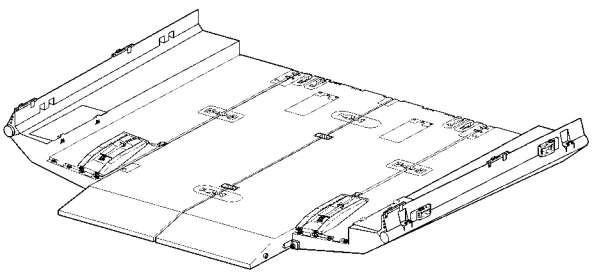
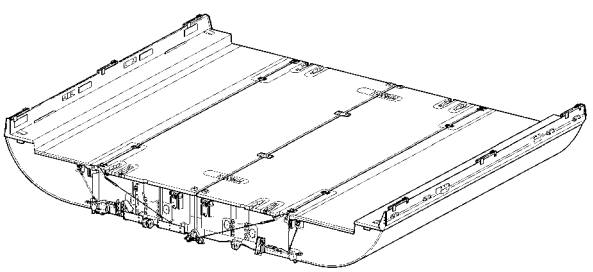
OPERATOR'S MANUAL

FOR

IMPROVED RIBBON BRIDGE (IRB)



RAMP BAY M16
NSN 5420-01-470-5825
P/N 12478918 EIC: XMT



INTERIOR BAY M17
NSN 5420-01-470-5824
P/N 12478919 EIC: XMS

HOW TO USE THIS MANUAL

GENERAL INFORMATION

DESCRIPTION AND THEORY OF OPERATION

OPERATING INSTRUCTIONS

OPERATOR'S TROUBLESHOOTING

OPERATOR'S MAINTENANCE

REFERENCES

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

ADDITIONAL AUTHORIZATION LIST (AAL)

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

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

HEADQUARTERS, DEPARTMENT OF THE ARMY

APRIL 2003

WARNING SUMMARY

Compressed air source will not exceed 30 psi (207 kPa). When cleaning with compressed air, eyeshields must be worn. Failure to comply may result in injury to personnel.

Improper cleaning methods and use of unauthorized cleaning solvents may result in injury to personnel and damage to equipment.

Water is discharged from pump nozzle under extreme pressure. Avoid cleaning in direction of personnel; mud, small rocks, and debris may fly up and injury to personnel may result.

Skysol-100 cleaning solvent is combustible. Use mechanical ventilation whenever product is used in a confined space, is heated above ambient temperatures, or is agitated. DO NOT use or store near heat, sparks, flame, or other ignition sources. Keep container sealed when not in use.

Contact with Skysol-100 cleaning solvent may cause skin irritation. Use chemical-resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing, or blurring of vision. Use face shield or goggles when eye contact may occur. In case of eye contact, flush eyes with large amounts of water for at least fifteen (15) minutes or until irritation subsides. Inhalation may cause irritation to upper respiratory passages. DO NOT have food or drink in the vicinity.

Accidental or intentional introduction of liquid contaminants into the environment is in violation of state, federal, and military regulations. Refer to Army POL (WP 0001 00) for information concerning storage, use, and disposal of these liquids. Failure to comply may result in damage to environment and health of personnel.

Cables may contain broken wire strands. Wear heavy leather gloves when handling cables. Do not run hands on cables when applying cleaning solvent or lubricant. Failure to comply may result in injury to personnel.

Always wear leather gloves when handling winch cable. Failure to comply may result in injury to personnel.

Do not allow vehicles on bridge or raft while performing operator maintenance. Failure to comply may result in injury or death to personnel or damage to equipment.

Operation of a deadlined CBT, BAP, or IRB bay without preliminary inspection prior to performing troubleshooting procedures may result in damage to equipment or injury to personnel.

The operator must only handle the coupling device by the cross tube handle during ramp bay lifting operations. The operator and all personnel must also keep clear of the coupling device guide rollers, lever, and hook. Failure to comply may result in injury to personnel.

WARNING SUMMARY (Contd)

Bridge boat operators will not make waves or carry out any unnecessary thrust changes during coupling device operations. Failure to comply may result in damage to equipment or injury to personnel.

Do not place hands between bays to position the coupling device hook on the ramp bay unfolding lever; bays can come together with extreme force and severe injury to personnel may result.

All nonessential personnel must stand clear of transporter and bay during lifting operations. Failure to comply may result in injury or death to personnel.

Ensure debris boat is positioned sufficiently upstream and safety boat is positioned downstream per SOP prior to assembling bridge. Failure to comply may result in damage to equipment and possible injury or death to personnel.

Ensure all boats are clear of bay unfolding area prior to releasing travel latch; bay unfolds with extreme force. Failure to comply may result in damage to equipment and possible injury or death to personnel.

Do not lift a load greater than the rated load capacity of the crane or materiel handling equipment. Failure to comply may result in damage to equipment or possible injury or death to personnel.

All personnel must wear approved life jackets and unblouse pants from boots while on the bay. Failure to comply may result in injury or death to personnel.

All bridge personnel must wear approved life jackets and unblouse pants from boots while on the bridge. Failure to comply may result in injury or death to personnel.

Do not sit, lie, or stand in front of boat push knees at any time while riding on bays. Failure to comply may result in injury or death to personnel.

Extreme caution should be taken when connecting bays. Bays come together with extreme force and injury or death to personnel may result.

Pushing ramp bay with BEB before engaging transverse upper couplings and ponton swivel hooks and swivel plates may cause the bay to fold, and possible injury or death to personnel may result.

The transverse upper couplings and ponton swivel hooks and swivel plates must be engaged prior to performing bridge or rafting operations; the weight of a vehicle crossing will cause the bay to fold up and may result in damage to equipment or injury or death to personnel.

The transverse upper couplings and outer ponton locks must be engaged prior to performing bridge or rafting operations; the weight of a vehicle crossing will cause the bay to fold up and may result in damage to equipment or injury or death to personnel.

Do not place fingers under longitudinal or transverse upper couplings when opening or closing them, or serious injury to personnel may result.

WARNING SUMMARY (Contd)

Never open the transverse upper couplings on ramp bays and interior bays once connected as a bridge or raft assembly. Failure to comply may result in damage to equipment or possible injury or death to personnel.

Keep hands clear of space between bays when closing longitudinal upper couplings, and do not place fingers under couplings when closing them, or serious injury to personnel may result.

Loosen bilge and drain plugs slowly to allow residual pressure to escape. Failure to comply may result in injury to personnel.

Do not use the rafting bracket quick-disconnect pins as connecting points for the helicopter lifting sling; use only the load receiving pins. Failure to comply may result in damage to equipment or possible injury or death to personnel.

Do not connect IRB hoisting gear to bridge rafting bracket mounting holes and quick-release pins. Use only the load receiving pins with one chain at each pin. Failure to comply may result in damage to equipment or possible injury or death to personnel.

Do not use the rafting bracket mounting holes for attaching lifting chains or bridge anchorage. Failure to comply may result in damage to equipment or injury or death to personnel.

Never intermix IFB bays with IRB bays when building rafts. Failure to comply may result in damage to equipment or possible injury or death to personnel.

Do not connect helicopter lifting sling to bridge rafting bracket mounting holes and quick-release pins. Use only the load receiving pins with one chain at each pin. Failure to comply may result in damage to equipment or possible injury or death to personnel.

Exercise caution when walking near centerline of roadway; the ponton alignment lugs project above the roadway surface on interior bays and constitute a tripping hazard. Failure to comply may result in injury to personnel.

Do not allow traffic on the bridge until bridge OIC has verified that all appropriate couplings, pins, and handrails are properly engaged. Failure to comply may result in damage to equipment or possible injury or death to personnel.

Verify all transverse upper couplings and outer ponton locks are closed, and all longitudinal upper couplings between interior bays only have been opened, prior to allowing vehicle traffic, cargo, or nonessential personnel on bridge assembly. Failure to comply may result in damage to equipment or possible injury or death to personnel.

When performing bridge operations using IFB bays interconnected with IRB bays, observe hybrid tabled data (table 5). Failure to comply may result in damage to equipment and injury or death to personnel.

All traffic must be loaded to center of the raft assembly and no traffic will be positioned on either ramp bay during rafting operations. Failure to comply may result in damage to equipment or possible injury or death to personnel.

WARNING SUMMARY (Contd)

Two personnel are required to remove/install a ramp plate, whether the operation is performed with the ramp bay in either the folded or unfolded position. Failure to comply may result in injury to personnel.

Prior to performing transporter operations, ensure a site survey is conducted. Failure to meet all site requirements for a given launch method may result in damage to equipment or possible injury or death to personnel.

Check for overhead power lines or other obstructions before attempting operation of the LHS. The LHS reaches a height of 22 ft 2 in. (6.7 m). Serious injury or death may result from contact with electric power lines.

Two ground guides must be present for all bridging operations. Failure to use ground guides may result in crashing the transporter into an obstruction or coming in contact with power lines, resulting in damage to equipment or injury or death to personnel.

When backing CBT to edge of bank, assistant will ensure rear wheels are a safe distance from edge of bank. Failure to comply may result in damage to equipment or possible injury or death to personnel.

The Bridge Modules have a relatively high center of gravity and can affect the common bridge transporter (CBT) dynamic performance. The CBT carrying a ramp bay or interior bay can be operated on improved roads at a maximum speed of 37 mph. If traversal of cross-country terrain is necessary to access an operation site, limit CBT speed to 15 mph or less.

Ensure water velocity is not above the specified limit for the launch method used. Failure to comply may result in damage to equipment or injury or death to personnel.

Do not perform free launch procedures without a safety pin installed on the air release control valve lever, or damage to equipment or possible injury or death to personnel may result.

All nonessential personnel must stand clear of transporter prior to removing safety pin from air release control valve lever. Once safety pin is removed, use caution not to accidentally pull or catch lanyard or a premature free launch may occur. Failure to comply may result in damage to equipment or possible injury or death to personnel.

Once the rear guides are released, only the winch cable secures the bay to the BAP. Personnel must not mount the BAP and must stand clear of the transporter. The bay could shift, release, or fall from the transporter, resulting in injury or death to personnel.

Keep hands and fingers clear of front pin lock assemblies once set to the DOWN position. Failure to comply may result in injury to personnel.

WARNING SUMMARY (Contd)

When the NO TRANSIT WHEN LIT indicator is illuminated, the CBT may be maneuvered in the immediate vicinity of the loading/unloading site, but should not be driven on the open road. Failure to comply may result in damage to equipment and possible injury or death to personnel.

The winch frame must be locked to the LHS hook arm prior to launching bay. Failure to comply may result in damage to equipment or injury to personnel.

The winch frame must be locked to the LHS hook arm for a controlled launch. Failure to comply may result in damage to equipment or injury to personnel.

The winch frame must be locked to the LHS hook arm prior to unloading the bay to the ground. Failure to comply may result in damage to equipment or injury to personnel.

The winch frame must be locked to the LHS hook arm for a high-bank launch. Failure to comply may result in damage to equipment or injury to personnel.

The BAP winch frame must be locked to the LHS hook arm for bay retrieval. Failure to comply may result in damage to equipment or injury to personnel.

If unloading the BAP to the ground, ensure BAP hold-down locks, winch frame locking levers, BAP air hose, and winch hydraulic hoses are in the correct position. Failure to comply will result in damage to equipment and possible injury or death to personnel.

The cable drum requires a minimum of four wraps of cable for safety. Failure to comply may result in damage to equipment or possible injury or death to personnel.

If BAP is loaded, ensure front pin lock assemblies are up and their jaws closed, and rear guides are locked in the MID position at both sides of BAP. Failure to comply may result in possible loss of bay or rollover of transporter, causing damage to equipment and possible injury or death to personnel.

Failure to ensure front pin lock jaws and rear guides lock bay trunnions after bay is loaded on BAP may result in a lost bay or transporter rollover during transport. At least three out of four locks must function. Failure to comply may result in damage to equipment and possible injury or death to personnel.

After water operations, transporter brakes will be wet and will not stop vehicle as quickly as usual. Allow extra distance for slowing and stopping transporter, or damage to equipment and possible injury or death to personnel may result.

Ensure front travel latch is closed prior to mounting bay. Failure to comply may result in damage to equipment or possible injury or death to personnel.

Ensure all personnel are off the folded bay and clear of its sides prior to opening travel latch. Failure to comply may result in injury or death to personnel.

Ensure bay is clear of boat crew personnel and obstructions before winching in bridge bay. Ensure all personnel are safely off bay before lifting. Failure to comply may result in damage to equipment or possible injury or death to personnel.

WARNING SUMMARY (Contd)

Ensure cable is tight prior to disconnection from BEB. Ensure crew is safely off bay before lifting, and ensure boat and crew are positioned away from folding operation, or damage to equipment or injury or death to personnel may result.

LHS hook arm is heavy and will fall free when the BAP is moved rearward. Under no circumstances should LHS hook arm be pried free from BAP hook bar by personnel. Failure to comply may result in injury or death to personnel.

Ground helicopter lift cable hook prior to connecting/disconnecting. Static electricity generated from helicopter will shock personnel and injury or death may result.

Prior to allowing any vehicle, cargo, or nonessential personnel on the raft, ensure all transverse and longitudinal upper couplings are in the closed position. Failure to comply may result in damage to equipment and possible injury or death to personnel.

Ensure cover plates are not removed from ramp bays until deck surface has been washed. Removing cover plates prior to washing will defeat purose of using them. Failure to comply may result in rocks and debris entering hinge points and jamming outer pontons during bay retrieval.

The operator must only handle the coupling device by the cross tube handle during ramp bay lifting operations. The operator and all personnel must also keep clear of the coupling device guide rollers, lever, and hook. Failure to comply may result in injury to personnel.

Ensure rafting brackets are equipped with quick-release pins prior to performing rafting operations. Only use quick-release pins designed for use with IRB rafting brackets. Failure to comply may result in damage to equipment or possible injury or death to personnel.

When checking main manifold, keep clear of CBT exhaust system. Exhaust system may be hot! Failure to comply may result in injury to personnel.

Ensure water velocity is not above the specified limit for the launch method used. Failure to comply may result in damage to equipment or injury or death to personnel.

Prior to and during any load or unload cycle, all personnel should stay clear of LHS and BAP, or serious injury or death to personnel may result.

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

When operating Transporter with palletized load system (PLS) trailer, the heaviest loaded BAP must always be placed on the Transporter; otherwise, adverse handling and/or braking may result, causing injury or death to personnel.

Ensure trailer air system is charged before beginning transfer, or trailer locks may not engage properly. Serious injury or death to personnel could result.

The winch frame must be locked to the BAP prior to unloading BAP to ground. Failure to comply may result in damage to equipment or injury to personnel.

WARNING SUMMARY (Contd)

Do not attempt to use the IRB lifting sling for deployment by helicopter. Use only the 25,000 lb aerial sling, chains, and detachable links provided by the IRB AAL. Failure to comply may result in damage to equipment or possible injury or death to personnel.

Pushing ramp bay with BEB before engaging transverse upper couplings and ponton swivel hooks and swivel plates may cause the bay to fold, and possible injury or death to personnel may result.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: The portion of text affected by the changes is indicated by a vertical line in the outer margins of the page.

Dates of issue for original and changed pages/work packages are:

Original ..0 ..8 April 2003

Change ..1 ..30 December 2003

THE TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 38 AND TOTAL NUMBER OF WORK PACKAGES IS 72 CONSISTING OF THE FOLLOWING:

Page/ WP No.	*Change No.
Front Cover	0
a	0
b–f	1
g Added	1
h blank Added	1
A	1
B blank	0
i–vi	0
WP 0001 00	1
CHAPTER 1 PAGE	0
WP 0002 00	0
WP 0003 00	1
WP 0004 00	0
WP 0005 00	1
CHAPTER 2 PAGE	0
WP 0006 00–0007 00	0
WP 0008 00	1
WP 0009 00	0
WP 0010 00–0011 00	1
WP 0012 00–0013 00	0
WP 0014 00–0023 00	1
WP 0023 01–0023 02 Added	1
WP 0024 00–0044 00	1
WP 0045 00	0
WP 0046 00–0048 00	1
WP 0049 00–0052 00	0
WP 0053 00	1
CHAPTER 3 PAGE	0
WP 0054 00–0056 00	0
WP 0057 00–0058 00	1
WP 0059 00–0060 00	0
CHAPTER 4 PAGE	0
WP 0061 00–0063 00	0
WP 0064 00	1
WP 0065 00	0
WP 0066 00	1
WP 0067 00	0
CHAPTER 5 PAGE	0
WP 0069 00–0072 00	1
Glossary-1–Glossary-2	1
INDEX-1–INDEX-9	1
INDEX-10 blank	0

*Zero in this column indicates original page.

CHANGE

NO. 1

HEADQUARTERS,
DEPARTMENT OF THE ARMY
Washington, D.C., *30 DECEMBER 2003*

TECHNICAL MANUAL

OPERATOR'S MANUAL
SUPPORT MAINTENANCE
FOR
IMPROVED RIBBON BRIDGE (IRB)

IRB	MODEL	NSN	P/N	EIC
Ramp Bay	M16	5420-01-470-5825	12478918	XMT
Interior Bay	M17	5420-01-470-5824	12478919	XMS

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

TM 5-5420-278-10, 8 April 2003, is updated as follows:

1. File this sheet in front of the manual for reference.
2. This change is a result of equipment improvements and new updated materials.
3. New or updated text and illustrations are indicated by a vertical bar in the outer margin of the page.
4. Remove old pages and insert new pages as indicated below.

Remove pages	Insert pages
Warning a through f	Warning a through g/h blank
A/B blank	A/B blank
Glossary 1 and 2	Glossary 1 and 2
INDEX 1 through	INDEX 1 through
INDEX 9/10 blank	INDEX 9/10 blank

5. Replace the following work packages with their revised version.

Work package number	Work package number	Work package number	Work package number
WP 0001 00	WP 0021 00	WP 0034 00	WP 0048 00
WP 0003 00	WP 0022 00	WP 0035 00	WP 0053 00
WP 0005 00	WP 0023 00	WP 0036 00	WP 0057 00
WP 0008 00	WP 0024 00	WP 0037 00	WP 0058 00
WP 0010 00	WP 0025 00	WP 0038 00	WP 0064 00
WP 0011 00	WP 0026 00	WP 0039 00	WP 0066 00
WP 0014 00	WP 0027 00	WP 0040 00	WP 0068 00
WP 0015 00	WP 0028 00	WP 0041 00	WP 0069 00
WP 0016 00	WP 0029 00	WP 0042 00	WP 0070 00
WP 0017 00	WP 0030 00	WP 0043 00	WP 0071 00
WP 0018 00	WP 0031 00	WP 0044 00	WP 0072 00
WP 0019 00	WP 0032 00	WP 0046 00	
WP 0020 00	WP 0033 00	WP 0047 00	

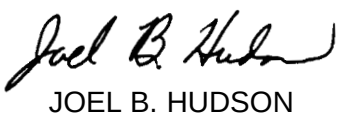
6. Add the following new work packages.

Work package number
WP 0023 01
WP 0023 02

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:



JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0406103

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 256762, requirements for TM 5-5420-278-10.

TM 5-5420-278-10

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *8 April 2003*

TECHNICAL MANUAL

OPERATOR'S MANUAL FOR IMPROVED RIBBON BRIDGE (IRB)

IRB	MODEL	NSN	P/N	EIC
Ramp Bay	M16	5420-01-470-5825	12478918	XMT
Interior Bay	M17	5420-01-470-5824	12478919	XMS

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028 (Recommended Changes to Publications and Blank Forms), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is http://aeps.ria.army.mil. If you need a password, scroll down and click on "ACCESS REQUEST FORM." The DA Form 2028 is located in the ONLINE FORMS PROCESSING section of the AEPS. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax or E-mail your letter or DA Form 2028 direct to: AMSTA-LC-CI Tech Pubs, TACOM-RI, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The E-mail address is TACOM-TECH-PUBS@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726. (Marine Corps) Submit NAVMC 10722 to Commander Code 835-2, Marine Corps Logistic Base, 814 Radford Boulevard, Albany, GA 31704-1128.

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TABLE OF CONTENTS

		WP Sequence No.
WARNING SUMMARY		a
HOW TO USE THIS MANUAL		v
GENERAL INFORMATION		0001 00
CHAPTER 1	DESCRIPTION AND THEORY OF OPERATION	
Section I.	Equipment Description and Data	0002 00
II.	Theory of Operation	0004 00
CHAPTER 2	OPERATING INSTRUCTIONS	
Section I.	Description and Use of Operator's Controls and Indicators	0006 00
II.	Operator's Preventive Maintenance Checks and Services (PMCS)	0012 00
III.	Operation Under Usual Conditions	0017 00
IV.	Operation Under Unusual Conditions	0045 00
V.	Operation of Special Purpose Kits	0052 00
CHAPTER 3	OPERATOR'S TROUBLESHOOTING	
Section I.	Introduction to Troubleshooting	0054 00
II.	Operator's Troubleshooting Procedures	0056 00
CHAPTER 4	OPERATOR MAINTENANCE INSTRUCTIONS	
Section I.	Service Upon Receipt	0061 00
II.	Lubrication Instructions	0063 00
III.	General Maintenance Procedures	0066 00
IV.	Operator Maintenance Procedures	0067 00
CHAPTER 5	SUPPORTING INFORMATION	
	References	0069 00
	Components of End Item (COEI) and Basic Issue Items (BII) Lists	0070 00
	Additional Authorization List (AAL)	0071 00
	Expendable/Durable Supplies and Materials List	0072 00
GLOSSARY		Glossary 1
INDEX		INDEX 1

HOW TO USE THIS MANUAL

ABOUT YOUR MANUAL

Equipment operators shall familiarize themselves with the format and use of this Technical Manual (TM) prior to equipment operation or performing routine maintenance. Learning how to use this manual will enable personnel to quickly locate information, gain proper knowledge of the equipment, and shorten the time necessary to complete the required procedure.

Features of this TM are:

a. Work Package Format – This TM is organized in Work Packages (WP). Each WP is an independent, stand-alone data unit. The subject title of each WP is assigned a six-digit sequence number. The first four digits of the sequence number identify the WP, and WPs are positioned in the TM in numerical order using the same four digits. The fifth and sixth digits of the sequence number are reserved for numbering WPs added to the TM as part of a future revision. Each WP is page numbered consecutively, after the sequence number, at the bottom of each page. A WP may contain as many as thirty pages.

b. Text Design – WP titles and sequence numbers are listed in the Table of Contents, at the beginning of each chapter and section, and in the index. The index is organized by subject, in alphabetical order, with WP sequence and page numbers provided. Task steps and figure(s) are located side-by-side on facing pages. Lubrication instructions are included with operator's Preventive Maintenance Checks and Services (PMCS).

c. Use of Illustrations – Illustrations are presented with exploded views, cut-away views, and individual callouts for identification of components and parts. Callouts are numbered in clockwise order starting at the 11 o'clock position.

d. Nomenclature Cross-Reference List – Nomenclature (names given to individual parts and components) used in this manual may differ from the common terminology currently used in the field. A list of TM nomenclature and common nomenclature is provided in the Glossary of this manual.

HOW TO USE YOUR MANUAL

The format of this manual is designed to make accessing information quick and easy. The following example is intended as a guide and should be reviewed and put to memory before attempting to use this manual. If you have any questions after reviewing the following example, don't hesitate to ask you supervisor.

PROBLEM: You receive a report that states the IRB-I inner ponton leaks water.

SOLUTION: You must find information on ponton leaks in the IRB manual and perform the necessary troubleshooting tasks to solve the problem.

HOW TO USE THIS MANUAL (Contd)

NOTE

If you are trying to find information by subject, a subject index can be found at the back of the book.

1. Go to Table of Contents and find Chapter 3. You will find two sections in Chapter 3. Turn to WP 0054 00, Section I, Introduction to Troubleshooting Table of Contents first, then proceed to WP 0055 00 and read the information under "General" in Introduction to Troubleshooting.

2. Go to WP 0056 00, Section II, Operator's Troubleshooting Procedures Table of Contents to find the work package number for the appropriate symptom index. In this case, you have a mechanical problem. Turn to WP 0057 00, Mechanical Troubleshooting Symptom Index, and look down the list of malfunctions until you identify the heading for ponton leaking.

3. Go to malfunction no. 5, WP 0058 00, Inner or Outer Ponton Leaking, and follow the steps and substeps listed. As you perform step 1b, you discover there are no seals on the bilge plugs. Now you must notify unit maintenance as instructed.

4. When maintenance is allocated at operator's level, you must perform and complete all instructions as outlined.

GENERAL INFORMATION FOR IMPROVED RIBBON BRIDGE (IRB)

General Information . . . . . .WP 0001 00

GENERAL INFORMATION

THIS WORK PACKAGE SUPERSEDES WP 0001 00, DATED 8 APRIL 2003

SCOPE

This TM contains operator's level instructions for the operation and servicing of the Improved Ribbon Bridge (IRB), Common Bridge Transporter (CBT), and the Bridge Adapter Pallet (BAP). Operation includes launching, construction of bridge, rafting, and retrieval. Servicing includes lubrication, Preventive Maintenance Checks and Service (PMCS), operator troubleshooting, and operator maintenance as allocated by the Maintenance Allocation Chart (MAC). Maintenance and repair of IRB, BAP, and CBT components are allocated for unit, direct support, and general support maintenance and are not authorized at the operator's level.

a. Type of Manual: Operator/crew.

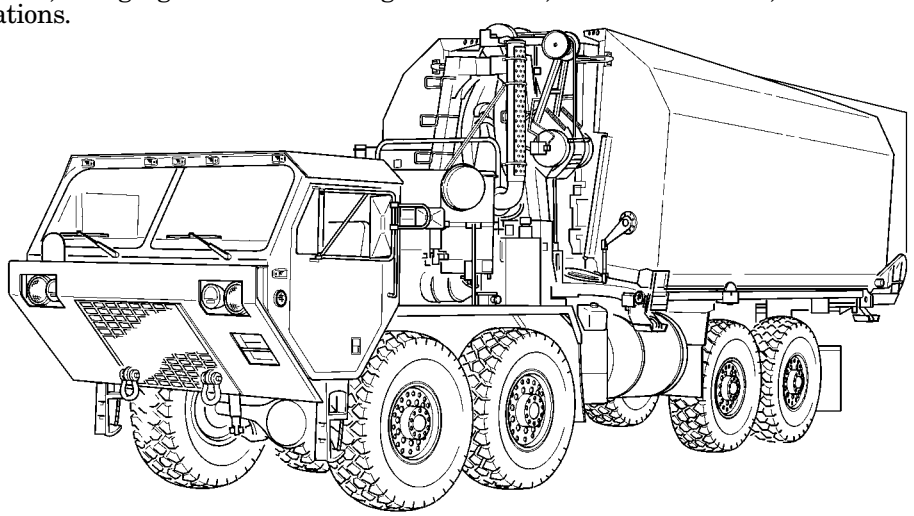
b. Model Number and Equipment Names: The IRB consists of two major components; the Ramp Bay M16 and the Interior Bay M17.

c. Purpose of Equipment: To provide a means to support military vehicles, equipment, and personnel across large, nonfordable streams or rivers in a minimum amount of time, thereby increasing the strategic options for a military convoy. The IRB facilitates U.S. Army task force defensive and offensive maneuvers by supporting operations across wet gap barriers to rapidly cross vehicles. Refer to Table 3, WP 0036 00-2, for IRB MLC ratings.

NOTE

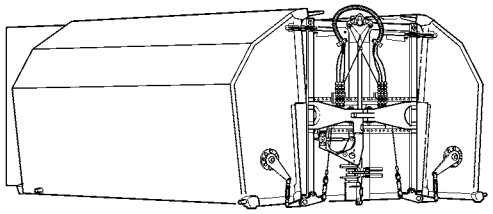
When connecting IFB bays with IRB bays, refer to TM 5-5420-209-12 for operating instructions unique to IFB bays.

d. Special Inclusions: For operation and maintenance of the basic M977 HEMTT truck chassis, refer to TM 9-2320-279-10, -12, and -20. For operation of the Bridge Erection Boat (BEB), refer to TM 5-1940-277-10. For operation of the Improved Boat Cradle (IBC), refer to TM 5-5420-277-14&P. For river crossing instructions, refer to FM 90-13, River Crossing Operations. For training instructions, refer to TC 5-210, Military Float Bridging Equipment and Field Manual 5-34, Engineer Field Data, chapter 7, Bridging. For river crossing instructions, refer to FM 90-13, River Crossing Operations.

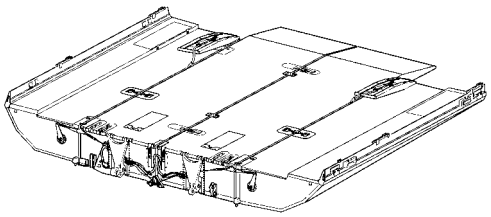


RAMP BAY M16 ON CBT, TYPICAL

GENERAL INFORMATION (Contd)

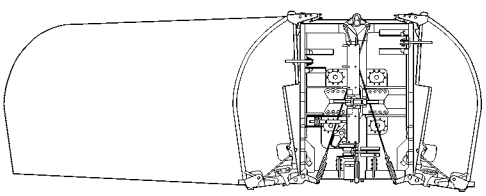


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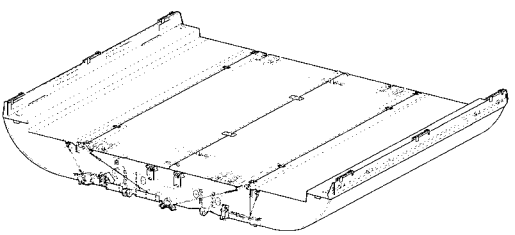


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RAMP BAY M16



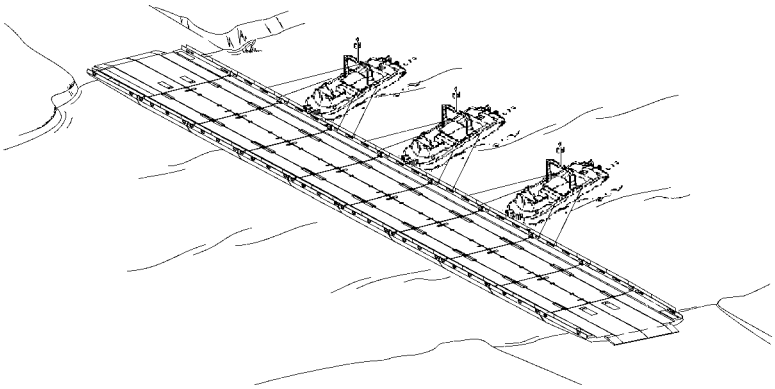
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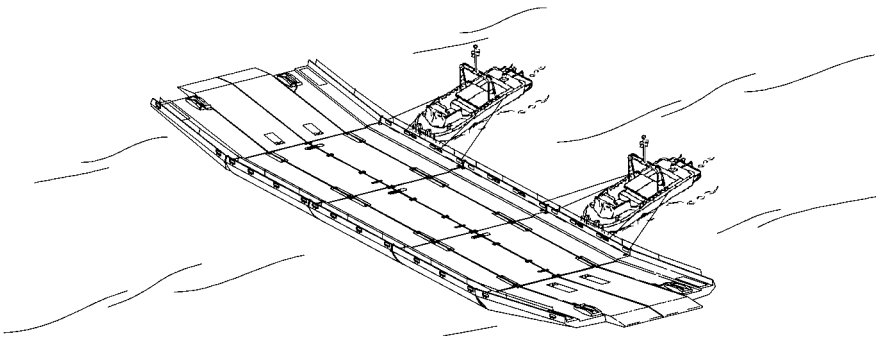
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INTERIOR BAY M17

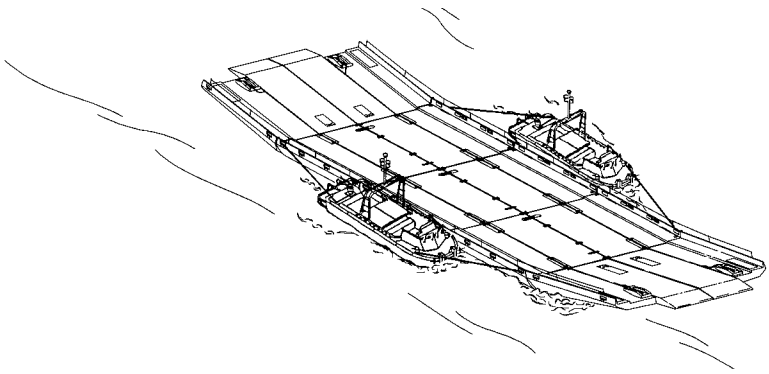
GENERAL INFORMATION (Contd)



TYPICAL BRIDGE BOAT ANCHORING



TYPICAL CONVENTIONAL RAFTING



TYPICAL LONGITUDINAL RAFTING

GENERAL INFORMATION (Contd)

MAINTENANCE FORMS, RECORDS, AND REPORTS

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

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S)

If your vehicle 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 what you don't like about the design or performance. The preferred method for submitting Quality Deficiency Reports (QDRs) is through the Army Electronic Product Support (AEPS) website under the Electronic Deficiency Reporting System (EDRS). The web address is: https://aeps.ria.army.mil. This is a secured site requiring a password that can be applied for on the front page of the website. If the above method is not available to you, put it on an SF 368, Product Quality Deficiency Report (PQDR), and mail it to us at: Department of the Army, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/PQDR MS 267, 6501 E. 11 Mile Road, Warren, MI 48397-500. We'll send you a reply. (Marine Corps) Submit QDRs per MCO 4855-10.

HAND RECEIPT

There is not a separate Hand Receipt for the IRB. For a complete list of end item related equipment (i.e., COEI, BII, and AAL) that must be accounted for, refer to WP 0070 00 and WP 0071 00 in chapter 5 of this manual.

CORROSION PREVENTION AND CONTROL (CPC)

CAUTION

Whenever the IRB has been exposed to seawater (salt water) or any aggressive water or chemicals, it must always be rinsed with fresh water to prevent corrosion. Failure to comply will result in damage to equipment.

NOTE

Many of the metal fasteners, fittings, and tubing susceptible to corrosion have been coated with an anti-corrosive chemical nickel-plating called "DURNI-COAT" and are marked "durnicoateirt" or "DNC 450 10MY."

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problem(s) be reported so corrections and/or improvements can be made to future items.

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

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

The form should be submitted to the address specified in DA Pam 738-750, Functional Users Manual for the Army Maintenance Management System (TAMMS).

GENERAL INFORMATION (Contd)

OZONE DEPLETING SUBSTANCES (ODS)

The continued use of ODS has been prohibited by Executive Order 12856 of 3 August 1993. The use of ODS in Army IETMs is prohibited.

ARMY PETROLEUM, OIL, AND LUBRICANTS (POL)

Proper disposal of hazardous waste material is vital to protecting the environment and providing a safe work environment. Materials such as batteries, oils, and antifreeze must be disposed of in a safe and efficient manner.

The following references are provided as a means to ensure that proper disposal methods are followed:

Technical Guide No. 126 (from the U.S. Army Environmental Hygiene Agency (USAEHA)
National Environmental Policy Act of 1969 (NEPA)
Clean Air Act (CAA)
Resource Conservation and Recovery Act (RCRA)
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
Emergency Planning and Community Right to Know Act (EPCRA)
Toxic Substances Control Act (TSCA)
Occupational Safety and Health Act (OSHA)

The disposal of Army Petroleum, Oils, and Lubricants (POL) products are affected by some of these regulations. State regulations may also apply to POL.

If you are unsure of which legislation affects you, contact state or local agencies for regulations regarding proper disposal of Army POL.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

The recommended method of rendering the IRB useless is to puncture holes in the pontons using heavy tools, weapons fire, or explosive charges. Procedures for destruction of Army materiel to prevent enemy use can be found in TM 750-244-6.

PREPARATION FOR STORAGE OR SHIPMENT

Refer to chapter 4, section III, WP 0066 00, for storage instructions. Additional information can be found in TM 746-10, Marking, Packing, and Shipment of Supplies and Equipment: General Packaging Instructions for Field Use.

For information on preparing the CBT for storage or shipment, refer to TM 5-5420-234-14&P.

GENERAL INFORMATION (Contd)

WARRANTY INFORMATION

The Improved Ribbon Bridge (IRB) bays are covered by a warranty. All US Army IRB customers requiring warranty assistance will initiate direct contact through respective unit Warranty Coordinators (WARCOs). WARCOs will submit all warranty claims for non-consumable items, greater than one hundred dollars, to the General Dynamics Santa Bárbara Sistemas (GDSBS) Point of Contact (POC) identified below. Request all claims be submitted both electronically and telephonically.

IRB warranty coverage applies to the following end items:

M16	RAMP BAY	5420-01-470-5825
M17	INTERIOR BAY	5420-01-470-5824

The IRB warranty period of performance provides complete “bumper-to-bumper” coverage for a period of 13 months. Prior to unit handoff, the IRB bays can be placed into storage for up to 9 months without a negative impact to the warranty period. The warranty start date begins at customer handoff, upon the acceptance and signing for the IRB bays. GDSBS POC is:

General Dynamics Santa Bárbara Sistemas GmbH

Customer Service Department

Barbarossastrasse 30

67655 Kaiserslautern, Germany

Phone: +49 (0) 631-3616 309

Fax: +49 (0) 631-3616 396

service@gdsbs.de

For warranty information covering the CBT, refer to TM 5-5420-234-15, Warranty Program for the Common Bridge Transporter (CBT). There is no warranty for the BAP.

NOMENCLATURE CROSS-REFERENCE LIST

Refer to the Glossary in the back of this TM for a list of TM nomenclature and common nomenclature.

LIST OF ABBREVIATIONS/ACRONYMS

Refer to the Glossary in the back of this manual for a list of abbreviations/acronyms that appear in this TM. For a list of standard abbreviations, refer to MIL-STD-12.

SAFETY, CARE, AND HANDLING

Observe all warnings, cautions, and notes prior to operating and servicing equipment. If uncertain how to perform any operator’s procedure, ask your supervisor for assistance.

METRIC SYSTEM

All hardware on the IRB bays is metric and will require the use of metric tools.

END OF WORK PACKAGE

CHAPTER 1

DESCRIPTION AND THEORY OF OPERATION FOR IMPROVED RIBBON BRIDGE (IRB)

Section I.	Equipment Description and Data	WP 0002 00
Section II.	Theory of Operation	WP 0004 00

DESCRIPTION AND THEORY OF OPERATION

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section I. EQUIPMENT DESCRIPTION AND DATA TABLE OF CONTENTS

WP Title	WP Sequence No.-Page No.
Equipment Characteristics, Capabilities, and Features	0003 00-1
Location and Description of Major Components	0003 00-2
Differences Between Models	0003 00-11
Differences Between IRB and IFB	0003 00-11
Equipment Data	0003 00-14
Equipment Configuration	0003 00-17
Location and Description of Data Plates	0003 00-22

DESCRIPTION AND THEORY OF OPERATION

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section I. EQUIPMENT DESCRIPTION AND DATA

THIS WORK PACKAGE SUPERSEDES WP 0003 00, DATED 8 APRIL 2003

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

The Improved Ribbon Bridge (IRB) is a modular bridge having a roadway surface supported by a floating integral superstructure made of aluminum that functions as a ponton. A complete ribbon bridge consists of a ramp bay at each bank and the required number of connected interior bays spanning between them. The IRB has a roadway width of 14 ft 9 in. (4.5 m). Adjacent to the roadway is a 4 ft (1.2 m) walkway on the bow pontons. IRB crossing weight capacities are listed in WP 0036 00. The IRB can be used for rafting operations by using one or more interior bays joined with a ramp bay at each end. An IRB bay is retrievable in five minutes or less. Each bay is transported, launched, and retrieved in a folded condition on a ribbon bridge transporter.

IRB Interior Bay (IRB-I). The IRB-I is a four-ponton folding module consisting of two roadway pontons and two bow pontons. Each inner ponton is divided into two watertight compartments. The IRB-I unfolds automatically once released and afloat. IRBs are connected to each other by manually engaging two lockpins and latches on the roadway pontons. The lockpins act as bearing points between consecutively joined bays, thus allowing the entire bridge to hinge with the weight of a moving vehicle and uneven water conditions.

IRB Ramp Bay (IRB-R). The IRB-R is a four-ponton module that functions similar to the IRB-I, but differs substantially in design. The ramp end of the roadway pontons extends lengthwise, beyond the bow pontons, and slopes down, forming the ramp edge. The sides of the bow pontons are slightly tapered toward the ramp end, and attaching extensions called ramp plates are provided. The IRB-R contains a manually controlled raising mechanism that works against the end and weight of an adjoining IRB-I. The angle or height of the IRB-R can be adjusted to meet various bank conditions. The IRB-R also contains two large stowage boxes recessed in the outer pontons.

The Common Bridge Transporter (CBT) M1977. The CBT consists of a remanufactured and modified Heavy Expanded Mobility Tactical Truck (HEMTT) M977 and a Load Handling System (LHS) which together are called the “CBT” or “Transporter.” The Bridge Adapter Pallet (BAP) M15 is a separate removable flatrack that is loaded on the CBT by the LHS, and is used in conjuction with the LHS to load, unload, and transport interior and ramp bays.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

For the location and a basic description of the major components of the CBT, IRB-R, and IRB-I locate the desired component by matching its description callout with the corresponding illustration callout on the opposite page.

LOAD HANDLING SYSTEM EQUIPMENT FEATURES

(A) **HEMTT HEATER COMPARTMENT** — The vehicle's console containing the HIGH IDLE switch, PTO ENGAGE swtich and indicators, and WORK LIGHT switch for LHS operation.

(B) **LHS CAB CONTROL BOX —** The control box (early model CBT) mounted on the heater compartment console, or control panel (late model CBT) mounted on transmission range selector panel, contains switches necessary to operate LHS from inside the vehicle.

(C) **LHS MAIN FRAME —** The frame connected to the LHS compression frame that supports the hook arm assembly in conjunction with the LHS fluid cylinders.

(D) **LHS HOOK ARM ASSEMBLY —** The arm connected to the LHS main frame that hooks and locks to the BAP winch frame (or IBC or NATO flatrack) for loading and unloading of BAP, and supports the BAP winch frame for llifting bays.

(E) **LHS COMPRESSION FRAME —** The frame mounted to the transporter frame that supports the LHS main frame, hook arm, fluid cylinders, and weight of equipment placed upon it.

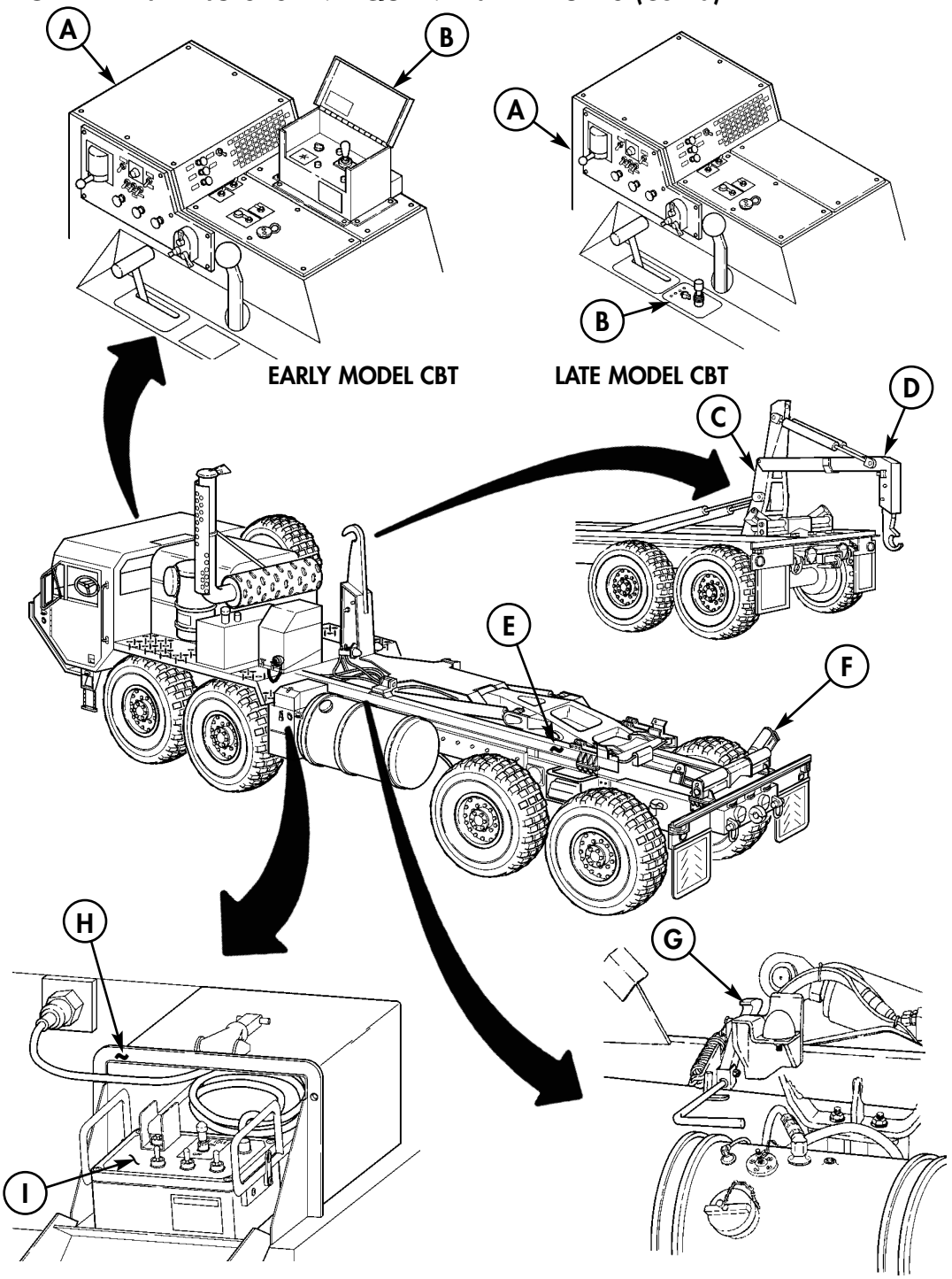
(F) **LHS REAR ROLLER ASSEMBLY —** The horizontal and angled rollers that support, center, and guide the BAP during loading and unloading operations.

(G) **BAP HOLD-DOWN LOCK —** The lock at each side of the LHS compression frame that secures the BAP to the LHS.

(H) **REMOTE CONTROL STOWAGE BOX —** The box that houses the remote control box when not in use.

(I) **REMOTE CONTROL UNIT (RCU) —** A hand-held control box containing the switches necessary to operate the LHS and BAP winch from outside the cab on either side of the vehicle.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Contd)
LOAD HANDLING SYSTEM EQUIPMENT FEATURES (Contd)



LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Contd)

LOAD HANDLING SYSTEM EQUIPMENT FEATURES (Contd)

(A) **LHS QUICK-DISCONNECT COUPLINGS** – Two couplings located adjacent to LHS cabinet assembly (late model CBT) or at rear of work platform (early model CBT) that receive hydraulic supply hoses from LHS or pallet.

(B) **NATO SLAVE RECEPTACLE** – The electric power supply receptacle used to supply 24 volts to pallet electrical system.

(C) **MOUNTING LADDER AND RAILINGS** – The ladder and railings on the transporter provided for safe and easy access to work platform.

(D) **AMBER REFLECTORS** – The amber reflector located on the curb side battery box and road side stowage box.

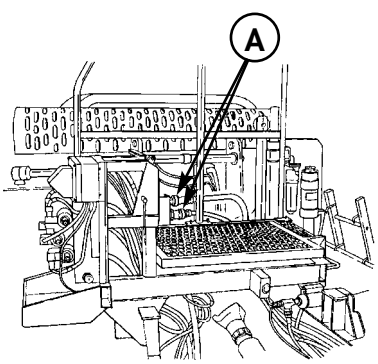
(E) **LHS CABINET ASSEMBLY** – A box mounted on the transporter that houses the LHS fluid manifold assemblies, valves, and solenoids.

(F) **REAR BUMPER ASSEMBLY** – The bumper plate mounted on the transporter frame and LHS rear roller assembly that supports the stop plate, tail lights, reflectors, and mudflaps.

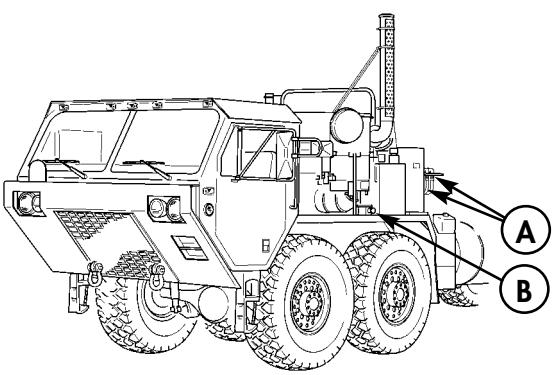
(G) **RED REFLECTORS** – The red reflector located on each side of the rear bumper plate and rear roller assembly.

(H) **FENDER SUPPORT ASSEMBLY** – The metal framing added to each fender for increased support of LHS components.

(I) **EXHAUST EXTENSION ASSEMBLY** – A longer stack and heat shield on the transporter exhaust system that raises exhaust above operator work area.



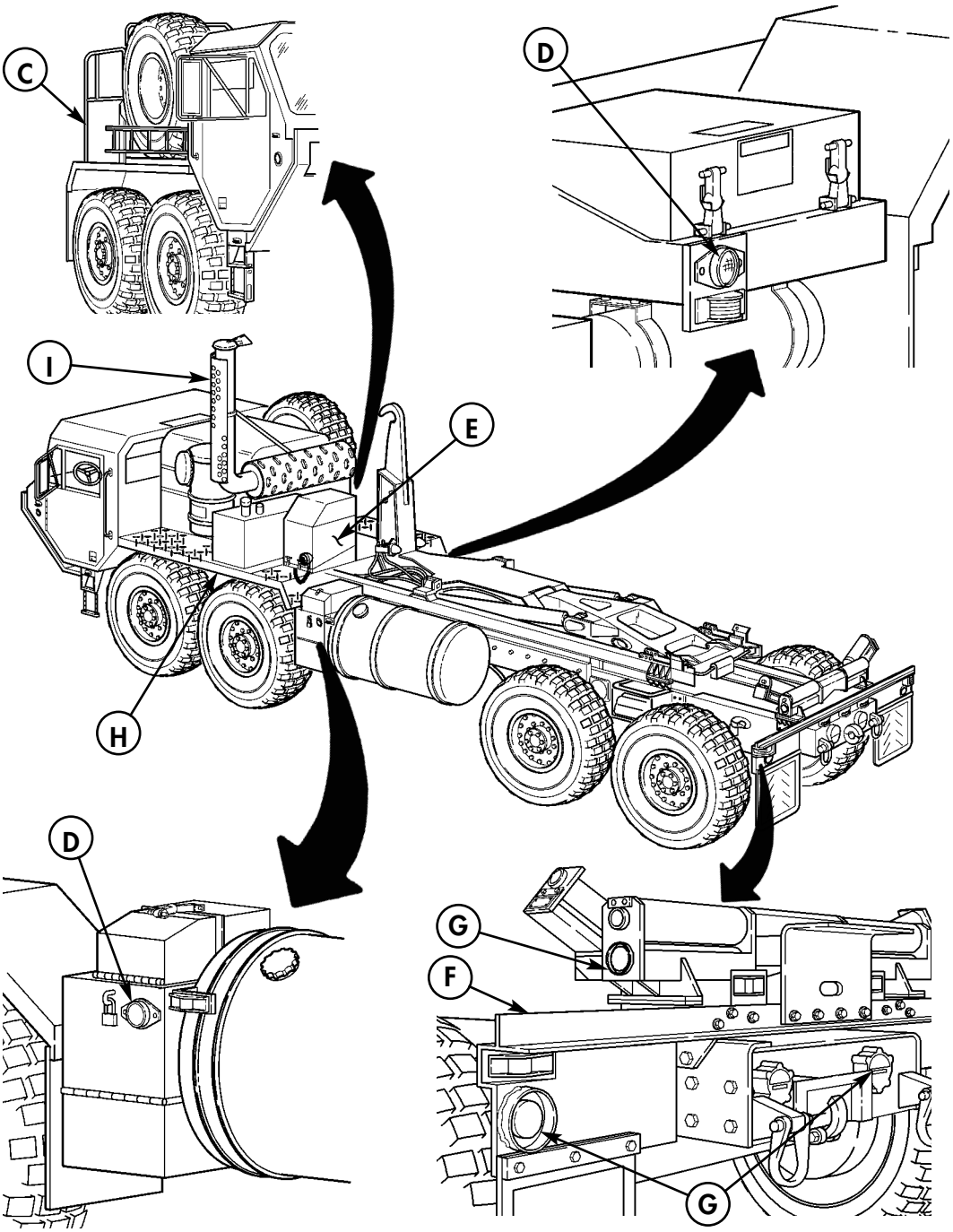
EARLY MODEL CBT



LATE MODEL CBT

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Contd)

LOAD HANDLING SYSTEM EQUIPMENT FEATURES (Contd)



LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Contd)

BRIDGE ADAPTER PALLET EQUIPMENT FEATURES

(A) **WINCH FRAME LOCK LEVERS** – The two levers on the winch frame are manually set to either lock the winch frame to the BAP or the LHS hook arm assembly.

(B) **WINCH ASSEMBLY** – The winch, cable, and sheave mounted on the winch frame.

(C) **WINCH FRAME ASSEMBLY** – The frame which supports the winch and is secured to the BAP frame prior to lifting the BAP, and secured to the LHS hook arm prior to lifting bays.

(D) **WINCH HOOK ASSEMBLY** – The hook attached to the winch cable designed to connect to the lifting eye of the bay.

(E) **MOUNTING LADDER** – The sliding ladder mounted on the BAP tool box for accessing either the BAP catwalks or LHS workstation.

(F) **FRONT PIN LOCK** – The mechanism on each side of the BAP that secures the bay by its trunnions.

(G) **FRONT AND REAR ROLLER ASSEMBLIES** – The two rollers on each side of the BAP that support and guide the movement of the bay during loading, unloading, and transport.

(H) **CATWALKS** – The two walkway/work platforms mounted on each side of the BAP frame.

(I) **REAR GUIDE** – The mechanism on each side of the BAP which guides the bay to the center during retrieval and secures the bay by its trunnions during transport.

(J) **REAR BUMPER ASSEMBLY** – The three roller type bumpers on the rear of the BAP that guide the BAP during transloading to trailer or truck.

(K) **TRANSLOAD ROLLER ASSEMBLY** – The roller on each side of the rear of the BAP that supports the movement of the BAP, when transferring the BAP to and from the M1076 trailer, and the bay, when performing a high-bank launch.

(L) **HAND PUMP** – The manualy operated hand pump mounted on the BAP which is used to extend the center roller to raise or lower the bay for specific operations, and to extend the transload rollers when transferring the BAP to the PLS trailer.

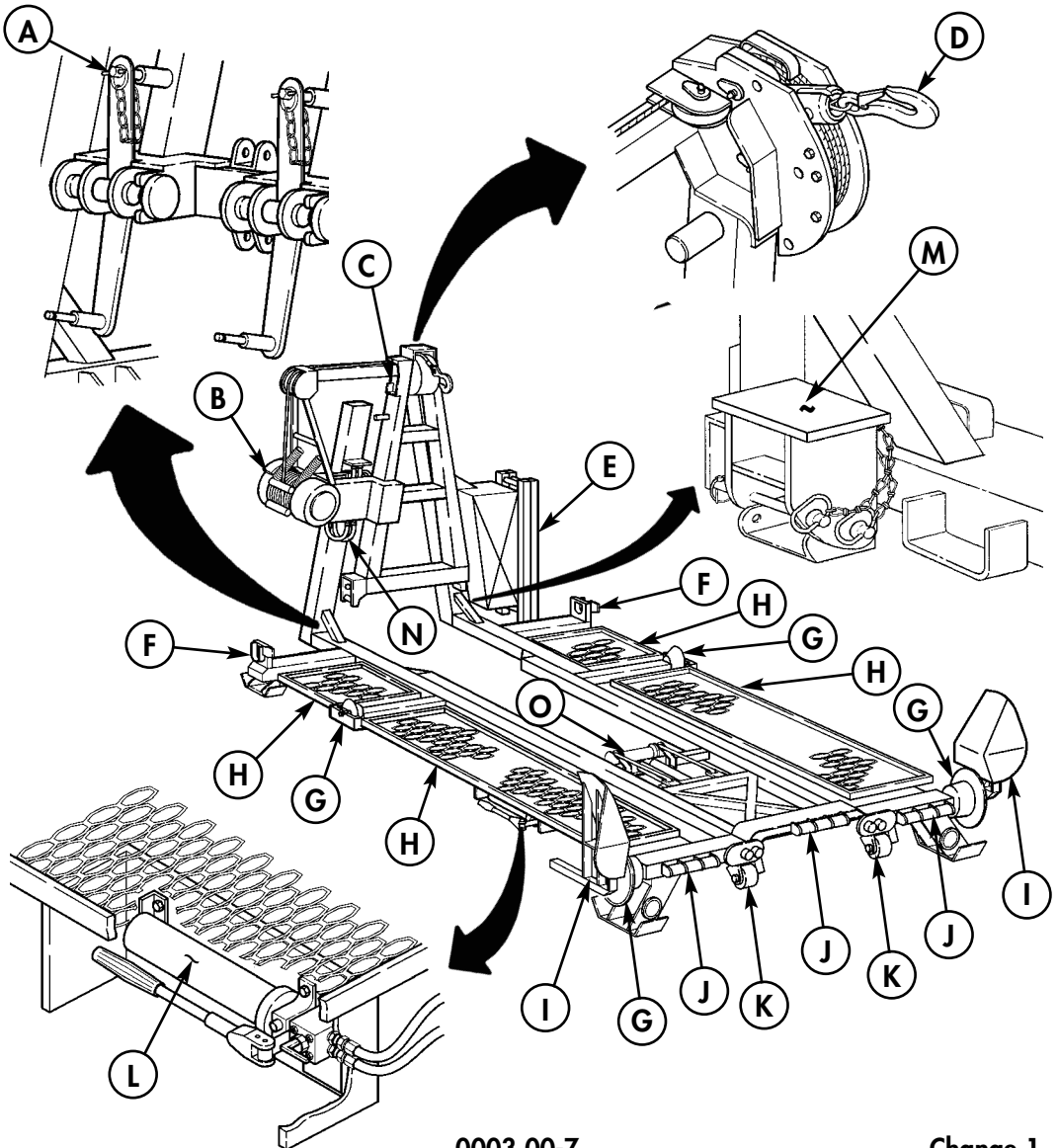
(M) **PLS FEET** – There is a PLS foot mounted on a bracket on each side of the BAP frame. The PLS feet are stowed (UP position) when the BAP is loaded on the CBT or transloaded on the PLS trailer. The PLS feet are moved to the down posoition only when loading/unloading the BAP on a PLS truck.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Contd)

BRIDGE ADAPTER PALLET EQUIPMENT FEATURES (Contd)

(N) **WINCH HYDRAULIC HOSES** – The two hoses that carry hydraulic fluid between the LHS and winch motor and are connected via quick-disconnect couplings.

(O) **CENTER ROLLER ASSEMBLY** – The roller and carriage on the center of the BAP frame which is raised by use of the hand pump and cylinder to support the bay during a free launch.



LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Contd)

RAMP BAY EQUIPMENT FEATURES

For the location and a brief description of the major components of the IRB-R and IRB-I, locate the desired component by matching its description callout with the corresponding illustration callout on the opposite page.

(A) **OUTER PONTON** – A non-compartmentalized structure that functions as a float to support loads placed on its top (walkway) surface, and provides additional buoyancy to the inner ponton. The outer ponton contains a stowage compartment for equipment and tools. Left and right outer pontons are not interchangeable.

(B) **STOWAGE COMPARTMENT** – A compartment in each outer ponton (ramp bay only) between the walkway and splash plate for holding the Basic Issue Items (BII) necessary for IRB operation. (Refer to WP 0044 00 and WP 0010 00 for location and installation of BII.)

(C) **RAMP PLATES** – The two plates mounted on the outer pontons used to increase the width of the roadway approach ramp.

(D) **ROADWAY** – The top road surface of two adjoining inner and outer pontons having a 22 ft (6.7 m) wide load bearing area for vehicles and cargo.

(E) **INNER PONTON** – A non-compartmentalized structure that functions as a float to support loads placed on its top (roadway) surface. The inner ponton contains a pump and cylinder. Left and right inner pontons are not interchangeable.

(F) **WALKWAY** – The 2 ft 5 in. (0.8 m) wide top surface of the outer ponton for personnel crossing.

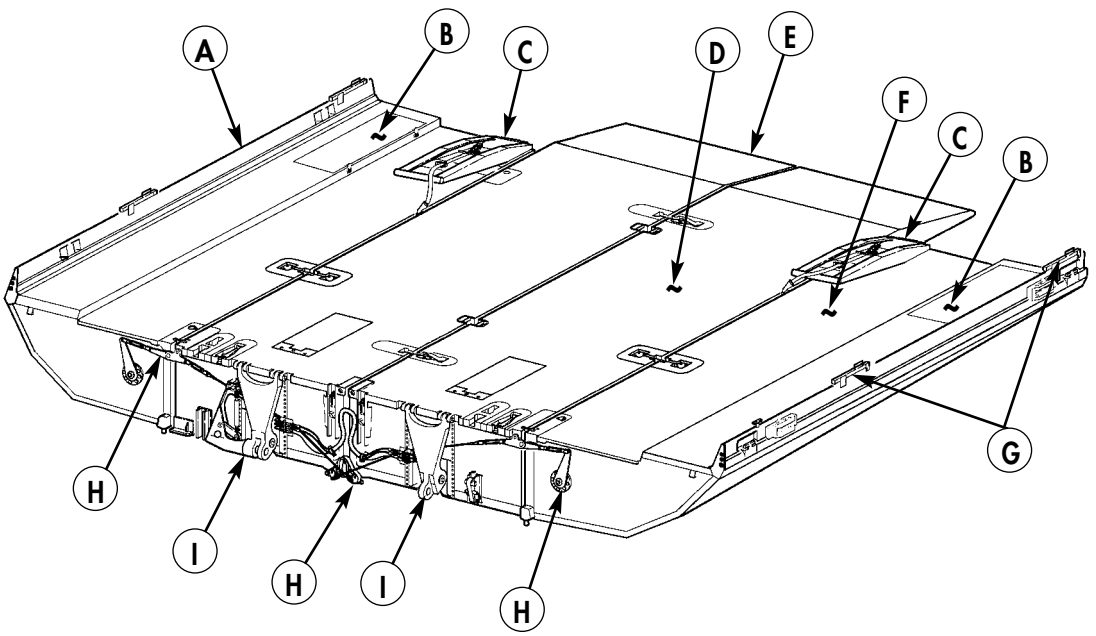
(G) **HANDRAIL** – A retractable railing, extending the full length of the bay, consisting of two stanchions and a cable mounted on each outer ponton splash plate.

(H) **UNFOLDING MECHANISM** – A system of cables, levers, and torsion bars located at the front of the IRB-R, that automatically control the unfolding of the inner and outer pontons once the bay is launched. During retrieval this mechanism works in reverse by pulling the pontons up into the folded position simultaneously, as the entire bay is lifted from the water via the transporter.

(I) **RAISING MECHANISM** – The pump, cylinder, and yoke assembly, contained on each of the two inner pontons, is used for raising and lowering the ramp bay.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Contd)

RAMP BAY EQUIPMENT FEATURES (Contd)



RAMP BAY (UNFOLDED)

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Contd)

INTERIOR BAY EQUIPMENT FEATURES

(A) **OUTER PONTON** – A non-compartmentalized structure that functions as a float to support loads placed on its top (walkway) surface, and provides additional buoyancy to the inner ponton. Left and right outer pontons are interchangeable.

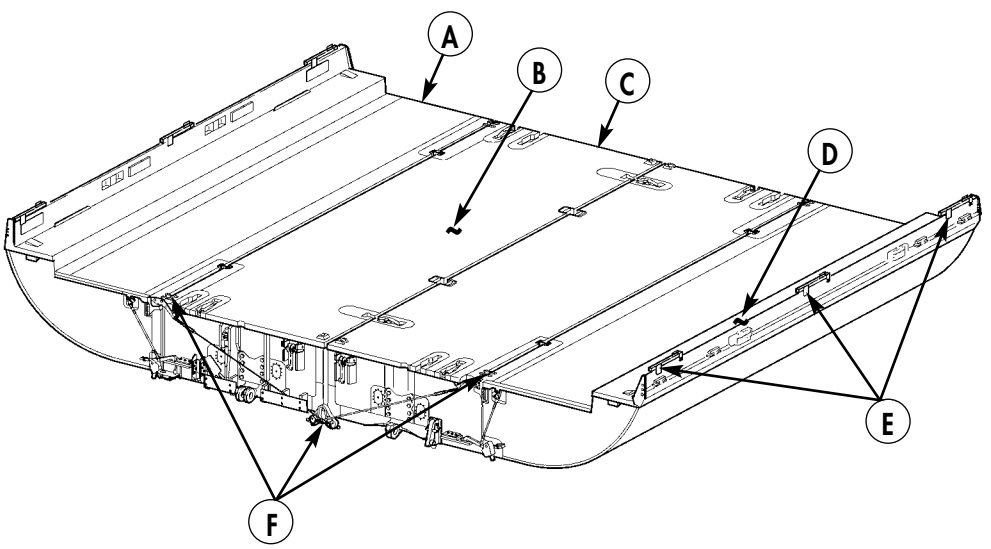
(B) **ROADWAY** – The top road surface of two adjoining inner and outer pontons having a 22 ft (6.7 m) wide load bearing area for vehicles and cargo.

(C) **INNER PONTON** – A non-compartmentalized structure that functions as a float to support loads placed on its top (roadway) surface. Left and right outer pontons are interchangeable.

(D) **WALKWAY** – The 2 ft 5 in. (0.8 m) wide top surface of the outer ponton for personnel crossing.

(E) **HANDRAIL** – A retractable railing, extending the full length of the bay, consisting of three stanchions and a cable mounted on each outer ponton splash plate.

(F) **UNFOLDING MECHANISM** – A system of cables, springs, and levers, located at both ends of the IRB-I, that automatically control the unfolding of the inner and outer pontons as the bay is launched. During retrieval, this mechanism works in reverse by pulling the pontons up into the folded position simultaneously, as the entire bay is lifted from the water via the transporter.



DIFFERENCES BETWEEN MODELS

There are two models that make up the IRB, the Ramp Bay M16 and the Interior Bay M17. For differences between the M16 and M17, refer to WP 0003 00. There are no differences between individual units of the same model of the IRB interior or ramp bays. The IRB is a redesigned and improved bridge that functions similar to its older Improved Float Bridge (IFB) counterpart. The IRB's interior and ramp bays can be interconnected with IFB bays.

DIFFERENCES BETWEEN IRB AND IFB

The IRB has been designed to connect with IFB bays interchangeably, but there are many significant differences in its appearance and operation. Table 1, below, is provided to assist the operator in identifying IRB design features that differ from the IFB. (Refer to WP0006 00 for operation of IRB. Refer to TM 5-5420-209-12 for operation of IFB.)

Table 1. Differences Between IRB and IFB.

IRB ASSEMBLY	DIFFERENCE IN CONFIGURATION FROM IFB
RAMP BAY	
Inner ponton	New structural design; ramp end is contiguous; no folding ramp plates
Outer ponton	1. Redesigned; revised bow shape 2. Raised splash plate 3. Redesigned cleats 4. Reinforced deck 5. Redesigned load receiving recesses for redesigned rafting brackets, air-transport, and load retaining system. 6. No retaining cable fixing strut 7. No unfolding mechanism lever box 8. No ramp plate lifting device fixing points or poles
Lower lock-drive	Metric jackscrew
Upper coupling, longitudinal	Locking recesses removable and made of steel
Upper coupling, transverse	None
Travel latch	None
Foldlock	None
Outer ponton lock	New design; swivel hook actuated from deck

DIFFERENCES BETWEEN IRB AND IFB (Contd)

Table 1. Differences Between IRB and IFB (Contd).

IRB ASSEMBLY	DIFFERENCE IN CONFIGURATION FROM IFB
Unfolding mechanism	1. New design: torsion bar in outer ponton 2. Redesigned unfolding lever/stabilizer
Lifting lug, front and rear	Both fixed
Bilge outlets	1. Redesigned outlets for draining folded bay 2. Redesigned outlets for pumping out unfolded bay
Railing	New design
Stowage box and lid	Integrated in outer ponton; lid even with top of deck
Walkway ramp plates	1. New design including fixing and securing on ponton 2. Provision for installation of one additional ramp plate on each ponton
PUMP SYSTEM	
Cylinder	1. New design having increased stroke and modified bearing 2. Modified pin for cylinder
Pump	1. New internal design 2. Larger fluid reservoir 3. Redesigned controls 4. Modified access cover and revised operating instructions data plate 5. Compensation line between fluid reservoirs 6. Redesigned hose guides including protection loom
INTERIOR BAY	
Inner ponton	1. Redesigned ends having integrated access holes for main couplings 2. Steel main couplings
Outer ponton	1. Redesigned; revised bow shape 2. Raised splash plate 3. Redesigned cleats 4. Reinforced deck 5. Redesigned load receiving recesses for redesigned rafting brackets, air-transport, and load retaining system 6. No unfolding mechanism lever box 7. No retaining cable fixing strut

DIFFERENCES BETWEEN IRB AND IFB (Contd)

Table 1. Differences Between IRB and IFB (Contd).

IRB ASSEMBLY	DIFFERENCE IN CONFIGURATION FROM IFB
Lower lock-drive	Metric jackscrew
Upper coupling, longitudinal	Locking recesses removable and made of steel
Upper coupling, transverse	None
Travel latch	None
Foldlock	None
Outer ponton lock	New design; lock is engaged/disengaged from deck
Unfolding mechanism	1. Redesigned unfolding lever/stabilizer and new double hinge connector 2. Rigid lifting lug; two per bay
Bilge outlets	1. Redesigned outlets for draining folded bay 2. Redesigned outlets for pumping out unfolded bay
Lifting lugs	Cables at both ends of bay
Handrail	New design

EQUIPMENT DATA

Refer to the following tables for specific equipment data.

NOTE

For equipment data on M977 series HEMTT, refer to TM 9-2320-279-10 and TM 5-5420-234-14&P.

Table 2. CBT Data.

	STANDARD	METRIC
Dimensions and weight (ready for travel)		
Not loaded (BAP installed):		
Length	32 ft 10 in.	10 m
Width	11 ft 6 in.	3.5 m
Height	12 ft 5 in.	3.8 m
Weight	36,098 lb	16,374 kg
Loaded with ramp bay on BAP:		
Length	39 ft 4 in.	12 m
Width	11 ft 4 in.	3.4 m
Height	12 ft 11 in.	3.9 m
Weight	56,454 lb	25,607 kg
Loaded with interior bay on BAP:		
Length	38 ft 5 in.	11.7 m
Width	11 ft 10 in.	3.6 m
Height	13 ft 3 in.	4 m
Weight	56,454 lb	25,607 kg
Wheelbase	17 ft 6 in.	5.3 m
Ground clearance	2 ft	61 cm
Turning circle (wall-to-wall)	100 ft	30.5 m
PTO fluid pump output at 3,000 psi (20,685kPa)	20 gpm	76 lpm
Transporter range	300 mi	483 km

Table 3. LHS Data.

	STANDARD	METRIC
Maximum lifting load	20,000 lb	9080 kg
Fluid system maximum operating pressure	3,625 psi	24,994 kPa
Fluid system full relief pressure	3,100 to 3,300 psi	21,375 to 22,754 kPa
Electric power voltage	24 Volt	

EQUIPMENT DATA (Contd)

Table 4. BAP Data (Empty).

	STANDARD	METRIC
Length	21 ft 4 in.	6.5 m
Width	11 ft 3 in.	3.4 m
Height	8 ft 11 in.	2.7 m
Weight	5,814 lb	2637 kg
Winch system operating pressure	2,100 to 2,300 psi	14,479 to 15,859 kPa

Table 5. Military Load Class (MLC) Ratings.

CONFIGURATION	MLC
CBT, unloaded	18
CBT, unloaded with empty M1076 trailer	22
CBT with loaded BAP (with interior bay)	24
CBT with loaded BAP (with ramp bay)	23
CBT with IBC and boat	22
CBT, maximum load	27
CBT with loaded M1076 trailer and loaded BAP (one interior bay and one ramp bay)	34
CBT and M1076 trailer; with loaded BAP, or IBC and boat	33
CBT with M1076 trailer, maximum load	39

EQUIPMENT DATA (Contd)

Table 6. Ramp Bay Data.

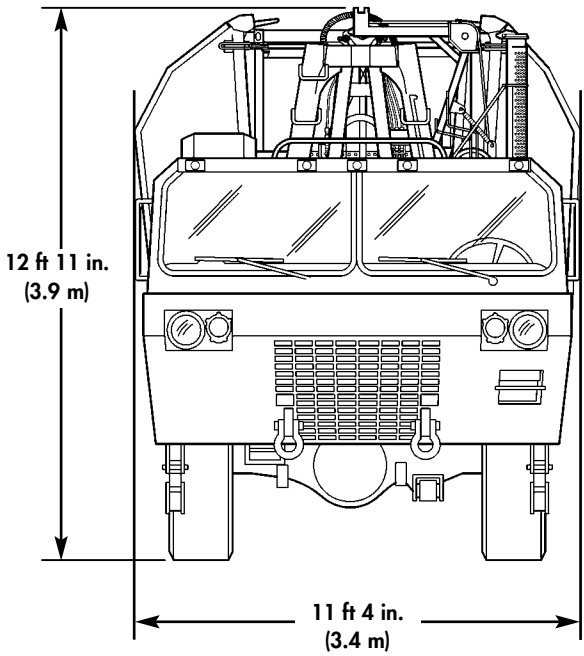
	STANDARD	METRIC
Length	22 ft 4 in.	6.8 m
Width		
Folded	10 ft 5 in.	3.2 m
Unfolded	28 ft 3 in.	8.6 m
Roadway width		
Single-lane traffic	14 ft 9 in.	4.5 m
Two-lane traffic	11 ft	3.4 m
Walkway width	2 ft 5 in.	0.8 m
Height		
Folded	7 ft 7 in.	2.3 m
Unfolded	4 ft 1 in.	1.2 m
Stowage compartment opening		
Length	3 ft 6 in.	1.1 m
Width	1 ft 1 in.	33.5 cm
Depth	1 ft 6 in.	45.7 cm
Weight	14,000 lb	6350 kg
Pump, weight	53 lb	24.1 kg
Pump, reservoir capacity	0.8 gal.	3.03L
Cylinder, weight	342 lb	155.3 kg
Cylinder, capacity	2 gal.	7.72L
Center of gravity (inboard of connecting lock pin)	8 ft 8 in.	2.7 m
Cubage	806.6 ft^3	22.8 m^3

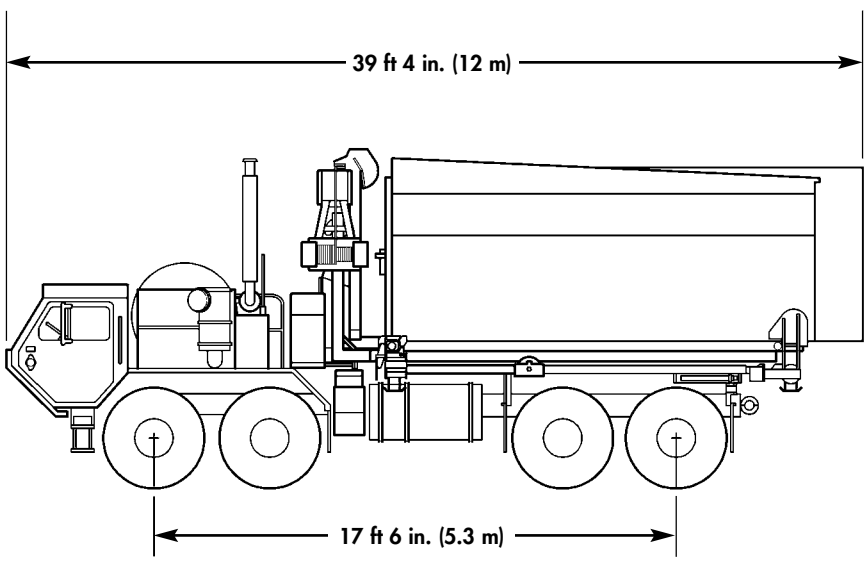
Table 7. Interior Bay Data.

	STANDARD	METRIC
Length	22 ft 7 in.	6.9 m
Width		
Folded	10 ft 10 in.	3.3 m
Unfolded	28 ft 2 in.	8.6 m
Roadway width		
Single-lane traffic	14 ft 9 in.	4.5 m
Two-lane traffic	11 ft	3.4 m
Walkway width	2 ft 5 in.	0.8 m
Height		
Folded	7 ft 8 in.	2.3 m
Unfolded	4 ft 5 in.	1.3 m
Weight	14,000 lb	6350 kg
Center of gravity (inboard of connecting lock pin)	11 ft 5 in.	3.5 m
Cubage	1412.6 ft^3	40.00 m^3

EQUIPMENT CONFIGURATION

The CBT loaded with ramp bay dimensions are detailed below.

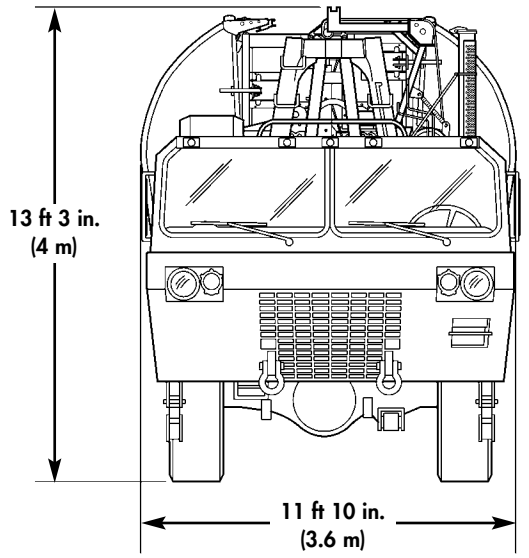


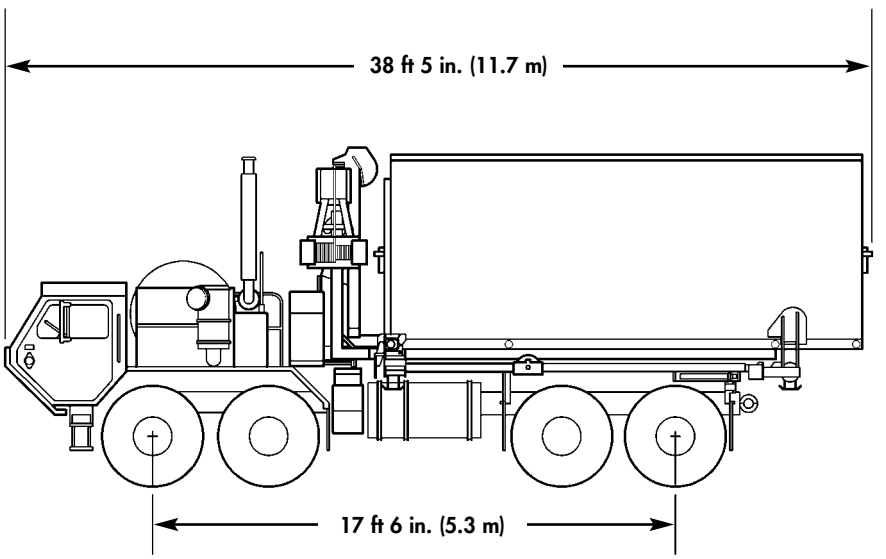


CBT LOADED WITH RAMP BAY

EQUIPMENT CONFIGURATION (Contd)

The CBT loaded with interior bay dimensions are detailed below.

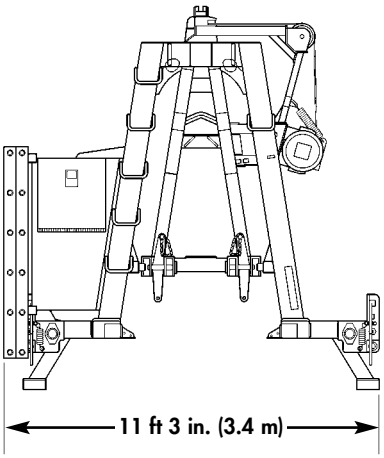


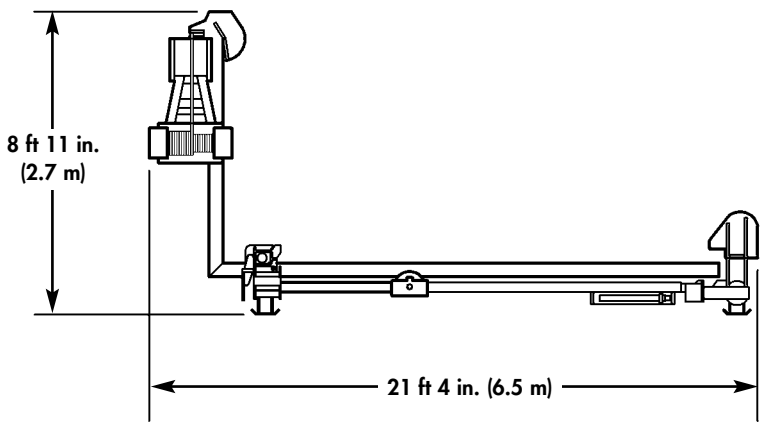


CBT LOADED WITH INTERIOR BAY

EQUIPMENT CONFIGURATION (Contd)

The BAP dimensions are detailed below.

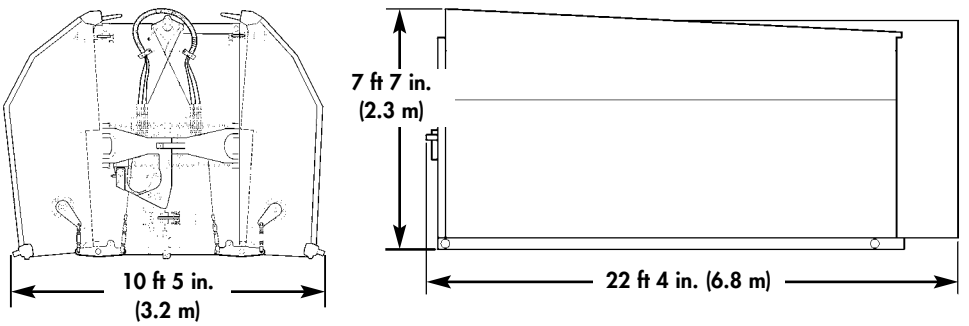




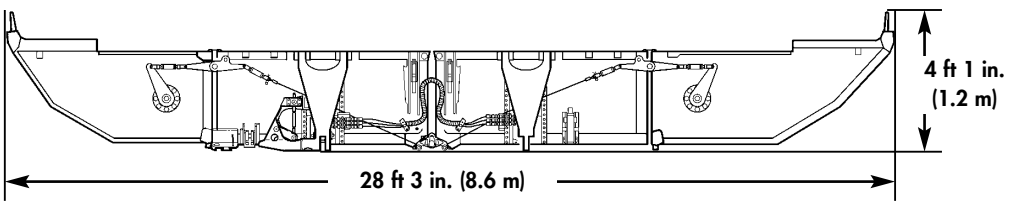
BRIDGE ADAPTER PALLET (BAP)

EQUIPMENT CONFIGURATION (Contd)

The IRB model ramp bay M16 and model interior bay M17 dimensions are detailed below.

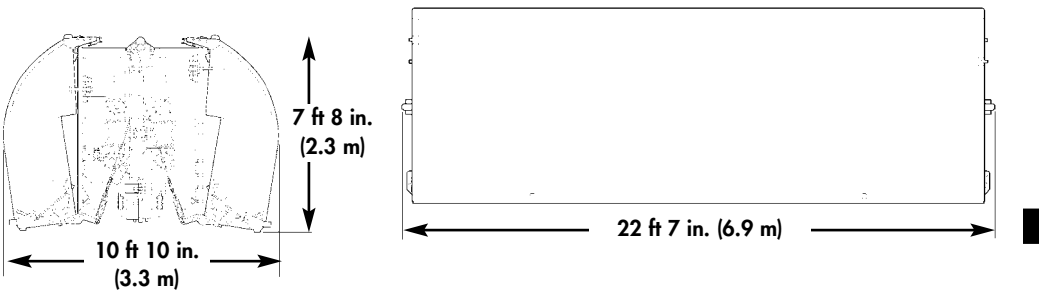


RAMP BAY M16, FOLDED

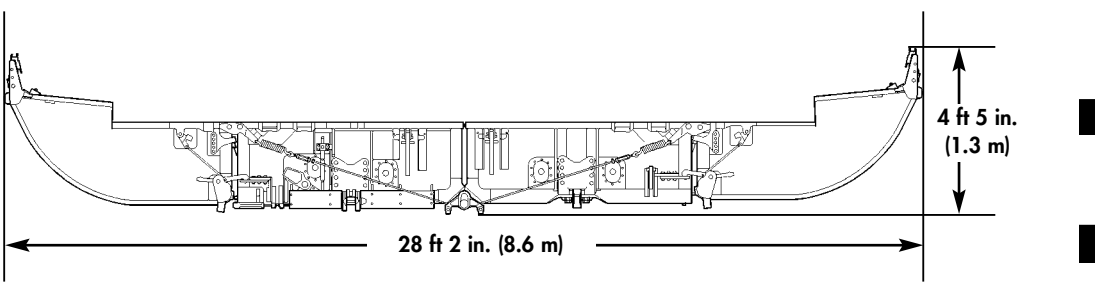


RAMP BAY M16, UNFOLDED

EQUIPMENT CONFIGURATION (Contd)



INTERIOR BAY M17, FOLDED



INTERIOR BAY M17, UNFOLDED

LOCATION AND DESCRIPTION OF DATA PLATES

The location and a description of each data plate and decal found on the CBT and IRB bays is provided under this heading. If any data plate or decal is worn, broken, unreadable, painted over, or missing, it must be replaced; notify your supervisor.

NOTE

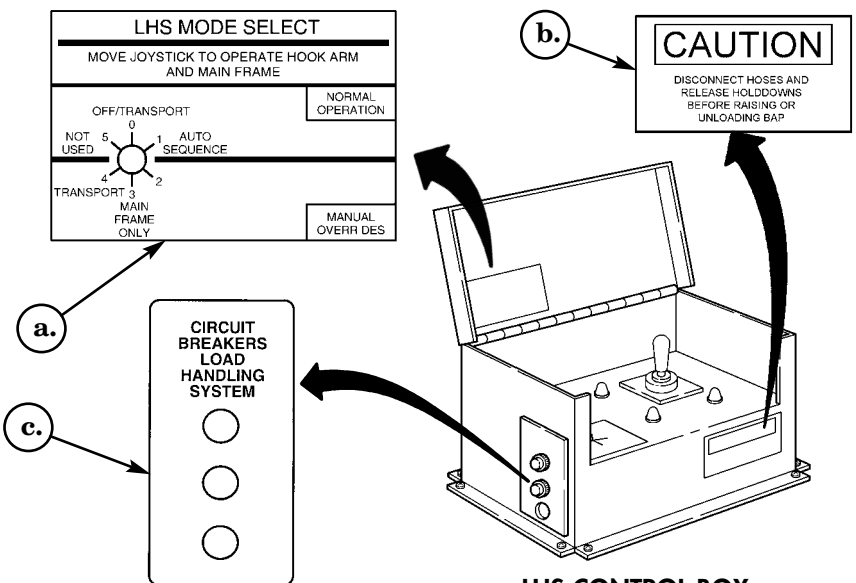
Data plates and decals pertaining to operation of the basic HEMTT truck are not covered. (Refer to TM 9-2320-279-10.)

1. LHS Data Plates and Decals

a. LHS MODE SELECT — This decal, located inside the cab, on the LHS control box cover, identifies the LHS MODE SELECT switch with its numbered functional mode positions and provides instructions for LHS operation.

b. CAUTION (BAP unloading) — This decal, located inside the cab, on the front of the LHS control box, is a reminder to disconnect hydraulic hoses to BAP winch and release hold-down locks prior to raising for unloading the BAP.

c. CIRCUIT BREAKERS — This decal, located inside the cab, on the side of the LHS control box, identifies LHS circuit breakers.



LHS CONTROL BOX

d. WORK LIGHT — This decal, located inside the cab on the side panel of the heater compartment, identifies the switch for operating the LHS work light and spotlight.

LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

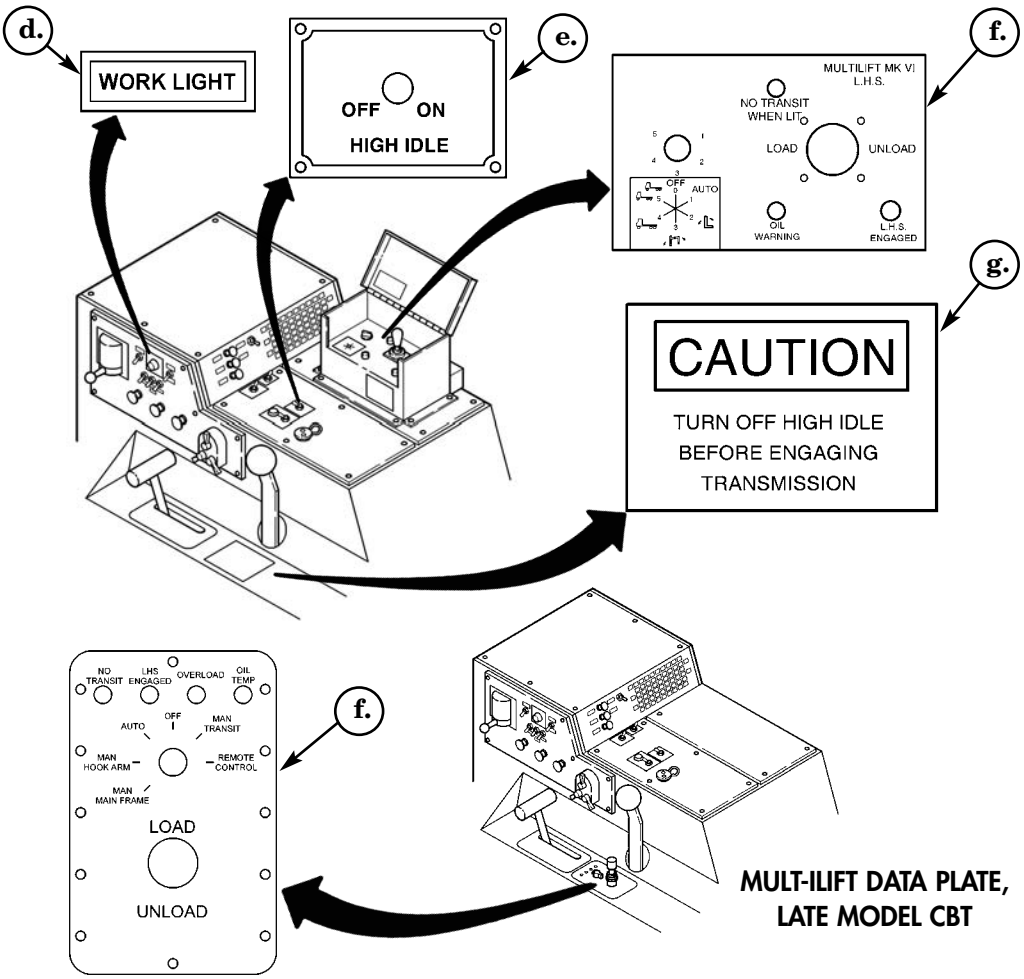
LHS Data Plates and Decals (Contd)

e. HIGH IDLE — This data plate, located inside the cab on the top panel of the heater compartment, identifies the switch for increasing engine idle speed prior to LHS operation.

f. MULTI-LIFT, MK VI LHS — This decal, located inside the cab on the top panel of the LHS control box, or on top of shift console on late model CBTs, identifies switches and indicator lights for LHS operation.

g. CAUTION (high idle) — This decal, located inside the cab on top of the shift console, is a reminder to turn off the HIGH IDLE switch before engaging the transmission.

h. WARNING (LHS function) — This decal (not shown below), located on the driver's side of the cab control box, warns not to use the LHS for any function other than lifting palletized loads and bridge equipment.



MULT-ILIFT DATA PLATE, LATE MODEL CBT

LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

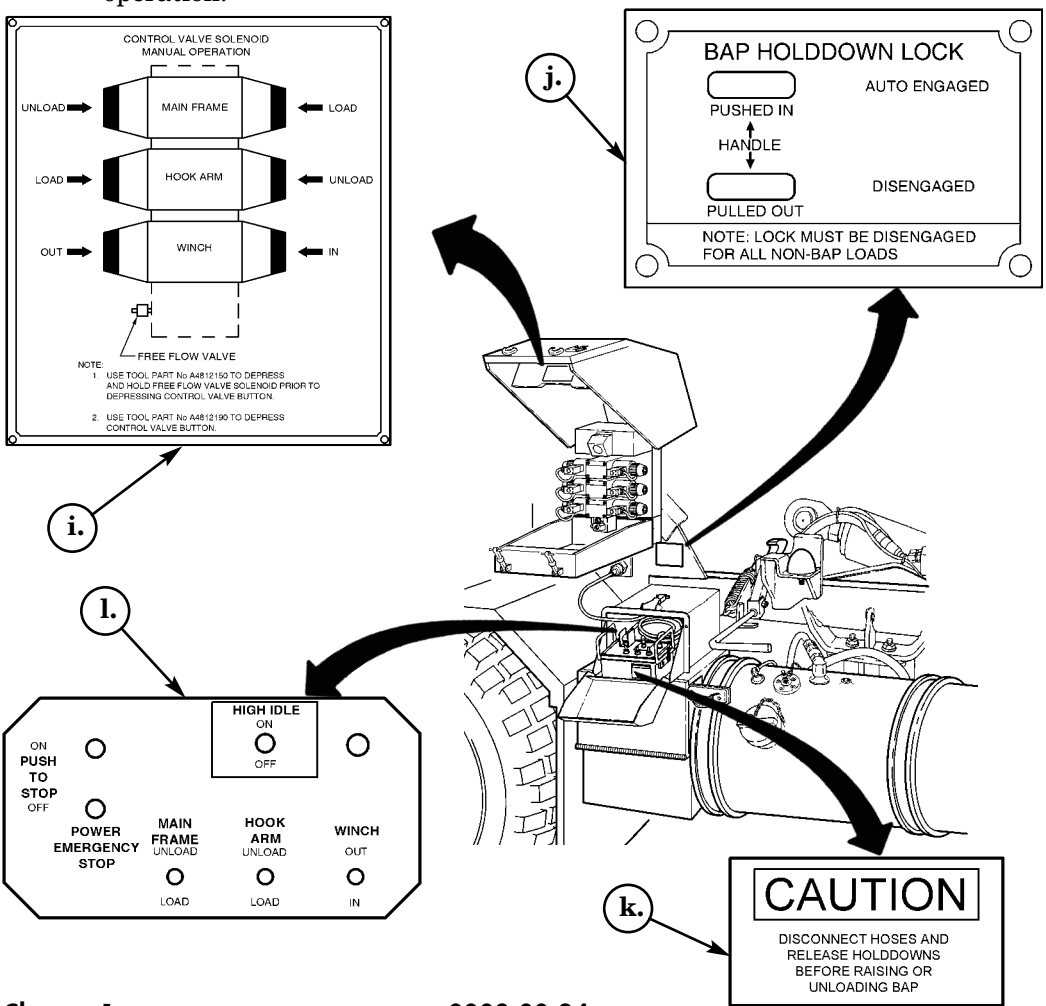
LHS Data Plates and Decals (Contd)

i. **CONTROL VALVE SOLENOID MANUAL OPERATION** — This data plate, located on the inside of the fluid manifold cover, identifies control valve buttons, free flow valve, and provides instructions for their manual operation, including the use of the free flow and solenoid tools.

j. **BAP HOLD-DOWN LOCK** — This data plate, located on the LHS frame adjacent to each hold-down lock, provides instructions for engaging and disengaging the hold-down lock.

k. **CAUTION (BAP unloading)** — This decal, located on the side of the RCU, is a reminder to disconnect hoses to BAP winch and release hold-down locks prior to raising or unloading the BAP.

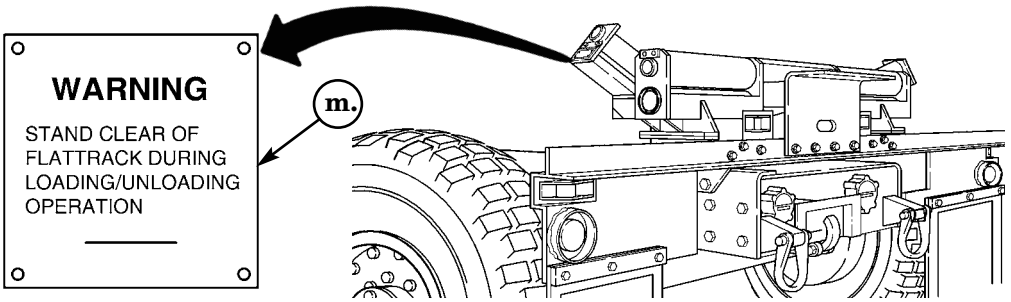
l. **REMOTE CONTROL UNIT (instructions)** — This decal, located on the top of the RCU, identifies switches and their functions for LHS and BAP operation.



LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

LHS Data Plates and Decals (Contd)

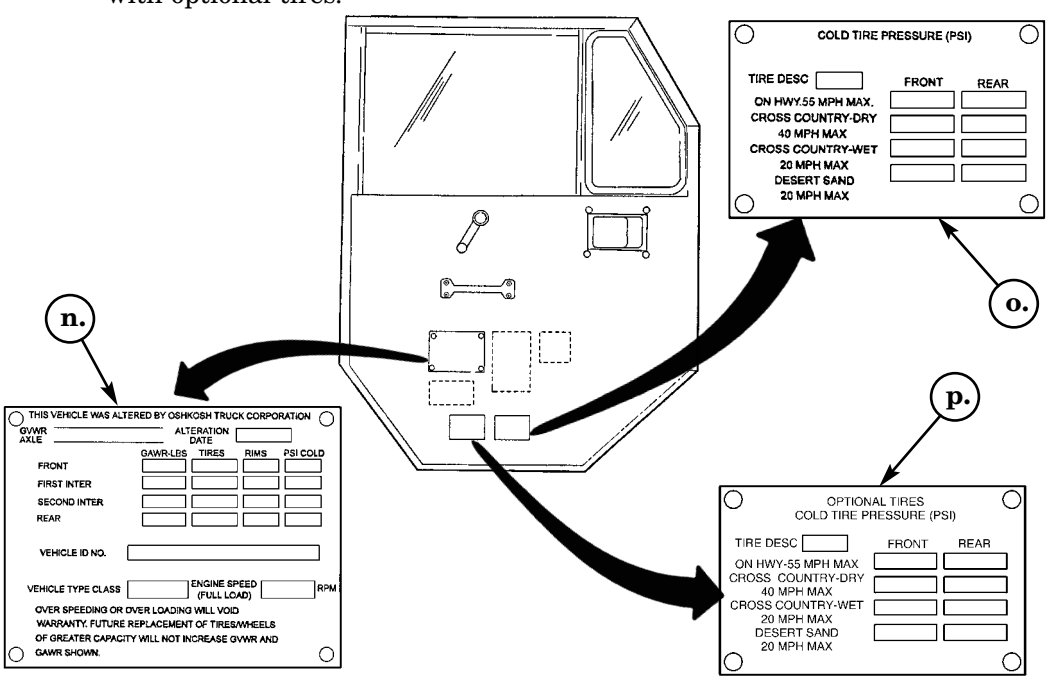
m. WARNING (flat-track) — This data plate, located on the rear roller assembly at each end, warns to stand clear of the flat-track during loading and unloading operations.



n. VEHICLE IDENTIFICATION — This data plate, located on the driver's side door, is the manufacturer's identification plate for the CBT; it contains the CVWR, alteration date, GAWR, tire data, vehicle ID No., type class, engine speed, and warranty information.

o. COLD TIRE PRESSURE (PSI) — This data plate, located on the driver's side door, identifies tire psi and maximum speeds for differing terrain.

p. OPTIONAL TIRES — This data plate, located on the driver's side door, identifies tire psi and maximum speeds for differing terrain when equipped with optional tires.

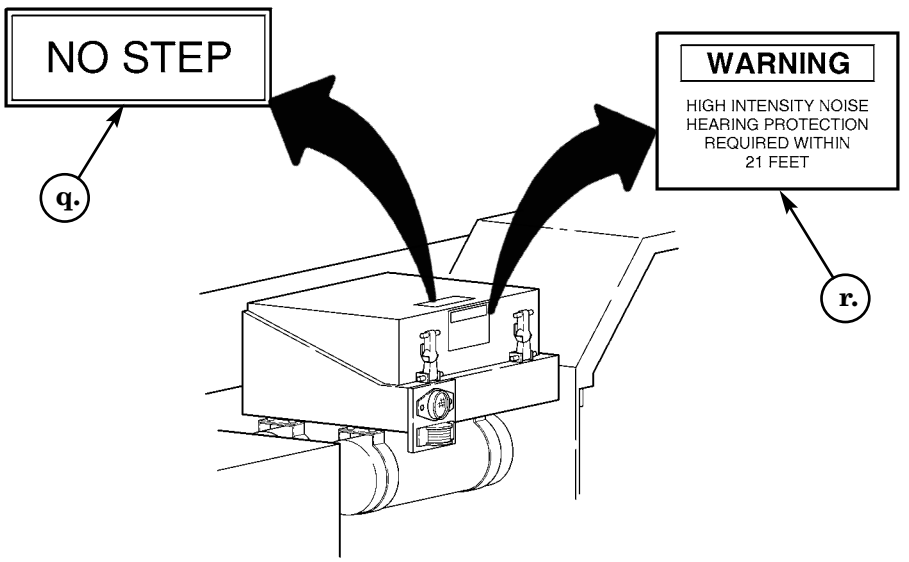


LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

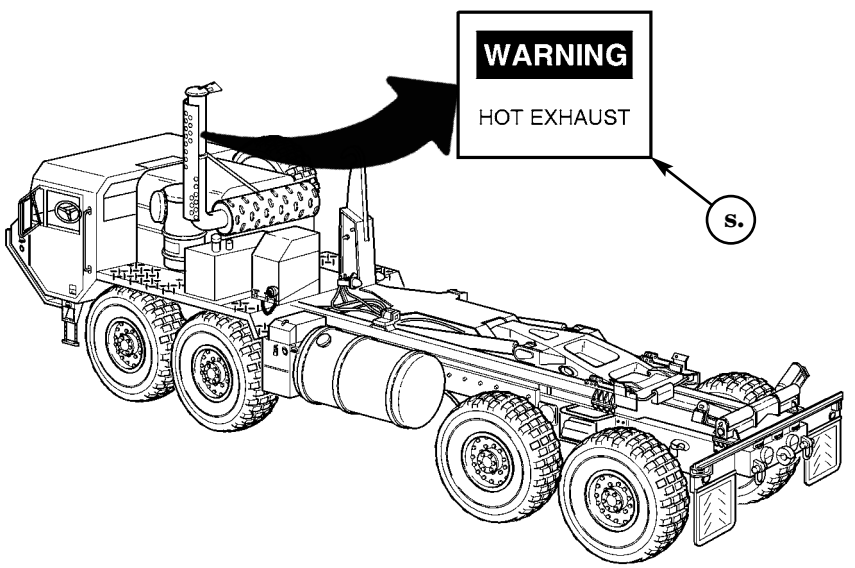
LHS Data Plates and Decals (Contd)

q. NO STEP — This decal is located on top of the battery box cover.

r. WARNING (hearing protection) — This decal, located on the battery box cover and engine air cleaner, is a warning requiring hearing protection within 21 feet of the vehicle due to high intensity noise.



s. WARNING (hot exhaust) — This decal is located on the exhaust extension heat shield.



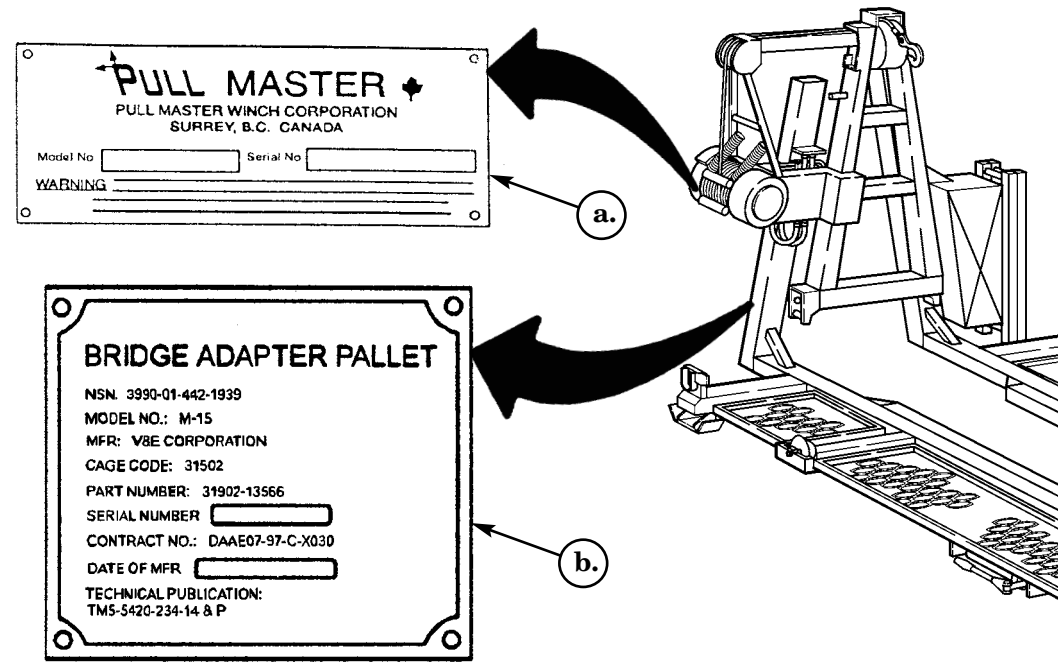
LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

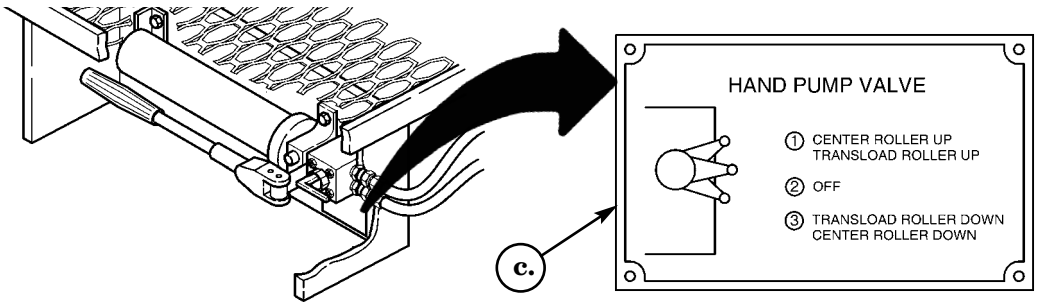
2. BAP Data Plates and Decals

a. PULL MASTER WINCH — This data plate, located on the winch assembly, is the manufacturer's identification plate for the winch; it contains the Model No., Serial No., and other information pertaining to the winch.

b. BRIDGE ADAPTER PALLET — This data plate, located on the driver's side of the BAP A-frame, is the manufacturer's identification plate for the BAP. It contains the Model No., Serial No., and other information pertaining to the BAP.

c. HAND PUMP VALVE — This data plate, located below the pump control valve, identifies three control valve positions for raising and lowering the center roller and transload roller on the BAP.





LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

BAP Data Plates and Decals (Contd)

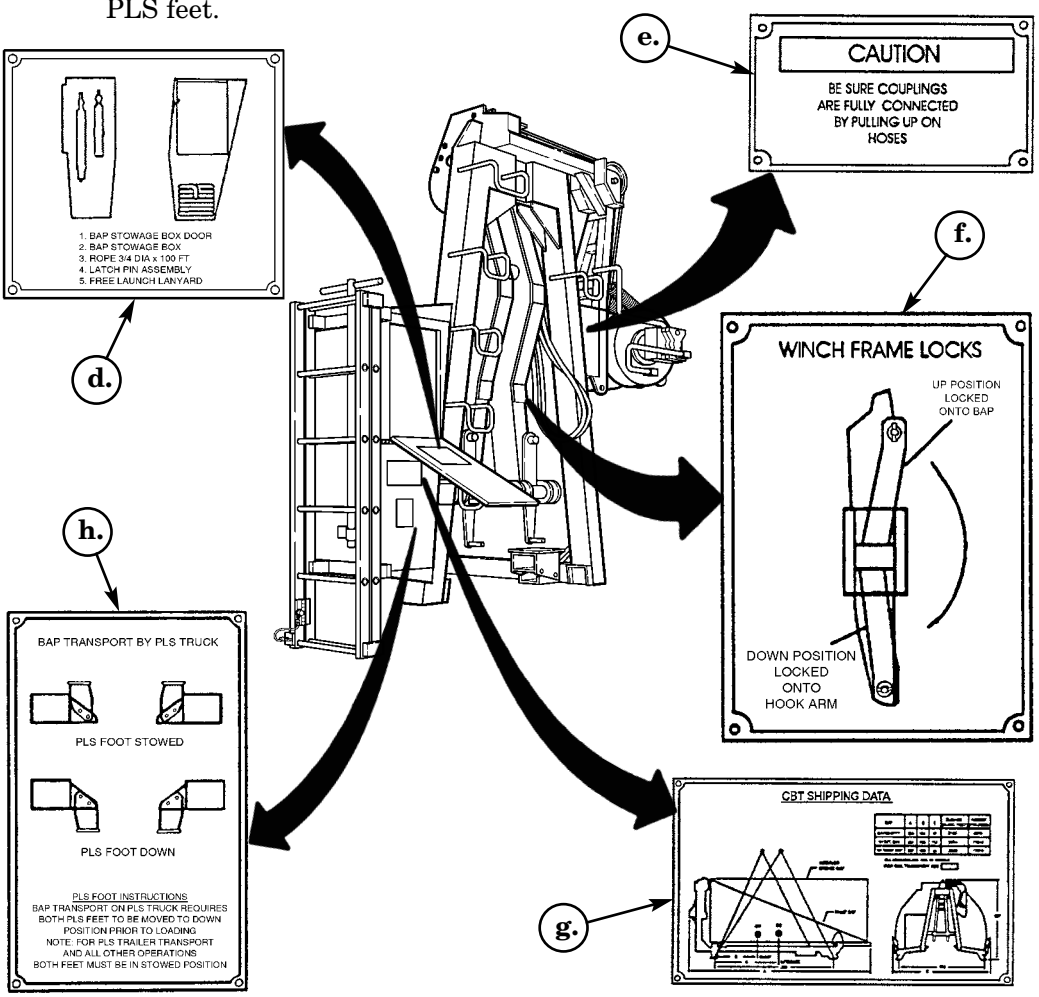
d. STOWAGE LOCATION — This data plate, located on the inside of the BAP toolbox door, identifies items that are to be stowed in the BAP toolbox.

e. CAUTION (coupling connection) — This data plate, located on the winch frame adjacent to the winch assembly, is a caution to ensure the couplings connecting the winch hoses are fully connected.

f. WINCH FRAME LOCKS — This data plate, located on the front side of the BAP winch frame above each lock, identifies the two locked positions for the winch frame locks.

g. CBT SHIPPING DATA — This data plate, located on the front of the BAP toolbox below the door, identifies the dimensions and weight of the BAP for shipping.

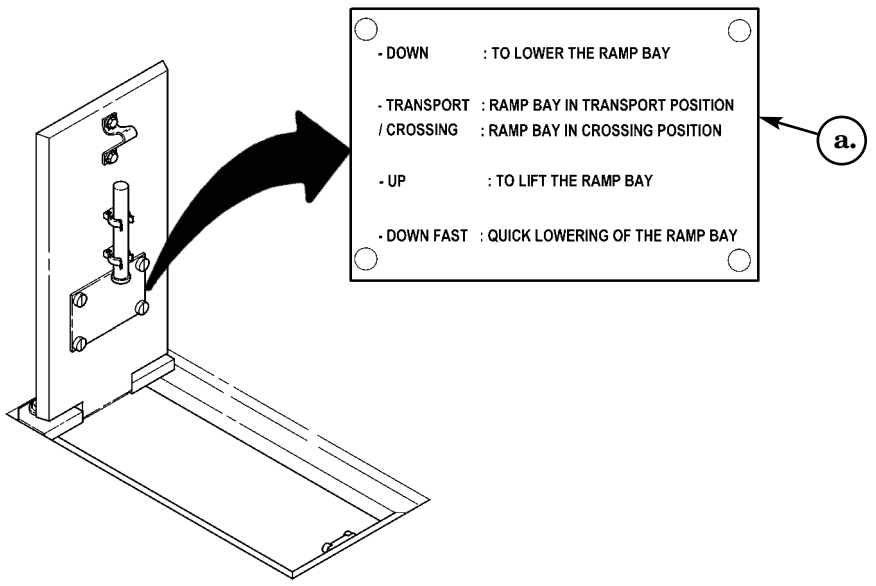
h. BAP TRANSPORT BY PLS TRUCK — This data plate, located on the front of the BAP toolbox below the door, provides instructions for the use of PLS feet.



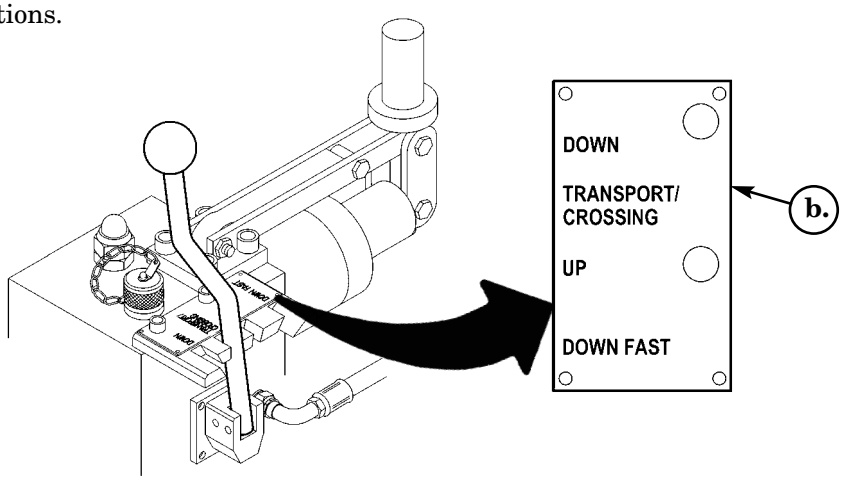
LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

3. IRB Data Plates

a. PUMP OPERATION — This data plate, located on the back side of both pump access covers, identifies the four pump control valve positions for operation of the ramp bay.



b. PUMP CONTROL VALVE — The data plate, located on the pump reservoir adjacent to the control valve lever, identifies the four control lever positions.



LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

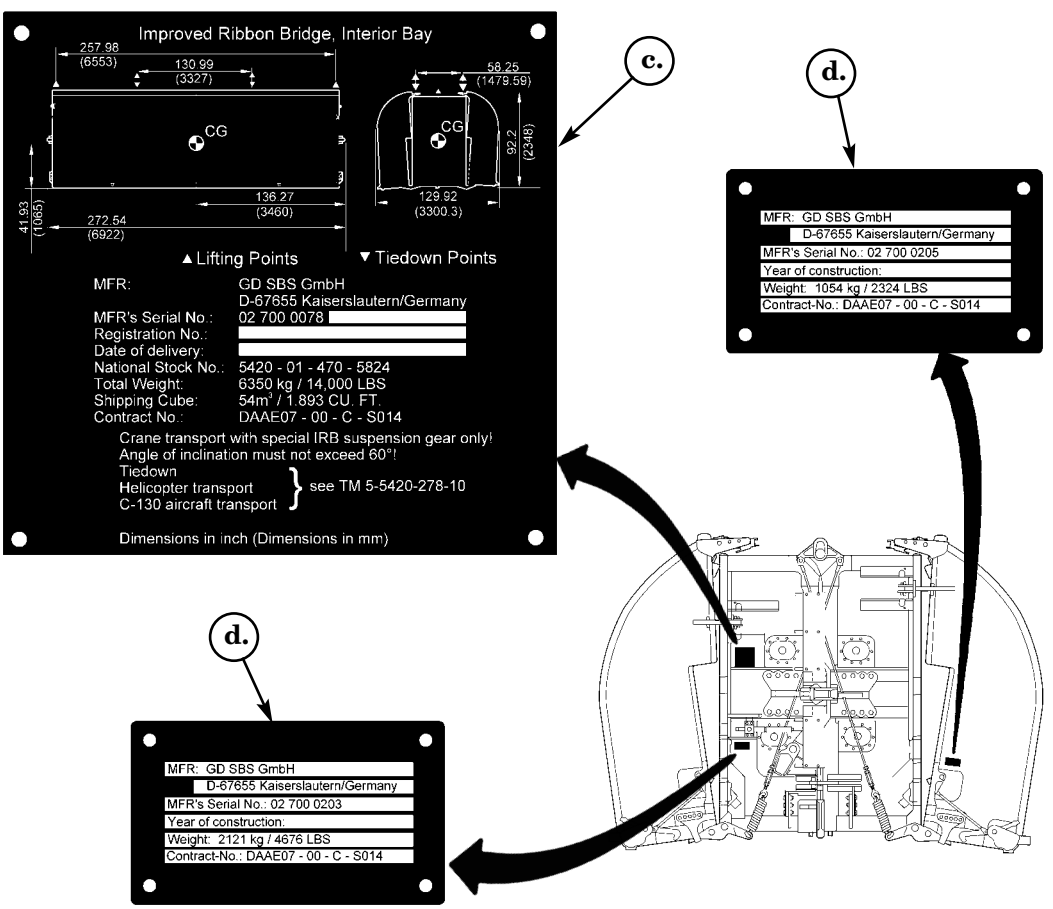
3. IRB Data Plates (Contd)

NOTE

GD SBS, formerly EWK, is the manufacturer of the IRB. Due to the company name change, IRB bays may contain data plates having GD SBS or EWK listed as the manufacturer.

c. IMPROVED RIBBON BRIDGE, INTERIOR BAY – This data plate, located on the left-hand inner ponton at one of the connecting ends, is the manufacturer's identification and shipping data plate for the IRB-I.

d. MFR – This data plate, located on each inner and outer ponton at the connecting ends, is the manufacturer's identification data plate for each ponton.

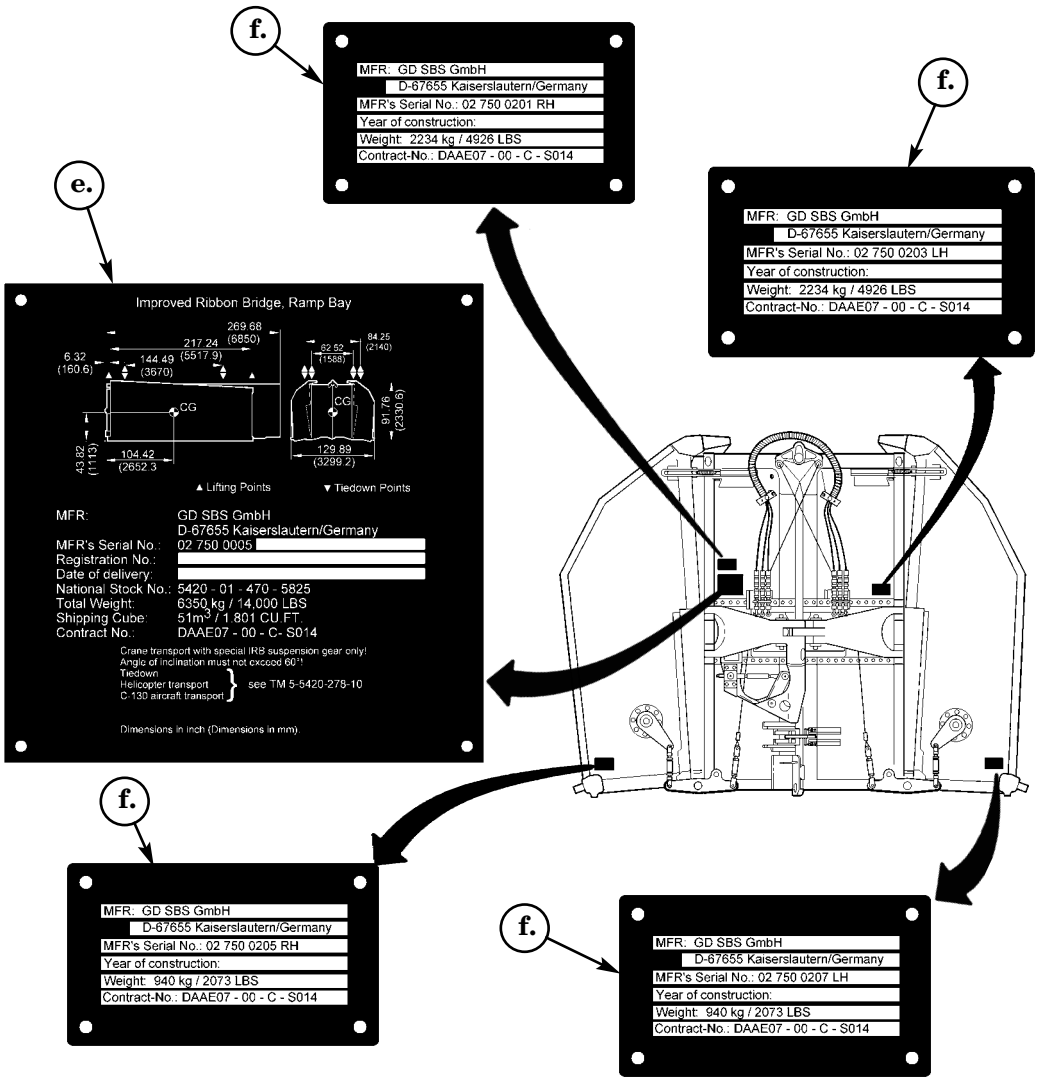


LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

3. IRB Data Plates (Contd)

e. IMPROVED RIBBON BRIDGE, RAMP BAY – This data plate, located on the left-hand inner ponton at the connecting end (front), is the manufacturer's identification and shipping data plate for the IRB-R.

f. MFR – This data plate, located on each inner and outer ponton at the connecting end (front) of the ramp bay, is the manufacturer's identification data plate for each ponton.



END OF WORK PACKAGE

DESCRIPTION AND THEORY OF OPERATION

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section II. THEORY OF OPERATION
TABLE OF CONTENTS

WP Title	WP Sequence No.-Page No.
General	0005 00-1
How the Bay Unfolds/Folds	0005 00-1
Function of the Ponton Locks	0005 00-1
Function of the Ponton Couplings	0005 00-2
Function of the Pump System	0005 00-2
Function of the Transporter (HEMTT)	0005 00-2
Function of the CBT Load Handling System (LHS)	0005 00-2
Function of the Bridge Adapter Pallet (BAP)	0005 00-2

DESCRIPTION AND THEORY OF OPERATION

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section II. THEORY OF OPERATION

THIS WORK PACKAGE SUPERSEDES WP 0005 00, DATED 8 APRIL 2003

GENERAL

This section explains how components of the IRB-I, IRB-R, CBT, and BAP work. A functional description of the IRB, CBT, and BAP components and their operation are covered in the following paragraphs.

HOW THE BAY UNFOLDS/FOLDS

Unfolding and folding operations involve the action of the bay's two inner and outer pontons and the cables, levers, and springs or torsion bars that make up the unfolding/folding mechanism. Once the bay is launched, the actual movement or unfolding is caused by the forces of gravity and buoyancy generated as the bay is released and begins to float. The unfolding mechanism's function is to assist and dampen the movement of the pontons about their hinged joints. The unfolding of the bay is automatic, whereas, to fold the bay it must be lifted from the end at the center. The lifting force (provided by the transporter) causes the inner pontons to move about their hinged joints, and their movement forces the unfolding/folding mechanism's cables, levers, and springs (IRB-I) or torsion bars (IRB-R) to simultaneously pull the outer pontons up, about their hinged joints, thus folding the bay.

FUNCTION OF THE PONTON LOCKS

The ponton locks are designed to hold the bay in the folded or unfolded position. When an IRB-R or IRB-I is placed in the folded position its inner and outer pontons are held by foldlocks and travel latches. These locks are manually engaged or disengaged during a controlled launch, retrieval, transport, and ground storage of the bay, but are not engaged when the bay will be used in the unfolded position. To secure the IRB-R or IRB-I in the unfolded position, the bay's inner pontons are locked by two manually engaged transverse couplings. The bay's outer pontons are then secured by manually engaging two swivel hooks and two swivel plates on the IRB-R or four outer ponton locks on the IRB-I. Once secured in the unfolded position, the bay is ready for bridge or raft construction.

FUNCTION OF THE PONTON COUPLINGS

The ponton couplings are the connection points for locating and holding IRB bays together in the construction of a bridge or raft. The upper couplings are designed to secure the bay to another bay until the lower lock pins can be engaged. The lower main coupling at each end of the inner ponton receives the lower lockpin. The lower main coupling is designed as a connecting eye, is made of steel, and is bolted to the inner ponton and a steel tie. The steel tie extends longitudinally the full length of the inner ponton. In a bridge or raft configuration, the loads placed on the adjoining bays are carried by the steel tie rather than the aluminum structure of the inner ponton itself. The upper coupling is made of steel and utilizes steel receptacle blocks bolted to the inner ponton. During bridging operations, the longitudinal upper couplings, except for those on the ramp bay, are opened to allow the bays to hinge at the lower main couplings. During rafting operations, the longitudinal upper couplings are closed for adequate rigidity.

FUNCTION OF THE PUMP SYSTEM

The pump system provides the mechanical means to change the angle of the entire ramp bay longitudinally, when connected to an interior bay, thereby raising or lowering the height of the ramp end of the roadway to meet a given river bank elevation. In operation, two manually operated pumps supply pressure to two cylinders each connected to a yoke on the inner pontons. The cylinders act to push the yokes out simultaneously at the bottom, and as the yokes are extended, the IRB-R hinges upward against the weight of the adjoining IRB-I.

FUNCTION OF THE TRANSPORTER (HEMTT)

The transporter functions to load/unload, launch/retrieve, and transport the BAP and bridge bays to and from launch sites. The transporter is a HEMTT equipped with a load handling system (LHS). The LHS is powered by the HEMTT. The HEMTT fluid system supplies pressure to the LHS by way of a PTO-driven pump on the HEMTT transmission. Control valves within the fluid system direct the flow of fluid to the LHS lift cylinders and winch motor. A cab-mounted control box and a hand-held remote control unit (RCU) are used to electrically actuate solenoids on the control valves for LHS operation.

FUNCTION OF THE CBT LOAD HANDLING SYSTEM (LHS)

The LHS is the lifting device for loading and unloading the BAP and supporting the winch when lifting and loading bridge bays. Bays cannot be loaded on the LHS without the BAP. The LHS is mounted on the HEMTT frame and contains a lifting arm which is raised and lowered by four fluid cylinders.

FUNCTION OF THE BRIDGE ADAPTER PALLET (BAP)

The BAP is the base support for a bridge bay during movement. It contains a detachable winch frame that locks to the LHS hook arm for bay launch and retrieval operations. Operation of the winch is possible only from the RCU.

END OF WORK PACKAGE

CHAPTER 2

OPERATING INSTRUCTIONS FOR IMPROVED RIBBON BRIDGE (IRB)

Section I.	Description and Use of Operator's Controls and Indicators	WP 0006 00
Section II.	Operator's Preventive Maintenance Checks and Services (PMCS)	WP 0012 00
Section III.	Operation Under Usual Conditions	WP 0017 00
Section IV.	Operation Under Unusual Conditions	WP 0045 00
Section V.	Operation of Special Purpose Kits	WP 0052 00

OPERATING INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

TABLE OF CONTENTS

WP Title	WP Sequence No.-Page No.
General	0007 00-1
Preparation for Use	0007 00-1
Common Bridge Transporter Controls and Indicators	0008 00-1
Bridge Adapter Pallet Controls and Indicators	0009 00-1
Ramp Bay Controls and Indicators	0010 00-1
Interior Bay Controls and Indicators	0011 00-1

OPERATING INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

GENERAL

This section locates and describes the controls and indicators of the CBT, BAP, IRB-R, and IRB-I. It is important to learn the location and function of all controls and indicators before attempting to operate the equipment.

PREPARATION FOR USE

When an IRB-R or IRB-I is received by the using organization, it is the responsibility of the officer-in-charge to determine whether it has been properly prepared for service by the supplier. It is the responsibility of the officer-in-charge to ensure the bay is in condition to perform its functions. Maintenance personnel will provide any additional service required to bring the bay to operating standards. Before operating the bays, the operator must become familiar with the controls and indicators as described in this section.

END OF WORK PACKAGE

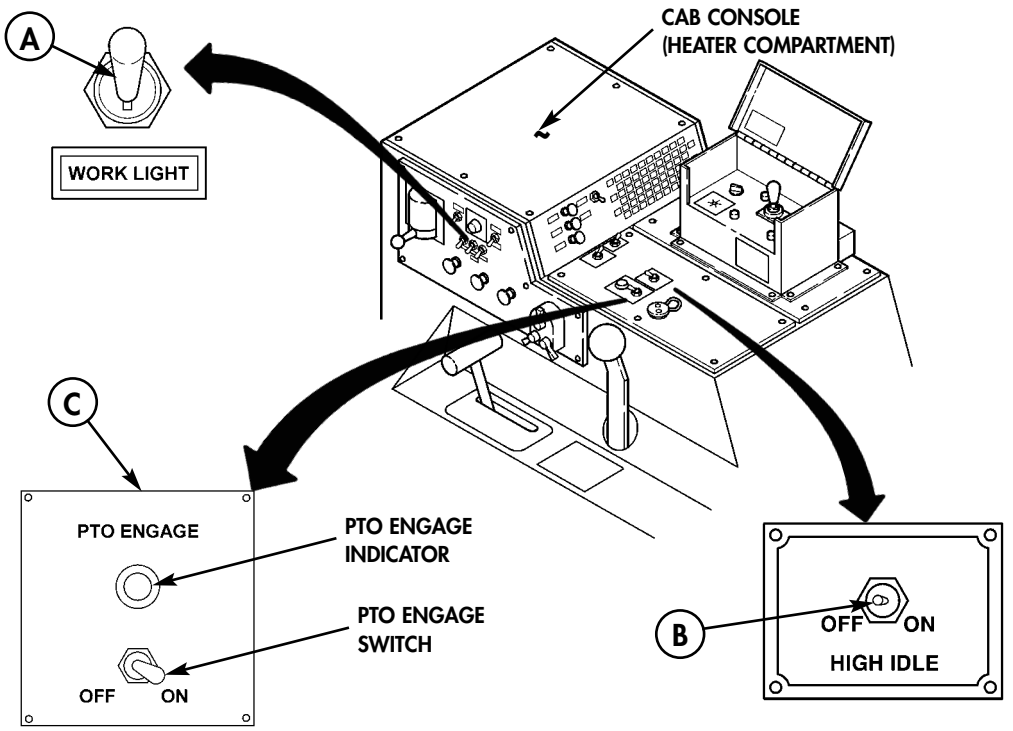
COMMON BRIDGE TRANSPORTER CONTROLS AND INDICATORS

THIS WORK PACKAGE SUPERSEDES WP 0008 00, DATED 8 APRIL 2003

(A) **WORK LIGHT SWITCH —** There is a WORK LIGHT switch located on the side panel to the right of the DOMELIGHT switch. Placing the WORKLIGHT switch in the UP position turns on the work light at the LHS main frame and the hand-held spotlight at the control valve cabinet.

(B) **HIGH IDLE SWITCH —** There is a HIGH IDLE switch on the top panel of the cab console (heater compartment) adjacent to the PTO ENGAGE switch and indicator. The HIGH IDLE switch is placed in the ON position to increase engine idle speed to 1,200 rpm; this is necessary to raise pump fluid pressure for LHS operation. The LHS or BAP winch is put in motion prior to switching on high idle, and high idle is switched off prior to stopping movement of LHS or BAP winch.

(C) **PTO ENGAGE SWITCH AND INDICATOR —** There is a PTO switch and indicator located on the top panel of the cab console (heater compartment) adjacent to the HIGH IDLE SWITCH. Prior to operation of the LHS, the HIGH IDLE SWITCH is left in the OFF position with the vehicle engine running, and the PTO is engaged by moving this switch to the ON position. The PTO ENGAGE INDICATOR will light when the PTO ENGAGE SWITCH is in the ON position. The PTO ENGAGE SWITCH is placed in the OFF position prior to stopping or starting the CBT engine.



COMMON BRIDGE TRANSPORTER CONTROLS AND INDICATORS (Contd)

(D) **LHS MODE SELECT SWITCH —** There is a six-position rotary switch located on the LHS cab control box panel. The switch is used to select the desired functional mode for LHS operation. The six functional mode positions are indicated on the LHS MODE SELECT and cab control panel decals. Turn the knob on the LHS MODE SELECT switch to change modes. The switch positions and functions are numbered, and the modes are as follows:

0 OFF/TRANSPORT — The LHS is not operational.

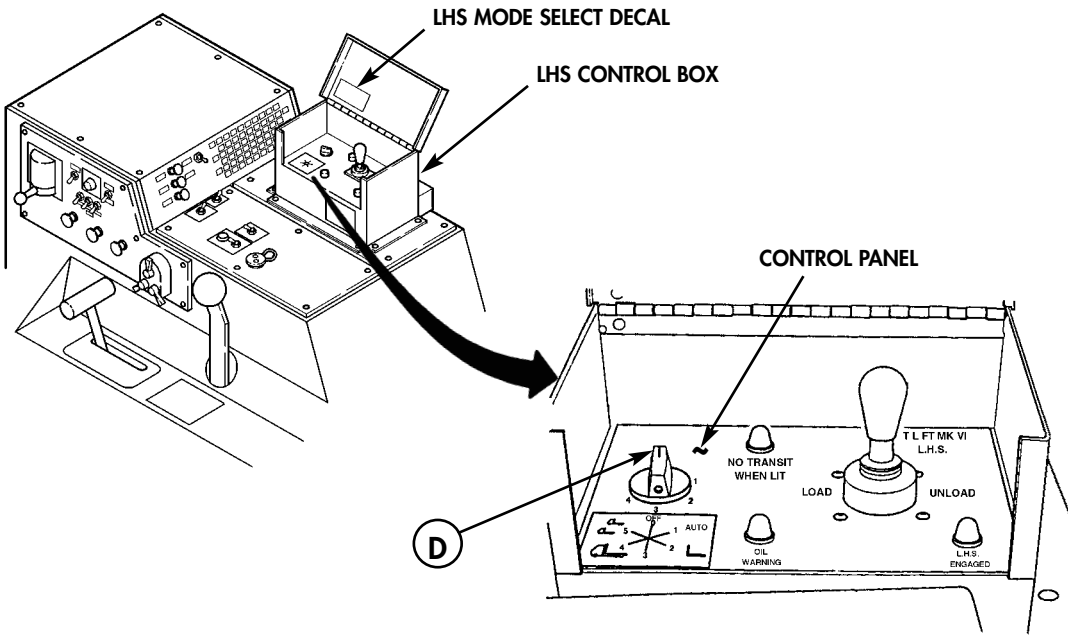
1 AUTO SEQUENCE — Provides automatic operation of the LHS during NATO flatrack retrieval.

2 HOOK ARM ONLY — Places the hook arm in the manual mode for moving the hook arm when the AUTO mode electric circuit is malfunctioning.

3 MAIN FRAME ONLY — Places the main frame in the manual mode for moving the main frame when the AUTO mode electric circuit is malfunctioning.

4 TRANSPORT — Provides for safe travel when the AUTO mode electric circuit has failed and the HOOK ARM ONLY and MAIN FRAME ONLY positions have been used.

5 NOT USED — Not used.



LHS MODE SELECT SWITCH, EARLY MODEL CBT

COMMON BRIDGE TRANSPORTER CONTROLS AND INDICATORS (Contd)

NOTE

The LHS Mode Select switch positions and functions for late model CBTs are listed below.

OFF — The LHS is not operational.

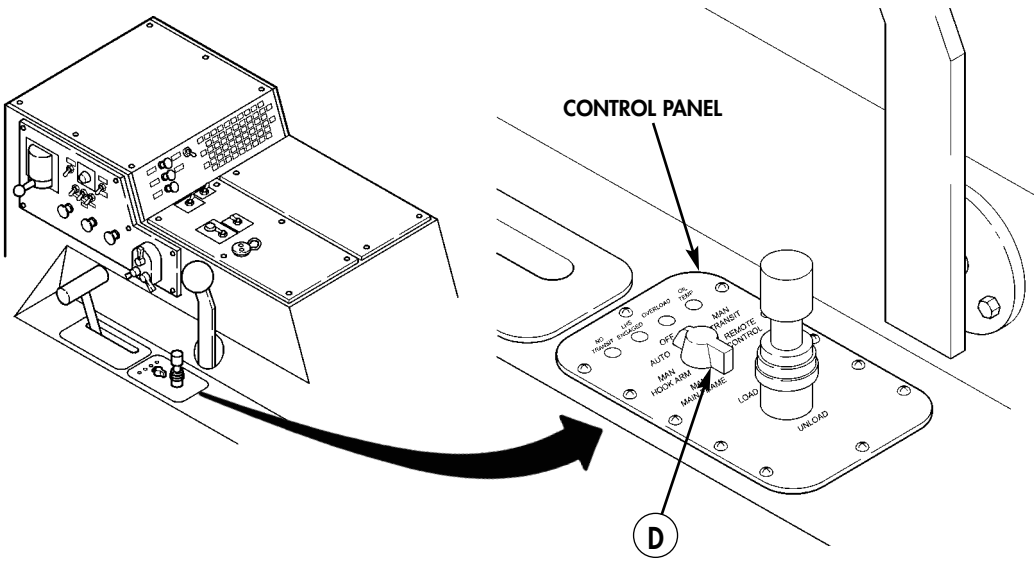
MAN TRANSIT — Provides for safe travel when this AUTO mode electric circuit has failed and the HOOK ARM ONLY and MAIN FRAME ONLY positions have been used.

REMOTE CONTROL — Activates hand-held LHS remote control unit.

MAN MAIN FRAME — Places the main frame in the manual mode for moving main frame if AUTO mode electric circuit is malfunctioning.

MAN HOOK ARM — Places the hook arm in the manual mode for moving hook arm if AUTO mode electric circuit is malfunctioning.

AUTO — Provides automatic operation of the LHS during NATO flatrack retrieval.



LHS MODE SELECT SWITCH, LATE MODEL CBT

COMMON BRIDGE TRANSPORTER CONTROLS AND INDICATORS (Contd)

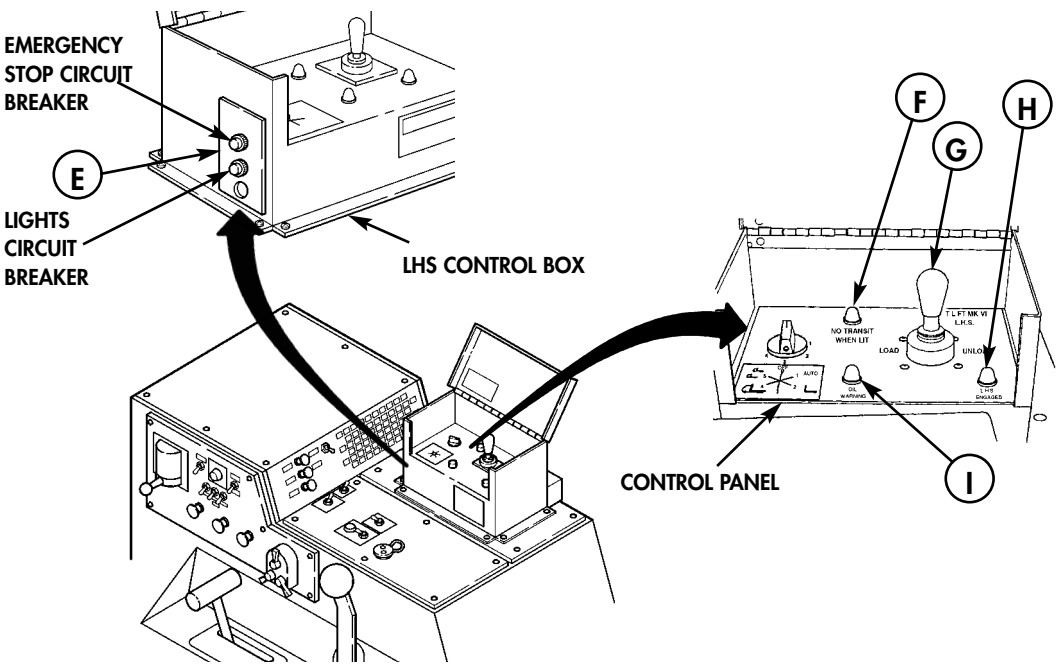
(E) **LHS CIRCUIT BREAKERS —** There are two circuit breakers located on the left side of the LHS cab control box. The top circuit breaker is an emergency stop that shuts off electrical power to the LHS control box. The bottom circuit breaker shuts off electrical power to the lights. Reset either circuit breaker by depressing button.

(F) **NO TRANSIT WHEN LIT INDICATOR —** The indicator on the control panel of the LHS cab control box that will light when the hook arm is not in the completely stowed position. When the NO TRANSIT WHEN LIT indicator is on, the CBT should not be driven except to facilitate loading in the immediate loading area.

(G) **JOYSTICK —** There is a single axis joystick adjacent to the LHS MODE SELECT switch on the LHS cab control box. Move the joystick to the right or left of center to control movement of the LHS components. The function controlled is determined by the LHS MODE SELECT switch.

(H) **LHS ENGAGE INDICATOR —** The indicator on the control panel of the LHS cab control box that will light when the joystick is used to operate LHS components. This light indicates that pressure to the fluid system is adequate for LHS operation.

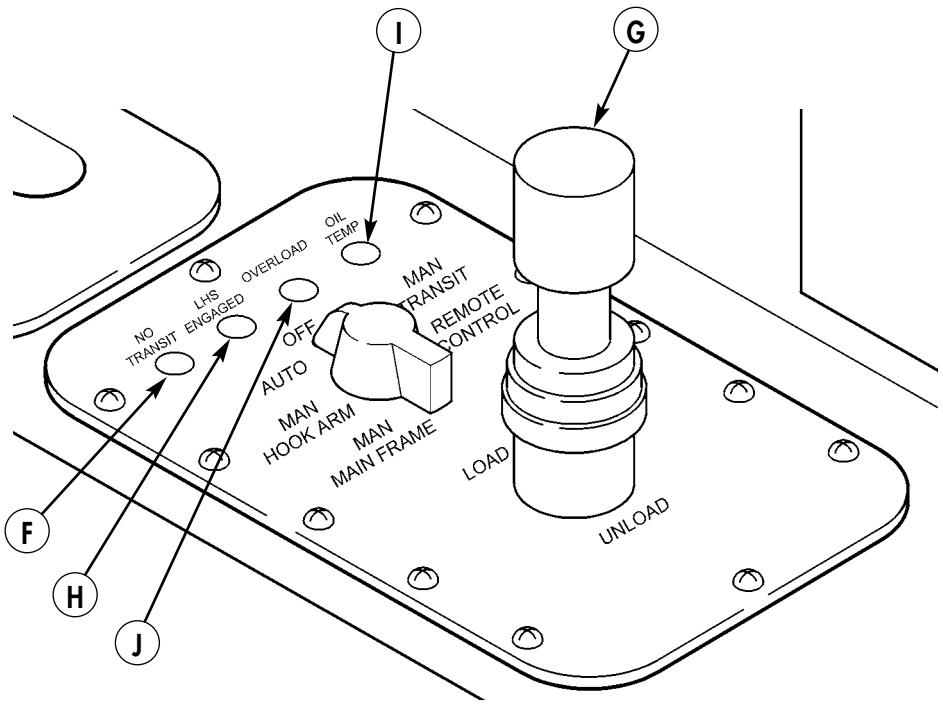
(I) **OIL WARNING INDICATOR —** The indicator on the control panel that will remain off during normal operation, and will light if LHS fluid temperature exceeds limits.



LHS CONTROL PANEL JOYSTICK AND INDICATORS, EARLY MODEL CBT

COMMON BRIDGE TRANSPORTER CONTROLS AND INDICATORS (Contd)

(J) **OVERLOAD —** The indicator on LHS control panel on late model CBTs that will light if lifting capacity of LHS is exceeded during LHS operation.



LHS CONTROL PANEL JOYSTICK AND INDICATORS, LATE MODEL CBT

COMMON BRIDGE TRANSPORTER CONTROLS AND INDICATORS (Contd)

(K) **RCU CABLE —** There is a cable provided to connect the hand-held RCU to the LHS. The cable end with the male cannon plug is connected to the RCU receptacle and secured by turning the collar on the cannon plug clockwise until tight. There is an LHS receptacle located on each side of the main manifold support frame for operation of the RCU from either side of the vehicle. The female cannon plug at the opposite end of the cable is connected to either LHS receptacle, and is secured by turning the collar on the cannon plug clockwise until tight.

(L) **EMERGENCY STOP SWITCH —** There is an EMERGENCY STOP toggle switch with guard on the control panel of the hand-held remote control unit. When pushed down, electrical power to the RCU controls is shut off and all functions of the LHS stop.

(M) **HIGH IDLE SWITCH —** The HIGH IDLE switch on the control panel of the RCU is placed in the ON position to increase engine idle speed to 1,200 rpm for LHS operation. The truck's PTO should be engaged prior to increasing engine idle speed.

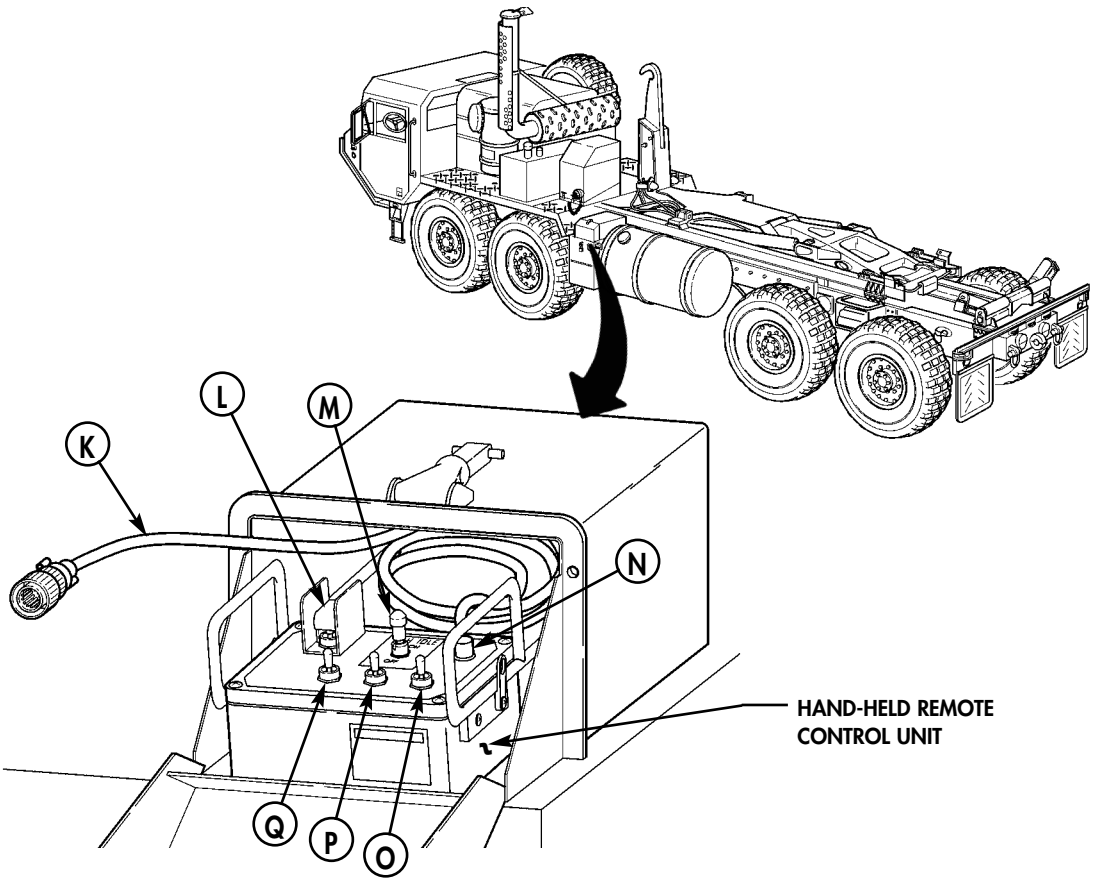
(N) **PANEL ILLUMINATION LIGHT —** The light on the RCU that illuminates the control panel for night operation..

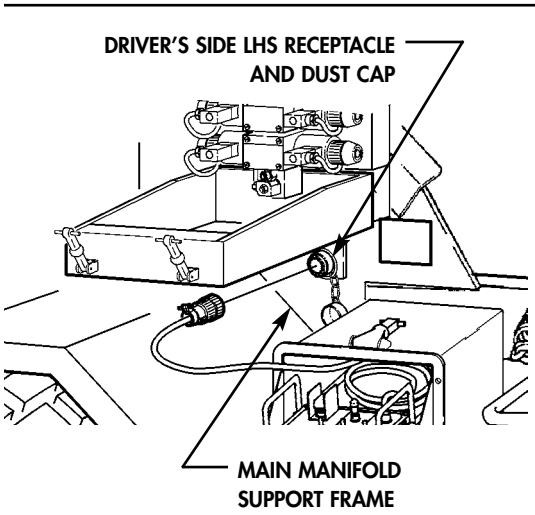
(O) **WINCH SWITCH —** There is a WINCH toggle switch on the control panel of the RCU for winch operation. Hold the switch in the OUT position to pay out winch cable, and release switch to stop winch. Hold the switch in the IN position to pay in winch cable, and release switch to stop winch.

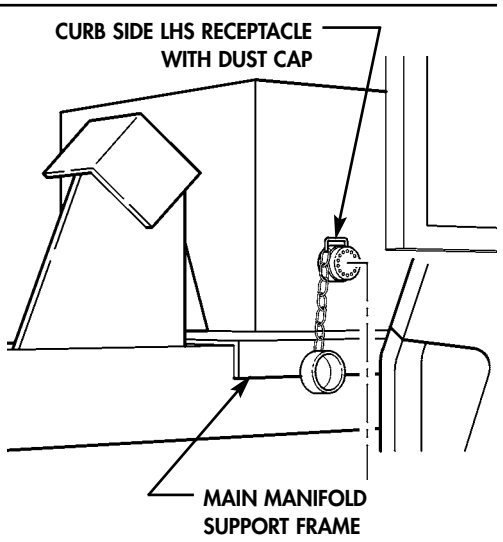
(P) **HOOK ARM SWITCH —** There is a HOOK ARM toggle switch on the control panel of the RCU for operation of the LHS hook harm. Hold the switch in the UNLOAD position to move the hook arm up and toward the rear of the vehicle for unloading operations. Release switch to stop hook arm. Hold the switch in the LOAD position to move the hook arm down and in a forward direction when performing loading operations. Release switch to stop hook arm.

(Q) **MAIN FRAME SWITCH —** There is a MAIN FRAME switch on the control panel of the RCU for operation of the LHS main frame. Hold the switch in the UNLOAD position to move the main frame up and toward the rear of vehicle for unloading operations. Release switch to stop main frame. Hold the switch in the LOAD position to move the main frame down and in a forward direction when performing loading operations. Release switch to stop main frame.

COMMON BRIDGE TRANSPORTER CONTROLS AND INDICATORS (Contd)







COMMON BRIDGE TRANSPORTER CONTROLS AND INDICATORS (Contd)

(R) **FREE-FLOW VALVE TOOL** — This tool is located in control valve cabinet and is used to manually lock the free-flow valve in the closed position prior to manual operation of the directional control valves.

(S) **SOLENOID TOOL** — This tool is located in control valve cabinet and is used to manually depress the solenoid buttons on the directional control valves for LHS operation.

(T) **HOUR METER** — The hour meter is an electric clock mounted on the main junction box at the top of the main manifold support frame. The hour meter records the total number of operating hours on the LHS fluid system for maintenance purposes.

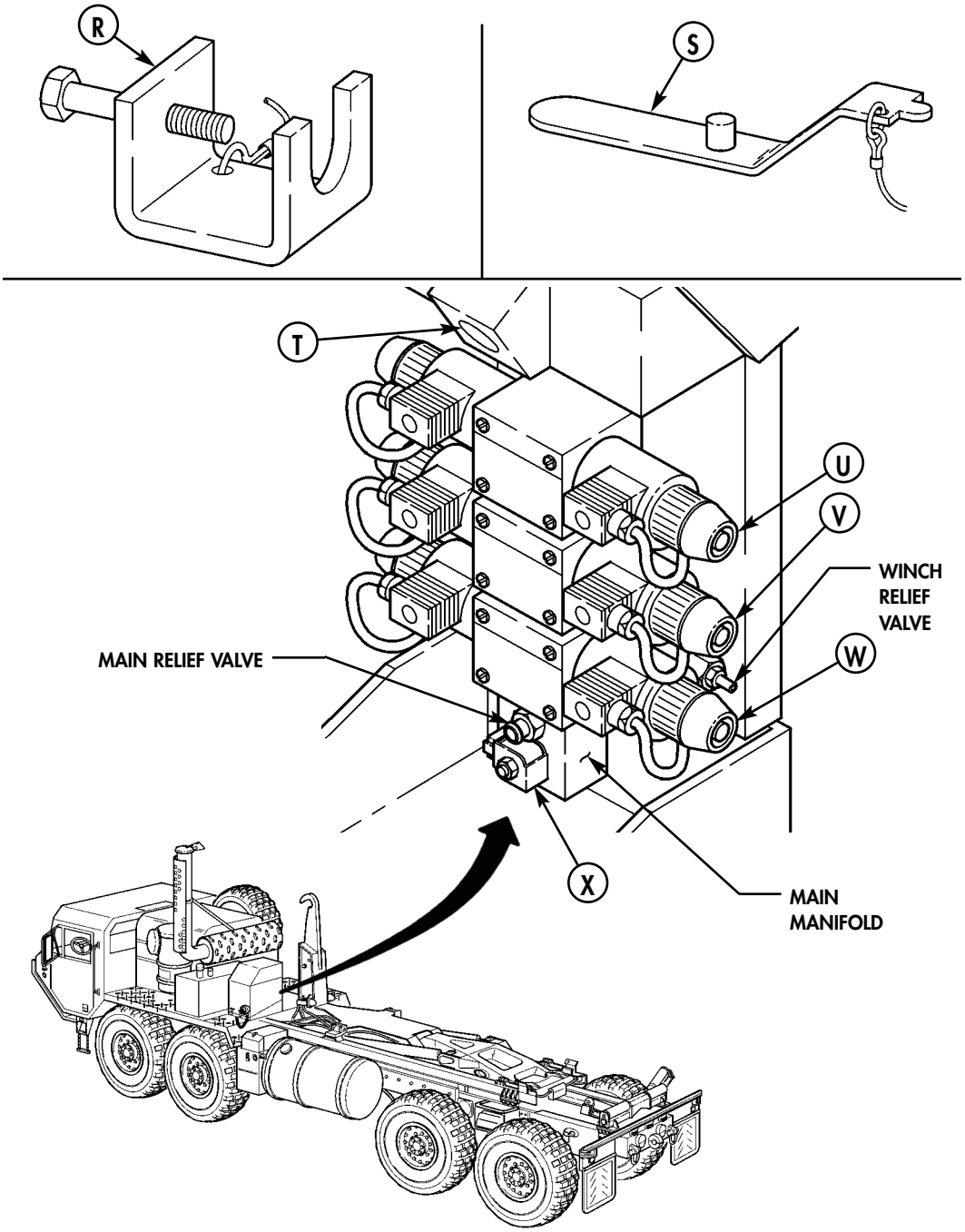
(U) **MAIN FRAME SOLENOID BUTTONS** — The solenoid button at each end of the top directional control valve which opens or closes the valve when manually depressed with the aid of the solenoid tool. The top directional control valve on the main manifold controls the directional flow of fluid to the cylinders to raise and lower the LHS main frame, and is intended to be manually operated only when electric power is lost to the solenoids.

(V) **HOOK ARM SOLENOID BUTTONS** — The solenoid button at each end of the center directional control valve which opens or closes the valve when manually depressed with the aid of the solenoid tool. The center directional control valve on the main manifold controls the directional flow of fluid to the cylinders to raise and lower the LHS hook arm, and is intended to be manually operated only when electric power is lost to the solenoids.

(W) **WINCH SOLENOID BUTTONS** — The solenoid buttons at each end of the bottom directional control valve which activates the valve when manually depressed with the aid of the solenoid tool. The bottom directional control valve on the main manifold controls the directional flow of fluid to the winch motor to pay winch cable in and out, and is intended to be manually controlled only when electric power is lost to the solenoids.

(X) **FREE-FLOW VALVE** — The free-flow valve is located on the main manifold adjacent to the main relief valve, and is electrically activated by a solenoid. When activated, the free-flow valve closes to divert fluid pressure to the directional control valves for operation of the LHS main frame, hook arm, and winch. Should electric power to the solenoid be interrupted due to a malfunction, the valve must be manually held in the closed position with the free-flow valve tool.

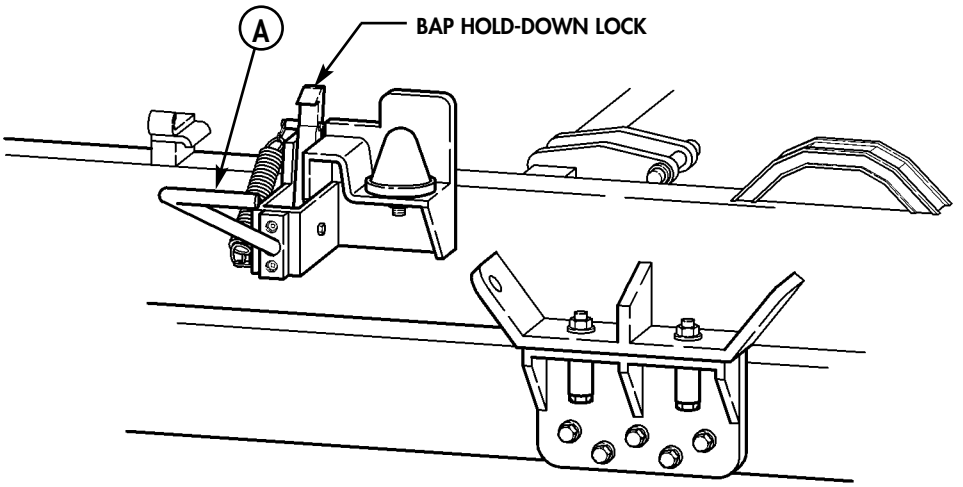
COMMON BRIDGE TRANSPORTER CONTROLS AND INDICATORS (Contd)



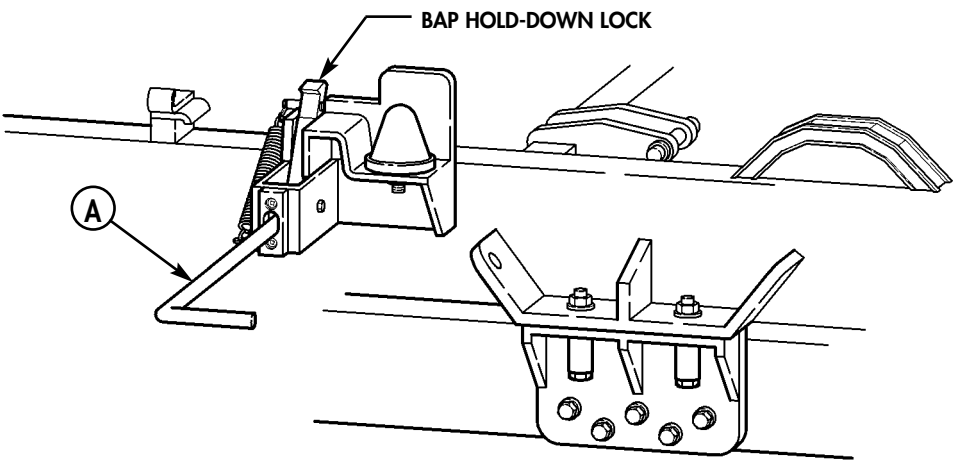
END OF WORK PACKAGE

BRIDGE ADAPTER PALLET CONTROLS AND INDICATORS

(A) **BAP HOLD-DOWN LOCK HANDLE** — The handle on the BAP hold-down lock at each side of the LHS compression frame is used to engage/disengage the lock. The handle is pushed in to set the hold-down lock in the AUTO ENGAGED position, and pulled out to hold the BAP hold-down lock in the DISENGAGED position.



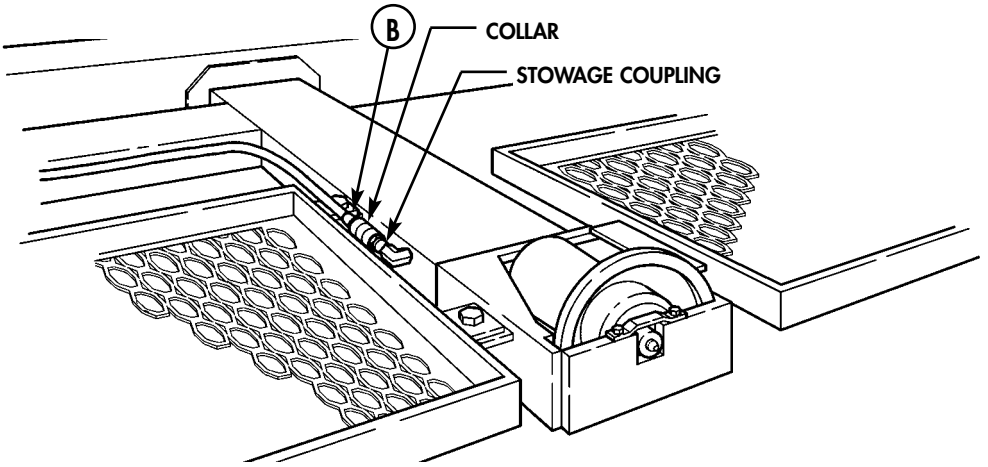
AUTO ENGAGED POSITION

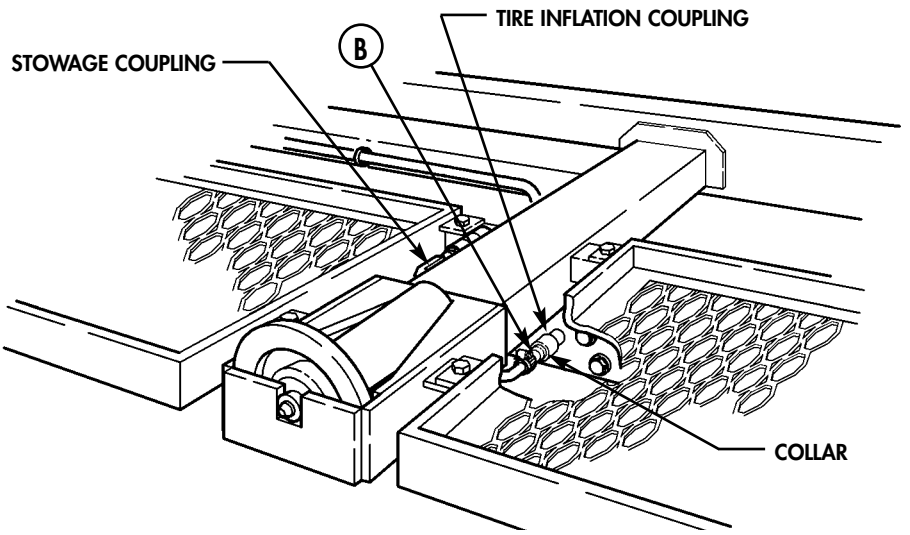


DISENGAGED POSITION

BRIDGE ADAPTER PALLET CONTROLS AND INDICATORS (Contd)

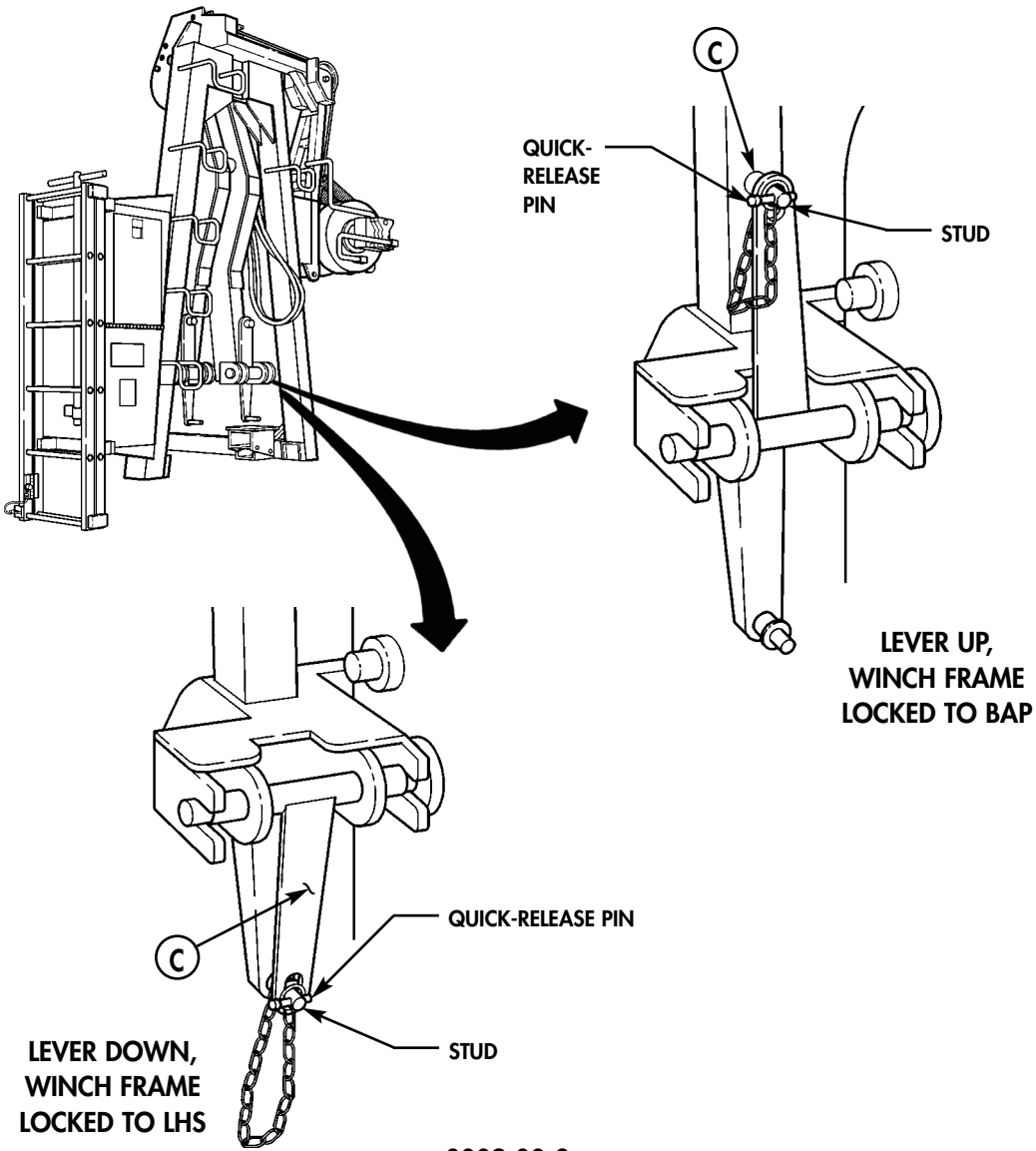
(B) **AIR HOSE QUICK-DISCONNECT COUPLING** — There is a quick-disconnect coupling on the BAP air supply hose. To disconnect the hose from its stowed location on the BAP, slide the collar back on the female stowage coupling. To connect the BAP air supply hose to the vehicle's air system tire inflation coupling, push the couplings together while holding the collar back on the female coupling, then release the collar.





BRIDGE ADAPTER PALLET CONTROLS AND INDICATORS (Contd)

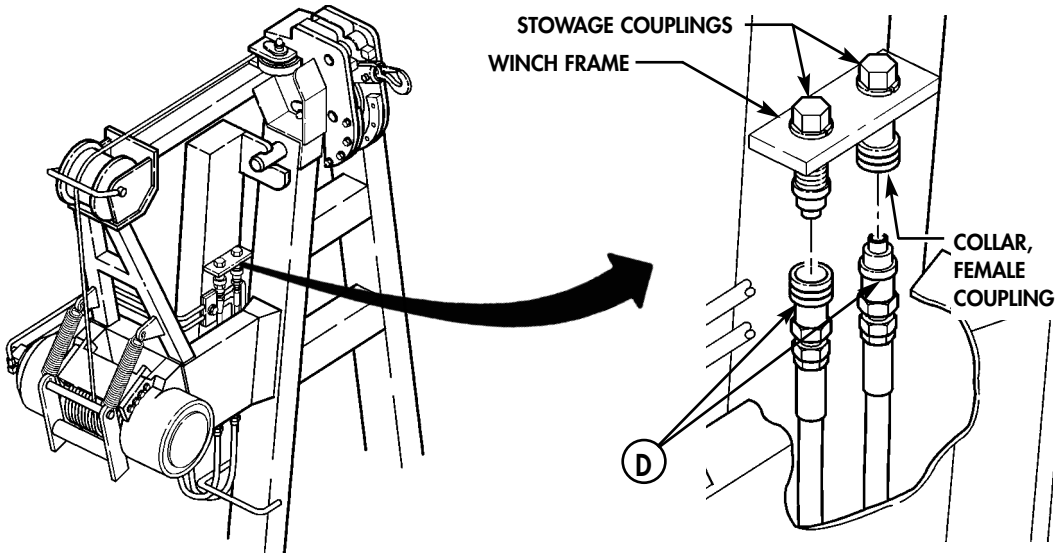
(C) **WINCH FRAME LOCK LEVERS** — The two levers on the winch frame used to lock the winch frame to the BAP or to the LHS hook arm. When the levers are up, the winch is locked to the BAP. When the levers are down, the winch frame is locked to the LHS hook arm. To lock the winch frame to the BAP or LHS hook arm, remove the quick-release pins from the studs welded to the winch frame. Swing each lever up or down until the stud protrudes through the hole at the end of lever, then install the quick-release pins on the studs.

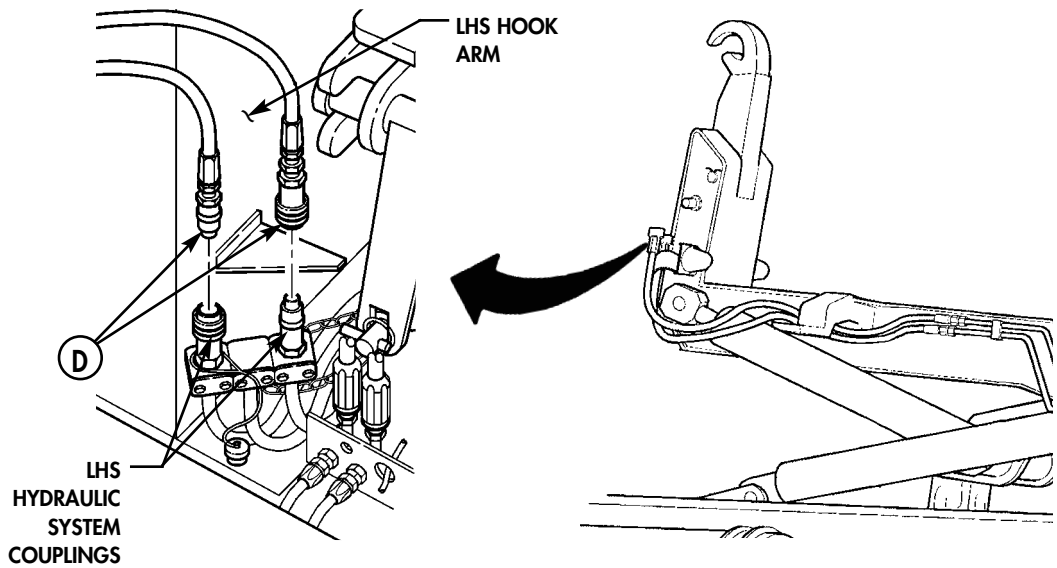


0009 00-3

BRIDGE ADAPTER PALLET CONTROLS AND INDICATORS (Contd)

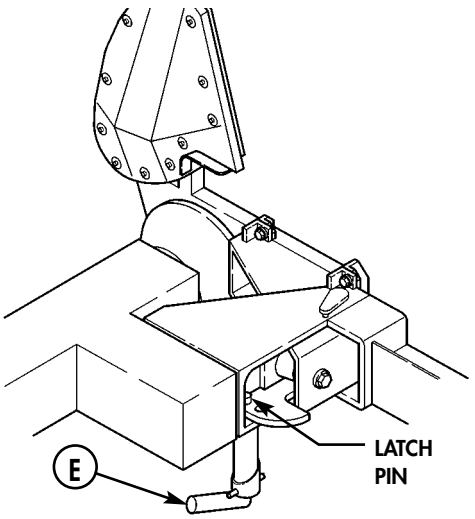
(D) **WINCH HYDRAULIC HOSE QUICK-DISCONNECT COUPLINGS** — The two BAP winch hydraulic hoses are supplied with quick-disconnect couplings for ease of use. To disconnect a hose, slide the collar back on the female coupling. To connect a hose, push the couplings together while holding the collar back on the female coupling, then release the collar. To connect the winch motor to the LHS hydraulic system, disconnect the two winch hoses from the stowage couplings, located on the winch frame, and connect the winch hoses to the LHS hydraulic system couplings, located on the LHS hook arm.



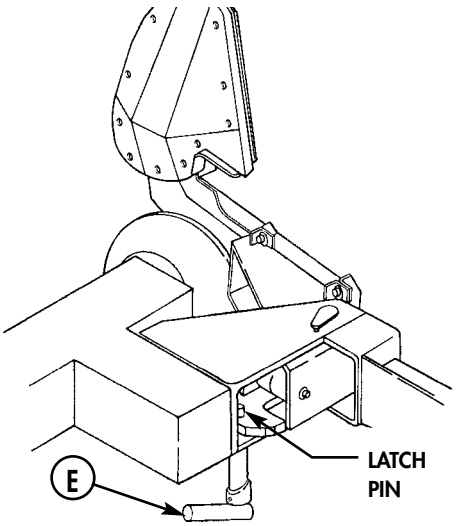


BRIDGE ADAPTER PALLET CONTROLS AND INDICATORS (Contd)

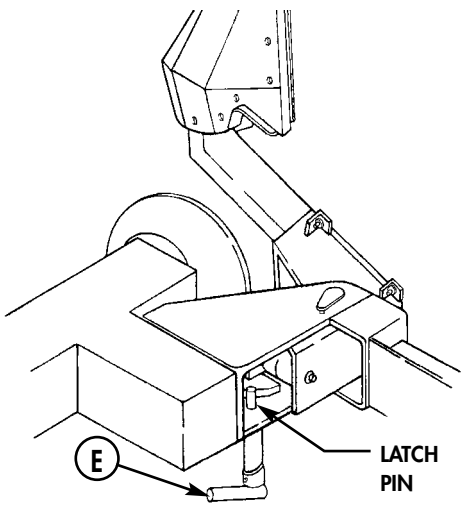
(E) **REAR GUIDE LATCH PIN HANDLE** — The handle used to disengage the rear guide. To disengage the rear guide on either side of the BAP, rotate the handle until the latch pin clears the hole in the bracket and the rear guide can be moved inboard or outboard. The spring loaded latch pin will automatically engage when the rear guide is in the full IN, MID, or full OUT positions.



FULL IN POSITION



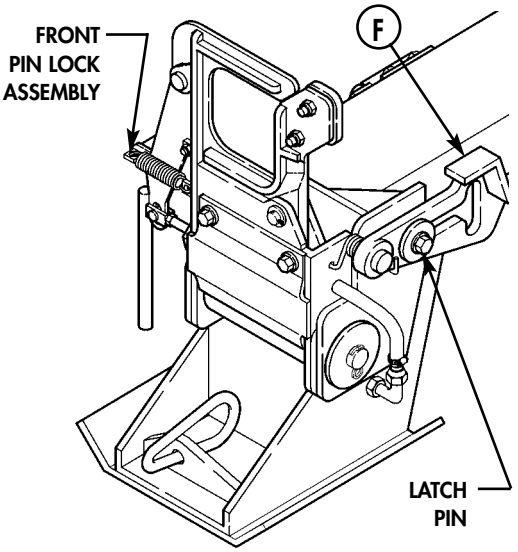
MID POSITION



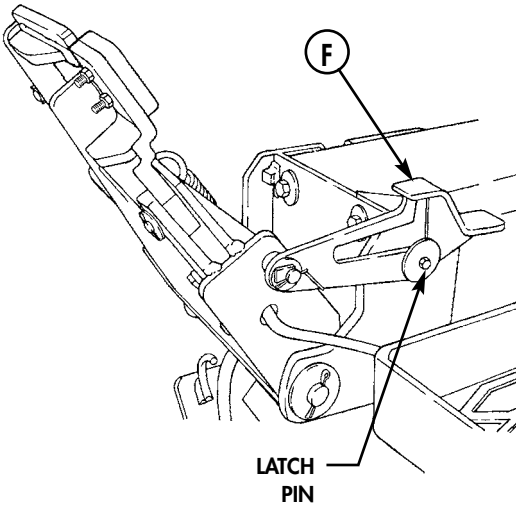
FULL OUT POSITION

BRIDGE ADAPTER PALLET CONTROLS AND INDICATORS (Contd)

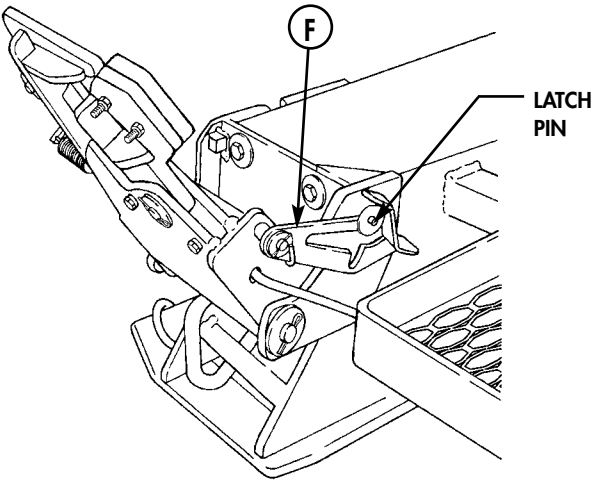
(F) **FRONT PIN LOCK LATCH** — The three-position latch that holds and releases the front pin lock assembly. Pulling back the front pin lock assembly to the UP position automatically engages the latch in the UP position or allows the latch to be manually engaged to the DOWN position. The latch is held in the UP or DOWN position by the latch pin and the force of a return spring. When the latch is moved off the latch pin, either by contact from the bay during loading or by the operator as necessary prior to unloading the bay, the front pin lock assembly is returned to the UP position automatically.



UP POSITION



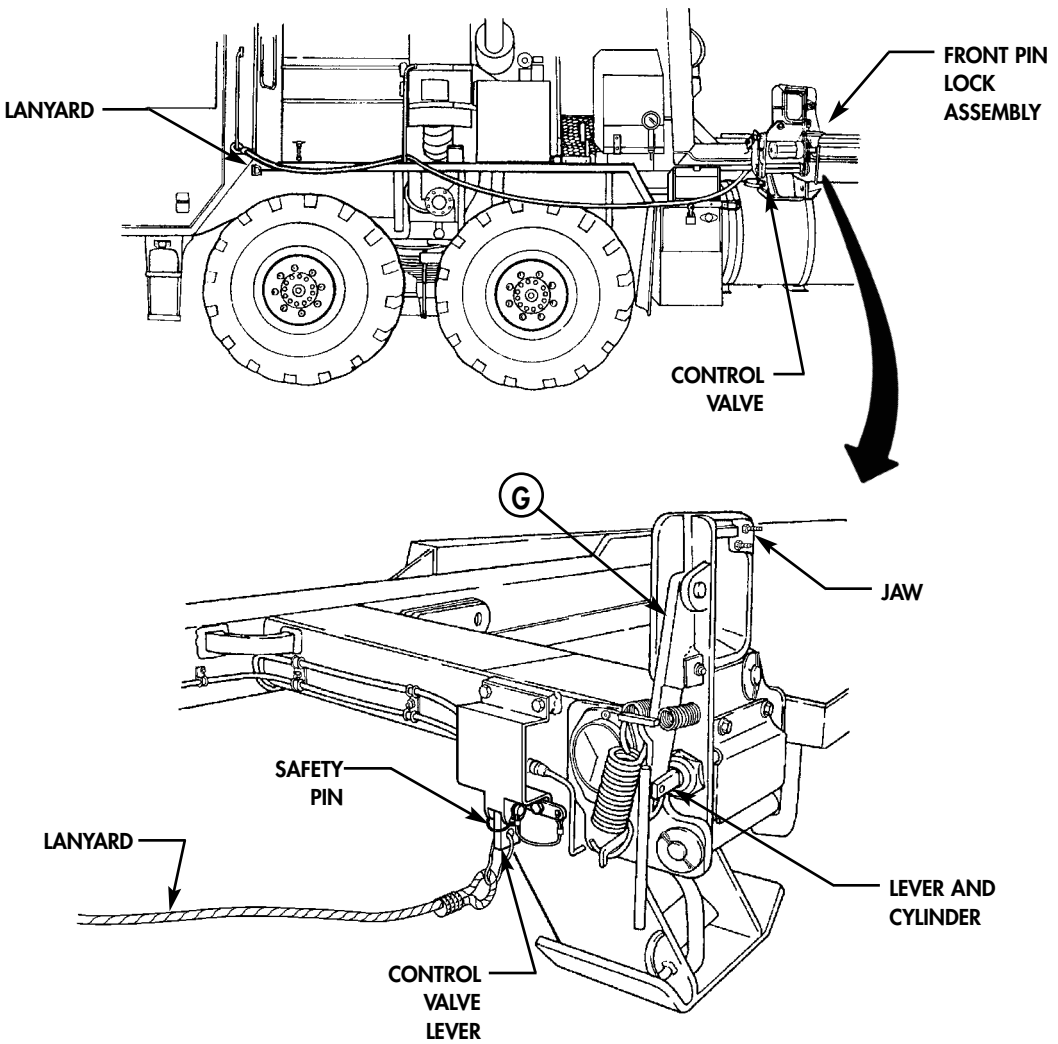
DOWN POSITION, LATCH UP



DOWN POSITION, LATCH DOWN

BRIDGE ADAPTER PALLET CONTROLS AND INDICATORS (Contd)

(G) **FRONT PIN LOCK RELEASE MECHANISM** — The jaw and latch on the front pin lock assembly that is released manually by pulling a lever or pneumatically by activating a control valve. To manually open the jaw on either front pin lock, pull the lever on the latch toward the vehicle cab. During a free launch of the bay, both front pin locks are released at the same time by a pneumatic cylinder on each lock assembly. The pneumatic cylinders are activated simultaneously by a single control valve located on the BAP, at the driver's side. To operate the control valve, connect a lanyard to the control valve lever, remove the safety pin from the same lever, and pull the lanyard toward the vehicle cab.

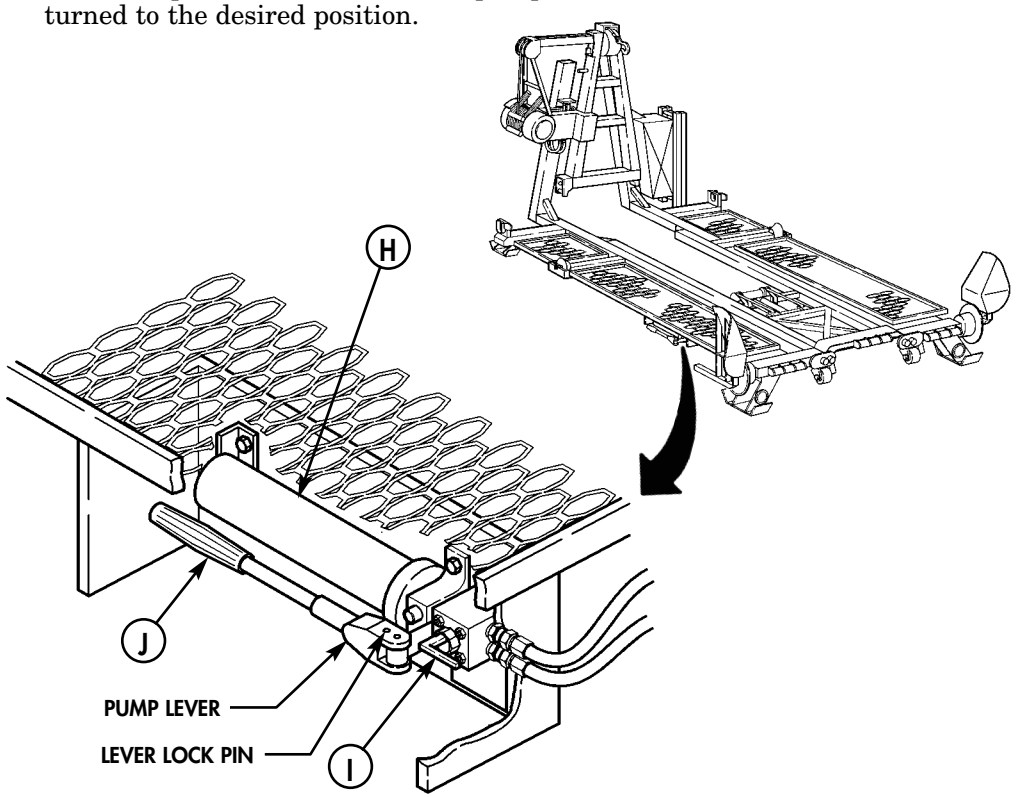


BRIDGE ADAPTER PALLET CONTROLS AND INDICATORS (Contd)

(H) **HAND PUMP** — The hand pump is mounted on the BAP and is used to supply pressure to operate cylinders that raise and lower the center roller and transload rollers on the BAP. The hand pump consists of a fluid pump, pump lever and handle, selector valve, and reservoir.

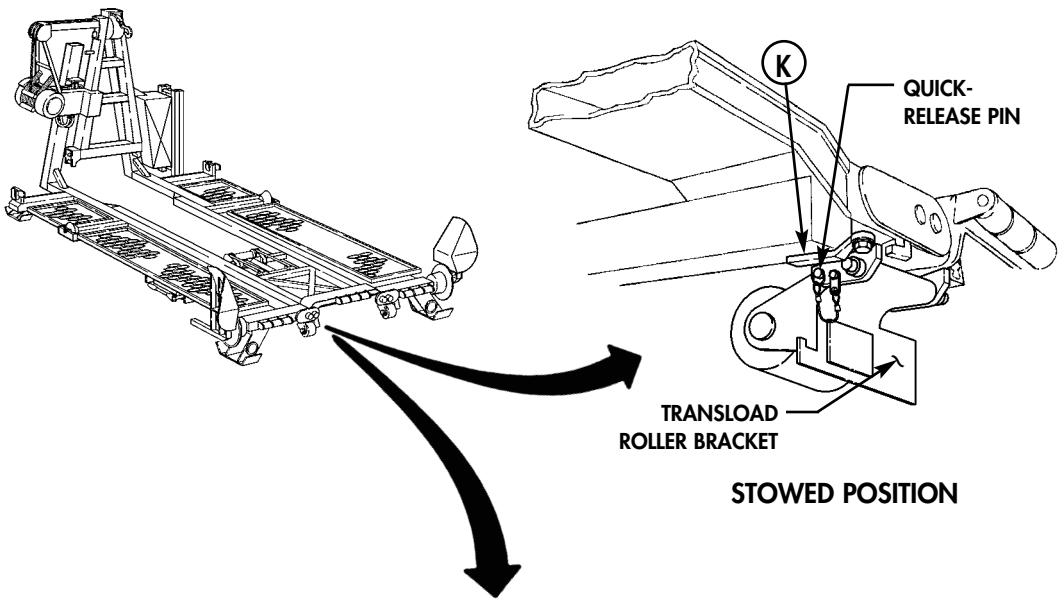
(I) **SELECTOR VALVE LEVER** — There is a three-position selector lever on the hand pump valve. When the lever is turned to the No. 1 position (lever up), operating the hand pump will raise the center roller to lift the bay. The No. 1 position is also used to lower the BAP during transloading by releasing fluid pressure to allow the transload rollers to hinge upward. Turning the lever to the No. 2 position (lever at center) shuts off the selector valve for transit. When the lever is turned to the No. 3 position (lever down), operating the pump will move the transload rollers down to lift the BAP. The No. 3 position is also used to release fluid pressure to lower the center roller.

(J) **PUMP HANDLE** — There is a handle secured to the pump lever on the hand pump. The hand pump is operated by moving the pump handle back and forth until the center roller or transload rollers are extended. Prior to pumping, the lever lock pin is removed from the pump lever, and the selector valve lever is turned to the desired position.

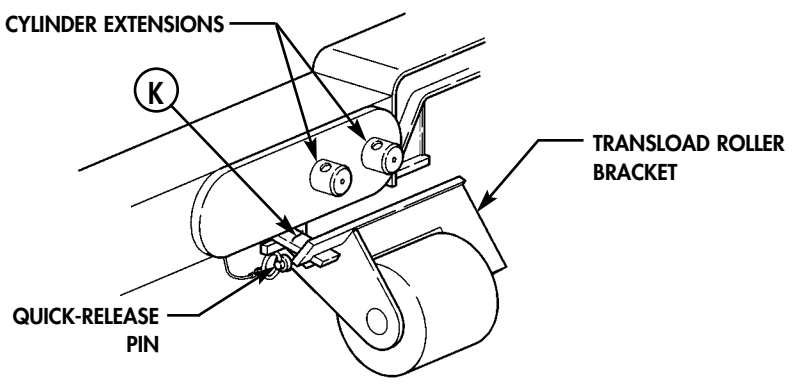


BRIDGE ADAPTER PALLET CONTROLS AND INDICATORS (Contd)

(K) **TRANSLOAD ROLLER RETAINING BAR** — There is a retaining bar adjacent to each transload roller on the underside of the BAP frame. To deploy the transload roller, remove the quick-release pin from the BAP frame and transload roller bracket. Swing the transload roller up until it contacts the two cylinder extensions. While holding the transload roller up, turn the retaining bar out so that it lines up with the notch on the transload roller bracket, then lower the transload roller down on the retaining bar. Stow the quick-release pin on the transload roller bracket. Returning the transload roller to its stowed position is done in the reverse order.



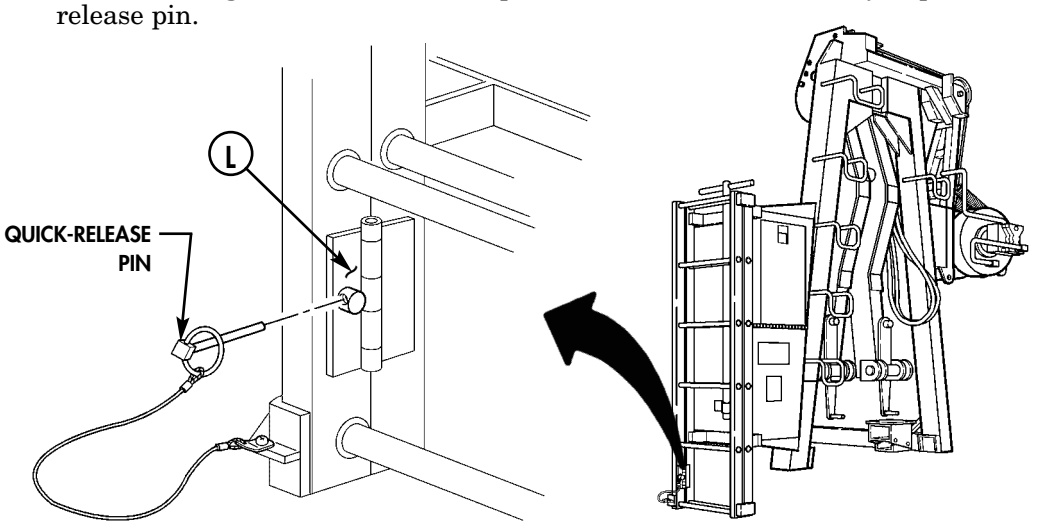
STOWED POSITION



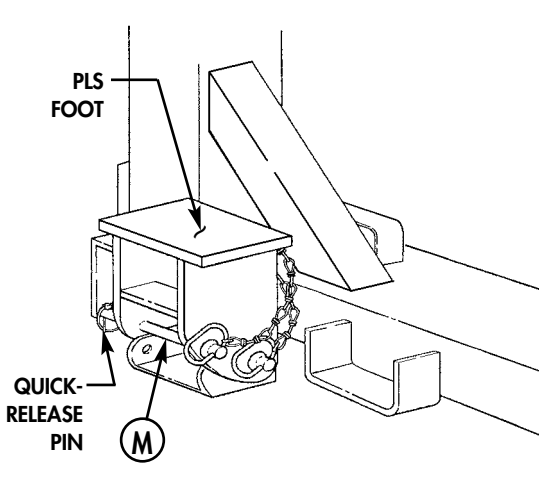
UP POSITION

BRIDGE ADAPTER PALLET CONTROLS AND INDICATORS (Contd)

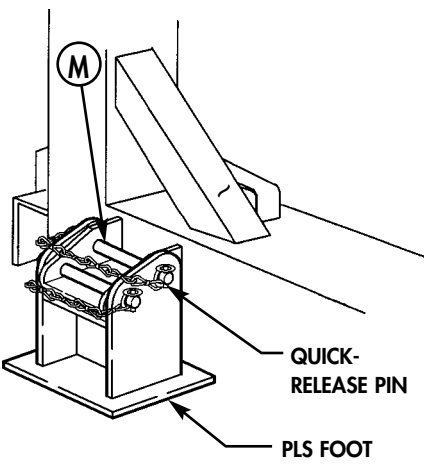
(L) **LADDER STOWAGE LATCH** — The latch that holds the sliding half of the BAP mounting ladder in its stowed position. The latch is locked by a quick-release pin.



(M) **PLS FOOT PINS** — There are two pins holding each PLS foot to its mounting bracket on both sides of the BAP frame. A quick-release pin secures each pin. The PLS feet moved to either the up (stowed) or down position by removing and installing the pins.



UP (STOWED) POSITION



DOWN POSITION

END OF WORK PACKAGE

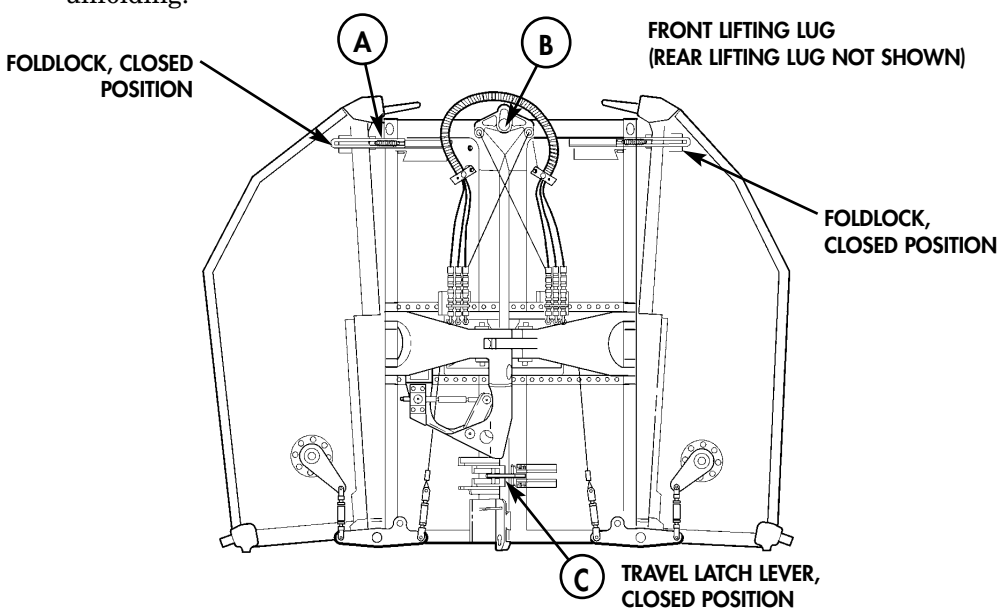
RAMP BAY CONTROLS AND INDICATORS

THIS WORK PACKAGE SUPERSEDES WP 0010 00, DATED 8 APRIL 2003

(A) **FOLDLOCKS** — There are two foldlocks on the IRB-R, each located on the inner ponton at the connecting end of the bay. It consists of a spring loaded lever that is manually operated; before launch both foldlocks are opened to allow the outer pontons to unfold as the bay is released into the water, and prior to retrieval, both foldlocks are placed in the closed position so they will automatically engage with the outer pontons as the bay is folded.

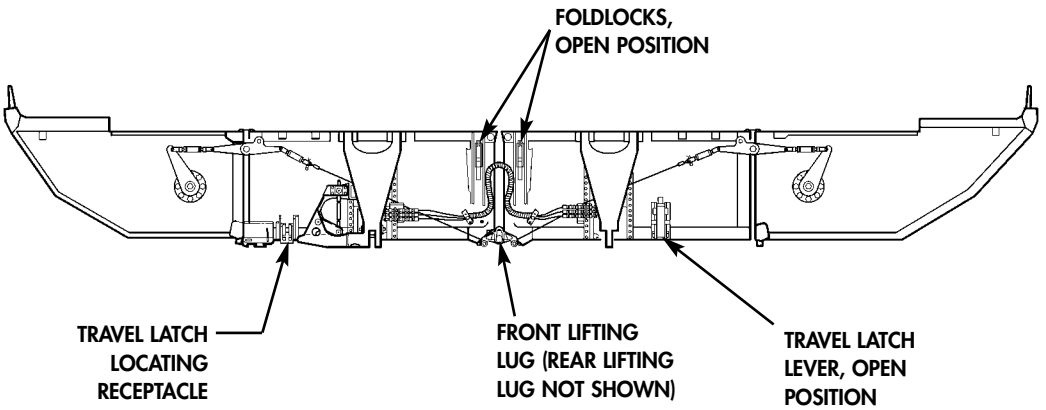
(B) **FRONT AND REAR LIFTING LUGS —** There are two different lifting lugs on the IRB-R inner pontons. During launch and retrieval the bay is lifted from the front lifting lug with one cable by the transporter. The rear lifting lug is used when bay is lifted with two cables for maintenance purposes. Both contain an eyebolt which holds the inner pontons together. Lifting from the front lifting lug is necessary to achieve proper folding of the IRB-R and to load the bay on the transporter.

(C) **TRAVEL LATCH —** There is one travel latch on the IRB-R, located on the inner pontons at the connecting end of the bay. It consists of a spring loaded lever on the right inner ponton and a locating receptacle on the left inner ponton. The travel latch is manually opened prior to conducting a free launch, and opened using a lanyard pin (refer to Item 7, WP 0070 00) and rope after conducting a controlled launch, high-bank launch, or deployment by helicopter. Prior to retrieval, the travel latch is placed in the closed position where it will automatically engage and latch the inner pontons when folded. During pick-up and transport, the travel latch prevents the IRB-R from unfolding.



RAMP BAY (FOLDED)

RAMP BAY CONTROLS AND INDICATORS (Contd)



RAMP BAY (UNFOLDED)

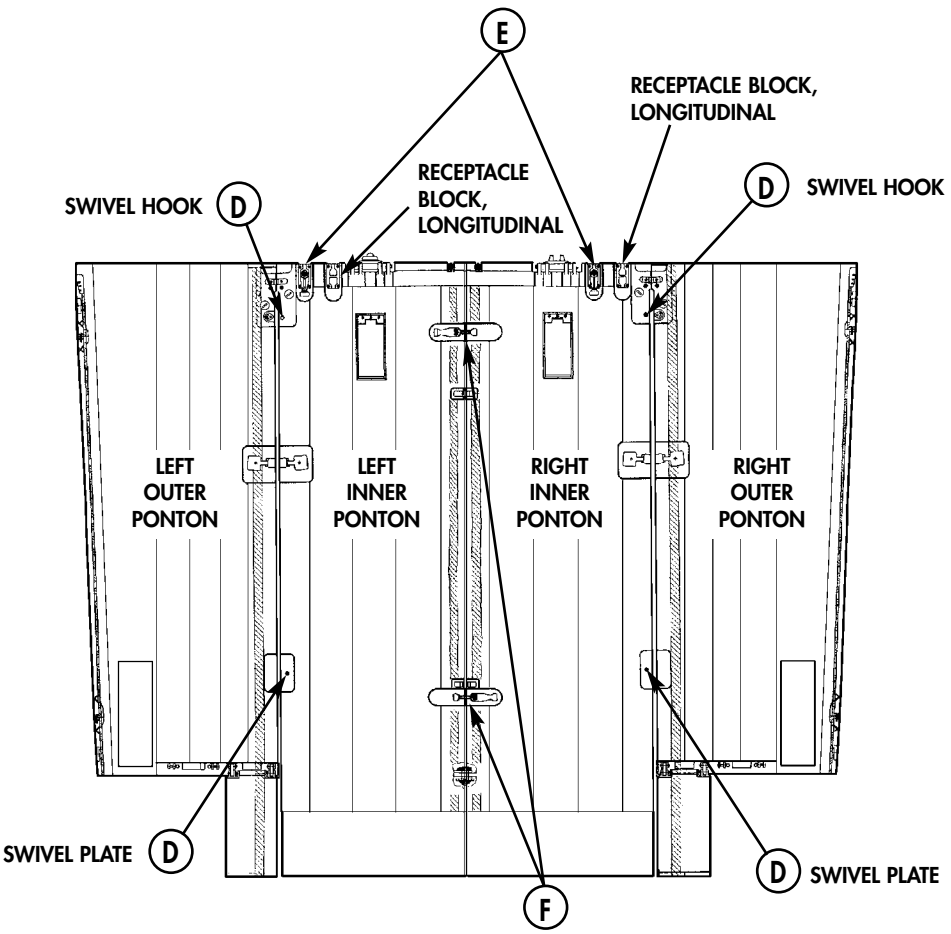
(D) **OUTER PONTON LOCKS** — There is a swivel hook and a swivel plate located on each inner ponton. Both are engaged to secure the outer ponton in the unfolded position by placing the socket end of a T-wrench (refer to Item 2, WP 0070 00) on the hex-head of each swivel hook shaft, and turning it until the position indicator and slot in hex-head point straight at the outer ponton. The position indicator is not visible when the swivel hook is completely disengaged.

(E) **UPPER COUPLING, LONGITUDINAL** — There are two identical upper couplings and receptacle blocks at the connecting end of the IRB-R. The upper coupling consists of a spring loaded lever mounted in a receptacle block on each inner ponton. A receptacle block is adjacent to each upper coupling. The upper coupling is used for bay-to-bay connection; when two bays are in position to be joined longitudinally, the two upper couplings on each bay are manually closed by placing them in the receptacle blocks of the opposite bay.

(F) **UPPER COUPLING, TRANSVERSE** — There are two identical upper couplings, each located on the inner pontons, that consist of a spring loaded lever mounted in a receptacle block. When the bay is unfolded, both upper couplings are manually closed by placing them in the opposite receptacle blocks of the adjacent inner ponton. They are both opened prior to IRB-R retrieval; this is essential prior to lifting the bay to prevent damage.

RAMP BAY CONTROLS AND INDICATORS (Contd)

CONNECTING END - FRONT



APPROACH END - REAR

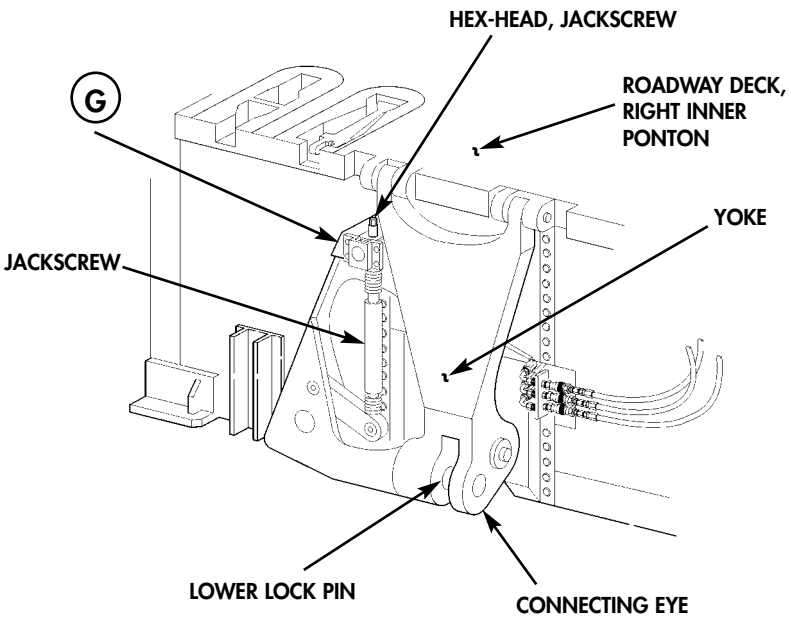
RAMP BAY (UNFOLDED)

RAMP BAY CONTROLS AND INDICATORS (Contd)

CAUTION

The BII T-wrench should only be used to operate outer ponton locks, lower lock-drives, and for removal and installation of bilge plugs. Do not use T-wrench as a pry bar or hammer, or damage to equipment will result.

(G) **LOWER LOCK-DRIVE** — There is one lower lock-drive assembly on the yoke of the right inner ponton at the connecting end of the IRB-R. It is manually operated from the roadway deck by placing the socket end of a T-wrench (refer to Item 2, WP 0070 00) on the hex-head of the jackscrew, and turning the screw clockwise. The top of the jackscrew will be 3/4 in. (1.9 cm) below the top surface of the roadway when the lower lock-drive pin is fully engaged. When the jackscrew is fully extended or fully retracted, it must be backed off one full rotation using the T-wrench.

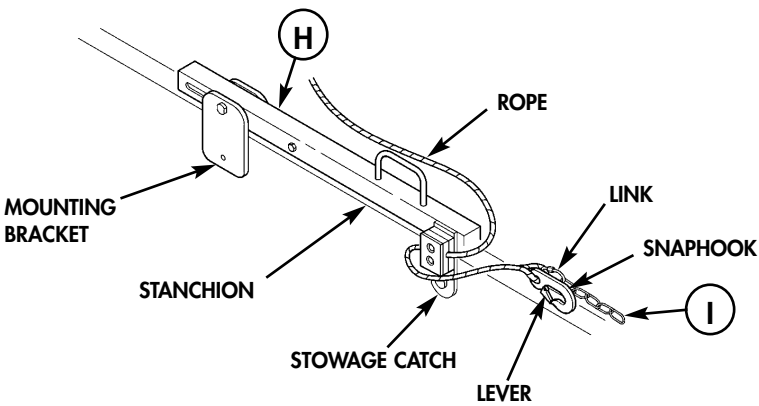


LOWER LOCK-DRIVE ASSEMBLY

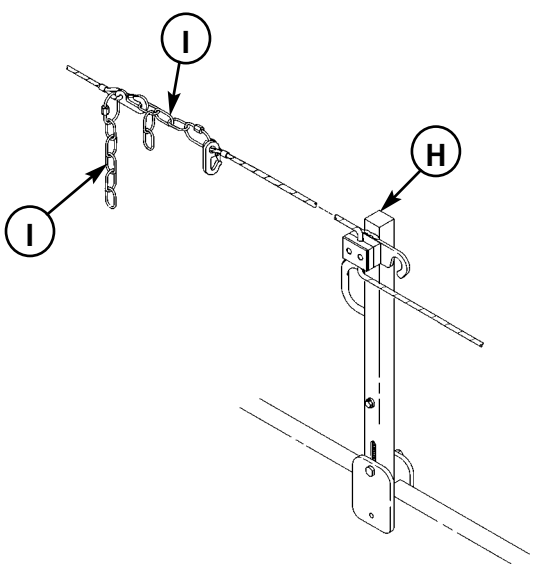
(H) **HANDRAILS** — There is a handrail rope supported by two fold-up stanchions mounted on the splash plate at each side of the IRB-R. To set up the handrail, pull each stanchion out and away from the mounting bracket and stowage catch, then lift the stanchion up; a spring will automatically set the stanchion into the mounting bracket once the stanchion is vertical. To stow the handrail down, lift each stanchion up and out of the mounting bracket, fold down, then release. Make sure the stowage catch is secure. When bays are connected, the handrail ropes are joined by connecting the snaphooks together. Press the lever on either snaphook to disconnect ropes.

RAMP BAY CONTROLS AND INDICATORS (Contd)

(I) **EXTENSION CHAINS** — The length of the handrail ropes is susceptible to change due to seasonal differences in temperature and humidity. To enable the handrail ropes to be adjusted tightly, an extension chain is supplied with each rope at the front (connecting end) of the ramp bay, and the fairlead blocks mounted on the handrail stanchions at the front of the bay allow the ropes to slip. The extension chain is made up of 5 links connected to the loop end of the rope by a removable link. To connect handrail ropes between adjoining bays, pull the ropes from each bay together to remove all slack, then connect the snaphook from one of the ropes to the farthest open link on the opposite chain extension.



HANDRAIL, STOWED POSITION



HANDRAIL, RAISED POSITION, CHAIN EXTENSION CONNECTED

RAMP BAY CONTROLS AND INDICATORS (Contd)

(J) **PUMPS –** There are two identical pumps on the IRB-R; each is located on the inner ponton under an access cover on the roadway deck. Open the access cover to access the pump. To operate either pump, remove a telescoping handle (refer to Item 1, WP 0070 00) from one of the IRB-R stowage compartments and install it on the pump lever. Select the operating mode desired by referring to the operating instructions on the data plate, also located on the underside of the access cover, and move the control valve lever to the desired slot. (Refer to WP 0003 00 for data plate.)

The four operating modes are as follows:

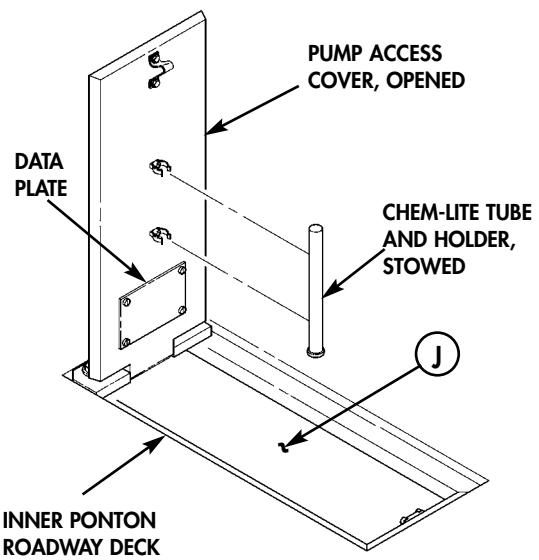
DOWN: To lower the ramp bay.

TRANSPORT/CROSSING: Ramp bay in transport position. Ramp bay in crossing position.

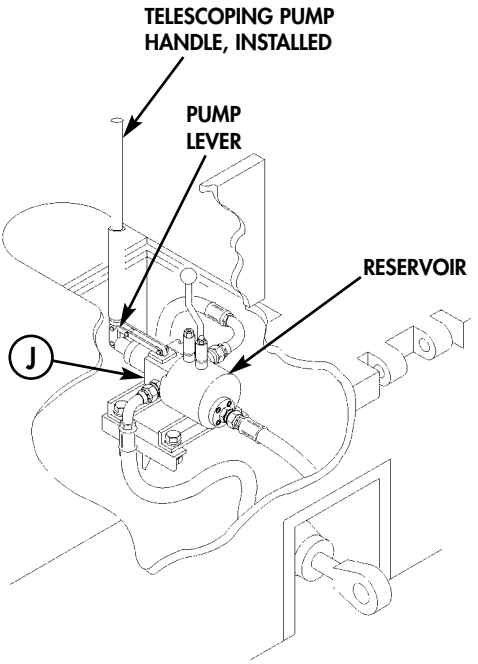
UP: To lift the ramp bay.

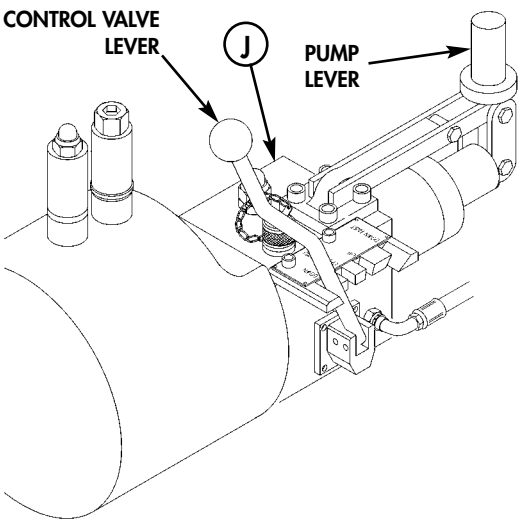
DOWN FAST: Quick lowering of the ramp bay.

Begin pumping by moving the handle forward and backward. The ramp bay can be raised with one pump, but it is both easier and faster to use both simultaneously. There are also two quick-disconnect ports for operating the cylinders from a remote power source.



RAMP BAY CONTROLS AND INDICATORS (Contd)





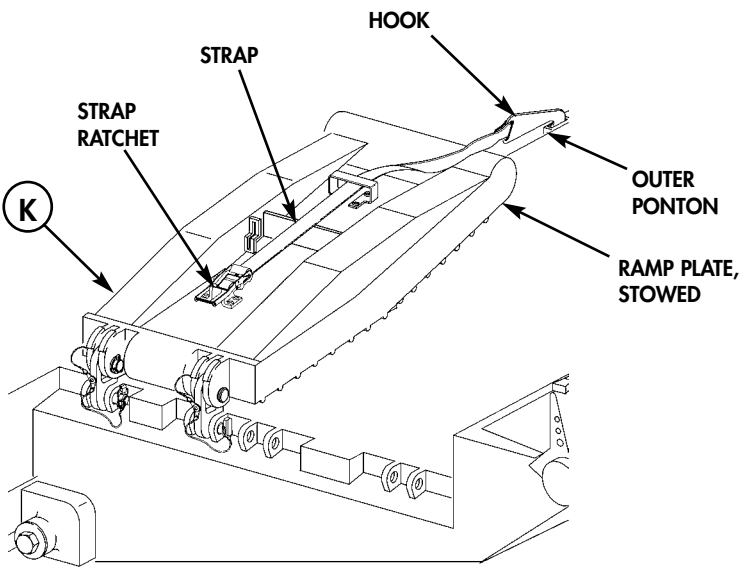
PUMP CONTROLS

RAMP BAY CONTROLS AND INDICATORS (Contd)

WARNING

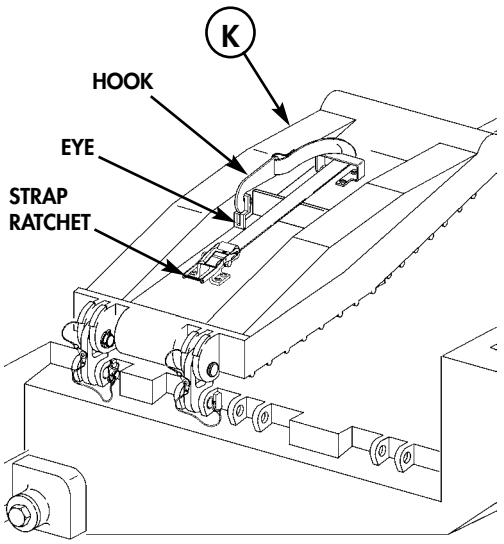
Two personnel are required to remove/install a ramp plate whether the operation is performed with the ramp bay in either the folded or unfolded position. Failure to comply may result in injury to personnel.

(K) **RAMP PLATES** — Two personnel are required to remove/install a ramp plate. There are two ramp plates, one on each outer ponton at the ramp end adjacent to the roadway. Two additional ramp plates may be requisitioned and installed next to the ramp plate on each outer ponton. Both ramp plates are manually folded down when the ramp bay is anchored at the shore line, to increase the useable width of the approach ramp. A ramp plate is manually released from its stowed position by loosening the strap via the strap ratchet, and removing the hook from the recess on the outer ponton walkway. The hook is then connected to an eye on the underside of the ramp plate and the strap is ratcheted tight; the ramp plate can then be folded down. To remove either ramp plate from an outer ponton, remove two quick-disconnect pins from two straight pins, and remove the straight pins from the outer ponton brackets and two connecting links on the ramp plate. After removing the ramp plate, stow all pins on the two connecting links for safekeeping.

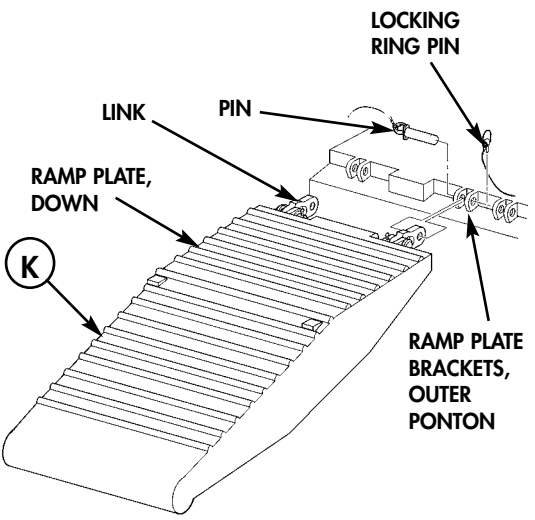


RAMP PLATE, UP AND STOWED

RAMP BAY CONTROLS AND INDICATORS (Contd)



RAMP PLATE, STOWING STRAP

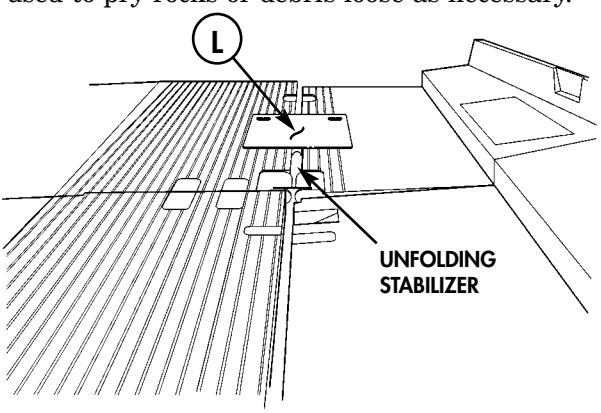


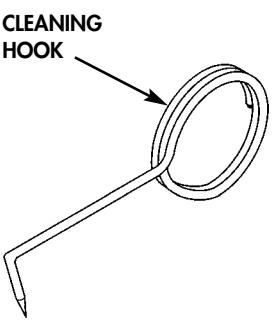
RAMP PLATE, DOWN

NOTE

Cleaning hook may be fabricated at unit level maintance.

(L) **COVER PLATE** — There are two BII cover plates and cleaning hooks stowed in the ramp bay stowage compartments. The cover plate is designed to prevent rocks and debris from entering the openings at the unfolding stabilizer mounting brackets. Prior to allowing vehicle traffic on the bridge, the left and right cover plates (marked L and R) are positioned over the left and right unfolding stabilizer mounting brackets. The cover plates are positioned with the rubber cover facing the front (connecting end) of the ramp bay. The cover plates are removed and stowed only after all rocks and debris have been power washed from the bridge. Should rocks and debris enter and become lodged in the unfolding stabilizer mounting brackets, the cleaning hook is used to pry rocks or debris loose as necessary.





RAMP BAY CONTROLS AND INDICATORS (Contd)

(M) **COUPLING DEVICE** — The coupling end (front) of the ramp bay floats lower in the water than the interior bay, making it difficult to connect the ramp bay to an interior bay. To lift the coupling end of the ramp bay up to meet the level of the interior bay for ramp bay to interior bay connection, two coupling devices are provided. The coupling device weighs 35 lb (16 kg). Instructions for use of the coupling device are as follows:

WARNING

Bridge boat operators will not make waves or carry out any unnecessary thrust changes during coupling device operations. Failure to comply may result in damage to equipment or injury to personnel.

CAUTION

Do not attempt to use the coupling device in its folded condition. Do not attempt to lift the ramp bay while vehicles and/or equipment are on top of bay. Do not use the coupling device if it is damaged or has missing parts. Failure to comply may result in damage to equipment.

NOTE

Use of coupling device applies to the IRB ramp bay for coupling/uncoupling purposes only.

To perform ramp bay to interior bay connection, two assistants are required to operate the coupling devices, two assistants will man the retaining ropes, and two assistants will close the longitudinal upper couplings and the lower lock-drive pins.

a. Signal bridge boat operator to position connecting ends of ramp bay and interior bay together approximately 8 in. (203 mm) apart.

b. Connect one guide rope to the nearest cleat on each outer ponton of ramp bay, and guide ramp bay so that eyes on ramp bay yokes and interior bay lower main couplings are aligned.

c. Remove two coupling devices from ramp bay stowage compartments and position them on interior bay roadway deck, unfolded, and with hook ends facing ramp bay.

WARNING

Do not place hands between bays to position the coupling device hook on the ramp bay unfolding lever; bays can come together with extreme force and severe injury to personnel may result.

d. Position each coupling device near center of ramp bay unfolding lever so that hook engages on unfolding lever.

RAMP BAY CONTROLS AND INDICATORS (Contd)

WARNING

The operator must only handle the coupling device by the cross tube handle during ramp bay lifting operations. The operator and all personnel must also keep clear of the coupling device guide rollers, lever, and hook. Failure to comply may result in injury to personnel.

e. Simultaneously push down on cross tube handle of each coupling device and lift ramp bay until level with interior bay roadway deck.

f. Pull bays together using guide ropes and coupling devices.

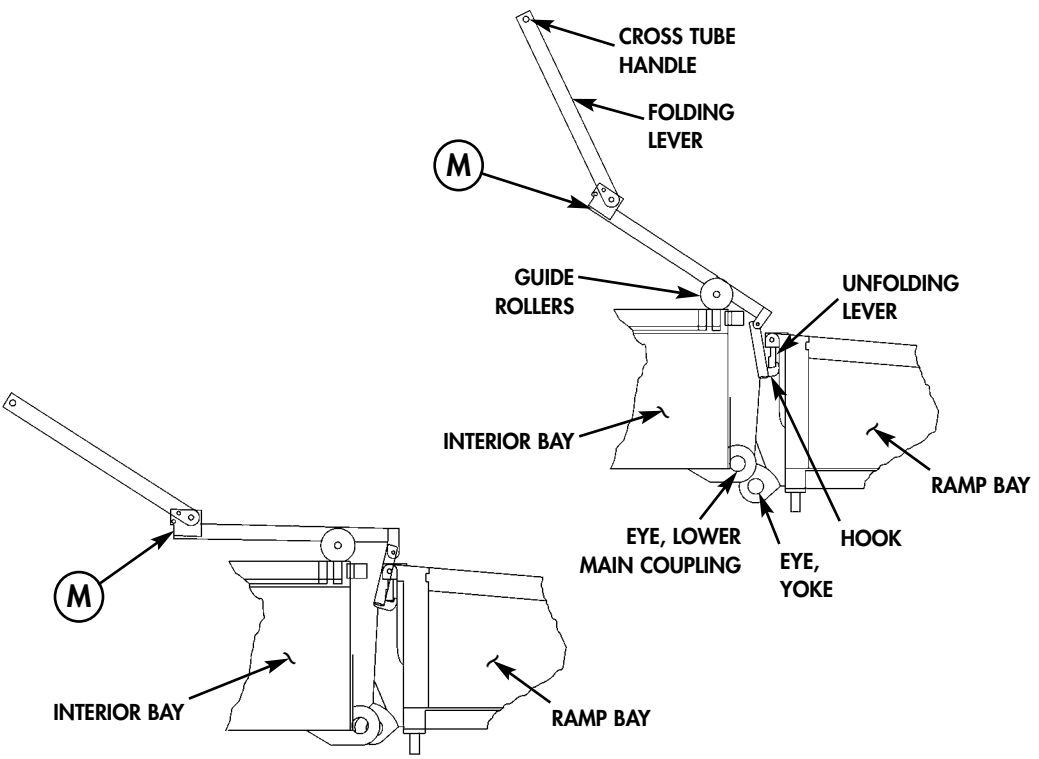
WARNING

Keep hands clear of space between bays when closing longitudinal upper couplings, and do not place fingers under couplings when closing them, or serious injury to personnel may result.

g. Close two longitudinal couplings on ramp bay and interior bay.

h. Using T-wrench, engage two lower lock pins.

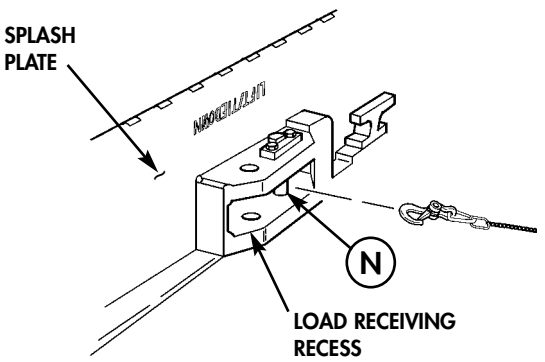
i. Remove two guide ropes from ramp bay, and remove, fold, and stow two coupling devices in ramp bay stowage compartments.

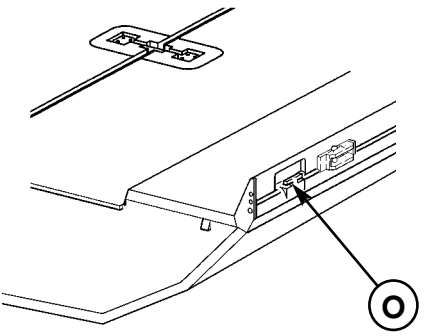


RAMP BAY CONTROLS AND INDICATORS (Contd)

(N) **LOAD RECEIVING PINS** — There are four load receiving pins on the bay; one at each end of the outer ponton located in a recess below the splash plate. They are non-removable to the operator and function both as lifting points and for anchoring bridge or raft assembly to shore.

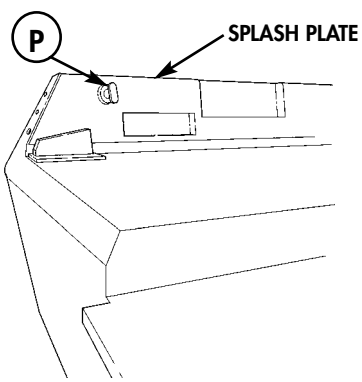
(O) **CLEATS** — There are four cleats on the bay; each is located next to a load receiving pin recess and splash plate. They are used to hold ropes and cables for IRB operation.

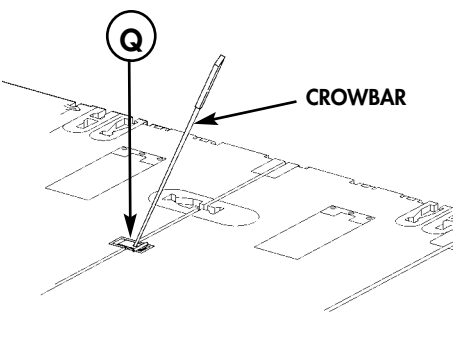




(P) **BELAY CLEATS** — There is a belay cleat located on each outer ponton splash plate near the handrail stanchion at the connecting end (front) of the bay. The belay cleats are used to secure ropes for drawing bays together during bay-to-bay connection.

(Q) **ROADWAY TOOL** — To use the roadway tool, position it over recess in inner pontons with hook end of tool facing down. The hook end should connect to dowel in recess. Insert round end of crowbar through hole in tool so crowbar contacts dowel in recess. Pull crowbar back until gap between inner pontons closes enough for assistant to close transverse upper coupling.





RAMP BAY CONTROLS AND INDICATORS (Contd)

(R) **STOWAGE COMPARTMENT LATCHES** — There are two latches located on the side of the stowage compartment access cover. To open the cover, pull the lever out and up on two latches, and unhook the latch from the catch. Refer to WP 0044 00 for BII items stowed in ramp bay stowage compartments.

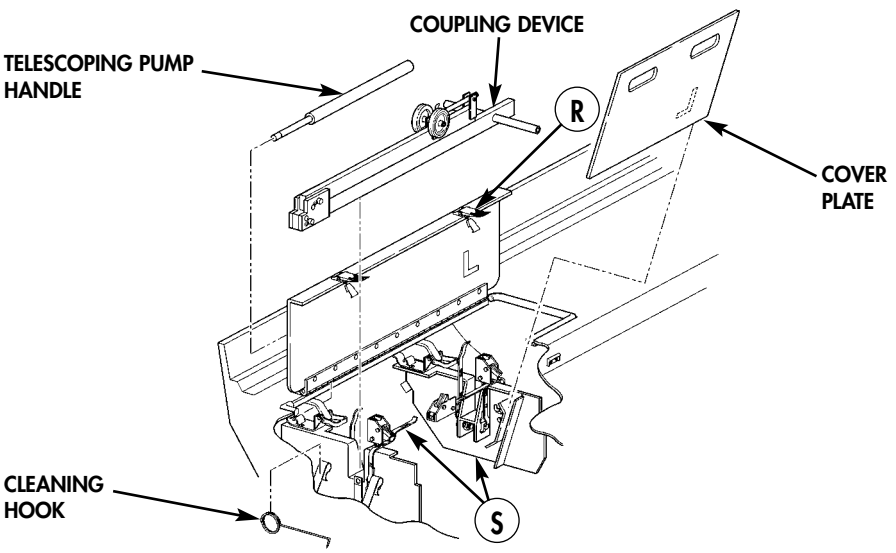
(S) **BII HOLDDOWN BRACKETS AND STRAPS** — The following BII are secured by holddown brackets and straps:

a. Telescoping pump handle – A telescoping pump handle is stowed in each IRB-R stowage compartment. The pump handle is secured by two holddown brackets and straps. Each strap is hooked to a tab on its bracket and tightened or loosened by a lever.

b. Cover plate – Each IRB-R stowage compartment contains one cover plate. The cover plates and stowage compartment lids are identified as left and right by the letters L and R, stenciled on the underside of each cover plate and on the inside of each stowage compartment lid. The cover plate is secured by two brackets and holddown belts. Each belt is tightened by pulling on the end of the belt until tight, and loosened by lifting up the lever to release the belt.

c. Coupling device – A coupling device is stowed in each stowage compartment. The coupling device is secured by two brackets and holddown belts. Each belt is tightened by pulling on the end of the belt until tight, and loosened by lifting up the lever to release the belt.

d. Cleaning hook – A cleaning hook is stowed in each IRB-R stowage compartment. The cleaning hook is secured by two belts (Velcro straps).



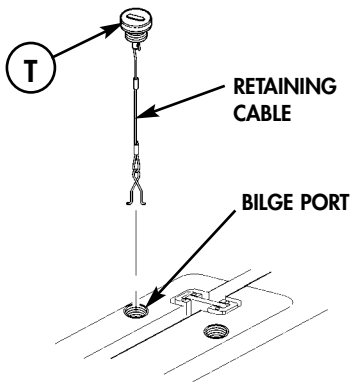
STOWAGE COMPARTMENT, LEFT SIDE SHOWN

RAMP BAY CONTROLS AND INDICATORS (Contd)

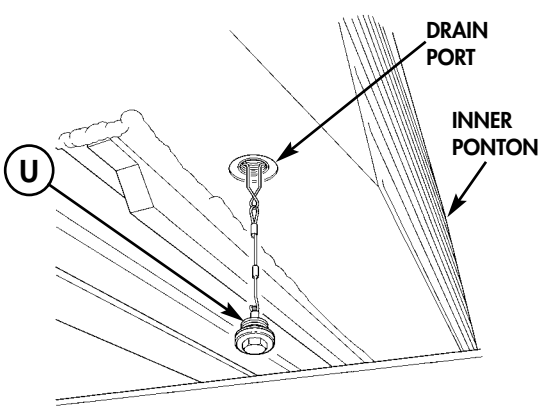
WARNING

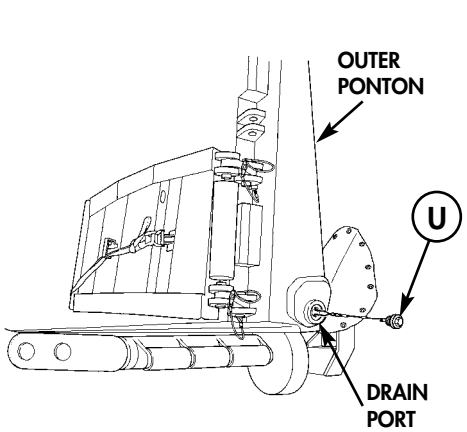
Loosen bilge and drain plugs slowly to allow residual pressure to escape. Failure to comply may result in injury to personnel.

(T) **BILGE PLUGS** — With the bay unfolded, a single bilge plug is removed from each of the four pontons whereby water is to be pumped out using the portable bilge pump (refer to WP 0053 00). The bilge ports are located at connecting end of the roadway on top of each ponton, and can only be accessed with the bay unfolded. Each bilge plug is threaded, removed with the slotted end of a T-wrench (refer to Item 2, WP 0070 00) by turning counterclockwise, and retained by a small cable to prevent loss.



(U) **DRAIN PLUGS** — With the bay folded, a single drain plug is removed from each of the four pontons to drain water. The drain ports are located at approach ramp end on the side of each ponton, with bay either loaded on the transporter or off-loaded onto timbers. Each plug is threaded, removed with a 19 mm wrench (refer to Item 5, WP 0070 00) by turning counterclockwise, and retained by a small cable to prevent loss.





END OF WORK PACKAGE

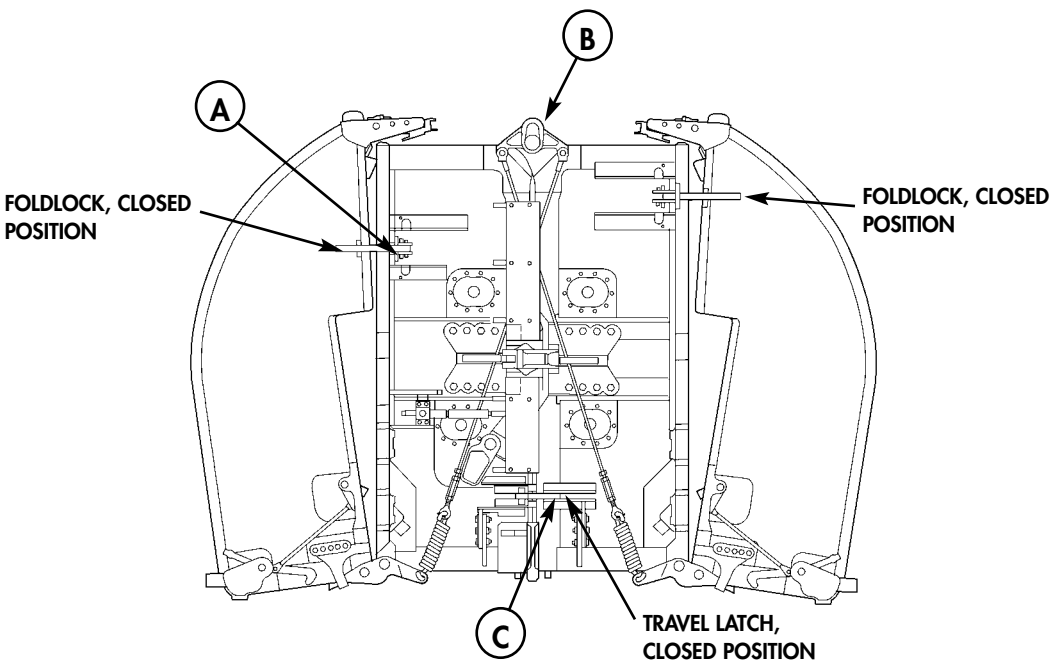
INTERIOR BAY CONTROLS AND INDICATORS

THIS WORK PACKAGE SUPERSEDES WP 0011 00, DATED 8 APRIL 2003

(A) **FOLDLOCKS** — There are four foldlocks on the IRB-I, each located on the inner ponton at both ends of the bay. The foldlock consists of a spring loaded lever that is manually operated; prior to launch all foldlocks are opened to allow the outer pontons to unfold as the bay is released into the water, and prior to retrieval, all foldlocks are placed in the closed position so they will automatically engage with the outer pontons as the bay is folded.

(B) **LIFTING LUG** — There are two identical lifting lugs on the IRB-I inner pontons. During launch and retrieval the bay is lifted by the transporter from the lifting lug at either end. Both contain an eyebolt which holds the inner pontons together. Lifting from the lifting lug is necessary to achieve proper folding of the IRB-I, and to load the bay on the transporter.

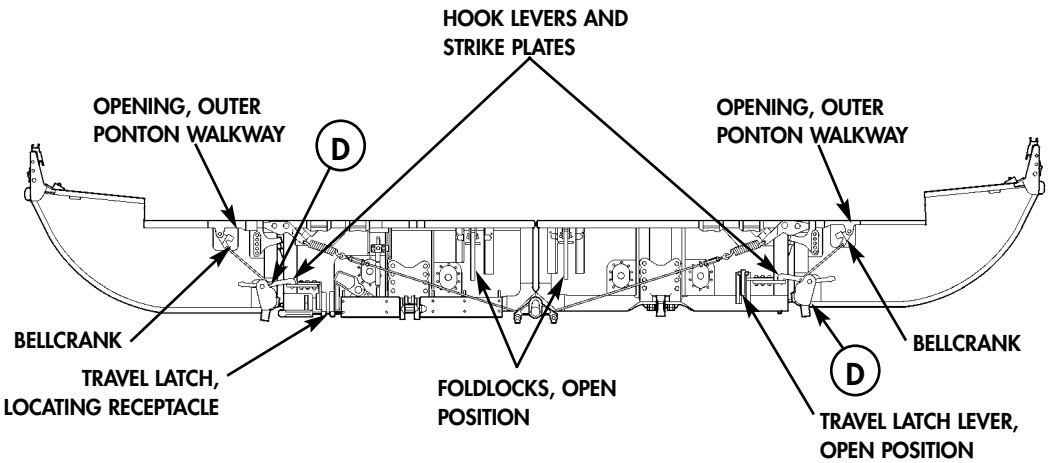
(C) **TRAVEL LATCH** — There are two travel latches on the IRB-I, each located on the inner pontons at both ends of the bay. The travel latch consists of a spring loaded lever that is manually operated, and a locating receptacle. Both travel latches are opened prior to conducting a free launch. Only one travel latch is opened prior to conducting a controlled launch, high-bank launch, or deployment by helicopter, after which the 2nd travel latch is opened using a lanyard pin (refer to Item 7, WP 0070 00) and rope. Prior to retrieval, both travel latches are placed in the closed position and automatically engage and latch the inner pontons when folded. During pick-up and transport, the travel latches prevent the IRB-I from unfolding.



INTERIOR BAY (FOLDED)

INTERIOR BAY CONTROLS AND INDICATORS (Contd)

(D) **OUTER PONTON LOCKS** — There are two outer ponton locks at each end of the IRB-I. Each is engaged by inserting the end of a T-wrench (refer to Item 2, WP 0070 00) into a hole in the bellcrank; the bellcrank is accessed through an opening at the end of the outer ponton walkway. The bellcrank is rotated until the lock/release lever is visibly engaged on the striker plate, located on the adjacent inner ponton.

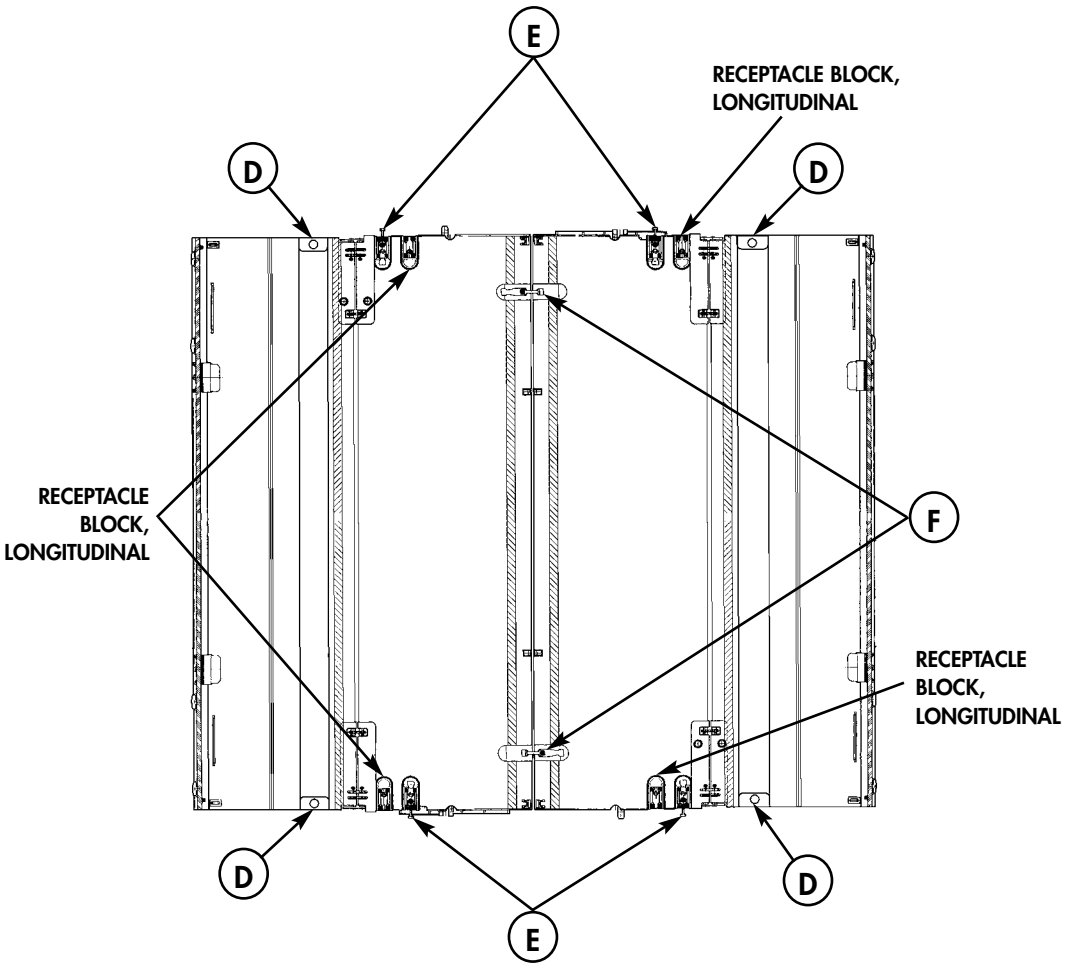


INTERIOR BAY (UNFOLDED)

(E) **UPPER COUPLING, LONGITUDINAL** — There are two identical upper couplings and two receptacle blocks at each end of the IRB-I. The upper coupling consists of a spring-loaded lever mounted in a receptacle block at each end of both inner pontons. A receptacle block is adjacent to each upper coupling. The upper coupling is used for bay-to-bay connection; when two bays are in position to be joined longitudinally, the two upper couplings on each bay are manually closed by placing them in the receptacle blocks of the opposite IRB-I or IRB-R.

(F) **UPPER COUPLING, TRANSVERSE** — There are two identical upper couplings, each located on the inner pontons, that consist of a spring-loaded lever mounted in a receptacle block. When the bay is unfolded, both upper couplings are manually closed by placing them in the opposite receptacle block of the adjacent inner ponton. They are both opened prior to IRB-I retrieval; this is essential prior to lifting to prevent damage.

INTERIOR BAY CONTROLS AND INDICATORS (Contd)



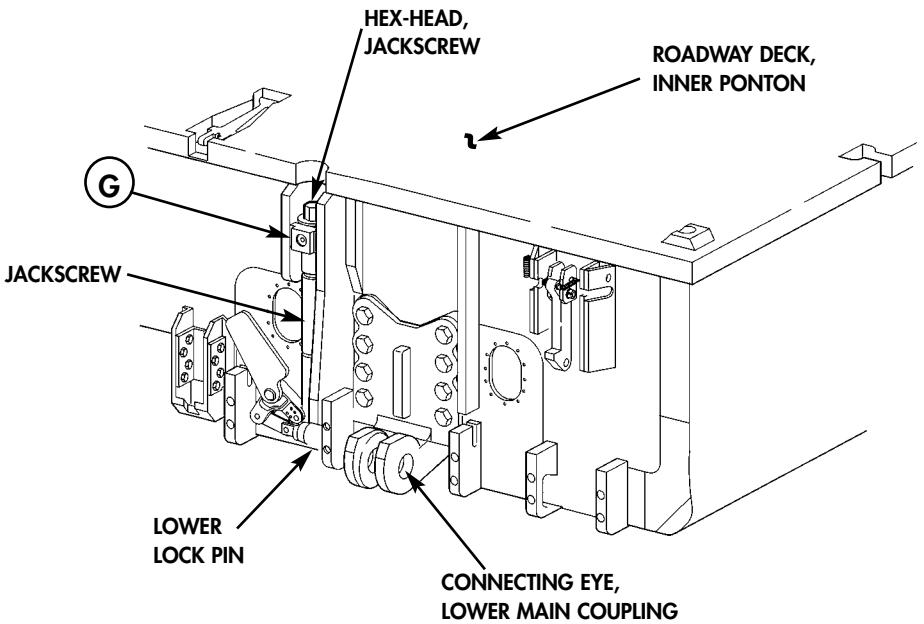
INTERIOR BAY (UNFOLDED)

INTERIOR BAY CONTROLS AND INDICATORS (Contd)

CAUTION

The BII T-wrench should only be used to operate outer ponton locks, lower lock-drives, and for removal and installation of bilge plugs. Do not use T-wrench as a pry bar or hammer, or damage to equipment will result.

(G) **LOWER LOCK-DRIVE** — There are two lower lock-drive assemblies on the IRB-I, one at each end of the bay on each inner ponton. Both are manually operated from the roadway deck by placing the socket end of a T-wrench (refer to Item 2, WP 0070 00) on the hex-head of the jackscrew, and turning the screw clockwise.

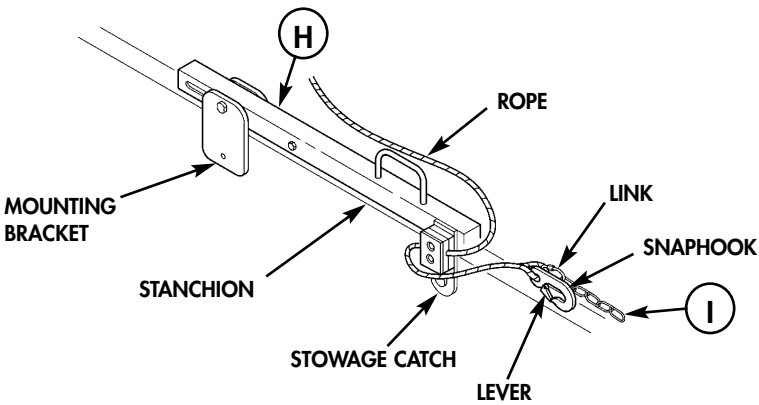


LOWER LOCK-DRIVE ASSEMBLY

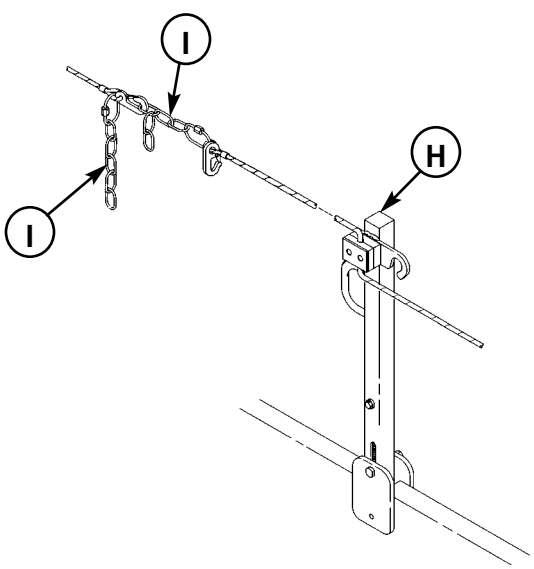
(H) **HANDRAILS** — There is a handrail rope supported by three fold-up stanchions mounted on the splash plate at each side of the IRB-I. To set up the handrail, pull each stanchion out and away from the mounting bracket and stowage catch, then lift the stanchion up; a spring will automatically set the stanchion into the mounting bracket, once the stanchion is vertical. To stow the handrail, lift each stanchion up and out of the mounting bracket, fold down, then release. Make sure the stowage catch is secure. When bays are connected, the handrail ropes are joined by connecting the snaphooks together. Press the lever on either snaphook to disconnect ropes.

INTERIOR BAY CONTROLS AND INDICATORS (Contd)

(I) **EXTENSION CHAINS** — The length of the handrail ropes is susceptible to change due to seasonal differences in temperature and humidity. To enable the handrail ropes to be adjusted tightly, an extension chain is supplied with each rope at both ends of the interior bay, and the fairlead blocks mounted on the handrail stanchions at the ends of the bay allow the ropes to slip. The extension chain is made up of 5 links connected to the loop end of the rope by a removable link. To connect handrail ropes between adjoining bays, pull the ropes from each bay together to remove all slack, then connect the snaphook from one of the ropes to the farthest open link on the opposite chain extension.



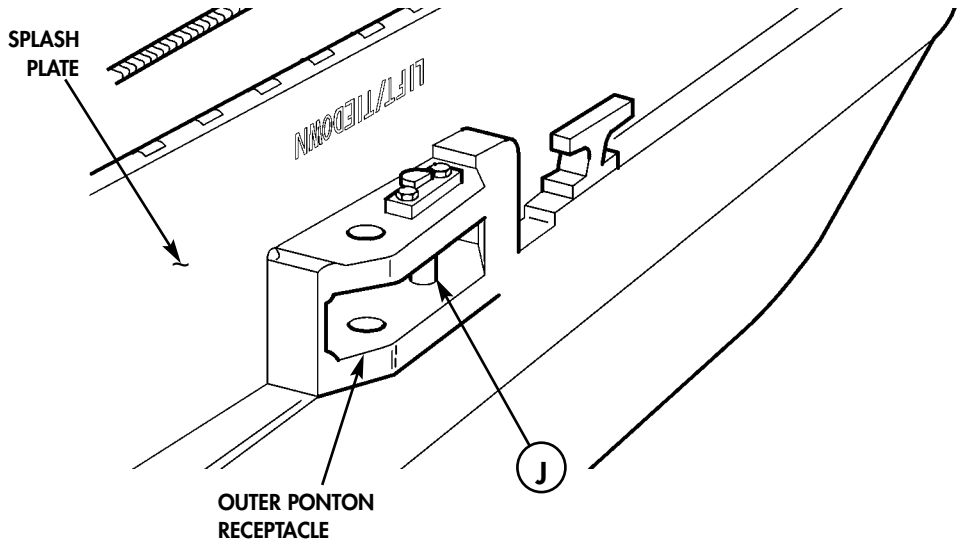
HANDRAIL, STOWED POSITION



HANDRAIL, RAISED POSITION, CHAIN EXTENSION CONNECTED

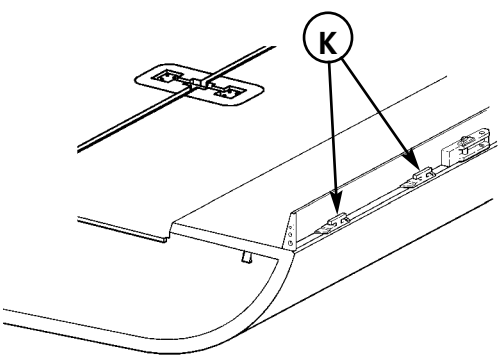
INTERIOR BAY CONTROLS AND INDICATORS (Contd)

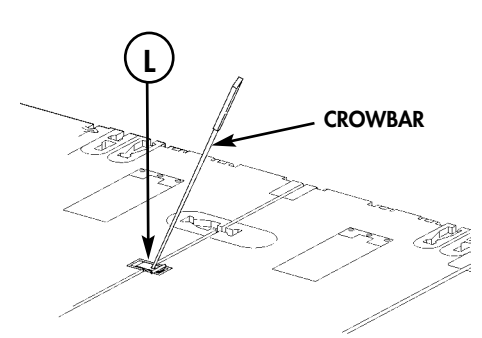
(J) **LOAD RECEIVING PINS** — There are four load receiving pins on the bay; one at each end of the outer ponton located in a receptacle below the splash plate. They are non-removable to the operator and function both as lifting points and for anchoring bridges to shore.



(K) **CLEATS** — There are eight cleats on the bay; two cleats are provided next to each load receiving pin receptacle on splash plate. They are used to secure ropes and cables for IRB-I operation.

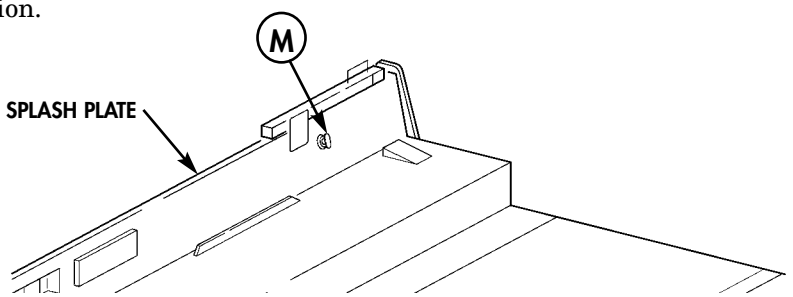
(L) **ROADWAY TOOL** — To use the roadway tool, position it over the recess in inner pontons with hook end of tool facing down. The hook end should connect to dowel in recess. Insert round end of crowbar through hole in tool so crowbar contacts dowel in recess. Pull crowbar back until gap between inner pontons closes enough for assistant to close transverse upper coupling.





INTERIOR BAY CONTROLS AND INDICATORS (Contd)

(M) **BELAY CLEATS** — There is a belay cleat located on each outer ponton splash plate near the handrail stanchion at both ends of the bay. The belay cleats are used to secure ropes for drawing bays together during bay-to-bay connection.

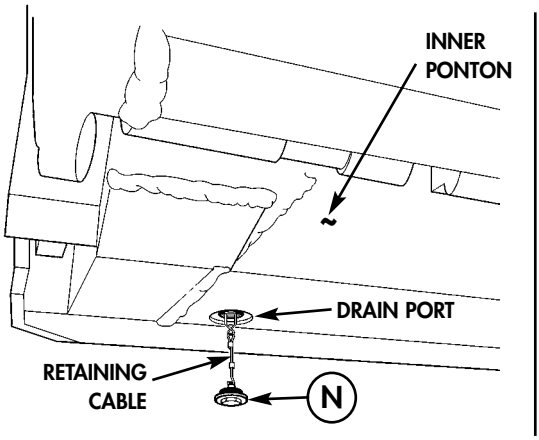


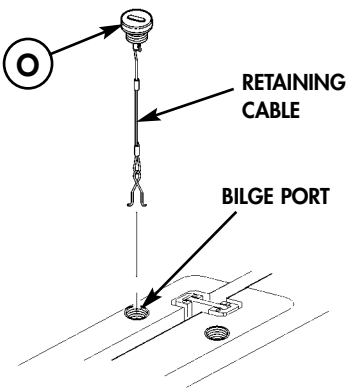
WARNING

Loosen bilge and drain plugs slowly to allow residual pressure to escape. Failure to comply may result in injury to personnel.

(N) **DRAIN PLUG** — With the bay folded, a single drain plug is removed from each of the four pontons to drain water. The drain ports are located at both ends on the bottom and can be accessed with the bay either loaded on the transporter or off-loaded onto timbers. Each plug is threaded, is removed with a 19-mm wrench (refer to Item 5, WP 0070 00) by turning counterclockwise, and is retained by a small cable to prevent loss.

(O) **BILGE PLUGS** — With the bay unfolded, a single bilge plug is removed from each of the four pontons whereby water is to be pumped out using the portable bilge pump (refer to WP 0053 00). The bilge ports are located at both ends of the roadway on the top of each ponton, and can only be accessed with the bay unfolded. Each bilge plug is threaded, is removed with the slotted end of a T-wrench (refer to Item 2, WP 0070 00) by turning counterclockwise, and is retained by a small cable to prevent loss.





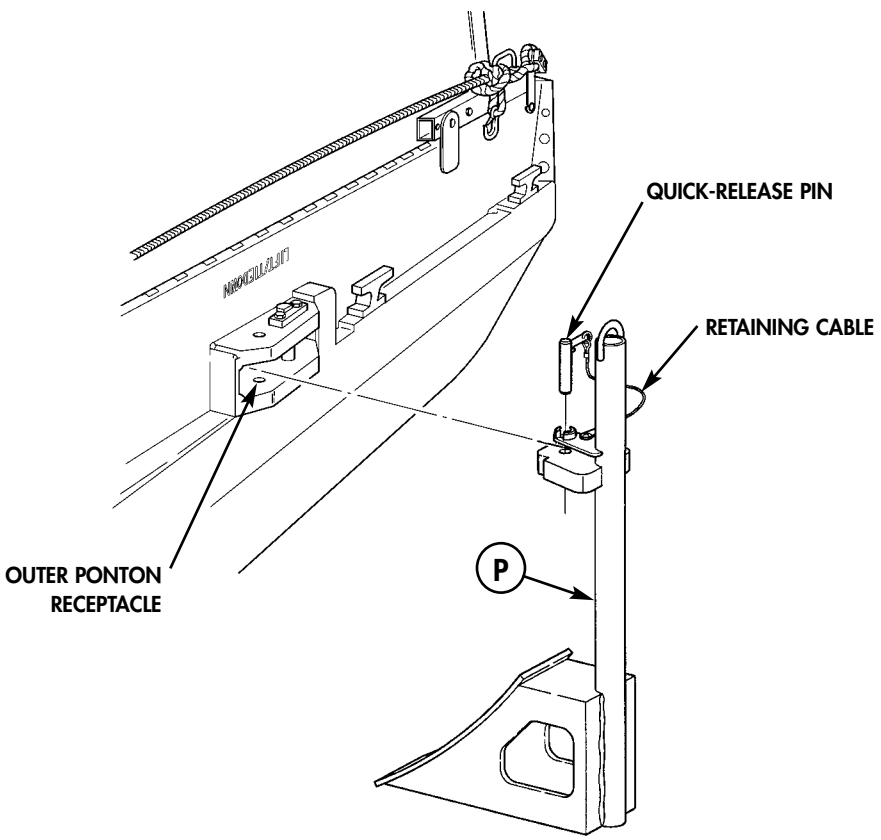
INTERIOR BAY CONTROLS AND INDICATORS (Contd)

WARNING

Ensure rafting brackets are equipped with quick-release pins prior to performing rafting operations. Only use quick release pins designed for use with IRB rafting brackets. Failure to comply may result in damage to equipment or possible injury or death to personnel.

Do not use the rafting bracket mounting holes for attaching lifting chains or bridge anchorage. Failure to comply may result in damage to equipment or injury or death to personnel.

(P) **RAFTING BRACKETS** — The rafting brackets are installed on the outer ponton receptacles adjacent to the load receiving pins. Each rafting bracket is secured to the outer ponton receptacle by installing a quick-release pin. The quick-release pin is secured to the outer ponton receptacle by a small retaining cable to prevent loss. Rafting brackets are installed during longitudinal rafting operations on interior bays only.



END OF WORK PACKAGE

OPERATING INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 1247891.

Section II. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)
TABLE OF CONTENTS

WP Title	WP Sequence No.-Page No.
General	0013 00-1
Purpose of PMCS Table	0013 00-1
Explanation of Columns	0013 00-1
Reporting Deficiencies	0013 00-2
Special Instructions	0013 00-2
Leaks	0013 00-3
Painting	0013 00-4
Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT)	0014 00-1
Lubrication	0014 00-1
Table 1 (Common Bridge Transporter)	0014 00-2
Operator Preventive Maintenance Checks and Services (PMCS) for Ramp Bay	0015 00-1
Lubrication	0015 00-1
Table 2 (Ramp Bay)	0015 00-1
Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay	0016 00-1
Lubrication	0016 00-1
Table 3 (Interior Bay)	0016 00-1

OPERATING INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 1247891.

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

GENERAL

Operator's PMCS Table 1 is for the CBT, Table 2 is for the ramp bay, and Table 3 is for the interior bay. The tables list inspections and care required to keep the equipment in good operating conditon. Operator PMCS are performed to ensure that the equipment is ready for operation at all times.

a. Before operation, perform PMCS intervals listed "Before." Observe all cautions and warnings.

b. During operation, perform PMCS intervals listed "During." Observe all cautions and warnings.

c. After operation, perform PMCS intervals listed "After." Observe all cautions and warnings.

d. At any PMCS interval, if your equipment fails to operate, notify Unit Maintenance.

PURPOSE OF PMCS TABLE

The purpose of the PMCS table is to provide a systematic method of inspection and required service of equipment. In this way, small defects can be detected early before they become a major problem, causing the equipment to fail to complete its mission. The PMCS table is arranged with the individual PMCS procedures listed in sequence under assigned intervals. The most logical time (before, during, and after operation) to perform each procedure determines the interval to which it is assigned. Make a habit of performing the checks in the same order each time. See Explanation of Columns for an explanation of columns in tables 1 and 2.

EXPLANATION OF COLUMNS

The following is a list and description of the column headings in the PMCS table.

a. Item Number. This column shows the sequence in which the checks and services are to be performed, and is used to identify the equipment area on the Equipment Inspection and Maintenance Worksheet, DA Form 2404 or DA Form 5988-E.

b. Interval. This column indicates when each check is to be performed.

c. Item To Check/Service. This column identifies the item and location to be inspected by part, component, or assembly name.

EXPLANATION OF COLUMNS (Contd)

d. Procedure. This column explains what type of service, specific damage, or defect is to be checked.

NOTE

The terms ready/available and mission capable refer to the same staus: equipment is on hand and is able to perform its combat mission. Refer to DA Pam 738-750.

e. Not Fully Mission Capable If. This column lists conditions that make the equipment unavailable for use as a result of damage, missing parts, or improper functioning that would represent a safety hazard. Do not accept or operate equipment with a condition noted in the "Not Fully Mission Capable If" column.

REPORTING DEFICIENCIES

If any problem with the equipment is discovered while performing PMCS or during operation that cannot be corrected at the operator's level, it must be reported. Refer to DA Pam 738-750 and report the deficiency on Equipment Inspection and Maintenance Worksheet, DA Form 2404 or DA Form 5988-E.

SPECIAL INSTRUCTIONS

Preventive maintenance is not limited to performing the checks and services listed in the PMCS tables.

WARNING

Skysol-100 cleaning solvent is combustible. Use mechanical ventilation whenever product is used in a confined space, is heated above ambient temperatures, or is agitated. DO NOT use or store near heat, sparks, flame, or other ignition sources. Keep container sealed when not in use.

Contact with Skysol-100 cleaning solvent may cause skin irritation. Use chemical-resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing, or blurring of vision. Use face shield or goggles when eye contact may occur. In case of eye contact, flush eyes with large amounts of water for at least fifteen (15) minutes or until irritation subsides. Inhalation may cause irritation to upper respiratory passages. DO NOT have food or drink in the vicinity.

SPECIAL INSTRUCTIONS (Contd)

WARNING

Compressed air source will not exceed 30 psi (207 kPa). When cleaning with compressed air, eyeshields must be worn. Failure to comply may result in injury to personnel.

a. Keep it clean. Dirt, grease, oil, and debris get in the way and may cover up a serious problem. Clean work area as needed. Use Skysol-100 on all metal surfaces. Use soap and water to clean rubber or plastic material. Dry with compressed air or clean, dry, lint-free cloths (Item 8, WP 0072 00).

b. Bolts, nuts, and screws. Check them all for obvious looseness, missing, bent, or broken condition. Look for chipped paint, bare metal, or rust around bolt heads; if loose, notify unit maintenance.

c. Wiring harnesses, wires, and connectors. Look for cracked or broken wiring harness insulation, bare wires, and loose or broken connectors. If faulty wiring or loose connections are found, notify unit maintenance.

d. Fluid lines. Look for wear, damage, and leaks. Make sure clamps and fittings are tight. Wet spots and stains around a fitting or connector can mean a leak. If a leak comes from a loose connector, notify unit mainenance. If something is broken or worn out, notify unit maintenance.

e. Air system components. Look for wear or damage to air lines and fittings. Make sure clamps and fittings are tight. If damage, wear, or leaks are found, notify unit maintenance.

LEAKS

a. It is necessary to know how fluid leaks affect equipment operation and readiness. The following definitions for types/classes of leakage shall be observed.

CAUTION

Equipment operation is allowable with minor leakage (Class I or II) of any fluid except fuel. Of course, consideration must be given to the fluid capacity in the item being checked/inspected. When in doubt, notify your supervisor.

When operating with Class I or II leaks, continue to check fluid level more often than required in the PMCS. Parts without fluid will stop working and/or cause equipment damage.

Class III leaks should be reported to your supervisor or unit maintenance.

LEAKS (Contd)

Class I	Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
Class II	Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.
Class III	Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

PAINTING

Paint touch-up of the IRB should be performed as needed during PMCS. Notify unit maintenance.

END OF WORK PACKAGE

OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR COMMON BRIDGE TRANSPORTER

THIS WORK PACKAGE SUPERSEDES WP 0014 00, DATED 8 APRIL 2003

This PMCS uses the one-look format, beginning at the driver's side of cab and proceeding counterclockwise. (Refer to figure 1.)

During PMCS, ensure that components and assemblies are *correctly installed*. Incorrect installation may cause additional equipment damage or failure.

When checking/servicing an item, ensure that all attaching/mounting hardware is properly secured. Loose, cracked, broken or missing hardware may cause equipment failure or injury to personnel.

LUBRICATION

Perform lubrication checks and services after completing PMCS. (Refer to WP 0064 00.)

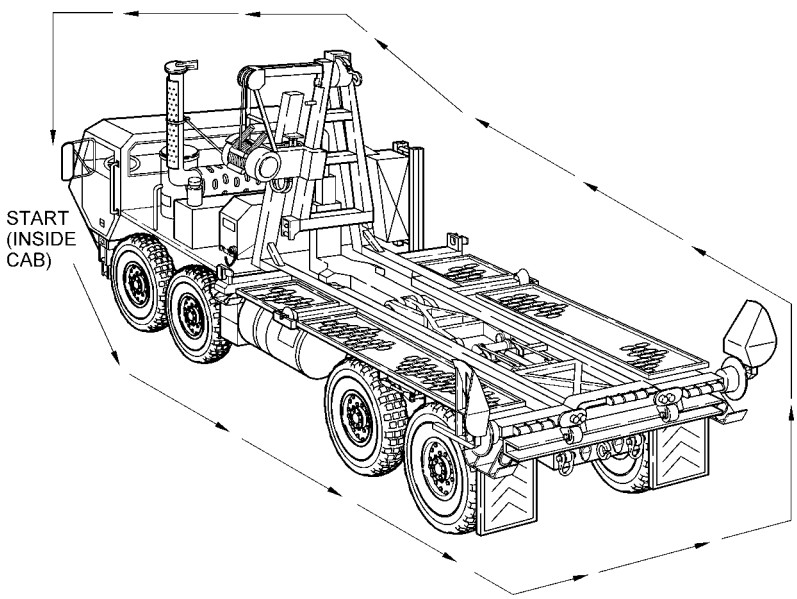


Figure 1. PMCS for CBT

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			NOTE Perform HEMTT PMCS before performing PMCS for LHS and BAP. (Refer to TM 9-2320-279-10.) CBT PMCS is performed with BAP on CBT. (Refer to WP 0013 00.) If leakage is detected, further investigation is needed to determine the location and cause of the leak. If there is any doubt, contact your supervisor or field maintenance.	
1	Before	CBT components	Check for obvious fluid leakage from hydraulic components and underneath vehicle.	Any Class III fluid leak is noted.
2	Before	LHS reservoir (1)	Check fluid level at reservoir site gauge.	Fluid level is not visible in site gauge.

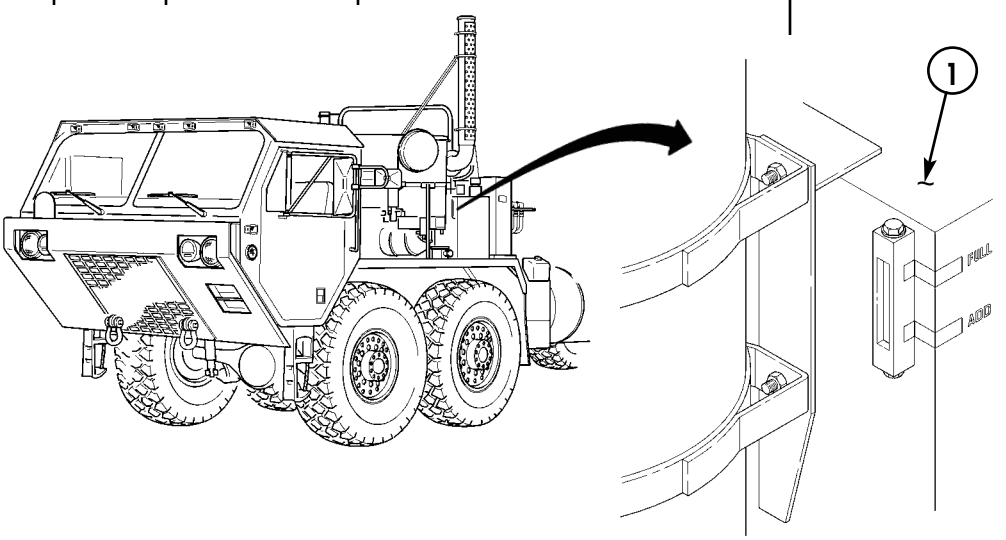
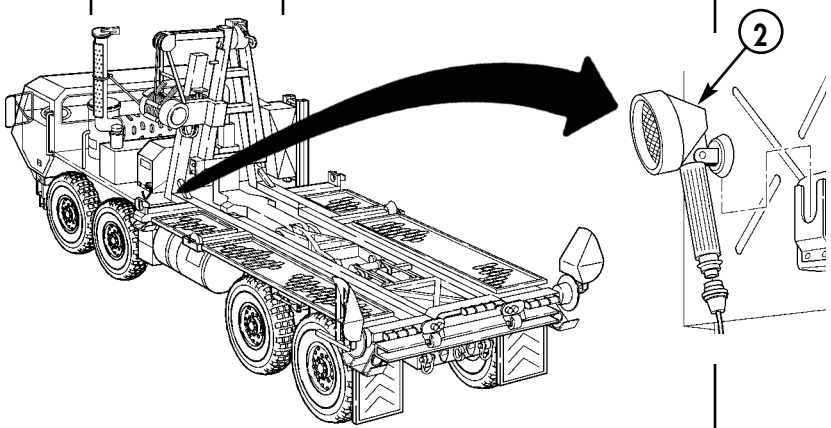


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
3	Before	Spotlight (2)	**a.** Check for structural damage to spotlight and cable. **b**. Check spotlight is operational.	
4	Before	Manifold cover assembly (3)	**a.** Check cover assembly for damaged or missing hardware. **b.** Check weldment for breaks, cracks or damage. Check cover assembly for rust, corrosion, or chipped paint.	



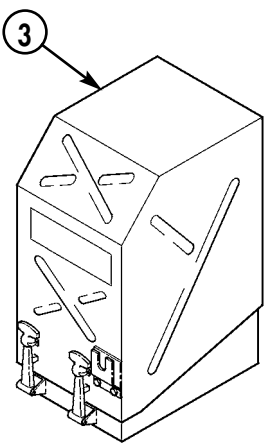
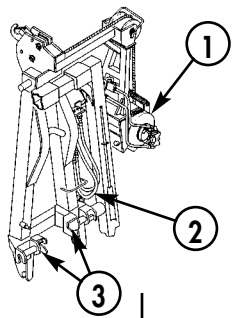
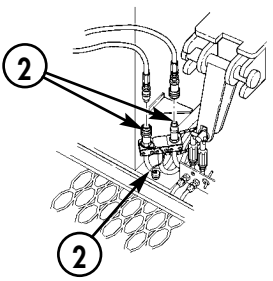
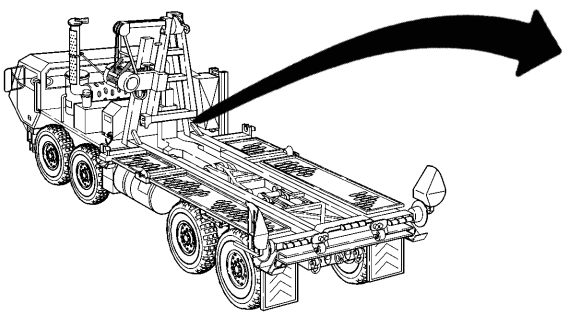


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
5	Before	BAP winch assembly (1) and fluid lines and couplings (2)	Check winch for obvious damage, fluid leaks.	Damage prevents winch operation. Any Class III fluid leak is noted.
6	Before	BAP frame locking levers (3)	Check winch frame locking levers for structural damage.	Damage prevents locking levers from being engaged, or parts are missing.
7	Before	BAP hold-down assembly (4)	**a.** Check lock for structural damage. **b**. Pull lock handle and ensure lock disengages.	**a.** Damage prevents lock from operating properly. **b.** Lock does not disengage.







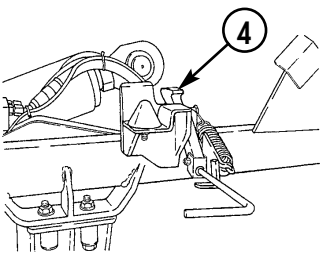


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

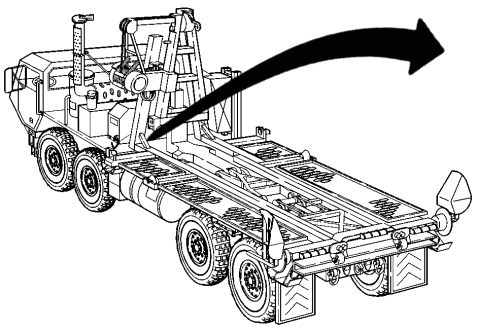
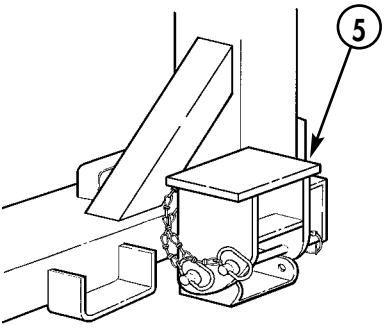
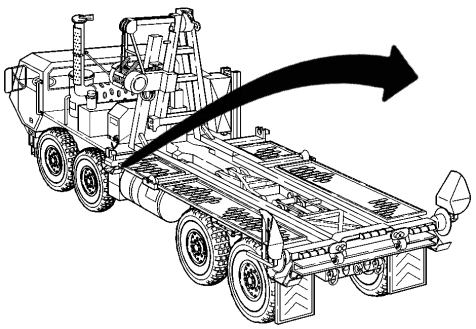
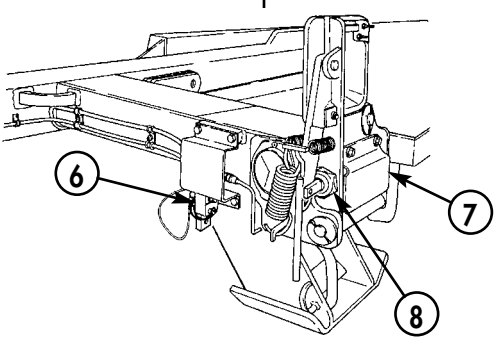
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
8	Before	BAP PLS foot (5)	Check for structural damage.	
				
9	Before	Control valve (6), guard (7), and air cylinder (8)	Check valve, guard, and cylinder for structural damage and loose or missing hardware. If severely damaged use manual operation. (Refer to WP 0009 00.)	Damage prevents manual valve/cylinder operation.
				

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

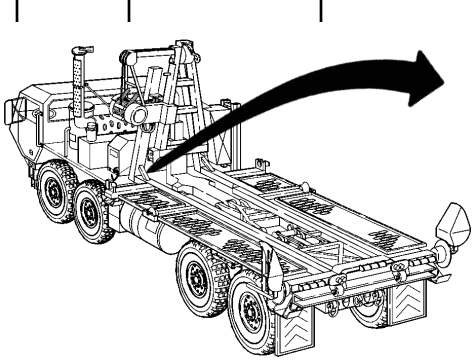
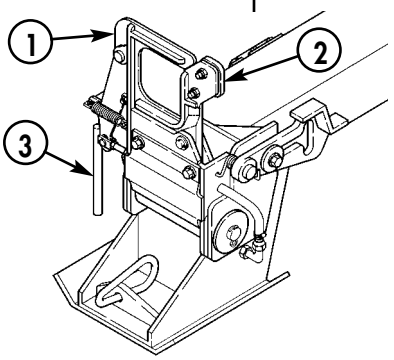
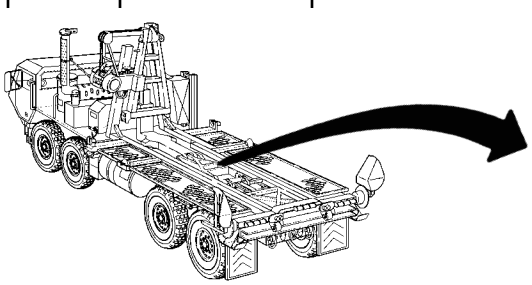
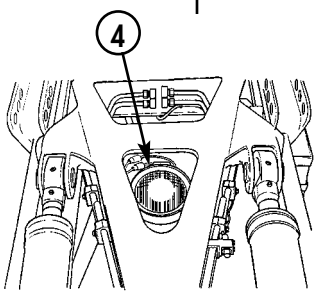
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
10	Before	Front pin lock (1), wear pad (2), and release lever (3)	**a.** Check lock for structural damage. **b.** Check pad for excessive wear (1/16 inch (1.59 mm) or less surface area available). **c**. Pull release lever to disengage lock.	**a.** Damage prevents lock from engaging pin. **c.** Lock does not disengage.
			 	
11	Before	Work light (4)	**a.** Check for structural damage to work light and cable. **b.** Check work light is operational.	
			 	

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

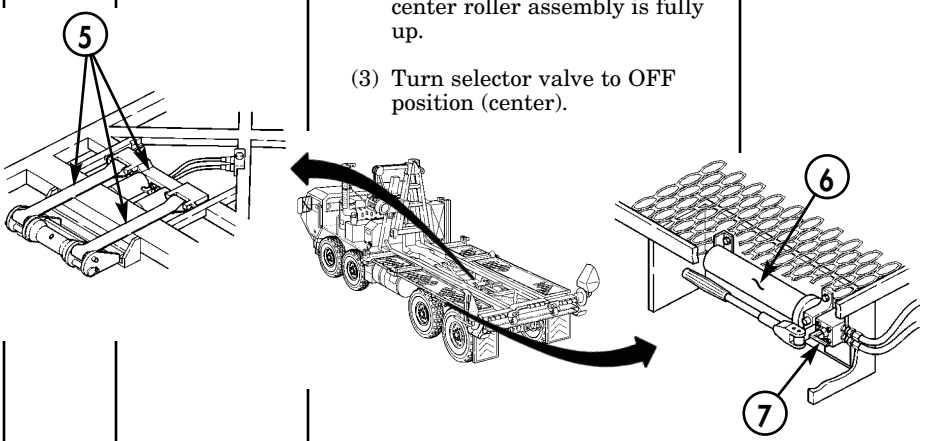
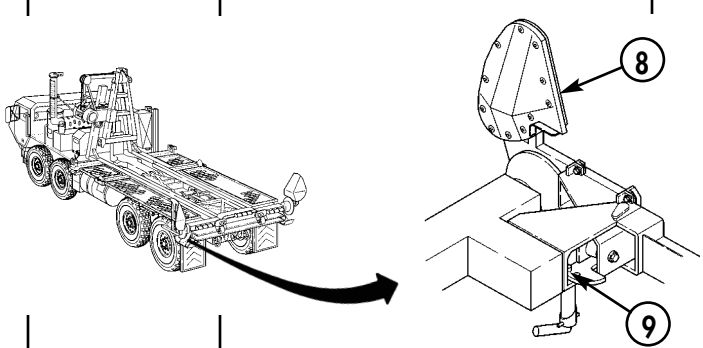
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
12	Before	Center roller assembly (5), hand pump (6), and selector valve (7)	**a.** Check rollers for structural damage, and excessive wear (large grooves or metal worn off), and fluid leaks. **b.** Check valve and hand pump operation and for fluid leaks: (1) Turn selector valve lever to CENTER ROLLER UP position. (2) Operate hand pump until center roller assembly is fully up. (3) Turn selector valve to OFF position (center).	**a.** Damage prevents hand pump operation. Any Class III fluid leak is noted. **b.** Any Class III fluid leak is noted.
				
13	Before	Rear guide (8) and latch pin assembly (9)	Check for structural damage.	Damage or missing items prevent pin and guide operation.
				

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

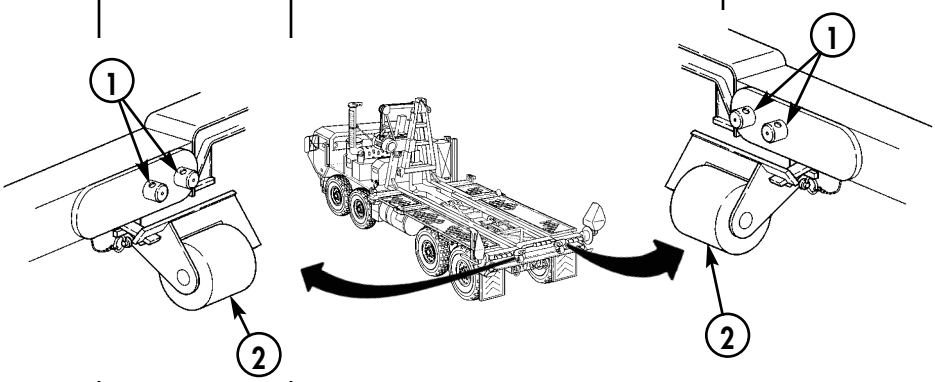
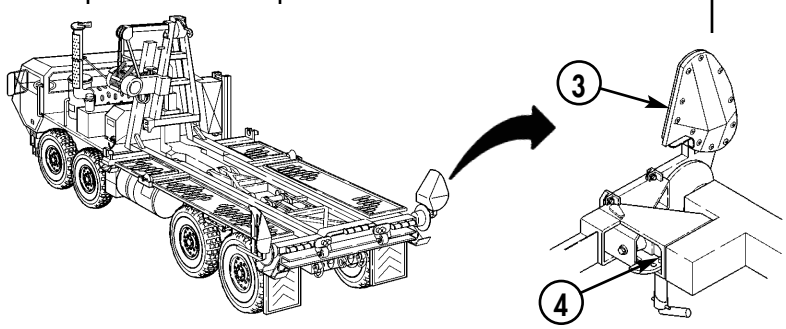
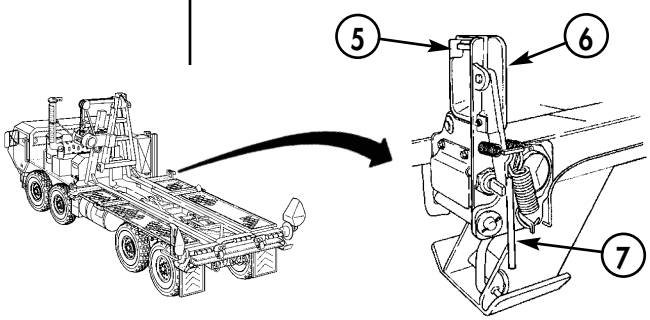
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
14	Before	Extension cylinders (1) and transload rollers (2)	**a.** Operate hand pump and check four extension cylinders for structural damage, proper operation, and fluid leaks. **b.** Check rollers for free rotation and structural damage.	**a.** Damage prevents cylinder operation, or any Class III fluid leak is noted. **b.** Rollers are cracked or will not rotate freely.
				
15	Before	Rear guide (3) and latch pin assembly (4)	Check for structural damage.	Damage or missing items prevent pin and guide operation.
				

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
16	Before	Front pin lock (5), wear pad (6), and release lever (7)	**a.** Check lock for structural damage. **b**. Check pad for excessive wear (1/16 inch (1.59 mm) or less surface area available). **c**. Pull release lever to disengage lock.	**a.** Damage prevents lock from engaging pin. **c.** Lock does not disengage.
17	Before	Air cylinder (9) and guard (8)	Check for structural damage. If severely damaged use manual operation. (Refer to WP 0009 00.)	Damage prevents manual cylinder operation.



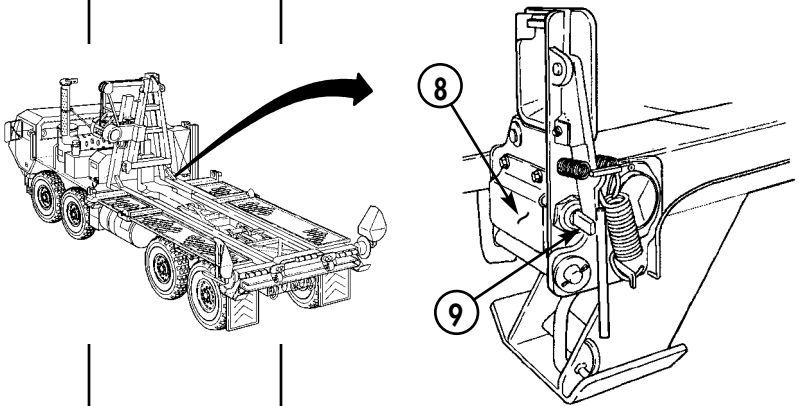


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

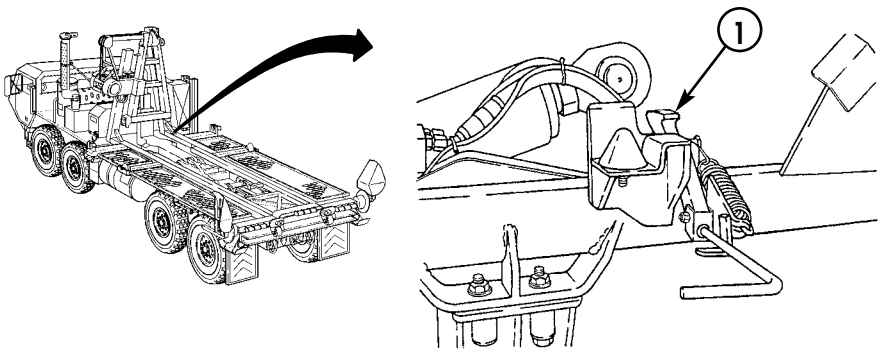
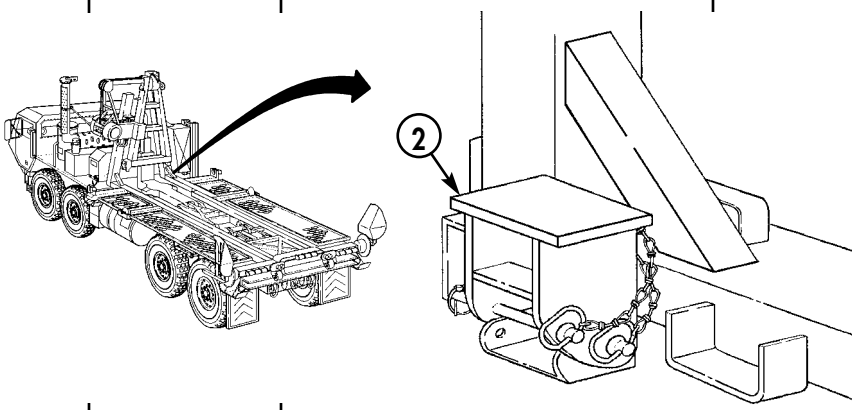
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
18	Before	BAP hold-down assembly (1)	**a.** Check lock for structural damage. **b.** Pull lock handle and ensure lock disengages.	**a**. Damage prevents lock from operating properly. **b.** Lock does not disengage.
				
19	Before	BAP PLS foot (2)	Check for structural damage.	
				

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

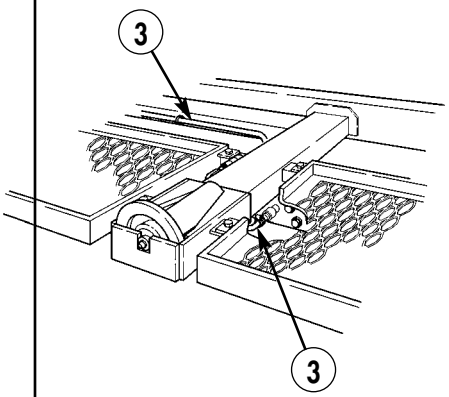
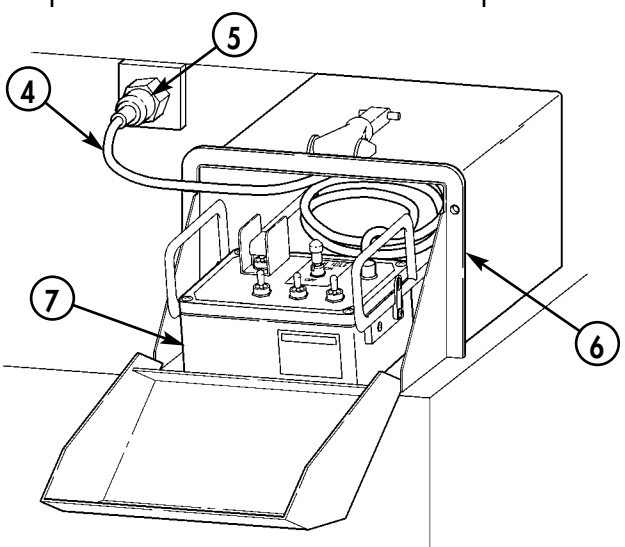
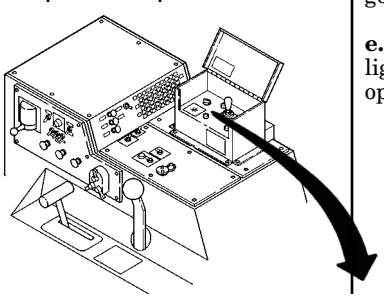
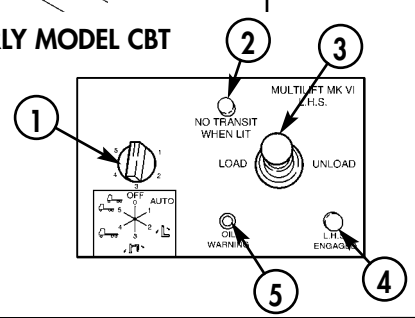
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
20	Before	BAP air lines (3)	Check for structural damage. 	Damage prevents using air line, or air leak is noted.
21	Before	Remote control unit (7), stowage box (6), RCU cable (4), and LHS receptacle (5)	**a.** Check exterior of RCU stowage box and RCU cable for damage. If damaged, use manual operation. (Refer to WP 0049 00.) **b.** Connect RCU cable to left or right LHS receptacle. If both receptacles are damaged, use manual operation. (Refer to WP 0049 00.) 	**a.** Manual operation will not operate LHS. **b.** Manual operation will not operate LHS.

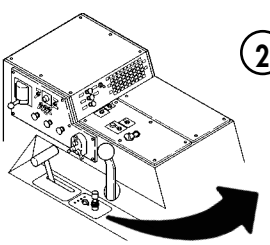
Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			WARNING Check for overhead power lines or other obstructions before attempting operation of the LHS. The LHS reaches a height of 22 ft. 2 in. (6.7 m). Serious injury or death may result from contact with electric power lines.	
22	During	Load handling system (LHS) controls: LHS MODE SELECT switch (1), NO TRANSIT WHEN LIT indicator (2), joystick (3), LHS ENGAGED indicator (4), and OIL WARNING indicator (5)	**a.** Check for proper operation of LHS MODE SELECT switch and joystick. Verify by placing LHS MODE SELECT switch in AUTO position. **b.** Pull joystick to UNLOAD to raise the LHS about 1 - 2 ft. (0.305 - 0.610 m). LHS ENGAGED indicator light will light green, and NO TRANSIT WHEN LIT indicator light will light red. **c.** Push joystick to LOAD position. NO TRANSIT WHEN LIT indicator light will go out. **d.** Turn LHS MODE SELECT switch to OFF. LHS ENGAGED indicator will go out. **e.** CHECK OIL WARNING indicator; light should remain out during LHS operation.	**a.** LHS will not operate electrically using RCU and manually using valve tools.



EARLY MODEL CBT





LATE MODEL CBT

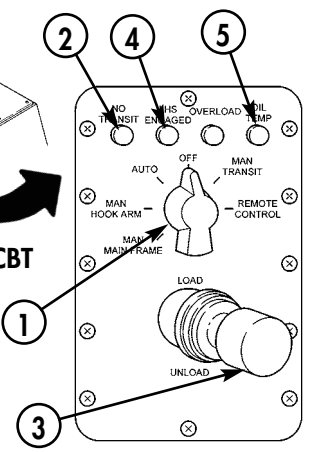
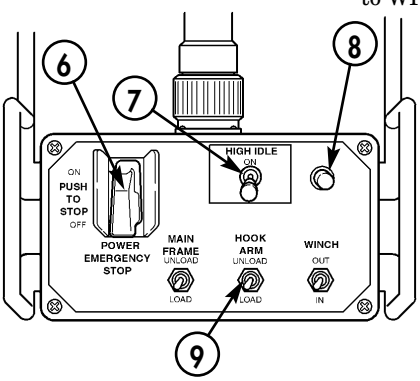


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
23	During	EMERGENCY STOP switch (6) panel illumination lamp (8), HIGH IDLE switch (7), HOOK ARM switch (9), and cylinder (10)	**a.** Check to ensure RCU switches are non-operational when RCU EMERGENCY STOP switch is in OFF position. Use manual operation (refer to WP 0049 00).	**a.** Switch operates with EMERGENCY STOP switch in OFF position.
			b. Move EMERGENCY STOP switch to ON position. Panel illumination lamp should light.Use manual operation (refer to WP 0049 00).	**b.** Panel illumination lamp is not lit using a new lamp.
			c. Move HIGH IDLE switch to ON. Engine rpm should increase audibly. Move HIGH IDLE switch to OFF. Use manual operation (refer to WP 0049 00).	**c.** Engine rpm will not increase with switch in HIGH IDLE position.
			d. Move HOOK ARM switch to UNLOAD until hook arm cylinders are extended to approximately 6 in. (15 cm). Use manual operation (refer to WP 0049 00).	**d.** Hook arm cylinders will not extend.



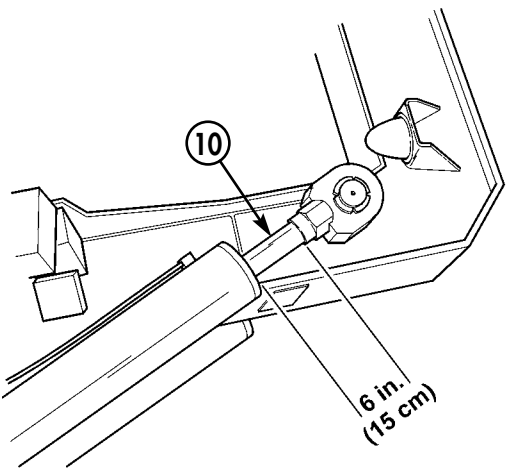


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
24	During	All components of LHS	Check LHS for any visible loose or missing mounting hardware.	Mounting hardware is missing.
25	During	MAIN FRAME switch (1) and HOOK ARM switch (2)	**a.** Move MAIN FRAME switch to UNLOAD and release when main frame is extended fully. Ensure main frame extends fully. If not, use manual operation. (Refer to WP 0049 00.) **b.** Move HOOK ARM switch to UNLOAD and release when hook arm is fully extended rearward. If not, use manual operation. (Refer to WP 0049 00.)	**a.** Main frame will not operate. **b.** Hook arm will not operate using manual operation.

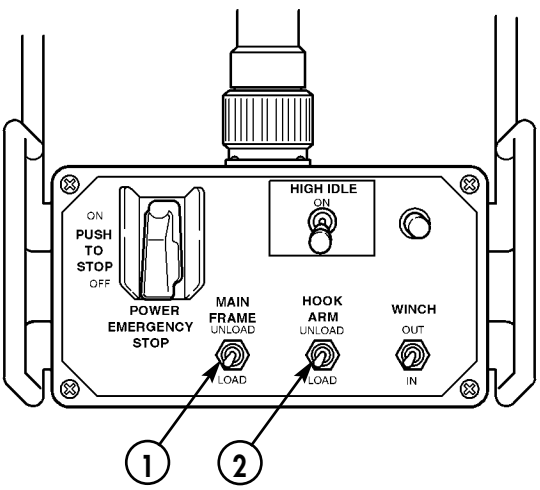
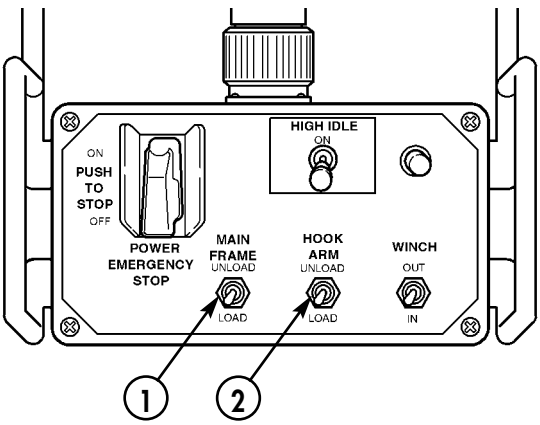


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
26	During	HOOK ARM SWITCH (2), MAIN FRAME switch (1), and cylinder (3)	**a.** Move HOOK ARM switch to LOAD and hold until hook arm cylinders are extended approximately 6 in. (15 cm). If not, use manual operation. (Refer to WP 0049 00.)	**a.** Cylinder arms will not operate.
			b. Move MAIN FRAME switch to LOAD and hold until main frame is in stowed position. If not, use manual operation. (Refer to WP 0049 00.)	**b.** Main frame will not move to stowed position.
			c. Move HOOK ARM switch to LOAD and hold until hook arm is in stowed position. If not, use manual operation. (Refer to WP 0049 00.)	**c.** Hook arm will not move to stowed position.



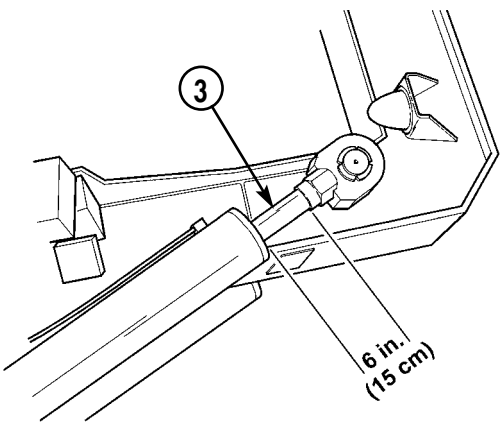
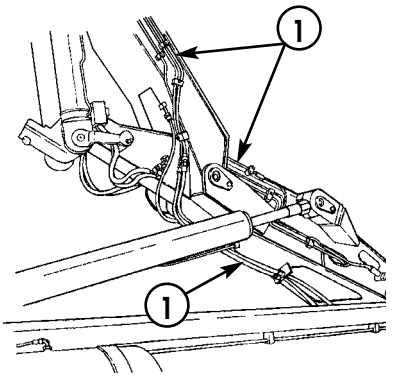
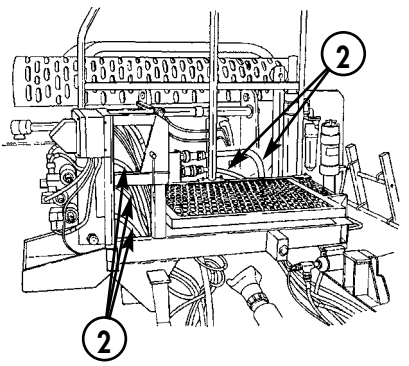
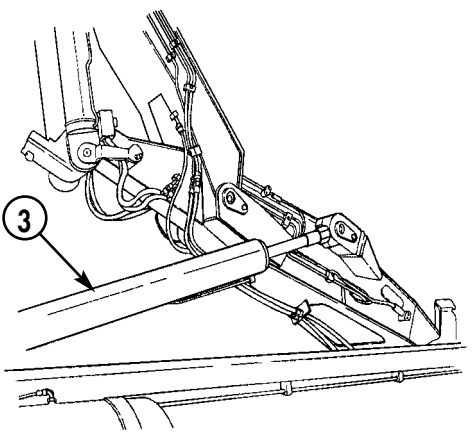


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
27	After	Tube assemblies (1) and hoses (2)	**a.** Visually check tube assemblies for cracks, kinks, and leaks. **b.** Visually check hoses for leaks.	**a.** Cracked or kinked tubes impair operation or result in Class III leaks. **b.** Any Class III leaks are detected.
28	After	Cylinders (3) and (4)	Visually check lift cylinders for leaks, damage, or missing hardware.	Any Class III leaks are detected or cylinders are damaged.







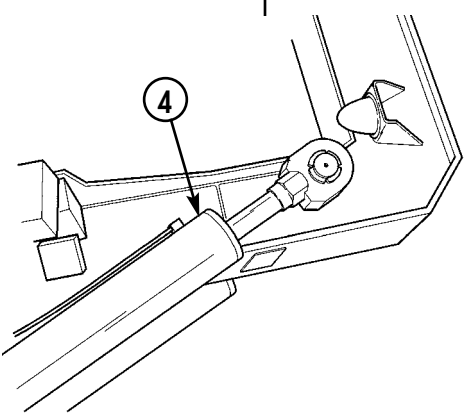
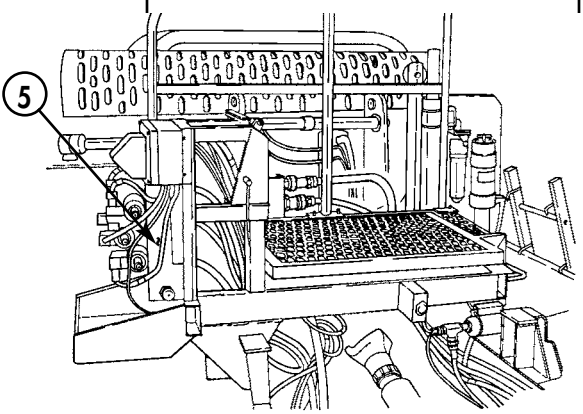


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			WARNING When checking main manifold, keep clear of CBT exhaust system. Exhaust system may be hot! Failure to comply may result in injury to personnel.	
29	After	Main manifold (5)	Visually check main manifold for leaks or damaged hardware.	Any Class III leaks are detected or hardware is damaged.
30	After	LHS rollers (6)	Check rollers for damage and binding.	Any rollers are broken, missing, or inoperable.



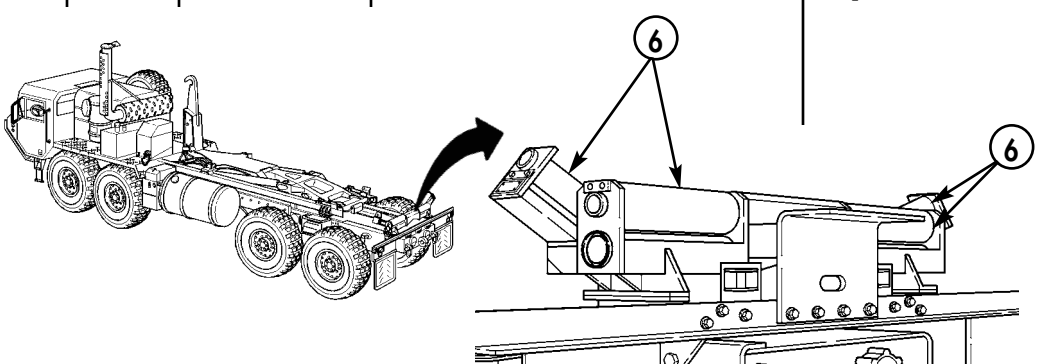
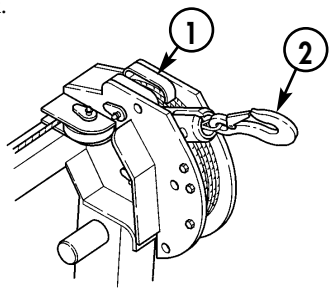
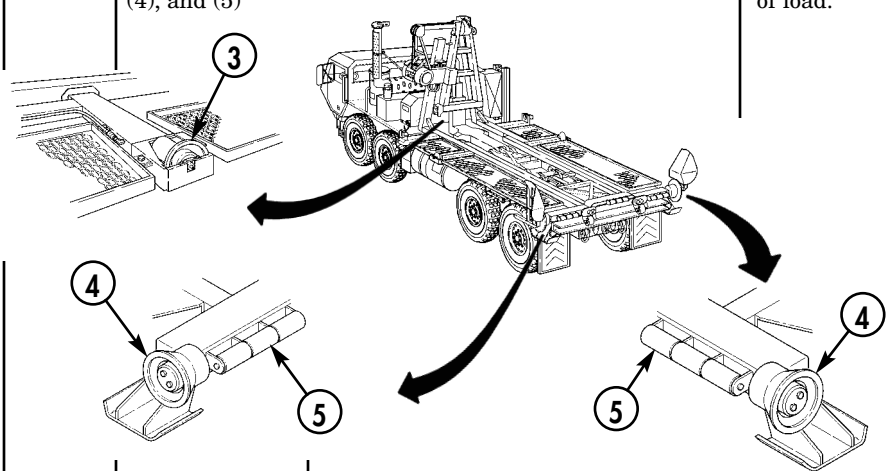


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Common Bridge Transporter (CBT) (contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			CAUTION Ensure safety latch on BAP winch cable hook has not been removed from hook. Failure to comply may result in damage to equipment.	
31	After	Winch (1) and hook assembly (2)	**a.** Observe winch and cable operation. **b.** Ensure safety latch is present on hook. 	**a.** Winch fails to pay out or pay in cable properly, or any Class III fluid leak is noted.
32	After	Roller assemblies (3), (4), and (5)	Observe roller free rotation.	Rollers binding or prevent movement of load.
33	After	Hydraulic components and lines	Check for structural damage or fluid leaks.	Damage prevents components from proper operation, or any Class III fluid leak is noted.



END OF WORK PACKAGE

OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR RAMP BAY

THIS WORK PACKAGE SUPERSEDES WP 0015 00, DATED 8 APRIL 2003

This PMCS uses the one-look format. With bay on transporter, start at the front (connecting end) of bay ponton, proceeding counterclockwise. Refer to figure 1.

During PMCS, ensure that components and assemblies are *correctly installed*. Incorrect installation may cause equipment damage or failure.

When checking/servicing an item, ensure that all attaching/mounting hardware is properly secured. Loose, cracked, broken, or missing hardware may cause equipment failure or injury to personnel.

LUBRICATION

Perform lubrication checks and services after completing PMCS. (Refer to WP 0064 00.)

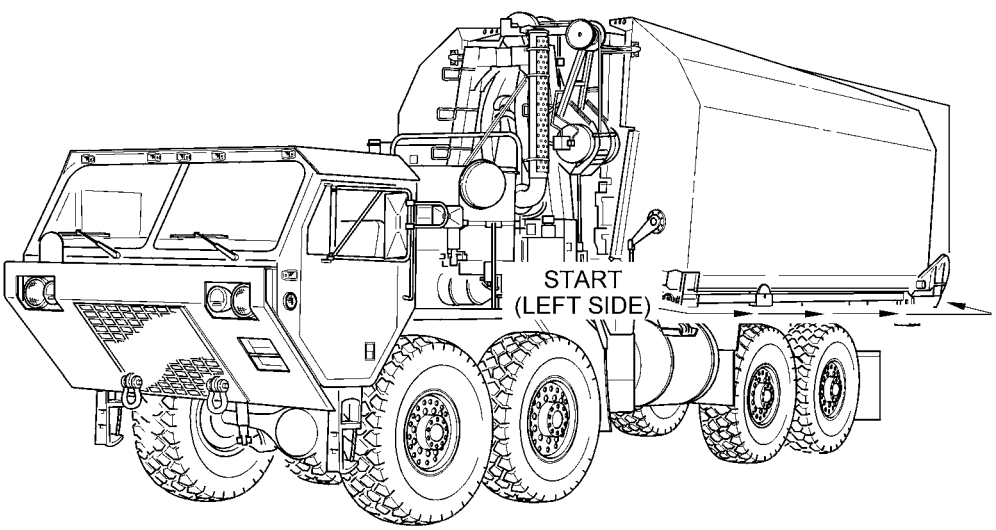


Figure 1. PMCS for Ramp Bay.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay.

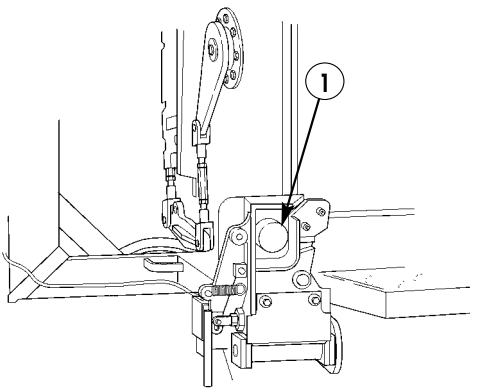
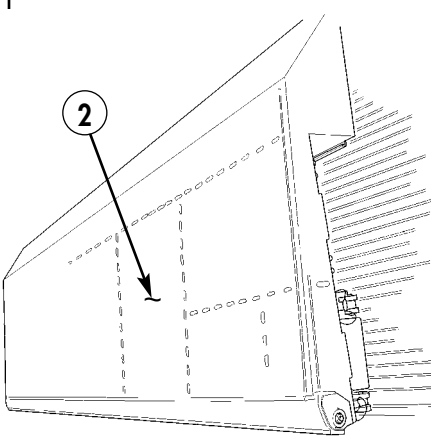
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			NOTE The time requirement to complete "Before" operation PMCS is 5 minutes per ramp bay.	
1	Before	Left front trunnion (1)	**a.** Check for structural damage.	**a.** Damage allows water to enter ponton. Any visible hole will deadline bay.
			b. Ensure trunnion is properly secured in lock.	**b.** Trunnion is not properly secured in lock.
				
2	Before	Left outer ponton skin surface along side (2)	Check for structural damage. 	Puncture, tear, or damage allows water to enter ponton. Any visible hole will deadline bay.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

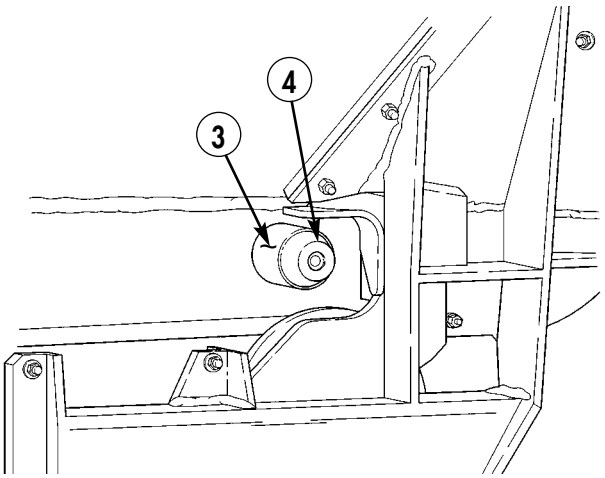
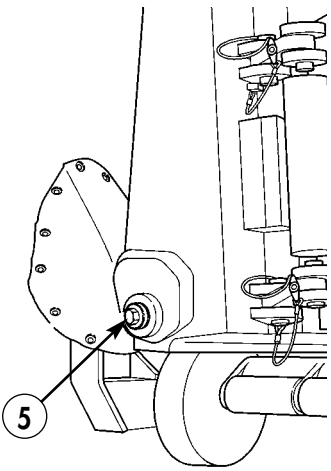
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
3	Before	Left rear trunnion (4) and wear cap (3)	Check for structural damage.	Damage allows water to enter ponton. Any visible hole will deadline bay.
				
4	Before	Left drain plug (5)	Ensure drain plug is secured and not cracked or broken. 	Plug is missing, cracked, or broken.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

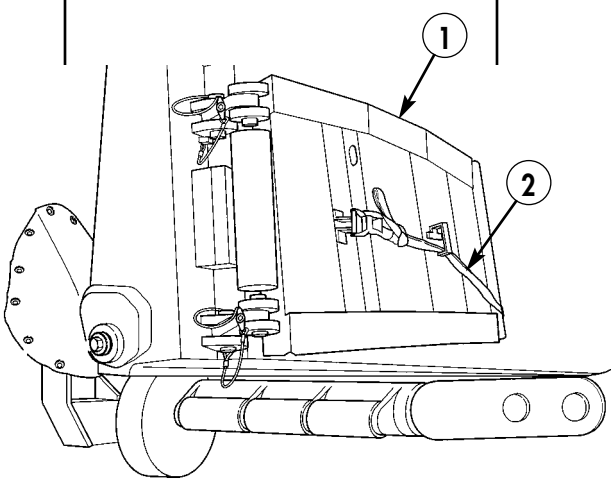
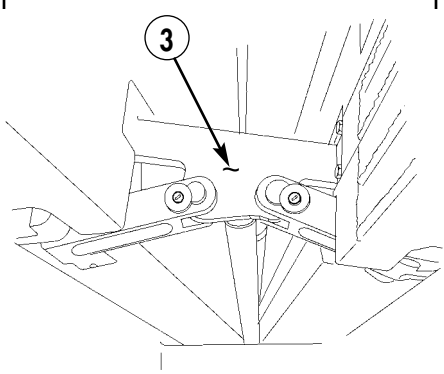
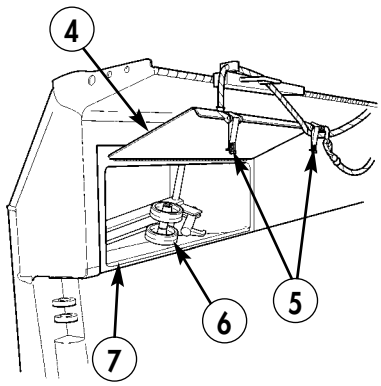
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
5	Before	Left ramp plate (1) and strap (2)	**a.** Check for structural damage. **b.** Ensure plate is secured with straps. 	**a.** Damage allows water to enter ponton. Any visible hole will deadline bay.
6	Before	Left stabilizer assembly (3)	Check for cracks, if bent, or if pins are loose or missing. 	Stabilizer is cracked or bent, or pins are loose or missing.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
7	Before	Left stowage compartment latches (5), lid (4), compartment seal (7), and BII (6)	Check for loose, damaged, or missing mounting hardware, latches, compartment seal, and BII. (Refer to WP 0044 00 for Basic Issue Items required in ramp bay stowage compartments.)	Lid and latches are loose, will not close, or are missing. All BII are not present and operational.
8	Before	left and right lower roadway ponton drain plugs (8)	Ensure drain plugs are secured and not cracked or broken.	Any drain plug is missing, cracked, or broken.



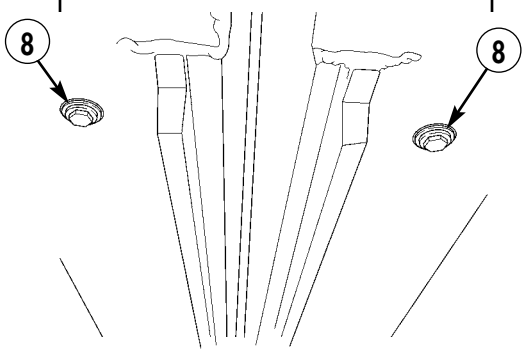


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

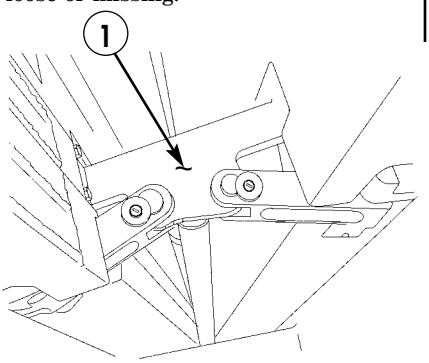
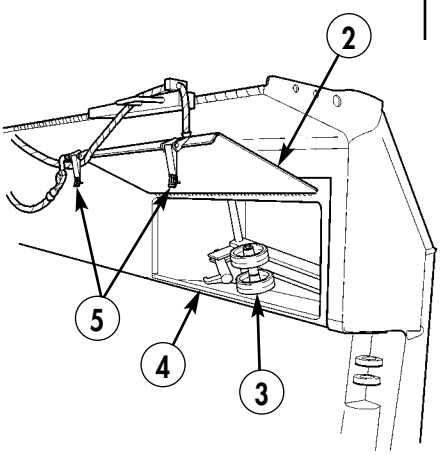
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
9	Before	Right stabilizer assembly (1)	Check for cracks, if bent, or if pins are loose or missing. 	Stabilizer is cracked or bent, or pins are loose or missing.
10	Before	Right stowage compartment latches (5), lid (2), compartment seal (4), and BII (3)	Check for loose, damaged, or missing mounting hardware, latches, compartment seal, and BII. (Refer to WP 0044 00 for Basic Issue Items required in ramp bay stowage compartments.) 	Lid and latches are loose, will not close, or are missing. All BII are not present and operational.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

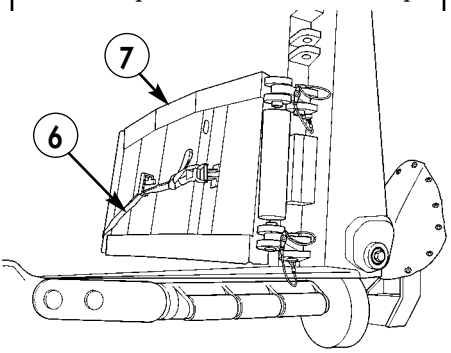
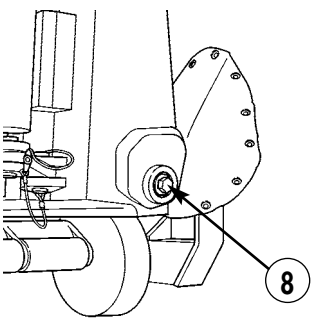
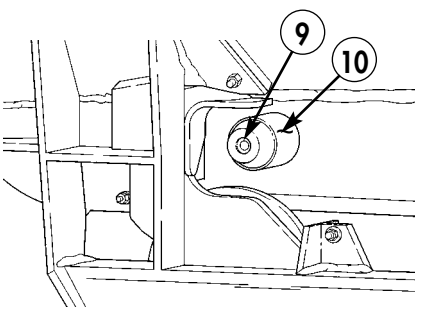
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
11	Before	Right ramp plate (7) and straps (6)	**a.** Check for structural damage. **b.** Ensure plate is secured with straps. 	**a.** Damage allows water to enter ponton. Any visible hole will deadline bay.
12	Before	Right drain plug (8)	Ensure drain plug is secured and not cracked or broken. 	Drain plug is missing, cracked, or broken.
13	Before	Right rear trunnion (9) and wear cap (10)	Check for structural damage. 	Damage allows water to enter ponton. Any visible hole will deadline bay.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

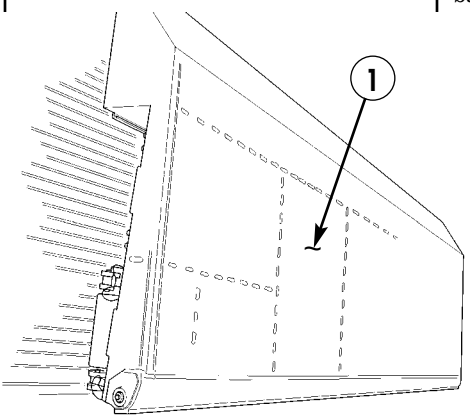
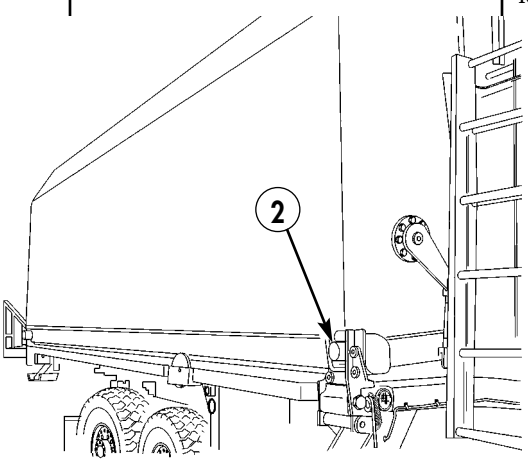
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
14	Before	Right outer ponton skin surface along side (1)	Check for structural damage.	Puncture, tear, or damage allows water to enter ponton. Any visible hole will deadline bay.
				
15	Before	Right front trunnion (2)	**a.** Check for structural damage.	**a.** Damage allows water to enter ponton. Any visible hole will deadline bay.
			b. Ensure trunnion is properly secured in lock.	**b.** Trunnion is not properly secured in lock.
				

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

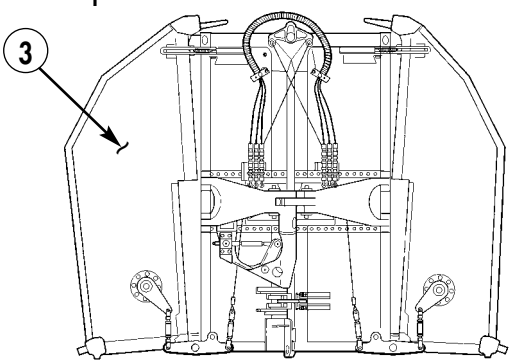
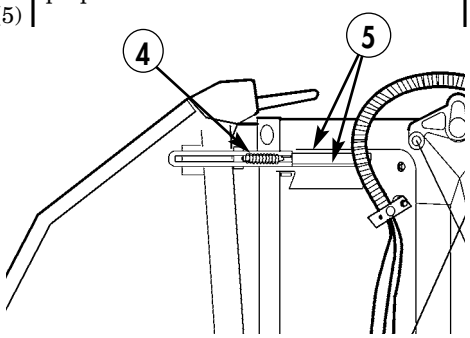
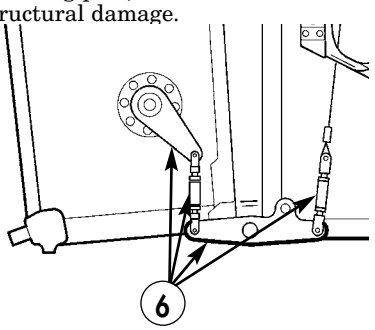
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
16	Before	Right outer ponton skin surface at end (3)	Check for structural damage. 	Puncture, tear, or damage allows water to enter ponton. Any visible hole will deadline bay.
17	Before	Right foldlock assembly (4) and brackets (5)	Check for structural damage and proper movement. 	Damage prevents foldlock from securing ponton.
18	Before	Right unfolding mechanism (6) and torsion bar	Check torsion bar, stabilizer lever, retaining pins, and turnbuckle for structural damage. 	Damage prevents proper operation of unfolding mechanism.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

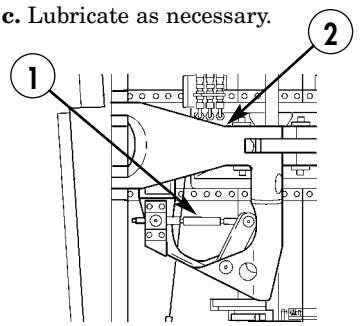
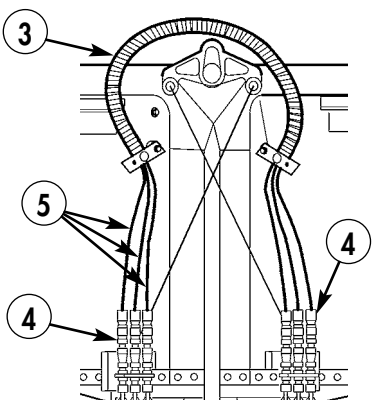
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
19	Before	Right double eye yoke (2), cylinder, and lower lock-drive assembly (1)	**a.** Check for structural damage and corrosion. **b.** Check cylinder for leaks. **NOTE** To prevent seizure and distortion, ensure lower lock-drive jackscrew is backed-off one full rotation after lower lock-drive pin is fully retracted. **c.** Lubricate as necessary.  	**a.** Damage prevents proper jackscrew and pin operation. **b.** Any Class III fluid leak is noted.
20	Before	Right hydraulic hoses (5), connectors (4), and loom (3)	**a.** Check for proper seating of connectors. **b.** Check lines for fluid leaks or physical damage. **c.** Check loom for physical damage.  	**a.** Connectors are not seated properly. **b.** Any Class III fluid leak is noted.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

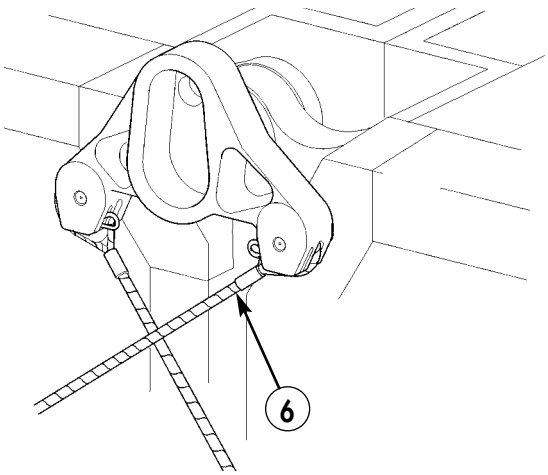
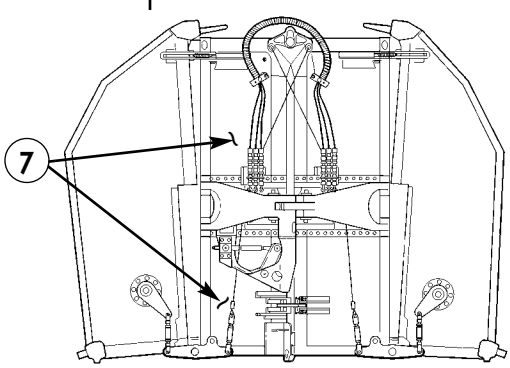
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
21	Before	Right unfolding cable assembly (6)	Check for looseness, kinks, broken strands, or compression.	Cable is loose, kinked, or compressed, or broken strands are noted.
				
22	Before	Right inner ponton skin surface (7)	Check for structural damage.	Puncture, tear, or damage allows water to enter ponton. Any visible hole will deadline bay.
				

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			NOTE Perform items 23 through 27 from top of ramp bay, starting at front (connecting end), proceeding counterclockwise. (Refer to figure 2.)	

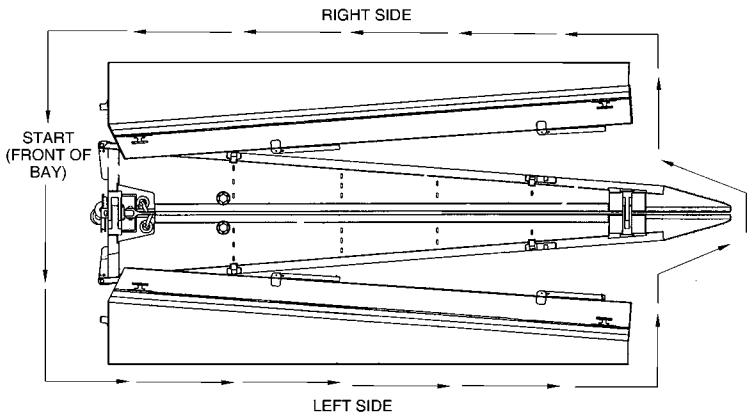


Figure 2. PMCS for Ramp Bay.

23	Before	Left and right front load receiving pin (3), recess (4), cleat (1), and splash plate (2)	**a.** Check pin and mounting hardware for cracks or if missing. **b.** Check recess for cracks and broken welds. **c.** Check cleat for broken welds or if missing.	**a.** Pin is missing or damage prevents use.

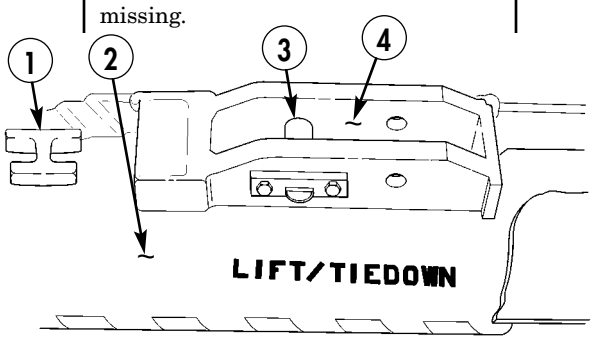


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

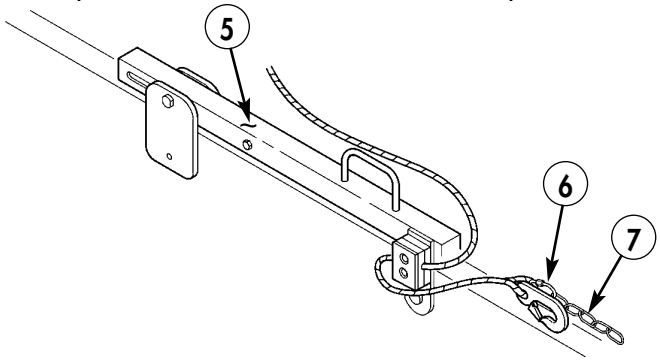
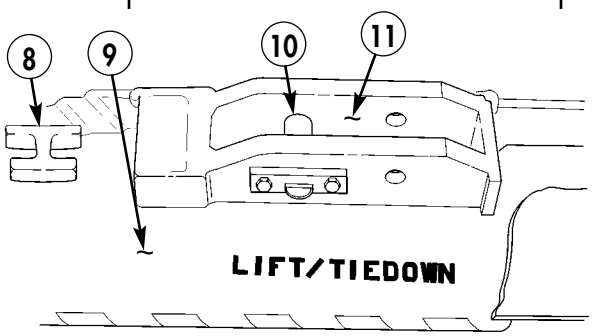
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
24	Before	Left and right handrail assemblies (5), chain extension (7), and chain linker (6)	Check for missing or damaged mounting hardware, rope and deterioration of rope, snaphooks, chain extensions, chain linkers, and if stanchion will lock in stowed and set positions.	Missing or damaged parts are found or stanchion is not operational.
				
25	Before	Left and right rear load receiving pin (10), recess (11), cleat (8), and splash plate (9)	**a.** Check pin and mounting hardware for cracks or if missing. **b.** Check recess for cracks and broken welds. **c.** Check cleat for broken welds or if missing.	**a.** Pin is missing or damage prevents use.
				

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

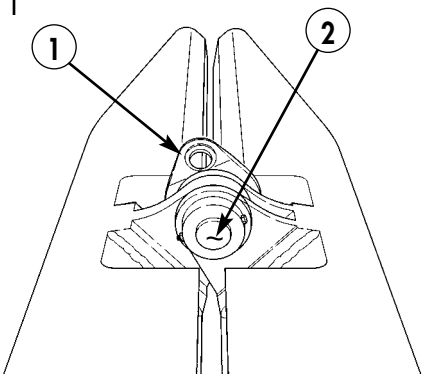
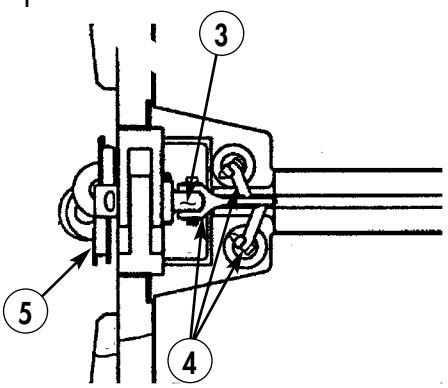
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
26	Before	Rear lifting lug (1) and eyebolt (2)	Check for damage or if missing. 	Missing or damaged parts.
27	Before	Front lifting lug (5), eyebolt (3), and lever assembly (4)	Check for damaged, loose, or missing parts. 	Any damaged, loose, or missing parts.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

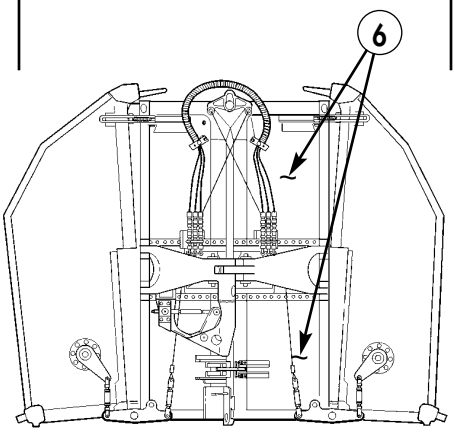
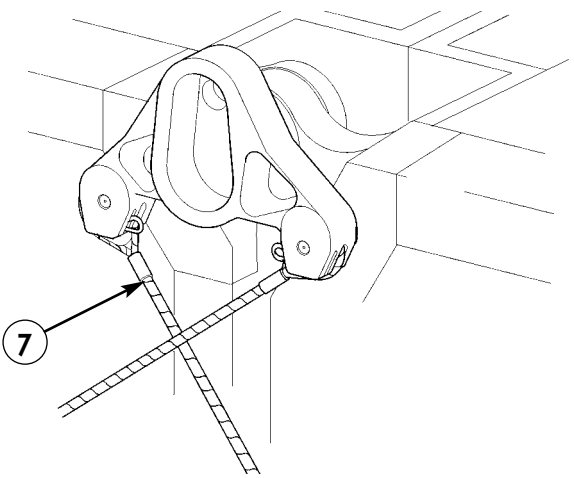
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
28	Before	Left inner ponton skin surface (6)	Check for structural damage. 	Puncture, tear, or damage allows water to enter ponton. Any visible hole will deadline bay.
29	Before	Left unfolding cable assembly (7)	Check for looseness, kinks, broken strands, or compression. 	Cable is loose, kinked, or compressed, or broken strands are noted.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

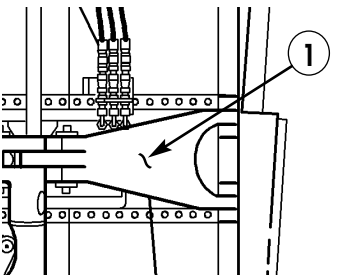
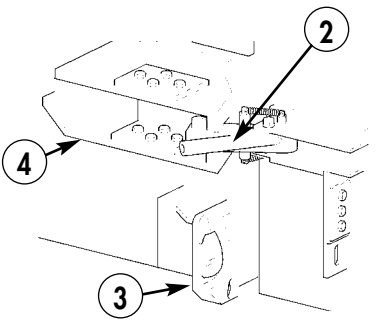
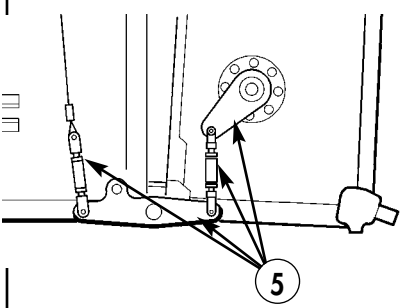
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
30	Before	Left single yoke (1) and cylinder	**a.** Check for structural damage and corrosion. **b.** Check cylinders for leaks. 	**a.** Damage prevents proper jackscrew and pin operation. **b.** Any Class III fluid leak noted.
31	Before	Travel latch 2), receptacle (4), and cable guide (3)	Check for structural damage and proper latch movement. 	Damage prevents latch from being engaged in receptacle.
32	Before	Left unfolding mechanism (5) and torsion bar	Check torsion bar, stabilizer lever, retaining pins, and turnbuckle for structural damage. 	Damage prevents proper operation of unfolding mechanism.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

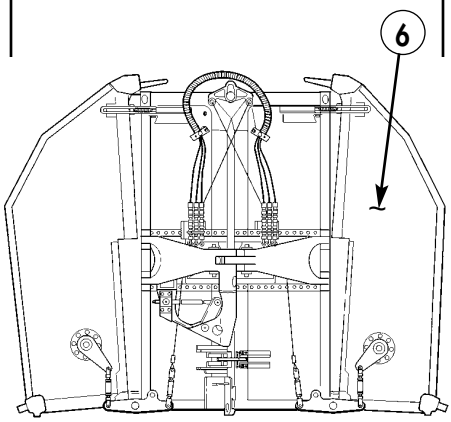
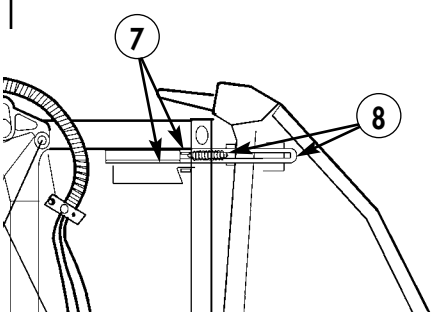
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
33	Before	Left outer ponton skin surface (6) at end	Check for structural damage. 	Puncture, tear, or damage allows water to enter ponton. Any visible hole will deadline bay.
34	Before	Left foldlock assembly (8) and brackets (7)	Check for structural damage and proper movement. 	Damage prevents foldlock from securing ponton.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			CAUTION Ensure longitudinal and transverse couplings and swivel hooks are engaged before performing "During" operation. **NOTE** Perform items 35 through 47 with ramp bay unfolded and secured, starting at front (connecting end), proceeding counterclockwise. (Refer to figure 3.)	

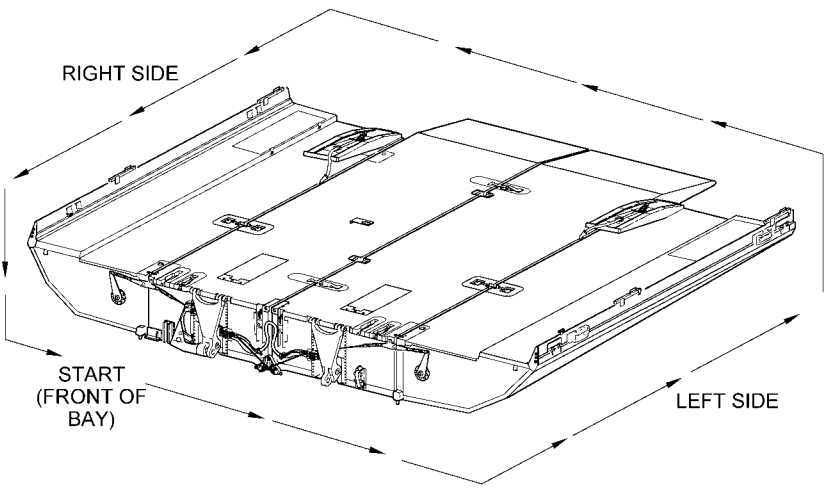


Figure 3. PMCS, Ramp Bay Unfolded.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

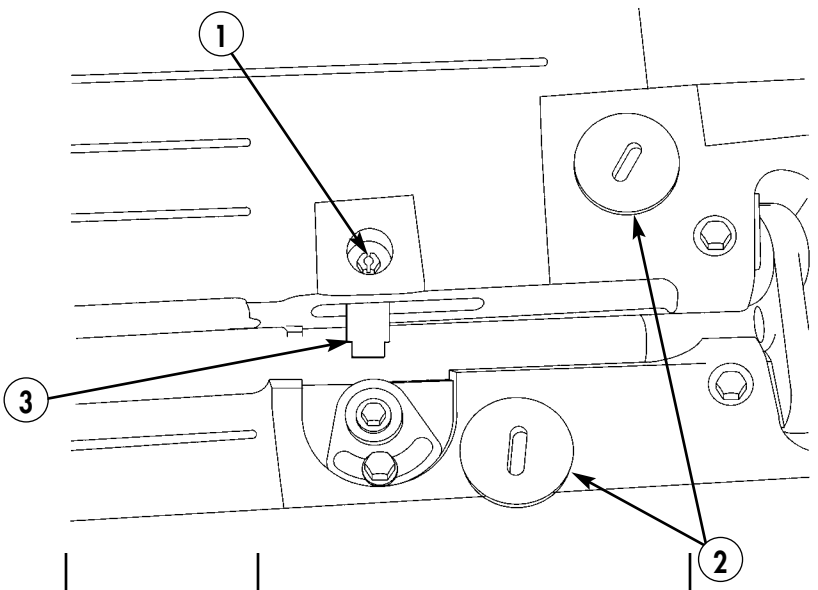
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
35	During	Right front swivel hook assembly (1), indicator (3), and bilge plugs (2)	**a.** Check hook for structural damage. **b.** Check that indicator is present. **NOTE** If a hole is observed, monitor the bridge or raft's performance. If visual evidence of taking on water is observed (like riding low in water), pump the water out while operations continue. If the water intake is faster than the pumping capacity, remove and replace the damaged bay. The damaged bay is deadlined until repairs are made. **c.** Ensure bilge plugs are secured and not cracked or broken.	**a.** Damage prevents proper hook operation. **c.** Any plug is missing, cracked, or broken.
				

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

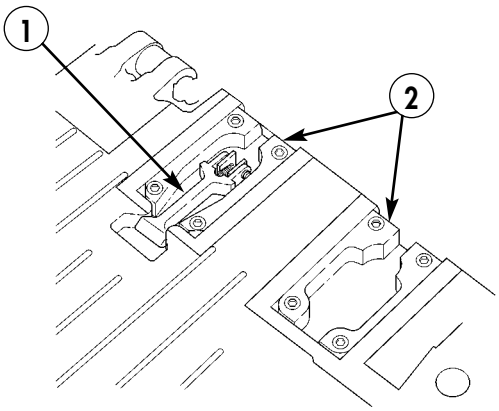
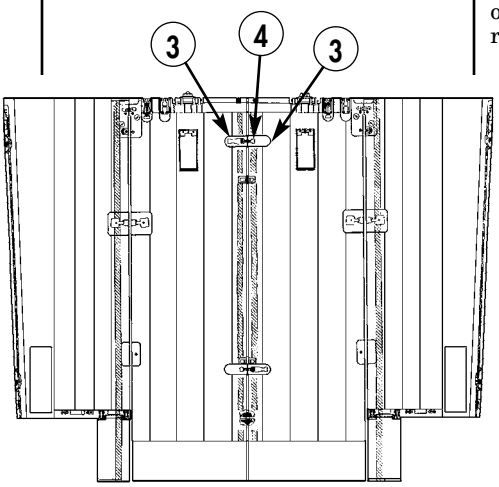
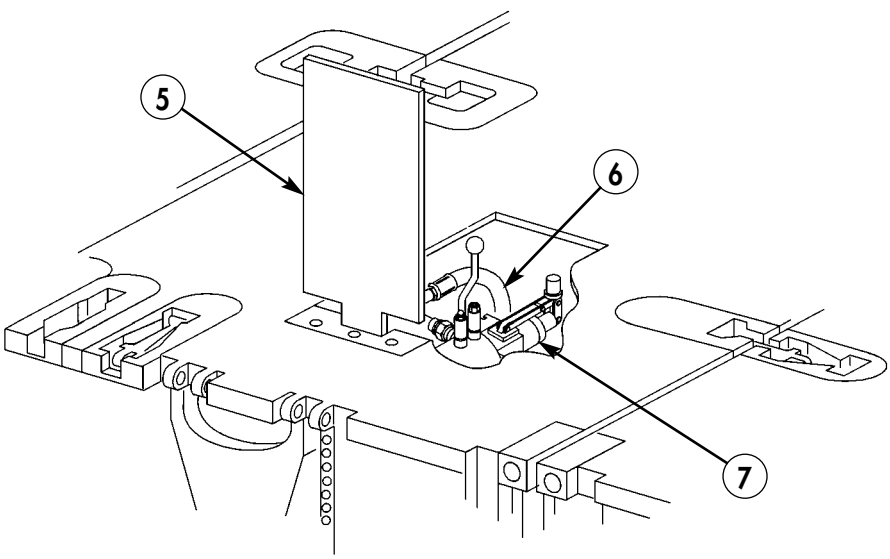
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
36	During	Right front longitudinal upper coupling (1) and receptacle blocks (2)	Check for proper operation and structural damage.	Damage prevents coupling from proper operation or seating in receptacle.
				
37	During	Front transverse upper coupling (4) and receptacle blocks (3)	Check for proper operation and structural damage.	Damage prevents coupling from proper operation or seating in receptacle.
				

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			NOTE PMCS for right and left fluid pump assemblies is the same. Right pump is shown.	
38	During	Right fluid pump cover (5), pump (7), and hoses (6)	**a.** Check for structural damage. **b.** Check pump for proper fluid level and leaks. Fill as required. **c.** Check pump for proper operation.	**a.** Pump cover is missing. **b.** Any Class III fluid leak is noted. **c.** Pump is not operational.
39	During	Left fluid pump cover (5), pump (7), and hoses (6)	**a.** Check for structural damage. **b.** Check pump for proper fluid level and leaks. Fill as required. **c.** Check pump for proper operation.	**a.** Pump cover is missing. **b.** Any Class III fluid leak is noted. **c.** Pump is not operational.



RIGHT PUMP SHOWN

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
40	During	Left front longitudinal upper coupling (1) and receptacle blocks (2)	Check for proper operation and structural damage.	Damage prevents coupling from proper operation or seating in receptacle.

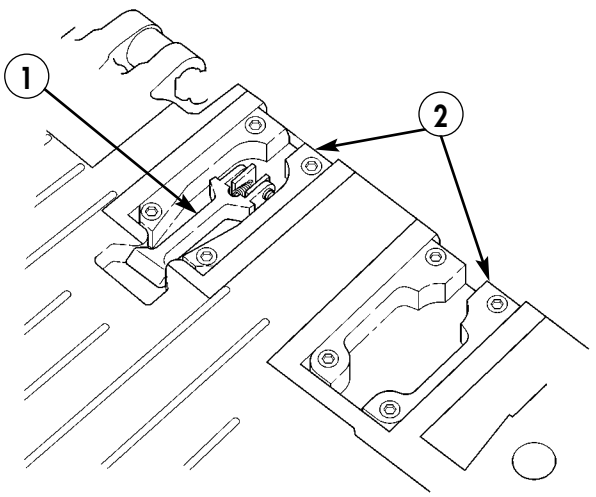


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

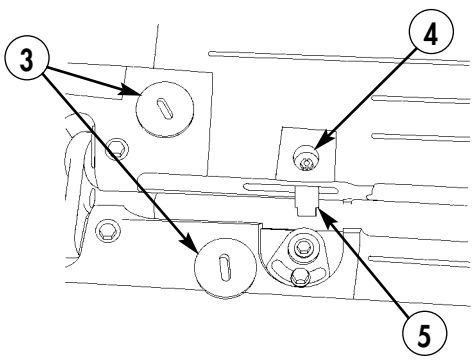
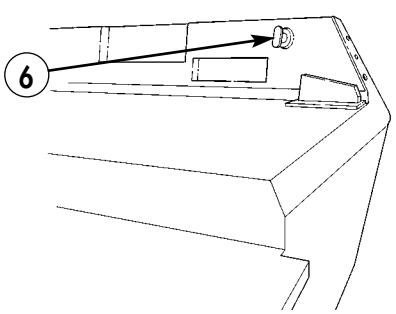
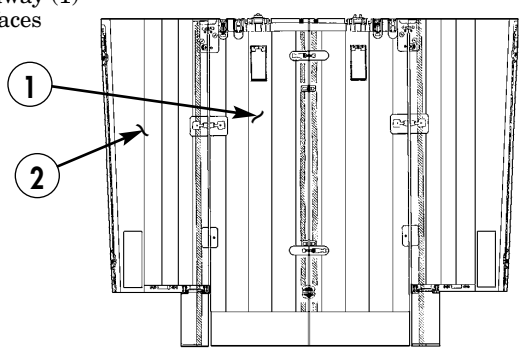
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
41	During	Left front swivel hook assembly (4), indicator (5), and bilge plugs (3)	**a.** Check hook for structural damage. **b.** Check that indicator is present. **NOTE** If a hole is observed, monitor the bridge or raft's performance. If visual evidence of taking on water is observed (such as riding low in water), pump the water out while operations continue. If the water intake is faster than the pumping capacity, remove and replace the damaged bay. The damaged bay is deadlined until repairs are made. **c.** Ensure bilge plugs are secured and not cracked or broken.	**a.** Hook does not engage or disengage. **c.** Any plug is missing, cracked, or broken.
				
42	During	Left belay cleat (6)	Check for damage or if missing. 	

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			NOTE If a hole is observed, monitor the bridge or raft's performance. If visual evidence of taking on water is observed (such as riding low in water), pump the water out while operations continue. If the water intake is faster than the pumping capacity, remove and replace the damaged bay. The damaged bay is deadlined until repairs are made.	
43	During	Left personnel walkway (2) and roadway (1) surfaces	Check for structural damage, deformity, holes, and tears.	Damage prevents safe traffic crossing or causes personnel safety hazard.
44	During	Rear transverse upper coupling (3) and receptacle blocks (4)	Check for proper operation and structural damage.	Damage prevents coupling from proper operation or seating in receptacle.



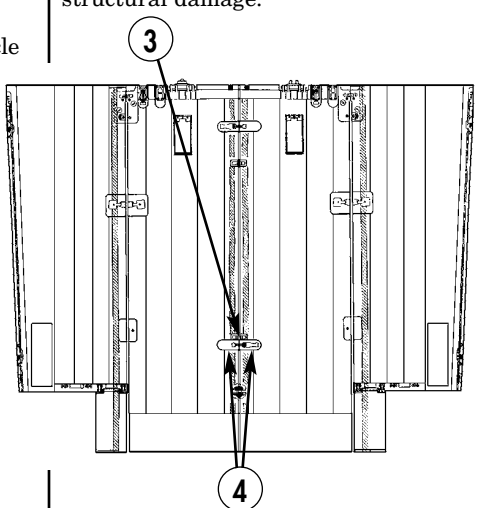


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

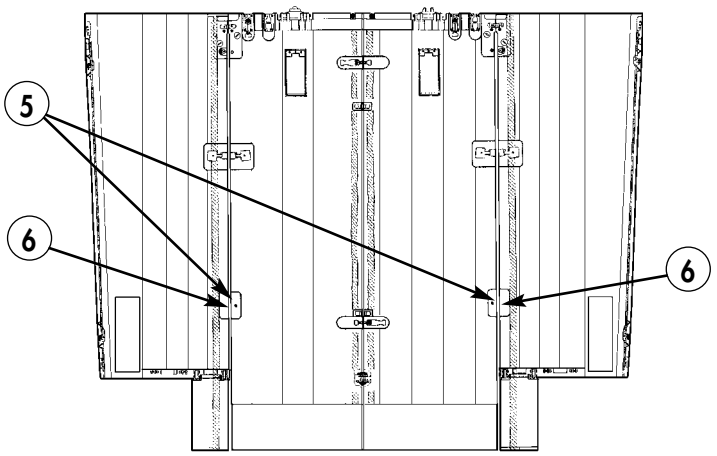
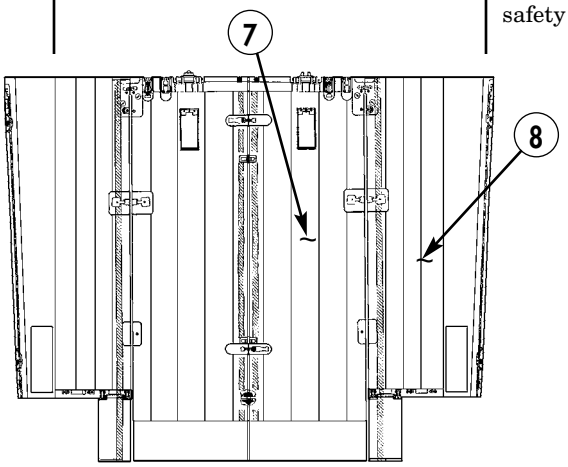
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
45	During	Left and right rear swivel plates (5) and indicators (6)	**a.** Check hook for structural damage. **b.** Check that indicator is present.	**a.** Damage prevents proper plate operation.
				
46	During	Right roadway (7) and walkway (8) surfaces	Check for structural damage, deformity, holes, and tears.	Damage prevents safe traffic crossing or causes personnel safety hazard.
				

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

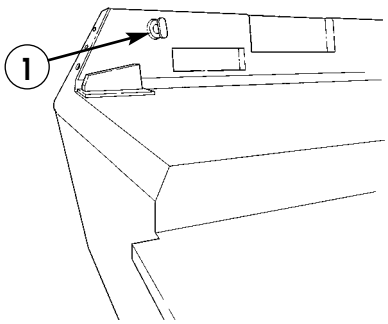
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
47	During	Right belay cleat (1)	Check for damage or if missing.  **CAUTION** Ensure all gravel, rocks, mud, and other debris are removed from openings at unfolding stabilizer mounting brackets prior to folding bay. Failure to comply may result in jamming during folding operations. **NOTE** The time requirement to complete "After" operation PMCS is 10 minutes per ramp bay. Refer to WP 0053 00 for power wash pump operating instructions.	
48	After	Walkways and roadways	**a.** Check to ensure that all dirt, mud, snow, ice, and debris are removed. **b.** Check for structural damage incurred during operation.	**b.** Damage prevents recovery.
49	After	Fluid system components	Check for fluid leaks.	Any Class III fluid leak is noted.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Improved Ribbon Bridge Ramp Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			CAUTION Check to ensure swivel hooks and swivel plates are fully retracted before retrieving bay, or damage to equipment will result.	
50	After	Foldlocks, travel latch, and receptacles	Check for structural damage and operation.	Damage prevents locks or latches from securing bay.
			NOTE Perform the following "After" operation checks when bay is recovered and secured to CBT. If more than 4 gallons of water is drained from any ponton with bay in water less than 8 hours, notify unit maintenance.	
51	After	Drain plugs	**a.** Remove and drain accumulated water from pontons.	
			b. Ensure drain plugs are secured and not cracked or broken.	**b.** Any drain plug is missing, cracked, or broken. Any visible hole will deadline a bay.
52	After	Ramp bay	Check for structural damage.	Damage prevents bay from being used for next mission.
53	After	Lower lock-drive jack screw	Lubricate threads.	

END OF WORK PACKAGE

OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR INTERIOR BAY

THIS WORK PACKAGE SUPERSEDES WP 0016 00, DATED 8 APRIL 2003

This PMCS uses the one-look format. With bay on the transporter, start at the left outer ponton nearest the driver's side of cab, proceeding counterclockwise. (Refer to figure1.)

During PMCS, ensure that components and assemblies are *correctly installed*. Incorrect installation may cause equipment damage or failure.

When checking/servicing an item, ensure that all attaching/mounting hardware is properly secured. Loose, cracked, broken, or missing hardware may cause equipment failure or injury to personnel.

LUBRICATION

Perform lubrication checks and services after completing PMCS. (Refer to WP 0064 00.)

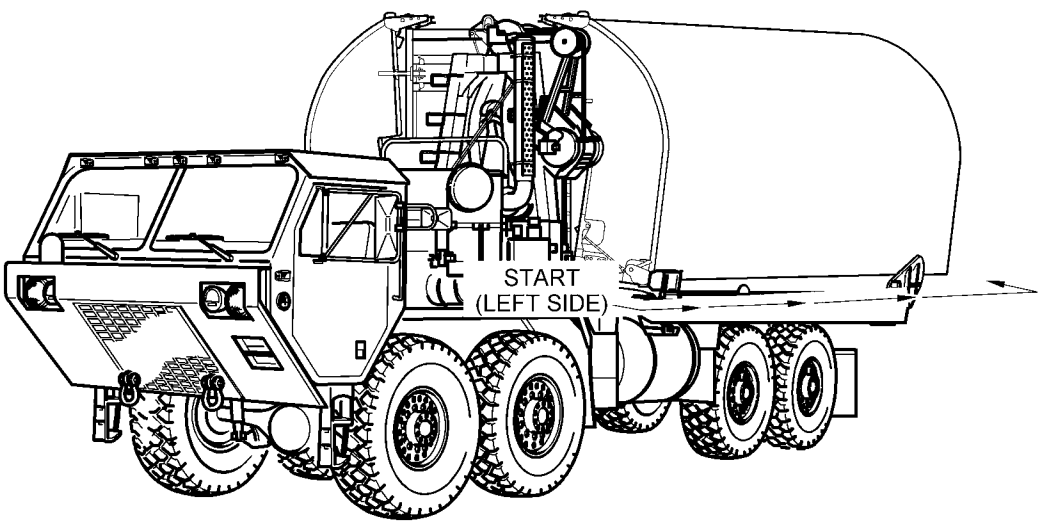


Figure 1. PMCS for Interior Bay.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay.

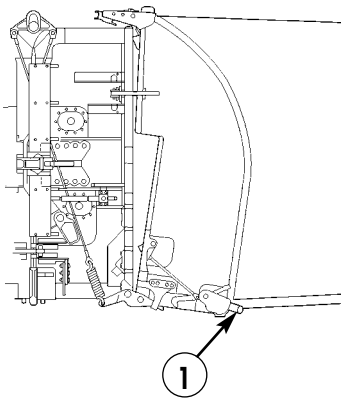
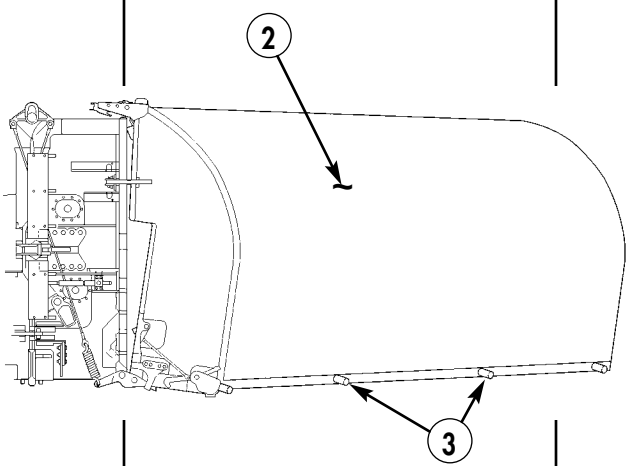
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			NOTE The time requirement to complete "Before" operation PMCS is 5 minutes per bay.	
1	Before	Left front trunnions (1) on left outer ponton	Check for cracks or broken welds, or if bent.  	Cracked or broken welds are found, or if bent enough to prevent securing bay to transporter.
2	Before	Left outer ponton skin surface (2) and trannions (3) along side	Check for cracks or broken welds, or if bent.  	Cracked or broken welds are found, or if bent enough to prevent securing bay to transporter.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

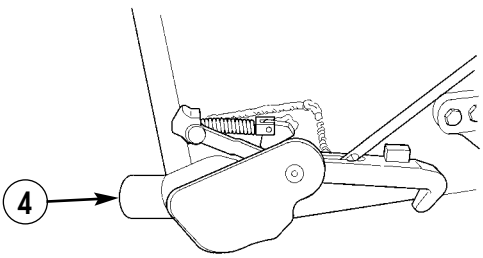
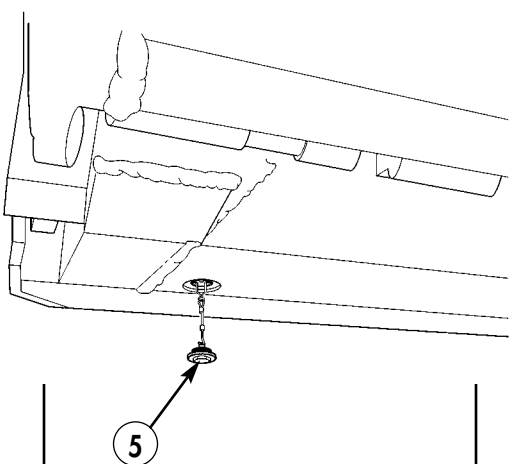
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
3	Before	Left rear trunnion (4) on left outer ponton	Check for cracks or broken welds, or if bent.	Cracked or broken welds are found, or if bent enough to prevent securing bay to transporter.
				
4	Before	Left drain plug (5)	Check for damaged drain plug.	Damage allows water to enter ponton. Any visible hole will deadline bay.
				

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

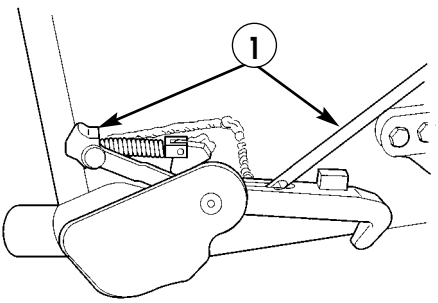
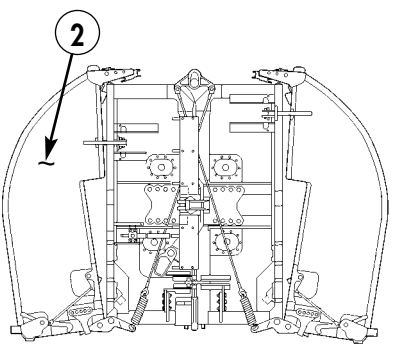
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
5	Before	Left outer ponton lock assembly (1) and brackets	Check for structural damage. 	Damage prevents proper locking operation.
6	Before	Left outer ponton skin surface (2) at end	Check for structural damage. 	Damage allows water to enter ponton. Any visible hole will deadline bay.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

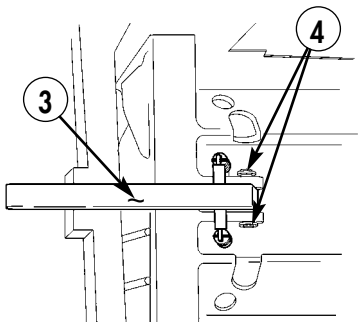
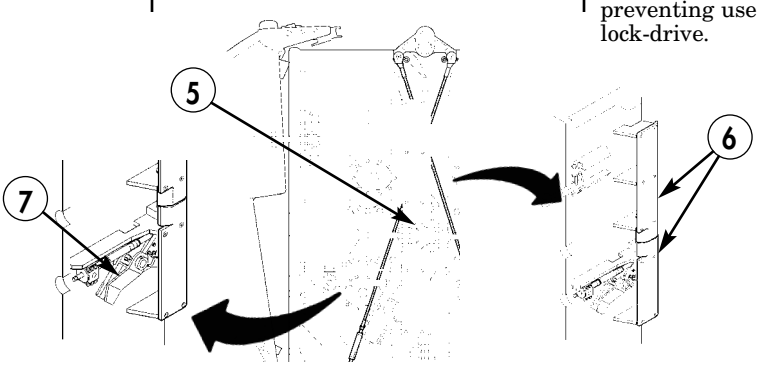
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
7	Before	Left foldlock assembly (3) and brackets (4)	Check for structural damage. 	Damage prevents proper foldlock operation.
8	Before	Left double-eye yoke (5), lower lock-drive assembly (7), and bumpers (6)	**a.** Check main lower coupling for cracks or broken welds.. **b.** Check jackscrew, trunnion caps, and pin for structural damage. **NOTE** To prevent seizure and distortion, ensure lower lock-drive jackscrew is backed-off one full rotation after lower lock-drive pin is fully retracted. **c.** Lubricate as necessary. **d.** Check bumpers and support brackets for cracks, broken welds, and deformation. **e.** Check for structural damage or missing or loose mounting hardware. 	**a.** Cracks or broken welds noted. **b.** Damage prevents porper pin operation. **d.** Cracks, broken welds, or deformation noted. **e.** Missing or loose mounting hardware preventing use of lock-drive.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

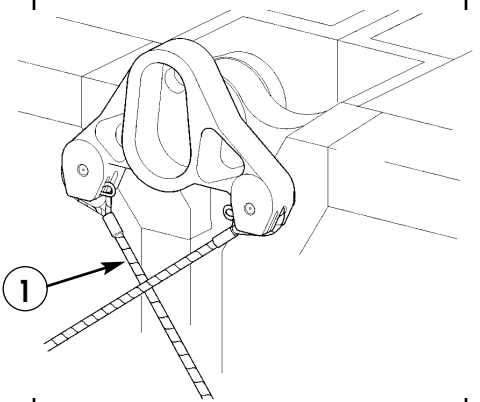
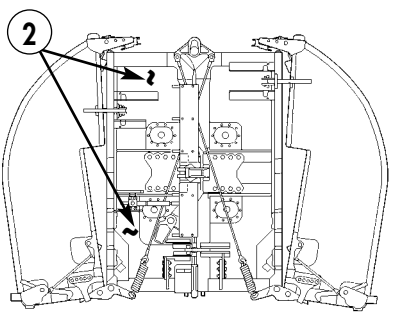
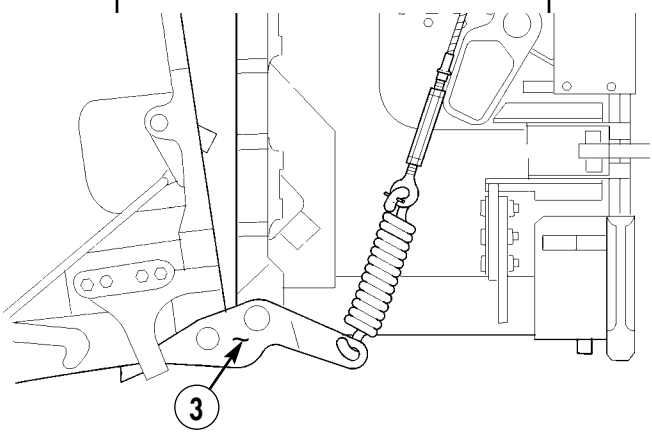
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
9	Before	Left unfolding cable assembly (1)	Check for looseness, kinks, broken strands, or compression. 	Cables are loose, kinked, or compressed, or broken strands are noted.
10	Before	Left inner ponton skin surface (2)	Check for structural damage. 	Damage allows water to enter ponton. Any visible hole will deadline bay.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
11	Before	Right unfolding mechanism (3)	**a.** Check bracket, stabilizer lever, rubber bumper, spring, and turnbuckle for physical damage. **b.** Check cable for looseness, kinks, broken strands, or compression.	**a.** Damage prevents proper unfolding operation. **b.** Cable is loose, kinked, or compressed, or broken strands are noted.
12	Before	Left inner ponton skin surface (4)	Check for structural damage.	Damage allows water to enter ponton. Any visible hole will deadline bay.



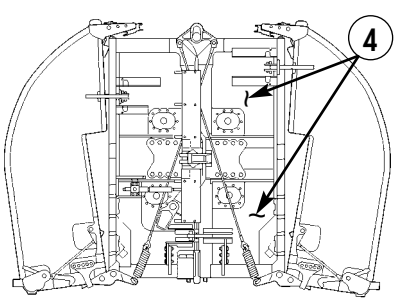


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

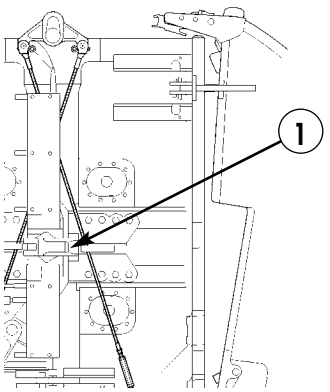
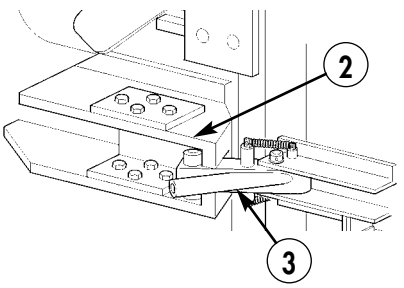
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
13	Before	Right single-eye yoke (1)	**a.** Check single-eye yoke for cracks or broken welds. **b.** Check for loose or missing hardware. 	**a.** Cracked or broken welds noted. **b.** Loose or missing hardware.
14	Before	Travel latch (3) and receptacle (2)	Check for structural damage, missing latch. 	Latch is missing or damage prevents latch movement/ proper operation.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

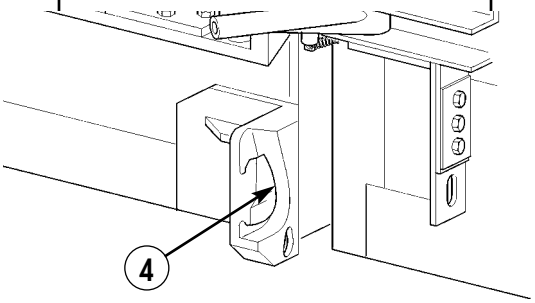
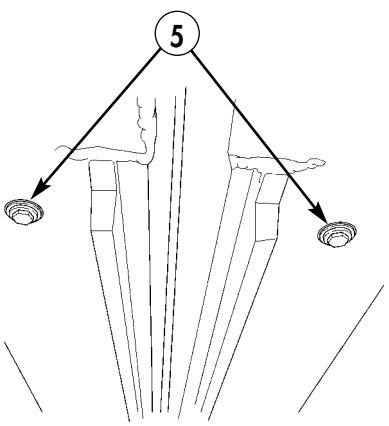
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
15	Before	Cable guide (4)	Check for structural damage, missing guide. 	Damage prevents using guide.
16	Before	Left and right roadway drain plugs (5)	Check drain plugs fro cracked or broken welds. 	Cracked or broken welds noted.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

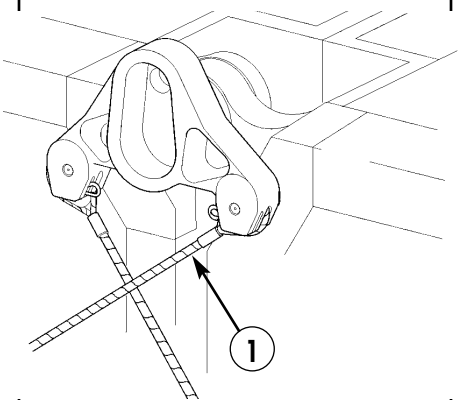
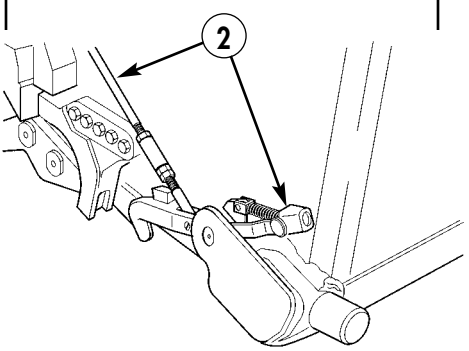
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
17	Before	Right unfolding cable assembly (1)	Check for looseness, kinks, broken strands, or compression. 	Cables are loose, kinked, or compressed, or broken strands are noted.
18	Before	Right outer ponton lock assembly (2) and brackets	**a.** Ensure outer ponton lock is assembled properly. **b.** Check brackets, spring pins, pins, spacers, lever, and connecting link for cracks, broken welds, binding, and deformation. 	**a.** Outer ponton lock not functioning properly. **b.** Broken welds or deformation noted.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

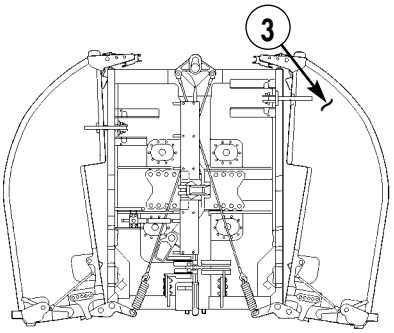
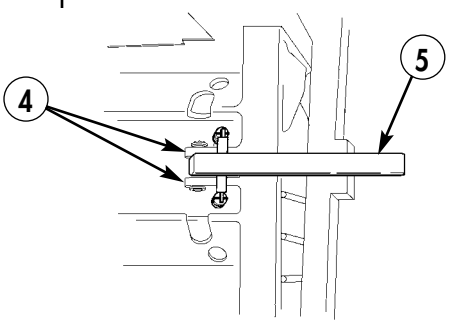
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
19	Before	Right outer ponton skin surface (3) at end	Check left outer ponton skin for damage. 	Damage allows water to enter ponton. Any visible hole will deadline bay.
20	Before	Right foldlock assembly (5) and brackets (4)	Check for structural damage. 	Damage prevents proper foldlock operation.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

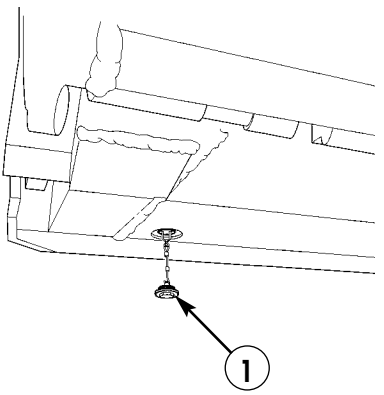
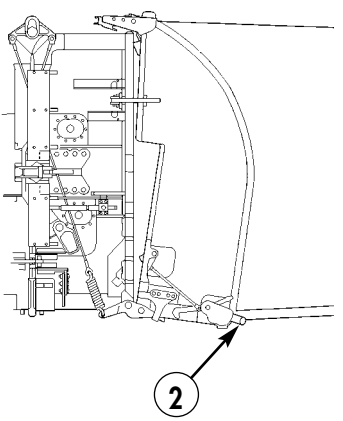
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
21	Before	Right drain plug (1)	Check drain plug for cracked or broken welds. 	Cracked or broken welds noted.
22	Before	Right rear trunnions (2) on right outer ponton	Check for cracks or broken welds, or if bent. 	Cracked or broken welds are found, or if bent enough to prevent securing bay to transporter.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

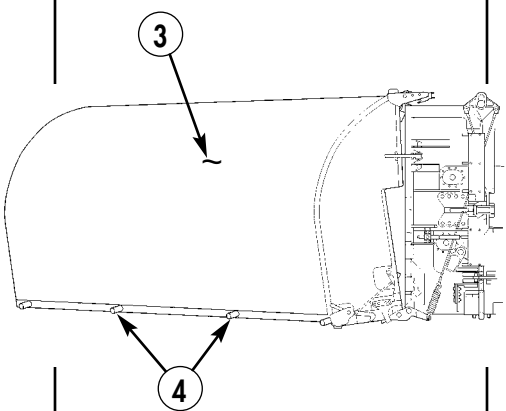
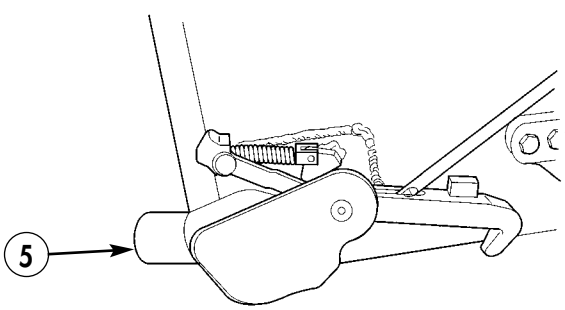
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
23	Before	RIght outer ponton skin surface (3) and trunnions (4) along side	Check for cracks or broken welds, or if bent. 	Cracked or broken welds are found, or if bent enough to prevent securing bay to transporter.
24	Before	Right front trunnion (5) on right outer ponton	Check for cracks or broken welds, or if bent. 	Cracked or broken welds are found, or if bent enough to prevent securing bay to transporter.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

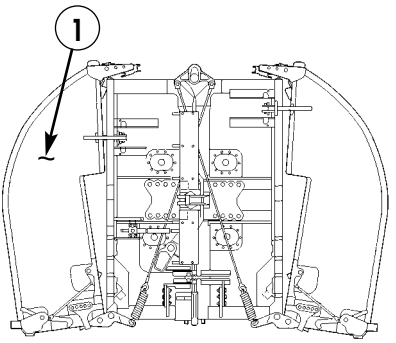
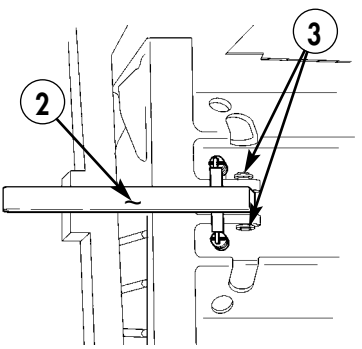
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
25	Before	Right outer ponton skin surface (1) at end	Check for structural damage. 	Damage allows water to enter ponton. Any visible hole will deadline bay.
26	Before	Right foldlock assembly (2) and brackets (3)	Check for structural damage. 	Damage prevents proper foldlock operation.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

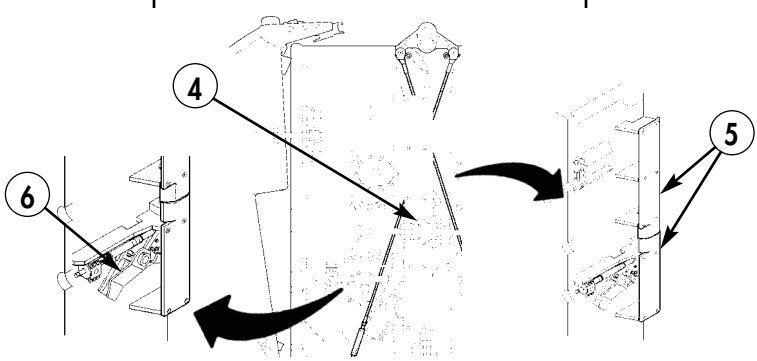
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
27	Before	Right double-eye yoke (4), lower lock-drive assembly (6), and bumpers (5)	**a.** Check main lower coupling for cracks or broken welds..	**a.** Cracks or broken welds noted.
			b. Check jackscrew, trunnion caps, and pin for structural damage.	**b.** Damage prevents porper pin operation.
			NOTE To prevent seizure and distortion, ensure lower lock-drive jackscrew is backed-off one full rotation after lower lock-drive pin is fully retracted.	
			c. Lubricate as necessary.	
			d. Check bumpers and support brackets for cracks, broken welds, and deformation.	**d.** Cracks, broken welds, or deformation noted.
			e. Check for structural damage or missing or loose mounting hardware.	**e.** Missing or loose mounting hardware preventing use of lock-drive.
				

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

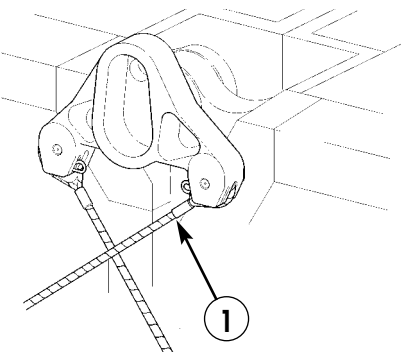
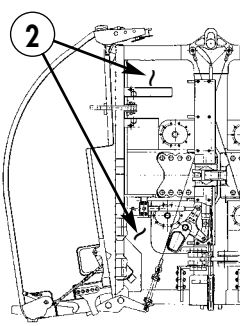
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
28	Before	Right unfolding cable assembly (1)	**a.** Check cable for kinks, compression, flat surfaces, broken or frayed strands, and proper tension. **b.** Check spring for deformation. **c.** Check turnbuckle for binding and loose or missing hardware.  	**a.** Cables kinked, compressed, flattened, or any strands broken. **b.** Spring stretched. **c.** Turnbuckle binding or loose, or hardware missing.
29	Before	Right inner ponton skin surface (2)	Check for structural damage.  	Damage allows water to enter ponton. Any visible hole will deadline bay.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

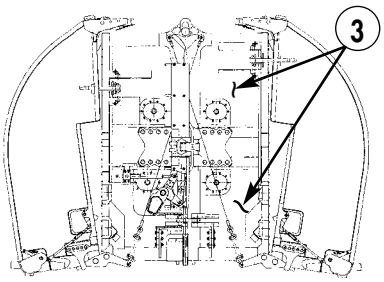
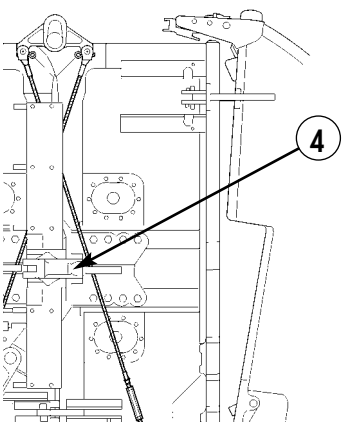
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
30	Before	Left inner ponton skin surface (3)	Check for structural damage. 	Damage allows water to enter ponton. Any visible hole will deadline bay.
31	Before	Left single-eye yoke (4)	**a.** Check single-eye yoke for cracks or broken welds. **b.** Check for loose or missing hardware. 	**a.** Cracked or broken welds noted. **b.** Loose or missing hardware.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

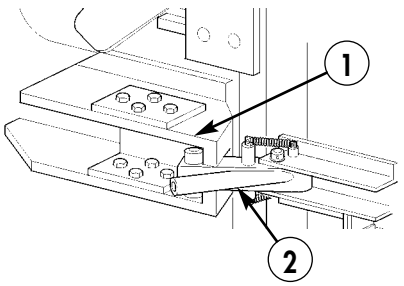
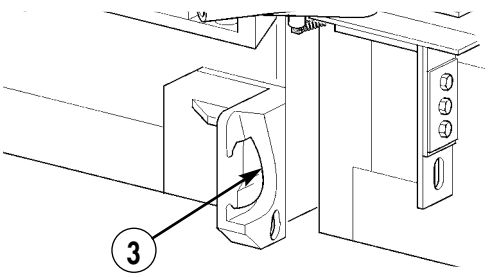
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
32	Before	Travel latch (2) and receptacle (1)	**NOTE** Receptacle, when properly adjusted, will allow latch to seat snugly in strike catches. Check brackets, shims, and strike catches for cracks, broken welds, binding, and deformation.  	Cracks, broken welds, binding, or deformation prevents engaging latch.
33	Before	Cable guide (3)	Check for structural damage, cracked welds, or missing guide.  	Cracked welds noted or damage prevents using guide.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

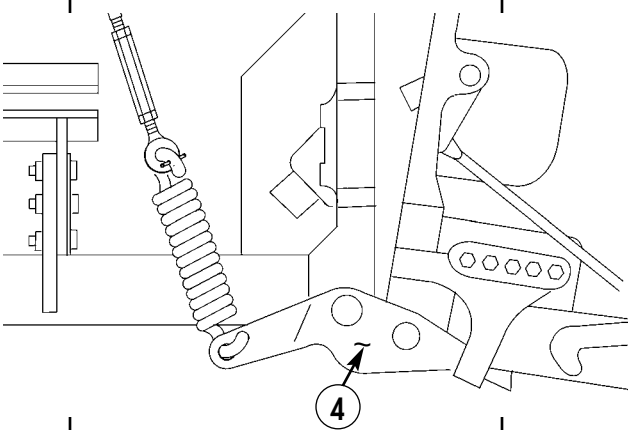
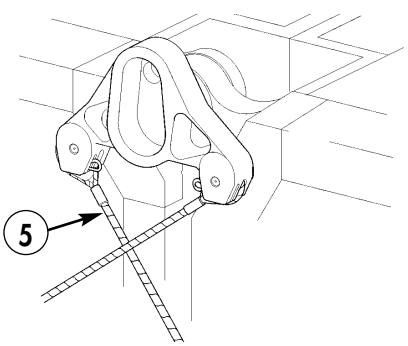
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
34	Before	Left unfolding mechanism (4)	**a.** Check bracket, stabilizer lever, rubber bumper, spring, turnbuckle, and cable for physical damage. **b.** Check cable for looseness, kinks, broken strands, or compression.  	**a.** Damage prevents proper unfolding operation. **b.** Cable is loose, kinked, compressed, or broken strands are noted.
35	Before	Left unfolding cable assembly (5)	**a.** Check cable for kinks, compression, flat surfaces, broken or frayed strands, and for proper tension. **b.** Check spring for deformation. **c.** Check turnbuckle for binding and loose or missing hardware.  	**a.** Cable kinked, compressed, flattened, or any strands broken. **b.** Spring stretched. **c.** Turnbuckle binding or loose, or hardware missing.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

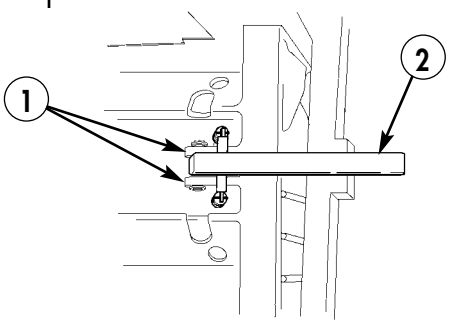
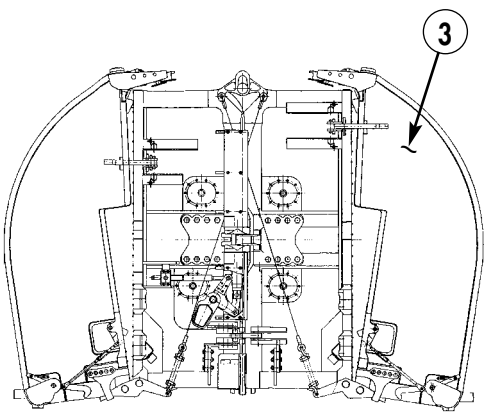
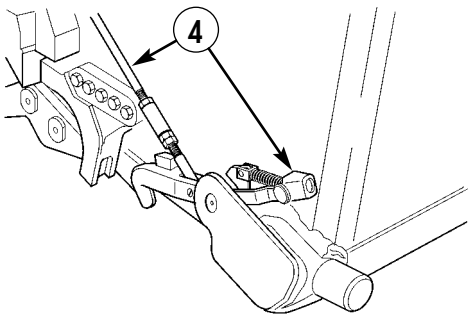
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
36	Before	Left foldlock assembly (2) and brackets (1)	Check right foldlock assembly for structural damage and proper movement.	Damage prevents foldlock from securing ponton.
				
37	Before	Left outer ponton skin surface (3) at end	Check for structural damage.	Damage allows water to enter ponton. Any visible hole will deadline bay.
				

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
38	Before	Left outer ponton lock assembly (4) and brackets	Check for structural damage.	Damage prevents proper locking operation.



NOTE

Perform steps 39 through 43 from top of interior bay, starting at either end, proceeding counterclockwise. (Refer to figure 2.)

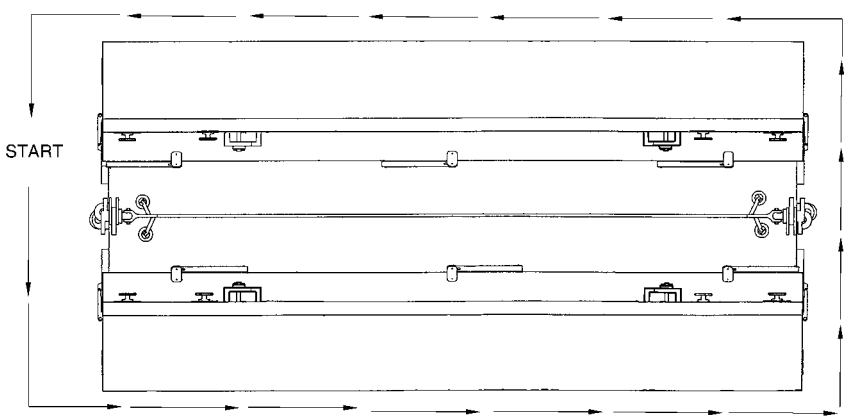


Figure 2. PMCS, Top of Interior Bay.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

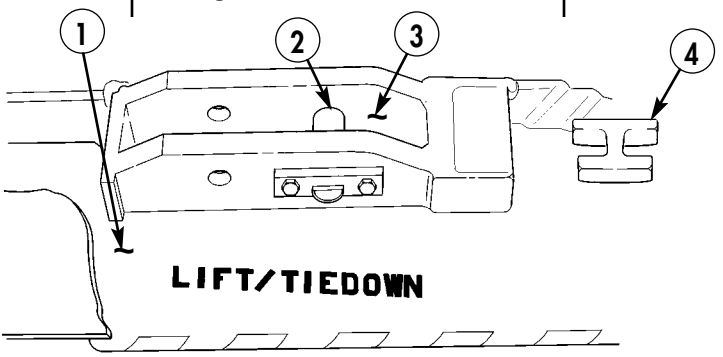
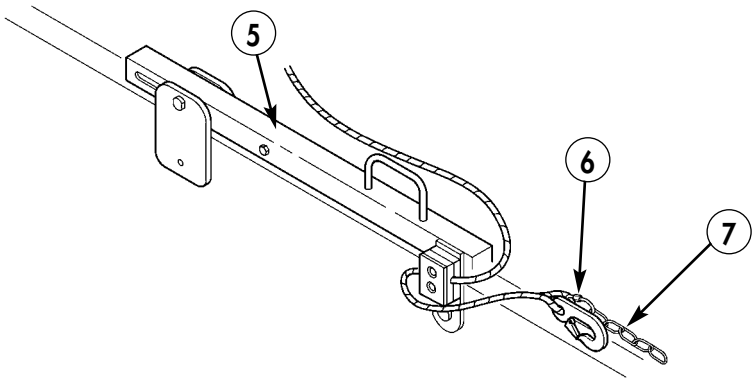
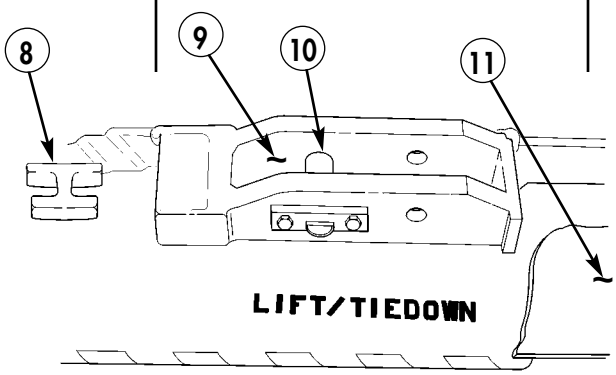
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
39	Before	Left and right front load receiving pin (2), recess (3), cleats (4), and splash plate (1)	**a.** Check pin and mounting hardware for cracks or if missing. **b.** Check recess for cracks and broken welds. **c.** Check cleat for broken welds or if missing.	**a.** Pin is missing or damage prevents pin use. **b.** Cracks or broken welds noted.
				
40	Before	Left, right, and center handrail assemblies (5), chain extension (7), and chain linker (6)	Check handrail assembly for missing or damaged mounting hardware, rope and deterioration of rope, snaphooks, chain extensions, chain linkers, and if stanchion will lock in stowed and set positions.	Missing or damaged parts are found or stanchion is not operational.
				

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
41	Before	Left and right rear load receiving pin (10), recess (9), cleats (8), and splash plate (11)	**a.** Check pin and mounting hardware for cracks or if missing. **b.** Check recess for cracks and broken welds. **c.** Check cleat for broken welds or if missing.	**a.** Pin is missing or damage prevents pin use.
42	Before	Rear lifting lug (13), eyebolt (12), and lever assembly (14)	Check for damaged, loose, or missing parts.	Any damaged, loose, or missing parts.



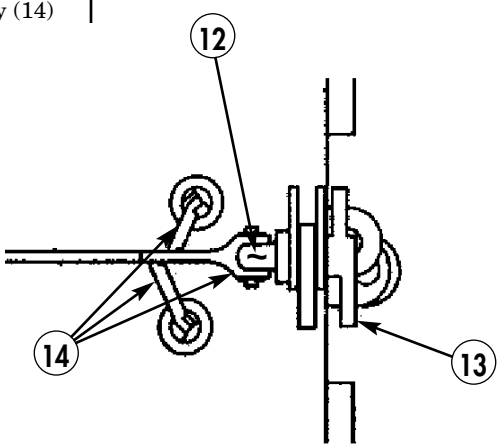


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
43	Before	Front lifting lug (3), eyebolt (1), and lever assembly (2)	Check for damaged, loose, or missing parts.	Any damaged, loose, or missing parts.

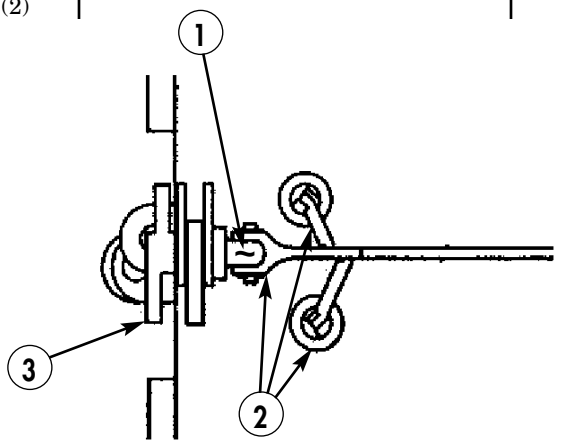


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			CAUTION Ensure longitudinal and transverse couplings and outer ponton locks are engaged before performing "During" operation. **NOTE** Perform items 44 through 54 with interior bay unfolded and secured, starting at either end, proceeding counterclockwise. (Refer to figure 3.)	

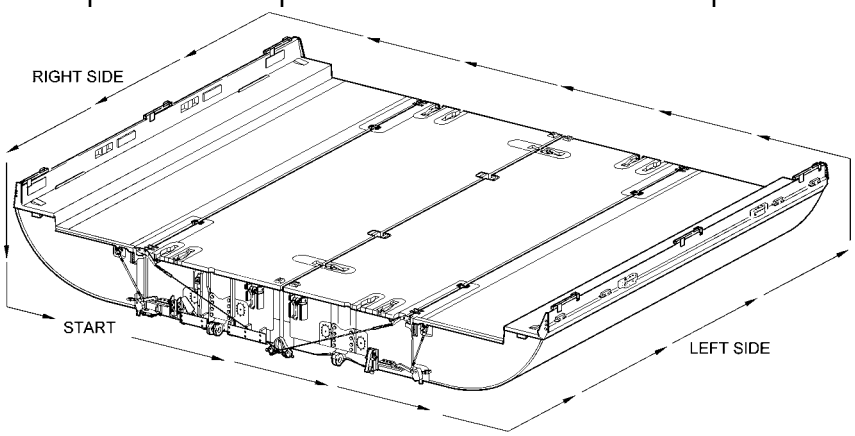
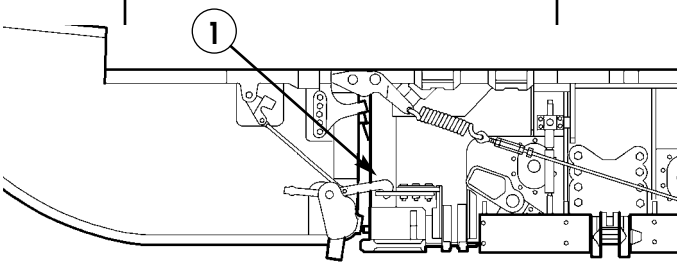


Figure 3. PMCS, Interior Bay Unfolded.

			NOTE If a hole is observed, monitor the bridge or raft's performance. If visual evidence of taking on water is observed (such as riding low in the water), pump the water out while operations continue. If the water intake is faster than the pumping capacity, remove and replace the damaged bay. The damaged bay is deadlined until repairs are made.	

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
44	During	Right outer ponton lock (1) at end of bay	Check for engagement.	Outer ponton lock will not engage.
45	During	Right and inner ponton bilge plugs (2)	Ensure bilge plugs are secured and not cracked or broken.	Any bilge plug missing, cracked, or broken.



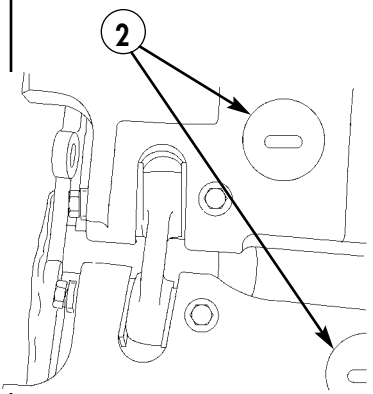


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

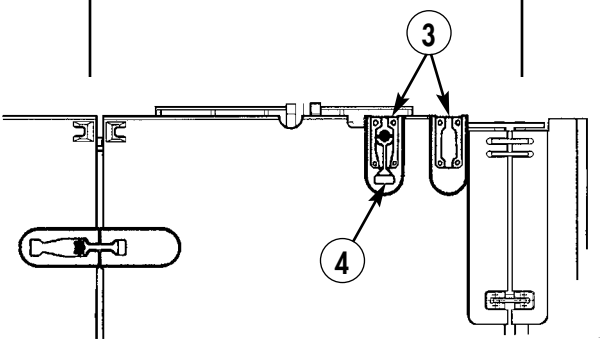
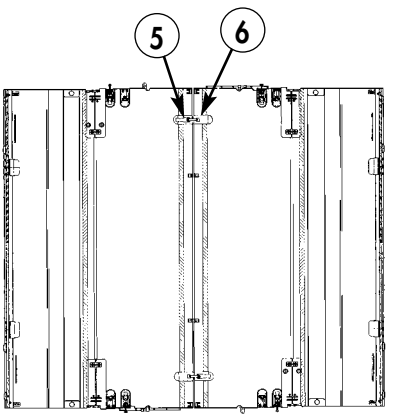
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
46	During	Longitudinal upper coupling (4) and receptacle blocks (3)	Check for structural damage. 	Damage prevents using coupling or receptacle.
47	During	Transverse upper coupling (5) and receptacle blocks (6)	Check for structural damage. 	Damage prevents using coupling or receptacle.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

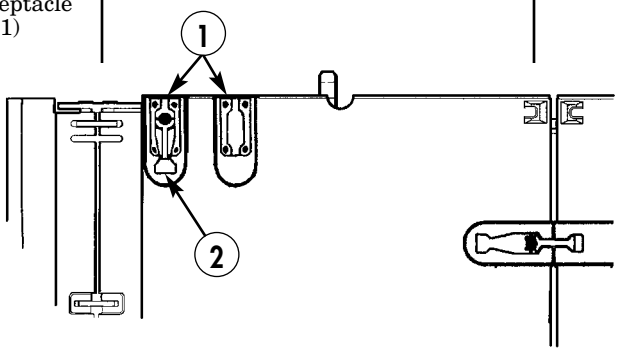
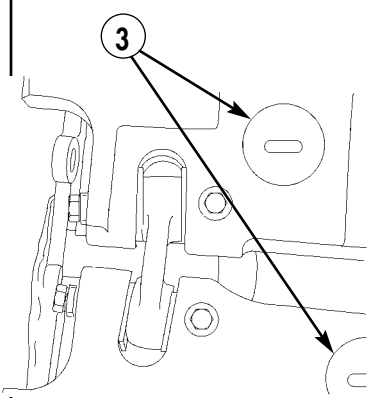
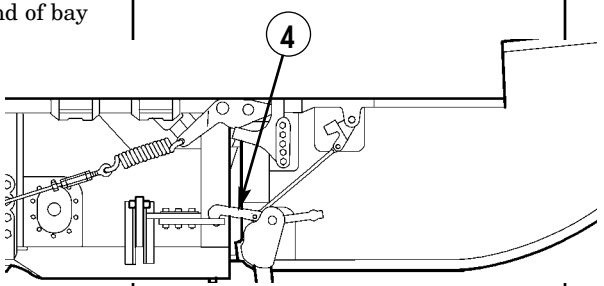
ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
48	During	Longitudinal upper coupling (2) and receptacle blocks (1)	Check for structural damage. 	Damage prevents using coupling or receptacle.
49	During	Left inner and outer ponton bilge plugs (3)	Ensure bilge plugs are secured and not cracked or broken. 	Any bilge plug missing, cracked, or broken.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
50	During	Left outer ponton lock (4) at end of bay	Check for engagement.	Outer ponton lock will not engage.
51	During	Belay cleat (5)	Check for damage or if missing.	



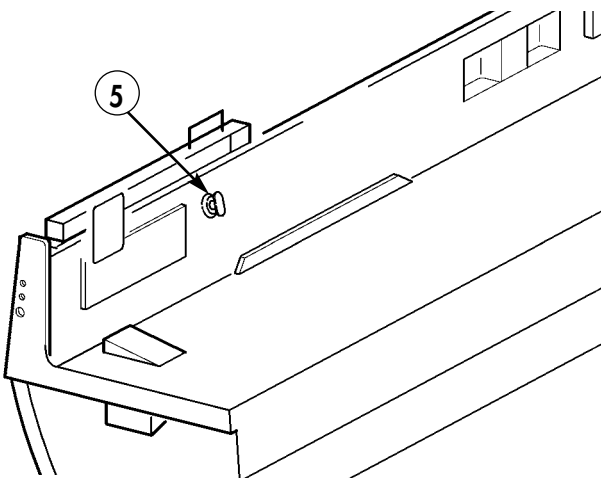
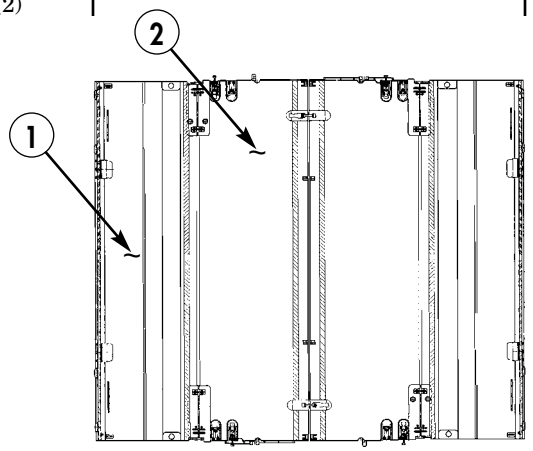


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
52	During	Left outer ponton personnel walkway surface (1) and inner ponton roadway surface (2)	Check for structural damage and personnel hazards.	Damage prevents safe traffic crossing or causes personnel safety hazard.
53	During	Belay cleat (3)	Check for damage or if missing.	
54	During	Opposite end of bay	Repeat items 44 through 53.	



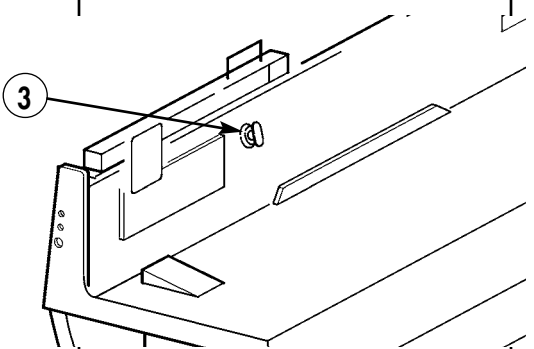


Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			CAUTION Ensure all gravel, rocks, mud, and other debris are removed from openings at unfolding stabilizer mounting brackets prior to folding bay. Failure to comply may result in jamming during folding operations. **NOTE** The time requirement to complete "After" operation PMCS is 10 minutes per interior bay. Refer to WP 0053 00 for power wash pump operating instructions.	
55	After	Roadways and walkways	**a.** Check to ensure that all dirt, mud, snow, ice, and debris are removed.	
			b. Check for physical damage.	**b.** Damage allows water to enter pontons. Any visible hole will deadline bay.
56	After	Bay couplings	Check for physical damage. **NOTE** Perform the following "After" operation checks when bay is recovered and secured to CBT. If more than four gallons of water (approx.) can be drained from any one ponton with bay in the water less than eight hours, notify unit maintenance to perform leak test.	Coupling cannot be engaged properly in receptacle.

Table 1. Operator Preventive Maintenance Checks and Services (PMCS) for Interior Bay (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
57	After	Lower drain plugs	**a.** Remove drain plugs and drain any water from pontons.	
			b. Check for physical damage and missing seals.	**b.** Drain plug is missing or damage allows water to enter bay. Any visible hole will deadline bay.
58	After	Bay outer skin surface areas	Check for physical damage.	Damage allows water to enter bay. Any visible hole will deadline bay.
59	After	Unfolding mechanisms	Check for physical damage.	Damage prevents bay from unfolding.
60	After	Travel latches and foldlocks	Check for physical damage.	Damage prevents latches/lock from operating properly.
61	After	Lower lock-drive jackscrews	Lubricate threads.	

END OF WORK PACKAGE

OPERATING INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section III. OPERATION UNDER USUAL CONDITIONS

TABLE OF CONTENTS

THIS WORK PACKAGE SUPERSEDES WP 0017 00, DATED 8 APRIL 2003

WP Title	WP Sequence No.-Page No.
General	0018 00-1
CBT Preparation for Use	0018 00-1
Transporter Operations Site Survey	0019 00-1
Site Requirements and Layouts	0019 00-2
Loading BAP from Ground	0020 00-1
Unloading BAP to Ground	0021 00-1
Loading Bay from Ground	0022 00-1
Unloading Bay to Ground	0023 00-1
Transloading BAP to PLS Trailer	0023 01-1
Transloading BAP to Common Bridge Transporter	0023 02-1
Free Launch of Bay	0024 00-1
Controlled Launch of Bay	0025 00-1
High-Bank Launch of Bay	0026 00-1
Deployment by Helicopter	0027 00-1
Securing Ramp Bay After Launch	0028 00-1
Securing Interior Bay After Launch	0029 00-1
Ramp Bay to Interior Bay Connection	0030 00-1
Ramp Bay to Interior Bay Connection (Alternate Method Only)	0031 00-1
Interior Bay to Interior Bay Connection	0032 00-1
Bridge Assembly, Successive Bay Method	0033 00-1
Bridge Assembly, Swinging Bridge Method	0034 00-1

Section III. OPERATION UNDER USUAL CONDITIONS (Contd)
TABLE OF CONTENTS (Contd)

WP Title	WP Sequence No.-Page No.
Bridge Anchorage	0035 00-1
Bridge Operation	0036 00-1
Bridge Recovery, Successive Bay Method	0037 00-1
Bridge Recovery, Swinging Bridge Method	0038 00-1
Bay Retrieval	0039 00-1
Recovery by Helicopter	0040 00-1
Raft Assembly and Disassembly	0041 00-1
Longitudinal Rafting Procedure	0042 00-1
Conventional Rafting Procedure	0043 00-1
Location of Basic Issue Items (BII), Components of End Items (COEI), and Additional Authorization List (AAL) Items	0044 00-1

OPERATING INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section III. OPERATION UNDER USUAL CONDITIONS

THIS WORK PACKAGE SUPERSEDES WP 0018 00, DATED 8 APRIL 2003

GENERAL

This section provides instructions for the transport and use of ramp and interior bays under normal operating conditions. Transportation instructions include operation of the CBT to load/unload the BAP, load/unload bays, launch and retrieve bays, and site requirements. Operating instructions include procedures to secure the bay after launch, connecting of bays, bridge assembly methods, bridge anchorage, operation, and recovery, and raft assembly procedures.

CBT PREPARATION FOR USE

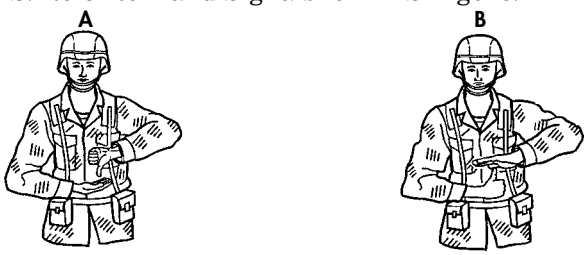
Operation of the CBT and BAP under usual conditions is described in this section. Operation under unusual conditions is described in WP 0045 00, Section IV. Prior to operating the CBT, the operator must perform the following:

WARNING

The Bridge Modules have a relatively high center of gravity and can affect the common bridge transporter (CBT) dynamic performance. The CBT carrying a ramp bay or interior bay can be operated on improved roads at a maximum speed of 37 mph. If traversal of cross-country terrain is necessary to access an operation site, limit CBT speed to 15 mph or less.

a. Review the HEMTT vehicle operating instructions prior to driving the CBT. (Refer to TM 9-2320-279-10.)

b. Review the proper hand signals for operation of the transporter LHS prior to using the LHS. Refer to Hand Signals for LHS Figure.

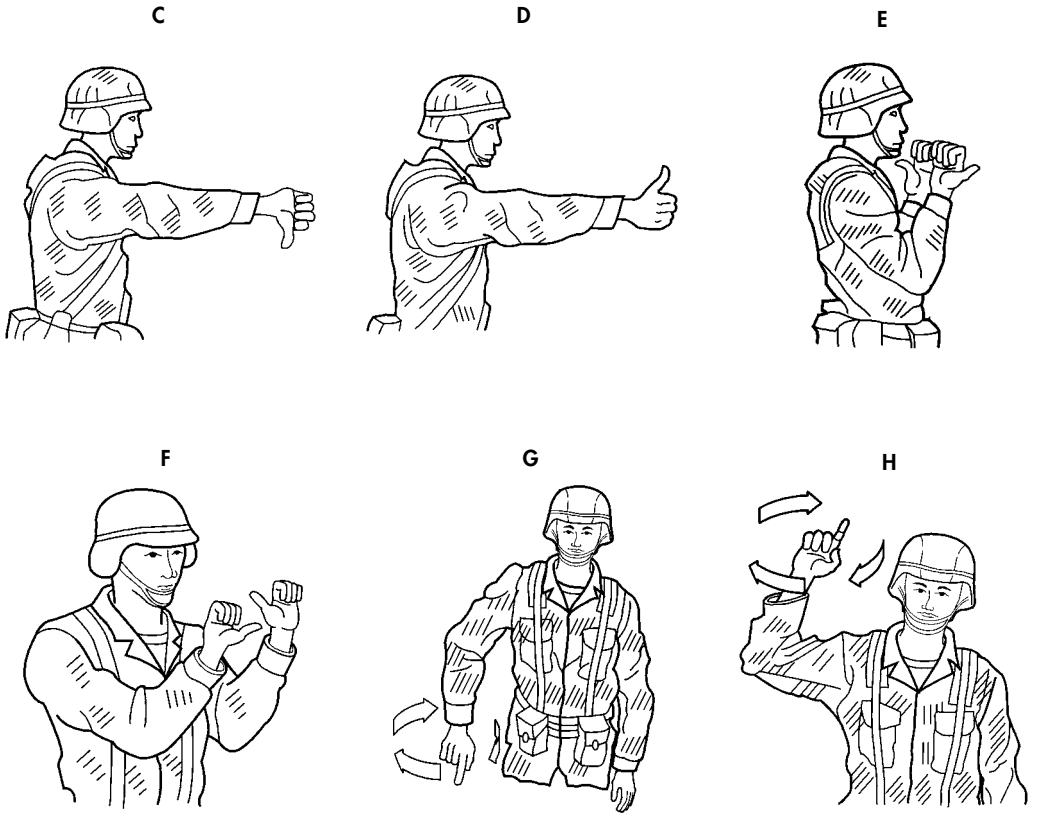


A – Auto unload, fist with thumb pointing down, touching palm of opposite hand.

B – Auto load, fist with thumb pointing up, touching palm of opposite hand.

Hand Signals for LHS Figure.

CBT PREPARATION FOR USE (Contd)



C – Hook arm unload, fist with thumb pointing down.

D – Hook arm load, fist with thumb pointing up.

E – Main frame unload, fist with both hands and thumbs pointing outward.

F – Main frame load, fist with both hands and thumbs pointing inward.

G – Winch out, fist with index finger pointing down, moving fist in a circular motion.

H – Winch in, fist with index finger pointing up, moving fist in a circular motion.

Hand Signals for LHS Figure (Contd).

CBT PREPARATION FOR USE (Contd)

c. Ensure Unit maintenance has serviced the vehicle; refer to DA Form 2404/5988-E, Equipment Inspection and Maintenance Worksheet.

d. Perform all operator/crew Before PMCS procedures as listed in WP 0014 00, table 1, prior to operating the CBT.

e. Review the BAP Locks Checklist, WP 0018 00, table 1, prior to performing BAP operations for each condition.

This table shows the various positions locks should be in for all BAP operations.

Table 1. BAP Locks Checklist.

	CONDITION	BAP Hold-down Locks[1]	Winch Frame Lock Levers[2]	Front Pin Locks			Rear Guides	Center Roller	Transload Rollers	PLS Feet	Fluid Lines
				Lock	Jaw[3]	Latch[3]					
1	Free Bridge Bay Launch	IN	DOWN	UP	CLOSED	N/A	OUT	UP	STOWED	STOWED	ENGAGED
2	Controlled Bridge Bay Launch	IN	DOWN	DOWN	N/A	DOWN	OUT	DOWN	STOWED	STOWED	ENGAGED
3	Water Bridge Bay Retrieval	IN	DOWN	DOWN	CLOSED	UP	MID	DOWN	STOWED	STOWED	ENGAGED
4	Unload Bridge Bay to Ground	IN	DOWN	DOWN	N/A	DOWN	OUT	DOWN	STOWED	STOWED	ENGAGED
5	Load Bridge Bay from Ground	IN	DOWN	DOWN	CLOSED	UP	MID	DOWN	STOWED	STOWED	ENGAGED
6	Load BAP from Ground	OUT	UP	UP[4]	CLOSED[4]	N/A	MID[4]	DOWN	STOWED	STOWED	STOWED
7	Unload BAP to Ground	OUT	UP	UP[4]	CLOSED[4]	N/A	MID[4]	DOWN	STOWED	STOWED	STOWED
8	Transport Mode	IN	UP/DOWN	UP	CLOSED[4]	N/A	MID[5]	DOWN	STOWED	STOWED	EITHER
9	Transload BAP to Trailer	OUT	UP	UP	CLOSED[4]	N/A	MID[5]	DOWN	DOWN[6]	STOWED	STOWED
10	Transload BAP to Truck	OUT	UP	UP	CLOSED[4]	N/A	MID[5]	DOWN	DOWN[7]	STOWED	STOWED
11	Load/unload BAP on PLS Truck	OUT	UP	UP	CLOSED	N/A	MID	DOWN	DOWN	DOWN	STOWED

[1] BAP hold-down locks are located on the transporter.

[2] UP is locked on the BAP; DOWN is locked on the LHS hook arm.

[3] Jaw and latch.

[4] N/A for an empty BAP.

[5] IN for an empty BAP.

[6] Moved to UP position after the BAP is fully on trailer.

[7] Moved to STOWED position after the BAP is fully on truck.

END OF WORK PACKAGE

TRANSPORTER OPERATIONS SITE SURVEY

THIS WORK PACKAGE SUPERSEDES WP 0019 00, DATED 8 APRIL 2003

WARNING

Prior to performing transporter operations, ensure a site survey is conducted. Failure to meet all site requirements for a given launch method may result in damage to equipment or possible injury or death to personnel.

A site survey must be conducted to establish a suitable launch site prior to launching bays and performing bridging or rafting operations. (Refer to Site Requirements and Layouts in this WP.) Site selection should be established by reconnaissance, and the operator is responsible to observe the following requirements and conditions prior to entering the site with a transporter.

WARNING

Two ground guides must be present for all bridging operations. Failure to use ground guides may result in crashing the transporter into an obstruction or coming in contact with power lines resulting in damage to equipment or injury or death to personnel.

a. A ground guide is required to assist the operator when maneuvering the transporter and while performing launch and retrieval operations.

CAUTION

Gravel and small rocks on roadway surface leading to bridge can cause dents and punctures in bridge roadway deck and can also become lodged in ramp and interior bay unfolding mechanisms causing jamming during bay retrieval. If gravel or small rocks are present at bridge or raft site, either remove them or cover them with topsoil or sand.

b. The launch site ground surface should be firm and clear of any obstructions such as gravel, small rocks, and low hanging trees or power lines.

c. The overhead clearance above loading areas must be at least 22 ft, 2 in. (6.7 m).

d. The river bank incline should not be greater than the specified limit for the launch method used. (Refer to Site Requirements and Layouts in this WP.)

e. The river bank side-to-side slope should be no greater than an 8% grade (5-degree angle).

CAUTION

Water fording depth should not exceed 4 ft (1.2 m) or damage to equipment may result.

f. Water depth for fording CBT should not exceed 4 ft (1.2 m).

TRANSPORTER OPERATIONS SITE SURVEY (Contd)

WARNING

Ensure water velocity is not above the specified limit for the launch method used. Failure to comply may result in damage to equipment or injury or death to personnel.

g. The water velocity or current should not exceed the maximum specified limit for the launch method used. (Refer to table 3, Bridge Assembly Requirements in this WP, for water velocity requirements for all conditions.) Notify your supervisor if you believe the water velocity at the launch site is greater than the specified limit.

WARNING

If unloading the BAP to the ground, ensure BAP hold-down locks, winch frame locking levers, BAP air hose, and winch hydraulic hoses are in the correct position. Failure to comply will result in damage to equipment and possible injury or death to personnel.

h. If unloading the BAP to the ground at the launch site, ensure the handle on both hold-down locks is pulled out to the DISENGAGED position, both winch frame locking levers are in the UP position, and the BAP air hose and winch fluid hoses are disconnected and secured in their stowed positions.

SITE REQUIREMENTS AND LAYOUTS

Site selection for bridging or rafting operations depends on several factors and is usually a compromise of tactical and technical requirements. Determining if the desired site location is suitable for the construction of a bridge or raft is essential to the success and safety of the bridge company. A careful survey of the bridge or raft site should be made by reconnaissance, not the operator/crew. However, the operator must understand and observe the site requirements when performing raft and bridge operations.

1. **Tactical Requirements.** The ability of the US Army to cross a river quickly and efficiently is critical. Where no fording sites, existing bridges, civilian ferries, armored vehicle launch bridges, assault boats, or amphibious vehicles are available to advance army forces across a river, the IRB will be used. Site selection is the result of a commander's strategic decision based on three types of river crossing operations: hasty, deliberate, and retrograde crossings.

   a. Hasty river crossings are usually conducted as a continuation of an attack by army forces using a river site that permits a crossing with little or no loss of momentum. If site conditions exist to permit rafting operations, the IRB may be used where the commander decides to reinforce assault forces with armored vehicles and anti-armor weapons.

   b. The deliberate river crossing requires a buildup of firepower and the use of IRB equipment to carry it, which entails the need for detailed planning and centralized control of the site. The deliberate crossing consists of an assault phase, a rafting phase, and a bridging phase.

SITE REQUIREMENTS AND LAYOUTS (Contd)

c. The retrograde crossing is a defensive operation intended to protect the retreating army forces by crossing a river, thereby delaying the enemy's advance. A line of defense is then established along the exit bank of the river, which effectively forces the enemy to conduct a deliberate river crossing to continue its assault. IRB equipment is used extensively in this role.

2. Site Requirements. Site selection is a critical step in performing a river crossing, and the requirements are generally based on strategic planning and equipment limitations. Crossing sites are generally characterized as assault, rafting, or bridging, with each having its own set of requirements.

a. An assault site is selected for the following characteristics:

(1) Enemy forces are weak, the terrain on the friendly shore provides concealment from enemy observation, and there is room for the assault to be supported by overmatching fire.

(2) Adequate crossing routes exist to and from the river at its narrowest point, and current velocity is 0–5 ft (0–1.5 m) per second.

(3) There are gently sloping, firm banks which permit rapid entry and exit at multiple points along the river.

(4) Riverbank slopes and water depth do not exceed the specified limits for the equipment entering the river.

b. All raft sites require the following characteristics:

CAUTION

Gravel and small rocks on roadway surface leading to raft can cause dents and punctures in raft roadway deck and can also become lodged in ramp and interior bay unfolding mechanisms, causing jamming during bay retrieval. If gravel or small rocks are present at raft site, either remove them or cover them with topsoil or sand.

(1) The site should be positioned downstream from a bridge site.

(2) The site should provide the fastest access to the far shore with established road networks on both sides of the river.

(3) The site should be located at a narrow point along the river that is free of sandbars or obstacles that would impede operations.

(4) The site should have firm banks on both sides with slopes, water depth, and current velocity within the specified limits for the IRB launch method used. (Refer to table 2, Launch Restrictions in this WP.)

SITE REQUIREMENTS AND LAYOUTS (Contd)

CAUTION

The following vehicles have known bank height limitations. Bank preparation prior to trafficking these vehicles may be required.

Heavy Equipment Transporter (HET) M1070 and M1000: Bank heights should not exceed 24 in. (0.6 m). This is limited by the tractor-trailer combination being limited to break-over/break-under angles of 15%. Severe damage can occur to the trailer if trafficking with bank heights higher than 24 in. (0.6 m) is attempted.

Abrams (M1) with Mine Clearing Blade (MCB): Bank heights should not exceed 18 in. (0.46 m). This is limited by clearance of the MCB with the bridge and ramp deck. Severe damage can occur to the bridge or ramp deck if trafficking with bank heights higher than 18 in. (0.46 m) is attempted.

Armor Vehicle Launched Bridge (AVLB): Bank heights should not exceed 46 in. (1.16 m). This is limited by clearance of the AVLB's bridge outrigger with the bridge and ramp deck. Severe damage can occur to the bridge or ramp deck if trafficking with bank heights higher than 46 in. (1.16 m) is attempted.

Other vehicles with low far overhangs or terrain limitations should be closely monitored and adjustments made to bank heights as necessary.

Attempting to cross any vehicle above the recommended bank height or 79 in. (2 m), whichever is less, may result in damage to the bridge or ramp deck or the crossing vehicle itself.

(5) The site should have a firm, stable bank with a slope of 11 degrees or less, a water depth of at least 48 in. (102 cm), and a current velocity of 10 ft (3 m) per second or less to launch BEBs. For vehicle type and bank height limitations for raft loading and unloading, refer to table 1, Vehicle Compatibility vs. Bank Height in this WP.

c. All bridge sites require the following characteristics:

CAUTION

Gravel and small rocks on roadway surface leading to bridge can cause dents and punctures in bridge roadway deck and can also become lodged in ramp and interior bay unfolding mechanisms, causing jamming during bay retrieval. If gravel or small rocks are present at bridge site, either remove them or cover them with topsoil or sand.

(1) The site should be located upstream from a raft site.

(2) The site should be located where there are established road networks on both sides of the river.

SITE REQUIREMENTS AND LAYOUTS (Contd)

(3) The site should be located at a narrow point along the river that is free of obstructions that would impede operations.

(4) The site should have firm banks on both sides with slopes, water depth, and current velocity within the specified limits for the IRB launch method used. (Refer to table 2, Launch Restrictions in this WP.)

(5) The bridge length and type of construction method will determine the size and number of assembly sites required. (Refer to WP 0033, Bridge Assembly Successive Method, and WP 0034, Bridge Assembly Swinging Bridge Method.)

CAUTION

The following vehicles have known bank height limitations. Bank preparation prior to trafficking these vehicles may be required.

Heavy Equipment Transporter (HET) M1070 and M1000: Bank heights should not exceed 24 in. (0.6 m). This is limited by the tractor-trailer combination being limited to break-over/break-under angles of 15%. Severe damage can occur to the trailer if trafficking with bank heights higher than 24 in. (0.6 m) is attempted.

Abrams (M1) with Mine Clearing Blade (MCB): Bank heights should not exceed 18 in. (0.46 m). This is limited by clearance of the MCB with the bridge and ramp deck. Severe damage can occur to the bridge or ramp deck if trafficking with bank heights higher than 18 in. (0.46 m) is attempted.

Armor Vehicle Launched Bridge (AVLB): Bank heights should not exceed 46 in. (1.16 m). This is limited by clearance of the AVLB's bridge outrigger with the bridge and ramp deck. Severe damage can occur to the bridge or ramp deck if trafficking with bank heights higher than 46 in. (1.16 m) is attempted.

Other vehicles with low far overhangs or terrain limitations should be closely monitored and adjustments made to bank heights as necessary.

Attempting to cross any vehicle above the recommended bank height or 79 in. (2 m), whichever is less, may result in damage to the bridge or ramp deck or the crossing vehicle itself.

(6) The site should have a firm, stable bank with a slope of 11 degrees or less, a water depth of at least 48 in. (102 cm), and a current velocity of 10 ft (3 m) per second or less to launch BEBs. For vehicle type and bank height limitations for bridge crossing, refer to table 1, Vehicle Compatibility vs. Bank Height in this WP.

SITE REQUIREMENTS AND LAYOUTS (Contd)

Table 1. Vehicle Compatibility vs. Bank Height.

MODEL	SERIAL	WEIGHT (lb.)	WEIGHT (tons)	~MLC	BANK HT. (m)	REMARKS
M1A1	9263	139,120	69.6	70	2.0	
M1A1	11237	140,660	70.3	70	2.0	
M1A1 w/MCB	11237	147,150	73.6	80 (>70)	0.35	Special considerations
M60A1	6938	108,368	54.2	54 (<MLC 70)	2.0	
M88A2	RD0001	139,760	69.9	71	2.0	Special considerations
M88A1	120			~58	0.35	
M113A2	C2928	20,540	10.3	13	2.0	
M2A2 (BFV)	80212	54,000	27.0	~29-30	2.0	
M1078 (LMTV)	7BCLF	17,200	8.6	7	2.0	
M1031 (CUCV)	3961		0.0	~1	2.0	
M1097 (HMMWV)	144641	7,940	4.0	~3	2.0	
M1075 (PLS)	62598	80,132	40.1	~35	2.0	
HETS+M1A1	3N0/25E	235,420	117.7	~97	0.35	Special considerations

Notes:

1. The bank heights given are the maximum for a given vehicle to negotiate the transition between the ramp bay and adjoining interior bay, up to 6.6 ft (2.0 m).
2. MCB = Mine Clearing Blade
3. The M1A1 with TWMP will require special preparation, site considerations, and marshing to prevent damage to the IRB ramp.
4. The M88A2 may scrape roadway surface slightly while exiting bridge at the highest bank heights at slopes of approximately 5%.

SITE REQUIREMENTS AND LAYOUTS (Contd)

3. **Launch Condition Requirements.** River bank and water conditions are used to determine the launch method best suited for the crossing site. There are four recommended launch methods for the IRB: the free launch, controlled launch, high-bank launch, and deployment by helicopter. Site requirements for each method are listed below.

Table 2. Launch Restrictions.

FREE LAUNCH

NOTE

Free launch is the fastest method of launch and, therefore, the most preferred method.

The water depth for free launch is based upon a 10% slope with the transporter backed into the water.

Minimum depth of water required:

Bank height: 0 ft (0 m) and 10% slope

Ramp bay: 9 ft (2.7 m)

Interior bay: 6 ft (1.8 m)

Bank height: 5 ft (1.5 m) and 20% slope

Ramp bay: 12 ft (3.7 m)

Interior bay: 7 ft 2 in. (2.2 m)

Bank height restrictions: 0–5 ft (0–1.5 m)

Bank slope restrictions: 0–20%

CONTROLLED LAUNCH

Minimum depth of water required:

Ramp bay: 6 ft (1.8 m)

Interior bay: 3 ft 7 in. (1.1 m)

Bank height restrictions: 0 ft (0 m)

Bank slope restrictions: 0–20%

HIGH BANK LAUNCH

Minimum depth of water required:

Ramp bay: 2 ft 8 in. (0.8 m)

Interior bay: 1 ft 10 in. (0.5 m)

Bank height restrictions: 5–28 ft (1.5–8.5 m)

Bank slope restrictions: On slopes greater than 5%, must anchor CBT per TM 5-5420-234-14&P.

HELICOPTER LAUNCH

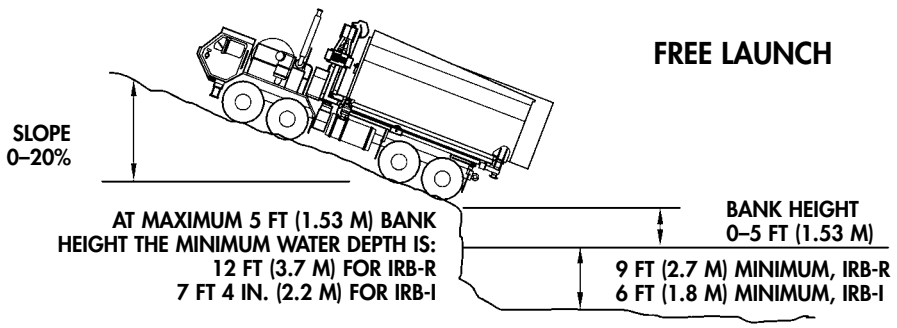
Minimum depth of water required: Same as High Bank Launch restrictions.

Bank height restrictions: N/A

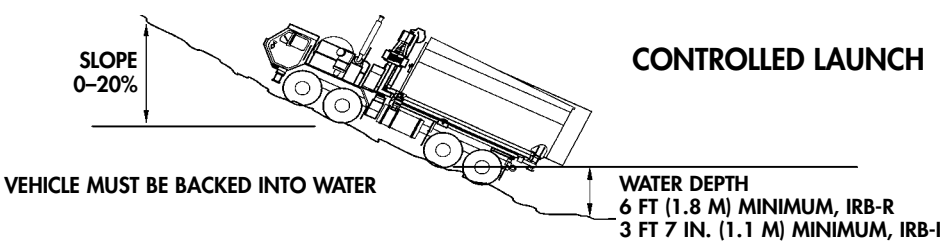
Bank slope restrictions: N/A

SITE REQUIREMENTS AND LAYOUTS (Contd)

a. For a free launch of IRB bays, the following requirements must be met:
   (1) The maximum river bank slope is 20%.
   (2) The maximum bank height is 60 in. (152 cm).
   (3) Water velocity should not be greater than 8 ft (2.44 m) per second.
   (4) The minimum water depth must be a least 6 ft (1.8 m) to free launch the interior bay from the maximum river bank slope of 20% (This is based on a zero bank height with the CBT backed into the water up to the top of its rear axle hubs).
   (5) The minimum water depth must be at least 9 ft (2.7 m) to free launch the ramp bay from the maximum river bank slope of 20% (This is based on a zero bank height with the CBT backed into the water up to the top of its rear axle tire rims).
   (6) The minimum water depth must be at least 7 ft 4 in. (2.2 m) to free launch the interior bay and 12 ft (3.7 m) to free launch the ramp bay from the maximum bank height of 60 in. (152 cm) and river bank slope of 20%.



b. For a controlled launch of IRB bays, the following requirements must be met.
   (1) The maximum river bank slope is 20%.
   (2) Zero bank height is required.
   (3) Water velocity should not be greater than 5 ft (1.53 m) per second.
   (4) The minimum water depth must be at least 6 ft (1.8 m) for IRB-R and 3 ft 7 in. (1.1 m) for IRB-I to perform a controlled launch at the maximum river bank slope of 20%. (This is based on a zero bank height with the CBT backed into the water up to the top of its rear axle hubs for interior bays, and up to the top of its rear axle tire rims for ramp bays.)



SITE REQUIREMENTS AND LAYOUTS (Contd)

c. For a high-bank launch of IRB bays, the following requirements must be met:

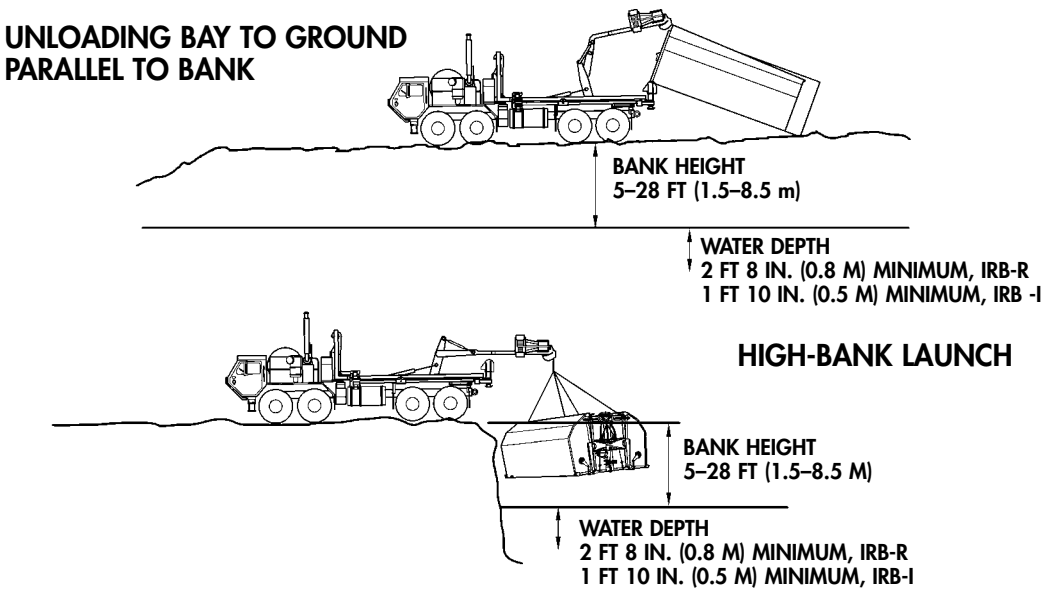
(1) The bank should slope no more than 5%. If the bank slope is greater than 5%, the front end of the launching CBT must be anchored.

(2) The water velocity should not be greater than 5 ft (1.5 m) per second.

(3) The bank height should be between 5–28 ft (1.5–8.5 m), and its side must be near vertical for clearance during launch.

(4) The minimum water depth is 2 ft 8 in. (0.8 m) for IRB-R and 1 ft 10 in. (0.5 m) for IRB-I.

(5) There must be sufficient room to unload the bay to the ground parallel to the shore bank and maneuver the CBT perpendicular to the bay for the high-bank launch.



d. For deployment by helicopter, the following requirement must be met. A water depth of at least 30 in. (76.2 cm) is recommended.

SITE REQUIREMENTS AND LAYOUTS (Contd)

4. **Site Layout Requirements** — Bridge and raft assembly sites require two way access roads to areas for parking, preparation of equipment, and routing of personnel and vehicle traffic. The type of bridge assembly method used will determine the location of launch and bridging sites and the location of access roads to them. Single or multi-launch sites are established depending on how quickly the advancing forces are directed to make a river crossing. When establishing a site layout, the following requirements must be met. (Refer to figures 1 through 4 for example layouts, and table 3 for bridge assembly requirements in this WP.)
   a. A minimum river bank width of 15 ft (4.57 m) is required for maneuvering the CBT at the launch site.
   b. An unobstructed floating downstream area of 100 ft (30.50 m) is required for bay assembly operations at a single launch site.
   c. An unobstructed floating downstream area of 100 ft (30.50 m) is required between individual launch sites at a multi-launch site.

SITE REQUIREMENTS AND LAYOUTS (Contd)

Table 3. Bridge Assembly Requirements.

BRIDGE LENGTH FEET (METERS)	BAYS		LAUNCH SITES DESIRED	BOATS	
	RAMP	INTERIOR		NEED	DESIRED
87.8 (26.78)	2	2	2	3	4
109.8 (33.48)	2	3	2	4	4
131.8 (40.19)	2	4	2	4	5
153.8 (46.89)	2	5	2	5	5
175.8 (53.60)	2	6	3	5	6
197.8 (60.30)	2	7	3	6	6
219.8 (67.01)	2	8	3	6	7
241.8 (73.71)	2	9	3	6	7
263.8 (80.42)	2	10	3	7	7
Additional (Note 1) 0–66 (20)	–	1–3	–	1	1
Additional (Note 2) 0–88 (26.8)	–	1–3	–	1	1
Additional (Note 3) 0–132 (40)	–	1–3	–	1	1

Notes:

1. In currents of 6–8 feet (1.8–2.4 m) per second: for each additional bridge length, increase of 0–66 feet (0–20.1 m). Add the indicated number of boats.
2. In currents of 3–6 feet (91.4 cm–1.8 m) per second: for each additional bridge length, increase of 0–88 feet (0–26.8 m). Add the indicated number of boats.
3. In currents up to 3 feet (91.4 cm) per second: for each additional bridge length, increase of 0–132 feet (0–40.2 m). Add the indicated number of boats (includes the safety boat, but not the backup boats).

SITE REQUIREMENTS AND LAYOUTS (Contd)

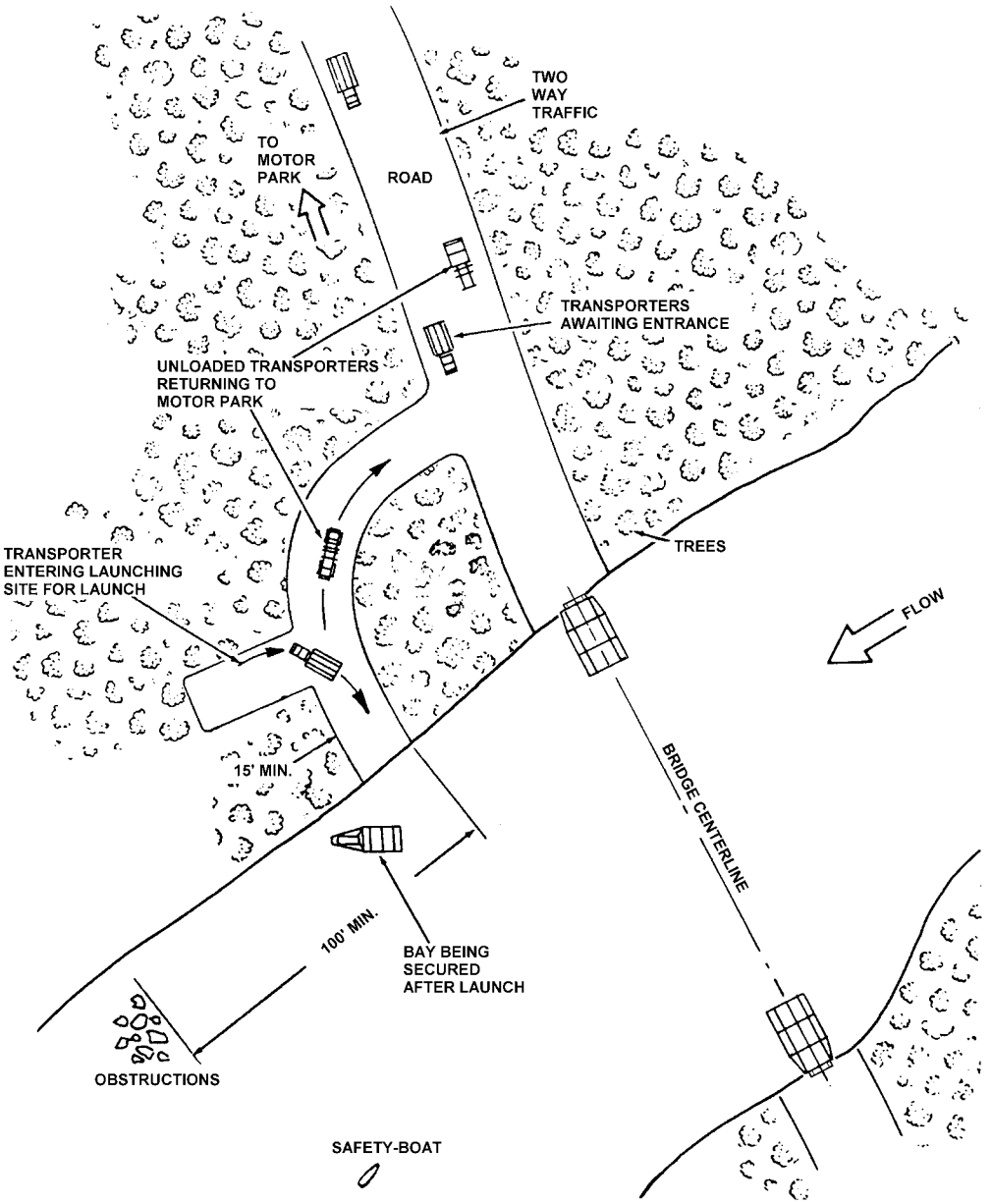


Figure 1. Bridge Assembly Site Layout for Single Launch Site (Successive Bay Assembly).

SITE REQUIREMENTS AND LAYOUTS (Contd)

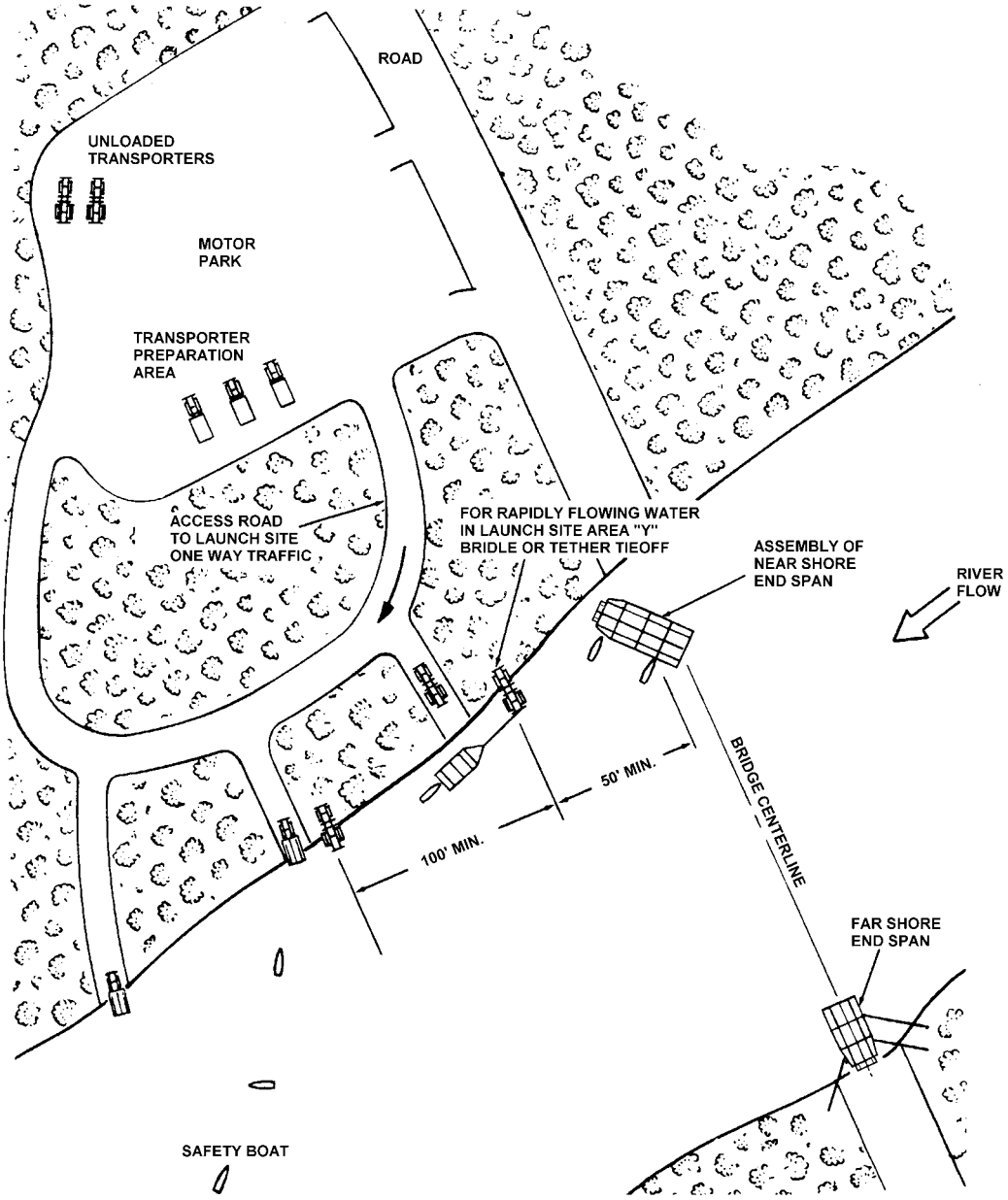


Figure 2. Bridge Assembly Site Layout for Multi-Launch Site (Successive Bay Assembly).

SITE REQUIREMENTS AND LAYOUTS (Contd)

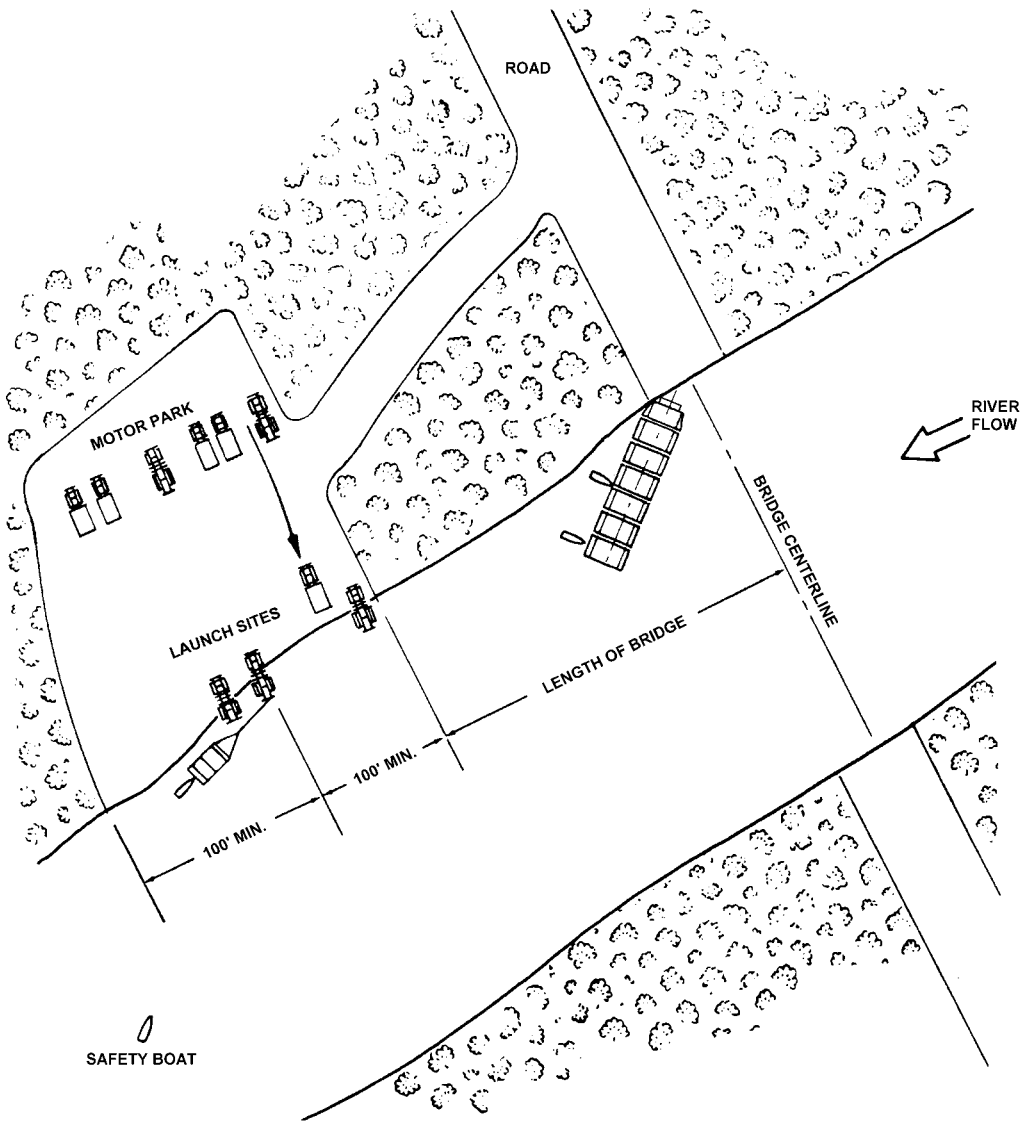


Figure 3. Bridge Assembly Site Layout for Multi-Launch Site (Swinging Bridge Assembly).

SITE REQUIREMENTS AND LAYOUTS (Contd)

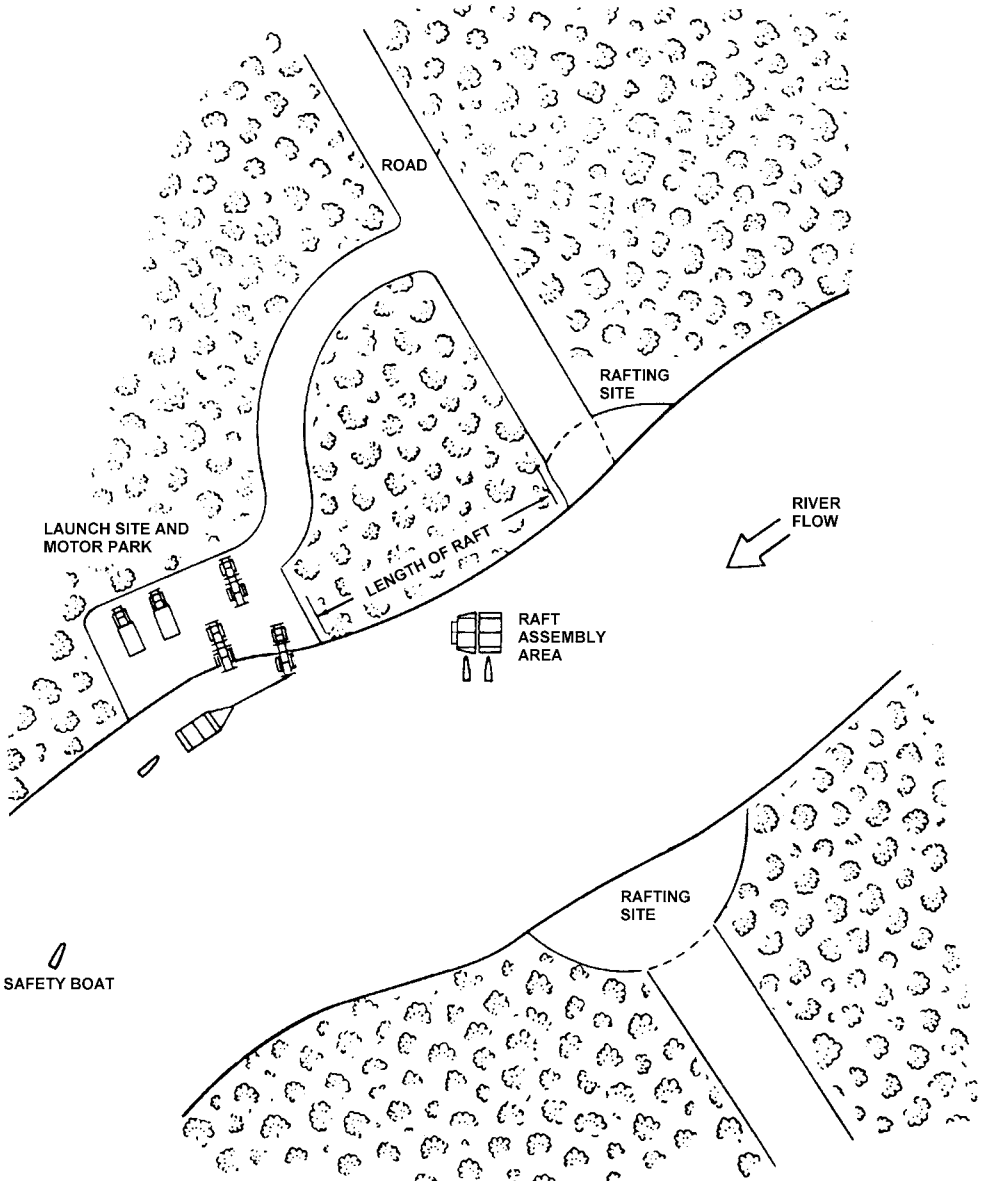


Figure 4. Raft Assembly Layout (Successive Bay Assembly).

END OF WORK PACKAGE

LOADING BAP FROM GROUND

THIS WORK PACKAGE SUPERSEDES WP 0020 00, DATED 8 APRIL 2003

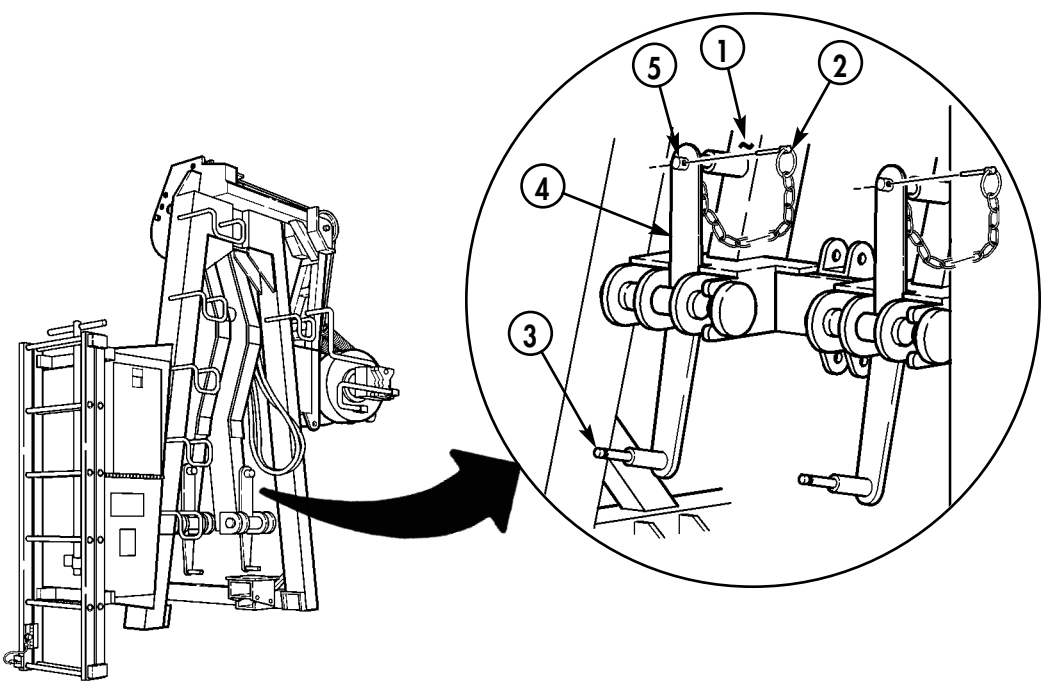
NOTE

When both levers are in the UP position, the winch frame is locked to the BAP. Perform steps a and b if levers are in the DOWN position.

During all transporter operations, the CBT operator will drive and be responsible for the operation of the LHS via the cab and remote control boxes. The assistant will act as a ground guide, be responsible for directing the operator using hand signals, and assist the operator as needed.

a. Remove quick-release pin (2) from stud (3) at both sides of winch frame (1).

b. Swing lever (4) up so that end of stud (5) is through hole in lever (4), and install quick-release pin (2) on stud (5) at both sides of winch frame (1).

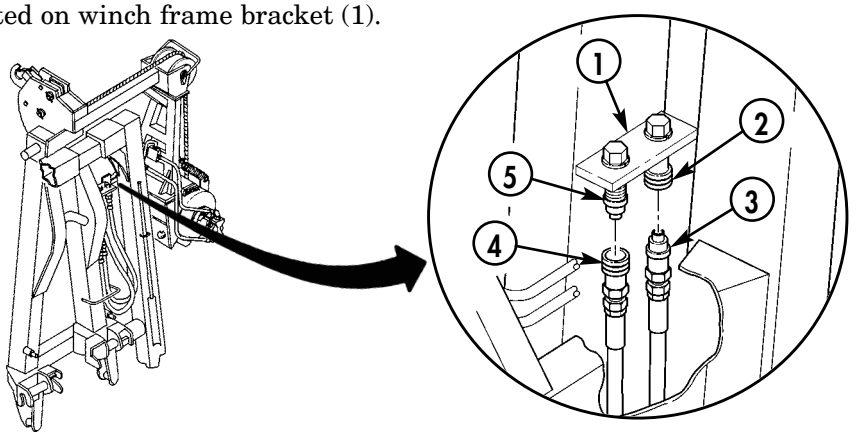


LOADING BAP FROM GROUND (Contd)

NOTE

Perform step c if BAP winch hydraulic hoses are disconnected from stowage couplings.

c. Connect winch hydraulic hoses (3) and (4) to stowage couplings (2) and (5), located on winch frame bracket (1).

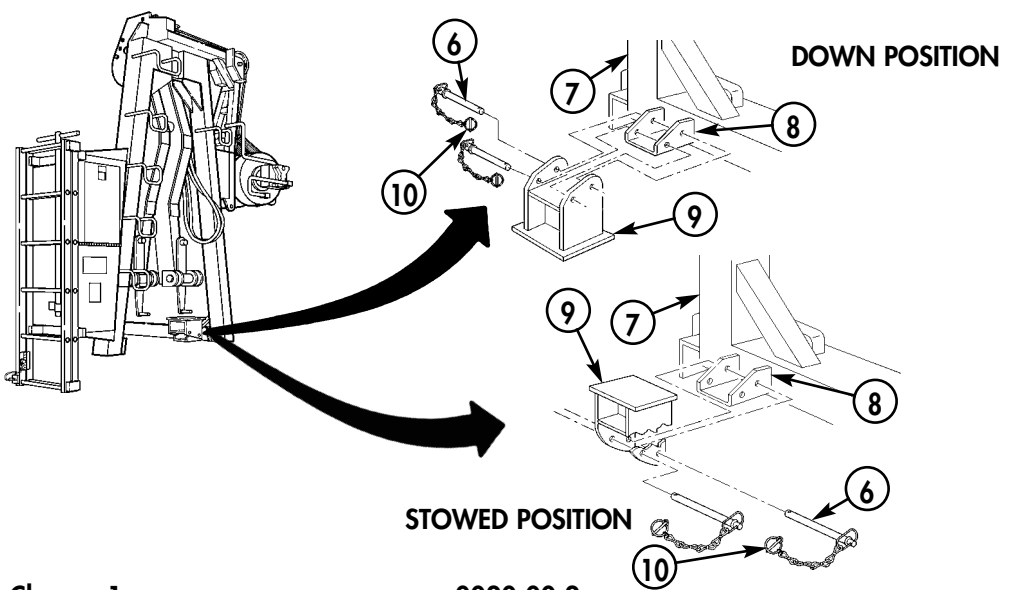


NOTE

Perform steps d and e if BAP PLS feet are not in stowed position. Make sure hitch pin chains are stored between PLS foot and BAP frame.

d. Remove two quick-release pins (10) from pins (6), and remove pins (6) and PLS foot (9) from bracket (8) at both sides of BAP frame (7).

e. Holding PLS foot (9) in stowed position, install PLS foot (9) on bracket (8) with two pins (6) and quick-release pins (10) at both sides of BAP frame (7).

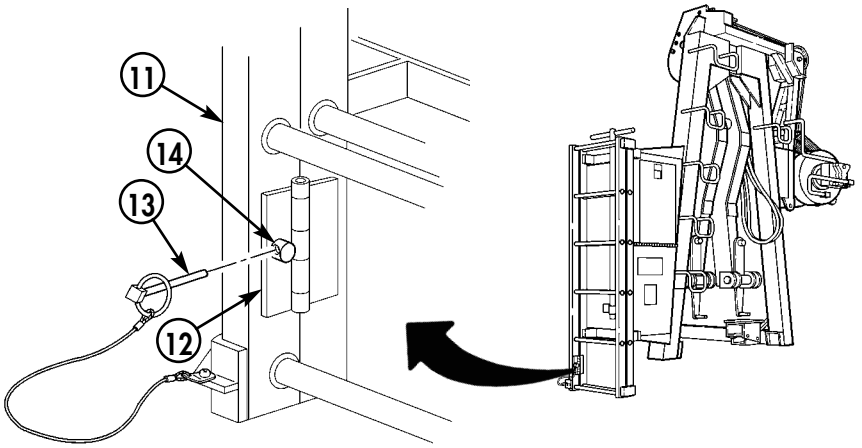


LOADING BAP FROM GROUND (Contd)

NOTE

Perform step f if BAP mounting ladder is not secured.

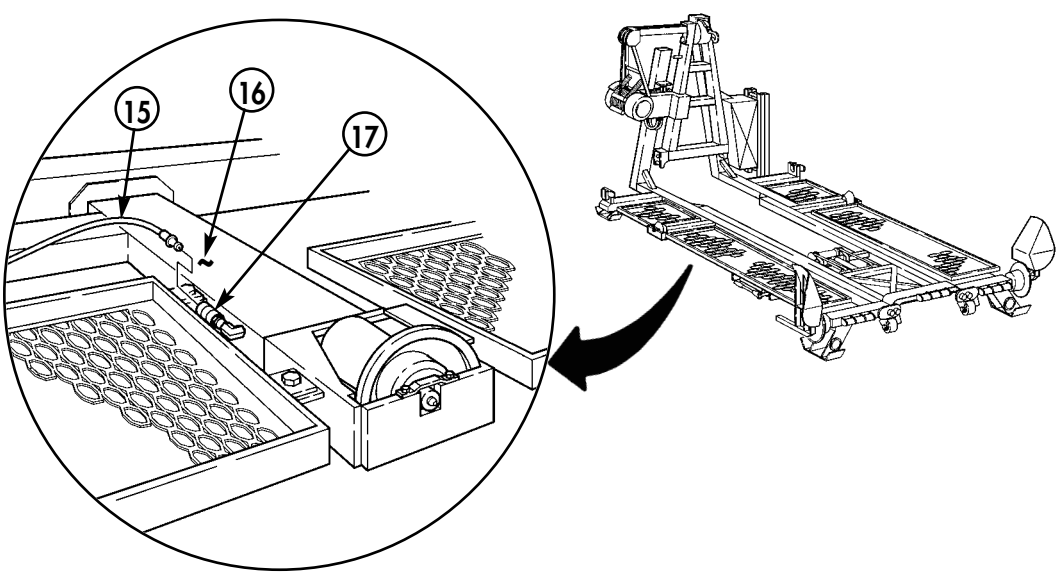
f. Raise sliding half of mounting ladder (11) up until stud (14) aligns with stowage latch (12), then close latch (12) and install quick-release pin (13) on stud (14).



NOTE

Perform step g if BAP air supply hose is disconnected from stowage coupling.

g. Connect air supply hose (15) to stowage coupling (17) at side of BAP frame (16).



LOADING BAP FROM GROUND (Contd)

WARNING

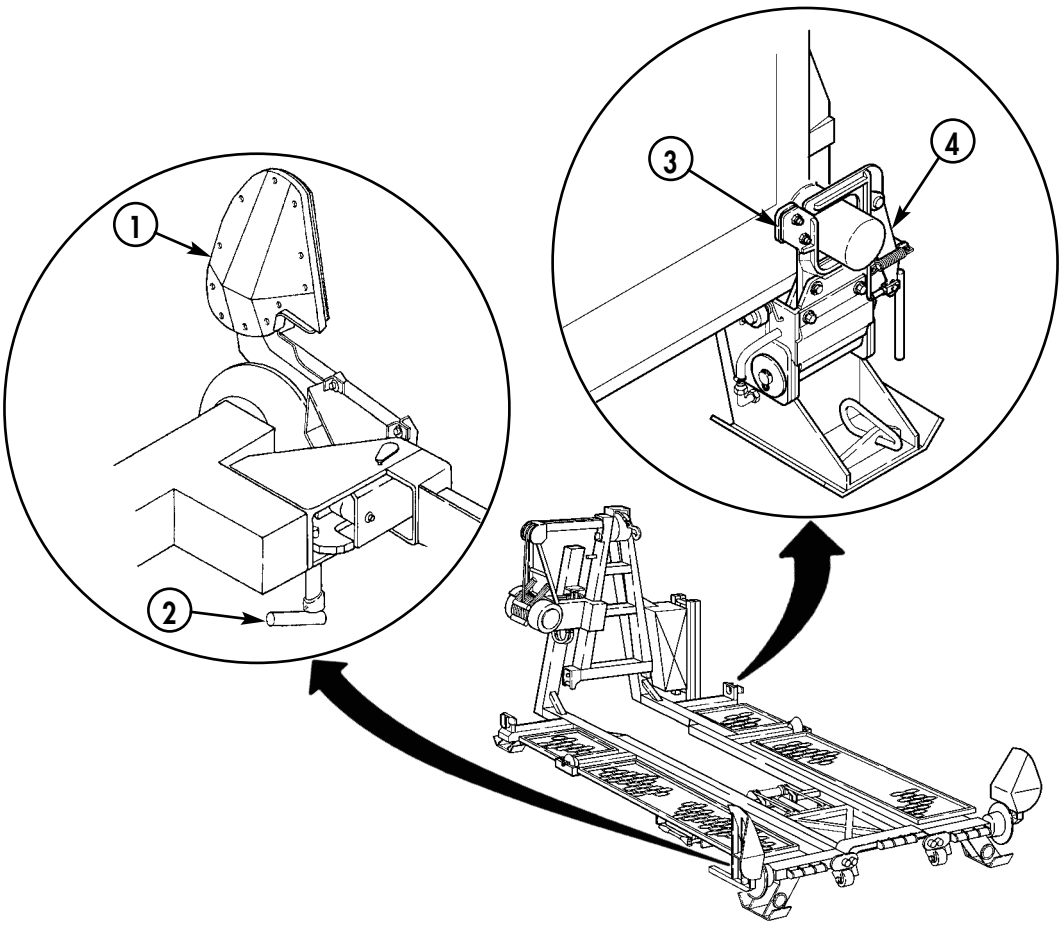
If BAP is loaded, ensure front pin lock assemblies are up and their jaws closed, and rear guides are locked in the MID position at both sides of BAP. Failure to comply may result in possible loss of bay or rollover of transporter, causing damage to equipment, and possible injury or death to personnel.

NOTE

Perform steps h and i if bay is loaded on BAP.

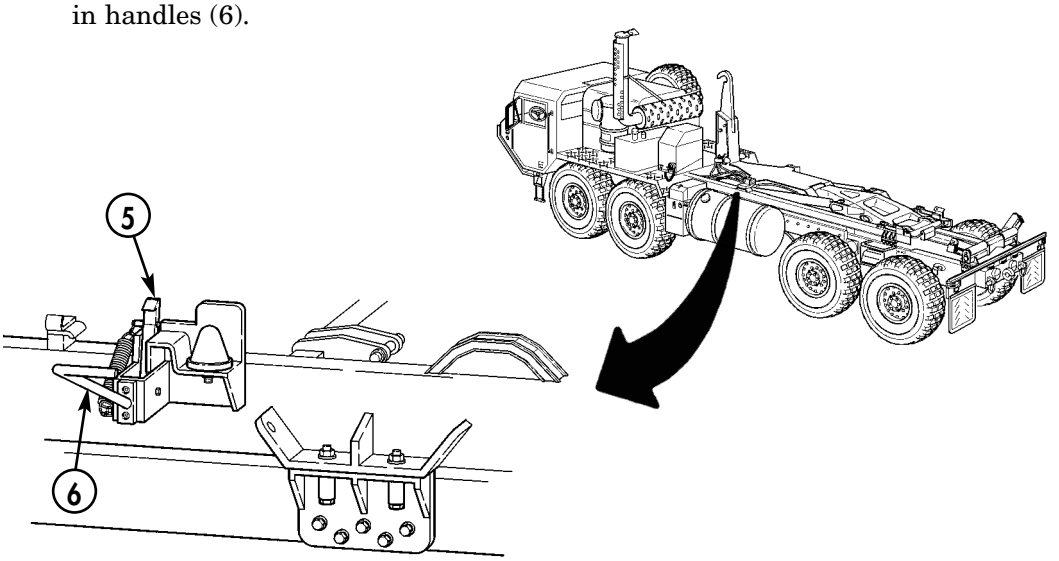
h. Rotate handle (2) until rear guide (1) is disengaged and move rear guide (1) inboard or outboard until locked in MID position at both sides of BAP.

i. Position both front pin lock assemblies (4) in the UP position, and ensure jaws (3) are locked.



LOADING BAP FROM GROUND (Contd)

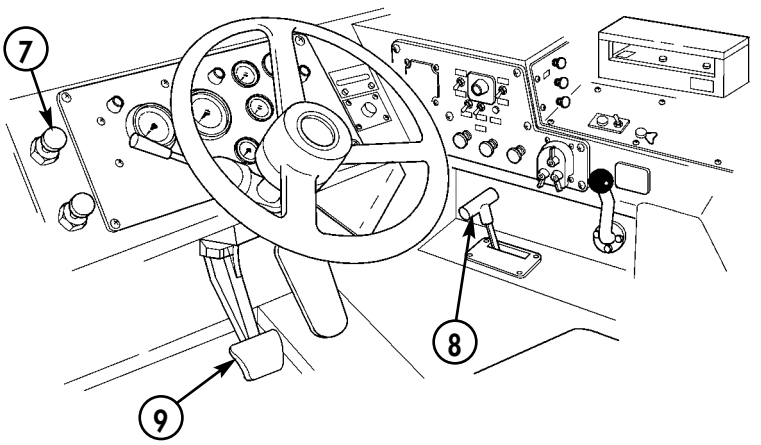
j. Set both BAP hold-down locks (5) in the AUTO ENGAGED position by pushing in handles (6).



CAUTION

Assistant will act as a ground guide when backing up CBT and during operation of the LHS. Failure to comply may result in damage to equipment.

k. Back up CBT so that rear of vehicle is directly in line with BAP and approximately 5–6 ft (1.5–1.8 m) away, apply service brake (9), move transmission selector lever (8) to N (neutral), and pull PARKING BRAKE control (7) out.



LOADING BAP FROM GROUND (Contd)

NOTE

Operator will perform steps l through u using LHS cab controls.

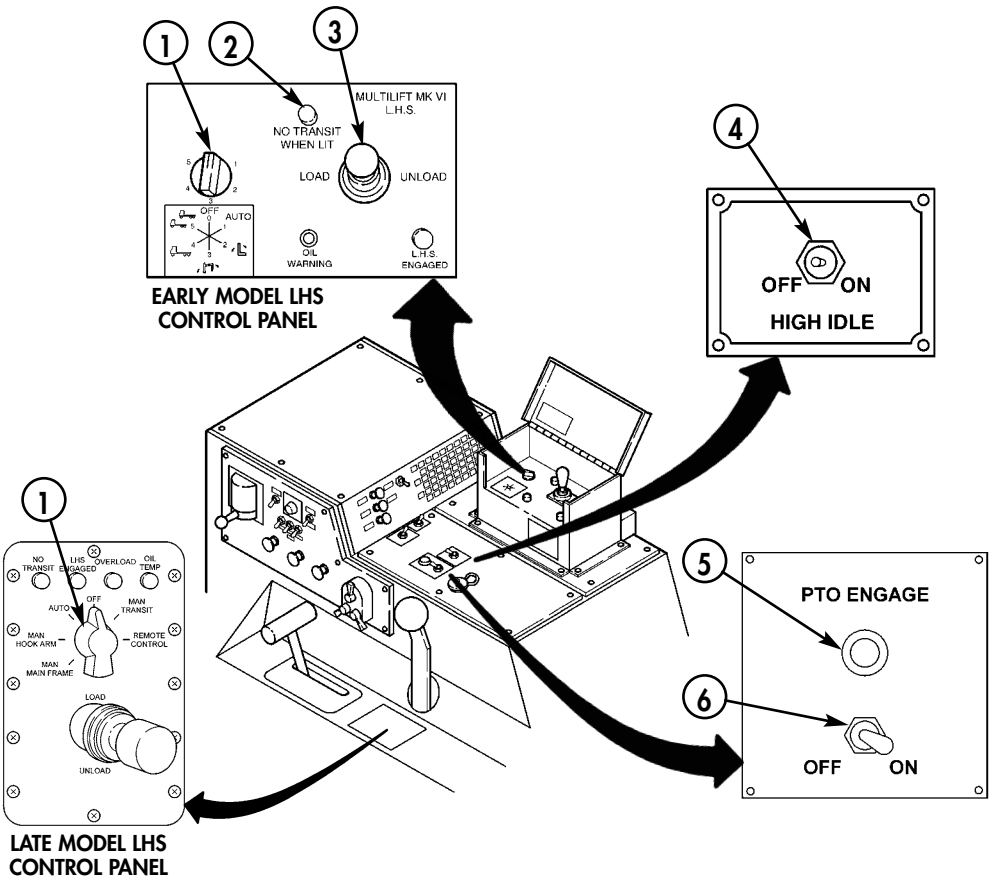
Ensure LHS RCU emergency stop switch is in the ON position if RCU is connected to LHS receptacle; cab LHS controls will not function otherwise.

l. Turn LHS MODE SELECT switch (1) to No. 1 (AUTO SEQUENCE) position on early models or AUTO position on late models.

CAUTION

HIGH IDLE switch must be in the OFF position prior to engaging PTO. Failure to comply may result in damage to the vehicle transmission or the LHS.

m. With HIGH IDLE switch (4) in OFF position, turn PTO ENGAGE switch (6) to ON position. The PTO ENGAGE indicator (5) will light.



LOADING BAP FROM GROUND (Contd)

CAUTION

To prevent surging or uneven operation of LHS or BAP winch, either perform all operations with CBT HIGH IDLE switch off, or engage CBT high idle after LHS or BAP winch is in motion, and disengage CBT high idle prior to stopping motion. Failure to comply may result in damage to equipment.

NOTE

The LHS ENGAGED indicator will light up whenever the joystick is held in the LOAD or UNLOAD position.

n. Hold joystick (3) in UNLOAD position and move HIGH IDLE switch (4) to ON until end of LHS hook arm (8) is below BAP hook bar (7). Move HIGH IDLE switch (4) to OFF and release joystick (3). The NO TRANSIT WHEN LIT indicator (2) will light.

CAUTION

Ensure HIGH IDLE switch is in OFF position prior to putting vehicle transmission in gear, or damage to transmission may result.

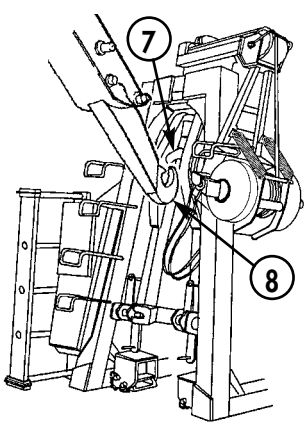
o. Back up CBT until end of hook arm (8) is centered directly under BAP hook bar (7), apply service brake (11), move transmission selector lever (10) to N (neutral), and pull PARKING BRAKE control (9) out.

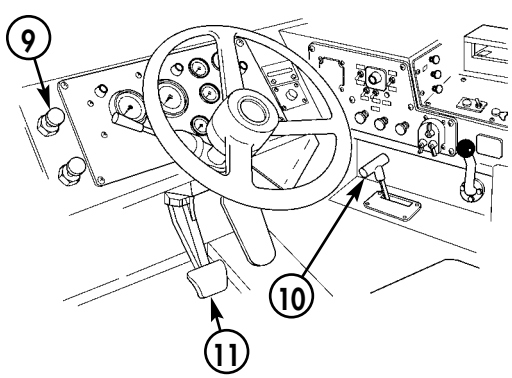
CAUTION

If hook end of LHS hook arm is not properly connected to BAP hook bar, assistant must immediately signal operator to stop loading procedure. Move CBT forward and repeat steps k through q, or damage to equipment may result.

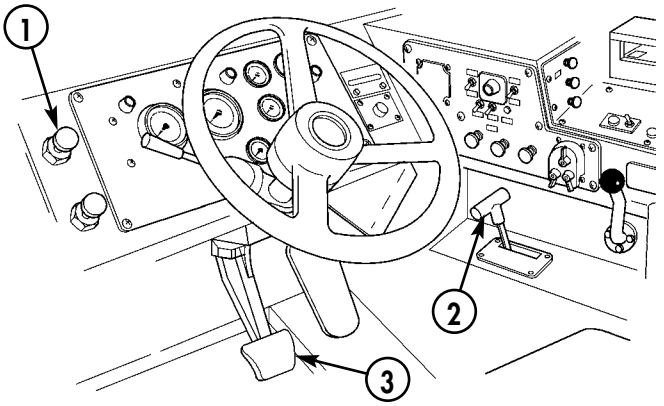
p. Hold joystick (3) in LOAD position until LHS hook arm (8) is fully connected to BAP hook bar (7), then release joystick (3).

q. Push PARKING BRAKE control (9) in.





LOADING BAP FROM GROUND (Contd)



WARNING

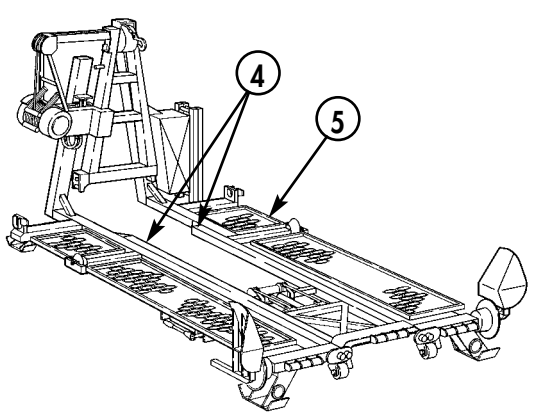
When the NO TRANSIT WHEN LIT indicator is illuminated, the CBT may be maneuvered in the immediate vicinity of the loading/unloading site, but should not be driven on the open road. Failure to comply may result in damage to equipment and possible injury or death to personnel.

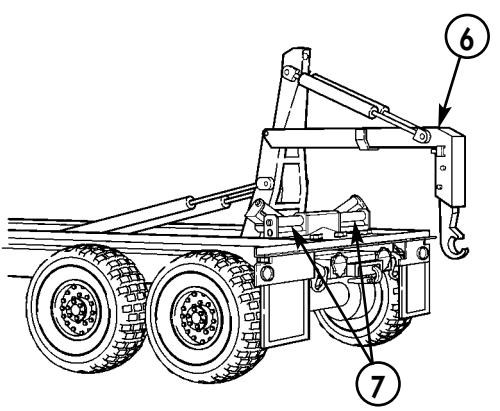
NOTE

When loading the BAP, its runners must line up with the LHS rear rollers, and it may become necessary to steer the transporter straight under the BAP as it is lifted from the ground.

r. Hold joystick (11) in LOAD position and move HIGH IDLE switch (8) to ON until BAP runners (4) contact LHS rear rollers (7) and BAP (5) clears ground. Move HIGH IDLE switch (8) to OFF, release joystick (11), and pull PARKING BRAKE control (1) out.

s. Hold joystick (11) in LOAD position until BAP (5) is loaded, LHS hook arm (6) is fully stowed, and NO TRANSIT WHEN LIT indicator (10) is off.





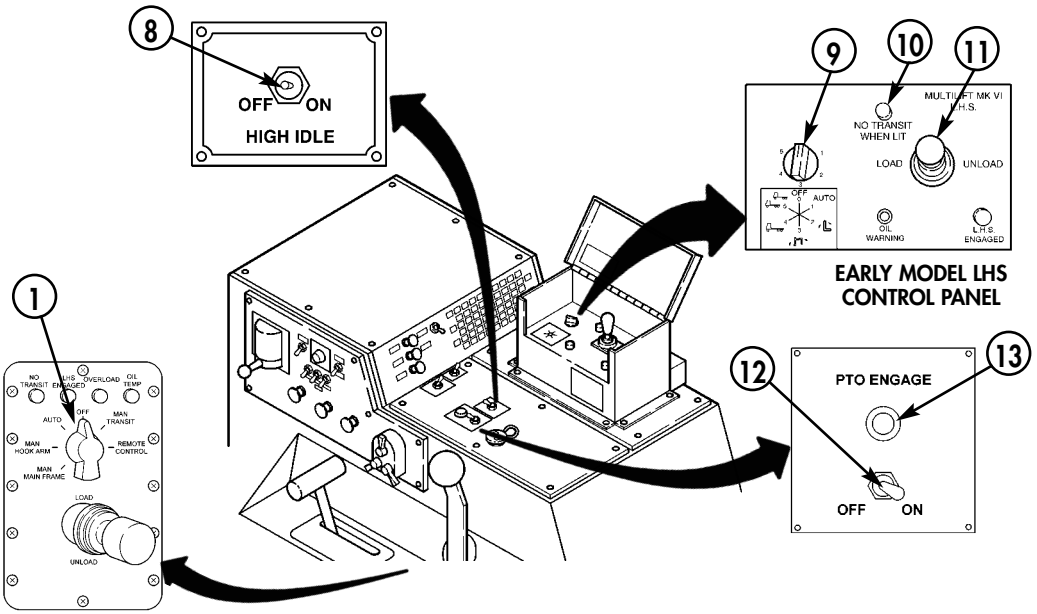
LOADING BAP FROM GROUND (Contd)

t. Turn PTO ENGAGE switch (12) to OFF position. PTO ENGAGE indicator light (13) should go out.

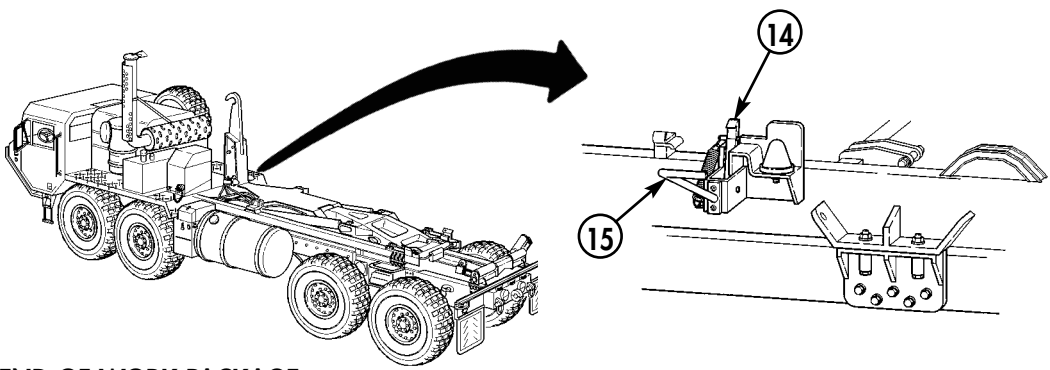
CAUTION

The LHS select switch must be in the 0 (OFF/TRANSPORT) position prior to road travel, or damage to LHS main frame and hook arm cylinders may result.

u. Turn LHS MODE SELECT switch (9) to 0 (OFF/TRANSPORT) position on early models or OFF position on late models.



v. Check BAP hold-down lock (14) at both sides of BAP; handles (15) should be in.



END OF WORK PACKAGE

UNLOADING BAP TO GROUND

THIS WORK PACKAGE SUPERSEDES WP 0021 00, DATED 8 APRIL 2003

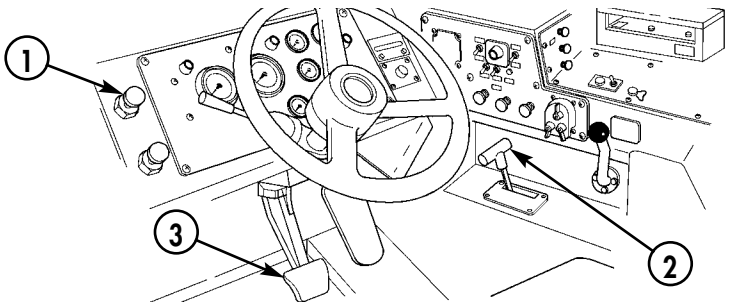
CAUTION

Assistant will act as ground guide when maneuvering CBT and during operation of the LHS. Failure to comply may result in damage to equipment.

NOTE

During all transporter operations, the CBT operator will drive and be responsible for the operation of the LHS via the cab and remote control boxes. The assistant will act as a ground guide, be responsible for directing the operator using hand signals, and assist the operator as needed.

a. Position CBT so that rear of vehicle is approximately 16 ft. (4.9 m) in front of where BAP is to set on ground, apply service brake (3), move transmission selector lever (2) to N (neutral), and pull parking brake control (1) out.

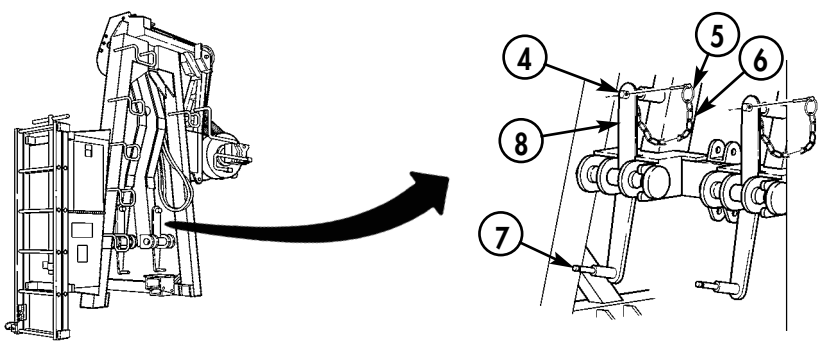


NOTE

When both levers are in the UP position, the winch frame is locked to the BAP. Perform steps b and c if levers are in the DOWN position.

b. Remove quick-release pin (5) from stud (7) at both sides of winch frame (6).

c. Swing lever (8) up so that end of stud (4) is through hole in lever (8), and install quick-release pin (5) on stud (4) at both sides of winch frame (6).



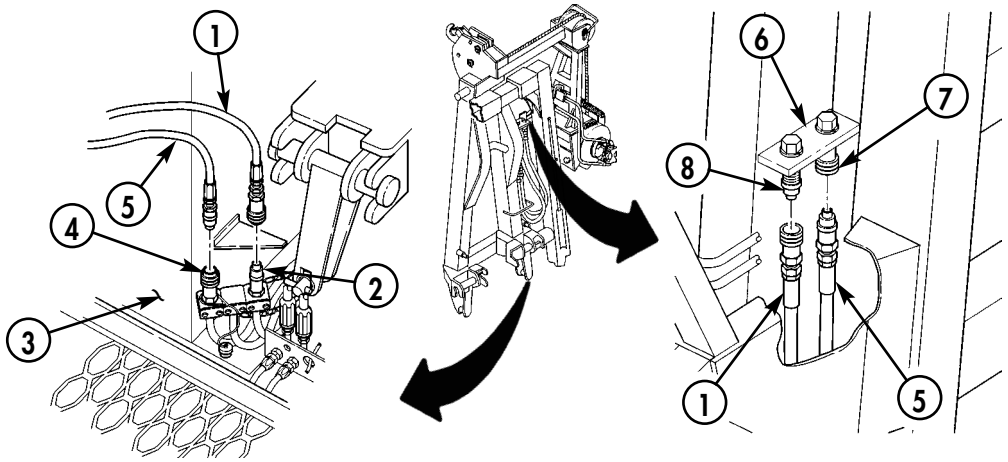
UNLOADING BAP TO GROUND (Contd)

NOTE

Perform steps d and e if BAP winch hydraulic hoses are connected to LHS couplings or disconnected from stowage couplings.

d. Disconnect winch hydraulic hoses (5) and (1) from LHS couplings (4) and (2), located on LHS hook arm (3).

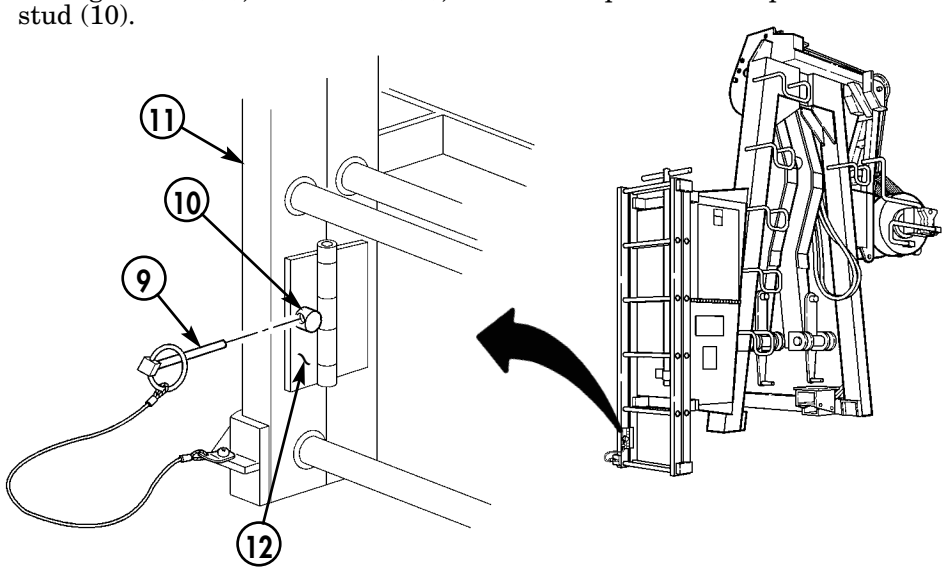
e. Connect winch hoses (5) and (1) to stowage couplings (7) and (8), located on winch frame bracket (6).



NOTE

Perform step f if BAP mounting ladder is not secured.

f. Raise sliding half of mounting ladder (11) up until stud (10) aligns with stowage latch (12), close latch (12), and install quick-release pin (9) on stud (10).



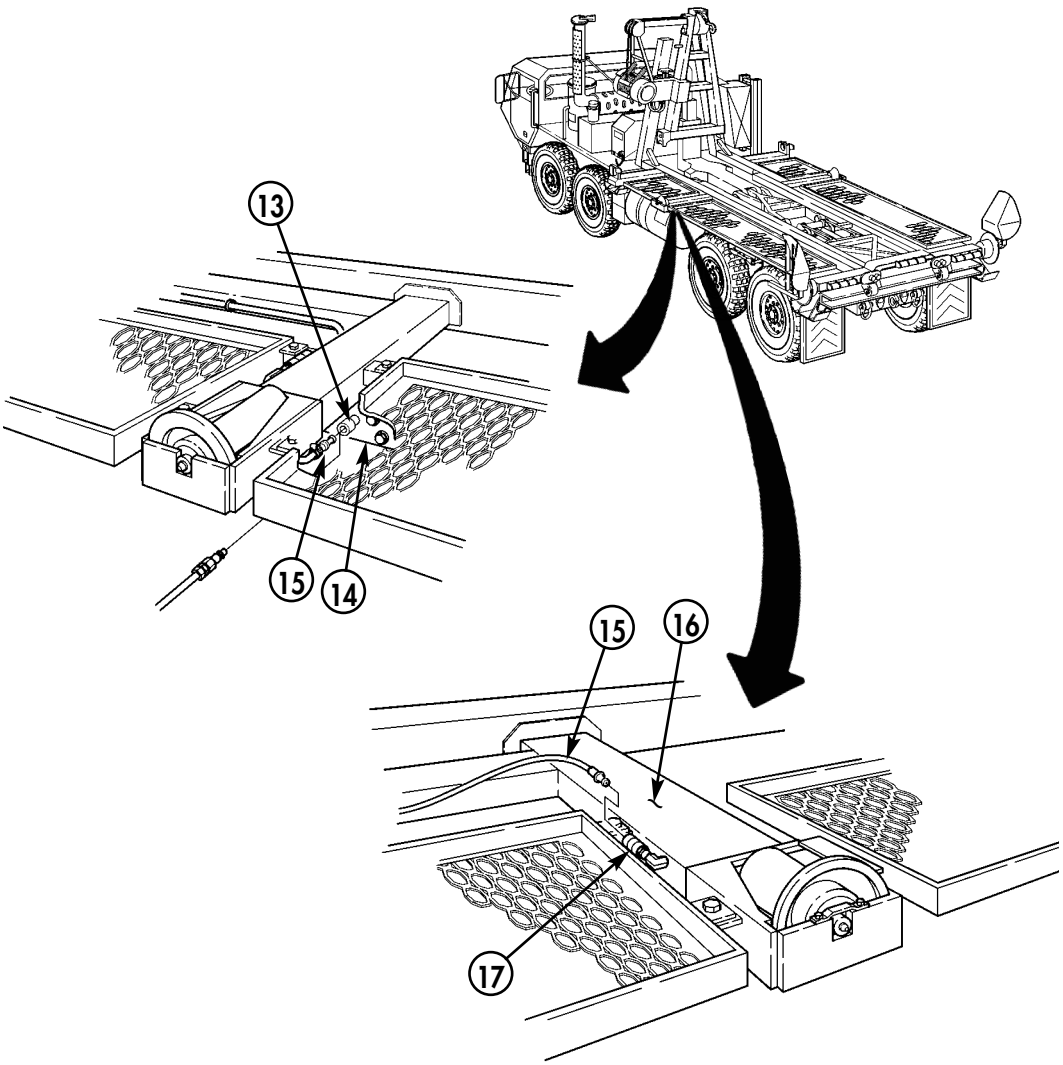
UNLOADING BAP TO GROUND (Contd)

NOTE

Perform steps g and h if BAP air supply hose is connected to transporter or disconnected from stowage coupling.

g. Disconnect air supply hose (15) from tire inflation air coupling (13), located on vehicle frame (14) near fuel tank at driver's side.

h. Connect air supply hose (15) to stowage coupling (17) at side of BAP frame (16).



UNLOADING BAP TO GROUND (Contd)

WARNING

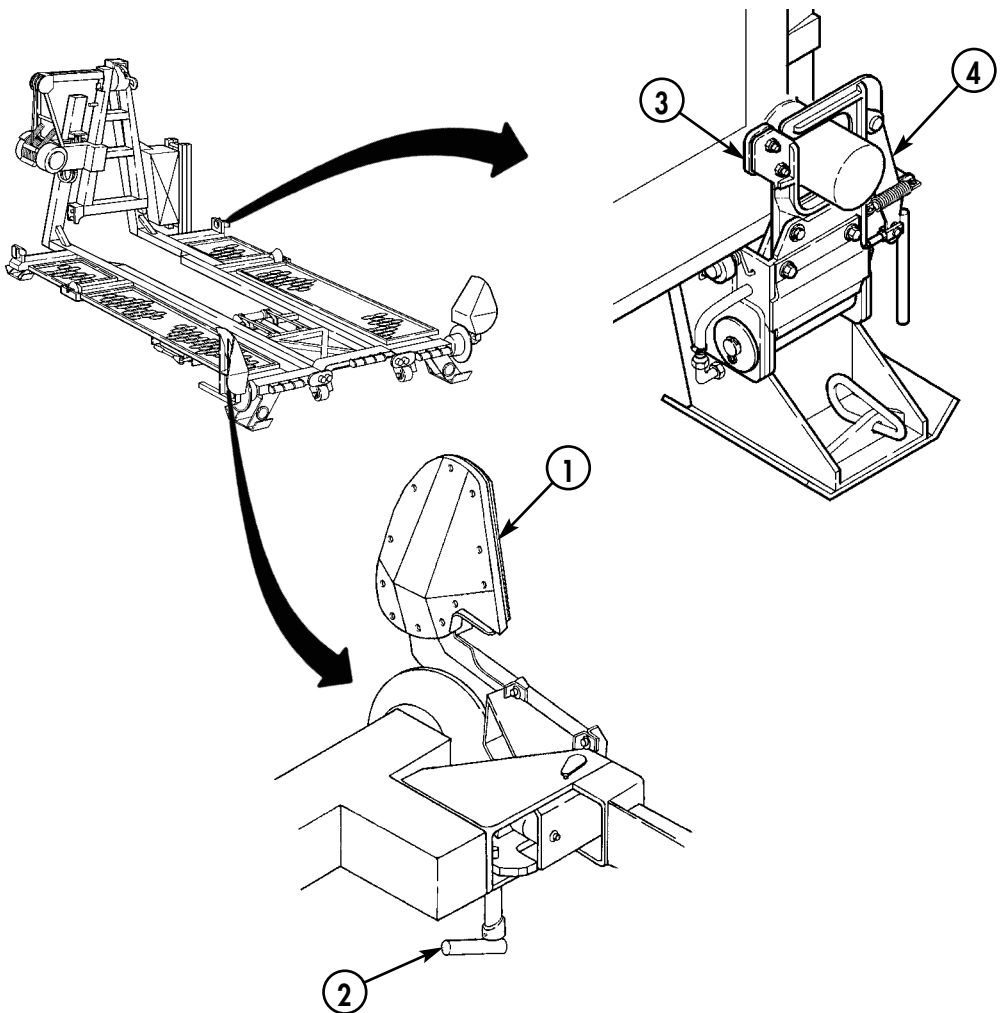
If BAP is loaded, ensure front pin lock assemblies are up and their jaws closed, and rear guides are locked in the MID position at both sides of BAP. Failure to comply may result in possible loss of bay or rollover of transporter, causing damage to equipment and possible injury or death to personnel.

NOTE

Perform steps i and j if bay is loaded on BAP.

i. Rotate handle (2) until rear guide (1) is disengaged and move rear guide (1) inboard or outboard until locked in MID position at both sides of BAP.

j. Position both front pin lock assemblies (4) in UP position, and ensure jaws (3) are locked.

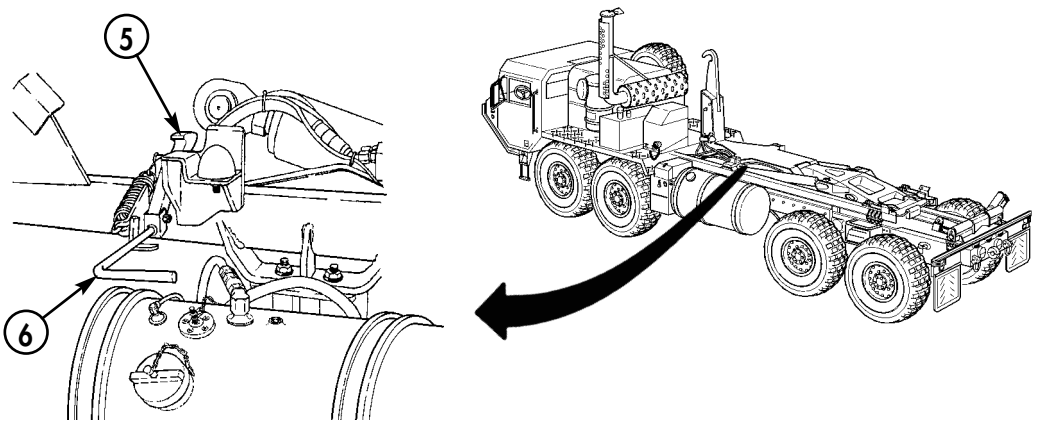


UNLOADING BAP TO GROUND (Contd)

CAUTION

BAP hold-down locks must be unlocked prior to unloading BAP to ground. Failure to comply will result in damage to equipment.

k. Set both BAP hold-down locks (5) in DISENGAGED position by pulling out handles (6).

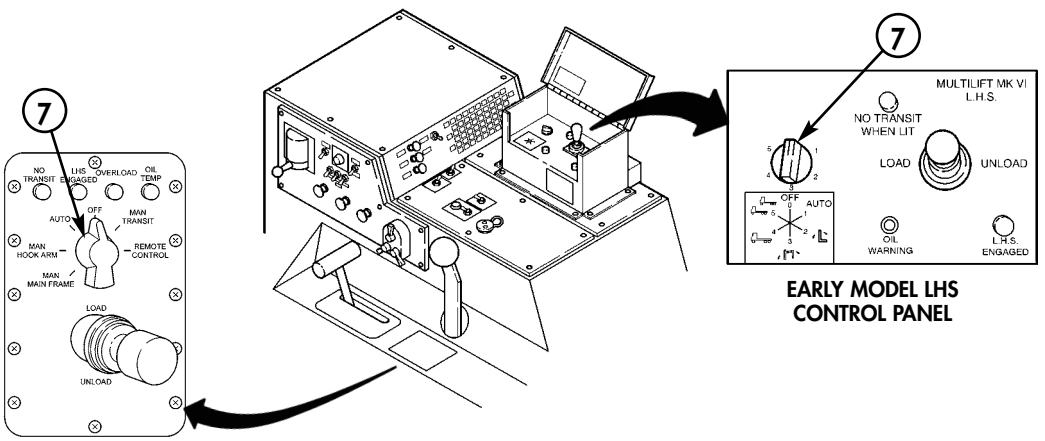


NOTE

Operator will perform steps l through u using LHS controls.

Ensure LHS RCU emergency stop switch is in the ON position if RCU is connected to LHS receptacle; cab LHS controls will not function otherwise.

l. Turn LHS MODE SELECT switch (7) to No. 1 (AUTO SEQUENCE) position on early models or AUTO position on late models.



LATE MODEL LHS CONTROL PANEL

EARLY MODEL LHS CONTROL PANEL

UNLOADING BAP TO GROUND (Contd)

CAUTION

High idle switch must be in the OFF position prior to engaging PTO. Failure to comply may result in damage to the vehicle transmission or the LHS.

m. With HIGH IDLE switch (3) in OFF position, turn PTO ENGAGE switch (1) to ON position. PTO ENGAGE indicator (2) will light.

WARNING

When the NO TRANSIT WHEN LIT indicator is illuminated, the CBT may be maneuvered in the immediate vicinity of the loading/unloading site, but should not be driven on the open road. Failure to comply may result in damage to equipment and possible injury or death to personnel.

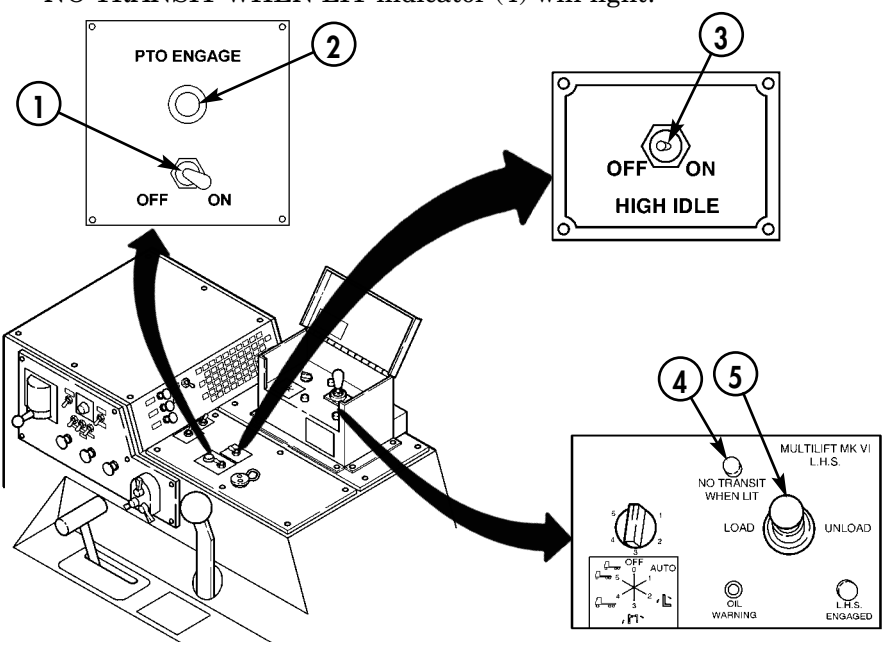
CAUTION

To prevent surging or uneven operation of LHS or BAP winch, either perform all operations with CBT HIGH IDLE switch off, or engage CBT high idle after LHS or BAP winch is in motion, and disengage CBT high idle prior to stopping motion. Failure to comply may result in damage to equipment.

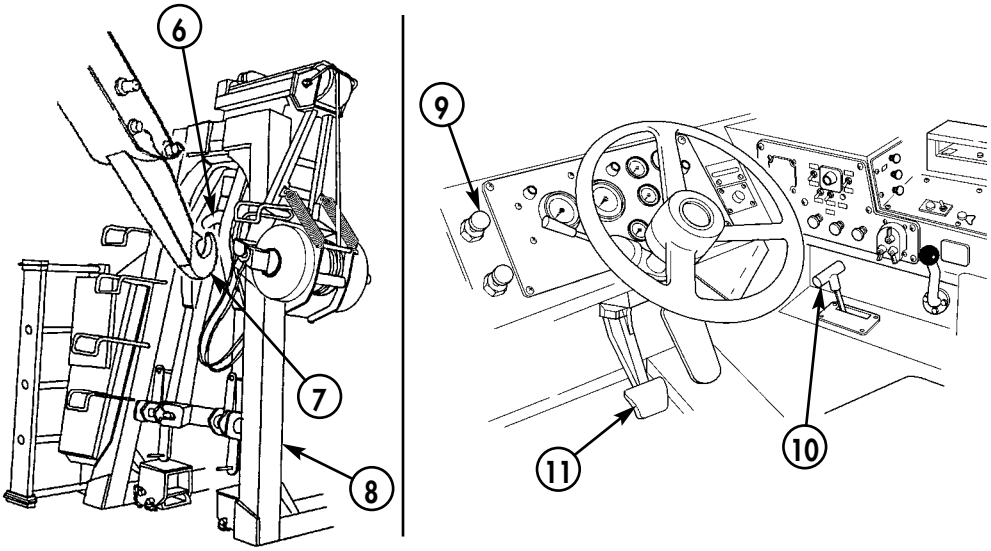
NOTE

The LHS ENGAGED indicator will light up whenever the joystick is held in the LOAD or UNLOAD position.

n. Hold joystick (5) in UNLOAD position and move HIGH IDLE switch (3) to ON until LHS hook arm (7) moves BAP (8) rearward and rear end of BAP (8) contacts ground. Move HIGH IDLE switch (3) to OFF and release joystick (5). NO TRANSIT WHEN LIT indicator (4) will light.



UNLOADING BAP TO GROUND (Contd)



NOTE

CBT should be in neutral and parking brake released to allow transporter to roll forward when unloading BAP.

o. Hold joystick (5) in UNLOAD position and move HIGH IDLE switch (3) to ON until front end of BAP (8) is approximately 1 ft (0.3 m) from ground. Move HIGH IDLE switch (3) to OFF and release joystick (5).

p. Hold joystick (5) in UNLOAD position until front end of BAP (8) rests on ground, then release joystick (5) and set parking brake by pulling PARKING BRAKE control (9) out.

CAUTION

Ensure HIGH IDLE switch is in OFF position prior to putting vehicle transmission in gear or damage to transmission may result.

NOTE

If LHS hook arm does not disengage, drive CBT forward 2 in. (5 cm) and repeat step s.

q. Hold joystick (5) in UNLOAD position until end of LHS hook (7) is fully disconnected from BAP hook bar (6).

r. Push PARKING BRAKE control (9) in and drive CBT forward 5 ft (1.5 m), apply service brake (11), move transmission selector lever (10) to N (neutral), and set parking brake by pulling PARKING BRAKE control lever (9) out.

UNLOADING BAP TO GROUND (Contd)

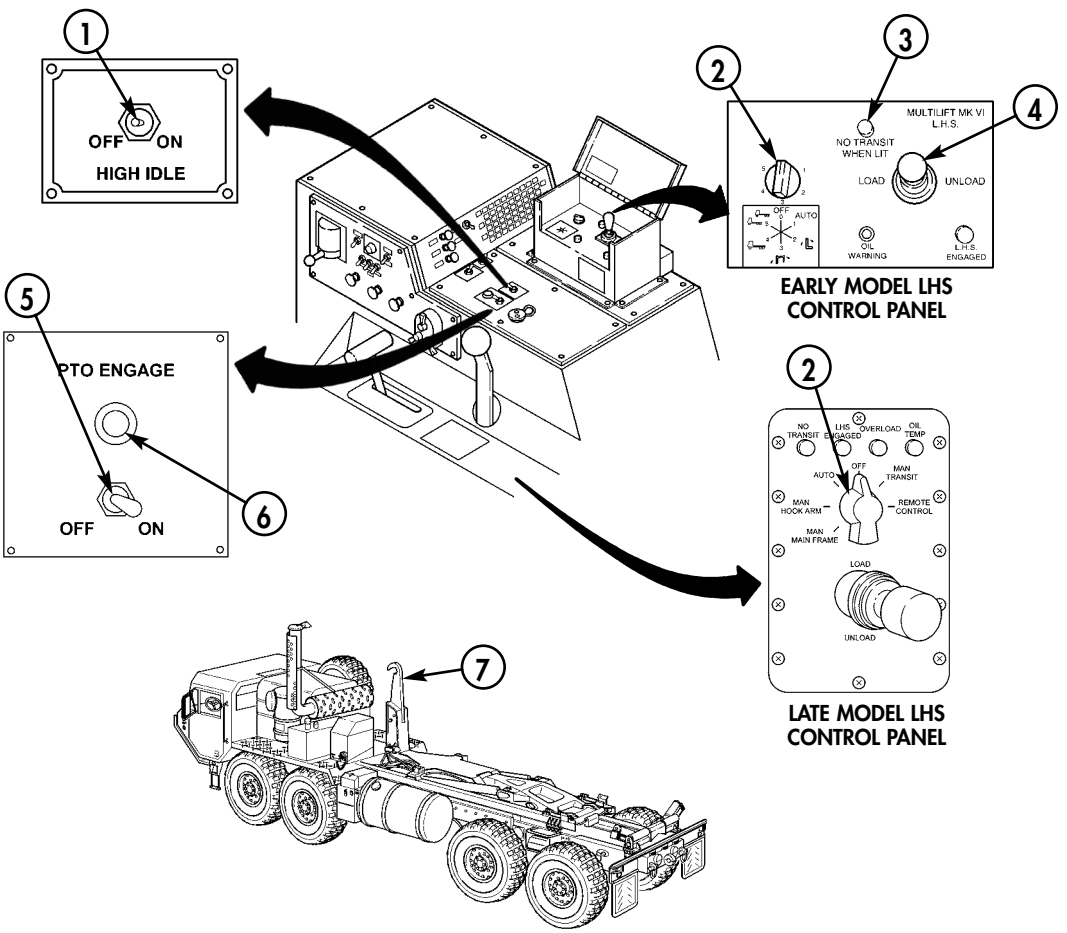
s. Hold joystick (4) in LOAD position and move HIGH IDLE switch (1) to ON until LHS hook arm (7) is fully stowed and NO TRANSIT WHEN LIT indicator (3) is off. Move HIGH IDLE switch (1) to OFF and release joystick (4).

t. Turn PTO ENGAGE switch (5) to OFF position. PTO ENGAGE indicator (6) should go off.

CAUTION

The LHS mode select switch must be in the 0 (OFF/TRANSPORT) position prior to road travel or damage to LHS main frame and hook arm cylinders may result.

u. Turn LHS MODE SELECT switch (2) to 0 (OFF/TRANSPORT) position on early models or OFF position on late models.



END OF WORK PACKAGE

LOADING BAY FROM GROUND

THIS WORK PACKAGE SUPERSEDES WP 0022 00, DATED 8 APRIL 2003

CAUTION

Assistant will act as a ground guide when maneuvering CBT and during operation of the LHS. Failure to comply may result in damage to equipment.

NOTE

During all transporter operations, the CBT operator will drive and be responsible for the operation of the LHS via the cab and remote control boxes. The assistant will act as a ground guide, be responsible for directing the operator using hand signals, and assist the operator as needed.

The BAP must be loaded on the CBT prior to loading bay. Perform step a if BAP is not loaded on CBT.

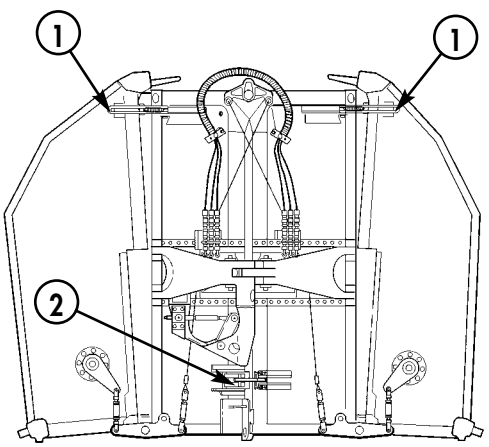
a. Load BAP on CBT. (Refer to WP 0020 00, Loading BAP from Ground.)

NOTE

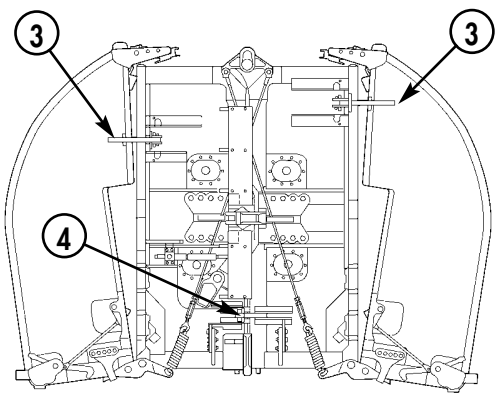
Perform step b if loading ramp bay or step c if loading interior bay.

b. Check to ensure both foldlocks (1) and travel latch (2) are in their closed positions at the connecting end of ramp bay.

c. Check to ensure both foldlocks (3) and travel latch (4) at both ends of interior bay are in their closed positions.



RAMP BAY



INTERIOR BAY

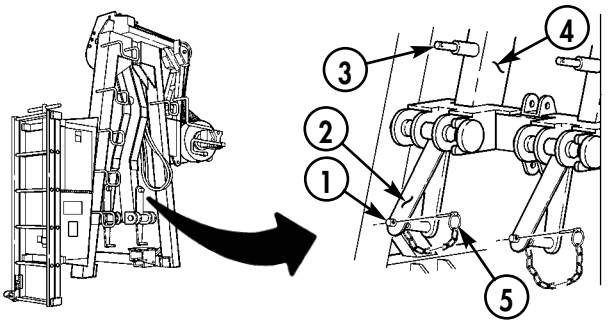
LOADING BAY FROM GROUND (Contd)

NOTE

When both levers are in the DOWN position, the winch frame is locked to the LHS hook arm. Perform steps d and e if levers are in the UP position.

d. Remove quick-release pin (5) from stud (3) at both sides of winch frame (4).

e. Swing lever (2) down so that end of stud (1) is through hole in lever (2), and install quick-release pin (5) on stud (1) at both sides of winch frame (4).



NOTE

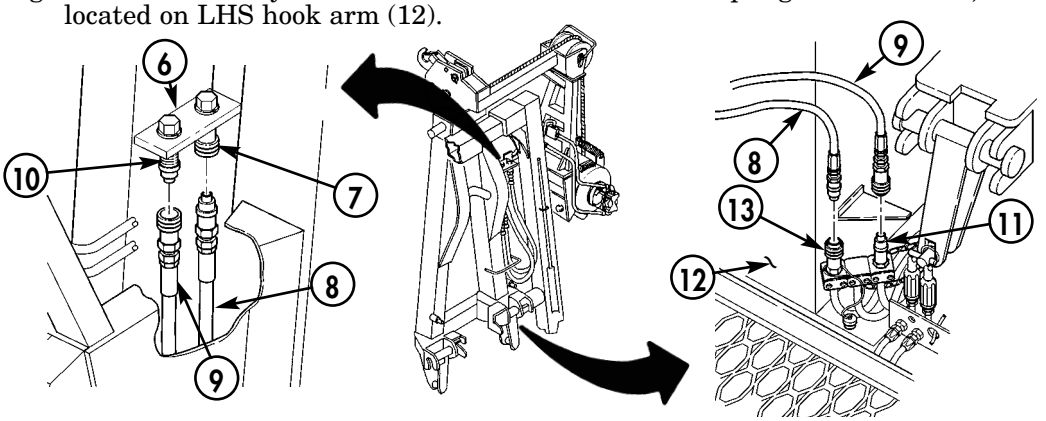
Perform steps f and g if BAP winch hoses are not connected to the LHS couplings.

f. Disconnect winch hoses (9) and (8) from stowage couplings (10) and (7), located on winch frame bracket (6).

CAUTION

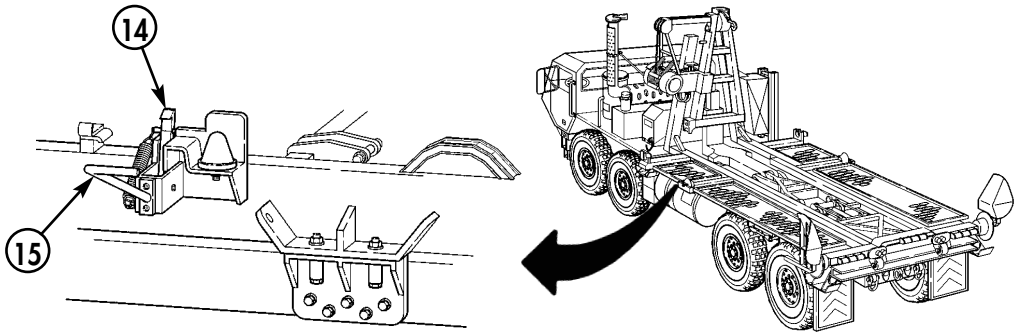
Ensure BAP winch hydraulic hoses are routed so that they are free to move with the LHS hook arm or damage to hoses will result.

g. Connect winch hydraulic hoses (8) and (9) to LHS couplings (13) and (11), located on LHS hook arm (12).



LOADING BAY FROM GROUND (Contd)

h. Check hold-down lock (14) at both sides of BAP to ensure they are in AUTO ENGAGED position; handles (15) should be in.

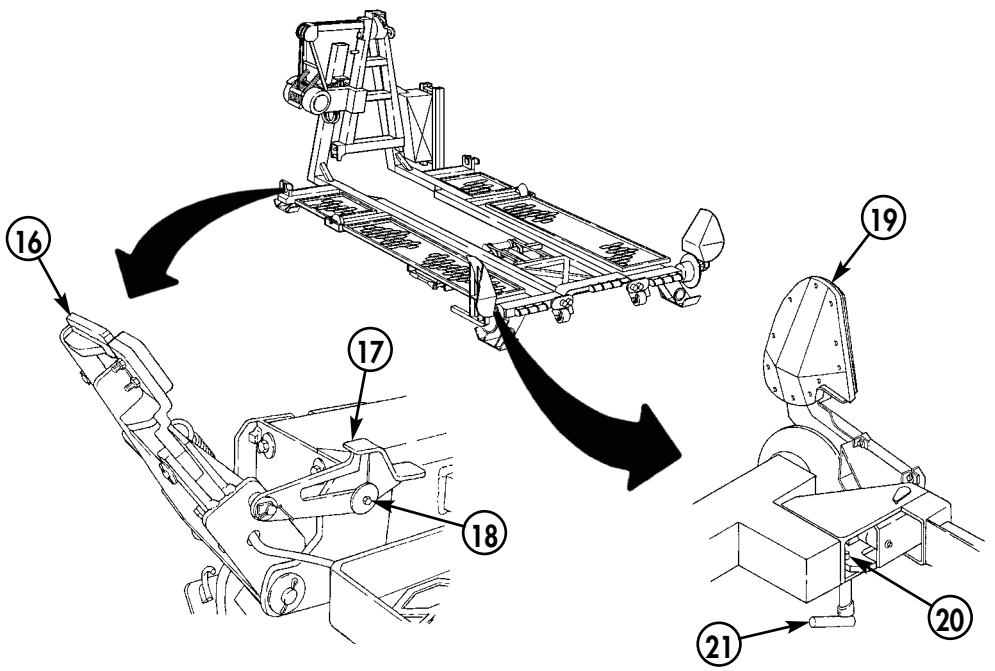


WARNING

Keep hands and fingers clear of front pin lock assemblies once set in the DOWN position. Failure to comply may result in injury to personnel.

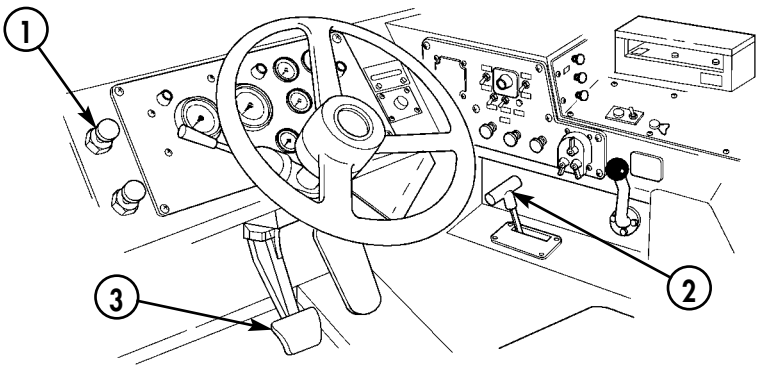
i. Set both front pin lock assemblies (16) in DOWN position by pulling back front pin lock assembly (16) until latch pin (18) engages latch (17) in UP position.

j. Set both rear guides (19) in MID position by rotating handle (21) until rear guide (19) is disengaged, then move rear guide (19) inboard or outboard until latch pin (20) engages rear guide (19).



LOADING BAY FROM GROUND (Contd)

k. Position CBT so that rear of vehicle is approximately 5 ft (1.5 m) in front of bay, apply service brake (3), move transmission selector lever (2) to N (neutral), and pull PARKING BRAKE control (1) out.



NOTE

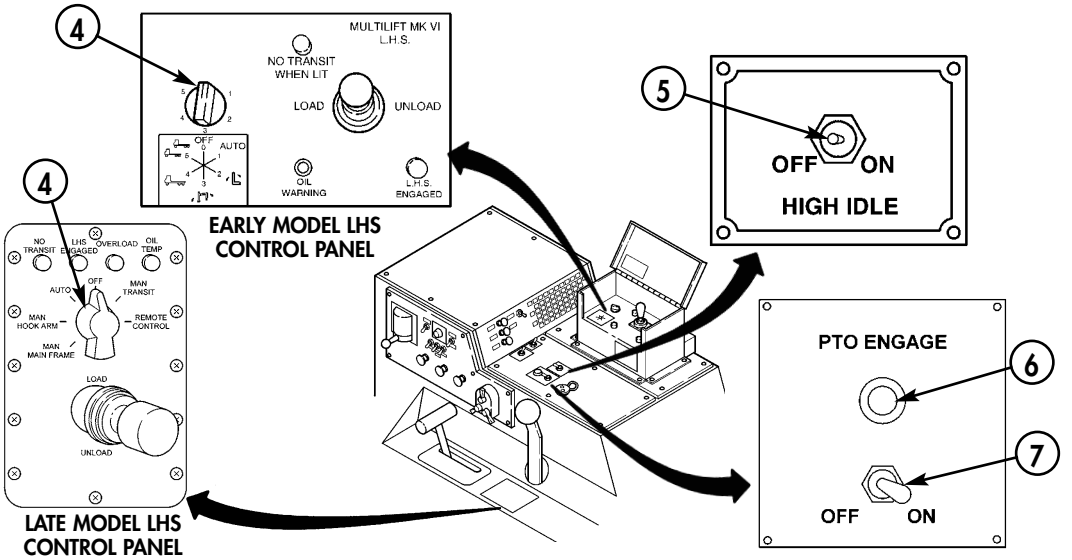
Operator will perform steps l and m from cab using the LHS controls.

l. Turn LHS MODE SELECT switch (4) to 0 (OFF/TRANSPORT) position on early models or REMOTE CONTROL position on late models.

CAUTION

HIGH IDLE switch must be in the OFF position prior to engaging PTO. Failure to comply may result in damage to vehicle transmission or the LHS.

m. With HIGH IDLE switch (5) in OFF position, turn PTO ENGAGE switch (7) to ON position. PTO ENGAGE indicator (6) will light.



LOADING BAY FROM GROUND (Contd)

NOTE

In case of emergency while RCU is in use, push red POWER EMERGENCY STOP switch to shut down operation of LHS.

Operator will perform steps n through ab using RCU.

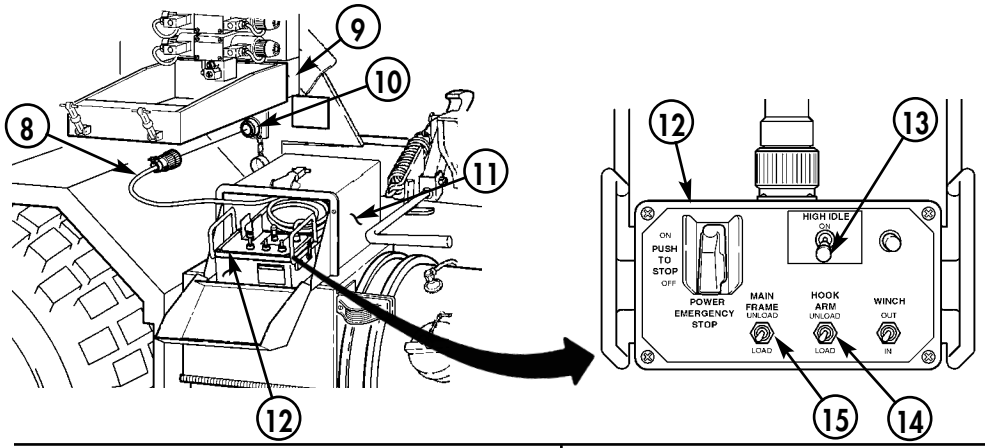
n. Remove remote control unit (12) and RCU cable (8) from stowage box (11), and connect RCU cable (8) to receptacle (10), located at main manifold support frame (9).

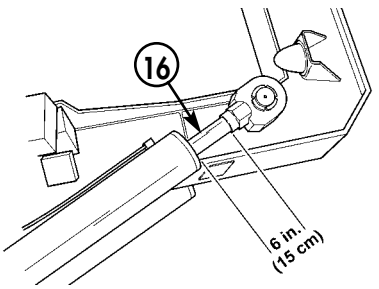
CAUTION

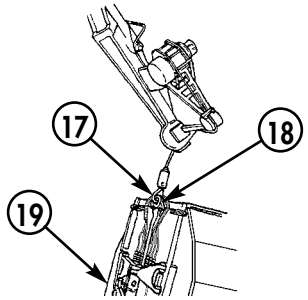
To prevent surging or uneven operation of LHS or BAP winch, either perform all operations with CBT HIGH IDLE switch off, or engage CBT high idle after LHS or BAP winch is in motion, and disengage CBT high idle prior to stopping motion. Failure to comply may result in damage to equipment.

o. Hold HOOK ARM switch (14) in UNLOAD position and move HIGH IDLE switch (13) to ON until hook arm cylinders (16) are extended approximately 6 in. (15 cm). Move HIGH IDLE switch (13) to OFF and release switch (14).

p. Hold MAIN FRAME switch (15) in UNLOAD position and move HIGH IDLE switch (13) to ON until winch cable hook (17) is approximately 2 ft (0.6 m) above lifting lug (18) of bay (19). Move HIGH IDLE switch (13) to OFF and relase MAIN FRAME switch (15).







LOADING BAY FROM GROUND (Contd)

WARNING

Always wear leather gloves when handling winch cable. Failure to comply may result in injury to personnel.

The cable drum requires a minimum of four wraps of cable for safety. Failure to comply may result in damage to equipment or possible injury or death to personnel.

q. While assistant maintains tension on winch cable (6), hold WINCH switch (2) in OUT position and move HIGH IDLE switch (1) to ON until winch cable hook (5) can be connected to lifting lug (8). Move HIGH IDLE switch (1) to OFF and release WINCH switch (2).

r. With hook end up and facing toward rear of bay, connect winch cable hook (5) to lifting lug (8). Ensure latch (7) is closed.

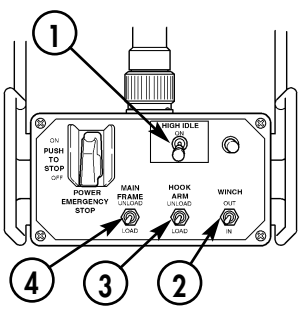
WARNING

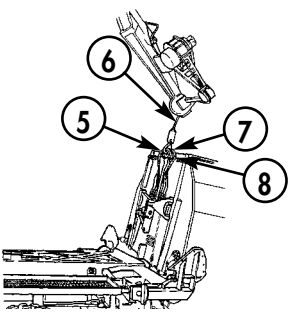
All personnel must stand clear of transporter and bay during lifting operations. Failure to comply may result in injury or death to personnel.

CAUTION

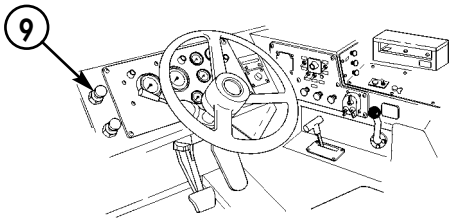
If loading ramp bay from concrete or asphalt surface, place a wood block under the tip of the inner ponton ramp ends to prevent damage should ramp bay slide forward while loading.

s. Hold MAIN FRAME switch (4) in LOAD position until slack is removed from cable (6).





t. Release parking brake by pushing PARKING BRAKE control (9) in.

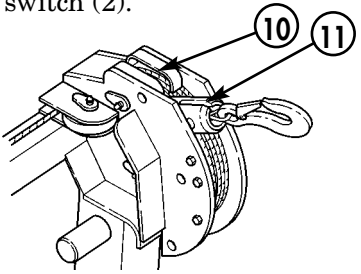


LOADING BAY FROM GROUND (Contd)

CAUTION

Ensure WINCH switch is released once hook holder is seated in winch saddle or damage to equipment may result.

u. Hold WINCH switch (2) in IN position until hook holder (11) is in saddle (10), then release WINCH switch (2).



NOTE

While loading bay, it may be necessary to steer transporter to guide bay onto BAP rear rollers.

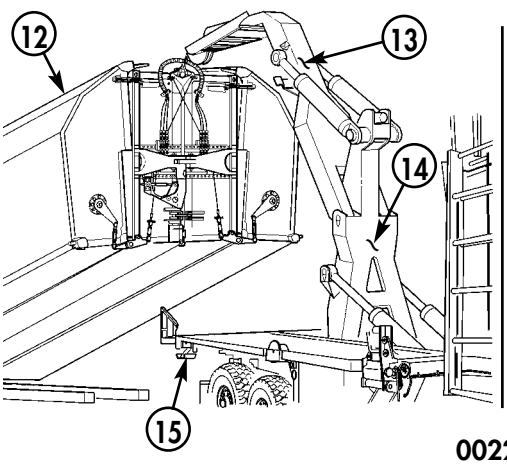
v. Hold MAIN FRAME switch (4) in LOAD position and move HIGH IDLE switch (1) to ON until bay (12) contacts BAP rear rollers (15) and clears ground. Move HIGH IDLE switch (1) to OFF, release switch (4), and pull PARKING BRAKE control (9) out.

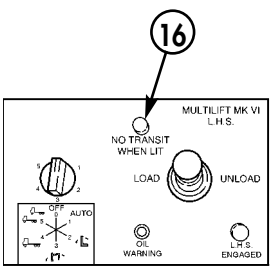
w. Hold MAIN FRAME switch (4) in LOAD position and move HIGH IDLE switch (1) to ON until LHS main frame (14) is fully stowed. Move HIGH IDLE switch (1) to OFF and release MAIN FRAME switch (4).

WARNING

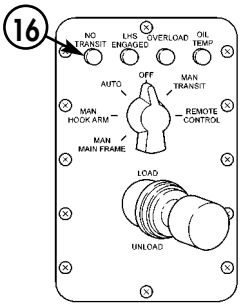
When the NO TRANSIT WHEN LIT indicator is illuminated, the CBT may be maneuvered in the immediate vicinity of the loading/unloading site, but should not be driven on the open road. Failure to comply may result in damage to equipment and possible injury or death to personnel.

x. Hold HOOK ARM switch (3) in LOAD position until LHS hook arm (13) is fully stowed, then release switch (3). NO TRANSIT WHEN LIT indicator (16) should be off.





EARLY MODEL LHS CONTROL PANEL



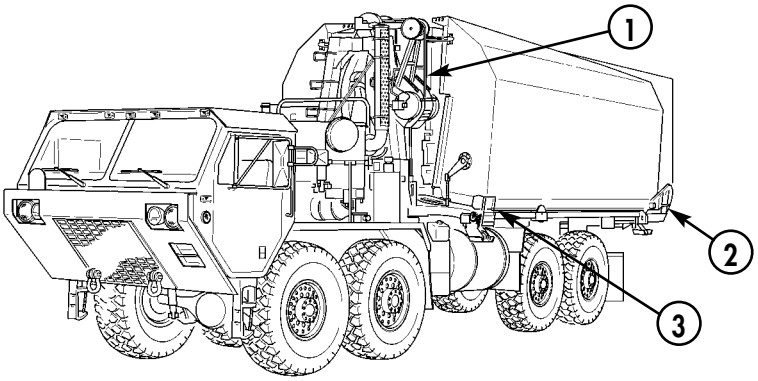
LATE MODEL LHS CONTROL PANEL

LOADING BAY FROM GROUND (Contd)

WARNING

Failure to ensure front pin lock jaws and rear guides lock bay trunnions after bay is loaded on BAP may result in a lost bay or transporter rollover during transport. At least three out of four locks must function. Failure to comply may result in damage to equipment and possible injury or death to personnel.

y. Ensure both front pin locks (3) and rear guides (2) are engaged.

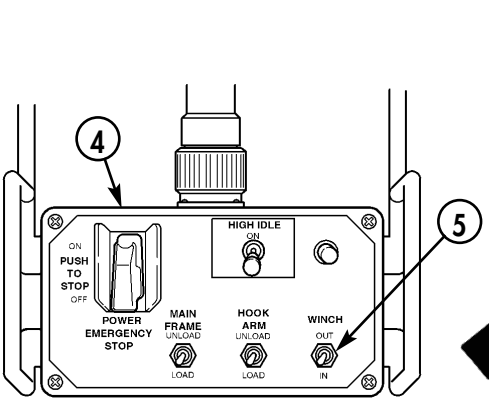


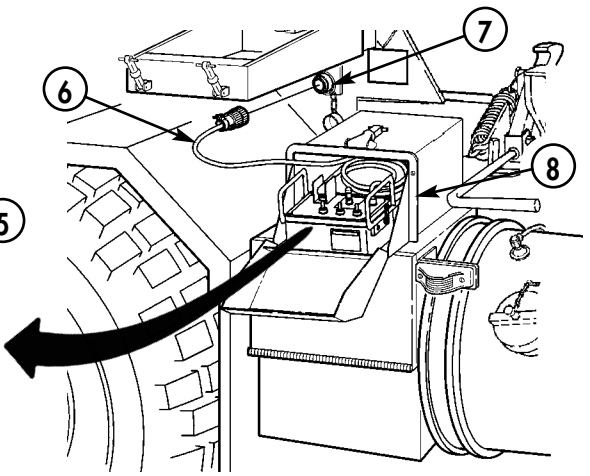
CAUTION

Ensure tension on winch cable is released to avoid undue strain on winch frame and cable during transit. Failure to comply may result in damage to equipment.

z. Hold WINCH switch (5) in OUT position until tension on winch cable (1) is released.

aa. Disconnect RCU cable (6) from receptacle (7), and stow remote control unit (4) and RCU cable (6) in stowage box (8).

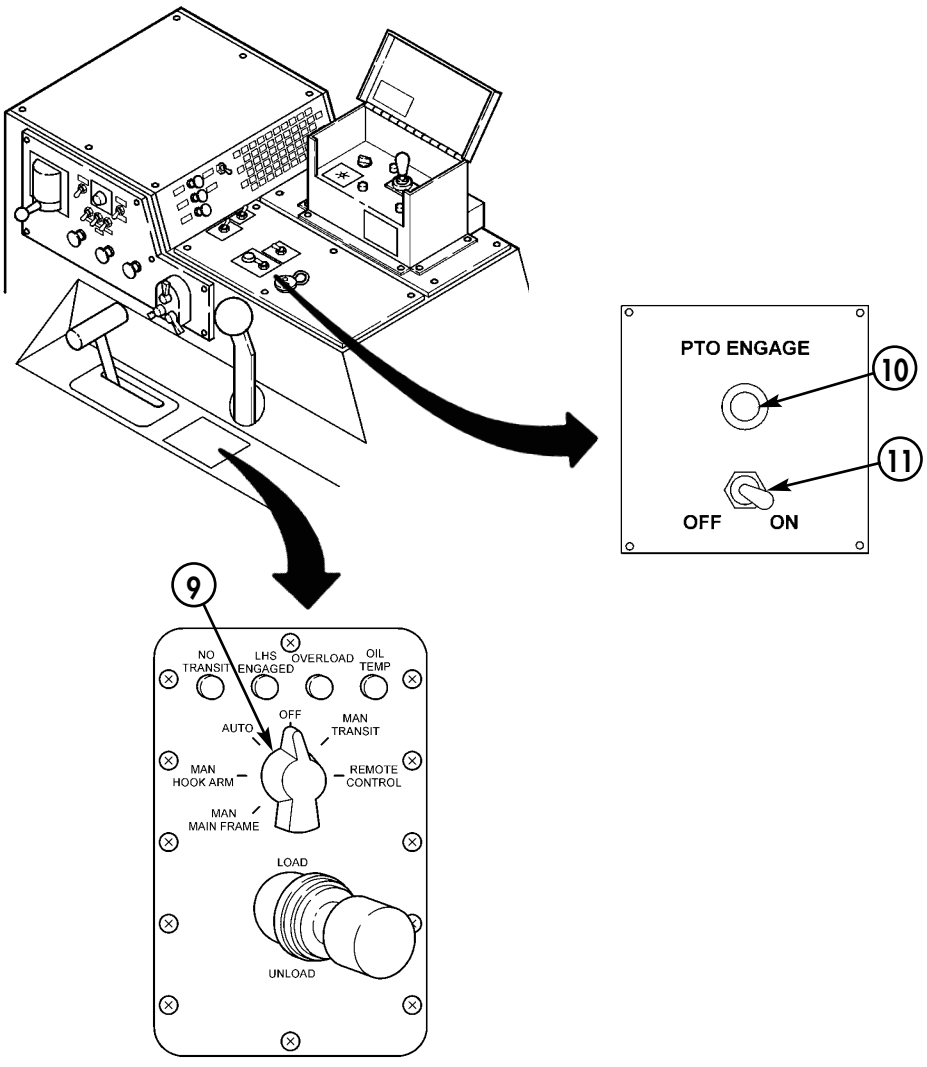




LOADING BAY FROM GROUND (Contd)

ab. Turn PTO ENGAGE switch (11) to OFF position. PTO ENGAGE indicator (10) will go off.

ac. Turn LHS MODE SELECT switch (9) to OFF position on late models.



LATE MODEL LHS CONTROL PANEL

END OF WORK PACKAGE

UNLOADING BAY TO GROUND

THIS WORK PACKAGE SUPERSEDES WP 0023 00, DATED 8 APRIL 2003

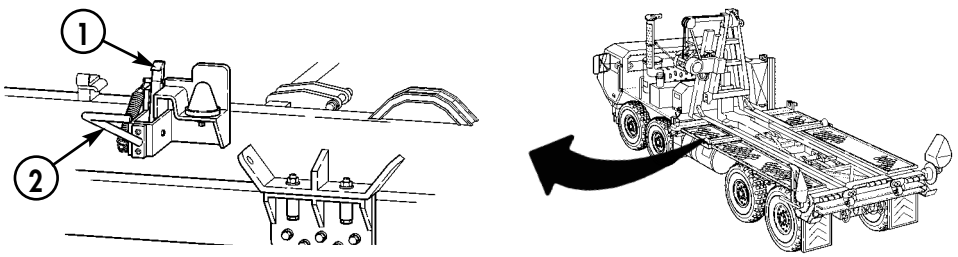
CAUTION

Assistant will act as ground guide when maneuvering CBT and during operation of the LHS. Failure to comply may result in damage to equipment.

NOTE

During all transporter operations, the CBT operator will drive and be responsible for the operation of the LHS via the cab and remote control boxes. The assistant will act as a ground guide, be responsible for directing the operator using hand signals, and assist the operator as needed.

a. Check hold-down lock (1) at both sides of BAP to ensure they are in AUTO ENGAGED position; handles (2) should be in.



WARNING

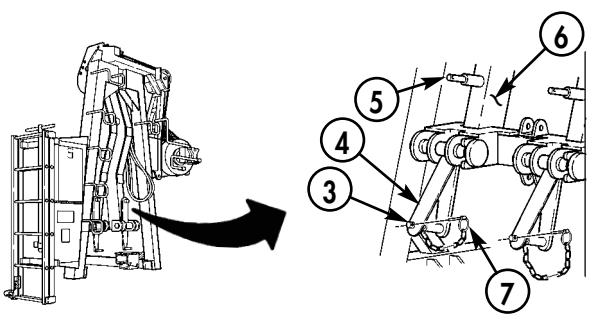
The winch frame must be locked to the LHS hook arm prior to unloading the bay to the ground. Failure to comply may result in damage to equipment or injury to personnel.

NOTE

When both levers are in the DOWN position, the winch frame is locked to the LHS hook arm. Perform steps d and e if levers are in the UP position.

b. Remove quick-release pin (7) from stud (5) at both sides of winch frame (6).

c. Swing lever (4) down so that end of stud (3) is through hole in lever (4), and install quick-release pin (7) on stud (3) at both sides of winch frame (6).



UNLOADING BAY TO GROUND (Contd)

NOTE

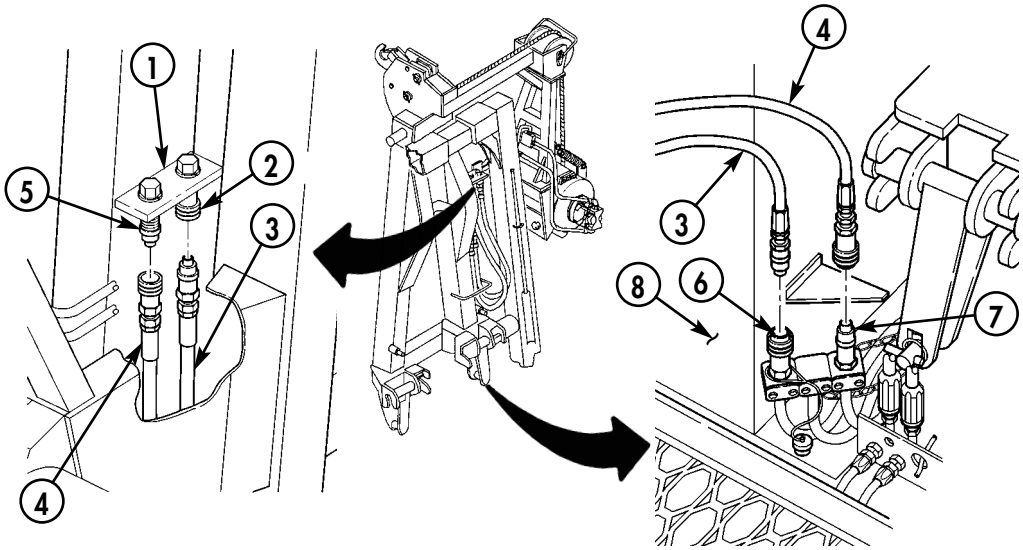
Perform steps d and e if BAP winch hoses are not connected to the LHS couplings.

d. Disconnect winch hoses (4) and (3) from stowage couplings (5) and (2), located on winch frame bracket (1).

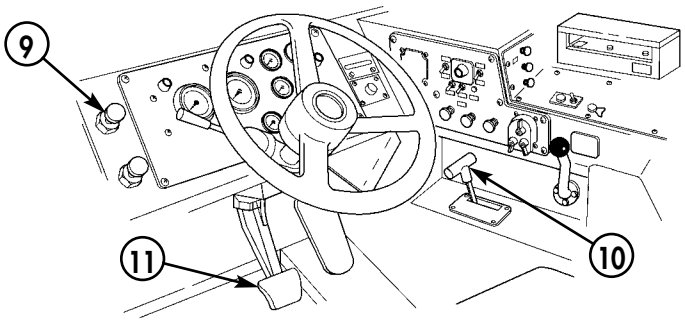
CAUTION

Ensure BAP winch hydraulic hoses are routed so that they are free to move with the LHS hook arm, or damage to hoses will result.

e. Connect winch hydraulic hoses (3) and (4) to LHS couplings (6) and (7), located on LHS hook arm (8).

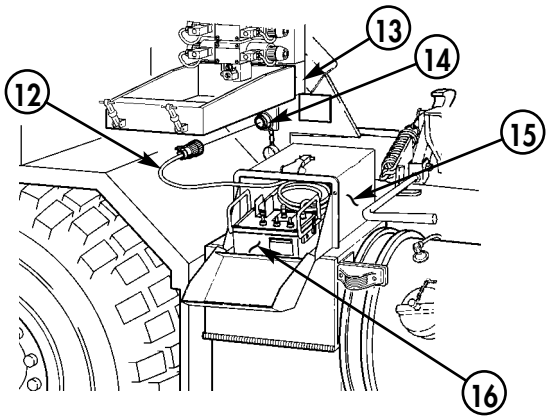


f. Position CBT so that rear of vehicle is approximately 5–6 ft. (1.5–1.8 m) from where rear of bay is to sit on ground, apply service brake (11), move transmission selector lever (10) to N (neutral), and pull PARKING BRAKE control (9) out.



UNLOADING BAY TO GROUND (Contd)

g. Remove remote control unit (16) and RCU cable (12) from stowage box (15), and connect RCU cable (12) to receptacle (14), located at main manifold support frame (13).



NOTE

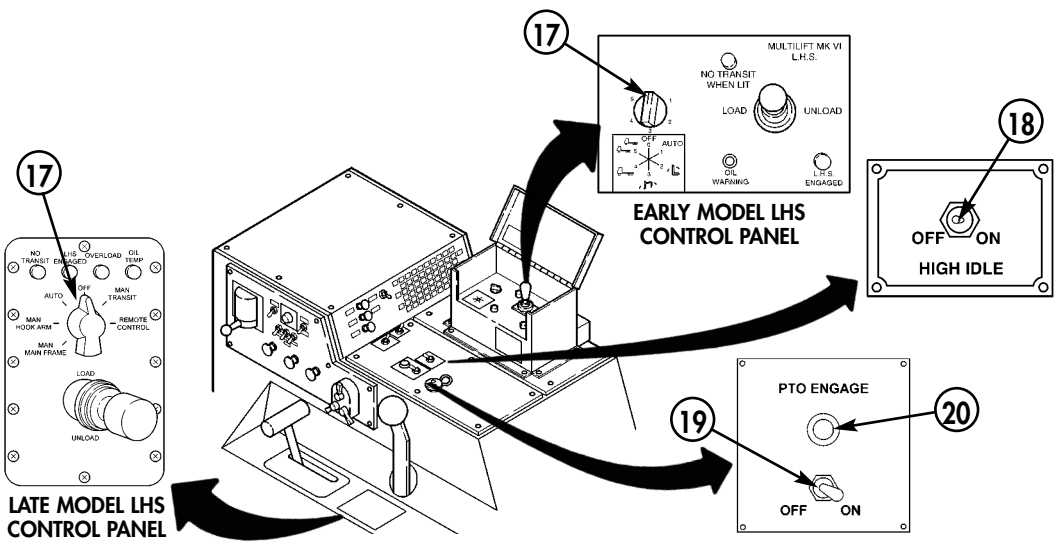
Operator will perform steps h and i from cab using the LHS control box.

h. Turn LHS MODE SELECT switch (17) to 0 (OFF/TRANSPORT) position on early models or REMOTE CONTROL position on late models.

CAUTION

HIGH IDLE switch must be in the OFF position prior to engaging PTO. Failure to comply may result in damage to the vehicle transmission or the LHS.

i. With HIGH IDLE switch (18) in OFF position, turn PTO ENGAGE switch (19) to ON position. PTO ENGAGE indicator (20) will light.



UNLOADING BAY TO GROUND (Contd)

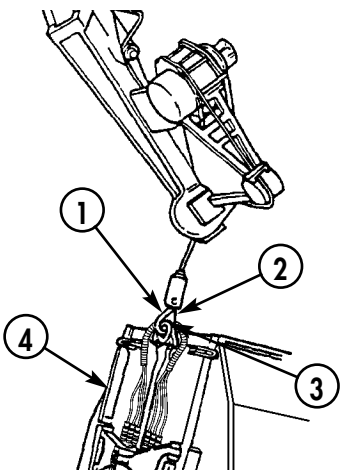
j. Ensure winch cable hook (1) is securely connected to bay's lifting lug (3) with the hook end facing up and toward bay (4). Ensure latch (2) is closed.

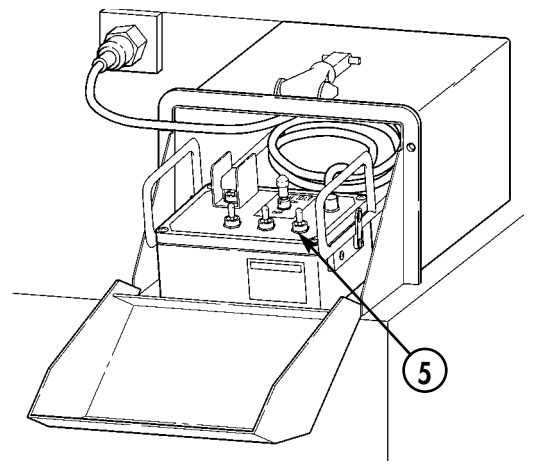
NOTE

In case of emergency while RCU is in use, push red POWER EMERGENCY STOP switch to shut down operation of LHS.

Operator will perform steps k through y using RCU.

k. Hold WINCH switch (5) in IN position until slack in winch cable is removed, then release switch (5).



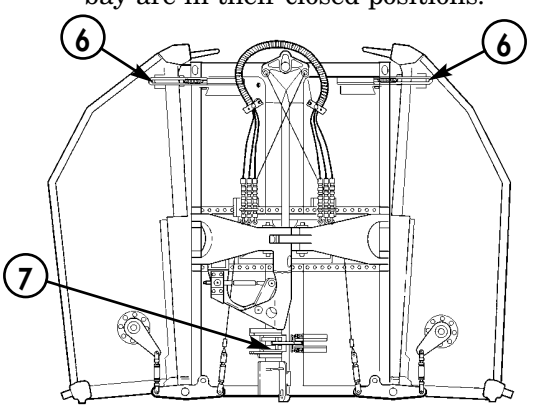


NOTE

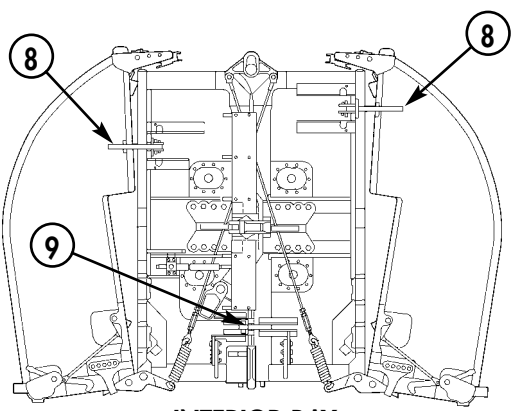
Perform step l if unloading ramp bay or step m if unloading interior bay.

l. Check to ensure both foldlocks (6) and travel latch (7) are in their closed positions at connecting end of ramp bay.

m. Check to ensure both foldlocks (8) and travel latch (9) at both ends of interior bay are in their closed positions.



RAMP BAY



INTERIOR BAY

UNLOADING BAY TO GROUND (Contd)

WARNING

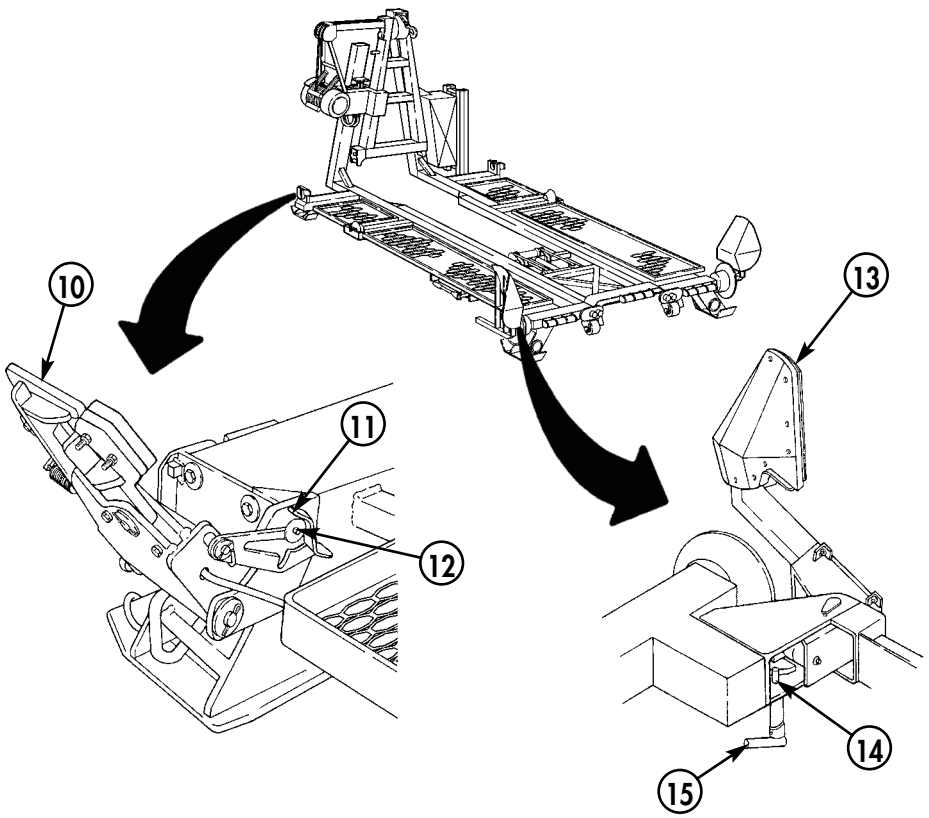
Keep hands and fingers clear of front pin lock assemblies once set in the DOWN position. Failure to comply may result in injury to personnel.

NOTE

Movement of the LHS hook arm may be necessary to release the front pin lock assemblies.

n. Set both front pin lock assemblies (10) in DOWN position by pulling back front pin lock assembly (10) and depressing hatch (11) to DOWN position until engaged with latch pin (12).

o. Set both rear guides (13) in full OUT position by rotating handle (15) until rear guide (13) is disengaged, then move rear guide (13) outboard until latch pin (14) engages rear guide (13).



UNLOADING BAY TO GROUND (Contd)

CAUTION

To prevent surging or uneven operation of LHS or BAP winch, either perform all operations with CBT HIGH IDLE switch off, or engage CBT high idle after LHS or BAP winch is in motion, and disengage CBT high idle prior to stopping motion. Failure to comply may result in damage to equipment.

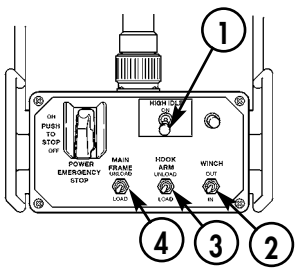
p. Hold HOOK ARM switch (3) in UNLOAD position and move HIGH IDLE switch (1) to ON until hook arm cylinders (5) are extended approximately 6 in. (15 cm). Move HIGH IDLE switch (1) to OFF and release HOOK ARM switch (3).

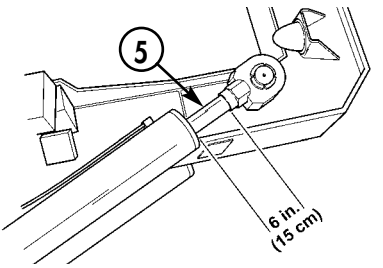
CAUTION

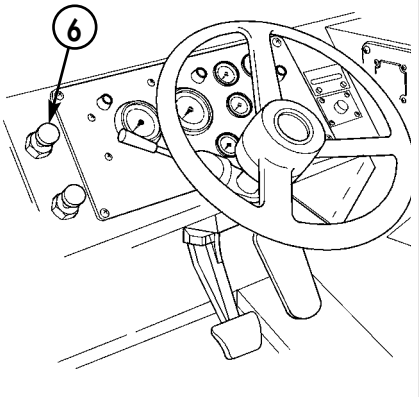
If unloading ramp bay on concrete or asphalt surface, place a wood block under the tip of the inner ponton ramp ends to prevent damage should ramp bay slide forward while unloading.

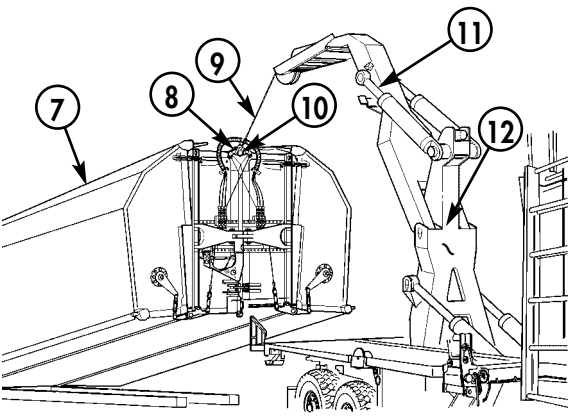
q. Hold MAIN FRAME switch (4) in UNLOAD position and move HIGH IDLE switch (1) to ON until rear of bay (7) touches ground. Move HIGH IDLE switch (1) to OFF, release MAIN FRAME switch (4), and immediately release parking brake by pushing PARKING BRAKE control (6) in.

r. Hold MAIN FRAME switch (4) in UNLOAD position, move HIGH IDLE switch (1) to ON, and steer transporter as it rolls forward. Move HIGH IDLE switch (1) to OFF and release MAIN FRAME switch (4) when front end of bay (7) is approximately 2 ft (0.6 m) above ground.









UNLOADING BAY TO GROUND (Contd)

s. Hold WINCH switch (2) in OUT position and move HIGH IDLE switch (1) to ON until bay (7) rests completely on ground. Move HIGH IDLE switch (1) to OFF, release WINCH switch (2), and pull PARKING BRAKE control (6) out.

WARNING

Always wear leather gloves when handling winch cable. Failure to comply may result in injury to personnel.

t. Hold MAIN FRAME switch (4) to UNLOAD position until winch cable (9) is slackened. Release switch (2) and disconnect winch cable hook (8) from lifting lug (10).

CAUTION

Ensure WINCH switch is released once hook holder is seated in winch saddle or damage to equipment may result.

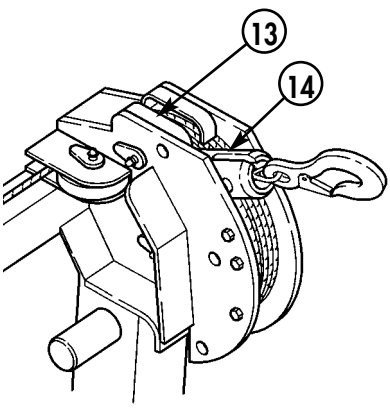
u. While assistant maintains tension on winch cable (9), hold WINCH switch (2) in IN position until hook holder (14) is in saddle (13), then release switch (2).

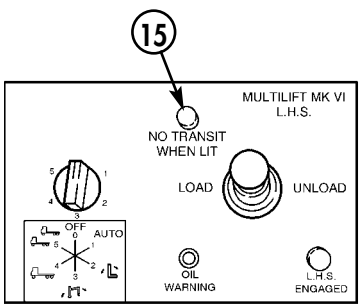
v. Hold MAIN FRAME switch (4) in LOAD position and move HIGH IDLE switch (1) to ON until LHS main frame (12) is fully stowed. Move HIGH IDLE switch (1) to OFF and release MAIN FRAME switch (4).

WARNING

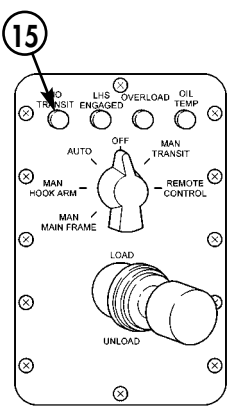
When the NO TRANSIT WHEN LIT indicator is illuminated, the CBT may be maneuvered in the immediate vicinity of the loading/unloading site, but should not be driven on the open road. Failure to comply may result in damage to equipment and possible injury or death to personnel.

w. Hold HOOK ARM switch (3) in LOAD position until LHS hook arm (11) is fully stowed and NO TRANSIT WHEN LIT indicator (15) is off.





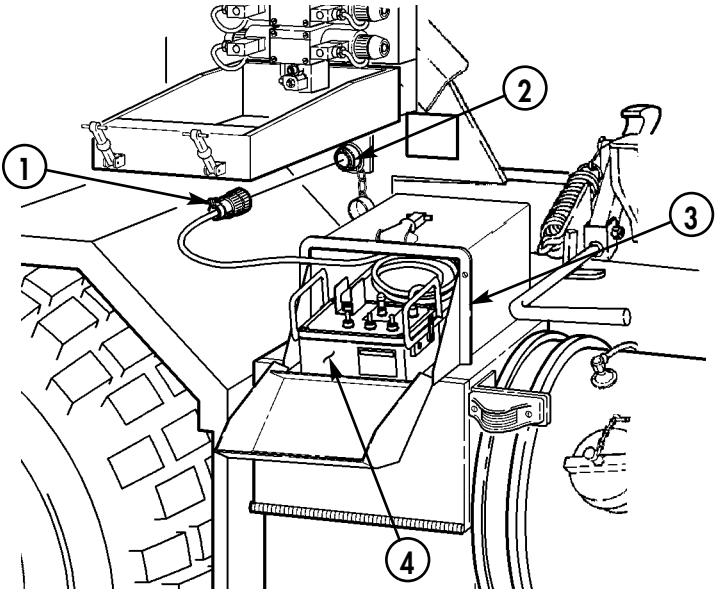
EARLY MODEL LHS CONTROL PANEL



LATE MODEL LHS CONTROL PANEL

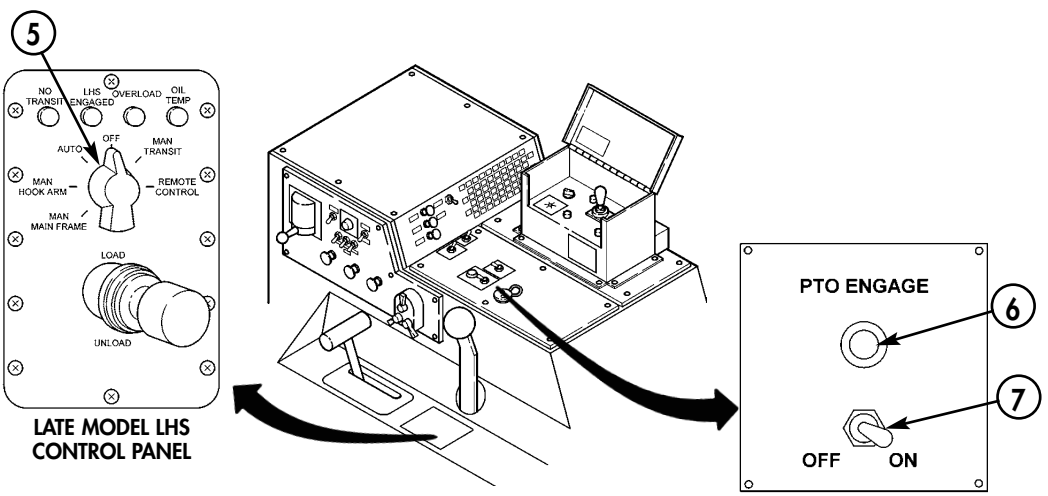
UNLOADING BAY TO GROUND (Contd)

x. Disconnect RCU cable (1) from receptacle (2), and stow remote control unit (4) and RCU cable (1) in stowage box (3).



y. Turn PTO ENGAGE switch (7) to OFF position. PTO ENGAGE indicator (6) will go off.

z. Turn LHS MODE SELECT switch (5) to OFF position on late models.

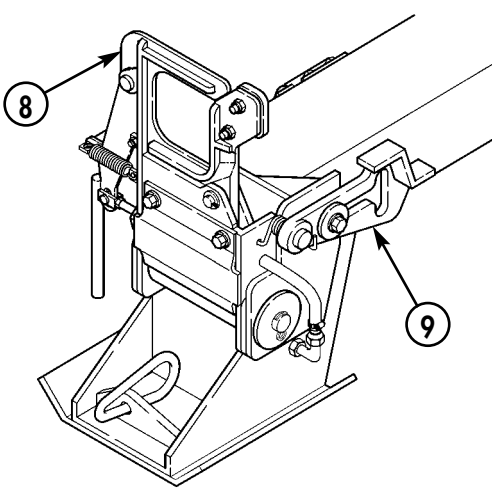


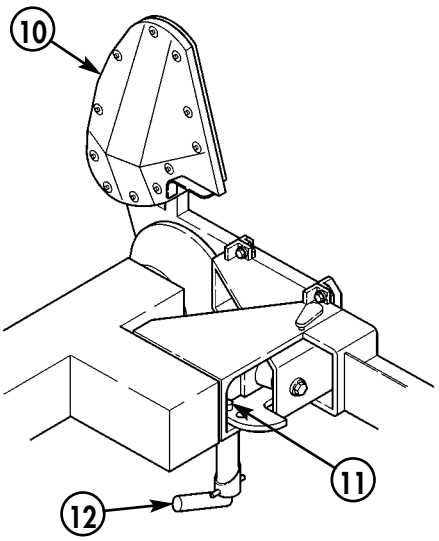
LATE MODEL LHS CONTROL PANEL

UNLOADING BAY TO GROUND (Contd)

aa. Set both front pin lock assemblies (8) in UP position by pulling assembly (8) out, moving latch (9) to UP position, and releasing assembly (8) inboard.

ab. Set both rear guides (10) in full IN position by rotating handle (12) until rear guide (10) disengages, then move rear guide (10) inboard until latch pin (11) engages rear guide (10).





END OF WORK PACKAGE

TRANSLOADING BAP TO PLS TRAILER

WARNING

Prior to and during any load or unload cycle, all personnel should stay clear of LHS and BAP, or serious injury or death to personnel may result.

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

When operating Transporter with Palletized Load System (PLS) trailer, the heaviest loaded BAP must always be placed on the Transporter; otherwise, adverse handling and/or braking may result, causing injury or death to personnel.

Ensure trailer air system is charged before beginning transfer, or trailer locks may not engage properly. Serious injury or death to personnel could result.

CAUTION

To avoid damage to equipment during transfer operations, ensure trailer drawbar extension is retracted and on the ground, centered forward of trailer. Ensure drawbar and drawbar extensions are properly stowed. (Refer to TM 9-2330-385-14).

Ensure air lines and cables are properly stowed, to prevent damage to equipment. (Refer to TM 9-2330-385-14).

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

NOTE

During all transporter operations, the operator will drive and be responsible for operation of LHS cab control box or Remote Control Unit (RCU). The assistant acts as a ground guide and will be responsible for directing the operator using hand signals and assisting the operator as needed.

a. Check transfer site for 22 ft (6.7 m) overhead clearance, ground firmness, and level ground.

b. If BAP is loaded with bridge, ensure bridge is properly secured. (Refer to WP 0009 00).

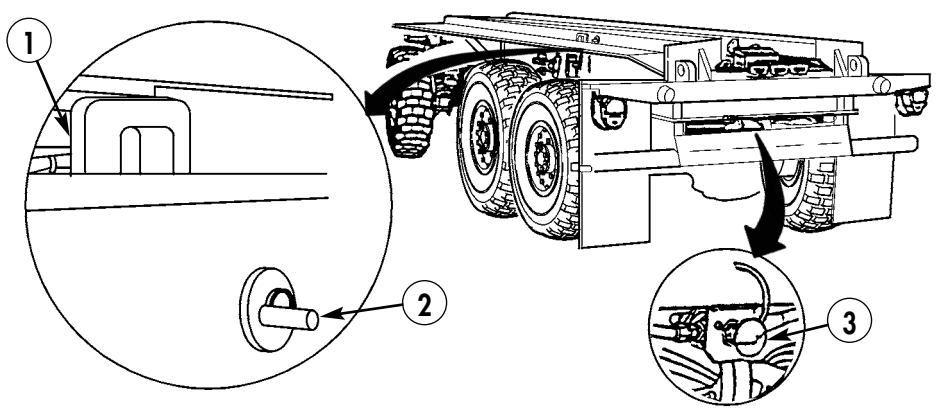
TRANSLOADING BAP TO PLS TRAILER (Contd)

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 BAP on trailer. If air pressure in not sufficient, use truck 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 9-2330-385-14.

Ensure both trailer locks are fully retracted, or damage to equipment may result.

c. Retract trailer locks by pushing in knob (3). Indicator lock pin (2) on left and right-hand trailer locks (1) must be fully retracted.



WARNING

The winch frame must be locked to the BAP prior to transloading BAP to PLS trailer. Failure to comply may result in damage to equipment or injury to personnel.

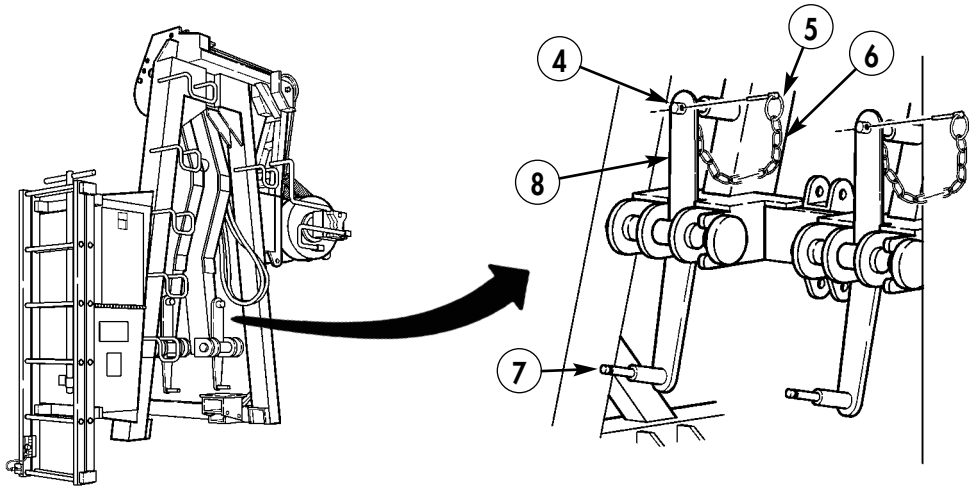
NOTE

When both levers are in the UP position, the winch frame is locked to the BAP. Perform steps d and e if levers are in the DOWN position.

d. Remove quick-release pin (5) from stud (7) at both sides of winch frame (6).

e. Swing lever (8) up so that end of stud (4) is through hole in lever (8), and install quick-release pin (5) on stud (4) at both sides of winch frame (6).

TRANSLOADING BAP TO PLS TRAILER (Contd)

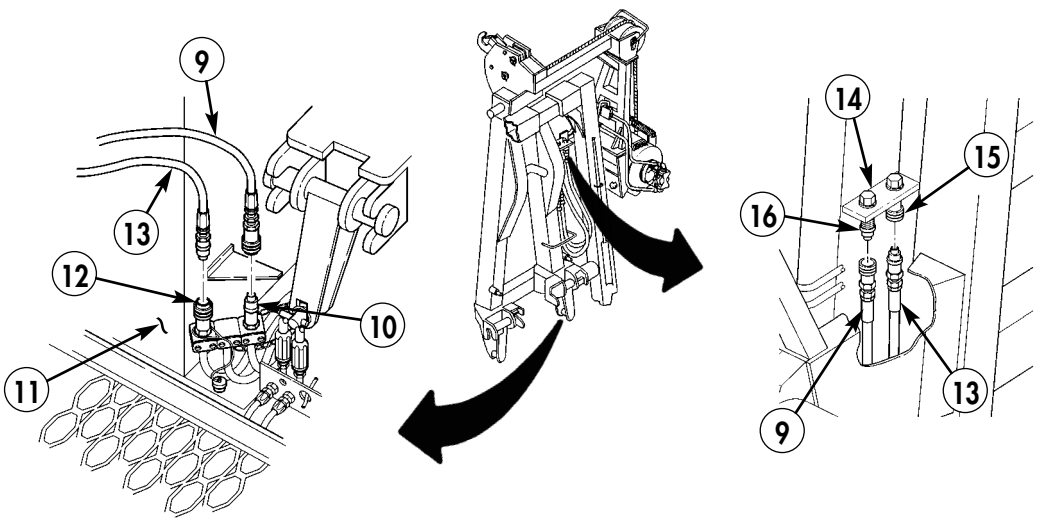


NOTE

Perform steps f and g if BAP winch hydraulic hoses are connected to LHS couplings or disconnected from stowage couplings.

f. Disconnect winch hydraulic hoses (13) and (9) from LHS couplings (12) and (10), located on LHS hook arm (11).

g. Connect winch hoses (13) and (9) to stowage couplings (15) and (16), located on winch frame bracket (14).

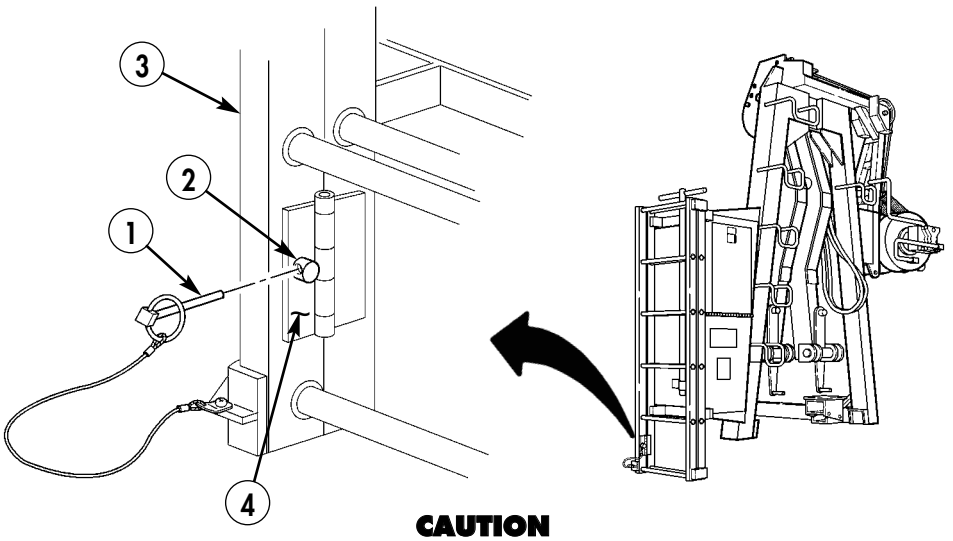


TRANSLOADING BAP TO PLS TRAILER (Contd)

NOTE

Perform step h if BAP mounting ladder is not secured.

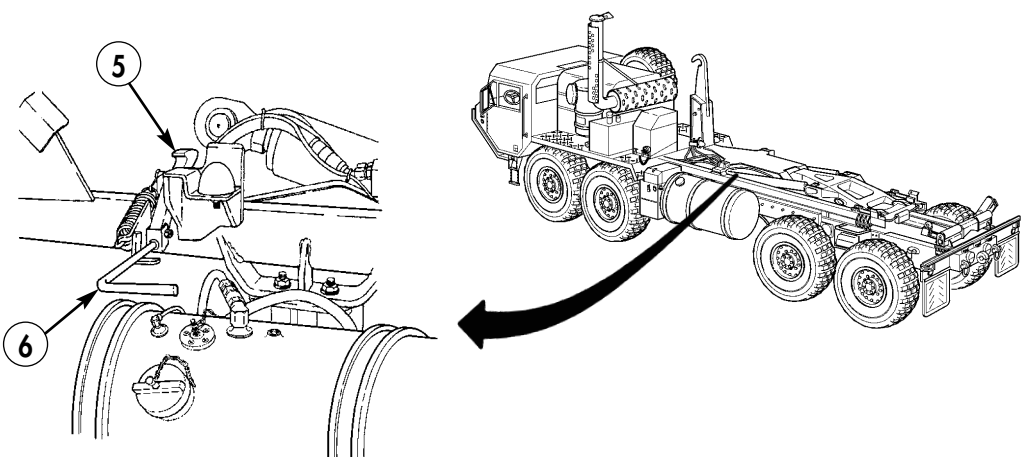
h. Raise sliding half of mounting ladder (3) up until stud (2) aligns with stowage latch (4), close latch (4), and install quick-release pin (1) on stud (2).



CAUTION

BAP hold-down locks on transporter must be set prior to transloading BAP to trailer. Failure to comply will result in damage to equipment.

i. Set both BAP hold-down locks (5) in DISENGAGED position by pulling out handles (6).



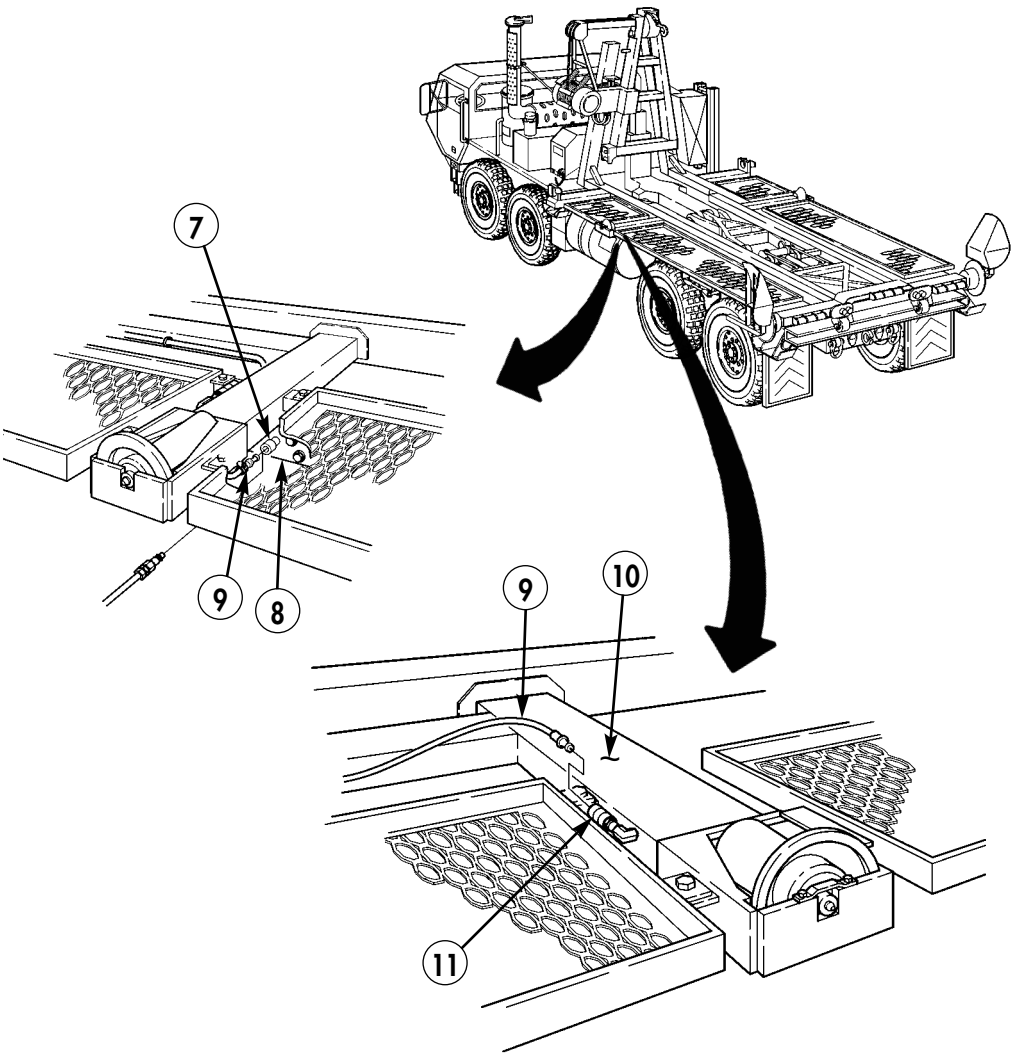
TRANSLOADING BAP TO PLS TRAILER (Contd)

NOTE

Perform steps j and k if BAP air supply hose is connected to transporter or disconnect from stowage coupling.

j. Disconnect air supply hose (9) from tire inflation air coupling (7), located on vehicle frame (8) near fuel tank at driver's side.

k. Connect air supply hose (9) to stowage coupling (11) at side of BAP frame (10).



TRANSLOADING BAP TO PLS TRAILER (Contd)

WARNING

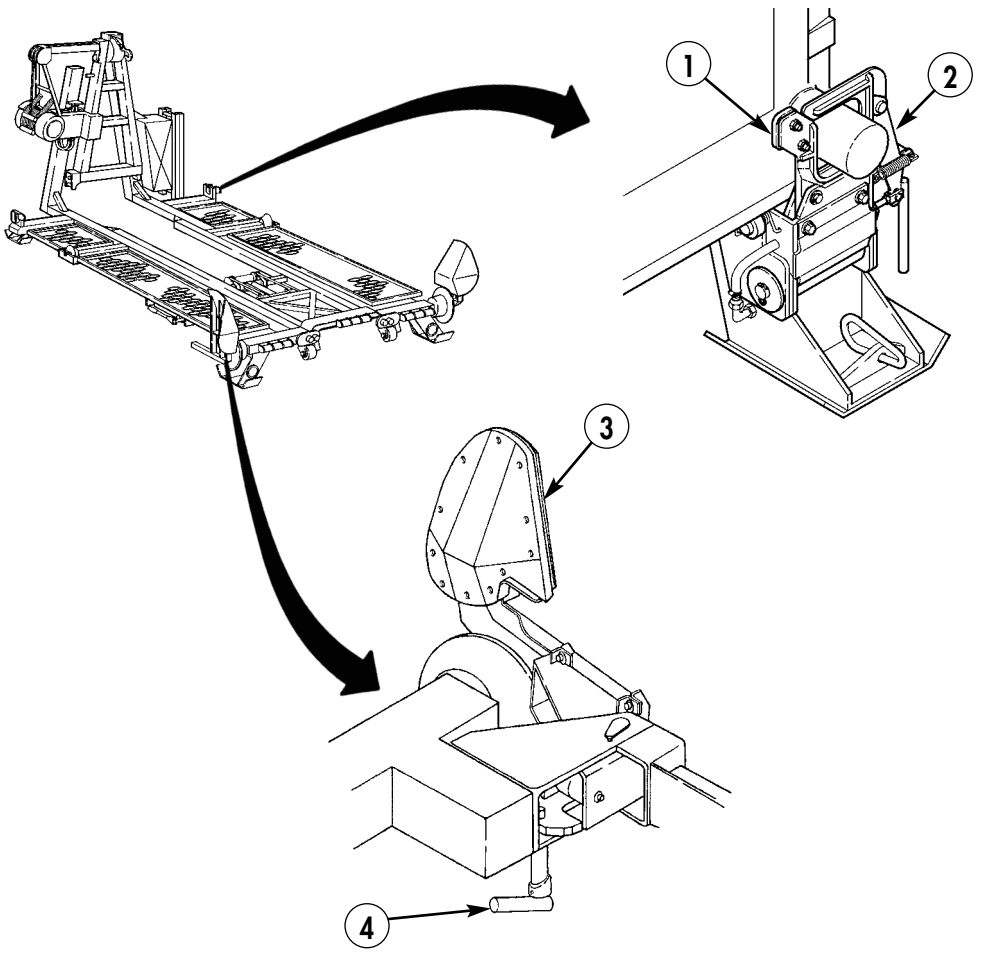
If BAP is loaded, ensure from pin lock assemblies are up and their jaws closed, and rear guides are locked in the MID position at both sides of BAP. Failure to comply may result in possible loss of bay or rollover of transporter, causing damage to equipment and possible injury or death to personnel.

NOTE

Perform steps l and m if bay is loaded on BAP.

l. Rotate handle (4) until rear guide (3) is disengaged and move rear guide (3) inboard or outboard until locked in MID position at both sides of BAP.

m. Position both front pin lock assemblies (2) in UP position and ensure jaws (1) are locked.



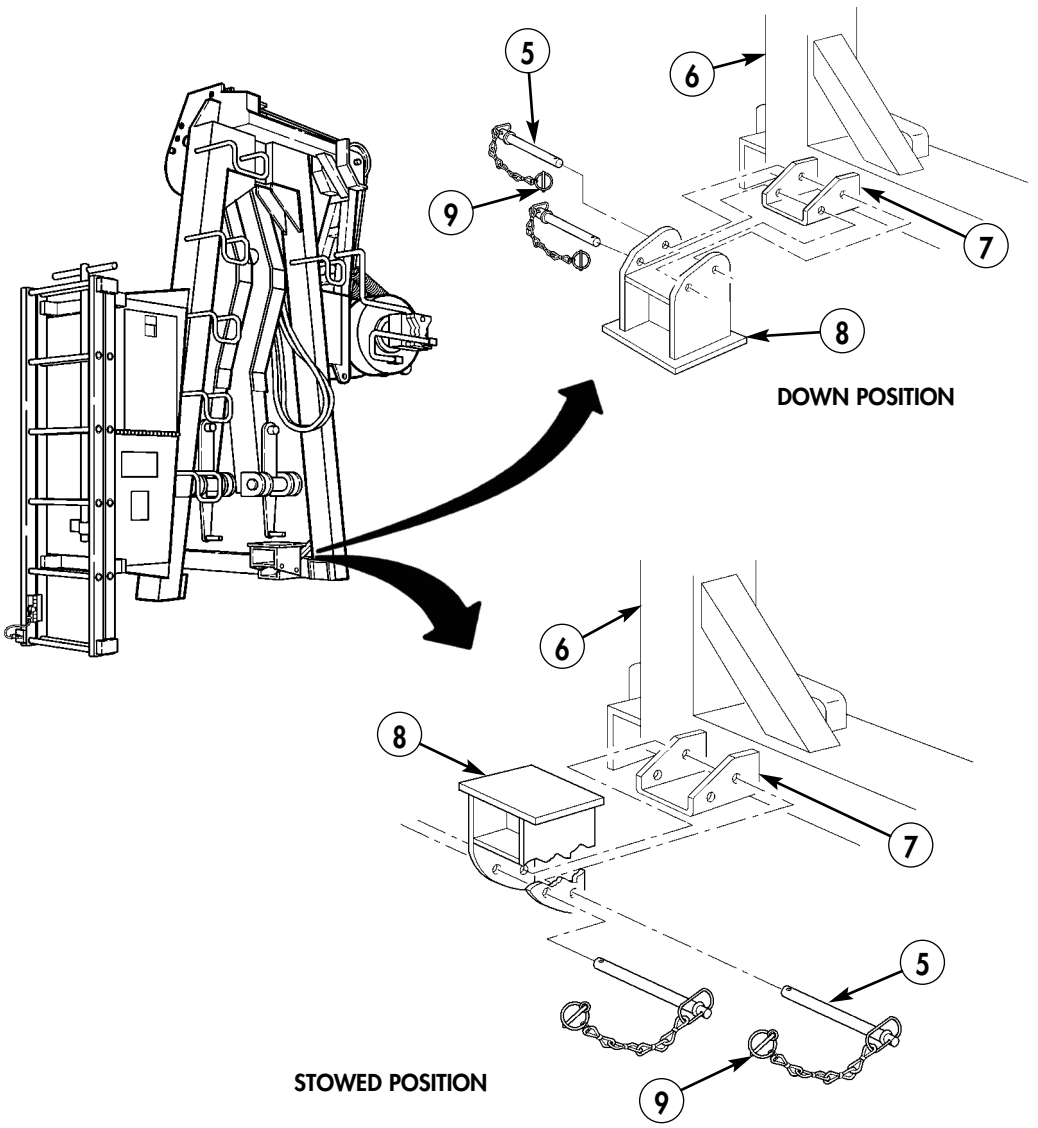
TRANSLOADING BAP TO PLS TRAILER (Contd)

NOTE

Perform steps n and o if PLS feet are in DOWN position.

n. Remove two quick-release pins (9) from pins (5), and remove pins (5) and PLS foot (8) from bracket (7) at both sides of BAP frame (6).

o. Holding PLS foot (8) in stowed position, install PLS foot (8) on bracket (7) with two pins (5) and quick-release pins (9) at both sides of BAP frame (6).

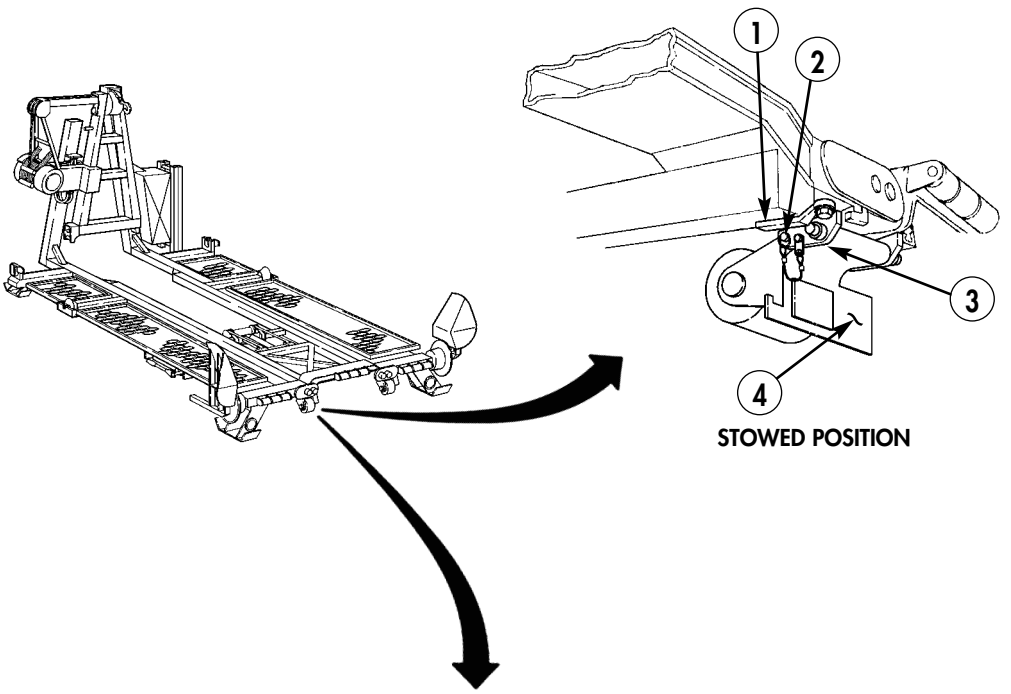


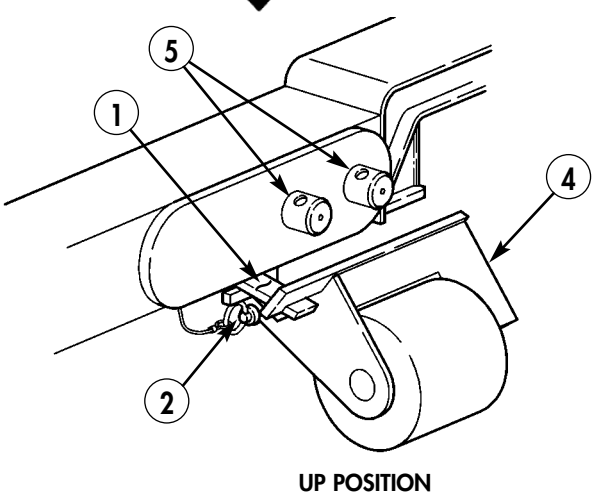
TRANSLOADING BAP TO PLS TRAILER (Contd)

p. Remove quick-release pin (2) from BAP frame (3) and transload roller bracket (4).

q. Swing transload roller bracket (4) up and hold in up position by turning retaining bar (1) out. Stow quick-release pin (2) on transload roller bracket (4).

r. Repeat steps p and q for opposite transload roller bracket.

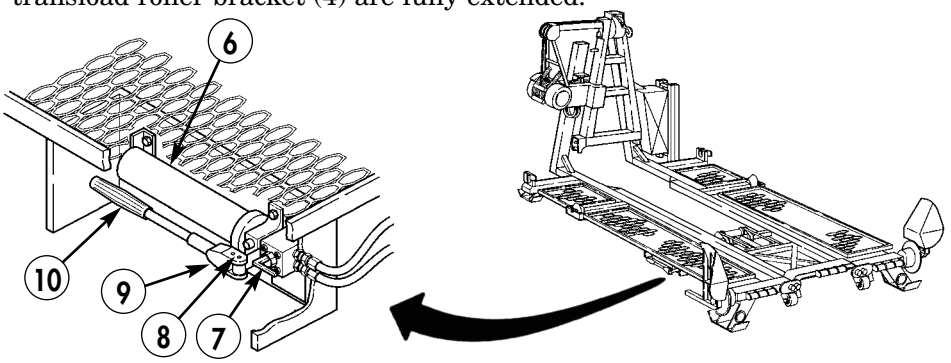




TRANSLOADING BAP TO PLS TRAILER (Contd)

s. Remove lock lever pin (8) from pump lever (9) on hand pump (6).

t. Position hand pump selector valve lever (7) to No. 3 position (lever down), and operate pump handle (10) until two extension cylinders (5) at each transload roller bracket (4) are fully extended.



CAUTION

Prior to backing Common Bridge Transporter (CBT), trailer drawbar must be all the way in, or damage to equipment may result.

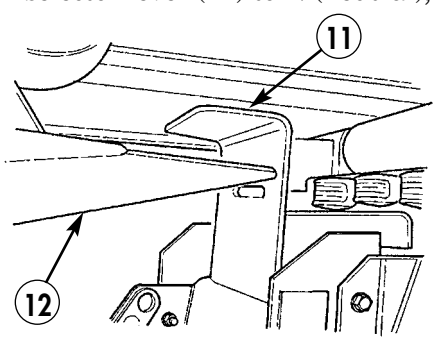
Ensure trailer drawbar is down against ground during transfer operations, or damage to equipment may result.

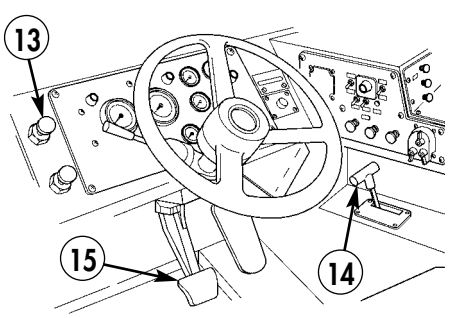
Both trailer bumper points must be under truck bump plate, and at least one trailer bumper point must contact bump plate. Trailer bumper point not contacting transporter bumper stop cannot exceed 0.5 in. (12.7 mm), or BAP will miss main rail guides and damage to equipment may result.

NOTE

Ensure transload roller bar rollers ride over top of trailer bumper points and are centered on trailer guides when backing up CBT.

u. Back up transporter so trailer bumper points (12) are under flange and contact CBT bump plate (11), apply service brake (15), move transmission selector lever (14) to N (neutral), and pull parking brake control (13) out.





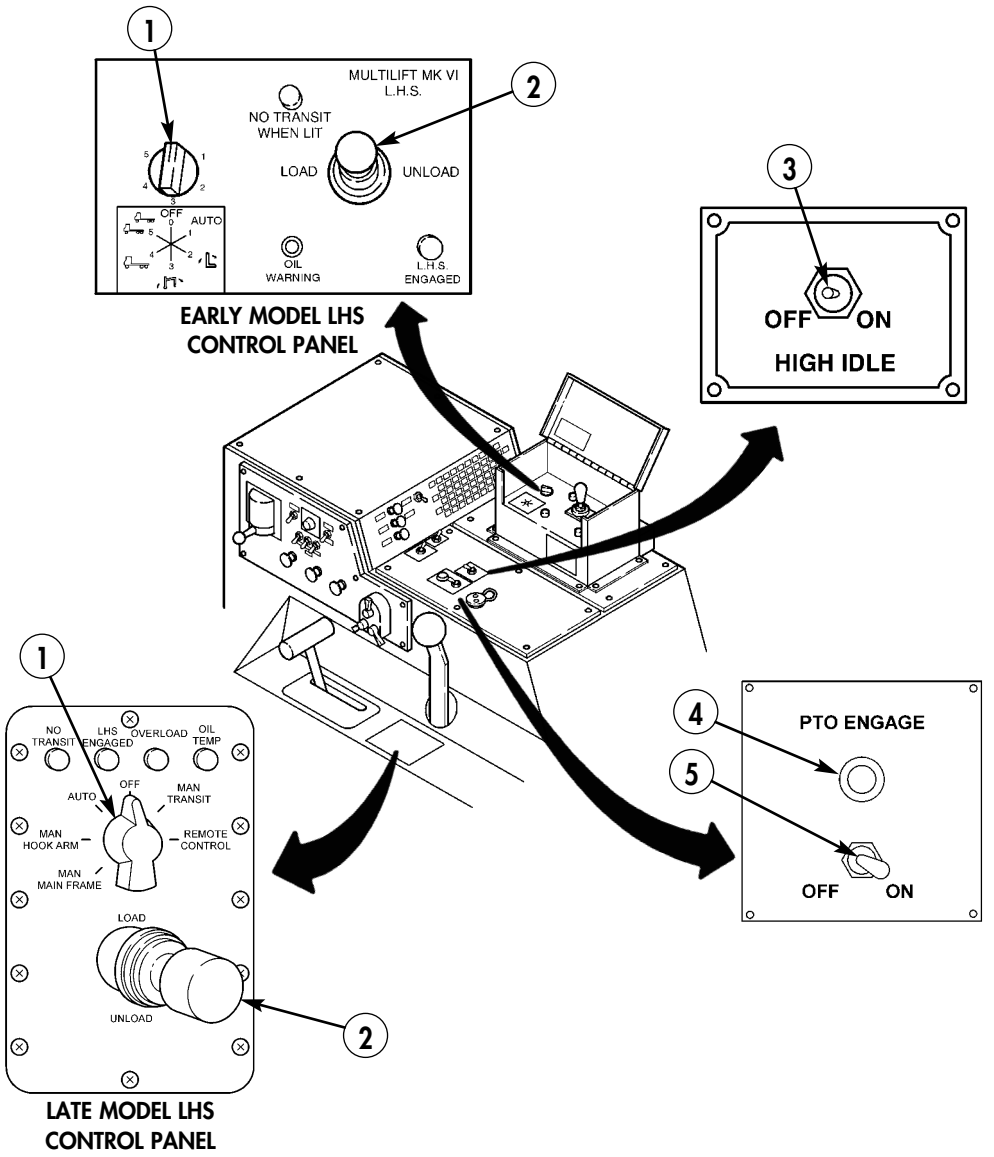
TRANSLOADING BAP TO PLS TRAILER (Contd)

v. Turn LHS MODE SELECT switch (1) to No. 1 (AUTO SEQUENCE) position on early models or AUTO position on late models.

CAUTION

HIGH IDLE switch must be in OFF position prior to engaging PTO. Failure to comply may result in damage to the vehicle transmission or the LHS.

w. With HIGH IDLE switch (3) in OFF position, turn PTO ENGAGE switch (5) to ON position. PTO ENGAGE indicator (4) will light.



TRANSLOADING BAP TO PLS TRAILER (Contd)

CAUTION

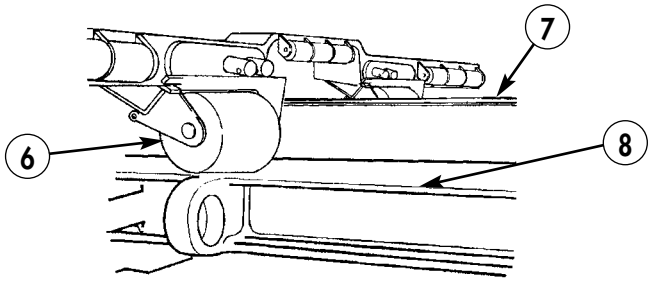
To prevent surging or uneven operation of LHS or BAP winch, either perform all operations with CBT high idle switch off, or engage CBT high idle after LHS or BAP winch is in motion, and disengage CBT high idle prior to stopping motion. Failure to comply may result in damage to equipment.

Ensure transload rollers do not contact trailer lifting eyes or guide rails. Trailer guide rails should be centered between transload rollers. Failure to comply may result in damage to equipment.

NOTE

The LHS ENGAGED indicator will light up whenever the joystick is held in the LOAD or UNLOAD position.

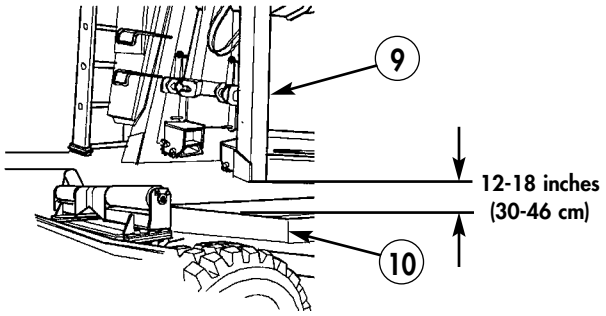
x. Hold joystick (2) in UNLOAD position and move HIGH IDLE switch (3) to ON until transload rollers (6) contact trailer frame rails (8) between guide rails (7). Move HIGH IDLE switch (3) to OFF and release joystick (2).



y. Hold joystick (2) in UNLOAD position and move HIGH IDLE switch (3) on ON, and observe BAP (9) roller rearward in trailer (10) until A-frame end of BAP (9) contacts trailer. Move HIGH IDLE switch (3) to OFF and release joystick (2).

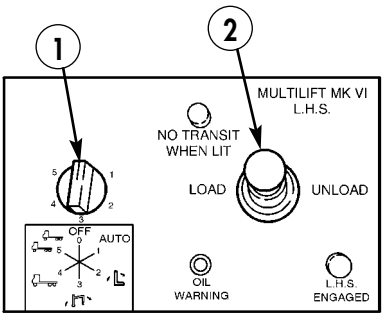
z. Turn LHS MODE SELECT switch (1) to No. 2 (HOOK ARM ONLY) position on early models or MAN HOOK ARM postion on late models.

aa. Hold joystick (2) in LOAD position and move HIGH IDLE switch (3) to ON until A-frame end of BAP (9) is raised 12 to 18 in. (30 to 46 cm) above trailer (10). Move HIGH IDLE switch (3) to OFF and release joystick (2).

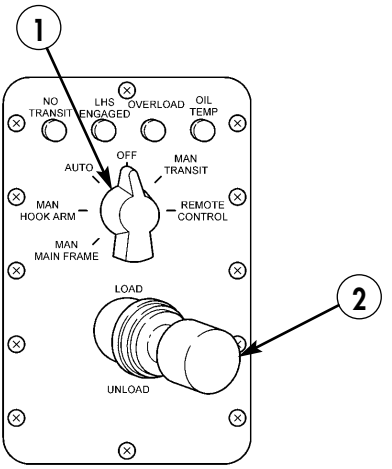


TRANSLOADING BAP TO PLS TRAILER (Contd)

ab. Turn LHS MODE SELECT switch (1) to No. 3 (MAIN FRAME ONLY) position on early models or MAN MAIN FRAME position on late models.



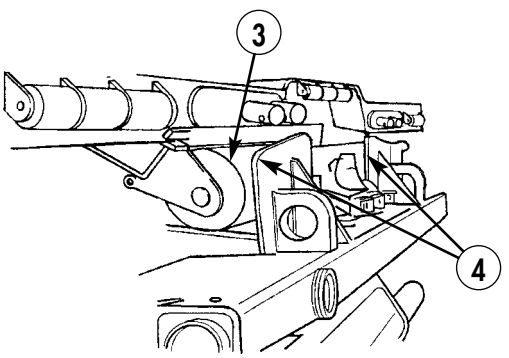
EARLY MODEL LHS CONTROL PANEL

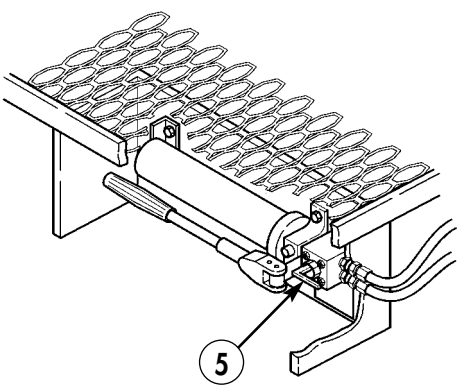


LATE MODEL LHS CONTROL PANEL

ac. Hold joystick (2) in UNLOAD position until both transload rollers (3) contact trailer stops (4), and both PLS feet (14) at A-frame end of BAP are seated on trailer. Then release joystick (2).

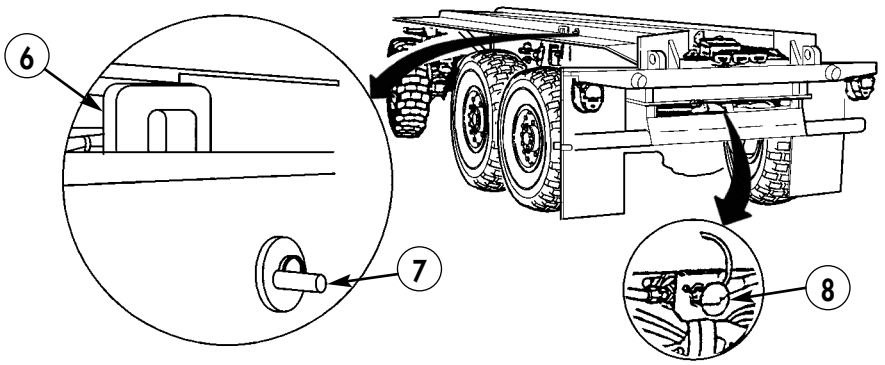
ad. Lower BAP onto trailer by turning hand pump selector valve lever (5) to No. 1 (lever up) position. When lowered, turn lever (5) to No. 2 position (lever at center).





ae. Engage trailer locks by pulling out knob (8). Indicator lock pin on left and right-hand trailer locks (6) must approximately 2 in. (5 cm).

TRANSLOADING BAP TO PLS TRAILER (Contd)



af. Turn LHS MODE SELECT switch (1) to No. 2 (HOOK ARM ONLY) position on early models or MAN HOOK ARM position on late models.

WARNING

CBT will roll forward when lowering pallet down on trailer. All personnel must stand clear. Failure to comply may result in serious injury.

ag. Release parking brake by pushing parking brake control (9) in.

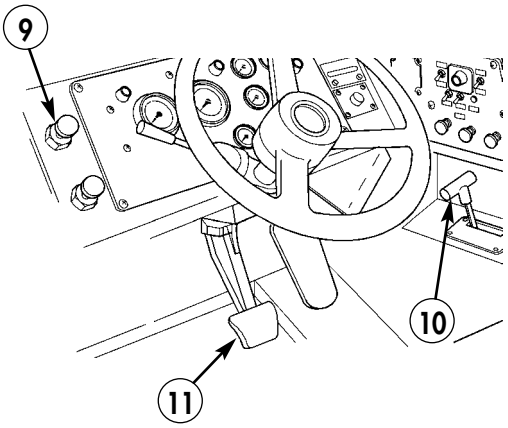
ah. Place wheel chock behind first front wheel on driver's side of CBT.

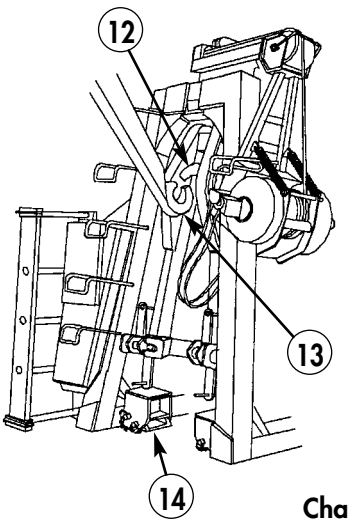
NOTE

It may be necessary to repeat step ai several times in order to clear hook bar.

ai. Hold joystick (2) in UNLOAD position to allow top of LHS hook arm (13) to clear BAP hook bar (12). Remove and stow wheel chock.

aj. Move transporter forward 5 ft (1.5 m), apply service brake (11), move transmission selector lever (10) to N (neutral), and pull parking brake control (9) out.





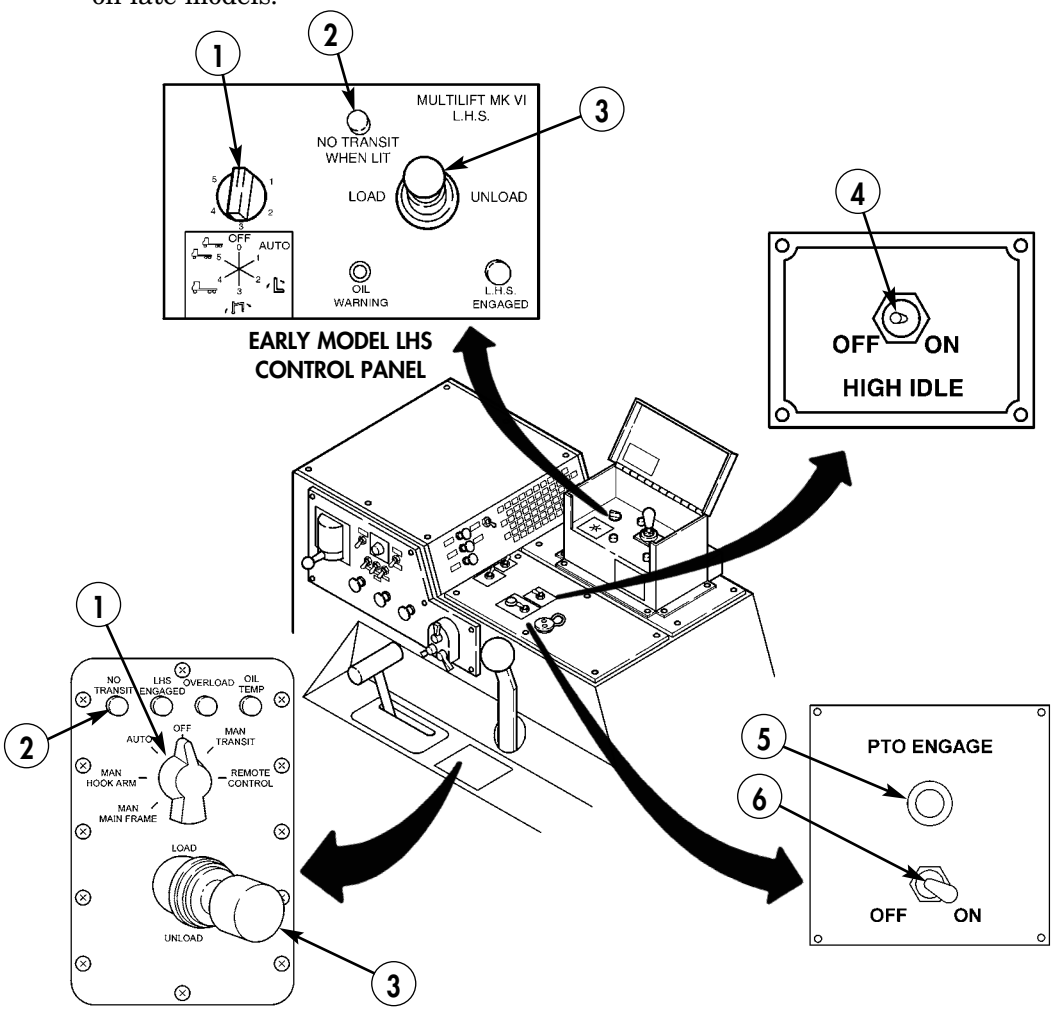
TRANSLOADING BAP TO PLS TRAILER (Contd)

NOTE

LHS hook arm does not need to be fully stowed if more transfer operation will be performed.

ak. Hold joystick (3) to LOAD position and move HIGH IDLE switch (4) to ON until NO TRANSIT WHEN LIT indicator (2) light goes out. Move HIGH IDLE switch (4) to OFF and release joystick (3).

al. Position PTO ENGAGE switch (6) to OFF, and turn LHS MODE SELECT switch (1) to 0 (OFF/TRANSPORT) position on early models or OFF postion on late models.



END OF WORK PACKAGE

TRANSLOADING BAP TO COMMON BRIDGE TRANSPORTER

WARNING

Prior to and during any load or unload cycle, all personnel should stay clear of the LHS and the BAP, or serious injury or death to personnel may result.

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

Ensure trailer air system is charged before beginning transfer, or trailer locks may not engage properly. Serious injury or death to personnel could result.

CAUTION

To avoid damage to equipment during transfer operations, ensure trailer drawbar extension is retracted and on the ground, centered forward of trailer. Ensure drawbar and drawbar extensions are properly stowed. (Refer to TM 9-2330-385-14).

Ensure air lines and cables are properly stowed, to prevent damage to equipment. (Refer to TM 9-2330-385-14).

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

NOTE

During all transporter operations, the operator will drive and be responsible for operation of 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 unit and winch, and assisting the operator as needed.

a. Check transfer site for 22 ft (6.7 m) overhead clearance, ground firmness, and level ground.

b. If BAP is loaded with bridge, ensure bridge is properly secured. (Refer to WP 0009 00).

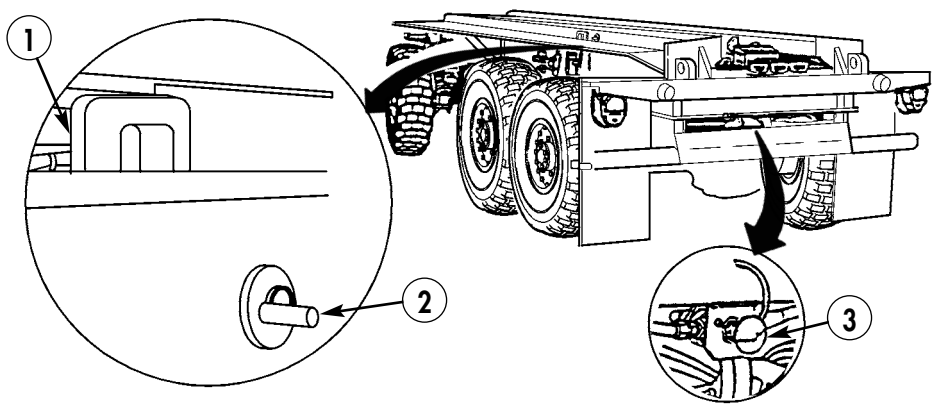
TRANSLOADING BAP TO COMMON BRIDGE TRANSPORTER (Contd)

CAUTION

Air pressure in trailer-air system must be sufficient to retract trailer locks, or damage to trailer locks may occur while attempting to transload BAP to CBT. If air pressure in not sufficient, use truck 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 9-2330-385-14.

Ensure both trailer locks are fully retracted or damage to equipment may result.

c. Push in on knob (3) and retract left and right trailer locks (1). Ensure lock indicator pin (2) is fully retracted.



WARNING

The winch frame must be locked to the BAP prior to transloading BAP to Transporter. Failure to comply may result in damage to equipment or injury to personnel.

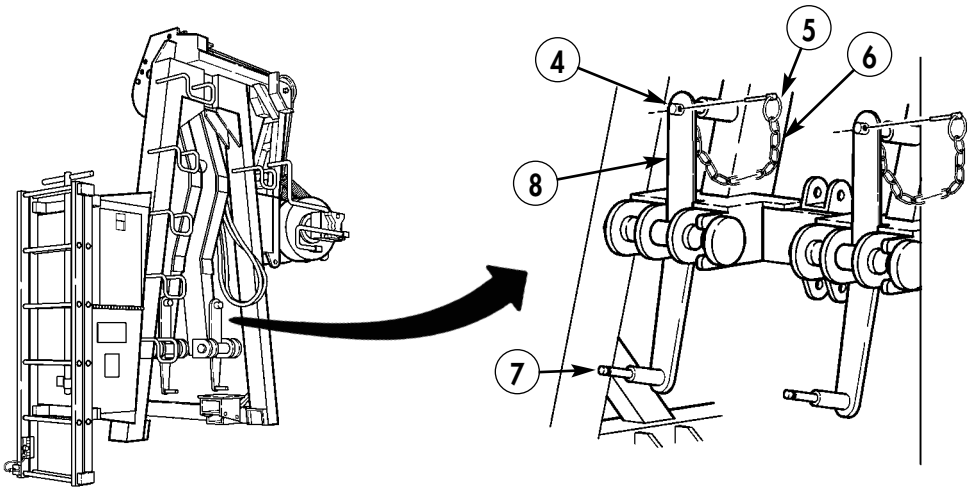
NOTE

When both levers are in the UP position, the winch frame is locked to the BAP. Perform steps d and e if levers are in the DOWN position.

d. Remove quick-release pin (5) from stud (7) at both sides of winch frame (6).

e. Swing lever (8) up so that end of stud (4) is through hole in lever (8), and install quick-release pin (5) on stud (4) at both sides of winch frame (6).

TRANSLOADING BAP TO COMMON BRIDGE TRANSPORTER (Contd)

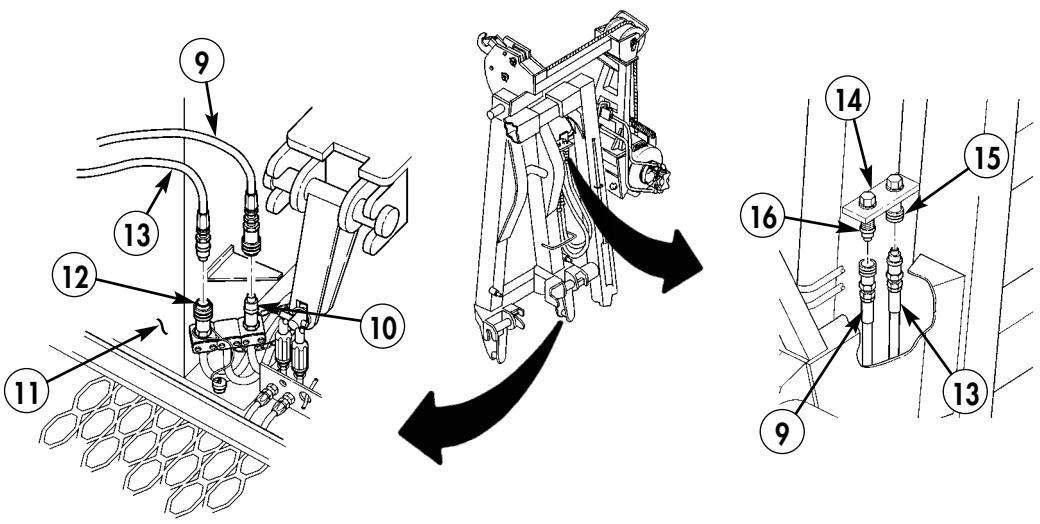


NOTE

Perform steps f and g if BAP winch hydraulic hoses are connected to LHS couplings or disconnected from stowage couplings.

f. Disconnect winch hydraulic hoses (13) and (9) from LHS couplings (12) and (10), located on LHS hook arm (11).

g. Connect winch hoses (13) and (9) to stowage couplings (15) and (16), located on winch frame bracket (14).

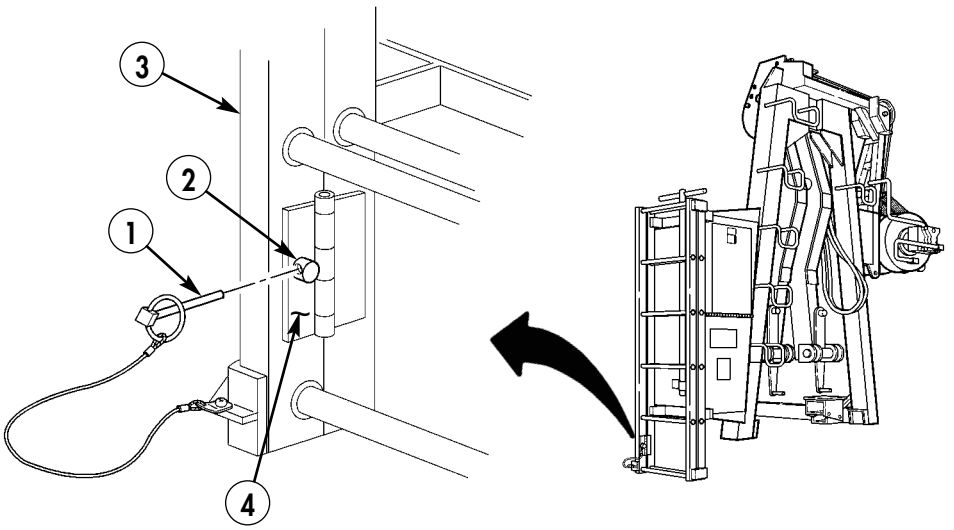


TRANSLOADING BAP TO COMMON BRIDGE TRANSPORTER (Contd)

NOTE

Perform step h if BAP mounting ladder is not secured.

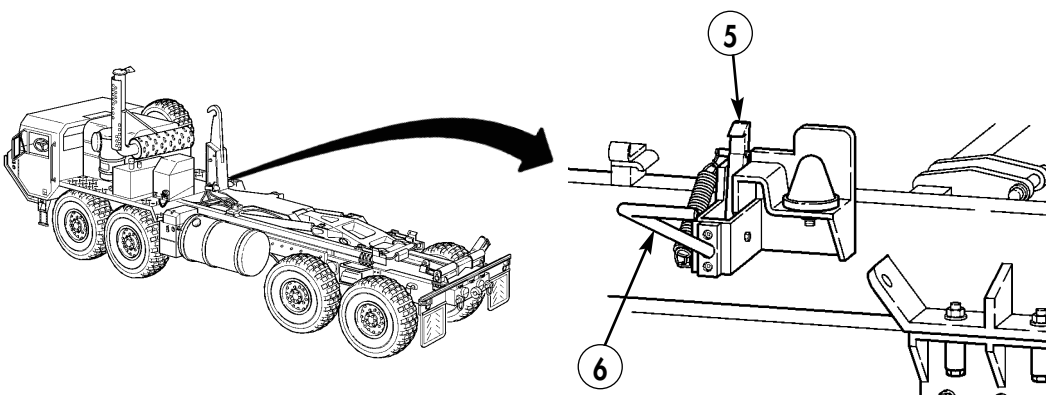
h. Raise sliding half of mounting ladder (3) up until stud (2) aligns with stowage latch (4), close latch (4), and install quick-release pin (1) on stud (2).



CAUTION

BAP hold-down locks on transporter must be set prior to transloading BAP to Transporter. Failure to comply will result in damage to equipment.

i. Set both BAP hold-down locks (5) in ENGAGED position by pushing in handles (6).



TRANSLOADING BAP TO COMMON BRIDGE TRANSPORTER (Contd)

WARNING

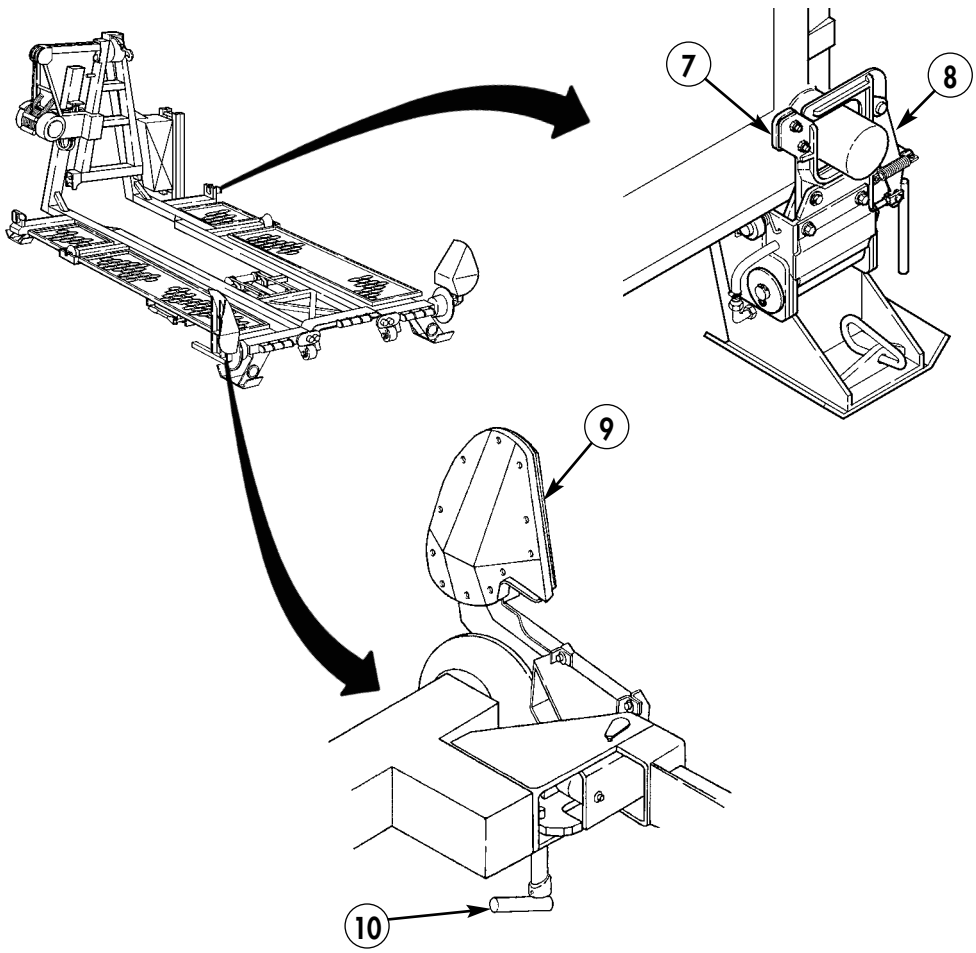
If BAP is loaded, ensure front pin lock assemblies are up and their jaws closed, and rear guides are locked in the MID position at both sides of BAP. Failure to comply may result in possible loss of bay or rollover of transporter, causing damage to equipment and possible injury or death to personnel.

NOTE

Perform steps j and k if bay is loaded on BAP.

j. Rotate handle (10) until rear guide (9) is disengaged and move rear guide (9) inboard or outboard until locked in MID position at both sides of BAP.

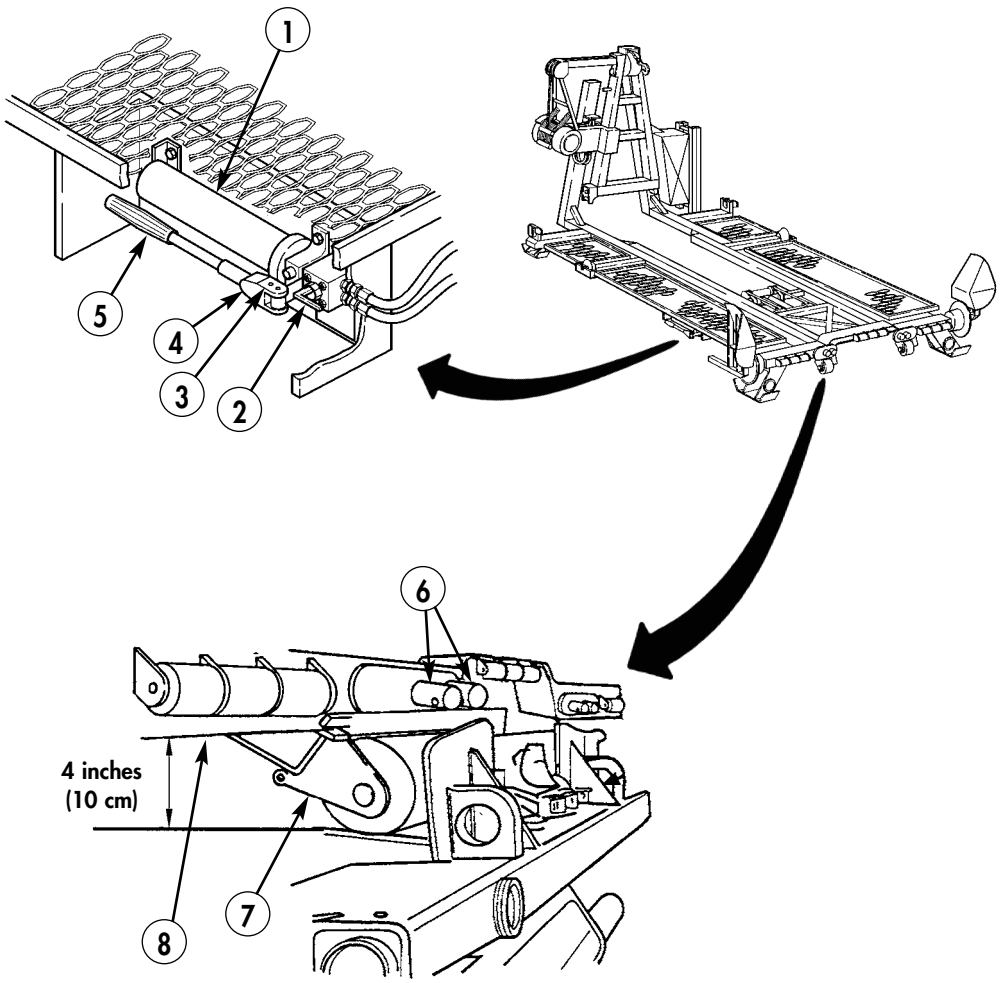
k. Position both front pin lock assemblies (8) in UP position and ensure jaws (7) are locked.



TRANSLOADING BAP TO COMMON BRIDGE TRANSPORTER (Contd)

l. Remove lock lever pin (3) from pump lever (4) on hand pump (1).

m. Position hand pump selector valve lever (2) to No. 3 position (lever down), and operate pump handle (5) until two extension cylinders (6) at each transload roller bracket (7) are fully extended. Rear of BAP (8) should be raised approximately 4 in. (10 cm).



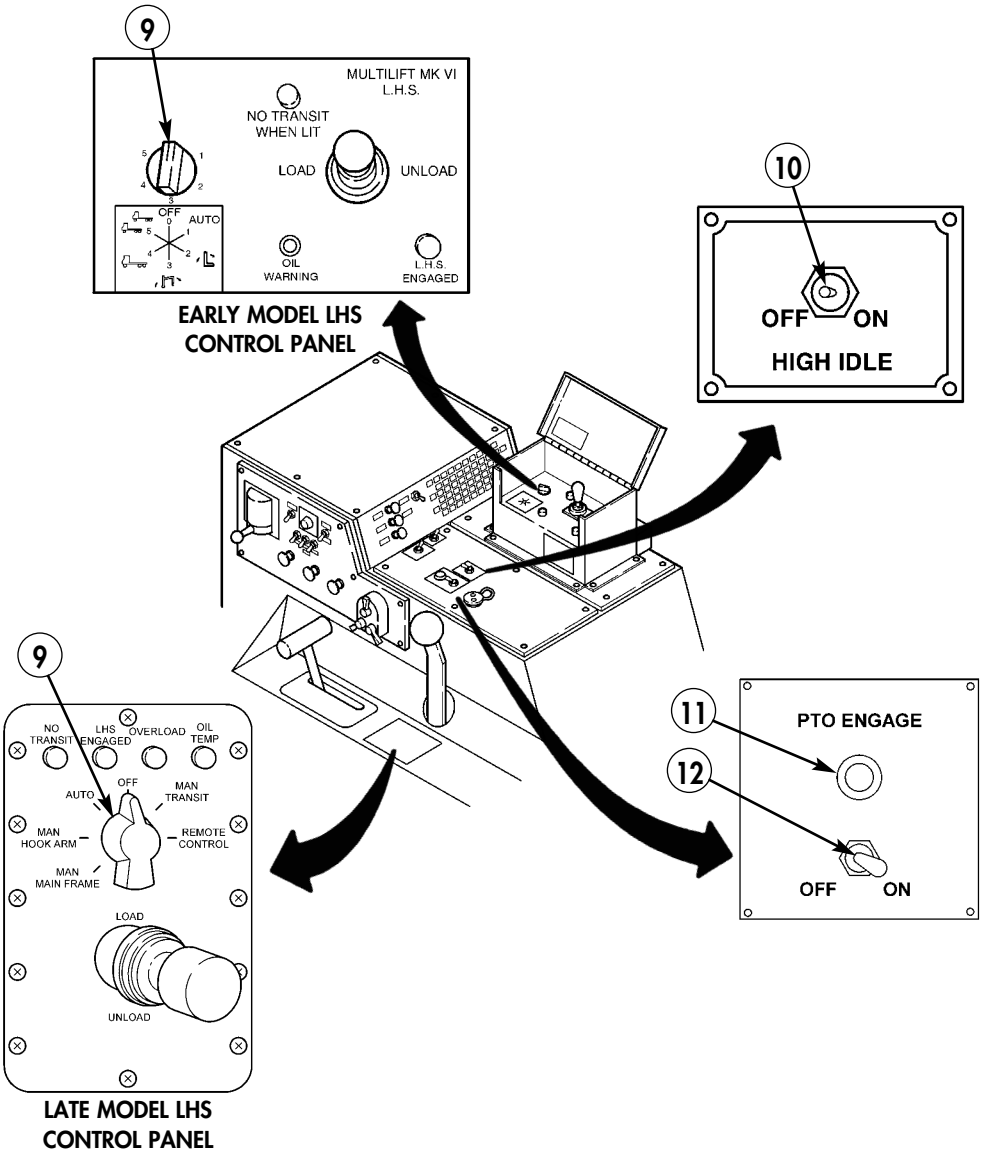
TRANSLOADING BAP TO COMMON BRIDGE TRANSPORTER (Contd)

n. Turn LHS MODE SELECT switch (9) to No. 1 (AUTO SEQUENCE) position on early models or AUTO position on late models.

CAUTION

HIGH IDLE switch must be in OFF position prior to engaging PTO. Failure to comply may result in damage to the vehicle transmission or the LHS.

o. With HIGH IDLE switch (10) in OFF position, turn PTO ENGAGE switch (12) to ON position. PTO ENGAGE indicator (11) will light.



TRANSLOADING BAP TO COMMON BRIDGE TRANSPORTER (Contd)

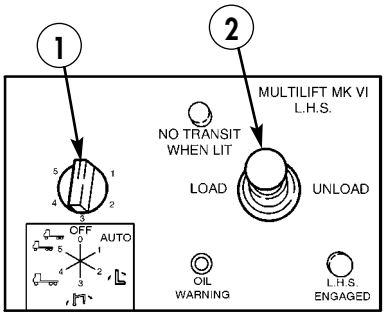
CAUTION

To prevent surging or uneven operation of LHS or BAP winch, either perform all operations with CBT high idle switch off, or engage CBT high idle after LHS or BAP winch is in motion, and disengage CBT high idle prior to stopping motion. Failure to comply may result in damage to equipment.

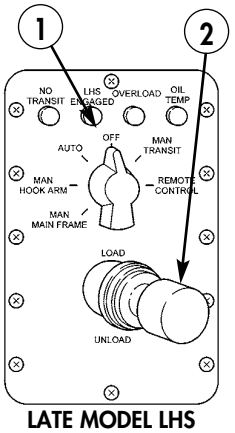
NOTE

The LHS ENGAGED indicator will light up whenever the joystick is held in the LOAD or UNLOAD position.

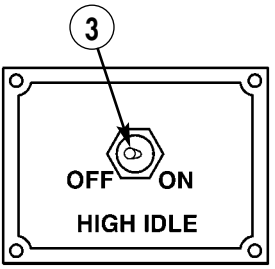
p. Hold joystick (2) in UNLOAD position and move HIGH IDLE switch (3) to ON until bottom tip of LHS hook arm (8) is just below level of BAP hook bar (7). Move HIGH IDLE switch (3) to OFF and release joystick (2).

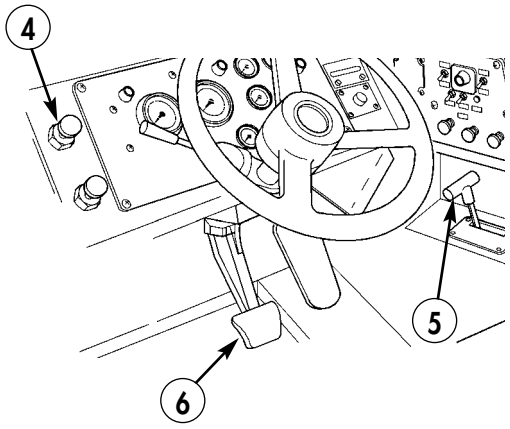


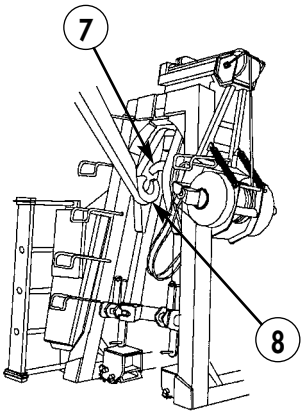
EARLY MODEL LHS CONTROL PANEL



LATE MODEL LHS CONTROL PANEL







TRANSLOADING BAP TO COMMON BRIDGE TRANSPORTER (Contd)

CAUTION

Prior to backing Common Bridge Transporter (CBT), trailer drawbar must be all the way in, or damage to equipment may result.

Ensure trailer drawbar is down against ground during transfer operations, or damage to equipment may result.

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

Ensure HIGH IDLE switch is in OFF position prior to putting vehicle transmission in gear, or damage to transmission may result.

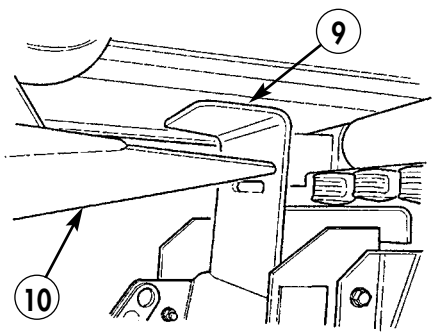
q. Back up CBT until end of hook arm (8) is centered directly under BAP hook bar (7), apply service brake (6), move transmission selector lever (5) to N (neutral), and pull PARKING BRAKE control (4) out.

CAUTION

If hook end of LHS hook arm is not properly connected to BAP hook bar, assistant must immediately signal operator to stop leading procedure. Move CBT forward and repeat steps k through q, or damage to equipment may result.

r. Hold joystick (2) in LOAD position until LHS hook arm (8) is fully connected to BAP hook bar (7) and trailer bump points (10) are under flange and contact CBT bump plate (9). Then release joystick (2).

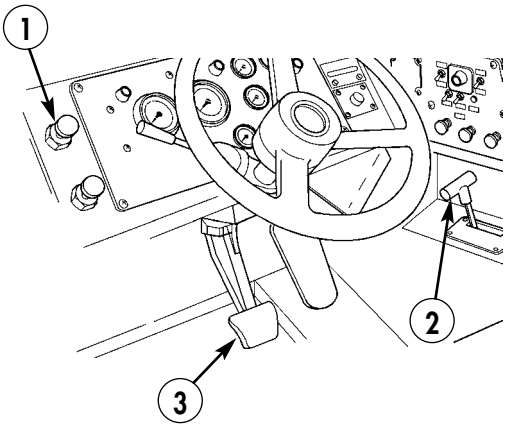
s. Hold joystick (2) in LOAD position and move HIGH IDLE switch (3) to ON until BAP if fully loaded on transporter and NO TRANSIT WHEN LIT indicator is OFF. Move HIGH IDLE switch (3) to OFF, and release joystick (2).



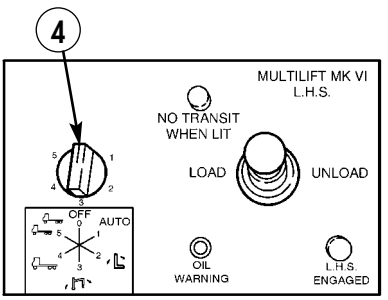
TRANSLOADING BAP TO COMMON BRIDGE TRANSPORTER (Contd)

t. Place transmission in forward mode, and slowly move CBT forward 10 ft (3 m) from trailer.

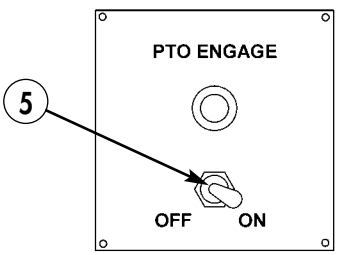
u. Apply service brake (3), and place transmission in selector lever (2) in N (neutral), and pull parking brake control (1) out.

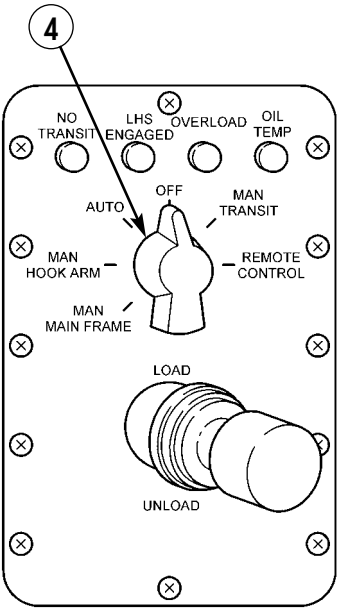


v. Position PTO ENGAGE switch (5) to OFF, and turn LHS MODE SELECT switch (4) to O (OFF/TRANSPORT) position on early models or OFF position on late models.



EARLY MODEL LHS CONTROL PANEL





LATE MODEL LHS CONTROL PANEL

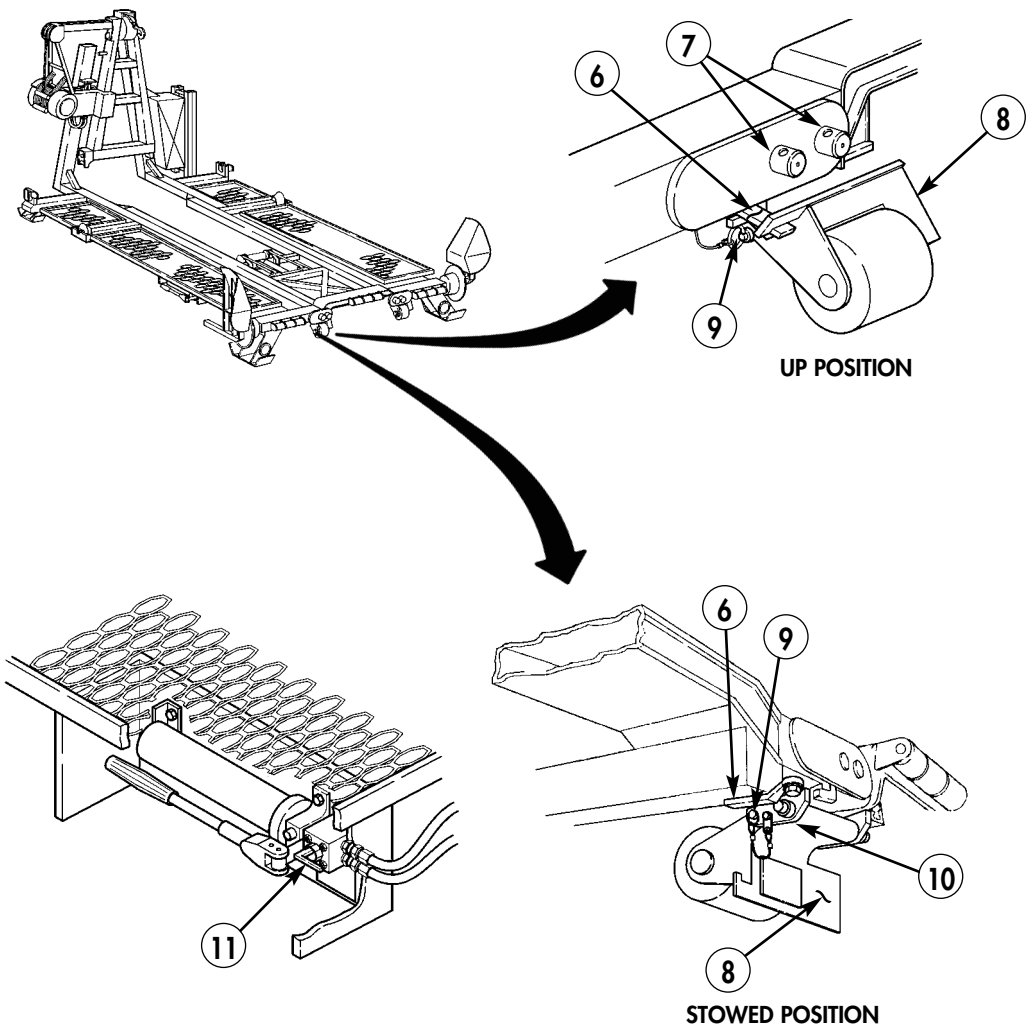
TRANSLOADING BAP TO COMMON BRIDGE TRANSPORTER (Contd)

w. Move hand pump selector valve lever (11) to No. 1 position (lever up), and allow extension cylinders (7) to retract fully. When retracted, turn lever (6) to No. 2 position (lever at center).

x. Remove quick-release pin (9) from transload roller bracket (8).

y. While holding transload roller bracket (8), turn retaining bar (6) out, swing transload roller bracket (8) back to stowed position, and install quick-release pin (9) on BAP frame (10) and transload roller bracket (8).

z. Repeat steps x and y for opposite transload roller bracket.

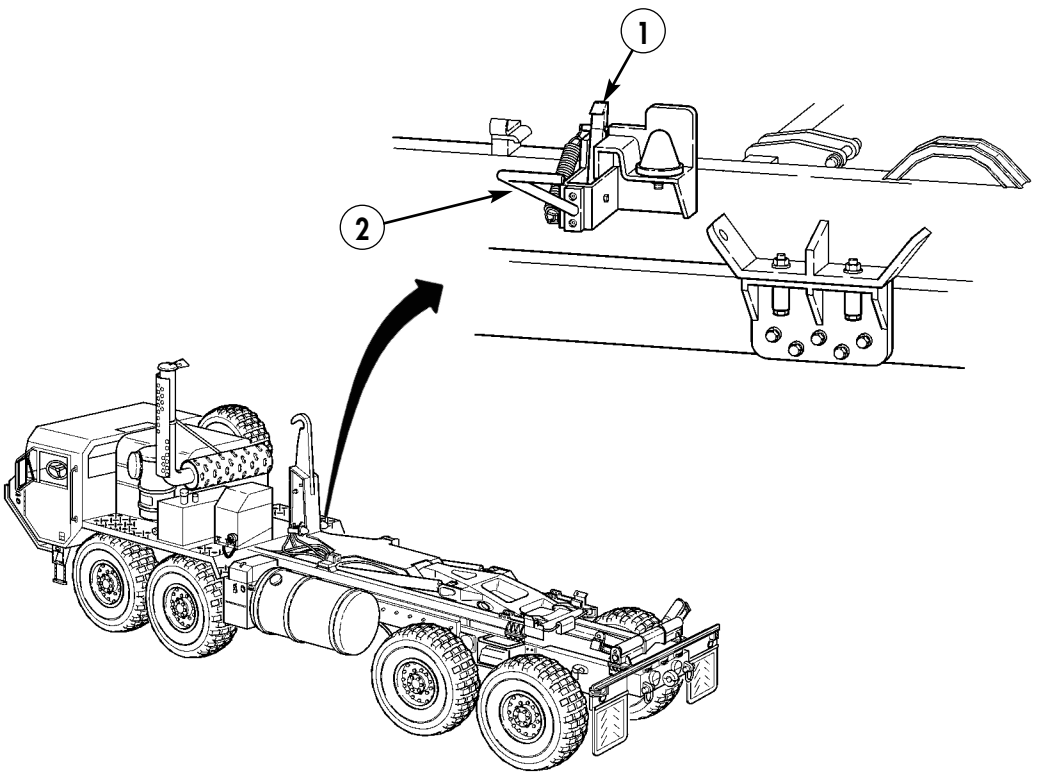


TRANSLOADING BAP TO COMMON BRIDGE TRANSPORTER (Contd)

CAUTION

Ensure BAP is seated on LHS frame and BAP hold-down locks are engaged prior to transit. Failure to comply may result in damage to equipment.

aa. Check BAP hold-down lock (1) at both sides of BAP; handles (2) should be in.



END OF WORK PACKAGE

FREE LAUNCH OF BAY

THIS WORK PACKAGE SUPERSEDES WP 0024 00, DATED 8 APRIL 2003

CAUTION

A free launch is performed where launch site conditions allow the bay to be rolled off the transporter and plunged directly into the water where it automatically unfolds. Ensure launch site requirements are met or damage to equipment may result.

Assistant will act as a ground guide when maneuvering CBT and during operation of the LHS. Failure to comply may result in damage to equipment.

NOTE

During all transporter operations, the CBT operator will drive and be responsible for the operation of the LHS via the cab control box or remote control unit. The assistant will act as a ground guide, be responsible for directing the operator using hand signals, and assist the operator as needed.

a. Ensure launch site conditions exist for a free launch of bay. (Refer to WP 0019 00, Launch Condition Requirements). If launch site conditions do not meet requirements for a free launch, refer to Controlled Launch of Bay (WP 0025 00) or High-Bank Launch of Bay (WP 0026 00).

CAUTION

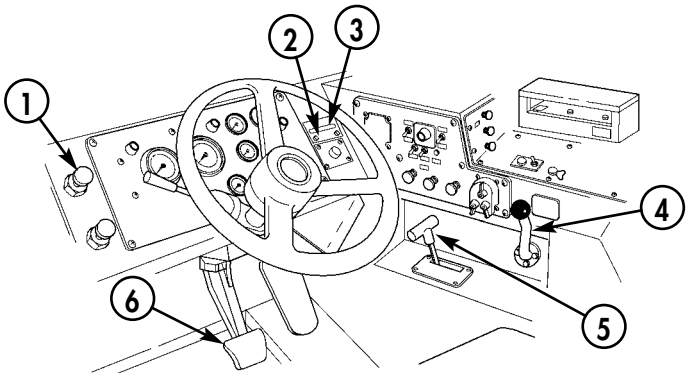
Do not move TRANSFER CASE shift lever when transmission is in gear, and do not move TRANSFER CASE shift lever or TRACTION CONTROL lever while vehicle is moving or damage to drive line will result.

NOTE

After traction control is engaged, move vehicle forward to allow shift collars to fully engage.

b. Move TRANSFER CASE shift lever (4) to L (LO) and TRACTION CONTROL lever (3) to INTER-AXLE DIFF. LOCK. TRACTION CONTROL indicator (2) will light up.

c. Back up CBT on river bank approximately 15 ft (4.6 m) from water, then apply service brake (6), move transmission selector lever (5) to N (neutral), and pull PARKING BRAKE control (1) out.



FREE LAUNCH OF BAY (Contd)

NOTE

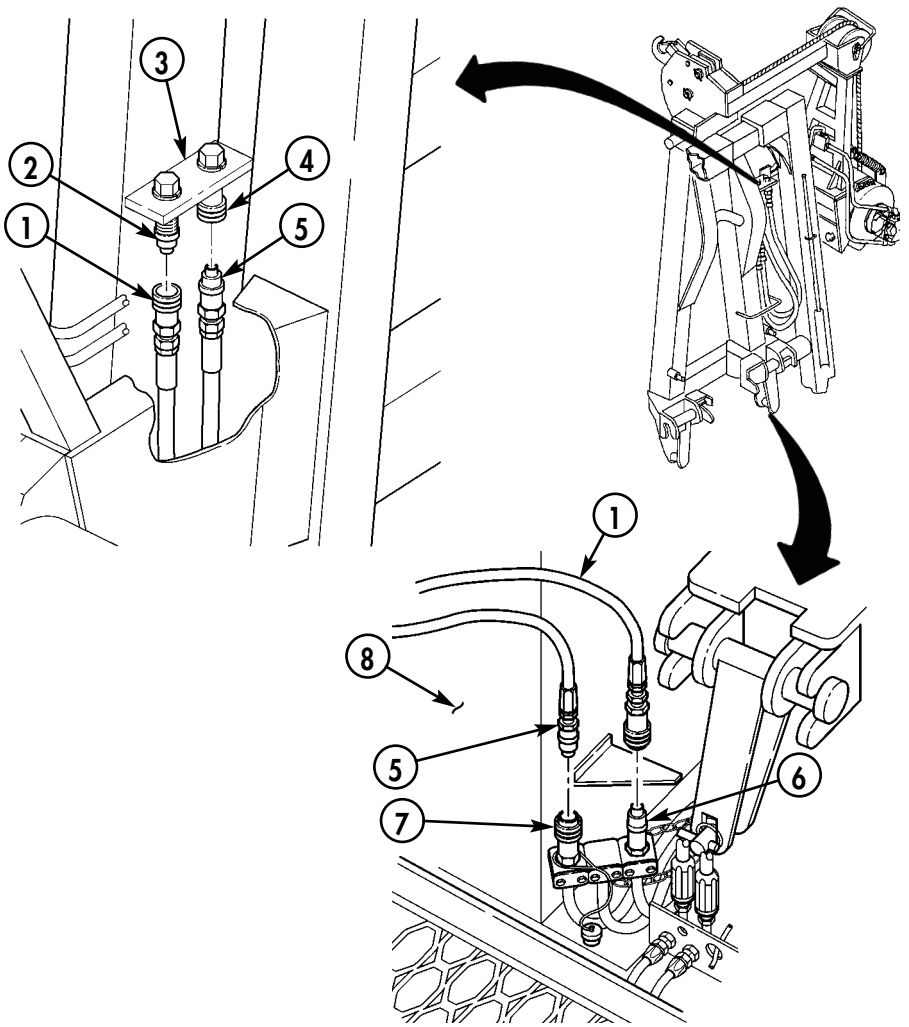
Perform steps d and e if BAP winch hydraulic hoses are not connected to LHS couplings.

d. Disconnect winch hydraulic hoses (1) and (5) from stowage couplings (2) and (4), located on winch frame bracket (3).

CAUTION

Ensure BAP winch hydraulic hoses are routed so they are free to move with LHS hook arm or damage to hoses will result.

e. Connect winch hydraulic hoses (5) and (1) to LHS couplings (7) and (6), located on LHS hook arm (8).



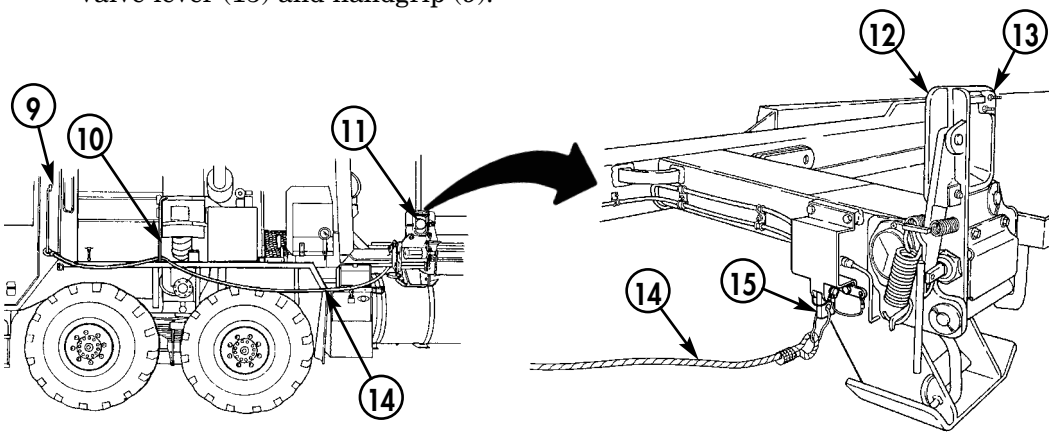
FREE LAUNCH OF BAY (Contd)

f. Ensure both front pin lock assemblies (12) are in UP position, and jaws (13) are closed on bay trunnions (11).

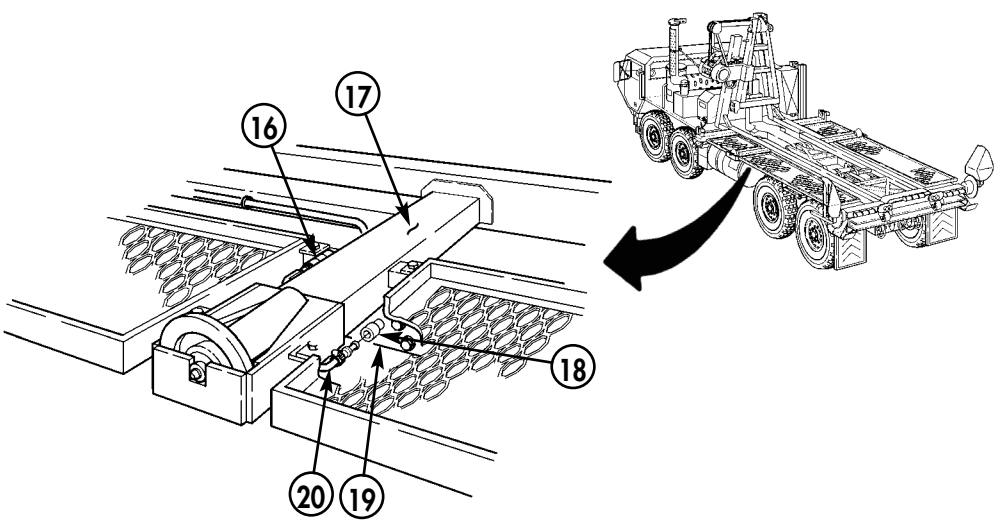
WARNING

Do not perform free launch procedures without a safety pin installed on the air release control valve lever, or damage to equipment or possible injury or death to personnel may result.

g. Route lanyard (14) inside railing (10), and connect lanyard (14) to control valve lever (15) and handgrip (9).



h. Disconnect air supply hose (20) from stowage coupling (16) at side of BAP frame (17), and connect hose (20) to tire inflation air coupling (18), located on vehicle frame (19) near fuel tank at driver's side.



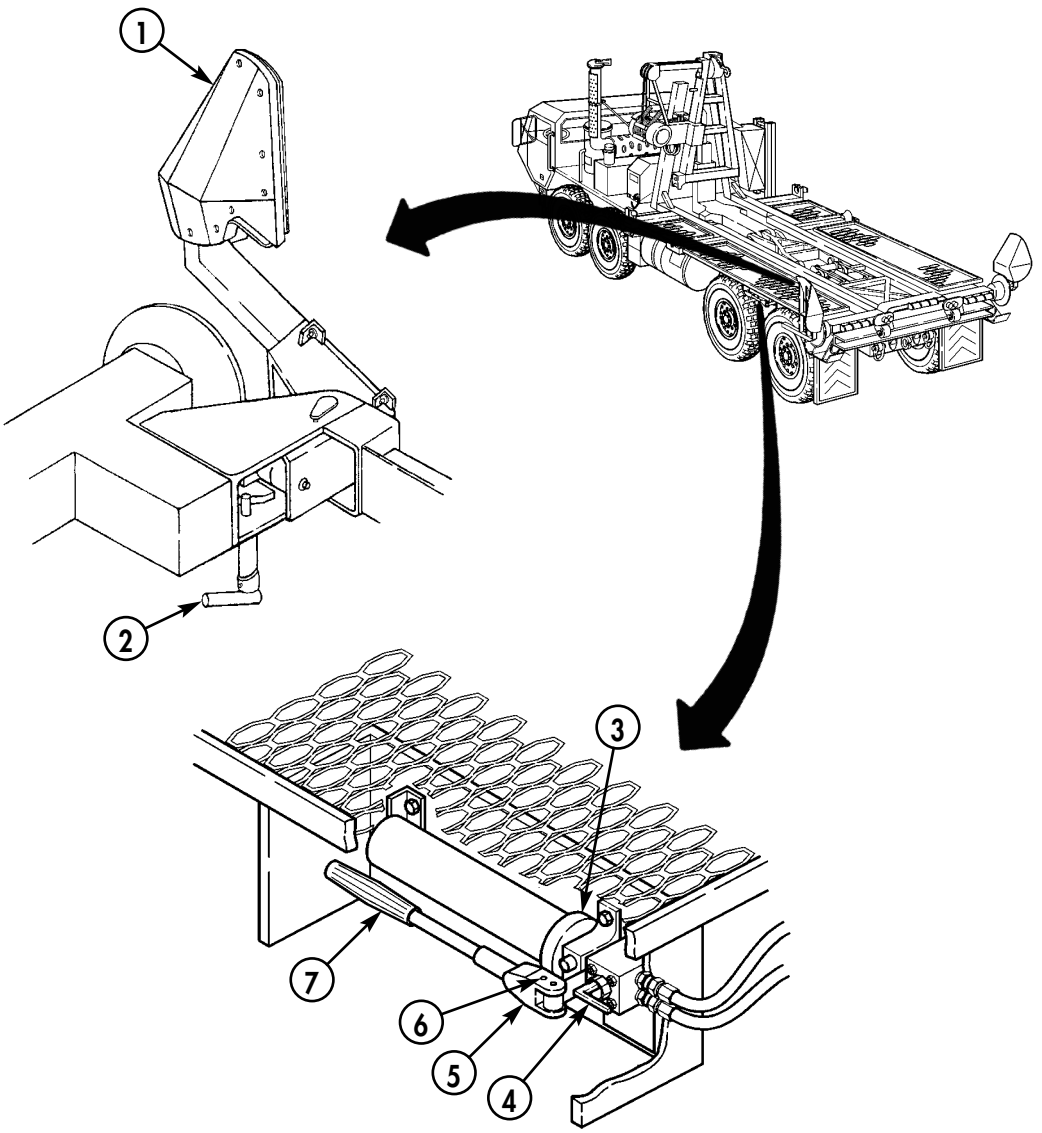
FREE LAUNCH OF BAY (Contd)

i. Rotate handle (2) until rear guide (1) is disengaged, then move rear guide (1) outboard until locked in full OUT position at both sides of BAP.

NOTE

Perform steps j and k for free launch of ramp bay only.

j. Turn hand pump selector valve lever (4) to No. 1 (CENTER ROLLER UP) position.

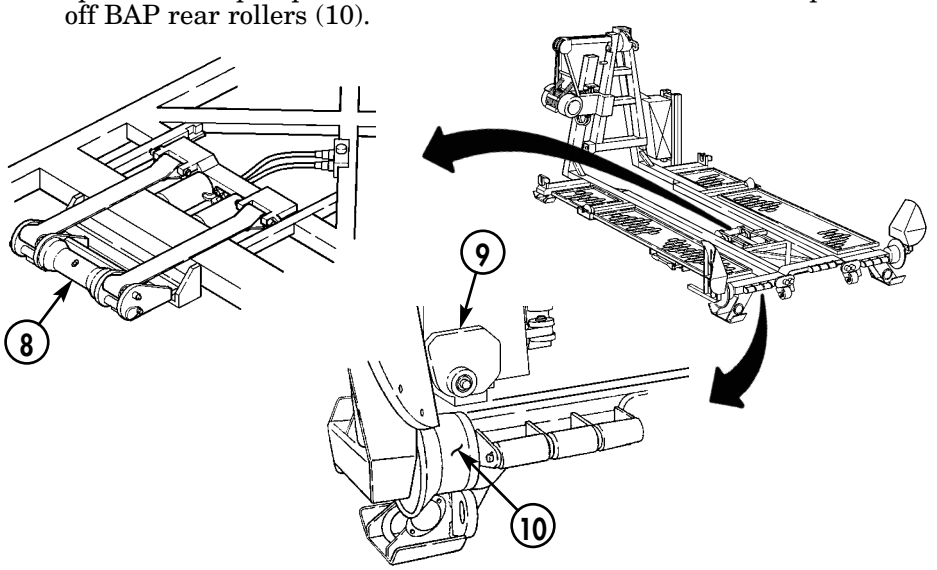


FREE LAUNCH OF BAY (Contd)

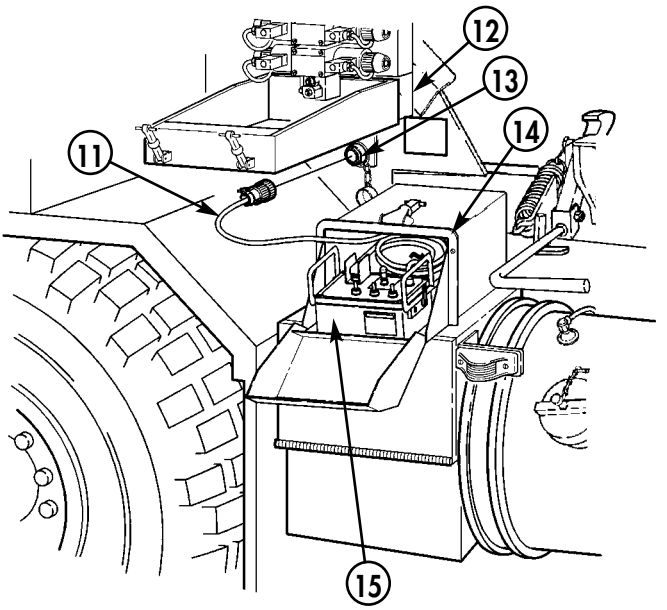
NOTE

There should be a 0.25-in. (6.4-mm) gap between BAP rear rollers and ramp end of bay.

k. Remove lever-locking pin (6) from pump lever (5), and using pump handle (7), operate hand pump (3) until center roller (8) lifts front (ramp end) of bay (9) off BAP rear rollers (10).



l. Remove remote control unit (15) from stowage box (14), and connect RCU cable (11) to receptacle (13), located at main manifold support frame (12).



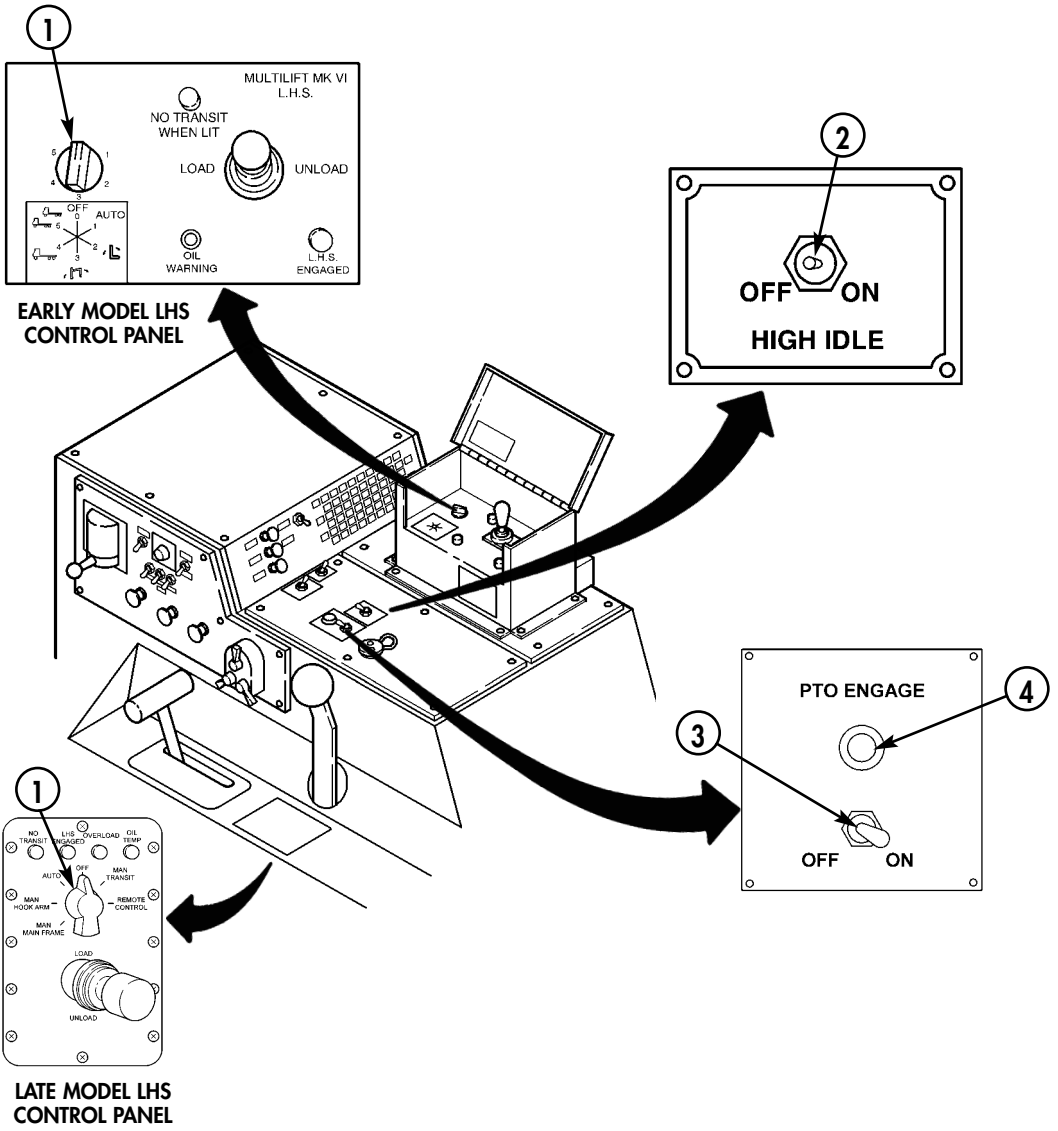
FREE LAUNCH OF BAY (Contd)

m. Turn LHS MODE SELECT switch (1) to No. 1 (AUTO SEQUENCE) position on early models or AUTO position on late models.

CAUTION

HIGH IDLE switch must be in the OFF position prior to engaging PTO. Failure to comply may result in damage to the vehicle transmission or the LHS.

n. With HIGH IDLE switch (2) in OFF position, move PTO ENGAGE switch (3) to ON position. The PTO ENGAGE indicator (4) will light.



FREE LAUNCH OF BAY (Contd)

WARNING

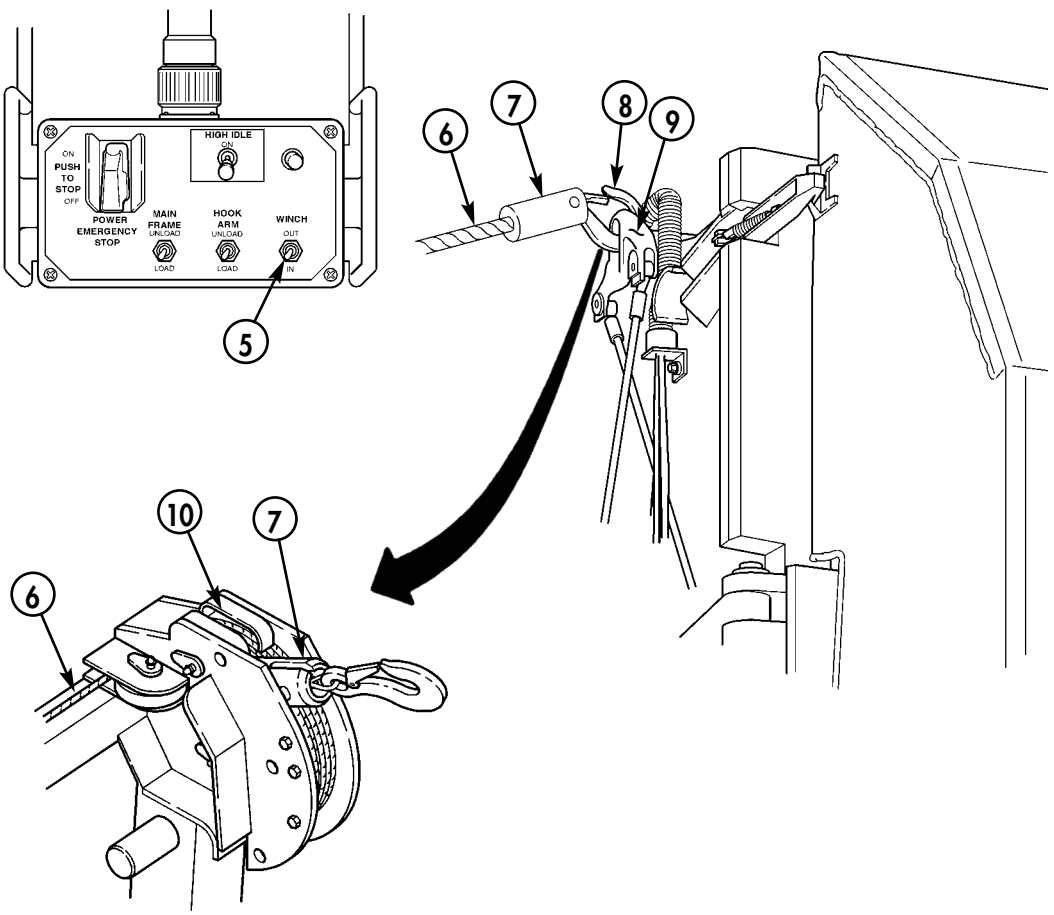
Always wear leather gloves when handling winch cable. Failure to comply may result in injury to personnel.

o. While assistant maintains tension on winch cable (6), hold WINCH switch (5) in OUT position until winch cable hook (8) can be disconnected from lifting lug (9), then release switch (5) and disconnect hook (8) from lifting lug (9).

CAUTION

Ensure WINCH switch is released once hook holder is seated in saddle or damage to equipment may result.

p. While assistant maintains tension on winch cable (6), hold WINCH switch (5) in IN position until hook holder (7) is seated in saddle (10), then release switch (5).



FREE LAUNCH OF BAY (Contd)

WARNING

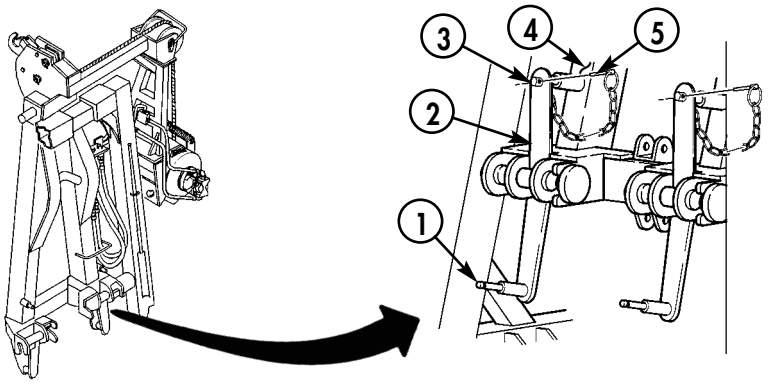
The winch frame must be locked to the LHS hook arm prior to launching bay. Failure to comply may result in damage to equipment or injury to personnel.

NOTE

When both levers are in the DOWN position, the winch frame is locked to the LHS hook arm. Perform steps q and r if levers are in the UP position.

q. Remove quick-release pin (5) from stud (3) at both sides of winch frame (4).

r. Swing lever (2) down so that end of stud (1) is through hole in lever (2), and install quick-release pin (5) on stud (1) at both sides of winch frame (4).

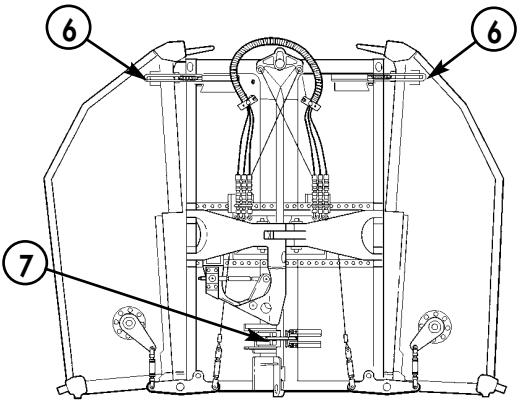


NOTE

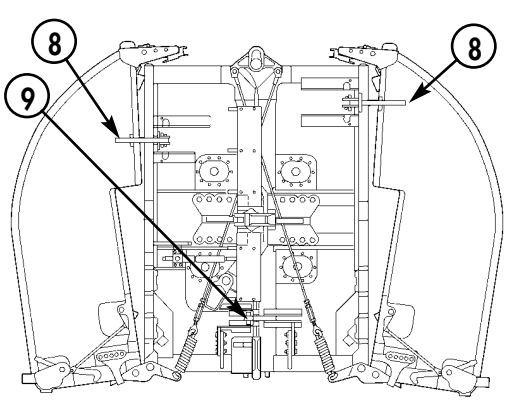
Perform step s if launching ramp bay or step t if launching interior bay.

s. Open both foldlocks (6) and travel latch (7) at front (connecting end) of ramp bay.

t. Open both foldlocks (8) and travel latches (9) at both ends of interior bay.



RAMP BAY



INTERIOR BAY

FREE LAUNCH OF BAY (Contd)

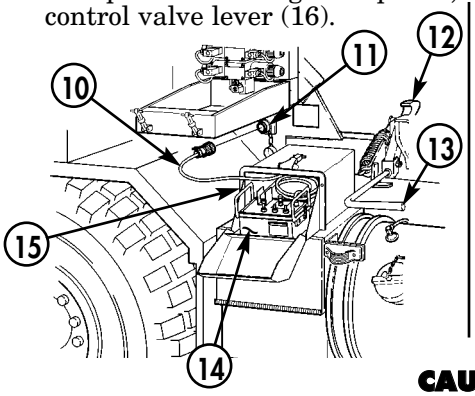
u. Set both BAP hold-down locks (12) in DISENGAGED position by pulling out handles (13).

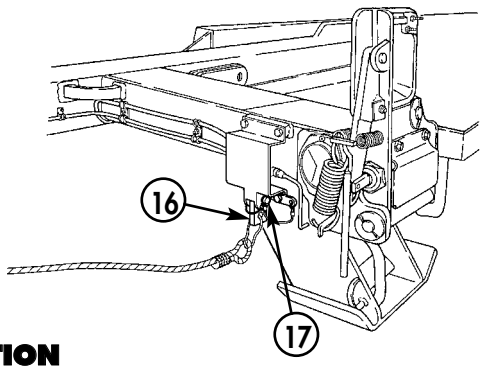
v. Disconnect RCU cable (10) from receptacle (11), and stow remote control unit (14) and RCU cable (10) in stowage box (15).

WARNING

All nonessential personnel must stand clear of transporter prior to removing safety pin from air release control valve lever. Once safety pin is removed, use caution not to accidentally pull or catch lanyard or a premature free launch may occur. Failure to comply may result in damage to equipment or possible injury or death to personnel.

w. Just prior to backing transporter, carefully remove safety pin (17) from control valve lever (16).





CAUTION

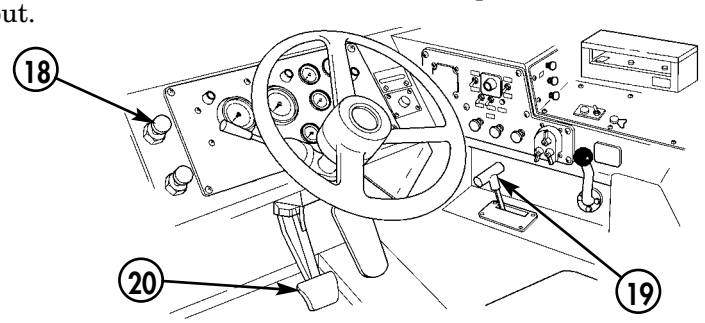
Do not exceed 4 ft (1.2 m) maximum fording depth or damage to equipment may result.

NOTE

Perform step x if launch site bank height is 0, or perform step y if bank height is between 0 and 60 in. (152 cm).

x. Back transporter into water to top of rear axle hubs, for free launch of interior bay, and to top of rear axle tire rims for free launch of ramp bay, then apply service brake (20), move transmission selector lever (19) to N (neutral), and pull PARKING BRAKE control (18) out.

y. Back transporter up to river bank so that rear axle tires are approximately 2 ft (0.6 m) from edge of bank , then apply service brake (20), move transmission selector lever (19) to N (neutral), and pull PARKING BRAKE control (18) out.



FREE LAUNCH OF BAY (Contd)

NOTE

If pulling lanyard does not release front lock pin assemblies, ensure BAP air hose is properly connected and vehicle air pressure gauge indicates adequate pressure.

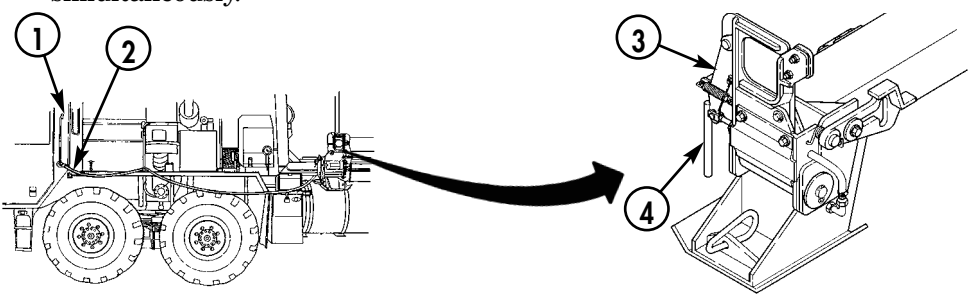
z. Launch bay by pulling lanyard (2) toward front of transporter.

NOTE

Perform step aa if pulling lanyard does not release front lock pin assemblies. Assistant will help with step aa.

Perform steps ab and ac if pulling lanyard releases both front lock pin assemblies but bay does not roll off BAP.

aa. Launch bay by manually pulling lever (4) on both front lock pin assemblies (3) simultaneously.



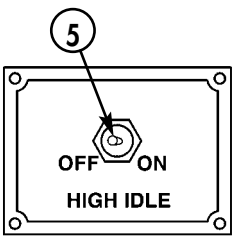
CAUTION

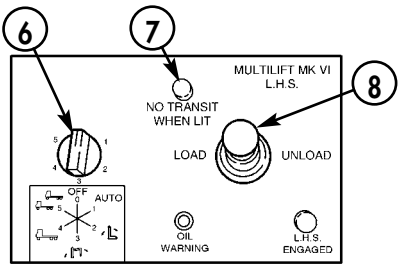
To prevent surging or uneven operation of LHS or BAP winch, either perform all operations with CBT HIGH IDLE switch off, or engage CBT high idle after LHS or BAP winch is in motion, and disengage CBT high idle prior to stopping motion. Failure to comply may result in damage to equipment.

Dot not raise BAP more than 2 ft (0.6 m) or damage to BAP air supply and winch hoses will result.

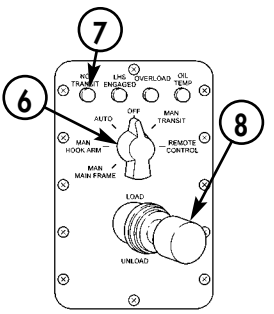
ab. Hold joystick (8) in UNLOAD position and move HIGH IDLE switch (5) to ON until bay starts to roll, then move HIGH IDLE switch (5) to OFF and release joystick (8).

ac. Hold joystick (8) in LOAD position until BAP is fully stowed and NO TRANSIT WHEN LIT indicator (7) is off.





EARLY MODEL LHS CONTROL PANEL



LATE MODEL LHS CONTROL PANEL

FREE LAUNCH OF BAY (Contd)

WARNING

After water operations, transporter brakes will be wet and will not stop vehicle as quickly as usual. Allow extra distance for slowing and stopping transporter or damage to equipment and possible injury or death to personnel may result.

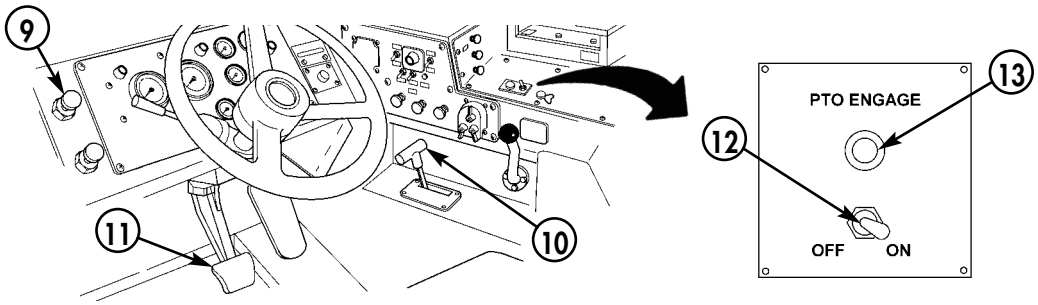
CAUTION

The LHS MODE SELECT switch may be left at any setting while maneuvering the transporter in the immediate loading or unloading site, but must be in the 0 (OFF/TRANSPORT) position prior to road travel or damage to LHS main frame and hook arm cylinders may result. PTO ENGAGE switch and indicator light must be off prior to road travel of damage to equipment may result.

ad. Apply service brake (11), move transmission selector lever (10) to 1 (first range), push PARKING BRAKE control (9) in, and drive transporter clear of launch area.

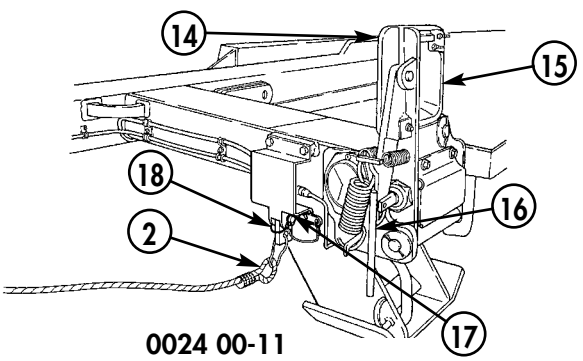
ae. Move PTO ENGAGE switch (12) to OFF position. PTO ENGAGE indicator light (13) should go off.

af. Turn LHS MODE SELECT switch (6) to 0 (OFF/TRANSPORT) position on early models or OFF position on late models.



ag. Install safety pin (17) on air release control valve lever (18), and remove lanyard (2) from lever (18) and transporter handgrip (1).

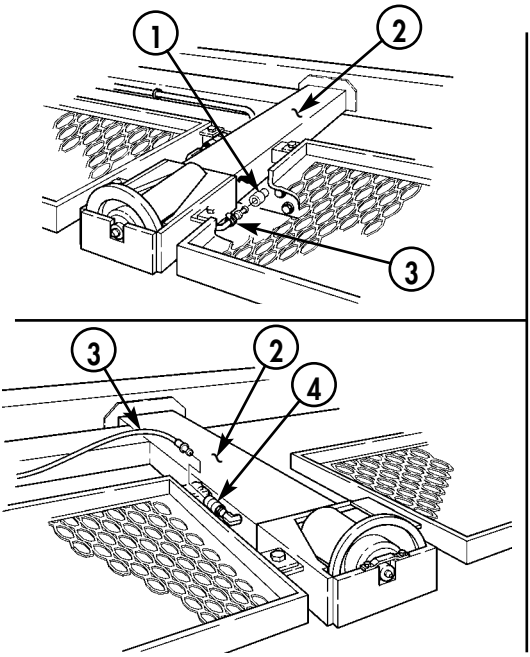
ah. Lock jaws (15) on both front lock pin assemblies (14) by pulling lever (16) toward front of transporter, then lift jaw (15) to lock position and release lever (16).

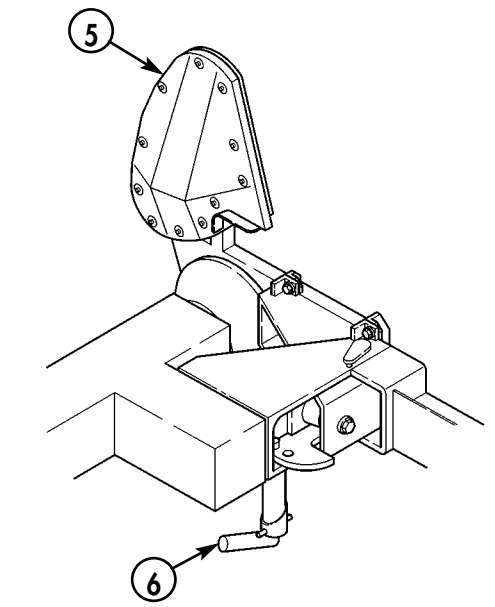


FREE LAUNCH OF BAY (Contd)

ai. Disconnect air supply hose (3) from tire inflation air coupling (1), and connect air supply hose (3) to stowage coupling (4) at side of BAP frame (2).

aj. Rotate handle (6) until rear guide (5) is disengaged, then move rear guide (5) inboard until locked in full IN position at both sides of BAP.

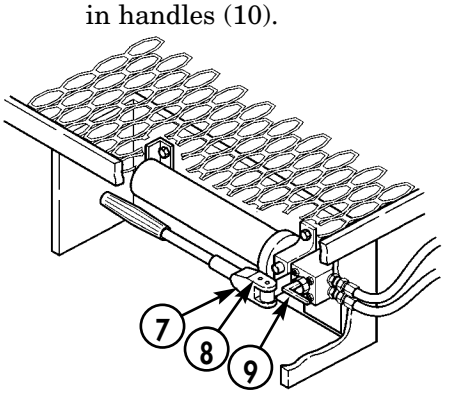


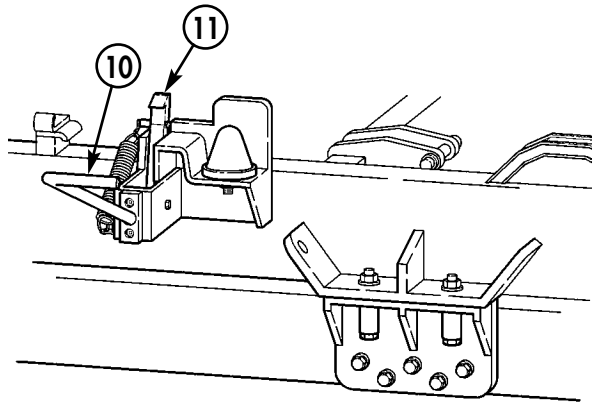


ak. Turn hand pump selector valve lever (9) to No. 3 (CENTER ROLLER DOWN) position. After center roller returns to its stowed position, turn lever (9) to No. 2 (OFF) position.

al. Install lever-locking pin (8) on pump hand pump lever (7).

am. Set both BAP hold-down locks (11) in AUTO ENGAGED position by pushing in handles (10).





END OF WORK PACKAGE

CONTROLLED LAUNCH OF BAY

THIS WORK PACKAGE SUPERSEDES WP 0025 00, DATED 8 APRIL 2003

CAUTION

A controlled launch is performed where site conditions require the bay to be slowly lowered into shallow water, with the transporter's LHS and BAP winch, and then unfolded by manually releasing the bay's travel latch with a lanyard. Ensure launch site conditions are met or damage to equipment may result.

Assistant will act as a ground guide when maneuvering CBT and during operation of the LHS. Failure to comply may result in damage to equipment.

NOTE

During all transporter operations, the CBT operator will drive and be responsible for the operation of the LHS via the cab control box or remote control unit. The assistant will act as a ground guide, be responsible for directing the operator using hand signals, and assist the operator as needed.

a. Ensure launch site conditions exist for a controlled launch of bay. (Refer to WP 0019 00, Launch Condition Requirements). If launch site conditions do not meet requirements for a controlled launch, refer to High-bank Launch of Bay (WP 0026 00) or Operation Under Unusual Conditions (WP 0045 00).

CAUTION

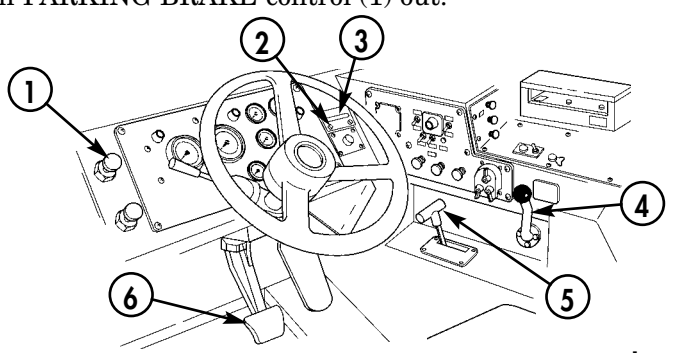
Do not move TRANSFER CASE shift lever when transmission is in gear, and do not move TRANSFER CASE shift lever or TRACTION CONTROL lever while vehicle is moving or damage to drive line will result.

NOTE

After traction control is engaged, move vehicle forward to allow shift collars to fully engage.

b. Move TRANSFER CASE shift lever (4) to L (LO) and TRACTION CONTROL lever (3) to INTER-AXLE DIFF. LOCK. TRACTION CONTROL indicator (2) will light up.

c. Back up CBT on river bank approximately 15 ft (4.6 m) from water, then apply service brake (6) move transmission selector lever (5) to N (neutral), and pull PARKING BRAKE control (1) out.



CONTROLLED LAUNCH OF BAY (Contd)

NOTE

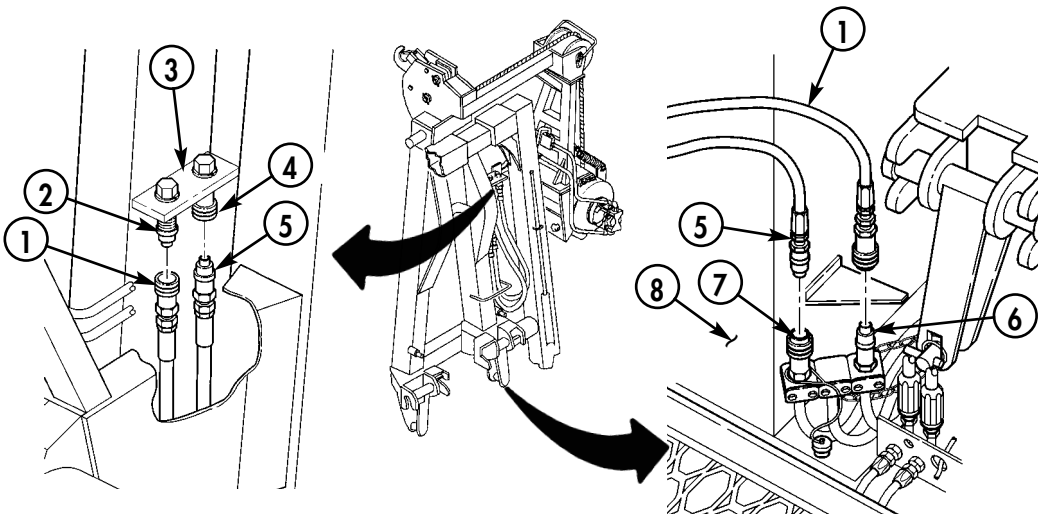
Perform steps d and e if BAP winch hoses are not connected to LHS couplings.

d. Disconnect winch hoses (1) and (5) from stowage couplings (2) and (4), located on winch frame bracket (3).

CAUTION

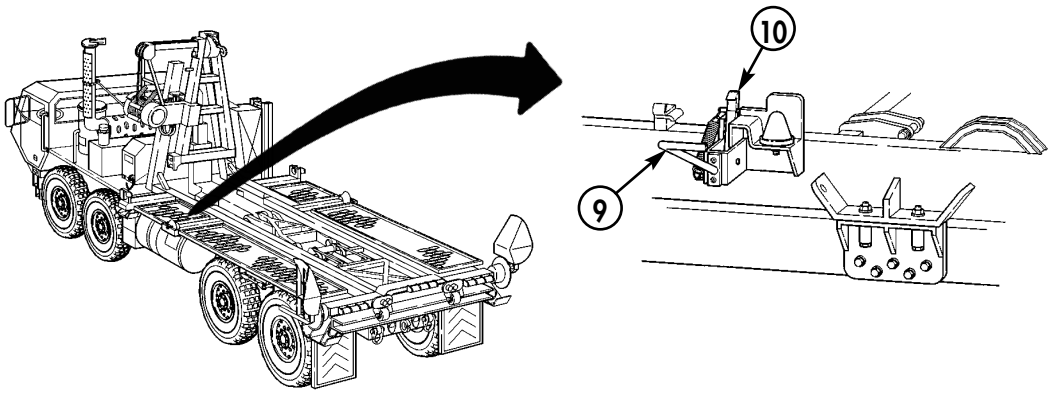
Ensure BAP winch hydraulic hoses are routed so they are free to move with LHS hook arm or damage to hoses will result.

e. Connect winch hydraulic hoses (5) and (1) to LHS couplings (7) and (6), located on LHS hook arm (8).



CONTROLLED LAUNCH OF BAY (Contd)

f. Check hold-down lock (10) at both sides of BAP to ensure they are in AUTO ENGAGED position; handles (9) should be in.



WARNING

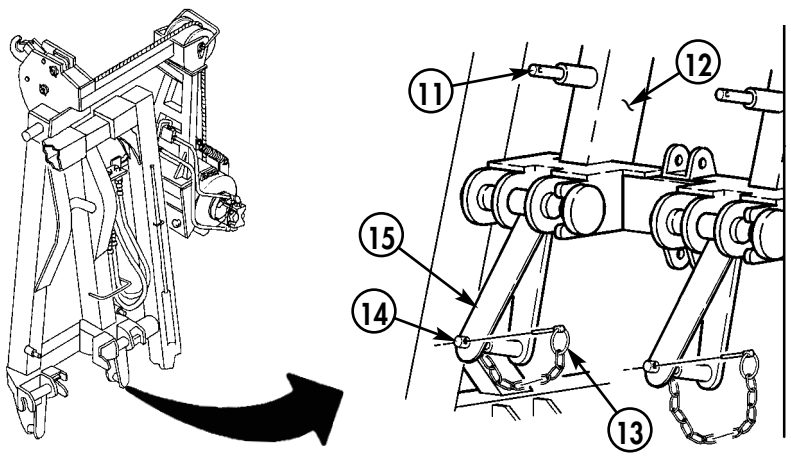
The winch frame must be locked to the LHS hook arm for a controlled launch. Failure to comply may result in damage to equipment or injury to personnel.

NOTE

When both winch frame lock levers are in the DOWN position, the winch frame is locked to the LHS hook arm. Perform steps g and h if levers are in the UP position.

g. Remove quick-release pin (13) from stud (11) at both sides of winch frame (12).

h. Swing lever (15) down so that end of stud (14) is through hole in lever (15), and install quick-release pin (13) on stud (14) at both sides of winch frame (12).



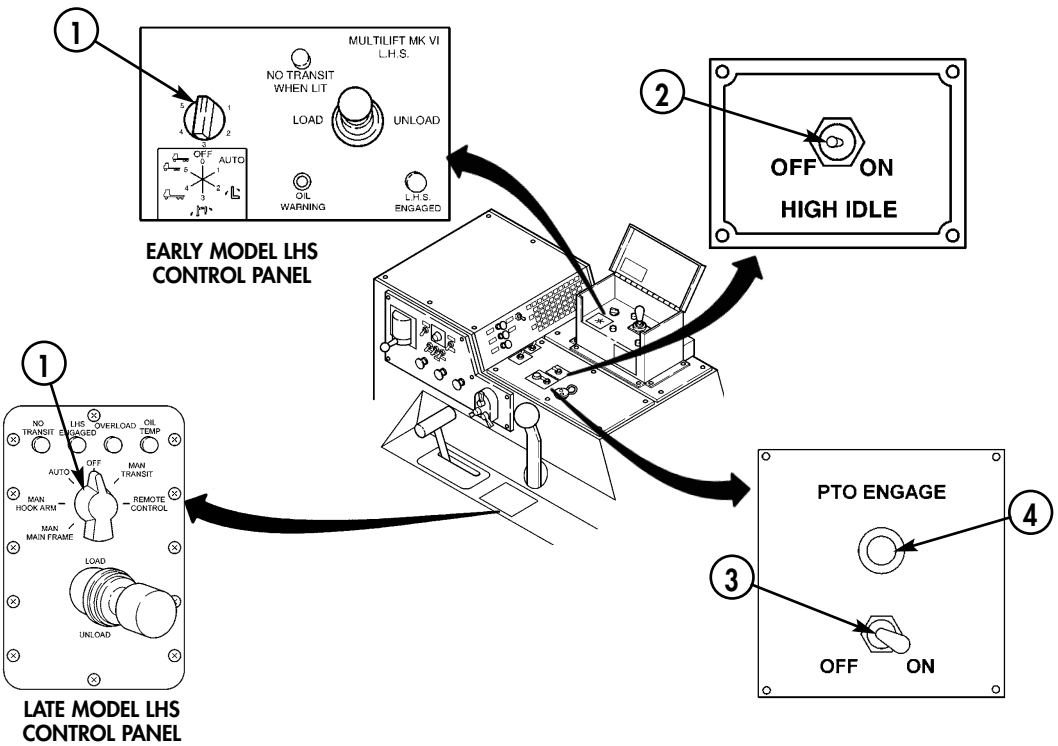
CONTROLLED LAUNCH OF BAY (Contd)

i. Turn LHS MODE SELECT switch (1) to 0 (OFF/TRANSPORT) position on early models or REMOTE CONTROL position on late models.

CAUTION

HIGH IDLE switch must be in the OFF position prior to engaging PTO. Failure to comply may result in damage to the vehicle transmission or the LHS.

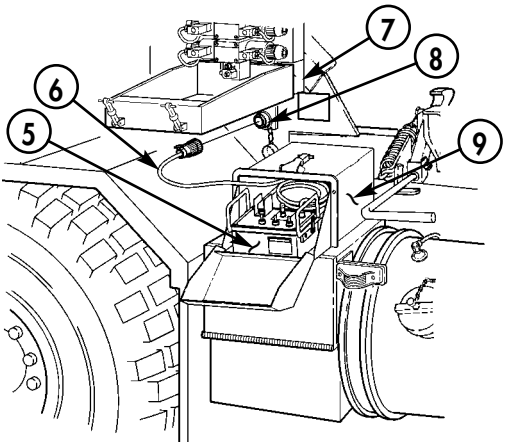
j. With HIGH IDLE switch (2) in OFF position, move PTO ENGAGE switch (3) to ON position. The PTO ENGAGE indicator (4) will light.

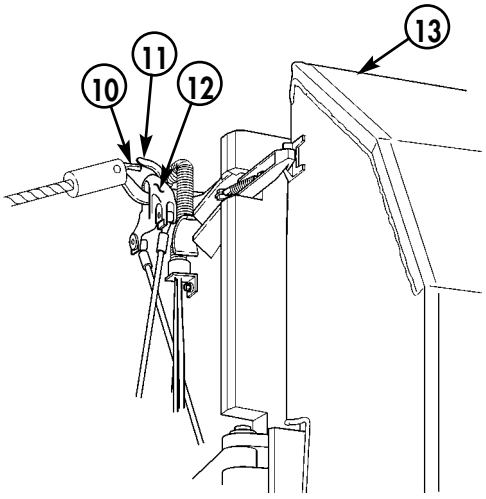


CONTROLLED LAUNCH OF BAY (Contd)

k. Remove remote control unit (5) from stowage box (9), and connect RCU cable (6) to receptacle (8), located at main manifold support frame (7).

l. Ensure winch cable hook (11) is securely connected to lifting lug (12) with hook end facing up and toward bay (13). Ensure latch (10) is closed.



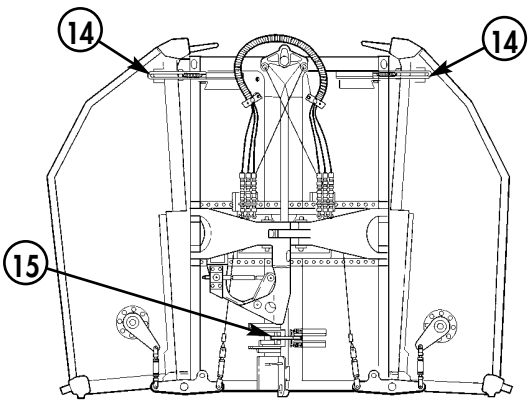


NOTE

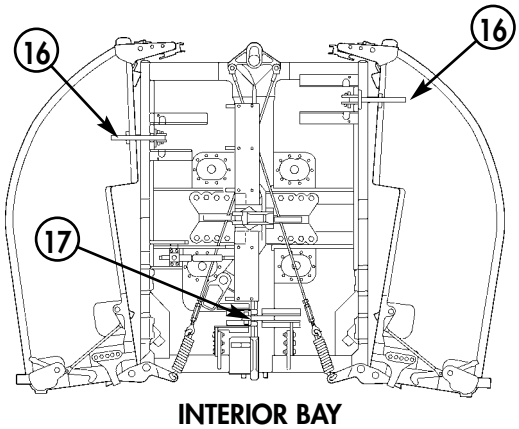
Perform step m if unloading ramp bay and step n if unloading interior bay.

m. Open two foldlocks (14) at front (connecting end) of ramp bay. Travel latch (15) should be left closed.

n. Open two foldlocks (16) at both ends of interior bay, and open travel latch (17) on interior bay at rear of transporter only. Travel latch (17) at opposite end should be left closed.



RAMP BAY



INTERIOR BAY

CONTROLLED LAUNCH OF BAY (Contd)

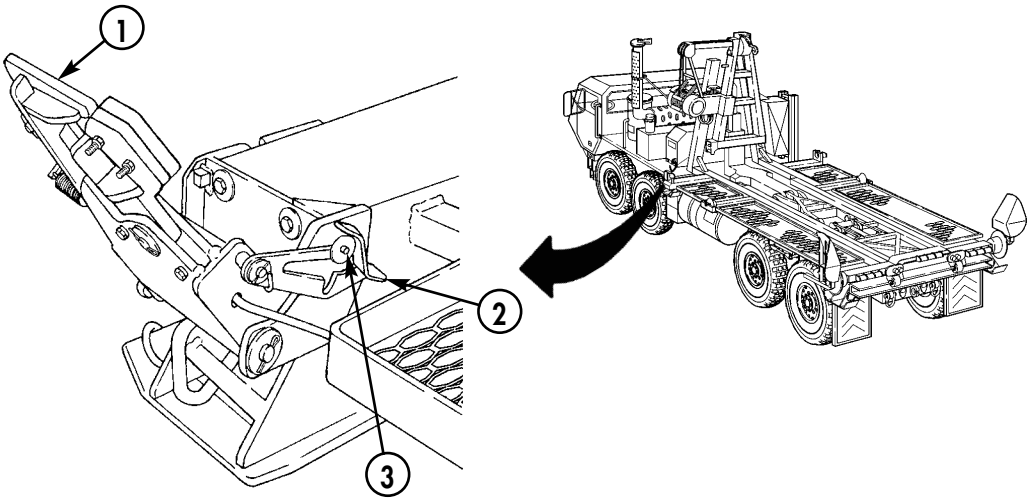
WARNING

Keep hands and fingers clear of front pin lock assemblies once set in the DOWN position. Failure to comply may result in injury to personnel.

NOTE

Movement of the LHS hook arm may be necessary to release the front pin lock assemblies.

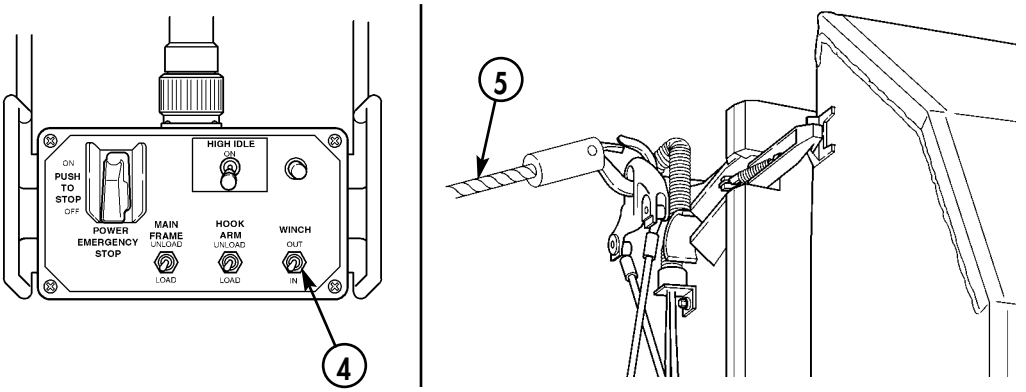
o. Set both front pin lock assemblies (1) in DOWN position by pulling back front pin lock assembly (1) and depressing latch (2) to DOWN position until engaged with latch pin (3).



NOTE

In case of emergency while the RCU is in use, push the red POWER EMERGENCY STOP switch to shut down operation of the LHS.

p. Hold WINCH switch (4) in IN position until slack is removed from winch cable (5), then release switch (4).



CONTROLLED LAUNCH OF BAY (Contd)

WARNING

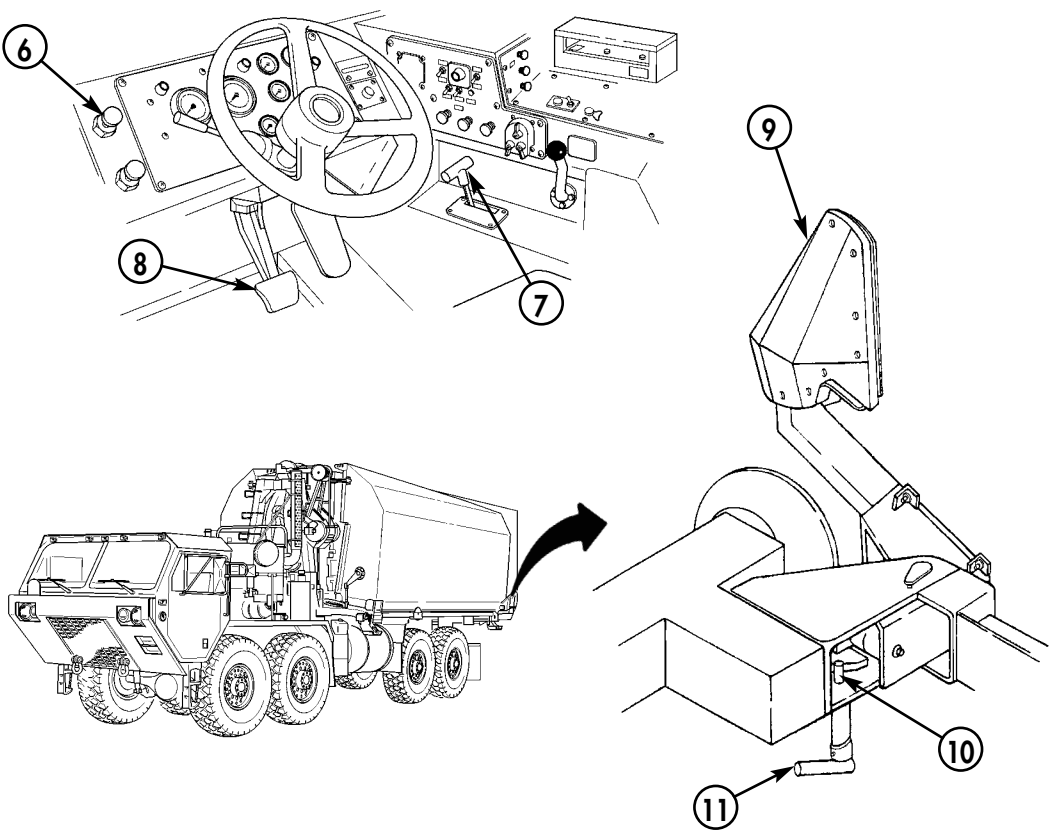
Once the rear guides are released, only the winch cable secures the bay to the BAP. Personnel must not mount the BAP and must stand clear of the transporter. The bay could shift, release, or fall from the transporter resulting in injury or death to personnel.

q. Set both rear guides (9) in full OUT position by rotating handle (11) until rear guide (9) is disengaged, then move rear guide (9) outboard until latch pin (10) engages rear guide (9).

CAUTION

Do not exceed 4 ft (1.2 m) maximum fording depth or damage to equipment may result.

r. Back transporter into water to top of rear axle hubs, for controlled launch of interior bay, and to top of rear axle tire rims for controlled launch of ramp bay, then apply service brake (8), move transmission selector lever (7) to N (neutral), and pull PARKING BRAKE control (6) out.



CONTROLLED LAUNCH OF BAY (Contd)

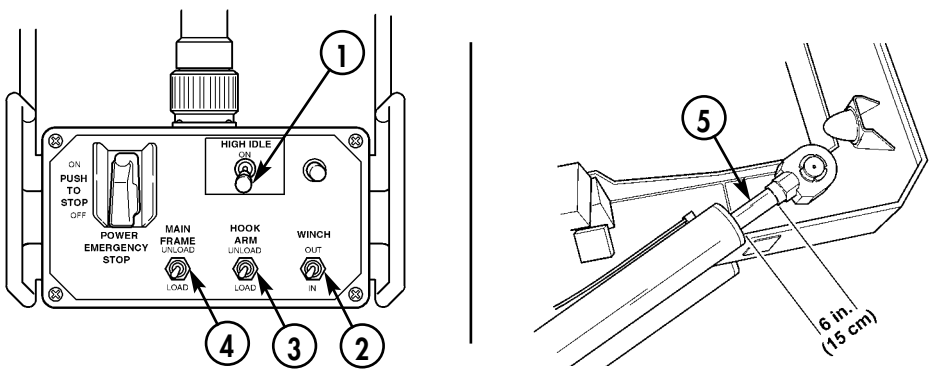
CAUTION

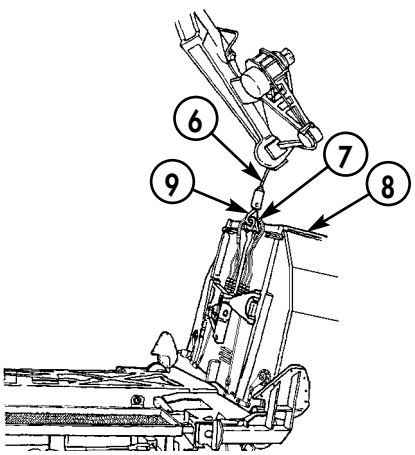
To prevent surging or uneven operation of LHS or BAP winch, either perform all operations with CBT HIGH IDLE switch off, or engage CBT high idle after LHS or BAP winch is in motion, and disengage CBT high idle prior to stopping motion. Failure to comply may result in damage to equipment.

s. Hold HOOK ARM switch (3) in UNLOAD position and move HIGH IDLE switch (1) to ON until hook arm cylinders (5) are extended approximately 6 in. (15 cm). Move HIGH IDLE switch (1) to OFF and release HOOK ARM switch (3).

t. Hold MAIN FRAME switch (4) in UNLOAD position and move HIGH IDLE switch (1) to ON until bay (8) is completely off BAP and clear of transporter. Move HIGH IDLE switch (1) to OFF and release MAIN FRAME switch (4).

u. Hold WINCH switch (2) in OUT position and move HIGH IDLE switch (1) to ON until bay (8) is completely in water and there is sufficient slack in winch cable (6) to allow cable hook (9) to be disconnected from lifting lug (7). Move HIGH IDLE switch (1) to OFF and release WINCH switch (2).





CONTROLLED LAUNCH OF BAY (Contd)

WARNING

After water operations, transporter brakes will be wet and will not stop vehicle as quickly as usual. Allow extra distance for slowing and stopping transporter or damage to equipment and possible injury or death to personnel may result.

CAUTION

The LHS MODE SELECT switch may be left at any setting while maneuvering the transporter in the immediate loading or unloading site, but must be in the 0 (OFF/TRANSPORT) position prior to road travel or damage to LHS main frame and hook arm cylinders may result. PTO ENGAGE switch and indicator light must be off prior to road travel of damage to equipment may result.

NOTE

Boat crew will disconnect winch cable hook from lifting lug, install pin and lanyard, and release travel latch to unfold bay.

A 1/2-in. (13-mm) diameter by 25 ft (7.6 m) rope (lanyard) must be tied through eye of pin (refer to Item 10, WP 0070 00) prior to inserting pin in travel latch. Use a bowline knot. (Refer to WP 0035 00).

v. After BEB crew disconnects cable hook (9) from lifting lug (7), apply service brake (12), move transmission selector lever (11) to 1 (first range), push PARKING BRAKE control (10) in, and drive transporter clear of launch area.

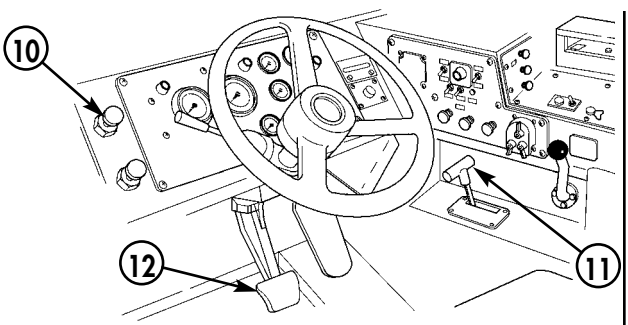
WARNING

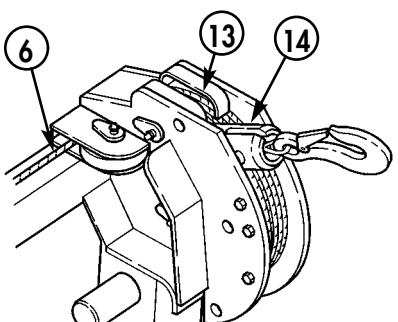
Always wear leather gloves when handling winch cable. Failure to comply may result in injury to personnel.

CAUTION

Ensure WINCH switch is released once hook holder is seated in saddle or damage to equipment may result.

w. While assistant maintains tension on winch cable (6), hold WINCH switch (2) in IN position and move HIGH IDLE switch (1) to ON until hook holder (14) is seated in saddle (13). Move HIGH IDLE switch (1) to OFF and release WINCH switch (2).



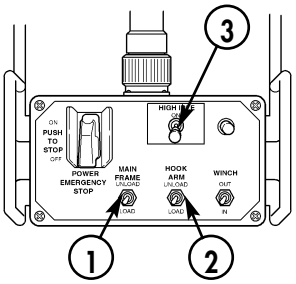


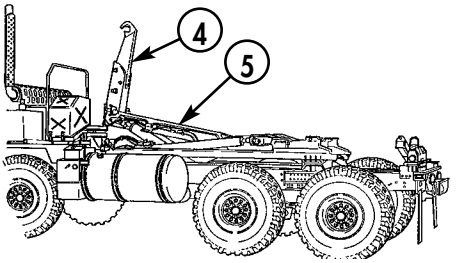
CONTROLLED LAUNCH OF BAY (Contd)

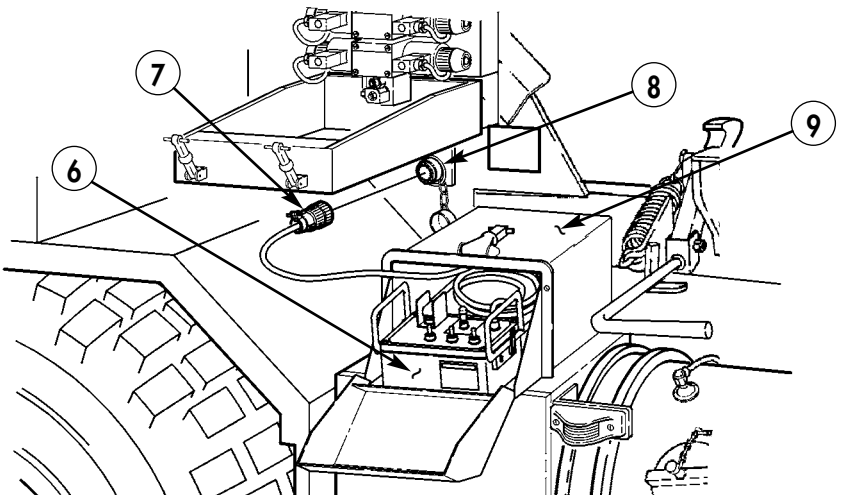
x. Hold MAIN FRAME switch (1) in LOAD position, move HIGH IDLE switch (3) to ON, and as main frame (5) moves into stowed position, move HIGH IDLE switch (3) to OFF, then release MAIN FRAME switch (1).

y. Hold HOOK ARM switch (2) in LOAD position, move HIGH IDLE switch (3) to ON until hook arm (4) is fully stowed, then move HIGH IDLE switch (3) to OFF and release HOOK ARM switch (2).

z. Disconnect RCU cable (7) from receptacle (8), and stow remote control unit (6) and RCU cable (7) in stowage box (9).



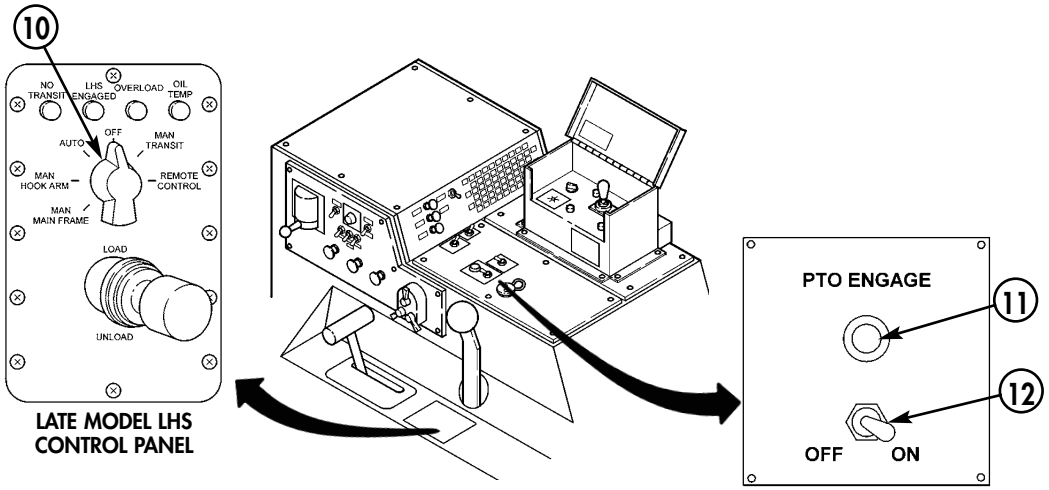




CONTROLLED LAUNCH OF BAY (Contd)

aa. Turn PTO ENGAGE switch (12) to OFF position. PTO ENGAGE indicator (11) will go off.

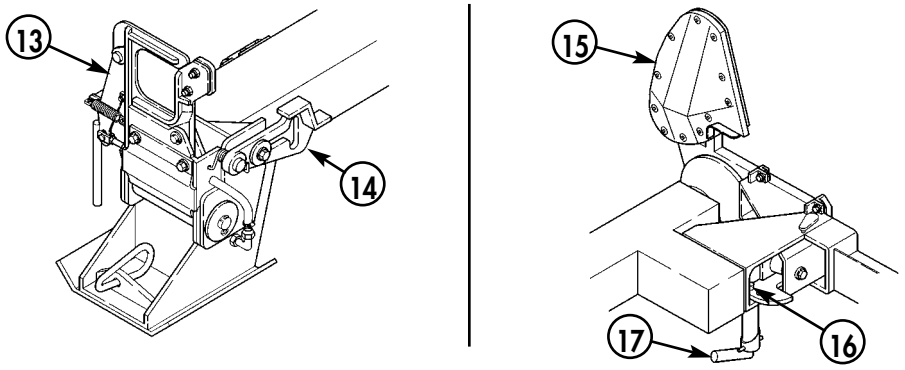
ab. Turn LHS MODE SELECT switch (10) to OFF position on late models.



LATE MODEL LHS CONTROL PANEL

ac. Set both front lock pin assemblies (13) in IN position by pulling assembly (13) out, then move latch (14) up and push assembly (13) inboard.

ad. Set both rear guides (15) in full IN position by rotating handle (17) until rear guide (15) disengages, then move rear guide (15) inboard until latch pin (16) engages rear guide (15).



END OF WORK PACKAGE

HIGH-BANK LAUNCH OF BAY

THIS WORK PACKAGE SUPERSEDES WP 0026 00, DATED 8 APRIL 2003

CAUTION

A high-bank launch is performed where launch site conditions require the bay to be slowly lowered into the water from a height of 5–28 ft (1.5–8.5 m) with the transporter's LHS and BAP winch, and then unfolded by manually releasing the bay's travel latch with a lanyard. Ensure launch site conditions are met or damage to equipment may result.

Assistant will act as a ground guide when maneuvering CBT and during operation of the LHS. Failure to comply may result in damage to equipment.

NOTE

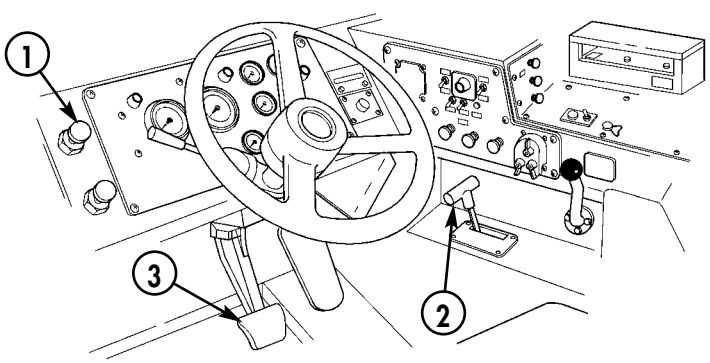
During all transporter operations, the CBT operator will drive and be responsible for the operation of the LHS via the cab control box or remote control unit. The assistant will act as a ground guide, be responsible for directing the operator using hand signals, and assist the operator as needed.

To perform a high-bank launch, the transporter winch must be fitted with the HEMTT 20 ton snatch block (BII, TM 9-2320-279-10) and the winch extension assembly. (Refer to AAL, TM 5-5420-234-14&P). Use the IRB hoisting gear (lifting sling) only for lifting bays. (Refer to Item 4, WP 0070 00).

a. Ensure launch site conditions exist for a high-bank launch of bay. (Refer to WP 0019 00, Launch Condition Requirements). If launch site conditions do not meet requirements for a high-bank launch, refer to Deployment by Helicopter (WP 0027 00) or Operation Under Unusual Conditions (WP 0045 00).

b. Back up CBT parallel to river bank approximately 8 ft (2.5 m) from edge of bank, then apply service brake (3), move transmission selector lever (2) to N (neutral), and pull PARKING BRAKE control (1) out.

c. Unload bay to ground. (Refer to WP 0023 00, Unloading Bay to Ground).



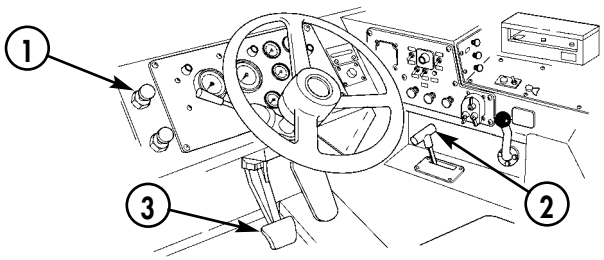
HIGH-BANK LAUNCH OF BAY (Contd)

NOTE

Where several bays will be high-bank launched and more than one CBT is available, it is faster to designate one or more CBTs as launching transporters and position them perpendicular to the water approximately 30 ft (9 m) from the edge of bank. All other CBTs are used as loading/unloading transporters.

Perform steps d through z to prepare transporter (s) to be used for launching operations only.

d. Position CBT perpendicular to water approximately 30 ft (9 m) from edge of bank, then apply service brake (3), move transmission selector lever (2) to N (neutral), and pull PARKING BRAKE control (1) out.

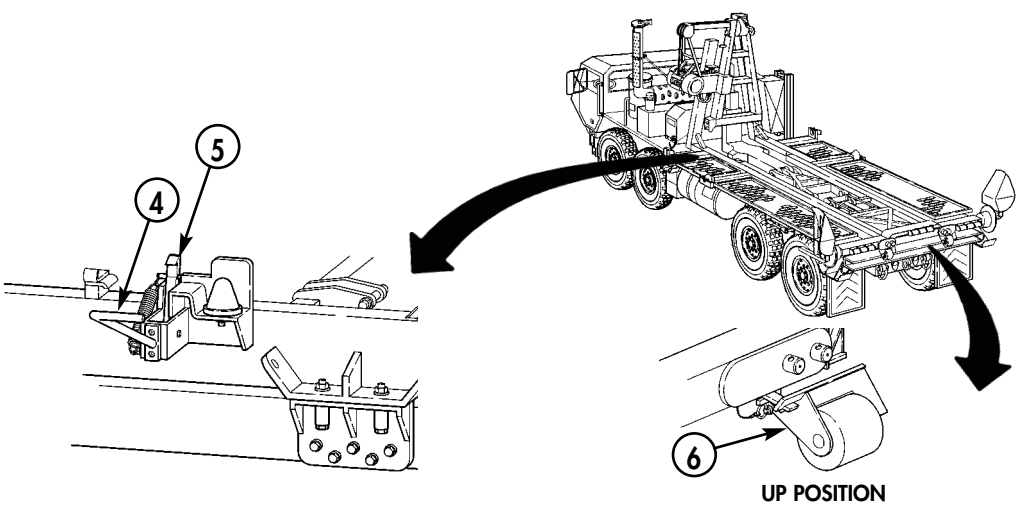


e. Check hold-down lock (5) at both sides of BAP to ensure they are in AUTO ENGAGED position; handles (4) should be in.

CAUTION

Ensure both transload rollers are placed in the UP position to protect outer pontons of bay. Failure to comply may result in damage to equipment.

f. Move both transload rollers (6) to the UP position. (Refer to WP 0009 00).



UP POSITION

HIGH-BANK LAUNCH OF BAY (Contd)

NOTE

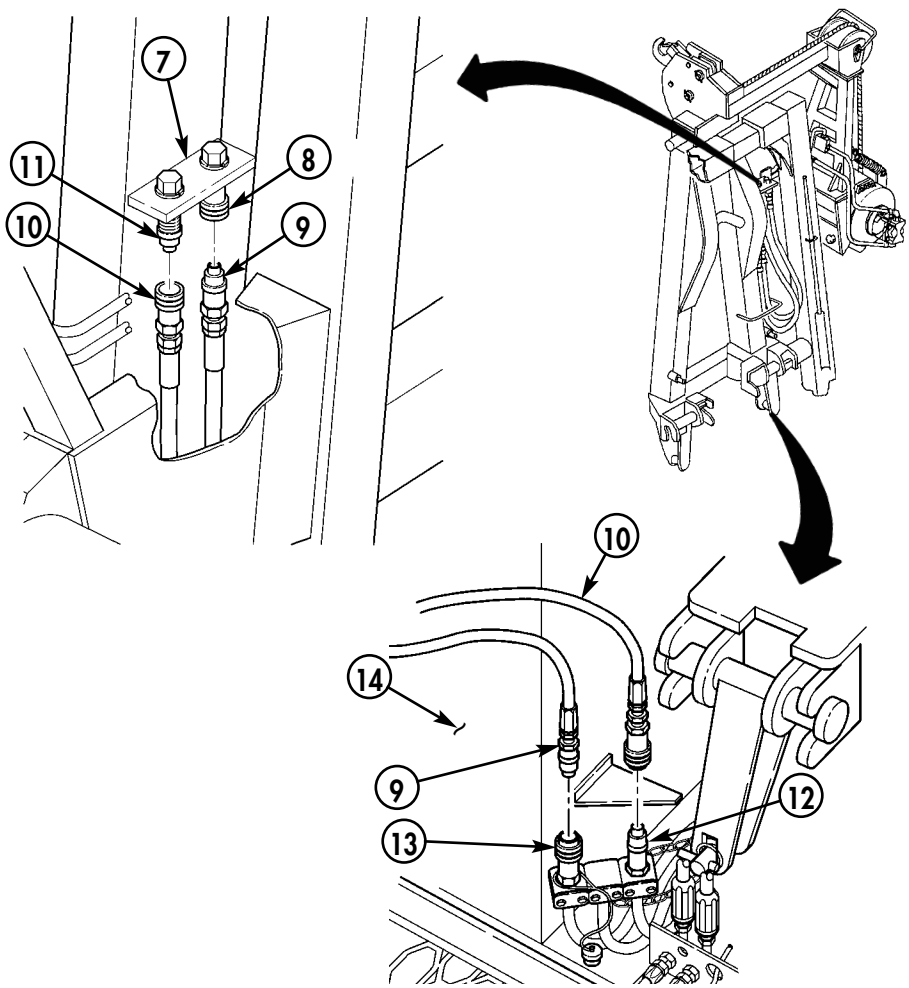
Perform steps g and h if BAP winch hoses are not connected to LHS couplings.

g. Disconnect winch hoses (10) and (9) from stowage couplings (11) and (8), located on winch frame bracket (7).

CAUTION

Ensure BAP winch hydraulic hoses are routed so they are free to move with LHS hook arm or damage to hoses will result.

h. Connect winch hydraulic hoses (9) and (10) to LHS couplings (13) and (12), located on LHS hook arm (14).



HIGH-BANK LAUNCH OF BAY (Contd)

WARNING

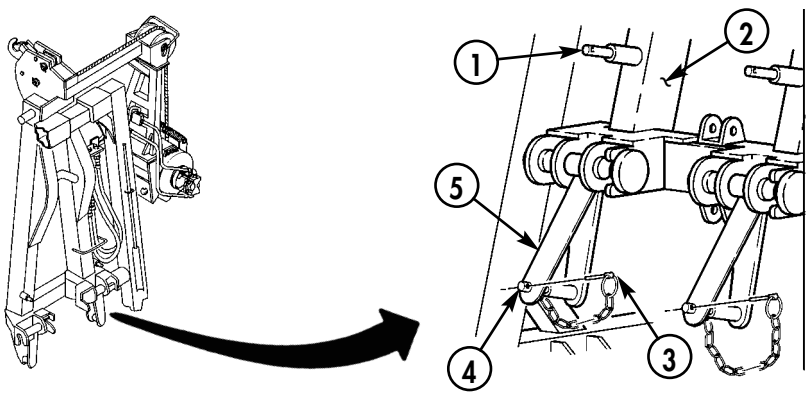
The winch frame must be locked to the LHS hook arm for a high-bank launch. Failure to comply may result in damage to equipment or injury to personnel.

NOTE

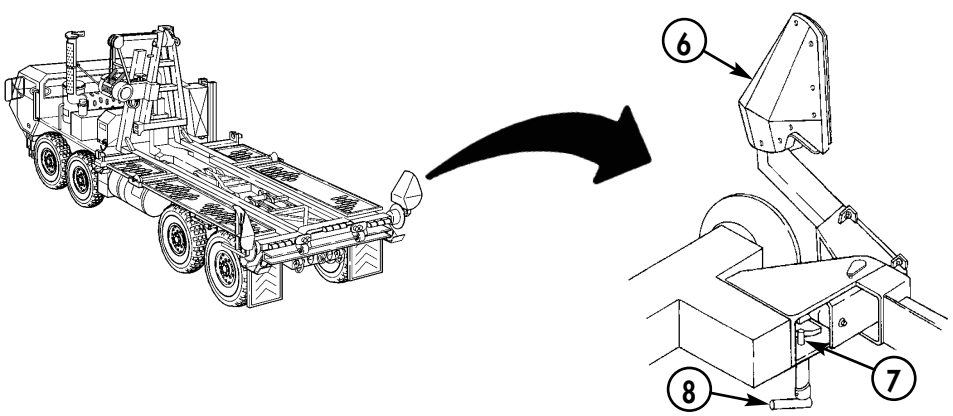
When both winch frame lock levers are in the DOWN position the winch frame is locked to the LHS hook arm. Perform steps i and j if levers are in the UP position.

i. Remove quick-release pin (3) from stud (1) at both sides of winch frame (2).

j. Swing lever (5) down so that end of stud (4) is through hole in lever (5), and install quick-release pin (3) on stud (4) at both sides of winch frame (2).



k. Set both rear guides (6) in full OUT position by rotating handle (8) until rear guide (6) is disengaged, then move rear guide (6) outboard until latch pin (7) engages rear guide (6).



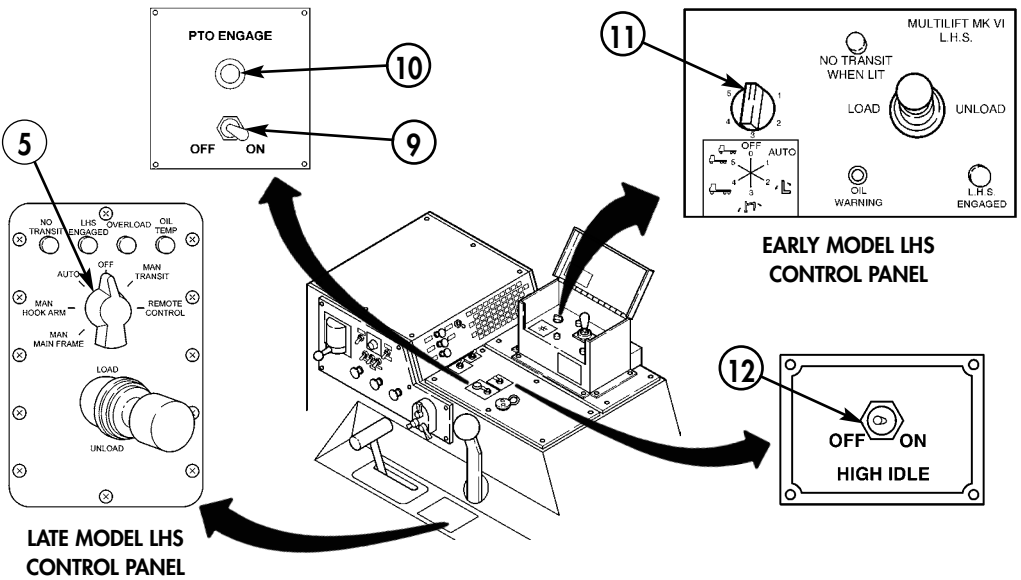
HIGH-BANK LAUNCH OF BAY (Contd)

l. Turn LHS MODE SELECT switch (11) to 0 (OFF/TRANSPORT) position on early models or REMOTE CONTROL position on late models.

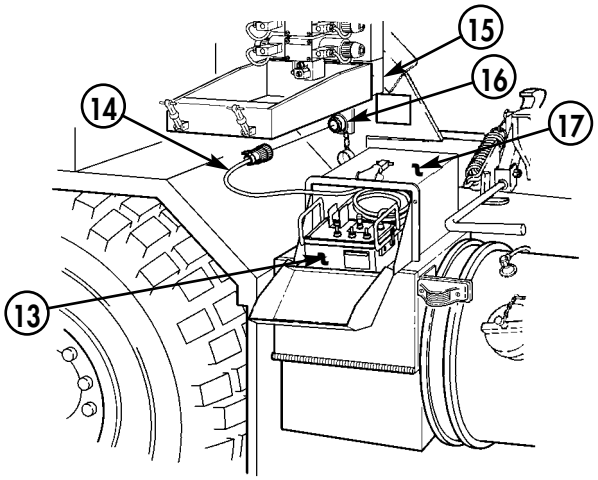
CAUTION

High idle switch must be in the OFF position prior to engaging PTO. Failure to comply may result in damage to the vehicle transmission or the LHS.

m. With HIGH IDLE switch (12) in OFF position, move PTO ENGAGE switch (9) to ON position. The PTO ENGAGE indicator (10) will light.



n. Remove remote control unit (13) from stowage box (17), and connect RCU cable (14) to receptacle (16), located at main manifold support frame (15).



HIGH-BANK LAUNCH OF BAY (Contd)

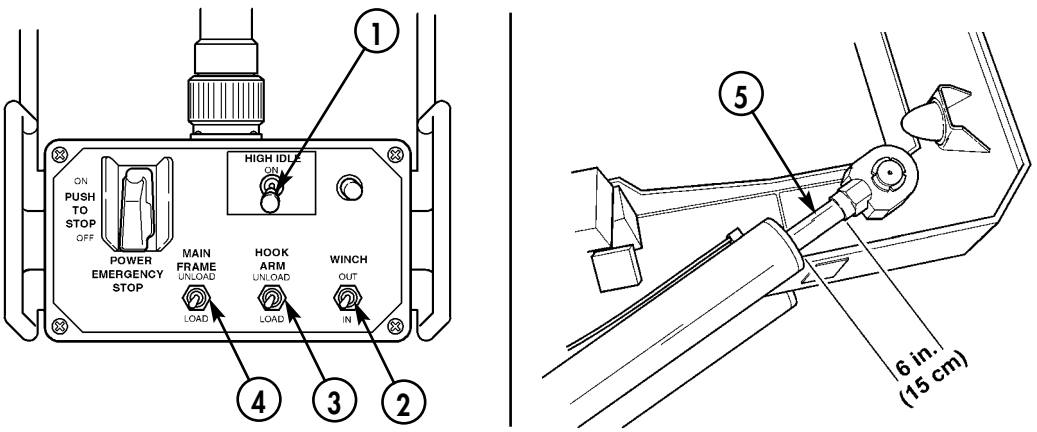
CAUTION

To prevent surging or uneven operation of LHS or BAP winch, either perform all operations with CBT HIGH IDLE switch off, or engage CBT high idle after LHS or BAP winch is in motion, and disengage CBT high idle prior to stopping motion. Failure to comply may result in damage to equipment.

NOTE

In case of emergency while the RCU is in use, push the red POWER EMERGENCY STOP switch to shut down operation of the LHS.

o. Hold HOOK ARM switch (3) in UNLOAD position and move HIGH IDLE switch (1) to ON until hook arm cylinders (5) are extended approximately 6 in. (15 cm). Move HIGH IDLE switch (1) to OFF and release HOOK ARM switch (3).



p. Hold MAIN FRAME switch (4) in UNLOAD position and move HIGH IDLE switch (1) to ON until main frame (8) is fully extended. Move HIGH IDLE switch (1) to OFF and release MAIN FRAME switch (4).

q. Hold HOOK ARM switch (3) in LOAD position and move HIGH IDLE switch (1) to ON until winch cable hook (9) is approximately 5 ft (1.5 m) above ground. Move HIGH IDLE switch (1) to OFF and release HOOK ARM switch (3).

WARNING

Always wear leather gloves when handling winch cable. Failure to comply may result in injury to personnel.

r. While assistant maintains tension on winch cable (6), hold WINCH switch (2) in OUT position and move HIGH IDLE switch (1) to ON until winch pays out approximately 4 ft (1.2 m) of cable (6). Move HIGH IDLE switch (1) to OFF and release WINCH switch (2).

s. Install extension assembly (11) on winch frame (15) and connect cable hook (9) to end of extension assembly (11). Ensure latch (10) is closed.

t. Install snatch block (12) on winch cable (6).

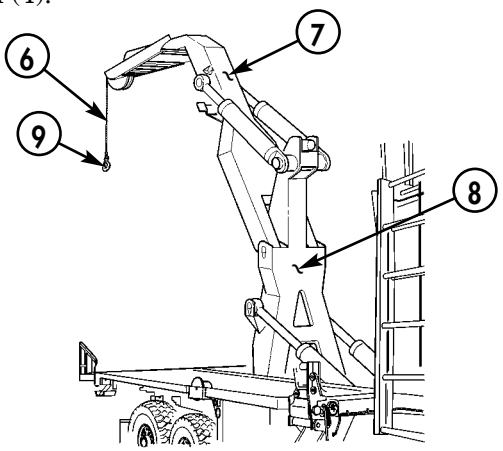
HIGH-BANK LAUNCH OF BAY (Contd)

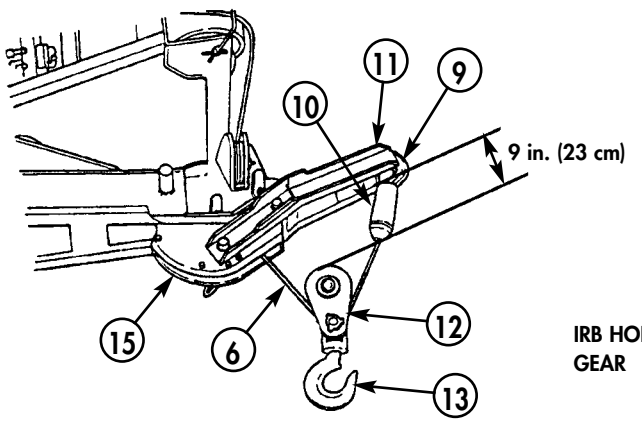
u. Connect large ring (14) of IRB hoisting gear to snatch block hook (13).

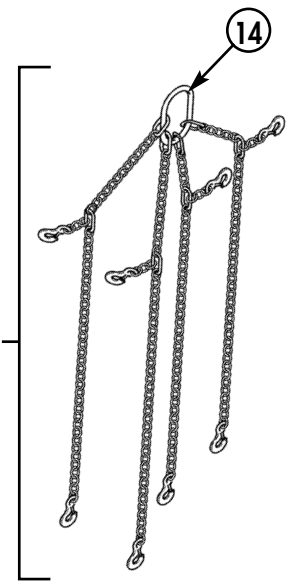
v. Hold HOOK ARM switch (3) in LOAD position and move HIGH IDLE switch (1) to ON until hook arm (7) is fully retracted Move HIGH IDLE switch (1) to OFF and release HOOK ARM switch (3).

w. Hold WINCH switch (2) in IN position until top of snatch block (12) is 9 in. (23 cm) from bottom of winch extension assembly (11), then release WINCH switch (2).

x. Hold MAIN FRAME switch (4) in LOAD position and move HIGH IDLE switch (1) to ON until bottom of snatch block hook (13) is approximately 9 ft (2.8 m) from ground. Move HIGH IDLE switch (1) to OFF and release MAIN FRAME switch (4).

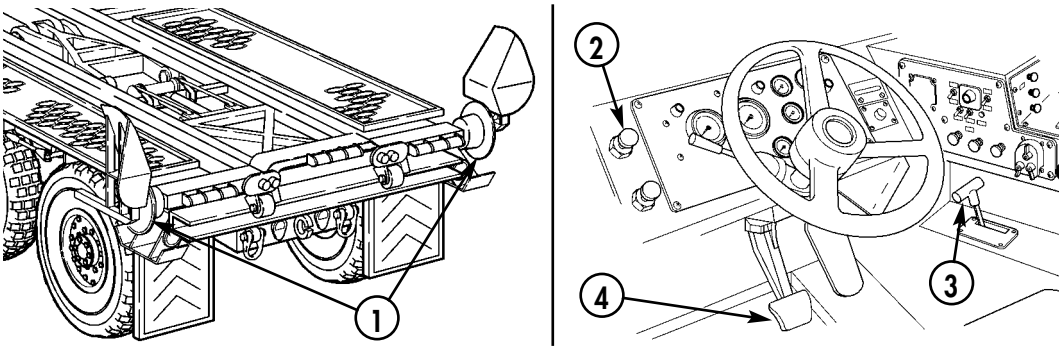






HIGH-BANK LAUNCH OF BAY (Contd)

y. Back up CBT until BAP rear rollers (1) are approximately 6–8 in. (15–20 cm) from side of bay, then apply service brake (4), move transmission selector lever (3) to N (neutral), and pull PARKING BRAKE control (2) out.



WARNING

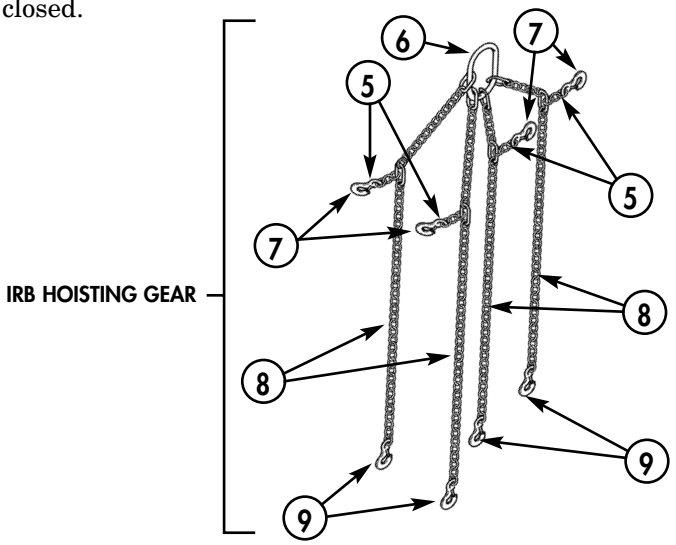
Do not connect IRB hoisting gear to bridge rafting bracket mounting holes and quick-release pins. Use only the load receiving pins with one chain hook at each pin. Failure to comply may result in damage to equipment or possible injury or death to personnel.

NOTE

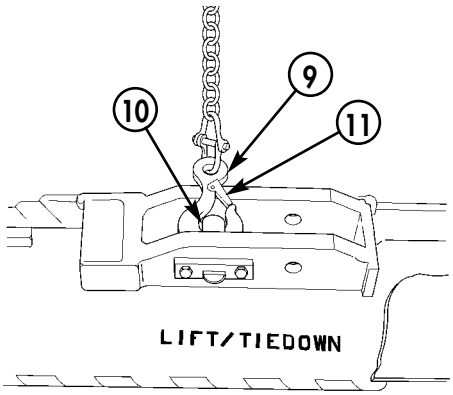
Perform steps z and aa if launching an interior bay or perform steps ab and ac if launching a ramp bay.

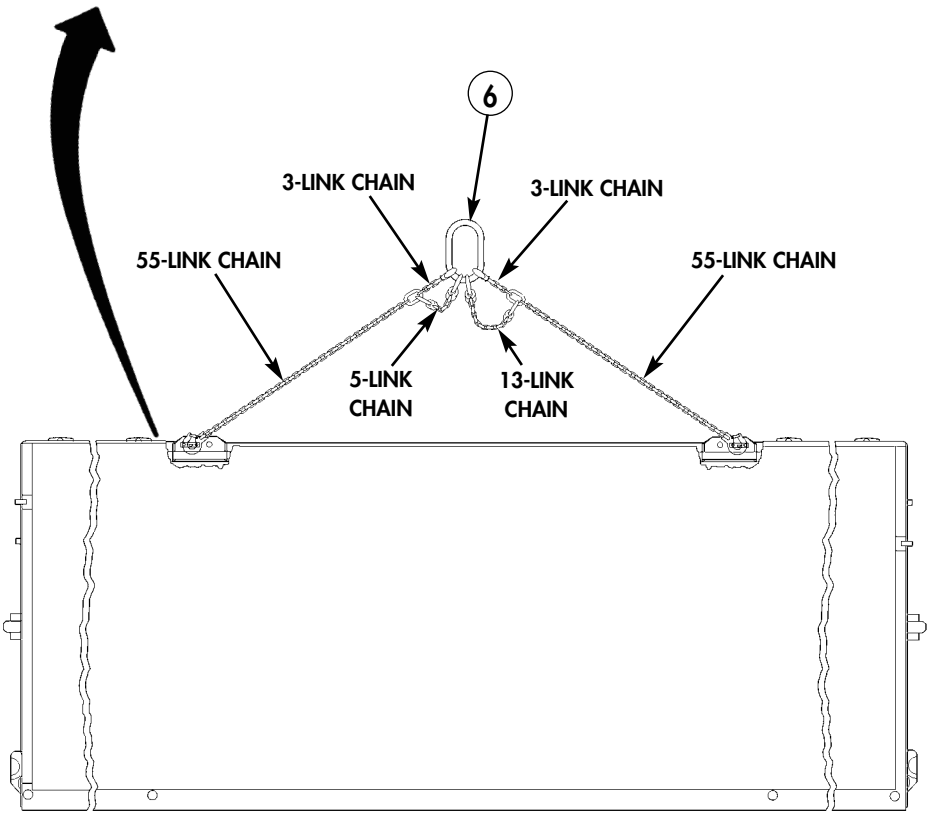
z. Using IRB hoisting gear, connect four hooks (9) from 55-link chains (8) to load receiving pins (10) on interior bay outer pontons. Ensure latches (11) are closed.

aa. Connect four hooks (7) from 3-link chains (5) to ring (6). Ensure latches (11) are closed.



HIGH-BANK LAUNCH OF BAY (Contd)





IRB HOISTING GEAR INSTALLED, IRB-I

HIGH-BANK LAUNCH OF BAY (Contd)

WARNING

Do not connect IRB hoisting gear to bridge rafting bracket mounting holes and quick-release pins. Use only the load receiving pins with one chain hook at each pin. Failure to comply may result in damage to equipment or possible injury or death to personnel.

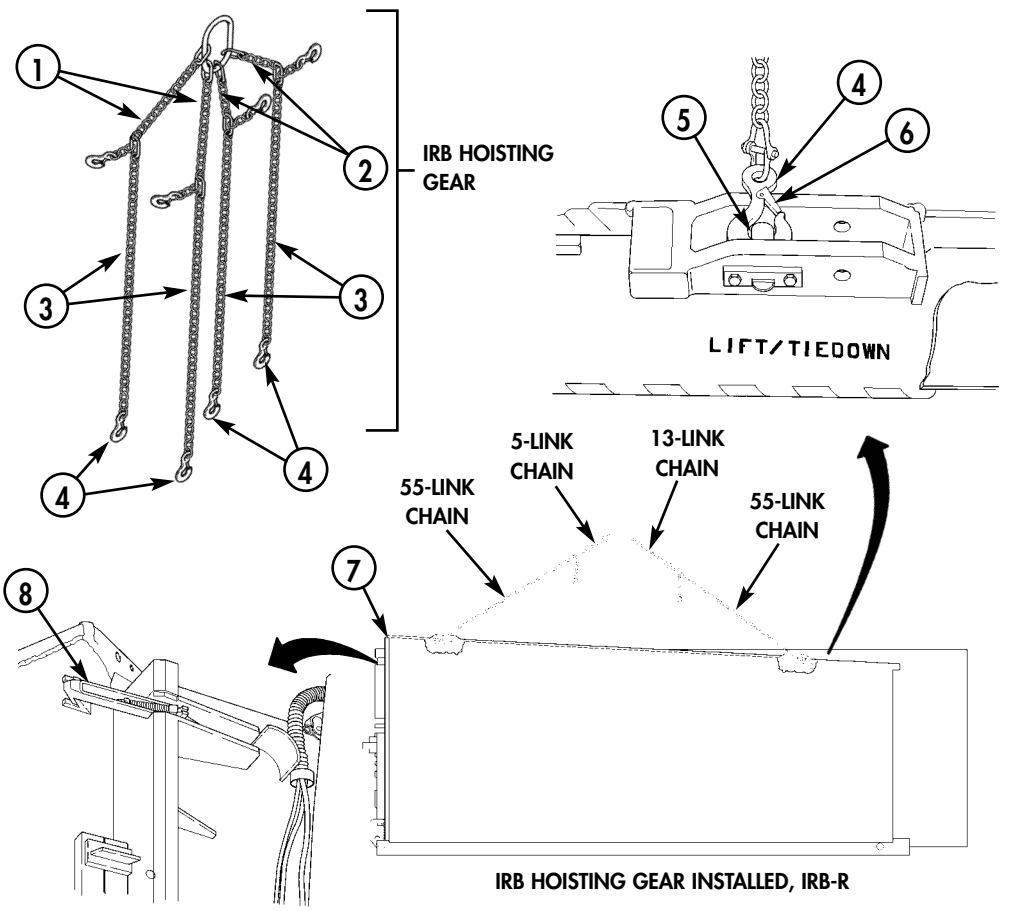
ab. Using IRB hoisting gear, connect two hooks (4) from 55-link chains (3) linked with 13-link chains (1) to load receiving pins (5) at rear (approach end) of ramp bay. Ensure latches (6) are closed.

ac. Connect two hooks (4) from 55-link chains (3) linked with 5-link chains (2) to load receiving pins (5) at front (connecting end) of ramp bay. Ensure latches (6) are closed.

NOTE

Perform step ad for ramp bay, or step ae for interior bay.

ad. Open two foldlocks (8) at front (connecting end) of ramp bay (7).



IRB HOISTING GEAR INSTALLED, IRB-R

HIGH-BANK LAUNCH OF BAY (Contd)

ae. Open two foldlocks (12) at both ends of interior bay (11), and open one travel latch (13) at either end of bay (11).

NOTE

If bay does not hang level when lifted from ground, set bay down, and check installation of IRB hoisting gear.

af. Hold MAIN FRAME switch (10) in UNLOAD position and move HIGH IDLE switch (9) to ON until bay (11) is approximately 1 ft (77 cm) above ground. Move HIGH IDLE switch (9) to OFF and release MAIN FRAME switch (10).

WARNING

When backing CBT to edge of bank, assistant will ensure rear wheels are a safe distance from edge of bank. Failure to comply may result in damage to equipment or possible injury or death to personnel.

CAUTION

To aid in alignment of bay when suspended from IRB lifting sling, ensure both transload rollers are in the UP position to prevent possible damage to bay's outer pontons.

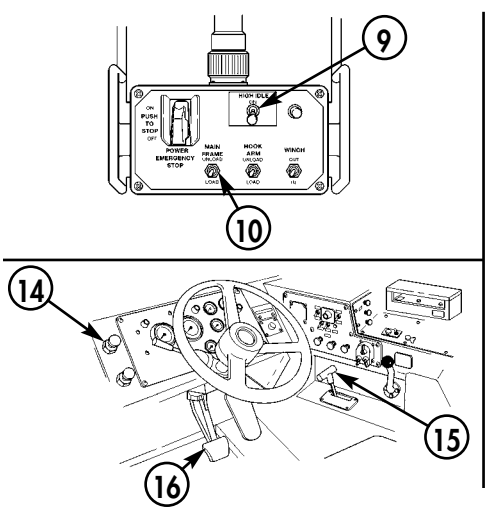
NOTE

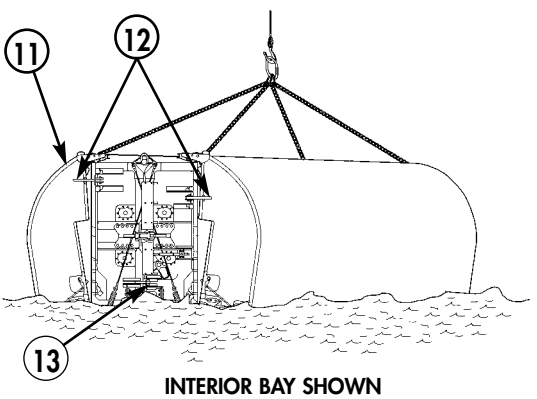
Have two assistants use taglines to steady bay when backing CBT into position.

ag. Slowly back CBT until bay (11) is hanging over edge of bank with sufficient clearance from side, then apply service brake (16), move transmission selector lever (15) to N (neutral), and pull PARKING BRAKE control (14) out.

NOTE

Have boat crew use taglines to keep bay parallel to bank and from swinging while lowering bay into water.

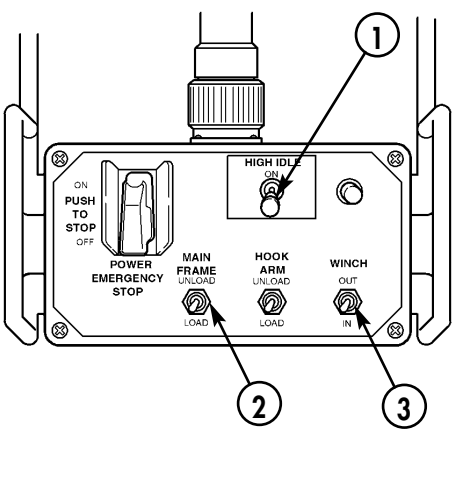


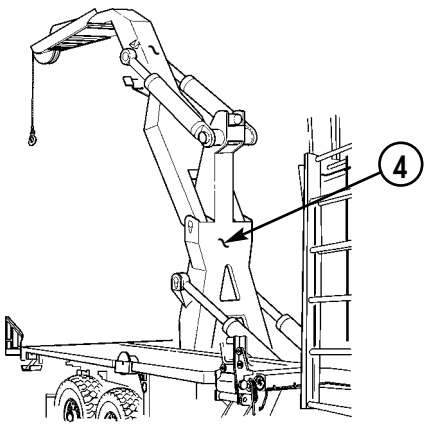


INTERIOR BAY SHOWN

HIGH-BANK LAUNCH OF BAY (Contd)

ah. Hold MAIN FRAME switch (2) in UNLOAD position and move HIGH IDLE switch (1) to ON until main frame (4) is fully extended. Move HIGH IDLE switch (1) to OFF and release MAIN FRAME switch (2).





ai. Hold WINCH switch (3) in OUT position and move HIGH IDLE switch (1) to ON until bay (9) is lowered into water and lifting sling (8) is slackened enough to allow removal. Move HIGH IDLE switch (1) to OFF and release WINCH switch (3).

NOTE

Boat crew will perform steps aj through an to unfold bay.

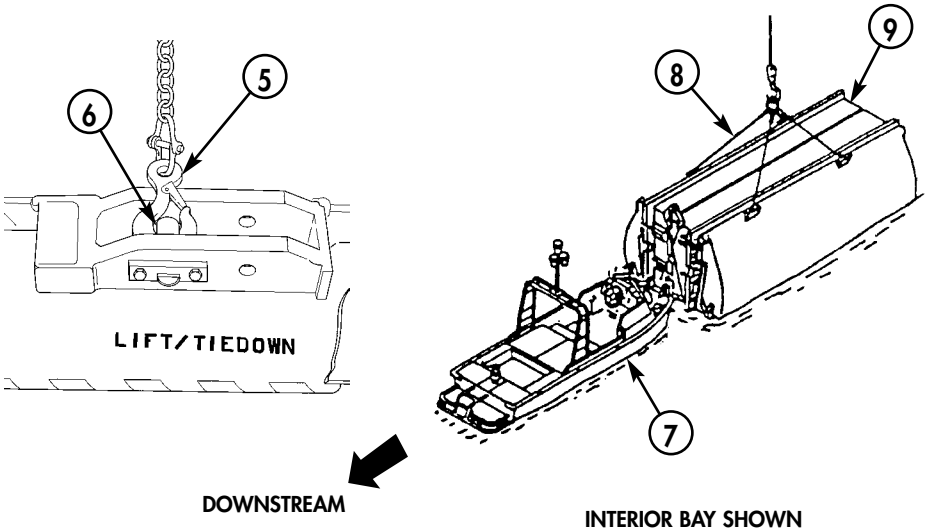
aj. Position BEB against connecting end of bay (9).

ak. Disconnect four sling hooks (5) from load receiving pins (6).

WARNING

Ensure all personnel are off the folded bay and clear of its sides prior to opening travel latch. Failure to comply may result in injury or death to personnel.

HIGH-BANK LAUNCH OF BAY (Contd)



NOTE

A 1/2-in. (13-mm) diameter by 25 ft (7.6 m) rope (lanyard) must be tied through eye of pin (refer to Item 10, WP 0070 00) prior to inserting pin in travel latch. Use a bowline knot. (Refer to WP 0035 00).

al. Insert pin and lanyard in travel latch (10) and secure opposite end of lanyard to BEB (7).

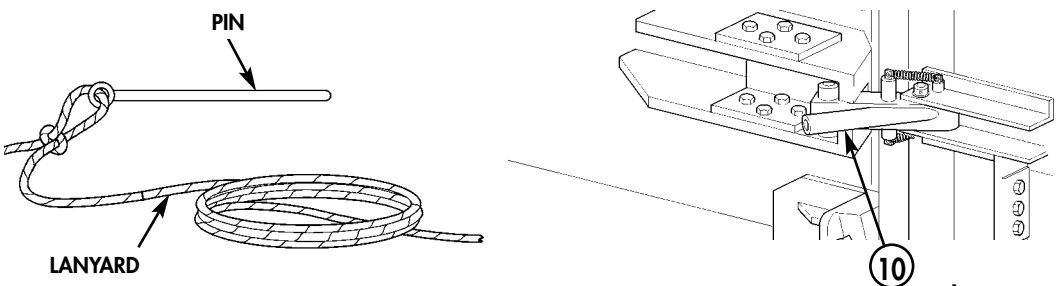
WARNING

Ensure all boats are clear of bay unfolding area prior to releasing travel latch; bay unfolds with extreme force. Failure to comply may result in damage to equipment and possible injury or death to personnel.

NOTE

It will be difficult to open the travel latch with the pin and lanyard unless the lanyard is pulled in a straight line perpendicular to the end of bay.

am. Unfold bay (9) by pulling on lanyard to open travel latch (10). Retrieve pin.



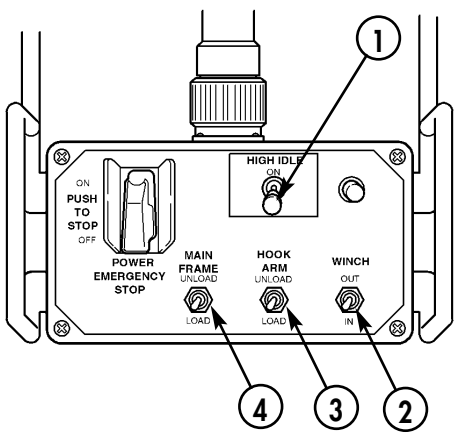
HIGH-BANK LAUNCH OF BAY (Contd)

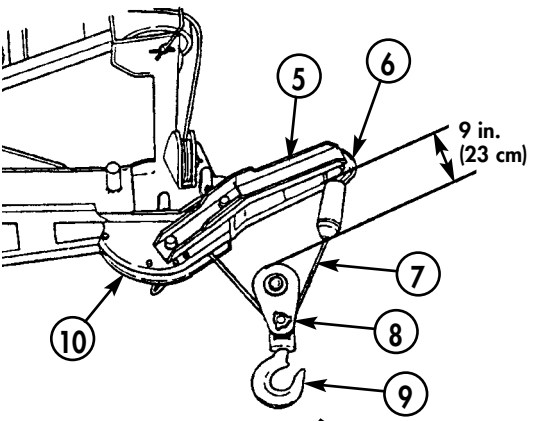
an. Secure bay. (Refer to WP 0029 00, Securing Interior Bay After Launch or refer to WP 0028 00, Securing Ramp Bay After Launch.)

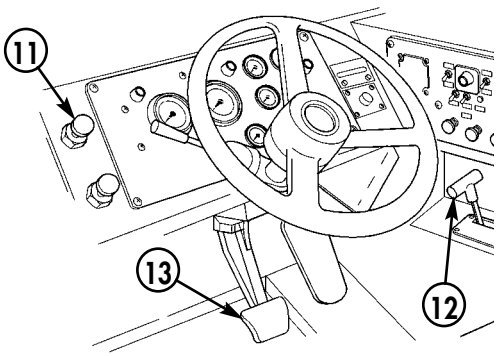
ao. Hold WINCH switch (2) in IN position and move HIGH IDLE switch (1) to ON until top of snatch block (8) is 9 in. (23 cm) from bottom of winch extension assembly (5). Move HIGH IDLE switch (1) to OFF and release WINCH switch (2).

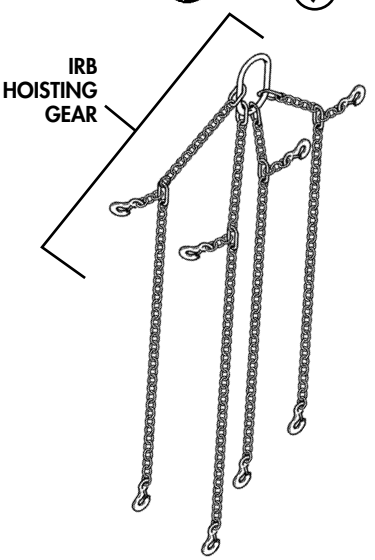
ap. Hold MAIN FRAME switch (4) in LOAD position and move HIGH IDLE switch (1) to ON until bottom of snatch block hook (9) is approximately 9 ft (2.8 m) above edge of bank. Move HIGH IDLE switch (1) to OFF and release MAIN FRAME switch (4).

aq. Move CBT forward until approximately 30 ft (9 m) from edge of bank, then apply service brake (13), move transmission selector lever (12) to N (neutral), and pull PARKING BRAKE control (11) out.









HIGH-BANK LAUNCH OF BAY (Contd)

NOTE

Repeat steps y through aq to high-bank launch another bay or perform steps ar through ba to prepare CBT for transit.

ar. Hold MAIN FRAME switch (4) in UNLOAD position and move HIGH IDLE switch (1) to ON until main frame (17) is fully extended. Move HIGH IDLE switch (1) to OFF and release MAIN FRAME switch (4).

as. Hold HOOK ARM switch (3) in LOAD position and move HIGH IDLE switch (1) to ON until main frame (17) is fully extended. Move HIGH IDLE switch (1) to OFF and release HOOK ARM switch (4)

at. Remove IRB hoisting gear from snatch block hook (9).

au. Hold WINCH switch (2) in OUT position and move HIGH IDLE switch (1) to ON until winch pays out approximately 4 ft (1.2 m) of cable (7). Move HIGH IDLE switch (1) to OFF and release WINCH switch (2).

av. Remove snatch block (8) from winch cable (7).

aw. Disconnect cable hook (6) from end of extension assembly (5), and remove extension assembly (5) from winch frame (10).

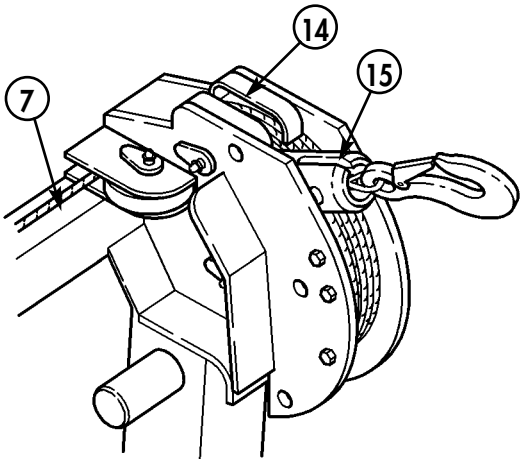
WARNING

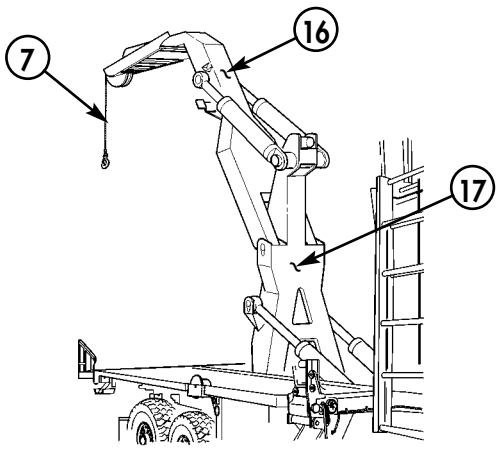
Always wear leather gloves when handling winch cable. Failure to comply may result in injury to personnel.

ax. While assistant maintains tension on winch cable (7), hold WINCH switch (2) in IN position until hook holder (15) is seated in saddle (14), then release switch (2).

ay. Hold MAIN FRAME switch (4) in LOAD position and move HIGH IDLE switch (1) to ON. As main frame (17) moves into stowed position, move HIGH IDLE switch (1) to OFF and release MAIN FRAME switch (4).

az. Hold HOOK ARM switch (3) in LOAD position and move HIGH IDLE switch (1) to ON until hook arm (16) is fully stowed. Move HIGH IDLE switch (1) to OFF and release HOOK ARM switch (3).





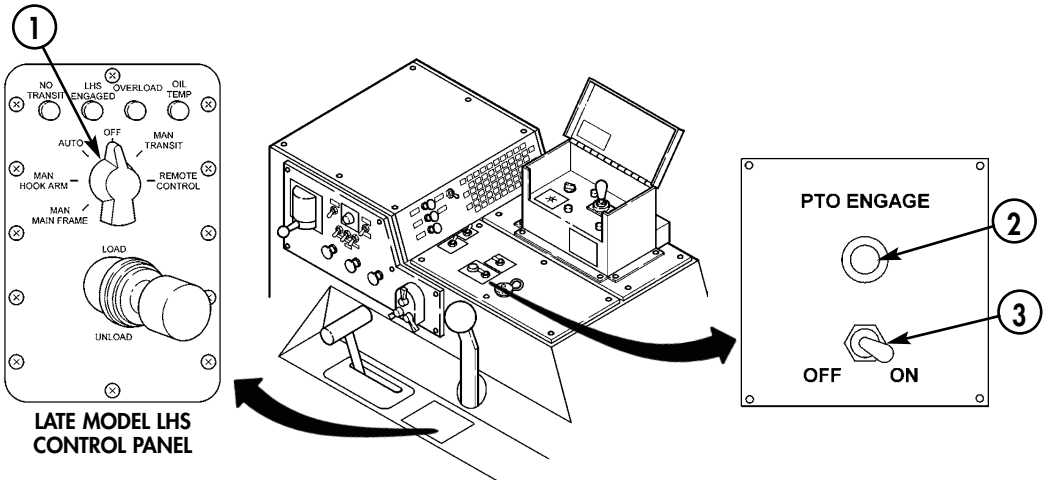
HIGH-BANK LAUNCH OF BAY (Contd)

CAUTION

PTO ENGAGE switch and indicator light must be off prior to road travel, or damage to equipment may result.

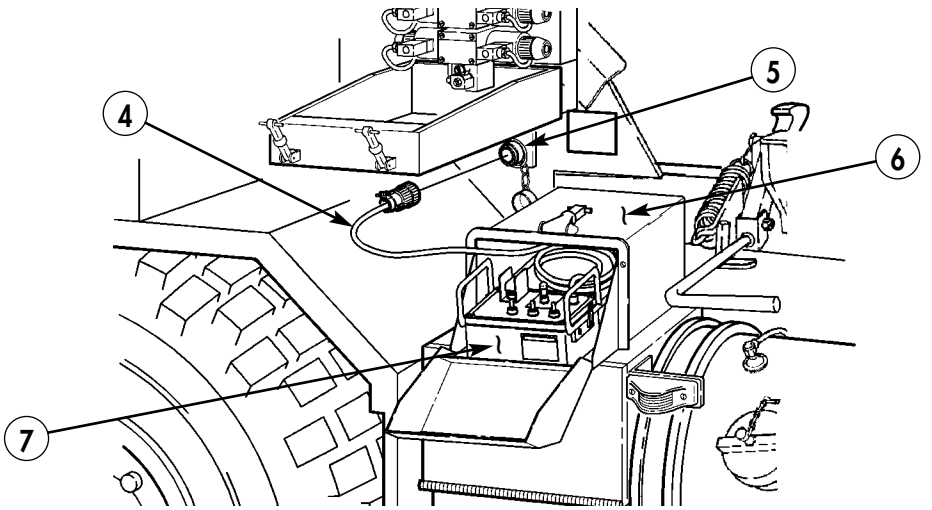
ba. Move PTO ENGAGE switch (3) to OFF position. PTO ENGAGE indicator light (2) should go out.

bb. Turn LHS MODE SELECT switch (1) to OFF position on late models.



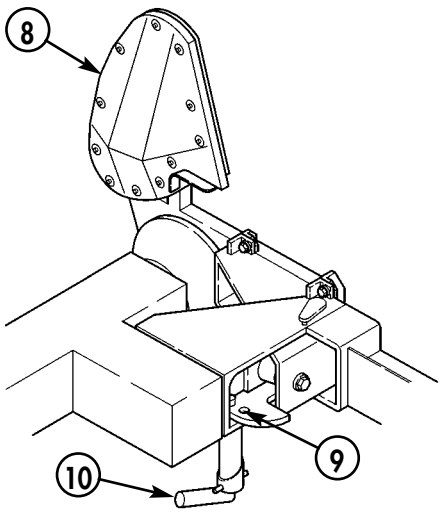
LATE MODEL LHS CONTROL PANEL

bc. Disconnect RCU cable (4) from receptacle (5), and stow remote control unit (7) and RCU cable (4) in stowage box (6).

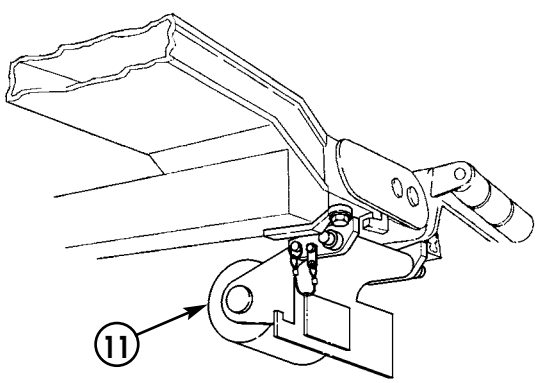


HIGH-BANK LAUNCH OF BAY (Contd)

bd. Set both rear guides (8) in MID position by rotating handle (10) until rear guide (8) disengages, then move rear guide (8) inboard until latch pin (9) engages rear guide (8).



be. Move both transload rollers (11) to the STOWED position. (Refer to WP 0009 00).



STOWED POSITION

END OF WORK PACKAGE

DEPLOYMENT BY HELICOPTER

THIS WORK PACKAGE SUPERSEDES WP 0027 00, DATED 8 APRIL 2003

NOTE

Unit commanders are cautioned of the necessity to anticipate requirements for an airlift operation and arrange for timely delivery.

Deployment by helicopter is performed under conditions where it may be advantageous to use helicopters to transport and launch bays or where site conditions make it impossible to launch bays by any other means.

Use helicopter lifting sling only to lift IRB bays. (Refer to WP 0071 00.)

Safe air speed will be determined by wind speed and direction, type, and condition of aircraft, and pilot proficiency in transporting bays. When transporting bay at air speeds greater than 40 knots, a 15-ft (4.6-m) diameter drogue parachute (NSN 1670-01-064-4451), type 4 links (NSN 1670-00-783-5988), and 36-ft (11-m) multi-loop extraction line (NSN 1670-01-064-4451) are required to provide stability. Drogue parachutes are readily available from the GM Rigging Unit (Parachute Maintenance), Area Resupply Co., all Airborne units, and all Air Force Cargo Wings.

Perform step a if bay to be deployed by helicopter is loaded on transporter.

a. Unload bay to ground where specified by unit commander. (Refer to WP 0023 00).

WARNING

Ensure front travel latch is closed and secure prior to mounting bay. Failure to comply may result in damage to equipment or possible injury or death to personnel.

Do not attempt to use the IRB lifting sling for deployment by helicopter. Use only the 25,000 lb aerial sling, chains, and detachable links provided in the IRB AAL. Failure to comply may result in damage to equipment or possible injury or death to personnel.

DEPLOYMENT BY HELICOPTER (Contd)

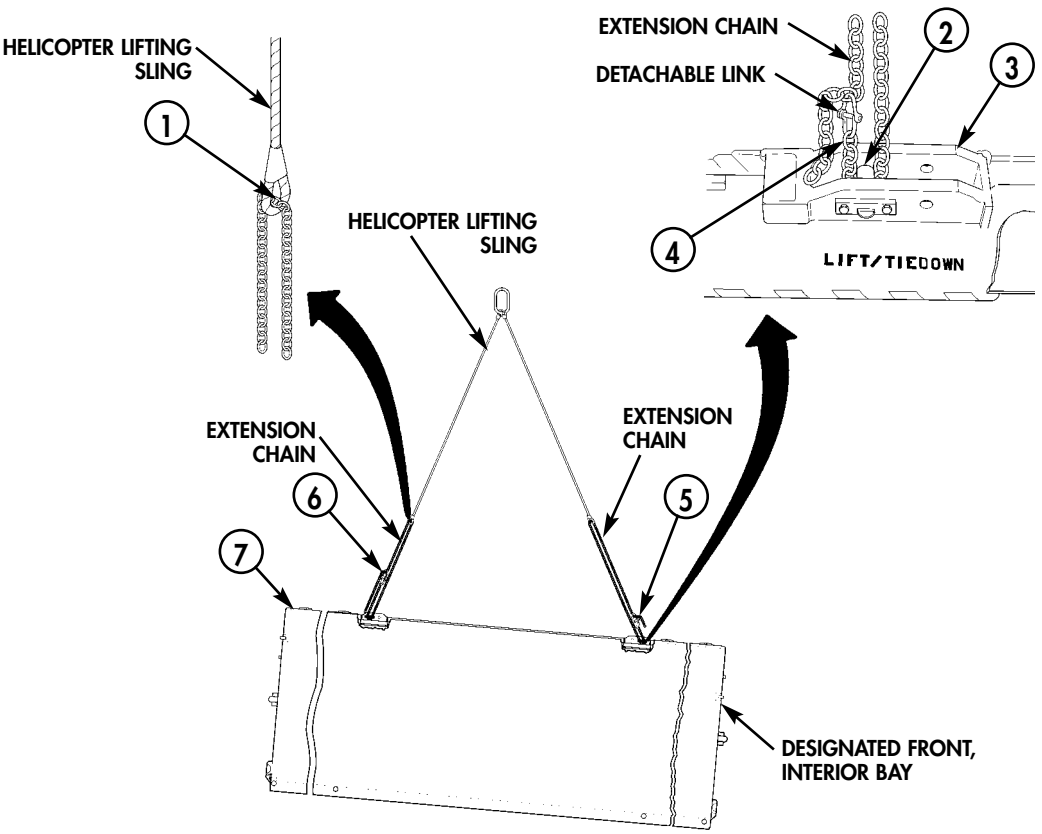
WARNING

Do not connect helicopter lifting sling to bridge rafting bracket mounting holes and quick-release pins. Use only the load receiving pins with one chain at each pin. Failure to comply may result in damage to equipment or possible injury or death to personnel.

b. Position helicopter lifting sling on top of interior bay (7) or ramp bay (8) with each leg near load receiving pin (2) at four LIFT/TIEDOWN brackets (3).

c. Pass end of one extension chain through eye (1) on each leg of helicopter lifting sling.

d. Pass opposite end of extension chain under load receiving pin (2), and connect detachable link to first link (4) on each extension chain.



DEPLOYMENT BY HELICOPTER (Contd)

CAUTION

Ensure extension chain are positioned so coupling links are not against load receiving pin recesses with chains under tension. Failure to comply may result in damage to equipment.

NOTE

Chain counts are based on achieving a nose-down attitude of approximately 5 degrees at bay's front for stability during air transport.

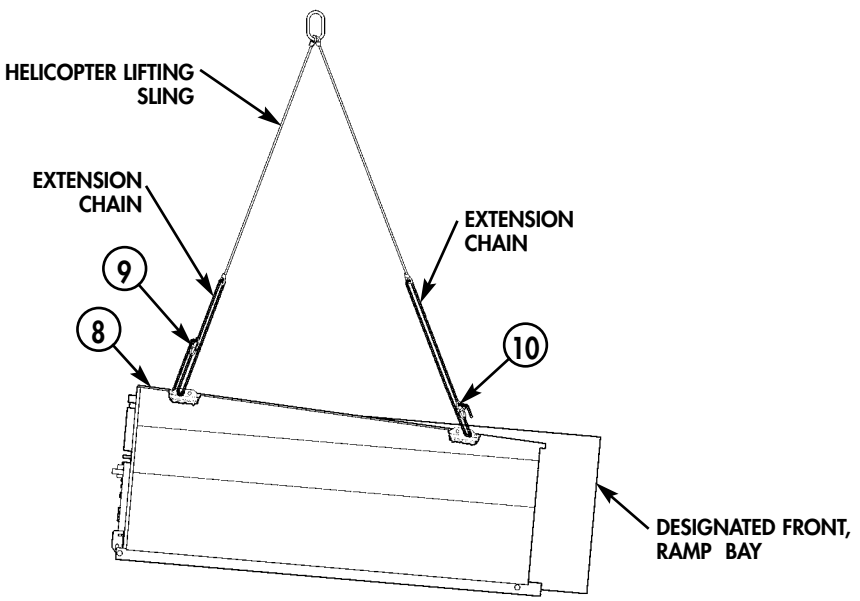
Perform steps e and f if deploying an interior bay or perform steps g and h if deploying a ramp bay.

e. Designate one end as front of interior bay (7), and connect detachable link to 10th link (5) on two extension chains at front of interior bay (7).

f. Connect detachable link to 24th link (6) on two extension chains at opposite end of interior bay (7).

g. Designate approach end as front of ramp bay (8), and connect detachable link to 10th link (10) on two extension chains at approach end of ramp bay (8).

h. Connect detachable link to 50th link (9) on two extension chains at opposite end of ramp bay (8).



DEPLOYMENT BY HELICOPTER (Contd)

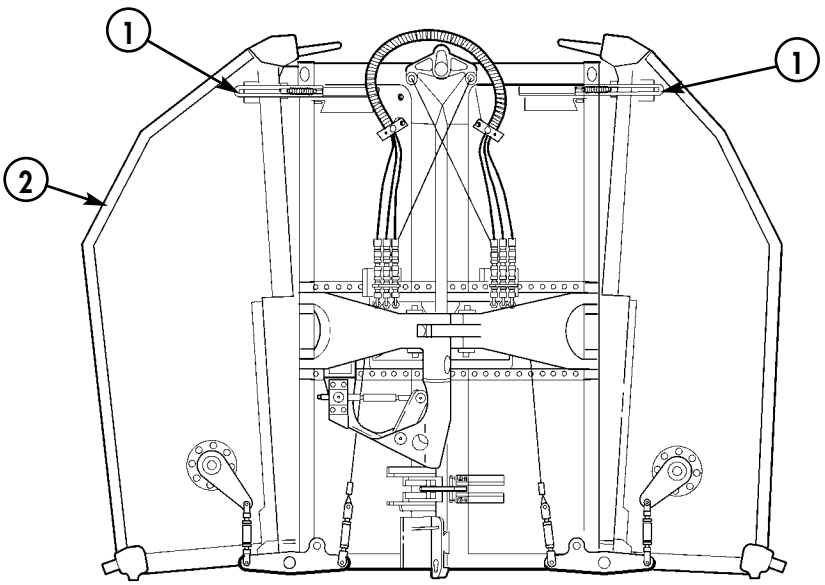
CAUTION

For long-distance helicopter transport of bay ensure a rope is around center of bay to prevent inadvertent unfolding. Failure to comply may result in damage to equipment.

NOTE

Perform step i for ramp bay, or step j for interior bay.

i. Open two foldlocks (1) at front (connecting end) of ramp bay (2).



j. Open two foldlocks (3) at both ends of interior bay (6).

k. Signal helicopter pilot to position helicopter directly over bay (6).

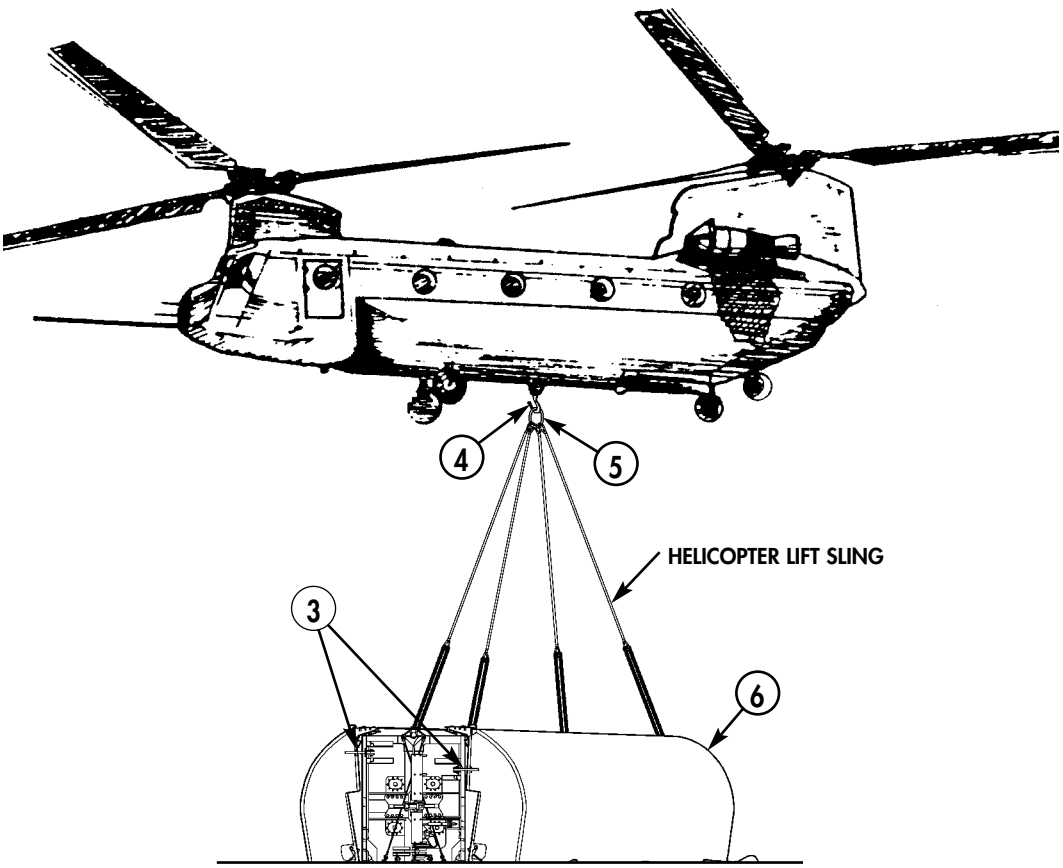
WARNING

Ground helicopter lift cable hook prior to connecting/ disconnecting. Static electricity generated from helicopter will shock personnel and injury or death may result.

l. Connect large ring (5) of helicopter lifting sling to helicopter lift hook (4), and signal helicopter pilot to take up slack on lifting sling until taught, then exit bay (6).

m. Signal pilot to slowly lift bay from ground and transport to launch area.

DEPLOYMENT BY HELICOPTER (Contd)



INTERIOR BAY SHOWN

DEPLOYMENT BY HELICOPTER (Contd)

WARNING

All personnel must wear approved life jackets while on the bay. Failure to comply may result in injury or death to personnel.

NOTE

Boat crew will perform steps n through r to complete launch of bay.

n. Signal helicopter pilot to lower bay onto water and release helicopter lifting sling, then hold bay with BEB (2) push-knees (3) from downstream side.

NOTE

A 1/2-in. (13-mm) diameter by 25-ft (7.6-m) rope (lanyard) must be tied through eye of pin (refer to Item 7, WP 0070 00) prior to inserting pin in travel latch. Use a bowline knot. (Refer to WP 0035 00).

o. Insert pin and lanyard in travel latch (1) and secure opposite end of lanyard to BEB (2).

WARNING

Ensure all personnel are off the folded bay and clear of its sides prior to opening travel latch. Failure to comply may result in injury or death to personnel.

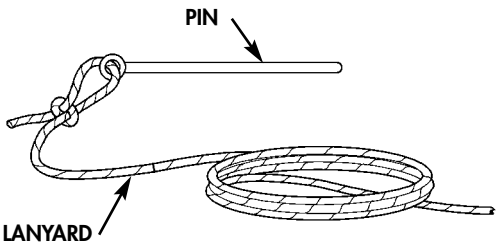
Ensure all boats are clear of bay unfolding area prior to releasing travel latch; bay unfolds with extreme force. Failure to comply may result in damage to equipment and possible injury or death to personnel.

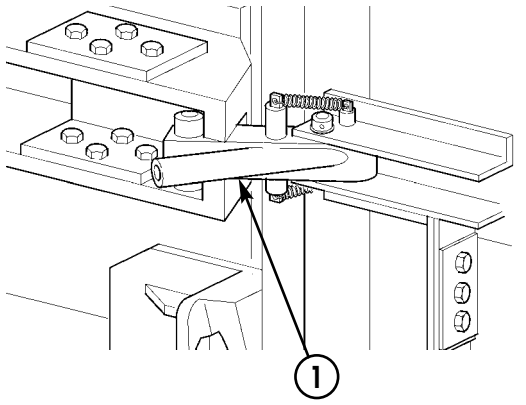
NOTE

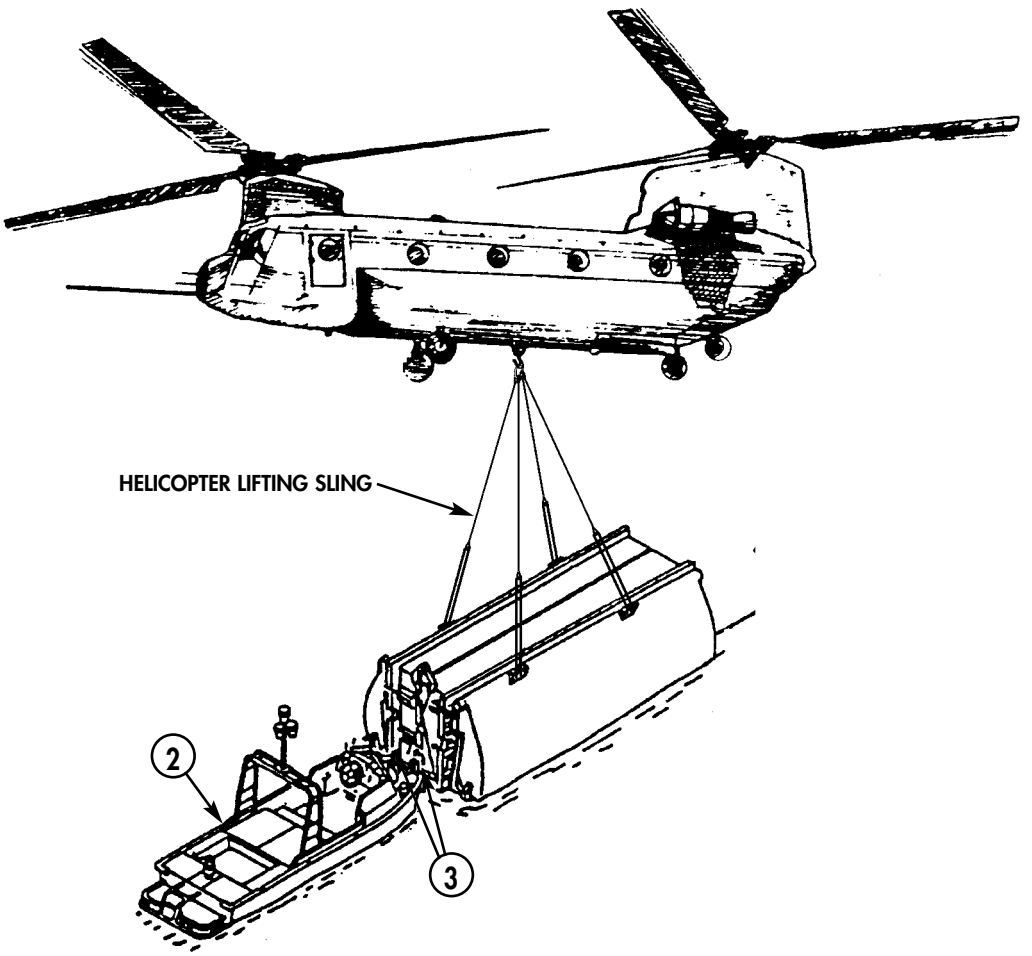
It will be difficult to open the travel latch with the pin and lanyard unless the lanyard is pulled in a straight line perpendicular to the end of bay.

p. Unfold bay by backing up BEB (2) to open travel latch (1). Retrieve lanyard pin.

DEPLOYMENT BY HELICOPTER (Contd)





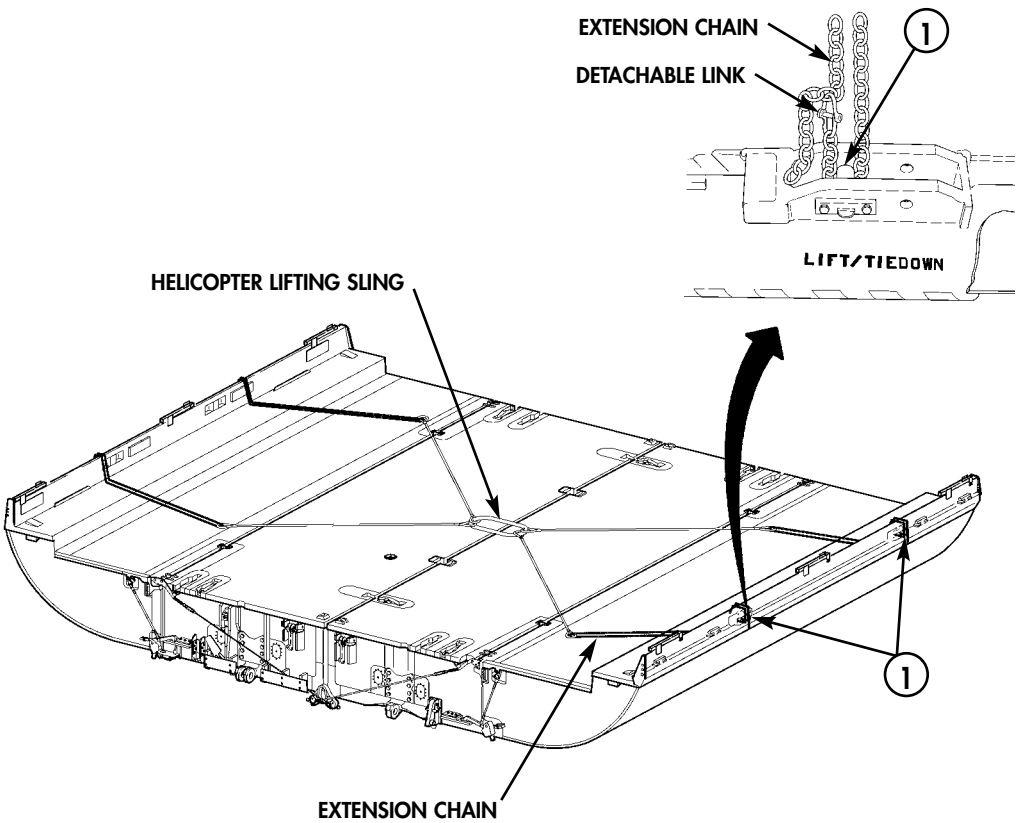


INTERIOR BAY SHOWN

DEPLOYMENT BY HELICOPTER (Contd)

q. Remove four detachable links and extension chains from load receiving pins (1) of bay and helicopter lifting sling, and move extension chains and helicopter lifting sling to BEB.

r. Secure bay. (Refer to Securing Interior Bay After Launch, WP 0029 00, or Securing Ramp Bay After Launch, WP 0028 00.)



END OF WORK PACKAGE

SECURING RAMP BAY AFTER LAUNCH

THIS WORK PACKAGE SUPERSEDES WP 0028 00, DATED 8 APRIL 2003

WARNING

All personnel must wear approved life jackets and unblouse pants from boots while on the bay. Failure to comply may result in injury or death to personnel.

Do not sit, lie, or stand in front of boat push knees at any time while riding on bays. Failure to comply may result in injury or death to personnel.

Pushing ramp bay with BEB before engaging transverse upper couplings and ponton swivel hooks and swivel plates may cause the bay to fold, and possible injury or death to personnel may result.

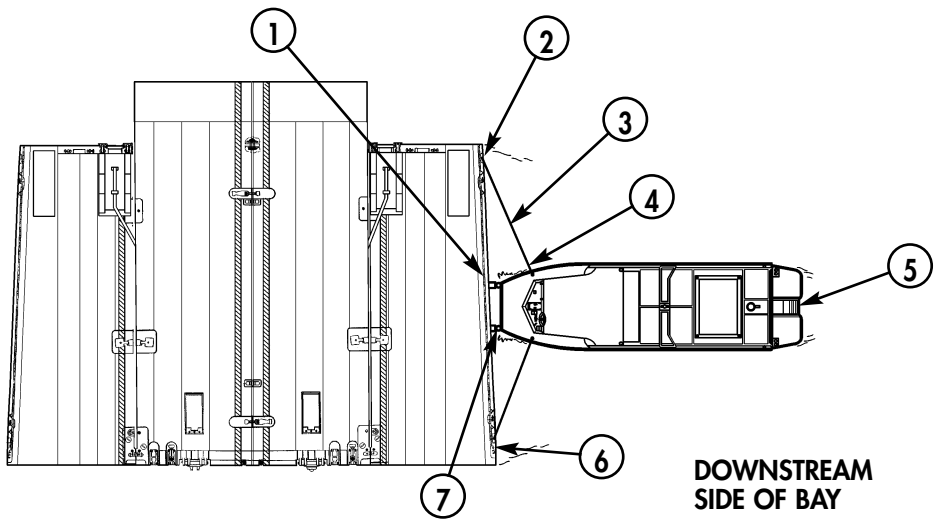
NOTE

Perform the following procedure to secure the bay once the bay is unfolded.

a. Position BEB (5) so its push knees (7) contact center of bay's outer ponton (1) from downstream side of bay (6).

b. Connect one bowline (3) to each cleat (2) at downstream side of bay (6).

c. Pull bowline (3) tight and secure to bow bollard (4) at each side of BEB (5).



SECURING RAMP BAY AFTER LAUNCH (Contd)

WARNING

Do not place fingers under longitudinal or transverse upper couplings when closing them, or serious injury to personnel may result.

The transverse upper couplings and ponton swivel hooks and swivel plates must be engaged prior to performing bridge or rafting operations; the weight of a vehicle crossing will cause the bay to fold up and may result in damage to equipment or injury or death to personnel.

NOTE

Use the roadway tool and crowbar to close the gap between inner pontons when upper transverse couplings cannot be fully closed in receptacle blocks.

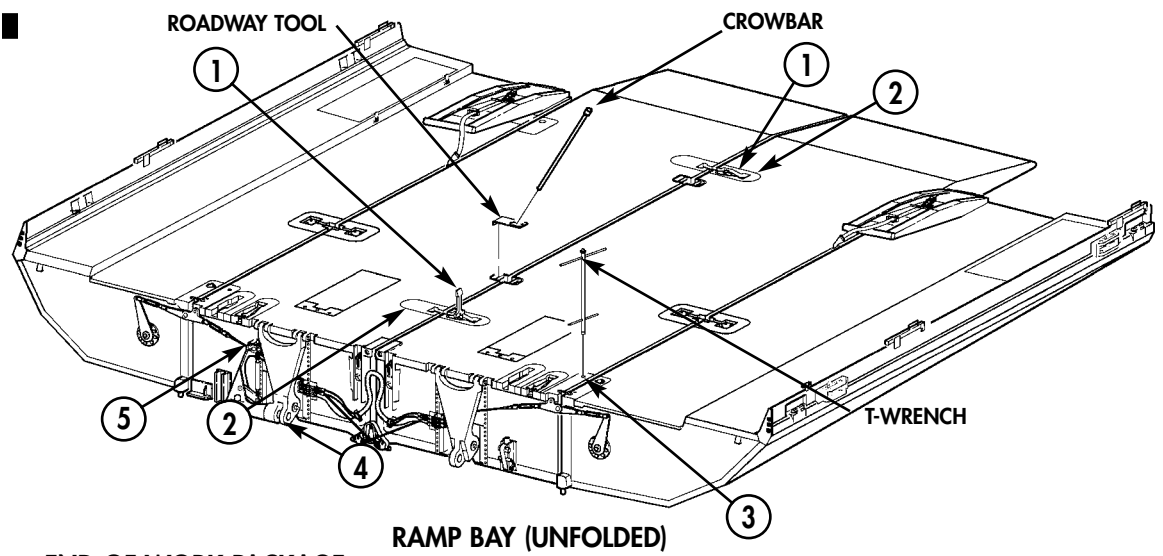
d. Close two transverse upper couplings (1) by folding each lever so that it engages in receptacle block (2) of adjacent inner ponton.

NOTE

As viewed from rear of bay (approach ramp end), engage the right-hand ponton swivel hook and swivel plate by turning shafts clockwise, and the left-hand side counterclockwise.

e. Using T-wrench, engage swivel hook and swivel plate on each inner ponton by turning shaft (3) until indicator and slot in hexhead point at outer ponton.

f. Using T-wrench, turn lower lock-drive to ensure jackscrew (5) moves freely and lower lock-drive pin (4) is fully retracted.



RAMP BAY (UNFOLDED)

END OF WORK PACKAGE

SECURING INTERIOR BAY AFTER LAUNCH

THIS WORK PACKAGE SUPERSEDES WP 0029 00, DATED 8 APRIL 2003

WARNING

All personnel must wear approved life jackets and unblouse pants from boots while on the bay. Failure to comply may result in injury or death to personnel.

Do not sit, lie, or stand in front of boat push knees at any time while riding on bays. Failure to comply may result in injury or death to personnel.

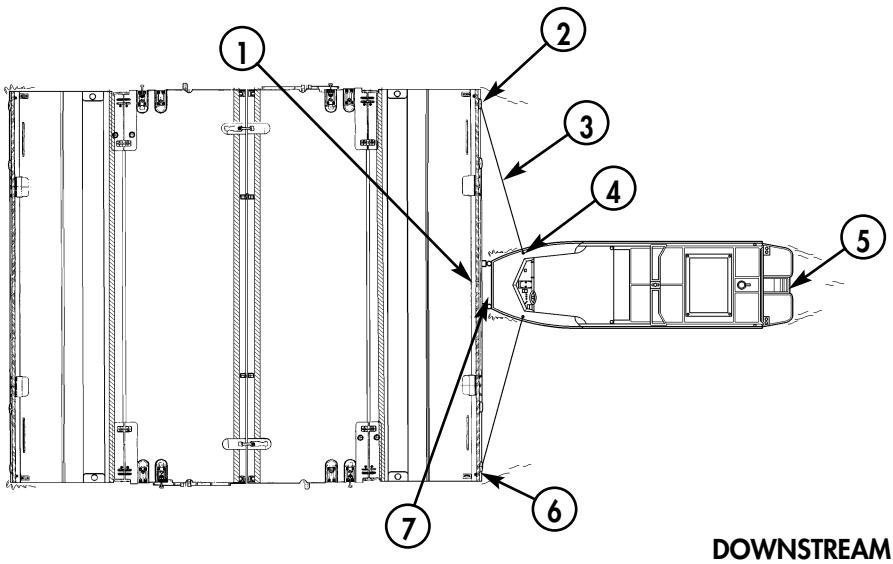
NOTE

Perform the following procedure to secure bay once bay is unfolded.

a. Position BEB (5) so its push knees (7) contact center of bay's outer ponton (1) from downstream side of bay (6).

b. Connect one bowline (3) to each outer cleat (2) at downstream side of bay (6).

c. Pull bowline (3) tight and secure to bow bollard (4) at each side of BEB (5).



SECURING INTERIOR BAY AFTER LAUNCH (Contd)

WARNING

Do not place fingers under transverse upper couplings when closing them, or serious injury to personnel may result.

The transverse upper couplings and outer ponton locks must be engaged prior to performing bridge or rafting operations; the weight of a vehicle crossing will cause the bay to fold up and may result in damage to equipment or injury or death to personnel.

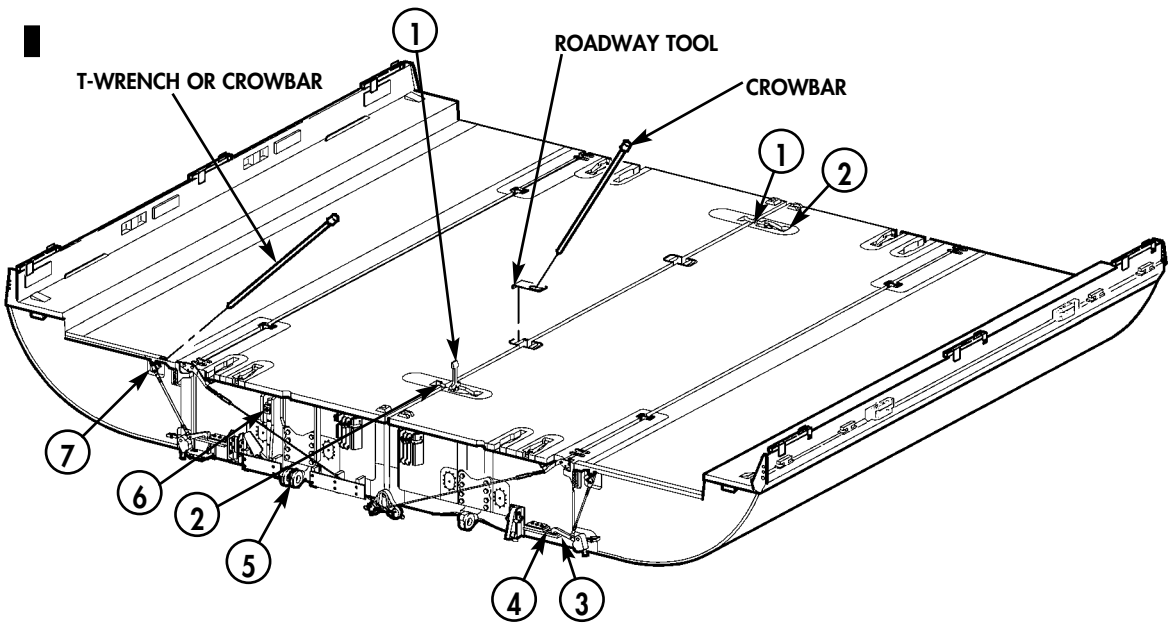
NOTE

Use the roadway tool and crowbar to close the gap between inner pontons when transverse upper couplings cannot be fully closed in receptacle blocks.

d. Close two transverse upper couplings (1) by folding each lever so that it engages in receptacle block (2) of adjacent inner ponton.

e. Using T-wrench or round end of crowbar, engage two outer ponton locks (7) at each end of both outer pontons. Visually check to see each lock/release lever (3) is in catch plate (4).

f. Using T-wrench, turn lower lock-drive to ensure jackscrew (6) moves freely and lower lock-drive pin (5) is fully retracted at each end of both inner pontons.



INTERIOR BAY (UNFOLDED)

END OF WORK PACKAGE

RAMP BAY TO INTERIOR BAY CONNECTION

THIS WORK PACKAGE SUPERSEDES WP 0030 00, DATED 8 APRIL 2003

WARNING

All personnel must wear approved life jackets and unblouse pants from boots while on the bay. Failure to comply may result in injury or death to personnel.

Extreme caution should be taken when connecting bays. Bays come together with extreme force and injury or death to personnel may result.

NOTE

IRB bays must be secured after launch prior to bay-to-bay connection.

When connecting IFB bays with IRB bays, refer to TM 5-5420-209-12 for operating instructions unique to IFB bays.

a. Approach interior bay (2) from downstream.

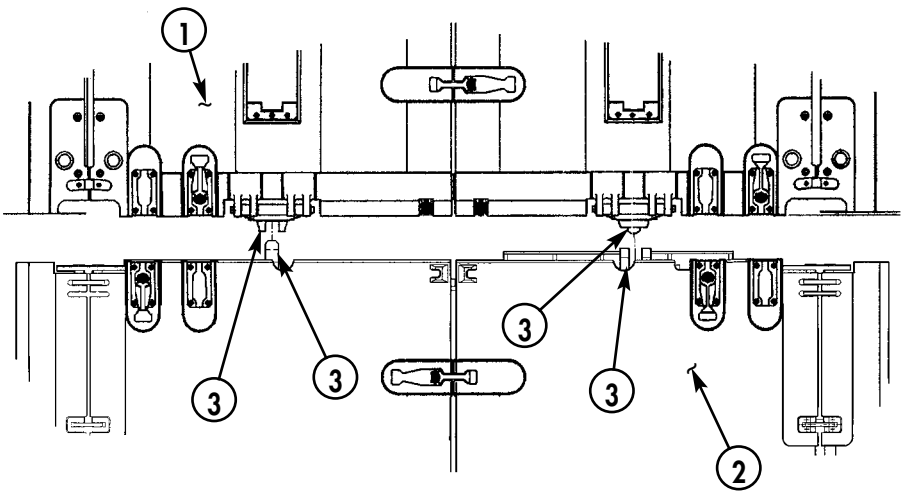
CAUTION

Do not place upper coupling levers in the open position (hanging over end of bay) before bays can be connected; levers should be left in receptacle blocks until the exact moment prior to closing. Failure to comply may result in damage to equipment.

NOTE

Check bays before connecting to ensure lower lockpins are fully retracted.

b. Align ramp bay (1) longitudinally with interior bay (2) so that yoke and lower main coupling connecting eyes (3) align, then pull bays together using ropes.



RAMP BAY TO INTERIOR BAY CONNECTION (Contd)

NOTE

Refer to WP 0011 00 for specific instructions on the use of the coupling device.

c. Using two coupling devices simultaneously, raise ramp bay (1) up until its roadway surface is even with roadway surface of interior bay (4).

WARNING

Keep hands clear of space between bays when closing longitudinal upper couplings, and do not place fingers under couplings when closing them, or serious injury to personnel may result.

NOTE

The upper couplings are closed when the levers are fully down in the receptacle blocks of the adjacent bay.

d. When bays are together, close two longitudinal upper couplings (3) on ramp bay (1) and two longitudinal upper couplings (3) on interior bay (4).

CAUTION

The top of lower lock-drive jackscrew will be 3/4 in. (1.9 cm) below top surface of roadway when lower lock-drive pin is fully engaged. Failure to comply may result in equipment damage.

e. Install T-wrench on jackscrew (5) of lower lock-drive, and turn T-wrench clockwise until lower lock-drive pin is fully engaged, then back out jackscrew (5) one full rotation.

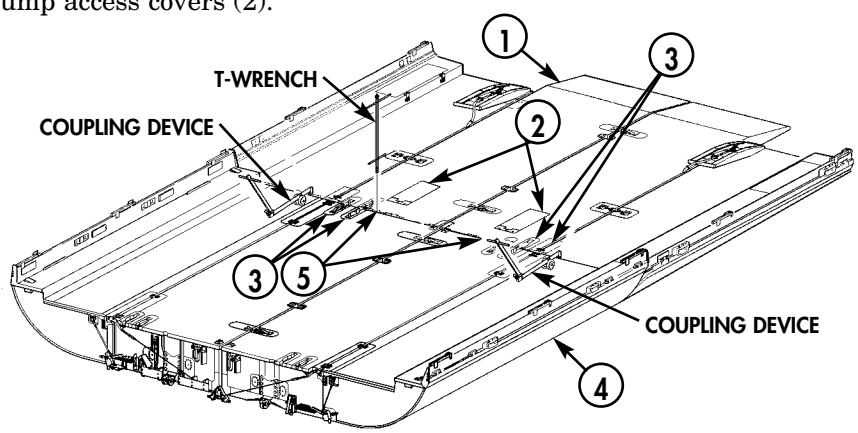
f. Repeat step e for opposite lower lock-drive.

NOTE

Perform steps g and h if either lower lock-drive pin cannot be fully engaged. Failure to comply may result in equipment damage.

g. Open pump access covers (2), set pump control levers to UP position, and operate pumps while assistant turns T-wrench to engage lower lock-drive pins.

h. Set pump control levers to TRANSPORT/CROSSING positions, and close pump access covers (2).



END OF WORK PACKAGE

RAMP BAY TO INTERIOR BAY CONNECTION (ALTERNATE METHOD ONLY)

THIS WORK PACKAGE SUPERSEDES WP 0031 00, DATED 8 APRIL 2003

WARNING

All personnel must wear approved life jackets and unblouse pants from boots while on the bay. Failure to comply may result in injury or death to personnel.

Extreme caution should be taken when connecting bays. Bays come together with extreme force and injury or death to personnel may result.

NOTE

This method of connecting bays is performed when the BEB is not available to position and hold the bays when bay-to-bay connection is urgent. The alternate method requires the use of the transporter to maneuver the bays from the riverbank.

Bays must be secured after launch prior to performing IRB-R to IRB-I connection.

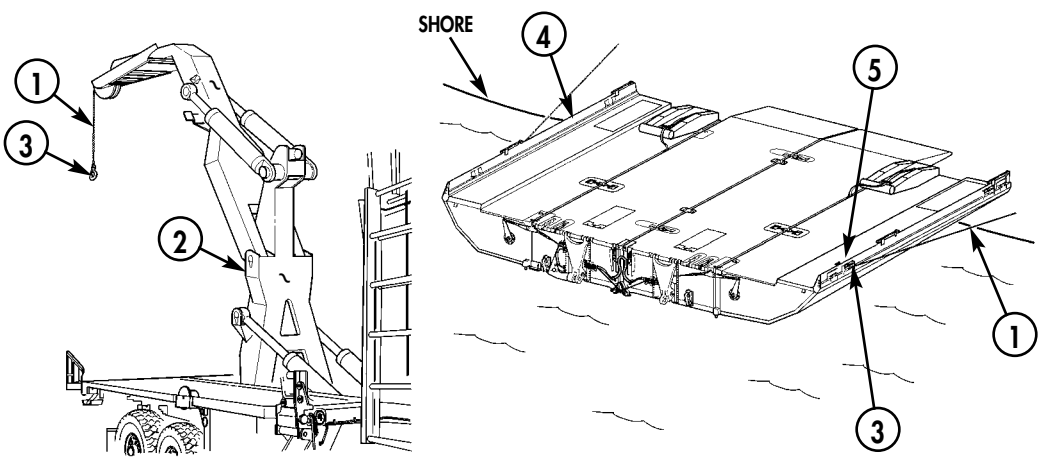
When connecting IFB bays intermixed with IRB bays, refer to TM 5-5420-209-12 for operating instructions unique to IFB bays.

Check bays before connecting to ensure lower lock-drive pin(s) are fully retracted.

a. Back transporter up to ramp bay (4) and fully extend LHS main frame (2).

b. Pay-out winch cable (1) and connect cable hook (3) to load receiving pin (5) closest to connecting end of ramp bay (4) facing shore.

c. Pay-in winch cable (1), and pull approach end (rear) of ramp bay (4) onto shore until partially grounded.



RAMP BAY TO INTERIOR BAY CONNECTION (ALTERNATE METHOD ONLY) (Contd)

d. Using taglines connected to belay cleats (1), position connecting end of interior bay (7) in line with connecting end (front) of ramp bay (3) facing water.

NOTE

Refer to WP 0011 00 for specific instructions on the use of the coupling device.

e. Using two coupling devices simultaneously, raise ramp bay (3) up until its roadway surface is even with roadway surface of interior bay (7).

WARNING

Keep hands clear of space between bays when closing longitudinal upper couplings and do not place fingers under couplings when closing them, or serious injury to personnel may result.

f. Close two longitudinal upper couplings (2) on ramp bay (3) and interior bay (7).

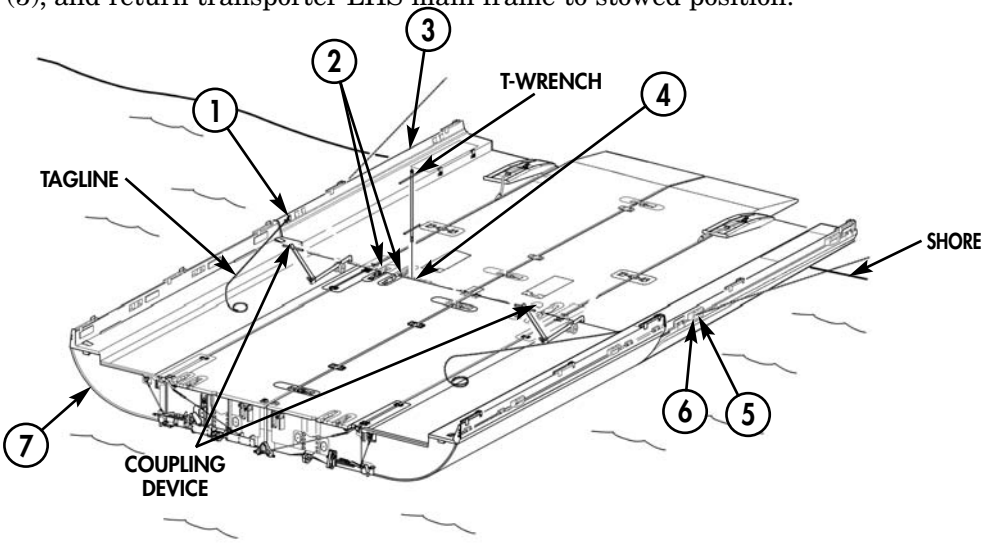
CAUTION

The top of lower lock-drive jackscrew must be 3/4 in. (1.9 cm) below top surface of roadway for lower lock-drive pin to be fully engaged. Failure to ensure jackscrew is 3/4 in. (1.9 cm) below top surface of roadway may result in damage to equipment.

g. Install T-wrench on jackscrew (4) of lower lock-drive, and turn T-wrench clockwise until lower lock-drive pin is fully engaged, then back-out jackscrew (4) one full rotation.

h. Repeat step g for opposite lower lock-drive.

i. Pay-out CBT winch cable, disconnect cable hook (6) from load receiving pin (5), and return transporter LHS main frame to stowed position.



END OF WORK PACKAGE

INTERIOR BAY TO INTERIOR BAY CONNECTION

THIS WORK PACKAGE SUPERSEDES WP 0032 00, DATED 8 APRIL 2003

WARNING

All personnel must wear approved life jackets and unblouse pants from boots while on bay. Failure to comply may result in injury or death to personnel.

Extreme caution should be taken when connecting bays. Bays come together with extreme force and injury or death to personnel may result.

NOTE

IRB bays must be secured after launch prior to bay-to bay connection.

When connecting IFB bays with IRB bays, refer to TM 5-5420-209-12 for operating instructions unique to IFB bays.

When connecting first two bays, one IRB-I must be anchored to shore prior to connection of second IRB-I.

a. Approach interior bay (1) from downstream.

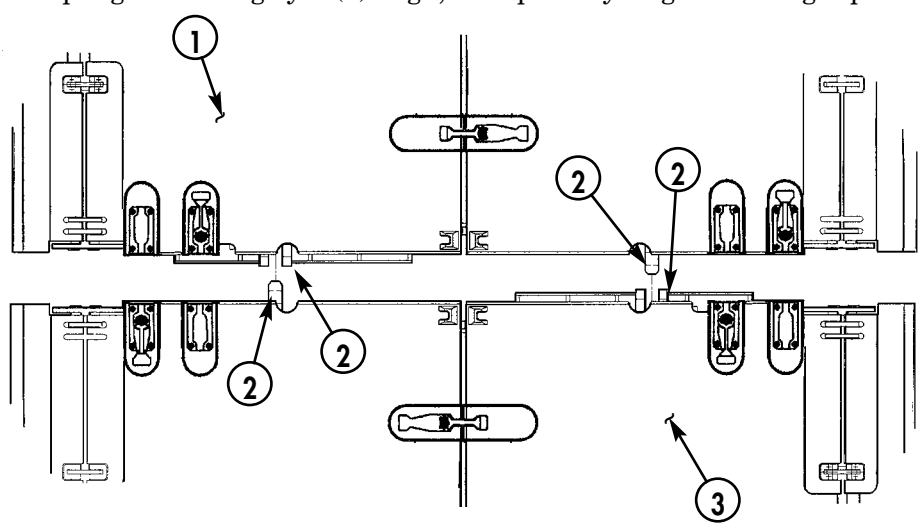
CAUTION

Do not place upper coupling levers in open position (hanging over end of bay) before bays can be connected; levers should be left in receptacle blocks until exact moment prior to closing. Failure to comply may result in damage to equipment.

NOTE

Check bays before connecting to ensure lower lock-drive pin(s) are fully retracted.

b. Align interior bays (1) and (3) longitudinally so that yoke and lower main coupling connecting eyes (2) align, then pull bays together using ropes.



INTERIOR BAY TO INTERIOR BAY CONNECTION (Contd)

WARNING

Keep hands clear of space between bays when closing longitudinal upper couplings and do not place fingers under couplings when closing them, or serious injury to personnel may result.

NOTE

Bay-to-bay connection is easier if BEB crew makes waves to create movement.

Upper couplings are closed when levers are fully down in receptacle blocks of adjacent bay.

c. When bays are together, close two longitudinal upper couplings (1) on interior bays (2) and (4).

CAUTION

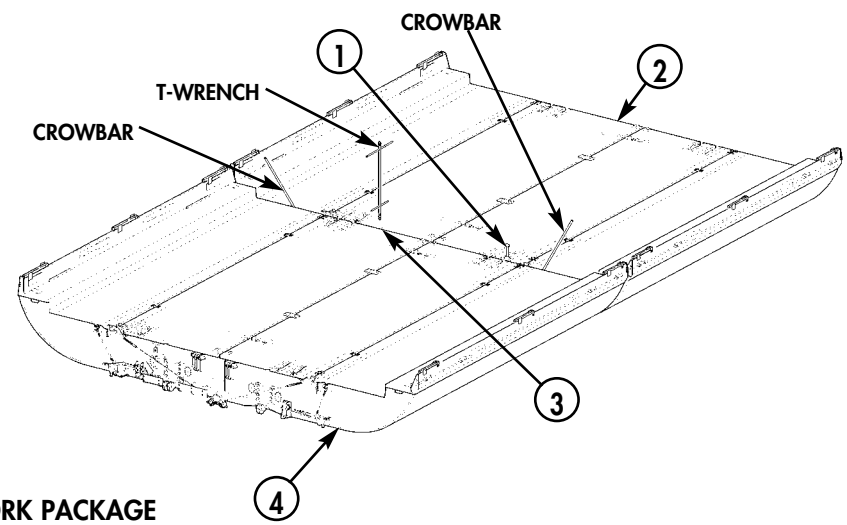
The top of lower lock-drive jackscrew must be 3/4 in. (1.9 cm) below top surface of roadway for lower lock-drive pin to be fully engaged. Failure to ensure jackscrew is 3/4 in. (1.9 cm) below top surface of roadway may result in damage to equipment.

NOTE

If engagement of lower lockpin is difficult, have bridge boat apply power forward or reverse and use crowbar to raise or lower bay as needed.

d. Install T-wrench on jackscrew (3) of lower lock-drive, and turn T-wrench clockwise until lower lock-drive pin is fully engaged, then back-out jackscrew (3) one full rotation.

e. Repeat step d for opposite lower lock-drive.



END OF WORK PACKAGE

BRIDGE ASSEMBLY, SUCCESSIVE BAY METHOD

THIS WORK PACKAGE SUPERSEDES WP 0033 00, DATED 8 APRIL 2003

WARNING

All bridge personnel must wear approved life jackets and unblouse pants from boots while on the bridge. Failure to comply may result in injury or death to personnel.

Exercise caution when walking near centerline of roadway; the ponton alignment lugs project above the roadway surface on interior bays and constitute a tripping hazard. Failure to comply may result in injury to personnel.

NOTE

Assembly of a bridge by successive bays is accomplished by the consecutive addition of bays along bridge centerline. A ramp bay and interior bays are connected and anchored at opposite river banks, and additional interior bays are connected until distance between them is met. The final connection, completing the bridge, is made by loosening anchorage at river banks and pulling the far shore and near shore end spans together using a grip hoist. When the body of water to be spanned contains obstacles, has rapidly flowing water (over 6 feet/sec (1.8 meters/sec)), or much floating debris, the successive bay method is the most effective. This method of deployment depends on environmental factors that are determined in the site layout prior to launch.

a. Launch all BEBs.

WARNING

Ensure debris boat is positioned sufficiently upstream and safety boat is positioned downstream per SOP prior to assembling bridge. Failure to comply may result in damage to equipment and possible injury or death to personnel.

b. Launch interior bays and ramp bays per unit SOP. (Refer to WP 0024 00, WP 0025 00, WP 0026 00, or WP 0027 00).

c. Secure and connect interior bays per unit SOP. (Refer to WP 0029 00 and WP 0032 00).

d. Connect ramp bay to interior bay per unit SOP. (Refer to WP 0030 00 or WP 0031 00).

NOTE

In some cases, depending on the far shore conditions, it may be necessary to deploy two additional interior bays and assemble a five bay raft. This raft can be used to transport two transporters to the far end shore to be used for anchorage.

Refer to figure 1, Bridge Assembly by Successive Bay Method, prior to performing steps e and f.

e. Anchor far shore end span to temporary anchorage, hold-fast, or natural deadman along bridge centerline (CL) (WP 0035 00).

BRIDGE ASSEMBLY, SUCCESSIVE BAY METHOD (Contd)

NOTE

It may be necessary to leave one BEB connected to help with grounding far shore end span.

f. Untie BEBs from end span and have them return to launch site.

NOTE

Bridge centerline crew will adjust ramp bay to allow desired grounding of ramp bay.

g. Open both ramp bay pump access covers (4).

h. Set pump control levers (1) to UP position and raise ramp bay (3) sufficiently to allow proper grounding by operating pumps (2).

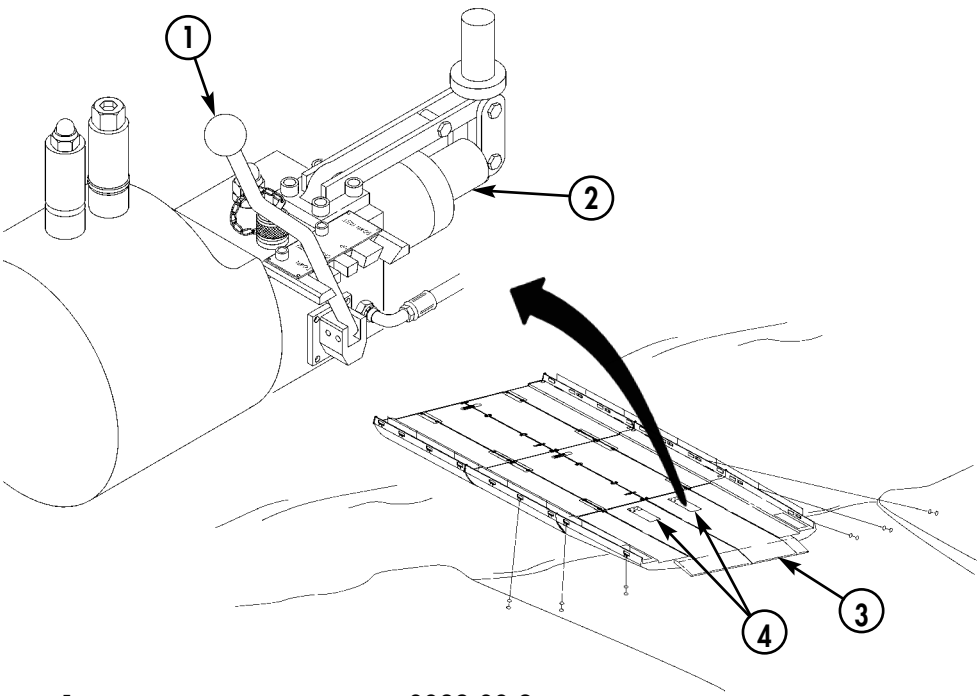
i. When ramp bay (3) is connected, pull connected bays shoreward, tighten anchoring lines, and lower ramp bay (3) by setting pump control levers (1) to DOWN position.

j. Set both pump control levers (1) to TRANSPORT/CROSSING position and close pump access covers (4).

NOTE

When installing near shore end span, use transporter to pull near shore end span an additional 10 ft (3 m) onto shore to allow bridge closure.

k. Repeat steps a through j for near shore end span.



BRIDGE ASSEMBLY, SUCCESSIVE BAY METHOD (Contd)

l. Launch and secure additional interior bays (WP 0029 00) and move them to far shore end span, then connect bays (WP 0032 00).

m. Ensure a sufficient number of BEBs are in place for anchorage. (Refer to table 1.)

Table 1. Bridge Erection Boats Required for Anchorage.

CURRENT SPEED	NUMBER OF BAYS PER MK I/II BEB
0.0–5.0 feet/sec (0.0–1.5 meters/sec)	4
5.0–8.0 feet/sec (1.5–2.4 meters/sec)	3
8.0–9.0 feet/sec (2.4–2.7 meters/sec)	2
9.0–10.0 feet/sec (2.7–3.0 meters/sec)	Anchorage system necessary

NOTE

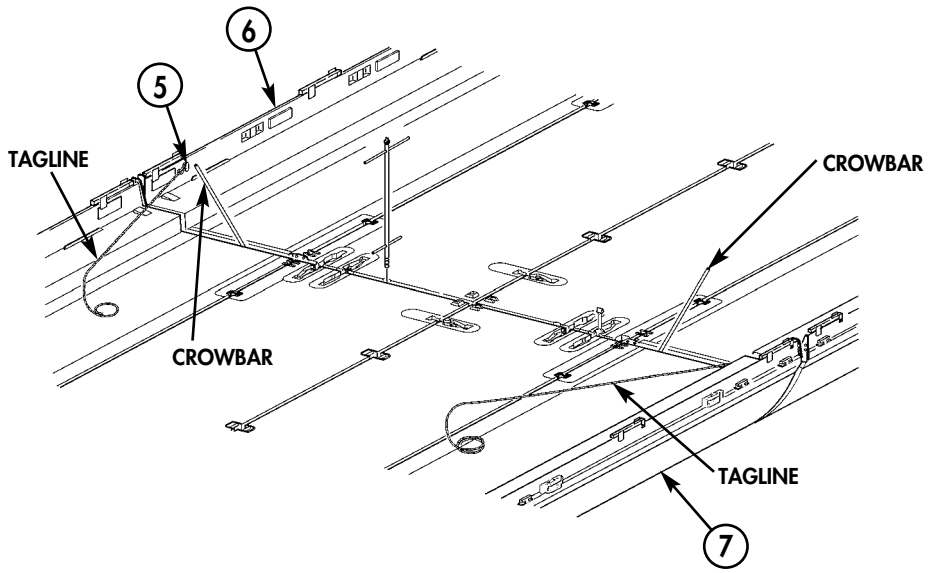
When connecting last interior bay to bridge centerline, connect interior bay to far shore end span first.

Transporter winch cable or man power may be required to achieve connection.

n. Connect taglines to belay cleats (5) on interior bays (6) and (7).

o. Loosen anchorage on both shores, and bring interior bays (6) and (7) together using taglines and crowbars as necessary.

p. Connect interior bays (6) and (7) (WP 0032 00).



BRIDGE ASSEMBLY, SUCCESSIVE BAY METHOD (Contd)

WARNING

Do not allow traffic on bridge until bridge OIC has verified that all appropriate couplings, pins, and handrails are properly engaged. Failure to comply may result in damage to equipment or possible injury or death to personnel.

q. Refer to WP 0035 00, Bridge Anchorage, and add additional anchorage.

r. Open both pump access covers (4) and lower ramp bay (3) by setting both control valve levers (1) to DOWN.

s. Set both pump control levers (1) to TRANSPORT/CROSSING position, then close access covers (4).

t. Repeat steps r and s for remaining ramp bay.

u. Raise all handrails and connect ropes. (Refer to WP 0010 00 and WP 0011 00).

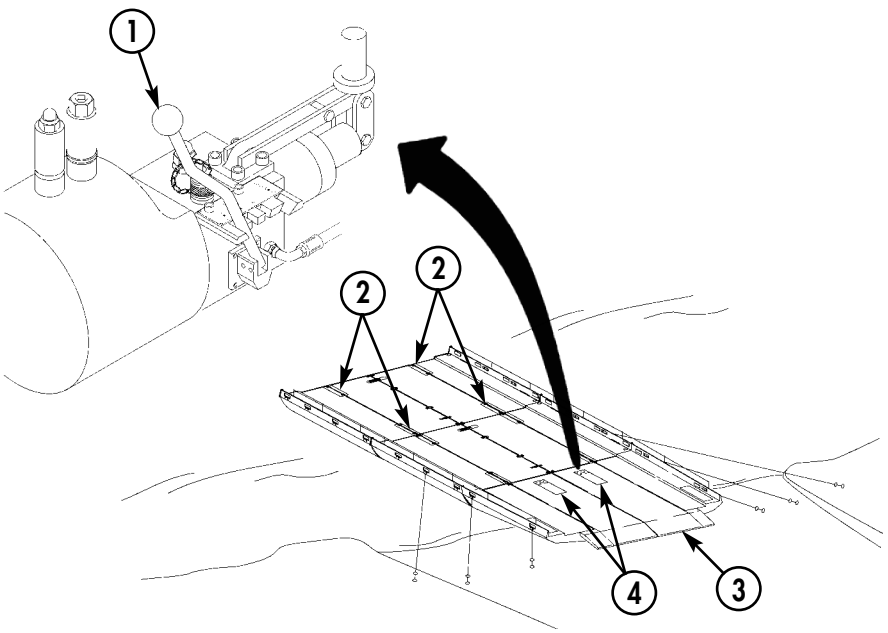
WARNING

Do not place fingers under longitudinal upper couplings when opening them, or serious injury to personnel may result.

Never open the transverse upper couplings on ramp bays and interior bays once connected as a bridge or raft assembly. Failure to comply may result in damage to equipment or possible injury or death to personnel.

v. Open all longitudinal upper couplings (2) between interior bays only.

w. Refer to WP 0036 00, Bridge Operation, for bridge operation guidelines.



BRIDGE ASSEMBLY, SUCCESSIVE BAY METHOD (Contd)

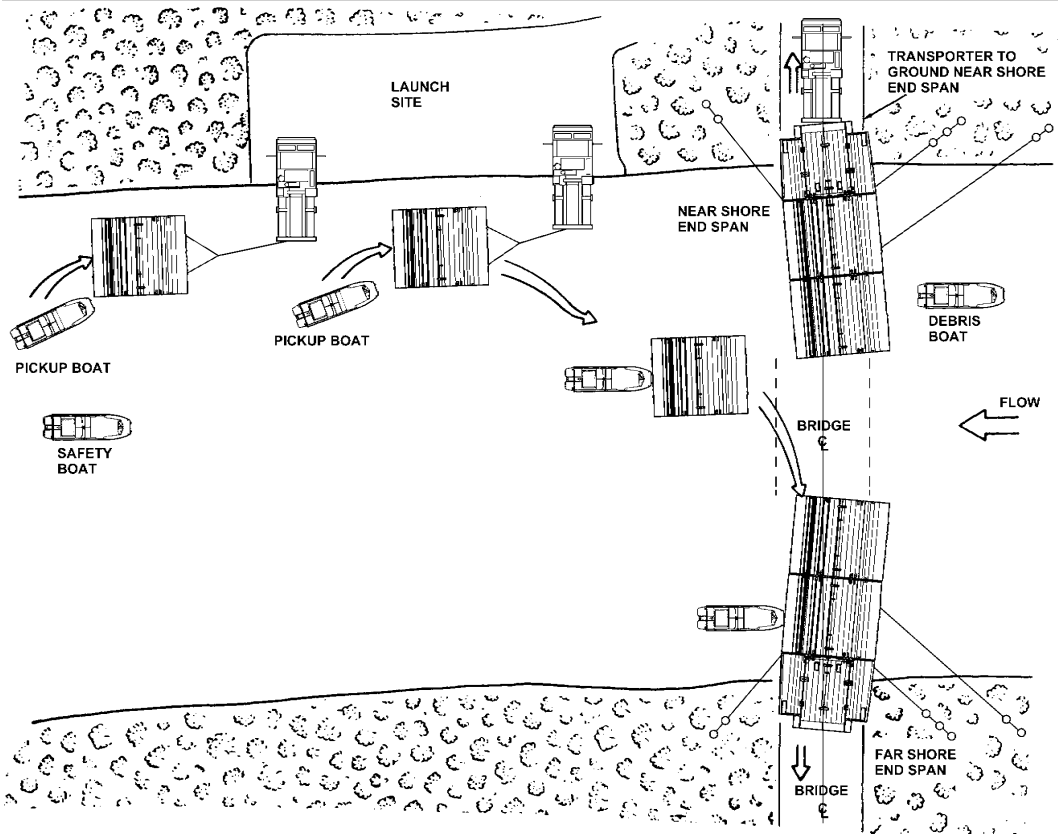


Figure 1. Bridge Assembly by Successive Bay Method.

END OF WORK PACKAGE

BRIDGE ASSEMBLY, SWINGING BRIDGE METHOD
THIS WORK PACKAGE SUPERSEDES WP 0034 00, DATED 8 APRIL 2003

WARNING

All bridge personnel must wear approved life jackets while on the bridge. Failure to comply may result in injury or death to personnel.

Exercise caution when walking near centerline of roadway; the ponton alignment lugs project above the roadway surface on interior bays and constitute a tripping hazard. Failure to comply may result in injury to personnel.

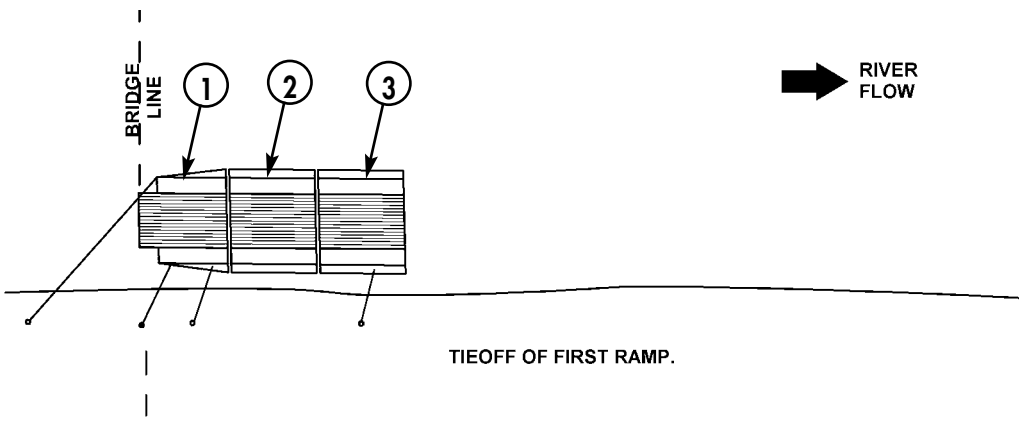
NOTE

The purpose of the swinging bridge method is to allow connection of the bays along or near the shore where the current will be considerably slower than in the main flow, thereby making bay-to-bay connection easier. Once bay-to-bay connections are complete, the bridge assembly is swung into place upstream with the current. Although this may be the most rapid method of construction, it has certain limitations. For example, the exact length of the bridge must be known, and the path for swinging the bridge must be free of protruding rocks, sandbars, debris, or other constructions. When constructing a bridge using this method, the bridge must always be swung upstream. This method of deployment depends on environmental factors that are determined in the site layout prior to launch.

Transporters can be used for temporary anchorage.

a. Launch, secure, and connect two interior bays (2) and (3). (Refer to WP 0029 00 and WP 0032 00). Anchor bays just downstream of bridge line. (Refer to WP 0035 00).

b. Launch and secure ramp bay (1). (Refer to WP 0028 00). Connect to interior bay (2). (Refer to WP 0030 00 or WP 0031 00).



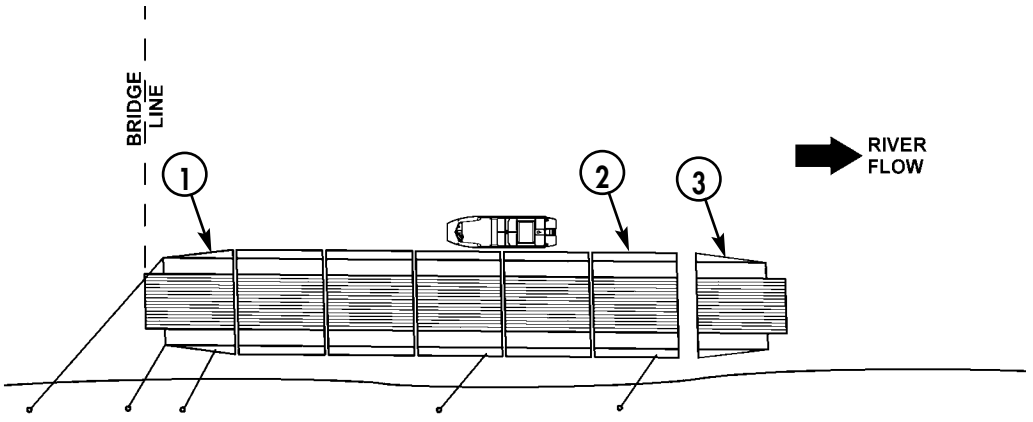
BRIDGE ASSEMBLY, SWINGING BRIDGE METHOD (Contd)

NOTE

Bridge boats should be used to hold bridge assembly in place.

c. Launch, secure, and connect remaining interior bays to existing assembly along near shore. Add anchorage as needed.

d. Launch, secure, and connect ramp bay (3) to last interior bay (2) (WP 0030 00).

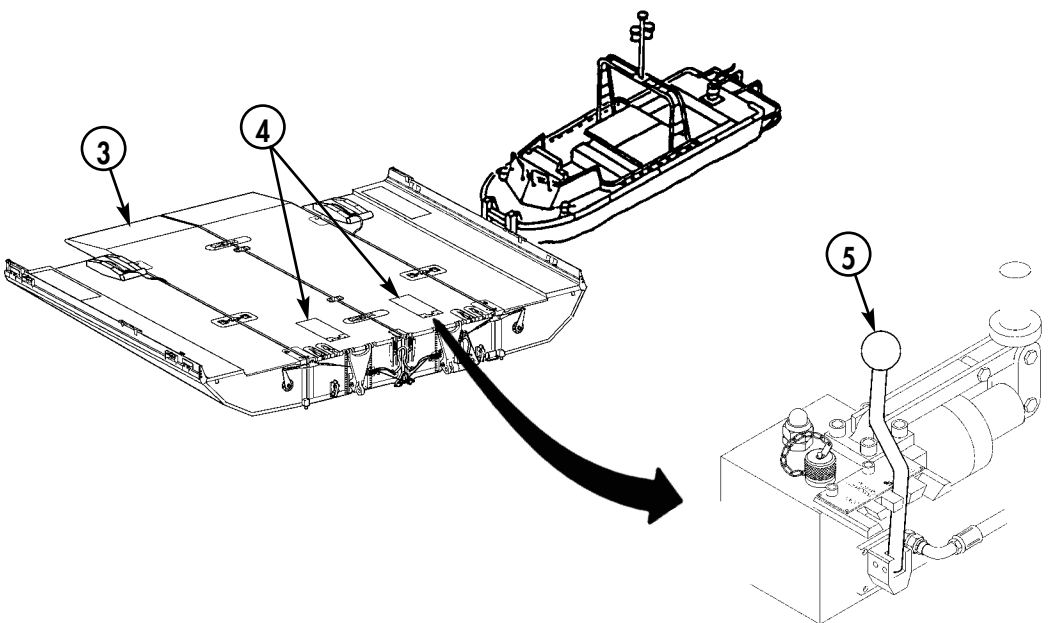


HOLDING OF BRIDGE DURING CONSTRUCTION ALONG SHORE.

e. Open both pump access covers (4), set pump control valve levers (5) to UP position, and raise ramp bay (3).

f. Close both pump access covers (4).

g. Repeat steps e and f for remaining ramp bay (1).



BRIDGE ASSEMBLY, SWINGING BRIDGE METHOD (Contd)

WARNING

Ensure debris boat is positioned sufficently upstream and safety boat is positioned downstream per SOP prior to swinging bridge assembly. Failure to comply may result in damage to equipment and possible injury or death to personnel.

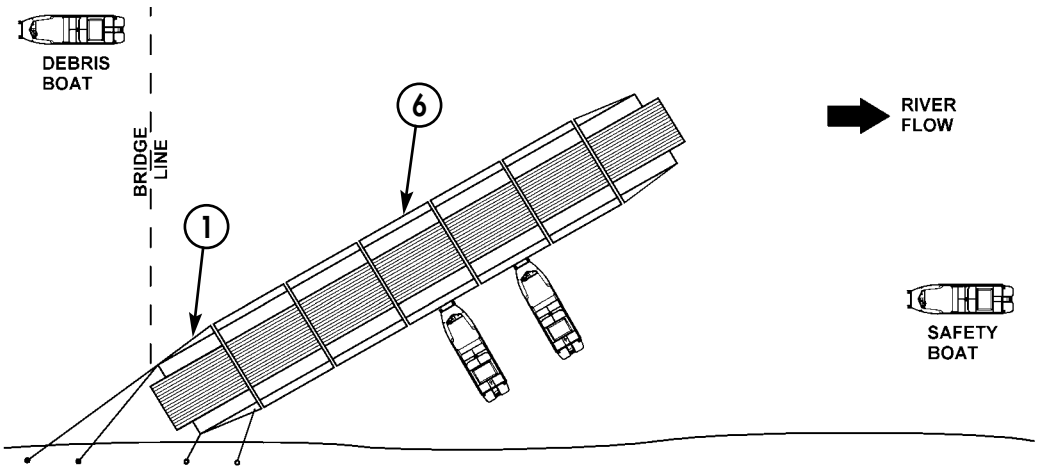
Do not swing bridge assembly downstream. Do not operate boats immediately upstream of bridge assembly or in path of swing. Failure to comply will result in damage to equipment or possible injury or death to personnel.

NOTE

To initiate swinging of bridge assembly, connect BEB to downstream ramp bay, and swing bridge assembly upstream until additional BEBs can be connected to downstream side of bridge assembly.

h. Remove anchorage for all interior bays (6) and adjust anchorage to ramp bay (1) at near shore bridge line as necessary.

i. Using BEBs, swing bridge assembly to bridge line at shore.



SWINGING BRIDGE TO BRIDGE LINE.

BRIDGE ASSEMBLY, SWINGING BRIDGE METHOD (Contd)

j. Open both pump access covers (3) and lower ramp bay by setting control valve levers (1) to DOWN position.

k. Set both pump control levers (1) to TRANSPORT/CROSSING position and close access covers (3).

l. Repeat steps j and k for remaining ramp bay.

WARNING

Do not allow any traffic on bridge until bridge OIC has verified that all appropriate couplings, lower lock pins, and handrails are properly engaged. Failure to comply may result in damage to equipment or possible injury or death to personnel.

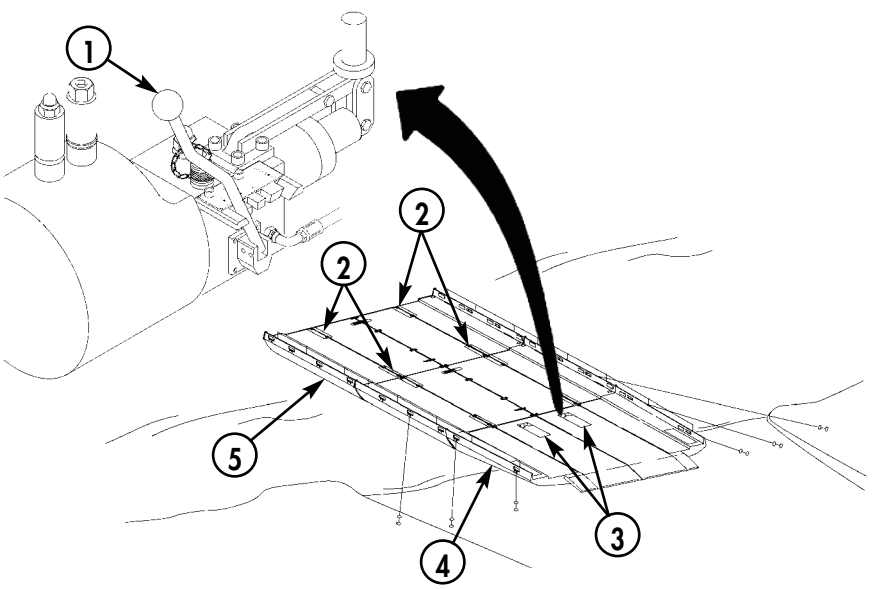
Do not place fingers under longitudinal upper couplings when opening them, or serious injury to personnel may result.

Never open the transverse upper couplings on ramp bays or interior bays once connected as a bridge or raft assembly. Failure to comply may result in damage to equipment or possible injury or death to personnel.

m. Open all longitudinal upper couplings (2) between interior bays (5) only.

o. Raise handrails and connect ropes. (Refer to WP 0010 00 and WP 0011 00).

p. Refer to WP 0036 00, Bridge Operation, for bridge operation guidelines.



END OF WORK PACKAGE

BRIDGE ANCHORAGE
THIS WORK PACKAGE SUPERSEDES WP 0035 00, DATED 8 APRIL 2003

INTRODUCTION

a. General

There are several methods of anchoring ribbon bridges. The anchorage system used will depend on the following factors: stream velocity, length of bridge, time available for bridge assembly, length of time bridge will be in place, and bank conditions. Refer to Anchorage of Floating Bridges, in this work package, in conjunction with the anchoring instructions listed below.

b. Short-Term Anchorage

Normally, the IRB is used as an assault bridge where it is necessary to assemble, cross, and recover the bridge in a short period of time. A temporary system of anchorage is required for this purpose. Short-term anchorage is a temporary system of anchorage that utilizes BEBs and approach guys (cables) to hold the bridge in place against the force of water current and vehicular traffic. Positioning of the BEBs and installation of approach guys is accomplished during bridge assembly whether by the successive bay method (WP 0033 00) or swinging bridge method (WP 0034 00). Refer to Anchoring of Floating Bridges in this work package in conjunction with the following instructions prior to installation of short-term anchorage.

(1) Downstream deflection must be countered by the correct number of BEBs. The spacing and correct number of BEBs needed to hold the bridge to its centerline is based on water velocity and the number of individual bays in the bridge assembly. Refer to table 1, and determine the number BEBs required. In addition, the fuel consumption of the BEBs must be checked every two hours, and at least two standby BEBs must be available when refueling BEBs as necessary.

CAUTION

Stop bridge traffic while replacing boats, or damage to equipment may result.

Table 1. Bridge Erection Boats Required for Anchorage.

CURRENT SPEED	NUMBER OF BAYS PER MK I/II BEB
0.0–5.0 feet/sec (0.0–1.5 meters/sec)	4
5.0–8.0 feet/sec (1.5–2.4 meters/sec)	3
8.0–9.0 feet/sec (2.4–2.7 meters/sec)	2
9.0–10.0 feet/sec (2.7–3.0 meters/sec)	Anchorage system necessary

Note: If the bridge is to remain in place for long periods of time, an anchorage system shall also be used.

BRIDGE ANCHORAGE (Contd)

INTRODUCTION (Contd)

b. Short-Term Anchorage (Contd)

CAUTION

If using transporters for anchorage, ensure winch cables are connected to the ramp bay load receiving pins only, or damage to equipment will result.

(2) In addition to placement of BEBs along the downstream side of the bridge, the ramp bays must be secured at both riverbanks during bridge assembly. End span anchorage is necessary to prevent the bridge from creeping away from the shore as a result of the impact of vehicular traffic driving on the bridge. If four transporters are available, position each transporter at approximately a 45-degree angle to the bridge centerline at both ends of the bridge. (Refer to figure 1). Using the front winch cable to the first load-receiving pin on the side of the ramp bay. (Refer to figure 2). Pay in cable to take up slack, set parking brake, and chock wheels on each transporter. (Refer to figure 1).

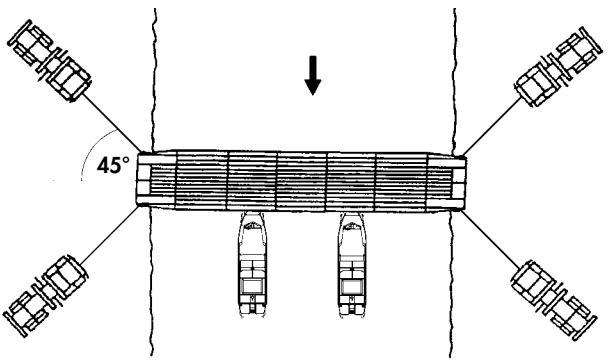


Figure 1. Typical End Span Anchorage.

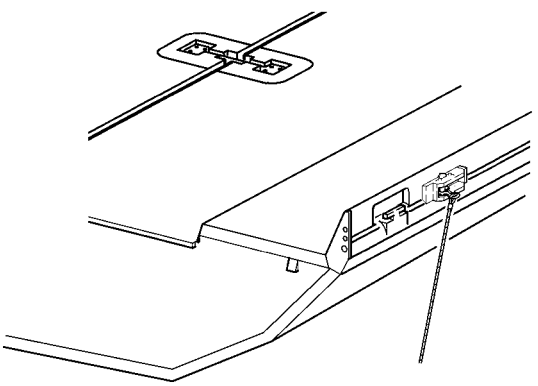


Figure 2. Ramp Bay Load Receiving Pin.

BRIDGE ANCHORAGE (Contd)

INTRODUCTION (Contd)

b. Short-Term Anchorage (Contd)

WARNING

Do not use bridge rafting bracket mounting holes and quick-release pin for anchoring bridge. Use only the load receiving pins with one anchoring cable at each pin. Failure to comply may result in damage to equipment or possible injury or death to personnel.

NOTE

The approach guys should be a minimum of 1/2-in. (12.7-mm) diameter Improved Plough Steel (IPS) cable and must be connected to the ramp bay's load-receiving pins only.

(3) If transporters are not available for temporary end span anchorage, connect one approach guy to the first load receiving pin on each side of the ramp bay at both ends of the bridge. Secure the opposite end of each approach guy to a hold-fast post at approximately a 45-degree angle to the bridge centerline. (Refer to figure 3.) The hold-fast posts should be located above high-water level to prevent washout.

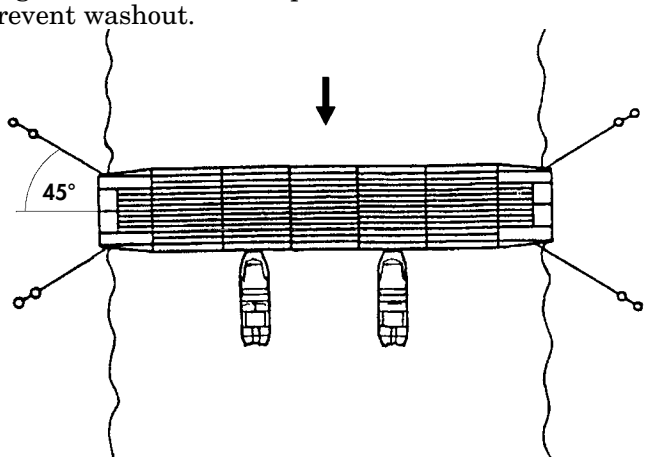


Figure 3. Typical Short-Term Anchoring.

c. Long-Term Anchorage

WARNING

Do not use bridge rafting bracket mounting holes and quick-release pin for anchoring bridge. Use only the load receiving pins with one anchoring cable at each pin. Failure to comply may result in damage to equipment or possible injury or death to personnel.

BRIDGE ANCHORAGE (Contd)

INTRODUCTION (Contd)

c. Long-Term Anchorage (Contd)

If the IRB will remain for an extended period of time, the transporters (if used) and BEBs should be replaced with fixed anchorage. Transporters, if used for end span anchorage, should be replaced with approach guys. Where currents are 0–3 feet/sec (0–0.9 meters/sec), BEBs can be replaced with upstream and downstream anchorage using shore guys. (Refer to figure 4). If currents are 3.1–11 feet/sec (1.6–3.4 meters/sec), an overhead cable system must be used. Refer to Anchorage of Floating Bridges in this work package for assembly and installation instructions for the various types of fixed anchorage. The components necessary to install the standard overhead cable system are supplied in the IRB supplemental set SC-5420-97-CL-E51. Refer to figure 5 for typical bridle line connection to IRB cleats.

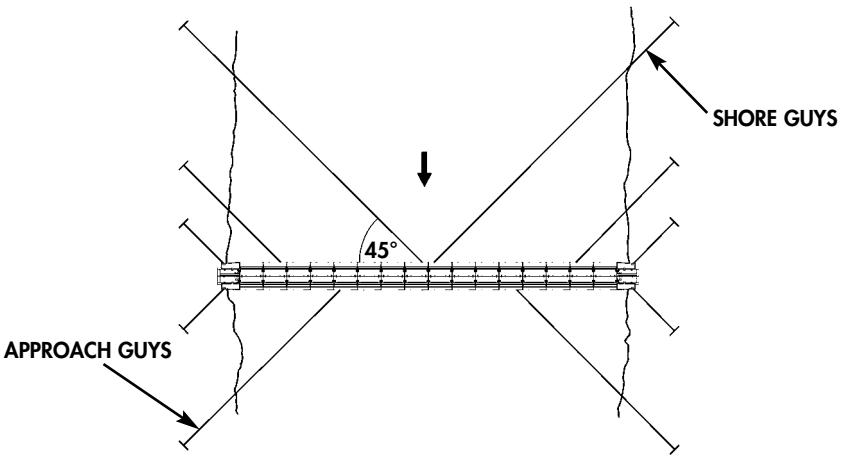


Figure 4. Typical End Span Anchorage.

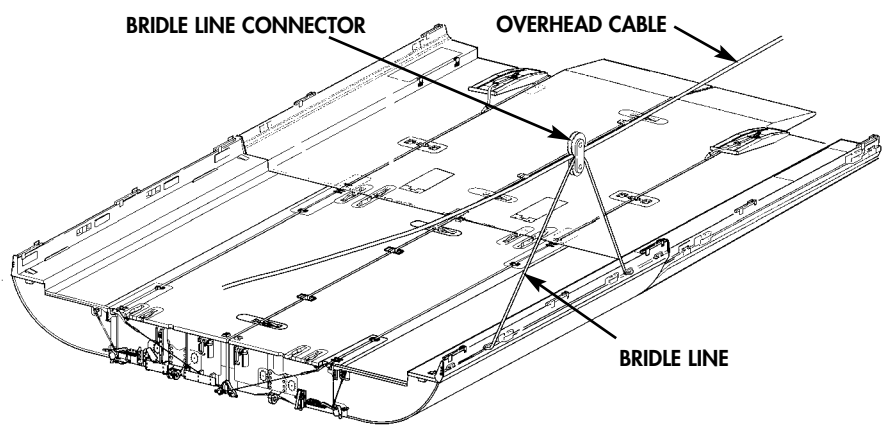


Figure 5. Typical Bridle Line Connection.

BRIDGE ANCHORAGE (Contd)

INTRODUCTION (Contd)

d. Anchorage of Floating Bridges

All military bridges must be held in position by some system of anchorage. Anchorage systems can be classified as short-term or long-term. Short-term anchorage generally refers to a method of holding a bridge in position for a limited period of time. Assault bridges, such as the ribbon bridge, are normally anchored using only short-term means. This work package describes the method of anchoring such bridges using BEBs. Lines of communications bridges remain in position for longer periods of time. For these bridges, long-term anchorage systems are necessary. Anchorage of Floating Bridges describes the design and construction of these long-term anchorage systems.

DESIGN OF LONG-TERM ANCHORAGE SYSTEMS: BASIC CONSIDERATIONS

The design of any system of anchorage is influenced by several factors, including:

- Width of the river
- Velocity of the river's current
- River depth
- River bottom conditions
- Height and slope of riverbanks
- Soil conditions
- Depth of the groundwater table
- Available equipment

Each of these factors must be considered when deciding upon the type of anchorage system to be installed. Generally, the velocity of the river and the river bottom conditions will have the greatest impact upon the type of long-term anchorage system that will be selected for a given site.

BASIC DESIGN

The three basic components of all long-term anchorage systems include approach guys, an upstream anchorage system, and a downstream anchorage system.

APPROACH GUYS

Approach guys are cables which prevent the bridge from being pushed away from the shore as a result of the impact of vehicles driving onto the ramps of the bridge. One end of each approach guy is attached to each side (upstream and downstream) of the first bay of bridge on both ends of the bridge. The other end of each approach guy is secured on the shore, normally using chain picket holdfasts. Place approach guys at approximately a 45-degree angle with the bridge centerline. (Refer to figure 6.) A minimum of 1/2-in. (12.7-mm) IPS cable should be used for each.

BRIDGE ANCHORAGE (Contd)

APPROACH GUYS (Contd)

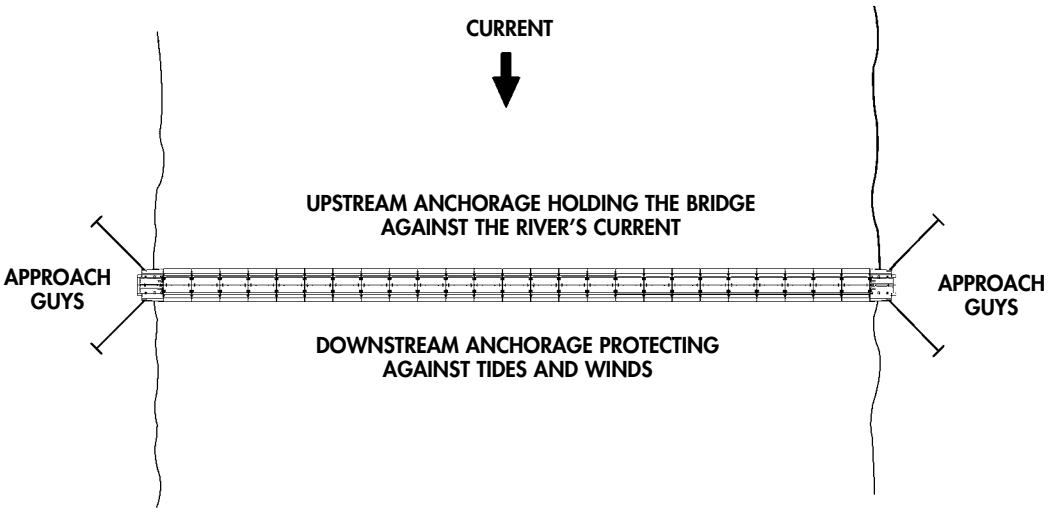


Figure 6. Three Components of a Long-Term Anchorage System.

UPSTREAM ANCHORAGE SYSTEM

The upstream anchorage system is the system which holds the bridge in position against the force of the river's normal current. This system is the bridge's primary anchorage system and its design is the most critical. Two types of anchorages can be used for the purpose of upstream anchorage: shore guys and the overhead cable system.

Although several factors may come into play when determining which of these type of anchorage to install, the primary considerations are the current velocity and river conditions. Table 2 provides guidelines for the selection of an upstream anchorage system.

DOWNSTREAM ANCHORAGE SYSTEM

The downstream anchorage system protects the floating bridge against reverse currents, tidal conditions, eddies, and high winds or storms which might temporarily alter or reverse the natural flow of the river. Shore guys and overhead cable systems can be used as methods of anchoring the bridge downstream. Once again, the design of downstream anchorage systems can be based upon several factors. River bottom conditions and the velocity of the expected reverse current will be of primary importance. Table 3 provides guidelines for the design of downstream anchorage systems.

BRIDGE ANCHORAGE (Contd)

Table 2. Design of Upstream Anchoring Systems.

CURRENT VELOCITY (RATE OF CURRENT PER SECOND)	BOTTOM CONDITIONS	
	SOFT	SOLID/ROCKY
0–3 feet/sec (0–0.9 meters/sec)	Shore guys every 6th float upstream	Shore guys every 6th float upstream
3.1–11 feet/sec (1–3.4 meters/sec)	Overhead cable system	Overhead cable system

Table 3. Design of Downstream Anchoring Systems.

CURRENT VELOCITY (RATE OF CURRENT PER SECOND)	BOTTOM CONDITIONS	
	SOFT	SOLID/ROCKY
None expected	Shore guys every 10th float downstream	Shore guys every 10th float downstream
0–3 feet/sec (0–0.9 meters/sec)	Shore guys every 6th float downstream	Shore guys every 6th float downstream
3.1–11 feet/sec (1–3.4 meters/sec)	Overhead cable system	Overhead cable system

BRIDGE ANCHORAGE (Contd)

SHORE GUY ANCHORAGE

a. Planning considerations. Shore guys are cables attached from the bridge to deadmen or similar holdfasts on the shore. Shore guys can be used as upstream or downstream anchorage systems provided that the maximum anticipated current (or reverse current for downstream systems) does not exceed 3 feet/sec (0.9 meters/sec). Shore guys may be used for any length of floating bridge provided that a 45-degree angle can be maintained between the shore guy and the bridge centerline.

b. Materials. Shore guys consist of steel cables attached to deadmen. The cable used for shore guy systems should be 1/2-in. (12.7-mm) IPS cable or any cable which has a comparable breaking strength. The length of these cables depends primarily upon the length of the bridge and the shore conditions.

c. Installation.

(1) When shore guys are used as the upstream anchorage system for a bridge, they are emplaced as the bridge is constructed. (Refer to figure 7.) The cable should be unreeled from the shore and passed out along the bridge. If necessary, station one person at every other float to hold the cable out of the water. Connect guys to the IRB load receiving pins only.

(2) Tighten the shore guys that were attached to the bridge during the bridge assembly just enough to hold them taut. After bridge completion, tighten the four approach guys simultaneously to prevent longitudinal movement. Then tighten the shore guys simultaneously to maintain bridge alignment. Shore guys must stay above the water to prevent whipping and accumulation of debris. If necessary, use an A-frame or some other means of intermediate support to raise the guys clear of the water.

BRIDGE ANCHORAGE (Contd)

SHORE GUY ANCHORAGE (Contd)

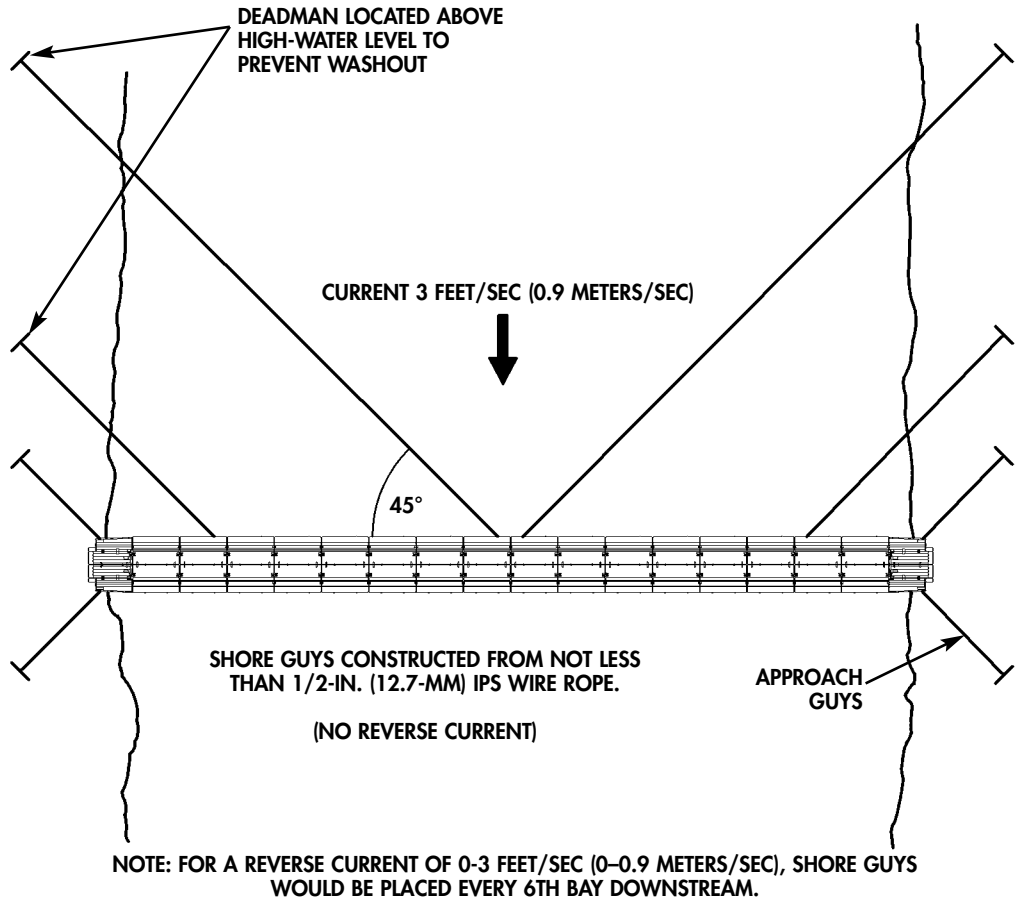


Figure 7. Typical Shore Guy System.

EXAMPLE

Given the following reconnaissance data, design a long-term anchorage system for the IRB:

River width: 500 ft (152.5 m)

Current velocity: 3 feet/sec (0.9 meters/sec)

River bottom is composed of rock.

No reverse current is expected.

SOLUTION

Anchorage system will include:

1. Approach guys: use 1/2-in. (12.7-mm) manila rope.
2. Upstream system: use shore guys attached to every 6th float (table 2).
3. Downstream system: use shore guys attached to every 10th float (table 3).

BRIDGE ANCHORAGE (Contd)

OVERHEAD CABLE SYSTEM

a. Overhead cable. An overhead cable system consists of one or more tower supported cables spanning the river parallel to the bridge. (Refer to figures 8 and 9). Each end of the overhead cable is secured to the shore, preferably through the use of deadmen. Bridle lines are used to connect each bay of bridge to the overhead cable. The cable functions like the cable used in a suspension bridge, except that in its final working position the cable is inclined toward the bridge because of the force of the current on the bridge.

b. Planning considerations. The overhead cable system can be used as both upstream and downstream anchorage systems. An overhead cable system can hold a heavy floating bridge in current less than or equal to 11 feet/sec (3.4 meters/sec). The following basic reconnaissance information must be determined in order to design an overhead cable system: river width, current velocity, bank heights (near and far shore), depth of ground water table, type of bridge to be supported. (Refer to table 4).

It is also important to be aware of the sizes and types of cable available for use as an overhead cable and the dimensions and types of materials that are available for use as a deadman.

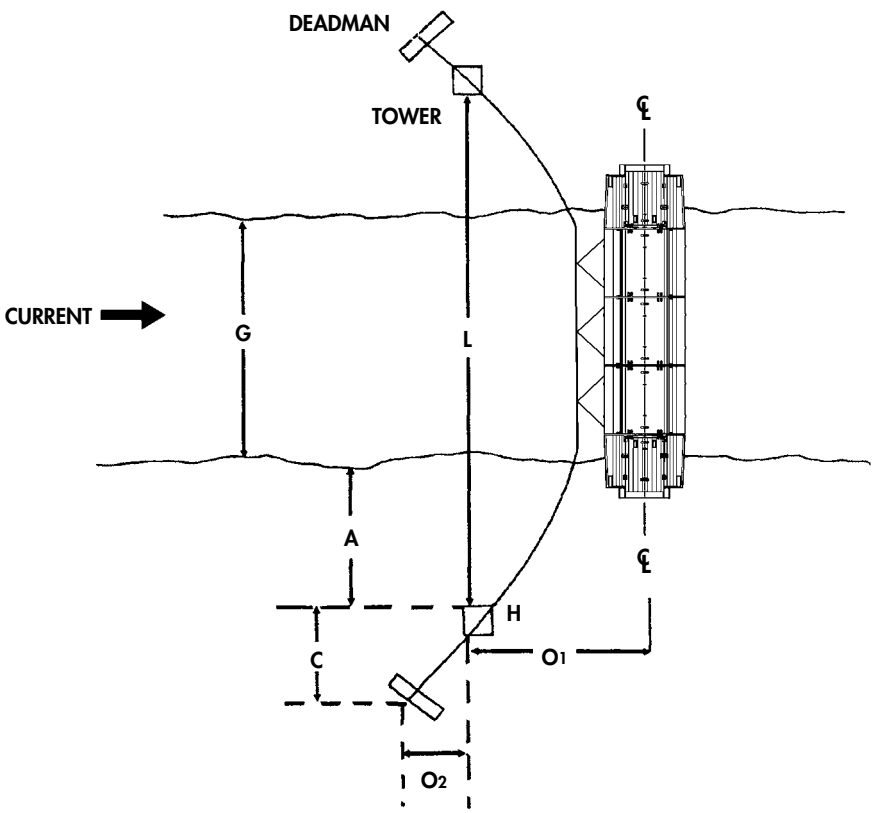


Figure 8. Typical Overhead Cable System.

BRIDGE ANCHORAGE (Contd)

OVERHEAD CABLE SYSTEM (Contd)

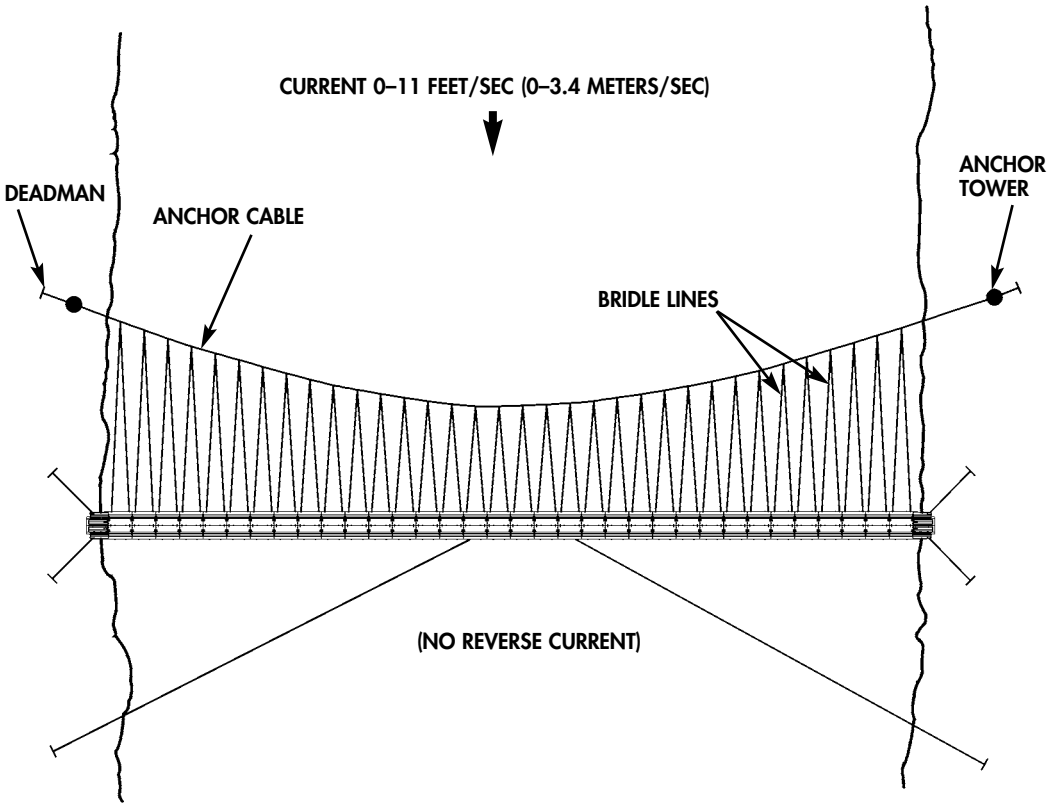


Figure 9. Typical Use of Overhead Cable as Upstream Anchorage.

EXAMPLE

Given the following reconnaissance data, design a complete long-term anchorage system for the IRB:

River width: 500 ft (152.5 m)

Current velocity: 6 feet/sec (1.8 meters/sec)

River bottom is composed of solid granite (rock).

No reverse current is expected.

SOLUTION

Anchorage system will include:

1. Approach guys: use 1/2-in. (12.7-mm) manila rope.
2. Upstream system: use overhead cable system (table 2).
3. Downstream system: use shore guys attached to every 10th float (table 3).

BRIDGE ANCHORAGE (Contd)

DESIGN OF AN OVERHEAD CABLE ANCHORAGE SYSTEM

Table 4 provides the basic information which must be calculated or determined when designing the overhead cable system. An expedient method of design for the overhead cable system is given in Appendix C of Military Float Bridge Equipment, TC 5-210. If the assumptions upon which this design sequence is based are invalid, or if a better understanding of this design sequence is desired, refer to the following paragraphs.

Cable design: size and number of overhead cables. Overhead cable systems may be constructed as one-, two-, or three-cable systems. (Refer to figure 10). Single-cable systems can be built for bridges as long as 1,200 ft (366 m) in most cases. Installation of cable spans up to 1,500 ft (457.5 m) is possible, but more difficult because of the practical limitations of erection equipment and the cable size and weight. If a cable of sufficient diameter is not available, or if the cable required is too large for the bridle lines and tower fittings, two or three smaller cables may have to be installed using a tower cap adapter. Use table 5 to determine the size and number of cables required to support Ribbon bridges. Table 6 provides information for light tactical bridges. It is important to understand that both table 5 and table 6 are based upon the use of IPS cable. If IPS cable is not used, select an appropriate substitute, based upon a comparison of the breaking strength of the available cables with that of the required IPS cable. Table 7 provides the weight and breaking strength of IPS cables as well as several other common cable types.

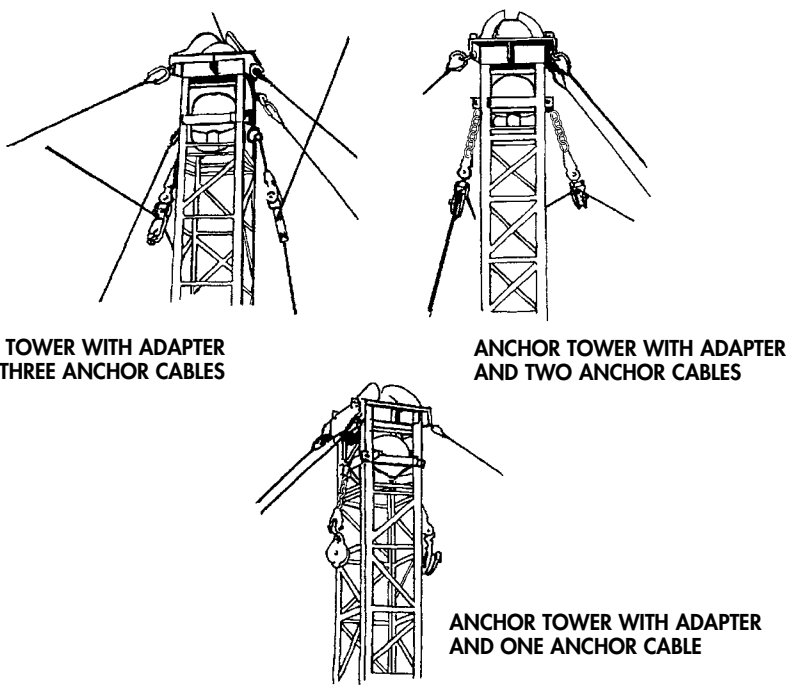


Figure 10. One-, Two-, or Three-Cable System Using One Set of Class 60 Towers.

BRIDGE ANCHORAGE (Contd)

DESIGN OF AN OVERHEAD CABLE ANCHORAGE SYSTEM (Contd)

Table 4. Designing an Overhead Cable System.

1. CABLE DATA

Number of master cables . . . . . _____
Size of master cable(s) (C_D) . . . . . _____
Length of master cable(s) (C_L) . . . . . _____
Number of clips at each end of cable . . . . . _____
Spacing of cable clips . . . . . _____
Initial sag (S) . . . . . _____

2. TOWER DATA

Actual tower height (H) . . . . . _____
  Near shore . . . . . _____
  Far shore . . . . . _____
Tower-waterline distance (A) . . . . . _____
  Near shore . . . . . _____
  Far shore . . . . . _____
Tower-bridge offset (0_1) . . . . . _____
  Near shore . . . . . _____
  Far shore . . . . . _____

3. DEADMAN DATA

Depth of deadman (D_D) . . . . . _____
  Near shore . . . . . _____
  Far shore . . . . . _____
Tower-deadman distance (C) . . . . . _____
  Near shore . . . . . _____
  Far shore . . . . . _____
Tower-deadman offset (0_2) . . . . . _____
  Near shore . . . . . _____
  Far shore . . . . . _____
Deadman face (D_f) . . . . . _____
Deadman thickness (D_t) . . . . . _____
Deadman length (D_L) . . . . . _____
  Near shore . . . . . _____
  Far shore . . . . . _____
Bearing plate thickness (x) . . . . . _____
Bearing plate length (y) . . . . . _____

BRIDGE ANCHORAGE (Contd)

DESIGN OF AN OVERHEAD CABLE ANCHORAGE SYSTEM (Contd)

Table 5. Determination of Cable Size and Number of Cables for Ribbon Bridges.

Wet gap width (G) (feet)	Type bridge assembly	Size (inches) and number of cables for specified river velocities											
		5 FPS			7 FPS			9 FPS			11 FPS		
		Single	Dual	Triple	Single	Dual	Triple	Single	Dual	Triple	Single	Dual	Triple
200	Normal	1/2	3/8	3/8	5/8	1/2	1/2	3/4	5/8	1/2	7/8	3/4	5/8
	Reinforced	5/8	1/2	3/8	3/4	5/8	1/2	7/8	3/4	5/8	1– 1/8	7/8	3/4
400	Normal	5/8	1/2	1/2	3/4	5/8	1/2	1	7/8	5/8	1–1/4	1	3/4
	Reinforced	3/4	5/8	1/2	1	3/4	5/8	1–1/4	1	3/4	1–1/2	1–1/4	7/8
600	Normal	3/4	5/8	1/2	1	3/4	5/8	1–1/4	1	3/4	1–1/2	1–1/4	7/8
	Reinforced	1	3/4	5/8	1–1/8	1	3/4	1–1/2	1–1/4	7/8	*	1–1/2	1–1/8
800	Normal	7/8	3/4	5/8	1–1/8	7/8	3/4	1–3/8	1–1/8	7/8	*	1–1/2	1–1/8
	Reinforced	1–1/8	7/8	3/4	1–3/8	1–1/8	7/8	*	1–3/8	1	*	*	1–1/4
1000	Normal	1	7/8	3/4	1–1/4	1	7/8	1–1/2	1–3/8	1	*	*	1–1/4
	Reinforced	1–1/4	1	3/4	1–1/2	1–1/4	1	*	*	1–1/8	*	*	1–3/4
1200	Normal	1–1/8	7/8	3/4	1–3/8	1–1/8	7/8	*	1–1/2	1–1/8	*	*	1–3/8
	Reinforced	1–3/8	1–1/8	7/8	*	1–3/8	1	*	*	1–1/4	*	*	*

Notes.
1. All values are based upon Improved Plough Steel cable and a 2 percent initial sag.
2. Asterisks (*) indicate that it is unsafe to construct that system.

BRIDGE ANCHORAGE (Contd)

DESIGN OF AN OVERHEAD CABLE ANCHORAGE SYSTEM (Contd)

Table 6. Determination of Cable Size for Light Tactical Bridges.

Wet gap width (G) (feet)	Current velocity			
	5 FPS	7 FPS	9 FPS	11 FPS
200	3/8″	3/8″	1/2″	1/2″
300	3/8″	1/2″	5/8″	3/4″
400	1/2″	1/2″	5/8″	3/4″
500	1/2″	5/8″	5/8″	3/4″
600	5/8″	5/8″	3/4″	7/8″

Note.
All values are based upon Improved Plough Steel cable and a 2 percent initial sag.

Table 7. Weight and Breaking Strengths for Common Cables (Cable Capacity).

Cable dia (CD)	3/8	1/2	5/8	3/4	7/8	1	1–1/8	1–1/4	1–3/8	1–1/2
Weight (pounds per foot)	.23	.40	.63	.90	1.23	1.6	2.03	2.5	3.03	3.6
Type of cable	Breaking strength (pounds)									
IPS	10,000	17,000	26,200	37,400	50,800	66,000	83,000	102,000	123,000	145,000
MPS*	11,000	18,800	28,800	41,200	56,000	73,000	92,000	113,000	136,000	161,000
Plough steel	12,600	21,600	33,200	47,400	64,400	84,000	106,000	130,000	157,000	185,000

Notes.
1. The strength varies slightly with the strand construction and the number of strands.
2. The strength varies approximately with the square of the diameter of the cable. For example: a 3/4" cable is 4 times as strong as a 3/8" cable made of the same materials, $(3/4)^2 \div (3/8)^2 = 4$.

* Mild plough steel

BRIDGE ANCHORAGE (Contd)

USE OF CABLE CLIPS

Both ends of the overhead cable are wrapped around a deadman and secured using cable clips. It is essential that the proper number of clips is correctly applied. To determine the number of clips which must be applied to each end of the overhead cable, use the following formula:

Number of clips at each end = (3 X C_D) + 1
where C_D is the diameter of the overhead cable, in inches.

These clips should also be spaced according to the cable size. To determine the correct clip spacing (in inches), use the following formula:

Clip spacing (in inches) = (6 X C_D) + 1
where C_D is the diameter of the overhead cable, in inches.

When installing cable clips, the base of each clip should bear against the standing (load carrying) end and the U-bolt should bear against the running (loose end). (Refer to figure 11.) If clips are installed incorrectly, they will cause shearing, excessive wear, breakage, or slippage of the cable. Always use the correct size cable clip to attain maximum holding power.

LENGTH OF THE OVERHEAD CABLE

In Appendix C of TC5-210, the calculation for the length of the overhead cable (in feet) is given as:

C_L = L + 250 ft (76.3 m) where C_L is the required length of the overhead cable (in feet), and L is the distance between the anchorage towers (in feet) and is given as: L = (1.1 X Gap) + 100 ft (30.5 m)

This formula provides an approximate value for the required length of the overhead cable. This approximation is based upon the most severe river and bank conditions and is intended for use as a planning figure only. There is no need to calculate an exact cable length, but if the designer of a cable system so desires, the formula can be derived from information provided in TM 5-312.

CABLE SAG

The ability of the anchor cable to hold the bridge decreases as the sag in the overhead cable increases. (Refer to figure 12.) Sag is defined as the distance (in feet) between the cable and the midpoint of a straight line formed by the two cable supports. Prior to connection of the bridle lines to the overhead cable, tension is applied to the cable and the initial sag determined. A two percent sag (or less) is desired. Initial sag (in feet) may be computed as:

S = (.02 X L)
where S is the initial sag, and L is the distance between the towers.

The distance between the towers (L) is determined as:

L = (1.1 X G) + 100 ft (30.5 m)
where G is the width of the river, in feet.

An initial sag of 2 percent will usually result in a final sag of 5 to 7 percent when the bridge is connected to the overhead cable.

BRIDGE ANCHORAGE (Contd)

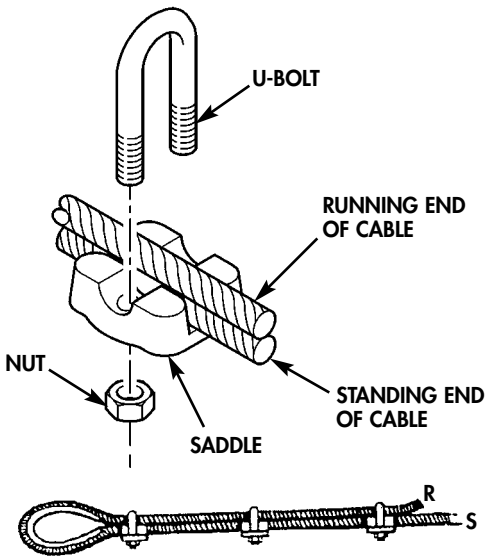


Figure 11. Application of Cable Clips.

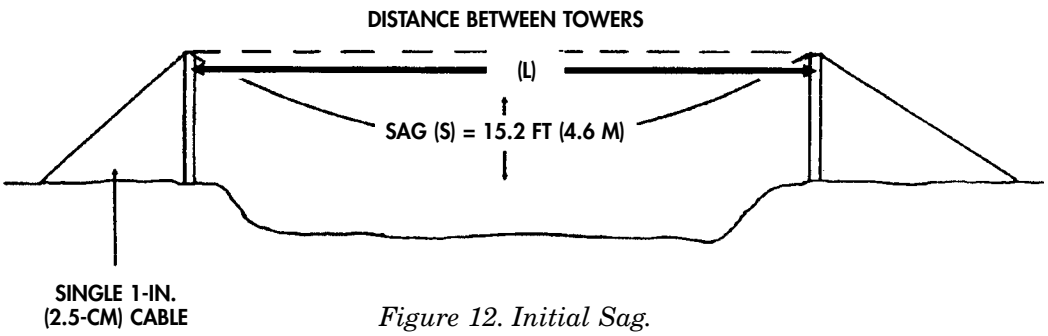


Figure 12. Initial Sag.

EXAMPLE

Given the following reconnaissance data, design the cable for an overhead cable system for the IRB:

River width: 600 ft (183 m)

Current velocity: 7 feet/sec (2.1 meters/sec)

Available cable: 1/2-, 1-, and 1 1/4-in. (12.7-, 25.4-, and 31.8-mm) IPS cables

SOLUTION

Number/size cable: refer to table 5. A single 1-in. (2.5-cm) cable is sufficient for this system:

Number of clips: (3 x CD) + 1 = 3 (1) + 1 = 4 clips at each end

Spacing of clips: (6 x CD) = 6 in. (15.2 cm) apart

L = (1.1 x 600) + 100 = 760 ft (215.3 m)

CL = 760 + 250 = 1010 ft (308 m)

S = 760 x .02 = 15.2 ft (4.6 m)

BRIDGE ANCHORAGE (Contd)

TOWER DESIGN

When installing an overhead cable system, towers are used to ensure that the master cable remains at least 3 ft (0.9 m) above the water level. The tower components are provided and located in the Ribbon Bridge Supplemental Set. The tower assembly is made up of a tower base, a pivot unit, six tower sections, a tower cap, a cap adapter, and two wire rope slings. (Refer to figure 13). If towers are not available, Bailey bridge panels can be used to construct an adequate tower. For additional information, see Appendix B in TC 5-210.

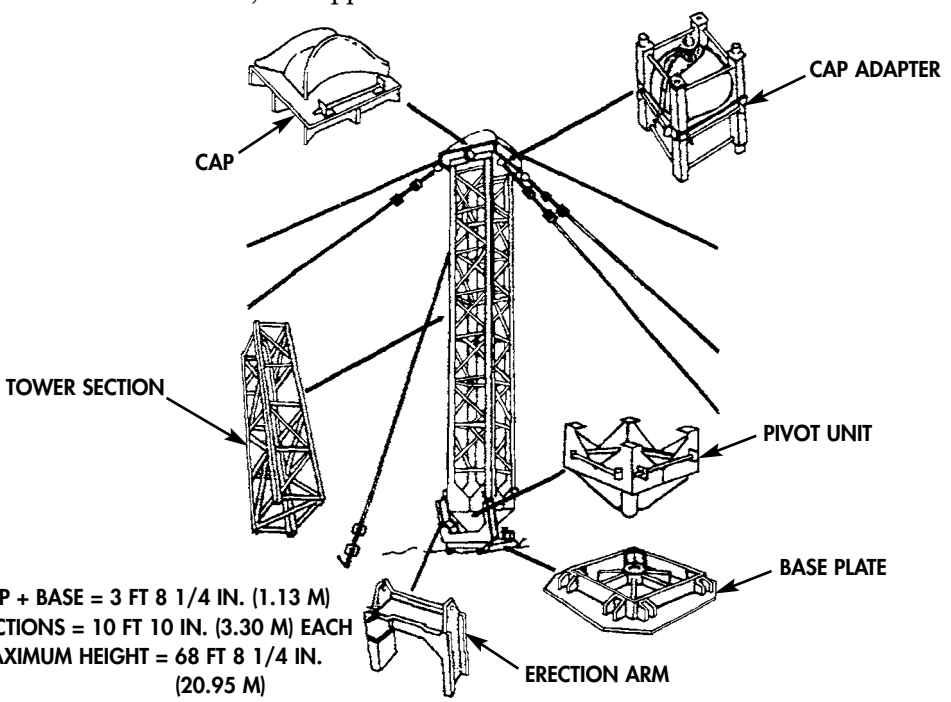


Figure 13. Tower.

EXAMPLE

Given the following reconnaissance data, design the tower for an overhead cable system used to anchor the IRB:

River width: 600 ft (183 m)

Current velocity: 7 feet/sec (2.1 meters/sec)

Bank heights:

Near shore: 10 ft (3 m)

Far shore: 3 ft (0.9 m)

SOLUTION

1. Determine the required tower heights.

   Near shore: HR = 3 + S – BH = 3 + 15.2 – 10 = 8.2 ft (2.5 m)

   Far shore: HR = 3 + S – BH = 3 + 15.2 – 3 = 15.2 ft (4.6 m)

2. Refer to table 8 to determine actual near and far shore tower heights.

   Near shore: H = 14 ft 6 1/4 in. (4.43 m)

   Far shore: H = 25 ft 4 1/4 in. (7.73 m)

BRIDGE ANCHORAGE (Contd)

TOWER HEIGHT

a. Required. To determine the size of the tower which must be built, it is first necessary to calculate the required tower height. Because the purpose of the tower is to elevate the overhead cable to a height at least 3 ft (0.9 m) above the water level, the formula for the required tower height (in feet) is:

HR = 3 ft (0.9 m) + S – BH
where HR is the required tower height in feet, S is the initial sag, and BH is the bank height in feet.

Because the height of the bank is used in this calculation, determine the required tower height separately for both the near shore and the far shore (if the bank heights of both shores are not the same).

b. Actual. Once the required tower height (in feet) is calculated, the actual height of each tower (near and far shore) can be determined. When using the Class 60 tower, it is possible to bolt the tower cap directly to the pivot unit to obtain a tower height of 3 ft 8 1/4 in. (1.13 m). This is the minimum possible tower height. The tower height may be increased by adding up to six of the 10 ft 10 in. (3.30 m) tower sections. Table 8 provides a list of possible tower heights.

Table 8. Possible Tower Heights.

NUMBER OF TOWER SECTIONS	TOWER HEIGHT (H)
Cap, base, and pivot unit	3 ft 8 1/4 in. (1.13 m)
With 1 tower section	14 ft 6 1/4 in. (4.43 m)
With 2 tower sections	25 ft 4 1/4 in. (7.73 m)
With 3 tower sections	36 ft 2 1/4 in. (11.04 m)
With 4 tower sections	47 ft 1/4 in. (14.34 m)
With 5 tower sections	57 ft 10 1/4 in. (17.65 m)
With 6 tower sections	68 ft 8 1/4 in. (20.95 m)

TOWER LOCATION

Distance from the tower to the waterline. Before erecting the towers, determine exactly where on each shore to place the towers. Both towers are placed an equal distance from the waterline. For planning purposes, determine this distance (A) in feet, by using the formula:

$$A = \frac{L - G}{2}$$

where L is the distance between towers in feet and G is the river width in feet.

This calculation, basically, centers the two towers on the river.

BRIDGE ANCHORAGE (Contd)

TOWER LOCATION (Contd)

Distance from the bridge centerline to the tower. When using an overhead cable system as an upstream anchorage system, the tower is placed some distance upstream from the bridge centerline. Conversely, if the overhead cable system is used as a downstream anchorage system, the tower is located some distance downstream from the bridge centerline. This distance, the Bridge to Tower Offset (O_1), can be calculated as follows:

NOTE

If the near- or far-shore bank or tower height differ, this step must be performed separately for each shore.

If the bank height (BH) is less than or equal to 15 ft (4.6 m), then:
O_1 = H + 50 ft (15.3 m)
where H is the actual tower height in feet.

If the bank height (BH) is greater than 15 ft (4.6 m), then:
O_1 = H + BH + 35 ft (10.7 m)
where H is the actual tower height in feet and BH is the actual bank height in feet.

This distance provides a suitable slope for the cable running from the bridge to the tower.

DEADMAN DESIGN

The use of a deadman on each shore is the preferred method of securing the overhead cable(s). (Refer to figures 14 and 15). These deadmen provide the holding power for the entire overhead cable system. Because of this, accurate deadman design is critical. Construct deadmen using logs, rectangular timber, steel beams, or similar objects, buried in the ground with a guy line or sling attached to the deadman's center. The holding power of a deadman is affected by the frontal bearing area, mean (average) depth, angle of pull, deadman material, and soil conditions.

a. Available materials. The first step in designing a deadman is to identify the dimensions of all available materials. Generally, select the timber with the largest timber face or a log with the greatest diameter. Use the largest dimension of the proposed deadman as the deadman face (D_f). The smaller dimension is defined as the deadman thickness (D_t).

b. Depth of deadman. To determine the depth to which a deadman should be buried, three rules must be considered.

(1) There must be at least 1 ft (0.3 m) of undisturbed soil between the ground water level and the bottom of the deadman. Therefore, the maximum mean deadman depth (D_{Dmax}) is defined as:

$$D_{Dmax} = GWL - 1\ ft - \frac{(D_f)}{2}$$

where GWL is the depth of the ground water level in feet. D_f is the size of the deadman face in feet, and D_{Dmax} is the maximum mean depth of the deadman (the maximum depth that the center of the deadman can be buried) in feet.

BRIDGE ANCHORAGE (Contd)

DEADMAN DESIGN (Contd)

(2) The minimum mean depth of a deadman is 3 ft (0.9 m). There is a real danger of the deadman being pulled out of the ground at depths of less than 3 ft (0.9 m).

(3) The maximum mean depth of a deadman is 7 ft (2.1 m). Beyond this depth, the advantage achieved in holding power is offset by the difficulty in emplacing the deadman.

To determine the actual mean depth of deadman (depth to the center of the deadman), calculate DDmax using the formula given earlier. Compare this value to the minimum and maximum values given in rules 2 and 3, and adjust the depth as necessary.

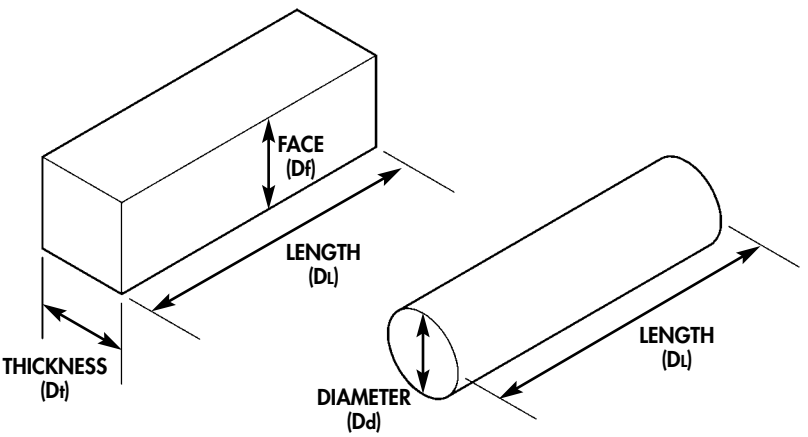


Figure 14. Determination of Deadman Dimensions.

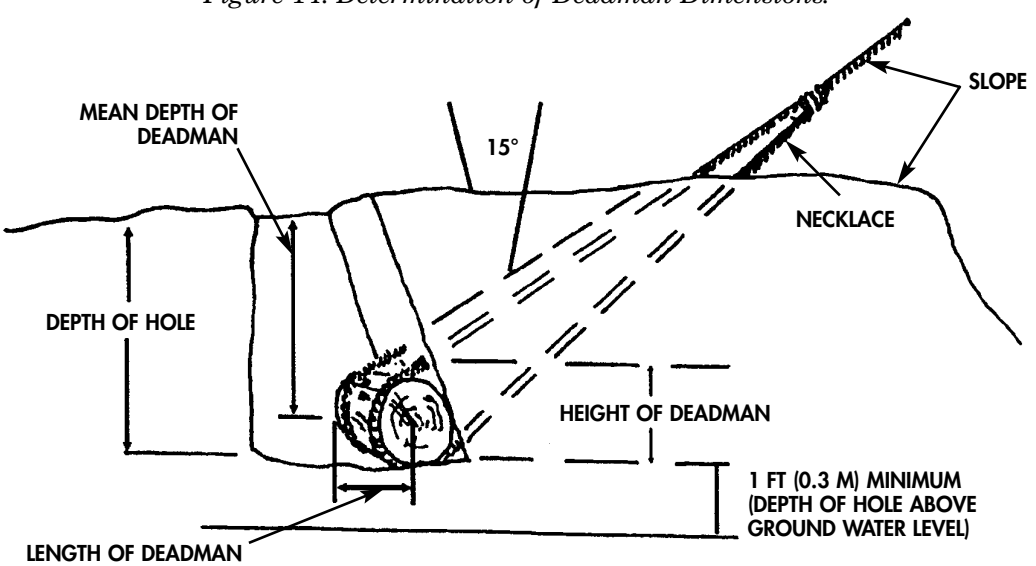


Figure 15. Depth of Deadman.

BRIDGE ANCHORAGE (Contd)

LENGTH OF DEADMAN

Deadmen are designed to have lengths which enable them to resist the breaking strength of the cable attached to them. The required length and thickness are based on allowable soil bearing with 1 ft (0.3 m) of length added to compensate for the width of the cable trench. The formula for the determination of deadman length Dt is:

$$Dt = \frac{CC}{(HP \times Df)} + 1$$

where CC is cable capacity (breaking strength) HP is the required holding power of the deadman.

Df is the deadman face in feet (for log deadmen, use log diameter).

This is the general formula for the determination of the required deadman length in all circumstances. In Appendix C of TC 5-210, the values for CC and HO have been divided by 1,000 for ease of calculation. Actual breaking strengths (CC) or cables were provided in table 7. The actual holding power of deadmen in loamy soil is provided in table 9.

NOTE

Table 9 assumes the deadman will be buried in loamy soil. For rock or hardpan soil, multiply the values in table 9 by a factor of 5. For fine-grained or sandy soil, multiply these values by a factor of 1/2.

The tower-to-deadman slope used in table 9 represents an approximation of the slope of the cable running from the tower to the deadman, as shown in figure 16. Since this value cannot be accurately measured until the exact location of the deadman is known, an estimation is made. The tower-to-deadman slope should fall between a 1:1 slope (45 degrees) and a 1:4 slope (14 degrees). If it is not possible to obtain an accurate estimate, then assume the worst case (1:1) slope.

Table 9. Holding Power of Deadmen in Loamy Soil.

REQUIRED HOLDING POWER (HP) IN LB/SQ FT				
DEPTH OF DEADMAN (DD)	TOWER-TO-DEADMAN SLOPE			
	1:1 (45°)	1:2 (26.5°)	1:3 (18.5°)	1:4 (14°)
3	950	1,300	1,450	1,500
4	1,750	2,200	2,600	2,700
5	2,800	3,600	4,000	4,100
6	3,800	5,100	5,800	6,000
7	5,100	7000	8,000	8,400
Notes: 1. For hardpan or rock, multiply the HP by 5. 2. For fine-grained soils with high moisture content, multiply the HP by				

BRIDGE ANCHORAGE (Contd)

LENGTH OF DEADMAN (Contd)

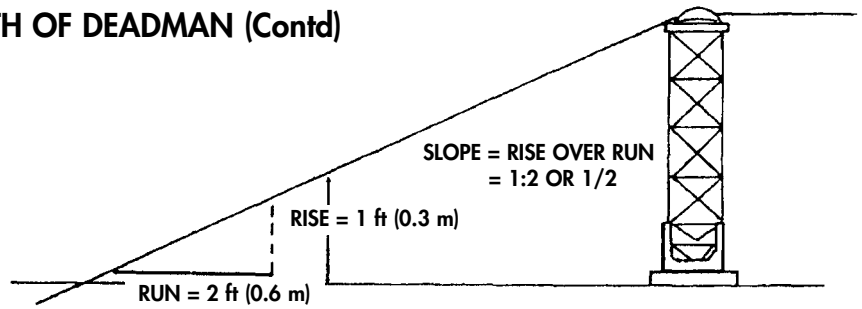


Figure 16. Estimation of Tower-to-Deadman Slope.

DEADMAN THICKNESS

After calculating the required length of the deadman, check the thickness of the deadman to ensure that the deadman will not break due to an insufficient length to thickness ratio.

For timber:
$\frac{Dt}{Df}$ must be less than or equal to 9.

For logs:
$\frac{DL}{diameter}$ must be less than or equal to 5.

If the length to thickness ratio is exceeded, decrease the length requirements. This can be accomplished by one of the following methods:

- Increase the mean depth of deadman (DD).
- Increase the tower-to-deadman slope ratio (the cable should become more horizontal).
- Increase the thickness of the deadman by selecting a deadman with a greater thickness or by using two timbers, placed back to back.

TOWER-TO-DEADMAN DISTANCE

The actual distance between the tower and the deadman can be described by the formula:

$$C = \frac{H + DD}{slope}$$

where H is the actual tower height in feet, DD is the mean depth of deadman in feet, and the slope refers to the tower-to-deadman slope ratio.

Given that the minimum tower-to-deadman slope is 1:1, the minimum value for C is described as:

$$Cmax = H + DD$$

Since the maximum tower-to-deadman slope ratio is 1:4 (or 1/4), the maximum value for C is:

$$Cmax = 4x(H + DD)$$

Place the deadman at any distance from the tower, as long as that distance falls between these minimum and maximum values. Once the deadman is positioned, make a check of the tower-to-deadman slope to ensure that the actual slope falls between the criteria given (1:1 and 1:4).

BRIDGE ANCHORAGE (Contd)

TOWER-TO-DEADMAN OFFSET

Just as it was necessary to calculate the distance at which to place the tower upstream from the bridge centerline, it is now necessary to determine the distance at which to place the deadman upstream from the tower. This distance is called the tower-to-deadman offset, or O_2. To calculate, use the formula:

$O_2 = (C \times O_2 \text{ ft})$

where O_2 ft is a factor determined from table 10, and C is the tower-to-deadman distance (in feet).

A slightly more accurate means of positioning the deadman is to determine the exact angle at which the deadman should be placed in relation to the tower (refer to table 11) and place the deadman at the calculated distance (C) along that angle. The slight difference between the two methods is negligible to the extent that the difference will not cause the system to fail.

Table 10. Determination of the Deadman Offset Factor (O_2).

DEADMAN OFFSET FACTOR (O_2)					
TYPE OF ASSEMBLY	CURRENT VELOCITY				
	3 feet/sec (0.9 meters/sec)	5 feet/sec (1.5 meters/sec)	7 feet/sec (2.1 meters/sec)	9 feet/sec (2.7 meters/sec)	11 feet/sec (3.4 meters/sec)
Normal	.09	.11	.14	.17	.19
Reinforced	.11	.14	.17	.19	.23

Table 11. Alternate Means of Determining Deadman Offset.

DEADMAN OFFSET ANGLE (Φ)					
TYPE OF ASSEMBLY	CURRENT VELOCITY				
	3 feet/sec (0.9 meters/sec)	5 feet/sec (1.5 meters/sec)	7 feet/sec (2.1 meters/sec)	9 feet/sec (2.7 meters/sec)	11 feet/sec (3.4 meters/sec)
Normal	5°	6.5°	8°	9.5°	11°
Reinforced	6.5°	8°	9.5°	11°	13°

BRIDGE ANCHORAGE (Contd)

BEARING PLATE DESIGN

The final step is to design a bearing plate for each deadman. Whenever a deadman composed of wood is used, apply a bearing plate to prevent the cable from cutting into the wood. The two types of bearing plates are flat and formed, each with its particular advantages. The flat plate is easily fabricated. The formed bearing plate can be made of a thin piece of steel. (Refer to figure 17).

Flat. Given the size of the deadman face and the diameter of the overhead cable, flat bearing plates can be designed using table 12.

Formed. Given the size of the deadman face and the diameter of the overhead cable, the dimensions for a formed bearing plate can be determined using table 13.

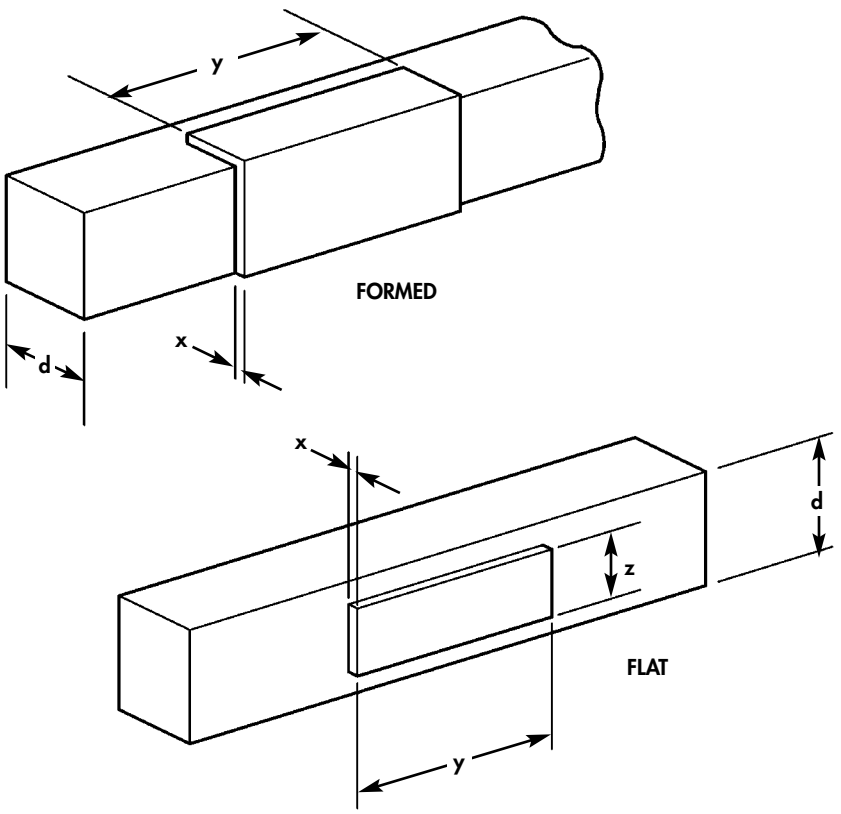


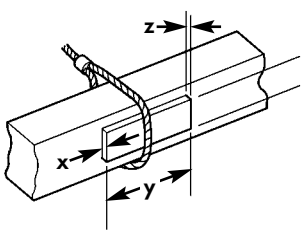
Figure 17. Design of Formed and Flat Bearing Plates.

BRIDGE ANCHORAGE (Contd)

BEARING PLATE DESIGN (Contd)

Table 12. Determination of Bearing Plate Dimensions x, y, and z (in Inches) for Flat Bearing Plates.

Deadman face (D_f)		Cable size (C_D)								
		3/8″	1/2″	5/8″	3/4″	7/8″	1″	1–1/8″	1–1/4″	1–1/2″
8″	x	7/16″	7/8″	1–1/4″						
	y	4″	8″	11″						
	z	6″	6″	6″						
10″	x	7/16″	11/16″	1″	1–3/8″					
	y	4″	6″	9″	12″					
	z	8″	8″	8″	8″					
12″	x	7/16″	9/16″	13/16″	1–1/8″	1–7/16″				
	y	4″	5″	7″	10″	13″				
	z	10″	10″	10″	10″	10″				
14″	x	7/16″	7/16″	11/16″	7/8″	1–1/4″	1–9/16″	2″		
	y	4″	4″	6″	8″	11″	14″	18″		
	z	12″	12″	12″	12″	12″	12″	12″		
16″	x	7/16″	7/16″	9/16″	13/16″	1–1/8″	1–3/8″	1–11/16″	2–1/8″	
	y	4″	4″	5″	7″	10″	12″	15″	19″	
	z	14″	14″	14″	14″	14″	14″	14″	14″	
18″	x	7/16″	7/16″	7/16″	11/16″	7/8″	1–1/4″	1–9/16″	1–13/16″	
	y	4″	4″	4″	6″	8″	11″	14″	16″	
	z	16″	16″	16″	16″	16″	16″	16″	16″	
20″	x	7/16″	7/16″	7/16″	11/16″	7/8″	1–1/8″	1–3/8″	1–11/16″	
	y	4″	4″	4″	6″	8″	10″	12″	15″	
	z	18″	18″	18″	18″	18″	18″	18″	18″	
24″	x	7/16″	7/16″	7/16″	9/16″	11/16″	7/8″	1–1/8″	1–3/8″	1–7/8″
	y	4″	4″	4″	5″	6″	8″	10″	12″	17″
	z	22″	22″	22″	22″	22″	22″	22″	22″	22″



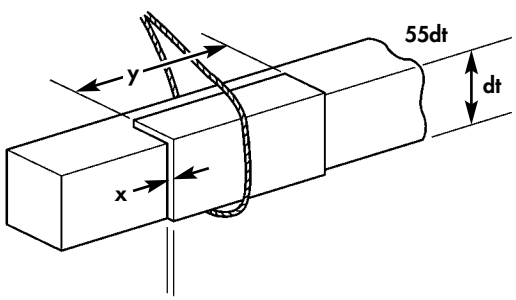
Note.
The values in this table are based upon the use of Improved Plough Steel (IPS) cable, where:
x = bearing plate thickness
y = bearing plate length
z = bearing plate face

BRIDGE ANCHORAGE (Contd)

BEARING PLATE DESIGN (Contd)

Table 13. Determination of Bearing Plate Dimensions x and y (in Inches) for Formed Bearing Plates.

Deadman face (D_f)		Cable size (C_D)								
		3/8"	1/2"	5/8"	3/4"	7/8"	1"	1–1/8"	1–1/4"	1–1/2"
6"	x	1/8"	3/16"							
	y	4"	7"							
8"	x	1/8"	1/8"	3/16"						
	y	3"	5"	8"						
10"	x	1/8"	1/8"	1/8"	1/4"					
	y	2"	4"	7"	10"					
12"	x	1/8"	1/8"	1/8"	1/8"	1/4"				
	y	2"	4"	6"	8"	11"				
14"	x	1/8"	1/8"	1/8"	1/8"	1/8"	1/4"	5/16"		
	y	2"	3"	5"	7"	9"	12"	15"		
16"	x	1/8"	1/8"	1/8"	1/8"	1/8"	3/16"	1/4"	3/8"	
	y	2"	2"	4"	6"	8"	11"	14"	17"	
18"	x	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	3/16"	1/4"	
	y	2"	2"	4"	6"	7"	10"	12"	15"	
20"	x	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	3/16"	3/8"
	y	2"	2"	3"	5"	7"	9"	11"	13"	19"
24"	x	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/4"
	y	2"	2"	3"	4"	6"	8"	9"	11"	16"
30"	x	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"
	y	2"	2"	3"	4"	5"	6"	7"	9"	13"
36"	x	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"
	y	2"	2"	2"	3"	4"	5"	6"	8"	10"



BRIDGE ANCHORAGE (Contd)

INSTALLATION OF AN OVERHEAD CABLE ANCHORAGE SYSTEM

When constructing an overhead cable system to be used as the primary (upstream) anchorage system for a bridge, construct this system at the same time as the bridge. As bridge bays are brought and connected to the bridge, connect them to the overhead cable using bridle lines. Usually, one engineer platoon has sufficient personnel to construct a complete single cable overhead anchorage system. When practical, the work on the far shore should progress simultaneously with the work on the near shore.

a. Organization. Table 14 provides a list of tasks to accomplish when constructing an overhead cable system. A suggested crew size for each task is also given.

Table 14. Organization for Construction of Overhead Cable System.

TASK	CREW SIZE NCO	EM
Far shore:		
Install deadman	1	3
Erect tower	1	8
Adjust cable to tower and deadman	1	2
Install approach guys	1	2
Near shore:		
Install deadman	1	3
Erect tower	1	8
Adjust cable to tower and deadman	1	2
Install approach guys	1	2
Over the water:		
Transport cable to far shore	1	2
Attach bridle lines	1	4

b. Installation of Deadman.

(1) Cut deadman to length and attach bearing plates as specified by the design procedure.

(2) When installing a deadman, dig a hole or trench perpendicular to the cable to be attached to the deadman. Place the deadman in this hole. Dig a sloping trench, which has the same slope as the cable, in front of the hole in which the deadman is placed. This will allow the cable free access to the deadman. (Refer to figure 15).

BRIDGE ANCHORAGE (Contd)

INSTALLATION OF AN OVERHEAD CABLE ANCHORAGE SYSTEM (Contd)

c. Erection of Towers.

(1) To assemble the anchor tower, anchor the tower base, rig the guy lines, and provide deadmen or hold-fasts for the tower guy lines. Begin installation of the deadman to which the overhead cable will be attached prior to tower erection.

(2) Install tower base plates and chain holdfasts.

(3) Connect the pivot unit, the required number of tower sections (from the tower design), and the tower cap. Bolt the tower cap to the top tower section. The tower cap has a 3-in. (7.6-cm) saddle, which must be aligned to receive the overhead cable. For multiple cable systems, ensure that the two-cap adapter with two wire rope slings is attached to the top tower section.

(4) Before raising the tower, secure the guy lines to the tower cap. Take care not to tangle or foul these guy lines. Place the erection arm in the pivot unit and pin it to the tower base to keep the pivot unit in the base socket.

(5) Raise the tower. For taller towers, some lifting device may be needed. (Refer to figure 18). Any crane, M728 combat engineer vehicle, or M88 recovery vehicle can be used.

(6) Adjust the tower guy lines as required.

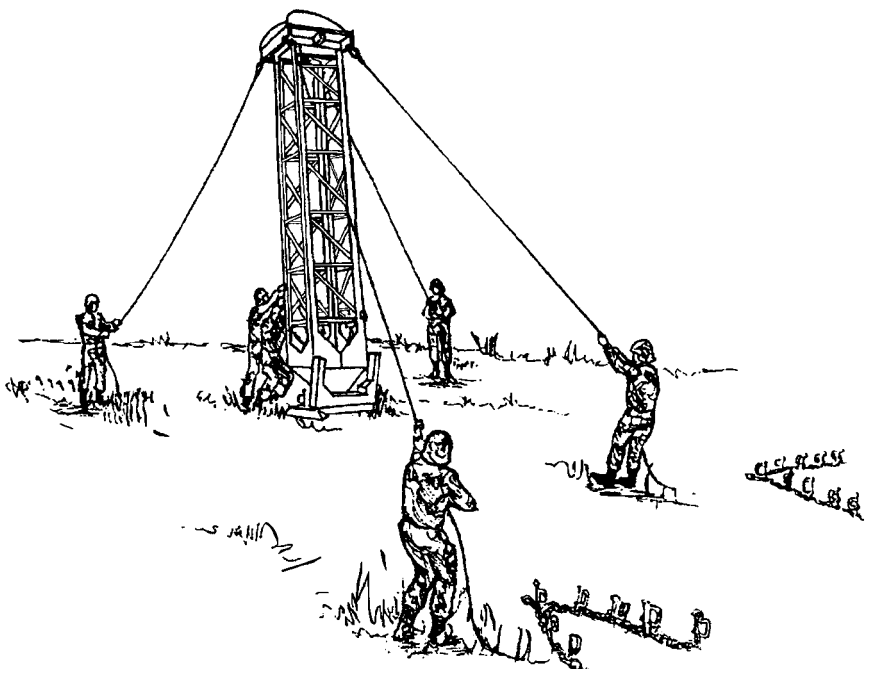


Figure 18. Raising the Tower.

BRIDGE ANCHORAGE (Contd)

INSTALLATION OF AN OVERHEAD CABLE ANCHORAGE SYSTEM (Contd)

d. Installing the Overhead Cable.

(1) Emplace anchor cables by mounting the cable reel on the near shore and tow the free end of the cable across the river using a BEB. If the stream bottom is hard and reasonably clear of shelf rocks and snags, this method is most effective. The use of intermediate floating supports, in areas where a large number of potential snags exist on the river bottom, may be of good use. Care must be taken when using intermediate floats, particularly in rivers with a swift current, to ensure that the boat can overcome the drag developed by towing the cable.

(2) Once the cable is ready for attachment to the deadman, place the cable under the deadman and around it. If the cable cuts into the ground, place a log or board under the cable at the outlet of the sloping trench.

(3) Measure and mark the initial sag distance from the point of support on each tower. (Refer to figure 20). Establish a line of sight between the marks. Tighten the cable until its lowest point touches the line of sight. This adjustment must be made before the bridge is connected to the cable. Tighten cable clips frequently as more strain is placed on the cable when bridle lines from the floats are attached. After the cable has been placed in service and is under tension, tighten the cable clips again to compensate for any decrease in cable diameter caused by the load and ensure equal distribution of load between the clips.

(4) Use the cable clips to secure the cable. Attach these clips above the ground for ease of tightening and maintenance.

e. Attachment of Bridle Lines. Once the overhead cable is secured, the bridle line crew can begin connecting the bridle lines from each float to the overhead cable. Bridle lines are normally 32 ft (9.8 m) long sections of 1-in. (2.5-cm) manila rope and are attached to the pontons in the ponton assembly area. Use bridle line connectors (refer to figure 19) to attach the bridle lines to the overhead cable.

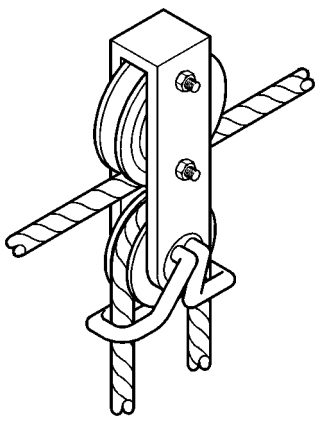
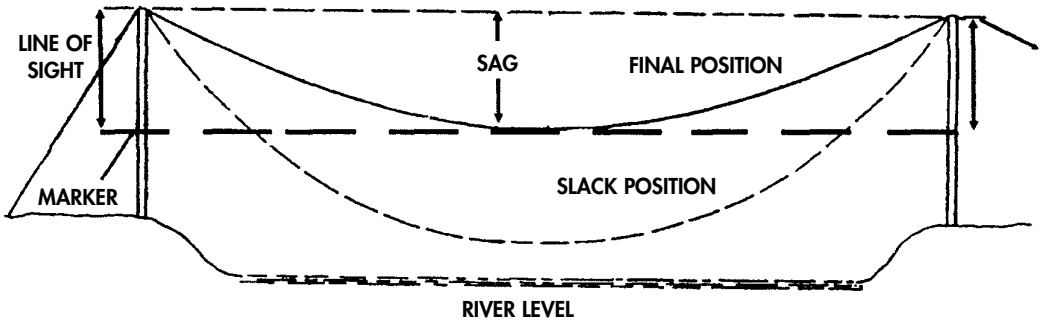


Figure 19. Bridle Line Connector

BRIDGE ANCHORAGE (Contd)

INSTALLATION OF AN OVERHEAD CABLE ANCHORAGE SYSTEM (Contd)



NOTE: VERTICAL DISTANCES ARE EXAGGERATED.

Figure 20. Measurement of Initial Sag.

Bowline. To tie a bowline knot, refer to the five steps illustrated in figure 21.

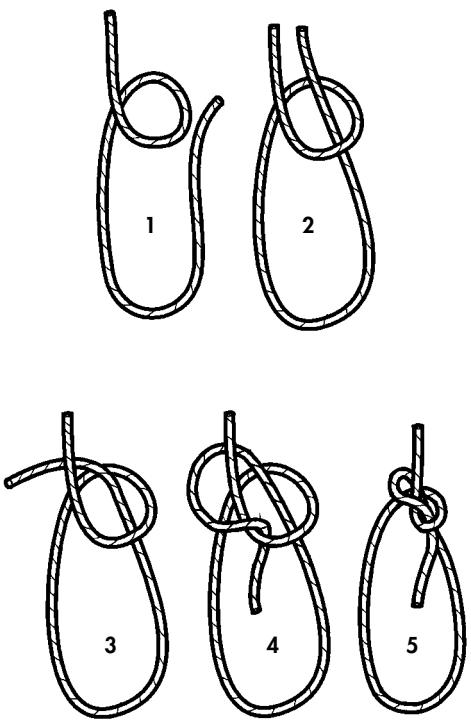


Figure 21. Bowline.

END OF WORK PACKAGE

BRIDGE OPERATION
THIS WORK PACKAGE SUPERSEDES WP 0036 00, DATED 8 APRIL 2003

WARNING

All bridge personnel must wear approved life jackets and unblouse pants from boots while on the bridge. Failure to comply may result in injury or death to personnel.

Exercise caution when walking near centerline of roadway; the ponton alignment lugs project above the roadway surface on interior bays and constitute a tripping hazard. Failure to comply may result in injury to personnel.

a. Bridge Length Options

NOTE

It is possible to assemble a bridge in the following lengths.

Table 1. Improved Ribbon Bridge Lengths.

NUMBER OF INTERIOR BAY SECTIONS	NUMBER OF RAMP BAY SECTIONS	BRIDGE LENGTH (SHORE ENDS EXTENDED)	
		FEET	METERS
1	2	65.8	20.07
2	2	87.8	26.78
3	2	109.8	33.48
4	2	131.8	40.19
5	2	153.8	46.89
6	2	175.8	53.60
7	2	197.8	60.30
8	2	219.8	67.01
9	2	241.8	73.71
10	2	263.8	80.42
11	2	285.8	87.12
12	2	307.8	93.83
13	2	329.8	100.53
14	2	351.8	107.24
15	2	373.7	113.94
16	2	395.7	120.65
17	2	417.7	127.35
18	2	439.9	134.11

BRIDGE OPERATION (Contd)

b. Bridge Length Restrictions

NOTE

For moving bodies of water in minimum water depth of 2.6 ft (0.8 m), the bridge length is restricted as follows:

Table 2. Improved Ribbon Bridge Length Restrictions.

INTERIOR BAYS	BRIDGE LENGTH	WATER SPEEDS
Up to 6	175.8 ft (53.60 m)	max. 5 feet/sec (1.5 meters/sec)
Up to 8	219.8 ft (67.01 m)	max. 4.3 feet/sec (1.3 meters/sec)
Up to 10	263.8 ft (80.42 m)	max. 3.6 feet/sec (1.1 meters/sec)

c. Required Conditions for Bridges

Table 3. Improved Ribbon Bridge Operation MLC Ratings.

IRB BRIDGE MLC RATINGS	WATER FLOW VELOCITY FEET/SEC (METERS/SEC)					
CROSSING TYPE	0.0	1-2 (0.3-0.6)	3-4 (0.9-1.2)	5-6 (1.5-1.8)	7-8 (2.1-2.4)	9-10 (2.7-3.0)
NORMAL						
Track	105	105	100	90	85	55
Wheel	105	105	100	90	85	55
CAUTION						
Track	115	115	111	101	96	65
Wheel	115	115	111	101	96	65
RISK						
Track	140	134	122	112	107	80
Wheel	140	134	122	112	107	80
TWO-LANE						
Track	20	20	20	20	20	0
Wheel	20	20	20	20	20	0

BRIDGE OPERATION (Contd)

Notes:

1. The following conditions will reduce the ratings from those given above. The bridge commander must monitor bow and roadway freeboard as well as trim to ensure that safe crossing conditions are maintained in the following conditions:
   (a) Rough, choppy, or turbulent water in current speeds above 4 feet/sec (1.2 meters/sec) will reduce ratings from those given in the preceding chart.
   (b) Shallow fast water of less than 6 ft 7 in (2.0 m) water depth combined with current speeds above 4 feet/sec (1.2 meters/sec) will reduce the ratings from those given the preceding chart.
   (c) Accumulations of snow, mud, or ice will reduce the ratings from those given above.
2. Bridge commander must observe leading edge of bridge and decrease crossing rating (Normal to Caution to Risk) or halt operations, as necessary, if continuous water is coming over bow dam.
3. These ratings apply for a bridge held in place with Mk I/II bridge erection boats BEBs). The number of bays that boats are to be spaced apart is based on the current speed and is as follows:

Table 4. Improved Ribbon Bridge Operation BEB Spacing.

CURRENT SPEED	NUMBER OF BAYS PER MK I/II BEB
0.0–5.0 feet/sec (0.0–1.5 meters/sec)	4
5.0–8.0 feet/sec (1.5–2.4 meters/sec)	3
8.0–9.0 feet/sec (2.4–2.7 meters/sec)	2
9.0–10.0 feet/sec (2.7–3.0 meters/sec)	Anchorage system necessary

Note: If the bridge is to remain in place for long periods or time, an anchorage system shall also be used.

4. Vehicle spacing:

Normal and two-lane (each lane):	100 ft (30 m) front to back
Caution:	170 ft (52 m) front to back
Risk:	Only one vehicle on bridge at a time

BRIDGE OPERATION (Contd)

5. Vehicle crossing speed:
   Normal and two-lane:
   Ramps:
   MLC 0–40: 15 mph (25 km/h)
   MLC 40 and over: 5 mph (8 km/h)
   Bridge:
   MLC 0–40: 25 mph (40 km/h)
   MLC 40 and over: 15 mph (25 km/h)
   Caution: 5 mph (8 km/h), Ramp and Bridge
   Risk: 3 mph (5 km/h), Ramp and Bridge
6. Vehicle lanes:
   Normal: Anywhere on 14 ft 9 in. (4.5 m) marked primary roadway
   Caution: On roadway centerline (minimum eccentricity)
   Risk: On roadway centerline (minimum eccentricity)
   Two-lane: Anywhere on each parallel 11 ft (3.4 m) marked roadway
7. Stopping, accelerating, turning, shifting of gears on the bridge is not permitted during Caution or Risk crossings and should be kept to a minimum during Normal crossings.
8. For two-lane traffic, ramp plates should be used to aid two-lane traffic on and off the bridge. Lane traffic should be staggered, with vehicles entering bridge at a minimum of 50 ft (15 m) intervals into alternate lanes.

WARNING

When performing bridge operations using IFB bays interconnected with IRB bays, observe hybrid tabled data (table 5). Failure to comply may result in damage to equipment and injury or death to personnel.

NOTE

When connecting IFB bays with IRB bays, refer to TM 5-5420-209-12 for operating instructions unique to IFB bays.

9. When bridges are built with IFB bays intermixed with IRB bays, the bridge ratings are reduced to IFB bridge ratings. As much as possible within the scope of a mission, keep the mixing of bays to a minimum, connect all IFB bays together, and connect all IRB bays together with only one IFB-IRB interface. Vehicle crossing speeds and vehicle spacing will be identical to those given above. The following MLC rating table applies whenever IFB bays are intermixed with IRB bays.

BRIDGE OPERATION (Contd)

Table 5. Improved Ribbon Bridge Operation Hybrid IRB/IFB MLC Ratings.

HYBRID IRB/IFB BRIDGE MLC RATINGS	WATER CURRENT VELOCITY FEET/SEC (METERS/SEC)					
CROSSING TYPE	0 (0.0)	1-2 (0.3-0.6)	3-4 (0.9-1.2)	5-6 (1.5-1.8)	7-8 (2.1-2.4)	9-10 (2.7 - 3.0)
NORMAL						
Track	75	75	75	70	60	30
Wheel	96	96	96	90	65	30
CAUTION						
Track	85	85	85	80	65	35
Wheel	105	105	105	100	75	35
RISK						
Track	100	100	100	90	75	40
Wheel	110	110	110	105	80	40

CAUTION

The following vehicles have known bank height limitations and bank preparation prior to trafficking these vehicles may be required:

Heavy Equipment Transporter (HET) M1070 and M1000: Bank heights should not exceed 24 in. (0.6 m). This is limited by the tractor-trailer combination being limited to break-over/break-under angles of 15%. Severe damage can occur to the trailer if trafficking with bank heights higher than 24 in. (0.6 m) is attempted.

Abrams (M1) with Mine Clearing Blade (MCB): Bank heights should not exceed 18 in. (0.46 m). This is limited by clearance of the MCB with the bridge and ramp deck. Severe damage can occur to the bridge or ramp deck if trafficking with bank heights higher than 18 in. (0.46 m) is attempted.

Armor Vehicle Launched Bridge (AVLB): Bank heights should not exceed 46 in. 1.16 m). This is limited by clearance of the AVLB's bridge outrigger with the bridge and ramp deck. Severe damage can occur to the bridge or ramp deck if trafficking with bank heights higher than 46 in. (1.16 m) is attempted.

Other vehicles with low, far overhangs or terrain limitations should be closely monitored and adjustments made to bank heights as necessary.

Attempting to cross any vehicle above the recommended bank height or 79 in. (2 m), whichever is less, may result in damage to the bridge or ramp deck or the crossing vehicle itself.

BRIDGE OPERATION (Contd)

d. Ramp Bay Controls. Prior to allowing vehicle traffic on bridge, bridge OIC checks the ramp cylinder controls. The ramp bay should be let down additionally and pressed to the shore prior to vehicle crossing. Position both ramp cylinder pump levers in the DOWN position, and pump each pump 12 times (25 times if using only one pump. Then place the ramp cylinder pump levers in the TRANSPORT/ CROSSING position. This condition will allow the ramp bay to automatically adjust to any rise in water level. To compensate for falling water level, the pump lever must be placed in the UP position and raised to the desired height until the ramp bay obtains the lower water level. When the ramp bay obtains the proper water level, place the lever in the TRANSPORT/CROSSING position before allowing traffic on bridge. The maximum angle the ramp bay can rise is 20 degrees. Some vehicles, such as Armored Vehicle Launched Bridge (AVLB), must be guided onto the bridge because of the interference of vehicle equipment with bridge deck.

WARNING

Verify all transverse upper couplings and outer ponton locks are closed, and all longitudinal upper couplings between interior bays only have been opened, prior to allowing vehicle traffic, cargo, or nonessential personnel on bridge assembly. Failure to comply may result in damage to equipment or possible injury or death to personnel.

CAUTION

Before a bridge crossing is performed, the operator must ensure all sharp-edged stones are removed from tire treads, tracks, and roadway surface. Failure to comply may cause dents or puncture holes in roadway.

Stopping, accelerating, turning, and shifting of gears on the bridge is not permitted during Caution or Risk crossing, and should be kept at a minimum during Normal crossings. Failure to comply may result in damage to equipment.

Bridge commander must observe leading edge of bridge and decrease crossing rating (Normal to Caution to Risk) or halt operations, as necessary, if continuous water is coming over bow dam.

e. Traffic. Prior to allowing vehicle traffic on bridge, open longitudinal upper couplings on interior bays only. Note GVW of each vehicle. The capacities of the IRB at various stream velocities are found in tables 3 and 5. Observe bank height limitations and bank preparation prior to allowing vehicles to enter/exit bridge. (Refer to WP 0019 00, Table 1. Vehicle Compatibility vs. Bank Height). Vehicles may travel anywhere within the yellow lines on the roadway in normal crossings at reasonable speeds. Adjust position of ramp plates as necessary. In Caution crossings, all vehicles are restricted to the center of the bridge and to speeds up to 8 mph (12.87 km/h). A 150-ft (45.72-m) tail-to-head spacing is required for Caution crossings, while a 100-ft (30.48-m) spacing is required for Normal crossings. Risk crossings require the following: the vehicle must be on the roadway centerline, it must travel at less than 3 mph (4.83 km/h), and only one vehicle is permitted on the bridge at a time.

BRIDGE OPERATION (Contd)

(1) DISTANCE BETWEEN VEHICLES:

For standard load, 98 ft (30 m); for exceptional load, 164 ft (50 m).

(2) MAXIMUM CROSSING SPEEDS:

Under standard load up to	MLC 40	12.4 mph (20 km/h)
Under standard load up to	MLC 40	6.2 mph (10 km/h)
Under exceptional load	MLC 70	3.1 mph (5 km/h)

f. Shore erosion. During periods of heavy traffic, wave action may cause the shore to erode under the approach ramp end of the bay. The end span anchorage system (shore lines) must be taut to keep bridge movement and subsequent erosion to a minimum. If erosion becomes significant, the ramp bay should be raised and sand bags or other suitable fill material must be placed under ramp inner pontons. The ramp bay should be lowered and securely anchored prior to vehicle crossing. This condition can often be eliminated by adding an interior bay to the center of the bridge, and pulling the ramps farther onto the shore.

g. Leakage. At three-hour intervals during heavy traffic, inspect the ponton bilges for water by removing the bilge plugs from the roadway deck using T-wrench. If more than 6 in. (15 cm) of water is discovered, pump it out as described in WP 0053 00. If a hole is observed, monitor the bridge or raft's performance. If visual evidence of taking on water is observed (such as riding low in water), pump the water out while operations continue. If the water intake is faster than the pumping capacity, remove and replace the damaged bay. The damaged bay is deadlined until repairs are made.

h. Water debris. Do not allow debris to build up against upstream side of bridge. Remove debris immediately to prevent damage to bridge.

CAUTION

Ensure all gravel, rocks, mud, and other debris are removed from openings at unfolding stabilizer mounting brackets prior to folding bay. Failure to comply may cause jamming during folding operations.

Ensure cover plates are not removed from ramp bays until deck surface has been cleaned for bridge recovery and retrieval. Removing cover plates prior to cleaning will defeat purpose of using them. Failure to comply may result in rocks and debris entering hinge points and jamming outer pontons during bay retrieval.

i. Roadway debris. During periods of heavy traffic, dirt and foreign materials may accumulate on roadway surface. Remove rocks and debris from openings at unfolding stabilizer mounting brackets using clevis cleaning tool. (Refer to WP 0070 00). Wash down roadway surface using pressure pump as described in WP 0053 00.

END OF WORK PACKAGE

BRIDGE RECOVERY, SUCCESSIVE BAY METHOD

THIS WORK PACKAGE SUPERSEDES WP 0037 00, DATED 8 APRIL 2003

In the successive method, the bridge assembly is opened by disconnecting two interior bays near either shore (depending on where the retrieval equipment is available) and the shoreward endspans are then pulled back on shore approximately 5 ft (1.5 m). This creates the space required to disconnect and maneuver the first interior bay from the bridge assembly.

WARNING

All bridge personnel must wear approved life jackets and unblouse pants from boots while on the bridge. Failure to comply may result in injury or death to personnel.

Ensure debris boat is positioned sufficiently upstream and safety boat is positioned downstream per SOP prior to disassembling bridge. Failure to comply may result in damage to equipment and possible injury or death to personnel.

Exercise caution when walking near centerline of roadway; the ponton alignment lugs project above the roadway surface on interior bays and constitute a tripping hazard. Failure to comply may result in injury to personnel.

NOTE

Ensure roadway surface is free of rocks, mud, and debris prior to bridge recovery.

Sequence of bridge recovery may differ per unit SOP.

a. Disconnect handrail ropes from interior bay (1) and ramp bay (4). (Refer to WP 0010 00 and WP 0011 00).

WARNING

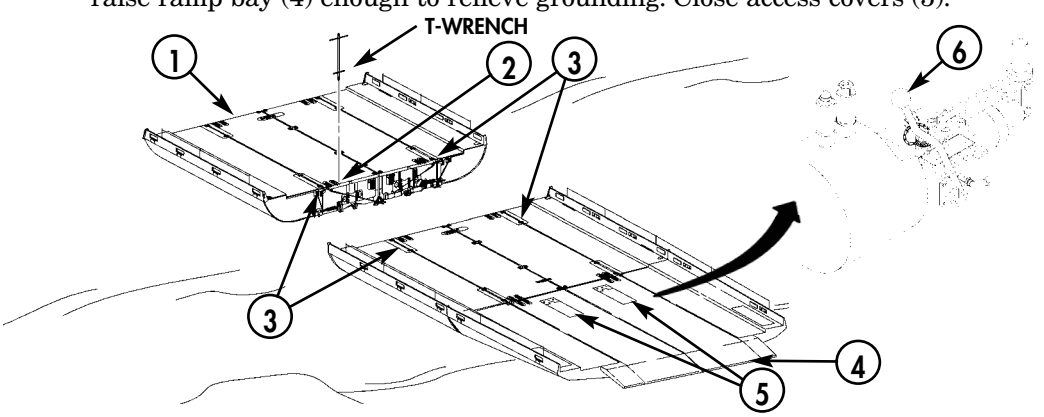
Do not place fingers under longitudinal upper couplings when opening them, or serious injury to personnel may result.

b. Open two longitudinal upper couplings (3) on interior bay (1) and ramp bay (4).

CAUTION

Ensure longitudinal upper couplings are opened prior to disengaging lower lock-drive pins, or damage to equipment may result.

c. Install T-wrench on jackscrew (2) of lower lock-drive and turn counterclockwise until lower lock-drive pin is fully retracted, then back off jackscrew (2) one full rotation.
d. Repeat step c for remaining lower lock-drive.
e. Open both pump access covers (5), set pump control valve levers (6) to UP, and raise ramp bay (4) enough to relieve grounding. Close access covers (5).



BRIDGE RECOVERY, SUCCESSIVE BAY METHOD (Contd)

f. Repeat step e for remaining ramp bay.

g. Have anchorage crew pull both shoreward endspans back on shore approximately 5 ft (1.5 m) and adjust anchorage as needed.

h. Have bridge boat secure to interior bay (3) being removed.

i. Lower handrails on interior bay (3). (Refer to WP 0011 00).

WARNING

Do not place fingers under longitudinal or transerve upper couplings when opening them, or serious injury to personnel may result.

NOTE

Recover bays per unit SOP.

j. Open two longitudinal upper couplings (2) on interior bays (3) and (9).

k. Install T-wrench on lower lockpin jackscrew (1) of lower lock-drive, and turn counterclockwise until lower lock-drive pin is fully retracted, then back off jackscrew (1) one full rotation.

l. Repeat step k for remaining lower lock-drive, and remove interior bay (3).

m. Move interior bay (3) to retrieval site.

n. Repeat steps h through m for remaining bays.

o. Disconnect and lower handrails on ramp bay (5). (Refer to WP 0010 00).

p. Open both pump access covers (6) and lower ramp bay (5) by moving pump control valve levers (10) to DOWN position. Move both levers (10) to TRANSPORT/CROSSING position and close access covers (6).

WARNING

Do not place fingers under longitudinal upper couplings when opening them, or serious injury may result.

q. Open two longitudinal upper couplings (4) on ramp bay (5) and interior bay (8)

CAUTION

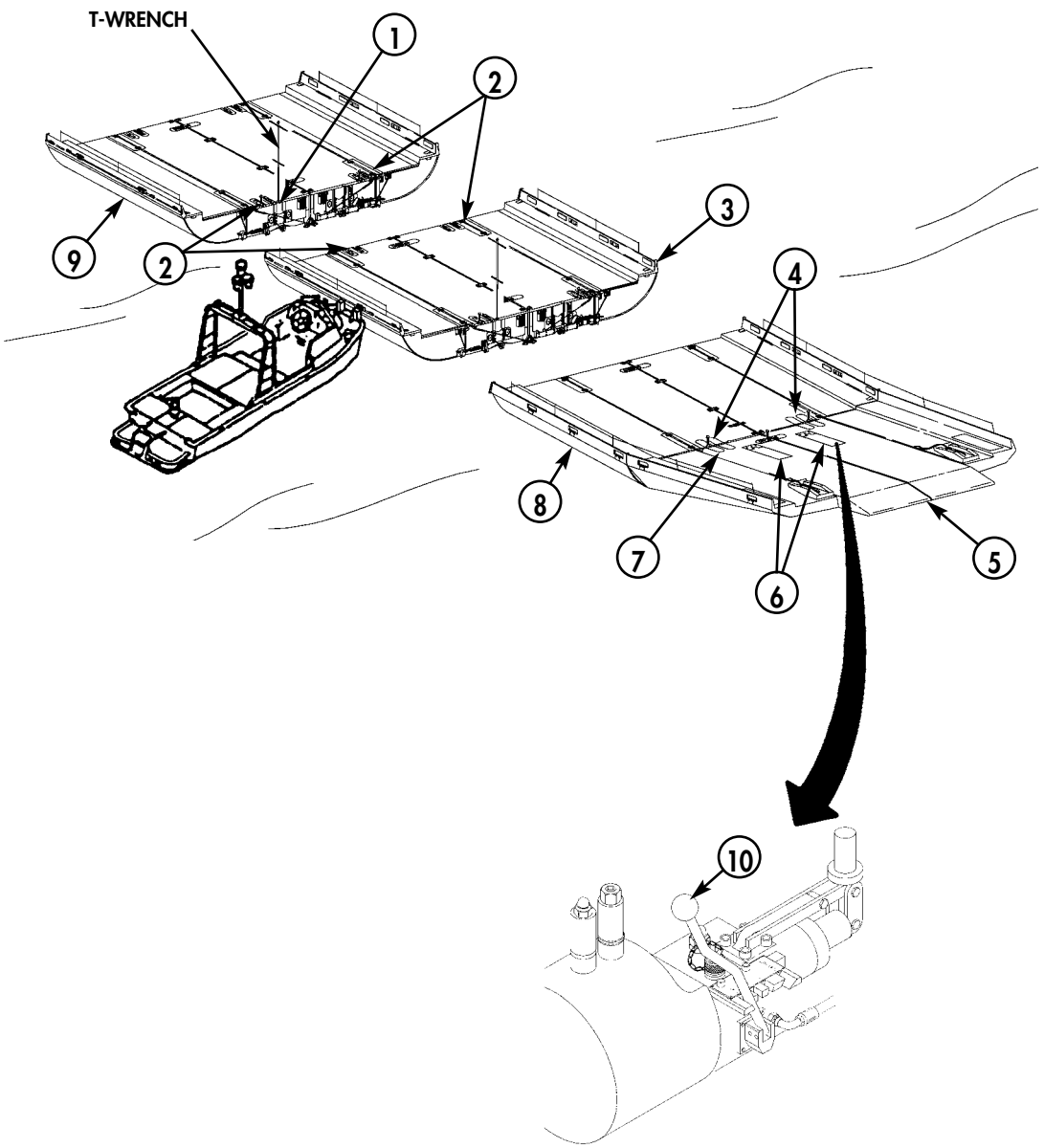
Ensure longitudinal upper couplings are opened prior to disengaging lower lock-drive pins or damage to equipment may result.

r. Install T-wrench on jackscrew (7) of lower lock-drive, and turn counterclockwise until lower lock-drive pin is fully retracted, then back off jackscrew (7) one full rotation.

s. Repeat step r for remaining lower lock-drive and remove interior bay (8) and ramp bay (5) to retrieval site.

t. Repeat steps o through s for remaining interior and ramp bays.

BRIDGE RECOVERY, SUCCESSIVE BAY METHOD (Contd)



END OF WORK PACKAGE

BRIDGE RECOVERY, SWINGING BRIDGE METHOD

THIS WORK PACKAGE SUPERSEDES WP 0038 00, DATED 8 APRIL 2003

In the swinging bridge method, the bridge assembly is swung upstream from the bridge line to the shore to allow disassembly along or near the shore where the current is slower than in the main flow of river. This makes bay-to-bay removal easier.

WARNING

All bridge personnel must wear approved life jackets and unblouse pants from boots while on the bridge. Failure to comply may result in injury or death to personnel.

Ensure debris boat is positioned sufficiently upstream and safety boat is positioned downstream per SOP prior to swinging bridge assembly. Failure to comply may result in damage to equipment and possible injury or death to personnel.

Exercise caution when walking near centerline of roadway; the ponton alignment lugs project above the roadway surface on interior bays and constitute a tripping hazard. Failure to comply may result in injury to personnel.

NOTE

Ensure roadway surface is free of rocks, mud, and debris prior to bridge recovery. (Refer to WP 0053 00.)

Sequence of bridge recovery may differ per unit SOP.

a. Open both pump access covers (3), move pump control valve levers (1) to UP position, and raise ramp bay (2) enough to relieve grounding. Close access covers (3).

CAUTION

Never swing bridge assembly downstream; always swing bridge assembly upstream to far shore.

b. Have appropriate number of bridge boats connected to bridge assembly for anchorage. (Refer to WP 0036 00, table 4).

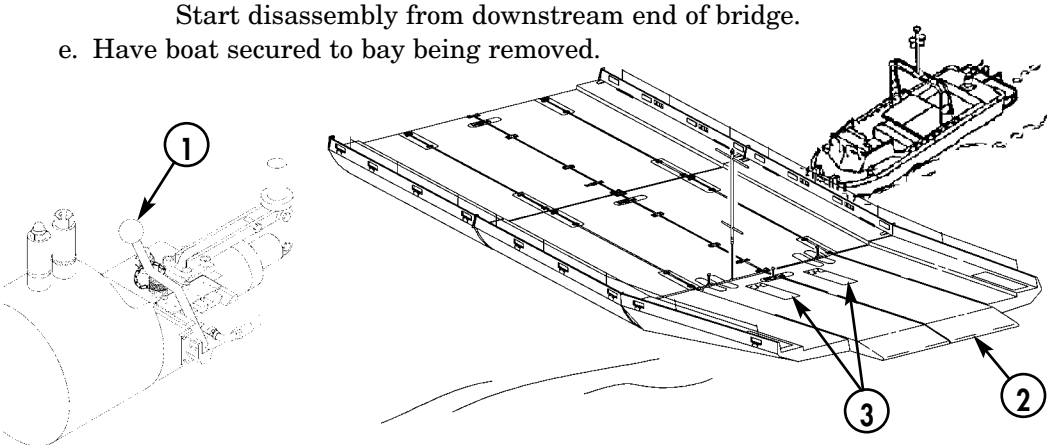
c. Remove anchorage from near shore ramp bay (2), swing bridge upstream while anchorage crew adjusts anchorage at far shore as needed.

d. Anchorage crew will temporarily anchor bridge assembly to far shore.

NOTE

Start disassembly from downstream end of bridge.

e. Have boat secured to bay being removed.



BRIDGE RECOVERY, SWINGING BRIDGE METHOD (Contd)

f. Open both pump access covers (5) and lower ramp bay (4) by moving pump control valve levers (9) to DOWN position. Move both levers (9) to TRANSPORT/CROSSING position and close access covers (5).

g. Disconnect and lower handrails on ramp bay (4). (Refer to WP 0010 00).

WARNING

Do not place fingers under longitudinal upper couplings when opening them, or serious injury to personnel may result.

h. Open two longitudinal upper couplings (3) on ramp bay (4) and interior bay (7).

CAUTION

Ensure longitudinal upper couplings are opened prior to disengaging lower lock-drive pins or damage to equipment may result.

i. Install T-wrench on jackscrew (6) of lower lock-drive, and turn counterclockwise until lower lock-drive pin is fully retracted, then back off jackscrew (6) one full rotation.

j. Repeat step i for remaining lower lock-drive and remove ramp bay (4) to retrieval site.

k. Disconnect and lower handrails on interior bay (7). (Refer to WP 0010 00).

WARNING

Do not place fingers under longitudinal upper couplings when opening them, or serious injury to personnel may result.

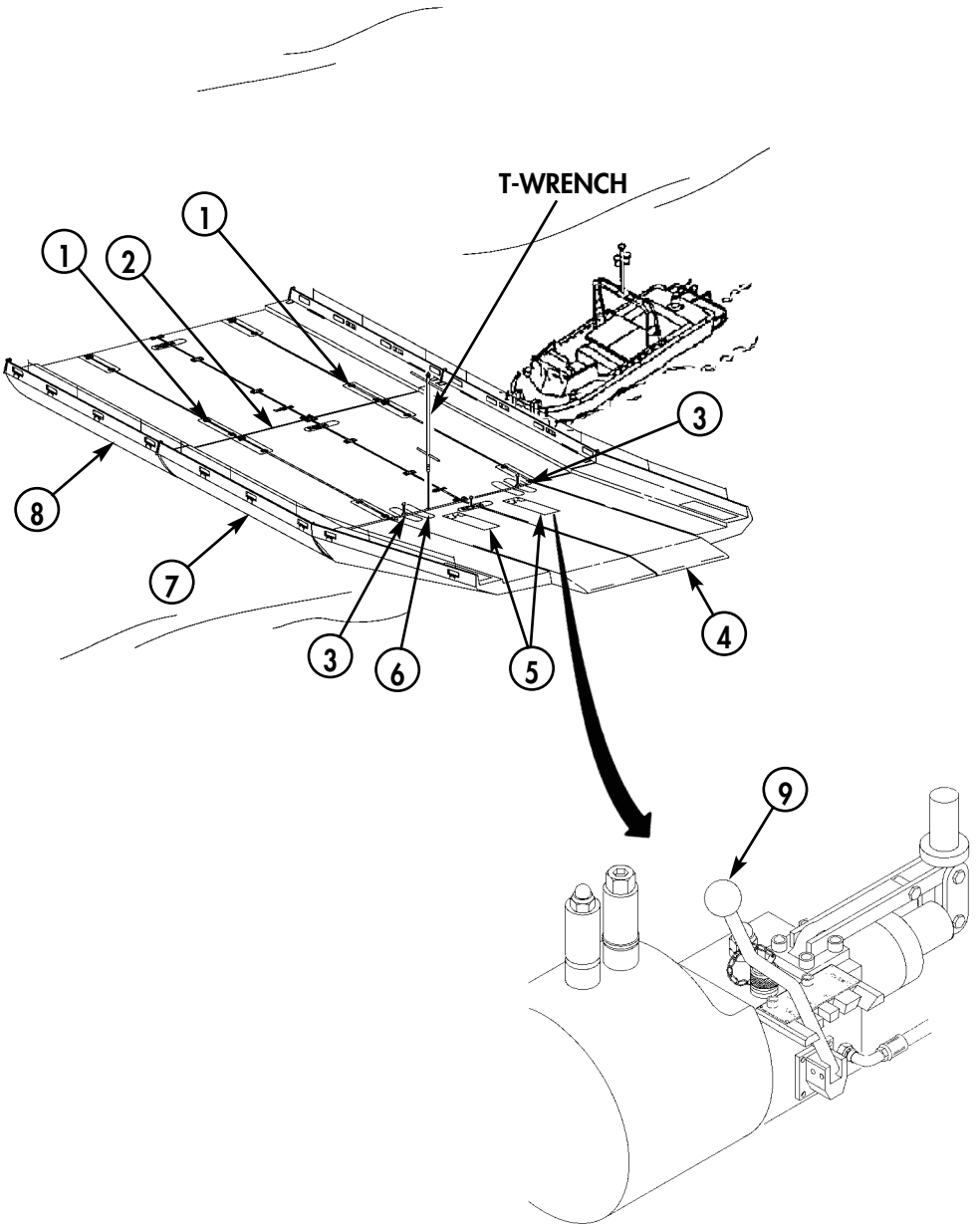
l. Open two longitudinal upper couplings (1) on interior bay (8) and interior bay (7).

m. Install T-wrench on jackscrew (2) of lower lock-drive, and turn counterclockwise until lower lock-drive pin is fully retracted, then back off jackscrew (2) one full rotation.

n. Repeat step m for remaining lower lock-drive, and remove interior bay (7). Move bay to retrieval site.

o. Repeat steps k through n for remaining bays.

BRIDGE RECOVERY, SWINGING BRIDGE METHOD (Contd)



END OF WORK PACKAGE

BAY RETRIEVAL

THIS WORK PACKAGE SUPERSEDES WP 0039 00, DATED 8 APRIL 2003

CAUTION

Assistant will act as a ground guide when maneuvering CBT and during operation of the LHS. Failure to comply may result in damage to equipment.

NOTE

During all transporter operations, the CBT operator will drive and be responsible for the operation of the LHS via the cab and remote control boxes. The assistant will act as a ground guide, be responsible for directing the operator using hand signals, and assist the operator as needed.

The BAP must be loaded on transporter prior to retrieval of bays.

a. Ensure launch site conditions exist for retrieval using CBT. (Refer to WP 0019 00, Launch Condition Requirements). If launch site conditions do not meet requirements for a controlled launch, refer to Recovery by Helicopter (WP 0040 00) or Operation Under Unusual Conditions (WP 0045 00).

CAUTION

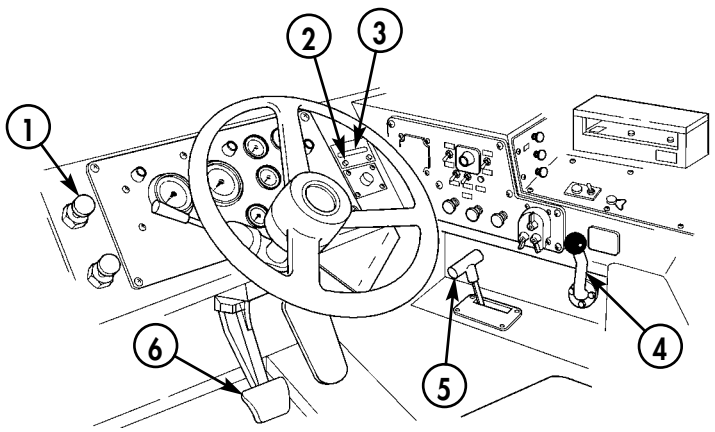
Do not move TRANSFER CASE shift lever when transmission is in gear, and do not move TRANSFER CASE lever or TRACTION CONTROL lever while vehicle is moving, or damage to drive line will result.

NOTE

After traction control is engaged, move vehicle forward to allow shift collars to fully engage.

b. Move TRANSFER CASE shift lever (4) to L (LO) and TRACTION CONTROL lever (3) to INTER-AXLE DIFF. LOCK. TRACTION CONTROL indicator (2) will light up.

c. Back up CBT on riverbank approximately 15 ft (4.6 m) from water, then apply service brake (6), move transmission selector lever (5) to N (neutral), and pull PARKING BRAKE control (1) out.



BAY RETRIEVAL (Contd)

NOTE

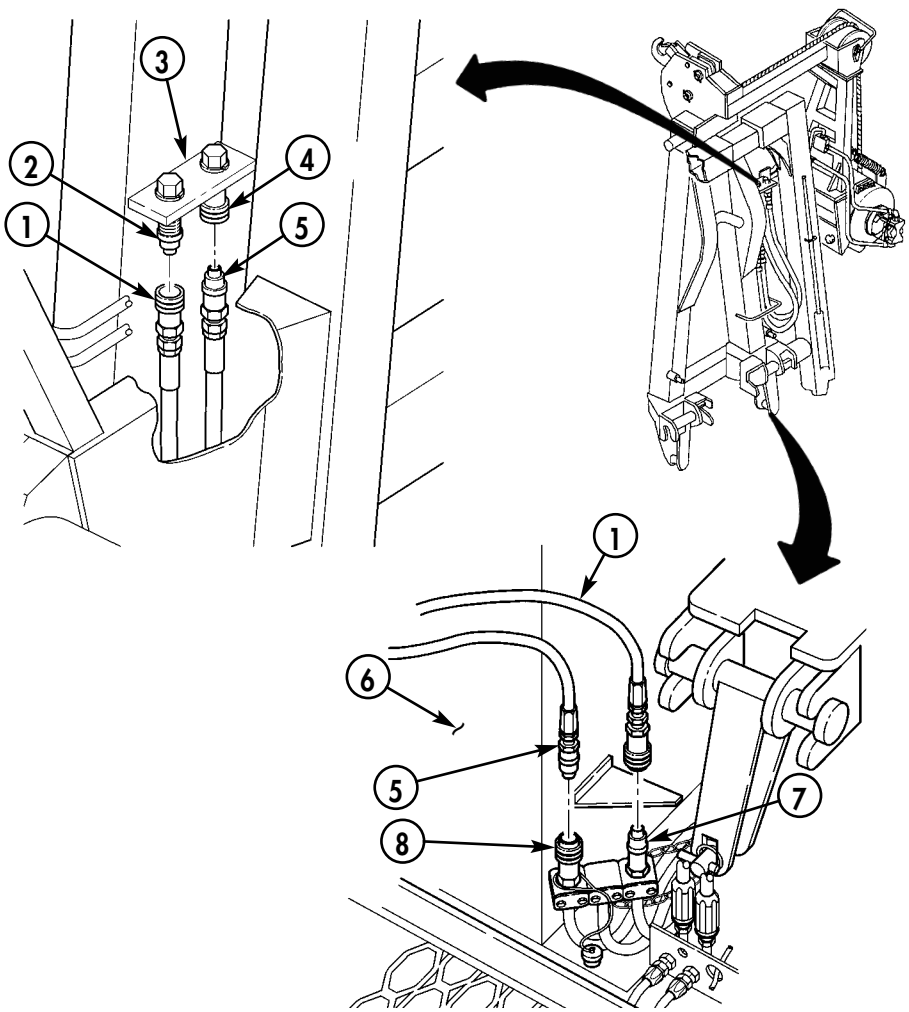
Perform steps e and f if BAP winch hydraulic hoses are not connected to the LHS couplings.

d. Disconnect winch hydraulic hoses (1) and (5) from stowage couplings (2) and (4), located on winch frame bracket (3).

CAUTION

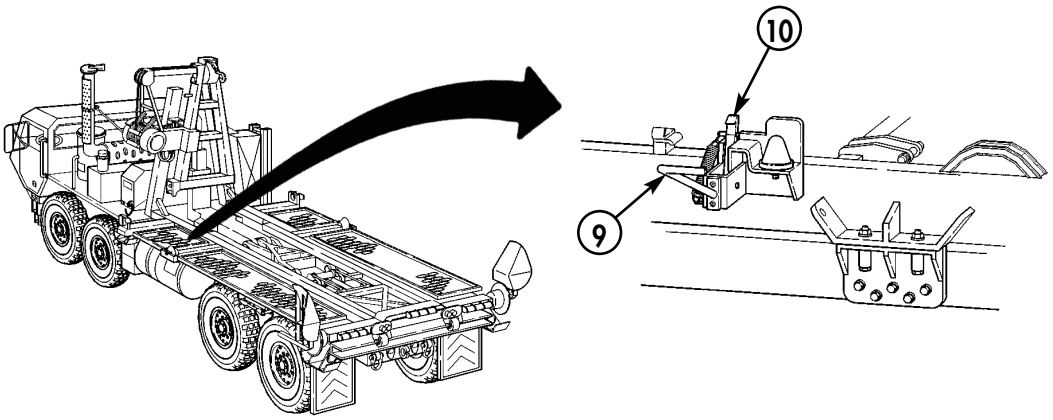
Ensure BAP winch hydraulic hoses are routed so they are free to move with the LHS hook arm or damage to hoses will result.

e. Connect winch hydraulic hoses (5) and (1) to LHS couplings (8) and (7), located on LHS hook arm (6).



BAY RETRIEVAL (Contd)

f. Check hold-down lock (10) at both sides of BAP to ensure they are in AUTO ENGAGED position; handles (9) have been pushed in.



WARNING

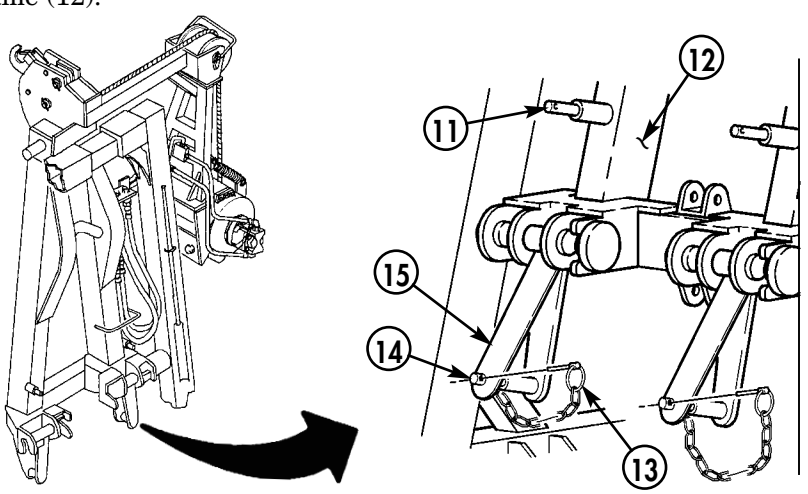
The BAP winch frame must be locked to the LHS hook arm for bay retrieval. Failure to comply may result in damage to equipment or injury to personnel.

NOTE

When both winch frame lock levers are in the DOWN position, the winch frame is locked to the LHS hook arm. Perform steps g and h if levers are in the UP position.

g. Remove quick-release pins (13) from stud (11) at both sides of winch frame (12).

h. Swing lever (15) down so that end of stud (14) is through hole in lever (15), and install quick-release pin (13) on stud (14) at both sides of winch frame (12).



BAY RETRIEVAL (Contd)

WARNING

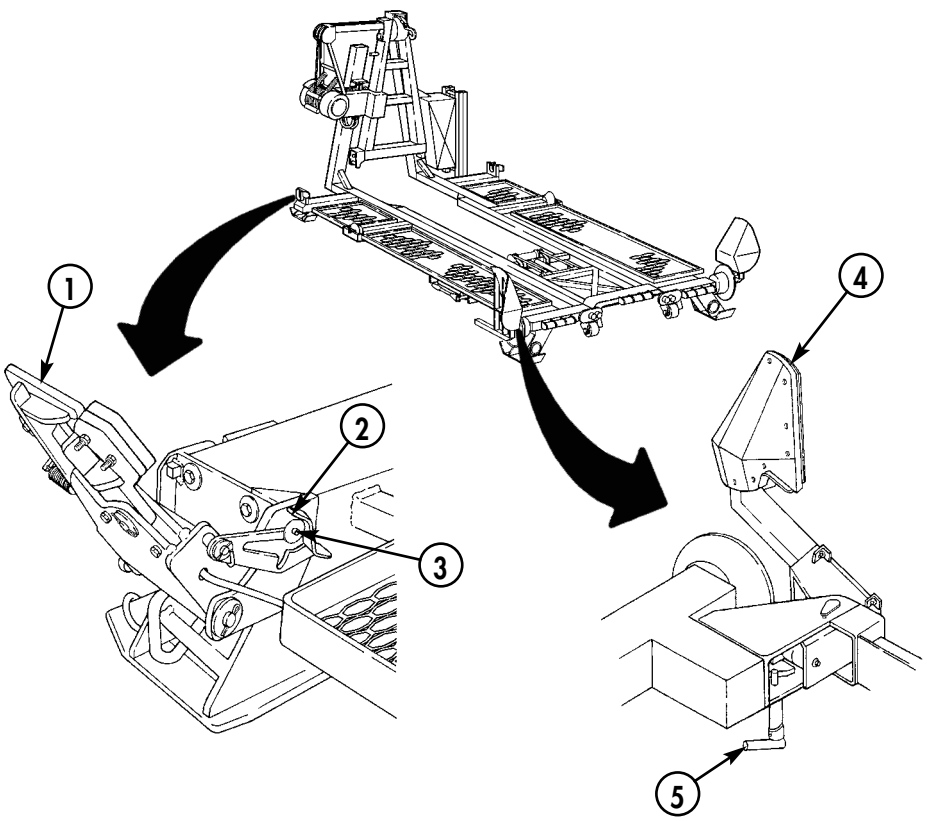
Keep hands and fingers clear of front pin lock assemblies once set to the DOWN position. Failure to comply may result in injury to personnel.

NOTE

Movement of the LHS hook arm may be necessary to release the front pin lock assemblies.

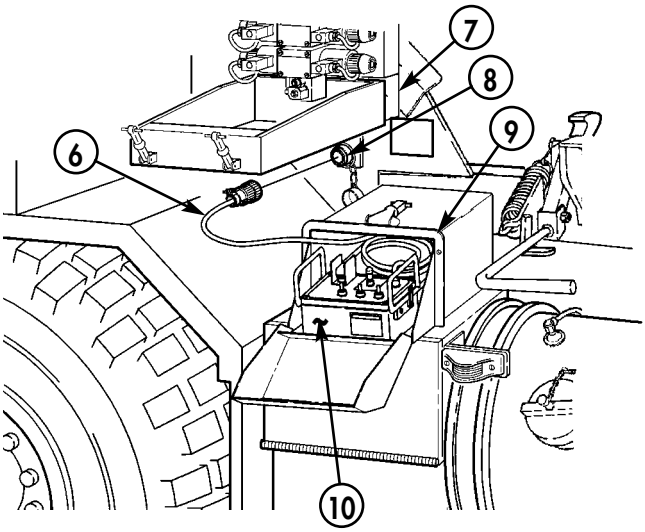
i. Set both front pin lock assemblies (1) in DOWN position by pulling back front pin lock assembly (1) and depressing latch (2) to DOWN position until engaged with latch pin (3).

j. Rotate handle (5) until rear guide (4) is disengaged, then move rear guide (4) inboard or outboard until locked in MID position at both sides of BAP.



k. Remove remote control unit (10) from stowage box (9) and connect RCU cable (6) to receptacle (8), located at main manifold support frame (7).

BAY RETRIEVAL (Contd)

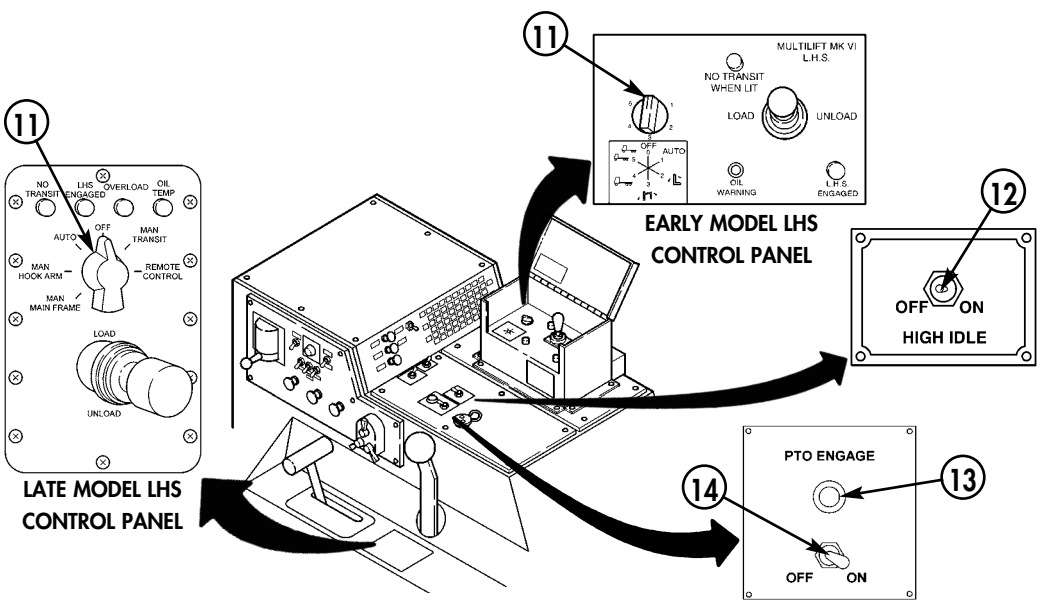


l. Turn LHS MODE SELECT switch (11) to 0 (OFF/TRANSPORT) position on early models or REMOTE CONTROL position on late models.

CAUTION

High idle switch must be in the OFF position prior to engaging PTO. Failure to comply may result in damage to the vehicle transmission or the LHS.

m. With HIGH IDLE switch (12) in OFF position, move PTO ENGAGE switch (14) to ON position. The PTO ENGAGE indicator (13) will light.



BAY RETRIEVAL (Contd)

CAUTION

To prevent surging or uneven operation of LHS or BAP winch, either perform all operations with CBT HIGH IDLE switch off, or engage CBT high idle after LHS or BAP winch is in motion, and disengage CBT high idle prior to stopping motion. Failure to comply may result in damage to equipment.

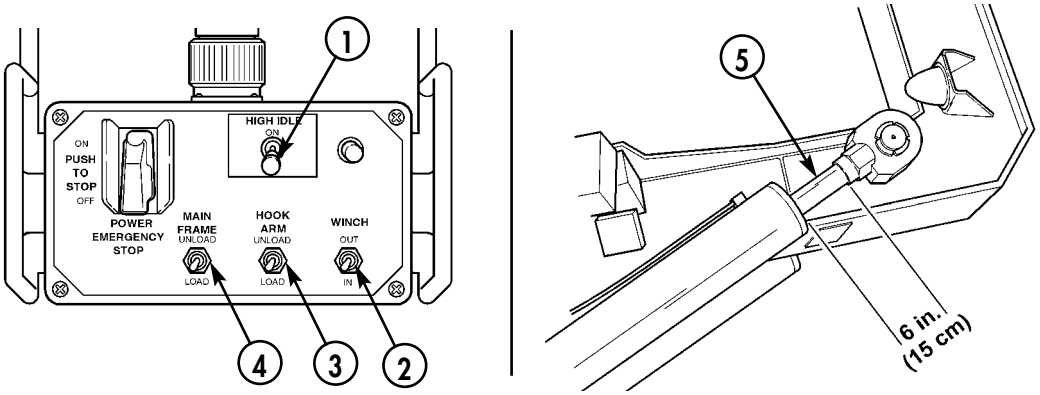
NOTE

In case of emergency while the RCU is in use, push the red POWER EMERGENCY STOP switch to shut down operation of the LHS.

n. Hold HOOK ARM switch (3) in UNLOAD position and move HIGH IDLE switch (1) to ON until hook arm cylinders (5) are extended approximately 6 in. (15 cm). Move HIGH IDLE switch (1) to OFF and release HOOK ARM switch (3).

o. Hold MAIN FRAME switch (4) in UNLOAD position and move HIGH IDLE switch (1) to ON until main frame (8) is fully extended. Move HIGH IDLE switch (1) to OFF and release MAIN FRAME switch (4).

p. Hold HOOK ARM switch (3) in UNLOAD position and move HIGH IDLE switch (1) to ON until cable hook (6) can be reached from ground. Move HIGH IDLE switch (1) to OFF and release HOOK ARM switch (3).



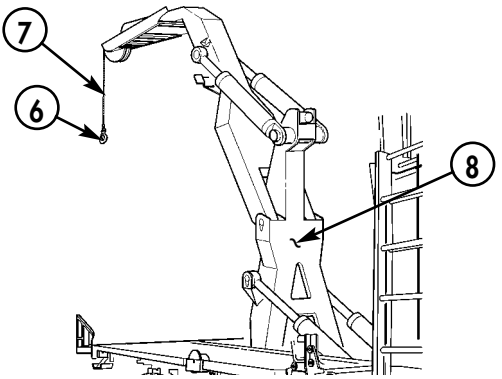
WARNING

Always wear leather gloves when handling winch cable. Failure to comply may result in injury to personnel.

q. While assistant maintains tension on winch cable (7), hold WINCH switch (2) in OUT position and move HIGH IDLE switch (1) to ON until winch pays out approximately 8 ft (2.4 m) of cable (7). Move HIGH IDLE switch (1) to OFF and release WINCH switch (2).

r. Hold HOOK ARM switch (3) in load position and move HIGH IDLE switch (1) to ON until hook arm cylinders (5) are returned to approximately 6 in. (15 cm). Move HIGH IDLE switch (1) to OFF and release HOOK ARM switch (3).

BAY RETRIEVAL (Contd)



CAUTION

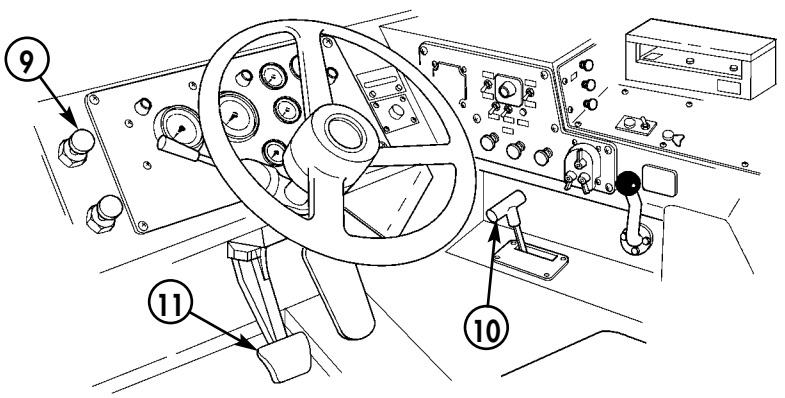
Do not exceed 4 ft (1.2 m) maximum fording depth or damage to equipment may result.

NOTE

Perform step s if launch site bank height is 0, or perform step t if bank height is between 0 and 60 in. (152 cm).

s. Back transporter into water to top of rear axle hubs, for retrieval of interior bay, and to top of rear axle tire rims for retrieval of ramp bay, then apply service brake (11), move transmission selector lever (10) to N (neutral), and pull PARKING BRAKE control (9) out.

t. Back transporter up to river bank so that rear axle tires are approximately 2 ft (0.6 m) out from edge of bank, then apply service brake (11), move transmission selector lever (10) to N (neutral), and pull PARKING BRAKE control (9) out.



BAY RETRIEVAL (Contd)

WARNING

All personnel must wear approved life jackets and unblouse pants from boots while on the bay. Failure to comply may result in injury or death to personnel.

Do not place fingers under transverse upper couplings when opening them, or serious injury to personnel may result.

NOTE

Use roadway tool and crowbar to close gap between inner pontons when transverse upper couplings cannot be opened otherwise.

u. Open two transverse upper couplings (2) by lifting each lever and returning it to its own receptacle block.

NOTE

Perform steps w through aa for retrieval of ramp bay, or perform steps ab through af for retrieval of interior bay.

v. Secure both ramp plates (3). (Refer to WP 0010 00).

CAUTION

To prevent seizure and distortion, ensure lower lock-drive jackscrew is backed-off one full rotation after lower lock-drive pin is fully retracted.

w. Using T-wrench, turn lower lock-drive to ensure jackscrew (7) moves freely and lower lock-drive pin (6) is fully retracted.

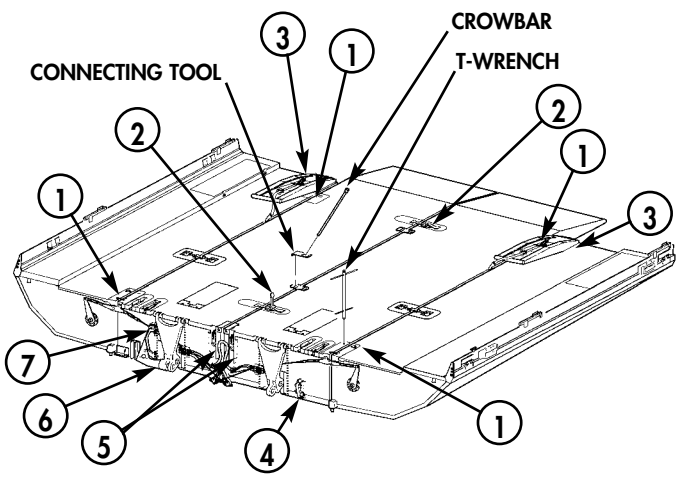
NOTE

As viewed from rear of bay (approach ramp end), disengage the right-hand ponton swivel hooks by turning shafts counterclockwise and the left-hand side clockwise.

x. Using T-wrench, disengage one swivel hook, at both ends of both inner pontons, by turning shaft (1) until indicator is not visible.

y. Move two foldlocks (5) to closed position (facing up).

z. Move travel latch (4) to closed position (facing down).



BAY RETRIEVAL (Contd)

WARNING

Do not place fingers under transverse upper couplings when opening them, or serious injury to personnel may result.

NOTE

Use the roadway tool and crowbar to close the gap between inner pontons when transverse upper couplings cannot be opened otherwise.

aa. Open two transverse upper couplings (8) by lifting each lever and returning it to its own receptacle block.

CAUTION

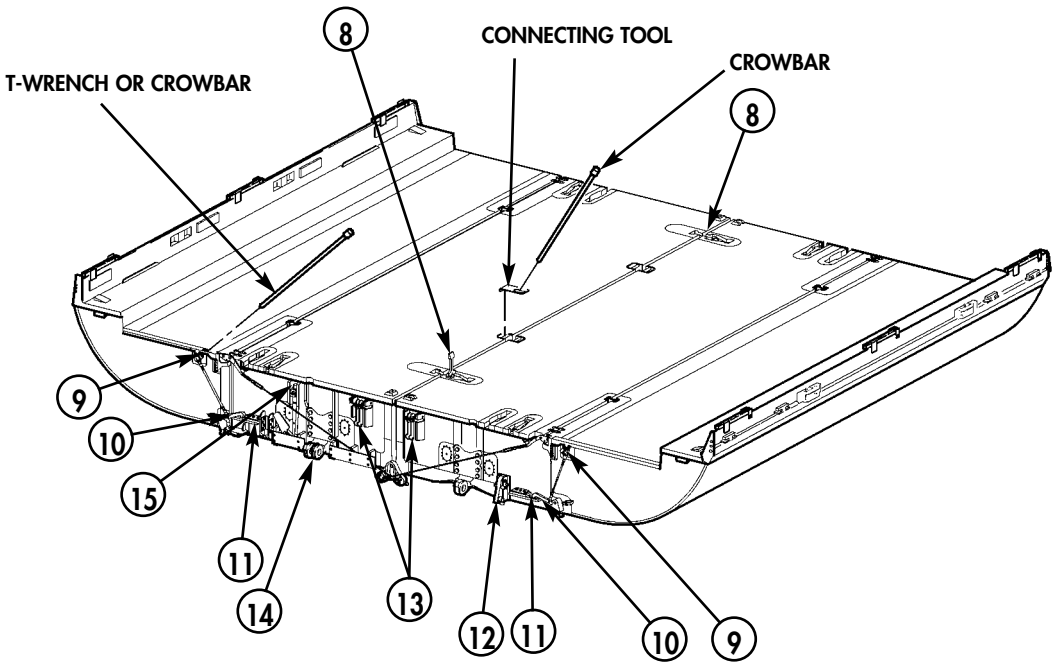
To prevent seizure and distortion, ensure lower lock-drive jackscrew is backed-off one full rotation after lower lock-drive pin is fully retracted.

ab. Using T-wrench, turn lower lock-drive to ensure jackscrew (15) moves freely and lower lock-drive pin (14) is fully retracted.

ac. Using T-wrench or round end of crowbar, open two outer ponton locks (9) at each end of both outer pontons. Visually check to see each lock/release lever (10) is clear of catch plate (11).

ad. Move two foldlocks (13) to closed position (facing up) at each end of bay.

ae. Move travel latch (12) to closed position (facing down) at each end of bay.



BAY RETRIEVAL (Contd)

WARNING

Pushing ramp bay with BEB after disengaging transverse upper couplings and ponton swivel hooks and swivel plates may cause the bay to fold, and possible injury or death to personnel may result.

CAUTION

Ensure all gravel, rocks, mud, and other debris are removed from openings at unfolding stabilizer mounting brackets prior to folding bay. Failure to comply may result in jamming during folding operations.

NOTE

BEB operator will maintain bay alignment with CBT during retrieval of bay.

af. Signal BEB operator to position bay (1) so connecting end is in line with winch cable (2).

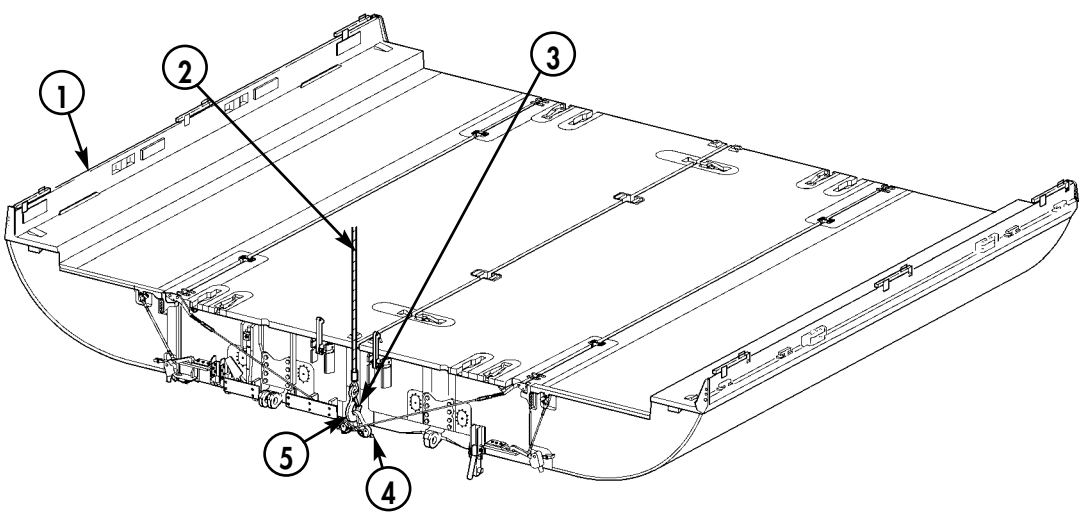
ag. Connect cable hook (5) to bay lifting lug (4). Ensure latch (3) is closed.

WARNING

Ensure bay is clear of boat crew personnel and obstructions before winching in bridge bay. Ensure all personnel are safely off bay before lifting. Failure to comply may result in damage to equipment or possible injury or death to personnel.

NOTE

During bay retrieval 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.



INTERIOR BAY SHOWN

BAY RETRIEVAL (Contd)

ah. Hold MAIN FRAME switch (8) in LOAD position until slack is removed from winch cable (9).

NOTE

Ensure all foldlocks and travel latches are set in their closed position prior to folding bay.

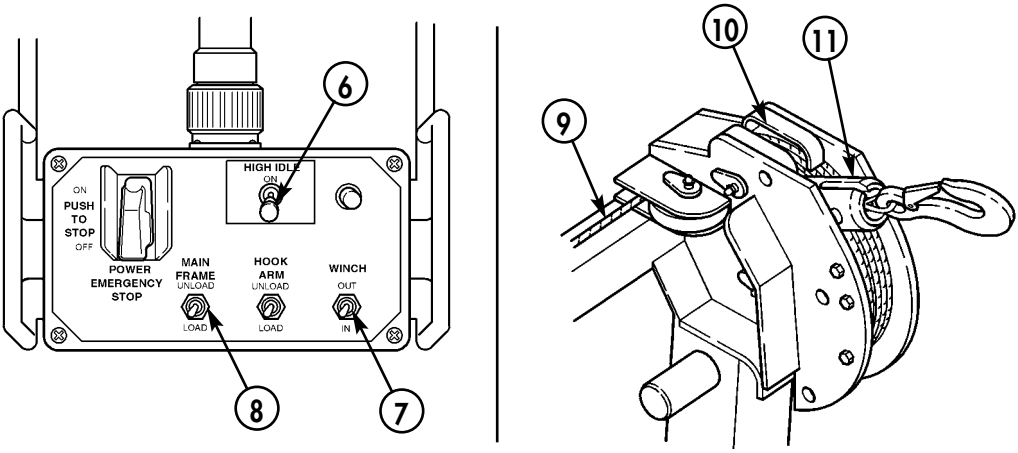
Perform steps ai and aj to fold ramp bay, or perform step ak to fold interior bay.

ai. Raise ramp bay by holding WINCH switch (7) in IN position until travel latch engages and locks inner pontons together.

aj. Lower ramp bay by holding WINCH switch (7) in OUT position until two foldlocks engage and lock inner and outer pontons together.

ak. Raise interior bay by holding WINCH switch (7) in IN position and move HIGH IDLE switch (6) to ON until travel latch and two foldlocks at each end of bay engage and lock inner and outer pontons together. Move HIGH IDLE switch (6) to OFF and release WINCH switch (7).

al. Hold WINCH switch (7) in IN position until cable holder (11) is in saddle (10), then release switch (7).



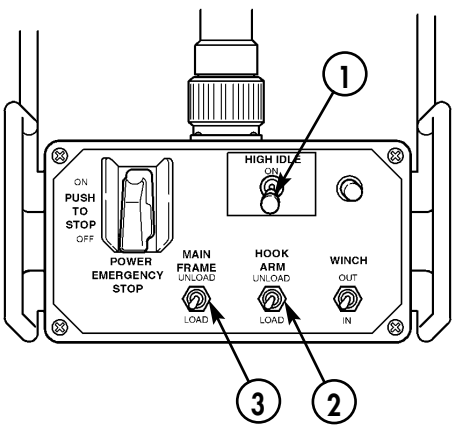
BAY RETRIEVAL (Contd)

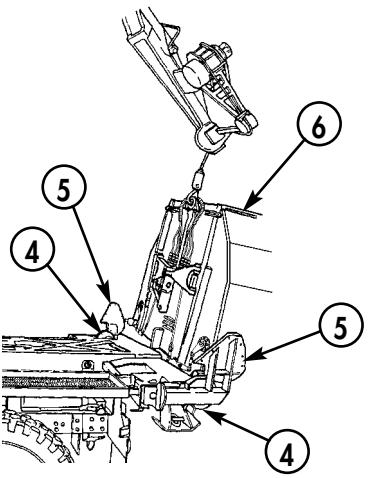
NOTE

While continuing to move bay forward, it may be necessary to adjust position of LHS main frame to keep bay properly positioned in BAP rear guides.

If bay fails to contact transporter properly, partially unload bay and repeat step an.

am. Hold MAIN FRAME switch (3) in LOAD position and move HIGH IDLE switch (1) to ON until bay (6) contacts transporter rear rollers (4). Move HIGH IDLE switch (1) to OFF and release MAIN FRAME switch (3).

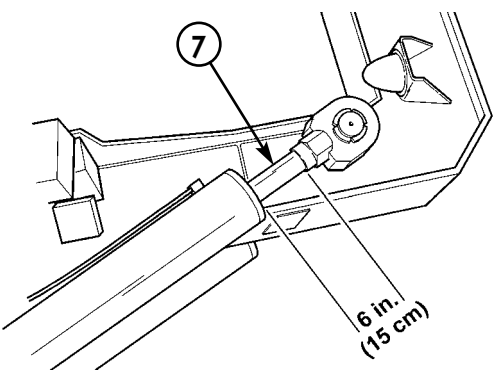




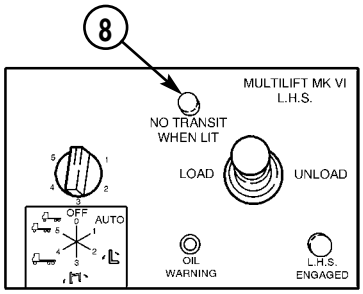
an. Hold HOOK ARM switch (2) in UNLOAD position as necessary to keep bay (6) positioned between rear guides (5) until cylinder (7) is extended 6 in. (15 cm), then release switch (2).

ao. Hold MAIN FRAME switch (3) in LOAD position and move HIGH IDLE switch (1) to ON until main frame is fully stowed, then move HIGH IDLE switch (1) to OFF and release MAIN FRAME switch (3).

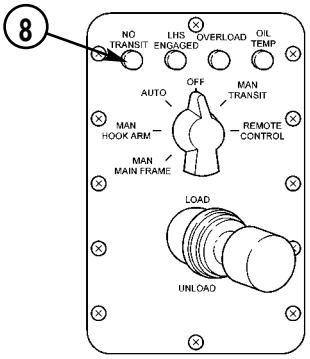
ap. Hold HOOK ARM switch (2) in LOAD position until LHS hook arm is fully stowed and NO TRANSIT WHEN LIT indicator (8) is off.



BAY RETRIEVAL (Contd)



EARLY MODEL LHS CONTROL PANEL



LATE MODEL LHS CONTROL PANEL

WARNING

After water operations, transporter brakes will be wet and will not stop vehicle as quickly as usual. Allow extra distance for slowing and stopping transporter or damage to equipment and possible injury or death to personnel may result.

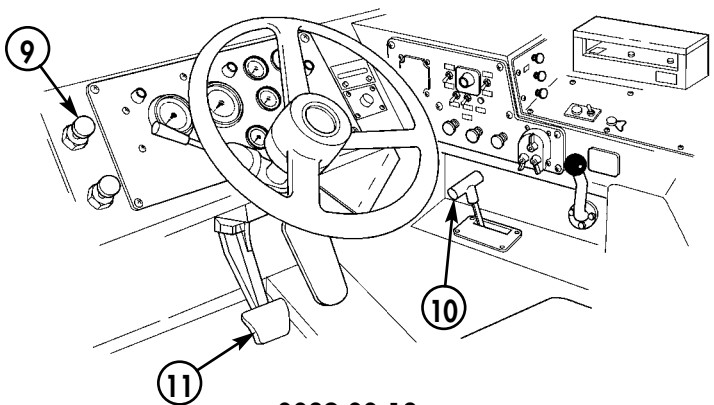
CAUTION

The LHS MODE SELECT switch may be left at any setting while maneuvering the transporter in the immediate loading or unloading site, but must be in the 0 (OFF/TRANSPORT) position prior to road travel, or damage to LHS main frame and hook arm cylinders may result.

PTO ENGAGE switch and indicator light must be off prior to road travel, or damage to equipment may result.

aq. Move transmission selector lever (10) to 1 (first range), push PARKING BRAKE control (9) in, and drive transporter clear of launch area.

ar. Apply service brake (11), move transmission selector lever (10) to N (neutral), and pull PARKING BRAKE control (9) out.

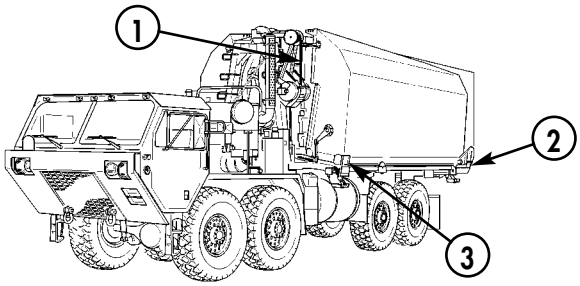


BAY RETRIEVAL (Contd)

WARNING

Failure to ensure front pin lock jaws and rear guides lock bay trunnions after bay is loaded on BAP may result in a lost bay or transporter rollover during transport. Failure to comply may result in damage to equipment and possible injury or death to personnel.

as. Ensure both front pin locks (3) and rear guides (2) are engaged.

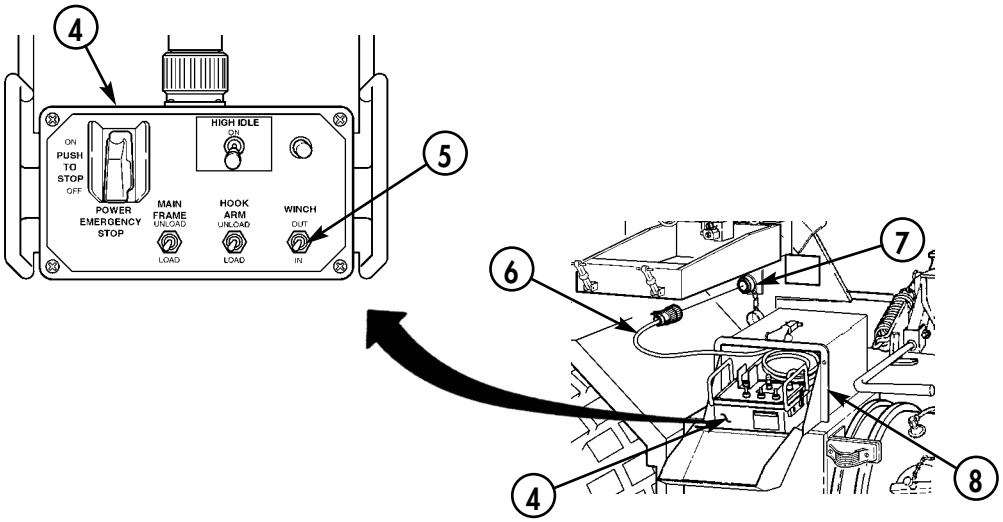


CAUTION

Ensure tension on winch cable is released to avoid undue strain on winch frame and cable during transit. Failure to comply may result in damage to equipment.

at. Hold WINCH switch (5) in OUT position until tension on winch cable (1) is released.

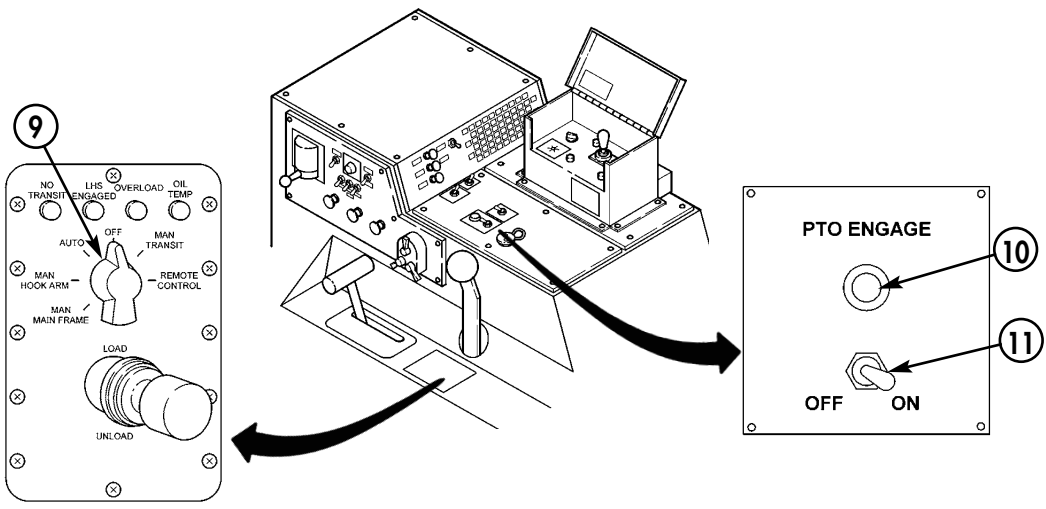
au. Disconnect RCU cable (6) from receptacle (7), and stow remote control unit (4) and RCU cable (6) in stowage box (8).



BAY RETRIEVAL (Contd)

av. Turn PTO ENGAGE switch (11) to OFF position. PTO ENGAGE indicator (10) will go off.

aw. Turn LHS MODE SELECT switch (9) to OFF position on late models.



LATE MODEL LHS CONTROL PANEL

END OF WORK PACKAGE

RECOVERY BY HELICOPTER

THIS WORK PACKAGE SUPERSEDES WP 0040 00, DATED 8 APRIL 2003

WARNING

All bridge personnel must wear approved life jackets while on the bay. Failure to comply may result in injury or death to personnel.

Do not place fingers under transverse upper couplings when opening them, or serious injury to personnel may result.

Do not attempt to use the IRB lifting sling for deployment by helicopter. Use only the 25,000 lb aerial sling, chains, and detachable links provided in the IRB AAL. Failure to comply may result in damage to equipment or possible injury or death to personnel.

NOTE

Unit commanders are cautioned of the necessity to anticipate requirements for an airlift operation and arrange for timely delivery.

Recovery by helicopter is performed under conditions where it may be advantageous to use helicopters to recover and transport bays or where site conditions make it impossible to recover bays by any other means.

Use IRB lifting sling only to lift IRB bays.

IRB-Is can be flown at air speeds up to 80 knots and IRB-Rs up to 100 knots, but must have a drogue parachute attached to prevent the bay from spinning.

When transporting bay at air speeds greater than 40 knots, a 15 ft (4.6 m) diameter drogue parachute (NSN 1670-01-052-1548), 60 ft. (18 m) extraction line, and 3 ft (91 cm) adapter are required. Drogue parachutes are readily available from the GM Rigging Unit (Parachute Maintenance), Area Resupply Co., all Airborne units, and all Air Force Cargo Wings.

Use the roadway tool and crowbar to close the gap between inner pontons when upper couplings cannot be fully closed in receptacle blocks.

RECOVERY BY HELICOPTER (Contd)

CAUTION

Ensure all gravel, rocks, mud, and other debris are removed from openings at unfolding stabilizer mounting brackets prior to folding bay. Failure to comply may result in jamming during folding operations.

a. Open two transverse upper couplings (2) by lifting each lever and returning it to its own receptacle block.

NOTE

Perform steps b through f for retrieval of ramp bay, or perform steps g through k for retrieval of interior bay.

b. Secure both ramp plates (3). (Refer to WP 0010 00).

c. Using T-wrench, turn lower lock-drive to ensure jackscrew (7) moves freely and lower lock-drive pin (6) is fully retracted.

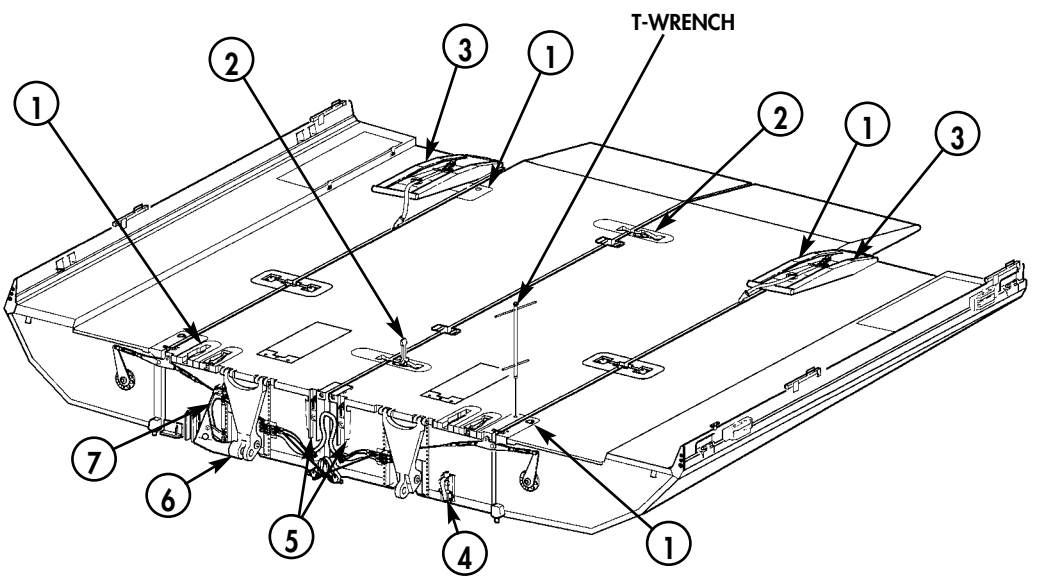
NOTE

As viewed from rear of bay (approach ramp end), disengage the right-hand ponton swivel hook and swivel plate by turning shafts counterclockwise, and the left-hand side clockwise.

d. Using T-wrench, disengage swivel hook and swivel plate at each inner ponton by turning shaft (1) until indicator is not visible.

e. Move two foldlocks (5) to closed position (facing up).

f. Move travel latch (4) to closed position (facing down).



RECOVERY BY HELICOPTER (Contd)

WARNING

Do not place fingers under upper couplings when opening them, or serious injury to personnel may result.

NOTE

Use roadway tool and crowbar to close gap between inner pontons when transverse upper couplings cannot be opened otherwise.

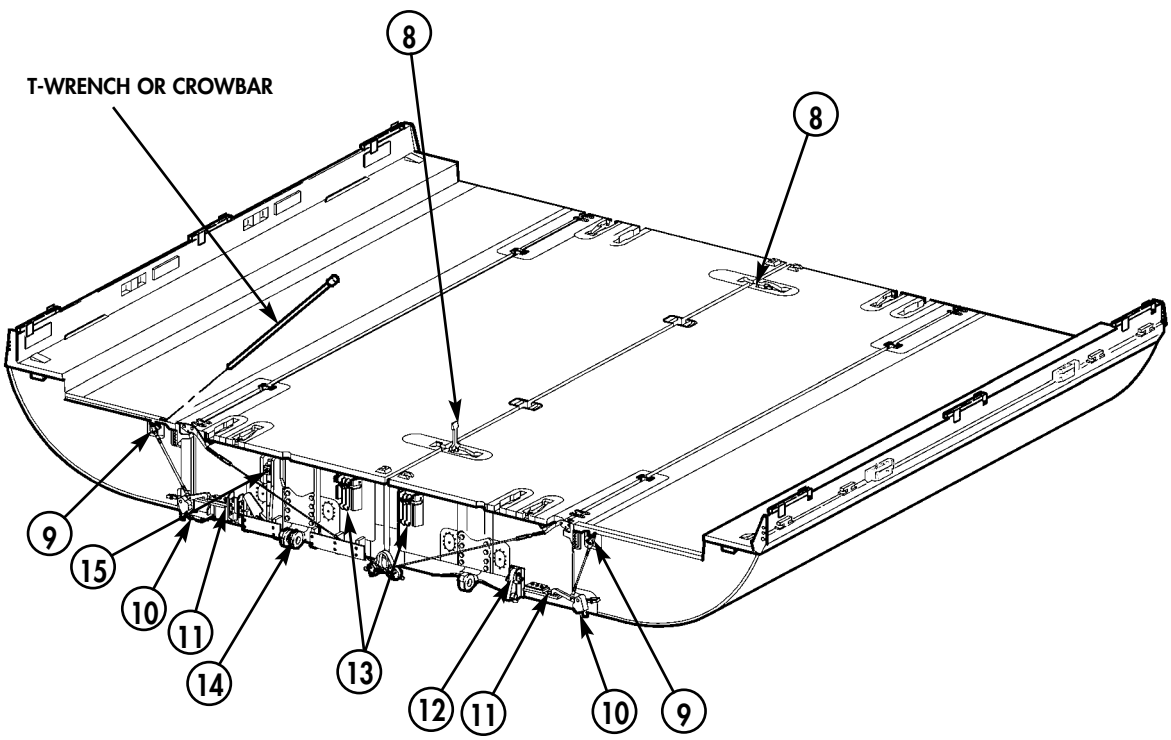
g. Open two transverse upper couplings (8) by lifting each lever and returning it to its own receptacle block.

h. Using T-wrench, turn lower lock-drive to ensure jackscrew (15) moves freely and lower lock-drive pin (14) is fully retracted.

i. Using T-wrench or round end of crowbar, open two outer ponton locks (9) at each end of both outer pontons. Visually check to see each lock/release lever (10) is clear of catch plate (11).

j. Move two foldlocks (13) to closed position (facing up) at each end of bay.

k. Move travel latch (12) to closed position (facing down) at each end of bay.



RECOVERY BY HELICOPTER (Contd)

WARNING

Pushing ramp bay with BEB after disengaging transverse upper couplings and ponton swivel hooks may cause the bay to fold, and possible injury or death to personnel may result.

NOTE

In order to provide a fixed reference point for the helicopter pilot, the bay must first be held in a fixed position against the shore or some other stable object. Use of a bridge erection boat for stabilization is not feasible due to rotor wash induced drifting.

l. Signal BEB operator to position bay near a stationary object, and secure bay to stationary object using taglines.

m. Position helicopter lifting sling on top of bay, and connect one leg of sling to lifting lug (3) with extension chain and detachable link.

n. Repeat step m for opposite end of interior bay only.

WARNING

Ensure crew is safely off bay before signaling. Failure to comply may result in damage to equipment or injury or death to personnel may result.

o. Signal helicopter pilot to position helicopter directly over bay. Connect large ring (1) of helicopter lifting sling to helicopter lift hook (2), then exit bay.

WARNING

Ground helicopter lift cable hook prior to connecting/ disconnecting. Static electricity generated from helicopter will shock personel and injury or death may result.

NOTE

Perform step p to fold ramp bay or step q to fold interior bay.

Ensure all foldlocks and travel latches are set in their closed positions prior to folding bay.

p. Signal helicopter pilot to lift ramp bay until travel latch engages inner pontons, then lower ramp bay until foldlocks engage outer pontons.

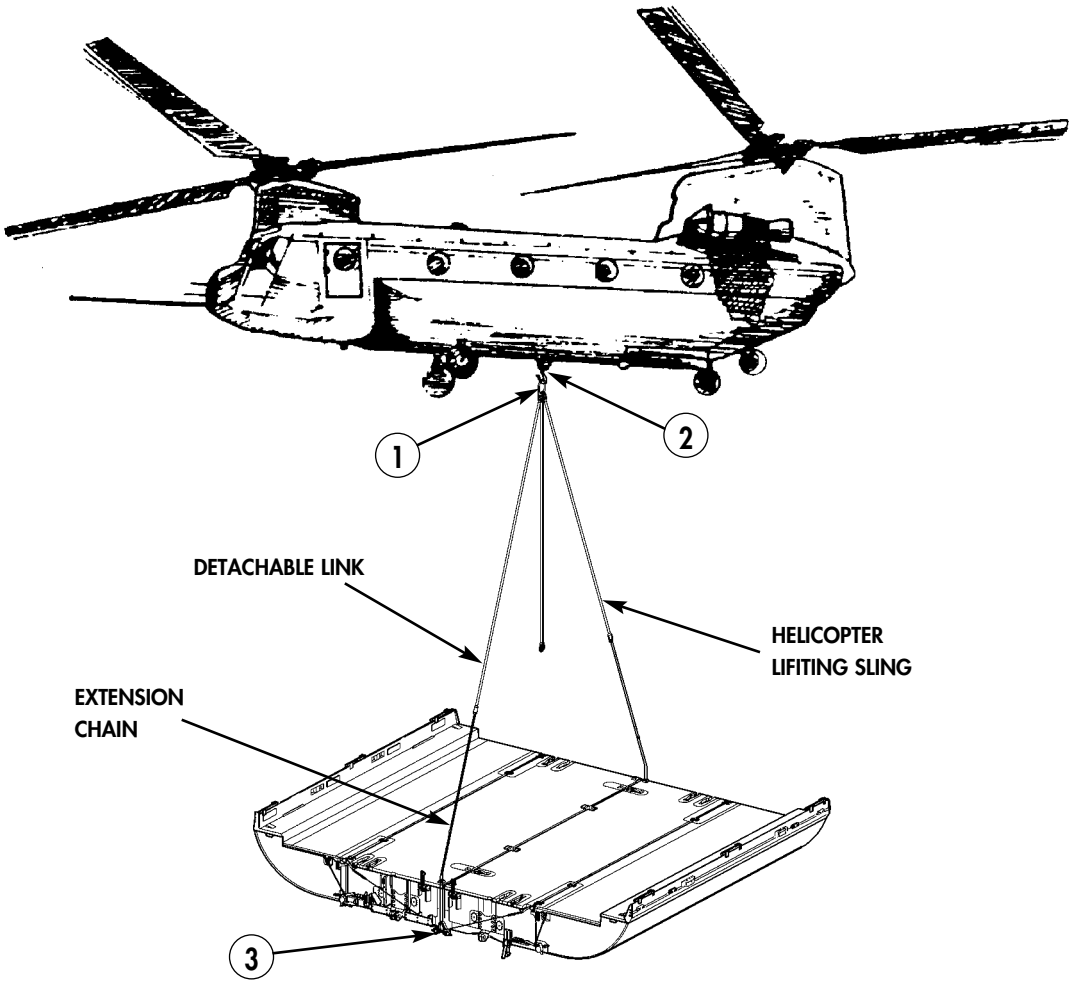
q. Signal helicopter pilot to lift interior bay until automatically folded and latched.

WARNING

Ensure all foldlocks and travel latches are closed prior to mounting bay and prior to recovery of bay by helicopter. Failure to comply may result in damage to equipment or possible injury or death to personnel.

r. Signal helicopter pilot to release helicopter lifting sling, then disconnect and remove lifting sling and extension chains from bay.

RECOVERY BY HELICOPTER (Contd)



INTERIOR BAY SHOWN

RECOVERY BY HELICOPTER (Contd)

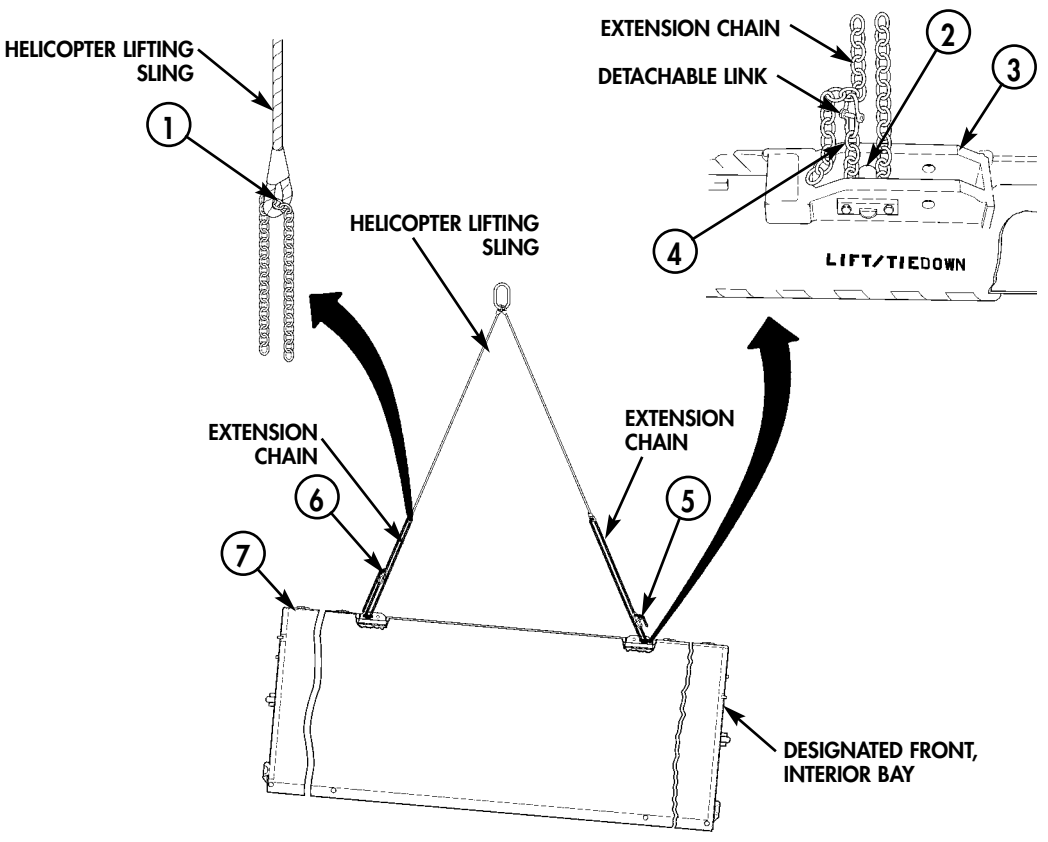
WARNING

Do not connect lifting sling to bridge rafting bracket mounting holes and quick-release pins. Use only the load receiving pins with one chain at each pin. Failure to comply may result in damage to equipment or possible injury or death to personnel.

s. Position helicopter lifting sling on top of interior bay (7) or ramp bay (8) with each leg near load receiving pin (2) at four LIFT/TIEDOWN brackets (3).

t. Pass end of one extension chain through eye (1) on each leg of helicopter lifting sling.

u. Pass opposite end of extension chain under load receiving pin (2), and connect coupling link to first link (4) on each extension chain.



RECOVERY BY HELICOPTER (Contd)

CAUTION

Ensure extension chains are positioned so coupling links are not against load receiving pin recesses with chains under tension. Failure to comply may result in damage to equipment.

NOTE

Chain counts are based on achieving a nose-down attitude of approximately 5 degrees at bay's front for stability during air transport.

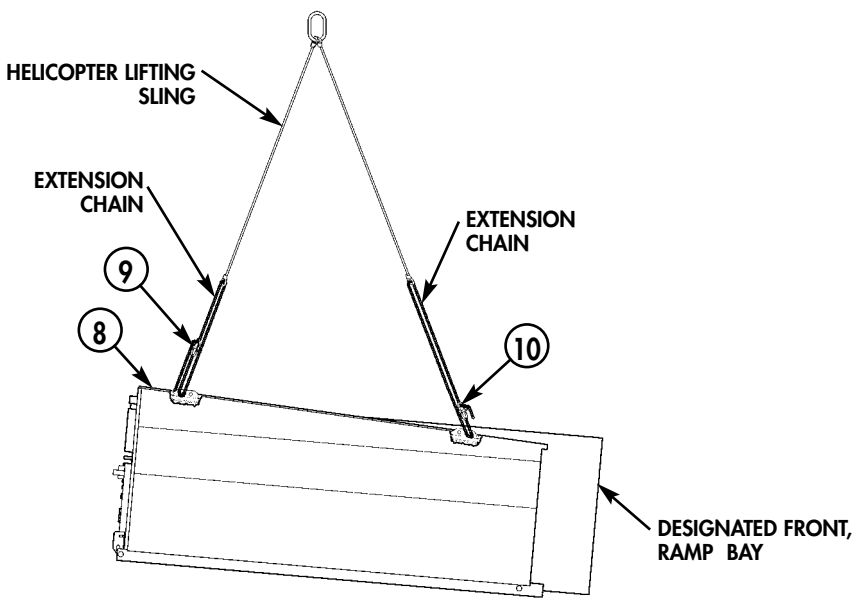
Perform steps v and w if recovering an interior bay or perform steps x and y if recovering a ramp bay.

v. Designate one end as front of interior bay (7), and connect coupling link to 10th link (5) on two extension chains at front of interior bay (7).

w. Connect coupling link to 24th link (6) on two extension chains at opposite end of interior bay (7).

x. Designate approach end as front of ramp bay (8), and connect coupling link to 10th link (10) on two extension chains at approach end of ramp bay (8).

y. Connect coupling link to 50th link (9) on two extension chains at opposite end of ramp bay (8).



RECOVERY BY HELICOPTER (Contd)

z. Signal helicopter pilot to position helicopter directly over bay and lower into position.

WARNING

Ground helicopter lift cable hook prior to connecting/ disconnecting. Static electricity generated from helicopter will shock personnel and injury or death may result.

aa. Connect large ring (2) of helicopter lifting sling to helicopter lift hook (1).

ab. Signal helicopter pilot to take up slack on helicopter lifting sling until taught, then exist bay.

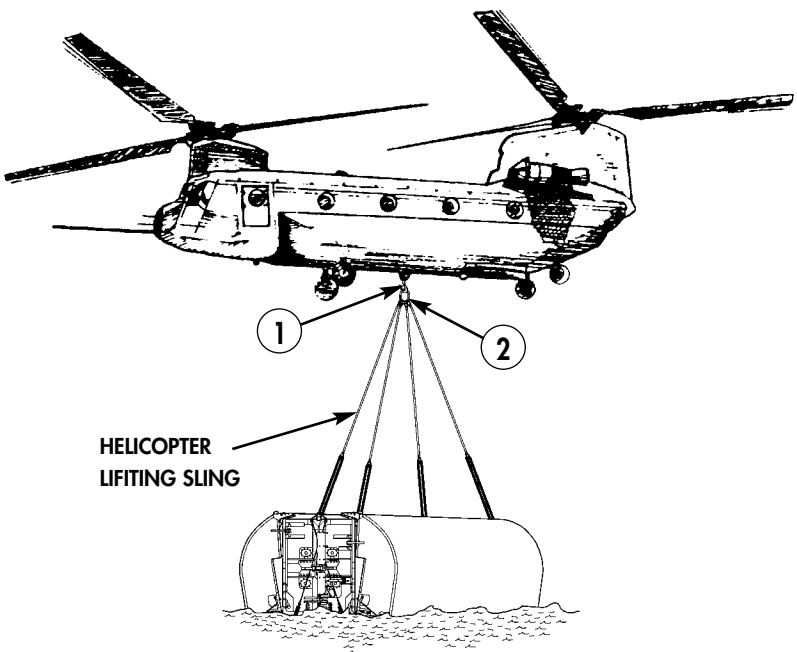
ac. Remove all taglines from bay and position boat and crew away from lifting area.

ad. Signal pilot to slowly lift bay from water and transport to recovery area.

ae. Signal helicopter to lower bay to ground and release helicopter lifting sling.

af. Disconnect and remove four extension chains and helicopter lifting sling from bay.

ag. If bay will be transported immediately after recovery, load bay on transporter. (Refer to WP 0022 00, Loading Bay from Ground).



INTERIOR BAY SHOWN

END OF WORK PACKAGE

RAFT ASSEMBLY AND DISASSEMBLY

THIS WORK PACKAGE SUPERSEDES WP 0041 00, DATED 8 APRIL 2003

NOTE

Ramp bays and interior bays may be joined to construct a raft for transporting personnel and equipment across bodies of water. The number of bays required for rafting is dependent upon the MLC of traffic to be transported, dimensions of equipment, and the velocity of the river. The number of boats required for safe operation of a particular raft depends upon the type of raft, the MLC of the load, and the velocity of the river. Consult the longitudinal or conventional rafting ratings tables, WP 0042 00 or WP 0043 00, for minimum raft size and boat requirements to ensure safe operation. A raft requires the use of two ramp bays to enable loading and unloading from either end. A raft requires a minimum crew of three soldiers (one raft commander and two assistants), and each BEB will have a minimum crew of two soldiers. The raft commander will direct the raft by use of hand signals to the boat operators. He is responsible for loading and unloading the raft, checking levers on the pumps, and the safety of the raft. The assistants are responsible for handling the ramp plates, operating the ramp pumps, setting the handrails, watching for underwater obstructions during crossings, and any other necessary duties for safe operation.

a. Determine method to launch bays (WP 0019 00, Site Requirements and Layouts), and launch two interior bays.

WARNING

All personnel must wear approved life jackets and unblouse pants from boots while on the raft. Failure to comply may result in injury or death to personnel.

Exercise caution when walking near centerline of roadway; the ponton alignment lugs project above the roadway surface on interior bays and constitute a tripping hazard. Failure to comply may result in injury to personnel.

b. Secure interior bays after launch (WP 0029 00, Securing Interior Bay After Launch).

WARNING

Never intermix IFB bays with IRB bays when building rafts. Failure to comply may result in damage to equipment or possible injury or death to personnel.

c. Connect two interior bays. (Refer to WP 0032 00, Interior Bay to Interior Bay Connection).

d. Secure connected interior bays upstream from launch site using taglines.

e. Launch and secure first ramp bay. (Refer to WP 0028 00, Securing Ramp Bay After Launch).

RAFT ASSEMBLY AND DISASSEMBLY (Contd)

NOTE

Add anchorage as needed.

f. Connect ramp bay to interior bay and secure connected bays perpendicular to shore using BEB. (Refer to WP 0030 00, Ramp Bay to Interior Bay Connection).

g. Launch remaining interior bays (as required by raft size) and connect them to raft assembly.

h. Launch and secure second ramp bay and connect it to interior bay at end of raft assembly.

WARNING

Prior to allowing any vehicle, cargo, or nonessential personnel on the raft, ensure all transverse and longitudinal upper couplings are in the closed position. Failure to comply may result in damage to equipment and possible injury or death to personnel.

NOTE

Raft assembly must be anchored to shore prior to loading/unloading of vehicles.

i. Determine rafting procedure (WP 0042 00, Longitudinal Rafting Procedure or WP 0043 00, Conventional Rafting Procedure) and anchor raft assembly.

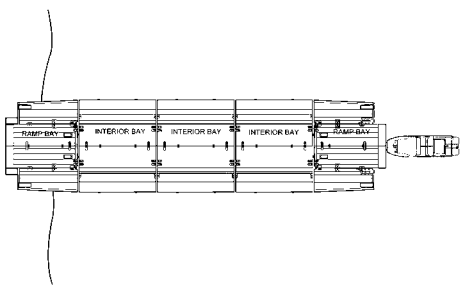


Figure 1. Typical Raft Configuration.

j. After rafting operation is complete, swing raft assembly perpendicular to shore and secure using taglines.

NOTE

Start raft disassembly from downstream end of raft.

k. Disassemble raft assembly by following Bridge Recovery, Swinging Bridge Method (WP 0038 00) and Bay Retrieval procedures (WP 0039 00).

END OF WORK PACKAGE

LONGITUDINAL RAFTING PROCEDURE

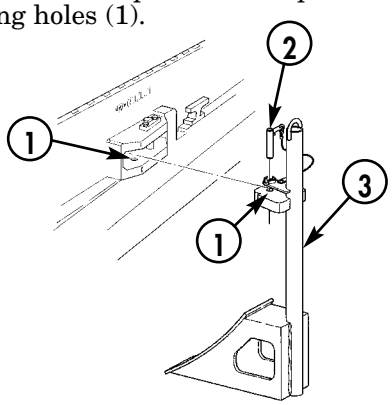
THIS WORK PACKAGE SUPERSEDES WP 0042 00, DATED 8 APRIL 2003

WARNING

All personnel must wear approved life jackets and unblouse pants from boots while on the raft. Failure to comply may result in injury or death to personnel.

Prior to allowing any vehicle, cargo, or nonessential personnel on the raft, ensure all transverse and longitudinal upper couplings are in the closed position. Failure to comply may result in damage to equipment and possible injury or death to personnel.

a. Install two rafting brackets (3) on each side of raft assembly between centerline of raft. Ensure quick-release pins (2) are fully seated in rafting bracket mounting holes (1).



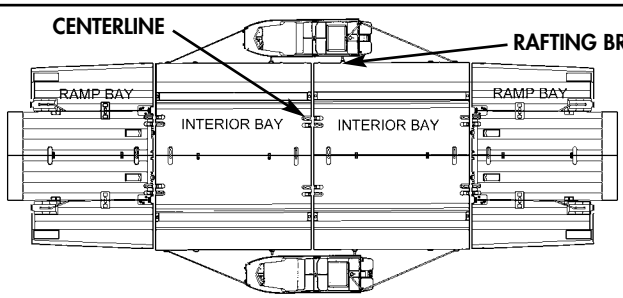


Figure 1. Positioning of Rafting Brackets on 4-Bay Raft Assembly.

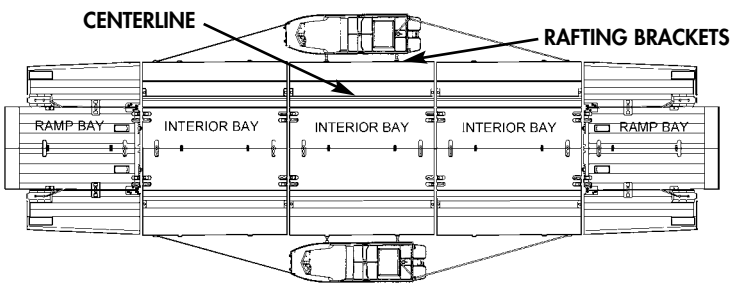


Figure 2. Positioning of Rafting Brackets on 5-Bay Raft Assembly.

LONGITUDINAL RAFTING PROCEDURE (Contd)

b. Position downstream BEB (11) to hold raft assembly (10) in position.

c. Position upstream BEB (4) adjacent to rafting brackets (9) with bow facing away from near shore on upstream side of raft assembly (10).

NOTE

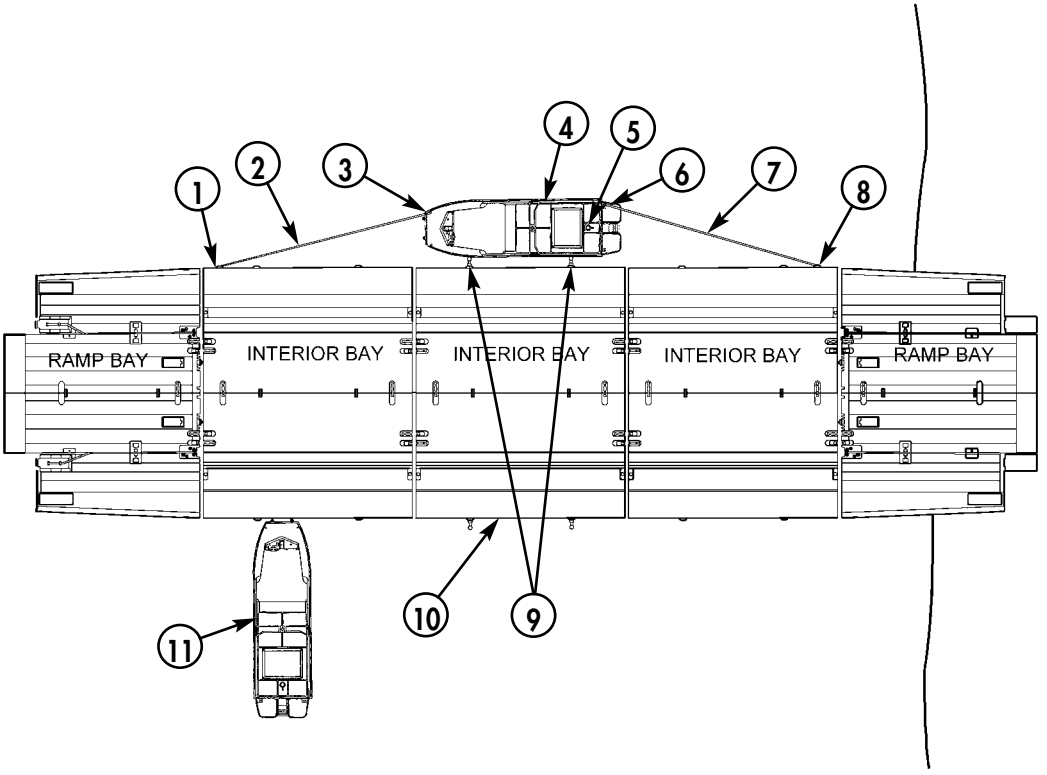
Use 1 in. (2.5 cm) manila/nylon rope for all lines.

BEB operator will place boat controls in neutral once bow line is secured.

d. Connect bow line (2) to interior bay load receiving pin (1) closest to ramp bay and secure bow line (2) to starboard side bollard (3).

e. Connect stern line (7) to interior bay load receiving pin (8) closest to ramp bay, and secure stern line (7) to starboard side bollard (6) and capstan (5).

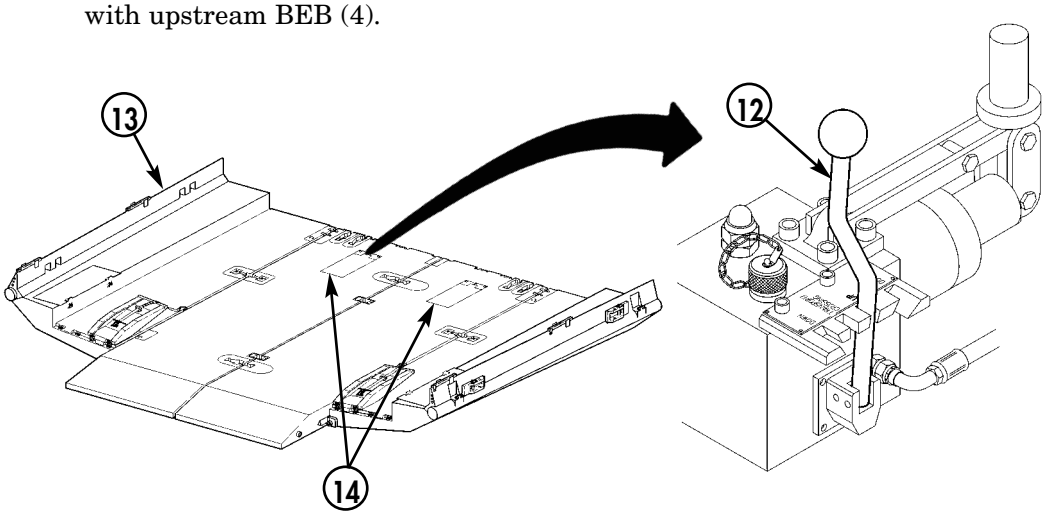
f. Take up slack in stern line (7) and tighten using capstan.



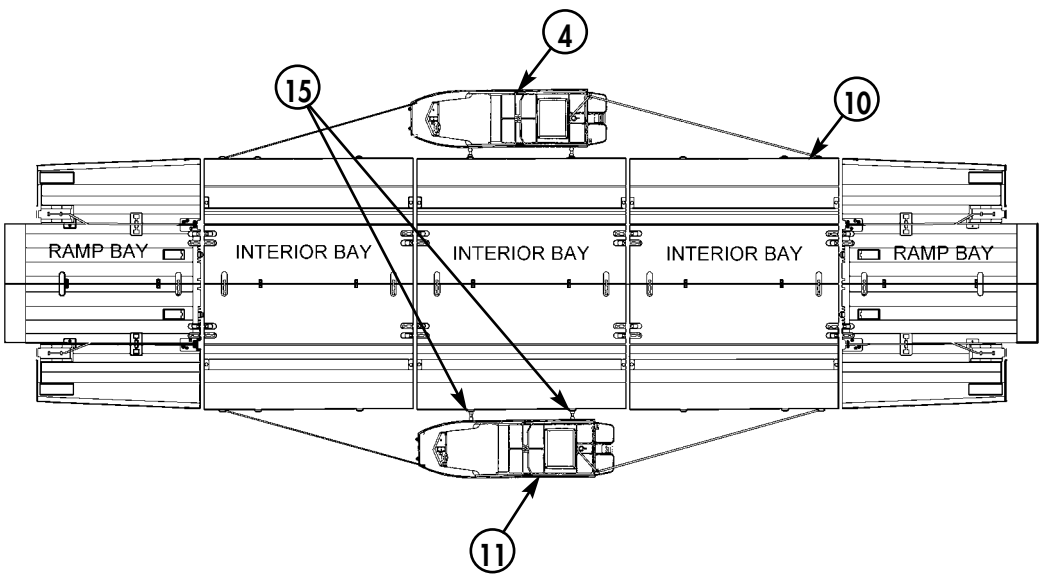
LONGITUDINAL RAFTING PROCEDURE (Contd)

g. Open both pump access covers (14) on ramp bay (13) facing near shore, position pump control valve levers (12) in UP position, and raise ramp bay (13).

h. Ground ramp bay (13) to near shore, and hold raft assembly (10) in place with upstream BEB (4).



i. Position downstream BEB (11) adjacent to rafting brackets (15) with bow facing away from near shore on downstream side of raft assembly (10).



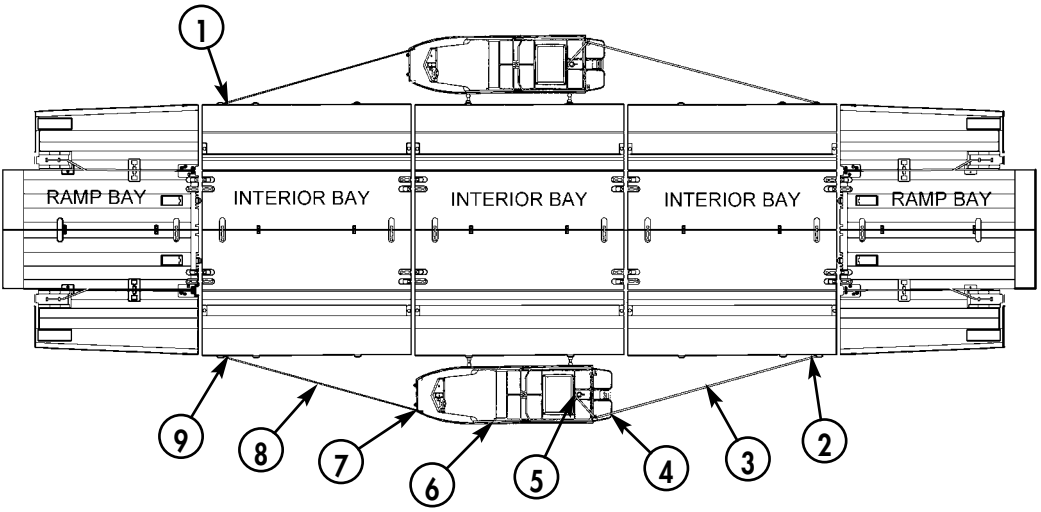
LONGITUDINAL RAFTING PROCEDURE (Contd)

j. Connect bow line (8) to interior bay load receiving pin (9) closest to ramp bay, and secure bow line (8) to starboard side bollard (7).

k. Connect stern line (3) to interior bay load receiving pin (2) closest to ramp bay, and secure stern line (3) to capstan (5).

l. Take up slack in stern line (3) and tie off end of stern line (3) to stern bollard (4).

m. Operate downstream BEB (6) as necessary to hold raft assembly to shore.



NOTE

Perform steps n through y to operate raft assembly.

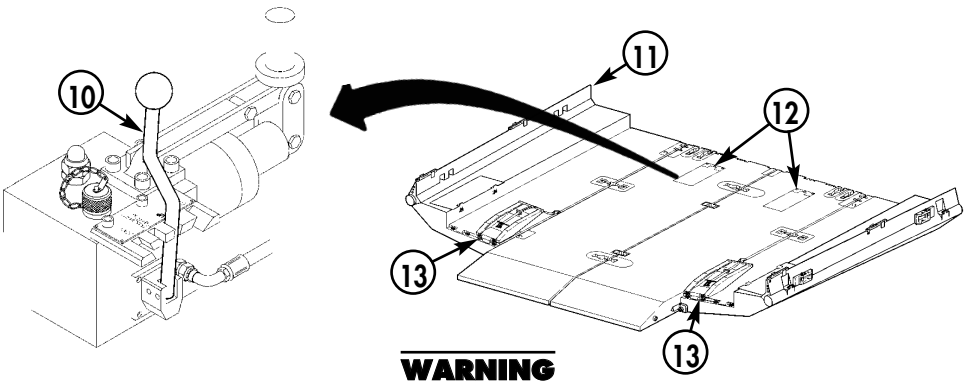
The near shore ramp bay should be let down additionally and pressed to the shore prior to loading vehicles on raft assembly.

n. Lower ramp bay (11) at near shore to ground by opening both pump access covers (12) and setting control valve levers (10) to DOWN position. Once lowered to ground, pump each pump 12 times (25 times if using only one pump.

o. Set both control valve levers (10) to TRANSPORT/CROSSING position and close pump access covers (12).

p. Lower two ramp plates (13) on ramp bay (11) as necessary.

LONGITUDINAL RAFTING PROCEDURE (Contd)



WARNING

Verify all transverse upper couplings and outer ponton locks are closed, and all longitudinal upper couplings between interior bays only have been opened, prior to allowing vehicle traffic, cargo, or nonessential personnel on bridge assembly. Failure to comply may result in damage to equipment or possible injury or death to personnel.

All traffic must be loaded to center of the raft assembly and no traffic will be positioned on either ramp bay during rafting operations. Failure to comply may result in damage to equipment or possible injury or death to personnel.

CAUTION

Failure to set both pump control valve levers in the TRANSPORT/CROSSING position prior to loading traffic may result in damage to ramp bay pumps and cylinders.

Prior to bridge crossing or rafting, the operator must ensure all tire chains and sharp-edged stones protruding from tire treads are removed from vehicles. Failure to comply may cause dents or puncture holes in roadway.

Ensure both BEBs push raft assembly against shore during loading and offloading of traffic or damage to equipment may result.

NOTE

Rafting operations in a river crossing with more than one raft assembly using same loading and unloading sites will follow a figure 8 pattern.

q. Refer to WP 0042 00, table 1, and WP 0041 00, tables 1 through 3 and check raft assembly loading capacities, then load traffic on raft assembly.

r. Raise and secure two ramp plates (13) on ramp bay (11) if used.

s. At far shore end of raft assembly (1), open both pump access covers (12), set control valve levers (10) to UP position, and operate pumps to raise bay to desired height. Close both access covers (12).

t. At near shore end of raft assembly (1), open both pump access covers (12), set control valve levers (10) to UP position, and operate pumps to raise ramp bay (11) to desired position. Close both access covers (12).

LONGITUDINAL RAFTING PROCEDURE (Contd)

CAUTION

Raft commander must observe leading edge of raft and decrease speeds or halt operations, as necessary, if continuous water is coming over bow dam.

NOTE

BEB operators will propel raft assembly only when signaled by the raft commander.

u. Cast off taglines and maneuver raft assembly to far shore per WP 0042 00, figure 3, Longitudinal Rafting Procedures.

v. Secure raft assembly to shore with taglines.

Table 1. Longitudinal Rafting Ratings Table.

LONGITUDINAL RAFT MLC RATINGS	WATER CURRENT VELOCITY FEET/SEC (METERS/SEC)					
Raft Size and Number of Vehicles	(0.0)	1–2 (0.3–0.6)	3–4 (0.9–1.2)	5–6 (1.5–1.8)	7–8 (2.1–2.4)	9–10 (2.7–3.0)
4-Bay						
Tracked	70	70	70	70	65	60
Wheeled	70	70	70	70	65	60
5-Bay						
Tracked	90	90	90	90	85	80
Wheeled	90	90	90	90	85	80
6-Bay						
Tracked	105	105	105	105	100	95
Wheeled	105	105	105	105	100	95
7-Bay Single						
Tracked	115	115	115	115	110	105
Wheeled	115	115	115	115	110	105
7-Bay Multiple						
Tracked	140	140	140	140	135	130
Wheeled	140	140	140	140	135	130

Notes:

1. The following conditions will reduce the ratings from those given above. The raft commander must monitor bow freeboard as well as trim to ensure that safe crossing conditions are maintained in the following conditions:

   a. Rough, choppy, or turbulent water in current speeds above 4 feet/sec (1.2 meters/sec) will reduce the ratings from those given in the preceding table.

   b. Shallow fast water of less than 6 ft 7 in. (2 m) water depth combined with current speeds above 4 feet/sec (1.2 meters/sec) will reduce the ratings from those given in the preceding table.

LONGITUDINAL RAFTING PROCEDURE (Contd)

Table 1. Longitudinal Rafting Ratings Table (Contd).

c. Accumulations of snow, mud, or ice will reduce the ratings from those given in the preceding table.

2. Raft commander must observe leading edge of raft and ramps and decrease speeds or halt operations, as necessary, if continuous water is coming over bow dam or ramp tips.

3. For 4-bay, 5-bay, and 6-bay rafts, ratings are for single or multiple vehicles. 7-bay rafts have separate ratings for single vehicles and multiple vehicles.

4. For single vehicle loads, vehicles should be loaded on the centerline of the roadway and centered between the ramps. For multiple vehicle loads, heavier vehicles should be placed towards the center of the raft, with lighter vehicles towards the ramps. Vehicles with an MLC of less than 20 may be loaded adjacently on either side of the raft centerline but should be of the same general type and MLC. Total added MLC for multiple vehicle loads shall not exceed the multiple vehicle rating. Vehicle loads shall not be on or overhang onto ramps.

5. Ratings apply only with bottom of ramp ends raised 12 in. (30 cm) before raft is under way.

6. For longitudinal rafting, current speeds cannot exceed 5 feet/sec (1.5 meters/sec) at off-load/on-load sites. However, for higher mid-stream currents, longitudinal rafting capacity is greater than conventional rafting capacity for the same raft size and current speed.

7. For conventional rafting, two BEBs are used. Refer to figure 3, Longitudinal Rafting Procedures, to determine where and how boats are attached to longitudinal rafts.

WARNING

Never intermix IFB bays with IRB bays when building rafts. Failure to comply may result in damage to equipment or possible injury or death to personnel.

8. Do not intermix IFB bays with IRB bays when building rafts.

LONGITUDINAL RAFTING PROCEDURE (Contd)

NOTE

The shore ramp bay should be let down additionally and pressed to the shore prior to unloading vehicles from raft.

w. Lower ramp bay (3) at shore end by opening both pump access covers (2) and setting pump control valve levers (4) to DOWN position. Once lowered to ground, pump each pump 12 times (25 times if using only one pump).

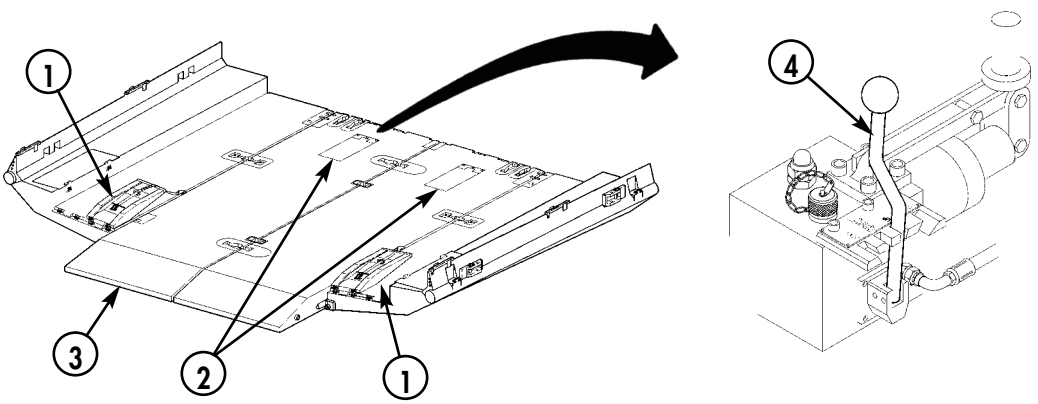
CAUTION

Failure to set both pump control levers in the TRANSPORT/CROSSING position prior to unloading traffic may result in damage to ramp bay pumps and cylinders.

Ensure both BEBs push raft assembly against shore during loading and offloading of traffic or damage to equipment may result.

x. Set both control valve levers (4) to TRANSPORT/CROSSING position and close pump access covers (2).

y. Lower two ramp plates (1) on ramp bay (3) as necessary, and unload traffic from raft assembly.



LONGITUDINAL RAFTING PROCEDURE (Contd)

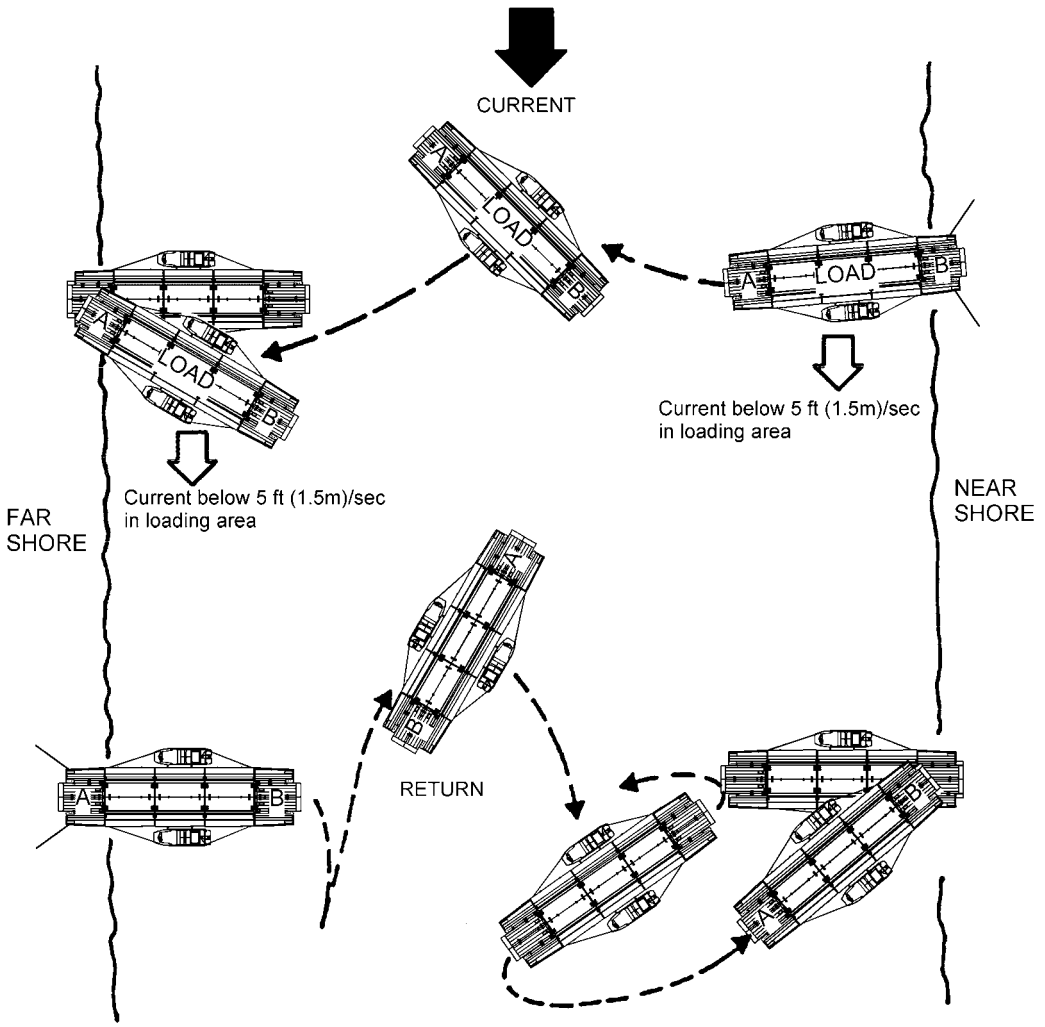


Figure 3. Longitudinal Rafting Procedures.

END OF WORK PACKAGE

CONVENTIONAL RAFTING PROCEDURE

THIS WORK PACKAGE SUPERSEDES WP 0043 00, DATED 8 APRIL 2003

WARNING

All personnel must wear approved life jackets and unblouse pants from boots while on the raft. Failure to comply may result in injury or death to personnel.

NOTE

Connecting BEBs to the raft assembly can be performed simultaneously or one boat at a time.

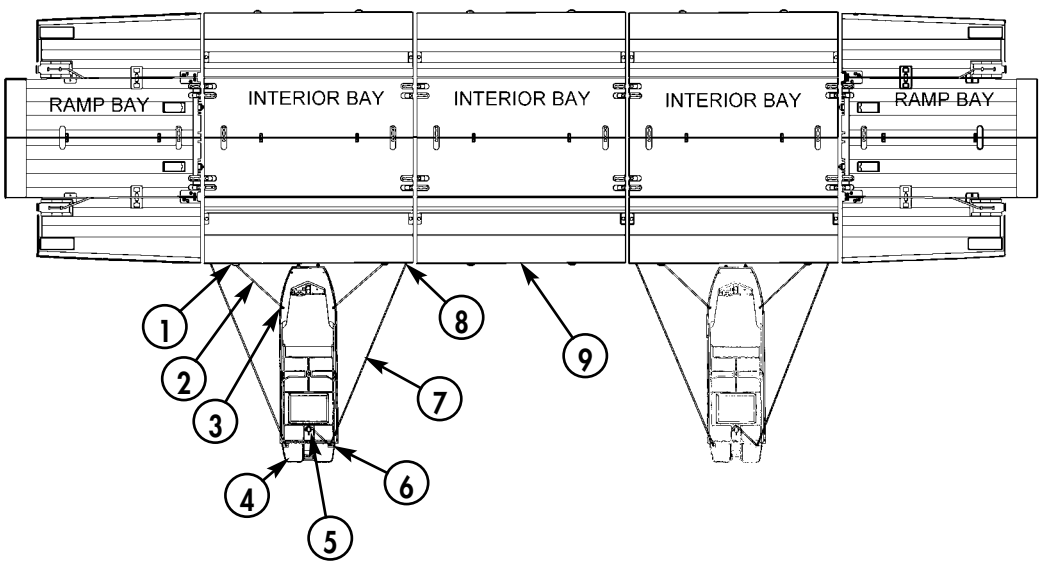
a. Position BEB (4) on downstream side of raft assembly (9) and center BEB (4) perpendicular to interior bay.

b. Connect two bow lines (2) to cleats (1) and bow bollards (3).

NOTE

Upstream (right-hand) steering line is routed through capstan.

c. Connect two steering lines (7) to cleats (8) and stern bollards (6), and tighten capstan (5).



CONVENTIONAL RAFTING PROCEDURE (Contd)

NOTE

Perform steps d through o to operate raft assembly.

The near shore ramp bay should be let down additionally and pressed to the shore prior to loading vehicles on raft assembly.

d. Lower ramp bay (2) at near shore to ground by opening both pump access covers (3) and setting control valve levers (1) to DOWN FAST position. Once lowered to ground, place levers (1) in DOWN position and pump each pump 12 times (25 times if using only one pump).

e. Set both control valve levers (1) to TRANSPORT/CROSSING position and close pump access covers (3).

f. Lower two ramp plates (4) on ramp bay (2) as necessary.

WARNING

All traffic must be loaded to center of the raft assembly and no traffic will be positioned on either ramp bay during rafting operations. Failure to comply may result in damage to equipment or possible injury or death to personnel.

CAUTION

Failure to set both pump control valve levers in the TRANSPORT/CROSSING position prior to loading traffic may result in damage to ramp bay pumps and cylinders.

Ensure both BEBs push raft assembly to shore during loading and offloading of traffic or damage to equipment may result.

NOTE

Rafting operations in a river crossing with more than one raft assembly using same loading and unloading sites will follow a figure 8 pattern.

g. Refer to WP 0042 00, table 1, and WP 0043 00, table 1, and check raft assembly loading capacities, then load traffic on raft assembly.

h. Secure two ramp plates (4) on ramp bay (2) if used, then raise ramp end.

i. At far shore end of raft assembly, open both pump access covers (3), set control valve levers (1) to UP position, and operate pumps to raise ramp bay (2) to desired height. Close both access covers (3).

j. At near shore end of raft assembly, open both pump access covers (3), set control valve levers (1) to UP position, and operate pumps to raise ramp bay to desired position. Close both access covers (3).

CONVENTIONAL RAFTING PROCEDURE (Contd)

CAUTION

Raft commander must observe leading edge of raft and ramps and decrease speeds or halt operations, as necessary, if continuous water is coming over bow dam or ramp tips.

NOTE

BEB operators will propel raft assembly only when signaled by the raft commander per unit SOP.

k. Cast off taglines and maneuver raft assembly to far shore per figure 1, Conventional Rafting Procedures.

l. Secure raft assembly to shore with taglines.

NOTE

The shore ramp bay should be let down additionally and pressed to the shore prior to unloading vehicles from raft assembly.

m. Lower ramp bay (2) at shore end by opening both pump access covers (3) and setting pump control valve levers (1) to DOWN position. Once lowered to ground, pump each pump 12 times (25 times if using only one pump).

CAUTION

Failure to set both pump control valve levers in the TRANSPORT/CROSSING position prior to unloading traffic may result in damage to ramp bay pumps and cylinders.

Ensure both BEBs push raft assembly against shore during loading and offloading of traffic or damage to equipment may result.

n. Set both control valve levers (1) to TRANSPORT/CROSSING position and close pump access covers (3).

o. Lower two ramp plates (4) on ramp bay (2) as necessary, and unload traffic from raft assembly.

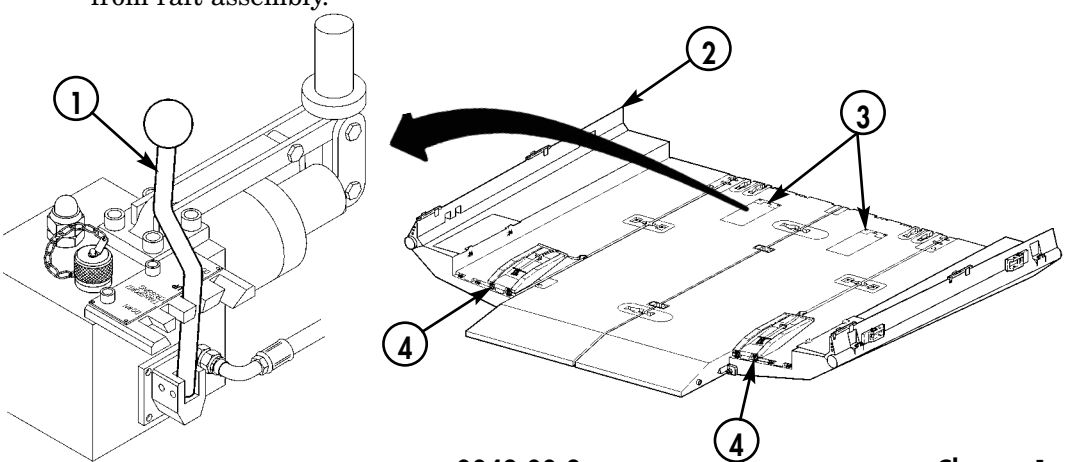


Table 1. Conventional Rafting Ratings Table.

CONVENTIONAL RAFT MLC RATINGS	WATER CURRENT VELOCITY FEET/SEC (METERS/SEC) (Note: Number of Mk I/II BEBs required is denoted by the number after the rating)					
Raft Size & Number of Vehicles	(0.0)	1–2 (0.3–0.6)	3–4 (0.9–1.2)	5–6 (1.5–1.8)	7–8 (2.1–2.4)	9–10 (2.7–3.0)
4-Bay						
Tracked	70	70	70	70	60	30
Wheeled	70	70	70	70	60	30
5-Bay						
Tracked	90	90	90	85	75	40
Wheeled	90	90	90	85	75	40
6-Bay						
Tracked	105	105	100	90	75	60
Wheeled	105	105	100	90	75	60
7-Bay Single						
Tracked	140	140	100	0	0	0
Wheeled	140	140	100	0	0	0
7-Bay Multiple						
Tracked	140	140	100	0	0	0
Wheeled	140	140	100	0	0	0

Notes:

1. The following conditions will reduce the ratings from those given above. The raft commander must monitor bow freeboard as well as trim to ensure that safe crossing conditions are maintained in the following conditions:

   a. Rough, choppy, or turbulent water in current speeds above 4 feet/sec (1.2 meters/sec) will reduce the ratings from those given in the preceding table.

   b. Shallow, fast water of less than 6 ft 7 in. (2 m) water depth combined with current speeds above 4 feet/sec (1.2 meters/sec) will reduce the ratings from those given in the preceding table.

   c. Accumulations of snow, mud, or ice will reduce the ratings from those given in the preceding table.

2. Raft commander must observe leading edge of raft and decrease speeds or halt operations, as necessary, if continuous water is coming over bow dam or ramp tips.

3. For 4-bay, 5-bay, and 6-bay rafts, ratings are for single or multiple vehicles. 7-bay rafts have separate ratings for single vehicles and multiple vehicles.

CONVENTIONAL RAFTING PROCEDURE (Contd)

Table 1. Conventional Rafting Ratings Table (Contd).

4. For single vehicle loads, vehicles should be loaded on the centerline of the roadway and centered between the ramps. For multiple vehicle loads, heavier vehicles should be placed towards the center of the raft, with lighter vehicles towards the ramps. Vehicles with an MLC of less than 20 may be loaded adjacently on either side of the raft centerline but should be of the same general type and MLC. Total added MLC for multiple vehicle loads shall not exceed the multiple vehicle rating. Vehicle loads shall not be on or overhang onto ramps.

5. Ratings apply only with bottom of ramp ends raised 12 in. (30 cm) before raft is under way.

6. For conventional rafting when additional capacity is needed, the load may be shifted eccentrically in the downstream direction to the edge of the 14 ft, 9 in. (4.5 m) wide single-lane roadway. This will increase the load capacity by MLC 10 for tracked or wheeled loads. Trailing edge roadway freeboard may be negative (water on the roadway) when this is done. Keep loads centered for at least the first crossing at any given crossing site as specific crossing conditions will be unknown.

7. For conventional rafting, when buoyancy is compromised, such as through ballistic or natural damage, lowering of the ramps until the tips are touching the water may aid in increasing overall raft buoyancy. This will not work in all situations and will be less effective for the larger raft sizes. This method should be used only as a last resort when offloading the raft load is not immediately feasible and loss of equipment is otherwise likely.

8. The number of Mk I/II BEBs required for each raft size and current speed is denoted by the number after the rating. Refer to figure 1, Conventional Rafting Procedures, to determine where and how boats are attached to conventional rafts.

WARNING

Never intermix IFB bays with IRB bays when building rafts. Failure to comply may result in damage to equipment or possible injury or death to personnel.

9. Do not intermix IFB bays with IRB bays when building rafts.

CONVENTIONAL RAFTING PROCEDURE (Contd)

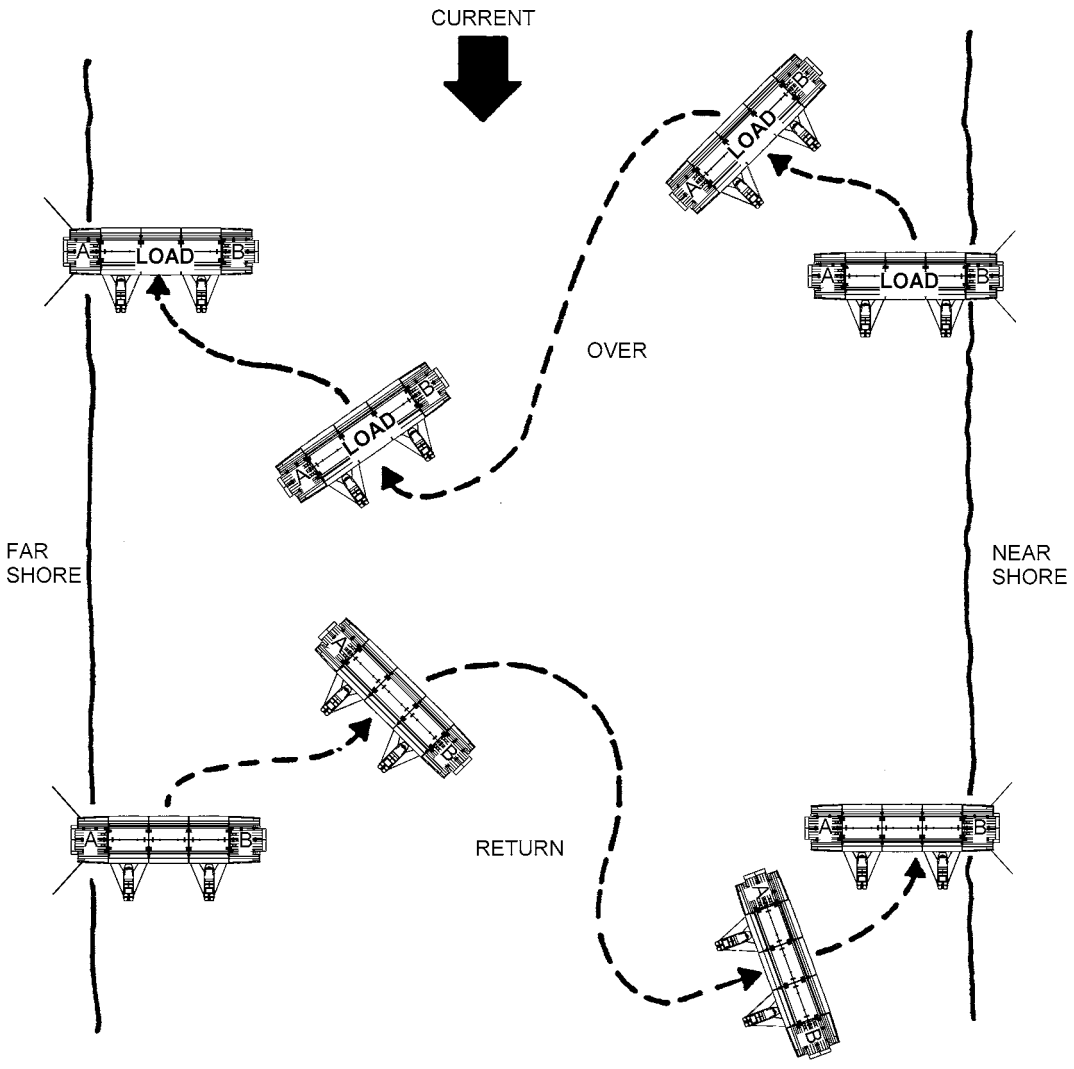


Figure 1. Conventional Rafting Procedures.

END OF WORK PACKAGE

LOCATION OF BASIC ISSUE ITEMS (BII), COMPONENTS OF END ITEMS (COEI), AND ADDITIONAL AUTHORIZATION LIST (AAL) ITEMS

THIS WORK PACKAGE SUPERSEDES WP 0044 00, DATED 8 APRIL 2003

NOTE

Refer to WP 0010 00 for installation of BII in ramp bay stowage compartment.

a. The following items can be stowed in the stowage compartments of the ramp bay:

(1) Two hand levers for operation of pumps.

(2) Spare Chem-lite tubes.

(3) Two coupling devices for bay-to-bay connection.

(4) Two cover plates for preventing debris from entering hinge points on IRB-R.

(5) Cleaning hook for removing lodged debris from hinge points on IRB-R.

(6) Two ropes for securing bay.

b. The following items can be stowed on the transporter:

(1) T-wrench for engaging outer ponton locks, lower lock-drive pins, and removal of bilge plugs.

(2) Rope for bridging from centerline.

(3) Pin and rope (lanyard) for releasing travel latch during controlled launch.

(4) Boat hook for assisting BEB crew and opening/closing foldlocks and travel latches.

(5) Rope for releasing lashing device during free launch of bay.

(6) Crowbar for use with roadway tool and during bay-to-bay connection.

(7) IRB hoisting gear (lifting sling) for high-bank launch.

(8) Roadway tool for closing gap between inner-to-inner pontons.

(9) 19 mm wrench for removing drain plugs.

c. The following items can be stowed on the Bridge Erection Boat:

(1) Rafting brackets for longitudinal rafting or docking of interior bays.

END OF WORK PACKAGE

OPERATING INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS
TABLE OF CONTENTS

WP Title	WP Sequence No.-Page No.
General	0046 00-1
Operation in Snow or Icy Conditions	0046 00-1
Operation in Rainy or Humid Conditions	0046 00-2
Operation in High Wind Conditions	0046 00-2
Operation in Extreme Heat or Dry Conditions	0046 00-2
Operation in Swift or Shallow Water	0046 00-2
Operating Transporter in Unusual Environment or Weather	0046 00-2
Manually Loading BAP from Ground	0047 00-1
Manually Unloading BAP to Ground	0048 00-1
Manually Bypassing Solenoid During Electric Power Loss	0049 00-1
Preparation for Emergency Manual Removal of BAP	0050 00-1
Manually Removing Load During LHS Power Loss	0051 00-1

OPERATING INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

THIS WORK PACKAGE SUPERSEDES WP 0046 00, DATED 8 APRIL 2003

GENERAL

This section contains special instructions for CBT and bridge operations in unusual conditions. The standard guidelines for bridge operation should be followed along with the following precautions for various weather conditions.

OPERATION IN SNOW OR ICY CONDITIONS

During bridge construction, operation, and recovery, follow all operating procedures for normal conditions and the following special instructions.

NOTE

Ensure snow and ice accumulation is removed from adjoining surfaces of pontons and from all ponton-locking levers and hinge points prior to launch or retrieval of bay.

Under extreme conditions it may become necessary to cut an upper coupling lever in order to disconnect or retrieve a bay. Ensure spare upper coupling levers are available per MRBC.

1. Remove any snow or ice from bridge equipment before and after operation.
2. Continually check upstream side of bridge for ice buildup or ice flows; remove ice buildup or ice flows off side of bridge where possible.
3. Monitor river flow and adjust anchorage accordingly. (Refer to WP 0035 00).
4. Wear gloves when operating or handling metallic equipment that is wet or ice covered, and exercise caution when working on bridge where snow or ice exist.
5. Check fluid levels more frequently in cold temperatures prior to operation. (Refer to WP 0064 00).

OPERATION IN RAINY OR HUMID CONDITIONS

Follow all operating procedures for normal conditions and the following special instructions.

1. Monitor river flow frequently and adjust anchorage accordingly.
2. Exercise caution when working on bridge where wet surfaces and equipment may become slippery.
3. Check bilges frequently for water accumulation in pontons. Have portable bilge pump ready and nearby, and pump water from pontons as necessary. (Refer to WP 0053 00).

OPERATION IN HIGH WIND CONDITIONS

Follow all operating procedures for normal conditions and the following special instructions.

1. Monitor river flow frequently and adjust anchorage accordingly. (Refer to WP 0035 00).
2. Monitor bridge centerline movement and add additional anchorage as required. (Refer to WP 0035 00).
3. Remove any large debris from upstream side of bridge immediately.
4. Ensure transverse upper couplings remain engaged by checking them before and after each vehicle crossing. (Refer to WP 0028 00 and WP 0029 00).

OPERATION IN EXTREME HEAT OR DRY CONDITIONS

Follow all operating procedures for normal conditions and the following special instructions.

1. Check fluid levels more frequently. (Refer to WP 0064 00).
2. Keep moving parts clean and well lubricated (for cleaning instructions, refer to WP 0053 00; for lubrication instructions. (Refer to WP 0063 00).

OPERATION IN SWIFT OR SHALLOW WATER

Follow all operating procedures for normal conditions and the following special instructions.

1. If performing a controlled or high-bank launch in swift water having a velocity of 6 ft (1.8 m) per second or greater, attach a Y-shaped bridle to the bay for stability.
2. If performing a high-bank launch or deploying bay by helicopter, it is possible to launch the bay in a minimum of 17 in. (43.2 cm) of water.

OPERATING TRANSPORTER IN UNUSUAL ENVIRONMENT OR WEATHER

For operation of the Heavy Expanded Mobility Tactical Truck (HEMTT) in unusual environment/weather conditions, see TM 9-2320-279-10; for the bridge erection boat, see TM 5-1940-277-10.

END OF WORK PACKAGE

MANUALLY LOADING BAP FROM GROUND

THIS WORK PACKAGE SUPERSEDES WP 0047 00, DATED 8 APRIL 2003

WARNING

Winch frame must be locked to BAP prior to loading BAP from ground. Failure to comply may result in damage to equipment or injury to personnel.

NOTE

When both levers are in UP position, the winch frame is locked to the BAP. Perform steps b and c if levers are in DOWN position.

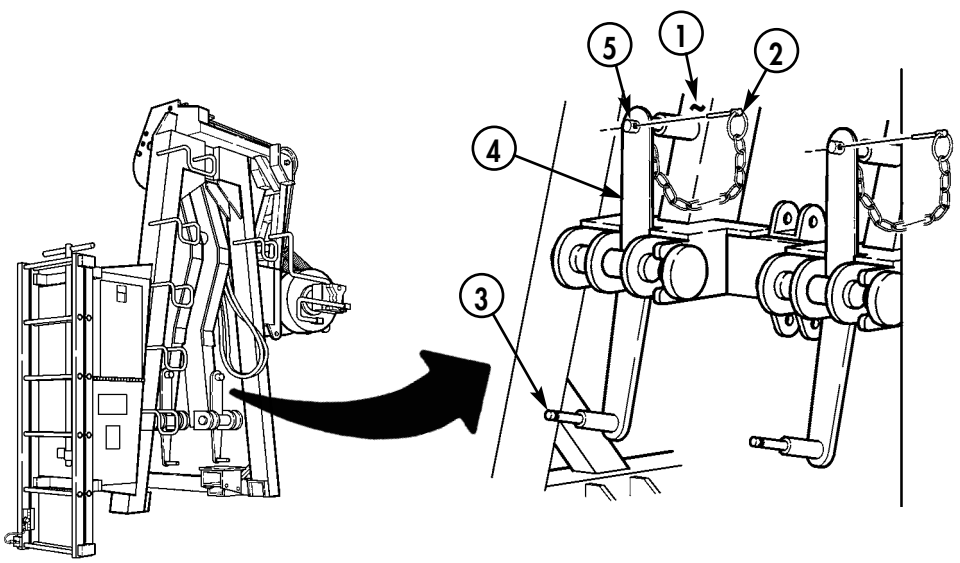
The following manual mode operations using cab control box are to be performed only when normal AUTO mode electric circuit is malfunctioning.

During all transporter operations, CBT operator will drive and be responsible for operation of LHS via the cab control box or remote control unit. The assistant will act as a ground guide, be responsible for directing operator using hand signals, and assist operator as needed.

a. If bay is loaded on BAP, inspect load and make sure it is secure.

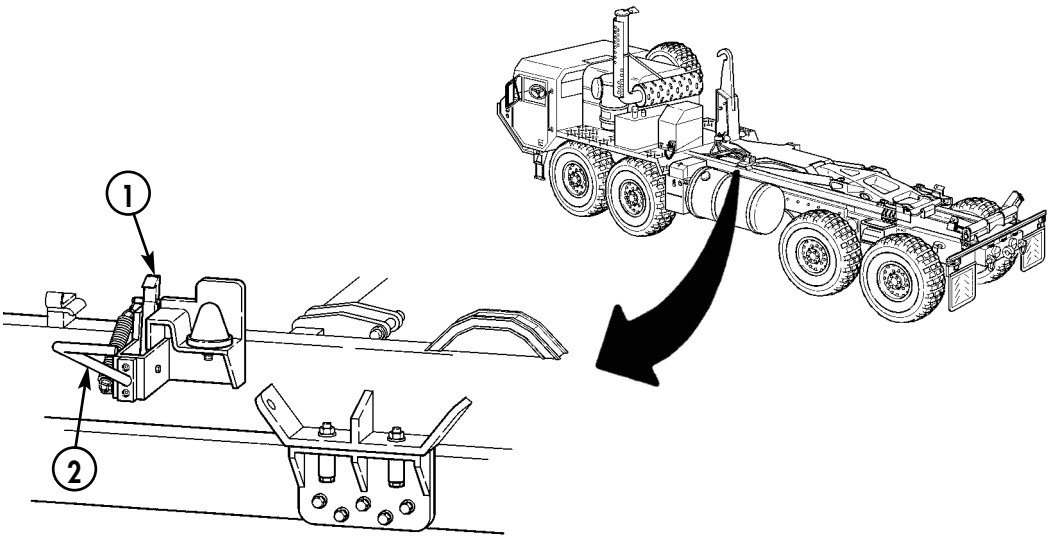
b. Remove quick-release pin (2) from stud (3) at both sides of winch frame (1).

c. Swing lever (4) up so that end of stud (5) is through hole in lever (4), and install quick-release pin (2) on stud (5) at both sides of winch frame (1).



MANUALLY LOADING BAP FROM GROUND (Contd)

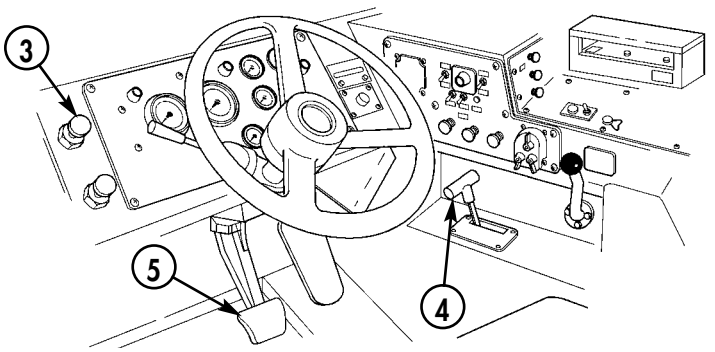
d. Set both BAP hold-down locks (1) in AUTO ENGAGED position by pushing in handles (2).



CAUTION

Assistant will act as ground guide when backing up CBT and during operation of LHS. Failure to comply may result in damage to equipment.

e. Back up CBT so that rear of vehicle is directly in line with BAP and approximately 5 to 6 ft (1.5 to 1.8 m) away, then apply service brake (5), move transmission selector lever (4) to N (neutral) and pull PARKING BRAKE control (3) out.



MANUALLY LOADING BAP FROM GROUND (Contd)

CAUTION

High idle switch must be in OFF position prior to engaging PTO. Failure to comply may result in damage to vehicle transmission or LHS.

NOTE

Operator will perform steps f through s using LHS cab control box.

f. With HIGH IDLE switch (8) in OFF position, move PTO ENGAGE switch (9) to ON position. PTO ENGAGE indicator (10) will light.

CAUTION

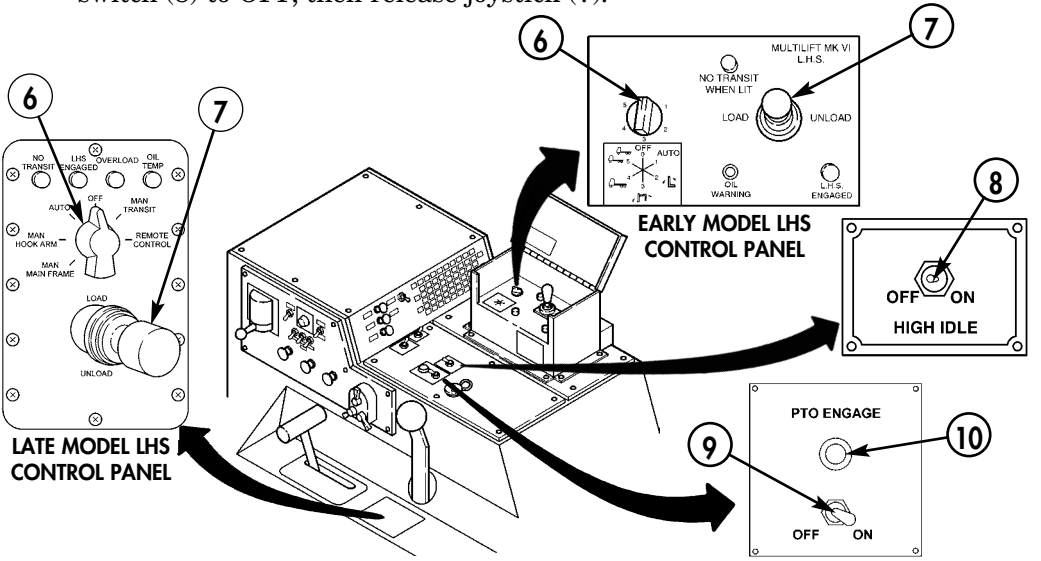
To prevent surging or uneven operation of LHS or BAP winch, either perform all operations with CBT HIGH IDLE switch off, or engage CBT high idle after LHS or BAP winch is in motion, and disengage CBT high idle prior to stopping motion. Failure to comply may result in damage to equipment.

g. Turn LHS MODE SELECT switch (6) to No. 2 (HOOK ARM ONLY) position on early models or MAN HOOK ARM position on late models.

NOTE

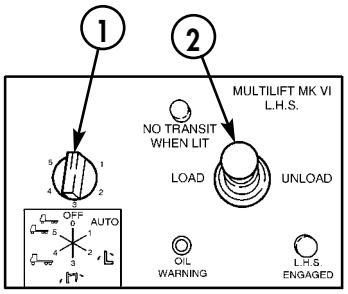
LHS ENGAGED indicator will light up whenever joystick is held in LOAD or UNLOAD position.

h. Hold joystick (7) in UNLOAD position and move HIGH IDLE switch (8) to ON until LHS hook arm is fully extended rearward. Move HIGH IDLE switch (8) to OFF, then release joystick (7).

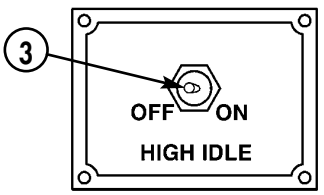


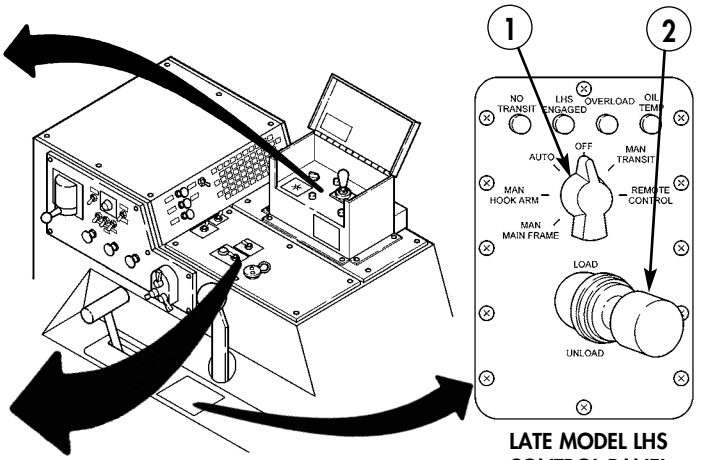
MANUALLY LOADING BAP FROM GROUND (Contd)

i. Turn LHS MODE SELECT switch (1) to No. 3 (MAIN FRAME ONLY) position on early models or MAN MAIN FRAME position on late models.



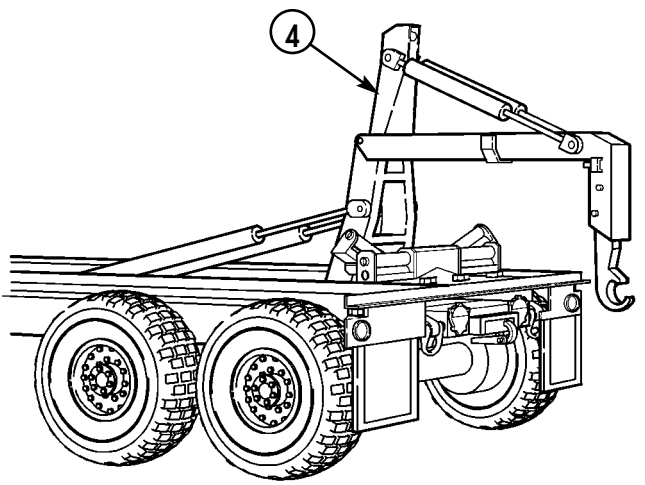
EARLY MODEL LHS CONTROL PANEL





LATE MODEL LHS CONTROL PANEL

j. Hold joystick (2) in UNLOAD position and move HIGH IDLE switch (3) to ON until LHS main frame (4) is extended. Move HIGH IDLE switch (3) to OFF, then release joystick (2).



MANUALLY LOADING BAP FROM GROUND (Contd)

CAUTION

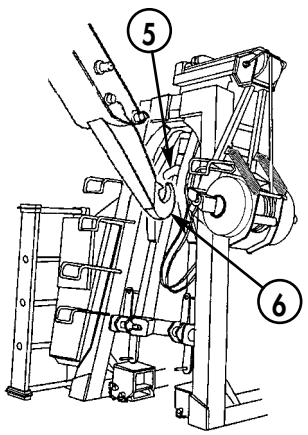
Ensure HIGH IDLE switch is in OFF position prior to placing vehicle transmission in gear, or damage to transmission may occur.

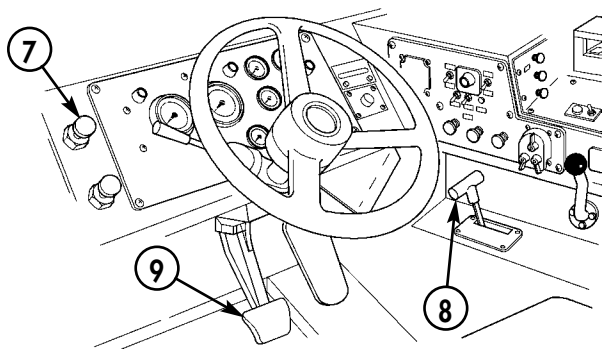
If hook end of LHS hook arm is not properly connected to BAP hook bar, assistant must immediately signal operator to stop loading procedure. Move CBT forward and repeat steps o and p, or damage to equipment may result.

k. Back up CBT until end of hook arm (6) is centered directly under BAP hook bar (5), then apply service brake (9), move transmission selector lever (8) to N (neutral), and pull PARKING BRAKE control (7) out.

l. Hold joystick (2) in LOAD position until LHS hook arm (6) is fully connected to BAP hook bar (5), then release joystick (2).

m. Push PARKING BRAKE control (7) in.





MANUALLY LOADING BAP FROM GROUND (Contd)

WARNING

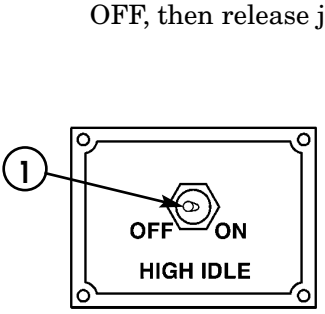
When NO TRANSIT WHEN LIT indicator is illuminated, CBT may be maneuvered in the immediate vicinity of loading/unloading site, but should not be driven on open road. Failure to comply may result in damage to equipment and possible injury or death to personnel.

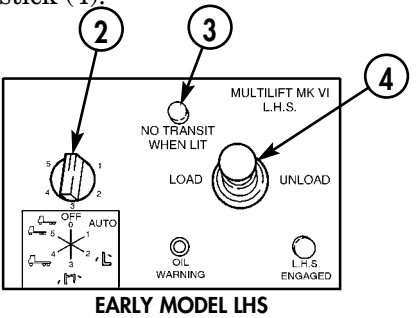
NOTE

When loading BAP, its runners must line up with LHS rear rollers, and it may become necessary to steer transporter straight under BAP as it is lifted from ground.

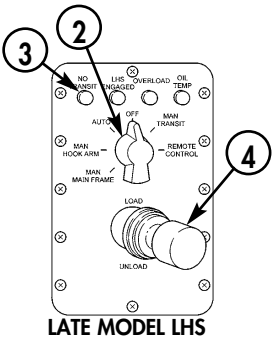
n. Hold joystick (4) in LOAD position and move HIGH IDLE switch (1) to ON until BAP runners (5) contact LHS rear rollers (7) and BAP (6) clears ground. Move HIGH IDLE switch (1) to OFF, then release joystick (4), and pull PARKING BRAKE control (10) out.

o. Hold joystick (4) in LOAD position and move HIGH IDLE switch (1) to ON until BAP (6) is loaded, LHS main frame (8) is fully stowed, and NO TRANSIT WHEN LIT indicator (3) is off. Move HIGH IDLE switch (1) to OFF, then release joystick (4).

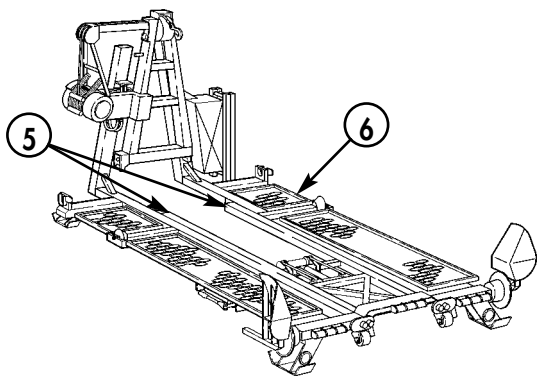


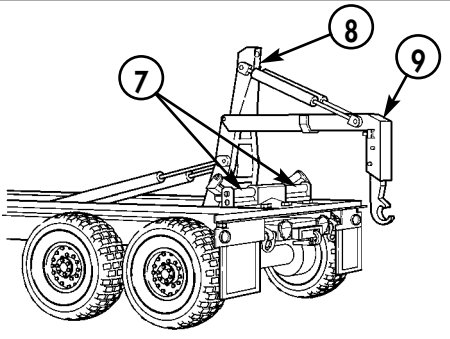


EARLY MODEL LHS CONTROL PANEL



LATE MODEL LHS CONTROL PANEL





MANUALLY LOADING BAP FROM GROUND (Contd)

p. Turn LHS MODE SELECT switch (2) to No. 2 (HOOK ARM ONLY) position on early models or MAN HOOK ARM position on late models.

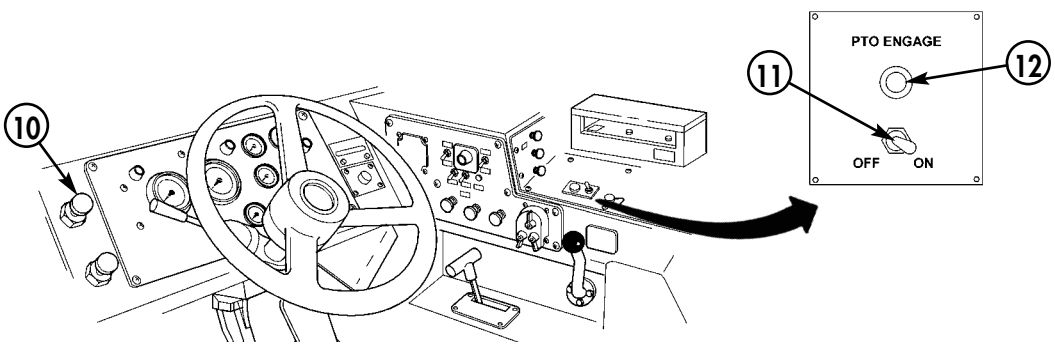
q. Hold joystick (4) in LOAD position and move HIGH IDLE switch (1) to ON until LHS hook arm (9) is fully stowed and NO TRANSIT WHEN LIT indicator (3) is off. Move HIGH IDLE switch (1) to OFF, then release joystick (4).

r. Move PTO ENGAGE switch (11) to OFF position. PTO ENGAGE indicator light (12) should go out.

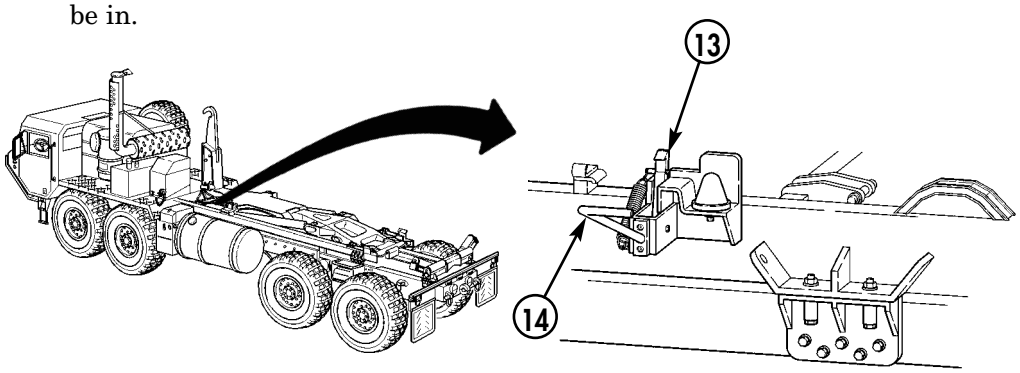
CAUTION

LHS mode select switch must be in 0 (OFF/TRANSPORT) position prior to road travel, or damage to LHS main frame and hook arm cylinders may result.

s. Turn LHS MODE SELECT switch (2) to 0 (OFF/TRANSPORT) position on early models or OFF position on late models.



t. Check BAP hold-down lock (13) at both sides of BAP; handles (14) should be in.



END OF WORK PACKAGE

MANUALLY UNLOADING BAP TO GROUND

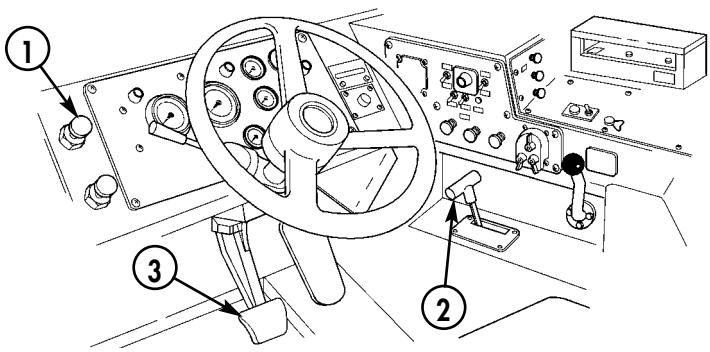
THIS WORK PACKAGE SUPERSEDES WP 0048 00, DATED 8 APRIL 2003

NOTE

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

During all transporter operations, the CBT operator will drive and be responsible for the operation of the LHS via the cab control box or remote control unit. The assistant will act as a ground guide, be responsible for directing the operator using hand signals, and assist the operator as needed.

a. Position CBT so that rear of vehicle is approximately 16 ft (4.9 m) in front of where BAP is to set on ground, then apply service brake (3), move transmission selector lever (2) to N (neutral), and pull PARKING BRAKE control (1) out.



MANUALLY UNLOADING BAP TO GROUND (Contd)

WARNING

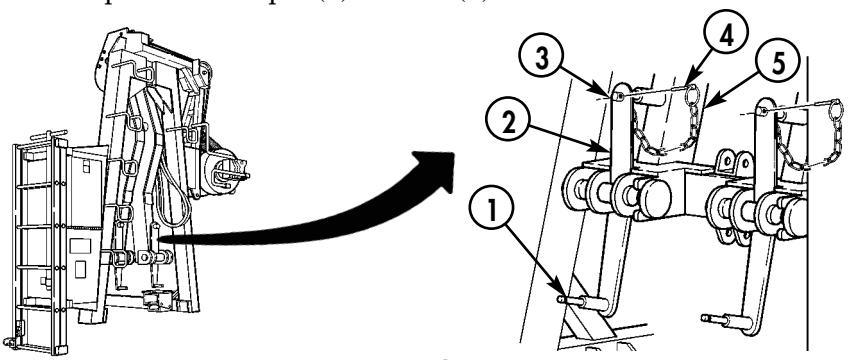
Winch frame must be locked to BAP prior to unloading BAP to ground. Failure to comply may result in damage to equipment or injury to personnel.

NOTE

When both levers are in the UP position, the winch frame is locked to the BAP. Perform steps b and c if levers are in the DOWN position.

b. Remove quick-release pin (4) from stud (1) at both sides of winch frame (5).

c. Swing lever (2) up so that end of stud (3) is through hole in lever (2), and install quick-release pin (4) on stud (3) at both sides of winch frame (5).

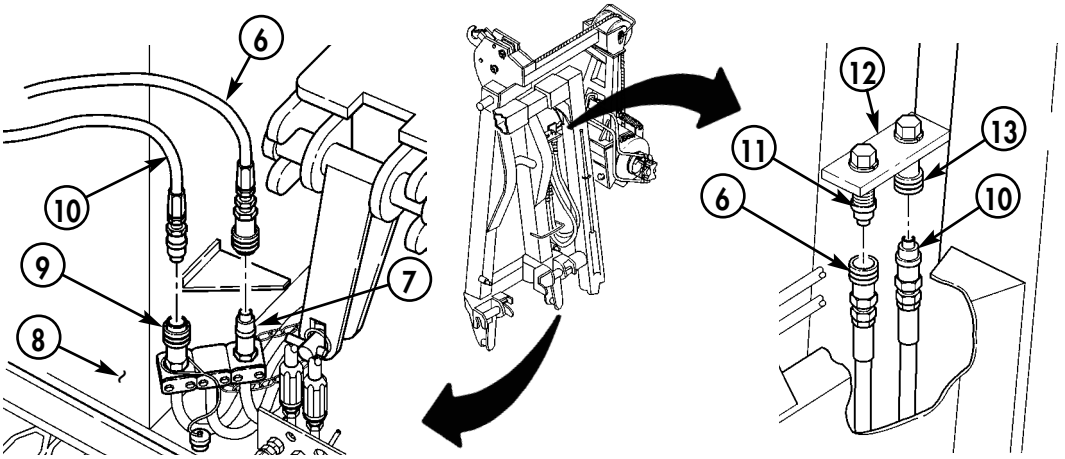


NOTE

Perform steps d and e if BAP winch hydraulic hoses are connected to LHS couplings or disconnected from stowage couplings.

d. Disconnect winch hydraulic hoses (6) and (10) from LHS couplings (7) and (9), located on LHS hook arm (8).

e. Connect winch hydraulic hoses (10) and (6) to stowage couplings (13) and (11), located on winch frame bracket (12).

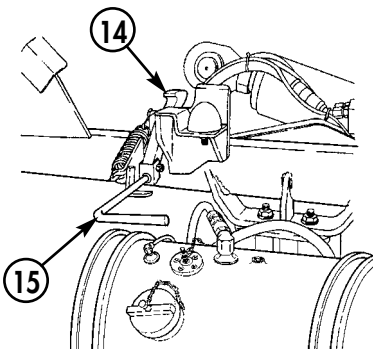


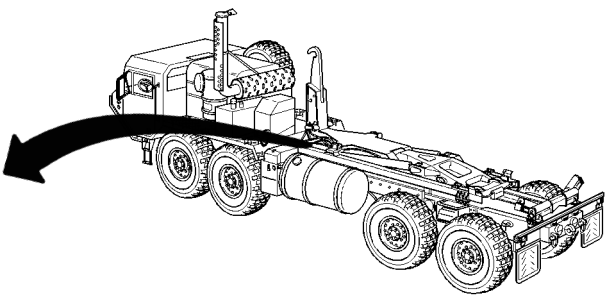
MANUALLY UNLOADING BAP TO GROUND (Contd)

CAUTION

BAP hold-down locks must be unlocked prior to unloading BAP to ground. Failure to comply will result in damage to equipment.

f. Set both BAP hold-down locks (14) in DISENGAGED position by pulling out handles (15).



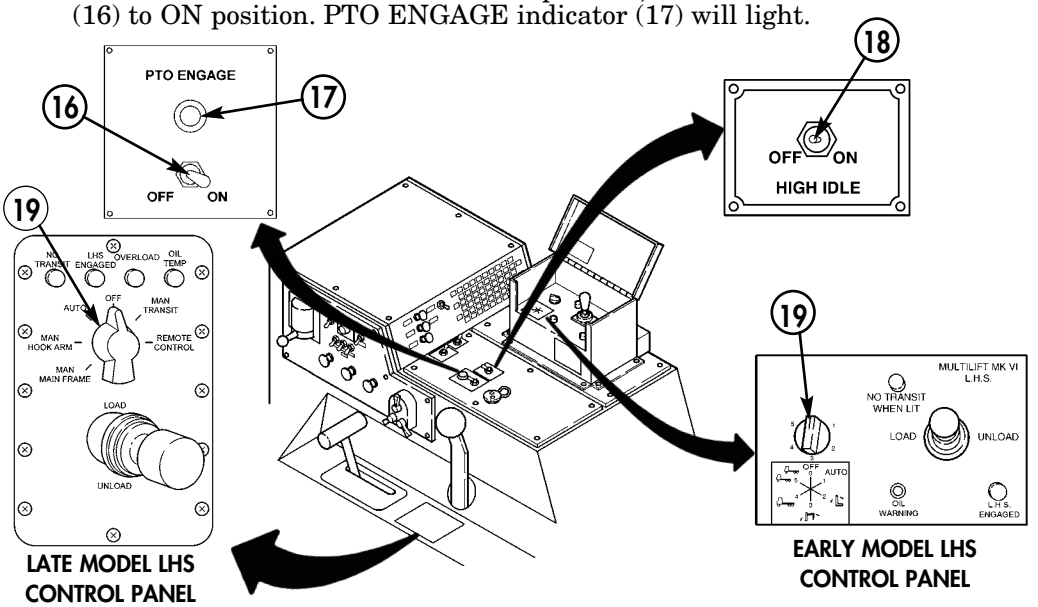


g. Turn LHS MODE SELECT switch (19) to No. 2 (HOOK ARM ONLY) position on early models or MAN HOOK ARM position on late models.

CAUTION

High idle switch must be in OFF position prior to engaging PTO. Failure to comply may result in damage to vehicle transmission or LHS.

h. With HIGH IDLE switch (18) in OFF position, move PTO ENGAGE switch (16) to ON position. PTO ENGAGE indicator (17) will light.



LATE MODEL LHS CONTROL PANEL

EARLY MODEL LHS CONTROL PANEL

MANUALLY UNLOADING BAP TO GROUND (Contd)

WARNING

When the NO TRANSIT WHEN LIT indicator is illuminated, the CBT may be maneuvered in the immediate vicinity of the loading/unloading site, but should not be driven on the open road. Failure to comply may result in damage to equipment and possible injury or death to personnel.

CAUTION

To prevent surging or uneven operation of LHS or BAP winch, either perform all operations with CBT high idle switch off, or engage CBT high idle after LHS or BAP winch is in motion, and disengage CBT high idle prior to stopping motion. Failure to comply may result in damage to equipment.

NOTE

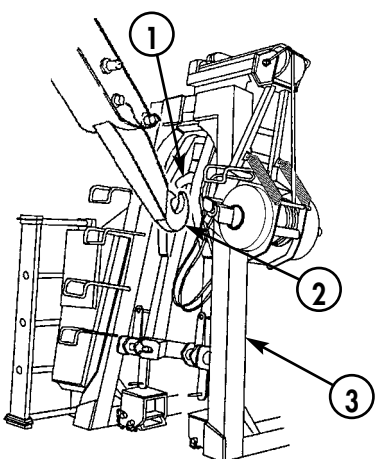
The LHS ENGAGED indicator will light up whenever the joystick is held in the LOAD or UNLOAD position.

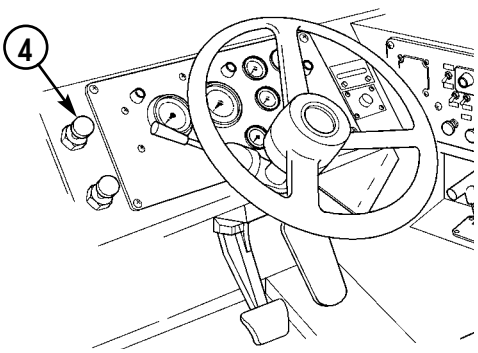
i. Hold joystick (7) in UNLOAD position and move HIGH IDLE switch (8) to ON until LHS hook arm (2) raises BAP (3) and completes its full movement rearward. Move HIGH IDLE switch (8) to OFF, then release joystick (7). NO TRANSIT WHEN LIT indicator (5) will light.

j. Turn LHS MODE SELECT switch (6) to No. 3 (MAIN FRAME ONLY) position on early models or MAN MAIN FRAME position on late models.

k. Hold joystick (7) in UNLOAD position and move HIGH IDLE switch (8) to ON until rear end of BAP (3) contacts ground. Move HIGH IDLE switch (8) to OFF, then release joystick (8).

l. Push PARKING BRAKE control (9) in.



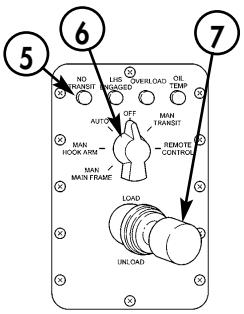


MANUALLY UNLOADING BAP TO GROUND (Contd)

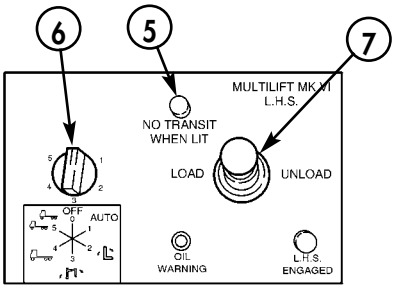
NOTE

CBT should be in neutral and parking brake released to allow transporter to roll forward when unloading BAP.

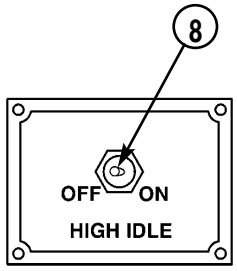
m. Hold joystick (7) in UNLOAD position and move HIGH IDLE switch (8) to ON until front end of BAP (3) is approximately 1 ft (30.5 cm) from ground. Move HIGH IDLE switch (8) to OFF, then release joystick (7).



LATE MODEL LHS CONTROL PANEL



EARLY MODEL LHS CONTROL PANEL



n. Hold joystick (7) in UNLOAD position until front end of BAP (3) rests on ground, then release joystick (7) and set parking brake by pulling PARKING BRAKE control (9) out.

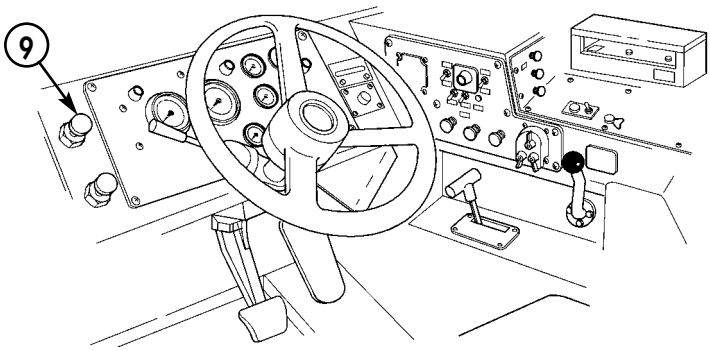
CAUTION

Ensure HIGH IDLE switch is in OFF position prior to putting vehicle transmission in gear or damage to transmission may result.

NOTE

If LHS hook arm does not disengage, drive CBT forward 2 in. (5 cm) and repeat step o.

o. Hold joystick (7) in UNLOAD position until end of LHS hook (2) is fully disconnected from BAP hook bar (1).



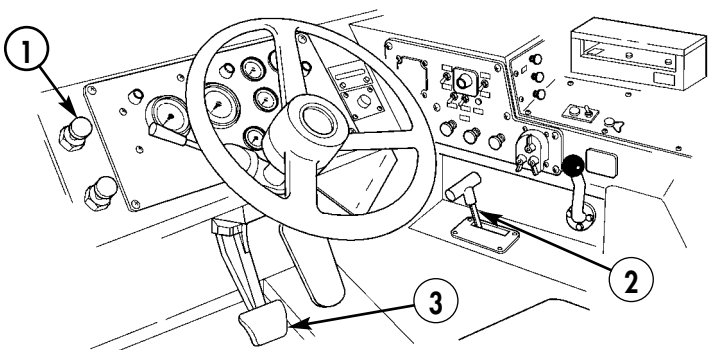
MANUALLY UNLOADING BAP TO GROUND (Contd)

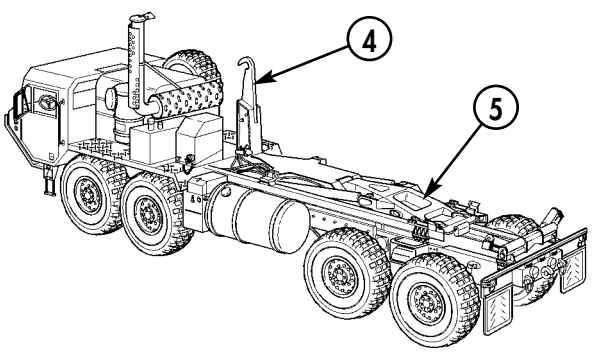
p. Push PARKING BRAKE control (1) in and drive CBT forward approximately 5 ft (1.5 m), then apply service brake (3), move transmission selector lever (2) to N (neutral), and set parking brake by pulling PARKING BRAKE control (1) out.

q. Hold joystick (11) in LOAD position and move HIGH IDLE switch (8) to ON until main frame (5) is fully stowed. Move HIGH IDLE switch (8) to OFF, then release joystick (11).

r. Turn LHS MODE SELECT switch (9) to No. 2 (HOOK ARM ONLY) position on early models or MAN HOOK ARM position on late models.

s. Hold joystick (11) in LOAD position and move HIGH IDLE switch (8) to ON until hook arm (4) is fully stowed and NO TRANSIT WHEN LIT indicator (10) is off. Move HIGH IDLE switch (8) to OFF, then release joystick (11).





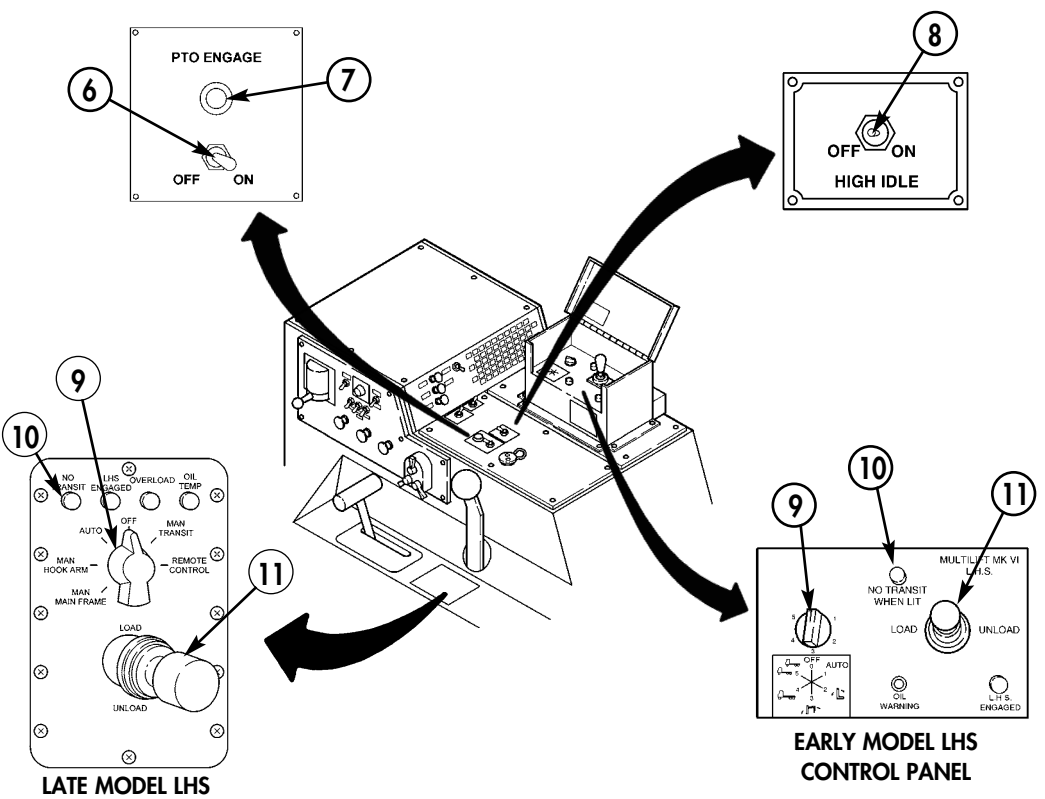
MANUALLY UNLOADING BAP TO GROUND (Contd)

t. Move PTO ENGAGE switch (6) to OFF position. PTO ENGAGE indicator (7) should go off.

CAUTION

The LHS mode select switch must be in the 0 (OFF/TRANSPORT) position on early models or OFF position on late models prior to road travel or damage to LHS main frame and hook arm cylinders may result.

u. Turn LHS MODE SELECT switch (9) to 0 (OFF TRANSPORT) position on early models or OFF position on late models



LATE MODEL LHS CONTROL PANEL

EARLY MODEL LHS CONTROL PANEL

END OF WORK PACKAGE

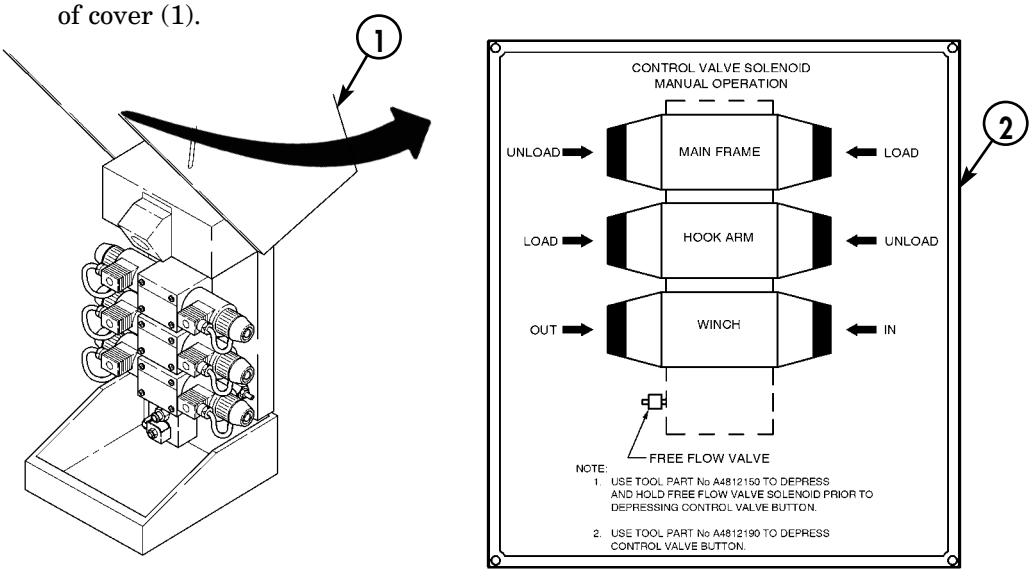
MANUALLY BYPASSING SOLENOID DURING ELECTRIC POWER LOSS

NOTE

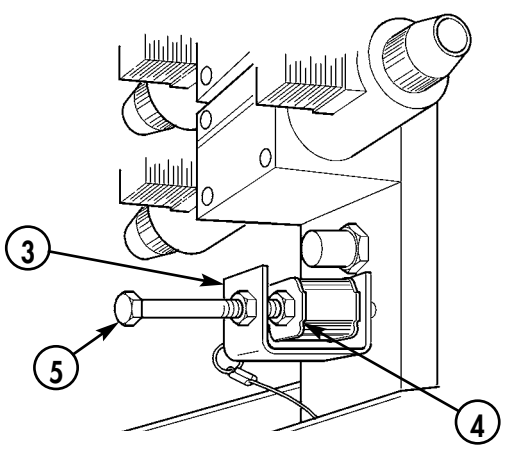
Manual mode operations using the cab control box are to be performed only when the normal AUTO mode electric circuit is malfunctioning.

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

a. Open hydraulic manifold assembly cover (1) and review data plate (2) inside of cover (1).



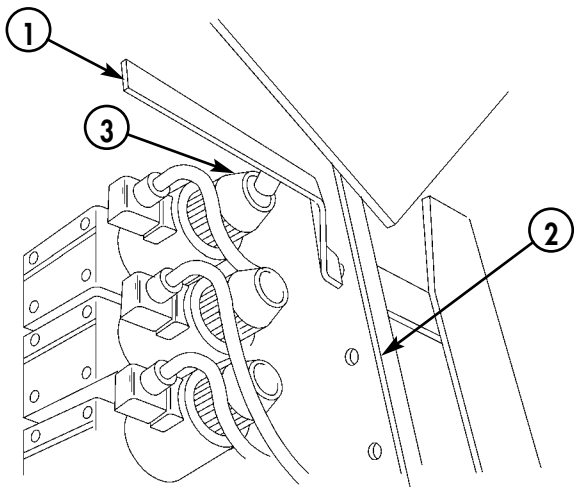
b. Install free-flow valve tool (3) on free-flow valve (4) and tighten thumbscrew (5).



0049 00-1

MANUALLY BYPASSING SOLENOID DURING ELECTRIC POWER LOSS (Contd)

c. Refer to and perform the appropriate operational procedures with the following exceptions: when the procedure directs the operation of the remote control unit or the cab controls, use the manual valve plunger tool (1), follow the data plate under the cover, and perform the operation within the control valve layout of the hydraulic manifold assembly. Fit plunger tool (1) in appropriate hole in hydraulic manifold assembly (2) and press plunger tool (1) into solenoid button (3).



END OF WORK PACKAGE

PREPARATION FOR EMERGENCY MANUAL REMOVAL OF BAP

CAUTION

Main frame of LHS must be in its fully stowed position. Attempting to lift BAP with main frame not stowed could result in damage to equipment.

NOTE

Manual mode operations using cab control box are to be performed only when 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 down with the help of a higher maintenance level.

a. Ensure LHS main frame is fully stowed (down). If LHS main frame is not fully stowed, lower LHS main frame by following solenoid manual bypass procedure (WP 0049 00, Manually Bypassing Solenoid During Electric Power Loss).

WARNING

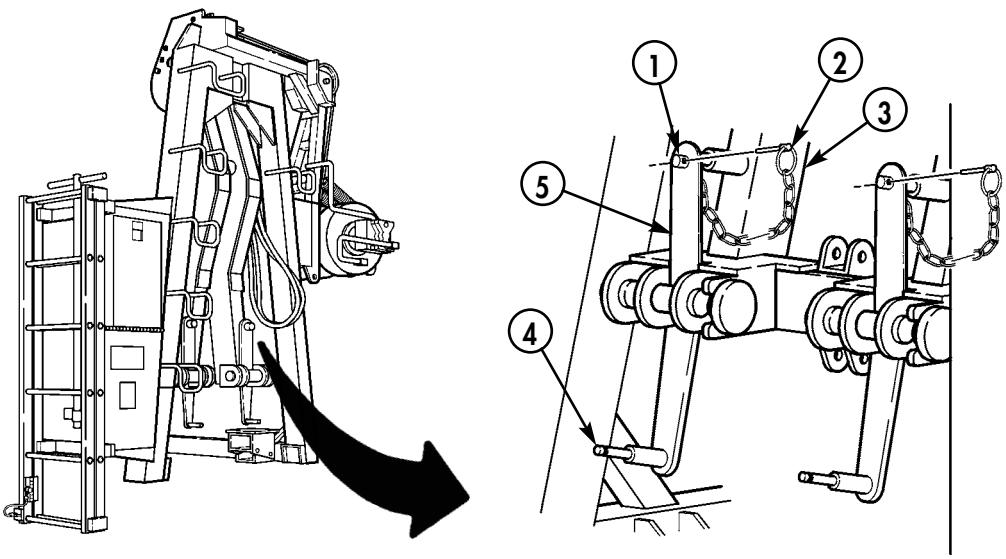
Winch frame must be locked to BAP prior to unloading BAP to ground or damage to equipment or injury to personnel may result.

NOTE

When both levers are in UP position, winch frame is locked to BAP. Perform steps b and c if levers are in the DOWN position.

b. Remove quick-release pin (2) from stud (4) at both sides of winch frame (3).

c. Swing lever (5) up so that end of stud (1) is through hole in lever (5), and install quick-release pin (2) on stud (1) at both sides of winch frame (3).



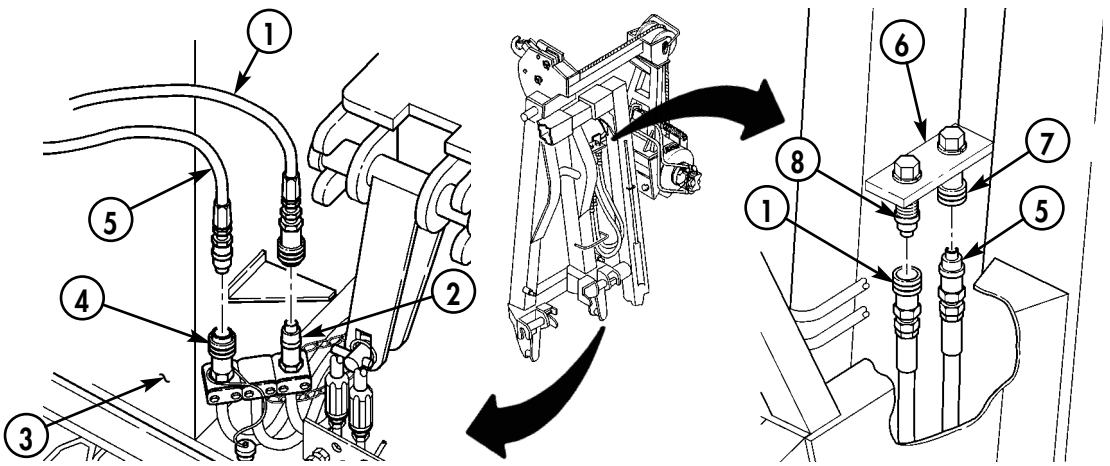
PREPARATION FOR EMERGENCY MANUAL REMOVAL OF BAP (Contd)

NOTE

Perform steps d and e if BAP winch hydraulic hoses are connected to LHS couplings or disconnected from stowage couplings.

d. Disconnect winch hydraulic hoses (5) and (1) from LHS couplings (4) and (2), located on LHS hook arm (3).

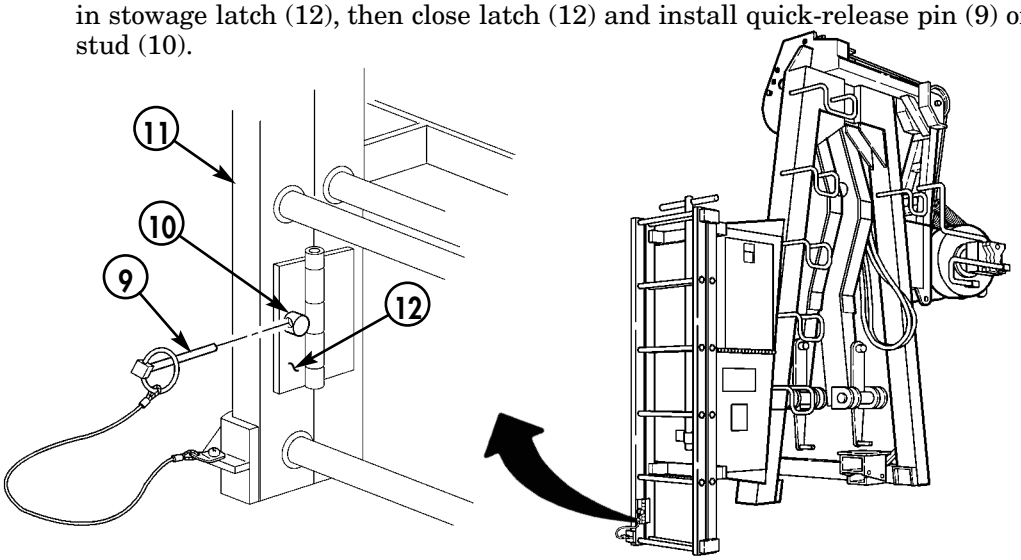
e. Connect winch hydraulic hoses (5) and (1) to stowage couplings (7) and (8) located on winch frame bracket (6).



NOTE

Perform step f if BAP mounting ladder is not secured.

f. Raise sliding half of mounting ladder (11) up until stud (10) aligns with hole in stowage latch (12), then close latch (12) and install quick-release pin (9) on stud (10).



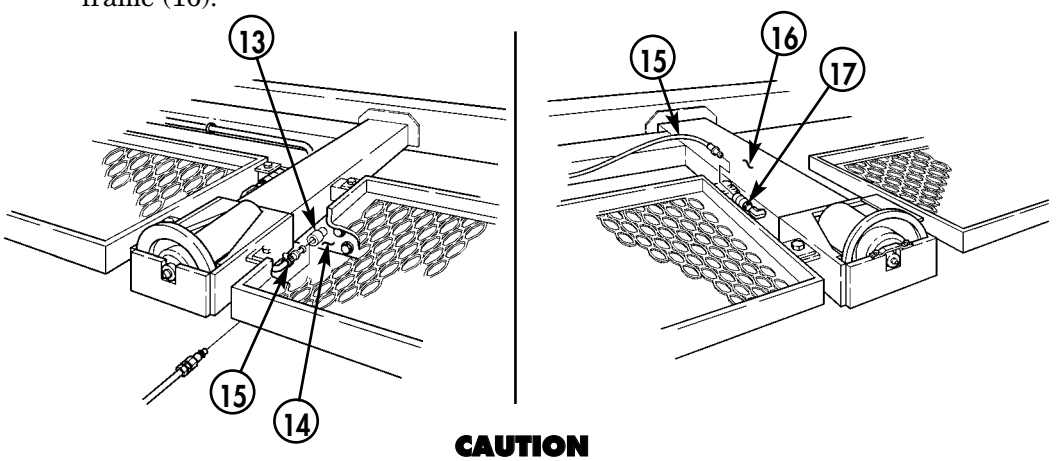
PREPARATION FOR EMERGENCY MANUAL REMOVAL OF BAP (Contd)

NOTE

Perform steps g and h if BAP air supply hose is connected to transporter or disconnected from stowage coupling.

g. Disconnect air supply hose (15) from tire inflation air coupling (13), located on vehicle frame (14) near fuel tank at driver's side.

h. Connect air supply hose (15) to stowage coupling (17) at side of BAP frame (16).



CAUTION

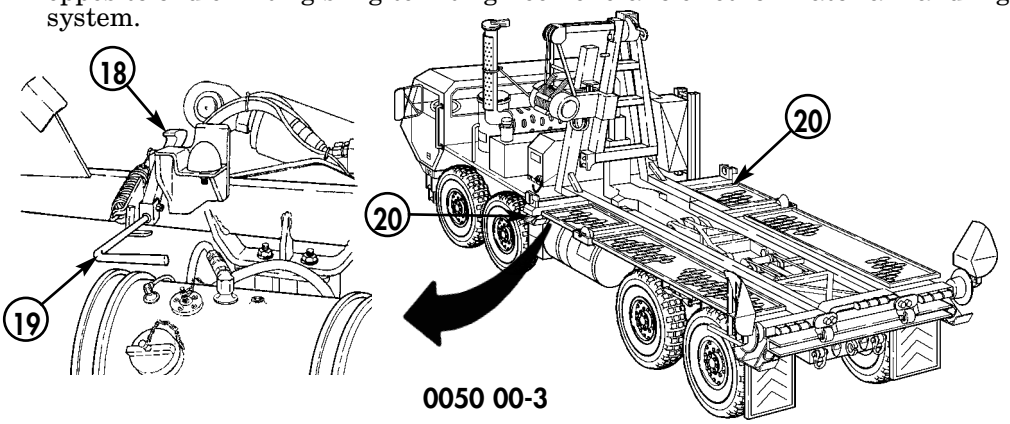
BAP hold-down locks must be unlocked prior to unloading BAP to ground. Failure to comply will result in damage to equipment.

i. Set both BAP hold-down locks (18) in DISENGAGED position by pulling out handles (19).

CAUTION

The BAP is front-heavy. Ensure BAP hangs level when lifted or damage to equipment may result.

j. Connect lifting sling to four BAP lifting eyes (20) and connect large ring at opposite end of lifting sling to lifting hook of crane or other material handling system.



PREPARATION FOR EMERGENCY MANUAL REMOVAL OF BAP (Contd)

k. Remove locking pin (2) from hook arm (1).

WARNING

Do not lift a load greater than the rated load capacity of the crane or materiel handling equipment. Failure to comply may result in damage to equipment or possible injury or death to personnel.

All personnel must stand clear of equipment prior to lifting operations or serious injury or death may result.

NOTE

The BAP weighs 5,810 lb. (2,637 kg). The BAP with bay weighs a minimum of 19,810 lb. (8,986 kg).

l. Signal crane operator to slowly lift BAP until weight of BAP is off transporter.

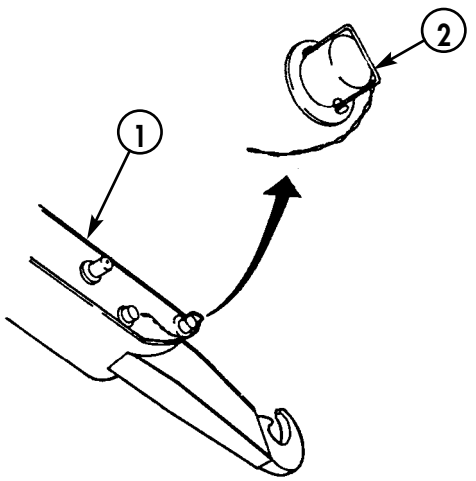
WARNING

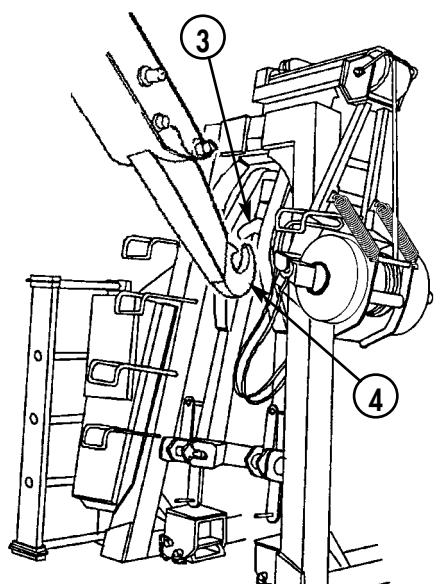
LHS hook arm is heavy and will fall free when the BAP is moved rearward. Under no circumstances should LHS hook arm be pried free from BAP hook bar by personnel. Failure to comply may result in injury or death to personnel.

m. Move the BAP rearward until LHS hook (4) drops free of BAP hook bar (3).

n. Raise BAP until clear of transporter, then set BAP on ground and slacken lifting sling.

o. Disconnect large ring of lifting sling from crane lifting hook, and remove lifting sling from four BAP lifting eyes.





END OF WORK PACKAGE

MANUALLY REMOVING LOAD DURING LHS POWER LOSS

NOTE

Manual mode operations using the cab control box are to be performed only when normal AUTO SEQUENCE mode electric circuit is not operating.

This procedure is used to remove load from transporter with a failed LHS or other failure that prevents operation of LHS.

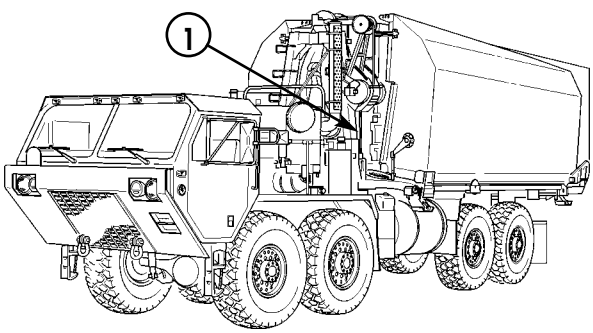
Each transporter is equipped with one hose assembly stowed in left-hand stowage box on transporter. Two hose assemblies (one from each vehicle) are required.

a. Position transporters so LHS control boxes (1) on both transporters are side by side.

b. Shut off engines on both transporters.

NOTE

Refer to figure 1, Transporter Hose, for steps c through g.



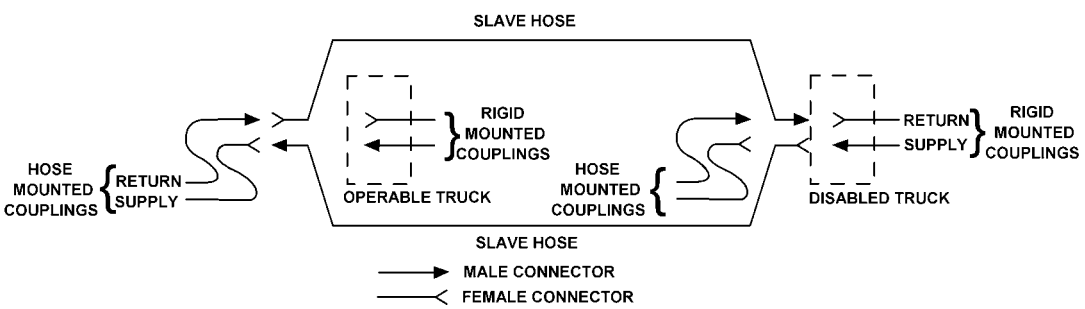
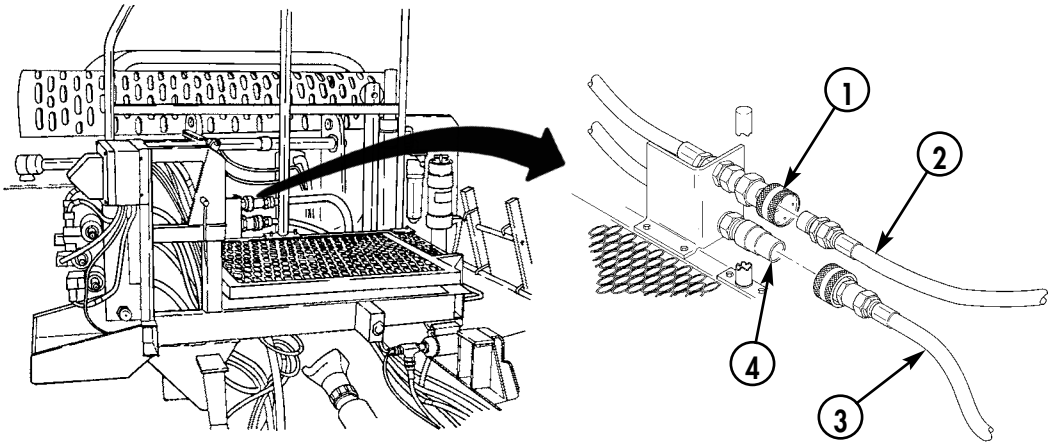


Figure 1. Transporter Hose Flow Diagram.

MANUALLY REMOVING LOAD DURING LHS POWER LOSS (Contd)

c. Disconnect LHS hoses (2) and (3) from quick-disconnects (1) and (4) on both transporters.

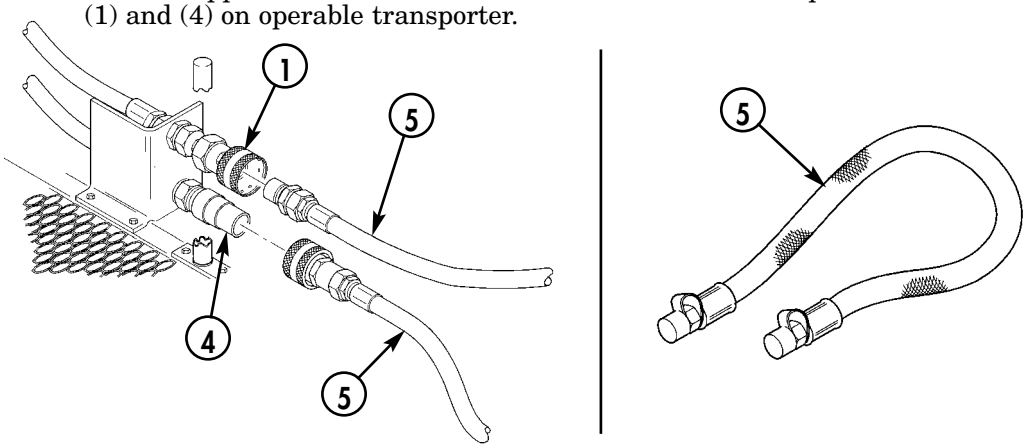


CAUTION

Make sure slave hoses are not stretched or run over during operation or damage to equipment may result.

d. Connect two slave hose assemblies (5) to LHS hoses (2) and (3) on disabled transporter.

e. Connect opposite ends of two slave hose assemblies (5) to quick-disconnects (1) and (4) on operable transporter.



f. Start engines of both transporters and perform load/unload operations using operable transporter controls (refer to WP 0020 00 and WP 0021 00 for loading/unloading procedures).

g. After completion of loading/unloading procedures, disconnect and connect hoses in reverse order.

END OF WORK PACKAGE

OPERATING INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section V. OPERATION OF SPECIAL PURPOSE KITS
TABLE OF CONTENTS

WP Title	WP Sequence No.-Page No.
General	0053 00-1
Bilge Pump Operation	0053 00-2
Power Wash Pump Operation	0053 00-4

OPERATING INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section V. OPERATION OF SPECIAL PURPOSE KITS

THIS WORK PACKAGE SUPERSEDES WP 0053 00, DATED 8 APRIL 2003

GENERAL

A gasoline engine driven self-priming centrifugal pump from the bridge supplemental set is supplied for use to pump water from the ponton bilges as necessary. The unit is portable and has 2-in. (51-mm) diameter detachable pressure hoses. The pump can also be used to supply water under pressure for power washing the bay with nozzle (provided).

BILGE PUMP OPERATION

To pump out water from ponton bilges, follow the procedure listed below.

1. Connect suction hose (6) to pump inlet (3).

NOTE

Loosen bilge plugs slowly to allow residual pressure to escape.

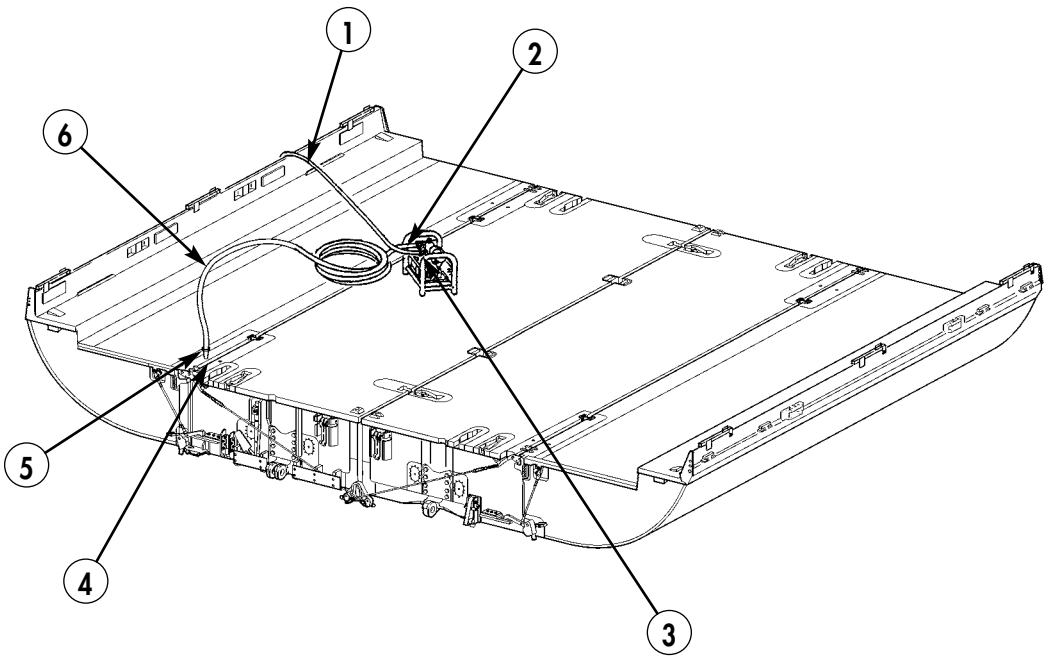
2. Remove bilge plug (5) from ponton bilge port (4), using slotted end of T-wrench.
3. Insert end of suction hose (6) through ponton bilge port (4) and all the way to bottom of ponton.
4. Connect discharge hose (1) to pump outlet (2), and place end of hose (1) overboard of bay.
5. Start and operate pump per TM 5-4320-200-13&P.
6. When ponton bilge has been pumped dry, stop engine per TM 5-4320-200-13&P, and remove suction hose (6) from ponton bilge port (4).

NOTE

Ensure bilge plug has a gasket and gasket is in good condition prior to installation. Notify unit maintenance if gasket is missing or damaged.

7. Using slotted end of T-wrench, install bilge plug (5) on ponton bilge port (4).
8. Perform steps 1 through 7 on remaining ponton bilges as necessary.
9. Remove discharge hose (1) and suction hose (6) from pump outlet (2) and inlet (3), and remove pump from bay.

BILGE PUMP OPERATION (Contd)



BILGE PUMP CONFIGURATION

POWER WASH PUMP OPERATION

To operate the pump as a power washer for cleaning mud and debris from the bay, follow the procedure listed below.

1. Connect suction hose (1) to pump inlet (3).
2. Connect discharge hose (4) to pump outlet (2), and connect nozzle (5) to end of hose (4).

CAUTION

Do not allow end of suction hose to touch bottom of river or stream; mud, weeds, or debris may be sucked into pump and damage pump.

3. Place end of suction hose (1) overboard into water.

WARNING

Water is discharged from pump nozzle under extreme pressure. Avoid cleaning in direction of personnel; mud, small rocks, and debris may fly up and injury to personnel may result.

CAUTION

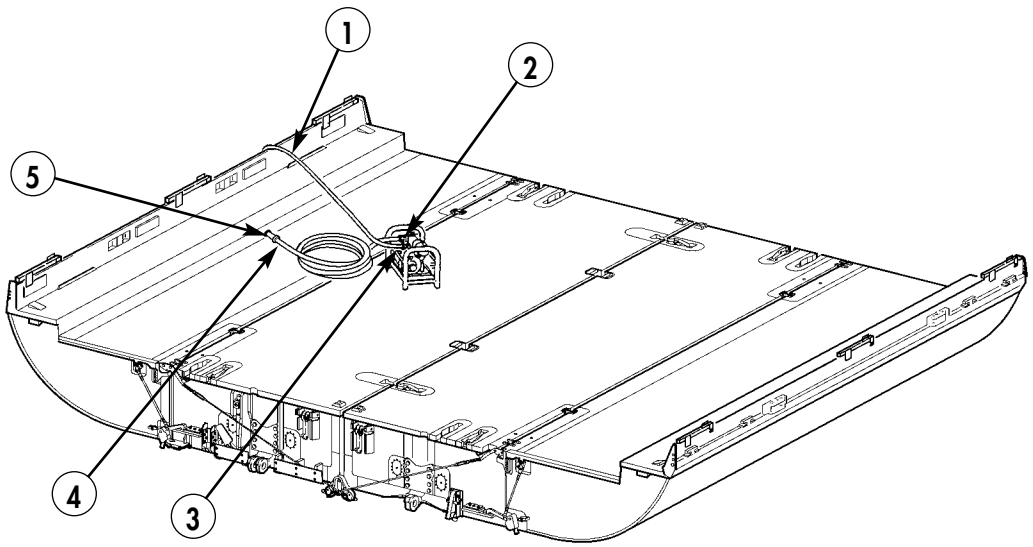
Ensure cover plates are not removed from ramp bays until deck surface has been washed. Removing cover plates prior to washing will defeat purpose of using them. Failure to comply may result in rocks and debris entering hinge points and jamming outer pontons during bay retrieval.

NOTE

Prior to washing ramp bay, ensure rear (approach end) is fully raised. Wash dirt and debris to the center of bay first, then in the direction of the front (coupling end).

4. Holding nozzle (5) away from personnel, start and operate pump per TM 5-4320-200-13&P, and wash off debris from bay surfaces.
5. Stop pump engine per TM 5-4320-200-13&P.
6. Remove nozzle (5) from end of discharge hose (4), and disconnect hose (4) from pump outlet (2).
7. Pull suction hose (1) from water, disconnect hose (1) from pump inlet (3), and remove pump from bay.

POWER WASH PUMP OPERATION (Contd)



POWER WASH PUMP CONFIGURATION

END OF WORK PACKAGE

CHAPTER 3

OPERATOR'S TROUBLESHOOTING FOR IMPROVED RIBBON BRIDGE (IRB)

Section I.	Introduction to Troubleshooting	WP 0054 00
Section II.	Operator's Troubleshooting Procedures	WP 0056 00

OPERATOR'S TROUBLESHOOTING

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section I. INTRODUCTION TO TROUBLESHOOTING
TABLE OF CONTENTS

WP Title	WP Sequence No.-Page No.
General	0055 00-1

OPERATOR'S TROUBLESHOOTING

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section I. INTRODUCTION TO TROUBLESHOOTING

GENERAL

WARNING

Operation of a deadlined CBT, BAP, or IRB bay without preliminary inspection prior to performing troubleshooting procedures may result in damage to equipment or injury to personnel.

a. This chapter provides the necessary troubleshooting procedures to diagnose mechanical and pump malfunctions for BAP and IRB ramp and interior bays.

b. The symptom index has its own work package number and is used to identify the malfunction and locate the troubleshooting procedure to diagnose the problem.

c. Each troubleshooting procedure lists a description of the malfunction followed by a step or sequence of steps to perform a test or inspection. Then, in the order of probability, substeps instruct the user to determine if a condition exists through a check, inspection, or test, followed by the corrective action required to solve the malfunction.

d. Prior to performing any troubleshooting procedure, the following recommendations should be observed:

(1) Isolate the system where the malfunction occurs.

(2) Perform the troubleshooting procedure in the order in which steps are listed.

(3) Consider the possibility that the problem could be simple in origin and may require only a minor adjustment; use common sense.

(4) If a malfunction occurs that is not listed, notify your supervisor.

(5) If a problem cannot be corrected after performing all corrective actions listed for a malfunction, notify your supervisor.

(6) If the corrective action is not authorized at the operator's level, operators should provide a brief written description of the problem using Equipment Inspection and Maintenance Worksheet, DA Form 2404 or DA Form 5988-E, and Maintenance Request, DA Form 2407.

END OF WORK PACKAGE

OPERATOR'S TROUBLESHOOTING

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section II. OPERATOR'S TROUBLESHOOTING PROCEDURES TABLE OF CONTENTS

WP Title	WP Sequence No.-Page No.
Mechanical Troubleshooting Symptom Index	0057 00-1
Mechanical Troubleshooting	0058 00-1
Pump System Troubleshooting Symptom Index	0059 00-1
Pump System Troubleshooting	0060 00-1

OPERATOR'S TROUBLESHOOTING

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section II. OPERATOR'S TROUBLESHOOTING PROCEDURES

MECHANICAL TROUBLESHOOTING SYMPTOM INDEX

THIS WORK PACKAGE SUPERSEDES WP 0057 00, DATED 8 APRIL 2003

MALFUNCTION NO.	MALFUNCTION	TROUBLESHOOTING WP-PAGE
1.	Bay will not unfold automatically when launched	0058 00-1
2.	Bay will not fold automatically during retrieval	0058 00-2
3.	Foldlock will not engage or hold when engaged	0058 00-2
4.	Inner or outer ponton leaking	0058 00-3
5.	Outer ponton lock will not engage or hold when engaged (Interior Bay only)	0058 00-3
6.	Handrail stanchion does not hold when set	0058 00-3
7.	Lower lock-drive will not engage	0058 00-4
8.	Swivel hook or swivel plate will not engage or hold when engaged (Ramp Bay only)	0058 00-4
9.	Travel latch will not release	0058 00-5
10.	Upper coupling will not engage in receptacle block	0058 00-5
11.	Upper coupling will not release from receptacle block	0058 00-5
12.	Lower main coupling jammed and will not line up	0058 00-6
13.	BAP front pin lock air release will not operate	0058 00-6
14.	BAP front pin lock will not align with bay trunnion	0058 00-6

OPERATOR'S TROUBLESHOOTING

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section II. OPERATOR'S TROUBLESHOOTING PROCEDURES MECHANICAL TROUBLESHOOTING

THIS WORK PACKAGE SUPERSEDES WP 0058 00, DATED 8 APRIL 2003

NOTE

Refer to the general instructions in Introduction to Troubleshooting, WP 0055 00, prior to performing

Operator's Mechanical Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

mechanical troubleshooting.

1. BAY WILL NOT UNFOLD AUTOMATICALLY WHEN LAUNCHED

Step 1. Check for loose or broken cable assemblies.

Step 2. Check to see all foldlocks and travel latches are unlatched.

Retrieve bay to transporter and unlatch foldlock and/or travel latch levers. (Refer to WP 0039 00).

Step 3. Check travel latch for damage (malfunction 9).

Step 4. Check for obstructions or jamming caused by rocks or debris.

Step 5. Check unfolding stabilizers for damage.

a. If inner ponton rail brackets or connecting links are bent or broken, notify unit maintenance.

b. If stabilizer bar, levers, or straight pins are bent or broken, notify unit maintenance.

Step 6. Check for broken torsion bar.

If torsion bar lever turnbuckle is loose or torsion bar lever can be moved by hand, torsion bar is broken. Notify unit maintenance.

END OF TESTING

Operator's Mechanical Troubleshooting (Contd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

2. BAY WILL NOT FOLD AUTOMATICALLY DURING RETRIEVAL

Step 1. Check to see transverse upper couplings are unlatched.

Unlatch upper couplings. (Refer to WP 0039 00).

Step 2. Check to see ponton swivel locks are disengaged (ramp bay only).

Disengage swivel locks (Refer to WP 0039 00).

Step 3. Check to see outer ponton locks are released (interior bay only).

Release outer ponton locks (Refer to WP 0039 00).

Step 4. Check for loose or broken cable assembly.

If cable assembly is loose or broken, notify unit maintenance.

Step 5. Check for obstructions or jamming caused by gravel, rocks, mud, or debris lodged in unfolding stabilizer mounting brackets.

Free and remove obstructions.

Step 6. Check for broken torsion bar turnbuckle (ramp bay only).

If torsion bar turnbuckle is suspected broken, notify unit maintenance.

END OF TESTING

3. FOLDLOCK WILL NOT ENGAGE OR HOLD WHEN ENGAGED

Step 1. Check for bent foldlock spring holder or damaged springs (ramp bay only).

Straighten foldlock spring holder if bent, and notify unit maintenance if springs or spring holder are damaged.

Step 2. Check for missing or damaged foldlock springs (interior bay only).

If springs are missing or damaged, notify unit maintenance.

Step 3. Check for bent foldlock lever and support brackets.

Straighten support brackets if bent or binding, and notify unit maintenance if support brackets or lever are damaged.

Step 4. Check foldlock catch on outer ponton for wear or if bent or damaged.

If catch appears to be worn, bent, or damaged, notify unit maintenance.

END OF TESTING

Operator's Mechanical Troubleshooting (Contd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

4. INNER OR OUTER PONTON LEAKING

Step 1. Check for loose, damaged, or missing bilge plugs and bilge plug seals.

a. Tighten loose bilge plugs. (Refer to WP 0010 00 and WP 0011 00).

b. If bilge plugs and seals are damaged or missing, notify unit maintenance.

c. If bilge plug retaining cable is damaged, notify unit maintenance.

Step 2. Inspect ponton for structural damage such as cracks, broken welds, or holes.

a. If visible structural damage is found, notify unit maintenance.

b. If no visible structural damage can be found and leaking persists, notify unit maintenance.

END OF TESTING

5. OUTER PONTON LOCK WILL NOT ENGAGE OR HOLD WHEN ENGAGED (INTERIOR BAY ONLY)

Step 1. Check for bent or damaged outer ponton lock/release lever, receiver plate, or turnbuckle.

If bent or damaged, notify unit maintenance.

Step 2. Check for correct outer ponton lock adjustment.

Notify unit maintenance to check adjustment.

END OF TESTING

6. HANDRAIL STANCHION DOES NOT HOLD WHEN SET

Step 1. Check handrail stanchion and support brackets for obstructions or debris lodged at base.

Free and remove debris from base of stanchion and support brackets.

Step 2. Check for bent or broken support brackets, stanchion, or tension spring.

If brackets, stanchion, or spring appears damaged, notify unit maintenance.

END OF TESTING

Operator's Mechanical Troubleshooting (Contd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

7. LOWER LOCK-DRIVE WILL NOT ENGAGE

Step 1. Check for possible misalignment of ponton connecting eyes.

Align bay connecting eyes. (Refer to malfunction 12).

Step 2. Check for seized jackscrew at upper and lower trunnion nuts.

Lubricate jackscrew.

Step 3. Check for bent jackscrew or damaged threads.

If threads are damaged or jackscrew is bent, notify unit maintenance.

Step 4. Check lower lock-drive assembly for jamming due to debris or damage resulting in misalignment.

a. Remove debris from lower lock-drive assembly.

b. If damage causing misalignment is suspected, notify unit maintenance.

Step 5. Check for bent or damaged connecting eyes on inner ponton main lower coupling (interior bay only).

If damaged, notify unit maintenance.

Step 6. Check for bent or damaged connecting eyes on yokes (Ramp Bay only).

If damaged, notify unit maintenance.

END OF TESTING

8. SWIVEL HOOK OR SWIVEL PLATE WILL NOT ENGAGE OR HOLD WHEN ENGAGED (RAMP BAY ONLY)

Step 1. Check for obstructions such as rocks or debris in swivel hook, retainer pin, or swivel plate cavities.

Remove debris from swivel hook, retainer pin, or swivel plate.

Step 2. Check retainer pin for out of adjustment condition.

Notify unit maintenance to check adjustment.

Step 3. Check for bent or damaged tension spring assembly.

If bent or damaged, notify unit maintenance.

END OF TESTING

Operator's Mechanical Troubleshooting (Contd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

9. TRAVEL LATCH WILL NOT RELEASE

Step 1. Check for bent or damaged upper and lower striker receptacles, latch bar, mounting brackets, or missing springs.

If parts are missing, bent, or damaged, notify unit maintenance.

Step 2. Check for clearance between pins on latch bar and upper and lower striker receptacles.

a. If no clearance is evident, notify unit maintenance.

b. If excessive clearance is observed, notify unit maintenance.

END OF TESTING

10.UPPER COUPLING WILL NOT ENGAGE IN RECEPTACLE BLOCK

Step 1. Check for obstructions such as rocks or debris lodged in receptacle blocks.

Free and remove debris from area.

Step 2. Check gap between inner-to-inner pontons.

Close gap using roadway tool and crowbar until inner-to-inner ponton upper couplings can be engaged.

Step 3. Check alignment during bay-to-bay connection.

a. Level roadway surface of adjoining bays using two coupling devices.

b. Draw adjoining bays closer together using ropes connected to belay cleats. (Refer to WP 0033 00).

Step 4. Check for bent lever or heavily worn receptacle block.

If parts appear bent or heavily worn, notify unit maintenance.

END OF TESTING

11.UPPER COUPLING WILL NOT RELEASE FROM RECEPTACLE BLOCK

Step 1. Check to see if lower lock-drive pins were inadvertently disengaged before the upper couplings.

Use ropes and pull bays together until longitudinal upper couplings can be released. (Refer to WP 0037 00 and WP 0038 00).

Step 2. Check for obstructions between inner-to-inner pontons.

Remove obstructions and close gap using roadway tool and crowbar until transverse upper couplings can be released. (Refer to WP 0039 00).

END OF TESTING

Operator's Mechanical Troubleshooting (Contd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

12. LOWER MAIN COUPLING JAMMED AND WILL NOT LINE UP

Step 1. Check for obstruction between bays.

Free and remove obstruction from between bays using crowbar.

Step 2. Check alignment of top surface of adjoining roadways.

a. Level top surface of roadways using two coupling devices.

b. Draw adjoining bays closer together using ropes connected to belay cleats. (Refer to WP 0033 00).

c. Extend yokes (ramp bay only) until lower lock-drive pins can be engaged. (Refer to WP 0010 00).

d. If pins still will not engage, check lower lock-drive assemblies for damage (malfunction 7).

END OF TESTING

13. BAP FRONT PIN LOCK AIR RELEASE WILL NOT OPERATE

Step 1. Check that BAP air line quick-disconnect connector is properly connected to CBT air system quick-disconnect connector.

Disconnect and reconnect quick-disconnect connector.

Step 2. Check tubes, hoses, and quick-disconnect connectors for air leaks.

a. If leak is found, notify unit maintenance.

b. Manually release front locks to deploy bridge bay and notify unit maintenance upon completion of mission.

END OF TESTING

14. BAP FRONT PIN LOCK WILL NOT ALIGN WITH BAY TRUNNION

Step 1. Check that bridge bay is sitting on all four roller assemblies.

If bridge bay is not sitting on all four roller assemblies, unload bridge bay from BAP and reload, ensuring that bridge bay is sitting on all four roller assemblies.

Step 2. Check that BAP front pin lock is aligned with bay trunnions.

If BAP front pin lock is not aligned with bay trunnions, notify unit maintenance to adjust front pin lock bracket.

END OF TESTING

END OF WORK PACKAGE

OPERATOR'S TROUBLESHOOTING

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section II. OPERATOR'S TROUBLESHOOTING PROCEDURES

PUMP SYSTEM TROUBLESHOOTING SYMPTOM INDEX

MALFUNCTION NO.	MALFUNCTION	TROUBLESHOOTING WP-PAGE
1.	Pump system will not raise bay (ramp bay only)	0060 00-1
2.	Pump system will not hold bay in raised position (ramp bay only)	0060 00-1
3.	BAP center roller and/or transload rollers will not operate	0060 00-2
4.	BAP winch assembly will not wind out or in	0060 00-2
5.	BAP winch assembly will not lift load or operates slowly	0060 00-3

OPERATOR'S TROUBLESHOOTING

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section II. OPERATOR'S TROUBLESHOOTING PROCEDURES PUMP SYSTEM TROUBLESHOOTING

NOTE

Refer to the general instructions in Introduction to Troubleshooting, WP 0055 00, prior to performing pump system troubleshooting.

Operator's Pump System Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

1. PUMP SYSTEM WILL NOT RAISE BAY (RAMP BAY ONLY)

Step 1. Check to see pump control lever is set to the UP position.

Set pump control valve to UP position and raise bay (WP 0010 00).

Step 2. Check pump reservoir for low fluid level.

a. If empty or low, fill reservoir to correct level (WP 0064 00).

b. Bleed system of air, notify unit maintenance.

Step 3. Check tubes and hoses for leaks.

a. If leak is found, notify unit maintenance.

b. If no visible leaks can be found, suspect internal leak in pump, cylinder, or control valve, and notify unit maintenance.

END OF TESTING

2. PUMP SYSTEM WILL NOT HOLD BAY IN RAISED POSITION (RAMP BAY ONLY)

Step 1. Check position of control valve lever.

Ensure lever has been moved to the TRANSPORT/CROSSING position and is fully engaged in slot on selector (WP 0010 00).

Step 2. Check tubes and hoses for leaks.

a. If leak is found, notify unit maintenance.

b. If no visible leak can be found, suspect internal leak in pump, cylinder, or control valve, and notify unit maintenance.

Operator's Pump System Troubleshooting (Contd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

END OF TESTING

3. BAP CENTER ROLLER AND/OR TRANSLOAD ROLLERS WILL NOT OPERATE

Step 1. Check that pump selector lever is in UP position to operate center roller or in DOWN position to operate transload rollers.

a. If selector lever is in center OFF position, move selector lever to UP or DOWN position and operate hand pump lever (WP 0010 00).

b. If desired action(s) is not observed perform step 2 and 3.

Step 2. Check hand pump fluid level.

If fluid level is low, notify unit maintenance.

Step 3. Check for fluid leaks at lines, fittings, and components.

a. If leaks are found, notify unit maintenance.

b. If problem is not resolved, notify unit maintenance.

END OF TESTING

4. BAP WINCH ASSEMBLY WILL NOT WIND OUT OR IN

Step 1. Check that winch assembly switch on remote control unit is set to the OUT or IN position.

Move winch assembly switch to OUT or IN position.

Step 2. Check BAP winch lines and fittings for leaks.

If leaks are found, notify unit maintenance.

Step 3. Check that winch quick-disconnect connectors are properly connected to CBT fluid system.

a. Disconnect and reconnect quick-disconnect connectors.

b. If winch still does not operate, perform step 4.

Step 4. Check remote control unit using receptacle on opposite side of transporter.

If winch still does not operate, notify unit maintenance.

Unit Hydraulic Troubleshooting (Contd)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

END OF TESTING

5. BAP WINCH ASSEMBLY WILL NOT LIFT LOAD OR OPERATES SLOWLY

NOTE

Perform the following check by operating CBT/winch with a load in place.

Step 1. With load attached to hook on winch cable, set BAP winch switch on remote control unit to IN position.

If cable will not lift load or operates slowly, perform step 2.

Step 2. Check for any binding or obstruction to winch cable and/or loose or missing mounting hardware.

Step 3. Check fluid level in BAP winch.

If fluid level is low, notify unit maintenance.

Step 4. Check for leaks in the BAP or for other obvious damage to winch lines and fittings.

a. If leaks are found, notify unit maintenance.

b. If no leaks or damage is found, perform step 5.

Step 5. Check if BAP winch quick-disconnect connectors are properly connected to CBT fluid system quick-disconnect connectors.

a. Disconnect and reconnect quick-disconnect connectors.

b. If winch still does not operate properly, perform step 6.

Step 6. Check remote control unit using receptacle on opposite side of transporter.

a. If winch operates, complete mission and notify unit maintenance about remote control receptacle that does not work.

b. If winch does not operate, notify unit maintenance.

END OF TESTING

END OF WORK PACKAGE

CHAPTER 4

OPERATOR MAINTENANCE INSTRUCTIONS FOR IMPROVED RIBBON BRIDGE (IRB)

Section I.	Service Upon Receipt	WP 0061 00
Section II.	Lubrication Instructions	WP 0063 00
Section III.	General Maintenance Procedures	WP 0065 00
Section IV.	Operator Maintenance Procedures	WP 0067 00

OPERATOR MAINTENANCE INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section I. SERVICE UPON RECEIPT

TABLE OF CONTENTS

WP Title	WP Sequence No.-Page No.
Service Upon Receipt of Material	0062 00-1
Installation Instructions	0062 00-1
Preliminary Servicing of Equipment	0062 00-2

OPERATOR MAINTENANCE INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section I. SERVICE UPON RECEIPT

SERVICE UPON RECEIPT OF MATERIAL

When an IRB bay is first received by the using organization, it is the responsibility of the officer-in-charge to determine if it has been properly prepared for service by the supplier. It is also the responsibility of the officer-in-charge to ensure the bay is in operating condition. Unit maintenance will provide any additional service required to bring the bay to operating standards. Whenever practical, the operator will assist with this service.

Upon receipt of a new or used IRB bay, perform the following procedure:

1. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 361, Transportation Discrepancy Report.
2. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepencies per applicable service instructions (Refer to DA PAM 738-750.)
3. Check to see whether the equipment has been modified.

INSTALLATION INSTRUCTIONS

Prepare IRB bay(s) for use by performing the following installation procedures:

1. Install ramp plates and binders (Ramp Bay only). (Refer to WP 0010 00.)
2. Install handrails on bay (if removed). (Refer to WP 0010 00.)
3. Install bilge plugs on bay (if removed). (Refer to WP 0010 00 or WP 0011 00.)
4. Add pump fluid to pump reservoirs as required (Ramp Bay only). (Refer to WP 0064 00.)
5. Install BII items on ramp bay in stowage boxes. (Refer to WP 0070 00 and WP 0044 00.)

PRELIMINARY SERVICING OF EQUIPMENT

Perform the following tasks prior to releasing the equipment for use:

1. Perform preventive maintenance checks and services (PMCS) (WP 0014 00, WP 0015 00, and WP 0016 00) to verify all component assemblies and subassemblies are complete, in proper working order, and lubricated where required.
2. Check all exterior surfaces of equipment for dirt, grease, oil, or any other existing debris. Clean bay as necessary. (Refer to WP 0066 00.)
3. Check all basic issue items (BII) (WP 0070 00 and WP 0044 00) to ensure they are present, in good condition, and properly mounted or stowed.
4. Check maintenance schedule for transporter and perform PMCS and lubrication on transporter and truck chassis as required. (Refer to TM 5-5420-234-14&P.)

END OF WORK PACKAGE

OPERATOR MAINTENANCE INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section II. LUBRICATION INSTRUCTIONS
TABLE OF CONTENTS

WP Title	WP Sequence No.-Page No.
General	0064 00-1
Service Intervals	0064 00-1
Pump Reservoir Fluid Level	0064 00-2

OPERATOR MAINTENANCE INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section II. LUBRICATION INSTRUCTIONS

THIS WORK PACKAGE SUPERSEDES WP 0064 00, DATED 8 APRIL 2003

GENERAL

This lubrication instruction is for operator maintenance, and provides the lubrication requirements needed to support the Improved Ribbon Bridge (IRB). Included are Fluid Capacities, Lubricant Requirements, Lubrication Intervals, and Locations for lubricating the bridge. For lubrication instructions for the CBT and BAP, refer to TM 5-5420-234-14&P.

SERVICE INTERVALS

1. Operator's service intervals are for normal operation of the bridge in moderate temperatures, humidity, and atmospheric conditions. The lubrication for the bridge is to be performed at whichever interval occurs first.
2. Check fluid level in both pump reservoirs (Ramp Bay only) every six months and after operation, and add fluid as necessary. (Refer to WP 0064 00).
3. Clean and lubricate unfolding cables (Ramp Bay and Interior Bay) weekly, and after operation, with lubricant, exposed wire. (Refer to WP 0068 00).
4. Clean and lubricate eyebolts (Ramp Bay and Interior Bay) weekly, and after operation, with lubricating oil. (Refer to WP 0068 00).
5. Clean and lubricate lower lock-drive jack screws (Ramp Bay and Interior Bay) weekly, and after operation, with oil. (Refer to WP 0068 00).

PUMP RESERVOIR FLUID LEVEL

WARNING

Accidental or intentional introduction of liquid contaminants into the environment is in violation of state, federal, and military regulation. Refer to Army POL (WP 0001 00) for information concerning storage, use, and disposal of these liquids. Failure to comply may result in damage to environment and health of personnel.

CAUTION

Before opening pump reservoir, ensure area around reservoir filler cap is clean. Do not allow dirt, dust, or water to enter reservoir. Failure to comply may result in damage or failure of components.

NOTE

Ramp bay must be removed from transporter and separated and unfolded, or placed in water and unfolded, to access pump reservoir.

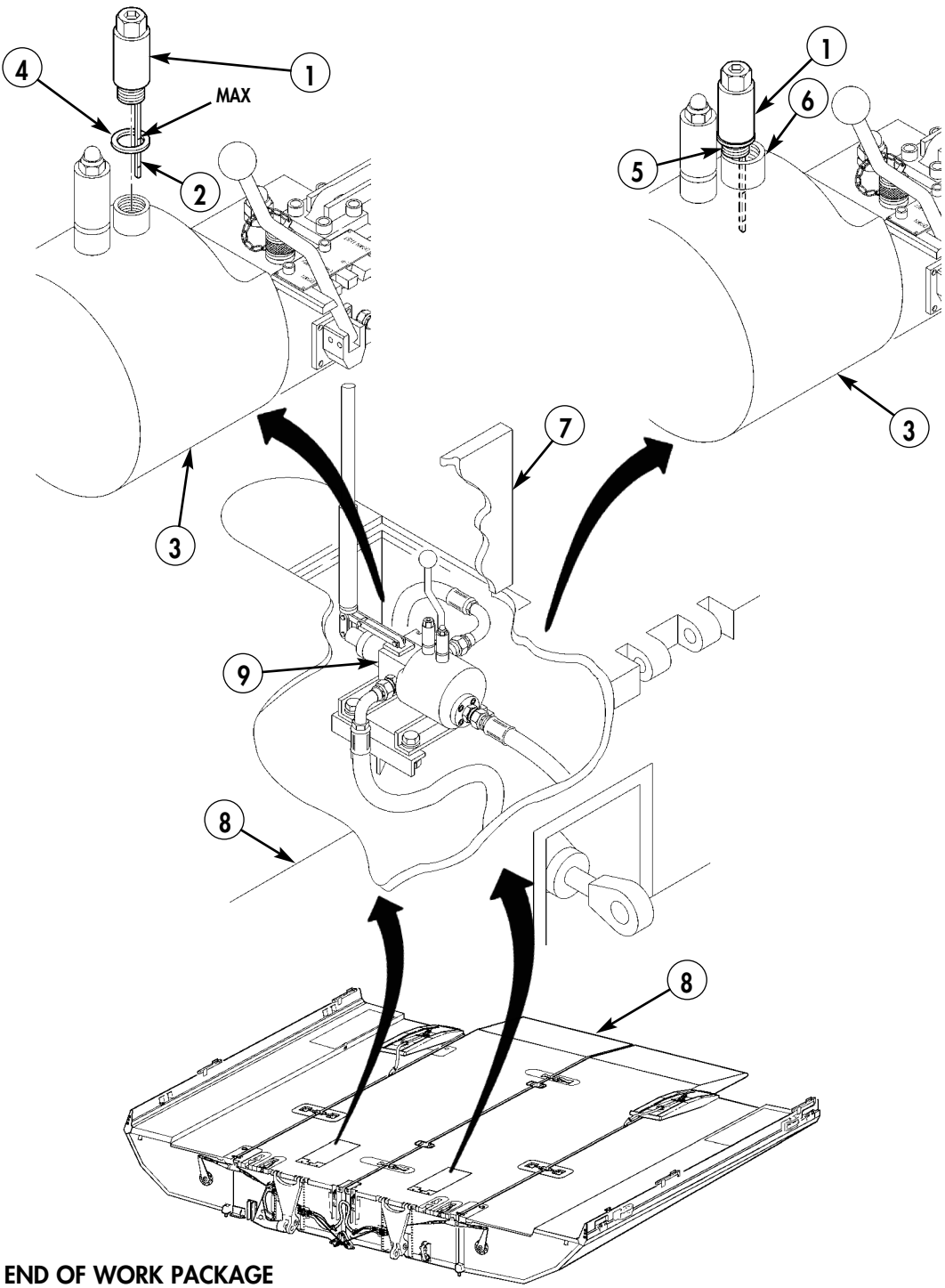
1. Open access cover (7) on ramp bay (8) to access pump (9).
2. Remove filler cap with dipstick (1) from pump reservoir (3) and check fluid level using filler cap dipstick (2).
3. Position filler cap threads (5) on reservoir opening (6) with threads on top of opening (6) to check level.
4. Fill reservoir (3) to MAX position on dipstick (2) if necessary.

CAUTION

Ensure O-ring seal is present and in good condition. Installing filler cap with O-ring seal missing or damaged may result in fluid leakage and an inoperable pump system.

5. Check O-ring seal (4) on filler cap with dipstick (1) for damage, and replace if necessary.
6. Install filler cap with dipstick (1) on pump reservoir (3).

PUMP RESERVOIR FLUID LEVEL (Contd)



END OF WORK PACKAGE

OPERATOR MAINTENANCE INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section III. GENERAL MAINTENANCE PROCEDURES TABLE OF CONTENTS

WP Title	WP Sequence No.-Page No.
General	0066 00-1
Cleaning	0066 00-1
Painting	0066 00-3
Loading and Movement of Equipment	0066 00-3
Preparation for Shipment and Limited Storage	0066 00-5

OPERATOR MAINTENANCE INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section III. GENERAL MAINTENANCE PROCEDURES

THIS WORK PACKAGE SUPERSEDES WP 0066 00, DATED 8 APRIL 2003

GENERAL

General maintenance instructions for cleaning, painting, placing in service, and preparation for storage or shipment are provided in this work package. Publications that provide additional information on general shop practice techniques and preservation are listed in References, WP 0069 00.

CLEANING

a. General Instructions. Cleaning procedures will be the same for the majority of parts and components on the IRB. General cleaning procedures are detailed in steps b through f.

b. The Importance of Cleaning. Great care and effort are required in all cleaning operations. The presence of dirt and foreign material is a constant threat to satisfactory equipment operation and maintenance. The following instructions will apply to all cleaning operations:

WARNING

Improper cleaning methods and use of unauthorized cleaning solvents may result in injury to personnel and damage to equipment.

CAUTION

Keep all related parts and components together. Do not mix parts. Failure to comply may result in damage to parts.

(1) Clean all parts before performing PMCS, lubrication, and maintenance procedures.

(2) Hands must be kept free of any accumulation of grease which can collect dust and grit.

CLEANING (Contd)

WARNING

Skysol-100 cleaning solvent is combustible. Use mechanical ventilation whenever product is used in a confined space, is heated above ambient temperatures, or is agitated. DO NOT use or store near heat, sparks, flame, or other ignition sources. Keep container sealed when not in use.

Contact with Skysol-100 cleaning solvent may cause skin irritation. Use chemical resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing or blurring of vision, Use face shield or goggles when eye contact may occur. In case of eye contact, flush eyes with large amounts of water for at least fifteen (15) minutes or until irritation subsides. Inhalation may cause irritation to upper respiratory passages. DO NOT have food or drink in the vicinity.

CAUTION

Before opening reservoir, ensure area around reservoir filler cap is clean. Do not allow dirt, dust, or water to enter reservoir. Failure to do this may cause damage to internal components.

c. Oil and Grease Covered Surfaces. Using Skysol-100, clean oil and grease from exterior surfaces of bay prior to cleaning dirt, mud, and debris with soap and water.

d. Oil Seals and Flexible Hoses.

CAUTION

Do not allow Skysol-100 to come in contact with seals or flexible hoses. Failure to comply will result in damage to parts.

e. External Surfaces. Clean all external surfaces of bay with soap and water and rinse thoroughly. Use power wash pump when cleaning to save time and effort. (Refer to WP 0053 00).

CLEANING (Contd)

f. Rusted Surfaces.

NOTE

All parts subject to rusting must be lightly oiled after cleaning and prior to storage. (Refer to Item 5, WP 0072 00).

Remove all evidence of corrosion.

PAINTING

The IRB bays will require touch-up of painted surfaces periodically. Touch-up bays as required. Bays are Chemical Agent Resistant Coating (CARC) painted; notify unit maintenance if entire bay requires painting.

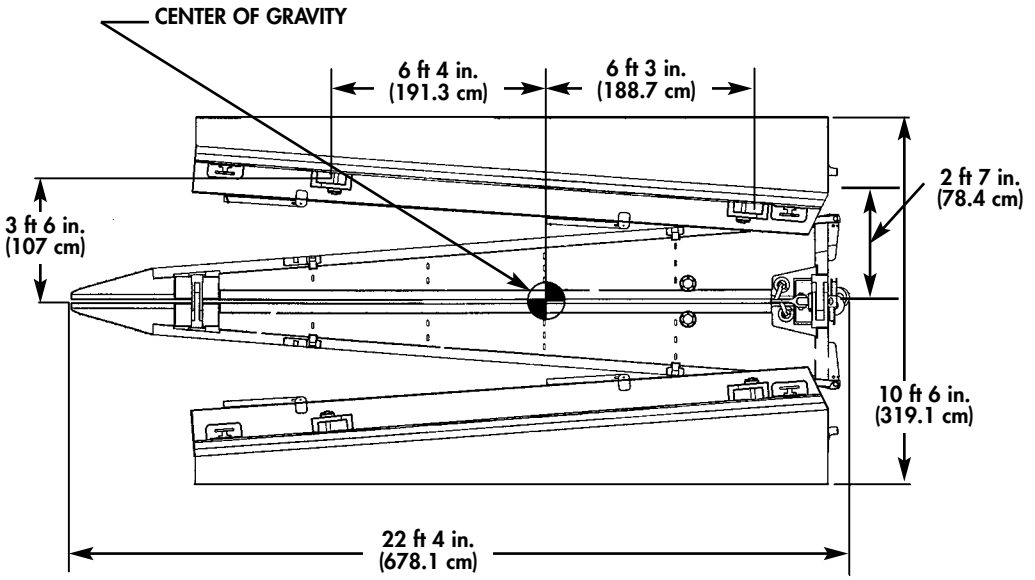
LOADING AND MOVEMENT OF EQUIPMENT

a. Shipping Data Plate. A shipping data plate is mounted on the connecting ends of each IRB-R and IRB-I. A silhouette of the side and end views of the bay is depicted, and overall dimensions, lifting and tiedown points, and center of gravity locations are given. (Refer to WP 0003 00).

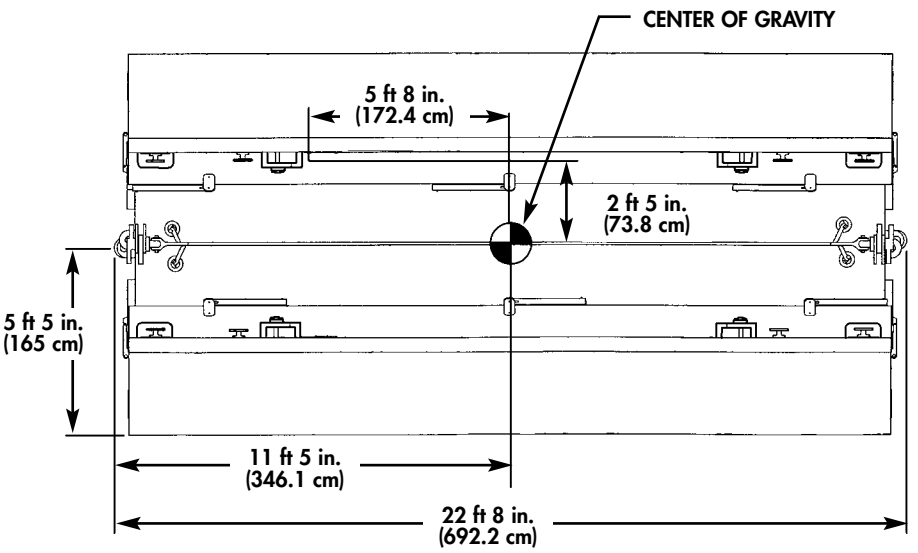
b. Slinging Provisions. IRB slinging provisions enable lifting of the IRB-R or IRB-I for both normal lift and external lift by helicopter. To lift the bay, connect IRB hoisting gear to the load receiving pins marked LIFT/TIEDOWN, located on top of the bay's outer pontons when in the folded position. When the BAP is used, lift the bay and the BAP by connecting a suitable sling to the lifting eyes on the BAP. When the bay is tied down with the BAP, the tiedowns are to be attached to the bay and not the BAP. The load receiving pin lift points are located in relationship to the bay's center of gravity.

LOADING AND MOVEMENT OF EQUIPMENT (Contd)

c. Center of Gravity.



TOP VIEW, M16 RAMP BAY



TOP VIEW, M17 INTERIOR BAY

LOADING AND MOVEMENT OF EQUIPMENT (Contd)

d. Loading and Movement. For transportability guidance in handling and movement of IRB bays, refer to TM 743-200-1, Storage and Materials Handling, and TM 55-2200-001-12, Transportability Guidance for Application of Blocking, Bracing, and Tiedown Materials. Refer to TM 5-5420-234-14&P for information on the Common Bridge Transporter (CBT) and the Bridge Adapter Pallet (BAP).

(1) When unloading an IRB-R or IRB-I for shipment or storage, ensure cargo bed, pallet, or ground surface is flat, level, and capable of supporting weight of bay. (Refer to Equipment Data, WP 0003 00, for weights and dimensions of bays).

WARNING

All nonessential personnel must stand clear of transporter and bay during lifting operations. Failure to comply may result in injury or death to personnel.

CAUTION

If loading ramp bay from concrete or asphalt surface, place a wood block under the tip of the inner ponton ramp ends to prevent damage should ramp bay slide forward while loading.

(2) Dunnage should be placed under IRB-R and IRB-I pontons during unloading to facilitate tiedown and prevent movement during shipment. Dunnage also prevents damage to bottom of bay when loading from ground to transporter. It is important to place one additional dunnage under the IRB-R inner pontons approximately 1 ft (305 mm) from the end of the approach ramp when unloading bay to ground; the inner pontons narrow to a point at the approach ramp end, and without the dunnage, the bay will often tip from side to side, making it very difficult to load on transporter.

PREPARATION FOR SHIPMENT AND LIMITED STORAGE

a. Cleaning. Protection for IRB bays and accompanying equipment must be sufficient to protect the material against deterioration and physical damage.

WARNING

Skysol-100 mixture is combustible. Use mechanical ventilation whenever product is used in a confined space, is heated above ambient temperatures, or is agitated. DO NOT use or store near heat, sparks, flame, or other ignition sources. Keep container sealed when not in use.

PREPARATION FOR SHIPMENT AND LIMITED STORAGE (Contd)

WARNING

Contact with Skysol-100 may cause skin irritation. Use chemical-resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing, or blurring of vision. Use face shield or goggles when eye contact may occur. In case of eye contact, flush eyes with large amounts of water for at least fifteen (15) minutes or until irritation subsides. Inhalation may cause irritation to upper respiratory passages. DO NOT have food or drink in the vicinity.

NOTE

Prior to application of corrosion preventive compound, surfaces must be cleaned to ensure removal of corrosion, soil, grease, or vehicle acid and alkali residues.

(1) Remove all dirt, grease, oil, and other foreign matter from all painted metal surfaces of the IRB bay by scrubbing with cloths soaked in Skysol-100. (Refer to Item 1, WP 0072 00). Use warm water for cleaning rubber parts.

WARNING

Compressed air source will not exceed 30 psi (207 kPa). When cleaning with compressed air, eyeshields must be worn. Failure to comply may result in injury to personnel.

(2) Clean exterior surfaces of IRB bays by power washing with water, to ensure removal of all dirt and foreign matter. (Refer to WP 0053 00). After cleaning, allow parts to air dry, use compressed air, or wipe with clean, dry, lint-free cloths. (Refer to Item 8, WP 0072 00).

b. Preservation. All critical unpainted metal surfaces must be protected during shipment. Coat all unpainted, exposed, or machined metal surfaces on the exterior of the bay with approved corrosion-preventive compound only (Item 2, WP 0072 00). Equipment protected must be closely watched for signs of corrosion.

c. Packing. Pack all Basic Issue Items (BII) and Additional Authorization List (AAL) items to prevent physical damage.

d. Shipment of Army Documents. Prepare all Army shipping documents accompanying IRB per DA Pam 738-750.

NOTE

Ensure each bay is drained prior to removal from storage. Water may accumulate from condensation inside bay pontons.

PREPARATION FOR SHIPMENT AND LIMITED STORAGE (Contd)

e. Limited Storage Instructions. Commanders are responsible for ensuring that all IRB bays issued or assigned to their command are maintained in a serviceable condition and properly cared for, and that personnel under their command comply with technical instructions. Lack of time, trained personnel, or proper tools may result in a unit being incapable of performing maintenance for which it is responsible. In such cases, unit commanders may, with the approval of major commanders, place an IRB-R or IRB-I that is beyond the maintenance capability of the unit in administrative storage. For detailed information, refer to AR 750-1.

f. Storage of New IRB Bays.

NOTE

Ensure each bay is drained prior to removal from storage. Water may accumulate from condensation inside bay pontons.

(1) If new IRB bays (interior or ramp) are placed in storage at either contractor or Government facilities, before being put in service, the warranty period shall not start until each such IRB bay is withdrawn from that storage, or until nine months from the date shown on the Material Inspection and Receiving Report (DD Form 250); whichever occurs first.

(2) If new IRB bays are placed in contractor storage, the contractor shall maintain and exercise such stored IRB bays in accordance with the contractor's approved technical manual. Upon removal from storage, and before delivering the IRB bays to the Government, the contractor shall exercise and perform all PMCS tasks in accordance with the contractor's approved technical manual.

(3) If new IRB bays are placed in Government storage, the Government will exercise stored IRB bays in accordance with the contractor's approved technical manual. The Government shall notify the contractor before placing each such IRB bay in storage, and again at the time it is withdrawn. If there are any contractor-caused retrofits that must be applied to the the IRB bays, the storage time does not start until those retrofits are completed.

NOTE

Bays must be separated at inner pontons for transport in C-130 aircraft. Notify unit maintenance for bay separation.

g. Transport of IRB Bays by C-130 Aircraft. The IRB-R and IRB-I are transportable by C-130 aircraft. Refer to Marking, Packing, and Shipment of Supplies and Equipment, TM 746-10, for shipping information.

END OF WORK PACKAGE

OPERATOR MAINTENANCE INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section IV. OPERATOR MAINTENANCE PROCEDURES TABLE OF CONTENTS

WP Title	WP Sequence No.-Page No.
General	0068 00-1
Cable Assembly Service	0068 00-2
Eyebolt Assembly Service	0068 00-4
Lower Lock-Drive Assembly Service	0068 00-5
Draining Pontons	0068 00-6

OPERATOR MAINTENANCE INSTRUCTIONS

IMPROVED RIBBON BRIDGE (IRB)

RAMP BAY M16
NSN 5420-01-470-5825 P/N 12478918;
INTERIOR BAY M17
NSN 5420-01-470-5824 P/N 12478919.

Section IV. OPERATOR MAINTENANCE PROCEDURES

THIS WORK PACKAGE SUPERSEDES WP 0068 00, DATED 8 APRIL 2003

GENERAL

WARNING

Do not allow vehicles on bridge or raft while performing operator maintenance. Failure to comply may result in injury or death to personnel or damage to equipment.

This section contains operator's level maintenance procedures for the IRB. For operator's level maintenance procedures for the CPT and BAP, refer to TM 5-5420-234-14&P. Perform all procedures in the order of the steps provided. Notify your supervisor if you cannot perform a maintenance procedure due to wear, damage, or missing parts.

CABLE ASSEMBLY SERVICE

WARNING

Cables may contain broken wire strands. Wear heavy leather gloves when handling cables. Do not run hands on cables when applying cleaning solvent or lubricant. Failure to comply may result in injury to personnel.

NOTE

Cleaning and lubrication of cable assemblies are performed the same way. Interior bay is shown.

WARNING

Skysol-100 mixture is combustible. Use mechanical ventilation whenever product is used in a confined space, is heated above ambient temperatures, or is agitated. DO NOT use or store near heat, sparks, flame, or other ignition sources. Keep container sealed when not in use.

Contact with Skysol-100 may cause skin irritation. Use chemical-resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing, or blurring of vision. Use face shield or goggles when eye contact may occur. In case of eye contact, flush eyes with large amounts of water for at least fifteen (15) minutes or until irritation subsides. Inhalation may cause irritation to upper respiratory passages. DO NOT have food or drink in the vicinity.

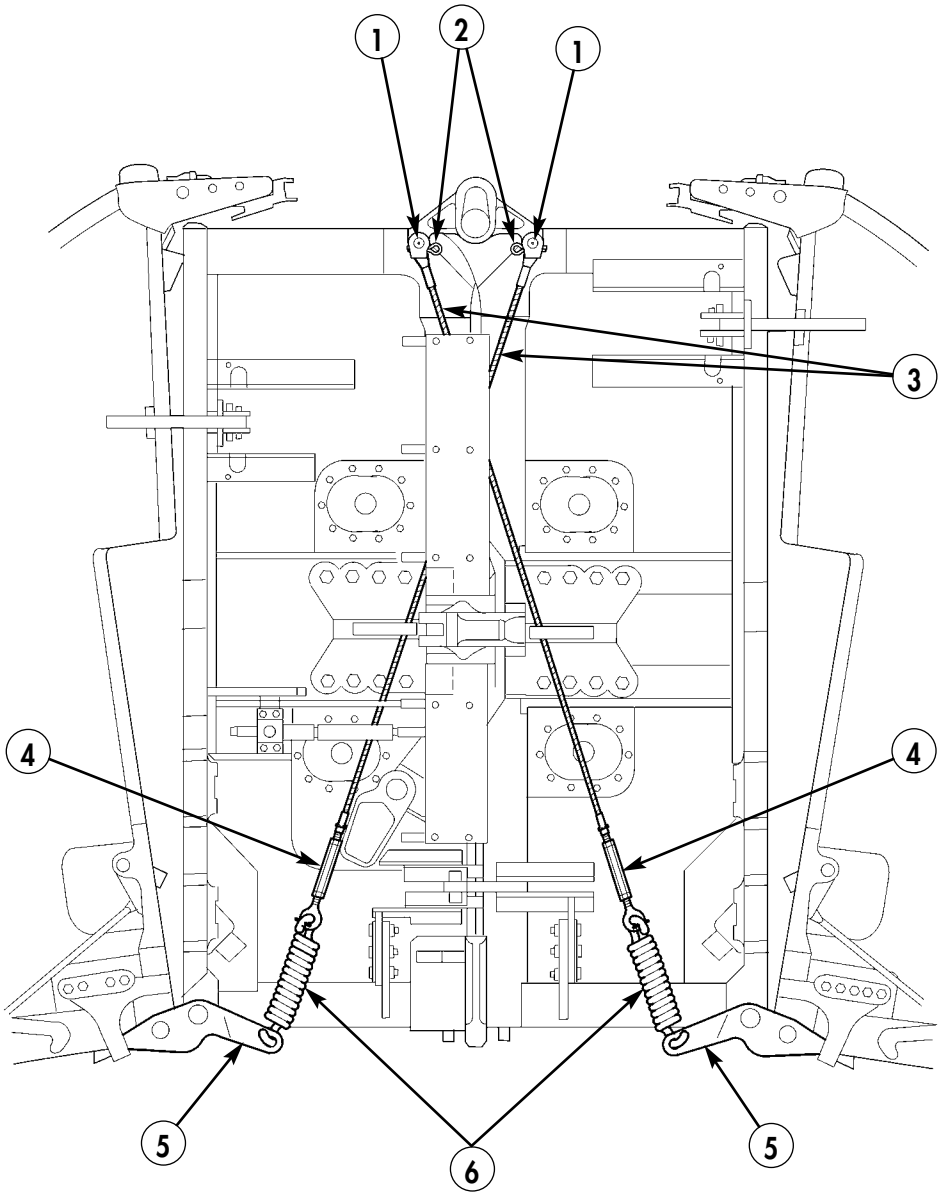
1. Using clean rags and solvent, clean two cables (3), turnbuckles (4), springs (6), levers (5), cotter pins (2), and pins (1).
2. Using clean rags, wipe dry both cable assemblies.

NOTE

Ensure cable assemblies are clean and dry prior to applying oil and lubricant.

3. Apply lubricant to two cables (3). (Refer to Item 6, WP 0072 00). Coat cables (3) thoroughly, then remove excess with clean rags.
4. Apply lubricating oil to two pins (1) and threads of turnbuckles (4). (Refer to Item 5, WP 0072 00). Remove excess with clean rags.

CABLE ASSEMBLY SERVICE (Contd)



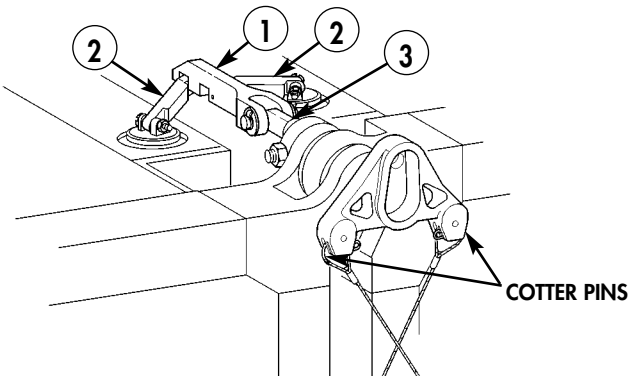
CABLE ASSEMBLY, INTERIOR BAY

EYEBOLT ASSEMBLY SERVICE

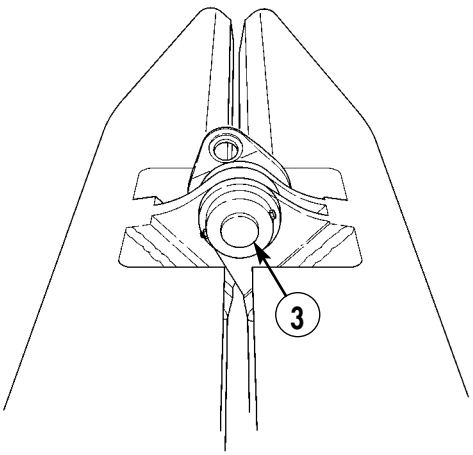
NOTE

Cleaning and lubrication of eyebolt assembly is the same for IRB-R and IRB-I. Interior bay is shown. Ramp bay rear eyebolt is shown.

1. Clean area around eyebolt (3), two connecting links (2), and cover (1) prior to lubricating. (Refer to WP 0066 00 for general cleaning instructions).
2. Lubricate two connecting links (2) and cover (1) at their pivot points using lubricating oil. (Refer to Item 5, WP 0072 00). Remove excess oil with clean rags.
3. Lubricate eyebolt (3). (Refer to Item 5, WP 0072 00).
4. Repeat steps 1 through 3 at opposite end of bay.



EYEBOLT ASSEMBLY



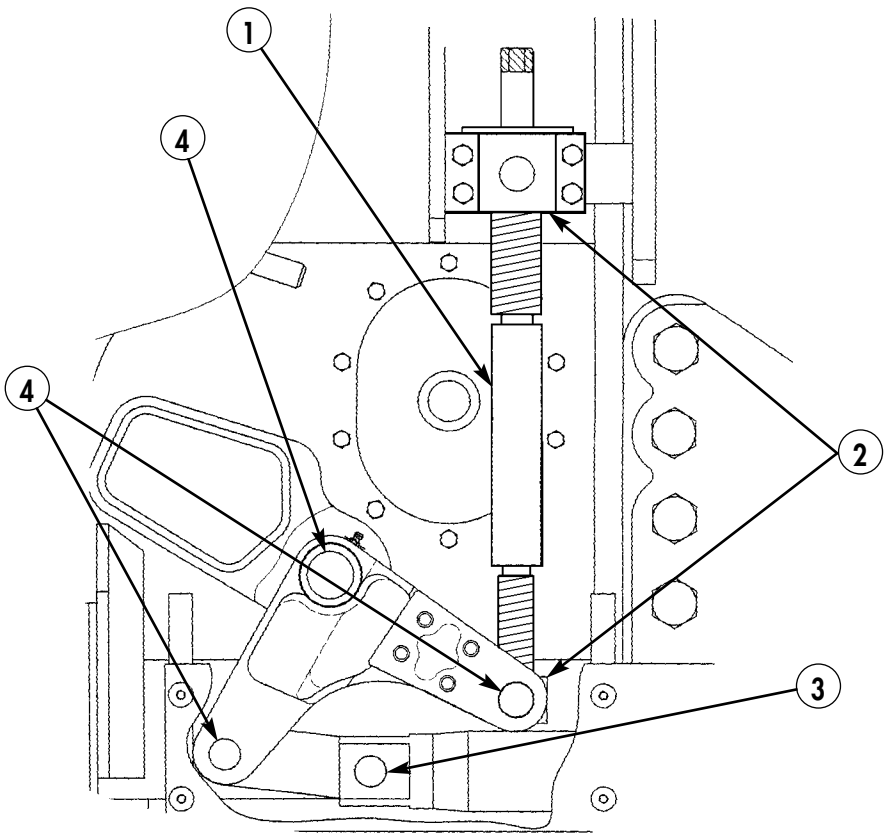
REAR EYEBOLT ASSEMBLY, RAMP BAY ONLY

LOWER LOCK-DRIVE ASSEMBLY SERVICE

NOTE

Cleaning and lubrication of lower lock-drive assemblies are the same for IRB-R and IRB-I. Interior bay is shown.

1. Clean area around connecting pin (3), bellcrank pins (4), and jackscrew trunnions (2) prior to lubricating. (Refer to WP 0066 00 for general cleaning instructions).
2. Lubricate threads of jackscrew (1) with oil (Item 5, WP 0072 00), and remove excess oil with clean rags.
3. Grease connecting pin (3) and bellcrank pins (4). (Refer to Item 12, WP 0072 00).



LOWER LOCK-DRIVE ASSEMBLY, INTERIOR BAY

DRAINING PONTONS

WARNING

Loosen bilge and drain plugs slowly to allow residual pressure to escape. Failure to comply may result in injury to personnel.

NOTE

To remove water from pontons when bay is in the unfolded position, water must be pumped out through bilge ports. (Refer to WP 0053 00).

Draining water from IRB-R or IRB-I is performed the same way. Ramp bay drain plugs are located on the rear (approach ramp end) of bay.

1. Load bay on transporter. (Refer to WP 0022 00 or WP 0039 00).

NOTE

Perform steps 2 through 4 for interior bay.

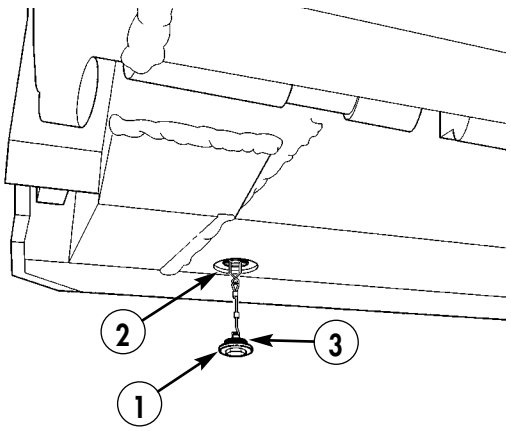
2. Remove drain plugs (1) from drain ports (2) on inner and outer pontons at either end of bay, by turning counterclockwise using 19 mm wrench. Allow water to completely drain.
3. Check each drain plug (1) to ensure gasket (3) is in place and not damaged. Notify unit maintenance if gasket (3) is missing or damaged.
4. Install drain plugs (1) on drain ports (2) by turning clockwise using 19 mm wrench.

NOTE

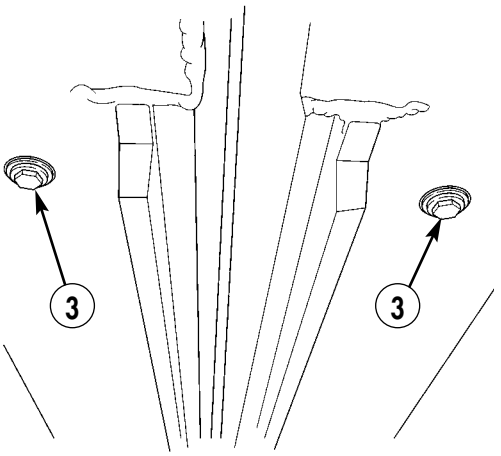
Perform steps 5 through 7 for ramp bay.

5. Remove drain plugs (5) from drain ports (4) on rear (approach ramp end) of each ponton. Allow water to completely drain.
6. Check each drain plug (5) to ensure gasket (6) is in place and not damaged. Notify unit maintenance if gasket (6) is damaged or missing.
7. Install drain plugs (5) on drain ports (4) of each ponton.

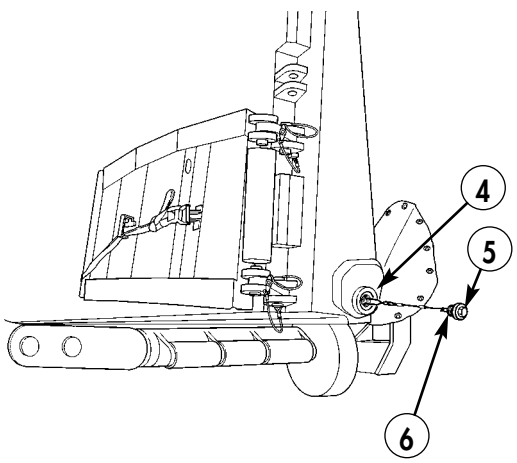
DRAINING PONTONS (Contd)



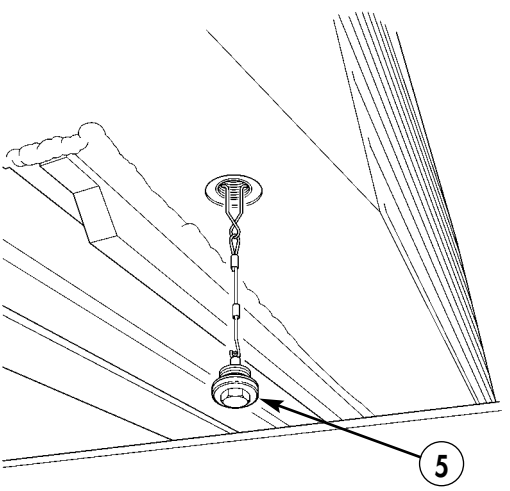
DRAIN PLUG LOCATION, INTERIOR BAY OUTER PONTON



DRAIN PLUG LOCATION, INTERIOR BAY INNER PONTON



DRAIN PLUG LOCATION, RAMP BAY OUTER PONTON



DRAIN PLUG LOCATION, RAMP BAY INNER PONTON

END OF WORK PACKAGE

CHAPTER 5

SUPPORTING INFORMATION FOR IMPROVED RIBBON BRIDGE (IRB)

References . . . . . WP 0069 00
Components of End Item (COEI) and Basic Issue Items (BII) List . . . . . WP 0070 00
Additional Authorization List (AAL) . . . . . WP 0071 00
Expendable/Durable Supplies and Materials List . . . . . WP 0072 00

REFERENCES

THIS WORK PACKAGE SUPERSEDES WP 0069 00, DATED 8 APRIL 2003

SCOPE

This work package lists all field manuals, forms, technical manuals, and miscellaneous publications referenced in this manual.

PUBLICATIONS INDEX

The following index should be consulted frequently for latest changes or revisions and for new publications relating to material covered in this manual.

DA Pam 738-750	The Army Maintenance Management System (TAMMS)

FORMS

The following forms pertain to this manual. See DA Pam 25-30 for index of blank forms. See DA Pam 738-750, The Army Maintenance Management System (TAMMS), for instructions on the use of maintenance forms pertaining to this manual.

DD Form 250	Material Inspection and Receiving Report
DD Form 314	Preventive Maintenance Schedule and Report Card
DA Form 2028	Recommended Changes to DA Publications and Blank Forms
DA Form 2404/5988-E	Equipment Inspection and Maintenance Worksheet
DA Form 5504	Maintenance Request
DA Form 2408-9	Equipment Control Record
SF 364	Report of Discrepancy (ROD)
SF 368	Product Quality Deficiency Report (Category 11)

FIELD MANUALS

FM 3-4	Nuclear, Biological, and Chemical (NBC) Protection
FM 3-5	Nuclear, Biological, and Chemical (NBC) Decontamination
FM 5-20	Camouflage Pattern Painting
FM 5-34	Engineer Field Data

REFERENCES (Contd)

TECHNICAL MANUALS

TM 5-5420-209-12	Operator's and Unit Maintenance Manual, Improved Float Bridge (Ribbon Bridge)
TM 5-5420-278-24&P	Unit, Direct Support, and General Support Manual (including Repair Parts and Special Tools List), Improved Ribbon Bridge
TM 5-5420-234-14&P	Operator's, Unit, Direct Support, and General Support Manual (including Repair Parts and Special Tool List), Common Bridge Transporter
TM 55-2200-001-12	Transportation Guidance for Application of Blocking, Bracing, and Tiedown Materials
TM 9-214	Inspection, Care, and Maintenance of Antifriction Bearing Subscription Form
TM 9-2320-279-10	M977 Series, 8 x 8 Heavy Expanded Mobility Tactical Truck (HEMTT) Operator's Manual
TM 9-247	Materials Used for Cleaning, Preserving, Abrading, and Materiel and Related Materiels Including Chemicals Cementing Ordnance
TM 43-0139	Painting Instructions for Field Use
TM 43-1043	Equipment Improvement Report and Maintenance Summary
TM 743-200-1	Storage and Materials Handling
TM 746-10	Marking, Packing, and Shipment of Supplies and Equipment
TM 750-244-6	Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use

TECHNICAL BULLETINS

TB 43-0142	Safety, Inspection and Testing of Lifting Devices
TB 43-0209	Color, Marking, and Camouflage Painting of Military Vehicles
TB 43-0002	Maintenance Federal Supply Class (FSC) 54

OTHER PUBLICATIONS

CTA 50-970	Expendable/Durable Items (except Medical, Class V, Repair Parts, and Heraldic Items)
MIL-STD-12	Military Standard Abbreviations for Use on Drawings and in Specifications, Standards and Technical Documents
TC 9-237	Welding Theory and Application
TC 5-210	Military Float Bridge Equipment

END OF WORK PACKAGE

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

Section I. INTRODUCTION

THIS WORK PACKAGE SUPERSEDES WP 0070 00, DATED 8 APRIL 2003

SCOPE

This work package lists Components of the End Item (COEI) and Basic Issue Items (BII) for the Improved Ribbon Bridge (IRB) to help inventory items required for safe and efficient operation. For a list of BII for the Common Bridge Transporter (CBT) and Bridge Adapter Pallet (BAP), refer to TM 5-5420-234-14&P.

GENERAL

The Components of End Item (COEI) and Basic Issue Items (BII) lists are divided into the following sections:

a. Section II, Components of End Item (COEI). This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III, Basic Issue Items (BII). These are the minimum essential items required to place the Improved Ribbon Bridge (IRB) in operation. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on Table of Orgainzation and Equipment/Modified Table of Organization and Equipment (TOE/MTOE) authorization of the end item.

EXPLANATION OF COLUMNS

The following provides an explanation of columns found in tabular listings:

a. Column (1) – Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

b. Column (2) – National Stock Number. Indicates the national stock number assigned to the item and will be used for requisitioning purposes.

c. Column (3) – Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses), followed by a part number.

d. Column (4) – Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g.: ea, in., pr).

e. Column (5) – Quantity Required (Qty Rqr). Indicates the quantity of the item authorized to be used with/on the Improved Ribbon Bridge (IRB).

Section II. COMPONENTS OF END ITEM

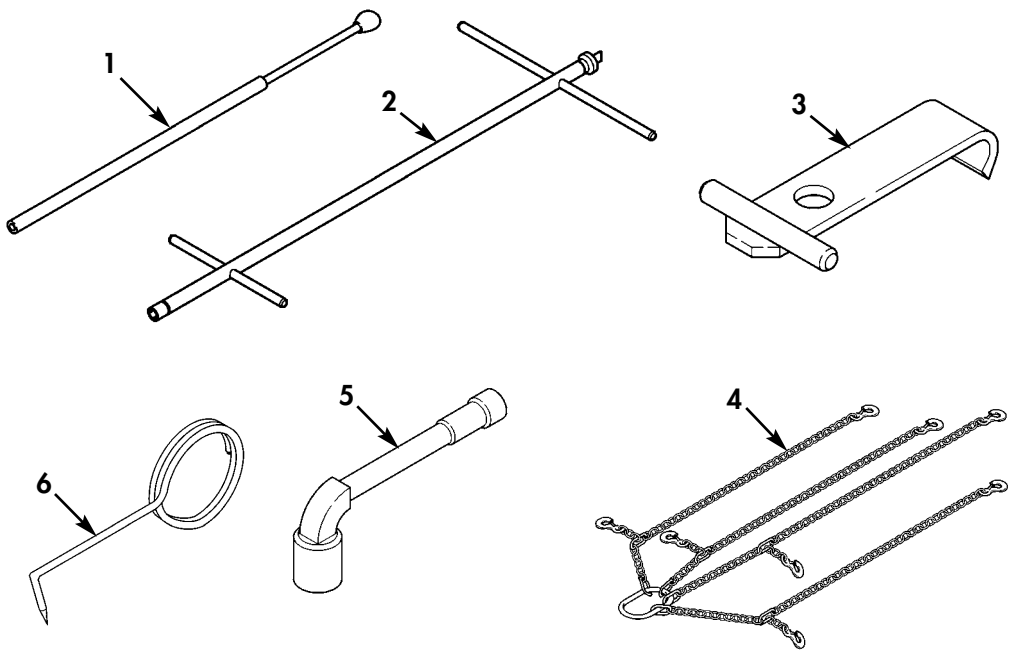
IRB

There are no COEI for the IRB.

CBT AND BAP

There are no COEI for the CBT or BAP.

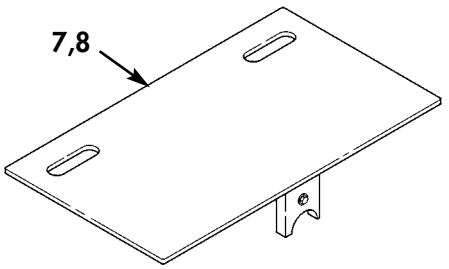
Section III. BASIC ISSUE ITEMS

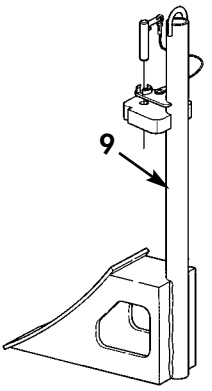


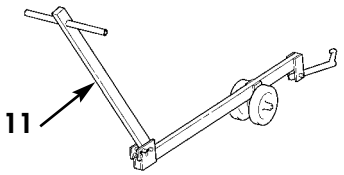
(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable On Code	(4) U/M	(5) Qty Rqr
1	5120-12-179-5817	HAND LEVER, PUMP (D9913) 909195502	ERB (Ramp)	EA	2
2	5120-12-359-0919	WRENCH, SOCKET (D9913) 029101703	ERB, EIB (Ramp, Interior)	EA	1
3	5420-12-359-8600	BRACKET, ROADWAY TOOL (D9913) 029105901	ERB, EIB (Ramp, Interior)	EA	1
4	3940-12-359-3444	GEAR, HOISTING (D9913) 029186806	ERB, EIB (Ramp, Interior)	EA	(See Note 1)
5	5120-12-357-6131	WRENCH, BILGE PLUG, 19 MM (D9913) 909120616	ERB, EIB (Ramp, Interior)	EA	1
6		CLEANING HOOK (D9913) 029153401	ERB (Ramp)	EA	2

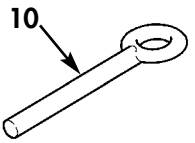
Note 1: Quantity is 4 per MRBC

Section III. BASIC ISSUE ITEMS (Contd)









(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable On Code	(4) U/M	(5) Qty Rqr
7		COVER PLATE, LH (D9913) 029100301	ERB (Ramp)	EA	1
8		COVER, PLATE, RH (D9913) 02910303	ERB (Ramp)	EA	1
9	5420-12-359-2281	BRACKET, RAFTING (D9913) 029103905	EIB (Interior)	EA	(See Note 2)
10	5420-12-173-9563	PUNCH, PIN (D9913) 029107201	ERB, EIB (Ramp, Interior)	EA	(See Note 3)
11	5420-12-356-3861	COUPLING DEVICE (D9913) 029107607	ERB (Ramp)	EA	2 (See Note 4)

Note 2: Quantity is 28 per MRBC
Note 3: Quantity is 1 (rope not included)
Note 4: Repair parts are available

END OF WORK PACKAGE

ADDITIONAL AUTHORIZATION LIST (AAL)

Section I. INTRODUCTION

THIS WORK PACKAGE SUPERSEDES WP 0071 00, DATED 8 APRIL 2003

SCOPE

This work package lists additional items authorized for the support of the Improved Ribbon Bridge (IRB).

GENERAL

This lists identifies items that do not have to accompany the Improved Ribbon Bridge (IRB) and that do not have to be turned in with it. These items are authorized by CTA, MTOE, 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) - Decription, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the CAGEC (in parentheses) and the part number.

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. These codes are identified below:

Code	Used on
ERB	Model M16
EIB	Model M17

Column (4) - Unit of Measure (U/M). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (1).

Column (5) - Qty Recm. Indicates the quantity recommended.

Section II. ADDITIONAL AUTHORIZATION LIST (AAL)

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGE & PART NUMBER	(3) USABLE ON CODE	(4) U/M	(5) QTY RECM
4730-00-202-7197	ADAPTER, STRAIGHT, PIPE TO HOSE (14959) 92A		EA	3
4730-00-289-8141	ADAPTER, STRAIGHT, PIPE TO HOSE (81349) MILC52404		EA	6
2040-00-377-8599	ANCHOR, MARINE, FLUKED, GALV. STEEL 75 LB. NOM. FLUKED DESIGN, REMOVABLE SHACKLE (81349) MILA15708		EA	6
3940-00-141-7195	BLOCK, TACKLE: 1.00 IN. DIA. WIRE ROPE, 26,000 LB. MAX. LOAD (58536) A-A-59390-D-1-A-14		EA	2
3940-00-338-5653	BLOCK, TACKLE, 0.500 IN. DIA. WIRE ROPE, 10,000 LB. MAX. LOAD (75535) 418-4-1-2		EA	3
4930-00-288-1511	ADAPTER, GREASE GUN COUPLING, FLEX. 14 IN. O/A LG. (0AYB6) G6		EA	6
4030-00-243-4440	CLAMP, WIRE ROPE, SADDLED, STEEL, 0.500 IN. NOM. (96906) MS16842-7		EA	100
4030-00-243-4444	CLAMP, WIRE ROPE, SADDLED, GALV. STEEL, 1.000 IN. NOM. (96906) MS16842-11		EA	100
5420-00-507-6560	CONNECTOR, BRIDLE, SHEAVE, SELF-ALIGNING, 1.00 IN. DIA. ROPE (97403) 7941		EA	15
5110-00-224-7058	CUTTER, WIRE ROPE, HAND OPERATED, HYDRAULIC, 1-1/8 IN. MAX. WIRE ROPE CAP. (58536) A-A-3029		EA	1

Section II. ADDITIONAL AUTHORIZATION LIST (AAL) (Contd)

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGE & PART NUMBER	(3) USABLE ON CODE	(4) U/M	(5) QTY RECM
5110-00-293-1066	CUTTER, WIRE ROPE, HAND OPERATED, HAPPER IMPACT, 1-1/2 IN. MAX. WIRE ROPE CAP. (85767) 2		EA	1
6230-00-163-1856	FLASHLIGHT, 2.500 O/A DIA. 8 IN. O/A LG. PLASTIC, WATER-TIGHT, 1 CLEAR LENS, MINIATURE FLANGED INCANDESCENT LAMP (64067) 6230-00-163-1856		EA	6
5120-00-224-2660	GRIP, CABLE JAW: PARALLEL, BRONZE LINED STEEL JAWS, SMOOTH SURFACES, 15,000 LB. SAFE OPERATING LOAD, 3/4 - 1.00 IN. WIRE ROPE (81348) RRG691		EA	4
5120-00-224-2660	GRIP, CABLE JAW: PARALLEL, BRONZE LINED STEEL JAWS, SMOOTH SURFACES, 15,000 LB. SAFE OPERATING LOAD, 3/4 - 1.00 IN. WIRE ROPE (81348) RRG691		EA	8
5120-00-900-6096	HAMMER, HAND, BLACKSMITH'S SLEDGE, 8 LB HEAD W/FIBERGLASS HANDLE (76732) 8D-8		EA	8
5340-00-214-7492	BRACKET, RAFTING, BRIDGE, ALUMINUM (97403) 13219E4304		EA	24
3950-00-276-9188	CHEST, CHAIN HOIST (97403) 13220E8275		EA	2
3950-00-292-9882	HOIST, CHAIN, HAND DRIVEN, 10,000 LB. MAX. LIFT. W/SAFETY LATCHES, FREE SPOOLING, 63.0 LBS. (27404) AC-4		EA	4
5420-00-377-0764	HOLDFAST ASSEMBLY, STEEL, BAR TYPE, 51.00 IN. LG. 8.00 IN. W. (97403) 13207E9737		EA	8

Section II. ADDITIONAL AUTHORIZATION LIST (AAL) (Contd)

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGE & PART NUMBER	(3) USABLE ON CODE	(4) U/M	(5) QTY RECM
5420-00-355-6772	PIN, HOLDFAST, 7/8 IN. DIA. (97403) 13207E9739		EA	8
5420-00-371-9897	STAKE, ANCHOR, BRIDGE, STEEL, 42 IN. LG., TAPERED END, W/D-SHAPE HOLDER (81349) MILP52258		EA	53
5420-00-060-7031	RETAINER, BRIDGE PIN (81349) MILR52243		EA	8
5420-00-371-9890	HOLDFAST ASSEMBLY, CHAIN TYPE, 12 LINKS (81349) MILH3586		EA	8
4720-00-202-6948	HOSE ASSEMBLY, NONMETALLIC, RUBBER, SYNTHETIC, DESIGNED FOR AIR (81348) ZZH500		EA	2
4720-00-289-6123	HOSE ASSEMBLY, NONMETALLIC, RUBBER, SYNTHETIC, DESIGNED FOR FUEL (58536)AA59226-1-B-1.5-25 FT		EA	6
4720-01-017-4299	HOSE ASSEMBLY, NOMETALLIC, RUBBER FOR WATER, 100.0 PSI, TEST (97403) 13219E4277		EA	6
6260-01-178-5559	LIGHT, CHEMILUMINESCENT, 6 IN. LG., RED, 12 HOUR, WATER-PROOF (58536) A-A-55134-E		BX	5
4930-00-253-2478	LUBRICATION GUN, HAND, LEVER OPERATED, 14 OZ. CAP, 6000 PSIG, W/COUPLING AND 6.500 IN. EXTENSION (36251) 1142		EA	6
4210-00-240-1654	NOZZLE, FIRE HOSE, PLAIN, TAPERED (02413) NOZZLE FIREHOSE		EA	3

Section II. ADDITIONAL AUTHORIZATION LIST (AAL) (Contd)

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGE & PART NUMBER	(3) USABLE ON CODE	(4) U/M	(5) QTY RECM
4320-00-221-5174	PUMP, HYDRAULIC RAM, HAND OPERATED, 1500.0 LBS. PSI. (95745) 1751		EA	4
4320-00-542-3347	PUMP UNIT, CENTRIFUGAL, 125.0 GPM, 5000 LB. PROOF LOAD (96046) A52109		EA	3
1670-00-360-0466	RING, PARACHUTE HARNESS D, STEEL OR CADMIUM PLATED (96906) MS22046-3		EA	21
4020-00-141-7152	ROPE, FIBROUS, NYLON, 2.250 IN. NOM CIRCUMFERENCE, 13,200.0 LBS. BREAKING STRENGTH, REEL, 600.00 FT., 3/4 DIA. (81349) MILR17343		RL	1
4020-00-968-1357	ROPE, FIBROUS, NYLON, 1.500 NOM. CIRCUMFERENCE, 5,800 LBS. BREAKING STRENGTH, REEL, 200.00 YDS, 1/2 IN. DIA. (81349) MILR17343		RL	2
4010-00-080-6234	ROPE, WIRE, STEEL IMPROVED PLOW CORE AND STRAND, INDEPENDENT WIRE ROPE, RIGHT REGULAR LAY, PREFORMED, 89,800 LBS NOM BREAKING STRENGTH (81348) RRW410		RL	1
1670-01-027-2900	SLING, CARGO, AERIAL DELIVER, WEB STRAP TYPE (56646) 38850-00001-044		EA	22
6670-01-010-5906	SCALE, WEIGHING, HANGING TYPE, DIAL INDICATOR, 0-60.0 LBS. RANGE (11710) IN-60		EA	1
4030-00-090-5354	SHACKLE, STEEL, ANCHOR TYPE, 40.000 LBS PROOF LOAD, AIR DELIVERY, 2.130 IN. MAX. OPENING WIDTH (96906) MS70087-3		EA	84

Section II. ADDITIONAL AUTHORIZATION LIST (AAL) (Contd)

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGE & PART NUMBER	(3) USABLE ON CODE	(4) U/M	(5) QTY RECM
4030-00-244-6092	SHACKLE, STEEL, ANCHOR TYPE, 31,800 LBS. PROOF LOAD, 1.250 IN. NOM. OPENING WIDTH (80205) NAS1042-12		EA	12
3940-00-214-7493	SLING AND WIRE ROPE ASSEMBLY (97403) 13218E4318		EA	3
4730-00-202-9174	STRAINER, SUCTION TYPE, COPPER ALLOY BODY AND SCREEN (81349) M12165-12		EA	3
5420-00-501-6997	PLATE, BRIDGE, ALUMINUM ALLOY, 12.00 IN. LG., 4.00 IN. W. (81348) QQ-A-250/9F		EA	24
5420-00-501-6998	PLATE, BRIDGE, ALUMINUM ALLOY, 24.00 IN. LG., 12.00 IN. W. (81348) QQ-A-250		EA	6
5210-00-554-7087	TAPE, MEASURING, FIBER, 100 FT., HAND CRANK WINDING (37163) 406		EA	3
9390-00-753-3208	TAPE, REFLECTIVE, YELLOW, PRESSURE SENSITIVE, 1.000 IN. W, 1800 IN. LG. (81346) ASTM-D4956		EA	4
5420-00-319-0128	TOWER, CABLE ANCHOR (97403) 13220E6626		EA	2
5420-00-371-9860	BASE, ANCHOR TOWER, STEEL (97403) 13220E6629		EA	1
5420-00-377-0757	CAP, ANCHOR TOWER, STEEL (97403) 13220E6631		EA	1
5420-00-319-0124	CAP, ADAPTER, ANCHOR TOWER, STEEL (97403) 13220E6632		EA	1

Section II. ADDITIONAL AUTHORIZATION LIST (AAL) (Contd)

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGE & PART NUMBER	(3) USABLE ON CODE	(4) U/M	(5) QTY RECM
5420-00-371-9883	FRAME, HINGE, ANCHOR TOWER, STEEL (97403) 13220E6630		EA	1
5420-00-371-9901	PIVOT UNIT, ANCHOR TOWER, STEEL (97403) 13220E6628		EA	1
5420-00-355-7069	TOWER UNIT, ANCHOR TOWER, (81336) D2775-1A		EA	2
5420-00-371-9918	TRAVELR, BICYCLE, A FRAME, ANCHOR TOWER (81336) D4551-1A		EA	1
4940-00-595-5720	TESTER, HYDRAULIC HOSE, FOR PRESSURE READINGS (08832) GS5		EA	4
4030-00-266-0066	THIMBLE, ROPE, SPLIT OVAL, ZINC COATED, 0.500 IN. NOM. DIA. (81348) FFT276		EA	24
4030-00-266-0071	THIMBLE, ROPE, SPLIT OVAL, ZINC COATED, 1.000 IN. NOM. DIA. (81348) FFT276		EA	24
5420-00-214-7496	TOOL, TEST, BAY LEAK, USED FOR TESTING BRIDGE PONTON LEAKS (97403) 13219E4303		EA	1
5120-00-204-1999	WRENCH SET, SOCKET, 3/4 SQ. DR. 12 PT. W/CASE (05047) B107.1		EA	2
5120-00-273-9208	EXTENSION, SOCKET WRENCH, 3.000 IN. LG. (58536) A-A-2170		EA	2
5120-00-227-8079	EXTENSION, SOCKET WRENCH, 16.000 IN. LG. (58536) A-A-2170		EA	2
5120-00-243-7328	EXTENSION, SOCKET WRENCH, 8.000 IN. LG. (58536) A-A-2170		EA	2

Section II. ADDITIONAL AUTHORIZATION LIST (AAL) (Contd)

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGE & PART NUMBER	(3) USABLE ON CODE	(4) U/M	(5) QTY RECM
5120-00-221-7959	HANDLE, SOCKET WRENCH, HINGED (45225) H377		EA	2
5120-00-249-1076	HANDLE, SOCKET WRENCH, RATCHET (77053) 9649		EA	2
5120-00-709-4072	HANDLE, SOCKETE WRENCH, SLIDING TEE (55719) L52BH		EA	2
5120-00-243-1687	UNIVERSAL JOINT, SOCKET WRENCH (58536) A-A-2169		EA	2
5120-00-181-6813	SOCKET, SOCKET WRENCH, 15/16 IN. (24789) 1230		EA	2
5120-00-189-7910	SOCKET, SOCKET WRENCH, 1-9/16 IN. (58536) A-A-1394		EA	2
5120-00-189-7928	SOCKET, SOCKET WRENCH, 1-1/16 IN. (58536) A-A-1394		EA	2
5120-00-189-7931	SOCKET, SOCKET WRENCH, 1-7/16 IN. (80204) B107.1		EA	2
5120-00-199-7765	SOCKET, SOCKET WRENCH, 1-5/8 IN. (79808) 5120-00-199-7765		EA	2
5120-00-199-7768	SOCKET, SOCKET WRENCH, 1-13/16 IN. (80204) A-A-1394		EA	2
5120-00-199-7769	SOCKET, SOCKET WRENCH, 1-7/8 IN. (8Z799) H-1260		EA	2
5120-00-199-7770	SOCKET, SOCKET WRENCH, 2 IN. (80204) B107.1		EA	2

Section II. ADDITIONAL AUTHORIZATION LIST (AAL) (Contd)

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGE & PART NUMBER	(3) USABLE ON CODE	(4) U/M	(5) QTY RECM
5120-00-232-5681	SOCKET, SOCKET WRENCH, 1-5/16 IN. (79808) 5120-00-232-5681		EA	2
5120-00-235-5871	SOCKET, SOCKET WRENCH, 1-1/4 IN. (1ML14) 3105A		EA	2
5120-00-237-0989	SOCKET, SOCKET WRENCH, 1 IN. (80204) B107.1 CL1STA		EA	2
5120-00-239-0021	SOCKET, SOCKET WRENCH, 1-1/8 IN. (58536) A-A-1394		EA	2
5120-00-243-1687	UNIVERSAL JOINT, SOCKET WRENCH, 1-1/2 IN. (58536) A-A-2169		EA	2
5140-00-772-4142	BAG, TOOL, COTTON DUCK, W/FLAP, 10.000X20.000 IN. (81337) 5-3-62		EA	1
5120-00-316-9217	WRENCH, WHEEL STUD NUT, DBLE SOCKET TYPE 11 (19207) 11677000-3		EA	1
5120-00-222-8852	SCREWDRIVER, FLAT TIP, HVY DUTY, PLASTIC HDL, 1/4 IN. TIP, 4 IN. BLADE, 7-3/4 IN. LG. (80063) SCC539502-2		EA	1
5120-00-227-7338	SCREWDRIVER, FLAT TIP, HVY DUTY, STEEL HDL, W/WOOD INSERTS, 5 IN. BLADE, 9-1/2 IN. LG. (77948) D339		EA	1
5120-00-234-8912	SCREWDRIVER, CROSS TIP, PHILLIPS NO. 3, PLASTIC HDL, 6 IN. BLADE, 10-1/8 IN. LG. (C7127) SSDP63		EA	1
5120-00-449-8083	WRENCH, ADJ., OPEN END, 9-1/2 TO 10-/12 IN. OPENING, TYPE 1, CLASS1 (96508) D710		EA	1

Section II. ADDITIONAL AUTHORIZATION LIST (AAL) (Contd)

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGE & PART NUMBER	(3) USABLE ON CODE	(4) U/M	(5) QTY RECM
5120-00-061-8546	HAMMER, HAND, MACHINIST'S BALL-PEEN, 2 LB., TYII, CL1, STY A (79171) FS432		EA	1
3940-01-480-9133	BLOCK, TACKLE, EXTENSION ASSEMBLY (31902) A4810810		EA	1
5420-00-071-5273	SUPPLEMENTARY SET, BRIDGE (19099) SC5420-97CLE51M-AP		EA	1
4010-01-058-4771	CHAIN, WELDED (81996) 38850-00053-102		EA	4
4010-01-041-9751	LINK, CHAIN, DETACHABLE (13743) 664241		EA	4

END OF WORK PACKAGE

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

THIS WORK PACKAGE SUPERSEDES WP 0072 00, DATED 8 APRIL 2003

SCOPE

This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized by CTA 50-970, Expendable/Durable Items (except medical, class V, repair parts, and heraldic items).

EXPLANATION OF COLUMNS

a. Column (1) – Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., cleaning solvent compound, Item 1, WP 0072 00).

b. Column (2) – Level. This column identifies the lowest level of maintenance that requires the listed item.

C — Operator/Crew
O — Unit Maintenance

c. Column (3) – National Stock Number. This is the National Stock Number assigned to the item; use it to request or requisition the item.

d. Column (4) – Description. This column indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Commercial and Government Entity Code for Manufacturer (CAGEC) in parentheses, followed by the part number.

e. Column (5) – Unit of Measure (U/M). This column indicates the measure used in performing the actual maintenance function. This measure is expressed by an alphabetical abbreviation (e.g., EA, GAL., OZ). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements. Adjust when higher category maintenance requirements are involved.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION CAGEC AND PART NUMBER	(5) UNIT MEASURE
1	C		CLEANING SOLVENT COMPOUND: (0K209) SKYSOL-100	
		6850-01-381-4423	5-Gallon Can	GAL.
2	C		CORROSION PREVENTIVE COMPOUND: grade II, soft film (81349) MIL-C-16173	
		8030-00-051-4011	1 Gallon Can	GAL.
3	C		DETERGENT, GENERAL: liquid, (81349) MIL-D-1679	
		8040-00-833-9563	1 Gallon Can	GAL
4	C		GREASE: automotive and artillery: (81349) MIL-PERF-10924	
		9150-00-935-1017	1 Gallon Can	GAL.
5	C		LUBRICATING OIL, WIRE ROPE AND EXPOSED GEAR: CW (81348) VV-L-751	
		9150-00-234-5197	5-Pound Can	LB
6	C		LUBRICANT, EXPOSED WIRE: Grd 1 Cw (81349) W-L-751	
		9150-00-234-5197	5-pt. Can	LB
7	C		ULTRA-SAFE 271 (Pump Fluid) (D9913) 029102714	
			10-Liter Can	L
8	C		RAG, WIPING: unbleached cotton and cotton-synthetic, mixed colors (58536) A-A-531	
		5350-00-321-0872	50-Pound Bale	LB
9	C		CORROSION PREVENTIVE COMPOUND (39428) WD-40 1347K11	
		8030-01-418-9008	12-oz. Can	OZ
10	C	6260-01-196-0637	CHEM-LITE HOLDER (OBY83) 9-06370	BX
11	C		CHEM-LITE TUBE	
		6260-01-074-4229	GREEN (A-A-55134-B)	BX
			10 Per Box	
		6260-01-175-5559	RED (A-A-55134-E)	BX
			10 Per Box	
12	C		GREASE: MOLYBDENUM (07950) MIL-G-21164	

END OF WORK PACKAGE

GLOSSARY

The following is a list of abbreviations/acronyms and their definitions appearing in this manual. Other terms found in this manual are defined in the paragraph in which they first appear. Refer to MIL-STD-12 for a complete list of standard military abbreviations.

BAP – Bridge Adapter Pallet
BEB – Bridge Erection Boat
BII – Basic Issue Items
CAGEC – Commercial and Government Entity Code
CBT – Common Bridge Transporter
cm – centimeter
DS – Direct Support
EIC – End Item Code
EIR – Equipment Improvement Recommendation
FCG – Functional Group Code
ft – foot
feet/sec – feet per second
GDSBS – General Dynamics Santa Bárbara Sistemas
GS – General Support
GVW – Gross Vehicle Weight
HEMTT – Heavy Expanded Mobility Tactical Truck
IBC – Improved Boat Cradle
IFB – Improved Float Bridge
in. – inch
IRB – Improved Ribbon Bridge
IRB-I – Improved Ribbon Bridge Interior Bay
IRB-R – Improved Ribbon Bridge Ramp Bay
IPS – Improved Plough Steel
kg – kilogram
lb – pound
LHS – Load Handling System
MAC – Maintenance Allocation Chart
MCB – Mine Clearing Blade
MLC – Military Load Class
mm – Millimeter
Meters/Sec – Meters per Second
MRBC – Multi-Role Bridge Companies
NFMC – Not Fully Mission Capable
NSN – National Stock Number
OIC – Officer In Charge
PLS – Palletized Load System
PMCS – Preventive Maintenance Checks and Services
POC – Point of Contact

GLOSSARY (Contd)

PTO – Power Take-off
RMC – Remote Control Unit
RPSTL – Repair Parts and Special Tools List
SMR – Sources, Maintenance, and Recoverability
SOP – Standard Operating Procedure
TM – Technical Manual
TMDE – Test, Measuring, and Diagnostic Equipment
WARCO – Warranty Coordinator

The following is a list of nomenclature used in this manual and the corresponding common nomenclature used in the field.

TM NOMENCLATURE	COMMON NOMENCLATURE
Bay trunnions	Bay tiedown pins
Crowbar	Tanker bar
Coupling device	Ramp dolly
Foldlock	Foldlock latch
Grip hoist	Bay connecting tool
Inner ponton	Roadway ponton
IRB hoisting gear	Lifting sling
Lifting lug	Lifting eye
Lower lock-drive pin	Lower lock-drive
Lower main coupling	Yoke
Outer ponton	Bow ponton
Outer ponton lock	Roadway to bow ponton latch
Outer ponton trunnion	Front/rear bay tie-down pin
Roadway tool	J-hook
Receptacle block	Connector receptacle
Striker receptacle	Strike catch
Travel latch locating receptacle	Travel latch receptacle
T-wrench	T-bar
Upper coupling, longitudinal	Bay-to-bay connector/dogbone
Upper coupling, transverse	Roadway connector/dogbone
Upper coupling receptacle block	Connector receptacle

INDEX

Subject	WP Sequence No.-Page No.
A	
Abbreviations/acronyms, list of	Glossary-1
Access cover, pump	0010 00-6
Additional Authorization List (AAL)	0071 00-2
Anchorage, bridge	0035 00-1
Army Petroleum, Oil, and Lubricants (POL)	0001 00-5
B	
Basic Issue Items (BII)	
List	0070 00-3/4 blank
Location of	0044 00-1/2 blank
Bay retrieval	0039 00-1
Bilge pump operation	0053 00-2
Bridge adapter pallet (BAP), function of the	0005 00-2
Bridge adapter pallet controls and indicators	0009 00-1
Air hose quick-disconnect coupling	0009 00-2
Front pin lock latch	0009 00-6
Front pin lock release mechanism	0009 00-7
Hand pump	0009 00-8
Hold-down lock handle	0009 00-1
Ladder stowage latch	0009 00-10
PLS foot pins	0009 00-10
Pump handle	0009 00-8
Rear guide latch pin handle	0009 00-5
Selector valve lever	0009 00-8
Transload roller retaining bar	0009 00-9
Winch frame lock levers	0009 00-3
Winch hose quick-disconnect couplings	0009 00-4
Bridge adapter pallet equipment features	0003 00-6
Bridge anchorage	0035 00-1
Bridge assembly, successive bay method	0033 00-1
Bridge assembly, swinging bridge method	0034 00-1
Bridge operation	0036 00-1
Bridge recovery, successive bay method	0037 00-1
Bridge recovery, swinging bridge method	0038 00-1
Bowline knot	0035 00-31/32 blank
C	
Cable assembly service	0068 00-1
Capabilities, and features, equipment characteristics	0003 00-1
CBT preparation for use	0018 00-1
Characteristics, capabilities, and features, equipment	0003 00-1

INDEX (Contd)

Subject	WP Sequence No.-Page No.
C (Contd)	
Checking pump reservoir fluid level	0064 00-2
Cleaning	0066 00-1
Cleats	
Interior bay	0011 00-6
Ramp bay	0010 00-10
Common bridge transporter, transload BAP to	0023 02-1
Common bridge transporter controls and indicators	0008 00-1
Common bridge transporter preparation for use	0018 00-1
Components of End Item (COEI) list	0070 00-2
Configuration, equipment	0003 00-17
Contents, table of	iii/iv blank
Controlled launch of bay	0025 00-1
Controls and indicators, description and use of operator's	0007 00-1/2 blank
Conventional rafting procedure	0043 00-1
Corrosion Prevention and Control (CPC)	0001 00-4
Coupling, upper, transverse and longitudinal	
Interior bay	0011 00-2
Ramp bay	0010 00-2
Cross-reference list, nomenclature	0001 00-6
D	
Data plates, location and description	0003 00-22
Data, equipment	0003 00-14
Deployment by helicopter	0027 00-1
Description and theory of operation	0003 00-1
Description and use of operator's controls and indicators	0007 00-1
Description of data plates, location and	0003 00-22
Description of major components, location and	0003 00-2
Destruction of Army materiel to prevent enemy use	0001 00-5
Differences between models	0003 00-11
Differences between IRB and IFB	0003 00-11
Draining pontons	0068 00-6
E	
Effective pages, list of	A/B blank

INDEX (Contd)

Subject	WP Sequence No.-Page No.
E (Contd)	
Equipment description and data	0003 00-1
Equipment characteristics, capabilities, and features	0003 00-1
Equipment configuration	0003 00-17
Equipment data	0003 00-14
Equipment, loading and movement of	0066 00-3
Expendable/durable supplies and materials list	0072 00-2
Eyebolt assembly services	0068 00-4
F	
Field manuals	0069 00-1
Foldlock	
Interior bay	0011 00-1
Ramp bay	0010 00-1
Forms	0069 00-1
Forms, records, and reports maintenance	0001 00-4
Free launch of bay	0024 00-1
Function of the bridge adapter pallet (BAP)	0005 00-2
Function of the CBT load handling system (LHS)	0005 00-2
Function of the ponton couplings	0005 00-2
Function of the ponton locks	0005 00-1
Function of the pump system	0005 00-2
Function of the transporter (HEMTT)	0005 00-2
G	
General information	0001 00-1
General information, scope	0001 00-1
General maintenance procedures	0066 00-1
H	
Hand Receipt (HR)	0001 00-4
Handling, care, and safety	0001 00-6
Handrails	
Interior bay	0011 00-5
Ramp bay	0010 00-5
Helicopter	
Deployment by	0027 00-1
Recovery by	0040 00-1

INDEX (Contd)

Subject	WP Sequence No.-Page No.
High-bank launch of bay	0026 00-1
How the bay unfolds/folds	0005 00-1
How to use this manual	v
I	
Information	
General	0001 00-1
Warranty	0001 00-6
Interior bay controls and indicators	0011 00-1
Bilge plugs	0011 00-7
Cleats	0011 00-6
Coupling device	0011 00-8
Foldlocks	0011 00-1
Handrails	0011 00-5
Lifting lug	0011 00-1
Load receiving pins	0011 00-6
Lower lock-drive	0011 00-4
Outer ponton locks	0011 00-2
Rafting brackets	0011 00-10
Travel latch	0011 00-1
Upper coupling, longitudinal	0011 00-2
Upper coupling, transverse	0011 00-2
Interior bay equipment features	0003 00-10
Interior bay to interior bay connection	0032 00-1
Installation instructions	0062 00-1
Introduction to troubleshooting	0055 00-1/2 blank
K	
Knot, bowline	0035 00-31/32 blank
L	
Latches, stowage compartment	0010 00-11/12 blank
Latch, travel	
Interior bay	0011 00-1
Ramp bay	0010 00-1
Launch of bay, high-bank	0026 00-1
Leaks	0013 00-3
Lifting lug	
Interior bay	0011 00-1
Ramp bay, front and rear	0010 00-1
List of	
Abbreviations/acronyms	0001 00-6
Effective pages/work packages	A/B blank

INDEX (Contd)

Subject	WP Sequence No.-Page No.
L (Contd)	
Load handling system (LHS), function of the	0005 00-2
Load handling system equipment features	0003 00-2
Load receiving pins	
Interior bay	0011 00-6
Ramp bay	0010 00-10
Loading and movement of equipment	0066 00-3
Loading BAP from ground	0020 00-1
Loading bay from ground	0022 00-1
Location and description of data plates	0003 00-22
Location and description of major components	0003 00-2
Location of Basic Issue Items (BII), Components of End Items (COEI), and Additional Authorization List (AAL) items	0044 00-1
Longitudinal rafting procedure	0042 00-1
Lower lock-drive assembly	
Interior bay	0011 00-4
Ramp bay	0010 00-4
Service	0068 00-5
Lubrication instructions	
General	0064 00-1
Service intervals	0064 00-1
M	
Maintenance forms, records, and reports	0001 00-4
Maintenance procedures, general	0068 00-1
Major components, location and description of	0003 00-2
Manually bypassing solenoid during electric power loss	0049 00-1
Manually loading BAP from ground	0047 00-1
Manually removing load during LHS power loss	0051 00-1
Manually unloading BAP to ground	0048 00-1
Mechanical troubleshooting	0058 00-1
Metric system	0001 00-6
Models, differences between	0003 00-11
N	
Nomenclature cross-reference list	0001 00-6

INDEX (Contd)

Subject	WP Sequence No.-Page No.
O	
Operating transporter in unusual environment or weather	0046 00-2
Operation, bilge pump	0053 00-2
Operation, bridge	0036 00-1
Operation in extreme heat or dry conditions	0046 00-2
Operation in high wind conditions	0046 00-2
Operation in rainy or humid conditions	0046 00-2
Operation in snow or icy conditions	0046 00-1
Operation in swift or shallow water	0046 00-2
Operation of special purpose kits	0053 00-1
Operation under unusual conditions	0046 00-1
Operation under usual conditions	0018 00-1
Operation, power wash pump	0053 00-4
Operation, description and theory of	0005 00-1
Operator maintenance procedures	0068 00-1
Operator preventive maintenance checks and services (PMCS) for CBT	0014 00-1
Operator preventive maintenance checks and services (PMCS) for interior bay	0016 00-1
Operator preventive maintenance checks and services (PMCS) for ramp bay	0015 00-1
Operator troubleshooting procedures table of contents	0056 00-1/2 blank
Other publications	0069 00-2
Outer ponton locks	
Interior bay	0011 00-2
Ramp bay (swivel hooks and swivel plates)	0010 00-2
Ozone Depleting Substances (ODS)	0001 00-5
P	
Painting	0066 00-3
PLS trailer, transloading BAP to	0023 01-1
Plates, ramp	0010 00-8
Plugs, bilge	
Interior bay	0011 00-7
Ramp bay	0010 00-11/12 blank
Ponton couplings, function of the	0005 00-2
Pontons, draining	0068 00-6
Power wash pump operation	0053 00-4

INDEX (Contd)

Subject	WP Sequence No.-Page No.
P (Contd)	
Preliminary servicing of equipment	0062 00-2
Preparation for emergency manual removal of BAP	0050 00-1
Preparation for shipment and limited storage	0066 00-5
Preparation for storage or shipment	0001 00-5
Preparation for use	0007 00-1
Preventive Maintenance Checks and Services (PMCS)	
Common Bridge Transporter (CBT)	0014 00-1
Interior bay	0016 00-1
General	0013 00-1
Table, explanation of columns in	0013 00-1
Ramp bay	0015 00-1
Publications index	0069 00-1
Pump, bilge, operation of	0053 00-2
Pump access cover	0010 00-6
Pump controls and indicators	0010 00-6
Pump reservoir fluid level	0064 00-2
Pump system, function of the	0005 00-2
Pump system troubleshooting	0060 00-1
Pump system troubleshooting symptom index	0059 00-1/2 blank
R	
Raft assembly and disassembly	0041 00-1
Rafting, conventional	0043 00-1
Rafting, longitudinal	0042 00-1
Rafting brackets	0011 00-10
Ramp bay controls and indicators	0010 00-1
Bilge plugs	0010 00-11/12 blank
Cleats	0010 00-10
Foldlocks	0010 00-1
Front and rear lifting lugs	0010 00-1
Handrails	0010 00-5
Load receiving pins	0010 00-10
Lower lock-drive	0010 00-4
Outer ponton locks	0010 00-2
Pumps	0010 00-6
Ramp plates	0010 00-8
Stowage compartment latches	0010 00-11/12 blank
Travel latch	0010 00-1
Upper coupling, longitudinal	0010 00-2
Upper coupling, transverse	0010 00-2
Ramp bay equipment features	0003 00-8

INDEX (Contd)

Subject	WP Sequence No.-Page No.
R (Contd)	
Ramp bay to interior bay connection	0030 00-1
Ramp bay to interior bay connection (alternate method)	0031 00-1
Ramp plates	0010 00-8
Receipt, hand	0001 00-4
Receipt, service upon	0062 00-1
Recommending improvements, reporting errors and	i/ii blank
Recovery by helicopter	0040 00-1
References	0069 00-1
Reporting deficiencies	0013 00-2
Reporting Equipment Improvement Recommendations (EIRs)	0001 00-4
Reporting errors and recommending improvements	i/ii blank
Reports, maintenance forms, records, and	0001 00-4
Retrieval, bay	0039 00-1
S	
Safety, care, and handling	0001 00-6
Securing interior bay after launch	0029 00-1
Securing ramp bay after launch	0028 00-1
Service intervals	0064 00-1
Service upon receipt of material	0062 00-1
Shipment and limited storage, preparation for	0066 00-5
Site requirements and layouts	0019 00-2
Special instructions	0013 00-2
Special purpose kits, operation of	0053 00-1
Storage or shipment, preparation for	0001 00-5
Stowage compartment latches	0010 00-11/12 blank
Successive bay method	
Bridge assembly	0033 00-1
Bridge recovery	0037 00-1
Supplies and materials list, expendable/durable	0072 00-1
Swinging bridge method	
Bridge assembly	0034 00-1
Bridge recovery	0038 00-1

INDEX (Contd)

Subject	WP Sequence No.-Page No.
T	
Table of contents	iii/iv blank
Technical bulletins	0069 00-2
Technical manuals	0069 00-2
Theory of operation	0005 00-1
Transloading BAP to common bridge transporter	0023 02-1
Transloading BAP to PLS trailer	0023 01-1
Transporter (HEMTT), function of the	0005 00-2
Transporter controls and indicators, common bridge	0008 00-1
Transporter operations site survey	0019 00-1
Travel latch	
Interior bay	0011 00-1
Ramp bay	0010 00-1
Troubleshooting, pump system	0060 00-1
Troubleshooting, introduction to	0055 00-1/2 blank
Troubleshooting, mechanical	0058 00-1
U	
Unloading BAP to ground	0021 00-1
Unloading bay to ground	0023 00-1
Upper coupling, transverse and longitudinal	
Interior bay	0011 00-2
Ramp bay	0010 00-2
W	
Warning summary	warning a
Warranty information	0001 00-6
Work packages, list of	A/B blank
Y	
Yokes, lower lock-drive	0010 00-4

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By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0300804

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1	0076 00-1 0015 00-3				1	Item number 1 reads part number 024522600. Should read 4522601. Callout to pump outlet reads 21. Should read 2.

SAMPLE

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1,000 Millimeters = 39.37 Inches
1 Kilometer = 1,000 Meters = 0.621 Miles

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter = 1,000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1,000 Milliliters = 33.82 Fluid Ounces

TEMPERATURE

Degrees Fahrenheit (F) = °C • 9 ÷ 5 + 32
Degrees Celsius (C) = °F - 32 • 5 ÷ 9
212° Fahrenheit is equivalent to 100° Celsius
89.96° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius

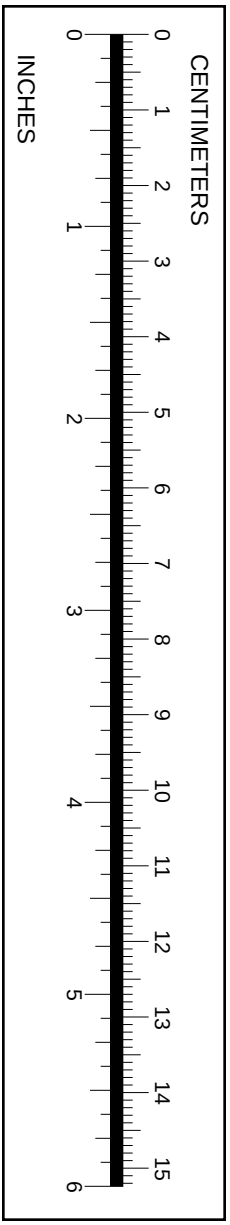
WEIGHTS

1 Gram = 0.001 Kilograms = 1,000 Milligrams = 0.035 Ounces
1 Kilogram = 1,000 Grams = 2.2 Lb
1 Metric Ton = 1,000 Kilograms = 1 Megagram = 1.1 Short Tons

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Millimeters	25.400
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	0.4536
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds Per Square 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
Millimeters	Inches	0.03937
Centimeters	Inches	0.3937
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square 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	2.2046
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds Per Square Inch	0.145
Kilometers Per Liter	Miles Per Gallon	2.354
Kilometers Per Hour	Miles Per Hour	0.621



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