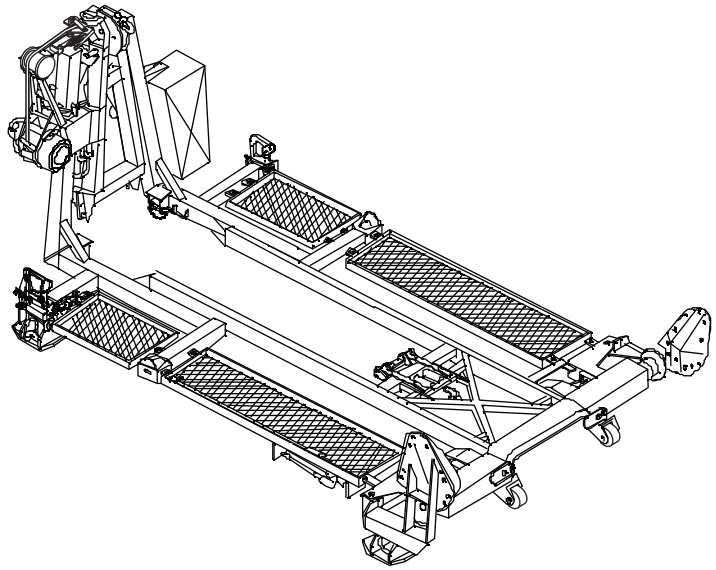
*TM 5-3990-263-13&P

TECHNICAL MANUAL
OPERATOR AND FIELD MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)
FOR

PALLET, ADAPTER, BRIDGE
M15
NSN 3990-01-442-1939 (EIC DV5)



*TM 5-3990-263-13&P dated 25 April 2012 supersedes BAP portion of TM 5-5420-234-14&P dated 15 July 1999, including all changes.

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

HEADQUARTERS, DEPARTMENT OF THE ARMY
25 April 2012

WARNING SUMMARY

This warning summary contains general safety and hazardous materials warnings that must be understood and applied during operation and maintenance of the machine. Failure to observe these precautions or operating this machine without training or instruction may result in serious injury or death to personnel.

FIRST AID

First aid is defined as "urgent and immediate lifesaving and other measures, which may be performed for casualties by nonmedical personnel when medical personnel are not immediately available."

FOR FIRST AID INFORMATION, REFER TO FM 4-25.11.

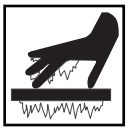
EXPLANATION OF SAFETY WARNING ICONS



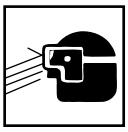
AIR PRESSURE - human hand blocking air gun shows the need to reduce air pressure before use, or debris may injure user and/or damage equipment.



ELECTRICAL - electrical wire to hand with electricity symbol running through human hand shows that shock hazard is present.



EXTREMELY COLD SURFACE - hand touching object with ice formed on both shows that surface is extremely cold and can damage human tissue.



EYE PROTECTION - person with goggles shows that material will injure the eyes.



FIRE - flame shows that material may ignite and cause burns.



FIRE EXTINGUISHER - fire extinguisher shows that material may ignite and a fire extinguisher should be within easy reach.



HEAVY OBJECT - human figure stooping over heavy object shows physical injury potential for improper lifting technique, and/or aid of assistant(s) and/or lifting device (as required).

WARNING SUMMARY - Continued

EXPLANATION OF SAFETY WARNING ICONS - Continued



HEAVY PARTS - hand with heavy object on top shows that heavy parts can crush and harm.



HEAVY PARTS - foot with heavy object on top shows that heavy parts can crush and harm.



HEAVY PARTS - moving heavy object pinning human figure against stationary object shows that heavy, moving parts/objects present a danger to life or limb.



HEAVY PARTS - heavy object on human figure shows that heavy parts present a danger to life or limb.



HOT AREA - hand over object radiating heats shows that part is hot and can burn.



MOVING PARTS - hand with fingers caught between gears shows that the moving parts of the equipment present a danger to life or limb.



PROJECTILE HAZARD - human body with object passing through it shows that a projectile hazard exists.



PROTECTIVE GLOVES - human hand with frayed wire rope shows the need to wear heavy leather protective gloves.



SLICK FLOOR - wavy line on floor with legs prone shows that slick floor presents a danger of falling.

WARNING SUMMARY - Continued

EXPLANATION OF SAFETY WARNING ICONS - Continued



VAPOR - human figure in a cloud shows that material vapors present a danger to life or health.



WARNING - triangle with exclamation point within shows that a WARNING is present that indicates a potential hazard, which may cause injury or death to personnel.

GENERAL SAFETY WARNINGS DESCRIPTION

WARNING



Ensure electrical power is off prior to working on all electrical connections. Prior to working on or around vehicle, remove all jewelry, such as rings, ID tags, bracelets, etc. Jewelry, and tools can catch on equipment, contact positive electrical circuits, and cause a direct short, severe burns, or electrical shock. Failure to comply may result in serious injury or death to personnel.

WARNING



If Chemical, Biological, Radiological, and Nuclear (CBRN) exposure is suspected, all filter media should be handled by personnel wearing protective equipment. Consult your unit CBRN Officer or CBRN NCO for appropriate handling or disposal instructions. Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY - Continued

GENERAL SAFETY WARNINGS DESCRIPTION - Continued

WARNING



A site survey must be conducted to ensure site meets criteria cited in warnings below. Failure to complete a site survey may result in serious injury or death to personnel.

- Use a ground guide for all bridging operations. The vehicle may crash into an obstruction or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Prior to performing bridging operations, conduct a site survey to ensure that side-to-side slope does not exceed 8 percent (5 degrees), ground in the transport area is firm, area around vehicle is free of personnel and obstructions, and overhead clearance is at least 22 ft. 2 in. (6.7 m) above the loading area. Failure to conduct a site survey could cause the vehicle to slip, turn over, crash into an obstruction, or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Unloading the BAP without disengaging hold-down locks may result in injury or death to personnel.

WARNING



Unless otherwise specified, perform all maintenance procedures with all attachments lowered to the ground, pilot shutoff lever in the up position, and engine shut off. Failure to comply may result in serious injury or death to personnel.

EXPLANATION OF HAZARDOUS MATERIALS ICONS



EXPLOSION - human figure in front of explosion symbol shows that the material may explode if subjected to high temperatures, sources of ignition, or high pressure.

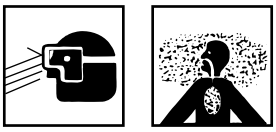


SKIN IRRITATION - hand radiating shows that material can cause skin irritation.

WARNING SUMMARY - Continued

HAZARDOUS MATERIALS DESCRIPTIONS

WARNING



CHEMICAL AGENT RESISTANT COATING (CARC) PAINT

Chemical Agent Resistant Coating (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 the 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.

- First aid for ingestion: do not induce vomiting. Seek immediate medical attention.
- First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention.
- First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention.
- First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If symptoms persist, seek medical attention.

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 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; can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.

Failure to comply may result in injury or death to personnel.

WARNING SUMMARY - Continued

HAZARDOUS MATERIALS DESCRIPTIONS - Continued

WARNING



SOLVENT CLEANING COMPOUND

Solvent Cleaning Compound (MIL-PRF-680) is flammable and may cause irritation to the eyes or skin. Wear protective goggles and gloves; avoid contact with skin, eyes, and clothing. Use in well ventilated areas and keep away from heat or flame. Failure to comply may result in serious injury or death to personnel.

Accidental ingestion can cause irritation of digestive tract and respiratory tract, and may cause lung and central nervous system damage. Can be fatal if swallowed. First aid for ingestion: do not induce vomiting. Seek immediate medical attention.

First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention.

First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention.

Inhalation of high/massive concentrations can cause coma or be fatal. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If symptoms persist, seek medical attention.

Keep away from open flames and other sources of ignition. Failure to comply may result in serious injury or death to personnel. The flash point for type II solvent cleaning compound is 141 to 198°F (61 to 92°C) and type III is 200 to 241°F (93 to 116°C). Fire extinguishers should be placed nearby when using solvent cleaning compound.

Improper cleaning methods and use of unauthorized cleaning solvents may result in serious injury or death to personnel.

Cloths or rags saturated with solvent cleaning compound must be disposed of using authorized facilities procedures.

Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may result in serious injury or death to personnel.

Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY - Continued

HAZARDOUS MATERIALS DESCRIPTIONS - Continued

WARNING



HYDRAULIC FLUID

Prolonged contact with hydraulic fluid may cause skin rash. Remove saturated clothing immediately and wash skin thoroughly that comes in contact with hydraulic fluid. Failure to comply may result in serious injury or death to personnel.

Spilled hydraulic fluid is slippery and creates a hazardous condition. Clean up and properly dispose of hydraulic fluid. Failure to comply may result in serious injury or death to personnel.

WARNING



HIGH-PRESSURE HYDRAULIC SYSTEM

Hydraulic systems can cause serious injuries if high-pressure lines or equipment fails.

Never work on hydraulic systems or equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and can give first aid. Failure to comply may result in serious injury or death to personnel.

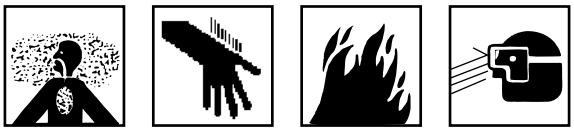
Never disconnect any hydraulic hose or part while the engine is running. Allow several minutes to elapse after shutting off engine, to allow pressure to relieve itself, before attempting to remove hoses. Failure to comply may result in serious injury or death to personnel.

Never disconnect any hydraulic line or fitting without first dropping the pressure to zero. Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY

HAZARDOUS MATERIALS DESCRIPTIONS - Continued

WARNING



ADHESIVES AND SEALANTS

Adhesives and sealants are flammable, 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 or sealant contacts eye, flush with large amounts of water, and seek medical attention. If adhesive or sealant gets on skin or clothing, flush with large amounts of water. If irritation persists, seek medical attention. Failure to comply may result in serious injury or death to personnel.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: Zero in the "Change No." column indicates an original page or work package.

Date of issue for the original manual is:

Original 25 April 2012

TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 56 AND TOTAL NUMBER OF WORK PACKAGES IS 82 CONSISTING OF THE FOLLOWING:

Page/WP No.	Change No.	Page/WP No.	Change No.
Front Cover	0	WP 0031 (10 pgs)	0
Warning summary (8 pgs)	0	WP 0032 (16 pgs)	0
Blank	0	WP 0033 (16 pgs)	0
i	0	Chapter 5 title page (2 pgs)	0
ii-blank	0	WP 0034 (2 pgs)	0
iii-xxvii	0	WP 0035 (16 pgs)	0
xxviii-blank	0	WP 0036 (10 pgs)	0
Chapter 1 title page (2 pgs)	0	Chapter 6 title page (2 pgs)	0
WP 0001 (4 pgs)	0	WP 0037 (2 pgs)	0
WP 0002 (4 pgs)	0	WP 0038 (14 pgs)	0
WP 0003 (2 pgs)	0	WP 0039 (4 pgs)	0
Chapter 2 title page (2 pgs)	0	WP 0040 (2 pgs)	0
WP 0004 (8 pgs)	0	WP 0041 (8 pgs)	0
WP 0005 (10 pgs)	0	WP 0042 (2 pgs)	0
WP 0006 (10 pgs)	0	WP 0043 (4 pgs)	0
WP 0007 (14 pgs)	0	WP 0044 (4 pgs)	0
WP 0008 (18 pgs)	0	WP 0045 (6 pgs)	0
WP 0009 (2 pgs)	0	WP 0046 (4 pgs)	0
WP 0010 (18 pgs)	0	WP 0047 (4 pgs)	0
WP 0011 (22 pgs)	0	WP 0048 (2 pgs)	0
WP 0012 (16 pgs)	0	WP 0049 (6 pgs)	0
WP 0013 (12 pgs)	0	WP 0050 (4 pgs)	0
WP 0014 (12 pgs)	0	WP 0051 (6 pgs)	0
WP 0015 (4 pgs)	0	WP 0052 (10 pgs)	0
WP 0016 (4 pgs)	0	WP 0053 (6 pgs)	0
WP 0017 (6 pgs)	0	WP 0054 (4 pgs)	0
WP 0018 (6 pgs)	0	WP 0055 (12 pgs)	0
WP 0019 (4 pgs)	0	WP 0056 (10 pgs)	0
WP 0020 (6 pgs)	0	WP 0057 (6 pgs)	0
WP 0021 (10 pgs)	0	WP 0058 (12 pgs)	0
WP 0022 (2 pgs)	0	WP 0059 (6 pgs)	0
Chapter 3 title page (2 pgs)	0	WP 0060 (8 pgs)	0
WP 0023 (4 pgs)	0	WP 0061 (10 pgs)	0
WP 0024 (2 pgs)	0	WP 0062 (4 pgs)	0
WP 0025 (4 pgs)	0	WP 0063 (6 pgs)	0
WP 0026 (4 pgs)	0	WP 0064 (8 pgs)	0
WP 0027 (4 pgs)	0	WP 0065 (10 pgs)	0
WP 0028 (2 pgs)	0	WP 0066 (10 pgs)	0
Chapter 4 title page (2 pgs)	0	WP 0067 (10 pgs)	0
WP 0029 (6 pgs)	0	WP 0068 (16 pgs)	0
WP 0030 (8 pgs)	0	WP 0069 (6 pgs)	0

LIST OF EFFECTIVE PAGES/WORK PACKAGES - Continued

Page/WP No.	Change No.	Page/WP No.	Change No.
WP 0070 (12 pgs)	0	WP 0077 (4 pgs)	0
WP 0071 (8 pgs)	0	WP 0078 (4 pgs)	0
Chapter 7 title page (2 pgs)	0	WP 0079 (2 pgs)	0
WP 0072 (6 pgs)	0	WP 0080 (2 pgs)	0
WP 0073 (70 pgs)	0	WP 0081 (4 pgs)	0
WP 0074 (6 pgs)	0	WP 0082 (4 pgs)	0
WP 0075 (6 pgs)	0	INDEX-1 - INDEX-4	0
Chapter 8 title page (2 pgs)	0	Inside back cover	0
WP 0076 (6 pgs)	0	Back cover	0

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 25 April 2012

TECHNICAL MANUAL

OPERATOR AND FIELD MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)
PALLET, ADAPTER, BRIDGE
M15
NSN 3990-01-442-1939 (EIC DV5)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any errors, or if you would like to recommend any improvements to the procedures in this publication, please let us know. The preferred method is to submit your DA Form 2028 (Recommended Changes to Publications and Blank Forms) through the Internet, on the TACOM Unique Logistics Support Applications (TULSA) website. The Internet address is https://tulsa.tacom.army.mil. Access to all applications requires CAC authentication, and you must complete the Access Request form the first time you use it. The DA Form 2028 is located under the TULSA Applications on the left-hand navigation bar. Fill out the form and click on SUBMIT. Using this form on the TULSA website will enable us to respond more quickly to your comments and to better manage the DA Form 2028 program.

You may also mail, e-mail, or fax your comments or DA Form 2028 directly to the U.S. Army TACOM Life Cycle Management Command. The postal mail address is U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP / TECH PUBS, MS 727, 6501 E. 11 Mile Road, Warren, MI 48397-5000. The e-mail address is: tacomlcmc.daform2028@us.army.mil. The fax number is DSN 786-1856 or Commercial (586) 282-1856. A reply will be furnished to you.

- RPSTL Current as of: 15 September 2011.

*TM 5-3990-263-13&P dated 25 April 2012 supersedes BAP portion of TM 5-5420-234-14&P dated 15 July 1999, including all changes.

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

TABLE OF CONTENTS

Page No.
WP Sequence No.

HOW TO USE THIS MANUAL xxv

Chapter 1 - GENERAL INFORMATION

GENERAL INFORMATION..... WP 0001

Table 1. Nomenclature Cross Reference List..... 0001-2

Table 2. List of Abbreviations and Acronyms..... 0001-2

EQUIPMENT DESCRIPTION AND DATA..... WP 0002

Table 1. Capabilities and Features..... 0002-1

Figure 1. BAP Components..... 0002-2

Table 2. BAP Components..... 0002-2

Figure 2. BAP Locks and Rollers..... 0002-3

Table 3. BAP Locks and Rollers..... 0002-3

Table 4. The BAP (Empty)..... 0002-4

THEORY OF OPERATION..... WP 0003

Chapter 2 - OPERATOR INSTRUCTIONS

LOCATION AND USE OF CONTROLS AND INDICATORS..... WP 0004

Table 1. Load Handling System (LHS) Cab Controls and Indicators..... 0004-1

Figure 1. PTO Controls..... 0004-1

Figure 2. Analog and Digital Control Panels..... 0004-2

Figure 3. LHS Remote Control Unit..... 0004-3

Figure 4. Main Hydraulic Manifold..... 0004-4

Figure 5. Free-Flow Valve..... 0004-5

Figure 6. Hydraulic Hand Pump..... 0004-6

LOADING BRIDGE ADAPTER PALLET (BAP) FROM THE GROUND..... WP 0005

Figure 1. Lock Winch Frame to BAP..... 0005-2

Figure 2. Stow Air Line..... 0005-3

Figure 3. Checking Front Pin Locks and Rear Guides..... 0005-4

Figure 4. Stowing Hydraulic Hoses..... 0005-5

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 5. Setting BAP Hold Down Locks..... 0005-5
Figure 6. Cab LHS Controls..... 0005-6
Figure 7. Cab LHS Controls..... 0005-8
Figure 8. Checking BAP Hold Down Locks..... 0005-9
UNLOADING BRIDGE ADAPTER PALLET (BAP) TO THE GROUND..... WP 0006
Figure 1. Brake and Transmission Controls..... 0006-2
Figure 2. Lock Winch Frame to BAP..... 0006-3
Figure 3. Disconnect Hydraulic Hoses..... 0006-4
Figure 4. Stow Hydraulic Hoses..... 0006-4
Figure 5. Stow Air Line..... 0006-5
Figure 6. Checking Front Pin Locks and Rear Guides..... 0006-6
Figure 7. Release BAP Hold Down Locks..... 0006-6
Figure 8. Cab LHS Controls..... 0006-7
Figure 9. Cab LHS Controls..... 0006-8
LOADING BRIDGE BAY FROM THE GROUND..... WP 0007
Figure 1. Brake and Transmission Controls..... 0007-2
Figure 2. Setting BAP Hold Down Locks..... 0007-3
Figure 3. Connect Hydraulic Hoses..... 0007-3
Figure 4. Lock Winch Frame to LHS Hook Arm..... 0007-4
Figure 5. Setting Front Pin Locks..... 0007-5
Figure 6. Setting Rear Guides..... 0007-5
Figure 7. Cab LHS Controls..... 0007-6
Figure 8. Picking Up Bridge Bay..... 0007-7
Figure 9. Parking Brake Control..... 0007-9
Figure 10. Stowing Winch Cable..... 0007-10
Figure 11. Cab and Remote Control Unit Controls..... 0007-11
Figure 12. Stow Remote Control Unit..... 0007-13

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

UNLOADING BRIDGE BAY TO THE GROUND..... WP 0008
Figure 1. Position BAP Locks..... 0008-2
Figure 2. Lock Winch Frame to Hook Arm..... 0008-3
Figure 3. Connect Hydraulic Hoses..... 0008-4
Figure 4. Connect Remote Control Unit..... 0008-5
Figure 5. Cab Controls..... 0008-6
Figure 6. Check and Set Winch Cable Tension..... 0008-7
Figure 7. Remote Control Unit Switches..... 0008-7
Figure 8. Front Pin Locks..... 0008-8
Figure 9. Rear Guides..... 0008-9
Figure 10. Unload Hook Arm..... 0008-10
Figure 11. Lowering Bridge Bay to the Ground..... 0008-11
Figure 12. Stowing Winch Cable..... 0008-13
Figure 13. PTO Engage Switch..... 0008-14
Figure 14. Stowing Remote Control Unit..... 0008-15
Figure 15. Setting Front Pin Locks..... 0008-16
Figure 16. Stowing Rear Guides..... 0008-17
BRIDGE BAY LAUNCHING INTRODUCTION..... WP 0009
CONTROLLED BRIDGE BAY LAUNCH..... WP 0010
Figure 1. Check BAP Hold Down Locks..... 0010-2
Figure 2. Lock Winch Frame to LHS Hook Arm..... 0010-3
Figure 3. Connect Hydraulic Hoses..... 0010-4
Figure 4. Cab LHS Controls..... 0010-5
Figure 5. Connect Remote Control Unit..... 0010-6
Figure 6. Check Winch Cable Hook..... 0010-7
Figure 7. Release Bridge Bay Latches..... 0010-8
Figure 8. Release Front Pin Locks..... 0010-9

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 9. Remove Slack in Winch Cable..... 0010-9
Figure 10. Open Rear Guides..... 0010-10
Figure 11. Brake and Transmission Controls..... 0010-11
Figure 12. Launch Bridge Bay..... 0010-12
Figure 13. Brake and Transmission Controls..... 0010-13
Figure 14. Stow Winch Cable Hook..... 0010-14
Figure 15. Cab LHS Controls..... 0010-15
Figure 16. Stow Remote Control Unit..... 0010-16
Figure 17. Secure Front Pin Locks..... 0010-17
Figure 18. Secure Rear Guides..... 0010-17
BRIDGE BAY FREE LAUNCH..... WP 0011
Figure 1. Cab LHS Controls..... 0011-3
Figure 2. Check Front Pin Locks..... 0011-4
Figure 3. Connect Remote Control Unit..... 0011-5
Figure 4. Attach Lanyard to Air Release Valve..... 0011-6
Figure 5. Connect Air Hose..... 0011-7
Figure 6. Position Rear Guides..... 0011-8
Figure 7. Center Roller Location..... 0011-9
Figure 8. Position Center Roller..... 0011-10
Figure 9. Remote Control Unit..... 0011-11
Figure 10. Lock Winch Frame to BAP..... 0011-12
Figure 11. Release IRB Foldlock Latches..... 0011-13
Figure 12. Unlock BAP from CBT..... 0011-13
Figure 13. Stow Remote Control Unit..... 0011-14
Figure 14. Brake and Transmission Controls..... 0011-15
Figure 15. Release Front Pin Locks..... 0011-16
Figure 16. Cab LHS Controls..... 0011-17

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 17. Remove Lanyard..... 0011-18
Figure 18. Lock Air Release Valve..... 0011-19
Figure 19. Disconnect Air Hose..... 0011-19
Figure 20. Disengage Front Pin Locks..... 0011-20
Figure 21. Secure Rear Guides..... 0011-20
Figure 22. Lower Center Roller..... 0011-21
CALM OR FAST WATER BRIDGE BAY RETRIEVAL..... WP 0012
Figure 1. Setting BAP Locks..... 0012-2
Figure 2. Lock Winch Frame to LHS Hook Arm..... 0012-3
Figure 3. Connect Hydraulic Hoses..... 0012-4
Figure 4. Position Front Pin Locks..... 0012-5
Figure 5. Position Rear Guides..... 0012-5
Figure 6. Connect Remote Control Unit..... 0012-6
Figure 7. Cab LHS Controls..... 0012-7
Figure 8. Remote Control Unit Controls..... 0012-8
Figure 9. Brake and Transmission Controls..... 0012-9
Figure 10. Engage IRB Foldlock Latches..... 0012-10
Figure 11. Remote Control Unit Controls..... 0012-11
Figure 12. Brake and Transmission Controls..... 0012-12
Figure 13. Remote Control Unit Controls..... 0012-13
Figure 14. Cab LHS Controls..... 0012-14
Figure 15. Stow Remote Control Unit..... 0012-15
NORMAL TRANSFER OF BRIDGE ADAPTER PALLET (BAP) FROM VEHICLE TO TRAILER..... WP 0013
Figure 1. Retract Trailer Locks..... 0013-2
Figure 2. Check Hydraulic Hoses..... 0013-3
Figure 3. Lock Winch Frame to BAP..... 0013-3
Figure 4. Unlock BAP from CBT..... 0013-4

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 5. Position PLS Feet 0013-4
Figure 6. Position Transload Rollers 0013-5
Figure 7. Bumper Points and Bump Plate 0013-5
Figure 8. Cab LHS Controls and Initial Contact with Trailer 0013-6
Figure 9. Cab LHS Controls and Final Stopping Point on Trailer 0013-8
Figure 10. Lower BAP to Trailer 0013-9
Figure 11. Engaging Trailer Locks 0013-9
Figure 12. Cab LHS Controls and Hook Disengage 0013-10

NORMAL TRANSFER OF BRIDGE ADAPTER PALLET (BAP) FROM TRAILER TO VEHICLE ..... WP 0014

Figure 1. Brake and Transmission Controls 0014-2
Figure 2. Lock Winch Frame to BAP 0014-3
Figure 3. Stow Hydraulic Hoses 0014-3
Figure 4. Position BAP Hold Down Locks 0014-4
Figure 5. Disengage Trailer Locks 0014-5
Figure 6. Raise BAP with Transload Rollers 0014-5
Figure 7. Cab LHS Controls 0014-6
Figure 8. Trailer Bumper Point and Vehicle Bump Plate 0014-7
Figure 9. Cab LHS Controls and Bail Bar Lock 0014-8
Figure 10. Stow Transload Rollers 0014-10
Figure 11. Retract Transload Roller Cylinders 0014-10

BAP HOLD-DOWN LOCKS CHECKLIST ..... WP 0015

Table 1. BAP Hold-Down Locks Checklist. 0015-1
Figure 1. BAP Hold-Down Locks Checklist 0015-2
Table 2. BAP Hold-Down Locks Checklist 0015-3
Figure 2. BAP Hold-Down Locks Checklist 0015-4

DECALS AND INSTRUCTION PLATES ..... WP 0016

Figure 1. Decal and Instruction Plate Locations. (Sheet 1 of 2) 0016-2

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 1. Decal and Instruction Plate Locations. (Sheet 2 of 2) 0016-3

MANUALLY LOADING BRIDGE ADAPTER PALLET (BAP) FROM THE GROUND..... WP 0017

Figure 1. Secure Winch Frame to BAP..... 0017-1

Figure 2. Check Hold-Down Locks..... 0017-2

Figure 3. Cab LHS Controls..... 0017-3

Figure 4. Check BAP Hold-Down Locks..... 0017-5

MANUALLY UNLOADING BRIDGE ADAPTER PALLET (BAP) TO THE GROUND..... WP 0018

Figure 1. Secure Winch Frame..... 0018-1

Figure 2. Stow Hydraulic Hoses..... 0018-2

Figure 3. Position Vehicle..... 0018-2

Figure 4. Disengage Locks..... 0018-3

Figure 5. Manually Unload BAP to the Ground..... 0018-4

MANUALLY BYPASSING SOLENOID DURING ELECTRIC POWER LOSS..... WP 0019

Figure 1. Hydraulic Manifold Cover..... 0019-1

Figure 2. Instructional Placard..... 0019-2

Figure 3. Free-Flow Valve Tool..... 0019-2

Figure 4. Valve Plunger Tool..... 0019-3

PREPARATION FOR EMERGENCY MANUAL REMOVAL OF BRIDGE ADAPTER PALLET (BAP)..... WP 0020

Figure 1. Winch Frame Locking Levers..... 0020-2

Figure 2. Stow Hydraulic Hoses..... 0020-2

Figure 3. Release BAP Hold Down Locks..... 0020-3

Figure 4. Lift Points and Bail Bar Lock..... 0020-4

MANUALLY REMOVING LOAD DURING HYDRAULIC POWER LOSS..... WP 0021

Figure 1. Move Vehicle..... 0021-1

Figure 2. Disconnect Hoses from Operable Vehicle..... 0021-2

Figure 3. Disconnect Hoses from Disabled Vehicle..... 0021-2

Figure 4. Connect Hoses to Operable Vehicle..... 0021-3

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 5. Set Cab Switches.... 0021-3
Figure 6. Return LHS to the Stowed Position.... 0021-4
Figure 7. Open M1977 A0 Cover.... 0021-4
Figure 8. Open M1977 A2 Cover.... 0021-5
Figure 9. Return LHS to Stowed Position.... 0021-5
Figure 10. Set Cab Switches.... 0021-6
Figure 11. Disconnect Hoses to Operable Vehicle.... 0021-7
Figure 12. Connect Hoses to Operable Vehicle.... 0021-7
Figure 13. Connect Hoses to Disabled Vehicle.... 0021-8
Figure 14. Close M1977 A0 LHS Control Box Cover.... 0021-8
Figure 15. Install M1977 A2 LHS Control Box Cover.... 0021-9

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR (CBRN) DECONTAMINATION PROCEDURES.... WP 0022

Chapter 3 - OPERATOR TROUBLESHOOTING PROCEDURES

CENTER ROLLER AND/OR TRANSLOAD ROLLERS WILL NOT OPERATE.... WP 0023
Figure 1. Hand Pump Selector Lever.... 0023-2
Figure 2. Hand Pump Selector Lever and Center Roller Assembly.... 0023-3
Figure 3. Hand Pump Selector Lever and Transload Roller Extension Cylinders.... 0023-4

FRONT PIN LOCK AIR RELEASE WILL NOT OPERATE DURING LAUNCH OF BRIDGE BAY.... WP 0024
Figure 1. BAP Air Line Quick-Disconnect Connector.... 0024-1

WINCH ASSEMBLY WILL NOT WIND OUT.... WP 0025
Figure 1. Winch Assembly Switch.... 0025-1
Figure 2. BAP Winch Hydraulic System Quick-Disconnect Connectors.... 0025-2
Figure 3. Remote Control Unit.... 0025-3

WINCH ASSEMBLY WILL NOT WIND IN.... WP 0026
Figure 1. Winch Assembly Switch.... 0026-1
Figure 2. BAP Winch Hydraulic System Quick-Disconnect Connectors.... 0026-2

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 3. Remote Control Unit..... 0026-3

WINCH ASSEMBLY WILL NOT LIFT LOAD OR OPERATES SLOWLY..... WP 0027

Figure 1. Winch Cable..... 0027-2

Figure 2. Winch Hardware..... 0027-2

Figure 3. BAP Winch Hydraulic System Quick-Disconnect Connectors..... 0027-3

Figure 4. Remote Control Unit..... 0027-4

FRONT PIN LOCK WILL NOT ALIGN WITH BRIDGE BAY PIN..... WP 0028

Figure 1. Bridge Bay..... 0028-1

Figure 2. BAP Front Pin Lock..... 0028-2

Chapter 4 - FIELD TROUBLESHOOTING PROCEDURES

CENTER ROLLER AND/OR TRANSLOAD ROLLERS WILL NOT OPERATE..... WP 0029

Figure 1. Roller Hydraulic Hoses/Lines..... 0029-2

Figure 2. Hand Pump..... 0029-3

Figure 3. Center Roller Manifold and Cylinders..... 0029-4

Figure 4. Transload Roller Manifold and Cylinders..... 0029-5

FRONT PIN LOCK WILL NOT OPERATE..... WP 0030

Figure 1. Air Supply Hose..... 0030-2

Figure 2. Control Valve..... 0030-3

Figure 3. Control Valve Outlet Ports..... 0030-4

Figure 4. Air Cylinder..... 0030-5

Figure 5. Control Valve Lever..... 0030-6

Figure 6. Air Cylinder Breather..... 0030-7

Figure 7. Latch Handle..... 0030-8

WINCH DOES NOT OPERATE..... WP 0031

Figure 1. Winch Quick-Disconnect Couplings (Model A Shown)..... 0031-2

Figure 2. Hydraulic Hoses..... 0031-2

Figure 3. Access Cover, Connector J2, and Connector P2..... 0031-3

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 4. Cab Digital Mode Select Switch..... 0031-4
Figure 5. Hydraulic Cabinet Cover..... 0031-5
Figure 6. Connector J3 and Connector J4..... 0031-5
Figure 7. Connector P2..... 0031-6
Figure 8. Connector J3..... 0031-7
Figure 9. WINCH IN Valve and Solenoid..... 0031-8
Figure 10. WINCH OUT Valve and Solenoid..... 0031-9
WINCH DOES NOT WIND OUT..... WP 0032
Figure 1. Winch Quick-Disconnect Couplings (Model A Shown)..... 0032-2
Figure 2. Hydraulic Hoses..... 0032-2
Figure 3. Left (Connector J8A) and Right (Connector J8B) Remote Locations..... 0032-3
Figure 4. Remote Control Unit..... 0032-4
Figure 5. Remote Control Cable Connectors P8 And P9..... 0032-5
Figure 6. Left (Connector J8A) and Right (Connector J8B) Remote Locations..... 0032-6
Figure 7. Main Frame Junction Box (Wiring Removed For Clarity)..... 0032-6
Figure 8. Left (Connector J8A) and Right (Connector J8B) Remote Locations..... 0032-7
Figure 9. Main Frame Junction Box (Wiring Removed For Clarity)..... 0032-8
Figure 10. WINCH OUT Solenoid Connector..... 0032-9
Figure 11. Main Frame Junction Box (Wiring Removed For Clarity)..... 0032-10
Figure 12. Cab Interface Wiring Harness Access Cover..... 0032-11
Figure 13. Cab Digital Mode Select Switch..... 0032-11
Figure 14. Hydraulic Cabinet Cover, WINCH OUT Solenoid Connector, and Connector J4..... 0032-13
Figure 15. Connector P2..... 0032-14
Figure 16. WINCH OUT Solenoid Connector and Connector J3..... 0032-15
Figure 17. WINCH OUT Solenoid Connector..... 0032-16
WINCH DOES NOT WIND IN..... WP 0033
Figure 1. Winch Quick-Disconnect Couplings (Model A Shown)..... 0033-2

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 2. Hydraulic Hoses.... 0033-2
Figure 3. Left (Connector J8A) And Right (Connector J8B) Remote Locations.... 0033-3
Figure 4. Remote Control Unit.... 0033-4
Figure 5. Remote Control Cable Connectors P8 And P9.... 0033-5
Figure 6. Left (Connector J8A) and Right (Connector J8B) Remote Locations.... 0033-6
Figure 7. Main Frame Junction Box (Wiring Removed For Clarity).... 0033-6
Figure 8. Left (Connector J8A) and Right (Connector J8B) Remote Locations.... 0033-7
Figure 9. Main Frame Junction Box (Wiring Removed For Clarity).... 0033-8
Figure 10. WINCH IN Solenoid Connector.... 0033-9
Figure 11. Main Frame Junction Box (Wiring Removed For Clarity).... 0033-10
Figure 12. Cab Interface Wiring Harness Access Cover.... 0033-11
Figure 13. Cab Digital Mode Select Switch.... 0033-11
Figure 14. Hydraulic Cabinet Cover, WINCH OUT Solenoid Connector, and Connector J4.... 0033-12
Figure 15. Connector P2.... 0033-13
Figure 16. WINCH IN Solenoid Connector and Connector J3.... 0033-14
Figure 17. WINCH IN Solenoid Connector.... 0033-16

Chapter 5 - PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

INTRODUCTION - PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS).... WP 0034
OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS).... WP 0035

Table 1. Operator Preventive Maintenance Checks and Services.... 0035-1
Figure 1. Load Handling System.... 0035-2
Figure 2. Dust Covers.... 0035-3
Figure 3. BAP Winch Assembly.... 0035-4
Figure 4. BAP Hold-Down Lock.... 0035-5
Figure 5. BAP PLS Feet.... 0035-5
Figure 6. Control Valve.... 0035-6
Figure 7. Front Pin Locks.... 0035-6

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 8. Center Roller..... 0035-7
Figure 9. Rear Guide Assemblies..... 0035-8
Figure 10. Transload Rollers..... 0035-8
Figure 11. Winch Cable..... 0035-9
Figure 12. Remote Control Unit..... 0035-10
Figure 13. Control Unit..... 0035-10
Figure 14. Main Frame Switch..... 0035-11
Figure 15. Winch Switch..... 0035-12
Figure 16. Disconnect Remote Control Unit..... 0035-13
Figure 17. Front Pin Locks..... 0035-14
Figure 18. Front Rollers..... 0035-14
Figure 19. Rear Rollers..... 0035-15
Figure 20. Control Valve..... 0035-15

FIELD LEVEL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)..... WP 0036

Table 1. FIELD LEVEL PMCS..... 0036-1
Figure 1. Catwalk..... 0036-2
Figure 2. BAP Frame Assembly..... 0036-3
Figure 3. Winch Frame Rail..... 0036-3
Figure 4. Winch Assembly..... 0036-4
Figure 5. Winch Hydraulic System..... 0036-4
Figure 6. Hand Pump..... 0036-5
Figure 7. Hand Pump Hydraulic System..... 0036-6
Figure 8. Rear Guide Assembly..... 0036-7
Figure 9. BAP Labels..... 0036-8
Figure 10. Winch Assembly Drain..... 0036-9

Chapter 6 - MAINTENANCE INSTRUCTIONS

SERVICE UPON RECEIPT..... WP 0037

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

GENERAL MAINTENANCE AND WELDING INSTRUCTIONS..... WP 0038
Figure 1. General Air Tubing Repair..... 0038-7
Figure 2. A-Frame..... 0038-8
Figure 3. Outriggers and Main Rails..... 0038-9
Figure 4. Winch Frame..... 0038-11
Table 1. Weld Joint Materials..... 0038-12
PLS FOOT STOWAGE..... WP 0039
Figure 1. PLS Foot Removal..... 0039-1
Figure 2. PLS Foot Stowage..... 0039-2
Figure 3. PLS Hitch Pin Installation..... 0039-3
STENCILS..... WP 0040
Figure 1. Stencil Application..... 0040-1
CATWALK REPLACEMENT..... WP 0041
Figure 1. Catwalk Locations..... 0041-2
Figure 2. Hydraulic Tubes Removal..... 0041-3
Figure 3. Catwalk Removal..... 0041-4
Figure 4. Tube Support Removal..... 0041-5
Figure 5. Tube Support Installation..... 0041-6
Figure 6. Catwalk Installation..... 0041-7
Figure 7. Hydraulic Tubes Installation..... 0041-8
PLUNGER REPLACEMENT..... WP 0042
Figure 1. Plunger Removal..... 0042-1
Figure 2. Plunger Installation..... 0042-2
TOOLBOX ASSEMBLY REPAIR..... WP 0043
Figure 1. Toolbox Assembly Removal..... 0043-1
Figure 2. Toolbox Disassembly..... 0043-2
Figure 3. Toolbox Assembly..... 0043-3

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 4. Toolbox Assembly Installation.... 0043-4
CENTER ROLLER REPAIR.... WP 0044
Figure 1. Center Roller Removal.... 0044-1
Figure 2. Center Roller Installation.... 0044-2
REAR GUIDE REPAIR.... WP 0045
Figure 1. Rear Guide Removal.... 0045-2
Figure 2. Reaction Bracket Removal.... 0045-3
Figure 3. Reaction Bracket Installation.... 0045-4
Figure 4. Rear Guide Installation.... 0045-5
Figure 5. Rear Guide Adjustment.... 0045-6
FRONT ROLLER ASSEMBLY REPLACEMENT.... WP 0046
Figure 1. Front Roller Assembly Removal.... 0046-1
Figure 2. Front Roller Assembly Installation.... 0046-2
REAR ROLLER ASSEMBLY REPLACEMENT.... WP 0047
Figure 1. Rear Roller Assembly Removal.... 0047-1
Figure 2. Rear Roller Assembly Installation.... 0047-2
REAR BUMPER ASSEMBLY REPLACEMENT.... WP 0048
Figure 1. Rear Bumper Assembly Removal.... 0048-1
Figure 2. Rear Bumper Assembly Installation.... 0048-2
TRANSLOAD ROLLER REPLACEMENT.... WP 0049
Figure 1. Quick Release Pin Removal.... 0049-1
Figure 2. Transload Roller Removal.... 0049-2
Figure 3. Transload Roller Pin Removal.... 0049-3
Figure 4. Transload Roller Pin Installation.... 0049-4
Figure 5. Transload Roller Installation.... 0049-4
Figure 6. Quick Release Pin Installation.... 0049-5
REFLECTOR REPLACEMENT.... WP 0050

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 1. Front Amber Reflector Removal..... 0050-1
Figure 2. Left Front Amber Reflector Removal..... 0050-2
Figure 3. Red Reflector Removal..... 0050-2
Figure 4. Red Reflector Installation..... 0050-3
Figure 5. Left Front Amber Reflector Installation..... 0050-3
Figure 6. Front Amber Reflector Installation..... 0050-4
LABEL REPLACEMENT..... WP 0051
Figure 1. Label Removal. (Sheet 1 of 2) 0051-2
Figure 1. Label Removal. (Sheet 2 of 2) 0051-3
Figure 2. Label Installation. (Sheet 1 of 2) 0051-4
Figure 2. Label Installation. (Sheet 2 of 2) 0051-5
FRONT PIN LOCK ASSEMBLY ADJUSTMENT AND REPAIR..... WP 0052
Figure 1. Air Hose Removal..... 0052-2
Figure 2. BAP Front Pin Lock Assembly Removal..... 0052-2
Figure 3. BAP Front Pin Lock Guide Assembly Disassembly..... 0052-3
Figure 4. BAP Front Pin Lock Assembly Disassembly..... 0052-4
Figure 5. BAP Front Pin Disassembly..... 0052-5
Figure 6. BAP Front Pin Lock Assembly Inspection..... 0052-6
Figure 7. BAP Front Pin Assembly..... 0052-6
Figure 8. BAP Front Pin Lock Assembly..... 0052-7
Figure 9. BAP Front Pin Lock Guide Assembly..... 0052-8
Figure 10. BAP Front Pin Lock Assembly Installation..... 0052-9
Figure 11. Air Hose Installation..... 0052-9
SHEAVE ASSEMBLY REPAIR..... WP 0053
Figure 1. Roller Assembly Removal..... 0053-2
Figure 2. Sheave Assembly Removal..... 0053-3
Figure 3. Sheave Assembly Installation..... 0053-4

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 4. Roller Assembly Installation..... 0053-5

WINCH FRAME LOCKING LEVER OUTBOARD RETAINER BLOCKS FIELD REPLACEMENT..... WP 0054

Figure 1. Winch Frame Locking Lever Outboard Retainer Blocks Field Removal..... 0054-1

Figure 2. Winch Frame Locking Lever Outboard Retainer Blocks Field Installation..... 0054-2

Figure 3. Winch Frame Locking Lever Outboard Retainer Blocks Field Installation..... 0054-2

Figure 4. Winch Frame Locking Lever Outboard Retainer Blocks Field Installation..... 0054-3

WINCH HYDRAULIC SYSTEM REPLACEMENT..... WP 0055

Figure 1. Winch Quick Disconnect Removal..... 0055-2

Figure 2. Winch Hydraulic Tube Bracket Removal..... 0055-3

Figure 3. Winch Hydraulic Tubes Removal..... 0055-4

Figure 4. Winch Quick Disconnect Bracket Removal..... 0055-6

Figure 5. Winch Quick Disconnect Bracket Installation..... 0055-7

Figure 6. Winch Hydraulic Tubes Installation..... 0055-8

Figure 7. Winch Hydraulic Tube Bracket Installation..... 0055-10

Figure 8. Winch Quick Disconnect Installation..... 0055-11

WINCH CABLE TENSIONER REPAIR..... WP 0056

Figure 1. Retainer Bar and Cable Assembly Removal..... 0056-2

Figure 2. Base Assembly Removal..... 0056-3

Figure 3. Handle Assembly Removal..... 0056-4

Figure 4. Spring and U-bolt Removal..... 0056-5

Figure 5. Spring and U-bolt Installation..... 0056-6

Figure 6. Handle Assembly Installation..... 0056-7

Figure 7. Base Assembly Installation..... 0056-8

Figure 8. Retainer Bar and Cable Assembly Installation..... 0056-9

CABLE ASSEMBLY REPLACEMENT..... WP 0057

Figure 1. Cable Anchor Removal..... 0057-2

Figure 2. Cable Assembly Removal..... 0057-3

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 3. Cable Assembly Disassembly..... 0057-3
Figure 4. Cable Assembly..... 0057-4
Figure 5. Cable Assembly Installation..... 0057-5
Figure 6. Cable Anchor Installation..... 0057-5
WINCH ASSEMBLY REPLACEMENT..... WP 0058
Figure 1. Drain Winch..... 0058-2
Figure 2. Upper Cable guide Shaft Removal..... 0058-3
Figure 3. Lower Cable Guide Shaft Removal..... 0058-4
Figure 4. Pivot Plates Removal..... 0058-5
Figure 5. Winch Assembly Removal..... 0058-6
Figure 6. Winch Assembly Installation..... 0058-7
Figure 7. Pivot Plates Installation..... 0058-8
Figure 8. Lower Cable Guide Shaft Installation..... 0058-9
Figure 9. Upper Cable Guide Shaft Installation..... 0058-10
Figure 10. Fill Winch..... 0058-10
Figure 11. Winch Tubes Installation..... 0058-11
WINCH MOTOR ASSEMBLY REPLACEMENT..... WP 0059
Figure 1. Winch Motor Tubes Removal..... 0059-2
Figure 2. Winch Motor Assembly Removal..... 0059-3
Figure 3. Winch Motor Assembly Installation..... 0059-4
Figure 4. Winch Motor Tubes Installation..... 0059-5
CENTER ROLLER HYDRAULIC SYSTEM REPAIR..... WP 0060
Figure 1. Center Roller Hydraulic System Pressure Relief..... 0060-2
Figure 2. Center Roller Hydraulic System Removal..... 0060-2
Figure 3. Rear Carriage Removal..... 0060-3
Figure 4. Manifold Removal..... 0060-4
Figure 5. Manifold Installation..... 0060-5

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 6. Rear Carriage Installation..... 0060-6
Figure 7. Center Roller Hydraulic System Installation..... 0060-6
TRANSLOAD ROLLER HYDRAULIC SYSTEM REPAIR..... WP 0061
Figure 1. Transload Roller Hydraulic System Guard Plate Removal..... 0061-2
Figure 2. Transload Roller Hydraulic System Hose Removal..... 0061-3
Figure 3. Transload Roller Hydraulic System Tube Removal..... 0061-3
Figure 4. Transload Roller Hydraulic Cylinder Removal..... 0061-4
Figure 5. Transload Roller Hydraulic System Cushion Clamps Removal..... 0061-5
Figure 6. Transload Roller Hydraulic System Cushion Clamps Installation..... 0061-6
Figure 7. Transload Roller Hydraulic System Cylinder Installation..... 0061-6
Figure 8. Transload Roller Hydraulic System Tube Installation..... 0061-7
Figure 9. Transload Roller Hydraulic System Hose Installation..... 0061-8
Figure 10. Transload Roller Hydraulic System Fittings Installation..... 0061-8
Figure 11. Transload Roller Hydraulic System Guard Plate Installation..... 0061-9
HYDRAULIC HAND PUMP REPLACEMENT..... WP 0062
Figure 1. Hydraulic Hand Pump Removal..... 0062-2
Figure 2. Hydraulic Hand Pump Installation..... 0062-3
Figure 3. Hydraulic Hand Pump Bleeding..... 0062-4
CONTROL VALVE REPLACEMENT..... WP 0063
Figure 1. Control Valve Removal..... 0063-2
Figure 2. Control Valve Installation..... 0063-4
AIR LINES AND FITTINGS REPLACEMENT (OLD CONFIGURATION)..... WP 0064
Figure 1. Tubing Removal..... 0064-2
Figure 2. Tube Nuts Removal..... 0064-4
Figure 3. Tube Nuts Installation..... 0064-6
Figure 4. Tubing Installation..... 0064-7
AIR LINES AND FITTINGS REPLACEMENT (NEW CONFIGURATION)..... WP 0065

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 1. Clamp and Tubing Removal.... 0065-2
Figure 2. Adapter and Tube Nuts Removal.... 0065-4
Figure 3. Adapter and Clamps installation.... 0065-6
Figure 4. Coupling and Hose Installation.... 0065-8
FRONT BAP LOCK REPLACEMENT.... WP 0066
Figure 1. Front BAP Lock Bracket Removal.... 0066-2
Figure 2. Front BAP Lock Handle Removal.... 0066-3
Figure 3. Front BAP Lock Removal.... 0066-4
Figure 4. Front BAP Lock Rubber Stop Removal.... 0066-5
Figure 5. Front BAP Lock Rubber Stop Installation.... 0066-5
Figure 6. Front BAP Lock Installation.... 0066-6
Figure 7. Front BAP Lock Handle Installation.... 0066-8
Figure 8. Front BAP Lock Bracket Installation.... 0066-9
REMOTE CONTROL UNIT REPAIR.... WP 0067
Figure 1. Remote Control Unit Disassembly.... 0067-1
Figure 2. Remote Control Unit Disassembly.... 0067-2
Figure 3. Remote Control Unit Disassembly.... 0067-3
Figure 4. Remote Control Unit Disassembly.... 0067-4
Figure 5. Remote Control Unit Disassembly.... 0067-5
Figure 6. Remote Control Unit Assembly.... 0067-6
Figure 7. Remote Control Unit Assembly.... 0067-7
Figure 8. Remote Control Unit Assembly.... 0067-8
Figure 9. Remote Control Unit Assembly.... 0067-9
Figure 10. Remote Control Unit Assembly.... 0067-10
WINCH REPAIR.... WP 0068
Figure 1. Brake Hub Assembly Removal.... 0068-2
Figure 2. Brake Hub Subassembly Removal.... 0068-3

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Figure 3. Final Drive Assembly Removal..... 0068-5
Figure 4. Brake Housing Removal..... 0068-6
Figure 5. Cable Drum Assembly Removal..... 0068-7
Figure 6. Final Housing Removal..... 0068-8
Figure 7. Final Housing Installation..... 0068-9
Figure 8. Cable Drum Assembly Installation..... 0068-10
Figure 9. Brake Housing Installation..... 0068-11
Figure 10. Final Drive Assembly Installation..... 0068-12
Figure 11. Brake Hub Subassembly Assembly..... 0068-13
Figure 12. Brake Hub Assembly Installation..... 0068-14
PREPARATION FOR STORAGE OR SHIPMENT..... WP 0069
LUBRICATION INSTRUCTIONS..... WP 0070
Figure 1. Monthly Lubrication Intervals..... 0070-3
Figure 2. Semiannual Lubrication Intervals..... 0070-4
Figure 3. Localized Views of Lubrication Points. (Sheet 1 of 5) 0070-5
Figure 3. Localized Views of Lubrication Points. (Sheet 2 of 5) 0070-6
Figure 3. Localized Views of Lubrication Points. (Sheet 3 of 5) 0070-7
Figure 3. Localized Views of Lubrication Points. (Sheet 4 of 5) 0070-8
Figure 3. Localized Views of Lubrication Points. (Sheet 5 of 5) 0070-9
Table 1. Lubricant Requirements..... 0070-10
Figure 4. Expected Temperatures..... 0070-10
Table 2. Notes..... 0070-11
GENERAL TORQUE LIMITS..... WP 0071
Figure 1. Screw Diameter Measurement..... 0071-1
Figure 2. Screw Thread Measurement..... 0071-1
Figure 3. Capscrew Head Markings..... 0071-2
Table 1. Torque Limits for Wet Flange Nuts..... 0071-2

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Table 2. Torque Limits for Wet Socket Head Capscrews..... 0071-3
Table 3. Torque Limits for Dry Fasteners..... 0071-3
Table 4. Torque Limits for Dry Metric Fasteners..... 0071-5
Table 5. Torque Limits for Wet Fasteners..... 0071-6

Chapter 7 - FIELD MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST

FIELD MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST INTRODUCTION..... WP 0072
Table 1. SMR Codes..... 0072-1
Table 2. Source Code 1st and 2nd Positions..... 0072-2
Table 3. Maintenance Code 3rd Position..... 0072-3
Table 4. Maintenance Code 4th Position..... 0072-4
Table 5. Recoverability Code 5th Position..... 0072-4
Table 6. Usable On Code..... 0072-6
GROUP 1000 BAP ASSEMBLY..... WP 0073
GROUP 1100 FRONT PIN LOCK ASSEMBLY..... WP 0073
GROUP 1200 WINCH FRAME ASSEMBLY..... WP 0073
GROUP 1210 WINCH CABLE ASSEMBLY..... WP 0073
GROUP 1220 BAP WINCH ASSEMBLY..... WP 0073
GROUP 1230 WINCH BRAKE HUB ASSEMBLY..... WP 0073
GROUP 1300 BAP HYDRAULIC INSTALLATION..... WP 0073
GROUP 1310 HYDRAULIC HAND PUMP..... WP 0073
GROUP 1400 BAP AIR LINES INSTALLATION..... WP 0073
GROUP 1500 FRONT BAP LOCK ASSEMBLY..... WP 0073
GROUP 1600 ELECTRICAL CONTROLS..... WP 0073
GROUP 9401 REPAIR KITS..... WP 0073
GROUP 9501 HARDWARE SUPPLIES AND BULK MATERIAL, COMMON..... WP 0073
NATIONAL STOCK NUMBER INDEX..... WP 0074
PART NUMBER INDEX..... WP 0075

TABLE OF CONTENTS - Continued

Page No.
WP Sequence No.

Chapter 8 - SUPPORTING INFORMATION

REFERENCES..... WP 0076
MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION..... WP 0077
MAINTENANCE ALLOCATION CHART (MAC)..... WP 0078
Table 1. MAINTENANCE ALLOCATION CHART (MAC)..... 0078-1
Table 2. TOOLS AND TEST EQUIPMENT..... 0078-3
Table 3. REMARKS..... 0078-3
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS..... WP 0079
Table 1. Basic Issue Items (BII)..... 0079-2
ADDITIONAL AUTHORIZATION LIST..... WP 0080
Table 1. ADDITIONAL AUTHORIZATION LIST..... 0080-1
EXPENDABLE AND DURABLE ITEMS LIST..... WP 0081
Table 1. EXPENDABLE AND DURABLE ITEMS..... 0081-2
MANDATORY REPLACEMENT PARTS..... WP 0082
Table 1. MANDATORY REPLACEMENT PARTS LIST..... 0082-1
Index

HOW TO USE THIS MANUAL

INTRODUCTION

This Technical Manual (TM) contains instructions for safe and efficient operation and maintenance of the Bridge Adapter Pallet (BAP). This manual also includes the authorized repair parts for the BAP. These instructions provide technical information and characteristics of the BAP, as well as servicing and maintenance procedures.

A Warning Summary is located at the beginning of this TM. Become familiar with these warnings and their associated icons before operating or maintaining the BAP.

This TM includes a list of abbreviations and acronyms that are used throughout the TM.

This TM provides operating instructions, preventive maintenance checks and services, troubleshooting, and maintenance procedures to keep the BAP mission-ready.

These instructions provide the user with a general knowledge of the equipment, characteristics, and operating procedures for the BAP.

Instructions are provided for most circumstances that may be encountered during mission operations. However, it is impossible to address every scenario you may encounter. If you are unsure of what to do after looking in this TM, always contact your direct supervisor. Emergencies, severe adverse weather, terrain, etc., may require modifications to these procedures.

This TM attempts to cover all areas of operation and field level maintenance required for the BAP. Personnel should have completed BAP training courses for their assigned duties. Before you attempt any procedures not covered in this TM or in training courses, obtain clearance from your commanding officer.

This TM contains a list of publications that occasionally will be referred to for use in conjunction with this TM. When this is the case, a reference to the list of publications will appear in parenthesis along with the publication number of the outside reference. The references list will identify the name of the publication.

TECHNICAL MANUAL STRUCTURE

This TM is written in work package format:

- Chapters divide the TM into major categories of information: General Information; Operator and Field Preventive Maintenance Checks and Services (PMCS); Operator and Field Troubleshooting; Maintenance Instructions; and Supporting Information.
- Each chapter is divided into work packages, which are identified by a 4-digit number (e.g., 0001, 0002) located on the upper, right-hand corner of each page.
- The work package page number is also included as part of the page number located centered at the bottom of each page (e.g., 0001-1, 0001-2).

INDEXING

Three indexing methods are used to help you locate information quickly:

- **Table Of Contents.** The Table of Contents lists all work packages as well as their figures and tables. It provides a quick reference to assist in finding the required information. If you cannot find what you are looking for in the Table of Contents, refer to the Alphabetical Index at the back of the TM.
- **Chapter Title Page Contents.** Each chapter begins with a chapter title page containing a list of all that chapter's work packages.
- **Alphabetical Index.** The alphabetical index contains a list of all work packages found within this TM, and as the name indicates they are listed in alphabetical order.

HOW TO USE THIS MANUAL - Continued

INITIAL SETUP BLOCK

The initial setup block may include up to five sections with information that is needed to prepare for and complete the work package.

- **Tools and Special Tools:** This section lists all tools, special tools, and TMDE required to perform the procedure in the work package.
- **Materials/Parts:** This section lists expendable materials such as grease, oil, or adhesives and includes all mandatory replacement parts.
- **Personnel Required:** This section indicates how many people are required to perform the procedure in the work package and if there is a specialty MOS required.
- **References:** References are listed two different ways.
    a. A publication number followed by a work package number in parenthesis; for example: TM 9-2320-425-10 (WP 0079). This indicates the reference is not found in this TM. The work package number in the parenthesis will be the list of references work package within this TM which contains the full name of outside publication being referenced.
    b. A work package number; for example: WP 0101. This indicates that a work package from within this TM is needed for reference.
- **Equipment Condition:** This section includes a list of conditions for the equipment that must be met before starting the procedure at hand. These conditions will mostly be other procedures within this TM that must be performed first. The work package number will follow the statement.

WARNINGS, CAUTIONS, AND NOTES

WARNING, CAUTION, and NOTE headings are printed in **BOLD** type. These headings indicate critical data is to follow that ensures personnel safety, prevents damage to the equipment, and provides important information for use during BAP procedures.

- **WARNING:** indicates a hazard which may result in injury or death to personnel.
- **CAUTION:** directs attention to usage practices that may result in damage to equipment.
- **NOTE:** is a statement containing information that will make the procedures easier to perform.

Carefully read and follow all WARNINGS, CAUTIONS, and NOTES before performing any procedure.

GENERAL MAINTENANCE

The General Maintenance work package consists of general instructions that apply to nearly all maintenance situations. Maintenance personnel should be familiar with these general procedures before performing the tasks found within this TM.

CHAPTER 1: GENERAL INFORMATION

This chapter contains general characteristics, location of major components, and theory of operation for the BAP.

CHAPTER 2: OPERATOR INSTRUCTIONS

This chapter contains operator instructions for both usual and unusual conditions.

CHAPTER 3: OPERATOR TROUBLESHOOTING PROCEDURES

This chapter contains troubleshooting procedures for the operator.

HOW TO USE THIS MANUAL - Continued

CHAPTER 4: FIELD TROUBLESHOOTING PROCEDURES

This chapter contains troubleshooting procedures for the field level maintainer.

CHAPTER 5: PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

This chapter contains general information pertaining to PMCS. It also includes both the operator and field level maintainer PMCS tables.

CHAPTER 6: MAINTENANCE INSTRUCTIONS

This chapter contains maintenance procedures for both the operator and field level maintainer.

CHAPTER 7: PARTS INFORMATION

This chapter contains the authorized repair parts and special tools needed for the BAP.

CHAPTER 8: SUPPORTING INFORMATION

This chapter contains the Maintenance Allocation Chart and other non-procedural information that is referenced throughout this TM to support the operator and maintenance instructions.

CHAPTER 1

GENERAL INFORMATION
FOR
M15 BRIDGE ADAPTER PALLET (BAP) NSN 3990-01-442-1939

CHAPTER CONTENTS

Work Package Title	WP Number
General Information	WP 0001
Equipment Description and Data	WP 0002
Theory of Operation	WP 0003

FIELD MAINTENANCE
GENERAL INFORMATION

SCOPE

Type of Manual. This Technical Manual (TM) provides Operator and Field Maintenance Instructions and a Repair Parts and Special Tools List (RPSTL) for the BAP. Maintenance Instructions include Troubleshooting procedures and Preventive Maintenance Checks and Services.

Equipment Name. M15 Bridge Adapter Pallet (BAP).

Purpose of Equipment. The BAP will be used with the Common Bridge Transporter (CBT) or Palletized Load System (PLS) trailer. The CBT provides the capability for transporting, launching, and retrieving the Improved Ribbon Bridge (IRB) and the Standard Ribbon Bridge (SRB).

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by (as applicable) DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual; DA PAM 738-751, Functional Users Manual for the Army Maintenance Management Systems - Aviation (TAMMS-A); or AR 700-138, Army Logistics Readiness and Sustainability.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS

If your BAP needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. If you have Internet access, the easiest and fastest way to report problems or suggestions is to go to https://tulsa.tacom.army.mil (scroll down and choose the "Submit Quality Deficiency Report" bar). The Internet form lets you choose to submit an Equipment Improvement Recommendation (EIR), a Product Quality Deficiency Report (PQDR or a Warranty Claim Action (WCA). You may also submit your information using an SF 368 (Product Quality Deficiency Report). You can send your SF 368 via e-mail, regular mail, or facsimile using the addresses/facsimile numbers specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual. We will send you a reply.

CORROSION PREVENTION AND CONTROL

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

Corrosion specifically occurs with metals. It is an electrochemical process that causes the degradation of metals. It is commonly caused by exposure to moisture, acids, bases, or salts. An example is the rusting of iron. Corrosion damage in metals can be seen, depending on the metal, as tarnishing, pitting, fogging, surface residue, and/or cracking.

Plastics, composites, and rubbers can also degrade. Degradation is caused by thermal (heat), oxidation (oxygen), solvation (solvents), or photolytic (light, typically UV) processes. The most common exposures are excessive heat or light. Damage from these processes will appear as cracking, softening, swelling, and/or breaking.

If a corrosion problem is identified, it can be reported using SF Form 368. The use of key words, such as "corrosion," "rust,""deterioration," and "cracking," will ensure that the information is identified as a CPC problem. SF Form 368, Product Quality Deficiency Report should be submitted to the address specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Procedures for the destruction of Army materiel are contained in TM 750-244-6 (WP 0076).

PREPARATION FOR STORAGE OR SHIPMENT

Information on preparing the BAP for storage or shipment is contained in (WP 0069).

WARRANTY INFORMATION

No warranty is available for the BAP.

NOMENCLATURE CROSS-REFERENCE LIST

Table 1. Nomenclature Cross Reference List.

Common Name	Official Nomenclature
Bay	Interior Bay or Ramp Bay, Bridge Chapter
Transporter	Converted HEMTT (M977 to M1977) with Load Handling System (LHS)
Bull Horns	Trailer Guides

LIST OF ABBREVIATIONS/ACRONYMS

Table 2. List of Abbreviations and Acronyms.

AOAP	Army Oil Analysis Program
BAP	Bridge Adapter Pallet
BII	Basic Issue Items
BOI	Basis of Issue
CAGEC	Commercial and Government Entity Code
CARC	Chemical Agent Resistant Coating
CBT	Common Bridge Transporter
cm	centimeter
COEI	Components of End Item
CPC	Corrosion Prevention and Control
CTA	Common Table of Allowances
EIC	End-Item Code
EIR	Equipment Improvement Recommendation
ft	foot

LIST OF ABBREVIATIONS/ACRONYMS - Continued

Table 2. List of Abbreviations and Acronyms - Continued.

GAA	Grease, Automotive Artillery
gl	gallon
GL	Gallon
GS	General Support
HEMTT	Heavy Expanded Mobility Tactical Truck
in.	inch
kg	kilogram
km	kilometer
lb	pound
LH	left-hand
LHS	Load Handling System
MAC	Maintenance Allocation Chart
NIIN	National Item Identification Number
NSN	National Stock Number
OEA	Oil, Engine, Arctic
OE/HDO	Oil, Engine/Hydraulic Oil
oz	ounce
PLS	Palletized Load System
PMCS	Preventive Maintenance Checks and Services
PQDR	Product Quality Deficiency Report
PTO	Power Take-Off
Qty.	quantity
Qty. Recm.	quantity recommended
RH	right-hand
RPSTL	Repair Parts and Special Tools List

LIST OF ABBREVIATIONS/ACRONYMS - Continued

Table 2. List of Abbreviations and Acronyms - Continued.

SMR	Source, Maintenance, and Recoverability
SRA	Specialized Repair Activity
TM	Technical Manual
TMDE	Test, Measuring, and Diagnostic Equipment
U/M	Unit of Measure
UOC	Usable on Code
V dc	Volts, direct current
Hard-Time Maintenance	Scheduled maintenance conducted at predetermined fixed intervals because of age, calendar, or usage, such as operating time, hours, or miles driven.
On-Condition Maintenance	Maintenance or item replacement action performed based on the condition of an item as determined by an evaluation of the item on a scheduled basis.

END OF WORK PACKAGE

FIELD MAINTENANCE
EQUIPMENT DESCRIPTION AND DATA

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

Characteristics. The BAP is a special flatrack that contains a detachable winch frame assembly. When the BAP is loaded on the CBT and secured to the LHS, it serves as the base support for interior or ramp bays during movement. It provides a means to load and unload the interior or ramp bays. It also converts the LHS into a ribbon bridge launch and retrieval arm. For a detailed explanation of support equipment characteristics, capabilities, and features, refer to TM 9-2320-425-10 or TM 9-2320-435-10 for the HEMTT/CBT, to TM 5-5420-209-12 for the Standard Ribbon Bridge (SRB), and to TM 5-5420-278-10 for the Improved Ribbon Bridge (IRB).

Table 1. Capabilities and Features.

BAP	
Multipurpose flatrack	Accommodates interior bay and ramp bay
Winch frame	Can be secured to the LHS or the BAP
Winch	Hydraulic
Bridge Sections	
Standard Ribbon Bridge	See TM 5-5420-209-12
Improved Ribbon Bridge	See TM 5-5420-278-10

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

Major components and accessories found on the BAP are illustrated and described below:

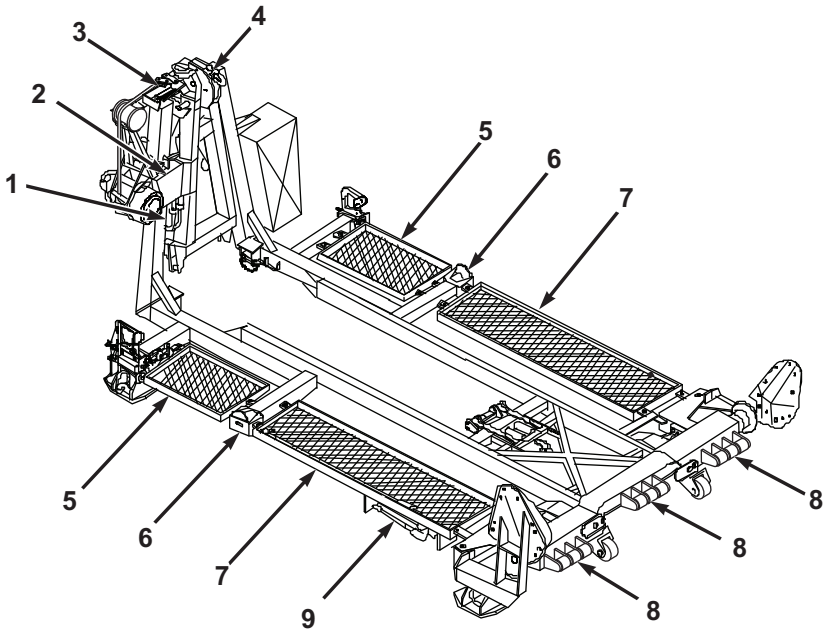


Figure 1. BAP Components.

Table 2. BAP Components.

1	**WINCH HYDRAULIC HOSES.** Provide interface between LHS hydraulics and winch assembly.
2	**WINCH AND FRAME ASSEMBLY.** Lifts, loads, launches, retrieves, and unloads various bridge bays.
3	**WINCH CABLE TENSIONER.** Applies tension on winch cable to prevent unraveling.
4	**HOOK ASSEMBLY.** Provides the means to attach winch cable to load being lifted.
5	**FRONT CATWALK.** Provides a walkway and work platform when the BAP is empty.
6	**FRONT ROLLER ASSEMBLY.** Provides support and smooth movement for bridge bay assembly.
7	**REAR CATWALK.** Provides a walkway and work platform when the BAP is empty.
8	**REAR BUMPER ASSEMBLY (OLDER MODELS ONLY).** Provides guidance for the BAP during loading and unloading.
9	**HYDRAULIC HAND PUMP.** Raises center roller and extends transload roller cylinders.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

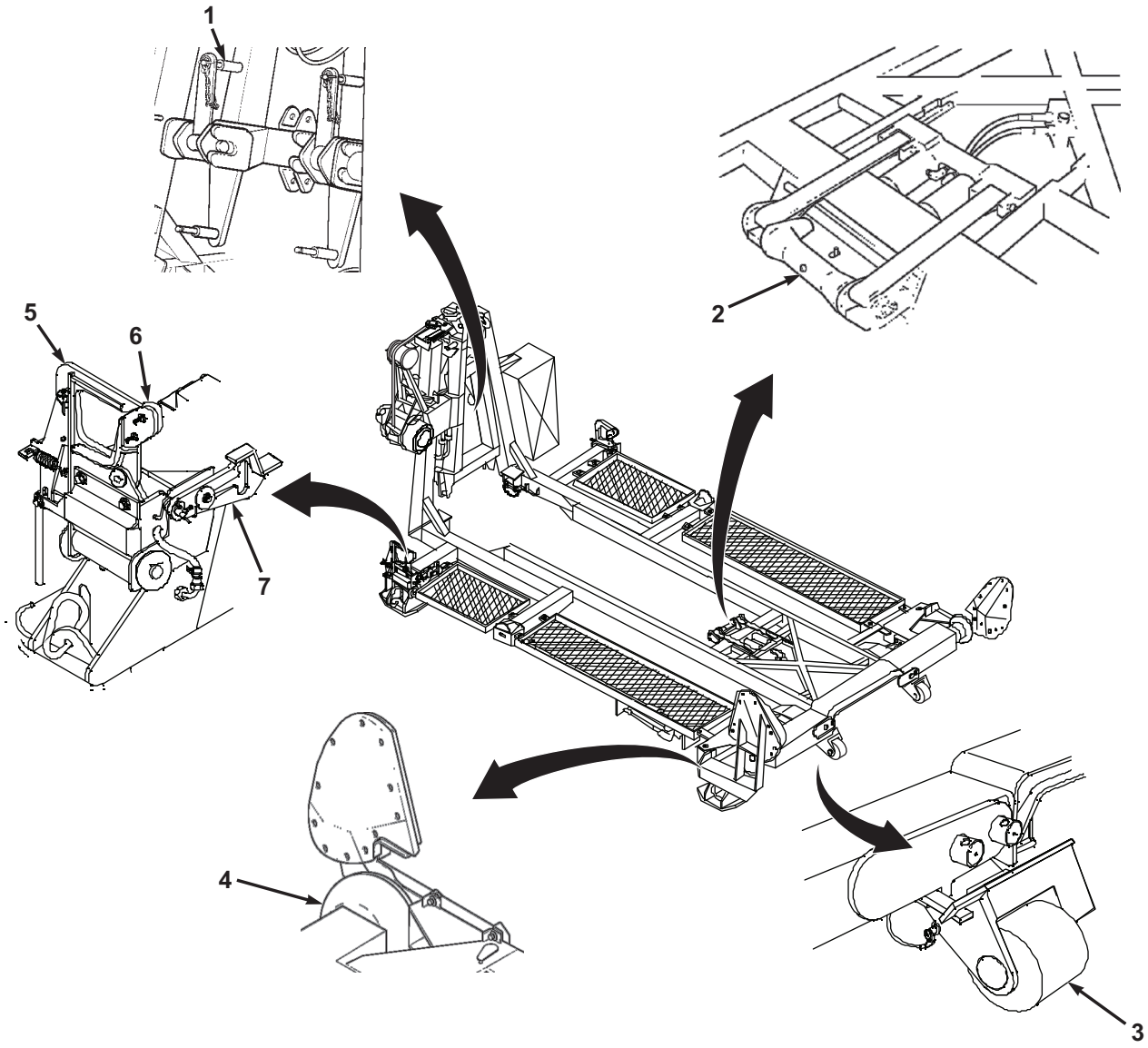


Figure 2. BAP Locks and Rollers

Table 3. BAP Locks and Rollers

1	**WINCH FRAME LOCKING LEVERS.** Lock winch frame to the BAP or the LHS for specific operations.
2	**CENTER ROLLER.** Provides support and smooth movement for free launch of bridge bay.
3	**TRANSLOAD ROLLERS.** Provide guidance for the BAP during transloading to the PLS trailer.
4	**REAR GUIDES AND ROLLERS.** Guide the bridge bay into position on the BAP during loading.
5	**FRONT PIN LOCKS.** Lock front pins of the bridge bay assembly.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

Table 3. BAP Locks and Rollers - Continued

6	**JAW.** Pneumatic operated release lock for free bay launch operations.
7	**LATCH.** Directional release lever for the front pin locks to be either up or down.

EQUIPMENT DATA

Table 4. The BAP (Empty)

Dimensions	
Length	256 inches (650 cm)
Width	134 inches (340 cm)
Height	108 inches (274 cm)
Weight	
BAP	5,780 pounds (2,622 kg)

END OF WORK PACKAGE

FIELD MAINTENANCE
THEORY OF OPERATION

GENERAL

A special flatrack that contains a detachable winch frame assembly. When the BAP is loaded on the CBT and secured to the LHS, it serves as the base support for interior or ramp bays during movement. It provides a means to load and unload the interior or ramp bays. It also converts the LHS into a ribbon bridge launch and retrieval arm.

END OF WORK PACKAGE

CHAPTER 2

OPERATOR INSTRUCTIONS
FOR
M15 BRIDGE ADAPTER PALLET (BAP) NSN 3990-01-442-1939

CHAPTER CONTENTS

Work Package Title	WP Number
Location and Use of Controls and Indicators	WP 0004
Loading Bridge Adapter Pallet (BAP) from the Ground	WP 0005
Unloading Bridge Adapter Pallet (BAP) to the Ground	WP 0006
Loading Bridge Bay from the Ground	WP 0007
Unloading Bridge Bay to the Ground	WP 0008
Bridge Bay Launching Introduction	WP 0009
Controlled Bridge Bay Launch	WP 0010
Free Bridge Bay Launch	WP 0011
Calm or Fast Water Bridge Bay Retrieval	WP 0012
Normal Transfer of Bridge Adapter Pallet (BAP) from Vehicle to Trailer	WP 0013
Normal Transfer of Bridge Adapter Pallet (BAP) from Trailer to Vehicle	WP 0014
BAP Hold-Down Locks Checklist	WP 0015
Decals and Instruction Plates	WP 0016
Manually Loading Bridge Adapter Pallet (BAP) from the Ground	WP 0017
Manually Unloading Bridge Adapter Pallet (BAP) to the Ground	WP 0018
Manually Bypassing Solenoid During Electric Power Loss	WP 0019
Preparation for Emergency Manual Removal of Bridge Adapter Pallet (BAP)	WP 0020
Manually Removing Load During Hydraulic Power Loss	WP 0021
Chemical, Biological, Radiological, and Nuclear (CBRN) Decontamination Procedures	WP 0022

OPERATOR MAINTENANCE
LOCATION AND USE OF CONTROLS AND INDICATORS

INTRODUCTION

This work package addresses location and use of controls and indicators used to operate Bridge Adapter Pallet (BAP) on vehicle. You should know the location and proper use of every control and indicator before operating vehicle. For further reference see CBT manuals (WP 0076).

Table 1. Load Handling System (LHS) Cab Controls and Indicators

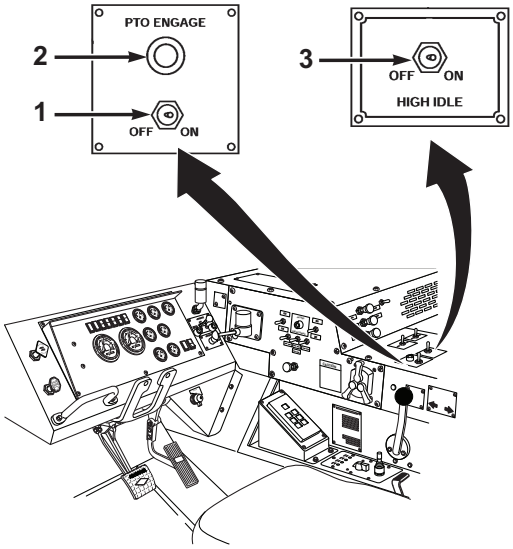


Figure 1. PTO Controls.

Key	Control/Indicator	Function
1	POWER TAKE OFF (PTO) ENGAGE SWITCH	When placed in ON position, hydraulic pressure is supplied to operate LHS and BAP.
2	PTO ENGAGE INDICATOR	Indicates when PTO switch is in ON position.
3	HIGH IDLE SWITCH	When placed in ON position, increases trucks idle speed from low to high (1200 rpm) for LHS operation.

Table 1. Load Handling System (LHS) Cab Controls and Indicators - Continued

Key	Control/Indicator	Function
4	LHS MODE SELECT Switch Position Decal (Analog Only)	Identifies functions of numbered positions of LHS MODE SELECT switch.

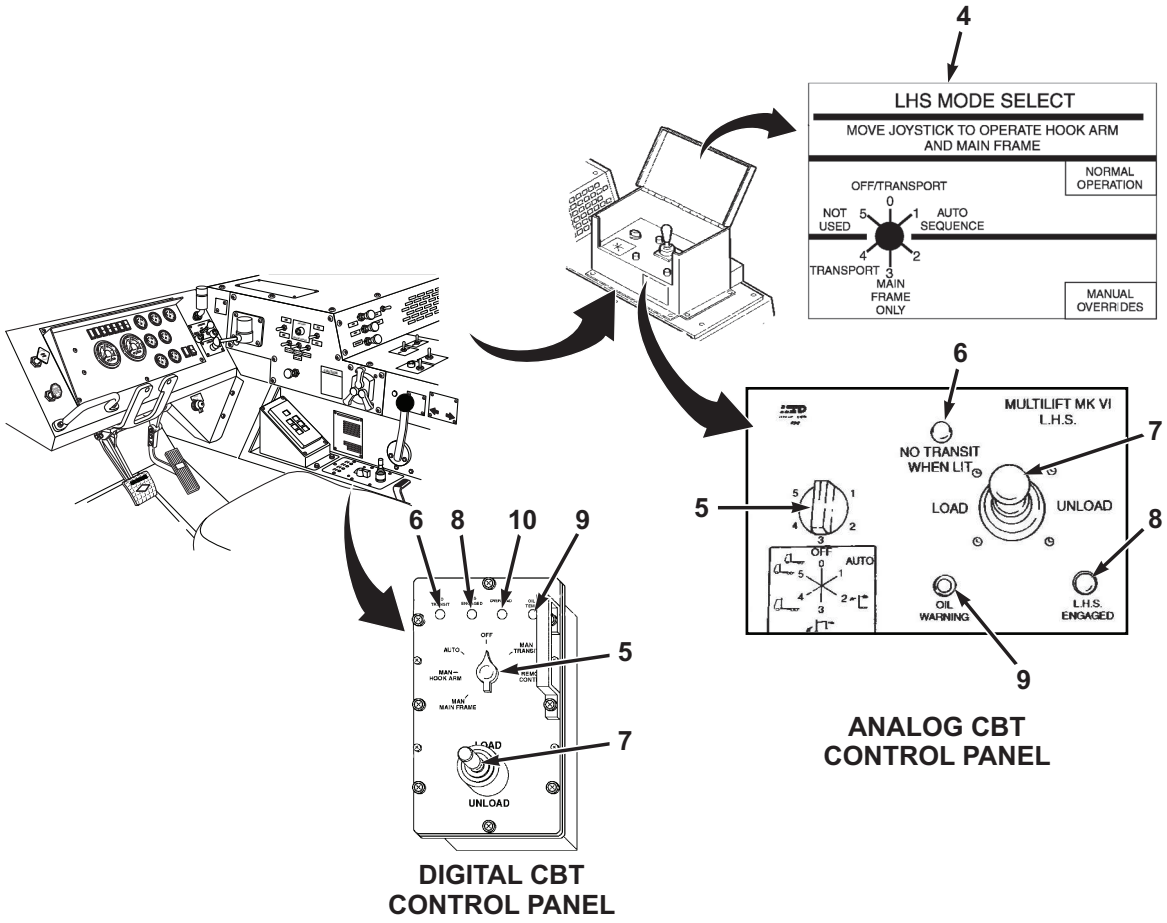


Figure 2. Analog and Digital Control Panels.

5	LHS MODE SELECT SWITCH	Used to select functional modes for LHS. Positions and functions are: **OFF/TRANSPORT** LHS is not operational. **AUTO SEQUENCE** Provides automatic operation of LHS during loading and unloading operations. **HOOK ARM ONLY** Places hook arm in manual mode for moving hook arm when AUTO mode electric circuit is malfunctioning. **MAIN FRAME ONLY** Places main frame in manual mode for moving main frame when AUTO mode electric circuit is malfunctioning. **TRANSPORT** Provides for safe travel when AUTO mode electric circuit has failed and HOOK ARM ONLY and MAIN FRAME ONLY positions have been used.

Table 1. Load Handling System (LHS) Cab Controls and Indicators - Continued

Key	Control/Indicator	Function
6	NO TRANSIT WHEN LIT INDICATOR	Lights when hook arm assembly is not in completely stowed position. CBT is not to be driven except in immediate loading and unloading area as long as this indicator is lit.
7	JOYSTICK	Used to operate LHS from cab controls. Function being controlled is determined by LHS MODE SELECT switch.
8	LHS ENGAGED INDICATOR	Lights when hydraulic pressure is supplied to LHS.
9	OIL WARNING INDICATOR	Lights when oil temperature exceeds limits.
10	LHS OVER LOAD INDICATOR	Illuminates whenever main hydraulic relief valve is opened during loading or unloading. Indicates LHS has reached an overload condition or that hydraulic system is lifting very near maximum capacity. If LHS is overloaded, light illuminates and system is automatically blocked out.

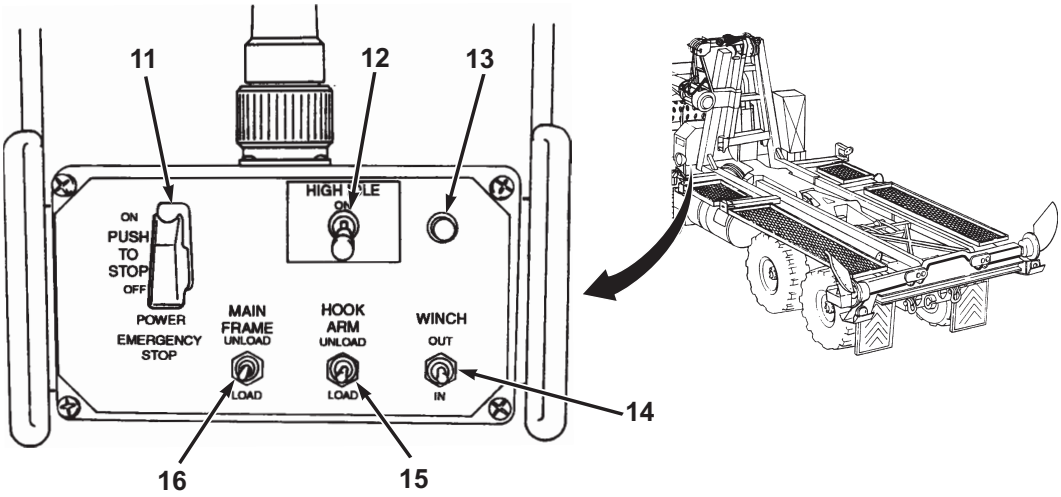


Figure 3. LHS Remote Control Unit.

11	EMERGENCY STOP Switch	When pushed, shuts down operation of LHS.
12	HIGH IDLE Switch	When placed in ON position, increases vehicle's idle speed from low to high (1200 rpm) for LHS operation.

Table 1. Load Handling System (LHS) Cab Controls and Indicators - Continued

Key	Control/Indicator	Function
13	Panel Illumination Light	Provides panel illumination for night operations.
14	WINCH Switch	OUT position (push) pays out winch cable. IN position (pull) pays in winch cable (located only on remote).
15	HOOK ARM Switch	UNLOAD position (push) moves hook arm up and to rear (unload).
16	MAIN FRAME Switch	UNLOAD position (push) moves main frame up and to rear (unload).

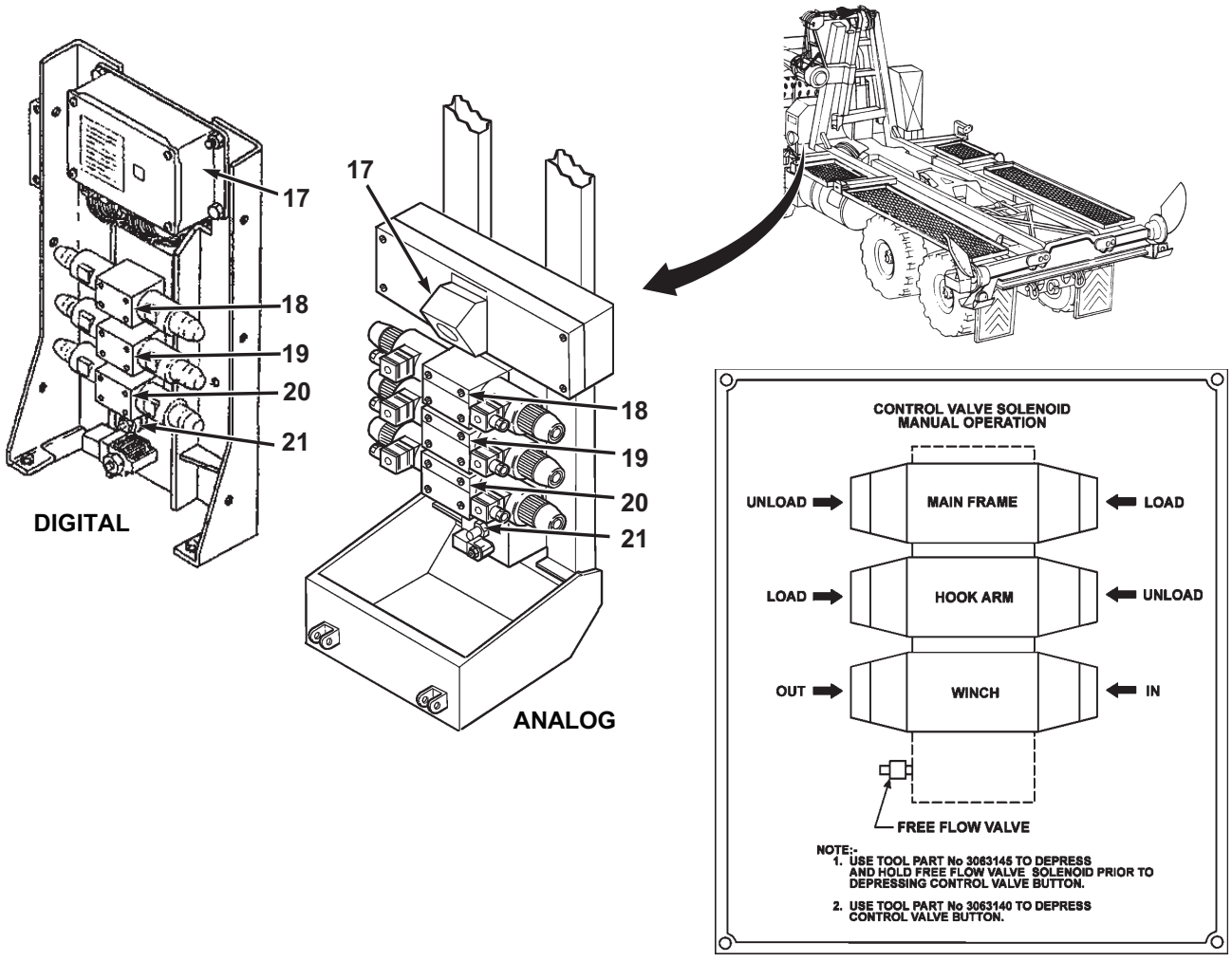


Figure 4. Main Hydraulic Manifold.

Table 1. Load Handling System (LHS) Cab Controls and Indicators - Continued

Key	Control/Indicator	Function
17	Hourmeter (Analog only)	Records number of hours hydraulic unit is in operation.
17	Electronic Control Module (Digital only)	Receives electronic signals from cab controls to operate solenoids.
18	Main Frame Solenoid	Raises main frame during emergency operations when electric power is lost.
19	Hook Arm Solenoid	Raises hook arm during emergency operations when electric power is lost.
20	Winch Solenoid	Pays out winch cable during emergency operations when electric power is lost.
21	Main Relief	Is main hydraulic relief valve.

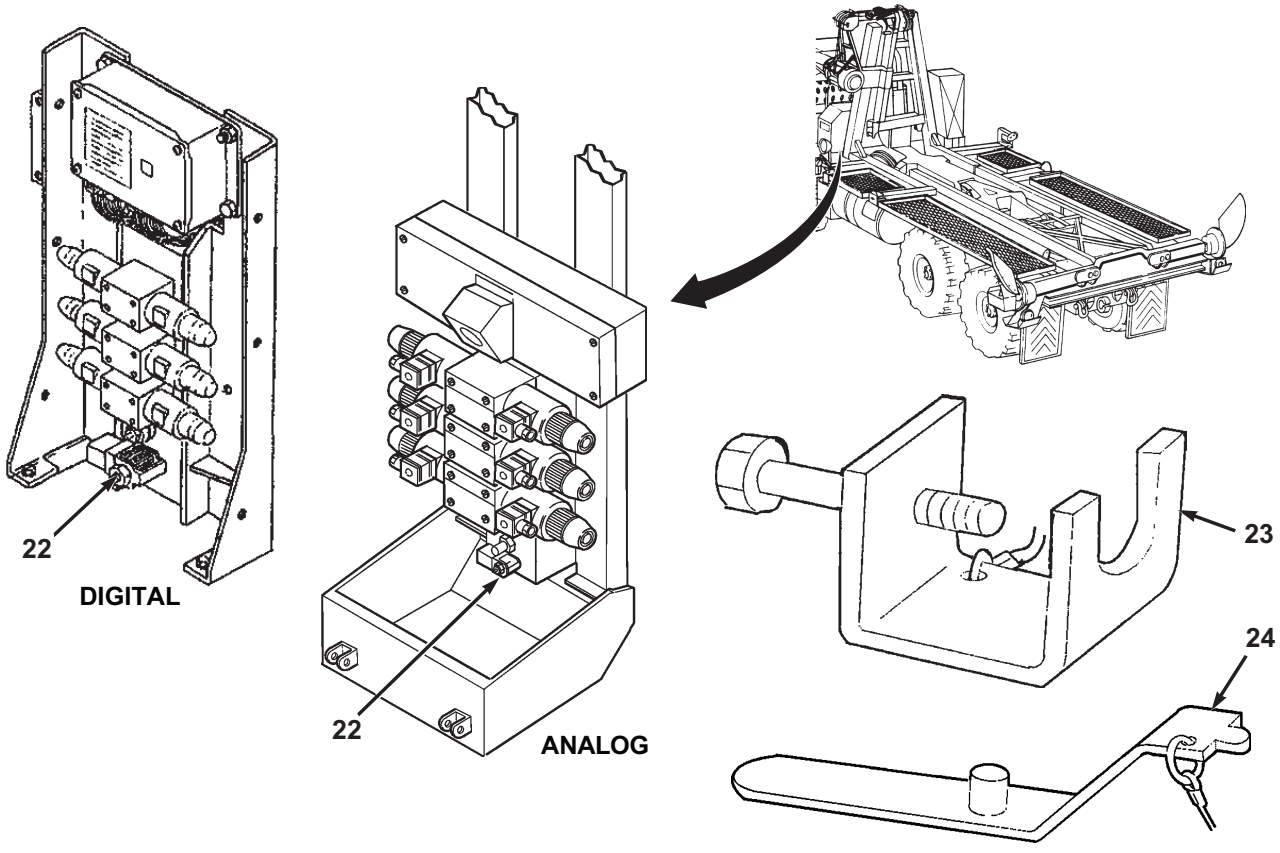


Figure 5. Free-Flow Valve.

Table 1. Load Handling System (LHS) Cab Controls and Indicators - Continued

Key	Control/Indicator	Function
22	Free-Flow Valve Solenoid Button	Must be depressed during emergency operation of hydraulic system when electric power is lost.
23	Free-Flow Tool	Used to lock free-flow valve in ON position when operating solenoids manually.
24	Solenoid Tool	Used to operate solenoids manually.

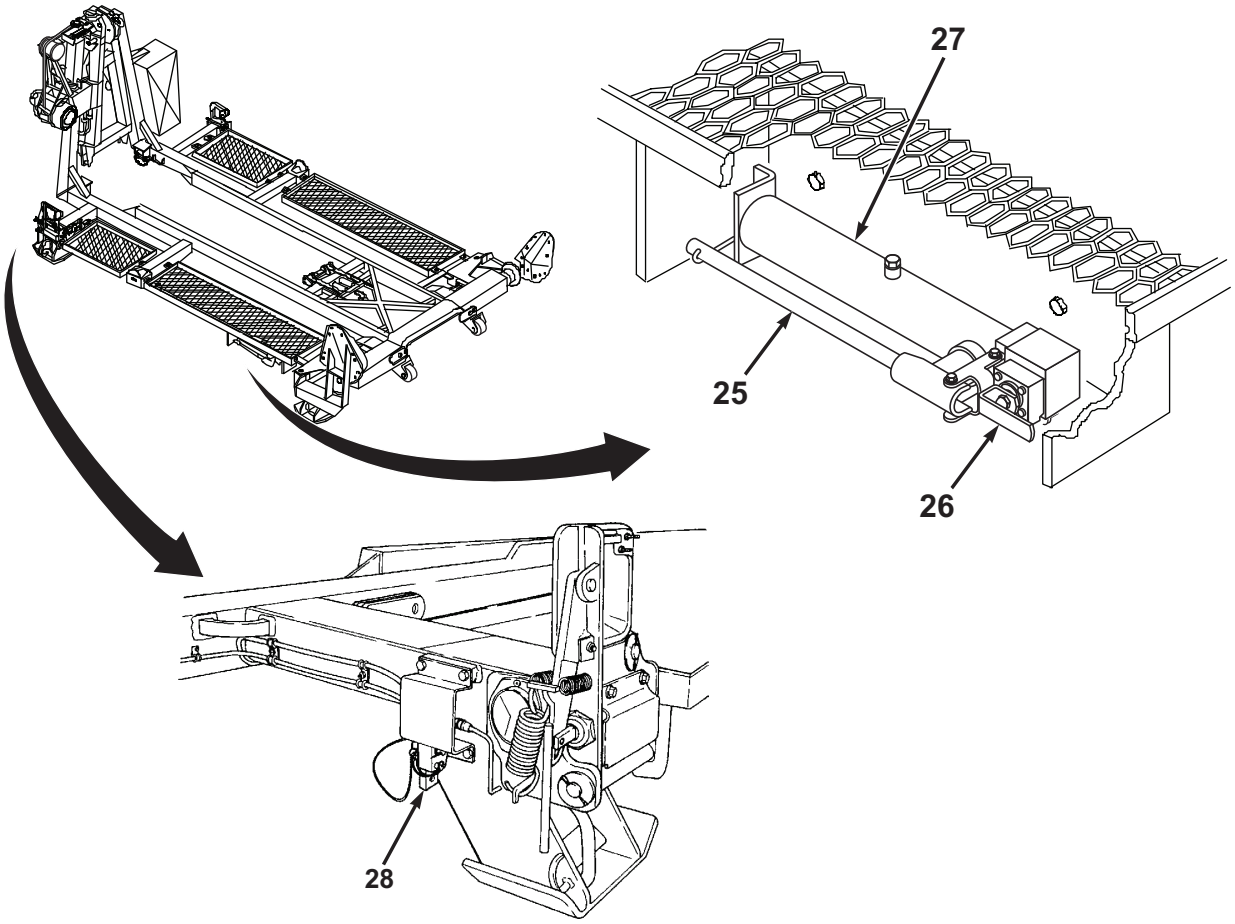


Figure 6. Hydraulic Hand Pump.

25	Hydraulic Pump Handle	Used to operate pump to move center roller and transload roller cylinders.
26	Hydraulic Pressure Select Valve	Used to control hydraulic pressure to center roller and transload roller cylinders. Three positions: up (for center roller), middle (for neutral), and down (for transload rollers).

Table 1. Load Handling System (LHS) Cab Controls and Indicators - Continued

Key	Control/Indicator	Function
27	Hydraulic Hand Pump	Provides manual hydraulic pressure to center roller and transload roller cylinders.
28	Control Valve	Pneumatic release for front pin lock jaws for a bridge bay free launch.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
LOADING BRIDGE ADAPTER PALLET (BAP) FROM THE GROUND

INITIAL SETUP:

Personnel Required
(2)

References
TM 5-5420-209-12 (WP 0076)

References (cont.)
TM 5-5420-278-10 (WP 0076)
TM 9-2320-425-10 (WP 0076)
TM 9-2320-435-10 (WP 0076)

GENERAL

NOTE

Perform all operator's before preventive maintenance checks (WP 0034) prior to operating the CBT and/or BAP. Ensure all checks and adjustments have been completed by field level maintenance.

1. This section contains instructions for safely operating the CBT and BAP under usual conditions.
2. Instructions for safely operating the vehicle in unusual conditions are covered in WP 0017 through WP 0022 of this manual.

PREPARATION FOR USE

WARNING



A site survey must be conducted to ensure site meets criteria cited in warnings below. Failure to complete a site survey may result in serious injury or death to personnel.

- Use a ground guide for all bridging operations. The vehicle may crash into an obstruction or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Prior to performing bridging operations, conduct a site survey to ensure that side-to-side slope does not exceed 8 percent (5 degrees), ground in the transport area is firm, area around vehicle is free of personnel and obstructions, and overhead clearance is at least 22 ft. 2 in. (6.7 m) above the loading area. Failure to conduct a site survey could cause the vehicle to slip, turn over, crash into an obstruction, or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Unloading the BAP without disengaging hold-down locks may result in injury or death to personnel.

A site survey must be conducted to ensure the site meets the criteria cited in the warning above.

OPERATION

NOTE

During all vehicle operations, the operator will drive and be responsible for the operation of the LHS cab control box. The assistant acts as a ground guide and will be responsible for directing the operator using hand signals, operating the remote control box and winch, and assisting the operator as needed.

1. Secure winch frame to the BAP. Ensure both winch frame locking levers (Figure 1, Item 1) are in the up position.

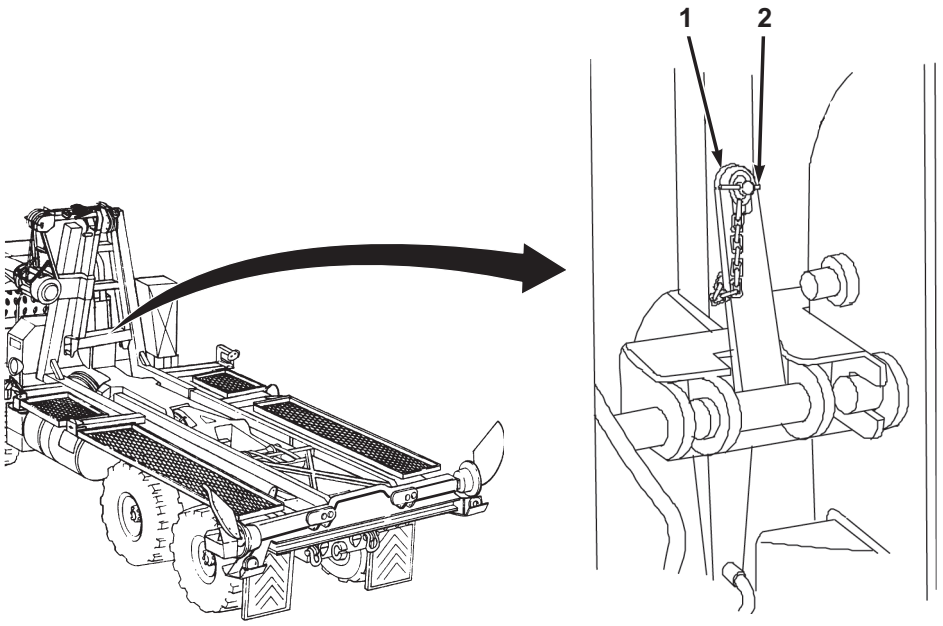


Figure 1. Lock Winch Frame to BAP.

2. If locking levers (Figure 1, Item 1) are not up:
   a. Remove lockpin (Figure 1, Item 2) from each locking lever (Figure 1, Item 1).
   b. Swing each locking lever (Figure 1, Item 1) to the up position.
   c. Insert lockpin (Figure 1, Item 2) into each locking lever (Figure 1, Item 1).
3. Ensure air line (Figure 2, Item 3) located on road side of the BAP is in the stowed position, connected to elbow (Figure 2, Item 4).

OPERATION - Continued

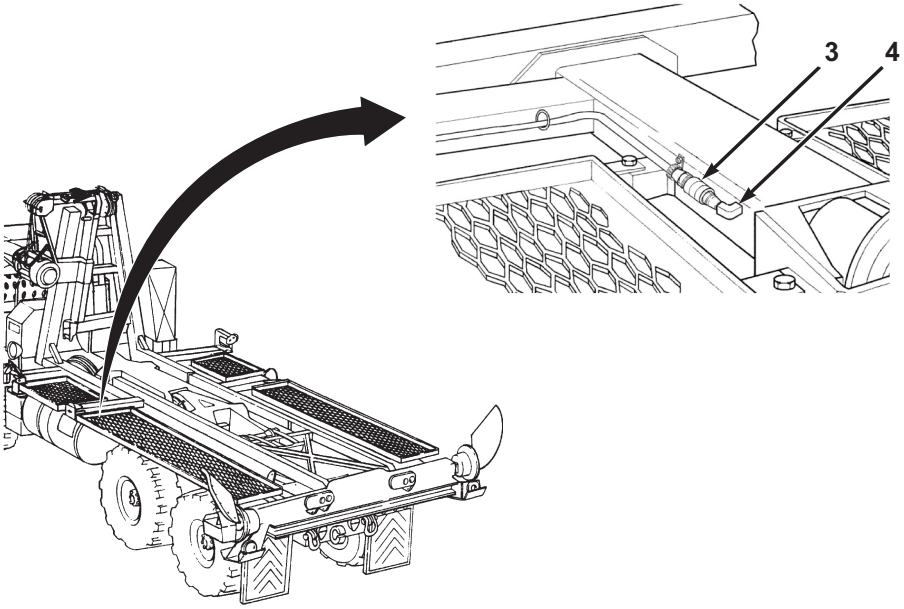


Figure 2. Stow Air Line.

OPERATION - Continued

WARNING

Ensure both rear guides are properly repositioned and locked after bridge bay retrieval. Failure to reposition and lock both rear guides after bridge bays are loaded could result in lost bridge bays or vehicle rollover during transport. Failure to comply may result in serious injury or death to personnel.

4. If the BAP is loaded with bridge bay, inspect load and ensure curb-side and road-side rear guide latch pins (Figure 3, Item 5) and front pin lock assemblies (Figure 3, Item 6) are in the locked position and secure (refer to BAP locks checklist for proper position of BAP locks) (WP 0015).

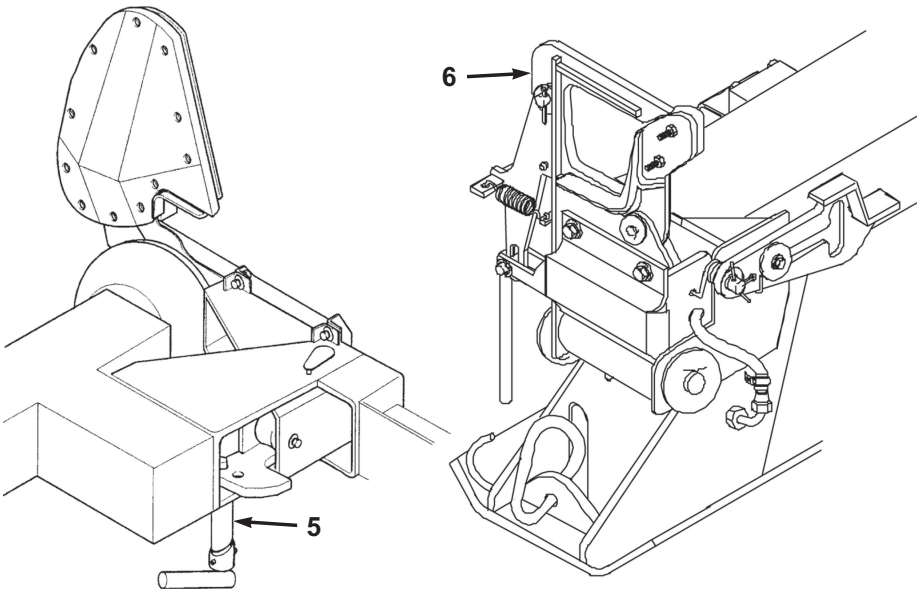


Figure 3. Checking Front Pin Locks and Rear Guides.

5. Ensure two hydraulic hoses (Figure 4, Item 7) are secured to the stowage connectors (Figure 4, Item 8).

OPERATION - Continued

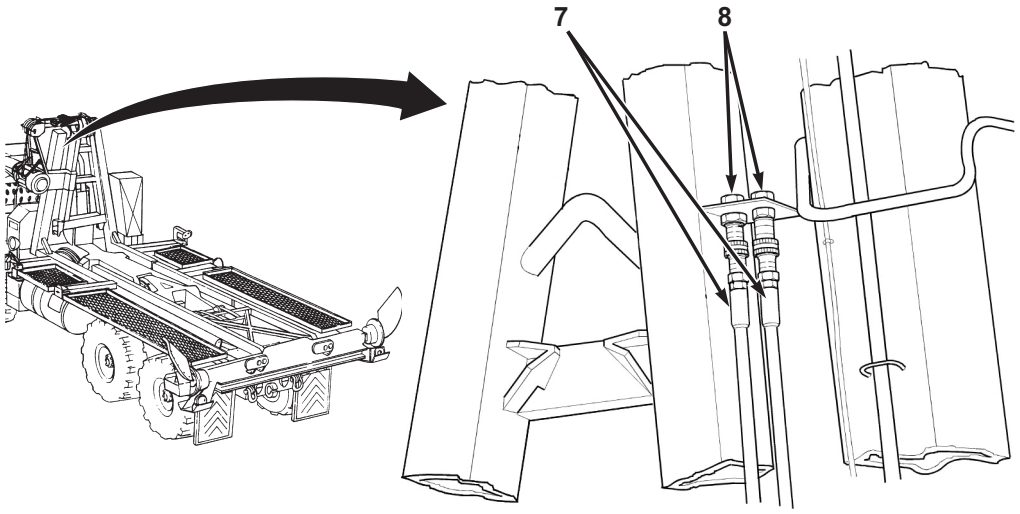


Figure 4. Stowing Hydraulic Hoses.

6. If the BAP is loaded with bridge bay, ensure all bridge latches are secured. Refer to TM 5-5420-209-12 or TM 5-5420-278-10.

7. Ensure BAP hold-down locks (Figure 5, Item 9) are in the auto engage position (handle pushed in).

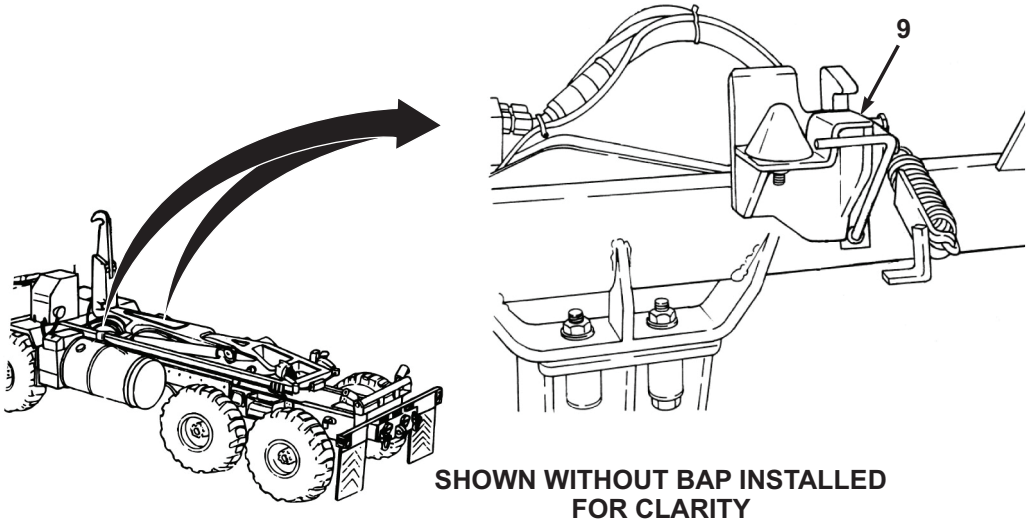


Figure 5. Setting BAP Hold Down Locks.

8. Back up vehicle so at least 5 ft. (1.5 m) of clearance is available behind vehicle for loading the BAP. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

OPERATION - Continued

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

9. Pull out PARKING BRAKE control (Figure 6, Item 10) or apply service brake pedal (Figure 6, Item 11).

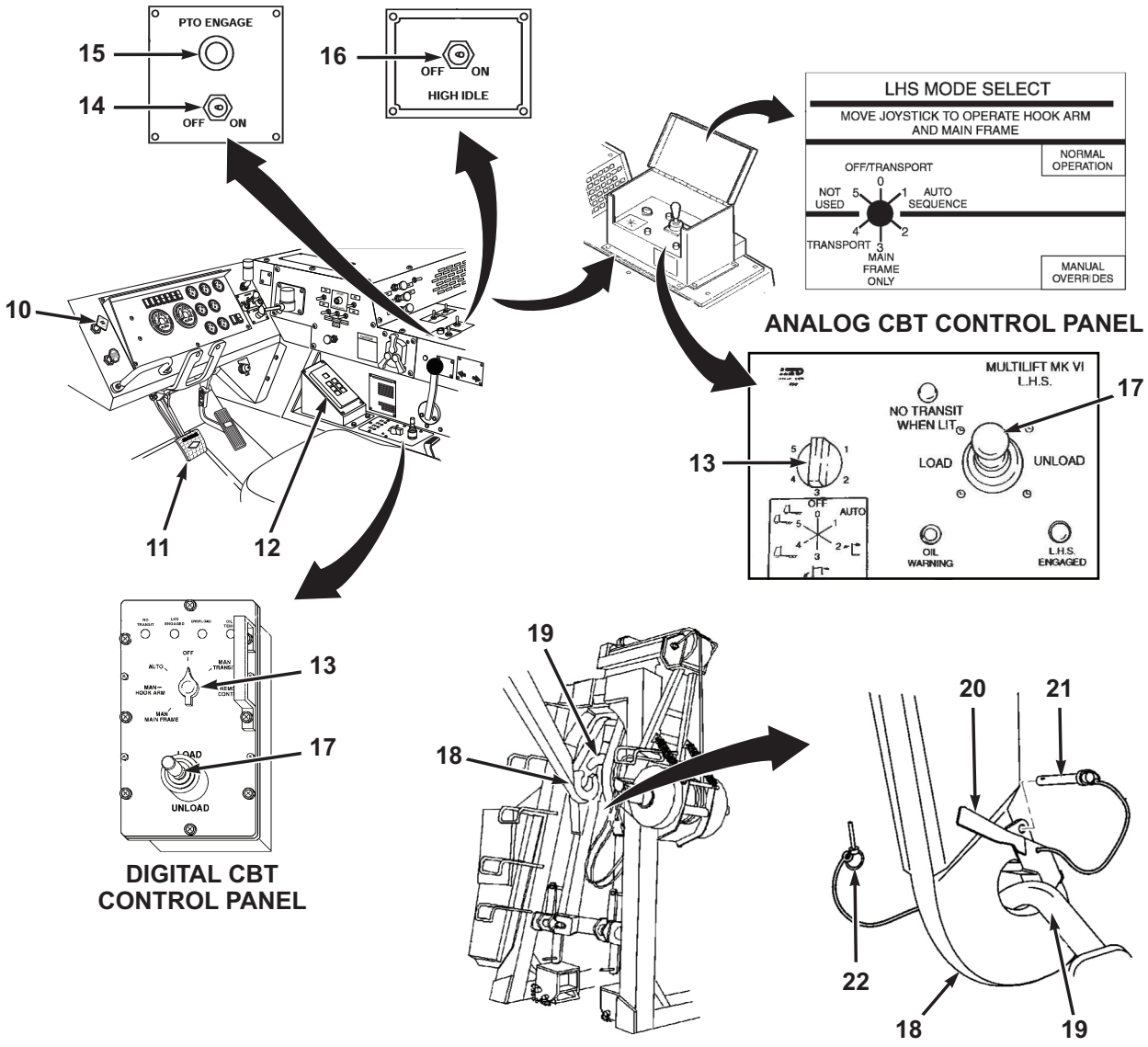


Figure 6. Cab LHS Controls.

10. Set transmission range selector (Figure 6, Item 12) to N (neutral).
11. Turn LHS MODE SELECT switch (Figure 6, Item 13) to AUTO.

OPERATION - Continued

CAUTION

- Do not position PTO ENGAGE switch to ON with HIGH IDLE switch ON. Engaging the PTO with HIGH IDLE switch ON may result in sudden application of hydraulic pressure to the LHS. Failure to comply may result in damage to equipment.
- PTO ENGAGE switch must be positioned OFF before road transport. Failure to comply may result in damage to equipment.

12. Set PTO ENGAGE switch (Figure 6, Item 14) to ON position. Indicator light (Figure 6, Item 15) will illuminate.
13. Set HIGH IDLE switch (Figure 6, Item 16) to ON position.
14. Move joystick (Figure 6, Item 17) to UNLOAD and hold to automatically raise and move hook arm and main frame toward the BAP.
15. Release joystick (Figure 6, Item 17) when tip of LHS hook (Figure 6, Item 18) is just below level of BAP bail bar (Figure 6, Item 19).
16. Set HIGH IDLE switch (Figure 6, Item 16) to OFF position.

CAUTION

An assistant should be used to act as a ground guide when backing up vehicle. Failure to comply may result in damage to equipment.

17. Set transmission range selector (Figure 6, Item 12) to R (reverse).

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

18. Push in PARKING BRAKE control (Figure 6, Item 10) and release service brake pedal (Figure 6, Item 11).
19. Back up vehicle while steering as necessary to align tip of LHS hook (Figure 6, Item 18) under BAP bail bar (Figure 6, Item 19), stop vehicle.

NOTE

Ensure tip of LHS hook is slightly below and in line with middle of BAP bail bar.

20. Set transmission range selector (Figure 6, Item 12) to N (neutral), and apply service brake pedal (Figure 6, Item 11).

NOTE

If LHS hook and BAP bail bar are not properly engaged, move vehicle away from the BAP and repeat Steps (18 through 20).

21. Move joystick (Figure 6, Item 17) to LOAD until LHS hook (Figure 6, Item 18) engages BAP bail bar (Figure 6, Item 19).
22. Install bail bar lock (Figure 6, Item 20) on LHS hook (Figure 6, Item 18) with pin (Figure 6, Item 21) and lock pin (Figure 6, Item 22).
23. Release service brake pedal (Figure 6, Item 11).
24. To ensure that BAP runners engage LHS rear rollers, steer vehicle straight under the BAP as the BAP rises.
25. Set HIGH IDLE switch (Figure 6, Item 16) to ON position.
26. Move joystick (Figure 6, Item 17) to LOAD.

OPERATION - Continued

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

27. Pull out PARKING BRAKE control (Figure 7, Item 10) when BAP runners come onto LHS rear rollers, and the BAP clears the ground.

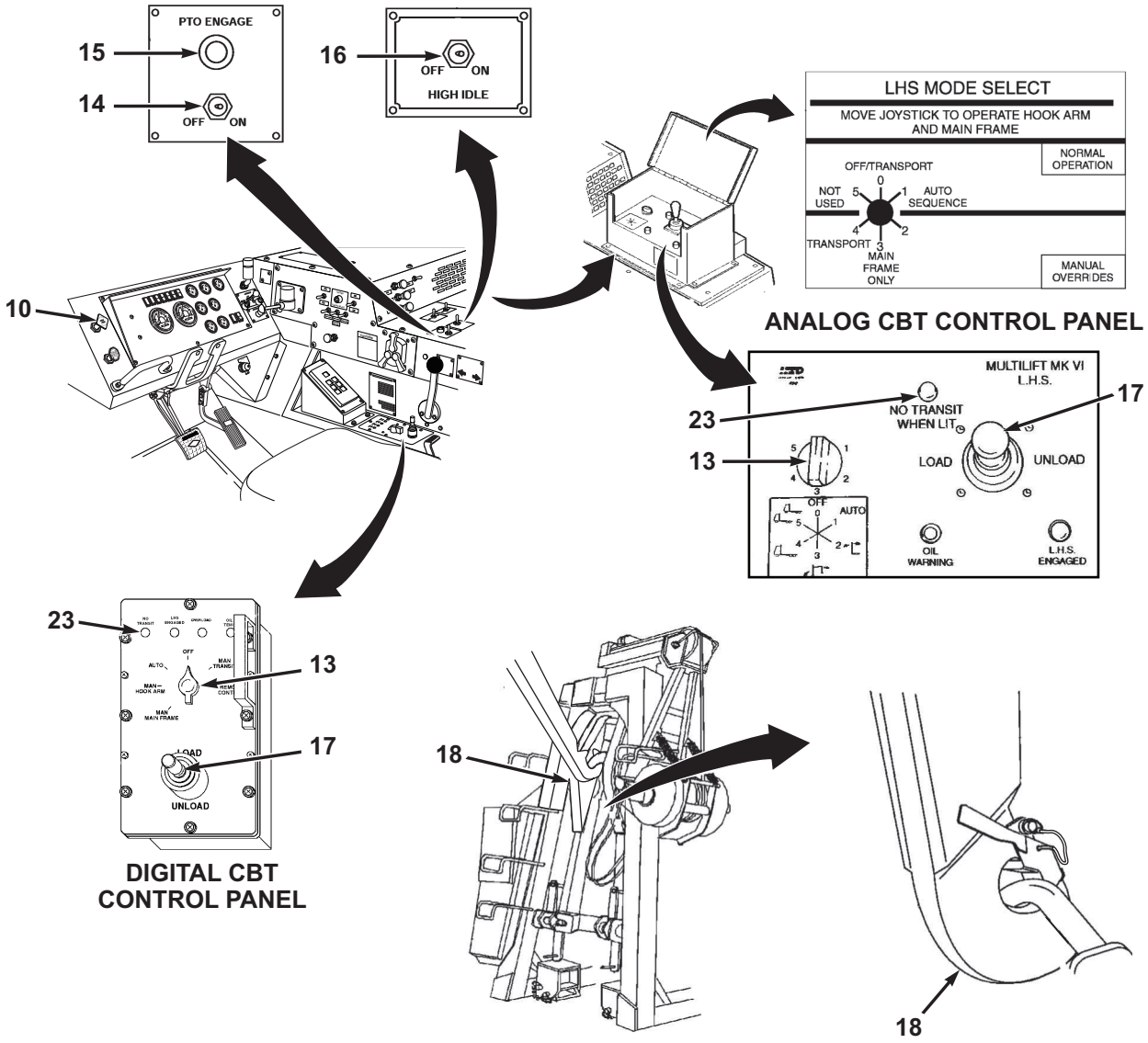


Figure 7. Cab LHS Controls.

OPERATION - Continued

WARNING



When NO TRANSIT indicator is illuminated, vehicle may be maneuvered in the immediate vicinity of the loading/unloading site. However, vehicle is unsafe for road travel. Do not perform open-road driving when NO TRANSIT indicator is illuminated. Failure to comply may result in serious injury or death to personnel and damage to equipment.

28. Release joystick (Figure 7, Item 17) when LHS hook (Figure 7, Item 18) is fully stowed and NO TRANSIT indicator light (Figure 7, Item 23) goes out.
29. Set HIGH IDLE switch (Figure 7, Item 16) to OFF position.

CAUTION

While maneuvering vehicle in the immediate vicinity of the loading or unloading site, LHS MODE SELECT switch may be in any setting. However, LHS MODE SELECT switch must be set to OFF prior to road travel. Failure to comply may result in damage to main frame and hook arm cylinders.

30. Turn LHS MODE SELECT switch (Figure 7, Item 13) to OFF.
31. Set PTO ENGAGE switch (Figure 7, Item 14) to OFF position. Indicator light (Figure 7, Item 15) will go out.
32. Ensure BAP hold-down locks (Figure 8, Item 9) have handles pushed in to lock BAP to vehicle.

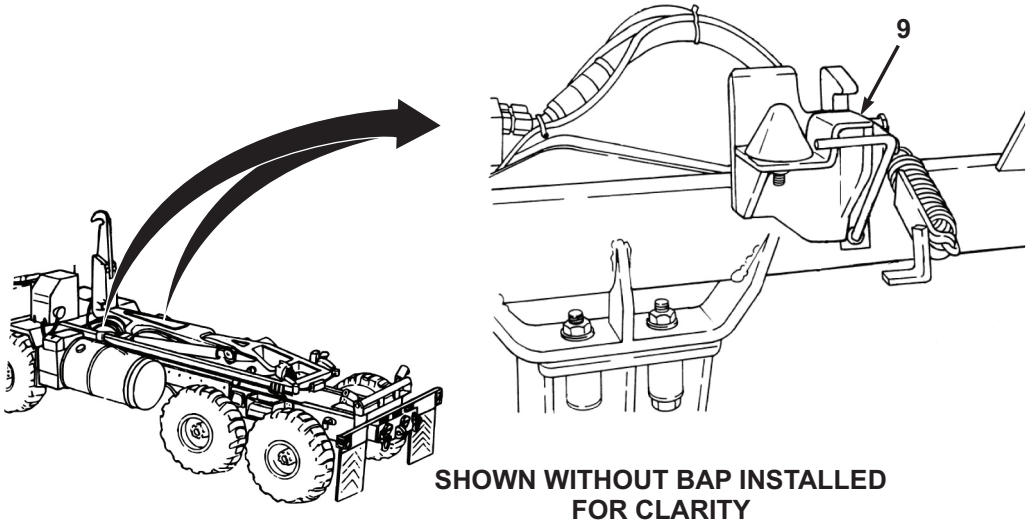


Figure 8. Checking BAP Hold Down Locks.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
UNLOADING BRIDGE ADAPTER PALLET (BAP) TO THE GROUND

INITIAL SETUP:

Personnel Required
(2)

Equipment Condition
BAP loaded on vehicle. (WP 0005)

References
TM 9-2320-425-10 (WP 0076)
TM 9-2320-435-10 (WP 0076)

GENERAL

NOTE

Perform all operator's before preventive maintenance checks (WP 0034) prior to operating the CBT and/or BAP. Ensure all checks and adjustments have been completed by field level maintenance.

1. This section contains instructions for safely operating the CBT and BAP under usual conditions.
2. Instructions for safely operating the vehicle in unusual conditions are covered in WP 0017 through WP 0022 of this manual.

PREPARATION FOR USE

WARNING



A site survey must be conducted to ensure site meets criteria cited in warnings below. Failure to complete a site survey may result in serious injury or death to personnel.

- Use a ground guide for all bridging operations. The vehicle may crash into an obstruction or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Prior to performing bridging operations, conduct a site survey to ensure that side-to-side slope does not exceed 8 percent (5 degrees), ground in the transport area is firm, area around vehicle is free of personnel and obstructions, and overhead clearance is at least 22 ft. 2 in. (6.7 m) above the loading area. Failure to conduct a site survey could cause the vehicle to slip, turn over, crash into an obstruction, or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Unloading the BAP without disengaging hold-down locks may result in injury or death to personnel.

A site survey must be conducted to ensure the site meets the criteria cited in the warning above.

OPERATION

NOTE

During all vehicle operations, the operator will drive and be responsible for the operation of the LHS cab control box. The assistant acts as a ground guide and will be responsible for directing the operator using hand signals, operating the remote control box and winch, and assisting the operator as needed.

1. Position rear of vehicle about 16 ft (5 m) in front of where the rear of the BAP is to be set on the ground. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

2. Pull out PARKING BRAKE control (Figure 1, Item 1) or apply service brake pedal (Figure 1, Item 2).

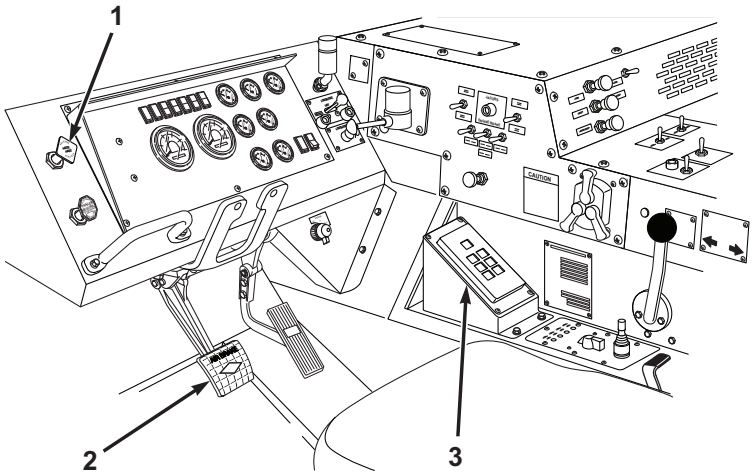


Figure 1. Brake and Transmission Controls.

3. Set transmission range selector (Figure 1, Item 3) to N (neutral).
4. Secure winch frame to the BAP. Ensure two winch frame locking levers (Figure 2, Item 4) are in the up position.

OPERATION - Continued

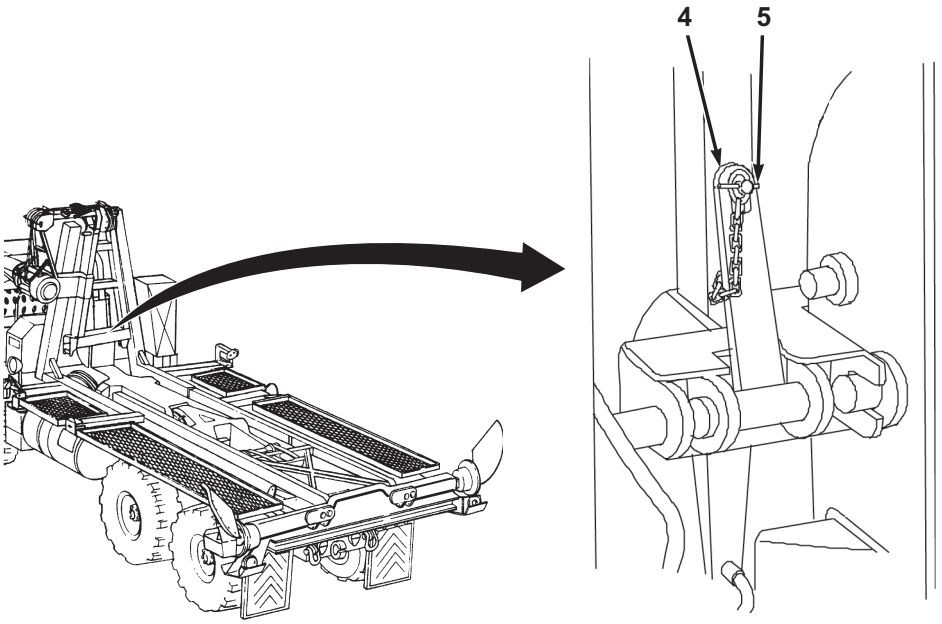


Figure 2. Lock Winch Frame to BAP.

5. If locking levers (Figure 2, Item 4) are not up:
   a. Remove lockpin (Figure 2, Item 5) from each locking lever (Figure 2, Item 4).
   b. Swing each locking lever (Figure 2, Item 4) to the up position.
   c. Insert lockpin (Figure 2, Item 5) into each locking lever (Figure 2, Item 4).

OPERATION - Continued

6. Disconnect two BAP winch hydraulic pressure hoses (Figure 3, Item 6) from male connector (Figure 3, Item 7) and female connector (Figure 3, Item 8) located on bottom of hook arm assembly.

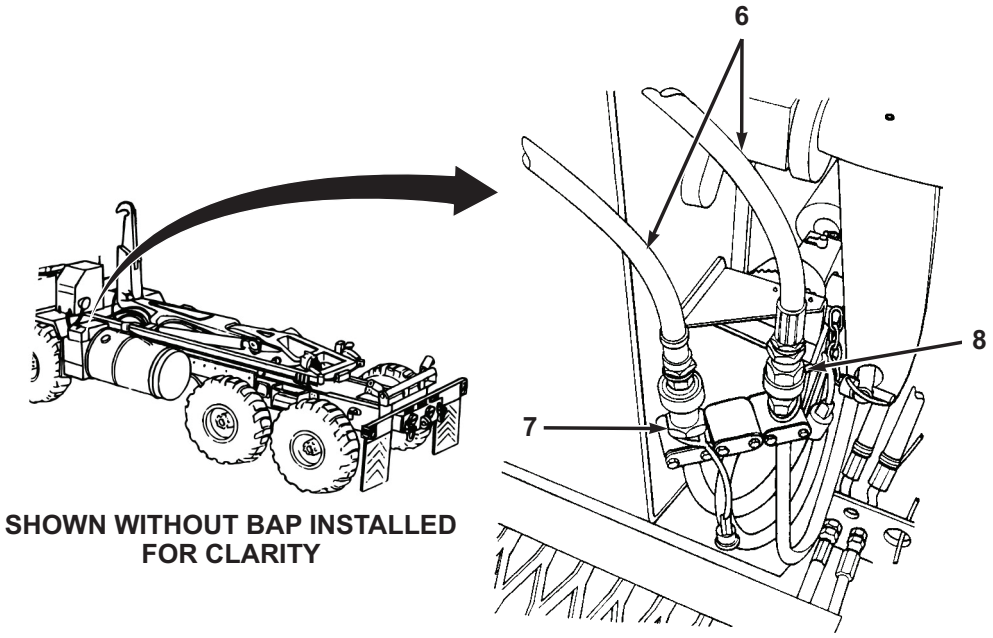


Figure 3. Disconnect Hydraulic Hoses.

7. Connect two hydraulic hoses (Figure 4, Item 9) to the stowage connectors (Figure 4, Item 10).

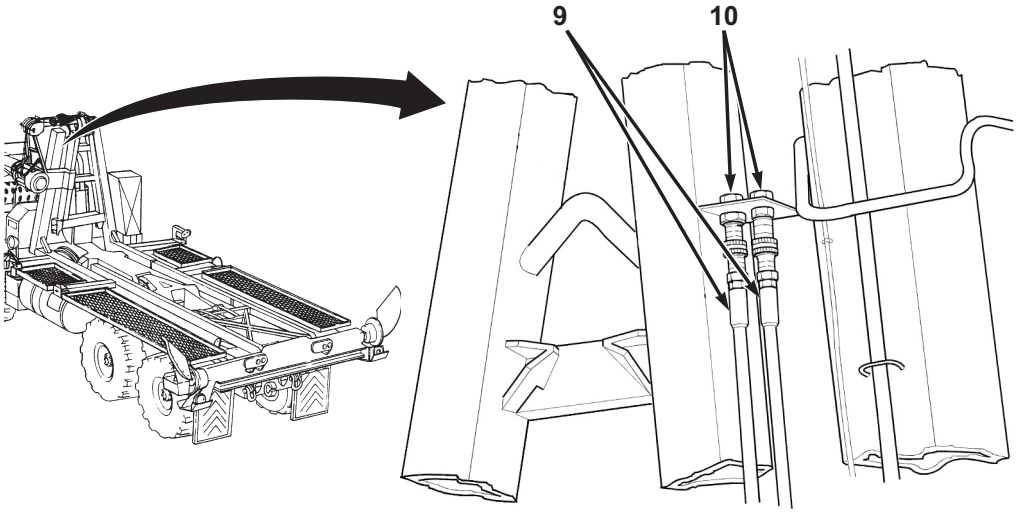


Figure 4. Stow Hydraulic Hoses.

OPERATION - Continued

8. Ensure BAP air line (Figure 5, Item 11) located on road side of the BAP is in the stowed position connected to elbow (Figure 5, Item 12).

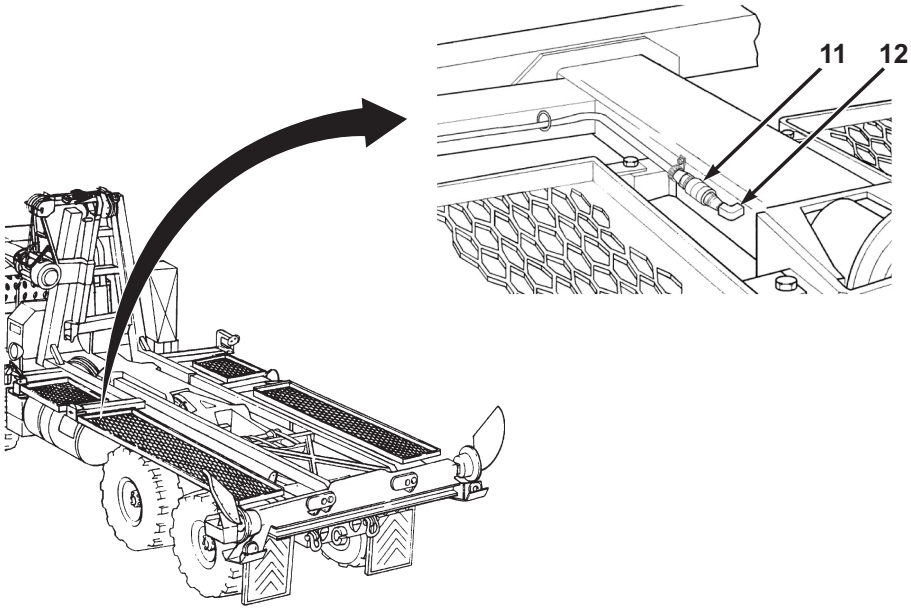


Figure 5. Stow Air Line.

WARNING



Ensure both rear guides are properly repositioned and locked after bridge bay retrieval. Failure to reposition and lock both rear guides after bridge bays are loaded could result in lost bridge bays or vehicle rollover during transport. Failure to comply may result in serious injury or death to personnel.

9. If the BAP is loaded with bridge bay, inspect load and ensure both curb-side and road-side guide latch pins (Figure 6, Item 13) and front pin lock assemblies (Figure 6, Item 14) are in the locked position and secure (refer to BAP locks checklist for proper position of BAP locks) (WP 0015).

OPERATION - Continued

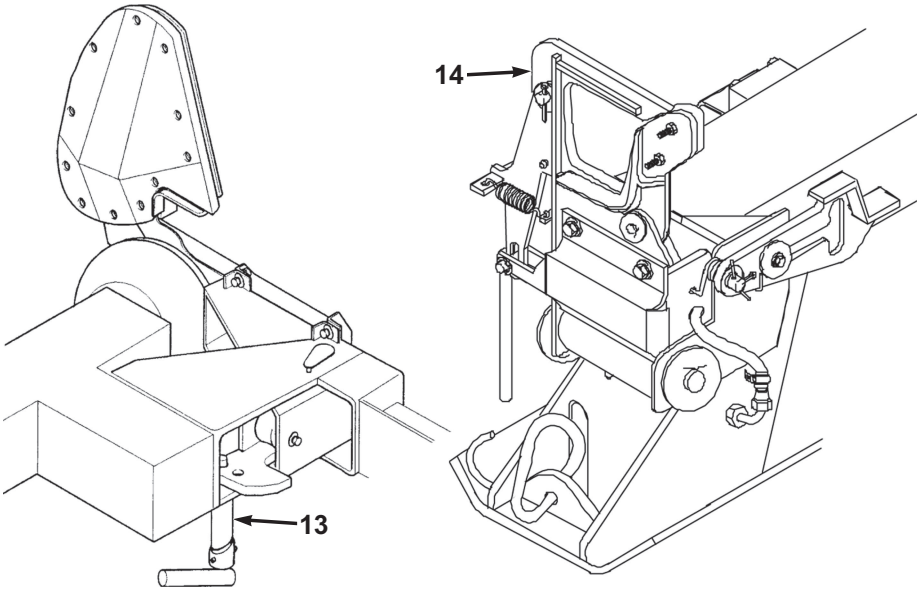


Figure 6. Checking Front Pin Locks and Rear Guides.

CAUTION

BAP hold-down locks must be unlocked from the LHS prior to commencing BAP unloading operations. Failure to comply may result in damage to equipment.

10. Release two BAP hold-down locks by pulling handle (Figure 7, Item 15) out.

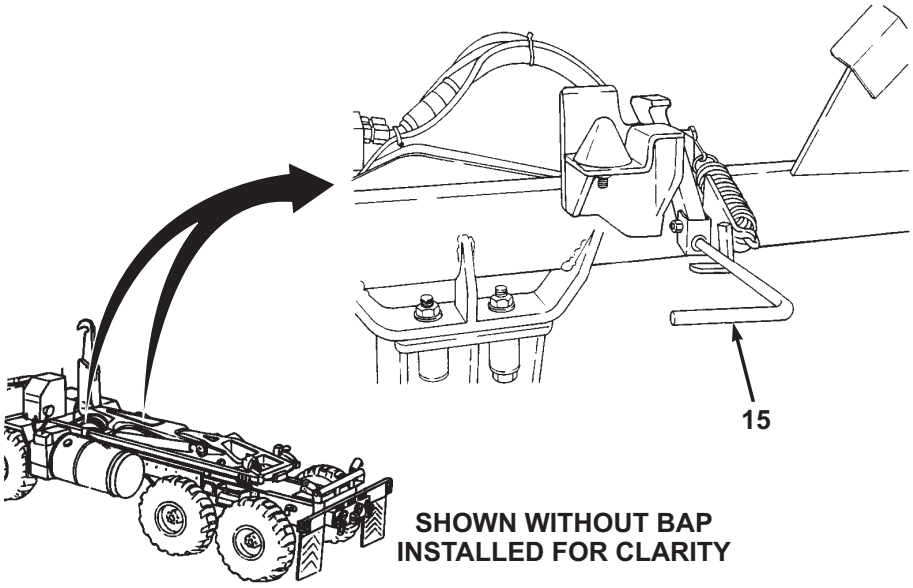


Figure 7. Release BAP Hold Down Locks.

OPERATION - Continued

11. Turn LHS MODE SELECT switch (Figure 8, Item 16) to AUTO.

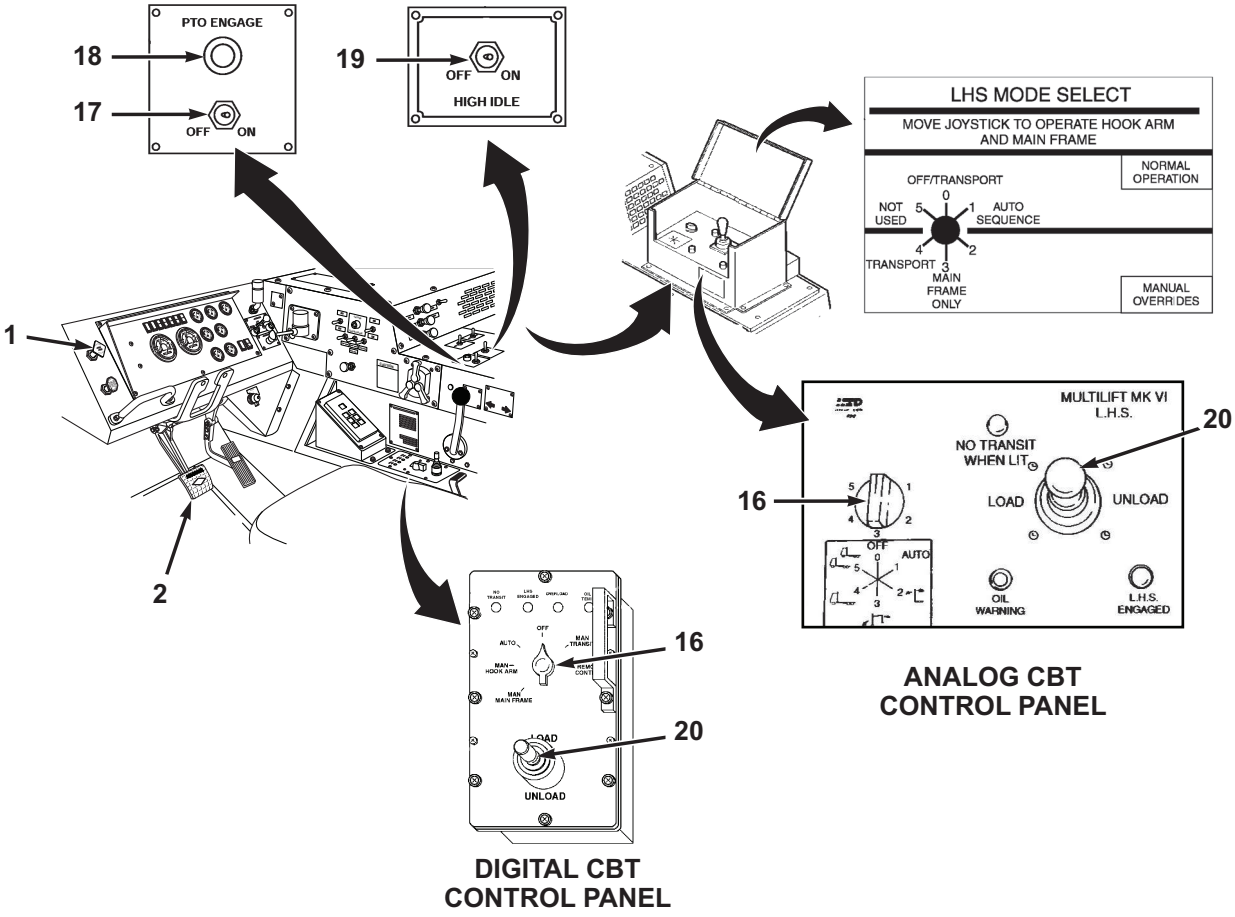


Figure 8. Cab LHS Controls.

CAUTION

- Do not position PTO ENGAGE switch to ON with HIGH IDLE switch ON. Engaging the PTO with HIGH IDLE switch ON may result in sudden application of hydraulic pressure to the LHS. Failure to comply may result in damage to equipment.
- PTO ENGAGE switch must be positioned OFF before road transport. Failure to comply may result in damage to equipment.

12. Set PTO ENGAGE switch (Figure 8, Item 17) to ON position. Indicator light (Figure 8, Item 18) will illuminate.
13. Set HIGH IDLE switch (Figure 8, Item 19) to ON position.
14. Move joystick (Figure 8, Item 20) to UNLOAD and hold while LHS hook arm rises and moves the BAP to the rear.

OPERATION - Continued

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

15. Push in PARKING BRAKE control (Figure 8, Item 1) and release service brake pedal (Figure 8, Item 2) when back edge of the BAP touches the ground.
16. Continue unloading while allowing vehicle to roll forward.
17. Release joystick (Figure 8, Item 20) when front end of the BAP is about 1 ft. (30 cm) off the ground.
18. Set HIGH IDLE switch (Figure 8, Item 19) to OFF position.
19. Move joystick (Figure 9, Item 20) to UNLOAD and continue unloading until the BAP rests on the ground and weight of load is off LHS hook (Figure 9, Item 21).

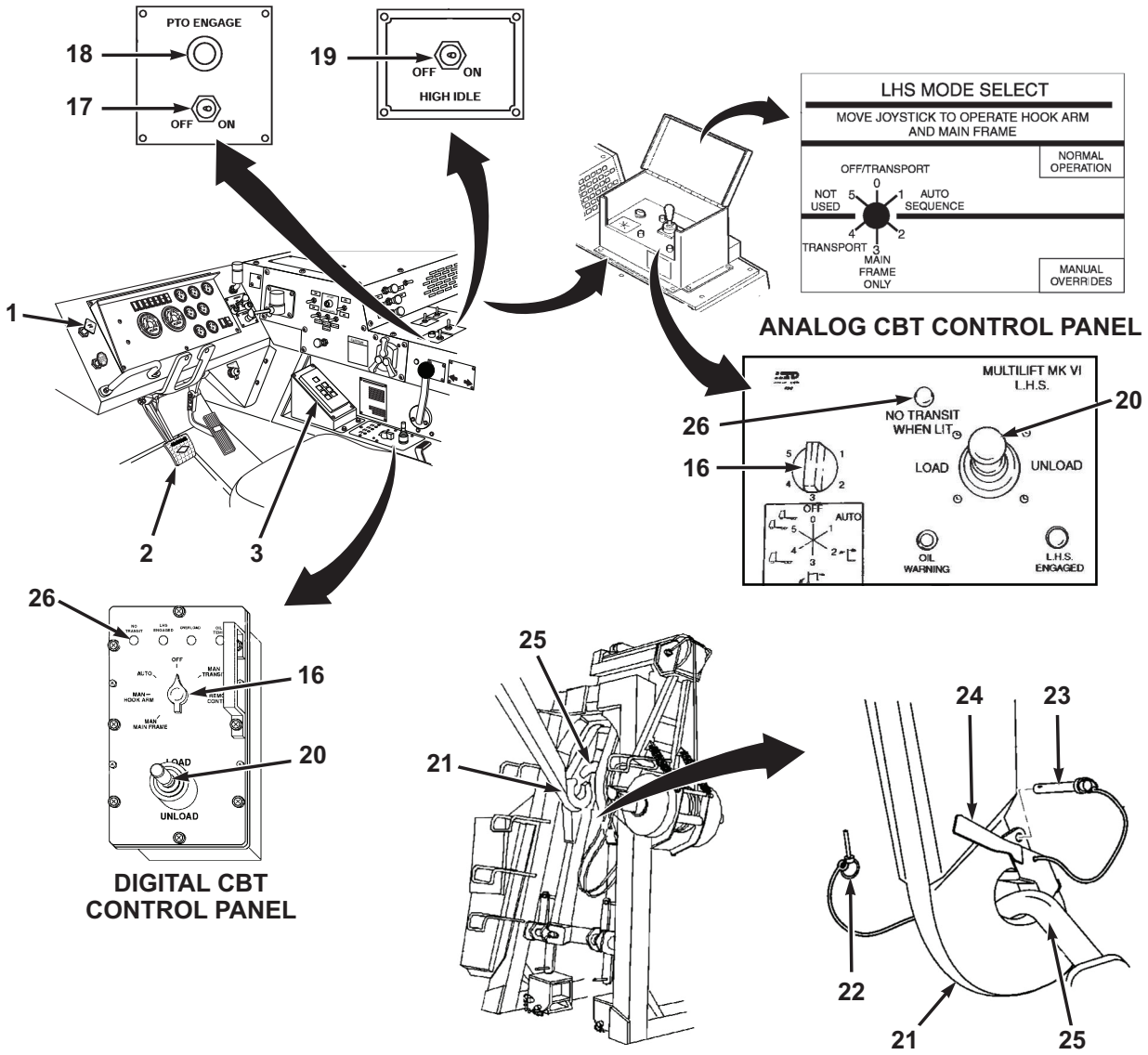


Figure 9. Cab LHS Controls.

OPERATION - Continued

20. Pull out PARKING BRAKE control (Figure 9, Item 1).
21. Remove lock pin (Figure 9, Item 22), pin (Figure 9, Item 23), and bail bar lock (Figure 9, Item 24) from LHS hook (Figure 9, Item 21).
22. Move joystick (Figure 9, Item 20) to UNLOAD.
23. Release joystick (Figure 9, Item 20) when LHS hook (Figure 9, Item 21) is slightly below BAP bail bar (Figure 9, Item 24).

NOTE

If LHS hook does not disengage, drive vehicle forward approximately two inches (5 cm), and repeat Steps (22) and (23).

24. Set transmission range selector (Figure 9, Item 3) to D (drive).
25. Push in PARKING BRAKE control (Figure 9, Item 1), or release service brake pedal (Figure 9, Item 2).
26. Drive forward slowly about 5 ft. (1.5 m) to clear LHS hook (Figure 9, Item 21) from BAP bail bar (Figure 9, Item 25). Stop vehicle.
27. Pull out PARKING BRAKE control (Figure 9, Item 1).
28. Set transmission range selector (Figure 9, Item 3) to N (neutral).
29. Set HIGH IDLE switch (Figure 9, Item 19) to ON position.
30. Move joystick (Figure 9, Item 20) to LOAD position.

WARNING



When NO TRANSIT indicator is illuminated, vehicle may be maneuvered in the immediate vicinity of the loading/unloading site. However, vehicle is unsafe for road travel. Do not perform open-road driving when NO TRANSIT indicator is illuminated. Failure to comply may result in serious injury or death to personnel and damage to equipment.

31. Release joystick (Figure 9, Item 20) when main frame and hook arm are fully stowed and NO TRANSIT indicator (Figure 9, Item 26) goes out.
32. Set HIGH IDLE switch (Figure 9, Item 19) to OFF position.

CAUTION

While maneuvering vehicle in the immediate vicinity of the loading or unloading site, LHS MODE SELECT switch may be in any setting. However, LHS MODE SELECT switch must be set to OFF prior to road travel. Failure to comply may result in damage to equipment.

33. Turn LHS MODE SELECT switch (Figure 9, Item 16) to OFF.
34. Set PTO ENGAGE switch (Figure 9, Item 17) to OFF position. Indicator light (Figure 9, Item 18) will go out.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
LOADING BRIDGE BAY FROM THE GROUND

INITIAL SETUP:

Personnel Required
(2)

Equipment Condition
BAP loaded on vehicle. (WP 0005)

References
TM 5-5420-209-12 (WP 0076)
TM 5-5420-278-10 (WP 0076)

GENERAL

NOTE

Perform all operator's before-preventive maintenance checks (WP 0034) prior to operating the CBT and/or BAP. Ensure all checks and adjustments have been completed by field level maintenance.

1. This section contains instructions for safely operating the CBT and BAP under usual conditions.
2. Instructions for safely operating the vehicle in unusual conditions are covered in WP 0017 through WP 0022 of this manual.

PREPARATION FOR USE

WARNING



A site survey must be conducted to ensure site meets criteria cited in warnings below. Failure to complete a site survey may result in serious injury or death to personnel.

- Use a ground guide for all bridging operations. The vehicle may crash into an obstruction or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Prior to performing bridging operations, conduct a site survey to ensure that side-to-side slope does not exceed 8 percent (5 degrees), ground in the transport area is firm, area around vehicle is free of personnel and obstructions, and overhead clearance is at least 22 ft. 2 in. (6.7 m) above the loading area. Failure to conduct a site survey could cause the vehicle to slip, turn over, crash into an obstruction, or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Unloading the BAP without disengaging hold-down locks may result in injury or death to personnel.

A site survey must be conducted to ensure the site meets the criteria cited in the warning above.

OPERATION

NOTE

- During all bridge bay operations, the operator will drive and be responsible for the operation of the LHS cab control box. The assistant acts as a ground guide and will be responsible for directing the operator using hand signals, operating the remote control box and winch, and assisting the operator as needed. Never walk backwards when ground guiding the vehicle.
- In case of emergency while the remote control is in use, push the emergency stop switch to shut down operation of the LHS.
- The BAP must be loaded on the vehicle before loading bridge bay.

1. Ensure all bridge bay latches and locks are locked and secured. Refer to TM 5-5420-209-12 or TM 5-5420-278-10.
2. Set transmission range selector (Figure 1, Item 1) to R (reverse), and back up vehicle so there is about 5 ft. (1.5 m) of clearance between vehicle and lifting hook end of bridge bay.

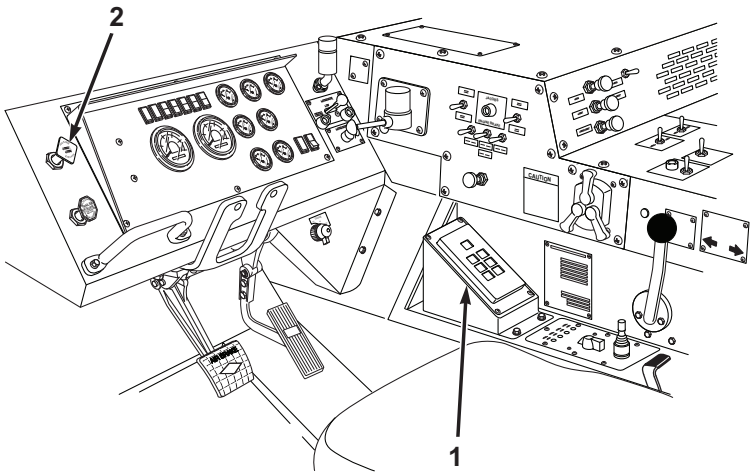


Figure 1. Brake and Transmission Controls.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

3. Pull out PARKING BRAKE control (Figure 1, Item 2) and set transmission range selector (Figure 1, Item 1) in N (neutral).
4. Ensure BAP hold-down lock handles (Figure 2, Item 3) are pushed in.

OPERATION - Continued

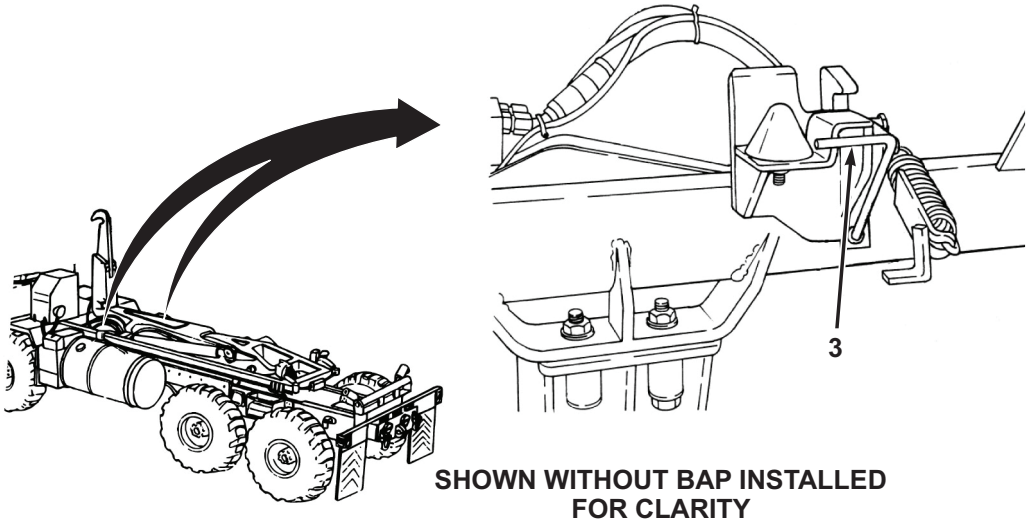


Figure 2. Setting BAP Hold Down Locks.

5. Connect two BAP winch hydraulic pressure hoses (Figure 3, Item 4) to male connector (Figure 3, Item 5) and female connector (Figure 3, Item 6) located on bottom of hook arm assembly.

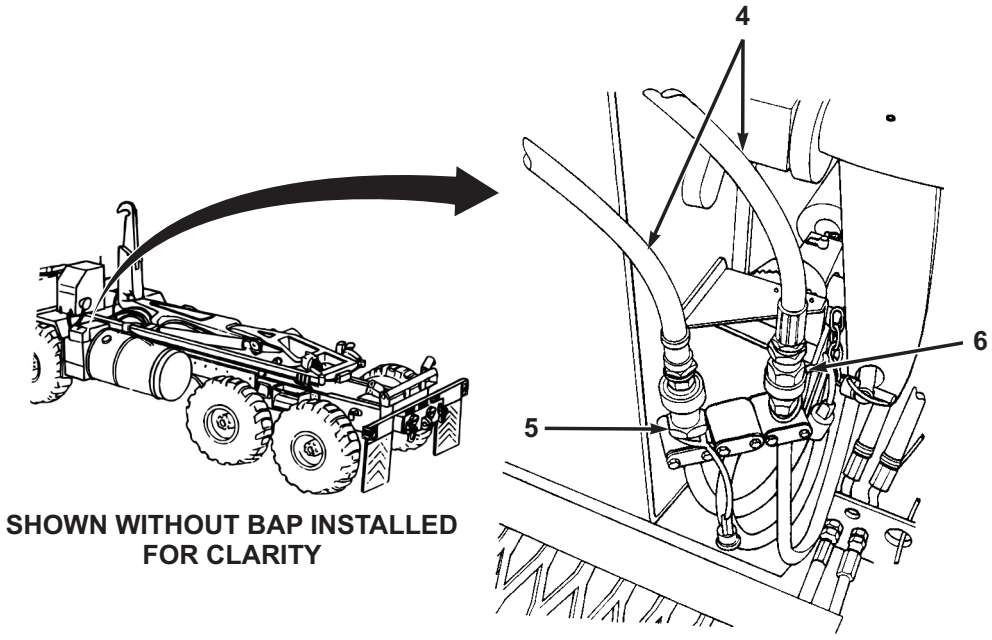


Figure 3. Connect Hydraulic Hoses.

OPERATION - Continued

6. Secure winch frame to LHS hook arm. Ensure two winch frame locking levers (Figure 4, Item 7) are in the down position.

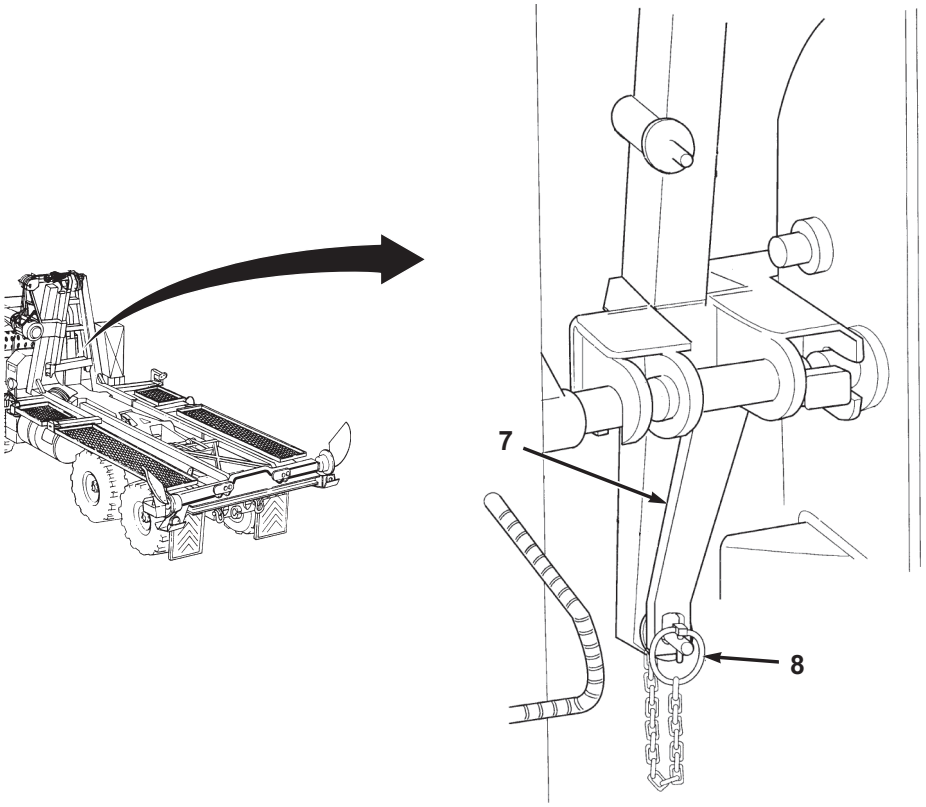


Figure 4. Lock Winch Frame to LHS Hook Arm.

7. If locking levers (Figure 4, Item 7) are not down:
   a. Remove lockpin (Figure 4, Item 8) from each upper locking lever (Figure 4, Item 7).
   b. Swing each locking lever (Figure 4, Item 7) to the down position.
   c. Insert lockpin (Figure 4, Item 8) into each locking lever (Figure 4, Item 7).

WARNING



Keep hands and fingers clear of front pin lock assemblies when in the auto engaged and disengaged position. Failure to comply may result in serious injury or death to personnel.

8. Secure curb-side and road-side front pin lock assemblies (Figure 5, Item 9) in the auto engage position (refer to BAP locks checklist for proper position of BAP locks) (WP 0015).
9. Pull back front pin lock assemblies (Figure 5, Item 9) until latch lever pin (Figure 5, Item 10) rests in base of vertical slot (Figure 5, Item 11).

OPERATION - Continued

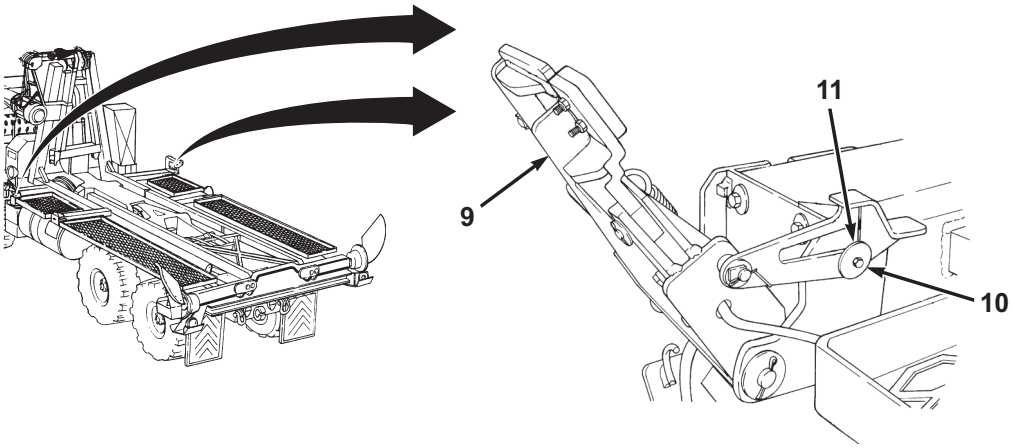


Figure 5. Setting Front Pin Locks.

10. Secure curb-side and road-side rear guides (Figure 6, Item 12) in the engaged position:

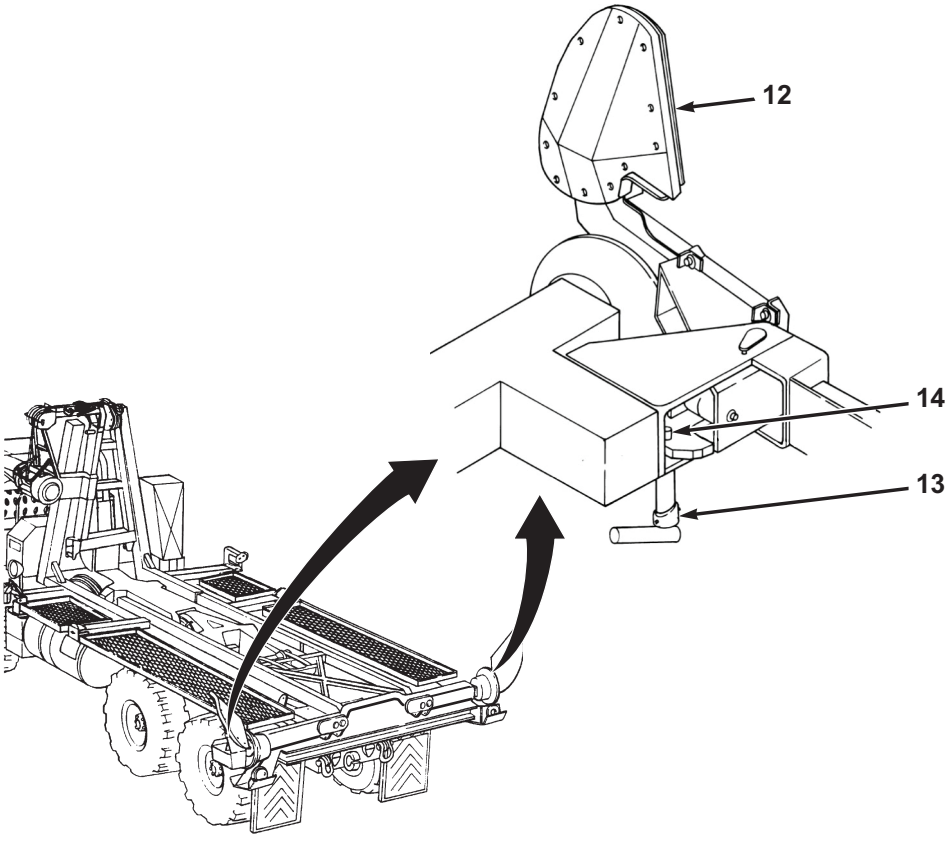


Figure 6. Setting Rear Guides.

a. Rotate latch pin (Figure 6, Item 13), and swing rear guide (Figure 6, Item 12) to the intermediate position.

b. Ensure each latch pin (Figure 6, Item 13) engages hole (Figure 6, Item 14) in rear guide (Figure 6, Item 12).

OPERATION - Continued

11. Turn LHS MODE SELECT switch (Figure 7, Item 15) to REMOTE.

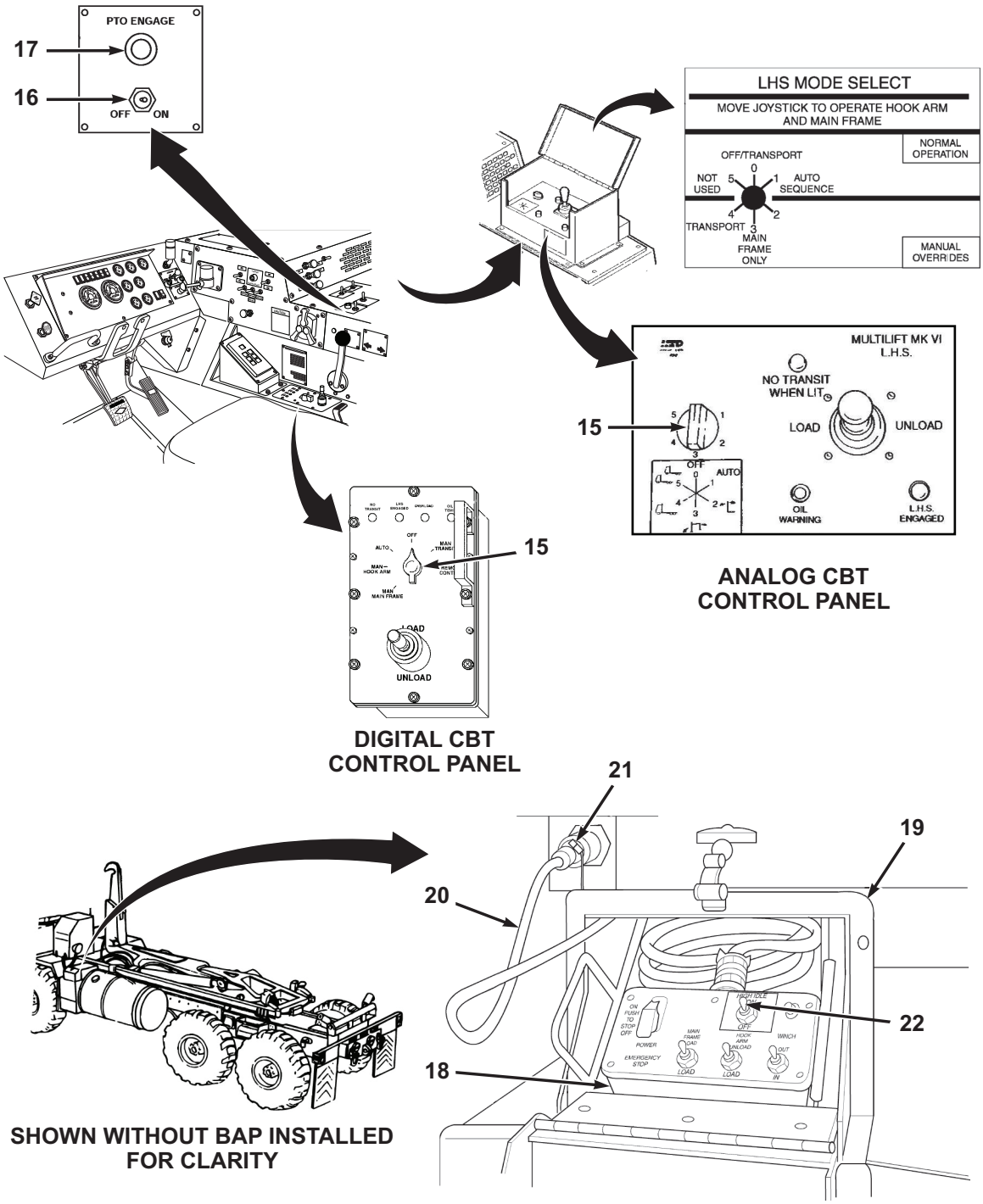


Figure 7. Cab LHS Controls.

OPERATION - Continued

CAUTION

- Do not position PTO ENGAGE switch to ON with HIGH IDLE switch ON. Engaging the PTO with HIGH IDLE switch ON may result in sudden application of hydraulic pressure to the LHS. Failure to comply may result in damage to equipment.
- PTO ENGAGE switch must be positioned OFF before road transport or severe damage to equipment may result.

12. Set PTO ENGAGE switch (Figure 7, Item 16) to ON position. Indicator light (Figure 7, Item 17) will illuminate.
13. Install remote-control unit (Figure 7, Item 18):
    a. Remove remote-control unit (Figure 7, Item 18) from stowage box (Figure 7, Item 19).
    b. Remove cable (Figure 7, Item 20) from stowage box (Figure 7, Item 19).
    c. Connect cable (Figure 7, Item 20) to curb-side or road-side LHS receptacle (Figure 7, Item 21).
14. Turn HIGH IDLE switch (Figure 8, Item 22) on remote-control unit (Figure 8, Item 18) to ON position.

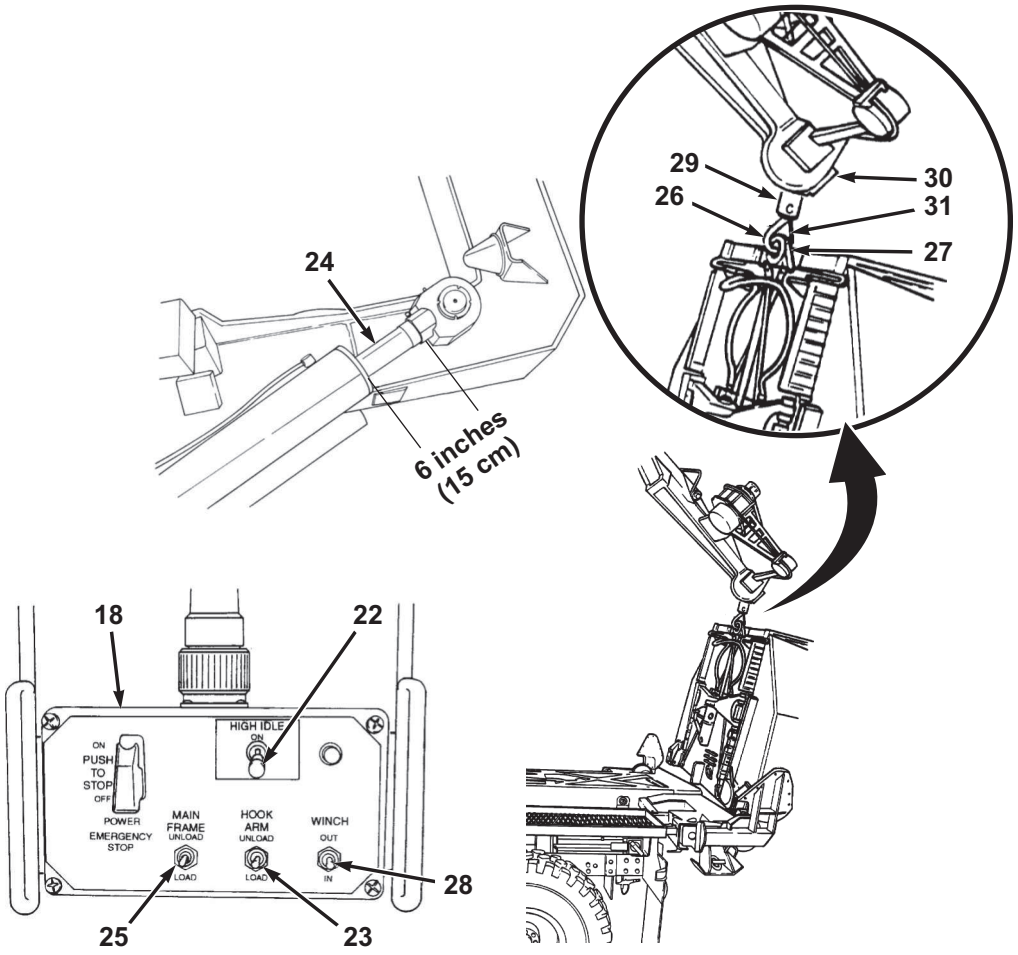


Figure 8. Picking Up Bridge Bay.

OPERATION - Continued

WARNING



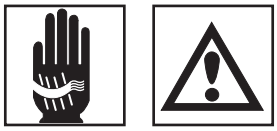
All personnel should stay clear of vehicle during bridging operations. Failure to comply may result in serious injury or death to personnel.

CAUTION

While moving LHS hook arm rearward, ensure winch hydraulic hoses are not trapped or damaged. Failure to comply may result in damage to equipment.

15. Position HOOK ARM switch (Figure 8, Item 23) to UNLOAD and release when hook arm cylinders (Figure 8, Item 24) are extended approximately 6 in. (15 cm).
16. Position MAIN FRAME switch (Figure 8, Item 25) to UNLOAD and release when main frame has moved rearward, to the level of the cab, and winch cable hook (Figure 8, Item 26) is about 2 ft. (61 cm) above bridge bay lifting eye (Figure 8, Item 27).

WARNING



- Always wear protective gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in serious injury or death to personnel.
- Never operate winch with less than five wraps of cable on winch drum. Failure to comply may result in serious injury or death to personnel.
- Do not move the CBT until the bridge bay has been fully loaded into the water from the vehicle. Failure to comply may result in serious injury or death to personnel.

17. While an assistant maintains tension on winch cable, position remote WINCH switch (Figure 8, Item 28) to OUT and release when winch cable hook (Figure 8, Item 26) can be attached to bay lifting eye (Figure 8, Item 27).
18. Pull the hook holder (Figure 8, Item 29) out of the saddle (Figure 8, Item 30) using the boat hook.

CAUTION

For SRB bridge bays only, pick up bridge bay only on the spreader cable and stationary hook eye end of bridge bay. Failure to comply may result in damage to bridge bay.

19. Attach winch cable hook (Figure 8, Item 26) to bridge bay.
    a. Winch cable hook (Figure 8, Item 26) should face rear with throat up.
    b. Hook latch (Figure 8, Item 31) should be closed.
20. Position MAIN FRAME switch (Figure 8, Item 25) to LOAD and release when there is no cable slack.

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

OPERATION - Continued

21. Push in PARKING BRAKE control (Figure 9, Item 2).

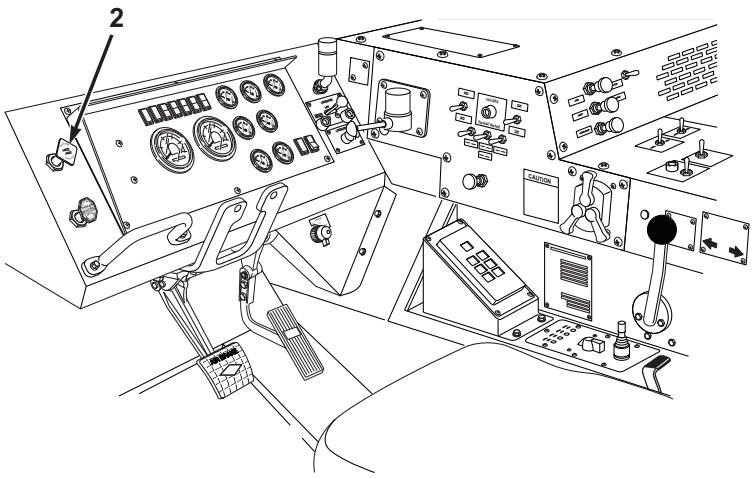


Figure 9. Parking Brake Control.

CAUTION

Ensure hook holder is stowed in saddle prior to engaging LHS. Failure to comply may result in damage to hook.

22. Position WINCH switch (Figure 10, Item 28) to IN and release when hook holder (Figure 10, Item 29) is in saddle (Figure 10, Item 30).

OPERATION - Continued

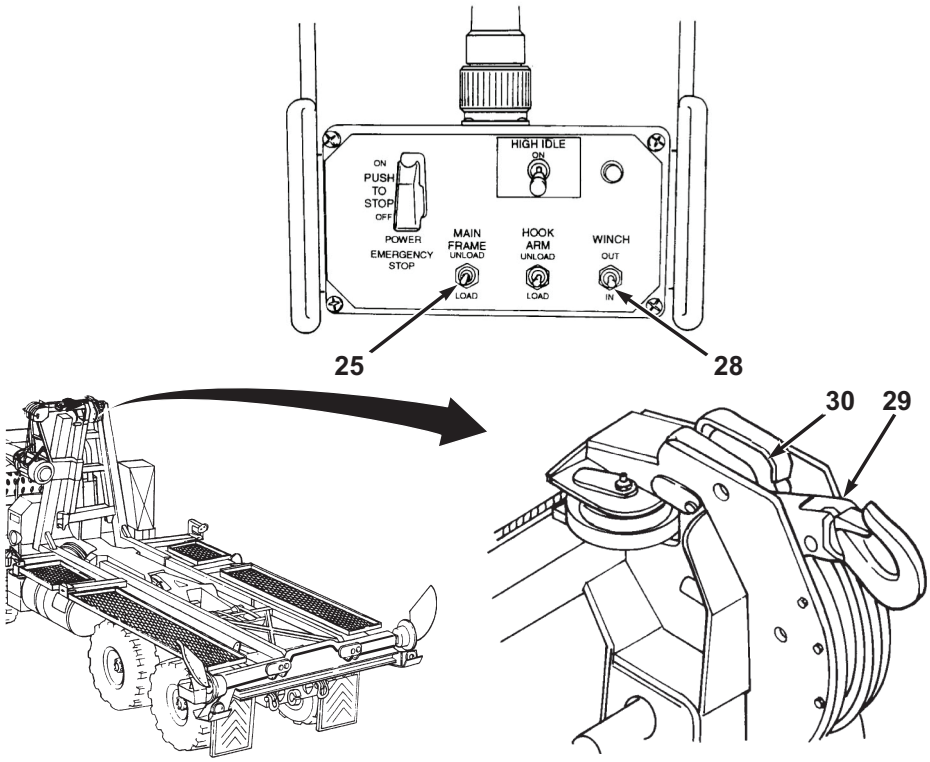


Figure 10. Stowing Winch Cable.

23. Position remote MAIN FRAME switch (Figure 10, Item 25) to LOAD.
24. Steer vehicle as necessary to guide bridge bay onto BAP rear rollers.
25. Pull out PARKING BRAKE control (Figure 11, Item 2) when bridge bay contacts rear rollers and clears the ground.

OPERATION - Continued

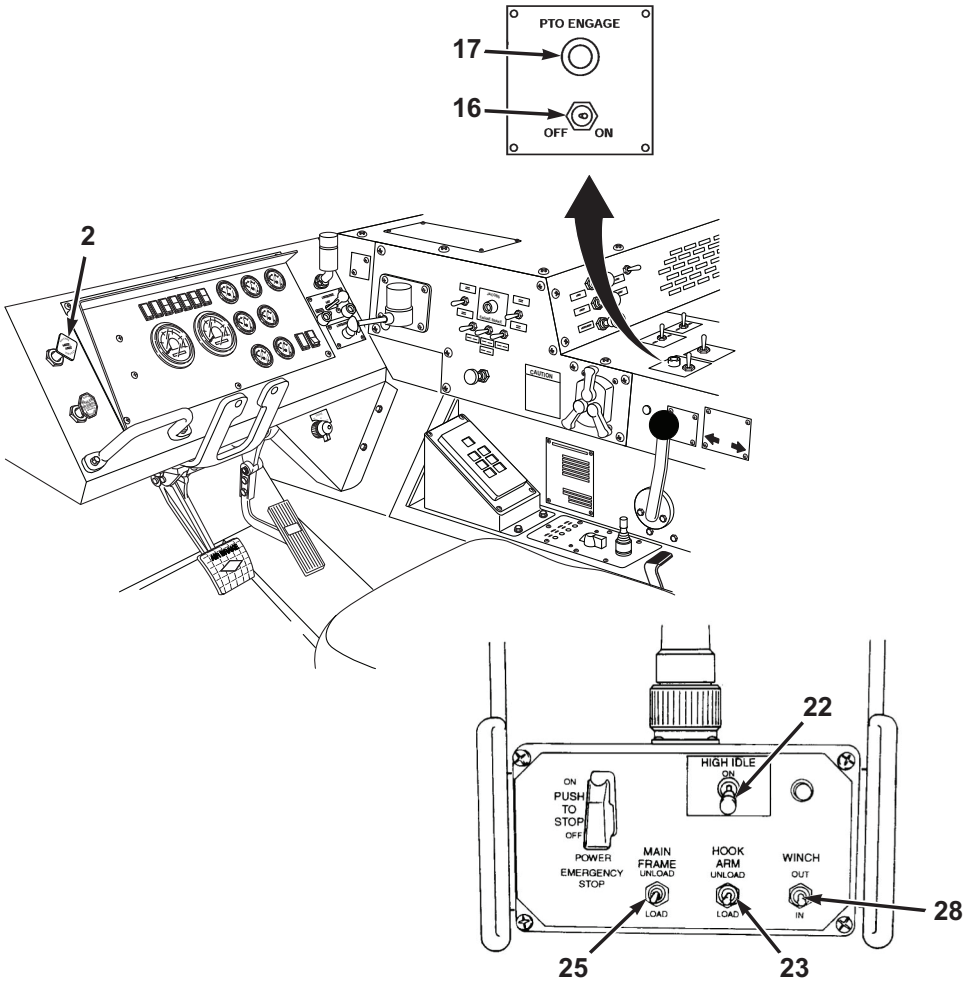


Figure 11. Cab and Remote Control Unit Controls.

26. Continue to hold remote MAIN FRAME switch (Figure 11, Item 25) to LOAD until main frame is fully stowed.
27. As main frame moves into stored position, turn HIGH IDLE switch (Figure 11, Item 22) to OFF position.

OPERATION - Continued

WARNING



When NO TRANSIT indicator is illuminated, vehicle may be maneuvered in the immediate vicinity of the loading/unloading site. However, vehicle is unsafe for road travel. Do not perform open-road driving when NO TRANSIT indicator is illuminated. Failure to comply may result in serious injury or death to personnel and damage to equipment.

28. Position HOOK ARM switch (Figure 11, Item 23) to LOAD until LHS hook arm has been fully stowed.

WARNING



Ensure both rear guides are properly repositioned and locked after bridge bay retrieval. Failure to reposition and lock both rear guides after bridge bays are loaded could result in lost bridge bays or vehicle rollover during transport. Failure to comply may result in serious injury or death to personnel.

29. Ensure curb-side and road-side front pin lock assemblies and rear guides are locked on bridge bay pins.

CAUTION

Always release tension on winch cable after operation, to avoid undue strain on frame and cable and to prevent damage to equipment during transit. Failure to comply may result in damage to equipment.

30. Position WINCH switch (Figure 11, Item 28) to OUT and release when winch cable tension is released.

CAUTION

While maneuvering vehicle in the immediate vicinity of the loading or unloading site, LHS MODE SELECT switch may be in any setting. However, LHS MODE SELECT switch must be set to OFF prior to road travel. Failure to comply may result in damage to equipment.

31. Set PTO ENGAGE switch (Figure 11, Item 16) to OFF position. Indicator light (Figure 11, Item 17) will go out.

OPERATION - Continued

32. Disconnect and stow remote control unit (Figure 12, Item 18):

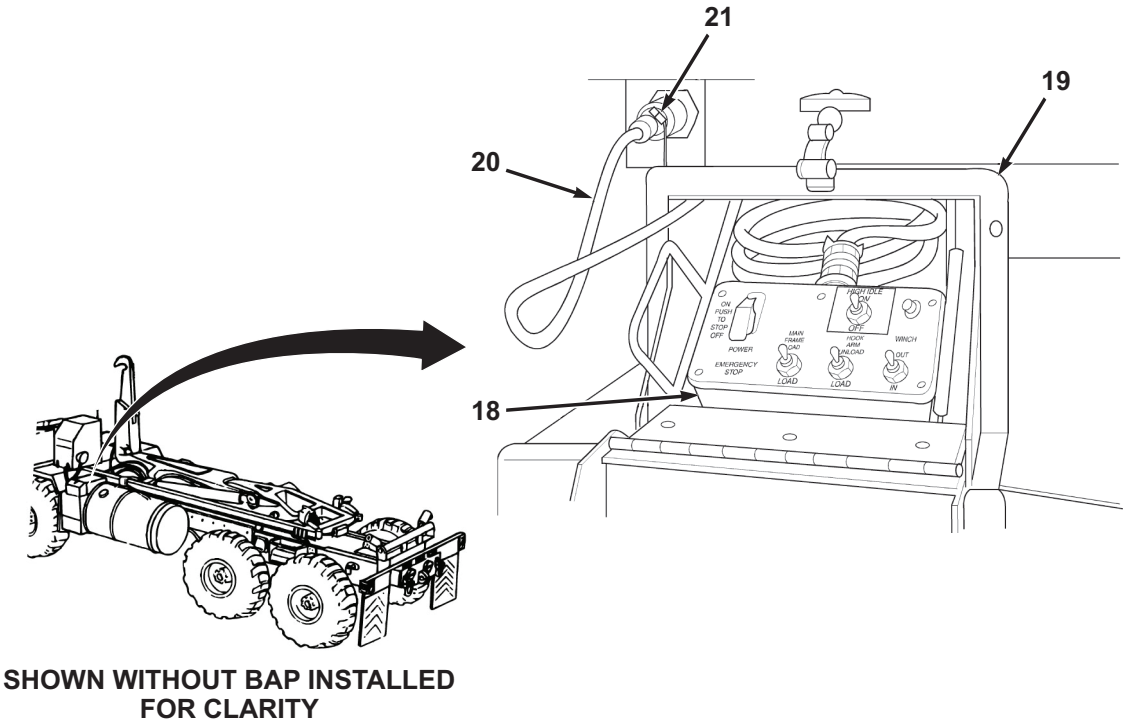


Figure 12. Stow Remote Control Unit.

a. Disconnect cable (Figure 12, Item 20) from LHS receptacle (Figure 12, Item 21).

b. Coil and stow cable (Figure 12, Item 20) in rear of stowage box (Figure 12, Item 19).

c. Stow remote control unit (Figure 12, Item 18) in stowage box (Figure 12, Item 19).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
UNLOADING BRIDGE BAY TO THE GROUND

INITIAL SETUP:

Personnel Required
(2)

References
TM 5-5420-209-12 (WP 0076)

References (cont.)
TM 5-5420-278-10 (WP 0076)
TM 9-2320-425-10 (WP 0076)
TM 9-2320-435-10 (WP 0076)

GENERAL

NOTE

Perform all operator's before-preventive maintenance checks (WP 0034) prior to operating the CBT and/or BAP. Ensure all checks and adjustments have been completed by field level maintenance.

1. This section contains instructions for safely operating the CBT and BAP under usual conditions.
2. Instructions for safely operating the vehicle in unusual conditions are covered in WP 0017 through WP 0022 of this manual.

PREPARATION FOR USE

WARNING



A site survey must be conducted to ensure site meets criteria cited in warnings below. Failure to complete a site survey may result in serious injury or death to personnel.

- Use a ground guide for all bridging operations. The vehicle may crash into an obstruction or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Prior to performing bridging operations, conduct a site survey to ensure that side-to-side slope does not exceed 8 percent (5 degrees), ground in the transport area is firm, area around vehicle is free of personnel and obstructions, and overhead clearance is at least 22 ft. 2 in. (6.7 m) above the loading area. Failure to conduct a site survey could cause the vehicle to slip, turn over, crash into an obstruction, or contact power lines. Failure to comply may result in serious injury or death to personnel.

A site survey must be conducted to ensure the site meets the criteria cited in the warning above.

OPERATION

NOTE

- In case of emergency while the remote control is in use, push the emergency stop switch to shut down operation of the LHS.
- During all vehicle operations, the operator will drive and be responsible for the operation of the LHS cab control box. The assistant acts as a ground guide and will be responsible for directing the operator using hand signals, operating the remote control box and winch, and assisting the operator as needed.

1. Secure the BAP to the LHS. Ensure both BAP hold-down lock handles (Figure 1, Item 1) are pushed in.

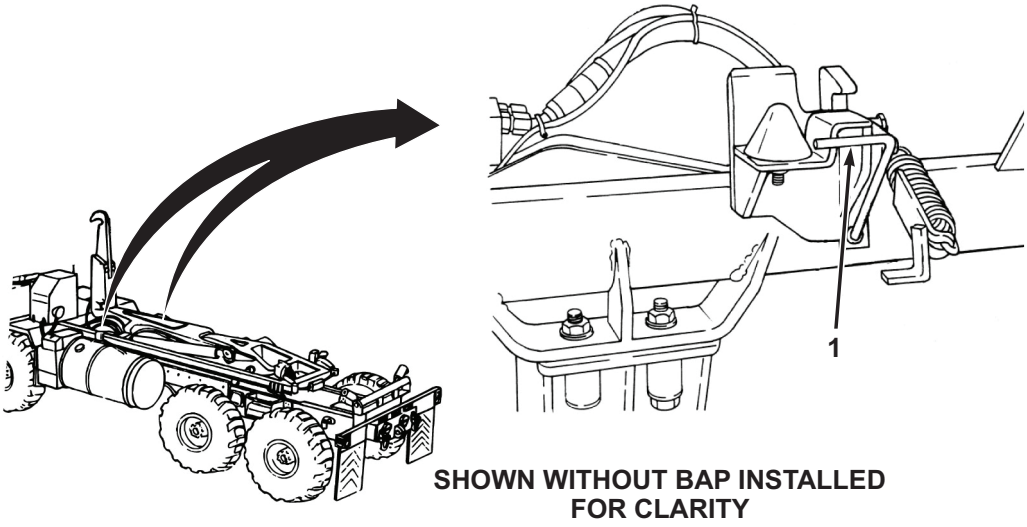


Figure 1. Position BAP Locks.

2. Secure winch frame to LHS hook arm. Ensure two winch frame locking levers (Figure 2, Item 2) are in the down position.

OPERATION - Continued

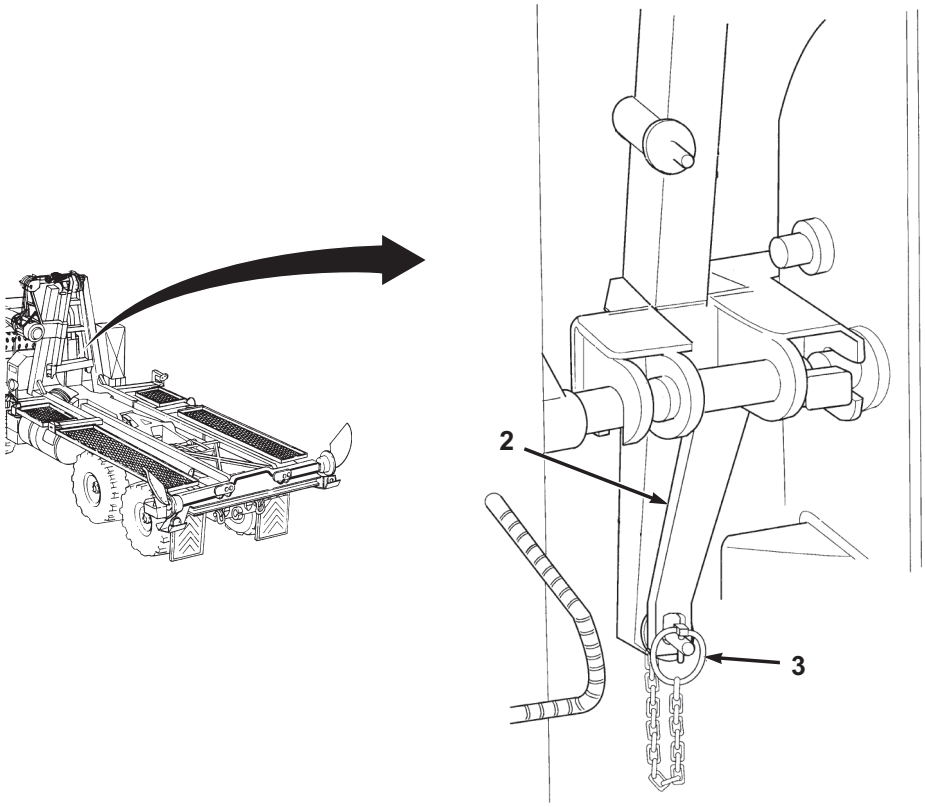


Figure 2. Lock Winch Frame to Hook Arm.

3. If locking levers (Figure 2, Item 2) are not down:
   a. Remove lockpin (Figure 2, Item 3) from each locking lever (Figure 2, Item 2).
   b. Swing each locking lever (Figure 2, Item 2) to the down position.
   c. Insert lockpin (Figure 2, Item 3) into each locking lever (Figure 2, Item 2).

OPERATION - Continued

4. Connect two winch hydraulic pressure line hoses (Figure 3, Item 4) to male connector (Figure 3, Item 5) and female connector (Figure 3, Item 6) located on bottom of hook arm assembly.

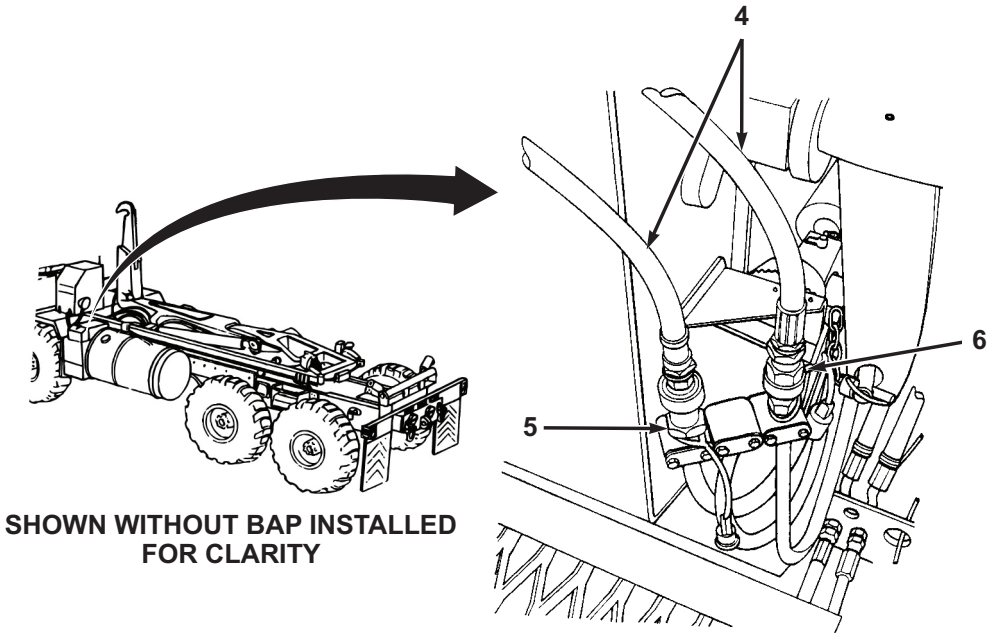


Figure 3. Connect Hydraulic Hoses.

5. Install remote control unit (Figure 4, Item 7):

OPERATION - Continued

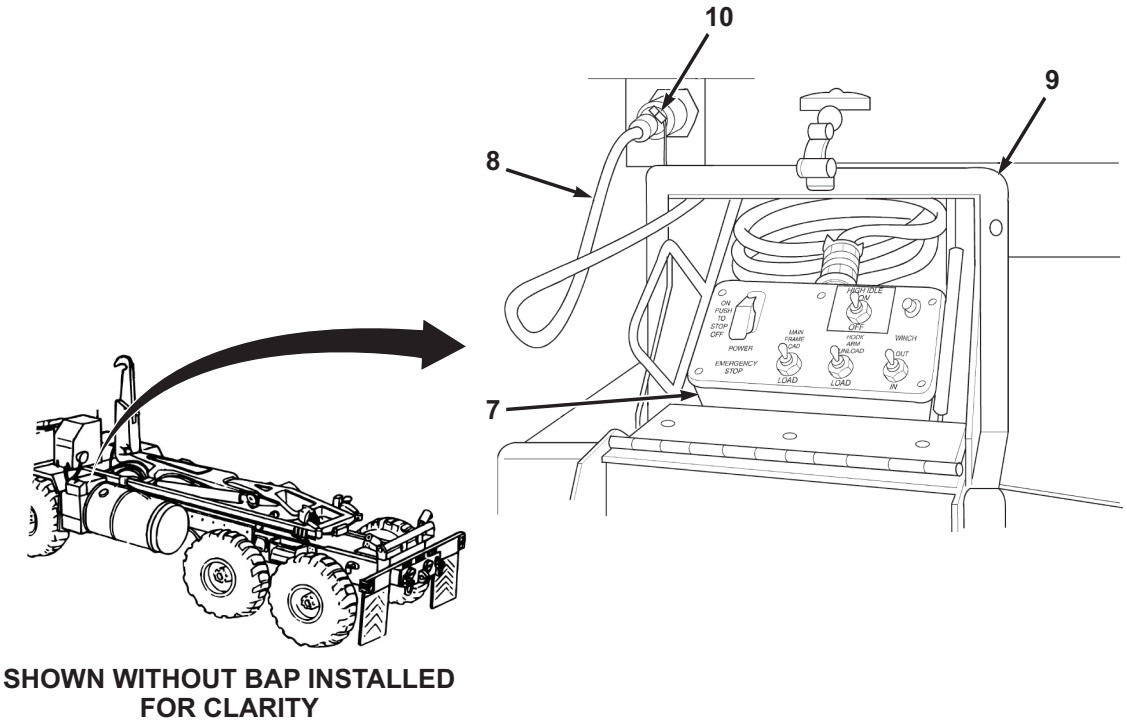


Figure 4. Connect Remote Control Unit.

a. Remove remote control unit (Figure 4, Item 7) and cable (Figure 4, Item 8) from stowage box (Figure 4, Item 9).

b. Connect cable (Figure 4, Item 8) to curb-side or road-side LHS receptacle (Figure 4, Item 10).

6. Position vehicle with its rear 5 to 6 ft. (1.53 to 1.83 m) from where rear of bridge bay is to sit on the ground. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

OPERATION - Continued

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

7. Pull out PARKING BRAKE control (Figure 5, Item 11) and set transmission range selector (Figure 5, Item 12) to N (neutral).

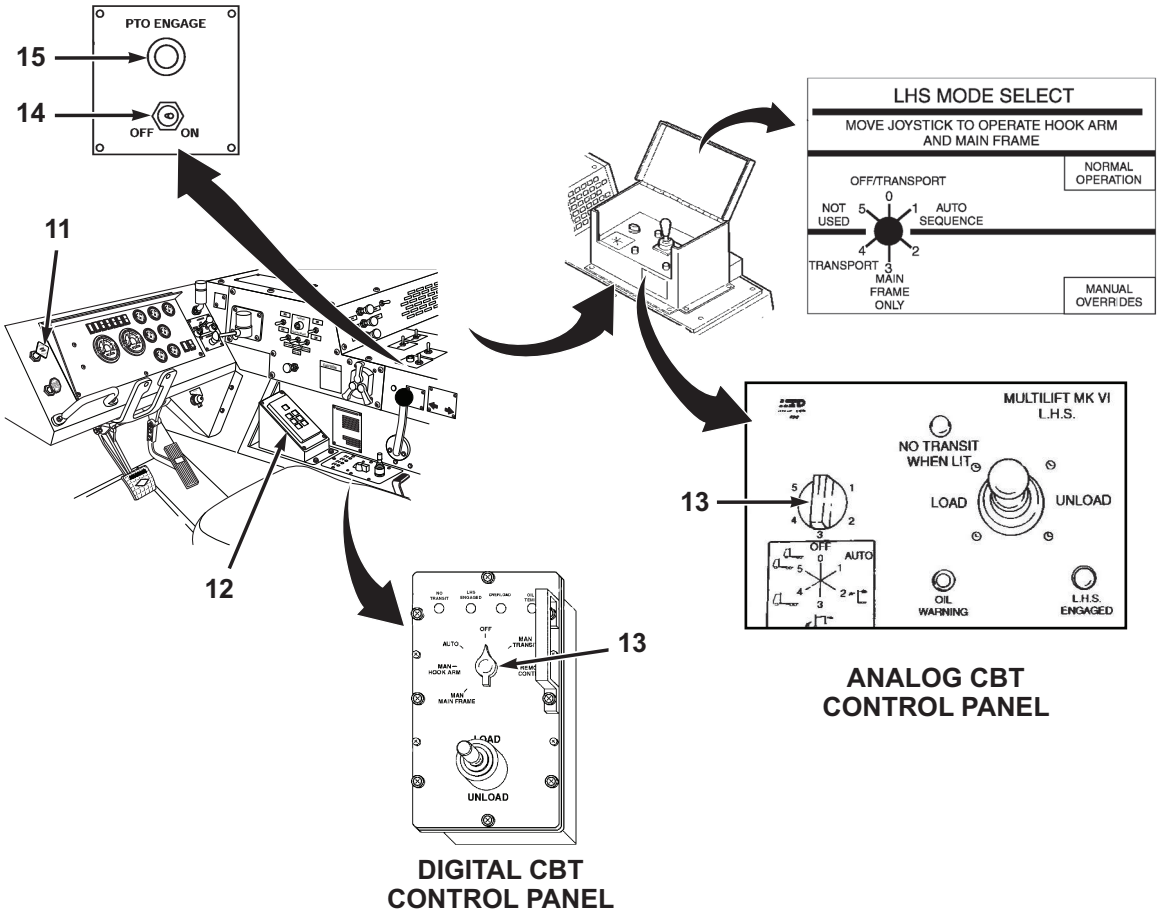


Figure 5. Cab Controls.

8. Turn LHS MODE SELECT switch (Figure 5, Item 13) to REMOTE.

CAUTION

- Do not position PTO ENGAGE switch to ON with HIGH IDLE switch ON. Engaging the PTO with HIGH IDLE switch ON may result in sudden application of hydraulic pressure to the LHS. Failure to comply may result in damage to equipment.
- PTO ENGAGE switch must be turned off before road transport or severe equipment damage could result.

9. Set PTO ENGAGE switch (Figure 5, Item 14) to ON position. Indicator light (Figure 5, Item 15) will illuminate.

OPERATION - Continued

10. Ensure winch cable hook (Figure 6, Item 16) is securely attached to stationary bay lifting eye (Figure 6, Item 17). Ensure winch cable hook (Figure 6, Item 16) is facing rear with throat up. Refer to TM 5-5420-209-12 or TM 5-5420-278-10.

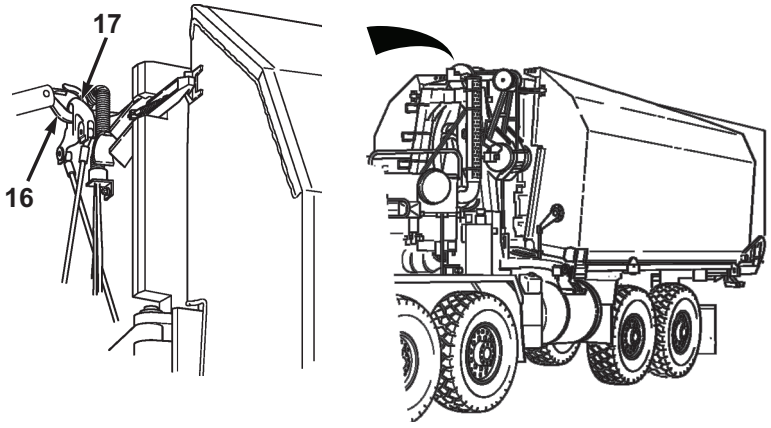


Figure 6. Check and Set Winch Cable Tension.

11. Position WINCH switch (Figure 7, Item 18) to IN. Release when tension is applied to winch cable.

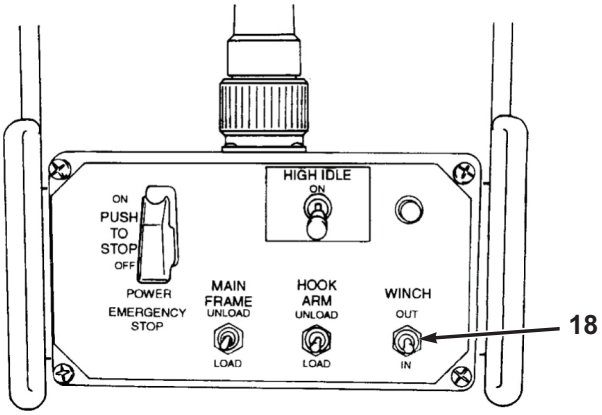


Figure 7. Remote Control Unit Switches.

OPERATION - Continued

WARNING



Keep hands and fingers clear of front pin lock assemblies when in the auto engaged and disengaged position. Failure to comply may result in serious injury or death to personnel.

NOTE

To release front pin lock assemblies, movement of the LHS hook arm may be required.

12. Release curb-side and road-side front pin lock assemblies (Figure 8, Item 20):

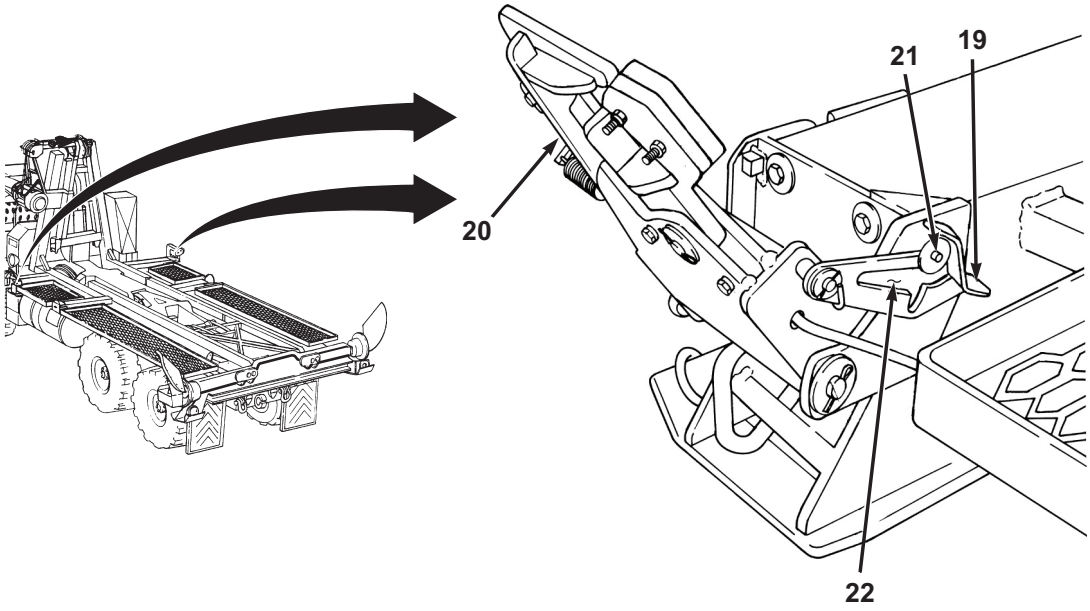


Figure 8. Front Pin Locks.

Press latch levers (Figure 8, Item 19) down, and pull back front pin lock assemblies (Figure 8, Item 20) until latch lever pin (Figure 8, Item 21) rests at top of vertical slot (Figure 8, Item 22).

WARNING



After releasing rear guides, only winch hook secures bridge bay to the BAP. Personnel must not mount the BAP and must stay clear of the area around rear of vehicle. The load could shift, release, or fall. Failure to comply may result in serious injury or death to personnel.

13. Set curb-side and road-side rear guides (Figure 9, Item 23) to full open position:

OPERATION - Continued

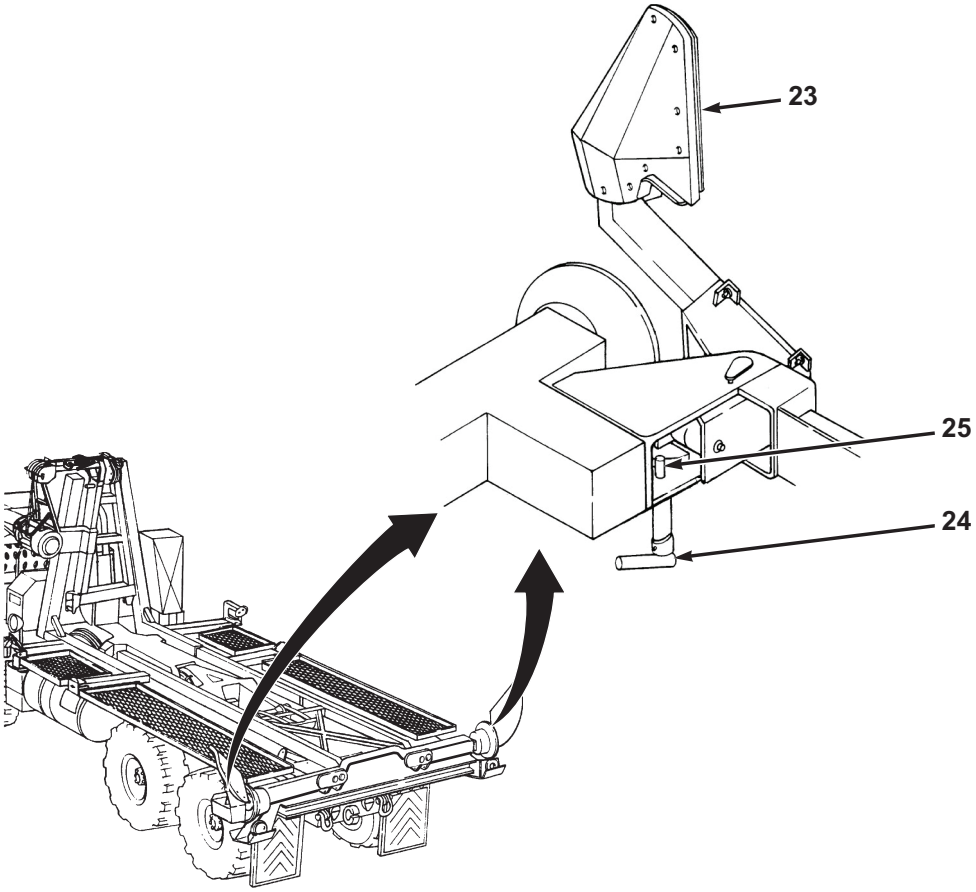


Figure 9. Rear Guides.

a. Rotate latch pin (Figure 9, Item 24) until rear guide (Figure 9, Item 23) disengages.

b. Swing rear guide (Figure 9, Item 23) until pin (Figure 9, Item 25) clicks into hole.

OPERATION - Continued

14. Position HOOK ARM switch (Figure 10, Item 27) to UNLOAD and release when hook arm cylinders (Figure 10, Item 26) are extended approximately 6 in. (15 cm).

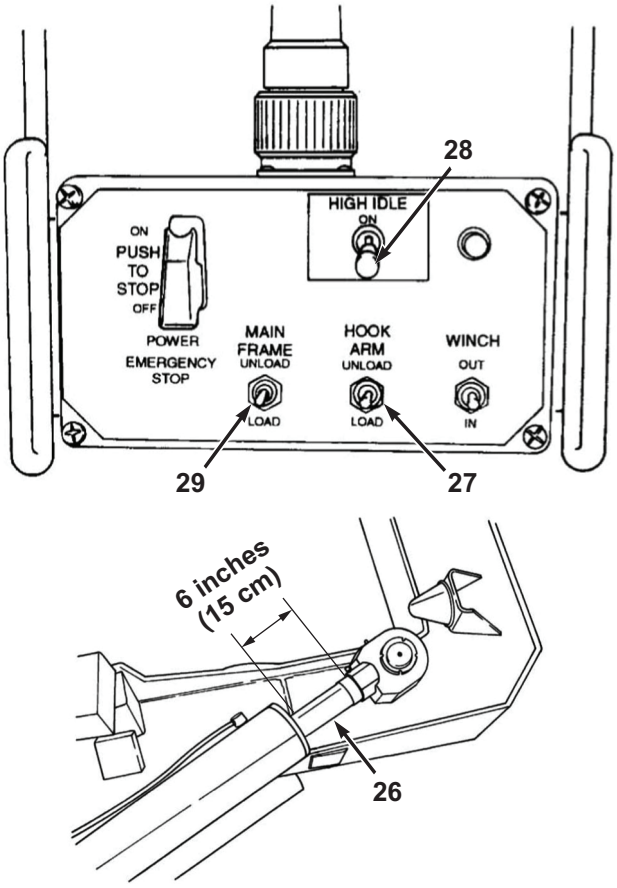


Figure 10. Unload Hook Arm.

NOTE

While moving LHS hook arm rearward, ensure winch hydraulic hose lines are not trapped or damaged.

15. Set HIGH IDLE switch (Figure 10, Item 28) to ON position.
16. Position MAIN FRAME switch (Figure 10, Item 29) to UNLOAD.

NOTE

- Immediately push in PARKING BRAKE control when rear of bridge bay touches ground.
- Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

17. Continue unloading while steering vehicle as it rolls forward. Release MAIN FRAME switch (Figure 11, Item 29) when front of bridge bay is approximately 2 ft. (61 cm) above the ground.

OPERATION - Continued

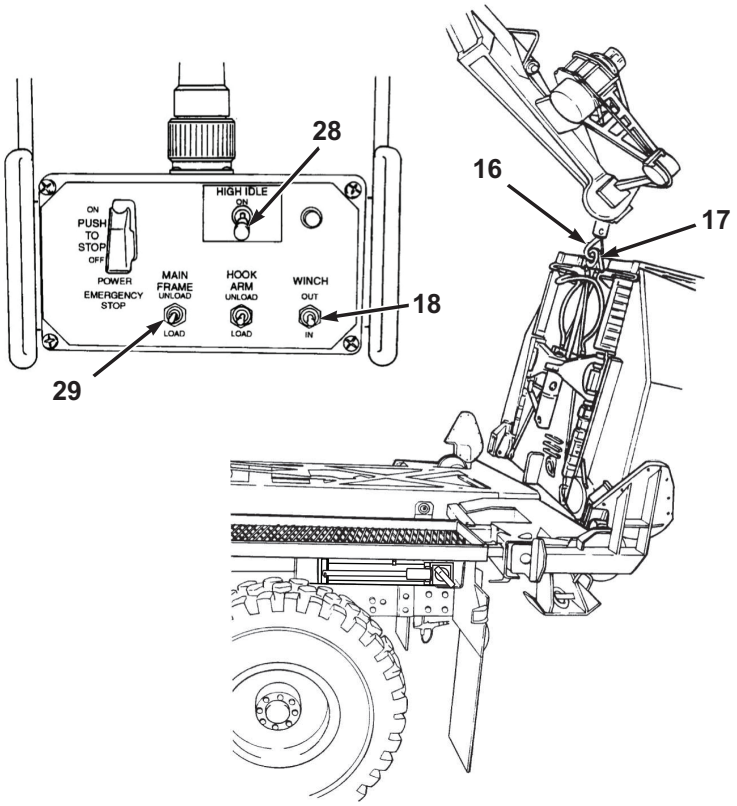


Figure 11. Lowering Bridge Bay to the Ground.

18. Set HIGH IDLE switch (Figure 11, Item 28) to OFF position.
19. Position WINCH switch (Figure 11, Item 18) to OUT until bridge bay is resting on the ground.

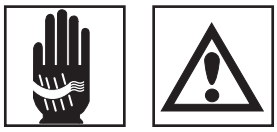
NOTE

Pull out PARKING BRAKE control when bridge bay is fully unloaded to the ground.

20. Position MAIN FRAME switch (Figure 11, Item 29) to UNLOAD to release tension on winch cable. Release when cable is slack enough so winch hook (Figure 11, Item 16) may be unhooked from bay lifting eye (Figure 11, Item 17).

OPERATION - Continued

WARNING



- Always wear protective gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in serious injury or death to personnel.
- Never operate winch with less than five wraps of cable on winch drum. Failure to comply may result in serious injury or death to personnel.
- Do not move the CBT until the bridge bay has been fully loaded into the water from the vehicle. Failure to comply may result in serious injury or death to personnel.

21. Remove winch cable hook (Figure 11, Item 16) from stationary bay lifting eye (Figure 11, Item 17).

CAUTION

Ensure hook holder is stowed in saddle. Failure to comply may result in damage to hook.

22. While assistant maintains tension on winch cable, position WINCH switch (Figure 12, Item 18) to IN. Release when hook holder (Figure 12, Item 30) is in saddle (Figure 12, Item 31).

OPERATION - Continued

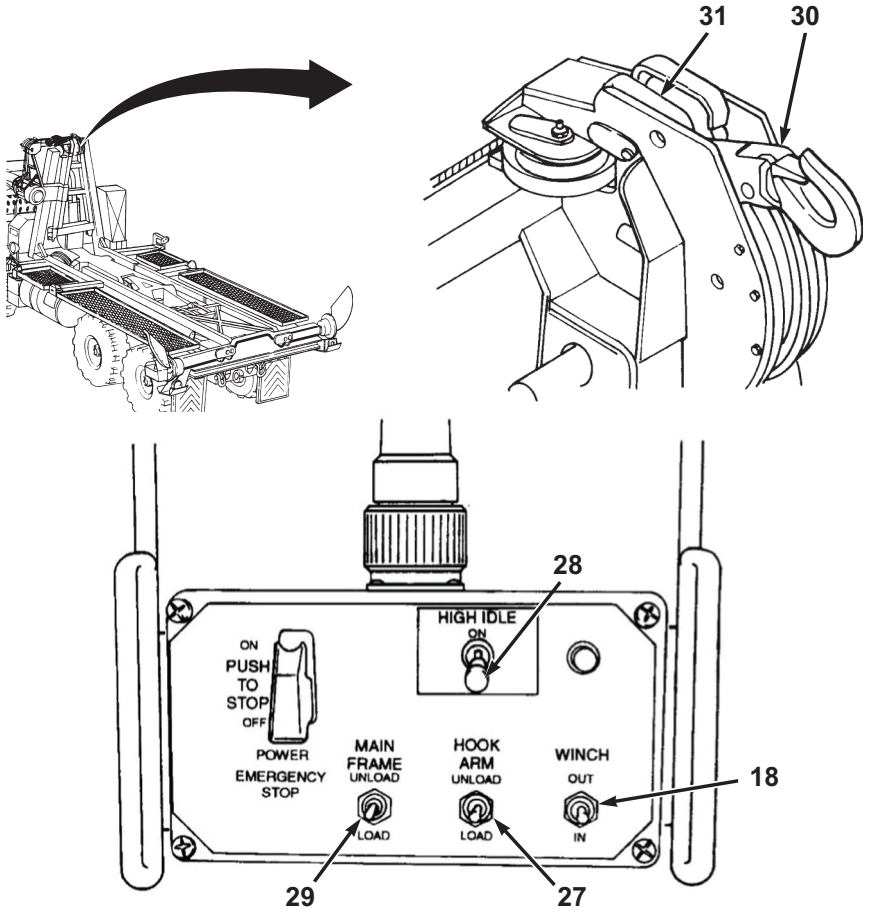


Figure 12. Stowing Winch Cable.

23. Set HIGH IDLE switch (Figure 12, Item 28) to ON position. Position MAIN FRAME switch (Figure 12, Item 29) to LOAD.

24. As main frame moves to stowed position, set HIGH IDLE switch (Figure 12, Item 28) to OFF.

WARNING



When NO TRANSIT indicator is illuminated, vehicle may be maneuvered in the immediate vicinity of the loading/unloading site. However, vehicle is unsafe for road travel. Do not perform open-road driving when NO TRANSIT indicator is illuminated. Failure to comply may result in serious injury or death to personnel and damage to equipment.

25. Position HOOK ARM switch (Figure 12, Item 27) to LOAD until LHS hook arm has been fully stowed.

OPERATION - Continued

CAUTION

While maneuvering vehicle in the immediate vicinity of the loading or unloading site, LHS MODE SELECT switch may be in any setting. However, LHS MODE SELECT switch must be set to OFF prior to road travel. Failure to comply may result in damage to equipment.

26. Set PTO ENGAGE switch (Figure 13, Item 14) to OFF position. Indicator light (Figure 13, Item 15) will go out.

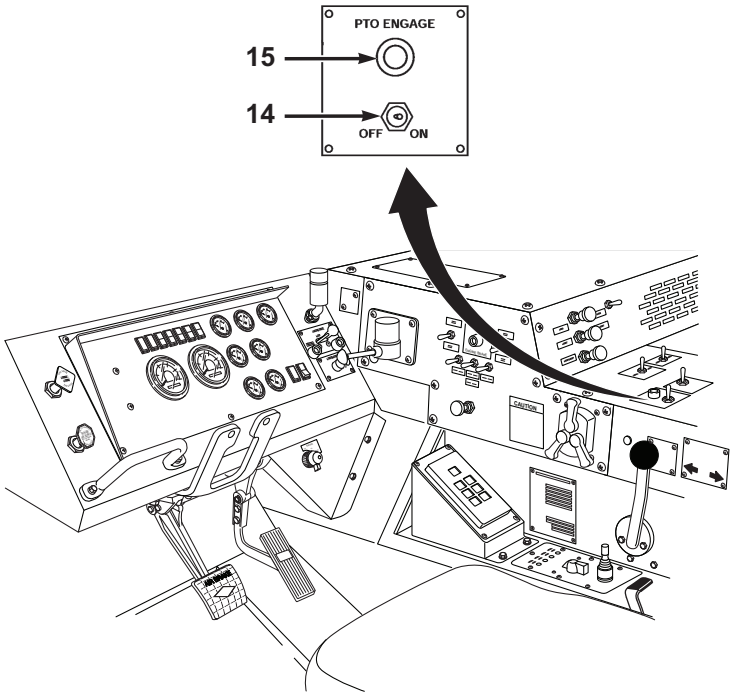


Figure 13. PTO Engage Switch.

OPERATION - Continued

27. Disconnect and stow remote control unit (Figure 14, Item 7):

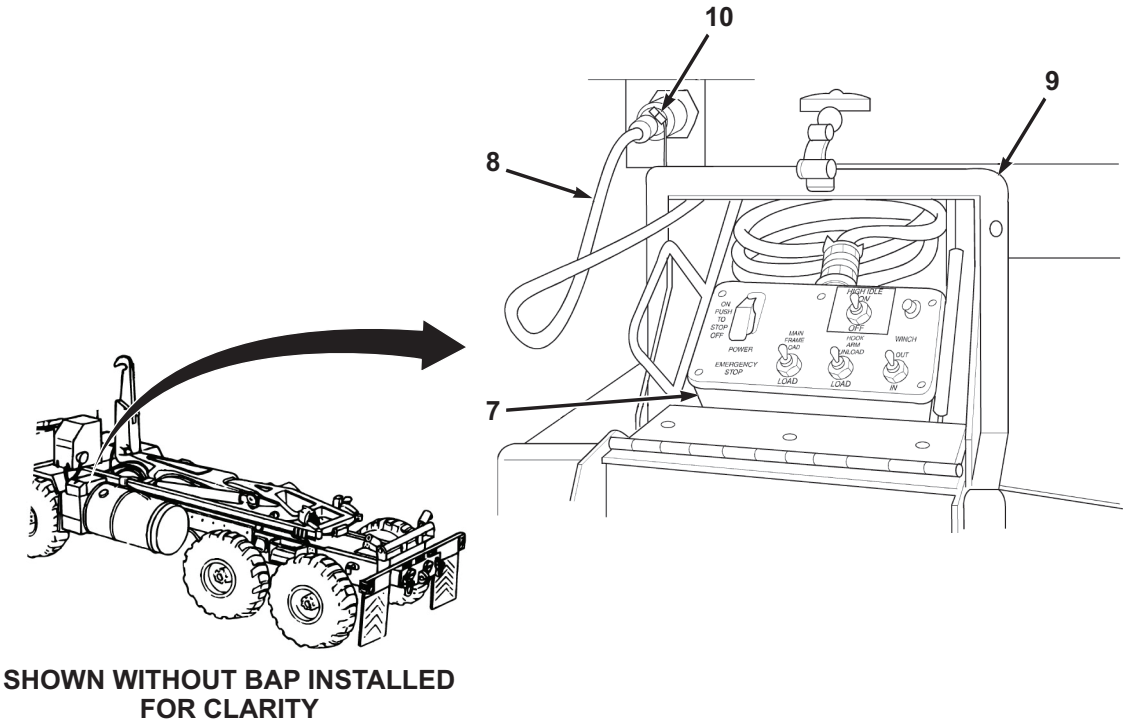


Figure 14. Stowing Remote Control Unit.

a. Disconnect cable (Figure 14, Item 8) from curb-side or road-side LHS receptacle (Figure 14, Item 10).

b. Coil and stow cable (Figure 14, Item 8) in rear of stowage box (Figure 14, Item 9).

c. Stow remote control unit (Figure 14, Item 7) in stowage box (Figure 14, Item 9).

WARNING



Keep hands and fingers clear of front pin lock assemblies when in the auto engaged and disengaged position. Failure to comply may result in serious injury or death to personnel.

28. Secure curb-side and road-side front pin lock assemblies (Figure 15, Item 20) to their inboard position:

OPERATION - Continued

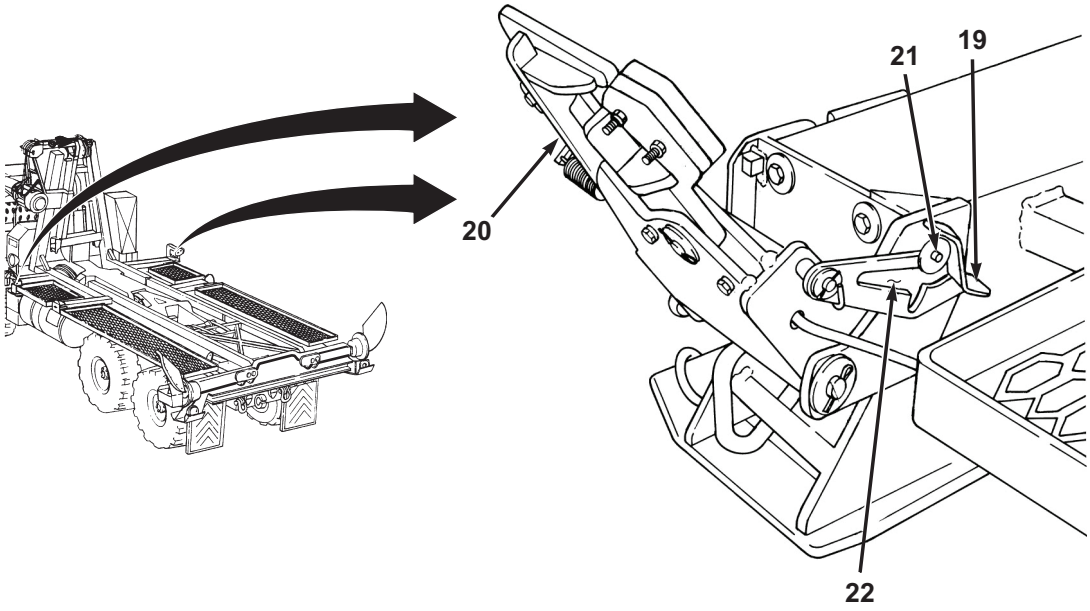


Figure 15. Setting Front Pin Locks.

a. Pull front pin lock assembly (Figure 15, Item 20) toward you while moving latch lever (Figure 15, Item 19) to center position.

b. Allow front pin lock assembly (Figure 15, Item 20) to slide inboard.

OPERATION - Continued

29. Secure curb-side and road-side rear guides (Figure 16, Item 23) to their stowed position:

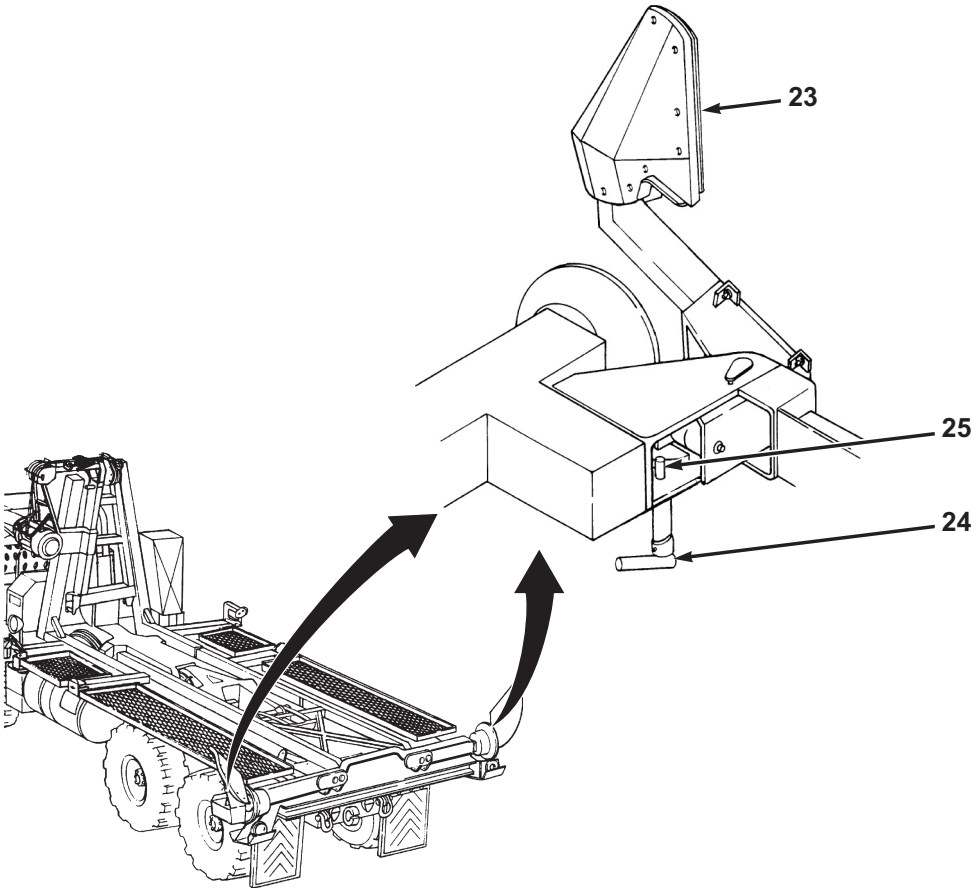


Figure 16. Stowing Rear Guides.

a. Rotate latch pin (Figure 16, Item 24) until rear guide (Figure 16, Item 23) disengages.

b. Swing rear guide (Figure 16, Item 23) to full inboard position, and ensure pin (Figure 16, Item 25) clicks into hole.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
BRIDGE BAY LAUNCHING INTRODUCTION

INITIAL SETUP:

Personnel Required
(2)

References
TM 5-5420-209-12 (WP 0076)
TM 5-5420-278-10 (WP 0076)

GENERAL

NOTE

Perform all operator's before-preventive maintenance (WP 0034) checks prior to operating the CBT and/or BAP. Ensure all checks and adjustments have been completed by field level maintenance.

1. This section contains instructions for safely operating the CBT and BAP under usual conditions.
2. Instructions for safely operating the vehicle in unusual conditions are covered in WP 0017 through WP 0022 of this manual.

PREPARATION FOR USE

WARNING



A site survey must be conducted to ensure site meets criteria cited in warnings below. Failure to complete a site survey may result in serious injury or death to personnel.

- Use a ground guide for all bridging operations. The vehicle may crash into an obstruction or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Prior to performing bridging operations, conduct a site survey to ensure that side-to-side slope does not exceed 8 percent (5 degrees), ground in the transport area is firm, area around vehicle is free of personnel and obstructions, and overhead clearance is at least 22 ft. 2 in. (6.7 m) above the loading area. Failure to conduct a site survey could cause the vehicle to slip, turn over, crash into an obstruction, or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Water velocity should not be greater than 5 ft. (1.5 m) per second. Refer to TM 5-5420-209-12 or TM 5-5420-278-10 for water velocity requirements for all launch conditions. Failure to comply may result in serious injury or death to personnel.

A site survey must be conducted to ensure the site meets the criteria cited in the warning above.

PREPARATION FOR USE - Continued

OPERATION

CAUTION

Water depth for fording should not exceed 4 feet (1.2 m) or damage to equipment could occur.

NOTE

- In case of emergency while the remote control is in use, push the emergency stop switch to shut down operation of the LHS.
- During all vehicle operations, the operator will drive and be responsible for the operation of the LHS cab control box. The assistant acts as a ground guide and will be responsible for directing the operator using hand signals, operating the remote control box and winch, and assisting the operator as needed.

1. **Launch Methods.** There are two recommended launch methods: controlled launch and free launch. The launch method depends on terrain, water conditions, and tactical requirements. The free launch method requires the least amount of time and is normally used. Water and bank conditions best suited for each type of launch are described below. For information on the operation of interior bay and ramp bay, refer to TM 5-5420-209-12 or TM 5-5420-278-10.
2. **Launch Conditions.** In addition to site survey conditions for normal transporter operations, the following specific conditions apply for bridge bay launching:
   a. Controlled Launch. (WP 0010) For a controlled launch, shore slope should be uniform, with a slope of not more than 20 percent. Water velocity should not be greater than 5 feet (1.5 m) per second. In swift water of about 6 feet (1.8 m) per second, a Y-shaped bridle is attached to the bridge bay. With a 20 percent slope, interior bay requires a water depth of at least 42 inches (1.0 m), with the top of back tire hub at the water line (whole hub in the water). Ramp bay requires a water depth of at least 50 inches (1.2 m), with the top of back tire rim at the water line (whole rim in the water). In addition, one travel latch on bridge bay must remain in the secured position when launching. The boat crew will install a lanyard to release latch after the bridge bay is in the water, and will open the bridge bay.
   b. Free Launch. (WP 0011) For a free launch, shore slope should be uniform, with a slope of not more than 20 percent. Water velocity should not be greater than 8 feet (2.44 m) per second. With a 20 percent slope, interior bay requires a water depth of at least 42 inches (106.7 cm), with the top of back tire hub at the water line (whole hub in the water). Ramp bay requires a water depth of at least 50 inches (127 cm), with the top of back tire rim at the water line (whole rim in the water).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CONTROLLED BRIDGE BAY LAUNCH

INITIAL SETUP:

Personnel Required
(2)

References
TM 5-5420-209-12 (WP 0076)
TM 5-5420-278-10 (WP 0076)

GENERAL

NOTE

Perform all operator's before-preventive maintenance checks (WP 0034) prior to operating the CBT and/or BAP. Ensure all checks and adjustments have been completed by field level maintenance.

1. This section contains instructions for safely operating the CBT and BAP under usual conditions.
2. Instructions for safely operating the vehicle in unusual conditions are covered in WP 0017 through WP 0022 of this manual.

PREPARATION FOR USE

WARNING



A site survey must be conducted to ensure site meets criteria cited in warnings below. Failure to complete a site survey may result in serious injury or death to personnel.

- Use a ground guide for all bridging operations. The vehicle may crash into an obstruction or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Prior to performing bridging operations, conduct a site survey to ensure that side-to-side slope does not exceed 8 percent (5 degrees), ground in the transport area is firm, area around vehicle is free of personnel and obstructions, and overhead clearance is at least 22 ft. 2 in. (6.7 m) above the loading area. Failure to conduct a site survey could cause the vehicle to slip, turn over, crash into an obstruction, or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Water velocity should not be greater than 5 ft. (1.5 m) per second. Refer to TM 5-5420-209-12 or TM 5-5420-278-10 for water velocity requirements for all launch conditions. Failure to comply may result in serious injury or death to personnel.

A site survey must be conducted to ensure the site meets the criteria cited in the warning above.

OPERATION

NOTE

- In case of emergency while the remote control unit is in use, push the emergency stop switch to shut down operation of the LHS.
- During all vehicle operations, the operator will drive and be responsible for the operation of the LHS cab control box. The assistant acts as a ground guide and will be responsible for directing the operator using hand signals, operating the remote control box and winch, and assisting the operator as needed.

1. Ensure launch conditions comply with established controlled launch conditions. Refer to Bridge Bay Launching Introduction. (WP 0009)
2. Ensure the BAP is locked to the vehicle and that BAP hold-down lock handles (Figure 1, Item 1) are pushed in.

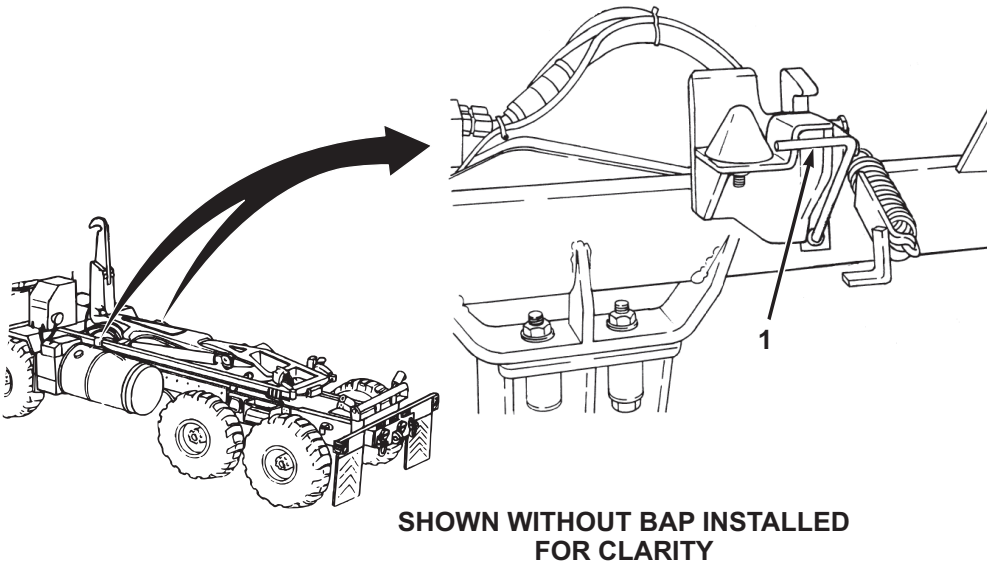


Figure 1. Check BAP Hold Down Locks.

3. Secure winch frame to LHS hook arm. Ensure two winch frame locking levers (Figure 2, Item 2) are in the down position.

OPERATION - Continued

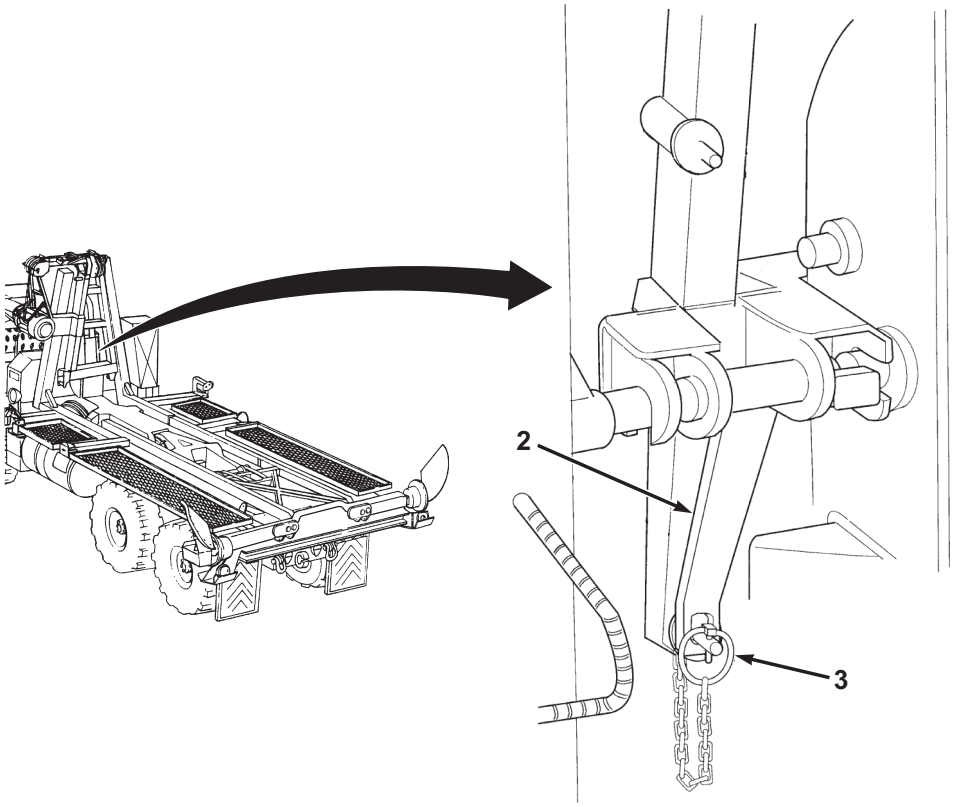


Figure 2. Lock Winch Frame to LHS Hook Arm.

4. If locking levers (Figure 2, Item 2) are not down:
   a. Remove lockpin (Figure 2, Item 3) from each locking lever (Figure 2, Item 2).
   b. Swing locking lever (Figure 2, Item 2) to the down position.
   c. Insert lockpin (Figure 2, Item 3) into locking lever (Figure 2, Item 2).

OPERATION - Continued

5. Connect two BAP winch hydraulic pressure hoses (Figure 3, Item 4) to male connector (Figure 3, Item 5) and female connector (Figure 3, Item 6) located on bottom of hook arm assembly.

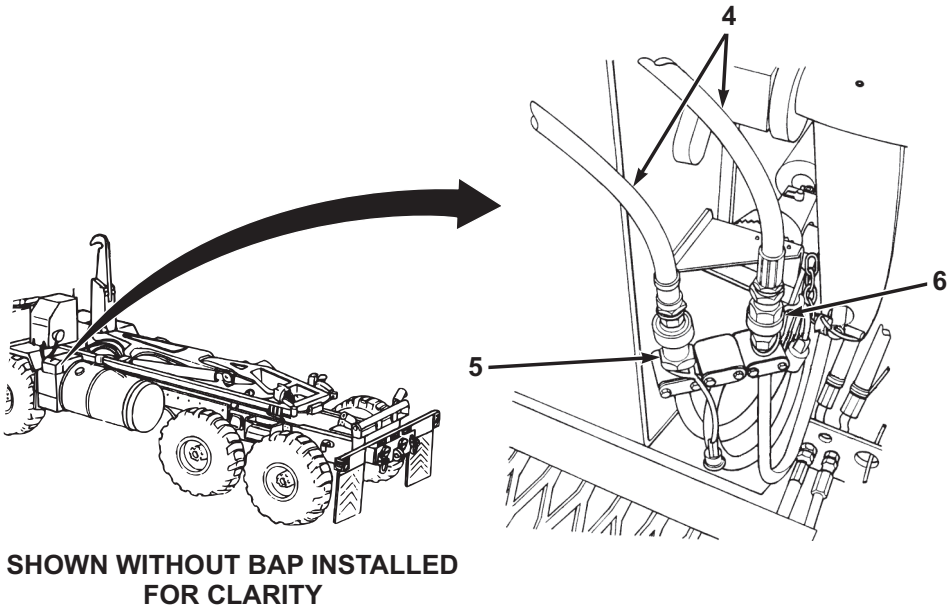


Figure 3. Connect Hydraulic Hoses.

6. Turn LHS MODE SELECT switch (Figure 4, Item 7) to AUTO.

OPERATION - Continued

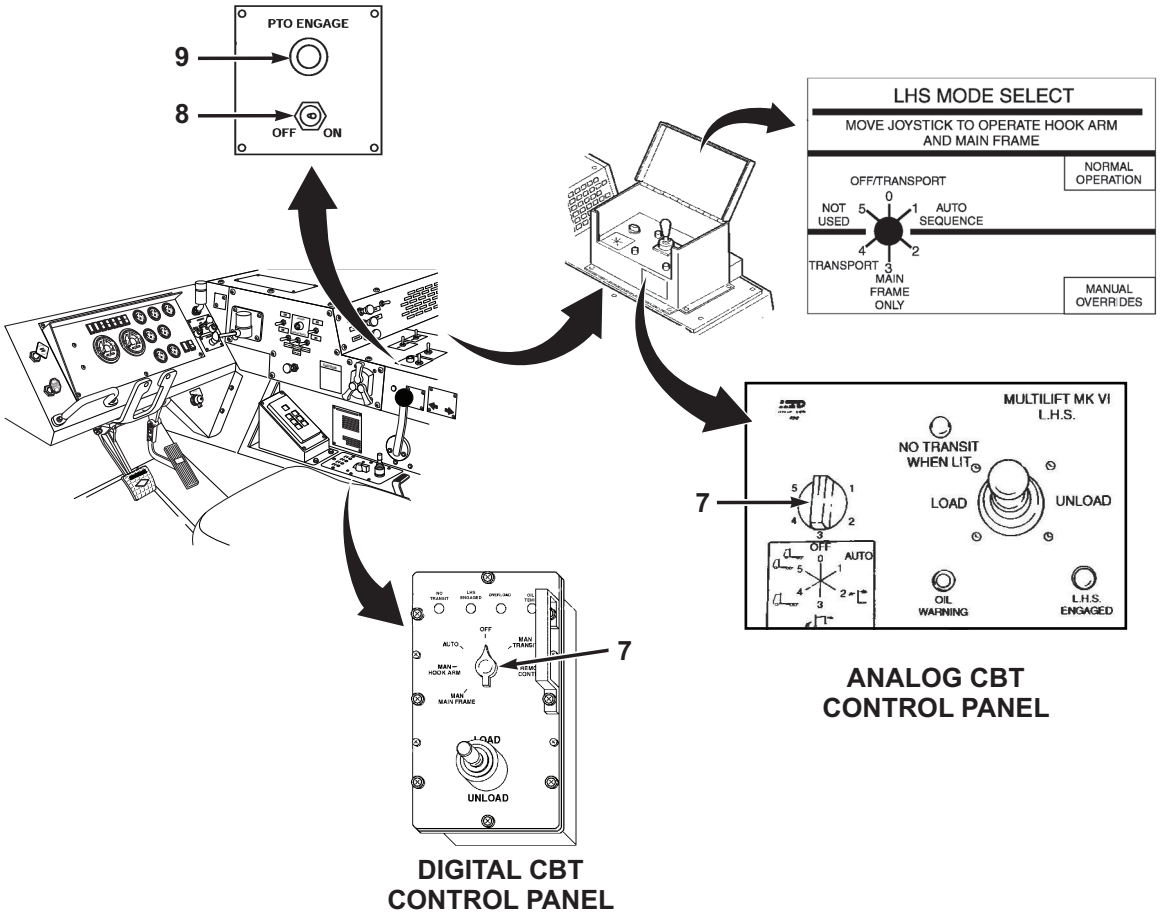


Figure 4. Cab LHS Controls.

CAUTION

- When selecting PTO ENGAGE switch, engine must be at low idle speed. Selection of PTO ENGAGE switch with HIGH IDLE switch on may result in sudden application of hydraulic pressure to the LHS. Failure to comply may result in damage to equipment.
- PTO ENGAGE switch must be positioned off before road transport, or severe equipment damage could result.

7. Set PTO ENGAGE switch (Figure 4, Item 8) to ON position. Indicator light (Figure 4, Item 9) will illuminate.

OPERATION - Continued

8. Install remote control unit (Figure 5, Item 10):

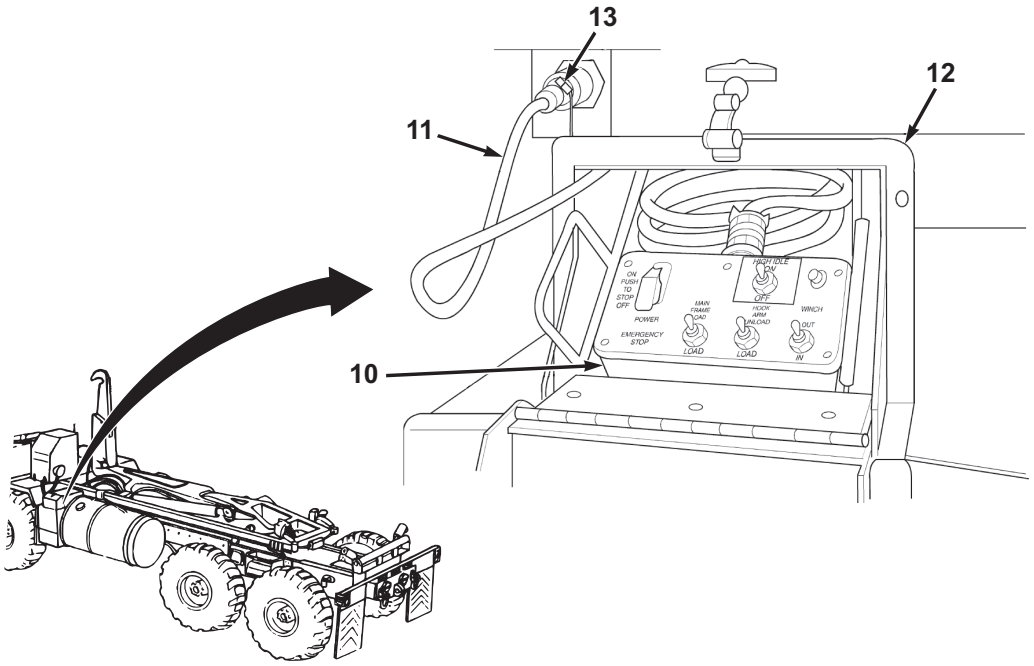


Figure 5. Connect Remote Control Unit.

   a. Remove remote control unit (Figure 5, Item 10) and cable (Figure 5, Item 11) from stowage box (Figure 5, Item 12).

   b. Connect cable (Figure 5, Item 11) to curb-side or road-side LHS receptacle (Figure 5, Item 13).

9. Ensure winch cable hook (Figure 6, Item 14) is securely attached to bay lifting eye (Figure 6, Item 15). Ensure winch cable hook (Figure 6, Item 14) is facing rear with throat up.

OPERATION - Continued

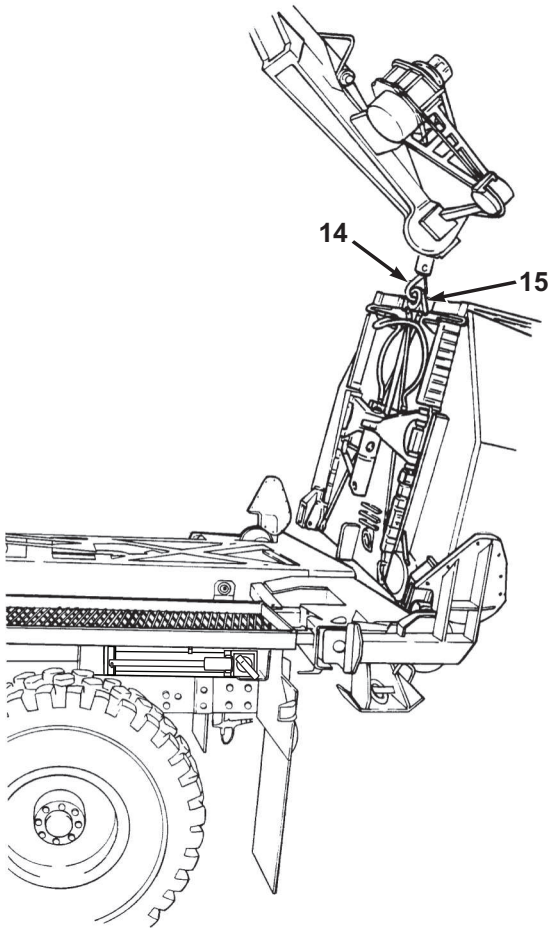


Figure 6. Check Winch Cable Hook.

OPERATION - Continued

WARNING



Ensure all appropriate bridge bay latches are hooked. Failure to comply may result in serious injury or death to personnel.

NOTE

- Interior bay has four foldlock latches, two at each end; ramp bay has two foldlock latches at one end only.
- Interior bay has two travel latches, one at each end; ramp bay has one travel latch at one end only.

10. Interior bay: release front and rear foldlock latches (Figure 7, Item 16) and travel latch (Figure 7, Item 17) at rear of bridge bay (Figure 7, Item 18).

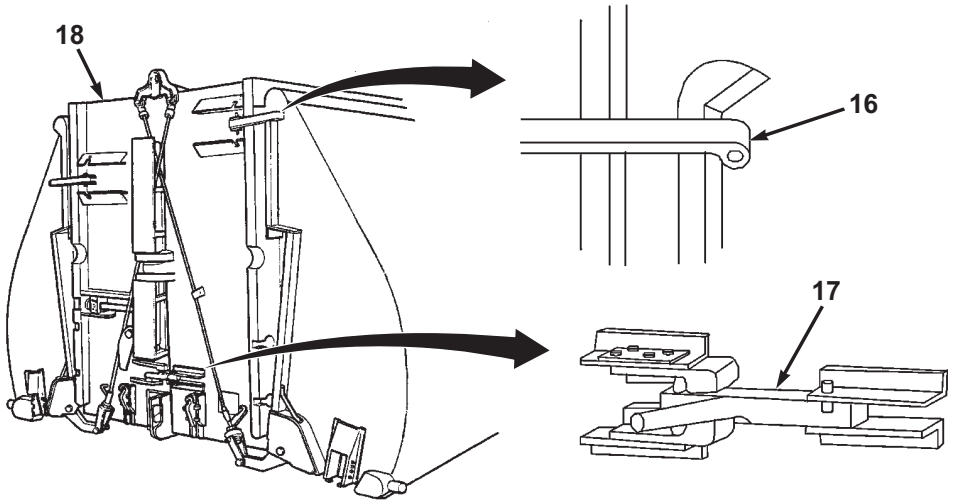


Figure 7. Release Bridge Bay Latches.

11. Ramp bay: release two foldlock latches (Figure 7, Item 16) at front of bridge bay (Figure 7, Item 18).

CAUTION

If BAP front pin lock assemblies cannot be unlocked, use remote controls to maneuver LHS hook arm to move the load slightly to free the lock. Failure to comply may result in damage to equipment.

12. Release curb-side and road-side BAP front pin lock assemblies (Figure 8, Item 19). Pull front pin lock assembly (Figure 8, Item 19) out while pushing latch lever pin (Figure 8, Item 20) down until it rests at top of vertical slot (Figure 8, Item 21).

OPERATION - Continued

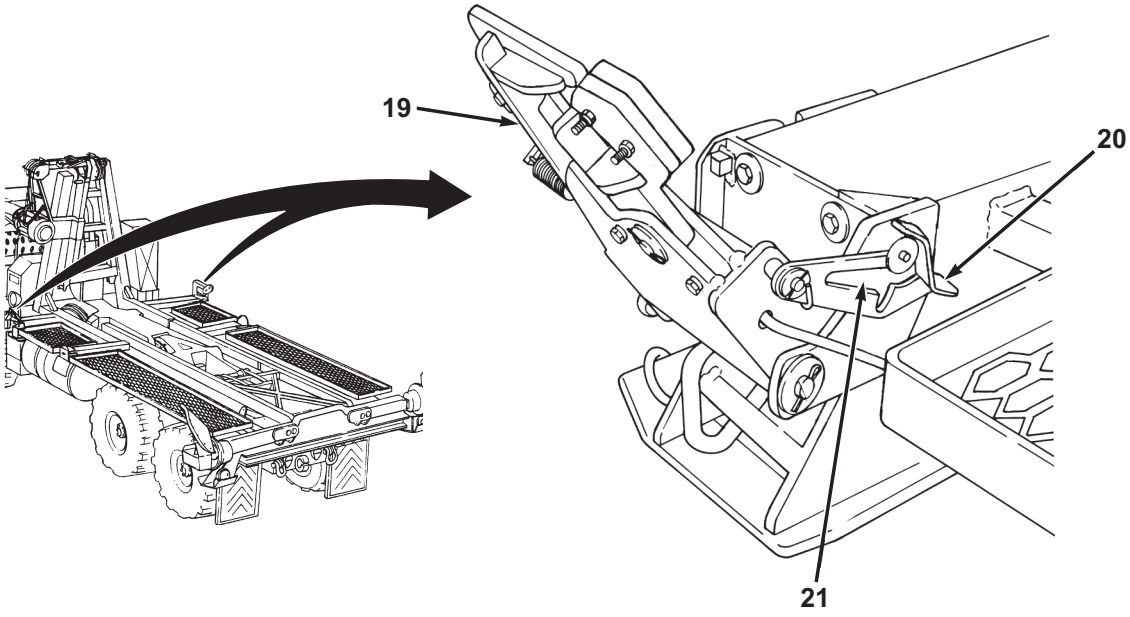


Figure 8. Release Front Pin Locks.

13. Position WINCH switch (Figure 9, Item 22) to IN and release when cable slack is removed.

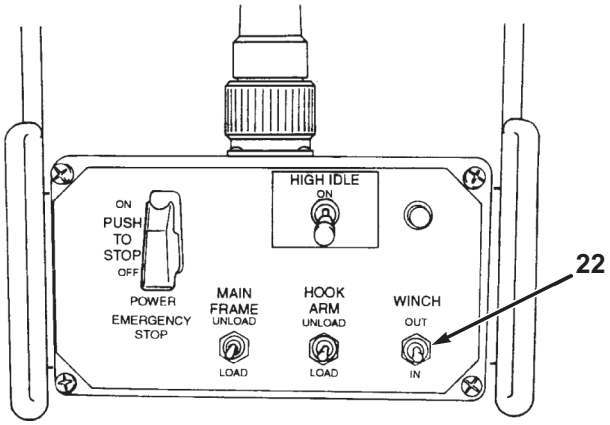


Figure 9. Remove Slack in Winch Cable.

OPERATION - Continued

WARNING



After releasing rear guides, only winch hook secures bridge bay to the BAP. Personnel must not mount the BAP and must stay clear of the area around rear of vehicle. The load could shift, release, or fall. Failure to comply may result in serious injury or death to personnel.

14. Set curb-side and road-side rear guides (Figure 10, Item 23) to fully open position:

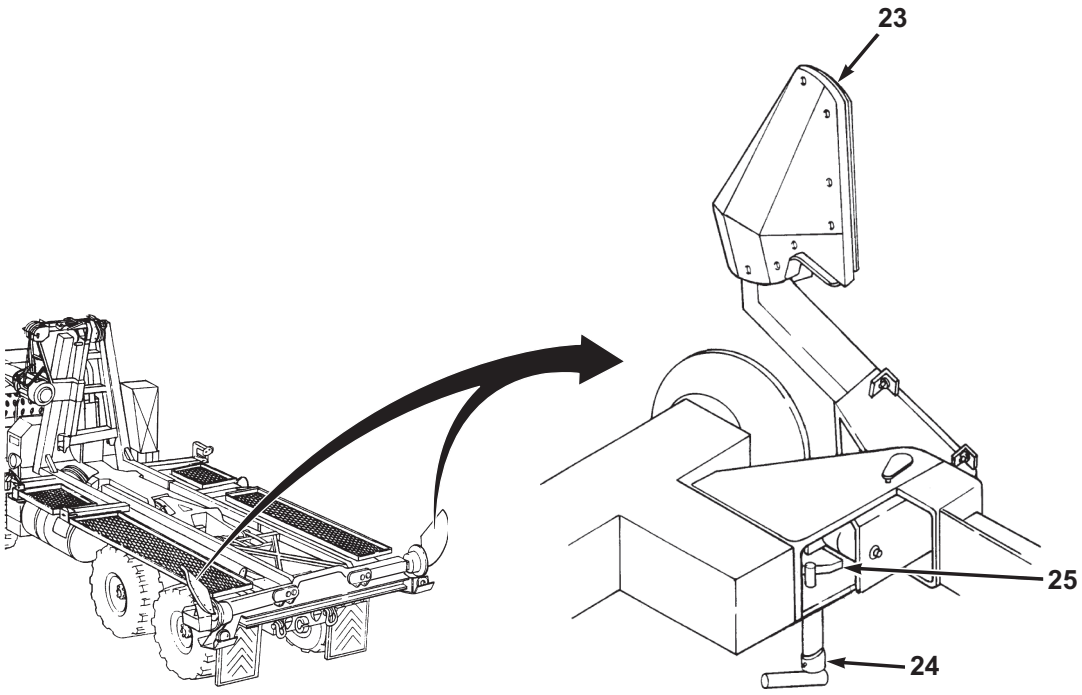


Figure 10. Open Rear Guides.

a. Rotate latch pin (Figure 10, Item 24) until rear guide (Figure 10, Item 23) disengages.

b. Swing rear guide (Figure 10, Item 23) until latch pin (Figure 10, Item 24) engages in rear of bay guide (Figure 10, Item 25).

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

15. Push in PARKING BRAKE control (Figure 11, Item 26).

OPERATION - Continued

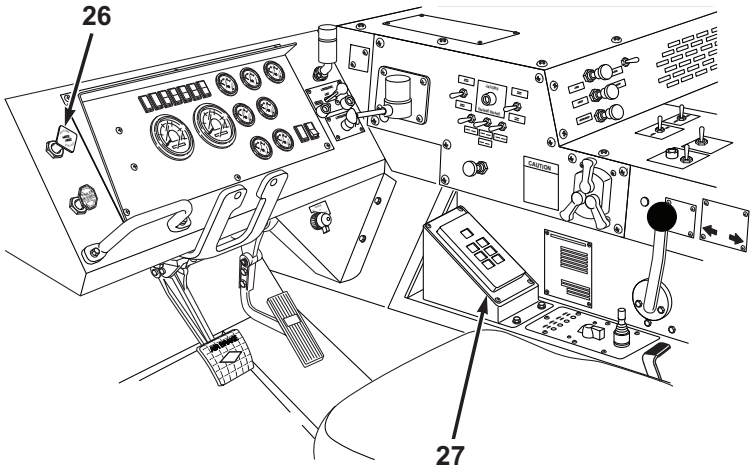


Figure 11. Brake and Transmission Controls.

NOTE

- Place CBT transfer case in low setting prior to backing vehicle into the water.
- Do not exceed fording depth of vehicle.
- If launching interior bay, proceed to Step (16). If this is a ramp bay, proceed to Step (17).

16. Back vehicle into the water and stop when top of back tire hub is at the water line (hub is in the water).
17. Back vehicle into the water and stop when top of back tire rim is at the water line (rim is in the water).

CAUTION

Before continuing operations and after entry of vehicle into the water, ensure PARKING BRAKE control is engaged and vehicle is motionless. Otherwise, parking brake may slip, allowing vehicle to roll into deeper water. Failure to comply may result in damage to equipment.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

18. Pull out PARKING BRAKE control (Figure 11, Item 26) and set transmission range selector (Figure 11, Item 27) to N (neutral).

OPERATION - Continued

19. Set HIGH IDLE switch (Figure 12, Item 28) to ON position.

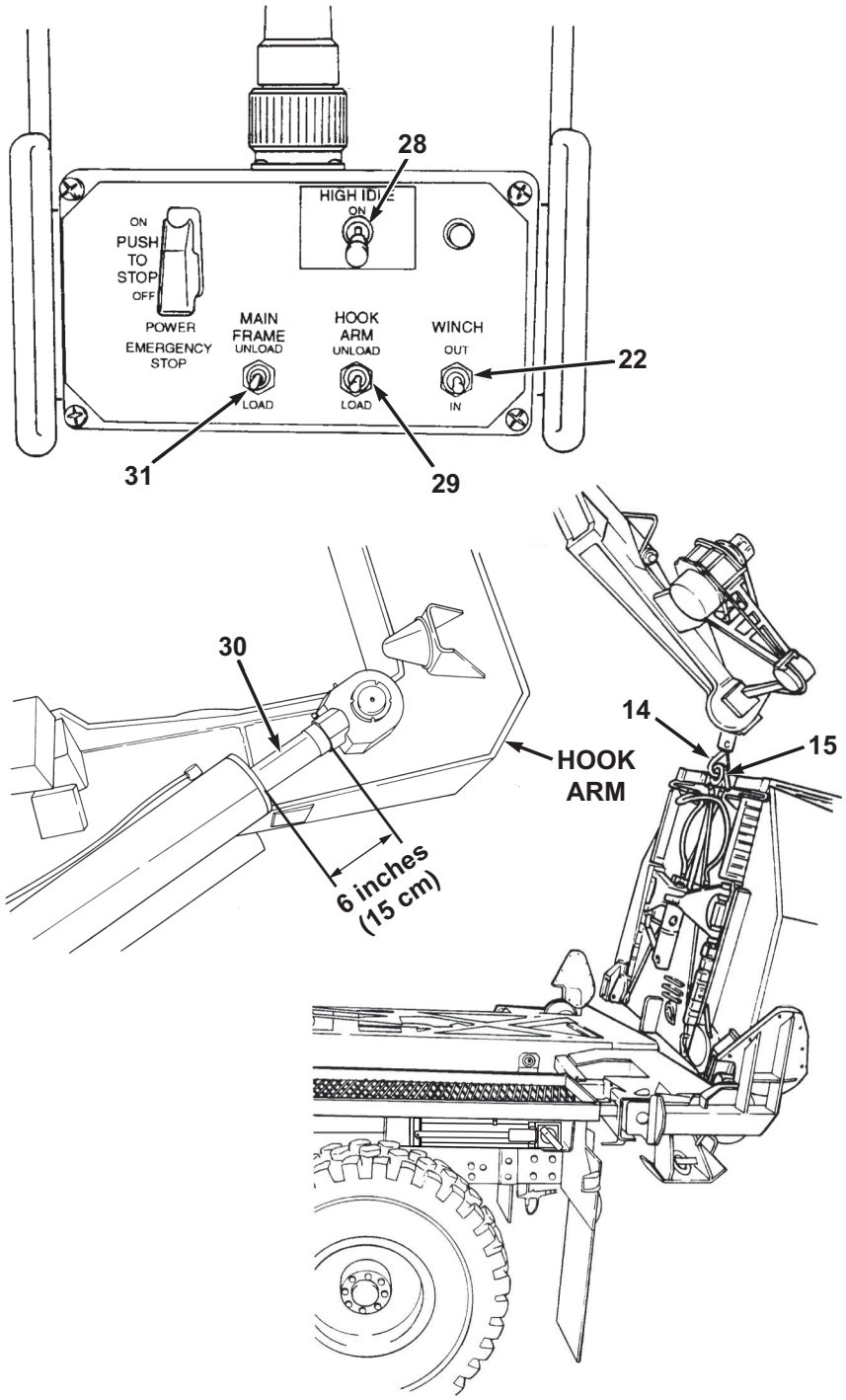


Figure 12. Launch Bridge Bay.

OPERATION - Continued

CAUTION

When moving LHS hook arm rearward, ensure winch hydraulic hose lines are not trapped or damaged. Failure to comply may result in damage to equipment.

20. Position HOOK ARM switch (Figure 12, Item 29) to UNLOAD and release when both hook arm cylinders (Figure 12, Item 30) are extended approximately 6 in. (15 cm).
21. Position MAIN FRAME switch (Figure 12, Item 31) to UNLOAD and release when bridge bay is clear of vehicle and the BAP.
22. Position WINCH switch (Figure 12, Item 22) to OUT and release when bridge bay floats.

NOTE

Refer to TM 5-5420-209-12 or TM 5-5420-278-10 for bridge bay operations.

23. Have boat crew move in toward bridge bay and install pin and lanyard in secured travel latch.
24. Position MAIN FRAME switch (Figure 12, Item 31) to UNLOAD and release when there is enough slack in cable to remove cable hook (Figure 12, Item 14) from bay lifting eye (Figure 12, Item 15).
25. Set HIGH IDLE switch (Figure 12, Item 28) to OFF position.
26. Have boat crewman remove winch cable hook (Figure 12, Item 14) from bay lifting eye (Figure 12, Item 15).

WARNING



After water operations, vehicle brakes will be wet and will not stop as quickly as usual. Care must be taken and extra distance allowed for slowing or stopping vehicle. Failure to comply may result in serious injury or death to personnel and damage to equipment.

27. Push in PARKING BRAKE control (Figure 13, Item 26) and drive vehicle forward until clear of water. Stop vehicle.

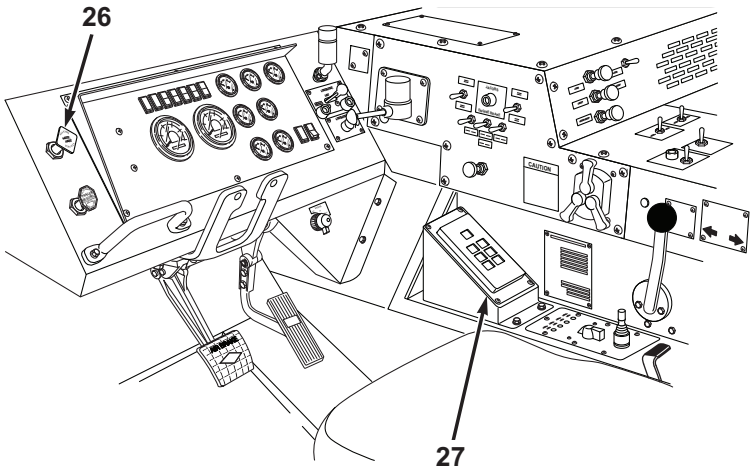


Figure 13. Brake and Transmission Controls.

28. Set transmission range selector (Figure 13, Item 27) to neutral.

OPERATION - Continued

29. Pull out PARKING BRAKE control (Figure 13, Item 26).
30. Have boat crew move away from bridge bay and pull lanyard to unfold bridge bay.
31. Set HIGH IDLE switch (Figure 14, Item 28) to ON position.

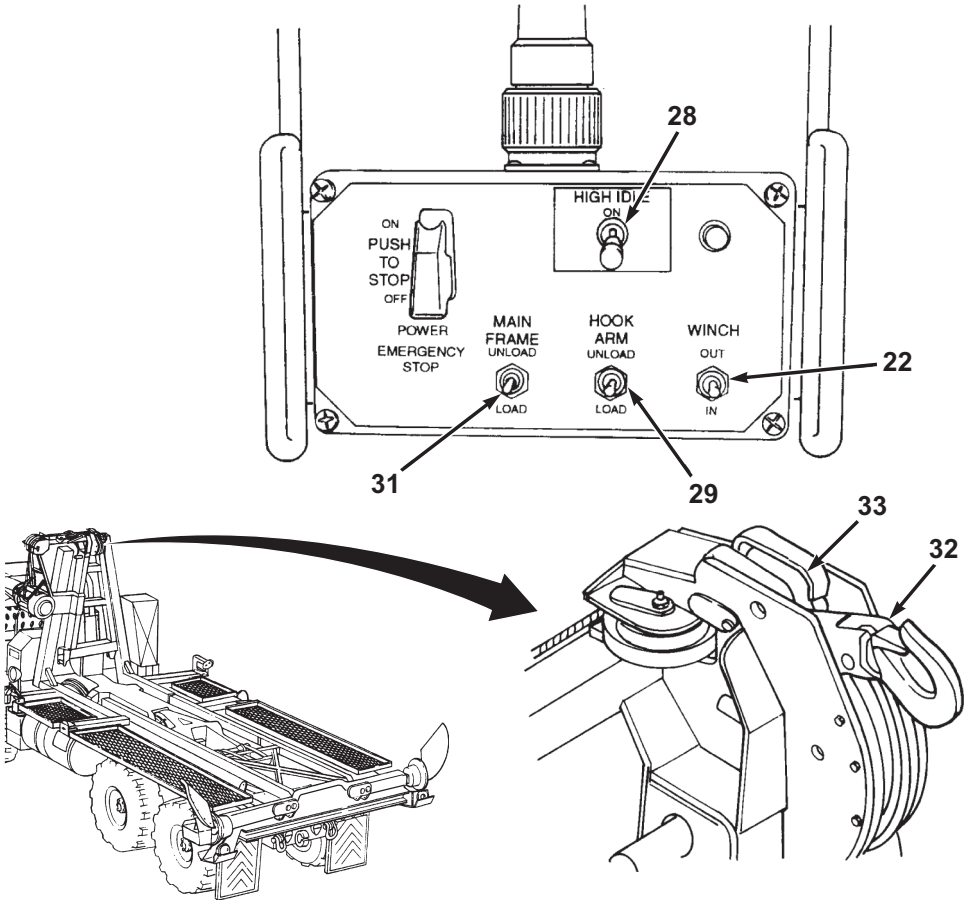


Figure 14. Stow Winch Cable Hook.

CAUTION

Ensure hook block is stowed in saddle. Failure to comply may result in damage to hook.

32. While maintaining tension on winch cable, position WINCH switch (Figure 14, Item 22) to IN and release when hook block (Figure 14, Item 32) is in saddle (Figure 14, Item 33).
33. Position MAIN FRAME switch (Figure 14, Item 31) to LOAD.
34. As main frame moves into stowed position, position HIGH IDLE switch (Figure 14, Item 28) to OFF.

OPERATION - Continued

WARNING

Failure to re-stow the hook arm could result in loss of lubrication to the winch. Failure to comply may result in serious injury or death to personnel and damage to equipment.

35. Position HOOK ARM switch (Figure 14, Item 29) to LOAD and release when hook arm is fully stowed.

CAUTION

While maneuvering vehicle in the immediate vicinity of the loading or unloading site, LHS MODE SELECT switch may be in any setting. However, LHS MODE SELECT switch must be set to OFF prior to road travel. Failure to comply may result in damage to equipment.

36. Turn LHS MODE switch (Figure 15, Item 7) to OFF.

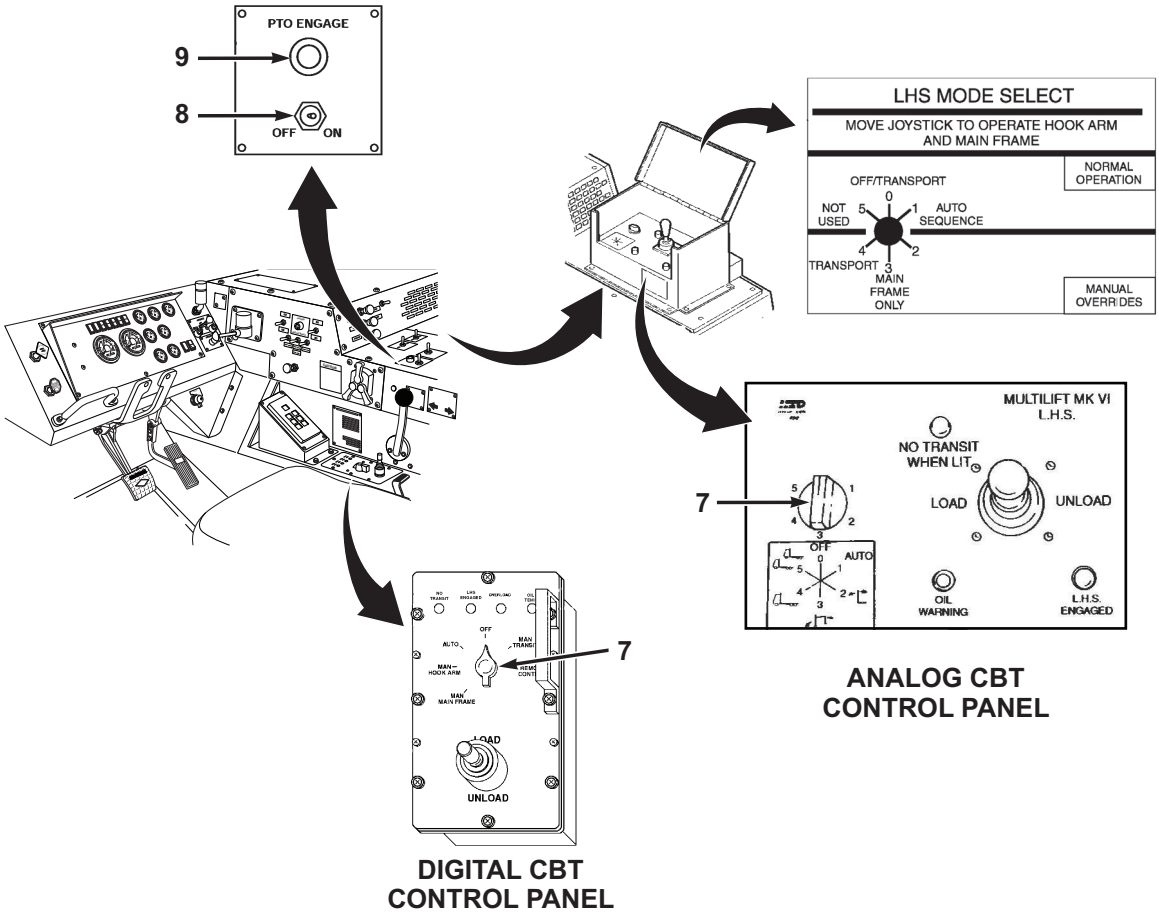


Figure 15. Cab LHS Controls.

37. Set PTO ENGAGE switch (Figure 15, Item 8) to OFF position. Indicator light (Figure 15, Item 9) will go out.

OPERATION - Continued

38. Disconnect and stow remote control unit (Figure 16, Item 10):

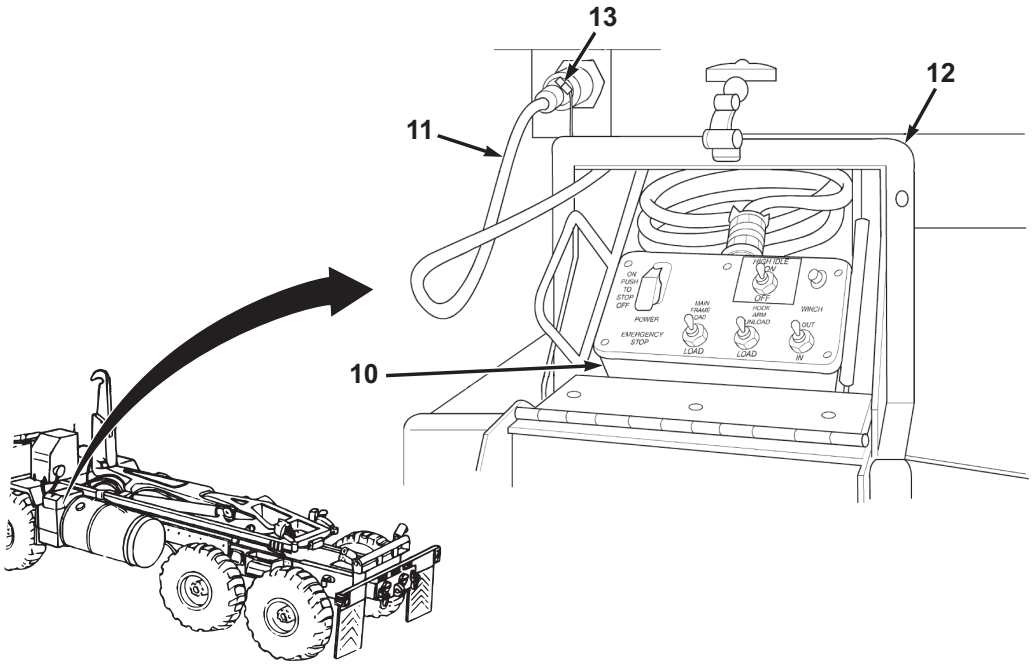


Figure 16. Stow Remote Control Unit.

a. Disconnect cable (Figure 16, Item 11) from LHS receptacle (Figure 16, Item 13).

b. Coil and stow cable (Figure 16, Item 11) in rear of stowage box (Figure 16, Item 12).

c. Stow remote control unit (Figure 16, Item 10) in stowage box (Figure 16, Item 12).

39. Secure curb-side and road-side front pin lock assemblies (Figure 17, Item 19) to their inboard position.

OPERATION - Continued

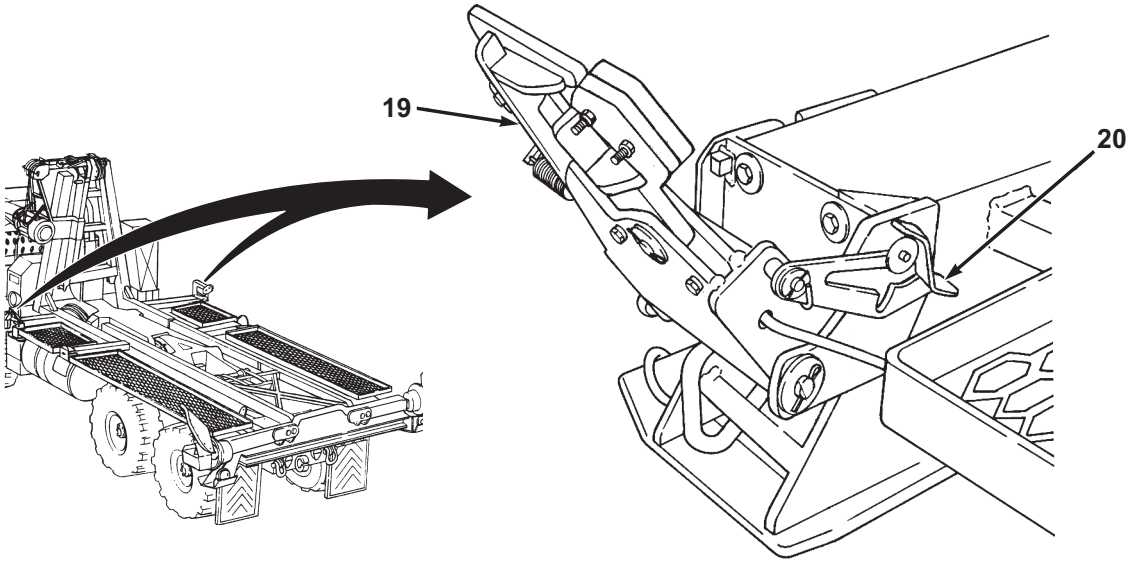


Figure 17. Secure Front Pin Locks.

40. Pull front pin lock assembly (Figure 17, Item 19) to release latch lever (Figure 17, Item 20), then let lock move in.

41. Secure curb-side and road-side rear guides (Figure 18, Item 23):

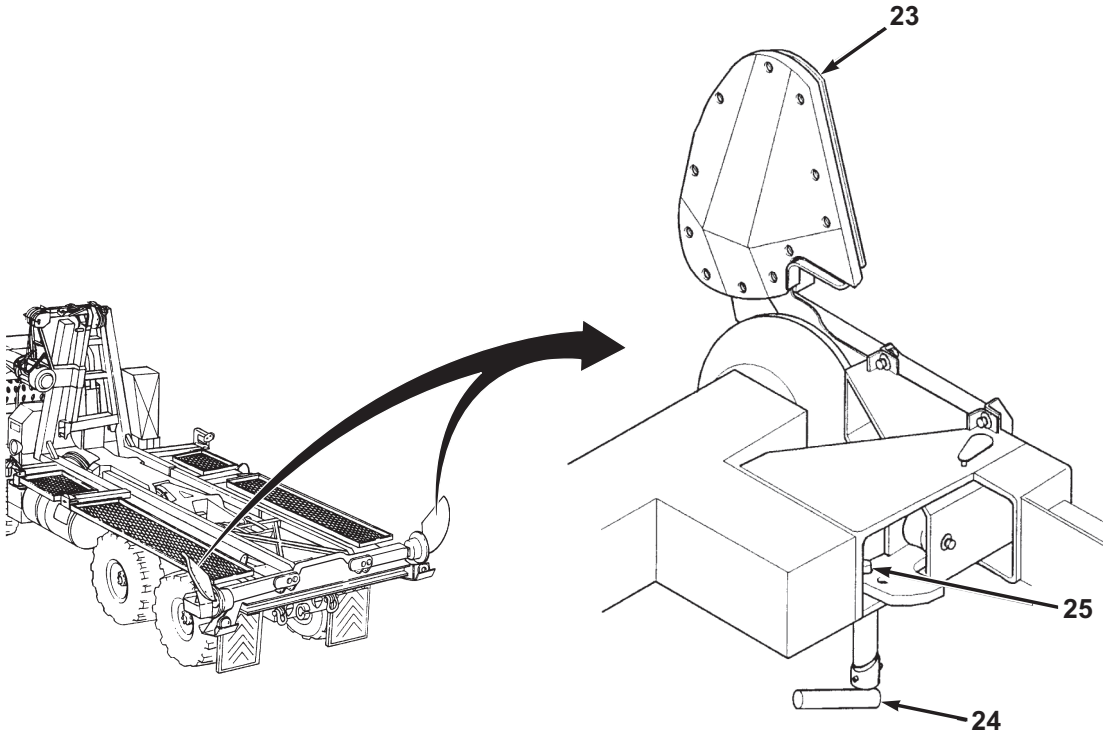


Figure 18. Secure Rear Guides.

a. Rotate latch pin (Figure 18, Item 24) until rear guide (Figure 18, Item 23) disengages.

OPERATION - Continued

b. Swing rear guide (Figure 18, Item 23) to full inboard position, until latch pin (Figure 18, Item 24) engages in rear of bay guide (Figure 18, Item 25).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
BRIDGE BAY FREE LAUNCH

INITIAL SETUP:

Personnel Required
(2)

References
TM 5-5420-209-12 (WP 0076)

References (cont.)
TM 5-5420-278-10 (WP 0076)
TM 9-2320-425-10 (WP 0076)
TM 9-2320-435-10 (WP 0076)

GENERAL

NOTE

Perform all operator's before-preventive maintenance checks (WP 0034) prior to operating the CBT and/or BAP. Ensure all checks and adjustments have been completed by field level maintenance.

1. This section contains instructions for safely operating the CBT and BAP under usual conditions.
2. Instructions for safely operating the vehicle in unusual conditions are covered in WP 0017 through WP 0022 of this manual.

PREPARATION FOR USE

WARNING



A site survey must be conducted to ensure site meets criteria cited in warnings below. Failure to complete a site survey may result in serious injury or death to personnel.

- Use a ground guide for all bridging operations. The vehicle may crash into an obstruction or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Prior to performing bridging operations, conduct a site survey to ensure that side-to-side slope does not exceed 8 percent (5 degrees), ground in the transport area is firm, area around vehicle is free of personnel and obstructions, and overhead clearance is at least 22 ft. 2 in. (6.7 m) above the loading area. Failure to conduct a site survey could cause the vehicle to slip, turn over, crash into an obstruction, or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Water velocity should not be greater than 5 ft. (1.5 m) per second. Refer to TM 5-5420-209-12 or TM 5-5420-278-10 for water velocity requirements for all launch conditions. Failure to comply may result in serious injury or death to personnel.

A site survey must be conducted to ensure the site meets the criteria cited in the warning above.

OPERATION

NOTE

- In case of emergency while the remote control unit is in use, push the emergency stop switch to shut down operation of the LHS.
- During all vehicle operations, the operator will drive and be responsible for the operation of the LHS cab control box. The assistant acts as a ground guide and will be responsible for directing the operator using hand signals, operating the remote control box and winch, and assisting the operator as needed.

1. Ensure conditions are safe for free bridge bay launch. Refer to Bridge Bay Launching Introduction. (WP 0009)
2. Back up vehicle to within 15 ft. of water. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

3. Pull out PARKING BRAKE control (Figure 1, Item 1).

OPERATION - Continued

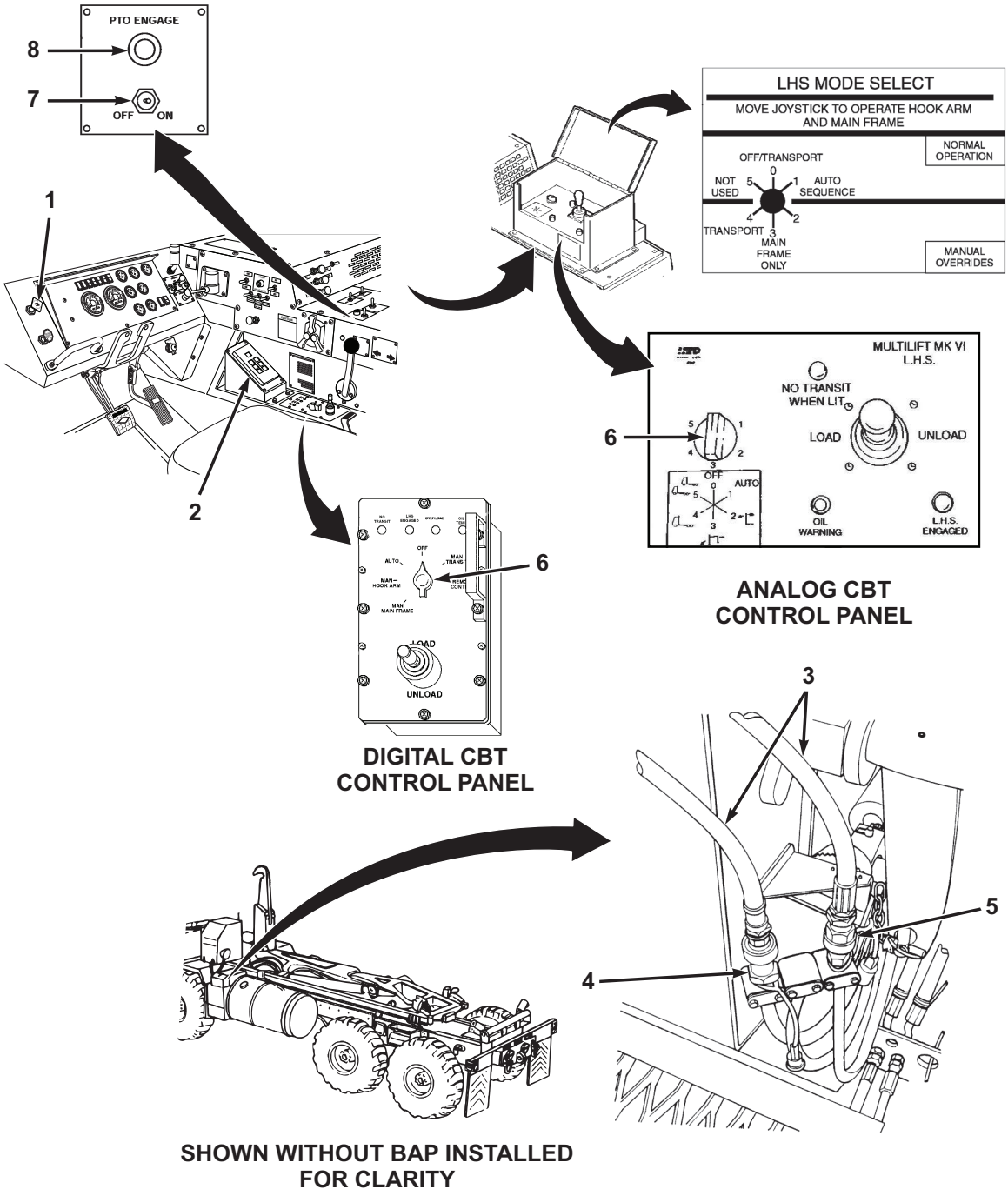


Figure 1. Cab LHS Controls.

4. Set transmission range selector (Figure 1, Item 2) to N (neutral).
5. Connect two winch pressure lines (Figure 1, Item 3) to male connector (Figure 1, Item 4) and female connector (Figure 1, Item 5) located on bottom of hook arm assembly.
6. Turn LHS MODE SELECT switch (Figure 1, Item 6) to AUTO.

OPERATION - Continued

CAUTION

- Do not set PTO ENGAGE switch to ON with HIGH IDLE switch ON. Engaging the PTO with HIGH IDLE switch ON may result in sudden application of hydraulic pressure to the LHS. Failure to comply may result in damage to equipment.
- PTO ENGAGE switch must be positioned OFF before road transport, or severe equipment damage could result.

7. Set PTO ENGAGE switch (Figure 1, Item 7) to ON position. Indicator light (Figure 1, Item 8) will illuminate.
8. Ensure that curb-side and road-side front pin lock assemblies (Figure 2, Item 9) are engaged onto bay pins (Figure 2, Item 10).

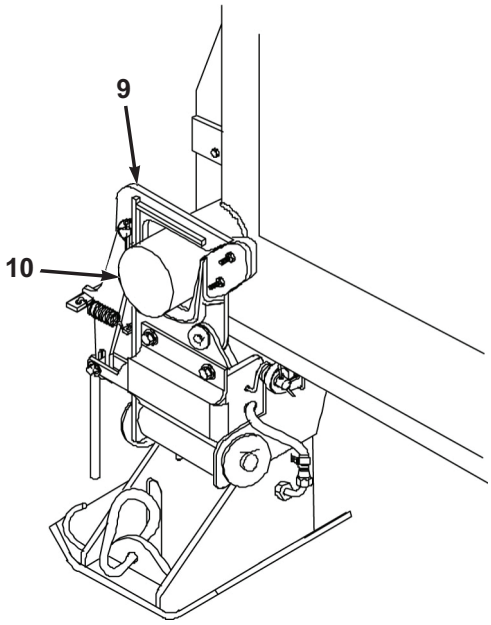
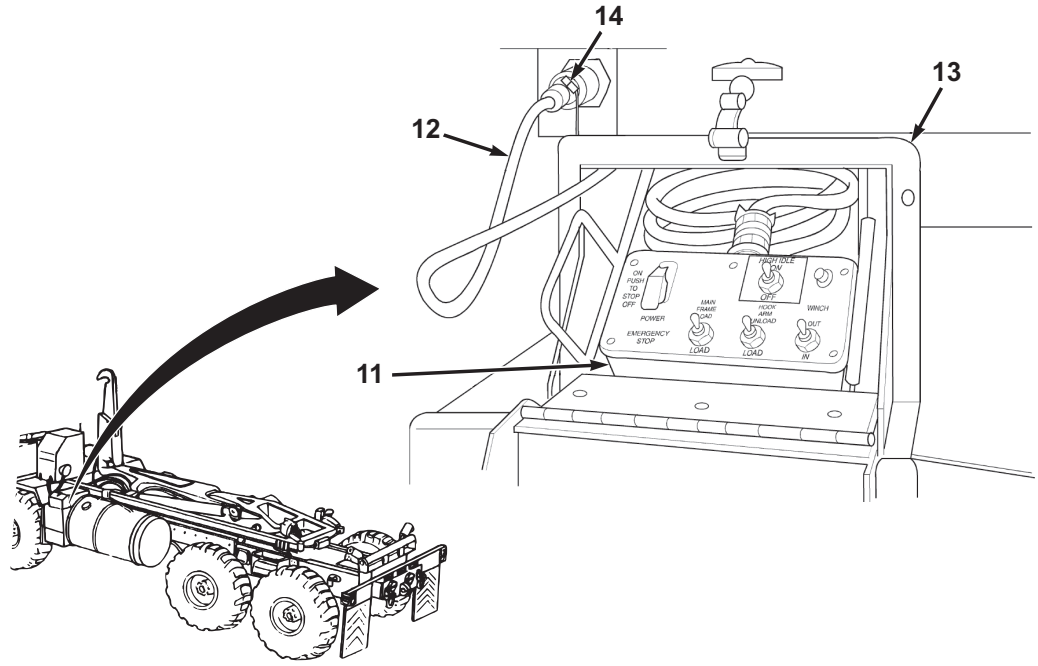


Figure 2. Check Front Pin Locks.

9. Install remote control unit (Figure 3, Item 11):

OPERATION - Continued



SHOWN WITHOUT BAP INSTALLED FOR CLARITY

Figure 3. Connect Remote Control Unit.

a. Remove remote control unit (Figure 3, Item 11) and cable (Figure 3, Item 12) from stowage box (Figure 3, Item 13).

b. Connect cable (Figure 3, Item 12) to curb-side or road-side LHS receptacle (Figure 3, Item 14).

OPERATION - Continued

NOTE

Ensure air release valve lever safety pin is engaged through release lever.

10. Attach lanyard (Figure 4, Item 15) to front bridge lock air release valve lever (Figure 4, Item 16).

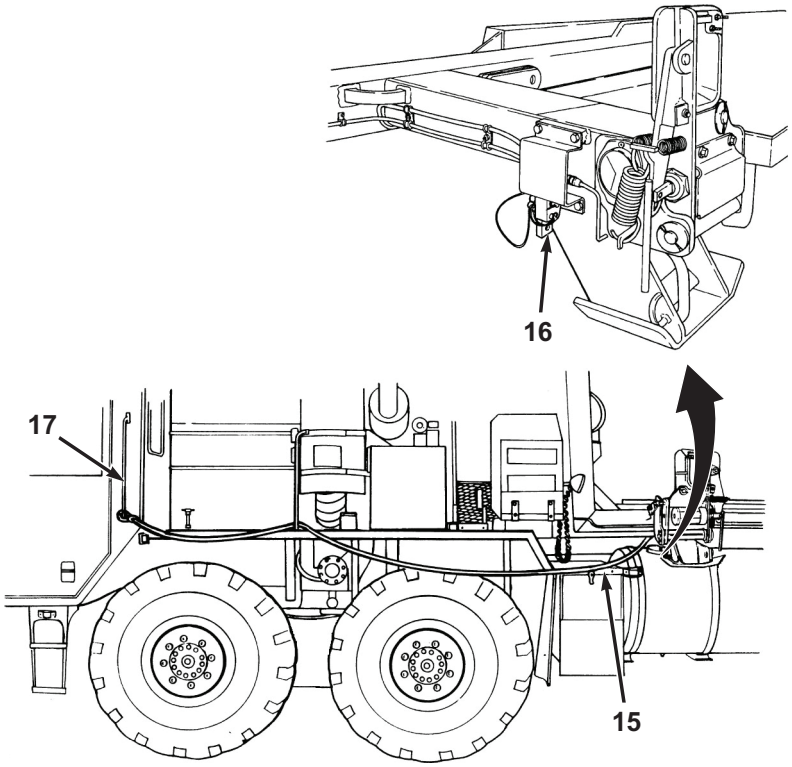


Figure 4. Attach Lanyard to Air Release Valve.

11. Run lanyard (Figure 4, Item 15) forward and attach to vehicle handgrip (Figure 4, Item 17).

12. Remove air hose from stowage connector (Figure 5, Item 18) (road-side of the BAP) and connect to vehicle tire inflation air connector (Figure 5, Item 19).

OPERATION - Continued

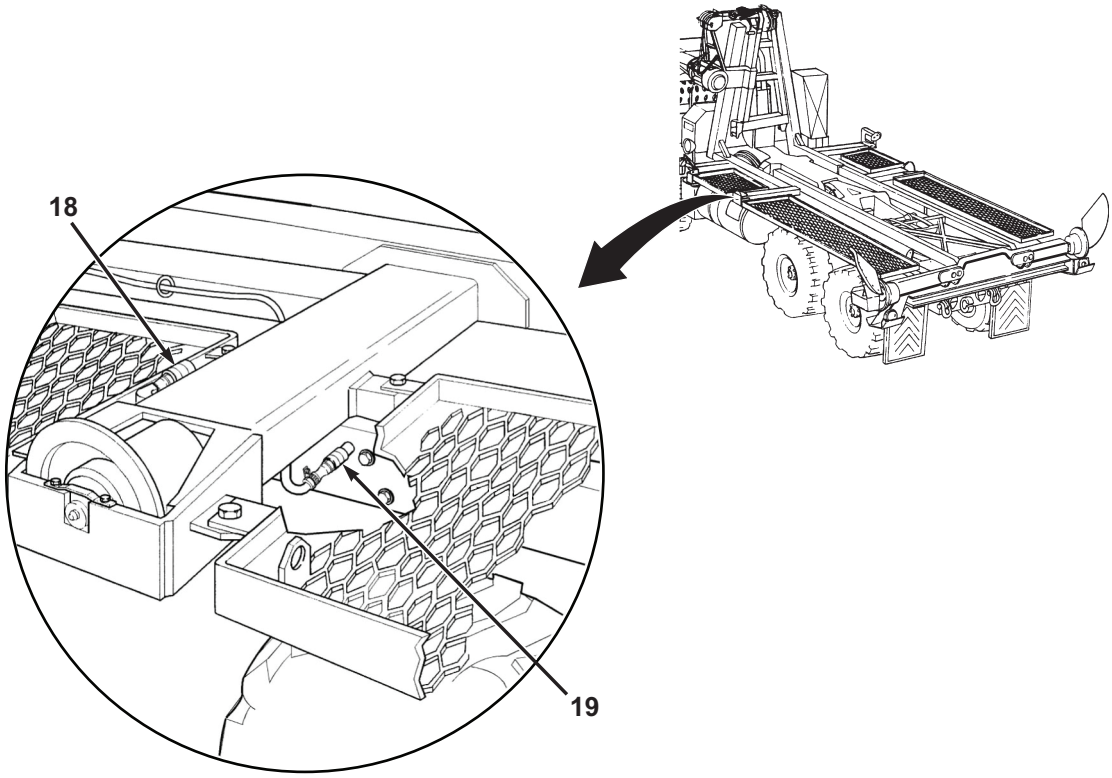


Figure 5. Connect Air Hose.

OPERATION - Continued

13. Set curb-side and road-side rear guides (Figure 6, Item 20) in the disengage position:

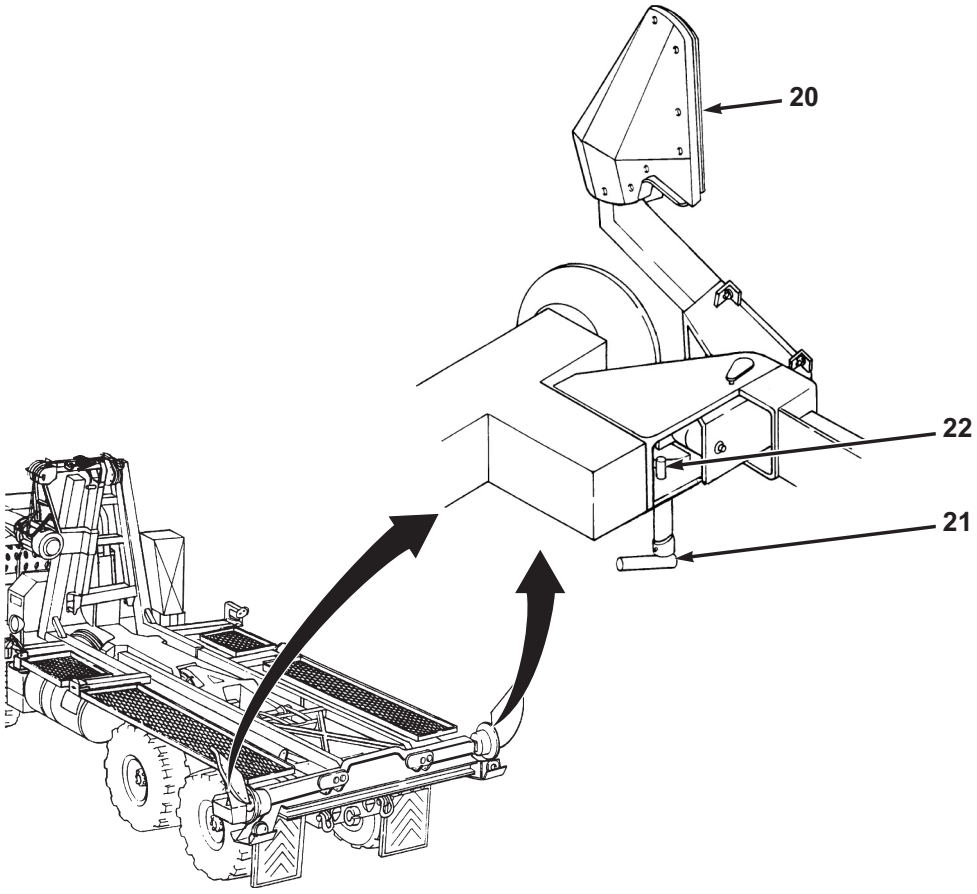


Figure 6. Position Rear Guides.

a. Rotate latch pin (Figure 6, Item 21) until rear guide (Figure 6, Item 20) disengages.

b. Swing rear guide (Figure 6, Item 20) to fully open position, and ensure pin (Figure 6, Item 22) engages rear guide (Figure 6, Item 20).

14. For ramp bays, raise center roller (Figure 7, Item 23):

OPERATION - Continued

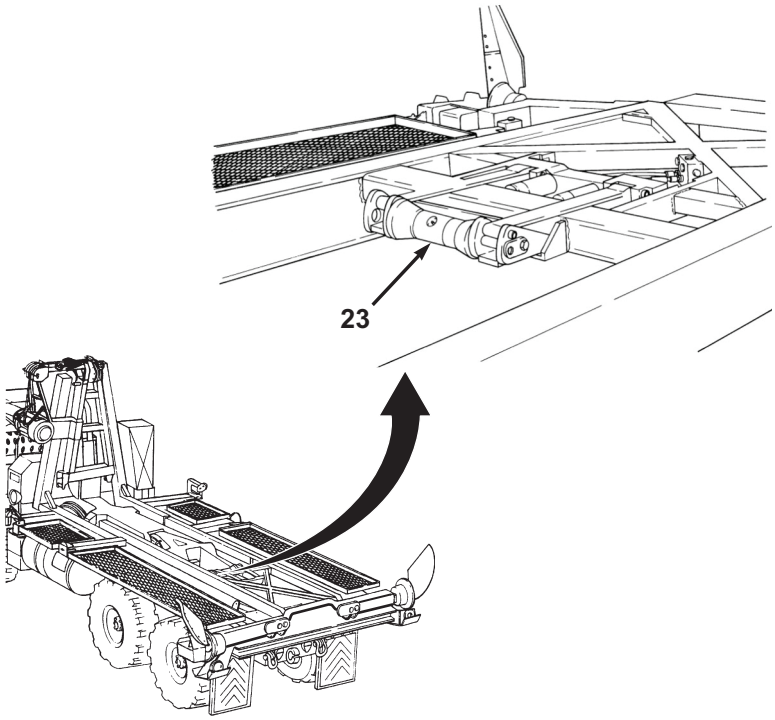


Figure 7. Center Roller Location.

OPERATION - Continued

a. Place hand pump selector valve lever (Figure 8, Item 24) in center roller up position.

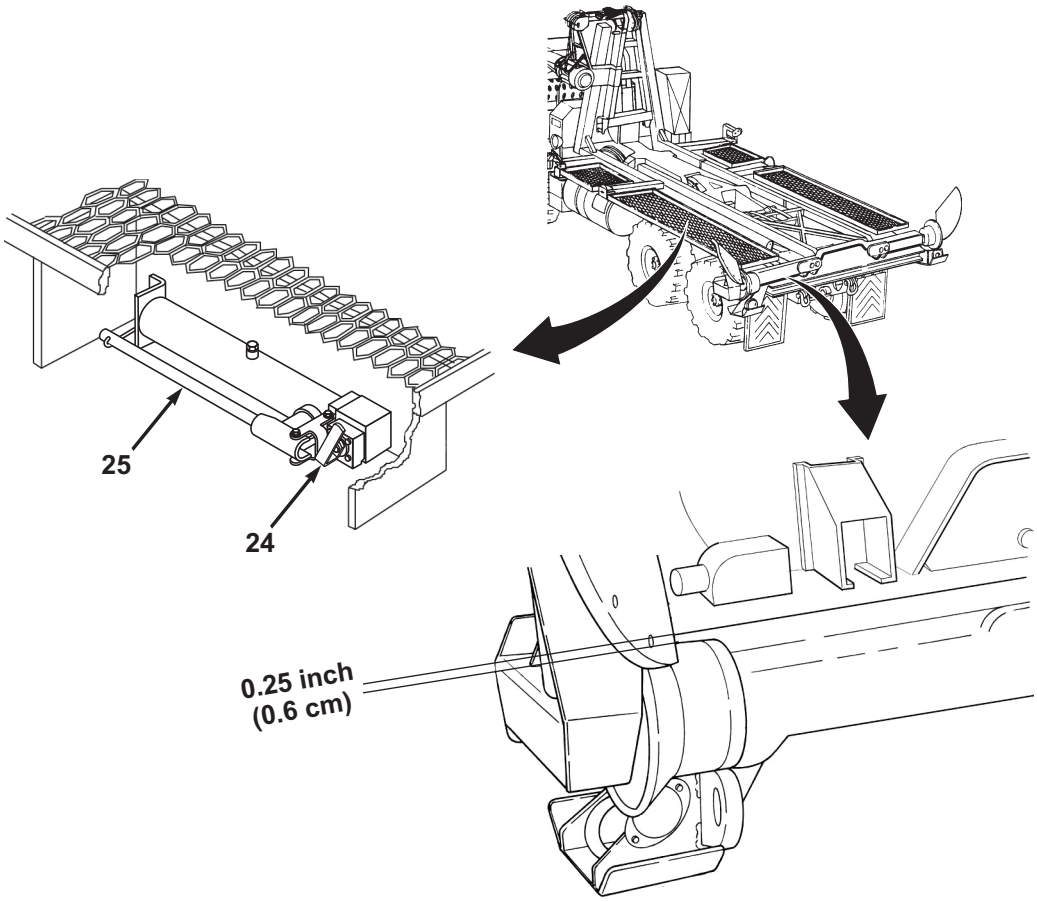


Figure 8. Position Center Roller.

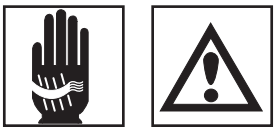
NOTE

- There should be a 0.25 in. (0.6 cm) gap between rear rollers and ramp bay.
- Interior bay does not require use of hydraulic pump.

b. Pump hydraulic pump (Figure 8, Item 25) until rear of ramp bay lifts off rear rollers.

OPERATION - Continued

WARNING



- Always wear protective gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in serious injury or death to personnel.
- Never operate winch with less than five wraps of cable on winch drum. Failure to comply may result in serious injury or death to personnel.
- Do not move the CBT until the bridge bay has been fully loaded into the water from the vehicle. Failure to comply may result in serious injury or death to personnel.

15. While assistant maintains tension on winch cable, position WINCH switch (Figure 9, Item 26) to OUT and stop when there is sufficient slack to remove hook from bay lifting eye.

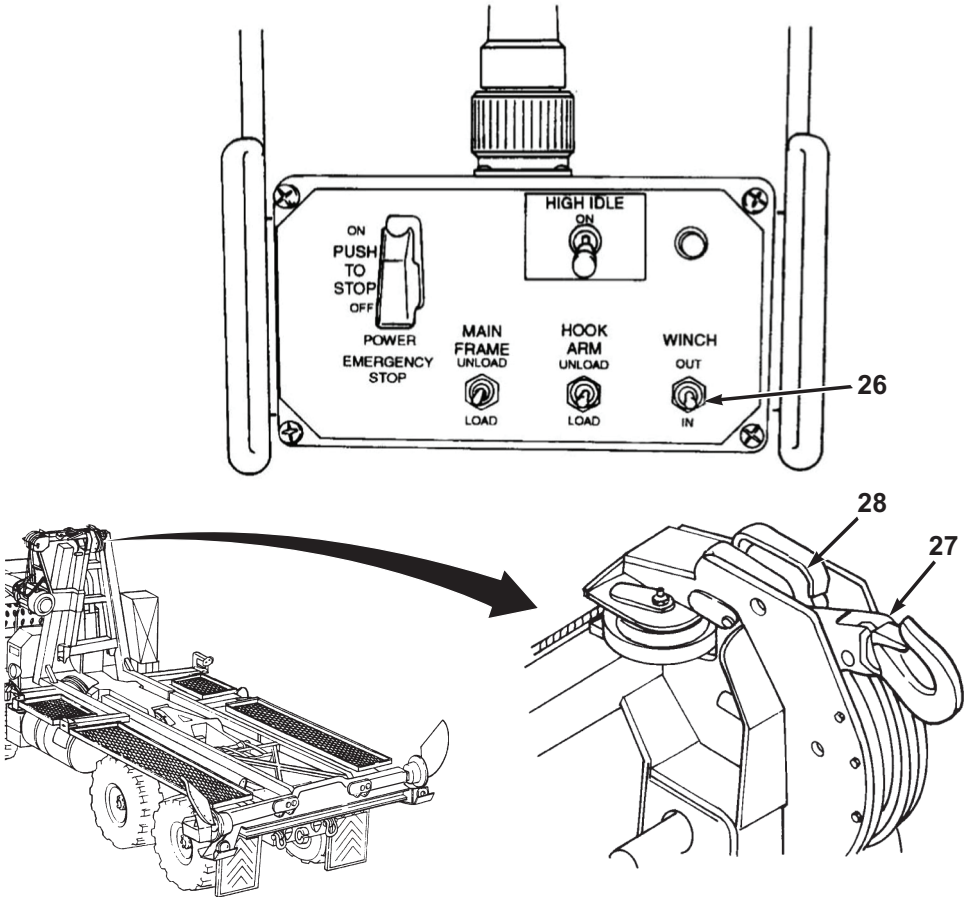


Figure 9. Remote Control Unit.

16. Disconnect cable hook from bay lifting eye.

17. While assistant maintains tension on winch cable, position remote WINCH switch (Figure 9, Item 26) to IN.

OPERATION - Continued

CAUTION

Ensure hook holder is stowed in saddle. Failure to comply may result in damage to hook.

18. Release WINCH switch (Figure 9, Item 26) when hook holder (Figure 9, Item 27) is in saddle (Figure 19, Item 28).
19. Secure winch frame to the BAP. Ensure two winch frame locking levers (Figure 10, Item 29) are in the up position.

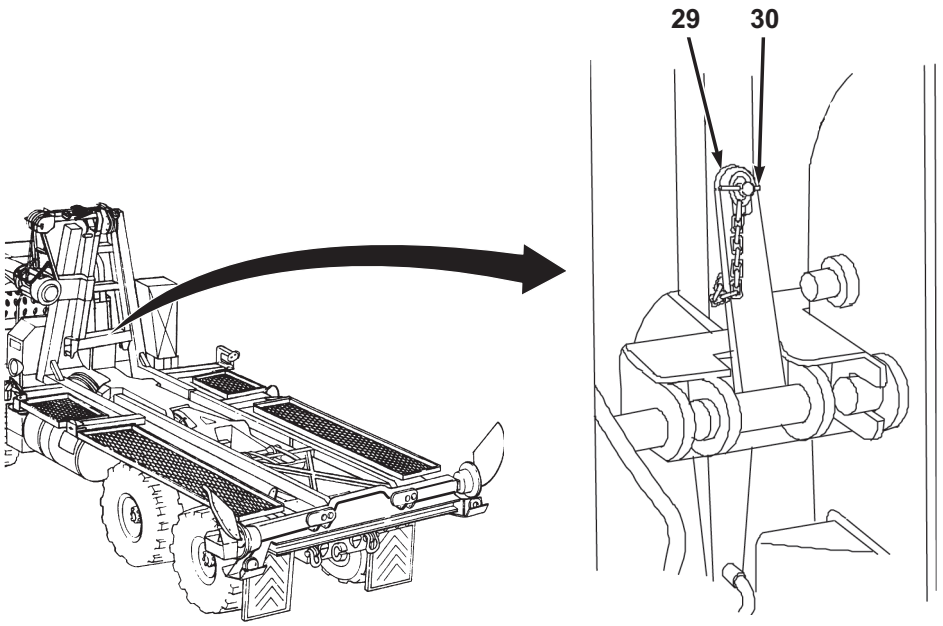


Figure 10. Lock Winch Frame to BAP.

20. If locking levers (Figure 10, Item 29) are not up:
    a. Remove lockpin (Figure 10, Item 30) from locking lever (Figure 10, Item 29).
    b. Swing locking lever (Figure 10, Item 29) to the up position.
    c. Insert lockpin (Figure 10, Item 30) into locking lever (Figure 10, Item 29).

NOTE

Interior bay has four foldlock latches and two travel latches. Ramp bay has two foldlock latches and one travel latch.

21. Release all bay foldlock latches (Figure 11, Item 31) and all travel latches (Figure 11, Item 32). Refer to TM 5-5420-278-10.

OPERATION - Continued

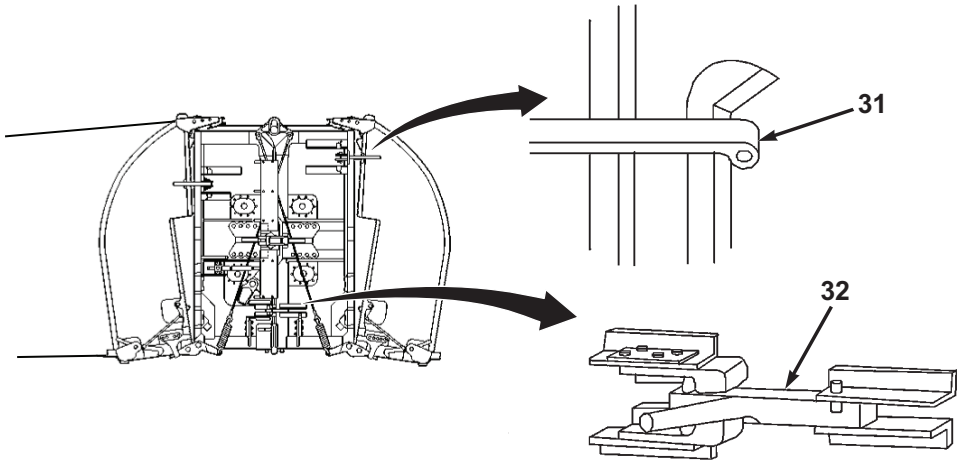


Figure 11. Release IRB Foldlock Latches.

22. Release two BAP hold-down locks (Figure 12, Item 33) by pulling handle (Figure 12, Item 34) out.

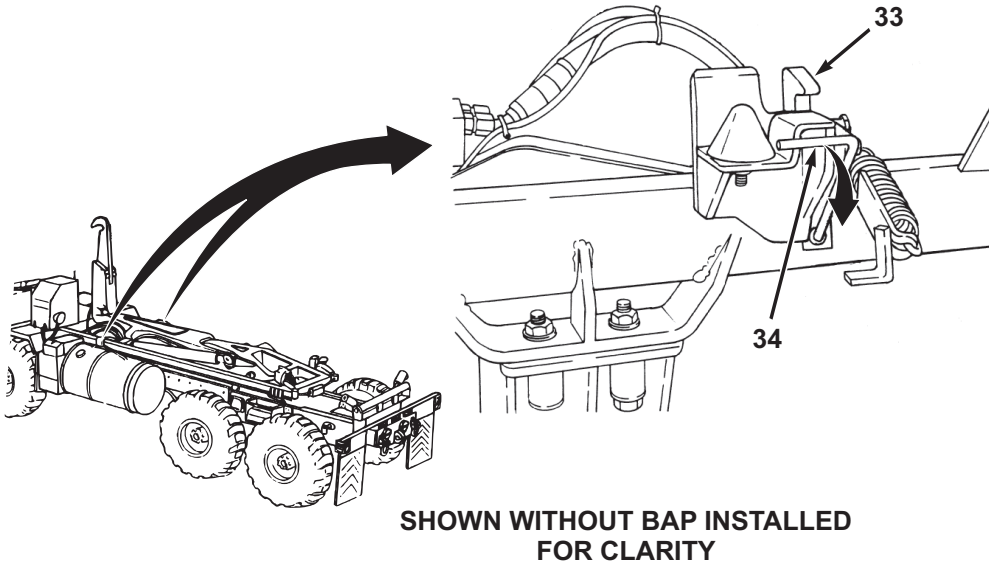


Figure 12. Unlock BAP from CBT.

OPERATION - Continued

23. Disconnect and stow remote control unit (Figure 13, Item 11):

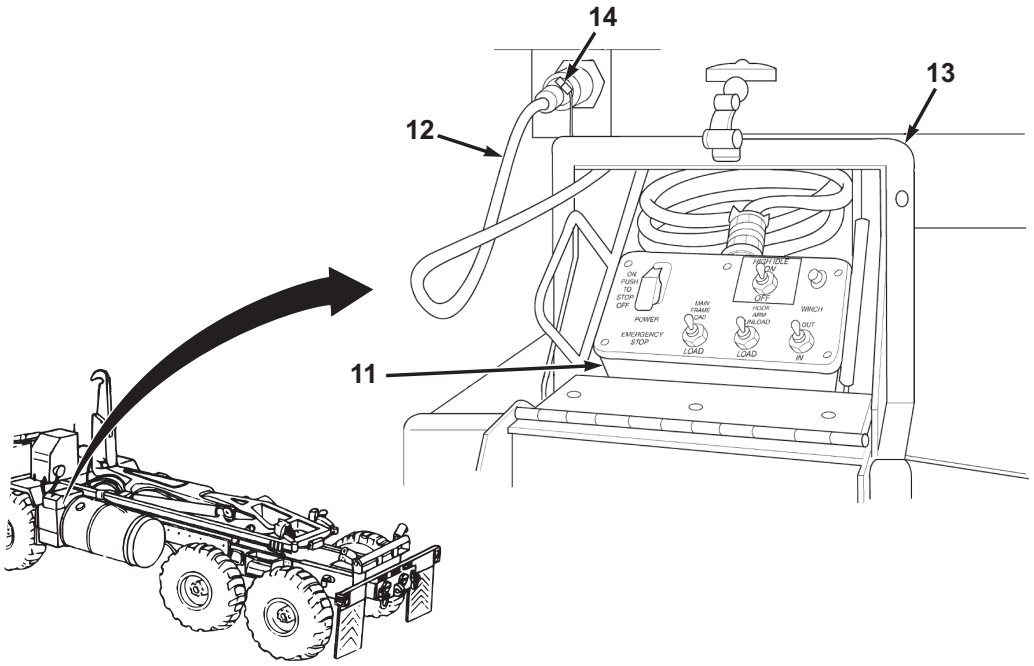


Figure 13. Stow Remote Control Unit.

a. Disconnect cable (Figure 13, Item 12) from LHS receptacle (Figure 13, Item 14).

b. Coil and stow cable (Figure 13, Item 12) in rear of stowage box (Figure 13, Item 13).

c. Stow remote control unit (Figure 13, Item 11) in stowage box (Figure 13, Item 13).

CAUTION

Be sure not to pull or catch lanyard connected to air release valve lever, or premature launching can occur. Failure to comply may result in damage to equipment.

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

24. Push in PARKING BRAKE control (Figure 14, Item 1).

OPERATION - Continued

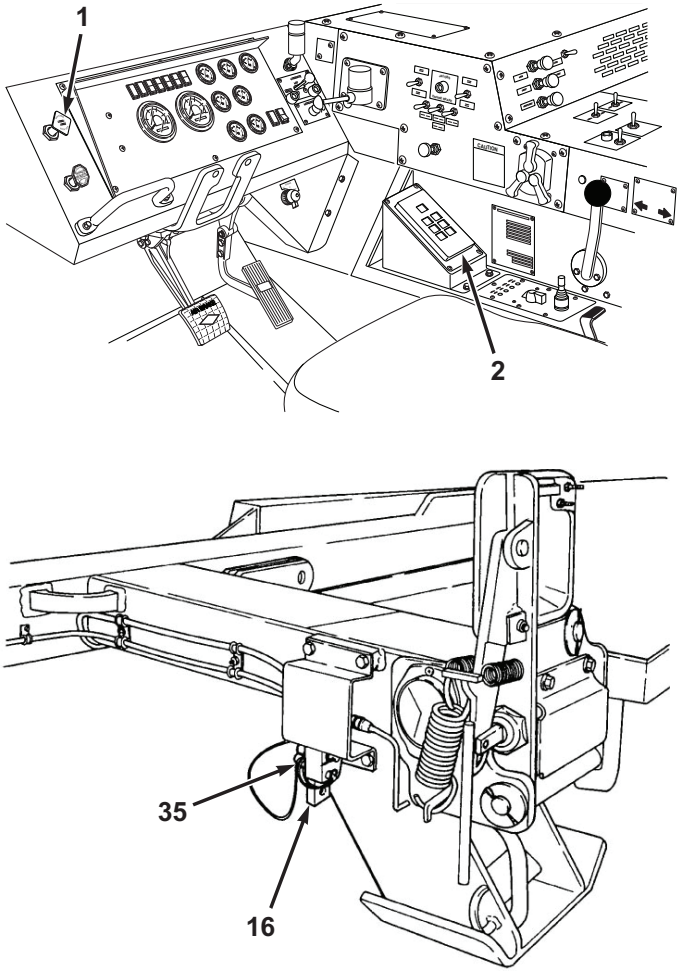


Figure 14. Brake and Transmission Controls.

WARNING

After safety pin is disengaged, ensure all personnel are clear of back of vehicle. Failure to comply may result in serious injury or death to personnel.

25. Just before vehicle enters the water, pull safety pin (Figure 14, Item 35) from air release valve lever (Figure 14, Item 16).

NOTE

Place CBT transfer case in low setting prior to backing vehicle into the water.

26. Back vehicle into the water. Do not exceed fording depth of vehicle 4 ft. (1.2 m).

OPERATION - Continued

CAUTION

The parking brake may slip after entry of vehicle into the water, allowing vehicle to roll into deeper water. Failure to comply may result in damage to equipment.

27. Pull out PARKING BRAKE control (Figure 14, Item 1).
28. Set transmission range selector (Figure 14, Item 2) to N (neutral).
29. When directed, pull lanyard (Figure 15, Item 15) to release front pin lock assemblies (Figure 15, Item 9), allowing bridge bay to roll off vehicle.

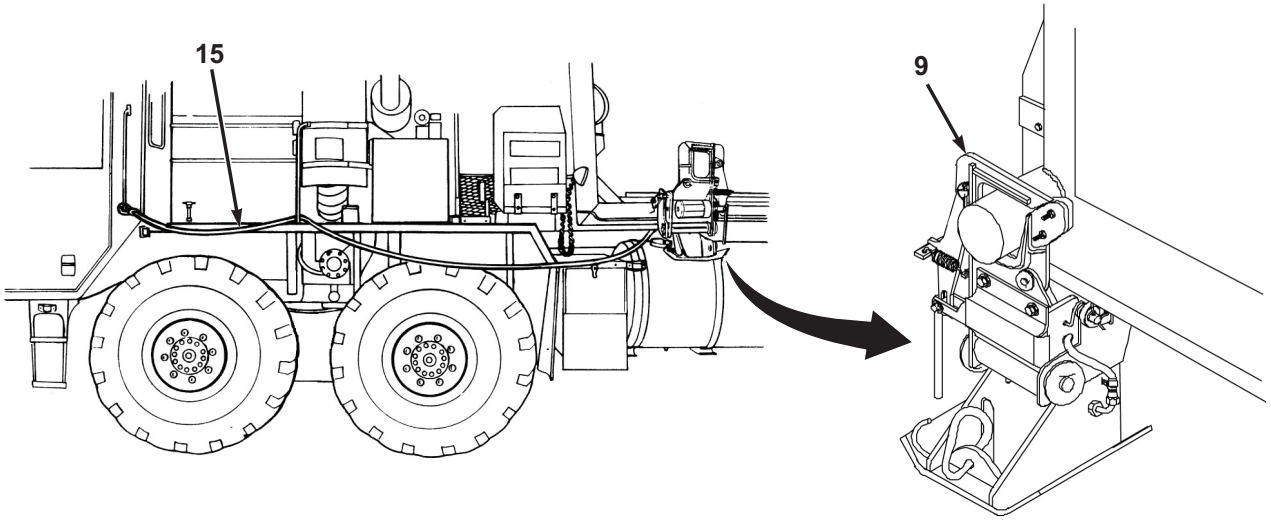


Figure 15. Release Front Pin Locks.

30. Turn LHS MODE SELECT switch (Figure 16, Item 6) to HOOK ARM or AUTO.

OPERATION - Continued

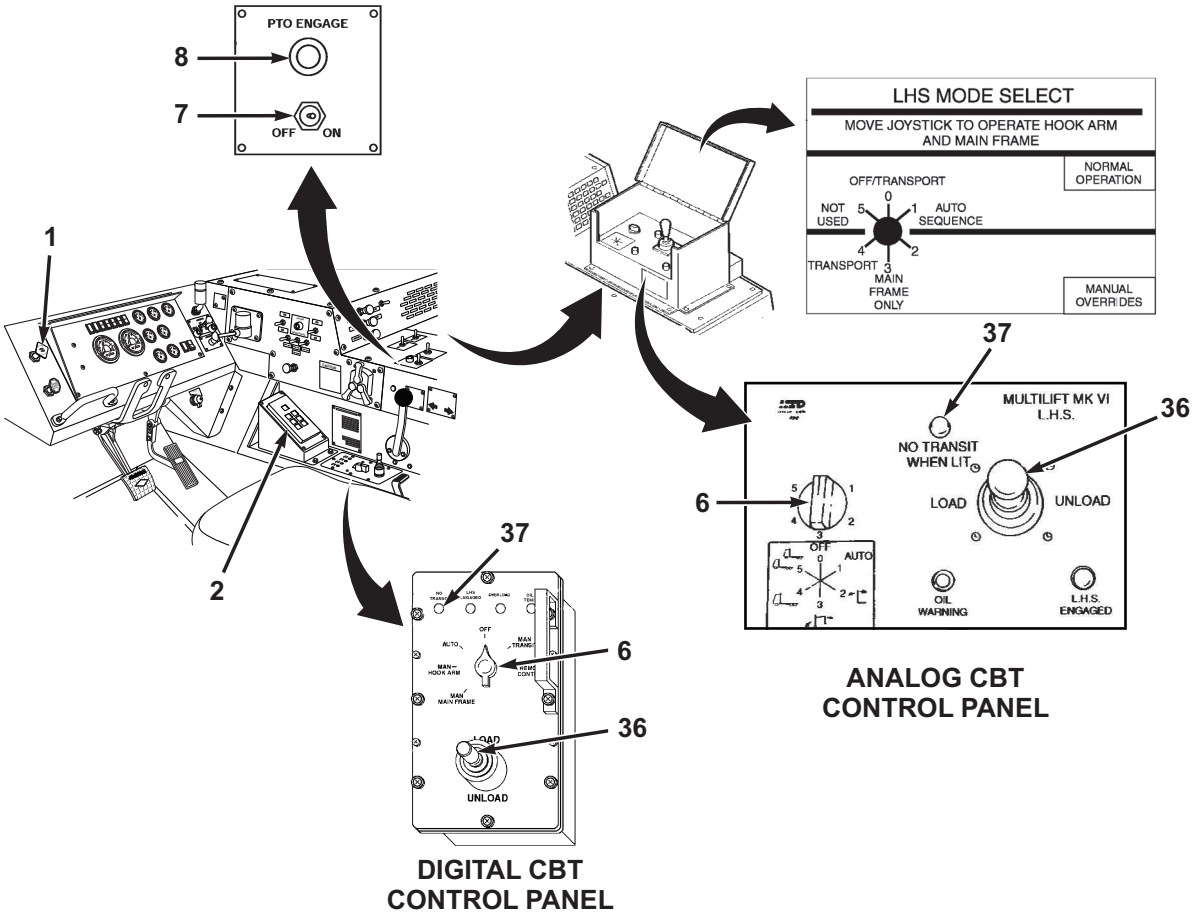


Figure 16. Cab LHS Controls.

31. If bridge bay does not roll off, move joystick (Figure 16, Item 36) to UNLOAD and release when bridge bay starts to roll.

32. Set transmission range selector (Figure 16, Item 2) to D (drive).

WARNING



After water operations, vehicle brakes will be wet and will not stop as quickly as usual. Care must be taken and extra distance allowed for slowing or stopping vehicle. Failure to comply may result in serious injury or death to personnel and damage to equipment.

33. Drive vehicle forward until clear of launch area.

34. Pull out PARKING BRAKE control (Figure 16, Item 1).

35. Move joystick (Figure 16, Item 36) to LOAD and release when NO TRANSIT indicator (Figure 16, Item 37) goes out.

OPERATION - Continued

CAUTION

While maneuvering vehicle in the immediate vicinity of the loading or unloading site, LHS MODE SELECT switch may be in any setting. However, LHS MODE SELECT switch must be set to OFF prior to road travel. Failure to comply may result in damage to main frame and hook arm cylinders.

36. Set PTO ENGAGE switch (Figure 16, Item 7) to OFF position. Indicator light (Figure 16, Item 8) will go out.
37. Turn LHS MODE SELECT switch (Figure 16, Item 6) to OFF.
38. Remove lanyard (Figure 17, Item 15) from air release valve lever (Figure 17, Item 16) and vehicle handgrip (Figure 17, Item 17) and stow.

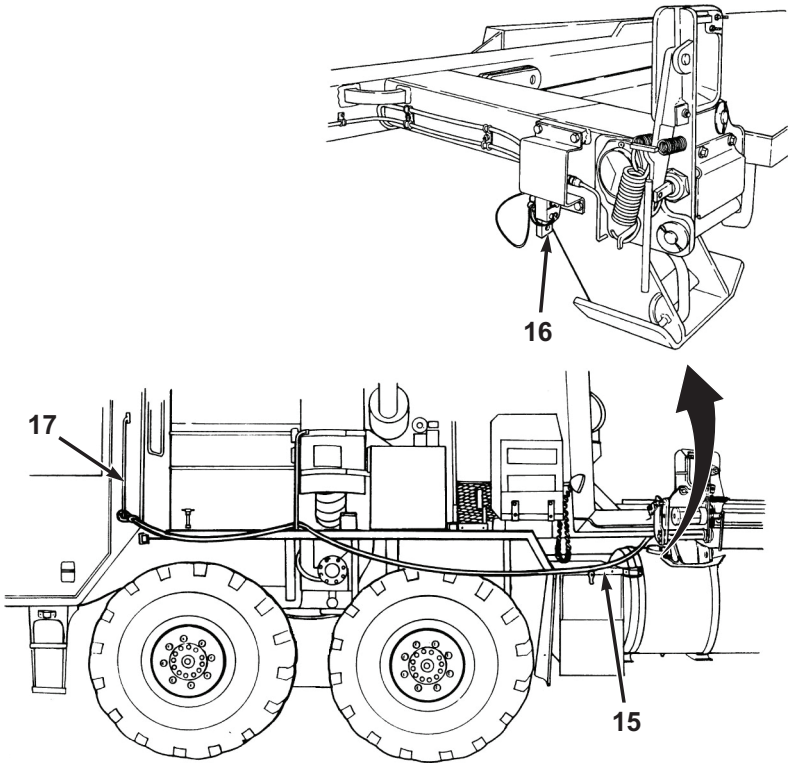


Figure 17. Remove Lanyard.

OPERATION - Continued

39. Insert safety pin (Figure 18, Item 35) in air release valve lever (Figure 18, Item 16).

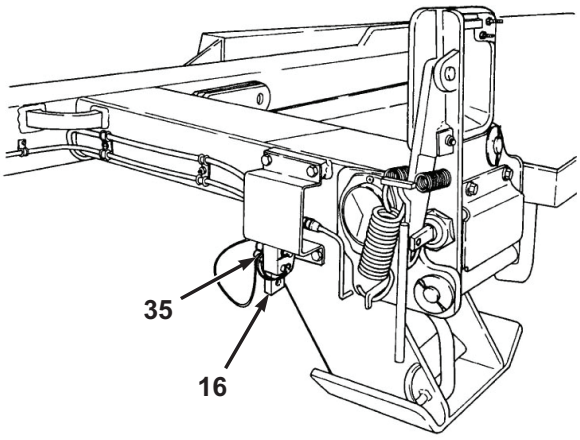


Figure 18. Lock Air Release Valve.

40. Disconnect air hose from vehicle tire inflation air connector (Figure 19, Item 19) and connect to stowage connector (Figure 19, Item 18) on the BAP.

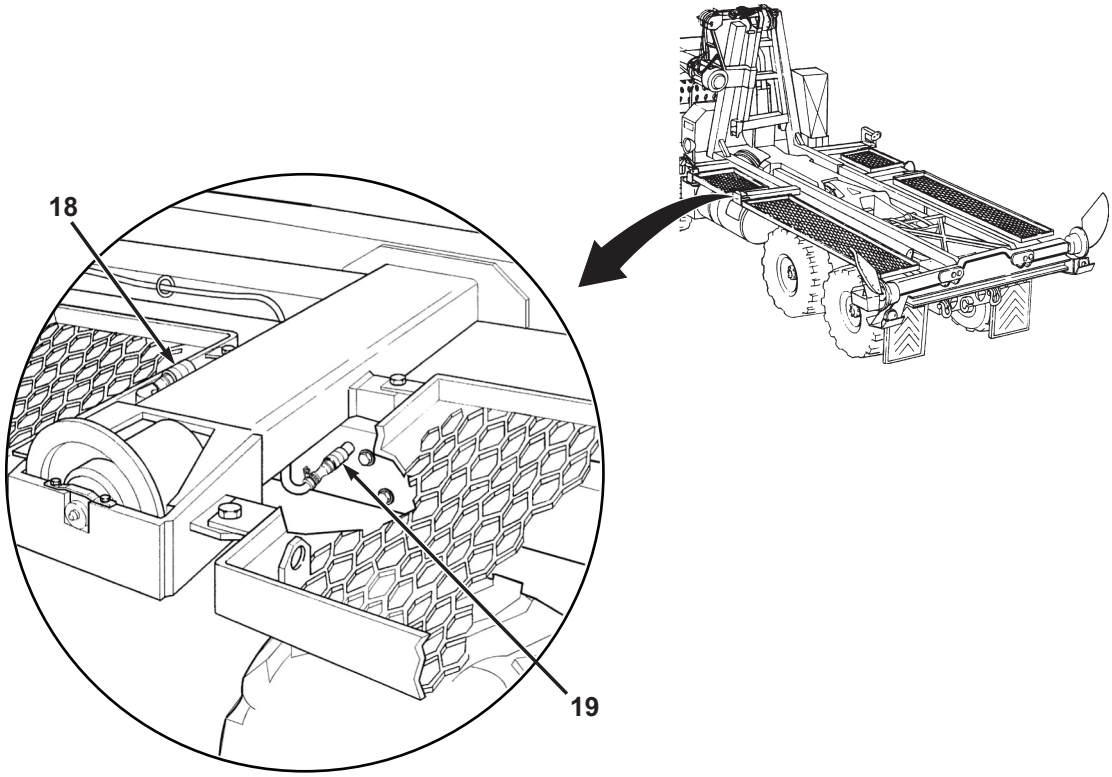


Figure 19. Disconnect Air Hose.

OPERATION - Continued

41. Disengage curb-side and road-side front pin lock assemblies (Figure 20, Item 9):

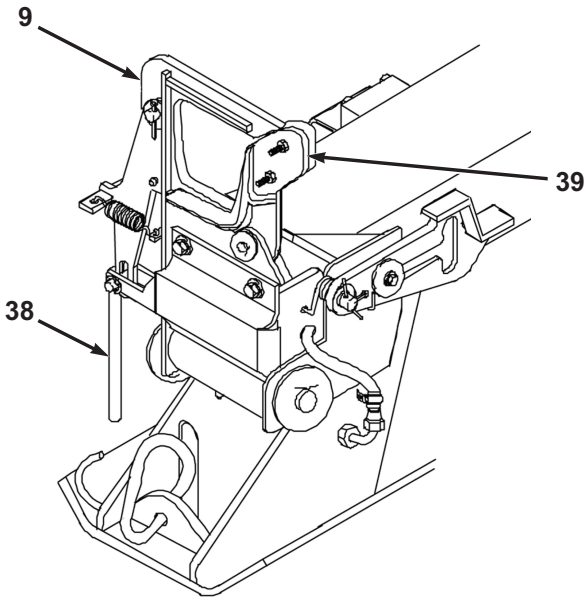


Figure 20. Disengage Front Pin Locks.

a. With one hand, pull release handle (Figure 20, Item 38) toward front of vehicle.
b. With other hand, lift locking lever (Figure 20, Item 39) into position.
c. Let go of release handle (Figure 20, Item 38).

42. Secure curb-side and road-side rear guides (Figure 21, Item 20):

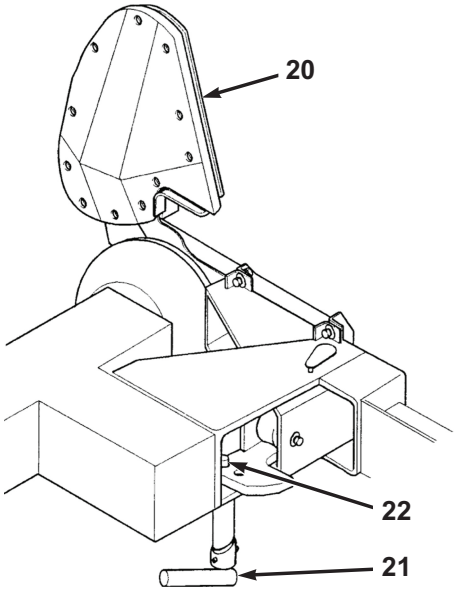


Figure 21. Secure Rear Guides.

OPERATION - Continued

a. Rotate latch pin (Figure 21, Item 21) until rear guide (Figure 21, Item 20) disengages.

b. Swing rear guide (Figure 21, Item 20) to full inboard position and ensure pin (Figure 21, Item 22) engages.

CAUTION

Always ensure selector valve is returned to the closed position after lowering center roller. Open selector valve could cause all fluid to drain out of lines and render center roller inoperable until hydraulic system is bled. Failure to comply may result in damage to equipment.

43. Move hand pump selector valve (Figure 22, Item 24) to down position.

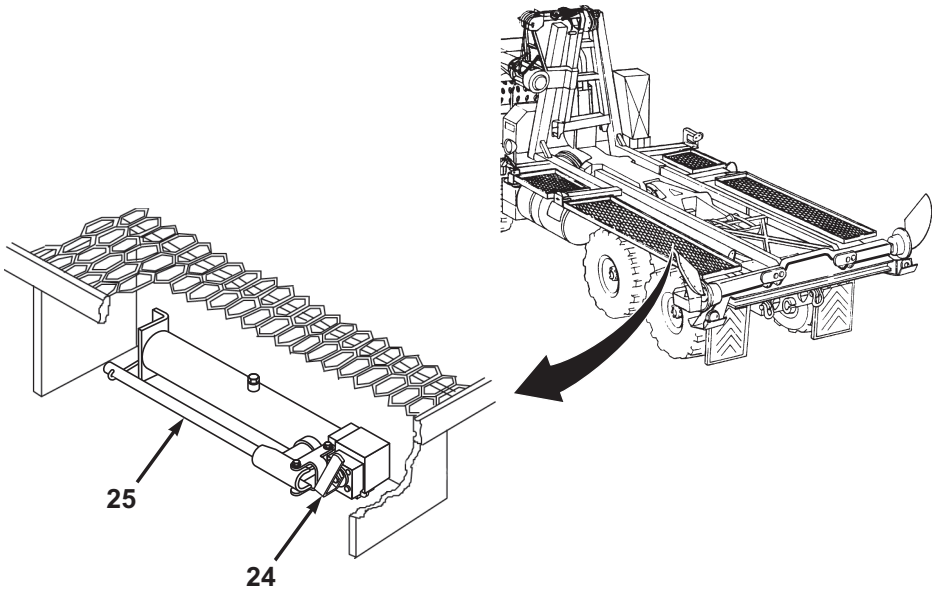


Figure 22. Lower Center Roller.

44. After center roller returns to stowed position, move hand pump selector valve (Figure 22, Item 24) to center position.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CALM OR FAST WATER BRIDGE BAY RETRIEVAL

INITIAL SETUP:

Personnel Required
(2)

References
TM 5-5420-209-12 (WP 0076)
TM 5-5420-278-10 (WP 0076)

GENERAL

NOTE

Perform all operator's before-preventive maintenance checks (WP 0034) prior to operating the CBT and/or BAP. Ensure all checks and adjustments have been completed by field level maintenance.

1. This section contains instructions for safely operating the CBT and BAP under usual conditions.
2. Instructions for safely operating the vehicle in unusual conditions are covered in WP 0017 through WP 0022 of this manual.

PREPARATION FOR USE

WARNING



A site survey must be conducted to ensure site meets criteria cited in warnings below. Failure to complete a site survey may result in serious injury or death to personnel.

- Use a ground guide for all bridging operations. The vehicle may crash into an obstruction or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Prior to performing bridging operations, conduct a site survey to ensure that side-to-side slope does not exceed 8 percent (5 degrees), ground in the transport area is firm, area around vehicle is free of personnel and obstructions, and overhead clearance is at least 22 ft. 2 in. (6.7 m) above the loading area. Failure to conduct a site survey could cause the vehicle to slip, turn over, crash into an obstruction, or contact power lines. Failure to comply may result in serious injury or death to personnel.
- Water velocity should not be greater than 5 ft. (1.5 m) per second. Refer to TM 5-5420-209-12 or TM 5-5420-278-10 for water velocity requirements for all launch conditions. Failure to comply may result in serious injury or death to personnel.

A site survey must be conducted to ensure the site meets the criteria cited in the warning above.

OPERATION

NOTE

- In case of emergency while the remote control unit is in use, push the emergency stop switch to shut down operation of the LHS.
- During all vehicle operations, the operator will drive and be responsible for the operation of the LHS cab control box. The assistant acts as a ground guide and will be responsible for directing the operator using hand signals, operating the remote control box and winch, and assisting the operator as needed.
- With a 20 percent slope, interior bay requires a water depth of at least 42 in. (1.07 m). Ramp bay requires a water depth of at least 50 in. (1.27 m).
- The BAP must be loaded on Transporter before retrieval of bridge bays.

1. Lock the BAP to the vehicle. Ensure curb-side and road-side BAP holddown lock handles (Figure 1, Item 1) are in.

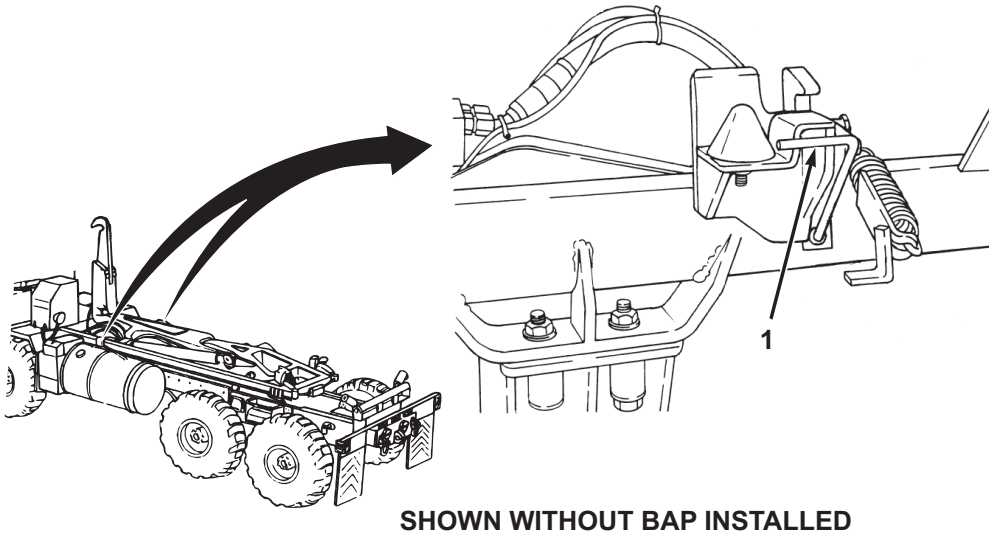


Figure 1. Setting BAP Locks.

2. Secure winch frame to LHS hook arm. Ensure two winch frame locking levers (Figure 2, Item 2) are in the down position.

OPERATION - Continued

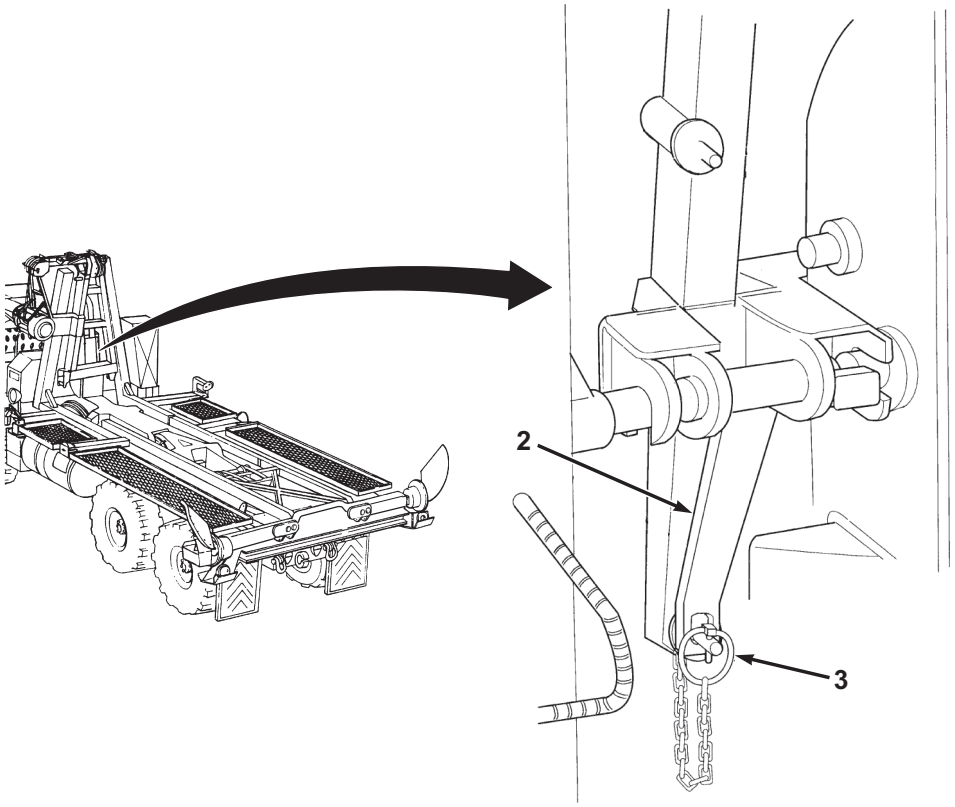


Figure 2. Lock Winch Frame to LHS Hook Arm.

3. If locking levers (Figure 2, Item 2) are not down:
   a. Remove lockpin (Figure 2, Item 3) from each locking lever (Figure 2, Item 2).
   b. Swing locking lever (Figure 2, Item 2) to the down position.
   c. Insert lockpin (Figure 2, Item 3) into locking lever (Figure 2, Item 2).

OPERATION - Continued

4. Connect two winch hydraulic pressure hoses (Figure 3, Item 4) to male connector (Figure 3, Item 5) and female connector (Figure 3, Item 6) located on bottom of hook arm assembly.

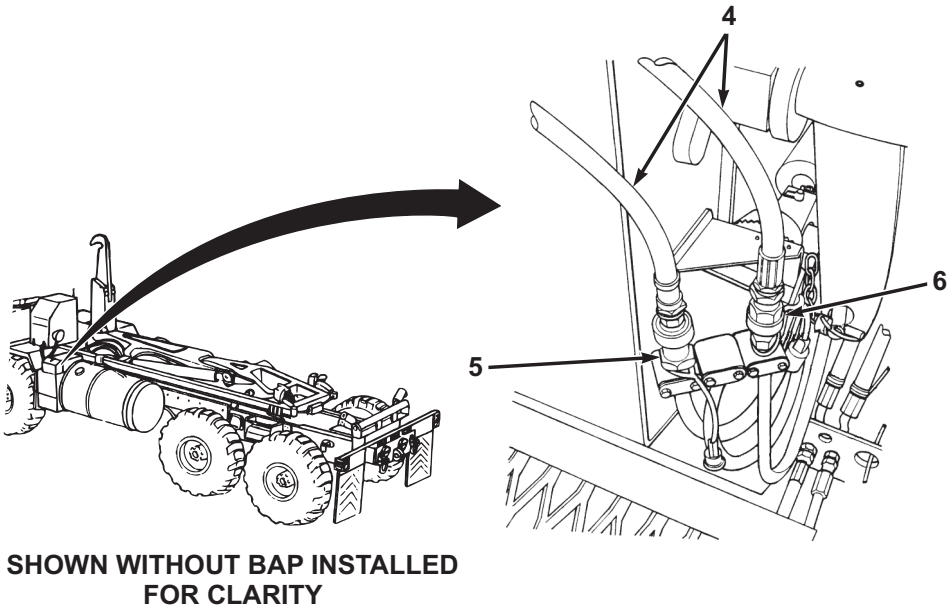


Figure 3. Connect Hydraulic Hoses.

WARNING



Keep hands and fingers clear of front pin lock assemblies when in the auto engaged and disengaged position. Failure to comply may result in serious injury or death to personnel.

5. Secure two front pin lock assemblies (Figure 4, Item 7) in the auto engage position. Pull back curb-side and road-side pin lock assemblies (Figure 4, Item 7) until each latch lever pin (Figure 4, Item 8) rests in base of vertical slot (Figure 4, Item 9).

OPERATION - Continued

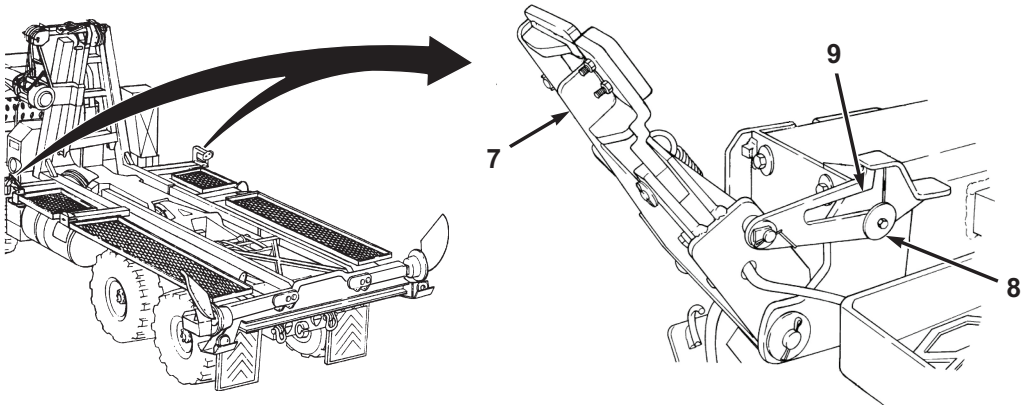


Figure 4. Position Front Pin Locks.

6. Secure curb-side and road-side rear guides (Figure 5, Item 10) in the engaged position.

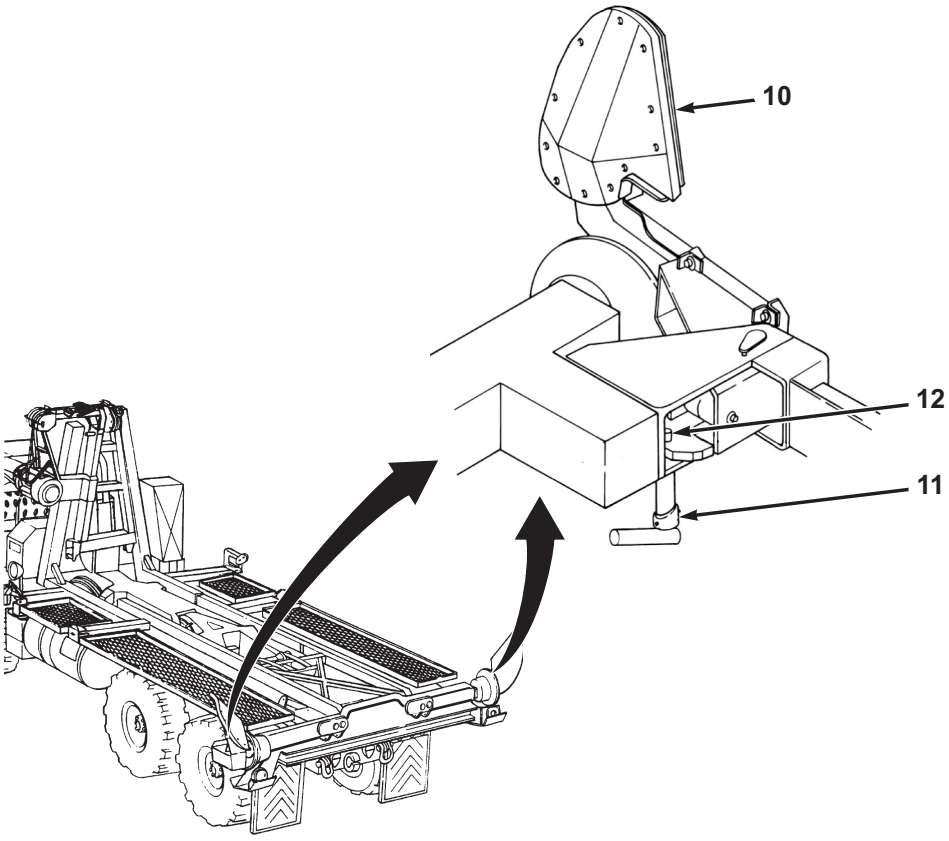


Figure 5. Position Rear Guides.

a. Rotate latch pin (Figure 5, Item 11) and swing rear guide (Figure 5, Item 10) to the engaged (intermediate) position.

b. Ensure latch pin (Figure 5, Item 11) engages hole in rear bay guide (Figure 5, Item 12).

OPERATION - Continued

7. Install remote control unit (Figure 6, Item 13):

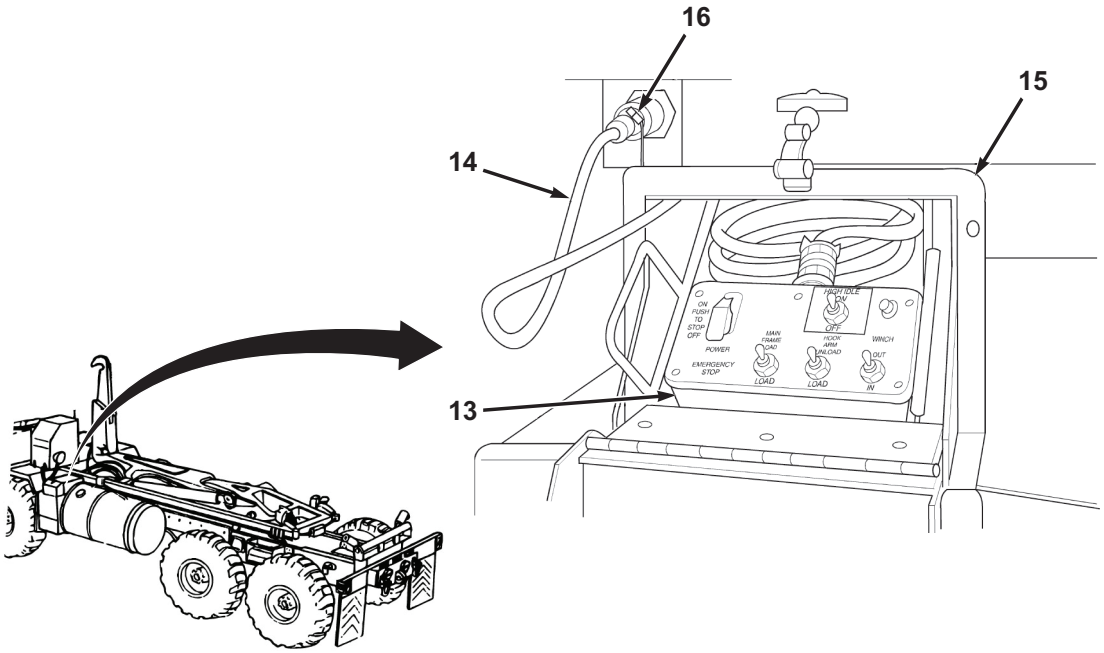


Figure 6. Connect Remote Control Unit.

a. Remove remote control unit (Figure 6, Item 13) and cable (Figure 6, Item 14) from stowage box (Figure 6, Item 15).

b. Connect cable (Figure 6, Item 14) to curb-side or road-side LHS receptacle (Figure 6, Item 16).

8. Turn LHS MODE SELECT switch (Figure 7, Item 17) to OFF.

OPERATION - Continued

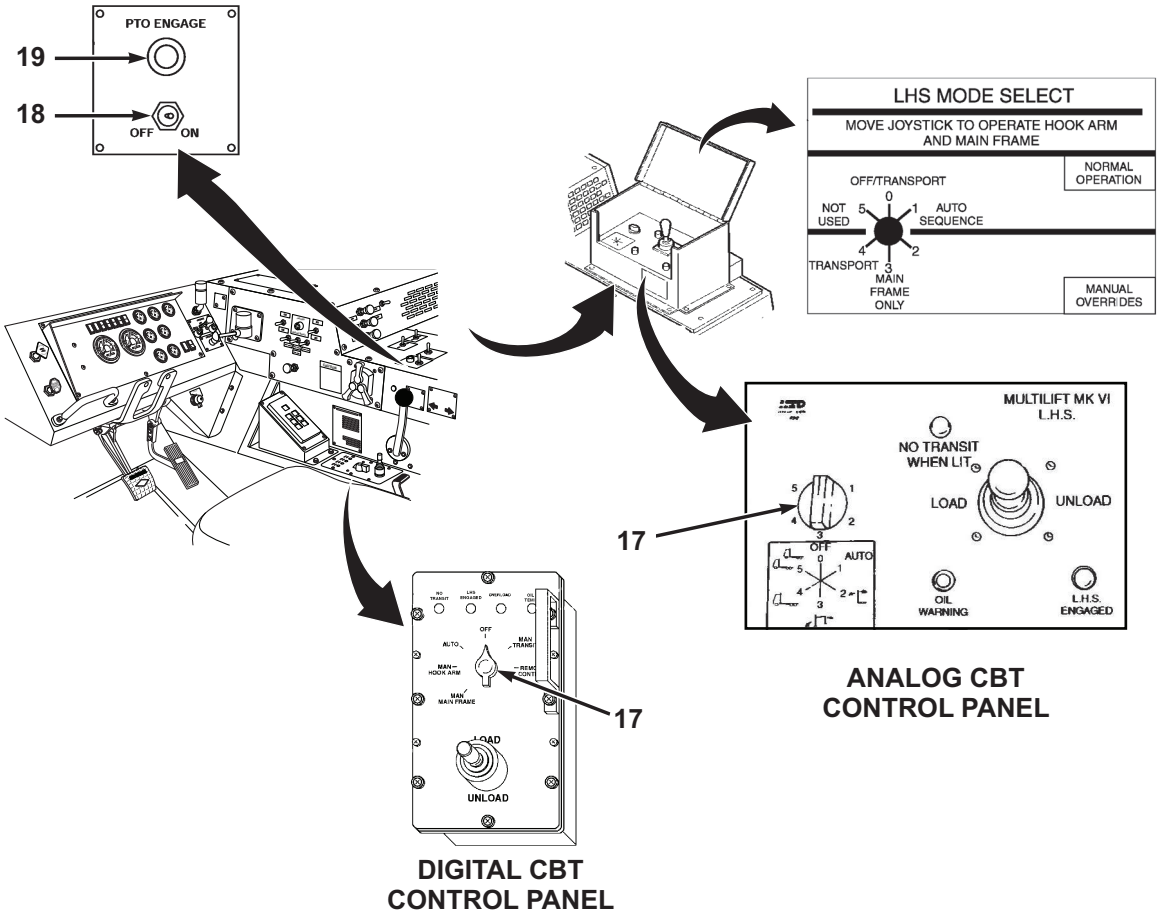


Figure 7. Cab LHS Controls.

CAUTION

- Do not set PTO ENGAGE switch to ON with HIGH IDLE switch ON. Engaging the PTO ENGAGE switch with HIGH IDLE switch ON may result in sudden application of hydraulic pressure to the LHS. Failure to comply may result in damage to equipment.
- PTO ENGAGE switch must be positioned OFF before road transport. Failure to comply may result in damage to equipment.

9. Set PTO ENGAGE switch (Figure 7, Item 18) to ON position. Indicator light (Figure 7, Item 19) will illuminate.

OPERATION - Continued

10. Set HIGH IDLE switch (Figure 8, Item 20) to ON position.

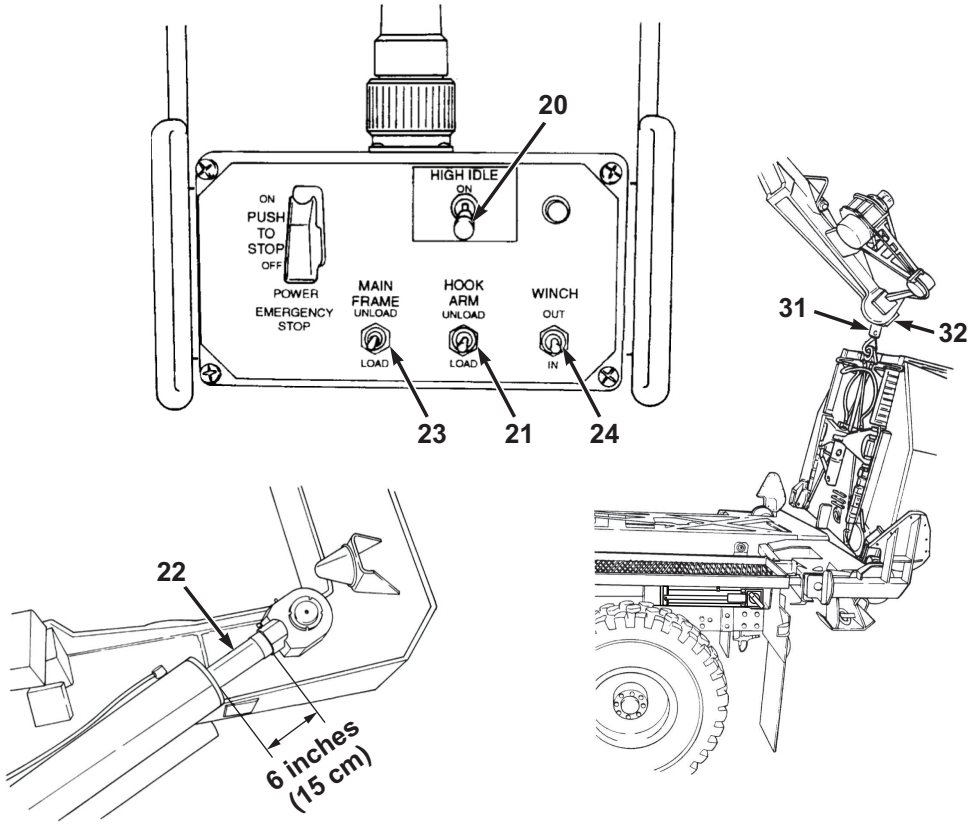


Figure 8. Remote Control Unit Controls.

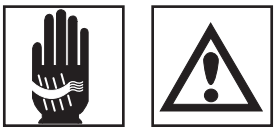
CAUTION

While moving LHS hook arm rearward, ensure BAP winch hydraulic hose lines are not trapped or damaged. Failure to comply may result in damage to equipment.

11. Position HOOK ARM switch (Figure 8, Item 21) to UNLOAD.
12. Release HOOK ARM switch (Figure 8, Item 21) when cylinders (Figure 8, Item 22) are extended approximately 6 in. (15 cm).
13. Position MAIN FRAME switch (Figure 8, Item 23) to UNLOAD and release when main frame is fully extended.
14. Position HOOK ARM switch (Figure 8, Item 21) to UNLOAD and release when winch cable hook can be reached from the ground.

OPERATION - Continued

WARNING



- Always wear protective gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in serious injury or death to personnel.
- Never operate winch with less than five wraps of cable on winch drum. Failure to comply may result in serious injury or death to personnel.
- Do not move the CBT until the bridge bay has been fully loaded into the water from the vehicle. Failure to comply may result in serious injury or death to personnel.

15. Ensure assistant maintains tension on cable.
16. Position WINCH switch (Figure 8, Item 24) to OUT, and release when cable has been winched out about 8 ft. (2.4 m). Return hook arm to 6 inches (15 cm).
17. Set HIGH IDLE switch (Figure 8, Item 20) to OFF position.

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

18. Push in PARKING BRAKE control (Figure 9, Item 25).

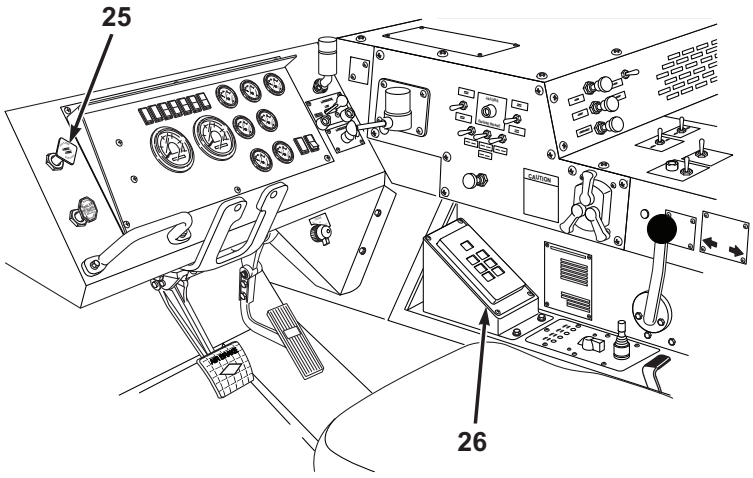


Figure 9. Brake and Transmission Controls.

CAUTION

Water depth for fording should not exceed 4 ft. (1.2 m). Failure to comply may result in damage to equipment.

NOTE

- Place transfer case in low setting prior to backing vehicle into the water.
- If this is an interior bay, perform Step (19). If this is a ramp bay, proceed to Step (20).

OPERATION - Continued

19. Back vehicle into the water and stop when top of back tire hub is at the water line (hub is in the water). Proceed to Step (21).
20. Back vehicle into the water and stop when top of back tire rim is at the water line (rim is in the water).

CAUTION

After entry of vehicle into the water, the parking brake may slip, allowing vehicle to roll into deeper water resulting in damage to equipment. Use care when setting parking brake. Failure to comply may result in damage to equipment.

NOTE

Dashboard parking brake indicator illuminate out when PARKING BRAKE control is applied.

21. Pull out PARKING BRAKE control (Figure 9, Item 25).
22. Set transmission range selector (Figure 9, Item 26) to N (neutral).
23. Have boat crew engage all bay foldlock latches (Figure 10, Item 27) and travel latches (Figure 10, Item 28) in the engage position.

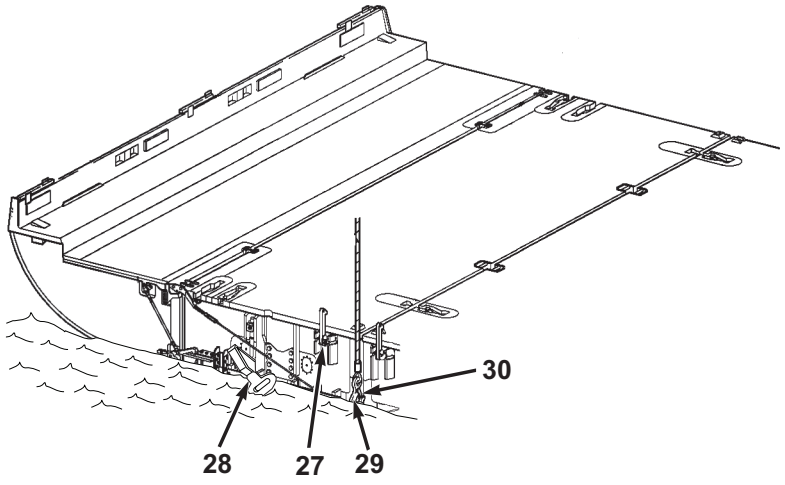


Figure 10. Engage IRB Foldlock Latches.

24. Have boat crew attach winch cable to bridge bay as follows:
    a. Cable hook (Figure 10, Item 29) should face rear with throat up.
    b. Hook latch (Figure 10, Item 30) should be closed.

CAUTION

During bridge bay retrieval, axis of cable hook must be vertical and in line with axis of cable. Failure to comply may result in damage to equipment.

25. Have boat operator maintain bridge bay in alignment with vehicle for loading.

OPERATION - Continued

26. Set HIGH IDLE switch (Figure 11, Item 20) to ON position.

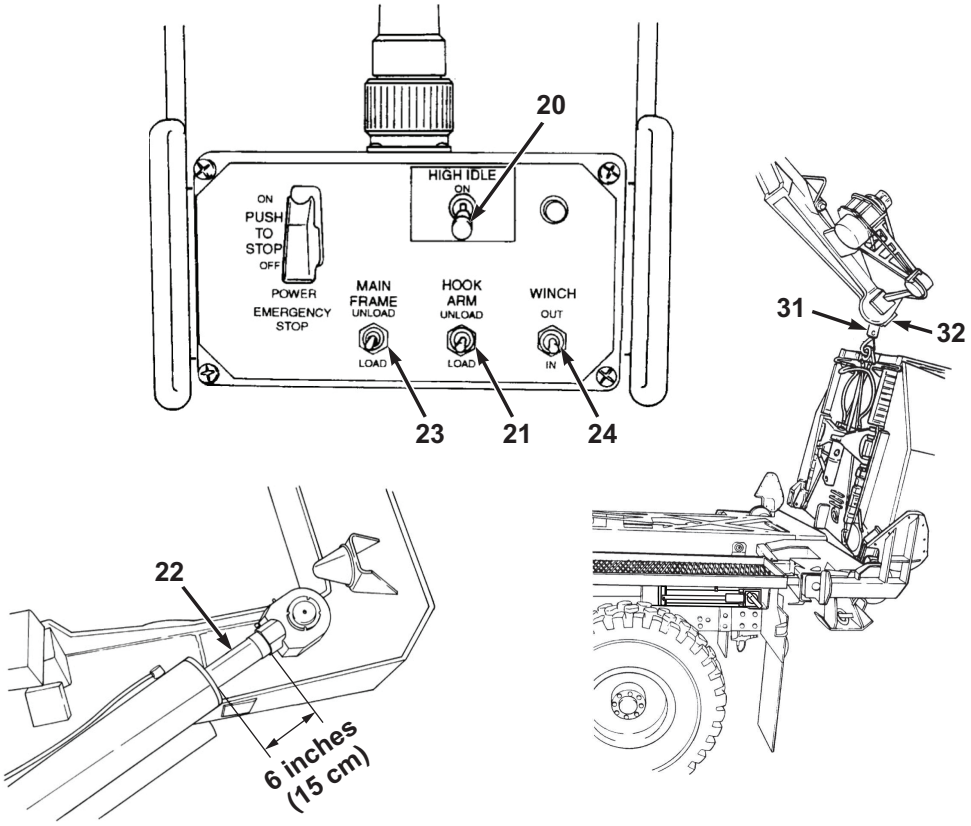


Figure 11. Remote Control Unit Controls.

27. Position MAIN FRAME switch (Figure 11, Item 23) to LOAD and release when cable slack has been removed.

WARNING

Ensure bridge bay is clear of boat crew personnel and obstructions prior to winching in bridge bay. Ensure crewman is safely off bridge bay prior to lifting. Failure to comply may result in serious injury or death to personnel.

NOTE

During bridge bay recovery in fast moving water or strong crosswinds, it may be necessary to position a boat with the push knees against the downstream bow to keep bridge bay aligned with Transporter.

28. Position WINCH switch (Figure 11, Item 24) to IN.

29. Steadily winch in cable as bridge bay folds and automatically latches.

OPERATION - Continued

30. Release WINCH switch (Figure 11, Item 24) when cable hook holder (Figure 11, Item 31) is in saddle (Figure 11, Item 32).

NOTE

While continuing to move bridge bay forward, it may be necessary to adjust MAIN FRAME switch to keep bridge bay properly positioned in BAP rear guides.

31. Position remote MAIN FRAME switch (Figure 11, Item 23) to LOAD to bring bridge bay onto BAP rear rollers.

NOTE

If bridge bay fails to contact vehicle properly, partially unload bridge bay and repeat Step (31).

32. Position HOOK ARM switch (Figure 11, Item 21) to UNLOAD as necessary to keep bridge bay positioned in rear guide arms until cylinder (Figure 11, Item 22) is extended 6 in. (15 cm).
33. Continue holding MAIN FRAME switch (Figure 11, Item 23) in LOAD position and release when main frame is in stowed position.
34. Set HIGH IDLE switch (Figure 11, Item 20) to OFF position.
35. Position HOOK ARM switch (Figure 11, Item 21) to LOAD until LHS hook arm has been fully stowed.
36. Push in PARKING BRAKE control (Figure 12, Item 25).

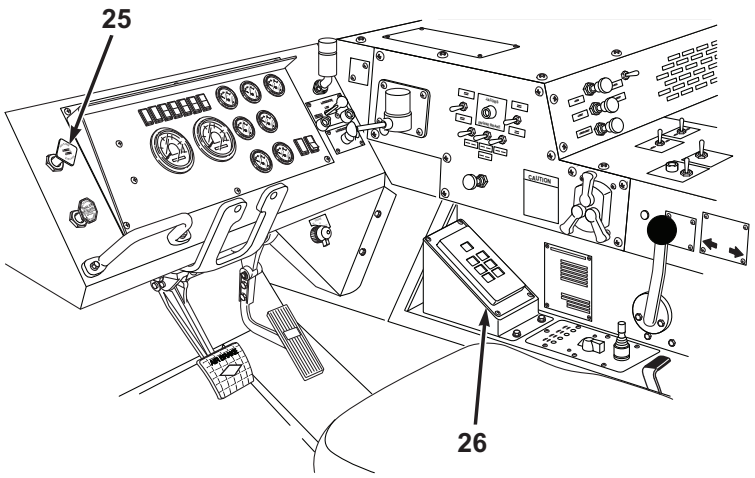


Figure 12. Brake and Transmission Controls.

WARNING



After water operations, vehicle brakes will be wet and will not stop as quickly as usual. Care must be taken and extra distance allowed for slowing or stopping vehicle. Failure to comply may result in serious injury or death to personnel and damage to equipment.

37. Set transmission range selector (Figure 12, Item 26) to D (drive), and drive vehicle from the water.
38. Pull out PARKING BRAKE control (Figure 12, Item 25).

OPERATION - Continued

39. Set transmission range selector (Figure 12, Item 26) to N (neutral).

CAUTION

While maneuvering vehicle in the immediate vicinity of the loading or unloading site, LHS MODE SELECT switch may be in any setting. However, LHS MODE SELECT switch must be set to OFF/TRANSPORT prior to road travel. Failure to comply may result in damage to equipment.

NOTE

Ensure both front pin lock assemblies are secured to bridge bay pins and both rear guides are properly locked.

40. Position WINCH switch (Figure 13, Item 24) to OUT, and release when winch cable tension is released.

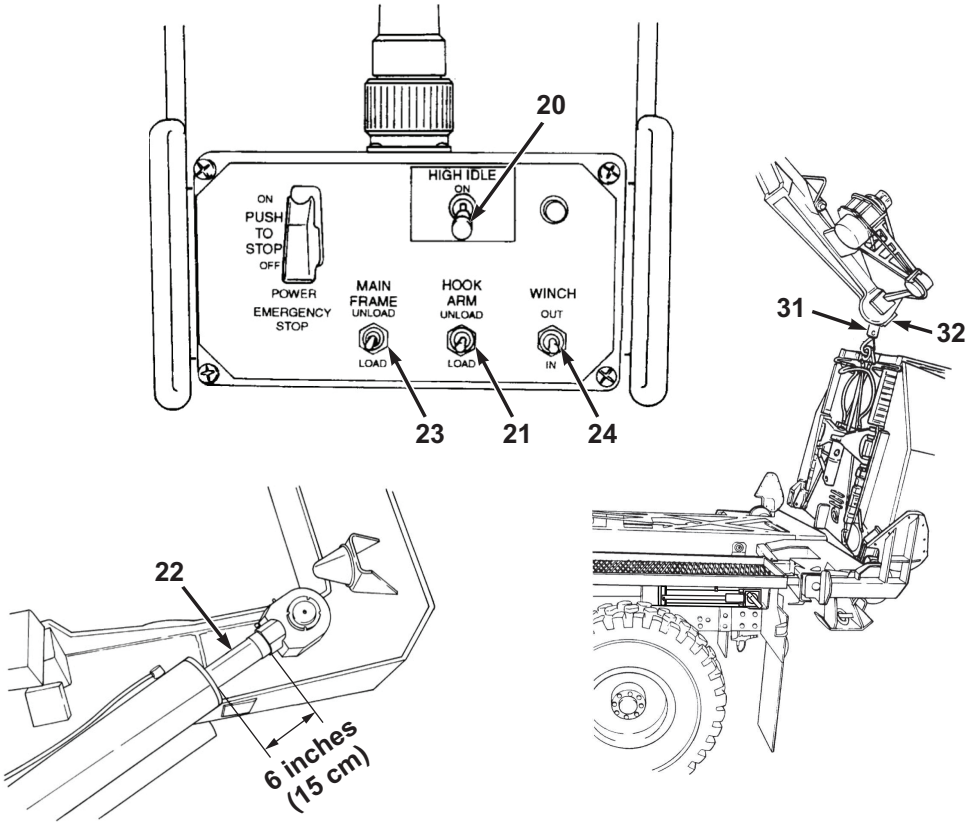


Figure 13. Remote Control Unit Controls.

41. Set PTO ENGAGE switch (Figure 14, Item 18) to OFF position. Indicator light (Figure 14, Item 19) will go out.

OPERATION - Continued

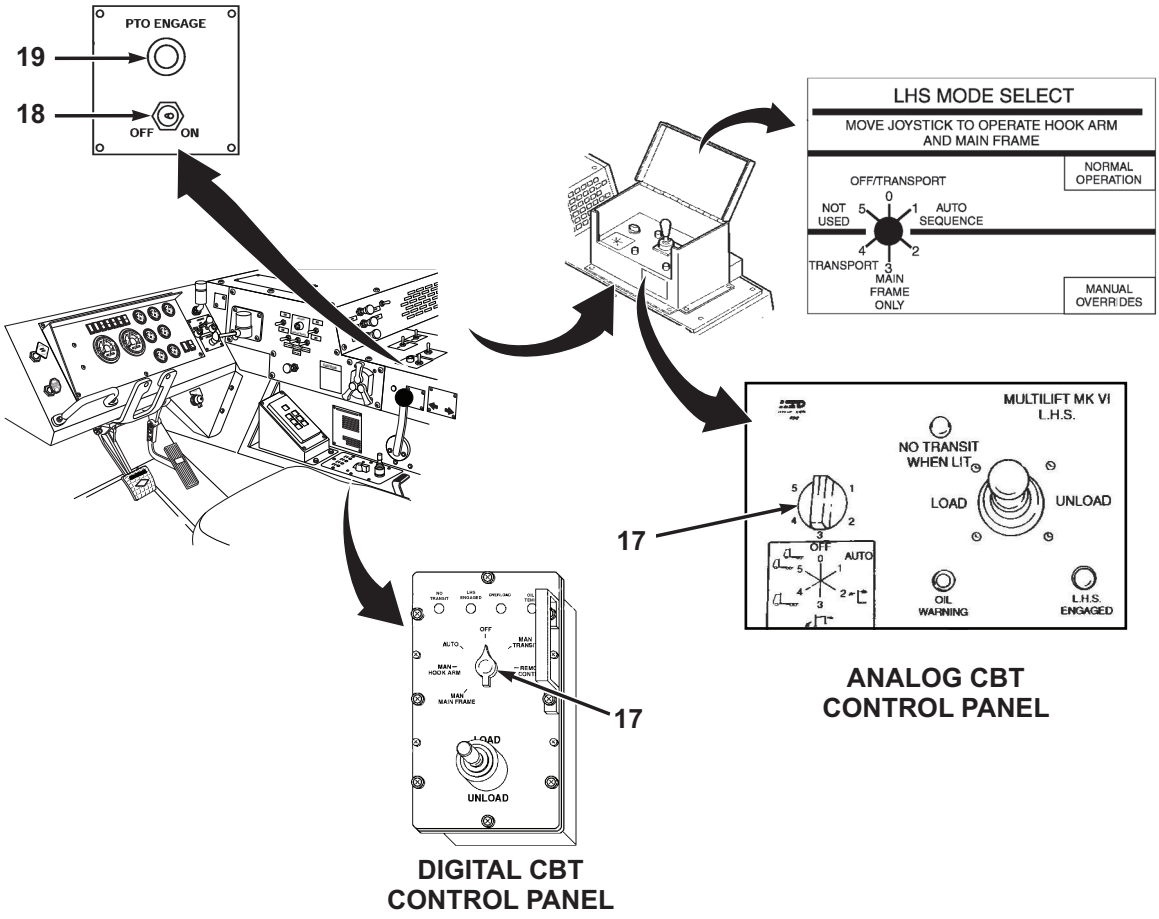


Figure 14. Cab LHS Controls.

OPERATION - Continued

42. Disconnect and stow remote control unit (Figure 15, Item 13):

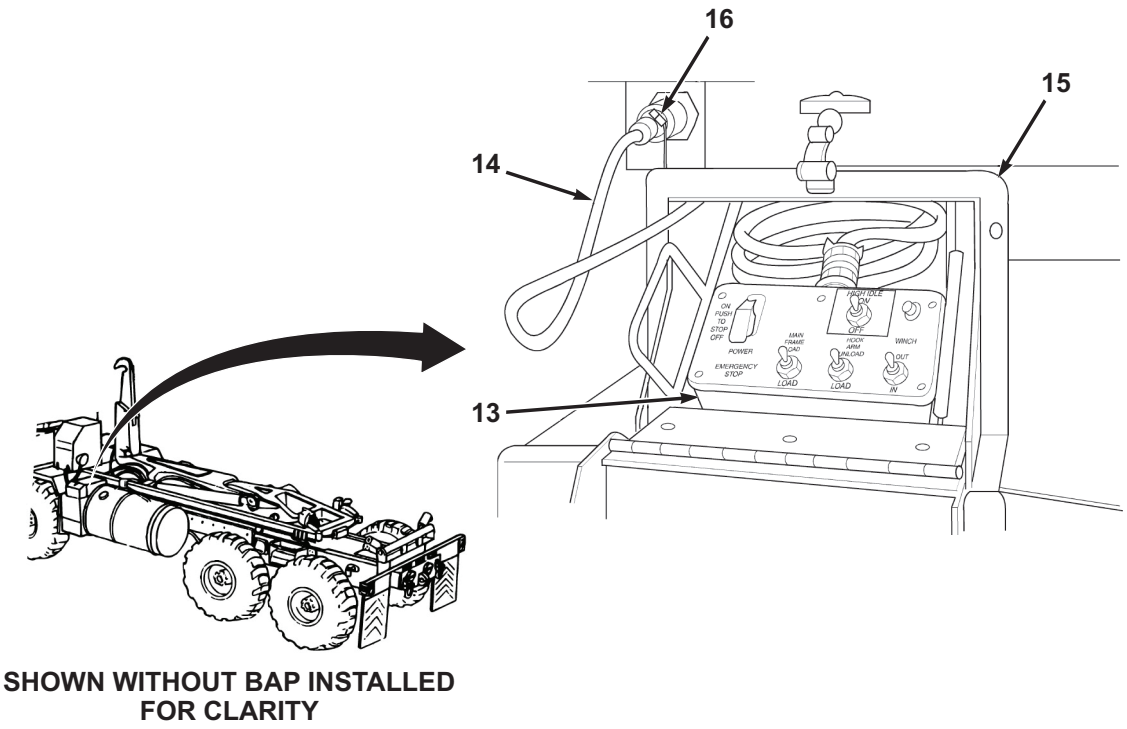


Figure 15. Stow Remote Control Unit.

a. Disconnect cable (Figure 15, Item 14) from LHS receptacle (Figure 15, Item 16).

b. Coil and stow cable (Figure 15, Item 14) in rear of stowage box (Figure 15, Item 15).

c. Stow remote control unit (Figure 15, Item 13) in stowage box (Figure 15, Item 15).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
NORMAL TRANSFER OF BRIDGE ADAPTER PALLET (BAP) FROM VEHICLE TO TRAILER

INITIAL SETUP:

Personnel Required
(2)

References
TM 9-2330-385-10 (WP 0076)

References (cont.)
TM 9-2320-425-10 (WP 0076)
TM 9-2320-435-10 (WP 0076)

GENERAL

NOTE

Perform all operator's before-preventive maintenance checks (WP 0035) prior to operating the CBT and/or BAP. Ensure all checks and adjustments have been completed by field level maintenance.

1. This section contains instructions for safely operating the CBT and BAP under usual conditions.
2. Instructions for safely operating the vehicle in unusual conditions are covered in WP 0017 through WP 0022 of this manual.

OPERATION

WARNING



- Prior to and during any load or unload cycle, all personnel should stay clear of LHS and BAP. Failure to comply may result in serious injury or death to personnel.
- Trailer wheels must be chocked during transfer operations. Failure to comply may result in serious injury or death to personnel.

CAUTION

- To avoid damage to equipment during transfer operations, ensure trailer drawbar extension is retracted and on the ground, centered forward of the trailer. Ensure drawbar and drawbar extension are properly positioned. Refer to TM 9-2320-385-10. Failure to comply may result in damage to equipment.
- Ensure air lines and cables are properly stowed, to prevent damage to equipment. Refer to TM 9-2320-385-10. Failure to comply may result in damage to equipment.

OPERATION - Continued

NOTE

- In case of emergency while the remote control unit is in use, push the emergency stop switch to shut down operation of the LHS.
- During all vehicle operations, the operator will drive and be responsible for the operation of the LHS cab control box. The assistant acts as a ground guide and will be responsible for directing the operator using hand signals, operating the remote control box and winch, and assisting the operator as needed.

1. Check transfer site for 22 ft 2 in. (6.7 m) overhead clearance, ground firmness, and level ground.
2. If the BAP is loaded, ensure load is properly secured.

WARNING



- When operating vehicle with palletized load system (PLS) trailer, the heaviest loaded BAP must always be placed on the vehicle. Failure to comply may result in serious injury or death to personnel.
- Ensure trailer air system is pressurized prior to beginning transfer or flatrack locks may not engage properly. Failure to comply may result in serious injury or death to personnel.

CAUTION

- Air pressure in trailer air system must be sufficient to retract trailer locks or damage to trailer locks may occur while attempting to load the BAP on trailer. If air pressure is not sufficient, use vehicle to charge trailer air system using trailer air-charging hose. If air system cannot retract trailer locks, use manual trailer lock retract procedure. Refer to TM 9-2330-385-10. Failure to comply may result in damage to equipment.
- Ensure both trailer locks are fully retracted. Failure to comply may result in damage to equipment.

3. Push in on knob (Figure 1, Item 1), and retract both left and right trailer locks (Figure 1, Item 2). Ensure lock indicator pins (Figure 1, Item 3) are fully retracted.

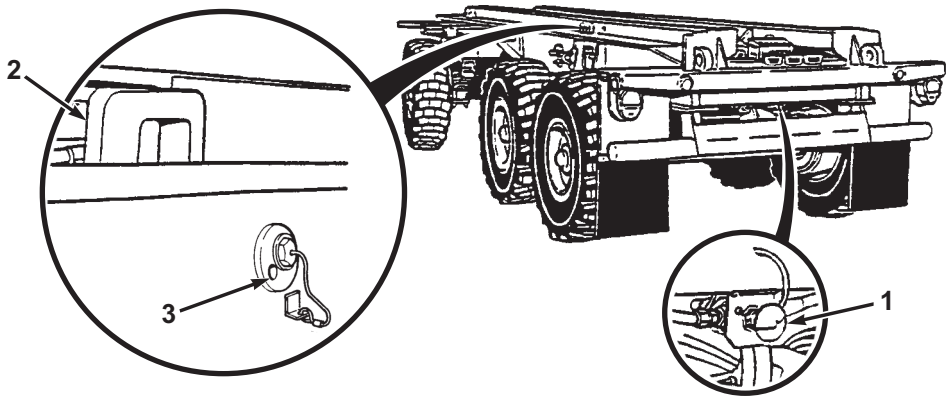


Figure 1. Retract Trailer Locks.

4. Ensure two hydraulic hoses (Figure 2, Item 4) are in the stowed location connections (Figure 2, Item 5).

OPERATION - Continued

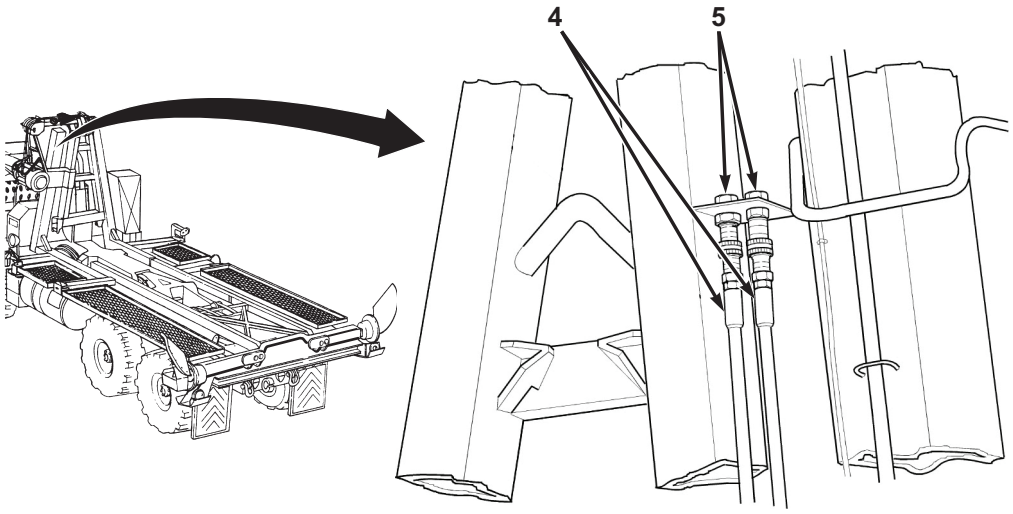


Figure 2. Check Hydraulic Hoses.

5. Secure winch frame to the BAP. Ensure two winch frame locking levers (Figure 3, Item 6) are in the up position. If locking levers (Figure 3, Item 6) are not up:

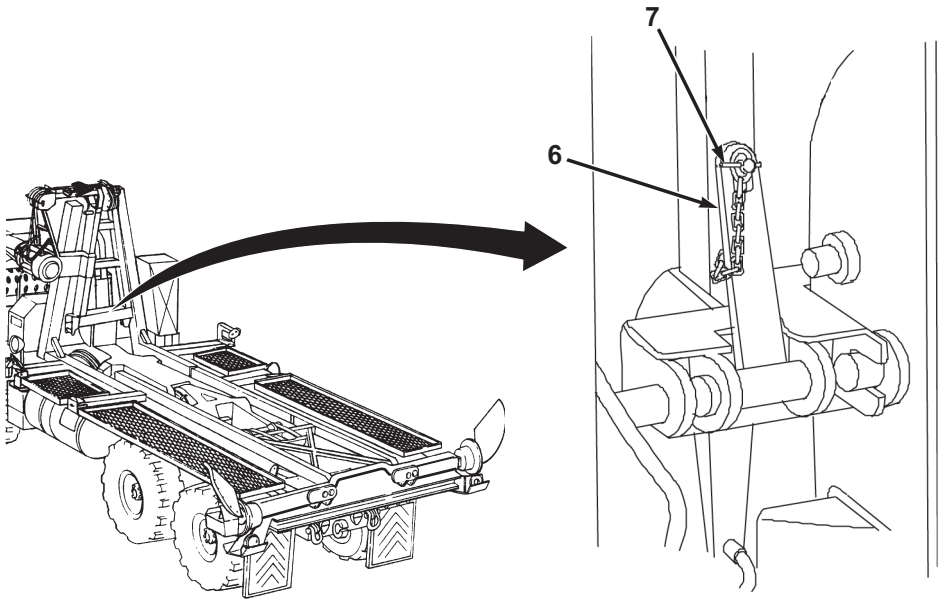


Figure 3. Lock Winch Frame to BAP.

a. Remove lockpin (Figure 3, Item 7) from each locking lever (Figure 3, Item 6).

b. Swing locking lever (Figure 3, Item 6) to the up position.

c. Insert lockpin (Figure 3, Item 7) into locking lever (Figure 3, Item 6).

OPERATION - Continued

6. Ensure curb-side and road-side BAP hold-down lock handles (Figure 4, Item 8) are in the unlocked position (handle pulled out).

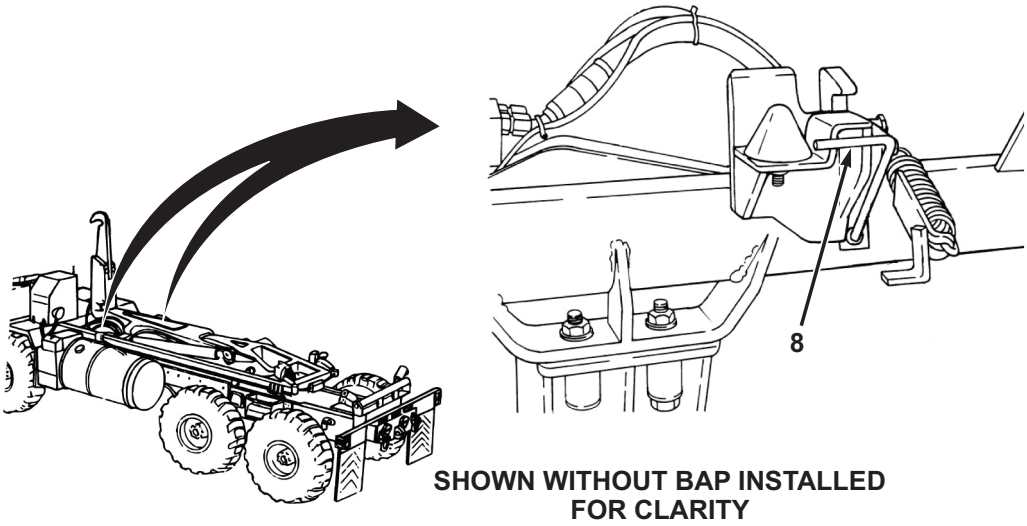


Figure 4. Unlock BAP from CBT.

7. Ensure both PLS feet (Figure 5, Item 9) are in the stowed position (up).

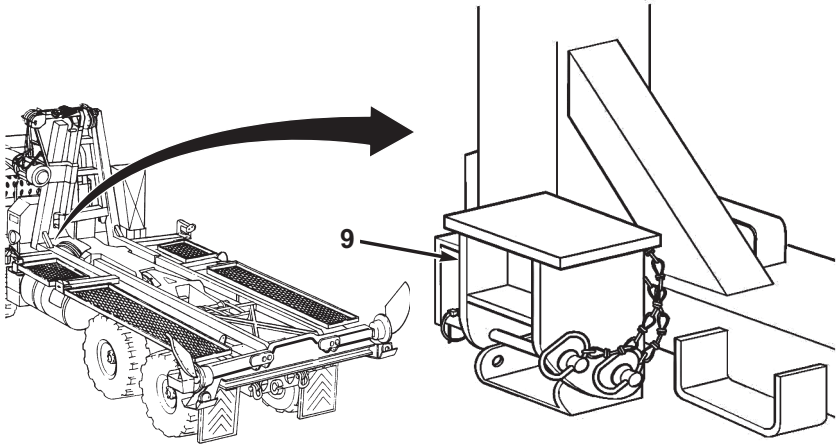


Figure 5. Position PLS Feet.

NOTE

Operation of each (road-side and curb-side) transload roller is the same.

8. Deploy both BAP transload rollers (Figure 6, Item 10):

OPERATION - Continued

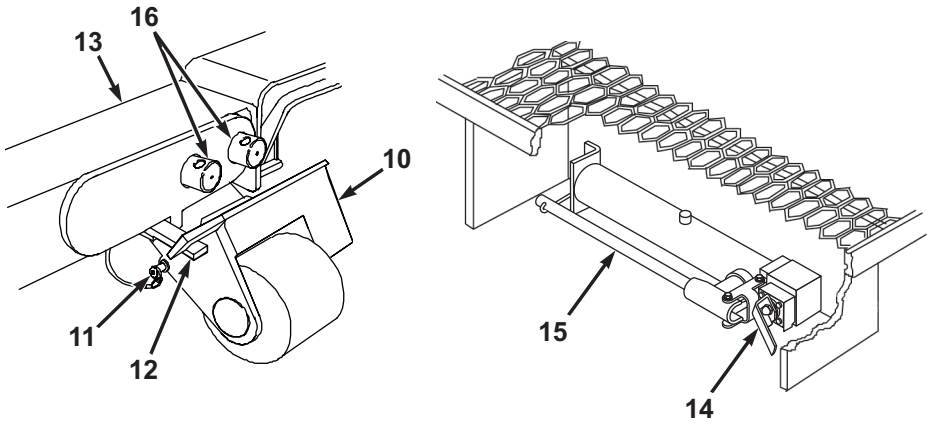


Figure 6. Position Transload Rollers.

a. Remove lockpin (Figure 6, Item 11) from transload roller (Figure 6, Item 10), and swing transload roller (Figure 6, Item 10) up. Stow retainer bar (Figure 6, Item 12) under BAP frame (Figure 6, Item 13). Install lockpin (Figure 6, Item 11) in stowed position on transload roller (Figure 6, Item 10).

b. Turn hand pump selector valve lever (Figure 6, Item 14) to transload position (down). Pump handle (Figure 6, Item 15) until both curb-side and road-side extension cylinders (Figure 6, Item 16) are fully extended.

CAUTION

Both trailer bumper points must be under vehicle bump plate, and at least one trailer bumper point must contact bump plate. Trailer bumper point not contacting vehicle bumper stop cannot exceed 0.5 in. (12.7 mm) or the BAP will miss main rail guides. Failure to comply may result in damage to equipment.

9. Back up vehicle so trailer bumper points (Figure 7, Item 17) are under flange and contact bump plate (Figure 7, Item 18).

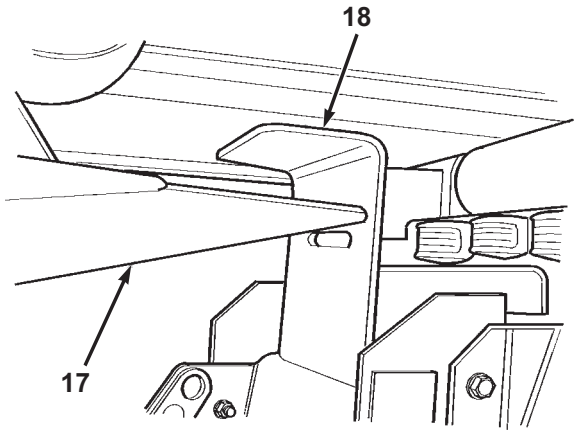


Figure 7. Bumper Points and Bump Plate.

OPERATION - Continued

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

10. Pull out PARKING BRAKE control (Figure 8, Item 19).

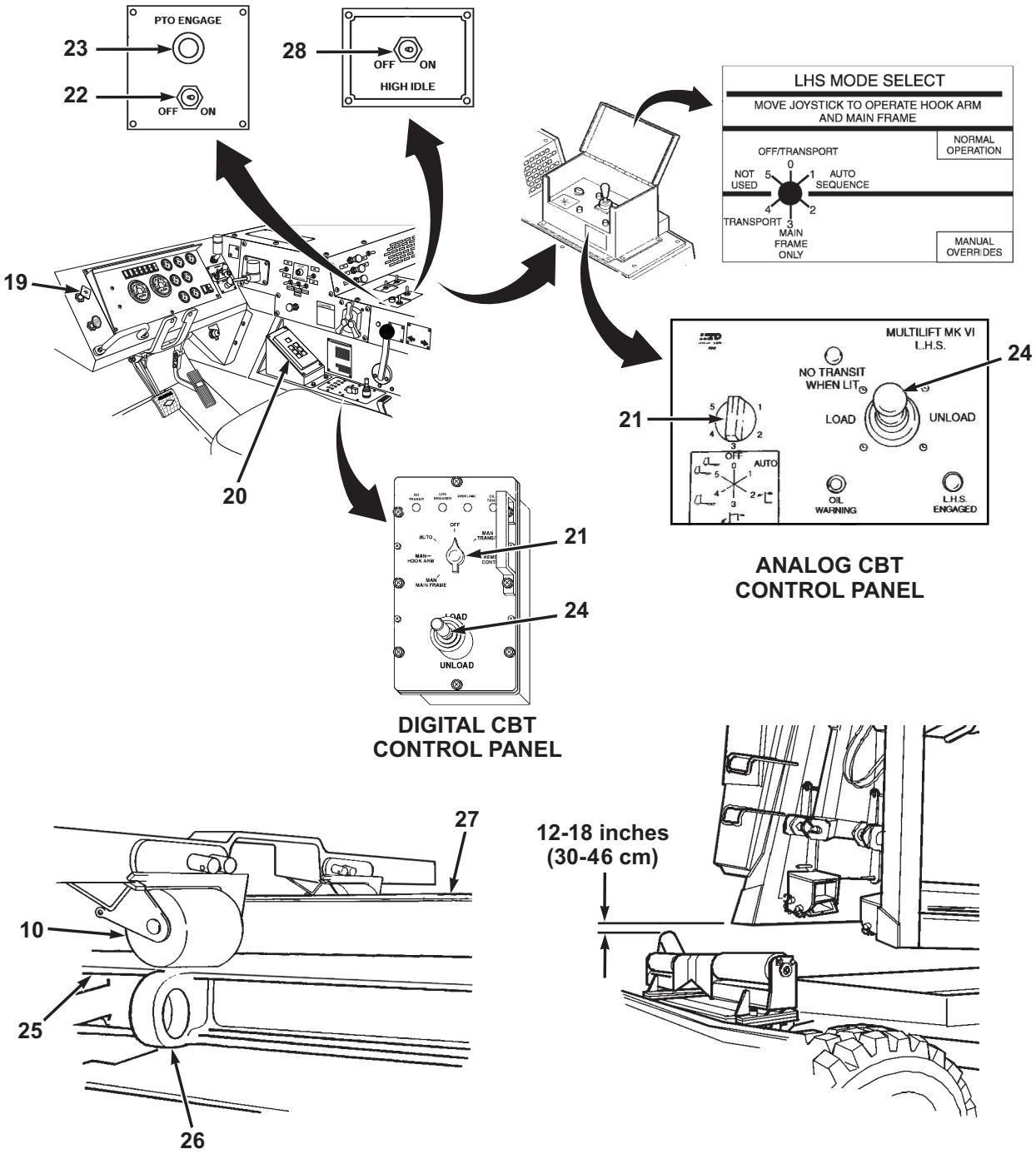


Figure 8. Cab LHS Controls and Initial Contact with Trailer.

OPERATION - Continued

11. Set transmission range selector (Figure 8, Item 20) to N (neutral).
12. Turn LHS MODE SELECT switch (Figure 8, Item 21) to AUTO.

CAUTION

- Do not set PTO ENGAGE switch to ON with HIGH IDLE switch ON. Engaging the PTO with HIGH IDLE switch ON may result in sudden application of hydraulic pressure to the LHS. Failure to comply may result in damage to equipment.
- PTO ENGAGE switch must be positioned OFF before road transport. Failure to comply may result in damage to equipment.

13. Set PTO ENGAGE switch (Figure 8, Item 22) to ON position. Indicator light (Figure 8, Item 23) will illuminate.

WARNING



Trailer wheels must be chocked during transfer operations. Failure to comply may result in serious injury or death to personnel.

CAUTION

If transload rollers roll over lifting eyes, damage to the BAP could occur. Failure to comply may result in damage to equipment.

NOTE

The amount of time it takes to load and unload is controlled by engine speed. To reduce loading and unloading times, engine speed can be increased to approximately 1200 rpm by engaging HIGH IDLE switch.

14. Move joystick (Figure 8, Item 24) to UNLOAD until both transload rollers (Figure 8, Item 10) contact trailer (Figure 8, Item 25). Ensure transload rollers (Figure 8, Item 10) clear the top of trailer lifting eyes (Figure 8, Item 26).
15. Release joystick (Figure 8, Item 24).
16. Ensure trailer guides (Figure 8, Item 27) are between transload rollers (Figure 8, Item 10).

NOTE

If trailer guides are not between transload rollers, perform Step (17). If trailer guides are aligned, proceed to Step (18).

17. If trailer guides (Figure 8, Item 27) are not between transload rollers (Figure 8, Item 10):
    a. Move joystick (Figure 8, Item 24) to LOAD.
    b. When the BAP is fully reloaded, release joystick (Figure 8, Item 24). Reposition vehicle to line up with trailer.
    c. Repeat Steps (9) through (16).
18. Set HIGH IDLE switch (Figure 8, Item 28) to ON position.
19. Move joystick (Figure 8, Item 24) to UNLOAD until BAP front end fully contacts trailer (Figure 8, Item 25).
20. Release joystick (Figure 8, Item 24).

OPERATION - Continued

21. Set HIGH IDLE switch (Figure 8, Item 28) to OFF position.
22. Turn LHS MODE SELECT switch (Figure 8, Item 21) to MAN HOOK ARM.
23. Move joystick (Figure 8, Item 24) to LOAD until front of BAP is raised approximately 6 to 8 in. (15 to 20 cm) and then stop.
24. Turn LHS MODE SELECT switch (Figure 9, Item 21) to MAN MAIN FRAME.

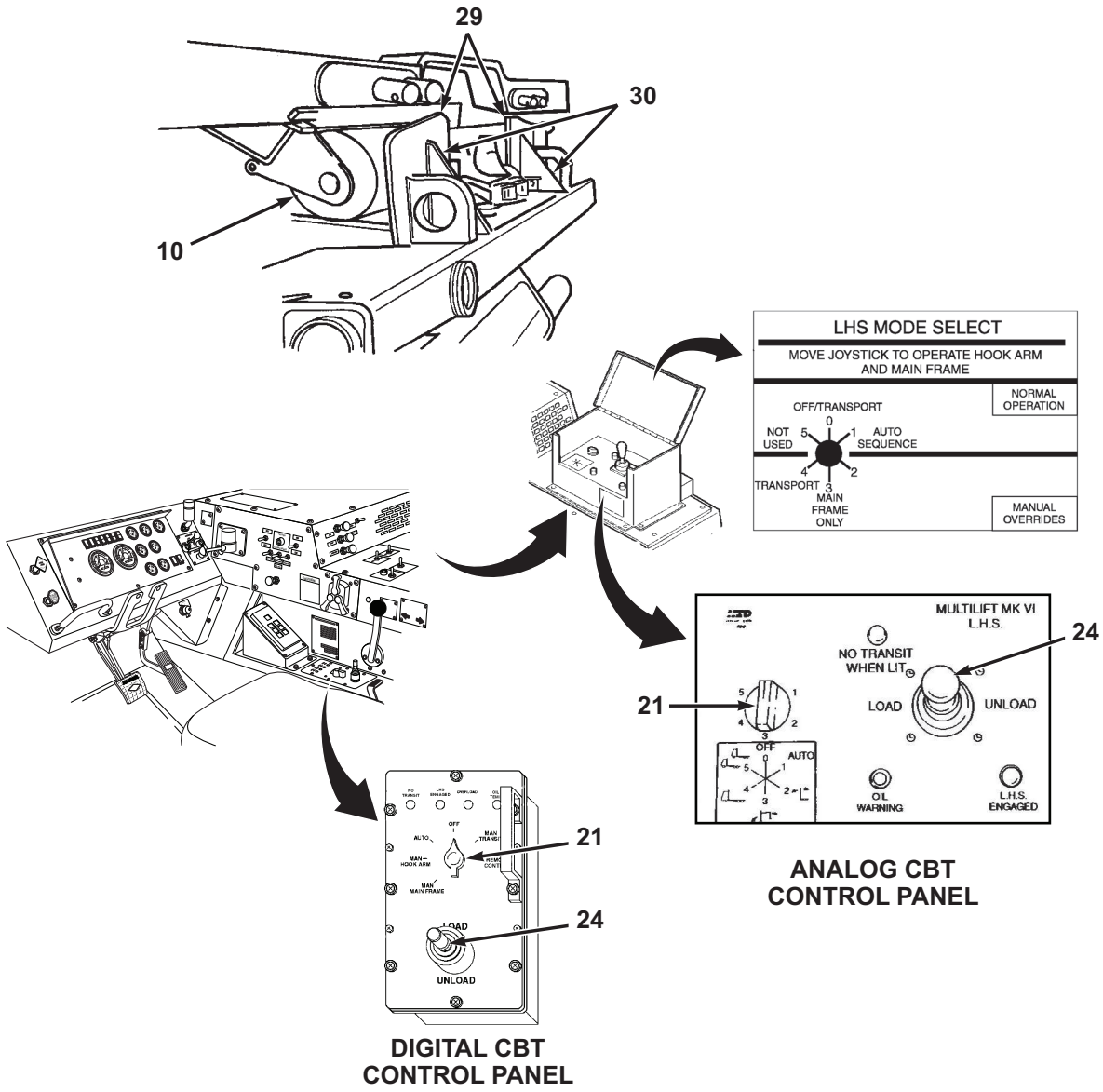


Figure 9. Cab LHS Controls and Final Stopping Point on Trailer.

25. Move joystick (Figure 9, Item 24) to UNLOAD until both transload rollers (Figure 9, Item 10) contact rear trailer stops (Figure 9, Item 30) and front of BAP main rails (Figure 9, Item 29) are seated on trailer.
26. Release joystick (Figure 9, Item 24).

OPERATION - Continued

27. Move hand pump selector valve lever (Figure 10, Item 14) to transload roller UP position, allowing the BAP to lower onto trailer. When lowered, move hand pump selector valve lever (Figure 10, Item 14) to OFF position.

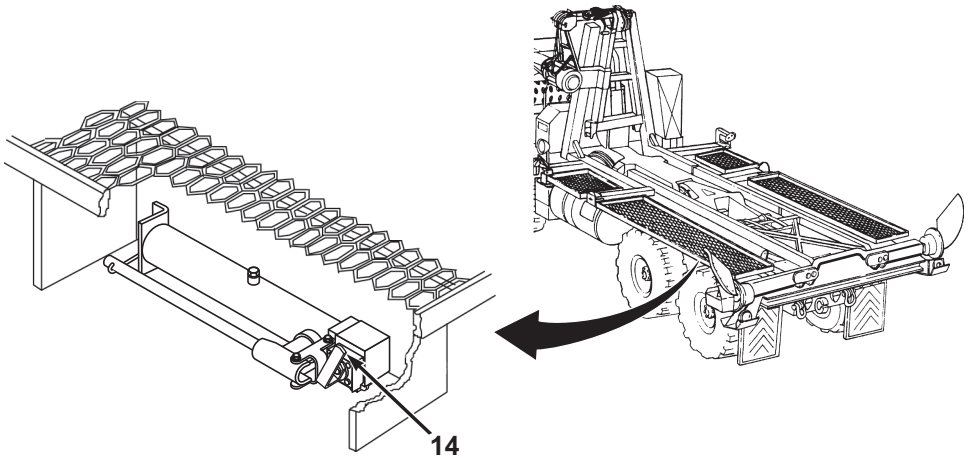


Figure 10. Lower BAP to Trailer.

28. Pull knob (Figure 11, Item 1) and engage curb-side and road-side trailer locks (Figure 11, Item 2).

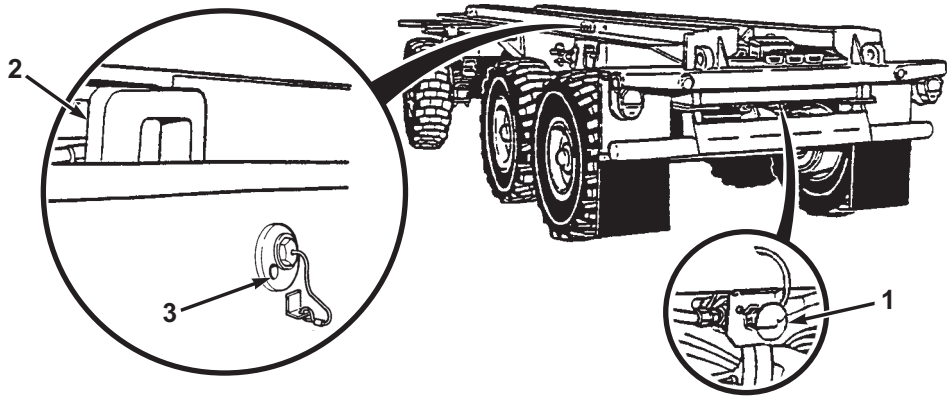


Figure 11. Engaging Trailer Locks.

29. Ensure trailer locks (Figure 11, Item 2) are engaged. Ensure lock indicator pin (Figure 11, Item 3) is extended approximately 2 in. (5 cm).

OPERATION - Continued

30. Remove lockpin (Figure 12, Item 31), pin (Figure 12, Item 32), and bail bar lock (Figure 12, Item 33) from LHS hook (Figure 12, Item 34).

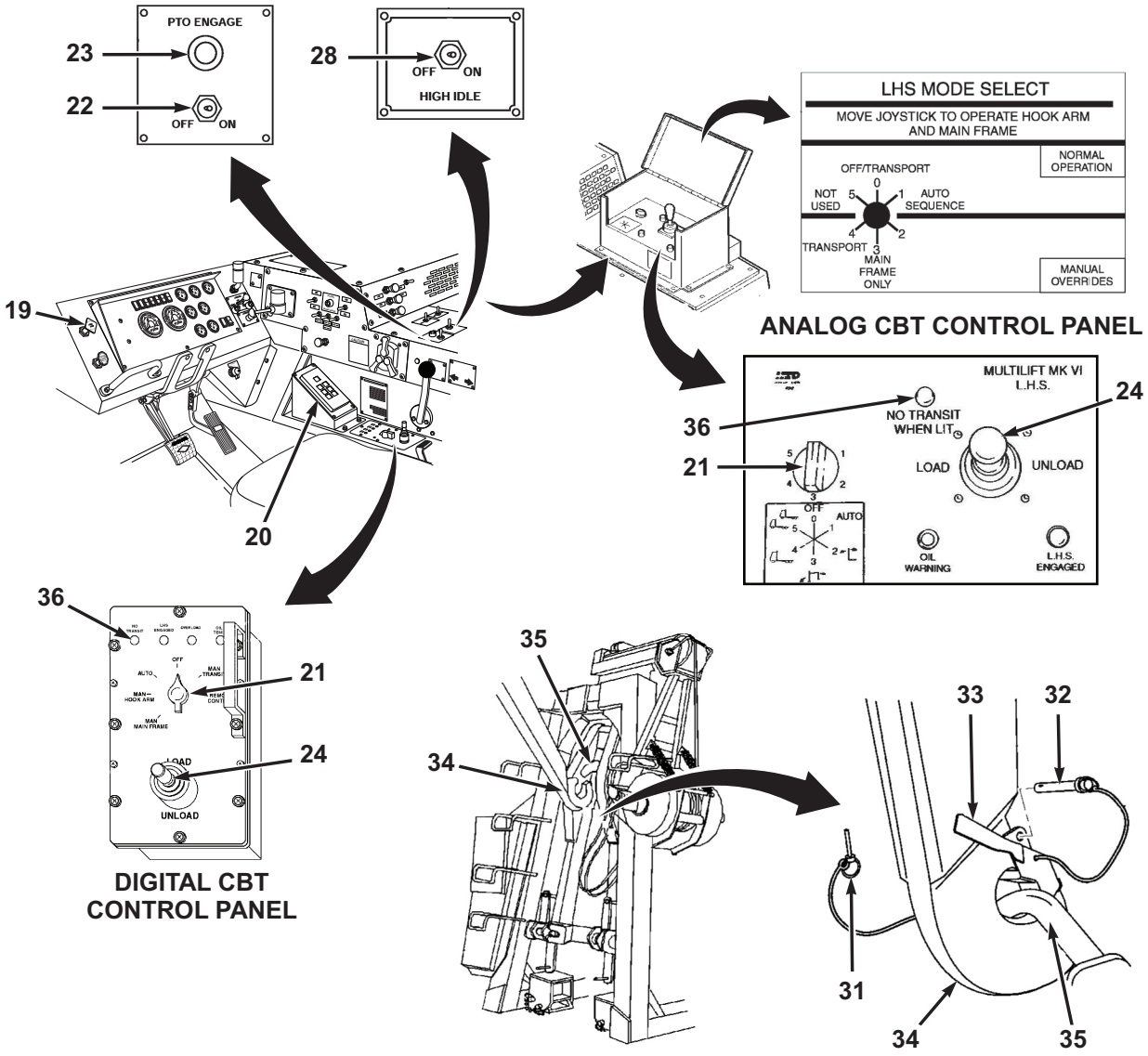


Figure 12. Cab LHS Controls and Hook Disengage.

31. Turn LHS MODE SELECT switch (Figure 12, Item 21) to MAN HOOK ARM.

NOTE

It may be necessary to repeat Steps (32) and (33) several times in order to clear hook arm from bail bar.

32. Move joystick (Figure 12, Item 24) to UNLOAD to allow top of LHS hook (Figure 12, Item 34) to clear BAP bail bar (Figure 12, Item 35).

OPERATION - Continued

33. Set transmission range selector (Figure 12, Item 20) to D (drive) and move forward slowly, making sure LHS lift hook (Figure 12, Item 34) clears BAP bail bar (Figure 12, Item 35).

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

34. Push in PARKING BRAKE control (Figure 12, Item 19).
35. Move vehicle forward approximately 5 ft. (1.5 m).
36. Pull out PARKING BRAKE control (Figure 12, Item 19).
37. Set transmission range selector (Figure 12, Item 20) to N (neutral).

NOTE

LHS hook arm does not need to be fully stowed if more transfer operations are going to be done.

38. Turn LHS MODE SELECT switch (Figure 12, Item 21) to AUTO.
39. Set HIGH IDLE switch (Figure 12, Item 28) to ON position.

WARNING



When NO TRANSIT indicator is illuminated, vehicle may be maneuvered in the immediate vicinity of the loading/unloading site. However, vehicle is unsafe for road travel. Do not perform open-road driving when NO TRANSIT indicator is illuminated. Failure to comply may result in serious injury or death to personnel and damage to equipment.

40. Move joystick (Figure 12, Item 24) to LOAD and hold in position until NO TRANSIT indicator (Figure 12, Item 36) light goes out.
41. Set HIGH IDLE switch (Figure 12, Item 28) to OFF position.
42. Position PTO ENGAGE switch (Figure 12, Item 22) to OFF position. Indicator light (Figure 12, Item 23) will go out.

CAUTION

While maneuvering vehicle in the immediate vicinity of the loading or unloading site, LHS MODE SELECT switch may be in any setting. However, LHS MODE SELECT switch must be set to OFF/TRANSPORT prior to road travel. Failure to comply may result in damage to equipment.

43. Turn LHS MODE SELECT switch (Figure 12, Item 21) to OFF.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
NORMAL TRANSFER OF BRIDGE ADAPTER PALLET (BAP) FROM TRAILER TO VEHICLE

INITIAL SETUP:

Personnel Required
(2)

References
TM 9-2330-385-10 (WP 0076)

References (cont.)
TM 9-2320-425-10 (WP 0076)
TM 9-2320-435-10 (WP 0076)

GENERAL

NOTE

Perform all operator's before-preventive maintenance checks (WP 0034) prior to operating the CBT and/or BAP. Ensure all checks and adjustments have been completed by field level maintenance.

1. This section contains instructions for safely operating the CBT and BAP under usual conditions.
2. Instructions for safely operating the vehicle in unusual conditions are covered in WP 0017 through WP 0022 of this manual.

OPERATION

WARNING



- Prior to and during any load or unload cycle, all personnel should stay clear of LHS and BAP. Failure to comply may result in serious injury or death to personnel.
- Trailer wheels must be chocked during transfer operations. Failure to comply may result in serious injury or death to personnel.

CAUTION

- Ensure air lines and cables are properly stowed. Refer to TM 9-2330-385-10. Failure to comply may result in damage to equipment.
- To avoid damage to equipment during transfer operations, ensure trailer drawbar extension is retracted and drawbar is in the down position against the ground and centered forward of the trailer. Ensure drawbar and drawbar extension are properly positioned Refer to TM 9-2330-385-10. Failure to comply may result in damage to equipment.

OPERATION - Continued

NOTE

- In case of emergency while the remote control unit is in use, push the emergency stop switch to shut down operation of the LHS.
- During all vehicle operations, the operator will drive and be responsible for the operation of the LHS cab control box. The assistant acts as a ground guide and will be responsible for directing the operator using hand signals, operating the remote control box and winch, and assisting the operator as needed.

1. Check transfer site for 22 ft. (6.7 m) overhead clearance, ground firmness, and level within one percent slope in all directions.
2. Align rear of vehicle with the BAP. Stop approximately 5 ft. (1.5 m) from the BAP. Refer to TM 9-2320-425-10 or TM 9-2320-435-10.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

3. Pull out PARKING BRAKE control (Figure 1, Item 1), or apply service brake pedal (Figure 1, Item 2).

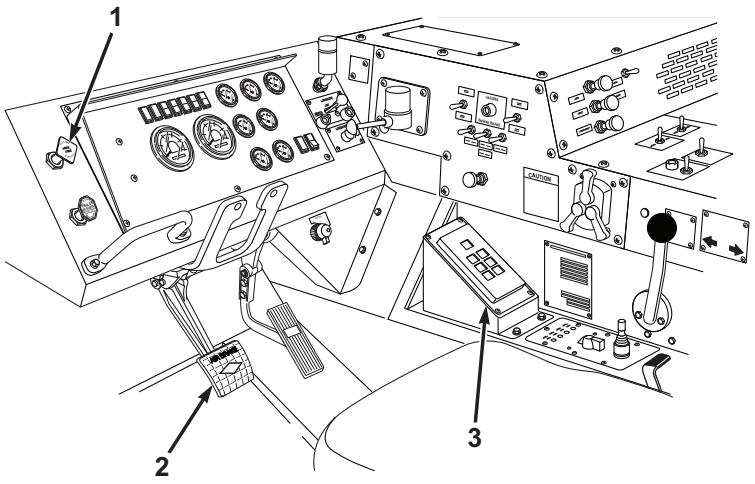


Figure 1. Brake and Transmission Controls.

4. Set transmission range selector (Figure 1, Item 3) to N (neutral).

NOTE

If the BAP is loaded, ensure load is properly secured.

5. Ensure winch frame is secured to the BAP. Ensure two winch frame locking levers (Figure 2, Item 4) are in the UP position. If locking levers (Figure 2, Item 4) are not up:

OPERATION - Continued

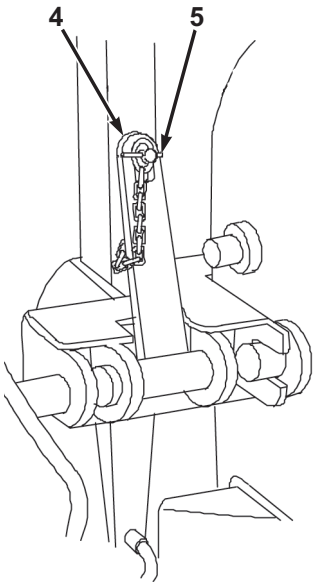


Figure 2. Lock Winch Frame to BAP.

a. Remove lockpin (Figure 2, Item 5) from each locking lever (Figure 2, Item 4).

b. Swing locking lever (Figure 2, Item 4) to the up position.

c. Insert lockpin (Figure 2, Item 5) into locking lever (Figure 2, Item 4).

6. Ensure two hydraulic hoses (Figure 3, Item 6) are secured to the stowed location connections (Figure 3, Item 7).

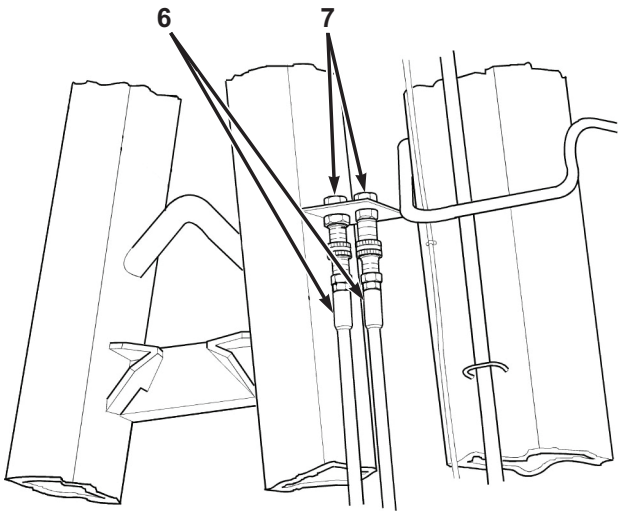


Figure 3. Stow Hydraulic Hoses.

OPERATION - Continued

CAUTION

Ensure BAP hold down locks in engaged (in position). Failure to comply may result in damage to equipment.

7. Push in each of two BAP hold-down locks (Figure 4, Item 8).

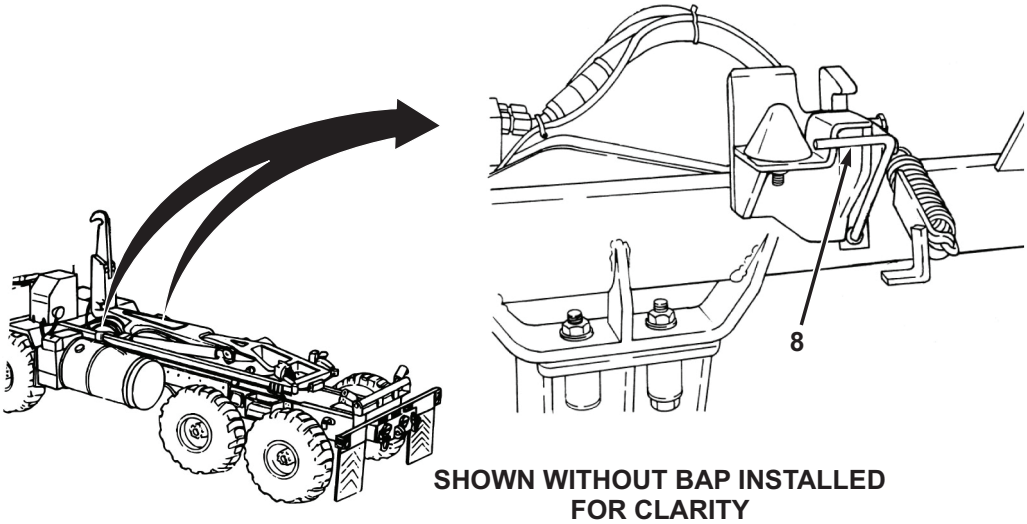


Figure 4. Position BAP Hold Down Locks.

CAUTION

- Air pressure must be sufficient in trailer air system to retract trailer locks, or damage to trailer locks can occur while attempting to remove the BAP from trailer. If air pressure is not sufficient, use vehicle to charge trailer air system using trailer air-charging hose. If air system cannot retract trailer locks, use manual trailer lock retract procedure Refer to TM 9-2330-385-10. Failure to comply may result in damage to equipment.
- Ensure both trailer locks are fully retracted. Failure to comply may result in damage to equipment.

8. Push knob (Figure 5, Item 9) on trailer to retract both trailer locks (Figure 5, Item 10). Ensure curb-side and road-side lock indicator pins (Figure 5, Item 11) are fully retracted.

OPERATION - Continued

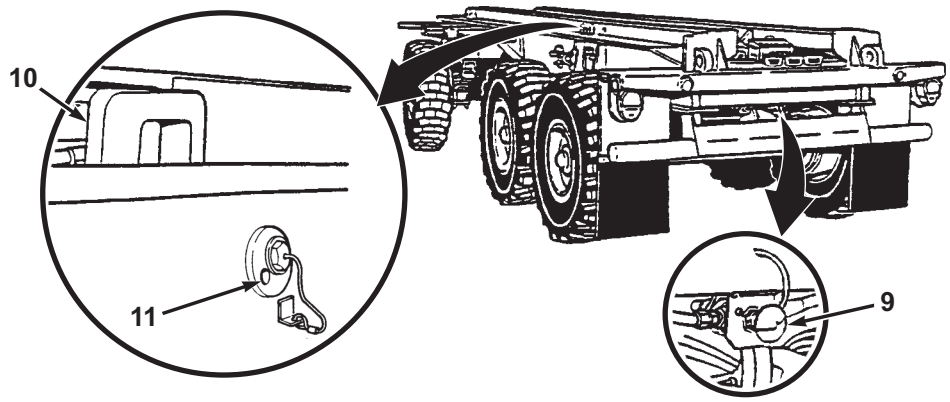


Figure 5. Disengage Trailer Locks.

CAUTION

Ensure both trailer locks are fully retracted. Failure to comply may result in damage to equipment.

9. Ensure both trailer locks (Figure 5, Item 10) are fully retracted.
10. Move hand pump selector valve lever (Figure 6, Item 12) to transload roller DOWN position.

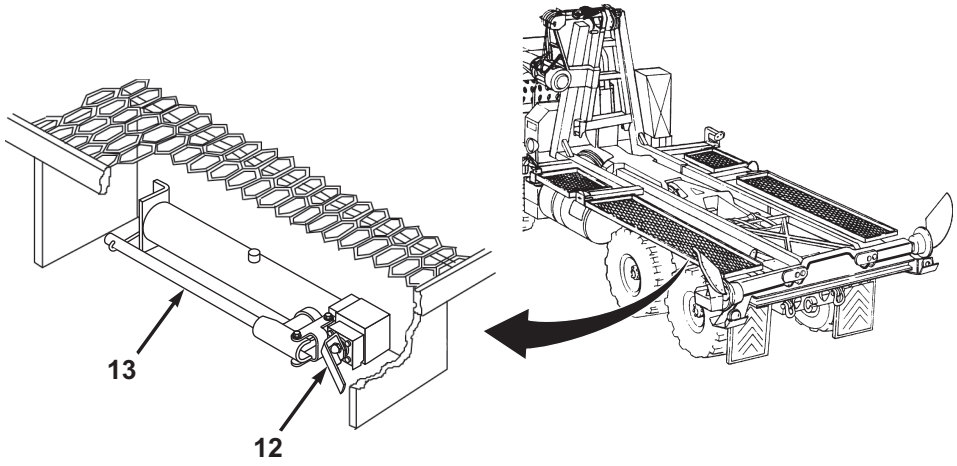


Figure 6. Raise BAP with Transload Rollers.

11. Operate hand pump (Figure 6, Item 13) until all four extension cylinders are fully extended. Rear of the BAP should be raised about 4 in. (10 cm).

OPERATION - Continued

12. Turn LHS MODE SELECT switch (Figure 7, Item 14) to AUTO.

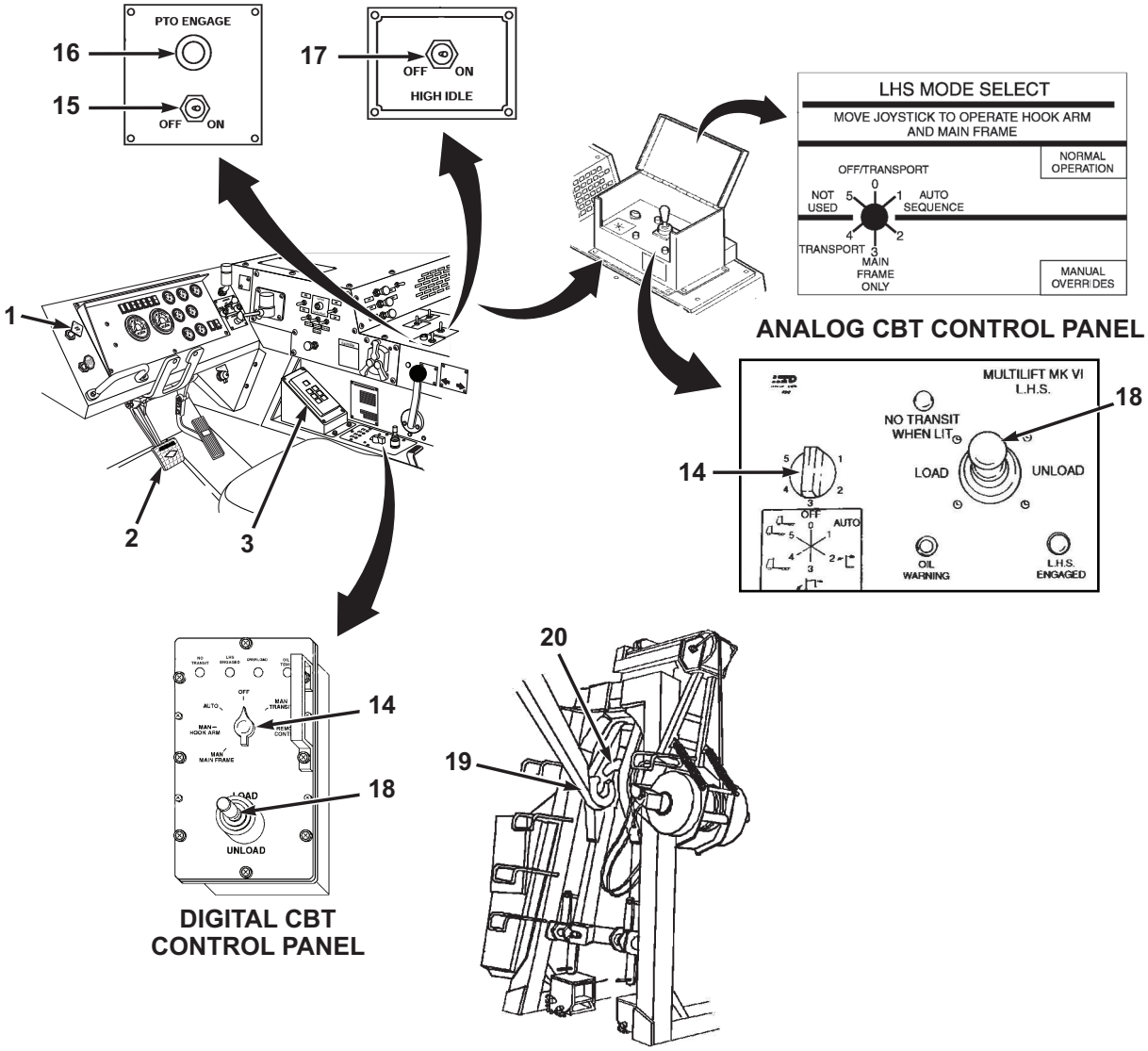


Figure 7. Cab LHS Controls.

CAUTION

- When selecting PTO ENGAGE switch, engine must be at low idle speed. Selection of PTO ENGAGE switch with HIGH IDLE switch on may result in sudden application of hydraulic pressure to LHS. Failure to comply may result in damage to equipment.
- PTO ENGAGE switch must be turned off before road transport. Failure to comply may result in damage to equipment.

13. Set PTO ENGAGE switch (Figure 7, Item 15) to ON position. Indicator light (Figure 7, Item 16) will illuminate.
14. Set HIGH IDLE switch (Figure 7, Item 17) to ON position.

OPERATION - Continued

15. Move joystick (Figure 7, Item 18) to UNLOAD until bottom tip of LHS lift hook (Figure 7, Item 19) is just below level of BAP bail bar (Figure 7, Item 20).
16. Set HIGH IDLE switch (Figure 7, Item 17) to OFF position.

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

17. Push in PARKING BRAKE control (Figure 7, Item 1), or release service brake pedal (Figure 7, Item 2).
18. Place transmission range selector (Figure 7, Item 3) to R (reverse), and back up vehicle until LHS lift hook (Figure 7, Item 19) engages BAP bail bar (Figure 7, Item 20).
19. Set transmission range selector (Figure 7, Item 3) to N (neutral).
20. Pull out PARKING BRAKE control (Figure 7, Item 1), or apply service brake pedal (Figure 7, Item 2).

CAUTION

- Both trailer bumper points must be under vehicle bump plate and at least one trailer bumper point must contact bump plate. Trailer bumper point not contacting vehicle bumper stop cannot exceed 0.5 in. (12.7 mm) or the BAP will miss main rail guides. Failure to comply may result in damage to equipment.
- Do not shift transmission to reverse to back up vehicle while LHS hook arm is attached to the BAP. Failure to comply may result in damage to equipment.

21. Ensure trailer bumper point (Figure 8, Item 21) is under flange of vehicle bump plate (Figure 8, Item 22).

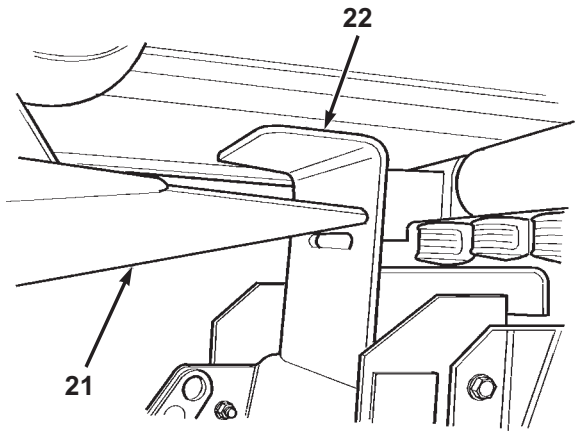


Figure 8. Trailer Bumper Point and Vehicle Bump Plate.

OPERATION - Continued

CAUTION

Ensure trailer air system is pressurized before beginning removal, or BAP locks may not disengage properly. Failure to comply may result in damage to equipment.

NOTE

The time it takes for loading and unloading is controlled by engine speed. To reduce loading and unloading times, engine speed can be increased to approximately 1200 rpm by engaging HIGH IDLE switch.

22. Move joystick (Figure 9, Item 18) to LOAD until LHS lift hook (Figure 9, Item 19) engages BAP bail bar (Figure 9, Item 20).

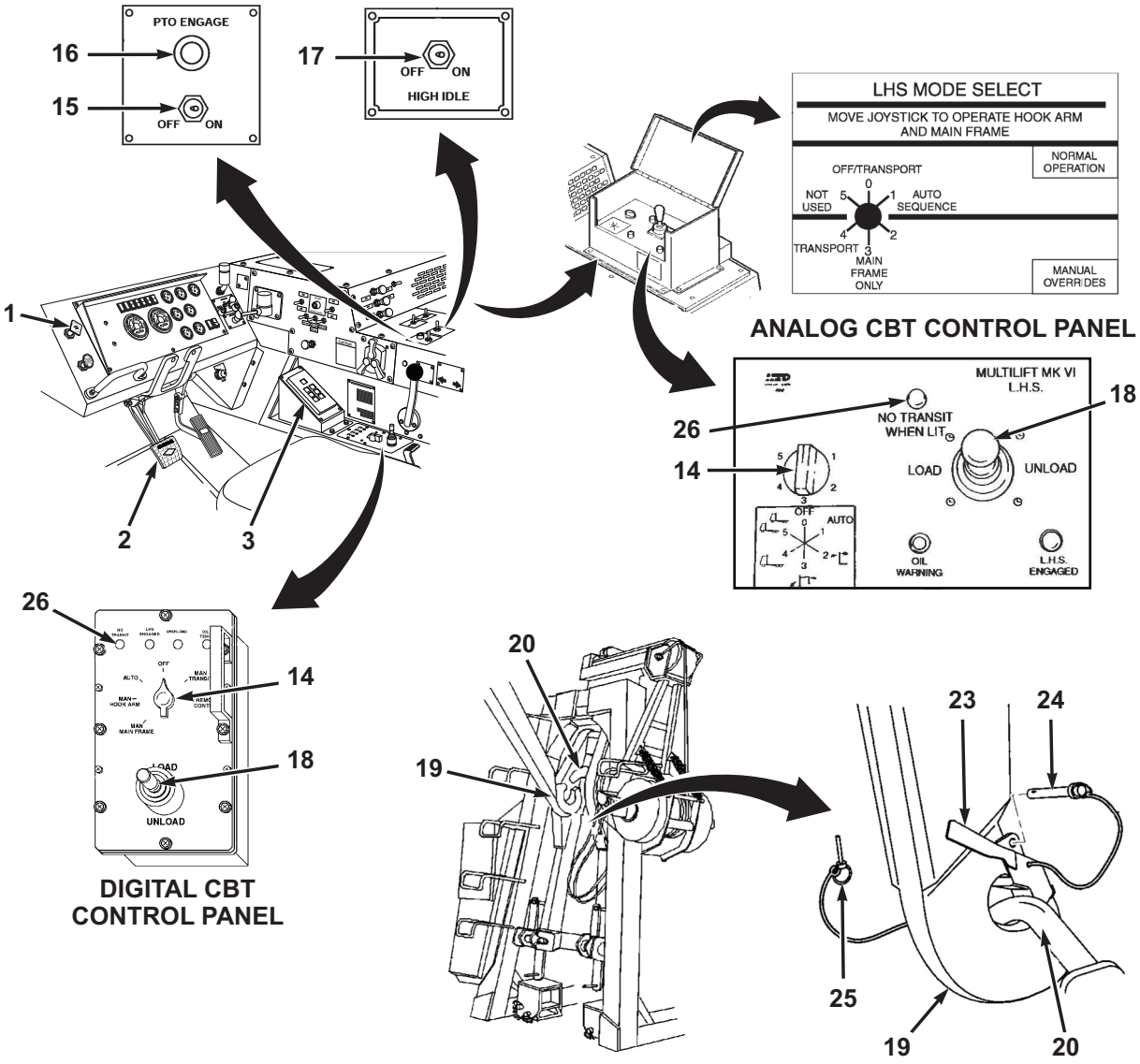


Figure 9. Cab LHS Controls and Bail Bar Lock.

OPERATION - Continued

23. Install bail bar lock (Figure 9, Item 23) on LHS hook (Figure 9, Item 19) with pin (Figure 9, Item 24) and lockpin (Figure 9, Item 25).
24. Move joystick (Figure 9, Item 18) to LOAD, stop when LHS lift hook (Figure 9, Item 19) raises the BAP.
25. Set HIGH IDLE switch (Figure 9, Item 17) to ON position.

WARNING



When NO TRANSIT indicator is illuminated, vehicle may be maneuvered in the immediate vicinity of the loading/unloading site. However, vehicle is unsafe for road travel. Do not perform open-road driving when NO TRANSIT indicator is illuminated. Failure to comply may result in serious injury or death to personnel and damage to equipment.

26. Move joystick (Figure 9, Item 18) to LOAD and stop when NO TRANSIT indicator (Figure 9, Item 26) goes out.
27. Set HIGH IDLE switch (Figure 9, Item 17) to OFF.
28. Push in PARKING BRAKE control (Figure 9, Item 1), or release service brake pedal (Figure 9, Item 2).
29. Set transmission range selector (Figure 9, Item 3) to D (drive), and move vehicle 10 ft. (3 m) from trailer.
30. Pull out PARKING BRAKE control (Figure 9, Item 1), or apply service brake pedal (Figure 9, Item 2).

NOTE

If BAP hold-down locks do not engage, raise the BAP slightly and lower again. The BAP should seat completely and engage BAP hold-down locks.

31. Set PTO ENGAGE switch (Figure 9, Item 15) to OFF position. Indicator light (Figure 9, Item 16) will go out.

CAUTION

While maneuvering vehicle in the immediate vicinity of the loading or unloading site, LHS MODE SELECT switch may be in any setting. However, LHS MODE SELECT switch must be set to OFF/TRANSPORT prior to road travel. Failure to comply may result in damage to equipment.

32. Turn LHS MODE SELECT switch (Figure 9, Item 14) to OFF.

OPERATION - Continued

33. Stow curb-side and road-side transload rollers (Figure 10, Item 27):

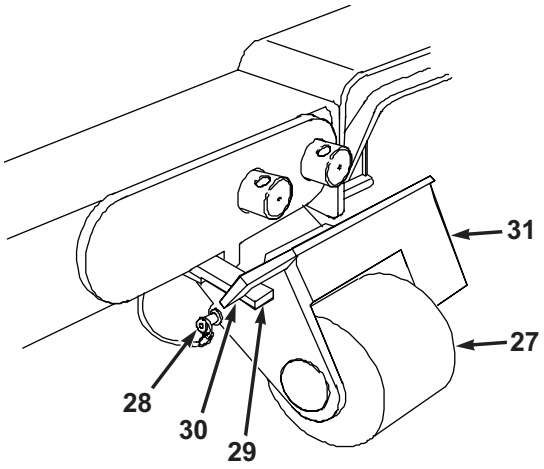


Figure 10. Stow Transload Rollers.

a. Remove lockpin (Figure 10, Item 28) from stowed position on transload rollers (Figure 10, Item 27).

b. While holding transload roller (Figure 10, Item 27), swing retainer bar (Figure 10, Item 29) free of notch (Figure 10, Item 30) on transload rollers (Figure 10, Item 27).

c. Swing transload roller (Figure 10, Item 27) into stowed position, and install lockpin (Figure 10, Item 28) in transload rollers (Figure 10, Item 27).

d. Swing transload bracket (Figure 10, Item 31) up against lockpin (Figure 10, Item 28).

e. Move hand pump selector valve lever (Figure 11, Item 12) to center roller UP position, to allow extension cylinders to retract fully.

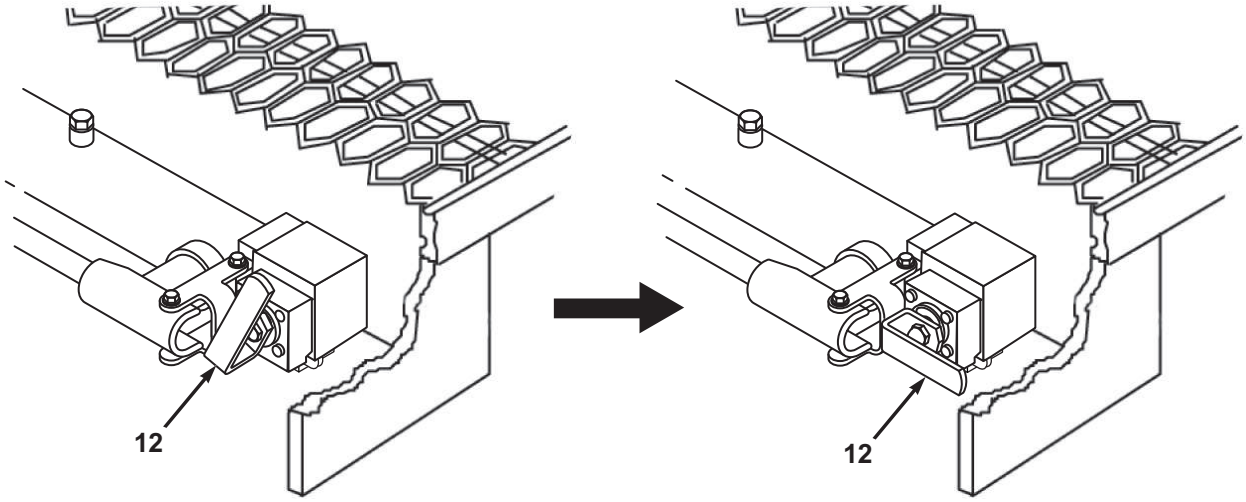


Figure 11. Retract Transload Roller Cylinders.

OPERATION - Continued

f. When extension cylinders are retracted, return selector valve (Figure 11, Item 12) to center position (off).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
BAP HOLD-DOWN LOCKS CHECKLIST

INITIAL SETUP:

References
TM 9-2320-425-10 (WP 0076)
TM 9-2320-435-10 (WP 0076)

CONFIGURE BAP HOLD-DOWN LOCKS

The following tables show the various BAP lock configurations for all BAP operations:

Table 1. BAP Hold-Down Locks Checklist.

		Bridge Bay Free Launch	Controlled Bridge Bay Launch	Water Bridge Bay Retrieval	Unload Bridge Bay to Ground	Load Bridge Bay From Ground
Bap Holddown Locks		DISENGAGED	ENGAGED	ENGAGED	ENGAGED	ENGAGED
Winch Frame Locking Levers		UP (Note 9)	DOWN	DOWN	DOWN	DOWN
Front Pin Locks	Lock	UP	DOWN	DOWN	DOWN	DOWN
	Jaw (Note 3)	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
	Latch (Note 2)	N/A	DOWN	UP	DOWN	UP
Rear Guides		DISENGAGED	DISENGAGED	MID	DISENGAGED	MID
Center Roller		DOWN/UP RAMP	DOWN	DOWN	DOWN	DOWN
Transload Rollers		STOWED	STOWED	STOWED	STOWED	STOWED
PLS Feet		STOWED	STOWED	STOWED	STOWED	STOWED
Hydraulic Lines		UP (Note 9)	ENGAGED	ENGAGED	ENGAGED	ENGAGED
Pneumatic Lines		ENGAGED	STOWED	STOWED	N/A	N/A

CONFIGURE BAP HOLD-DOWN LOCKS - Continued

Table 1. BAP Hold-Down Locks Checklist - Continued.

	Bridge Bay Free Launch	Controlled Bridge Bay Launch	Water Bridge Bay Retrieval	Unload Bridge Bay to Ground	Load Bridge Bay From Ground

Notes:

1. Refer to figure below for location of BAP hold-down locks on vehicle.

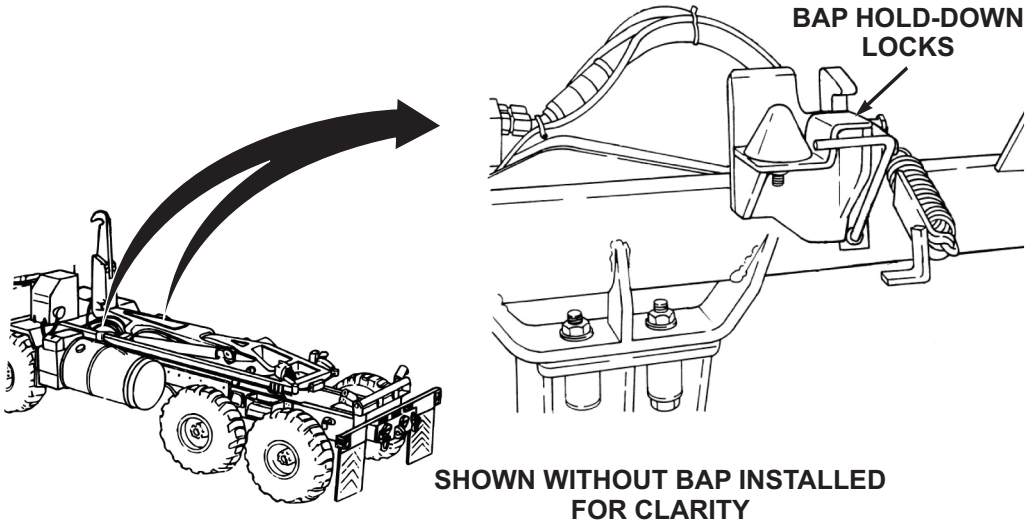


Figure 1. BAP Hold-Down Locks Checklist.

2. Winch frame locking levers - UP position is locked to the BAP, DOWN position is locked to the LHS hook arm.
3. Jaw and latch assembly are shown on page 1-11 of TM 9-2320-425-10 or TM 9-2320-435-10.
4. Not applicable for empty BAP (no bay uploaded).
5. ENGAGED for empty BAP.
6. Release hydraulic pressure on transload rollers to seat BAP fully on trailer.
7. Moved to the fully stowed position after BAP is fully loaded on vehicle.
8. Ramp bay launch requires center roller to be in up position.
9. Winch frame locking levers and hydraulic hoses are returned to stowed position or up after the winch cable and hook are removed from the bay for launch.
10. LHS PMCS requires use of BAP lock checklist if BAP is loaded.
11. Ramp and bay locks are checked according to appropriate.

CONFIGURE BAP HOLD-DOWN LOCKS - Continued

Table 2. BAP Hold-Down Locks Checklist.

		Load BAP From Ground	**Unload BAP to Ground**	**Transport Mode**	**Transload BAP to Trailer**	**Transload BAP to Vehicle**
Bap Holddown Locks		DISENGAGED	DISENGAGED	ENGAGED	DISENGAGED	DISENGAGED
Winch Frame Locking Levers		UP	UP	UP	UP	UP
Front Pin Locks	Lock	UP	UP	UP	UP	UP
	Jaw (Note 3)	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
	Latch (Note 2)	N/A	N/A	DOWN	N/A	N/A
Rear Guides		MID (Note 4)	MID (Note 4)	MID	MID (Note 5)	MID (Note 6)
Center Roller		DOWN	DOWN	DOWN	DOWN	DOWN
Transload Rollers		STOWED	STOWED	STOWED	DOWN (Note 6)	DOWN (Note 7)
PLS Feet		STOWED	STOWED	STOWED	STOWED	STOWED
Hydraulic Lines		STOWED	STOWED	STOWED	STOWED	STOWED
Pneumatic Lines		N/A	N/A	STOWED	N/A	N/A

CONFIGURE BAP HOLD-DOWN LOCKS - Continued

Table 2. BAP Hold-Down Locks Checklist - Continued.

	Load BAP From Ground	Unload BAP to Ground	Transport Mode	Transload BAP to Trailer	Transload BAP to Vehicle

Notes:

1. Refer to figure below for location of BAP hold-down locks on vehicle.

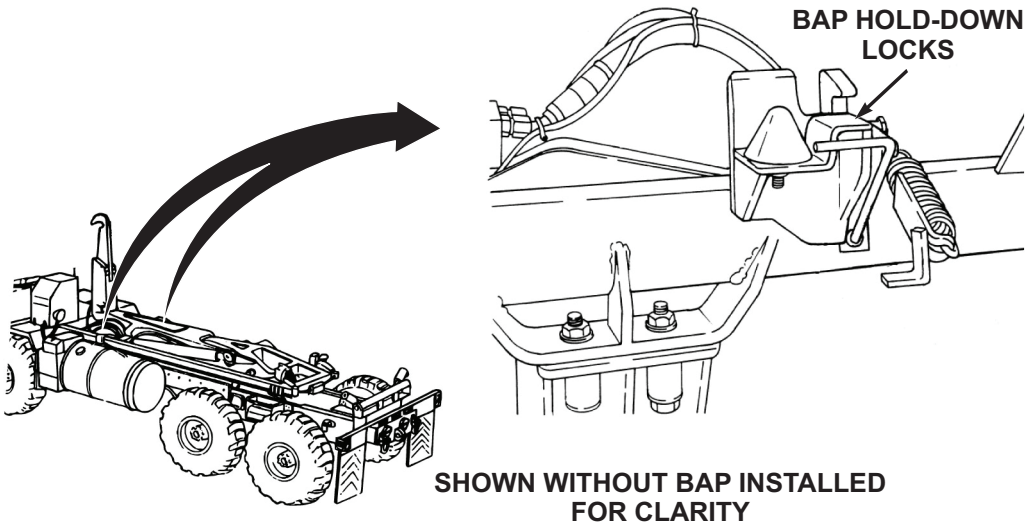


Figure 2. BAP Hold-Down Locks Checklist.

2. Winch frame locking levers - UP position is locked to the BAP, DOWN position is locked to the LHS hook arm.
3. Jaw and latch assembly are shown on page 1-11 of TM 9-2320-425-10 or TM 9-2320-435-10.
4. Not applicable for empty BAP (no bay uploaded).
5. ENGAGED for empty BAP.
6. Release hydraulic pressure on transload rollers to seat BAP fully on trailer.
7. Moved to the fully stowed position after BAP is fully loaded on vehicle.
8. Ramp bay launch requires center roller to be in up position.
9. Winch frame locking levers and hydraulic hoses are returned to stowed position or up after the winch cable and hook are removed from the bay for launch.
10. LHS PMCS requires use of BAP lock checklist if BAP is loaded.
11. Ramp and bay locks are checked according to appropriate.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
DECALS AND INSTRUCTION PLATES

INITIAL SETUP:

Not Applicable

DECALS AND INSTRUCTION PLATES

Figure Item Number	Decal Name	Decal Description
1	Stowage Location	This decal, located in the curb-side BAP toolbox, identifies the locations and the items that are stowed in the toolbox.
2	Bridge Adapter Pallet	This data plate, located on the road side of the BAP A-frame, provides descriptive data pertaining to the BAP.
3	Hand Pump Valve	This data plate, located next to the hand pump, illustrates proper positioning of the hand pump valve.
4	Pull Master	This manufacturers data plate, located on the winch assembly, provides descriptive data pertaining to the winch.
5	IUID Plate	This data plate, located above the BAP plate, has serial number on it and has a scannable radio frequency identification code.
6	BAP Transport By PLS Truck	This data plate, located on the front side of the BAP toolbox, provides instruction on the use of PLS feet.
7	BAP Shipping Data	This data plate shows the height, weight, and length of the BAP.
8	Winch Frame Locks	There are two winch frame locks data plates, located on the front side of the BAP winch frame, providing information on the locking positions.

DECALS AND INSTRUCTION PLATES - Continued

9	Caution	This plate informs of ensuring that hydraulic hoses are connected properly.

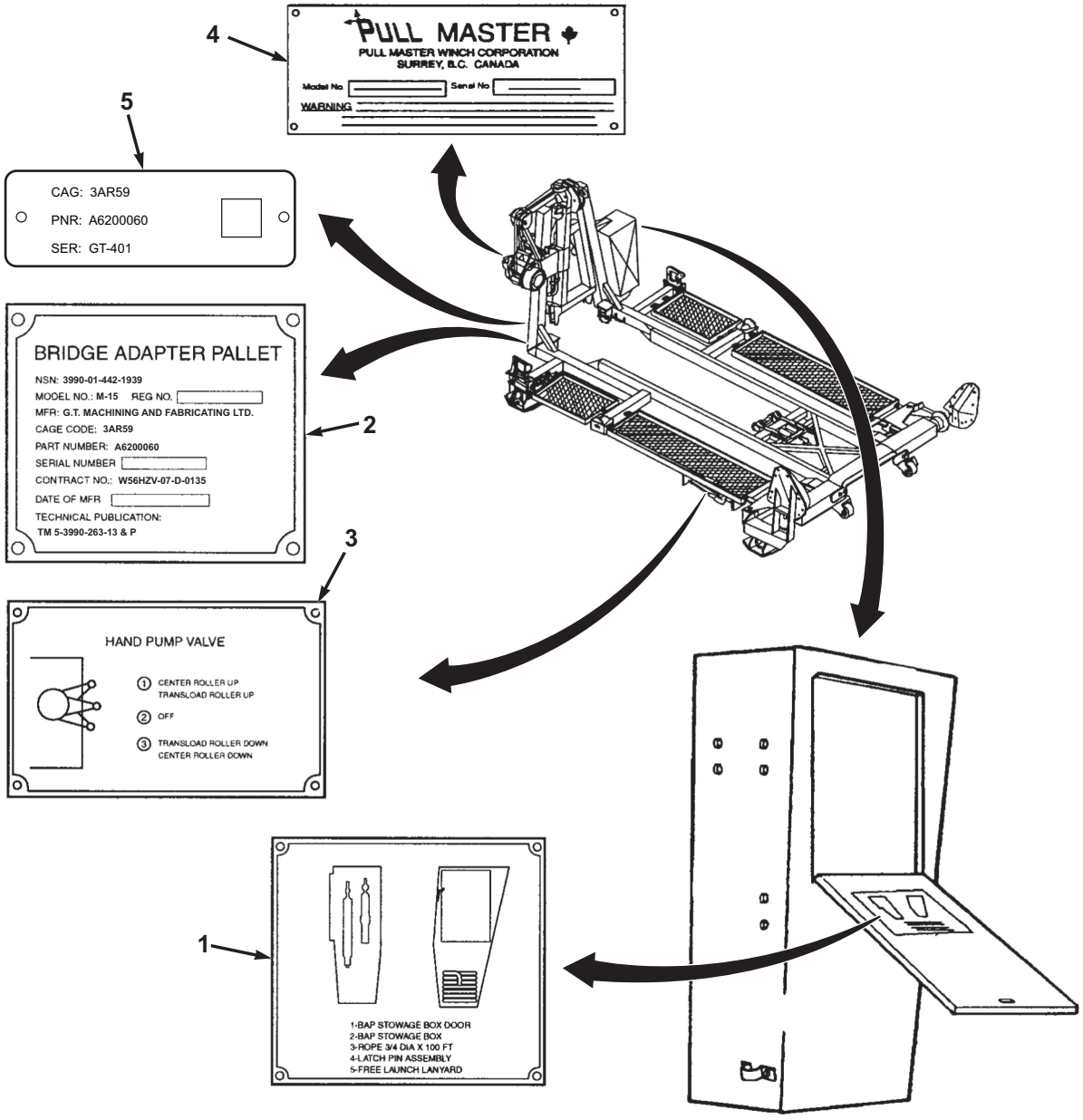


Figure 1. Decal and Instruction Plate Locations. (Sheet 1 of 2)

DECALS AND INSTRUCTION PLATES - Continued

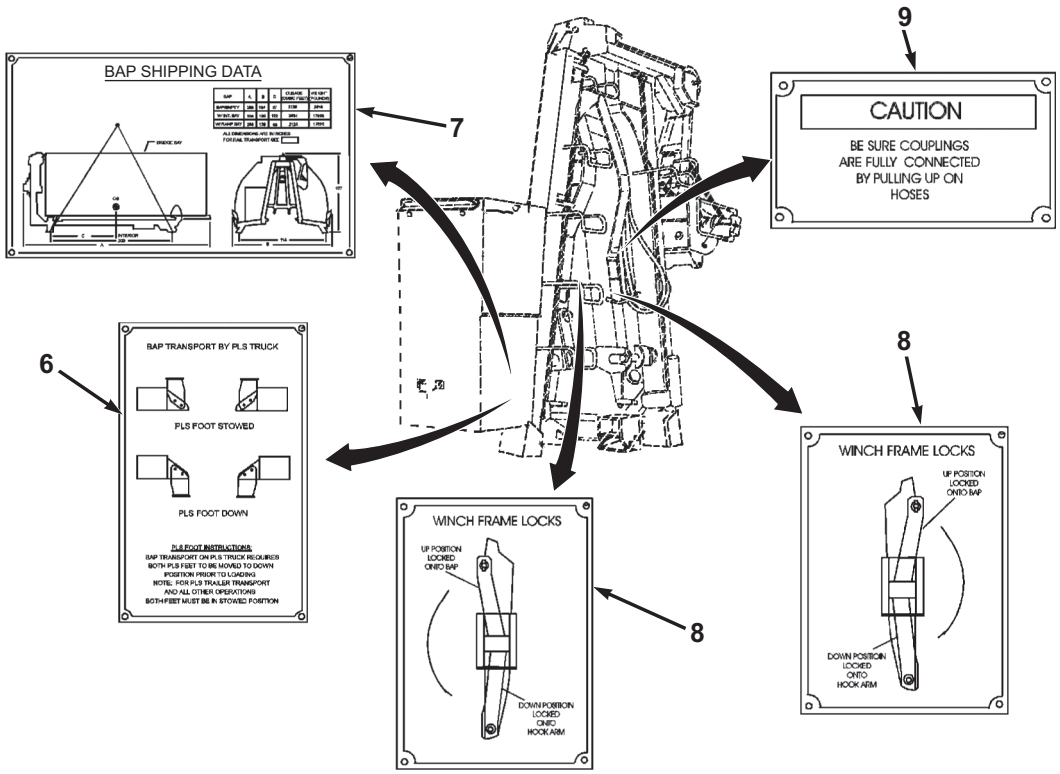


Figure 1. Decal and Instruction Plate Locations. (Sheet 2 of 2)

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
MANUALLY LOADING BRIDGE ADAPTER PALLET (BAP) FROM THE GROUND

INITIAL SETUP:

Personnel Required
(2)

References
TM 9-2320-425-10 (WP 0076)
TM 9-2320-435-10 (WP 0076)

PERFORM PROCEDURE

NOTE

The following manual mode operations using the cab control box are to be performed only when the normal AUTO mode electric circuit is malfunctioning.

1. Secure winch frame to the BAP. Ensure two winch frame locking levers (Figure 1, Item 1) are in the up position.

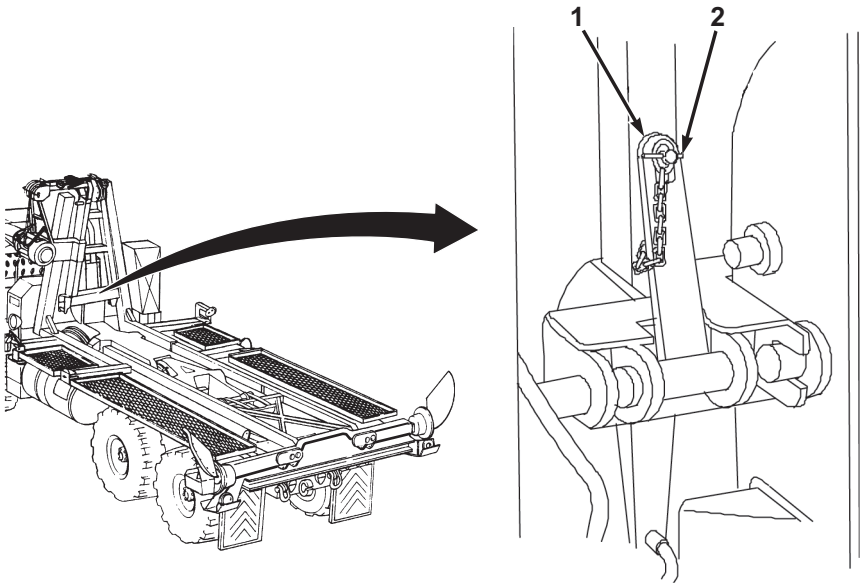


Figure 1. Secure Winch Frame to BAP.

2. If locking levers (Figure 1, Item 1) are not up:
   a. Remove lockpin (Figure 1, Item 2) from each locking lever (Figure 1, Item 1).
   b. Swing locking lever (Figure 1, Item 1) to the up position.
   c. Insert lockpin (Figure 1, Item 2) into locking lever (Figure 1, Item 1).
3. If the BAP is loaded, inspect load and ensure it is secure.

PERFORM PROCEDURE - Continued

4. Ensure BAP hold-down locks (Figure 2, Item 3) are in auto engage position (handle pushed in).

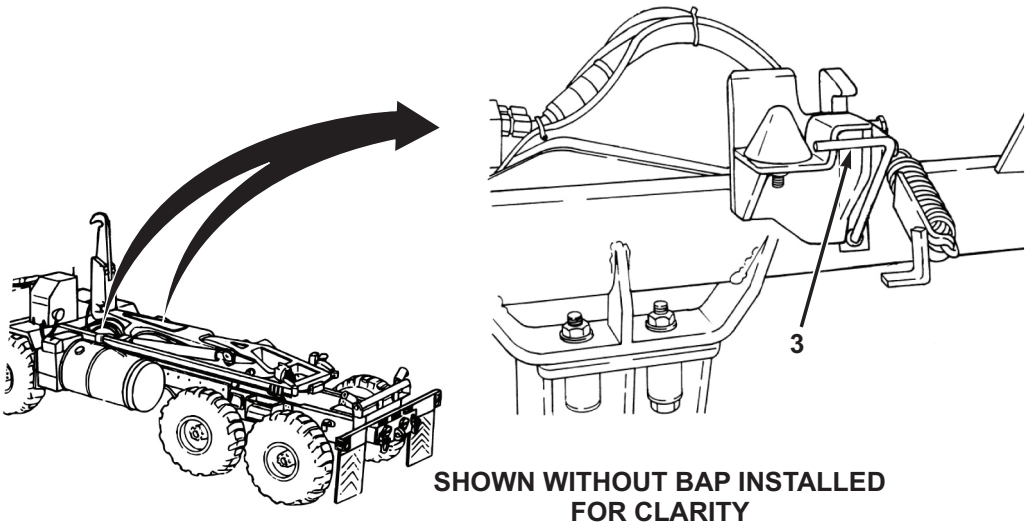


Figure 2. Check Hold-Down Locks.

5. Back up vehicle so that at least 5 ft. (1.5 m) of clearance is available behind vehicle for loading the BAP. Refer to TM 9-2320-425-10 or TM 9-2320-435-10.

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

6. Pull out PARKING BRAKE control (Figure 3, Item 4) or apply service brake pedal (Figure 3, Item 5).

PERFORM PROCEDURE - Continued

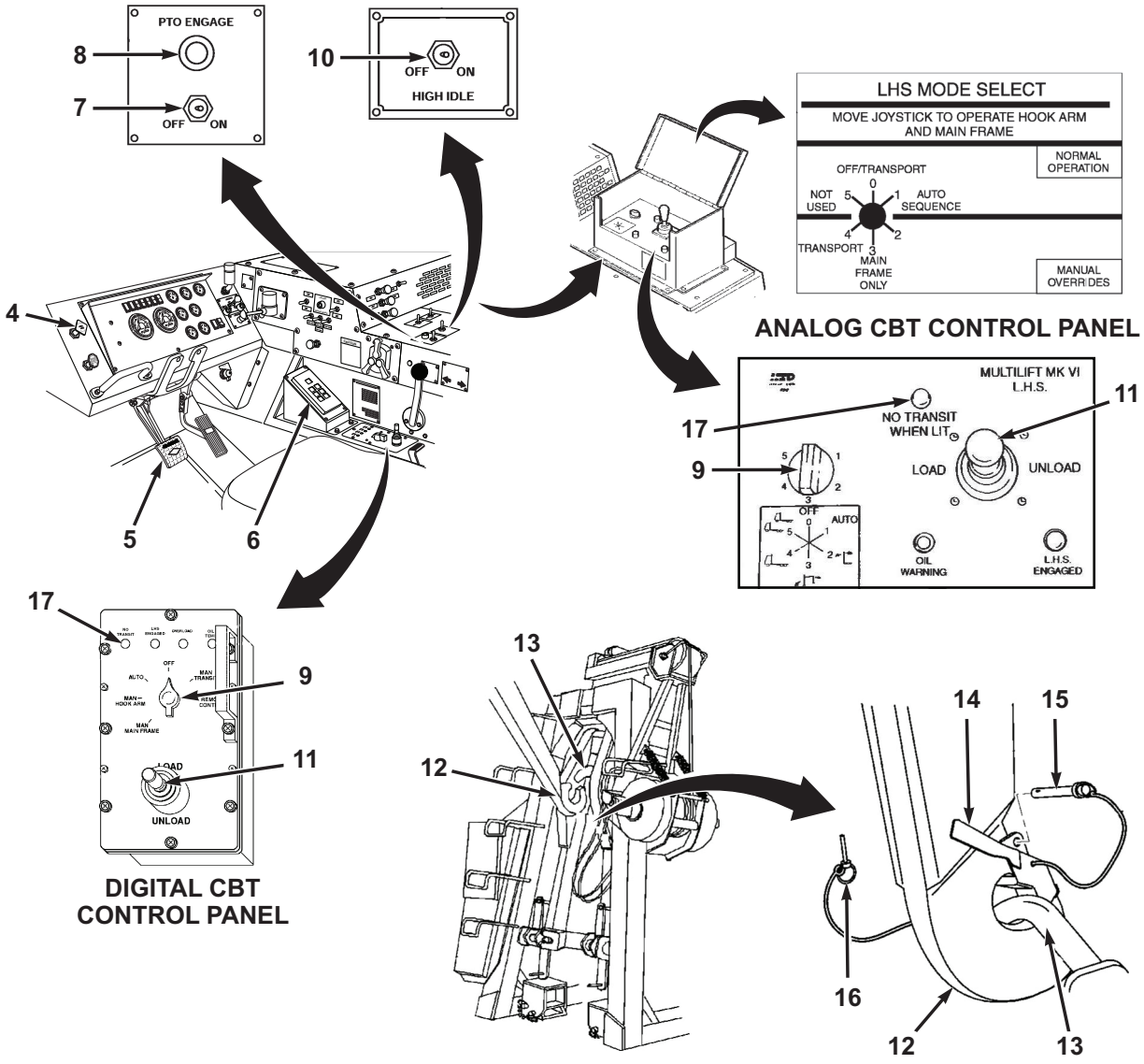


Figure 3. Cab LHS Controls.

7. Set transmission range selector (Figure 3, Item 6) to N (neutral).

CAUTION

- Do not position PTO ENGAGE switch to ON with HIGH IDLE switch ON. Engaging the PTO with HIGH IDLE switch ON may result in sudden application of hydraulic pressure to the LHS, Failure to comply may result in damage to equipment.
- PTO ENGAGE switch must be positioned OFF before road transport. Failure to comply may result in damage to equipment.

8. Set PTO ENGAGE switch (Figure 3, Item 7) to ON position. Indicator light (Figure 3, Item 8) will illuminate.
9. Turn LHS MODE SELECT switch (Figure 3, Item 9) to MAN HOOK ARM.
10. Set HIGH IDLE switch (Figure 3, Item 10) to ON position.

PERFORM PROCEDURE - Continued

11. To raise and move hook arm toward the BAP, move joystick (Figure 3, Item 11) to UNLOAD and hold.
12. Release joystick (Figure 3, Item 11) when hook arm completes its full movement rearward.
13. Set HIGH IDLE switch (Figure 3, Item 10) to OFF position.
14. Turn LHS MODE SELECT switch (Figure 3, Item 9) to MAN MAIN FRAME.
15. Set HIGH IDLE switch (Figure 3, Item 10) to ON position.

NOTE

When LHS hook moves below level of BAP bail bar, release joystick.

16. To raise and move main frame toward the BAP, move joystick (Figure 3, Item 11) to UNLOAD and hold.
17. Set HIGH IDLE switch (Figure 3, Item 10) to OFF position.

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

18. Push in PARKING BRAKE control (Figure 3, Item 4) or release service brake pedal (Figure 3, Item 5).

NOTE

Have an assistant function as a ground guide.

19. Back up vehicle until aligned with the BAP.
20. Ensure LHS lifting hook tip (Figure 3, Item 12) is slightly below and in line with the middle of the BAP bail bar (Figure 3, Item 13).
21. Apply service brake pedal (Figure 3, Item 5) and set transmission range selector (Figure 3, Item 6) to N (neutral).
22. Move joystick (Figure 3, Item 11) to LOAD until LHS lifting hook (Figure 3, Item 12) engages BAP bail bar (Figure 3, Item 13).
23. If LHS hook (Figure 3, Item 12) and BAP bail bar (Figure 3, Item 13) are not properly aligned, perform the following steps:
    a. Move vehicle away from the BAP.
    b. Repeat Steps (5) through (22).
24. Install bail bar lock (Figure 3, Item 14) on LHS lifting hook (Figure 3, Item 12) with pin (Figure 3, Item 15) and lockpin (Figure 3, Item 16).
25. Set HIGH IDLE switch (Figure 3, Item 10) to ON position.
26. Release service brake pedal (Figure 3, Item 5).
27. Move joystick (Figure 3, Item 11) to LOAD.
28. Ensure BAP runners engage LHS rear rollers by steering vehicle under BAP as BAP rises.
29. Apply service brake pedal (Figure 3, Item 5) when BAP runners contact LHS rear rollers.
30. Move joystick (Figure 3, Item 11) to LOAD and release when main frame is fully stopped.
31. Set HIGH IDLE switch (Figure 3, Item 10) to OFF position.
32. Turn LHS MODE SELECT switch (Figure 3, Item 9) to MAN HOOK ARM.
33. Set HIGH IDLE switch (Figure 3, Item 10) to ON position.

PERFORM PROCEDURE - Continued

34. To move and lower hook arm to stowed position, move joystick (Figure 3, Item 11) to LOAD and hold.

WARNING

When NO TRANSIT indicator is illuminated, vehicle may be maneuvered in the immediate vicinity of the loading/unloading site. However, vehicle is unsafe for road travel. Do not perform open-road driving when NO TRANSIT indicator is illuminated. Failure to comply may result in serious injury or death to personnel and damage to equipment.

35. Release joystick (Figure 3, Item 11) when hook arm is fully stowed and NO TRANSIT indicator (Figure 3, Item 17) light goes out.
36. Set HIGH IDLE switch (Figure 3, Item 10) to OFF position.
37. Pull out PARKING BRAKE control (Figure 3, Item 4).

CAUTION

While maneuvering vehicle in the immediate vicinity of the loading or unloading site, LHS MODE SELECT switch may be in any setting. However, LHS MODE SELECT switch must be set to OFF prior to road travel. Failure to comply may result in damage to equipment.

38. Turn LHS MODE SELECT switch (Figure 3, Item 9) to OFF.
39. Set PTO ENGAGE switch (Figure 3, Item 7) to OFF position. Indicator light (Figure 3, Item 8) will go out.
40. Ensure both BAP hold-down locks (Figure 4, Item 3) are in auto engage position (handles are pushed in).

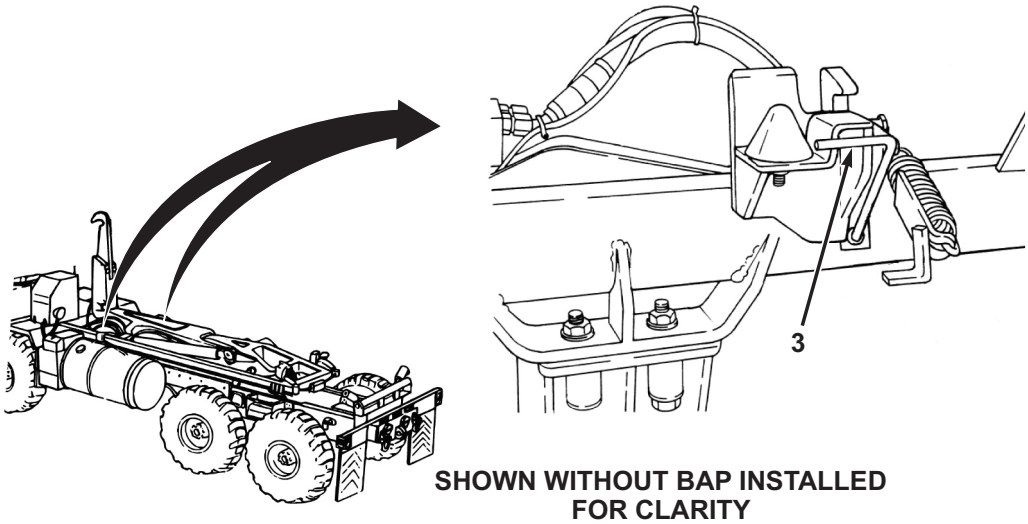


Figure 4. Check BAP Hold-Down Locks.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
MANUALLY UNLOADING BRIDGE ADAPTER PALLET (BAP) TO THE GROUND

INITIAL SETUP:

Personnel Required
(2)

References
TM 9-2320-425-10 (WP 0076)
TM 9-2320-435-10 (WP 0076)

PERFORM PROCEDURE

NOTE

The following manual mode operations using the cab control box are to be performed only when the normal AUTO mode electric circuit is malfunctioning.

1. Secure winch frame to the BAP and ensure two winch frame locking levers (Figure 1, Item 1) are in the up position.

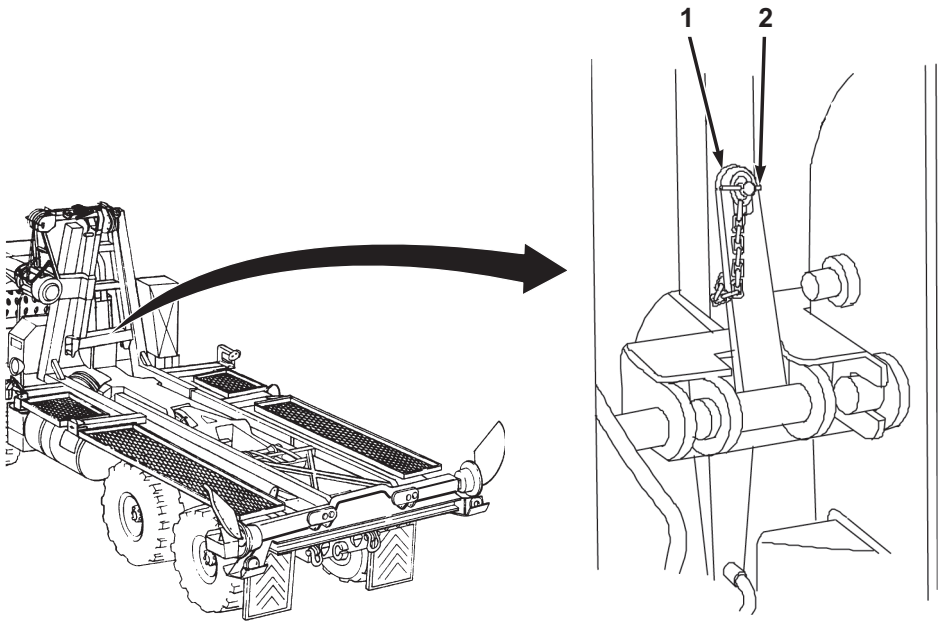


Figure 1. Secure Winch Frame.

2. If locking levers (Figure 1, Item 1) are not up:
   a. Remove lockpin (Figure 1, Item 2) from each locking lever (Figure 1, Item 1).
   b. Swing locking lever (Figure 1, Item 1) to the up position.
   c. Insert lockpin (Figure 1, Item 2) into locking lever (Figure 1, Item 1).
3. If the BAP is loaded, inspect load and ensure it is secure.
4. Connect two hydraulic hoses (Figure 2, Item 3) to the stowed location connections (Figure 2, Item 4).

PERFORM PROCEDURE - Continued

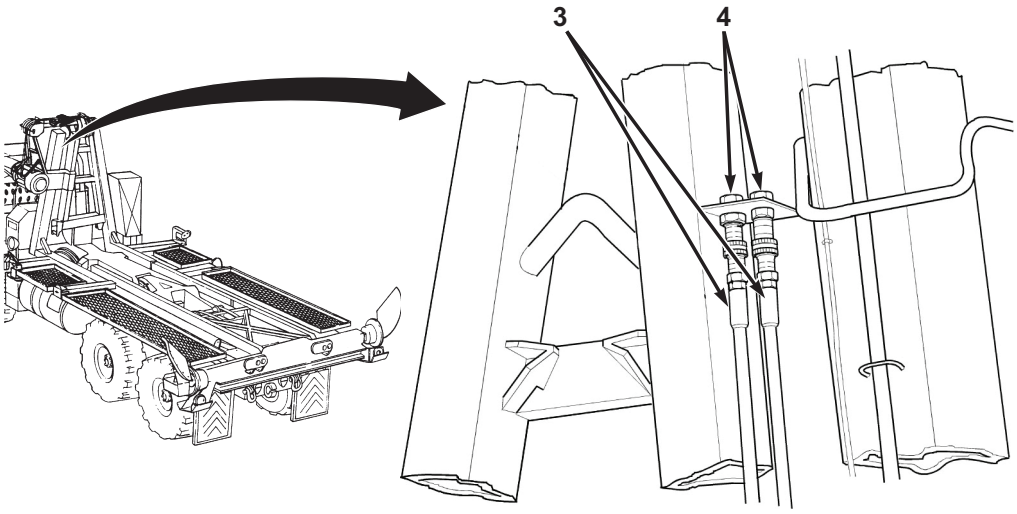


Figure 2. Stow Hydraulic Hoses.

5. Drive vehicle to unloading area. Refer to TM 9-2320-425-10 or TM 9-2320-435-10.
6. Apply service brake pedal (Figure 3, Item 5).

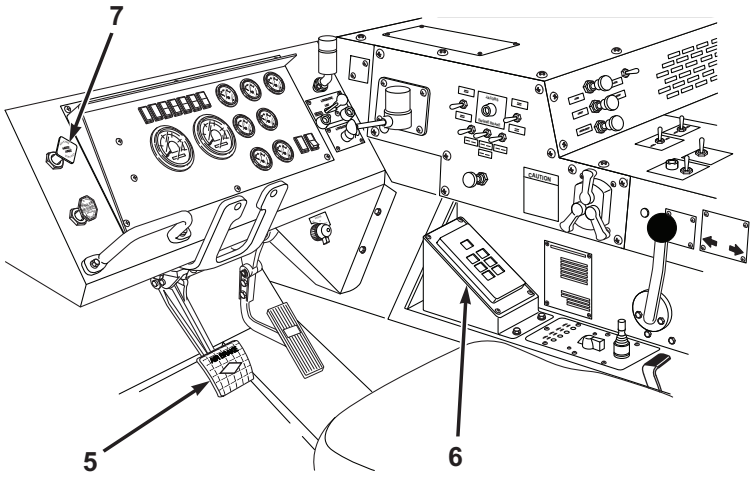


Figure 3. Position Vehicle.

7. Set transmission range selector (Figure 3, Item 6) to N (neutral).

NOTE

Dashboard parking brake indicator will illuminate when PARKING BRAKE control is applied.

8. Pull out PARKING BRAKE control (Figure 3, Item 7).

PERFORM PROCEDURE - Continued

CAUTION

The BAP hold-down locks must be unlocked from the LHS prior to starting BAP unloading operations. Failure to comply may result in damage to equipment.

9. Ensure BAP hold-down locks (Figure 4, Item 8) are disengaged (handle pulled out).

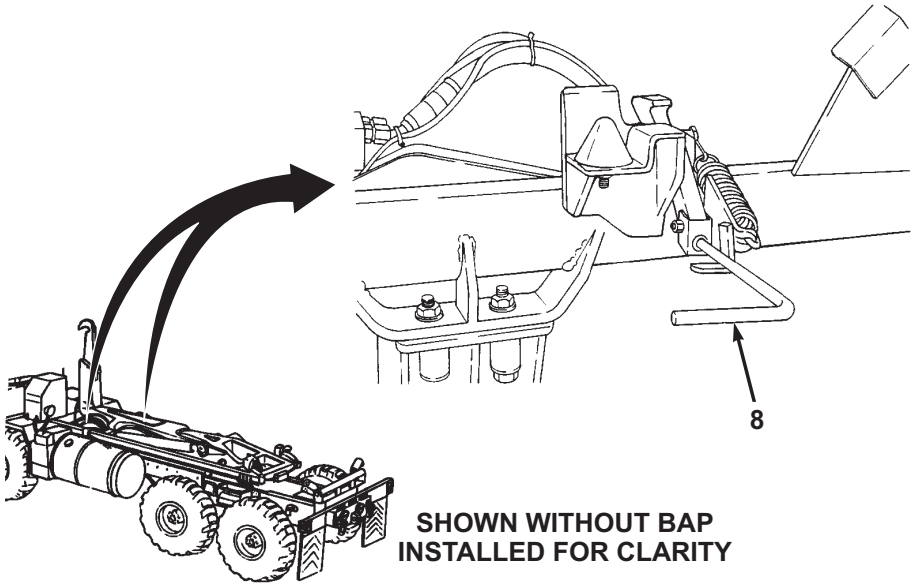


Figure 4. Disengage Locks.

PERFORM PROCEDURE - Continued

CAUTION

- Do not position PTO ENGAGE switch to ON with HIGH IDLE switch ON. Engaging the PTO with HIGH IDLE switch ON may result in sudden application of hydraulic pressure to the LHS. Failure to comply may result in damage to equipment.
- PTO ENGAGE switch must be positioned OFF before road transport. Failure to comply may result in damage to equipment.

10. Set PTO ENGAGE switch (Figure 5, Item 9) to ON position. Indicator light (Figure 5, Item 10) will illuminate.

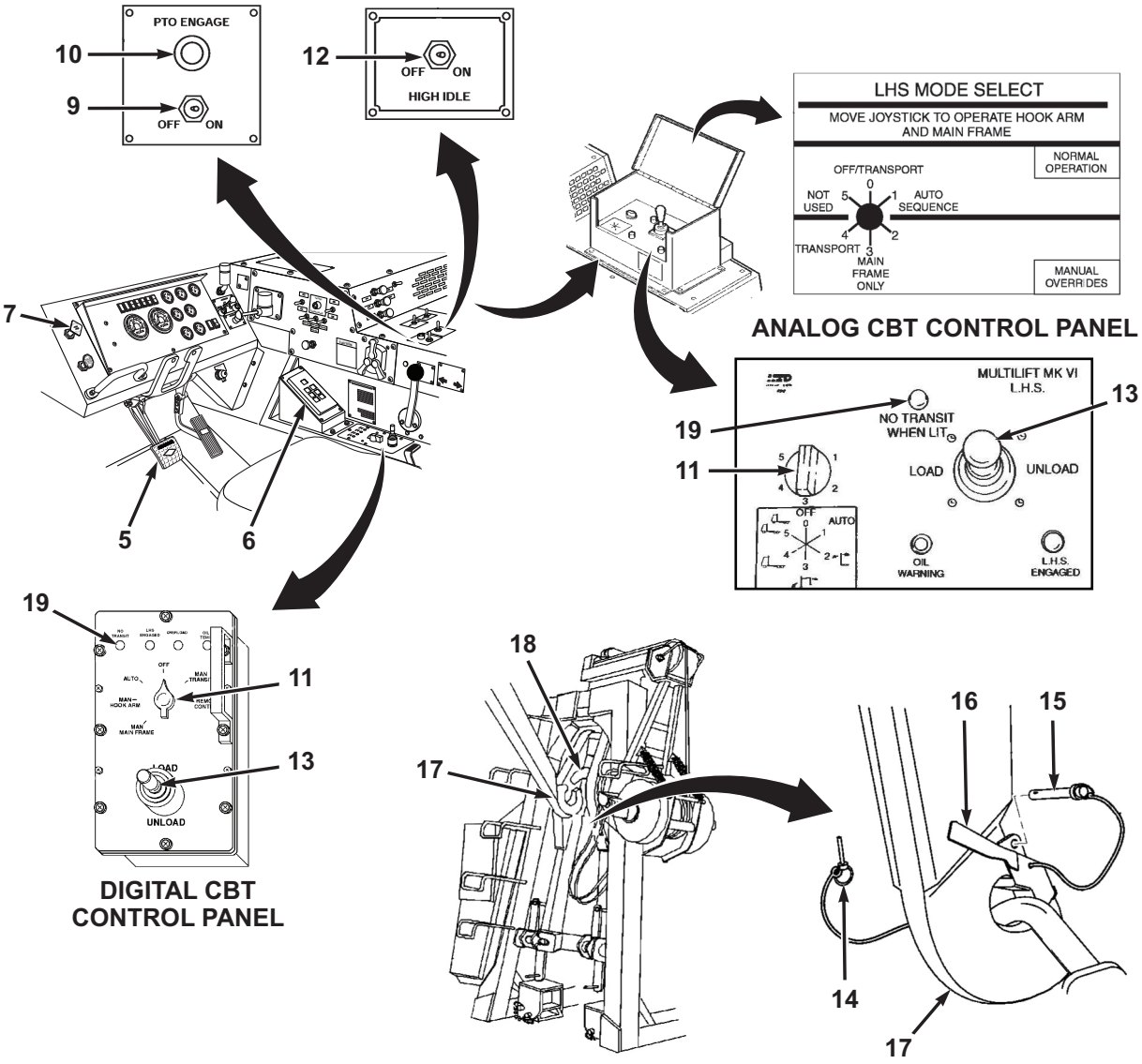


Figure 5. Manually Unload BAP to the Ground.

11. Turn LHS MODE SELECT switch (Figure 5, Item 11) to MAN HOOK ARM.

12. Set HIGH IDLE switch (Figure 5, Item 12) to ON position.

PERFORM PROCEDURE - Continued

13. Move joystick (Figure 5, Item 13) to UNLOAD and hold while hook arm rises and moves the BAP to the rear.
14. Release joystick (Figure 5, Item 13) when hook arm completes its full movement rearward.
15. Set HIGH IDLE switch (Figure 5, Item 12) to OFF position.

NOTE

Dashboard parking brake indicator will go out when PARKING BRAKE control is released.

16. Push in parking brake control (Figure 5, Item 7) and apply service brake pedal (Figure 5, Item 5).
17. Turn LHS MODE SELECT switch (Figure 5, Item 11) to MAN MAIN FRAME.
18. Set HIGH IDLE switch (Figure 5, Item 12) to ON position.
19. Move joystick (Figure 5, Item 13) to UNLOAD and hold until back edge of the BAP touches the ground.
20. Immediately release service brake pedal (Figure 5, Item 5).
21. Move joystick (Figure 5, Item 13) to UNLOAD and continue unloading while allowing vehicle to roll forward.
22. Release joystick (Figure 5, Item 13) when front end of the BAP is about 1 ft. (30 cm) off the ground.
23. Set HIGH IDLE switch (Figure 5, Item 12) to OFF position.
24. Move joystick (Figure 5, Item 13) to UNLOAD and continue unloading until the BAP rests on the ground and weight of load is off LHS lifting hook.
25. Pull out PARKING BRAKE control (Figure 5, Item 7).
26. Remove lockpin (Figure 5, Item 14), pin (Figure 5, Item 15), and bail bar lock (Figure 5, Item 16) from LHS lifting hook (Figure 5, Item 17).
27. Move joystick (Figure 5, Item 13) to UNLOAD.
28. Release joystick (Figure 5, Item 13) when LHS lifting hook (Figure 5, Item 17) is slightly below BAP bail bar (Figure 5, Item 18).
29. Push in PARKING BRAKE control (Figure 5, Item 7).
30. Set transmission range selector (Figure 5, Item 6) to D (drive).
31. Drive vehicle forward slowly about 6 in. (15 cm) and stop vehicle.
32. Pull out PARKING BRAKE control (Figure 5, Item 7).
33. Set transmission range selector (Figure 5, Item 6) to N (neutral).
34. Set HIGH IDLE switch (Figure 5, Item 12) to ON position.
35. Move joystick (Figure 5, Item 13) to LOAD, release when main frame has stopped moving.
36. Set HIGH IDLE switch (Figure 5, Item 12) to OFF position.
37. Turn LHS MODE SELECT switch (Figure 5, Item 11) to MAN HOOK ARM.
38. Set HIGH IDLE switch (Figure 5, Item 12) to ON position.
39. Move joystick (Figure 5, Item 13) to LOAD.

PERFORM PROCEDURE - Continued

WARNING



When NO TRANSIT indicator is illuminated, vehicle may be maneuvered in the immediate vicinity of the loading/unloading site. However, vehicle is unsafe for road travel. Do not perform open-road driving when NO TRANSIT indicator is illuminated. Failure to comply may result in serious injury or death to personnel and damage to equipment.

40. Release joystick (Figure 5, Item 13) when hook arm is fully stowed and NO TRANSIT indicator (Figure 5, Item 19) light is off.
41. Set HIGH IDLE switch (Figure 5, Item 12) to OFF position.

CAUTION

While maneuvering vehicle in the immediate vicinity of the loading or unloading site, LHS MODE SELECT switch may be in any setting. However, LHS MODE SELECT switch must be set to OFF prior to road travel. Failure to comply may result in damage to equipment.

42. Turn LHS MODE SELECT switch (Figure 5, Item 11) to OFF.
43. Set PTO ENGAGE switch (Figure 5, Item 9) to OFF position. Indicator light (Figure 5, Item 10) will go out.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
MANUALLY BYPASSING SOLENOID DURING ELECTRIC POWER LOSS

INITIAL SETUP:

Not Applicable

PERFORM PROCEDURE

NOTE

When determined necessary, the solenoid bypass procedure may be used to perform CBT operations.

1. Locate hydraulic manifold assembly cover (Figure 1, Item 1) on driver side of vehicle.

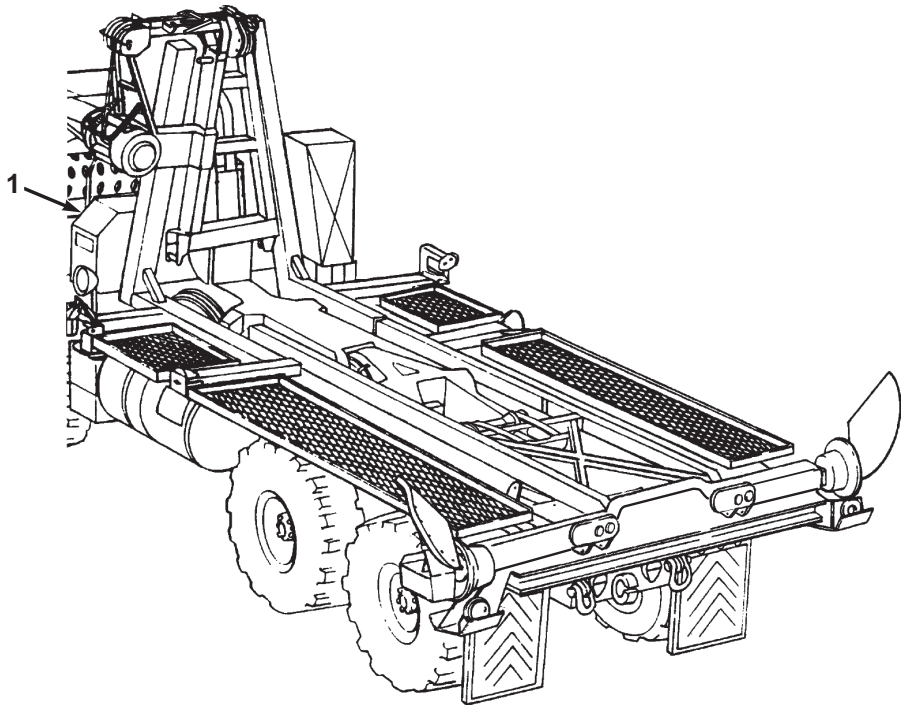


Figure 1. Hydraulic Manifold Cover.

2. Open hydraulic manifold assembly cover (Figure 2, Item 1). Instructional placard (Figure 2, Item 2) is on inside of cover (Figure 2, Item 1).

PERFORM PROCEDURE - Continued

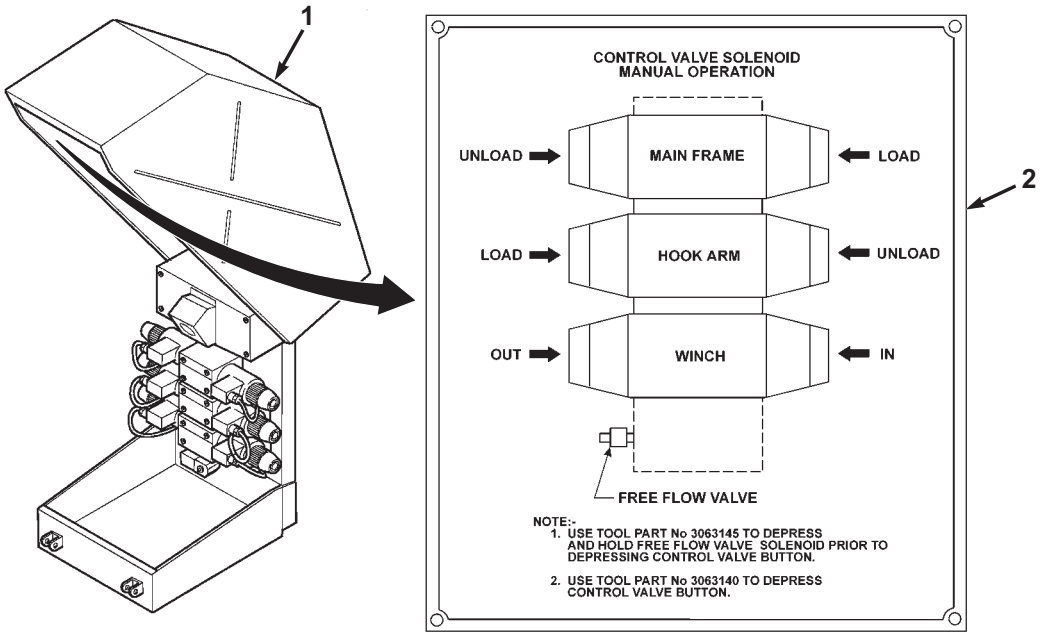


Figure 2. Instructional Placard.

3. Install free-flow valve tool (Figure 3, Item 3) on free-flow valve (Figure 3, Item 4) and tighten thumbscrew (Figure 3, Item 5).

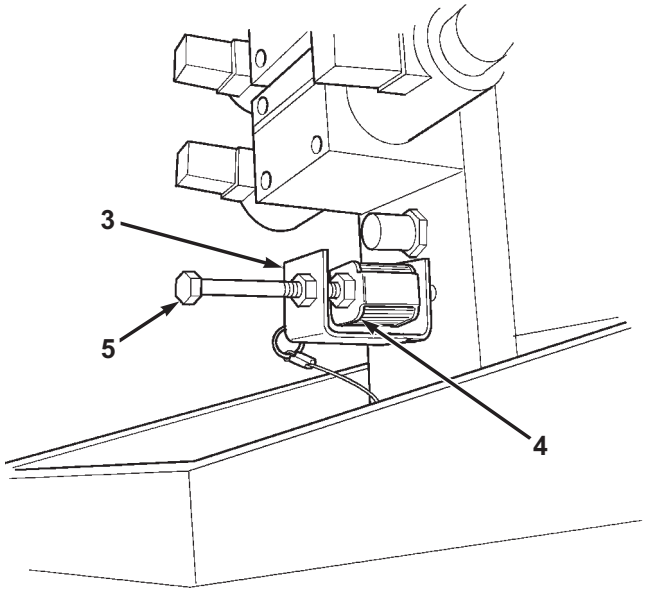


Figure 3. Free-Flow Valve Tool.

4. Refer to and perform the appropriate operational procedures with the following exceptions:

PERFORM PROCEDURE - Continued

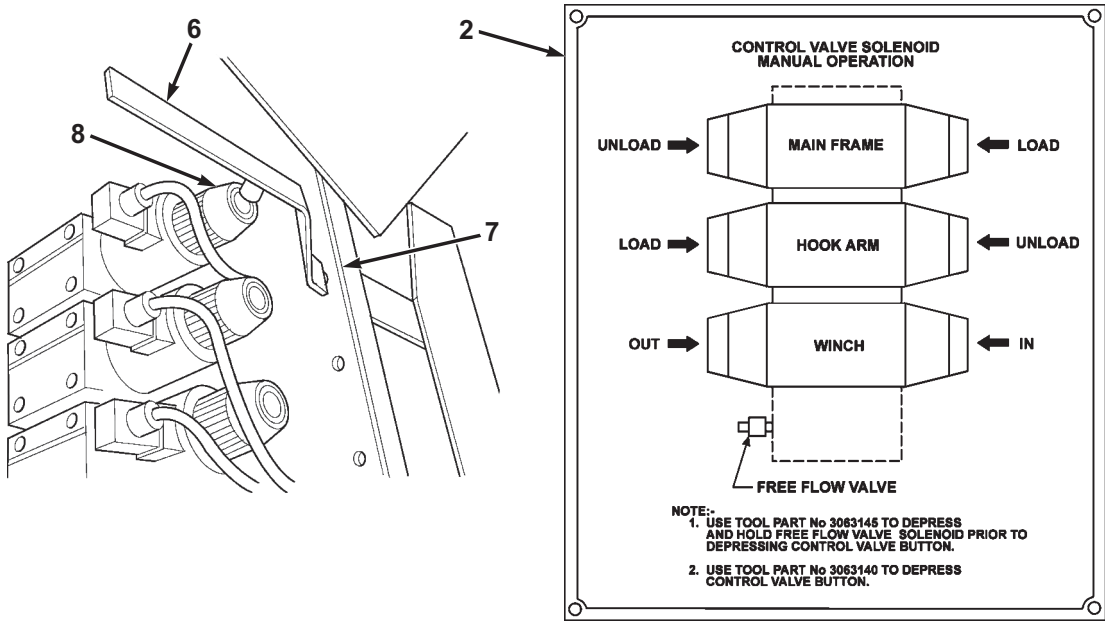


Figure 4. Valve Plunger Tool.

a. When the procedure directs the operation of the remote control unit or the cab controls, use the manual valve plunger tool (Figure 4, Item 6), follow procedures on the instructional placard (Figure 4, Item 2), and perform the operation within the control valve layout of the hydraulic manifold assembly.

b. Fit plunger tool (Figure 4, Item 6) in appropriate hole in hydraulic manifold assembly (Figure 4, Item 7) and press plunger tool (Figure 4, Item 6) into solenoid button (Figure 4, Item 8).

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
PREPARATION FOR EMERGENCY MANUAL REMOVAL OF BRIDGE ADAPTER PALLET (BAP)

INITIAL SETUP:

Personnel Required
(2)

PERFORM PROCEDURE

WARNING



Do not attempt to lift a load greater than the rated load capacity of crane or materiel-handling equipment. Failure to comply may result in injury or death to personnel and damage to equipment.

NOTE

- Manual mode operations using the cab control box are to be performed only when the normal AUTO mode electric circuit is malfunctioning.
- This procedure is performed when a loaded BAP must be removed using a crane or other handling system and must be done with help of a higher maintenance level.
- The BAP weighs 5,780 lbs (2 622 kg). The BAP with bridge bay weighs 19,780 lbs (8 972 kg).

1. Ensure main frame is fully stowed.
2. Ensure that, if necessary, main frame is lowered using loading button of the solenoid bypass procedure as necessary (WP 0019).

PERFORM PROCEDURE - Continued

3. Secure winch frame to the BAP and ensure two winch frame locking levers (Figure 1, Item 1) are in the up position.

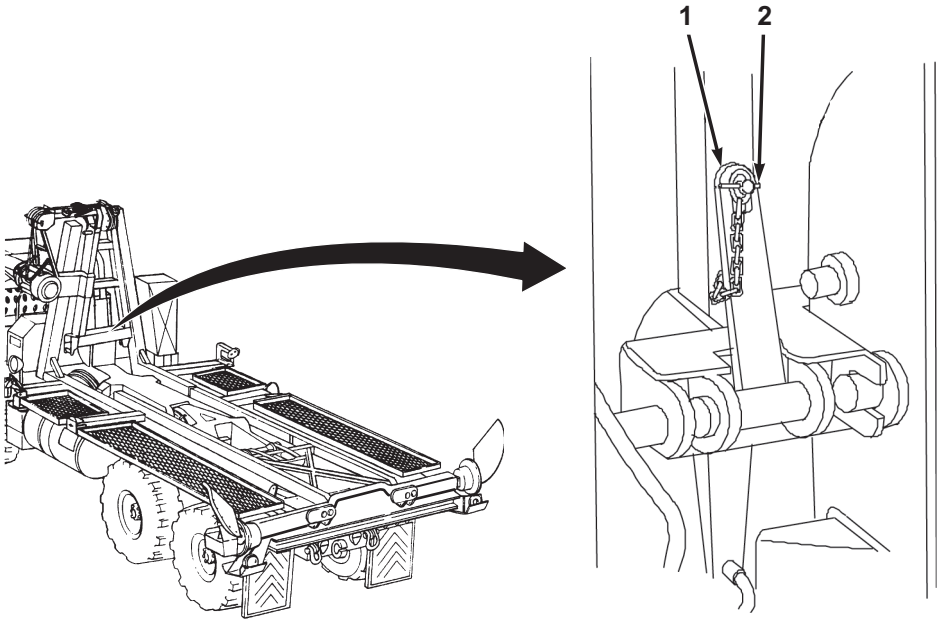


Figure 1. Winch Frame Locking Levers.

4. If locking levers (Figure 1, Item 1) are not up:
   a. Remove lockpin (Figure 1, Item 2) from each locking lever (Figure 1, Item 1).
   b. Swing locking lever (Figure 1, Item 1) to the up position.
   c. Insert lockpin (Figure 1, Item 2) into locking lever (Figure 1, Item 1).
5. Connect two hydraulic hoses (Figure 2, Item 3) to the stowed location connections (Figure 2, Item 4).

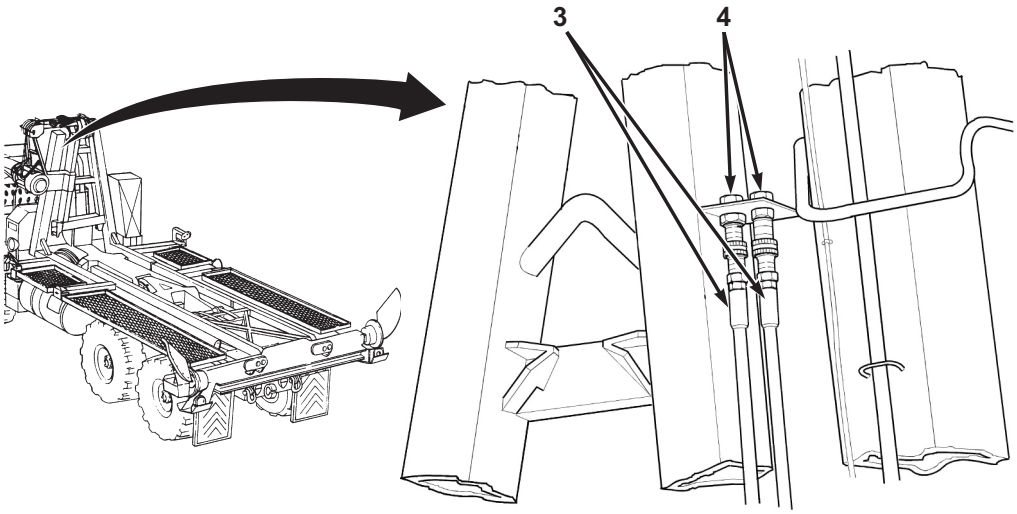


Figure 2. Stow Hydraulic Hoses.

PERFORM PROCEDURE - Continued

6. If the BAP is loaded, inspect load and make sure it is secure.

CAUTION

The BAP holddown locks must be unlocked from the LHS prior to starting BAP unloading operations. Failure to comply may result in damage to equipment.

7. Release BAP holddown locks by pulling handle out (Figure 3, Item 5).

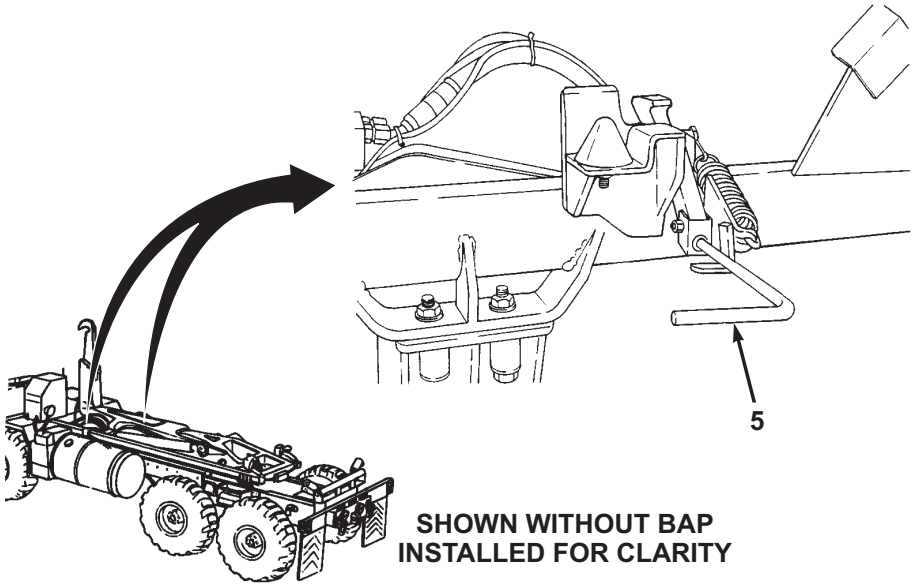


Figure 3. Release BAP Hold Down Locks.

CAUTION

The BAP is front-heavy. Arrange cable length accordingly. Failure to comply may result in damage to equipment.

8. With the aid of an assistant, the crane operator secures four-legged sling to BAP lifting eyes (Figure 4, Item 6) and to crane or other materiel handling-system hook.

PERFORM PROCEDURE - Continued

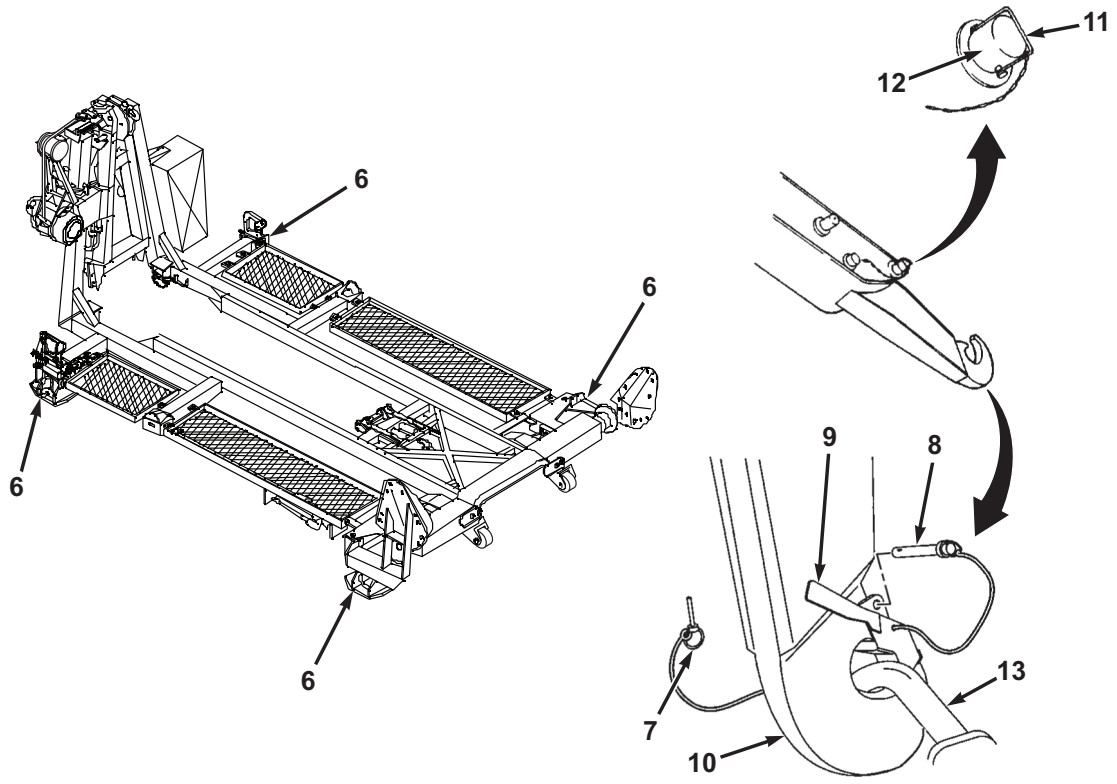


Figure 4. Lift Points and Bail Bar Lock.

9. Remove locking pin (Figure 4, Item 7), pin (Figure 4, Item 8), and bail bar lock (Figure 4, Item 9) from LHS lifting hook (Figure 4, Item 10).
10. Remove hook arm pin locking pin (Figure 4, Item 11).
11. Remove hook arm pin (Figure 4, Item 12) from LHS.

WARNING



A loaded BAP will not rise due to LHS hook being engaged to the BAP. Stand clear of loaded BAP. Failure to comply may result in injury or death to personnel.

12. Crane operator performs the following steps:
    a. Using a crane, raise sling until tension is on sling and weight of the BAP is removed from vehicle.

PERFORM PROCEDURE - Continued

WARNING



LHS hook arm weighs 1,025 lbs (466 kg) and will fall free when the BAP is moved rearward. Stay clear of hook arm when moving the BAP. Do not attempt to lift or move hook arm without the aid of an assistant and a lifting device. Failure to comply may result in injury or death to personnel.

b. Move the BAP rearward until LHS lifting hook (Figure 4, Item 10) drops free of BAP bail bar (Figure 4, Item 13).

c. Raise loaded BAP until it clears the LHS.

d. Move loaded BAP away from vehicle.

e. Set loaded BAP on the ground.

f. Remove sling lifting eye from hook on crane. Remove four legs of sling from BAP lifting eye (Figure 4, Item 6).

g. Stow sling.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
MANUALLY REMOVING LOAD DURING HYDRAULIC POWER LOSS

INITIAL SETUP:

References
TM 9-2320-425-10 (WP 0076)
TM 9-2320-435-10 (WP 0076)

PERFORM PROCEDURE

CAUTION

If LHS system on disabled vehicle is not in fully stowed position (transport position), remove hydraulic tank cap from operable vehicle prior to starting the task to allow excess hydraulic oil to drain. Failure to comply may result in damage to hydraulic tank or hydraulic system.

NOTE

- This procedure can only be used if there are no leaks or breaks in the hydraulic system.
- This procedure is used to remove the load from a vehicle with a failed hydraulic pump or other failure which prevent operation of the hydraulic system.
- Each vehicle is equipped with one hydraulic slave hose. Two hoses (one from each vehicle) are required to perform slave hydraulic procedures. Locate and remove hoses from stowage boxes of vehicles.

1. Move vehicles into position so LHS control box (Figure 1, Item 1) on both vehicles are side by side.

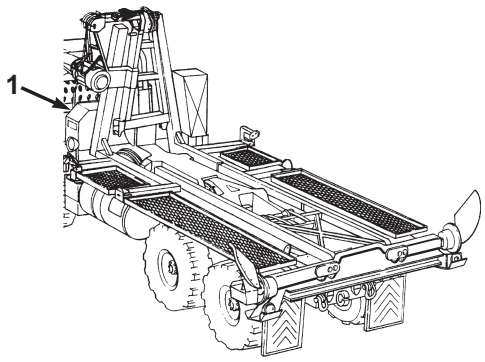


Figure 1. Move Vehicle.

2. Park both vehicles. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
3. Shut off engine on both vehicles. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

PERFORM PROCEDURE - Continued

WARNING



Hydraulic fluid is under great pressure. Engines on both vehicles must be shut off while disconnecting hydraulic lines. Failure to comply may result in injury or death to personnel.

CAUTION

To prevent hydraulic contamination, keep hydraulic quick disconnects clean. Failure to comply may result in damage to hydraulic system.

NOTE

Quick disconnects are located on the back of the LHS box.

4. Disconnect supply hose (Figure 2, Item 2) and return hose (Figure 2, Item 3) located on the back of LHS control box (Figure 2, Item 1) of operable vehicle.

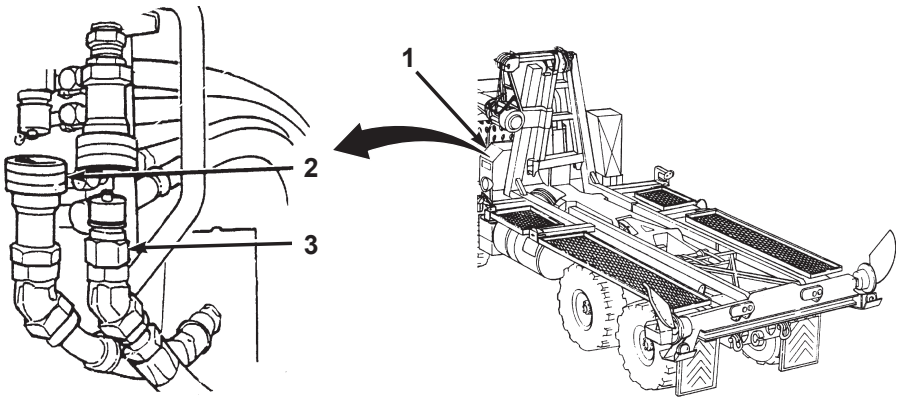


Figure 2. Disconnect Hoses from Operable Vehicle.

5. Disconnect supply hose (Figure 3, Item 4) and return hose (Figure 3, Item 5) located on the back of LHS control box (Figure 3, Item 1) of disabled vehicle.

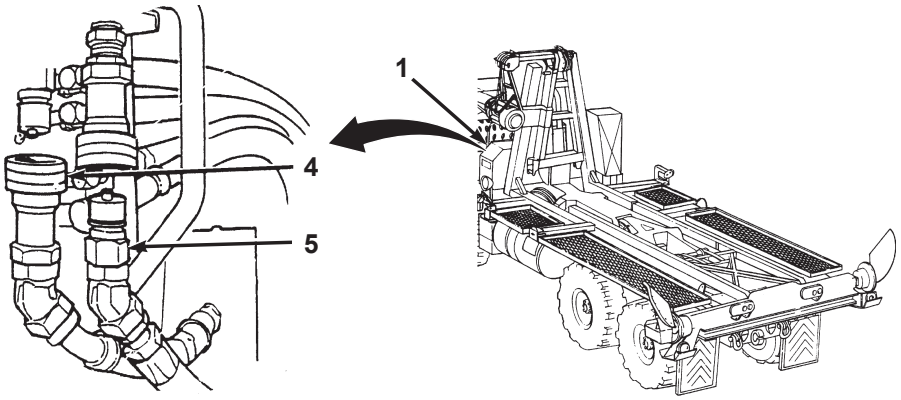


Figure 3. Disconnect Hoses from Disabled Vehicle.

PERFORM PROCEDURE - Continued

6. Connect male end of first slave hose (Figure 4, Item 6) to supply hose (Figure 4, Item 2) of operable vehicle.

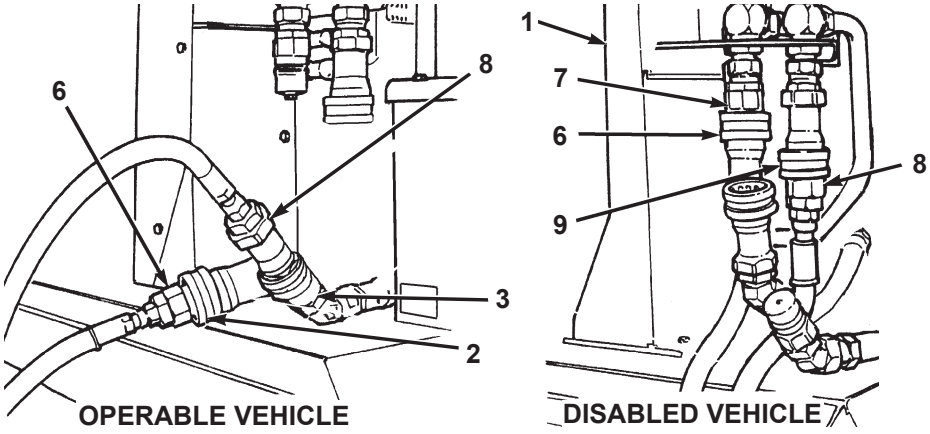


Figure 4. Connect Hoses to Operable Vehicle.

7. Connect female end of first slave hose (Figure 4, Item 6) to supply tube (Figure 4, Item 7) mounted on back of LHS control box (Figure 4, Item 1) of disabled vehicle.
8. Connect female end of second slave hose (Figure 4, Item 8) to return hose (Figure 4, Item 3) of operable vehicle.
9. Connect male end of second slave hose (Figure 4, Item 8) to return tube (Figure 4, Item 9) mounted on back of LHS control box (Figure 4, Item 1) of disabled vehicle.
10. Start engine of operable vehicle. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

CAUTION

- Do not position PTO ENGAGE switch to ON with HIGH IDLE switch ON. Engaging the PTO with HIGH IDLE switch ON may result in sudden application of hydraulic pressure to the LHS. Failure to comply may result in damage to equipment.
- PTO ENGAGE switch must be positioned OFF before road transport. Failure to comply may result in damage to equipment.

11. Set PTO ENGAGE switch (Figure 5, Item 10) to ON position. Indicator light (Figure 5, Item 11) will illuminate.

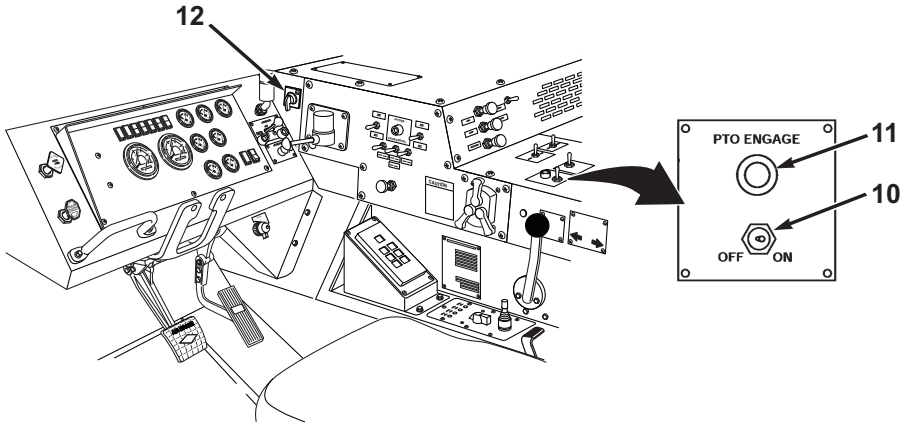


Figure 5. Set Cab Switches.

PERFORM PROCEDURE - Continued

CAUTION

Engine speed must be at idle before using hydraulic selector switch. Failure to comply may result in damage to equipment.

12. Turn hydraulic selector switch (Figure 5, Item 12) to AUTO.
13. On disabled vehicle, turn ENGINE switch (Figure 6, Item 13) to ON, and turn hydraulic selector switch (Figure 6, Item 12) to AUTO. Operate joystick (Figure 6, Item 14) to return LHS to the stowed position.

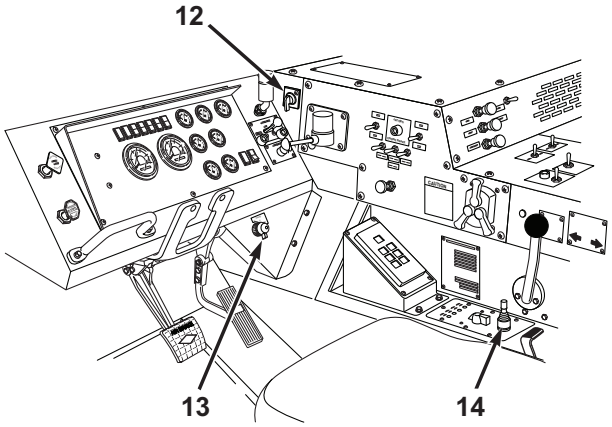


Figure 6. Return LHS to the Stowed Position.

NOTE

Perform Step (14) for M1977 A0 vehicles. Perform Step (15) for M1977 A2 vehicles.

14. On disabled vehicle, open LHS control box cover (Figure 7, Item 17) and review data plate (Figure 7, Item 18) inside of LHS control box cover (Figure 7, Item 17).

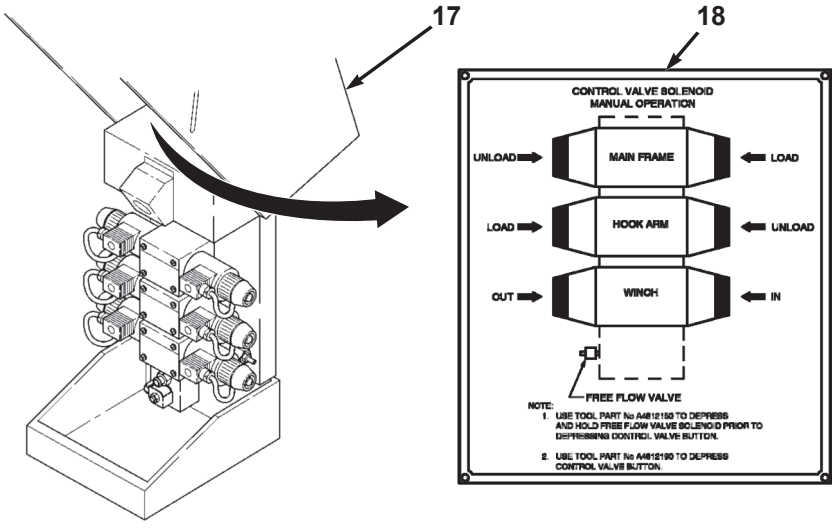


Figure 7. Open M1977 A0 Cover.

PERFORM PROCEDURE - Continued

15. On disabled vehicle, remove four screws (Figure 8, Item 19), lockwashers (Figure 8, Item 20), and review data plate (Figure 8, Item 18) inside of LHS control box cover (Figure 8, Item 17).

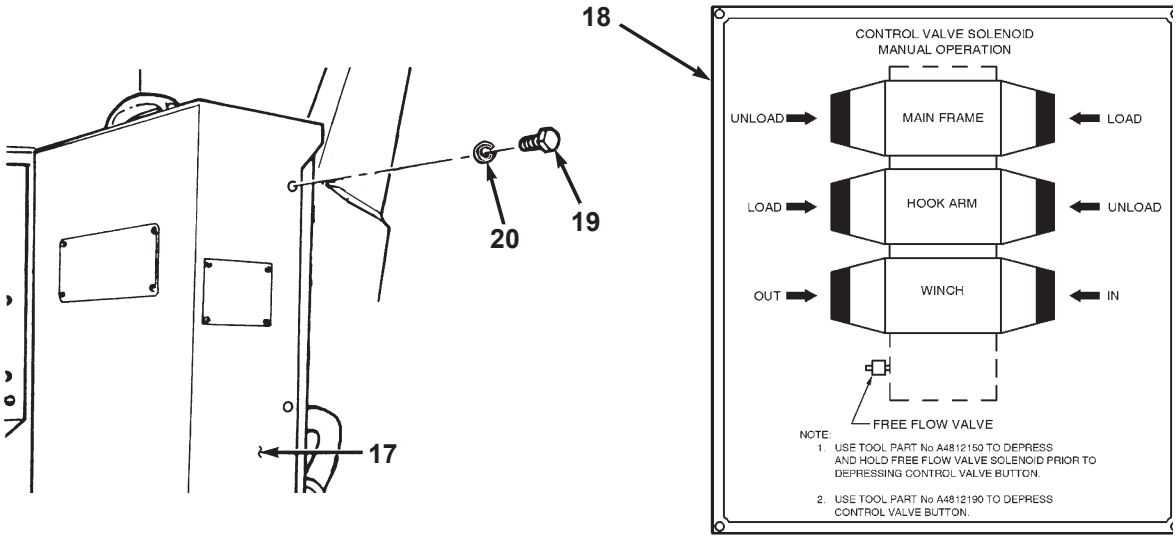


Figure 8. Open M1977 A2 Cover.

NOTE

Button may be stiff and hard to push in.

16. Press and hold free flow valve override button (Figure 9, Item 21). Simultaneously press one or more of the following buttons to return LHS to the stowed position: hook arm LOAD (Figure 9, Item 22), hook arm UNLOAD (Figure 9, Item 23), main frame LOAD (Figure 9, Item 24), main frame UNLOAD (Figure 9, Item 25).

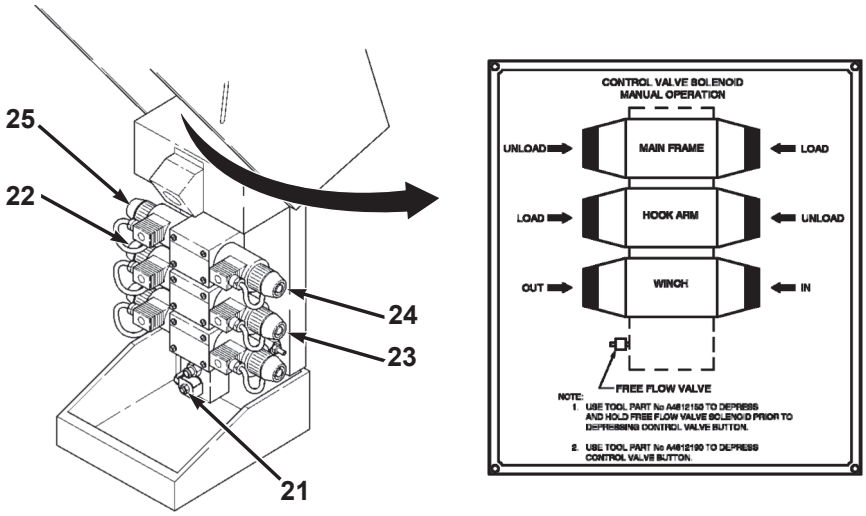


Figure 9. Return LHS to Stowed Position.

PERFORM PROCEDURE - Continued

CAUTION

Engine speed must be at idle before using hydraulic selector switch. Failure to comply may result in damage to equipment.

17. Turn hydraulic selector switch (Figure 10, Item 12) to OFF.

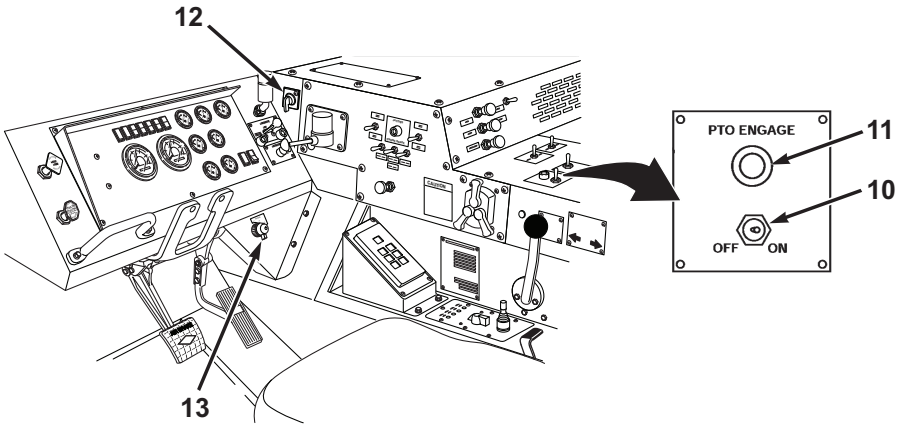


Figure 10. Set Cab Switches.

18. On operable vehicle, set PTO ENGAGE switch (Figure 10, Item 10) to OFF position. Indicator light (Figure 10, Item 11) will go out.
19. Shut off engine on operable vehicle. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
20. On disabled vehicle, turn ENGINE switch (Figure 10, Item 13) to OFF.

WARNING



Hydraulic fluid is under great pressure. Engines on both vehicles must be shut off while disconnecting hydraulic lines. Failure to comply may result in injury or death to personnel.

CAUTION

To prevent hydraulic contamination, keep hydraulic quick disconnects clean. Failure to comply may result in damage to hydraulic system.

NOTE

Quick disconnects are located on the back of the LHS box.

21. Disconnect male end of first slave hose (Figure 11, Item 6) from supply hose (Figure 11, Item 2) of operable vehicle.

PERFORM PROCEDURE - Continued

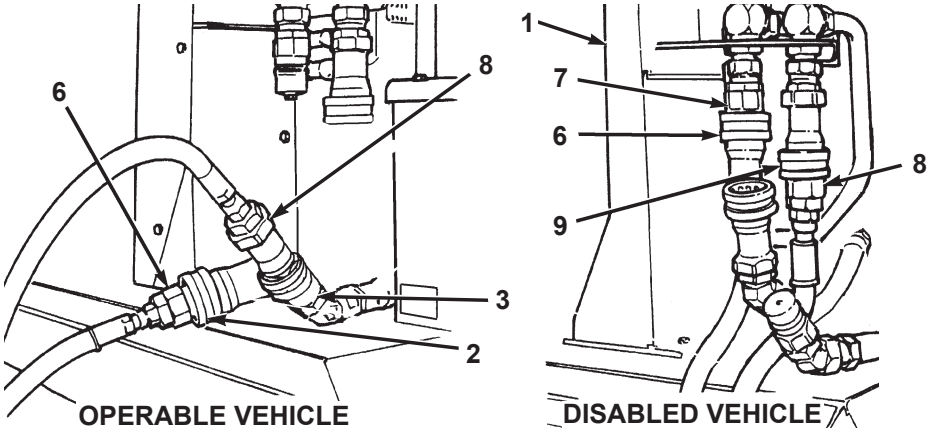


Figure 11. Disconnect Hoses to Operable Vehicle.

22. Disconnect female end of first slave hose (Figure 11, Item 6) from supply tube (Figure 11, Item 7) of disabled vehicle.
23. Disconnect female end of second slave hose (Figure 11, Item 8) from return hose (Figure 11, Item 3) of operable vehicle.
24. Disconnect male end of second slave hose (Figure 11, Item 8) from return tube (Figure 11, Item 9) of disabled vehicle.
25. Return first and second slave hoses to appropriate stowage (one to each vehicle).
26. Connect supply hose (Figure 12, Item 2) and return hose (Figure 12, Item 3) to appropriate quick disconnects located on the back of LHS control box (Figure 12, Item 1) on operable vehicle.

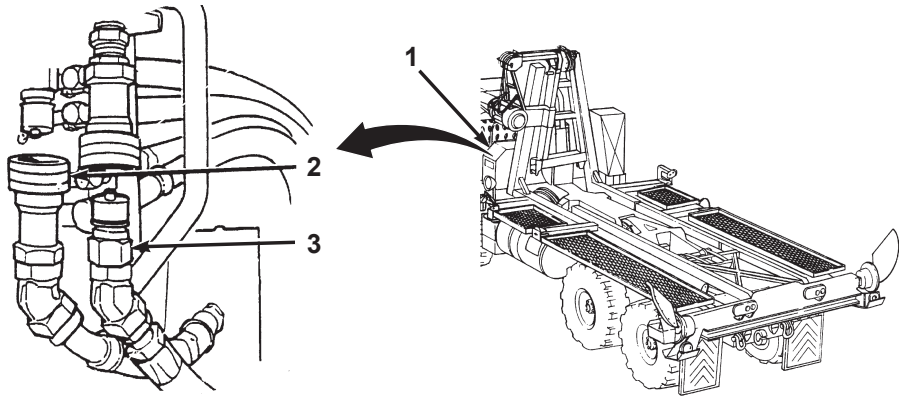


Figure 12. Connect Hoses to Operable Vehicle.

PERFORM PROCEDURE - Continued

27. Connect supply hose (Figure 13, Item 4) and return hose (Figure 13, Item 5) to appropriate quick disconnects located on the back of LHS control box (Figure 13, Item 1) on disabled vehicle.

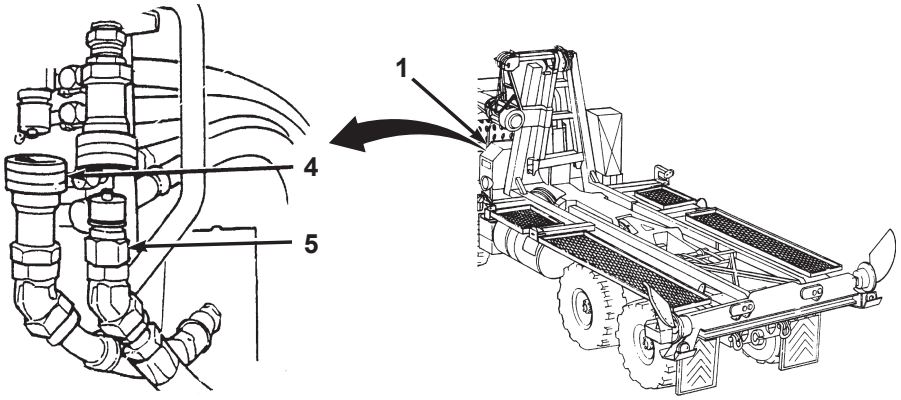


Figure 13. Connect Hoses to Disabled Vehicle.

28. When operations are completed, check hydraulic fluid levels of both vehicles. Service as necessary.

NOTE

Perform Step (29) for M1977 A0 vehicles. Perform Step (30) for M1977 A2 vehicles.

29. On disabled vehicle, close LHS control box cover (Figure 14, Item 17).

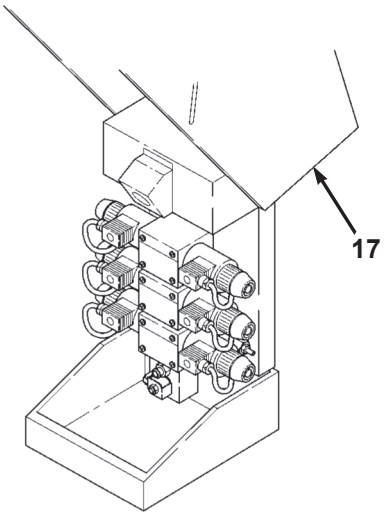


Figure 14. Close M1977 A0 LHS Control Box Cover.

PERFORM PROCEDURE - Continued

30. On disabled vehicle, install LHS control box cover (Figure 15, Item 17) with four lockwashers (Figure 15, Item 20) and screws (Figure 15, Item 19).

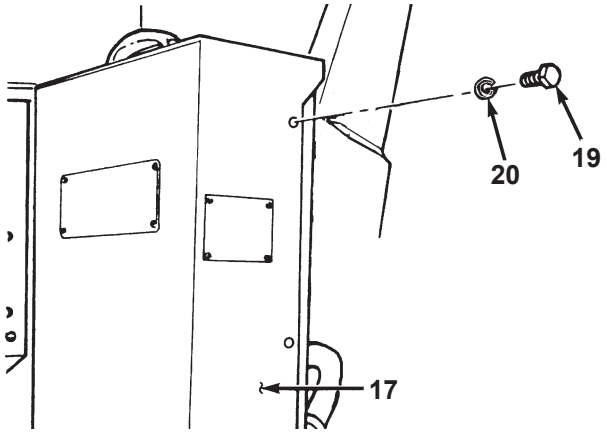


Figure 15. Install M1977 A2 LHS Control Box Cover.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR (CBRN) DECONTAMINATION PROCEDURES

INITIAL SETUP:

Personnel Required
(2)

INTRODUCTION AND PROCEDURES

NOTE

To reduce the effects of contamination in a CBRN-contaminated environment, the CBT should be operated with all windows, doors, and stowage boxes closed.

1. The CBT is capable of being operated by personnel wearing chemical, biological, radiological, or nuclear (CBRN) protective clothing without special tools or supporting equipment. Refer to FM 3-11.5 for information on decontamination procedures. Specific procedures for the CBT are as follows:
   a. Rubber sleeves and other rubber items, rope, and gaskets will absorb and retain chemical agents. Replacement of these items is the recommended method of decontamination.
   b. Lubricants or fluids may be present on the external surfaces of the CBT or its components due to leaks or normal operation. These fluids will absorb CBRN agents. The preferred method of decontamination is removal of these fluids using conventional decontamination methods in accordance with FM 3-11.5.
   c. Continued decontamination of the external CBT surfaces with supertropical bleach (STB)/ decontamination solution number 2 (DS2) will degrade clear plastic (e.g., hydraulic fluid reservoir sight glass) to the point where looking through it will become impossible. This problem will become more evident for personnel wearing protective masks. Therefore, the use of STB or DS2 decontamination in the area of clear plastic should be minimized. Clear plastic should be decontaminated with warm, soapy water.
   d. External surfaces of the CBT and related equipment such as the remote control units that are marked with painted or stamped lettering will not withstand repeated decontamination with STB or DS2 without degradation of this lettering. Therefore, the recommended method of decontamination for these areas is washing with warm, soapy water.

INTRODUCTION AND PROCEDURES - Continued

NOTE

Replacement of hardware, as well as conventional methods of decontamination, are the preferred methods of decontamination for the areas listed below.

2. Areas that will entrap contaminants, making efficient decontamination extremely difficult include the following:
   a. Exposed heads of screws.
   b. Areas adjacent to and behind exposed hydraulic lines.
   c. Hinged areas or access doors on the stowage boxes.
   d. Retaining chains for lynchpins and lockpins.
   e. Areas around the tie downs, lifting rings, crevices around access doors, external valves and drains, and exposed hydraulic connectors.
   f. Areas behind knobs, levers, externally-mounted equipment, specification and advisory data plates, and roller and locking mechanisms.
   g. Winch cable and winch hook assembly.
3. Conventional methods of decontamination should be used on all areas listed in Steps (1) and (2), while stressing the importance of thoroughness, and the probability of some degree of continuing contact, including vapor hazard.
4. For additional CBRN information, refer to FM 3-11.3 and FM 3-11.4.

END OF TASK

END OF WORK PACKAGE

CHAPTER 3

OPERATOR TROUBLESHOOTING PROCEDURES FOR M15 BRIDGE ADAPTER PALLET (BAP) NSN 3990-01-442-1939

CHAPTER CONTENTS

Work Package Title	WP Number
Center Roller and/or Transload Rollers Will Not Operate	WP 0023
Front Pin Lock Air Relaese Will Not Operate During Launch of Bridge Bay	WP 0024
Winch Assembly Will Not Wind Out	WP 0025
Winch Assembly Will Not Wind In	WP 0026
Winch Assembly Will Not Lift Load or Operates Slowly	WP 0027
BAP Front Pin Lock Will Not Align With Bridge Bay Pin	WP 0028

OPERATOR MAINTENANCE
CENTER ROLLER AND/OR TRANSLOAD ROLLERS WILL NOT OPERATE

INITIAL SETUP:

References
WP 0035

Equipment Condition
Load removed from the BAP. (WP 0006)

TROUBLESHOOTING PROCEDURE

SYMPTOM

Center Roller and/or Transload Rollers will not Operate.

MALFUNCTION

Hand Pump Selector Lever Position is Incorrect.

CORRECTIVE ACTION

NOTE

- If lever is in center position (OFF), neither the center roller or transload roller extension cylinders will work.
- To operate center roller assembly, lever must be in up position (1).
- To operate transload roller extension cylinders, lever must be in down position (2).

Check position of hand pump selector lever (Figure 1).

CORRECTIVE ACTION - Continued

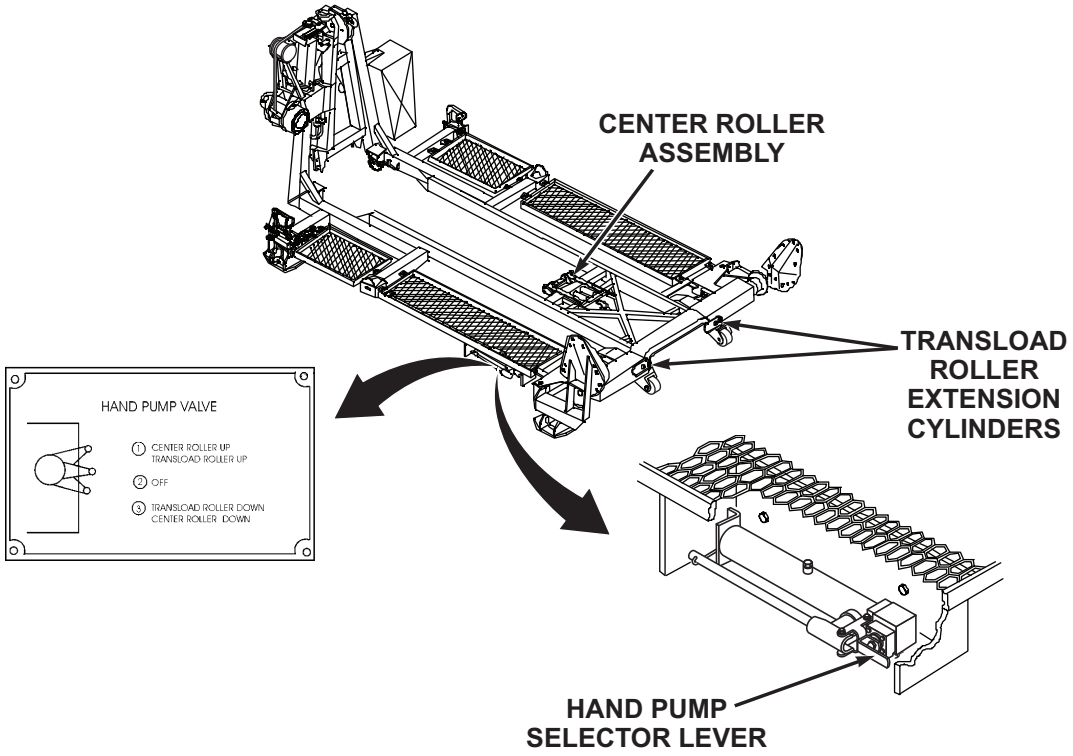


Figure 1. Hand Pump Selector Lever.

a. If lever is not in correct position, place lever in position required.

b. If lever is in correct position, proceed to next Malfunction.

MALFUNCTION

Hydraulic Lines, Fittings, and/or Components Leak.

CORRECTIVE ACTION

Inspect hydraulic lines, fittings, and components for leaks. (WP 0035)

a. If hydraulic lines, fittings, or components leak, notify Field maintenance.

b. If hydraulic lines, fittings, and components do not leak, proceed to next Malfunction.

MALFUNCTION

Hand Pump Hydraulic Fluid Level is Low.

CORRECTIVE ACTION

Check hydraulic fluid level in hand pump. (WP 0035)

a. If hydraulic fluid level is low, notify Field maintenance.

b. If hydraulic fluid level is not low, proceed to next Malfunction.

MALFUNCTION

Center Roller Assembly does not Rise.

CORRECTIVE ACTION

1. Position hand pump selector lever in up position (Figure 2).

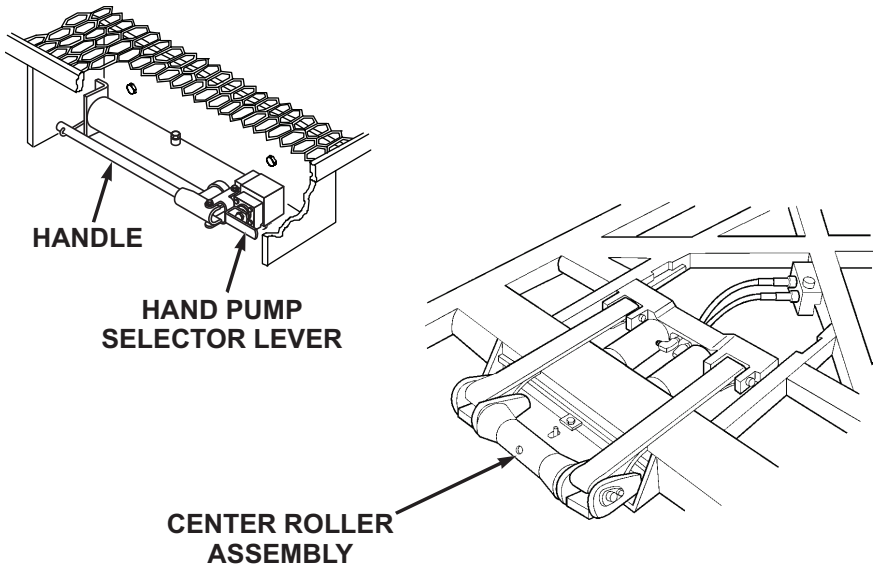


Figure 2. Hand Pump Selector Lever and Center Roller Assembly.

2. Operate hand pump handle and observe if center roller assembly rises (Figure 2).
   a. If center roller assembly does not rise, notify Field maintenance.
   b. If center roller assembly rises, proceed to next Malfunction.

CORRECTIVE ACTION - Continued

MALFUNCTION

Transload Roller Extension Cylinders do not Extend Out.

CORRECTIVE ACTION

1. Position hand pump selector lever in down position (Figure 3).

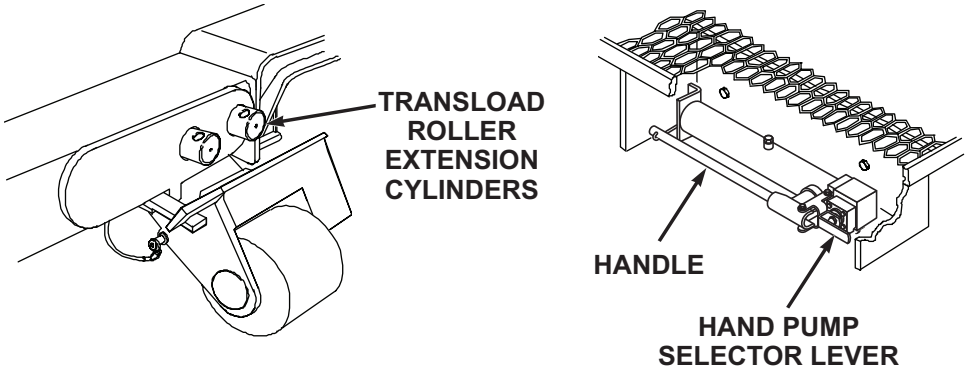


Figure 3. Hand Pump Selector Lever and Transload Roller Extension Cylinders.

2. Operate hand pump handle and observe if transload roller extension cylinders extend out (Figure 3).
   a. If transload roller extension cylinders do not extend out, notify Field maintenance.
   b. If transload roller extension cylinders do extend out and problem is not resolved, notify Field maintenance.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
FRONT PIN LOCK AIR RELEASE WILL NOT OPERATE DURING LAUNCH OF BRIDGE BAY

INITIAL SETUP:

References
WP 0008

Equipment Condition
Engine turned off. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)

Equipment Condition (cont.)
Parking brakes applied. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Wheels chocked. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Load removed from the BAP. (WP 0006)

TROUBLESHOOTING PROCEDURE

SYMPTOM

Front Pin Lock Air Release will not Operate During Launch of Bridge Bay.

MALFUNCTION

Air Line Quick-Disconnect Connectors are not Connected Properly.

CORRECTIVE ACTION

1. Ensure BAP air line quick-disconnect connector is properly connected to vehicle air system quick-disconnect connector (Figure 1).

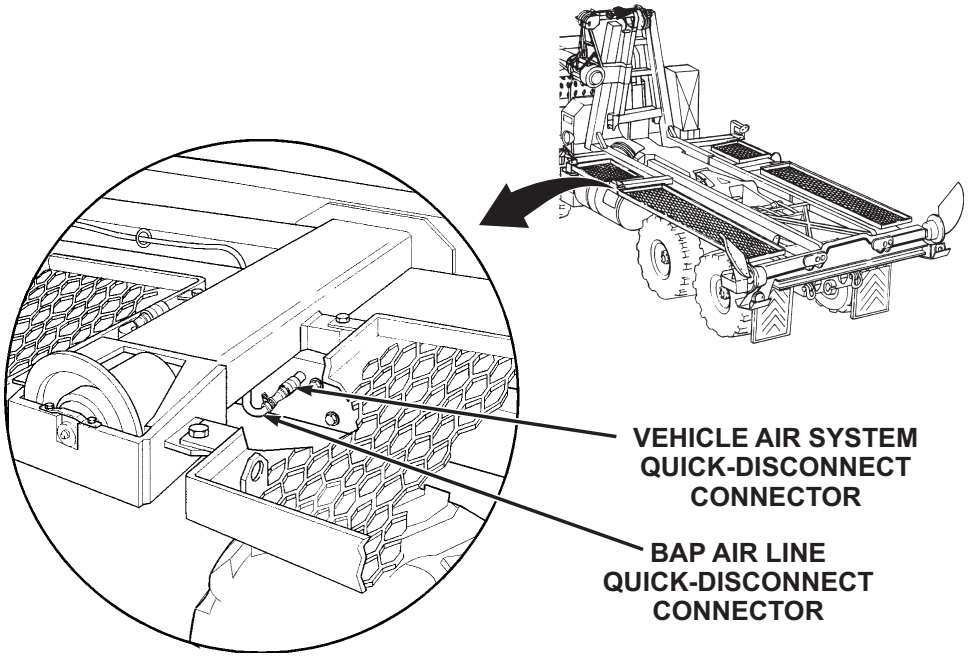


Figure 1. BAP Air Line Quick-Disconnect Connector.

CORRECTIVE ACTION - Continued

2. Disconnect and reconnect BAP air line quick-disconnect connector and ensure connector locks (Figure 1).
   a. If locks do not work and/or an air leak is heard, notify Field maintenance.
   b. If front pin locks do not work during air-release procedure, manually release front locks to deploy bridge bay. (WP 0008) Notify Field maintenance upon completion of mission.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
WINCH ASSEMBLY WILL NOT WIND OUT

INITIAL SETUP:

References
WP 0004
WP 0035

Equipment Condition
BAP loaded on vehicle. (WP 0005)
Engine started. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)

Equipment Condition (cont.)
Parking brakes applied. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Wheels chocked. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)

TROUBLESHOOTING PROCEDURE

SYMPTOM

Winch Assembly will not Wind Out.

MALFUNCTION

Winch Assembly Switch not Set Correctly.

CORRECTIVE ACTION

Ensure winch assembly switch on remote control unit is set to OUT (Figure 1). (WP 0004)

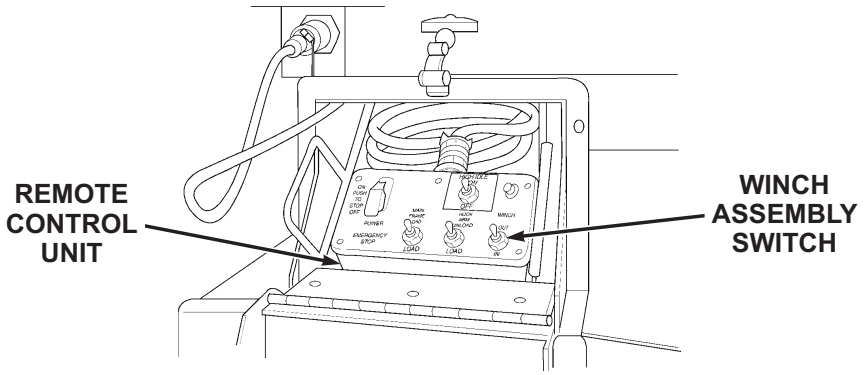


Figure 1. Winch Assembly Switch.

a. If winch assembly switch is not set correctly, set switch to OUT position.

b. If winch assembly switch is set correctly, proceed to next Malfunction.

MALFUNCTION

Winch Hydraulic Lines and Fittings have Leaks.

CORRECTIVE ACTION

Check for leaks in winch hydraulic lines and fittings. (WP 0035)

a. If leaks are found, notify Field maintenance.

b. If leaks are not found, proceed to next Malfunction.

MALFUNCTION

Hydraulic System Quick-Disconnect Connectors are not Connected Properly.

CORRECTIVE ACTION

1. Ensure BAP winch hydraulic system quick-disconnect connectors are properly connected to vehicle hydraulic system quick-disconnect connectors (Figure 2).

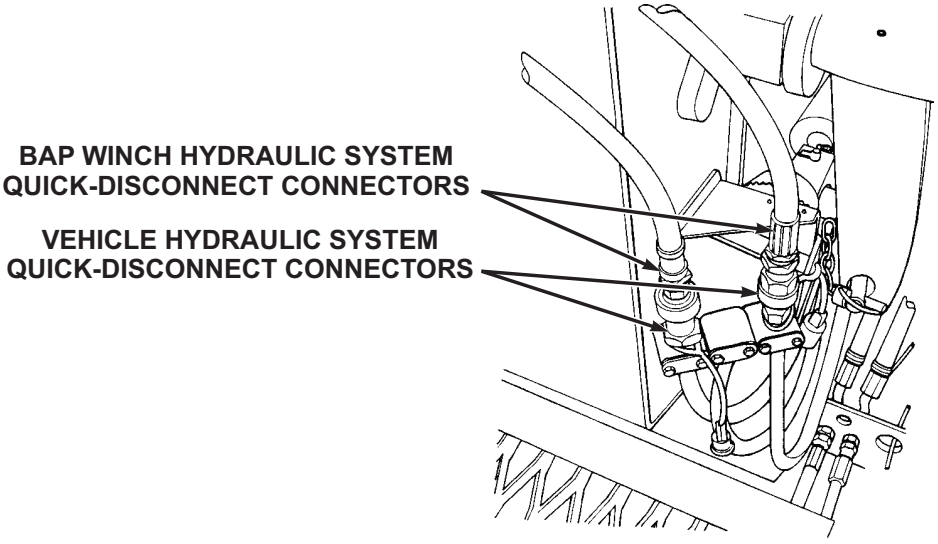


Figure 2. BAP Winch Hydraulic System Quick-Disconnect Connectors.

2. Disconnect and reconnect BAP winch hydraulic system quick-disconnect connectors (Figure 2).
3. Operate winch. (WP 0004)
   a. If winch works, problem corrected.
   b. If winch still does not work, proceed to next Malfunction.

MALFUNCTION

Remote Control Station does not Work.

CORRECTIVE ACTION

Check remote control unit at receptacle on opposite side of vehicle (Figure 3). (WP 0004)

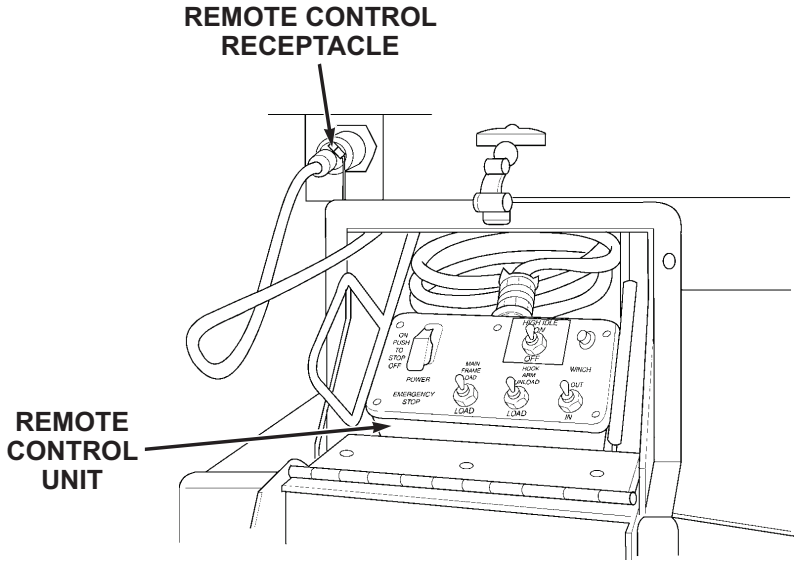


Figure 3. Remote Control Unit.

a. If winch works, complete mission and notify Field maintenance about remote station that does not work.

b. If winch still does not work, notify Field maintenance.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
WINCH ASSEMBLY WILL NOT WIND IN

INITIAL SETUP:

References
WP 0004
WP 0035

Equipment Condition
BAP loaded on vehicle. (WP 0005)
Engine started. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)

Equipment Condition (cont.)
Parking brakes applied. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Wheels chocked. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)

TROUBLESHOOTING PROCEDURE

SYMPTOM

Winch Assembly will not Wind in.

MALFUNCTION

Winch Assembly Switch not Set Correctly.

CORRECTIVE ACTION

Ensure winch assembly switch on remote control unit is set to IN (Figure 1). (WP 0004)

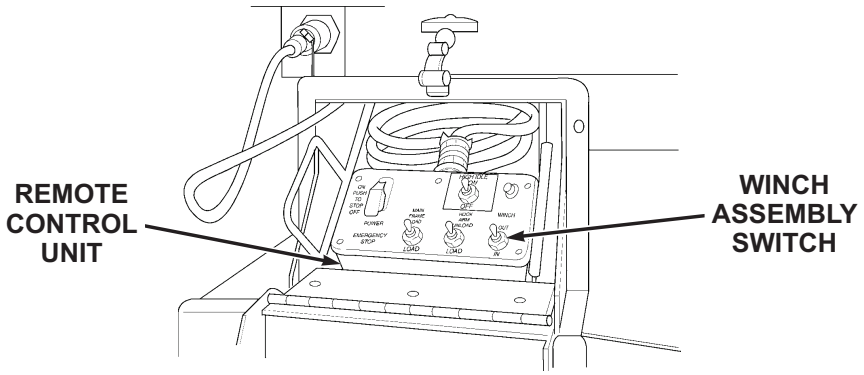


Figure 1. Winch Assembly Switch.

a. If winch assembly switch is not set correctly, set switch to IN position.

b. If winch assembly switch is set correctly, proceed to next Malfunction.

MALFUNCTION

Winch Hydraulic Lines and Fittings have Leaks.

CORRECTIVE ACTION

Check for leaks in winch hydraulic lines and fittings. (WP 0035)

a. If leaks are found, notify Field maintenance.

b. If leaks are not found, proceed to next Malfunction.

MALFUNCTION

Hydraulic System Quick-Disconnect Connectors are not Connected Properly.

CORRECTIVE ACTION

1. Ensure BAP winch hydraulic system quick-disconnect connectors are properly connected to vehicle hydraulic system quick-disconnect connectors (Figure 2).

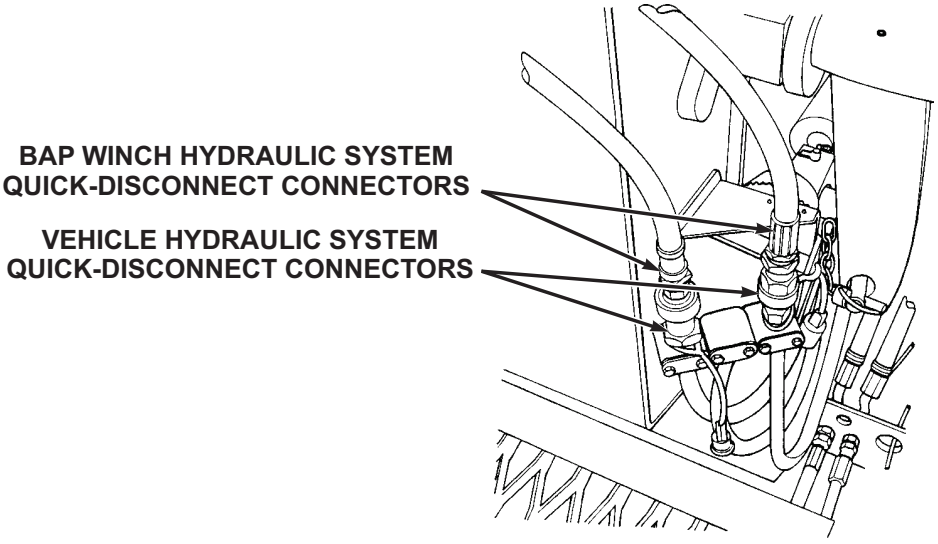


Figure 2. BAP Winch Hydraulic System Quick-Disconnect Connectors.

2. Disconnect and reconnect BAP winch hydraulic system quick-disconnect connectors (Figure 2).
3. Operate winch. (WP 0004)
   a. If winch works, problem corrected.
   b. If winch still does not work, proceed to next Malfunction.

MALFUNCTION

Remote Control Station does not Work.

CORRECTIVE ACTION

Check remote control unit at receptacle on opposite side of vehicle (Figure 3). (WP 0004)

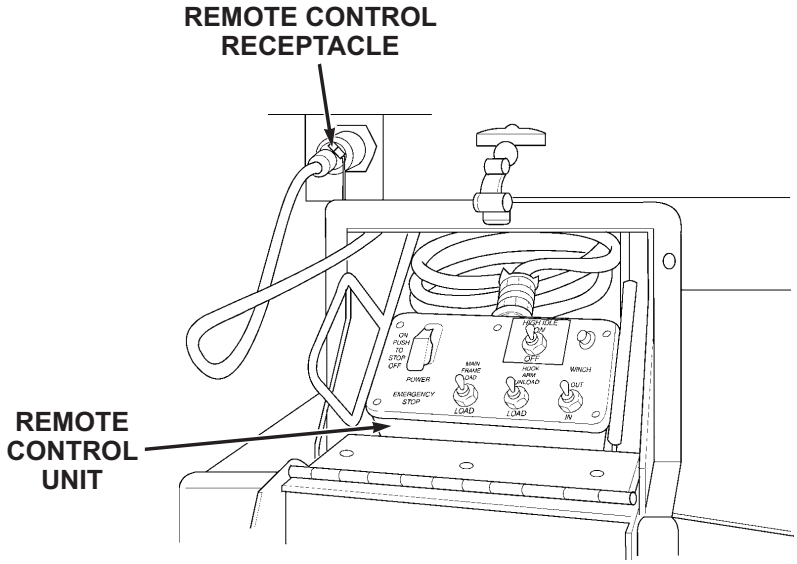


Figure 3. Remote Control Unit.

a. If winch works, complete mission and notify Field maintenance about remote station that does not work.

b. If winch still does not work, notify Field maintenance.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
WINCH ASSEMBLY WILL NOT LIFT LOAD OR OPERATES SLOWLY

INITIAL SETUP:

References
WP 0004
WP 0035

Equipment Condition
BAP loaded on vehicle. (WP 0005)
Engine started. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)

Equipment Condition (cont.)
Parking brakes applied. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Wheels chocked. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)

TROUBLESHOOTING PROCEDURE

SYMPTOM

Winch Assembly will not Lift Load or Operates Slowly.

MALFUNCTION

Cable will not Lift Load or Operates Slowly.

CORRECTIVE ACTION

NOTE

Perform the following check by operating vehicle/winch with a load in place.

1. With load attached to hook on winch cable, set BAP winch switch on remote control unit to IN. (WP 0004)
2. Operate winch to raise load. (WP 0004)
   a. If cable raises load normally, no fault at this time.
   b. If cable will not lift the load or operates slowly, proceed to next Malfunction.

MALFUNCTION

Winch Cable is Obstructed.

CORRECTIVE ACTION

1. Check for any binding of or obstructions to winch cable (Figure 1). (WP 0035)

CORRECTIVE ACTION - Continued

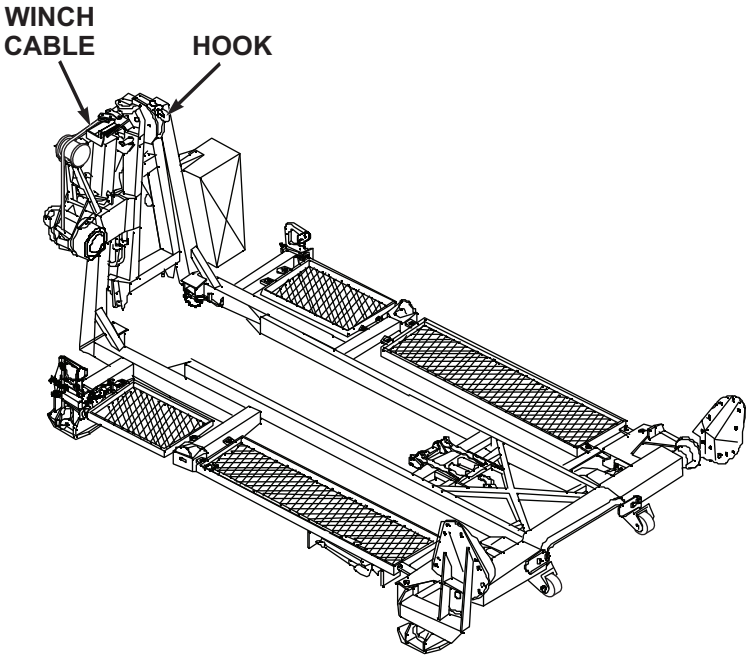


Figure 1. Winch Cable.

2. Check for loose and/or missing hardware (bolts, lockwashers, nuts, etc.) (Figure 2).

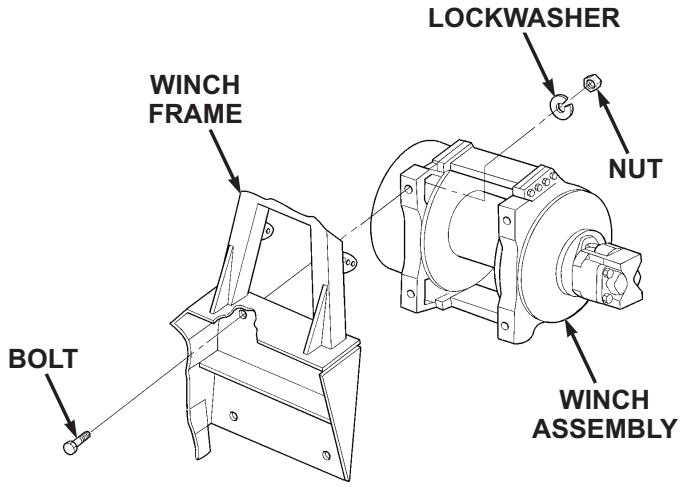


Figure 2. Winch Hardware.

a. If obstructed, remove obstructions.

b. If loose or missing hardware is found, notify Field Maintenance.

c. If not binding, obstructed, and does not have loose or missing hardware, proceed to next Malfunction.

MALFUNCTION

Winch Fluid Level Low.

CORRECTIVE ACTION

Check fluid level in winch. (WP 0035)

a. If fluid level is low, notify Field Maintenance.

b. If fluid level is not low, proceed to next Malfunction.

MALFUNCTION

Hydraulic Lines and Fittings have Leaks or Damage.

CORRECTIVE ACTION

Check winch hydraulic lines and fittings for leaks and damage. (WP 0035)

a. If leaks or damage is found, notify Field Maintenance.

b. If leaks and damage are not found, proceed to next Malfunction.

MALFUNCTION

Hydraulic System Quick-Disconnect Connectors not Connected Properly.

CORRECTIVE ACTION

1. Ensure BAP winch hydraulic system quick-disconnect connectors are properly connected to vehicle hydraulic system quick-disconnect connectors (Figure 3).

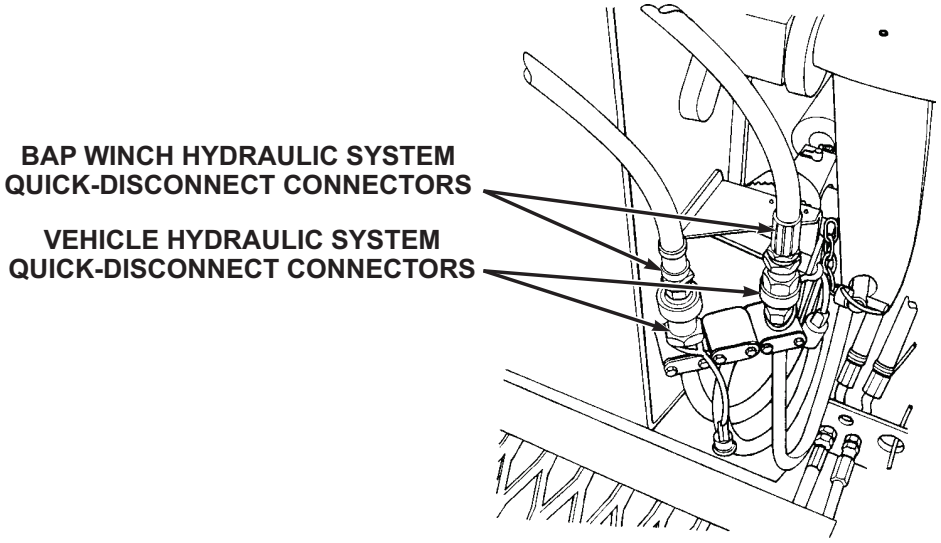


Figure 3. BAP Winch Hydraulic System Quick-Disconnect Connectors.

CORRECTIVE ACTION - Continued

2. Disconnect and reconnect BAP winch hydraulic system quick-disconnect connectors (Figure 3).
3. Operate winch. (WP 0004)
   a. If winch works properly, problem corrected.
   b. If winch still does not work properly, proceed to next Malfunction.

MALFUNCTION

Remote Control Station does not Work.

CORRECTIVE ACTION

Check remote control unit at receptacle on opposite side of vehicle (Figure 4). (WP 0004)

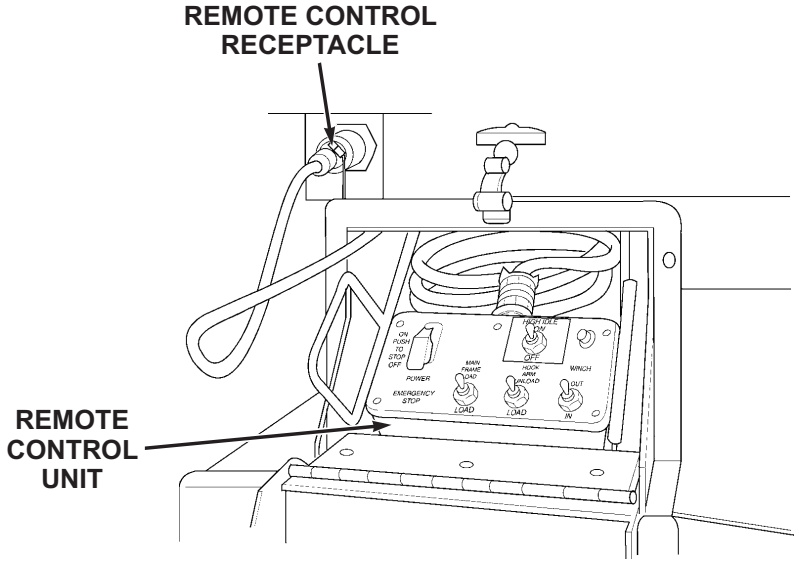


Figure 4. Remote Control Unit.

   a. If winch works, complete mission and notify Field Maintenance about remote station that does not work.
   b. If winch still does not lift load, notify Field Maintenance.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
FRONT PIN LOCK WILL NOT ALIGN WITH BRIDGE BAY PIN

INITIAL SETUP:

References
WP 0007
WP 0008

Equipment Condition
BAP loaded on vehicle. (WP 0005)
Bridge bay loaded on BAP. (WP 0007)

Equipment Condition (cont.)
Engine turned off. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Parking brakes applied. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Wheels chocked. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)

TROUBLESHOOTING PROCEDURE

SYMPTOM

BAP Front Pin Lock will not Align with Bridge Bay Pin.

MALFUNCTION

Bridge Bay is not Sitting on all Four Roller Assemblies.

CORRECTIVE ACTION

Ensure bridge bay is sitting on all four roller assemblies (Figure 1).

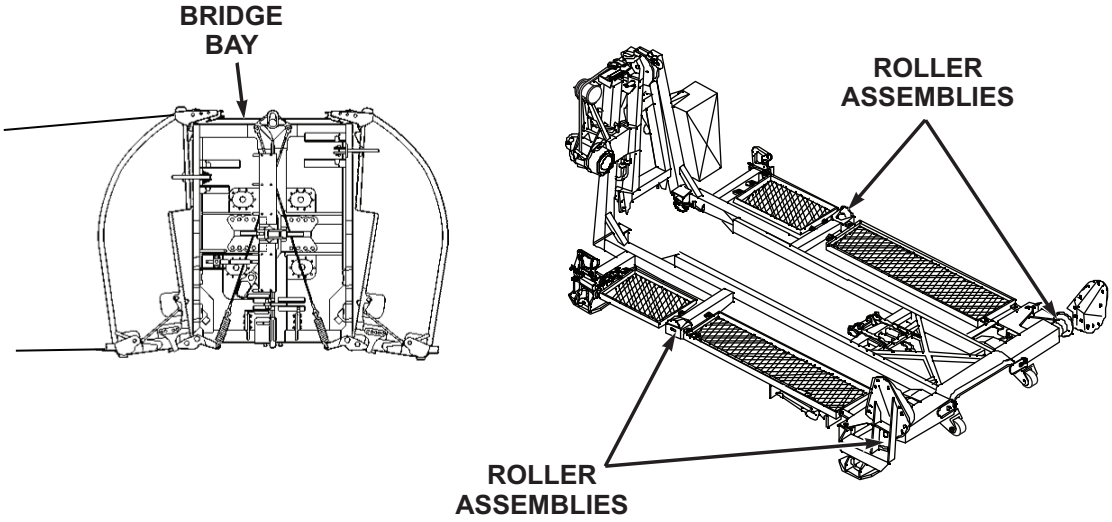


Figure 1. Bridge Bay.

CORRECTIVE ACTION - Continued

a. If bridge bay is not sitting on all four roller assemblies, perform the following:

(1) Unload bridge bay from BAP. (WP 0008)

(2) Reload bridge bay on BAP, ensuring bridge bay is sitting on all four rollers. (WP 0007)

(3) Check if BAP front pin lock will align with bridge bay pin (Figure 2).

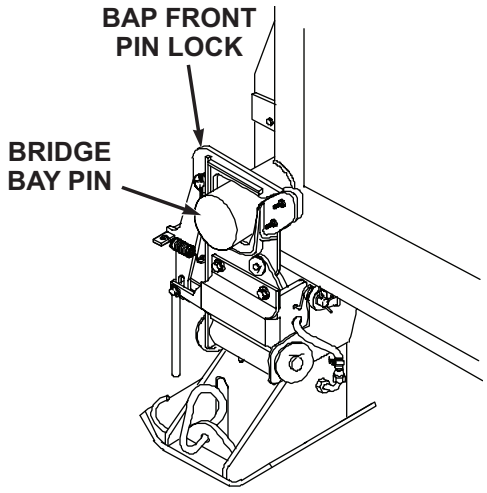


Figure 2. BAP Front Pin Lock.

(4) If BAP front pin lock still will not align with bridge bay pin, notify Field maintenance to adjust BAP front pin lock bracket.

b. If bridge bay is sitting on all four roller assemblies, notify Field maintenance to adjust BAP front pin lock bracket.

END OF WORK PACKAGE

CHAPTER 4

FIELD TROUBLESHOOTING PROCEDURES
FOR
M15 BRIDGE ADAPTER PALLET (BAP) NSN 3990-01-442-1939

CHAPTER CONTENTS

Work Package Title	WP Number
Center Roller and/or Transload Rollers Will Not Operate	WP 0029
Front Pin Lock Will Not Operate	WP 0030
Winch Does Not Operate	WP 0031
Winch Does Not Wind Out	WP 0032
Winch Does Not Wind In	WP 0033

FIELD MAINTENANCE
CENTER ROLLER AND/OR TRANSLOAD ROLLERS WILL NOT OPERATE

INITIAL SETUP:

Tools and Special Tools
Pan, Drain, 5-Gallon (WP 0078, Table 2, Item 1)
Tool Kit, General Mechanic's: Automotive (WP 0078, Table 2, Item 1)

References
WP 0060
WP 0061
WP 0062

Equipment Condition
Engine turned off. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)

Equipment Condition (cont.)
Parking brakes applied. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Wheels chocked. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Load removed from the BAP. (WP 0006)
Hydraulic system bled of air. (WP 0062)

TROUBLESHOOTING PROCEDURE

SYMPTOM

Center Roller and/or Transload Rollers will not Operate.

MALFUNCTION

Hydraulic Hoses and/or Lines are Damaged or Leaking.

CORRECTIVE ACTION

NOTE

Damaged or leaking hoses or lines will not allow pump to deliver sufficient pressure.

Visually inspect hydraulic hoses and lines for leaks and damage (Figure 1).

CORRECTIVE ACTION - Continued

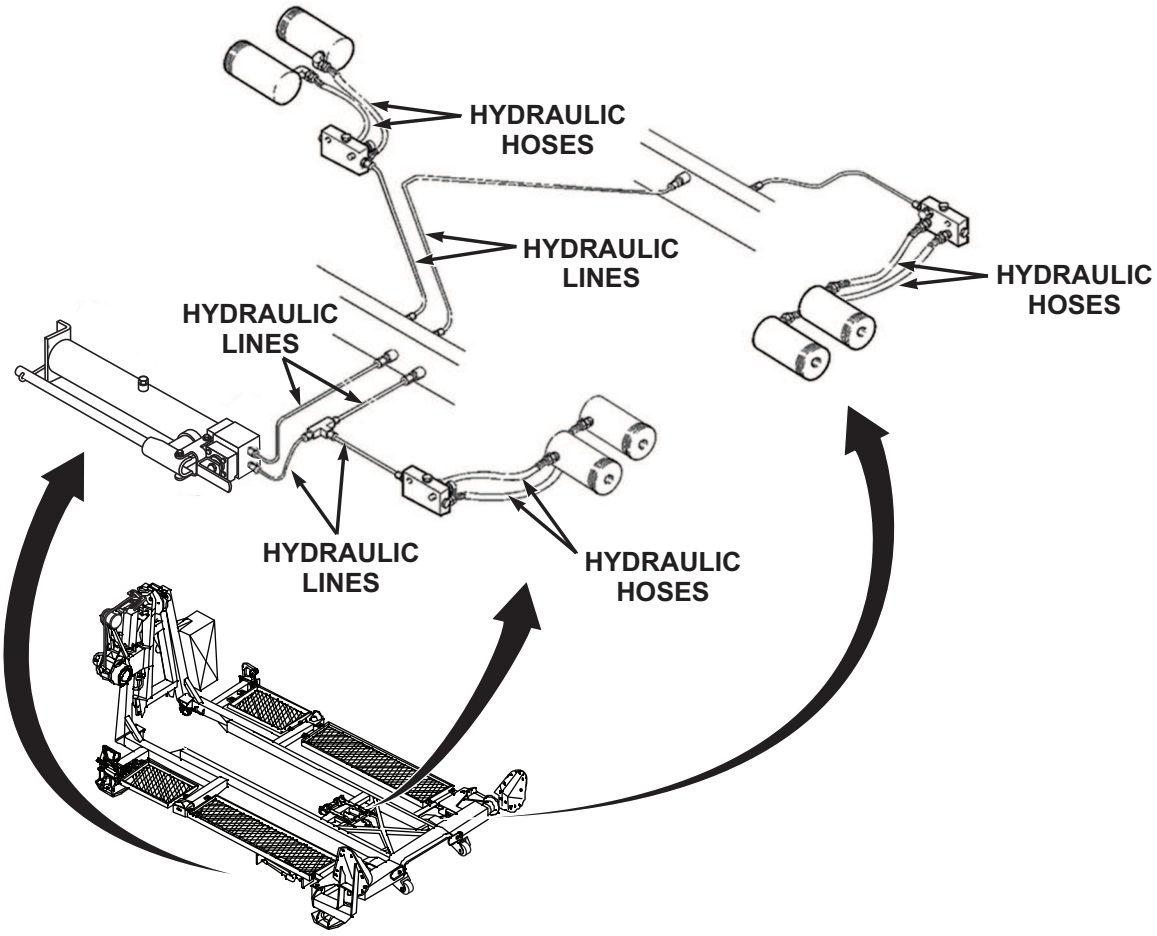


Figure 1. Roller Hydraulic Hoses/Lines.

a. If hydraulic hoses or lines are leaking, tighten connection or replace faulty hose or line and verify problem is corrected.

(1) For center roller hoses, refer to Center Roller Hydraulic System Repair. (WP 0060)

(2) For transload roller hoses, refer to Transload Roller Hydraulic System Repair. (WP 0061)

b. If hydraulic hoses and lines are not leaking, proceed to next Malfunction.

MALFUNCTION

Hand Pump is Faulty.

CORRECTIVE ACTION

NOTE

- Use a drain pan to catch fluid draining from hoses and fittings. Wipe up any spillage with a rag. Handle, store, and dispose of drained fluids in accordance with local policies and procedures.
- Center roller and/or transload rollers will not operate without sufficient flow of hydraulic fluid.

1. Place suitable container under hand pump.
2. Disconnect two hydraulic lines from hand pump (Figure 2).

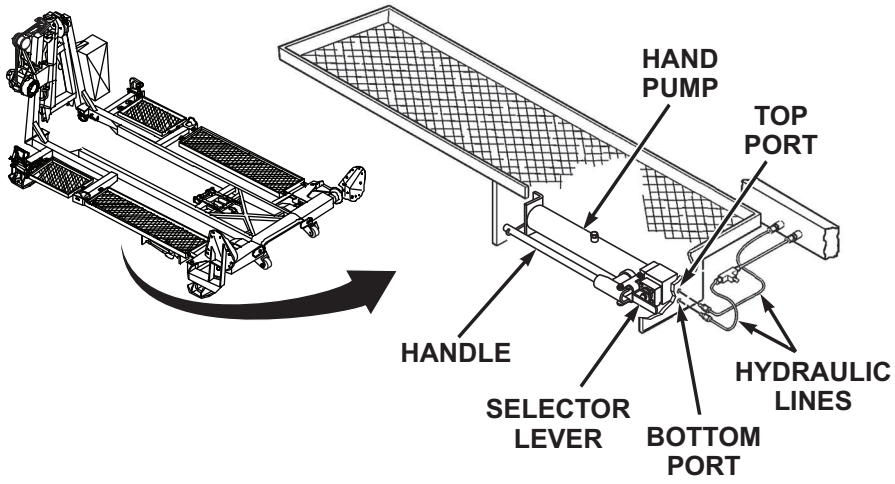


Figure 2. Hand Pump.

3. Move hand pump selector lever to UP position (Figure 2).
4. Pump handle and verify fluid flow is present at TOP PORT (Figure 2).
5. Move hand pump selector lever to DOWN position (Figure 2).
6. Pump handle and verify fluid flow is present at BOTTOM PORT (Figure 2).
   a. If hydraulic fluid does not flow from one or both ports, replace hydraulic hand pump. (WP 0062)
   b. If hydraulic fluid flows from both ports and only center rollers do not operate, proceed to Malfunction **Center Roller Manifold Or Center Roller Cylinders Are Faulty.**
   c. If hydraulic fluid flows from both ports and only transload rollers do not operate, proceed to Malfunction **Transload Roller Manifold Or Transload Roller Cylinders Are Faulty.**
   d. If hydraulic fluid flows from both ports and both, center rollers and transload rollers do not operate, perform the procedures in both Malfunction's, **Center Roller Manifold Or Center Roller Cylinders Are Faulty** and **Transload Roller Manifold Or Transload Roller Cylinders Are Faulty.**

MALFUNCTION

Center Roller Manifold or Center Roller Cylinders are Faulty.

CORRECTIVE ACTION

1. Connect hydraulic lines to hand pump and bleed system to remove any trapped air (Figure 2).
2. Place suitable container under center roller cylinders (Figure 3).

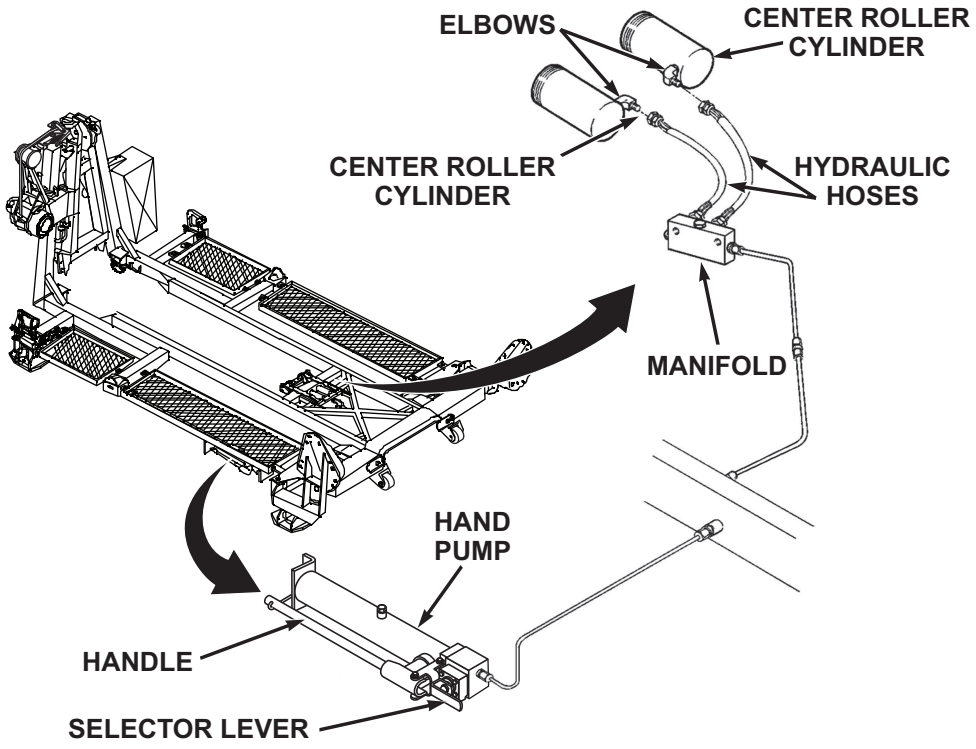


Figure 3. Center Roller Manifold and Cylinders.

3. Disconnect two hydraulic hoses from elbows on center roller cylinders (Figure 3).
4. Move hand pump selector lever to UP position (Figure 3).
5. Pump hand pump handle and observe open ends of hydraulic hoses for fluid flow (Figure 3).
   a. If hydraulic fluid is not flowing, replace center roller manifold (WP 0060) and verify problem is corrected.
   b. If hydraulic fluid is flowing, replace center roller cylinders (WP 0060) and verify problem is corrected.

MALFUNCTION

Transload Roller Manifold or Transload Roller Cylinders are Faulty.

CORRECTIVE ACTION

1. If disconnected, connect hydraulic lines to hand pump and bleed system to remove any trapped air (Figure 2).
2. If disconnected, connect hydraulic hoses to elbows on center roller cylinders and bleed system for any trapped air (Figure 3).
3. Place suitable container under transload roller cylinders (Figure 4).

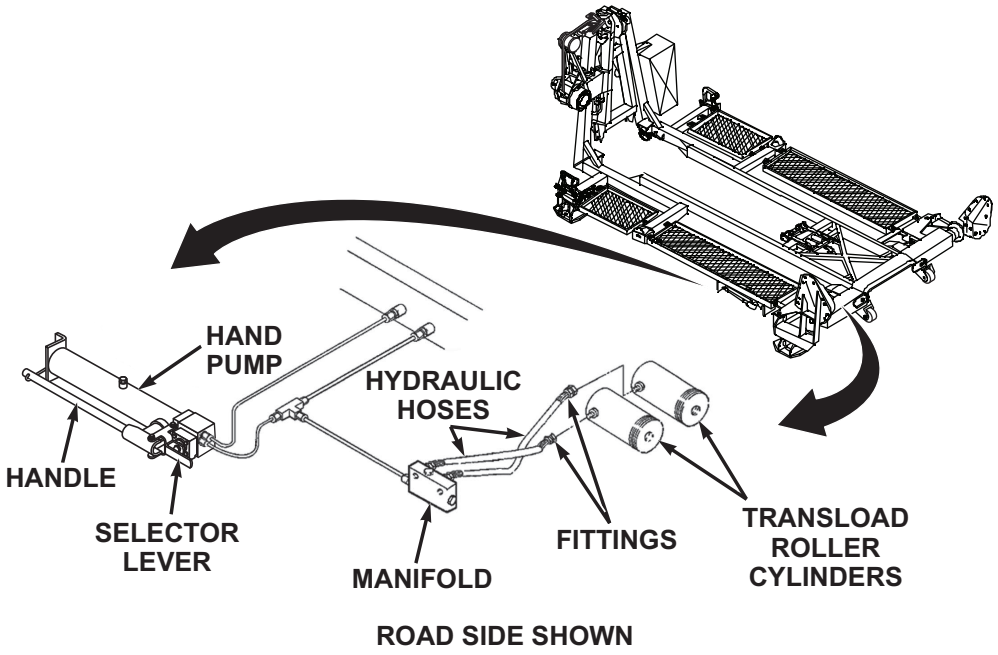


Figure 4. Transload Roller Manifold and Cylinders.

4. Disconnect two hydraulic hoses from fittings on transload roller cylinders (Figure 4).
5. Move hand pump selector lever to DOWN position (Figure 4).
6. Pump hand pump handle and observe open ends of hydraulic hoses for fluid flow (Figure 4).
   a. If hydraulic fluid is not flowing, replace transload roller manifold (WP 0061) and verify problem is corrected.
   b. If hydraulic fluid is flowing, replace transload roller cylinders (WP 0061) and verify problem is corrected.

END OF WORK PACKAGE

FIELD MAINTENANCE
FRONT PIN LOCK WILL NOT OPERATE

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive (WP 0078, Table 2, Item 1)

Materials/Parts
Lockwasher (WP 0082, Table 1, Item 41) Qty: 6
Lockwasher (WP 0082, Table 1, Item 43) Qty: 2

References
WP 0052
WP 0063
WP 0064

Equipment Condition
Engine turned off. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)

Equipment Condition (cont.)
Parking brakes applied. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Wheels chocked. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Load removed from the BAP. (WP 0006)
CBT air supply fully charged. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
BAP air supply hose connected to HEMITT supply air coupling. (WP 0011)

TROUBLESHOOTING PROCEDURE

SYMPTOM

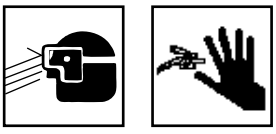
Front Pin Lock will not Operate.

MALFUNCTION

Vehicle Air Supply is Faulty.

CORRECTIVE ACTION

WARNING



Air system is under pressure. Never point airflow toward personnel. Failure to comply may result in serious injury or death to personnel.

NOTE

Front pin locks will not operate without sufficient air pressure.

1. Loosen hose clamp (Figure 1).

CORRECTIVE ACTION - Continued

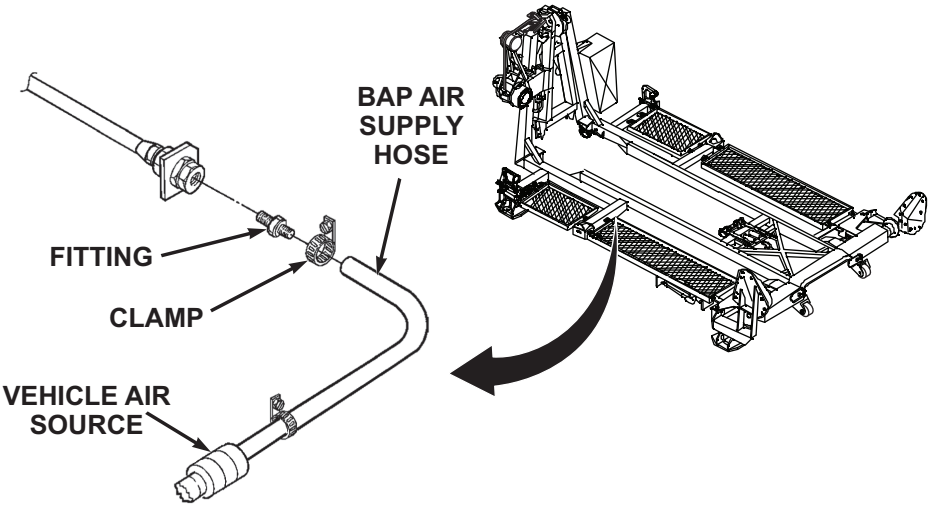


Figure 1. Air Supply Hose.

2. Remove BAP air supply hose from fitting and check for air pressure at end of air supply hose.
3. Install BAP air supply hose on fitting and tighten hose clamp.
   a. If very little or no air pressure is present, vehicle air supply is faulty. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
   b. If steady or strong air pressure is present, proceed to next Malfunction.

MALFUNCTION

Air Line Between BAP Air Supply Hose and Control Valve is Faulty.

CORRECTIVE ACTION

NOTE

Control valve will not operate without sufficient air pressure.

1. Remove two screws and lockwashers from bracket and control valve (Figure 2). Discard lockwashers.

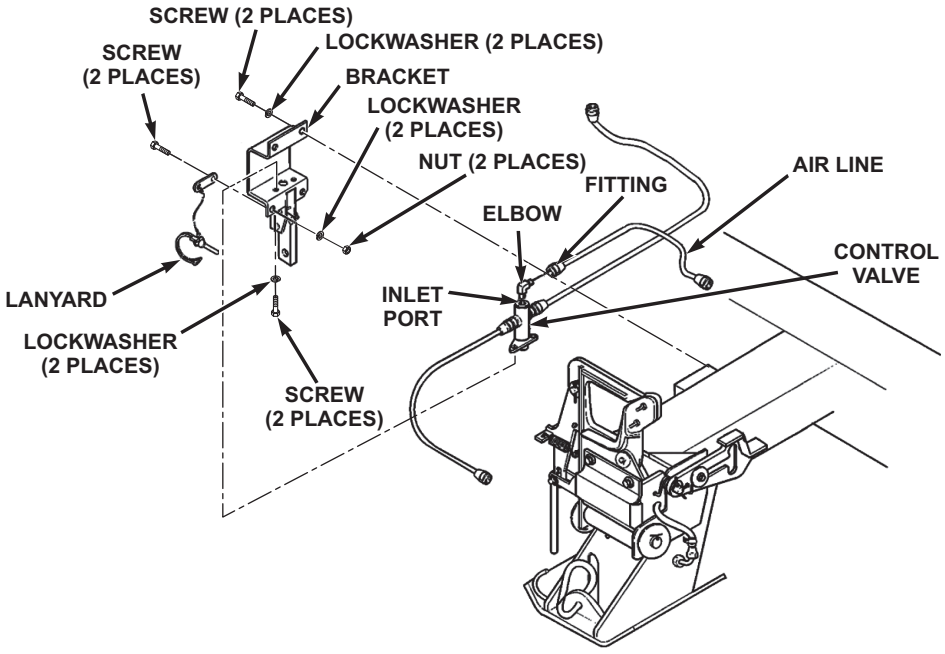


Figure 2. Control Valve.

2. Remove two screws and lockwashers from bracket (Figure 2). Discard lockwashers.
3. Remove two screws, lockwashers, nuts, lanyard, and bracket from frame (Figure 2).
4. Remove air line fitting from elbow on inlet port of control valve and check for air pressure at end of air line (Figure 2).
   a. If very little or no air pressure is present, perform the following:
      (1) Replace air line between BAP air supply hose and control valve. (WP 0064)
      (2) Install fitting on elbow on inlet port of control valve (Figure 2).
      (3) Install bracket on control valve with two screws and lockwashers (Figure 2).
      (4) Install two screws and lockwashers on bracket and control valve (Figure 2).
      (5) Install lanyard, two screws, lockwashers, and nuts on bracket (Figure 2).
      (6) Verify problem is corrected.
   b. If steady air pressure is present, install fitting on elbow on inlet port of control valve (Figure 2) and proceed to next Malfunction.

MALFUNCTION

Control Valve is Faulty.

CORRECTIVE ACTION

NOTE

Air cylinders will not operate without sufficient air pressure output from control valve.

1. Remove air line fittings from right and left outlet ports of control valve (Figure 3).

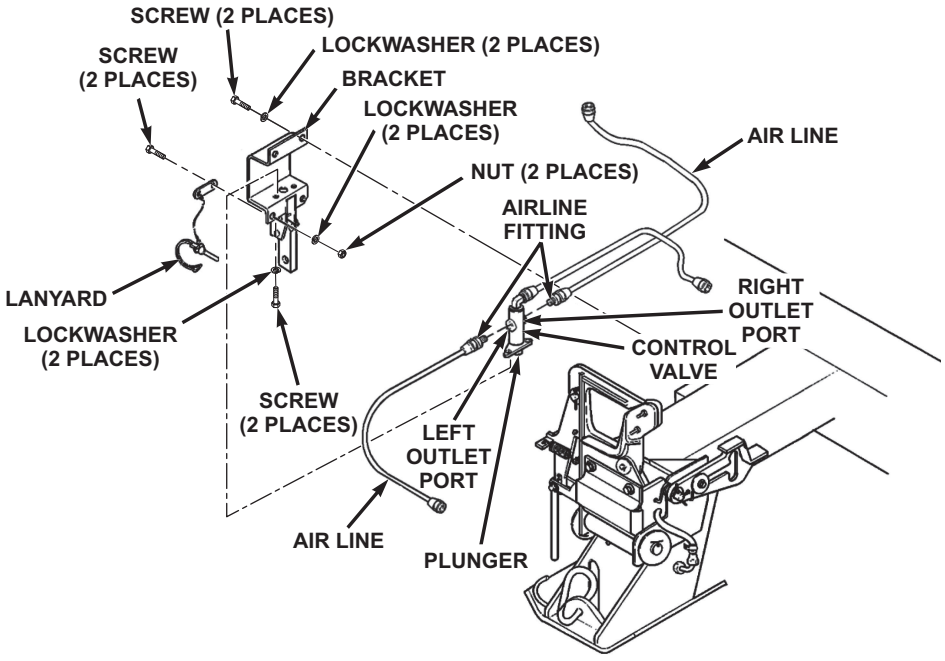


Figure 3. Control Valve Outlet Ports.

2. Press plunger on bottom of control valve and check for air pressure at both outlet ports (Figure 3).
   a. If very little or no air pressure is present at one or both outlet ports, perform the following:
      (1) Replace control valve. (WP 0063)
      (2) Install fittings on left and right outlet ports of control valve (Figure 3).
      (3) Install bracket on control valve with two screws and lockwashers (Figure 3).
      (4) Install two screws and lockwashers on bracket and control valve (Figure 3).
      (5) Install lanyard, two screws, lockwashers, and nuts on bracket (Figure 3).
      (6) Verify problem is corrected.
   b. If steady air pressure is present from both outlet ports, perform the following:
      (1) Install fittings on left and right outlet ports of control valve (Figure 3).
      (2) Install bracket on control valve with two screws and lockwashers (Figure 3).
      (3) Install two screws and lockwashers on bracket and control valve (Figure 3).
      (4) Install lanyard, two screws, lockwashers, and nuts on bracket (Figure 3).

CORRECTIVE ACTION - Continued

(5) Proceed to next Malfunction.

MALFUNCTION

Curb-side and/or Road-side Air Lines are Faulty.

CORRECTIVE ACTION

NOTE

Air cylinders will not operate without sufficient air pressure.

1. Remove two screws, lockwashers, and air cylinder guard from curb-side front pin lock (Figure 4). Discard lockwashers.

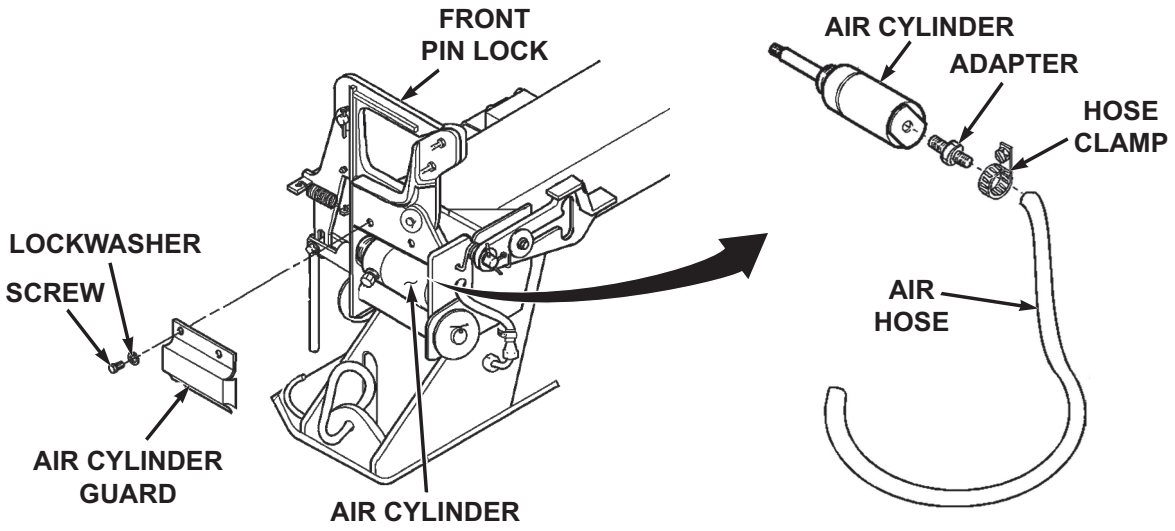


Figure 4. Air Cylinder.

2. Remove two screws, lockwashers, and air cylinder guard from road-side front pin lock (Figure 4). Discard lockwashers.
3. Loosen hose clamp and remove air hose and adapter from curb-side air cylinder (Figure 4).
4. Loosen hose clamp and remove air hose and adapter from road-side air cylinder (Figure 4).
5. Pull lever (Figure 5) to activate control valve and check for air pressure at ends of hoses (Figure 4).

CORRECTIVE ACTION - Continued

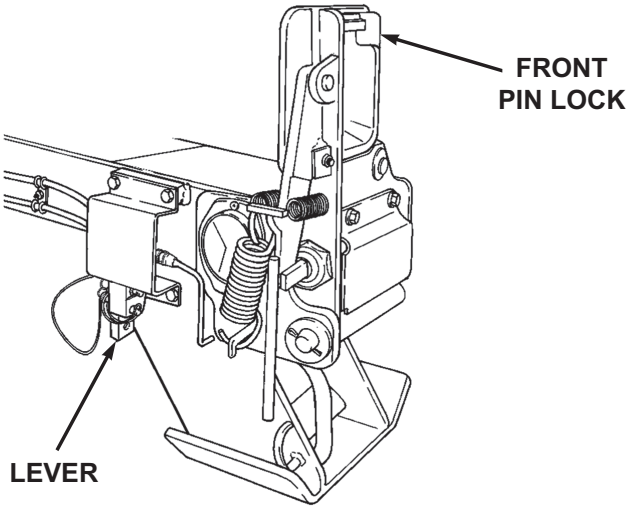


Figure 5. Control Valve Lever.

a. If very little or no air pressure is present, perform the following:

(1) Replace hose(s) between control valve and air cylinder(s). (WP 0064)

(2) Install air hose and adapter to road-side air cylinder and tighten hose clamp (Figure 4).

(3) Install air hose and adapter to curb-side air cylinder and tighten hose clamp (Figure 4).

(4) Install air cylinder guard to road-side front pin lock with two screws and lockwashers (Figure 4).

(5) Install air cylinder guard to curb-side front pin lock with two screws and lockwashers (Figure 4).

(6) Verify problem is corrected.

b. If steady air pressure is present, perform the following:

(1) Install air hose and adapter to road-side air cylinder and tighten hose clamp (Figure 4).

(2) Install air hose and adapter to curb-side air cylinder and tighten hose clamp (Figure 4).

(3) Proceed to next Malfunction.

MALFUNCTION

Breather is Plugged or Damaged.

CORRECTIVE ACTION

NOTE

Front pin locks will not release if breather is plugged or damaged.

1. Remove breather from curb-side air cylinder (Figure 6).

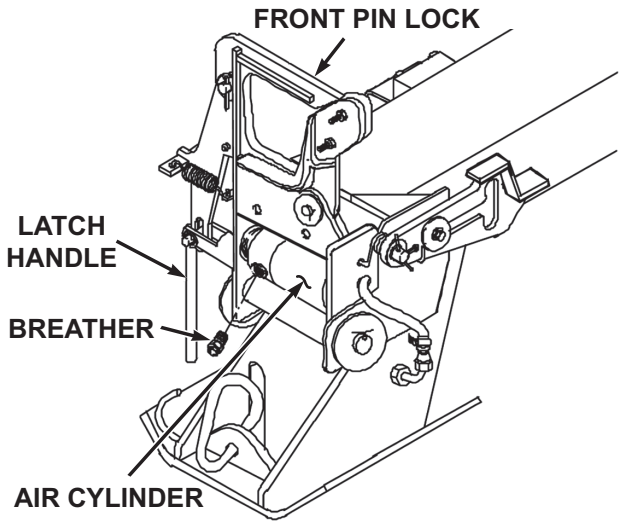


Figure 6. Air Cylinder Breather.

2. Remove breather from road-side air cylinder (Figure 6).
3. Pull and release curb-side and road-side latch handles to extend and contract air cylinders (Figure 6).
   a. If air cylinders extend and contract smoothly, perform the following:
      (1) Replace breathers. (WP 0052)
      (2) Install air cylinder guard to road-side front pin lock with two screws and lockwashers (Figure 4).
      (3) Install air cylinder guard to curb-side front pin lock with two screws and lockwashers (Figure 4).
      (4) Verify problem is corrected.
   b. If air cylinders do not extend or contract or move slowly and bind, install breathers (Figure 6) and proceed to next Malfunction.

MALFUNCTION

Air Cylinders are Faulty.

CORRECTIVE ACTION

NOTE

Front pin locks will not release if air cylinders are frozen or binding.

Pull and release curb-side and road-side latch handles to extend and contract air cylinders (Figure 7).

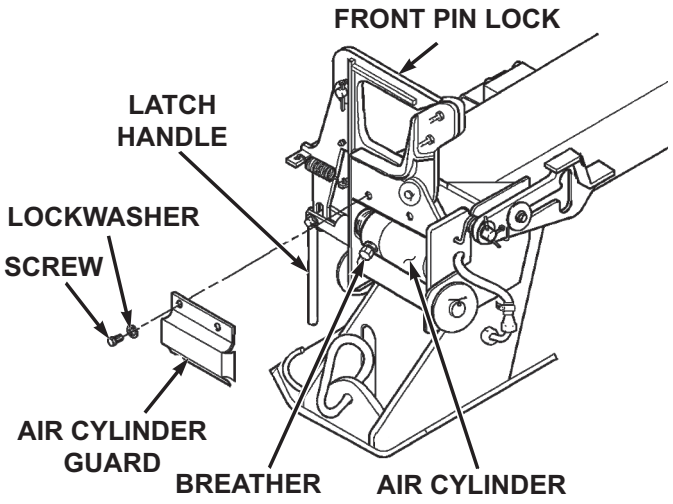


Figure 7. Latch Handle.

a. If air cylinders do not extend or contract or move slowly and bind, perform the following:

(1) Replace air cylinders. (WP 0052)

(2) Install air cylinder guard to road-side front pin lock with two screws and lockwashers (Figure 7).

(3) Install air cylinder guard to curb-side front pin lock with two screws and lockwashers (Figure 7).

(4) Verify problem is corrected.

b. If air cylinders extend and contract smoothly, perform the following:

(1) Install air cylinder guard to road-side front pin lock with two screws and lockwashers (Figure 7).

(2) Install air cylinder guard to curb-side front pin lock with two screws and lockwashers (Figure 7).

(3) Verify problem is corrected.

END OF WORK PACKAGE

FIELD MAINTENANCE
WINCH DOES NOT OPERATE

INITIAL SETUP:

Tools and Special Tools
Multimeter (WP 0078, Table 2, Item 1)
Tool Kit, General Mechanic's: Automotive (WP 0078, Table 2, Item 1)

References
TM 9-2320-435-10 (WP 0076)
TM 9-2320-425-10 (WP 0076)

References (cont.)
WP 0005
WP 0055

Equipment Condition
BAP loaded on vehicle. (WP 0005)
Engine turned off. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Parking brakes applied. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Wheels chocked. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)

TROUBLESHOOTING PROCEDURE

SYMPTOM

Winch does not Operate.

MALFUNCTION

Quick-Disconnect Couplings are not Connected Properly.

CORRECTIVE ACTION

NOTE

Hydraulic fluid flow to winch motor may be blocked at quick-disconnect fittings if fittings are not connected properly.

Verify male portion of quick-disconnect couplings are fully seated in female portions of couplings and are secured by locking mechanism (Figure 1).

CORRECTIVE ACTION - Continued

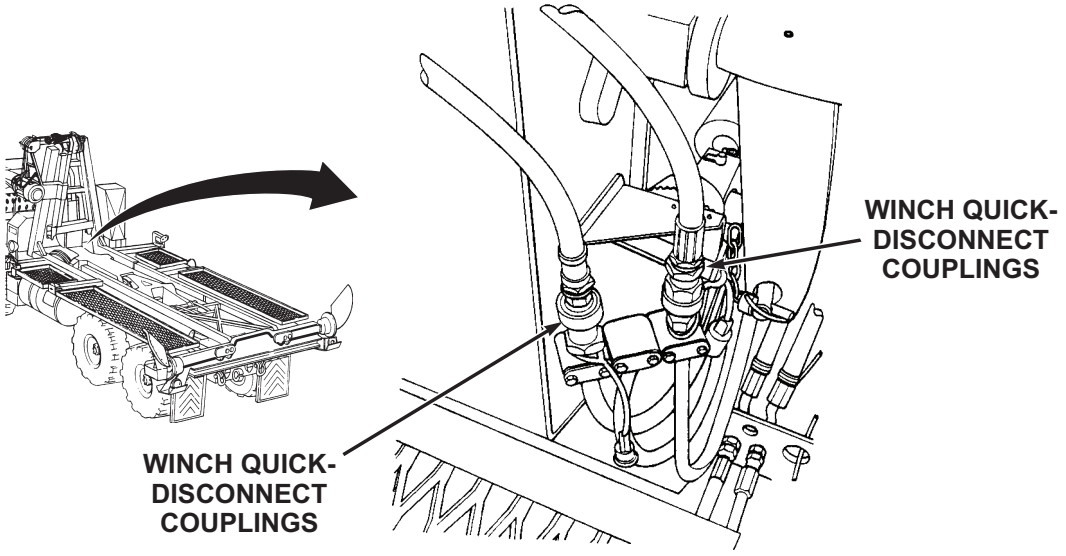


Figure 1. Winch Quick-Disconnect Couplings (Model A Shown).

a. If quick-disconnect couplings are not connected properly, connect quick-disconnect couplings properly. (WP 0005)

b. If quick-disconnect couplings are connected properly, proceed to next Malfunction.

MALFUNCTION

Hydraulic Hoses, Lines, and/or Fittings are Leaking or Damaged.

CORRECTIVE ACTION

Visually inspect hydraulic hoses, lines, and fittings for leaks and damage (Figure 2).

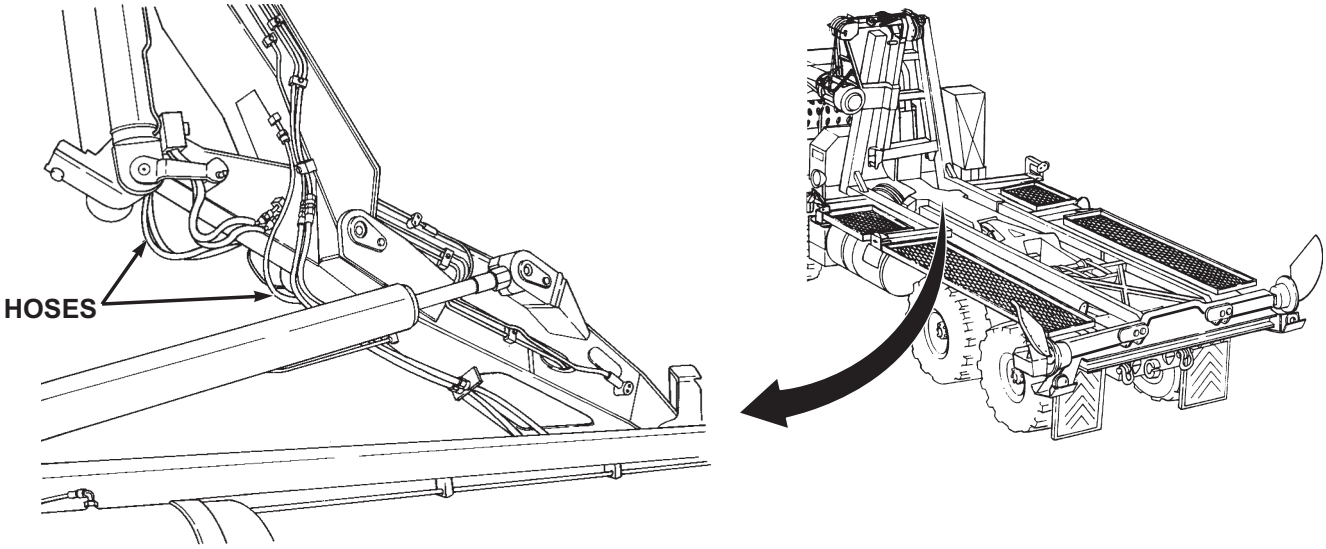


Figure 2. Hydraulic Hoses.

CORRECTIVE ACTION - Continued

a. If hydraulic hoses, lines, or fittings are leaking or damaged, tighten fittings and replace damaged hoses or lines. (WP 0055)

b. If hydraulic hoses, lines, or fittings are not leaking or damaged and vehicle is Model A, End of Task.

c. If hydraulic hoses, lines, or fittings are not leaking or damaged and vehicle is Model B, proceed to next Malfunction.

MALFUNCTION

Cab Interface Wiring Harness is Faulty.

CORRECTIVE ACTION

1. Remove three thumb screws and access cover on right side of vehicle under front fender to gain access to cab interface wiring harness connector (Figure 3).

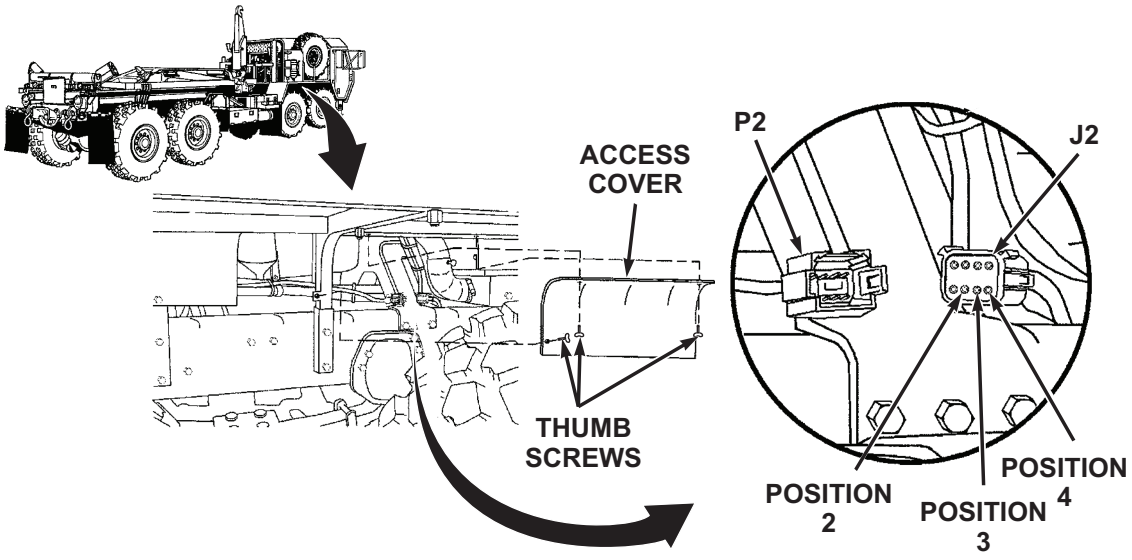


Figure 3. Access Cover, Connector J2, and Connector P2.

2. Cut and remove wire ties as necessary to loosen cab interface wiring harness.
3. Disconnect cab interface wiring harness connector J2 from digital controller wiring harness connector P2 (Figure 3).
4. Turn engine start switch to ON position. (TM 9-2320-435-10 or TM 9-2320-425-10)
5. Set multimeter to voltage position.
6. Place positive (+) probe of multimeter on position 2, circuit 1473, of control cab control box connector J2 (Figure 3).
7. Place negative (-) probe of multimeter on known good ground. Check multimeter for voltage reading, note reading.
8. Set cab LHS MODE SELECT switch to AUTO position (Figure 4).

CORRECTIVE ACTION - Continued

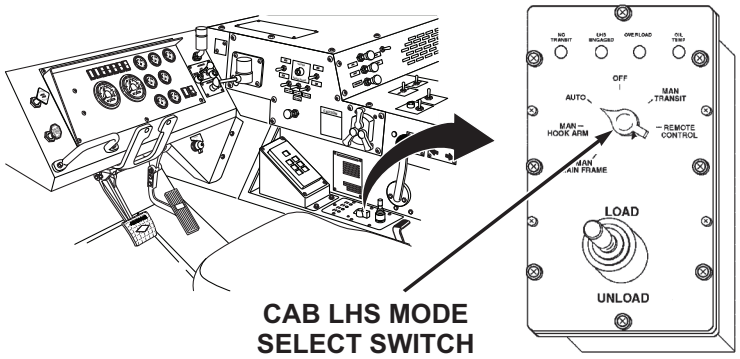


Figure 4. Cab Digital Mode Select Switch.

9. Place positive (+) probe of multimeter on position 3, circuit 1471, of control cab control box connector J2 (Figure 3). Note reading.

NOTE

Position 4, circuit 1490, should have a reading of 1 - 5 volts, not 22 - 28 volts. If 1 - 5 volts are not measured at position 4, replace the cab digital control box. (TM 9-2320-435-10 or TM 9-2320-425-10)

10. Place positive (+) probe of multimeter on position 4, circuit 1490, of control cab control box connector J2 (Figure 3). Note reading.
11. Turn engine start switch to OFF position. (TM 9-2320-435-10 or TM 9-2320-425-10)
    a. If 22 - 28 volts is not present at connector J2 position 2 and position 3, repair or replace cab interface wiring. (TM 9-2320-435-10 or TM 9-2320-425-10)
    b. If 22 - 28 volts is present at connector J2 position 2 and position 3, proceed to next Malfunction.

MALFUNCTION

Wiring Between Connectors J4 and P2 is Faulty and/or Wiring Between Connector J3 and WINCH OUT Solenoid is Faulty.

CORRECTIVE ACTION

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

NOTE

Digital controller and cab control box are not repairable, therefore, it is necessary to test digital controller and cab interface wiring harnesses, switches, solenoids, and other components to identify possible faults other than digital controller and digital cab controller.

1. Remove 6 screws and flatwashers from hydraulic cabinet cover and remove cover (Figure 5).

CORRECTIVE ACTION - Continued

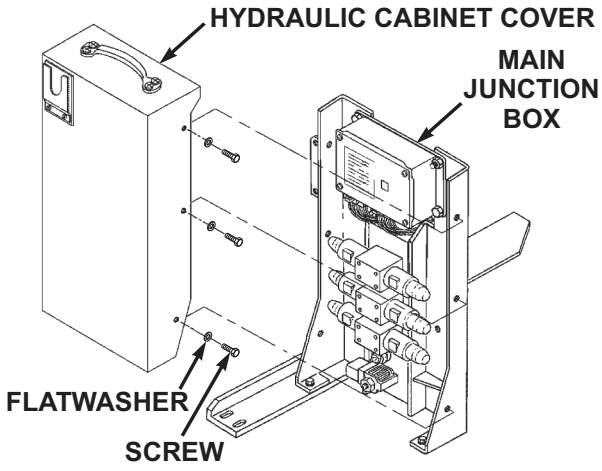


Figure 5. Hydraulic Cabinet Cover.

2. Disconnect right hand connector J3 (40 pin connector) from digital controller (Figure 6).

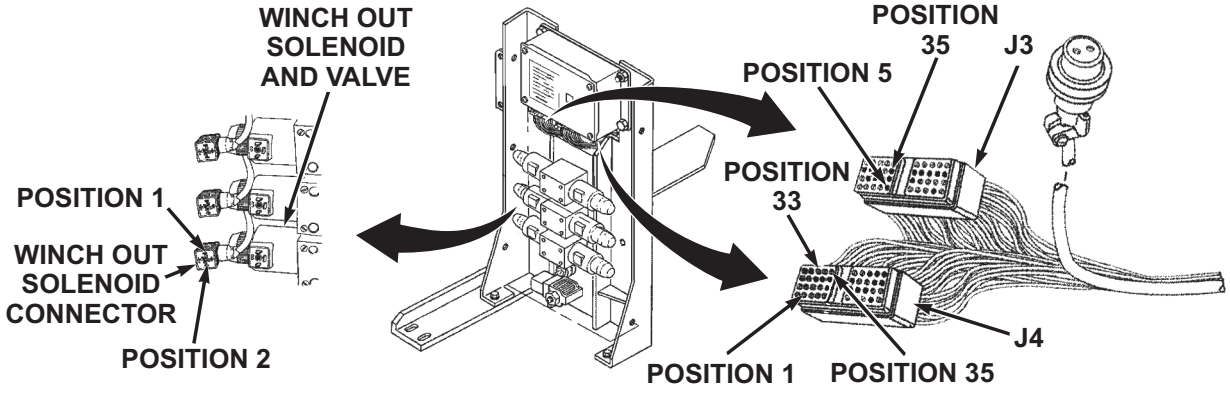


Figure 6. Connector J3 and Connector J4.

3. Disconnect left hand connector J4 (40 pin connector) from digital controller (Figure 6).
4. Remove connector from WINCH OUT solenoid (Figure 6).
5. Set multimeter to ohms position.

NOTE

A reading of infinity indicates an open circuit.

6. Place negative (-) probe of multimeter on position 1 of digital controller wiring harness connector J4 (Figure 6).
7. Place positive (+) probe of multimeter on position 2 of digital controller wiring harness connector P2 (Figure 7). Check multimeter for continuity.

CORRECTIVE ACTION - Continued

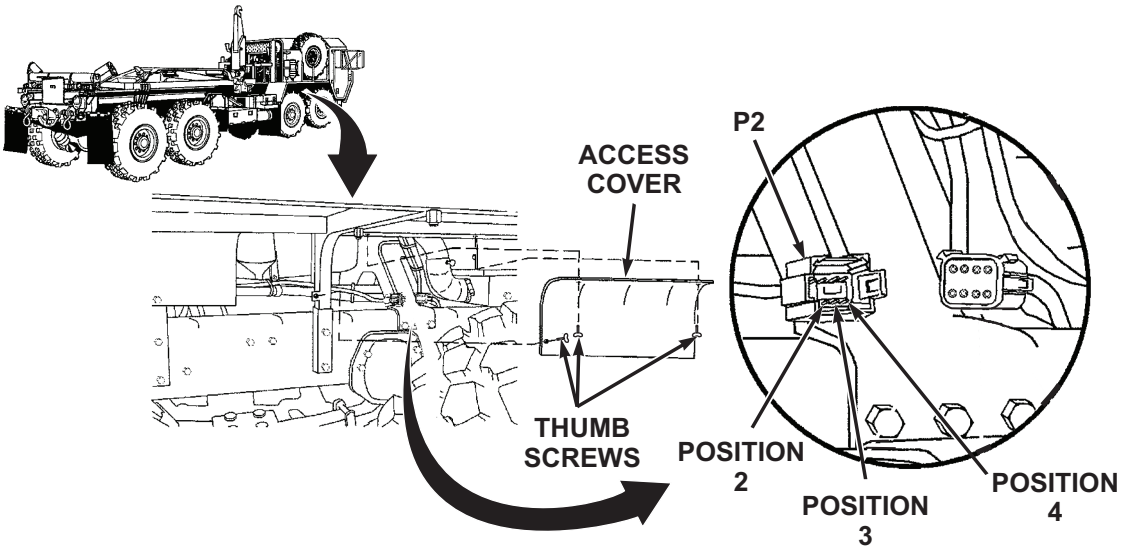


Figure 7. Connector P2.

8. Place negative (-) probe of multimeter on position 35 of digital controller wiring harness connector J4 (Figure 6).
9. Place positive (+) probe of multimeter on position 3 of digital controller wiring harness connector P2 (Figure 7). Check multimeter for continuity.
10. Place negative (-) probe of multimeter on position 33 of digital controller wiring harness connector J4 (Figure 6).
11. Place positive (+) probe of multimeter on position 4 of digital controller wiring harness connector P2 (Figure 7). Check multimeter for continuity.
12. Place negative (-) probe of multimeter on position 5 of digital controller wiring harness connector J3 (Figure 6).
13. Place positive (+) probe of multimeter on position 1 of WINCH OUT solenoid connector (Figure 6). Check multimeter for continuity.
14. Place negative (-) probe of multimeter on position 35 of digital controller wiring harness connector J3 (Figure 6).
15. Place positive (+) probe of multimeter on position 2 of WINCH OUT solenoid connector (Figure 6). Check multimeter for continuity.
    a. If continuity is not present at one or all of the readings, repair or replace digital controller wiring harness. (TM 9-2320-435-10 or TM 9-2320-425-10)
    b. If continuity is present for all of the readings, proceed to next Malfunction.

MALFUNCTION

Wiring Between Connector J3 and WINCH IN Solenoid is Faulty.

CORRECTIVE ACTION

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

NOTE

Digital controller and cab control box are not repairable, therefore, it is necessary to test digital controller and cab interface wiring harnesses, switches, solenoids, and other components to identify possible faults other than digital controller and digital cab controller.

1. Remove connector from WINCH IN solenoid (Figure 8).

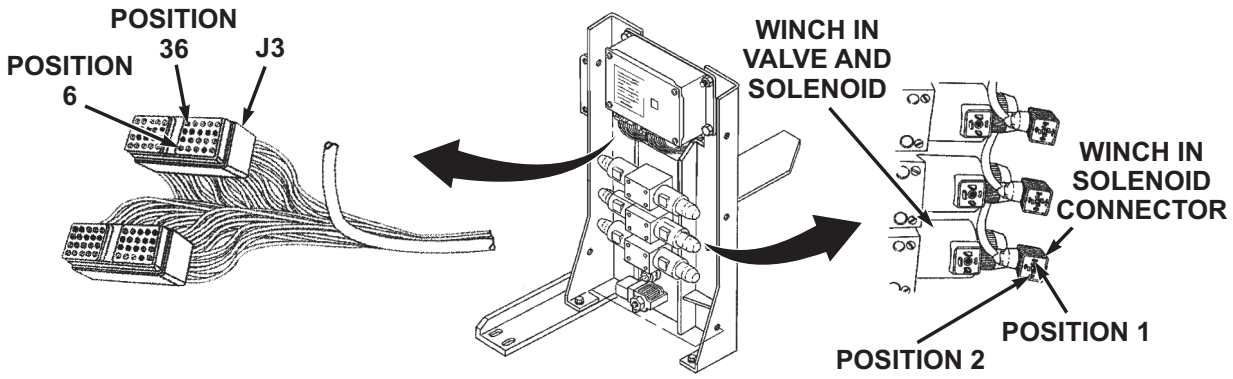


Figure 8. Connector J3.

2. Set multimeter to ohms position.

NOTE

A reading of infinity indicates an open circuit.

3. Place negative (-) probe of multimeter on position 6 of digital controller wiring harness connector J3 (Figure 8).
4. Place positive (+) probe of multimeter on position 1 of WINCH IN solenoid connector (Figure 8). Check multimeter for continuity.
5. Place negative (-) probe of multimeter on position 36 of digital controller wiring harness connector J3 (Figure 8).
6. Place positive (+) probe of multimeter on position 2 of WINCH IN solenoid connector (Figure 8). Check multimeter for continuity.
   a. If continuity is not present at one or both readings, repair or replace digital controller wiring harness. (TM 9-2320-435-10 or TM 9-2320-425-10)
   b. If continuity is present for both readings, proceed to next Malfunction.

MALFUNCTION

WINCH IN Directional Control Valve is Faulty.

CORRECTIVE ACTION

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

NOTE

Digital controller and cab control box are not repairable, therefore, it is necessary to test digital controller and cab interface wiring harnesses, switches, solenoids, and other components to identify possible faults other than digital controller and digital cab controller.

1. Set multimeter to ohms position.
2. Place negative (-) probe of multimeter on position 1 of WINCH IN solenoid (Figure 9).

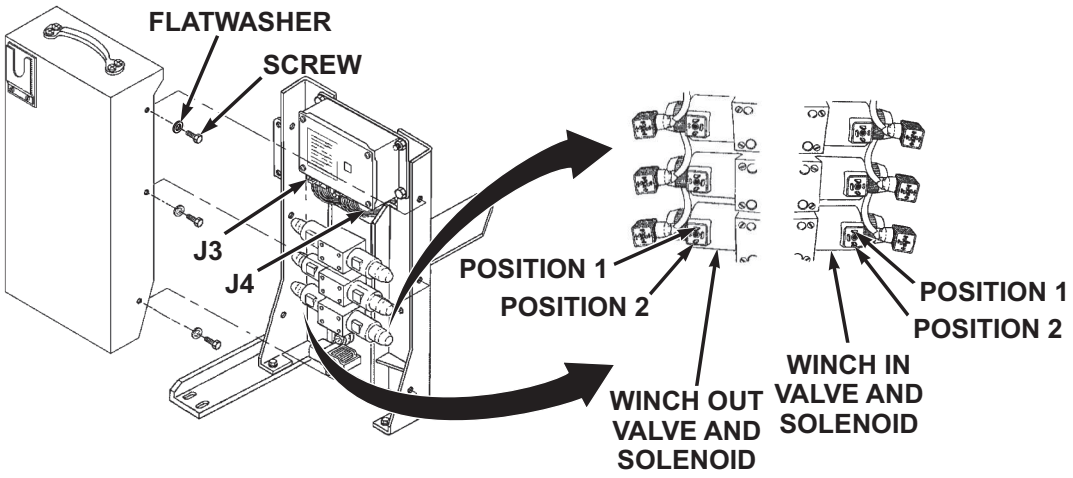


Figure 9. WINCH IN Valve and Solenoid.

3. Place positive (+) probe of multimeter on position 2 of WINCH IN solenoid (Figure 9). Check multimeter for continuity.
   a. If continuity is not present, replace WINCH IN directional control valve. (TM 9-2320-435-10 or TM 9-2320-425-10)
   b. If continuity is present, proceed to next Malfunction.

MALFUNCTION

WINCH OUT Directional Control Valve is Faulty.

CORRECTIVE ACTION

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

NOTE

Digital controller and cab control box are not repairable, therefore, it is necessary to test digital controller and cab interface wiring harnesses, switches, solenoids, and other components to identify possible faults other than digital controller and digital cab controller.

1. Set multimeter to ohms position.
2. Place negative (-) probe of multimeter on position 1 of WINCH OUT solenoid (Figure 10).

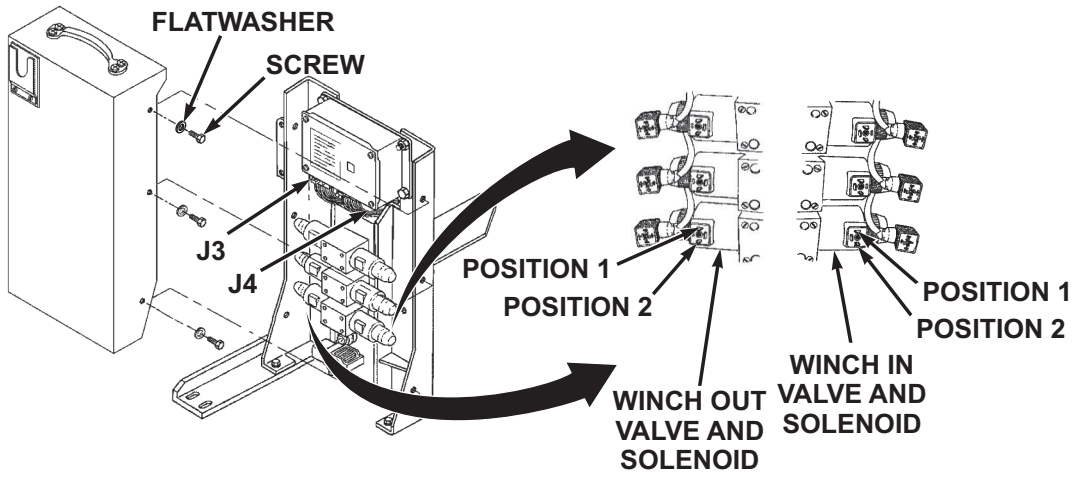


Figure 10. WINCH OUT Valve and Solenoid.

3. Place positive (+) probe of multimeter on position 2 of WINCH OUT solenoid (Figure 10). Check multimeter for continuity.
   a. If continuity is not present, replace WINCH OUT directional control valve. (TM 9-2320-435-10 or TM 9-2320-425-10)
   b. If continuity is present, replace digital control box. (TM 9-2320-435-10 or TM 9-2320-425-10)

END OF WORK PACKAGE

FIELD MAINTENANCE
WINCH DOES NOT WIND OUT

INITIAL SETUP:

Tools and Special Tools
Multimeter (WP 0078, Table 2, Item 1)
Tool Kit, General Mechanic's: Automotive (WP 0078, Table 2, Item 1)

Personnel Required
(2)

References
TM 9-2320-435-10 (WP 0076)
TM 9-2320-425-10 (WP 0076)
WP 0004
WP 0005

References (cont.)
WP 0007
WP 0055
WP 0067

Equipment Condition
BAP loaded on vehicle. (WP 0005)
Engine turned off. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Parking brakes applied. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Wheels chocked. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)

TROUBLESHOOTING PROCEDURE

SYMPTOM

Winch does not Wind Out.

MALFUNCTION

Quick-Disconnect Couplings are not Connected Properly.

CORRECTIVE ACTION

NOTE

Hydraulic fluid flow to winch motor may be blocked at quick-disconnect fittings if fittings are not connected properly.

Verify male portion of quick-disconnect couplings are fully seated in female portions of couplings and are secured by locking mechanism (Figure 1).

CORRECTIVE ACTION - Continued

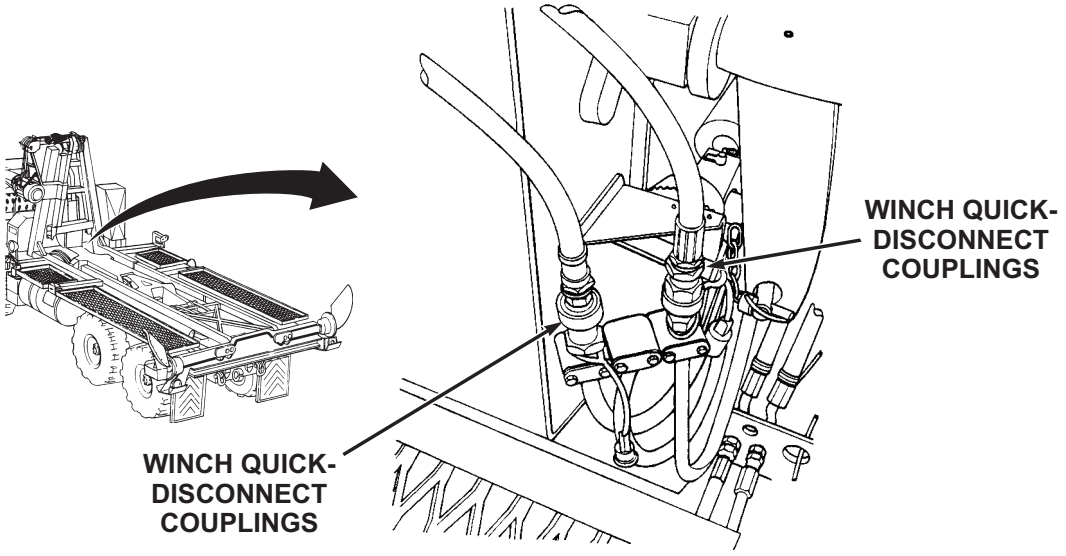


Figure 1. Winch Quick-Disconnect Couplings (Model A Shown).

a. If quick-disconnect couplings are not connected properly, connect quick-disconnect couplings properly. (WP 0005)

b. If quick-disconnect couplings are connected properly, proceed to next Malfunction.

MALFUNCTION

Hydraulic Hoses, Lines, and/or Fittings are Leaking or Damaged.

CORRECTIVE ACTION

Visually inspect hydraulic hoses, lines, and fittings for leaks and damage (Figure 2).

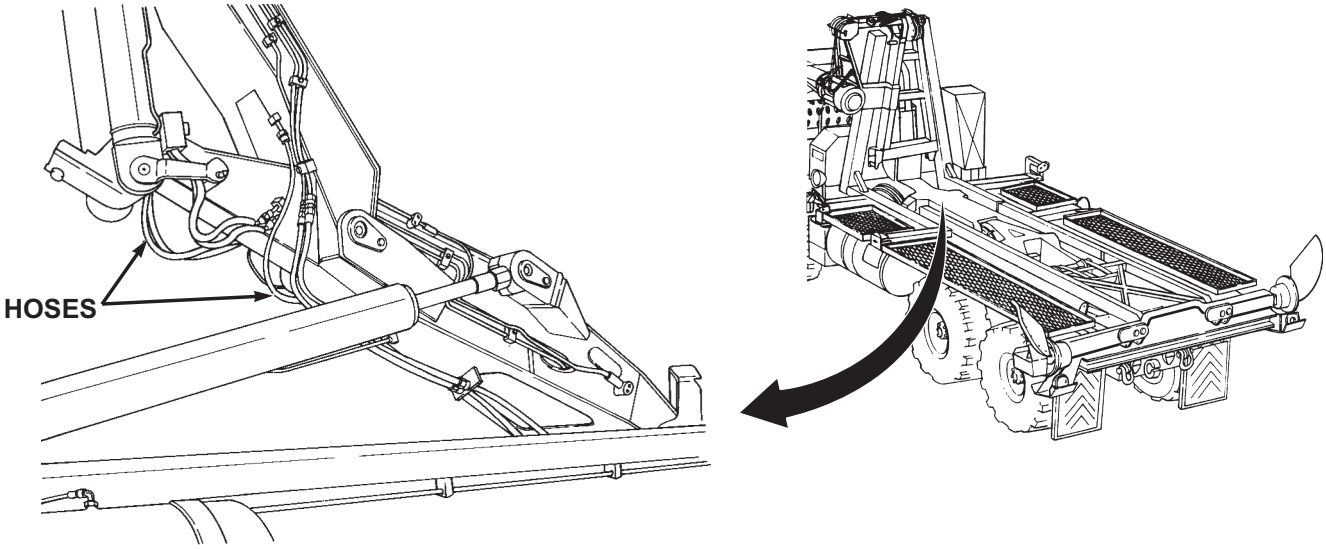


Figure 2. Hydraulic Hoses.

CORRECTIVE ACTION - Continued

a. If hydraulic hoses, lines, or fittings are leaking or damaged, tighten fittings and replace damaged hoses or lines. (WP 0055)

b. If hydraulic hoses, lines, or fittings are not leaking or damaged, proceed to next Malfunction.

MALFUNCTION

Winch Operates from one Side of Vehicle but not Other.

CORRECTIVE ACTION

NOTE

The following procedures will determine if fault is located in remote control linking harness or parts of remote control circuit common to both sides of vehicle.

1. Attempt to operate winch with remote control unit at left remote location (connector J8A) (Figure 3). (WP 0007) Note results.

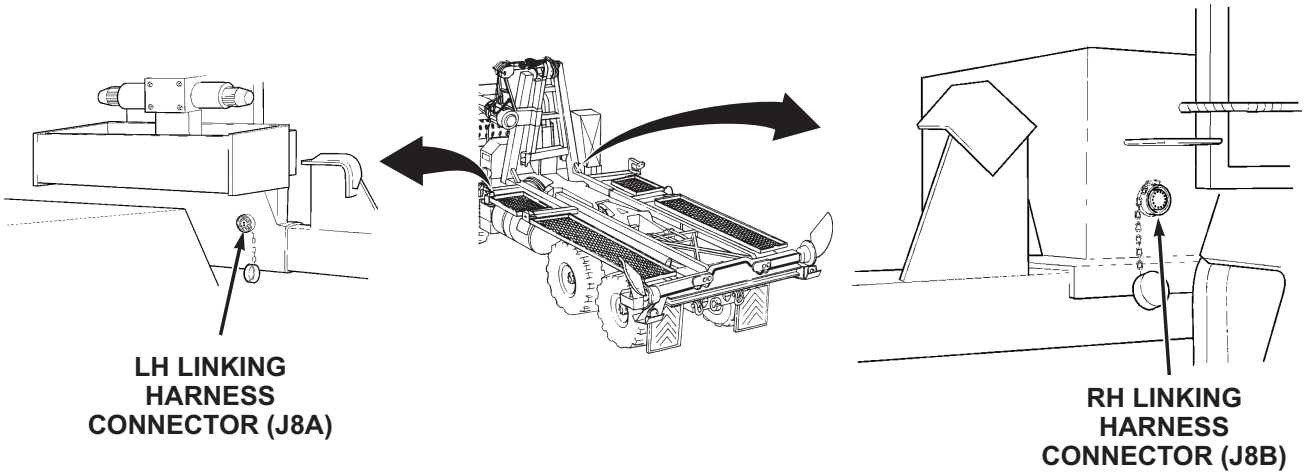


Figure 3. Left (Connector J8A) and Right (Connector J8B) Remote Locations.

2. Attempt to operate winch with remote control unit at right remote location (connector J8B) (Figure 3). Note results.

a. If winch operates from one side of vehicle but not other and vehicle is Model A, proceed to Malfunction **Remote Linking Harness Has Open Circuit On Side That Does Not Operate (Model A Only).**

b. If winch operates from one side of vehicle but not other and vehicle is Model B, proceed to Malfunction **Cab Interface Wiring Harness Is Faulty (Model B Only).**

c. If winch does not operate from either side, proceed to next Malfunction.

MALFUNCTION

Remote Control Unit is Faulty.

CORRECTIVE ACTION

1. Disconnect remote control cable from remote control unit (Figure 4).

CORRECTIVE ACTION - Continued

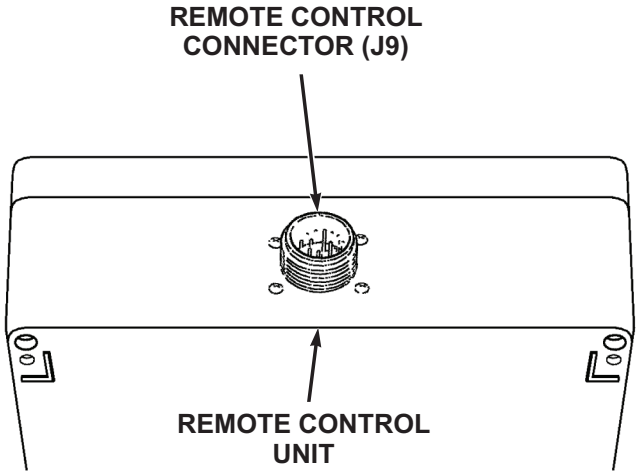


Figure 4. Remote Control Unit.

2. Set multimeter to ohms position.
3. Set EMERGENCY STOP switch to ON position. (WP 0004)
4. Have assistant hold WINCH switch in OUT position.

NOTE

A reading of infinity indicates an open circuit.

5. Place negative (-) probe of multimeter on position E of remote control unit connector J9 (Figure 4).
6. Place positive (+) probe of multimeter on position L of remote control unit connector J9 (Figure 4). Check multimeter for continuity.
7. Move negative (-) probe of multimeter on position C of remote control unit connector J9 (Figure 4). Check multimeter for continuity.
   a. If continuity is not present at one or both readings, repair remote control unit. (WP 0067)
   b. If continuity is present at both readings, proceed to next Malfunction.

MALFUNCTION

Remote Control Cable is Faulty.

CORRECTIVE ACTION

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

1. Disconnect remote control cable from components.
2. Set multimeter to ohms position.

CORRECTIVE ACTION - Continued

NOTE

A reading of infinity indicates an open circuit.

3. Place negative (-) probe of multimeter on position D of remote control cable connector P9 (Figure 5).

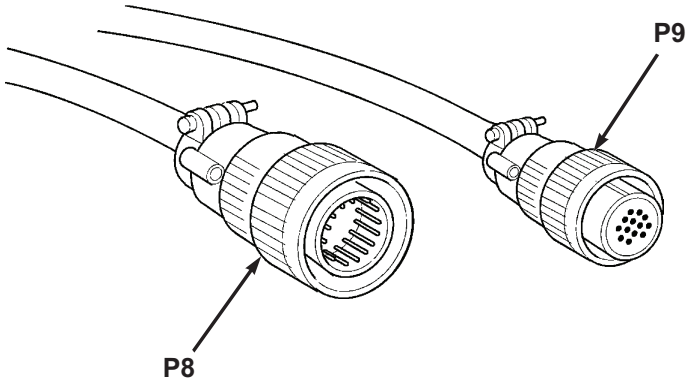


Figure 5. Remote Control Cable Connectors P8 And P9.

4. Place positive (+) probe of multimeter on position C of remote control cable connector P8 (Figure 5). Check multimeter for continuity.
5. Place negative (-) probe of multimeter on position E of remote control cable connector P9 (Figure 5).
6. Place positive (+) probe of multimeter on position J of remote control cable connector P8 (Figure 5). Check multimeter for continuity.
   a. If continuity is not present at one or both readings, replace remote control cable. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
   b. If continuity is present at both readings and vehicle is Model A, proceed to Malfunction **22 - 28 Volts Not Present At Position 33 On Main Frame Junction Box Terminal Strip (Model A Only).**
   c. If continuity is present at both readings and vehicle is Model B, proceed to Malfunction **Cab Interface Wiring Harness Is Faulty (Model B Only).**

MALFUNCTION

Remote Linking Harness has Open Circuit on Side that does not Operate (Model A Only).

CORRECTIVE ACTION

1. Open hydraulic cabinet cover. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
2. Loosen four screws on main frame junction box cover and open cover. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
3. If necessary, remove remote control cable from linking harness connector.

CORRECTIVE ACTION - Continued

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

4. Set multimeter to ohms position.

NOTE

- A reading of infinity indicates an open circuit.
- Terminals to test are same on connector J8A (LH) and connector J8B (RH). Test terminals of connector on side that does not operate.

5. Place negative (-) probe of multimeter on terminal C of digital controller wiring harness connector J8A (LH) or J8B (RH) (Figure 6).

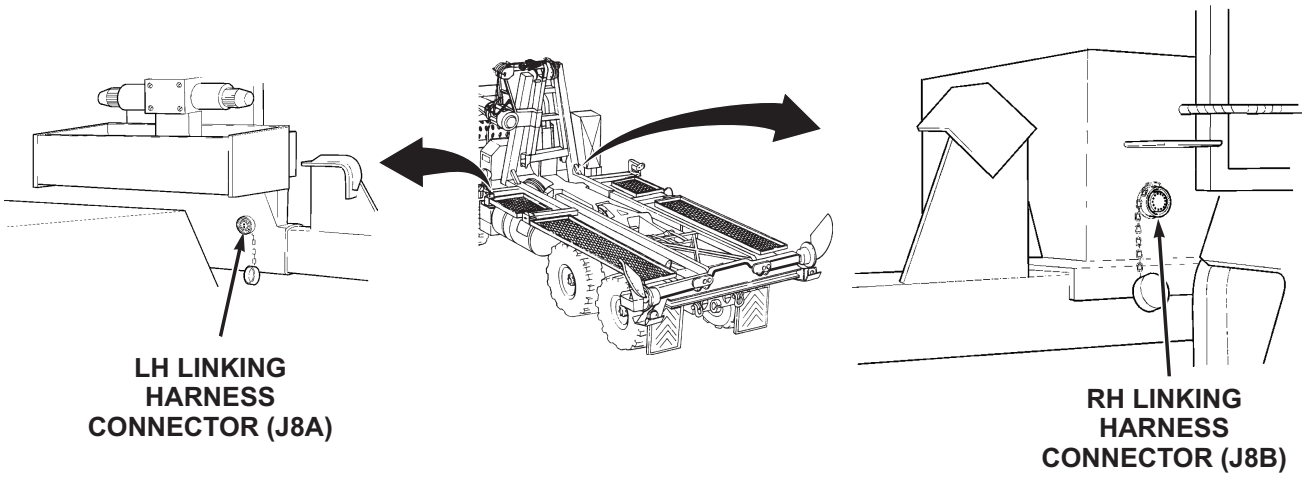


Figure 6. Left (Connector J8A) and Right (Connector J8B) Remote Locations.

6. Place positive (+) probe of multimeter on position 7 of main frame junction box (Figure 7). Check multimeter for continuity.

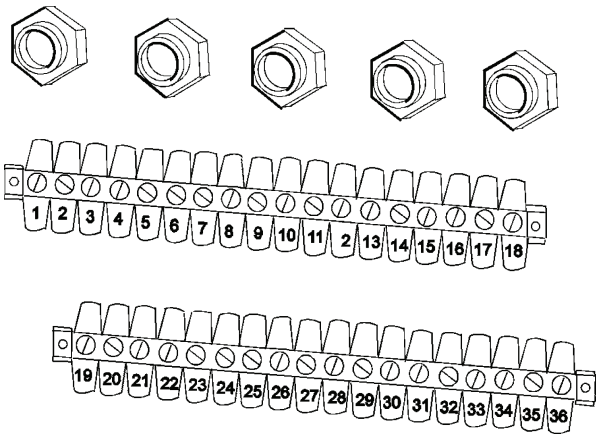


Figure 7. Main Frame Junction Box (Wiring Removed For Clarity).

CORRECTIVE ACTION - Continued

7. Place negative (-) probe of multimeter on terminal J of digital controller wiring harness connector J8A (LH) or J8B (RH) (Figure 6).
8. Place positive (+) probe of multimeter on position 33 of main frame junction box (Figure 7). Check multimeter for continuity.
   a. If continuity is not present for one or all readings, replace faulty remote linking wiring harness. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
   b. If continuity is present for all readings, proceed to next Malfunction.

MALFUNCTION

Remote Linking Harness has Short to Ground on Side that does not Operate (Model A Only).

CORRECTIVE ACTION

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

1. Set multimeter to ohms position.
2. Place negative (-) probe of multimeter on known good ground.

NOTE

Any reading besides infinity indicates a grounded wire.

3. Place positive (+) probe of multimeter to each terminal on connector J8A (LH) or J8B (RH) (Figure 8). Check for continuity between each terminal and known good ground.

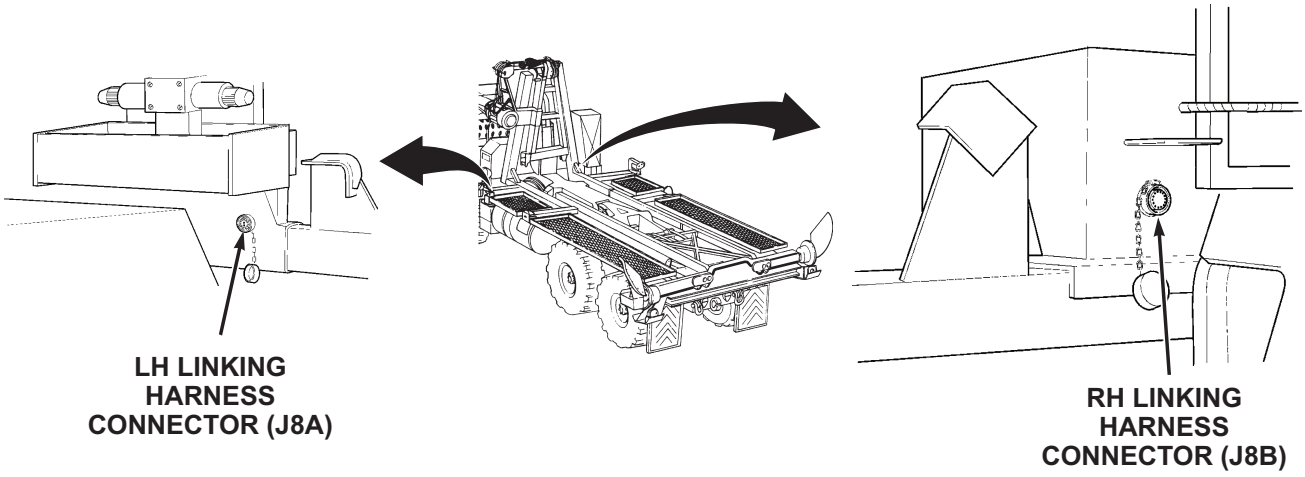


Figure 8. Left (Connector J8A) and Right (Connector J8B) Remote Locations.

   a. If continuity is present for one or all readings, replace faulty remote linking wiring harness. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
   b. If continuity is not present for all readings, fault not corrected. Notify supervisor.

MALFUNCTION

22 - 28 Volts not Present at Position 33 on Main Frame Junction Box Terminal Strip (Model A Only).

CORRECTIVE ACTION

1. Open hydraulic cabinet cover. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
2. Loosen four screws and remove cover from main frame junction box. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
3. Turn engine start switch to ON position. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
4. Turn light control switch to STOP LIGHT position. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
5. Set multimeter to voltage position.
6. Place positive (+) probe of multimeter on position 33 of main frame junction box terminal strip (Figure 9).

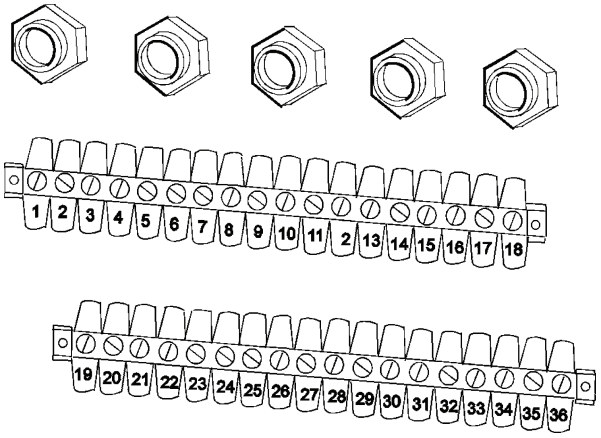


Figure 9. Main Frame Junction Box (Wiring Removed For Clarity).

7. Place negative (-) probe of multimeter on known good ground. Check multimeter for voltage reading while an assistant holds WINCH switch in OUT position. Note reading.
8. Instruct assistant to release WINCH switch.
9. Turn engine start switch and light control switch to OFF position. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
    a. If 22 - 28 volts is not present, remote control or remote control cable is faulty. Restart procedure at Malfunction **Winch Operates From One Side Of Vehicle But Not The Other.**
    b. If 22 - 28 volts is present, proceed to next Malfunction.

CORRECTIVE ACTION - Continued

MALFUNCTION

WINCH OUT Solenoid Harness is Faulty (Model A Only).

CORRECTIVE ACTION

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

1. Remove connector from WINCH OUT solenoid (Figure 10).

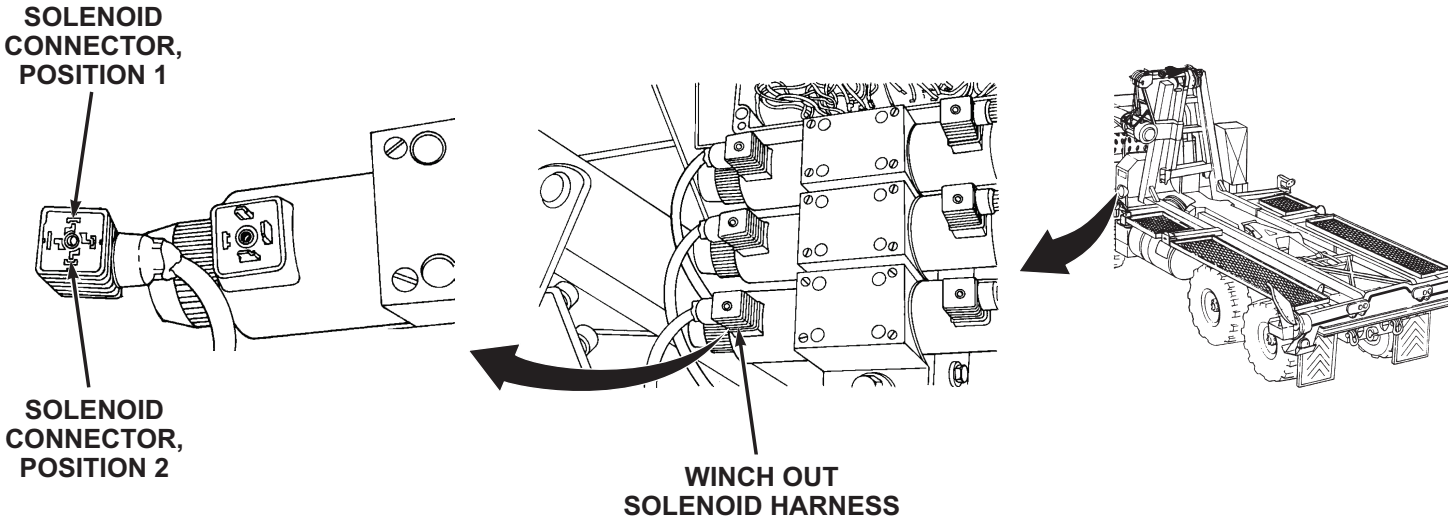


Figure 10. WINCH OUT Solenoid Connector.

2. Set multimeter to ohms position.

NOTE

- A reading of infinity indicates an open circuit.
- Junction box terminal 33 is connected to one side of solenoid and terminal 34 is connected to other side of solenoid.

3. Place negative (-) probe of multimeter on position 33 of main frame junction box terminal strip (Figure 11).

CORRECTIVE ACTION - Continued

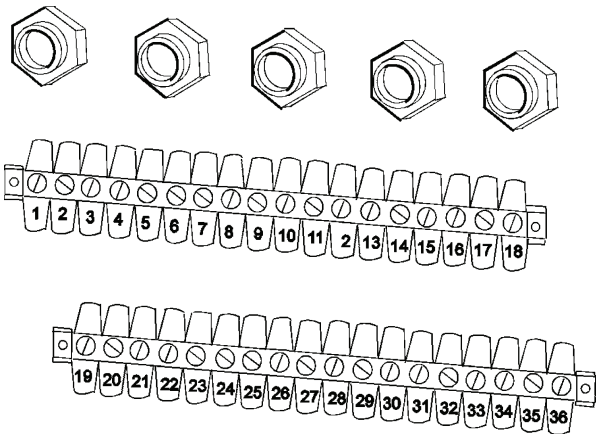


Figure 11. Main Frame Junction Box (Wiring Removed For Clarity).

4. Place positive (+) probe of multimeter on position 1 of WINCH OUT solenoid connector (Figure 10). Check multimeter for continuity.
5. Place negative (-) probe of multimeter on position 34 of main frame junction box terminal strip (Figure 11).
6. Place positive (+) probe of multimeter on position 2 of WINCH OUT solenoid connector (Figure 10). Check multimeter for continuity.
   a. If continuity is not present at one or both readings, replace WINCH OUT solenoid wiring harness. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
   b. If continuity is present for both readings, replace WINCH OUT directional control valve. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

MALFUNCTION

Cab Interface Wiring Harness is Faulty (Model B Only).

CORRECTIVE ACTION

NOTE

Digital controller and cab control box are not repairable, therefore, it is necessary to test digital controller and cab interface wiring harnesses, switches, solenoids, and other components to identify possible faults other than digital controller and digital cab controller.

1. Remove three thumb screws and access cover on right side of vehicle under front fender to gain access to cab interface wiring harness connector (Figure 12).

CORRECTIVE ACTION - Continued

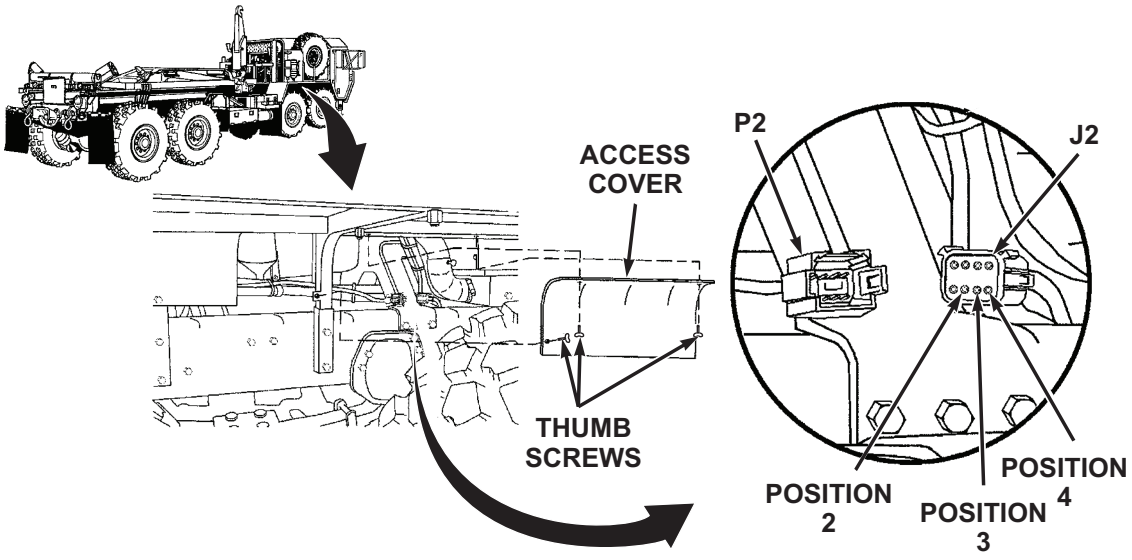


Figure 12. Cab Interface Wiring Harness Access Cover.

2. Cut and remove wire ties as necessary to loosen cab interface wiring harness.
3. Disconnect cab interface wiring harness connector J2 from digital controller wiring harness connector P2 (Figure 12).
4. Turn engine start switch to ON position. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
5. Set multimeter to voltage position.
6. Place positive (+) probe of multimeter on position 2, circuit 1473, of cab control box connector J2 (Figure 12).
7. Place negative (-) probe of multimeter on known good ground. Check multimeter for voltage reading, note reading.
8. Set cab LHS MODE SELECT switch in AUTO position (Figure 13).

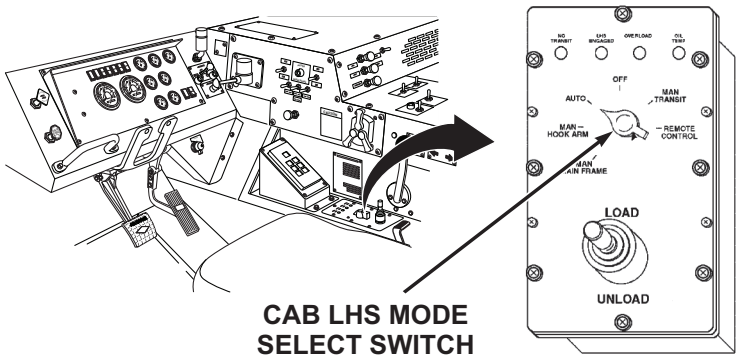


Figure 13. Cab Digital Mode Select Switch.

9. Place positive (+) probe of multimeter on position 3, circuit 1471, of cab control box connector J2 (Figure 12). Note reading.

CORRECTIVE ACTION - Continued

NOTE

Position 4, circuit 1490, should have a reading of 1 - 5 volts, not 22 - 28 volts.
If 1 - 5 volts are not measured at position 4, replace cab digital control box.
Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

10. Place positive (+) probe of multimeter on position 4, circuit 1490, of cab control box connector J2 (Figure 12). Note reading.
11. Turn engine start switch to OFF position. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
    a. If 22 - 28 volts is not present at connector J2 position 2 and position 3, repair or replace cab interface wiring harness. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
    b. If 22 - 28 volts is present at connector J2 position 2 and position 3, proceed to next Malfunction.

CORRECTIVE ACTION - Continued

MALFUNCTION

Wiring Between Connectors J4 and P2 is Faulty (Model B Only).

CORRECTIVE ACTION

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

NOTE

Digital controller and cab control box are not repairable, therefore, it is necessary to test digital controller and cab interface wiring harnesses, switches, solenoids, and other components to identify possible faults other than digital controller and digital cab controller.

1. Remove 6 screws and flat washers from hydraulic cabinet cover and remove cover (Figure 14).

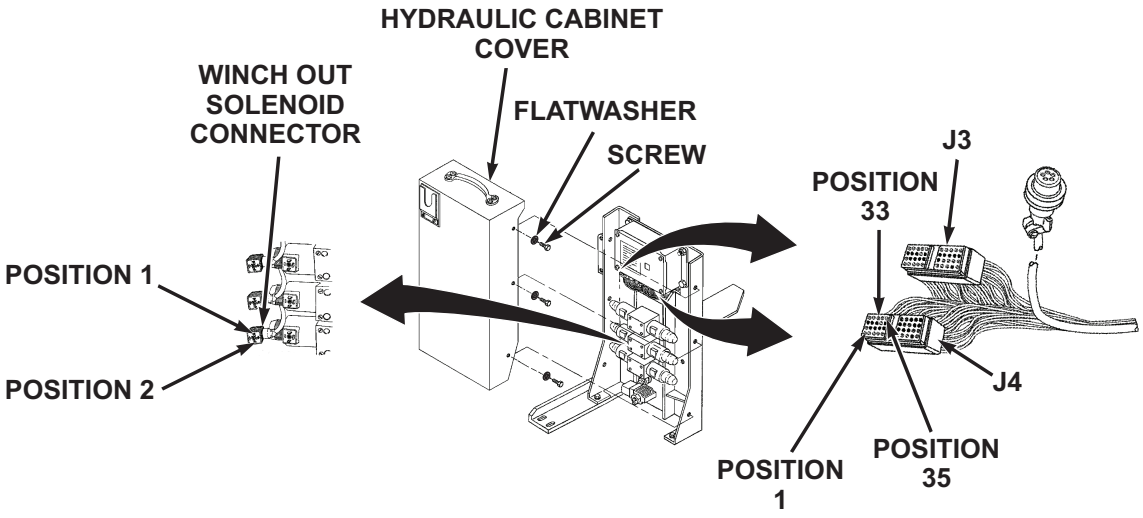


Figure 14. Hydraulic Cabinet Cover, WINCH OUT Solenoid Connector, and Connector J4.

2. Disconnect right hand connector J3 (40 pin connector) from digital controller (Figure 14).
3. Disconnect left hand connector J4 (40 pin connector) from digital controller (Figure 14).
4. Set multimeter to ohms position.

NOTE

A reading of infinity indicates an open circuit.

5. Place negative (-) probe of multimeter on position 1 of digital controller wiring harness connector J4 (Figure 14).
6. Place positive (+) probe of multimeter on position 2 of digital controller wiring harness connector P2 (Figure 15). Check multimeter for continuity.

CORRECTIVE ACTION - Continued

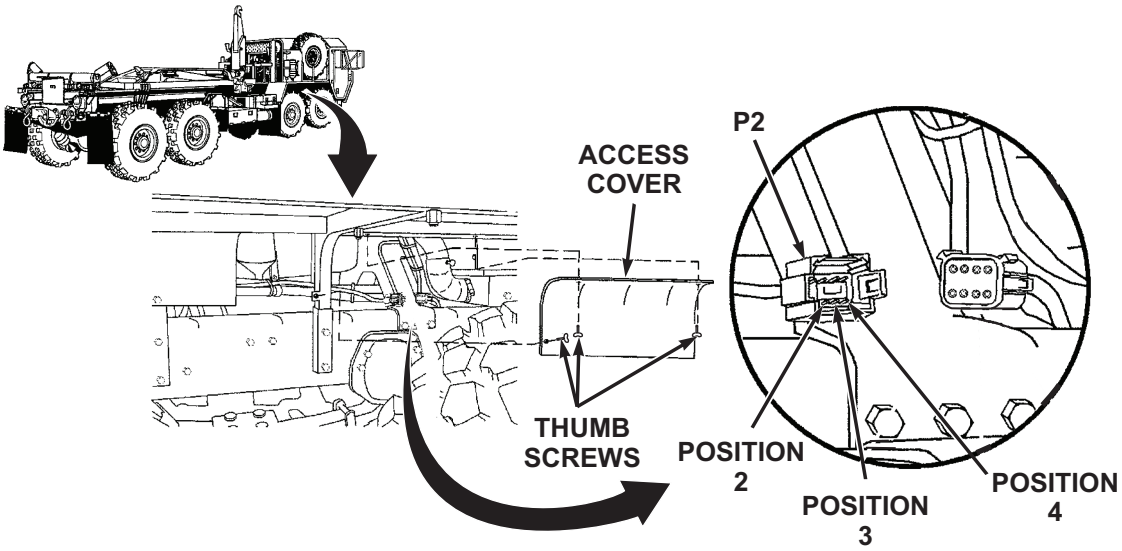


Figure 15. Connector P2.

7. Place negative (-) probe of multimeter on position 35 of digital controller wiring harness connector J4 (Figure 14).
8. Place positive (+) probe of multimeter on position 3 of digital controller wiring harness connector P2 (Figure 15). Check multimeter for continuity.
9. Place negative (-) probe of multimeter on position 33 of digital controller wiring harness connector J4 (Figure 14).
10. Place positive (+) probe of multimeter on position 4 of digital controller wiring harness connector P2 (Figure 15). Check multimeter for continuity.
    a. If continuity is not present at one or all of the readings, repair or replace digital controller wiring harness. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
    b. If continuity is present for all of the readings, proceed to next Malfunction.

MALFUNCTION

Wiring Between Connector J3 and WINCH OUT Solenoid is Faulty (Model B Only).

CORRECTIVE ACTION

NOTE

Digital controller and cab control box are not repairable, therefore, it is necessary to test digital controller and cab interface wiring harnesses, switches, solenoids, and other components to identify possible faults other than digital controller and digital cab controller.

1. Remove connector from WINCH OUT solenoid (Figure 16).

CORRECTIVE ACTION - Continued

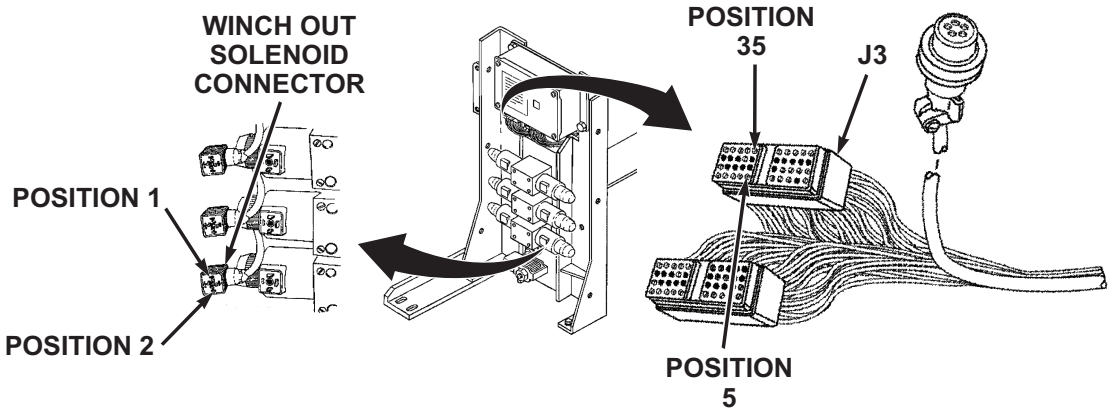


Figure 16. WINCH OUT Solenoid Connector and Connector J3.

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

NOTE

A reading of infinity indicates an open circuit.

2. Set multimeter to ohms position.
3. Place negative (-) probe of multimeter on position 5 of digital controller wiring harness connector J3 (Figure 16).
4. Place positive (+) probe of multimeter on position 1 of WINCH OUT solenoid connector (Figure 16). Check multimeter for continuity.
5. Place negative (-) probe of multimeter on position 35 of digital controller wiring harness connector J3 (Figure 16).
6. Place positive (+) probe of multimeter on position 2 of WINCH OUT solenoid connector (Figure 16). Check multimeter for continuity.
   a. If continuity is not present at one or both readings, repair or replace digital controller wiring harness. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
   b. If continuity is present for all of the readings, proceed to next Malfunction.

CORRECTIVE ACTION - Continued

MALFUNCTION

WINCH OUT Directional Control Valve is Faulty (Model B Only).

CORRECTIVE ACTION

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

NOTE

Digital controller and cab control box are not repairable, therefore, it is necessary to test digital controller and cab interface wiring harnesses, switches, solenoids, and other components to identify possible faults other than digital controller and digital cab controller.

1. Set multimeter to ohms position.
2. Place negative (-) probe of multimeter on position 1 of WINCH OUT solenoid (Figure 17).

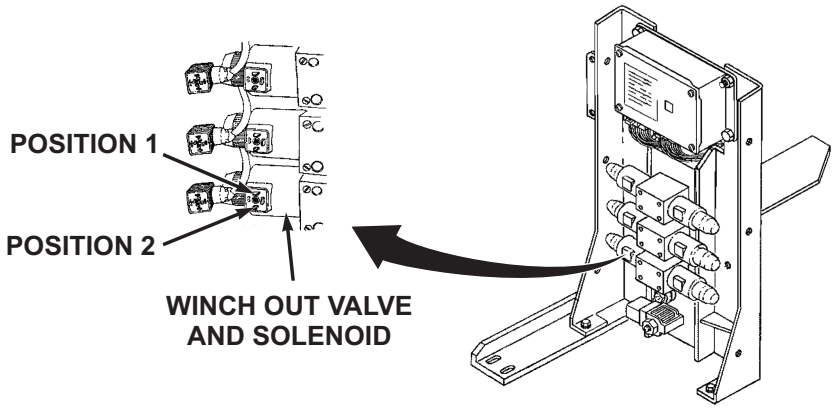


Figure 17. WINCH OUT Solenoid Connector.

3. Place positive (+) probe of multimeter on position 2 of WINCH OUT solenoid (Figure 17). Check multimeter for continuity.
   a. If continuity is not present, replace WINCH OUT directional control valve. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
   b. If continuity is present, replace digital cab control box. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

END OF WORK PACKAGE

FIELD MAINTENANCE
WINCH DOES NOT WIND IN

INITIAL SETUP:

Tools and Special Tools
Multimeter (WP 0078, Table 2, Item 1)
Tool Kit, General Mechanic's: Automotive (WP 0078, Table 2, Item 1)

Personnel Required
(2)

References
TM 9-2320-435-10 (WP 0076)
TM 9-2320-425-10 (WP 0076)
WP 0004
WP 0005

References (cont.)
WP 0007
WP 0055
WP 0067

Equipment Condition
BAP loaded on vehicle. (WP 0005)
Engine turned off. (TM 9-2320-435-10 or TM 9-2320-425-10) WP 0076
Parking brakes applied. (TM 9-2320-435-10 or TM 9-2320-425-10) WP 0076
Wheels chocked. (TM 9-2320-435-10 or TM 9-2320-425-10) WP 0076

TROUBLESHOOTING PROCEDURE

SYMPTOM

Winch does not Wind In.

MALFUNCTION

Quick-Disconnect Couplings are not Connected Properly.

CORRECTIVE ACTION

NOTE

Hydraulic fluid flow to winch motor may be blocked at quick-disconnect fittings if fittings are not connected properly.

Verify male portion of quick-disconnect couplings are fully seated in female portions of couplings and are secured by locking mechanism (Figure 1).

CORRECTIVE ACTION - Continued

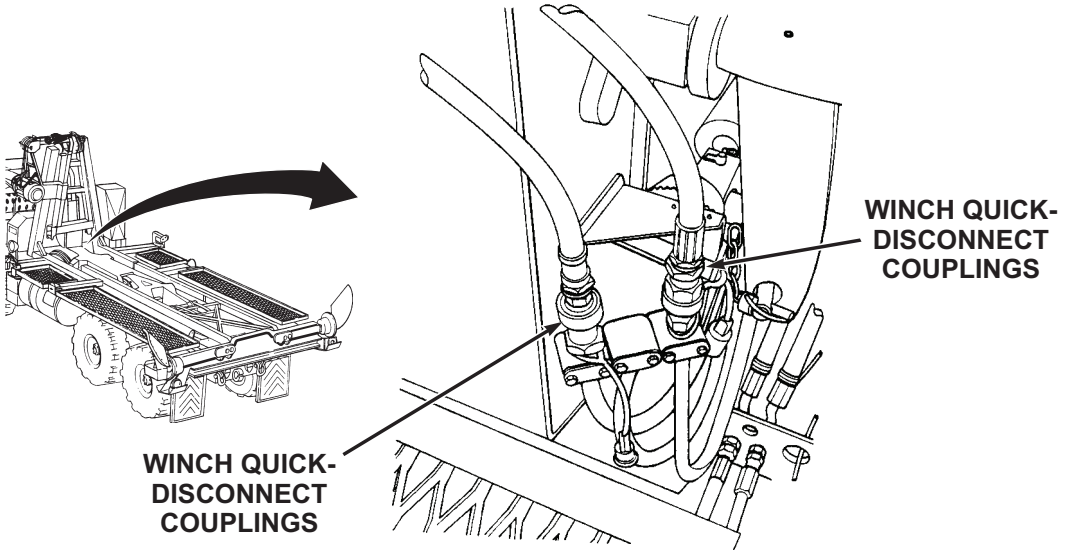


Figure 1. Winch Quick-Disconnect Couplings (Model A Shown).

a. If quick-disconnect couplings are not connected properly, connect quick-disconnect couplings properly. (WP 0005)

b. If quick-disconnect couplings are connected properly, proceed to next Malfunction.

MALFUNCTION

Hydraulic Hoses, Lines, and/or Fittings are Leaking or Damaged.

CORRECTIVE ACTION

Visually inspect hydraulic hoses, lines, and fittings for leaks and damage (Figure 2).

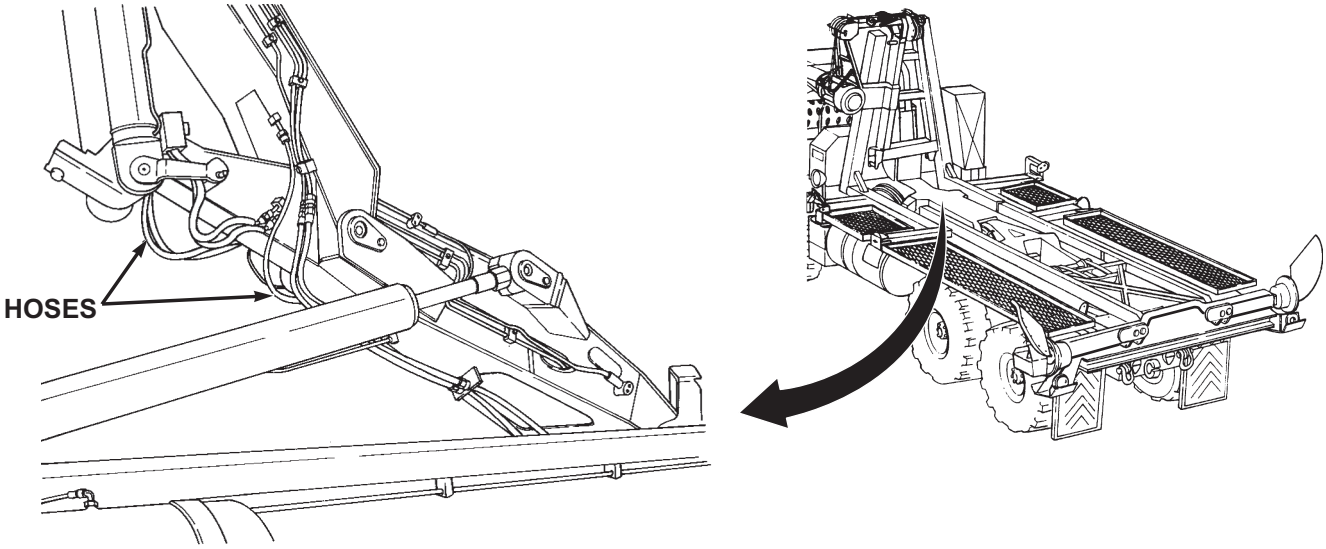


Figure 2. Hydraulic Hoses.

CORRECTIVE ACTION - Continued

a. If hydraulic hoses, lines, or fittings are leaking or damaged, tighten fittings and replace damaged hoses or lines. (WP 0055)

b. If hydraulic hoses, lines, or fittings are not leaking or damaged, proceed to next Malfunction.

MALFUNCTION

Winch Operates from One Side of Vehicle but not the Other.

CORRECTIVE ACTION

NOTE

The following procedures will determine if fault is located in remote control linking harness or parts of remote control circuit common to both sides of vehicle.

1. Attempt to operate winch with remote control unit at left remote location (connector J8A) (Figure 3). (WP 0007) Note results.

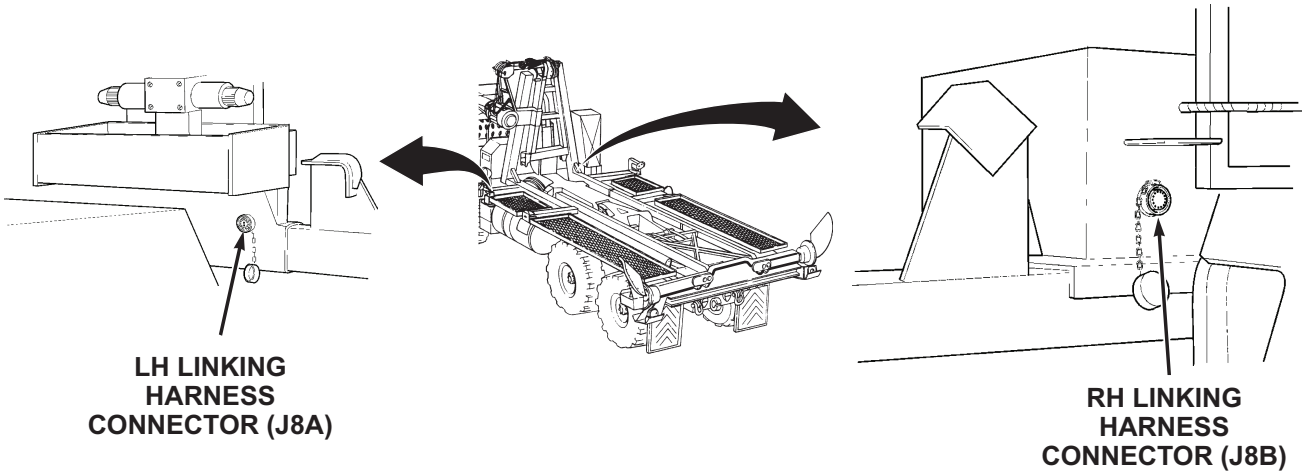


Figure 3. Left (Connector J8A) And Right (Connector J8B) Remote Locations.

2. Attempt to operate winch with remote control unit at right remote location (connector J8B) (Figure 3). Note results.

a. If winch operates from one side of vehicle but not other and vehicle is Model A, proceed to Malfunction **Remote Linking Harness Has Open Circuit On Side That Does Not Operate (Model A Only).**

b. If winch operates from one side of vehicle but not other and vehicle is Model B, proceed to Malfunction **Cab Interface Wiring Harness Is Faulty (Model B Only).**

c. If winch does not operate from either side, proceed to next Malfunction.

MALFUNCTION

Remote Control Unit is Faulty.

CORRECTIVE ACTION

1. Disconnect remote control cable from remote control unit (Figure 4).

CORRECTIVE ACTION - Continued

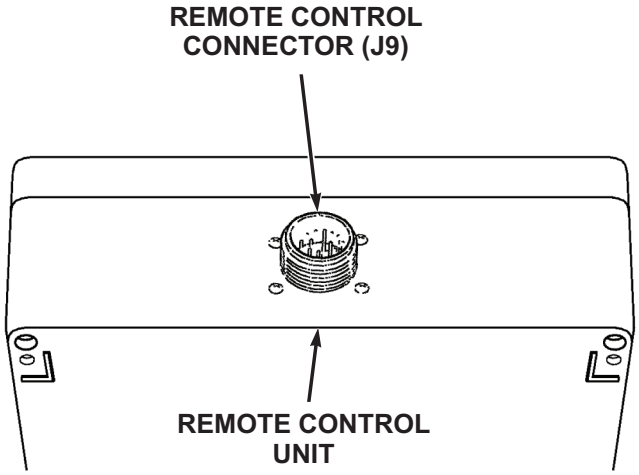


Figure 4. Remote Control Unit.

2. Set multimeter to ohms position.
3. Set EMERGENCY STOP switch to ON position. (WP 0004)
4. Have assistant hold WINCH switch in IN position.

NOTE

A reading of infinity indicates an open circuit.

5. Place negative (-) probe of multimeter on position E of remote control unit connector J9 (Figure 4).
6. Place positive (+) probe of multimeter on position L of remote control unit connector J9 (Figure 4). Check multimeter for continuity.
7. Move negative (-) probe of multimeter on position F of remote control unit connector J9 (Figure 4). Check multimeter for continuity.
   a. If continuity is not present at one or both readings, repair remote control unit. (WP 0067)
   b. If continuity is present at both readings, proceed to next Malfunction.

MALFUNCTION

Remote Control Cable is Faulty.

CORRECTIVE ACTION

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

1. Disconnect remote control cable from components.
2. Set multimeter to ohms position.

CORRECTIVE ACTION - Continued

NOTE

A reading of infinity indicates an open circuit.

3. Place negative (-) probe of multimeter on position F of remote control cable connector P9 (Figure 5).

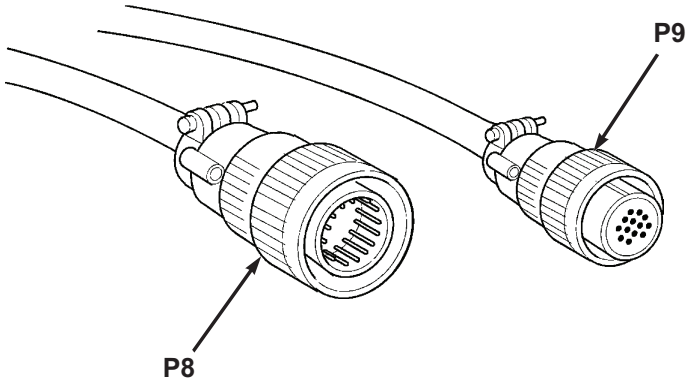


Figure 5. Remote Control Cable Connectors P8 And P9.

4. Place positive (+) probe of multimeter on position E of remote control cable connector P8 (Figure 5). Check multimeter for continuity.
5. Place negative (-) probe of multimeter on position E of remote control cable connector P9 (Figure 5).
6. Place positive (+) probe of multimeter on position J of remote control cable connector P8 (Figure 5). Check multimeter for continuity.
   a. If continuity is not present at one or both readings, replace remote control cable. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
   b. If continuity is present at both readings and vehicle is Model A, proceed to Malfunction **22 - 28 Volts Not Present At Position 35 On Main Frame Junction Box Terminal Strip (Model A Only).**
   c. If continuity is present at both readings and vehicle is Model B, proceed to Malfunction **Cab Interface Wiring Harness Is Faulty (Model B Only).**

MALFUNCTION

Remote Linking Harness has Open Circuit on Side that does not Operate (Model A Only).

CORRECTIVE ACTION

1. Open hydraulic cabinet cover. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
2. Loosen four screws on main frame junction box cover and open cover. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
3. If necessary, remove remote control cable from linking harness connector.

CORRECTIVE ACTION - Continued

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

4. Set multimeter to ohms position.

NOTE

- A reading of infinity indicates an open circuit.
- Terminals to test are same on connector J8A (LH) and connector J8B (RH). Test terminals of connector on side that does not operate.

5. Place negative (-) probe of multimeter on terminal C of digital controller wiring harness connector J8A (LH) or J8B (RH) (Figure 6).

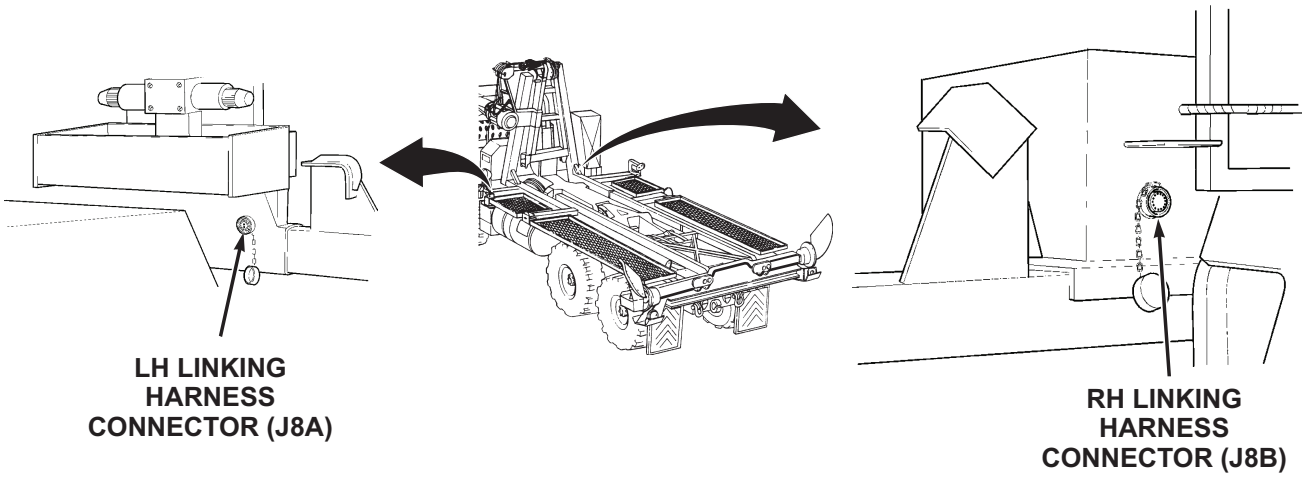


Figure 6. Left (Connector J8A) and Right (Connector J8B) Remote Locations.

6. Place positive (+) probe of multimeter on position 7 of main frame junction box (Figure 7). Check multimeter for continuity.

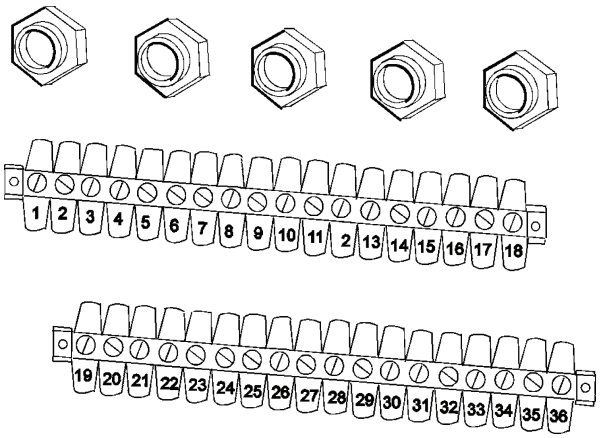


Figure 7. Main Frame Junction Box (Wiring Removed For Clarity).

CORRECTIVE ACTION - Continued

7. Place negative (-) probe of multimeter on terminal J of digital controller wiring harness connector J8A (LH) or J8B (RH) (Figure 6).
8. Place positive (+) probe of multimeter on position 23 of main frame junction box (Figure 7). Check multimeter for continuity.
9. Place negative (-) probe of multimeter on terminal E of digital controller wiring harness connector J8A (LH) or J8B (RH) (Figure 6).
10. Place positive (+) probe of multimeter on position 35 of main frame junction box (Figure 7). Check multimeter for continuity.
    a. If continuity is not present for one or all readings, replace faulty remote linking wiring harness. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
    b. If continuity is present for all readings, proceed to next Malfunction.

MALFUNCTION

Remote Linking Harness has Short to Ground on Side that does not Operate (Model A Only).

CORRECTIVE ACTION

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

1. Set multimeter to ohms position.
2. Place negative (-) probe of multimeter on known good ground.

NOTE

Any reading besides infinity indicates a grounded wire.

3. Place positive (+) probe of multimeter to each terminal on connector J8A (LH) or J8B (RH) (Figure 8). Check for continuity between each terminal and known good ground.

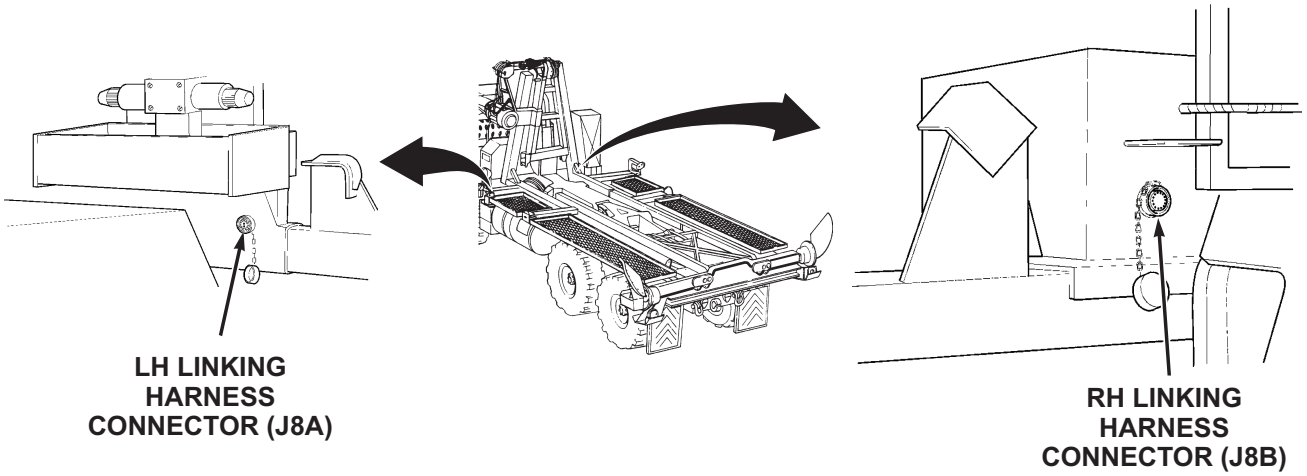


Figure 8. Left (Connector J8A) and Right (Connector J8B) Remote Locations.

CORRECTIVE ACTION - Continued

a. If continuity is present for one or all readings, replace faulty remote linking wiring harness. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

b. If continuity is not present for all readings, fault not corrected. Notify supervisor.

MALFUNCTION

22 - 28 Volts not Present at Position 35 on Main Frame Junction Box Terminal Strip (Model A Only).

CORRECTIVE ACTION

1. Open hydraulic cabinet cover. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
2. Loosen four screws and remove cover from main frame junction box. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
3. Turn engine start switch to ON position. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
4. Turn light control switch to STOP LIGHT position. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
5. Set multimeter to voltage position.
6. Place positive (+) probe of multimeter on position 35 of main frame junction box terminal strip (Figure 9).

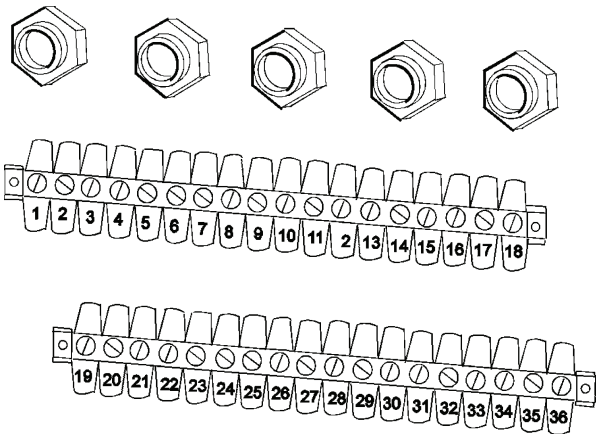


Figure 9. Main Frame Junction Box (Wiring Removed For Clarity).

7. Place negative (-) probe of multimeter on known good ground. Check multimeter for voltage reading while an assistant holds WINCH switch in IN position. Note reading.
8. Instruct assistant to release WINCH switch.
9. Turn engine start switch and light control switch to OFF position. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

a. If 22 - 28 volts is not present, remote control or remote control cable is faulty. Restart procedure at Malfunction **Winch Operates From One Side Of Vehicle But Not The Other.**

b. If 22 - 28 volts is present, proceed to next Malfunction.

CORRECTIVE ACTION - Continued

MALFUNCTION

WINCH IN Solenoid Harness is Faulty (Model A Only).

CORRECTIVE ACTION

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

1. Remove connector from WINCH IN solenoid (Figure 10).

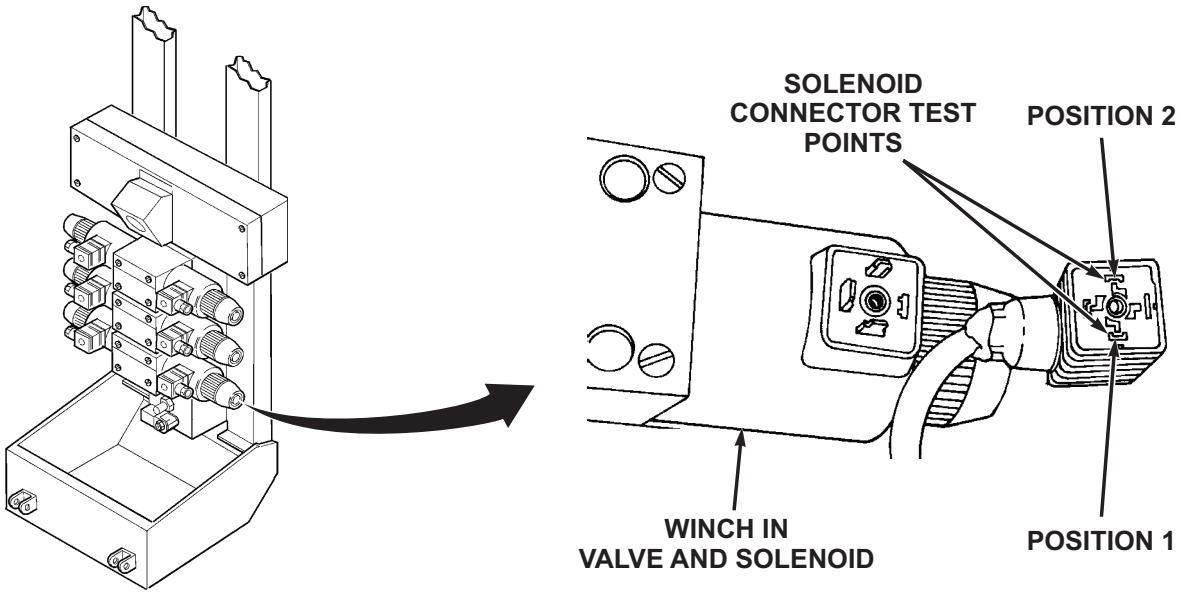


Figure 10. WINCH IN Solenoid Connector.

2. Set multimeter to ohms position.

NOTE

- A reading of infinity indicates an open circuit.
- Junction box terminal 35 is connected to one side of the solenoid and terminal 36 is connected to the other side of the solenoid.

3. Place negative (-) probe of multimeter on position 35 of main frame junction box terminal strip (Figure 11).

CORRECTIVE ACTION - Continued

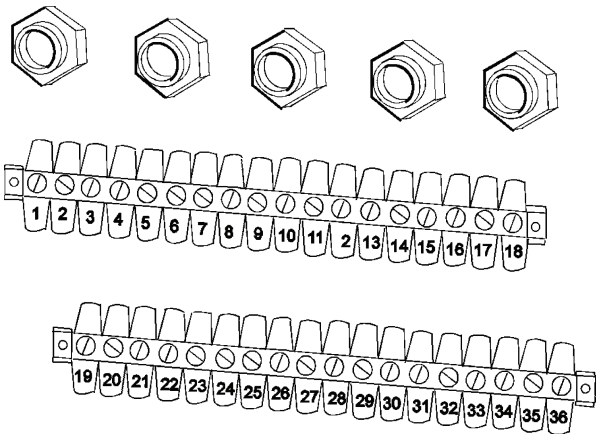


Figure 11. Main Frame Junction Box (Wiring Removed For Clarity).

4. Place positive (+) probe of multimeter on position 1 of WINCH IN solenoid connector (Figure 10). Check multimeter for continuity.
5. Place negative (-) probe of multimeter on position 36 of main frame junction box terminal strip (Figure 11).
6. Place positive (+) probe of multimeter on position 2 of WINCH IN solenoid connector (Figure 10). Check multimeter for continuity.
    a. If continuity is not present at one or both readings, replace WINCH IN solenoid wiring harness. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
    b. If continuity is present for both readings, replace WINCH IN directional control valve. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

MALFUNCTION

Cab Interface Wiring Harness is Faulty (Model B Only).

CORRECTIVE ACTION

1. Remove three thumb screws and access cover on right side of vehicle under front fender to gain access to cab interface wiring harness connector (Figure 12).

CORRECTIVE ACTION - Continued

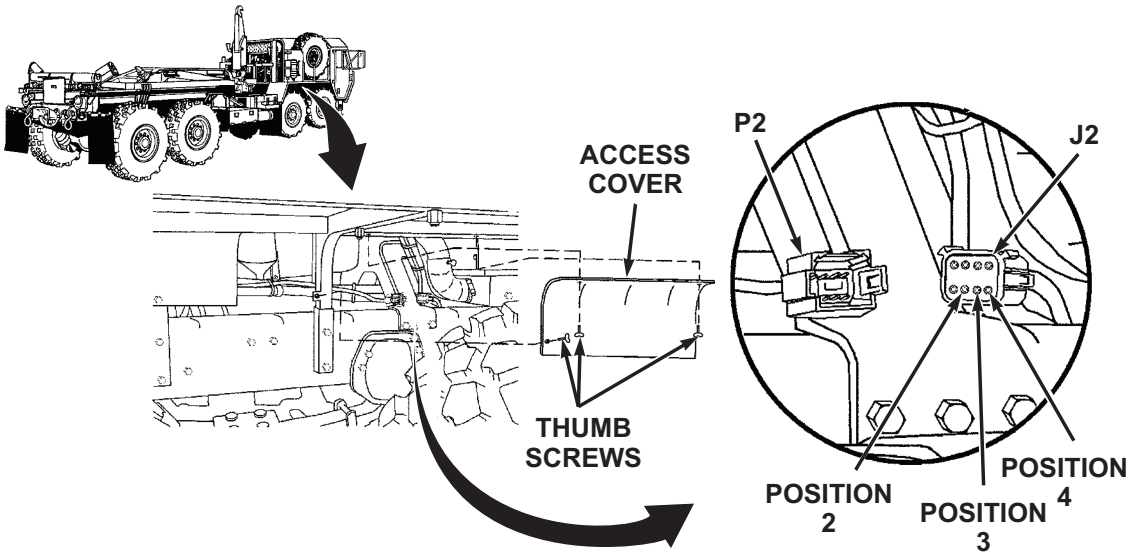


Figure 12. Cab Interface Wiring Harness Access Cover.

2. Cut and remove wire ties as necessary to loosen cab interface wiring harness.
3. Disconnect cab interface wiring harness connector J2 from digital controller wiring harness connector P2 (Figure 12).
4. Turn engine start switch to ON position. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
5. Set multimeter to voltage position.
6. Place positive (+) probe of multimeter on position 2, circuit 1473, of cab control box connector J2 (Figure 12).
7. Place negative (-) probe of multimeter on known good ground. Check multimeter for voltage reading, note reading.
8. Set LHS MODE SELECT switch to AUTO position (Figure 13).

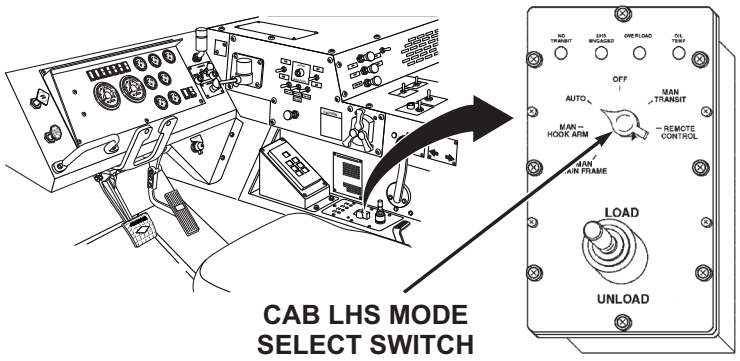


Figure 13. Cab Digital Mode Select Switch.

9. Place positive (+) probe of multimeter on position 3, circuit 1471, of cab control box connector J2 (Figure 12). Note reading.

CORRECTIVE ACTION - Continued

NOTE

Position 4, circuit 1490, should have a reading of 1 - 5 volts, not 22 - 28 volts. If 1 - 5 volts are not measured at position 4, replace cab digital control box. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

10. Place positive (+) probe of multimeter on position 4, circuit 1490, of cab control box connector J2 (Figure 12). Note reading.
11. Turn engine start switch to OFF position. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
    a. If 22 - 28 volts is not present at connector J2 position 2 and position 3, repair or replace cab interface wiring harness. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
    b. If 22 - 28 volts is present at connector J2 position 2 and position 3, proceed to next Malfunction.

MALFUNCTION

Wiring Between Connectors J4 and P2 is Faulty (Model B Only).

CORRECTIVE ACTION

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

NOTE

Digital controller and cab control box are not repairable, therefore, it is necessary to test digital controller and cab interface wiring harnesses, switches, solenoids, and other components to identify possible faults other than digital controller and digital cab controller.

1. Remove 6 screws and flatwashers from hydraulic cabinet cover and remove cover (Figure 14).

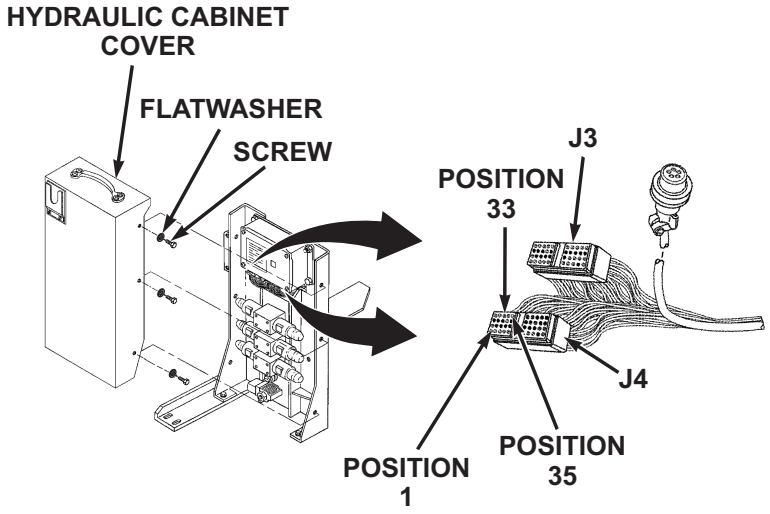


Figure 14. Hydraulic Cabinet Cover, WINCH OUT Solenoid Connector, and Connector J4.

CORRECTIVE ACTION - Continued

2. Disconnect right hand connector J3 (40 pin connector) from digital controller (Figure 14).
3. Disconnect left hand connector J4 (40 pin connector) from digital controller (Figure 14).
4. Set multimeter to ohms position.

NOTE

A reading of infinity indicates an open circuit.

5. Place negative (-) probe of multimeter on position 1 of digital controller wiring harness connector J4 (Figure 14).
6. Place positive (+) probe of multimeter on position 2 of digital controller wiring harness connector P2 (Figure 15). Check multimeter for continuity.

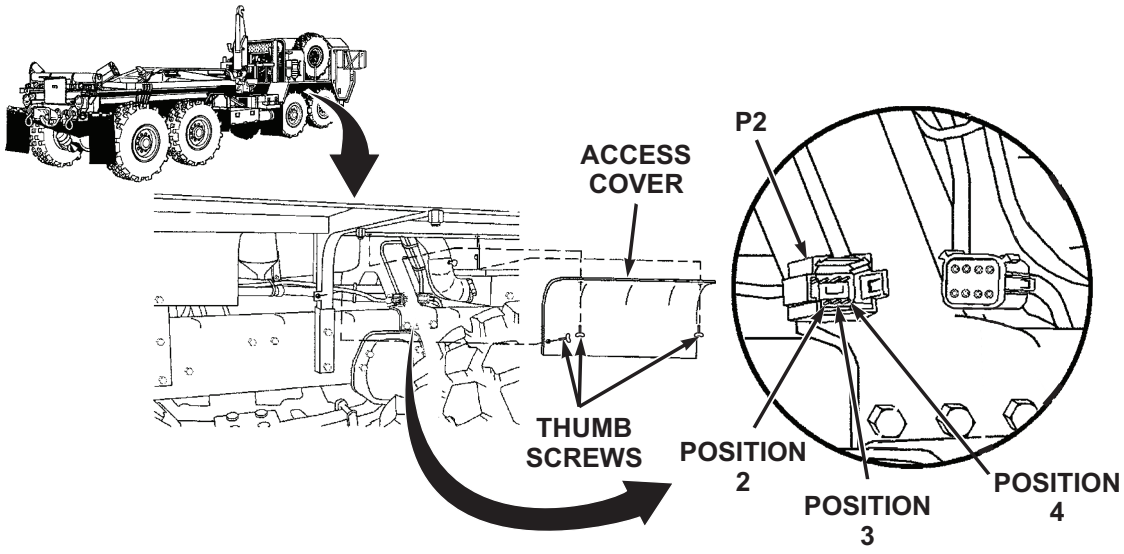


Figure 15. Connector P2.

7. Place negative (-) probe of multimeter on position 35 of digital controller wiring harness connector J4 (Figure 14).
8. Place positive (+) probe of multimeter on position 3 of digital controller wiring harness connector P2 (Figure 15). Check multimeter for continuity.
9. Place negative (-) probe of multimeter on position 33 of digital controller wiring harness connector J4 (Figure 14).
10. Place positive (+) probe of multimeter on position 4 of digital controller wiring harness connector P2 (Figure 15). Check multimeter for continuity.
    a. If continuity is not present at one or all of the readings, repair or replace digital controller wiring harness. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
    b. If continuity is present for all readings, proceed to next Malfunction.

MALFUNCTION

Wiring Between Connector J3 and WINCH IN Solenoid is Faulty (Model B Only).

CORRECTIVE ACTION

NOTE

Digital controller and cab control box are not repairable, therefore, it is necessary to test digital controller and cab interface wiring harnesses, switches, solenoids, and other components to identify possible faults other than digital controller and digital cab controller.

1. Remove connector from WINCH IN solenoid (Figure 16).

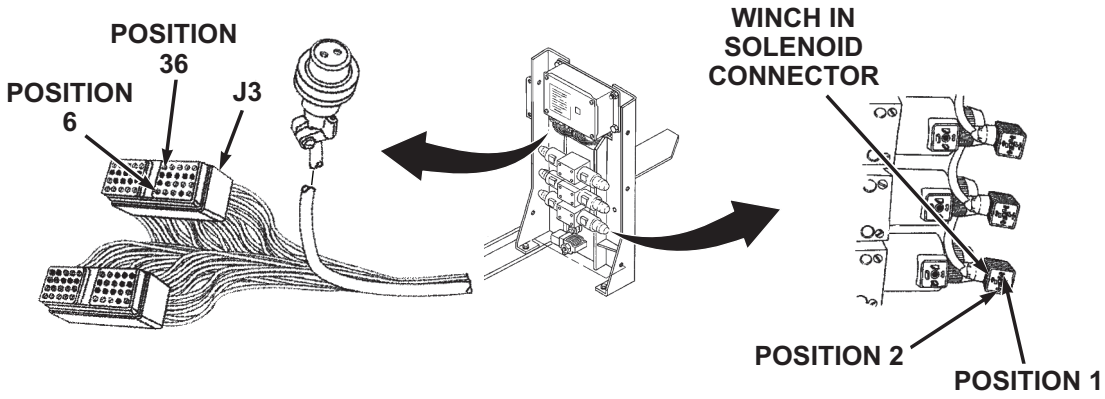


Figure 16. WINCH IN Solenoid Connector and Connector J3.

CORRECTIVE ACTION - Continued

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

NOTE

A reading of infinity indicates an open circuit.

2. Set multimeter to ohms position.
3. Place negative (-) probe of multimeter on position 6 of digital controller wiring harness connector J3 (Figure 16).
4. Place positive (+) probe of multimeter on position 1 of WINCH IN solenoid connector (Figure 16). Check multimeter for continuity.
5. Place negative (-) probe of multimeter on position 36 of digital controller wiring harness connector J3 (Figure 16).
6. Place positive (+) probe of multimeter on position 2 of WINCH IN solenoid connector (Figure 16). Check multimeter for continuity.
   a. If continuity is not present at one or both readings, repair or replace digital controller wiring harness. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.
   b. If continuity is present for all of the readings, proceed to next Malfunction.

MALFUNCTION

WINCH IN Directional Control Valve is Faulty (Model B Only).

CORRECTIVE ACTION

CAUTION

Electrical power must be shut OFF from circuit before continuity can be checked. Failure to comply with this caution may result in damage to test equipment or electrical system.

NOTE

Digital controller and cab control box are not repairable, therefore, it is necessary to test digital controller and cab interface wiring harnesses, switches, solenoids, and other components to identify possible faults other than digital controller and digital cab controller.

1. Set multimeter to ohms position.
2. Place negative (-) probe of multimeter on position 1 of WINCH IN solenoid (Figure 17).

CORRECTIVE ACTION - Continued

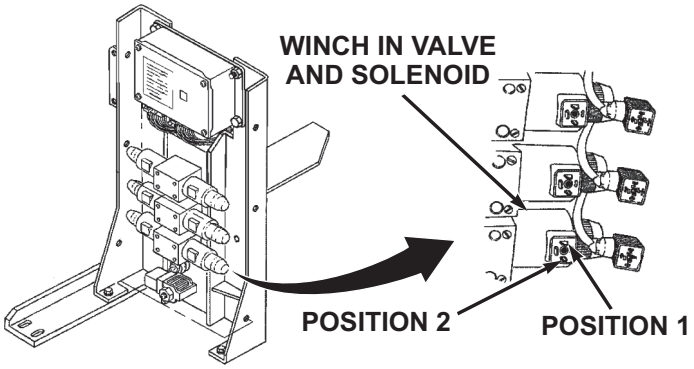


Figure 17. WINCH IN Solenoid Connector.

3. Place positive (+) probe of multimeter on position 2 of WINCH IN solenoid (Figure 17). Check multimeter for continuity.

   a. If continuity is not present, replace WINCH IN directional control valve. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

   b. If continuity is present, replace digital cab control box. Refer to TM 9-2320-435-10 or TM 9-2320-425-10.

END OF WORK PACKAGE

CHAPTER 5

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) FOR M15 BRIDGE ADAPTER PALLET (BAP) NSN 3990-01-442-1939

CHAPTER CONTENTS

Work Package Title	WP Number
Introduction-Preventive Maintenance Checks and Services (PMCS)	WP 0034
Operator Preventive Maintenance Checks and Services (PMCS)	WP 0035
Field Preventive Maintenance Checks and Services (PMCS)	WP 0036

OPERATOR MAINTENANCE
INTRODUCTION - PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

PMCS INTRODUCTION

This section contains the Preventive Maintenance Checks and Services (PMCS) for the Bridge Adapter Pallet (BAP). The PMCS tables contain checks and services necessary to ensure BAP is ready for operation. Using PMCS tables, perform each maintenance procedure at specific interval.

Operator PMCS procedures are in (WP 0035).

Field PMCS procedure is listed in (WP 0036).

MAINTENANCE FORMS AND RECORDS

Every mission begins and ends with paperwork. There is not much of it, but it must be kept up. The filled out forms and records have several uses; they are a permanent record of services, repairs, and modifications made on the BAP; they are reports to unit maintenance and to your Commander; and they serve as a checklist to find out what is wrong with the vehicle after its last use, and whether those faults have been fixed. For more information on forms and records, refer to DA PAM 750-8 (WP 0036).

WARNINGS AND CAUTIONS

Warnings and Cautions. Always observe warnings and cautions that appear in the PMCS table. These warnings and cautions appear before the applicable procedure. Failure to observe the warnings and cautions could result in death or injury to personnel or damage to equipment.

EXPLANATION OF COLUMNS

The PMCS table columns are described as follows:

a. **Item No.** Item number column of your PMCS table is to be used for reference. When completing DA Form 2404 or DA Form 5988-E, include item number for check/service indicating a fault. Item numbers also appear in order that you must do checks and services for intervals listed.
b. **Interval.** This column of your PMCS table tells you when to do check or service:
c. **Item To Be Checked or Serviced.** This column names item to be checked or serviced.
d. **Procedure.** This column tells you how to do required checks and services. Follow these instructions carefully. If tools are not available or if procedure says to, have Field maintenance do work.
e. **Equipment Not Ready/Available If:** ("Mission Capable" refers to equipment being on hand and able to perform its combat mission. Refer to AR 700-138). This column explains when and why your equipment cannot be used. If PMCS reveals faults listed in this column, do not operate equipment. Follow standard operating procedures for maintaining equipment or reporting equipment failures.

PMCS INTERVAL

a. **Before.** Before checks are performed immediately before using the BAP.
b. **During.** During checks are those checks that are performed during the mission and that identify faults in BAP performance. Faults that render the equipment not fully mission capable must be corrected immediately.
c. **After.** After checks are those checks that are performed immediately at the conclusion of the mission and that identify faults which will prevent the next mission. These faults must be corrected to ensure that the equipment is fully mission capable and to maintain the equipment at an original-condition standard.
d. **Seminannual.** Perform Semiannual PMCS procedure once every six months.

GENERAL MAINTENANCE PROCEDURES

While conducting PMCS, perform the following general maintenance procedures as required:

a. **Cleanliness.** Dirt, grease, oil, and debris only get in the way, conceal problems and may in fact cause a serious problem. Clean all metal surfaces and grease fittings.
b. **Bolts, nuts, and screws.** Ensure they are not loose, missing, bent, or broken. Report loose or missing bolts, nuts, and screws to Field maintenance.
c. **Welds.** Inspect for gaps where parts are welded together. Check for loose or chipped paint, rust, and cracks. Report bad welds to Field maintenance.
d. **Hydraulic lines and fittings.** Inspect for wear, damage, and leaks. Carefully inspect winch hydraulic lines in area of winch frame to ensure lines have not chafed during operation. Ensure fittings are tight. A stain around a fitting or connector can mean a possible leak during operation. Report any damage, leaks, or loose fittings to Field maintenance.
e. **Air system components.** Inspect for wear, damage, and leaks. Ensure clamps and fittings are tight. Report any damage, leaks, or loose fittings to Field maintenance.

Ensure components are adequately lubricated. (WP 0070) Inspect all grease fittings and ensure rollers are operating freely. Report any problems to Field maintenance for correction. Once a week or every 50 hours of operation, whichever occurs first, use an oil can to lubricate all pivots, shackles, screw threads, hinges, and other components that require lubrication but are not provided with lubrication fittings.

All defects that operator cannot fix must be reported on a DA Form 2404 or DA Form 5988-E immediately after completing PMCS. If a serious problem is found, IMMEDIATELY report it to your supervisor.

Extreme weather conditions, periods of high use, or combat conditions may dictate that PMCS procedures be performed more often than required in PMCS table.

LEAKAGE DEFINITIONS

It is important to know how fluid leakage affects the BAP status. The following are types/classes of leakage an operator must know to determine if BAP is mission capable. Learn these leakage definitions. When in doubt, notify your supervisor.

a. **Class I.** Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
b. **Class II.** Leakage of fluid great enough to form drops, but not great enough to cause drops to drip from item being inspected.
c. **Class III.** Leakage of fluid great enough to form drops that fall from item being inspected.

Equipment operation is allowed with minor (Class I or Class II) leakages. Fluid levels in an item/system affected with such leakage must be checked more frequently than required in PMCS. When in doubt, notify your supervisor.

Report Class III leaks IMMEDIATELY to your supervisor or Field maintenance.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

INITIAL SETUP:

Materials/Parts
Rags, Wiping (WP 0081, Table 1, Item 21)

Equipment Condition
Vehicle PMCS performed (TM 9-2320-425-10 or TM 9-2320-435-10). (WP 0076)

References
TM 9-2320-425-10 (WP 0076)
TM 9-2320-435-10 (WP 0076)

Table 1. Operator Preventive Maintenance Checks and Services

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			WARNING  Check for overhead power lines or other obstructions before attempting operation of LHS. LHS reaches a height of 22 ft 2 in. (6.7 m) and could contact power lines. Failure to comply may result in serious injury or death to personnel. **NOTE** Perform Operator's Before PMCS checks if: • You are assigned operator but have not operated machine since last PMCS was performed. • You are operating machine for first time. • Lubrication order is to be used in conjunction with PMCS.	
1	Before	Vehicle	Start vehicle. Refer to TM 9-2320-425-10 or TM 9-2320-435-10.	
2	Before	Load Handling System (LHS) Controls	Check for proper operation of LHS MODE SELECT switch (Figure 1, Item 1) and joystick (Figure 1, Item 2). Verify by placing LHS MODE SELECT switch (Figure 1, Item 1) in AUTO position.	LHS will not operate.

Table 1. Operator Preventive Maintenance Checks and Services - Continued

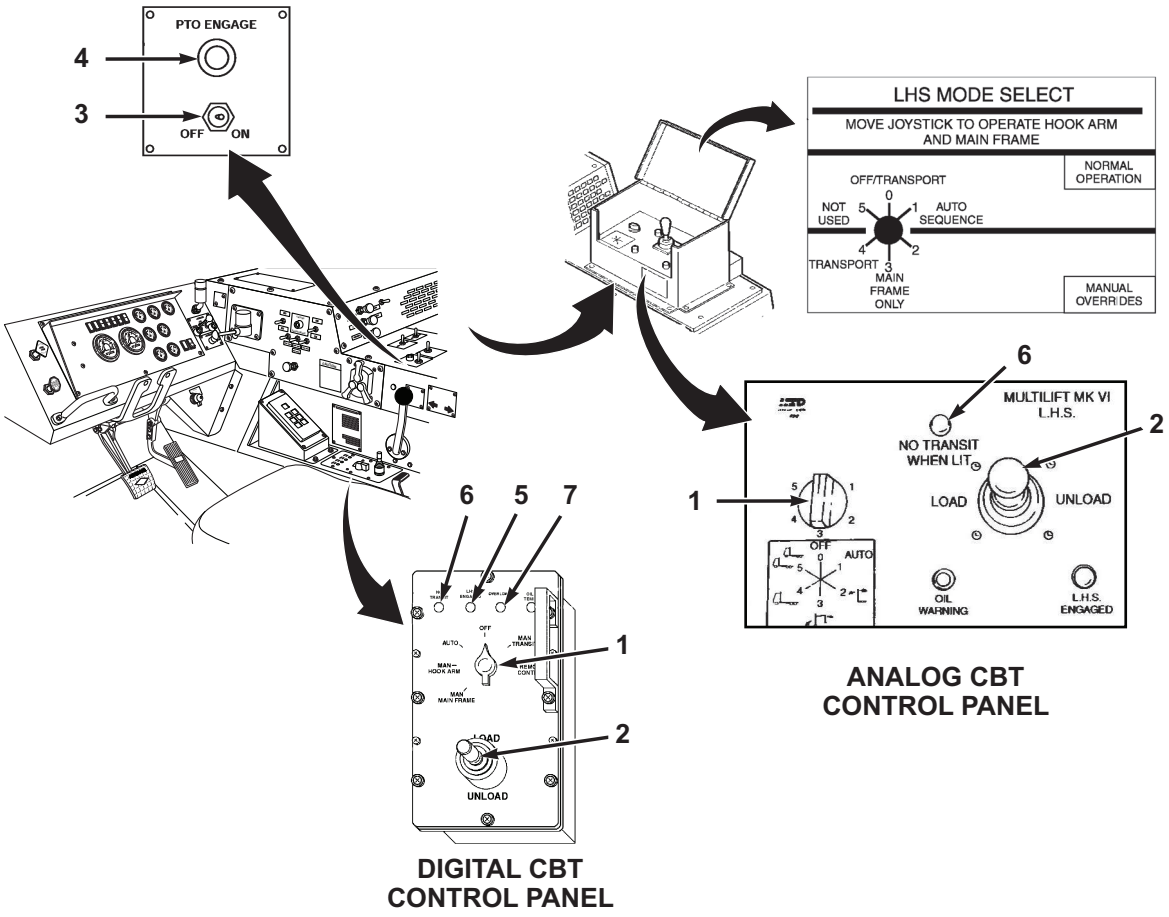
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
			Set PTO ENGAGE switch (Figure 1, Item 3) in ON. Ensure indicator light (Figure 1, Item 4) comes on. Move joystick (Figure 1, Item 2) to UNLOAD to raise LHS about one to two feet (0.305 to 0.610 m). LHS ENGAGED indicator (Figure 1, Item 5) light will light green, and NO TRANSIT WHEN LIT indicator (Figure 1, Item 6) light will light red. LHS OVERLOAD indicator (Figure 1, Item 7) may light yellow if system is overloaded. Move joystick (Figure 1, Item 2) to LOAD position. NO TRANSIT WHEN LIT indicator (Figure 1, Item 5) light will go out.	

Figure 1. Load Handling System.

Table 1. Operator Preventive Maintenance Checks and Services - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Turn LHS MODE SELECT switch (Figure 1, Item 1) to OFF. LHS ENGAGED indicator (Figure 1, Item 5) light will go out. Set PTO ENGAGE switch (Figure 1, Item 3) in OFF. Ensure indicator light (Figure 1, Item 4) goes off. Turn vehicle off. Refer to TM 9-2320-425-10 or TM 9-2320-435-10.	
3	Before	Leaks	Check underneath vehicle for evidence of obvious fluid leakage. If leakage is detected, further investigation is needed to determine location and cause of leak. If there is any doubt, contact your supervisor or Field maintenance.	Any Class III leak is evident.
4	Before	Dust Covers	Check to see if dust covers (Figure 2, Item 1) are present and installed on winch hose quick disconnect couplings (Figure 2, Item 2).	

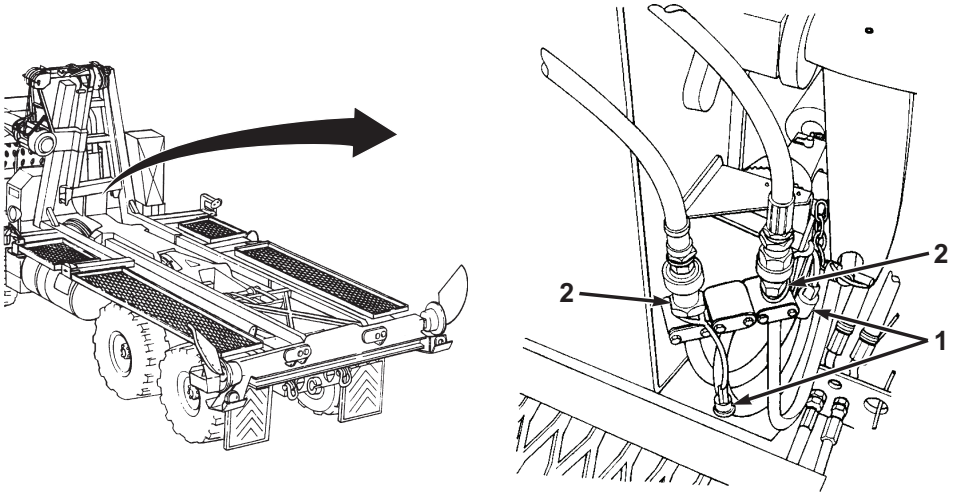


Figure 2. Dust Covers.

5	Before	BAP Winch Assembly and Cable Tensioner	Check winch (Figure 3, Item 1) for obvious damage and loose or missing hardware.	Hardware is missing.

Table 1. Operator Preventive Maintenance Checks and Services - Continued

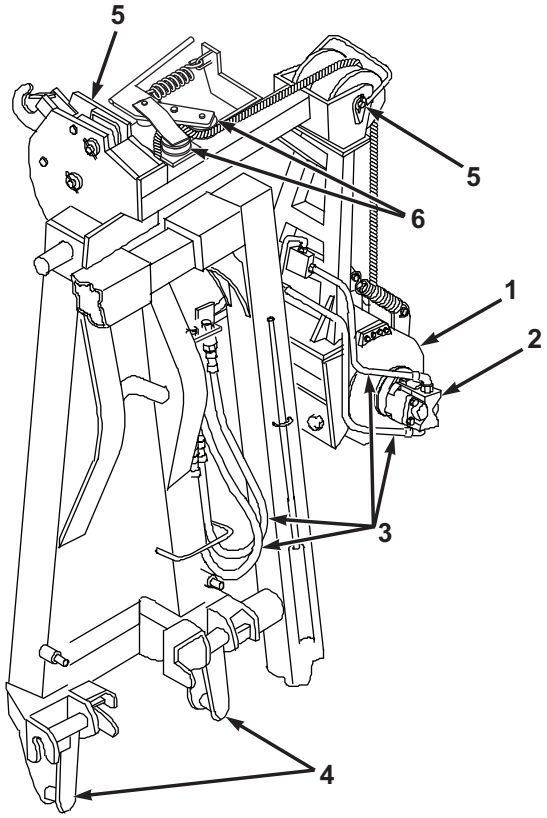
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 *Figure 3. BAP Winch Assembly.*	
			Check winch hydraulic pump (Figure 3, Item 2) and hoses (Figure 3, Item 3) for leaks or damage.	Any Class III leaks are detected. Winch is damaged or parts are missing.
			Check winch frame locking levers (Figure 3, Item 4) for damage or missing parts.	Locks are damaged or will not operate.
			Check sheave assembly and roller and pulley grease fittings (Figure 3, Item 5) for damaged or missing hardware.	Rollers are damaged or binding.
			Check cable tensioner sheaves (Figure 3, Item 6) for damage.	Sheaves are damaged or missing.
6	Before	BAP Hold-Down Lock	Check lock (Figure 4, Item 1) for damage or missing parts.	

Table 1. Operator Preventive Maintenance Checks and Services - Continued

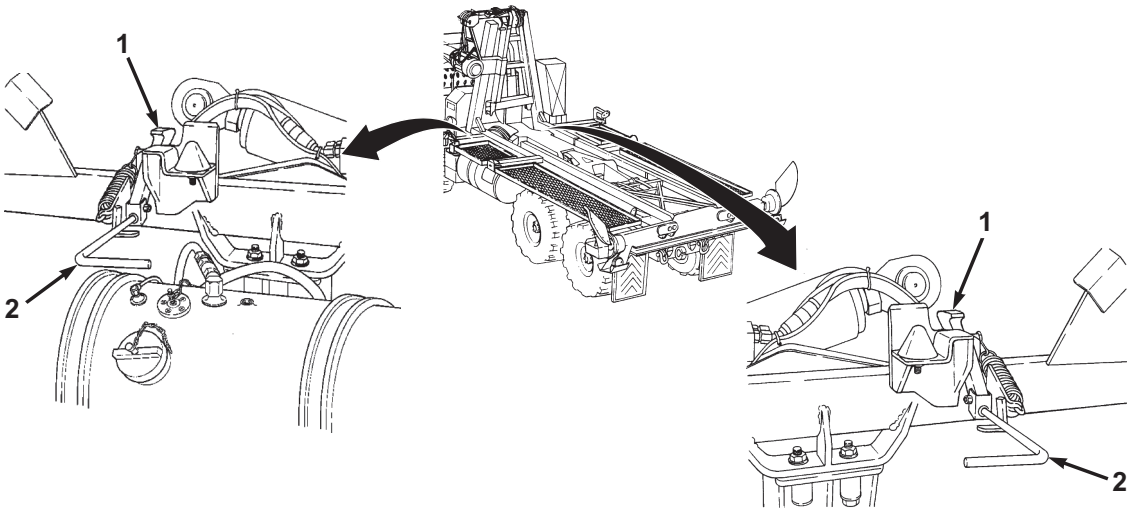
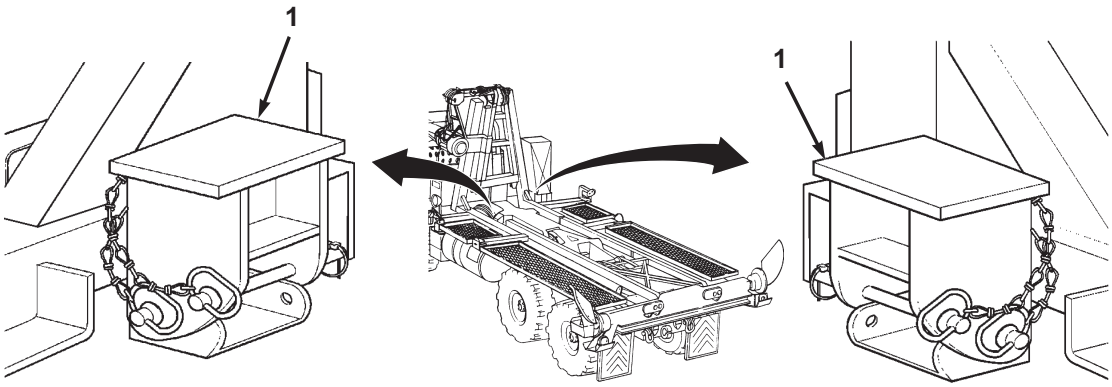
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 *Figure 4. BAP Hold-Down Lock.*	
			Pull locking handle (Figure 4, Item 2) to see if lock disengages.	Hold-down lock does not engage.
7	Before	Left and Right BAP PLS Feet	Check BAP PLS foot (Figure 5, Item 1) for damage or missing hardware.	
			 *Figure 5. BAP PLS Feet.*	
8	Before	Control Valve and Air Cylinder	Inspect control valve (Figure 6, Item 1) for damaged or missing hardware.	

Table 1. Operator Preventive Maintenance Checks and Services - Continued

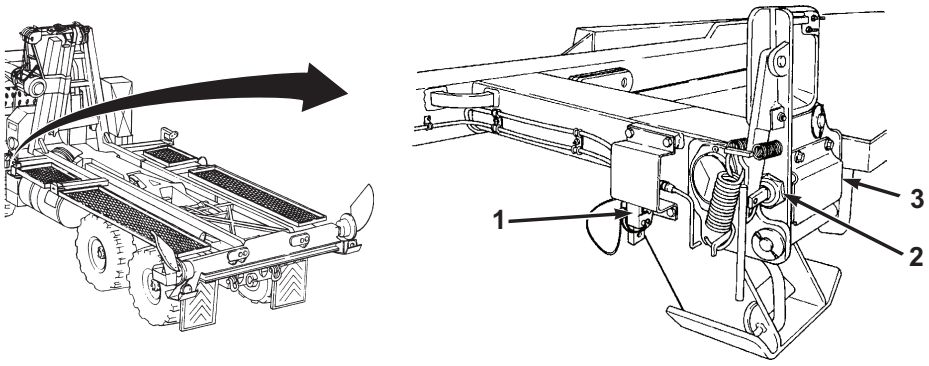
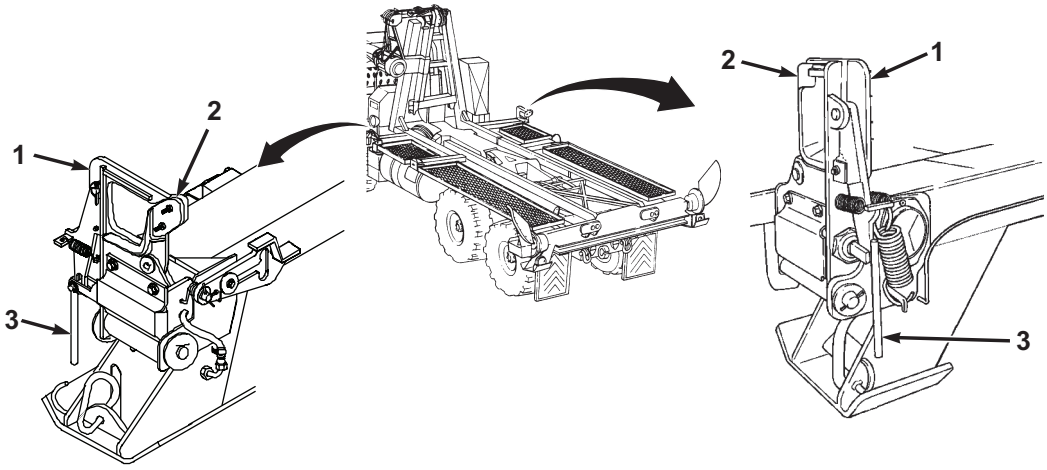
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 *Figure 6. Control Valve.*	
			Inspect air cylinder (Figure 6, Item 2) and guard (Figure 6, Item 3) for damaged or missing hardware.	
9	Before	Left and Right Front Pin Locks	Check locking mechanism (Figure 7, Item 1) for damaged or missing parts.	Front pin lock is damaged or has missing parts.
			 *Figure 7. Front Pin Locks.*	
			Check front pin lock wear pad (Figure 7, Item 2) for excessive wear. Notify Field maintenance to turn over wear pad (Figure 7, Item 2) if it is worn to within 1/16 inch (1.59 mm) of screw heads, or if top edge is worn down to 1/16 inch (1.59 mm) of metal contact. If bottom edge has already been worn down, notify Field maintenance to replace wear pad (Figure 7, Item 2).	
			Pull locking handle (Figure 7, Item 3) to see if assembly disengages.	Front pin lock does not engage

Table 1. Operator Preventive Maintenance Checks and Services - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
10	Before	Center Roller Assembly	Inspect center roller assembly (Figure 8, Item 1) for damage and freedom of movement.	Center roller is damaged or will not move properly.
			Inspect hydraulic pump assembly (Figure 8, Item 2) for proper operation: • Position select lever (Figure 8, Item 3) to center roller position (up). • Pump hydraulic pump assembly (Figure 8, Item 2), and ensure center roller assembly (Figure 8, Item 1) is free to move. • Position select lever (Figure 8, Item 3) to OFF position (center).	Hydraulic pump assembly will not operate properly.
			Inspect center roller hydraulics for leaks.	Any Class III leak is evident.
11	Before	Left and Right Rear Guide Assemblies	Check for loose or binding handle (Figure 9, Item 1): • Rotate handle (Figure 9, Item 1). • Move rear guide (Figure 9, Item 2) to its fullest open and closed positions. Rear guide (Figure 9, Item 2) and handle (Figure 9, Item 1) should move freely • Inspect rear guide assembly for cracks, bends, or broken welds.	Handle is missing or inoperative. Rear guide assembly will not operate.

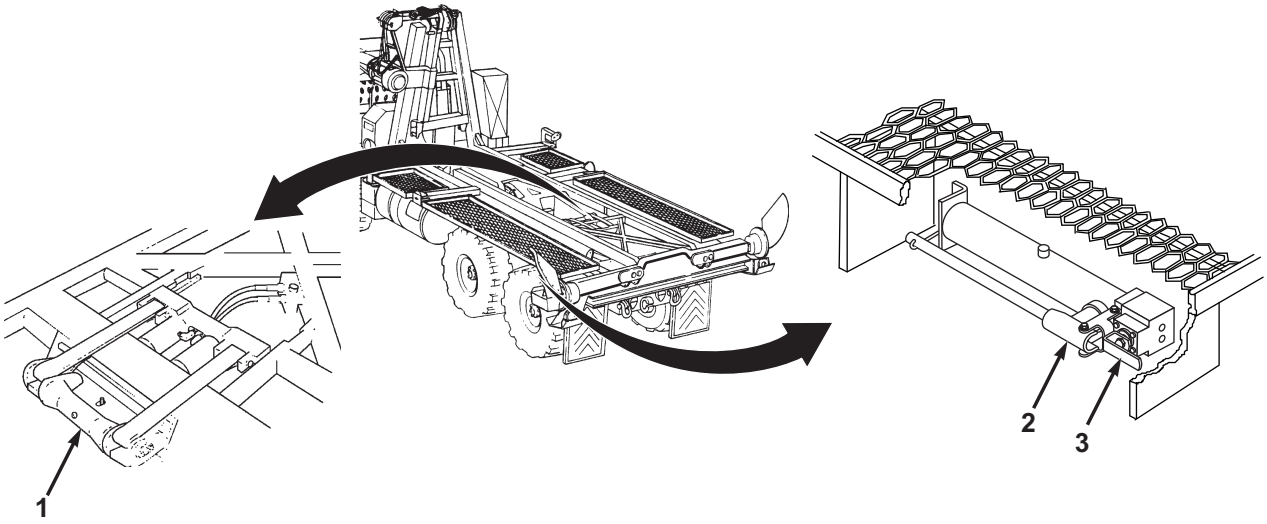


Figure 8. Center Roller.

Table 1. Operator Preventive Maintenance Checks and Services - Continued

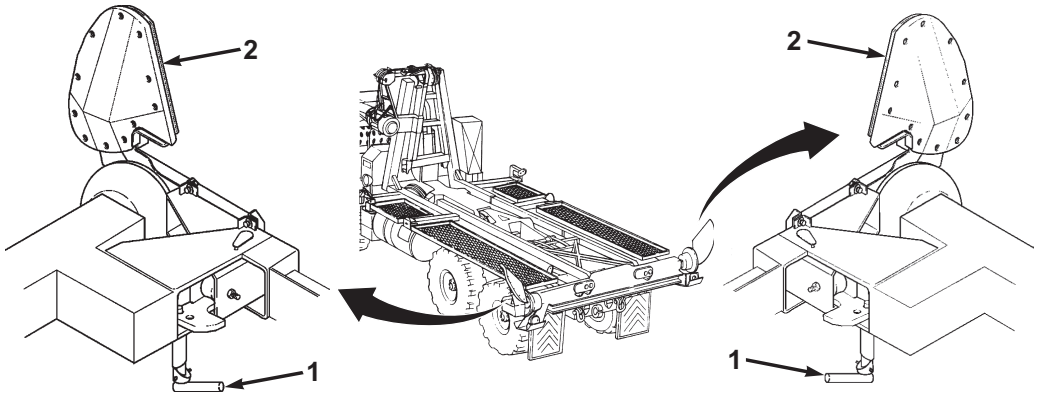
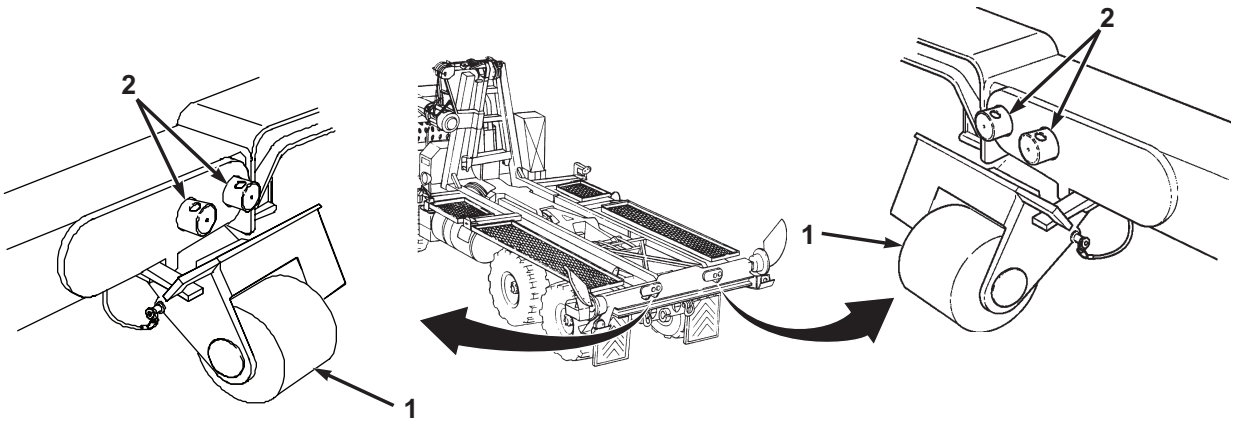
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 *Figure 9. Rear Guide Assemblies.*	
12	Before	Transload Rollers	Inspect transload rollers (Figure 10, Item 1) and extension cylinders (Figure 10, Item 2) for damage and freedom of movement.	Transload rollers are damaged or will not move freely.
			 *Figure 10. Transload Rollers.*	
13	During	BAP Air Lines, Hoses, and Fittings	Check air lines, hoses, and fittings for leaks, dents, cracks, and kinks.	
14	During	BAP Winch Assembly	Check winch cable (Figure 11, Item 1) for broken wires and kinks. If in doubt, notify field level maintenance.	Winch cable has more than three broken wires per 3 in (7.62 cm) section on same strand Maximum number of broken wires shall not occur in any two consecutive 3 in (7.62 cm)

Table 1. Operator Preventive Maintenance Checks and Services - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				in sections of cable; that is, if six wires are broken in one 3 in (7.62 cm) section of cable, none would be allowed in next 3 in (7.62 cm) section.

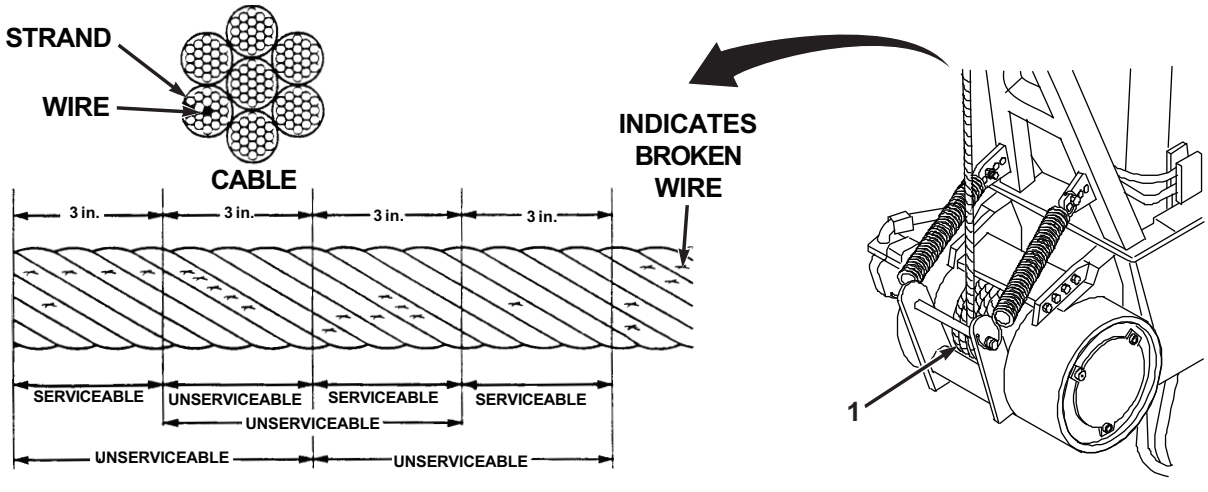


Figure 11. Winch Cable.

15	During	Remote Control Unit	**WARNING**  Check for overhead power lines or other obstructions before attempting operation of LHS. LHS reaches a height of 22 ft 2 in. (6.7 m) and could contact power lines. Failure to comply may result in serious injury or death to personnel. **CAUTION** BAP must be unloaded and winch frame unlocked from BAP before checking remote control unit. Failure to comply may result in damage to equipment. Remove remote control unit (Figure 12, Item 1) from stowage box (Figure 12, Item 2) and check for damage.	

Table 1. Operator Preventive Maintenance Checks and Services - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

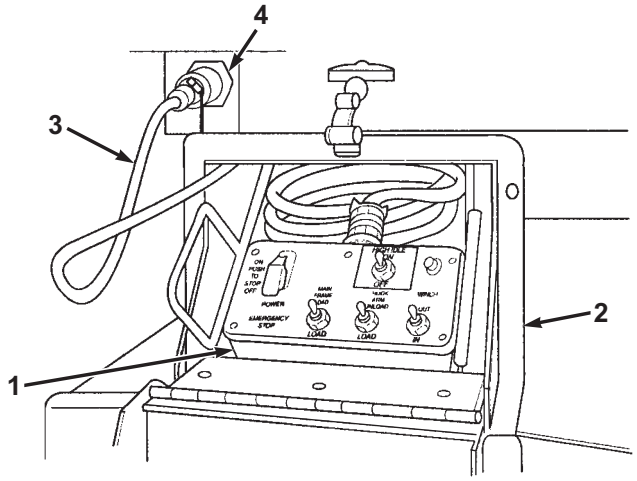


Figure 12. Remote Control Unit.

		Remove remote control cable (Figure 12, Item 3) and connect it to left or right LHS receptacle (Figure 12, Item 4). Ensure remote controls do not operate when remote control EMERGENCY STOP switch (Figure 13, Item 5) is in OFF position.	

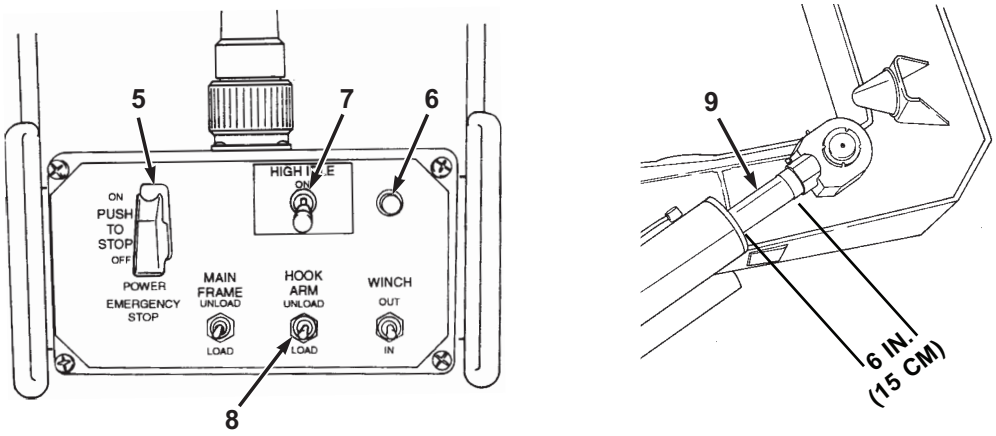


Figure 13. Control Unit.

		Turn remote control EMERGENCY STOP switch (Figure 13, Item 5) to ON position. Lamp (Figure 13, Item 6) should light.	

Table 1. Operator Preventive Maintenance Checks and Services - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Position HIGH IDLE switch (Figure 13, Item 7) to ON. Engine rpm should increase audibly. Turn HIGH IDLE switch (Figure 13, Item 7) to OFF. Position remote control HOOK ARM switch (Figure 13, Item 8) to UNLOAD until hook arm cylinders (Figure 13, Item 9) are extended approximately 6 inches (15 cm). Position remote control MAIN FRAME switch (Figure 14, Item 10) to UNLOAD and release when main frame is extended fully. Ensure main frame extends fully.	

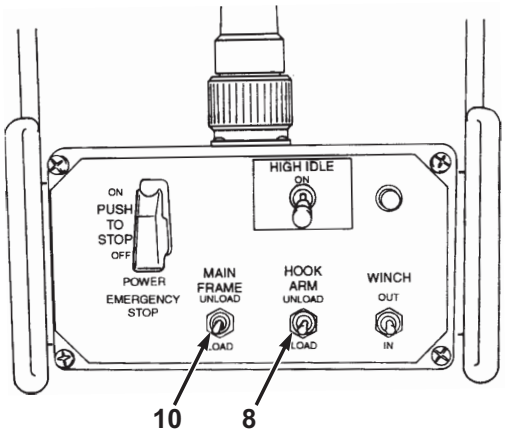


Figure 14. Main Frame Switch.

			Position HOOK ARM switch (Figure 15, Item 8) to UNLOAD and release when winch cable hook (Figure 15, Item 11) can be reached from ground.	

Table 1. Operator Preventive Maintenance Checks and Services - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

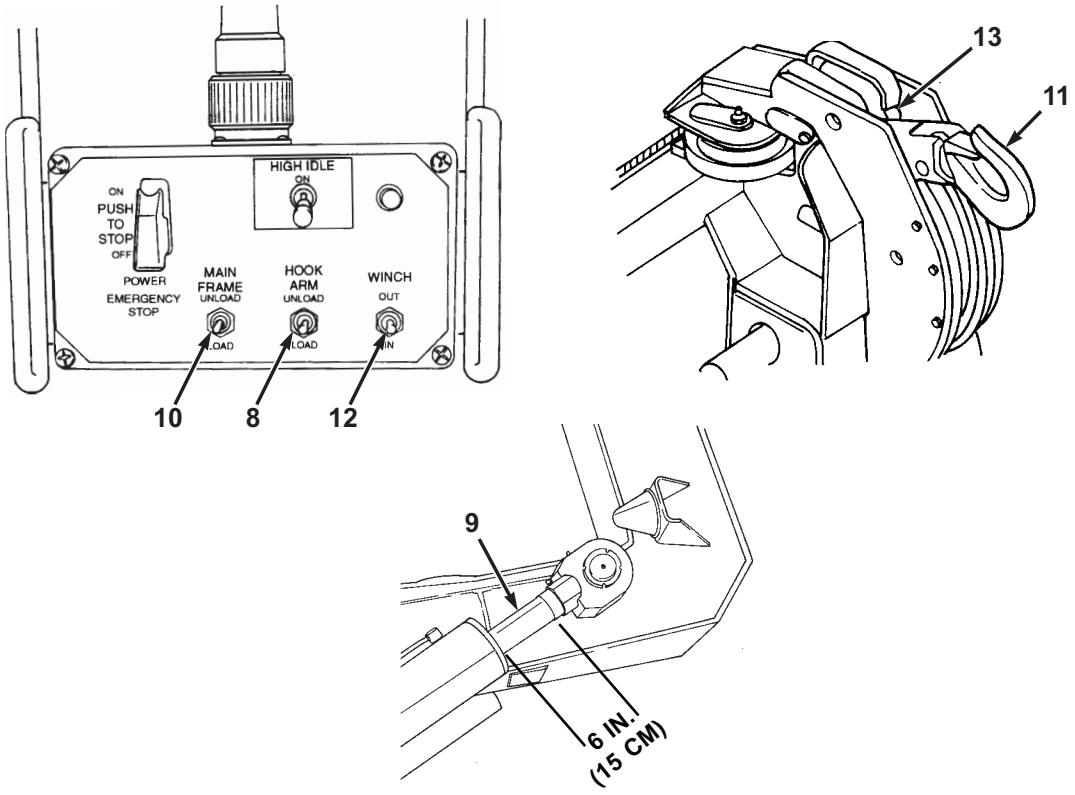


Figure 15. Winch Switch.

WARNING

Use care when handling winch cable. Always wear leather gloves and ensure cut ends are taped. Ensure cut ends of cable on winch assembly are securely fastened down. Failure to comply may result in serious injury or death to personnel.

NOTE

Have an assistant maintain tension on cable.

Position remote control WINCH switch (Figure 15, Item 12) to OUT and release when cable has been wound out about 8 feet (2.4 m). Winch cable should wind out.

Table 1. Operator Preventive Maintenance Checks and Services - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Position remote control WINCH switch (Figure 15, Item 11) to IN until winch cable hook (Figure 15, Item 12) is in saddle (Figure 15, Item 13). Position HOOK ARM switch (Figure 15, Item 8) to load position until hook arm cylinders (Figure 15, Item 9) are extended approximately 6 inches (15 cm). Position MAIN FRAME switch (Figure 15, Item 10) to LOAD until main frame is in stowed position. Position HOOK ARM switch (Figure 15, Item 8) to LOAD until hook arm is in stowed position. Disconnect remote control cable (Figure 16, Item 3) from LHS receptacle (Figure 16, Item 4), and stow cable (Figure 16, Item 3) and remote control unit (Figure 16, Item 1) in stowage box (Figure 16, Item 2).	

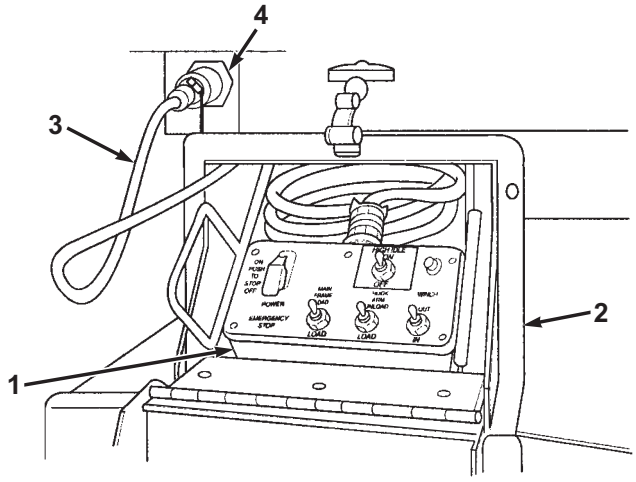


Figure 16. Disconnect Remote Control Unit.

16	During	Front Pin Locks	**NOTE** This check must be made while bridge bay is being loaded onto BAP. Ensure BAP front pin locks (Figure 17, Item 1) are adjusted properly: • If BAP front pin locks (Figure 17, Item 1) work properly but do not engage bridge bay front pins (Figure 17, Item 2), notify Field maintenance to adjust BAP front pin locks. • If BAP front pin locks (Figure 17, Item 1) work properly and do engage bridge bay front pins	Front pin locks do not engage bridge bay front pins.

Table 1. Operator Preventive Maintenance Checks and Services - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			(Figure 17, Item 2), BAP front pin locks (Figure 17, Item 1) are adjusted properly.	

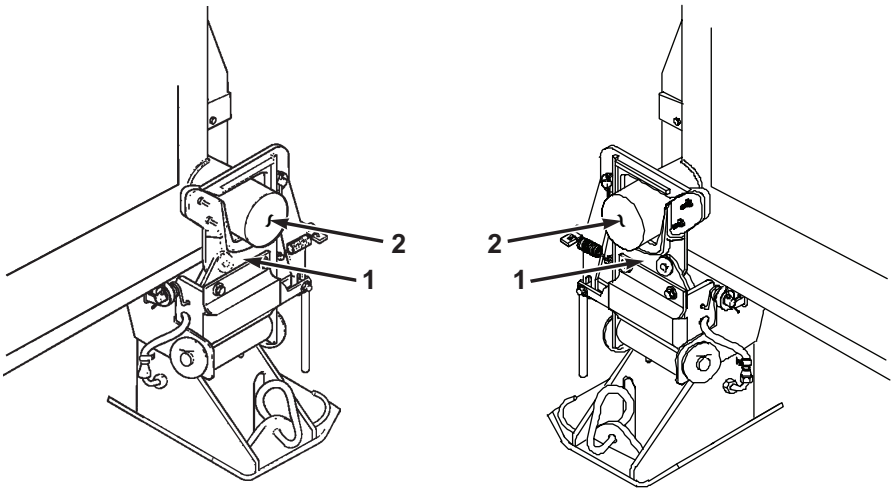


Figure 17. Front Pin Locks.

17	During	Front Roller Assemblies	Check front roller (Figure 18, Item 1) for damage or binding.	Front roller is damaged or binding.

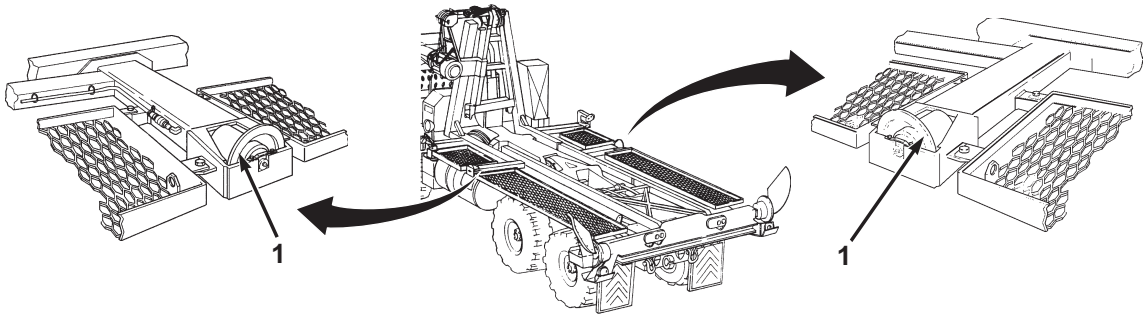
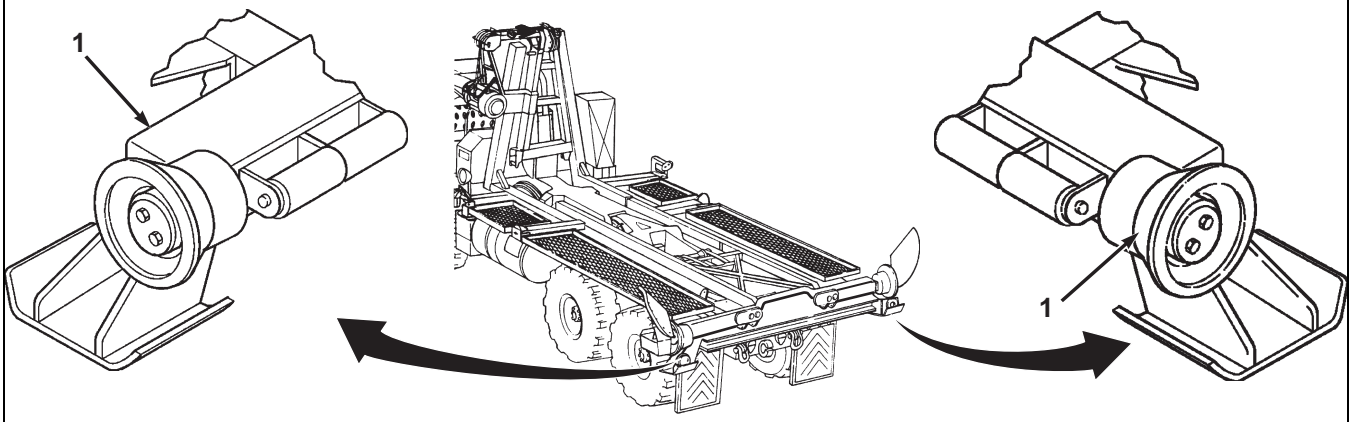
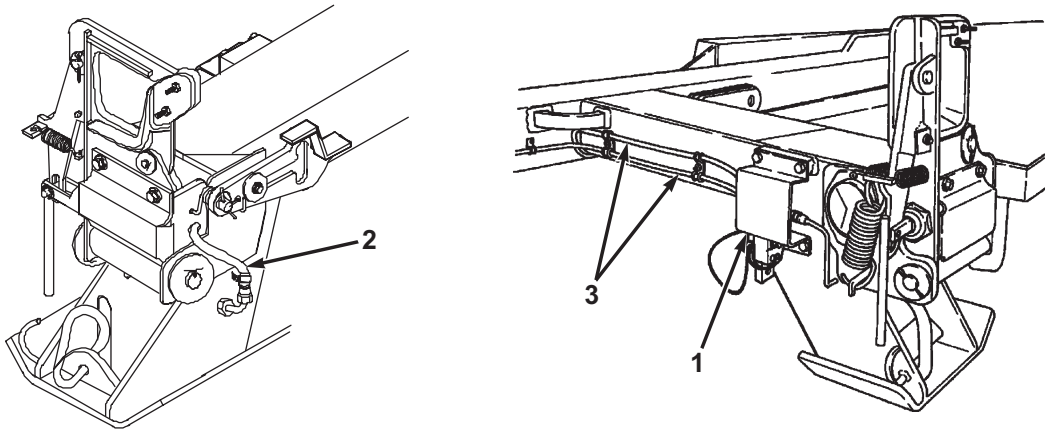


Figure 18. Front Rollers.

18	During	Rear Roller Assemblies	Check rear rollers (Figure 19, Item 1) for damage or binding.	Rear rollers are missing, broken, or inoperative.

Table 1. Operator Preventive Maintenance Checks and Services - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 *Figure 19. Rear Rollers.*	
19	After	BAP Air Lines, Hoses, and Fittings	Check air lines, hoses, and fittings for leaks, dents, cracks, and kinks.	
20	After	Control Valve	Inspect control valve (Figure 20, Item 1), air hose (Figure 20, Item 2), and lines (Figure 20, Item 3) for kinks or missing hardware.	
			 *Figure 20. Control Valve.*	

END OF WORK PACKAGE

FIELD MAINTENANCE
FIELD LEVEL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

INITIAL SETUP:

Materials/Parts
Rags, Wiping (WP 0081, Table 1, Item 21)

References
TM 9-2320-425-10 (WP 0076)
TM 9-2320-435-10 (WP 0076)
WP 0058

References (cont.)
WP 0070
WP 0045

Equipment Condition
Vehicle PMCS performed (TM 9-2320-425-10 or TM 9-2320-435-10). (WP 0076)

Table 1. FIELD LEVEL PMCS

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			NOTE Operator PMCS must be performed in conjunction with Field Level PMCS.	
1	Semi-Annual	Catwalk	Inspect catwalk sections (Figure 1, Item 1) for damaged or missing hardware.	

Table 1. FIELD LEVEL PMCS - Continued

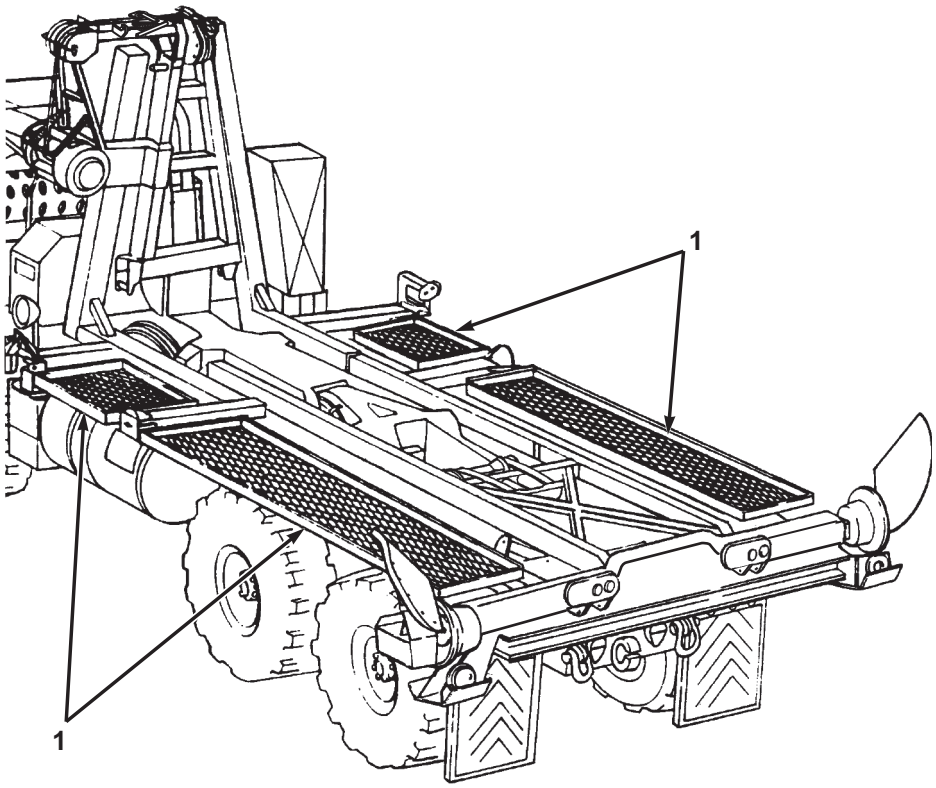
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 *Figure 1. Catwalk.*	
2	Semi-Annual	BAP Frame Assembly	Check for damaged side rails (Figure 2, Item 1) or crossmembers (Figure 2, Item 2), or broken welds.	Side rails or crossmembers are damaged or welds are broken.

Table 1. FIELD LEVEL PMCS - Continued

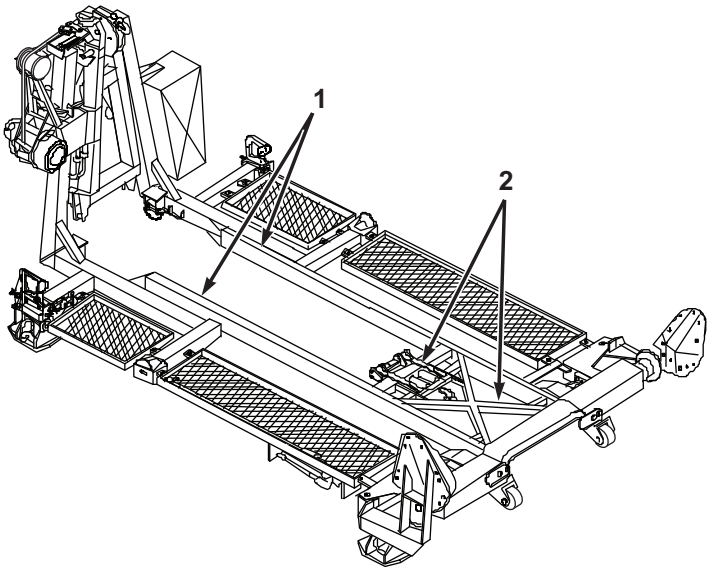
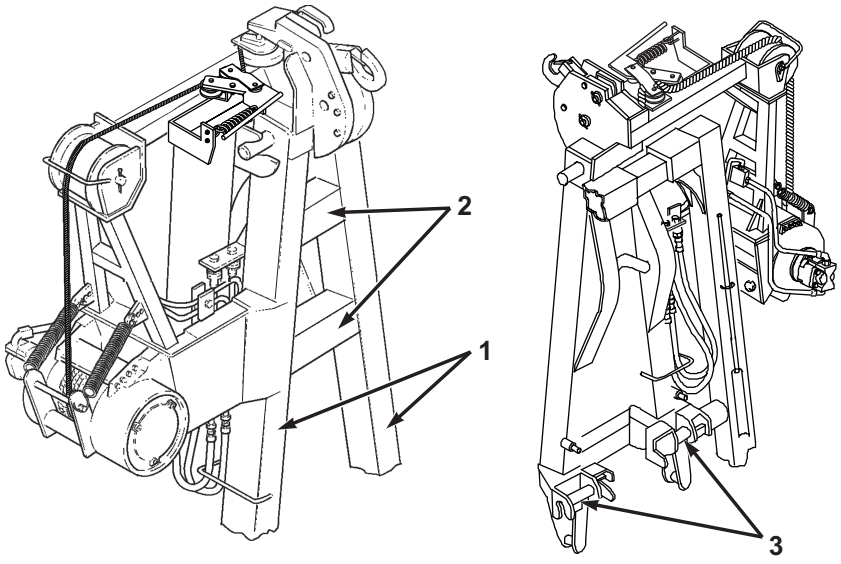
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 *Figure 2. BAP Frame Assembly.*	
3	Semi-Annual	BAP Winch Frame and Components	Check for damaged frame rails (Figure 3, Item 1) or crossmembers (Figure 3, Item 2), or broken welds.	Frame rails or crossmembers are damaged or welds are broken.
			 *Figure 3. Winch Frame Rail.*	

Table 1. FIELD LEVEL PMCS - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Check winch frame locking levers (Figure 3, Item 3) for cracks, broken weldments, or damage and for freedom of movement.	Winch frame locking levers are cracked, have broken weldments, are damaged, or have no freedom of movement.
4	Semi-Annual	BAP Winch Assembly and Cable Tensioner	Check fluid level from winch filler port (Figure 4, Item 1). Fill with oil. (WP 0070)	Any Class III leaks are found.

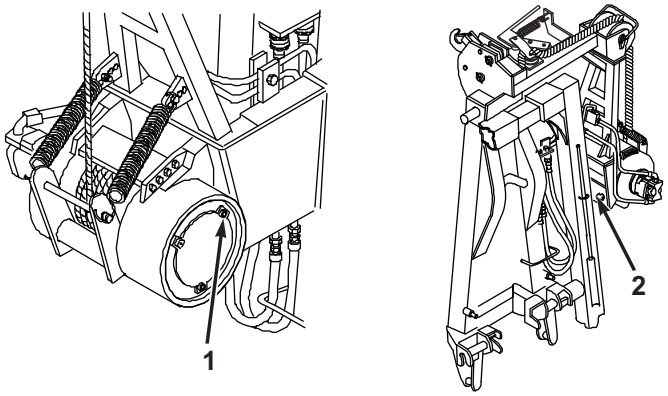


Figure 4. Winch Assembly.

			Check mounting screws (Figure 4, Item 2). Replace mounting screws (Figure 4, Item 2) if broken or missing (WP 0058).	Mounting screws are broken or missing.
5	Semi-Annual	BAP Winch Hydraulic System	Inspect input ports to winch hydraulic motor (Figure 5, Item 1) for leaks.	

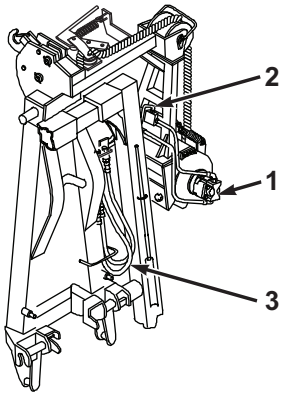


Figure 5. Winch Hydraulic System.

Table 1. FIELD LEVEL PMCS - Continued

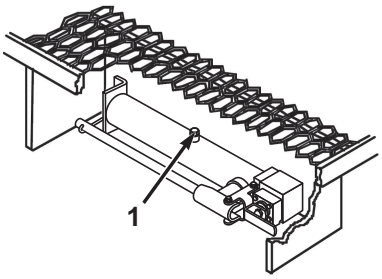
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Inspect valve block (Figure 5, Item 2) and holding valve connections for leaks. Inspect hydraulic tubing and hoses (Figure 5, Item 3) for damage, kinks, and/or leaking. Check for leaks on winch. Ensure hydraulic hoses are not rubbing or chafing on sharp edges	 Any Class III leaks are found. Any Class III leaks are found.
6	Semi-Annual	Hydraulic Hand Pump	Check fluid level in hand pump (Figure 6, Item 1) semiannually. Fill with OE/HDO as required. (WP 0070)	Any Class III leaks are found.
			 *Figure 6. Hand Pump.*	
7	Semi-Annual	Hand Pump Hydraulic System	Check valve manifolds (Figure 7, Item 1) and fittings for leaks.	

Table 1. FIELD LEVEL PMCS - Continued

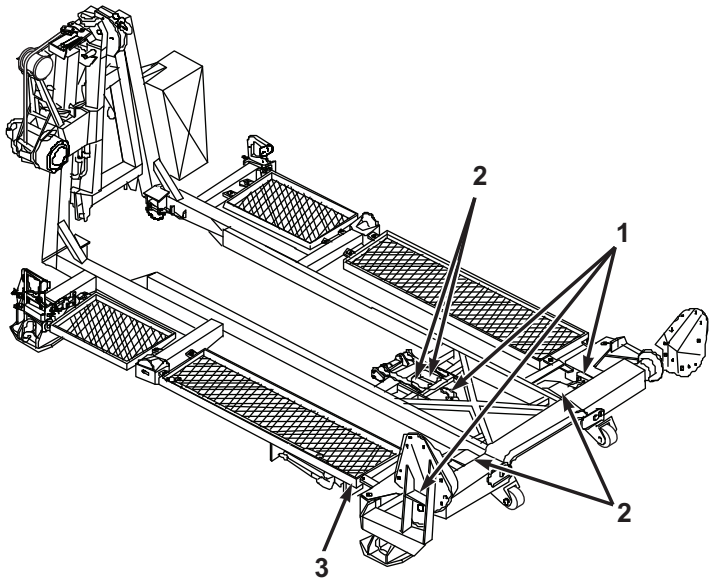
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 *Figure 7. Hand Pump Hydraulic System.*	
			Check hydraulic cylinders (Figure 7, Item 2) for leaks, sand, dirt, or debris.	Not mission capable if leaks, sand, dirt, or debris are present.
			Check hydraulic tubing (Figure 7, Item 3) and hoses for damage, kinks, and/or leaking	Any Class III leaks are found.
8	Semi-Annual	Rear Guide Assembly	Check rear guide pad (Figure 8, Item 1) for excessive wear, damage, or missing hardware. Replace wear pad (Figure 8, Item 1) (WP 0045) if it is worn to within 1/16 inch (1.59 mm) of screw heads or if it is worn through, exposing metal backing plate.	Wear pad is worn to within 1/16 inch (1.59 mm) of screw heads or is worn through.

Table 1. FIELD LEVEL PMCS - Continued

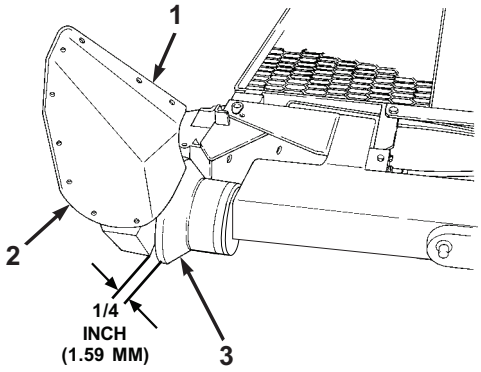
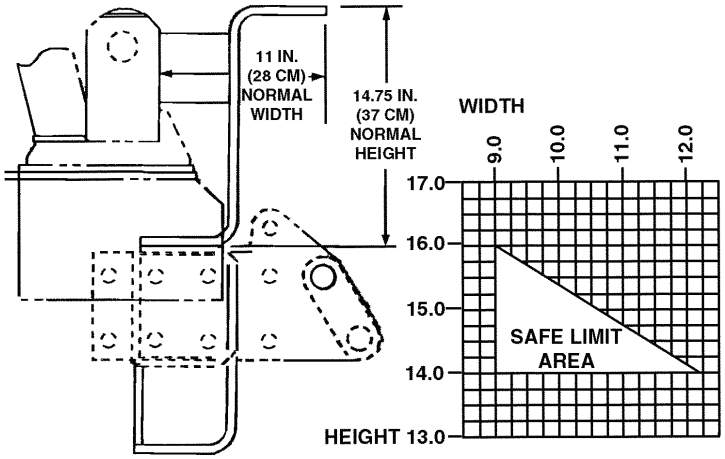
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			  *Figure 8. Rear Guide Assembly.*	
			Check clearance between BAP rear guide assembly (Figure 8, Item 2) and rear roller assembly (Figure 8, Item 3). Clearance should be adjusted to 1/4 inch (6.35 mm) (WP 0045).	
9	Semi-Annual	BAP Labels	Check all labels (Figure 9) to ensure legibility. Replace labels if damaged or missing (WP 0051).	

Table 1. FIELD LEVEL PMCS - Continued

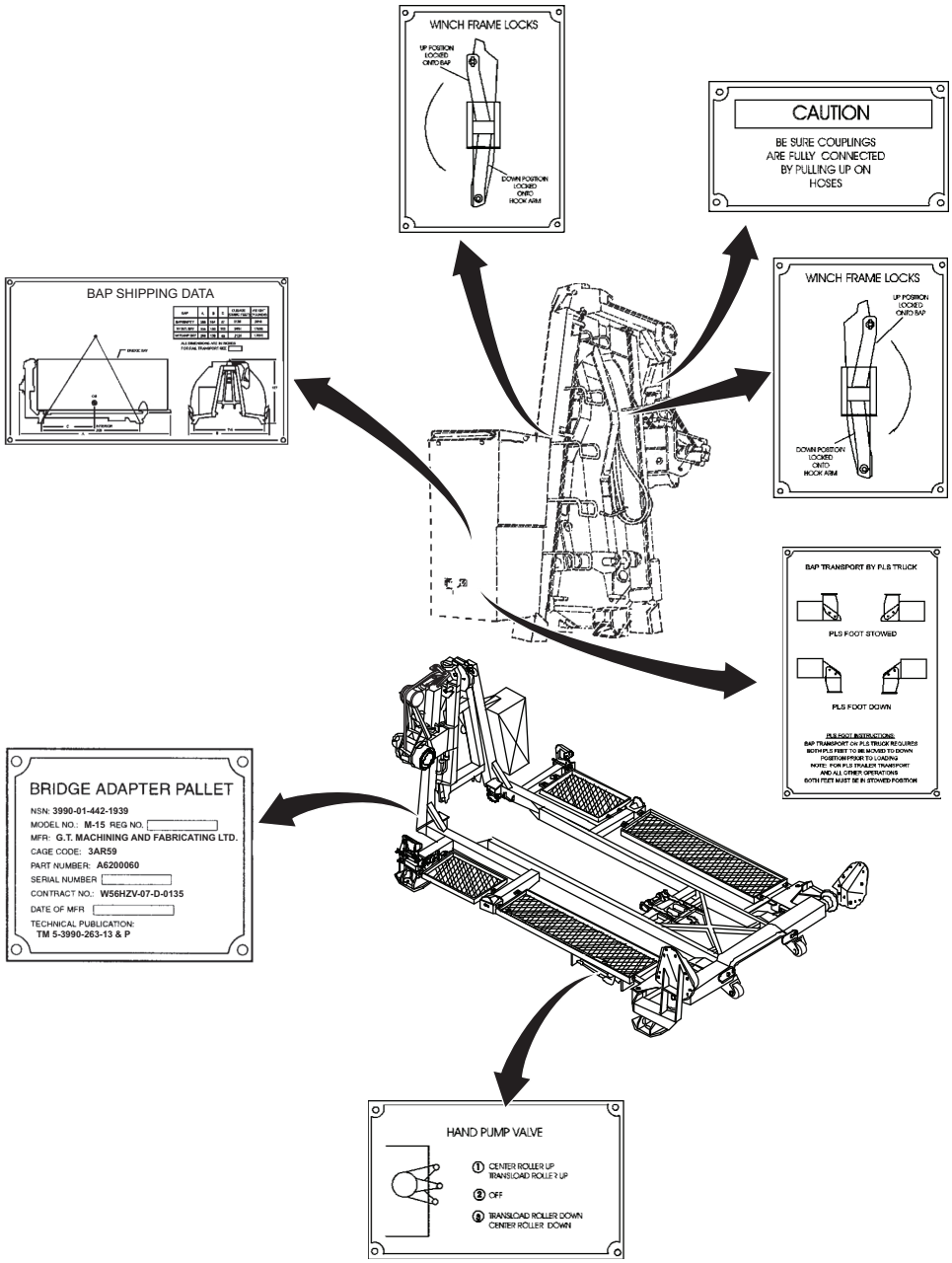
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
10	Annual	BAP Winch Assembly	Drain fluid from winch assembly drain plug (Figure 11, Item 1) annually. Fill with OE/HDO as required (WP 0070).	Any Class III leaks are found.

Figure 9. BAP Labels.

Table 1. FIELD LEVEL PMCS - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

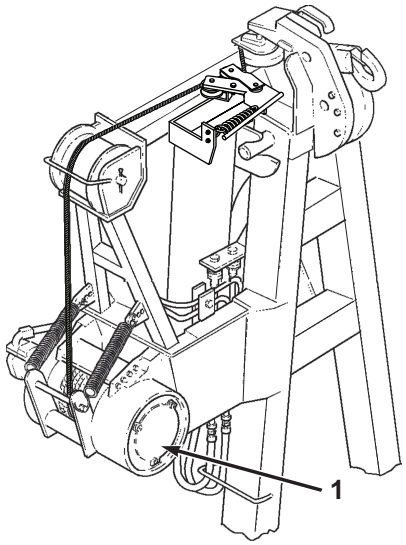


Figure 10. Winch Assembly Drain.

END OF WORK PACKAGE

CHAPTER 6

MAINTENANCE INSTRUCTIONS
FOR
M15 BRIDGE ADAPTER PALLET (BAP) NSN 3990-01-442-1939

CHAPTER CONTENTS

Work Package Title	WP Number
Service Upon Receipt	WP 0037
General Maintenance and Welding Instructions	WP 0038
PLS Foot Stowage	WP 0039
Stencils	WP 0040
Catwalk Replacement	WP 0041
Plunger Replacement	WP 0042
Toolbox Assembly Repair	WP 0043
Center Roller Repair	WP 0044
Rear Guide Repair	WP 0045
Front Roller Assembly Replacement	WP 0046
Rear Roller Assembly Replacement	WP 0047
Rear Bumper Assembly Replacement	WP 0048
Transload Roller Replacement	WP 0049
Reflector Replacement	WP 0050
Label Replacement	WP 0051
Front Pin Lock Assembly Adjustment and Repair	WP 0052
Sheave Assembly Repair	WP 0053
Winch Frame Locking Lever Outboard Retainer Blocks Field Replacement	WP 0054
Winch Hydraulic System Replacement	WP 0055
Winch Cable Tensioner Repair	WP 0056
Cable Assembly Replacement	WP 0057

CHAPTER CONTENTS - Continued

Work Package Title	WP Number
Winch Assembly Replacement	WP 0058
Winch Motor Assembly Replacement	WP 0059
Center Roller Hydraulic System Repair	WP 0060
Transload Roller Hydraulic System Repair	WP 0061
Hydraulic Hand Pump Replacement	WP 0062
Control Valve Replacement	WP 0063
Air Lines and Fittings Replacement (Old Configuration)	WP 0064
Air Lines and Fittings Replacement	WP 0065
Front BAP Lock Replacement	WP 0066
Remote Control Unit Repair	WP 0067
Winch Repair	WP 0068
Preparation for Storage and Shipment	WP 0069
Lubrication Instructions	WP 0070
General Torque Limits	WP 0071

FIELD MAINTENANCE
SERVICE UPON RECEIPT

INITIAL SETUP:

References
DA PAM 750-8 (WP 0076)
DA Form 2407 (WP 0076)
DD Form 314 (WP 0076)
DD Form 1397 (WP 0076)

References (cont.)
SF 361 (WP 0076)
WP 0038
WP 0035
WP 0036

GENERAL INFORMATION

When a new, used, or reconditioned BAP is received, determine whether it has been properly prepared for service and is capable of performing its mission. Follow the inspection and servicing instructions in this work package.

SERVICE UPON RECEIPT OF MATERIAL

UNPACKING

NOTE

- Refer to DD Form 1397 for procedures on unpacking the IBC.
- Unpacking will take approximately 2 hours to complete.

Remove all straps, plywood, tape, seals, and wrappings.

END OF TASK

CHECKING UNPACKED EQUIPMENT

Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 361, Transportation Discrepancy Report.

Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with applicable service instructions found in DA PAM 750-8.

Check to see whether the equipment has been modified.

END OF TASK

PROCESSING UNPACKED EQUIPMENT

Remove rust preventive compound from coated exterior parts of the BAP using cleaning compound.

END OF TASK

PRELIMINARY SERVICING OF EQUIPMENT

1. Perform the operator PMCS. (WP 0035)
2. Perform the field PMCS. (WP 0036)

PRELIMINARY SERVICING OF EQUIPMENT - Continued

3. Schedule the next preventive maintenance checks and services on DD Form 314.
4. Report all deficiencies on DA Form 2407 if the deficiencies appear to involve unsatisfactory design.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
GENERAL MAINTENANCE AND WELDING INSTRUCTIONS

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive (WP 0078, Table 2, Item 2)

Materials/Parts
Rag, Wiping (WP 0081, Table 1, Item 21)
Cleaning Compound, Solvent (WP 0081, Table 1, Item 5, 6)
Grease, Automotive, Artillery (WP 0081, Table 1, Item 10, 11, 12, 13, 14)

Materials/Parts (cont.)
Lubricating Oil, Engine, OEA (WP 0081, Table 1, Item 15, 16)
Lubricating Oil, Engine, OE/HDO 10 (WP 0081, Table 1, Item 17, 18, 19, 20)

References

Equipment Condition
Remove load from BAP (General air tubing assembly instructions only). WP 0008
Unload BAP from vehicle (General air tubing assembly instructions only). WP 0006

INTRODUCTION

This section describes general procedures that apply to all parts of the Bridge Adapter Pallet (BAP). To avoid repetition, these procedures are not described in specific maintenance paragraphs.

GENERAL REMOVAL INSTRUCTIONS

Work Required. Remove only those parts needing repair or replacement. Do not disassemble a component any further than needed.

Preparation. Before removing any parts of electrical or hydraulic systems, ensure system is not energized or pressurized. Disconnect batteries before doing any work to electrical system. Ensure parking brake is applied, wheels are blocked, and all controls are in OFF position before starting any removal procedure.

Removal. Ensure there is enough clearance to remove a part. Disassemble adjacent parts as needed to provide working clearance.

Lifting. Always use a chain hoist, jack, or other aid when lifting heavy parts. Ensure load limit of lifting devices is not exceeded by weight being lifted. Position and rig lifting devices before disconnecting any part for removal.

Identification. Tag or mark all similar parts, such as electrical leads, before disconnecting and removing part. This will make proper assembly easier. Ensure to identify mating ends of electric, hydraulic, and air lines as they are disconnected.

Position of Valves. Before removing valve handles, mark or diagram their positions when opened and closed. This will help during assembly.

Electrical Wires and Connectors. Electrical wires and connectors are identified on electrical schematic. Wherever possible, these wire and connector numbers are also provided in troubleshooting and maintenance tasks.

GENERAL DISASSEMBLY INSTRUCTIONS

Cleanliness. Work area must be kept as clean as possible. This will prevent contamination of internal parts. This is especially true for valves, cylinders, and other hydraulic or air system parts.

GENERAL DISASSEMBLY INSTRUCTIONS - Continued

Expendable Parts. All gaskets, preformed packings, and seals removed during repair shall be discarded and replaced with new parts. These items are usually damaged during removal. All lockwires, lockwashers, locknuts, cotter pins, and like items must be replaced at time of assembly.

Seal Removal. When removing gaskets, preformed packings, or seals do not use any metal tool that will scratch surfaces next to those items.

Disassembly. Before disassembly of any item, study illustrations carefully. Note relationship of internal parts. Knowing details of a component will speed up disassembly and assembly and will help avoid mistakes.

Parts Protection. To prevent moisture and dirt from entering open housings, lines, and other openings, apply protective caps and plugs as soon as possible after disassembly. Wrap all parts removed in clean cloth or dip them in preservative oil.

CLEANING

GENERAL CLEANING INSTRUCTIONS

WARNING



SOLVENT CLEANING COMPOUND

Solvent Cleaning Compound (MIL-PRF-680) is flammable and may cause irritation to the eyes or skin. Wear protective goggles and gloves; avoid contact with skin, eyes, and clothing. Use in well ventilated areas and keep away from heat or flame. Failure to comply may result in personnel injury or death.

Accidental ingestion can cause irritation of digestive tract and respiratory tract, and may cause lung and central nervous system damage. Can be fatal if swallowed. First aid for ingestion: do not induce vomiting. Seek immediate medical attention.

First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention.

First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention.

Inhalation of high/massive concentrations can cause coma or be fatal. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If symptoms persist, seek medical attention.

Keep away from open flames and other sources of ignition. Failure to comply may result in serious injury or death to personnel. The flash point for type II solvent cleaning compound is 141 to 198°F (61 to 92°C) and type III is 200 to 241°F (93 to 116°C). Fire extinguishers should be placed nearby when using solvent cleaning compound.

Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.

Cloths or rags saturated with solvent cleaning compound must be disposed of using authorized facilities procedures.

Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.

Failure to comply may result in injury or death to personnel.

CLEANING - Continued

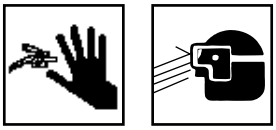
GENERAL CLEANING INSTRUCTIONS - Continued

CAUTION

- Petroleum solvents may not be used on parts that are in contact with hydraulic fluids. Failure to comply may result in damage to equipment.
- Do not clean tires, lubricants, seals, rubber hoses, or electrical components with a solvent mixture. Failure to comply may result in damage to equipment.

1. **Cleaning Solvents.** Use only approved cleaning solvents to clean parts. Solvent cleaning compound is commonly used. Work in a well-ventilated area.

WARNING



Compressed air used for cleaning and drying purposes shall not exceed 30 psi (207 kPa). Use only with chip-guarding and personal equipment (goggles/shield, gloves, etc.). Failure to comply may result in serious injury or death to personnel.

2. **Deposit Removal.** After soaking parts in solvent, wash away deposits by flushing or spraying. Where necessary, brush with a soft bristle brush moistened in solvent. Use compressed air to dry all parts, except bearings. Bearings must be allowed to air-dry.
3. **Tools.** Do not use scrapers, wire brushes, abrasive wheels, or compounds in cleaning parts, unless called for in detailed instructions.
4. **Ball and Roller Bearings.** When cleaning ball or roller bearings, place them in a basket and suspend basket in a container of solvent cleaning compound. If needed, use a brush to remove caked-on grease, chips, and so on. Avoid rotating a bearing before solid particles are removed, to prevent damaging races and balls. When bearings have been cleaned, coat them lightly with lubricating oil to remove solvent.
5. **Rubber Parts.** Do not clean O-rings or other rubber parts in solvent cleaning compound. These parts should be wiped clean with a clean, dry, lint-free cloth.
6. **Exterior Parts.** Steam-cleam all exterior parts thoroughly before removing. This will make inspection and disassembly easier.
7. **Degreasing Machine.** Use a degreasing machine to remove heavy grease and oil accumulations from metal parts.

CAUTION

Parts should be dipped in rust-preventive compound within two hours after degreasing. Failure to comply may result in corrosion on parts and damage to equipment.

8. **Passages.** After removing parts from degreasing machine and before coating with rust preventive, check all oil passages and cavities for dirt or blockage. A thin, flexible wire should be run through oil passages to ensure they are not clogged. Individual passages that are dirty may be cleared using a spray gun and solvent cleaning compound.
9. **Electrical Parts.** Electrical parts, such as switches, that use insulating materials, should not be soaked or sprayed with cleaning solutions. Clean these parts with a clean, lint-free cloth moistened with solvent cleaning compound.

CLEANING - Continued

GENERAL CLEANING INSTRUCTIONS - Continued

10. **Hydraulic System.** When cleaning hydraulic system parts, use a solvent cleaning compound. Clean and dry parts thoroughly to ensure no residue remains. If a coating of preservative is required before assembly, apply a light film of preservative oil. If petroleum-free solvents are not available, use the same hydraulic fluid as used in vehicle system.

END OF TASK

INSPECTION

GENERAL INSPECTION INSTRUCTIONS

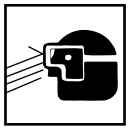
1. **Sealing Surfaces.** Inspect all surfaces in contact with gaskets, packing, or seals. Ensure there are no nicks, burrs, or scratches. If any defect is found, remove or repair as outlined under General Repair Instructions in this work package.
2. **Bearings.** Check bearings for rusted or pitted balls, races, or separators. Check balls and races for brinelling, abrasion, and serious discoloration. Criteria for bearing rejection are as follows:
    a. Cuts or grooves parallel to ball or roller rotation.
    b. Fatigue pits (not minor machine marks or scratches).
    c. Cracks.
3. **Inspection.** Inspection consists of checking for defects, such as distortion, wear, cracks, leakage, and pitting.
4. Parts under heavy load or pressure must be inspected more thoroughly. Clean all parts before inspection.
5. **Drain Plugs.** When removing drain plugs from system components, inspect for sediment adhering to plug. A buildup of grit and/or fine metal particles may indicate part failure. A few fine particles are normal.
6. This inspection is effective in determining defective parts prior to internal inspection of parts.
7. **Tubing and Hosing.** Check all hose surfaces for broken or frayed fabric. Check for breaks caused by sharp kinks or rubbing against other parts of vehicle. Inspect fitting threads for damage. Replace any part found to be defective. Following assembly and during operation of Load Handling System, check for leaks.
8. **Electrical Parts.** Inspect wiring harnesses for chafed or burned insulation. Inspect all terminal connectors for loose connections and broken parts. Inspect connectors for corrosion.
9. **Metal Parts.** Visually inspect all castings and weldments for cracks. Parts that carry a great load should receive magnetic particle inspection. Critical nonferrous parts may be inspected with fluorescent penetrant.

END OF TASK

REPAIR

GENERAL REPAIR INSTRUCTIONS

WARNING



Drilling and grinding operations are hazardous to the eyes. Eye protection is required. Failure to comply may result in serious injury or death to personnel.

1. **Exterior Parts.** Chassis and exterior painted parts may be resurfaced where paint is damaged, or where parts have been repaired, by using an abrasive disc driven by a flexible shaft.
2. **Bearings.** Remove residue and oil stain from bearing races with crocus cloth.

NOTE

Protective parts procedure is used with polished or machined steel parts not protected by cadmium, tin, copper, or other plating or surface treatment. Bare metal surfaces must be free of moisture when protective coating is applied.

3. **Protective Parts.** During repair operations, protect bare steel surfaces from rusting when not actually undergoing repair work. Dip parts in, or spray them with, corrosion preventive compound. Same protective coating may be applied to other metal to prevent rust. Aluminum parts may require protection in regions having a high salt-air content. Steel parts must always be protected.
4. **Electrical Parts.** Replace all broken, worn, or burned electrical wiring. Wires with several broken strands shall be replaced. Broken strands increase resistance of wire and impair efficiency of system.
5. **Hoses.** Replace all broken, frayed, crimped, or soft flexible lines or hoses. Replace stripped or damaged fittings. Replace entire flexible hose if fittings are damaged. Ensure hose clamps do not crimp hoses.
6. **Fasteners.** Replace any bolt, screw, nut, or fitting with damaged threads. Inspect tapped holes for thread damage. If cross-threading or galling is evident, re-tap holes for next oversize screw or stud. When re-tapping will weaken part or when cost of a part makes re-tapping impractical, replace damaged part. Chasing threads with proper size tap or die may often be enough.
7. **Sheet Metal Repair.** Repair minor skin cracks by installing patches.

END OF TASK

ASSEMBLY

GENERAL ASSEMBLY INSTRUCTIONS

1. **Preparation.** Remove grease from parts prior to installation.
2. **Packing Installation.** Lubricate all packing with a thin coating of lubricating oil prior to installation. Slightly stretch packing and place into position. Rotate component on flat surface or uniformly press packing into position.
3. **Gaskets.** To provide added sealing for gaskets, coat both sides with sealant. Remove all traces of previous gasket and sealant before installing new gasket.
4. **Seal Rings.** Coat seal rings with oil and carefully inset into their bores. If a seal ring must be installed over threaded parts, temporarily wrap threads with tape to protect seal ring. Then remove tape.

ASSEMBLY - Continued

GENERAL ASSEMBLY INSTRUCTIONS - Continued

5. **Bearings and Shafts.** During assembly of shafts and bearings in housings, first mount bearing on shaft. Then install assembly by applying force to shaft. When mounting bearings on shafts, always apply force to inner races of bearings.
6. **Bearing Lubrication.** Lubricate bearings before reassembly with type of lubricant normally used in related housing or container. This will provide lubrication during first run-in until lubrication from system can reach bearings.

END OF TASK

INSTALLATION

GENERAL INSTALLATION INSTRUCTIONS

1. **Preparation.** When unpacking items, remove all packing material, barrier paper, tape, plastic bags, protective caps, and protective grease coatings. Handle and store removed components carefully.
2. **Adhesive Sealants and Sealing Compounds.** Use sealants and sealing compounds as required in each maintenance task.
3. **Torquing.**Screws and nuts must be tightened according to values given in, or to specific values given in maintenance tasks. (WP 0071)
4. **Identification Tags.** Put hoses, tubes, lines, and electrical wiring in place by matching identification tags and markings on equipment.
5. **Hoses, Air Lines, and Wiring.** After installing hoses, air lines, and wiring, ensure they do not contact moving parts or component edges. Secure in place, out of way, with cable ties and cushion clips.

END OF TASK

AIR TUBING

GENERAL AIR TUBING ASSEMBLY INSTRUCTIONS

NOTE

- Do not remove tube nuts and flared tube sleeves from air tubing unless there is leakage or other damage to tubes, tube nuts, or flared tube sleeves that make them unserviceable.
- If flared tube sleeve is removed, inspect end of tube connected by tube nut for distortion or other damage that would make it unserviceable. Do not reuse flared tube sleeves.
- All tube nuts and flared tube sleeves are replaced in same manner. Use following procedure to replace all tube nuts and flared tube sleeves.

1. Inspect end of tube (Figure 1, Item 1) for distortion or other damage. If distortion or damage is noted, replace tube (Figure 1, Item 1).

AIR TUBING - Continued

GENERAL AIR TUBING ASSEMBLY INSTRUCTIONS - Continued

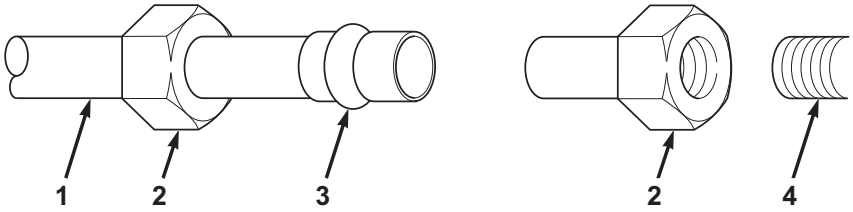


Figure 1. General Air Tubing Repair.

2. Install tube nut (Figure 1, Item 2) and new flared tube sleeve (Figure 1, Item 3) on end of tube (Figure 1, Item 1), and install tube nut (Figure 1, Item 2) on fitting (Figure 1, Item 4). To finish installing flared tube sleeve (Figure 1, Item 3), tighten tube nut (Figure 1, Item 2) by compressing flared tube sleeve (Figure 1, Item 3).

END OF TASK

FOLLOW-ON MAINTENANCE

1. Load BAP on vehicle. (WP 0005)
2. Check for air leaks.

END OF TASK

WELDING

GENERAL WELDING MAINTENANCE

Weldment Points

1. Thoroughly inspect all weldments for cracks, chips, or other damage. BAP areas include the main frame structure, winch frame structure, front pin lock assemblies, rear guides, center roller assembly, and catwalks.
2. Not all weldments are specifically addressed below.

WELDING - Continued

Main Frame Structure

1. A-Frame to Main Rails (Figure 2, Item 1). These welds are those joining A-frame tubes and main rail tubes to angled plate between two tubes. Sound welds in these joints are necessary to ensure safe loading and unloading of loaded BAP. A crack should be repaired before it reaches 1.0 inch (25.4 mm) in length. Combined length of multiple cracks at either A-frame leg joint should not exceed 2.0 inches (50.8 mm).

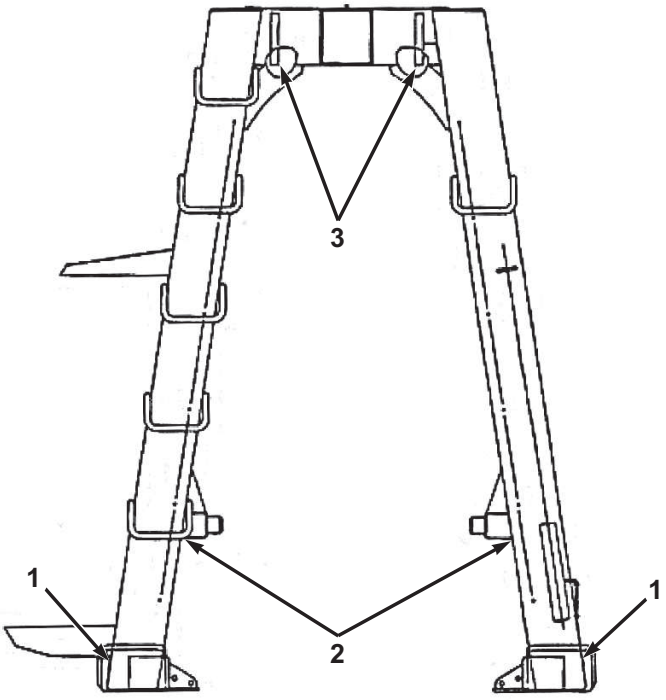


Figure 2. A-Frame.

2. Winch Frame Lower Lock Pin to A-Frame (Figure 2, Item 2). These welds join winch frame lower lock pin outer circumference to A-frame tubes. Sound welds in these joints are necessary to ensure safe loading and unloading of loaded BAP. A crack should be repaired before it reaches 0.75 inch (19.0 mm) in length. Combined length of multiple cracks at either pin joint should not exceed 1.50 inches (38.1 mm).
3. Winch Frame Upper Pin Saddle Plate to A-Frame (Figure 2, Item 3). These welds join winch frame upper pin saddle plate to top beam of A-frame. Sound welds in these joints are necessary for safe unloading of loaded BAP. A crack should be repaired before it reaches 1.5 inches (38.1 mm) in length. Combined length of multiple cracks at either plate joint should not exceed 3.0 inches (76.2 mm).
4. Front Lock Outrigger Tubes to Main Rails (Figure 3, Item 1). These welds join front lock outrigger tubes to main rails. Sound welds in these joints are necessary to ensure safe support of loaded BAP when resting on front feet. A crack should be repaired before it reaches 1.5 inches (38.1 mm) in length. Combined length of multiple cracks at either front outrigger tube joint to main rail should not exceed 2.0 inches (50.8 mm).

WELDING - Continued

Main Frame Structure - Continued

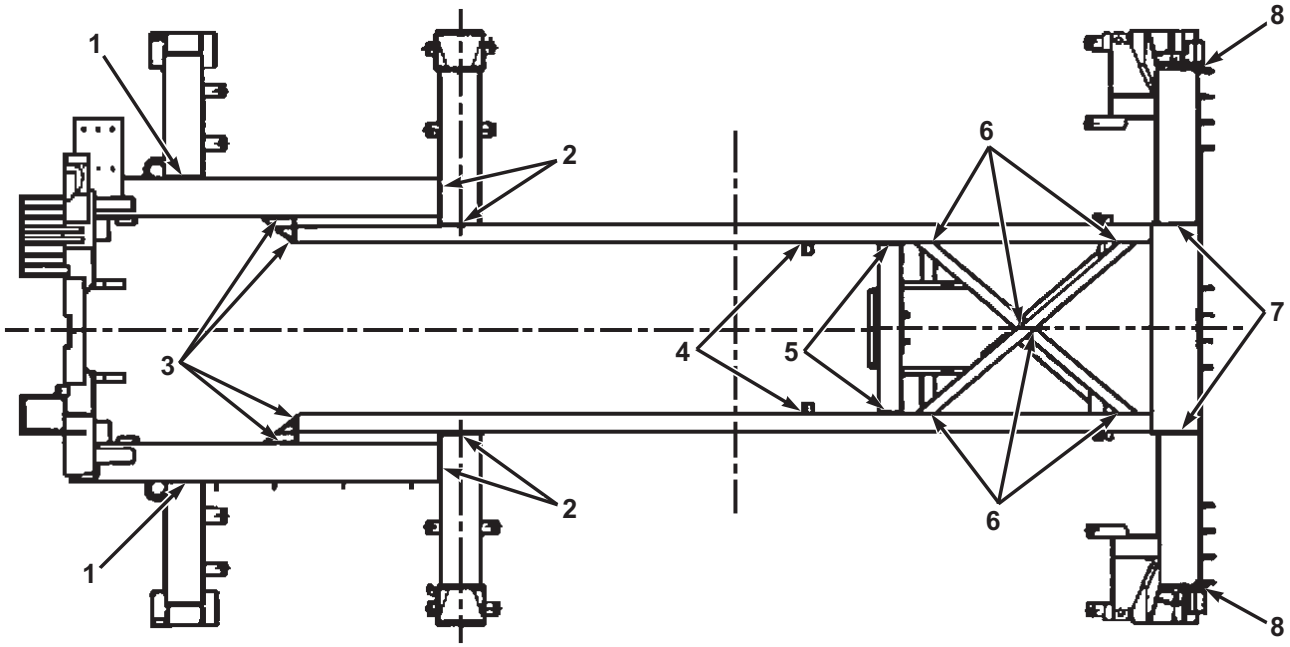


Figure 3. Outriggers and Main Rails.

5. Front Roller Outrigger Tubes to Both Main Rails (Figure 3, Item 2). These welds join front roller outrigger tubes to both front and rear main rail segments. Sound welds in these joints are necessary to ensure safe support of bridge bays during handling and transport. A crack should be repaired before it reaches 1.5 inches (38.1 mm) in length. Combined length of multiple cracks at any one of four tube joints (two for each outrigger) to main rails should not exceed 2.0 inches (50.8 mm).

6. Front Main Rails to Rear Main Rails (Figure 3, Item 3). These welds join front end of rear main rails and front main rails via gusset plates. Sound welds in these joints are necessary to ensure safe support of loaded BAP during handling and transport. A crack should be repaired before it reaches 1.0 inch (25.4 mm) in length. Combined length of multiple cracks at any rail joint should not exceed 2.0 inches (50.8 mm).

7. Rear Holding Locks (DIN Locks) (Figure 3, Item 4). These locks secure BAP to vehicle, preventing it from moving forward or up. These welds join locks to main rails. Sound welds in these joints are necessary to ensure safe transport of loaded BAP on vehicle or on a PLS trailer. A crack should be repaired before it reaches 1.0 inch (25.4 mm) in length. Combined length of multiple cracks at either lock joint should not exceed 2.0 inches (50.8 mm).

8. Center Roller Crossmember to Main Rails (Figure 3, Item 5). These welds join center roller crossmember tube to main rails. Sound welds in these joints are necessary to ensure support of loaded BAP during handling and transport. A crack should be repaired before it reaches 1.0 inch (25.4 mm) in length. Combined length of multiple cracks at either rail joint should not exceed 1.5 inches (38.1 mm).

WELDING - Continued

Main Frame Structure - Continued

9. X-Bracket to X-Brace and to Main Rails (Figure 3, Item 6). These welds join X-brace members and join X-braces to main rails. Sound welds in these joints are necessary to ensure that frame, with load, will remain square during handling and transport. A crack should be repaired before it reaches 1.0 inch (25.4 mm) in length. Combined length of multiple cracks at any X-brace joint should not exceed 2.0 inches (50.8 mm).
10. Rear Beam Outrigger Tubes to Main Rails (Figure 3, Item 7). These welds join rear beam outrigger tubes to gusset plates, which join to main rails and to beam center segment. Sound welds in these joints are necessary to ensure safe support of bridge bays during handling and transport as well as supporting loaded BAP when resting on BAP rear feet. A crack should be repaired before it reaches 1.5 inches (38.1 mm) in length. Combined length of multiple cracks at any one joint should not exceed 2.0 inches (50.8 mm).
11. Rear Roller Axles to Beam End Plates (Figure 3, Item 8). These welds join rear roller axles to beam end plates. Sound welds in these joints are necessary to ensure safe support of bridge bays during handling and transport. A crack should be repaired before it reaches 1.0 inch (25.4 mm) in length. Combined length of multiple cracks at either of the axle joints should not exceed 1.5 inches (38.1 mm).

Winch Frame Structure

1. Bail Bar to Plates (Figure 4, Item 1). These welds join bail bar to plates. Sound welds in these bar joints are necessary to ensure safe handling of bridge bays and loaded BAP. A crack should be repaired before it reaches 1.0 inch (25.4 mm) in length. The combined length of multiple cracks at any joint should not exceed 1.5 inches (38.1 mm).

WELDING - Continued

Winch Frame Structure - Continued

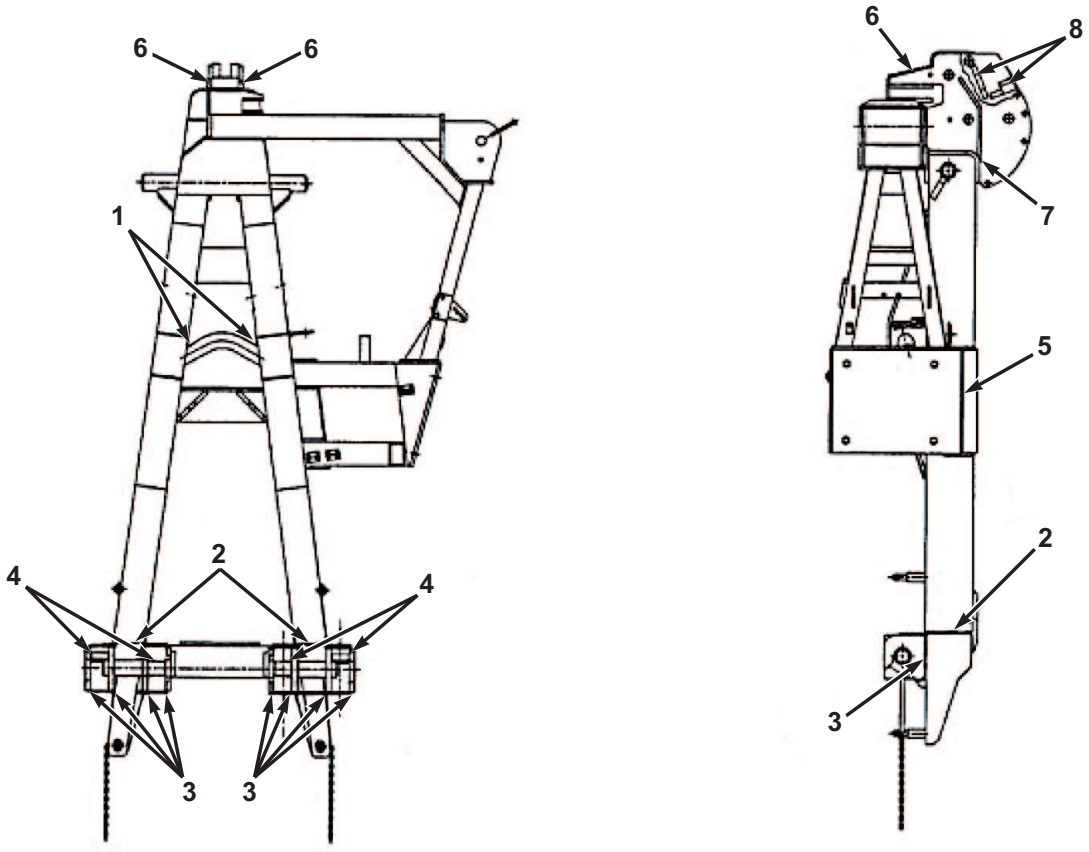


Figure 4. Winch Frame.

2. Bottom Lock Beam to Side Tubes (Figure 4, Item 2). These welds join the bottom lock beam assembly to side tubes. Sound welds in these joints are necessary to ensure safe handling of bridge bays and loaded BAP. A crack should be repaired before it reaches 1.0 inch (25.4 mm) in length. The combined length of multiple cracks at any joint should not exceed 2.0 inches (50.8 mm).

3. Bottom Lock Support and Guide Plates to Beam (Figure 4, Item 3). These welds join the eight bottom lock support and guide plates to the beam. Sound welds in these joints are necessary to ensure safe handling of bridge bays and loaded BAP. A crack should be repaired before it reaches 1.0 inch (25.4 mm) in length. The combined length of multiple cracks at any plate joint should not exceed 2.0 inches (50.8 mm).

4. Bottom Locking Tabs to Pins (Figure 4, Item 4). These welds join locking tabs to bottom lockpins. Sound welds are necessary to ensure safe handling of bridge bays and loaded BAP. A crack should be repaired before it reaches 0.25 inch (6.4 mm) in length. The combined length of multiple cracks at any tab joint should not exceed 0.5 inch (12.7 mm).

5. Winch Mounting Plate to Support Plate (Figure 4, Item 5). These welds join the winch mounting plate to support plate coming from winch frame side tubes. Sound welds in these joints are necessary to ensure safe handling of bridge bays. A crack should be repaired before it reaches 1.0 inch (25.4 mm) in length. The combined length of multiple cracks in this joint should not exceed 2.0 inches (50.8 mm).

6. Sheave Housing Side Plates to Cap Plate (Figure 4, Item 6). These welds join sheave housing side plates to top cap plate. Sound welds in cap plate joints are necessary to ensure safe handling of bridge bays. A crack

WELDING - Continued

Winch Frame Structure - Continued

should be repaired before it reaches 1.0 inch (25.4 mm) in length. The combined length of multiple cracks in cap plate joints should not exceed 2.0 inches (50.8 mm).

7. Sheave Housing Outside Gusset Plates to Base Plate (Figure 4, Item 7). These welds join outside gusset plates to sheave housing base plate. Sound welds in these joints are necessary to ensure safe handling of bridge bays. A crack should be repaired before it reaches 1.0 inch (25.4 mm) in length. The combined length of multiple cracks in any one gusset plate joint should not exceed 2.0 inches (50.8 mm).
8. Sheave Housing Hook Housing Saddle Plates and Supports (Figure 4, Item 8). These welds join winch rope hook housing saddle stop plates and support bars to sheave housing side plates. Sound welds in these joints are necessary to ensure safe handling of bridge bays. A crack should be repaired before it reaches 1.0 inch (25.4 mm) in length. The combined length of multiple cracks should not exceed 1.5 inches (38.1 mm).

Weld Joint/Joint Materials

1. Welding on BAP must be performed when BAP has been removed from vehicle or PLS trailer and bridge bay load has been removed. Different areas of BAP require different weld electrodes.
2. Use guidelines given in Table 5-2 to determine correct weld.

Table 1. Weld Joint Materials

Weld Joint	Joint Materials
Main Frame Structure	
1. A-Frame to Main Rails	ASTM A500, GR B to ASTM A572, GR 50 to ASTM A656, GR 80, TY7
2. Winch Frame Lower Lock Pin to A-Frame	ASTM A331, GR 41L40 to ASTM A500, GR B
3. Winch Frame Upper Pin Saddle Plate to A-Frame	ASTM A572, GR 5 to ASTM A500, GR B
4. Front Lock Outrigger Tubes to Main Rails	ASTM A500, GR B to ASTM A656, GR 80, TY7
5. Front Roller Outrigger Tubes to Both Main Rails	ASTM A500, GR B to ASTM A656, GR 80, TY7
6. Front Main Rails to Rear Main Rails	ASTM A656, GR 80, TY7 to ASTM A588, GR A or to ASTM A656, GR 80, TY7
7. Rear Holding Locks	ASTM A352, GR LCB to ASTM A656, GR 80, TY7
8. Center Roller Crossmember to Main Rails	ASTM A656, GR 80, TY7 to ASTM A588, GR A or to ASTM A656, GR 80, TY7

WELDING - Continued

Weld Joint/Joint Materials - Continued

Table 1. Weld Joint Materials - Continued

Weld Joint	Joint Materials
9. X-Brace to X-Brace and to Main Rails	ASTM A500, GR B to ASTM A500, GR B, or to ASTM A588, GR A or to ASTM A656, GR 80, TY7
10. Rear Beam Outrigger Tubes to Main Rails	ASTM A500, GR B to ASTM A656, GR 80, TY7
11. Rear Roller Axle to Beam End Plate	ASTM A322, GR 8620 to ASTM A572, GR 50
Winch Frame Structure	
1. Bail Bar to Plates	ASTM A322, GR 8620 to ASTM A656, GR 80, TY7
2. Bottom Lock Beam to Side Tubes	ASTM A656, GR 80, TY7 to ASTM A500, GR B
3. Bottom Lock Support and Guide Plates to Beam	ASTM A572, GR 50 to ASTM A656, GR 80, TY7
4. Bottom Locking Tabs to Pins	ASTM A572, GR 50, to ASTM A193, GR B7
5. Winch Mounting Plate to Support Plate	ASTM A656, GR 80, TY7 to ASTM A572, GR 50
6. Sheave Housing Side Plates to Cap Plate	ASTM A572, GR 50 to ASTM A572, GR 50
7. Sheave Housing Outside Gusset Plates to Base Plate	ASTM A572, GR 50 to ASTM A572, GR 50

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
PLS FOOT STOWAGE

INITIAL SETUP:

References
Parts Manual (WP 0073, Figure 3)

Equipment Condition
Engine turned off (TM 9-2320-435-10 or TM 9-2320-425-10). (WP 0076)
Wheels chocked (TM 9-2320-435-10 or TM 9-2320-425-10). (WP 0076)

REMOVAL

1. Remove two hitch pins (Figure 1, Items 1 and 2) from PLS foot (Figure 1, Item 3) and BAP frame bracket (Figure 1, Item 4).

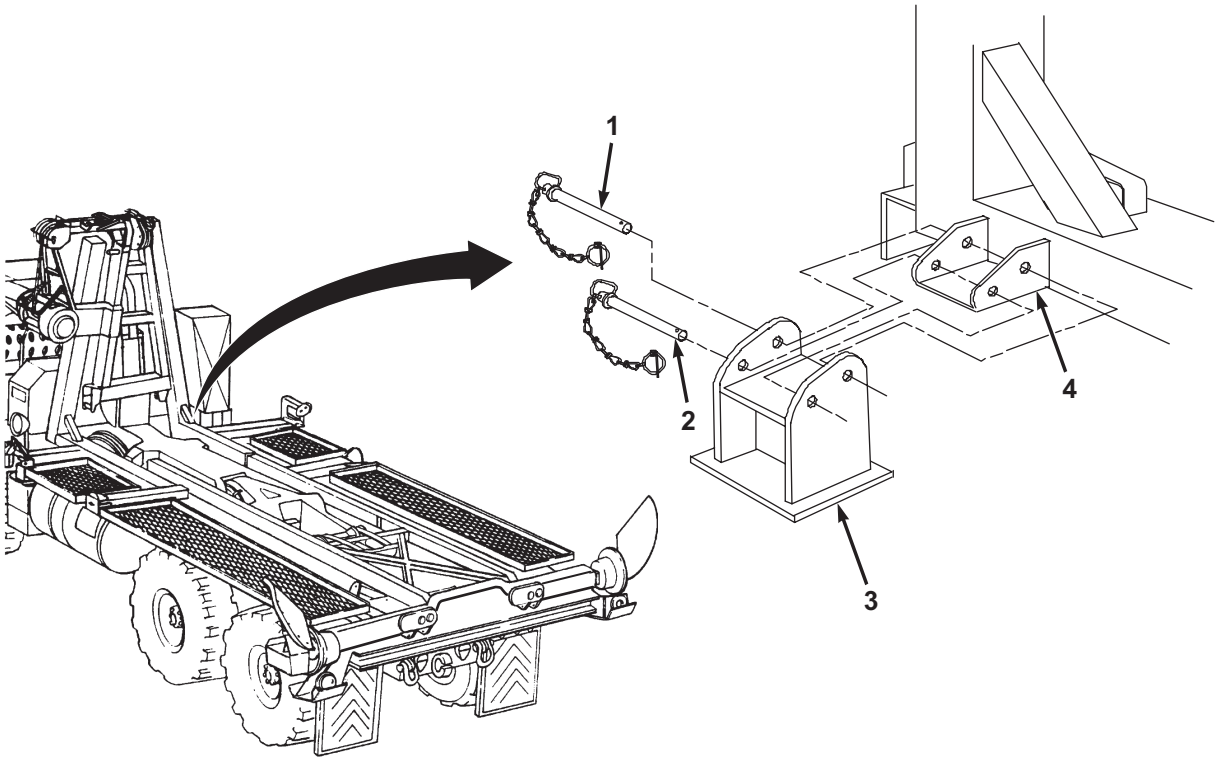


Figure 1. PLS Foot Removal.

2. Remove PLS foot (Figure 1, Item 3) from frame bracket (Figure 1, Item 4).

END OF TASK

STOWAGE

1. Align PLS foot (Figure 2, Item 3) with rear hole in frame bracket (Figure 2, Item 4).

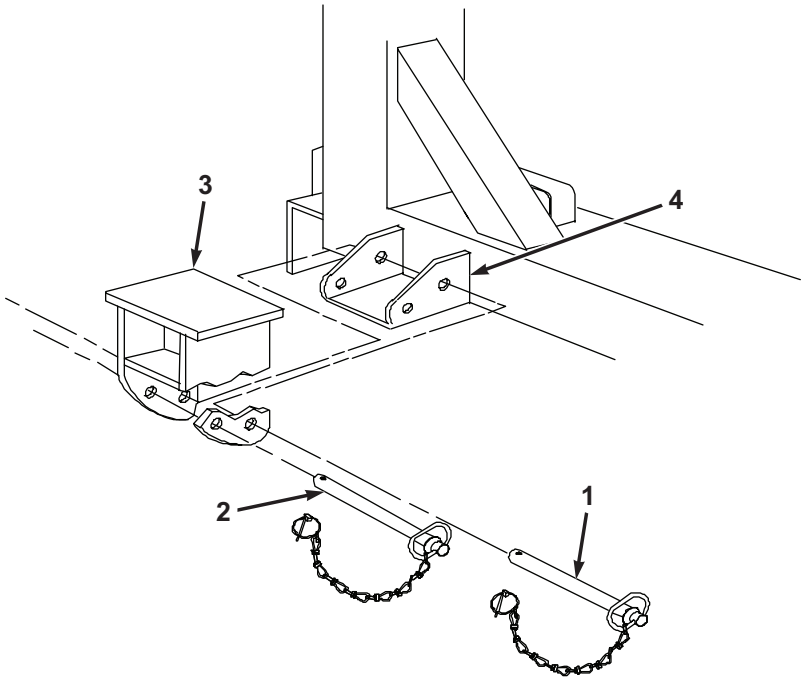


Figure 2. PLS Foot Stowage.

STOWAGE - Continued

NOTE

Ensure hitch pin chains are stored between PLS foot and BAP frame.

2. Install hitch pin (Figure 3, Item 1) in rear hole of PLS foot (Figure 3, Item 3) and frame bracket (Figure 3, Item 4). Install hitch pin (Figure 3, Item 2) in front hole of PLS foot (Figure 3, Item 3) so hitch pin (Figure 3, Item 2) rests on frame bracket (Figure 3, Item 4).

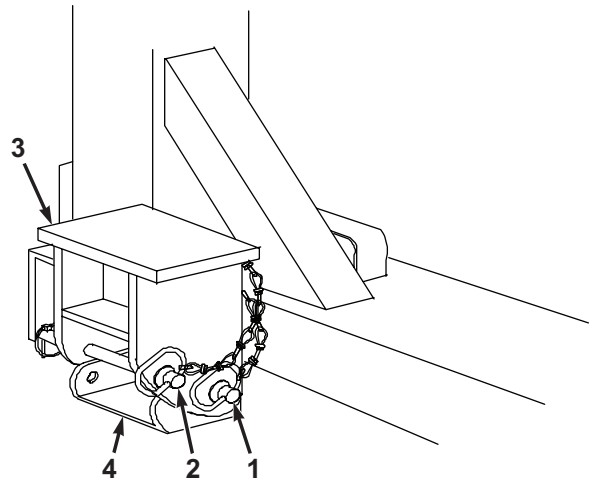


Figure 3. PLS Hitch Pin Installation.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
STENCILS

INITIAL SETUP:

References
MIL-T-704 (WP 0076)

Equipment Condition
Engine turned off. (TM 9-2320-435-10 or TM 9-2320-425-10). (WP 0076)
Wheels chocked. (TM 9-2320-435-10 or TM 9-2320-425-10). (WP 0076)

STENCIL APPLICATION

NOTE

- Stencil locations (four each for TIE DOWN and LIFT, one for CARC) are shown below.
- Apply stencils to clean, painted surfaces only, using CARC black paint.

Paint in accordance with MIL-T-704. For LIFT and CARC stencils, use 1-inch-high characters; for TIE DOWN stencils, use 3/4-inch-high characters.

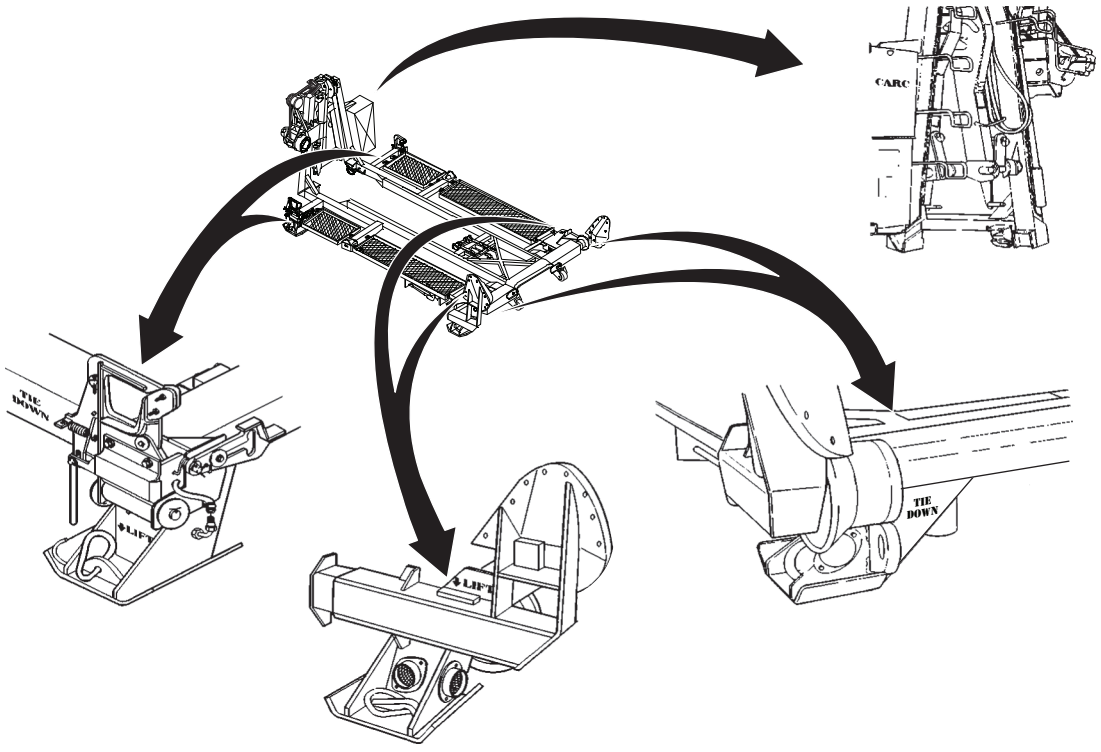


Figure 1. Stencil Application.

END OF TASK

FOLLOW-ON MAINTENANCE

Remove wheel chocks. Refer to TM 9-2320-435-10 or TM 9-2320-425-10

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
CATWALK REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Pan, Drain, 5-Gallon (WP 0078, Table 2, Item 1)
Lifting Device, Minimum Capacity 160 lb (72.6 kg)
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Materials/Parts
Lockwasher (WP 0082, Table 1, Item 41) Qty: 3
Locknut (WP 0082, Table 1, Item 25) Qty: 5

Personnel Required
(2)

References
Parts Manual (WP 0073, Figure 1)
Parts Manual (WP 0073, Figure 22)

Equipment Condition
Hydraulic hand pump removed (rear road-side section of catwalk only). WP 0062
Plunger removed (rear road-side section of catwalk only). WP 0042

REMOVAL

WARNING



A suitable lifting device is required for removing or installing the Bridge Adapter Pallet catwalk because each large catwalk section weighs approximately 160 pounds (72.6 kg) and each small catwalk section weighs approximately 68 pounds (30.8 kg). Failure to comply may result in serious injury or death to personnel.

NOTE

This task is used for front and rear, road-side and curb-side, catwalks. Each section of catwalk is removed in a similar manner, except as noted.

1. With the aid of an assistant, secure lifting device to section of catwalk (Figure 1, Item 1) being removed.

REMOVAL - Continued

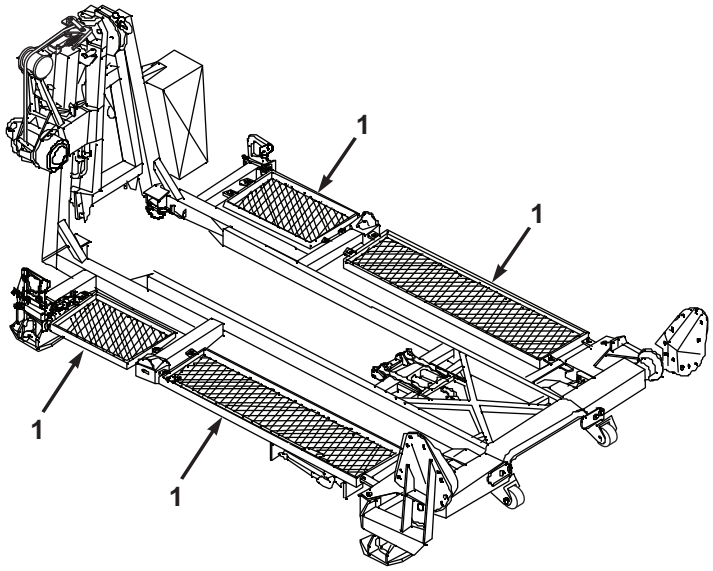


Figure 1. Catwalk Locations.

NOTE

- Perform Steps (2) through (5) and Step (7) only when removing rear road-side section of catwalk.
- Use a drain pan to catch fluid draining from tubes and fittings. Wipe up any spillage with a rag. Handle, store, and dispose of drained fluids in accordance with local policies and procedures.

2. Remove two screws (Figure 2, Item 2), nuts (Figure 2, Item 3), lockwashers (Figure 2, Item 4), and four clamps (Figure 2, Item 5) from catwalk (Figure 2, Item 1) and tube support (Figure 2, Item 6). Discard lockwashers.

REMOVAL - Continued

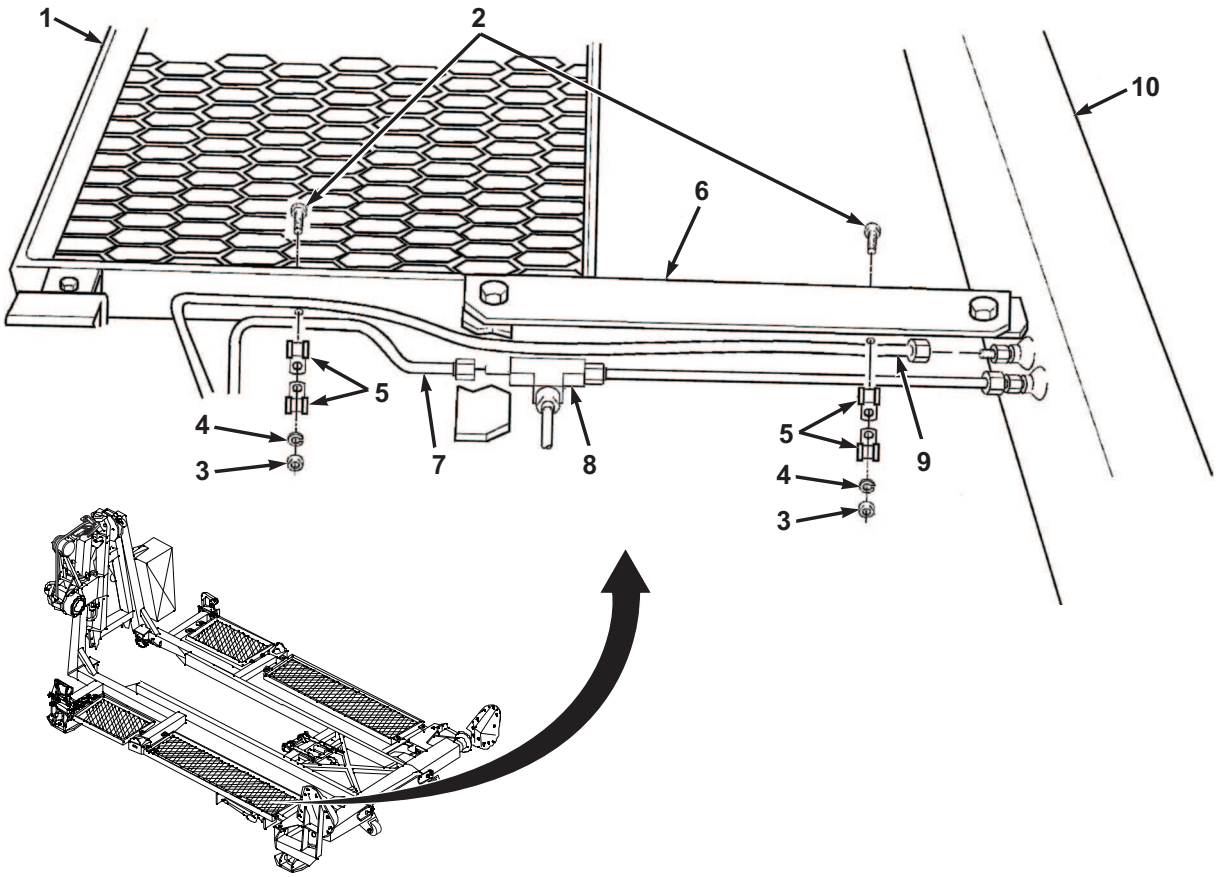


Figure 2. Hydraulic Tubes Removal.

3. Remove hydraulic tube (Figure 2, Item 7) from tee (Figure 2, Item 8).
4. Remove hydraulic tube (Figure 2, Item 9) from frame (Figure 2, Item 10).

REMOVAL - Continued

5. Remove screw (Figure 3, Item 11), retaining clip (Figure 3, Item 12), lockwasher (Figure 3, Item 13), and nut (Figure 3, Item 14) from left rear section of catwalk (Figure 3, Item 1). Discard lockwasher.

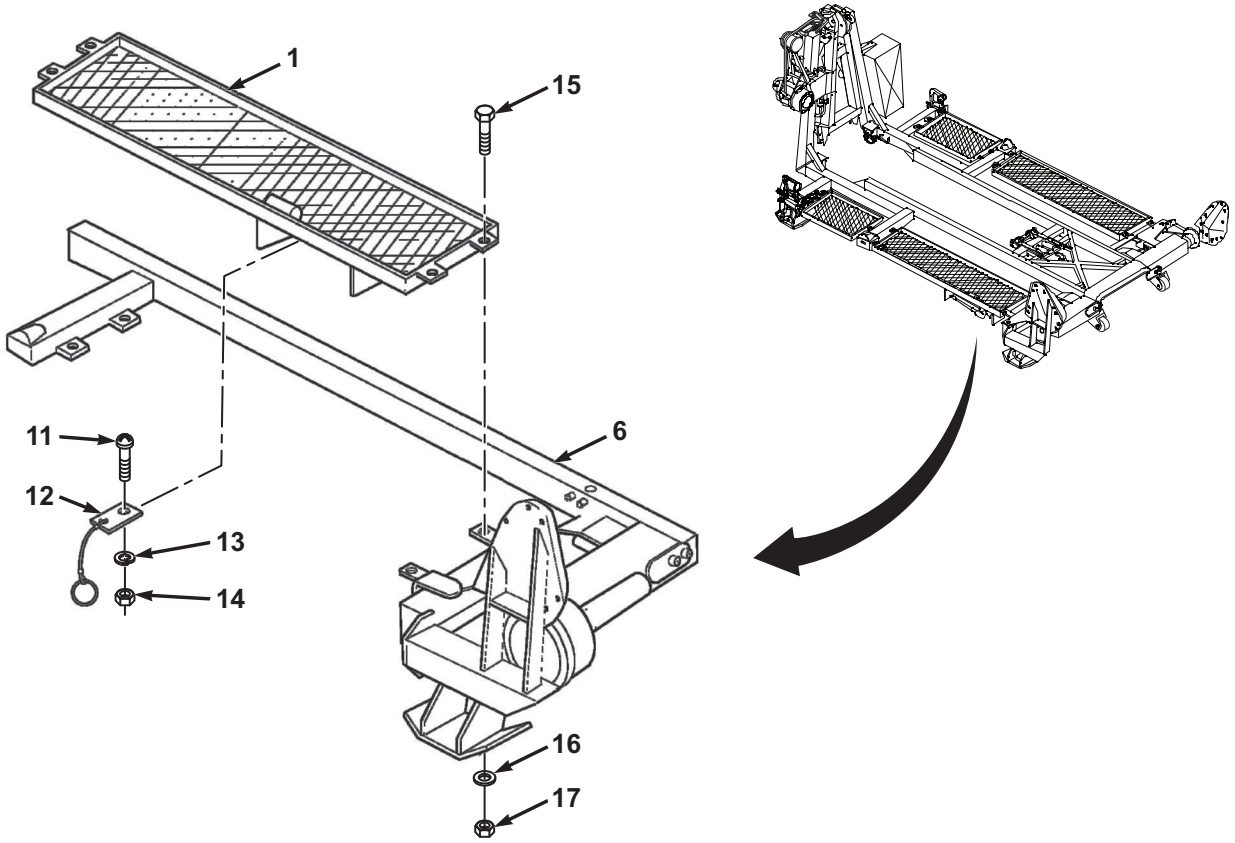


Figure 3. Catwalk Removal.

NOTE

Tube support is found only on rear sections of catwalk.

6. Remove four screws (Figure 3, Item 15), washers (Figure 3, Item 16), and locknuts (Figure 3, Item 17) from catwalk (Figure 3, Item 1) and tube support (Figure 3, Item 6). Discard locknuts.

REMOVAL - Continued

7. Remove screw (Figure 4, Item 18) and locknut (Figure 4, Item 19) from tube support (Figure 4, Item 6). Discard locknut.

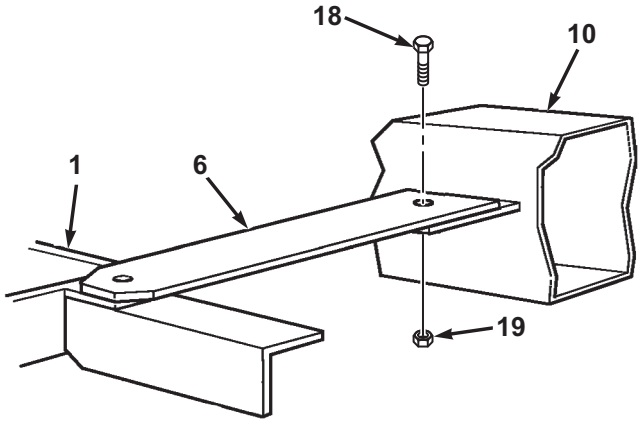


Figure 4. Tube Support Removal.

8. Remove tube support (Figure 4, Item 6) from catwalk (Figure 4, Item 1) and frame (Figure 4, Item 10).
9. With the aid of an assistant, remove section of catwalk (Figure 4, Item 1) from the BAP.

END OF TASK

INSTALLATION

WARNING



A suitable lifting device is required for removing or installing the Bridge Adapter Pallet catwalk because each large catwalk section weighs approximately 160 pounds (72.6 kg) and each small catwalk section weighs approximately 68 pounds (30.8 kg). Failure to comply may result in serious injury or death to personnel.

1. With the aid of an assistant, install section of catwalk (Figure 5, Item 1) on the BAP.

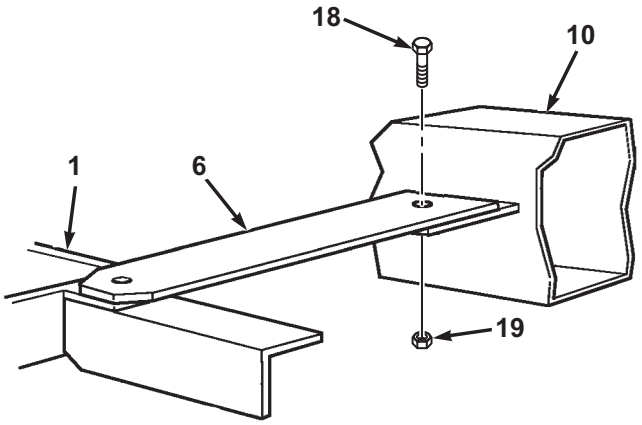


Figure 5. Tube Support Installation.

NOTE

Perform Steps (2) through (8) if installing rear road-side section of catwalk. Perform Step (3) only if installing front section of catwalk.

2. Align holes in ends of tube support (Figure 5, Item 6) and mounting holes in catwalk (Figure 5, Item 1).

NOTE

Tube support is found only on rear sections of catwalk.

3. Install screw (Figure 5, Item 18), locknut (Figure 5, Item 19), and tube support (Figure 5, Item 6) on catwalk (Figure 5, Item 1) and frame (Figure 5, Item 10).

INSTALLATION - Continued

4. Install four screws (Figure 6, Item 15), washers (Figure 6, Item 16), and locknuts (Figure 6, Item 17) on catwalk (Figure 6, Item 1) and tube support (Figure 6, Item 6).

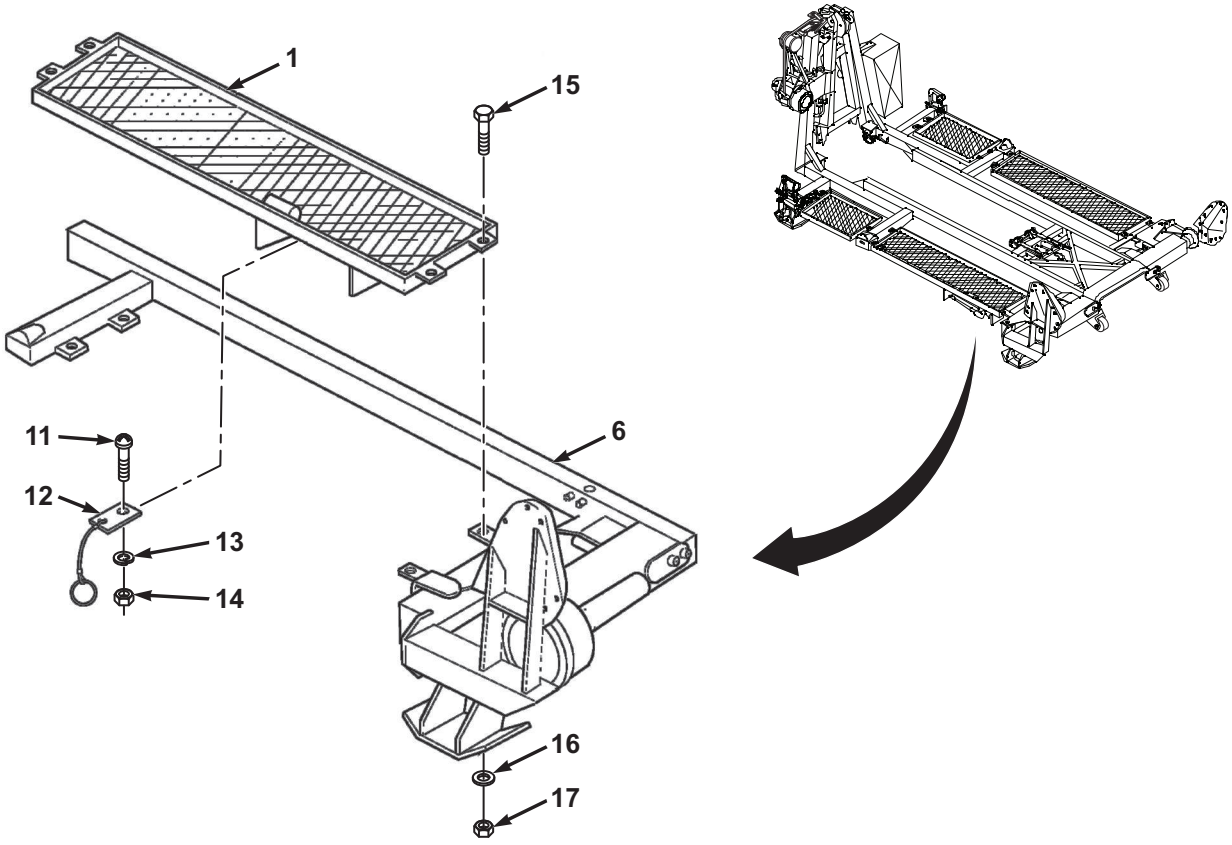


Figure 6. Catwalk Installation.

5. Install screw (Figure 6, Item 11), retaining clip (Figure 6, Item 12), lockwasher (Figure 6, Item 13), and nut (Figure 6, Item 14) on rear road-side section of catwalk (Figure 6, Item 1).

INSTALLATION - Continued

6. Install hydraulic tube (Figure 7, Item 9) on frame (Figure 7, Item 10).

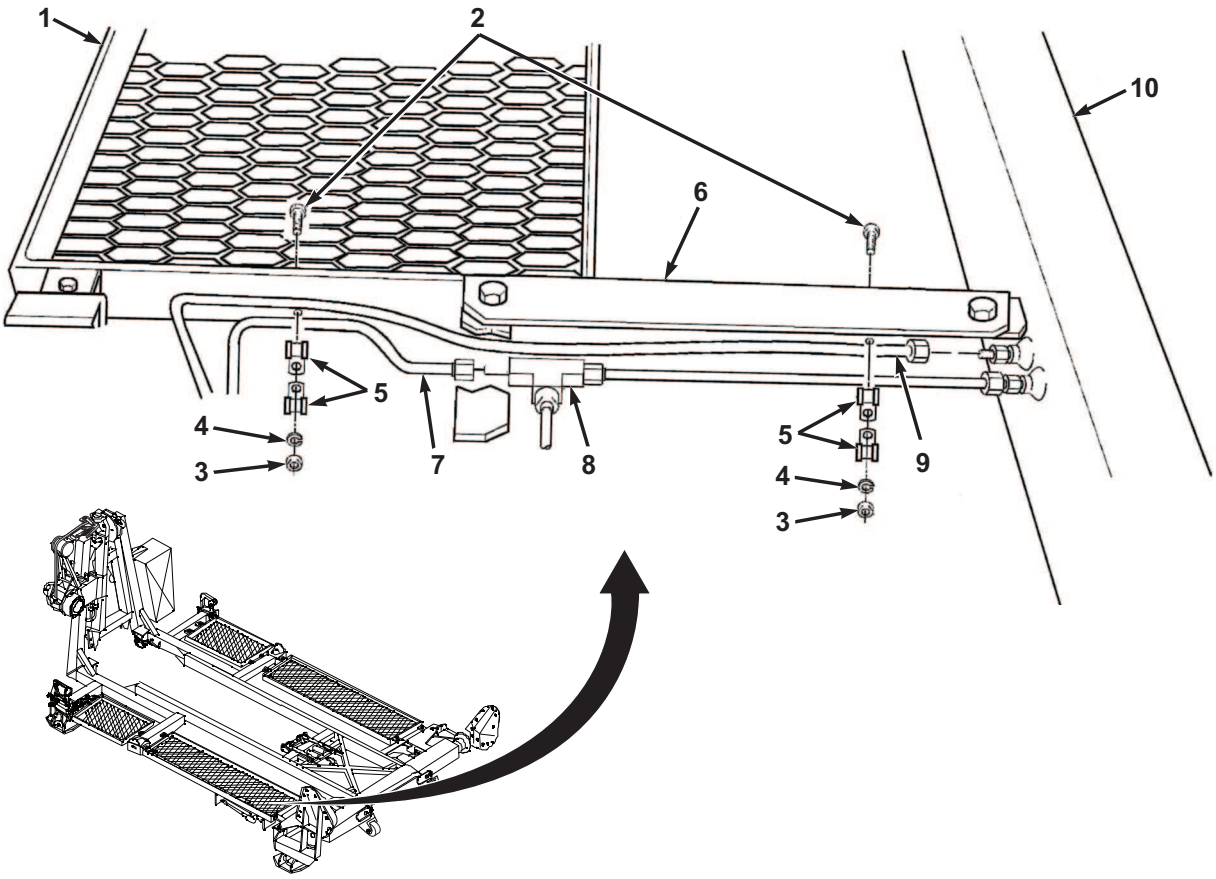


Figure 7. Hydraulic Tubes Installation.

7. Install hydraulic tube (Figure 7, Item 7) on tee (Figure 7, Item 8).
8. Install four clamps (Figure 7, Item 5), two screws (Figure 7, Item 2), nuts (Figure 7, Item 3), and lockwashers (Figure 7, Item 4) on catwalk (Figure 7, Item 1) and tube support (Figure 7, Item 6).

END OF TASK

FOLLOW-ON MAINTENANCE

1. Install hydraulic hand pump. (WP 0062)
2. Install plunger. (WP 0042)

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
PLUNGER REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive (WP 0078, Table 2, Item 2)

Materials/Parts
Spring Pin (WP 0082, Table 1, Item 26)

References
Parts Manual (WP 0073, Figure 1)

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP unloaded from the CBT. (WP 0006)

REMOVAL

1. Remove boat hook (Figure 1, Item 1) from plunger housing (Figure 1, Item 2).

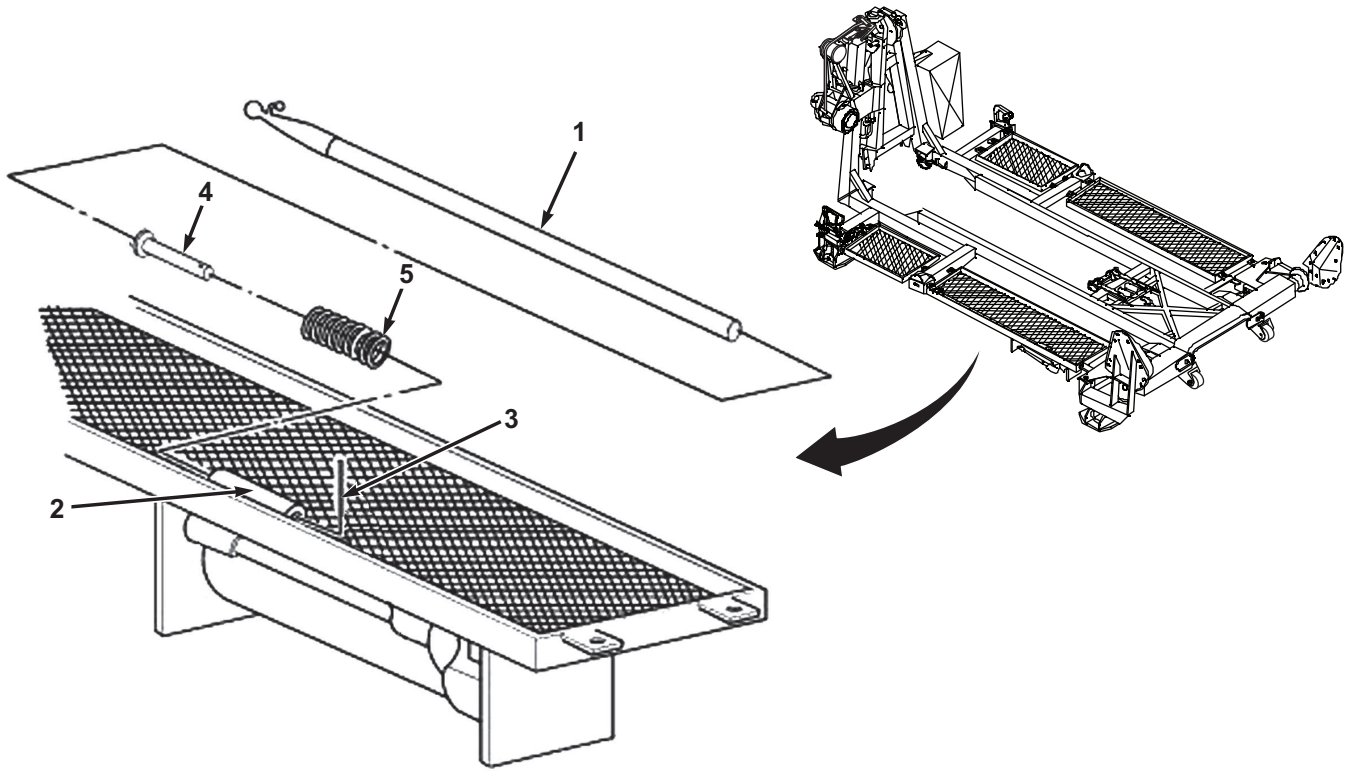


Figure 1. Plunger Removal.

2. Remove spring pin (Figure 1, Item 3) from plunger (Figure 1, Item 4). Discard spring pin.
3. Slide plunger (Figure 1, Item 4) out of plunger housing (Figure 1, Item 2).
4. Remove compression spring (Figure 1, Item 5) from plunger (Figure 1, Item 4).

END OF TASK

INSTALLATION

1. Install compression spring (Figure 2, Item 5) on plunger (Figure 2, Item 4).

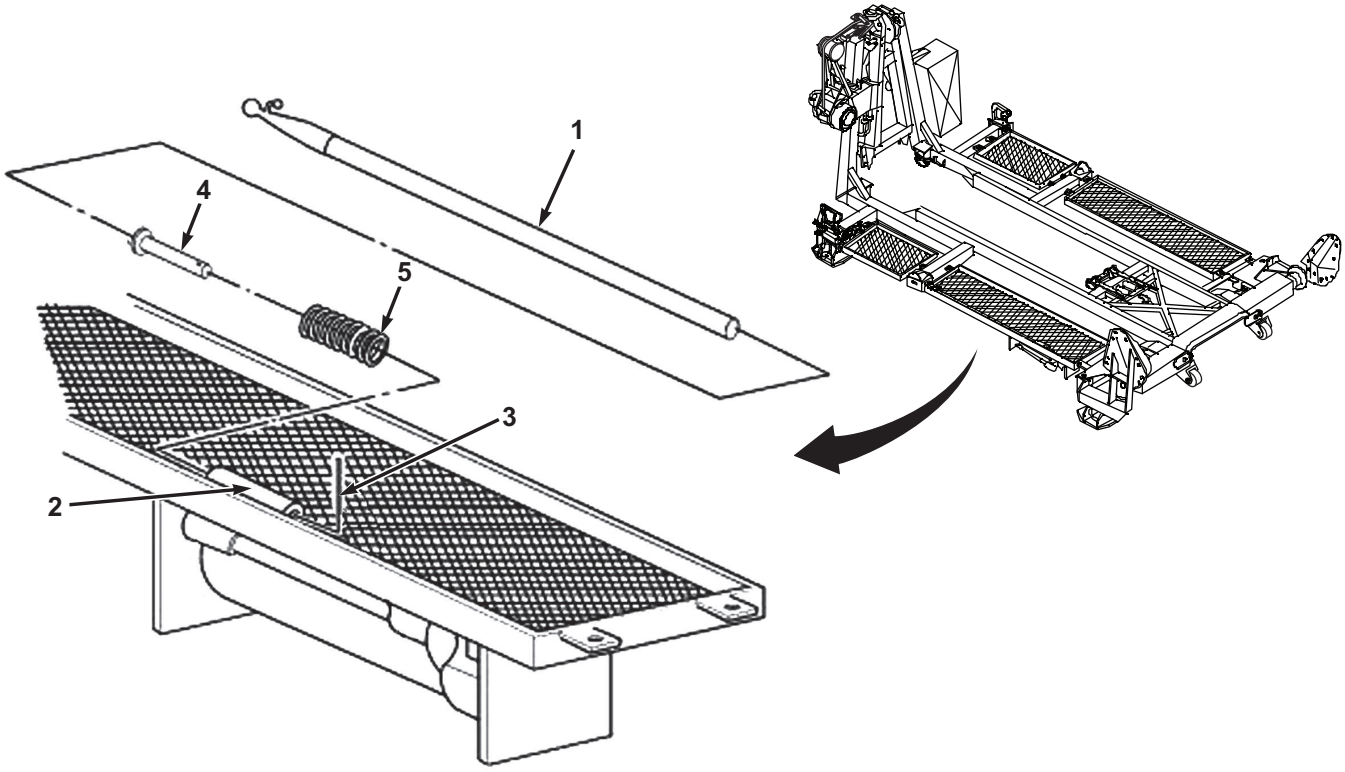


Figure 2. Plunger Installation.

2. Slide plunger (Figure 2, Item 4) and compression spring (Figure 2, Item 5) into plunger housing (Figure 2, Item 2).
3. Install spring pin (Figure 2, Item 3) on plunger (Figure 2, Item 4).
4. Install boat hook (Figure 2, Item 1) in plunger housing (Figure 2, Item 2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
TOOLBOX ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Materials/Parts
Lockwasher (WP 0082, Table 1, Item 50) Qty: 12

Materials/Parts (cont.)
Lockwasher (WP 0082, Table 1, Item 43) Qty: 8
Locknut (WP 0082, Table 1, Item 24) Qty: 4

References
Parts Manual (WP 0073, Figure 2)

REMOVAL

1. Open toolbox door (Figure 1, Item 1).

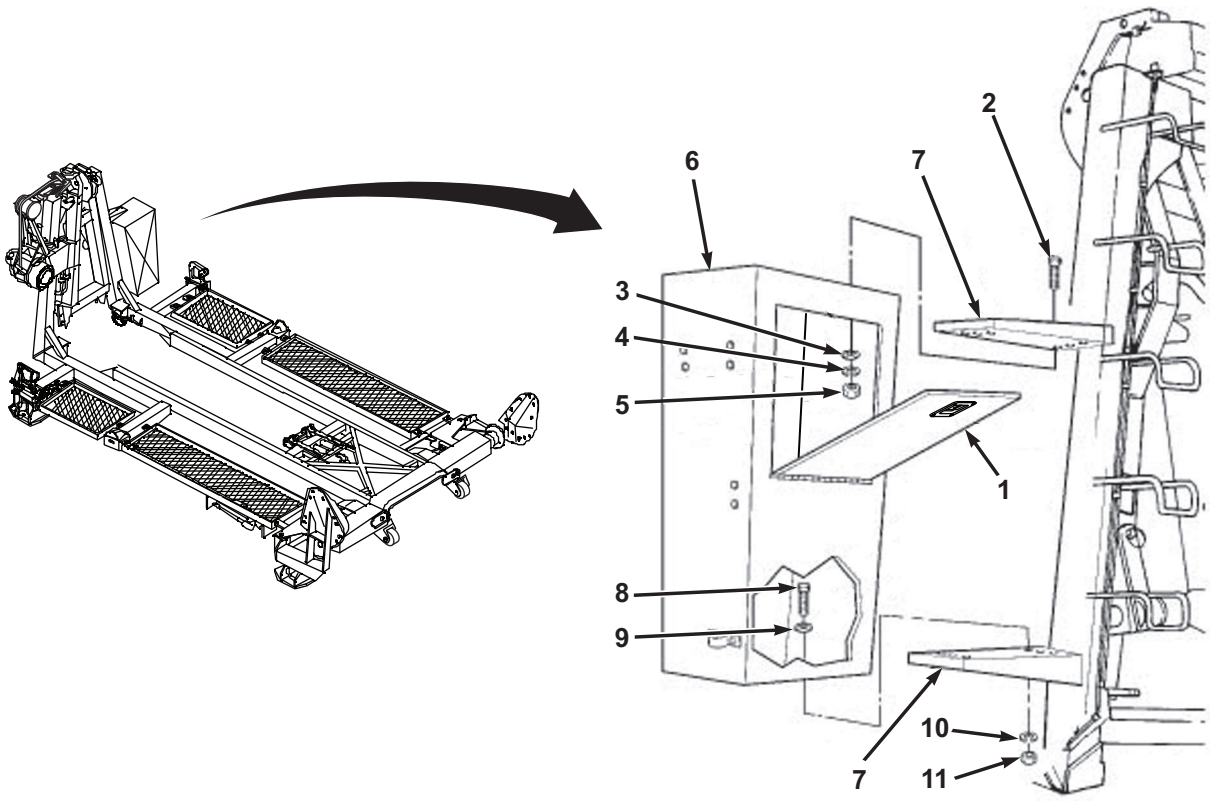


Figure 1. Toolbox Assembly Removal.

2. Remove six bolts (Figure 1, Item 2), washers (Figure 1, Item 3), lockwashers (Figure 1, Item 4), and nuts (Figure 1, Item 5) from toolbox (Figure 1, Item 6) and frame (Figure 1, Item 7). Discard lockwashers.
3. Remove six bolts (Figure 1, Item 8), washers (Figure 1, Item 9), lockwashers (Figure 1, Item 10), and nuts (Figure 1, Item 11) from toolbox (Figure 1, Item 6) and frame (Figure 1, Item 7). Discard lockwashers.

REMOVAL - Continued

4. Remove toolbox (Figure 1, Item 6) from frame (Figure 1, Item 7).

END OF TASK

DISASSEMBLY

1. Remove two bolts (Figure 2, Item 12), lockwashers (Figure 2, Item 13), locknuts (Figure 2, Item 14), and T-wrench bracket (Figure 2, Item 15) from toolbox (Figure 2, Item 6). Discard lockwashers and locknuts.

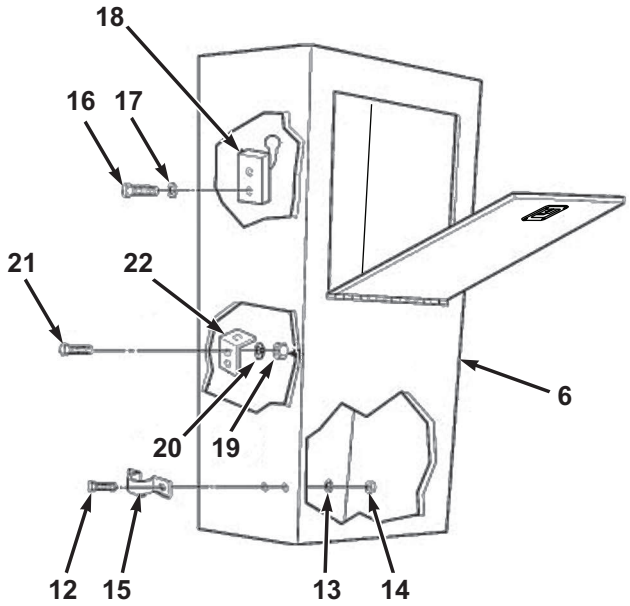


Figure 2. Toolbox Disassembly.

2. Remove four bolts (Figure 2, Item 16), lockwashers (Figure 2, Item 17), and two hooks (Figure 2, Item 18) from toolbox (Figure 2, Item 6). Discard lockwashers.
3. Remove two locknuts (Figure 2, Item 19), lockwashers (Figure 2, Item 20), bolts (Figure 2, Item 21), and bracket (Figure 2, Item 22) from toolbox (Figure 2, Item 6). Discard locknuts and lockwashers.

END OF TASK

ASSEMBLY

1. Install bracket (Figure 3, Item 22) on toolbox (Figure 3, Item 6) with two bolts (Figure 3, Item 21), locknuts (Figure 3, Item 19), and lockwashers (Figure 3, Item 20).

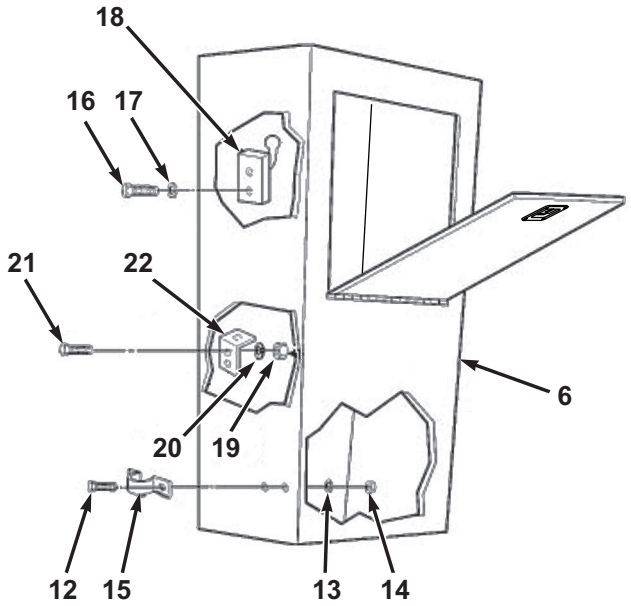


Figure 3. Toolbox Assembly.

2. Install two hooks (Figure 3, Item 18) on toolbox (Figure 3, Item 6) with four bolts (Figure 3, Item 16) and lockwashers (Figure 3, Item 17).
3. Install T-wrench bracket (Figure 3, Item 15) on toolbox (Figure 3, Item 6) with two bolts (Figure 3, Item 12), lockwashers (Figure 3, Item 13), and locknuts (Figure 3, Item 14).

END OF TASK

INSTALLATION

1. Install toolbox (Figure 4, Item 6) on frame (Figure 4, Item 7), aligning toolbox and frame mounting holes.

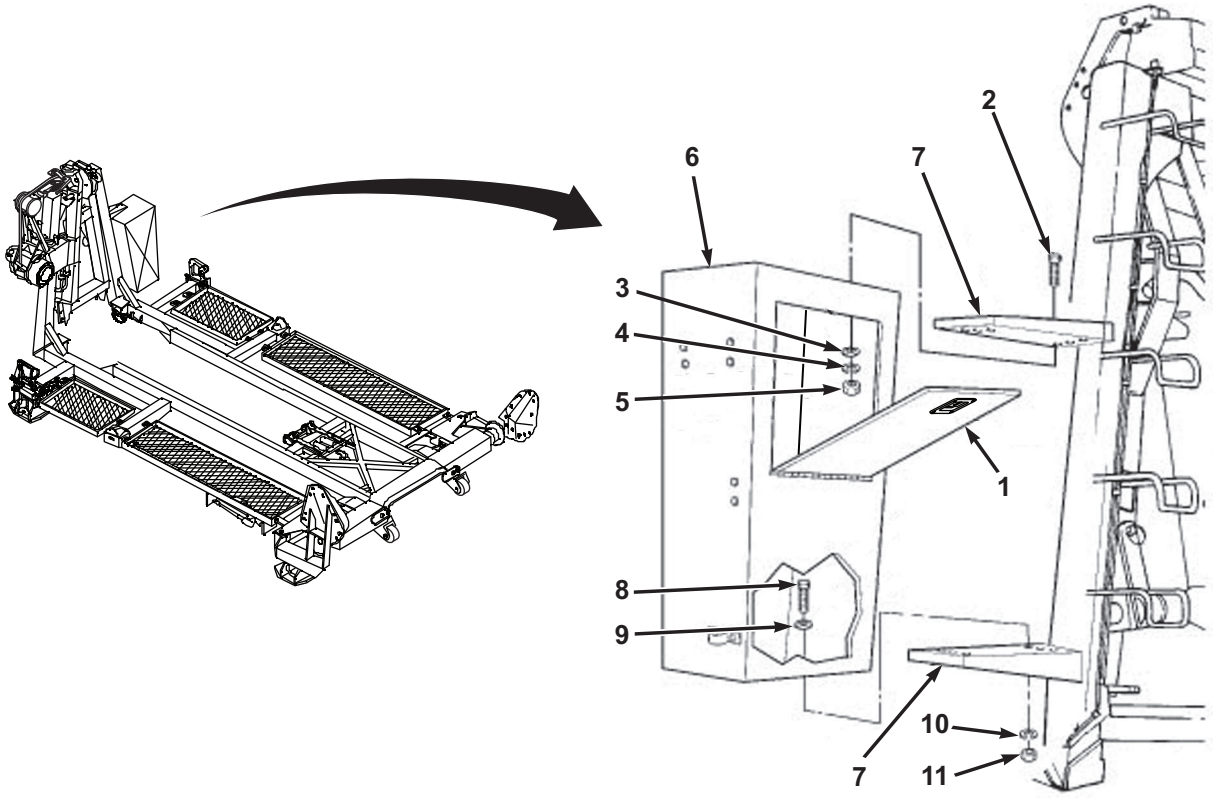


Figure 4. Toolbox Assembly Installation.

2. Install six bolts (Figure 4, Item 8), washers (Figure 4, Item 9), lockwashers (Figure 4, Item 10), and nuts (Figure 4, Item 11) on toolbox (Figure 4, Item 6) and frame (Figure 4, Item 7).
3. Install six bolts (Figure 4, Item 2), washers (Figure 4, Item 3), lockwashers (Figure 4, Item 4), and nuts (Figure 4, Item 5) and toolbox (Figure 4, Item 6) on frame (Figure 4, Item 7).
4. Close toolbox door (Figure 4, Item 1).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
CENTER ROLLER REPAIR

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Materials/Parts
Lockwasher (WP 0082, Table 1, Item 50) Qty: 1
Spring Pin (WP 0082, Table 1, Item 27) Qty: 4

References
Parts Manual (WP 0073, Figure 4)

Equipment Condition
Center roller hydraulic cylinders and hoses removed. (WP 0060)

REMOVAL

1. Remove screw (Figure 1, Item 1), lockwasher (Figure 1, Item 2), straight-headed pin (Figure 1, Item 3), center roller assembly (Figure 1, Item 4), and two thrust washers (Figure 1, Item 5) from center roller carriage (Figure 1, Item 6). Discard lockwasher.

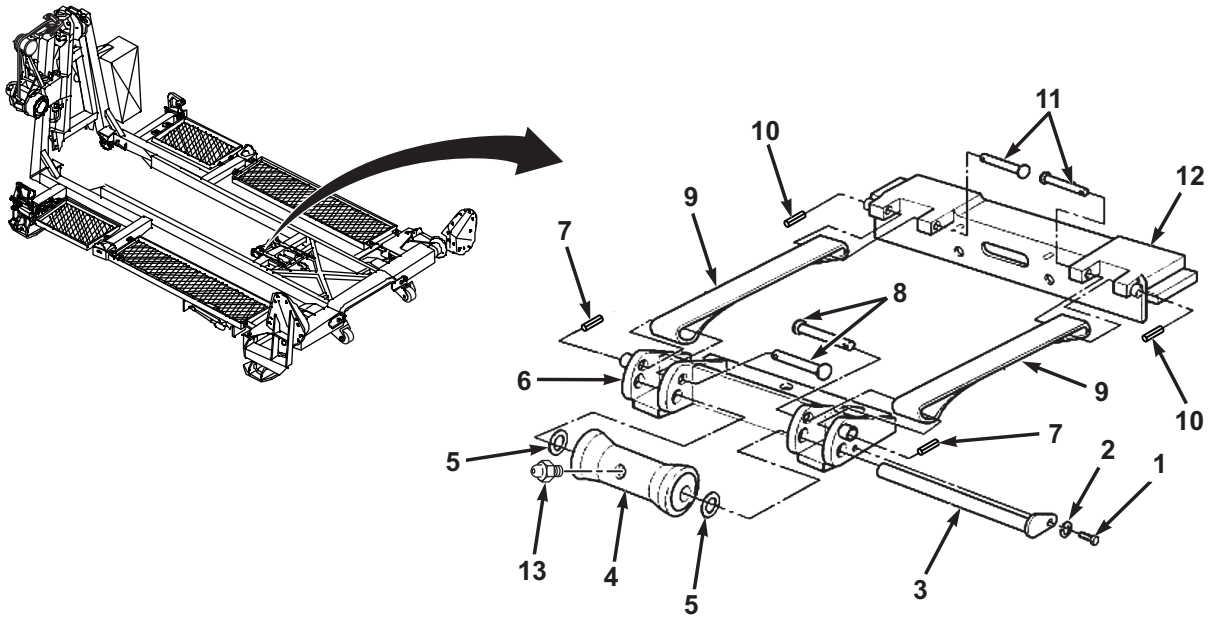


Figure 1. Center Roller Removal.

2. Remove two spring pins (Figure 1, Item 7) from two front strap pins (Figure 1, Item 8). Remove two strap pins (Figure 1, Item 8) and pull straps (Figure 1, Item 9) from center roller carriage (Figure 1, Item 6). Remove center roller carriage (Figure 1, Item 6) from the BAP. Discard spring pins.

3. Remove two spring pins (Figure 1, Item 10) from two rear strap pins (Figure 1, Item 11). Remove two strap pins (Figure 1, Item 11) and pull straps (Figure 1, Item 9) from rear cylinder carriage (Figure 1, Item 12). Remove rear cylinder carriage (Figure 1, Item 12) from the BAP. Discard spring pins.

REMOVAL - Continued

4. Remove lubrication fitting (Figure 1, Item 13) from center roller assembly (Figure 1, Item 4).

END OF TASK

CLEANING

1. Refer to General Maintenance Instructions (WP 0038) for general cleaning instructions.
2. Lubricate parts in accordance with Lubrication Instructions (WP 0070).

END OF TASK

INSPECTION

Refer to General Maintenance Instructions (WP 0038) for general inspection instructions.

END OF TASK

INSTALLATION

1. Install lubrication fitting (Figure 2, Item 13) in center roller assembly (Figure 2, Item 4).

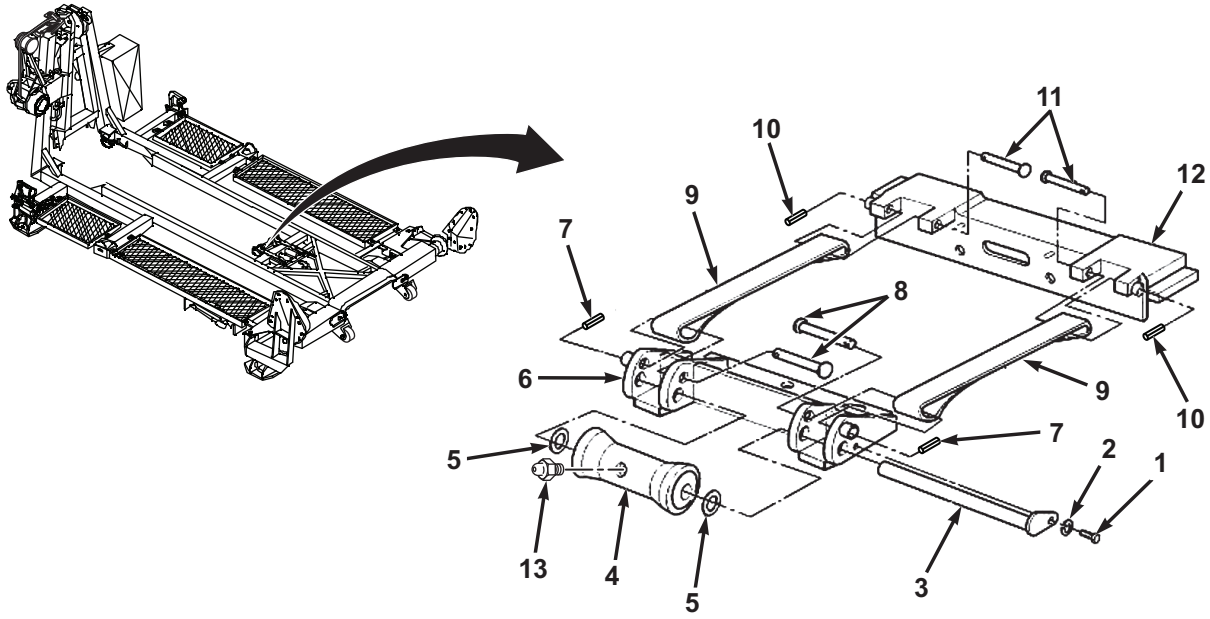


Figure 2. Center Roller Installation.

2. Place rear cylinder carriage (Figure 2, Item 12) on the BAP. Install two rear strap pins (Figure 2, Item 11), spring pins (Figure 2, Item 10), and pull straps (Figure 2, Item 9) on rear cylinder carriage (Figure 2, Item 12).
3. Place center roller carriage (Figure 2, Item 6) on the BAP. Install two front strap pins (Figure 2, Item 8) in pull straps (Figure 2, Item 9) and center roller carriage (Figure 2, Item 6). Install two spring pins (Figure 2, Item 7) on front strap pins (Figure 2, Item 8).
4. Install pin (Figure 2, Item 3), two thrust washers (Figure 2, Item 5), and center roller assembly (Figure 2, Item 4) on center roller carriage (Figure 2, Item 6).

INSTALLATION - Continued

5. Install screw (Figure 2, Item 1) and lockwasher (Figure 2, Item 2) to secure pin (Figure 2, Item 3) on center roller carriage (Figure 2, Item 6).

END OF TASK

FOLLOW-ON MAINTENANCE

Install center roller hydraulic cylinders and hoses. (WP 0060)

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
REAR GUIDE REPAIR

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Materials/Parts
Locknut (WP 0082, Table 1, Item 24) Qty: 11
Lockwasher (WP 0082, Table 1, Item 50) Qty: 5
Cotter Pin (WP 0082, Table 1, Item 38)
Locknut (WP 0082, Table 1, Item 25)
Spring Pin (WP 0082, Table 1, Item 28)

References
Parts Manual (WP 0073, Figure 5)

References (cont.)
WP 0038
WP 0070

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP removed from the CBT. (WP 0006)

REMOVAL

WARNING



Support BAP rear guide in place when removing pivot pin. Failure to comply may result in serious injury or death to personnel.

NOTE

- Rear guide latch handle must be in locked position and rear guide in full open position before performing task.
- This task can be used for either curb-side or road-side rear guide. Road side is shown.

1. Remove 11 screws (Figure 1, Item 1) and locknuts (Figure 1, Item 2) from rear guide pad (Figure 1, Item 3) and rear guide (Figure 1, Item 4). Discard locknuts.

REMOVAL - Continued

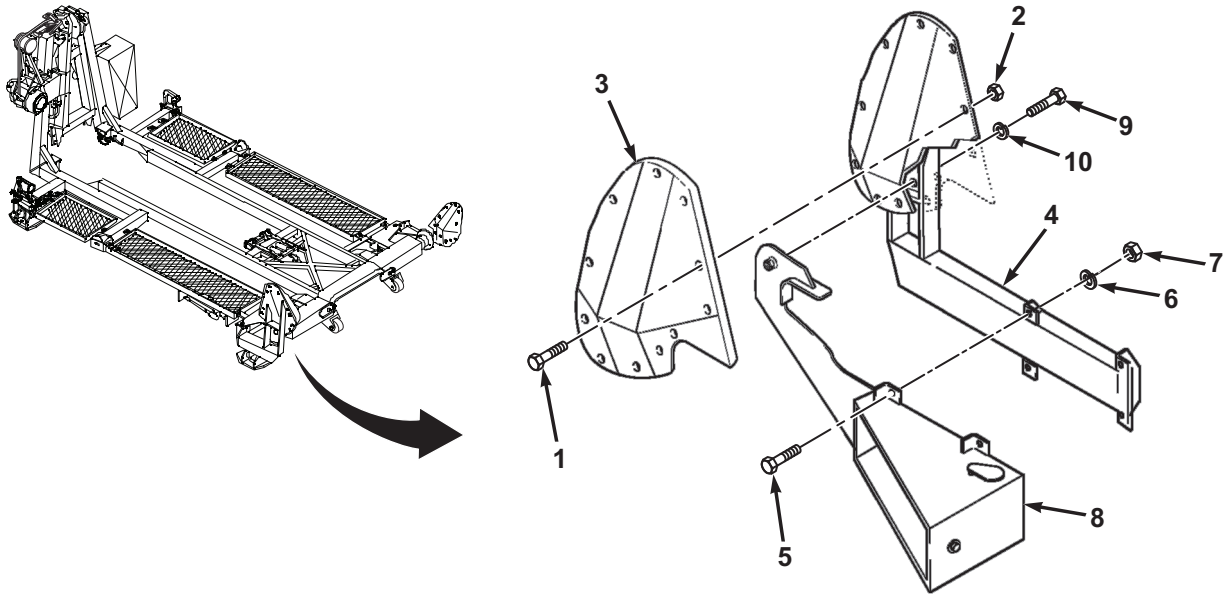


Figure 1. Rear Guide Removal.

2. Remove rear guide pad (Figure 1, Item 3) from rear guide (Figure 1, Item 4).
3. Remove four screws (Figure 1, Item 5), lockwashers (Figure 1, Item 6), and nuts (Figure 1, Item 7) from lock bracket (Figure 1, Item 8) and rear guide (Figure 1, Item 4). Discard lockwashers.
4. Remove screw (Figure 1, Item 9) and lockwasher (Figure 1, Item 10) from rear guide (Figure 1, Item 4) and lock bracket (Figure 1, Item 8). Remove rear guide (Figure 1, Item 4) from lock bracket (Figure 1, Item 8). Discard lockwasher.
5. Remove cotter pin (Figure 2, Item 11) and washer (Figure 2, Item 12) from pivot pin (Figure 2, Item 13). Tap pivot pin (Figure 2, Item 13) out of BAP frame (Figure 2, Item 14). Discard cotter pin.

REMOVAL - Continued

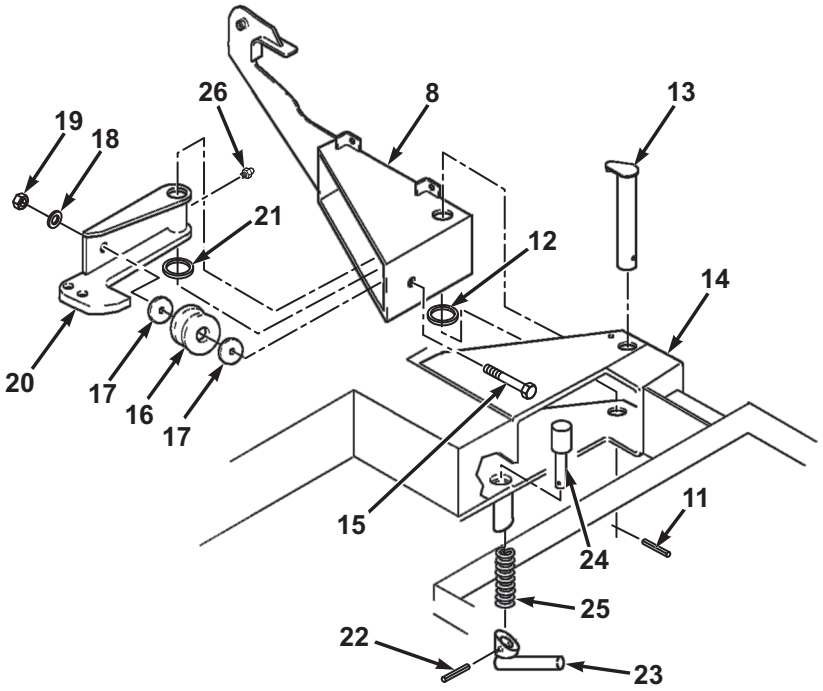


Figure 2. Reaction Bracket Removal.

6. Remove screw (Figure 2, Item 15), rubber bumper (Figure 2, Item 16), two spacers (Figure 2, Item 17), washer (Figure 2, Item 18), and locknut (Figure 2, Item 19) from reaction bracket (Figure 2, Item 20) and lock bracket (Figure 2, Item 8). Discard locknut.
7. Remove reaction bracket (Figure 2, Item 20) and washer (Figure 2, Item 21) from lock bracket (Figure 2, Item 8).
8. Remove spring pin (Figure 2, Item 22) from latch handle (Figure 2, Item 23). Remove latch handle (Figure 2, Item 23) from latch pin (Figure 2, Item 24). Discard spring pin.
9. Remove latch pin (Figure 2, Item 24) from frame (Figure 2, Item 14).
10. Remove spring (Figure 2, Item 25) from latch pin (Figure 2, Item 24).

NOTE

Perform Step (11) if grease fitting is damaged.

11. Remove grease fitting (Figure 2, Item 26) from reaction bracket (Figure 2, Item 20).

END OF TASK

CLEANING

1. Refer to General Maintenance Instructions (WP 0038) for general cleaning instructions.
2. Lubricate pivot pin (Figure 2, Item 13) and latch pin (Figure 2, Item 24) in accordance with Lubrication Instructions (WP 0070).

END OF TASK

INSPECTION

1. Refer to General Maintenance Instructions (WP 0038) for general inspection instructions.

NOTE

Rear guide pad prevents metal-to-metal contact between the BAP and bridge bay sections during launch/recovery operations.

2. Inspect rear guide pad (Figure 4, Item 3) for damage and/or wear. Replace rear guide pad (Figure 4, Item 3) if worn within 1/16 inch (1.6 mm) from head of screws (Figure 4, Item 1) or exposes metal on rear guide (Figure 4, Item 4).

END OF TASK

INSTALLATION

NOTE

Perform Step (1) if grease fitting was removed.

1. Install grease fitting (Figure 3, Item 26) on reaction bracket (Figure 3, Item 20).
2. Install spring (Figure 3, Item 25) on latch pin (Figure 3, Item 24).

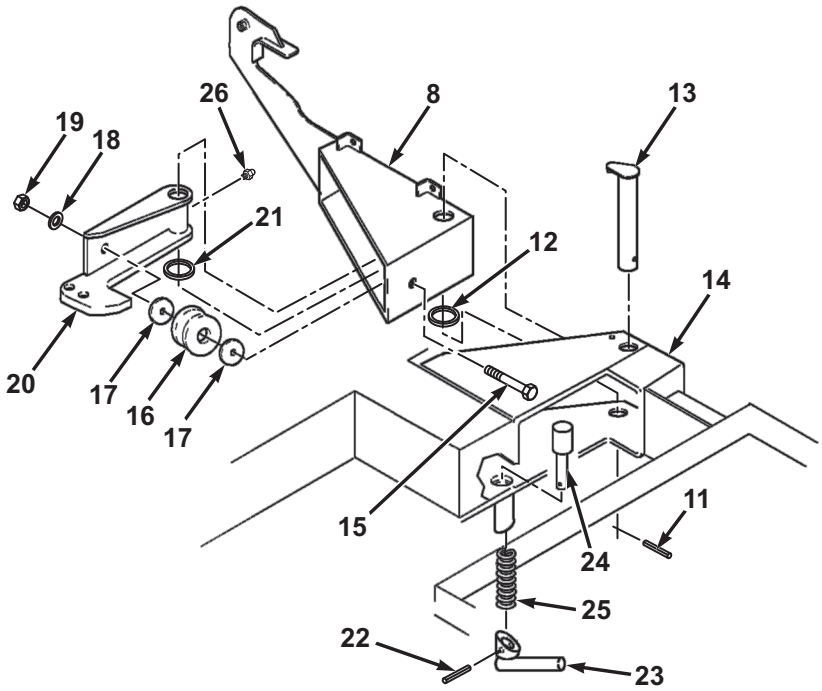


Figure 3. Reaction Bracket Installation.

3. Install latch pin (Figure 3, Item 24) in frame (Figure 3, Item 14).
4. Install latch handle (Figure 3, Item 23) on latch pin (Figure 3, Item 24), and install spring pin (Figure 3, Item 22) in latch handle (Figure 3, Item 23).
5. Install reaction bracket (Figure 3, Item 20) and washer (Figure 3, Item 21) on lock bracket (Figure 3, Item 8).

INSTALLATION - Continued

6. Install screw (Figure 3, Item 15), rubber bumper (Figure 3, Item 16), two spacers (Figure 3, Item 17), washer (Figure 3, Item 18), and locknut (Figure 3, Item 19) on reaction bracket (Figure 3, Item 20) and lock bracket (Figure 3, Item 8).
7. Install lock bracket (Figure 3, Item 8), washer (Figure 3, Item 12), screw (Figure 3, Item 9), and lockwasher (Figure 3, Item 10) in rear guide (Figure 3, Item 4).
8. Tap pivot pin (Figure 3, Item 13) into frame (Figure 3, Item 14).
9. Install cotter pin (Figure 3, Item 11) on pivot pin (Figure 3, Item 13).
10. Install lock bracket (Figure 4, Item 8) on rear guide (Figure 4, Item 4) with four screws (Figure 4, Item 5), lockwashers (Figure 4, Item 6), and nuts (Figure 4, Item 7).

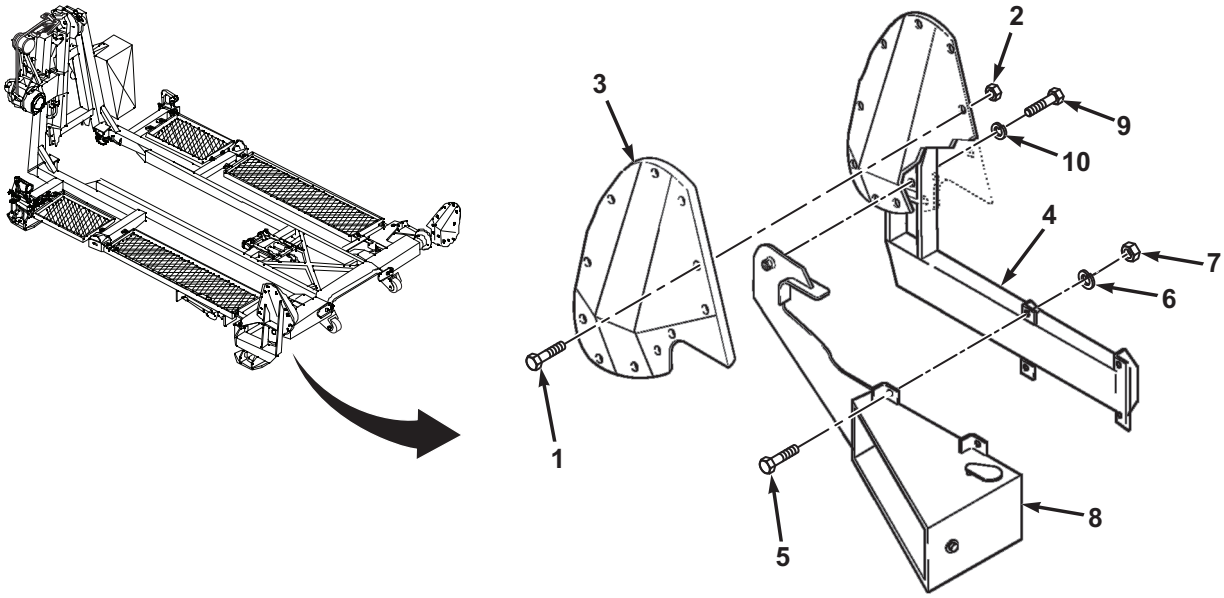


Figure 4. Rear Guide Installation.

11. Install rear guide pad (Figure 4, Item 3) on rear guide (Figure 4, Item 4) with 11 screws (Figure 4, Item 1) and locknuts (Figure 4, Item 2).

END OF TASK

ADJUSTMENT

NOTE

With rear guide in fully closed position, gap between rear guide and rear roller should be 1/4 inch (6.3 mm).

1. With rear guide (Figure 5, Item 4) in fully closed position, measure the gap between rear guide (Figure 5, Item 4) and rear roller (Figure 5, Item 27).

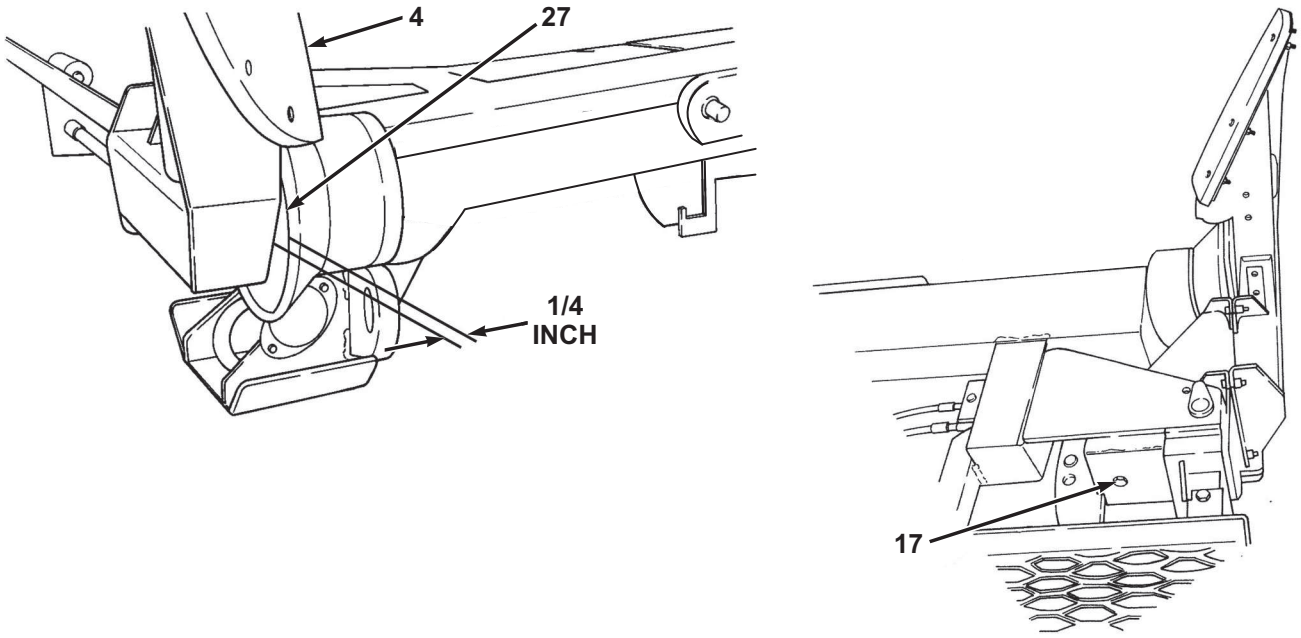


Figure 5. Rear Guide Adjustment.

2. If gap is more than 1/4 inch (6.3 mm), turn screw (Figure 5, Item 17) clockwise to decrease gap. If gap is less than 1/4 inch (6.3 mm), turn screw (Figure 5, Item 17) counterclockwise to increase gap.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
FRONT ROLLER ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Materials/Parts
Lockwasher (WP 0082, Table 1, Item 42) Qty: 2

References
Parts Manual (WP 0073, Figure 6)

References (cont.)
WP 0038
WP 0070

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP unloaded from the CBT. (WP 0006)

REMOVAL

1. Remove two screws (Figure 1, Item 1) and lockwashers (Figure 1, Item 2) securing shaft cap (Figure 1, Item 3) to roller housing (Figure 1, Item 4). Discard lockwashers.

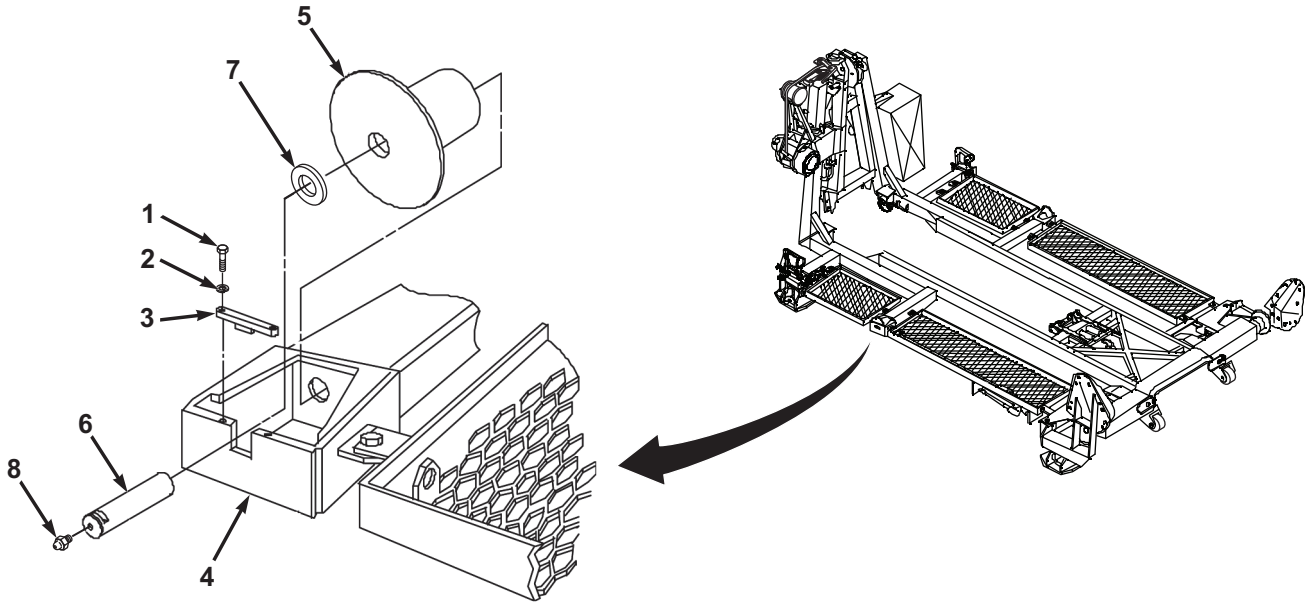


Figure 1. Front Roller Assembly Removal.

2. Using one hand to support front roller (Figure 1, Item 5), slide shaft (Figure 1, Item 6) out of roller housing (Figure 1, Item 4), thrust washer (Figure 1, Item 7), and roller (Figure 1, Item 5).
3. Remove front roller (Figure 1, Item 5) and thrust washer (Figure 1, Item 7) from roller housing (Figure 1, Item 4).

REMOVAL - Continued

NOTE

Perform Step (4) if grease fitting is damaged.

4. Remove grease fitting (Figure 1, Item 8) from shaft (Figure 1, Item 6).

END OF TASK

CLEANING

Refer to General Maintenance Instructions (WP 0038) for general cleaning instructions.

END OF TASK

INSPECTION

Refer to General Maintenance Instructions (WP 0038) for general inspection instructions.

END OF TASK

INSTALLATION

NOTE

Perform Step (1) if grease fitting was removed.

1. Install grease fitting (Figure 2, Item 8) in shaft (Figure 2, Item 6).

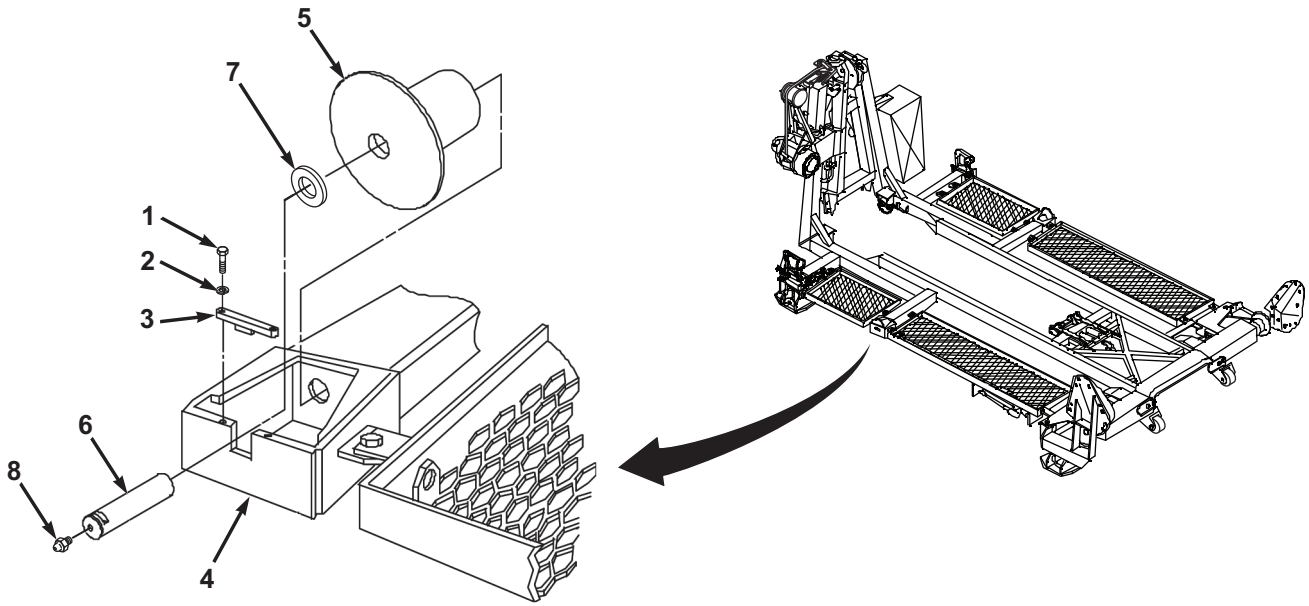


Figure 2. Front Roller Assembly Installation.

2. Install front roller (Figure 2, Item 5) in roller housing (Figure 2, Item 4).
3. Insert shaft (Figure 2, Item 6) partway into hole in roller housing (Figure 2, Item 4), and slide thrust washer (Figure 2, Item 7) onto shaft (Figure 2, Item 6).

INSTALLATION - Continued

4. Using one hand to hold roller (Figure 2, Item 5) in alignment with shaft (Figure 2, Item 6), slide shaft (Figure 2, Item 6) through roller (Figure 2, Item 5). Ensure grease fitting (Figure 2, Item 8) and slot in shaft cap (Figure 2, Item 3) are facing out.
5. Align slot in shaft (Figure 2, Item 6) with edge of roller housing (Figure 2, Item 4).
6. Insert shaft cap (Figure 2, Item 3) in slot and align with holes in roller housing (Figure 2, Item 4).
7. Insert two screws (Figure 2, Item 1) through two lockwashers (Figure 2, Item 2) and into roller housing (Figure 2, Item 4).
8. Lubricate roller assembly (WP 0070).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
REAR ROLLER ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Materials/Parts
Lockwasher (WP 0082, Table 1, Item 45) Qty: 2

References
Parts Manual (WP 0073, Figure 6)

References (cont.)
WP 0038
WP 0070

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP unloaded from the CBT. (WP 0006)
Rear guide in full open position. (WP 0008)

REMOVAL

1. Remove two bolts (Figure 1, Item 1), lockwashers (Figure 1, Item 2), and plate clamp (Figure 1, Item 3) from axle (Figure 1, Item 4). Discard lockwashers.

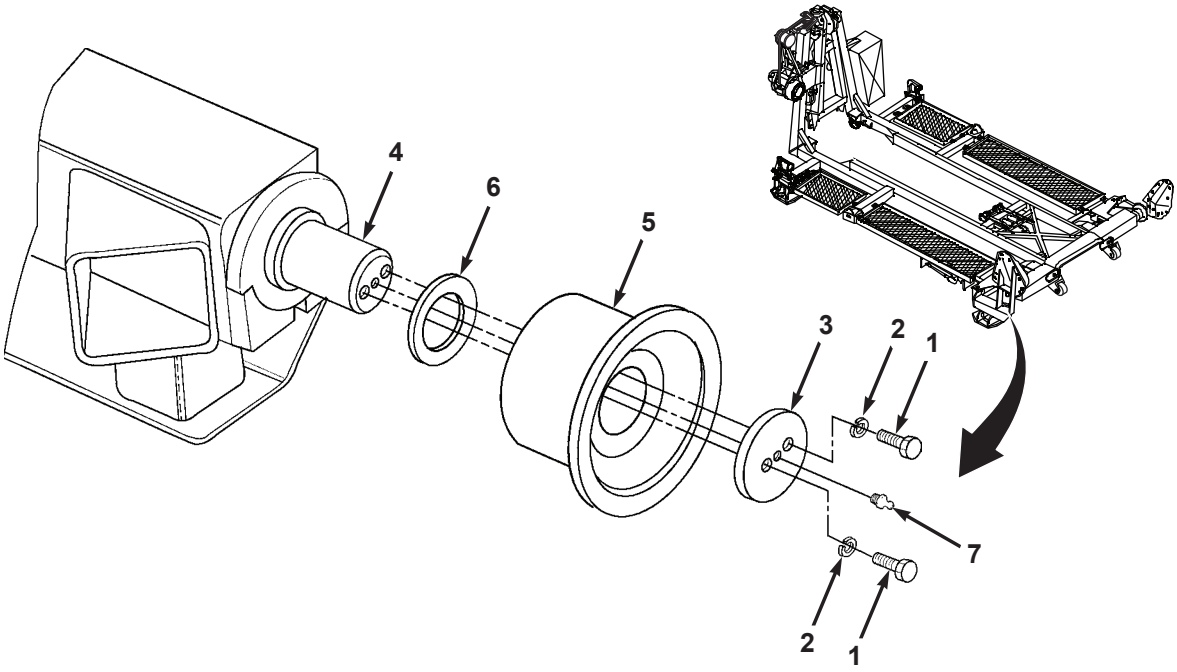


Figure 1. Rear Roller Assembly Removal.

2. Remove rear roller assembly (5) and shim (6) from axle (4).
3. Remove grease fitting (7) from end of axle (4).

END OF TASK

CLEANING

Refer to General Maintenance Instructions (WP 0038) for general cleaning instructions.

END OF TASK

INSPECTION

Refer to General Maintenance Instructions (WP 0038) for general inspection instructions.

END OF TASK

INSTALLATION

1. Install grease fitting (Figure 2, Item 7) on end of axle (Figure 2, Item 4).

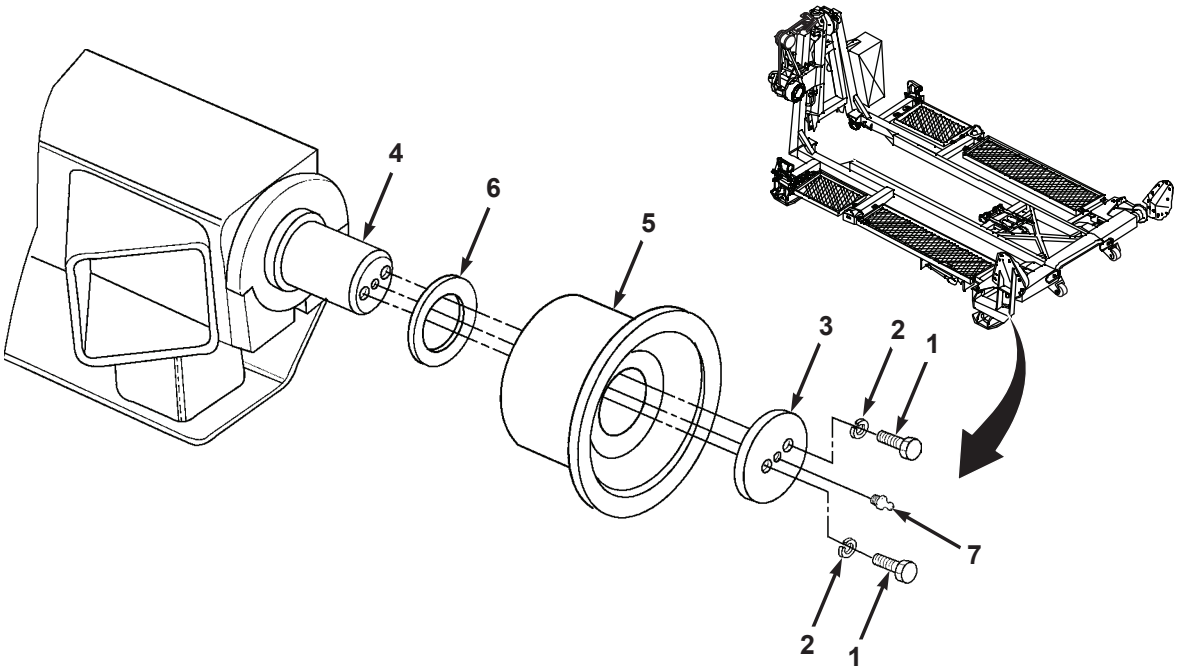


Figure 2. Rear Roller Assembly Installation.

2. Install shim (Figure 2, Item 6) and rear roller assembly (Figure 2, Item 5) on axle (Figure 2, Item 4).
3. Install plate clamp (Figure 2, Item 3) on end of axle (Figure 2, Item 4), and align holes in plate clamp (Figure 2, Item 3) with holes in axle (Figure 2, Item 4).
4. Insert two bolts (Figure 2, Item 1) and lockwashers (Figure 2, Item 2) in plate clamp (Figure 2, Item 3).
5. Lubricate rear roller assembly (WP 0070).

END OF TASK

FOLLOW-ON MAINTENANCE

Put rear guide in stowed position. (WP 0005)

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
REAR BUMPER ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive (WP 0078, Table 2, Item 2)

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP unloaded from the CBT. (WP 0006)

Materials/Parts
Cotter Pin (WP 0082, Table 1, Item 36)

References
Parts Manual (WP 0073, Figure 7)
WP 0070

REMOVAL

NOTE

- This task is for older model BAPs only, new model BAPs not equipped with rear bumper assembly. Repair and/or replacement is at the discretion of the Unit Commander.
- This task can be used for the road-side, curb-side, or middle roller bumpers. The middle roller bumpers are shown.

1. Remove cotter pin (Figure 1, Item 1) from bumper shaft (Figure 1, Item 2). Discard cotter pin.

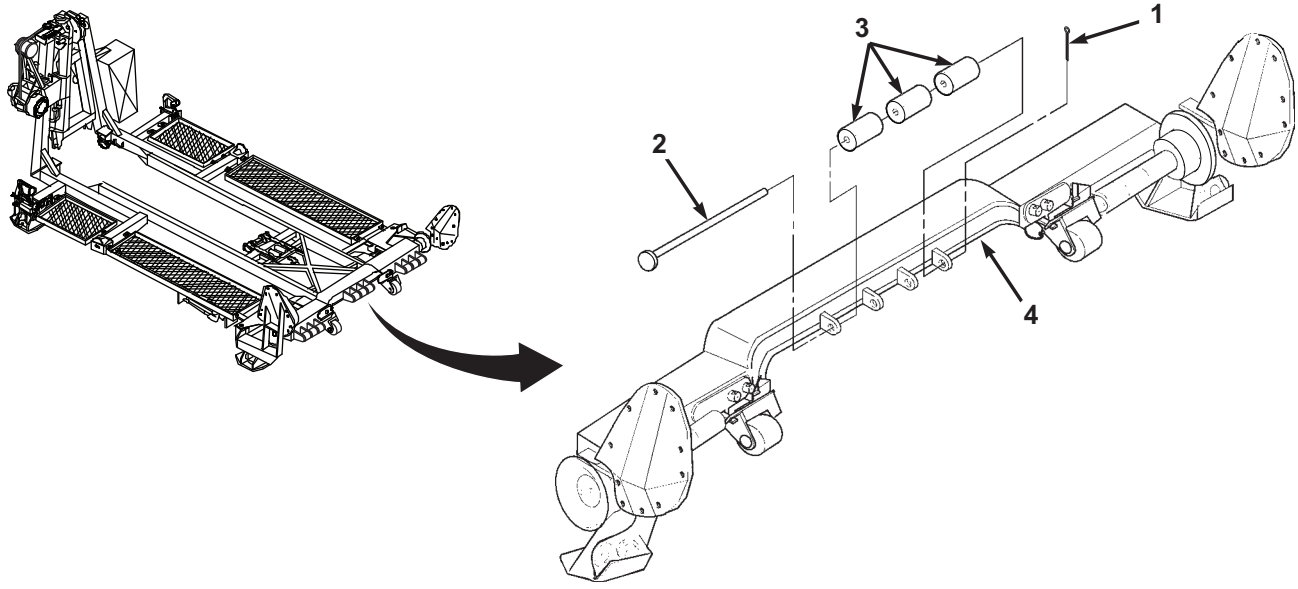


Figure 1. Rear Bumper Assembly Removal.

2. Remove bumper shaft (Figure 1, Item 2) and three roller bumpers (Figure 1, Item 3) from BAP frame (Figure 1, Item 4).

REMOVAL - Continued

3. Lubricate bumper shaft (Figure 1, Item 2) and bumpers (Figure 1, Item 3) in accordance with (WP 0070).

END OF TASK

INSTALLATION

1. Install three roller bumpers (Figure 2, Item 3) and bumper shaft (Figure 2, Item 2) on BAP frame (Figure 2, Item 4).

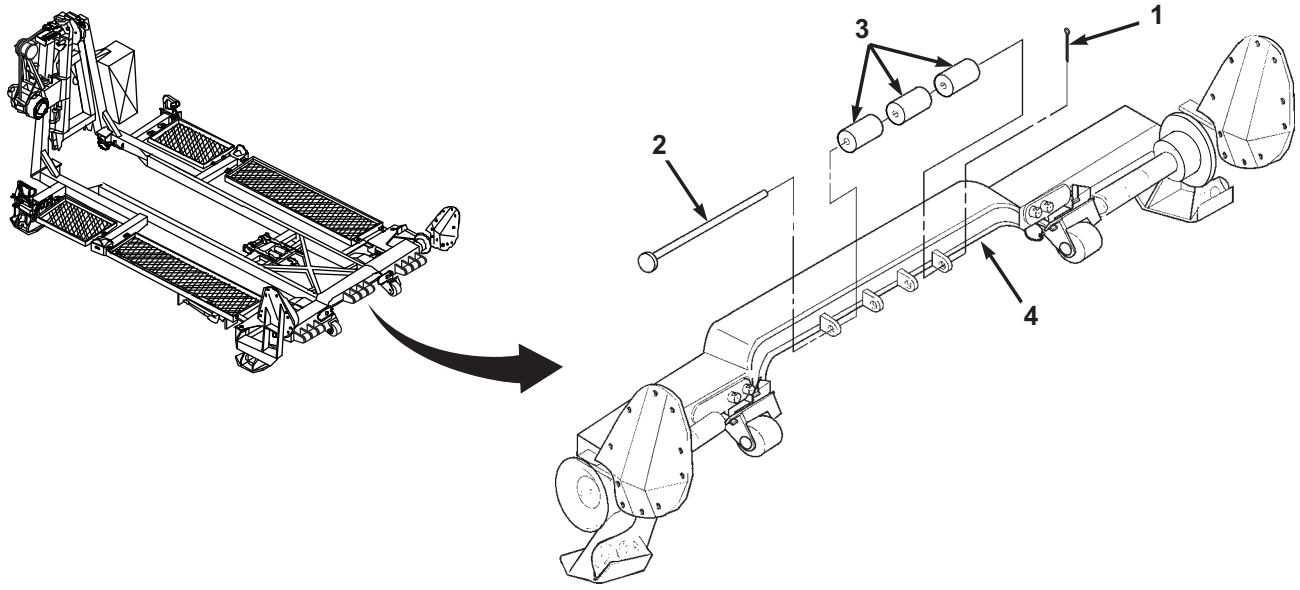


Figure 2. Rear Bumper Assembly Installation.

2. Install cotter pin (Figure 2, Item 1) in bumper shaft (Figure 2, Item 2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
TRANSLOAD ROLLER REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

References
Parts Manual (WP 0073, Figure 8)
WP 0070

Materials/Parts
Cotter Pin (WP 0082, Table 1, Item 37)
Lockwasher (WP 0082, Table 1, Item 50)
Spring Pin (WP 0082, Table 1, Item 49)

Equipment Condition
Load removed from BAP. (WP 0008)
BAP unloaded from vehicle. (WP 0006)

Personnel Required
(2)

REMOVAL

NOTE

This procedure is for either curb-side or road-side transload roller replacement. Road side is shown.

1. Remove-quick release pin (Figure 1, Item 1) from transloader bracket (Figure 1, Item 2). Remove screw (Figure 1, Item 3) and lanyard (Figure 1, Item 4) from BAP frame (Figure 1, Item 5).

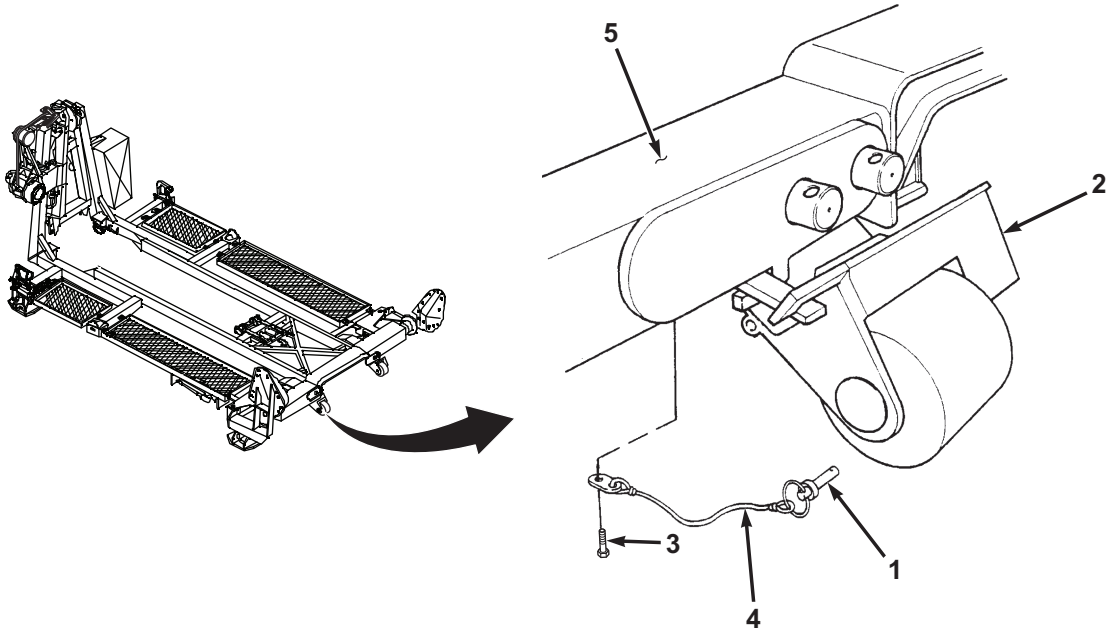


Figure 1. Quick Release Pin Removal.

2. Remove cotter pin (Figure 2, Item 6) from straight pin (Figure 2, Item 7). Discard cotter pin.

REMOVAL - Continued

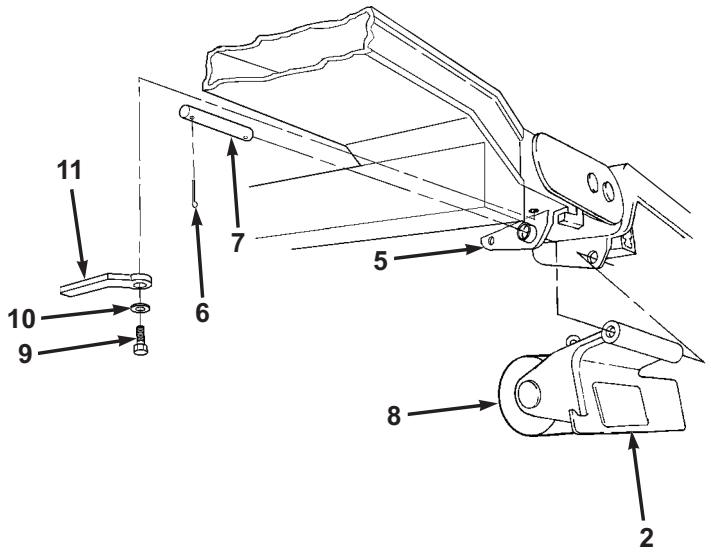


Figure 2. Transload Roller Removal.

NOTE

The straight pin is removed by pulling it toward the outside of the BAP.

3. While an assistant supports transload roller (Figure 2, Item 8) and transloader bracket (Figure 2, Item 2), remove straight pin (Figure 2, Item 7) from welded bracket on frame (Figure 2, Item 5) by pulling it toward the outside of the BAP.
4. Remove screw (Figure 2, Item 9), lockwasher (Figure 2, Item 10), and retaining bar (Figure 2, Item 11) from welded bracket on frame (Figure 2, Item 5). Discard lockwasher.
5. Remove spring pin (Figure 3, Item 12) and transloader collar (Figure 3, Item 13) from headed pin (Figure 3, Item 14). Discard spring pin.

REMOVAL - Continued

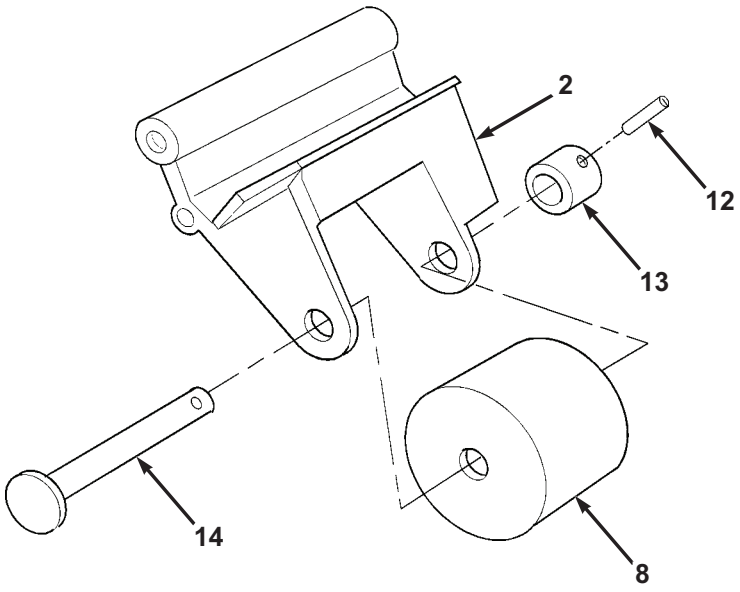


Figure 3. Transload Roller Pin Removal.

6. Remove headed pin (Figure 3, Item 14) and roller (Figure 3, Item 8) from transloader bracket (Figure 3, Item 2).
7. Lubricate straight pin (Figure 3, Item 7) and headed pin (Figure 3, Item 14) in accordance with (WP 0070).

END OF TASK

INSTALLATION

1. Install headed pin (Figure 4, Item 14) in bracket (Figure 4, Item 2), roller (Figure 4, Item 8), and transloader collar (Figure 4, Item 13), ensuring holes in transloader collar (Figure 4, Item 13) and headed pin (Figure 4, Item 14) align.

INSTALLATION - Continued

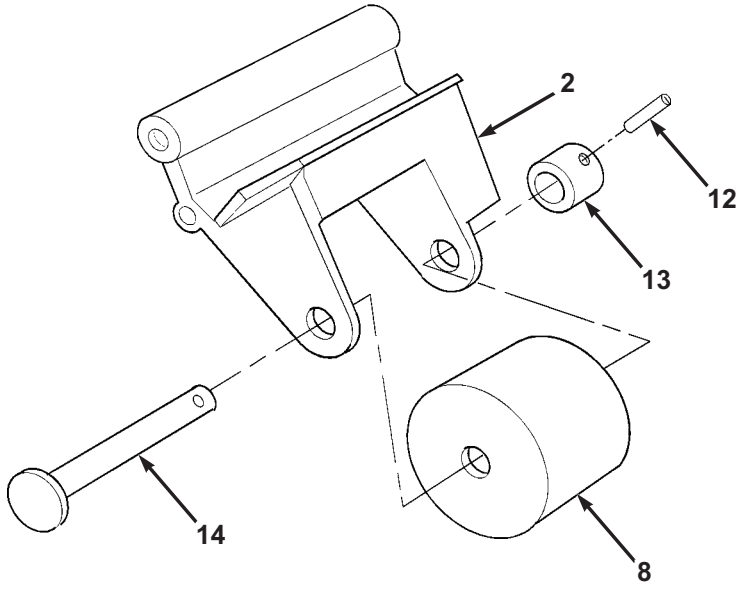


Figure 4. Transload Roller Pin Installation.

2. Install spring pin (Figure 4, Item 12) in holes in transloader collar (Figure 4, Item 13) and headed pin (Figure 4, Item 14).
3. Install retaining bar (Figure 5, Item 11), screw (Figure 5, Item 9), and lockwasher (Figure 5, Item 10) on welded bracket on frame (Figure 5, Item 5).

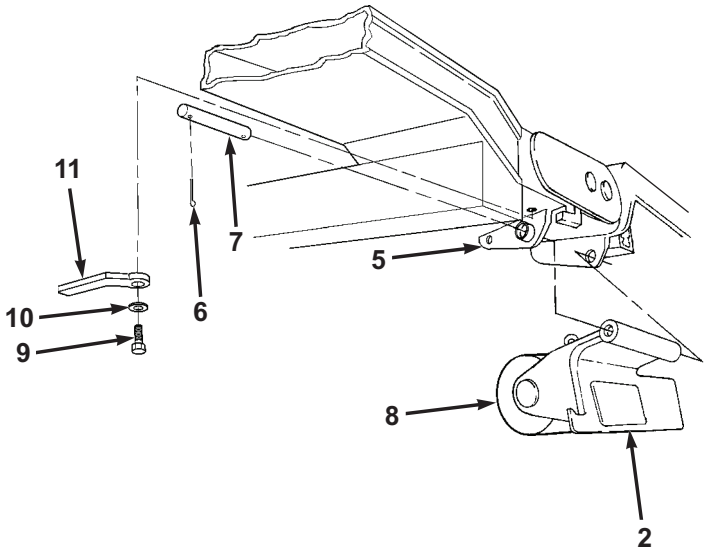


Figure 5. Transload Roller Installation.

4. Install straight pin (Figure 5, Item 7) through transloader bracket (Figure 5, Item 2) and welded bracket on frame (Figure 5, Item 5).
5. Install cotter pin (Figure 5, Item 6) on straight pin (Figure 5, Item 7).
6. Install lanyard (Figure 6, Item 4) on frame (Figure 6, Item 5) with screw (Figure 6, Item 3).

INSTALLATION - Continued

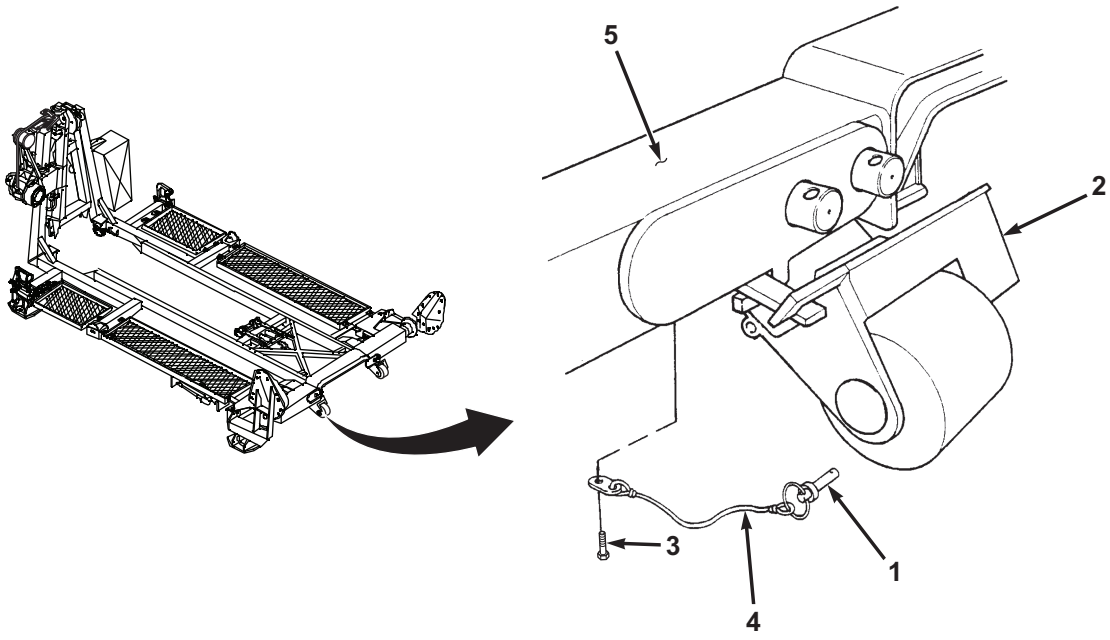


Figure 6. Quick Release Pin Installation.

7. Place roller (Figure 6, Item 8) and transloader bracket (Figure 6, Item 2) in stowed position, and insert quick-release pin (Figure 6, Item 1) in frame (Figure 6, Item 5).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
REFLECTOR REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Materials/Parts
Lockwasher (WP 0082, Table 1, Item 41) Qty: 2

References
Parts Manual (WP 0073, Figure 10)

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP unloaded from the CBT. (WP 0006)

REMOVAL

1. Remove two screws (Figure 1, Item 1), nuts (Figure 1, Item 2), lockwashers (Figure 1, Item 3), and amber reflector (Figure 1, Item 4) from A-frame (Figure 1, Item 5). Discard lockwashers.

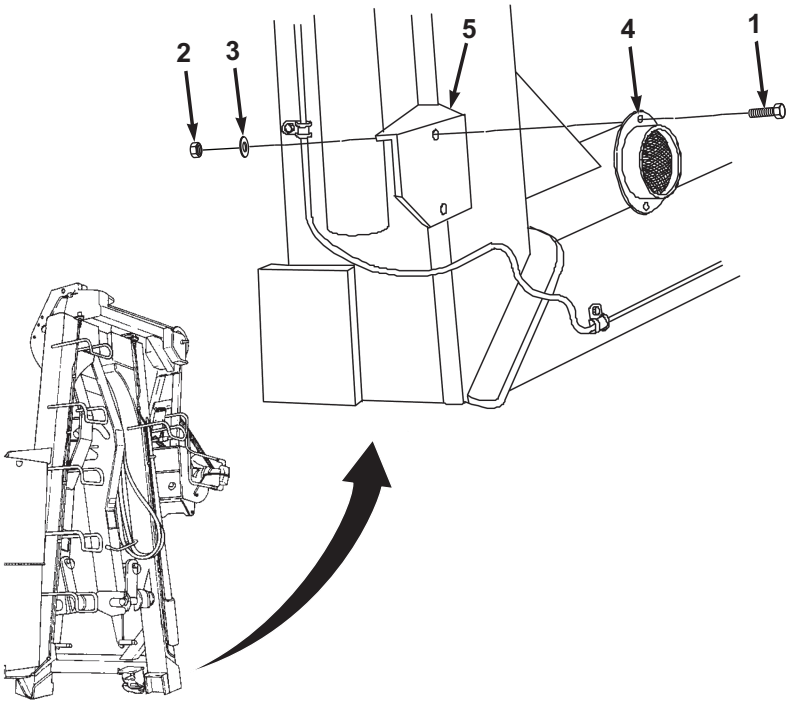


Figure 1. Front Amber Reflector Removal.

NOTE

- Steps (2) through (4) are the same for removal of road-side and curb-side reflectors.
- Engage pin lock assembly in manual position before removing or installing reflector.

2. Remove two screws (Figure 2, Item 6), lockwashers (Figure 2, Item 7), and amber reflector (Figure 2, Item 8) from BAP frame (Figure 2, Item 9). Discard lockwashers.

REMOVAL - Continued

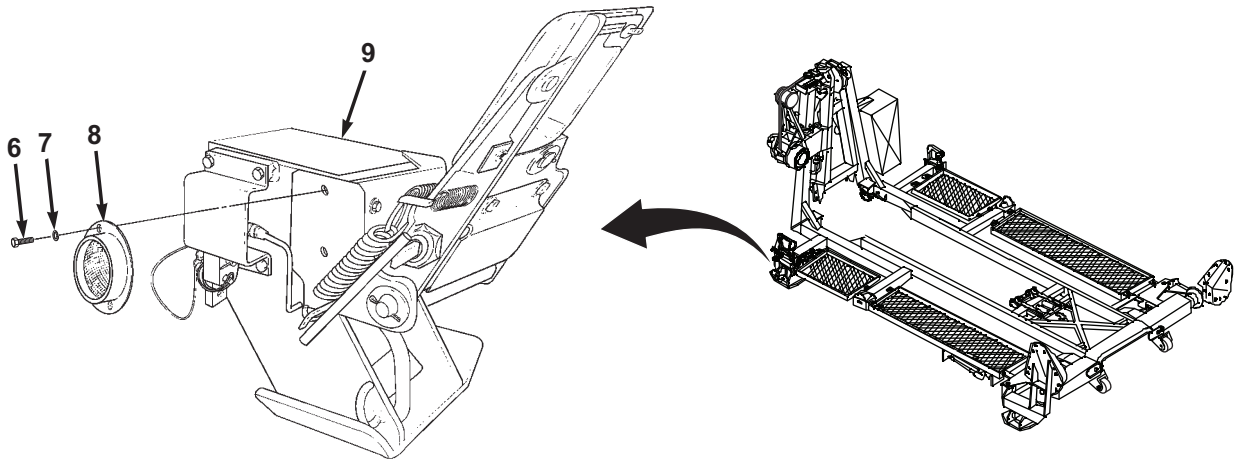


Figure 2. Left Front Amber Reflector Removal.

3. Remove two screws (Figure 3, Item 10), nuts (Figure 3, Item 11), lockwashers (Figure 3, Item 12), and red reflector (Figure 3, Item 13) from BAP frame (Figure 3, Item 9). Discard lockwashers.

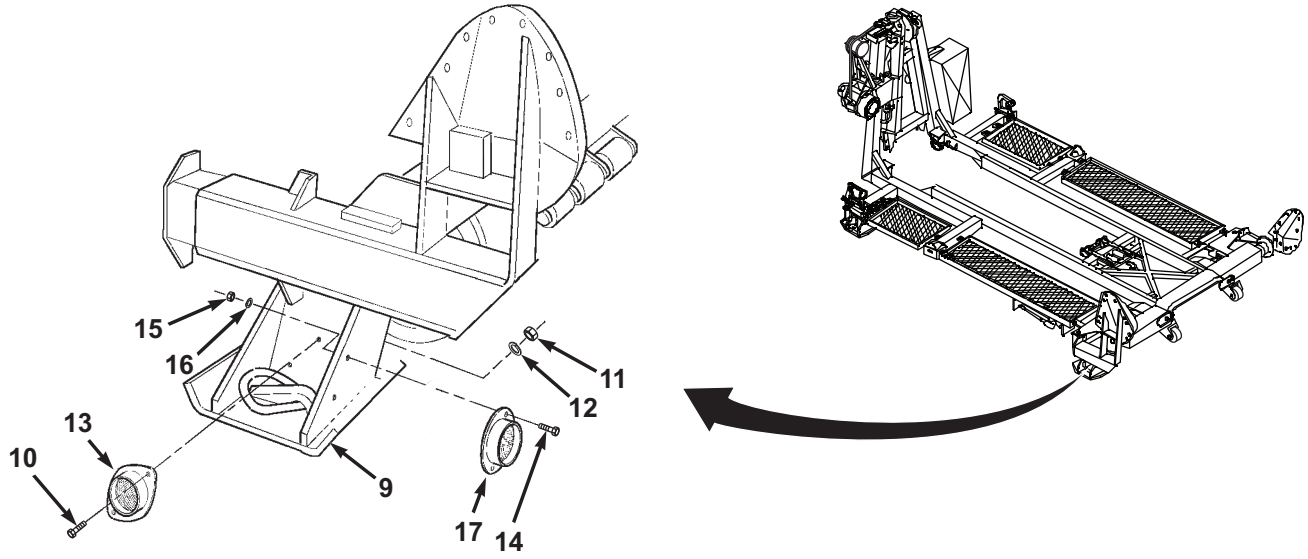


Figure 3. Red Reflector Removal.

4. Remove two screws (Figure 3, Item 14), nuts (Figure 3, Item 15), lockwashers (Figure 3, Item 16), and red reflector (Figure 3, Item 17) from BAP frame (9). Discard lockwashers.

END OF TASK

INSTALLATION

NOTE

Steps (1) through (3) are the same for installation of road-side and curb-side reflectors.

INSTALLATION - Continued

1. Install red reflector (Figure 4, Item 17) on BAP frame (Figure 4, Item 9) with two screws (Figure 4, Item 14), nuts (Figure 4, Item 15), and lockwashers (Figure 4, Item 16).

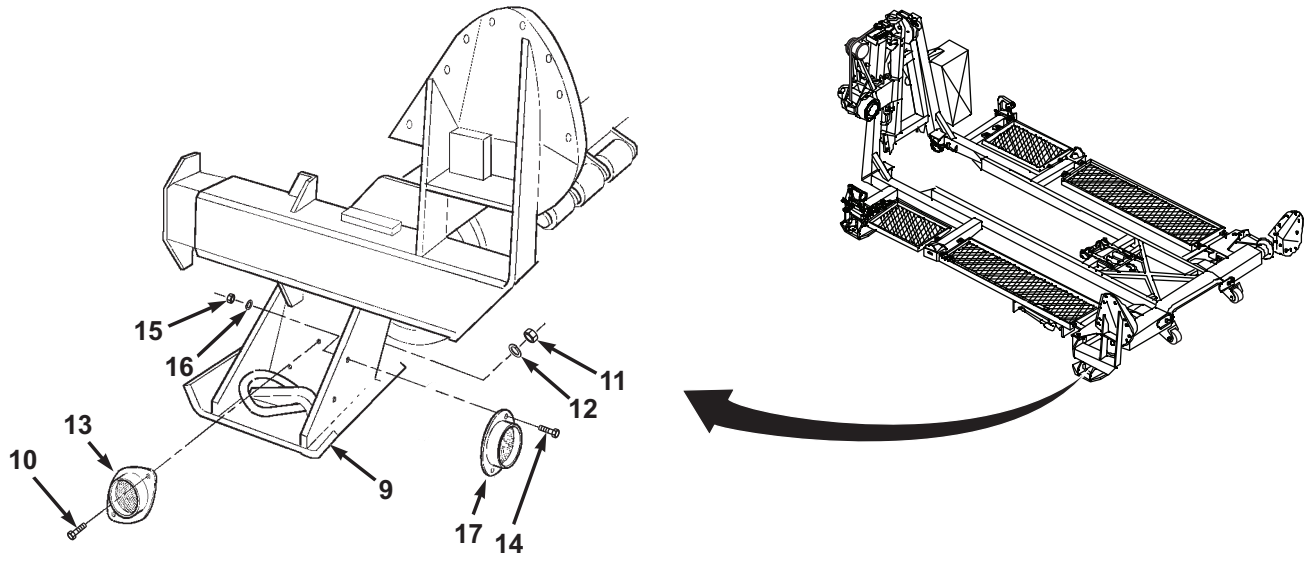


Figure 4. Red Reflector Installation.

2. Install red reflector (Figure 4, Item 13) on BAP frame (Figure 4, Item 9) with two screws (Figure 4, Item 10), nuts (Figure 4, Item 11), and lockwashers (Figure 4, Item 12).
3. Install amber reflector (Figure 5, Item 8) on BAP frame (Figure 5, Item 9) with two screws (Figure 5, Item 6) and lockwashers (Figure 5, Item 7).

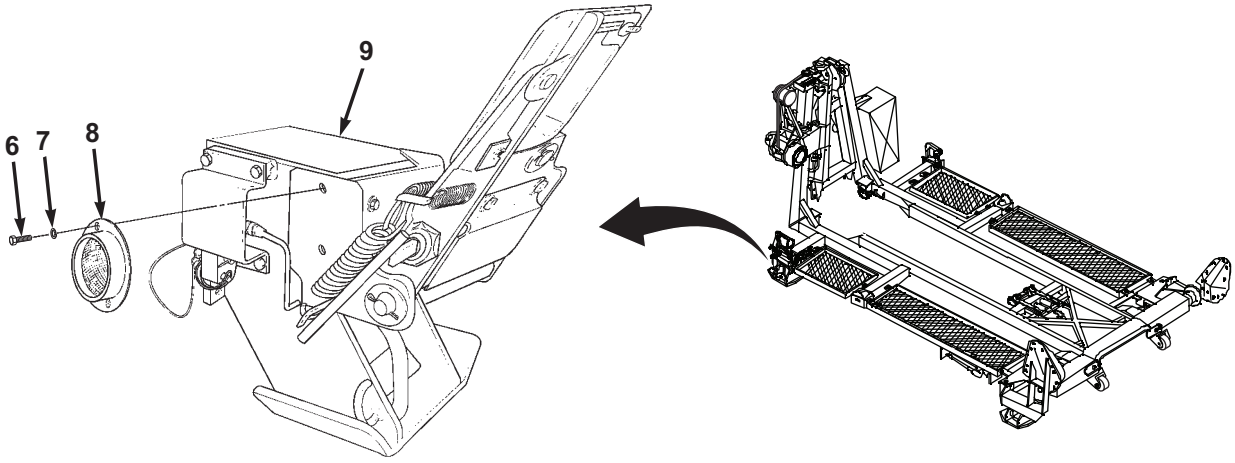


Figure 5. Left Front Amber Reflector Installation.

4. Install amber reflector (Figure 6, Item 4) on A-frame (Figure 6, Item 5) with two screws (Figure 6, Item 1), nuts (Figure 6, Item 2), and lockwashers (Figure 6, Item 3).

INSTALLATION - Continued

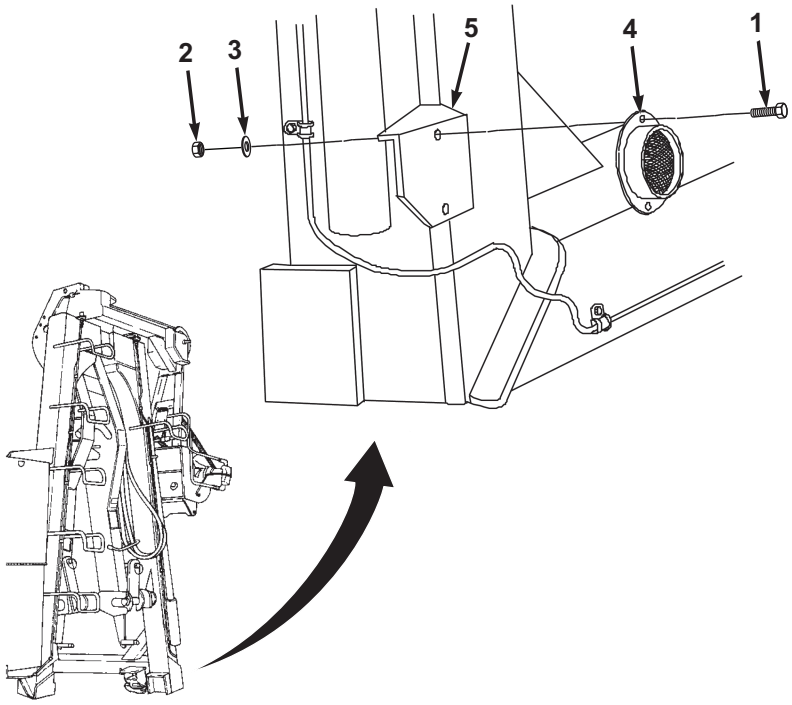


Figure 6. Front Amber Reflector Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
LABEL REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Drill, Electric, Portable, 1/4-inch
(WP 0078, Table 2, Item 1)
Drill Set, Twist (WP 0078, Table 2, Item 1)
Tool Kit, Blind Rivet (WP 0078, Table 2, Item 1)
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Materials/Parts
Drive Screw (WP 0082, Table 1, Item 30) Qty: 4
Rivet (WP 0082, Table 1, Item 29) Qty: 4

References
Parts Manual (WP 0073, Figure 2)
Parts Manual (WP 0073, Figure 10)

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP unloaded from the CBT. (WP 0006)

REMOVAL

NOTE

- All nine BAP labels (decals/data plates) are replaced in the same manner.
- Eight labels are secured with drive screws. The label on the toolbox door is secured with rivets.

Remove label (Figure 1, Item 1) and four drive screws (Figure 1, Item 2) or rivets (Figure 1, Item 3) from the BAP.

REMOVAL - Continued

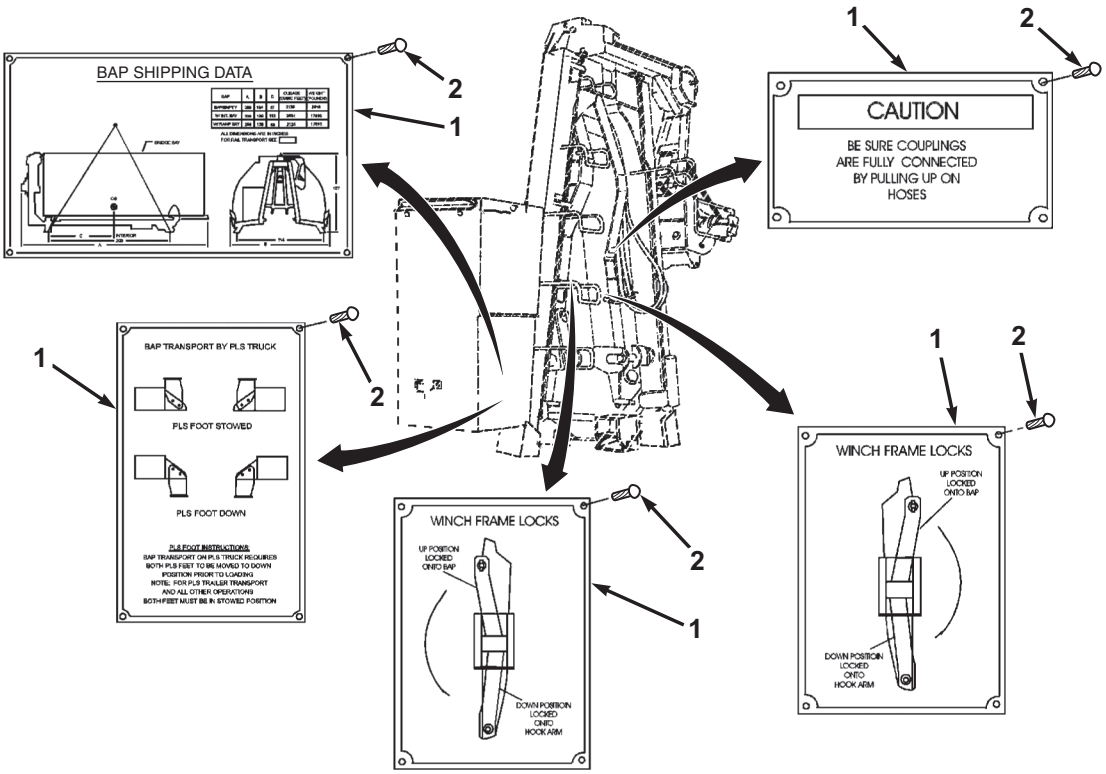


Figure 1. Label Removal. (Sheet 1 of 2)

REMOVAL - Continued

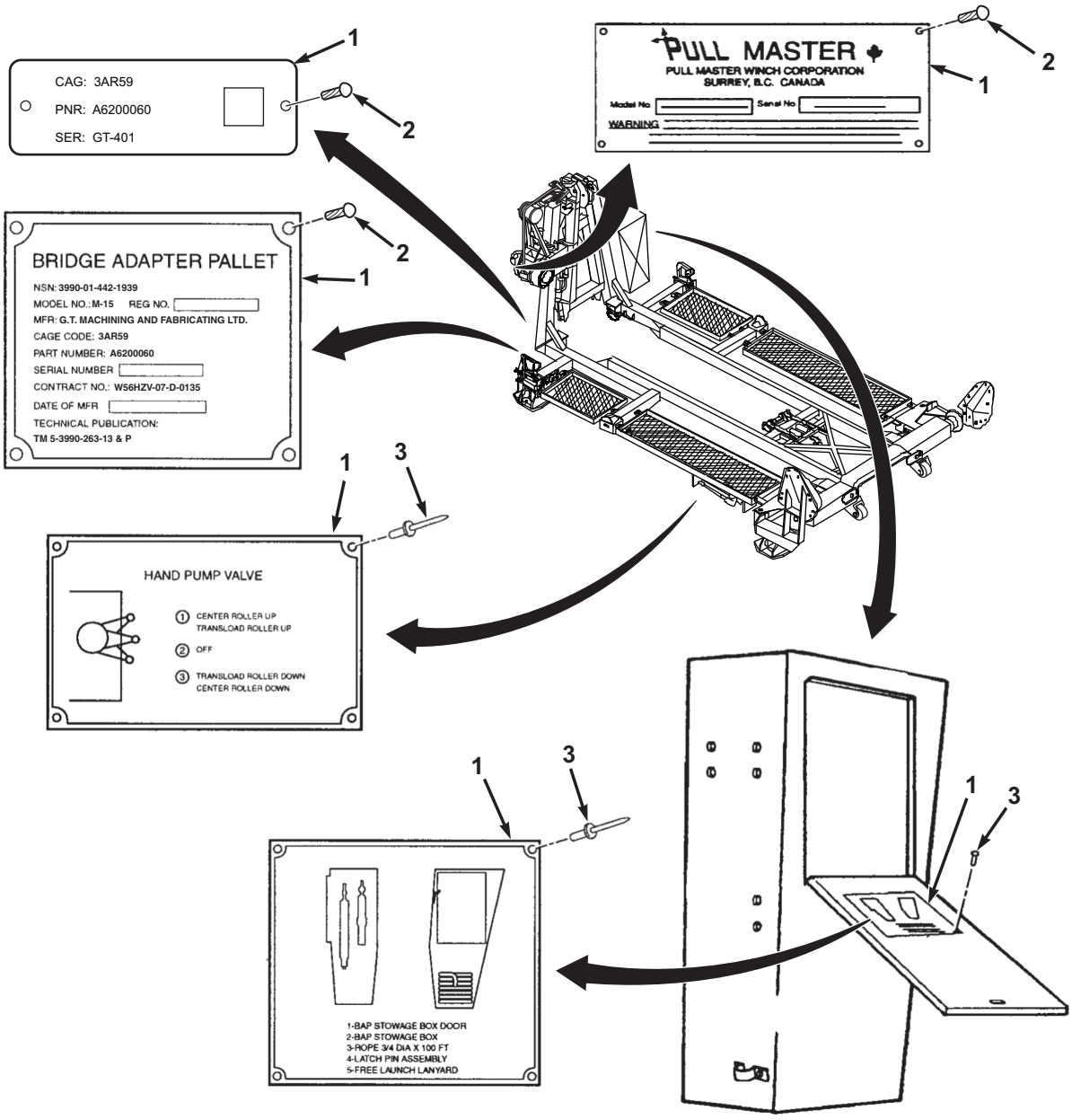


Figure 1. Label Removal. (Sheet 2 of 2)

END OF TASK

INSTALLATION

Install label (Figure 2, Item 1) on the BAP with four drive screws (Figure 2, Item 2) or rivets (Figure 2, Item 3).

INSTALLATION - Continued

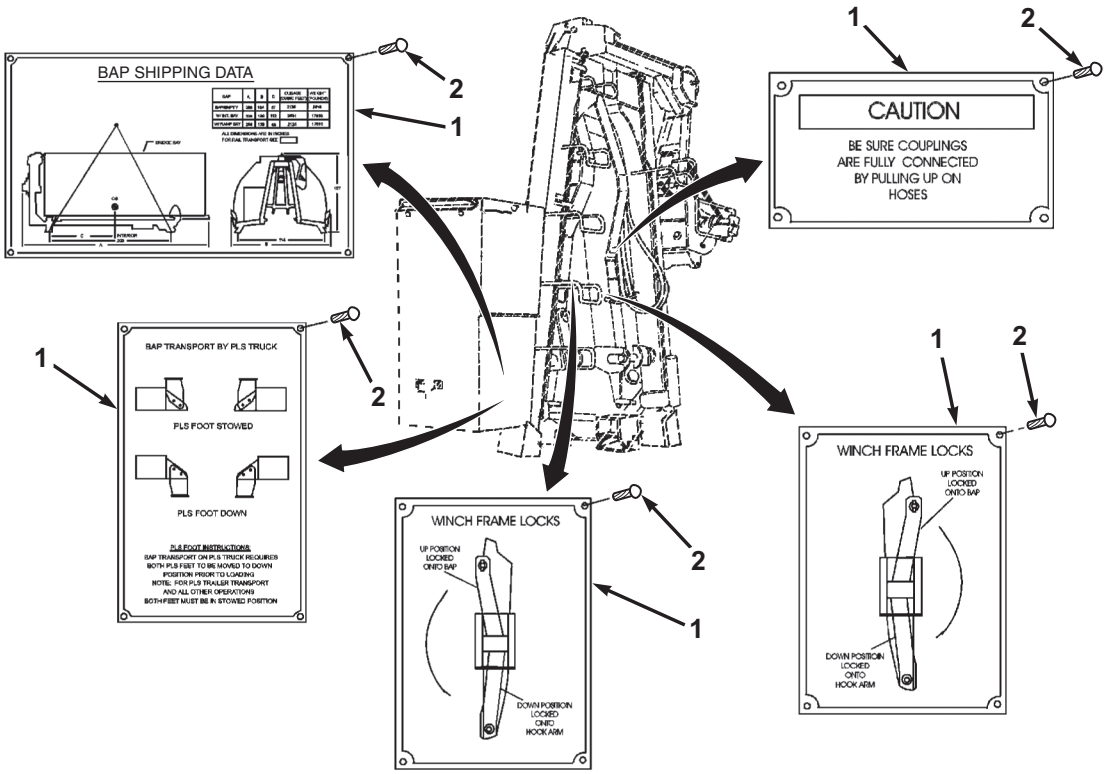


Figure 2. Label Installation. (Sheet 1 of 2)

INSTALLATION - Continued

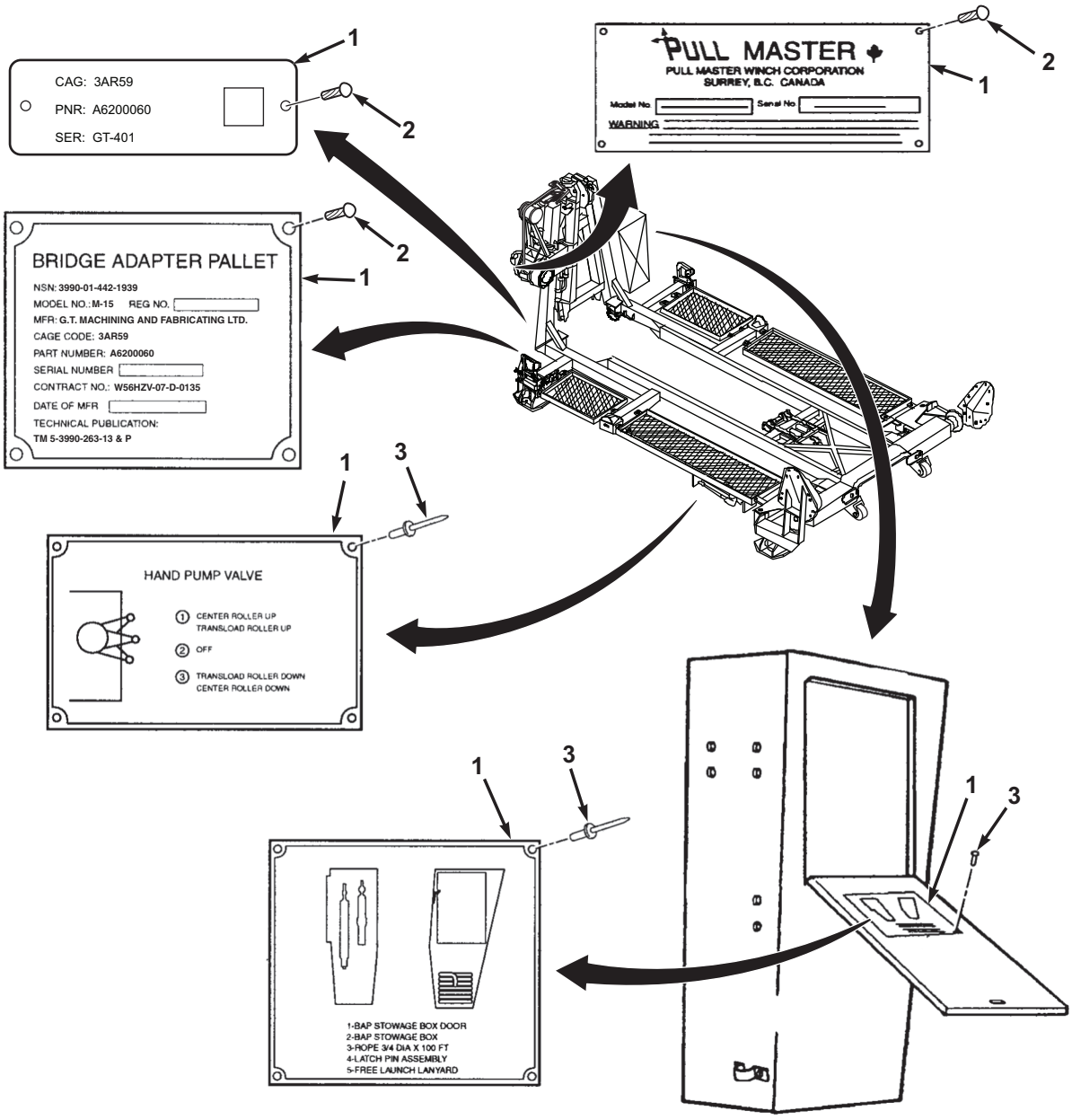


Figure 2. Label Installation. (Sheet 2 of 2)

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
FRONT PIN LOCK ASSEMBLY ADJUSTMENT AND REPAIR

INITIAL SETUP:

Tools and Special Tools
Pliers, Retaining Ring (WP 0078, Table 2, Item 1)
Tool Kit, General Mechanics: Automotive (WP 0078, Table 2, Item 2)
Wrench, Adjustable (WP 0078, Table 2, Item 1)
Wrench, Torque, 50-250 lb-ft (68-339 N·m), 1/2 in. Drive (WP 0078, Table 2, Item 7)

Materials/Parts
Goggles, Safety (WP 0081, Table 1, Item 9)
Lockwasher (WP 0082, Table 1, Item 42)
Lockwasher (WP 0082, Table 1, Item 43) Qty: 2
Cotter Pin (WP 0082, Table 1, Item 35) Qty: 2
Cotter Pin (WP 0082, Table 1, Item 33) Qty: 1

Materials/Parts (cont.)
Locknut (WP 0082, Table 1, Item 24) Qty: 2
Cotter Pin (WP 0082, Table 1, Item 51) Qty: 2

Personnel Required
(2)

References
Parts Manual (WP 0073, Figure 11)
Parts Manual (WP 0073, Figure 26)
WP 0038
WP 0070

Equipment Condition
Front pin lock reflector removed. (WP 0050)

REMOVAL

NOTE

- BAP front pin lock should be in stowed position for steps 1 through 3.
- Repair of curb-side and road-side pin locks is the same. Road-side pin lock is shown.

1. Remove air hose (Figure 1, Item 1) from elbow (Figure 1, Item 2) on BAP frame (Figure 1, Item 3).

REMOVAL - Continued

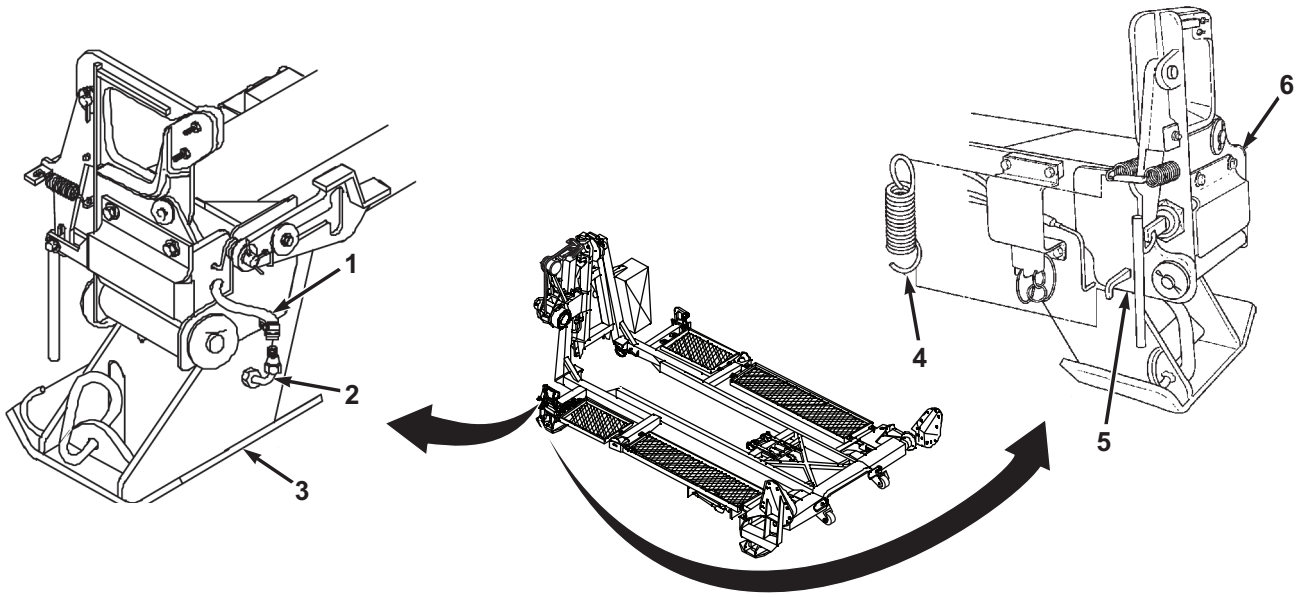


Figure 1. Air Hose Removal.

2. Disengage extension spring (Figure 1, Item 4) from pin lock bracket (Figure 1, Item 5) and front pin lock guide (Figure 1, Item 6).
3. Remove bolt (Figure 2, Item 7), lockwasher (Figure 2, Item 8), and two washers (Figure 2, Items 9 and 10) from pivot latch (Figure 2, Item 11). Discard lockwasher.

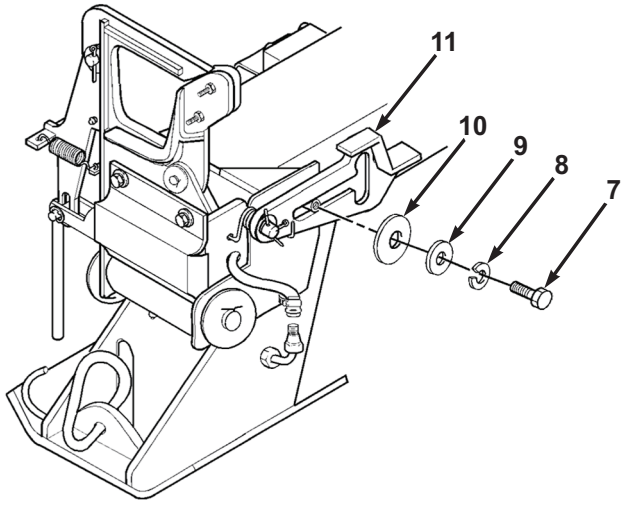


Figure 2. BAP Front Pin Lock Assembly Removal.

END OF TASK

DISASSEMBLY

1. Remove two bolts (Figure 3, Item 12), lockwashers (Figure 3, Item 13), and air cylinder guard (Figure 3, Item 14) from pin lock guide (Figure 3, Item 6). Discard lockwashers.

DISASSEMBLY - Continued

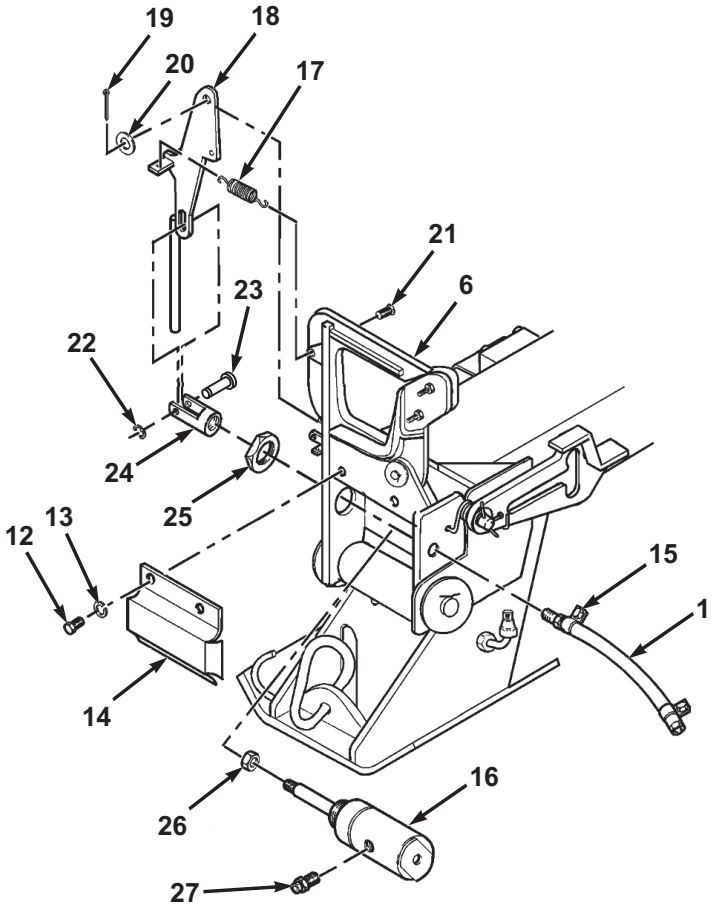
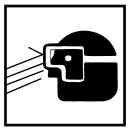


Figure 3. BAP Front Pin Lock Guide Assembly Disassembly.

2. Loosen clamp (Figure 3, Item 15) on air hose (Figure 3, Item 1) and remove air hose (Figure 3, Item 1) from air cylinder (Figure 3, Item 16).

3. Remove two springs (Figure 3, Item 17) from release latch (Figure 3, Item 18) and pin lock guide (Figure 3, Item 6). Remove cotter pin (Figure 3, Item 19), washer (Figure 3, Item 20), and headed straight pin (Figure 3, Item 21) from pin lock guide (Figure 3, Item 6). Discard cotter pin.

WARNING



Wear safety goggles and use caution when removing or installing springs, snaprings, retaining rings, and other parts under spring tension. These parts are under tension and can act as projectiles when released. Failure to comply may result in serious injury or death to personnel.

4. Remove two snaprings (Figure 3, Item 22) and straight pin (Figure 3, Item 23) from clevis (Figure 3, Item 24). Remove clevis (Figure 3, Item 24) from release latch (Figure 3, Item 18).

5. Remove release latch (Figure 3, Item 18) from pin lock guide (Figure 3, Item 6).

DISASSEMBLY - Continued

6. Loosen nut (Figure 3, Item 25) and remove air cylinder (Figure 3, Item 16) from pin lock guide (Figure 3, Item 6).
7. Remove nut (Figure 3, Item 25) from air cylinder (Figure 3, Item 16). Remove clevis (Figure 3, Item 24) and adjusting nut (Figure 3, Item 26) from air cylinder (Figure 3, Item 16).
8. Remove breather (Figure 3, Item 27) from air cylinder (Figure 3, Item 16).
9. Remove cotter pin (Figure 4, Item 28), washer (Figure 4, Item 29), pivot latch (Figure 4, Item 11), and torsion spring (Figure 4, Item 30) from pin lock guide (Figure 4, Item 6). Discard cotter pin.

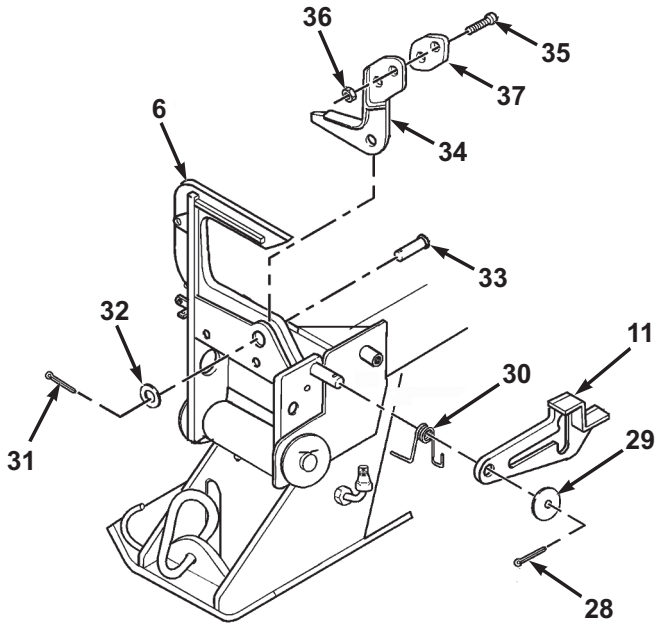


Figure 4. BAP Front Pin Lock Assembly Disassembly.

10. Remove cotter pin (Figure 4, Item 31), washer (Figure 4, Item 32), and headed straight pin (Figure 4, Item 33) from pin lock jaw (Figure 4, Item 34). Discard cotter pin.
11. Remove pin lock jaw (Figure 4, Item 34) from pin lock guide (Figure 4, Item 6).
12. Remove two screws (Figure 4, Item 35), locknuts (Figure 4, Item 36), and wear pad (Figure 4, Item 37) from pin lock jaw (Figure 4, Item 34). Discard locknuts.

NOTE

Measure the distance from the top of triangle-shaped weldment on top of pin lock bracket to top of frame. Make a note of distance measured for later use during assembly.

13. Remove two cotter pins (Figure 5, Item 38) from pin lock pin (Figure 5, Item 39). With the aid of an assistant, remove two washers (Figure 5, Item 40) and pin lock pin (Figure 5, Item 39) from pin lock guide (Figure 5, Item 6). Discard cotter pins.

DISASSEMBLY - Continued

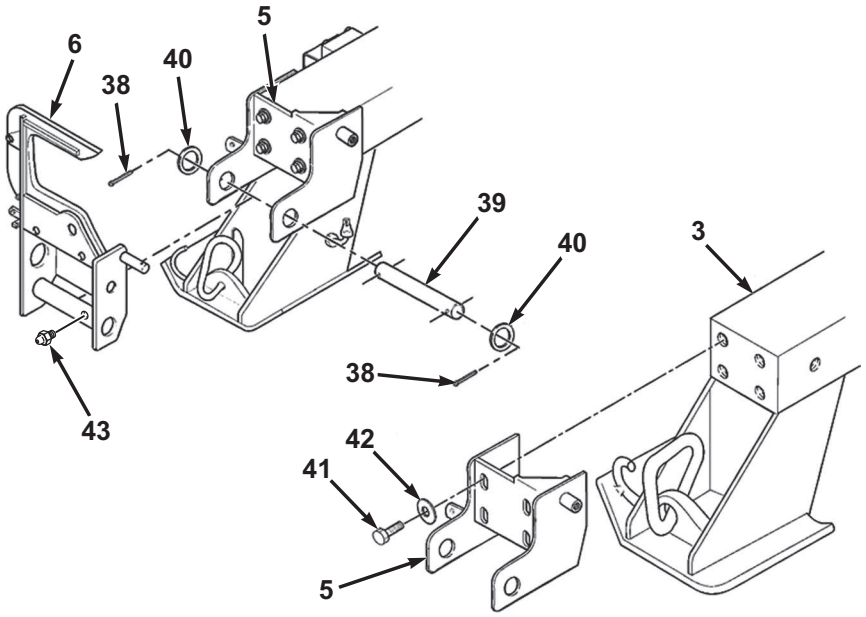


Figure 5. BAP Front Pin Disassembly.

14. Remove pin lock guide (Figure 5, Item 6) from pin lock bracket (Figure 5, Item 5).
15. Remove four screws (Figure 5, Item 41) and washers (Figure 5, Item 42) from pin lock bracket (Figure 5, Item 5).
16. Remove pin lock bracket (Figure 5, Item 5) from frame (Figure 5, Item 3).

NOTE

Perform Step (17) if grease fitting is damaged.

17. Remove grease fitting (Figure 5, Item 43) from pin lock guide (Figure 5, Item 6).

END OF TASK

CLEANING

1. Refer to General Maintenance Instructions (WP 0038) for general cleaning instructions.
2. Lubricate all pins in accordance with (WP 0070).

END OF TASK

INSPECTION

1. Refer to General Maintenance Instructions (WP 0038) for general inspection instructions.
2. Measure wear pad (Figure 6, Item 1). If wear pad (Figure 6, Item 1) is worn to within 1/16 inch (1.6 mm) of screw (Figure 6, Item 2) or pin lock jaw (Figure 6, Item 3), wear pad (Figure 6, Item 1) can be rotated 180 degrees and reused. If bottom and top edges of wear pad (Figure 6, Item 1) show excessive wear, replace wear pad (Figure 6, Item 1).

INSPECTION - Continued

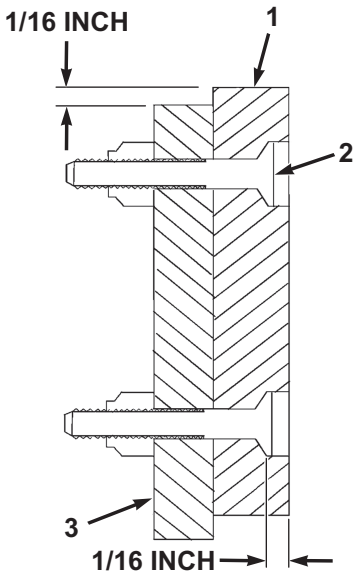


Figure 6. BAP Front Pin Lock Assembly Inspection.

END OF TASK

ASSEMBLY

NOTE

Perform Step (1) if grease fitting was removed.

1. Install grease fitting (Figure 7, Item 43) to pin lock guide (Figure 7, Item 6).

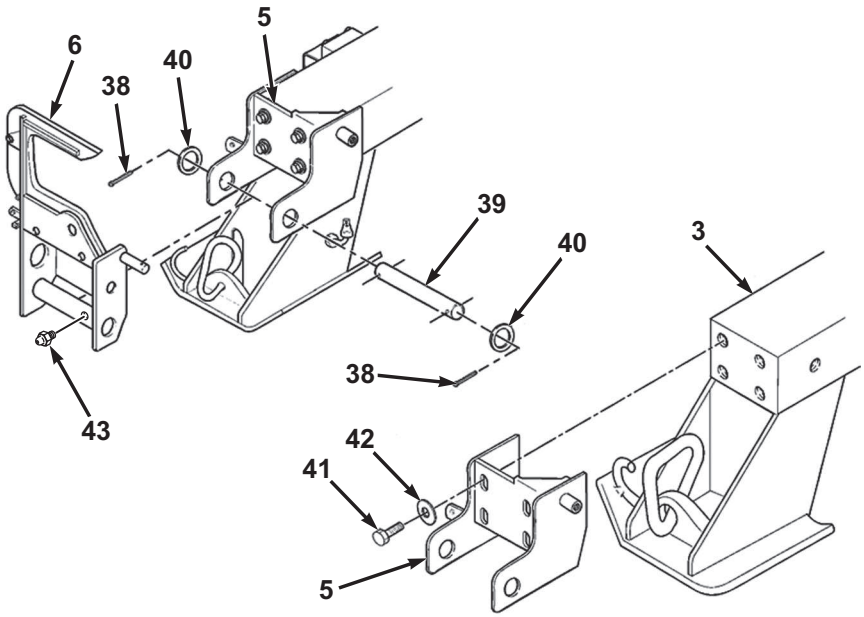


Figure 7. BAP Front Pin Assembly.

ASSEMBLY - Continued

NOTE

Mount pin lock bracket at same height as noted during disassembly.

2. Install pin lock bracket (Figure 7, Item 5) on frame (Figure 7, Item 3) with four screws (Figure 7, Item 41) and washers (Figure 7, Item 42). Tighten screws to 75 and 80 ft-lb (101.7 and 108.5 Nm).
3. With the aid of an assistant, install pin lock guide (Figure 7, Item 6) on pin lock bracket (Figure 7, Item 5) with pin lock pin (Figure 7, Item 39), two washers (Figure 7, Item 40), and cotter pins (Figure 7, Item 38).
4. Install wear pad (Figure 8, Item 37) on pin lock jaw (Figure 8, Item 34) with two screws (Figure 8, Item 35) and locknuts (Figure 8, Item 36).

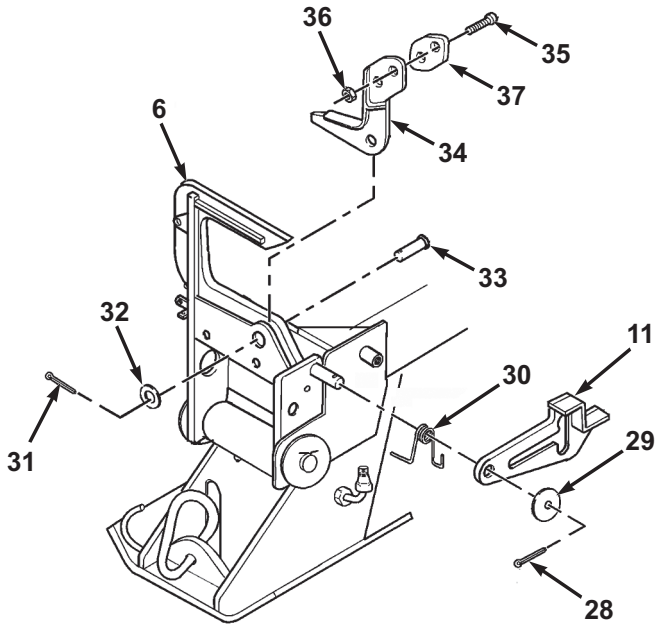


Figure 8. BAP Front Pin Lock Assembly.

5. Install pin lock jaw (Figure 8, Item 34) on pin lock guide (Figure 8, Item 6) with headed straight pin (Figure 8, Item 33), washer (Figure 8, Item 32), and cotter pin (Figure 8, Item 31).
6. Install torsion spring (Figure 8, Item 30) on pin lock guide (Figure 8, Item 6) with pivot latch (Figure 8, Item 11), washer (Figure 8, Item 29), and cotter pin (Figure 8, Item 28).
7. Install breather (Figure 9, Item 27) on air cylinder (Figure 9, Item 16).

ASSEMBLY - Continued

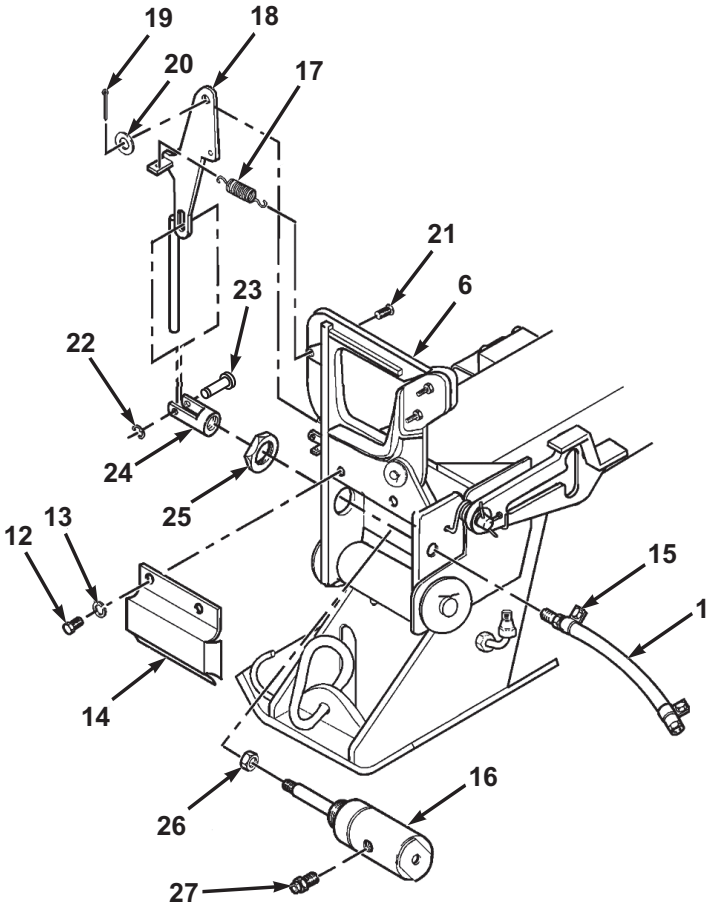


Figure 9. BAP Front Pin Lock Guide Assembly.

8. Install adjusting nut (Figure 9, Item 26) and clevis (Figure 9, Item 24) on air cylinder (Figure 9, Item 16).
9. Install air cylinder (Figure 9, Item 16) in pin lock guide (Figure 9, Item 6), ensuring pin lock jaw (Figure 9, Item 34) is in the up position and breather (Figure 9, Item 27) is facing bottom of pin lock guide (Figure 9, Item 6).
10. Install nut (Figure 9, Item 25) on air cylinder (Figure 9, Item 16). Install air hose (Figure 9, Item 1) on air cylinder (Figure 9, Item 16). Tighten clamp (Figure 9, Item 15).
11. Install release latch (Figure 9, Item 18) on clevis (Figure 9, Item 24).
12. Install straight pin (Figure 9, Item 23) and two snaprings (Figure 9, Item 22) in clevis (Figure 9, Item 24) and release latch (Figure 9, Item 18).
13. Install release latch (Figure 9, Item 18) on pin lock guide (Figure 9, Item 6) with headed straight pin (Figure 9, Item 21), washer (Figure 9, Item 20), and cotter pin (Figure 9, Item 19). Install two springs (Figure 9, Item 17) on release latch (Figure 9, Item 18) and pin lock guide (Figure 9, Item 6).
14. Install air cylinder guard (Figure 9, Item 14) on pin lock guide (Figure 9, Item 6) with two lockwashers (Figure 9, Item 13) and bolts (Figure 9, Item 12).

END OF TASK

INSTALLATION

1. Install pivot latch (Figure 10, Item 11) on pin lock bracket (Figure 10, Item 5) with bolt (Figure 10, Item 7), two washers (Figure 10, Items 9 and 10), and lockwasher (Figure 10, Item 8).

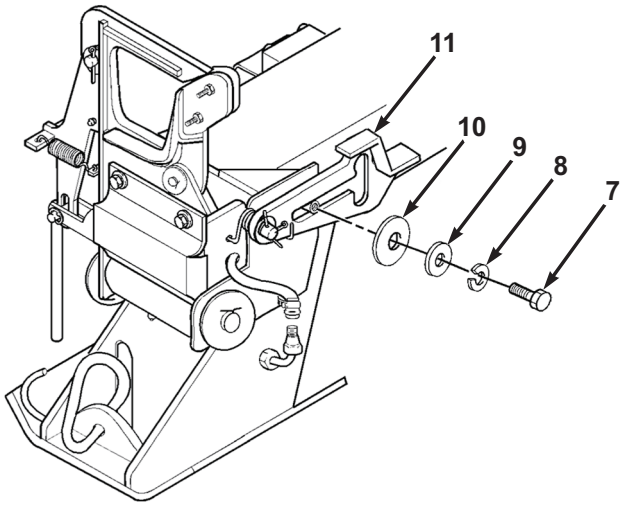


Figure 10. BAP Front Pin Lock Assembly Installation.

2. Install extension spring (Figure 11, Item 4) on pin lock guide (Figure 11, Item 6) and pin lock bracket (Figure 11, Item 5). Install air hose (Figure 11, Item 1) on elbow (Figure 11, Item 2) on frame (Figure 11, Item 3).

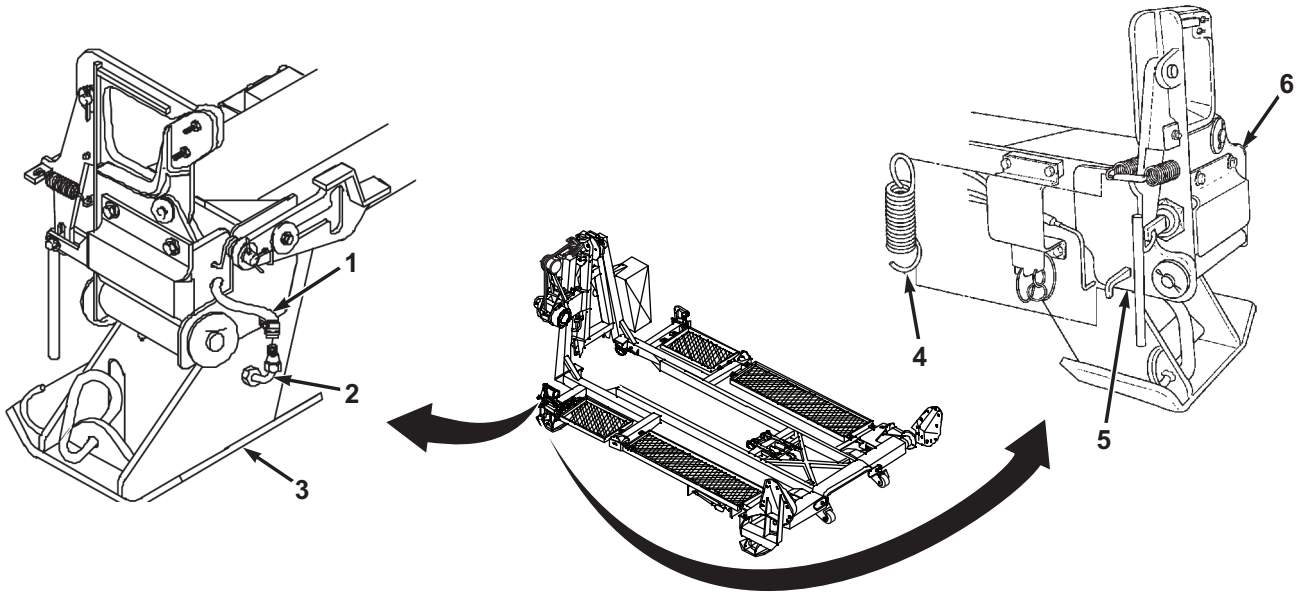


Figure 11. Air Hose Installation.

END OF TASK

FOLLOW-ON MAINTENANCE

Install front pin lock reflector. (WP 0050)

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
SHEAVE ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Materials/Parts
Lockwasher (WP 0082, Table 1, Item 44) Qty: 8
Cotter Pin (WP 0082, Table 1, Item 38) Qty: 4

Personnel Required
(2)

References
Parts Manual (WP 0073, Figure 12)

Equipment Condition
BAP winch cable extended six feet. (WP 0007)

REMOVAL

1. Remove eight bolts (Figure 1, Item 1), lockwashers (Figure 1, Item 2), and two guides (Figure 1, Item 3) from winch frame (Figure 1, Item 4). Discard lockwashers.

REMOVAL - Continued

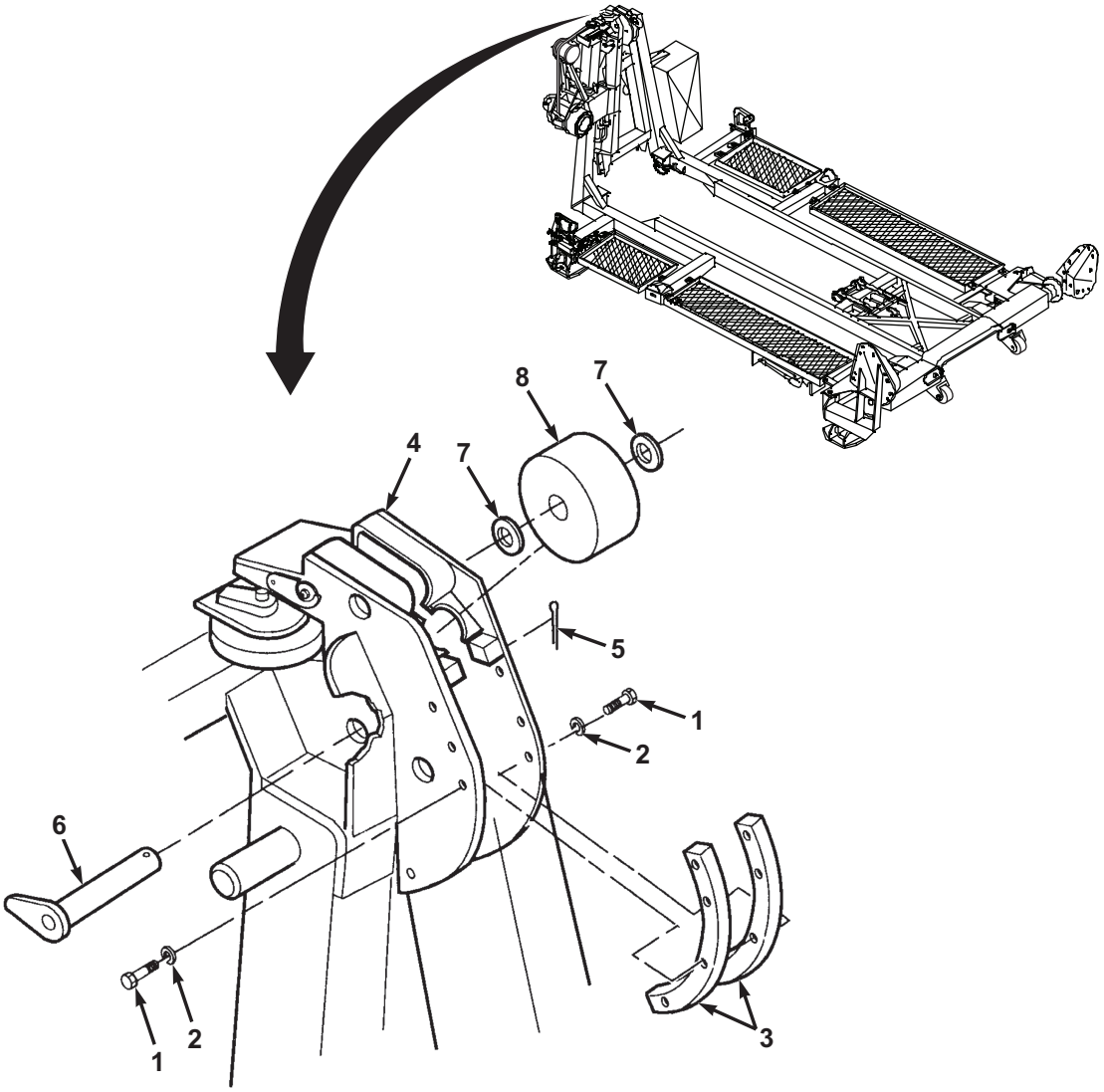


Figure 1. Roller Assembly Removal.

2. Remove cotter pin (Figure 1, Item 5) from roller pin (Figure 1, Item 6). Remove roller pin (Figure 1, Item 6), two spacers (Figure 1, Item 7), and roller assembly (Figure 1, Item 8) from winch frame (Figure 1, Item 4). Discard cotter pin.

3. Remove cotter pin (Figure 2, Item 9) from roller pin (Figure 2, Item 10). Remove roller pin (Figure 2, Item 10), two spacers (Figure 2, Item 11), and roller assembly (Figure 2, Item 12) from winch frame (Figure 2, Item 4). Discard cotter pin.

REMOVAL - Continued

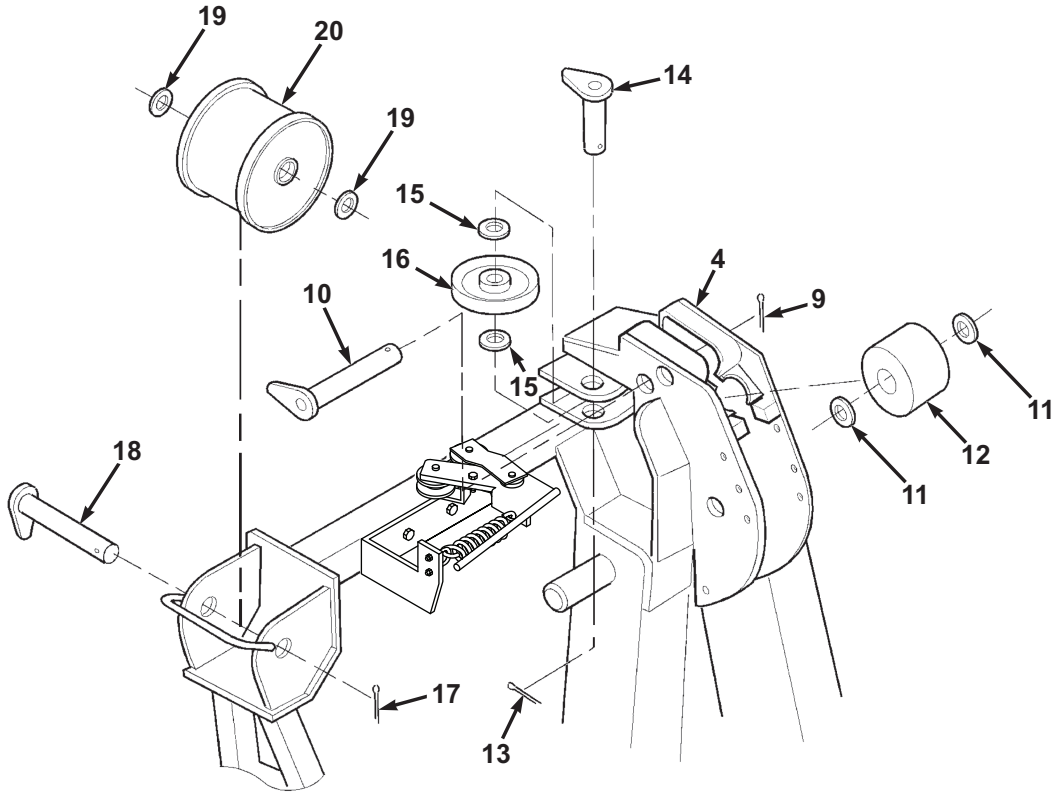


Figure 2. Sheave Assembly Removal.

4. Remove cotter pin (Figure 2, Item 13) from pulley pin (Figure 2, Item 14). Remove pulley pin (Figure 2, Item 14), two spacers (Figure 2, Item 15), and pulley (Figure 2, Item 16) from winch frame (Figure 2, Item 4). Discard cotter pin.
5. With the aid of an assistant, remove cotter pin (Figure 2, Item 17) from roller pin (Figure 2, Item 18). Remove roller pin (Figure 2, Item 18), two spacers (Figure 2, Item 19), and roller assembly (Figure 2, Item 20) from winch frame (Figure 2, Item 4). Discard cotter pin.

END OF TASK

CLEANING

1. Refer to General Maintenance Instructions (WP 0038) for general cleaning instructions.
2. Lubricate parts in accordance with Lubrication Instructions (WP 0070).

END OF TASK

INSPECTION

Refer to General Maintenance Instructions (WP 0038) for general inspection instructions.

END OF TASK

INSTALLATION

1. With the aid of an assistant, install roller pin (Figure 3, Item 18), two spacers (Figure 3, Item 19), and roller assembly (Figure 3, Item 20) on winch frame (Figure 3, Item 4). Install cotter pin (Figure 3, Item 17) on roller pin (Figure 3, Item 18).

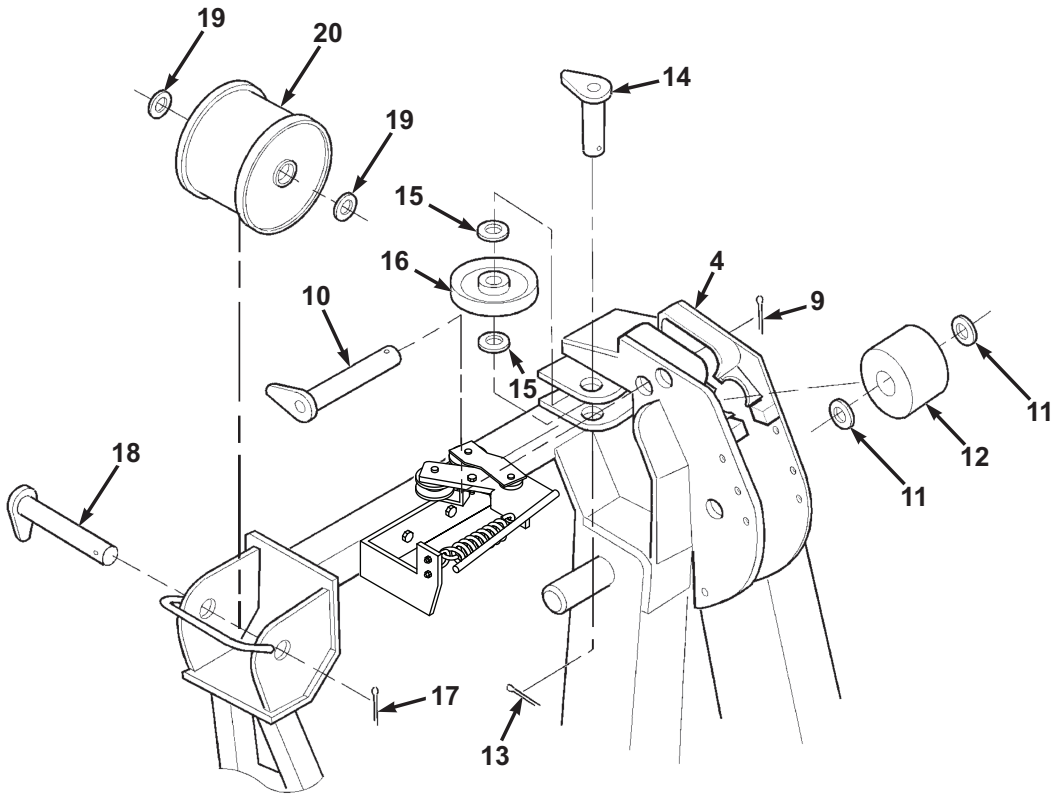


Figure 3. Sheave Assembly Installation.

2. Install pulley pin (Figure 3, Item 14), two spacers (Figure 3, Item 15), and pulley (Figure 3, Item 16) on winch frame (Figure 3, Item 4). Install cotter pin (Figure 3, Item 13) on pulley pin (Figure 3, Item 14).
3. Install roller pin (Figure 3, Item 10), two spacers (Figure 3, Item 11), and roller assembly (Figure 3, Item 12) on winch frame (Figure 3, Item 4). Install cotter pin (Figure 3, Item 9) on roller pin (Figure 3, Item 10).
4. Install roller pin (Figure 4, Item 6), two spacers (Figure 4, Item 7), and roller assembly (Figure 4, Item 8) on winch frame (Figure 4, Item 4). Install cotter pin (Figure 4, Item 5) on roller pin (Figure 4, Item 6).

INSTALLATION - Continued

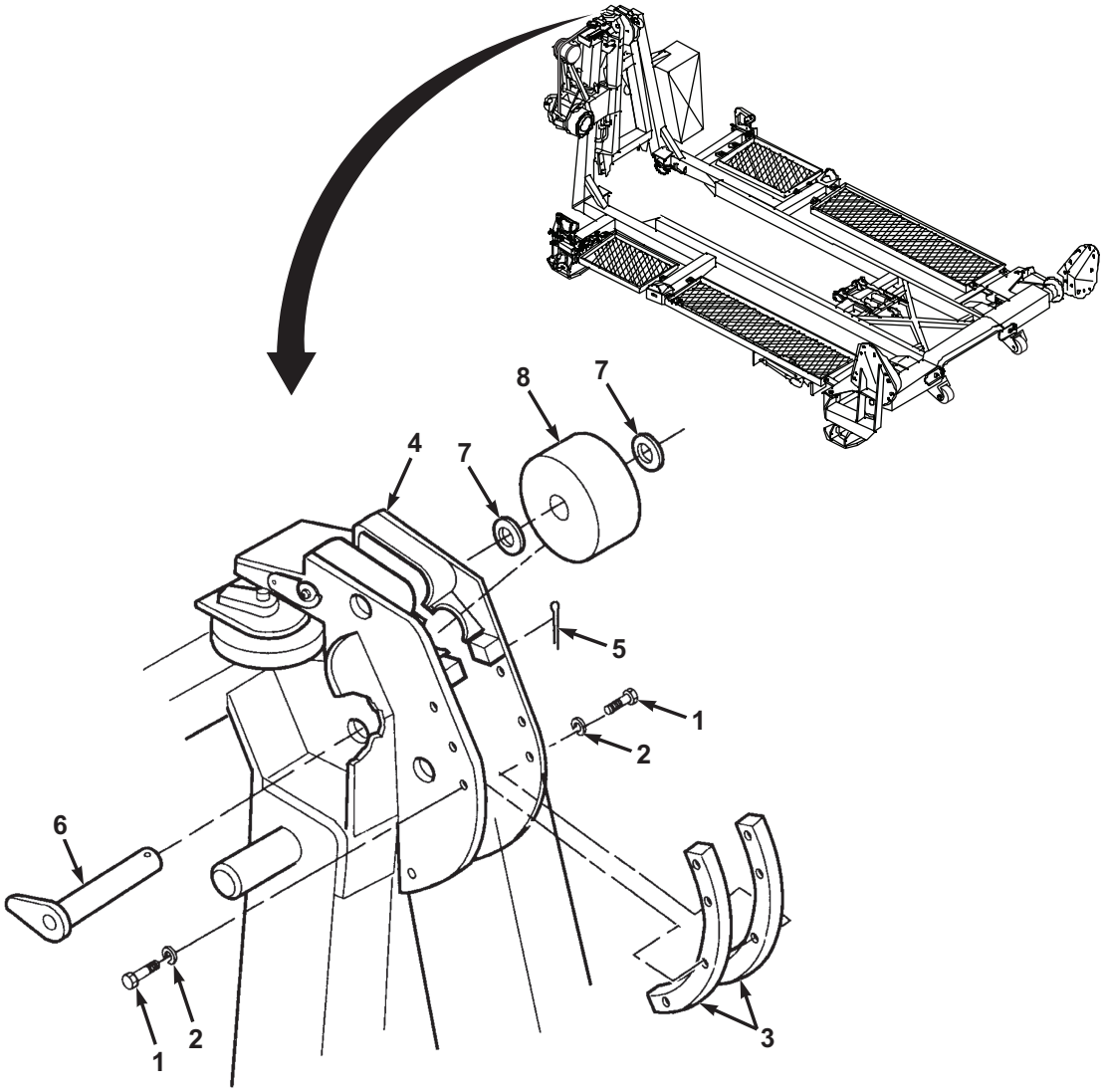


Figure 4. Roller Assembly Installation.

5. Install two guides (Figure 4, Item 3) on winch frame (Figure 4, Item 4) with eight bolts (Figure 4, Item 1) and lockwashers (Figure 4, Item 2).

END OF TASK

FOLLOW-ON MAINTENANCE

Wind in winch cable. (WP 0007)

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
WINCH FRAME LOCKING LEVER OUTBOARD RETAINER BLOCKS FIELD REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Welder, Portable (WP 0078, Table 2, Item 1)
Hand Grinder, Portable (WP 0078, Table 2, Item 1)
Clamps (WP 0078, Table 2, Item 1)

Materials/Parts
Block, Retainer (WP 0081, Table 1, Item 1)
Rod, Welding 336 or 340 (WP 0081, Table 1, Item 25) Qty: 1

Materials/Parts (cont.)
Rod, Welding MG600 (WP 0081, Table 1, Item 24) Qty: 1
Shim Stock, 0.040 in. (WP 0082, Table 1, Item 1) Qty: 1

References
Parts Manual (WP 0073, Figure 12)

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP removed from the CBT. (WP 0006)

REMOVAL

NOTE

- Use MG600 1/16 in. filler rod if using a TIG welder.
- Use 336 or 340 welding rod if stick welding.

Grind off any remaining weld or broken retainer block from locking pin (Figure 1, Item 1).

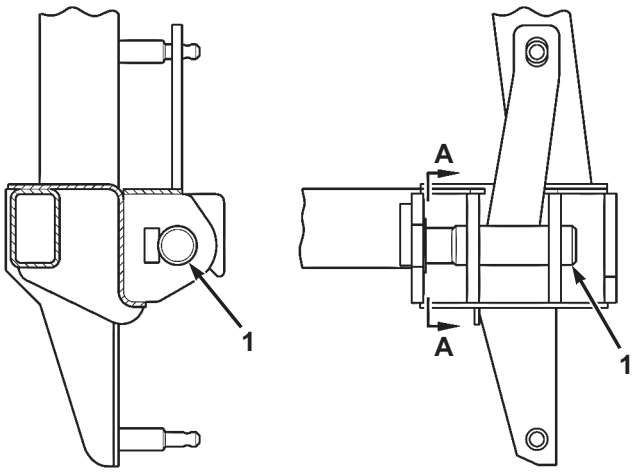


Figure 1. Winch Frame Locking Lever Outboard Retainer Blocks Field Removal.

END OF TASK

INSTALLATION

1. Rotate locking lever (Figure 2, Item 2) to the up position. Inboard retainer block (Figure 2, Item 3) should be to the back of locking pin (Figure 2, Item 1) and parallel with the winch frame (Figure 2, Item 4).

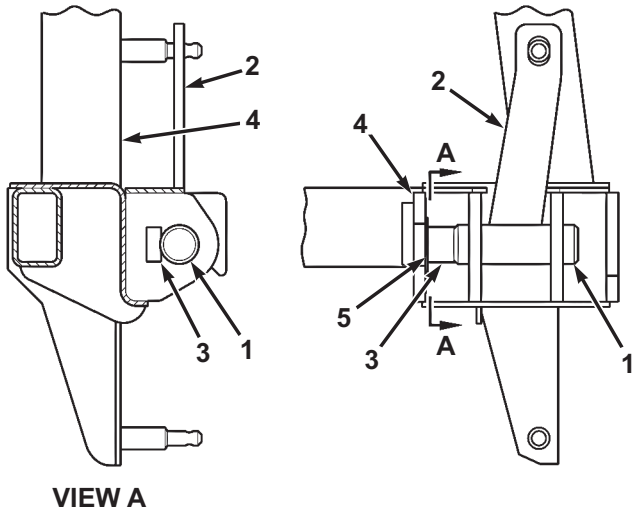


Figure 2. Winch Frame Locking Lever Outboard Retainer Blocks Field Installation.

2. Place a 0.040 in. (0.1016 cm) thick shim (Figure 2, Item 5) between end of inboard retainer block (Figure 2, Item 3) and winch frame (Figure 2, Item 4) and clamp in place.

3. Position outboard retainer block (Figure 3, Item 6) on the locking pin (Figure 3, Item 1) so that outboard retainer block is centered in the outboard lock beam opening (Figure 3, Item 7).

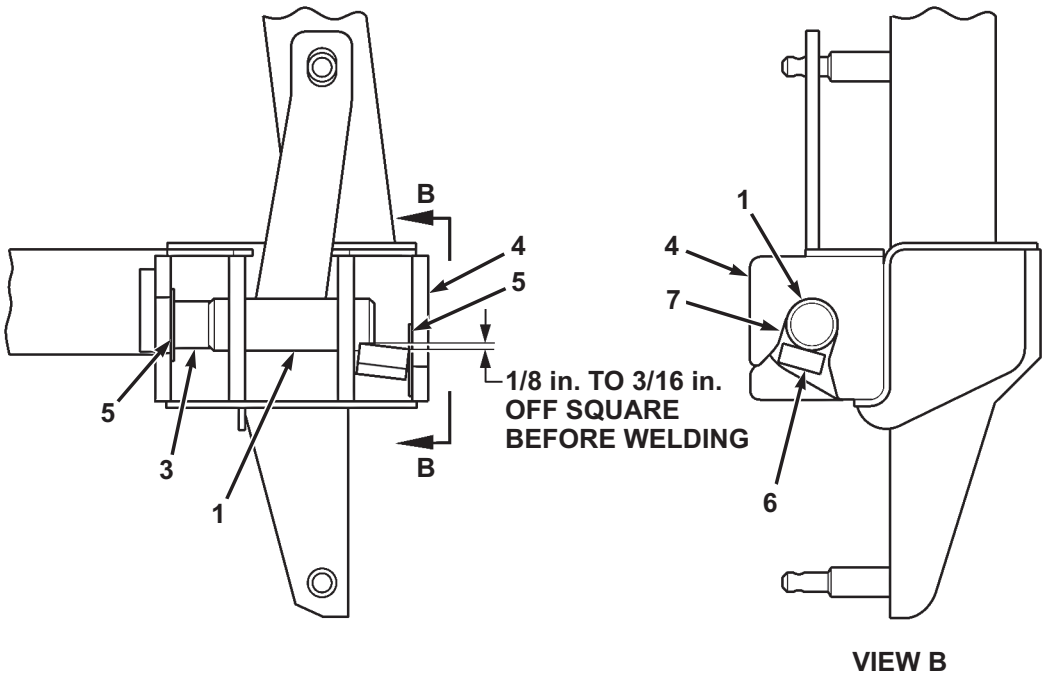


Figure 3. Winch Frame Locking Lever Outboard Retainer Blocks Field Installation.

INSTALLATION - Continued

4. Pre-stress outboard retainer block (Figure 3, Item 6) 1/8 in. (0.3175 cm) to 3/16 in. (0.47625 cm) out of square off the end of locking pin (Figure 3, Item 1) to counter pull of the weld.
5. Place a 0.040 in thick shim (Figure 3, Item 5) between end of outboard retainer block (Figure 3, Item 6) and winch frame (Figure 3, Item 4) and clamp in place.
6. Pre-heat locking pin (Figure 3, Item 1) to 475°F (246°C).
7. Tack weld outboard retainer block (Figure 3, Item 6) on back corners.
8. Weld root pass on sides of retainer block from back to front.
9. Build up weld from side to side until just over flush. All weld passes should be made from back to front.
10. Build up weld across front of retainer block until just under flush.
11. Check that locking levers (Figure 4, Item 2) move freely to upper and lower lock positions. Check that inboard retainer blocks (Figure 4, Item 3) and outboard retainer blocks (Figure 4, Item 6) are in the correct positions.

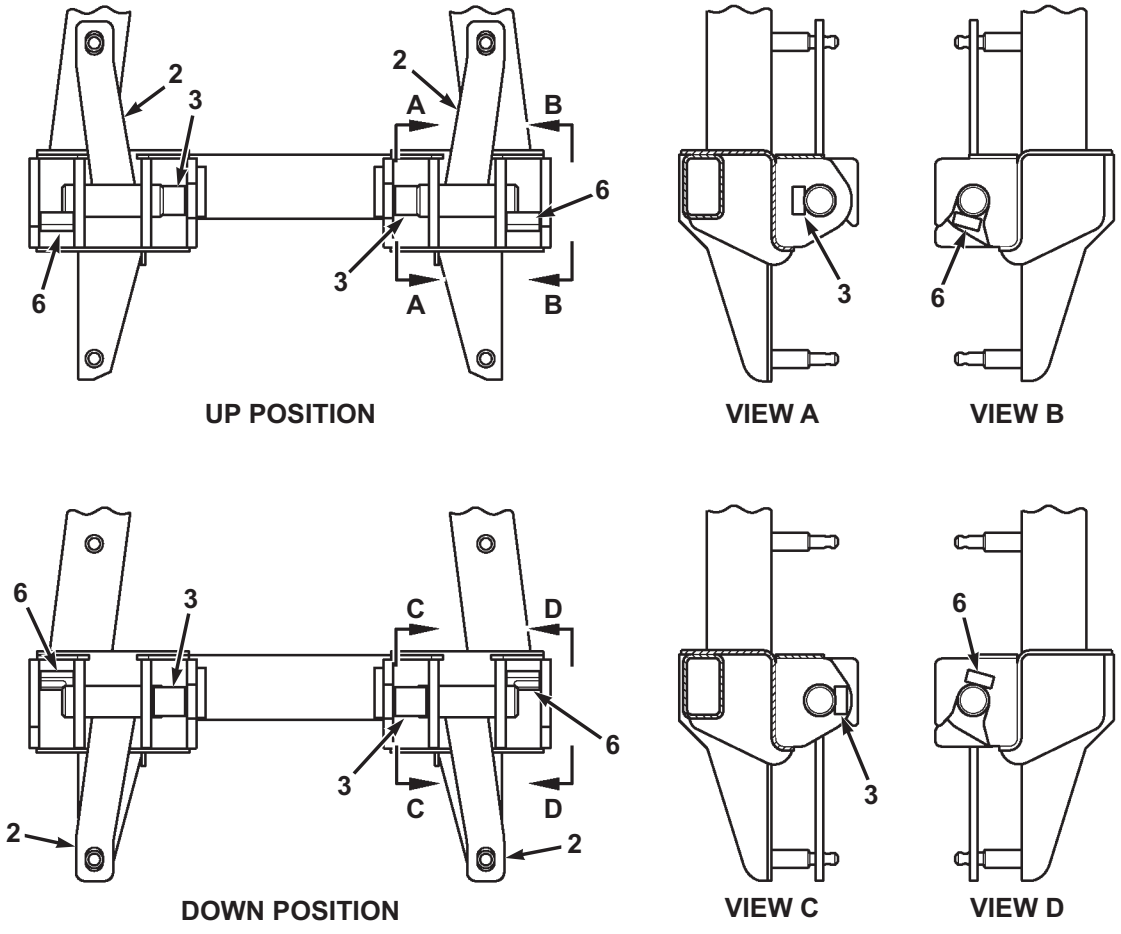


Figure 4. Winch Frame Locking Lever Outboard Retainer Blocks Field Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
WINCH HYDRAULIC SYSTEM REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Pan, Drain, 5-Gallon (WP 0078, Table 2, Item 1)
Tool Kit, General Mechanics: Automotive (WP 0078, Table 2, Item 2)

Materials/Parts
Grease (WP 0081, Table 1, Item 10, 11, 12, 13, 14)
Backup Ring (WP 0082, Table 1, Item 7) Qty: 1
Preformed Packing (WP 0082, Table 1, Item 8) Qty: 1
O-ring (WP 0082, Table 1, Item 22) Qty: 2
Preformed Packing (WP 0082, Table 1, Item 14) Qty: 2
Preformed Packing (WP 0082, Table 1, Item 13) Qty: 1

Materials/Parts (cont.)
Lockwasher (WP 0082, Table 1, Item 43) Qty: 2
Preformed Packing (WP 0082, Table 1, Item 17) Qty: 2
Lockwasher (WP 0082, Table 1, Item 46) Qty: 2

References
Parts Manual (WP 0073, Figure 12)
Parts Manual (WP 0073, Figure 14)
Parts Manual (WP 0073, Figure 17)

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP removed from the CBT. (WP 0006)

REMOVAL

CAUTION

Do not remove tube nuts and flared tube sleeves from hydraulic tubes unless there is leakage or other damage to tubes, tube nuts, or flared tube sleeves that make them unserviceable.

NOTE

- Use a drain pan to catch fluid draining from hoses and fittings. Wipe up any spillage with a rag. Handle, store, and dispose of drained fluids in accordance with local policies and procedures.
- Tag all hoses and tubes before disconnecting. Note if each hose or tube has a male or female connector.

1. Remove male quick-disconnect coupling half (Figure 1, Item 1) from dummy female quick-disconnect coupling half (Figure 1, Item 2).

REMOVAL - Continued

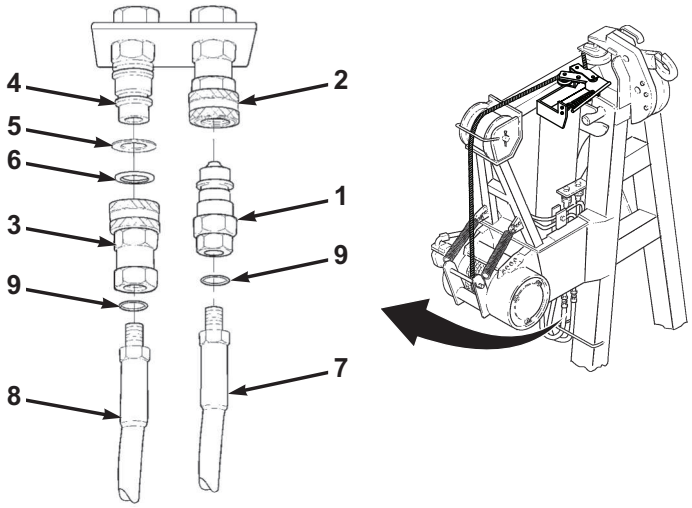


Figure 1. Winch Quick Disconnect Removal.

2. Remove female quick-disconnect coupling half (Figure 1, Item 3) from dummy male quick-disconnect coupling half (Figure 1, Item 4).
3. Remove backup ring (Figure 1, Item 5) and preformed packing (Figure 1, Item 6) from female quick-disconnect coupling half (Figure 1, Item 3). Discard backup ring and preformed packing.
4. Remove male quick-disconnect coupling half (Figure 1, Item 1) from hose (Figure 1, Item 7).
5. Remove female quick-disconnect coupling half (Figure 1, Item 3) from hose (Figure 1, Item 8). Remove two O-rings (Figure 1, Item 9) from male quick-disconnect coupling half (Figure 1, Item 1) and female quick-disconnect coupling half (Figure 1, Item 3). Discard O-rings.
6. Remove tube nut (Figure 2, Item 10) from hose connector (Figure 2, Item 11). Remove tube nut (Figure 2, Item 12) from hose connector (Figure 2, Item 13).

REMOVAL - Continued

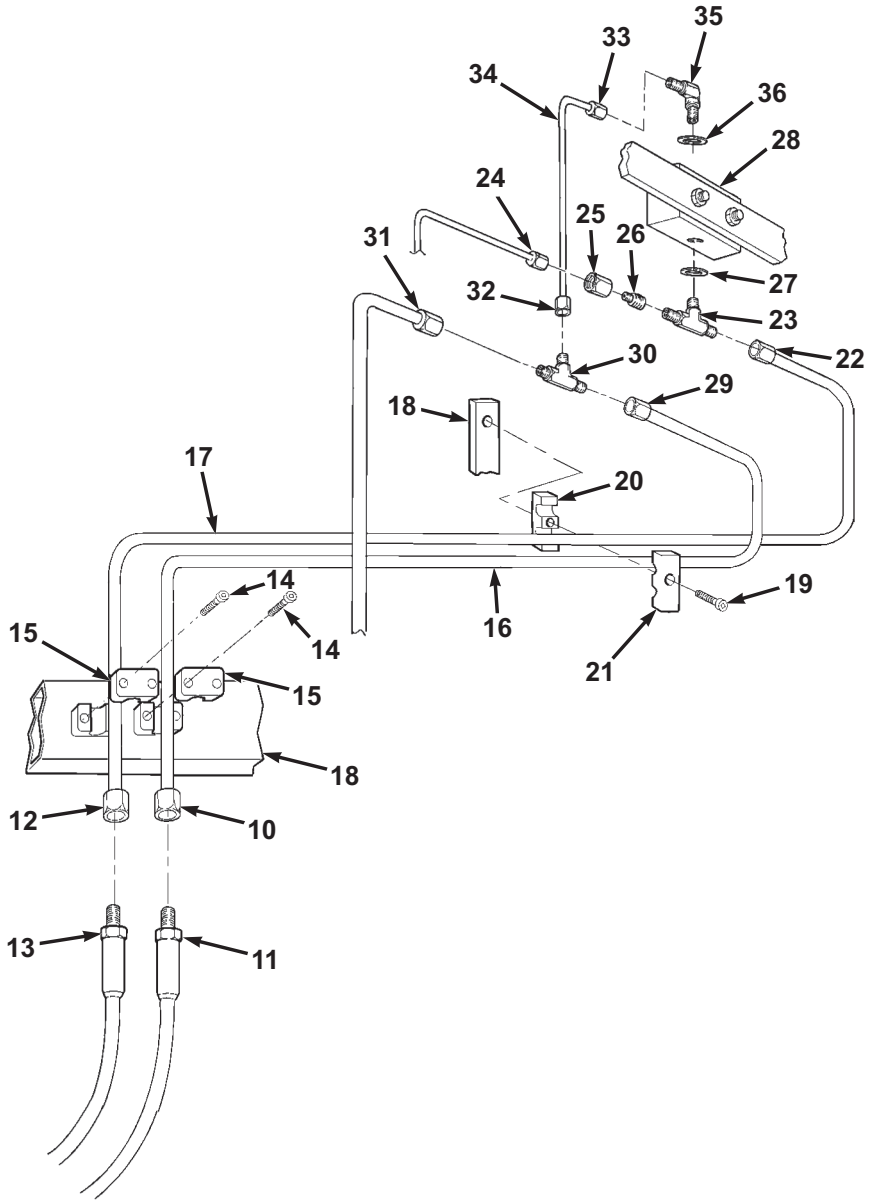


Figure 2. Winch Hydraulic Tube Bracket Removal.

7. Remove four screws (Figure 2, Item 14) and two double brackets (Figure 2, Item 15) from two tubes (Figure 2, Items 16 and 17) and winch frame (Figure 2, Item 18).
8. Remove screw (Figure 2, Item 19), clamp block (Figure 2, Item 20), and arched cover plate (Figure 2, Item 21) from two tubes (Figure 2, Items 16 and 17) and winch frame (Figure 2, Item 18). Remove tube nut (Figure 2, Item 22) and tube (Figure 2, Item 17) from tee (Figure 2, Item 23).
9. Remove tube nut (Figure 2, Item 24) from tube nut (Figure 2, Item 25). Remove tube nut (Figure 2, Item 25) from tee (Figure 2, Item 23). Remove reducer (Figure 2, Item 26) from tube nut (Figure 2, Item 25).
10. Remove tee (Figure 2, Item 23) and preformed packing (Figure 2, Item 27) from valve block (Figure 2, Item 28). Discard preformed packing.

REMOVAL - Continued

11. Remove tube nut (Figure 2, Item 29) and tube (Figure 2, Item 16) from tee (Figure 2, Item 30). Remove tube nut (Figure 2, Item 31) from tee (Figure 2, Item 30). Remove tee (Figure 2, Item 30) from tube nut (Figure 2, Item 32).
12. Remove tube nut (Figure 2, Item 33) and tube (Figure 2, Item 34) from elbow (Figure 2, Item 35). Remove elbow (Figure 2, Item 35) and preformed packing (Figure 2, Item 36) from valve block (Figure 2, Item 28). Discard preformed packing.
13. Remove tube nut (Figure 3, Item 37) from straight adapter (Figure 3, Item 38). Remove straight adapter (Figure 3, Item 38) and preformed packing (Figure 3, Item 39) from valve block (Figure 3, Item 28). Discard preformed packing.

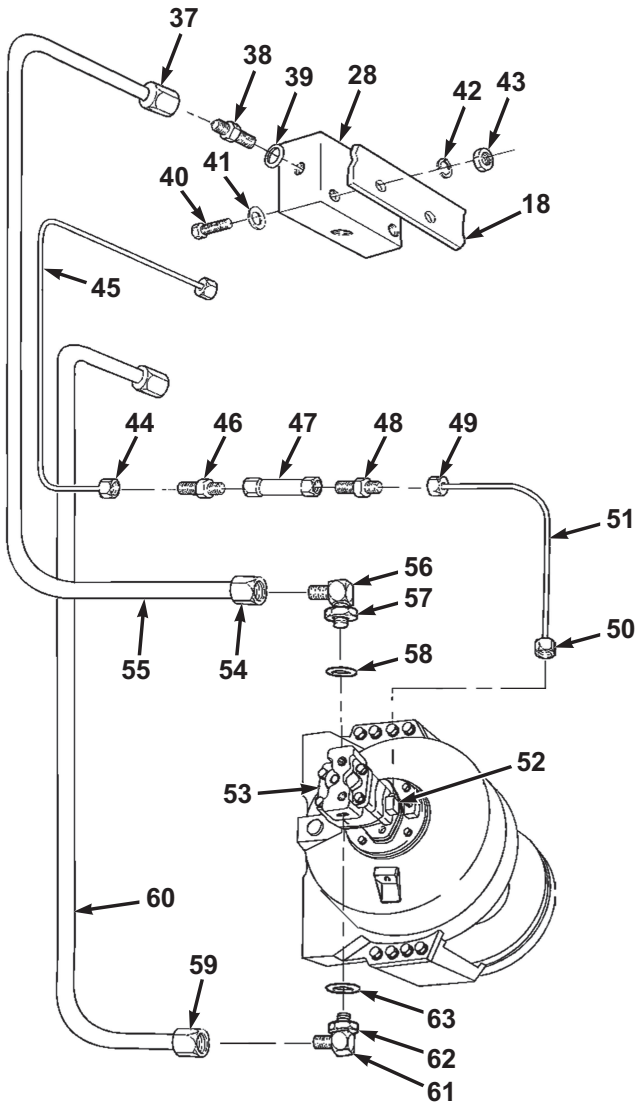


Figure 3. Winch Hydraulic Tubes Removal.

14. Remove two bolts (Figure 3, Item 40), washers (Figure 3, Item 41), lockwashers (Figure 3, Item 42), nuts (Figure 3, Item 43), and valve block (Figure 3, Item 28) from winch frame (Figure 3, Item 18). Discard lockwashers.

REMOVAL - Continued

NOTE

Before removal, mark one end of the check valve, straight adapter, and tube nut. The check valve must be installed the same way it is removed.

15. Remove tube nut (Figure 3, Item 44) and tube (Figure 3, Item 45) from straight adapter (Figure 3, Item 46). Remove straight adapter (Figure 3, Item 46) from check valve (Figure 3, Item 47). Remove check valve (Figure 3, Item 47) from straight adapter (Figure 3, Item 48). Remove tube nut (Figure 3, Item 49) from straight adapter (Figure 3, Item 48).
16. Remove tube nut (Figure 3, Item 50) and tube (Figure 3, Item 51) from elbow (Figure 3, Item 52) on side of winch motor (Figure 3, Item 53).
17. Remove tube nut (Figure 3, Item 54) and tube (Figure 3, Item 55) from elbow (Figure 3, Item 56) on top of winch motor (Figure 3, Item 53). Loosen captive nut (Figure 3, Item 57) and remove elbow (Figure 3, Item 56) and preformed packing (Figure 3, Item 58) from winch motor (Figure 3, Item 53). Discard preformed packing.
18. Remove tube nut (Figure 3, Item 59) and tube (Figure 3, Item 60) from elbow (Figure 3, Item 61) on bottom of winch motor (Figure 3, Item 53). Loosen captive nut (Figure 3, Item 62) and remove elbow (Figure 3, Item 61) and preformed packing (Figure 3, Item 63) from winch motor (Figure 3, Item 53). Discard preformed packing.

NOTE

Note where dummy coupling halves were removed.

19. Remove two screws (Figure 4, Item 64), lockwashers (Figure 4, Item 65), and dummy quick-disconnect coupling halves (Figure 4, Items 2 and 4) from mounting bracket (Figure 4, Item 66). Discard lockwashers.

REMOVAL - Continued

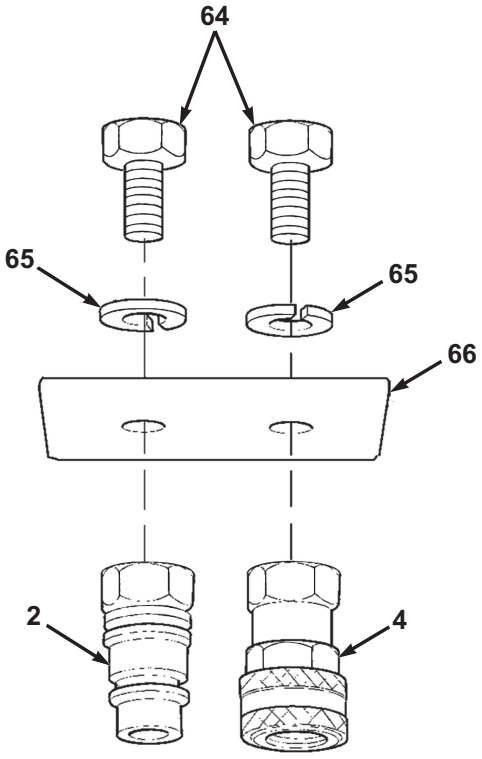


Figure 4. Winch Quick Disconnect Bracket Removal.

END OF TASK

CLEANING

Refer to General Maintenance Instructions (WP 0038) for general cleaning instructions.

END OF TASK

INSPECTION

Refer to General Maintenance Instructions (WP 0038) for general inspection instructions.

END OF TASK

INSTALLATION

NOTE

- Do not tighten captive nuts until all tubes are installed.
- Apply a light film of grease on all O-rings and preformed packings before installation.

1. Install dummy quick-disconnect coupling halves (Figure 5, Items 2 and 4) on mounting bracket (Figure 5, Item 66) with two screws (Figure 5, Item 64) and lockwashers (Figure 5, Item 65).

INSTALLATION - Continued

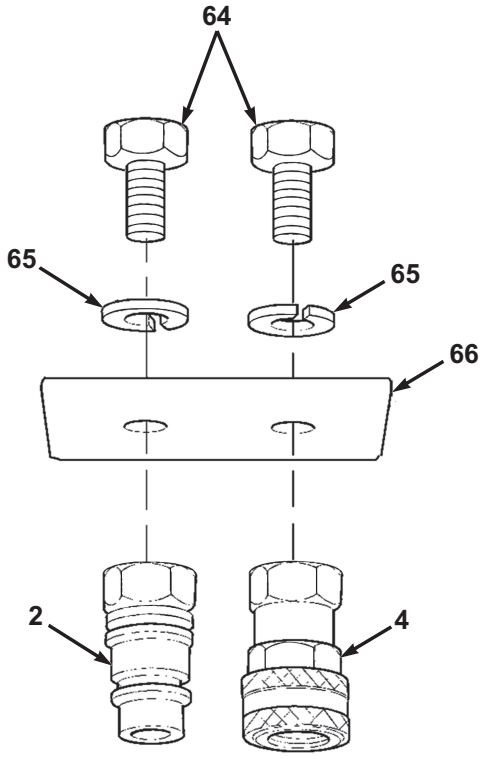


Figure 5. Winch Quick Disconnect Bracket Installation.

2. Install elbow (Figure 6, Item 61) and O-ring (Figure 6, Item 63) on bottom of winch motor (Figure 6, Item 53).

INSTALLATION - Continued

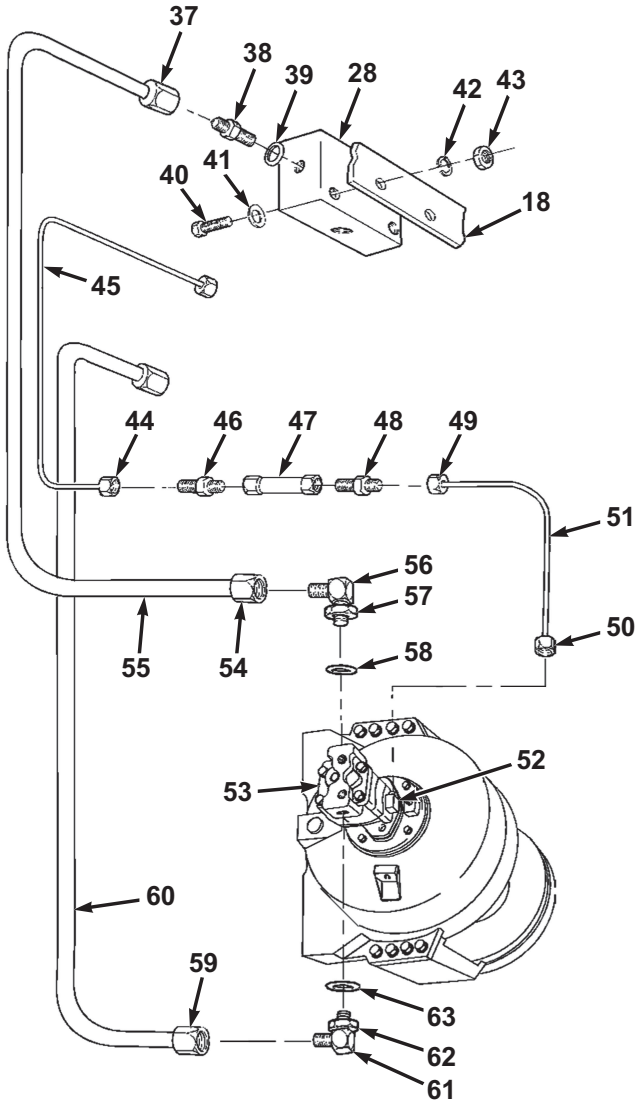


Figure 6. Winch Hydraulic Tubes Installation.

3. Install elbow (Figure 6, Item 56) and preformed packing (Figure 6, Item 58) on top of winch motor (Figure 6, Item 53).
4. Install tube nut (Figure 6, Item 50) and tube (Figure 6, Item 51) on elbow (Figure 6, Item 52) on side of winch motor (Figure 6, Item 53).

NOTE

Make sure breather valve is facing rear of the BAP when installing valve block.

5. Install valve block (Figure 6, Item 28) on winch frame (Figure 6, Item 18) with two bolts (Figure 6, Item 40), washers (Figure 6, Item 41), lockwashers (Figure 6, Item 42), and nuts (Figure 6, Item 43).
6. Install straight adapter (Figure 6, Item 38) and preformed packing (Figure 6, Item 39) on side of valve block (Figure 6, Item 28).

INSTALLATION - Continued

NOTE

To install check valve correctly, use the marks made on check valve, straight adapter, and tube nut during removal.

7. Install tube nut (Figure 6, Item 49) on straight adapter (Figure 6, Item 48). Install check valve (Figure 6, Item 47) on straight adapter (Figure 6, Item 48). Install straight adapter (Figure 6, Item 46) on check valve (Figure 6, Item 47). Install tube nut (Figure 6, Item 44) and tube (Figure 6, Item 45) on straight adapter (Figure 6, Item 46).
8. Install tube nut (Figure 6, Item 54) and tube (Figure 6, Item 55) on elbow (Figure 6, Item 56). Install tube nut (Figure 6, Item 37) on other end of tube (Figure 6, Item 55) on straight adapter (Figure 6, Item 38).
9. Install tube nut (Figure 6, Item 59) and tube (Figure 6, Item 60) on elbow (Figure 6, Item 61).
10. Install tee (Figure 7, Item 23) and preformed packing (Figure 7, Item 27) on bottom of valve block (Figure 7, Item 28). Install elbow (Figure 7, Item 35) and O-ring (Figure 7, Item 36) on top of valve block (Figure 7, Item 28).

INSTALLATION - Continued

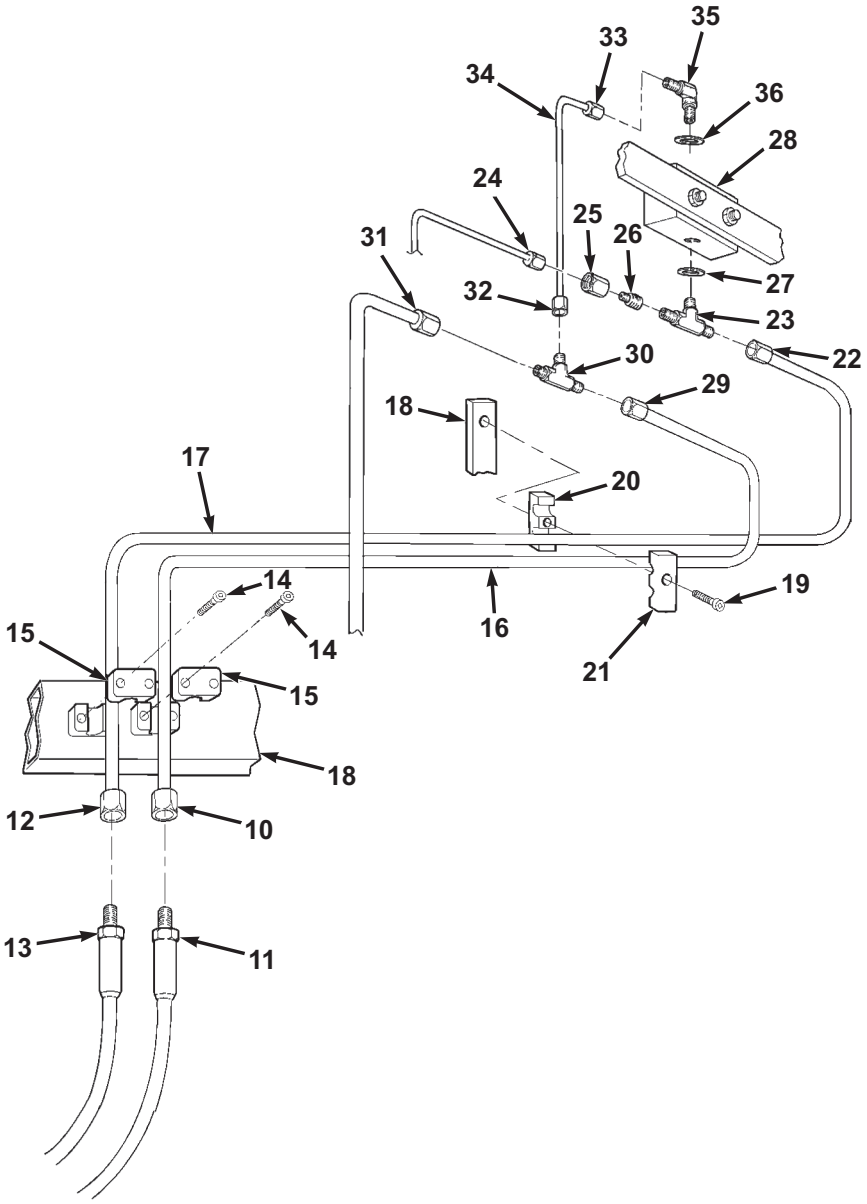


Figure 7. Winch Hydraulic Tube Bracket Installation.

11. Install tube nut (Figure 7, Item 33) and tube (Figure 7, Item 34) on elbow (Figure 7, Item 35). Install tee (Figure 7, Item 30) on tube nut (Figure 7, Item 32) and tube (Figure 7, Item 34). Install tube nut (Figure 7, Item 31) on tee (Figure 7, Item 30).
12. Install reducer (Figure 7, Item 26) and tube nut (Figure 7, Item 25) on tee (Figure 7, Item 23).
13. Install tube nut (Figure 7, Item 24) on tube nut (Figure 7, Item 25). Install tube nut (Figure 7, Item 22) and tube (Figure 7, Item 17) on tee (Figure 7, Item 23). Install tube nut (Figure 7, Item 29) and tube (Figure 7, Item 16) on tee (Figure 7, Item 30).
14. Install screw (Figure 7, Item 19), clamp block (Figure 7, Item 20), and arched cover plate (Figure 7, Item 21) on two tubes (Figure 7, Items 16 and 17) and winch frame (Figure 7, Item 18).

INSTALLATION - Continued

15. Install four screws (Figure 7, Item 14) and two double brackets (Figure 7, Item 15) on two tubes (Figure 7, Items 16 and 17) and winch frame (Figure 7, Item 18).

CAUTION

BAP hydraulic hoses must be installed through restraining bracket welded onto winch frame. Failure to properly install hydraulic hoses could result it damage to hoses during BAP operation.

16. Install tube nut (Figure 7, Item 10) on hose connector (Figure 7, Item 11). Install tube nut (Figure 7, Item 12) on hose connector (Figure 7, Item 13).
17. Install two O-rings (Figure 8, Item 9) on male quick-disconnect coupling half (Figure 8, Item 1) and female quick-disconnect coupling half (Figure 8, Item 3).

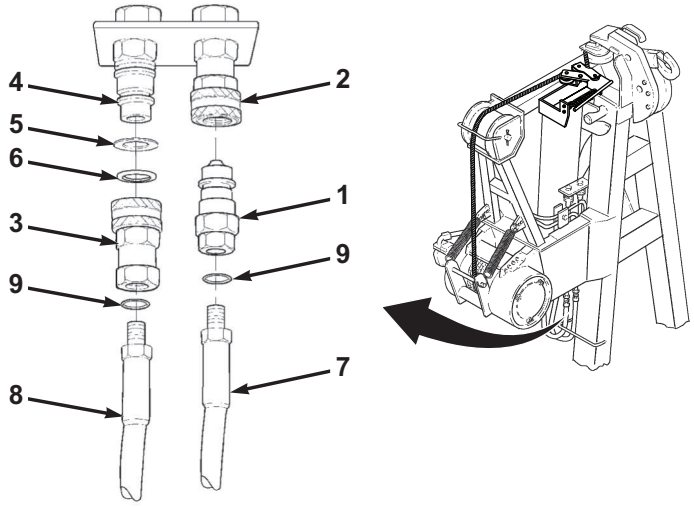


Figure 8. Winch Quick Disconnect Installation.

18. Install female quick-disconnect coupling half (Figure 8, Item 3) on hose (Figure 8, Item 8).
19. Install male quick-disconnect coupling half (Figure 8, Item 1) on hose (Figure 8, Item 7).
20. Install backup ring (Figure 8, Item 5) and preformed packing (Figure 8, Item 6) in female quick-disconnect coupling half (Figure 8, Item 3).
21. Install female quick-disconnect coupling half (Figure 8, Item 3) on dummy male quick-disconnect coupling half (Figure 8, Item 4).
22. Install male quick-disconnect coupling half (Figure 8, Item 1) on dummy female quick-disconnect coupling half (Figure 8, Item 2).

END OF TASK

FOLLOW-ON MAINTENANCE

1. Load the BAP on the CBT. (WP 0005)
2. Briefly operate BAP winch and check for leaks.

FOLLOW-ON MAINTENANCE - Continued

3. Add hydraulic oil to Transporter as needed. (WP 0070)

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
WINCH CABLE TENSIONER REPAIR

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Materials/Parts
Gloves, Protective (WP 0081, Table 1, Item 8)
Pin, Cotter (WP 0082, Table 1, Item 4) Qty: 2
Locknut (WP 0082, Table 1, Item 3) Qty: 6
Locknut (WP 0082, Table 1, Item 2) Qty: 1

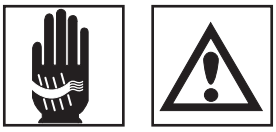
Personnel Required
(2)

References
Parts Manual (WP 0073, Figure 13)

Equipment Condition
Load removed from the BAP. (WP 0008)
Wheels chocked. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)
Winch cable fully extended. (WP 0008)
Engine turned off. (TM 9-2320-435-10 or TM 9-2320-425-10) (WP 0076)

REMOVAL

WARNING



- Always wear protective gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in serious injury or death to personnel.
- Never operate winch with less than five wraps of cable on winch drum. Failure to comply may result in serious injury or death to personnel.
- Do not move the CBT until the bridge bay has been fully loaded into the water from the vehicle. Failure to comply may result in serious injury or death to personnel.

1. Remove two cotter pins (Figure 1, Item 1) and retainer bar (Figure 1, Item 2) from handle assembly (Figure 1, Item 3) and base assembly (Figure 1, Item 4). Discard cotter pins.

REMOVAL - Continued

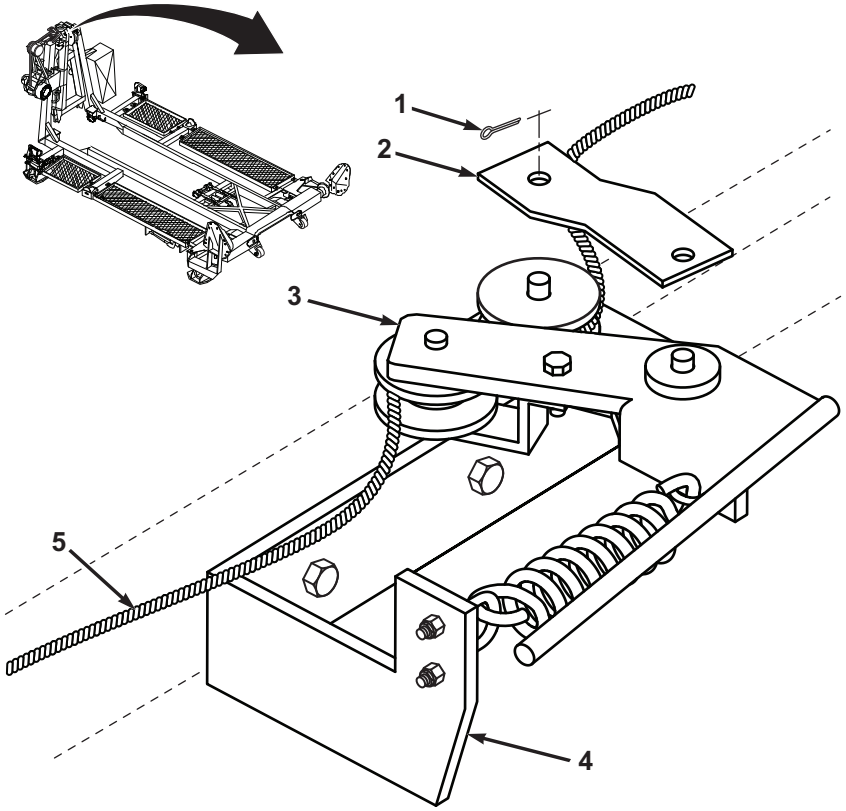


Figure 1. Retainer Bar and Cable Assembly Removal.

2. Remove cable assembly (Figure 1, Item 5) from handle assembly (Figure 1, Item 3) and base assembly (Figure 1, Item 4).
3. Remove two screws (Figure 2, Item 6), locknuts (Figure 2, Item 7), handle assembly (Figure 2, Item 3), and base assembly (Figure 2, Item 4) from winch frame (Figure 2, Item 8). Discard locknuts.

REMOVAL - Continued

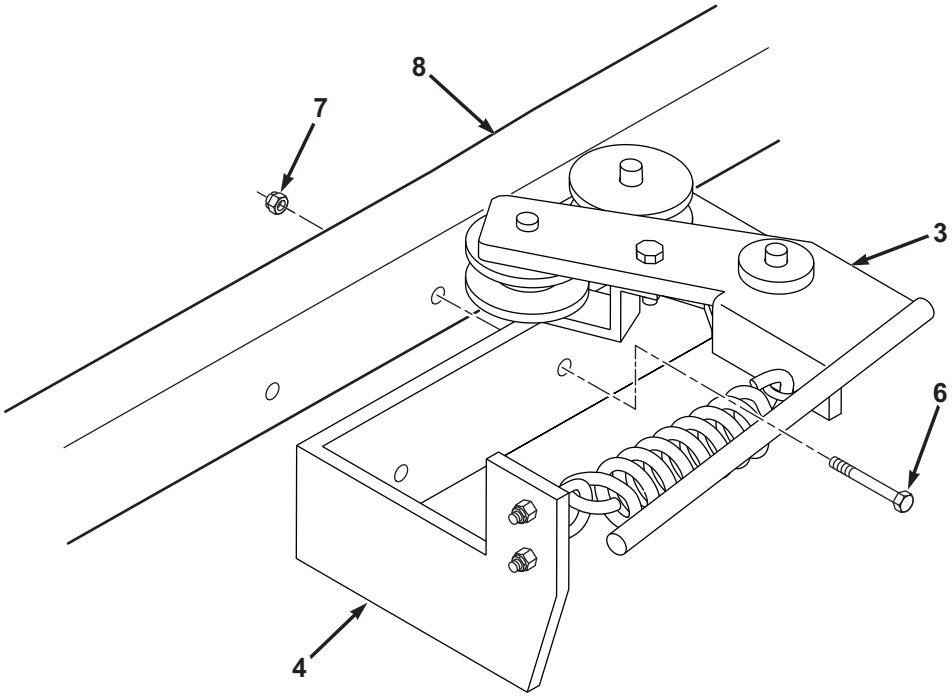


Figure 2. Base Assembly Removal.

END OF TASK

DISASSEMBLY

NOTE

Note quantity of threads on u-bolt prior to removing locknuts and jam-nuts to ensure proper tension on spring during installation.

1. Remove two locknuts (Figure 3, Item 9) and u-bolt (Figure 3, Item 10) from handle assembly (Figure 3, Item 3) and spring (Figure 3, Item 11). Discard locknuts.

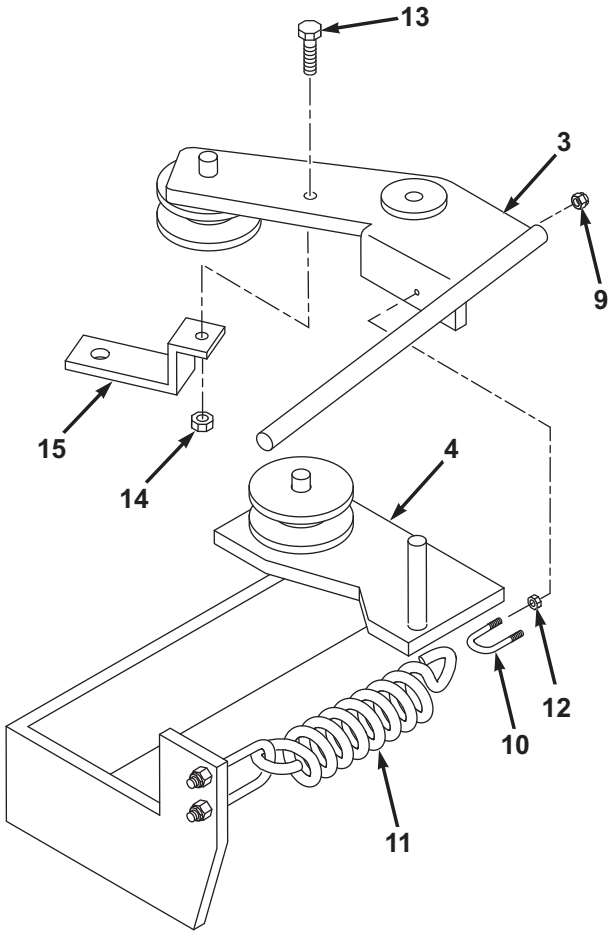


Figure 3. Handle Assembly Removal.

2. Remove two jam-nuts (Figure 3, Item 12) from u-bolt (Figure 3, Item 10).
3. Remove handle assembly (Figure 3, Item 3) from base assembly (Figure 3, Item 4).
4. Remove screw (Figure 3, Item 13), locknut (Figure 3, Item 14), and torsion lock plate (Figure 3, Item 15) from handle assembly (Figure 3, Item 3). Discard locknuts.

DISASSEMBLY - Continued

NOTE

Note quantity of threads on u-bolt prior to removing locknuts to ensure proper tension on spring during installation.

5. Remove two locknuts (Figure 4, Item 16), u-bolt (Figure 4, Item 17), and spring (Figure 4, Item 11) from base assembly (Figure 4, Item 4). Discard locknuts.

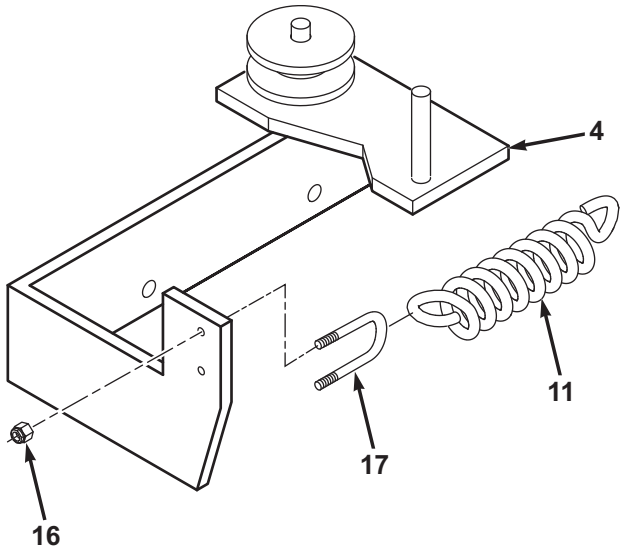


Figure 4. Spring and U-bolt Removal.

END OF TASK

ASSEMBLY

NOTE

Install locknuts on u-bolt as noted prior to removal.

1. Install spring (Figure 5, Item 11) on base assembly (Figure 5, Item 4) with u-bolt (Figure 5, Item 17) and two locknuts (Figure 5, Item 16).

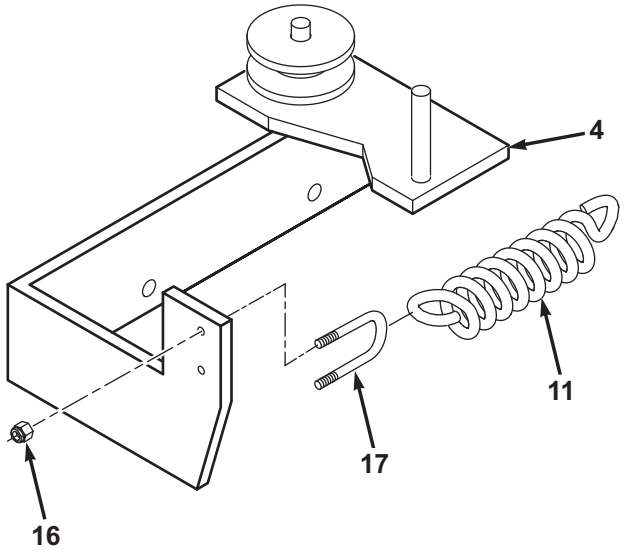


Figure 5. Spring and U-bolt Installation.

2. Install torsion lock plate (Figure 6, Item 15) on handle assembly (Figure 6, Item 3) with screw (Figure 6, Item 13) and locknut (Figure 6, Item 14).

ASSEMBLY - Continued

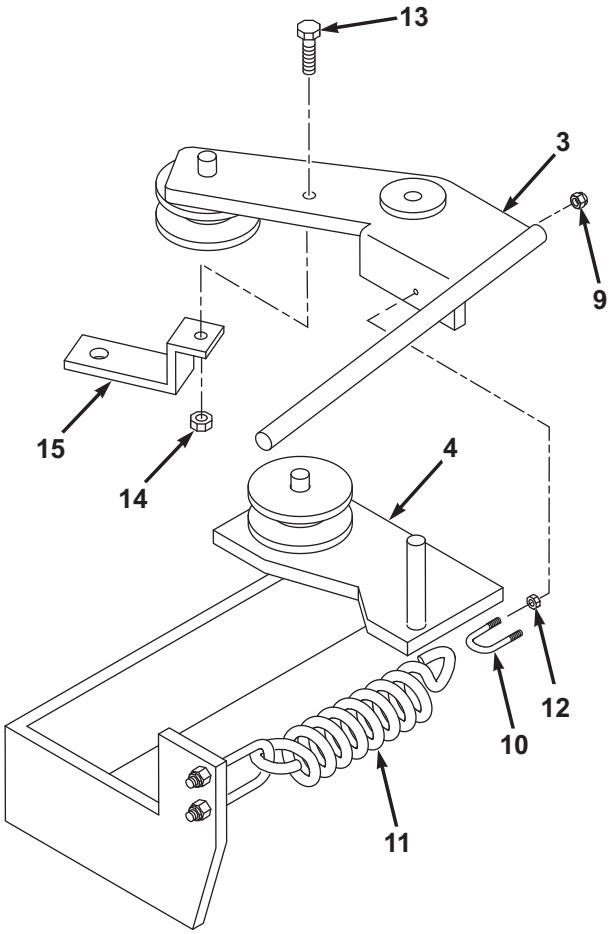


Figure 6. Handle Assembly Installation.

3. Install handle assembly (Figure 6, Item 3) on base assembly (Figure 6, Item 4).

NOTE

Install jam-nuts and locknuts on u-bolt as noted prior to removal.

4. Install two jam-nuts (Figure 6, Item 12) on u-bolt (Figure 6, Item 10).
5. Install spring (Figure 6, Item 11) on handle assembly (Figure 6, Item 3) with u-bolt (Figure 6, Item 10) and two locknuts (Figure 6, Item 9).

END OF TASK

INSTALLATION

1. Install base assembly (Figure 7, Item 4) and handle assembly (Figure 7, Item 3) on winch frame (Figure 7, Item 8) with two screws (Figure 7, Item 6) and locknuts (Figure 7, Item 7).

INSTALLATION - Continued

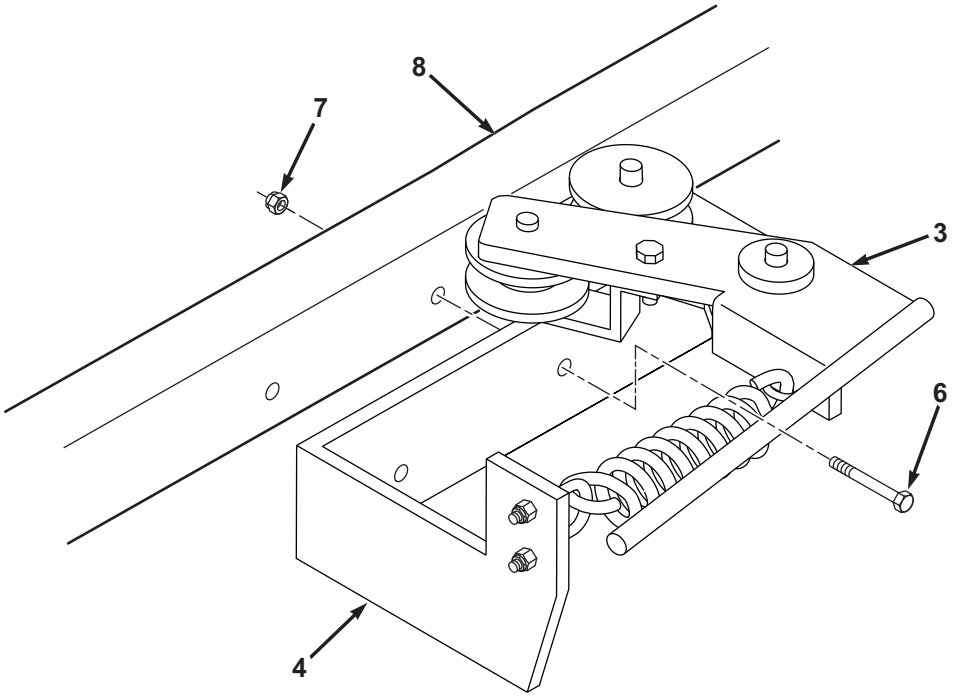


Figure 7. Base Assembly Installation.

2. Install cable assembly (Figure 8, Item 5) on handle assembly (Figure 8, Item 3) and base assembly (Figure 8, Item 4).

INSTALLATION - Continued

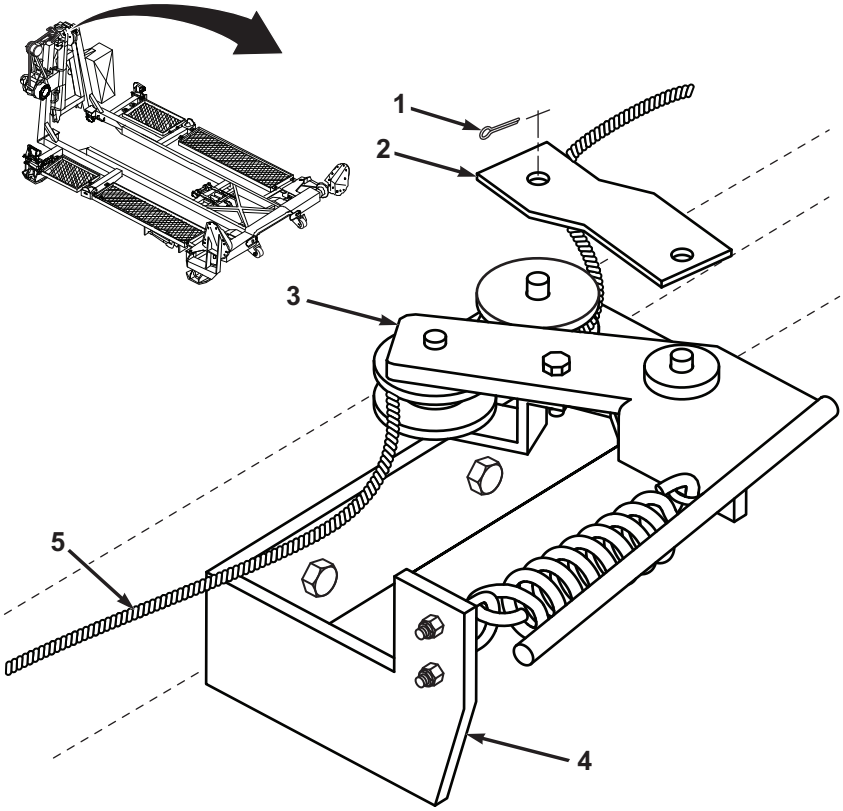


Figure 8. Retainer Bar and Cable Assembly Installation.

3. Install retainer bar (Figure 8, Item 2) on handle assembly (Figure 8, Item 3) and base assembly (Figure 8, Item 4) with two cotter pins (Figure 8, Item 1).

END OF TASK

FOLLOW-ON MAINTENANCE

1. Reel in winch cable. (WP 0008)
2. Remove wheel chocks. (TM 9-2320-435-10 or TM 9-2320-425-10).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
CABLE ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Materials/Parts
Gloves, Protective (WP 0081, Table 1, Item 8)
Hook Latch Kit (WP 0082, Table 1, Item 18)

Personnel Required
(2)

References
Parts Manual (WP 0073, Figure 12)

References (cont.)
Parts Manual (WP 0073, Figure 15)
Parts Manual (WP 0073, Figure 16)
Parts Manual (WP 0073, Figure 19)
WP 0070

Equipment Condition
Load removed from the BAP. (WP 0008)
Wheels chocked (TM 9-2320-435-10 or TM 9-2320-425-10). (WP 0076)
Winch cable fully extended. (WP 0008)
Engine turned off (TM 9-2320-435-10 or TM 9-2320-425-10). (WP 0076)

REMOVAL

WARNING



Always wear protective gloves when handling winch cable. Never let cable run through hands. Frayed cables can cut severely. Failure to comply may result in serious injury or death to personnel.

1. Unhook ends of two cable guide springs (Figure 1, Item 1) from cable guide (Figure 1, Item 2) and two mounting brackets (Figure 1, Item 3). Lower cable guide (Figure 1, Item 2) to gain access for removing cable anchor (Figure 1, Item 4).

REMOVAL - Continued

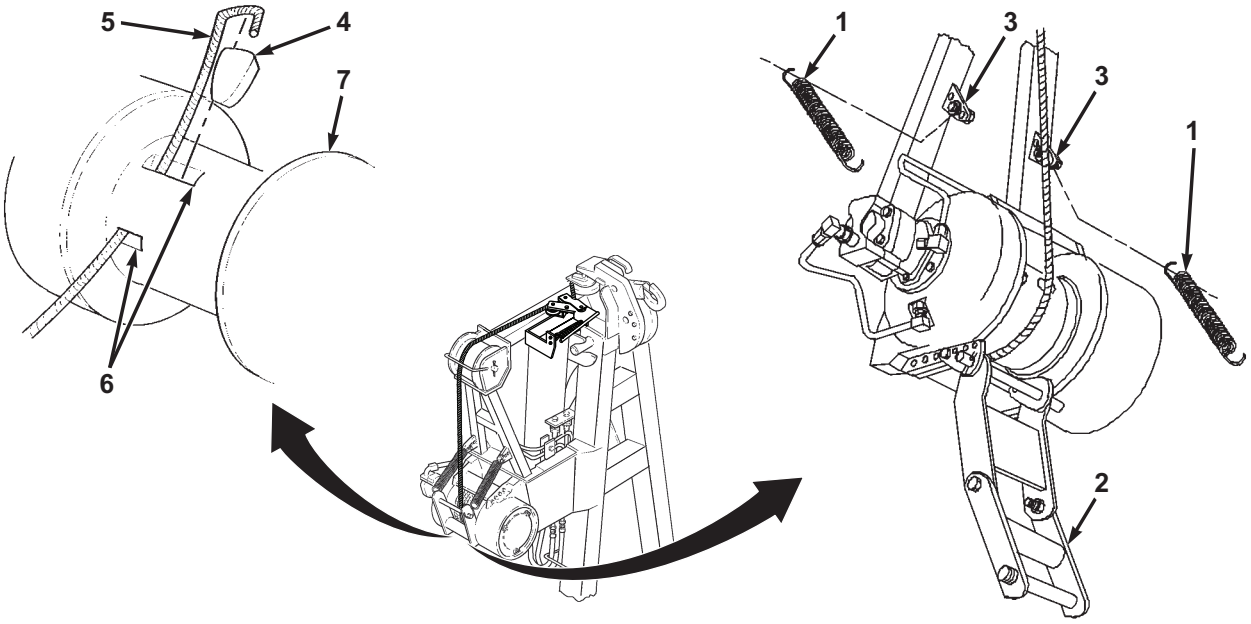


Figure 1. Cable Anchor Removal.

NOTE

Cable drum can be set up for clockwise or counterclockwise installation of winch cable. Make note of cable anchor slot used to secure cable on winch drum prior to removal to ensure proper installation.

2. Push cable anchor (Figure 1, Item 4) and cable (Figure 1, Item 5) out of cable anchor slot (Figure 1, Item 6). Remove cable (Figure 1, Item 5) from around cable anchor (Figure 1, Item 4), and pull cable (Figure 1, Item 5) from winch (Figure 1, Item 7).
3. Remove cable (Figure 2, Item 5) from winch (Figure 2, Item 7) and off of winch frame (Figure 2, Item 8) by pulling through roller (Figure 2, Item 9), cable tensioner (Figure 2, Item 10), and pulley (Figure 2, Item 11).

REMOVAL - Continued

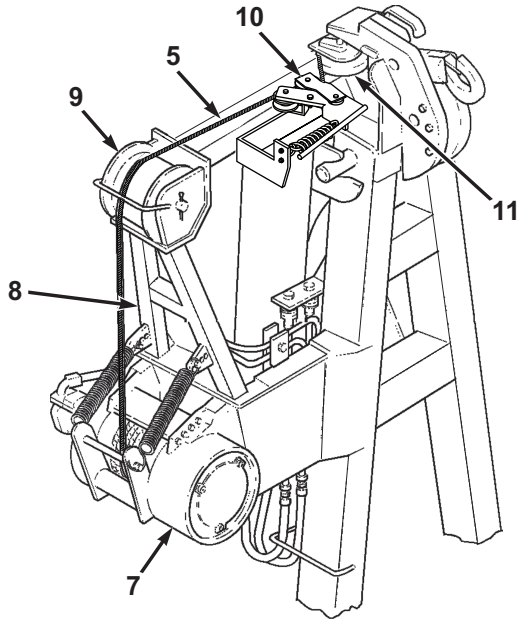


Figure 2. Cable Assembly Removal.

END OF TASK

DISASSEMBLY

1. Loosen setscrew (Figure 3, Item 1) from hook holder (Figure 3, Item 2) until pin (Figure 3, Item 3) can be removed from hook holder (Figure 3, Item 2).

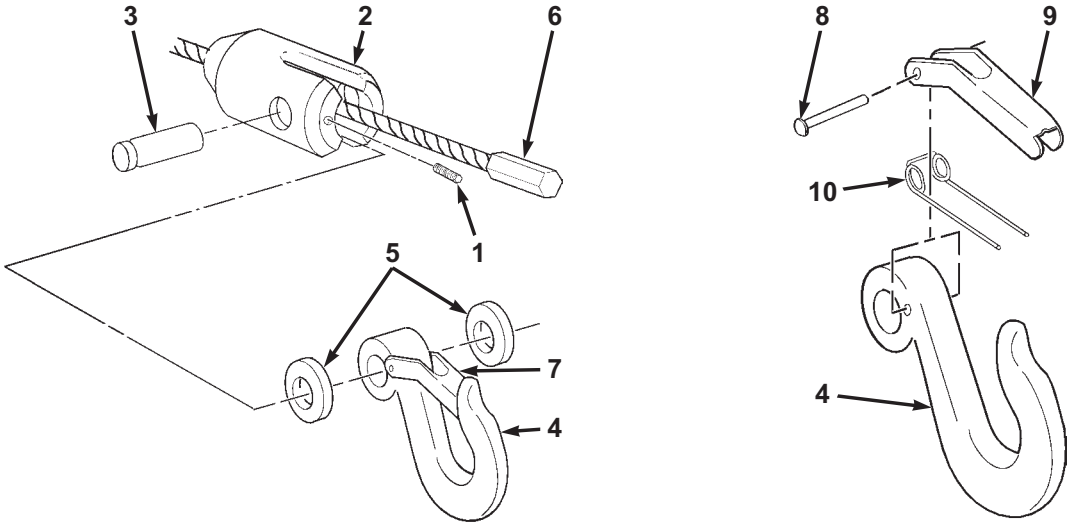


Figure 3. Cable Assembly Disassembly.

2. Remove hook (Figure 3, Item 4) and two spacers (Figure 3, Item 5) from hook holder (Figure 3, Item 2), and slide hook holder (Figure 3, Item 2) off of cable (Figure 3, Item 6).

DISASSEMBLY - Continued

3. Remove hook latch kit (Figure 3, Item 7) by driving out rivet (Figure 3, Item 8) and removing latch (Figure 3, Item 9) and spring (Figure 3, Item 10) from hook (Figure 3, Item 4). Discard hook latch kit.

END OF TASK

ASSEMBLY

1. Install latch (Figure 4, Item 9), spring (Figure 4, Item 10), and rivet (Figure 4, Item 8) on hook (Figure 4, Item 4).

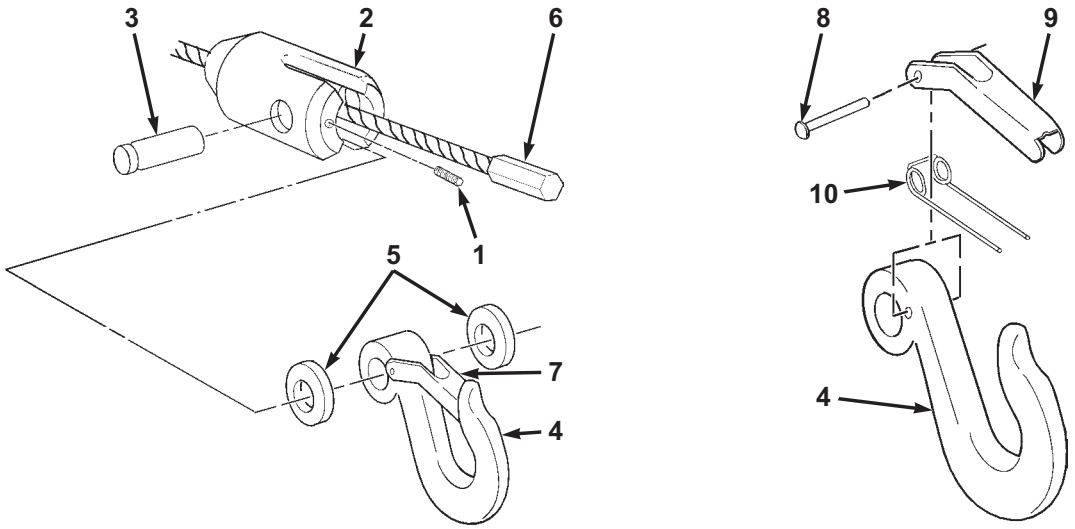


Figure 4. Cable Assembly.

2. Slide hook holder (Figure 4, Item 2) over cable (Figure 4, Item 6) until cable (Figure 4, Item 6) is fully seated in hook holder (Figure 4, Item 2).
3. Install two spacers (Figure 4, Item 5), hook (Figure 4, Item 4), and pin (Figure 4, Item 3) in hook holder (Figure 4, Item 2). Ensure pin (Figure 4, Item 3) is installed with groove under setscrew (Figure 4, Item 1).
4. Install setscrew (Figure 4, Item 1) in hook holder (Figure 4, Item 2).
5. Lubricate cable in accordance with Lubrication Instructions (WP 0070).

END OF TASK

INSTALLATION

1. Install cable (Figure 5, Item 5) on winch frame (Figure 5, Item 8) and through pulley (Figure 5, Item 11), cable tensioner (Figure 5, Item 10), and roller (Figure 5, Item 9) and on winch (Figure 5, Item 7).

INSTALLATION - Continued

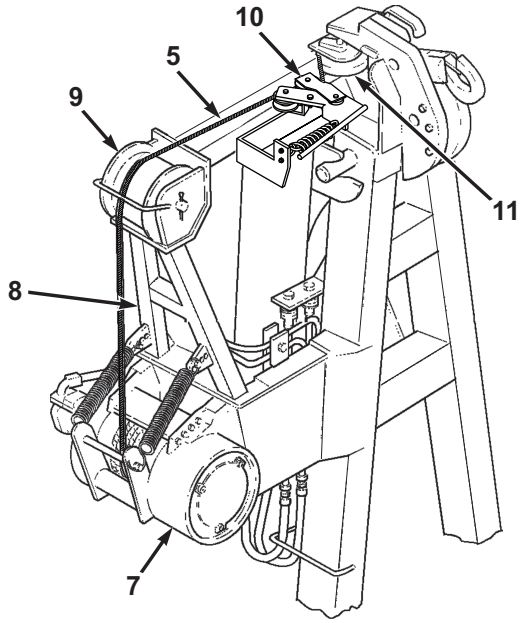


Figure 5. Cable Assembly Installation.

NOTE

Ensure cable is fully wrapped around wide end of cable anchor and lies along groove of cable anchor. Small end of cable anchor goes into cable anchor slot first.

2. Install cable (Figure 6, Item 5) through cable anchor slot (Figure 6, Item 6) and around cable anchor (Figure 6, Item 4). Firmly seat cable anchor (Figure 6, Item 4) in cable anchor slot (Figure 6, Item 6) of winch (Figure 6, Item 7).

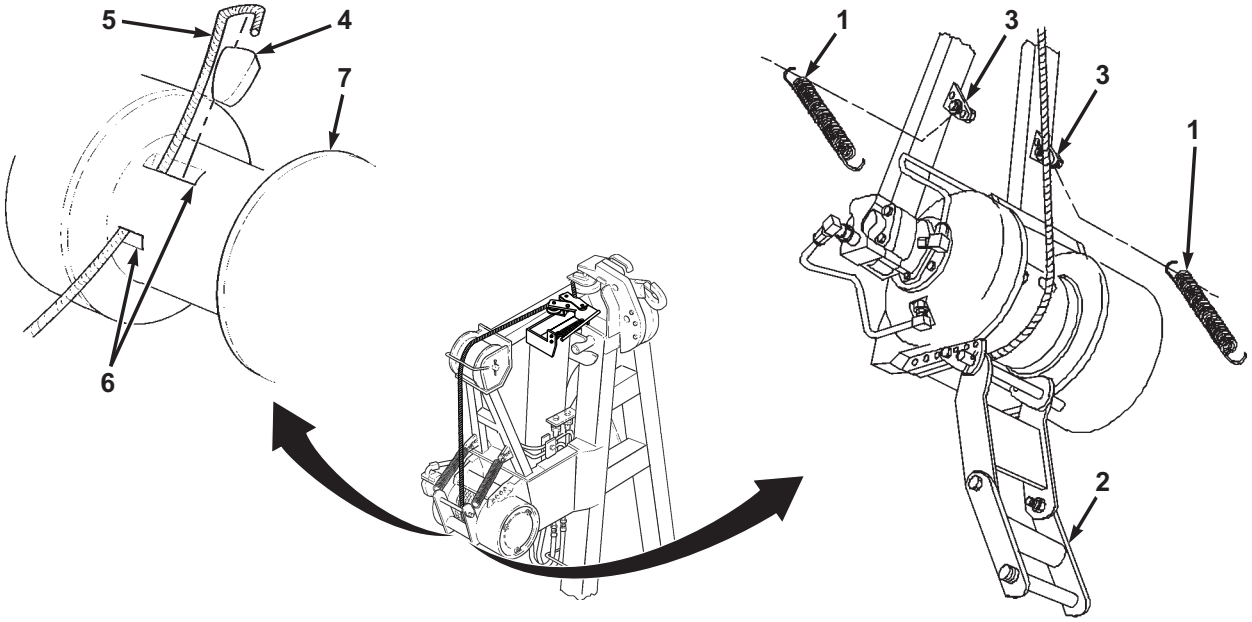


Figure 6. Cable Anchor Installation.

INSTALLATION - Continued

3. Raise cable guide (Figure 6, Item 2) and install two cable guide springs (Figure 6, Item 1) on cable guide (Figure 6, Item 2) and two mounting brackets (Figure 6, Item 3).

END OF TASK

FOLLOW-ON MAINTENANCE

Reel in winch cable. (WP 0008)

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
WINCH ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Pan, Drain, 5-Gallon (WP 0078, Table 2, Item 1)
Lifting Device, Minimum Capacity 350 lb (158.9 kg)
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Materials/Parts
Cap and Plug Set (WP 0081, Table 1, Item 4)
Gloves, Protective (WP 0081, Table 1, Item 8)
Goggles, Safety (WP 0081, Table 1, Item 9)
Lubricating Oil (WP 0081, Table 1, Item 17, 18, 19, 20)
Rag (WP 0081, Table 1, Item 21)
Packing, Preformed
(WP 0082, Table 1, Item 17) Qty: 2
Cotter Pin (WP 0082, Table 1, Item 34) Qty: 4
Lockwasher (WP 0082, Table 1, Item 44) Qty: 8
Lockwasher (WP 0082, Table 1, Item 46) Qty: 4

Personnel Required
(2)

References
Parts Manual (WP 0073, Figure 12)
Parts Manual (WP 0073, Figure 14)
Parts Manual (WP 0073, Figure 15)
Parts Manual (WP 0073, Figure 16)
Parts Manual (WP 0073, Figure 17)
Parts Manual (WP 0073, Figure 19)
WP 0057
WP 0038

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP unloaded from the CBT. (WP 0006)

REMOVAL

WARNING



If winch cable has to be cut to remove winch assembly, wrap cut end of cable in tape and secure loose end of cable to prevent it from swinging free during winch assembly removal. Failure to comply may result in serious injury or death to personnel.

WARNING



The winch assembly without cable installed weighs approximately 350 pounds (158.9 kg). Winch must be secured by a suitable lifting device before removing or installing mounting hardware. Failure to comply may result in serious injury or death to personnel.

CAUTION

To prevent contamination of hydraulic system, cap and/or plug hydraulic lines and ports after disconnecting lines.

REMOVAL - Continued

NOTE

- If winch is inoperative, it can be removed only by cutting the cable.
- Use a drain pan to catch fluid draining from hoses and fittings. Wipe up any spillage with a rag. Handle, store, and dispose of drained fluids in accordance with local policies and procedures.

1. If winch can be operated to play out winch cable (Figure 1, Item 1), remove winch cable (Figure 1, Item 1) (WP 0057). If winch cannot be operated to play out winch cable, cut cable (Figure 1, Item 1) close to hook holder (Figure 1, Item 2).

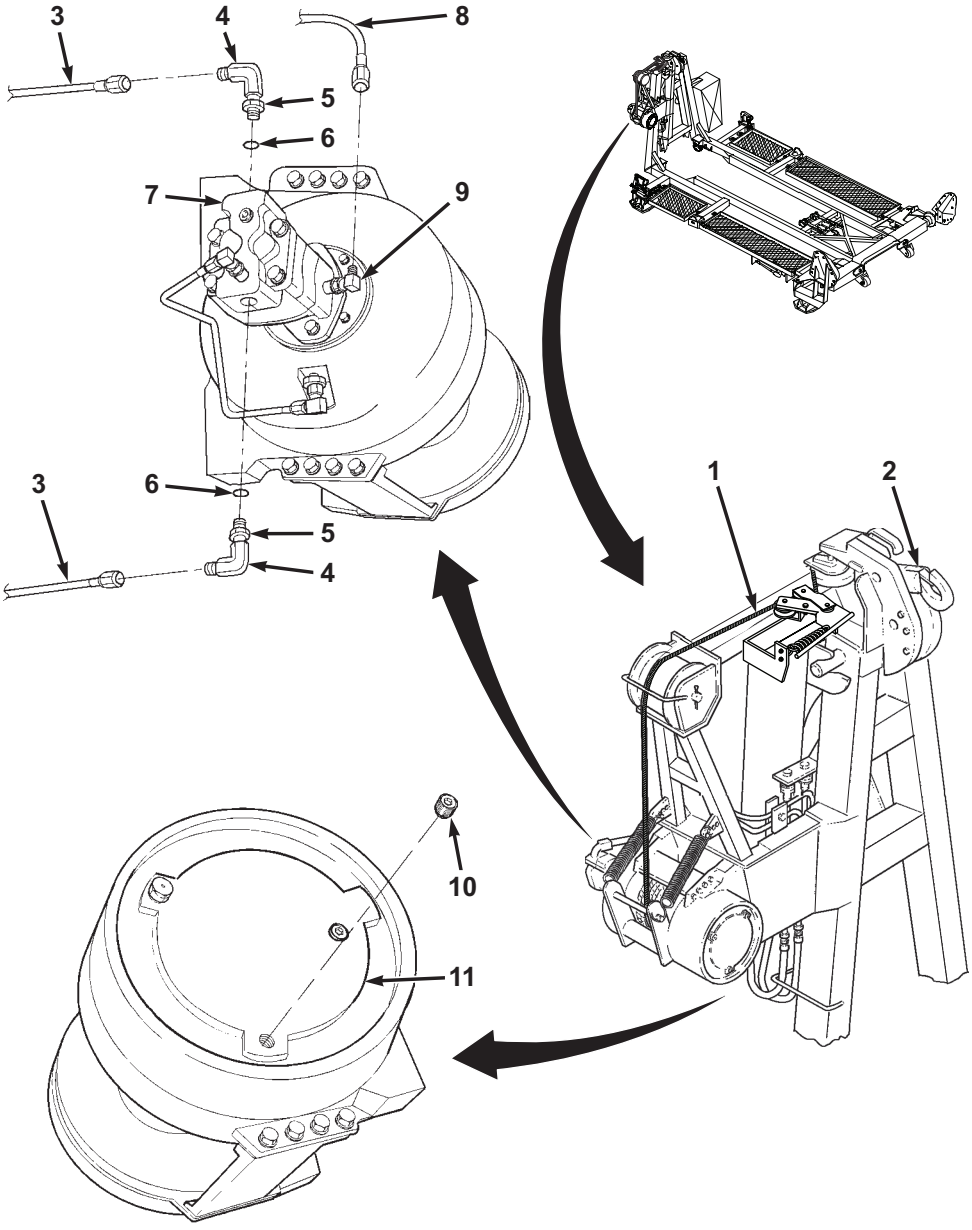


Figure 1. Drain Winch.

REMOVAL - Continued

2. Remove two hydraulic tubes (Figure 1, Item 3) from two elbows (Figure 1, Item 4). Loosen two captive nuts (Figure 1, Item 5), then remove two elbows (Figure 1, Item 4) and preformed packings (Figure 1, Item 6) from winch motor (Figure 1, Item 7). Remove tube (Figure 1, Item 8) from elbow (Figure 1, Item 9). Discard preformed packings.
3. Remove pipe plug (Figure 1, Item 10) from end cover (Figure 1, Item 11), and drain oil into a suitable container. Install pipe plug (Figure 1, Item 10) in end cover (Figure 1, Item 11).
4. Remove two cable guide springs (Figure 2, Item 12) from two bolts (Figure 2, Item 13) and brackets (Figure 2, Item 14) on winch frame (Figure 2, Item 15) and upper cable guide shaft (Figure 2, Item 16).

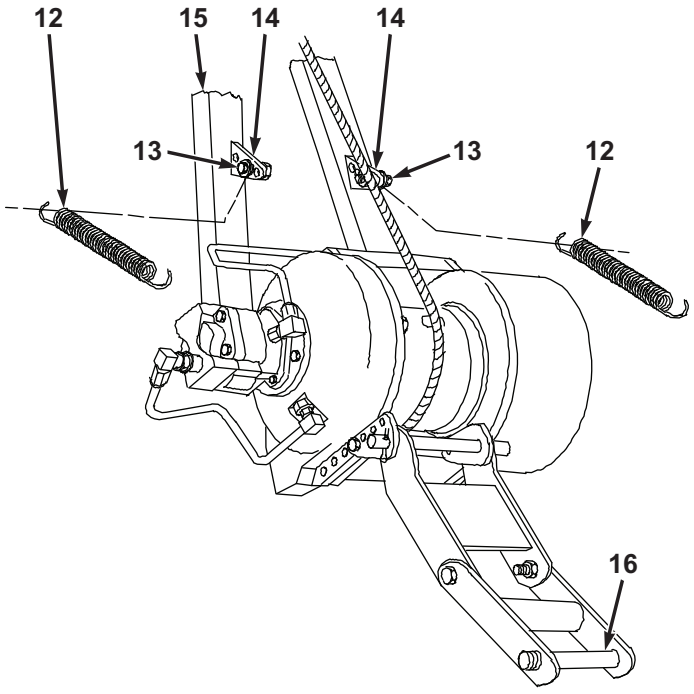


Figure 2. Upper Cable guide Shaft Removal.

5. Remove two cotter pins (Figure 3, Item 17) and upper cable guide shaft (Figure 3, Item 16) from two upper cable guide retainers (Figure 3, Item 18). Remove two cotter pins (Figure 3, Item 19) and lower cable guide shaft (Figure 3, Item 20) from carriage (Figure 3, Item 21) and two pivot plates (Figure 3, Item 22). Discard cotter pins.

REMOVAL - Continued

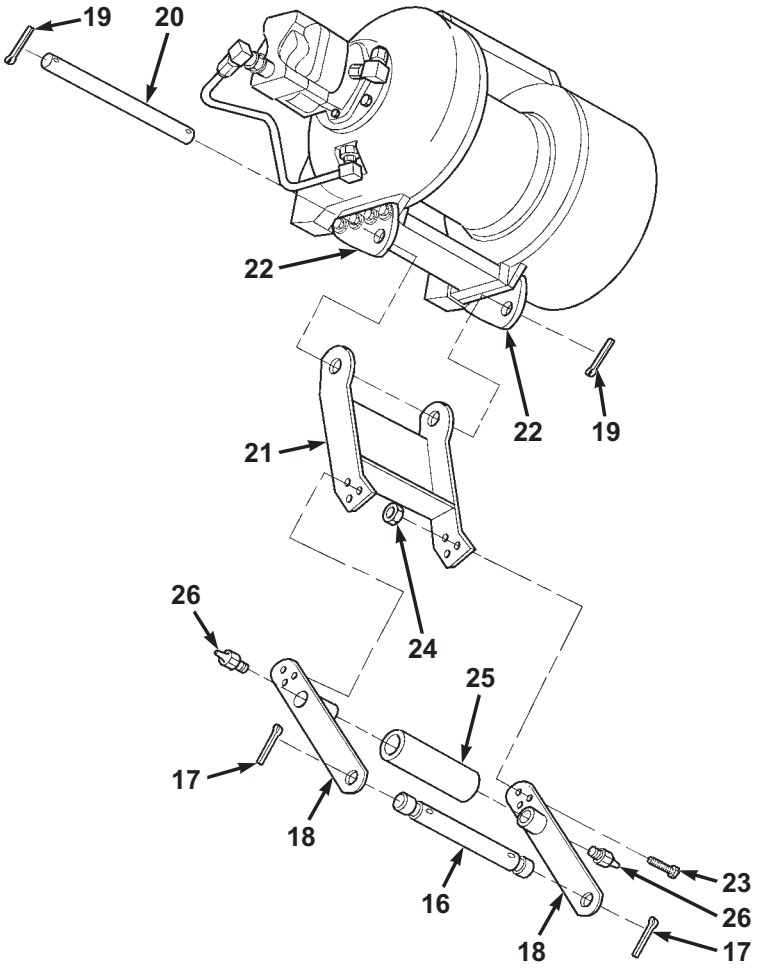


Figure 3. Lower Cable Guide Shaft Removal.

6. Remove six screws (Figure 3, Item 23), nuts (Figure 3, Item 24), two upper cable guide retainers (Figure 3, Item 18), and roller assembly (Figure 3, Item 25) from carriage (Figure 3, Item 21). Remove two grease fittings (Figure 3, Item 26) from roller assembly (Figure 3, Item 25).

NOTE

- When replacing an old winch assembly with a new winch assembly, remove eight bolts from new winch assembly and exchange with those on winch being turned in for repair. Bolts used to mount pivot plates are longer than those shipped with new winch assembly. Be sure to ship old winch with all shorter bolts.
- Replace the two pivot plates one at a time.

7. Remove four bolts (Figure 4, Item 27) and lockwashers (Figure 4, Item 28) from each of two pivot plates (Figure 4, Item 22). Remove two pivot plates (Figure 4, Item 22) from winch assembly (Figure 4, Item 29). Discard lockwashers. Temporarily reinstall four bolts (Figure 4, Item 27) in winch assembly (Figure 4, Item 29).

REMOVAL - Continued

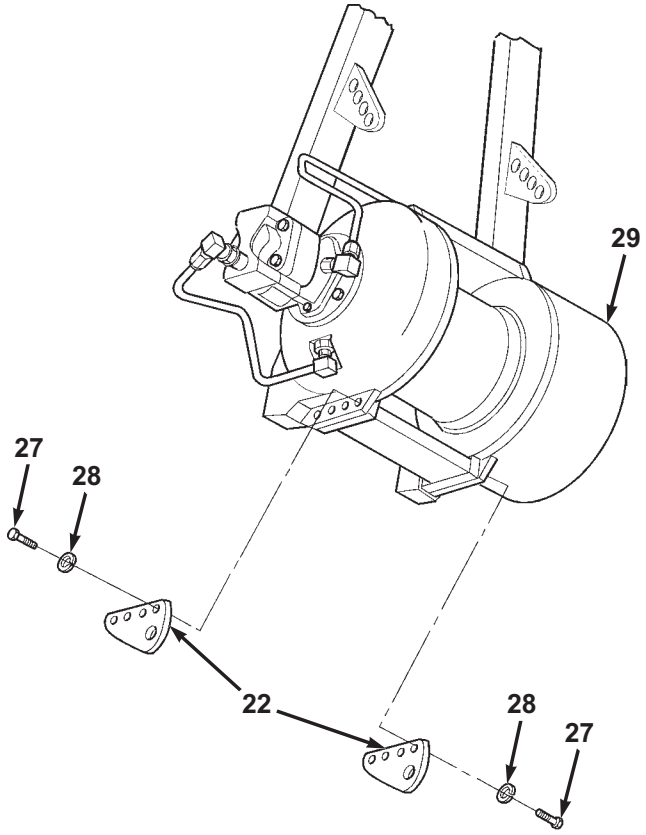


Figure 4. Pivot Plates Removal.

WARNING



The winch assembly without cable installed weighs approximately 350 pounds (158.9 kg). Winch must be secured by a suitable lifting device before removing or installing mounting hardware. Failure to comply may result in serious injury or death to personnel.

NOTE

If winch cable had to be cut to remove winch assembly in Step (1), manually unwind winch cable from winch drum, then remove winch cable from winch drum.

8. Attach lifting device to winch assembly (Figure 4, Item 29) and take up slack so winch will not fall out of position when mounting hardware is removed.
9. Remove four bolts (Figure 5, Item 30), lockwashers (Figure 5, Item 31), and nuts (Figure 5, Item 32) from base of winch assembly (Figure 5, Item 29). Discard lockwashers. Remove winch assembly (Figure 5, Item 29) from winch frame (Figure 5, Item 15).

REMOVAL - Continued

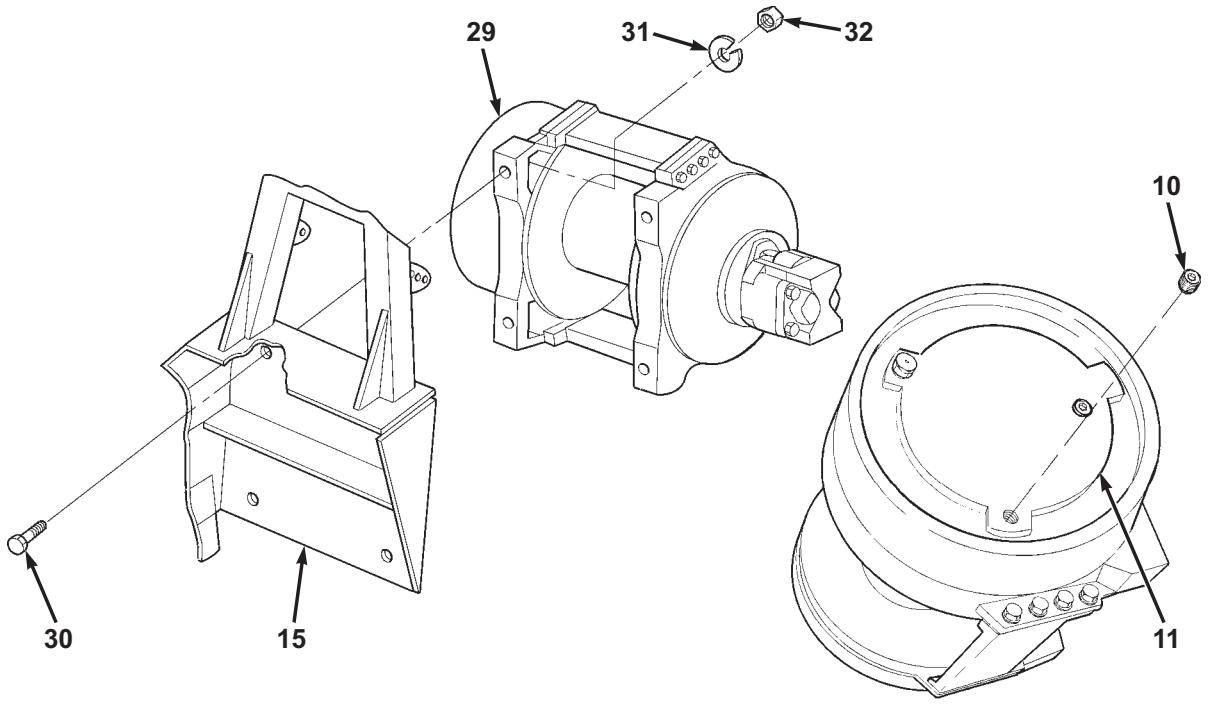


Figure 5. Winch Assembly Removal.

10. Remove pipe plug (Figure 5, Item 10) from end cover (Figure 5, Item 11), and drain remaining oil into a suitable container. Install pipe plug (Figure 5, Item 10) in end cover (Figure 5, Item 11).

END OF TASK

CLEANING

NOTE

Do not use solvent cleaning compound on winch cable.

Refer to General Maintenance Instructions (WP 0038) for general cleaning instructions.

END OF TASK

INSPECTION

Refer to General Maintenance Instructions (WP 0038) for general inspection instructions.

END OF TASK

INSTALLATION

WARNING



The winch assembly without cable installed weighs approximately 350 pounds (158.9 kg). Winch must be secured by a suitable lifting device before removing or installing mounting hardware. Failure to comply may result in serious injury or death to personnel.

1. With the aid of an assistant and using lifting device, lift winch assembly (Figure 6, Item 29) into position on winch frame (Figure 6, Item 15), and ensure all four mounting pads (Figure 6, Item 33) of winch assembly (Figure 6, Item 29) are flush with winch frame (Figure 6, Item 15) mounting surface.

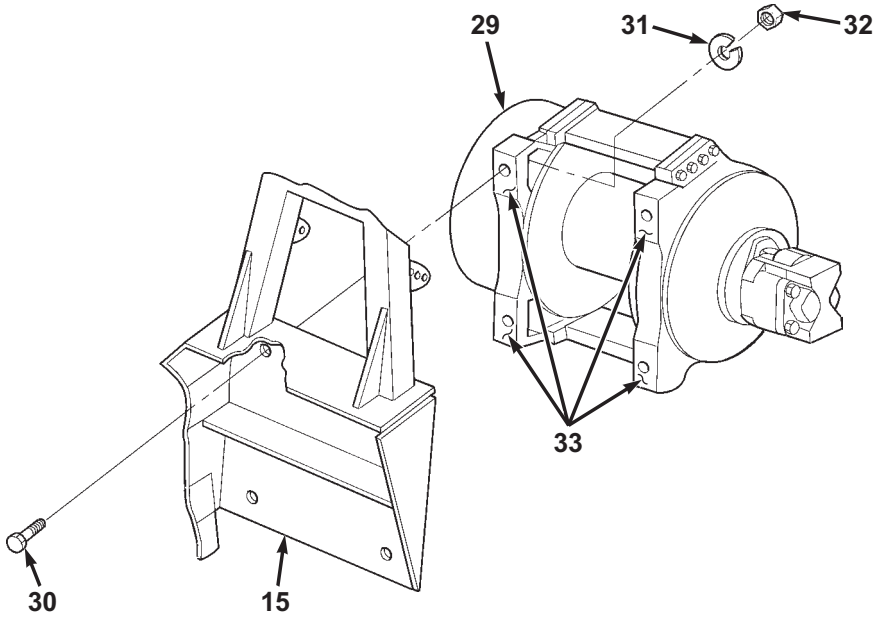


Figure 6. Winch Assembly Installation.

2. Install winch assembly (Figure 6, Item 29) on winch frame (Figure 6, Item 15) with four bolts (Figure 6, Item 30), lockwashers (Figure 6, Item 31), and nuts (Figure 6, Item 32). Remove lifting device.

NOTE

Reuse the 8 long bolts that supported pivot plates from old winch assembly during installation.

3. Remove four bolts (Figure 7, Item 27) temporarily reinstalled in winch assembly (Figure 7, Item 29) during removal. Install four bolts (Figure 7, Item 27) and new lockwashers (Figure 7, Item 28) and pivot plate (Figure 7, Item 22) on winch assembly (Figure 7, Item 29). Install other pivot plate (Figure 7, Item 22) in the same manner.

INSTALLATION - Continued

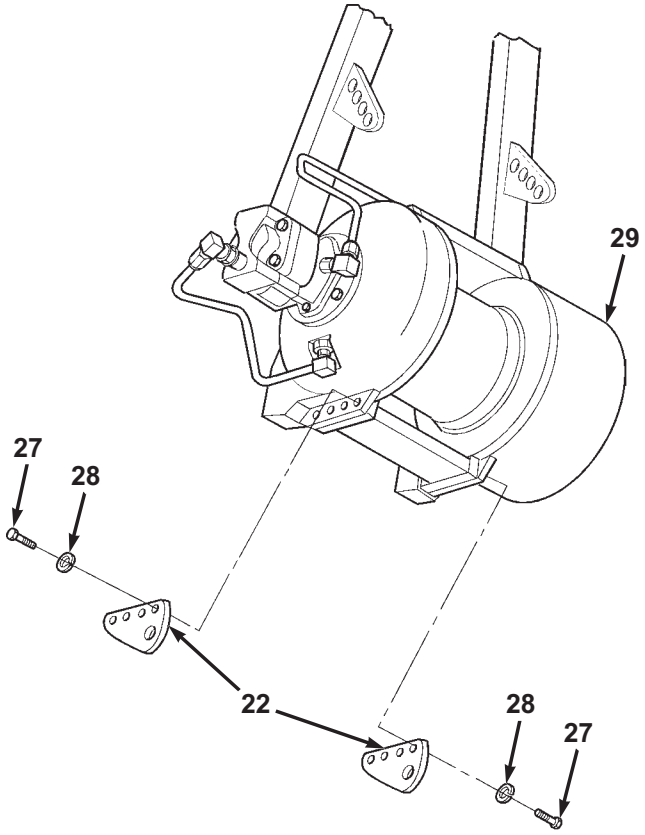


Figure 7. Pivot Plates Installation.

4. Install six screws (Figure 8, Item 23), nuts (Figure 8, Item 24), two upper cable guide retainers (Figure 8, Item 18), and roller assembly (Figure 8, Item 25) on carriage (Figure 8, Item 21). Install two grease fittings (Figure 8, Item 26) on ends of roller assembly (Figure 8, Item 25).

INSTALLATION - Continued

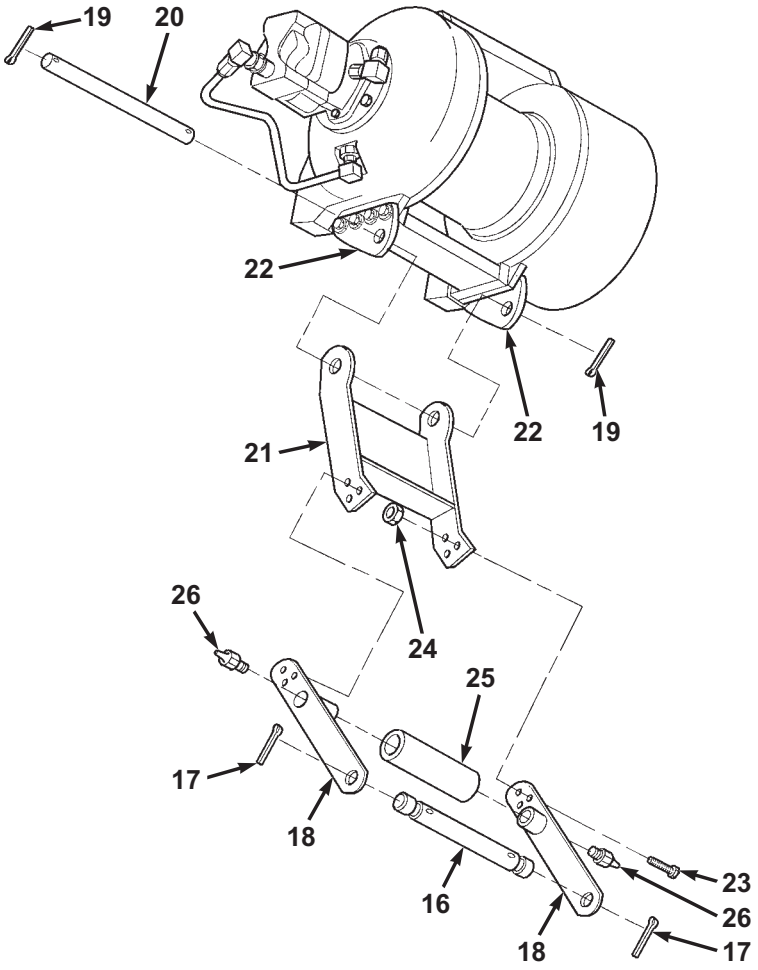


Figure 8. Lower Cable Guide Shaft Installation.

5. Install two cotter pins (Figure 8, Item 19), and lower cable guide shaft (Figure 8, Item 20) onto carriage (Figure 8, Item 21) and two pivot plates (Figure 8, Item 22). Install two cotter pins (Figure 8, Item 17) and upper cable guide shaft (Figure 8, Item 16) on two upper cable guide retainers (Figure 8, Item 18).

NOTE

If there is no tension of cable against roller assemblies, install spring on higher hole until tension exists.

6. Install one end of each of two cable guide springs (Figure 9, Item 12) on upper cable guide shaft (Figure 9, Item 16). Install other end of each of two springs (Figure 9, Item 12) on two bolts (Figure 9, Item 13) that are on brackets (Figure 9, Item 14).

INSTALLATION - Continued

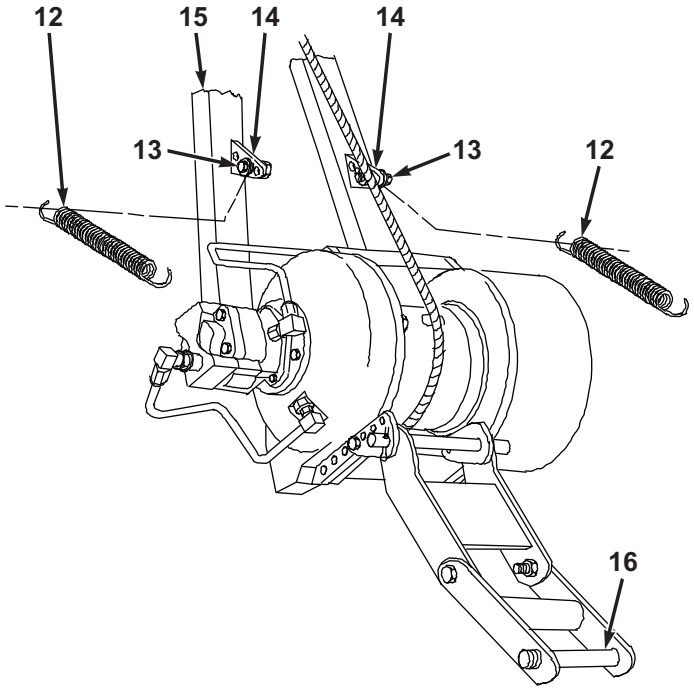


Figure 9. Upper Cable Guide Shaft Installation.

7. Remove filler plug (Figure 10, Item 34) from end cover (Figure 10, Item 11), and fill winch with oil Lubrication Instructions (WP 0070). Install filler plug (Figure 10, Item 34) in end cover (Figure 10, Item 11).

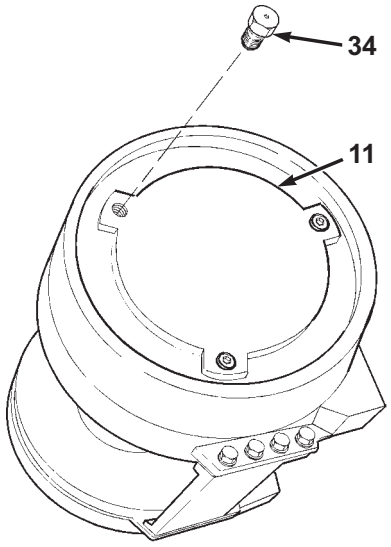


Figure 10. Fill Winch.

8. Install tube (Figure 11, Item 8) on elbow (Figure 11, Item 9). Install two elbows (Figure 11, Item 4) and new preformed packings (Figure 11, Item 6) on winch motor (Figure 11, Item 7), and tighten two captive nuts (Figure 11, Item 5). Install two hydraulic tubes (Figure 11, Item 3) on elbows (Figure 11, Item 4).

INSTALLATION - Continued

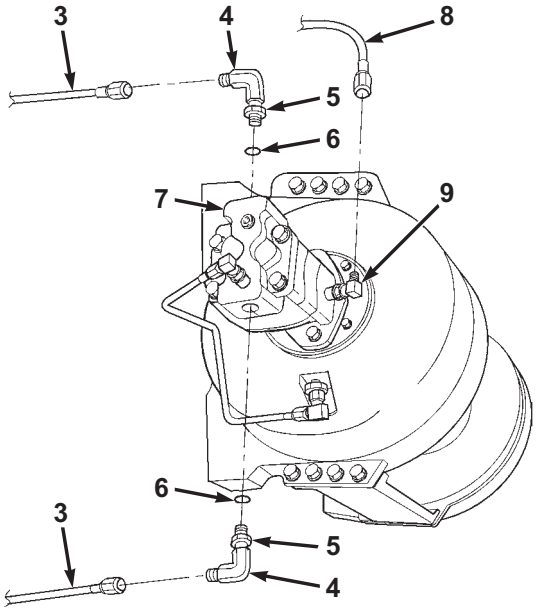


Figure 11. Winch Tubes Installation.

END OF TASK

FOLLOW-ON MAINTENANCE

Install winch cable. (WP 0057)

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
WINCH MOTOR ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Pan, Drain, 5-Gallon (WP 0078, Table 2, Item 1)
Tool Kit, General Mechanics: Automotive (WP 0078, Table 2, Item 2)

Materials/Parts
Grease (WP 0081, Table 1, Item 10, 11, 12, 13, 14)
Rag (WP 0081, Table 1, Item 21)
Packing, Preformed (WP 0082, Table 1, Item 17) Qty: 2
Seal, Plain (WP 0082, Table 1, Item 12) Qty: 1
Lockwasher (WP 0082, Table 1, Item 47) Qty: 2

Materials/Parts (cont.)
O-ring (WP 0082, Table 1, Item 10) Qty: 1
O-ring (WP 0082, Table 1, Item 23) Qty: 1

References
Parts Manual (WP 0073, Figure 14)
Parts Manual (WP 0073, Figure 16)
Parts Manual (WP 0073, Figure 17)

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP unloaded from the CBT. (WP 0006)

REMOVAL

NOTE

Use a drain pan to catch fluid draining from hoses and fittings. Wipe up any spillage with a rag. Handle, store, and dispose of drained fluids in accordance with local policies and procedures.

1. Loosen both ends of two tubes (Figure 1, Items 1 and 2) on two elbows (Figure 1, Items 3 and 4). Loosen two captive nuts (Figure 1, Items 5 and 6) and remove elbows (Figure 1, Items 3 and 4) and two preformed packings (Figure 1, Items 7 and 8) from winch hydraulic motor (Figure 1, Item 9). Discard preformed packings.

REMOVAL - Continued

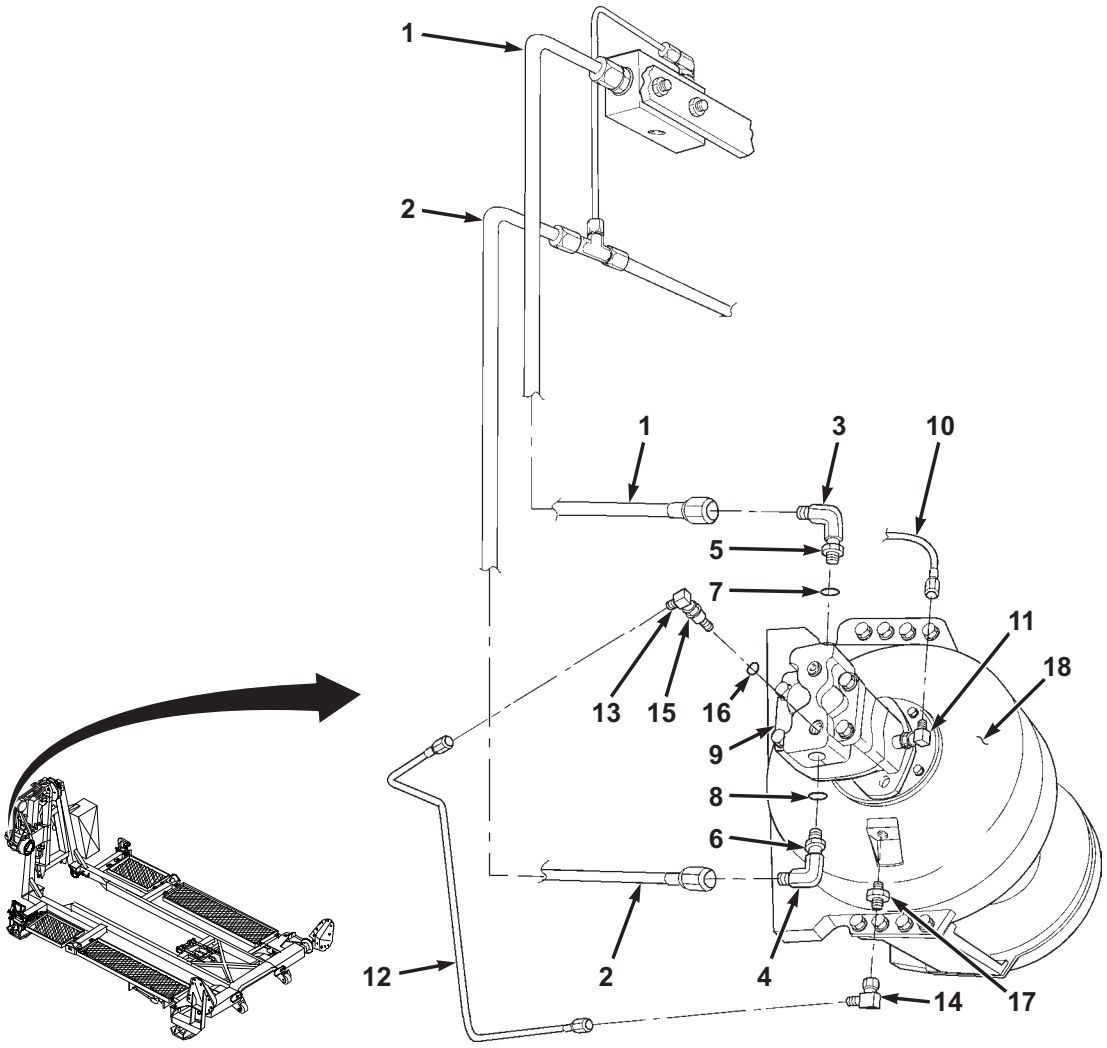


Figure 1. Winch Motor Tubes Removal.

2. Remove tube (Figure 1, Item 10) from elbow (Figure 1, Item 11).
3. Remove tube (Figure 1, Item 12) from elbow (Figure 1, Item 13) on motor (Figure 1, Item 9). Remove other end of tube (Figure 1, Item 12) from elbow (Figure 1, Item 14).
4. Loosen captive nut (Figure 1, Item 15) and remove elbow (Figure 1, Item 13) and O-ring (Figure 1, Item 16) from motor (Figure 1, Item 9). Remove elbow (Figure 1, Item 14) and adapter (Figure 1, Item 17) from winch housing (Figure 1, Item 18). Discard O-ring.
5. Remove two bolts (Figure 2, Item 19), lockwashers (Figure 2, Item 20), and winch hydraulic motor (Figure 2, Item 9) from winch housing (Figure 2, Item 18). Remove O-ring (Figure 2, Item 21) from base of winch hydraulic motor (Figure 2, Item 9). Discard lockwashers and O-ring.

REMOVAL - Continued

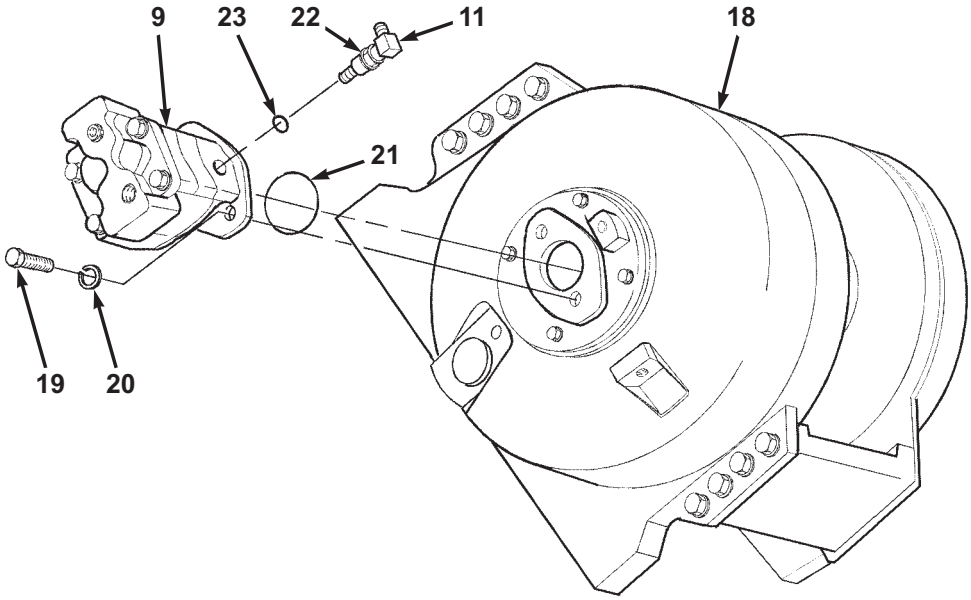


Figure 2. Winch Motor Assembly Removal.

6. Loosen captive nut (Figure 2, Item 22) and remove elbow (Figure 2, Item 11) and O-ring (Figure 2, Item 23) from winch hydraulic motor (Figure 2, Item 9). Discard O-ring.

END OF TASK

INSTALLATION

1. Coat O-ring (Figure 3, Item 21) with grease and install on base of winch hydraulic motor (Figure 3, Item 9). Install elbow (Figure 3, Item 11) and O-ring (Figure 3, Item 23) to align with the end of tube (Figure 4, Item 10) when winch hydraulic motor (Figure 3, Item 9) is installed on winch housing (Figure 3, Item 18).

INSTALLATION - Continued

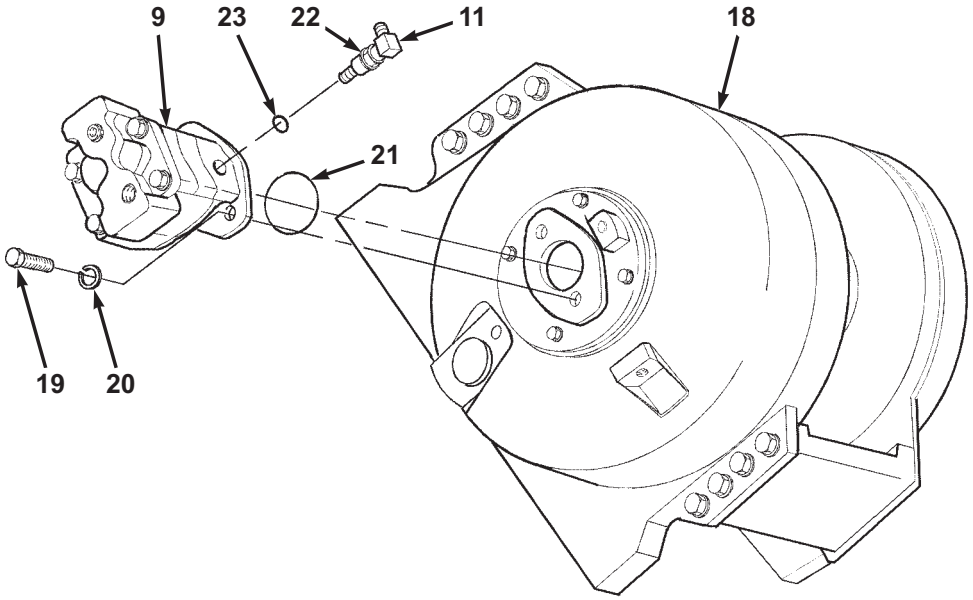


Figure 3. Winch Motor Assembly Installation.

CAUTION

Be careful not to damage O-ring by pinching it between the winch motor base and the winch housing when installing winch motor. Failure to comply may result in damage to equipment.

2. Carefully position winch hydraulic motor (Figure 3, Item 9) on winch housing (Figure 3, Item 18), and install two bolts (Figure 3, Item 19) and lockwashers (Figure 3, Item 20) on winch housing (Figure 3, Item 18).
3. Install adapter (Figure 4, Item 17) on winch housing (Figure 4, Item 18). Install elbow (Figure 4, Item 14) on adapter (Figure 4, Item 17), but do not tighten. Install tube (Figure 4, Item 12) on elbow (Figure 4, Item 14).

INSTALLATION - Continued

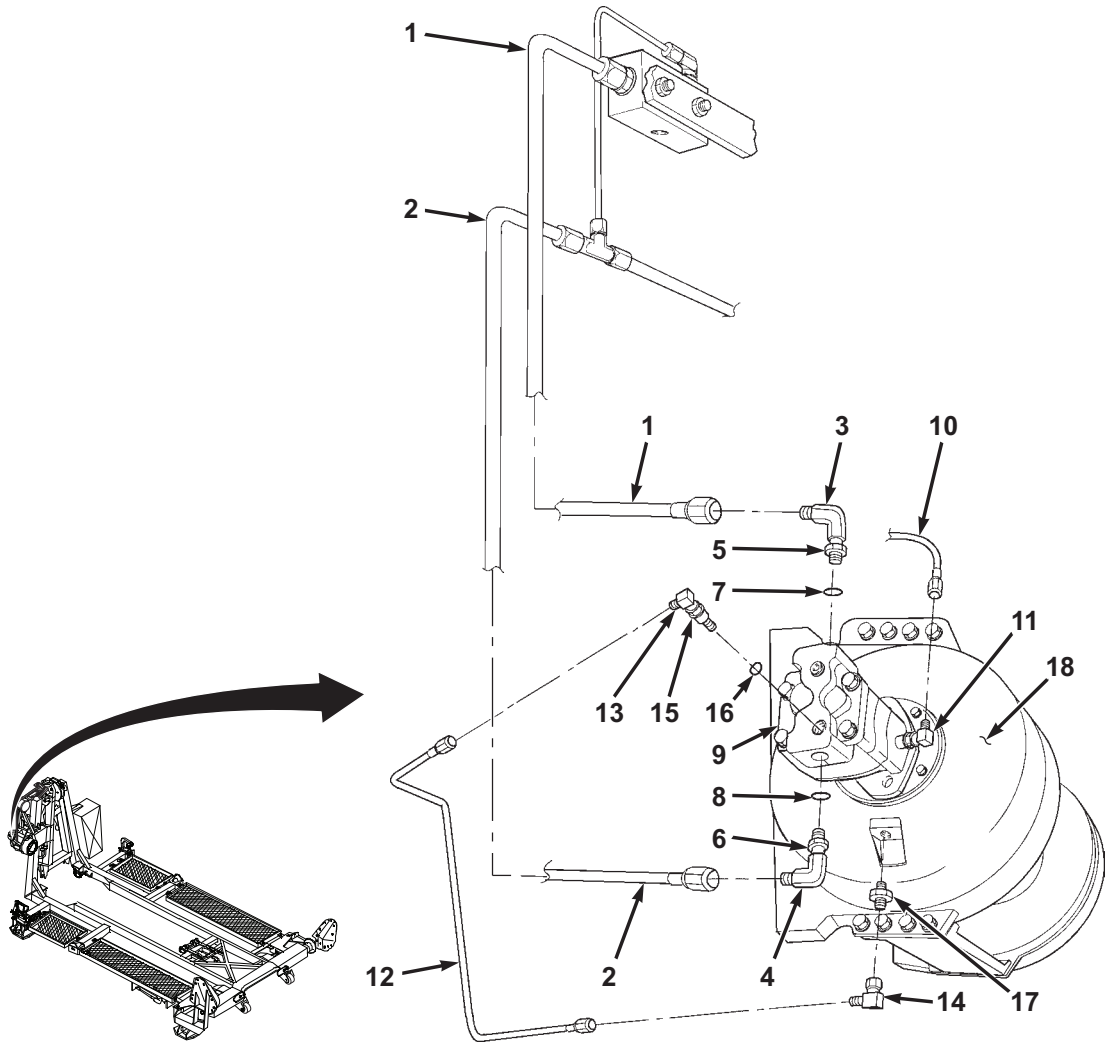


Figure 4. Winch Motor Tubes Installation.

4. Install elbow (Figure 4, Item 13) and O-ring (Figure 4, Item 16) on winch hydraulic motor (Figure 4, Item 9) to align with tube (Figure 4, Item 12). Install tube (Figure 4, Item 12) on elbow (Figure 4, Item 13). Tighten captive nut (Figure 4, Item 15) on motor (Figure 4, Item 9). Install elbow (Figure 4, Item 14) on adapter (Figure 4, Item 17).
5. Install tube (Figure 4, Item 10) on elbow (Figure 4, Item 11), then tighten captive nut (Figure 3, Item 22) on motor (Figure 4, Item 9).
6. Install two elbows (Figure 4, Items 3 and 4) and O-rings (Figure 4, Items 7 and 8) on winch hydraulic motor (Figure 4, Item 9), then tighten two captive nuts (Figure 4, Items 5 and 6) on winch hydraulic motor (Figure 4, Item 9).
7. Tighten both ends of two tubes (Figure 4, Items 1 and 2) on two elbows (Figure 4, Items 3 and 4).

END OF TASK

FOLLOW-ON MAINTENANCE

1. Load the BAP on the vehicle. (WP 0005)

FOLLOW-ON MAINTENANCE - Continued

2. Operate BAP winch and check for leaks. (WP 0007)
3. Turn off engine (TM 9-2320-435-10 or TM 9-2320-425-10).
4. Add hydraulic fluid to winch. (WP 0070)

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
CENTER ROLLER HYDRAULIC SYSTEM REPAIR

INITIAL SETUP:

Tools and Special Tools
Pan, Drain, 5-Gallon (WP 0078, Table 2, Item 1)
Tool Kit, General Mechanics: Automotive (WP 0078, Table 2, Item 2)

Materials/Parts
Rag (WP 0081, Table 1, Item 21)
Lockwasher (WP 0082, Table 1, Item 42) Qty: 1
Lockwasher (WP 0082, Table 1, Item 50) Qty: 2
Lockwasher (WP 0082, Table 1, Item 43) Qty: 2
O-ring (WP 0082, Table 1, Item 21) Qty: 1
Lockwasher (WP 0082, Table 1, Item 41) Qty: 2

References
Parts Manual (WP 0073, Figure 4)

References (cont.)
Parts Manual (WP 0073, Figure 8)
Parts Manual (WP 0073, Figure 22)
Parts Manual (WP 0073, Figure 23)
WP 0038

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP unloaded from the CBT. (WP 0006)

REMOVAL

NOTE

Use a drain pan to catch fluid draining from hoses and fittings. Wipe up any spillage with a rag. Handle, store, and dispose of drained fluids in accordance with local policies and procedures.

1. To relieve pressure from center roller hydraulic system, move hydraulic hand pump selector lever (Figure 1, Item 1) down, in TRANSLOAD position, and pump hand pump lever (Figure 1, Item 2) until two transload cylinders (Figure 1, Item 3) are fully extended.

REMOVAL - Continued

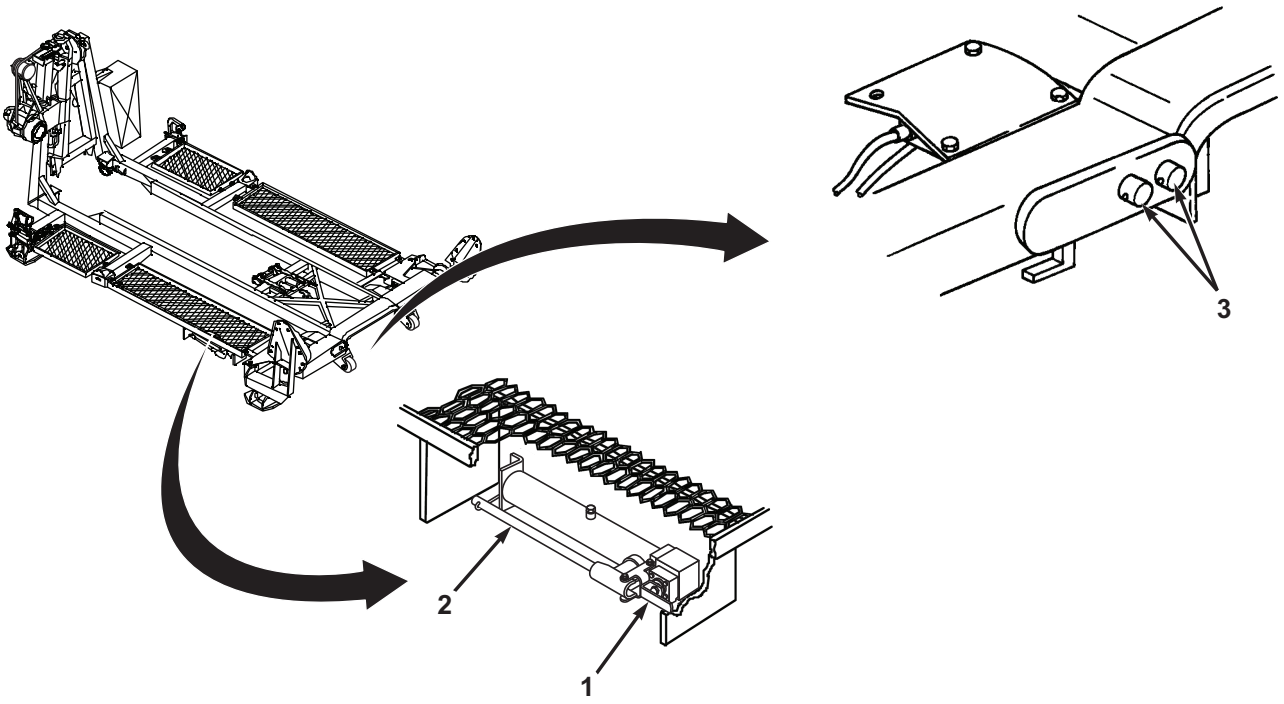


Figure 1. Center Roller Hydraulic System Pressure Relief.

2. Remove screw (Figure 2, Item 4), lockwasher (Figure 2, Item 5), and retainer (Figure 2, Item 6) from BAP frame (Figure 2, Item 7). Discard lockwasher.

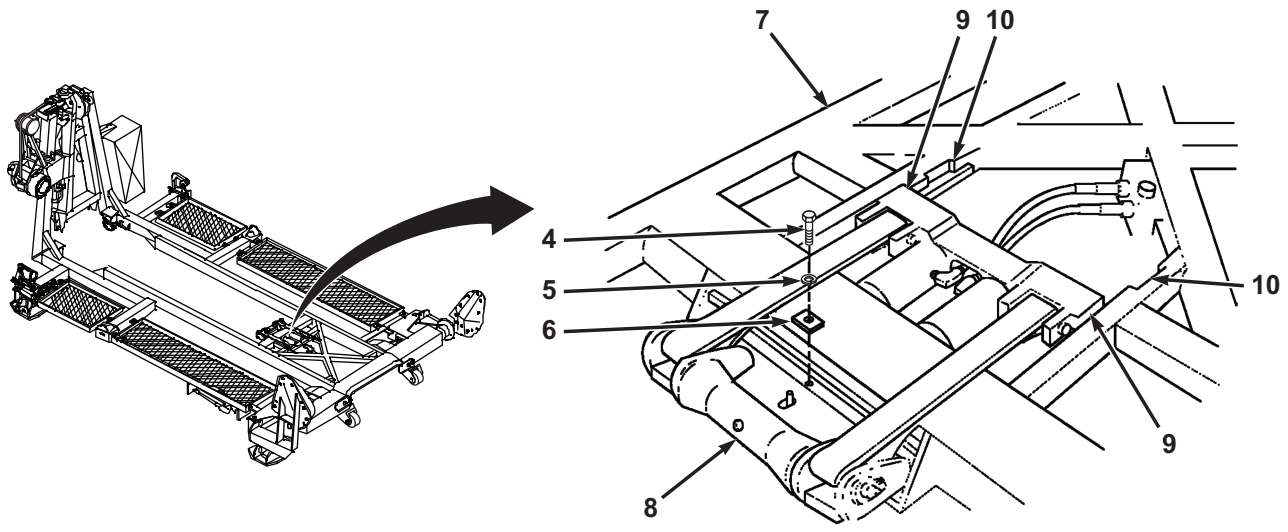


Figure 2. Center Roller Hydraulic System Removal.

3. Lift and move center roller assembly (Figure 2, Item 8) toward rear of the BAP until tabs on rear carriage (Figure 2, Item 9) align with two notches in track (Figure 2, Item 10) of BAP frame (Figure 2, Item 7), then lift center roller assembly (Figure 2, Item 8) clear of BAP frame (Figure 2, Item 7).

REMOVAL - Continued

4. Remove two screws (Figure 3, Item 11) and lockwashers (Figure 3, Item 12) from rear carriage (Figure 3, Item 9) and two BAP center roller hydraulic cylinders (Figure 3, Item 13). Remove hydraulic cylinders (Figure 3, Item 13) from rear carriage (Figure 3, Item 9). Discard lockwashers.

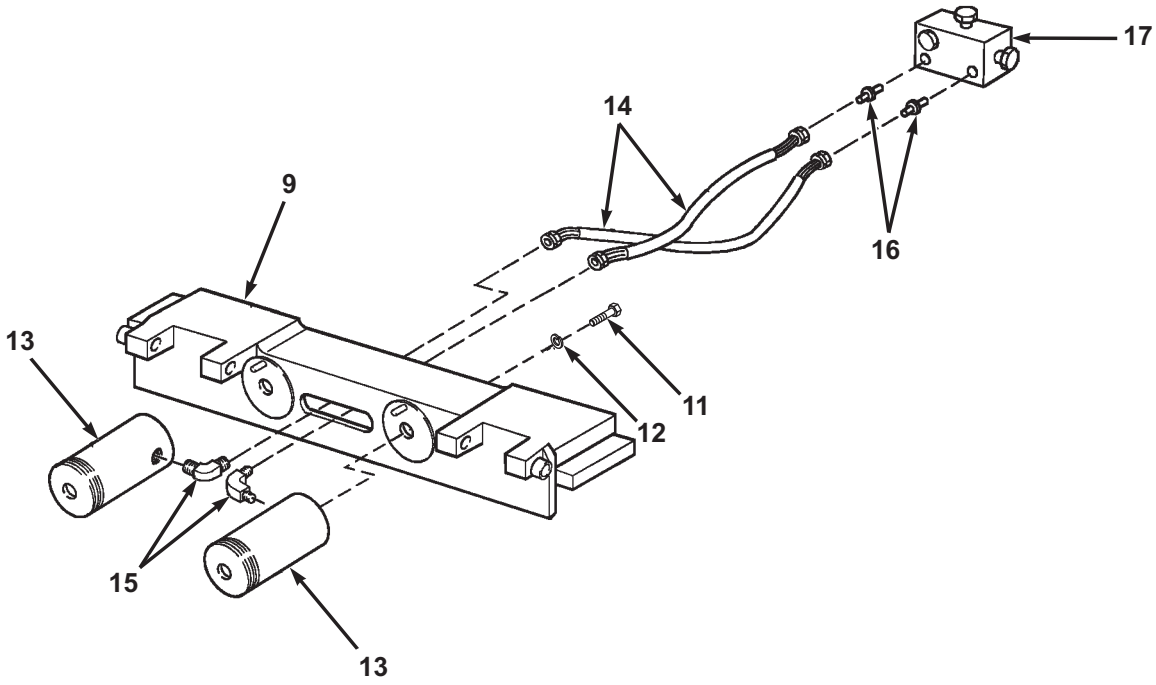


Figure 3. Rear Carriage Removal.

5. Remove two hydraulic hoses (Figure 3, Item 14) and elbows (Figure 3, Item 15) from two hydraulic cylinders (Figure 3, Item 13). Remove two fittings (Figure 3, Item 16) from manifold (Figure 3, Item 17) and hydraulic hoses (Figure 3, Item 14).

6. Remove tube (Figure 4, Item 18) from fitting (Figure 4, Item 19). Remove fitting (Figure 4, Item 19) from manifold (Figure 4, Item 17).

REMOVAL - Continued

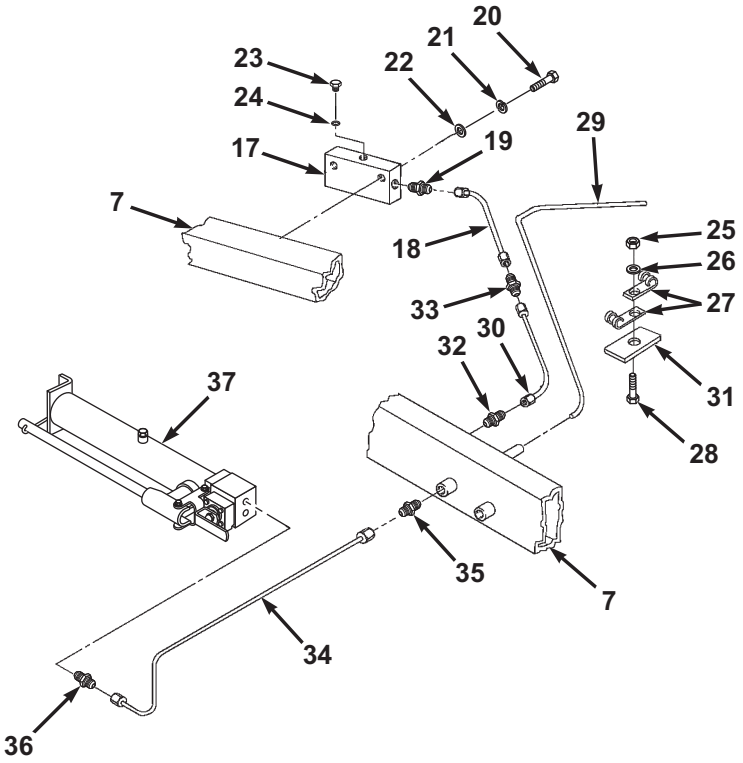


Figure 4. Manifold Removal.

7. Remove two bolts (Figure 4, Item 20), lockwashers (Figure 4, Item 21), washers (Figure 4, Item 22) and manifold (Figure 4, Item 17) from frame (Figure 4, Item 7). Remove plug (Figure 4, Item 23) and O-ring (Figure 4, Item 24) from manifold (Figure 4, Item 17). Discard lockwashers and O-ring.
8. Remove two nuts (Figure 4, Item 25), lockwashers (Figure 4, Item 26), four cushion clamps (Figure 4, Item 27), and two bolts (Figure 4, Item 28) from tubes (Figure 4, Items 29 and 30) and welded bracket (Figure 4, Item 31) on frame (Figure 4, Item 7). Discard lockwashers.
9. Remove tube (Figure 4, Item 30) from two fittings (Figure 4, Items 32 and 33). Remove fitting (Figure 4, Item 32) from frame (Figure 4, Item 7). Remove fitting (Figure 4, Item 33) from tube (Figure 4, Item 18).
10. Remove tube (Figure 4, Item 34) from two fittings (Figure 4, Items 35 and 36). Remove fitting (Figure 4, Item 35) from frame (Figure 4, Item 7). Remove fitting (Figure 4, Item 36) from hand pump (Figure 4, Item 37).

END OF TASK

CLEANING

Refer to General Maintenance Instructions (WP 0038) for general cleaning instructions.

END OF TASK

INSPECTION

1. Refer to General Maintenance Instructions (WP 0038) for general inspection instructions.

INSPECTION - Continued

2. Inspect hoses, tubes, fittings, and hydraulic cylinders for leaks or damage (such as damaged threads) that would make them unserviceable. Replace any unserviceable parts.

END OF TASK

INSTALLATION

1. Install fitting (Figure 5, Item 35) on frame (Figure 5, Item 7). Install fitting (Figure 5, Item 36) on hand pump (Figure 5, Item 37). Install tube (Figure 5, Item 34) on two fittings (Figure 5, Items 35 and 36).

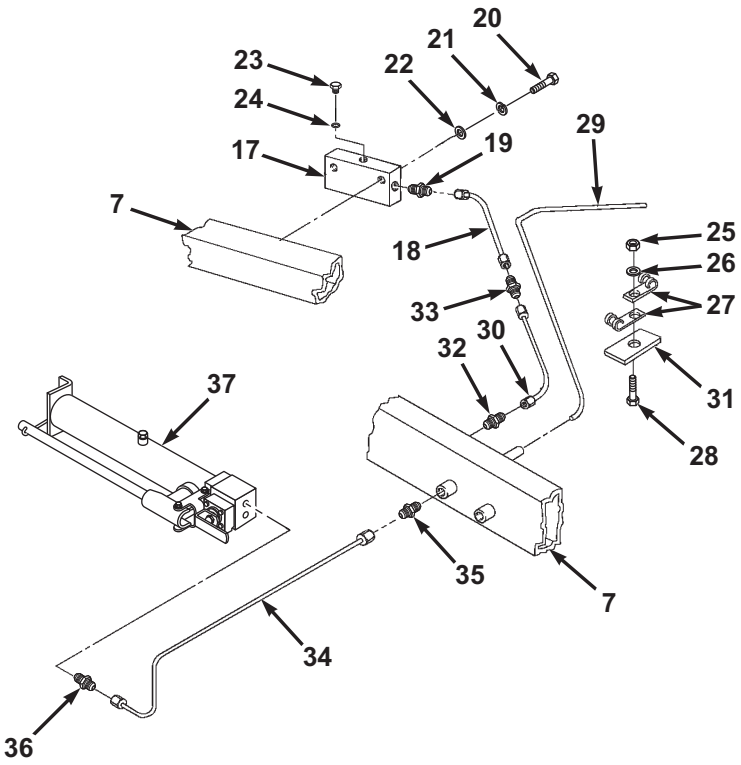


Figure 5. Manifold Installation.

2. Install fitting (Figure 5, Item 32) on frame (Figure 5, Item 7). Install tube (Figure 5, Item 30) on fitting (Figure 5, Item 32). Install fitting (Figure 5, Item 33) on tube (Figure 5, Item 30).
3. Install two nuts (Figure 5, Item 25), lockwashers (Figure 5, Item 26), four cushion clamps (Figure 5, Item 27), and two bolts (Figure 5, Item 28) on tubes (Figure 5, Items 29 and 30) and welded bracket (Figure 5, Item 31) on frame (Figure 5, Item 7).
4. Install plug (Figure 5, Item 23) and O-ring (Figure 5, Item 24) on manifold (Figure 5, Item 17). Install manifold (Figure 5, Item 17) on frame (Figure 5, Item 7) using two bolts (Figure 5, Item 20), lockwashers (Figure 5, Item 21), and washers (Figure 5, Item 22).
5. Install fitting (Figure 5, Item 19) on manifold (Figure 5, Item 17). Install tube (Figure 5, Item 18) on fitting (Figure 5, Item 19).
6. Install tube (Figure 5, Item 18) on fitting (Figure 5, Item 33).
7. Install two screws (Figure 6, Item 11), lockwashers (Figure 6, Item 12), and hydraulic cylinders (Figure 6, Item 13) on rear carriage (Figure 6, Item 9).

INSTALLATION - Continued

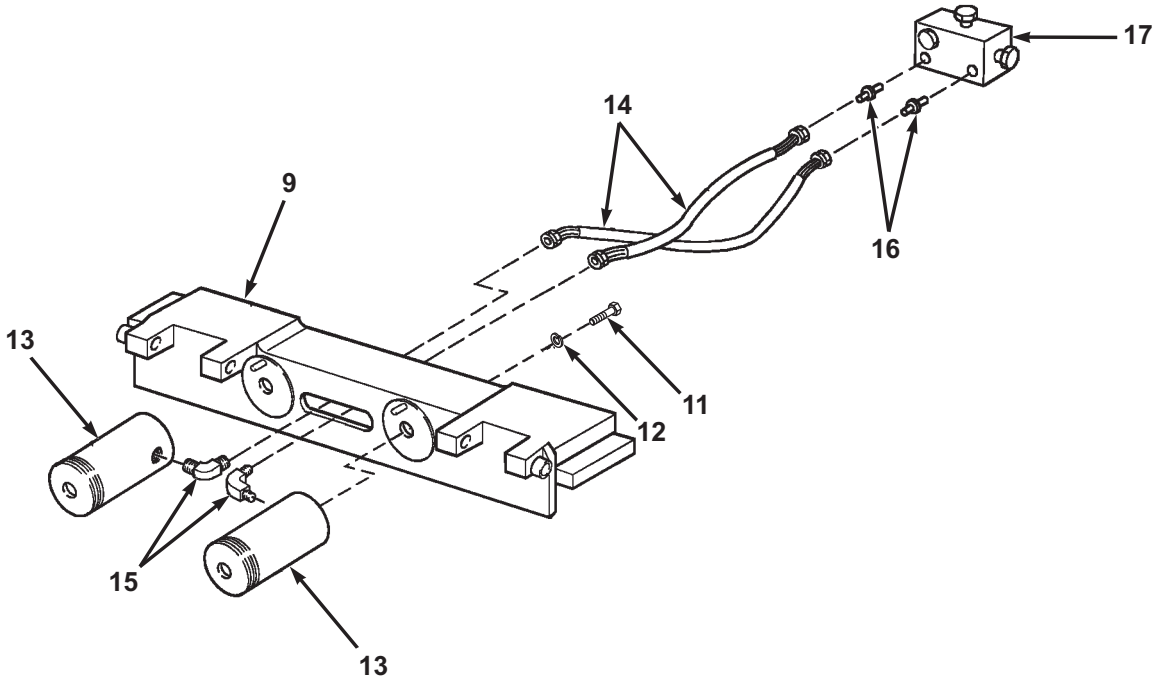


Figure 6. Rear Carriage Installation.

8. Install two fittings (Figure 6, Item 16) on manifold (Figure 6, Item 17). Install two hydraulic hoses (Figure 6, Item 14) and elbows (Figure 6, Item 15) on two hydraulic cylinders (Figure 6, Item 13).

9. Align track (Figure 7, Item 10) in BAP frame (Figure 7, Item 7) with tabs on rear carriage (Figure 7, Item 9), and install center roller assembly (Figure 7, Item 8) on frame (Figure 7, Item 7).

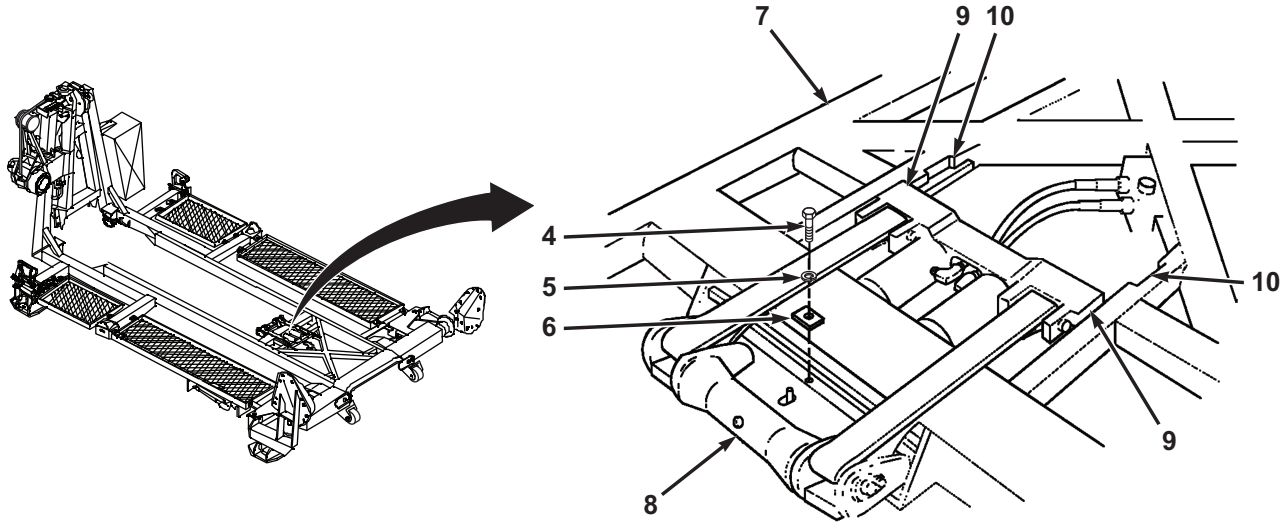


Figure 7. Center Roller Hydraulic System Installation.

INSTALLATION - Continued

10. Install retainer (Figure 7, Item 6), lockwasher (Figure 7, Item 5), and screw (Figure 7, Item 4) on BAP frame (Figure 7, Item 7).

END OF TASK

FOLLOW-ON MAINTENANCE

Fill and bleed center roller hydraulic system (WP 0062).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
TRANSLOAD ROLLER HYDRAULIC SYSTEM REPAIR

INITIAL SETUP:

Tools and Special Tools
Pan, Drain, 5-Gallon (WP 0078, Table 2, Item 1)
Tool Kit, General Mechanics: Automotive (WP 0078, Table 2, Item 2)

Materials/Parts
Grease (WP 0081, Table 1, Item 10, 11, 12, 13, 14)
Lubricating Oil (WP 0081, Table 1, Item 17, 18, 19, 20)
Rag (WP 0081, Table 1, Item 21)
Tape, Antiseizing (WP 0081, Table 1, Item 23)
Lockwasher (WP 0082, Table 1, Item 42) Qty: 1
Lockwasher (WP 0082, Table 1, Item 39) Qty: 2
O-ring (WP 0082, Table 1, Item 21) Qty: 2

Materials/Parts (cont.)
Lockwasher (WP 0082, Table 1, Item 43) Qty: 4
Lockwasher (WP 0082, Table 1, Item 50) Qty: 6
Lockwasher (WP 0082, Table 1, Item 41) Qty: 3

References
Parts Manual (WP 0073, Figure 8)
Parts Manual (WP 0073, Figure 22)
Parts Manual (WP 0073, Figure 23)
WP 0062

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP unloaded from the CBT. (WP 0006)

REMOVAL

NOTE

- Use a drain pan to catch fluid draining from hoses and fittings. Wipe up any spillage with a rag. Handle, store, and dispose of drained fluids in accordance with local policies and procedures.
- Procedures for the curb-side and road-side transload roller guard plates and hydraulic cylinders, hoses, and fittings are the same, except as otherwise noted.

1. Remove screw (Figure 1, Item 1), lockwasher (Figure 1, Item 2), and nut (Figure 1, Item 3) from guard plate (Figure 1, Item 4). Remove two screws (Figure 1, Item 5) and lockwashers (Figure 1, Item 6) from guard plate (Figure 1, Item 4) and mounting plate (Figure 1, Item 7). Discard lockwashers.

REMOVAL - Continued

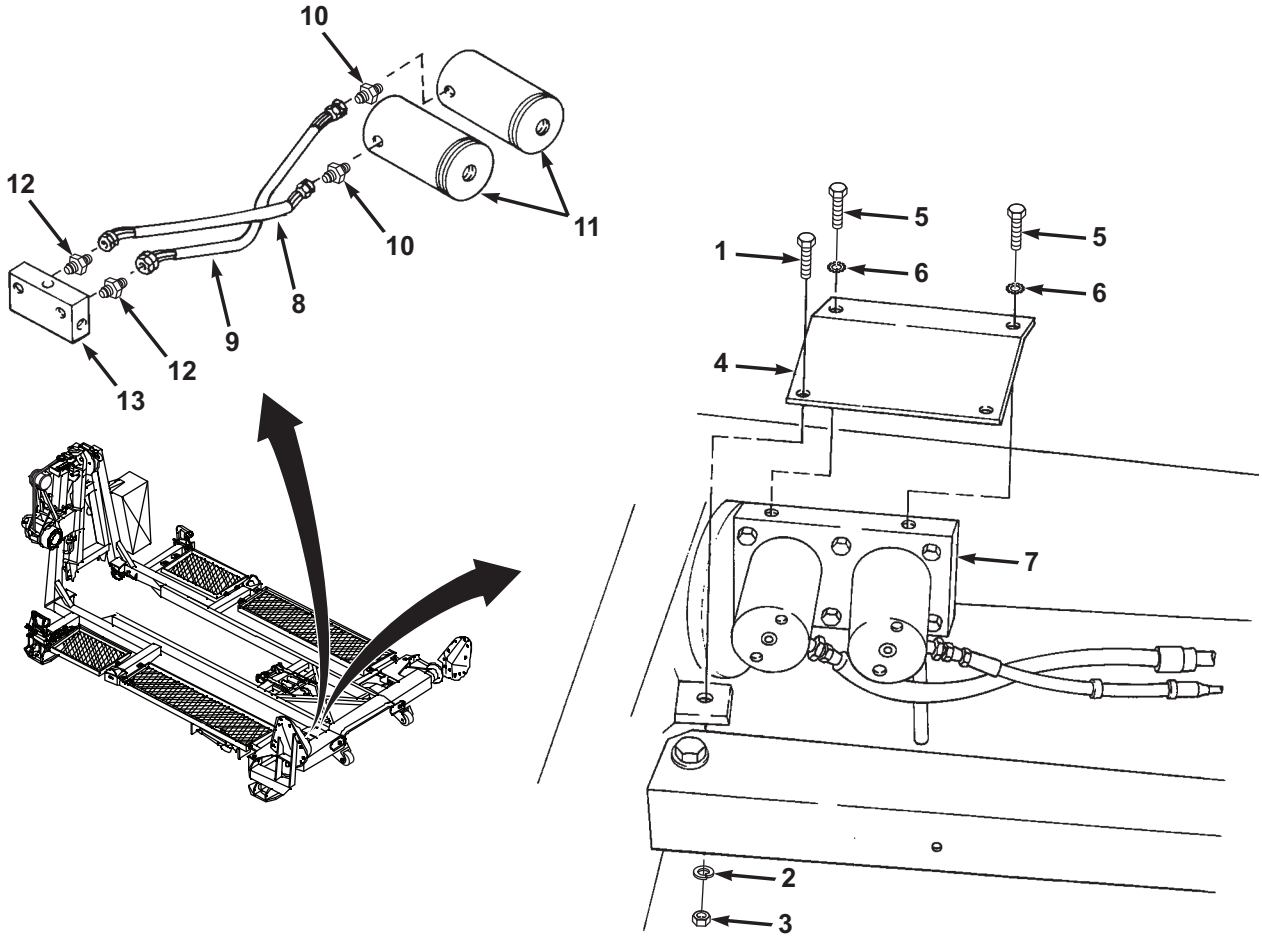


Figure 1. Transload Roller Hydraulic System Guard Plate Removal.

2. Remove two hoses (Figure 1, Items 8 and 9) from two fittings (Figure 1, Item 10). Remove two fittings (Figure 1, Item 10) from two hydraulic cylinders (Figure 1, Item 11).

3. Remove other end of each hose (Figure 1, Items 8 and 9) from two fittings (Figure 1, Item 12). Remove fittings (Figure 1, Item 12) from manifold (Figure 1, Item 13).

NOTE

For removal of hoses and fittings from curb side only, perform Step (4) and then proceed to Step (8). For road side only, skip Steps (4) and (5) and go to Step (6).

4. Remove hose (Figure 2, Item 14) from two fittings (Figure 2, Items 15 and 16). Remove fitting (Figure 2, Item 15) from manifold (Figure 2, Item 17). Remove fitting (Figure 2, Item 16) from frame (Figure 2, Item 18).

REMOVAL - Continued

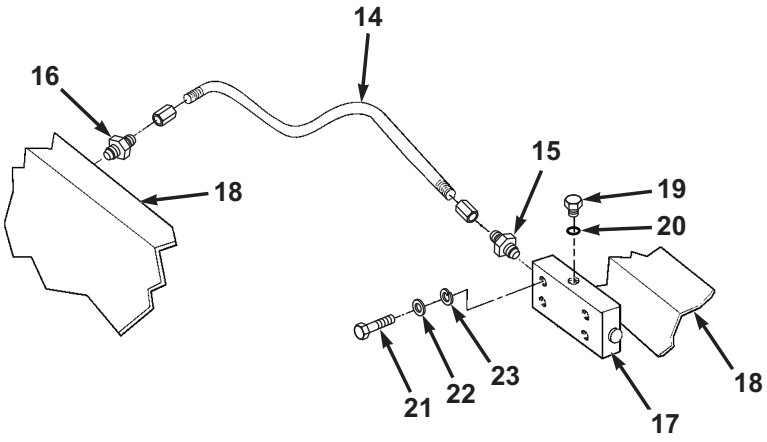


Figure 2. Transload Roller Hydraulic System Hose Removal.

5. Remove plug (Figure 2, Item 19) and O-ring (Figure 2, Item 20) from manifold (Figure 2, Item 17). Remove two screws (Figure 2, Item 21), lockwashers (Figure 2, Item 22), and washers (Figure 2, Item 23) and manifold (Figure 2, Item 17) from frame (Figure 2, Item 18). Discard O-ring and lockwashers.

6. Remove tube (Figure 3, Item 24) from fitting (Figure 3, Item 25) and tee (Figure 3, Item 26). Remove fitting (Figure 3, Item 25) from manifold (Figure 3, Item 13).

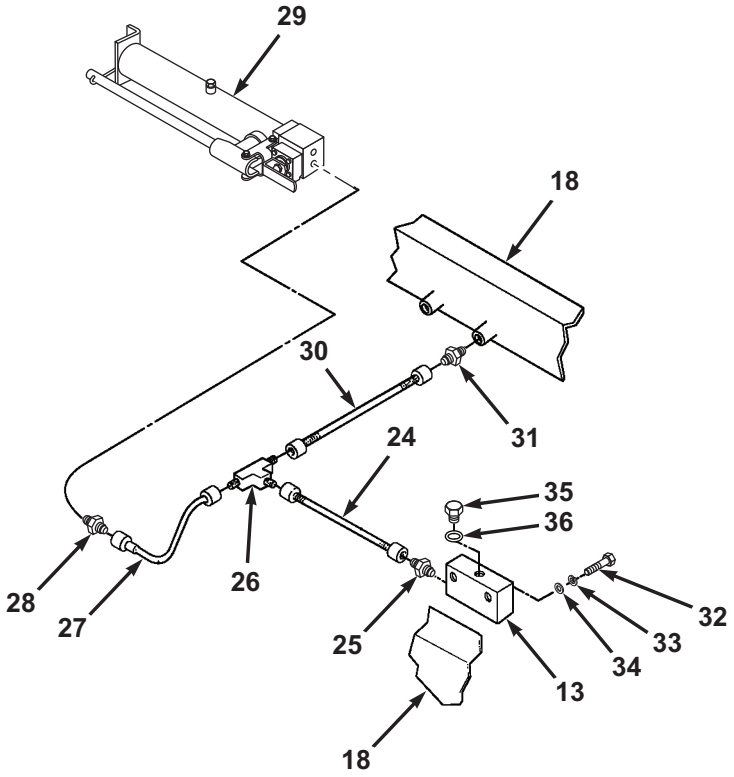


Figure 3. Transload Roller Hydraulic System Tube Removal.

7. Remove tube (Figure 3, Item 27) from tee (Figure 3, Item 26) and fitting (Figure 3, Item 28). Remove fitting (Figure 3, Item 28) from hand pump (Figure 3, Item 29).

REMOVAL - Continued

8. Remove tube (Figure 3, Item 30) from tee (Figure 3, Item 26) and fitting (Figure 3, Item 31). Remove fitting (Figure 3, Item 31) from frame (Figure 3, Item 18).
9. Remove two screws (Figure 3, Item 32), lockwashers (Figure 3, Item 33), and washers (Figure 3, Item 34) and manifold (Figure 3, Item 13) from frame (Figure 3, Item 18). Remove plug (Figure 3, Item 35) and O-ring (Figure 3, Item 36) from manifold (Figure 3, Item 13). Discard lockwashers and O-ring.
10. Unscrew and remove two hydraulic cylinders (Figure 4, Item 11) and extensions (Figure 4, Item 37) from mounting plate (Figure 4, Item 7). Remove extension cylinders (Figure 4, Item 37) from hydraulic cylinders (Figure 4, Item 11).

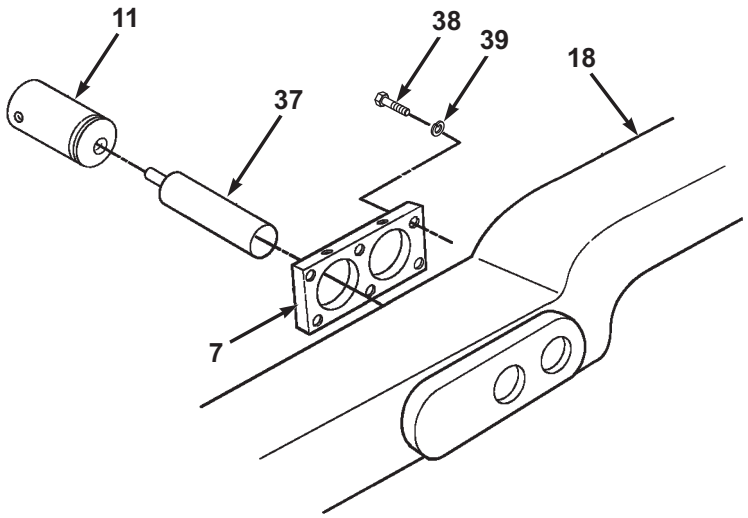


Figure 4. Transload Roller Hydraulic Cylinder Removal.

11. Remove six screws (Figure 4, Item 38), lockwashers (Figure 4, Item 39), and mounting plate (Figure 4, Item 7) from frame (Figure 4, Item 18). Discard lockwashers.

NOTE

Steps (12) through (14) are for curb-side hydraulics only.

12. Remove two screws (Figure 5, Item 40), nuts (Figure 5, Item 41), lockwashers (Figure 5, Item 42), and four cushion clamps (Figure 5, Item 43) from tube (Figure 5, Item 44) and frame bracket (Figure 5, Item 45). Discard lockwashers.

REMOVAL - Continued

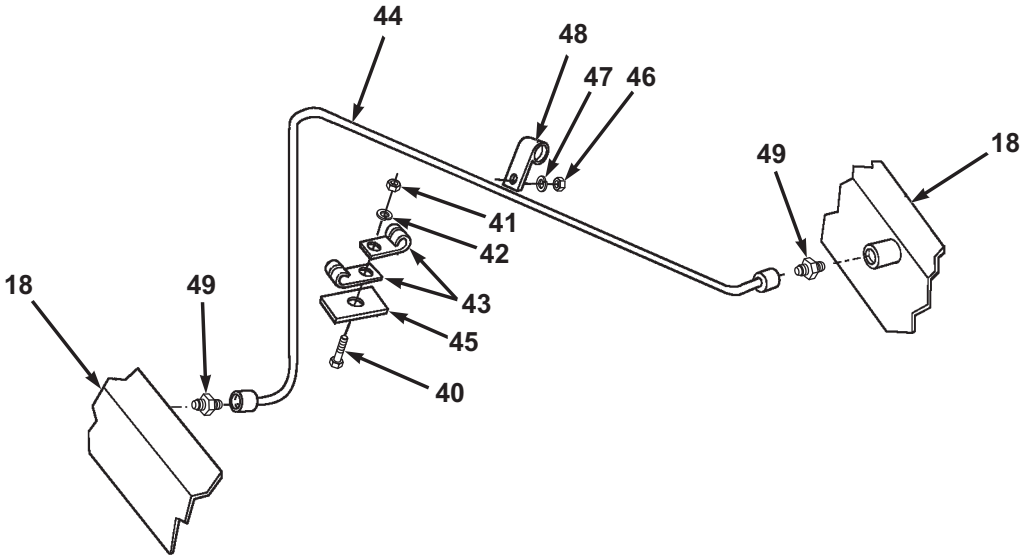


Figure 5. Transload Roller Hydraulic System Cushion Clamps Removal.

13. Remove nut (Figure 5, Item 46), lockwasher (Figure 5, Item 47), and clamp (Figure 5, Item 48) from tube (Figure 5, Item 44) and frame (Figure 5, Item 18). Discard lockwasher.
14. Remove tube (Figure 5, Item 44) from two fittings (Figure 5, Item 49). Remove two fittings (Figure 5, Item 49) from frame (Figure 5, Item 18).

END OF TASK

CLEANING

Refer to General Maintenance Instructions (WP 0038) for general cleaning instructions.

END OF TASK

INSPECTION

Refer to General Maintenance Instructions (WP 0038) for general inspection instructions.

END OF TASK

INSTALLATION

NOTE

- Steps (1) through (6) are for curb side only. Perform Step (7) for road-side hydraulics.
- Apply Antiseizing tape to all fittings that fit into cylinders or manifolds.

1. Install two fittings (Figure 6, Item 49) on frame (Figure 6, Item 18).

INSTALLATION - Continued

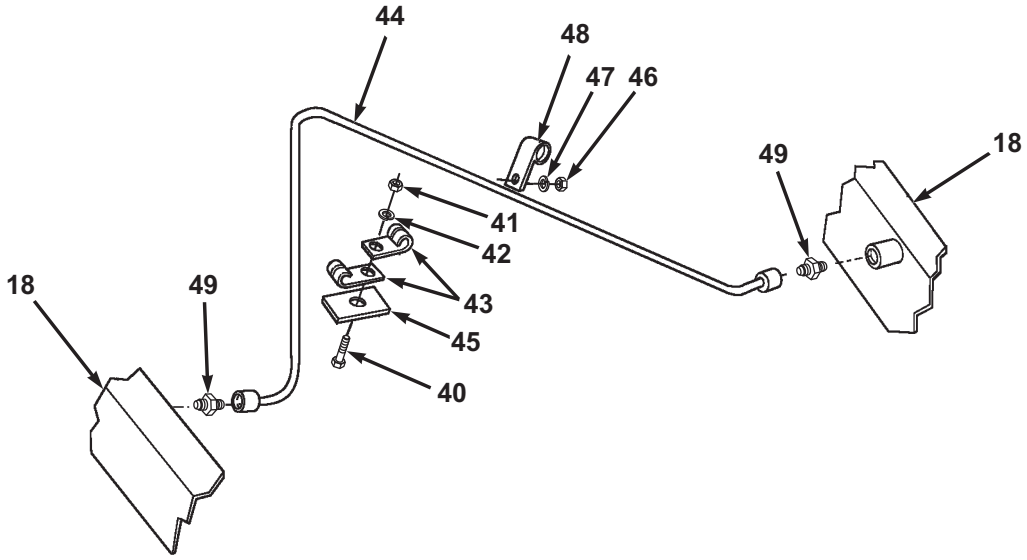


Figure 6. Transload Roller Hydraulic System Cushion Clamps Installation.

2. Install tube (Figure 6, Item 44) on two fittings (Figure 6, Item 49).
3. Install nut (Figure 6, Item 46), lockwasher (Figure 6, Item 47), and clamp (Figure 6, Item 48) on tube (Figure 6, Item 44) and frame (Figure 6, Item 18).
4. Install two screws (Figure 6, Item 40), nuts (Figure 6, Item 41), lockwashers (Figure 6, Item 42), and four cushion clamps (Figure 6, Item 43) on tube (Figure 6, Item 44) and frame bracket (Figure 6, Item 45).
5. Install six screws (Figure 7, Item 38), lockwashers (Figure 7, Item 39), and mounting plate (Figure 7, Item 7) on frame (Figure 7, Item 18). Make sure mounting plate (Figure 7, Item 7) is installed with two small holes on top.

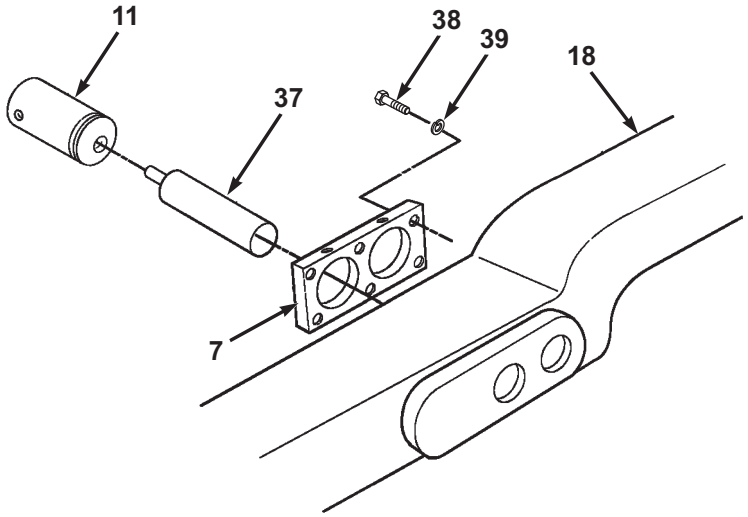


Figure 7. Transload Roller Hydraulic System Cylinder Installation.

6. Install two extensions (Figure 7, Item 37) on two hydraulic cylinders (Figure 7, Item 11).
7. Install two hydraulic cylinders (Figure 7, Item 11) on mounting plate (Figure 7, Item 7).

INSTALLATION - Continued

8. Install two screws (Figure 8, Item 32), lockwashers (Figure 8, Item 33), washers (Figure 8, Item 34), and manifold (Figure 8, Item 13) on frame (Figure 8, Item 18). Install plug (Figure 8, Item 35) and O-ring (Figure 8, Item 36) on manifold (Figure 8, Item 13).

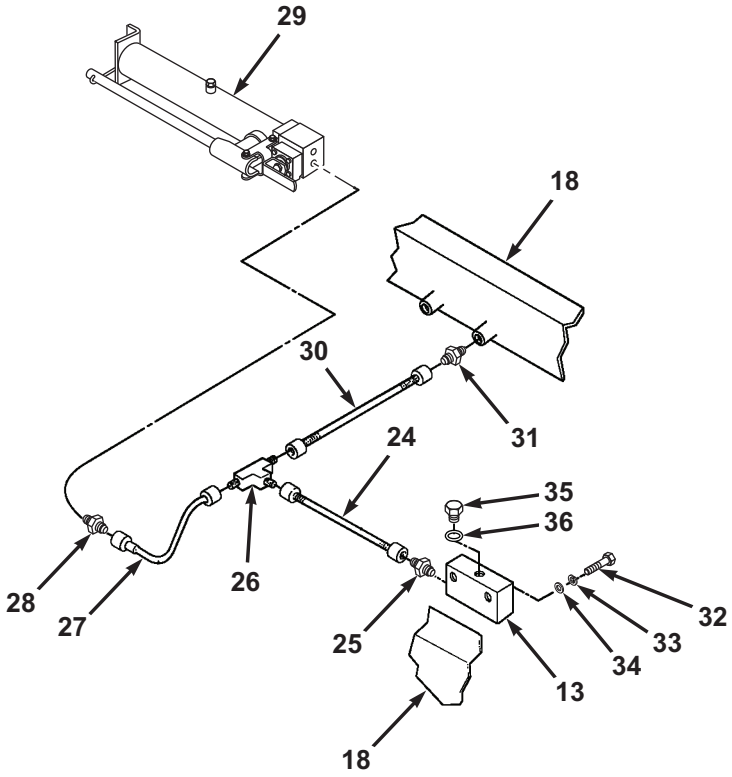


Figure 8. Transload Roller Hydraulic System Tube Installation.

9. Install fitting (Figure 8, Item 31) on frame (Figure 8, Item 18). Install tube (Figure 8, Item 30) on tee (Figure 8, Item 26) and fitting (Figure 8, Item 31).

10. Install fitting (Figure 8, Item 28) on hand pump (Figure 8, Item 29). Install tube (Figure 8, Item 27) on tee (Figure 8, Item 26) and fitting (Figure 8, Item 28).

11. Install fitting (Figure 8, Item 25) on manifold (Figure 8, Item 13). Install tube (Figure 8, Item 24) on fitting (Figure 8, Item 25) and tee (Figure 8, Item 26).

12. Install two screws (Figure 9, Item 21), lockwashers (Figure 9, Item 22), washers (Figure 9, Item 23) and manifold (Figure 9, Item 17) on frame (Figure 9, Item 18). Install plug (Figure 9, Item 19) and O-ring (Figure 9, Item 20) on manifold (Figure 9, Item 17).

INSTALLATION - Continued

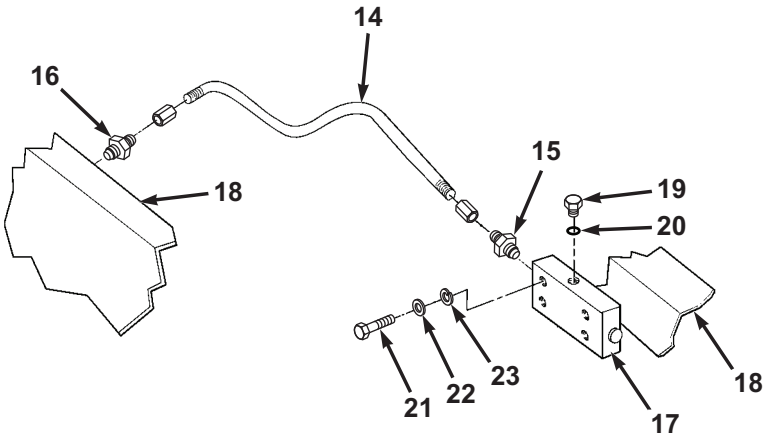


Figure 9. Transload Roller Hydraulic System Hose Installation.

13. Install fitting (Figure 9, Item 16) on frame (Figure 9, Item 18). Install fitting (Figure 9, Item 15) on manifold (Figure 9, Item 17). Install hose (Figure 9, Item 14) on two fittings (Figure 9, Items 15 and 16).
14. Install two fittings (Figure 10, Item 12) on manifold (Figure 10, Item 13). Install two hoses (Figure 10, Items 8 and 9) on fittings (Figure 10, Item 12).

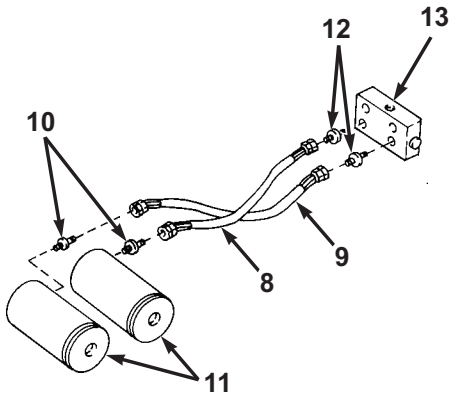


Figure 10. Transload Roller Hydraulic System Fittings Installation.

15. Install two fittings (Figure 10, Item 10) on two hydraulic cylinders (Figure 10, Item 11).
16. Install other end of each hose (Figure 10, Items 8 and 9) on two fittings (Figure 10, Item 10).
17. Install two screws (Figure 11, Item 5), lockwashers (Figure 11, Item 6), and guard plate (Figure 11, Item 4) on mounting plate (Figure 11, Item 7) and frame (Figure 11, Item 18). Install screw (Figure 11, Item 1), lockwasher (Figure 11, Item 2), and nut (Figure 11, Item 3) on mounting plate (Figure 11, Item 7).

INSTALLATION - Continued

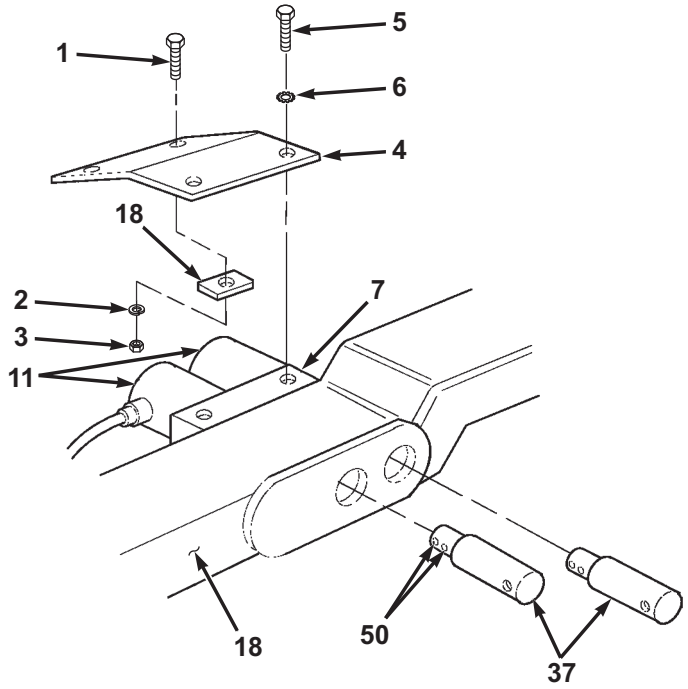


Figure 11. Transload Roller Hydraulic System Guard Plate Installation.

18. Lubricate two spring-loaded ball bearings (Figure 11, Item 50) on two extension cylinders (Figure 11, Item 37) per Lubrication Instructions (WP 0070).
19. Push two extension cylinders (Figure 11, Item 37) into frame (Figure 11, Item 18) until two spring-loaded ball bearings (Figure 11, Item 50) lock into two hydraulic cylinders (Figure 11, Item 11).

END OF TASK

FOLLOW-ON MAINTENANCE

Fill and bleed transload hydraulic system with hydraulic fluid (WP 0062).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
HYDRAULIC HAND PUMP REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Pan, Drain, 5-Gallon (WP 0078, Table 2, Item 1)
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Materials/Parts
Lubricating Oil
(WP 0081, Table 1, Item 17, 18, 19, 20)
Rag, Wiping (WP 0081, Table 1, Item 21)
Lockwasher (WP 0082, Table 1, Item 43) Qty: 4

References
Parts Manual (WP 0073, Figure 1)

References (cont.)
Parts Manual (WP 0073, Figure 22)
Parts Manual (WP 0073, Figure 23)

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP unloaded from the CBT. (WP 0006)

REMOVAL

NOTE

Use a drain pan to catch fluid draining from hoses and fittings. Wipe up any spillage with a rag. Handle, store, and dispose of drained fluids in accordance with local policies and procedures.

1. Remove two hydraulic tubes (Figure 1, Items 1 and 2) and fittings (Figure 1, Items 3 and 4) from hand pump (Figure 1, Item 5).

REMOVAL - Continued

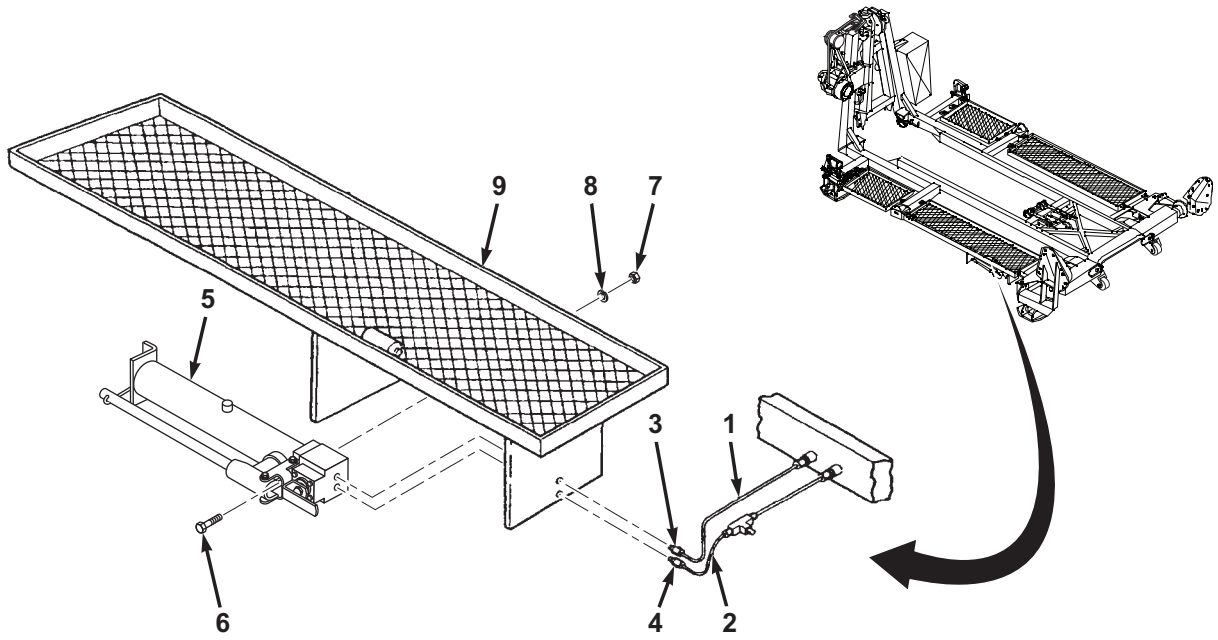


Figure 1. Hydraulic Hand Pump Removal.

2. Remove four screws (Figure 1, Item 6), nuts (Figure 1, Item 7), and lockwashers (Figure 1, Item 8) from hand pump (Figure 1, Item 5). Discard lockwashers.
3. Remove hand pump (Figure 1, Item 5) from catwalk (Figure 1, Item 9).

END OF TASK

INSTALLATION

1. Install hand pump (Figure 2, Item 5) and four screws (Figure 2, Item 6), nuts (Figure 2, Item 7), and lockwashers (Figure 2, Item 8) on catwalk (Figure 2, Item 9).

INSTALLATION - Continued

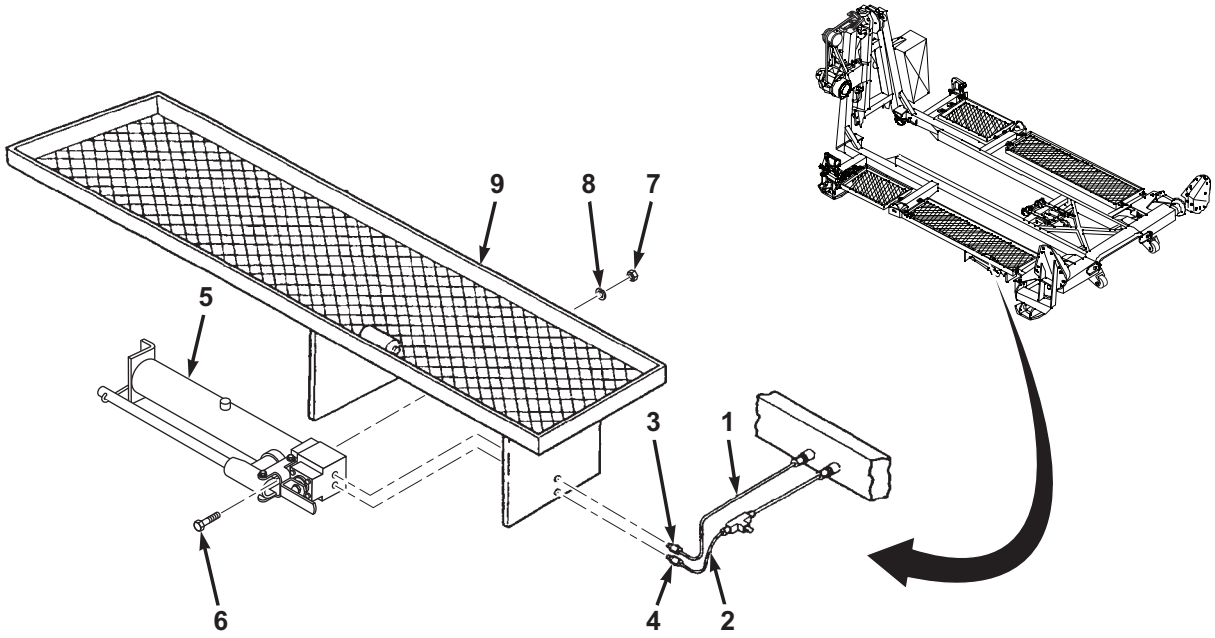


Figure 2. Hydraulic Hand Pump Installation.

2. Install two hydraulic tubes (Figure 2, Items 1 and 2) and fittings (Figure 2, Items 3 and 4) to hand pump (Figure 2, Item 5).

END OF TASK

BLEEDING

1. Remove dipstick (Figure 3, Item 1) from hand pump (Figure 3, Item 2).

BLEEDING - Continued

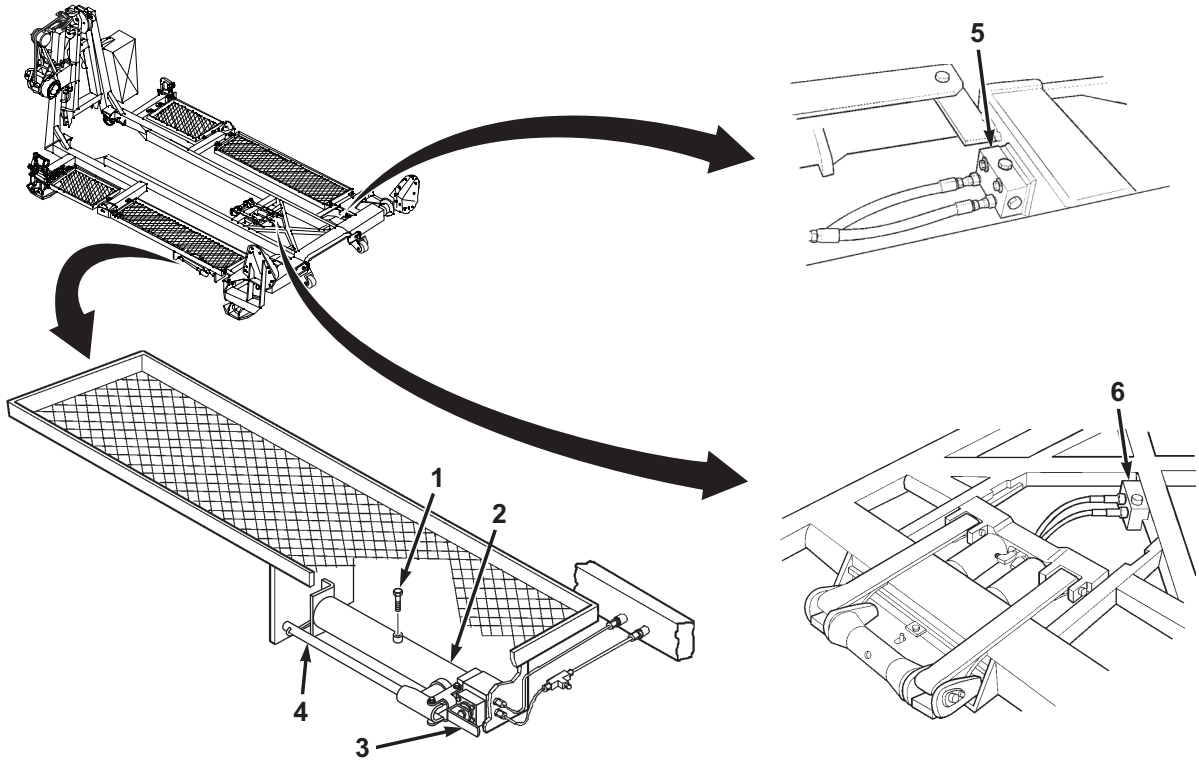


Figure 3. Hydraulic Hand Pump Bleeding.

2. Push hand pump selector (Figure 3, Item 3) to down position.
3. Fill hand pump (Figure 3, Item 2) with fluid until dipstick (Figure 3, Item 1) hole shows fluid level. Slowly pump handle (Figure 3, Item 4) so fluid level spreads to hydraulic system until no air comes out of plug or test fitting at manifold (Figure 3, Item 5).
4. Fill hand pump (Figure 3, Item 2) with hydraulic fluid until fluid level reaches dipstick (Figure 3, Item 1) hole.
5. Push hand pump selector (Figure 3, Item 3) to up position.
6. Slowly pump handle (Figure 3, Item 4) as fluid level spreads to hydraulic system until no air comes out of plug or test fitting at center roller manifold (Figure 3, Item 6). Fill hand pump (Figure 3, Item 2) with fluid until dipstick (Figure 3, Item 1) hole shows fluid level.
7. Continue filling hand pump (Figure 3, Item 2) with hydraulic fluid until fluid level reaches dipstick (Figure 3, Item 1) hole.
8. Install dipstick (Figure 3, Item 1) in hand pump (Figure 3, Item 2).
9. Move hand pump selector (Figure 3, Item 3) to center position.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
CONTROL VALVE REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Materials/Parts
Cotter Pin (WP 0082, Table 1, Item 31) Qty: 1
Lockwasher (WP 0082, Table 1, Item 41) Qty: 2
Lockwasher (WP 0082, Table 1, Item 43) Qty: 4

References
Parts Manual (WP 0073, Figure 26)

Equipment Condition
Load removed from the BAP. (WP 0008)
BAP unloaded from the CBT. (WP 0006)

REMOVAL

1. Release safety pin (Figure 1, Item 1) from valve bracket (Figure 1, Item 2) and lever (Figure 1, Item 3).

REMOVAL - Continued

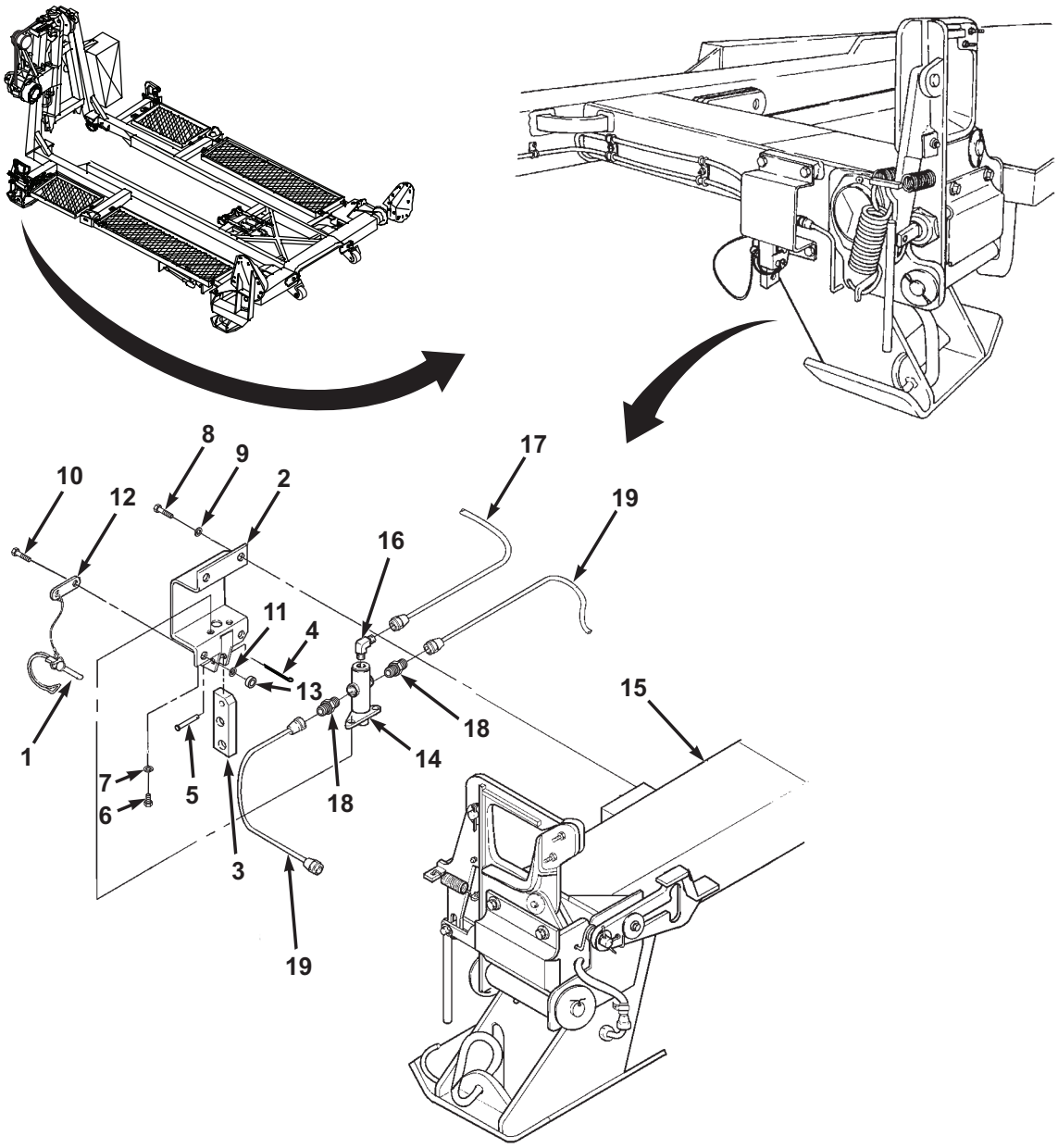


Figure 1. Control Valve Removal.

2. Remove cotter pin (Figure 1, Item 4), straight pin (Figure 1, Item 5), and lever (Figure 1, Item 3) from valve bracket (Figure 1, Item 2). Discard cotter pin.
3. Remove two screws (Figure 1, Item 6) and lockwashers (Figure 1, Item 7) from valve bracket (Figure 1, Item 2). Discard lockwashers.
4. Remove two bolts (Figure 1, Item 8) and lockwashers (Figure 1, Item 9) from valve bracket (Figure 1, Item 2). Discard lockwashers.

REMOVAL - Continued

5. Remove two bolts (Figure 1, Item 10), lockwashers (Figure 1, Item 11), lanyard (Figure 1, Item 12), valve bracket (Figure 1, Item 2), and two nuts (Figure 1, Item 13) from control valve (Figure 1, Item 14) and BAP frame (Figure 1, Item 15). Discard lockwashers.
6. Remove elbow (Figure 1, Item 16) from tubing (Figure 1, Item 17).
7. Remove two adapters (Figure 1, Item 18) from two tubings (Figure 1, Item 19).
8. Remove elbow (Figure 1, Item 16) and two adapters (Figure 1, Item 18) from control valve (Figure 1, Item 14).

END OF TASK

INSTALLATION

1. Install elbow (Figure 2, Item 16) and two adapters (Figure 2, Item 18) on control valve (Figure 2, Item 14).

INSTALLATION - Continued

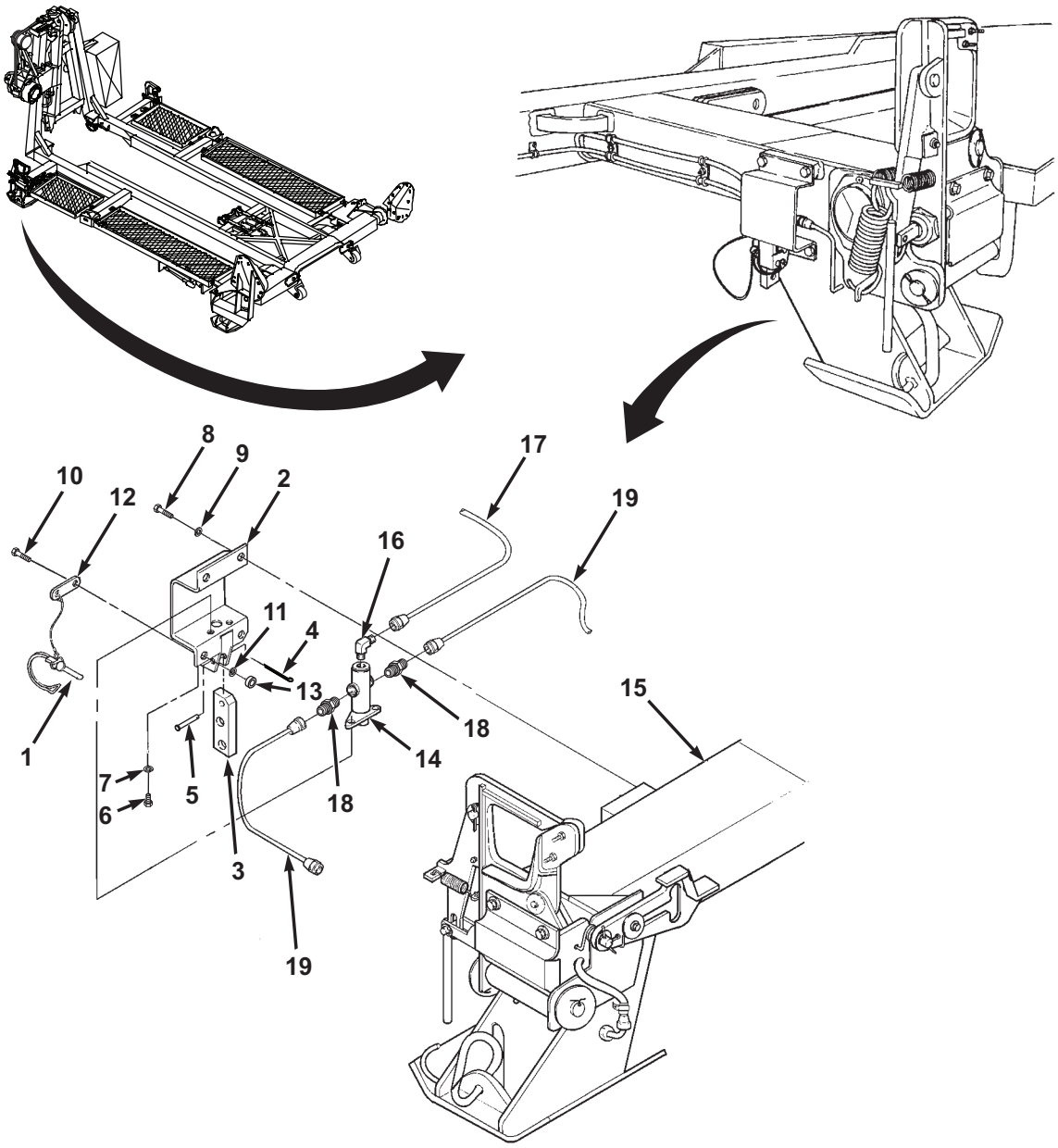


Figure 2. Control Valve Installation.

2. Install two adapters (Figure 2, Item 18) on two tubings (Figure 2, Item 19).
3. Install elbow (Figure 2, Item 16) on tubing (Figure 2, Item 17).
4. Install valve bracket (Figure 2, Item 2) and lanyard (Figure 2, Item 12) on control valve (Figure 2, Item 14) and frame (Figure 2, Item 15) with two nuts (Figure 2, Item 13), two bolts (Figure 2, Item 10), and lockwashers (Figure 2, Item 11).
5. Install two bolts (Figure 2, Item 8) and lockwashers (Figure 2, Item 9) on valve bracket (Figure 2, Item 2).
6. Install two screws (Figure 2, Item 6) and lockwashers (Figure 2, Item 7) on valve bracket (Figure 2, Item 2).

INSTALLATION - Continued

NOTE

Small top hole in lever faces BAP frame.

7. Install straight pin (Figure 2, Item 5) in middle hole of lever (Figure 2, Item 3) and in valve bracket (Figure 2, Item 2). Install cotter pin (Figure 2, Item 4) on valve bracket (Figure 2, Item 2). Engage safety pin (Figure 2, Item 1) through valve bracket (Figure 2, Item 2) and lever (Figure 2, Item 3).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
AIR LINES AND FITTINGS REPLACEMENT (OLD CONFIGURATION)

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive
(WP 0078, Table 2, Item 2)

Equipment Condition
Control valve removed. (WP 0063)
Front pin lock guard plate removed. (WP 0052)

Materials/Parts
Lockwasher (WP 0082, Table 1, Item 41) Qty: 25

References
Parts Manual (WP 0073, Figure 11)
Parts Manual (WP 0073, Figure 24)

REMOVAL

1. Remove nut (Figure 1, Item 1), lockwasher (Figure 1, Item 2), and loop clamp (Figure 1, Item 3) from tubing (Figure 1, Item 4). Remove tubing (Figure 1, Item 4) from BAP frame. Discard lockwasher.

REMOVAL - Continued

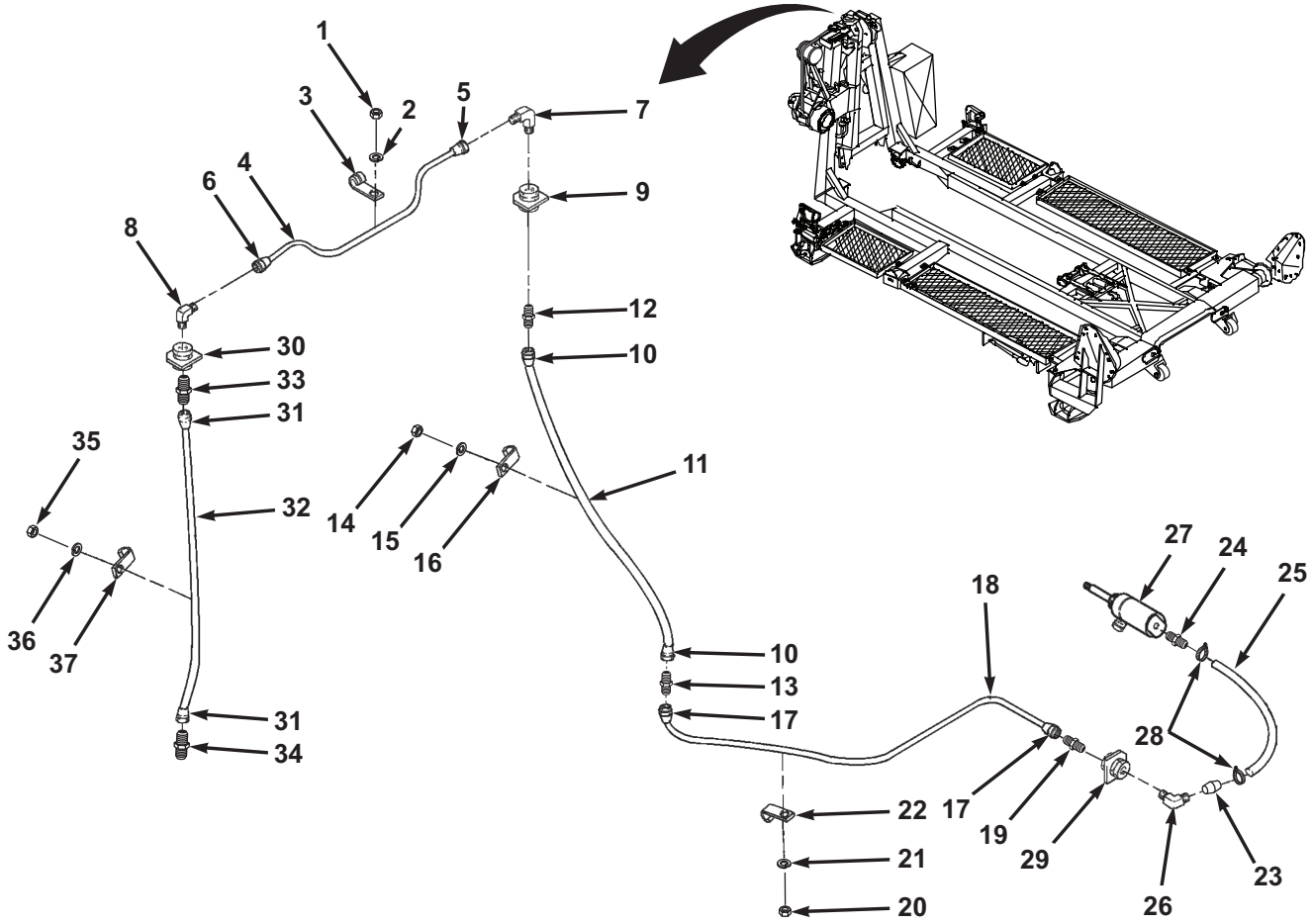


Figure 1. Tubing Removal.

2. Loosen tube nuts (Figure 1, Items 5 and 6) on each end of tubing (Figure 1, Item 4), and disconnect tubing (Figure 1, Item 4) from two elbows (Figure 1, Items 7 and 8).

NOTE

Steps (3) through (11) apply to curb-side air lines. Proceed to Step (12) for road-side air lines.

3. Remove elbow (Figure 1, Item 7) from pipe coupling (Figure 1, Item 9).
4. Loosen tube nuts (Figure 1, Item 10) on each end of tubing (Figure 1, Item 11), and disconnect tubing (Figure 1, Item 11) from adapter (Figure 1, Item 12) and tube nipple (Figure 1, Item 13). Remove adapter (Figure 1, Item 12) from pipe coupling (Figure 1, Item 9).
5. Remove six nuts (Figure 1, Item 14), lockwashers (Figure 1, Item 15), and loop clamps (Figure 1, Item 16) from tubing (Figure 1, Item 11). Remove tubing (Figure 1, Item 11) from BAP frame. Discard lockwashers.
6. Remove adapter (Figure 1, Item 12) and pipe coupling (Figure 1, Item 9) from BAP frame.
7. Loosen tube nuts (Figure 1, Item 17) on each end of tubing (Figure 1, Item 18), and disconnect tubing (Figure 1, Item 18) from tube nipple (Figure 1, Item 13) and adapter (Figure 1, Item 19).
8. Remove six nuts (Figure 1, Item 20), lockwashers (Figure 1, Item 21), and loop clamps (Figure 1, Item 22) from tubing (Figure 1, Item 18). Remove tubing (Figure 1, Item 18) from BAP frame. Discard lockwashers.

REMOVAL - Continued

9. Loosen two tube nuts (Figure 1, Items 23 and Item 24) on ends of air hose (Figure 1, Item 25) and disconnect air hose (Figure 1, Item 25) from elbow (Figure 1, Item 26) and air cylinder (Figure 1, Item 27).
10. Remove two hose clamps (Figure 1, Item 28) and tube nuts (Figure 1, Items 23 and 24) from air hose (Figure 1, Item 25).
11. Remove adapter (Figure 1, Item 19), elbow (Figure 1, Item 26), and coupling (Figure 1, Item 29) from BAP frame.

NOTE

Steps (12) through (28) apply only to road-side air lines.

12. Remove elbow (Figure 1, Item 8) from coupling (Figure 1, Item 30).
13. Loosen tube nuts (Figure 1, Item 31) on each end of tubing (Figure 1, Item 32), and disconnect tubing (Figure 1, Item 32) from adapter (Figure 1, Item 33) and tube nipple (Figure 1, Item 34).
14. Remove six nuts (Figure 1, Item 35), lockwashers (Figure 1, Item 36), and loop clamps (Figure 1, Item 37) from tubing (Figure 1, Item 32). Remove tubing (Figure 1, Item 32) from BAP frame. Discard lockwashers.
15. Remove adapter (Figure 1, Item 33) and coupling (Figure 1, Item 30) from BAP frame.
16. Remove tube nipple (Figure 2, Item 34) and adapter (Figure 2, Item 38) from tube nuts (Figure 2, Item 39) on each end of tubing (Figure 2, Item 40).

REMOVAL - Continued

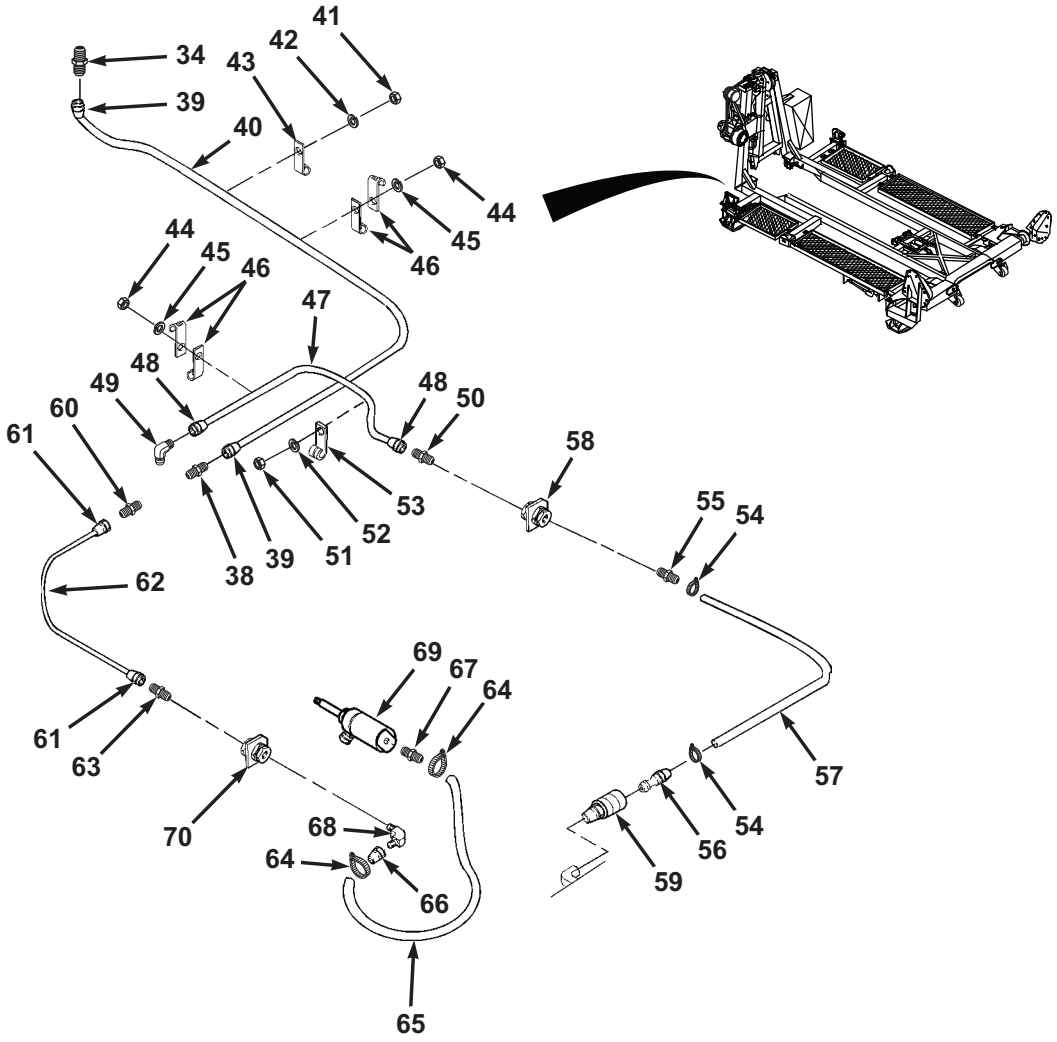


Figure 2. Tube Nuts Removal.

17. Remove three nuts (Figure 2, Item 41), lockwashers (Figure 2, Item 42), and loop clamps (Figure 2, Item 43) from tubing (Figure 2, Item 40). Discard lockwashers.

18. Remove two nuts (Figure 2, Item 44), lockwashers (Figure 2, Item 45), and four loop clamps (Figure 2, Item 46) from two tubings (Figure 2, Items 40 and 47). Remove tubing (Figure 2, Item 40) from BAP frame. Discard lockwashers.

19. Remove tube nut (Figure 2, Item 48) from elbow (Figure 2, Item 49) on one end of tubing (Figure 2, Item 47). Loosen tube nut (Figure 2, Item 48) on other end of tubing (Figure 2, Item 47), and disconnect tubing (Figure 2, Item 47) from adapter (Figure 2, Item 50).

20. Remove nut (Figure 2, Item 51), lockwasher (Figure 2, Item 52), and loop clamp (Figure 2, Item 53) from tubing (Figure 2, Item 47) under BAP frame. Remove tubing (Figure 2, Item 47) from BAP frame. Discard lockwasher.

21. Remove two hose clamps (Figure 2, Item 54), straight adapter (Figure 2, Item 55), and coupling half (Figure 2, Item 56) from air hose (Figure 2, Item 57).

22. Remove adapter (Figure 2, Item 50), straight adapter (Figure 2, Item 55), and coupling (Figure 2, Item 58) from BAP frame.

REMOVAL - Continued

23. Release coupling half (Figure 2, Item 56) from coupling half (Figure 2, Item 59), and remove coupling half (Figure 2, Item 59) from BAP frame.
24. Remove adapter (Figure 2, Item 60) from tube nut (Figure 2, Item 61) on one end of tubing (Figure 2, Item 62). Loosen tube nut (Figure 2, Item 61) on other end of tubing (Figure 2, Item 62), and disconnect tubing (Figure 2, Item 62) from adapter (Figure 2, Item 63). Remove tubing (Figure 2, Item 62) from BAP frame.
25. Loosen two hose clamps (Figure 2, Item 64) from air hose (Figure 2, Item 65).
26. Loosen two adapters (Figure 2, Items 66 and 67) on ends of air hose (Figure 2, Item 65), and disconnect air hose (Figure 2, Item 65) from elbow (Figure 2, Item 68), two hose clamps (Figure 2, Item 64), and air cylinder (Figure 2, Item 69).
27. Remove adapters (Figure 2, Items 66 and 67) from air hose (Figure 2, Item 65).
28. Remove adapter (Figure 2, Item 63), elbow (Figure 2, Item 68), and coupling (Figure 2, Item 70) from BAP frame.

END OF TASK

INSTALLATION

NOTE

- For general air tubing repair instructions, proceed to BAP General Air Tubing Assembly Instructions.
- Steps (1) through (17) apply only to road-side air lines. Proceed to Step (18) for curb-side air lines.

1. Install two hose clamps (Figure 3, Item 64) on air hose (Figure 3, Item 65).

INSTALLATION - Continued

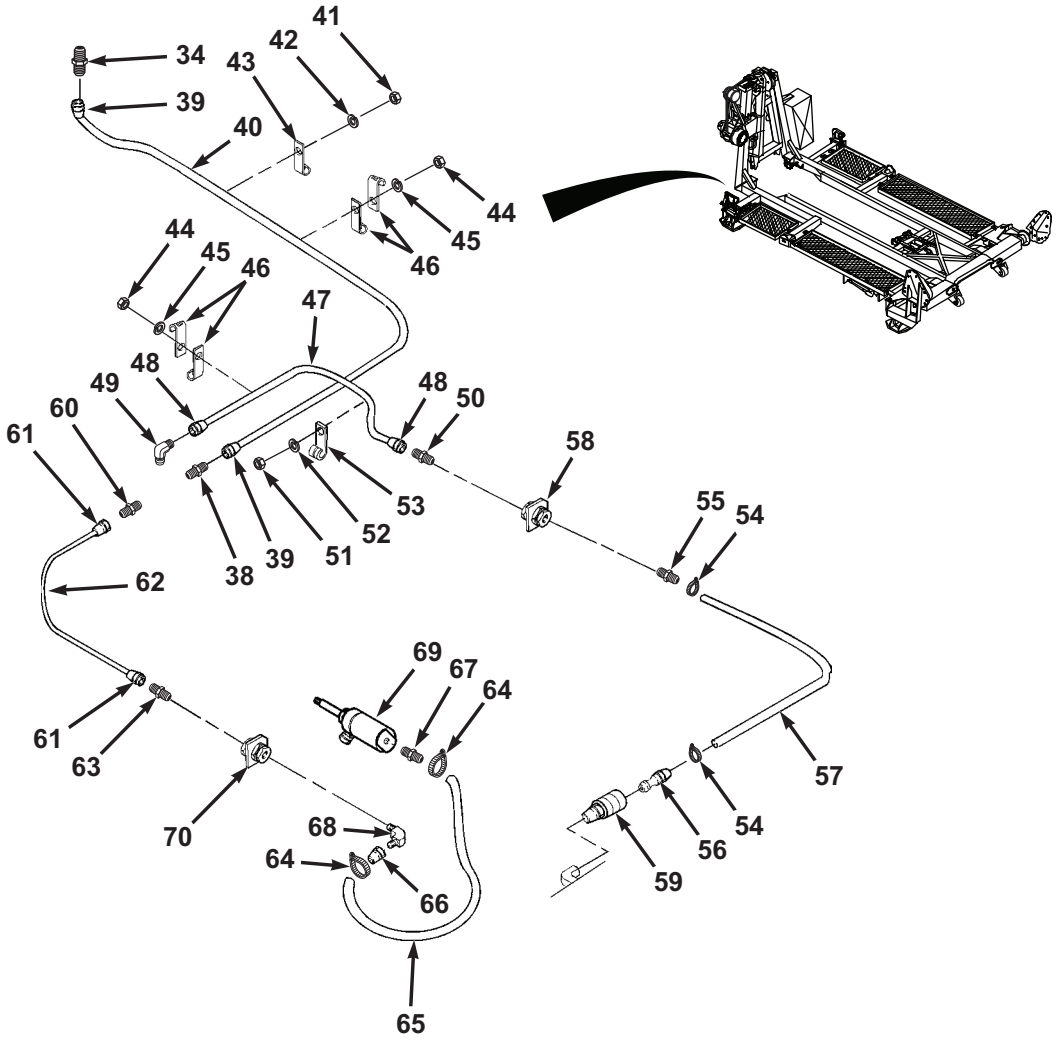


Figure 3. Tube Nuts Installation.

2. Using two adapters (Figure 3, Items 66 and 67), connect air hose (Figure 3, Item 65) to elbow (Figure 3, Item 68) and air cylinder (Figure 3, Item 69). Tighten hose clamps (Figure 3, Item 64).
3. Tighten two adapters (Figure 3, Items 66 and 67) on air hose (Figure 3, Item 65).
4. Install coupling (Figure 3, Item 70), elbow (Figure 3, Item 68), and adapter (Figure 3, Item 63) on BAP frame.
5. Using two tube nuts (Figure 3, Item 61), connect tubing (Figure 3, Item 62) to two adapters (Figure 3, Items 60 and 63).
6. Install coupling half (Figure 3, Item 56) and straight adapter (Figure 3, Item 55) on air hose (Figure 3, Item 57) with two hose clamps (Figure 3, Item 54).
7. Install coupling half (Figure 3, Item 59) on BAP frame, and insert coupling half (Figure 3, Item 56) in coupling half (Figure 3, Item 59).
8. Install coupling (Figure 3, Item 58), straight adapter (Figure 3, Item 55), and adapter (Figure 3, Item 50) on BAP frame.

INSTALLATION - Continued

9. Install tubing (Figure 3, Item 47) on BAP frame with loop clamp (Figure 3, Item 53), lockwasher (Figure 3, Item 52), and nut (Figure 3, Item 51).
10. Using two tube nuts (Figure 3, Item 48), connect tubing (Figure 3, Item 47) to adapter (Figure 3, Item 50) and elbow (Figure 3, Item 49).
11. Install tubing (Figure 3, Item 40) on BAP frame using four loop clamps (Figure 3, Item 46), two lockwashers (Figure 3, Item 45), and nuts (Figure 3, Item 44).
12. Secure tubing (Figure 3, Item 40) to BAP frame with three loop clamps (Figure 3, Item 43), lockwashers (Figure 3, Item 42), and nuts (Figure 3, Item 41).
13. Using two tube nuts (Figure 3, Item 39), connect tubing (Figure 3, Item 40) to adapter (Figure 3, Item 38) and tube nipple (Figure 3, Item 34).
14. Install coupling (Figure 4, Item 30) and adapter (Figure 4, Item 33) on BAP frame.

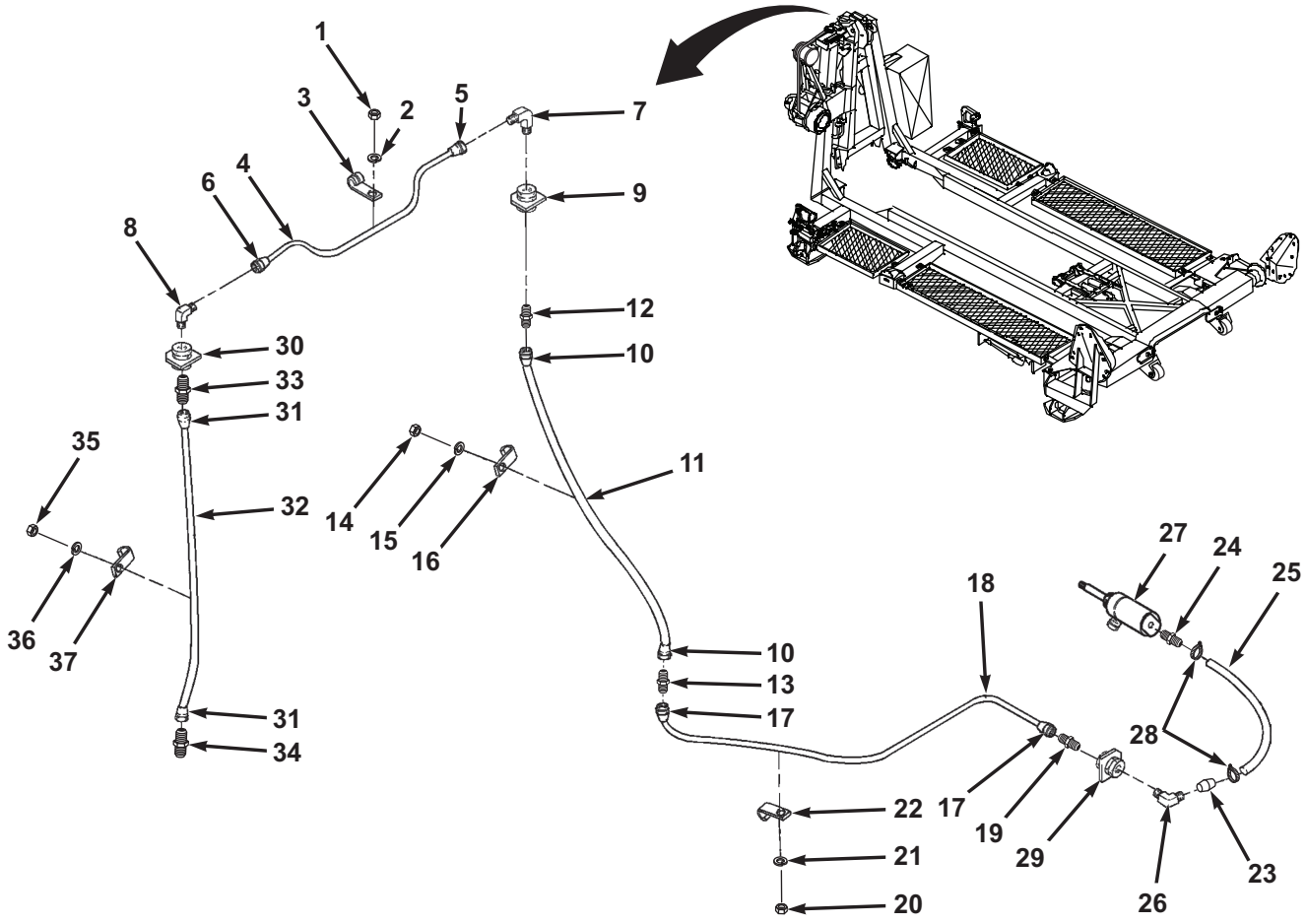


Figure 4. Tubing Installation.

15. Install tubing (Figure 4, Item 32) on BAP frame with six loop clamps (Figure 4, Item 37), lockwashers (Figure 4, Item 36), and nuts (Figure 4, Item 35).
16. Using two tube nuts (Figure 4, Item 31), connect tubing (Figure 4, Item 32) to tube nipple (Figure 4, Item 34) and adapter (Figure 4, Item 33).
17. Install elbow (Figure 4, Item 8) on coupling (Figure 4, Item 30).

INSTALLATION - Continued

NOTE

Steps (18) through (28) apply only to curb-side air lines.

18. Install coupling (Figure 4, Item 29), elbow (Figure 4, Item 26), and adapter (Figure 4, Item 19) on the BAP.
19. Install two tube nuts (Figure 4, Items 23 and 24) on air hose (Figure 4, Item 25) with two hose clamps (Figure 4, Item 28).
20. Using two tube nuts (Figure 4, Items 23 and 24), connect air hose (Figure 4, Item 25) to elbow (Figure 4, Item 26) and air cylinder (Figure 4, Item 27).
21. Install tubing (Figure 4, Item 18) on BAP frame with six loop clamps (Figure 4, Item 22), lockwashers (Figure 4, Item 21), and nuts (Figure 4, Item 20).
22. Using two tube nuts (Figure 4, Item 17), connect tubing (Figure 4, Item 18) to adapter (Figure 4, Item 19) and tube nipple (Figure 4, Item 13).
23. Install pipe coupling (Figure 4, Item 9) and adapter (Figure 4, Item 12) on BAP frame.
24. Install tubing (Figure 4, Item 11) on BAP frame with six loop clamps (Figure 4, Item 16), lockwashers (Figure 4, Item 15), and nuts (Figure 4, Item 14).
25. Using two tube nuts (Figure 4, Item 10), connect tubing (Figure 4, Item 11) to tube nipple (Figure 4, Item 13) and adapter (Figure 4, Item 12).
26. Install elbow (Figure 4, Item 7) on pipe coupling (Figure 4, Item 9).
27. Install tubing (Figure 4, Item 4) on BAP frame with loop clamp (Figure 4, Item 3), lockwasher (Figure 4, Item 2), and nut (Figure 4, Item 1).
28. Using two tube nuts (Figure 4, Items 5 and 6), connect tubing (Figure 4, Item 4) to two elbows (Figure 4, Items 7 and 8).

END OF TASK

FOLLOW-ON MAINTENANCE

1. Install BAP front pin lock guard plate. (WP 0052)
2. Install BAP control valve. (WP 0062)
3. Load BAP onto Transporter and connect air system. (WP 0005)
4. Check air system for leaks. (WP 0038)

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
AIR LINES AND FITTINGS REPLACEMENT (NEW CONFIGURATION)

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's: Automotive
(WP 0078, Table 2, Item 2)

References
Parts Manual (WP 0073, Figure 11)
Parts Manual (WP 0073, Figure 24)

Materials/Parts
Lockwasher (WP 0082, Table 1, Item 48) Qty: 22
Ferrule (WP 0082, Table 1, Item 16) Qty: 8

Equipment Condition
Control valve removed. (WP 0063)
Front pin lock guard plate removed. (WP 0052)

REMOVAL

NOTE

- Note location and position of loop clamps prior to removal to ensure proper installation.
- All but four loop clamps are removed the same way, only one clamp setup shown.

1. Remove nut (Figure 1, Item 1), lockwasher (Figure 1, Item 2), and loop clamp (Figure 1, Item 3) from tubing (Figure 1, Item 4) and BAP frame. Discard lockwasher.

REMOVAL - Continued

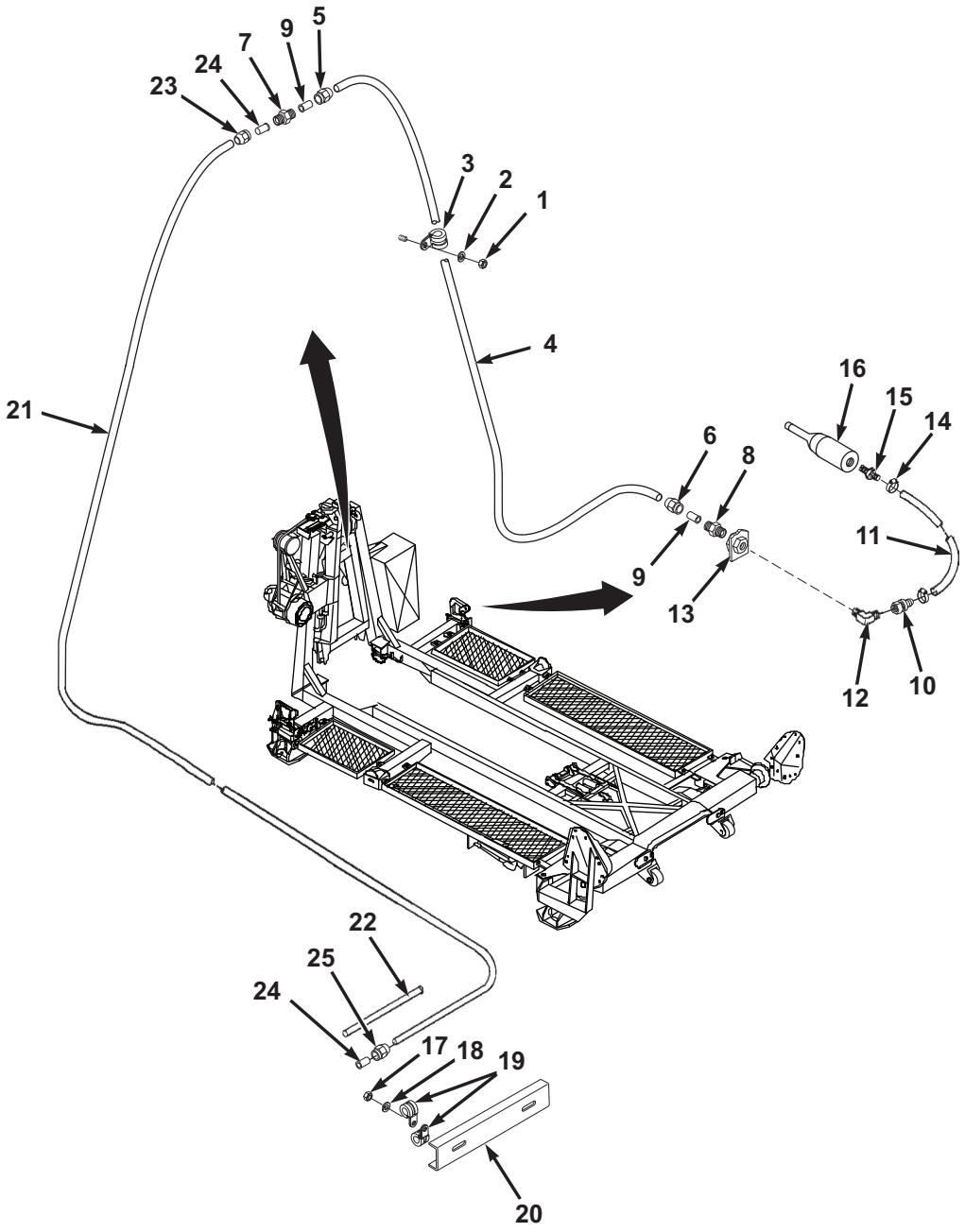


Figure 1. Clamp and Tubing Removal.

NOTE

Steps (2) through (7) apply only to curb-side air lines. Proceed to Step (8) for road-side air lines.

2. Loosen fitting connectors (Figure 1, Items 5 and 6) on each end of tubing (Figure 1, Item 4) and remove tubing (Figure 1, Item 4) from fittings (Figure 1, Items 7 and 8) and BAP frame.

REMOVAL - Continued

3. Remove ferrules (Figure 1, Item 9) and fitting connectors (Figure 1, Items 5 and 6) from each end of tubing (Figure 1, Item 4). Discard ferrules.
4. Loosen fitting connector (Figure 1, Item 10) on end of air hose (Figure 1, Item 11) and remove air hose (Figure 1, Item 11) from elbow (Figure 1, Item 12).
5. Remove fitting (Figure 1, Item 8) and elbow (Figure 1, Item 12) from coupling (Figure 1, Item 13).
6. Remove coupling (Figure 1, Item 13) from BAP frame.
7. Loosen clamp (Figure 1, Item 14) and remove air hose (Figure 1, Item 11) from fitting (Figure 1, Item 15).
8. Remove fitting (Figure 1, Item 15) from air cylinder (Figure 1, Item 16).

NOTE

Note location and position of loop clamps prior to removal to ensure proper installation.

9. Remove two nuts (Figure 1, Item 17), lockwashers (Figure 1, Item 18), four loop clamps (Figure 1, Item 19), and bracket (Figure 1, Item 20) from tubing (Figure 1, Item 21), tubing (Figure 1, Item 22)' and BAP frame. Discard lockwashers.
10. Loosen fitting connector (Figure 1, Item 23) on end of tubing (Figure 1, Item 21) and remove tubing (Figure 1, Item 21) from fitting (Figure 1, Item 7) and BAP frame.
11. Remove ferrules (Figure 1, Item 24) and fitting connectors (Figure 1, Items 23 and 25) from each end of tubing (Figure 1, Item 21). Discard ferrules.
12. Loosen fitting connector (Figure 2, Item 26) on end of tubing (Figure 2, Item 27) and remove tubing (Figure 2, Item 27) from fitting (Figure 2, Item 28).

REMOVAL - Continued

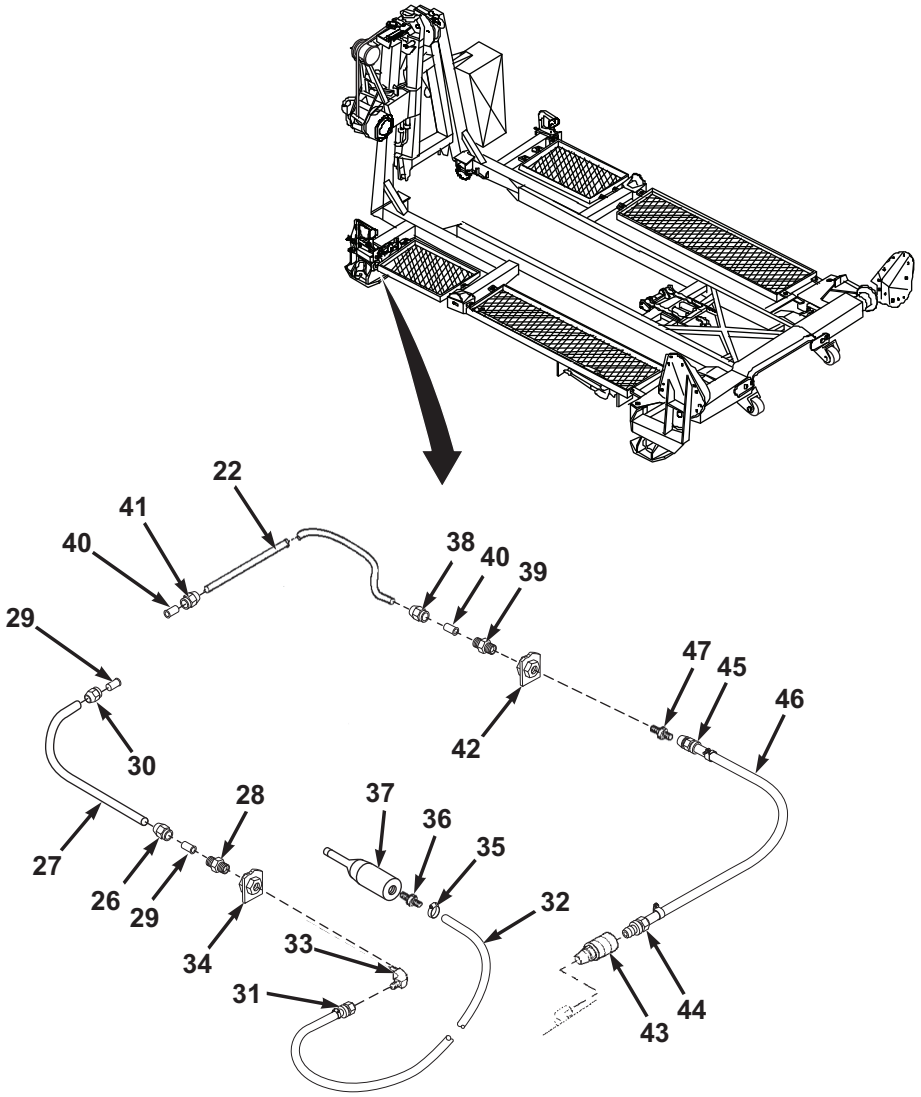


Figure 2. Adapter and Tube Nuts Removal.

13. Remove ferrules (Figure 2, Item 29) and fitting connectors (Figure 2, Items 26 and 30) from each end of tubing (Figure 2, Item 27). Discard ferrules.
14. Loosen fitting connector (Figure 2, Item 31) on end of air hose (Figure 2, Item 32) and remove air hose (Figure 2, Item 32) from elbow (Figure 2, Item 33).
15. Remove fitting (Figure 2, Item 28) and elbow (Figure 2, Item 33) from coupling (Figure 2, Item 34).
16. Remove coupling (Figure 2, Item 34) from BAP frame.
17. Loosen clamp (Figure 2, Item 35) and remove air hose (Figure 2, Item 32) from fitting (Figure 2, Item 36).
18. Remove fitting (Figure 2, Item 36) from air cylinder (Figure 2, Item 37).
19. Loosen fitting connector (Figure 2, Item 38) on end of tubing (Figure 2, Item 22) and remove tubing (Figure 2, Item 22) from fitting (Figure 2, Item 39).
20. Remove ferrules (Figure 2, Item 40) and fitting connectors (Figure 2, Items 38 and 41) from each end of tubing (Figure 2, Item 22). Discard ferrules.

REMOVAL - Continued

21. Remove fitting (Figure 2, Item 39) from coupling (Figure 2, Item 42).
22. Release coupling half (Figure 2, Item 43) from coupling half (Figure 2, Item 44).
23. Remove coupling half (Figure 2, Item 43) from BAP frame.
24. Loosen fitting connector (Figure 2, Item 45) on end of tubing (Figure 2, Item 46) and remove tubing (Figure 2, Item 46) from fitting (Figure 2, Item 47).
25. Remove fitting (Figure 2, Item 47) from coupling (Figure 2, Item 42).
26. Remove coupling (Figure 2, Item 42) from BAP frame.

END OF TASK

INSTALLATION

NOTE

- For general air tubing repair instructions, proceed to General Air Tubing Assembly Instructions. (WP 0038)
- Steps (1) through (17) apply only to road-side air lines. Proceed to Step (18) for curb-side air lines.

1. Install coupling (Figure 3, Item 42) to BAP frame.

INSTALLATION - Continued

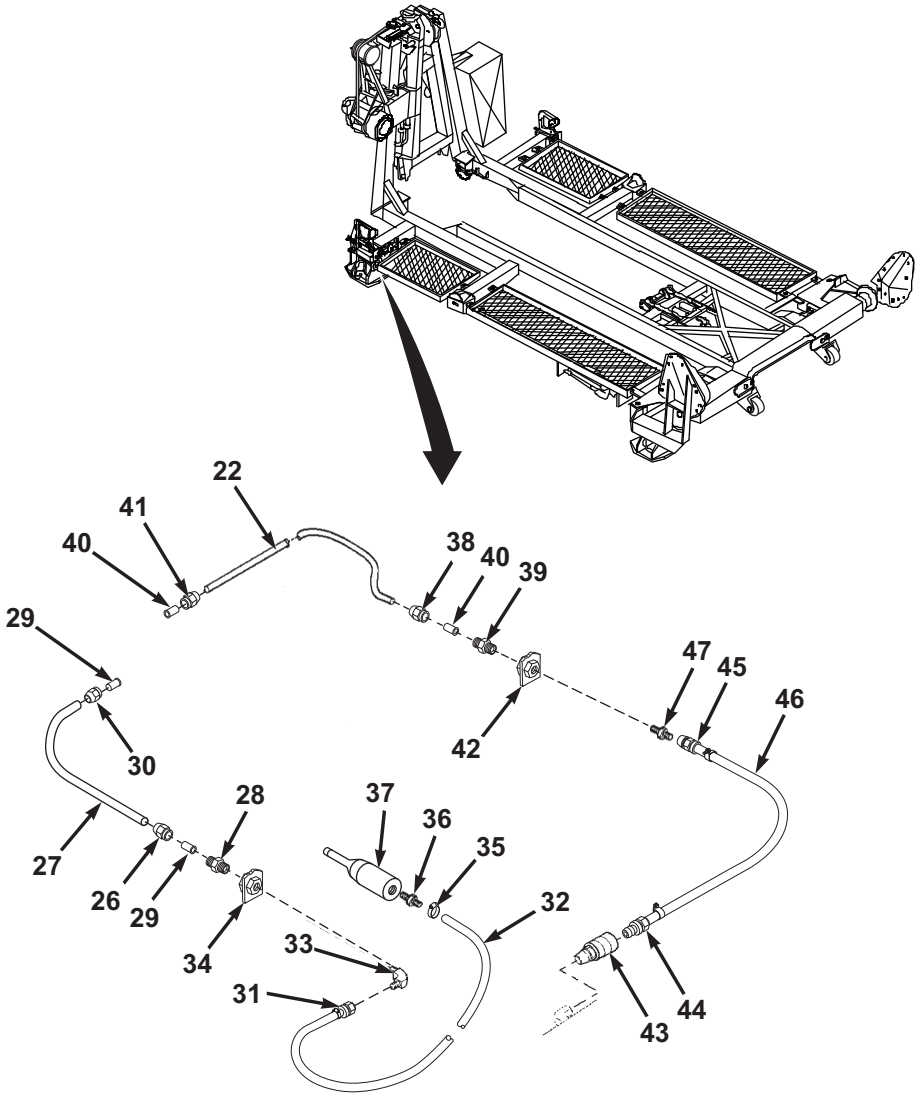


Figure 3. Adapter and Clamps installation.

2. Install fitting (Figure 3, Item 47) to coupling (Figure 3, Item 42).
3. Install fitting connector (Figure 3, Item 45) on end of tubing (Figure 3, Item 46) to fitting (Figure 3, Item 47).
4. Connect coupling half (Figure 3, Item 44) to coupling half (Figure 3, Item 43).
5. Install fitting (Figure 3, Item 39) to coupling (Figure 3, Item 42).
6. Install fitting connectors (Figure 3, Items 38 and 41) and ferrules (Figure 3, Item 40) on each end of tubing (Figure 3, Item 22).
7. Install fitting connector (Figure 3, Item 38) on end of tubing (Figure 3, Item 22) to fitting (Figure 3, Item 39).
8. Install fitting (Figure 3, Item 36) to air cylinder (Figure 3, Item 37).
9. Install air hose (Figure 3, Item 32) and clamp (Figure 3, Item 35) to fitting (Figure 3, Item 36) and tighten clamp (Figure 3, Item 35).
10. Install coupling (Figure 3, Item 34) to BAP frame.

INSTALLATION - Continued

11. Install fitting (Figure 3, Item 28) and elbow (Figure 3, Item 33) to coupling (Figure 3, Item 34).
12. Install fitting connector (Figure 3, Item 31) on end of air hose (Figure 3, Item 32) to elbow (Figure 3, Item 33).
13. Install fitting connectors (Figure 3, Items 26 and 30) and ferrules (Figure 3, Item 29) to each end of tubing (Figure 3, Item 27).
14. Install fitting connector (Figure 3, Item 26) on end of tubing (Figure 3, Item 27) to fitting (Figure 3, Item 28).
15. Install fitting connectors (Figure 4, Items 23 and 25) and ferrules (Figure 4, Item 24) on each end of tubing (Figure 4, Item 21).

INSTALLATION - Continued

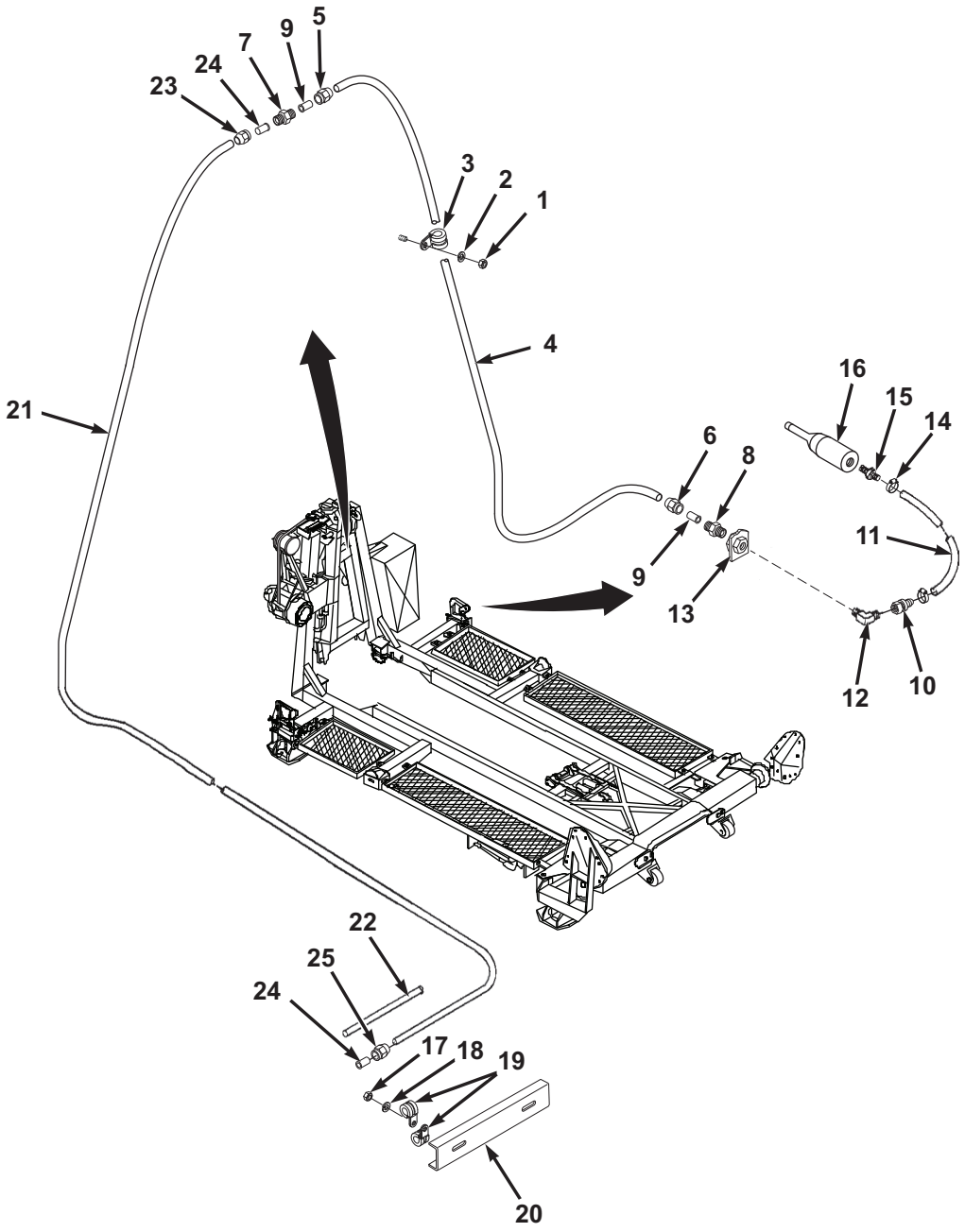


Figure 4. Coupling and Hose Installation.

16. Install fitting connector (Figure 4, Item 23) on end of tubing (Figure 4, Item 21) to fitting (Figure 4, Item 7).

NOTE

Install loop clamps as noted prior to removal.

17. Install bracket (Figure 4, Item 20) and four loop clamps (Figure 4, Item 19) on tubing (Figure 4, Item 21), tubing (Figure 4, Item 22) and BAP frame with two nuts (Figure 4, Item 17) and lockwashers (Figure 4, Item 18).

18. Install fitting (Figure 4, Item 15) to air cylinder (Figure 4, Item 16).

INSTALLATION - Continued

19. Install air hose (Figure 4, Item 11) and clamp (Figure 4, Item 14) to fitting (Figure 4, Item 15) and tighten clamp (Figure 4, Item 14).
20. Install coupling (Figure 4, Item 13) to BAP frame.
21. Install fitting (Figure 4, Item 8) and elbow (Figure 4, Item 12) to coupling (Figure 4, Item 13).
22. Install fitting connector (Figure 4, Item 10) on end of air hose (Figure 4, Item 11) to elbow (Figure 4, Item 12).
23. Install fitting connectors (Figure 4, Items 5 and 6) and ferrules (Figure 4, Item 9) on each end of tubing (Figure 4, Item 4).
24. Install fitting connectors (Figure 4, Items 5 and 6) on each end of tubing (Figure 4, Item 4) to fittings (Figure 4, Items 7 and 8).

NOTE

- Install loop clamps as noted prior to removal.
- All loop clamps are installed the same way, only one clamp setup shown.

25. Install loop clamp (Figure 4, Item 3) on tubing (Figure 4, Item 4) and BAP frame with lockwasher (Figure 4, Item 2) and nut (Figure 4, Item 1).

END OF TASK

FOLLOW-ON MAINTENANCE

1. Install BAP front pin lock guard plate. (WP 0052)
2. Install BAP control valve. (WP 0062)
3. Load BAP onto Transporter and connect air system. (WP 0005)
4. Check air system for leaks.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
FRONT BAP LOCK REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanics: Automotive (WP 0078, Table 2, Item 2)

Materials/Parts
Cotter pin (WP 0082, Table 1, Item 32) Qty: 4
Locknut (WP 0082, Table 1, Item 20) Qty: 1
Cotter pin (WP 0082, Table 1, Item 15) Qty: 1
Locknut (WP 0082, Table 1, Item 6) Qty: 1

Personnel Required
(2)

References
Parts Manual (WP 0073, Figure 25)

Equipment Condition
BAP unloaded to ground. (WP 0006)
Engine turned off (TM 9-2320-435-10 or TM 9-2320-425-10). (WP 0076)
Wheels chocked (TM 9-2320-435-10 or TM 9-2320-425-10). (WP 0076)

REMOVAL

NOTE

- Front bap locks are located on right and left sides of vehicle. Both bap locks are replaced the same way. Right side shown.
- Model B trucks are equipped with shims between bap lock and frame.

1. Remove two screws (Figure 1, Item 1) and plate (Figure 1, Item 2) from bracket (Figure 1, Item 3).

REMOVAL - Continued

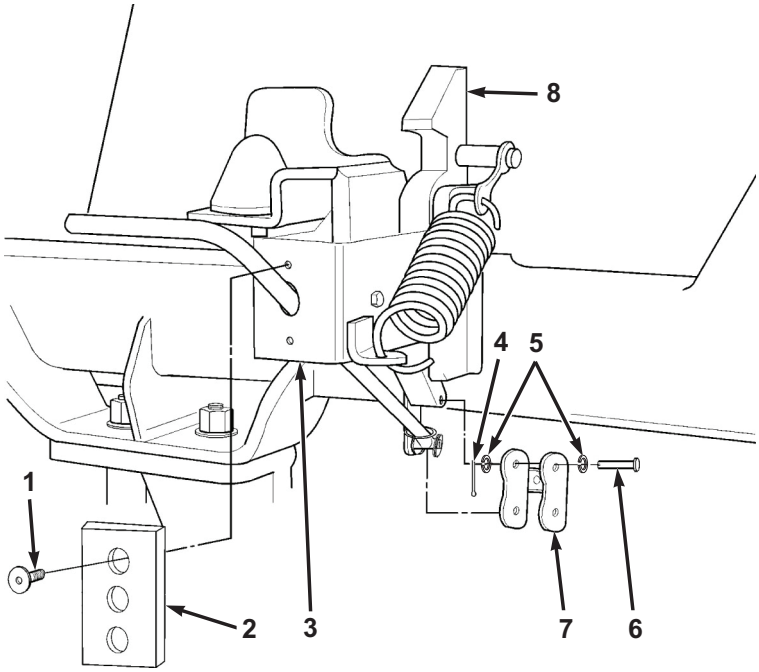


Figure 1. Front BAP Lock Bracket Removal.

2. Remove cotter pin (Figure 1, Item 4), two washers (Figure 1, Item 5), pin (Figure 1, Item 6) and bracket (Figure 1, Item 7) from lock (Figure 1, Item 8). Discard cotter pin.

NOTE

Note position of spring prior to removal to ensure proper installation.

3. Remove handle (Figure 2, Item 9) from bracket (Figure 2, Item 3).

REMOVAL - Continued

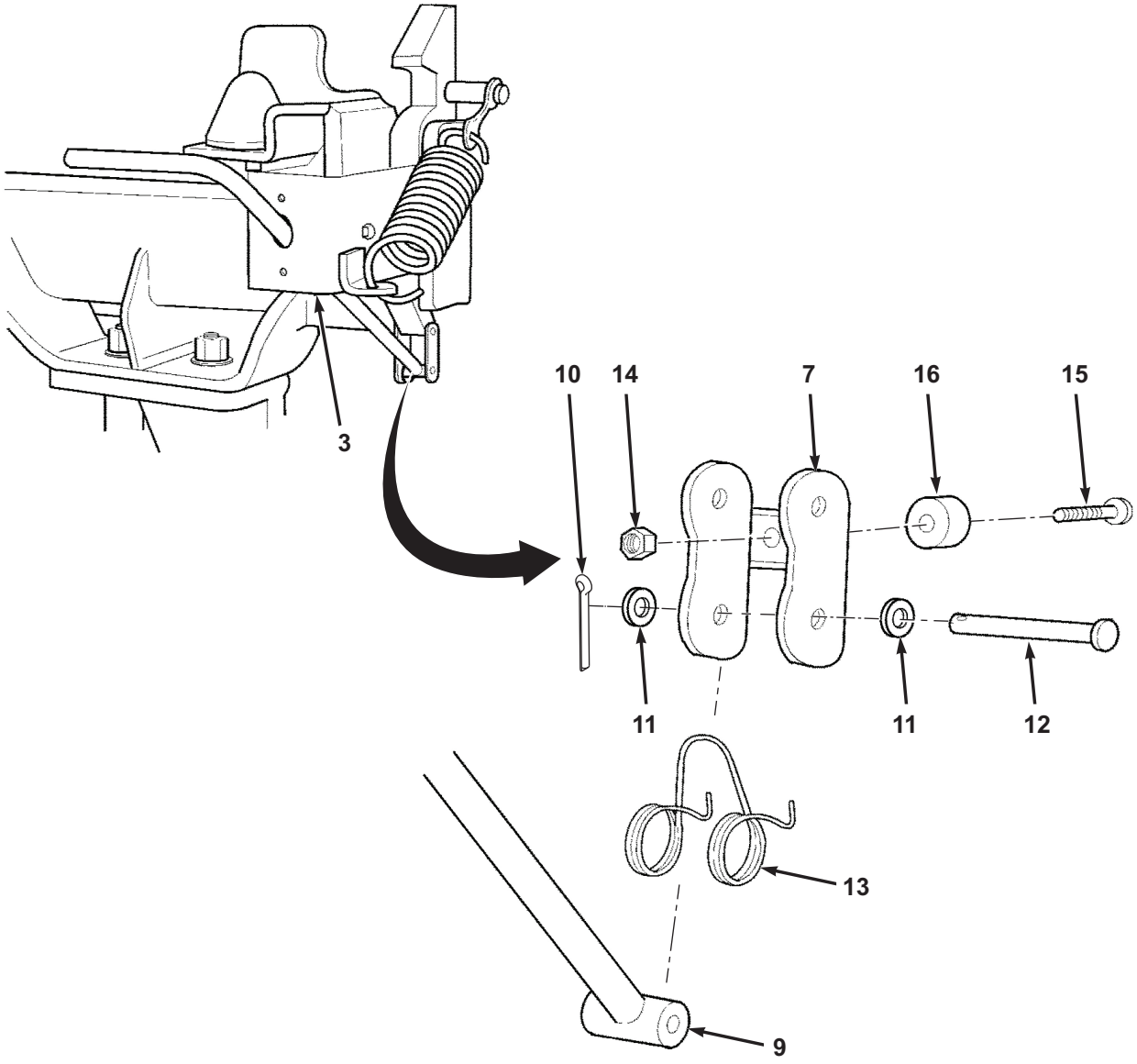
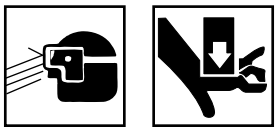


Figure 2. Front BAP Lock Handle Removal.

4. Remove cotter pin (Figure 2, Item 10), two washers (Figure 2, Item 11), pin (Figure 2, Item 12), spring (Figure 2, Item 13), and handle (Figure 2, Item 9) from bracket (Figure 2, Item 7). Discard cotter pins.
5. Remove locknut (Figure 2, Item 14), screw (Figure 2, Item 15), and bumper (Figure 2, Item 16) from bracket (Figure 2, Item 7). Discard locknut.

REMOVAL - Continued

WARNING



Lock is under spring tension. Use extreme care when removing pin. Ensure all personnel wear safety glasses and keep hands and fingers clear of lock when pin is being removed. Failure to comply may result in injury or death to personnel.

6. Remove cotter pin (Figure 3, Item 17) and washer (Figure 3, Item 18) from pin (Figure 3, Item 19). Discard cotter pin.

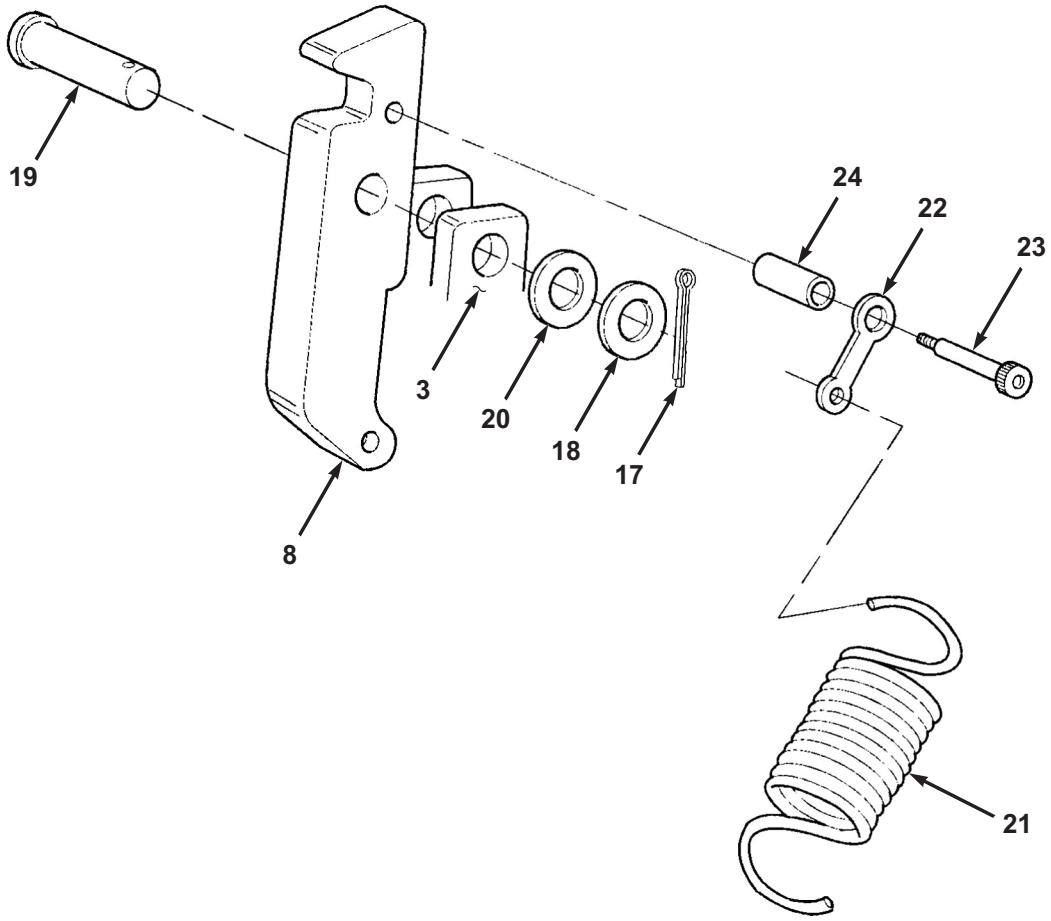


Figure 3. Front BAP Lock Removal.

NOTE

Spacer washer is used only if needed. Some units may not have one.

7. Remove pin (Figure 3, Item 19) and spacer washer (Figure 3, Item 20) from bracket (Figure 3, Item 3) and lock (Figure 3, Item 8).

8. Remove spring (Figure 3, Item 21) from bracket (Figure 3, Item 3) and spring extension (Figure 3, Item 22).

REMOVAL - Continued

9. Remove shoulder bolt (Figure 3, Item 23), spacer tube (Figure 3, Item 24), and spring extension (Figure 3, Item 22) from lock (Figure 3, Item 8).
10. Remove locknut (Figure 4, Item 25), screw (Figure 4, Item 26), and rubber stop (Figure 4, Item 27) from bracket (Figure 4, Item 3). Discard locknut.

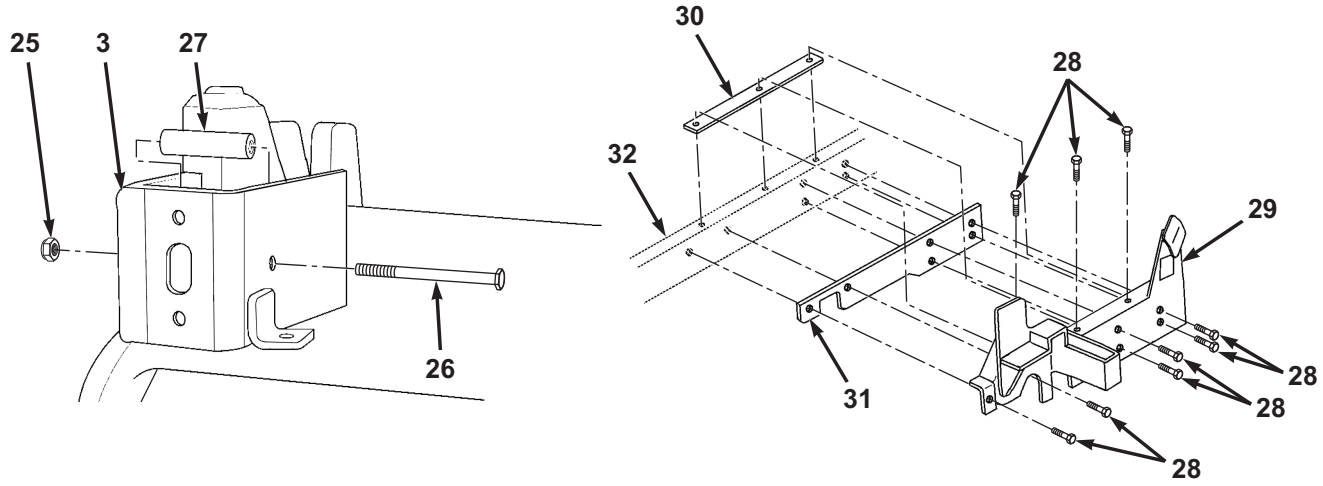


Figure 4. Front BAP Lock Rubber Stop Removal.

11. Remove nine screws (Figure 4, Item 28) from bracket (Figure 4, Item 29). Remove bracket (Figure 4, Item 29) and two shims (Figure 4, Items 30 and 31) from frame (Figure 4, Item 32).

END OF TASK

INSTALLATION

1. Position two shims (Figure 5, Items 30 and 31) on frame (Figure 5, Item 32). Install bracket (Figure 5, Item 29) on frame (Figure 5, Item 32) and secure with nine screws (Figure 5, Item 28).

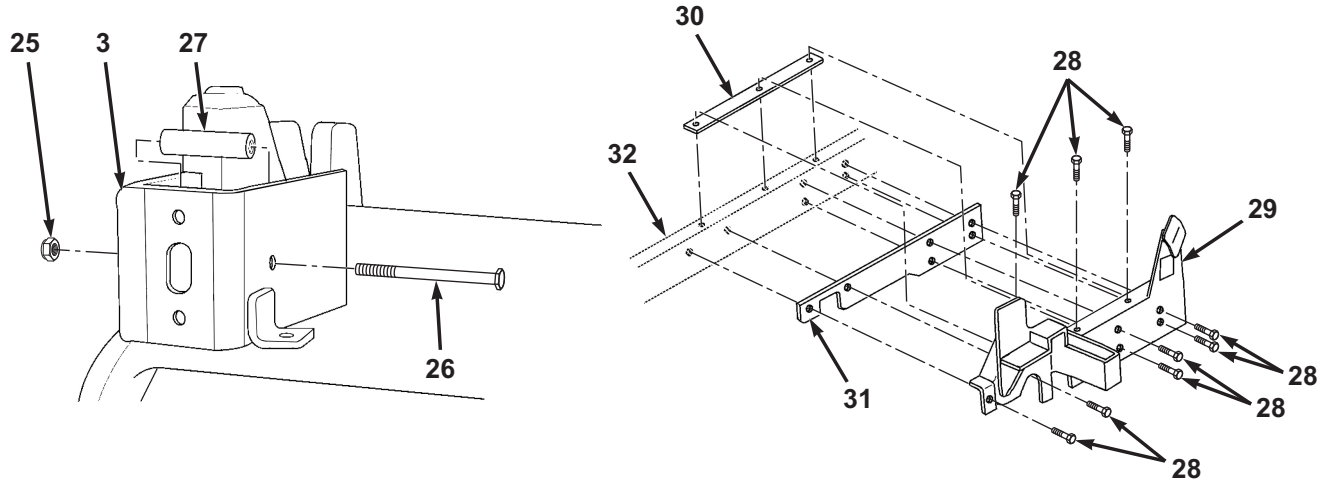


Figure 5. Front BAP Lock Rubber Stop Installation.

INSTALLATION - Continued

2. Install rubber stop (Figure 5, Item 27) in bracket (Figure 5, Item 3) with screw (Figure 5, Item 26) and locknut (Figure 5, Item 25).
3. Install spacer tube (Figure 6, Item 24) and spring extension (Figure 6, Item 22) on lock (Figure 6, Item 8) with shoulder bolt (Figure 6, Item 23).

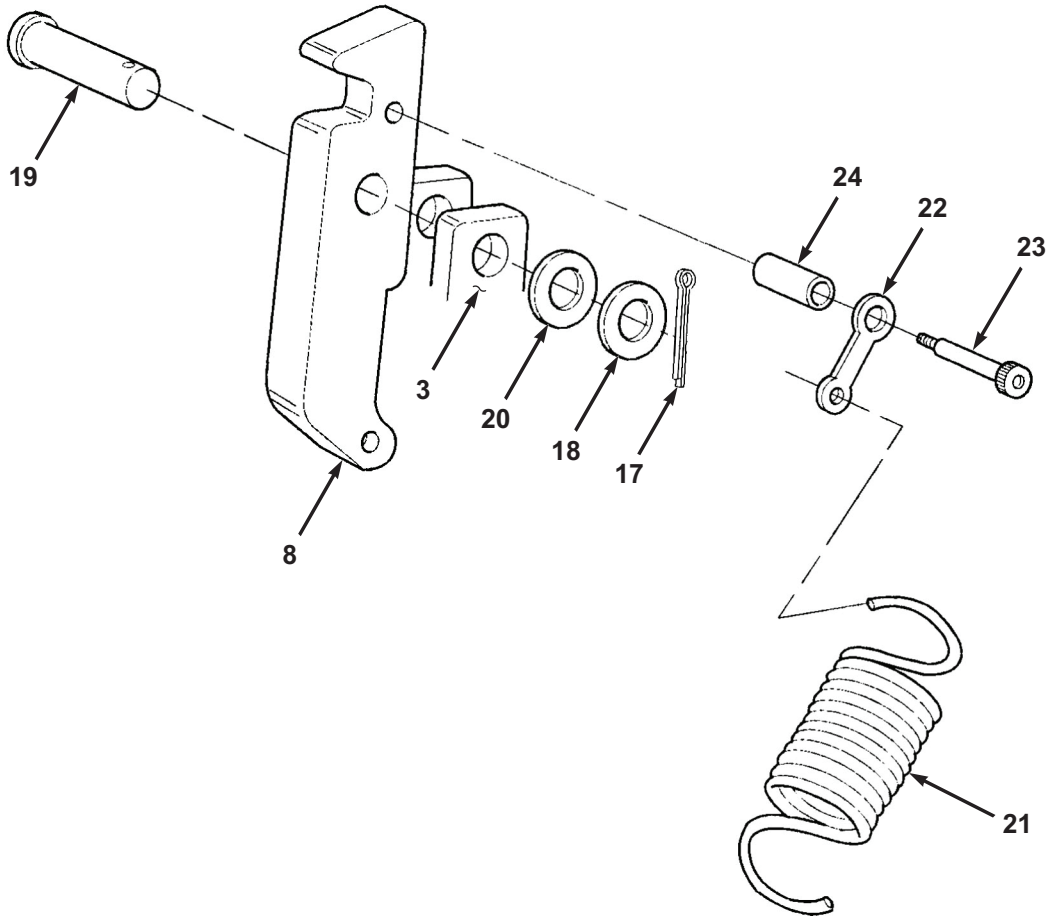
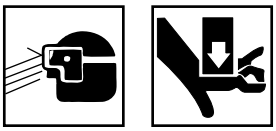


Figure 6. Front BAP Lock Installation.

4. Install spring (Figure 6, Item 21) on bracket (Figure 6, Item 3) and spring extension (Figure 6, Item 22).
5. Position lock (Figure 6, Item 8) in bracket (Figure 6, Item 3).

INSTALLATION - Continued

WARNING



Lock is under spring tension. Use extreme care when removing pin. Ensure all personnel wear safety glasses and keep hands and fingers clear of lock when pin is being removed. Failure to comply may result in injury or death to personnel.

NOTE

- Assistant must pry lock up into position while mechanic installs pin.
- Use one or more spacer washers as needed to fill gap between bracket and lock without binding lock. Some installations may not need spacer washer.

6. With the aid of an assistant, install lock (Figure 6, Item 8) in bracket (Figure 6, Item 3) with flat washer (Figure 6, Item 18) and pin (Figure 6, Item 19).
7. Install washer (Figure 7, Item 18), spacer washer (Figure 7, Item 20), and cotter pin (Figure 7, Item 17) in pin (Figure 7, Item 19).

INSTALLATION - Continued

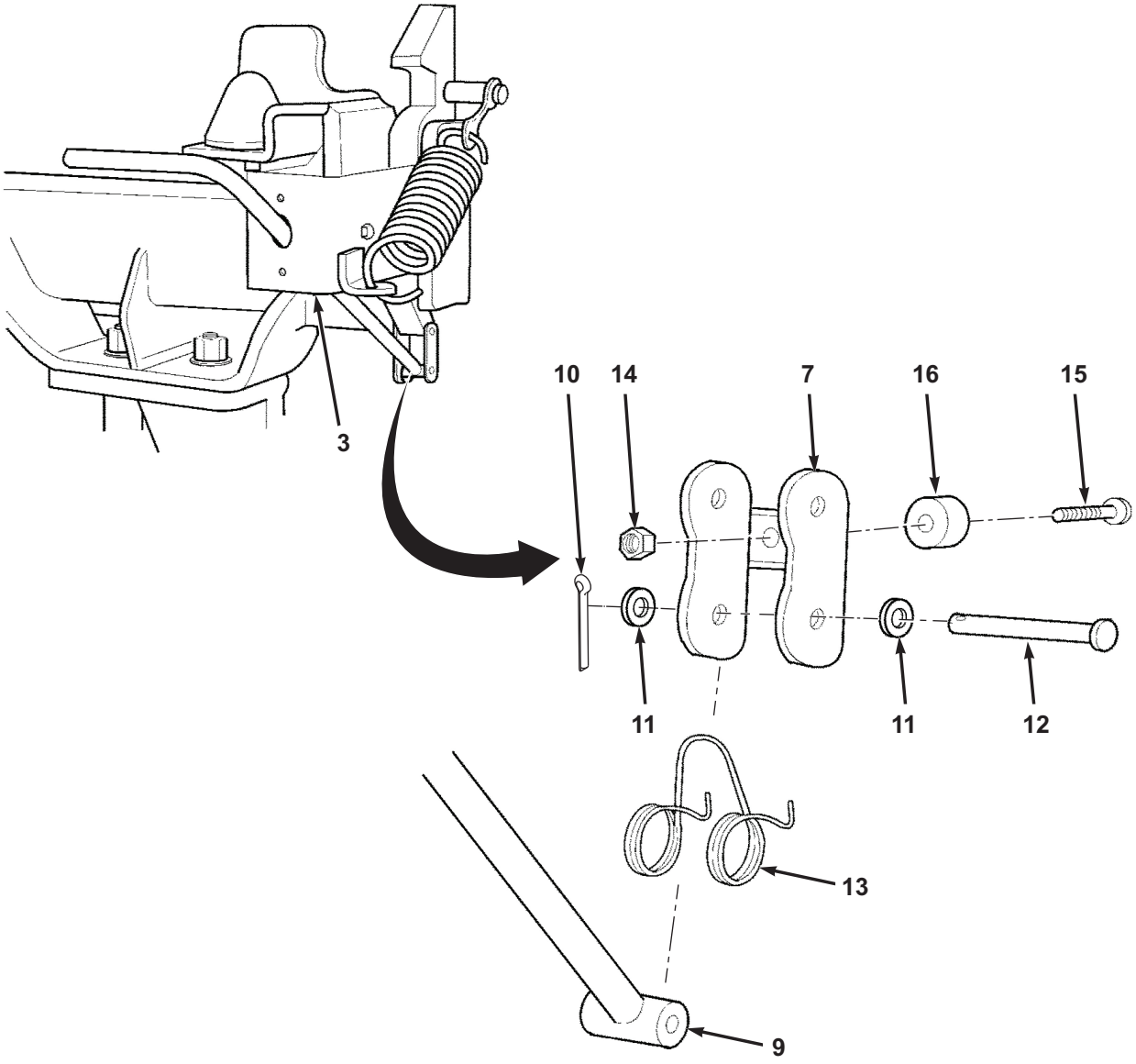


Figure 7. Front BAP Lock Handle Installation.

8. Install bumper (Figure 7, Item 16) on bracket (Figure 7, Item 7) with screw (Figure 7, Item 15) and locknut (Figure 7, Item 14).

NOTE

- Handle faces rear of Transporter.
- Ensure spring is installed in same position as noted prior to removal.

9. Install handle (Figure 7, Item 9) and spring (Figure 7, Item 13) in bracket (Figure 7, Item 7) with pin (Figure 7, Item 12), two washers (Figure 7, Item 11), and cotter pin (Figure 7, Item 10).
10. Install handle (Figure 7, Item 9) in bracket (Figure 7, Item 3).
11. Install bracket (Figure 8, Item 7) on lock (Figure 8, Item 8) with pin (Figure 8, Item 6), two washers (Figure 8, Item 5), and cotter pin (Figure 8, Item 4).

INSTALLATION - Continued

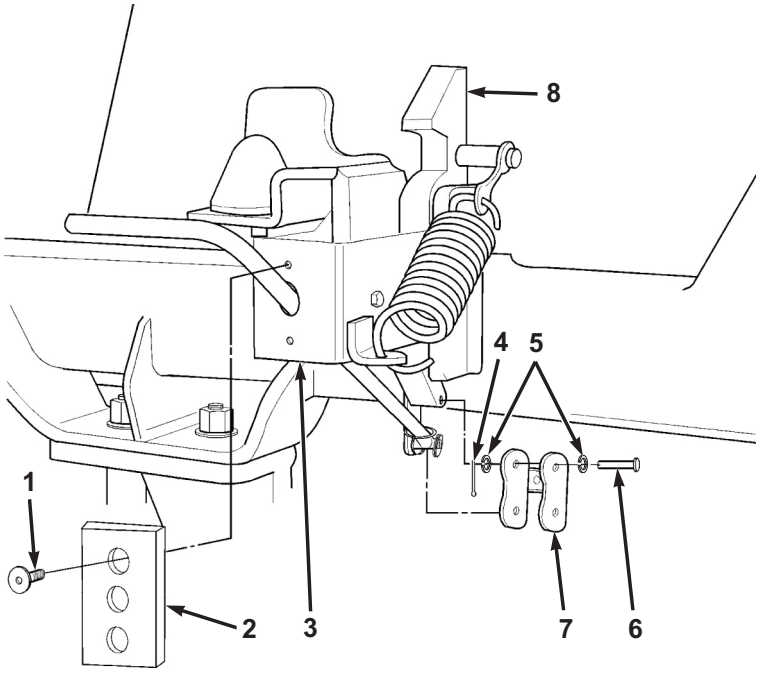


Figure 8. Front BAP Lock Bracket Installation.

12. Install plate (Figure 8, Item 2) on bracket (Figure 8, Item 3) with two screws (Figure 8, Item 1).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
REMOTE CONTROL UNIT REPAIR

INITIAL SETUP:

Tools and Special Tools
Soldering Gun (WP 0078, Table 2, Item 1)
Tool Kit, Electrical (WP 0078, Table 2, Item 1)
Tool Kit, General Mechanic's: Automotive (WP 0078, Table 2, Item 2)
Respirator, Air Filtering (WP 0078, Table 2, Item 4)

Materials/Parts
Cable Ties (WP 0081, Table 1, Item 2, 3)
Tags, Identification (WP 0081, Table 1, Item 22)

Materials/Parts (cont.)
Lockwasher (WP 0082, Table 1, Item 40) Qty: 4
Gasket (WP 0082, Table 1, Item 19) Qty: 1

References
Parts Manual (WP 0073, Figure 26)
WP 0038

Equipment Condition
Batteries disconnected (TM 9-2320-435-10 or TM 9-2320-425-10). (WP 0076)

DISASSEMBLY

NOTE

- Tag and mark wires, connectors, and harnesses prior to disassembly to ensure proper assembly.
- Remove cable ties as required.

1. Remove neck strap (Figure 1, Item 1) from two neck strap brackets (Figure 1, Item 2).

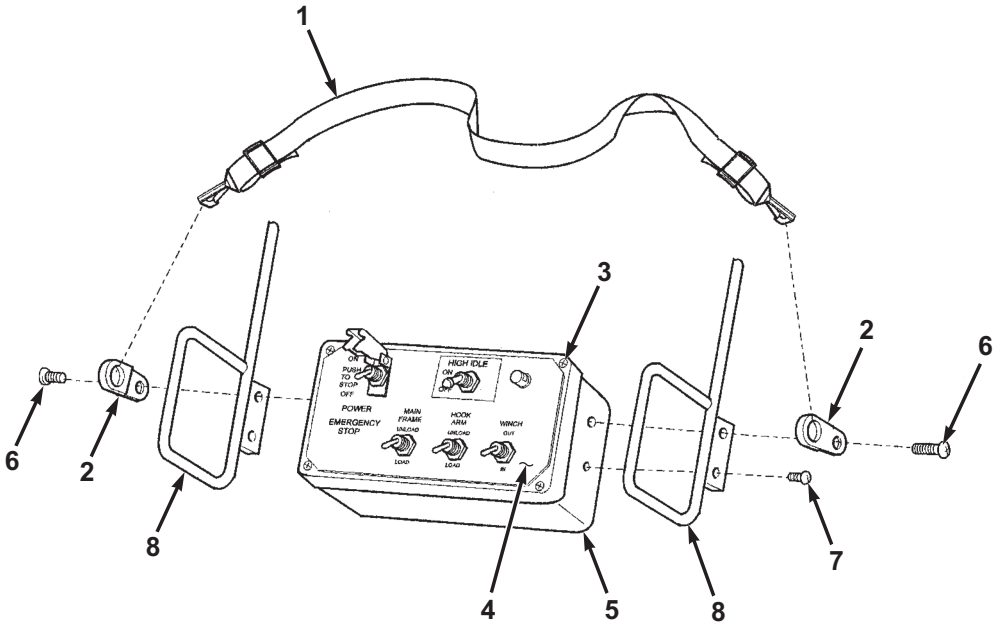


Figure 1. Remote Control Unit Disassembly.

DISASSEMBLY - Continued

2. Loosen four screws (Figure 1, Item 3), and remove cover (Figure 1, Item 4) from base (Figure 1, Item 5).
3. Remove two screws (Figure 1, Item 6) and neck strap brackets (Figure 1, Item 2) from base (Figure 1, Item 5).
4. Remove two screws (Figure 1, Item 7) and guard bars (Figure 1, Item 8) from base (Figure 1, Item 5).
5. Remove spade connector (Figure 2, Item 9) and spade connector (Figure 2, Item 10) from ON/OFF switch (Figure 2, Item 11).

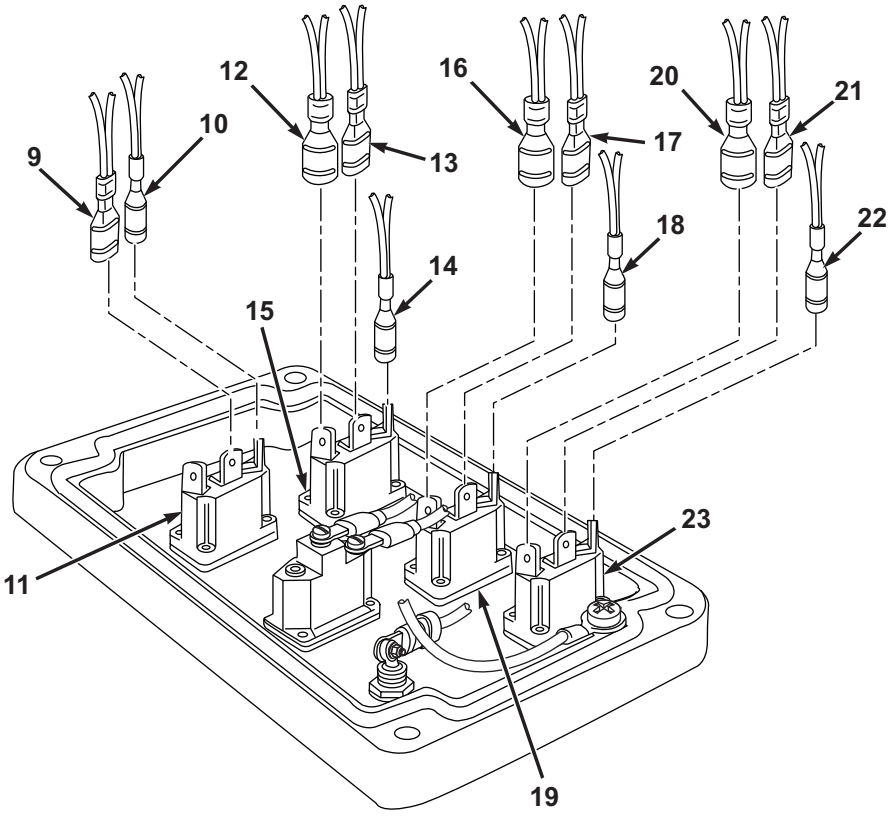


Figure 2. Remote Control Unit Disassembly.

6. Remove spade connector (Figure 2, Item 12), spade connector (Figure 2, Item 13), and spade connector (Figure 2, Item 14) from MAIN FRAME load/unload switch (Figure 2, Item 15).
7. Remove spade connector (Figure 2, Item 16), spade connector (Figure 2, Item 17), and spade connector (Figure 2, Item 18) from HOOK ARM switch (Figure 2, Item 19).
8. Remove spade connector (Figure 2, Item 20), spade connector (Figure 2, Item 21), and spade connector (Figure 2, Item 22) from WINCH switch (Figure 2, Item 23).
9. Remove two screws (Figure 3, Item 24), yellow wire (Figure 3, Item 25), and red wire (Figure 3, Item 26) from HIGH IDLE switch (Figure 3, Item 27).

DISASSEMBLY - Continued

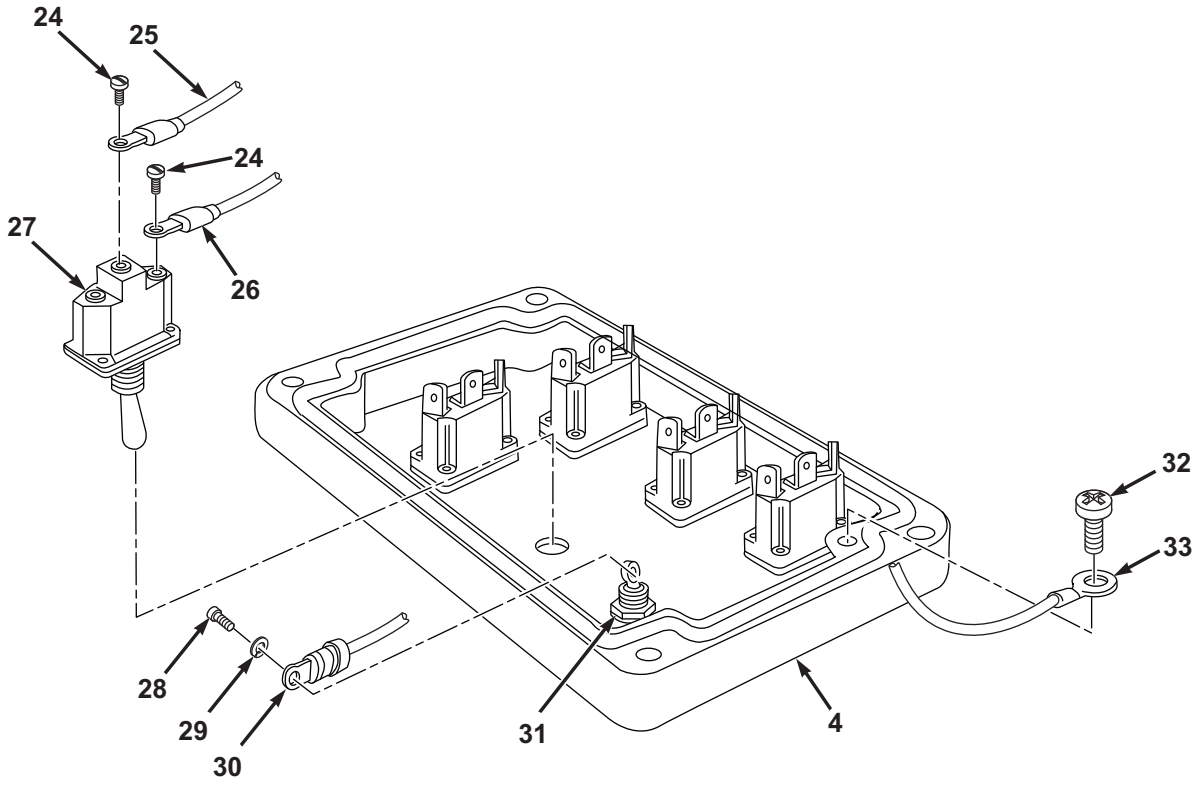


Figure 3. Remote Control Unit Disassembly.

10. Remove screw (Figure 3, Item 28), lockwasher (Figure 3, Item 29), and red wire (Figure 3, Item 30) from light (Figure 3, Item 31).

11. Remove screw (Figure 3, Item 32) and brown wire (Figure 3, Item 33) from cover (Figure 3, Item 4).

NOTE

Note location and position of switches prior to disassembly to ensure proper assembly.

12. Remove nut (Figure 4, Item 34), lockwasher (Figure 4, Item 35), and MAIN FRAME load/unload switch (Figure 4, Item 15) from cover (Figure 4, Item 4).

DISASSEMBLY - Continued

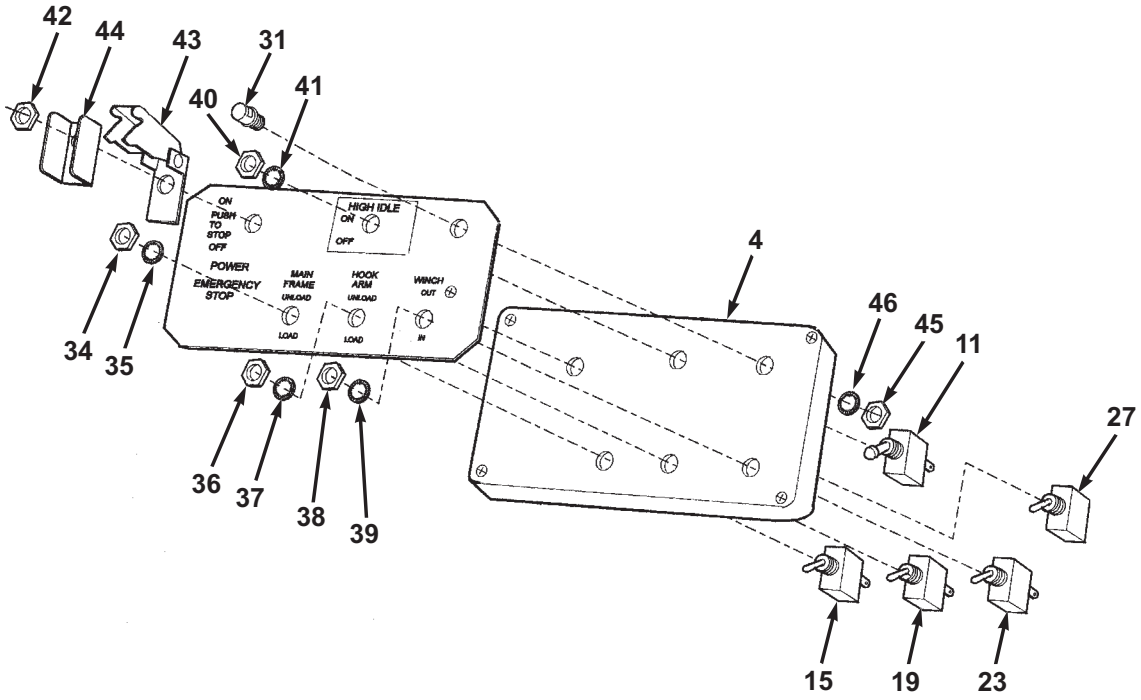


Figure 4. Remote Control Unit Disassembly.

13. Remove nut (Figure 4, Item 36), lockwasher (Figure 4, Item 37), and HOOK ARM switch (Figure 4, Item 19) from cover (Figure 4, Item 4).
14. Remove nut (Figure 4, Item 38), lockwasher (Figure 4, Item 39), and WINCH switch (Figure 4, Item 23) from cover (Figure 4, Item 4).
15. Remove nut (Figure 4, Item 40), lockwasher (Figure 4, Item 41), and HIGH IDLE switch (Figure 4, Item 27) from cover (Figure 4, Item 4).
16. Remove nut (Figure 4, Item 42), snap cover (Figure 4, Item 43), switch guard (Figure 4, Item 44), and ON/OFF switch (Figure 4, Item 11) from cover (Figure 4, Item 4).
17. Remove nut (Figure 4, Item 45), lockwasher (Figure 4, Item 46), and light (Figure 4, Item 31) from cover (Figure 4, Item 4). Discard lockwasher.
18. Remove connector (Figure 5, Item 47) from circuit board (Figure 5, Item 48).

DISASSEMBLY - Continued

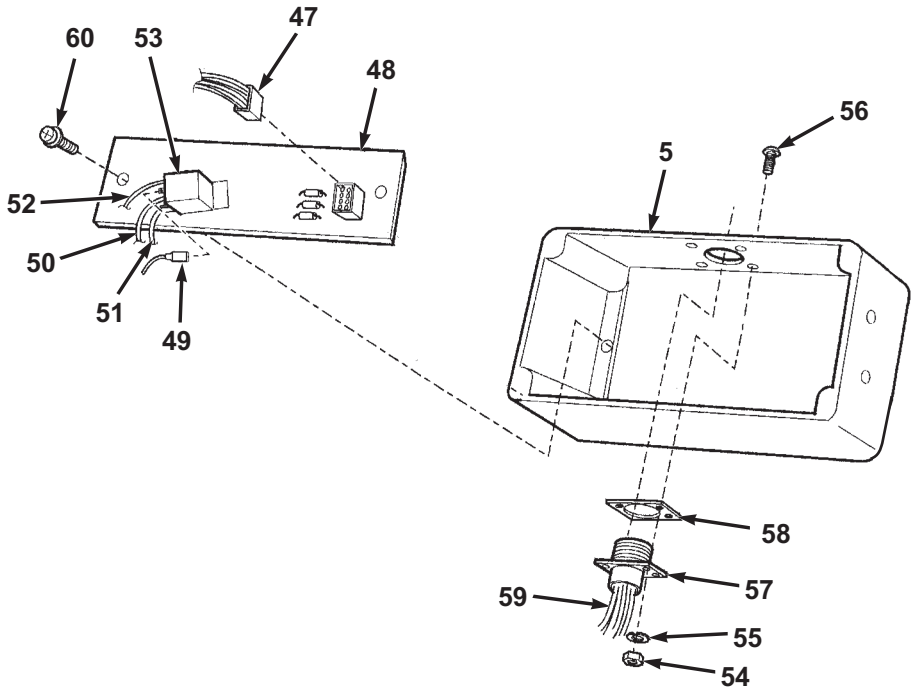


Figure 5. Remote Control Unit Disassembly.

19. Remove spade connector (Figure 5, Item 49), spade connector (Figure 5, Item 50), spade connector (Figure 5, Item 51), and spade connector (Figure 5, Item 52) from relay (Figure 5, Item 53).

20. Remove four nuts (Figure 5, Item 54), lockwashers (Figure 5, Item 55), screws (Figure 5, Item 56), connector J9 (Figure 5, Item 57), and gasket (Figure 5, Item 58) from base (Figure 5, Item 5). Discard lockwashers and gasket.

NOTE

Tag and mark all wires prior to disassembly to ensure proper assembly.

21. Unsolder all wires (Figure 5, Item 59) from connector J9 (Figure 5, Item 57).

NOTE

Note position of circuit board prior to disassembly to ensure proper assembly.

22. Remove two screws (Figure 5, Item 60) and circuit board (Figure 5, Item 48) from base (Figure 5, Item 5).

END OF TASK

CLEANING

Refer to General Maintenance Instructions (WP 0038) for general cleaning instructions.

END OF TASK

INSPECTION

Refer to General Maintenance Instructions (WP 0038) for general inspection instructions.

END OF TASK

ASSEMBLY

NOTE

- Install circuit board as noted prior to disassembly.
- Install wires as noted prior to disassembly.

1. Install circuit board (Figure 6, Item 48) in base (Figure 6, Item 5) with two screws (Figure 6, Item 60).

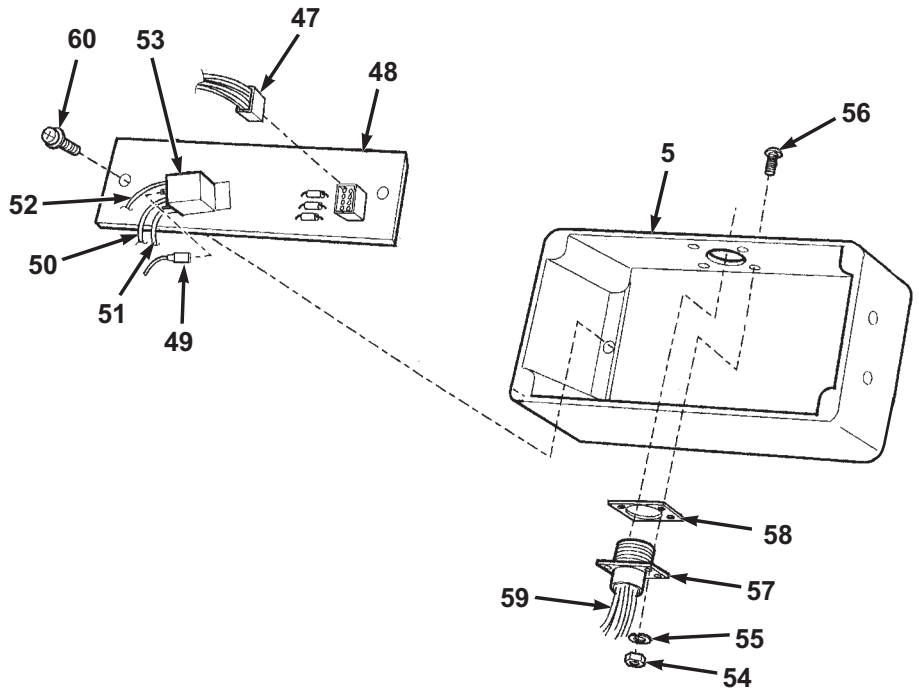


Figure 6. Remote Control Unit Assembly.

NOTE

Install cable ties as required.

2. Solder all wires (Figure 6, Item 59) on connector J9 (Figure 6, Item 57).

NOTE

Install connector in base with notch facing up.

3. Install gasket (Figure 6, Item 58) and connector J9 (Figure 6, Item 57) in base (Figure 6, Item 5) with four screws (Figure 6, Item 56), lockwashers (Figure 6, Item 55), and nuts (Figure 6, Item 54).
4. Install spade connector (Figure 6, Item 52), spade connector (Figure 6, Item 51), spade connector (Figure 6, Item 50), and spade connector (Figure 6, Item 49) on relay (Figure 6, Item 53).
5. Install connector (Figure 6, Item 47) on circuit board (Figure 6, Item 48).

ASSEMBLY - Continued

6. Install light (Figure 7, Item 31) in cover (Figure 7, Item 4) with lockwasher (Figure 7, Item 46) and nut (Figure 7, Item 45).

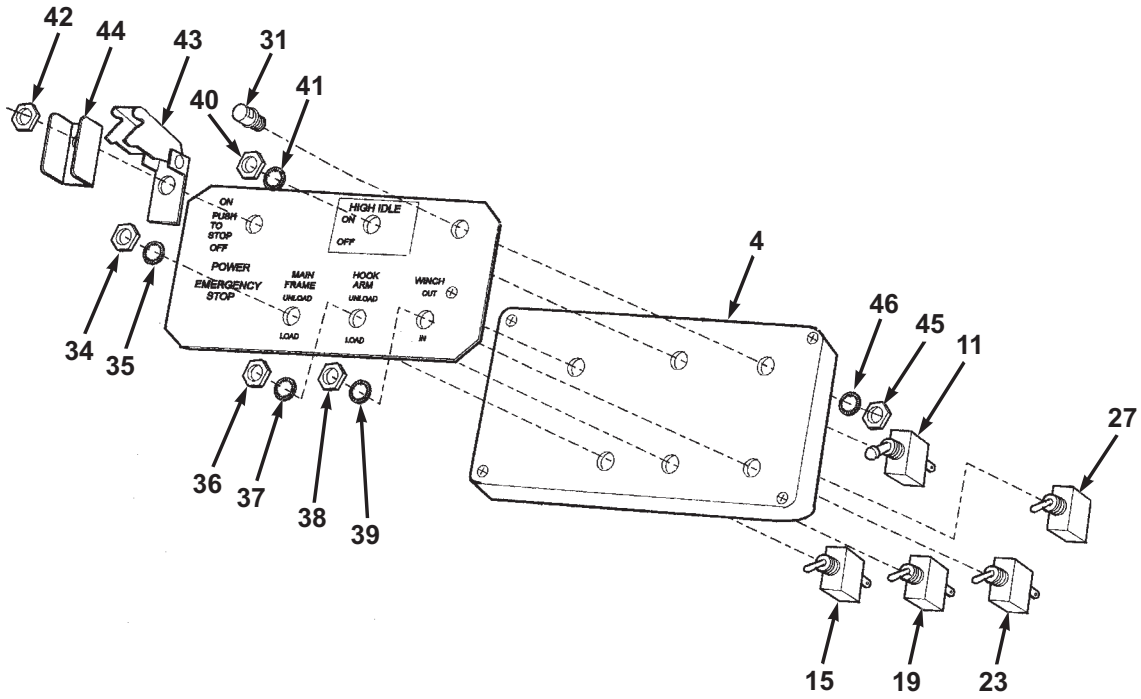


Figure 7. Remote Control Unit Assembly.

NOTE

Install switches as noted prior to disassembly.

7. Install ON/OFF switch (Figure 7, Item 11), switch guard (Figure 7, Item 44), and snap cover (Figure 7, Item 43) on cover (Figure 7, Item 4) with nut (Figure 7, Item 42).
8. Install HIGH IDLE switch (Figure 7, Item 27) in cover (Figure 7, Item 4) with lockwasher (Figure 7, Item 41) and nut (Figure 7, Item 40).
9. Install WINCH switch (Figure 7, Item 23) in cover (Figure 7, Item 4) with lockwasher (Figure 7, Item 39) and nut (Figure 7, Item 38).
10. Install HOOK ARM switch (Figure 7, Item 19) in cover (Figure 7, Item 4) with lockwasher (Figure 7, Item 37) and nut (Figure 7, Item 36).
11. Install MAIN FRAME load/unload switch (Figure 7, Item 15) in cover (Figure 7, Item 4) with lockwasher (Figure 7, Item 35) and nut (Figure 7, Item 34).
12. Install brown wire (Figure 8, Item 33) on cover (Figure 8, Item 4) with screw (Figure 8, Item 32).

ASSEMBLY - Continued

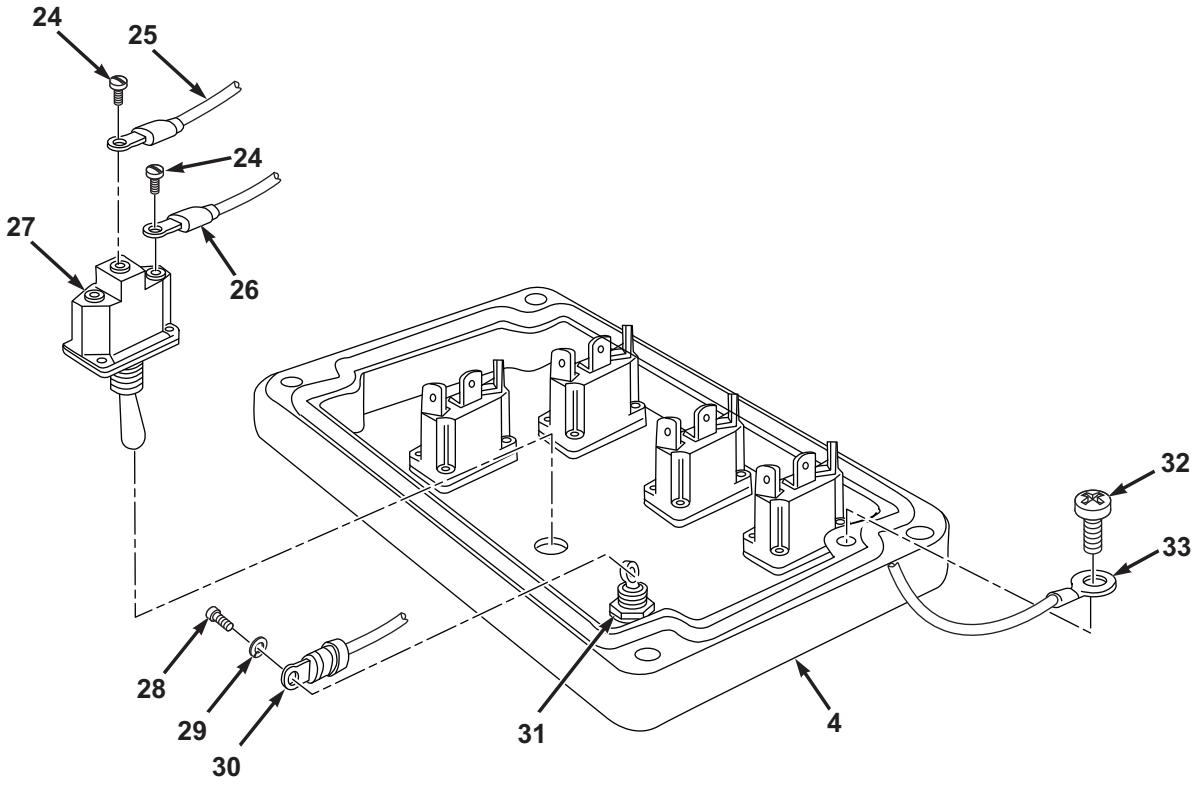


Figure 8. Remote Control Unit Assembly.

13. Install red wire (Figure 8, Item 30) on light (Figure 8, Item 31) with lockwasher (Figure 8, Item 29) and screw (Figure 8, Item 28).

14. Install red wire (Figure 8, Item 26) and yellow wire (Figure 8, Item 25) on HIGH IDLE switch (Figure 8, Item 27) with two screws (Figure 8, Item 24).

15. Install spade connector (Figure 9, Item 22), spade connector (Figure 9, Item 21), and spade connector (Figure 9, Item 20) on WINCH switch (Figure 9, Item 23).

ASSEMBLY - Continued

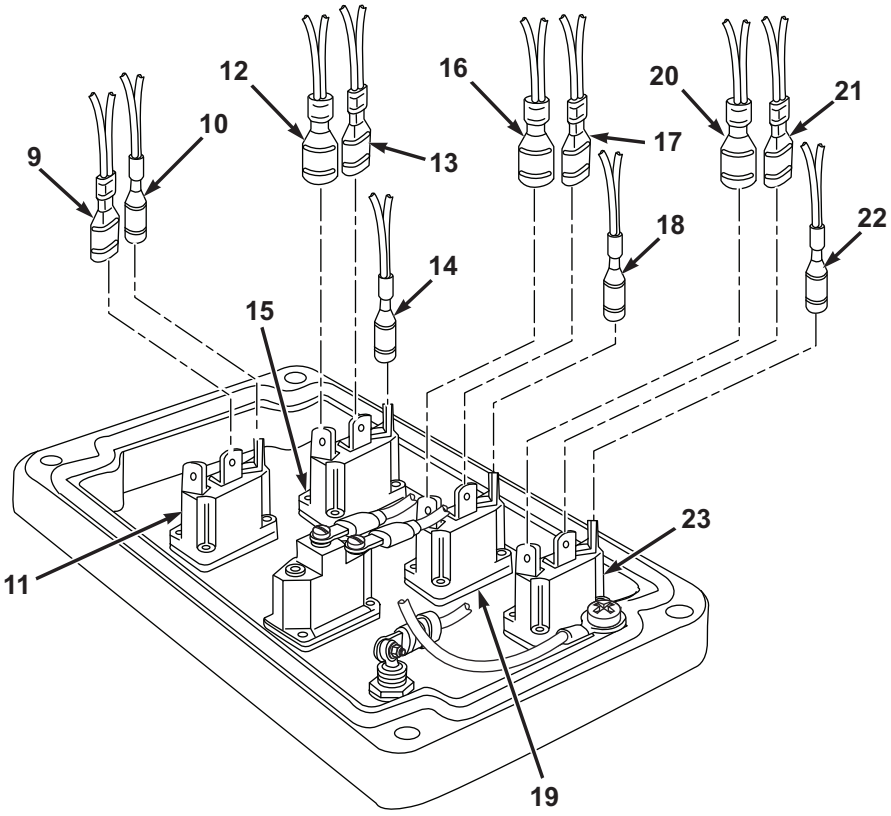


Figure 9. Remote Control Unit Assembly.

16. Install spade connector (Figure 9, Item 18), spade connector (Figure 9, Item 17), and spade connector (Figure 9, Item 16) on HOOK ARM switch (Figure 9, Item 19).
17. Install spade connector (Figure 9, Item 14), spade connector (Figure 9, Item 13), and spade connector (Figure 9, Item 12) on MAIN FRAME load/unload switch (Figure 9, Item 15).
18. Install spade connector (Figure 9, Item 10) and spade connector (Figure 9, Item 9) on ON/OFF switch (Figure 9, Item 11).
19. Install two guard bars (Figure 10, Item 8) on base (Figure 10, Item 5) with two screws (Figure 10, Item 7).

ASSEMBLY - Continued

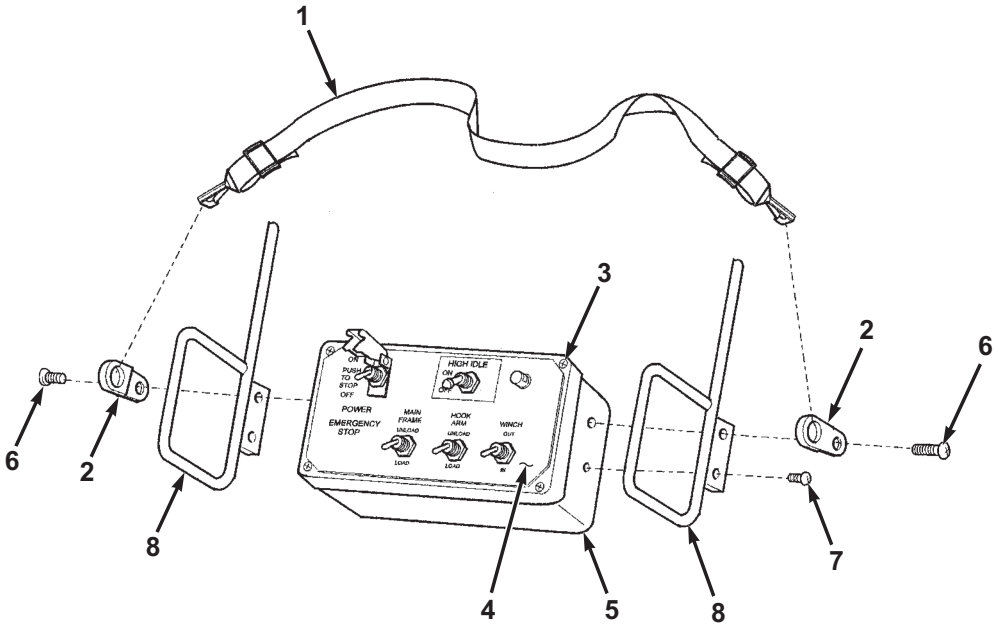


Figure 10. Remote Control Unit Assembly.

20. Install two neck strap brackets (Figure 10, Item 2) on base (Figure 10, Item 5) with two screws (Figure 10, Item 6).
21. Install cover (Figure 10, Item 4) on base (Figure 10, Item 5) and tighten four screws (Figure 10, Item 3).
22. Install neck strap (Figure 10, Item 1) on two neck strap brackets (Figure 10, Item 2).

END OF TASK

FOLLOW-ON MAINTENANCE

Connect batteries (TM 9-2320-435-10 or TM 9-2320-425-10). (WP 0076)

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
WINCH REPAIR

INITIAL SETUP:

Tools and Special Tools
- Arbor Press (WP 0078, Table 2, Item 3)
- Pliers, Retaining Ring, 6 1/2 in. (WP 0078, Table 2, Item 1)
- Pliers, Retaining Ring, 1 1/2 in. (WP 0078, Table 2, Item 1)
- Tool Kit, General Mechanics: Automotive (WP 0078, Table 2, Item 2)
- Wrench Set, Socket (WP 0078, Table 2, Item 1)
- Wrench, Torque, 20-100 lb-ft (27-136 N·m), 3/8 in. Drive (WP 0078, Table 2, Item 6)

Materials/Parts
- Crocus Cloth (WP 0081, Table 1, Item 7)
- Goggles, Safety (WP 0081, Table 1, Item 9)
- Grease (WP 0081, Table 1, Item 10, 11, 12, 13, 14)
- Tape, Antiseizing (WP 0081, Table 1, Item 23)
- Lockwasher (WP 0082, Table 1, Item 47) Qty: 4
- Gasket and Seal Set (WP 0082, Table 1, Item 9) Qty: 1

Materials/Parts (cont.)
- Lockwasher (WP 0082, Table 1, Item 11) Qty: 16
- Spacer (WP 0082, Table 1, Item 5) Qty: 2

Personnel Required
- (2)

References
- Parts Manual (WP 0073, Figure 16)
- Parts Manual (WP 0073, Figure 18)
- Parts Manual (WP 0073, Figure 19)
- Parts Manual (WP 0073, Figure 20)
- Parts Manual (WP 0073, Figure 21)

Equipment Condition
- Winch assembly removed. (WP 0058)
- Winch motor assembly removed. (WP 0059)

BRAKE HUB ASSEMBLY REMOVAL

1. Remove pipe plug (Figure 1, Item 1) from motor adapter (Figure 1, Item 2).

BRAKE HUB ASSEMBLY REMOVAL - Continued

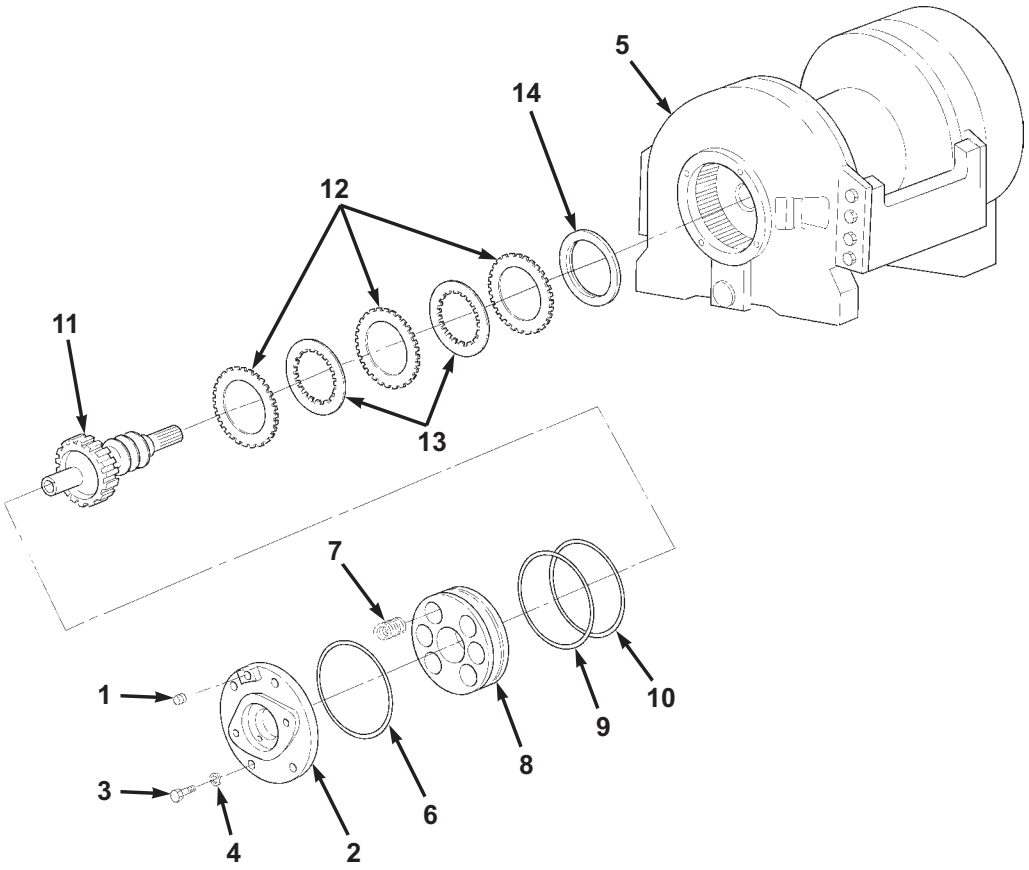


Figure 1. Brake Hub Assembly Removal.

CAUTION

Brake springs are under pressure inside motor housing. Remove motor adapter screws one turn at a time, until spring pressure has been released. Failure to comply may result in damage to equipment.

NOTE

Match-mark motor adapter and its location on the winch so motor adapter can be installed at the same angle as when removed.

2. Remove four screws (Figure 1, Item 3), lockwashers (Figure 1, Item 4), and motor adapter (Figure 1, Item 2) from brake housing (Figure 1, Item 5). Discard lockwashers.
3. Remove O-ring (Figure 1, Item 6) from motor adapter (Figure 1, Item 2). Discard O-ring.
4. Remove six springs (Figure 1, Item 7) from piston (Figure 1, Item 8).
5. Remove piston (Figure 1, Item 8) from brake housing (Figure 1, Item 5).
6. Remove two O-rings (Figure 1, Items 9 and 10) from piston (Figure 1, Item 8). Discard O-rings.
7. Remove brake hub subassembly (Figure 1, Item 11) from brake housing (Figure 1, Item 5).

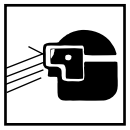
BRAKE HUB ASSEMBLY REMOVAL - Continued

8. Remove seven spacer plates (Figure 1, Item 12), six brake spacer plates (Figure 1, Item 13), and brake spacer (Figure 1, Item 14) from brake housing (Figure 1, Item 5).

END OF TASK

BRAKE HUB SUBASSEMBLY DISASSEMBLY

WARNING



Wear safety goggles and use caution when removing or installing springs, snaprings, retaining rings, and other parts under spring tension. These parts are under tension and can act as projectiles when released. Failure to comply may result in serious injury or death to personnel.

1. Remove snapring (Figure 2, Item 15) from motor drive shaft (Figure 2, Item 16).

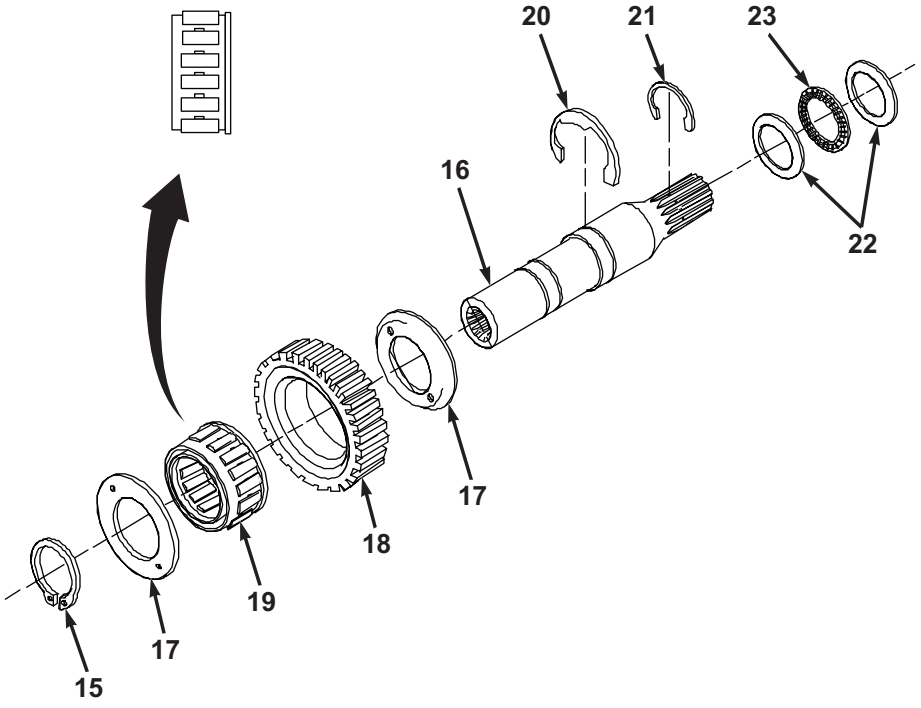


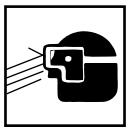
Figure 2. Brake Hub Subassembly Removal.

2. Remove two clutch liners (Figure 2, Item 17) and brake hub (Figure 2, Item 18) from motor drive shaft (Figure 2, Item 16).

3. Remove bearing (Figure 2, Item 19) from brake hub (Figure 2, Item 18).

BRAKE HUB SUBASSEMBLY DISASSEMBLY - Continued

WARNING



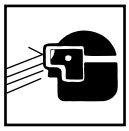
Wear safety goggles and use caution when removing or installing springs, snaprings, retaining rings, and other parts under spring tension. These parts are under tension and can act as projectiles when released. Failure to comply may result in serious injury or death to personnel.

4. Remove retaining ring (Figure 2, Item 20) and C-clip (Figure 2, Item 21) from motor drive shaft (Figure 2, Item 16).
5. Remove two bearing seats (Figure 2, Item 22) and bearing (Figure 2, Item 23) from motor drive shaft (Figure 2, Item 16).

END OF TASK

FINAL DRIVE ASSEMBLY REMOVAL

WARNING



Wear safety goggles and use care when removing cover retainer. It is under spring tension and can act as a projectile when released. Failure to comply may result in serious injury or death to personnel.

1. Remove cover retainer (Figure 3, Item 24) from end cover (Figure 3, Item 25).

FINAL DRIVE ASSEMBLY REMOVAL - Continued

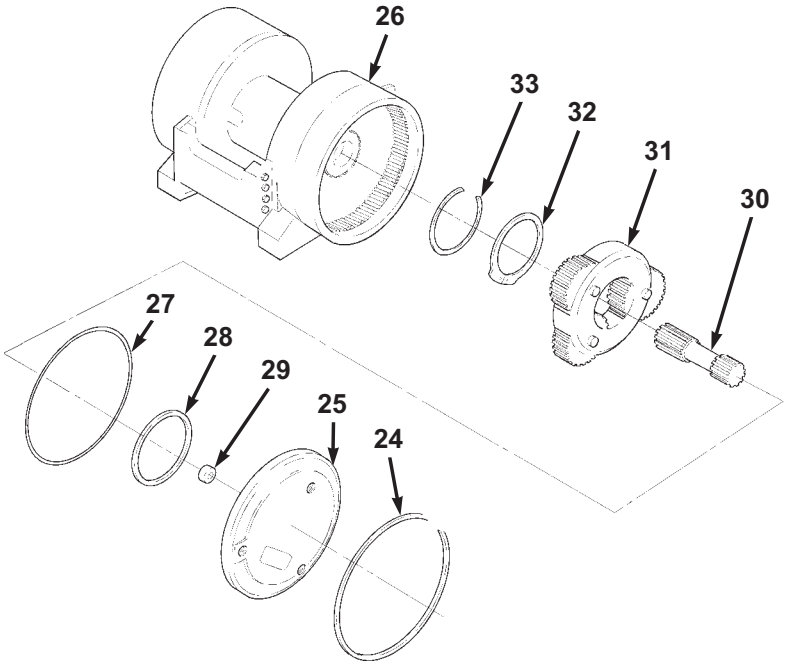


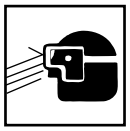
Figure 3. Final Drive Assembly Removal.

NOTE

Match-mark end cover and its location on the winch so end cover can be installed at the same angle as when removed.

2. Remove end cover (Figure 3, Item 25) from final housing (Figure 3, Item 26).
3. Remove O-ring (Figure 3, Item 27), stopper (Figure 3, Item 28), and sungear stopper (Figure 3, Item 29) from end cover (Figure 3, Item 25). Discard O-ring.
4. Remove final sungear shaft (Figure 3, Item 30) and final drive planetary gear (Figure 3, Item 31) from final housing (Figure 3, Item 26).

WARNING



Wear safety goggles and use caution when removing or installing springs, snaprings, retaining rings, and other parts under spring tension. These parts are under tension and can act as projectiles when released. Failure to comply may result in serious injury or death to personnel.

5. Remove snapring (Figure 3, Item 32) and bearing retainer (Figure 3, Item 33) from final housing (Figure 3, Item 26).

END OF TASK

BRAKE HOUSING REMOVAL

1. Remove 16 screws (Figure 4, Item 34), lockwashers (Figure 4, Item 35), and two tie bars (Figure 4, Item 36) from brake housing (Figure 4, Item 5) and final housing (Figure 4, Item 26). Discard lockwashers.

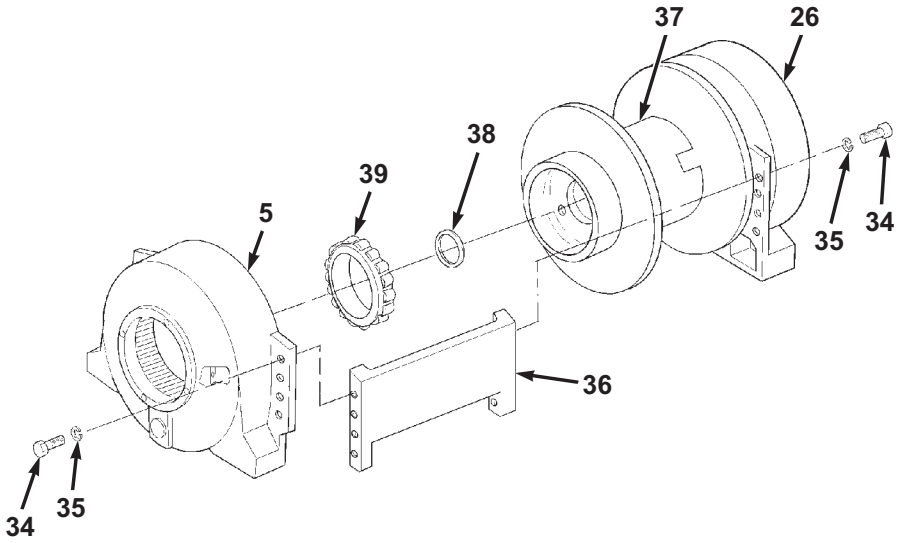


Figure 4. Brake Housing Removal.

2. With the aid of an assistant, remove brake housing (Figure 4, Item 5) from cable drum (Figure 4, Item 37).

NOTE

Cylindrical roller bearing comes apart with the brake housing, and the cylindrical roller race remains in the cable drum. Perform Step (3) only if cylindrical roller bearing is damaged.

3. Remove spacer (Figure 4, Item 38) and cylindrical roller bearing (Figure 4, Item 39) from brake housing (Figure 4, Item 5). Discard spacer.

END OF TASK

CABLE DRUM ASSEMBLY REMOVAL

1. Remove oil seal (Figure 5, Item 40) from cable drum (Figure 5, Item 37). Discard oil seal.

CABLE DRUM ASSEMBLY REMOVAL - Continued

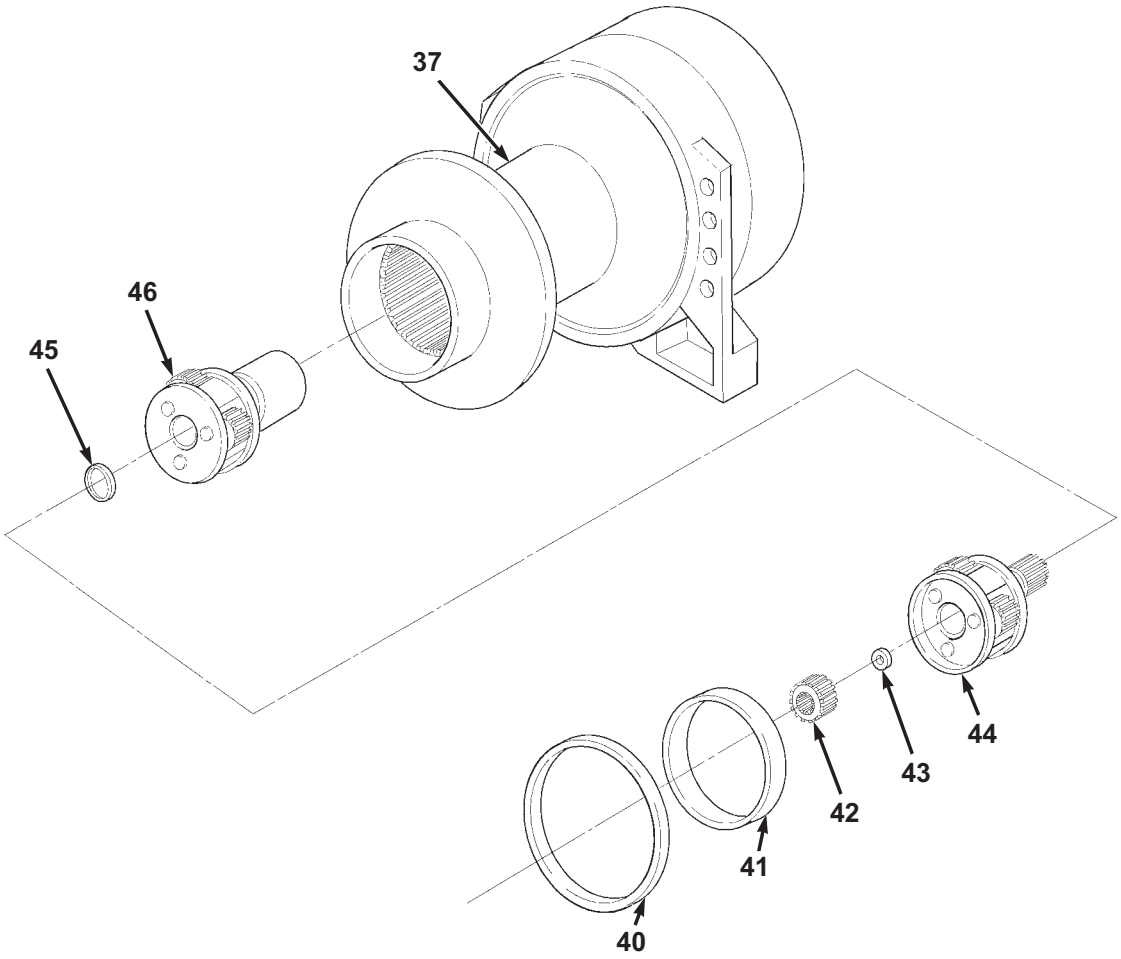


Figure 5. Cable Drum Assembly Removal.

NOTE

Perform Step (2) only if cylindrical roller race is damaged.

2. Remove cylindrical roller race (Figure 5, Item 41) from cable drum (Figure 5, Item 37).
3. Remove primary sungear (Figure 5, Item 42) and shim (Figure 5, Item 43) from primary drive planetary gear (Figure 5, Item 44).
4. Remove primary drive planetary gear (Figure 5, Item 44) from cable drum (Figure 5, Item 37).
5. Remove spacer (Figure 5, Item 45) from primary drive planetary gear (Figure 5, Item 44). Discard spacer.
6. Remove secondary drive planetary gear (Figure 5, Item 46) from cable drum (Figure 5, Item 37).
7. With the aid of an assistant, separate final housing (Figure 6, Item 26) from cable drum (Figure 6, Item 37).

CABLE DRUM ASSEMBLY REMOVAL - Continued

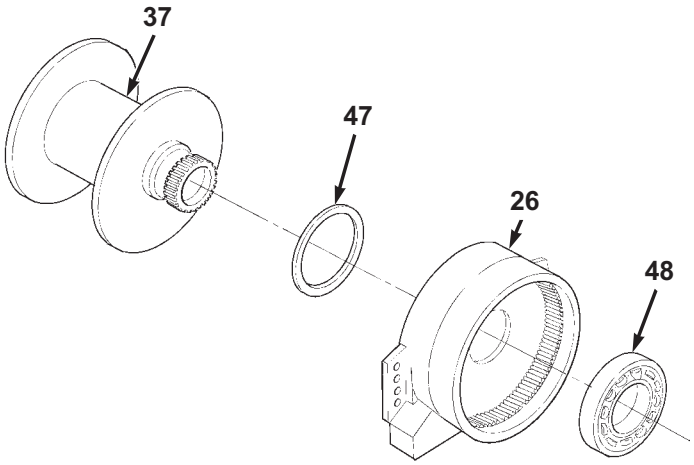


Figure 6. Final Housing Removal.

8. Remove oil seal (Figure 6, Item 47) from final housing (Figure 6, Item 26). Discard oil seal.

NOTE

Perform Step (9) only if bearing is damaged.

9. Remove bearing (Figure 6, Item 48) from final housing (Figure 6, Item 26).

END OF TASK

CLEANING

1. Refer to General Maintenance Instructions (WP 0038) for general cleaning instructions.
2. Lubricate parts in accordance with Lubrication Instructions (WP 0070).

END OF TASK

INSPECTION

1. Refer to General Maintenance Instructions (WP 0038) for general inspection instructions.
2. Check the outside diameters of the piston and the inside diameters of the brake housing for surface scratches due to contaminated hydraulic fluid. If there is any evidence of damage, polish piston and brake housing with fine emery cloth.

END OF TASK

CABLE DRUM ASSEMBLY INSTALLATION

1. Install oil seal (Figure 7, Item 47) on final housing (Figure 7, Item 26) so oil seal (Figure 7, Item 47) is flush with final housing (Figure 7, Item 26) rim.

CABLE DRUM ASSEMBLY INSTALLATION - Continued

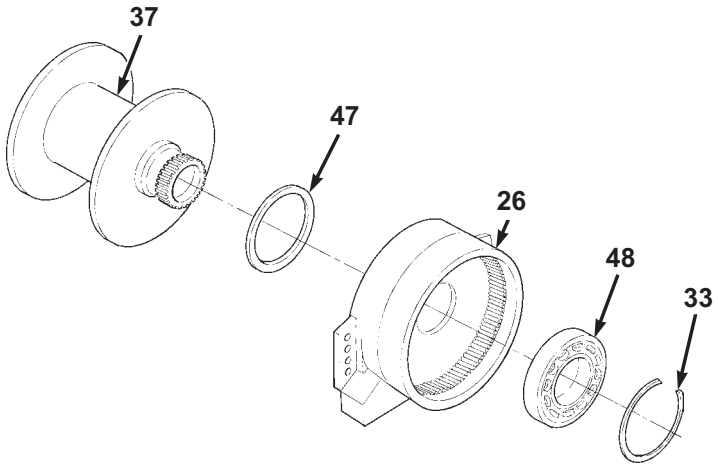


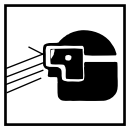
Figure 7. Final Housing Installation.

NOTE

Perform Step (2) only if bearing was removed.

2. Install bearing (Figure 7, Item 48) in final housing (Figure 7, Item 26).

WARNING



Wear safety goggles and use care when installing bearing retainer. It is under spring tension and can act as a projectile when released. Failure to comply may result in serious injury or death to personnel.

3. Install bearing retainer (Figure 7, Item 33) in final housing (Figure 7, Item 26).
4. With the aid of an assistant, install final housing (Figure 7, Item 26) in cable drum (Figure 7, Item 37).
5. Install secondary drive planetary gear (Figure 8, Item 46) on cable drum (Figure 8, Item 37).

CABLE DRUM ASSEMBLY INSTALLATION - Continued

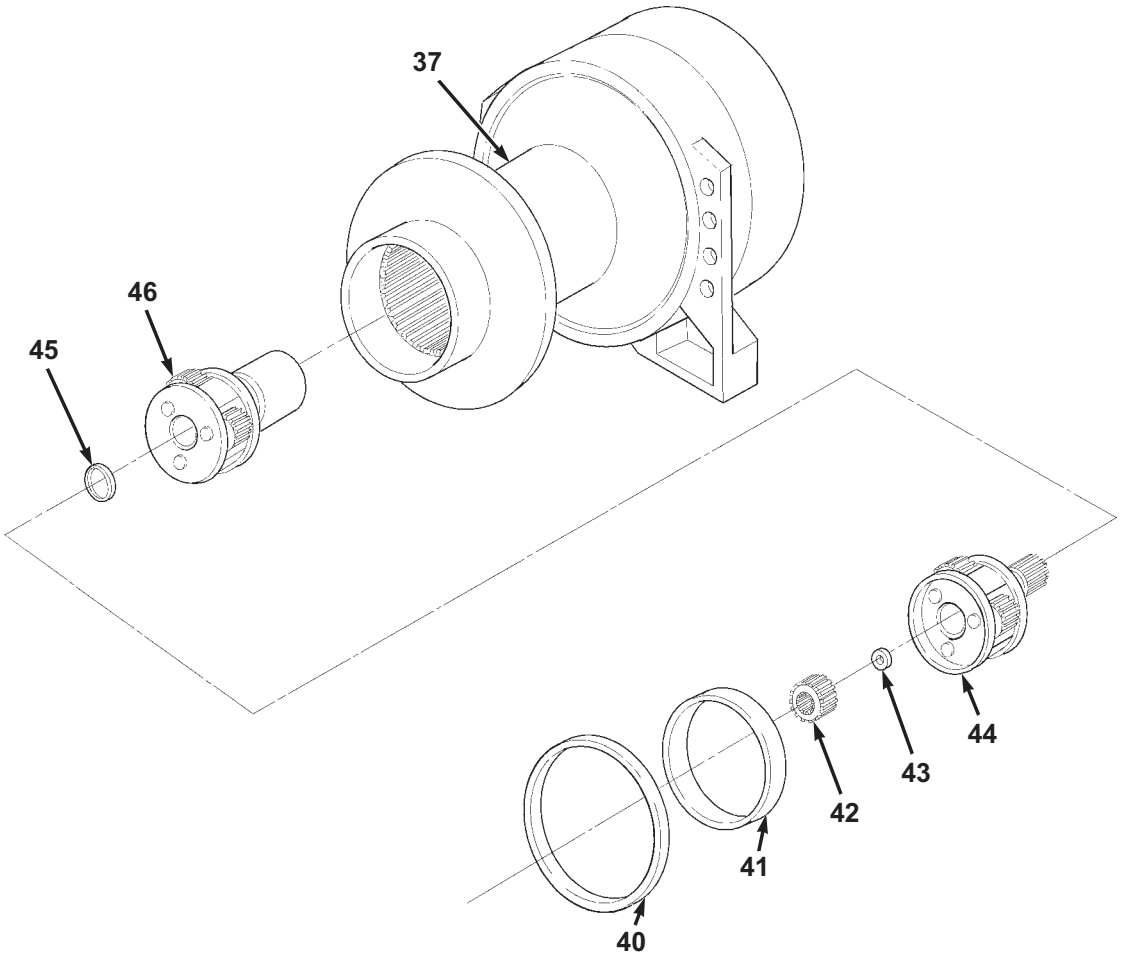


Figure 8. Cable Drum Assembly Installation.

6. Install shim (Figure 8, Item 43) in primary sungear (Figure 8, Item 42).
7. Install spacer (Figure 8, Item 45) on primary drive planetary gear (Figure 8, Item 44).
8. Install primary drive planetary gear (Figure 8, Item 44) in cable drum (Figure 8, Item 37).
9. Install primary sungear (Figure 8, Item 42) in primary drive planetary gear (Figure 8, Item 44).

NOTE

Perform Step (10) only if cylindrical roller race was removed.

10. Install cylindrical roller race (Figure 8, Item 41) in cable drum (Figure 8, Item 37) using an arbor press.
11. Install oil seal (Figure 8, Item 40) in cable drum (Figure 8, Item 37). Ensure oil seal (Figure 8, Item 40) is flush with cable drum (Figure 8, Item 37) rim.

END OF TASK

BRAKE HOUSING INSTALLATION

1. Install spacer (Figure 9, Item 38) on brake housing (Figure 9, Item 5).

BRAKE HOUSING INSTALLATION - Continued

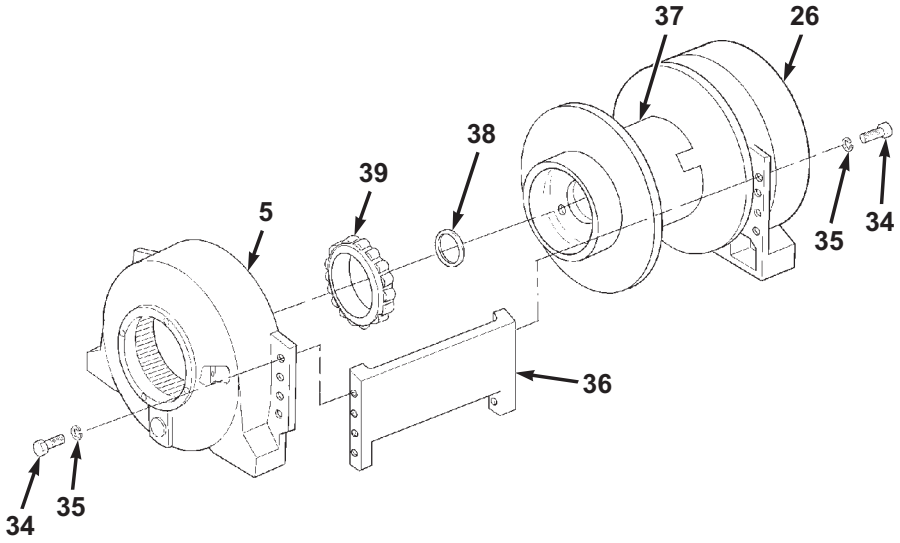


Figure 9. Brake Housing Installation.

NOTE

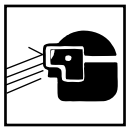
- Remove cylindrical roller race from cylindrical roller bearing before installing cylindrical roller bearing.
- Perform Step (2) only if cylindrical roller bearing was removed.

2. Install cylindrical roller bearing (Figure 9, Item 39) on brake housing (Figure 9, Item 5) using an arbor press.
3. With the aid of an assistant, install brake housing (Figure 9, Item 5) on cable drum (Figure 9, Item 37), ensuring the two tie bars (Figure 9, Item 36) align from brake housing (Figure 9, Item 5) to final housing (Figure 9, Item 26).
4. Install two tie bars (Figure 9, Item 36) on brake housing (Figure 9, Item 5) and cable drum (Figure 9, Item 37) with 16 screws (Figure 9, Item 34) and lockwashers (Figure 9, Item 35). Torque screws to 50 lb-ft (68 Nm).

END OF TASK

FINAL DRIVE ASSEMBLY INSTALLATION

WARNING



Wear safety goggles and use caution when removing or installing springs, snaprings, retaining rings, and other parts under spring tension. These parts are under tension and can act as projectiles when released. Failure to comply may result in serious injury or death to personnel.

1. Install snapring (Figure 10, Item 32) in final housing (Figure 10, Item 26).

FINAL DRIVE ASSEMBLY INSTALLATION - Continued

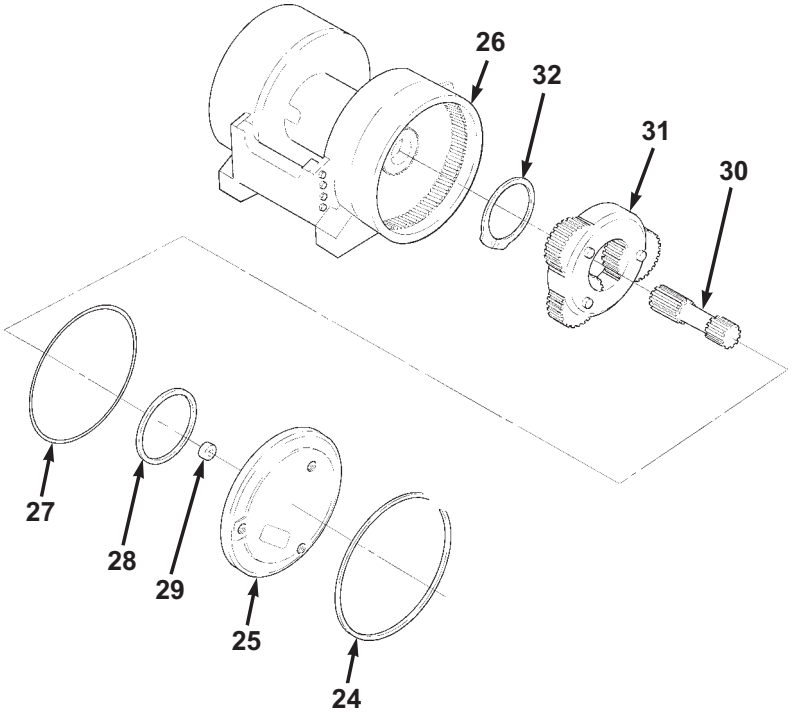


Figure 10. Final Drive Assembly Installation.

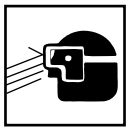
2. Install final drive planetary gear (Figure 10, Item 31) in final housing (Figure 10, Item 26).
3. Install final sungear shaft (Figure 10, Item 30) in final drive planetary gear (Figure 10, Item 31), with longer splined end first, ensuring final sungear shaft (Figure 10, Item 30) engages with final drive planetary gear (Figure 10, Item 31).
4. Install sungear stopper (Figure 10, Item 29), stopper (Figure 10, Item 28), and O-ring (Figure 10, Item 27) on end cover (Figure 10, Item 25).

NOTE

When installing end cover, be sure to align marks previously made during removal.

5. Install end cover (Figure 10, Item 25) on final housing (Figure 10, Item 26).

WARNING



Wear safety goggles and use care when installing cover retainer. It is under spring tension and can act as a projectile when released. Failure to comply may result in serious injury or death to personnel.

6. Install cover retainer (Figure 10, Item 24) on end cover (Figure 10, Item 25). Ensure lip end of retainer aligns with nail hole at top of final housing (Figure 10, Item 26).

END OF TASK

BRAKE HUB SUBASSEMBLY ASSEMBLY

1. Install bearing (Figure 11, Item 19) in brake hub (Figure 11, Item 18), ensuring bearing (Figure 11, Item 19) lip end goes into recessed side of brake hub (Figure 11, Item 18).

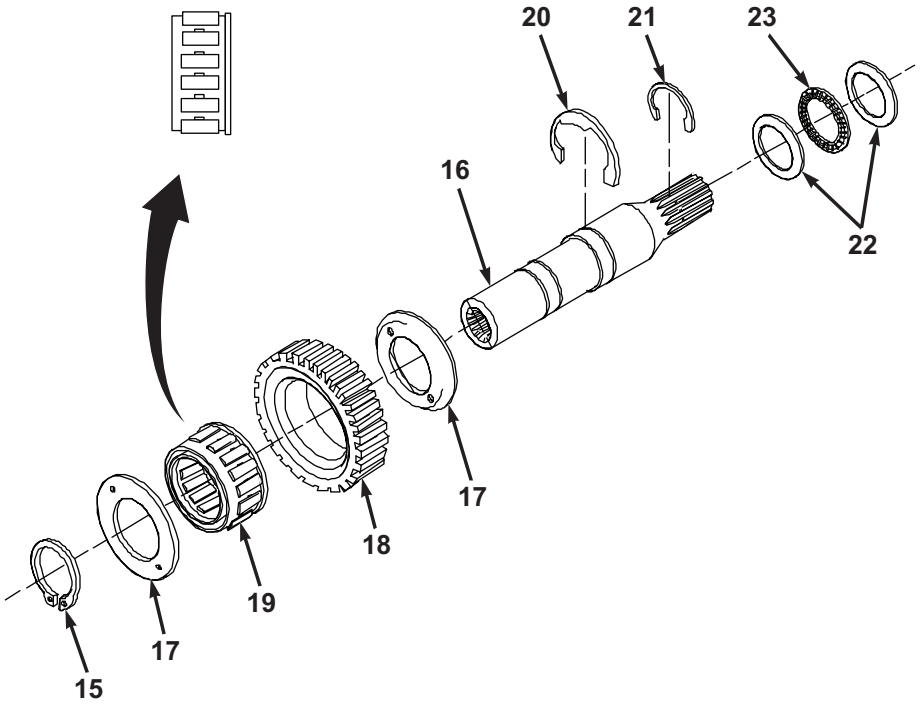
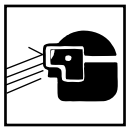


Figure 11. Brake Hub Subassembly Assembly.

2. Install two clutch liners (Figure 11, Item 17) on brake hub (Figure 11, Item 18), with recessed sides inward.
3. Install raised side of brake hub (Figure 11, Item 18) on nonsplined end of motor drive shaft (Figure 11, Item 16), turning motor drive shaft (Figure 11, Item 16) counterclockwise until brake hub (Figure 11, Item 18) fits securely on motor drive shaft (Figure 11, Item 16).

WARNING

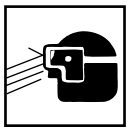


Wear safety goggles and use caution when removing or installing springs, snaprings, retaining rings, and other parts under spring tension. These parts are under tension and can act as projectiles when released. Failure to comply may result in serious injury or death to personnel.

4. Install snapring (Figure 11, Item 15) on machine-cut groove in nonsplined end of motor drive shaft (Figure 11, Item 16).
5. Install two bearing seats (Figure 11, Item 22) and bearing (Figure 11, Item 23) on motor drive shaft (Figure 11, Item 16).

BRAKE HUB SUBASSEMBLY ASSEMBLY - Continued

WARNING



Wear safety goggles and use care when installing cover retainer. It is under spring tension and can act as a projectile when released. Failure to comply may result in serious injury or death to personnel.

6. Install retaining ring (Figure 11, Item 20) and C-clip (Figure 11, Item 21) on machine-cut grooves in splined end of motor drive shaft (Figure 11, Item 16).

END OF TASK

BRAKE HUB ASSEMBLY INSTALLATION

1. Install brake hub subassembly (Figure 12, Item 11) in brake housing (Figure 12, Item 5), ensuring splined end is in brake housing (Figure 12, Item 5) first. Rotate brake hub subassembly (Figure 12, Item 11) until it engages with primary gear.

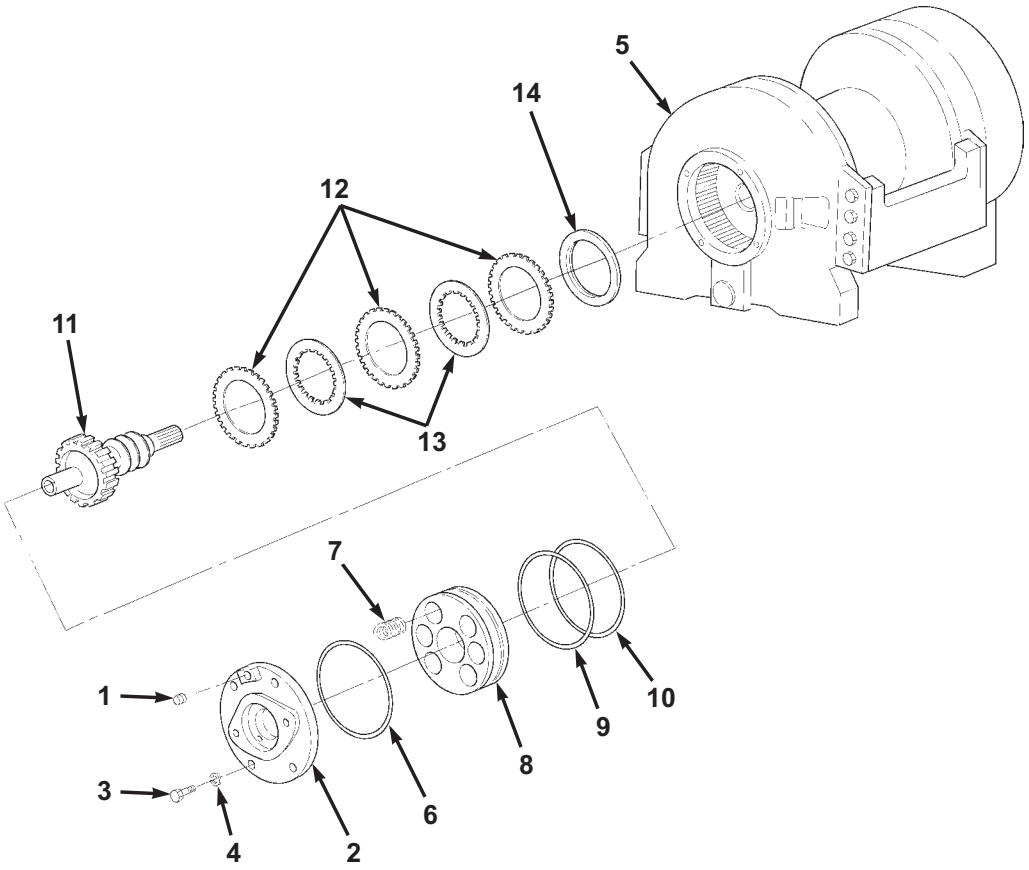


Figure 12. Brake Hub Assembly Installation.

2. Install brake spacer (Figure 12, Item 14) in brake housing (Figure 12, Item 5), with recessed end down.

BRAKE HUB ASSEMBLY INSTALLATION - Continued

NOTE

Install spacer plates alternately, making sure to end with seventh spacer plate.

3. Install seven spacer plates (Figure 12, Item 12) and six brake spacer plates (Figure 12, Item 13) in brake housing (Figure 12, Item 5).

NOTE

If installed spacer plates and brake spacer plates measure more than 1.7 inches (4.3 cm) from brake housing rim, or if they are discolored or glazed, replace with spacer plates and brake spacer plates.

4. Install two O-rings (Figure 12, Items 9 and 10) on piston (Figure 12, Item 8).
5. Install piston (Figure 12, Item 8) in brake housing (Figure 12, Item 5).
6. Install six springs (Figure 12, Item 7) in piston (Figure 12, Item 8).
7. Install O-ring (Figure 12, Item 6) on motor adapter (Figure 12, Item 2).

NOTE

When installing motor adapter, be sure to align marks previously made during removal.

8. Install motor adapter (Figure 12, Item 2) on brake housing (Figure 12, Item 5) with four lockwashers (Figure 12, Item 4) and screws (Figure 12, Item 3). Tighten screws (Figure 12, Item 3) evenly, one turn at a time, against the pressure exerted by the six springs (Figure 12, Item 7). Torque screws to 32 lb-ft (43 Nm).
9. Apply antiseizing tape to pipe plug (Figure 12, Item 1), and install pipe plug (Figure 12, Item 1) on motor adapter (Figure 12, Item 2).

END OF TASK

FOLLOW-ON MAINTENANCE

1. Install winch motor assembly. (WP 0059)
2. Refill winch oil. (WP 0070)

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE
PREPARATION FOR STORAGE OR SHIPMENT

INITIAL SETUP:

References
AR 200-1 (WP 0076)
STA Form 4895 (WP 0076)
DA Pam 750-8 (WP 0076)
MIL-STD-3003A (WP 0076)
PMCS (WP 0034)

References (cont.)
SF 364 (WP 0076)
TB 43-0209 (WP 0076)
TM 743-200-1 (WP 0076)
WP 0070

GENERAL

1. This section contains requirements and procedures for the administrative storage of equipment that is issued to and in use by Army activities worldwide.
2. The requirements specified herein are necessary to maintain equipment in administrative storage in such a way as to achieve maximum readiness condition.
3. Equipment that is placed in administrative storage should be capable of being readied to perform its mission with a 24-hour period, or as otherwise prescribed by the approving authority. Before equipment is placed in administrative storage, current preventive maintenance checks and services (PMCS) procedures should be completed and deficiencies corrected.
4. Report equipment in administrative storage as prescribed for all reportable equipment. Refer to AR 200-1.
5. Perform inspections, maintenance services, and lubrication as specified herein.
6. Records and reports to be maintained for equipment in administrative storage are those prescribed by DA Pam 750-8 for equipment in use.
7. A 10 percent variance is acceptable on time, running hours, or mileage used to determine the required maintenance actions.
8. Accomplishment of applicable PMCS, as mentioned throughout this section, will be on a semiannual basis.

END OF TASK

DEFINITION OF ADMINISTRATIVE STORAGE

The placement of equipment in administrative storage can be for short periods of time when a shortage of maintenance effort exists. Items should be ready for use within the time factors determined by the directing authority. During the storage period, appropriate maintenance records will be kept.

END OF TASK

PREPARATION OF EQUIPMENT FOR ADMINISTRATIVE STORAGE

1. ***Storage Site***
   a. Select the best available site for administrative storage. Separate stored equipment from equipment in use. Conspicuously mark the area "Administrative Storage".
   b. Covered space is preferred.

PREPARATION OF EQUIPMENT FOR ADMINISTRATIVE STORAGE - Continued

c. Open sites should be improved hardstand, if available. Unimproved sites should be firm, well drained, and free of excessive vegetation.

2. ***Storage Plan***

a. Store equipment so as to provide maximum protection from the elements and access for inspection, maintenance and exercising. Anticipate removal or deployment problems and take suitable precautions.

b. Take into consideration environmental conditions such as extreme heat or cold, high humidity, soft ground, mud, heavy snow, blowing sand, dust or loose debris, or any combination thereof, and take adequate precautions.

c. Establish a fire plan and provide for adequate fire-fighting equipment and personnel.

3. ***Maintenance Services and Inspection***

a. Prior to storage, perform the next scheduled Field Level PMCS. (WP 0034)

b. Inspect and approve the equipment prior to storage. Do not place in storage equipment that is not mission capable.

4. ***Auxiliary Equipment and Basic Issue Items***

a. Process auxiliary equipment and basic issue items (BII) simultaneously with the major item to which they are assigned.

b. If possible, store auxiliary equipment and BII with the major item.

c. If stored apart from the major item, mark auxiliary equipment and BII with tags indicating the major item and its registration or serial number and location, and store in protective-type enclosures. In addition, place a tag or list indicating the location of the removed items in a conspicuous place on the major item.

5. ***Correction of Shortcomings and Deficiencies***

Correct all shortcomings and deficiencies prior to storage or obtain a deferment from the approving authority.

6. ***Lubrication***

Lubricate equipment in accordance with the Lubrication Instructions. (WP 0070)

7. ***General Cleaning, Painting, and Preservation***

CAUTION

Do not direct water or steam under pressure against unsealed electrical systems or any exterior opening. Failure to comply may result in damage to the equipment.

a. Clean dirt, grease, and other contaminants from the equipment, but do not use vapor degreasing. Wash any oil, grease, or mud from tires.

b. Remove rust and damaged paint by scraping, wire brushing, sanding, or buffing. Sand to a smooth finish and spot-paint as necessary. Refer to TB 43-0209.

c. After cleaning and drying, immediately coat unpainted metal surfaces with oil or grease, as appropriate. Refer to Lubrication Instructions. (WP 0070)

CAUTION

To prevent corrosion, place a piece of barrier material between desiccant bags and metal surfaces. Failure to comply may result in damage to the equipment.

PREPARATION OF EQUIPMENT FOR ADMINISTRATIVE STORAGE - Continued

NOTE

Air circulation under draped covers reduces deterioration from moisture and heat.

d. Sunlight, heat, moisture (humidity), and dirt tend to accelerate deterioration. Install all covers (including vehicle protective closures) authorized for the equipment. Close and secure all openings except those required for venting and draining. Seal openings to prevent the entry of rain, snow, or dust. Insert desiccant when complete seal is required. Place equipment and provide blocking or framing to allow for ventilation and water drainage. Support cover away from item surfaces that may rust, rot, or mildew.

e. Park vehicle so tires are not resting on greasy or oily surfaces.

END OF TASK

CARE OF EQUIPMENT IN ADMINISTRATIVE STORAGE

1. ***Maintenance Services*** - After equipment has been placed in administrative storage, inspect, service, and exercise as required.
2. ***Inspection*** - Inspection must consist of at least a walk-around examination of all equipment to detect any deficiencies. Inspect equipment in open storage weekly, and inspect equipment in covered storage monthly. Inspect all equipment immediately after any severe storm or environmental change. The following are examples of things to look for during a visual inspection:
   a. Low or flat tires.
   b. Condition of preservatives, seals, and wraps.
   c. Torn, frayed, or split canvas covers and tops.
   d. Corrosion or other deterioration.
   e. Missing or damaged parts.
   f. Water in compartments.
   g. Fluid leaks.
   h. Oil can points.
   i. Any other readily recognizable shortcomings or deficiencies.
3. ***Repair During Administrative Storage*** - Keep equipment in an optimum state of readiness. Accomplish the required services and repairs as expeditiously as possible. Whenever possible, perform all maintenance on-site.

END OF TASK

STORAGE MAINTENANCE PROCEDURES

1. Before placing a Bridge Adapter Pallet (BAP) in storage, perform the following inspection, repair, or replacement tasks:
   a. **Rollers.** Inspect rollers for excess wear, scuffing, torn or cracked rubber, excess play, and free spinning ability. Lubricate rollers if necessary and verify that they spin freely. Replace any damaged or missing rollers in accordance with the applicable maintenance procedure in this manual.
   b. **Seals.** Inspect seals for leaks. Leaks may develop during storage or shortly thereafter. If leaking seals are present, replace seals in accordance with the applicable maintenance procedure in this manual.
   c. **Hoses.** Inspect hoses for cracks, splits, frayed or rotted material, poor connections, and leaks. Replace any hoses that show signs of corrosion, deterioration, or other defects.

STORAGE MAINTENANCE PROCEDURES - Continued

d. **Winch Mechanism.** Inspect winch casing for signs of obvious damage or hydraulic reservoir leaks. Repair or replace in accordance with the applicable maintenance procedure in this manual.

e. **Road-Side and Curb-Side Front Pin Locks.** Inspect front pin locks for signs of damage and missing or broken springs. Replace any missing or broken springs in accordance with the applicable maintenance procedure in this manual.

f. **Road-Side and Curb-Side Rear Guides.** Inspect rear guides for signs of damage and loose and/or missing nuts and bolts. Replace and/or tighten any missing or loose nuts and bolts. Push down on the locking pins and make sure each rear guide swivels freely on its arc throughout its entire range of motion.

g. **Winch Cable.** Make sure entire length of winch cable has been coated with grease. Refer to Lubrication Instructions. (WP 0070)

2. Before placing a BAP in storage, perform the following disassembly procedure:

   a. Loosen and remove four nuts, bolts, and washers from road-side and curb-side rear guides. Refer to Rear Guide Repair in this TM. (WP 0045)

   b. Remove the rear guide from its position on the rear of the BAP.

   c. Mount the rear guide to the welded bolts on the underside of the BAP so that the rear guide is perpendicular to the centerline of the BAP.

   d. Secure the rear guide to the BAP bolts using the washers and nuts removed in Step (a). Stow the bolts removed in Step (a) in the BAP stowage box.

3. Forty-five *working* days after the BAP is placed in storage, perform the following inspections:

   a. Inspect the BAP in accordance with Steps (1) (a) through (f).

   b. Note the items checked and any maintenance problems encountered on a Preventive Maintenance Record.

   c. Note the corrective action completed for any maintenance problems.

   d. If any loss, damage, or destruction is found, note it on a Preventive Maintenance Record and notify the Government Property Administrator for action.

4. Ninety *working* days after the BAP is placed in storage, perform the following inspection and exercises:

   a. Inspect the BAP in accordance with Steps (1) (a) through (f).

   b. Using a portable hydraulic power unit, exercise the winch cable by extending it a minimum of 30 feet.

   c. Examine winch cable for preservative application. If reapplication of preservatives is required, extend the cable full length and clean and reapply preservatives as necessary. Refer to Lubrication Instructions. (WP 0070)

   d. Rewind the winch cable using enough tension to prevent kinking and to ensure a proper cable wind.

   e. Exercise the hand pump hydraulic system by raising and lowering the center rollers.

   f. Exercise the pneumatic system by opening and closing the front bay locks three times.

   g. Note the items checked and any maintenance problems encountered on a Preventive Maintenance Record.

   h. Note the corrective action completed for any maintenance problems and record the badge number and date of performance.

   i. If any loss, damage, or destruction is found, note it on the Preventive Maintenance Record and notify the Government Property Administrator for action.

END OF TASK

REMOVAL OF EQUIPMENT FROM ADMINISTRATIVE STORAGE

1. ***Activation*** - Restore the BAP to normal operating condition as follows:
   a. Loosen and remove four nuts and washers and road-side rear guide from its stored position underneath the BAP.
   b. Remove eight bolts from the BAP stowage box.
   c. Replace the road-side rear guide in its position at the rear of the BAP. Secure the rear guide with four bolts, washers, and nuts.
   d. Repeat Steps (a) through (c) for the curb-side rear guide.
2. ***Servicing*** - Resume the maintenance service schedule in effect at the commencement of administrative storage.

END OF TASK

PREPARATION OF EQUIPMENT FOR SHIPMENT

1. STA Form 4895, Equipment Preservation Data Sheets, documents in detail preparation for shipment and storage. Along with MIL-STD-3003A, the data sheets provide specific equipment processing instructions.
2. Equipment that has been removed from storage for shipment do not have to be reprocessed if they will reach their destination within the administrative storage period. Reprocess only if inspection reveals any corrosion or if in transit weather conditions make it necessary.
3. When a BAP is received and has already been processed for domestic shipment, the BAP does not have to be reprocessed for storage unless corrosion and deterioration are found during the inspection upon receipt. List, on an SF 364, all discrepancies found because of poor preservation, packaging, packing, marking, handling, loading, storage, or excessive preservation. Repairs that cannot be handled by the receiving unit must have tags attached listing needed repairs. A report of these conditions will be submitted by the Unit Commander for action by an ordnance maintenance unit.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
LUBRICATION INSTRUCTIONS

INITIAL SETUP:

Materials/Parts
- Cleaning Compound, Solvent (WP 0081, Table 1, Item 5, 6)
- Grease (WP 0081, Table 1, Item 10, 11, 12, 13, 14)
- Lubricating Oil OEA (WP 0081, Table 1, Item 15, 16)
- Lubricating Oil (WP 0081, Table 1, Item 17, 18, 19, 20)

References
- DA Pam 750-8 (WP 0076)
- FM 9-207 (WP 0076)

Equipment Condition
- Load removed from the BAP. (WP 0008)

GENERAL

NOTE

These lubrication instructions to be performed on BAP are MANDATORY.

This work package contains lubrication instructions for Bridge Adapter Pallet (BAP).

BAP must receive lubrication with approved lubricants at recommended intervals in order to be mission ready at all times.

INTERVALS

Intervals (on-condition or hard-time) and related man-hours are based on normal operation. Man-hour time specified is time needed to do all services prescribed for a particular interval.

- **Hard Time.** BAP is not enrolled in Army Oil Analysis Program (AOAP). HARD-TIME INTERVALS APPLY. Hard-time maintenance is scheduled maintenance conducted at predetermined fixed intervals based on age, calendar, or usage (e.g., operating time). Change hard-time interval if your lubricants are contaminated or if you are operating under adverse environmental conditions. Intervals may be extended during periods of low activity providing adequate preservation precautions have been taken.
- **On Condition.** On-condition maintenance is scheduled maintenance performed based on condition of BAP as determined by regularly scheduled intervals.

SPECIFIC LUBRICATION INSTRUCTIONS

- Keep all lubricants in a closed container and store in a clean, dry place away from extreme heat. Keep container covers clean and do not allow dust, dirt, or other foreign material to mix with lubricants. Keep all lubrication equipment clean and ready for use.
- Maintain a record of lubrication performed and report any problems noted during lubrication. Refer to DA Pam 750-8 (WP 0076) for maintenance forms and procedures for recording and reporting any findings.
- Keep all external parts not requiring lubrication free of lubricants. After lubrication, wipe off excess oil or grease to prevent accumulation of foreign matter.
- After parts are cleaned, rinse and dry them thoroughly. Apply a light grade of oil to all polished metal surfaces to prevent rusting.
- When authorized to install new parts, remove any preservative materials, such as rust-preventive compound or protective grease, prior to installation. Apply lubricant prescribed in lubrication instructions if required.
- Clean and lubricate bearings as specified in FM 9-207 for lubrication instructions in cold weather.

SPECIFIC LUBRICATION INSTRUCTIONS - Continued

- After operation in mud or in sandy or dusty conditions, clean and inspect all points of lubrication for fouled lubricants. Change lubricants as required.
- All fittings must be lubricated after fording, submersion in water, or high-pressure washing.
- Clean all fittings and area around lubrication points in accordance with General Cleaning Instructions (WP 0038) before lubricating equipment. After lubrication, wipe off excess oil or grease to prevent accumulation of foreign matter.

LUBRICATION CHART

- Lubrication Chart (Figures 1, 2, and 3) cover BAP lubrication points.
- Lubrication Requirements (Table 1) lists lubricants to be used in all temperature ranges and shows intervals.
- Lubrication Chart (Figures 1, 2, and 3) show lubrication points, items to be lubricated, required lubricants, and recommended intervals for lubrication. Any special lubricating instructions for specific components are contained in NOTES. Reference to appropriate localized view is given after each lubrication entry.
- Recommended intervals are based on normal conditions of operation; intervals given represent allocated hours of operation between each scheduled lubrication. Under extreme conditions, lubricants should always be changed more frequently. When in doubt, notify your supervisor.
- Lowest level of maintenance authorized to lubricate a point is indicated in parentheses by use of the following: (C) for Operator/Crew or (F) for Field maintenance.

LUBRICATION CHART - Continued

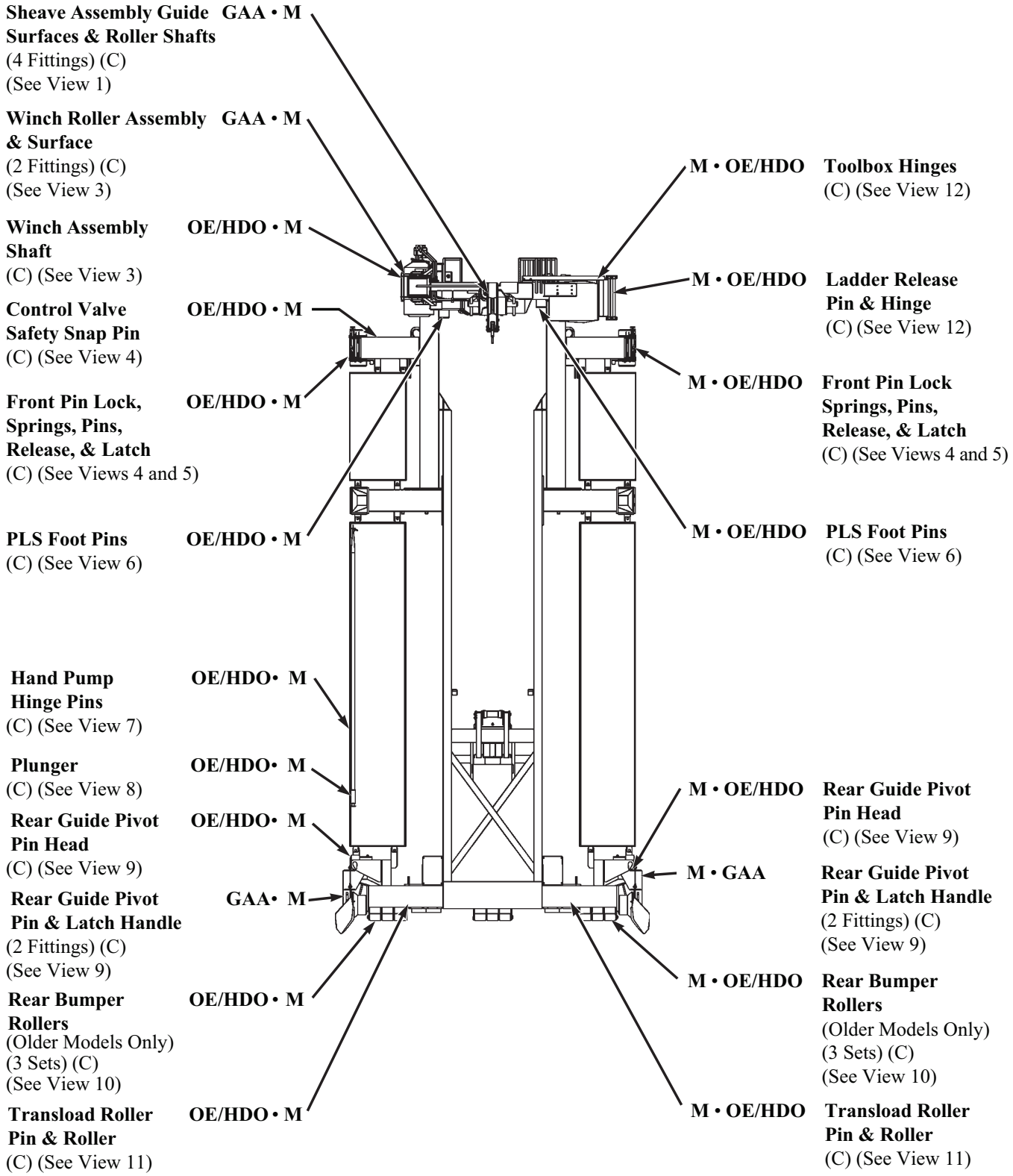


Figure 1. Monthly Lubrication Intervals.

LUBRICATION CHART - Continued

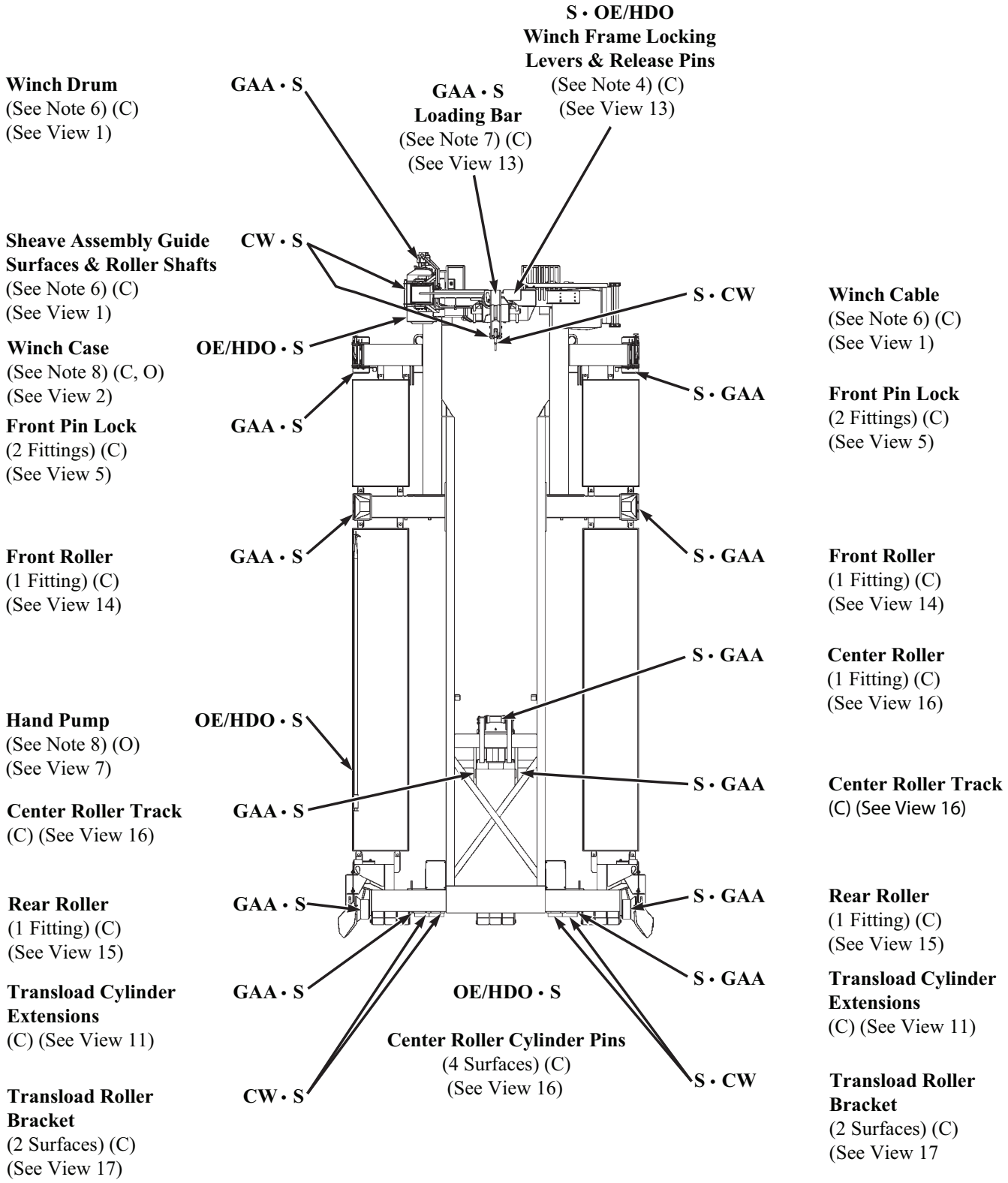


Figure 2. Semiannual Lubrication Intervals.

LUBRICATION CHART - Continued

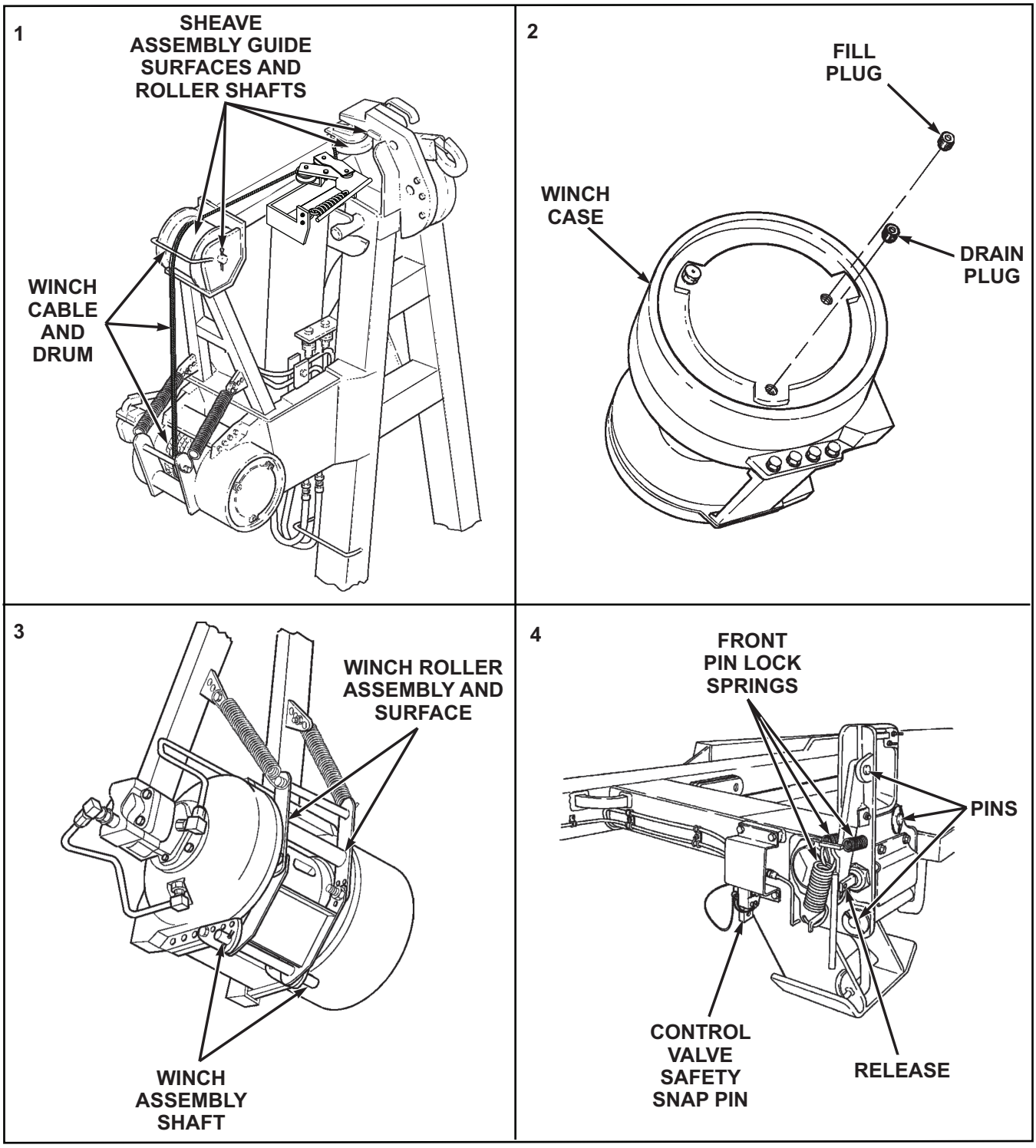


Figure 3. Localized Views of Lubrication Points. (Sheet 1 of 5)

LUBRICATION CHART - Continued

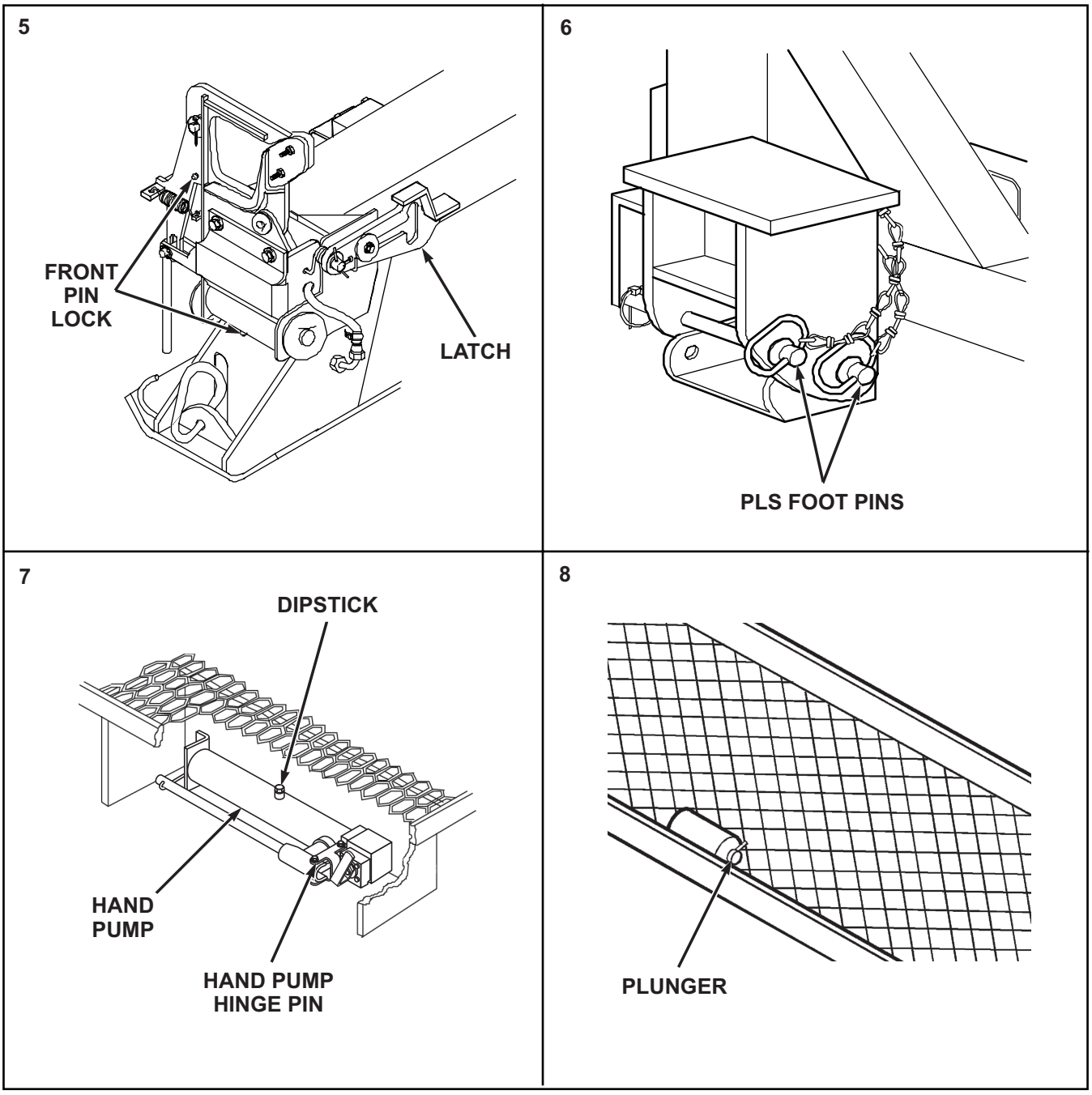


Figure 3. Localized Views of Lubrication Points. (Sheet 2 of 5)

LUBRICATION CHART - Continued

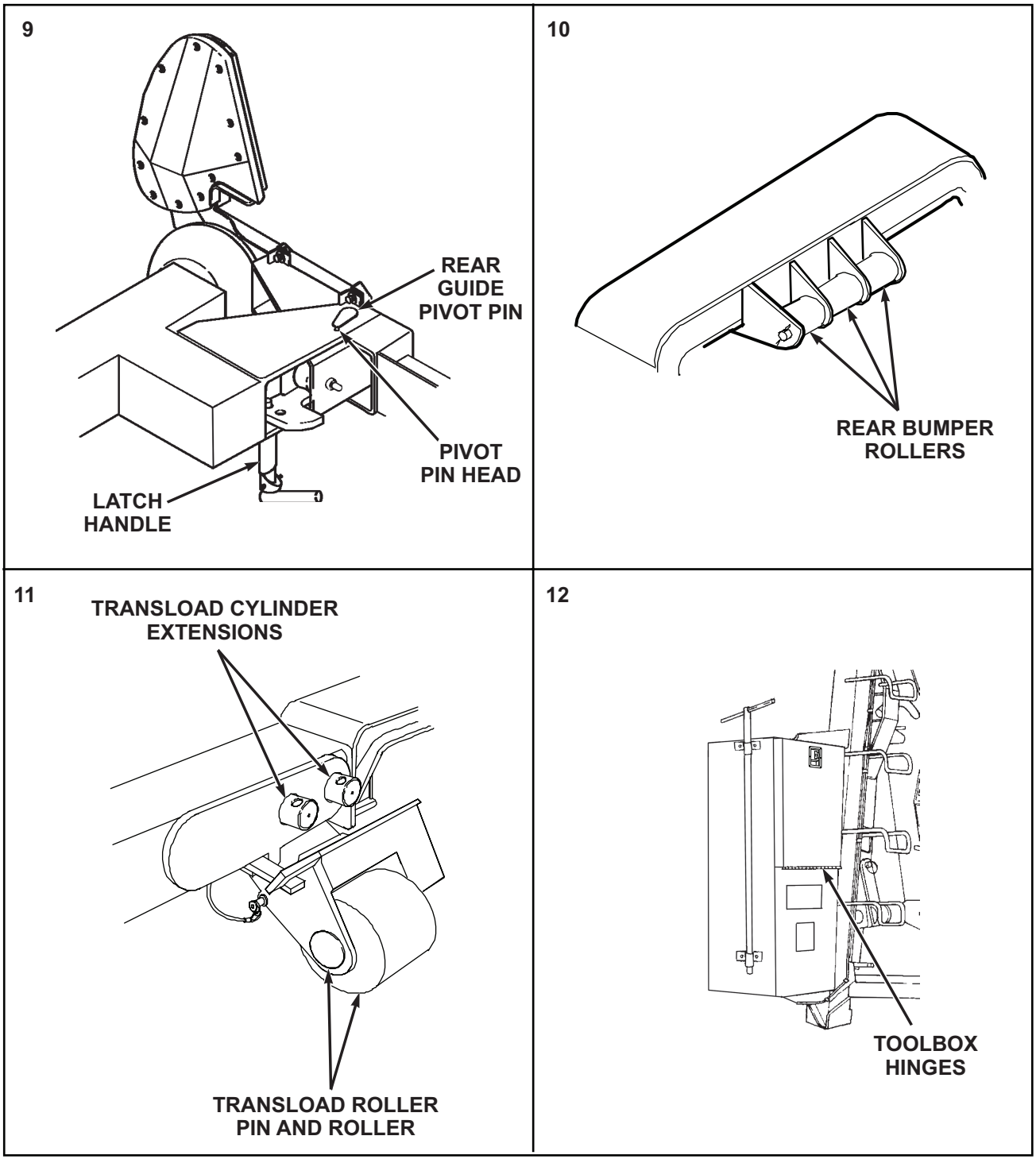


Figure 3. Localized Views of Lubrication Points. (Sheet 3 of 5)

LUBRICATION CHART - Continued

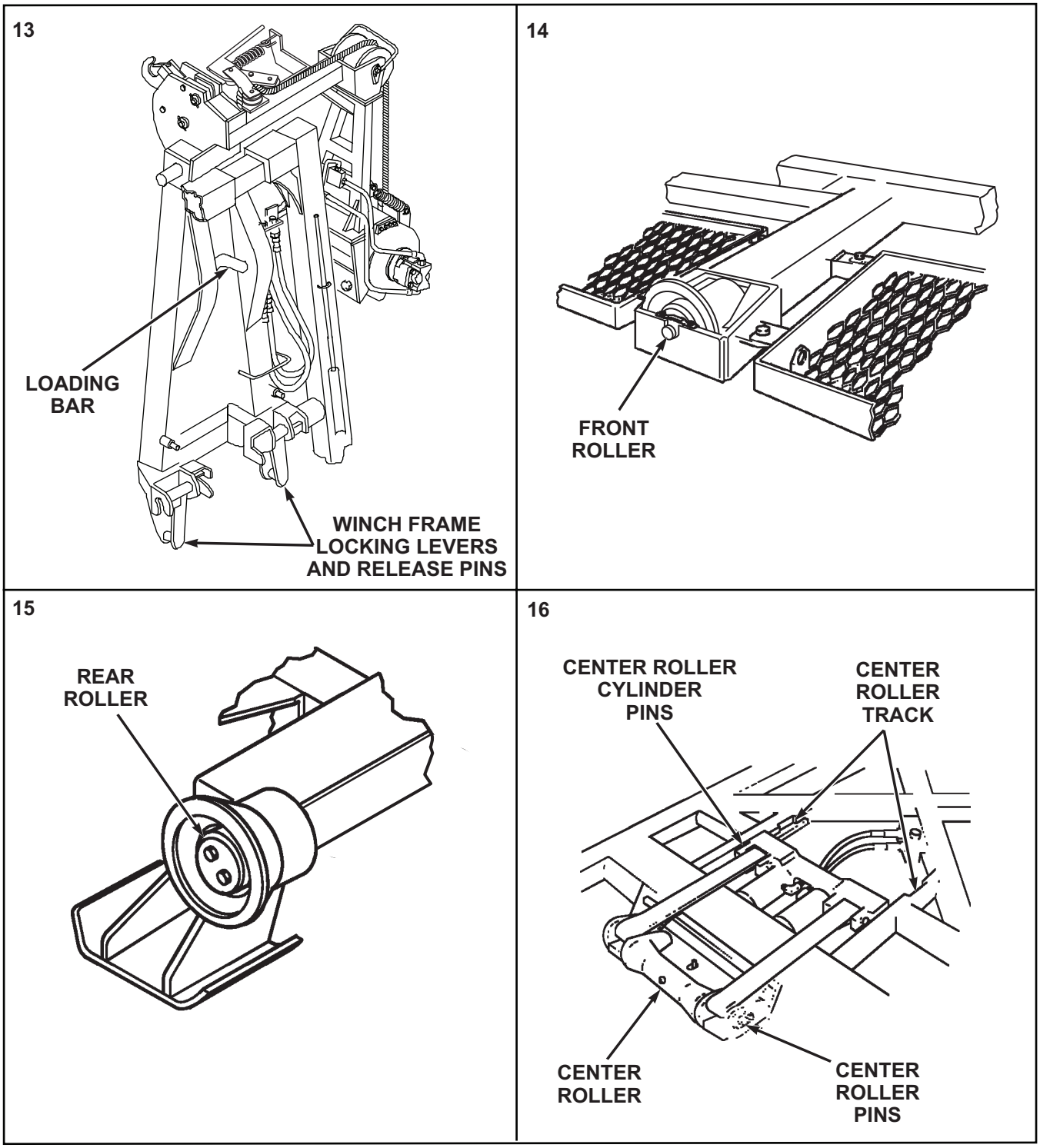


Figure 3. Localized Views of Lubrication Points. (Sheet 4 of 5)

LUBRICATION CHART - Continued

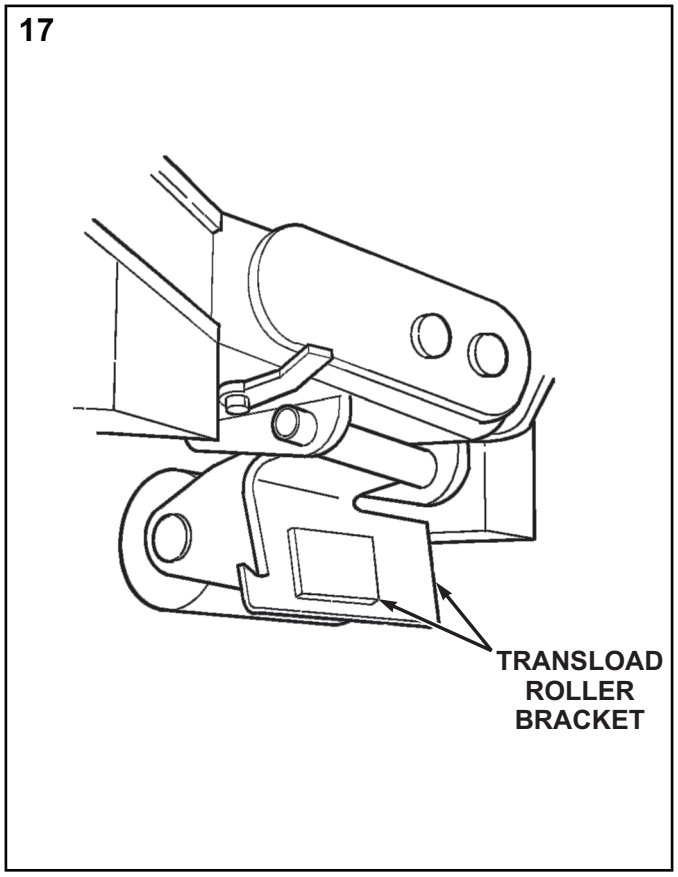


Figure 3. Localized Views of Lubrication Points. (Sheet 5 of 5)

LUBRICATION CHART - Continued

Table 1. Lubricant Requirements.

LUBRICANTS	EXPECTED TEMPERATURES			INTERVALS	
	Above -32°F (Above 0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-18°C to -54°C)		
OE/HDO - Lubricating Oil, Internal Combustion Engine, Tactical	OE/HDO 10	OE/HDO 10	OEA	D-DAILY M-MONTHLY AR-AS REQUIRED HR-HOURS S-SEMIANNUALY (6 MONTHS) 1.5-1500 MILES	For Arctic operation, refer to FM 9-207.
OEA - Lubricating Oil, Internal Combustion Engine, Arctic					
GAA - Grease, Automotive and Artillery	ALL TEMPERATURES				
CW - Corrosion Prevention Compound					
Antiseize Compound					

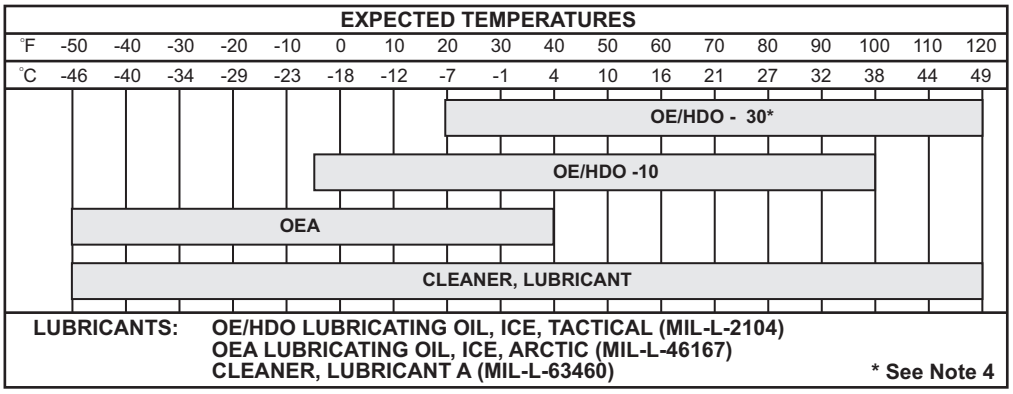


Figure 4. Expected Temperatures.

LUBRICATION CHART - Continued

Table 2. Notes.

WARNING



SOLVENT CLEANING COMPOUND

Solvent Cleaning Compound (MIL-PRF-680) is flammable and may cause irritation to the eyes or skin. Wear protective goggles and gloves; avoid contact with skin, eyes, and clothing. Use in well ventilated areas and keep away from heat or flame. Failure to comply may result in personnel injury or death.

Accidental ingestion can cause irritation of digestive tract and respiratory tract, and may cause lung and central nervous system damage. Can be fatal if swallowed. First aid for ingestion: do not induce vomiting. Seek immediate medical attention.

First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention.

First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention.

Inhalation of high/massive concentrations can cause coma or be fatal. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If symptoms persist, seek medical attention.

Keep away from open flames and other sources of ignition. Failure to comply may result in serious injury or death to personnel. The flash point for type II solvent cleaning compound is 141 to 198°F (61 to 92°C) and type III is 200 to 241°F (93 to 116°C). Fire extinguishers should be placed nearby when using solvent cleaning compound.

Improper cleaning methods and use of unauthorized cleaning solvents may injure personnel and damage equipment.

Cloths or rags saturated with solvent cleaning compound must be disposed of using authorized facilities procedures.

Eye shields must be worn when cleaning with a wire brush. Flying rust and metal particles may cause injury.

Failure to comply may result in injury or death to personnel.

1	FOR OPERATION OF EQUIPMENT IN PROTRACTED COLD TEMPERATURE BELOW -10°F (-23°C). Remove lubricants prescribed in Table 1 for temperatures above -10°F (-23°C). Clean parts with solvent cleaning compound. Re-lubricate with lubricants specified for temperatures below -10°F (-23°C).	
2	LUBRICANTS. The following is a list of lubricants with military symbols and applicable specification numbers:	OE/HDO - MIL-L-2104, Grade 10 OEA - MIL-L-46167 GAA - MIL-G-10924 CW - MIL-C-16173, Grade 1

LUBRICATION CHART - Continued

Table 2. Notes - Continued.

3	OIL-CAN POINTS. Every month lubricate all pivots, shackles, screw threads, hinges, and other components that require lubrication but are not provided with lubrication fittings.	
4	WINCH FRAME LOCKING LEVERS AND PINS. Apply OEA by hand to locking lever pivot points.	
5	Remove safety pin and washer to remove LHS pin. Lubricate LHS pin and reinstall with washer and safety pin.	
6	WINCH CABLE, DRUM, SHEAVES, ROLLERS, GUIDES, AND HOOK ARM SURFACE. Every month clean and lubricate with new GAA. Every six months, if cable is not generally used, unwind entire cable, clean, and lubricate with new GAA. Wipe off excess and coat winch drum with GAA before rewinding cable on drum.	
7	HOOK ARM HOOK AND BAP LOADING BAR. Lubricate with grease as needed.	
8	WINCH CASE AND HAND PUMP. Operator is to remove fill plug and check for correct oil level. Oil level should be up to filler plug. Unit maintenance removes fill plug and drain plug to drain oil. Fill winch with OE/HDO through fill plug port. Unit maintenance to check oil in hand pump by removing dipstick and filling until fluid level reaches notch in dipstick.	
9	PURGING OF LUBRICANT. When using a grease gun, apply lubricant to the fitting until clean lubricant squeezes out of the part being lubricated.	
10	LIFT HOOK. Apply grease to lift hook more often if vehicle truck mileage is low but LHS hours are high.	
11	To allow access to the hook arm cylinder rear grease fittings and LHS hook arm pin, the LHS should be fully extended.	
12	The 50-hour interval is based on actual LHS operating hours. The hours can be tracked by the operator using the hourmeter. The LHS should be lubricated monthly or every 50 operating hours, whichever comes first.	

END OF WORK PACKAGE

FIELD MAINTENANCE
GENERAL TORQUE LIMITS

GENERAL

This work package provides general torque limits for the screws used on the BAP. The general torque limits given in this work package 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.

TORQUE LIMITS

Table 1 lists the torque limits for wet flange nuts.
Table 2 lists the torque limits for wet socket head capscrews.
Table 3 lists torque limits for dry fasteners. Dry torque limits are used on screws that do not have high pressure lubricants applied to the threads.
Table 4 lists torque limits for dry metric fasteners.
Table 5 lists torque limits for wet fasteners. Wet torque limits are used on screws that have high pressure lubricants applied to the threads.

HOW TO USE THE TORQUE TABLE

Screws and Nuts.

a. Measure the diameter of the screw you are installing with a ruler (Figure 1).

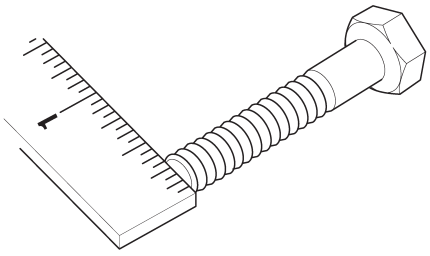


Figure 1. Screw Diameter Measurement.

b. Measure out one inch with a ruler and count the number of threads per inch (Figure 2).

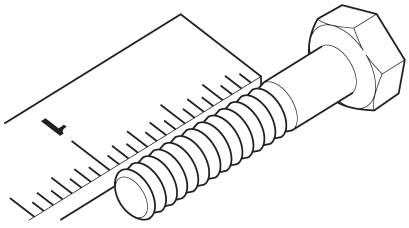


Figure 2. Screw Thread Measurement.

c. Under the heading DIAMETER look down the left hand column until you find the diameter of the screw you are installing (there are usually two lines beginning with the same diameter).

HOW TO USE THE TORQUE TABLE - Continued

NOTE

Step (d) is not required for metric screws.

d. Under the heading THREADS PER INCH, find the number of threads per inch that matches the number you counted in Step (b).

e. To find the grade of the screw you are installing, match the markings on the head of the screw to the correct picture (Figure 3) under CAPSCREW HEAD MARKINGS on the torque table.

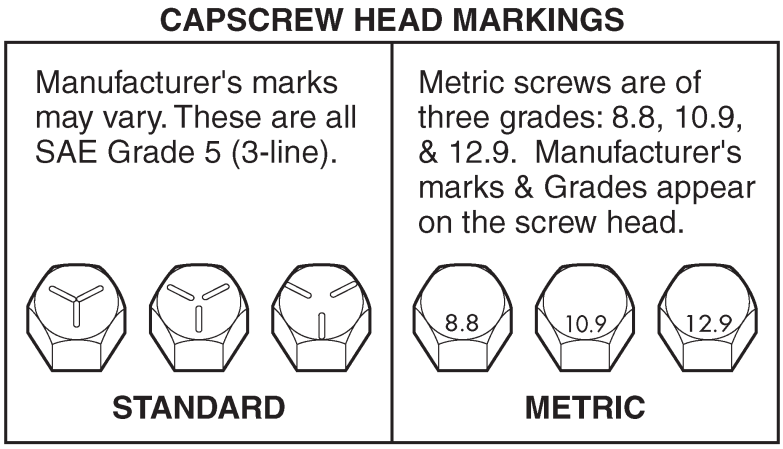
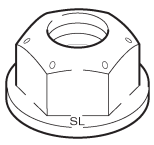


Figure 3. Capscrew Head Markings.

f. Look down the column under the picture you found in Step (e) until you find the torque limit (lb-ft or Nm) for the diameter and threads per inch of the screw you are installing.

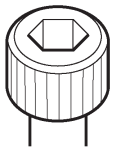
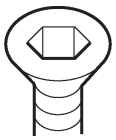
1. Table 1 lists the torque limits for wet flange nuts.

Table 1. Torque Limits for Wet Flange Nuts

SPIRALOCK FLANGE NUT MARKINGS	DIAMETER		THREADS	TORQUE	
GRADE 8	IN.	mm	PER INCH	LB-FT	N·m
	1/4 5/16 3/8 1/2 5/8 3/4	6.35 7.94 9.65 12.70 15.75 19.05	20 18 16 13 11 10	15 25 45 110 210 375	20 34 61 149 285 508

2. Table 2 lists the torque limits for wet socket head capscrews.

Table 2. Torque Limits for Wet Socket Head Capscrews

TORQUE IN FT. LBS (CAPSCREWS) LUBRICATED			
	SIZE	**SOC HD or 12 PT**	**SOC FLAT HD**
SOC HEAD/12 PT. 	.10-24 .25-20 .31-18 .38-16 .50-13	5 12 25 44 70	2.5 6 12 22 36
SOC FLAT HEAD 	.56-12 .62-11 .75-10 1.00-8	106 212 375 781	53 106 187

3. Table 3 lists torque limits for dry fasteners. Dry torque limits are used on screws that do not have lubricants applied to the threads.

Table 3. Torque Limits for Dry Fasteners.

CAPSCREW HEAD MARKINGS										
NOTE Manufacturer's marks may vary. These are all SAE Grade 5. 										
SAE GRADE NO. 2 			SAE GRADE NO. 5 		SAE GRADE NO. 6 or 7 		SAE GRADE NO. 8 		DIAMETER Threads TORQUE	
IN.	mm	Per Inch	LB-FT	N·m	LB-FT	N·m	LB-FT	Nm	LB-FT	N·m
1/4	6.35	20	5	7	8	11	10	14	12	16
1/4	6.35	28	6	9	10	14	12	16	14	19

Table 3. Torque Limits for Dry Fasteners - Continued.

IN.	mm	Per Inch	LB-FT	N·m	LB-FT	N·m	LB-FT	Nm	LB-FT	N·m
5/16	7.94	18	11	15	17	17	21	28	24	34
5/16	7.94	24	12	16	19	26	24	33	27	34
3/8	9.53	16	20	27	30	41	40	54	44	61
3/8	9.53	24	23	31	35	47	45	61	49	68
7/16	11.11	14	30	41	50	68	60	81	70	95
7/16		20	35	47	55	75	70	95	78	108
1/2	12.70	13	50	68	75	102	95	129	105	149
1/2		20	55	75	90	122	100	136	120	163
9/16	14.29	12	65	88	110	149	135	183	155	203
9/16		18	75	102	120	163	150	203	170	231
5/8	15.88	11	90	122	150	203	190	258	210	298
5/8		18	100	136	180	244	210	285	240	325
3/4	19.05	10	160	217	260	353	320	434	375	515
3/4		16	180	244	300	407	360	488	420	597
7/8	22.23	9	140	190	400	542	520	705	605	814
7/8		14	155	210	440	597	580	786	675	895
1	25.40	8	220	298	580	786	800	1085	910	1220
1		12	240	325	640	868	860	1166	990	1356
1-1/8	25.58	7	300	407	800	1085	1120	1519	1280	1736
1-1/8		12	340	461	880	1193	1260	1709	1444	1953
1-1/4	31.75	7	420	570	1120	1519	1580	2142	1820	2468
1-1/4		12	460	624	1240	1681	1760	2387	2000	2712
1-3/8	34.93	6	560	759	1460	1980	2080	2820	2300	3227
1-3/8		12	640	868	1680	2278	2380	3227	2720	3688
1-1/2	38.10	6	740	1003	1940	2631	2780	3770	3160	4285

Table 3. Torque Limits for Dry Fasteners - Continued.

IN.	mm	Per Inch	LB-FT	N·m	LB-FT	N·m	LB-FT	Nm	LB-FT	N·m
1-1/2		12	840	1139	2200	2983	3100	4204	3560	4827

4. Table 4 lists torque limits for dry metric fasteners.

Table 4. Torque Limits for Dry Metric Fasteners.

CAPSCREW HEAD MARKINGS							
							
METRIC GRADE 8.8 		METRIC GRADE 10.9 		METRIC GRADE 12.9 		DIAMETER TORQUE	
IN.	mm	LB-FT	N·m	LB-FT	N·m	LB-FT	N·m
0.157	4	2	3	3	4	4	5
0.197	5	4	5	6	8	7	9
0.237	6	7	9	10	14	11	15
0.276	7	11	15	16	22	20	27
0.315	8	18	24	25	34	29	39
0.394	10	32	43	47	64	58	79
0.473	12	58	79	83	113	100	136
0.552	14	94	127	133	180	159	216
0.630	16	144	195	196	266	235	319
0.709	18	190	258	269	365	323	438
0.788	20	260	353	366	496	440	597
0.867	22	368	499	520	705	678	919
0.946	24	470	637	664	900	794	1077
1.064	27	707	959	996	1351	1235	1675

Table 4. Torque Limits for Dry Metric Fasteners - Continued.

IN.	mm	LB-FT	N·m	LB-FT	N·m	LB-FT	N·m
1.182	30	967	1311	1357	1840	1630	2210

5. Table 5 lists torque limits for wet fasteners. Wet torque limits are used on screws that have high pressure lubricants applied to the threads.

Table 5. Torque Limits for Wet Fasteners.

CAPSCREW HEAD MARKINGS										
 **NOTE** Manufacturer's marks may vary. These are all SAE Grade 5.										
SAE GRADE NO. 2 			SAE GRADE NO. 5 		SAE GRADE NO. 6 or 7 		SAE GRADE NO. 8 		DIAMETER Threads TORQUE	
IN.	mm	Per Inch	LB-FT	N·m	LB-FT	N·m	LB-FT	N·m	LB-FT	N·m
1/4	6.35	20	4	6	6	8	8	11	9	12
1/4	6.35	28	5	7	7	9	9	12	10	14
5/16	7.94	18	8	11	13	18	16	22	18	24
5/16	7.94	24	9	12	14	19	18	24	20	27
3/8	9.53	16	15	20	23	31	30	41	35	47
3/8	9.53	24	17	23	25	34	30	41	35	47
7/16	11.11	14	24	33	35	47	45	61	55	75
7/16		20	25	34	40	54	50	68	60	81
1/2	12.70	13	35	47	55	75	70	95	80	108
1/2		20	40	54	65	88	80	108	90	122

Table 5. Torque Limits for Wet Fasteners - Continued.

IN.	mm	Per Inch	LB-FT	N·m	LB-FT	N·m	LB-FT	N·m	LB-FT	N·m
9/16	14.29	12	50	68	80	108	100	136	110	149
9/16		18	55	75	90	122	110	149	130	176
5/8	15.88	11	70	95	110	149	140	190	170	231
5/8		18	80	108	130	176	160	217	180	244
3/4	19.05	10	120	163	200	271	240	325	280	380
3/4		16	140	190	220	298	280	380	320	434
7/8	22.23	9	110	149	300	407	400	542	460	624
7/8		14	120	163	320	434	440	597	500	678
1	25.40	8	160	217	440	597	600	814	680	922
1		12	170	231	480	651	660	895	740	1003
1-1/8	25.58	7	220	298	600	814	840	1139	960	1302
1-1/8		12	260	353	660	895	940	1275	1080	1464
1-1/4	31.75	7	320	434	840	1139	1100	1492	1360	1844
1-1/4		12	360	488	920	1248	1320	1790	1500	2034
1-3/8	34.93	6	420	570	1100	1492	1560	2115	1780	2414
1-3/8		12	460	624	1260	1709	1780	2414	2040	2766
1-1/2	38.10	6	560	760	1460	1980	2080	2820	2360	3200
1-1/2		12	620	841	1640	2224	2320	3146	2660	3607

END OF TASK

END OF WORK PACKAGE

CHAPTER 7

FIELD MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST FOR M15 BRIDGE ADAPTER PALLET (BAP) NSN 3990-01-442-1939

CHAPTER CONTENTS

Work Package Title	WP Number
Field Repair Parts And Special Tools List Introduction	WP 0072
Repair Parts And Special Tools List	WP 0073
National Stock Number Index	WP 0074
Part Number Index	WP 0075

FIELD MAINTENANCE
FIELD MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST INTRODUCTION

INTRODUCTION

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 field and sustainment maintenance of the Bridge Adapter Pallet (BAP). It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the source, maintenance, and recoverability (SMR) codes.

GENERAL

In addition to the Introduction work package, this RPSTL is divided into the following work packages:

1. Repair Parts List Work Packages. Work packages containing lists of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. These work packages also include 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. Sending units, brackets, filters, and bolts are listed with the component they mount on. Bulk materials are listed by item name in FIG. BULK at the end of the work packages. Repair parts kits are listed separately in their own functional group and work package. Repair parts for reparable special tools are also listed in a separate work package. Items listed are shown on the associated illustrations.
2. Special Tools List Work Packages. Work packages containing lists of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE (UOC) column). Tools that are components of common tool sets and/or Class VII are not listed.
3. Cross-Reference Index Work Packages. There are two cross-reference index work packages in this RPSTL: the National Stock Number (NSN) Index work package, and the Part Number (P/N) Index work package. The National Stock Number Index work package refers you to the figure and item number. The Part Number Index work package refers you to the figure and item number.

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES

ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

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 instructions as shown in the following breakout.

Table 1. SMR Codes.

Source Code	**Maintenance Code**		**Recoverability Code**
xx	**xx**		**x**
1st two positions: How do you get an item	3rd position: Who can install, replace, use the item	4th position: Who can do complete repair* on the item	5th position: Who determines disposition action on an unserviceable item
*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.			

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES - Continued

Source Code. The source code tells you how to obtain an item needed for maintenance, repair, or overhaul of an end item or equipment. Explanation of source codes follows:

Table 2. Source Code 1st and 2nd Positions.

Code	Application/Explanation
PA	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.
PB	
PC**	
PD	
PE	
PF	
PG	
PH	
PR	
PZ	
KD	Items with these codes are not to be requested/requisitioned individually. They are part of a kit, which is authorized to the maintenance category in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.
KF	
KB	
MF (Made at Field level)	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 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.
MH (Made at Sustainment level)	
ML (Made at Specialized Repair Activity SRA)	
MD (Made at Sustainment level)	
AF (Assembled by Field 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
AH (Assembled by Sustainment level)	

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES - Continued

Table 2. Source Code 1st and 2nd Positions - Continued.

Code	Application/Explanation
AL (Assembled by SRA)	source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.
AD (Assembled by Sustainment level)	
XA	Do not requisition an "XA" coded item. Order its next higher assembly.
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 and 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: Items coded PC are subject to deterioration.	
***NOTE: Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with this source code.	

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 3rd and 4th positions of the SMR code as follows:

Table 3. Maintenance Code 3rd Position.

Code	Application/Explanation
F	Field level can remove, replace, and use the item.
H	Sustainment level can remove, replace, and use the item.
L	Specialized repair activity can remove, replace, and use the item.
K	Contractor facility can remove, replace and use the item.
Z	Item is not authorized to be removed, replaced, or used at any maintenance level.
D	Depot level can remove, replace, and use the item.
*NOTE: Army may use C in the third position. However, for joint service publications, Army will use O.	

The maintenance code entered in the 4th position tells whether or not the item is to be repaired, and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions).

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES - Continued

(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:

Table 4. Maintenance Code 4th Position.

Code	Application/Explanation
F	Field is the lowest level that can do complete repair of the item.
H	Sustainment is the lowest level that can do complete repair of the item.
L	Specialized repair activity (enter specialized repair activity or TASMG designator) is the lowest level that can do complete repair or the item.
D	Sustainment is the lowest level that can do complete repair of the item.
K	Complete repair is done at contractor facility.
Z	Nonrepairable. No repair is authorized.
B	No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B" coded item). However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the 5th position of the SMR Code as follows:

Table 5. Recoverability Code 5th Position.

Code	Application/Explanation
Z	Nonrepairable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the 3rd position of SMR Code.
F	Repairable item. When uneconomically repairable, condemn and dispose of the item at Field level.
H	Repairable item. When uneconomically repairable, condemn and dispose of the item at Sustainment level.
D	Repairable item. When beyond lower level repair capability, return to Sustainment. Condemnation and disposal of item not authorized below Sustainment level.
L	Repairable item. Condemnation and disposal of item not authorized below SRA.
A	Item requires handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material, or

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES - Continued

Table 5. Recoverability Code 5th Position - Continued.

Code	Application/Explanation
	hazardous material). Refer to appropriate manuals/directives for specific instructions.
K	Repairable Item. Condemnation and disposal to be performed at contractor facility.

NSN (Column (3)). The National Stock Number (NSN) identifies the stock number of the item to be used for requisitioning purposes.

CAGEC (Column (4)). The Commercial and Government Entity Code (CAGEC) is a 5-digit alphanumeric code, which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

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 an NSN to requisition an item, the item you receive may have a different part number from the number listed.

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 of bulk materials are referenced in this column in the line entry to be manufactured or fabricated.
3. Hardness Critical Item (HCI). A support item that provides the equipment with special protection from electromagnetic pulse (EMP) damage during a nuclear attack.
4. The statement END OF FIGURE appears just below the last item description in column (6) for a given figure in both the repair parts list and special tools list work packages.

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 instead of a quantity indicates that the quantity is variable and quantity may change from application to application.

EXPLANATION OF CROSS-REFERENCE INDEXES WORK PACKAGES FORMAT AND COLUMNS

1. National Stock Number (NSN) Index Work Package. NSN’s in this index are listed in National Item Identification Number (NIIN) sequence.
    a. STOCK NUMBER Column. This column lists the NSN in NIIN sequence. The NIIN consists of the last nine digits of the NSN. When using this column to locate an item, ignore the first four digits of the NSN. However, the complete NSN should be used when ordering items by stock number. For example, if the NSN is 5385-01-574-1476, the NIIN is 01-574-1476.
    b. FIG. Column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in the repair parts list and special tools list work packages.
    c. 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
1. Part Number (P/N) Index Work Package. Part numbers in this index are listed in ascending alphanumeric sequence (vertical arrangement of letter and number combinations 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).

EXPLANATION OF CROSS-REFERENCE INDEXES WORK PACKAGES FORMAT AND COLUMNS - Continued

a. PART NUMBER Column. Indicates the part number assigned to the item.
b. FIG. Column. This column lists the number of the figure where the item is identified/located in the repair parts list and special tools list work packages.
c. ITEM Column. The item number is the number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

SPECIAL INFORMATION

UOC. The UOC 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 first line under the applicable item/nomenclature. Uncoded items are applicable to all models. Identification of the UOCs used in the RPSTL are:

Table 6. Usable On Code.

Code	Used On
PLT	Bridge Adapter Pallet

Fabrication Instructions. Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for bulk material are also referenced in the Description Column of the line item entry for the item to be manufactured/fabricated.

Index Numbers. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the NSN / Part Number (P/N) Index work packages and the bulk material list in the repair parts list work package.

END OF WORK PACKAGE

FIELD MAINTENANCE
REPAIR PARTS AND SPECIAL TOOLS LIST

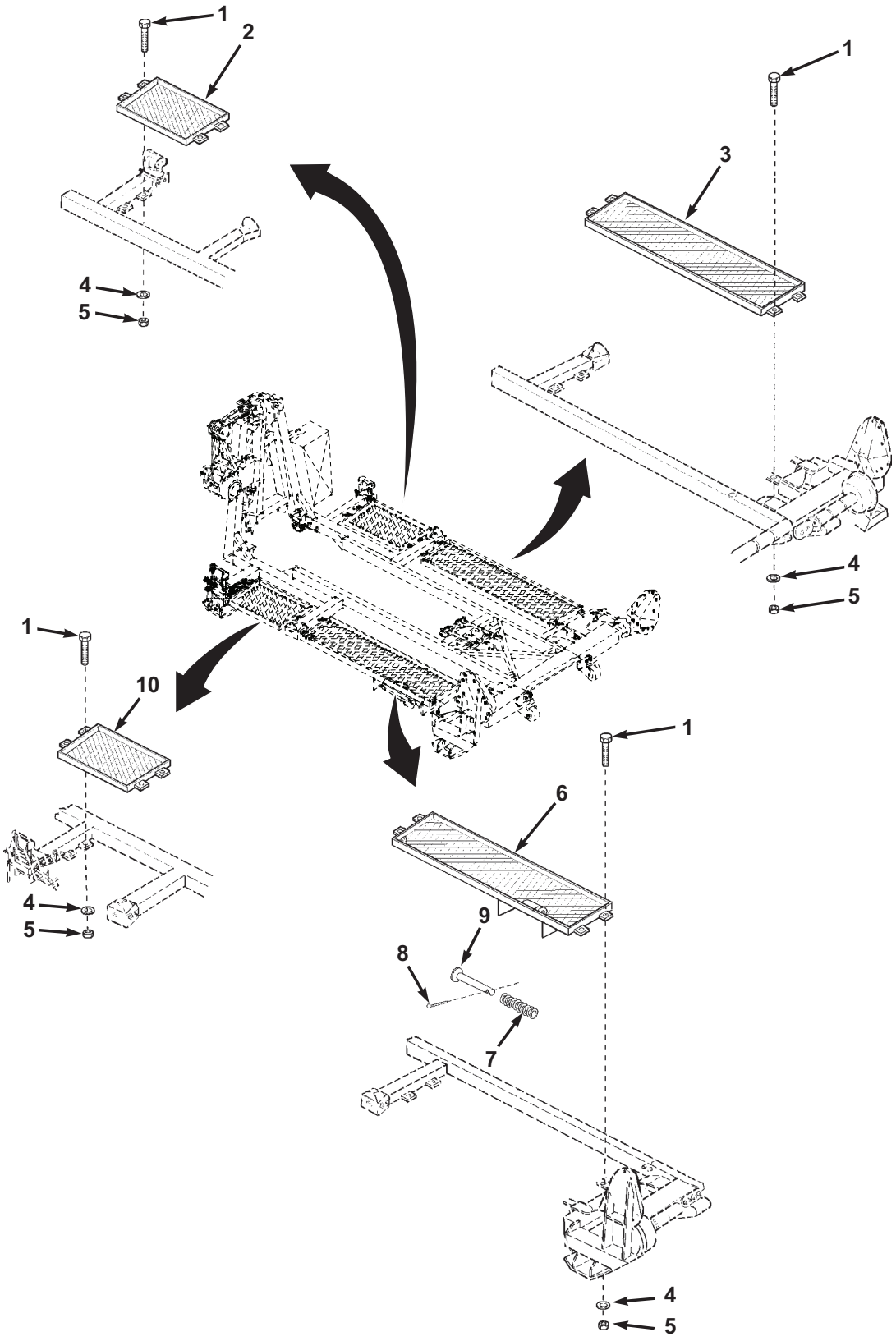


Figure 1. CATWALKS

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1000 BAP ASSEMBLY	
					FIG. 1. CATWALKS	
1	PAFZZ	5305-01-325-8388	80205	MS90725-113	SCREW,CAP,HEXAGON HEAD,1/2-13X1 1/2	16
2	PAFZZ	3990-01-461-0414	3AR59	A6210620	CATWALK RIGHT SIDE	1
3	PAFZZ	3990-01-461-0423	3AR59	A6210630	CATWALK RIGHT SIDE	1
4	PAFZZ	5310-00-809-5997	96906	MS27183-17	WASHER,FLAT 1/2	16
5	PAFZZ	5310-00-225-6993	81349	M45913/1-8CG5C	NUT,SELF-LOCKING HEXAGON,1/2-13	16
6	PAFZZ	3990-01-461-0440	3AR59	A6210640	CATWALK LEFT SIDE	1
7	PAFZZ	5360-01-453-7577	92830	C1225-085-5000S	SPRING,HELICAL COMPRESSION	1
8	PAFZZ	5315-00-058-9756	80205	MS16562-227	PIN,SPRING 1/8X1 1/4	1
9	PAFZZ	5315-01-454-5755	3AR59	BBD15016	PIN,STRAIGHT,HEADED	1
10	PAFZZ	3990-01-461-0443	3AR59	A6210610	CATWALK LEFT SIDE	1
					END OF FIGURE	

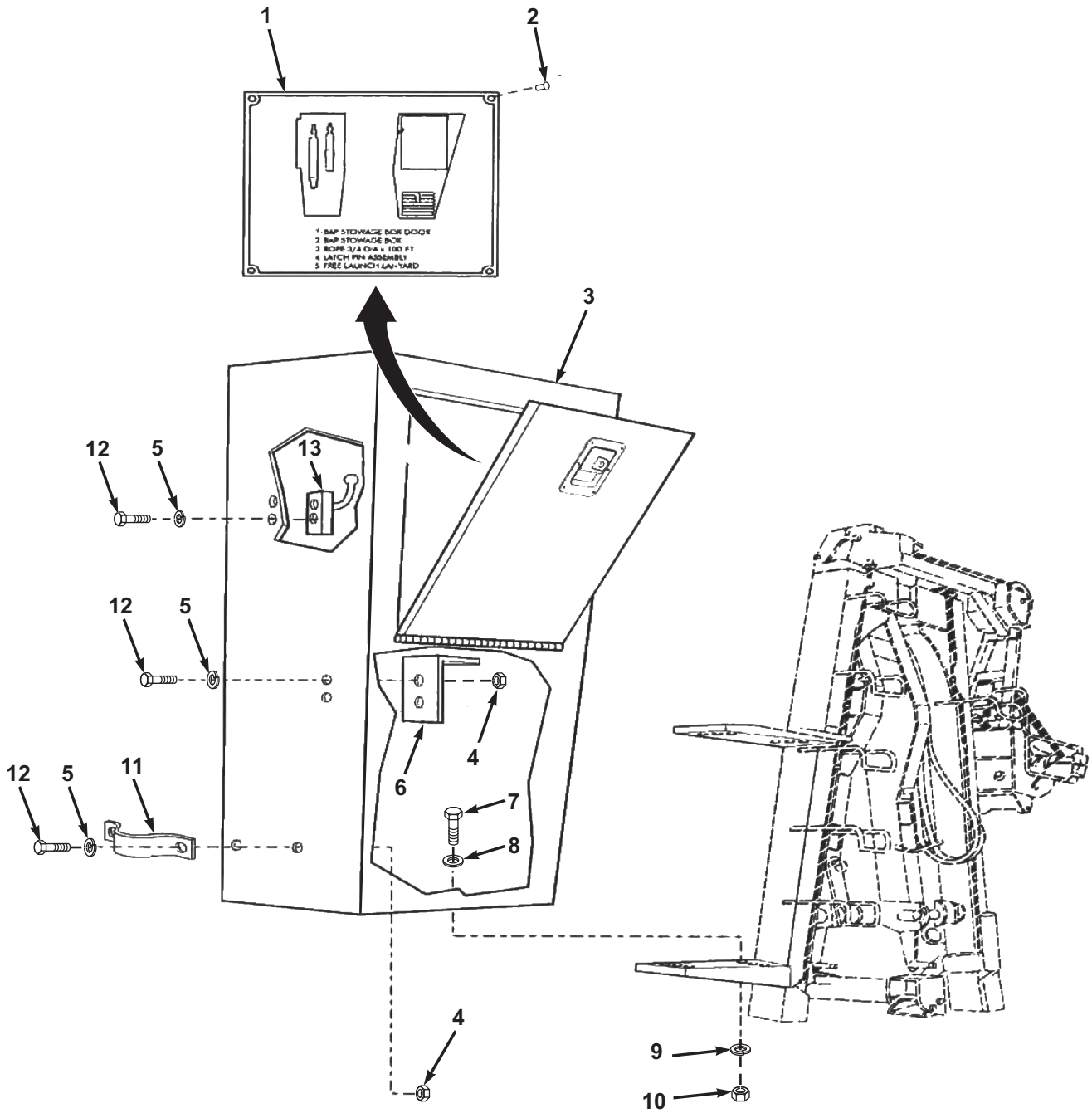


Figure 2. TOOL BOX ASSEMBLY

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1000 BAP ASSEMBLY	
					FIG. 2. TOOL BOX ASSEMBLY	
1	PBFZZ	7690-01-456-5113	3AR59	BBD15029	LABEL BAP STOWAGE BOX	1
2	PAFZZ	5320-00-584-9078	80205	MS20470A4-4	RIVET,SOLID 1/8X1 1/4	4
3	PAFFF	2540-01-453-8763	3AR59	A4810260	BOX,ACCESSORIES STOWAGE	1
4	PAFZZ	5310-00-984-3806	81349	M45913/1-5CG5C	NUT,SELF-LOCKING HEXAGON,5/16-18	4
5	PAFZZ	5310-00-407-9566	80205	MS35338-45	WASHER,LOCK 5/16	8
6	PAFZZ	5340-01-454-7284	3AR59	A4810263	BRACKET,MOUNTING	1
7	PAFZZ	5305-00-068-0510	80204	B1821BH038C100N	SCREW,CAP,HEXAGON HEAD, 3/8-16X1	12
8	PAFZZ	5310-00-080-6004	96906	MS27183-14	WASHER,FLAT 3/8	12
9	PAFZZ	5310-00-637-9541	08999	R10-5.50-3	WASHER,LOCK 3/8	12
10	PAFZZ	5310-00-732-0558	96906	MS51967-8	NUT,PLAIN,HEXAGON 3/8-16	12
11	PAFZZ	5340-01-454-7287	3AR59	A4810151	BRACKET,MOUNTING T WRENCH	1
12	PAFZZ	5306-00-226-4825	80204	B1821BH031C075N	BOLT,MACHINE 5/16-18X3/4	8
13	PAFZZ	5340-01-454-7285	3AR59	A4810480	HOOK,SUPPORT	2
					END OF FIGURE	

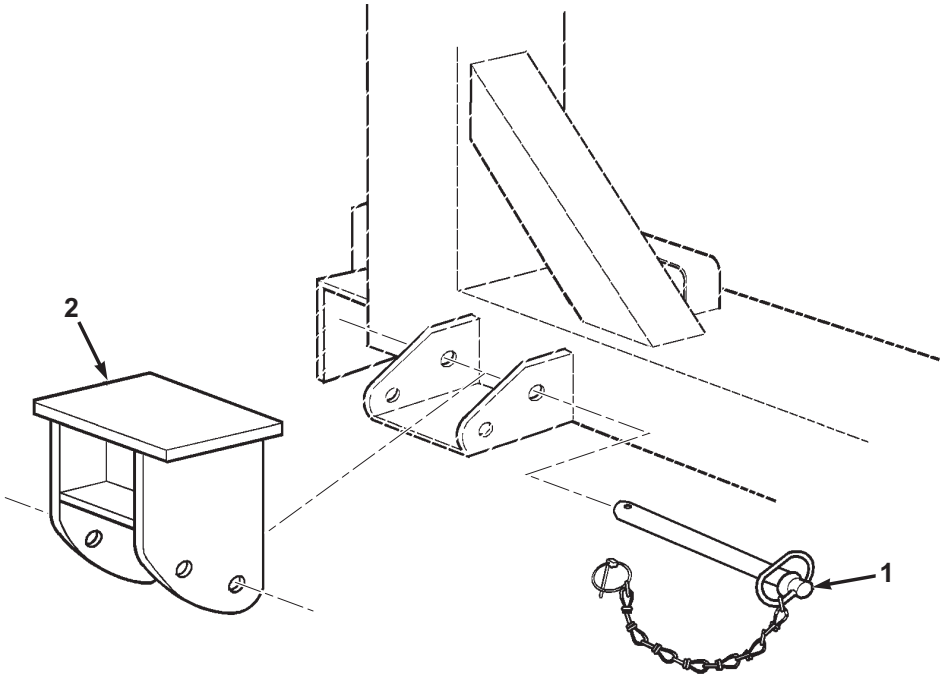


Figure 3. PLS FOOT

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1000 BAP ASSEMBLY	
					FIG. 3. PLS FOOT	
1	PAFZZ	5315-01-457-2385	39428	98497A661	PIN,QUICK RELEASE 1/2X5 3/4	4
2	PAFZZ	8145-01-457-1170	3AR59	BBD15009	SUPPORT,SHIPPING	2
					END OF FIGURE	

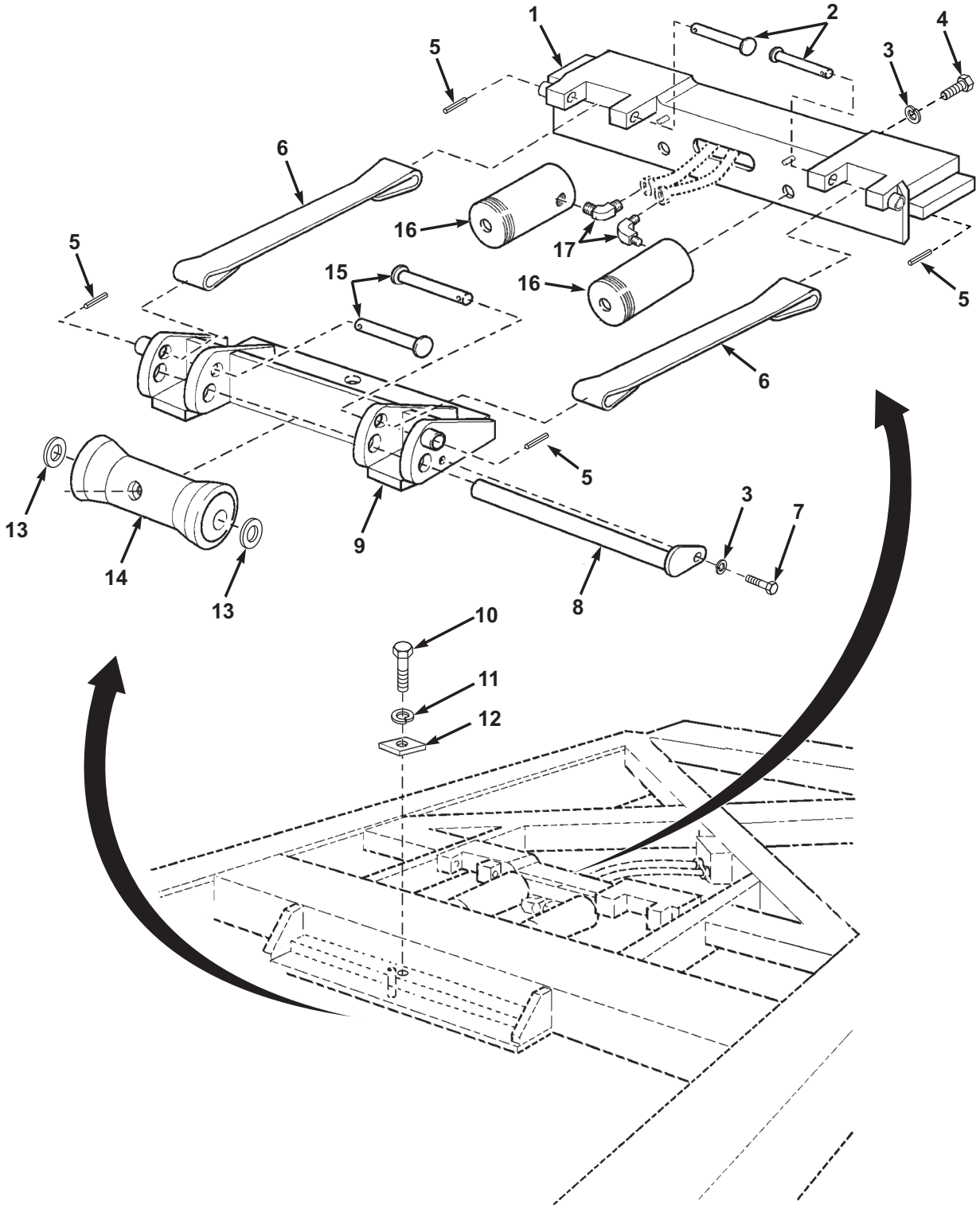


Figure 4. CENTER ROLLERS

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1000 BAP ASSEMBLY	
					FIG. 4. CENTER ROLLERS	
1	PAFZZ	3040-01-453-8773	3AR59	A6210730	SUPPORT,CYLINDER REAR	1
2	PAFZZ	5315-01-454-8256	3AR59	A6210757	PIN,STRAIGHT HEADLESS,FRONT	2
3	PAFZZ	5310-00-637-9541	08999	R10-5.50-3	WASHER,LOCK 3/8	3
4	PAFZZ	5305-00-068-0510	80204	B1821BH038C100N	SCREW,CAP,HEXAGON HEAD,3/8X1	2
5	PAFZZ	5315-00-058-9782	80205	MS16562-236	PIN,SPRING 3/16X3/4	4
6	PAFZZ	5340-01-459-1294	3AR59	A6210755	STRAP,RETAINING	2
7	PAFZZ	5305-01-140-9118	80204	B1821BH038C088N	SCREW,CAP,HEXAGON HEAD, 3/8-16X7/8	1
8	PAFZZ	5315-01-454-2268	3AR59	A6210740	PIN,STRAIGHT,HEADED	1
9	PAFZZ	3040-01-453-8771	3AR59	A6210750	SUPPORT,CYLINDER	1
10	PAFZZ	5305-00-068-0508	80204	B1821BH025C075N	SCREW,CAP,HEXAGON HEAD,1/4X3/4	1
11	PAFZZ	5310-00-582-5965	80205	MS35338-44	WASHER,LOCK 1/4	1
12	PAFZZ	5340-01-457-6136	3AR59	BBD15020	RETAINER,NUT AND BOLT	1
13	PAFZZ	5310-01-454-3840	3AR59	A6210758	WASHER,FLAT	2
14	PAFZZ	5340-01-457-7628	3AR59	A6210760	WHEEL,SOLID METALLIC	1
15	PAFZZ	5315-01-454-8224	3AR59	BBD15014	PIN,STRAIGHT HEADLESS,REAR	2
16	PAFZZ	2590-01-453-7423	3AR59	BBD17366	CYLINDER,HYDRAULIC 2.00 BORE X 2.12 STROKE	2
17	PAFZZ	4730-00-812-7999	96906	MS51504A6	ELBOW,PIPE TO TUBE 90 DEGREE, 3/8 NPT X 1/4 TUBE, 37 DEG.	2
					END OF FIGURE	

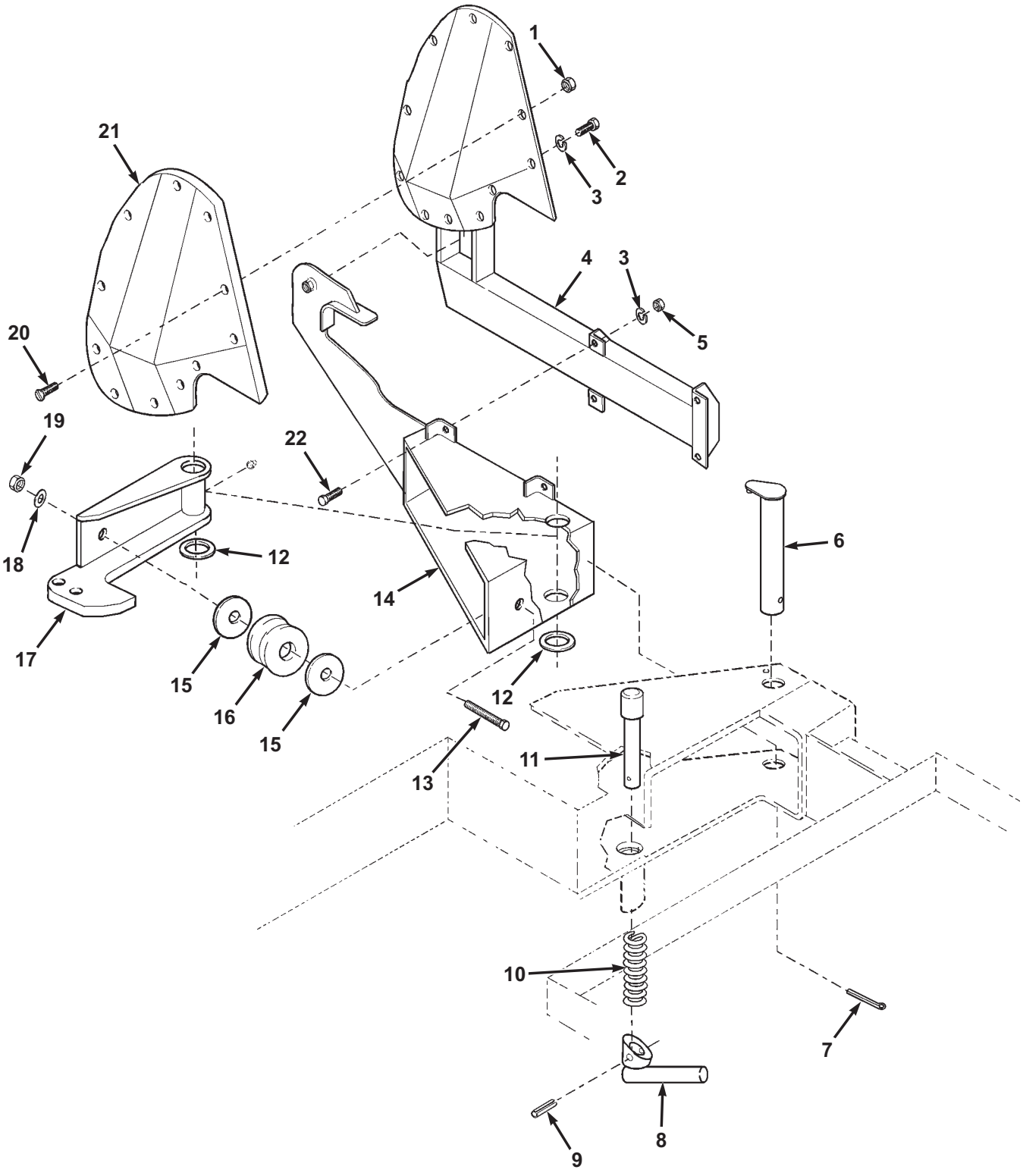


Figure 5. REAR GUIDE

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1000 BAP ASSEMBLY	
					FIG. 5. REAR GUIDE	
1	PAFZZ	5310-00-984-3806	81349	M45913/1-5CG5C	NUT,SELF-LOCKING HEXAGON, 5/16-18	22
2	PAFZZ	5305-01-325-8387	80205	MS90725-64	SCREW,CAP,HEXAGON HEAD,3/8-16X1 1/2	2
3	PAFZZ	5310-00-637-9541	08999	R10-5.50-3	WASHER,LOCK 3/8	10
4	PAFZZ	5340-01-453-2532	3AR59	A6210340	PLATE,MOUNTING RIGHT SIDE, REAR GUIDE	1
4	PAFZZ	5310-04-455-1836	3AR59	A6210350	PLATE,MOUNTING LEFT SIDE, REAR GUIDE	1
5	PAFZZ	5310-00-732-0558	96906	MS51967-8	NUT,PLAIN,HEXAGON 3/8-16	8
6	PAFZZ	5315-01-455-4898	3AR59	A6210650	PIN,SHOULDER,HEADED REAR GUIDE, PIVOT	2
7	PAFZZ	5315-00-209-7273	80205	MS24665-625	PIN,COTTER 1/4X2	2
8	PAFZZ	5315-01-454-6752	3AR59	A6210710	PIN,STRAIGHT HEADLESS,REAR GUIDE, HANDLE LATCH	2
9	PAFZZ	5315-00-200-3183	80205	MS16562-240	PIN,SPRING 3/16X1 1/2	2
10	PAFZZ	5360-01-455-7581	92830	C0975-105-2500M	SPRING,HELICAL COMPRESSION	2
11	PAFZZ	5315-01-454-6761	3AR59	BBD15019	PIN,STRAIGHT,HEADED REAR GUIDE, LATCH	2
12	PAFZZ	5310-01-454-3837	3AR59	A6210671	WASHER,FLAT REAR GUIDE	4
13	PAFZZ	5305-00-071-2084	80204	B1821BH050C550N	SCREW,CAP,HEXAGON HEAD,1/2-13X5 1/2	2
14	PAFZZ	5340-01-455-2093	3AR59	A6210190	BRACKET,MOUNTING LEFT SIDE,REAR GUIDE	1
14	PAFZZ	5340-01-455-2095	3AR59	A6210410	BRACKET,MOUNTING RIGHTSIDE,REAR GUIDE	1
15	PAFZZ	5310-01-461-4474	3AR59	BBD14079	WASHER,FLAT RUBBER SPRING, SPACER	4
16	PAFZZ	5340-01-454-7279	3AR59	BBD810046	BUMPER,NONMETALLIC DIA 75MM X 90MM LG	2
17	PAFZZ	5340-01-455-2090	3AR59	A6210660	BRACKET,MOUNTING LEFT SIDE,REAR GUIDE,REACTION	1
17	PAFZZ	5340-01-455-2092	3AR59	A6210670	BRACKET,MOUNTING RIGHT SIDE,REAR GUIDE,REACTION	1
18	PAFZZ	5310-00-809-5997	96906	MS27183-17	WASHER,FLAT 1/2	2
19	PAFZZ	5310-00-225-6993	81349	M45913/1-8CG5C	NUT,SELF-LOCKING HEXAGON,1/2-13	2
20	PAFZZ	5305-01-455-5055	39428	92196A585	SCREW,CAP,SOCKET HEAD,5/16-18X1 1/4	22
21	PAFZZ	2590-01-453-9122	3AR59	A6210721-2	PAD,CUSHIONING RIGHT SIDE,REAR GUIDE	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
21	PAFZZ	2590-01-453-9248	3AR59	A6210721-1	PAD,CUSHIONING LEFT SIDE,REAR GUIDE	1
22	PAFZZ	5305-00-543-2419	80204	B1821BH038C113N	SCREW,CAP,HEXAGON HEAD,3/8-16X1 1/4	8

END OF FIGURE

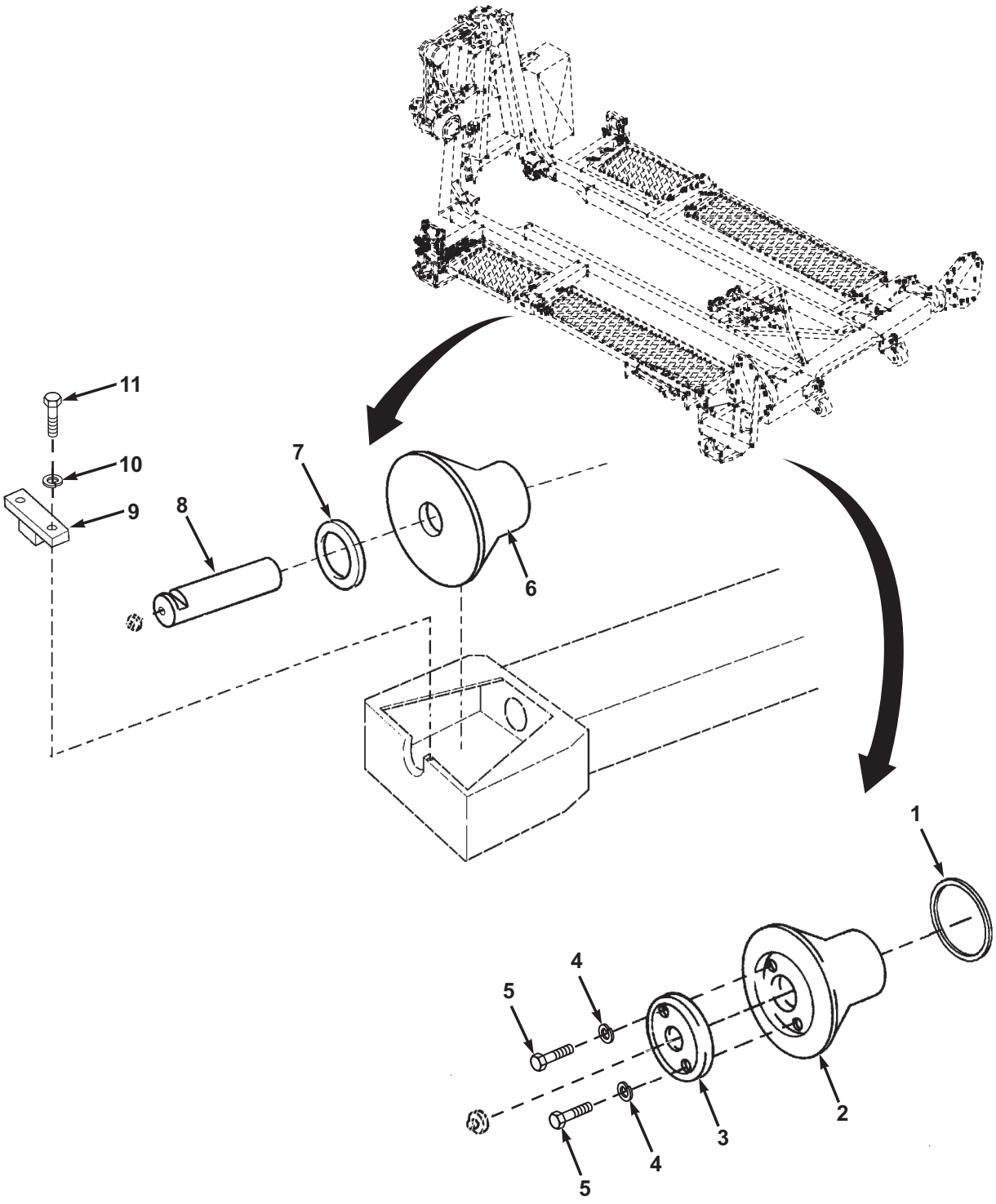


Figure 6. FRONT AND REAR ROLLER ASSEMBLIES

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1000 BAP ASSEMBLY	
					FIG. 6. FRONT AND REAR ROLLER ASSEMBLIES	
1	PAFZZ	5365-01-454-9552	3AR59	A4810075	SHIM	2
2	PAFZZ	3990-01-453-9712	3AR59	A4810110	ROLLER,MATERIAL REAR	2
3	PAFZZ	3040-01-453-8714	3AR59	A4810074	PLATE,RETAINING SHAFT	2
4	PAFZZ	5310-00-820-6653	80205	MS35338-50	WASHER,LOCK 5/8	4
5	PAFZZ	5306-00-087-3762	96906	MS16208-137	BOLT,MACHINE 5/8X1 1/4	4
6	PAFZZ	3910-01-460-3891	3AR59	A4810080	ROLLER ASSEMBLY FRONT BAY/ BOAT	2
7	PAFZZ	5365-01-454-9554	3AR59	A4810056	SHIM	2
8	PAFZZ	3040-01-453-8753	3AR59	A4810055	SHAFT,STRAIGHT	2
9	PAFZZ	3110-01-454-3228	3AR59	A6210643	CAP,SHAFT,FRONT BAY	2
10	PAFZZ	5310-00-582-5965	80205	MS35338-44	WASHER,LOCK 1/4	4
11	PAFZZ	5305-00-068-0508	80204	B1821BH025C075N	SCREW,CAP,HEXAGON HEAD, 1/4-20X3/4	4
					END OF FIGURE	

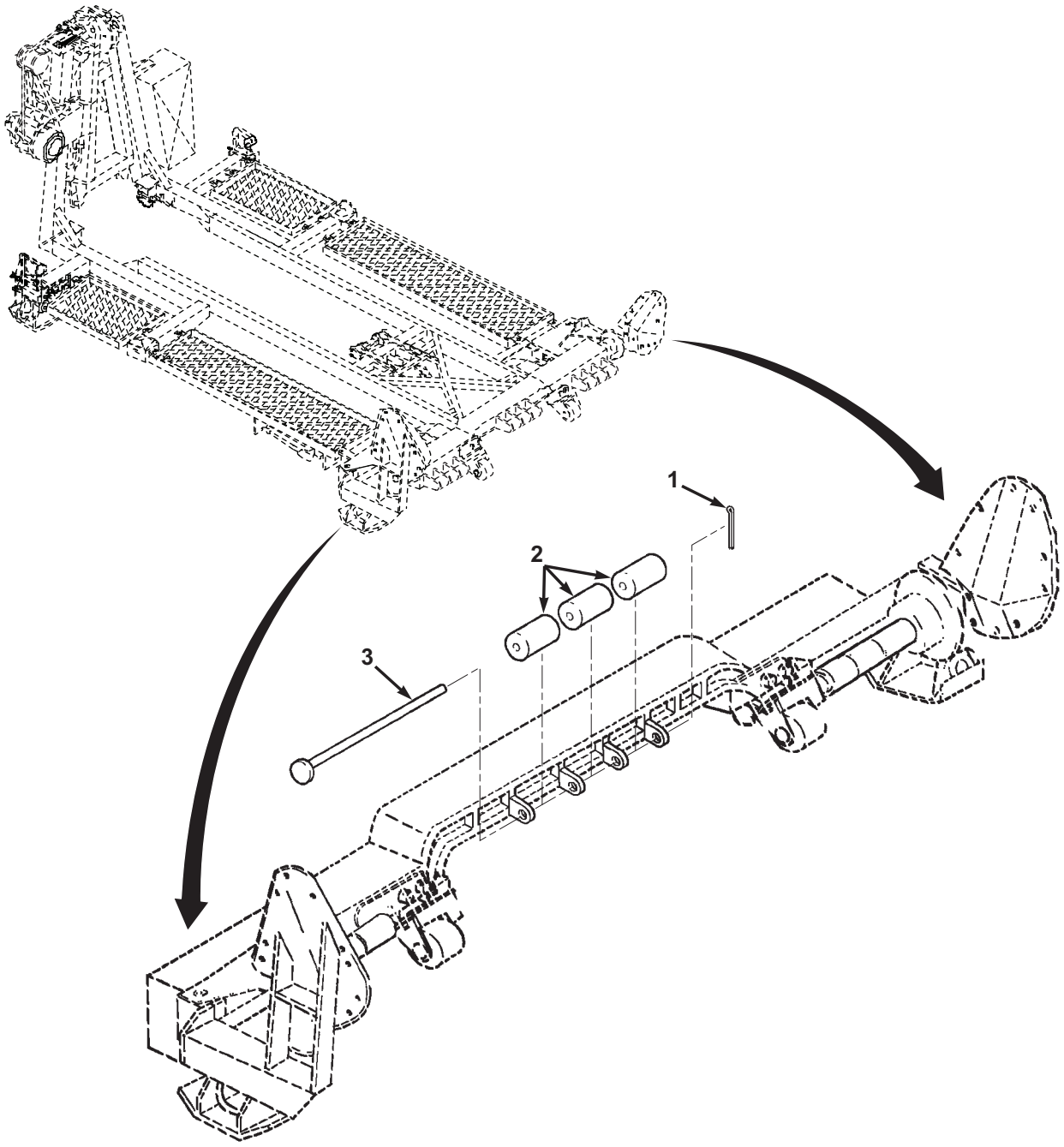


Figure 7. REAR BUMPER ASSEMBLY (OLDER MODELS ONLY)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1000 BAP ASSEMBLY	
					FIG. 7. REAR BUMPER ASSEMBLY (OLDER MODELS ONLY)	
1	PAFZZ	5315-00-576-0421	80205	MS24665-511	PIN,COTTER 3/16X1 1/4	3
2	PAFZZ	5340-01-457-8615	3AR59	A6210693	WHEEL,SOLID NONMETALLIC,HIGH BANK ROLLER	9
3	PAFZZ	5315-01-454-6758	3AR59	A6210700	PIN,STRAIGHT,HEADED REAR BUMPER	3
					END OF FIGURE	

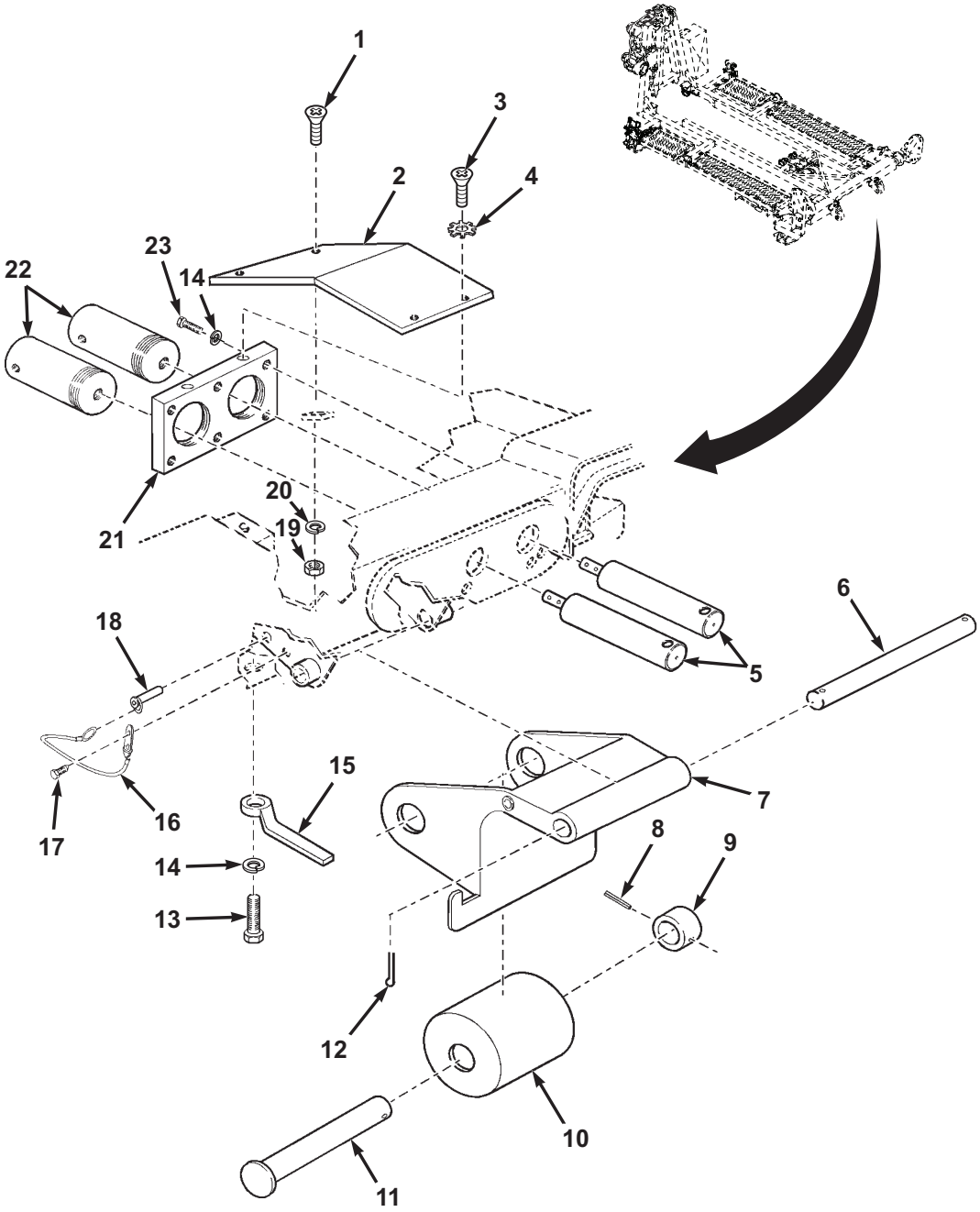


Figure 8. GUARD PLATE AND TRANSLOAD ROLLER

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1000 BAP ASSEMBLY	
					FIG. 8. GUARD PLATE AND TRANSLOAD ROLLER	
1	PAFZZ	5305-00-990-1347	80205	MS35190-292	SCREW,MACHINE 1/4-20X1 1/4	2
2	XDFZZ		3AR59	BBD15027-2	PLATE,MENDING GUARD RAMP RIGHT SIDE	1
2	PAFZZ	5340-01-453-2520	3AR59	BBD15027-1	PLATE,MENDING LEFT SIDE	1
3	PAFZZ	5305-00-206-3689	80205	MS35198-70	SCREW,MACHINE 1/4-20X5/8	4
4	PAFZZ	5310-00-261-7163	96906	MS35336-29	WASHER,LOCK EXTERNAL TOOTH,1/4	4
5	PAFZZ	3040-01-453-8796	3AR59	A6210680	EXTENSION SHAFT CYLINDER	4
6	PAFZZ	5315-01-454-2514	3AR59	A6210371	PIN,STRAIGHT HEADLESS	2
7	PAFZZ	5340-01-453-2533	3AR59	A6210370	BRACKET,MOUNTING RIGHT SIDE,TRANSLOADER	1
7	PAFZZ	5340-01-453-2544	3AR59	A6210360	BRACKET,MOUNTING LEFT SIDE,TRANSLOADER	1
8	PAFZZ	5315-01-140-4870	96906	MS51987-422	PIN,SPRING 3/16X2	2
9	PAFZZ	3040-01-453-8635	3AR59	A6210603	COLLAR,SHAFT TRANSLOADER	2
10	XDFZZ		3AR59	A6210600	WHEEL,SOLID NONMETALLIC,ROLLER	2
11	PAFZZ	3040-01-372-8553	3AR59	A6210500	SHAFT,SHOULDERED	2
12	PAFZZ	5315-00-239-8032	80205	MS24665-513	PIN,COTTER 3/16X1 1/2	2
13	PAFZZ	5305-00-068-0510	80204	B1821BH038C100N	SCREW,CAP,HEXAGON HEAD, 3/8-16X1	2
14	PAFZZ	5310-00-637-9541	08999	R10-5.50-3	WASHER,LOCK 3/8	14
15	PAFZZ	5340-01-453-2554	3AR59	A6210372	LEVER,LOCK-RELEASE	2
16	PAFZZ	4010-01-561-2608	2V507	90312A310	WIRE ROPE ASSEMBLY	2
17	PAFZZ	5305-00-014-5454	21450	145454	SCREW,TAPPING #10-24X3/8	2
18	PAFZZ	5315-00-904-1673	80205	MS17984C415	PIN,QUICK RELEASE	2
19	PAFZZ	5310-00-761-6882	96906	MS51967-2	NUT,PLAIN,HEXAGON 1/4-20	2
20	PAFZZ	5310-00-582-5965	80205	MS35338-44	WASHER,LOCK 1/4	2
21	PAFZZ	5340-01-453-2542	3AR59	A6210683	BRACKET,MOUNTING	2
22	PAFZZ	2590-01-453-7423	3AR59	BBD17366	CYLINDER,HYDRAULIC 2.00 BORE X 2.12 STROKE	4
23	PAFZZ	5305-01-325-8387	80205	MS90725-64	SCREW,CAP,HEXAGON HEAD,3/8-16X1 1/2	12
					END OF FIGURE	

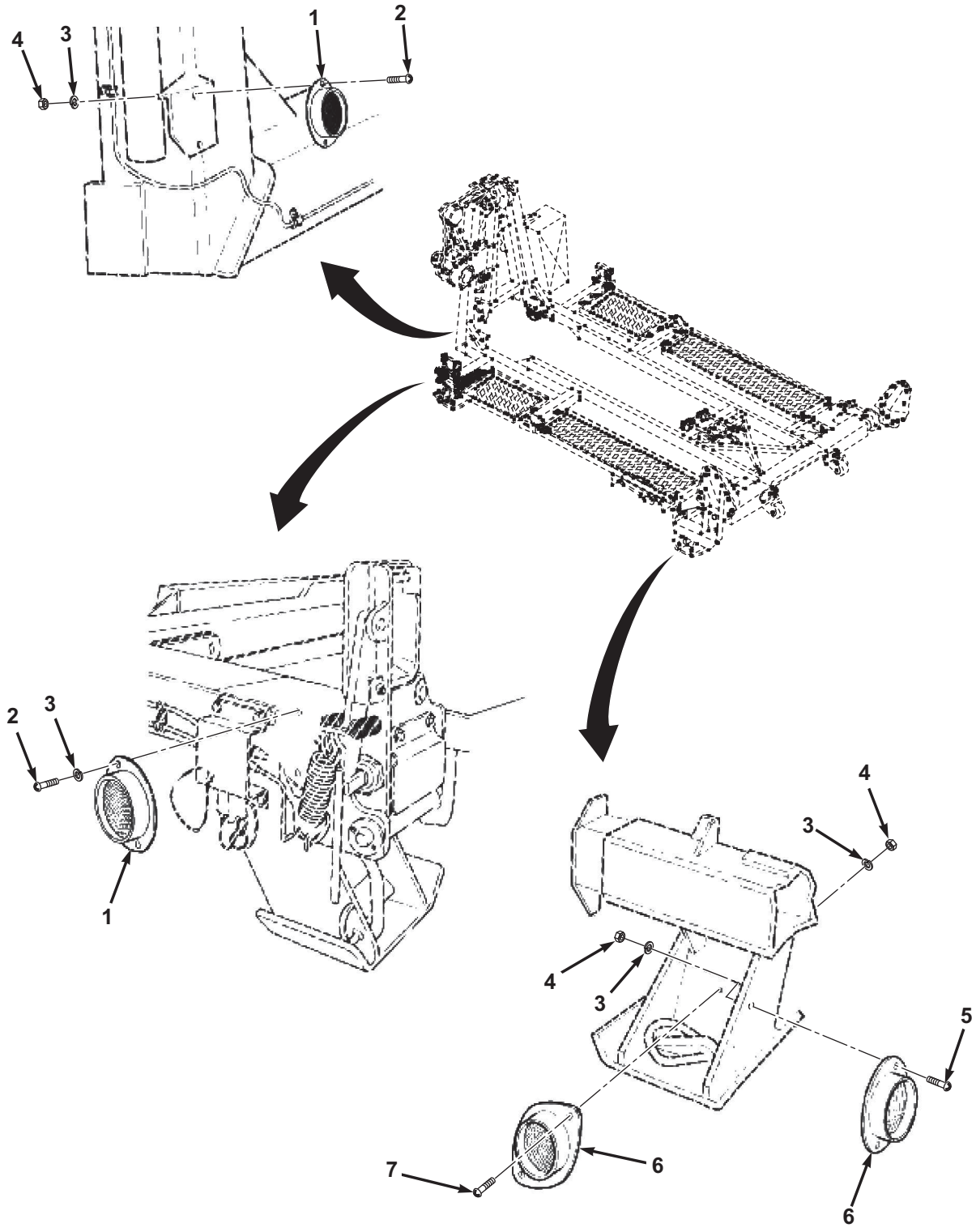


Figure 9. REFLECTORS

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1000 BAP ASSEMBLY	
					FIG. 9. REFLECTORS	
1	PAFZZ	9905-00-917-7167	81834	40153-3	REFLECTOR INDICATING,CLEARANCE,AMBER	4
2	PAFZZ	5305-00-984-6210	80205	MS35206-263	SCREW,MACHINE #10-24X1/2	8
3	PAFZZ	5310-00-045-3296	80205	MS35338-43	WASHER,LOCK #10	16
4	PAFZZ	5310-00-934-9764	80205	MS35649-205B	NUT,PLAIN,HEXAGON #10-24	16
5	PAFZZ	5305-00-984-6214	80205	MS35206-267	SCREW,MACHINE #10-24X1	4
6	PAFZZ	9905-00-917-7168	81834	40152-3	REFLECTOR,INDICATIN RED	4
7	PAFZZ	5305-00-984-6212	80205	MS35206-265	SCREW,MACHINE #10-24X3/4	4
					END OF FIGURE	

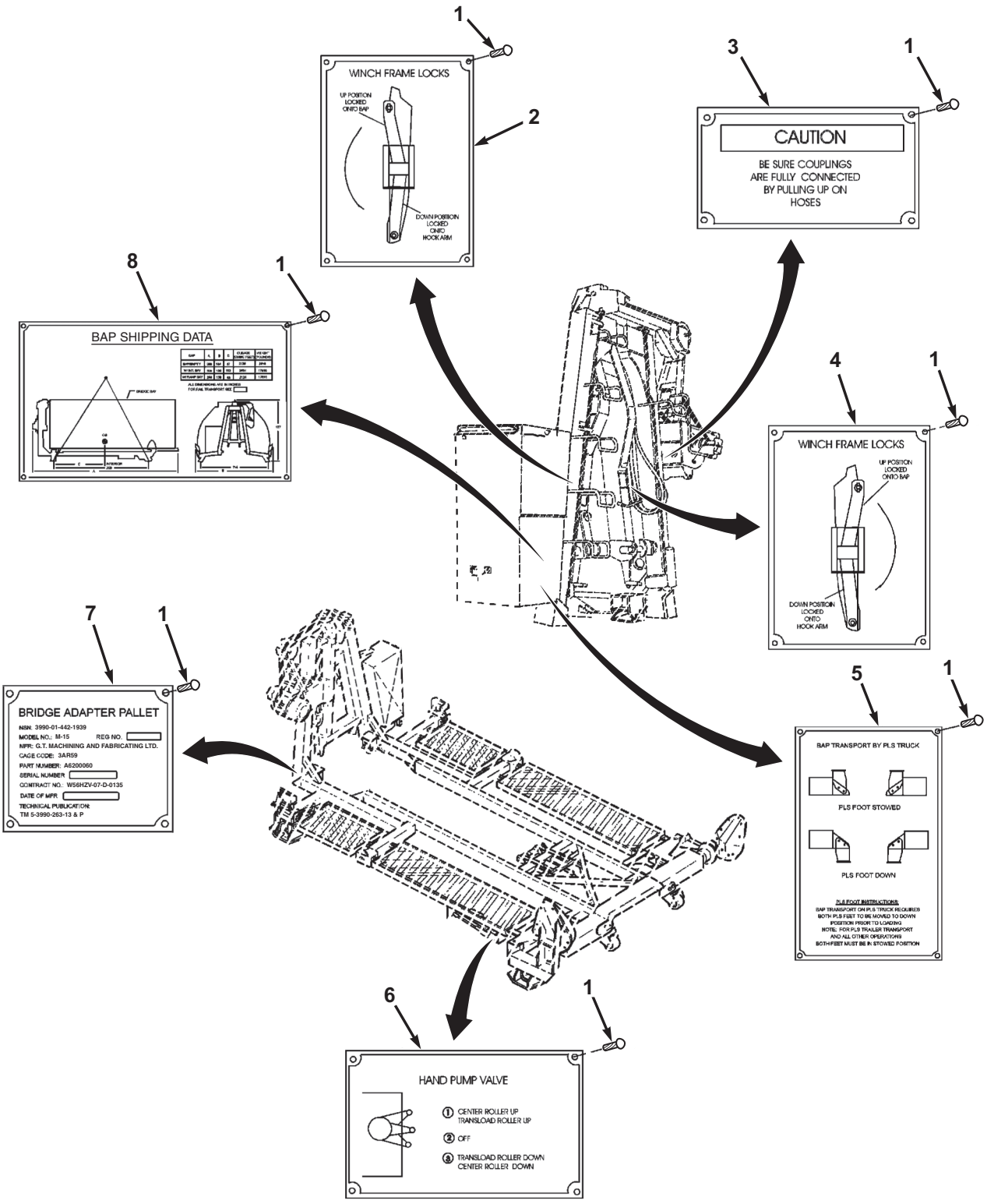


Figure 10. BAP LABELS

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1000 BAP ASSEMBLY	
					FIG. 10. BAP LABELS	
1	PAFZZ	5305-00-253-5614	80205	MS21318-20	SCREW,DRIVE #4-7X3/16	28
2	PAFZZ	9905-01-456-5361	3AR59	BBD15030	PLATE,INSTRUCTION WINCH FRAME LOCKS	1
3	PAFZZ	9905-01-456-4287	3AR59	BBD15028	PLATE,INSTRUCTION CAUTION	1
4	PAFZZ	9905-01-456-3829	3AR59	BBD15031	PLATE,INSTRUCTION WINCH FRAME LOCKS	1
5	PAFZZ	9905-01-457-8348	3AR59	BBD15033	PLATE,INSTRUCTION PLS FOOT USE	1
6	PAFZZ	9905-01-456-4282	3AR59	BBD15034	PLATE,INSTRUCTION HAND PUMP VALVE	1
7	PAFZZ	9905-01-457-8347	3AR59	BBD15032	PLATE,IDENTIFICATIO BAP	1
8	PAFZZ	9905-01-457-8351	3AR59	BBD15035	PLATE,INSTRUCTION SHIPPING DATA	1
					END OF FIGURE	

1 — 2 THROUGH 33

29 — 30 AND 31

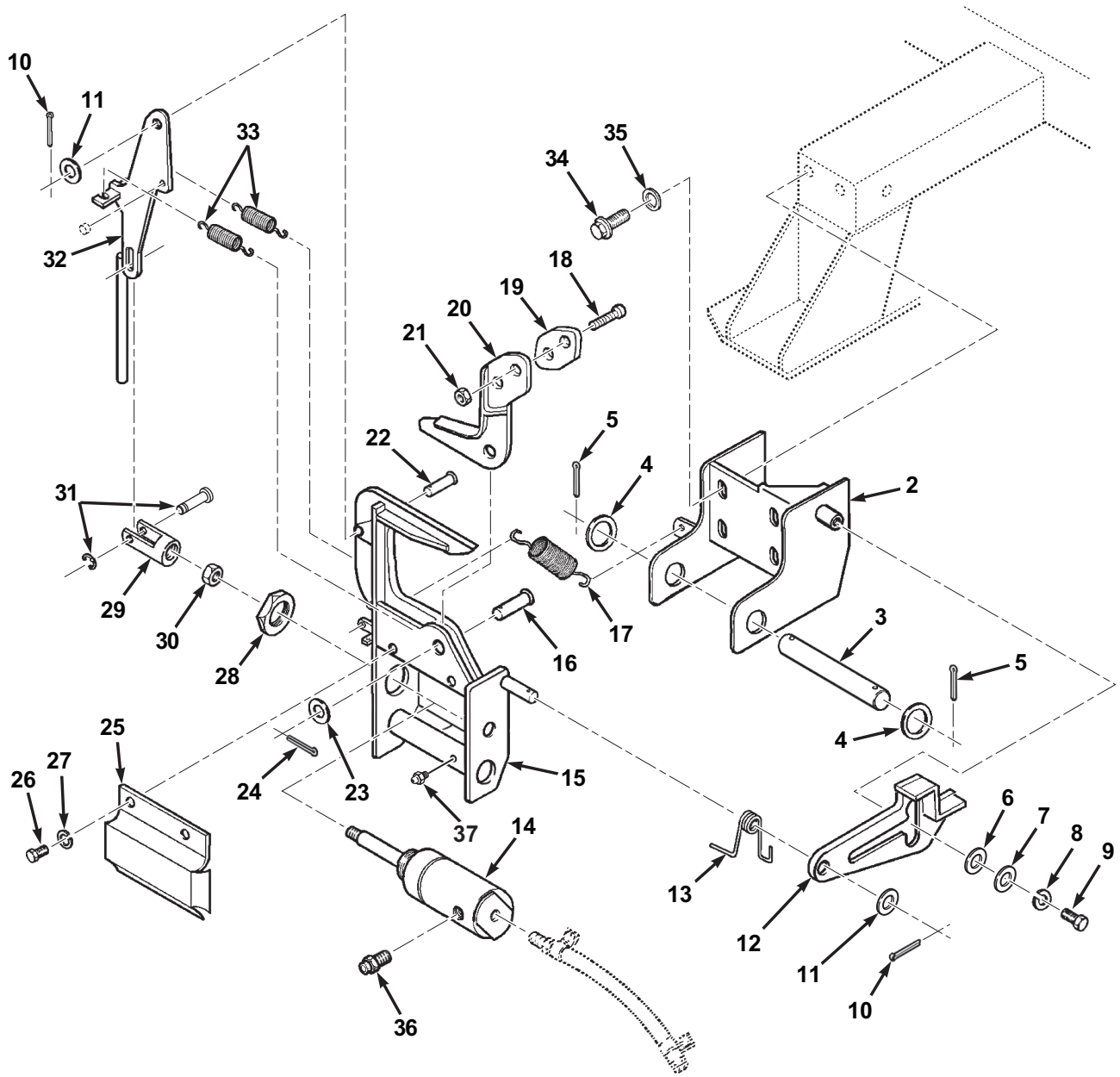


Figure 11. FRONT TRUNNION

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1100 FRONT PIN LOCK ASSEMBLY	
					FIG. 11. FRONT TRUNNION	
1	PBFZZ	2540-20-000-7371	3AR59	A6210060	LOCK,PNEUMATIC LEFT HAND	1
1	PBFZZ	2510-01-454-7251	3AR59	A6210400	LOCK,PNEUMATIC RIGHT HAND	1
2	XDFZZ		3AR59	A6210080	. BRACKET,FRONT,PIN LEFT HAND	1
2	XDFZZ		3AR59	A6210100	. BRACKET,FRONT,PIN RIGHT HAND	1
3	PAFZZ	5315-01-454-4326	3AR59	A6210061	. PIN,STRAIGHT HEADLESS	1
4	PAFZZ	5310-00-809-8541	96906	MS27183-27	. WASHER,FLAT 1 1/16	2
5	PAFZZ	5315-00-241-7332	76005	RS40-7	. PIN,COTTER 1/4X1 1/2	2
6	PAFZZ	5310-00-619-4848	15090	99-51505-017	. WASHER,FLAT 1/4X1 1/2	1
7	PAFZZ	5310-01-364-4211	39428	98026A033	. WASHER,FLAT 9/16X1 3/8	1
8	PAFZZ	5310-00-582-5965	80205	MS35338-44	. WASHER,LOCK 1/4	1
9	PAFZZ	5305-00-068-0500	59556	015587T	. SCREW,CAP,HEXAGON HEAD, 1/4X1/2	1
10	PAFZZ	5315-00-059-0206	80205	MS24665-491	. PIN,COTTER #10X1	2
11	PAFZZ	5310-00-809-5997	96906	MS27183-17	. WASHER,FLAT 1/2	2
12	XDFZZ		3AR59	A6210110	. LATCH,PIVOT LEFT SIDE,FRONT	1
12	XDFZZ		3AR59	A6210120	LATCH,PIVOT RIGHT SIDE	1
13	PAFZZ	5360-01-454-0425	3AR59	A6210064	. SPRING,HELICAL TORSION,LEFT SIDE,FRONT	1
13	PAFZZ	5360-01-454-0427	3AR59	A6210065	. SPRING,HELICAL TORSION,RIGHT SIDE FRONT	1
14	PAFZZ	2990-01-108-6147	3AR59	BBD5R502D	. CYLINDER,AIR 2.50 BORE X 2.00 STROKE	1
15	PBFZZ	5340-01-453-9094	3AR59	A6210170	. PLATE,MOUNTING LEFT SIDE,GUIDE	1
15	PBFZZ	5340-01-456-5631	3AR59	A6210180	. PLATE,MOUNTING RIGHT SIDE,GUIDE	1
16	PAFZZ	5315-01-454-2368	3AR59	A6210062	. PIN,STRAIGHT,HEADED 1/2	1
17	PAFZZ	5360-01-453-7574	56048	E1750-207-5500M	. SPRING,HELICAL 1 3/4X5 1/2	2
18	PAFZZ	5305-00-052-7485	80205	MS35198-87	. SCREW,MACHINE 5/16-18X1 1/4	2
19	PAFZZ	2590-01-456-5819	3AR59	BBD15015	. PAD,CUSHIONING	1
20	XDFZZ		3AR59	A6210130	. JAW,FRONT PIN,LOCK LEFT HAND	1
20	XDFZZ		3AR59	A6210140	. JAW,FRONT PIN,LOCK RIGHT SIDE	1
21	PAFZZ	5310-00-984-3806	81349	M45913/1-5CG5C	. NUT,SELF-LOCKING HEXAGON, 5/16-18	2
22	PAFZZ	5315-01-454-6001	3AR59	A6210063	. PIN,STRAIGHT,HEADED 3/4	1
23	PAFZZ	5310-00-809-8533	96906	MS27183-23	. WASHER,FLAT 13/16	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
24	PAFZZ	5315-00-845-7787	80205	MS24665-289	. PIN,COTTER	1
25	PAFZZ	5340-01-453-2469	3AR59	A6210066	. GUARD,VALVE ACTUATOR	1
26	PAFZZ	5306-00-226-4822	80204	B1821BH031C050N	. BOLT,MACHINE 5/16-18X1/2	2
27	PAFZZ	5310-00-407-9566	80205	MS35338-45	. WASHER,LOCK 5/16	2
28	PAFZZ	5310-01-461-1608	19541	D-2540	. NUT,PLAIN,HEXAGON 1/2	1
29	PAFZZ	5340-01-133-8831	19541	D231-3	. CLEVIS,ROD END	1
30	PAFZZ	5310-01-458-5052	39428	94895A825	. . NUT,PLAIN,HEXAGON 1/2-20	1
31	PAFZZ	5315-01-457-9220	39428	92735A430	. . PIN,STRAIGHT,HEADED WITH RETAINING RING	1
32	PAFZZ	2510-01-454-0909	3AR59	A6210150	. LATCH,RELEASE LEFT SIDE,FRONT	1
32	PAFZZ	2510-01-453-7303	3AR59	A6210160	. LATCH,RELEASE RIGHT SIDE,FRONT	1
33	PAFZZ	5360-01-453-8119	56048	E0850-085-2750M	. SPRING,HELICAL	2
34	PAFZZ	5305-01-456-9393	39428	92316A716	SCREW,CAP,HEXAGON HEAD,1/2-13X1 1/2	8
35	PAFZZ	5310-00-809-5997	96906	MS27183-17	WASHER,FLAT 1/2	8
36	PAFZZ	2805-01-244-0125	39428	9833K22	BREATHER	2
37	XDFZZ		3AR59	0411-005	FITTING,GREASE	1

END OF FIGURE

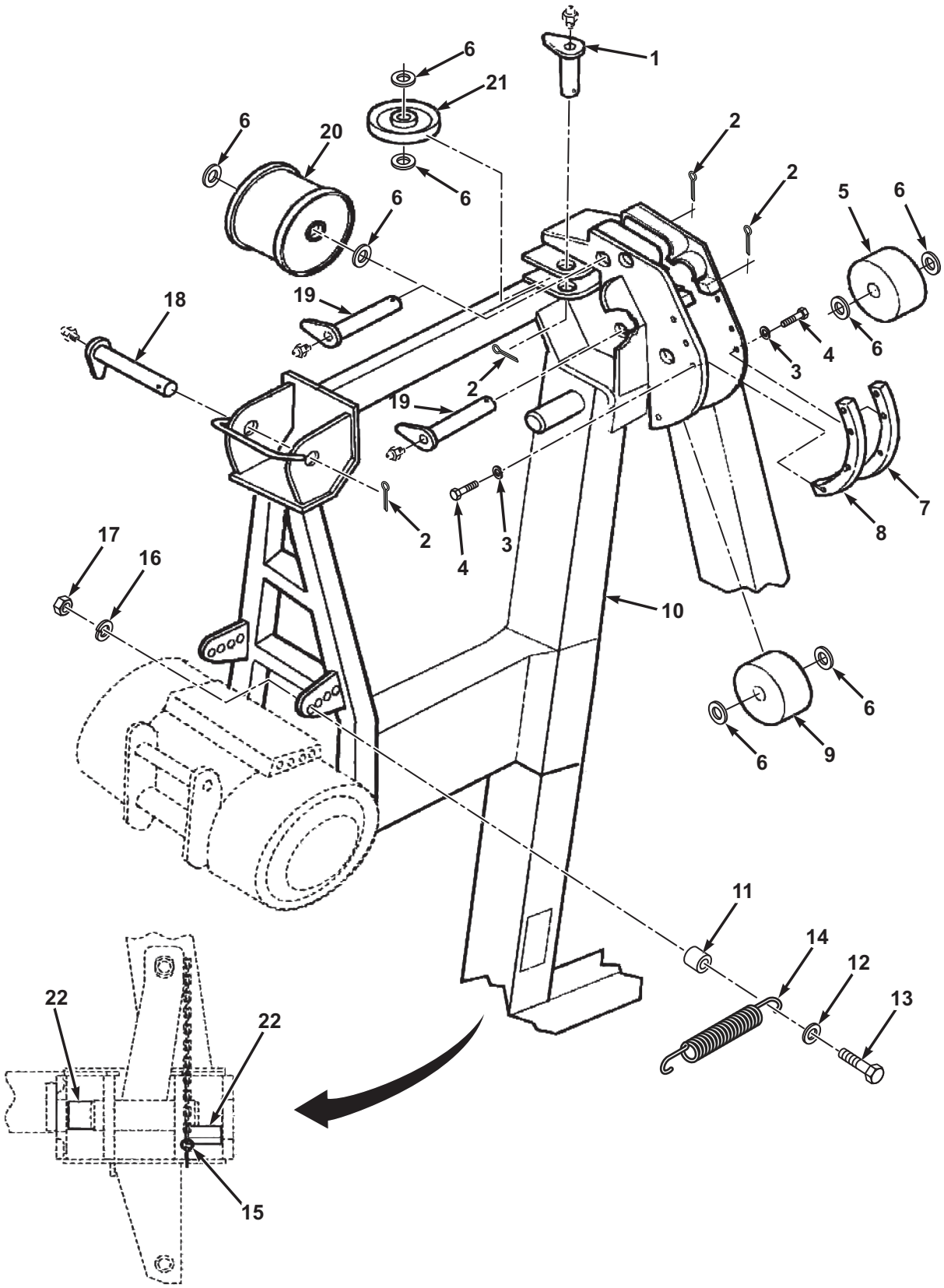


Figure 12. SHEAVE ASSEMBLY

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1200 WINCH FRAME ASSEMBLY	
					FIG. 12. SHEAVE ASSEMBLY	
1	PAFZZ	5315-01-454-0517	3AR59	A4809270	PIN,STRAIGHT,HEADED	1
2	PAFZZ	5315-00-209-7273	80205	MS24665-625	PIN,COTTER 1/4X2	4
3	PAFZZ	5310-00-209-0965	80205	MS35338-47	WASHER,LOCK 7/16	8
4	PAFZZ	5305-00-709-8539	05047	B1821BH044F150N	SCREW,CAP,HEXAGON HEAD,7/16-14X1 1/2	8
5	PAFZZ	3020-01-454-0321	3AR59	A4809300	PULLEY,FLAT ROLLER ASSEMBLY	1
6	PAFZZ	5365-01-453-6479	3AR59	A4809165	SPACER,SPECIAL SHAPED	8
7	PAFZZ	3950-01-453-5422	3AR59	A4809088	WEAR PLATE,CRANE LEFT HAND	1
8	PAFZZ	3950-01-453-5524	3AR59	A4809089	WEAR PLATE,CRANE RIGHT HAND	1
9	PAFZZ	3020-01-454-0316	3AR59	A4809280	PULLEY,FLAT ROLLER ASSEMBLY	1
10	XDFZZ		3AR59	A6208060	WINCH FRAME W.A.	1
11	PAFZZ	3120-01-453-2303	3AR59	A4809164	BUSHING,SLEEVE	2
12	PAFZZ	5310-00-080-6004	96906	MS27183-14	WASHER,FLAT 3/8	2
13	PAFZZ	5305-00-543-2419	80204	B1821BH038C113N	SCREW,CAP,HEXAGON HEAD,3/8-16X1 1/4	2
14	PAFZZ	5360-01-453-5457	92830	E2000-177-8000M	SPRING,HELICAL EXTENSION	2
15	PAFZZ	5315-01-351-5128	80205	MS17984C516	PIN,QUICK RELEASE 5/16X1.56 IN LG	2
16	PAFZZ	5310-00-637-9541	08999	R10-5.50-3	WASHER,LOCK 3/8	2
17	PAFZZ	5310-00-732-0558	96906	MS51967-8	NUT,PLAIN,HEXAGON 3/8-16	2
18	PAFZZ	5315-01-453-8667	3AR59	A4809260	PIN,STRAIGHT,HEADED ROLLER	1
19	PAFZZ	5315-01-454-5458	3AR59	A4809290	PIN,STRAIGHT,HEADED ROLLER	2
20	PAFZZ	3110-01-480-5406	3AR59	A4809250	ROLLER,ASSEMBLY	1
21	PAFZZ	3020-01-453-8749	3AR59	BBD15023	PULLEY,GROOVE	1
22	PAFZZ	3040-20-003-3567	3AR59	A4809211	BRACKET,EYE	1
					END OF FIGURE	

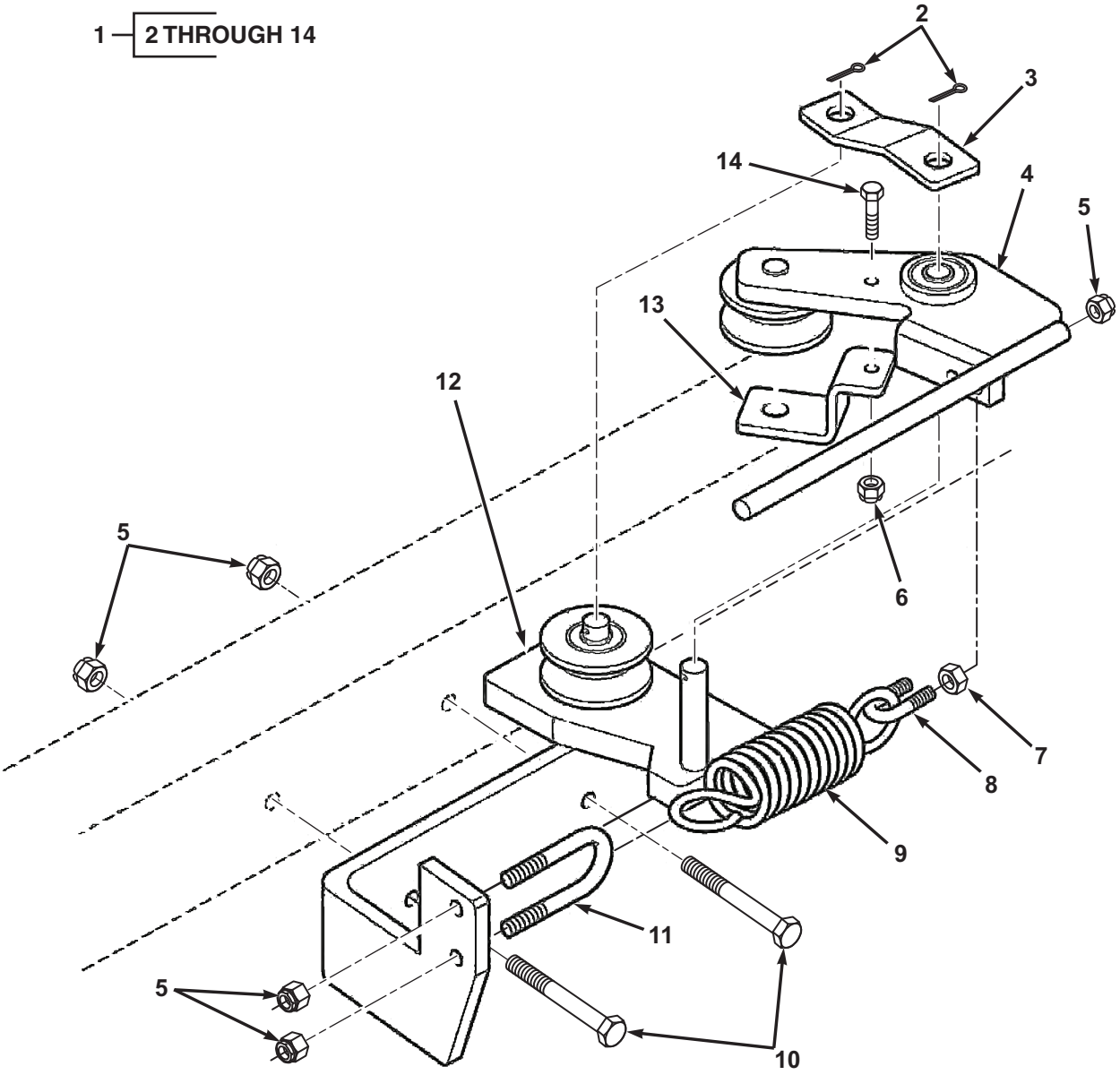


Figure 13. CABLE TENSIONER

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1200 WINCH FRAME ASSEMBLY	
					FIG. 13. CABLE TENSIONER	
1	XDFFF		3AR59	BBD20000-2	TENSIONER,CABLE PULLEY ASSEMBLY	1
2	XDFZZ		3AR59	165-143	. PIN,COTTER	2
3	XDFZZ		3AR59	BBD20003	. BAR,RETAINER	1
4	XDFZZ		3AR59	BBD20014	. HANDLE ASSEMBLY	1
5	XDFZZ		3AR59	111-018	. NUT,NYLOCK 3/8-16	6
6	XDFZZ		3AR59	108-016	. NUT,NYLOCK 5/16-18	1
7	XDFZZ		3AR59	341057	. NUT,HEX JAM 3/8-16	2
8	XDFZZ		3AR59	APEX50-ZP-1/2-601612	. U-BOLT	1
9	XDFZZ		3AR59	BBD01468	. SPRING	1
10	XDFZZ		3AR59	075-504	. BOLT,HEX HEAD 3/8-16X4	2
11	XDFZZ		3AR59	29010024	. U-BOLT	1
12	XDFZZ		3AR59	BBD20013	. BASE ASSEMBLY	1
13	XDFZZ		3AR59	BBD20006	. PLATE,TORSION	1
14	XDFZZ		3AR59	075-444	. BOLT,HEX HEAD 5/16-18X1 1/4	1

END OF FIGURE

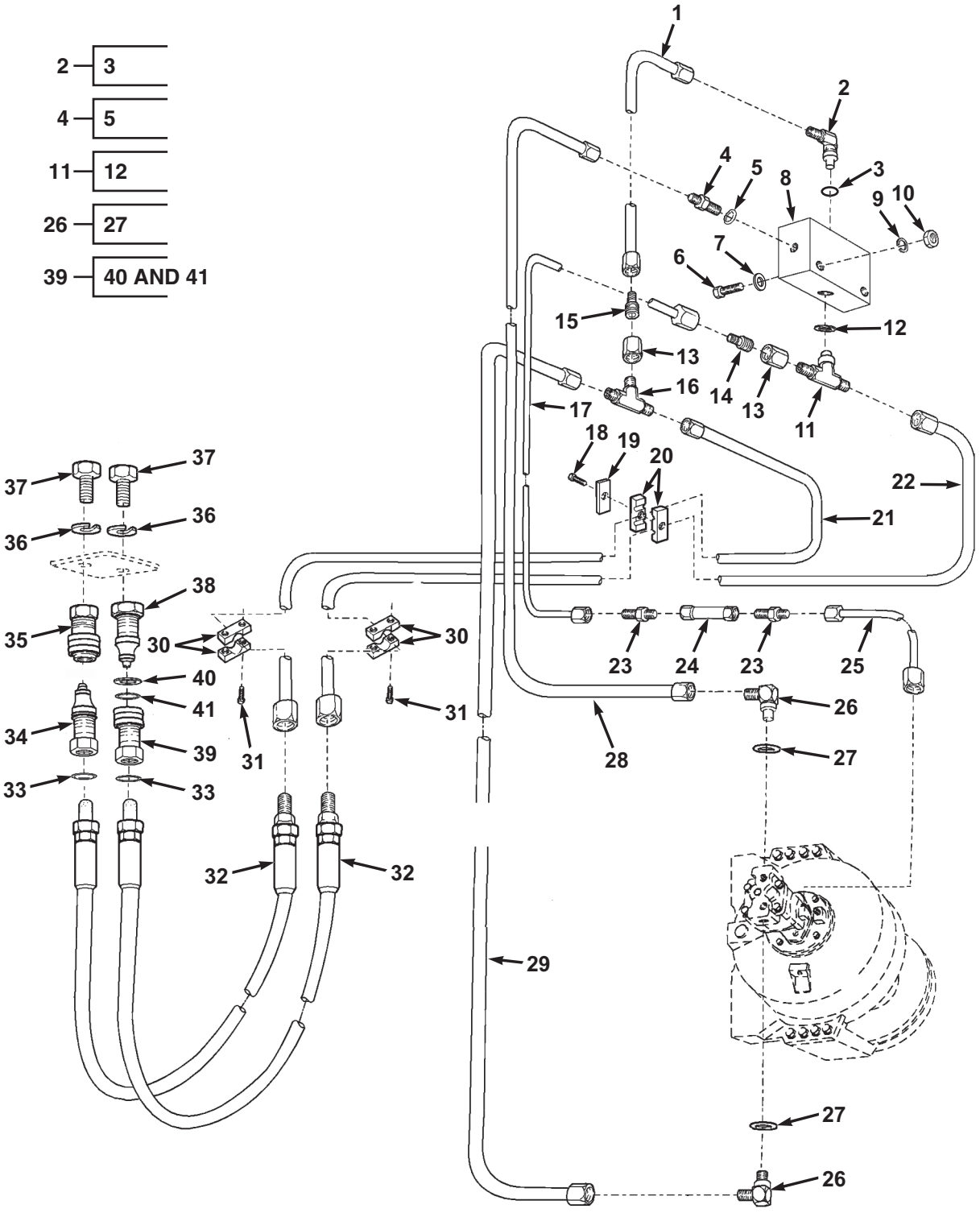


Figure 14. WINCH HYDRAULIC LINES

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1200 WINCH FRAME ASSEMBLY	
					FIG. 14. WINCH HYDRAULIC LINES	
1	PAFZZ	4710-01-453-5648	3AR59	A4806095	TUBE,BENT,METALLIC	1
2	PAFZZ	4730-00-143-3941	96906	MS51527A6	ELBOW,TUBE TO BOSS 3/8	1
3	PAFZZ	5330-01-460-4706	02697	3-906V0894	. PACKING,PREFORMED	1
4	PAFZZ	4730-00-906-0721	30780	10F50XS	ADAPTER,STRAIGHT TUBE TO BOSS,0.625 TUBE	1
5	PAFZZ	5330-00-485-3586	02697	3-910	. PACKING,PREFORMED	1
6	PAFZZ	5306-00-226-4834	80204	B1821BH031C225N	BOLT,MACHINE 5/16-18X2 1/4	2
7	PAFZZ	5310-00-081-4219	96906	MS27183-12	WASHER,FLAT 5/16	2
8	PAFZZ	4820-01-453-6133	54035	CBEA-LAN-BCK	VALVE,REGULATING BLOCK	1
9	PAFZZ	5310-00-407-9566	80205	MS35338-45	WASHER,LOCK 5/16	2
10	PAFZZ	5310-00-931-8167	96906	MS51967-6	NUT,PLAIN,HEXAGON 5/16-18	2
11	PAFZZ	4730-00-421-1363	96906	MS51529A10	TEE,TUBE TO BOSS 5/8 TUBE	1
12	PAFZZ	5330-00-485-3586	02697	3-910	. PACKING,PREFORMED	1
13	PAFZZ	4730-00-897-2043	96906	MS51531B10	NUT,TUBE COUPLING 5/8	2
14	PAFZZ	4730-01-116-1658	30780	0603-10-4	REDUCER BODY,TUBE 5/8X1/4	1
15	PAFZZ	4730-00-999-9830	96906	MS51534B10-6	REDUCER,TUBE 5/8X3/8	1
16	PAFZZ	4730-00-784-2633	96906	MS51510A10	TEE,TUBE 5/8	1
17	PAFZZ	4710-01-457-1284	3AR59	A6206067	TUBE ASSEMBLY,METAL	1
18	PAFZZ	5306-01-453-5940	53790	AS-2-D	BOLT,MACHINE 5/16-18X1 3/8	1
19	XDFZZ		53970	SP3	PLATE,MOUNTING COVER	1
20	PAFZZ	5340-01-375-6141	53790	2160/160 PP	CLAMP,BLOCK	1
21	PAFZZ	4710-01-453-5663	3AR59	A4806091	TUBE,BENT,METALLIC	1
22	PAFZZ	4710-01-457-1080	3AR59	A4806092	TUBE,BENT,METALLIC	1
23	PAFZZ	4730-00-837-7073	1EFH8	1001978	ADAPTER,STRAIGHT 1/4 TUBE TO 1/4 NPT	2
24	PAFZZ	4820-01-038-2313	09990	VCL4P05A	VALVE,CHECK 1/4 NPT	1
25	PAFZZ	4710-01-457-1297	3AR59	A6206066	TUBE ASSEMBLY,METAL	1
26	PAFZZ	4730-01-077-4889	81343	10-12 070220C	ELBOW,TUBE TO BOSS 5/8 TUBE TO 3/4 O-RING	2
27	PAFZZ	5331-01-480-2366	45152	7HB220	. PACKING,PREFORMED	1
28	PAFZZ	4710-20-000-9086	3AR59	A4806094	TUBE ASSEMBLY,METAL	1
29	PAFZZ	4710-01-453-5637	3AR59	A4806093	TUBE,BENT,METALLIC	1
30	PAFZZ	5340-01-216-1165	53790	2160PP	HANGER,PIPE 5/8 TUBE	2

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
31	PAFZZ	5305-00-225-3843	80204	B1821BH025C100N	SCREW,CAP,HEXAGON HEAD, 1/4-20X1	4
32	PAFZZ	4720-01-453-5137	3AR59	A4806096	HOSE ASSEMBLY NONMETALLIC	2
33	PAFZZ	5331-01-344-4335	81343	AS3209016CP	O-RING	2
34	PAFZZ	4730-01-024-1347	01276	5610-10-10S	COUPLING HALF,QUICK 7/8-14	1
35	PAFZZ	4730-01-453-5390	01276	5691-8-10S	COUPLING HALF,QUICK 3/4	1
36	PAFZZ	5310-01-339-6531	80205	MS35338-51	WASHER,LOCK 3/4	2
37	PAFZZ	5305-01-296-1863	80204	B1821BH075F100N	SCREW,CAP,HEXAGON HEAD, 3/4-16X1	2
38	PAFZZ	4730-01-327-5244	01276	5606-8-10S	COUPLING ASSEMBLY MALE 3/4-16	1
39	PAFZZ	4730-01-025-4918	01276	5608-10-10S	COUPLING HALF,QUICK FEMALE	1
40	PAFZZ	5342-00-789-8409	00624	22021-10	. RING,BACKUP	1
41	PAFZZ	5330-00-017-9253	01276	22550-211	. PACKING,PREFORMED	1

END OF FIGURE

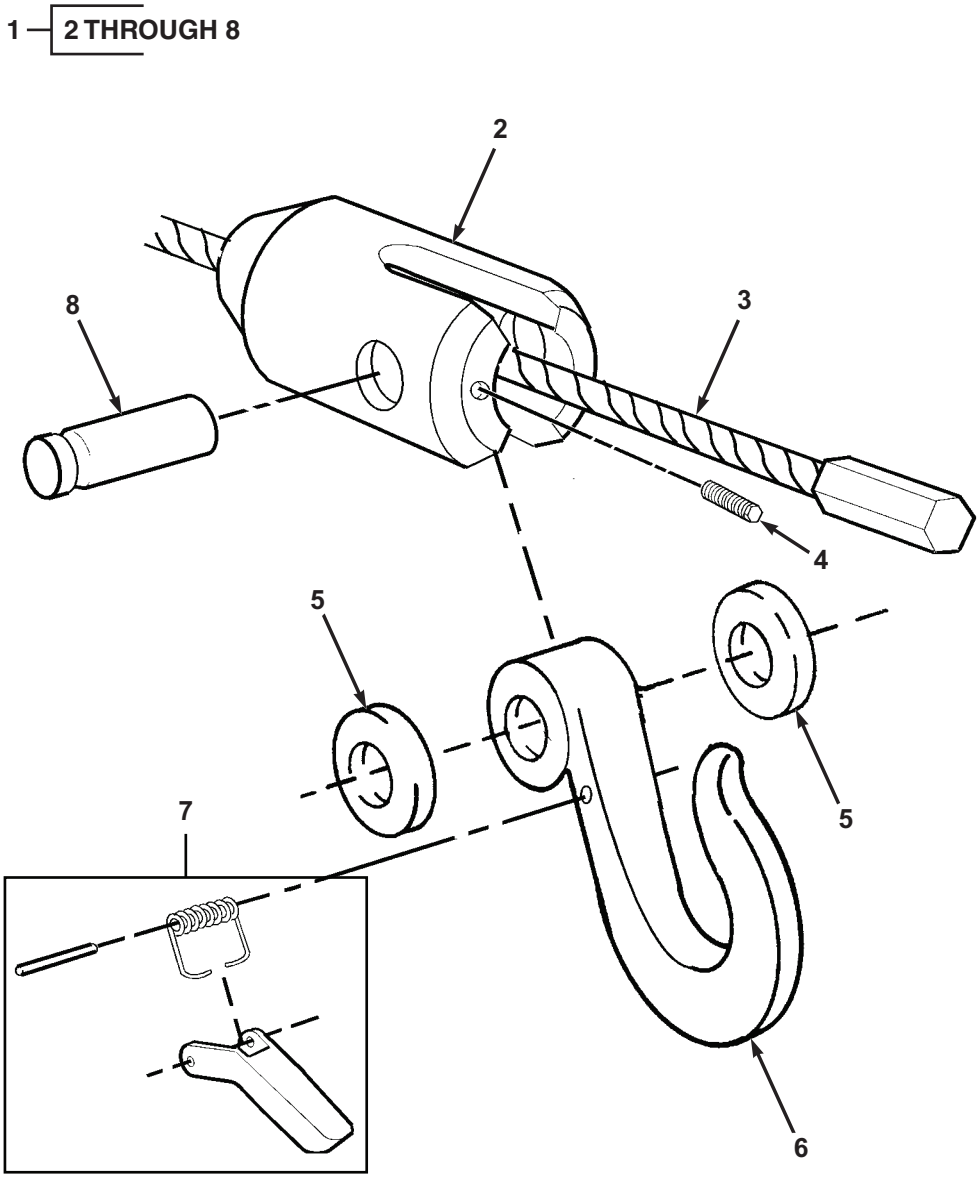


Figure 15. WINCH CABLE ASSEMBLY

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1210 WINCH CABLE ASSEMBLY	
					FIG. 15. WINCH CABLE ASSEMBLY	
1	XDFFF		3AR59	A4809240	WIRE ROPE ASSEMBLY	1
2	PAFZZ	4030-01-454-8215	3AR59	A4809131	. COUPLING,WIRE ROPE	1
3	PAFZZ	4010-01-528-1747	19207	BBD30075	. WIRE ROPE ASSEMBLY 70 FT	1
4	PAFZZ	5305-00-724-5834	80205	MS51963-87	. SETSCREW 5/16-18X3/4	1
5	PAFZZ	5365-01-453-7218	3AR59	A4809163	. SPACER,SPECIAL SHAPED	2
6	PAFZZ	4030-01-458-0680	75535	1003782	. HOOK,HOIST	1
7	PAFZZ	4030-01-454-8219	3AR59	A4809184	. LATCH,SAFETY,HOOK	1
8	PAFZZ	5315-01-454-2338	3AR59	A4809159	. PIN,GROOVED,HEADED	1
					END OF FIGURE	

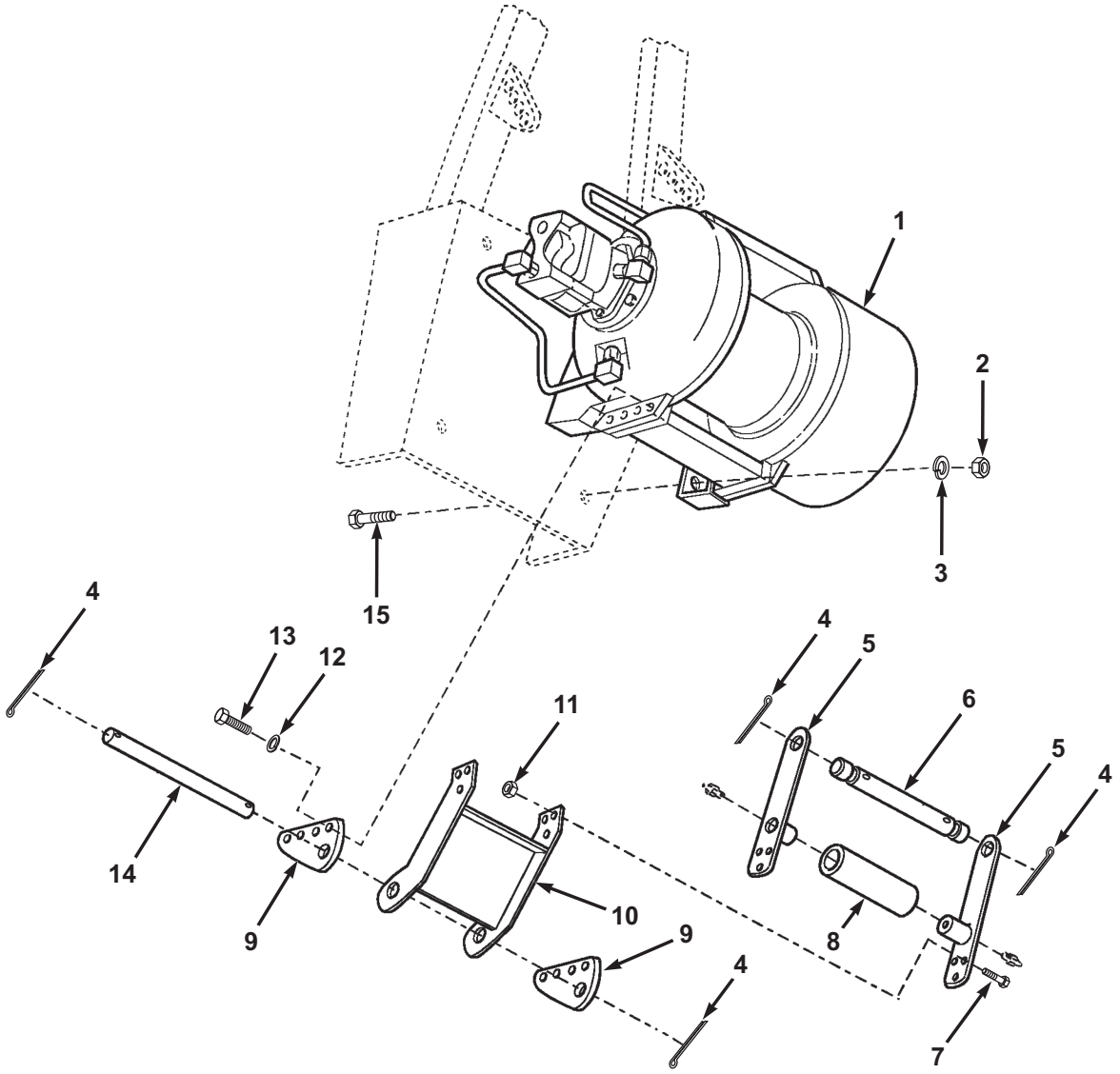


Figure 16. WINCH ASSEMBLY

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1220 BAP WINCH ASSEMBLY	
					FIG. 16. WINCH ASSEMBLY	
1	PAFFF	3950-01-450-5478	3AR59	A4809173	WINCH,DRUM,POWER OPERATED,PULL MASTER MODEL (38335)R7-15-135-1-437 1.3	1
2	PAFZZ	5310-00-763-8921	96906	MS51967-23	NUT,PLAIN,HEXAGON 3/4-10	4
3	PAFZZ	5310-01-339-6531	80205	MS35338-51	WASHER,LOCK 3/4	4
4	PAFZZ	5315-00-298-1499	80205	MS24665-360	PIN,COTTER 1/8X2	4
5	PAFZZ	5340-01-454-7280	3AR59	A4809370	BRACKET,MOUNTING	2
6	PAFZZ	3040-01-453-8731	3AR59	A4809152	SHAFT,STRAIGHT	1
7	PAFZZ	5305-01-358-8402	80205	NAS1352C5-12	SCREW,CAP,SOCKET HEAD, 5/16-18X3/4	6
8	PAFZZ	3040-01-453-8550	3AR59	A4809400	SHAFT,STRAIGHT ROLLER	1
9	PAFZZ	5340-01-454-7281	3AR59	A4809151	PLATE,MOUNTING PIVOT	2
10	PAFZZ	5340-01-454-7283	3AR59	A4809380	BRACKET,MOUNTING CARRIAGE	1
11	PAFZZ	5310-00-984-3806	81349	M45913/1-5CG5C	NUT,SELF-LOCKING HEXAGON,5/16-18	6
12	PAFZZ	5310-00-209-0965	80205	MS35338-47	WASHER,LOCK 7/16	8
13	PAFZZ	5305-00-071-2055	80204	B1821BH044C150N	SCREW,CAP,HEXAGON HEAD, 7/16-14X1	8
14	PAFZZ	3040-01-453-8706	3AR59	A4809149	SHAFT,STRAIGHT	1
15	PAFZZ	5305-00-922-7994	80204	B1821BH075C250N	SCREW,CAP,HEXAGON HEAD,3/4-10X2 1/2	4
					END OF FIGURE	

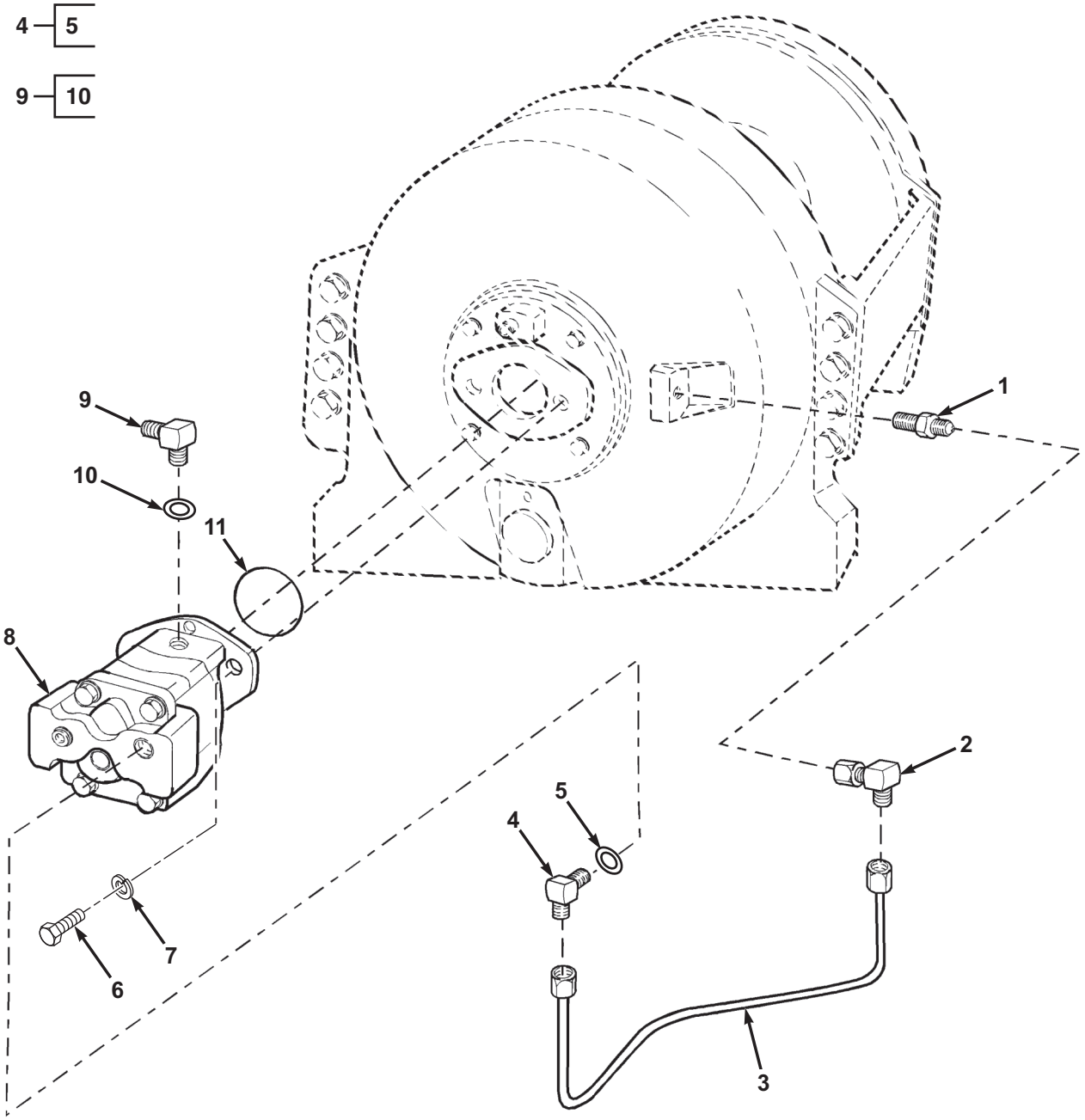


Figure 17. WINCH MOTOR ASSEMBLY

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1220 BAP WINCH ASSEMBLY	
					FIG. 17. WINCH MOTOR ASSEMBLY	
1	XDFZZ		38335	25895	ADAPTER,PIPE TO TUB	1
2	XDFZZ		38335	26120	ELBOW,TUBE TO BOSS	1
3	PAFZZ	4710-21-914-5839	38335	23556	TUBE ASSEMBLY,METAL 1/4 INCH OD 1/8	1
4	XDFZZ		38335	26125	ELBOW,TUBE TO BOSS 90 DEGREE	1
5	KFFZZ		38335	25716	. SEAL,PLAIN PART OF KIT P/N 23157	1
6	PAFZZ	5305-01-217-2126	38335	25264	SCREW,CAP,HEXAGON 3/8-16X1	2
7	PAFZZ	5310-00-011-5093	80205	MS35338-65	WASHER,LOCK 3/8	2
8	PAFZZ	4320-21-921-1420	38335	26384	MOTOR-PUMP HYDRAULIC	1
9	PAFZZ	4730-00-585-2309	96906	MS51527A4	ELBOW,TUBE TO BOSS 1/4 TUBE TO 1/4	1
10	PAFZZ	5331-01-458-9296	11314	AS904-B46-70	. O-RING	1
11	KFFZZ		38335	25016	O-RING PART OF KIT P/N 23157	1
					END OF FIGURE	

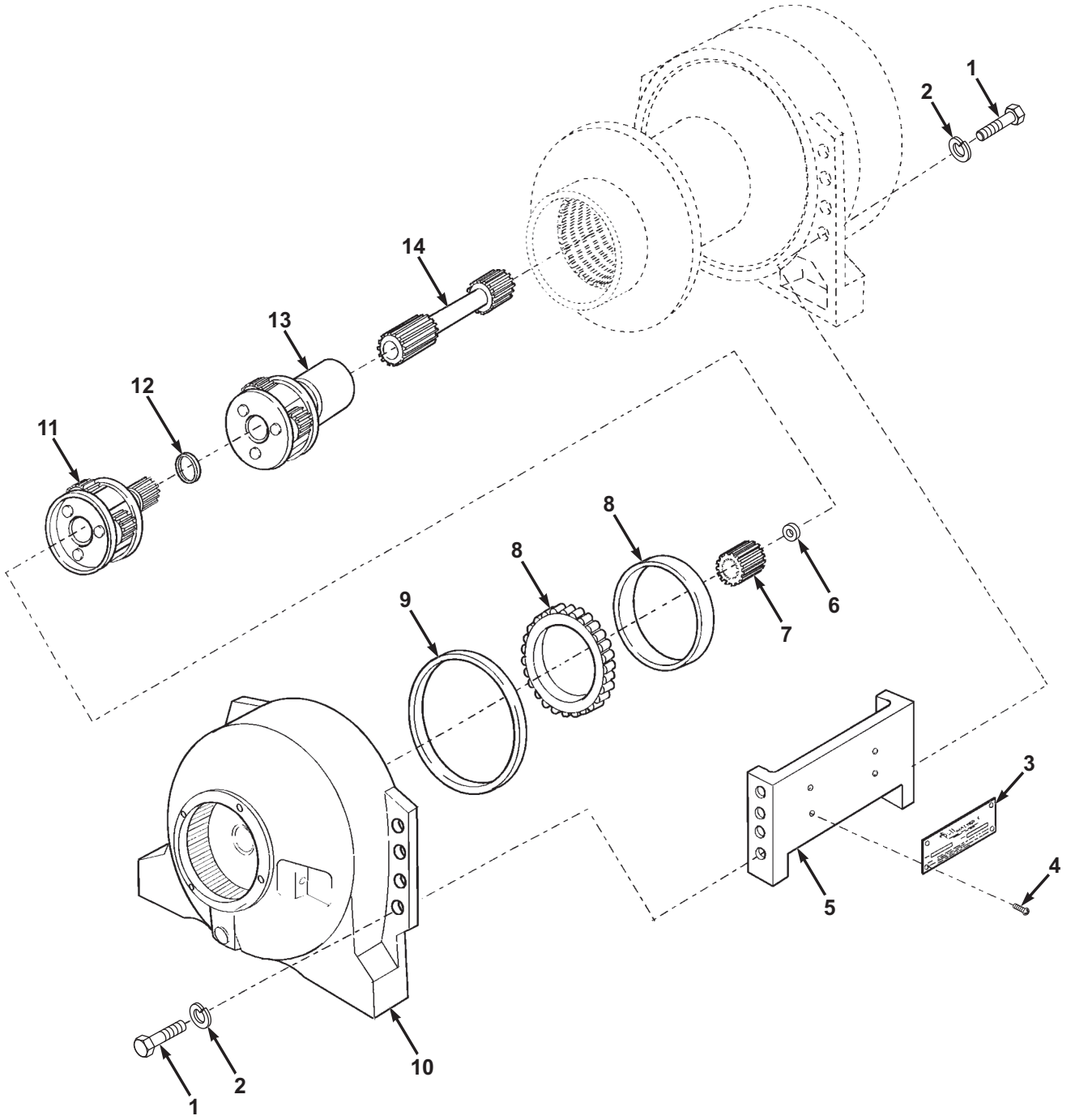


Figure 18. WINCH PRIMARY AND SECONDARY DRIVES

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1220 BAP WINCH ASSEMBLY	
					FIG. 18. WINCH PRIMARY AND SECONDARY DRIVES	
1	PAFZZ	5305-01-271-3276	38335	25265	SCREW,CAP,HEXAGON HEAD,7/16-14X1 1/4	16
2	PAFZZ	5310-01-212-2299	38335	25328	WASHER,LOCK 7/16	16
3	XDFZZ		38335	26324	PLATE,IDENTIFICATIO SERIAL NUMBER	1
4	PAFZZ	5305-21-908-1937	94223	B-1124A	SCREW,DRIVE 4-7X1/4	4
5	XDFZZ		38335	22374	BRACKET,MOUNTING R7	2
6	PAFZZ	5365-01-278-6157	38335	20450	SHIM PRIMARY	1
7	PFFZZ	3020-21-914-8060	38335	20670	GEAR,SPUR S-15 PRIMARY	1
8	PAFZZ	3110-21-893-3048	K7182	N217	BEARING,ROLLER CYLINDER	1
9	KFFZZ		38335	25148	OIL SEAL PART OF KIT P/N 23157	1
10	XDFZZ		38335	22834	BRAKE HOUSING R7-13 SPEC-437	1
11	PFFZZ	3040-21-914-8063	38335	22272	HOUSING,MECHANICAL PRIMARY DRIVE	1
12	PFFZZ	5365-01-217-7125	38335	20372	SPACER	2
13	PFFZZ	3040-21-914-8062	38335	22402	HOUSING,MECHANICAL SECONDARY DRIVE	1
14	PAFZZ	3040-21-914-9942	38335	22400	GEARSHAFT,SPUR R7 FINAL	1
					END OF FIGURE	

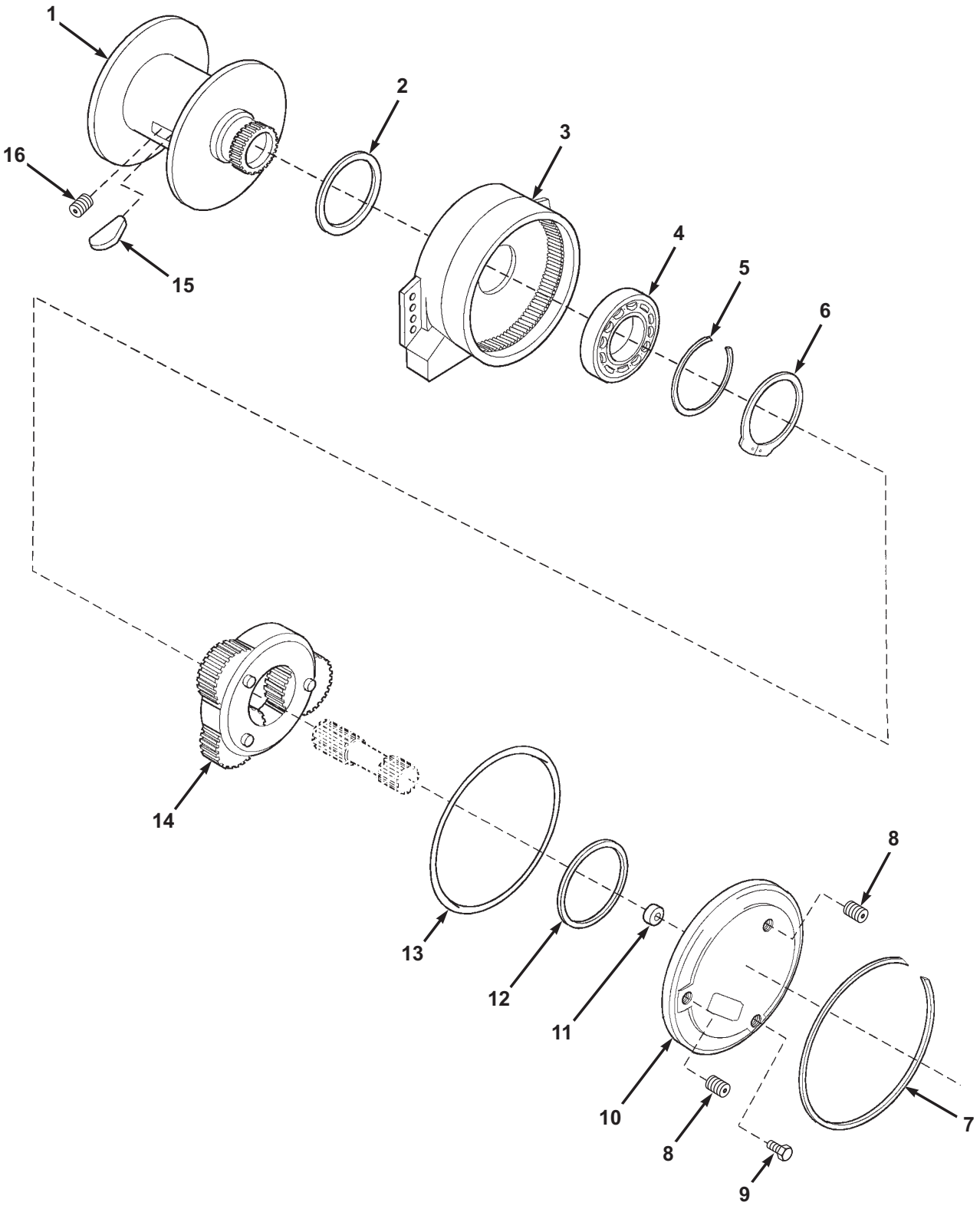


Figure 19. WINCH FINAL DRIVE ASSEMBLY

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1220 BAP WINCH ASSEMBLY	
					FIG. 19. WINCH FINAL DRIVE ASSEMBLY	
1	PFFZZ	2590-21-914-8056	38335	22361	DRUM,WINCH VEHICULAR,6.4 X 12.6 X 8.0, R7-01	1
2	KFFZZ		38355	26049	SEAL,PLAIN PART OF KIT P/N 23157 4 3/4X5 1/2X3/8	1
3	XAFZZ		38335	22360	FINAL HOUSING R7	1
4	XDFZZ		38335	25150	BEARING,ROLLER CYLINDER,110 X 170 X 28	1
5	PBFZZ	5325-21-914-8216	38335	20664	RING,RETAINING	1
6	XAFZZ		38335	25489	RING,RETAINING 1/2	1
7	PAFZZ	5325-21-914-9925	38335	20663	RING,RETAINING 1/4X5/32	1
8	PAFZZ	4730-01-211-5222	38335	25032	PLUG,PIPE NPT SOC HD	2
9	PAFZZ	4820-21-909-4456	38335	20458	VALVE,VENT 1/2 NPT 7.5 PSI	1
10	PFFZZ	4320-21-914-7074	38335	22399	COVER,HYDRAULIC PUMP,R7	1
11	PAFZZ	5365-21-914-7132	38335	20063	BUSHING,NONMETALLIC	1
12	PAFZZ	5365-21-914-7133	38335	20662	SPACER,STRAIGHT PLANET HUB STOPPER	1
13	KFFZZ		38335	25484	O-RING PART OF KIT P/N 23157 11 INCH ID X 0.121 1/8 IN CS	1
14	PFFZZ	3040-21-914-8061	38335	22273	HOUSING,MECHANICAL FINAL DRIVE	1
15	PAFZZ	4030-21-910-6656	38335	20171	WEDGE,DRUM CLAMP 12 S 3/8 TO 5/8 WIRE	1
16	PAFZZ	4730-01-204-5145	38335	25085	PLUG,PIPE 3/8 NPT SOC HD	1
					END OF FIGURE	

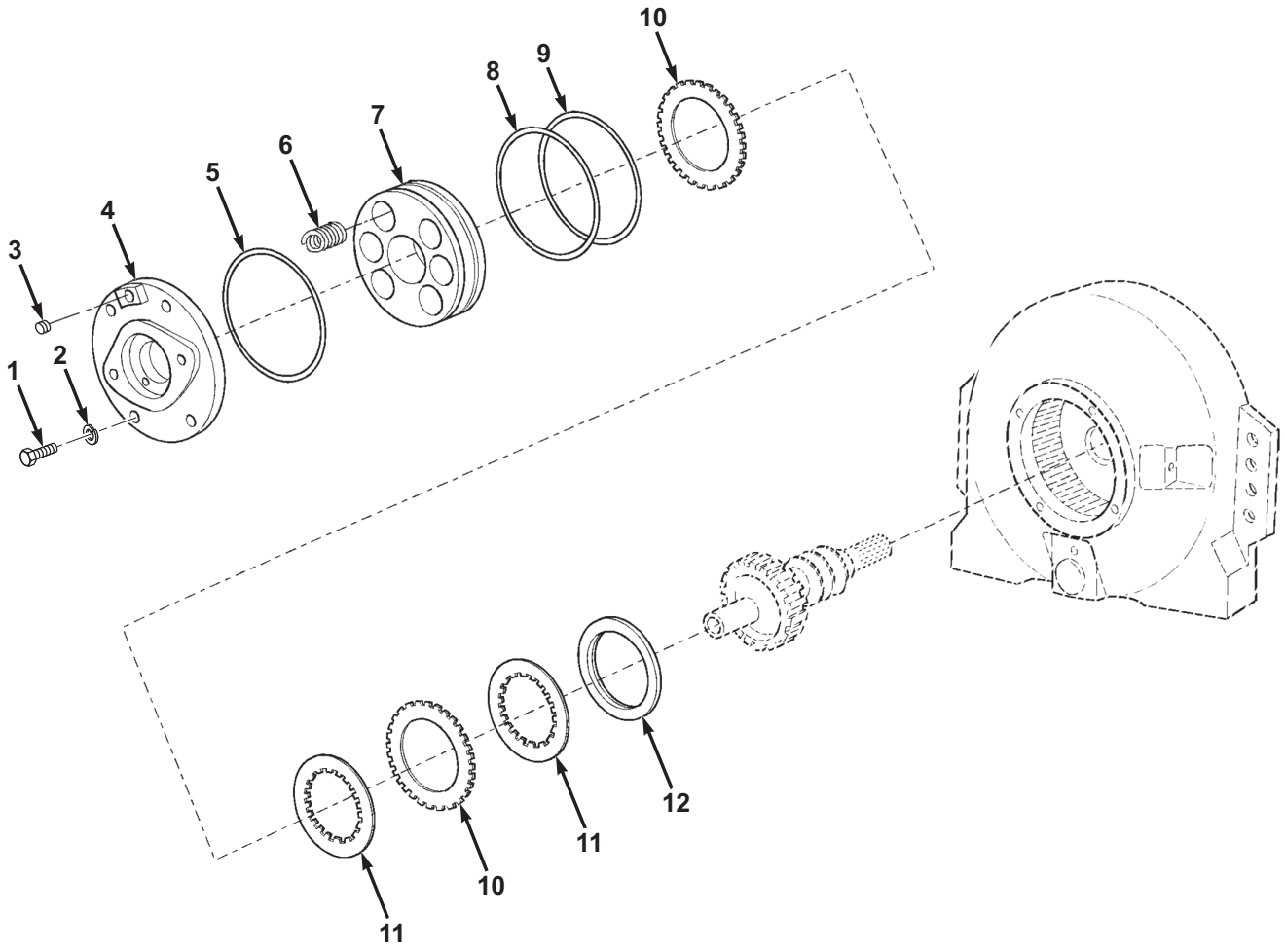


Figure 20. WINCH BRAKE HUB ASSEMBLY

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1230 WINCH BRAKE HUB ASSEMBLY	
					FIG. 20. WINCH BRAKE HUB ASSEMBLY	
1	PAFZZ	5305-01-217-2126	38335	25264	SCREW,CAP,HEXAGON HEAD, 3/8-16X1	4
2	PAFZZ	5310-00-011-5093	80205	MS35338-65	WASHER,LOCK 3/8	4
3	PAFZZ	4730-00-042-8988	81348	WW-P-471-ACABUB	PLUG,PIPE 1/4 NPT SOC HD	1
4	XAFZZ		38335	21079	MOTOR ADAPTOR	1
5	PAFZZ	5331-01-094-9071	81343	AS28775-048	O-RING PART OF KIT P/N 23157 4 3/4 IN ID X 1/16 IN CS	1
6	PAFZZ	5360-01-199-6157	38335	20340	SPRING,HELICAL COMPRESSION	6
7	XDFZZ		38335	23088	PISTON,LINEAR ACTUA R7 W/O INT BR, PL 2/4	1
8	KFFZZ		38335	25869	O-RING PART OF KIT P/N 23157 4 3/4IN ID 1/8 IN CS	1
9	KFFZZ		38335	25870	O-RING PART OF KIT P/N 23157 4 1/2 IN ID 1/8 IN CS	1
10	PAFZZ	5365-01-198-1650	38335	25024	SPACER,PLATE	7
11	PAFZZ	5365-01-198-3321	38335	20034	SPACER,PLATE PL2, PL4 M5, R7	6
12	PAFZZ	5365-21-914-7131	38335	22836	SPACER,SLEEVE R7 SPEC 437	1
					END OF FIGURE	

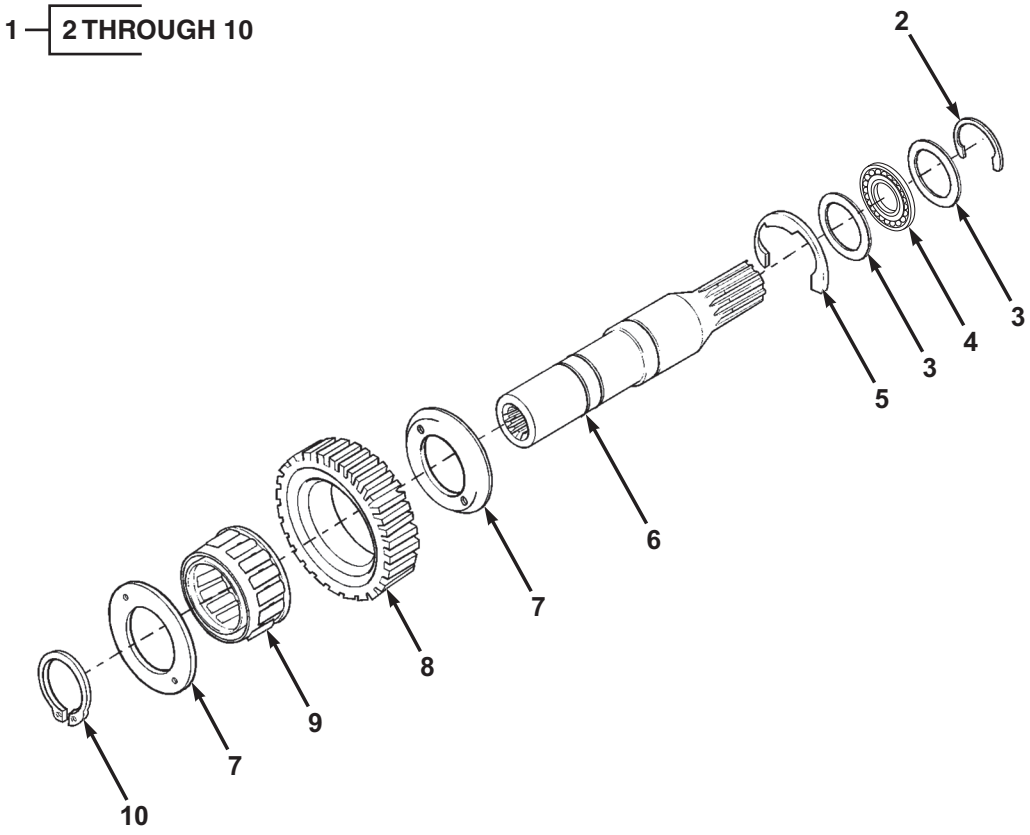


Figure 21. WINCH BRAKE HUB SUBASSEMBLY

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1230 WINCH BRAKE HUB ASSEMBLY	
					FIG. 21. WINCH BRAKE HUB SUBASSEMBLY	
1	AFFFF		38335	22277	SUB-ASSY,BRAKE HUB R7 135-CW	1
2	XDFZZ		38335	25500	. RING,RETAINING	1
3	PAFZZ	3110-12-174-4236	D2457	AS3047	. SEAT,BEARING	2
4	PFFZZ	3110-00-455-0374	96105	55830-47	. RETAINER AND ROLLER BEARING	1
5	PAFZZ	5325-01-240-7163	38335	25539	. RING,RETAINING	1
6	PAFZZ	3040-20-003-6768	38335	22214	. SHAFT,SHOULDERED R7-X-135	1
7	PAFZZ	2590-01-217-8142	38335	20183	. LINER,CLUTCH PL2/4	2
8	PAFZZ	3020-20-001-8603	38335	20640	. GEAR,SPUR R7	1
9	XDFZZ		38335	25187	. BEARING,ROLLER CYLINDRICAL	1
10	XAFZZ		38335	25492	. RING,RETAINING	1
					END OF FIGURE	

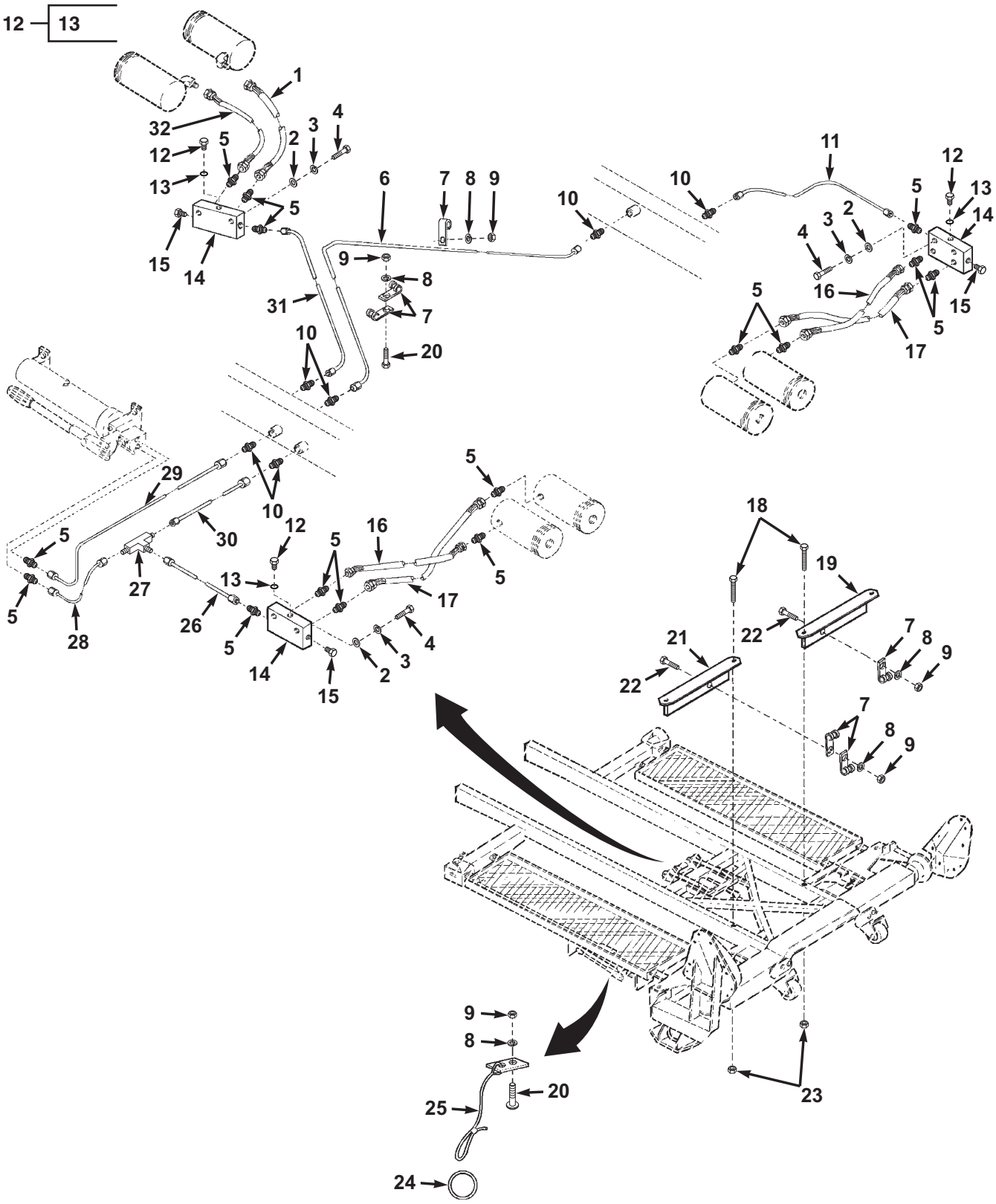


Figure 22. BAP HYDRAULIC INSTALLATION

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1300 BAP HYDRAULIC INSTALLATION	
					FIG. 22. BAP HYDRAULIC INSTALLATION	
1	PAFZZ	4720-01-453-5448	3AR59	A6206071	HOSE ASSEMBLY NONMETALLIC,16 1/4 IN LG	1
2	PAFZZ	5310-00-081-4219	96906	MS27183-12	WASHER,FLAT 11/32	6
3	PAFZZ	5310-00-407-9566	80205	MS35338-45	WASHER,LOCK 5/16	6
4	PAFZZ	5306-00-226-4832	80204	B1821BH031C175N	BOLT,MACHINE 5/16-18X1 3/4	6
5	PAFZZ	4730-00-942-9147	81343	4-6 070102C	ADAPTER,STRAIGHT PIPE	15
6	PAFZZ	4710-01-457-1599	3AR59	BBD314046	TUBE ASSEMBLY,METAL	1
7	PAFZZ	5340-00-912-8870	96906	MS21333-10	CLAMP,LOOP 11/16	12
8	PAFZZ	5310-00-045-3296	80205	MS35338-43	WASHER,LOCK #10	5
9	PAFZZ	5310-00-934-9764	80205	MS35649-205B	NUT,PLAIN,HEXAGON #10-24	5
10	PAFZZ	4730-01-057-9597	10988	218-444	ADAPTER,STRAIGHT PIPE,1/4 NPT X 1/2 TUBE, 37 FLARE	6
11	PAFZZ	4710-01-456-8765	3AR59	BBD314027	TUBE ASSEMBLY,METAL	1
12	PAFZZ	5365-01-071-8261	30780	5P5ON-S	PLUG,MACHINE THREAD 1/2-20	3
13	PAFZZ	5331-00-167-5166	81343	AS3208-05	. O-RING	1
14	PAFZZ	4730-01-453-5411	3AR59	A6206064	MANIFOLD ASSEMBLY HYDRAULIC	3
15	PAFZZ	4730-00-958-8599	93061	3/8-HP-S	PLUG,PIPE 3/8	3
16	PAFZZ	4720-20-000-7377	3AR59	A6206062	HOSE ASSEMBLY NONMETALLIC,HYDRAULIC,11.00 IN LG	2
17	PAFZZ	4720-01-453-5469	3AR59	A6206063	HOSE ASSEMBLY NONMETALLIC,HYDRAULIC,16.00 IN LG	2
18	PAFZZ	5305-00-044-4153	80205	MS90725-109	SCREW,CAP,HEXAGON HEAD, 1/2-13X1	4
19	PAFZZ	5340-01-455-1839	3AR59	A6210715	BRACKET,MOUNTING LEFT SIDE	1
20	PAFZZ	5305-00-059-8280	80205	MS35214-55	SCREW,MACHINE #10-24X1/2	2
21	PAFZZ	5340-01-455-1838	3AR59	A6210714	BRACKET,MOUNTING RIGHT SIDE	1
22	PAFZZ	5305-00-984-6212	80205	MS35206-265	SCREW,MACHINE #10-24X3/4	4
23	PAFZZ	5310-00-225-6993	81349	M45913/1-8CG5C	NUT,SELF-LOCKING HEXAGON,1/2-13	4
24	PAFZZ	5340-01-343-5833	39428	90177A224	HOLDER,KEY 1.40 ID, 1.64 OD	1
25	XDFZZ		39428	90312A610	LANYARD	1
26	PAFZZ	4710-01-456-9295	3AR59	BBD314007	TUBE,BENT,METALLIC	1
27	PAFZZ	4730-00-804-1923	81343	AS1035-040404	TEE,TUBE 1/4X1/4X1/4	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
28	PAFZZ	4710-01-458-0122	3AR59	BBD314017	TUBE ASSEMBLY,METAL	1
29	PAFZZ	4710-01-456-9299	3AR59	BBD314043	TUBE,BENT,METALLIC	1
30	PAFZZ	4710-01-457-1375	3AR59	BBD314022	TUBE ASSEMBLY,METAL	1
31	PAFZZ	4710-01-457-1303	3AR59	BBD314030	TUBE ASSEMBLY,METAL	1
32	PAFZZ	4720-01-453-5420	3AR59	A6206069	HOSE ASSEMBLY NONMETALLIC,HYDRAULIC,14.50 IN LG	1

END OF FIGURE

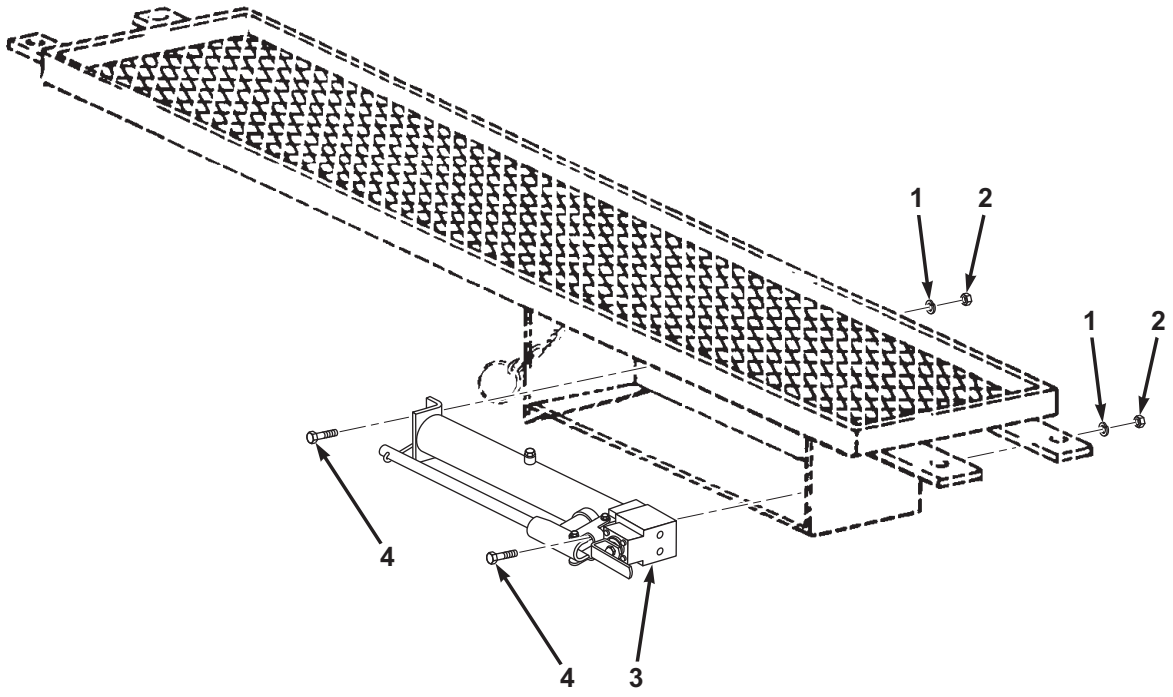


Figure 23. HYDRAULIC HAND PUMP

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1310 HYDRAULIC HAND PUMP	
					FIG. 23. HYDRAULIC HAND PUMP	
1	PAFZZ	5310-00-407-9566	80205	MS35338-45	WASHER,LOCK 5/16	4
2	PAFZZ	5310-01-281-0563	96906	MS51967-35	NUT,PLAIN,HEXAGON 5/16-18	4
3	PAFZZ	4320-01-453-6465	3AR59	A4806160	PUMPING UNIT HYDRAULIC	1
4	PAFZZ	5305-00-226-4831	80204	B1821BH031C150N	SCREW,CAP,HEXAGON HEAD,5/16-18X1 1/2	4
					END OF FIGURE	

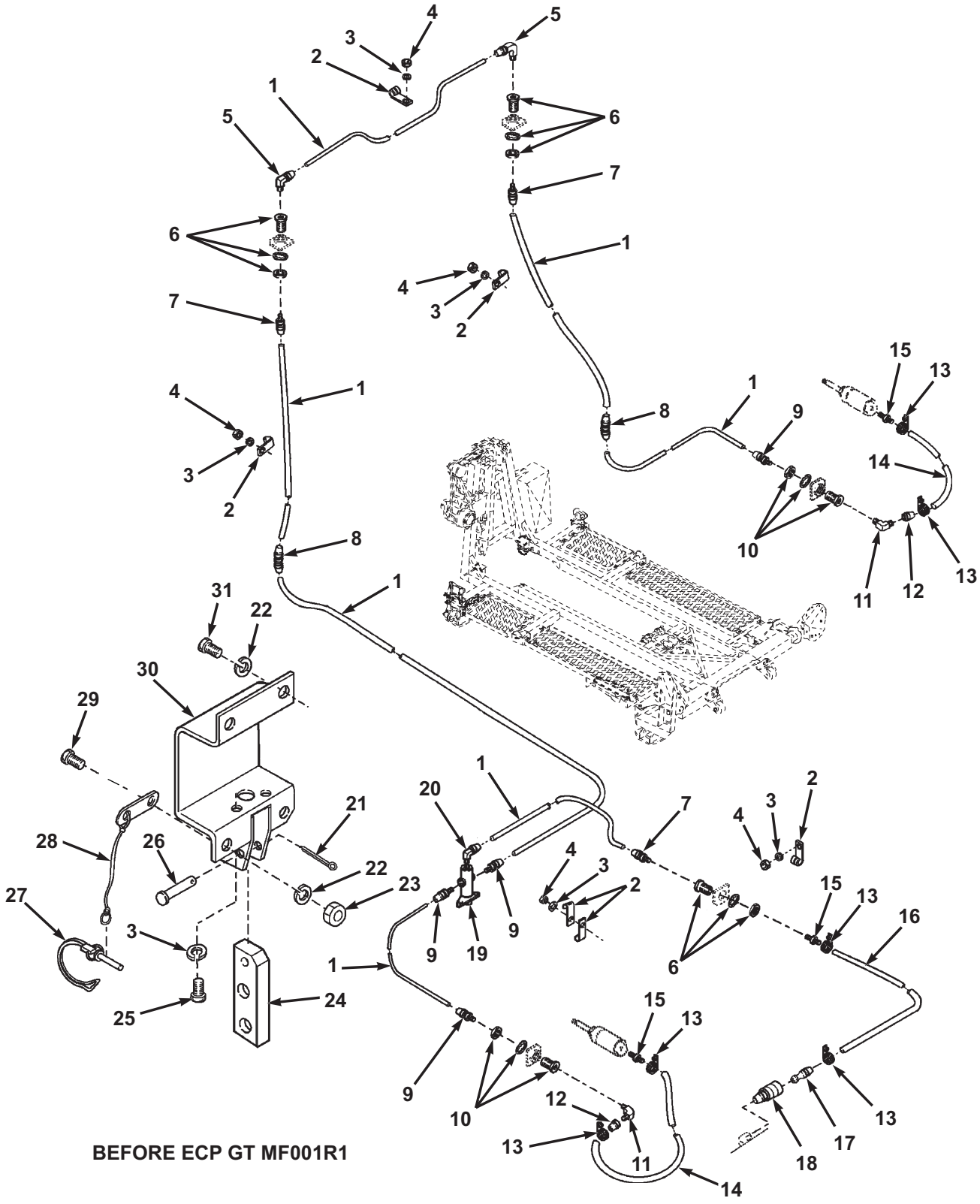


Figure 24. BAP AIR LINES INSTALLATION (Sheet 1 of 2)

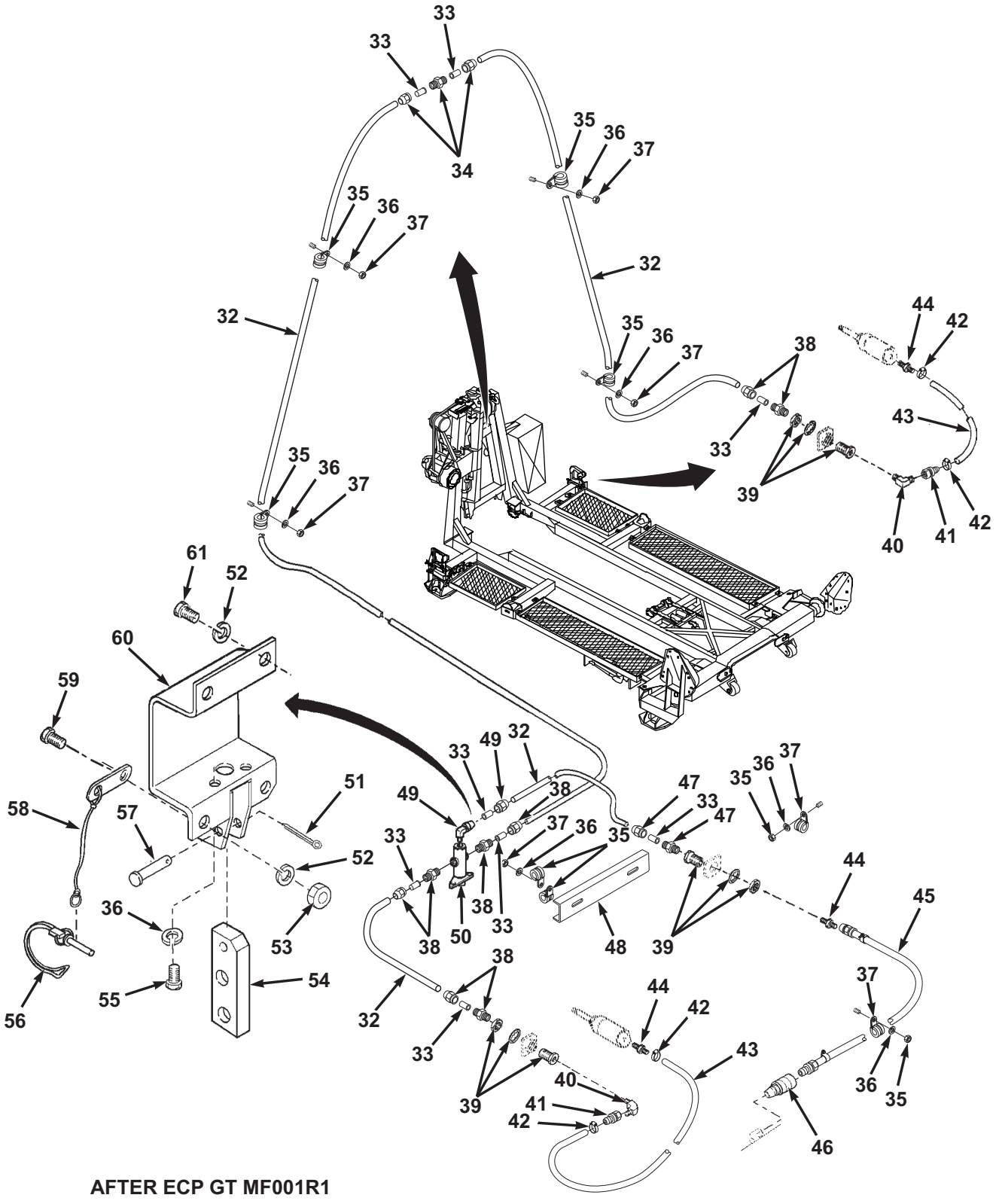


Figure 24. BAP AIR LINES INSTALLATION (Sheet 2 of 2)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1400 BAP AIR LINES INSTALLATION	
					FIG. 24. BAP AIR LINES INSTALLATION	
1	MFFZZ		39428	5175K51-AR	TUBE,METALLIC MAKE FROM METALLIC TUBE,P/N 5175K51(39428),LENGTH AS REQUIRED	7
2	PAFZZ	5340-01-031-0905	80205	MS21333-3	CLAMP,LOOP 1/4	27
3	PAFZZ	5310-00-045-3296	80205	MS35338-43	WASHER,LOCK #10	27
4	PAFZZ	5310-00-934-9764	80205	MS35649-205B	NUT,PLAIN,HEXAGON 10-24	25
5	PAFZZ	4730-00-118-5177	81343	4-4 120202BA	ELBOW,PIPE TO TUBE 1/4X1/4	2
6	PAFZZ	4730-01-164-3365	93061	207ACBH-4	COUPLING,PIPE 1/4-18NPT	3
7	PAFZZ	4730-00-270-4580	81343	SAE J246 4-4 120102BA	ADAPTER,STRAIGHT PIPE TO TUBE, 1/4X1/4	3
8	PAFZZ	4730-00-277-9672	81343	4-4 120101BA	NIPPLE,TUBE 1/4	2
9	PAFZZ	4730-00-277-8750	81343	SAE J246 4-2 120102BA	ADAPTER,STRAIGHT 1/4X1/8	4
10	PAFZZ	4730-00-574-8807	93061	207ACBH-2	COUPLING,PIPE	2
11	PAFZZ	4730-00-254-6211	81343	J5124-2010202B	ELBOW,PIPE TO TUBE 1/4X1/8	2
12	PAFZZ	4730-00-555-1152	70281	2203B510	ADAPTER,STRAIGHT 1/4X1/4	2
13	PAFZZ	5340-00-779-5620	96906	MS21333-6	CLAMP,LOOP 7/16	6
14	MFFZZ		02697	M24135/10-05-9.5	HOSE,NONMETALLIC MAKE FROM NONMETALLIC HOSE,P/N M24135/10-05 (81349),9.5 IN LG	2
15	PAFZZ	4730-00-152-0128	87373	30182-4-4	ADAPTER,STRAIGHT 1/4	1
16	MFFZZ		02697	M24135/10-05-62	HOSE,NONMETALLIC MAKE FROM NONMETALLIC HOSE,P/N M24135/10-05 (81349),62 IN LG	1
17	PAFZZ	4730-01-383-6756	97111	B20-3-BP	COUPLING HALF,QUICK DISCONNECT,0.250 MALE	1
18	PAFZZ	4730-01-155-3163	01276	FD40-1000-04-04	COUPLING HALF,QUICK DISCONNECT	1
19	PAFZZ	4820-01-454-0733	06853	229612N	VALVE,LINEAR,DIRECT	1
20	PAFZZ	4730-00-921-3240	81343	4-2 120202BA	ELBOW,PIPE TO TUBE 1/4X1/8	1
21	PAFZZ	5315-00-017-9252	80205	MS24665-136	PIN,COTTER 5/8X1	1
22	PAFZZ	5310-00-407-9566	80205	MS35338-45	WASHER,LOCK 5/16	4
23	PAFZZ	5310-01-466-4092	30554	88-22790-5	NUT,PLAIN,HEXAGON 5/16	2
24	PAFZZ	5340-01-454-7282	3AR59	A4814071	LEVER,MANUAL CONTROL	1
25	PAFZZ	5305-00-059-8256	80205	MS35214-31	SCREW,MACHINE 10-24X1/2	2
26	PAFZZ	5315-00-081-7015	96906	MS20392-3C31	PIN,STRAIGHT,HEADED 0.250 X .9 GRIP	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
27	PAFZZ	5315-01-453-9031	39428	98416A011	PIN,STRAIGHT,HEADED 0.250 X 1.38 GRIP	1
28	PAFZZ	4010-01-461-2608	39428	90312A310	WIRE ROPE ASSEMBLY	1
29	PAFZZ	5306-00-226-4829	80204	B1821BH031C125N	BOLT,MACHINE 5/16-18X1 1/4	2
30	PAFZZ	5340-01-453-2528	3AR59	A6210050	BRACKET,MULTIPLE ANGLE	1
31	PAFZZ	5306-00-225-8496	80205	MS90725-31	BOLT,MACHINE 5/16-18X5/8	2
32	MFFZZ		98441	NB-4-040-AR	TUBING,NONMETALLIC MAKE FROM NONMETALLIC TUBING, P/N CPR104420-1 (19207),LENGTH AS REQUIRED	4
33	PAFZZ	4730-01-057-7109	93061	63NTA-4	INSERT,TUBE FITTING	8
34	PAFZZ	4730-00-277-9672	81343	4-4 120101BA	NIPPLE,TUBE	1
35	PAFZZ	5340-01-031-0905	80205	MS21333-3	CLAMP,LOOP 0.25 TUBE 0.190 STUD	22
36	PAFZZ	5310-00-045-3296	80205	MS35338-43	WASHER,LOCK #10	22
37	PAFZZ	5310-00-934-9764	80205	MS35649-205B	NUT,PLAIN,HEXAGON #10-24	22
38	PAFZZ	4730-00-277-8750	81343	SAE J246 4-2 120102BA	ADAPTER,STRAIGHT 1/4X1/8	4
39	PAFZZ	4730-01-164-3365	93061	207ACBH-4	COUPLING,PIPE	3
40	PAFZZ	4730-00-254-6211	81343	J5124-2010202B	ELBOW,PIPE TO TUBE	2
41	PAFZZ	4730-01-020-8435	98441	30882-4-4B	ADAPTER,STRAIGHT TUBE TO HOSE	2
42	PAFZZ	4730-01-316-5785	35871	MAH-6	CLAMP,HOSE	4
43	MFFZZ		87373	836-4-10.5	HOSE,NONMETALLIC MAKE FROM HOSE,P/N 836-4-BLU (87373),10.5 IN LG	2
44	PAFZZ	4730-00-028-7021	01276	4738-4-4B	ADAPTER,STRAIGHT PIPE TO HOSE	3
45	XDFZZ		3AR59	A6214080	HOSE ASSEMBLY	1
46	PAFZZ	4730-01-155-3163	01276	FD40-1000-04-04	COUPLING HALF,QUICK QUICK DISCONNECT	1
47	PAFZZ	4730-00-270-4580	81343	SAE J246 4-4 120102BA	ADAPTER,STRAIGHT PIPE TO TUBE	1
48	XDFZZ		3AR59	A6214061	BRACKET	1
49	PAFZZ	4730-00-921-3240	93061	VS269AB-4-2	ELBOW, PIPE TO TUBE	1
50	PAFZZ	4820-01-454-0733	06853	229612N	VALVE,LINEAR,DIRECT	1
51	PAFZZ	5315-00-017-9252	80205	MS24665-136	PIN,COTTER 5/8X1	1
52	PAFZZ	5310-00-407-9566	80205	MS35338-45	WASHER,LOCK 5/16	4
53	PAFZZ	5310-01-466-4092	30554	88-22790-5	NUT,PLAIN,HEXAGON 5/16-18	2
54	PAFZZ	5340-01-454-7282	3AR59	A4814071	LEVER,MANUAL CONTROL	1
55	PAFZZ	5305-00-059-8256	80205	MS35214-31	SCREW,MACHINE #10-24X1/2	2
56	PAFZZ	5315-00-081-7015	96906	MS20392-3C31	PIN,STRAIGHT,HEADED	1
57	PAFZZ	5315-01-453-9031	39428	98416A011	PIN,STRAIGHT,HEADED	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
58	PAFZZ	4010-01-461-2608	39428	90312A310	WIRE ROPE ASSEMBLY	1
59	PAFZZ	5306-00-226-4829	80204	B1821BH031C125N	BOLT,MACHINE 5/16-18X1 1/4	2
60	PAFZZ	5340-01-453-2528	3AR59	A6210050	BRACKET,MULTIPLE	1
61	PAFZZ	5306-00-225-8496	80205	MS90725-31	BOLT,MACHINE 5/16-18X5/8	2

END OF FIGURE

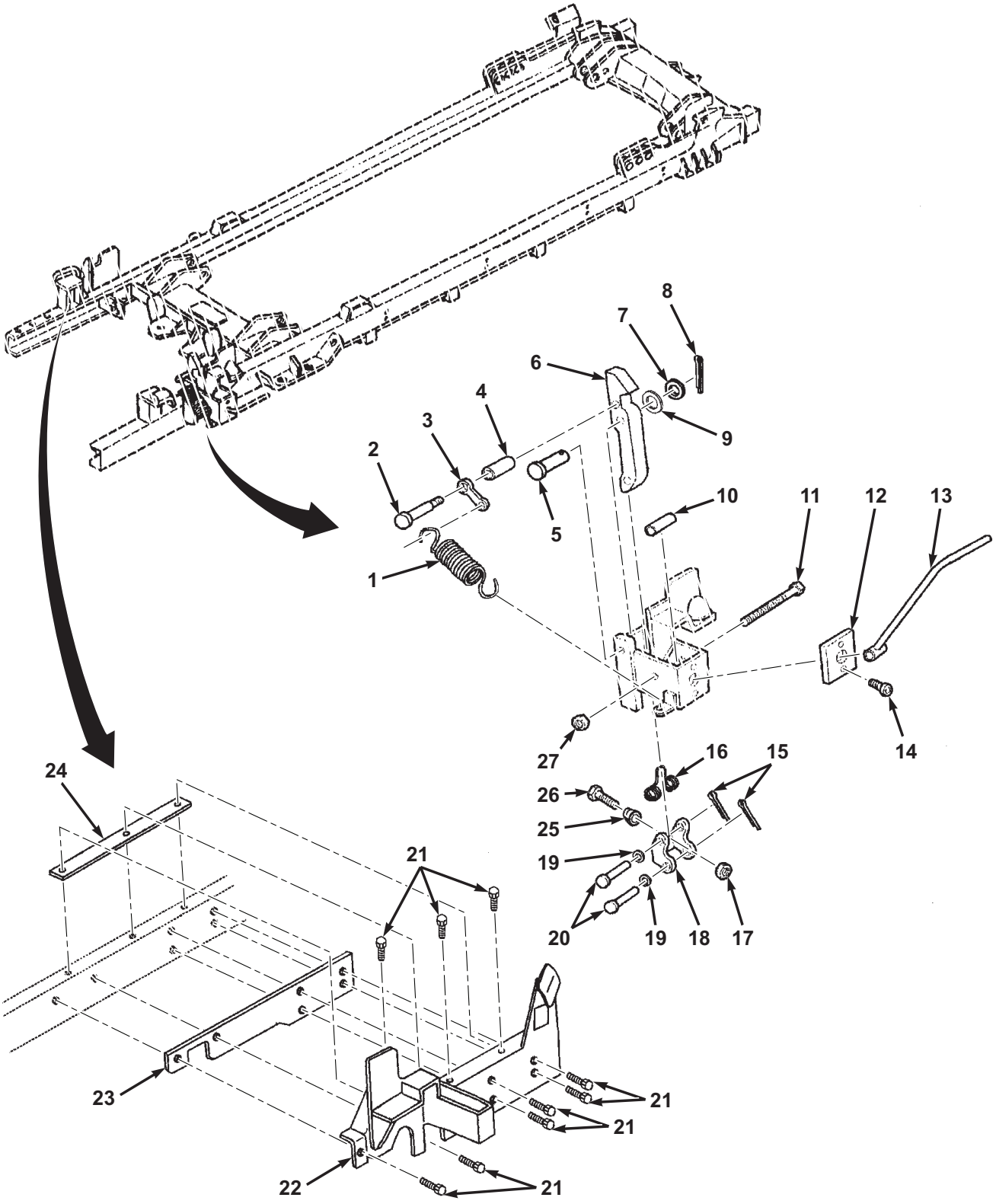


Figure 25. FRONT BAP LOCK

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1500 FRONT BAP LOCK ASSEMBLY	
					FIG. 25. FRONT BAP LOCK	
1	PAFZZ	5360-01-456-6943	45152	3129059	SPRING,HELICAL EXTENSION	2
2	PAFZZ	5305-01-480-4697	45152	3234829	SCREW,SHOULDER 5/16-18X2	2
3	PAFZZ	2590-01-458-9401	45152	3130939	LINK ASSEMBLY	2
4	PAFZZ	4710-01-476-0279	45152	3234830	TUBE,METALLIC	2
5	PAFZZ	5315-01-288-6747	96652	11-289	PIN,STRAIGHT,HEADED	2
6	PAFZZ	5340-01-457-8923	45152	3130933	LEVER,LOCK-RELEASE	2
7	PAFZZ	5310-01-214-4946	45152	2083HX	WASHER,FLAT 3/4	2
8	PAFZZ	5315-01-377-1554	45152	356AX	PIN,COTTER 1/4X1/4	2
9	PAFZZ	3120-01-477-3510	45152	3234843	BEARING,WASHER THRUST	2
10	MFFZZ		97403	13221E4806-1-2.125	HOSE,NONMETALLIC MAKE FROM HOSE,NONMETALLIC, P/N 13221E4806-1 (97403), 2.125 IN LG	4
11	PAFZZ	5305-01-227-5660	45152	36850AX	SCREW,CAP,HEXAGON HEAD, 1/4-20X3	2
12	PAFZZ	5340-01-456-6969	45152	3145757	STRIKE,CATCH	2
13	PAFZZ	5340-01-456-6964	45152	3138396	HANDLE,MANUAL CONTROL	2
14	PAFZZ	5305-01-456-6925	45152	51047AX	SCREW,SHOULDER 5/16-18X1/2	4
15	PAFZZ	5315-00-842-3044	80205	MS24665-283	PIN,COTTER	4
16	PAFZZ	5360-01-456-5633	45152	3149272	SPRING,HELICAL TORSION	2
17	PAFZZ	5310-00-208-1918	88044	AN365-1024A	NUT,SELF-LOCKING HEX,10-24	2
18	PAFZZ	2590-01-458-9395	45152	3138348	LINK ASSEMBLY	2
19	PAFZZ	5310-00-809-4058	96906	MS27183-10	WASHER,FLAT 9/32	8
20	PAFZZ	5315-01-458-2064	96652	11-043	PIN,STRAIGHT HEADLESS,1/4X1 1/2	4
21	PAFZZ	5305-01-357-4683	45152	117971A	SCREW,CAP,HEXAGON 1/2-13X1	18
22	PAFZZ	5340-01-486-4890	45152	3274525	BRACKET,MOUNTING RH	1
22	PAFZZ	5340-01-486-4897	45152	3274524	BRACKET,MOUNTING LH	1
23	PAFZZ	5365-01-486-3420	45152	3276180	SHIM	2
24	PAFZZ	5365-01-486-3418	45152	3274653	SHIM	2
25	PAFZZ	5340-01-455-8403	7B735	CCN-91001	BUMPER	2
26	PAFZZ	5305-01-249-8564	45152	59031AX	SCREW,MACHINE 10-24X3/4	2
27	PAFZZ	5310-01-066-6759	56878	21NE-040	NUT,SELF-LOCKING HEX,1/4-20	2
					END OF FIGURE	

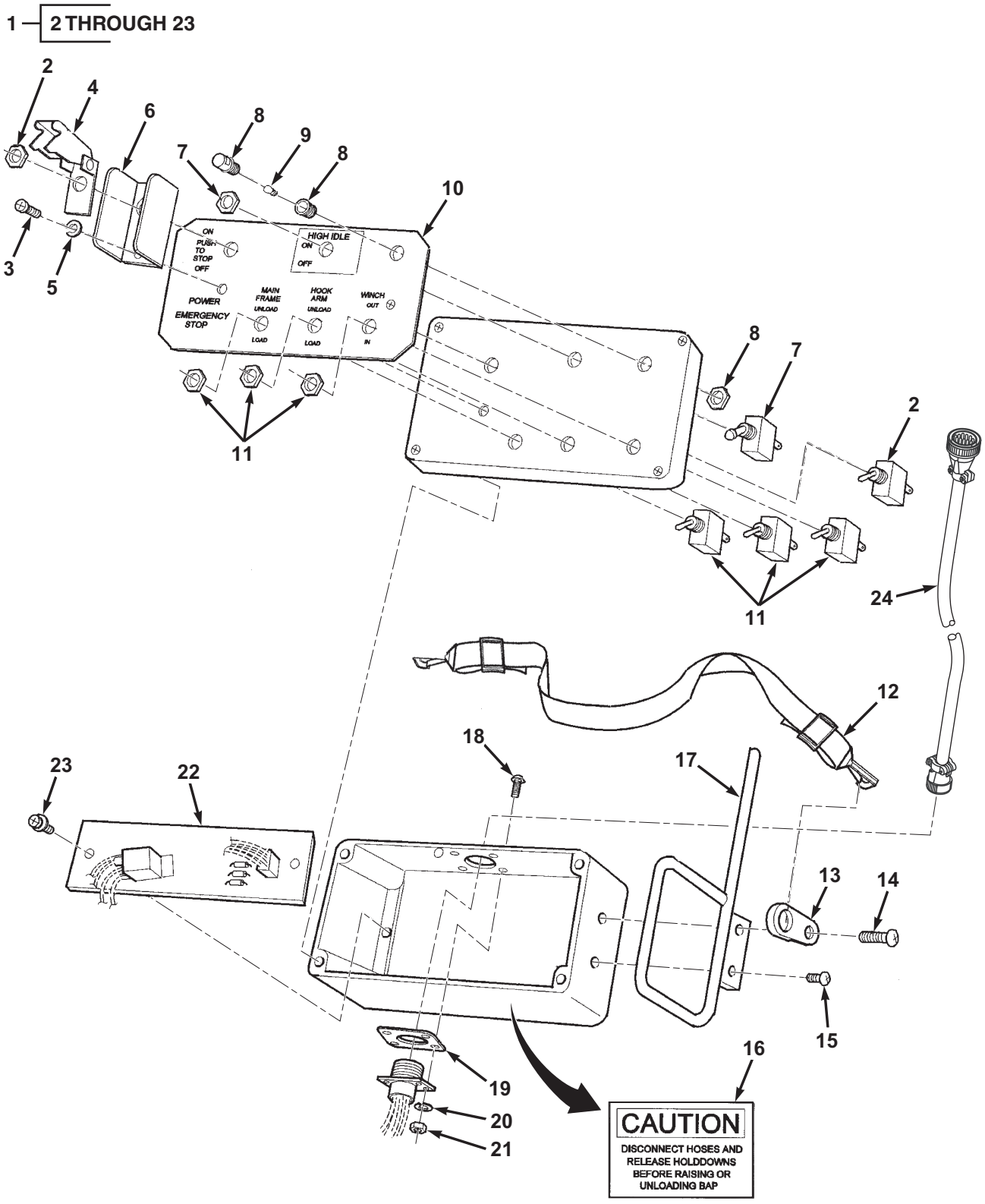


Figure 26. REMOTE CONTROL UNIT

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1600 ELECTRICAL CONTROLS	
					FIG. 26. REMOTE CONTROL UNIT	
1	PAFFF	5895-01-467-7784	0ENJ2	DA-00E-100	CONTROL-POWER SUPPLY	1
2	PAFZZ	5930-01-480-5432	91929	31NT91-1	. SWITCH,TOGGLE	1
3	PAFZZ	5305-00-088-9044	96906	MS35207-260	. SCREW,MACHINE 10-32X5/16	1
4	PAFZZ	5930-00-615-6731	96906	MS25224-1	. GUARD,SWITCH	1
5	PAFZZ	5310-00-933-8120	80205	MS35338-138	. WASHER,LOCK #10	1
6	PAFZZ	5930-01-458-3844	0ENJ2	380-07-600	. RETAINER,ELECTRICAL	1
7	PAFZZ	5930-01-457-3028	0ENJ2	435-05-605	. SWITCH,TOGGLE	1
8	PAFZZ	2920-01-457-8996	0ENJ2	375-10-600	. SOCKET,LIGHT VEHICULAR	1
9	PAFZZ	6240-01-138-4366	71744	CM8176	. LAMP,INCANDESCENT	1
10	PCFZZ	9905-01-457-8344	0ENJ2	195-01-678	. PLATE,INSTRUCTION BOX COVER	1
11	PAFZZ	5930-01-456-9303	0ENJ2	435-04-603	. SWITCH,TOGGLE ON-OFF-ON	3
12	PAFZZ	5340-01-429-8551	0ENJ2	158-01-600	. STRAP,WEBBING	1
13	PAFZZ	5340-01-459-2193	0ENJ2	380-04-600	. BRACKET,MOUNTING	2
14	PAFZZ	5305-00-993-1848	80205	MS35207-265	. SCREW,MACHINE 10-32X3/4	2
15	PAFZZ	5305-00-989-7435	80205	MS35207-264	. SCREW,MACHINE 10-32X5/8	2
16	PCFZZ	7690-01-458-4240	0ENJ2	195-01-683	. LABEL CAUTION BAP UNLOADING	1
17	PAFZZ	5340-01-457-8962	0ENJ2	DA-00E-501	. HANDLE,BOW	2
18	PAFZZ	5305-00-889-2999	80205	MS35206-217	. SCREW,MACHINE 4-40X1/2	4
19	PAFZZ	5330-00-968-1753	58536	A52481-7	. GASKET	1
20	PAFZZ	5310-00-543-2410	80205	MS35338-40	. WASHER,LOCK #4	4
21	PAFZZ	5310-00-275-9301	96906	MS35649-43	. NUT,PLAIN,HEXAGON 4-40	4
22	PAFZZ	5998-01-456-9734	0ENJ2	PO-006-201	. CIRCUIT CARD DIODE ARRAY BOARD	1
23	PAFZZ	5305-01-456-8936	51506	1812-10S-PS-E31	. SCREW,MACHINE M6X10	2
24	PEFZZ	6150-01-453-9023	45152	3055065	WIRING HARNESS	1
					END OF FIGURE	

ILLUSTRATION NOT REQUIRED

Figure KITS. REPAIR KITS

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 9401 REPAIR KITS	
					FIG. KITS. REPAIR KITS	
1	PAFZZ	5330-01-571-2232	3G5P8	23157	GASKET AND SEAL SET	1
					SEAL,PLAIN (001) 17-5	
					O-RING (001) 17-11	
					OIL SEAL (001) 18-9	
					SEAL,PLAIN (001) 19-2	
					O-RING (001) 19-13	
					O-RING (001) 20-5	
					O-RING (001) 20-8	
					O-RING (001) 20-9	
					END OF FIGURE	

ILLUSTRATION NOT REQUIRED

Figure BULK. BULK MATERIAL

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 9501 HARDWARE SUPPLIES AND BULK MATERIAL, COMMON	
					FIG. BULK. BULK MATERIAL	
1	PAFZZ	4710-01-453-8578	39428	5175K51	TUBE,METALLIC COPPER, 0.25 NOM, 0.375 OD X 0.030 WALL THICK 0001	
2	PCFZZ	4720-00-051-4712	81349	M24135/10-05	HOSE,NONMETALLIC 0.250 NOM ID X 0.578 NOM OD 0001	
3	PCFZZ	4720-00-847-1710	97403	13221E4806-1	HOSE,NONMETALLIC 0001	
4	PAFZZ	4720-01-058-7213	19207	CPR104420-1	TUBING,NONMETALLIC	1
5	PAFZZ	4720-01-475-3029	87373	836-4-BLU	HOSE,NONMETALLIC	1
					END OF FIGURE	

FIELD MAINTENANCE
NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM
5310-00-011-5093	17	7
	20	2
5305-00-014-5454	8	17
5315-00-017-9252	24	21
	24	51
5330-00-017-9253	14	41
4730-00-028-7021	24	44
4730-00-042-8988	20	3
5305-00-044-4153	22	18
5310-00-045-3296	9	3
	22	8
	24	3
	24	36
4720-00-051-4712	BULK	2
5305-00-052-7485	11	18
5315-00-058-9756	1	8
5315-00-058-9782	4	5
5315-00-059-0206	11	10
5305-00-059-8256	24	25
	24	55
5305-00-059-8280	22	20
5305-00-068-0500	11	9
5305-00-068-0508	4	10
	6	11
5305-00-068-0510	2	7
	4	4
	8	13
5305-00-071-2055	16	13
5305-00-071-2084	5	13
5310-00-080-6004	2	8
	12	12
5310-00-081-4219	14	7
	22	2
5315-00-081-7015	24	26
	24	56
5306-00-087-3762	6	5
5305-00-088-9044	26	3
4730-00-118-5177	24	5
4730-00-143-3941	14	2
4730-00-152-0128	24	15
5331-00-167-5166	22	13
5315-00-200-3183	5	9
5305-00-206-3689	8	3
5310-00-208-1918	25	17
5310-00-209-0965	12	3
	16	12
5315-00-209-7273	5	7
	12	2

STOCK NUMBER	FIG.	ITEM
5305-00-225-3843	14	31
5310-00-225-6993	1	5
	5	19
	22	23
5306-00-225-8496	24	31
	24	61
5306-00-226-4822	11	26
5306-00-226-4825	2	12
5306-00-226-4829	24	29
	24	59
5305-00-226-4831	23	4
5306-00-226-4832	22	4
5306-00-226-4834	14	6
5315-00-239-8032	8	12
5315-00-241-7332	11	5
5305-00-253-5614	10	1
4730-00-254-6211	24	11
	24	40
5310-00-261-7163	8	4
4730-00-270-4580	24	7
	24	47
5310-00-275-9301	26	21
4730-00-277-8750	24	9
	24	38
4730-00-277-9672	24	8
	24	34
5315-00-298-1499	16	4
5310-00-407-9566	2	5
	11	27
	14	9
	22	3
	23	1
	24	22
	24	52
4730-00-421-1363	14	11
3110-00-455-0374	21	4
5330-00-485-3586	14	5
	14	12
5310-00-543-2410	26	20
5305-00-543-2419	5	22
	12	13
4730-00-555-1152	24	12
4730-00-574-8807	24	10
5315-00-576-0421	7	1
5310-00-582-5965	4	11
	6	10
	8	20
	11	8

STOCK NUMBER	FIG.	ITEM
5320-00-584-9078	2	2
4730-00-585-2309	17	9
5930-00-615-6731	26	4
5310-00-619-4848	11	6
5310-00-637-9541	2	9
	4	3
	5	3
	8	14
	12	16
5305-00-709-8539	12	4
5305-00-724-5834	15	4
5310-00-732-0558	2	10
	5	5
	12	17
5310-00-761-6882	8	19
5310-00-763-8921	16	2
5340-00-779-5620	24	13
4730-00-784-2633	14	16
5342-00-789-8409	14	40
4730-00-804-1923	22	27
5310-00-809-4058	25	19
5310-00-809-5997	1	4
	5	18
	11	11
	11	35
5310-00-809-8533	11	23
5310-00-809-8541	11	4
4730-00-812-7999	4	17
5310-00-820-6653	6	4
4730-00-837-7073	14	23
5315-00-842-3044	25	15
5315-00-845-7787	11	24
4720-00-847-1710	BULK	3
5305-00-889-2999	26	18
4730-00-897-2043	14	13
5315-00-904-1673	8	18
4730-00-906-0721	14	4
5340-00-912-8870	22	7
9905-00-917-7167	9	1
9905-00-917-7168	9	6
4730-00-921-3240	24	20
	24	49
5305-00-922-7994	16	15
5310-00-931-8167	14	10
5310-00-933-8120	26	5
5310-00-934-9764	9	4
	22	9
	24	4
	24	37
4730-00-942-9147	22	5
4730-00-958-8599	22	15
5330-00-968-1753	26	19
5310-00-984-3806	2	4
	5	1
	11	21
	16	11
5305-00-984-6210	9	2
5305-00-984-6212	9	7
	22	22
5305-00-984-6214	9	5
5305-00-989-7435	26	15
5305-00-990-1347	8	1
5305-00-993-1848	26	14
4730-00-999-9830	14	15
4730-01-020-8435	24	41
4730-01-024-1347	14	34
4730-01-025-4918	14	39
5340-01-031-0905	24	2
	24	35
4820-01-038-2313	14	24
4730-01-057-7109	24	33
4730-01-057-9597	22	10
4720-01-058-7213	BULK	4
5310-01-066-6759	25	27
5365-01-071-8261	22	12
4730-01-077-4889	14	26
5331-01-094-9071	20	5
2990-01-108-6147	11	14
4730-01-116-1658	14	14
5340-01-133-8831	11	29
6240-01-138-4366	26	9
5315-01-140-4870	8	8
5305-01-140-9118	4	7
4730-01-155-3163	24	18
	24	46
4730-01-164-3365	24	6
	24	39
5365-01-198-1650	20	10
5365-01-198-3321	20	11
5360-01-199-6157	20	6
4730-01-204-5145	19	16
4730-01-211-5222	19	8
5310-01-212-2299	18	2
5310-01-214-4946	25	7
5340-01-216-1165	14	30
5305-01-217-2126	17	6
	20	1
5365-01-217-7125	18	12
2590-01-217-8142	21	7
5305-01-227-5660	25	11
5325-01-240-7163	21	5
2805-01-244-0125	11	36
5305-01-249-8564	25	26
5305-01-271-3276	18	1
5365-01-278-6157	18	6
5310-01-281-0563	23	2

STOCK NUMBER	FIG.	ITEM
5315-01-288-6747	25	5
5305-01-296-1863	14	37
4730-01-316-5785	24	42
5305-01-325-8387	5	2
	8	23
5305-01-325-8388	1	1
4730-01-327-5244	14	38
5310-01-339-6531	14	36
	16	3
5340-01-343-5833	22	24
5331-01-344-4335	14	33
5315-01-351-5128	12	15
5305-01-357-4683	25	21
5305-01-358-8402	16	7
5310-01-364-4211	11	7
3040-01-372-8553	8	11
5340-01-375-6141	14	20
5315-01-377-1554	25	8
4730-01-383-6756	24	17
5340-01-429-8551	26	12
3950-01-450-5478	16	1
3120-01-453-2303	12	11
5340-01-453-2469	11	25
5340-01-453-2520	8	2
5340-01-453-2528	24	30
	24	60
5340-01-453-2532	5	4
5340-01-453-2533	8	7
5340-01-453-2542	8	21
5340-01-453-2544	8	7
5340-01-453-2554	8	15
4720-01-453-5137	14	32
4730-01-453-5390	14	35
4730-01-453-5411	22	14
4720-01-453-5420	22	32
3950-01-453-5422	12	7
4720-01-453-5448	22	1
5360-01-453-5457	12	14
4720-01-453-5469	22	17
3950-01-453-5524	12	8
4710-01-453-5637	14	29
4710-01-453-5648	14	1
4710-01-453-5663	14	21
5306-01-453-5940	14	18
4820-01-453-6133	14	8
4320-01-453-6465	23	3
5365-01-453-6479	12	6
5365-01-453-7218	15	5
2510-01-453-7303	11	32
2590-01-453-7423	4	16
	8	22
5360-01-453-7574	11	17
5360-01-453-7577	1	7

STOCK NUMBER	FIG.	ITEM
5360-01-453-8119	11	33
3040-01-453-8550	16	8
4710-01-453-8578	BULK	1
3040-01-453-8635	8	9
5315-01-453-8667	12	18
3040-01-453-8706	16	14
3040-01-453-8714	6	3
3040-01-453-8731	16	6
3020-01-453-8749	12	21
3040-01-453-8753	6	8
2540-01-453-8763	2	3
3040-01-453-8771	4	9
3040-01-453-8773	4	1
3040-01-453-8796	8	5
6150-01-453-9023	26	24
5315-01-453-9031	24	27
	24	57
5340-01-453-9094	11	15
2590-01-453-9122	5	21
2590-01-453-9248	5	21
3990-01-453-9712	6	2
3020-01-454-0316	12	9
3020-01-454-0321	12	5
5360-01-454-0425	11	13
5360-01-454-0427	11	13
5315-01-454-0517	12	1
4820-01-454-0733	24	19
	24	50
2510-01-454-0909	11	32
5315-01-454-2268	4	8
5315-01-454-2338	15	8
5315-01-454-2368	11	16
5315-01-454-2514	8	6
3110-01-454-3228	6	9
5310-01-454-3837	5	12
5310-01-454-3840	4	13
5315-01-454-4326	11	3
5315-01-454-5458	12	19
5315-01-454-5755	1	9
5315-01-454-6001	11	22
5315-01-454-6752	5	8
5315-01-454-6758	7	3
5315-01-454-6761	5	11
2510-01-454-7251	11	1
5340-01-454-7279	5	16
5340-01-454-7280	16	5
5340-01-454-7281	16	9
5340-01-454-7282	24	24
	24	54
5340-01-454-7283	16	10
5340-01-454-7284	2	6
5340-01-454-7285	2	13
5340-01-454-7287	2	11

STOCK NUMBER	FIG.	ITEM
4030-01-454-8215	15	2
4030-01-454-8219	15	7
5315-01-454-8224	4	15
5315-01-454-8256	4	2
5365-01-454-9552	6	1
5365-01-454-9554	6	7
5340-01-455-1838	22	21
5340-01-455-1839	22	19
5340-01-455-2090	5	17
5340-01-455-2092	5	17
5340-01-455-2093	5	14
5340-01-455-2095	5	14
5315-01-455-4898	5	6
5305-01-455-5055	5	20
5360-01-455-7581	5	10
5340-01-455-8403	25	25
9905-01-456-3829	10	4
9905-01-456-4282	10	6
9905-01-456-4287	10	3
7690-01-456-5113	2	1
9905-01-456-5361	10	2
5340-01-456-5631	11	15
5360-01-456-5633	25	16
2590-01-456-5819	11	19
5305-01-456-6925	25	14
5360-01-456-6943	25	1
5340-01-456-6964	25	13
5340-01-456-6969	25	12
4710-01-456-8765	22	11
5305-01-456-8936	26	23
4710-01-456-9295	22	26
4710-01-456-9299	22	29
5930-01-456-9303	26	11
5305-01-456-9393	11	34
5998-01-456-9734	26	22
4710-01-457-1080	14	22
8145-01-457-1170	3	2
4710-01-457-1284	14	17
4710-01-457-1297	14	25
4710-01-457-1303	22	31
4710-01-457-1375	22	30
4710-01-457-1599	22	6
5315-01-457-2385	3	1
5930-01-457-3028	26	7
5340-01-457-6136	4	12
5340-01-457-7628	4	14
9905-01-457-8344	26	10
9905-01-457-8347	10	7
9905-01-457-8348	10	5
9905-01-457-8351	10	8
5340-01-457-8615	7	2
5340-01-457-8923	25	6
5340-01-457-8962	26	17
2920-01-457-8996	26	8
5315-01-457-9220	11	31
4710-01-458-0122	22	28
4030-01-458-0680	15	6
5315-01-458-2064	25	20
5930-01-458-3844	26	6
7690-01-458-4240	26	16
5310-01-458-5052	11	30
5331-01-458-9296	17	10
2590-01-458-9395	25	18
2590-01-458-9401	25	3
5340-01-459-1294	4	6
5340-01-459-2193	26	13
3910-01-460-3891	6	6
5330-01-460-4706	14	3
3990-01-461-0414	1	2
3990-01-461-0423	1	3
3990-01-461-0440	1	6
3990-01-461-0443	1	10
5310-01-461-1608	11	28
4010-01-461-2608	24	28
	24	58
5310-01-461-4474	5	15
5310-01-466-4092	24	23
	24	53
5895-01-467-7784	26	1
4720-01-475-3029	BULK	5
4710-01-476-0279	25	4
3120-01-477-3510	25	9
5331-01-480-2366	14	27
5305-01-480-4697	25	2
3110-01-480-5406	12	20
5930-01-480-5432	26	2
5365-01-486-3418	25	24
5365-01-486-3420	25	23
5340-01-486-4890	25	22
5340-01-486-4897	25	22
4010-01-528-1747	15	3
4010-01-561-2608	8	16
5330-01-571-2232	KITS	1
5310-04-455-1836	5	4
3110-12-174-4236	21	3
2540-20-000-7371	11	1
4720-20-000-7377	22	16
4710-20-000-9086	14	28
3020-20-001-8603	21	8
3040-20-003-3567	12	22
3040-20-003-6768	21	6
3110-21-893-3048	18	8
5305-21-908-1937	18	4
4820-21-909-4456	19	9
4030-21-910-6656	19	15
4710-21-914-5839	17	3

STOCK NUMBER	FIG.	ITEM
4320-21-914-7074	19	10
5365-21-914-7131	20	12
5365-21-914-7132	19	11
5365-21-914-7133	19	12
2590-21-914-8056	19	1
3020-21-914-8060	18	7
3040-21-914-8061	19	14
3040-21-914-8062	18	13
3040-21-914-8063	18	11
5325-21-914-8216	19	5
5325-21-914-9925	19	7
3040-21-914-9942	18	14
4320-21-921-1420	17	8

END OF WORK PACKAGE

FIELD MAINTENANCE
PART NUMBER INDEX

PART NUMBER	FIG.	ITEM
A4806091	14	21
A4806092	14	22
A4806093	14	29
A4806094	14	28
A4806095	14	1
A4806096	14	32
A4806160	23	3
A4809088	12	7
A4809089	12	8
A4809131	15	2
A4809149	16	14
A4809151	16	9
A4809152	16	6
A4809159	15	8
A4809163	15	5
A4809164	12	11
A4809165	12	6
A4809173	16	1
A4809184	15	7
A4809211	12	22
A4809240	15	1
A4809250	12	20
A4809260	12	18
A4809270	12	1
A4809280	12	9
A4809290	12	19
A4809300	12	5
A4809370	16	5
A4809380	16	10
A4809400	16	8
A4810055	6	8
A4810056	6	7
A4810074	6	3
A4810075	6	1
A4810080	6	6
A4810110	6	2
A4810151	2	11
A4810260	2	3
A4810263	2	6
A4810480	2	13
A4814071	24	24
	24	54
A52481-7	26	19
A6206062	22	16
A6206063	22	17
A6206064	22	14
A6206066	14	25
A6206067	14	17
A6206069	22	32
A6206071	22	1
A6208060	12	10
A6210050	24	30
	24	60
A6210060	11	1
A6210061	11	3
A6210062	11	16
A6210063	11	22
A6210064	11	13
A6210065	11	13
A6210066	11	25
A6210080	11	2
A6210100	11	2
A6210110	11	12
A6210120	11	12
A6210130	11	20
A6210140	11	20
A6210150	11	32
A6210160	11	32
A6210170	11	15
A6210180	11	15
A6210190	5	14
A6210340	5	4
A6210350	5	4
A6210360	8	7
A6210370	8	7
A6210371	8	6
A6210372	8	15
A6210400	11	1
A6210410	5	14
A6210500	8	11
A6210600	8	10
A6210603	8	9
A6210610	1	10
A6210620	1	2
A6210630	1	3
A6210640	1	6
A6210643	6	9
A6210650	5	6
A6210660	5	17
A6210670	5	17
A6210671	5	12
A6210680	8	5
A6210683	8	21
A6210693	7	2
A6210700	7	3
A6210710	5	8

PART NUMBER	FIG.	ITEM
A6210714	22	21
A6210715	22	19
A6210721-1	5	21
A6210721-2	5	21
A6210730	4	1
A6210740	4	8
A6210750	4	9
A6210755	4	6
A6210757	4	2
A6210758	4	13
A6210760	4	14
A6214061	24	48
A6214080	24	45
AN365-1024A	25	17
APEX50-ZP-1/2-601612	13	8
AS-2-D	14	18
AS1035-040404	22	27
AS28775-048	20	5
AS3047	21	3
AS3208-05	22	13
AS3209016CP	14	33
AS904-B46-70	17	10
B-1124A	18	4
B1821BH025C075N	4	10
	6	11
B1821BH025C100N	14	31
B1821BH031C050N	11	26
B1821BH031C075N	2	12
B1821BH031C125N	24	29
	24	59
B1821BH031C150N	23	4
B1821BH031C175N	22	4
B1821BH031C225N	14	6
B1821BH038C088N	4	7
B1821BH038C100N	2	7
	4	4
	8	13
B1821BH038C113N	5	22
	12	13
B1821BH044C150N	16	13
B1821BH044F150N	12	4
B1821BH050C550N	5	13
B1821BH075C250N	16	15
B1821BH075F100N	14	37
B20-3-BP	24	17
BBD01468	13	9
BBD14079	5	15
BBD15009	3	2
BBD15014	4	15
BBD15015	11	19
BBD15016	1	9
BBD15019	5	11
BBD15020	4	12

PART NUMBER	FIG.	ITEM
BBD15023	12	21
BBD15027-1	8	2
BBD15027-2	8	2
BBD15028	10	3
BBD15029	2	1
BBD15030	10	2
BBD15031	10	4
BBD15032	10	7
BBD15033	10	5
BBD15034	10	6
BBD15035	10	8
BBD17366	4	16
	8	22
BBD20000-2	13	1
BBD20003	13	3
BBD20006	13	13
BBD20013	13	12
BBD20014	13	4
BBD30075	15	3
BBD314007	22	26
BBD314017	22	28
BBD314022	22	30
BBD314027	22	11
BBD314030	22	31
BBD314043	22	29
BBD314046	22	6
BBD5R502D	11	14
BBD810046	5	16
C0975-105-2500M	5	10
C1225-085-5000S	1	7
CBEA-LAN-BCK	14	8
CCN-91001	25	25
CM8176	26	9
CPR104420-1	BULK	4
D-2540	11	28
D231-3	11	29
DA-00E-100	26	1
DA-00E-501	26	17
E0850-085-2750M	11	33
E1750-207-5500M	11	17
E2000-177-8000M	12	14
FD40-1000-04-04	24	18
	24	46
J5124-2010202B	24	11
	24	40
M24135/10-05	BULK	2
M24135/10-05-62	24	16
M24135/10-05-9.5	24	14
M45913/1-5CG5C	2	4
	5	1
	11	21
	16	11
M45913/1-8CG5C	1	5

PART NUMBER	FIG.	ITEM
	5	19
	22	23
MAH-6	24	42
MS16208-137	6	5
MS16562-227	1	8
MS16562-236	4	5
MS16562-240	5	9
MS17984C415	8	18
MS17984C516	12	15
MS20392-3C31	24	26
	24	56
MS20470A4-4	2	2
MS21318-20	10	1
MS21333-10	22	7
MS21333-3	24	2
	24	35
MS21333-6	24	13
MS24665-136	24	21
	24	51
MS24665-283	25	15
MS24665-289	11	24
MS24665-360	16	4
MS24665-491	11	10
MS24665-511	7	1
MS24665-513	8	12
MS24665-625	5	7
	12	2
MS25224-1	26	4
MS27183-10	25	19
MS27183-12	14	7
	22	2
MS27183-14	2	8
	12	12
MS27183-17	1	4
	5	18
	11	11
	11	35
MS27183-23	11	23
MS27183-27	11	4
MS35190-292	8	1
MS35198-70	8	3
MS35198-87	11	18
MS35206-217	26	18
MS35206-263	9	2
MS35206-265	9	7
	22	22
MS35206-267	9	5
MS35207-260	26	3
MS35207-264	26	15
MS35207-265	26	14
MS35214-31	24	25
	24	55
MS35214-55	22	20
MS35336-29	8	4
MS35338-138	26	5
MS35338-40	26	20
MS35338-43	9	3
	22	8
	24	3
	24	36
MS35338-44	4	11
	6	10
	8	20
	11	8
MS35338-45	2	5
	11	27
	14	9
	22	3
	23	1
	24	22
	24	52
MS35338-47	12	3
	16	12
MS35338-50	6	4
MS35338-51	14	36
	16	3
MS35338-65	17	7
	20	2
MS35649-205B	9	4
	22	9
	24	4
	24	37
MS35649-43	26	21
MS51504A6	4	17
MS51510A10	14	16
MS51527A4	17	9
MS51527A6	14	2
MS51529A10	14	11
MS51531B10	14	13
MS51534B10-6	14	15
MS51963-87	15	4
MS51967-2	8	19
MS51967-23	16	2
MS51967-35	23	2
MS51967-6	14	10
MS51967-8	2	10
	5	5
	12	17
MS51987-422	8	8
MS90725-109	22	18
MS90725-113	1	1
MS90725-31	24	31
	24	61
MS90725-64	5	2
	8	23
N217	18	8

PART NUMBER	FIG.	ITEM
NAS1352C5-12	16	7
NB-4-040-AR	24	32
PO-006-201	26	22
R10-5.50-3	2	9
	4	3
	5	3
	8	14
	12	16
RS40-7	11	5
SAE J246 4-2 120102BA	24	9
	24	38
SAE J246 4-4 120102BA	24	7
	24	47
SP3	14	19
VCL4P05A	14	24
VS269AB-4-2	24	49
WW-P-471-ACABUB	20	3
015587T	11	9
0411-005	11	37
0603-10-4	14	14
075-444	13	14
075-504	13	10
10-12 070220C	14	26
1001978	14	23
1003782	15	6
108-016	13	6
10F50XS	14	4
11-043	25	20
11-289	25	5
111-018	13	5
117971A	25	21
13221E4806-1	BULK	3
13221E4806-1-2.125	25	10
145454	8	17
158-01-600	26	12
165-143	13	2
1812-10S-PS-E31	26	23
195-01-678	26	10
195-01-683	26	16
20034	20	11
20063	19	11
20171	19	15
20183	21	7
20340	20	6
20372	18	12
20450	18	6
20458	19	9
20640	21	8
20662	19	12
20663	19	7
20664	19	5
20670	18	7
207ACBH-2	24	10
207ACBH-4	24	6
	24	39
2083HX	25	7
21079	20	4
2160/160 PP	14	20
2160PP	14	30
218-444	22	10
21NE-040	25	27
22021-10	14	40
2203B510	24	12
22214	21	6
22272	18	11
22273	19	14
22277	21	1
22360	19	3
22361	19	1
22374	18	5
22399	19	10
22400	18	14
22402	18	13
22550-211	14	41
22834	18	10
22836	20	12
229612N	24	19
	24	50
23088	20	7
23157	KITS	1
23556	17	3
25016	17	11
25024	20	10
25032	19	8
25085	19	16
25148	18	9
25150	19	4
25187	21	9
25264	17	6
	20	1
25265	18	1
25328	18	2
25484	19	13
25489	19	6
25492	21	10
25500	21	2
25539	21	5
25716	17	5
25869	20	8
25870	20	9
25895	17	1
26049	19	2
26120	17	2
26125	17	4
26324	18	3
26384	17	8

PART NUMBER	FIG.	ITEM
29010024	13	11
3-906V0894	14	3
3-910	14	5
	14	12
3/8-HP-S	22	15
30182-4-4	24	15
3055065	26	24
30882-4-4B	24	41
3129059	25	1
3130933	25	6
3130939	25	3
3138348	25	18
3138396	25	13
3145757	25	12
3149272	25	16
31NT91-1	26	2
3234829	25	2
3234830	25	4
3234843	25	9
3274524	25	22
3274525	25	22
3274653	25	24
3276180	25	23
341057	13	7
356AX	25	8
36850AX	25	11
375-10-600	26	8
380-04-600	26	13
380-07-600	26	6
4-2 120202BA	24	20
4-4 120101BA	24	8
	24	34
4-4 120202BA	24	5
4-6 070102C	22	5
40152-3	9	6
40153-3	9	1
435-04-603	26	11
435-05-605	26	7
4738-4-4B	24	44
51047AX	25	14
5175K51	BULK	1
5175K51-AR	24	1
55830-47	21	4
5606-8-10S	14	38
5608-10-10S	14	39
5610-10-10S	14	34
5691-8-10S	14	35
59031AX	25	26
5P5ON-S	22	12
63NTA-4	24	33
7HB220	14	27
836-4-10.5	24	43
836-4-BLU	BULK	5
88-22790-5	24	23
	24	53
90177A224	22	24
90312A310	8	16
	24	28
	24	58
90312A610	22	25
92196A585	5	20
92316A716	11	34
92735A430	11	31
94895A825	11	30
98026A033	11	7
9833K22	11	36
98416A011	24	27
	24	57
98497A661	3	1
99-51505-017	11	6

END OF WORK PACKAGE

CHAPTER 8

SUPPORTING INFORMATION
FOR
M15 BRIDGE ADAPTER PALLET (BAP) NSN 3990-01-442-1939

CHAPTER CONTENTS

Work Package Title	WP Number
References	WP 0076
Maintenance Allocation Chart (MAC) Introduction	WP 0077
Maintenance Allocation Chart (MAC)	WP 0078
Components of End Item (COEI) and Basic Issue Items (BII) Lists	WP 0079
Additional Authorization List (AAL)	WP 0080
Expendable and Durable Items List	WP 0081
Mandatory Replacement Parts	WP 0082

FIELD MAINTENANCE
REFERENCES

SCOPE

This work package lists all field manuals, forms, technical manuals, and miscellaneous publications referenced in this manual.

ARMY REGULATIONS

AR 200-1	Environmental Protection and Enhancement
AR 700-138	Army Logistics Readiness and Sustainability
CTA 8-100	Army Medical Department Expendable/Durable Items
CTA 50-909	Field and Garrison Furnishings and Equipment
CTA 50-970	Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)

DEPARTMENT OF ARMY PAMPHLETS (DA PAM)

DA PAM 738-751	Functional Users Manual for The Army Maintenance Management System - Aviation (TAMMS-A)
DA PAM 750-8	The Army Maintenance Management System (TAMMS) Users Manual

FIELD MANUALS

FM 3-11.3	Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Contamination Avoidance
FM 3-11.4	Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Protection
FM 3-11.5	Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination
FM 4-25.11	First Aid
FM 9-207	Operation and Maintenance of Ordnance Material in Cold Weather
FM 90-13	River Crossing Operations

FORMS

DA FORM 2028	Recommended Changes to Publications and Blank Forms

FORMS - Continued

DA FORM 2404	Equipment Inspection and Maintenance Worksheet
DA FORM 2407	Maintenance Request
DA FORM 5988-E	Equipment Inspection and Maintenance (Electronic) Worksheet
DD FORM 314	Preventive Maintenance Schedule and Record
DD FORM 1397	Processing and Deprocessing Record for Shipment, Storage, and Issue of Vehicles and Spare Engines
SF 364	Report of Discrepancy (ROD)
SF 368	Product Quality Deficiency Report
STA Form 4895	Equipment Preservation Data Sheet (EPDS)

MILITARY STANDARDS

MIL-STD-3003A	Preparation for Shipment and Storage of Wheeled Vehicles
MIL-T-704	Paints, Dopes, Varnishes and Related Products

TECHNICAL BULLETINS

TB 43-0209	Color, Marking, and Camouflage Painting of Military Vehicles, Construction Equipment and Materials Handling Equipment

TECHNICAL MANUALS

TM 5-5420-278-10	Operator's Manual for Improved Ribbon Bridge (IRB)
TM 5-5420-209-12	Operator’s and Unit Maintenance Manual for Improved Float Bridge (Ribbon Bridge)
TM 9-2320-425-10	Truck, Common Bridge Transport (CBT), 8X8 M1977A2
TM 9-2320-435-10	Truck, Common Bridge Transport (CBT), 8X8 M1977
TM 9-2330-385-10	Operator's Manual for Palletized Load System Trailer (PLST) Model M1076
TM 750-244-6	Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use

END OF WORK PACKAGE

FIELD MAINTENANCE
MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION

The Army Maintenance System MAC

This introduction provides a general explanation of all maintenance and repair functions authorized at the two maintenance levels under the Two-Level Maintenance System concept.

This MAC (immediately following the introduction) designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component shall be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC as:

- Field – includes two sub columns, Crew (C) and Maintainer (F).
- Sustainment – includes two sub columns, Below Depot (H) and Depot (D).

The maintenance to be performed at field and sustainment levels is described as follows:

- **Crew Maintenance**. The responsibility of a using organization to perform maintenance on its assigned equipment. It normally consists of inspecting, servicing, lubricating, adjusting, and replacing parts, minor assemblies, and subassemblies. The replace function for this level of maintenance is indicated by the letter "C" in the third position of the SMR code. A "C" appearing in the fourth position of the SMR code indicates complete repair is possible at the crew maintenance level.
- **Maintainer Maintenance**. Maintenance accomplished on a component, accessory, assembly, subassembly, plug-in unit, or other portion, either on the system or after it is removed. The replace function for this level of maintenance is indicated by the letter "F", appearing in the third position of the SMR code. An "F" appearing in the fourth position of the SMR code indicates complete repair is possible at the field maintenance level. Items are returned to the user after maintenance is performed at this level.
- **Below Depot Sustainment**. Maintenance accomplished on a component, accessory, assembly, subassembly, plug-in unit, or other portion either on the system or after it is removed. The replace function for this level of maintenance is indicated by the letter "H" appearing in the third position of the SMR code. An "H" appearing in the fourth position of the SMR code indicates complete repair is possible at the below depot sustainment maintenance level. Items are returned to the supply system after maintenance is performed at this level.
- **Depot Sustainment**. Maintenance accomplished on a component, accessory, assembly, subassembly, plug-in unit, or other portion, either on the system or after it, is removed. The replace function for this level of maintenance is indicated by the letter "D" or "K" appearing in the third position of the SMR code. Depot sustainment maintenance can be performed by either depot personnel or contractor personnel. A "D" or "K", appearing in the fourth position of the SMR code indicates complete repair is possible at the depot sustainment maintenance level. Items are returned to the supply systems after maintenance is performed at this level.

The tools and test equipment requirements table (immediately following the MAC) lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks table (immediately following the tools and test equipment requirements) contains supplemental instructions and explanatory notes for a particular maintenance function.

Maintenance Functions

Maintenance functions are limited to and defined as follows:

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).

The Army Maintenance System MAC - Continued

Test.

To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.

Service.

Operations required periodically to keep an item in proper operating condition; e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases. This includes scheduled exercising and purging of recoil mechanisms. The following are examples of service functions:

Unpack.

To remove from packing box for service or when required for the performance of maintenance operations.

Repack.

To return item to packing box after service and other maintenance operations.

Clean.

To rid the item of contamination.

Touch up.

To spot paint scratched or blistered surfaces.

Mark.

To restore obliterated identification.

Adjust.

To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.

Align.

To adjust specified variable elements of an item to bring about optimum or desired performance.

Calibrate.

To determine and cause corrections to be made or to be adjusted on instruments of test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons 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.

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.

The Army Maintenance System MAC - Continued

Paint (ammunition only).

To prepare and spray color coats of paint so that the ammunition can be identified and protected. The color indicating primary use is applied, preferably, to the entire exterior surface as the background color of the item. Other markings are to be repainted as original so as to retain proper ammunition identification.

Replace.

To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and assigned maintenance level is shown as the third position code of the Source, Maintenance and Recoverability (SMR) code.

Repair.

The application of maintenance services, including fault location/troubleshooting, removal/installation, 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.
The following definitions are applicable to the " **repair**" maintenance function:

- **Services.** Inspect, test, service, adjust, align, calibrate, and/or replace.
- **Fault location/troubleshooting.** 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).
- **Disassembly/assembly.** The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).
- **Actions.** Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

Overhaul.

That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

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 (e.g., hours/miles) considered in classifying Army equipment/components.

EXPLANATION OF COLUMNS IN THE MAC

Column (1) Group Number. Column (1) lists Functional Group Code (FGC) numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).

Column (2) Component/Assembly. Column (2) contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

Column (3) Maintenance Function. Column (3) lists the functions to be performed on the item listed in column (2). (For a detailed explanation of these functions refer to "Maintenance Functions" outlined above).

The Army Maintenance System MAC - Continued

Column (4) Maintenance Level. Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicating work time required (expressed as man hours in whole hours or decimals) in the appropriate subcolumn. This work time 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 varies at different maintenance levels, appropriate work time figures are to 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 time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are as follows:

Field:
- C Crew maintenance
- F Maintainer maintenance

Sustainment:
- L Specialized Repair Activity (SRA)
- H Below depot maintenance
- D Depot maintenance

NOTE

The "L" maintenance level is not included in column (4) of the MAC. Functions to this level of maintenance are identified by work time figure in the "H" column of column (4), and an associated reference code is used in the REMARKS column (6). This code is keyed to the remarks and the SRA complete repair application is explained there.

Column (5) Tools and Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools), common Test, Measurement and Diagnostic Equipment (TMDE), and special tools, special TMDE and special support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.

Column (6) Remarks Code. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks table entries.

Explanation of Columns in the Tools and Test Equipment Requirements

Column (1) - Tool or Test Equipment Reference Code. The tool or test equipment reference code correlates with a code used in column (5) of the MAC.
Column (2) - Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.
Column (3) - Nomenclature. Name or identification of the tool or test equipment.
Column (4) - National Stock Number (NSN). The NSN of the tool or test equipment.
Column (5) - Tool Number. The manufacturer's part number.

Explanation of Columns in the Remarks

Column (1) - Remarks Code. The code recorded in column (6) of the MAC.
Column (2) - Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC."

END OF WORK PACKAGE

FIELD MAINTENANCE
MAINTENANCE ALLOCATION CHART (MAC)

Table 1. MAINTENANCE ALLOCATION CHART (MAC)

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			FIELD		SUSTAINMENT			
			CREW	MAINTAINER	BELOW DEPOT	DEPOT		
			C	F	H	D		
1000	BAP Assembly	Inspect	0.5	0.25			1, 2	
		Service	1.0					
		Test		*				A
		Repair	1.0				1, 2, 7	
1100	Front Pin Lock Assembly, Right or Left Side	Inspect		0.1			1, 2	
		Adjust		0.1				
		Repair		1.0				
1200	Winch Frame Assembly	Inspect	0.1				1	
		Repair		1.0				
1210	Cable Assembly	Inspect		0.3			1	
		Service		0.5				
		Replace		1.0				
		Repair		1.0				
1220	Winch Assembly	Inspect		0.5				
		Replace		1.0			1, 4, 5	

Table 1. MAINTENANCE ALLOCATION CHART (MAC) - Continued

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			FIELD		SUSTAINMENT			
			CREW	MAINTAINER	BELOW DEPOT	DEPOT		
			C	F	H	D		
		Repair		2.2				
		Overhaul		2.0				
1230	Winch Brake Hub Assembly	Inspect		1.0				
		Replace		2.0			1, 2, 3, 6	
		Repair		2.0				
1300	Hydraulic Installation	Inspect	0.1				1, 2	
		Repair		1.0				
1310	Hydraulic Hand Pump	Replace		0.5			1, 2	
		Repair		1.5				
1400	Air Lines Installation	Inspect		0.1			1	
		Repair		1.0				
1500	Front BAP Lock Assembly	Inspect	0.1					
		Replace		1.0			1, 4, 5	
1600	Electrical Controls	Replace		0.1				
		Repair		*			1, 2	B

Table 2. TOOLS AND TEST EQUIPMENT

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	F	Forward Repair System (FRS)	4940-01-533-1621	SC4940-95-E42
2	F	Tool Kit, General Mechanic's: Automotive	5180-01-483-0249	12B470000-1
3	F	Arbor Press		11671961
4	F	Respirator, Air Filter	4240-01-269-4169	313000
5	F	Wrench, Torque, 20-100 lb-ft (27-136 N·m), 3/8 in. Drive	5120-01-426-7580	1002MFR
6	F	Wrench, Torque, 40-200 lb-in (6-23 N·m), 3/8 in. Drive	5120-01-092-3278	2002MR
7	F	Wrench, Torque, 50-250 lb-ft (68-339 N·m), 1/2 in. Drive	5120-01-426-7585	2503MFR

Table 3. REMARKS

REMARK CODE	REMARKS
A	No specific times established. Times required for inspection, service, or test will depend on extent of testing required.
B	No specific times established. Times required for replacement or repair will depend on extent of work required.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

INTRODUCTION

SCOPE.

This work package lists components of end item (COEI) and basic issue items (BII) for the Bridge Adapter Pallet (BAP) to help you inventory the items for safe and efficient operation of the equipment.

GENERAL.

The COEI and BII lists are divided into the following sections:

Section II, Components of End Item.

This listing is for information purposes only, and is not authority to requisition replacements. These items are part of the BAP. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.
There are no components of end item for the BAP System.

Section III, Basic Issue Items.

These essential items are required in order to place the BAP in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the BAP during operation and whenever it is transferred between property accounts. This list is your authority to request/requisition BII for replacement based on authorization of the end item by the Table of Organization and Equipment (TOE)/Modification Table of Organization and Equipment (MTOE). Illustrations are furnished to help you find and identify the items.

EXPLANATION of COLUMNS in the BII List

The following is an explanation of the columns in Section III.

Column (1)—Illus. [Illustration] Number:

Gives you the number of the item illustrated.

Column (2)—National Stock Number:

Identifies the national stock number of the item; this number will be used for requisitioning purposes.

Column (3)—Description, CAGEC and Part Number:

Identifies the Federal item name (in capital letters) followed by a minimum description when needed. The line below the description is the Commercial and Government Entity Code (CAGEC) (in parentheses) and the part number.

Column (4)—U/I (Unit of Issue):

Indicates how the item is issued for the national stock number shown in the second column. This measure is expressed by a two-character alphabetical abbreviation: EA for "each."

Column (5)—Qty. Rqr:

INTRODUCTION - Continued

Indicates the quantity required for use with or on the equipment.

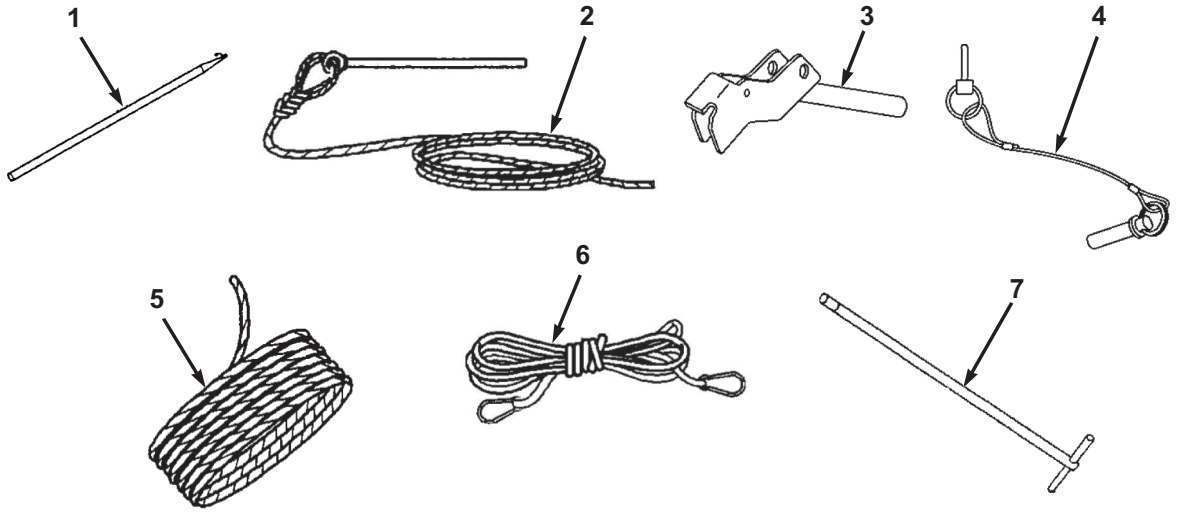


Table 1. Basic Issue Items (BII)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER (NSN)	(3) DESCRIPTION, PART NUMBER/ (CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
1	2040-00-007-1136	Hook, Boat 13216E9929 (97403)		EA	1
2	5420-01-045-1770	Latch Pin Assembly 13218E4360 (97403)		EA	1
3	5340-01-462-1757	Lock, Bail Bar 3191030 (45152)		EA	1
4	5315-01-431-0602	Pin, Bail Lock 2207830 (45152)		EA	1
5	4020-00-018-2186	Rope Fibrous, 3/4 in. Dia. 110 Ft. Lg. TR605 (81348)		EA	1
6	4020-01-453-6292	Cord Assembly, Fibrous A4810490 (3AR59)		EA	1
7	5420-01-030-5815	Wrench, Bay Drive Pin 13218E4347 (97403)		EA	1

END OF WORK PACKAGE

FIELD MAINTENANCE
ADDITIONAL AUTHORIZATION LIST

INTRODUCTION

SCOPE.

This work package lists additional items you are authorized for the support of the Bridge Adapter Pallet (BAP).

GENERAL.

The list identifies items that do not have to accompany the (CBT) and do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

EXPLANATION of Columns in the AAL

Column (1) - National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (2) - Description, Part Number/(CAGEC). Identifies the Federal item name (in Initial capital letters) followed by a minimum description when needed. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (3) - Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (4) - Unit of Issue (U/I) indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (1).

Column (5) - Quantity Recommended (Qty Recom). Indicates the quantity recommended.

Table 1. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER (NSN)	(2) DESCRIPTION, PART NUMBER/ (CAGEC)	(3) USABLE ON CODE	(4) U/I	(5) QTY RECM
	EXTENSION ASSEMBLY A4810810 (31902)		EA	1
5420-00-071-5273	BRIDGE SUPPLEMENTARY SET SC 5420-98-E51 (19207)		EA	1
	LOCKING COLLAR GT-RB-A4809211			

END OF WORK PACKAGE

FIELD MAINTENANCE
EXPENDABLE AND DURABLE ITEMS LIST

EXPENDABLE AND DURABLE ITEMS LIST INTRODUCTION

SCOPE

This appendix lists expendable and durable items that you will need to maintain the Bridge Adapter Pallet. This list is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970 (WP 0076), Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items); CTA 50-909 (WP 0076), Field and Garrison Furnishings and Equipment; or CTA 8-100 (WP 0076), Army Medical Department Expendable/Durable Items.

EXPLANATION OF COLUMNS IN THE EXPENDABLE/DURABLE ITEMS LIST

Column (1) Item No.

This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., Use adhesive (WP 0795, item 2)).

Column (2) Level.

This column identifies the lowest level of maintenance that requires the listed item (C = Crew, F = Maintainer).

Column (3) National Stock Number (NSN).

This is the NSN assigned to the item which you can use to requisition it.

Column (4) Item Name, Description, Part Number/(CAGEC).

This column provides the other information you need to identify the item. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (5) U/I.

Unit of Issue (U/I) code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Table 1. EXPENDABLE AND DURABLE ITEMS

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER/ (CAGEC)	(5) U/I
			Block, Retainer	
1	F	3040-20-003-3567	Block, Retainer A4809211 (3AR59)	EA
			Cable Ties	
2	F	5975-00-074-2072	Cable Ties 6-inch length MS3367-1-9 (81343)	HD
3	F	5975-01-273-8133	Cable Ties 12-inch length MS3367-3 (96906)	HD
			Cap and Plug Set	
4	F	5340-00-450-5718	Cap and Plug Set 10935405 (19207)	EA
			Cleaning Compound, Solvent	
5	F	6850-01-474-2316	Solvent, Cleaning 55-Gallon Drum MIL-PRF-680 Type II (81349)	DR
6	F	6850-01-474-2317	Solvent, Cleaning 5-Gallon Can MIL-PRF-680 Type II (81349)	CO
			Crocus Cloth	
7	F	5350-00-221-0872	Crocus Cloth MIL-C-16173 (80244)	PG
			Gloves, Protective	
8	F	8415-00-268-7859	Gloves, Protective A-A-50022 (58536)	PR
			Goggles, Safety	
9	F	4240-00-269-7912	Goggles, Safety 5023A (30760)	PR
			Grease, Automotive, Artillery	
10	F	9150-01-197-7688	Grease, Automotive, Artillery 2-1/4 oz tube M-10924-A (81349)	TU
11	F	9150-01-197-7693	Grease, Automotive, Artillery 14 oz cartridge M-10924-B (81349)	CA
12	F	9150-01-197-7690	Grease, Automotive, Artillery 1-3/4 lb can M-10924-C (81349)	CN
13	F	9150-01-197-7689	Grease, Automotive, Artillery 6-1/2 lb can M-10924-D (81349)	CN
14	F	9150-01-197-7692	Grease, Automotive, Artillery 35-lb can MIL-G-10924-E (81349)	CN
			Lubricating Oil, Engine, OEA	

Table 1. EXPENDABLE AND DURABLE ITEMS - Continued

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER/ (CAGEC)	(5) U/I
15	F	9150-00-402-2372	Lubricating Oil, Engine, OEA 5-gal can MIL-PRF-46167 (81349)	CN
16	F	9150-00-491-7197	Lubricating Oil, Engine, OEA 55-gal drum MIL-L-46167, MIL-PRF-46167 (81349)	DR
Lubricating Oil, Engine, OE/HDO 10				
17	F	9150-00-189-6727	Lubricating Oil, Engine, OE/HDO 10 1-qt can M2104-1-10W (81349)	QT
18	F	9150-01-186-6668	Lubricating Oil, Engine, OE/HDO 10 5-gal can MIL-PRF-2104 (81349)	CN
19	F	9150-00-191-2772	Lubricating Oil, Engine, OE/HDO 10 55-gal drum MIL-PRF-2104 (81349)	DR
20	F	9150-01-213-3118	Lubricating Oil, Engine, OE/HDO 10 bulk MIL-PRF-2104G (81349)	GL
Rag, Wiping				
21	F	7920-00-205-1711	Rag, Wiping 50-lb bale (64067)	BE
Tag, Identification				
22	F	9905-00-720-5377	Tag, Identification 12-105 (16956)	EA
Tape, Antiseizing (Pipe Thread)				
23	F	8030-00-889-3534	Tape, Antiseizing (Pipe Thread) AA58092-2-1 (58536)	RO
Rod, Welding 336 or 340				
24	F		Rod, Welding 6011	LB
Rod, Welding MG600				
25	F	3439-01-144-3824	Rod, Welding MG600	LB

END OF WORK PACKAGE

FIELD MAINTENANCE
MANDATORY REPLACEMENT PARTS

GENERAL.

This appendix is a cross-reference of item numbers to part numbers and is included for that purpose only.

EXPLANATION OF COLUMNS.

The four table columns of have the following headings:

Column (1) - Item Number.

This number is assigned to the entry in Table K-1 for cross-referencing to the part number. The item number appears in the "Materials/Parts" listing of each maintenance procedure.

Column (2) - Item Name.

This is the name given to the item in the "Materials/Parts" listing and in the text of the maintenance procedure.

Column (3) - Part Number.

This is the primary number used by the manufacturer, 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.

Column (4) - National Stock Number.

When available, the national stock number is listed.

Table 1. MANDATORY REPLACEMENT PARTS LIST

ITEM NO.	PART NUMBER /(CAGEC)	NATIONAL STOCK NUMBER (NSN)	NOMENCLATURE	QTY
1		-	Shim Stock, 0.040 in.	
2	108-016 (3AR59)	-	Locknut	
3	111-018 (3AR59)	-	Locknut	
4	165-143 (3AR59)	-	Cotter pin	
5	20372 (38335)	5365-01-217-7125	Spacer	
6	21NE-040 (56878)	5310-01-066-6759	Locknut	
7	22021-10 (00624)	5342-00-789-8409	Backup ring	

Table 1. MANDATORY REPLACEMENT PARTS LIST - Continued

ITEM NO.	PART NUMBER /(CAGEC)	NATIONAL STOCK NUMBER (NSN)	NOMENCLATURE	QTY
8	22550-211 (01276)	5330-00-017-9253	Preformed packing	
9	23157 (3G5P8)	5330-01-571-2232	Gasket and Seal Set	
10	25016 (38335)	-	O-ring (Part of kit PN 23157)	
11	25328 (38335)	5310-01-212-2299	Lockwasher	
12	25716 (38335)	-	Seal, Plain (Part of kit PN 23157)	
13	3-906V0894 (02697)	5330-01-460-4706	O-ring	
14	3-910 (02697)	5330-00-485-3586	O-ring	
15	356AX (45152)	5315-01-377-1554	Cotter pin	
16	63NTA-4 (93061)	4730-01-057-7109	Ferrule	
17	7HB220 (45152)	5331-01-480-2366	Packing, Preformed	
18	A4809184 (3AR59)	4030-01-454-8219	Hook latch kit	
19	A52481-7 (58536)	5330-00-968-1753	Gasket	
20	AN365-1024A (88044)	5310-00-208-1918	Locknut	
21	AS3208-05 (81343)	5331-00-167-5166	O-ring	
22	AS3209016CP (81343)	5331-01-344-4335	O-ring	
23	AS904-B46-70 (11314)	5331-01-458-9296	O-ring	
24	M45913/1-5CG5C (81349)	5310-00-984-3806	Locknut	
25	M45913/1-8CG5C (81349)	5310-00-225-6993	Locknut	
26	MS16562-227	5315-00-058-9756	Spring pin	

Table 1. MANDATORY REPLACEMENT PARTS LIST - Continued

ITEM NO.	PART NUMBER /(CAGEC)	NATIONAL STOCK NUMBER (NSN)	NOMENCLATURE	QTY
	(80205)			
27	MS16562-236 (80205)	5315-00-058-9782	Spring pin	
28	MS16562-240 (80205)	5315-00-200-3183	Spring pin	
29	MS20470A4-4 (80205)	5320-00-584-9078	Rivet	
30	MS21318-20 (80205)	5305-00-253-5614	Drive screw	
31	MS24665-136 (80205)	5315-00-017-9252	Cotter pin	
32	MS24665-283 (80205)	5315-00-842-3044	Cotter pin	
33	MS24665-289 (96906)	5315-00-845-7787	Cotter pin	
34	MS24665-360 (80205)	5315-00-298-1499	Cotter pin	
35	MS24665-491 (80205)	5315-00-059-0206	Cotter pin	
36	MS24665-511 (80205)	5315-00-576-0421	Cotter pin	
37	MS24665-513 (80205)	5315-00-239-8032	Cotter pin	
38	MS24665-625 (80205)	5315-00-209-7273	Cotter pin	
39	MS35336-29 (80205)	5310-00-261-7163	Star washer	
40	MS35338-40 (80205)	2130-00-543-2410	Lockwasher	
41	MS35338-43 (80205)	5310-00-045-3296	Lockwasher	
42	MS35338-44 (80205)	5310-00-582-5965	Lockwasher	
43	MS35338-45 (80205)	5310-00-407-9566	Lockwasher	
44	MS35338-47 (80205)	5310-00-209-0965	Lockwasher	

Table 1. MANDATORY REPLACEMENT PARTS LIST - Continued

ITEM NO.	PART NUMBER /(CAGEC)	NATIONAL STOCK NUMBER (NSN)	NOMENCLATURE	QTY
45	MS35338-50 (80205)	5310-00-820-6653	Lockwasher	
46	MS35338-51 (80205)	5310-01-339-6531	Lockwasher	
47	MS35338-65 (80205)	5310-00-011-5093	Lockwasher	
48	MS35649-205B (80205)	5310-00-934-9764	Lockwasher	
49	MS51987-422 (96906)	5315-01-140-4870	Spring pin	
50	R10-5.50-3 (08999)	5310-00-637-9541	Lockwasher	
51	RS40-7 (76005)	5315-00-241-7332	Cotter pin	

END OF WORK PACKAGE

INDEX

Subject **WP Sequence No.-Page No.**

A

ADDITIONAL AUTHORIZATION LIST..... WP 0080-1
AIR LINES AND FITTINGS REPLACEMENT (NEW CONFIGURATION)..... WP 0065-1
AIR LINES AND FITTINGS REPLACEMENT (OLD CONFIGURATION)..... WP 0064-1

B

BAP HOLD-DOWN LOCKS CHECKLIST..... WP 0015-1
BRIDGE BAY FREE LAUNCH..... WP 0011-1
BRIDGE BAY LAUNCHING INTRODUCTION..... WP 0009-1

C

CABLE ASSEMBLY REPLACEMENT..... WP 0057-1
CALM OR FAST WATER BRIDGE BAY RETRIEVAL..... WP 0012-1
CATWALK REPLACEMENT..... WP 0041-1
CENTER ROLLER AND/OR TRANSLOAD ROLLERS WILL NOT OPERATE..... WP 0023-1
CENTER ROLLER AND/OR TRANSLOAD ROLLERS WILL NOT OPERATE..... WP 0029-1
CENTER ROLLER HYDRAULIC SYSTEM REPAIR..... WP 0060-1
CENTER ROLLER REPAIR..... WP 0044-1
CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR (CBRN) DECONTAMINATION PROCEDURES..... WP 0022-1
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS..... WP 0079-1
CONTROL VALVE REPLACEMENT..... WP 0063-1
CONTROLLED BRIDGE BAY LAUNCH..... WP 0010-1

D

DECALS AND INSTRUCTION PLATES..... WP 0016-1

E

EQUIPMENT DESCRIPTION AND DATA..... WP 0002-1
EXPENDABLE AND DURABLE ITEMS LIST..... WP 0081-1

F

FIELD LEVEL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)..... WP 0036-1
FIELD MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST INTRODUCTION..... WP 0072-1
FRONT BAP LOCK REPLACEMENT..... WP 0066-1
FRONT PIN LOCK AIR RELEASE WILL NOT OPERATE DURING LAUNCH OF BRIDGE BAY..... WP 0024-1
FRONT PIN LOCK ASSEMBLY ADJUSTMENT AND REPAIR..... WP 0052-1
FRONT PIN LOCK WILL NOT ALIGN WITH BRIDGE BAY PIN..... WP 0028-1
FRONT PIN LOCK WILL NOT OPERATE..... WP 0030-1
FRONT ROLLER ASSEMBLY REPLACEMENT..... WP 0046-1

G

GENERAL INFORMATION..... WP 0001-1
GENERAL MAINTENANCE AND WELDING INSTRUCTIONS..... WP 0038-1
GENERAL TORQUE LIMITS..... WP 0071-1

INDEX - Continued

Subject	WP Sequence No.-Page No.
H	
HYDRAULIC HAND PUMP REPLACEMENT	WP 0062-1
I	
INTRODUCTION - PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)	WP 0034-1
L	
LABEL REPLACEMENT	WP 0051-1
LOADING BRIDGE ADAPTER PALLET (BAP) FROM THE GROUND	WP 0005-1
LOADING BRIDGE BAY FROM THE GROUND	WP 0007-1
LOCATION AND USE OF CONTROLS AND INDICATORS	WP 0004-1
LUBRICATION INSTRUCTIONS	WP 0070-1
M	
MAINTENANCE ALLOCATION CHART (MAC)	WP 0078-1
MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION	WP 0077-1
MANDATORY REPLACEMENT PARTS	WP 0082-1
MANUALLY BYPASSING SOLENOID DURING ELECTRIC POWER LOSS	WP 0019-1
MANUALLY LOADING BRIDGE ADAPTER PALLET (BAP) FROM THE GROUND	WP 0017-1
MANUALLY REMOVING LOAD DURING HYDRAULIC POWER LOSS	WP 0021-1
MANUALLY UNLOADING BRIDGE ADAPTER PALLET (BAP) TO THE GROUND	WP 0018-1
N	
NATIONAL STOCK NUMBER INDEX	WP 0074-1
NORMAL TRANSFER OF BRIDGE ADAPTER PALLET (BAP) FROM TRAILER TO VEHICLE	WP 0014-1
NORMAL TRANSFER OF BRIDGE ADAPTER PALLET (BAP) FROM VEHICLE TO TRAILER	WP 0013-1
O	
OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)	WP 0035-1
P	
PART NUMBER INDEX	WP 0075-1
PLS FOOT STOWAGE	WP 0039-1
PLUNGER REPLACEMENT	WP 0042-1
PREPARATION FOR EMERGENCY MANUAL REMOVAL OF BRIDGE ADAPTER PALLET (BAP)	WP 0020-1
PREPARATION FOR STORAGE OR SHIPMENT	WP 0069-1
R	
REAR BUMPER ASSEMBLY REPLACEMENT	WP 0048-1
REAR GUIDE REPAIR	WP 0045-1
REAR ROLLER ASSEMBLY REPLACEMENT	WP 0047-1
REFERENCES	WP 0076-1
REFLECTOR REPLACEMENT	WP 0050-1
REMOTE CONTROL UNIT REPAIR	WP 0067-1

INDEX - Continued

Subject	WP Sequence No.-Page No.
R	
REPAIR PARTS AND SPECIAL TOOLS LIST	WP 0073-1
S	
SERVICE UPON RECEIPT	WP 0037-1
SHEAVE ASSEMBLY REPAIR	WP 0053-1
STENCILS	WP 0040-1
T	
THEORY OF OPERATION	WP 0003-1
TOOLBOX ASSEMBLY REPAIR	WP 0043-1
TRANSLOAD ROLLER HYDRAULIC SYSTEM REPAIR	WP 0061-1
TRANSLOAD ROLLER REPLACEMENT	WP 0049-1
U	
UNLOADING BRIDGE ADAPTER PALLET (BAP) TO THE GROUND	WP 0006-1
UNLOADING BRIDGE BAY TO THE GROUND	WP 0008-1
W	
WINCH ASSEMBLY REPLACEMENT	WP 0058-1
WINCH ASSEMBLY WILL NOT LIFT LOAD OR OPERATES SLOWLY	WP 0027-1
WINCH ASSEMBLY WILL NOT WIND IN	WP 0026-1
WINCH ASSEMBLY WILL NOT WIND OUT	WP 0025-1
WINCH CABLE TENSIONER REPAIR	WP 0056-1
WINCH DOES NOT OPERATE	WP 0031-1
WINCH DOES NOT WIND IN	WP 0033-1
WINCH DOES NOT WIND OUT	WP 0032-1
WINCH FRAME LOCKING LEVER OUTBOARD RETAINER BLOCKS FIELD REPLACEMENT	WP 0054-1
WINCH HYDRAULIC SYSTEM REPLACEMENT	WP 0055-1
WINCH MOTOR ASSEMBLY REPLACEMENT	WP 0059-1
WINCH REPAIR	WP 0068-1

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS

For use of this form, see AR 310-1; the proponent agency is the US Army Adjutant General Center.

Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).

DATE: Date form is filled out

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*

Mailing address found on title block page

FROM: *(Activity and location) (Include ZIP Code)*

Your mailing address

PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER:	DATE:	TITLE:
TM XX-XXXX-XXX-XX	Date of the TM	Title of TM

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO.	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON (Exact wording of recommended change must be given)
	0019 00 1	3	1	1		Step No. 2 says to secure doors open with locking bar or hooks from where to what? The bars or hooks are not identified.
	0019 00 4	4	1	1		Step No. 19 states to remove locking bars, pins or hooks from where to what? The bars, pins or hooks are not identified. Where are they stored?

SAMPLE

* Reference to line numbers within the paragraph or subparagraph.

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Doe, John, CPL	755-1313	*CPL John Doe*

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*	FROM: *(Activity and location) (Include ZIP Code)*	DATE:

PART II- REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION/FORM NUMBER:	DATE:	TITLE:
TM XX-XXXX-XXX-XX	Date of the TM	Title of TM

PAGE NO.	COLM NO.	LINE NO.	FEDERAL STOCK NUMBER	REFERENCE NO.		FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

SAMPLE

PART III - REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and*
blank forms. Additional blank sheets may be used if more space is needed.)

* Reference to line numbers within the paragraph or subparagraph.

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Doe, John, CPL	755-1313	*CPL John Doe*

☆ U.S. GOVERNMENT PRINTING OFFICE 1981 341-646/8606

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS

For use of this form, see AR 25-30; the proponent agency is OAASA

Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).

DATE

TO *(Forward to proponent of publication or form) (Include ZIP Code)*
U.S. Army TACOM Life Cycle Management Command
AMSTA-LCL-MPP / TECH PUBS
6501 E. 11 Mile Road, Warren, MI 48397-5000

FROM *(Activity and location) (Include ZIP Code)*

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 5-3990-263-13&P	25 April 2012	Operator and Field Maintenance Manual Including Repair Parts and Special Tools List for Bridge Adapter Pallet (BAP) M15.

ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON

** Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO *(Forward direct to addressee listed in publication)*	FROM *(Activity and location) (Include ZIP Code)*	DATE
U.S. Army TACOM Life Cycle Management Command AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000		

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 5-3990-263-13&P	25 April 2012	Operator and Field Maintenance Manual Including Repair Parts and Special Tools List for Bridge Adapter Pallet (BAP) M15.

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS *(Any general remarks, recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

USAPA V3.01

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS

For use of this form, see AR 25-30; the proponent agency is OAASA

Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).

DATE

TO *(Forward to proponent of publication or form) (Include ZIP Code)*
U.S. Army TACOM Life Cycle Management Command
AMSTA-LCL-MPP / TECH PUBS
6501 E. 11 Mile Road, Warren, MI 48397-5000

FROM *(Activity and location) (Include ZIP Code)*

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 5-3990-263-13&P	25 April 2012	Operator and Field Maintenance Manual Including Repair Parts and Special Tools List for Bridge Adapter Pallet (BAP) M15.

ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON

** Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO *(Forward direct to addressee listed in publication)*	FROM *(Activity and location) (Include ZIP Code)*	DATE
U.S. Army TACOM Life Cycle Management Command AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000		

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 5-3990-263-13&P	25 April 2012	Operator and Field Maintenance Manual Including Repair Parts and Special Tools List for Bridge Adapter Pallet (BAP) M15.

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS *(Any general remarks, recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

USAPA V3.01

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS

For use of this form, see AR 25-30; the proponent agency is OAASA

Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).

DATE

TO *(Forward to proponent of publication or form) (Include ZIP Code)*
U.S. Army TACOM Life Cycle Management Command
AMSTA-LCL-MPP / TECH PUBS
6501 E. 11 Mile Road, Warren, MI 48397-5000

FROM *(Activity and location) (Include ZIP Code)*

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 5-3990-263-13&P	25 April 2012	Operator and Field Maintenance Manual Including Repair Parts and Special Tools List for Bridge Adapter Pallet (BAP) M15.

ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON

** Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO *(Forward direct to addressee listed in publication)*	FROM *(Activity and location) (Include ZIP Code)*	DATE
U.S. Army TACOM Life Cycle Management Command AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000		

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 5-3990-263-13&P	25 April 2012	Operator and Field Maintenance Manual Including Repair Parts and Special Tools List for Bridge Adapter Pallet (BAP) M15.

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS *(Any general remarks, recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

USAPA V3.01

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS

For use of this form, see AR 25-30; the proponent agency is OAASA

Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).

DATE

TO *(Forward to proponent of publication or form) (Include ZIP Code)*
U.S. Army TACOM Life Cycle Management Command
AMSTA-LCL-MPP / TECH PUBS
6501 E. 11 Mile Road, Warren, MI 48397-5000

FROM *(Activity and location) (Include ZIP Code)*

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 5-3990-263-13&P	25 April 2012	Operator and Field Maintenance Manual Including Repair Parts and Special Tools List for Bridge Adapter Pallet (BAP) M15.

ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON

** Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO *(Forward direct to addressee listed in publication)*	FROM *(Activity and location) (Include ZIP Code)*	DATE
U.S. Army TACOM Life Cycle Management Command AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000		

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 5-3990-263-13&P	25 April 2012	Operator and Field Maintenance Manual Including Repair Parts and Special Tools List for Bridge Adapter Pallet (BAP) M15.

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS *(Any general remarks, recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

USAPA V3.01

By Order of the Secretary of the Army:

Official:



JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army

1206606

RAYMOND T. ODIERNO
General, United States Army
Chief of Staff

Distribution:

To be distributed in accordance with the Initial Distribution Number (IDN) 256521 requirements for TM 5-3990-263-13&P.

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

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

LIQUID MEASURE
1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

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

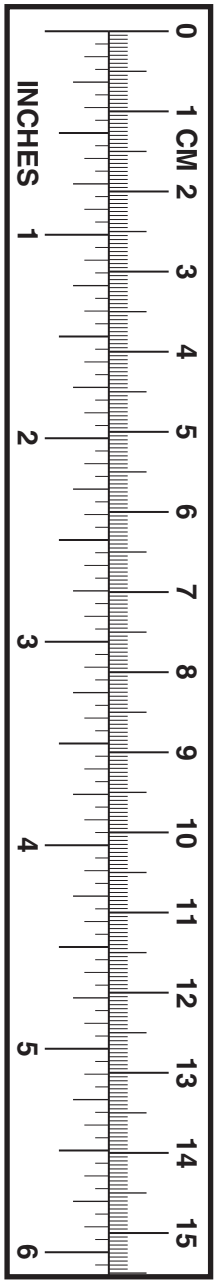
CUBIC MEASURE
1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

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

TO CHANGE	TO	MULTIPLY BY
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

TO CHANGE	TO	MULTIPLY BY
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
Metrication	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



PIN: 086494-000