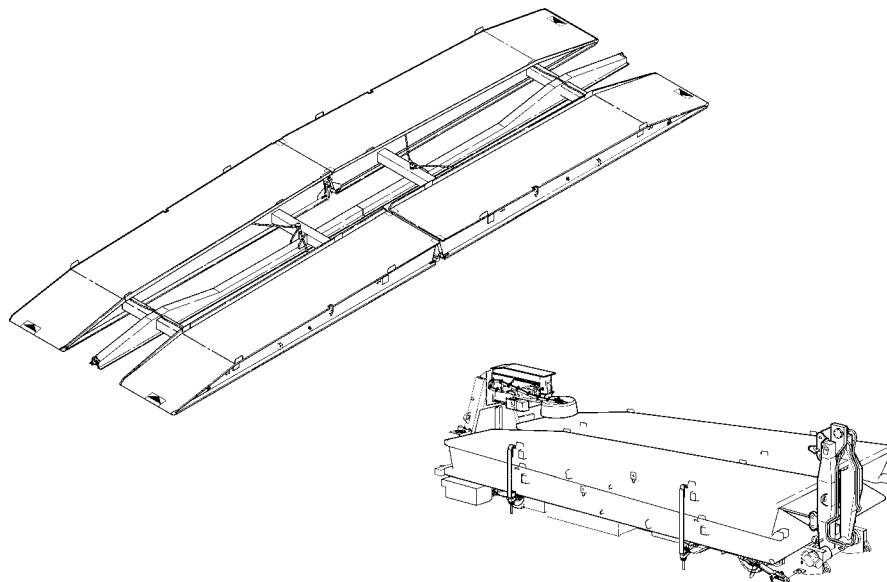


**UNIT AND DIRECT SUPPORT MAINTENANCE
AND REPAIR PARTS
AND SPECIAL TOOLS LIST**

FOR

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959



HOW TO USE THIS MANUAL

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EQUIPMENT DESCRIPTION, AND
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**HEADQUARTERS, DEPARTMENT OF THE ARMY
AUGUST 2006**

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.

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

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. Failure to comply may result in injury to personnel.

Operation of a deadlined REB without preliminary inspection prior to performing troubleshooting procedures may result in damage to equipment or injury to personnel.

All nonessential personnel must stand 30 ft (9 m) away from equipment during lifting operations. Failure to comply may result in injury to personnel or damage to equipment.

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

Nonessential personnel must stand at least 30 ft (9 m) away from truck and bridge cable during emplacement and retrieval operations. Failure to comply may result in personnel injury or equipment damage.

The bleed valve on hydraulic line should be used to bleed line before disconnecting. When disconnecting any hydraulic line, open line slowly and protect face; hydraulic oil may spray out due to residual pressure in system. Always wear leather gloves when handling winch cable. Never allow cable to run through bare hands. Failure to comply may result in injury or death to personnel.

Winch assembly weighs approximately 525 lb (238 kg). Support winch assembly during removal and installation. Failure to comply may result in injury or death to personnel.

Lower support boom must be supported on dunnage before cylinders are removed. Failure to comply may result in injury or death to personnel.

Before disconnecting any hydraulic hose, you must relieve residual hydraulic pressure from system and use care when loosening any hydraulic tube or hose. Failure to comply may result in injury or death to personnel.

Welding repair of bridge structural components is not allowed at field level. Attempting welding repair of damaged structural areas without proper heat treating will compromise strength of bridge. Failure to comply may result in failure of bridge, damage to equipment, and possible injury or death to personnel.

Secondary boom is heavy and must be supported during removal or installation. Failure to comply may result in injury or death to personnel.

WARNING SUMMARY (Contd)

Launch beam and bridge half must be supported when removing bridge quarters. Failure to comply may result in injury or death to personnel.

Use care when removing bridge quarters. The lower supporting pins and springs will fall out of launch beam arms as bridge quarter is removed. The side supporting pins are under a small amount of pressure and will fly out. The top supporting pins may stay in launch beam arms. Failure to comply may result in injury or death to personnel.

Battery acid (electrolyte) is harmful. Always wear safety goggles and rubber gloves, and do not smoke when performing battery maintenance. Severe injury will result if acid contacts eyes or skin.

Remove all jewelry such as rings, dogtags, bracelets, etc. If jewelry or disconnected battery ground cable contacts battery terminal, a direct short can result, causing instant heating of tools, severe injury to personnel, or damage to equipment.

When removing battery cable clamps, disconnect ground cables first. Ensure all switches are in OFF position before disconnecting. Do not allow tools to come in contact with pallet when disconnecting cable camps. A direct short can result, causing instant heating of tools, tool damage, battery damage, or battery explosion.

Wear neoprene gloves and eye protection when mixing or coating KS 55. Skin irritation or eye damage may occur if procedure is performed without neoprene gloves and eye protection.

Ensure proper ventilation and wear a respirator apparatus when working with KS 55. Injury to personnel may occur if used without a respirator or in a confined area.

Wash hands and wrists with skin protectant and rub with skin protectant ointment before and after performing task. Skin irritation may occur if hands and wrists are not properly cleaned and protected.

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF PALLET.

Launch boom is very heavy and must be supported before disconnecting hydraulic hoses or tubes. Failure to comply may result in injury or death to personnel.

Use care when removing telescopic tube from transverse quarter. Slide pins are under spring pressure and will fly out of transverse quarter as telescopic tube is removed. Failure to comply may result in injury to personnel.

Tire must be deflated before removing nuts and screws securing rims together. Failure to comply may result in injury or death to personnel.

Ensure battery ground cable is disconnected or damage to equipment or injury to personnel may result.

Eyeshields must be worn when cleaning with a wire brush. Flying rust and metal particles may result in injury to personnel.

Exercise caution when compressing pins and sliding bridge quarter onto launch beam. Failure to comply may result in injury to personnel.

Personnel must observe all relevant safety precautions to prevent inhaling toxic fumes or dust when cleaning or welding around epoxy paints used on bridge quarters. Failure to comply may result in injury or death to personnel.

Ensure retaining pin is installed prior to removing locknuts from cylinder rod ends or wheel support bracket will fall out.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

The date of issue for original pages/work packages for this TM is:

Original 31 August 2006

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 956.

TOTAL NUMBER OF WORK PACKAGES IS 206.

THE PAGES/WORK PACKAGES CONSISTS OF THE FOLLOWING:

Page No.	Change No.
Warning a - b0
A0
B blank0
i-x0
WP 0001 00-0206 000
Glossary0
Index0

*Zero in this column indicates original page.

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HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 31 August 2006

TECHNICAL MANUAL
UNIT AND DIRECT SUPPORT MAINTENANCE
AND REPAIR PARTS AND SPECIAL TOOLS LIST
FOR
RAPIDLY EMPLACED BRIDGE (REB)

REB	MODEL	NSN	P/N
Rapidly Emplaced Bridge	M21	5420-01-481-3959	12480471

Current as of 22 May 2006

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 Equipment Technical Publications), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is <https://aeprs.ria.army.mil>. The DA Form 2028 is located under the Public Applications section in the AEPS Public Home Page. 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-LMIT / TECH PUBS, TACOM-RI, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The email address is TACOM-TECH-PUBS@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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HOW TO USE THIS MANUAL

ABOUT YOUR MANUAL

Maintenance personnel shall familiarize themselves with the format and use of this Technical Manual (TM) prior to performing equipment maintenance and repair. 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.

The basic 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** – Chapter titles are listed on the front cover for quick reference. 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 illustrations are located side-by-side on facing pages. Lubrication instructions are included with 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. **Glossary** – A list of abbreviations/acronyms used in this manual is provided in the glossary found at the back of the 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 before attempting to use this manual. If you have any questions after reviewing the following example, don't hesitate to ask your supervisor.

PROBLEM: You receive a report that states the bridge pallet cannot be maneuvered while on the ground or loaded onto the transport because the pallet wheels will not maintain their position once lowered.

SOLUTION: You must find information on pallet wheels in Hydraulic System Troubleshooting (WP 0010 00) and perform the necessary troubleshooting tasks to solve the problem.

NOTE

If you're trying to find information by subject, a subject index can be found at the back of the manual.

1. Go to the Table of Contents and find chapter 2. You will find nine work packages in chapter 2. Turn to WP 0004 00 for Introduction to Troubleshooting, and read the information under "General" in Introduction to Troubleshooting.
2. Go to WP 0005 00, Mechanical System Troubleshooting Symptom Index, to find the work package number for the appropriate symptom. In this case, you have a hydraulic system problem. Turn to WP 0009 00, Hydraulic System Troubleshooting Symptom Index, and look down the list of malfunctions until you identify the heading for wheels lifting cylinders will not lower or raise.
3. Go to malfunction no. 15, WP 0010 00-8, step 6, check that wheel lifting cylinder operates for performing steps 1 through 5, and follow the steps and substeps listed. As you perform step 6, you discover that a damaged pump is causing pressure loss to the wheel lifting cylinder. Now you must go to WP 0081 00 as referenced in step 6.

HOW TO USE THIS MANUAL (Contd)

4. Before beginning WP 0081 00, Hydraulic Supporting Wheels Control Valve, Flow Dividers, Selector Valve, Pressure Regulator Valve, Pressure Gauge, and Pump Replacement, you must review the entire procedure starting with the INITIAL SETUP. The first page of the work package contains the INITIAL SETUP and is always located on the right-hand page. The INITIAL SETUP provides the maintenance technician with the requirements to perform and complete all tasks included in the work package as follows:
 - a. Test Equipment: All test equipment required to perform the procedure.
 - b. Tools and Special Tools: Those tools required to perform the procedure.
 - c. Materials/Parts: All expendable items, support materials, and mandatory replacement parts required to perform the procedure.
 - d. Personnel Required: The number of personnel required for the procedure if more than one is required.
 - e. References: TMs and other work packages required to complete the procedure that are not listed in the Equipment Condition.
 - f. Equipment Condition: Any special conditions required before the procedure can be started.
 - g. Special Environmental Conditions: Any special environment conditions required.
5. Complete the INITIAL SETUP requirements by going to the appropriate work package references and gathering all information, tools, and parts that are required. Complete all equipment condition requirements as references.
6. Review the entire task prior to performing it. Perform the steps in the order they are listed. Notice that text and illustrations are used together on facing pages, and the exploded views show part location by number as called out in the text.
7. Follow all warnings, cautions, and notes; they provide supplemental information as follows:
 - a. **WARNINGS**: Indicate conditions, practices, or procedures which must be observed to avoid personnel injury, loss of life, or long-term health hazards.
 - b. **CAUTIONS**: Indicate conditions, practices, or procedures which must be observed to avoid damage to equipment or destruction of equipment.
 - c. **NOTES**: Include essential information of special importance, interest, or aid in job performance, which should be remembered and would be otherwise difficult to find or incorporate into the text.
8. Once you have completed Hydraulic Supporting Wheels Control Valve, Flow Dividers, Selector Valve, Pressure Regulator Valve, Pressure Gauge, and Pump Replacement, return to WP 0010 00. Check for leaks by performing a hydraulic system pressure test. You may discover there still is a leak in the hydraulic system.

CHAPTER 1

GENERAL INFORMATION, EQUIPMENT DESCRIPTION, AND THEORY OF OPERATION

RAPIDLY EMPLACED BRIDGE (REB)

General Information	0001 00-1
Equipment Description	0002 00-1
Theory of Operation and Equipment Data	0003 00-1

GENERAL INFORMATION, EQUIPMENT DESCRIPTION, AND THEORY OF OPERATION

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

GENERAL INFORMATION

SCOPE

This TM contains field level maintenance instructions for the Rapidly Emplaced Bridge (REB). The REB consists of the bridge and pallet (launcher), and is transported and deployed on the Common Bridge Transporter (CBT). Field maintenance includes troubleshooting, Preventive Maintenance Checks and Services (PMCS), lubrication, general maintenance, replacement of components, and minor repair as allocated by the Maintenance Allocation Chart (MAC).

- a. **Type of Manual** – Field maintenance.
- b. **Equipment Names and Model Number** – The REB consists of two major components: the Bridge and the Pallet. Together they are the Rapidly Emplaced Bridge M21. The REB is transported and deployed on the CBT. (Refer to figures 1 and 2.)
- c. **Purpose of Equipment** – To provide a means for the U.S. Army's Stryker Brigade Combat Team (SBCT) to rapidly cross unprepared gaps up to 42.6 ft (13 m) in a minimum amount of time, thereby increasing the strategic options for military operations. The REB facilitates defensive and offensive maneuvers by supporting wheeled and tracked vehicles up to Military Load Classification (MLC) 30 for normal crossings, and MLC 40 for caution crossings.

CAUTION

The REB bridge pallet should not be loaded on M945 or M812 transporters; attempting to load the REB on either vehicle will result in damage to equipment.

- d. **Special Inclusions** – None.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 750-8, Functional Users Manual for the Army Maintenance Management System (TAMMS).

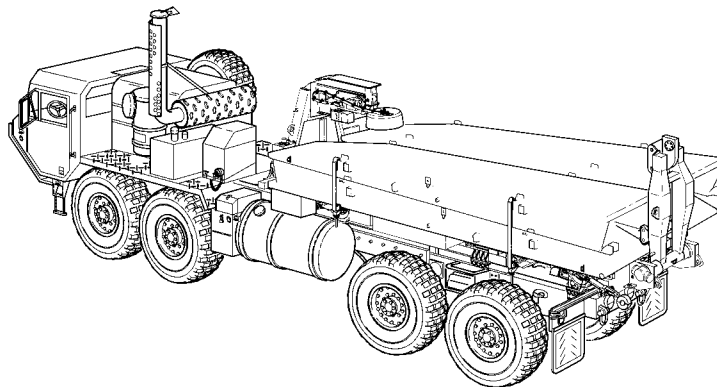
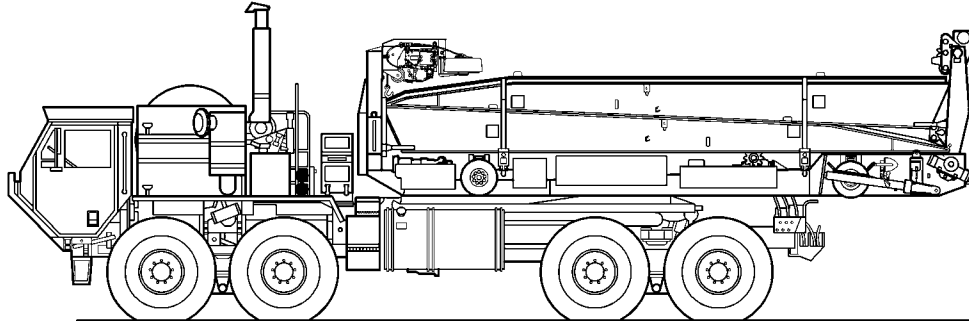
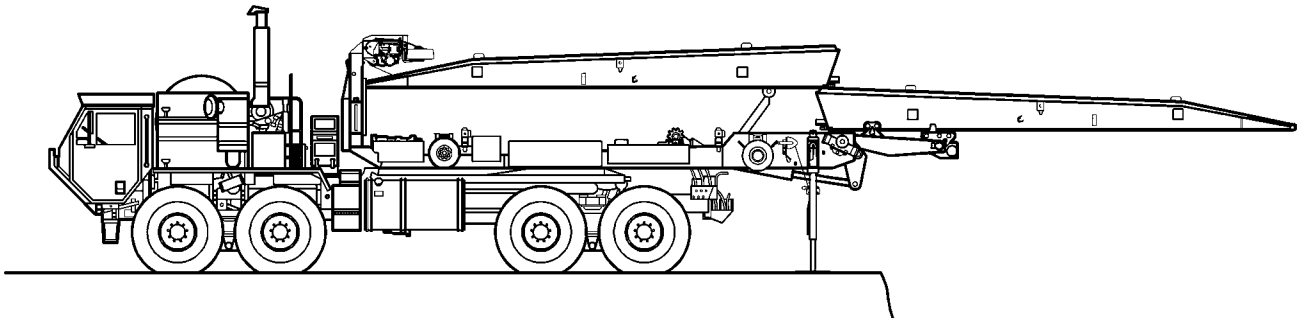


Figure 1. Rapidly Emplaced Bridge on CBT, Typical.

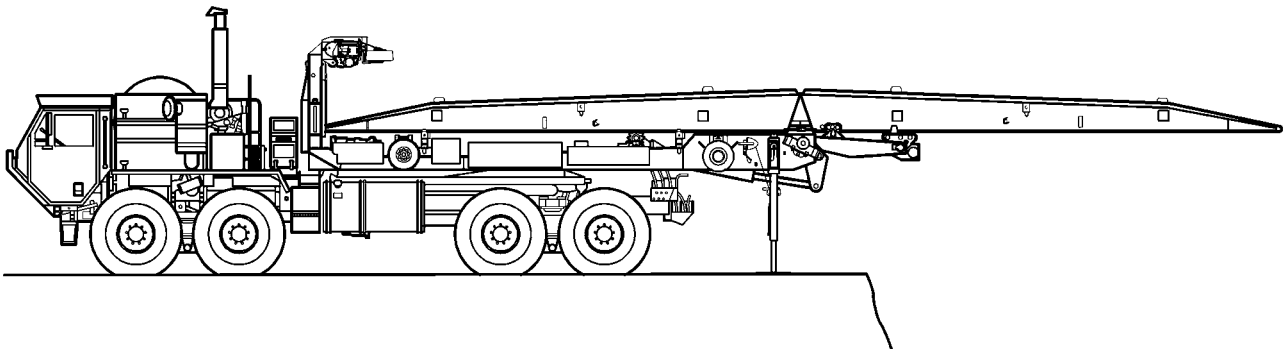
GENERAL INFORMATION (Contd)



CBT LOADED WITH BRIDGE AND BRIDGE PALLET IS BACKED INTO POSITION ON NEAR SHORE.



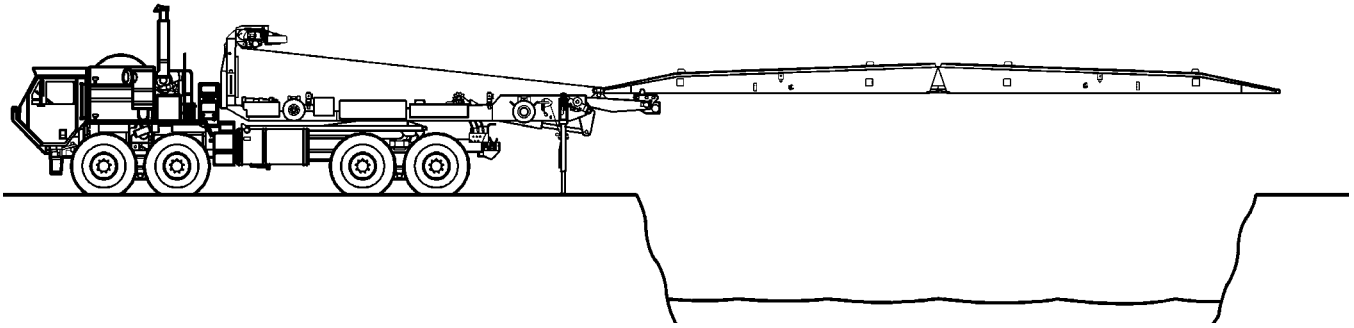
PIN WHEEL DRIVE UNIT ADVANCES LOWER BRIDGE HALF INTO COUPLING POSITION.



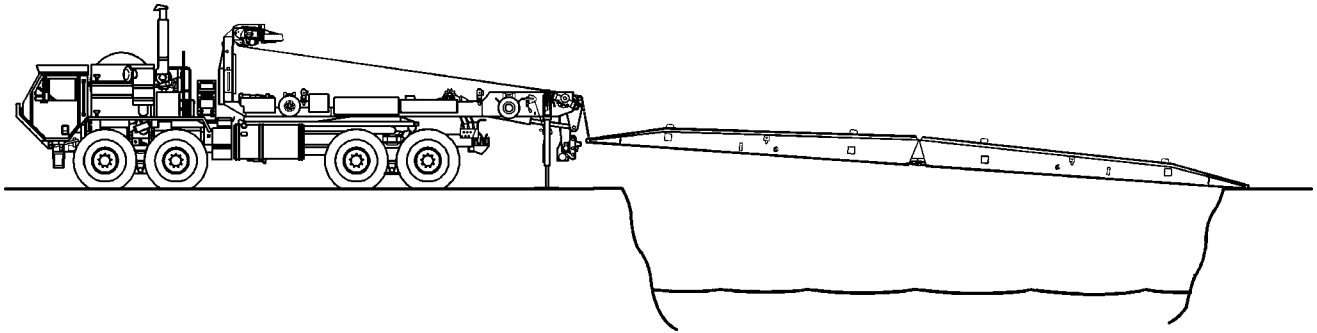
BRIDGE HALVES ARE COUPLED TOGETHER.

Figure 2. Depiction of Bridge Launch (1 of 2).

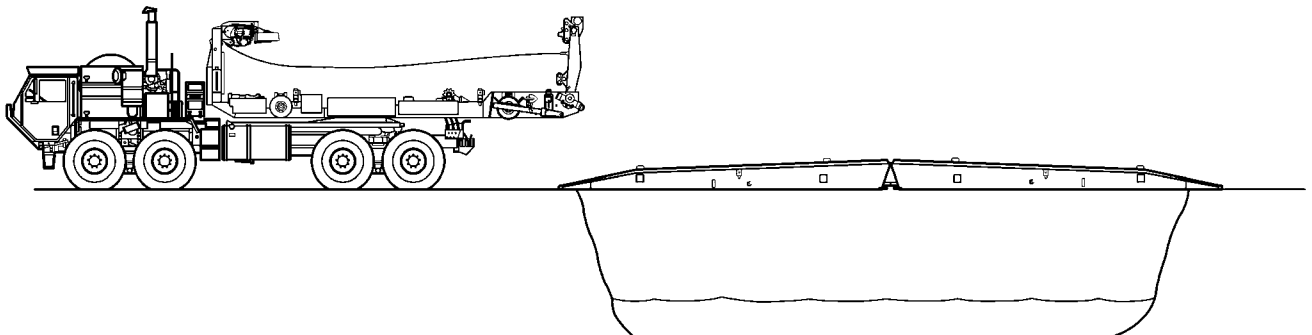
GENERAL INFORMATION (Contd)



PIN WHEEL DRIVE UNIT ADVANCES BRIDGE INTO LAUNCHING POSITION.



LAUNCH BOOM LOWERS BRIDGE TO FAR SHORE, AND WINCH CABLE LOWERS BRIDGE TO NEAR SHORE.



BRIDGE IS DEPLOYED AND CBT IS READY TO MOVE.

Figure 2. Depiction of Bridge Launch (2 of 2).

GENERAL INFORMATION (Contd)

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your bridge equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. The preferred method for submitting a Quality Deficiency Report (QDR) 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 which 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: U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/PQDR MS 267, 6501 E. 11 Mile Road, Warren, MI 48397-5000. We'll send you a reply.

HAND RECEIPT

There is not a separate Hand Receipt for the REB. For a complete list of end-item-related equipment (i.e., COEI, BII, and AAL), refer to TM 5-5420-280-10.

CORROSION PREVENTION AND CONTROL (CPC)

CAUTION

Whenever the REB 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 12MY."

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

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

Plastics, composites, and rubbers will also degrade. Their deterioration is caused by exposure to heat, oxygen, solvents, or light (typically ultraviolet). An example is deteriorated rubber weather stripping. Degradation from excessive exposure of these elements can be seen in the form of shrinkage, hardening, cracks, and breaks.

If a corrosion problem is identified, it should be reported using SF 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.

SF 368 should be submitted to the address specified in DA PAM 750-8, Functional Users Manual for the Army Maintenance Management System (TAMMS).

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 equipment is prohibited. The bridge does not contain or generate hazardous material.

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.

GENERAL INFORMATION (Contd)

ARMY PETROLEUM, OIL, AND LUBRICANTS (POL) (Contd)

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)

ARMY PETROLEUM, OIL, AND LUBRICANTS (POL) (CONTD)

The disposal of Army Petroleum, Oil, and Lubricants (POL) products are affected by some of these regulations. State regulations also may 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 REB useless is to destroy its coupling mechanism 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, Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use.

PREPARATION FOR STORAGE OR SHIPMENT

Refer to WP 0127 00 for limited storage instructions. Additional information can be found in TM 746-10, Marking, Packaging, 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.

WARRANTY INFORMATION

The Rapidly Emplaced Bridge (REB) is covered by a warranty. All U.S. Army REB 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.

REB warranty coverage applies to the following end item:

M21 RAPIDLY EMPLACED BRIDGE 5420-01-481-3959

The REB warranty period of performance provides complete "bumper-to-bumper" coverage for a period of 13 months. Prior to unit handoff, the REB 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 REB. 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
E-mail: service@gdsbs.de

For warranty information covering the CBT, refer to TB 5-5420-234-15, Warranty Program for the Common Bridge Transporter (CBT).

GENERAL INFORMATION (Contd)

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 ASME Y14.38.

QUALITY OF MATERIAL

Material used for replacement, repair, or modification must meet the requirements of this manual. If quality of material requirements are not stated in this manual, the material must meet the requirements of the drawings, standards, specifications, or approved engineering change proposals applicable to the subject equipment.

SAFETY, CARE, AND HANDLING

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

METRIC SYSTEM

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

GENERAL INFORMATION, EQUIPMENT DESCRIPTION, AND THEORY OF OPERATION

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

EQUIPMENT DESCRIPTION

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

The Common Bridge Transporter (CBT) M1977 consists of a modified Heavy Expanded Mobility Tactical Truck (HEMTT) M977 equipped with a Load Handling System (LHS), which together are called the CBT or Transporter.

The Bridge is an aluminum welded structure consisting of two bridge halves coupled together at the center. The bridge is light weight, corrosion resistant, torsionally flexible, and strong enough to support MLC 30-wheeled and tracked vehicles under normal crossing conditions. It can also support up to MLC 40-wheeled vehicles under a caution crossing.

The usable free span length of the coupled bridge is 42.6 ft (13 m) with a maximum roadway width of 11 ft (3.4 m). A 2 in. (50 mm) high guard rail on the inside of each deck plate is provided as a guide for vehicle wheel alignment during bridge crossing. Each deck plate is 3 ft 11 in. (1.2 m) wide.

The bridge requires the use of the pallet and the Common Bridge Transporter (CBT) for all launch and retrieval operations. Launch or retrieval operations require two soldiers, and can be completed in approximately 10 minutes each.

The Pallet is a separate removable flatrack that is loaded on the CBT by way of the CBT's Load Handling System (LHS). The pallet contains components making up a launcher, a hydraulic system, an electrical control system, a diesel engine power unit, pallet support wheels, and four tool boxes for stowage of BII.

Should the pallet's launch power unit malfunction, hydraulic and electrical power is accomplished by connecting to the CBT. Launch or retrieval operations using the CBT can be completed in approximately 13 minutes each. The pallet can be transloaded to and from the Palletized Load System Trailer (PLST), but cannot launch or retrieve the bridge from the PLST. The REB can be transported by C-130, C-141, C17, or C-5 aircrafts or deployed bridge can be airlifted by CH-47D and CH-53 helicopters.

EQUIPMENT DESCRIPTION (Contd)

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

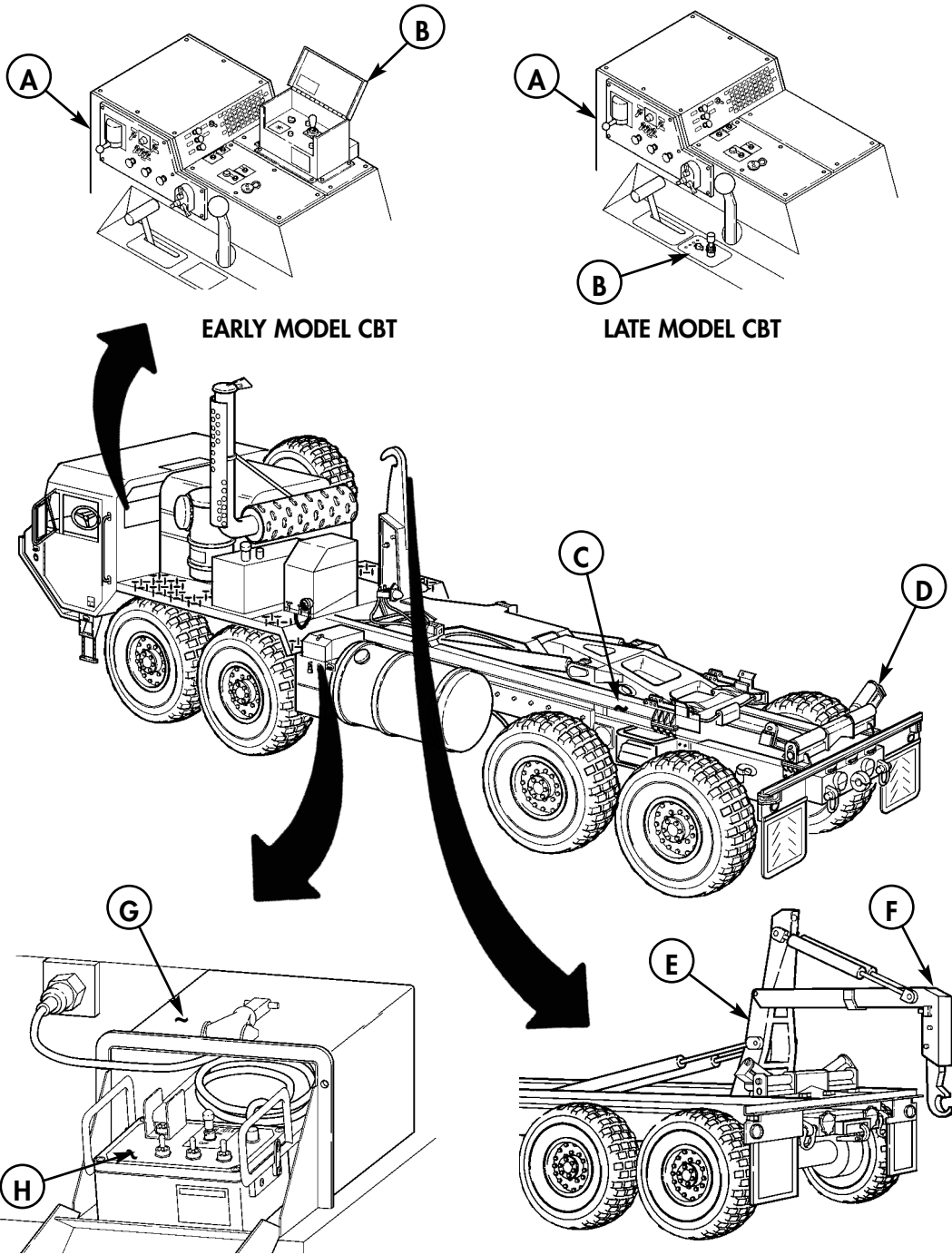
For the location and a basic description of the major components of the CBT, LHS, pallet, and bridge, locate the desired component by matching its description callout with the corresponding illustration callout on opposite page.

LHS EQUIPMENT FEATURES

- (A) HEMTT HEATER COMPARTMENT** – The vehicle's console containing HIGH IDLE switch, PTO ENGAGE switch and indicators, and WORK LIGHT switch for LHS operation.
- (B) LHS CAB CONTROL BOX** – The control box (early model CBT) mounted on heater compartment console, or control panel (late model CBT) mounted on transmission range selector panel, containing switches necessary to operate LHS from inside vehicle cab.
- (C) LHS COMPRESSION FRAME** – The frame mounted on transporter frame that supports LHS main frame, hook arm, hydraulic cylinders, and weight of equipment placed upon it.
- (D) LHS REAR ROLLER ASSEMBLY** – The two horizontal and angled rollers that support, center, and guide pallet frame during loading and unloading operations.
- (E) LHS MAIN FRAME** – The frame connected to LHS compression frame that supports hook arm assembly in conjunction with LHS hydraulic cylinders.
- (F) LHS HOOK ARM ASSEMBLY** – The arm is connected to LHS main frame designed to connect to the hook bar on pallet A-frame support for loading, unloading, and transport of pallet.
- (G) REMOTE CONTROL STOWAGE BOX** – This box that houses the remote control unit when not in use.
- (H) REMOTE CONTROL UNIT (RCU)** – The hand-held control box containing switches necessary for operation of LHS from outside cab on either side of vehicle.

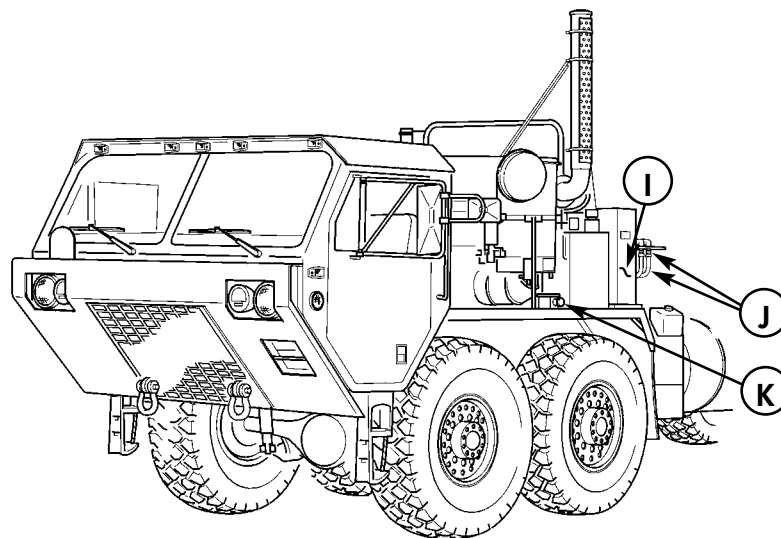
EQUIPMENT DESCRIPTION (Contd)

LHS EQUIPMENT FEATURES (Contd)



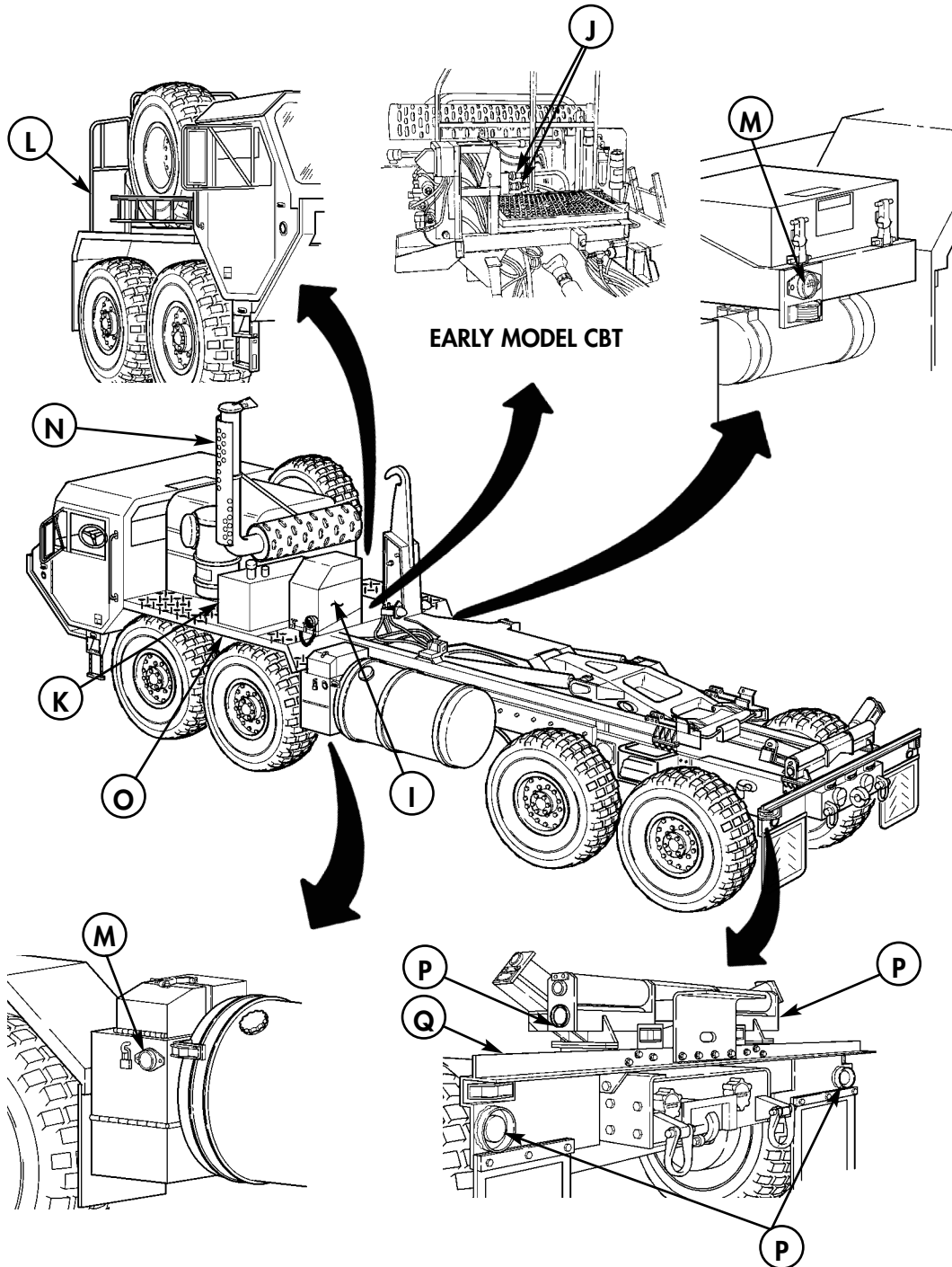
EQUIPMENT DESCRIPTION (Contd)**LHS EQUIPMENT FEATURES (Contd)**

- ① **LHS CABINET ASSEMBLY** – The box mounted on transporter that houses the LHS hydraulic manifold assembly, control valves, and solenoids.
- ② **LHS QUICK-DISCONNECT COUPLINGS** – The 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 either CBT LHS or REB pallet. The REB pallet hydraulic supply hoses are connected to LHS quick-disconnect couplings for emergency backup only.
- ③ **NATO SLAVE RECEPTACLE** – The electric power supply receptacle used to supply 24 volts to pallet electrical system for charging pallet batteries or for emergency backup power.
- ④ **MOUNTING LADDER AND RAILINGS** – The ladder and railings on the CBT provided for safe and easy access to work platform.
- ⑤ **AMBER REFLECTORS** – The amber reflectors located on passenger side battery box and driver's side stowage box.
- ⑥ **EXHAUST EXTENSION ASSEMBLY** – A longer stack and heat shield on transporter exhaust system that raises exhaust above operator work area.
- ⑦ **FENDER SUPPORT ASSEMBLY** – The metal framing added to each fender for increased support of LHS components.
- ⑧ **RED REFLECTORS** – The red reflectors located on each side of rear bumper plate and rear roller assembly.
- ⑨ **REAR BUMPER ASSEMBLY** – The bumper plate mounted on transporter frame and LHS rear roller assembly that supports stop plate, tail lights, reflectors, and mudflaps.

**LATE MODEL CBT**

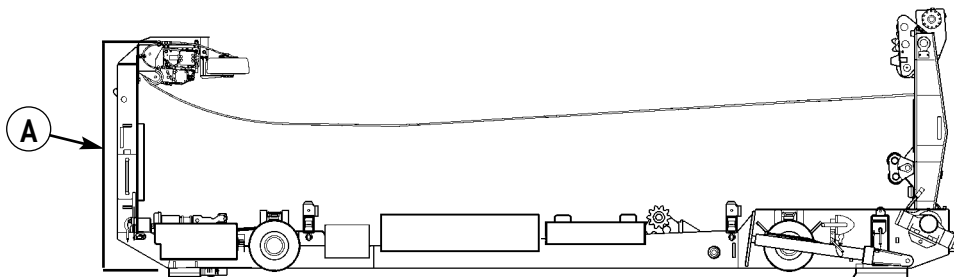
EQUIPMENT DESCRIPTION (Contd)

LHS EQUIPMENT FEATURES (Contd)



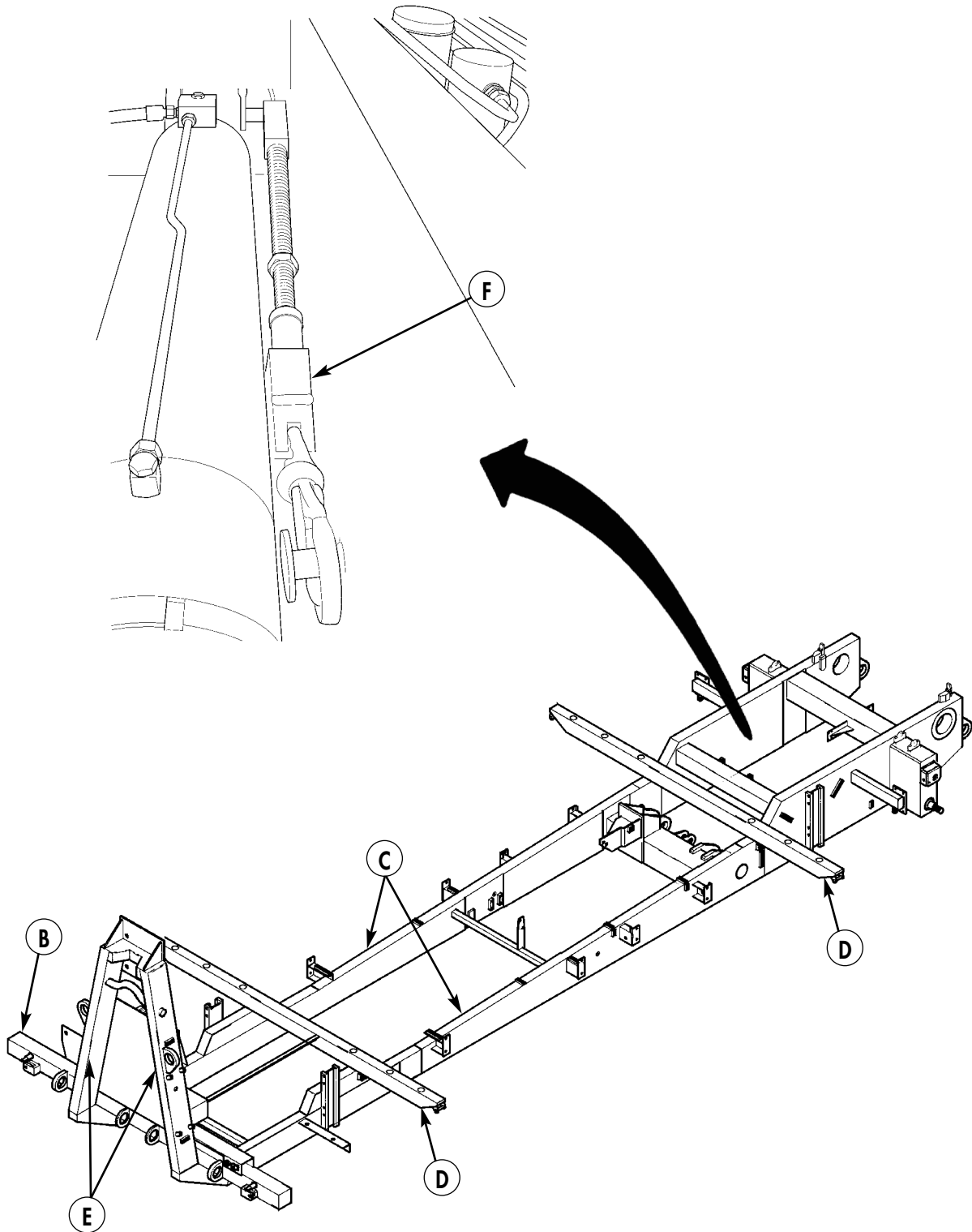
EQUIPMENT DESCRIPTION (Contd)**PALLET EQUIPMENT FEATURES**

- (A) PALLET** – The flatrack that functions as transport pallet and launcher for bridge assembly.
- (B) PALLET FRAME** – The welded steel structure that supports and contains component parts making up the pallet.
- (C) LONGITUDINAL GIRDERS** – The two girders of pallet frame that serve as main support members.
- (D) TRANSVERSE GIRDERS** – The two support girders welded perpendicular to the longitudinal girders that hold four telescoping tubes for spreading/retracting bridge quarters.
- (E) A-FRAME SUPPORT** – The welded frame member on front end of the longitudinal girders that contains a hook bar for pallet interface with CBT, channel for interface with bridge launch beam, pallet lifting eyes, and supports winch assembly and auxiliary hydraulic oil reservoir.
- (F) PALLET HOLD-DOWN BARS** – The two bars with hooks, mounted on the longitudinal girders of pallet frame, designed to connect to CBT towing shackles for securing pallet to CBT during transit.



EQUIPMENT DESCRIPTION (Contd)

PALLET EQUIPMENT FEATURES (Contd)

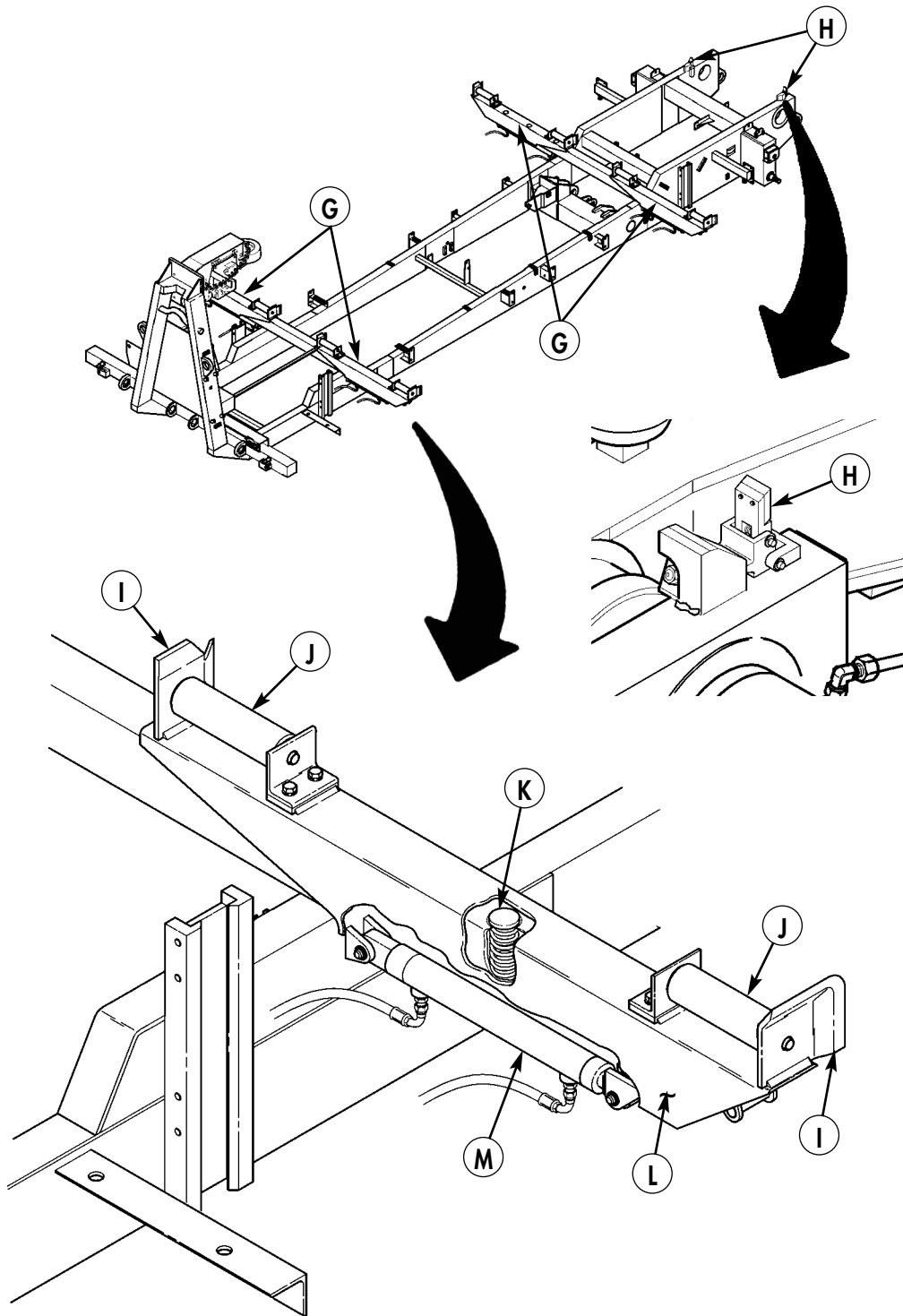


EQUIPMENT DESCRIPTION (Contd)**PALLET EQUIPMENT FEATURES (Contd)**

- G** **TRANSVERSE HANDLING UNIT** – The two telescopic tubes and rollers on each transverse girder of pallet frame that function to spread bridge quarters and advance bridge halves.
- H** **PALLET BRIDGE REMOTE CONTROL LEVER RELEASE** – The two spring operated trip levers mounted on pallet frame that function to actuate bridge upper and lower coupling locks automatically.
- I** **CARRIER** – The outer mounting bracket on each telescopic tube that functions to align and retain bridge quarter during expanding, retracting, and advancement.
- J** **TRANSPORT ROLLERS** – The two rollers mounted on top of each telescopic tube that support bridge halves when advancing bridge.
- K** **SLIDE PINS** – The spring-loaded round disks positioned on transverse girders that enable telescopic tubes to slide under weight of bridge halves.
- L** **TELESCOPIC TUBE** – One of two tubes on each transverse girder that slide transversely on slide pins by means of separate expanding cylinders.
- M** **EXPANDING CYLINDER** – The hydraulic cylinder on each of the four telescopic tubes.

EQUIPMENT DESCRIPTION (Contd)

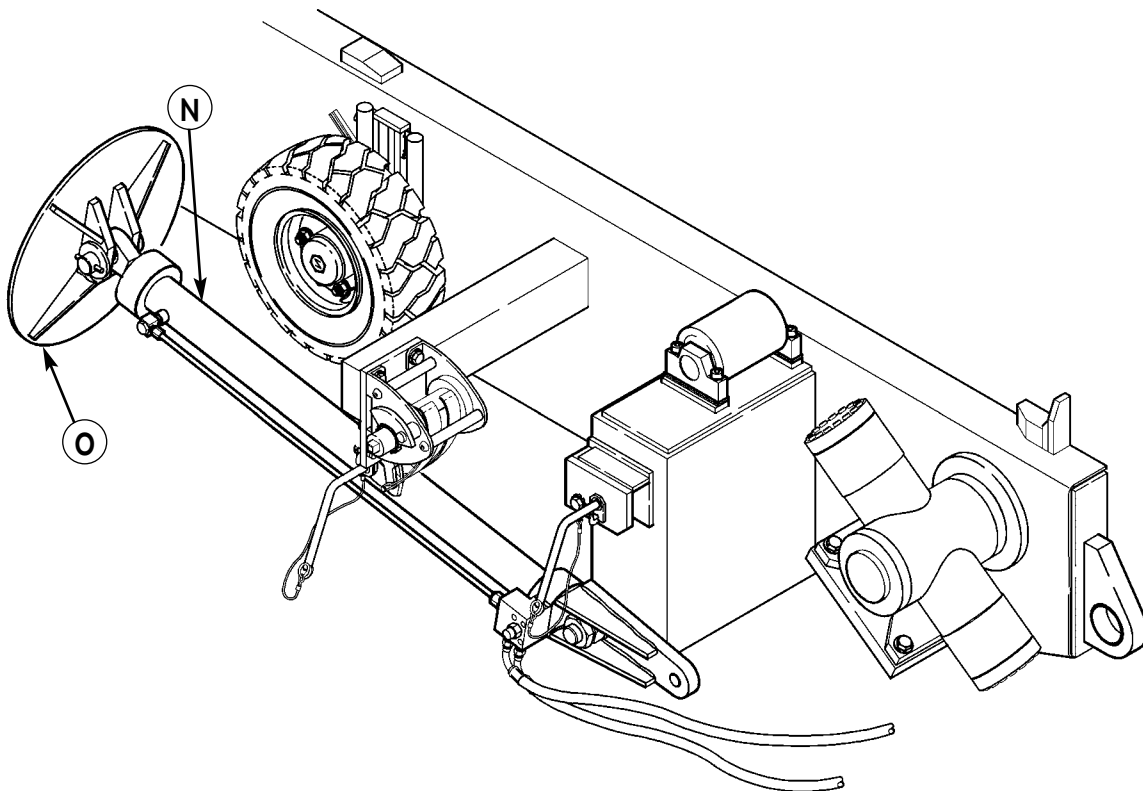
PALLET EQUIPMENT FEATURES (Contd)



EQUIPMENT DESCRIPTION (Contd)

PALLET EQUIPMENT FEATURES (Contd)

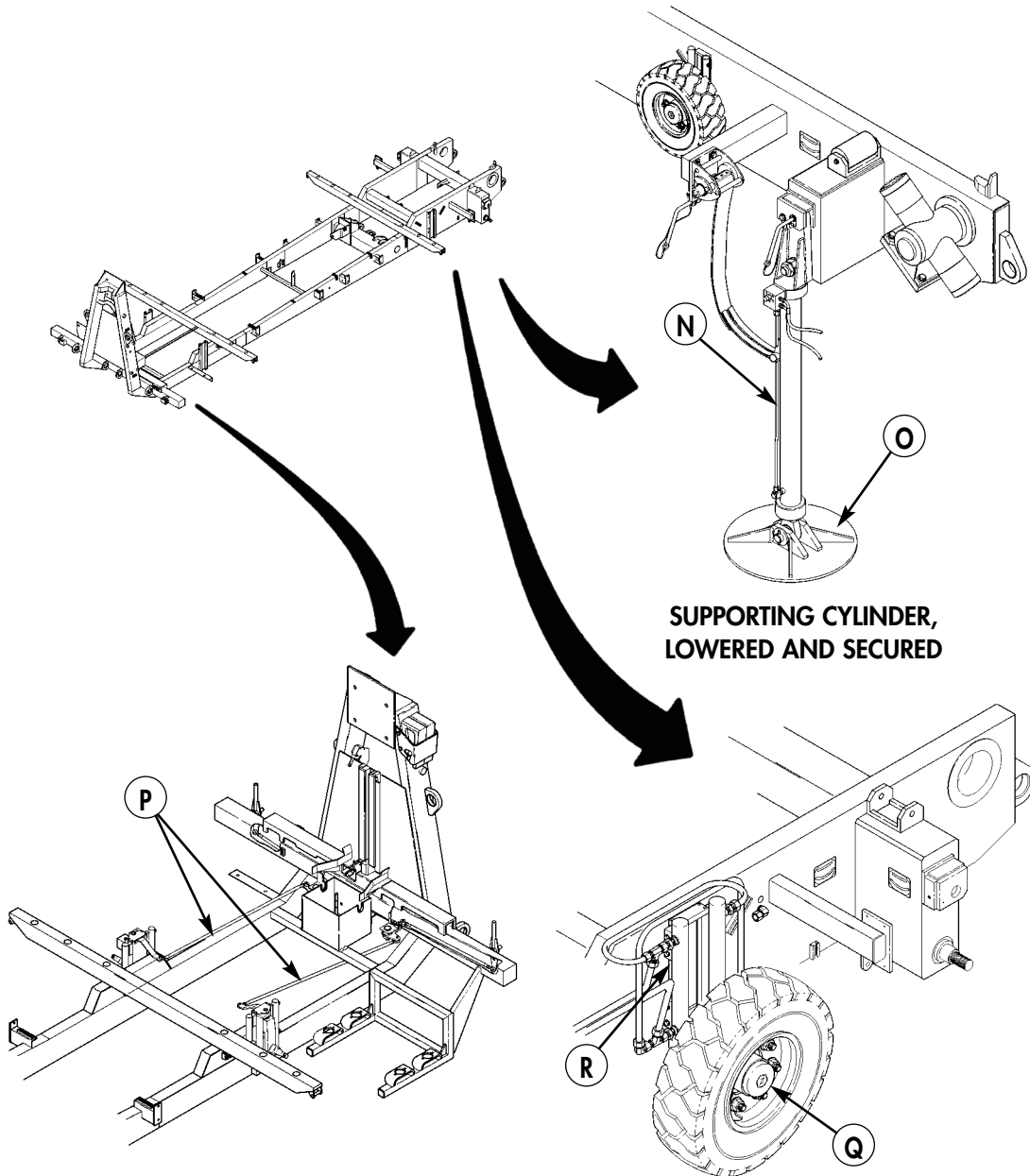
- (N) SUPPORTING CYLINDERS** – The two supporting cylinders at rear of pallet frame that are lowered to provide additional support during bridge launch and retrieval operations.
- (O) BOTTOM PLATE** – The support plate on piston rod end of each supporting cylinder.
- (P) PALLET STEERING LINKAGE** – The steering levers, bellcranks, and tie rods that connect the pallet front wheel assemblies and enable pallet to be manually steered while on ground.
- (Q) PALLET WHEEL ASSEMBLY** – The four hydraulically lowered wheels that enable the pallet to be maneuvered while on ground.
- (R) LIFTING CYLINDERS** – The two hydraulic cylinders on each of four pallet wheel assemblies.



SUPPORTING CYLINDER, RAISED AND SECURED

EQUIPMENT DESCRIPTION (Contd)

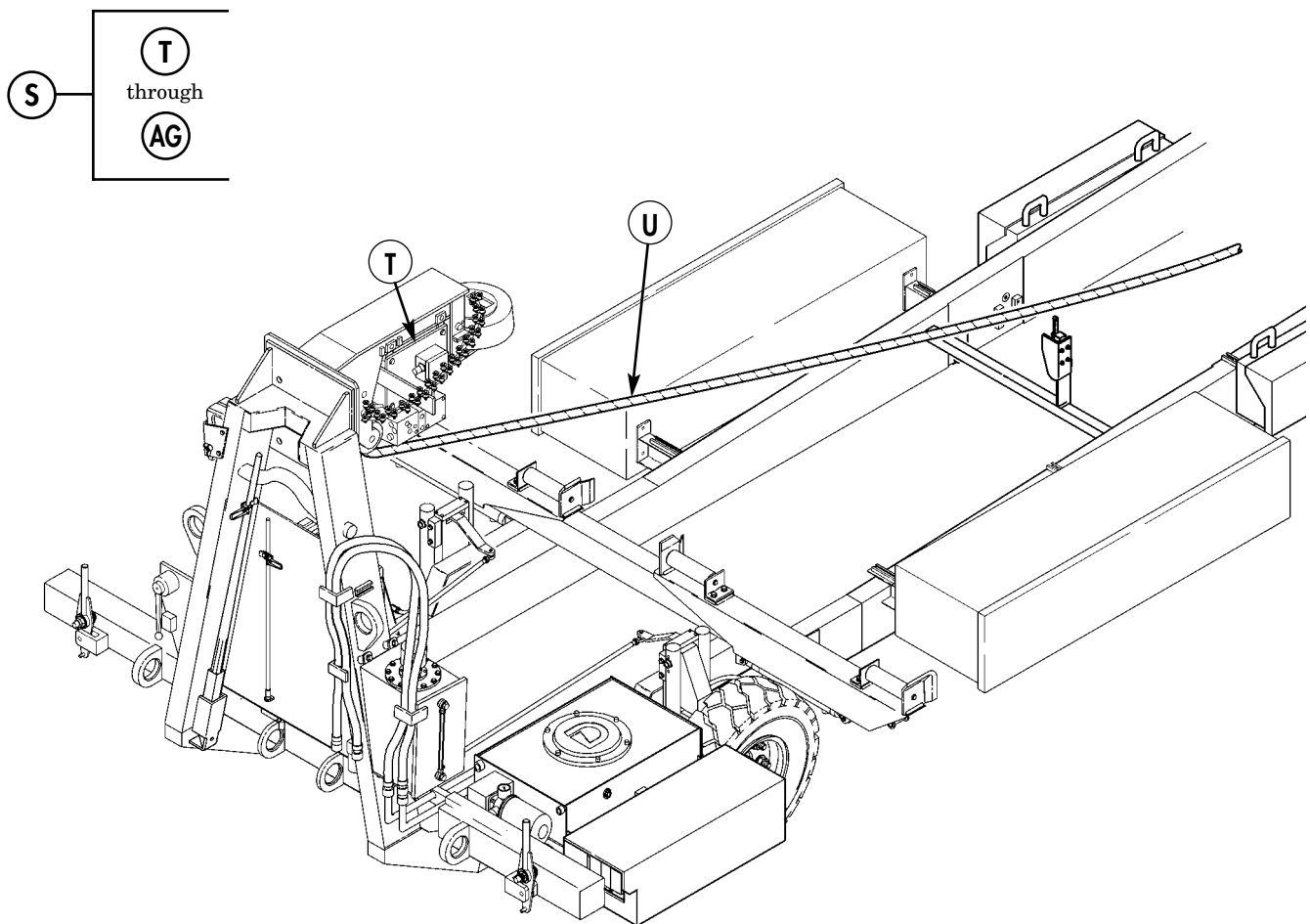
PALLET EQUIPMENT FEATURES (Contd)



EQUIPMENT DESCRIPTION (Contd)

PALLET EQUIPMENT FEATURES (Contd)

- (S) LAUNCHER** – The launch boom, swivel drive, front and rear pin wheel drives, upper and lower rollers, cable guide roller, lower support boom, secondary support boom and rollers, and winch assembly.
- (T) WINCH ASSEMBLY** – The hydraulic winch, mounted on A-frame support of pallet, that assists in lifting and supporting bridge during launch and retrieval operations.
- (U) WINCH WIRE ROPE HOOK** – The hook attached to the winch wire rope designed to connect to lifting eye on bridge launch beam and pallet launch boom.

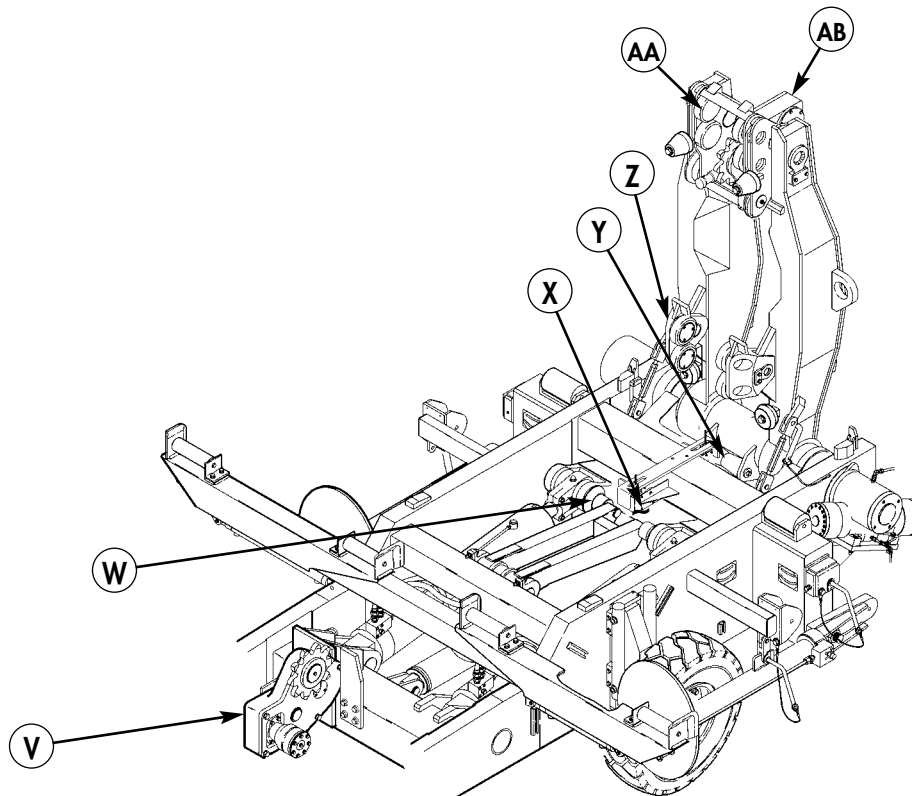


- (V) FORWARD PIN WHEEL DRIVE** – The drive unit, mounted on pallet frame center crossmember, comprised of a gear box, hydraulic motor, and drive gear.
- (W) SECONDARY SUPPORT BOOM ROLLERS** – The two large rollers with tapered centering plates mounted on secondary support boom.

EQUIPMENT DESCRIPTION (Contd)

PALLET EQUIPMENT FEATURES (Contd)

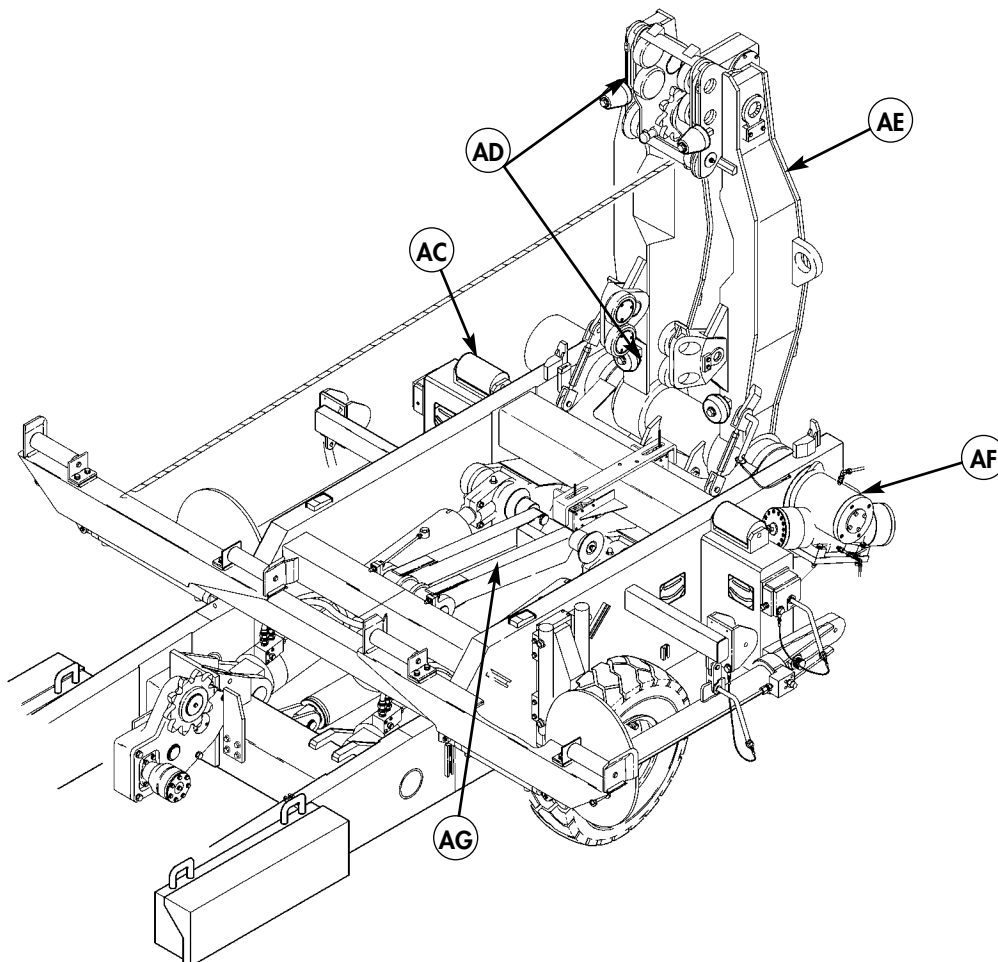
- (X) **LOWER SUPPORT BOOM** – The large structural frame, mounted on bearing shaft below launch boom, that serves to lift launch boom while under load of bridge assembly by means of two large hydraulic cylinders.
- (Y) **CABLE GUIDE ROLLER** – The roller on center of launch boom that guides the winch cable during launch and retrieval operations.
- (Z) **UPPER ROLLER BLOCKS** – The two rollers, mounted behind lower support rollers on each side of launch boom, that contact bridge launch beam to provide additional support during launch and retrieval operations.
- (AA) **LOWER SUPPORT ROLLERS** – The six rollers, mounted on end of launch boom next to rear pin wheel drive, that function to hold bridge along roller contact surfaces of bridge launch beam during launch and retrieval operations.
- (AB) **REAR PIN WHEEL DRIVE** – The drive unit consisting of a gearbox, drive gear, hydraulic motor, and brake, located on launch boom next to lower support rollers, that functions to drive and retain bridge assembly during launch and retrieval operations.



EQUIPMENT DESCRIPTION (Contd)

PALLET EQUIPMENT FEATURES (Contd)

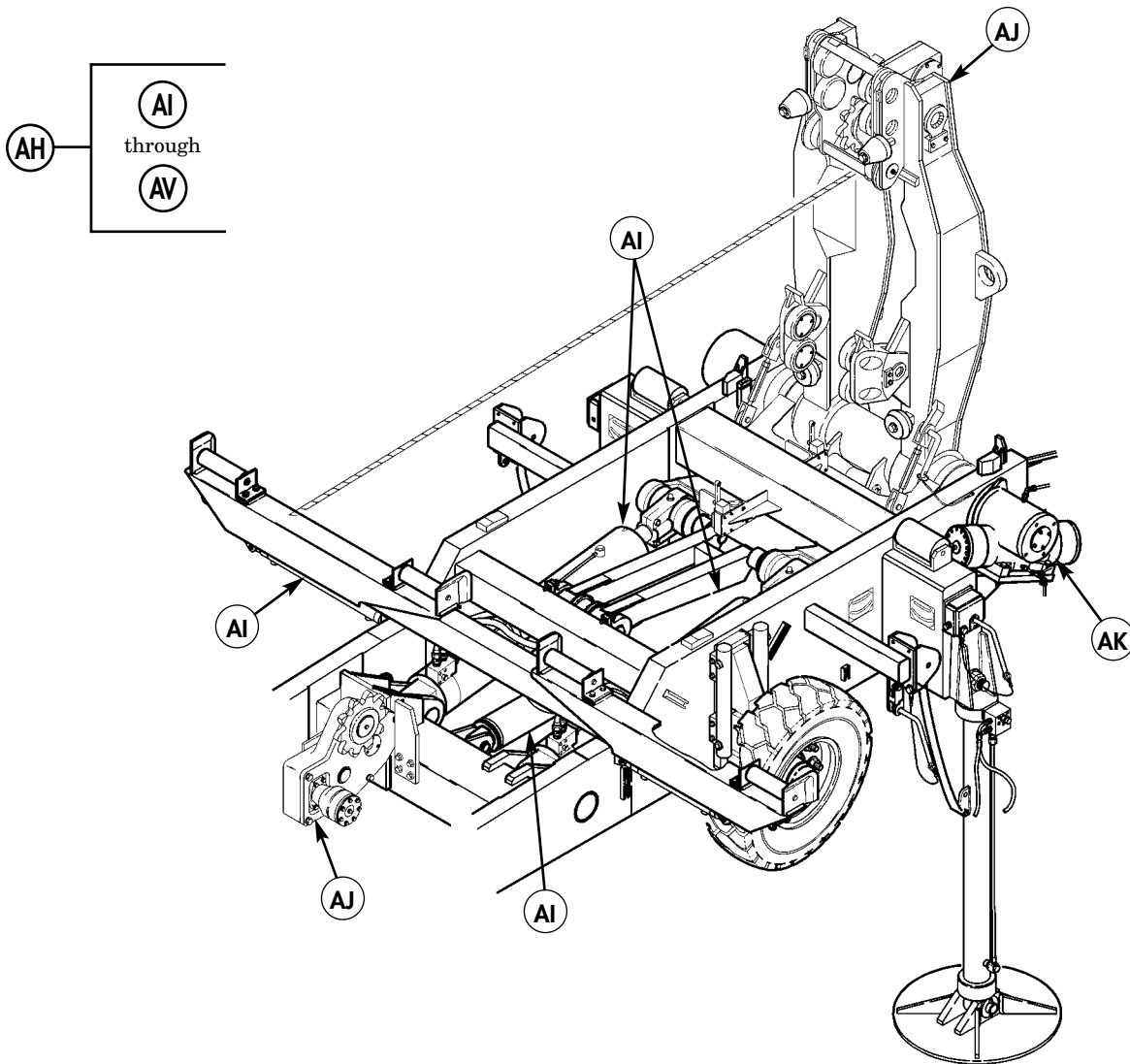
- Ⓐ **BRIDGE SUPPORT ROLLERS** – The roller mounted on top of each supporting cylinder frame member that functions to support bridge.
- Ⓐ **CONE ALIGNMENT ROLLERS** – The two rollers mounted on lower support rollers frame and two rollers mounted on launch boom adjacent to upper roller blocks, that assist in aligning bridge launch beam during launch and retrieval.
- Ⓐ **LAUNCH BOOM** – The large structural frame, mounted on bearing shaft at rear of pallet frame, that functions to support bridge assembly during launch and retrieval operations.
- Ⓐ **SWIVEL DRIVE** – The hydraulic drive unit, located on left rear side of pallet frame, that functions to rotate launch boom under no-load conditions.
- Ⓐ **SECONDARY SUPPORT BOOM** – The support, located at center of pallet frame above lower support boom cylinders, that functions to lift upper bridge half during coupling and uncoupling.



EQUIPMENT DESCRIPTION (Contd)

PALLET EQUIPMENT FEATURES (Contd)

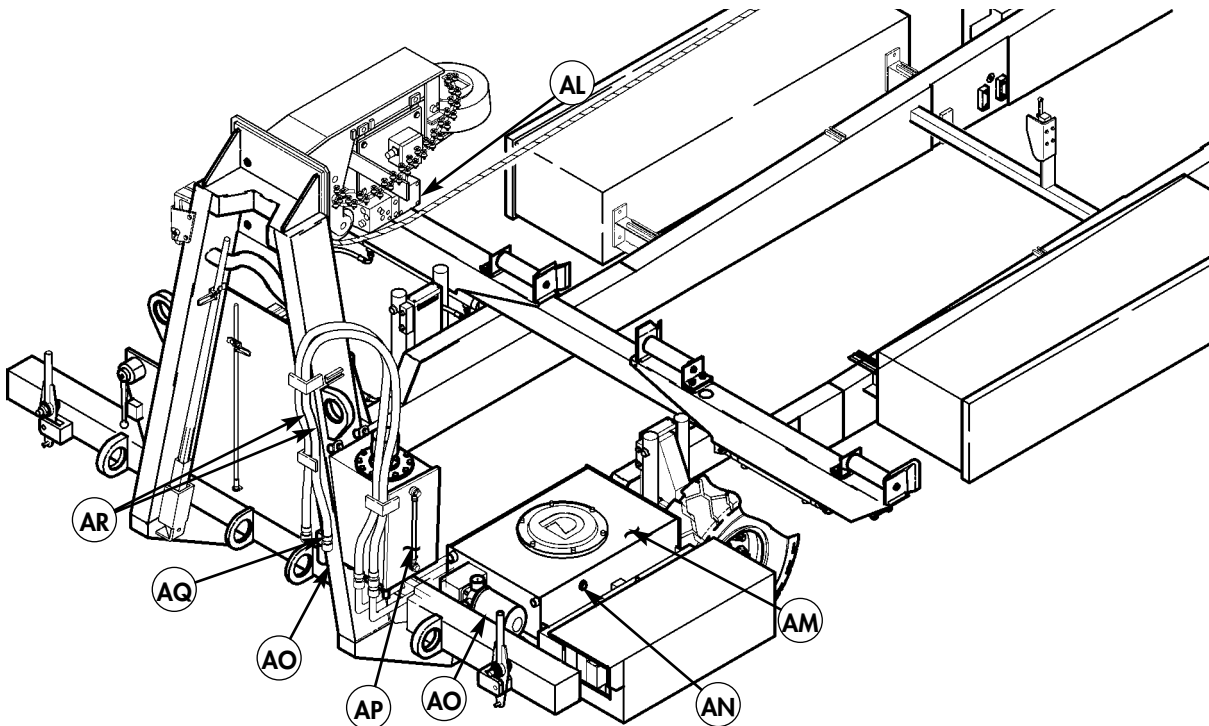
- (AH) **HYDRAULIC SYSTEM** – The hydraulic motors, cylinders, control valves, check valves, flow dividers, hydraulic lines, reservoirs, and filters on pallet.
- (AI) **HYDRAULIC CYLINDERS** – There are 18 individual cylinders that function to articulate the moving mechanical parts of pallet.
- (AJ) **PIN WHEEL DRIVE HYDRAULIC MOTOR** – The hydraulic motor that powers a gearbox on front and rear pin wheel drives by converting hydraulic pressure into mechanical power.
- (AK) **HYDRAULIC SWIVEL DRIVE** – The drive unit for launch boom that converts hydraulic pressure to mechanical power.



EQUIPMENT DESCRIPTION (Contd)

PALLET EQUIPMENT FEATURES (Contd)

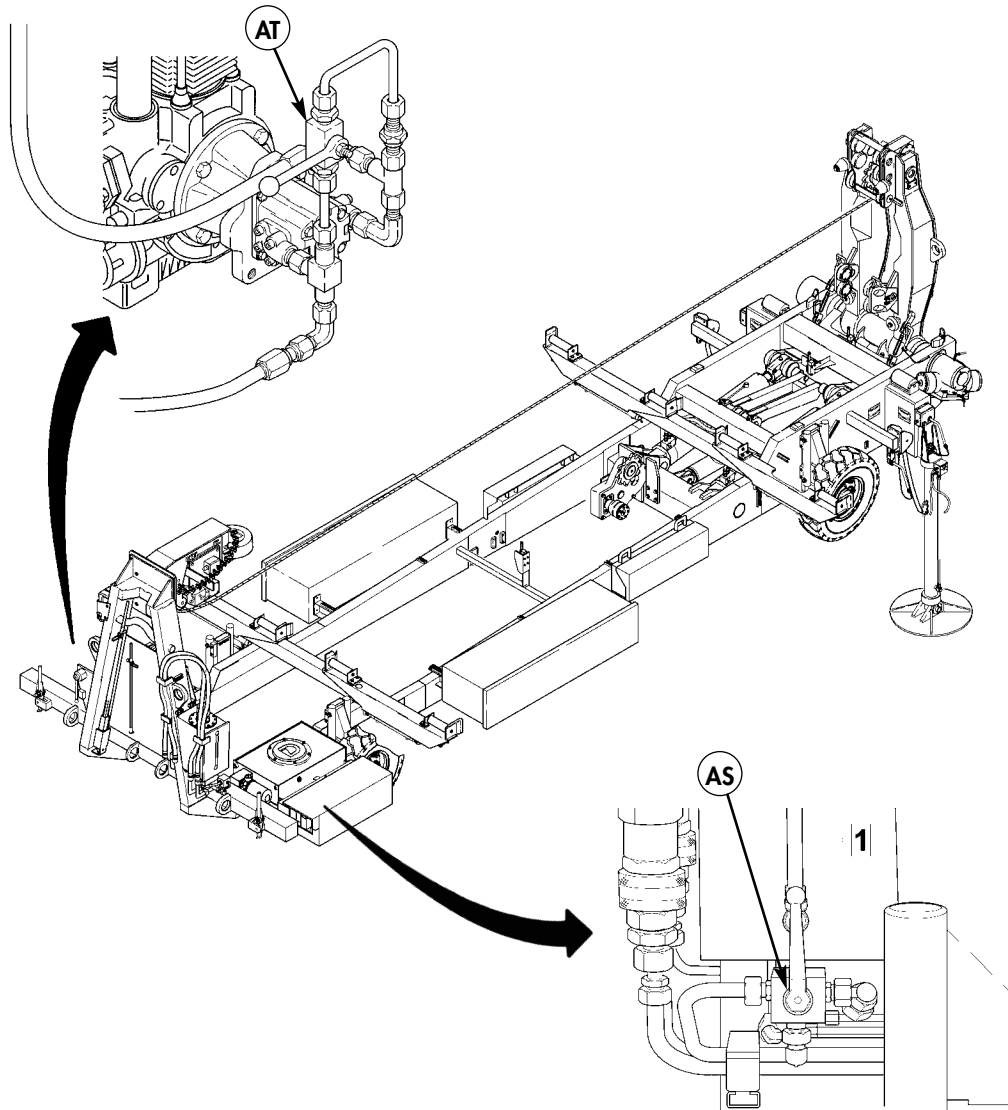
- (AL) WINCH HYDRAULIC MOTOR** – The motor built into winch assembly that powers pulleys by converting hydraulic pressure to mechanical power.
- (AM) RESERVOIR** – There is a tank mounted on side of pallet frame that contains hydraulic oil for operation of pallet hydraulic system and supports main hydraulic manifold and filter.
- (AN) RESERVOIR SITE GLASS** – The indicator on side of hydraulic reservoir for checking hydraulic oil level.
- (AO) OIL FILTERS** – There is an external oil filter mounted on reservoir that filters the pallet hydraulic system, and an external oil pre-filter mounted on pallet frame that prevents contamination of pallet's hydraulic system when connected to CBT.
- (AP) AUXILIARY HYDRAULIC OIL RESERVOIR** – There is a tank mounted on A-frame of pallet that functions to vent pallet hydraulic system and provides a space to contain residual hydraulic oil during operation.
- (AQ) FLOW CONTROL VALVE** – The valve located on pallet A-frame near auxiliary hydraulic oil reservoir.
- (AR) PALLET HYDRAULIC SUPPLY HOSES** – The two hydraulic hoses of pallet hydraulic system that connect, by means of quick-disconnect couplings, the pallet's engine driven hydraulic pump to the pallet hydraulic system. For emergency back-up, the pallet hydraulic supply hoses are connected to the CBT hydraulic system.



EQUIPMENT DESCRIPTION (Contd)

PALLET EQUIPMENT FEATURES (Contd)

- (AS) **TRANSFER VALVE** – The transfer valve, located under the auxiliary hydraulic oil reservoir, that enables hydraulic oil from CBT's oil reservoir to be added to the pallet's oil reservoirs or returned back to the CBT.
- (AT) **HYDRAULIC PUMP AND BYPASS VALVE** – The hydraulic pump mounted on pallet engine that supplies oil under pressure to pallet hydraulic system. The bypass valve, located on hydraulic pump, bypasses or directs hydraulic oil under pressure to pallet hydraulic system from hydraulic pump of either pallet engine or CBT.



EQUIPMENT DESCRIPTION (Contd)**PALLET EQUIPMENT FEATURES (Contd)**

- (AU) CONTROL VALVES** – The distribution system for all pallet hydraulic functions that consist of five single and eight double spool-type valves of which 12 are mounted on hydraulic main manifold and one on crossmember adjacent to forward pin wheel drive. Each control valve is identified by solenoid code KY followed by its assigned number. Solenoid codes are printed on a white band on the electrical lead for each solenoid. Single control valves actuate in one direction only and utilize one solenoid. Double control valves actuate in both directions and utilize two solenoids. Control valves can be manually operated by depressing and holding button on valve. Control valves KY1, KY22, and KY23 can be locked in depressed position. Control valve KY20 does not have a button for manual operation.

NOTE

Control valve numbers KY2 and KY3 are no longer used.

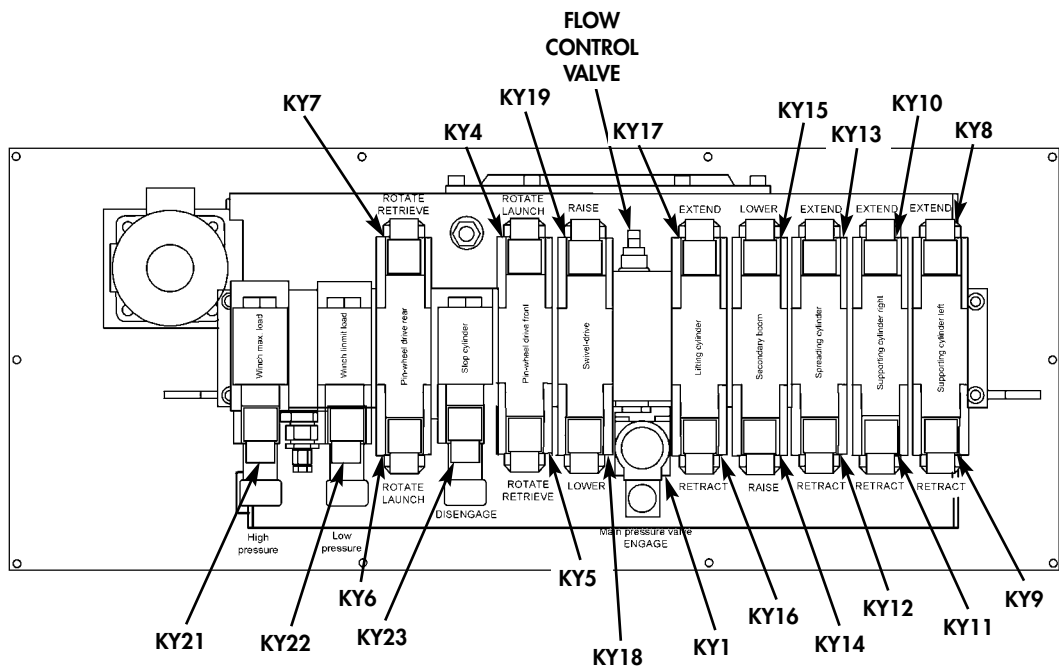
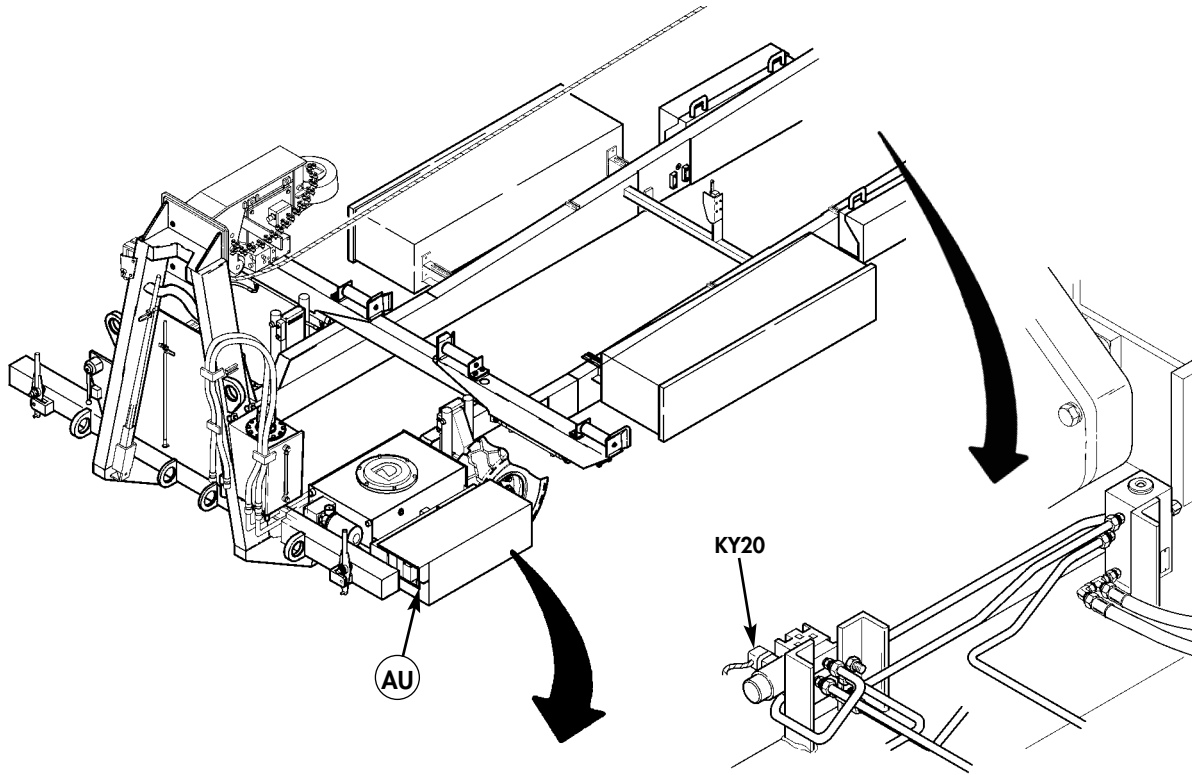
- KY1*** - Main control valve that supplies hydraulic pressure to hydraulic manifold. KY1 must be locked in depressed position before manually operating all other control valves.
- KY4** - Operates forward pin wheel drive to deploy lower bridge half.
- KY5** - Operates forward pin wheel drive to retrieve lower bridge half.
- KY6** - Operates rear pin wheel drive to deploy lower bridge half.
- KY7** - Operates rear pin wheel drive to retrieve lower bridge half.
- KY8** - Extends driver's side supporting cylinder to lift pallet.
- KY9** - Retracts driver's side supporting cylinder to lower pallet.
- KY10** - Extends passenger side supporting cylinder to lift pallet.
- KY11** - Retracts passenger side supporting cylinder to lower pallet.
- KY12** - Operates four transverse handling unit expanding cylinders to retract bridge quarters to travel position.
- KY13** - Operates four transverse handling unit expanding cylinders to extend bridge quarters to operating width.
- KY14** - Raises secondary boom.
- KY15** - Lowers secondary boom
- KY16** - Retracts lower support boom.
- KY17** - Extends lower support boom.
- KY18** - Operates swivel drive to lower launch boom.
- KY19** - Operates swivel drive to raise launch boom.
- KY20*** - Operates lower support boom in conjunction with KY17 to increase flow rate of hydraulic fluid.
- KY21*** - Provides high pressure to winch motor to increase lifting capacity for play-in and pay-out of wire rope as controlled by remote control unit (RCU) or winch emergency switch. Manually depressing KY21 alone will not play-in or pay-out wire rope.
- KY22*** - Provides low pressure to winch motor for play-in and pay-out of wire rope as controlled by RCU or winch emergency switch. Manually depressing KY22 alone will not play-in or pay-out wire rope.
- KY23*** - Operates end stop hydraulic cylinder.
- * Single spool valve.

NOTE

Swivel drive flow control valve not shown. Mounts with KY 18–KY 19.

EQUIPMENT DESCRIPTION (Contd)

PALLET EQUIPMENT FEATURES (Contd)



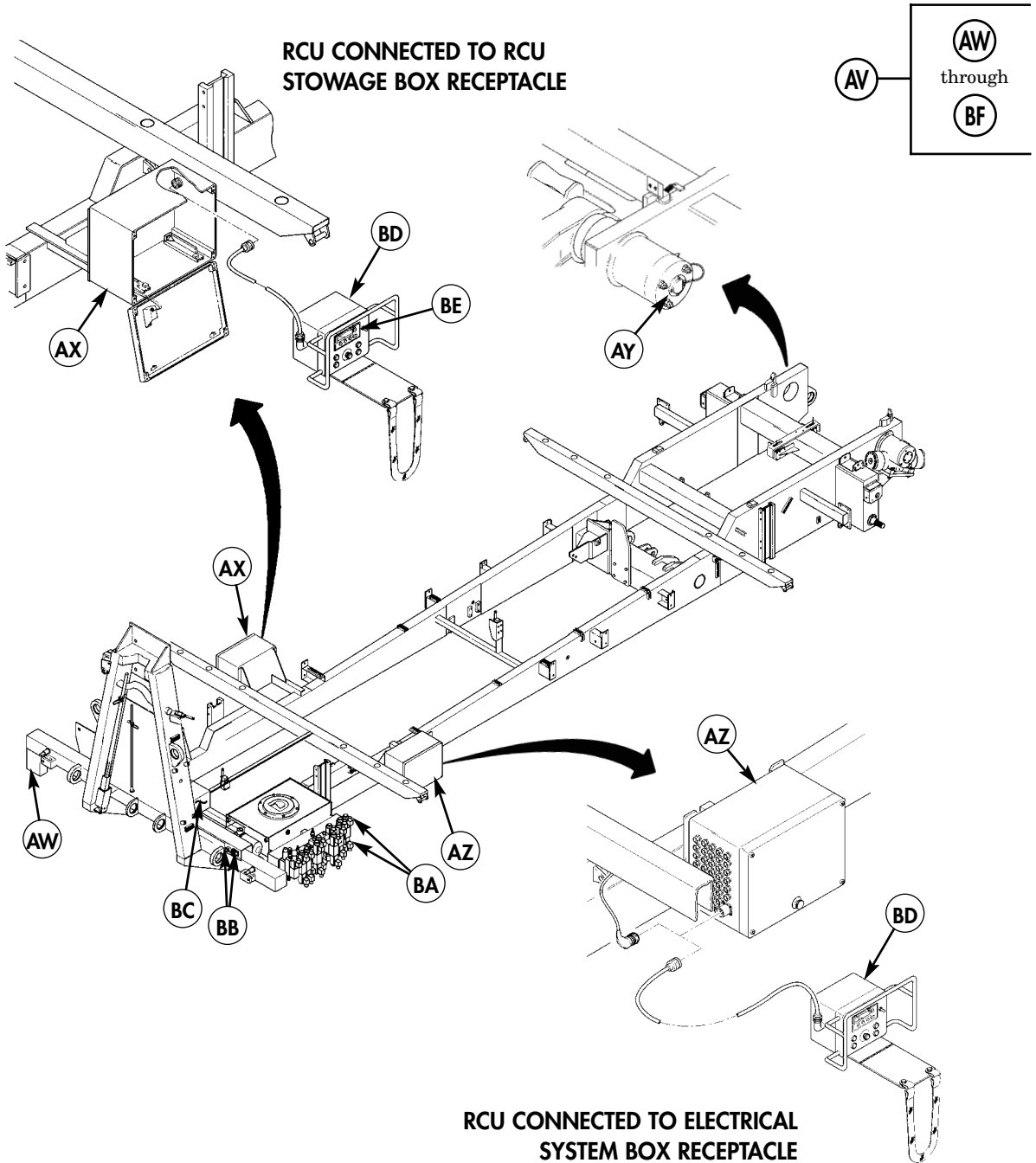
EQUIPMENT DESCRIPTION (Contd)**PALLET EQUIPMENT FEATURES (Contd)**

- Ⓐ **ELECTRICAL SYSTEM** – The SPS control unit, RCU, control valve solenoids, limit switches, power cable, wiring harnesses, battery, 27A generator, and PU starter motor and control box of PU.
- Ⓐ **LPU CONTROL BOX** – The control box, mounted adjacent to LPU, that contains an ignition switch, glow plug indicator, engine oil pressure light, and battery light.
- Ⓐ **RCU STOWAGE BOX** – There is a metal stowage box, mounted on pallet frame adjacent to LPU, that contains RCU, RCU power cable, and RCU power receptacle. In addition, there is an emergency stop button on front of box door.
- Ⓐ **POTENTIOMETER** – A variable resistor located on main shaft manifold cover that measures position of launch boom electronically.
- Ⓐ **ELECTRICAL SYSTEM BOX** – There is a metal stowage box, mounted on pallet frame adjacent to hydraulic reservoir, that contains two expansion modules, circuit blocks, a circuit breaker, 3 winch relays, 38 bulkheads, and RCU power receptacle. In addition, there is an emergency stop button on front of box door.
- Ⓐ **CONTROL VALVE SOLENOIDS** – The electric solenoid, mounted on each hydraulic control valve, that functions to actuate the control valve by means of RCU, SPS control unit, and limit switches.
- Ⓐ **MAIN POWER SWITCH AND NATO SLAVE RECEPTACLE** – The main power switch is a key operated two-position switch used to send 24V from pallet batteries or an external 24V power source to the pallet electrical system. When operating from an external 24V power source, a standard NATO slave receptacle is provided adjacent to the main power switch.
- Ⓐ **BATTERY BOX** – The stowage box that holds two batteries located at center of pallet frame adjacent to A-frame.
- Ⓐ **REMOTE CONTROL UNIT** – The hand-held control unit from which all pallet launch and retrieval functions are initiated. RCU power cable can be connected to receptacles on either side of pallet.

EQUIPMENT DESCRIPTION (Contd)

PALLET EQUIPMENT FEATURES (Contd)

- BE **SPS CONTROL UNIT** – The stored program system built into RCU that controls automatic launch and retrieval functions of pallet by means of RCU.



EQUIPMENT DESCRIPTION (Contd)

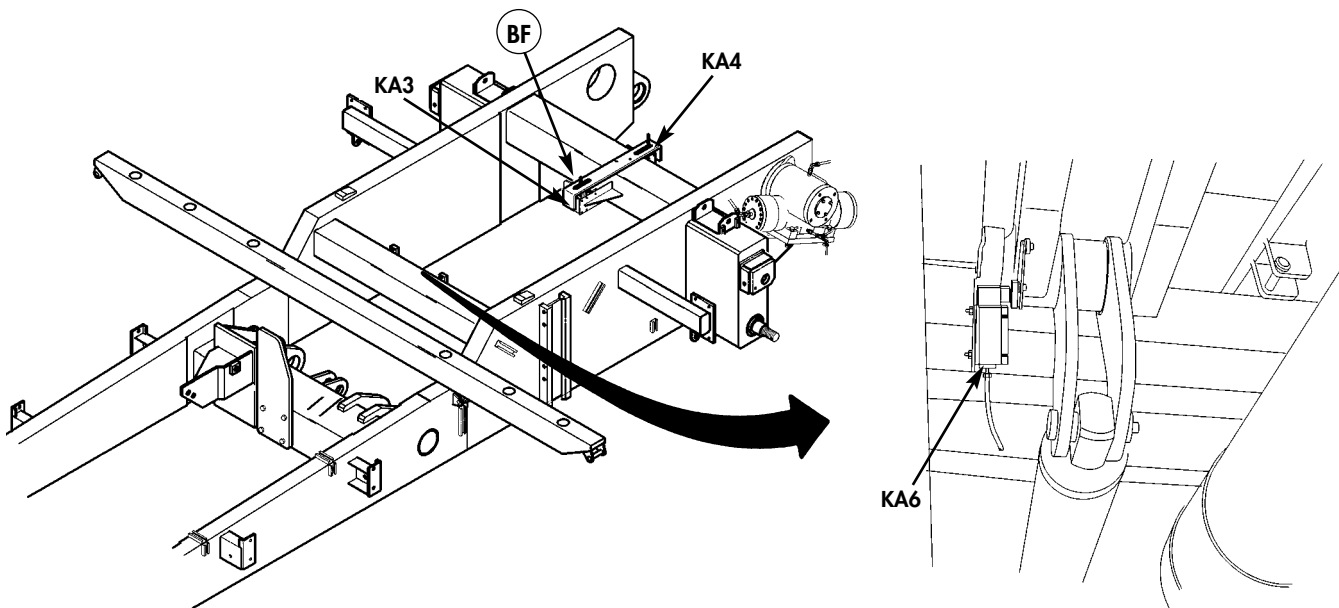
PALLET EQUIPMENT FEATURES (Contd)

BF **LIMIT SWITCHES** – There are seven electrical switches positioned on pallet frame that stop travel of components at set positions by activating control valve solenoids, thereby making launch and retrieval functions automatic. A functional description of each limit switch is listed below.

NOTE

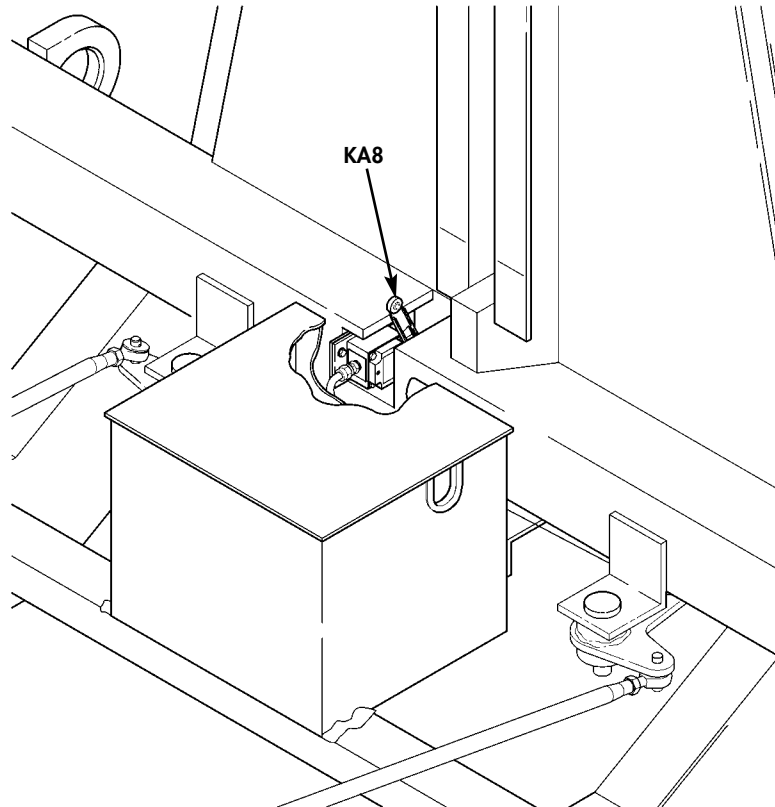
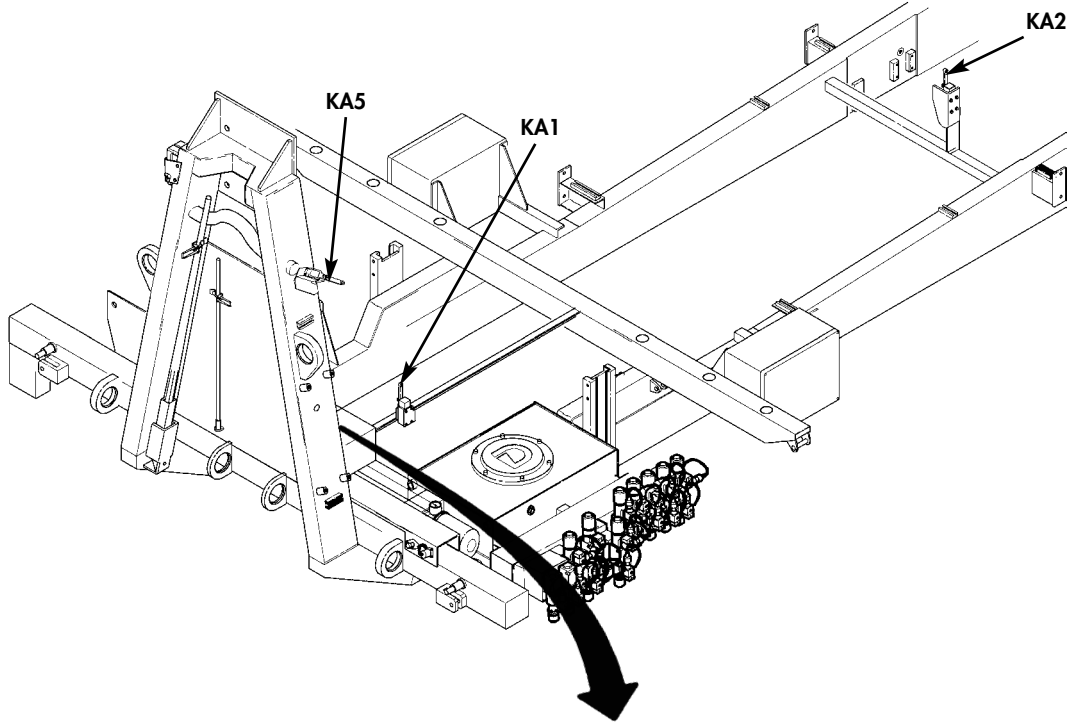
Limit switch number KA7 is no longer used.

- KA1** - During launch, stops lower bridge half when deploying toward rear of pallet, and during retrieval, stops lower bridge half.
- KA2** - During launch, switches forward pin wheel drive to rear pin wheel drive, and during retrieval, switches rear pin wheel drive to forward pin wheel drive.
- KA3** - During launch. Stops lower bridge half at pre-coupling position before raising secondary boom, and during retrieval, stops bridge half before lowering secondary boom.
- KA4** - During launch, stops lower bridge half at coupling position. During retrieval, KA4 and KA3 work together to stop bridge, activate launch boom to raise bridge half to pre-stress upper coupling, which is then stopped by potentiometer, and stop bridge when driven toward pallet A-frame
- KA5** - During launch and retrieval, stops upper bridge half in up position, and stops winch when lifting upper bridge half to up position.
- KA6** - During launch, stops secondary boom and when secondary boom is fully lowered it activates launch boom to go up. During retrieval, stops secondary boom when raised, and activates launch boom to lower.
- KA8** - During retrieval, stops bridge at base of A-frame when driving (retracting), activates winch, then stops winch.



EQUIPMENT DESCRIPTION (Contd)

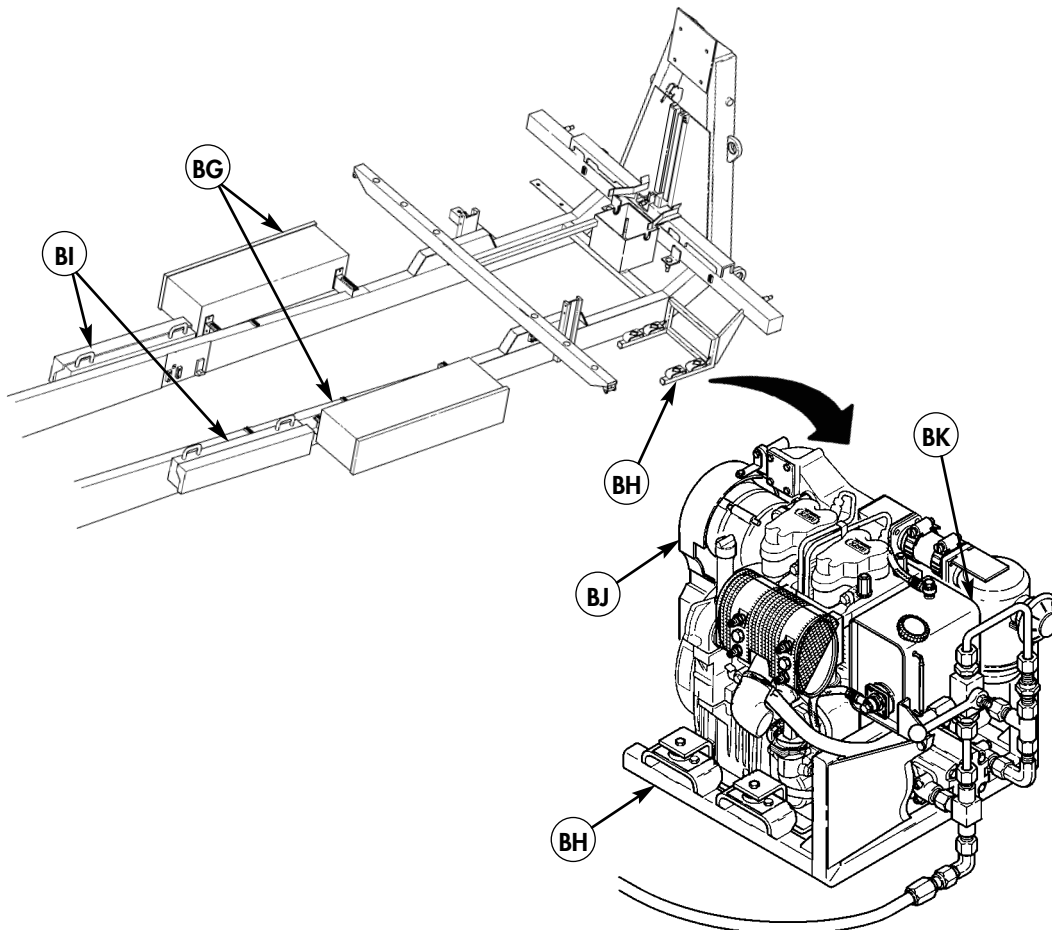
PALLET EQUIPMENT FEATURES (Contd)



EQUIPMENT DESCRIPTION (Contd)

PALLET EQUIPMENT FEATURES (Contd)

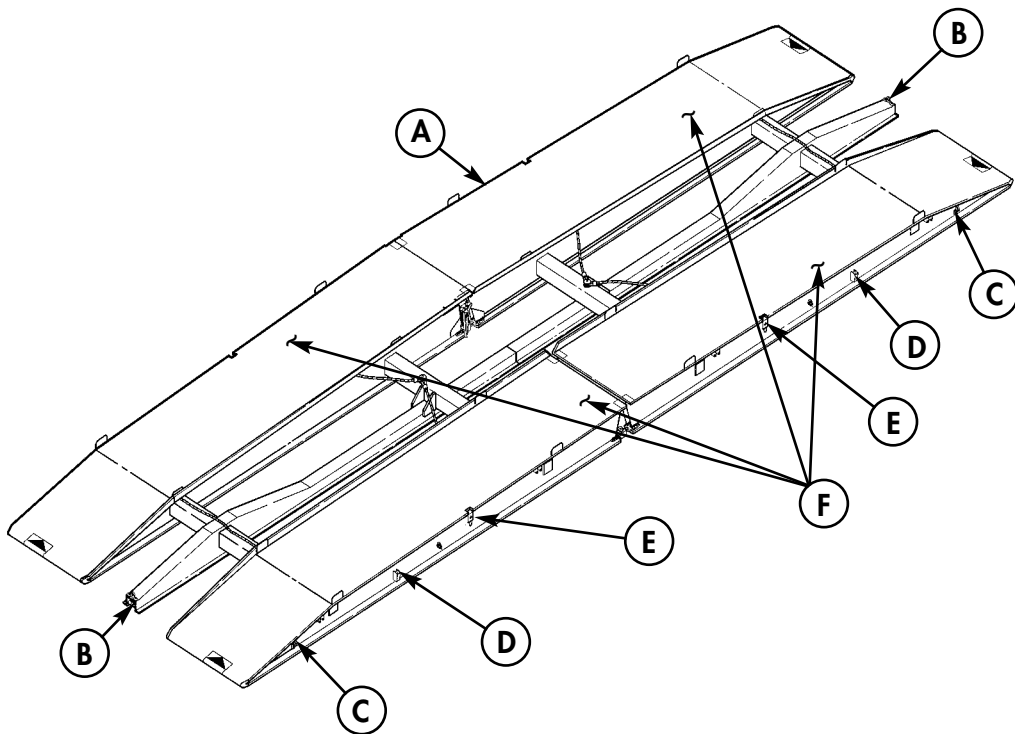
- ⓑ **PALLET TOOL BOXES** – The two metal boxes mounted on pallet frame used for BII stowage.
- ⓑ **LPU SUPPORT** – The welded frame member, located at right front of pallet frame, that supports the LPU.
- ⓑ **ANCHORAGE SYSTEM STOWAGE BOXES** – There are two removable metal boxes mounted on pallet frame for holding anchoring BII.
- ⓑ **LAUNCH POWER UNIT (LPU)** – A diesel engine, mounted on LPU support at right front of pallet frame, that powers the pallet's hydraulic and electrical systems.
- ⓑ **FUEL TANK** – The fuel supply tank mounted on LPU support frame.



EQUIPMENT DESCRIPTION (Contd)

BRIDGE EQUIPMENT FEATURES

- (A) **BRIDGE ASSEMBLY** – The two bridge halves coupled together.
- (B) **LIFTING EYE** – The hinged eye bracket mounted on launch beam at each end of bridge assembly, that receives the pallet winch rope hook and functions as a lifting point for bridge.
- (C) **ANCHORING EYE** – The hinged bracket on side of each bridge quarter used for anchoring bridge.
- (D) **ROADWAY MARKER BRACKET** – The mounting bracket on side of each bridge quarter that holds marker pole designating edge of roadway.
- (E) **HELICOPTER LIFT BRACKET** – The bracket on the side of each bridge quarter used as a lifting point for deploying bridge by helicopter.
- (F) **ROADWAY** – The top road surface of bridge assembly, consisting of a 3 ft 11-in. (1.2-m) wide deck plate on each side.

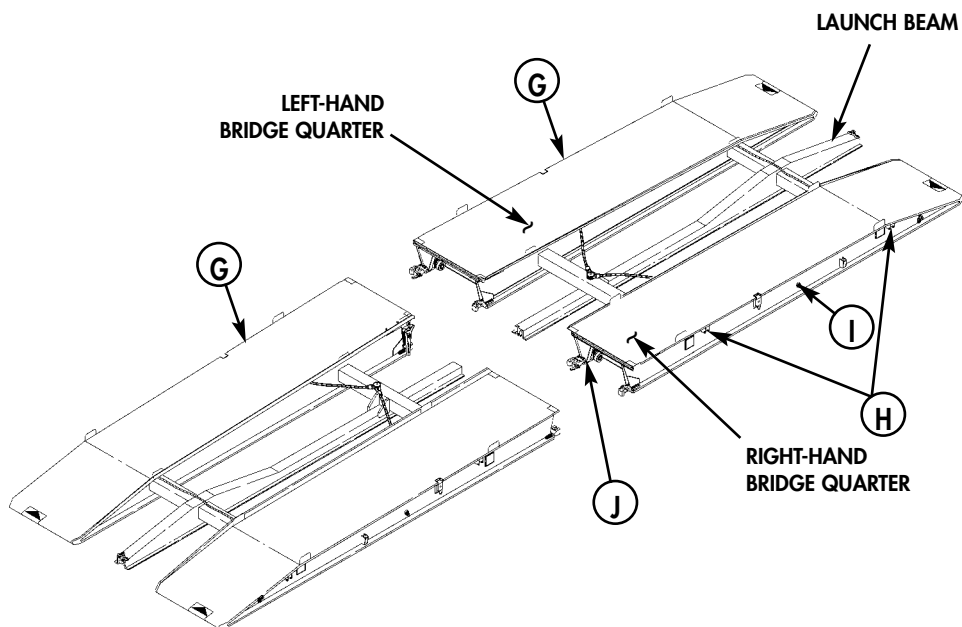


BRIDGE HALVES, COUPLED

EQUIPMENT DESCRIPTION (Contd)

BRIDGE EQUIPMENT FEATURES (Contd)

- (G) BRIDGE HALF** – An assembly consisting of a left-hand bridge quarter, right-hand bridge quarter, and launch beam.
- (H) HOLD-DOWN BRACKETS** – The two brackets on side of each bridge quarter used for securing bridge halves on pallet with fastening rods.
- (I) SLIDE LOCK** – There is a lock mechanism on each bridge quarter that automatically locks bridge halves when expanded to full roadway width. It is manually unlocked at side of each bridge quarter prior to retracting bridge halves to transport width.
- (J) SUPPORT WHEELS** – There are four wheels mounted on bottom of each bridge quarter that enable upper bridge half to roll on top of lower bridge half when driving lower bridge half.

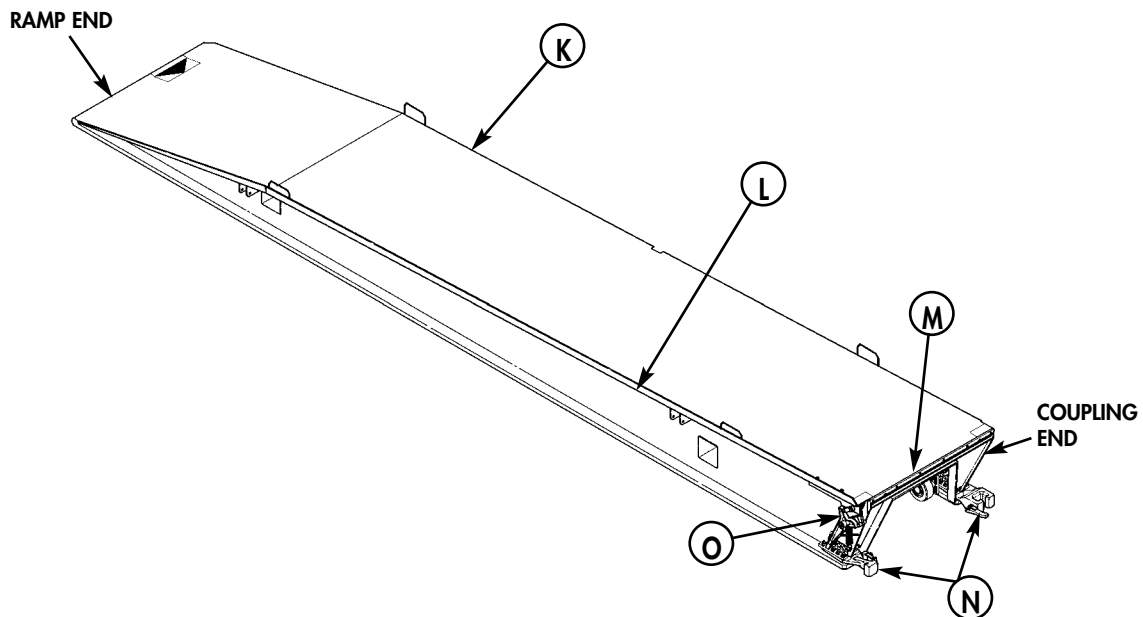


BRIDGE HALVES, UNCOUPLED

EQUIPMENT DESCRIPTION (Contd)

BRIDGE EQUIPMENT FEATURES (Contd)

- Ⓚ **BRIDGE QUARTER** – A U-shaped structure having a ramp end, coupling end, and flat deck plate running the length of its top surface.
- Ⓛ **GUARD RAIL** – A 2-in. (50-mm) high railing welded to the inside edge of deck plate on each bridge quarter that serves to guide vehicles to center when crossing bridge.
- Ⓜ **CROSSFORCE COUPLING BUMPER** – The steel insert bolted to connecting end of each bridge quarter that functions to align and prevent the coupled bridge assembly from twisting at its center.
- Ⓝ **LOWER COUPLINGS AND HELP LEVERS** – There are two steel castings with help levers bolted to coupling end of each bridge quarter that function to hold the two bridge halves together at the bottom. Help levers are manually operated during launch and retrieval.
- Ⓞ **UPPER COUPLING** – The lock mechanism, located on coupling end of each left bridge quarter, that functions to hold the two bridge halves together at crossforce coupling bumpers until bridge assembly is emplaced.

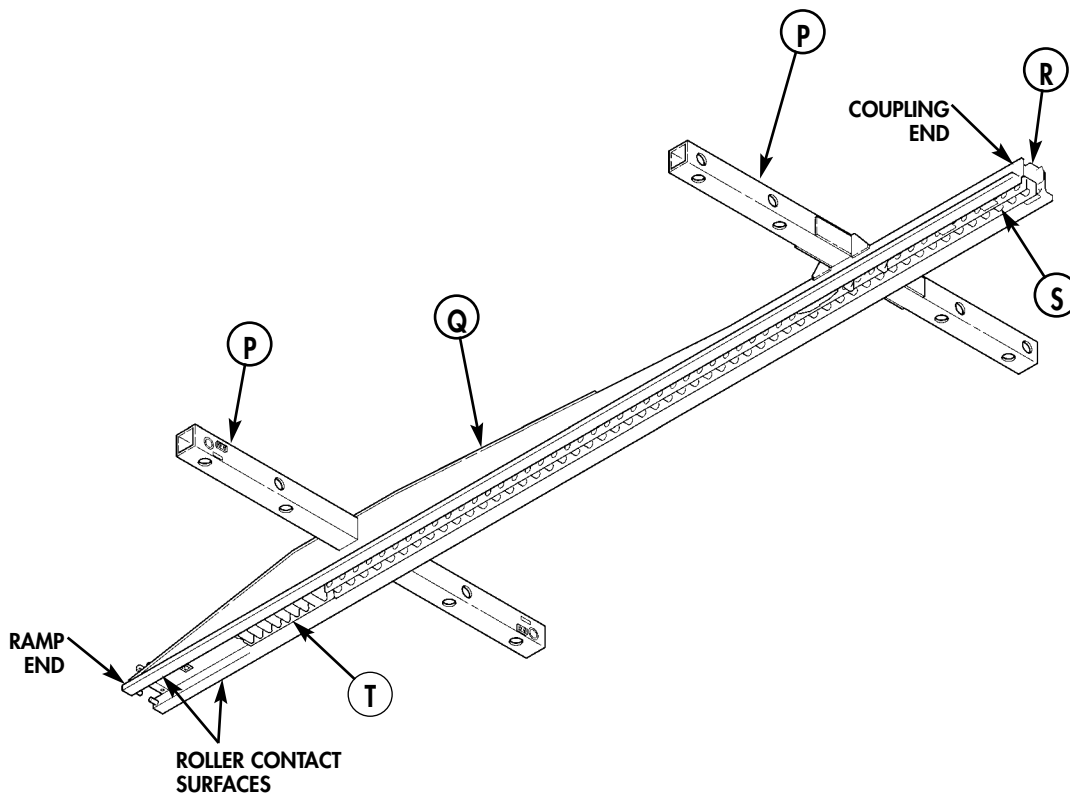


BRIDGE QUARTER, LEFT-HAND SHOWN

EQUIPMENT DESCRIPTION (Contd)

BRIDGE EQUIPMENT FEATURES (Contd)

- (P) SUPPORT TUBES** – The two square tubes welded perpendicular to launch beam that support and permit bridge quarters to slide outward to roadway width and inward to transport width.
- (Q) LAUNCH BEAM** – The center support structure of a bridge half.
- (R) BEAM** – A hat-shaped steel support that contains roller contact surfaces and drive pins that interface with pallet launcher.
- (S) DRIVE PINS** – There is a channel, bolted to bottom of launch beam, that contains 84 round pins and functions to engage bridge half with pallet pin wheel drive gears to move bridge on pallet during launch and retrieval.
- (T) RAIL TRACK** – There is a hardened steel rail track bolted to ramp end of launch beam that functions to engage bridge with pallet pin wheel drive gears to move bridge onto pallet at retrieval.



LAUNCH BEAM, BOTTOM VIEW

END OF WORK PACKAGE

GENERAL INFORMATION, EQUIPMENT DESCRIPTION, AND THEORY OF OPERATION

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

THEORY OF OPERATION AND EQUIPMENT DATA

GENERAL

This section explains how components of the REB and CBT work. Functional descriptions of the CBT, pallet, and bridge components and their operation are covered in the following paragraphs.

FUNCTION OF THE COMMON BRIDGE TRANSPORTER (CBT)

The transporter functions to load/unload and transport the pallet with or without the bridge to and from launch sites, and can also provide emergency back-up hydraulic and electric power to the pallet for bridge launch/retrieval operations. The CBT is a HEMTT equipped with a Load Handling System (LHS). The LHS hydraulic system is powered by way of a PTO-driven pump on the CBT transmission. Control valves within the LHS hydraulic system direct the flow of hydraulic oil to the LHS lift cylinders. A cab-mounted control box and a hand-held Remote Control Unit (RCU) are used to operate the solenoid-actuated control valves necessary for LHS operation. To power the pallet using CBT, the LHS hydraulic hoses are disconnected from the CBT hydraulic pump, and the pallet's hydraulic hoses are then connected to the CBT hydraulic pump by way of quick-disconnects. The CBT's slave power cable is connected to NATO slave receptacles on the pallet and CBT.

FUNCTION OF THE CBT LOAD HANDLING SYSTEM (LHS)

The CBT's LHS is utilized to load and carry the REB pallet (with or without bridge) in the same way it is used for the M1 Flat Rack, M15 Bridge Adapter Pallet (BAP), and M14 Improved Boat Cradle (IBC). The LHS is permanently mounted on the HEMTT frame and contains a lifting arm that is hydraulically raised and lowered by way of the CBT hydraulic and electrical systems. Only the pallet can be carried on the LHS; the bridge or bridge halves alone are not designed to interface with the LHS.

FUNCTION OF THE PALLET

The Pallet is the launching mechanism and transport frame for the bridge. The Pallet's launcher mechanism couples the two bridge halves together and emplaces them to the ground. Launch and retrieval of the bridge is performed while the pallet is on the CBT only. The pallet has two supporting cylinders that assist in supporting the weight of the bridge on the CBT during launch and retrieval operations. The bridge is intended to be transported on the pallet by the CBT, although once coupled and emplaced, the bridge can be lifted, transported, and emplaced by helicopter. The pallet is designed to be transported on the CBT or the Palletized Load System Trailer (PLST). The pallet is transloaded from the CBT to the PLST using the CBT LHS. The pallet can be maneuvered on the ground by its own support wheels and steering system which is provided primarily for loading onto an aircraft. The pallet has a self-contained hydraulic and electrical system powered by a small diesel engine called the Launch Power Unit (LPU).

FUNCTION OF THE PALLET LAUNCHER MECHANISM

The launcher mechanism is part of the pallet, and is made up of five major components that work together to couple, extend, and emplace the bridge as follows:

- (1) The launch boom functions to hold the bridge by its launch beam during launch and retrieval. The launch boom contains a number of upper and lower support rollers, a pin wheel drive unit, and a brake, which together support and propel the bridge as it is extended and emplaced.

THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

FUNCTION OF THE LAUNCHER MECHANISM (Contd)

- (2) The lower support boom functions to lift the launch boom under the weight of the bridge as the bridge is coupled, extended, and emplaced. Two large hydraulic cylinders connected to the lower support boom provide the necessary force.
- (3) The pin wheel drive units function to drive and retain the bridge, by means of the bridge launch beam, during launch and retrieval. The gear on each pin wheel drive unit is designed to engage with pins on the bridge launch beam to move the bridge. A hydraulic brake on the rear pin wheel drive unit holds the bridge by means of locking the pin wheel drive gear.
- (4) The secondary boom functions to lower the upper bridge half during coupling and lifts the upper bridge half during uncoupling. Two rollers on the secondary boom keep the upper bridge half centered with the lower bridge half for alignment during coupling.
- (5) The winch functions to lower the ramp end of the upper bridge half by its launch beam prior to coupling, and takes control of the bridge after coupling by lowering the bridge to the ground.

HOW THE BRIDGE IS EMPLACED

In order to launch the bridge, the CBT is positioned on the shore, supporting cylinders are lowered, and the LPU is started. A hand held remote control unit (RCU) is used to operate the pallet launcher mechanism. Within the RCU is an electronic Stored Program System (SPS) containing 22 functional steps required to expand, couple, extend, and emplace the bridge. Each functional step is initiated by the operator and is carried out either automatically by the SPS or manually by the operator. Essentially, the two bridge halves are first expanded to roadway width. Then the lower bridge is driven out to the rear by the pallet's pin wheel drive units. The upper bridge half is lowered and positioned so that the lower couplings of both bridge halves are engaged. Then the lower bridge half is tilted toward the upper bridge half until the upper couplings on both bridge halves lock. The coupled bridge is then driven to the rear until the entire length of the bridge is extended over gap (river, gully, or ditch) to be crossed. The pallet launch boom and lower support boom lower far shore end of bridge to ground, and the pallet winch lowers near shore end to ground. Bridge retrieval is performed basically in reverse order.

THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

EQUIPMENT DIMENSIONS

NOTE

For equipment data pertaining to the basic HEMTT vehicle, refer to TM 9-2320-279-10.

Refer to the following tables for specific equipment data.

Table 1. Common Bridge Transporter (CBT) Data.

	STANDARD	METRIC
Dimensions and weight (ready for travel)		
Not loaded		
Length	33 ft 3 in.	10.2 m
Width	8 ft	2.4 m
Height	8 ft 4 in.	2.6 m
Curb weight	37,240 lb	16,892 kg
GVWR	66,000 lb	29,938 kg
Loaded with pallet and bridge		
Length	38 ft 6 in.	11.8 m
Width	9 ft 2 in.	2.8 m
Height	11 ft 8 in.	3.6 m
Weight	56,173 lb	25,480 kg
Weight distribution loaded with pallet and bridge		
Weight over front axles	20,886 lb	9,460 kg
Weight over rear axles	35,274 lb	16,000 kg
PTO hydraulic pump output at 3,000 psi (20,685 kPa)	20 gpm	76 lpm
Hydraulic reservoir capacity (with filter)	120 qt	114 l
LHS		
Maximum lifting capacity	24,000 lb	10,886 kg
Hydraulic system maximum operating pressure	3,625 psi	24,994 kPa
Hydraulic system full relief pressure	3,100 to	21,375 to
.....	3,300 psi	22,754 kPa
Electric power voltage	24 Vdc	

Table 2. Palletized Load System (PLS) Trailer Data.

	STANDARD	METRIC
Length	24 ft 4 in.	7.5 m
Width	8 ft	2.4 m
Height	4 ft 11 in.	1.5 m
Curb weight	12,994 lb	5,894 kg

THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

EQUIPMENT DIMENSIONS (Contd)

Table 2. Palletized Load System (PLS) Trailer Data (Contd).

	STANDARD	METRIC
PLS trailer loaded with REB		
Length	26 ft 4 in.	8 m
Width	110 in.	279 cm
Height	12 ft 4 in.	3.8 m
Weight	33,739 lb	15,304 kg
GVWR	49,500 lb	22,453 kg

Table 3. Pallet (Empty).

	STANDARD	METRIC
Length	25 ft	7.6 m
Width	9 ft 2 in.	2.8 m
Height	7 ft	2.2 m
Weight	9,526 lb	4,330 kg
Weight distribution		
Weight over front axles	3,130 lb	1,420 kg
Weight over rear axles	6,437 lb	2,920 kg
Hydraulic system operating pressure	3,249 psi	22,402 kPa
Electrical system box circuit breaker	16 A	
Electrical system	24 Vdc	
Generator output	27 A, 28 Vdc	
Number of batteries	2 (12 Vdc)	
Hydraulic system capacity (dry)	121.5 qt	115 l
Main hydraulic reservoir capacity	18.5 gal.	70 l
Hydraulic pump output	5.3 gpm	20 lpm
	@ 1,200 rpm	
Hydraulic pump capacity	300 ft ³	8.5 m ³
	per revolution	
Support wheel tire pressure	100 psi	690 kPa
LPU engine		
Type2-cylinder, 4-cycle, air-cooled, direct injection diesel	
Displacement	60.8 in. ³	997 cm ³
Horsepower	21.45 hp	16 kw
Direction of rotation at power take-off endcounterclockwise	
FuelJP8 (same grade as used in CBT)	
Fuel tank capacity	0.8 gal	3 l
Oil capacity	3.2 qt	3 l
Oil consumption		
(after break-in period)1% for fuel consumption at full load	
Oil pressure14.5 psi (1 bar) minimum	
Difference between "max" and "min" oil level	0.85 qt	0.8 l
Inlet and exhaust valve clearance	0.004 in.	0.10 mm
at 50–86° F (10–30° C)		
Low idle	700 rpm	
High idle	1,200 rpm	
Weight (includes fuel tank, air cleaner, exhaust muffler, and electric starter)	234 lb	106 kg

THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

EQUIPMENT DIMENSIONS (Contd)

Table 4. Bridge Data.

	STANDARD	METRIC
Length		
Total	45 ft 3 in.	13.8 m
Effective (on prepared abutments)	42 ft 6 in.	13 m
Width		
Retracted	9 ft 2 in.	2.8 m
Expanded	11 ft	3.4 m
Width of bridge quarter deck plate	3 ft 11 in.	1.2 m
Height	1 ft 10 in.	56 cm
Weight	10,582 lb	4,800 kg
Maximum load	MLC 40	
Retrievability	either end	

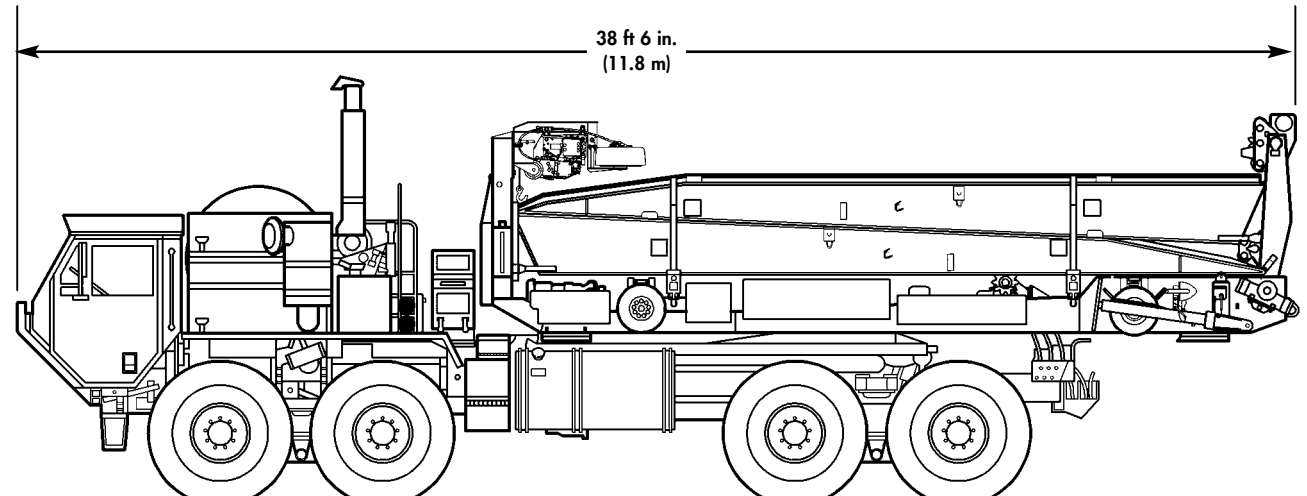
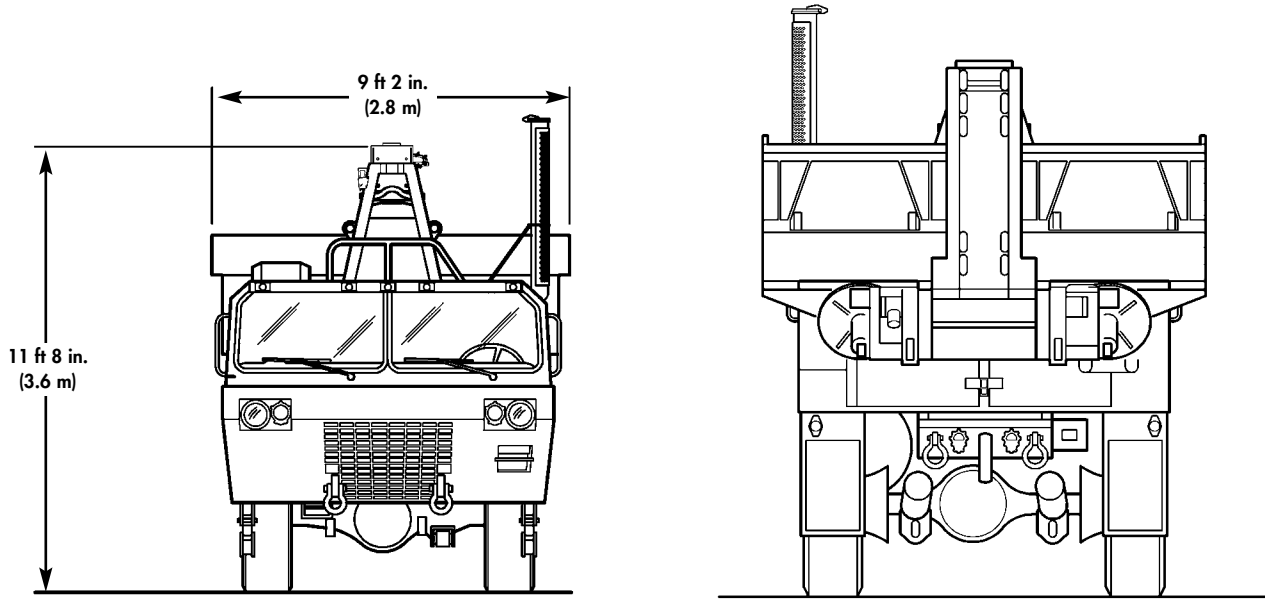
Table 5. Pallet with Bridge.

	STANDARD	METRIC
Length	25 ft	7.6 m
Width	9 ft 2 in.	2.8 m
Height	8 ft	2.4 m
Weight	20,856 lb	9,410 kg

THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

EQUIPMENT DIMENSIONS (Contd)

Dimensions of CBT loaded with REB are detailed below.

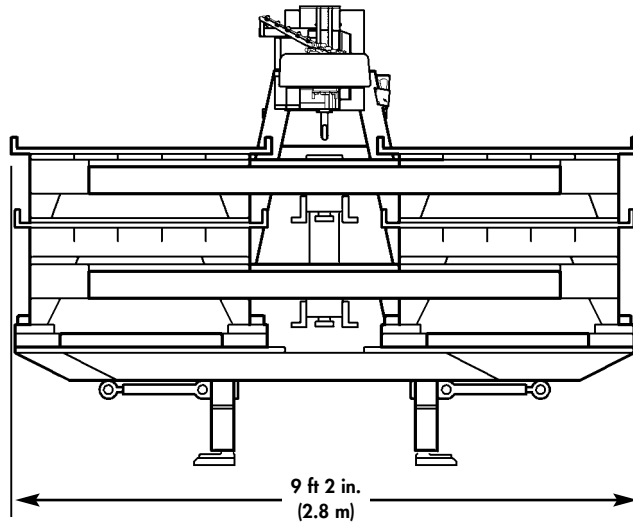


CBT LOADED WITH PALLET AND BRIDGE

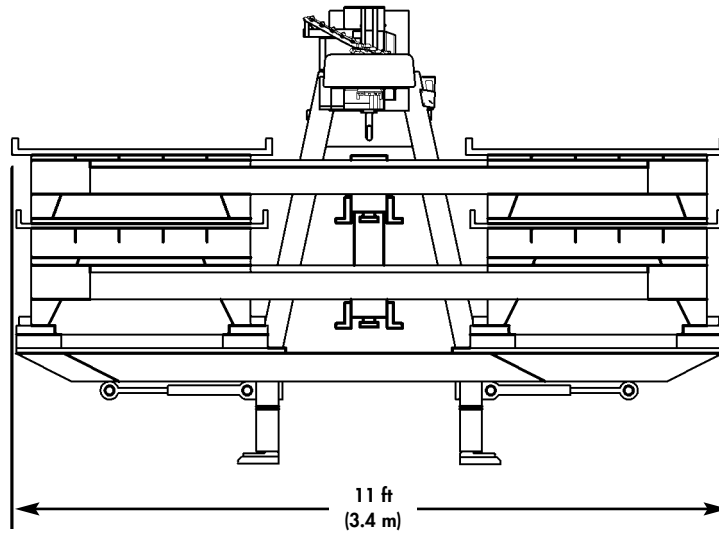
THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

EQUIPMENT DIMENSIONS (Contd)

Bridge retracted and expanded dimensions are detailed below.



BRIDGE, RETRACTED

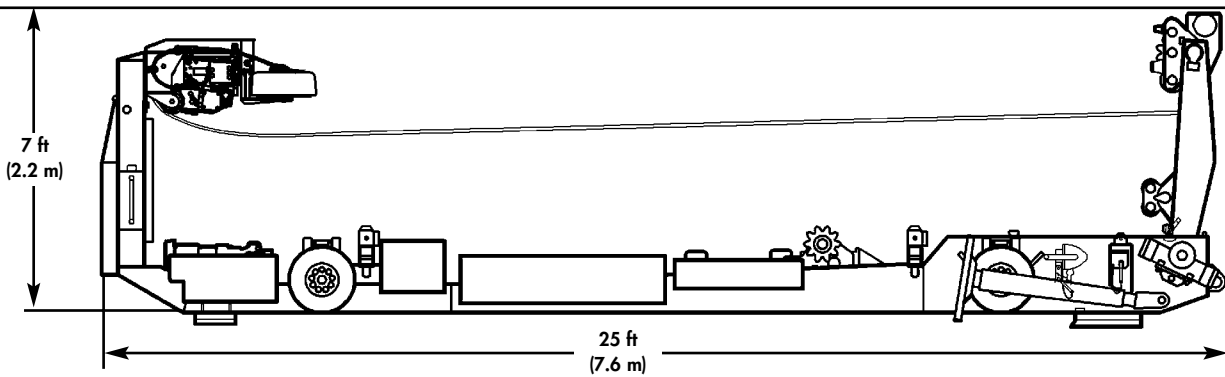
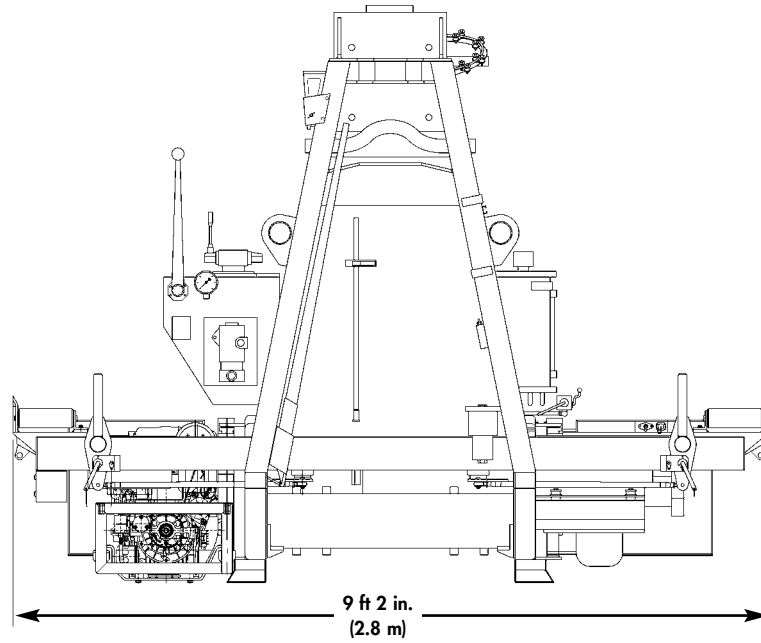


BRIDGE, EXPANDED

THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

EQUIPMENT DIMENSIONS (Contd)

Pallet dimensions are detailed below.

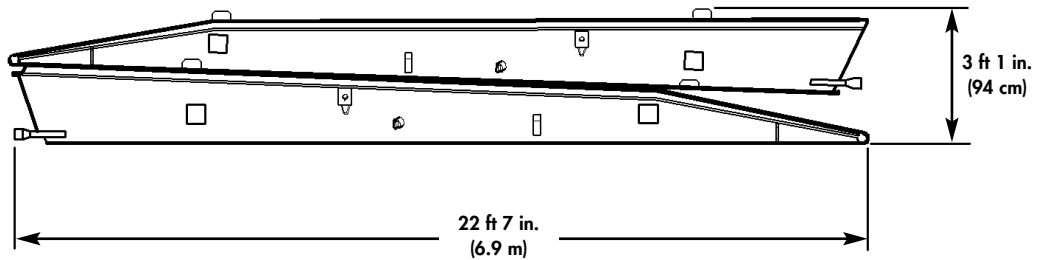


PALLET

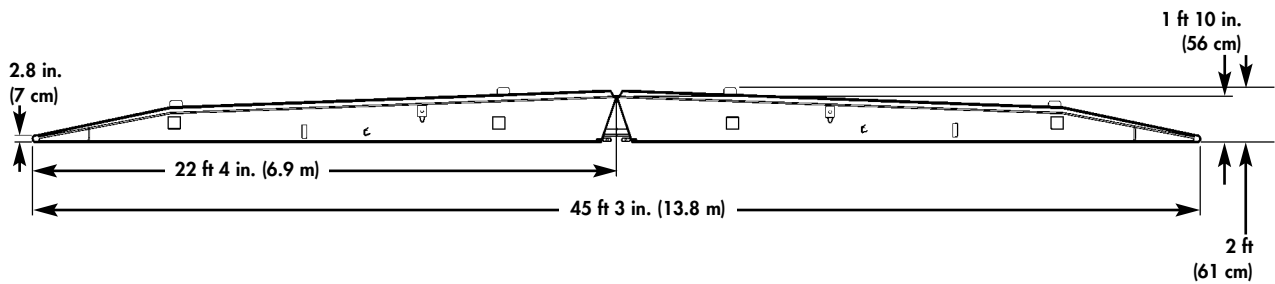
THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

EQUIPMENT DIMENSIONS (Contd)

Coupled and uncoupled bridge dimensions are detailed below.



BRIDGE, UNCOUPLED



BRIDGE, COUPLED

THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

LOCATION AND DESCRIPTION OF DATA PLATES

Locations and descriptions of data plates and decals found on CBT and REB units are 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

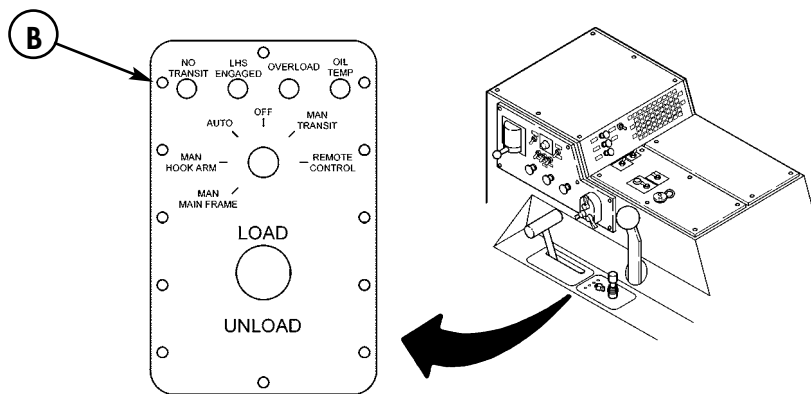
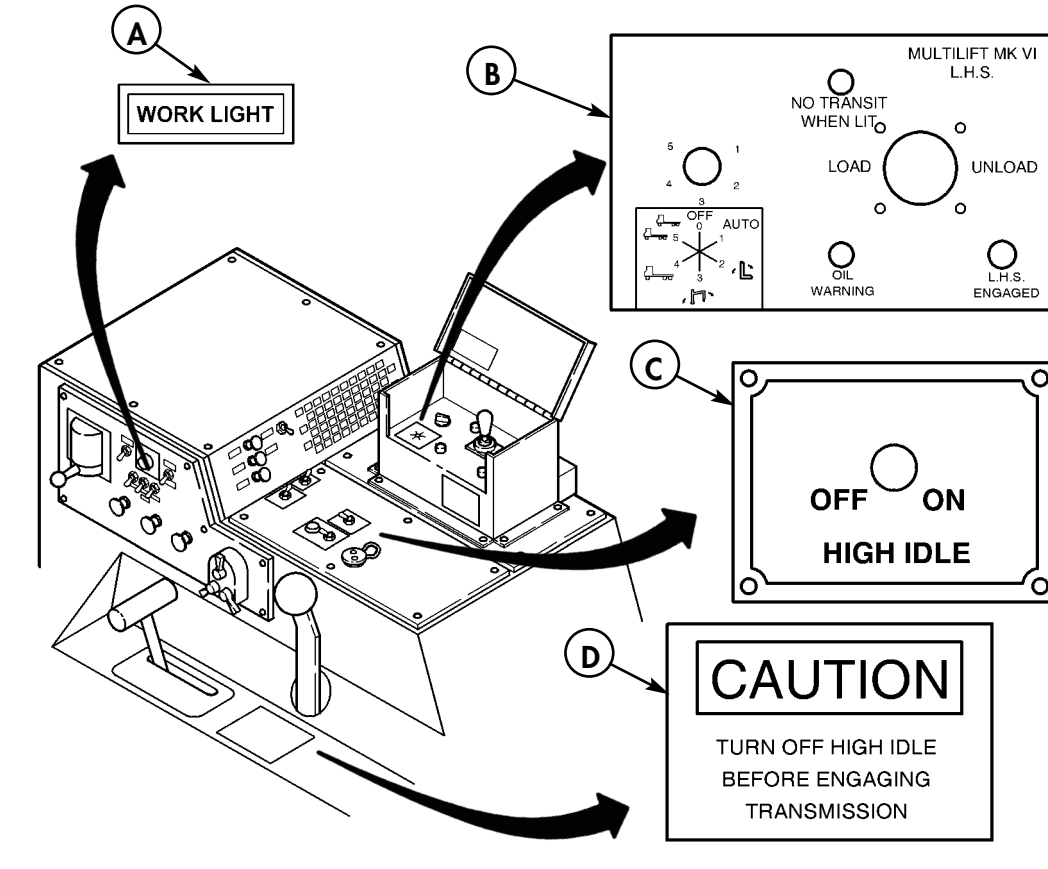
For data plates and decals pertaining to operation of the basic HEMTT vehicle, refer to TM 9-2320-279-10.

LHS DATA PLATES AND DECALS

- Ⓐ **WORK LIGHT** — This decal, located inside cab on side panel of heater compartment, identifies switch for operating LHS work light and spotlight.
- Ⓑ **MULTILIFT, MK VI LHS** — This decal, located inside cab on top panel of LHS control box, or on top of shift console on late model CBTs, identifies switches and indicator lights for LHS operation.
- Ⓒ **HIGH IDLE** — This data plate, located inside cab on top panel of heater compartment, identifies switch for increasing engine idle speed prior to LHS operation.
- Ⓓ **CAUTION (high idle)** — This decal, located inside cab on top of shift console, is a reminder to turn off HIGH IDLE switch before engaging transmission.
- Ⓔ **WARNING (LHS function)** — This decal (not shown), located on driver's side of cab control box, warns not to use LHS for any function other than lifting palletized loads and bridge equipment.

THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

LOCATION AND DESCRIPTION OF DATA PLATES (Contd)



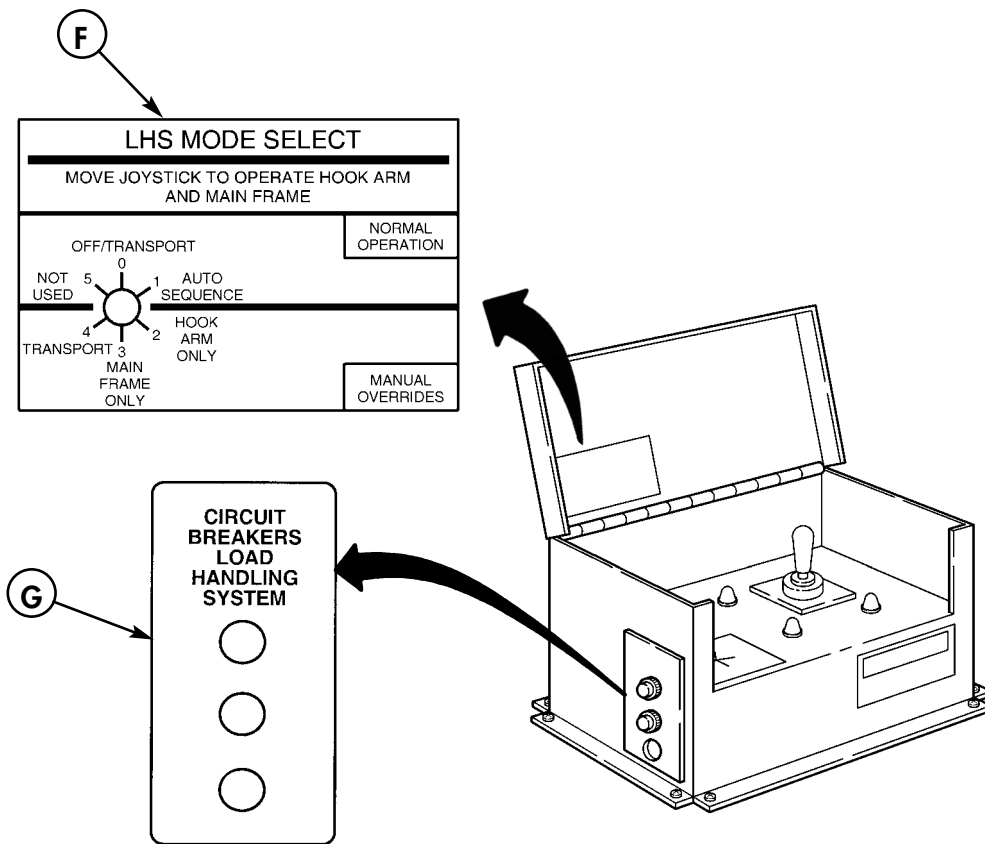
MULTILIFT DATA PLATE, LATE MODEL CBT

THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

LHS DATA PLATES AND DECALS (Contd)

- (F) **LHS MODE SELECT** — This decal, located inside cab, on LHS control box cover, identifies LHS MODE SELECT switch with numbered functional mode positions and provides instructions for LHS operation.
- (G) **CIRCUIT BREAKERS** — This decal, located inside cab on side of LHS control box, identifies LHS circuit breakers.



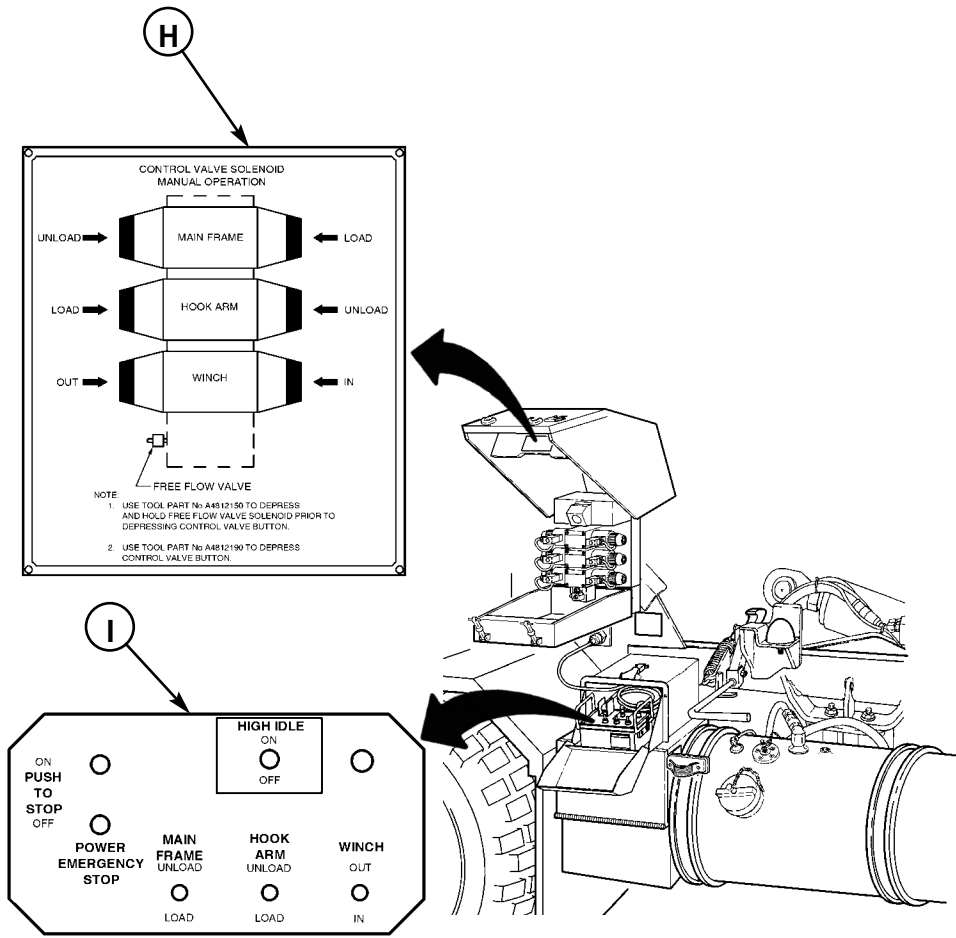
LHS CONTROL BOX, EARLY MODEL CBT

THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

LHS DATA PLATES AND DECALS (Contd)

- (H) CONTROL VALVE SOLENOID MANUAL OPERATION** — This data plate, located inside hydraulic manifold cover, identifies control valve buttons and free flow valve, and provides instructions for their manual operation, including use of free flow and solenoid tools.
- (I) REMOTE CONTROL UNIT (instructions)** — This decal, located on top of RCU, identifies switches and their functions for operation of LHS.

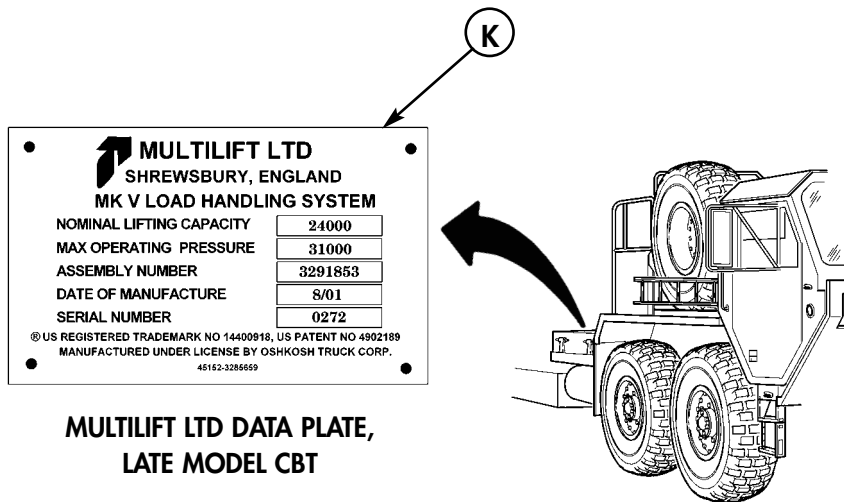
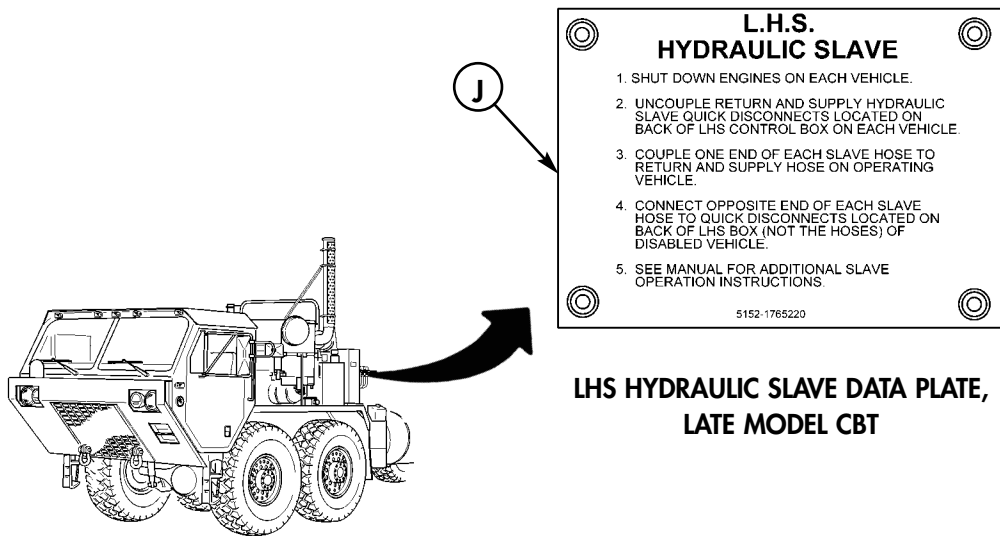


THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

LHS DATA PLATES AND DECALS (Contd)

- J** **LHS HYDRAULIC SLAVE** — This data plate, located on side of LHS hydraulic control valve cabinet, identifies instructions for slave operation.
- K** **MULTILIFT LTD** — This data plate, located on LHS compression frame, near battery box, identifies lifting capacity, operating pressure, serial number, and or information pertaining to LHS.

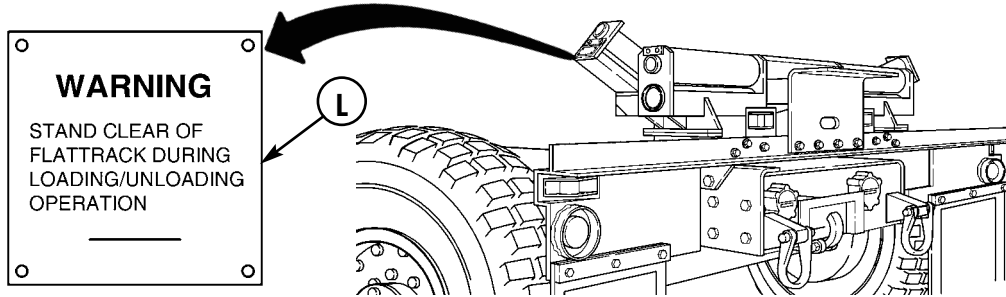


THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

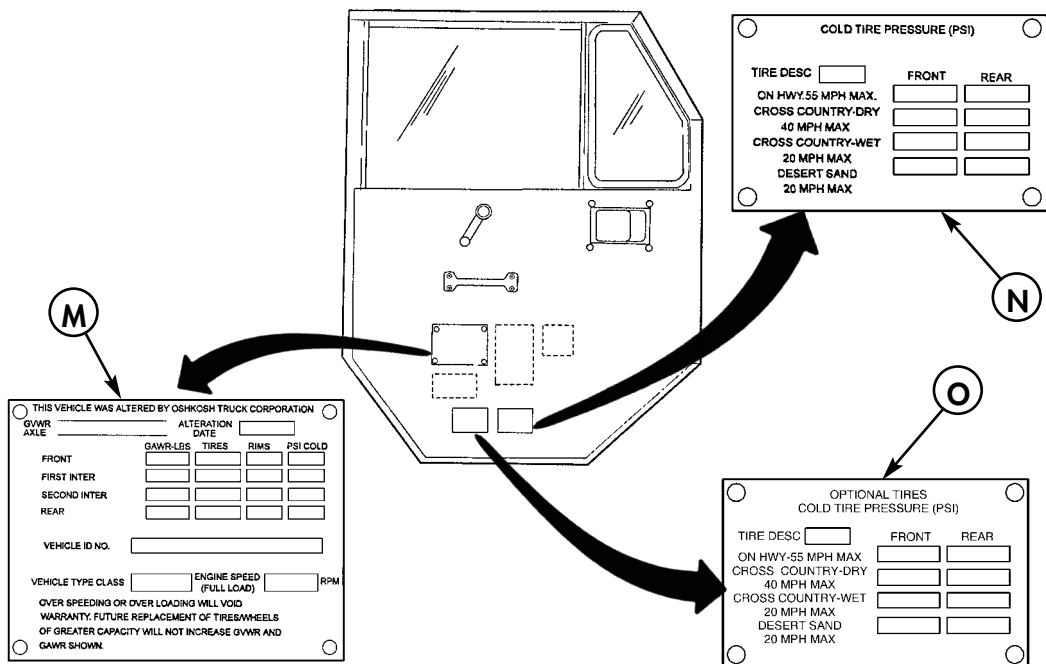
LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

LHS DATA PLATES AND DECALS (Contd)

- (L) WARNING (flattrack)** — This data plate, located at each end of rear roller assembly, warns to stand clear of flattrack during loading and unloading operations.



- (M) VEHICLE IDENTIFICATION** — This data plate, located on driver's side door, is manufacturer's identification plate for CBT; it contains CVWR, alteration date, GAWR, tire data, vehicle ID no., type class, engine speed, and warranty information.
- (N) COLD TIRE PRESSURE (PSI)** — This data plate, located on driver's side door, identifies tire psi and maximum speeds for differing terrain.
- (O) OPTIONAL TIRES** — This data plate, located on driver's side door, identifies tire psi and maximum speeds for differing terrain when equipped with optional tires.

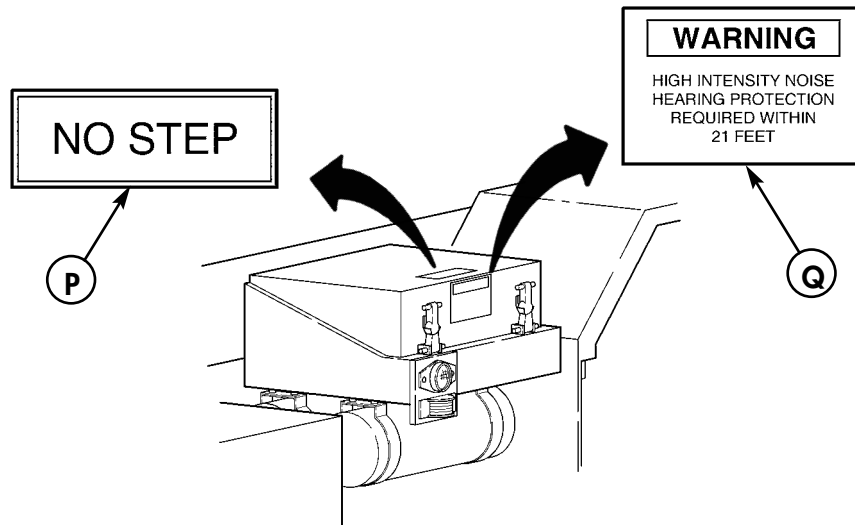


THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

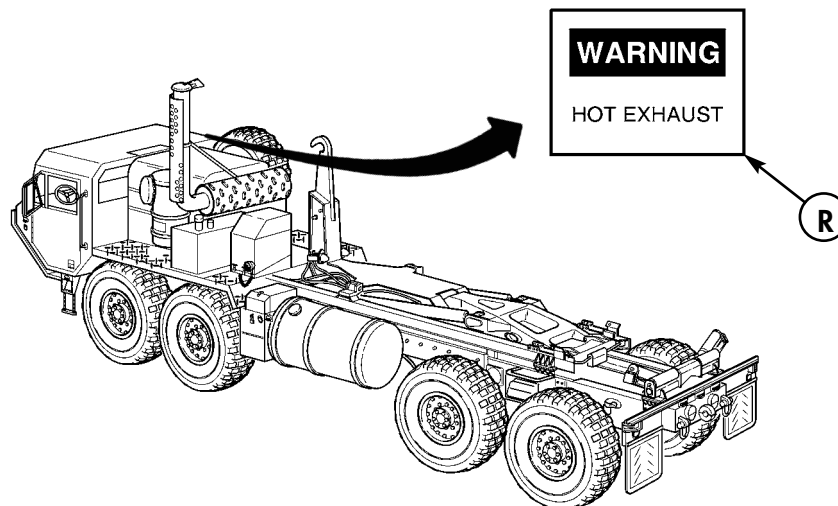
LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

LHS DATA PLATES AND DECALS (Contd)

- Ⓐ **NO STEP** — This decal is located on top of battery box cover.
- Ⓑ **WARNING (hearing protection)** — This decal, located on battery box cover and engine air cleaner, is a warning requiring hearing protection within 21 ft of vehicle, due to high-intensity noise.



- Ⓒ **WARNING (hot exhaust)** — This decal is located on exhaust extension heat shield.

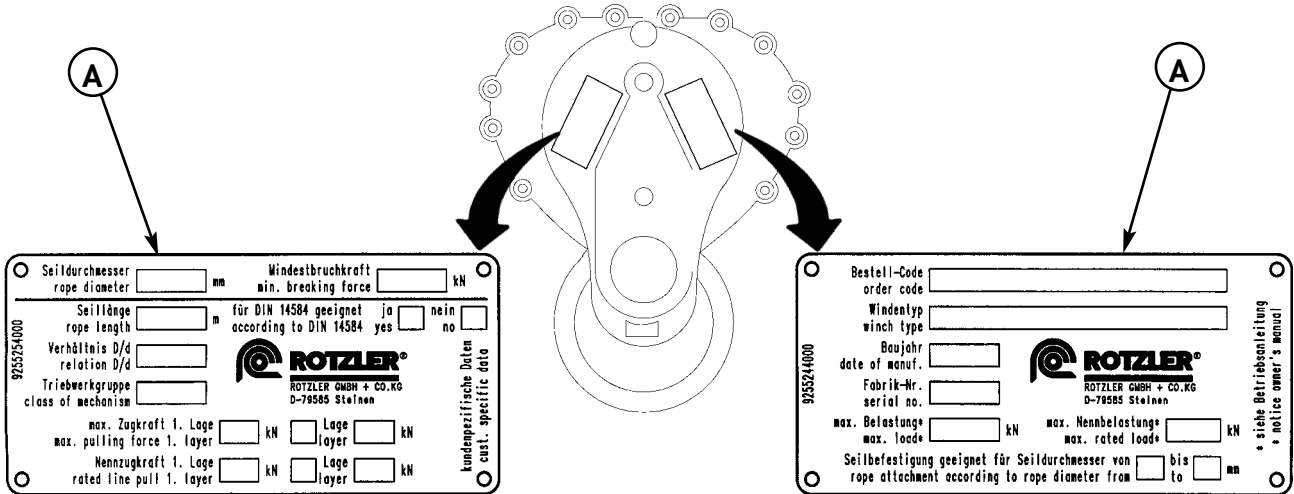


THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

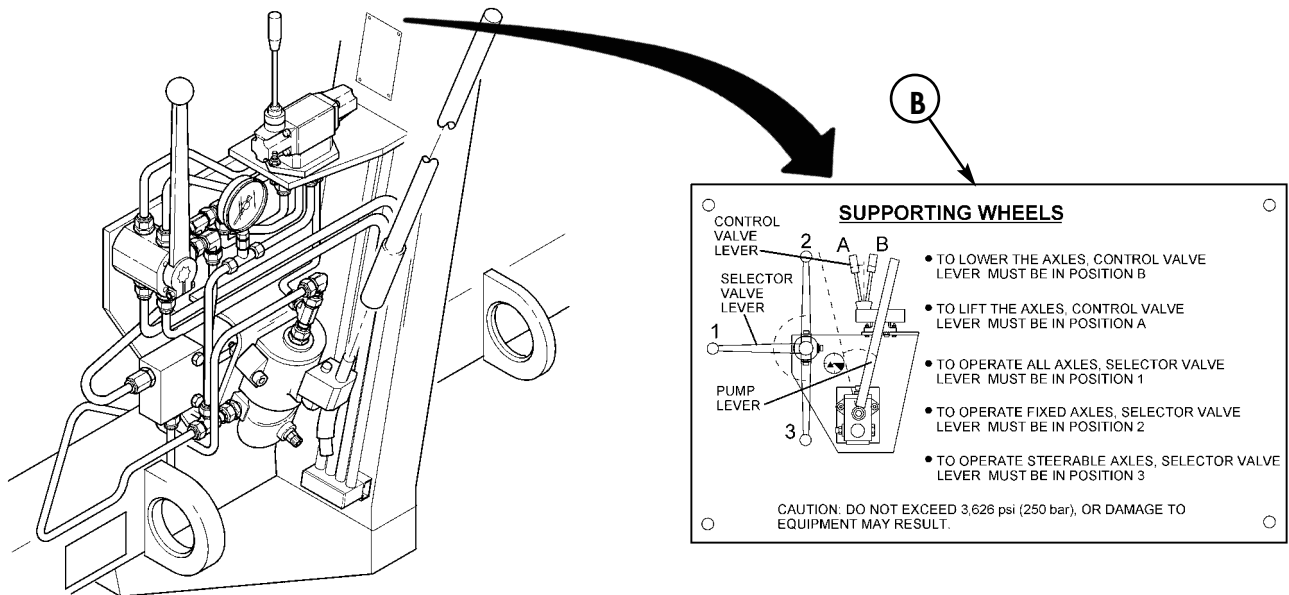
LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

PALLET DATA PLATES AND DECALS

A **ROTZLER TREIBMATIC** — This data plate, located on 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 **SUPPORTING WHEELS** — This decal, located on pallet frame, identifies control valve, selector valve, and pump operating positions for supporting wheels.

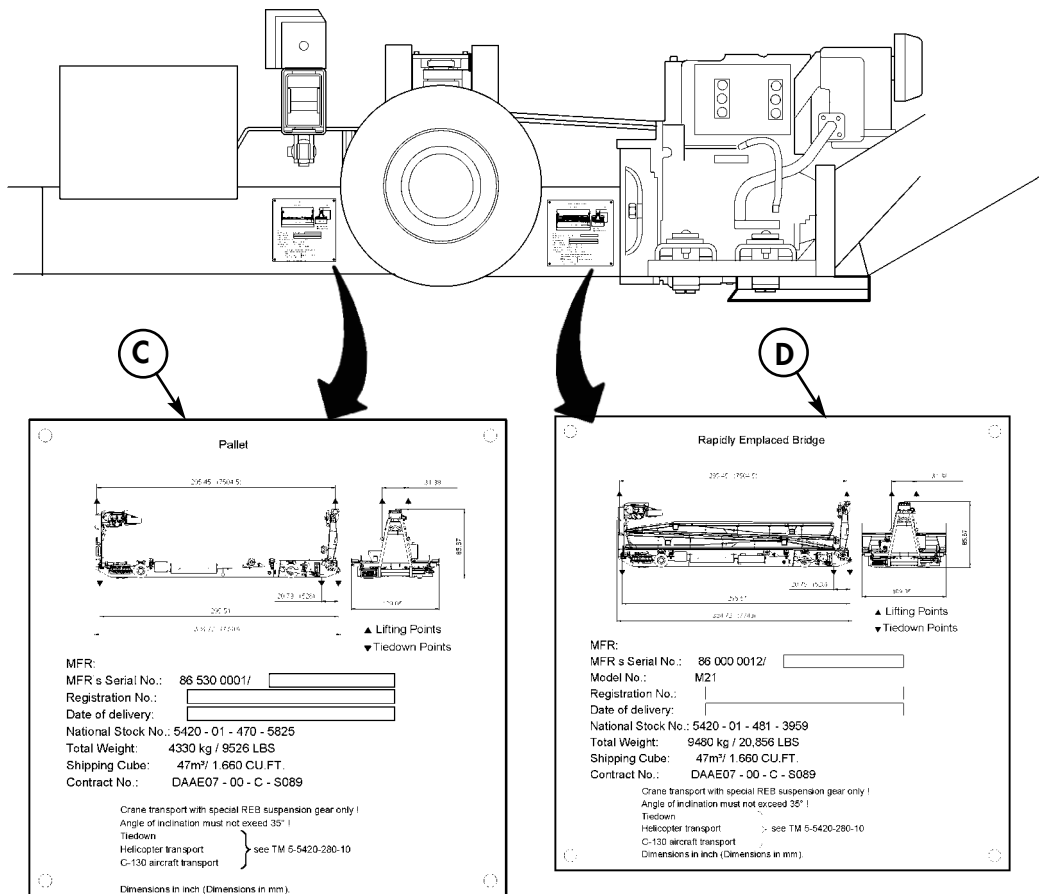


THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

PALLET DATA PLATES AND DECALS (Contd)

- (C) PALLET** — This data plate, located pallet on passenger’s side of pallet frame adjacent to right steering axle, is the manufacturer’s identification plate for pallet. It contains the serial no. and other information pertaining to pallet.
- (D) RAPIDLY EMPLACED BRIDGE** — This data plate, located on passenger side of pallet frame adjacent to right steering axle, is the manufacturer’s identification plate for REB. It contains REB serial number and other information pertaining to REB.

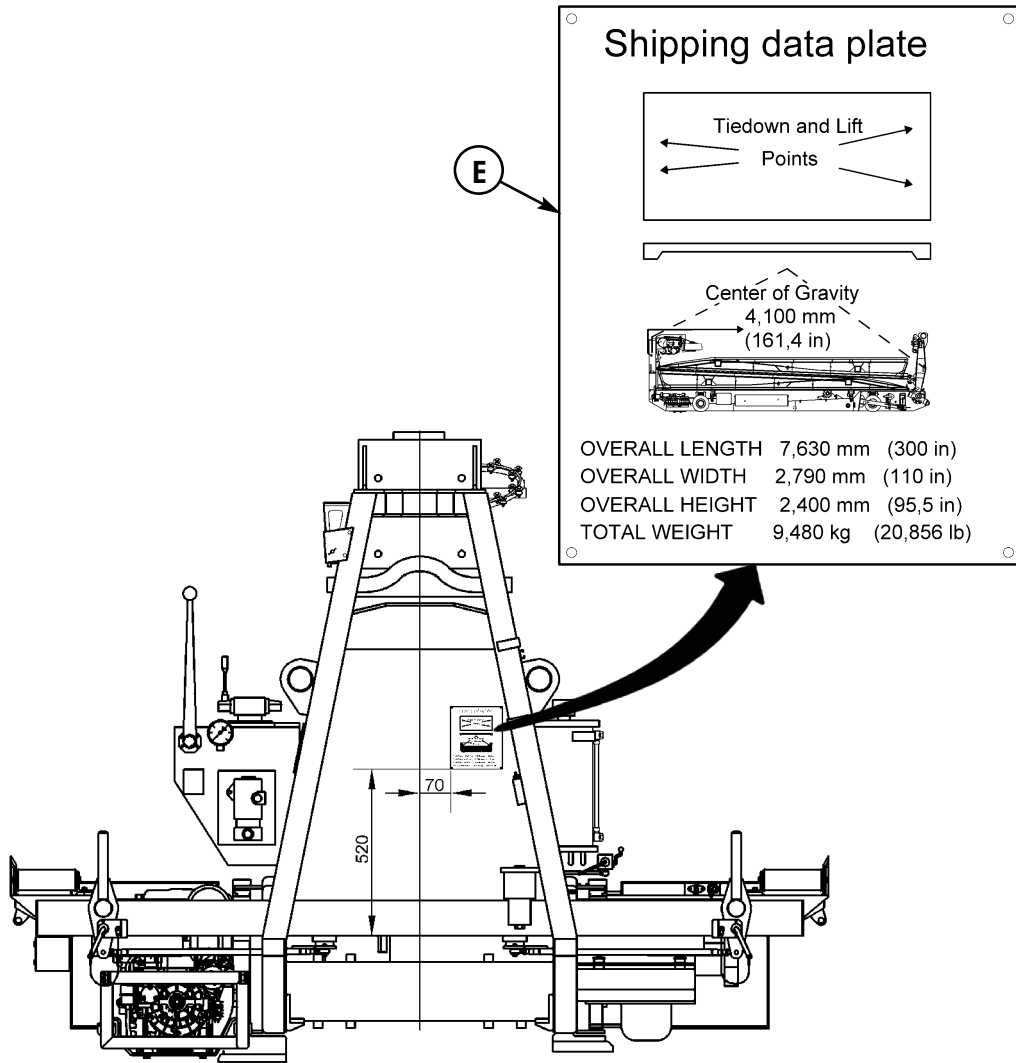


THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

PALLET DATA PLATES AND DECALS (Contd)

- E** **SHIPPING DATA PLATE** — This data plate, located on A-frame below the winch, identifies tiedown/lift points, center of gravity, dimensions, and total weight of REB for shipping purposes.

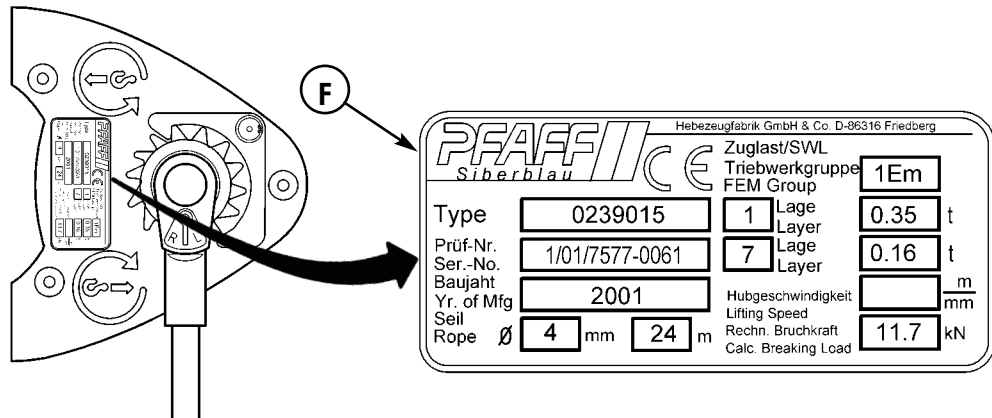


THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

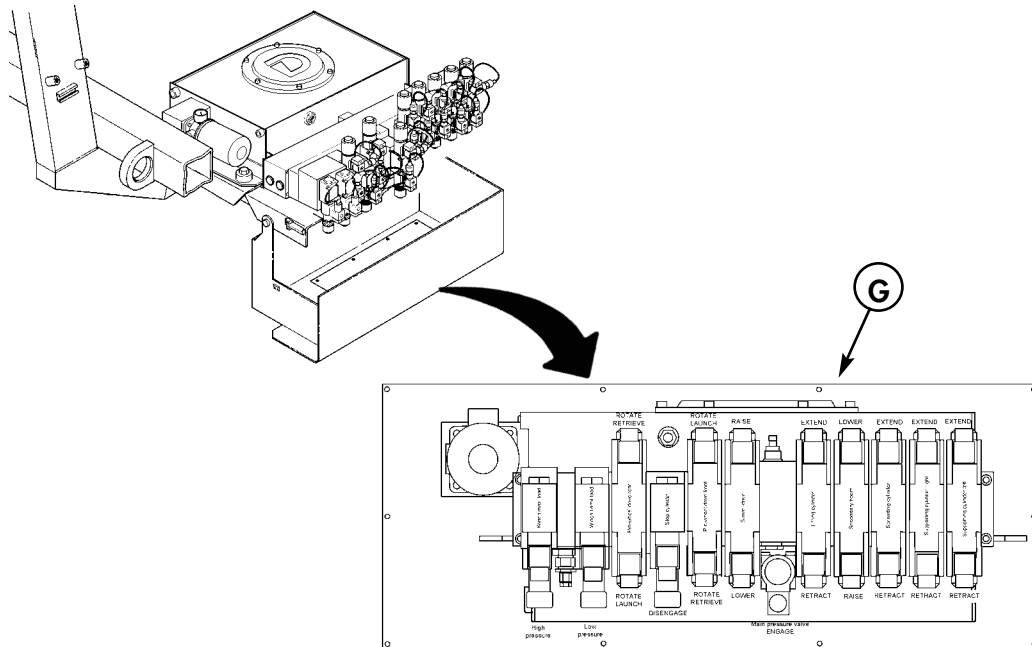
LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

PALLET DATA PLATES AND DECALS (Contd)

- F** **PFAFF** — This decal, located on side of supporting cylinder hand-operated winch, identifies manufacturer’s data for winch.



- G** **CONTROL VALVE DIAGRAM** — This decal, located inside control valve cover, identifies each hydraulic control valve by solenoid code and number.

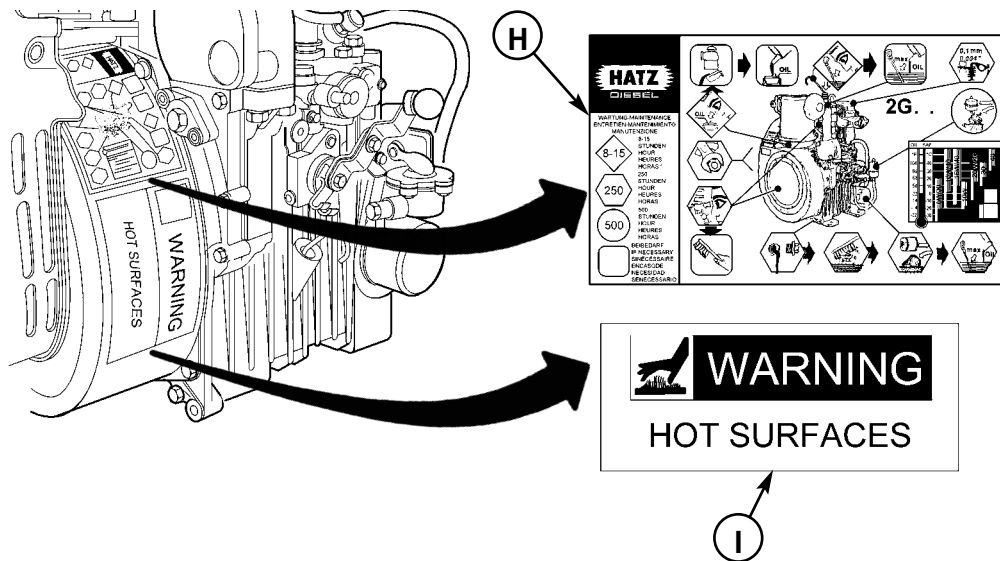


THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

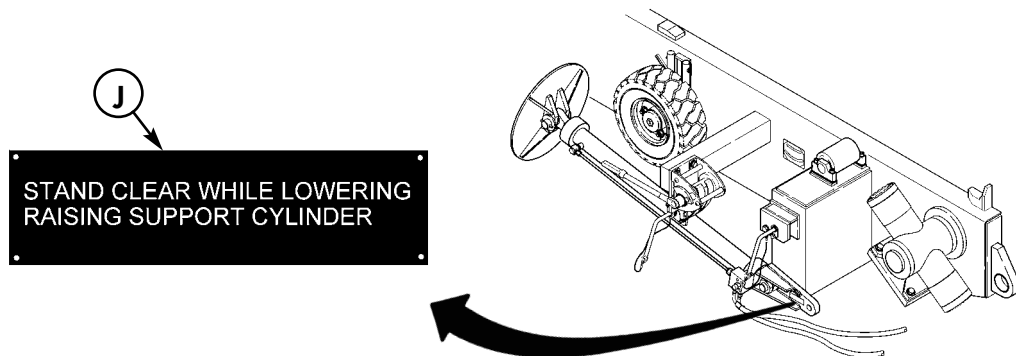
LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

PALLET DATA PLATES AND DECALS (Contd)

- (H) HATZ DIESEL** — This decal, located on LPU engine flywheel cover, identifies maintenance intervals for HATZ engine.
- (I) WARNING (hot surfaces)** — This decal, located on LPU engine flywheel cover, warns operator to potential hot surfaces of engine.



- (J) STAND CLEAR WHILE LOWERING/RAISING SUPPORT CYLINDER** — This decal, located on each pallet supporting cylinder, alerts operator to stay clear of path the support cylinder travels while manually lowered or raised into position.

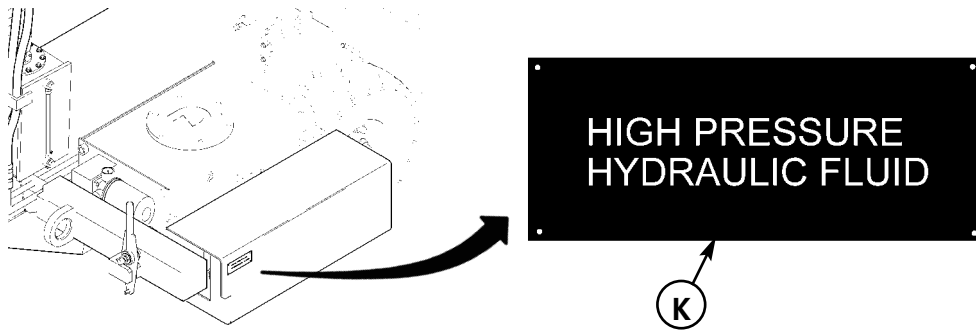


THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

PALLET DATA PLATES AND DECALS (Contd)

- Ⓚ **HIGH PRESSURE HYDRAULIC FLUID** — This data plate, located on pallet control valve cover, alerts operator to use caution when operating hydraulic system and when disconnecting or connecting pallet hydraulic hoses.

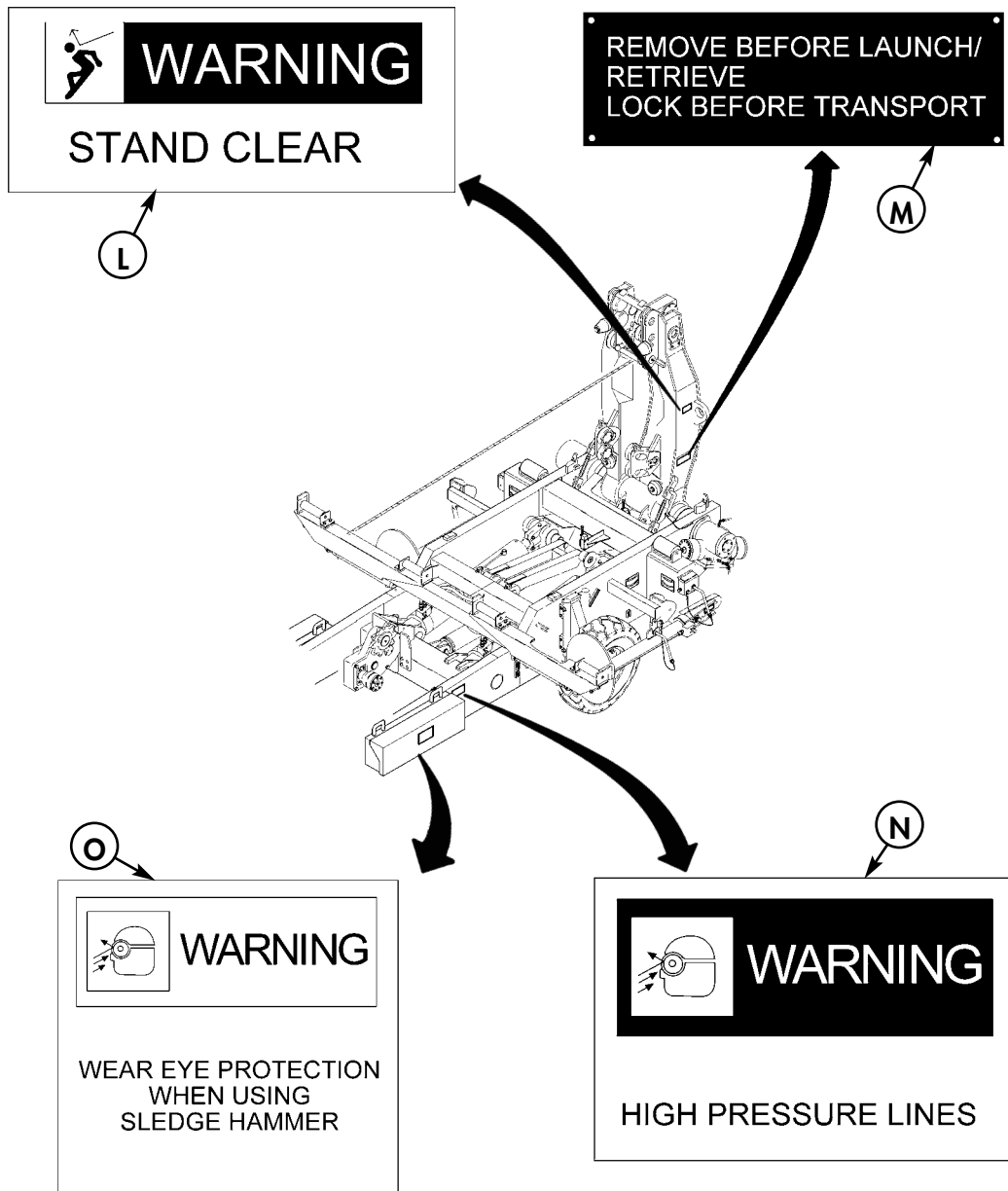


- Ⓛ **WARNING (stand clear)** — This decal, located on side of pallet launch boom, warns operators to stand clear of area behind launch boom during launch and retrieval.
- Ⓜ **REMOVE BEFORE LAUNCH/RETRIEVE, LOCK BEFORE TRANSPORT** — This data plate, located on side of pallet launch boom, is a reminder to ensure launch boom lock retaining pins are removed before launch or retrieval, and installed before transport.
- Ⓝ **WARNING (high pressure lines)** — This decal, located on side of pallet frame adjacent to anchorage stowage box, warns operator and maintenance personnel to avoid contact with hydraulic lines. Eye protection should be worn when disconnecting any hydraulic hose or tube.
- Ⓞ **WARNING (wear eye protection)** — This decal, located on each anchorage stowage box, alerts operator to wear eye protection when using BII sledge hammer to install anchoring pins.

THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

PALLET DATA PLATES AND DECALS (Contd)

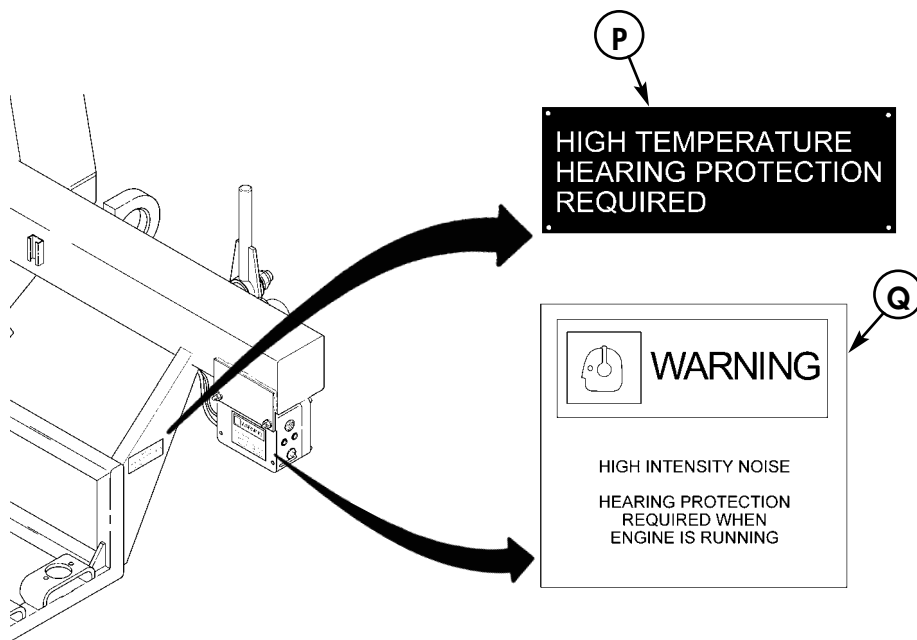


THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

PALLET DATA PLATES AND DECALS (Contd)

- P** **HIGH TEMPERATURE HEARING PROTECTION REQUIRED** — This data plate, located on LPU support, reminds operator of hot engine components and the requirement to wear hearing protection when running LPU engine.
- Q** **WARNING (high intensity noise)** — This decal, located on side of LPU control box, alerts operator to the requirement to wear hearing protection when LPU engine is running.

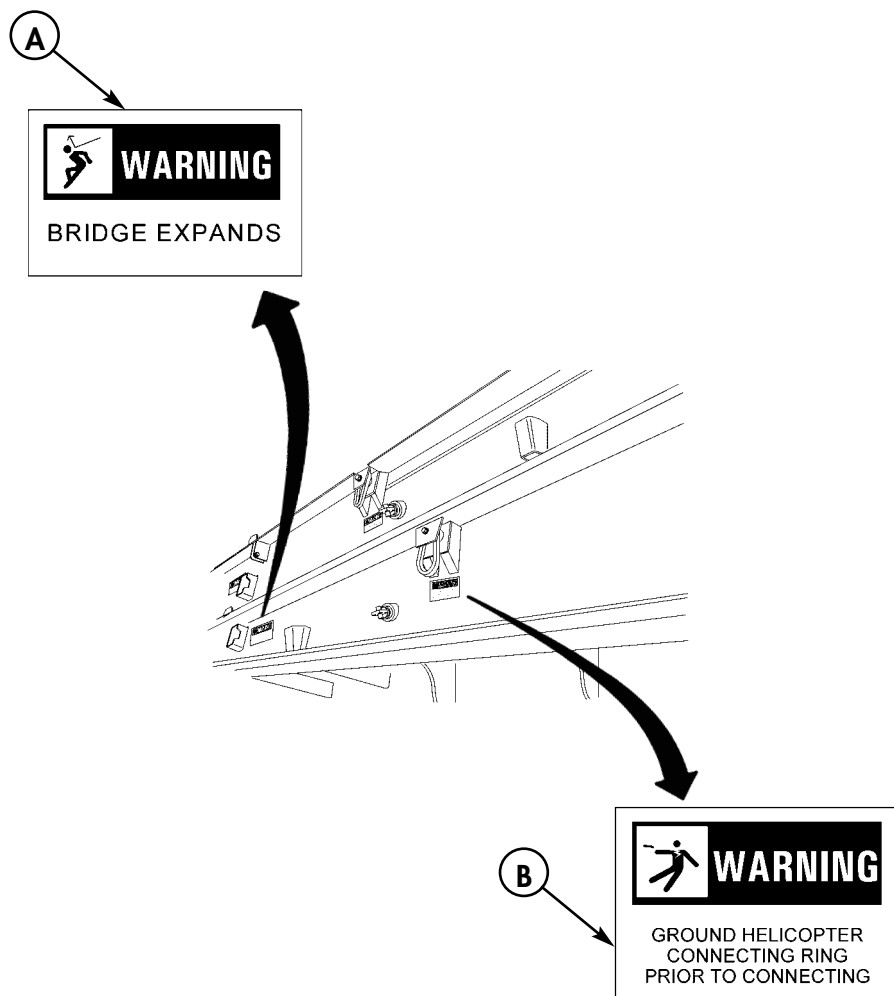


THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

BRIDGE DATA PLATES AND DECALS

- (A) **WARNING (bridge expands)** — This decal, located on side of each bridge, alerts operator to keep clear when extending bridge halves to operating width.
- (B) **WARNING (Ground helicopter connecting ring)** — This decal, located on side of each bridge quarter directly below helicopter lifting ring, alerts operator to ensure helicopter connecting ring has been grounded prior to connecting/disconnecting.

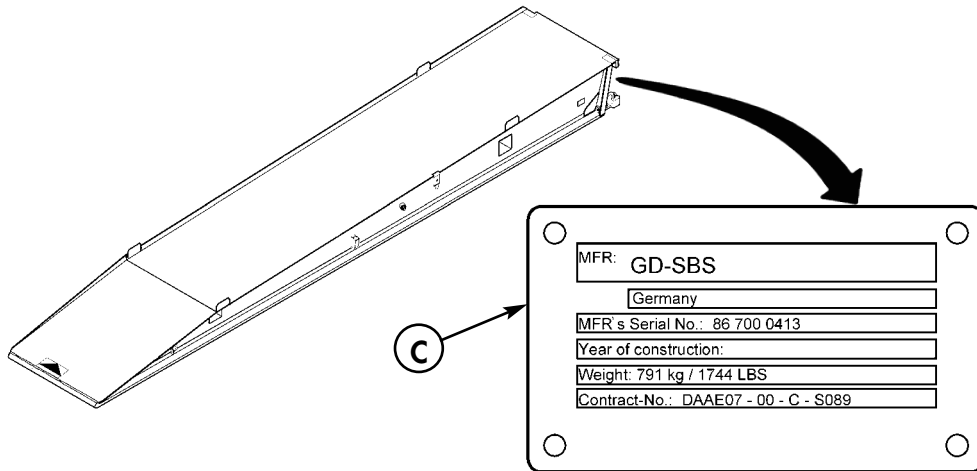


THEORY OF OPERATION AND EQUIPMENT DATA (Contd)

LOCATION AND DESCRIPTION OF DATA PLATES (Contd)

BRIDGE DATA PLATES AND DECALS (Contd)

- C **RAPIDLY EMPLACED BRIDGE (REB)** — This data plate, located on side of bridge quarter near lower coupling, is the manufacturer’s identification data plate for each bridge quarter.



CHAPTER 2
TROUBLESHOOTING PROCEDURES
RAPIDLY EMPLACED BRIDGE (REB)

Introduction to Troubleshooting	0004 00-1
Mechanical System Troubleshooting Symptom Index	0005 00-1
Mechanical System Troubleshooting	0006 00-1
Electrical System Troubleshooting Symptom Index	0007 00-1
Electrical System Troubleshooting	0008 00-1
Hydraulic System Troubleshooting Symptom Index	0009 00-1
Hydraulic System Troubleshooting	0010 00-1
Launch Power Unit (LPU) Troubleshooting Symptom Index	0011 00-1
Launch Power Unit (LPU) Troubleshooting	0012 00-1

TROUBLESHOOTING PROCEDURES

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

INTRODUCTION TO TROUBLESHOOTING

GENERAL

WARNING

Operation of a deadlined REB 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, electrical, hydraulic system, and Launch Power Unit (LPU) engine malfunctions of the REB.
- b. The symptom indexes have their own work package numbers and are 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 check the operation of a component. Then, in the order of probability, substeps instruct the user to determine if a condition exists through a check, inspection, or test. Each step or substep is followed by the corrective action required to solve the malfunction.
- d. Prior to performing any troubleshooting procedure, observe the following recommendations:
 - (1) Check the Equipment Inspection and Maintenance Worksheet, DA Form 2404, 5988-E, and Maintenance Request Form, DA Form 5504, to find out why the equipment has been deadlined. Note the operator's written description of the problem and, whenever possible, ask the operator about the problem. This can save time and effort in diagnosing the malfunction.
 - (2) It is best not to assume the operator's diagnosis is correct, even if it sounds accurate. Always perform the appropriate troubleshooting procedure(s) to verify the cause of the problem. Performing a corrective action without proof of a fault wastes time and increases the maintainability of the equipment.
 - (3) Always first isolate the system where the malfunction occurs, then locate the component and perform corrective action in the order listed.
 - (4) Use approved mechanical, electrical, hydraulic system, and LPU engine repair practices provided in the technical manuals, field manuals, and technical bulletins listed in WP 0128 00 of this manual.
 - (5) Use the approved special tools and test equipment to determine the known parameters for isolating a fault.
 - (6) Fill out and attach an Exchange Tag, DA Form 2402, for any component that will be exchanged as a core and turned in for repair or rebuilding at the source or national maintenance level.
- e. This chapter lists the most common malfunctions that may occur. When a malfunction occurs that is not listed in the Mechanical System Troubleshooting Symptom Index, WP 0005 00, Electrical System Troubleshooting Symptom Index, WP 0007 00, Hydraulic System Troubleshooting Symptom Index, WP 0009 00, or LPU Engine Troubleshooting Symptom Index, WP 0011 00, notify source or national maintenance.

INTRODUCTION TO TROUBLESHOOTING (Contd)

f. Using RCU to troubleshoot Stored Program System (SPS) Electrical System.

(1) INTRODUCTION

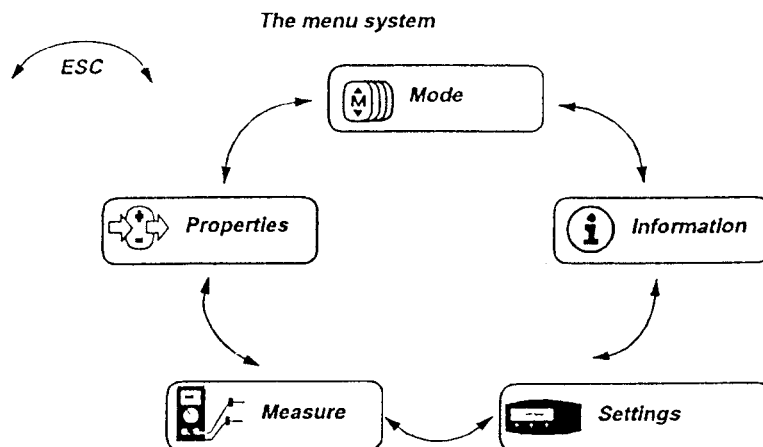
- (a) These instructions are primarily intended for use during troubleshooting the electrical system.
- (b) The user of these instructions should have basic knowledge in handling of electronic equipment.
- (c) The software settings in this unit can be changed by the manufacturer. Contact TACOM Logistics Representative (LAR) if there is anything you are unsure about or if you have any questions regarding this unit, its handling, or maintenance.

(2) DESCRIPTION OF MENU SYSTEM

- (a) The character window, general information. This section describes how to utilize the display by using the menu system.
- (b) In the display's menu system, you get access to information and settings concerning the IQAN converters.
- (c) When you turn on the display, the date and time are shown in the character window. This is the operational position. This operational position is normally shown during operation.
- (d) In the menu system you can change driver mode, display settings, channel properties, read the system information, and measure on channels.
- (e) The different menus are characterized by their own icon which is shown before the menu name.

(3) BROWSING IN THE MENU SYSTEM

- (a) When in operational position, use the ESC button to go to the menu system and also when returning to the operational position. (To return to operational position, you must be on the first menu level.)
- (b) To browse between the different menus, use the up/dn-button to the right of the character window.
- (c) In the submenus, use the ESC button to return to the previous menu level.



INTRODUCTION TO TROUBLESHOOTING (Contd)

(4) OPERATIONAL POSITION

In the operational position, date and time are shown. This is the mode that is shown during normal operation.

(5) MENU SYSTEM

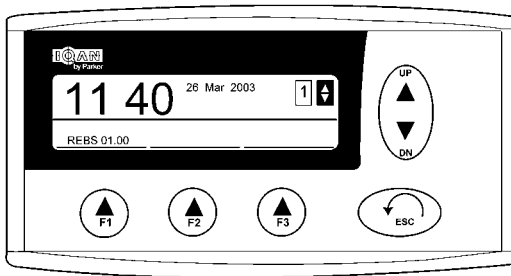
- (a) When you read about the different menus, it is recommended also to look at the menu overview.
- (b) The system consists of five menus and their submenus.

Menus
Mode
Information
Settings
Measure
Properties

NOTE

Function button [F3] is used to change SCOPE channel to a graph display.

- (c) On the display there are three function buttons [F1], [F2], or [F3]. These are used to select different functions in the system's submenus. Above every function button, there is an informative tab for the current function.



(6) UP/DN BUTTON

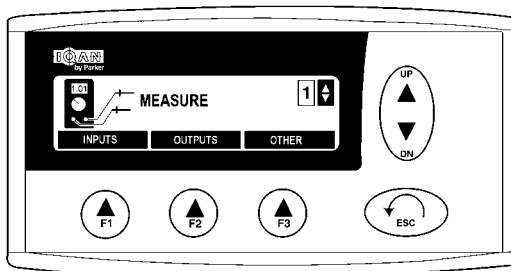
- (a) In the submenus, the UP/DN button is used to browse the list.

Indication	Description
	Browse in list

- (b) The indication is shown in the upper right corner of the character window.

(7) MEASURE

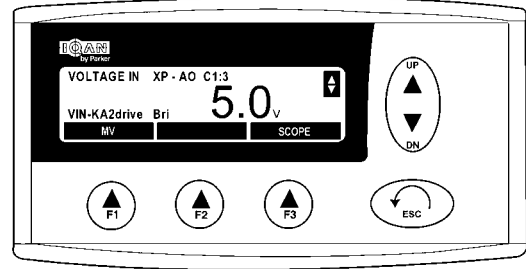
This menu contains functions for measuring on the different channels.



INTRODUCTION TO TROUBLESHOOTING (Contd)

(8) MEASURE VOLTAGE INPUT

- (a) Press INPUTS [F1] to select the function for measuring an input.
- (b) Press VOLTAGE [F1] to measure voltage input.
- (c) Browse in the list for the different voltage inputs using UP/DN. For every channel, the following is shown:

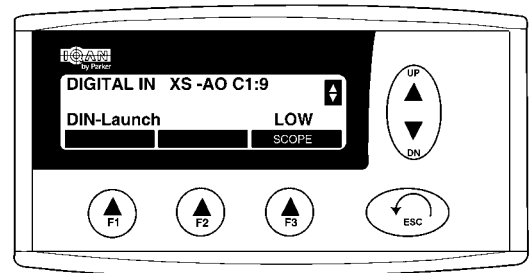


- (d) To return to the previous menu, press ESC.

(9) MEASURE DIGITAL INPUT

- (a) Press INPUTS [F1] to select the function for measuring an input.
- (b) Press DIGITAL [F2] to measure digital input.
- (c) Browse in the list for the different digital inputs using UP/DN. For every channel, the following is shown:

Channel type	Pin number
Channel name	Measured value



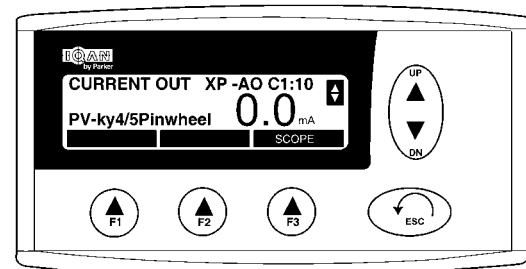
- (d) To return to the previous menu, press ESC.

(10) MEASURE CURRENT OUTPUT

- (a) Press OUTPUTS [F2] to select the function for measuring an output.
- (b) Press CURRENT [F1] to measure current output.
- (c) Browse in the list for the different current outputs using UP/DN. For every channel, the following is shown:

Channel type	Pin number
Channel name	Measured value

- (d) The +/- characters show if the output is working in a positive or negative direction.
- (e) To return to the previous menu, press ESC.

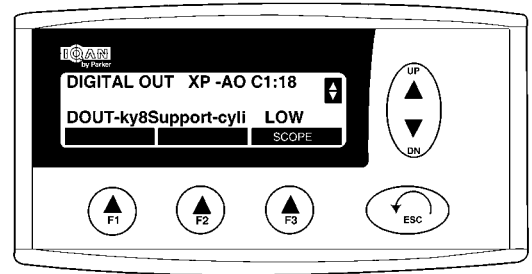


INTRODUCTION TO TROUBLESHOOTING (Contd)

(11) MEASURE DIGITAL OUTPUT

- (a) Press OUTPUTS [F2] to select the function for measuring an output.
- (b) Press DIGITAL [F2] to measure digital output.
- (c) Browse in the list for the different digital outputs using UP/DN. For every channel, the following is shown:

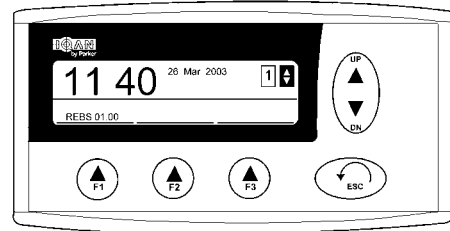
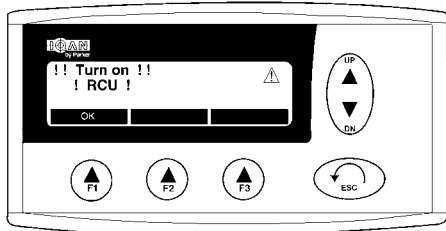
Channel type	Pin number
Channel name	Measured value



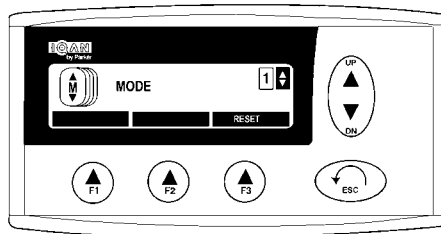
- (d) To return to the previous menu, press ESC.

g. Electrical Troubleshooting Example Using RCU

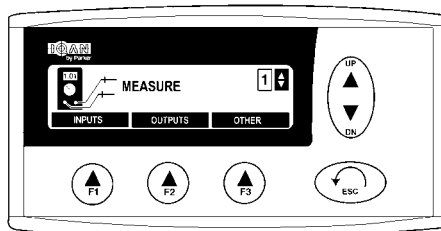
- (1) Remove RCU from stowage box and connect to receptacle on electrical control box. Refer to TM 5-5420-280-10.
- (2) Unlatch and open control valve cover to check solenoid lights.
- (3) Turn on pallet main power switch. Refer to TM 5-5420-280-10.
- (4) RCU (LCD screen) will show TURN ON RCU. Press F1 (OK).



- (5) Press ESC to change LCD screen to show MODE.

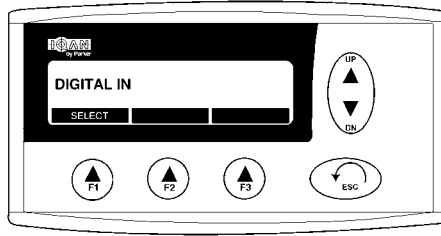


- (6) Press UP/DN button to change LCD screen to show MEASURE. Press F1 INPUTS.

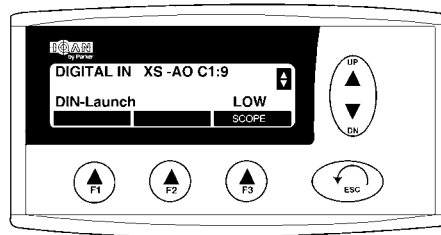


INTRODUCTION TO TROUBLESHOOTING (Contd)

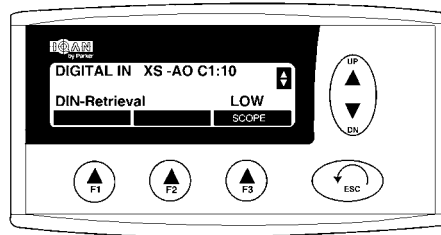
- (7) Press UP/DN button to go to DIGITAL IN.



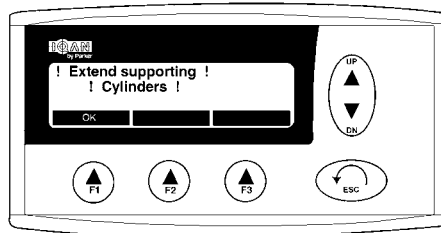
- (8) Press F1 SELECT to go to DIGITAL IN XS-AO C1:9 DIN-Launch SCOPE LOW (switch is OPEN). Press launch button on RCU and SCOPE will change to HIGH (switch is closed). If scope changes, the switch is operating.



- (9) Press UP/DN button until LCD screen shows DIGITAL IN XS-AO C1:10 DIN-Retrieval SCOPE LOW. Press retrieval button on RCU and scope will change to HIGH if switch is operating.

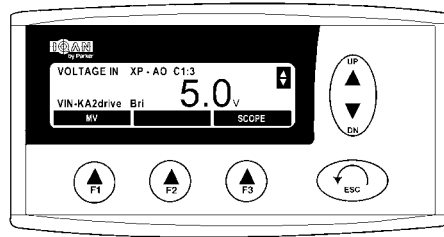


- (10) To check if control valve solenoids have voltage, press ESC button until LCD screen is back to starting point. Press launch button on RCU until LCD screen shows EXTEND THE SUPPORT CYLINDERS.



INTRODUCTION TO TROUBLESHOOTING (Contd)

- (11) Press ACTION buttons 1 or 2 (TM 5-5420-280-10) and check if light is on control valve solenoids KY1 and KY8 or KY10 are lit. If lights operate when ACTION buttons are depressed, system is operating.
- (12) If necessary, repeat steps through launch and retrieval to check all control valve solenoid lights.
- (13) If RCU SPS is checked first, then all that can be assumed is that a fault is the wiring between the lights or solenoids and the SPS.
- (14) If checking voltage in VIN-KA2 drive, scope will shown 5.0 V. This is 24 volts the system must have 5.0 V to operate.

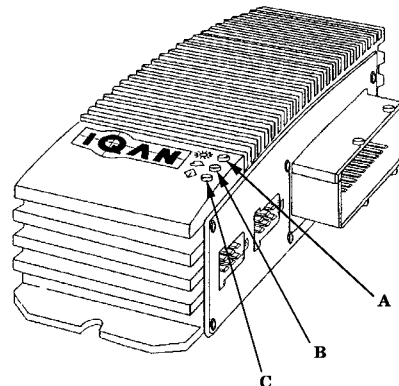
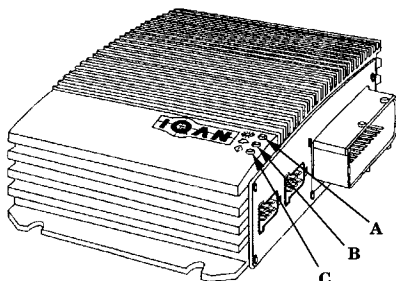


h. Check Operation of IQAN-XP and IQAN-XS

- (1) Loosen four screws and open cover on electrical control box. Refer to WP 0049 00.
- (2) Turn on RCU (TM 5-5420-280-10).
- (3) The expansion power XP module and the expansion signal XS module have three LED lights that indicate power supply to module A, heart B, and arrow C.
- (4) Explanation of LED lights and flashes.
 - a. Indication for supply voltage. LED A with a firm green light indicates supply voltage. If the LED is out, the supply voltage is missing.
 - b. Status indication for IQAN-XP and IQAN-XS. Status=correct, indicated by LED for heart B and arrow C flashes alternately with a green light. Status=some errors have been detected, indicated by LED for heart B is out and LED for arrow C flashes with a green light.

Explanation of flashes:

 - One flash arrow C indicates fault on inputs/outputs or that the supply voltage is too low or high.
 - Two flashes arrow C in a row indicates that internal temperature in the unit is too low or high.
 - Three flashes arrow C in a row indicates that the fault is related to the CAN-bus.
 - Four flashes arrow C in a row indicates an internal fault on the hardware in the unit.



INTRODUCTION TO TROUBLESHOOTING (Contd)

i. Description of Hydraulic Control Valves Operation

KF1 – Pressure switch on side of right lower support boom cylinder. When both cylinders are fully extended, the switch closes and tells the SPS the cylinders are fully extended.

KF2 – Pressure switch mounted on top of main hydraulic manifold. This switch is activated when the lower support boom cylinders are fully retracted and subsequently tells the SPS.

KY1 – Main control valve that supplies hydraulic pressure to hydraulic manifold. KY1 must be locked in depressed position before manually operating all other control valves.

NOTE

Control valves KY2 and KY3 are no longer used and have been removed.

KY4 – Operates forward pin wheel drive to deploy lower bridge half.

KY5 – Operates forward pin wheel drive to retrieve lower bridge half.

KY6 – Operates rear pin wheel drive to deploy lower bridge half.

KY7 – Operates rear pin wheel drive to retrieve lower bridge half.

KY8 – Extends driver's side supporting cylinder to lift pallet.

KY9 – Retracts driver's side supporting cylinder to lower pallet.

KY10 – Extends passenger side supporting cylinder to lift pallet.

KY11 – Retracts passenger side supporting cylinder to lower pallet.

KY12 – Operates four transverse handling unit expanding cylinders to retract bridge quarters to operating width.

KY13 – Operates four transverse handling unit expanding cylinders to extend bridge quarters to operating width.

KY14 – Raises secondary boom.

KY15 – Lowers secondary boom.

KY16 – Lowers lower support boom.

KY17 – Extends lower support boom.

KY18 – Operates swivel drive to lower launch boom.

KY19 – Operates swivel drive to raise launch boom.

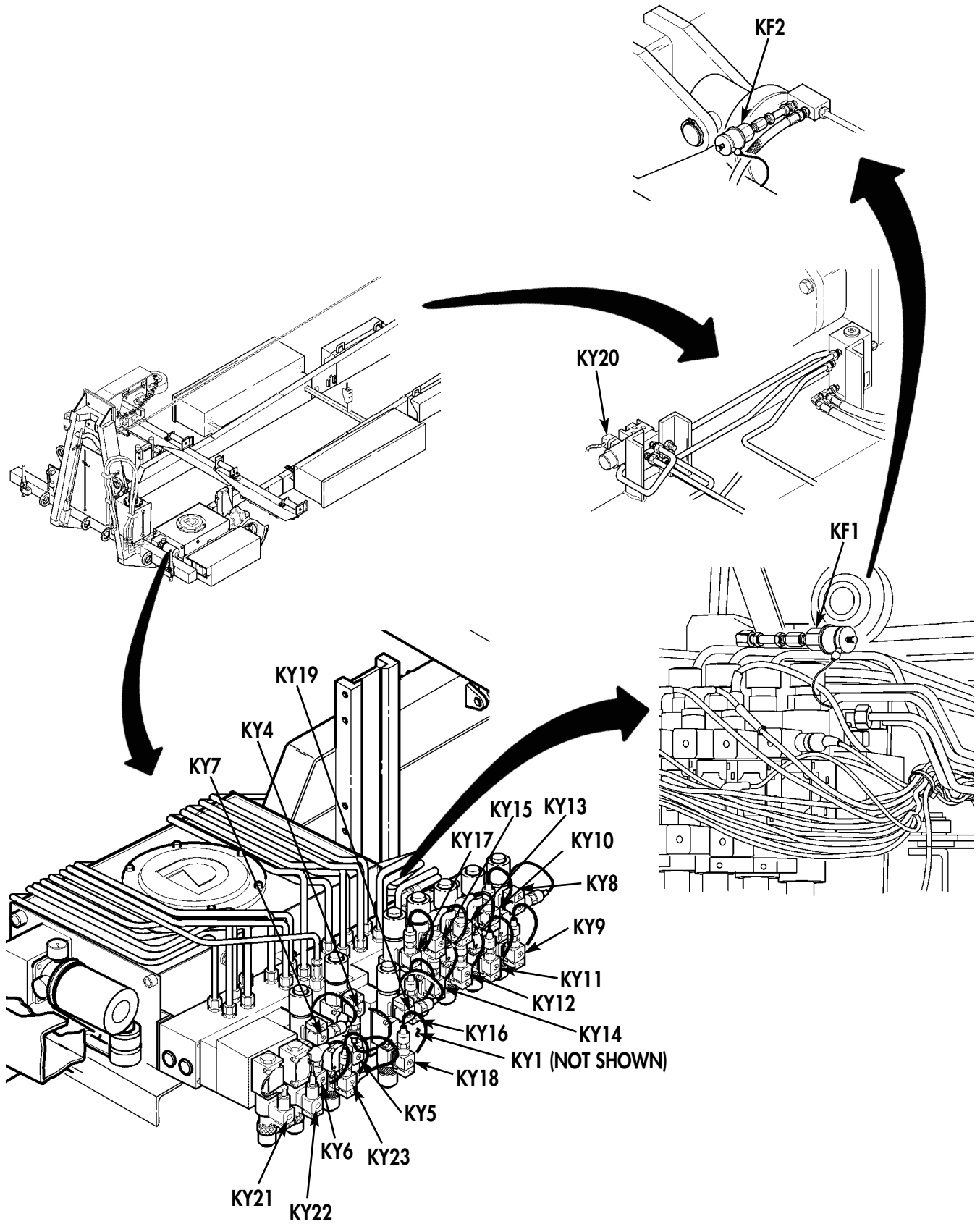
KY20 – Operates lower support boom in conjunction with KY17 to increase flow rate of hydraulic fluid.

KY21 – Provides high pressure to winch motor to increase lifting capacity for play-in and pay-out of wire rope as controlled by remote control unit (RCU) or winch emergency switch. Manually depressing KY21 alone will not play-in or pay-out wire rope.

KY22 – Provides low pressure to winch motor for play-in and pay-out of wire rope as controlled by RCU or winch emergency switch. Manually depressing KY22 alone will not play-in or pay-out wire rope.

KY23 – Operates stop cylinder to hold bridge in place during coupling.

INTRODUCTION TO TROUBLESHOOTING (Contd)



INTRODUCTION TO TROUBLESHOOTING (Contd)

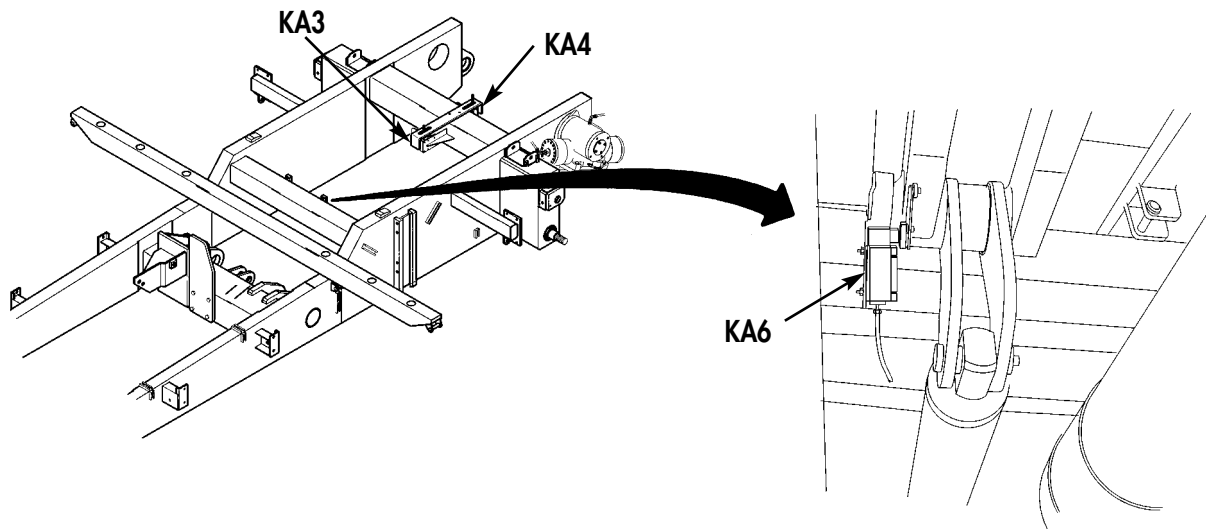
j. Description of Limit Switches Operation

- KA1** – During launch, stops lower bridge half when deploying toward rear of pallet, and during retrieval, stops lower bridge half.
- KA2** – During launch, switches forward pin wheel drive to rear pin wheel drive, and during retrieval, switches rear pin wheel drive to forward pin wheel drive.
- KA3** – During retrieval, stops lower bridge half at precoupling position before raising secondary boom, and during retrieval, stops bridge half before lowering secondary boom.
- KA4** – During launch, stops lower bridge at coupling position. During retrieval, KA4 and KA3 work together to stop bridge, activate launch boom to raise bridge half to prestress upper coupling, which is then stopped by potentiometer, and stop bridge when driven toward pallet A-frame.
- KA5** – During launch and retrieval, stops upper bridge half in up position, and stops winch when lifting upper bridge half to up position.
- KA6** – During launch, stops secondary boom and when secondary boom is fully lowered it activates launch boom to go up. During retrieval, stops secondary boom when raised, and activates launch boom to lower.

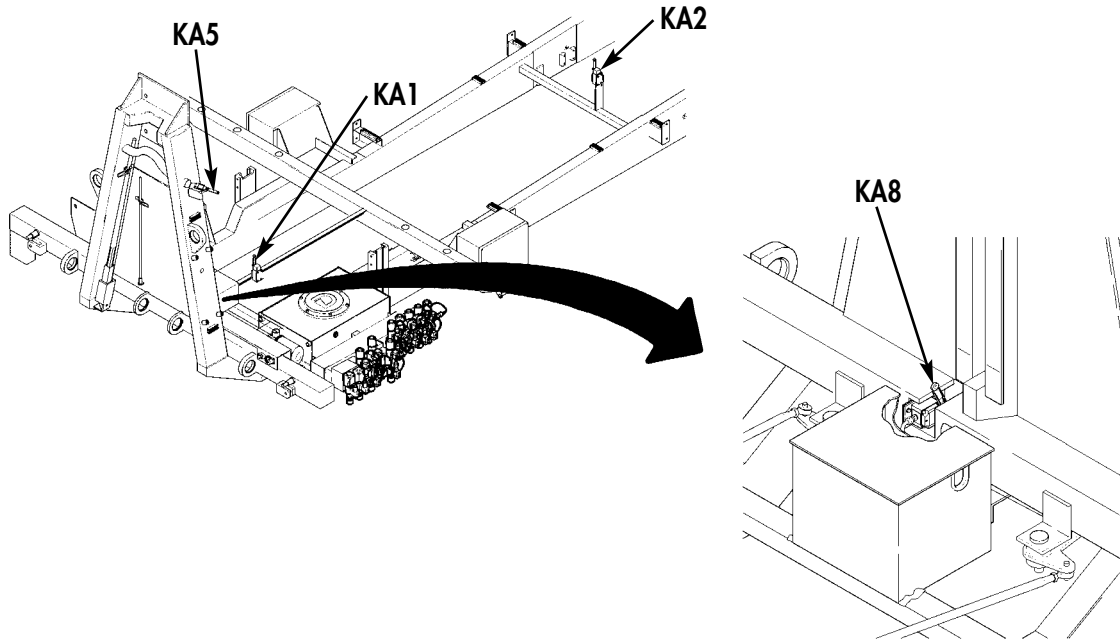
NOTE

Limit switch KA7 is no longer used and has been removed.

- KA8** – During retrieval, stops bridge at base of A-frame when driving (retracting), activates winch, then stops winch.



INTRODUCTION TO TROUBLESHOOTING (Contd)

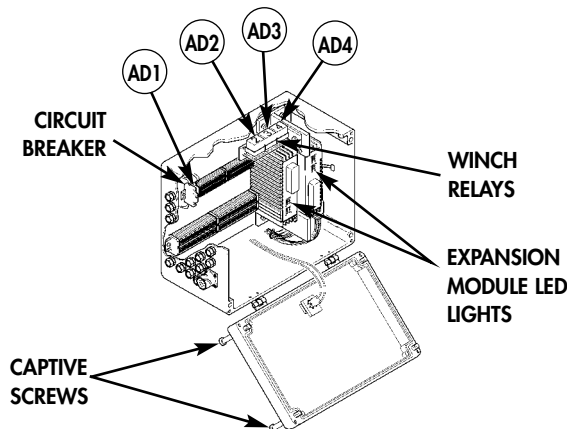


k. – Description of Circuit Breaker, Winch Relays, and Expansion Module LED Lights.

CIRCUIT BREAKER — There is a circuit breaker inside the electrical system box on left-hand side operated by a self-contained switch. To access circuit breaker, open electrical system box by loosening four captive screws and fold front door down.

WINCH RELAYS — There are three electrical relays, AD2, AD3, and AD4 located above the expansion modules. Winch relay AD1 is light blue in color and is mounted to the right of circuit breaker.

EXPANSION MODULE LED LIGHTS — Power to the pallet electrical system can be verified by observing if green LED A is lit on expansion modules IQAN-XP and IQAN-XS. To access expansion modules, open electrical system box by loosening four captive screws and fold front door down.



END OF WORK PACKAGE

TROUBLESHOOTING PROCEDURES

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

MECHANICAL SYSTEM TROUBLESHOOTING SYMPTOM INDEX

MALFUNCTION NO.	MALFUNCTION	TROUBLESHOOTING WP-PAGE
BRIDGE		
1.	Upper coupling will not lock	0006 00-1
2.	Upper coupling will not unlock	0006 00-1
3.	Lower coupling will not engage receptacle	0006 00-1
4.	Slide lock mechanism will not lock	0006 00-2
5.	Slide lock mechanism will not unlock	0006 00-2
6.	Bridge support wheels will not rotate	0006 00-2
7.	Fastening rods will not secure bridge to pallet	0006 00-2
PALLET		
1.	Supporting cylinder winch will not lower	0006 00-3
2.	Supporting cylinder winch will not lift	0006 00-3
3.	Steering wheels will not turn	0006 00-3
4.	Pallet wheel hub will not rotate	0006 00-3
5.	Transport tube roller will not rotate	0006 00-4
6.	Bridge support rollers will not rotate	0006 00-4
7.	Secondary boom roller will not rotate	0006 00-4
8.	Upper roller block roller will not rotate	0006 00-4
9.	Lower support roller will not rotate	0006 00-4
10.	Launch boom rope guide roller will not rotate	0006 00-5
11.	Winch guide rollers will not rotate	0006 00-5
12.	Winch guide pulleys will not rotate	0006 00-5
13.	Winch inlet cover guide rollers will not rotate	0006 00-5
14.	Winch force transmitter will not move	0006 00-5
15.	Winch axle drum unit will not rotate	0006 00-6
16.	Winch hook clip will not lock	0006 00-6
17.	Bridge halves not aligned to center of pallet	0006 00-6

TROUBLESHOOTING PROCEDURES

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

MECHANICAL SYSTEM TROUBLESHOOTING

NOTE

Refer to the general instructions in Introduction to Troubleshooting, WP 0004 00, prior to performing mechanical system troubleshooting.

Bridge Mechanical System Troubleshooting.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

1. UPPER COUPLING WILL NOT LOCK

- Step 1. Check upper coupling for obstruction or jamming caused by rocks or debris.
Clean obstruction or debris from upper coupling. Refer to TM 5-5420-280-10.
- Step 2. Check for broken, bent, or missing spring.
If spring is broken, bent, or missing, replace spring. Refer to WP 0024 00.
- Step 3. Check upper coupling lock lever plunger for full engagement.
a. Clean and grease plunger and lock mechanism. Refer to WP 0016 00.
b. Check if plunger pin is bent. Replace if bent or damaged Refer to WP 0024 00.
- Step 4. Check lock mechanism for damage or proper adjustment.
a. If damaged, replace lock mechanism. Refer to WP 0024 00.
b. Adjust lock mechanism. Refer to WP 0024 00.

END OF TESTING

2. UPPER COUPLING WILL NOT UNLOCK

- Step 1. Check lock mechanism for damage or proper adjustment.
a. If damaged, replace lock mechanism. Refer to WP 0024 00.
b. Adjust lock mechanism. Refer to WP 0024 00.
- Step 2. Check trip lock levers for broken, missing springs, or proper adjustment.
a. If damaged or missing, replace spring. Refer to WP 0024 00.
b. Adjust trip lock lever. Refer to WP 0024 00.
c. Clean and grease lock lever and plunger. Refer to WP 0016 00.

END OF TESTING

3. LOWER COUPLING WILL NOT ENGAGE RECEPTACLE

- Step 1. Check for possible misalignment of bridge halves.
Align bridge halves. Refer to TM 5-5420-280-10.
- Step 2. Check lower coupling, receptacle, and lock levers for obstruction or jamming caused by rocks or debris.
Clean obstruction or debris from lower coupling, receptacle, and lock levers. Refer to TM 5-5420-280-10.
- Step 3. Check for broken or missing coupling, receptacle, or lock levers.
Replace broken or missing coupling, receptacle, or lock levers. Refer to WP 0022 00.

END OF TESTING

Bridge Mechanical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

4. SLIDE LOCK MECHANISM WILL NOT LOCK

- Step 1. Check if bridge quarters are fully extended.
Extend bridge quarters. Refer to TM 5-5420-280-10.
- Step 2. Check for broken or missing spring.
Replace broken or missing spring. Refer to WP 0026 00.
- Step 3. Check for broken or missing locking lever clevises.
Replace broken or missing locking lever clevises. Refer to WP 0026 00.
- Step 4. Check for bent or missing locking rods.
Replace bent or missing locking rods. Refer to WP 0026 00.

END OF TESTING

5. SLIDE LOCK MECHANISM WILL NOT UNLOCK

- Step 1. Check for broken or missing locking lever clevises.
Replace broken or missing locking lever clevises. Refer to WP 0026 00.
- Step 2. Check for bent or broken locking rods.
Replace bent or broken locking rods. Refer to WP 0026 00.

END OF TESTING

6. BRIDGE SUPPORT WHEELS WILL NOT ROTATE

- Step 1. Check for worn or damaged bearings.
Replace worn or damaged bearings. Refer to WP 0023 00.
- Step 2. Check for missing or damaged wheel hub or tire.
Replace missing or damaged wheel hub or tire. Refer to WP 0023 00.

END OF TESTING

7. FASTENING RODS WILL NOT SECURE BRIDGE TO PALLET

- Step 1. Check for mud debris or damaged threads on fastening rod drive screw.
a. Clean mud or debris from threads on drive screw.
b. Clean and lubricate threads on drive screw or fastening rods. Refer to WP 0016 00.
- Step 2. Check for proper adjustment of fastening rods.
Adjust fastening rods. Refer to TM 5-5420-280-10.
- Step 3. Check for missing or damaged tiedown strap bracket pins.
Repair or replace missing or damaged tiedown strap brackets or pins on bridge transverse girders. Refer to WP 0019 00 or WP 0043 00.

END OF TESTING

Pallet Mechanical System Troubleshooting (Contd).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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1. SUPPORTING CYLINDER WINCH WILL NOT LOWER

- Step 1. Check that retaining pin is removed from connecting link.
Remove retaining pin from connecting link. Refer to TM 5-5420-280-10.
- Step 2. Check for binding winch strap.
Remove winch strap pin clevis and repair strap. Refer to WP 0039 00.
- Step 3. Check that clutch drive is functioning properly.
- Disassemble, clean, and check for cracked clutch disks. Do not oil clutch disks.
 - Replace winch assembly. Refer to WP 0039 00.

END OF TESTING

2. SUPPORTING CYLINDER WINCH WILL NOT LIFT

- Step 1. Check for broken winch strap.
Replace broken winch strap. Refer to WP 0039 00.
- Step 2. Check that clutch drive is functioning properly.
- Disassemble, clean, and check for cracked clutch disks. Do not oil clutch disks.
 - Replace winch assembly. Refer to WP 0039 00.

END OF TESTING

3. STEERING WHEELS WILL NOT TURN**NOTE**

Steering radius is very limited.

- Step 1. Check that both retaining pins are removed from steering levers.
Remove retaining pins from steering levers. Refer to TM 5-5420-280-10.
- Step 2. Check steering wheels for obstruction or jamming caused by rocks or debris.
Clean obstruction or debris from steering wheels. Refer to TM 5-5420-280-10.
- Step 3. Check for bent or broken tie-rod or steering links.
Replace bent or broken tie-rod or steering links. Refer to WP 0034 00.
- Step 4. Check for binding bellcranks or steering levers.
Grease bellcranks and steering levers. Refer to WP 0016 00.

END OF TESTING

4. PALLET WHEEL HUB WILL NOT ROTATE

- Step 1. Check for obstruction or jamming caused by rocks or debris between wheel and bridge pallet.
Clean obstruction or debris from between wheel and bridge pallet. Refer to TM 5-5420-280-10.
- Step 2. Check for worn or damaged wheel bearings.
Replace worn or damaged wheel bearings. Refer to WP 0037 00.

END OF TESTING

Pallet Mechanical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

5. TRANSPORT TUBE ROLLER WILL NOT ROTATE

Step 1. Check for missing or damaged roller.

Replace missing or damaged roller. Refer to WP 0041 00.

Step 2. Check for bent, broken, or loose roller pin, bushings, or brackets.

Tighten or replace damaged pin, bushings, or brackets. Refer to WP 0041 00.

END OF TESTING

6. BRIDGE SUPPORT ROLLERS WILL NOT ROTATE

Step 1. Check for missing or damaged roller.

Replace missing or damaged roller. Refer to WP 0044 00.

Step 2. Check for bent, broken, or loose roller pin, bushings, or brackets.

Tighten or replace damaged pin, bushings, or brackets. Refer to WP 0044 00.

END OF TESTING

7. SECONDARY BOOM ROLLER WILL NOT ROTATE

Step 1. Check for loose or missing hardware.

Tighten or replace loose or missing hardware. Refer to WP 0098 00.

Step 2. Check for worn or damaged bushings.

Replace worn or damaged bushings. Refer to WP 0098 00.

END OF TESTING

8. UPPER ROLLER BLOCK ROLLER WILL NOT ROTATE

Step 1. Check for binding rollers.

Grease upper roller block rollers. Refer to WP 0016 00.

Step 2. Check for obstruction or jamming caused by debris between rollers.

Clean obstruction or debris from rollers. Refer to TM 5-5420-280-10.

Step 2. Check for loose, worn, or damaged bearings.

Tighten or replace loose, worn, or damaged bearings. Refer to WP 0090 00.

END OF TESTING

9. LOWER SUPPORT ROLLER WILL NOT ROTATE

Step 1. Check for binding rollers.

Grease lower support rollers. Refer to WP 0016 00.

Step 2. Check for obstruction or jamming caused by debris between rollers.

Clean obstruction or debris from rollers. Refer to TM 5-5420-280-10.

Step 3. Check for loose, worn, or damaged bearings.

Tighten or replace loose, worn, or damaged bearings. Refer to WP 0089 00.

END OF TESTING

Pallet Mechanical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

10. LAUNCH BOOM ROPE GUIDE ROLLER WILL NOT ROTATE

- Step 1. Check for bent, broken, or loose roller pin or brackets.
Tighten or replace damaged pin or brackets. Refer to WP 0091 00.
- Step 2. Check for worn or damaged bushings or roller.
Replace worn or damaged bushings or roller. Refer to WP 0091 00.

END OF TESTING

11. WINCH GUIDE ROLLERS WILL NOT ROTATE

- Step 1. Check for obstruction or jamming caused by rocks or debris between rollers and winch wire rope.
Clean obstruction or debris from between rollers and winch wire rope. Refer to TM 5-5420-280-10.
- Step 2. Check for bent, broken, or binding rollers.
- a. Grease binding rollers. Refer to WP 0016 00.
 - b. Replace bent or broken rollers. Refer to WP 0058 00.

END OF TESTING

12. WINCH GUIDE PULLEYS WILL NOT ROTATE

- Step 1. Check for obstruction or jamming caused by rock or debris between pulleys, winch wire rope, and mounting bracket.
Clean obstruction or debris from between pulleys, winch wire rope, and mounting bracket.
Refer to TM 5-5420-280-10.
- Step 2. Check for binding pulleys.
- a. Grease pulleys and pulley pins. Refer to WP 0016 00.
 - b. Replace worn or damaged pulleys. Refer to WP 0060 00.

END OF TESTING

13. WINCH INLET COVER GUIDE ROLLERS WILL NOT ROTATE

- Step 1. Check for obstruction or jamming caused by rock or debris between rollers and winch wire rope.
Clean obstruction or debris from between rollers and winch wire rope. Refer to TM 5-5420-280-10.
- Step 2. Check for worn or damaged rollers.
Replace worn or damaged rollers. Refer to WP 0059 00.

END OF TESTING

14. WINCH FORCE TRANSMITTER WILL NOT MOVE

- Step 1. Check for obstruction or debris between winch wire rope and force transmitter.
Clean obstruction or debris from between winch wire rope and force transmitter.
- Step 2. Check for binding between winch mounting bracket and force transmitter.
- a. Grease force transmitter and transmitter holder.
 - b. Replace worn or damaged force transmitter. Refer to WP 0064 00.

END OF TESTING

Pallet Mechanical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

15. WINCH STOWAGE DRUM UNIT WILL NOT ROTATE

Step 1. Check for obstruction or jamming caused by rock or debris between rope stowage drum and winch mounting bracket.

Clean obstruction or debris from between rope stowage drum and winch mounting bracket.
Refer to TM 5-5420-280-10.

Step 2. Check for worn or damaged drum unit.

Replace worn or damaged drum unit. Refer to WP 0061 00.

END OF TESTING

16. WINCH HOOK CLIP WILL NOT LOCK

Check for broken, bent, or missing spring or pin.

Replace broken, bent, or missing spring or pin. Refer to WP 0057 00.

END OF TESTING

17. BRIDGE HALVES NOT ALIGNED TO CENTER OF PALLET

Step 1. Check alignment of launch beam on upper and lower bridge halves.

If either launch beam is not aligned with center of pallet launch boom, align them using a tanker bar.

Step 2. Check alignment of lower bridge quarters on pallet transverse handling unit carriers.

If lower bridge half quarters do not line up squarely on carriers, align them using a tanker bar.

Step 3. Check alignment of upper bridge half quarters resting on lower bridge half quarters.

If upper bridge half quarters are not centered between guides on lower bridge half quarters, align them using a tanker bar.

END OF TESTING

TROUBLESHOOTING PROCEDURES

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

ELECTRICAL SYSTEM TROUBLESHOOTING SYMPTOM INDEX

MALFUNCTION NO.	MALFUNCTION	TROUBLESHOOTING WP-PAGE
1.	RCU will not power up using Launch Power Unit (LPU) batteries . .	0008 00-1
2.	RCU will not power up using CBT	0008 00-2
3.	RCU will not operate hydraulic system using LPU or CBT batteries	0008 00-2
NOTE		
Malfunctions 4 through 26 are procedures used during bridge launching and is shown on RCU display screen steps.		
4.	RCU will not extend bridge to operating width (L2-H)	0008 00-3
5.	RCU will not retract winch wire rope (L3-A)	0008 00-3
6.	RCU will not extend supporting cylinders (L4-A+M) or (L7-A)	0008 00-4
7.	RCU will not deploy bridge half (L5-A)	0008 00-5
8.	RCU will not lower launch boom to launch position (L6-A)	0008 00-5
9.	RCU will not move lower bridge half (L8-A)	0008 00-6
10.	RCU will not raise secondary boom (L9-H)	0008 00-7
11.	RCU will not move lower bridge half into coupling position (L10-A) .	0008 00-7
12.	RCU will not lower winch wire rope (L11-H)	0008 00-8
13.	RCU will not lower launch boom to pre-coupling position (L12-A) . .	0008 00-9
14.	RCU will not deploy lifting cylinders (L14-A)	0008 00-9
15.	RCU will not lower secondary boom (L13-H)	0008 00-10
16.	RCU will not lift launch boom to coupling position (L14-A)	0008 00-10
17.	RCU will not lower secondary boom (L13-H)	0008 00-11
18.	RCU will not lock launch boom into coupling position (L14-A) and (L15-A)	0008 00-12
19.	RCU will not lower launch boom (L15-A)	0008 00-13
20.	RCU will not deploy bridge across gap (L16-H)	0008 00-13
21.	RCU will not lower far-shore end of bridge (L17-A)	0008 00-14
22.	RCU will not lower near-shore end of bridge (L18-H)	0008 00-14

ELECTRICAL SYSTEM TROUBLESHOOTING SYMPTOM INDEX (Contd)

MALFUNCTION NO.	MALFUNCTION	TROUBLESHOOTING WP-PAGE
23.	RCU will not raise launch boom to travel position (L20-H)	0008 00-15
24.	RCU will not tighten winch wire rope (L19-M+H)	0008 00-16
25.	RCU will not raise supporting cylinders (L21-H+M)	0008 00-17
26.	RCU will not retract bridge cradle to travel position (L22-H+M) . . .	0008 00-17
NOTE		
Malfunctions 27 through 48 are procedures used during bridge retrieval and is shown on RCU display screen steps.		
27.	RCU will not extend supporting cylinders (R1-M) and (R2-H)	0008 00-18
28.	RCU will not extend bridge cradle to retrieval position (R3-H)	0008 00-18
29.	RCU will not uncoil winch wire rope (R4-A+H+M)	0008 00-19
30.	RCU will not lower launch boom to retrieval position (R4-A+H+M) .	0008 00-20
31.	RCU will not raise near-shore end of bridge with winch wire rope (R5-H)	0008 00-20
32.	RCU will not raise far-shore end of bridge with launch boom (R6-A)	0008 00-21
33.	RCU will not retrieve bridge from gap (R7-H)	0008 00-22
34.	RCU will not retrieve bridge to pallet (R10-H)	0008 00-22
35.	RCU will not lift launch boom into coupling position (R9-A)	0008 00-23
36.	RCU will not lower launch boom to pre-coupling position (R9-A) . . .	0008 00-24
37.	RCU will not raise secondary boom (R10-H)	0008 00-24
38.	RCU will not lift launch boom (R11-A)	0008 00-25
39.	RCU will not winch-in wire rope (R12-A) and (R13-A)	0008 00-26
40.	RCU will not retrieve lower bridge half (R13-A)	0008 00-27
41.	RCU will not retrieve lower bridge half (R17-H)	0008 00-28
42.	RCU will not lower secondary boom (R14-H)	0008 00-28
43.	RCU will not raise launch boom to travel position (R16-A)	0008 00-29
44.	RCU will not lower winch wire rope (R18-H)	0008 00-30
45.	RCU will not lower lifting cylinders (R2-A)	0008 00-31
46.	RCU will not retrieve lower bridge half (R17-H)	0008 00-31
47.	RCU will not raise supporting cylinders (R19-H)	0008 00-32
48.	RCU will not retract bridge to travel position (R21-H)	0008 00-32

TROUBLESHOOTING PROCEDURES

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

ELECTRICAL SYSTEM TROUBLESHOOTING

NOTE

Refer to the general instructions in Introduction to Troubleshooting, WP 0004 00, prior to performing electrical system troubleshooting.

Refer to Pallet Electrical System Schematic, WP 0122 00, and Winch Electronic Box Electrical Schematic, WP 0124 00, when performing troubleshooting malfunctions.

Electrical System Troubleshooting.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. RCU WILL NOT POWER UP USING LAUNCH POWER UNIT (LPU) BATTERIES

Step 1. Check that red main power switch is turned to ON position.

Move red main power switch to ON position. Refer to TM 5-5420-280-10.

Step 2. Check that all three emergency stops are in the OUT position.

a. Disengage emergency stops. Refer to TM 5-5420-280-10.

b. Replace emergency stop if damaged. Refer to WP 0049 00 and WP 0052 00.

c. Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

d. Check circuit breaker FI for 24 volts and reset or replace as necessary . Refer to WP 0049 00 and WP 0052 00.

Step 3. Check LPU engine batteries for low volts.

Connect CBT slave cable to pallet to charge system or replace batteries as necessary. Refer to WP 0113 00.

Step 4. Check for 24 volts at end of RCU cable connector.

a. If RCU cable connector has voltage, repair or replace RCU box. Refer to WP 0050 00.

b. If RCU cable connector has no voltage perform step 5.

Step 5. Check for 24 volts at RCU receptacle on electrical box.

a. If electrical box RCU receptacle has no voltage, check and reset circuit breaker located in electrical box.

b. If electrical box RCU receptacle has voltage, repair or replace jumper cable between electrical box and RCU stowage box. Refer to WP 0051 00.

c. If electrical box RCU receptacle has no voltage, repair or replace electrical connector. Refer to WP 0051 00 or wires. Refer to Electrical System Schematic. Refer to WP 0122 00 for wiring.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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NOTE

Refer to launching and retrieval procedures in TM 5-5420-280-10 for operation of RCU.

Check that hydraulic system has pressure before performing electrical troubleshooting. Refer to Hydraulic System Troubleshooting (WP 0010 00).

Refer to Electrical System Schematic (WP 0122 00) when performing troubleshooting malfunctions.

2. RCU WILL NOT POWER UP USING CBT

- Step 1. Check that power cable is properly connected between CBT and bridge pallet.
If power cable is not properly connected, connect power cable between CBT and bridge pallet. Refer to TM 5-5420-280-10.
- Step 2. Check that all three emergency stops are in the OUT position.
- Disengage emergency stops. Refer to TM 5-5420-280-10.
 - Replace emergency stop if damaged. Refer to WP 0049 00 and WP 0052 00.
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
 - Check circuit breaker FI for 24 volts and reset or replace as necessary. Refer to WP 0049 00 and WP 0052 00.
- Step 3. Check for 24 volts at CBT power cable source.
Repair or replace CBT power cable or connection. Refer to TM 5-5420-234-14&P.
- Step 4. Check for 24 volts at end of RCU cable connector.
- If RCU cable connector has voltage, repair or replace RCU box. Refer to WP 0050 00.
 - If RCU cable connector has no voltage, perform step 5.
- Step 5. Check for 24 volts at RCU receptacle on electrical box.
- If electrical box RCU receptacle has voltage, repair or replace jumper cable between electrical box and RCU stowage box. Refer to WP 0051 00.
 - If electrical box RCU receptacle has no voltage, repair or replace electrical connector (WP 0051 00) or wires. Refer to Electrical System Schematic WP 0122 00 for wiring.

END OF TESTING

3. RCU WILL NOT OPERATE HYDRAULIC SYSTEM USING LPU OR CBT BATTERIES

- Step 1. Check that hydraulic system has pressure.
Refer to malfunctions 1 or 2 in Hydraulic System Troubleshooting (WP 0010 00).

NOTE

KY1 is the main pressure hydraulic control valve solenoid and it must operate with all other control valve solenoids to perform an operation.

- Step 2. Check that KY1 hydraulic control valve solenoid has 24 volts or the LED light is lit.
- If light is lit and system will not operate, replace solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If light is out, check for 24 volts at control valve solenoid connector.
 - If connector has no voltage, check wire at KL-1 buss bar pin 1 for KY1 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) repair or replace wires (WP 0053 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
 - Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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4. RCU WILL NOT EXTEND BRIDGE TO OPERATING WIDTH (L2-H)

Step 1. Check that all four fastening rods have been removed.

Remove fastening rods. Refer to TM 5-5420-280-10.

Step 2. Check that KY1 and KY13 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

a. If both lights are lit on control valve solenoids. Refer to malfunction 4 in Hydraulic System Troubleshooting (WP 0010 00).

b. Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 3. Check to see if only one of the control valve solenoid LED lights is lit.

a. If only one light is lit, check for 24 volts at control valve solenoid without a light.

b. If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.

c. If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid and KL-1 buss bar pin 13 for KY13 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).

d. Check wires between KL-1 buss bar pin 1 and 13 and IQAN-XS connector pins 20 and 21. Replace wires if damaged WP 0053 00.

END OF TESTING

5. RCU WILL NOT RETRACT WINCH WIRE ROPE (L3-A)

Step 1. Check if winch electrical harness, control cable, or power supply cable are loose or damaged.

If loose or damaged, connect or replace winch electrical harness, control cable, or power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00 and Winch Electronic Box Schematic WP 0124 00.

Step 2. Check if power supply cable is supplying power to winch electronic box.

a. If power supply cable has no power, check if fuse is blown. Replace 8 Amp fuse.

b. If fuse is good, repair or replace power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00 and Winch Electronic Box Schematic WP 0124 00.

c. Check for voltage at winch relays AD2, AD3, and AD4.

Step 3. Check if rope loop sensor light is lit when action button 1 is depressed.

a. If light is not lit, check for loose connector on rope-loop sensor.

b. If light is lit, check if rope loop sensor is out of adjustment or damaged and adjust or replace rope loop sensor. Refer to WP 0064 00.

Step 4. Check if winch system has hydraulic pressure to winch control block, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).

Step 5. Check that KY1, and KY21 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Limit switch KA5 stops winch cable when upper bridge half is lifted to its up position.

a. If all lights are lit on control valve solenoids, check limit switch KA5 to see if damaged or out of adjustment. Adjust or replace limit switch KA5. Refer to WP 0056 00.

b. Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

c. If limit switch KA5 is operating and control valve solenoid lights are lit, refer to malfunction 5 Hydraulic System Troubleshooting (WP 0010 00).

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

5. RCU WILL NOT RETRACT WINCH WIRE ROPE (L3-A) (Contd)

- Step 6. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve (WP 0075 00).
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 21 for KY21 control valve solenoid, and KL-1 buss bar pin 29 for KA5 limit switch. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wires between buss bar KL-1 pins 1 and 21 on IQAN-XS connector pins 20 and 36 and buss bar KL-1 pin 3 and IQAN-XP connector pin 37. Replace wires if damaged (WP 0053 00).
 - Check wires between KL-1 buss bar pin 29 and IQAN-XP connector pin 17. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

6. RCU WILL NOT EXTEND SUPPORTING CYLINDERS (L4-A+M) OR (L7-A)**NOTE**

KY1 and KY8 driver's side (left) control valve solenoids extend left side-supporting cylinder, and KY1 and KY10 passenger's side (right) control valve solenoids extend the right side-supporting cylinder.

- Step 1. Check that KY1 and either KY8 left or KY10 right hydraulic control valve solenoid LED lights are lit when action button 1 or 2 is depressed.
- If both lights are lit on control valve solenoids. Refer to malfunction 3 in Hydraulic System Troubleshooting, WP 0010 00.
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 2. Check to see if one or more control valve solenoid LED lights are lit.
- If only one light is lit, check for 24 volts at control valve solenoid without a light.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 8 for KY8 control valve solenoid, and KL-1 buss bar pin 10 for KY10 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wires between KL-1 buss bar pin 1, pin 8, or pin 10 and IQAN-XS connector pin 20, IQAN-XP connector pins 18 or 20. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

7. RCU WILL NOT DEPLOY BRIDGE HALF (L5-A)

Step 1. Check that KY1 and KY4 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Limit switch KA1 stops lower bridge half when driving out during first launch step.

- If both lights are lit on control valve solenoids, check limit switch KA1 to see if damaged or out of adjustment. Adjust or replace limit switch KA1. Refer to WP 0056 00.
- If limit switch KA1 is operating and control valve solenoid lights are lit, refer to malfunction 10 in Hydraulic System Troubleshooting (WP 0010 00).
- Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.

- If lights are out, check for 24 volts at control valve solenoid.
- If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 4 for KY4 control valve solenoid, and KL-1 buss bar pin 25 for KA1 limit switch. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
- Check wires between buss bar pins 3 and 25 and IQAN-XP connector pins 37 and 2. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

8. RCU WILL NOT LOWER LAUNCH BOOM TO LAUNCH POSITION (L6-A)

Step 1. Check that KY1 and KY18 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the launching procedures.

- If both lights are lit on control valve solenoids, check potentiometer JR2 position 2 to see if damaged or out of adjustment. Adjust or replace potentiometer JR2. Refer to WP 0093 00.
- If potentiometer JR2 is operating and control valve solenoid lights are lit, refer to malfunction 7 in Hydraulic System Troubleshooting (WP 0010 00).
- Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

8. RCU WILL NOT LOWER LAUNCH BOOM TO LAUNCH POSITION (L6-A) (Contd)

- Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 18 for KY18 control valve solenoid, and KL-1 buss bar pins 34, 35, and 48 for potentiometer JR2. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00) or adjust potentiometer JR2 (WP 0093 00).
 - Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
 - Check wires between KL-1 buss bar pins 18, 34, 35, and 48 and IQAN-XP connector pins 22, 15, 17, and 1. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

9. RCU WILL NOT MOVE LOWER BRIDGE HALF (L8-A)

- Step 1. Check that KY1, KY4, and KY23 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Limit switch KA2 switches front pin wheel drive to rear pin wheel drive as lower bridge half moves to rear.

- If all lights are lit on control valve solenoids, check limit switch KA2 to see if damaged or out of adjustment. Adjust or replace limit switch KA2. Refer to WP 0056 00.
 - If limit switch KA2 is operating and control valve solenoid LED light is lit, refer to malfunction 6 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 2. Check to see if one or more of the control valve solenoid LED lights are out when action button 1 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 4 for KY4 control valve solenoid, KL-1 buss bar pin 23 for KY23 control valve solenoid, and KL-1 buss bar pin 26 for limit switch KA2. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
 - Check wires between KL-1 buss bar pins 26, 23, and 27 and IQAN-XP connector pins 3, 26, and 24. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

10. RCU WILL NOT RAISE SECONDARY BOOM (L9-H)

- Step 1. Check that KY1 and KY14 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.
- If both lights are lit on control valve solenoids, refer to malfunction 11 Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 2. Check to see if only one of the control valve solenoid LED lights is lit.
- If only one light is lit, check for 24 volts at control valve solenoid with light off.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid and KL-1 buss bar pin 14 for KY14 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
 - Check wire between KL-1 buss bar pin 14 and IQAN-XP connector pin 32. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

11. RCU WILL NOT MOVE LOWER BRIDGE HALF INTO COUPLING POSITION (L10-A)

- Step 1. Check that KY1 and KY6 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Limit switch KA4 stops lower bridge half at coupling position.

- If all lights are lit on control valve solenoids, check limit switch KA4 to see if damaged or out of adjustment. Adjust or replace limit switch KA4. Refer to WP 0056 00.
 - If limit switch KA4 is operating and control valve solenoid lights are lit, refer to malfunction 12 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.
- If light is out, check for 24 volts at control valve solenoids.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 6 for KY6 control valve solenoid, and KL-1 buss bar pin 28 for KA4 limit switch. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
 - Check wires between KL-1 buss bar pins 6 and 28 and IQAN-XP connector pins 25 and 5. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

12. RCU WILL NOT LOWER WINCH WIRE ROPE (L11-H)

- Step 1. Check if winch electrical harness, control cable, or power supply cable are loose or damaged.
If loose or damaged, connect or replace winch electrical harness, control cable, or power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00, and Winch Electronic Box Schematic WP 0124 00.
- Step 2. Check if power supply cable is supplying power to winch electronic box.
- If power supply cable has no power, check if fuse is blown. Replace 8 Amp fuse.
 - If fuse is good, repair or replace power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00, and Winch Electronic Box Schematic WP 0124 00.
- Step 3. Check if rope loop sensor light is lit when action button 1 is depressed.
- If light is not lit, check for loose connector on rope-loop sensor.
 - If light is lit, check if rope loop sensor is out of adjustment or damaged and adjust or replace rope loop sensor. Refer to WP 0064 00.
- Step 4. Check if winch system has hydraulic pressure to winch control block, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).
- Step 5. Check that KY1 and KY21 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.
- If all lights are lit on control valve solenoids, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 6. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wire at KL-1 buss bar pin 1 for KY1 control valve solenoid and KL-1 buss bar pin 21 for KY21 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wires between KL-1 buss bar pins 1 and 21 and IQAN-XS connector pins 20 and 36. Replace wires if damaged. Refer to WP 0053 00.
 - Check wire between KL-1 buss bar pin 2 and IQAN-XP connector pin 23. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

13. RCU WILL NOT LOWER LAUNCH BOOM TO PRE-COUPPLING POSITION (L12-A)

Step 1. Check that KY1 and KY16 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the launching procedures.

- If both lights are lit on control valve solenoids, check potentiometer JR2 position 4 to see if damaged or out of adjustment. Adjust or replace potentiometer JR2. Refer to WP 0093 00.
- If potentiometer JR2 is operating and control valve solenoid lights are lit, refer to malfunction 13 in Hydraulic System Troubleshooting (WP 0010 00).
- Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.

- If light is out, check for 24 volts at control valve solenoid.
- If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 16 for KY16 control valve solenoid, and KL-1 buss bar pins 34, 35, and 48 for JR2 potentiometer. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
- Check wire between KL-1 buss bar pin 15 and IQAN-XP connector pin 33. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

14. RCU WILL NOT DEPLOY LIFTING CYLINDERS (L14-A)

Step 1. Check that KY1, KY17, and KY20 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

- If all lights are lit on control valve solenoids, refer to malfunction 9 in Hydraulic System Troubleshooting (WP 0010 00).
- Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if one or more of the control valve solenoid LED lights are out.

- If only one or two lights are lit, check for 24 volts at control valve solenoids with light off.
- If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 17 for KY17 control valve solenoid, and KL-1 buss bar pin 20 for KY20 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
- Check wires between KL-1 buss bar pins 17 and 20 and IQAN-XP connector pins 34 and 40. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

15. RCU WILL NOT LOWER SECONDARY BOOM (L13-H)

Step 1. Check that KY1 and KY15 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Limit switch KA6 stops secondary boom and once lowered, actuates launch boom to go up.

- If both lights are lit on control valve solenoids, check limit switch KA6 to see if damaged or out of adjustment. Adjust or replace limit switch KA6. Refer to WP 0056 00.
- If limit switch KA6 is operating and control valve solenoid lights are lit, refer to malfunction 11 in Hydraulic System Troubleshooting (WP 0010 00).
- Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if only one of the lights is lit when action button 1 is depressed.

- If light is out, check for 24 volts at control valve solenoid.
- If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 15 for KY15 for control valve solenoid, and KL-1 buss bar pin 30 for KA6 limit switch. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- Check wires between KL-1 buss bar pins 1 and 30 and IQAN-XS connector pins 20 and 22. Replace wires if damaged. Refer to WP 0053 00.
- Check wire between KL-1 buss bar pin 15 and IQAN-XP connector pin 33. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

16. RCU WILL NOT LIFT LAUNCH BOOM TO COUPLING POSITION (L14-A)

Step 1. Check that KY1 and KY17 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the launching procedures.

- If both lights are lit on control valve solenoids, check potentiometer JR2 position 7 to see if damaged or out of adjustment. Adjust or replace potentiometer JR2. Refer to WP 0093 00.
- If potentiometer JR2 is operating and control valve solenoid lights are lit, refer to malfunction 7 in Hydraulic System Troubleshooting (WP 0010 00).
- Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.

- If light is out, check for 24 volts at control valve solenoid.
- If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.

Electrical System Troubleshooting (Contd).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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16. RCU WILL NOT LIFT LAUNCH BOOM TO COUPLING POSITION (L14-A) (Contd)

- c. If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 17 for KY17 control valve solenoid, and KL-1 buss bar pins 34, 35, and 48 for potentiometer JR2. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00) or adjust potentiometer (WP 0093 00).
- d. Check wires between KL-1 buss bar pins 1, 17, 34, 35, and 48 and IQAN-XP connector pins 20, 34, 15, 17, and 1. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

17. RCU WILL NOT LOWER SECONDARY BOOM (L13-H)

Step 1. Check that KY1 and KY15 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Limit switch KA 7 stops secondary boom in bridge coupling position.

- a. If both lights are lit on control valve solenoids, check limit switch KA7 to see if damaged or out of adjustment. Adjust or replace limit switch KA7. Refer to WP 0056 00.
 - b. If limit switch KA7 is operating and control valve solenoid lights are lit, refer to malfunction 11 Hydraulic System Troubleshooting. Refer to WP 0010 00.
 - c. Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 2. Check to see if one or no lights are lit when action button 1 is depressed.
- a. If light is out, check for 24 volts at control valve solenoid.
 - b. If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - c. If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 15 for KY15 control valve solenoid, and KL-1 pin 31 for KA7 limit switch. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - d. Check wire between KL-1 buss bar pins 1 and 31 and IQAN-XS connector pins 20 and 24. Replace wires if damaged. Refer to WP 0053 00.
 - e. Check wire between KL-1 buss bar pin 15 and IQAN-XP connector pin 33. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

18. RCU WILL NOT LOCK LAUNCH BOOM INTO COUPLING POSITION (L14-A) AND (L15-A)

Step 1. Check that KY1, KY17, and KY23 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the launching procedures.

- a. If all lights are lit on control valve solenoids, check potentiometer JR2 position 3 to see if damaged or out of adjustment. Adjust or replace potentiometer JR2. Refer to WP 0093 00.
- b. If potentiometer JR2 is operating and control valve solenoid lights are lit, refer to malfunction 7, Hydraulic System Troubleshooting (WP 0010 00).
- c. Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if only one or no lights are lit when action button 1 is depressed.

- a. If light is out, check for 24 volts at control valve solenoid.
- b. If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- c. If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 17 for KY17 control valve solenoid, KL-1 buss bar pin 23 for KY23 control valve solenoid, and KL-1 buss bar pins 34, 35, and 48 for JR2 potentiometer. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00) or adjust potentiometer (WP 0093 00).
- d. Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
- e. Check wires between KL-1 buss bar pins 17, 23, 34, 35, and 48 and IQAN-XP connector pins 34, 27, 15, 17, and 1. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

19. RCU WILL NOT LOWER LAUNCH BOOM (L15-A)

Step 1. Check that KY1 and KY16 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the launching procedures.

- a. If both lights are lit on control valve solenoids, check potentiometer JR2 position 2 to see if damaged or out of adjustment. Adjust or replace potentiometer JR2. Refer to WP 0093 00.
- b. If potentiometer JR2 is operating and control valve solenoid lights are lit, refer to malfunction 7 in Hydraulic System Troubleshooting (WP 0010 00).
- c. Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.

- a. If light is out, check for 24 volts at control valve solenoid.
- b. If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- c. If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 16 for KY16 control valve solenoid, and KL-1 buss bar pins 34, 35, and 48 for JR2 potentiometer. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00) or adjust potentiometer (WP 0093 00).
- d. Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
- e. Check wires between KL-1 buss bar pins 16, 34, 35, and 48 and IQAN-XP connector pins 35, 15, 17, and 1. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

20. RCU WILL NOT DEPLOY BRIDGE ACROSS GAP (L16-H)

Step 1. Check that KY1, KY6, and KY24 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

- a. If all lights are lit on control valve solenoids, refer to malfunction 14 Hydraulic System Troubleshooting (WP 0010 00).
- b. Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.

- a. If light is out, check for 24 volts at control valve solenoid.
- b. If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- c. If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 6 for KY6 control valve solenoid, and KL-1 buss bar pin 24 for KY24 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- d. Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pins 20. Replace wire if damaged. Refer to WP 0053 00.
- e. Check wires between KL-1 buss bar pins 16, 34, 35, and 48 and IQAN-XP connector pins 35, 15, 17, and 1. replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

21. RCU WILL NOT LOWER FAR-SHORE END OF BRIDGE (L17-A)

Step 1. Check that KY1, KY16, KY18, and KY24 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the launching procedures.

- If lights are lit on KY1, KY16, KY18, and KY24 control valve solenoids, check potentiometer JR2 position 6 to see if damaged or out of adjustment. Adjust or replace potentiometer JR2. Refer to WP 0093 00.
- If potentiometer JR2 is operating and control valve solenoid lights are lit, refer to malfunction 9 in Hydraulic System Troubleshooting (WP 0010 00).
- Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.

- If light is out, check for 24 volts at control valve solenoid.
- If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 6 for KY6 control valve solenoid, KL-1 buss bar pin 16 for KY16 control valve solenoid, KL-1 buss bar pin 18 for KY18 control valve solenoid, KL-1 buss bar pin 24 for KY24 control valve solenoid, and KL-1 buss bar pins 34, 35, and 48 for JR2 potentiometer. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pins 20. Replace wire if damaged. Refer to WP 0053 00.
- Check wires between KL-1 buss bar pins 6, 16, 18, 24, 34, 35, and 48 and IQAN-XP connector pins 25, 35, 22, 41, 15, 17, and 1. replace wires if damaged. Refer to WP 0053 00.

END OF TESTING**22. RCU WILL NOT LOWER NEAR-SHORE END OF BRIDGE (L18-H)**

Step 1. Check if winch electrical harness, control cable, or power supply cable are loose or damaged.

If loose or damaged, connect or replace winch electrical harness, control cable, or power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00, and Winch Electronic Box Schematic WP 0124 00.

Step 2. Check if power supply cable is supplying power to winch electronic box.

- If power supply cable has no power, check if fuse is blown. Replace 8 Amp fuse.
- If fuse is good, repair or replace power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00, and Winch Electronic Box Schematic WP 0124 00.

Step 3. Check if rope loop sensor light is lit when action button 1 is depressed.

- If light is not lit, check for loose connector on rope-loop sensor.
- If light is lit, check if rope loop sensor is out of adjustment or damaged and adjust or replace rope loop sensor. Refer to WP 0064 00.

Step 4. Check if winch system has hydraulic pressure to winch control block, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

22. RCU WILL NOT LOWER NEAR-SHORE END OF BRIDGE (L18-H) (Contd)

- Step 5. Check that KY1 and KY21 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.
- If all lights are lit on control valve solenoids, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 6. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid and KL-1 buss bar pin 21 for KY21 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wire between KL-1 buss bar pins 1 and 21 and IQAN-XS connector pins 20 and 36. Replace wires if damaged. Refer to WP 0053 00.
 - Check wire between KL-1 buss bar pin 2 and IQAN-XP connector pin 37. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

23. RCU WILL NOT RAISE LAUNCH BOOM TO TRAVEL POSITION (L20-H)

- Step 1. Check that KY1 and KY19 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the launching procedures.

- If both lights are lit on control valve solenoids, check potentiometer JR2 position 1 to see if damaged or out of adjustment. Adjust or replace potentiometer JR2. Refer to WP 0093 00.
 - If potentiometer JR2 is operating and control valve solenoid lights are lit, refer to malfunction 7 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 19 for KY19 control valve solenoid, and KL-1 buss bar pins 34, 35, and 48 for JR2 potentiometer. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pins 20. Replace wire if damaged. Refer to WP 0053 00.
 - Check wires between KL-1 buss bar pins 19, 34, 35, and 48 and IQAN-XP connector pins 36, 15, 17, and 1. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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24. RCU WILL NOT TIGHTEN WINCH WIRE ROPE (L19-M+H)

- Step 1. Check if winch electrical harness, control cable, or power supply cable are loose or damaged.
If loose or damaged, connect or replace winch electrical harness, control cable, or power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00, and Winch Electronic Box Schematic WP 0124 00.
- Step 2. Check if power supply cable is supplying power to winch electronic box.
- If power supply cable has no power, check if fuse is blown. Replace 8 Amp fuse.
 - If fuse is good, repair or replace power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00, and Winch Electronic Box Schematic WP 0124 00.
- Step 3. Check if rope loop sensor light is lit when action button 1 is depressed.
- If light is not lit, check for loose connector on rope-loop sensor.
 - If light is lit, check if rope loop sensor is out of adjustment or damaged and adjust or replace rope loop sensor. Refer to WP 0064 00.
- Step 4. Check if winch system has hydraulic pressure to winch control block, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).
- Step 5. Check that KY1 and KY22 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.
- If lights are lit on control valve solenoids, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 6. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid and KL-1 buss bar pin 22 for KY22 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pins 20. Replace wire if damaged. Refer to WP 0053 00.
 - Check wires between KL-1 buss bar pin 3 and IQAN-XP connector pin 37. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

25. RCU WILL NOT RAISE SUPPORTING CYLINDERS (L21-H+M)

NOTE

KY1 and KY9 driver's side (left) control valve solenoids raise left side-supporting cylinder and KY1 and KY11 passenger's side (right) control valve solenoids raise the right side-supporting cylinder.

- Step 1. Check that KY1 and either KY9 or KY11 hydraulic control valve solenoid LED lights are lit when action button 1 or 2 is depressed.
- a. If both lights are lit on control valve solenoids, refer to malfunction 3 in Hydraulic System Troubleshooting (WP 0010 00).
 - b. Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 1 and 2 are depressed.
- a. If light is out, check for 24 volts at control valve solenoid.
 - b. If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - c. If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid KL-1 buss bar pin 9 for KY9 control valve solenoid, and KL-1 buss bar pin 11 for KY11 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - d. Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
 - e. Check wires between KL-1 buss bar pins 9 and 11 and IQAN-XP connector pins 19 and 21. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

26. RCU WILL NOT RETRACT BRIDGE CRADLE TO TRAVEL POSITION (L22-H+M)

- Step 1. Check that KY1 and KY12 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.
- a. If lights are lit on control valve solenoids, refer to malfunction 4 in Hydraulic System Troubleshooting (WP 0010 00).
 - b. Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.
- a. If light is out, check for 24 volts at control valve solenoid.
 - b. If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - c. If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid and KL-1 buss bar pin 12 for KY12 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - d. Check wire between KL-1 buss bar pins 1 and 12 and IQAN-XS connector pins 20 and 36. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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NOTE

Malfunctions 27 through 48 are procedures used during bridge retrieval and are shown on RCU display screen steps.

27. RCU WILL NOT EXTEND SUPPORTING CYLINDERS (R1-M) AND (R2-H)**NOTE**

KY1 and KY8 driver's side (left) control valve solenoids extend left side-supporting cylinder, and KY1 and KY10 passenger's side (right) control valve solenoids extend the right side-supporting cylinder.

- Step 1. Check that KY1 and either KY8 left or KY10 right hydraulic control valve solenoid LED lights are lit when action button 1 or 2 is depressed.
- If both lights are lit on control valve solenoids, refer to malfunction 3 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 2. Check to see if one or more control valve solenoid LED lights are lit.
- If only one light is lit, check for 24 volts at control valve solenoid without a light.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 8 for KY8 control valve solenoid, and KL-1 buss bar pin 10 for KY10 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
 - Check wires between KL-1 buss bar pin 1, pin 8, or pin 10 and IQAN-XS connector pin 20, IQAN-XP connector pins 18 or 20. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

28. RCU WILL NOT EXTEND BRIDGE CRADLE TO RETRIEVAL POSITION (R3-H)

- Step 1. Check that KY1 and KY13 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.
- If both lights are lit on control valve solenoids, refer to malfunction 4 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 2. Check to see if one or more control valve solenoids LED lights are out when action button 2 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid and KL-1 buss bar pin 13 for KY13 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wires between KL-1 buss bar pins 1 and 13 and IQAN-XS connector pin 20 and 21. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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29. RCU WILL NOT UNCOIL WINCH WIRE ROPE (R4-A+H+M)

- Step 1. Check if winch electrical harness, control cable, or power supply cable are loose or damaged.
If loose or damaged, connect or replace winch electrical harness, control cable, or power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00, and Winch Electronic Box Schematic WP 0124 00.
- Step 2. Check if power supply cable is supplying power to winch electronic box.
- If power supply cable has no power, check if fuse is blown. Replace 8 Amp fuse.
 - If fuse is good, repair or replace power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00, and Winch Electronic Box Schematic WP 0124 00.
- Step 3. Check if rope loop sensor light is lit when action button 1 is depressed.
- If light is not lit, check for loose connector on rope-loop sensor.
 - If light is lit, check if rope loop sensor is out of adjustment or damaged and adjust or replace rope loop sensor. Refer to WP 0064 00.
- Step 4. Check if winch system has hydraulic pressure to winch control block, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).
- Step 5. Check that KY1 and KY21 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.
- If both lights are lit on control valve solenoids, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 6. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid and KL-1 buss bar pin 21 for KY21 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pins 20. Replace wire if damaged. Refer to WP 0053 00.
 - Check wire between KL-1 buss bar pin 2 and IQAN-XP connector pin 23. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

30. RCU WILL NOT LOWER LAUNCH BOOM TO RETRIEVAL POSITION (R4-A+H+M)

Step 1. Check that KY1 and KY18 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the retrieval procedure.

- If both lights are lit on control valve solenoids, check potentiometer JR2 position 6 to see if damaged or out of adjustment. Adjust or replace potentiometer JR2. Refer to WP 0093 00.
- If potentiometer JR2 is operating and control valve solenoid lights are lit, refer to malfunction 7 in Hydraulic System Troubleshooting (WP 0010 00).
- Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.

- If light is out, check for 24 volts at control valve solenoid.
- If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 18 for KY18 control valve solenoid, and KL-1 buss bar pins 34, 35, and 48 for potentiometer JR2. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00) or adjust potentiometer (WP 0093 00).
- Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
- Check wire between KL-1 buss bar pins 18, 34, 35, and 48 IQAN-XP connector pins 22, 15, 17, and 1. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

31. RCU WILL NOT RAISE NEAR-SHORE END OF BRIDGE WITH WINCH WIRE ROPE (R5-H)

Step 1. Check if winch electrical harness, control cable, or power supply cable are loose or damaged.

If loose or damaged, connect or replace winch electrical harness, control cable, or power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00, and Winch Electronic Box Schematic WP 0124 00.

Step 2. Check if power supply cable is supplying power to winch electronic box.

- If power supply cable has no power, check if fuse is blown. Replace 8 Amp fuse.
- If fuse is good, repair or replace power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00, and Winch Electronic Box Schematic WP 0124 00.

Step 3. Check if rope loop sensor light is lit when action button 1 is depressed.

- If light is not lit, check for loose connector on rope-loop sensor.
- If light is lit, check if rope loop sensor is out of adjustment or damaged and adjust or replace rope loop sensor. Refer to WP 0064 00.

Step 4. Check if winch system has hydraulic pressure to winch control block, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

31. RCU WILL NOT RAISE NEAR-SHORE END OF BRIDGE WITH WINCH WIRE ROPE (R5-H) (CONTD)

- Step 5. Check that KY1 and KY21 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.
- If all lights are lit on control valve solenoids, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 6. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 21 for KY21 control valve solenoid, and KL-1 buss bar pin 29 for KA5 limit switch. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wire between KL-1 buss bar pins 1 and 21 and IQAN-XS connector pins 20 and 36. Replace wires if damaged. Refer to WP 0053 00.
 - Check wire between KL-1 buss bar pins 3 and 29 and IQAN-XP connector pins 37 and 16. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

32. RCU WILL NOT RAISE FAR-SHORE END OF BRIDGE WITH LAUNCH BOOM (R6-A)

- Step 1. Check that KY1, KY17, KY20, and KY23 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the retrieval procedure.

- If all lights are lit on control valve solenoids, check potentiometer JR2 position 2 to see if damaged or out of adjustment. Adjust or replace potentiometer JR2. Refer to WP 0093 00.
 - If potentiometer JR2 is operating and control valve solenoids lights are lit, refer to malfunction 7 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 2. Check to see if one or more lights are out when action button 2 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve (WP 0075 00).
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 17 for KY17 control valve solenoid, KL-1 buss bar pin 20 for KY20 control valve solenoid, KL-1 buss bar pin 23 for KY23 control valve solenoid, and KL-1 buss bar pins 34, 35, and 48 for JR2 potentiometer. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pins 20. Replace wires if damaged. Refer to WP 0053 00.
 - Check wire between KL-1 buss bar pins 17, 20, 23, 34, 35, and 48 and IQAN-XP connector pins 34, 40, 27, 15, 17, and 1. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

33. RCU WILL NOT RETRIEVE BRIDGE FROM GAP (R7-H)

Step 1. Check that KY1, KY7, and KY22 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

NOTE

Limit switches KA3 and KA4 work together to stop bridge and actuate launch boom, moving bridge toward A-frame and stops.

- If all lights are lit on control valve solenoids, check limit switches KA3 and KA4 to see if damaged or out of adjustment. Adjust or replace limit switches KA3 and KA4 (WP 0056 00).
- If limit switches KA3 and KA4 are operating and control valve solenoid lights are lit, refer to malfunction 14 in Hydraulic System Troubleshooting (WP 0010 00).
- Check operation of IQAN-XP and IQAN-XS LED lights, refer to WP 0004 00 step h.

Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.

- If light is out, check for 24 volts at control valve solenoids.
- If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 7 for KY7 control valve solenoid, KL-1 buss bar pin 22 for KY22 control valve solenoid, KL-1 buss bar pin 27 for KA3 limit switch, and KL-1 buss bar pin 28 for KA4 limit switch. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
- Check wire between KL-1 buss bar pins 7, 22, 27, and 28 and IQAN-XP connector pins 39, 26, 4, and 5. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

34. RCU WILL NOT RETRIEVE BRIDGE TO PALLET (R10-H)

Step 1. Check that KY1, KY3, KY7, and KY21 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

NOTE

Limit switch KA8 has two operations, it stops bridge at base of A-frame and then operates winch to lift bridge up to lock bridge pins behind channels on A-frame and then stops bridge.

- If all lights are lit on control valve solenoids, check limit switch KA8 low and KA8 high to see if damaged or out of adjustment. Adjust low or high or replace limit switch KA8. Refer to WP 0056 00.
- If limit switch KA8 low and KA8 high is operating and control valve solenoid red light is lit, refer to malfunction 10 in Hydraulic System Troubleshooting (WP 0010 00).
- Check operation of IQAN-XP and IQ-XS LED lights. Refer to WP 0004 00 step h.

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

34. RCU WILL NOT RETRIEVE BRIDGE TO PALLET (R10-H) (Contd)

Step 2. Check to see if one or more lights are out when action button 2 is depressed.

- a. If light is out, check for 24 volts at control valve solenoid.
- b. If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- c. If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 3 for KY3 control valve solenoid, KL-1 buss bar pin 7 for KY7 control valve solenoid, KL-1 buss bar pin 21 for KY21 control valve solenoid, and KL-1 buss bar pin 32 for KA8 limit switch. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- d. Check wire between KL-1 buss bar pins 1, 21, and 32 and IQAN-XS connector pins 20, 36, and 25.. Replace wires if damaged. Refer to WP 0053 00.
- e. Check wire between KL-1 buss bar pins 3 and 7 and IQAN-XP connector pins 37 and 39. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

35. RCU WILL NOT LIFT LAUNCH BOOM INTO COUPLING POSITION (R9-A)

Step 1. Check that KY1 and KY16 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the retrieval procedure.

- a. If both lights are lit on control valve solenoids, check potentiometer JR2 position 4 to see if damaged or out of adjustment. Adjust or replace potentiometer JR2. Refer to WP 0093 00.
- b. If potentiometer JR2 is operating and control valve solenoid lights are lit, refer to malfunction 7 in Hydraulic System Troubleshooting (WP 0010 00).

Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.

- a. If light is out, check for 24 volts at control valve solenoid.
- b. If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- c. If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 16 for KY16 control valve solenoid, and KL-1 buss bar pins 34, 35, and 48 for JR2 potentiometer. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- d. Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
- e. Check wires between KL-1 buss bar pins 16, 34, 35, and 48 and IQAN-XP connector pins 35, 15, 17, and 1. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

36. RCU WILL NOT LOWER LAUNCH BOOM TO PRE-COUPPLING POSITION (R9-A)

Step 1. Check that KY1 and KY16 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the retrieval procedure.

- a. If both lights are lit on control valve solenoids, check potentiometer JR2 position 7 to see if damaged or out of adjustment. Adjust or replace potentiometer JR2. Refer to WP 0093 00.
- b. If potentiometer JR2 is operating and control valve solenoid lights are lit, refer to malfunction 7 in Hydraulic System Troubleshooting (WP 0010 00).
- c. Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.

- a. If light is out, check for 24 volts at control valve solenoid.
- b. If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- c. If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 16 for KY16 control valve solenoid, and KL-1 buss bar pins 34, 35, and 48 for JR2 potentiometer. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- d. Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pins 20. Replace wire if damaged. Refer to WP 0053 00.
- e. Check wire between KL-1 buss bar pins 16, 34, 35, and 48 and IQAN-XP connector pins 35, 15, 17, and 1. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

37. RCU WILL NOT RAISE SECONDARY BOOM (R14-H)

Step 1. Check that KY1 and KY14 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

NOTE

Limit switch KA6 stops secondary boom and starts launch boom to lower

- a. If all lights are lit on control valve solenoids, check limit switch KA6 to see if damaged or out of adjustment. Adjust or replace limit switch KA6. Refer to WP 0056 00.
- b. If limit switch KA6 is operating and control valve solenoid lights are lit, refer to malfunction 11 in Hydraulic System Troubleshooting (WP 0010 00).
- c. Check operation of IQAN-XP and IQAN-XS LED lights, refer to WP 0004 00 step h.

Electrical System Troubleshooting (Contd).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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37. RCU WILL NOT RAISE SECONDARY BOOM (R14-H) (Contd)

- Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.
- If light is out, check for 24 volts at control valve solenoids.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 14 for KY14 control valve solenoid, and KL-1 buss bar pin 30 for KA6 limit switch. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wires between KL-1 buss bar pins 1 and 30 and IQAN-XS connector pins 20 and 22. Replace wires if damaged. Refer to WP 0053 00.
 - Check wire between KL-1 buss bar pin 15 and IQAN-XP connector pin 33. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

38. RCU WILL NOT LIFT LAUNCH BOOM (R11-H)

- Step 1. Check that KY1 and KY17 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the retrieval procedure

- If both lights are lit on control valve solenoids, check potentiometer JR2 position 3 to see if damaged or out of adjustment. Adjust or replace potentiometer JR2. Refer to WP 0093 00.
 - If potentiometer JR2 is operating and control valve solenoid lights are lit, refer to malfunction 7 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 2. Check to see if one or more lights are out when action button 2 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 17 for KY17 control valve solenoid, and KL-1 buss bar pins 34, 35, and 48 for potentiometer JR2. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
 - Check wire between KL-1 buss bar pins 17, 34, 35, and 48 and IQAN-XP connector pins 34, 15, 17, and 1. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

39. RCU WILL NOT WINCH-IN WIRE ROPE (R12-A) AND (R13-A)

Step 1. Check if winch electrical harness, control cable, or power supply cable are loose or damaged.

If loose or damaged, connect or replace winch electrical harness, control cable, or power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00, and Winch Electronic Box Schematic WP 0124 00.

Step 2. Check if power supply cable is supplying power to winch electronic box.

a. If power supply cable has no power, check if fuse is blown. Replace 8 Amp fuse.

b. If fuse is good, repair or replace power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00, and Winch Electronic Box Schematic WP 0124 00.

Step 3. Check if rope loop sensor light is lit when action button 1 is depressed.

a. If light is not lit, check for loose connector on rope-loop sensor.

b. If light is lit, check if rope loop sensor is out of adjustment or damaged and adjust or replace rope loop sensor. Refer to WP 0064 00.

Step 4. Check if winch system has hydraulic pressure to winch control block, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).

Step 5. Check that KY1 and KY21 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

NOTE

Limit switch KA5 stops upper bridge half in up position by stopping winch cable.

a. If all lights are lit on control valve solenoids, check limit switch KA5 for damage or out of adjustment. Adjust or replace limit switch KA5. Refer to WP 0056 00.

b. If limit switch KA5 is operating and control valve solenoid lights are lit, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).

c. Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 6. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.

a. If light is out, check for 24 volts at control valve solenoid.

b. If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.

c. If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 21 for KY21 control valve solenoid, and KL-1 buss bar pin 29 for KA5 limit switch. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).

d. Check wires between KL-1 buss bar pin 1 and 21 and IQAN-XS connector pins 20 and 36. Replace wires if damaged. Refer to WP 0053 00.

e. Check wires between KL-1 buss bar pins 3 and 29 and IQAN-XP connector pins 37 and 16. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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40. RCU WILL NOT RETRIEVE LOWER BRIDGE HALF (R13-A)

Step 1. Check that KY1, KY5, and KY7 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

NOTE

Limit switch KA1 stops lower bridge half and limit switch KA2 switches rear pin wheel drive to front pin wheel drive.

- a. If all lights are lit on control valve solenoids, check limit switch KA1 and KA2 to see if damaged or out of adjustment. Adjust or replace limit switch KA1 and KA2. Refer to WP 0056 00.
 - b. If limit switches KA1 and KA2 are operating and control valve solenoid lights are lit, refer to malfunction 10 in Hydraulic System Troubleshooting (WP 0010 00).
 - c. Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.
- a. If light is out, check for 24 volts at control valve solenoid.
 - b. If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - c. If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 5 for KY5 control valve solenoid, KL-1 buss bar pin 7 for KY7 control valve solenoid, KL-1 pin 25 for KA1 limit switch, and KL-1 buss bar pin 26 for KA2 limit switch. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - d. Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pins 20. Replace wire if damaged. Refer to WP 0053 00.
 - e. Check wires between KL-1 buss bar pins 5, 7, 25, and 26 and IQAN-XP connector pins 38, 39, 2, and 3. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

41. RCU WILL NOT RETRIEVE LOWER BRIDGE HALF (R17-H)

Step 1. Check that KY1 and KY7 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

NOTE

Limit switch KA3 stops lower bridge half before lowering secondary boom.

- If all lights are lit on control valve solenoids, check limit switch KA3 for damage or out of adjustment. Adjust or replace limit switch KA3. Refer to WP 0056 00.
- If limit switch KA3 is operating and control valve solenoid lights are lit, refer to malfunction 10 in Hydraulic System Troubleshooting (WP 0010 00).
- Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.

- If light is out, check for 24 volts at control valve solenoid.
- If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 7 for KY7 control valve solenoid, and KL-1 buss bar pin 27 for KA3 limit switch. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
- Check wires between KL-1 buss bar pins 7 and 27 and IQAN-XP connector pins 39 and 4. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

42. RCU WILL NOT LOWER SECONDARY BOOM (R14-H)

Step 1. Check that KY1 and KY14 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

- If both lights are lit on control valve solenoids, refer to malfunction 11 in Hydraulic System Troubleshooting (WP 0010 00).
- Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.

- If light is out, check for 24 volts at control valve solenoid.
- If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid and KL-1 buss bar pin 14 for KY14 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
- Check wire between KL-1 buss bar pin 14 and IQAN-XP connector pin 32. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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43. RCU WILL NOT RAISE LAUNCH BOOM TO TRAVEL POSITION (R16-A)

Step 1. Check that KY1 and KY19 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the retrieval procedure.

- a. If both lights are lit on control valve solenoids, check potentiometer JR2 position 1 for damage or out of adjustment. Adjust or replace potentiometer JR2. Refer to WP 0093 00.
- b. If potentiometer JR2 is operating and control valve solenoid lights are lit, refer to malfunction 7 in Hydraulic System Troubleshooting (WP 0010 00).
- c. Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.

- a. If light is out, check for 24 volts at control valve solenoid.
- b. If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- c. If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 19 for KY19 control valve solenoid, and KL-1 buss bar pins 34, 35, and 48 for JR2 potentiometer. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- d. Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
- e. Check wires between KL-1 buss bar pins 19, 34, 35, and 48 and IQAN-XP connector pins 36, 15, 17, and 1. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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44. RCU WILL NOT LOWER WINCH WIRE ROPE (R18-H)

- Step 1. Check if winch electrical harness, control cable, or power supply cable are loose or damaged.
If loose or damaged, connect or replace winch electrical harness, control cable, or power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00, and Winch Electronic Box Schematic WP 0124 00.
- Step 2. Check if power supply cable is supplying power to winch electronic box.
- If power supply cable has no power, check if fuse is blown. Replace 8 Amp fuse.
 - If fuse is good, repair or replace power supply cable. Refer to WP 0065 00, Electrical System Schematic WP 0122 00, and Winch Electronic Box Schematic WP 0124 00.
- Step 3. Check if rope loop sensor light is lit when action button 1 is depressed.
- If light is not lit, check for loose connector on rope-loop sensor.
 - If light is lit, check if rope loop sensor is out of adjustment or damaged and adjust or replace rope loop sensor. Refer to WP 0064 00.
- Step 4. Check if winch system has hydraulic pressure to winch control block, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).
- Step 5. Check that KY1 and KY21 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.
- If all lights are lit on control valve solenoids, refer to malfunction 5 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 6. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid and KL-1 buss bar pin 21 for KY21 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wires between KL-1 buss bar pins 1 and 21 and IQAN-XS connector pins 20 and 36. Replace wire if damaged. Refer to WP 0053 00.
 - Check wire between KL-1 buss bar pin 2 and IQAN-XP connector pin 23. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

45. RCU WILL NOT LOWER LIFTING CYLINDERS (R2-H)

Step 1. Check that KY1 and KY16 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

NOTE

Pressure switch KF1 stops lower lifting cylinders when they are fully retrieved.

- If both lights are lit on control valve solenoids, check pressure switch KF1 to see if damaged or out of adjustment. Adjust or replace pressure switch KF1 on manifold. Refer to WP 0056 00.
- If pressure switch KF1 is operating and control valve solenoids are lit, refer to malfunction 15 in Hydraulic System Troubleshooting (WP 0010 00).
- Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 1 is depressed.

- If light is out, check for 24 volts at control valve solenoid.
- If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 16 for KY16 control valve solenoid, and KL-1 buss bar pin 33 for KF1 pressure switch. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- Check wire between KL-1 buss bar pins 1 and 33 and IQAN-XS connector pins 20 and 22. Replace wire if damaged. Refer to WP 0053 00.
- Check wire between KL-1 buss bar pin 16 and IQAN-XP connector pin 35. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

46. RCU WILL NOT RETRIEVE LOWER BRIDGE HALF (R17-H)

Step 1. Check that KY1 and KY5 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

- If both lights are lit on control valve solenoids, refer to malfunction 10 in Hydraulic System Troubleshooting (WP 0010 00).
- Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.

Step 2. Check to see if only one of the control valve solenoid LED lights is lit.

- If only one light is lit, check for 24 volts at control valve solenoid without a light.
- If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
- If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid and KL-1 buss bar pin 5 for KY5 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
- Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
- Check wire between KL-1 buss bar pin 5 and IQAN-XP connector pin 38. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

Electrical System Troubleshooting (Contd).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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47. RCU WILL NOT RAISE SUPPORTING CYLINDERS (R19-H)**NOTE**

KY1 and KY9 driver's side (left) control valve solenoids raise one side-supporting cylinder, and KY1 and KY11 passenger's side (right) control valve solenoids raise the other side-supporting cylinder.

- Step 1. Check that KY1 and either KY9 left or KY11 right hydraulic control valve solenoid LED lights are lit when action button 1 or 2 is depressed.
- If both lights are lit on control valve solenoids, refer to malfunction 3 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights, refer to WP 0004 00 step h.
- Step 2. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid, KL-1 buss bar pin 9 for KY9 control valve solenoid, and KL-1 buss bar pin 11 for KY11 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wire between KL-1 buss bar pin 1 and IQAN-XS connector pin 20. Replace wire if damaged. Refer to WP 0053 00.
 - Check wire between KL-1 buss bar pins 9 and 11 and IQAN-XP connector pins 19 and 21. Replace wire if damaged. Refer to WP 0053 00.

END OF TESTING

48. RCU WILL NOT RETRACT BRIDGE TO TRAVEL POSITION (R21-H)

- Step 1. Check that both sides of bridge slide lock mechanism are unlocked or damaged.
- If slide lock mechanism is locked, unlock slide lock mechanism on both sides.
 - Repair or replace bridge slide lock if damaged. Refer to WP 0026 00.
- Step 2. Check that KY1 and KY12 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.
- If lights are lit on control valve solenoids, refer to malfunction 4 in Hydraulic System Troubleshooting (WP 0010 00).
 - Check operation of IQAN-XP and IQAN-XS LED lights. Refer to WP 0004 00 step h.
- Step 3. Check to see if one or more control valve solenoid LED lights are out when action button 2 is depressed.
- If light is out, check for 24 volts at control valve solenoid.
 - If connector has 24 volts, replace control valve solenoid or hydraulic control valve. Refer to WP 0075 00.
 - If connector has no voltage, check wires at KL-1 buss bar pin 1 for KY1 control valve solenoid and KL-1 buss bar pin 12 for KY12 control valve solenoid. Refer to Electrical System Schematic (WP 0122 00) and repair or replace wires (WP 0053 00).
 - Check wires between KL-1 buss bar pins 1 and 12 and IQAN-XS connector pins 20 and 35. Replace wires if damaged. Refer to WP 0053 00.

END OF TESTING

END OF WORK PACKAGE

TROUBLESHOOTING PROCEDURES

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

HYDRAULIC SYSTEM TROUBLESHOOTING SYMPTOM INDEX

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END OF WORK PACKAGE

TROUBLESHOOTING PROCEDURES

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

HYDRAULIC SYSTEM TROUBLESHOOTING

NOTE

Refer to the general instructions in Introduction to Troubleshooting, WP 0004 00, prior to performing hydraulic system troubleshooting.

Refer to Pallet Hydraulic System Schematic (WP 0121 00), Winch Control Block Hydraulic Schematic (WP 0123 00), Pallet Electrical System Schematic (WP 0122 00), and Winch Electronic Box Electrical Schematic (WP 0124 00) when performing troubleshooting tasks.

Hydraulic System Troubleshooting.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

1. HYDRAULIC SYSTEM WILL NOT OPERATE USING LAUNCH POWER UNIT (LPU)

Step 1. Check that auxiliary engine is operating. Refer to TM 5-5420-280-10.

Start engine and set to operating speed. Refer to TM 5-5420-280-10.

Step 2. Check that hydraulic hose quick-disconnectors are connected to bridge pallet connections. Refer to TM 5-5420-280-10.

Connect hydraulic hose quick-disconnectors to bridge pallet connectors. Refer to TM 5-5420-280-10.

Step 3. Check for low oil level in pallet hydraulic reservoir.

Fill hydraulic reservoir to proper oil level. Refer to WP 0016 00.

Step 4. Check that bypass valve on auxiliary engine pump is in closed position.

Close bypass valve on auxiliary engine pump. Refer to TM 5-5420-280-10.

Step 5. Check for damaged hydraulic pump or drive coupling.

a. Replace drive coupling if damaged. Refer to WP 0104 00.

b. Replace hydraulic pump if damaged. Refer to WP 0104 00.

NOTE

KY1 is main pressure hydraulic control valve and must operate with all other control valves to perform an operation.

Step 6. Check for loose electrical connector or damaged KY1 hydraulic control valve on control manifold.

a. Manually engage KY1 hydraulic control valve by pressing down on button on top of solenoid, if system operates. (Check Electrical System Troubleshooting WP 0008 00.)

b. Tighten or connect electrical connector on KY1 hydraulic control valve. Refer to WP 0075 00.

c. Replace damaged KY1 hydraulic control valve. Refer to WP 0075 00.

Hydraulic System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. HYDRAULIC SYSTEM WILL NOT OPERATE USING LAUNCH POWER UNIT (LPU) (CONTD)

Step 7. Check sight gauges to see if in red zone for clogged oil pre-filter or clogged oil filter on control valve manifold. Refer to WP 0079 00.

- a. If gauges are in red zone, replace clogged oil pre-filter. Refer to WP 0080 00.
- b. If gauges are in red zone, replace clogged oil filter on control valve manifold. Refer to WP 0079 00.

Step 8. Using oil pressure test kit, check for lower settings or damaged 016 oil pressure regulator valve on top of control valve manifold.

- a. Engage KY1 control valve and set pressure to 2190 psi (220 bar) on oil pressure regulator valve. Refer to WP 0076 00.
- b. Replace 016 oil pressure regulator valve if damaged. Refer to WP 0076 00.

END OF TESTING

2. HYDRAULIC SYSTEM WILL NOT OPERATE USING CBT

Step 1. Check that engine is operating and PTO is engaging on CBT.

Start engine and engage PTO on CBT. Refer to TM 5-5420-280-10.

Step 2. Check that hydraulic hose quick-disconnectors are connected to CBT.

Connect hydraulic hose quick-disconnectors to CBT. Refer to TM 5-5420-280-10.

Step 3. Check for low oil level in CBT reservoir.

Fill CBT reservoir to proper oil level. Refer to TM 5-5420-280-10.

NOTE

KY1 is the main pressure hydraulic control valve and it must operate with all other control valves to perform an operation.

If lights are on and system will not operate, replace solenoids or hydraulic control valves (WP 0075 00).

Step 4. Check for loose electrical connector (WP 0008 00) or damaged KY1 hydraulic control valve mounted on control manifold (WP 0121 00 and WP 0122 00).

- a. Manually engage KY1 hydraulic control valve by pressing down on button on top of solenoid, if system operates. (Check Electrical System Troubleshooting WP 0008 00).
- b. Tighten or replace electrical connector on KY1 control valve solenoid. Refer to WP 0075 00.
- c. Replace damaged KY1 hydraulic control valve. Refer to WP 0075 00.

Step 5. Check sight gauges to see if in red zone for clogged oil pre-filter or clogged oil filter on control valve manifold. Refer to WP 0079 00.

- a. If gauges are in red zone, replace clogged oil pre-filter. Refer to WP 0080 00.
- b. If gauges are in red zone, replace clogged oil filter on control valve manifold. Refer to WP 0079 00.

Step 6. Using oil pressure test kit, check for lower pressure setting or damage to 016 oil pressure regulator valve on control valve manifold.

- a. Engage KY1 control valve and set pressure to 2190 psi (220 bar) on oil pressure relief valve. Refer to WP 0074 00.
- b. Replace 016 oil pressure regulator valve if damaged. Refer to WP 0074 00.

END OF TESTING

Hydraulic System Troubleshooting (Contd).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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NOTE

These malfunction procedures may occur during launching or retrieving bridge and are shown on RCU display screen steps.

3. SUPPORTING CYLINDERS WILL NOT EXTEND OR RETRACT (L4-A+M), (L7-A), OR (R19-H)**NOTE**

KY1 and KY8 driver's side (left) control valve solenoids extend left side-supporting cylinder, and KY1 and KY10 passenger's side (right) control valve solenoids extend the right side-supporting cylinder.

KY1 and KY9 driver's side (left) control valve solenoids retract left side-supporting cylinder, and KY1 and KY11 Passenger's side (right) control valve solenoids retract the right side-supporting cylinder.

Step 1. Check that KY1 and either two hydraulic control valve solenoids, as noted above, are actuated when action button 1 or 2 is depressed.

If lights are not lit, refer to malfunction 4 in Electrical Troubleshooting (WP 0008 00).

Step 2. Check if one of the other operations have flow and pressure and will operate.

a. If other system operates, perform step 3.

b. If other system will not operate, refer to malfunctions 1 or 2 in Hydraulic System Will Not Operate.

Step 3. Check for damaged hydraulic control valve solenoid KY8, KY9, KY10, or KY11.

a. Manually operate control valve solenoid by locking KY1 hydraulic control valve in operating position and then press down on solenoid button of hydraulic control valve to extend or retract supporting cylinder.

b. If control valve operates, refer to malfunction 4 in Electrical System Troubleshooting (WP 0008 00).

c. If control valve will not operate, replace hydraulic control valve KY8, KY9, KY10, or KY11. Refer to WP 0075 00.

Step 4. Check supporting cylinders for damage or missing hardware.

Replace damaged supporting cylinder(s). Refer to WP 0038 00.

Step 5. Check supporting cylinder flow control valve if cylinder will not extend or moves very slow.

Replace flow control valve mounted in supporting cylinder supply tube. Refer to WP 0166 00.

END OF TESTING

4. BRIDGES WILL NOT EXTEND TO OPERATING WIDTH (L2-H) OR (R21-H)

Step 1. Check that all four fastening rods have been removed.

Remove fastening rods. Refer to TM 5-5420-280-10.

Step 2. Check for missing mounting hardware or damaged telescopic tube hydraulic cylinders.

Replace damaged hydraulic cylinder(s). Refer to WP 0042 00.

Step 3. Check that KY1 and KY13 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

Step 4. Check for damaged hydraulic control valve KY1 or KY13.

a. Manually operate control valve solenoid by pressing down on KY1 and KY13 solenoid buttons at the same time to extend bridge to operating width.

b. If control valves operate, refer to malfunction 5 in Electrical System Troubleshooting (WP 0008 00).

c. If control valve will not operate, check oil pressure regulator valve 016 for operating pressure of 2190 psi (220 bar) using pressure test set installed on manifold test port or replace hydraulic control valve. Refer to WP 0075 00.

END OF TESTING

Hydraulic System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

5. WINCH WIRE ROPE WILL NOT OPERATE (L3-A) OR (R18-H)**NOTE**

KY1, KY21 high pressure, and KY22 lower pressure control valve solenoids retract (pay-in) winch wire rope, and KY1, KY21, and KY22 control valve solenoids lower (pay-out) winch wire rope.

KY1 and KY21 are used to retract (pay-in) or lower (pay-out) winch wire rope with a load on rope and KY1 and KY22 are used to retract (pay-in) or lower (pay-out) winch wire rope without a load.

Step 1. Check that KY1, KY21, and KY22 hydraulic control valve solenoid LED lights are lit when action button 1 (launch) or action button 2 (retrieval) is depressed.

NOTE

Limit switch KA5 stops winch cable when upper bridge half is lifted to its up position.

If all lights are lit on control valve solenoids, check limit switch KA5 to see if damaged or out of adjustment. Adjust or replace limit switch KA5. Refer to WP 0056 00.

Step 2. Check for damaged control valve KY1, KY21, or KY22.

If control valve will not operate, replace control valve. Refer to WP 0075 00.

Step 3. Check that winch system is operating electrically.

Refer to malfunction 6 Electrical System Troubleshooting (WP 0008 00).

Step 4. Check that winch control block has hydraulic pressure to operate system.

Refer to Winch Control Block Hydraulic Schematic (WP 0123 00).

Step 5. Check that load is not too heavy for system operation.

- a. Operate in Limited Load position or reduce load on winch wire rope.
- b. Operating oil temperature to high, let winch cool down.

Step 6. Check if wire rope slipping on winch pulleys.

- a. Clean wire rope and check if worn.
- b. If worn or damaged, replace winch wire rope. Refer to WP 0057 00.

Step 7. Check if winch hydraulic motor is operating.

If winch hydraulic motor has hydraulic pressure and will not operate, replace winch hydraulic motor. Refer to WP 0068 00.

Step 8. Check if force transmitter is loose or damaged.

If force transmitter is loose or damaged this will stop winch from operating. Repair or replace force transmitter. Refer to WP 0064 00.

END OF TESTING

6. BOTTOM BRIDGE HALF WILL NOT MOVE TO REAR (L5-A) OR (R17-H)

Step 1. Check for damaged or missing launch beam pin wheel drive bracket or drive pins.

- a. If damaged or missing, replace pin wheel drive bracket. Refer to WP 0028 00.
- b. If damaged or missing, replace drive pins. Refer to WP 0028 00.

Step 2. Check that KY1, KY4, and KY23 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Limit switch KA2 switches front pin wheel drive to rear pin wheel drive during launch and switches rear pin wheel drive to front pin wheel drive during retrieval.

Hydraulic System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

6. BOTTOM BRIDGE HALF WILL NOT MOVE TO REAR (L5-A) OR (R17-H) (CONTD)

If all lights are lit on control valve solenoids, check limit switch KA2 to see if damaged or out of adjustment. Adjust or replace limit switch KA2. Refer to WP 0056 00.

Step 3. Check for damaged control valves KY1, KY4, and KY23.

- a. Manually operate control valves by locking KY1 control valve in on position and depressing KY4 to operate front pin wheel drive and KY23 to pay-out winch cable.
- b. If control valve operates, refer to malfunction 10 in Electrical System Troubleshooting (WP 0008 00).

Step 4. Check that forward pin wheel drive hydraulic motor rotates.

If hydraulic motor will not rotate, replace hydraulic motor. Refer to WP 0084 00.

END OF TESTING

7. LAUNCH BOOM WILL NOT LOWER OR RAISE (L6-A), (L12-A), (L15-A), (L20-H), OR (R4-A+H+M), (R11-A), (R9-A), (R16-A)

Step 1. Check if both launch boom retaining pins are installed.

Remove launch boom retaining pin. Refer to TM 5-5420-280-10.

Step 2. Check for missing retaining plate and pin on launch boom and main shaft.

- a. Replace missing retaining plate and pin on launch boom and main shaft. Refer to WP 0095 00.
- b. Replace four hydraulic fillings on main shaft if pin was missing. Refer to WP 0095 00.

Step 3. Check for damaged hydraulic tubing.

Repair or replace damaged hydraulic tubing. Refer to WP 0069 00.

Step 4. Check for damaged bearing shaft manifold.

Replace damaged bearing shaft manifold. Refer to WP 0092 00.

Step 5. Check that KY1, KY18, and KY19 hydraulic control valve solenoid LED lights are lit when action button 1 or 2 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the launching procedures.

If both lights are lit on control valve solenoids, check potentiometer JR2 position 6 to see if damaged or out of adjustment. Adjust or replace potentiometer JR2. Refer to WP 0093 00.

END OF TESTING

8. LAUNCH BOOM WILL NOT STOP AT COUPLING POSITION (L14-A), (L15-A) OR (R9-A)

Step 1. Check that KY1 and KY16 hydraulic control valve solenoid LED lights are lit when action button 1 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the launching procedures.

If all lights are lit on control valve solenoids, check potentiometer JR2 position 4 to see if damaged or out of adjustment. Adjust or replace potentiometer JR2 (WP 0093 00).

Step 2. Check for damaged control valve KY1 and KY16.

- a. Manually operate each control valve solenoid by depressing button on KY1 and KY16 control valves.
- b. If control valves operate, refer to malfunction 19 in Electrical Troubleshooting (WP 0008 00).
- c. If either control valve will not operate, replace control valve. Refer to WP 0075 00.

END OF TESTING

Hydraulic System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

9. LOWER SUPPORT BOOM CYLINDERS WILL NOT EXTEND OR RETRACT (L14-A) OR (R2-H)

Step 1. Check hydraulic system for operating pressures.

Perform malfunctions 1 or 2.

Step 2. Check hydraulic hoses, tubing, and cylinders for damage or missing pins.

a. Replace hydraulic hoses or steel tubing if damaged. Refer to WP 0071 00.

b. Replace hydraulic cylinder(s) or pins if damaged or missing. Refer to WP 0096 00.

Step 3. Check that KY1, KY17, and KY20 hydraulic control valve solenoid LED lights are lit when action button 2 is depressed.

NOTE

Potentiometer JR2 is used to stop launch boom at a set position in the launching procedures.

If all lights are lit on control valve solenoids, check potentiometer J2 position 2 to see if damaged or out of adjustment. Adjust or replace potentiometer J2. Refer to WP 0093 00.

Step 4. Check for damaged control valve KY1, KY17, or KY20.

a. Manually operate control valve solenoids by locking KY1 control valve solenoid in on position and depressing down KY17 and KY20 control valve solenoid buttons.

b. If control valve operates, refer to malfunction 9 in Electrical Troubleshooting (WP 0008 00).

c. If control valve will not operate, replace control valve. Refer to WP 0075 00.

END OF TESTING

10. BOTTOM BRIDGE HALF WILL NOT MOVE ON LAUNCH BOOM (L16-H) OR (R7-H)

Step 1. Check for damaged launch beam pin wheel drive bracket or drive pins.

Repair or replace damaged pin wheel drive bracket or drive pins. Refer to WP 0028 00.

Step 2. Check for damaged rear pin wheel drive assembly.

Repair or replace damaged rear pin wheel drive assembly. Refer to WP 0082 00.

Step 3. Check that KY1, KY5, and KY7 hydraulic control valve solenoid LED lights are lit when action button 2 or KY1 and KY6 hydraulic control valve solenoid LED light is lit when action button 1 is depressed.

NOTE

Limit switch KA1 stops lower bridge half when deploying toward rear of roller during launch and limit switch KA2 switches forward pin wheel drive to rear pin wheel drive during launch and switches rear pin wheel drive to forward pin wheel drive during retrieval.

If all lights are lit on control valve solenoids, check limit switch KA1 and KA2 to see if damaged or out of adjustment. Adjust or replace limit switch KA1 and KA2. Refer to WP 0056 00.

Step 4. Check for damaged control valve KY1, KY5, KY6, or KY7.

a. Manually operate control valve by locking KY1 control valve in on position and depressing KY5, KY6, or KY7 to operate pin wheel drives.

b. If control valves operate refer to malfunction 42 in Electrical Troubleshooting (WP 0008 00).

c. If control valve will not operate, replace control valve. Refer to WP 0075 00.

Hydraulic System Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

10. BOTTOM BRIDGE HALF WILL NOT MOVE ON LAUNCH BOOM (L16-H) OR (R7-H) (CONTD)

Step 5. Check that rear pin wheel drive hydraulic motor rotates.

If hydraulic motor will not rotate, replace hydraulic motor. Refer to WP 0084 00.

Step 6. Check for damaged or locked-up rear pin wheel drive stop cylinder.

Repair or replace damaged stop cylinder. Refer to WP 0085 00.

END OF TESTING

11. SECONDARY BOOM CYLINDER WILL NOT RAISE OR LOWER (L9-H), (L13-H) OR (R10-H), (R14-H)

Step 1. Check for bent or damaged secondary boom rollers or bracket.

a. Replace bent or damaged secondary boom rollers. Refer to WP 0098 00.

b. Replace bent or damaged secondary boom bracket. Refer to WP 0098 00.

Step 2. Check for damaged supporting boom cylinder.

Replace supporting boom cylinder. Refer to WP 0099 00.

Step 3. Check that KY1, KY14, and KY15 hydraulic control valve solenoid LED lights are lit when action button 1 during launch, or action button 2 during retrieval is depressed.

NOTE

Limit switch KA6 stops secondary boom and once lowered, actuates launch boom to go up.

If all lights are lit on control valve solenoids, check limit switch KA6 to see if damaged or out of adjustment. Adjust or replace limit switch KA6 (WP 0056 00).

Step 4. Check for damaged control valve KY1, KY14, and KY15.

a. Manually operate control valve solenoid by pressing down on KY1 solenoid button and KY14 to raise or KY15 to lower secondary boom.

b. If control valve operates refer to malfunctions 11 or 41 in Electrical Troubleshooting (WP 0008 00).

c. If control valve will not operate, replace control valve KY1, KY14, or KY15. Refer to WP 0075 00.

END OF TESTING

12. LOWER BRIDGE HALF WILL NOT MOVE TO COUPLING POSITION (L14-A) AND (L15-A) OR (R9-A)

Step 1. Perform Launch Boom Will Not Lower or Raise malfunction 7 if launch boom will not lower or raise.

Step 2. Perform Lower Support Boom Cylinder Will Not Extend or Retract task 9 if lower support boom cylinders will not extend or retract.

Step 3. Check Electrical System Troubleshooting. Refer to WP 0008 00.

END OF TESTING

13. LAUNCH BOOM WILL NOT MOVE TO PRE-COUPPLING POSITION (L12-A) OR (R9-A)

Step 1. Perform Launch Boom Will Not Lower or Raise task 7 if launch boom will not lower or raise.

Step 2. Perform Lower Support Boom Cylinder Will Not Extend or Retract malfunction 9 if lower support boom cylinders will not extend or retract.

Step 3. Check Electrical System Troubleshooting. Refer to WP 0008 00.

END OF TESTING

Hydraulic System Troubleshooting (Contd).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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14. LAUNCH BOOM WILL NOT HOLD BRIDGE WHEN EXTENDED OVER GAP (L16-H) OR (R7-H)**NOTE**

Pressure switch KF1 stops lower support boom lifting cylinder at end of travel position.

Step 1. Check for sticking or damaged KF1 pressure switch.

Replace KF1 pressure switch if sticking or damaged. Refer to WP 0075 00.

Step 2. Check for damaged lifting cylinders.

Replace damaged lifting cylinders. Refer to WP 0096 00.

END OF TESTING

15. WHEEL LIFTING CYLINDERS WILL NOT LOWER OR RAISE

Step 1. Check that retaining pins are removed.

Remove retaining pins. Refer to TM 5-5420-280-10.

Step 2. Check for proper hydraulic oil level in reservoir.

Fill reservoir to proper oil level. Refer to WP 0016 00.

Step 3. Check position of selector valve.

Place selector valve lever in one of three positions to lower/raise front, rear, or all wheel lifting cylinders. Refer to TM 5-5420-280-10.

Step 4. Check position of control valve.

Place control valve lever in wheels-lowered or wheels-raised position. Refer to TM 5-5420-280-10.

Step 5. Check that hydraulic pump operates and apply pressure to wheel lifting cylinders as shown on gauge. Refer to TM 5-5420-280-10.

Step 6. Check that wheel lifting cylinder operates after performing steps 1 through 5.

If no pressure is shown on gauge, replace hydraulic pump. Refer to WP 0081 00.

END OF TESTING

TROUBLESHOOTING PROCEDURES

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

LAUNCH POWER UNIT (LPU) TROUBLESHOOTING SYMPTOM INDEX

MALFUNCTION NO.	MALFUNCTION	TROUBLESHOOTING WP-PAGE
1.	Engine cranks but does not start	0012 00-1
2.	Engine does not start at low temperatures	0012 00-1
3.	Engine starter motor does not operate	0012 00-2
4.	Engine alternator indicator light will not go off	0012 00-2
5.	Engine oil pressure indicator light will not go off	0012 00-2
6.	Engine starts but stops running as soon as starter motor is disengaged	0012 00-2
7.	Engine shuts down during operation	0012 00-3
8.	Engine speed and performance drop off	0012 00-3
9.	Engine runs very hot	0012 00-3

TROUBLESHOOTING PROCEDURES

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

LAUNCH POWER UNIT (LPU) TROUBLESHOOTING

CAUTION

Never use starting fluid (ether) to assist starting LPU. Failure to comply will result in damage to engine.

NOTE

Refer to the general instructions in Introduction to Troubleshooting, WP 0004 00, prior to performing electrical system troubleshooting.

Refer to Pallet Electrical System Schematic (WP 0122 00) when performing troubleshooting tasks.

LPU Troubleshooting.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

1. ENGINE CRANKS BUT DOES NOT START

Step 1. Check for clogged fuel tank filter.

If clogged, clean or replace engine fuel tank filter. Refer to WP 0102 00.

Step 2. Check for faulty fuel pump.

If faulty, replace fuel pump. Refer to WP 0101 00.

Step 3. Check for faulty fuel injectors.

If faulty, replace fuel injectors. Refer to WP 0111 00.

END OF TESTING

2. ENGINE DOES NOT START AT LOW TEMPERATURES

Step 1. Check for low voltage at pallet batteries.

a. If voltage is low, connect CBT power source to charge pallet batteries.

b. If batteries are damaged or will not charge, replace pallet batteries. Refer to WP 0113 00.

Step 2. Check for faulty engine glow plugs.

If faulty, replace engine glow plugs. Refer to TM 9-2815-250-24&P.

END OF TESTING

LPU Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

3. ENGINE STARTER MOTOR DOES NOT OPERATE

Step 1. Check if control box switch is in on position.

Move switch to ON position. Refer to TM 5-5420-280-10.

Step 2. Check if oil pressure and alternator indicator lights have come on.

a. If lights do not come on, check for low voltage, loose wires or cables.

b. If pallet batteries have low voltage, connect CBT power source to charge batteries.

c. If cables or wires are loose, tighten cables or wires. Refer to WP 0113 00.

Step 3. Check starter motor for loose wires, cables, or damage.

a. Tighten loose wires or cables. Refer to WP 0113 00.

b. If damaged, replace starter motor. Refer to WP 0105 00.

END OF TESTING

4. ENGINE ALTERNATOR INDICATOR LIGHT WILL NOT GO OFF

Step 1. Check if engine has stopped operating.

Start engine. Refer to TM 5-5420-280-10.

Step 2. Check for slipping or missing alternator belt.

a. Tighten slipping alternator belt. Refer to WP 0106 00.

b. Replace missing alternator belt. Refer to WP 0106 00.

Step 3. Check alternator for loose wires or damage.

a. Tighten loose wires. Refer to WP 0106 00.

b. Replace damaged alternator. Refer to WP 0106 00.

5. ENGINE OIL PRESSURE INDICATOR LIGHT WILL NOT GO OFF

Step 1. Check engine oil level.

Fill engine to proper oil level. Refer to WP 0016 00.

Step 2. Check if engine has stopped operating.

Start engine. Refer to TM 5-5420-280-10.

Step 3. Check engine oil pressure sender for loose wires or damage.

a. Tighten loose wires. Refer to WP 0115 00.

b. Replace oil pressure sender if damaged. Refer to TM 9-2815-250-24&P.

6. ENGINE STARTS BUT STOPS RUNNING AS SOON AS STARTER MOTOR IS DISENGAGED

Step 1. Check fuel supply from tank for obstructions.

If obstructed, clean fuel line.

Step 2. Check for clogged fuel tank filter.

If clogged, clean or replace engine fuel tank filter. Refer to WP 0102 00.

END OF TESTING

LPU Troubleshooting (Contd).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

7. ENGINE SHUTS DOWN DURING OPERATION

Step 1. Check for clogged fuel tank filter.

If clogged, clean or replace fuel tank filter. Refer to WP 0102 00.

Step 2. Check fuel pump for malfunction.

If malfunctioning, repair fuel pump. Refer to WP 0101 00.

END OF TESTING

8. ENGINE SPEED AND PERFORMANCE DROP OFF

Step 1. Check for slipping engine speed control lever.

Tighten mounting hardware and adjust speed control levers. Refer to WP 0114 00.

Step 2. Check fuel lines for leaks.

If leaking, tighten fuel line fittings or replace damaged fuel lines. Refer to WP 0103 00.

Step 3. Check for clogged fuel tank filter.

If clogged, clean or replace fuel tank filter. Refer to WP 0102 00.

END OF TESTING

9. ENGINE RUNS VERY HOT

Check for plugged or obstructed cooling fins.

If plugged or obstructed, clean obstructions from fin openings.

END OF TESTING

END OF WORK PACKAGE

CHAPTER 3
MAINTENANCE INSTRUCTIONS/PMCS
RAPIDLY EMPLACED BRIDGE (REB)

Service Upon Receipt	0013 00-1
Preventive Maintenance Checks and Services (PMCS) Introduction	0014 00-1
Preventive Maintenance Checks and Services (PMCS)	0015 00-1
Lubrication Instructions	0016 00-1
General Maintenance Procedures	0017 00-1

MAINTENANCE INSTRUCTIONS/PMCS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

SERVICE UPON RECEIPT

SERVICE UPON RECEIPT OF MATERIAL

When a REB 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 bridge and bridge pallet is in operating condition. The operator will assist when performing service upon receipt inspections. Refer to TM 5-5420-280-10 when testing equipment for proper operation.

Upon receipt of a new or used REB, 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 discrepancies in accordance with applicable service instructions (refer to DA PAM 750-8).
3. Check to see whether the equipment has been modified.

INSTALLATION INSTRUCTIONS

Prepare REB for use by performing the following installation procedures.

1. Add oil to Launch Power Unit (LPU) engine. Refer to TM 5-5420-280-10.
2. Fill LPU engine fuel tank. Refer to TM 5-5420-280-10.
3. Add hydraulic oil to reservoir as required. Refer to TM 5-5420-280-10.
4. Install BII items on pallet in storage boxes. Refer to TM 5-5420-280-10.

PRELIMINARY SERVICING OF EQUIPMENT

Perform the following tasks prior to releasing the equipment for use:

1. Perform Preventive Maintenance Checks and Services (PMCS). Refer to WP 0015 00.
2. Check all exterior surfaces of equipment for dirt, grease, oil, or any other existing debris. Refer to WP 0017 00 and clean as necessary.
3. Check all Basic Issue Items (BII) to ensure they are present, in good condition, and properly mounted or stowed. Refer to TM 5-5420-280-10.
4. Check maintenance schedule for transporter and perform PMCS and lubrication on transporter and vehicle chassis as required. Refer to TM 5-5420-280-10 and WP 0016 00.

END OF WORK PACKAGE

0013 00-1/2 blank

MAINTENANCE INSTRUCTIONS/PMCS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

INTRODUCTION

GENERAL

Field Maintenance PMCS are performed at regular intervals to ensure the equipment is fully operational and ready at all times. Maintaining the REB requires inspection on a regular basis so minor damage or faults can be discovered and corrected. Performing PMCS is essential to the reliability and expected longevity of the equipment. Failing to correct a minor problem may result in major damage or a failure which could compromise the mission or cause injury to personnel.

PURPOSE OF PMCS TABLES

The purpose of the PMCS tables is to provide a systematic method of inspection and servicing the equipment. In this way, small defects can be detected early and corrected before they become a major problem causing the equipment to fail. The PMCS tables are arranged with the individual PMCS procedures listed in sequence under assigned intervals. The most logical time (before or during 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; anything wrong will be seen quickly. Refer to WP 0015 00 for PMCS instructions and tables 1 and 2.

MAINTENANCE INSTRUCTIONS/PMCS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

GENERAL

NOTE

Designated PMCS intervals are to be followed under usual operating conditions. PMCS must be performed more frequently when operating under unusual conditions.

Perform all checks and services per the designated intervals specified in the PMCS tables. Service intervals are for normal operation of the bridge and pallet in moderate temperatures, humidity, and atmospheric conditions. The intervals are hard-time intervals which are performed per the bridge's and pallet age or calendar time. The hard-time intervals are based on calendar time. An example of a calendar interval is semiannually (every six months).

EXPLANATION OF COLUMNS

The following is a list of the PMCS table column headings with a description of the information found in each column.

- 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 2404/5988-E.
- b. Interval.** This column shows when each check is to be performed.
- c. Location/Item To Check/Service.** This column lists the location of the item to be inspected by part, component, or assembly name.
- d. Item to be Inspected/Procedures.** This column identifies the general area or specific part where the check or service is to be done and explains how to do it.

NOTE

The terms *ready/available* and *mission capable* refer to the same status: equipment is on hand and is able to perform its combat mission. Refer to DA Pam 750-8.

- e. Equipment Not Ready/Available If.** This column lists conditions that make the equipment unavailable for use because it is unable to perform its mission, or because it would represent a safety hazard. Do not accept or operate equipment with a condition in the Equipment Is Not Ready/Available If column.

REPORTING DEFICIENCIES

If any problem with the equipment is discovered during PMCS or while it is being operated that cannot be corrected at the field maintenance level, it must be reported. Refer to DA Pam 750-8 and report the deficiency on Equipment Inspection and Maintenance Worksheet, DA Form 2404.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

CORROSION PREVENTION AND CONTROL (CPC)

- a. Corrosion prevention and control (CPC) of Army materiel is a continuing concern. It is important that corrosion problems are reported so they can be corrected and improvements can be made to prevent future problems.
- b. 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.
- c. If a corrosion problem is identified, it can 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.
- d. The form should be submitted to the address specified in DA Pam 750-8.

SPECIAL INSTRUCTIONS

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

WARNING

Skysol 100 cleaning solvent is combustible. Use mechanical ventilation whenever product is used in a confined space, heated above ambient temperatures, or 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. Failure to comply may result in injury to personnel.

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.
- b. **Bolts, nuts, and screws.** Check them all for obvious loose, missing, bent, or broken condition. Look for chipped paint, bare metal, or rust around bolt heads; check and tighten where necessary.

WARNING

The bleed valve on hydraulic line should be used to bleed residual pressure from the line prior to disconnecting. When disconnecting any hydraulic line, open line slowly and protect face; hydraulic oil may spray out due to residual pressure in system. Failure to comply may result in serious injury to personnel.

- c. **Hydraulic lines.** Look for wear, damage, and leaks. Ensure 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, tighten it. If something is broken or worn out, refer to the appropriate maintenance Work Package (WP) task and repair or replace it.
- d. **Data plates.** Check all data plates. If any plate is worn, broken, painted over, missing hardware, or unreadable, it must be replaced. Refer to WP 0132 00.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

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.
- 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.
- b. Identify and report any sign of leakage, and perform all maintenance and repair. Refer to chapter 5 bridge pallet maintenance in this manual.
- c. Under emergency conditions where use of the hydraulic system is necessary to complete the mission, consideration must be given to the fluid capacity and the leak classification. Class III leaks must be reported to the maintenance supervisor immediately.

PAINTING

Paint touch-up of the REB should be performed as needed during PMCS. Refer to painting instructions WP 0119 00.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR BRIDGE AND PALLET

This PMCS uses the one-look format. With REB on the transporter, start at the front of pallet nearest the driver's side of cab, proceeding counterclockwise. Refer to figure below.

WARNING

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.

CAUTION

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

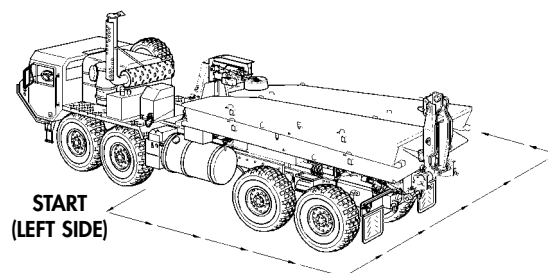
During PMCS, ensure that components and assemblies are correctly installed. Incorrect installation may cause equipment damage or failure.

When checking or inspecting 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.

Remove rust and accumulated corrosion during PMCS. Corrosion not removed promptly will degrade equipment performance.

LUBRICATION

Perform lubrication checks and services after completing PMCS. Refer to WP 0016 00.



PMCS for Bridge and Pallet Figure.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

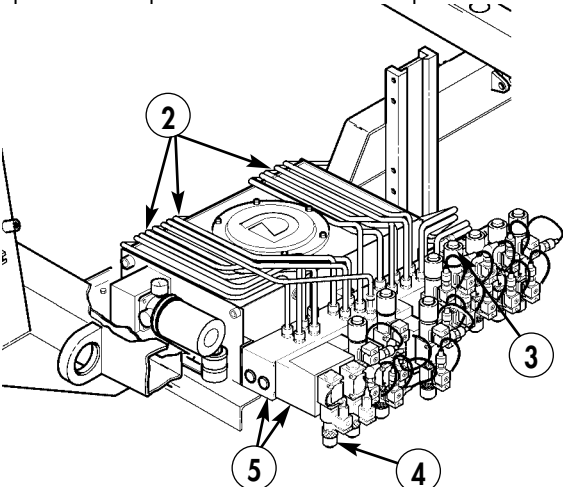
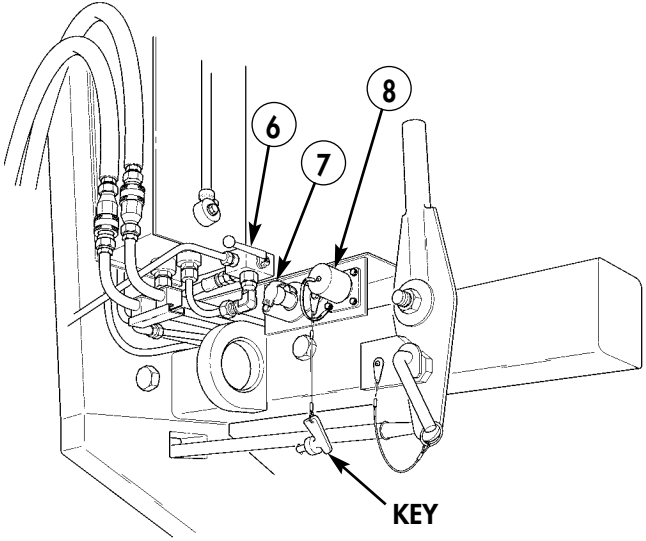
Table 1. Preventive Maintenance Checks and Services for Pallet.

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
1	Annual	A-frame (1)	Check for cracks, broken welds, or if bent.	Pallet A-frame member is cracked, has broken welds, or is bent enough to affect operation.
2	Annual	Control valves (4), manifolds (5), hydraulic lines (2), and solenoid electrical leads (3)	<ol style="list-style-type: none"> a. Check control valves for loose mounting hardware or oil leakage. b. Check manifolds for loose mounting hardware or oil leakage. c. Check hydraulic lines for oil leakage. d. Check solenoid electrical leads for damage, loose connectors, or frayed wires. e. Repair or replace loose or damaged leads or wires. Refer to WP 0053 00. 	<ol style="list-style-type: none"> a. Any mounting hardware is loose, or Class III leak is noted. b. Any mounting hardware is loose, or Class III leak is noted. c. Any Class III is leak noted. d. Any electrical lead is damaged, loose, or frayed.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
3	Annual	Transfer valve (6)	Check for damage or missing lever. Repair or replace lever. Refer to WP 0073 00.	Damaged or lever is missing.
4	Annual	NATO slave receptacle (8) and main power switch (7)	a. Check for damage, loose electrical leads, missing hardware, or missing key. b. Check NATO slave receptacle for damage or if missing. c. Repair or replace main power switch or NATO slave receptacle. Refer to WP 0055 00.	a. Damaged or loose electrical leads or key or hardware is missing. b. NATO slave receptacle is damaged or missing.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

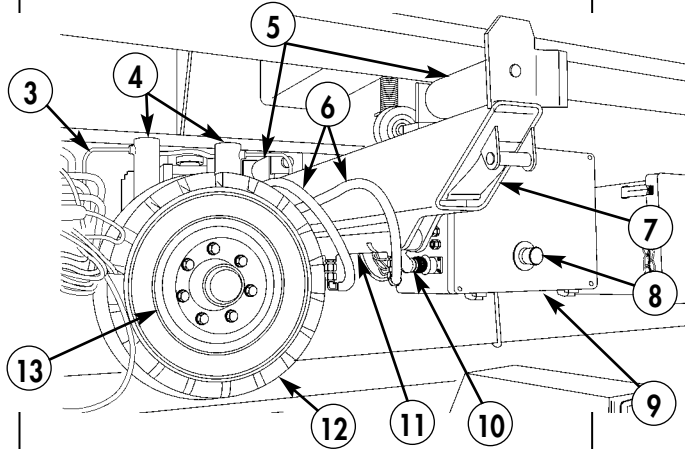
Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
5	Annual	Auxiliary hydraulic oil reservoir (1) and hydraulic reservoir (2)	a. Check for leaks or missing hardware. b. Repair or replace reservoir. Refer to WP 0072 00 or WP 0073 00.	a. Any Class III leak noted.
6	Annual	Telescopic tube (7), rollers (5), hydraulic cylinder (11) and lines, and hoses (6)	a. Check telescopic tube for cracks, damage, or binding. b. Check for loose or missing rollers. c. Repair or replace loose or missing rollers. Refer to WP 0041 00. d. Check hydraulic cylinder, lines, fittings, and hoses for damage or leaks. e. Repair or replace cylinder, lines, fittings, or hoses. Refer to WP 0042 00.	a. Any cracks, damage, or binding is noted. b. Any rollers are loose or missing. d. Any damage or Class III leak is noted.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
7	Annual	Supporting wheel (13), tire (12), hydraulic cylinders (4), and lines (3)	a. Check supporting wheel and retaining bracket for damage or missing hardware. b. Repair or replace damaged or missing hardware. Refer to WP 0033 00. c. Check tire for cuts, cracks, or deflation. Add air as necessary, fill to 100 psi (670 kPa) d. Repair or replace tires. Refer to WP 0036 00. e. Check hydraulic cylinders for loose or missing hardware. f. Check hydraulic cylinders, lines, and fittings for leaks. g. Repair or replace cylinders, lines, or fittings. Refer to WP 0032 00.	a. Any damaged or missing hardware. e. Any missing hardware. f. Any Class III leak is noted.
8	Annual	Electrical system box (9), electrical harnesses (10), and emergency stop button (8)	a. Check electrical system box for loose or missing hardware. b. Check electrical harnesses for damaged, frayed, or missing mounting hardware. Repair or replace loose, missing, or damaged hardware. Refer to WP 0049 00.	a. Any missing hardware. b. Any frayed electrical harnesses.



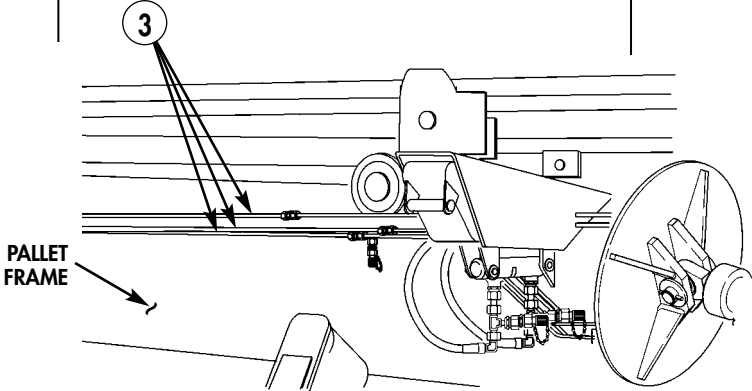
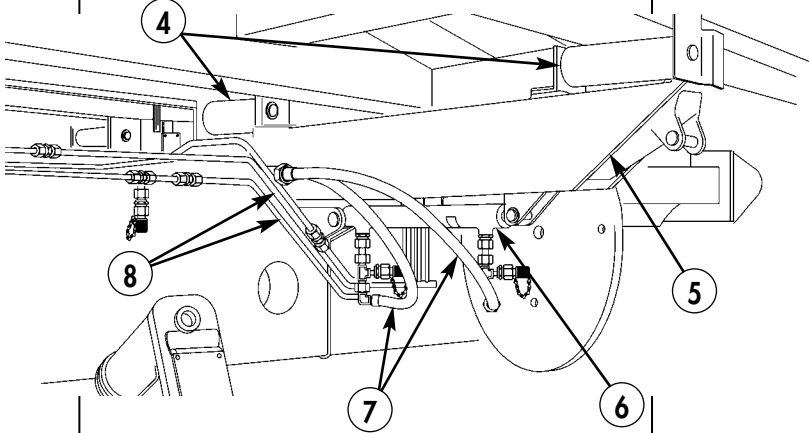
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
9	Annual	Pallet toolbox (1) and BII	<p>a. Check toolbox for loose mounting hardware.</p> <p>b. Check tool hold-down brackets for missing or loose mounting hardware.</p> <p>c. Check toolbox cover and latches for loose or missing hardware.</p> <p>d. Repair or replace missing or damaged hardware. Refer to WP 0045 00.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Fastening rods may be securing bridge.</p> <p>e. Check for missing or damaged BII. Refer to TM 5-5420-280-10.</p> <div data-bbox="673 924 1096 1207" style="text-align: center;"> </div> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Boxes may be stowed on bridge.</p>	<p>a. Any mounting hardware is loose.</p> <p>c. Latches or mounting hardware are damaged or missing.</p> <p>e. Any BII are damaged or missing.</p>
10	Annual	Anchorage stowage box (2) and BII	<p>a. Check for loose mounting hardware, brackets, latches, pins, or missing cover.</p> <p>b. Check for missing or damaged BII. Refer to TM 5-5420-280-10.</p> <p>c. Repair or replace missing or damaged hardware. Refer to WP 0046 00.</p> <div data-bbox="657 1606 1136 1921" style="text-align: center;"> </div>	<p>a. Latches, pins, or cover are damaged or missing.</p> <p>b. Any BII are damaged or missing.</p>

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
11	Annual	Hydraulic tubing (3) on pallet frame	<p>a. Check hydraulic tubing on pallet for kinks, damage, loose mounting hardware, or leaking fittings.</p> <p>b. Repair or replace tubing or damaged hardware. Refer to WP 0071 00.</p> 	Any tubing is kinked, damaged, mounting hardware is loose, or Class III leak is noted.
12	Annual	Telescopic tube (5), rollers (4), hydraulic cylinder (6), lines (8), and hoses (7)	<p>a. Check telescopic tube for cracks or damage.</p> <p>b. Check for loose or missing rollers.</p> <p>c. Check hydraulic cylinder, lines, fittings, and hoses for damage or leaks.</p> <p>d. Repair or replace cylinder, lines, fittings, or damaged hardware. Refer to WP 0042 00.</p> 	<p>a. Any cracks or damage is noted.</p> <p>b. Any rollers are loose or missing.</p> <p>c. Any damage or Class III leak is noted.</p>

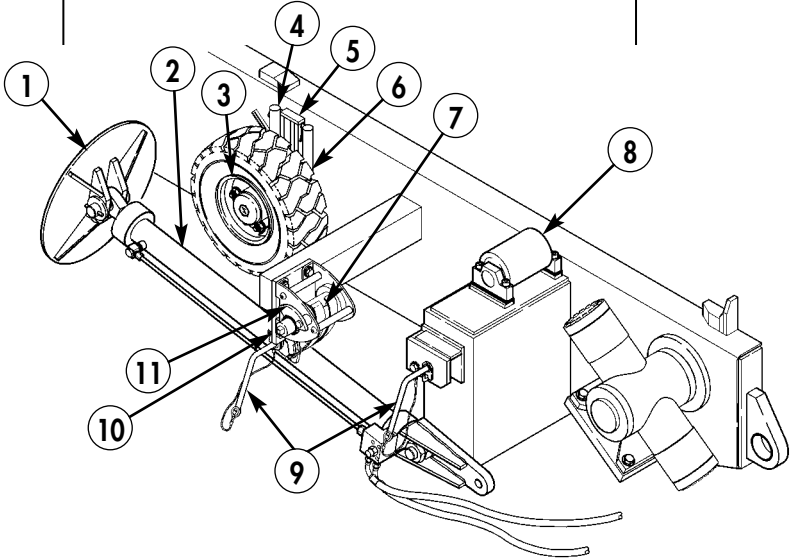
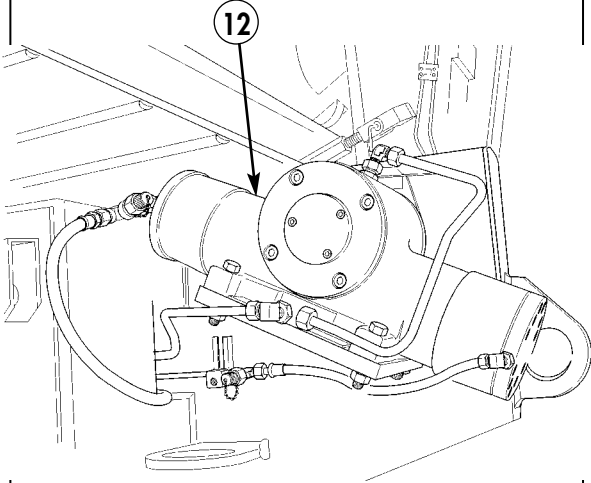
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/ SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
13	Annual	Supporting cylinder bottom plate (1)	a. Check for damage, cracks, or missing pin. b. Repair or replace damaged or missing pins. Refer to WP 0038 00.	Supporting cylinder bottom plate is damaged or pin is missing.
14	Annual	Supporting cylinder (2), winch (11) ratchet clutch (10), strap (7), retaining pins (9), and support rollers (8)	a. Check for damaged or missing retaining pins. b. Check for damaged or missing hand winch strap or strap end. c. Check winch strap and ratchet clutch operation for binding or slippage using BII ratchet. d. Check hydraulic hoses, fittings, and lines for damage or leaks. e. Repair or replace missing hardware, damaged strap, or hoses and fittings. Refer to WP 0039 00. f. Check check for damaged or missing rollers. g. Repair or replace damaged or missing rollers. Refer to WP 0044 00.	a. Retaining pins are missing or damaged. b. Strap or strap ends are damaged or missing. c. Strap is binding or ratchet clutch slipping or not operational. d. Lines, hoses, or fittings are damaged, or Class III leak is noted.
15	Annual	Supporting wheel (3), tire (6), hydraulic cylinders (4), and retaining bracket (5)	a. Check supporting wheel and retaining bracket for damage or missing hardware. b. Check tire for cuts, cracks, or deflation. Add air as necessary, fill to 100 psi (690 kPa). c. Check hydraulic cylinders for loose or missing hardware. d. Check hydraulic cylinders, lines, and fittings for leaks, or if tubing is kinked or damaged. e. Repair or replace missing hardware, cylinders, tires, lines, and fittings. Refer to WP 0032 00.	d. Any Class III leak is noted or faulty cylinders prevent transload or transport of pallet on ground.

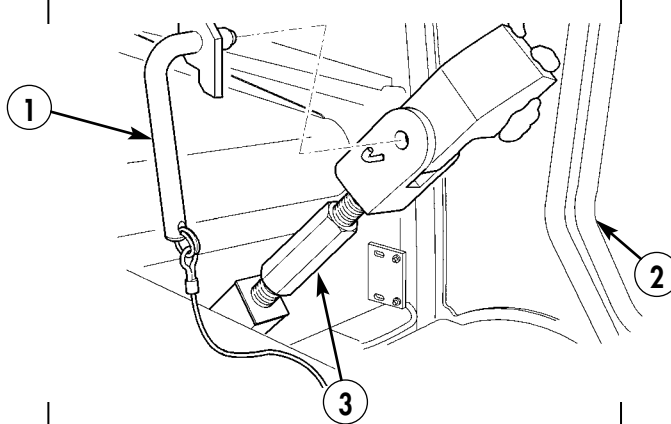
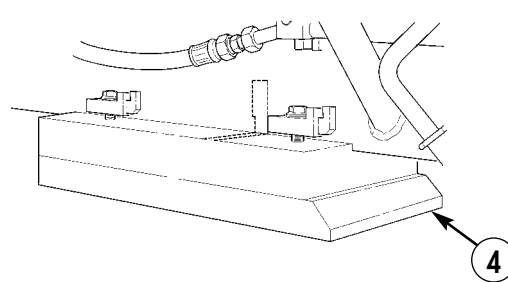
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
16	Annual	Swivel drive (12)	 <p>a. Check swivel drive for missing or loose mounting hardware.</p> <p>b. Check hydraulic lines and fitting for damage or leaks.</p> <p>c. Repair or replace damaged, missing, loose mounting hardware, or lines and fittings. Refer to WP 0094 00.</p> 	<p>a. Mounting hardware is missing or loose.</p> <p>b. Hydraulic lines are damaged or Class III leak is noted.</p>

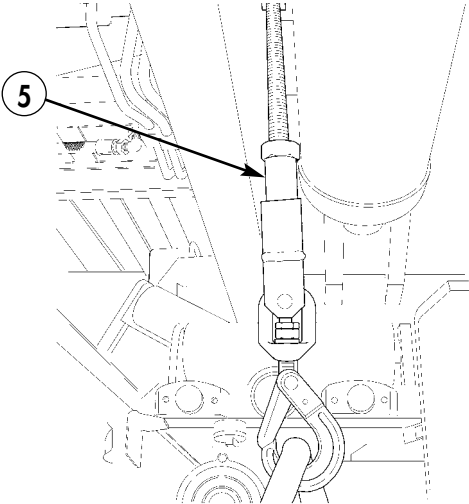
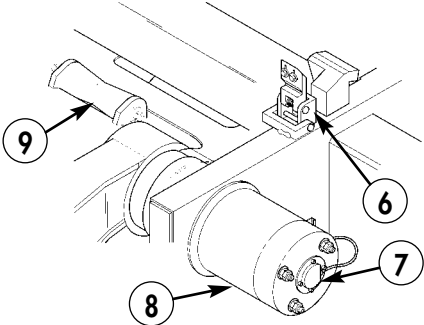
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
17	Annual	Launch boom (2), launch boom locks (3), and retaining pins (1)	<p>a. Check hydraulic lines for damage, or loose mounting hardware.</p> <p>b. Check hydraulic lines for leaks.</p> <p>c. Check launch boom locks for damage or if retaining pins are missing.</p> <p>d. Repair or replace hoses, fittings, or loose or missing hardware. Refer to WP 0095 00.</p>  <p>The diagram shows a launch boom assembly. Callout 1 points to a retaining pin on the boom. Callout 2 points to the launch boom itself. Callout 3 points to a launch boom lock mechanism.</p>	<p>a. Lines are not secured properly.</p> <p>b. Any Class III leak is noted.</p> <p>c. Launch boom locks are damaged or retaining pins are missing.</p>
18	Annual	Pallet shoring pads (4) and hold-down bars (5)	<p>a. Check both hold-down bars for damage or missing parts.</p> <p>b. Repair or replace hold-down bar if damaged or missing. Refer to WP 0047 00.</p> <p>c. Check both shoring pads for damage or missing hardware.</p> <p>d. Repair or replace damaged or missing hardware. Refer to WP 0048 00.</p>  <p>The diagram shows a pallet shoring pad. Callout 4 points to the shoring pad itself.</p>	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
19	Annual	Bearing shaft manifold (8), potentiometer (7), lever (6), and winch wire rope roller (9)	 <p>a. Check bearing shaft manifold for damage, loose or missing hardware, or leakage.</p> <p>b. Check hydraulic tubing and fittings for damage or leakage.</p> <p>c. Repair or replace bearing shaft, manifold, or loose or damaged lines and fittings. Refer to WP 0092 00.</p> <p>d. Check potentiometer electrical harness for damaged or frayed wires.</p> <p>e. Repair or replace potentiometer harness or wires. Refer to WP 0093 00.</p> <p>f. Check lever for loose or missing springs or hardware.</p> <p>g. Repair or replace damaged or missing parts. Refer to WP 0031 00.</p> <p>h. Check wire rope roller for damage.</p> 	<p>a. Any damage, loose or missing hardware, or Class III leaks noted.</p> <p>b. Any Class III leaks noted.</p> <p>d. Harness wires are damaged or frayed.</p> <p>f. Lever or springs damaged or missing.</p> <p>h. Roller will not turn freely or is damaged.</p>

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
20	Annual	Supporting cylinder (2), and strap winch (1)	<ul style="list-style-type: none"> a. Check for damaged or missing retaining pins. b. Check for damaged or missing hand winch strap or strap end. c. Check hand strap winch operation for binding. d. Check hydraulic hoses, fittings, and lines for damage or leaks. e. Repair or replace missing hardware, damaged strap, or hoses and fittings. Refer to WP 0039 00. f. Check for damaged or missing roller. g. Repair or replace damaged or missing roller. Refer to WP 0044 00. 	<ul style="list-style-type: none"> a. Missing or damaged retaining pins. b. Damaged or missing strap or strap ends. c. Binding hand strap winch. d. Damaged lines, hoses, fittings, or Class III leak noted. f. Roller is damaged or missing or will not turn.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
21	Annual	Supporting wheel (5), tire (6), and hydraulic cylinders (3)	a. Check supporting wheel for damage or missing hardware. b. Check tire for cuts, cracks, or deflation. c. Check hydraulic cylinder for loose or missing hardware. d. Check hydraulic cylinder, lines, and fittings for leaks, or if tubing is kinked or damaged. e. Repair or replace missing hardware, cylinders, tires, lines, and fittings. Refer to WP 0032 00.	d. Any Class III leak is noted or faulty cylinders prevent transload or transport of pallet on ground.
22	Annual	Supporting cylinder bottom plate (4)	a. Check supporting cylinder bottom plate for damage, cracks, or missing pin. b. Repair or replace damaged or missing pins. Refer to WP 0038 00.	Supporting cylinder bottom plate damaged or missing pin.

The diagram shows a side view of a supporting cylinder assembly. Callout 3 points to the hydraulic cylinder body. Callout 4 points to the bottom plate of the cylinder. Callout 5 points to the supporting wheel. Callout 6 points to the tire on the wheel.

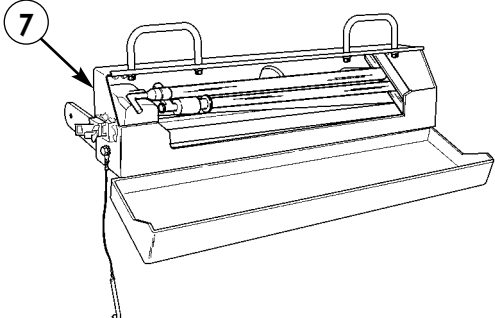
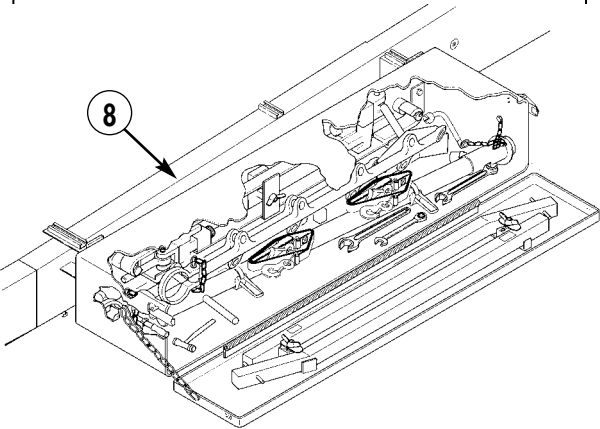
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
23	Annual	Telescopic tube (6), rollers (1), hydraulic cylinder (4), lines (3), and hoses (5)	a. Check telescopic tube for cracks or damage. b. Check for loose or missing rollers. c. Check hydraulic cylinder, lines, fittings, and hoses for damage or leaks. d. Repair or replace cylinder, lines, fittings, or damaged hardware. Refer to WP 0042 00.	a. Any cracks or damage noted. b. Any loose or missing rollers. c. Any damage or Class III leaks noted.
24	Annual	Hydraulic tubing (3) on pallet frame	a. Check hydraulic tubing on pallet for kinks, damage, loose mounting hardware, or leaking fittings. b. Repair or replace tubing or damaged hardware. Refer to WP 0038 00.	Any kinked or damaged tubing, loose mounting hardware, or Class III leak noted.

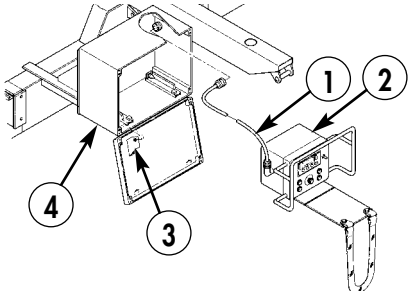
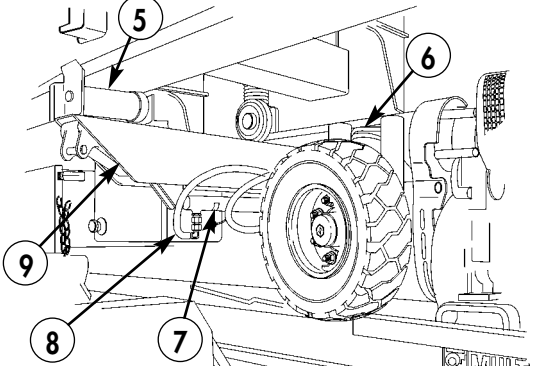
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
25	Annual	Anchorage stowage box (7) and BII	<p>a. Check for loose mounting hardware, brackets, latches, pins, or missing cover.</p> <p>b. Repair or replace missing or damaged hardware. Refer to WP 0046 00.</p> <p>c. Check for damaged or missing BII. Refer to TM 5-5420-280-10.</p> 	<p>a. Latches, pins, or cover are damaged or missing.</p> <p>b. Any BII are damaged or missing.</p>
26	Annual	Pallet toolbox (8) and BII	<p>a. Check toolbox for loose mounting hardware.</p> <p>b. Check tool hold-down brackets for missing or loose mounting hardware.</p> <p>c. Check toolbox cover and latches for loose or missing hardware.</p> <p>d. Repair or replace missing or damaged hardware. Refer to WP 0045 00.</p> <p>e. Check for missing or damaged BII. Refer to TM 5-5420-280-10.</p> 	<p>a. Any mounting hardware is loose.</p> <p>c. Latches or mounting hardware are damaged or missing.</p> <p>e. Any BII are damaged or missing.</p>

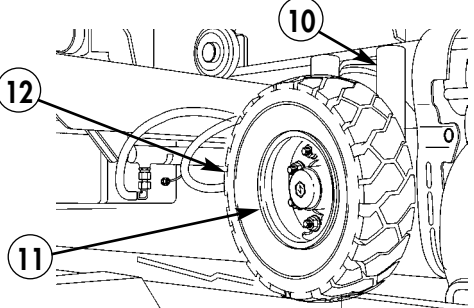
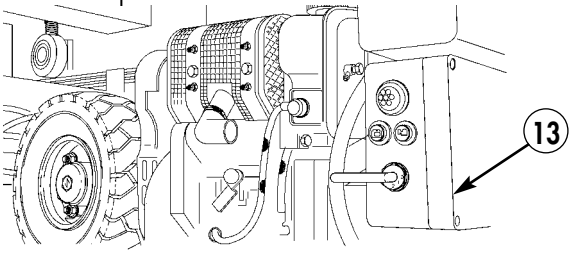
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
27	Annual	RCU stowage box (4), electrical harness (1), RCU (2), and emergency stop button (3)	<p>a. Check RCU stowage box for damaged latch, cover hinges, O-ring seal, or loose or missing hardware.</p> <p>b. Actuate emergency stop button on RCU stowage box lid and electrical box lid.</p> <p>c. Check electrical harness for damage or loose connector.</p> <p>d. Check RCU for damaged display or controls.</p> <p>e. Repair or replace loose, missing, or damaged hardware. Refer to WP 0050 00.</p> 	<p>a. Latch or hinges missing.</p> <p>b. Any emergency stop button is inoperable.</p> <p>c. Electrical harness damaged.</p> <p>d. RCU damaged.</p>
28	Annual	Telescopic tube (9), rollers (5), hydraulic cylinder (7), lines (6), and hoses (8)	<p>a. Check telescopic tube for cracks or damage.</p> <p>b. Check for loose or missing rollers.</p> <p>c. Repair or replace loose or missing rollers. Refer to WP 0041 00.</p> <p>d. Check hydraulic cylinder, lines, fittings, and hoses for damage or leaks.</p> <p>e. Repair or replace cylinder, lines, fittings, or hoses. Refer to WP 0042 00.</p> 	<p>a. Any cracks or damage noted.</p> <p>b. Any loose or missing rollers.</p> <p>d. Any damage or Class III leaks noted.</p>

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

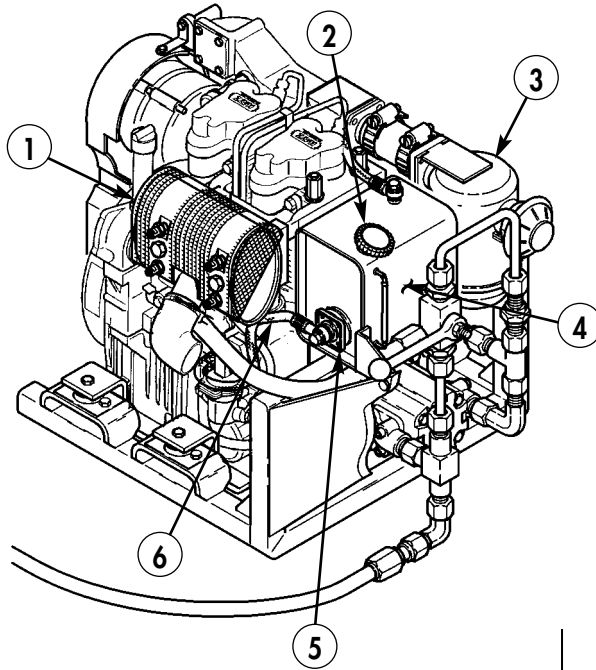
Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
29	Annual	Supporting wheel (11), tire (12), and hydraulic cylinders (10)	<p>a. Check supporting wheel and retaining bracket for damage or missing hardware.</p> <p>b. Repair or replace damaged or missing hardware. Refer to WP 0033 00.</p> <p>c. Check tire for cuts, cracks, or deflation.</p> <p>d. Repair or replace tires. Refer to WP 0036 00.</p> <p>e. Check hydraulic cylinder for loose or missing hardware.</p> <p>f. Check hydraulic cylinder, lines, and fittings for leaks.</p> <p>g. Repair or replace cylinders, lines, or fittings. Refer to WP 0032 00.</p> 	<p>f. Any Class III leak noted or faulty cylinders prevent transload or transport of pallet on ground.</p>
30	Annual	Launch Power Unit (LPU) engine control box (13)	<p>a. Check LPU control box for damage.</p> <p>b. Repair or replace damaged or missing hardware.</p> <p>c. Check engine for damage. Check oil level, start and run engine. Refer to WP 0115 00. Refer to TM 5-5420-280-10.</p> <p>d. Shut down LPU engine. Refer to TM 5-5420-280-10.</p> 	<p>a. Damage prevents starting auxiliary engine.</p> <p>c. Engine is damaged or will not run.</p>

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

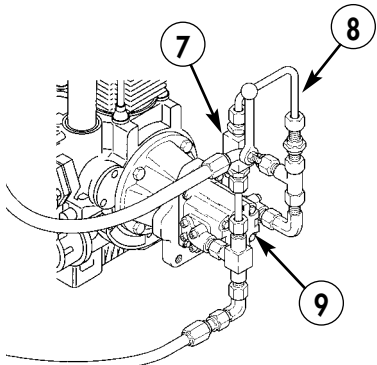
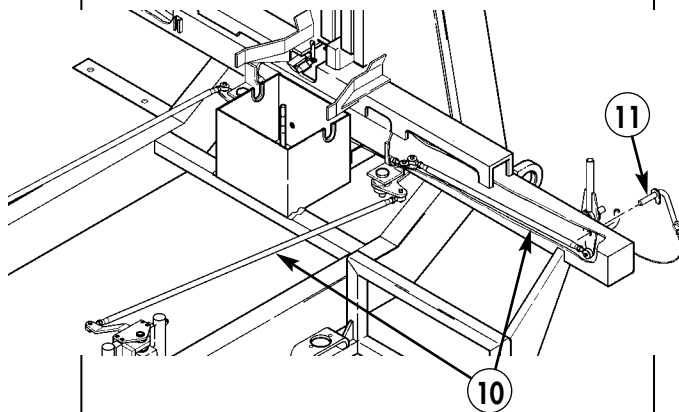
Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
31	Annual	Launch Power Unit (LPU) engine, air cleaner (3), muffler (1), fuel tank (4), filter 5), and hose (6), and filler cap (2)	<p>a. Check air cleaner for damage, loose or missing hardware, or dirt.</p> <p>b. Check muffler for damage or loose or missing hardware.</p> <p>c. Check fuel tank and filler cap for damage, loose or missing hardware, or leakage.</p> <p>d. Check hoses and drain valve for damage or leakage.</p> <p>e. Repair or replace damaged, loose, or missing hardware. Refer to WP 0102 00, WP 0108 00, and WP 0109 00.</p>	<p>c. Any missing hardware or Class III leaks noted.</p> <p>d. Any Class III leaks noted.</p>



PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

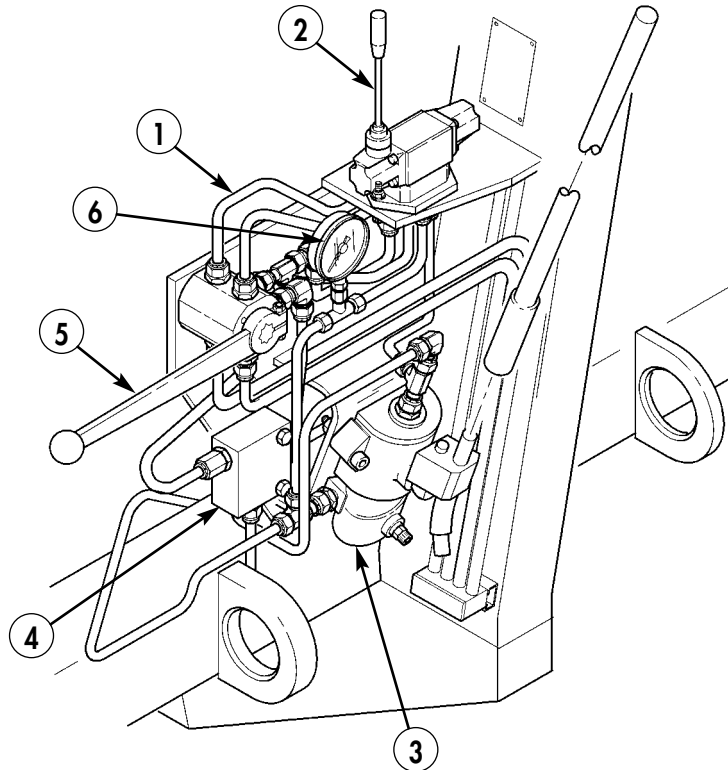
Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
32	Annual	LPU engine hydraulic pump (9), bypass valve (7), and lines (8)	<p>a. Check hydraulic pump for damaged drive gear coupling.</p> <p>b. Check bypass valve for damage or loose or missing hardware.</p> <p>c. Check lines and fitting for damage or leakage.</p> <p>d. Repair or replace damaged, loose, or missing hardware. Refer to WP 0104 00.</p> 	<p>a. Damaged drive gear coupling LPU.</p> <p>b. Damaged drive gear coupling (if LPU engine will be used).</p> <p>c. Damaged drive gear coupling (if LPU engine will be used).</p>
33	Annual	Steering linkage (10) and both retaining pins (11)	<p>a. Check steering linkage for damage, loose or missing hardware, or binding.</p> <p>b. Check both retaining pins for damage.</p> <p>c. Repair or replace damaged, loose, or missing hardware. Refer to WP 0034 00.</p> 	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

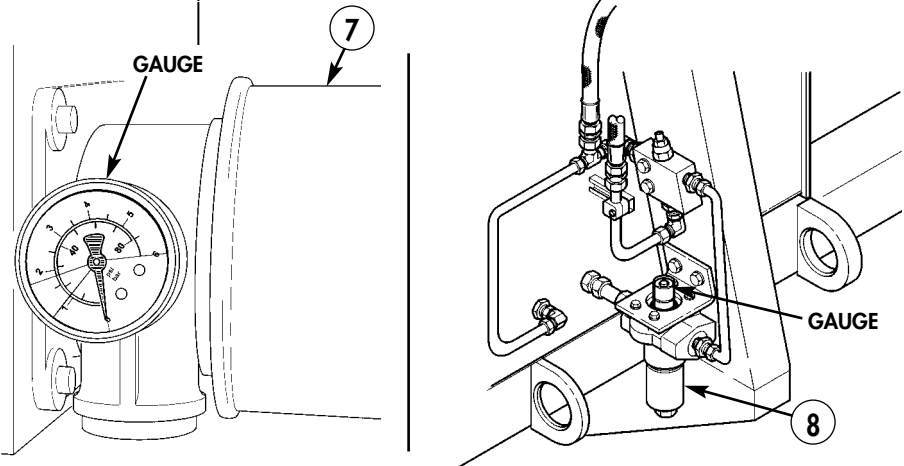
Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
34	Annual	Supporting wheel pump (3), selector valve (5), control valve (2), tubing (1), pressure valve (4), and gauge (6)	<p>a. Check pump for damage, loose or missing hardware, or leakage.</p> <p>b. Check valves and gauge for damage, loose or missing hardware, or leakage.</p> <p>c. Check tubing and fittings for damage, loose or missing hardware, or leakage.</p> <p>d. Repair or replace damaged, loose, or missing hardware. Refer to WP 0081 00.</p>	<p>a. Any damage, loose or missing hardware, or Class III leak noted.</p> <p>b. Any damage, loose or missing hardware, or Class III leak noted.</p> <p>c. Any damage, loose or missing hardware, or Class III leak noted.</p>



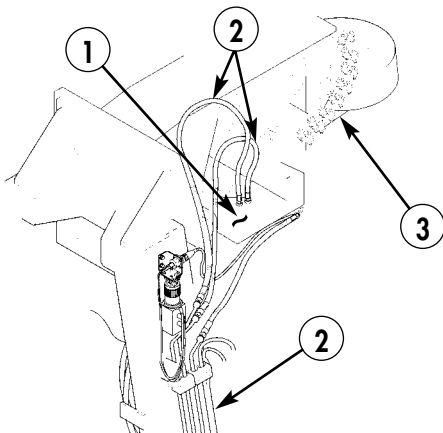
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
35	Annual	Hydraulic reservoir oil filter (7) and pre-filter (8)	<p>a. Check for damage or leaks; if clogged, gauge will indicate red zone when operating.</p> <p>b. Repair or replace filter or pre-filter. Refer to WP 0080 00.</p>	Any damage, Class III leaks noted, or gauge in red zone.
				
36	Annual		Launch bridge to ground and observe RCU display screen. Refer to TM 5-5420-280-10.	RCU will not operate.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
37	Annual	Winch motor (1), wire rope (3), and hydraulic lines (2)	<p style="text-align: center;"><u>WARNING</u></p> <p>Winch wire rope may be frayed. Wear heavy leather gloves when handling winch cable, and do not run hands on wire rope. Failure to comply may result in injury to personnel.</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>When performing PMCS on pallet, do not stand or sit on hydraulic lines, tubing, limit switches, or mounting brackets. Failure to comply may result in damage to equipment.</p> <p style="text-align: center;"><u>NOTE</u></p> <p>Perform steps 37 through 53 with bridge removed.</p> <p>a. Check winch motor for loose or missing hardware.</p> <p>b. Check hydraulic lines for loose mounting hardware, damaged lines, or leaking lines or fittings.</p> <p>c. Check winch wire rope for signs of pigtailing, unwrapping, broken wires, frays, or damage. Refer to WP 0057 00.</p> <p>d. Repair or replace damaged, loose, or missing hardware. Refer to WP 0057 00, WP 0068 00, and WP 0069 00.</p>	<p>a. Any loose or missing hardware.</p> <p>b. Any loose or missing hardware, damaged lines, or Class III leaks noted.</p> <p>c. Winch wire rope is kinked, frayed, damaged, or signs of pigtailing, unwrapping or has more than six broken wires in 1 in. length of cable.</p>
38	Annual	Winch limit switch (4)	<p>Check limit switches for damage or broken electrical wires. Refer to WP 0056 00.</p> 	<p>Limit switches broken or damaged, broken wires, or out of adjustment.</p>

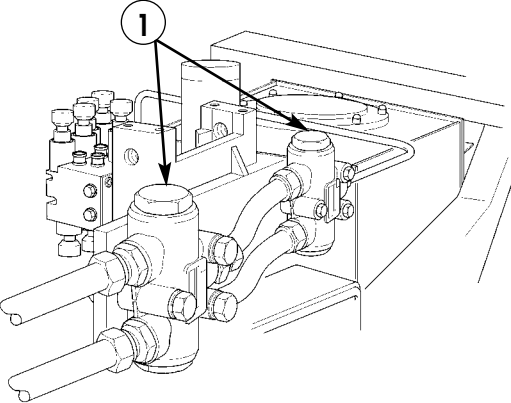
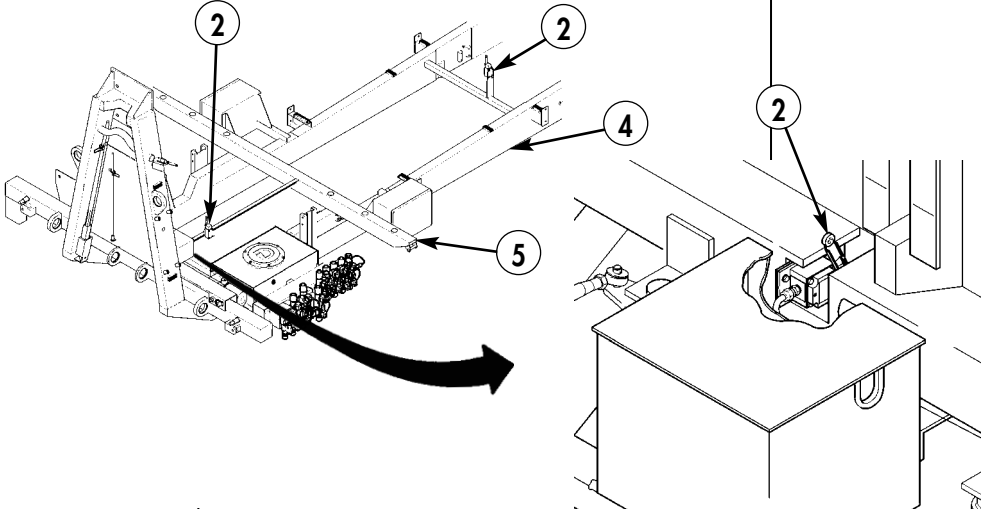
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
39	Annual	Battery box (7), batteries (9), and cables (7)	a. Check battery box for damage or loose mount hardware. b. Check battery case for visible cracks or damage. c. Check battery cable terminals for corrosion, loose or damaged cable, or missing hardware. d. Repair or replace damaged, loose, or missing hardware. Refer to WP 0113 00.	a. Any damage or loose mounting hardware. b. Any visible cracks or damage. c. Any damage, loose battery cables, or missing hardware.
40	Annual	Steering rods (8) and tie rods (6)	a. Check steering rods for damage or loose or missing hardware. b. Check tie rod for damage or loose or missing hardware. c. Repair or replace damaged, loose, or missing hardware. Refer to WP 0034 00.	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
41	Annual	Flow dividers (1)	<p>a. Check flow divider and pressure regulators for damage, loose mounting hardware, or leaking lines.</p> <p>b. Repair or replace damaged, loose, or missing hardware. Refer to WP 0078 00.</p> 	<p>a. Any damage, loose mounting hardware, or Class III leaks. noted.</p>
42	Annual	Transverse girders (5) and longitudinal girders (4)	<p>Check for cracks, broken welds, or if bent.</p>	<p>Cracked, has broken welds, or is bent enough to affect operation.</p>
43	Annual	Limit switches (2)	<p>Check limit switches for damage or broken electrical wires. Refer to WP 0056 00. Check limit switches for damage, broken electrical wires, or out of adjustment. Refer to WP 0056 00.</p> 	<p>Limit switches are broken or damaged.</p>

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

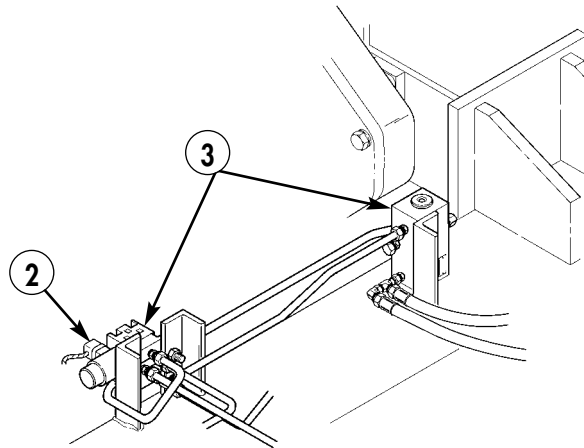
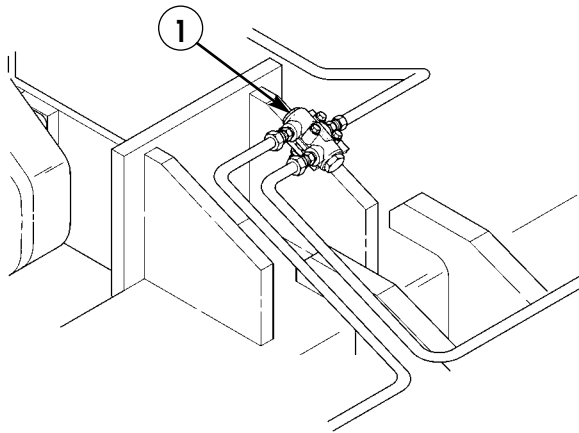
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
44	Annual	Forward pinwheel drive (6), hydraulic motor (8), and lines	a. Check forward pinwheel drive for damaged, loose, or missing hardware and for low oil level. b. Check hydraulic motor for damage or loose or missing hardware. c. Check hydraulic lines and fittings for leakage. d. Repair or replace damaged, loose, or missing hardware. Refer to WP 0084 00.	a. Any damage or loose or missing hardware. b. Any damage or loose or missing hardware. c. Any Class III leaks noted.
45	Annual	Limit switches (7)	Check limit switches for damage, broken electrical wires, or if out of adjustment. Refer to WP 0056 00.	Limit switches are broken, damaged, or out of adjustment.

The diagram shows a detailed view of the pallet fork assembly. Callout 6 is located at the front of the assembly, pointing to a circular component (the forward pinwheel drive). Callout 7 is located on the right side, pointing to a rectangular component (the limit switch). Callout 5 is located at the bottom center, pointing to a hydraulic motor or fitting. Various other mechanical parts like rollers, bearings, and structural beams are also visible.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
46	Annual	Flow divider (1), pressure regulators (3), and solenoid (2)	<p>a. Check flow divider and pressure regulators for damage, loose mounting hardware, or leaking lines.</p> <p>b. Check solenoid for damaged electrical leads, loose mounting hardware, and leaking lines.</p> <p>c. Repair or replace leaking lines, damaged, loose, or missing hardware. Refer to WP 0076 00, WP 0077 00, and WP 0078 00.</p>	<p>a. Any damage, loose mounting hardware, or Class III leaks noted.</p> <p>b. Any damage, loose mounting hardware, or Class III leaks noted.</p>



PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
47	Annual	Secondary boom (7), rollers (6), hydraulic cylinder (4), and hoses (5)	a. Check secondary boom for cracks or loose or missing hardware. b. Check rollers for damage or loose or missing hardware. c. Check hydraulic cylinder for damage, loose or missing hardware, or leakage. d. Check hoses and fittings for damage or leakage. e. Repair or replace damaged, loose, or missing hardware. Refer to WP 0098 00, WP 0099 00, and WP 0100 00.	a. Any cracks or missing hardware. b. Any cracks or missing hardware. c. Any cracks or missing hardware or Class III leaks noted. d. Any damage or Class III leaks noted.
48	Annual	Limit switches (8)	Check for damage, broken electrical wires, or if out of adjustment. Refer to WP 0056 00.	Limit switch is broken, damaged, or out of adjustment.

The diagram shows a side view of a pallet fork assembly. Callout 4 points to the hydraulic cylinder at the base of the boom. Callout 5 points to the hoses connecting the cylinder. Callout 6 points to the rollers on the boom. Callout 7 points to the secondary boom structure. Callout 8 points to a limit switch mechanism located near the end of the boom.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

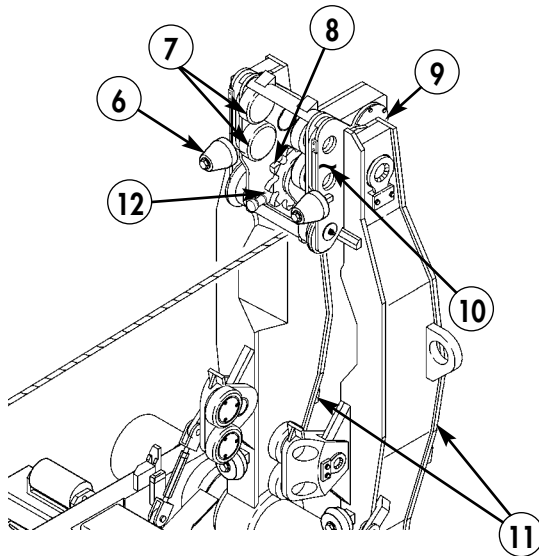
Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
49	Annual	Lower support boom, cylinders (1), hoses (5)	a. Check lower support boom for cracks, damage, or loose or missing hardware. b. Check cylinders for damage, loose or missing hardware, or leakage. c. Check hydraulic hoses and fittings for damage or leakage. d. Repair or replace damaged, loose, or missing hardware. Refer to WP 0096 00.	a. Any cracks, damage, or missing hardware. b. Any damage, loose or missing hardware, or Class III leaks noted. c. Any Class III leaks noted.
50	Annual	Winch wire rope roller (2)	Check winch cable roller for damage and loose or missing hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0091 00.	Any damage or loose or missing hardware.
51	Annual	Upper roller blocks (4) and cone alignment roller guides (3)	a. Check upper roller blocks for damaged rollers, loose or missing hardware, or missing rollers. b. Repair or replace damaged, loose, or missing hardware. Refer to WP 0091 00 and WP 0087 00.	a. Any damage or missing rollers.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 1. Preventive Maintenance Checks and Services for Pallet (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
52	Annual	Roller track frame (10), rollers (7), and cone alignment rollers (6)	a. Check roller track frame for cracks or damage. b. Check roller track rollers for damage, loose or missing hardware or rollers. c. Check cone alignment rollers for damage, if loose, or if missing. d. Repair or replace damaged, loose, or missing hardware. Refer to WP 0088 00 and WP 0089 00.	a. Any cracks or damage. b. Any rollers damaged, loose, or missing hardware or rollers. c. Any damage, if loose, or if missing.
53	Annual	Rear pinwheel drive (8), hydraulic motor (9), stop cylinder (12), and hydraulic lines (11)	a. Check rear pinwheel drive for damaged, loose, or missing hardware and low oil level. b. Check hydraulic motor and stop cylinder for damage or loose or missing hardware. c. Check hydraulic lines and fittings for damage or leakage. d. Repair or replace damaged, loose, or missing hardware. Refer to WP 0082, WP 0083, WP 0085 00, and WP 0086 00.	a. Any damage, loose or missing hardware, or low oil level. b. Any damage or loose or missing hardware. c. Any Class III leaks noted.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

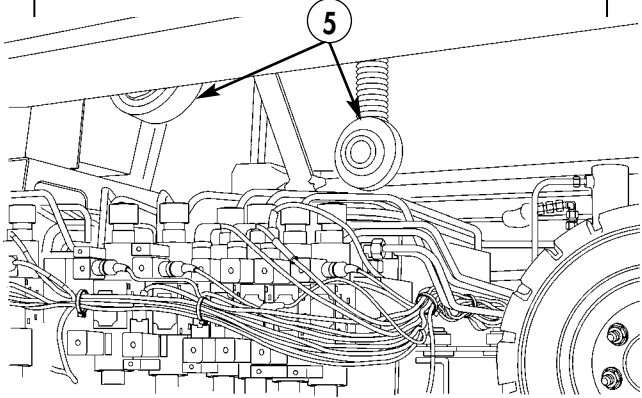
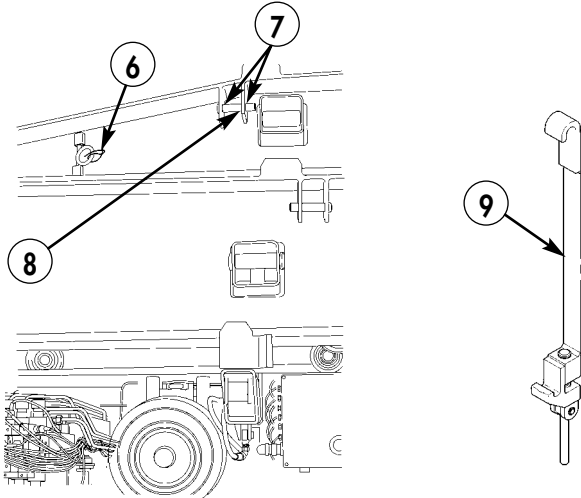
Table 2. Preventive Maintenance Checks and Services for Bridge.

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
1	Annual	Lower bridge crossforce coupling bumper (1)	Check for degradation or missing or loose mounting hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0025 00.	
2	Annual	Lower bridge quarter upper coupling lock mechanism (4)	Check for missing spring, damaged lock lever pins, loose mounting hardware, or damaged plunger. Repair or replace damaged, loose, or missing hardware. Refer to WP 0024 00.	Any missing spring, loose mounting hardware, damaged lock lever pins, or damaged plunger.
3	Annual	Lower bridge quarter lower coupling and receptacle (2) and lock lever (3)	a. Check lower coupling for cracks or missing hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0022 00. b. Check latch and catch for proper operation or if damaged. Repair or replace damaged lock levers. Refer to WP 0022 00.	a. Any cracks or missing hardware. b. Lock levers are operational.

The diagrams illustrate the components mentioned in the table. Diagram 1 points to the crossforce coupling bumper. Diagram 2 points to the lower coupling and receptacle. Diagram 3 points to the lock lever mechanism. Diagram 4 is a circular inset showing a close-up of the lock mechanism, highlighting the spring and plunger components.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 2. Preventive Maintenance Checks and Services for Bridge (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
4	Annual	Lower bridge quarter support wheels (5) and springs	<p>Visually check support wheels and springs for degradation. Repair or replace damaged, loose, or missing hardware. Refer to WP 0023 00.</p> 	
5	Annual	Upper bridge quarter anchoring eye (6)	<p>Check for degradation of anchoring eye or missing hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0021 00.</p>	Any cracks or missing hardware.
6	Annual	Fastening rod pin (8), brackets (7), and fastening rod (9)	<p>Visually check for cracks, missing pin, or if fastening rod is missing or damaged. Repair or replace damaged, loose, or missing hardware. Refer to WP 0020 00. Refer to TM 5-5420-280-10 for fastening rods.</p> 	Any cracks, missing pin, or damaged or missing fastening rod.

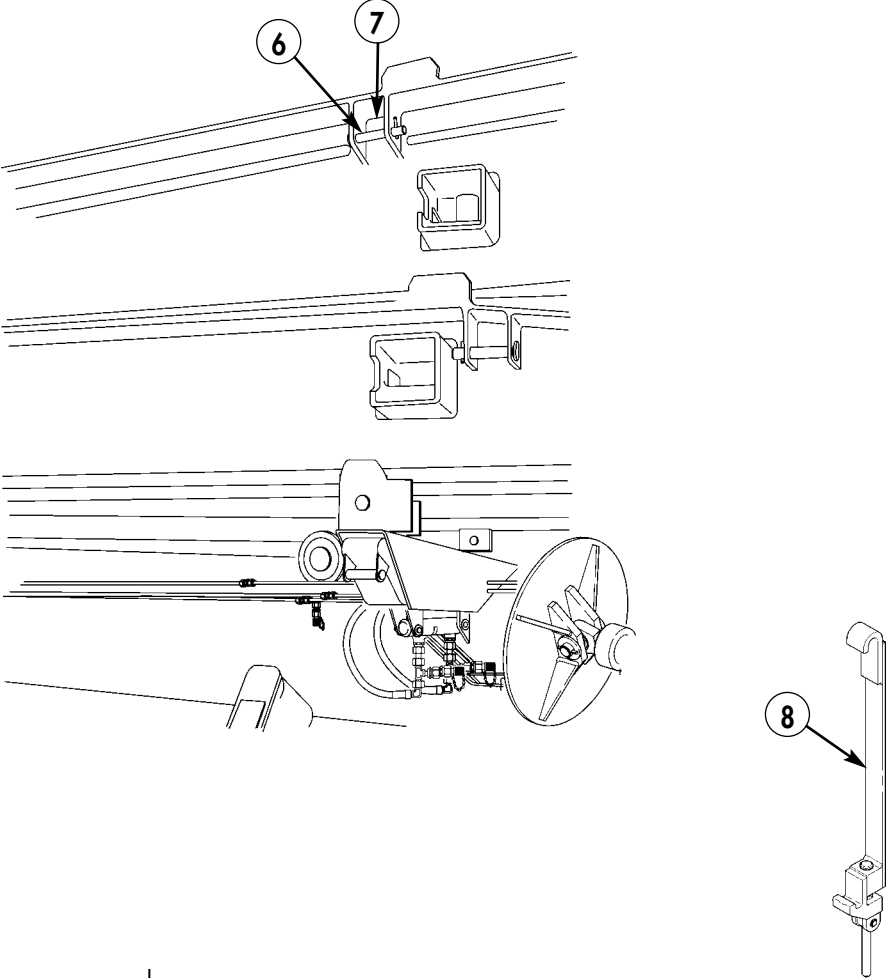
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 2. Preventive Maintenance Checks and Services for Bridge (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
7	Annual	Upper bridge quarter marker pole bracket (3) and helicopter lifting ring (1)	Visually check for missing bracket, lifting ring, or cracked welds. Repair or replace damaged, loose, or missing hardware. Refer to WP 0021 00. For cracks, refer to WP 0030 00.	
8	Annual	Upper and lower bridge slide locks (2)	Check slide locks for broken springs, tie rods, locking levers, and missing pins. Repair or replace damaged, loose, or missing hardware. Refer to WP 0026 00.	Any broken levers or missing pins.
9	Annual	Lower bridge quarter helicopter lifting ring (4) and marker pole bracket (5)	Visually check for missing lifting ring bracket or cracked welds. Repair or replace damaged, loose, or missing hardware. Refer to WP 0021 00 and WP 0030 00.	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 2. Preventive Maintenance Checks and Services for Bridge (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
10	Annual	Fastening rod pin (6), brackets (7), and fastening rod (8)	<p>Visually check for cracks, missing pin, or if fastening rod is missing or damaged. Repair or replace damaged, loose, or missing hardware. Refer to WP 0020 00 and WP 0030 00. Refer to TM 5-5420-280-10 for fastening rods.</p> 	Any cracks, missing pin, or damaged or missing fastening rod.

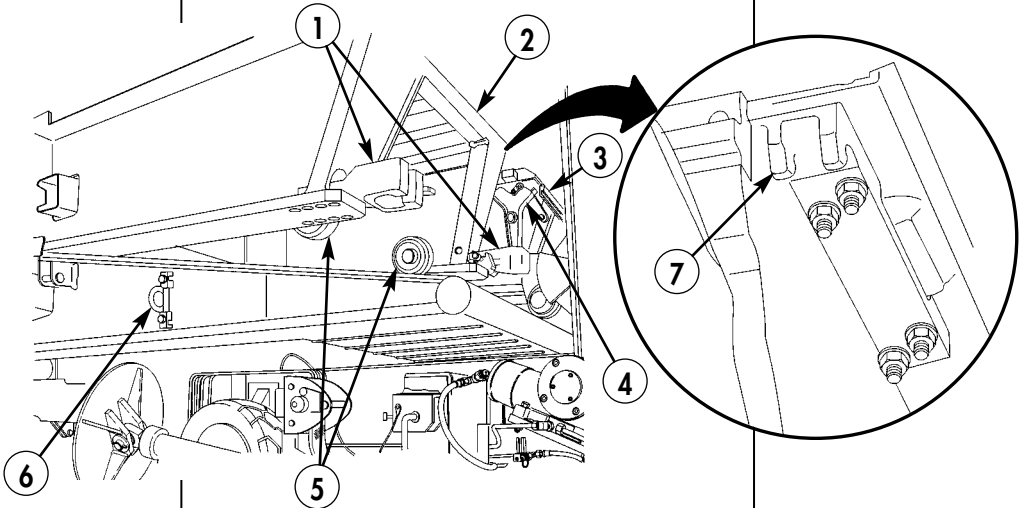
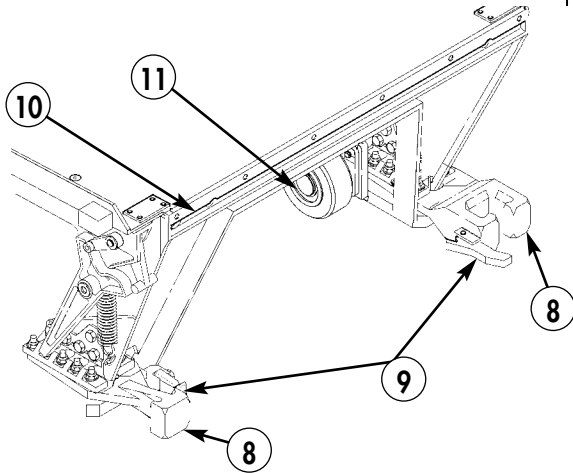
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 2. Preventive Maintenance Checks and Services for Bridge (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
11	Annual	Lower bridge quarter anchoring eye (6)	Check for degradation of anchoring eye or missing hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0021 00.	Any cracks or missing hardware.
12	Annual	Upper bridge crossforce coupling bumper (2)	Check for degradation, missing or loose mounting hardware, and damaged or missing alignment pins. Repair or replace damaged, loose, or missing hardware. Refer to WP 0025 00.	
13	Annual	Upper bridge lock receptacle (7)	Check for cracks, missing hooks, or loose mounting hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0024 00.	Any cracks or missing hooks.
14	Annual	Upper bridge quarter lower coupling and receptacle (1) and lock levers (9)	Check lower coupling for cracks or missing hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0022 00.	Any cracks or missing hardware.
15	Annual	Upper bridge quarter support wheels (5) and springs	Check support wheels for missing rubber tires, loose wheel bearings, or missing hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0023 00.	Any missing rubber tires, loose wheel bearing, or missing hardware.
16	Annual	Launch beam lifting eye	Check for missing hardware or if damaged or missing. Repair or replace damaged, loose, or missing hardware. Refer to WP 0027 00.	Any missing hardware or if damaged or missing.
17	Annual	Upper bridge crossforce coupling bumper (3)	Check for cracks or missing or loose mounting hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0025 00.	
18	Annual	Upper bridge quarter upper coupling lock mechanism (4) and plunger (10)	Check for missing spring, damaged lock lever pins, plunger, or loose mounting hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0024 00.	Any missing spring, loose mounting hardware, or damaged lock lever pins or plunger.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

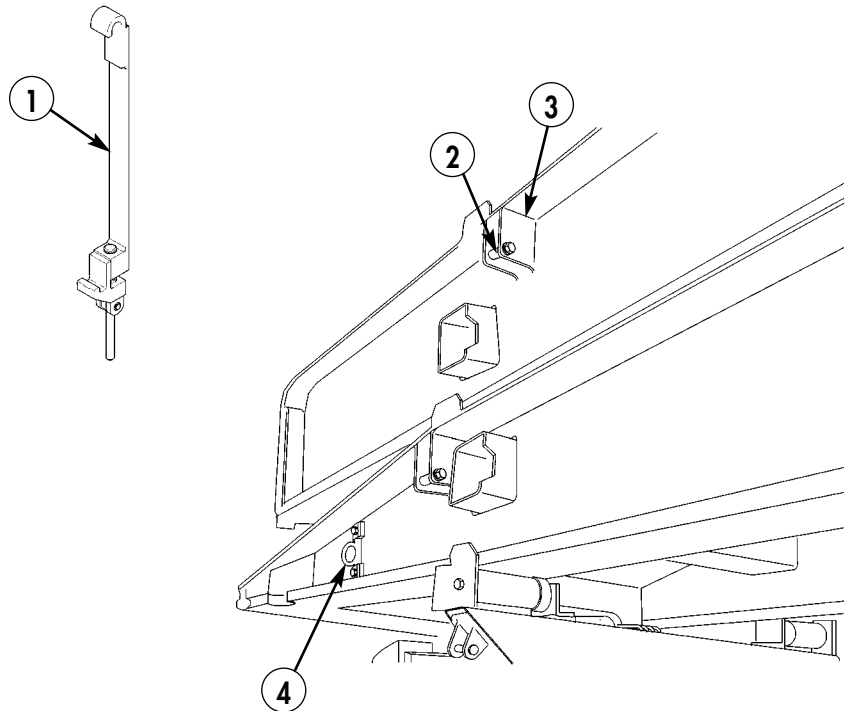
Table 2. Preventive Maintenance Checks and Services for Bridge (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
19	Annual	Upper bridge quarter lower coupling and receptacles (8) and lock levers (9)	 <p data-bbox="621 1024 1166 1115">Check lower coupling for cracks or missing hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0022 00.</p>	Any cracks or missing hardware.
20	Annual	Upper bridge quarter support wheels (11) and springs	<p data-bbox="621 1209 1166 1320">Check support wheels for missing rubber tires, loose wheel bearings, or missing hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0023 00.</p> 	Any missing rubber tires, loose wheel bearing, or missing hardware.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 2. Preventive Maintenance Checks and Services for Bridge (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
21	Annual	Lower bridge quarter anchoring eye (4)	Check for degradation of anchoring eye or missing hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0021 00.	Any cracks or missing hardware.
22	Annual	Fastening rod pin (2), brackets (3), and fastening rod (1)	Visually check for cracks, missing pin, or if fastening rod is missing or damaged. Repair or replace damaged, loose, or missing hardware. Refer to WP 0020 00 and WP 0030 00. Refer to TM 5-5420-280-10 for fastening rods.	Any cracks, missing pin, or damaged or missing fastening rod.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

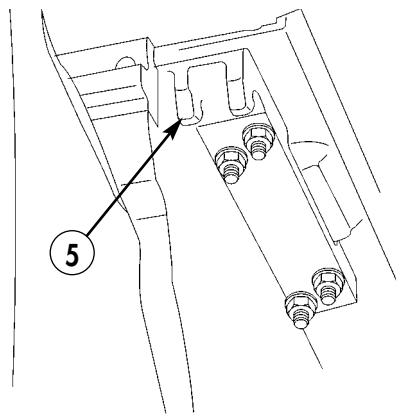
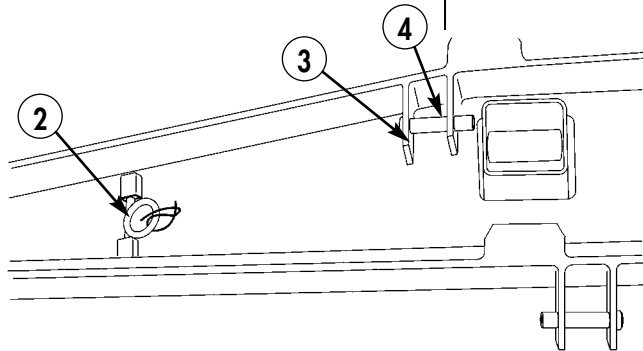
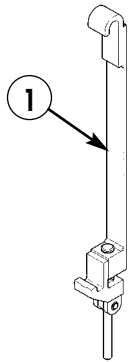
Table 2. Preventive Maintenance Checks and Services for Bridge (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
23	Annual	Lower bridge quarter marker pole bracket (8) and helicopter lifting ring (9)	Check for missing bracket, lifting ring, or cracked welds. Repair or replace damaged, loose, or missing hardware. Refer to WP 0021 00 and WP 0030 00.	
24	Annual	Upper and lower bridge slide locks (6)	Check slide locks for broken springs, tie rods, locking levers, and missing pins. Repair or replace damaged, loose, or missing hardware. Refer to WP 0026 00.	Any broken levers or missing pins.
25	Annual	Upper bridge quarter helicopter lifting ring (7) and marker pole bracket (5)	Check for missing lifting ring, bracket, or cracked welds. Repair or replace damaged, loose, or missing hardware. Refer to WP 0021 00 and WP 0030 00.	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 2. Preventive Maintenance Checks and Services for Bridge (Contd).

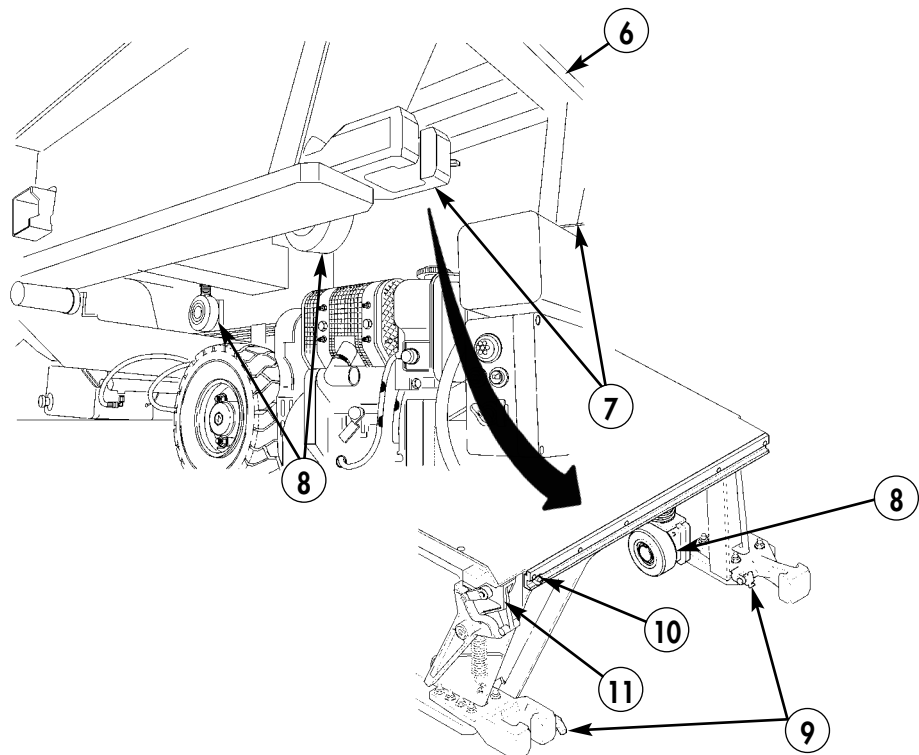
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
26	Annual	Fastening rod pin (4), brackets (3), and fastening rod (1)	Visually check for cracks, missing pin, or if fastening rod is missing or damaged. Repair or replace damaged, loose, or missing hardware. Refer to WP 0020 00 and WP 0030 00. Refer to TM 5-5420-280-10 for fastening rods.	Any cracks, missing pin, or damaged or missing fastening rod.
27	Annual	Upper bridge quarter anchoring eye (2)	Check for cracks, deformation of anchoring eye or missing hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0021 00.	Any cracks or missing hardware.
28	Annual	Lower bridge lock receptacle (5)	Check for cracks, missing hooks, or loose mounting hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0024 00.	Any cracks or missing hooks.



PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

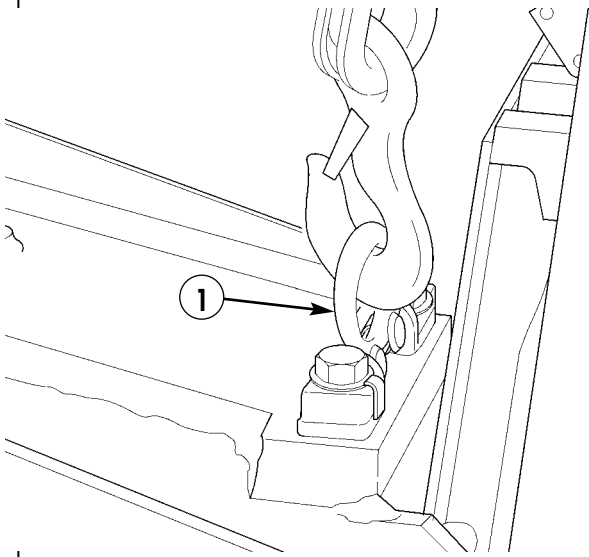
Table 2. Preventive Maintenance Checks and Services for Bridge (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
29	Annual	Lower bridge quarter crossforce coupling bumper (6), upper coupling lock mechanism (11), and plunger (10)	Check for degradation, or missing or loose mounting hardware, damaged lock lever pins or missing springs. Repair or replace damaged, loose, or missing hardware. Refer to WP 0024 00 and WP 0025 00.	Any missing springs, loose mounting hardware, damaged lock lever pins, or plunger.
30	Annual	Lower bridge quarter lower coupling and receptacle (7) and lock levers (9)	a. Check lower coupling for cracks or missing hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0022 00 and WP 0030 00. b. Check latch and catch for proper operation or if damaged. Repair or replace if damaged or not operational. Refer to WP 0022 00.	a. Any cracks or missing hardware. b. Any missing springs, loose mounting hardware, or damaged lock levers.
31	Annual	Lower bridge quarter support wheels (8) and springs	Check support wheels for missing rubber tires, loose wheel bearings, or missing hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0023 00.	Any missing rubber tires, loose wheel bearing, or missing hardware.



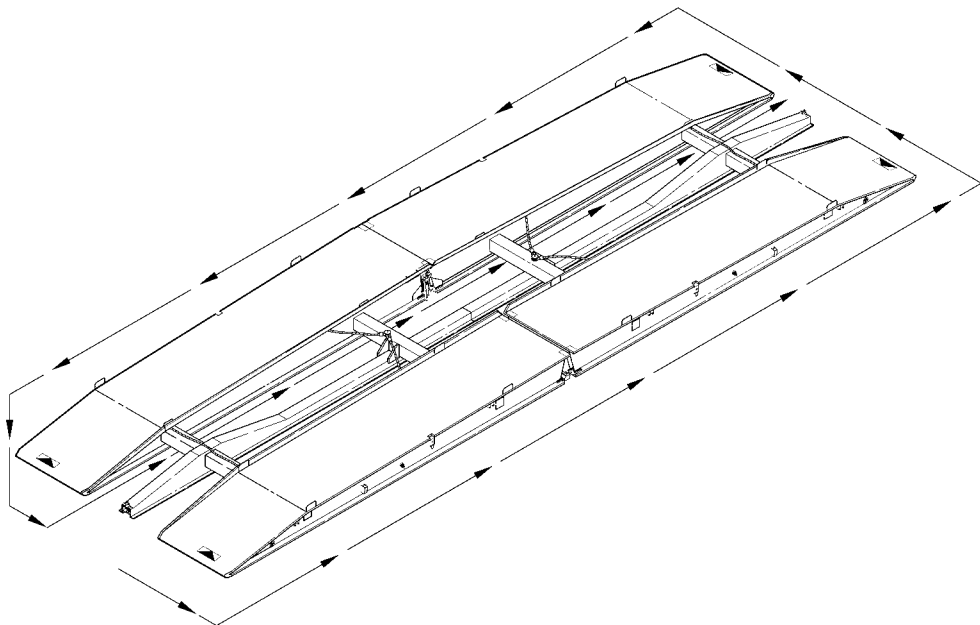
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 2. Preventive Maintenance Checks and Services for Bridge (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
32	Annual	Launch beam lifting eye (1)	<p>Visually check for missing hardware or if damaged or missing. Repair or replace damaged, loose, or missing hardware. Refer to WP 0027 00.</p> 	Any missing hardware or if damaged or missing.
33	Annual	Bridge halves	<p>Check for cracks, deformation of lifting eye, or missing hardware. Repair or replace damaged, loose, or missing hardware. Refer to WP 0027 00 and WP 0030 00.</p>	Any cracks or missing hardware.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 2. Preventive Maintenance Checks and Services for Bridge (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
			<p style="text-align: center;">NOTE</p> <p>Perform items 34 through 42 with bridge launched to ground. Refer to TM 5-5420-280-10. Starting at either right bridge quarter at ramp end, and proceeding counterclockwise.</p> <div style="text-align: center;">  <p><i>PMCS for Deployed Bridge.</i></p> </div>	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)*Table 2. Preventive Maintenance Checks and Services for Bridge (Contd).*

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
34	Annual	Right deck surfaces of roadway (11), guides (14), and crossforce coupling bumpers (12)	<p>a. Check deck surface and guides for cracks, tears, and broken welds. Refer to WP 0030 00.</p> <p>b. Check crossforce couplings for engagement of if damaged.</p>	<p>a. Any cracks longer than 3 in. (7.6 cm) or broken welds longer than .59 in. (1.5 mm).</p> <p>b. Crossforce couplings are not fully engaged or are damaged.</p>
35	Annual	Left deck surfaces of roadway (1), guides (7), and crossforce coupling bumpers (3)	<p>a. Check deck surface and guides for cracks, tears, and broken welds. Refer to WP 0030 00.</p> <p>b. Check crossforce couplings for engagement or if damaged.</p>	<p>a. Any cracks longer than 3 in. (7.6 cm) or broken welds longer than .59 in. (1.5 mm).</p> <p>b. Crossforce couplings are not fully engaged or are damaged.</p>
36	Annual	Launch beam (16) and lifting eye (17)	Check launch beam for deformation, lifting eye for damage, and loose or missing hardware.	
37	Annual	Left and right bridge quarter sides (2) and retaining cables (15)	<p>a. Check for cracked welds on sides and brackets.</p> <p>b. Check for loose or missing cable, pins, or hardware.</p>	
38	Annual	Left and right bridge quarter sides (2) and retaining wire rope (13)	<p>a. Check for cracked welds on sides and brackets.</p> <p>b. Check for loose or missing retaining wire rope assemblies, pins, or hardware.</p> <p>c. Check for frayed, missing, or damaged retaining wire rope assemblies.</p>	
39	Annual	Upper coupling lock mechanism levers (4)	Check to ensure lever is fully engaged in lock receptacle on both sides of bridge.	Levers are not fully engaged.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

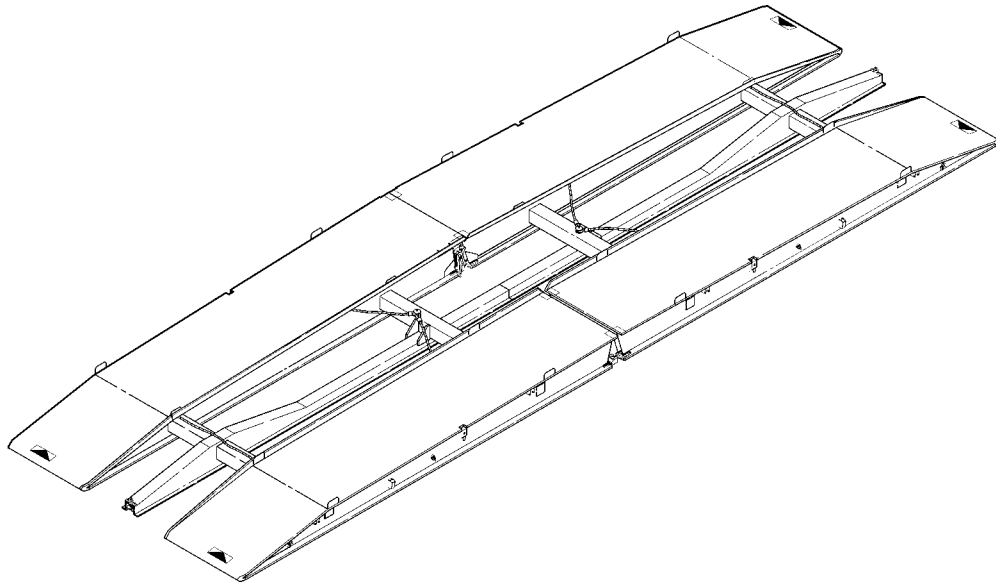
Table 2. Preventive Maintenance Checks and Services for Bridge (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
40	Annual	Left and right bridge quarter sides (6) and retaining wire rope assemblies (5)	a. Check for cracked welds on sides and brackets. b. Check for loose or missing retaining wire rope assemblies, pins, or hardware. c. Check for frayed, missing, or damaged retaining wire rope assemblies.	
41	Annual	Right and left bridge quarter sides (6) and retaining cable (8)	a. Check for cracked welds on sides and brackets. b. Check for loose or missing cables, pins, or hardware.	
42	Annual	Launch beam (9) and lifting eye (10)	Check launch beam for deformation, lifting eye for damage, and loose or missing hardware.	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Contd)

Table 2. Preventive Maintenance Checks and Services for Bridge (Contd).

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
43	Annual	Bridge assembly	<p style="text-align: center;">NOTE</p> <p>Perform item 43 with bridge on ground, proceeding counterclockwise.</p> <p>a. Clean all dirt and debris from bridge. Refer to TM 5-5420-280-10.</p> <p>b. Retrieve bridge from ground. Refer to TM 5-5420-280-10.</p>	



MAINTENANCE INSTRUCTIONS/PMCS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

LUBRICATION INSTRUCTIONS

GENERAL

This lubrication instruction is for field maintenance, and provides the lubrication requirements needed to support the REB. Included are Fluid Capacities, Lubricant Requirements, Lubrication Intervals, and Locations for lubricating the bridges and pallet.

SERVICE INTERVALS

1. Service intervals are for normal operation in moderate temperatures, humidity, and atmospheric conditions. The intervals are hard-time intervals which are performed in accordance with the age of bridge and pallet, calendar time, or usage such as operating hours. The hard-time intervals are based on months of calendar times. An example of calendar intervals is: semiannually (every six months), annually (every 12 months), or biannually (every 24 months). The lubrication for the bridges and pallet is to be performed at whichever interval occurs first.
2. For equipment under manufacturer's warranty, hard-time oil service intervals shall be followed. Hard-time intervals may be shortened if lubricants are used under adverse conditions, including longer-than usual operating hours. Hard-time intervals may be extended during periods of low activity, although adequate preservation precautions must be taken.
3. Lubricants are shown in table 1, and intervals and locations are shown in tables 2 and 3, and figures 1 through 4.

CORROSION PREVENTION AND CONTROL (CPC)

1. Corrosion prevention and control (CPC) of Army materiel is a continuing concern. It is important that corrosion problems are reported so they can be corrected and improvements can be made to prevent future problems.
2. 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.
3. If a corrosion problem is identified, it can 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.
4. The form should be submitted to the address specified in DA Pam 750-8.

FILTERS

Filter shall be changed and pre-filter cleaned as applicable when:

- (1) They are known to be contaminated or clogged.
- (2) Prescribed hard-time intervals are reached.

LUBRICATION INSTRUCTIONS (Contd)

CLEANING

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. Failure to comply may result in injury to personnel.

CAUTION

Keep container covers clean and allow no dust, dirt, or other foreign material to mix with lubricants. Keep all lubrication equipment clean and ready to use.

1. Keep all external parts of equipment not requiring lubrication free of lubricants.
2. Before lubricating equipment, clean fittings. Use Skysol 100 to wipe all lubrication points free of dirt and grease and dry before lubricating. After servicing lubrication points, wipe off excess lubricants to prevent accumulation of foreign matter.

CHANGING SYSTEM HYDRAULIC OIL

NOTE

Refer to table 1, lubrication specification, in this work package for the lubricants.

1. Launch bridge to ground. Refer to TM 5-5420-280-10.
2. Remove hydraulic oil reservoir cover. Refer to WP 0072 00.

NOTE

Have an empty 55-gallon (208-liter) barrel to catch oil.

3. Using a transfer pump, remove hydraulic oil from hydraulic reservoir.
4. Change oil filter and clean pre-filter.
5. Fill hydraulic oil reservoir with hydraulic oil to 6 in. (152 mm) from top of reservoir cover opening. Refer to Table 1 for hydraulic oil.
6. Disconnect return hose quick-disconnect coupling from pallet quick coupler, remove quick-disconnect coupling from hose, and secure hose to 55-gallon (208-liter) barrel.
7. Start launch power unit (LPU) with ball-valve in open position.
8. Operate control valve KY1 and close ball-valve.

CAUTION

Observe oil level in hydraulic reservoir and fill as necessary to 6 in. (152 mm) from top of reservoir.

9. Operate control valves to remove oil from system.
 - a. Extend lifting cylinders using control valves KY1 & KY17.
 - b. Extend supporting cylinders using control valves KY1, KY10, and KY8.

LUBRICATION INSTRUCTIONS (Contd)

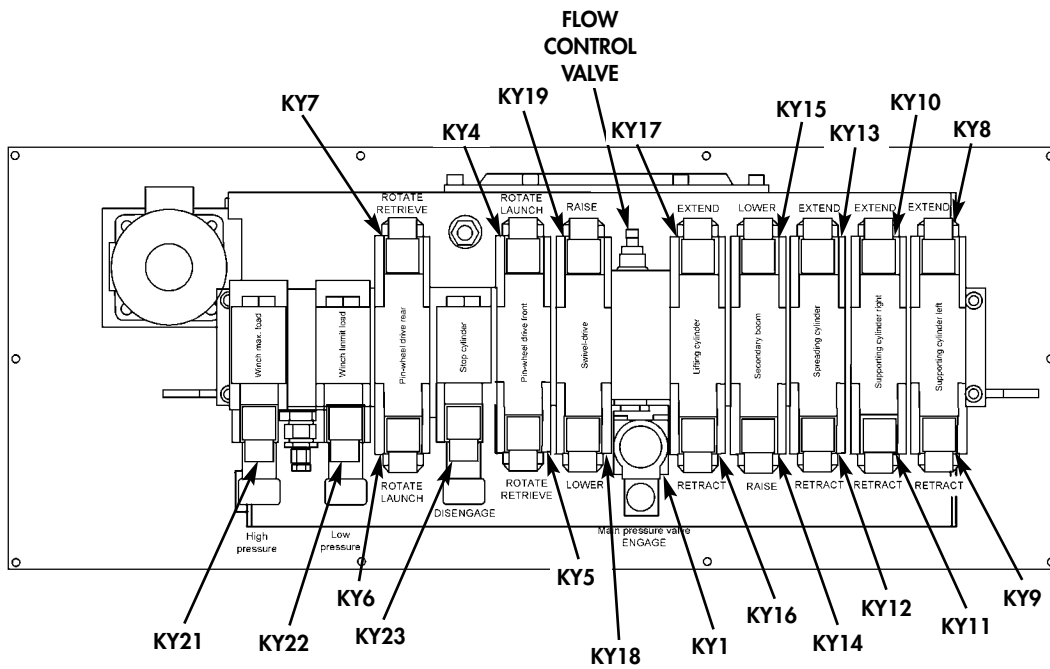
CHANGING SYSTEM HYDRAULIC OIL (Contd)

- c. Raise secondary boom cylinder using control valves KY1 and KY14.
- d. Operate rear pin wheel drive using, control valves KY1, KY-6, or KY7 for about 15 seconds.
- e. Operate front pin wheel drive using, control valves KY1, KY4, or KY5 for about 15 seconds.
- f. Operate winch control valve KY22 and emergency switch for about 15 seconds.

NOTE

Do not let oil reservoir run completely out of oil as cylinders are being retracted or lowered. Add oil if necessary to reservoir.

- g. Retract lifting cylinders using, control valves KY1 & KY16.
 - h. Lower secondary boom cylinder, using control valves KY1 & KY 15.
 - i. Retract supporting cylinders, using control valves KY1, KY11, and KY9.
 - k. Unlock main pressure control valve KY1 and stop LPU.
 - l. Fill hydraulic reservoir to level on site glass and install reservoir cover.
10. Remove hose from barrel and install quick-disconnect coupling on hose.
 11. Connect quick-disconnect coupling on pallet.
 12. Retrieve bridge from ground. Refer to TM 5-5420-280-10.



LUBRICATION INSTRUCTIONS (Contd)

Table 1. Lubrication Specifications.

APPLICATION	CAPACITY	LUBRICANTS	AMBIENT TEMPERATURE RANGE USAGE																		
			°F	<-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120
Launch Power Unit	w/Filter 3.2 qt (3 L)	Lubricating Oil, OE/HDO-15W-40 (MIL-PRF-2104) or OE/HDO-5W-30 (MIL-L-46152 5W-30)	°F	<-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120
Oil Bath Air Filter			°C	<-46	-40	-34	-29	-23	-18	-12	-7	-1	4	10	16	21	27	32	38	44	49
			OE/HDO-15W-40																		
			OE/HDO-5W-30																		
Limit Switches; Plungers on KA1 thru KA4 and Rollers on KA5, KA6, and KA8	As Required	Lubricating Oil, OE/HDO-30 or OE/HDO-10 ICE, Arctic (MIL-PRF-2104)	°F	<-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120
Pallet Hydraulic Fluid Reservoir	Reservoir- 74 qts (70 L) Hyd Sys-121.5 qt (115L)		°C	<-46	-40	-34	-29	-23	-18	-12	-7	-1	4	10	16	21	27	32	38	44	49
Bridge Quarter Slide Locks	As Required		OE/HDO-30																		
			OE/HDO-10																		
			OEA																		
Winch Gearbox	2.2 qt (2 L)	GO Lubricating Oil, Gear, Multipurpose 80/90 (MIL-L-2105C)	°F	<-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120
Forward and Rear Pin Wheel Gearbox	0.44 L		°C	<-46	-40	-34	-29	-23	-18	-12	-7	-1	4	10	16	21	27	32	38	44	49
			GO-75/90																		
A-Frame Pin Guide Channels	As Required	Grease, Automotive and Artillery, (MIL-PRF-10924)	°F	<-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120
Crossforce Couplings			°C	<-46	-40	-34	-29	-23	-18	-12	-7	-1	4	10	16	21	27	32	38	44	49
Launch Beam Wheel Drive Pins			GAA																		
Lower Coupling Connectors & Receptacles																					
Bridge Quarter Support Tubes																					
Winch Wire Rope	As Required	GO Lubricating Oil, Gear, Multipurpose 80/90 (MIL-L-2105C) & Grease, Wire Rope - Exposed Gear, Type II, (MIL-PRF-18458)	°F	<-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120
			°C	<-46	-40	-34	-29	-23	-18	-12	-7	-1	4	10	16	21	27	32	38	44	49
			Type II MIL-PRF-18458																		
			GO-75/90																		
Launch Power Unit (LPU) Engine Fuel		JP-8 (MIL-T- 83133GRJP8)	(ALL TEMPERATURES)																		

LUBRICATION INSTRUCTIONS (Contd)

Table 2. Pallet Lubrication Intervals.

LOCATION	INTERVAL	LUBRICANT
Launch Power Unit (LPU) Engine Oil and Filter		
Engine oil	6 months	MIL-PRF-2104 OE/HDO 15 W-40 or OE/HDO 5 W-30
Oil filter	6 months	
Fuel filter clean	6 months	
Oil bath air filter	6 months	MIL-PRF-2104 OE/HDO 15 W-40
Winch		
Gearbox	12 months	MIL-L-2105C SAE 75W90
Track rollers	6 months	MIL-PRF-2104 OE/HDO 15 W-40
Force transmitter bushings	6 months	MIL-PRF-2104 OE/HDO 15 W-40
Wire rope	6 months	MIL-G-18458 W-L-751
Hydraulic Reservoir		
Oil filter replace	6 months	
Reservoir	12 months	MIL-PRF-2104 OE/HDO-30 or OE/HDO-10
Pre-filter clean	6 months	
Pallet Steering Linkage		
Bellcranks (2) Lube fittings (2)	12 months	MIL-PRF-10924 GAA
Front turning wheels (2) Lube fittings (2)	12 months	MIL-PRF-10924 GAA
Pallet Support Wheels (4)		
Wheel bearings Pack bearings	24 months	MIL-PRF-10924 GAA
Support wheel channels	6 months	MIL-PRF-10924 GAA
Pallet A-Frame		
A-frame guide channel	6 months	MIL-PRF-10924 GAA
Pin Wheel Drives (2)		
Forward pin wheel drive	12 months	MIL-L-2105C GO 80/90
Rear pin wheel drive	12 months	MIL-L-2105C GO 80/90
Launch Boom		
Lower support rollers Lube fittings (4)	6 months	MIL-PRF-10924 GAA
Lower support guide rollers Lube fittings (2)	6 months	MIL-PRF-10924 GAA
Upper roller blocks Lube fittings (4)	6 months	MIL-PRF-10924 GAA
Launch boom and lower support boom bushings Lube fittings (2)	6 months	MIL-PRF-10924 GAA
Lower support boom cylinders Lube fittings (2)	6 months	MIL-PRF-10924 GAA

LUBRICATION INSTRUCTIONS (Contd)

Table 3. Bridge Lubrication Intervals.

LOCATION	INTERVAL	LUBRICANT
Bridge Halves (2)		
Support wheel hub slide plates	6 months	MIL-PRF-10924 GAA
Bridge quarter support tubes	6 months	MIL-PRF-10924 GAA
Remote control levers	6 months	MIL-PRF-10924 GAA
Upper coupling lock levers and receptacles	6 months	MIL-PRF-10924 GAA
Needle cam follower lube fittings (2)	6 months	MIL-PRF-10924 GAA
Upper coupling lock plunger shafts	6 months	MIL-PRF-10924 GAA
Launch beam channel drive pins, rack, and rails	6 months	MIL-PRF-10924 GAA
Lower coupling connectors and receptacles	6 months	MIL-PRF-10924 GAA
Crossforce coupling bumpers	6 months	MIL-PRF-10924 GAA
Slide Lock Mechanism (4)		
Control lever housings pack or lube fittings (4)	6 months	MIL-PRF-10924 GAA

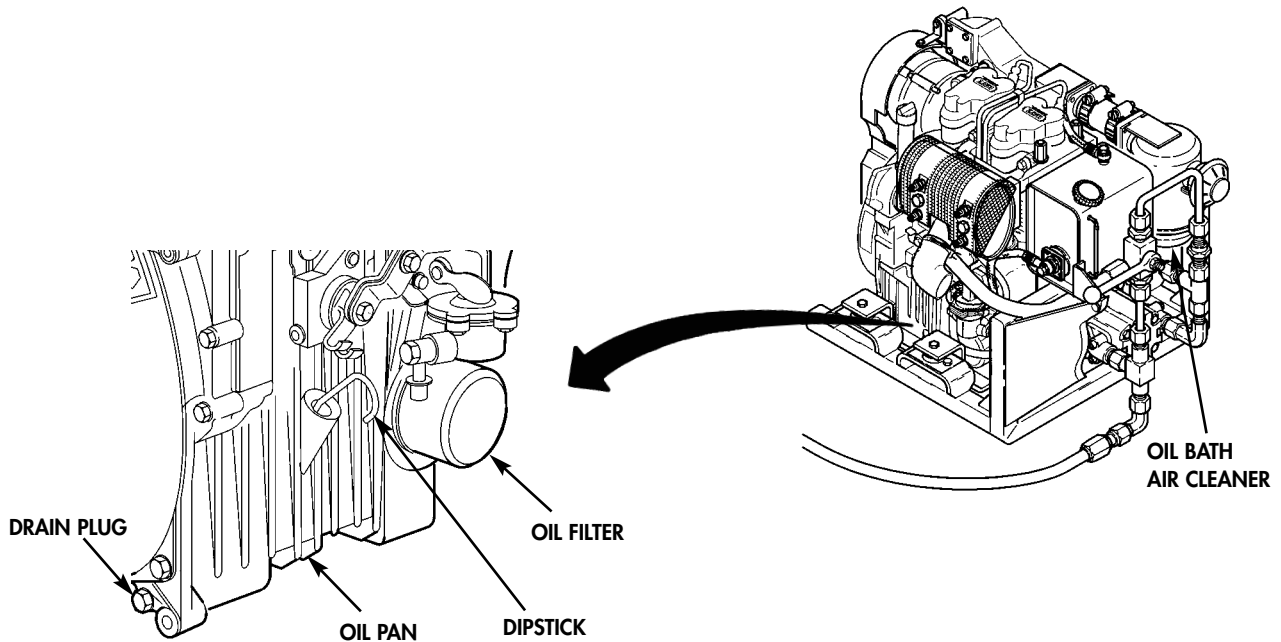


Figure 1. Pallet Lubrication Locations.

LUBRICATION INSTRUCTIONS (Contd)

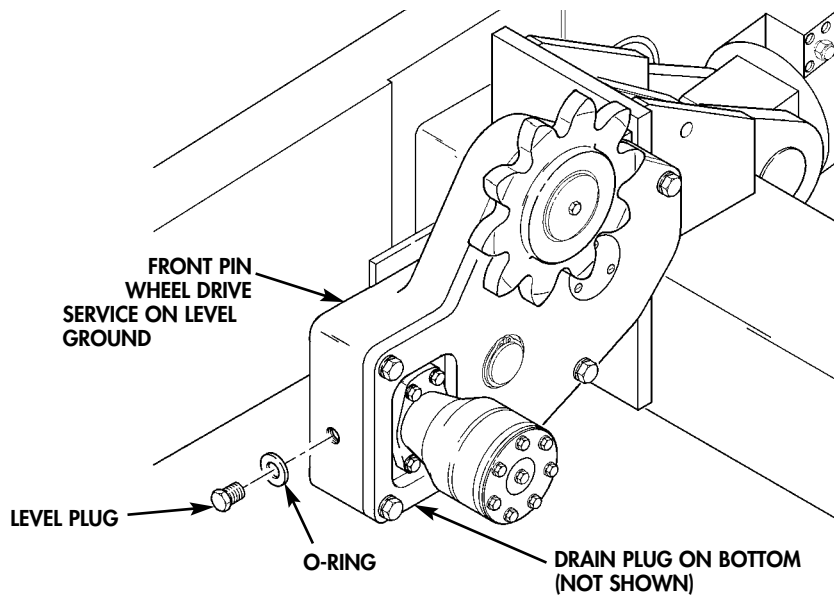
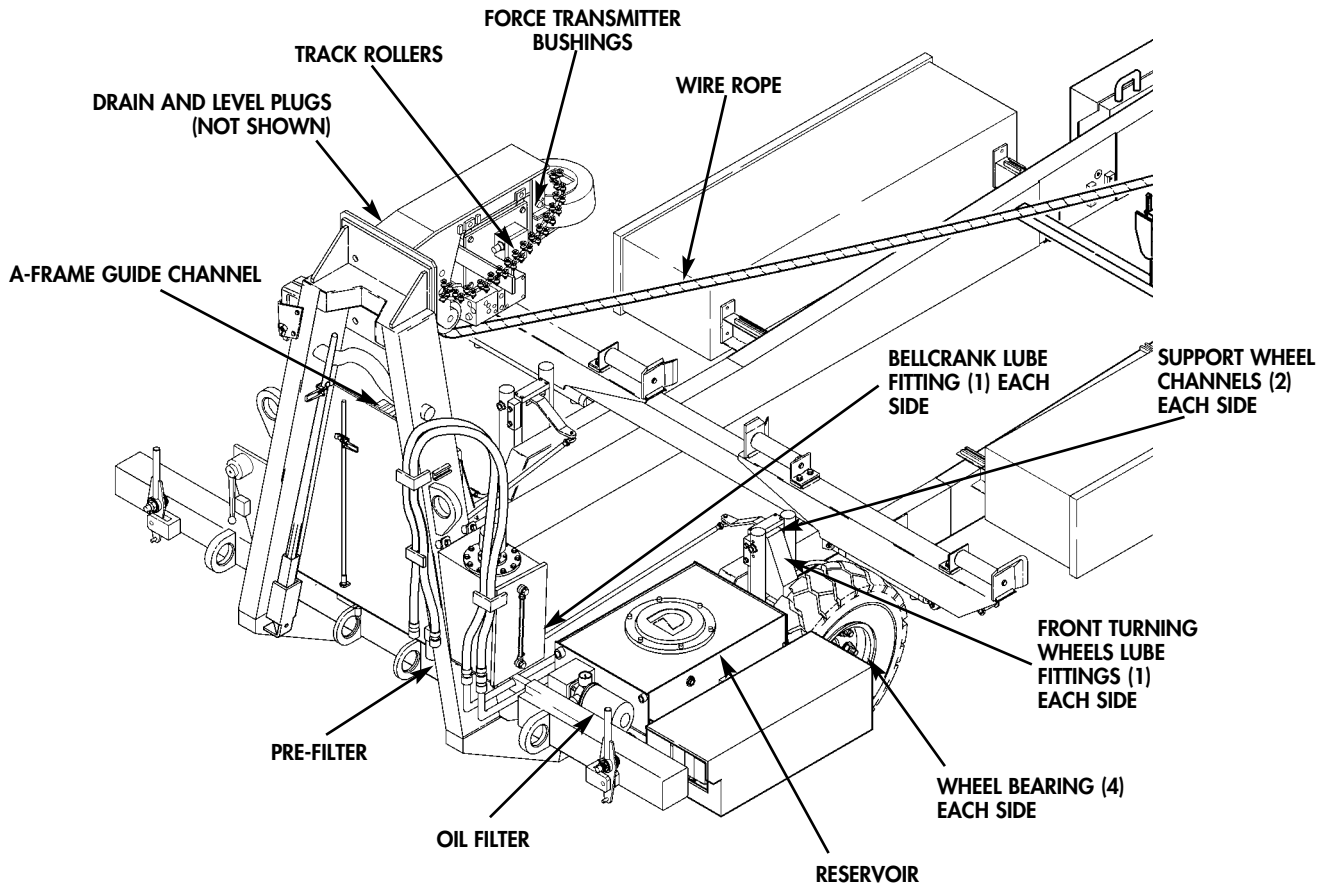


Figure 2. Pallet Lubrication Locations.

LUBRICATION INSTRUCTIONS (Contd)

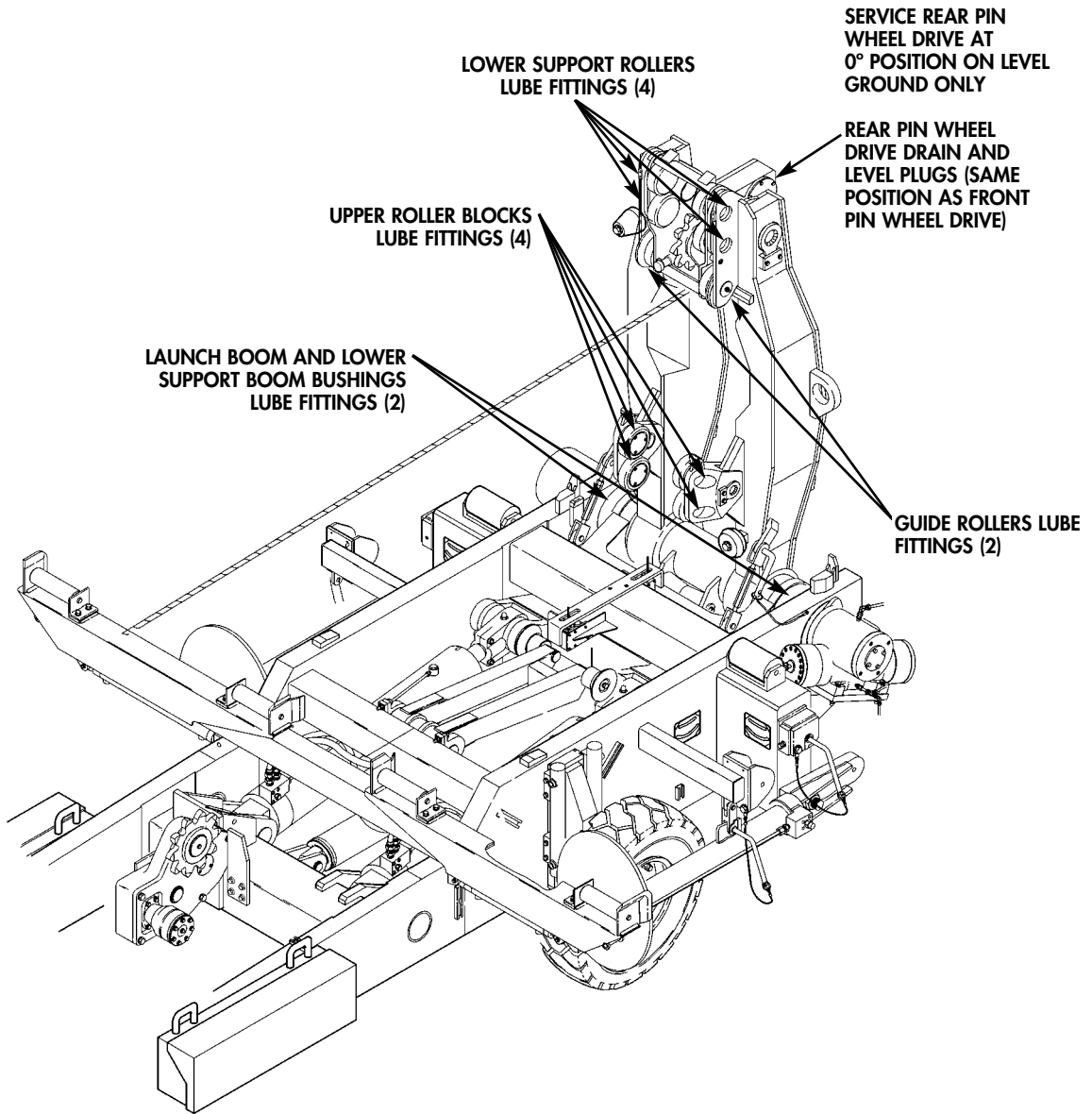


Figure 3. Pallet Lubrication Locations.

LUBRICATION INSTRUCTIONS (Contd)

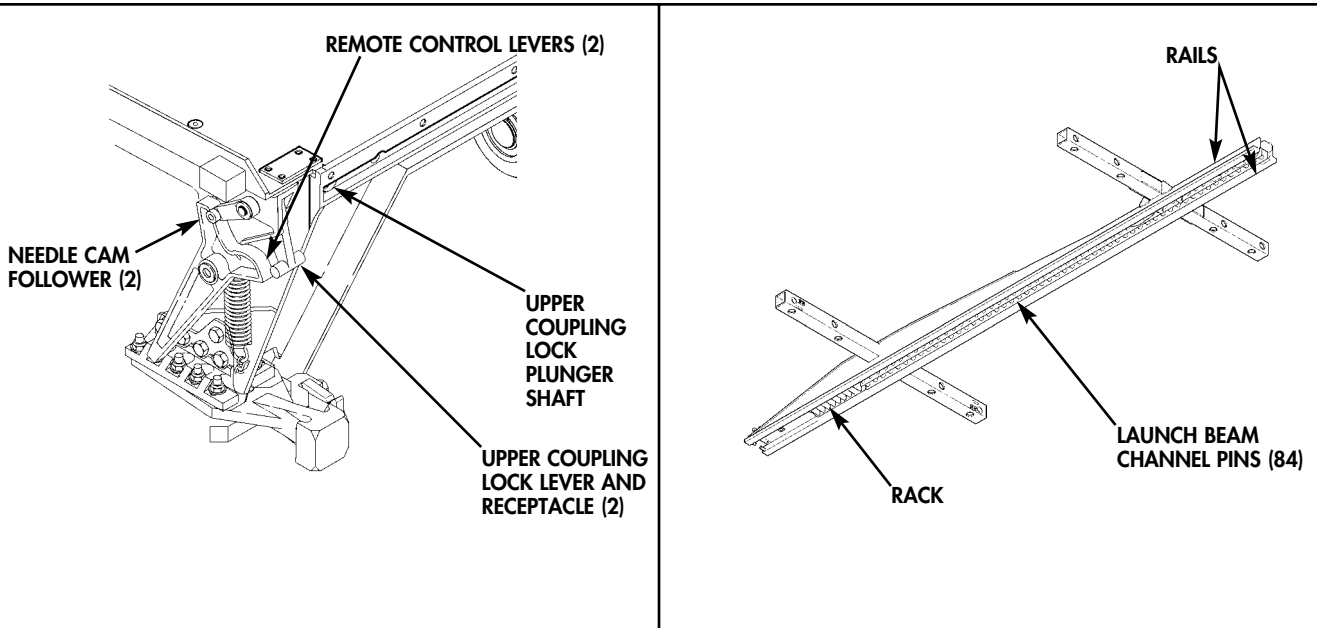
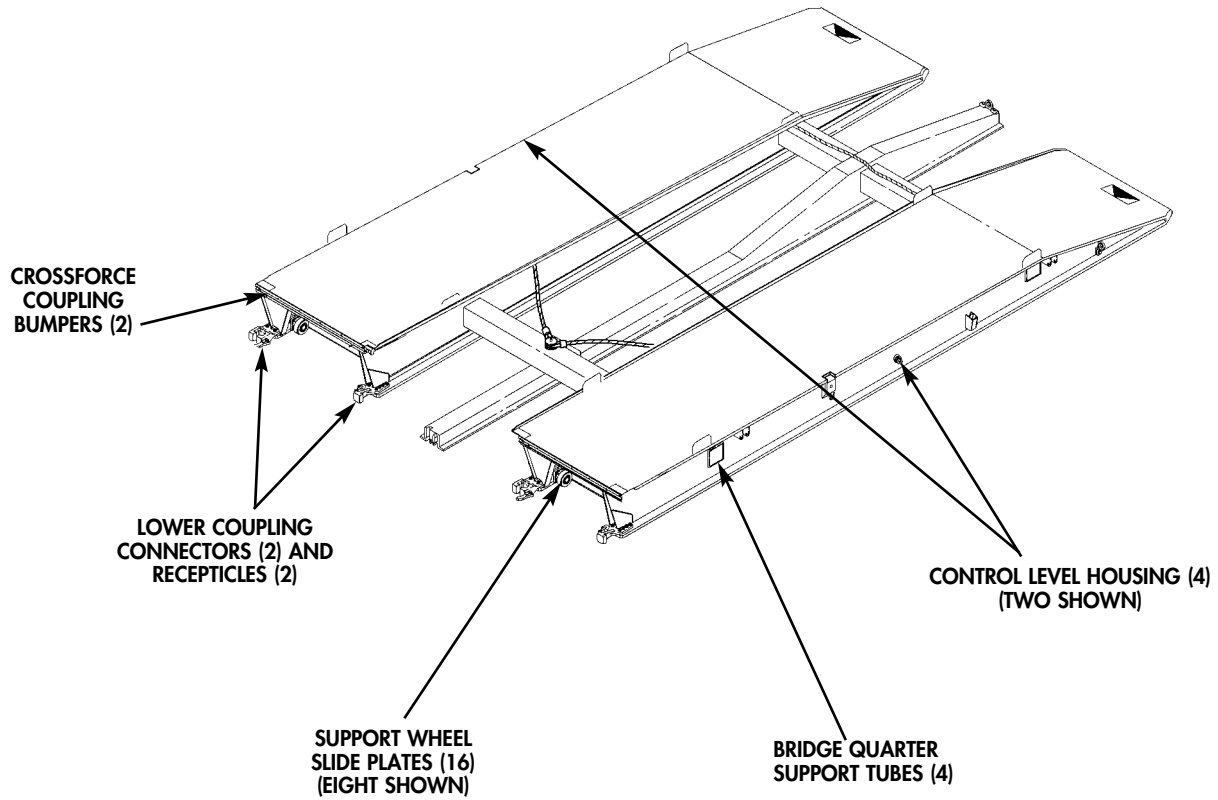


Figure 4. Bridge Lubrication Locations.

END OF WORK PACKAGE

MAINTENANCE INSTRUCTIONS/PMCS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

GENERAL MAINTENANCE PROCEDURES

GENERAL MAINTENANCE PROCEDURES

General maintenance instructions for cleaning, inspection, repair, assembly, and disassembly are provided in this work package. Publications which provide additional information on general shop practice techniques, preservation, welding, sheet metal work, etc. are listed in References. Refer to WP 0128 00.

CLEANING

- a. **General Instructions.** Cleaning procedures will be the same for the majority of parts and components which make up the REB subassemblies. General cleaning procedures are detailed in steps b through l.
- 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.

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 inspection, after repair, and before assembly.
 - (2) Hands must be kept free of any accumulation of grease which can collect dust and grit.
 - (3) After cleaning, all parts must be covered or wrapped in plastic or paper to protect them from dust and/or dirt.
- c. **Disassembled Parts Cleaning.**
 - (1) Place all disassembled parts in wire baskets for cleaning.
 - (2) Clean, dry, and cover all parts.
 - (3) All parts subject to rusting must be lightly oiled and wrapped.
 - (4) Place cleaned parts on racks to hold for inspection or repair.

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. Failure to comply may result in injury to personnel.

GENERAL MAINTENANCE PROCEDURES (Contd)

CLEANING (Contd)

d. Castings.

- (1) Clean inner and outer surfaces of castings and all areas subject to grease and fluid with Skysol 100.
- (2) Use a stiff brush to remove sludge and gum deposits.

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.

- (3) Use compressed air to blow out all tapped screw holes and to dry castings after cleaning.

e. Fluid Passages. Particular attention must be given to all fluid passages in castings and machined parts. Fluid passages must be clean and free of any obstructions.

- (1) Clean passages with wire probes to break up any sludge or gum deposits.
- (2) Wash passages by flushing with solvents.

WARNING

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

- (3) Dry passages with compressed air.

f. 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.

Clean with soap and water.

g. Bearings.

- (1) Bearings require special cleaning. After removing surface grease and gum deposits, wipe bearings dry; do not use compressed air. After cleaning, coat bearings with grease, wrap, and hold for inspection.
- (2) Refer to TM 9-214 for more information on care of bearings.

h. Machine Tooled Parts. Clean with Skysol 100 and dry with compressed air.

i. Machined Surfaces. Clean with Skysol 100 and dry with clean cloth.

j. Mated Surfaces.

WARNING

Eyeshields must be worn when cleaning with a wire brush. Flying rust and metal particles may result in injury to personnel.

Remove old gasket and/or sealing compound using wire brush and Skysol 100.

k. Rusted Surfaces.

NOTE

All parts subject to rusting must be lightly oiled and wrapped prior to storage.

Clean all rusted surfaces using wire brush and emery cloth.

l. Externally Exposed Parts. Wash with soap and water. Rinse thoroughly and air dry.

GENERAL MAINTENANCE PROCEDURES (Contd)

INSPECTION

- a. **General Instructions.** Procedures for inspections will be the same for many of the parts and components that make up the REB subassemblies. General procedures are detailed in steps b through l. Dimensional standards for parts have been fixed at extremely close tolerances; use specification where provided. Use specified inspection equipment for inspection where cracks and other damage cannot be spotted visually. Exercise extreme care in all phases of inspection.
- b. **Castings.**
 - (1) Inspect all ferrous and nonferrous castings for cracks using a magnifying glass and strong light.
 - (2) Refer to ASTM-E 1417, Inspection, Liquid Penetrant Methods, and MIL-I-6868, Inspection Process, Magnetic Particles.
 - (3) Particularly inspect areas around studs, pipe plugs, threaded inserts, and sharp corners. Replace all cracked castings.
 - (4) Inspect machined surfaces for nicks, burrs, or raised metal. Mark damaged areas for repair or replacement.
 - (5) Inspect all pipe plugs, pipe plug openings, screws, and screw openings for damaged or stripped threads. Replace or repair damaged or stripped threads.
 - (6) Using a straightedge or surface plate, check all gasket mating surfaces, flanges on housings, and supports for warpage. Inspect mating flanges for discolorations which may indicate persistent oil leakage. Replace damaged parts.
 - (7) Check all castings for conformance to applicable repair standards. Replace damaged castings.
- c. **Bearings.** Refer to TM 9-214 for inspection of bearings. Check all bearings for conformance to applicable repair standards.
- d. **Studs, Bolts, and Screws.** Replace if threads are damaged, bent, or stripped.
- e. **Seals.** Seals are mandatory replacement items.
- f. **Bushings and Bushing-Type Bearings.**
 - (1) Check all bushings and bushing-type bearings for secure fit, evidence of overheating, wear, burrs, nicks, and out-of-round condition.
 - (2) Check for dirt in lubrication holes or grooves. Holes and grooves must be clean and free from damage.
- g. **Machined Tooled Parts.** Inspect for cracks, breaks, elongated holes, wear, and chips.
- h. **Machined Surfaces.** Inspect for cracks, evidence of wear, galled or pitted surface, burrs, nicks, and scratches.
- i. **Mated Surfaces.** Inspect for remains of old gasket, seal, secure fit, pitting, and evidence of leakage.
- j. **Rusted Surfaces.** Inspect for pitting, holes, and severe damage.
- k. **Externally Exposed Parts.** Inspect for breaks, cracks, rust damage, and wear.
- l. **Rivets.** Inspect for loose, broken, and missing rivets in accordance with TM 9-450.

GENERAL MAINTENANCE PROCEDURES (Contd)

REPAIR

- a. **General Instructions.** Repair of parts and components is limited to procedures outlined in applicable maintenance tasks and the following general procedures detailed in steps b through g.
- b. **Castings.**
 - (1) All cracked castings will be replaced.
 - (2) Only minor repairs to machined surfaces, flanges, and gasket mating surfaces are permitted. Remove minor nicks, burrs, and/or scratches with:
 - (a) Fine mill file.
 - (b) Emery cloth dipped in Skysol 100.
 - (c) Lapping across a surface plate.
 - (3) Machining of machined surfaces to repair damaged, warped, or uneven surfaces is not permitted. Replace castings.
 - (4) Repair damaged threaded pipe plug and/or screw holes with the correct size tap. Repair oversize holes with threaded inserts.
- c. **Bearings.** See TM 9-214.
- d. **Studs.** Replace all bent and stretched studs. Repair minor thread damage with the correct size thread die. Replace studs having stripped or damaged threads as outlined below:
 - (1) Remove studs using a stud remover. Back studs out slowly to avoid heat buildup and seizure which can cause stud to break off.

NOTE

If welding method is used, refer to TC 9-237.

- (2) If a stud breaks off too short to use a stud remover or a stud extractor, use welding method.
 - (3) Broken studs can be removed by welding bar stock or a nut to stud and removing with wrench.
 - (4) Standard studs may have a coarse thread on one end and a fine thread on the other end. The coarse thread end is installed in the casting. Studs having coarse threads on both ends are used in some applications; the shorter threaded end goes into the casting. Refer to WP 0131 00 for correct part numbers.
 - (5) Replacement studs have a special coating and must have a small amount of antiseize compound, refer to WP 0196 00, Item 2, that is applied on threads before stud is installed. Install replacement stud slowly to prevent heat buildup and snapping off.
- e. **Bushings and Bushing-Type Bearings.** When bushings and bushing-type bearings seize to a shaft and spin in the bore, the associated part must also be replaced.
 - f. **Seals.**
 - (1) Using proper seal removal tool, remove seals; use caution not to damage casting, adapter bore, or seal surface of shaft.
 - (2) Always install new seal in bore using the specified seal driving tool.
 - g. **Rivets.** Replace rivets in accordance with TM 9-450.

GENERAL MAINTENANCE PROCEDURES (Contd)

DISASSEMBLY

- a. The work area for disassembly of any item must be kept as clean as possible. This will prevent contamination of internal parts.
- b. Before disassembling any item, study the illustration carefully, noting the relationship of internal parts. Knowing the details of construction will speed up disassembly and help avoid mistakes. If in doubt, tag all parts.
- c. All gaskets, O-rings, and seals removed during repair will be discarded and replaced with new parts. These items are usually damaged during removal. Lockwire, lockwashers, locknuts, cotter pins, and like items should be discarded during disassembly.
- d. When removing gaskets, O-rings, or seals, do not use any metal tool that will scratch the sealing surface next to these items.

ASSEMBLY

- a. Cleanliness is essential in all assembly operations. Dirt and dust, even in small quantities, are abrasive. Parts must be cleaned as specified and kept clean. Wrap or cover parts and components when assembly procedures are not completed immediately.
- b. Lubricate all metal parts with lubricant or fluid used during operation. Refer to WP 0016 00 for proper lubricants.
- c. Installation of cotter pins and lockwires shall be accomplished as specified in assembly procedures.
- d. Critical torque values are specified in the assembly procedure. When not specified, tighten bolts, screws, and nuts in accordance with standard dry torque values. Refer to WP 0118 00.
- e. All fuel, air, and hydraulic components must be kept thoroughly clean at all times. Plug all open ports until the component is installed.
- f. All pressing operations should be accomplished using a suitable press and adapters, unless otherwise specified.

END OF WORK PACKAGE

CHAPTER 4
BRIDGE MAINTENANCE
RAPIDLY EMPLACED BRIDGE (REB)

Bridge Half Replacement	0018 00-1
Bridge Retaining Wire Rope Assemblies Replacement	0019 00-1
Bridge Quarter Replacement	0020 00-1
Bridge Anchoring Eye, Swivel Block, and Lifting Eye Replacement	0021 00-1
Bridge Lower Coupling Connector, Receptacle, and Lock Levers Replacement	0022 00-1
Bridge Support Wheel Hub and Tire, Bearings, Axle Bracket, and Spring Support Assembly Maintenance	0023 00-1
Bridge Upper Coupling Lock Lever, Receptacle, and Locking Mechanism Maintenance	0024 00-1
Bridge Crossforce Coupling Bumpers Replacement	0025 00-1
Bridge Slide Lock Mechanism Replacement	0026 00-1
Launch Beam Lifting Eye and Swivel Blocks Replacement	0027 00-1
Launch Beam Pin Wheel Drive Bracket and Drive Pins Replacement	0028 00-1
Threaded Insert Replacement	0029 00-1
Bridge and Pallet Crack Deformation Inspection and Repair	0030 00-1

BRIDGE MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**BRIDGE HALF REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)
Lifting device
Sling Endless (Table 2, Item 3, WP 0206 00)
Chains or cables
Dunnage

Materials/Parts

Two locknuts (WP 0157 00)

Personnel Required

Four

Equipment Condition

Unload pallet to ground. Refer to
TM 5-5420-280-10.
Bridge fastening rods removed. Refer to
TM 5-5420-280-10.

BRIDGE HALF REPLACEMENT (Contd)

REMOVAL

1. Remove two retaining pins (2) and disconnect launch boom support (3) from launch boom (1).
2. Start Launch Power Unit (LPU). Refer to TM 5-5420-280-10.
3. Depress control valves KY1 and KY18 until launch boom (1) lowers to 0-degree position. Use winch emergency switch to lower winch wire rope hook (14). Shut off LPU. Refer to TM 5-5420-280-10.
4. Remove four screws (9), washers (8), and two stop blocks (7) from top of A-frame angle bracket (11).

NOTE

Mark location of limit switch prior to removal for installation.

5. Remove two locknuts (12), four washers (5), two screws (4), and limit switch (6) from bracket (13) on A-frame (10). Discard locknuts (12).
6. Install four sling hooks (20) or straps on fastening rod brackets (16) and connect sling lifting eye (17) or straps to a suitable lifting device.

WARNING

All nonessential personnel must stand clear during lifting operations. Use taglines during removal. Failure to comply may result in injury or death to personnel.

7. Disconnect winch wire rope hook (14) from lifting eye (15) on launch beam of top bridge half (18).
8. Lift top bridge half (18) off lower bridge half (19) and bridge pallet (21), place bridge half (18) on dunnage, and remove sling hooks (20) or straps from bridge half (18).
9. Install four sling hooks (20) or straps on tiedown strap brackets (16), lift lower bridge half (19) off bridge pallet (21), place bridge half (19) on dunnage, and remove four sling hooks (20) or straps from bridge half (19).

INSTALLATION

1. Install four sling hooks (20) or straps on tiedown strap brackets (16) and connect sling lifting eye (17) or straps to a suitable lifting device.

WARNING

All nonessential personnel must stand clear during lifting operations. Use tag lines during installation. Failure to comply may result in injury or death to personnel.

2. Lift either bridge half (18) or (19) off dunnage and place bridge half (18) or (19) on bridge pallet (21) with ramp end facing away from winch wire rope hook (14). This bridge half (18) or (19) will become the lower bridge half (19).
3. If necessary, start LPU and depress KY1 and KY5 until pin wheel drive moves bridge and end of launch beam contacts A-frame (10). If necessary, install anchoring straps and draw bridge quarters together.
4. Remove four sling hooks (20) or straps from tiedown strap brackets (16) and connect on other bridge half (18) tiedown strap brackets (16). This bridge half (18) will become top bridge half (18).
5. Lift top bridge half (18) and place on top of lower bridge half (19) and bridge pallet (21) with ramp end facing winch wire rope hook (14). Pins on end of launch beam must fit into angle brackets (11) on A-frame (10) as top bridge half (18) is lowered onto lower bridge half (19).
6. Install winch wire rope hook (14) on lifting eye (15) on launch beam of top bridge half (18).

CAUTION

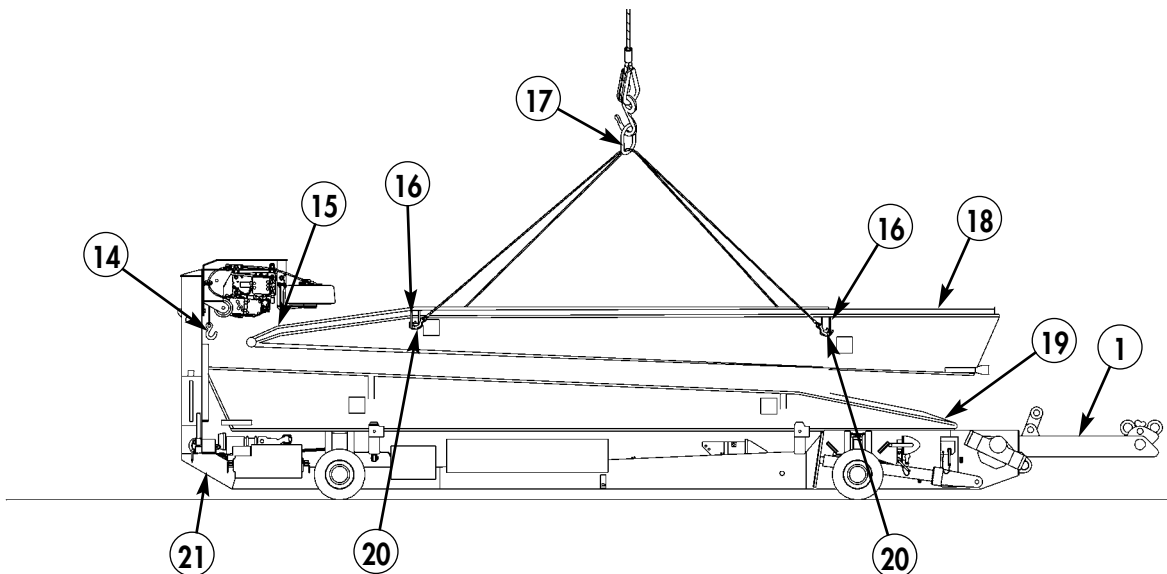
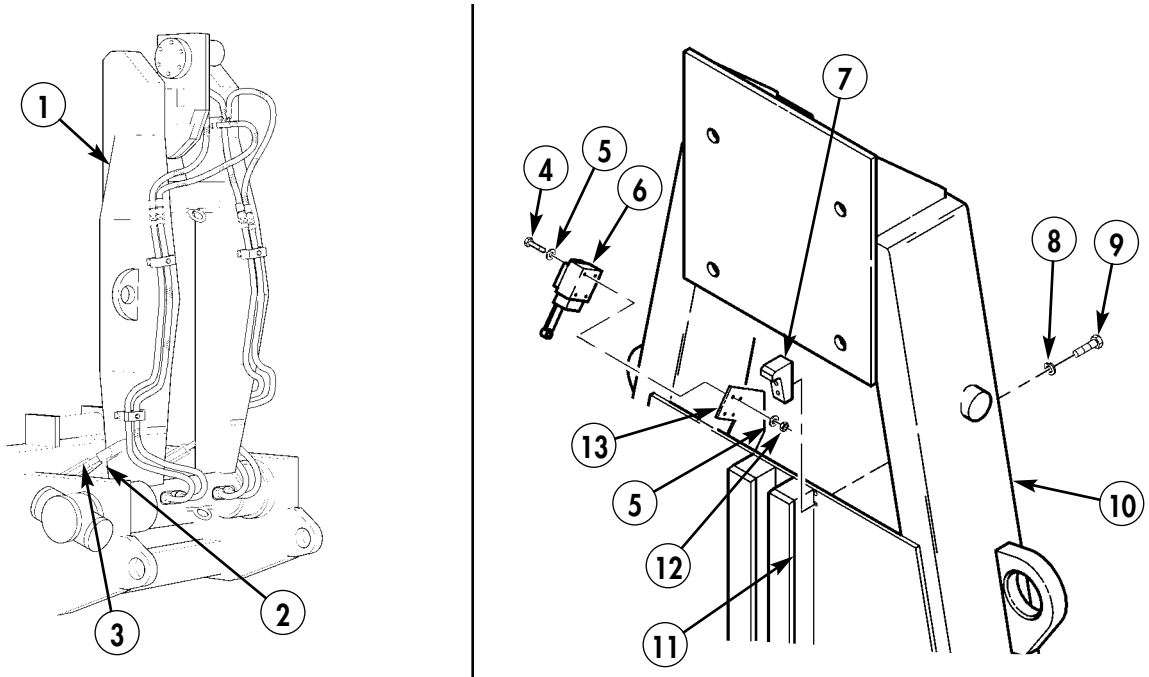
Ensure limit switch is installed as marked during removal or damage to equipment may result.

7. Install limit switch (6) on bracket (13) with two screws (4), four washers (5), and two new locknuts (12).

BRIDGE HALF REPLACEMENT (Contd)

INSTALLATION (Contd)

8. Install two stop blocks (7) on angle brackets (11) of A-frame (10) with four washers (8) and screws (9).
9. Install four fastening rod straps. Refer to TM 5-5420-280-10.
10. Start LPU. Refer to TM 5-5420-280-10.
11. Depress control valves KY1 and KY19 until launch boom (1) raises to +90-degrees position and then use winch emergency switch to tighten winch wire rope hook (14). Turn off LPU. Refer to TM 5-5420-280-10.
12. Connect two launch boom supports (3) on launch boom (1) and install two retaining pins (2).



END OF WORK PACKAGE

BRIDGE MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**BRIDGE RETAINING WIRE ROPE ASSEMBLIES REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)**Equipment Condition**Bridge unloaded to ground.
Refer to TM 5-5420-280-10.**Materials/Parts**Six cotter pins (WP 0133 00)

BRIDGE RETAINING CABLE REPLACEMENT (Contd)

REMOVAL

1. Remove screw (5), washer (6), pin (4), and retaining wire rope assembly (3) from bracket (7) and pin hole (2) at ramp end of each bridge quarter (1).

NOTE

Note position and quantity of spacer washers for installation.

2. Remove three cotter pins (10), two washers (9), washer (11), two pins (15), spacer washers (9), and retainer wire rope assemblies (12) from two brackets (8) and pin (13) on launch beam (14) at ramp end of each bridge quarter (1). Discard cotter pins (10).

INSTALLATION

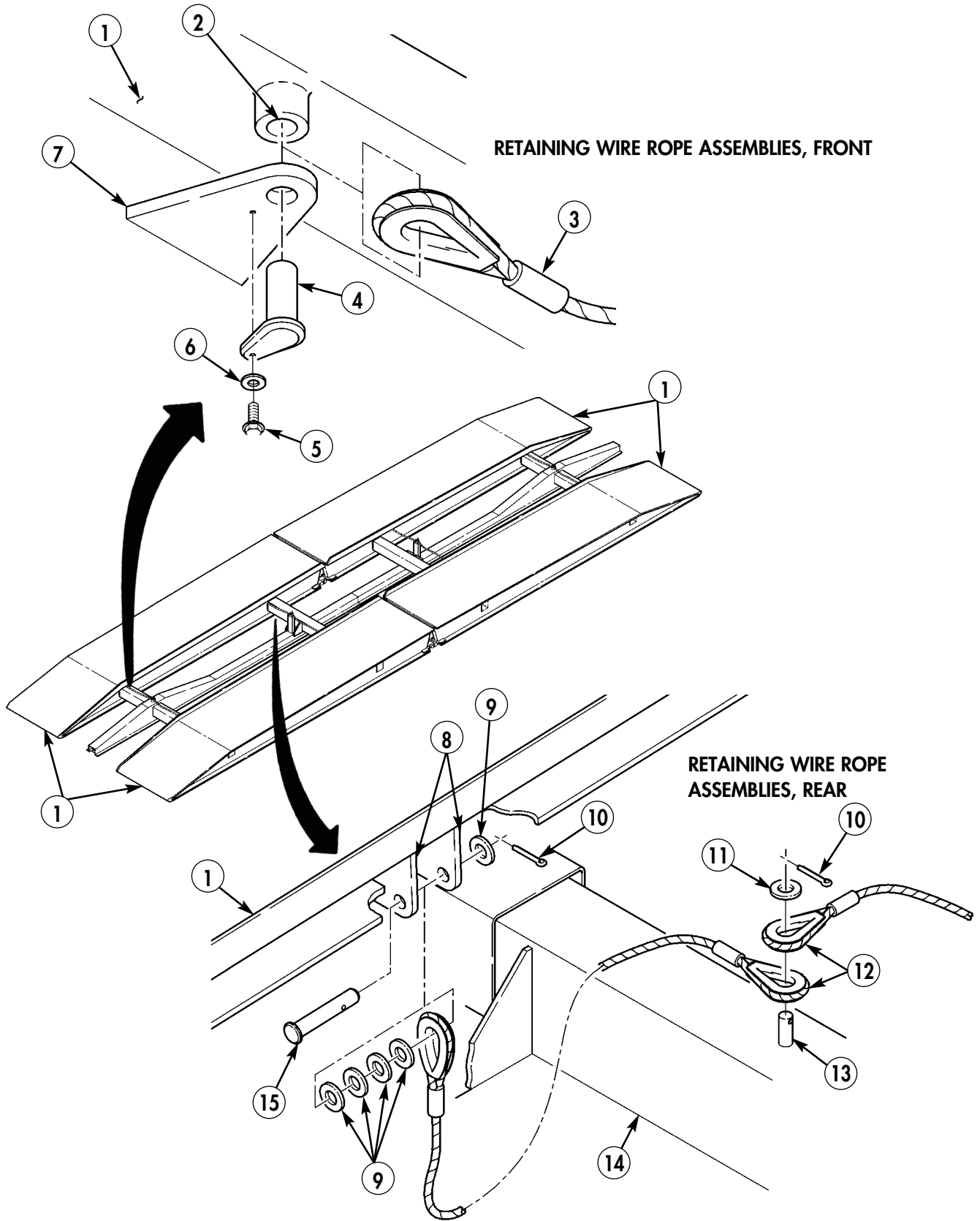
NOTE

Install spacer washers as noted at removal.

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

1. Install two retaining wire rope assemblies (12) on brackets (8) at coupling end of bridge quarter (1) with spacer washers (9), two pins (15), washers (9), and new cotter pins (10).
2. Install other end of two retaining wire rope assemblies (12) on pin (13) on launch beam (14) with washer (11) and new cotter pin (10).
3. Install retaining wire rope assemblies (3) on pin hole (2) and bracket (7) at ramp end of each bridge quarter (1) with pin (4), washer (6), and screw (5).
4. Install bridge on bridge pallet. Refer to TM 5-5420-280-10.

BRIDGE RETAINING CABLE REPLACEMENT (Contd)



END OF WORK PACKAGE

BRIDGE MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**BRIDGE QUARTER REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)
Sling Endless (Table 2, Item 3, WP 0206 00)
Chains or cables

Materials/Parts

Grease (Item 8, WP 0205 00)
Six cotter pins (WP 0133 00)

Equipment Condition

Bridge half removed from bridge pallet and
placed on dunnage. Refer to WP 0018 00.

Personnel Required

Four 62B
One 62F

BRIDGE QUARTER REPLACEMENT (Contd)

REMOVAL

NOTE

Note position and quantity of spacer washers for installation.

1. Remove cotter pin (4), washer (3), pin (6), and spacer washers (3) from retaining wire rope assembly (5) and two brackets (2) at coupling end of bridge quarter (1) to be removed. Discard cotter pin (4).
2. Remove screw (11), washer (10), and pin (9) from retaining wire rope assembly (8), mounting bracket (12), and pin hole (7) at ramp end of bridge quarter (1) to be removed.

WARNING

Launch beam and bridge half must be supported when removing bridge quarters. Failure to comply may result in injury or death to personnel.

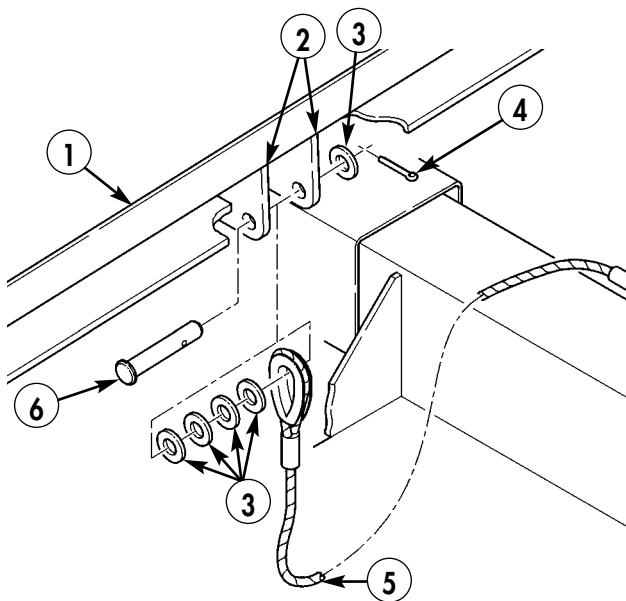
Use care when removing bridge quarters. The lower supporting pins and springs will fall out of launch beam arms as bridge quarter is removed. The side supporting pins are under a small amount of pressure and will fly out. The top supporting pins may stay in launch beam arms. Failure to comply may result in injury or death to personnel.

3. Using suitable lifting device, support and slide bridge quarter (1) off launch beam arms (16) and supporting pins (15).
4. Remove four supporting pins (15) and two springs (19) from top and bottom of launch beam arms (16).

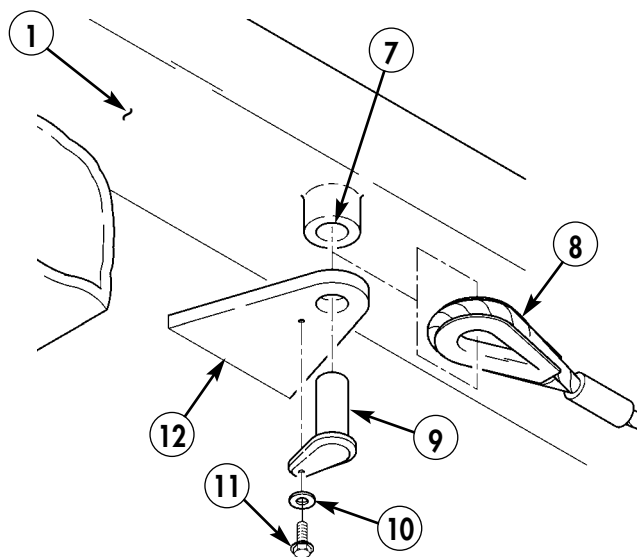
NOTE

Note position of supporting pin without spring for installation.

5. Remove three supporting pins (15) and one spring (19) from side of launch beam arms (16).
6. If worn or damaged, remove four screws (18) and two slide plates (17) from side of launch beam arms (16).
7. Repeat steps 1 through 6 to remove opposite bridge quarter (14) from launch beam (13).

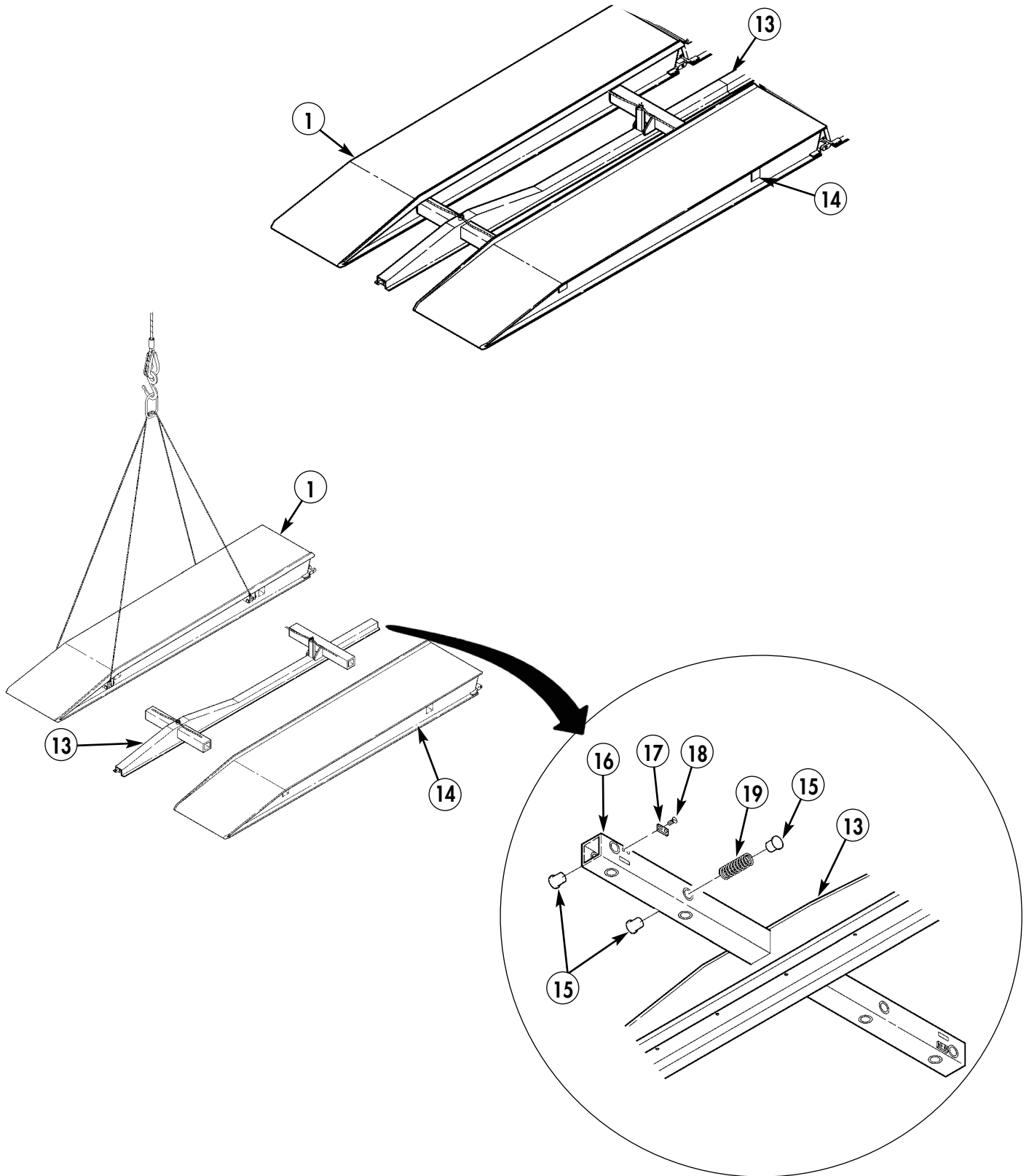


RETAINING WIRE ROPE ASSEMBLY, COUPLING END
(REAR)



RETAINING WIRE ROPE ASSEMBLY, RAMP END
(FRONT)

BRIDGE QUARTER REPLACEMENT (Contd)



BRIDGE QUARTER REPLACEMENT (Contd)

INSTALLATION

NOTE

Apply grease to supporting pins and slide plates at installation.

Install supporting pin without spring as noted at removal.

1. If removed, install two slide plates (2) on launch beam arms (1) with four screws (3).
2. Install spring (4) and three supporting pins (5) on first side openings of launch beam arms (1) on launch beam (6).

WARNING

Exercise caution when compressing pins and sliding bridge quarter onto launch beam. Failure to comply may result in injury to personnel.

NOTE

Assistant will help with steps 3 through 7.

3. Using suitable lifting device, lift and slide bridge quarter (7) on launch beam arms (1) until bridge quarter (7) contacts supporting pins (5) on each arm (1). Compress four supporting pins (5) until bridge quarter (7) will slide up to top openings on launch beam arms (1).
4. Install two springs (4) and four supporting pins (5) on top and bottom openings of launch beam arms (1). Compress top and bottom supporting pins (5) until bridge quarter (7) will slide to next set of openings on launch beam arms (1).
5. Install two springs (4) and four supporting pins (5) on side openings of launch beam arms (1) and compress side supporting pins (5) and slide bridge quarter (7) up to next set of openings on launch beam arms (1).
6. Install two springs (4) and four supporting pins (5) on top and bottom openings of launch beam arms (1) and compress top and bottom supporting pins (5) until bridge quarter (7) will slide to closed position.
7. Remove lifting device from bridge quarter (7).
8. Repeat steps 1 through 7 to install opposite bridge quarter (8) on launch beam (6).

NOTE

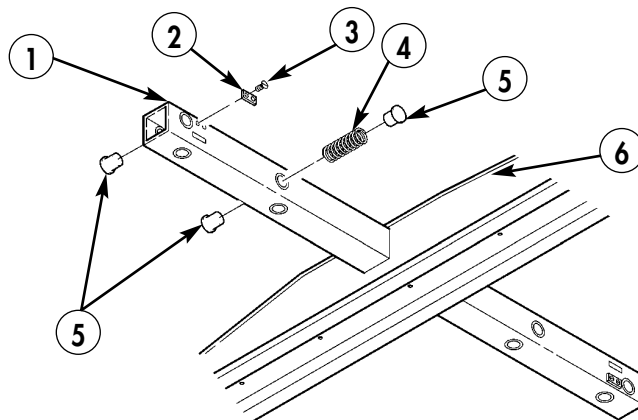
Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

9. Install retaining wire rope assembly (10) on bracket (14) and pin hole (9) at ramp end of bridge quarters (8) and (7) with pin (11), washer (12), and screw (13).

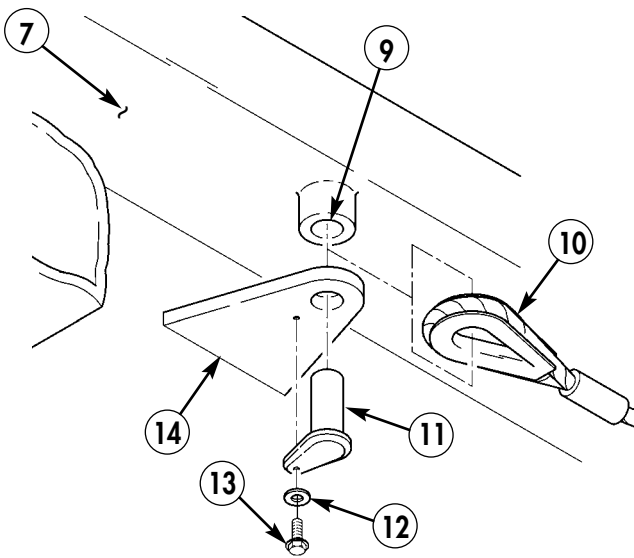
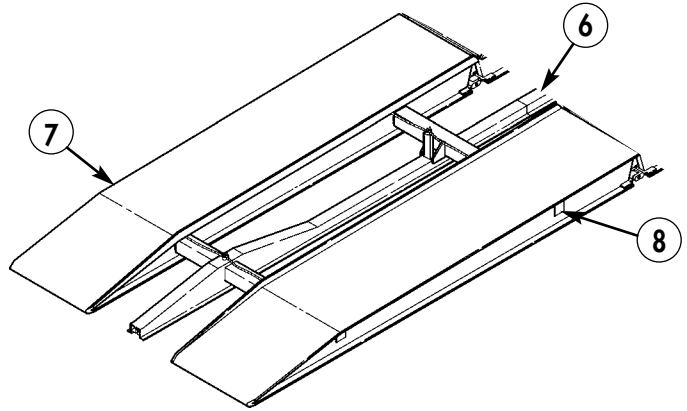
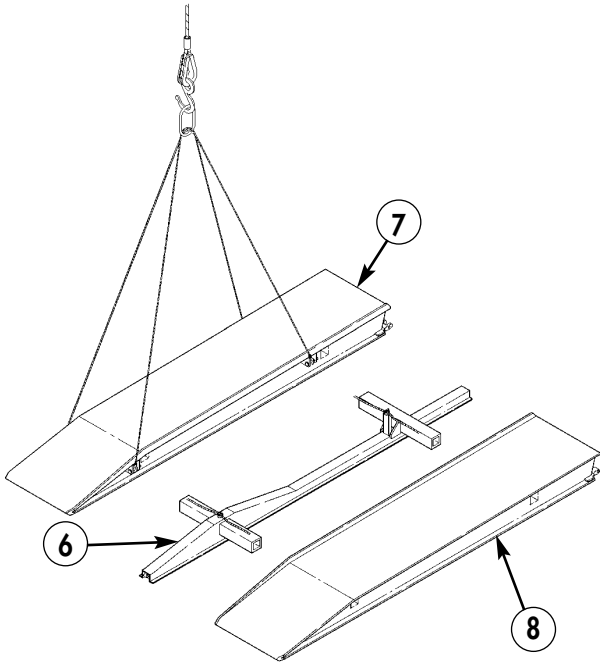
NOTE

Install spacer washers as noted at removal.

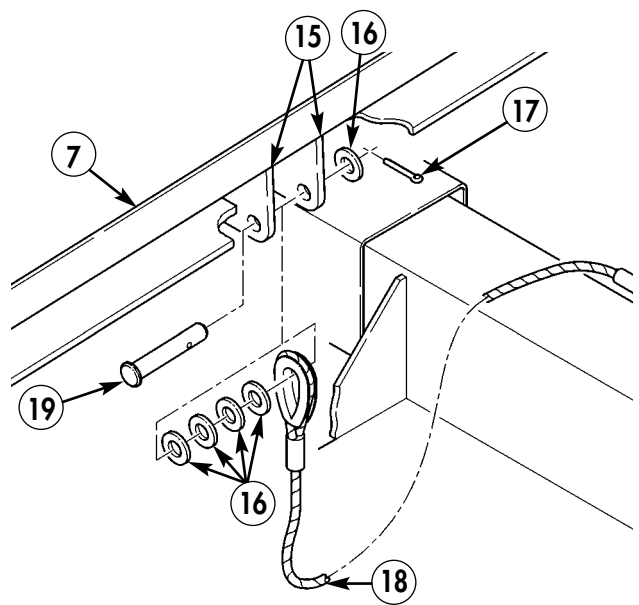
10. Install retaining wire rope assembly (18) on two brackets (15) at coupling end of bridge quarters (8) and (7) with pin (19), washer (16), and new cotter pin (17).
11. Install bridge half on bridge pallet. Refer to WP 0018 00.



BRIDGE QUARTER REPLACEMENT (Contd)



RETAINING WIRE ROPE ASSEMBLY, RAMP END (FRONT)



RETAINING WIRE ROPE ASSEMBLY, COUPLING END (REAR)

END OF WORK PACKAGE

BRIDGE MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**BRIDGE ANCHORING EYE, SWIVEL BLOCKS, AND LIFTING EYE REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Bridge half removed from bridge pallet and
placed on dunnage. Refer to WP 0018 00.

Materials/Parts

Unlike metal compound
(Item 18, WP 0205 00)
Grease (Item 8, WP 0205 00)
Two locking tabs (WP 0135 00)

BRIDGE ANCHORING EYE, SWIVEL BLOCKS, AND LIFTING EYE REPLACEMENT (Contd)

NOTE

All bridge anchoring eyes, swivel blocks, and lifting eyes are replaced the same way. This task covers replacement of one anchoring eye, swivel blocks, and lifting eye. Left side is shown.

LIFTING EYE REMOVAL

1. Remove screw (6), washer (7), retainer plate (5), and lifting eye (4) from anchor boss (2) on side of bridge quarter (1).
2. If damaged, replace threaded insert (3). Refer to WP 0029 00.

LIFTING EYE INSTALLATION

NOTE

All bridge anchoring eyes, swivel blocks, and lifting eyes are replaced the same way. This task covers replacement of one anchoring eye, swivel blocks, and lifting eye. Left side is shown.

Install lifting eye (4) on anchor boss (2) of bridge quarter (1) with retainer plate (5), washer (7), and screw (6).

ANCHORING EYE AND SWIVEL BLOCKS REMOVAL

1. Bend two locking tabs (14) away from head of screws (15).
2. Support backing plate (8) and remove two screws (15), locking tabs (16), two swivel blocks (11), and anchoring eye (13) from side of bridge quarter (1). Discard locking tabs (16).
3. Remove two swivel blocks (11) from anchoring eye pin (5).

ANCHORING EYE AND SWIVEL BLOCKS INSTALLATION

NOTE

Apply a light coat of grease to bridge anchoring eye pins at installation. Apply a light coat of unlike metal compound to mating surfaces of backing plate and bridge quarter at installation.

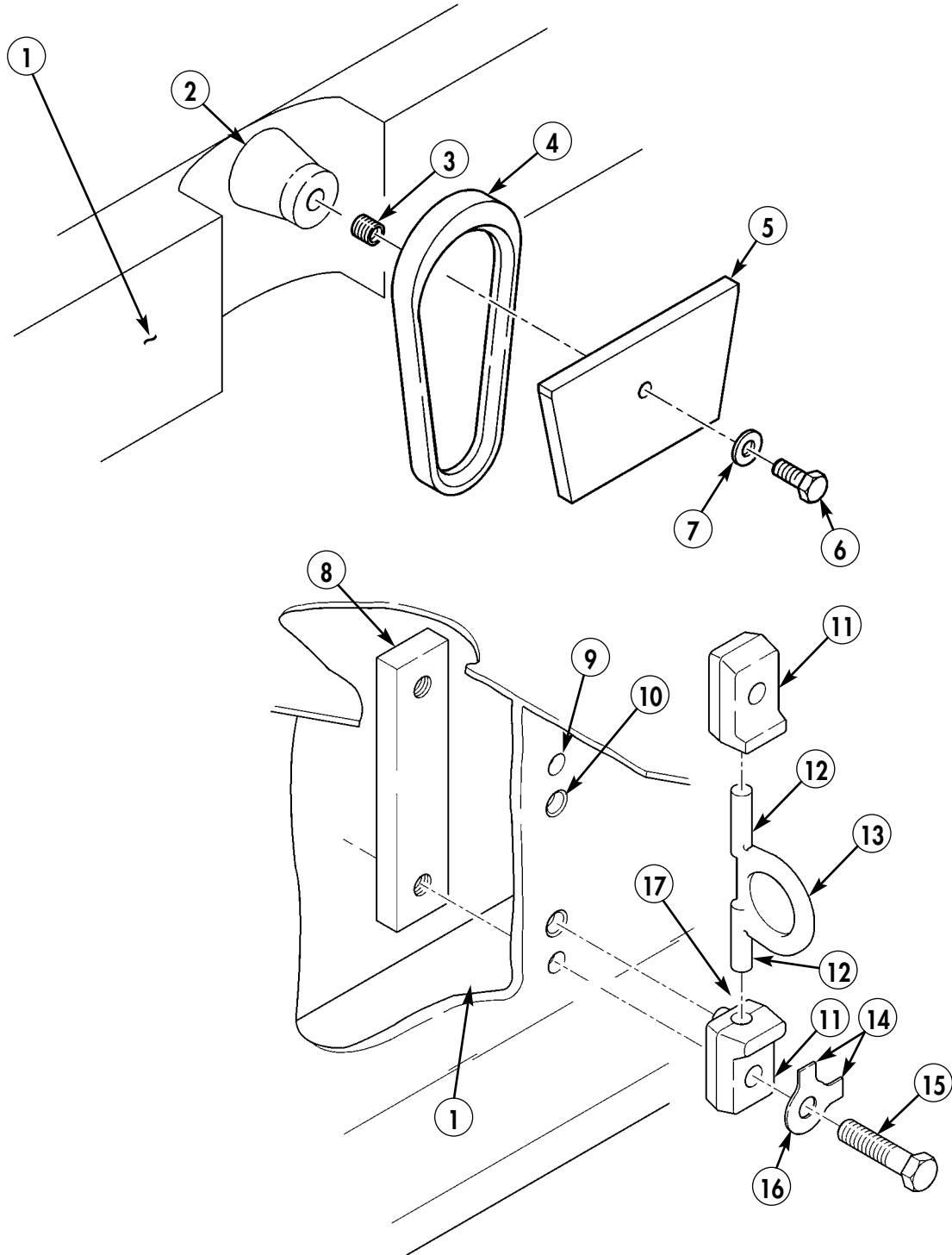
1. Install two swivel blocks (11) on anchoring eye pin (12).
2. Position backing plate (8) behind bridge quarter (1) with mounting holes (9) aligned.
3. Position bridge anchoring eye (13) and two swivel blocks (11) on bridge quarter (1) with dowel pins (17) aligned with holes (10), and install two new locking tabs (16) and screws (15).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

4. Tighten two screws (15) and bend one tab (14) up to head of screw (15) and other locking tab (14) down to swivel block (11).
5. Install bridge half on bridge pallet. Refer to WP 0018 00.

BRIDGE ANCHORING EYE, SWIVEL BLOCKS, AND LIFTING EYE REPLACEMENT (Contd)



END OF WORK PACKAGE

BRIDGE MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

BRIDGE LOWER COUPLING CONNECTOR, RECEPTACLE, AND LOCK LEVERS REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Bridge half removed from bridge pallet and
placed on dunnage. Refer to WP 0018 00.

Materials/Parts

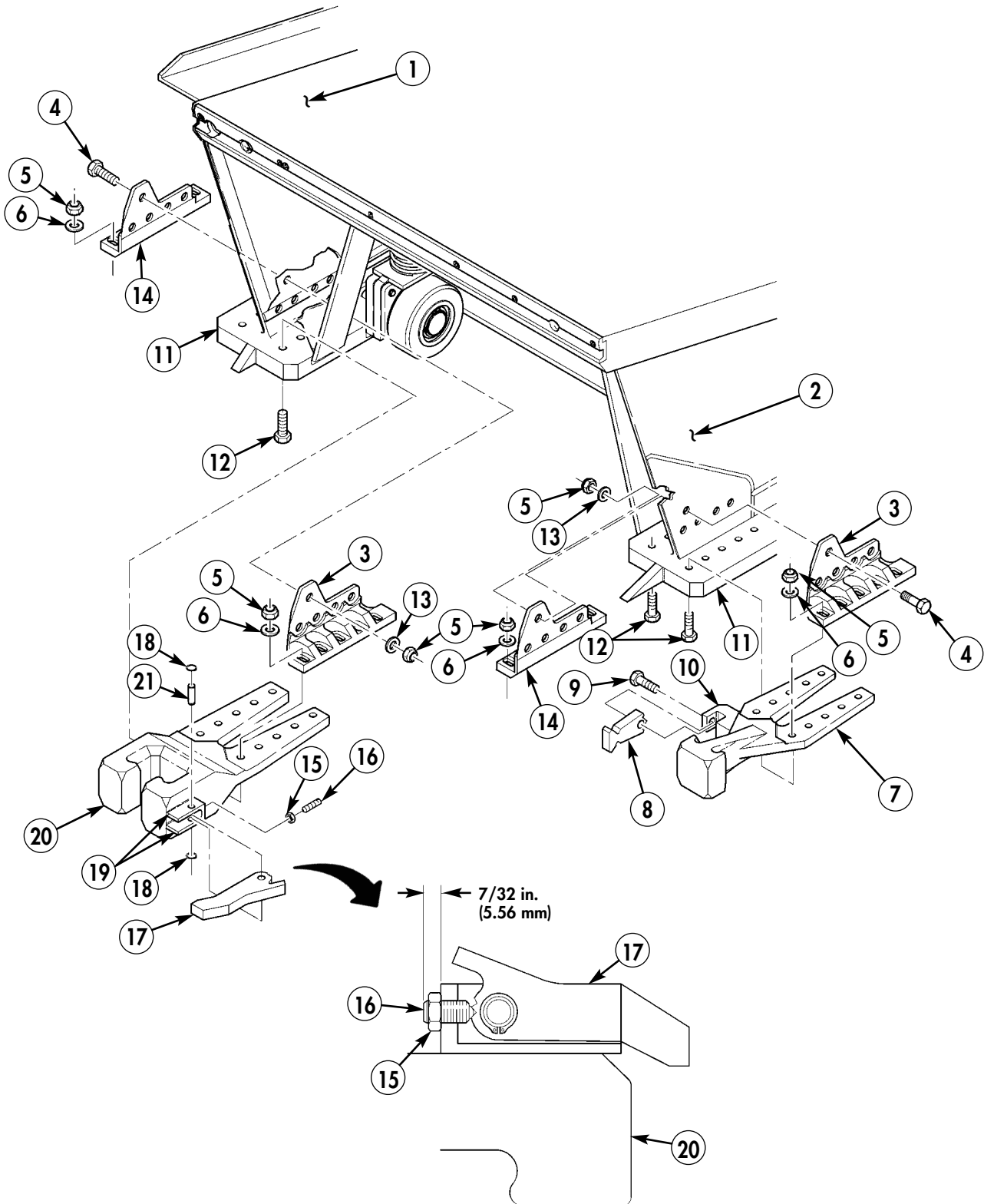
Grease (Item 8, WP 0205 00)
Unlike metal compound (Item 18, WP 0205 00)
Thirty locknuts (WP 0136 00)

BRIDGE LOWER COUPLING CONNECTOR, RECEPTACLE, AND LOCK LEVERS REPLACEMENT (Contd)**REMOVAL****CAUTION**

Connector, receptacle, and coupling support brackets are installed with unlike metal compound between mating surfaces, and it may be necessary to slightly heat area around coupling or receptacle to loosen compound and then use a mallet to loosen them. Do not overheat area or use a metal hammer or damage to equipment may result.

1. If lock lever latch (17) is damaged or lower coupling receptacle (20) is being replaced, loosen nut (15) and remove spring ball setscrew (16) from bracket (19).
2. Remove two snaprings (18), pin (21), and lock lever latch (17) from bracket (19).
3. Remove five locknuts (5) and washers (13) from screws (4) on coupling support brackets (3) and (14). Discard locknuts (5).
4. Remove ten locknuts (5) and washers (6) from screws (12) on lower coupling receptacle (20) and coupling support brackets (3) and (14). Discard locknuts (5).
5. Using drift, drive five screws (4) from coupling support brackets (3) and (14) on side panel (2) and ten screws (12) from coupling support brackets (3) and (14), lower coupling receptacle (20), and lower support rail (11), remove coupling support brackets (3) and (14) and lower coupling receptacle (20) from bridge quarter (1).
6. If lock lever catch (8) is damaged or lower coupling connector (7) is being replaced, remove screw (9) and lock lever catch (8) from bracket (10).
7. Remove five locknuts (5) and washers (13) from screws (4) on coupling support brackets (3) and (14). Discard locknuts (5).
8. Remove ten locknuts (5) and washers (6) from screws (12) on lower coupling connector (7) and coupling support brackets (3) and (14). Discard locknuts (5).
9. Using drift, drive five screws (4) from coupling support brackets (3) and (14) on side panel (2) and ten screws (12) from coupling support brackets (3) and (14), lower coupling connector (7), and lower support rail (11), remove coupling support brackets (3) and (14) and lower coupling connector (7) from bridge quarter (1).

BRIDGE LOWER COUPLING CONNECTOR, RECEPTACLE, AND LOCK LEVERS REPLACEMENT (Contd)



BRIDGE LOWER COUPLING CONNECTOR, RECEPTACLE, AND LOCK LEVERS REPLACEMENT (Contd)**INSTALLATION****NOTE**

Clean remaining unlike metal compound from mating surfaces prior to installation.

Apply unlike metal compound to mating surfaces prior to installation.

1. Position lower coupling connector (7) and coupling support brackets (3) and (14) on lower support rail (11), and drive ten screws (12) up into mounting holes from under side on lower support rail (11).
2. Install five screws (4) from outer side of bridge quarter (1) through coupling support brackets (3) and (14) and side panel (2).
3. Install five washers (13) and new locknuts (5) on screws (4). Do not torque coupling support bracket locknuts (5) until lower coupling locknuts (5) have been tightened.

NOTE

Tighten mounting locknuts alternately and evenly starting with center inner and outer two screws and then following an X pattern during torquing. Refer to metric torque limits, WP 0118 00.

4. Install ten washers (6) and new locknuts (5) on screws (12) of lower coupling connector (7) and coupling support brackets (3) and (14) and tighten all locknuts (5).

NOTE

Apply light coat of grease to pin screw at installation.

5. If lock lever catch (8) was removed, install lock lever catch (8) on bracket (10) with screw (9).
6. Position lower coupling receptacle (20) and coupling support brackets (3) and (14) on lower support rail (11), and drive ten screws (12) up into mounting holes from under side on lower support rail (11).
7. Install five screws (4) from outer side of bridge quarter (1) through coupling support brackets (3) and (14) and side panel (2).
8. Install five washers (13) and new locknuts (5) on screws (4). Do not torque coupling support bracket locknuts (5) until lower coupling locknuts (5) have been tightened.

NOTE

Tighten mounting locknuts alternately and evenly starting with center inner and outer two screws and then following an X pattern during torquing. Refer to metric torque limits, WP 0118 00.

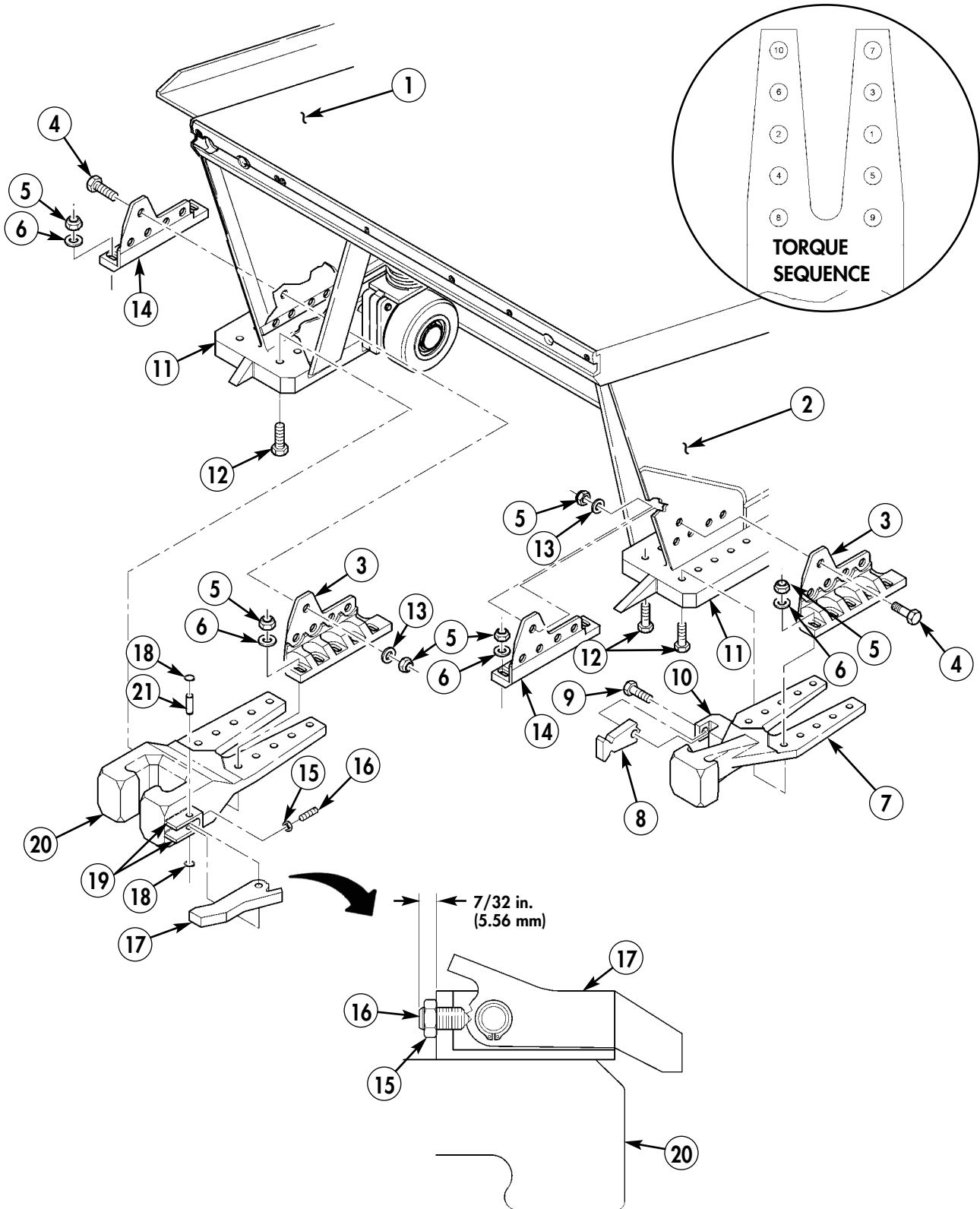
9. Install ten washers (6) and new locknuts (5) on screws (12) of lower coupling receptacle (20) and coupling support brackets (3) and (14) and tighten all locknuts (5).

NOTE

Apply light coat of grease to pin at installation.

10. If lock lever latch (17) was removed, install lock lever latch (17) on bracket (19) with pin (21) and two snaprings (18).
11. Install spring ball setscrew (16) and nut (15) on bracket (19).
12. Adjust spring ball setscrew (16) to 7/32 in. (5.56 mm) and tighten nut (15).
13. Install bridge half on bridge pallet. Refer to WP 0018 00.

BRIDGE LOWER COUPLING CONNECTOR, RECEPTACLE, AND LOCK LEVERS REPLACEMENT (Contd)



END OF WORK PACKAGE

0022 00-5/6 blank

BRIDGE MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

BRIDGE SUPPORT WHEEL HUB AND TIRE, BEARINGS, AXLE BRACKET, AND SPRING SUPPORT ASSEMBLY MAINTENANCE REMOVAL, DISASSEMBLY, CLEANING AND INSPECTION, ASSEMBLY, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Bridge half removed from bridge pallet and
placed on dunnage. Refer to WP 0018 00.

Materials/Parts

Grease (Item 8, WP 0205 00)
Skysol 100 (Item 4, WP 0205 00)
Cloth (Item 5, WP 0205 00)
Four lockwashers (WP 0137 00)

BRIDGE SUPPORT WHEEL HUB AND TIRE, BEARINGS, AXLE BRACKET, AND SPRING SUPPORT ASSEMBLY MAINTENANCE (Contd)

NOTE

There are four support wheels and spring support assemblies per bridge quarter. Maintenance is performed the same way for each support wheel and spring support assembly. This task covers maintenance of one support wheel and spring support assembly.

It may be necessary to use spreader and puller to remove support wheel from axle bracket.

REMOVAL

NOTE

Perform steps 1 and 2 to remove support wheel and axle bracket.

1. Remove snapring (1) from shaft (17), and pull support wheel hub (21) and support wheel tire (4) evenly off shaft (17).
2. Remove four screws (16), lockwashers (15), and axle bracket (14) from spring support bracket (13). Discard lockwashers (15).

NOTE

Perform steps 3 through 7 to remove spring support assembly.

There are four retainer support brackets per bridge quarter. One retainer support bracket has a cutaway for clearance; three do not. Illustration shows retainer support bracket with cutaway.

3. Tighten screw (6) to compress spring (7) until washer (5) is clear of retainer support bracket (9).
4. Remove four screws (18), spacers (20), and plate (19) from spring support bracket (13) and support bracket (8).
5. Loosen screw (6) until screw (6), washer (5), and spring (7) can be removed from spring support bracket (13).
6. Remove four screws (10), washers (11), and retainer support bracket (9) from support bracket (8).
7. If damaged, replace threaded inserts (12). Refer to WP 0029 00.

DISASSEMBLY

1. Remove two snaprings (2) and bearings (3) from hub (21).
2. If support wheel tire (4) is damaged, remove support wheel tire (4) from hub (21).

CLEANING AND INSPECTION

WARNING

Skysol 100 mixture is combustible. Use mechanical ventilation whenever product is used in a confined space. DO NOT use or store near heat, sparks, flame, or other ignition sources. Keep container sealed when not in use.

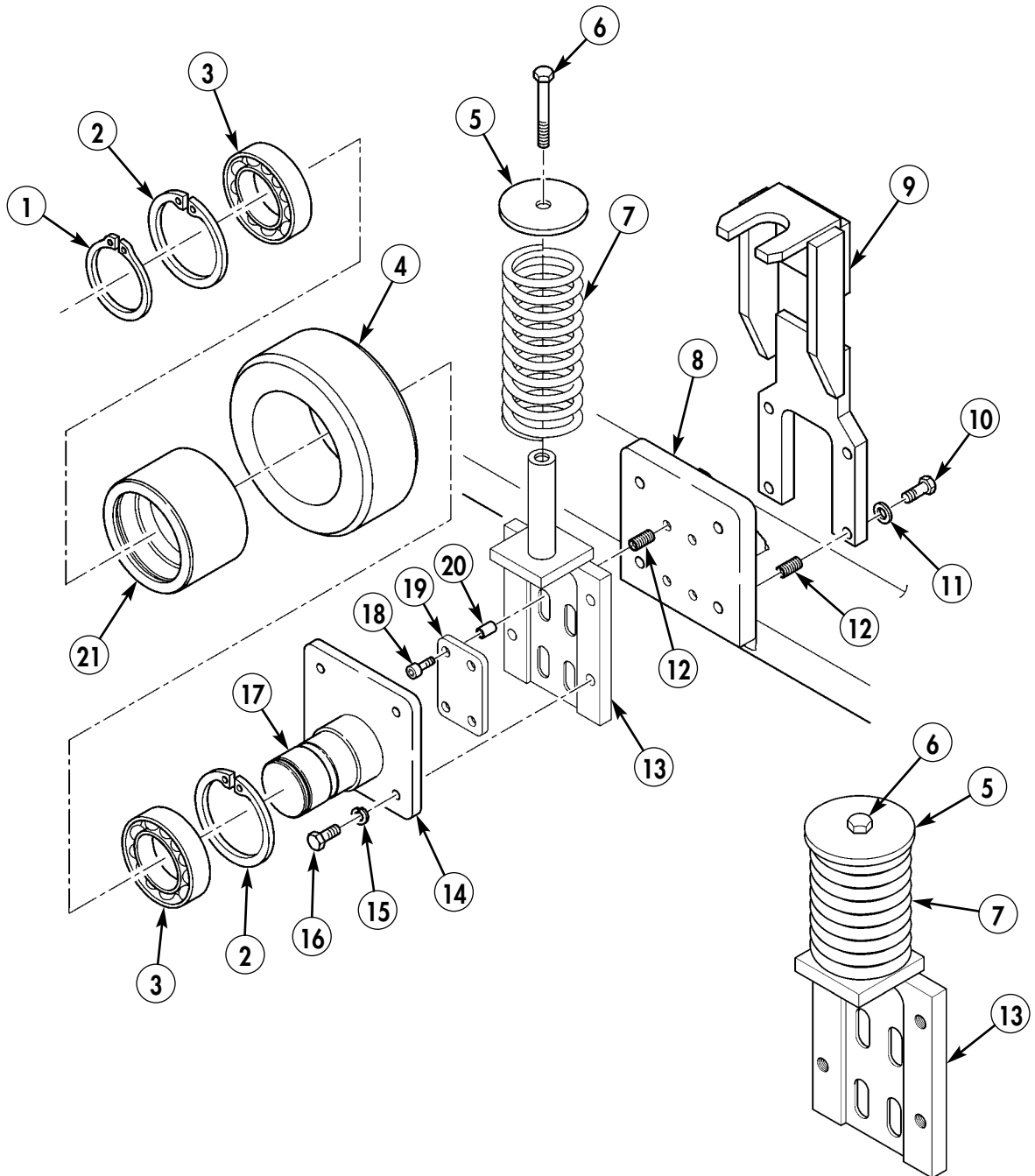
Contact with Skysol 100 may cause skin irritation. Use chemical-resistant gloves. In case of skin contact, remove any contaminated clothing and wash skin thoroughly with soap and water. Wash contaminated clothing before reuse. Eye contact may cause irritation, tearing, or blurring of vision. Use face 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. Clean support wheel hub (21) and bearings (3) with Skysol 100 and dry with cloth before inspection.

BRIDGE SUPPORT WHEEL HUB AND TIRE, BEARINGS, AXLE BRACKET, AND SPRING SUPPORT ASSEMBLY MAINTENANCE (Contd)

CLEANING AND INSPECTION (Contd)

2. Inspect support wheel tire (4) for cracks or damage to rolling surface, and replace if damaged.
3. Inspect support wheel hub (21) for cracks or bearing surface wear, and replace if damaged.
4. Inspect bearings (3) for cracks or pits, and replace if damaged.
5. Inspect axle bracket shaft (17) for wear, and replace if worn.
6. Inspect axle bracket (14), retainer support bracket (9), and spring support bracket (13) for cracked welds, and repair or replace if damaged.
7. Inspect support bracket (8) for cracked welds, and repair or replace if damaged. Refer to WP 0030 00.



BRIDGE SUPPORT WHEEL HUB AND TIRE, BEARINGS, AXLE BRACKET, AND SPRING SUPPORT ASSEMBLY MAINTENANCE (Contd)

ASSEMBLY

NOTE

Apply grease to bearings at installation.

1. If removed, install support wheel tire (4) on hub (21).

NOTE

Ensure snapping is installed with bevel edge facing in.

2. Install two bearings (3) on support wheel hub (21) with two snaprings (2).

INSTALLATION

NOTE

Perform steps 1 through 4 to install spring support assembly.

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

There are four retainer support brackets per bridge quarter. One retainer support bracket has a cutaway for clearance; three do not. Illustration shows retainer support bracket with cutaway.

1. Install retainer support bracket (9) on support bracket (8) with four washers (11) and screws (10).
2. Install spring (7), washer (5), and screw (6) on spring support bracket (13). Tighten screw (6) until spring (7) is compressed to align mounting holes on support bracket (8) with slots on spring support bracket (13).

NOTE

Apply a light coat of grease to plate and both sides of spring support bracket at installation.

3. Install spring support bracket (13) with spring (7), on support bracket (8) with plate (19), four spacers (20), and screws (18).
4. Loosen screw (6) until washer (5) contacts top of retainer support bracket (9).

NOTE

Perform steps 5 through 7 to install support wheel and axle bracket.

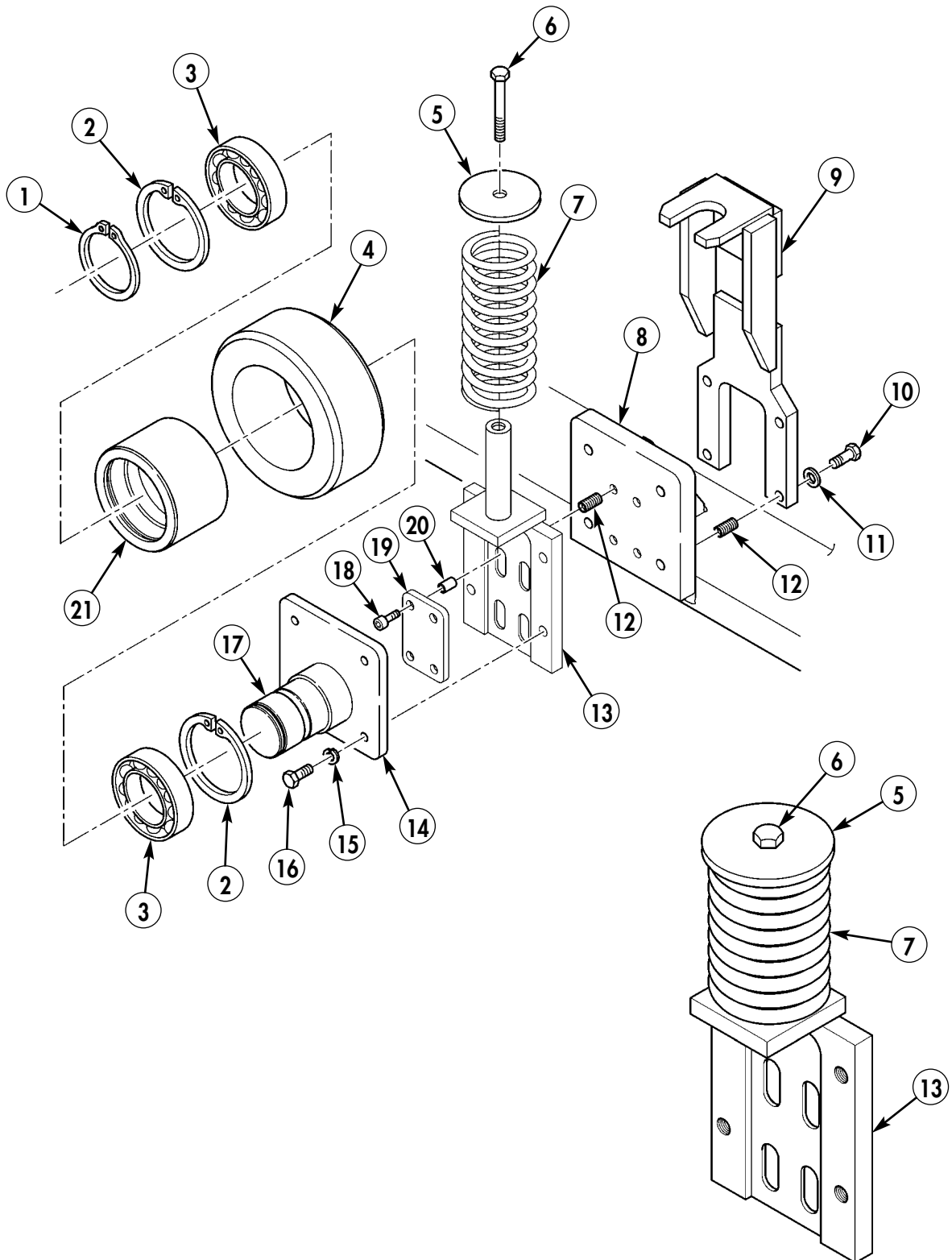
5. Install axle bracket (14) on spring support bracket (13) with four new lockwashers (15) and screws (16).

NOTE

Ensure snapping is installed with bevel edge facing in.

6. Install support wheel hub (21) and support wheel tire (4) on shaft (17) with snapping (1).
7. Install bridge half on bridge pallet. Refer to WP 0018 00.

BRIDGE SUPPORT WHEEL HUB AND TIRE, BEARINGS, AXLE BRACKET, AND SPRING SUPPORT ASSEMBLY MAINTENANCE (Contd)



END OF WORK PACKAGE

BRIDGE LEVEL MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**BRIDGE UPPER COUPLING LOCK LEVER, RECEPTACLE, AND
LOCKING MECHANISM MAINTENANCE****REMOVAL, CLEANING AND INSPECTION, INSTALLATION, ADJUSTMENT**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Sealing compound (Item 17, WP 0206 00)
Skysol 100 (Item 4, WP 0205 00)
Cloth (Item 5, WP 0205 00)
Grease (Item 8, WP 0205 00)
Unlike metal compound (Item 18, WP 0205 00)
Eight locknuts (WP 0138 00)
Locknut (WP 0138 00)
Locknut (WP 0138 00)
Cotter pin (WP 0139 00)

BRIDGE UPPER COUPLING LOCK LEVER, RECEPTACLE, AND LOCKING MECHANISM MAINTENANCE (Contd)

REMOVAL

1. Push in plunger (2) on locking mechanism (1) and place lock lever (14) in lock position (up). Remove spring (24) from lock lever (14) and bracket (31) on bridge quarter (4).
2. Remove locknut (29), washer (28), remote control lever (25), and shoulder bolt (23) from lock lever support bracket (27). Discard locknut (29).
3. Remove locknut (22), washer (21), needle cam follower (19), and washer (20) from lever (16) on shaft (6). Discard locknut (22).

NOTE

If present, note position of shim(s) and mark position of support bracket for installation.

4. Remove four locknuts (13), washers (12), screws (3), lock lever support bracket (27), and shims (30) from bridge quarter (4). Discard locknuts (13).

NOTE

Note position of lever for installation.

5. Remove snapping (18), washer (17), and lever (16) from shaft (6).
6. Loosen jamnut (8) and remove setscrew (9) from lock lever (14) and shaft (6).
7. Using a screw or puller, pull shaft (6) out of locking mechanism (1), lock lever (14), and lock lever support bracket (27).

NOTE

Lock receptacle is mounted on the other bridge quarter that mates with the lock lever, if necessary perform step 8 to remove lock receptacle.

Note position of shim(s) for installation.

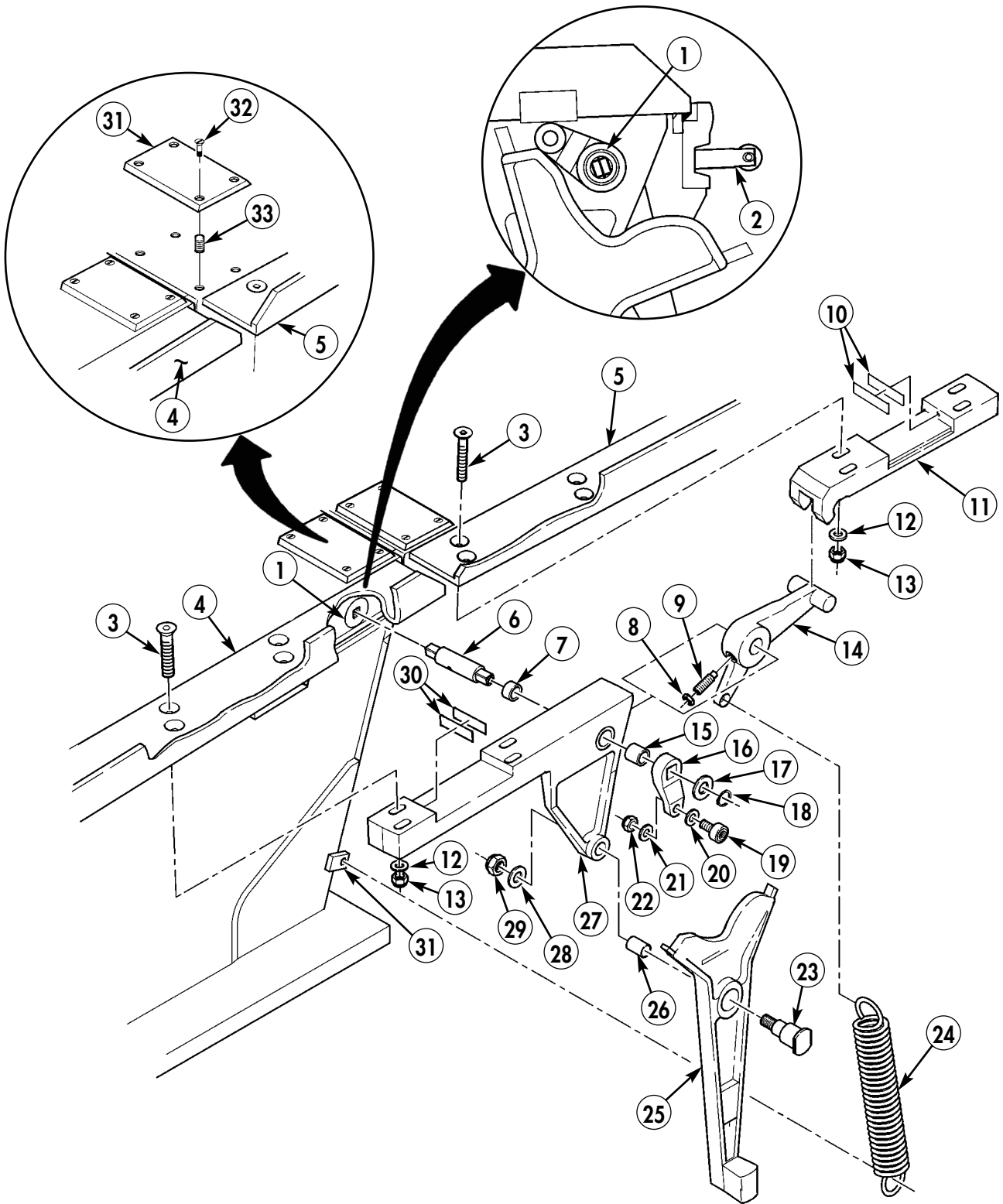
8. Remove four locknuts (13), washers (12), screws (3), lock receptacle (11), and shims (10) from mating bridge quarter (5). Discard locknuts (13).
9. If damaged or worn, remove bushings (7), (15), and (26) from lock lever support bracket (27) and remote control lever (25).

NOTE

Each bridge quarter has two skid plates installed at coupling ends. Skid plates are removed and installed in the same way. Only one skid plate is shown.

10. If skid plates (31) are damaged or worn, remove four screws (32) and skid plates (31) from bridge quarters (4) or (5).
11. If threads are damaged, remove threaded inserts (33). Refer to WP 0029 00.

BRIDGE UPPER COUPLING LOCK LEVER, RECEPTACLE, AND LOCKING MECHANISM MAINTENANCE (Contd)



BRIDGE UPPER COUPLING LOCK LEVER, RECEPTACLE, AND LOCKING MECHANISM MAINTENANCE (Contd)

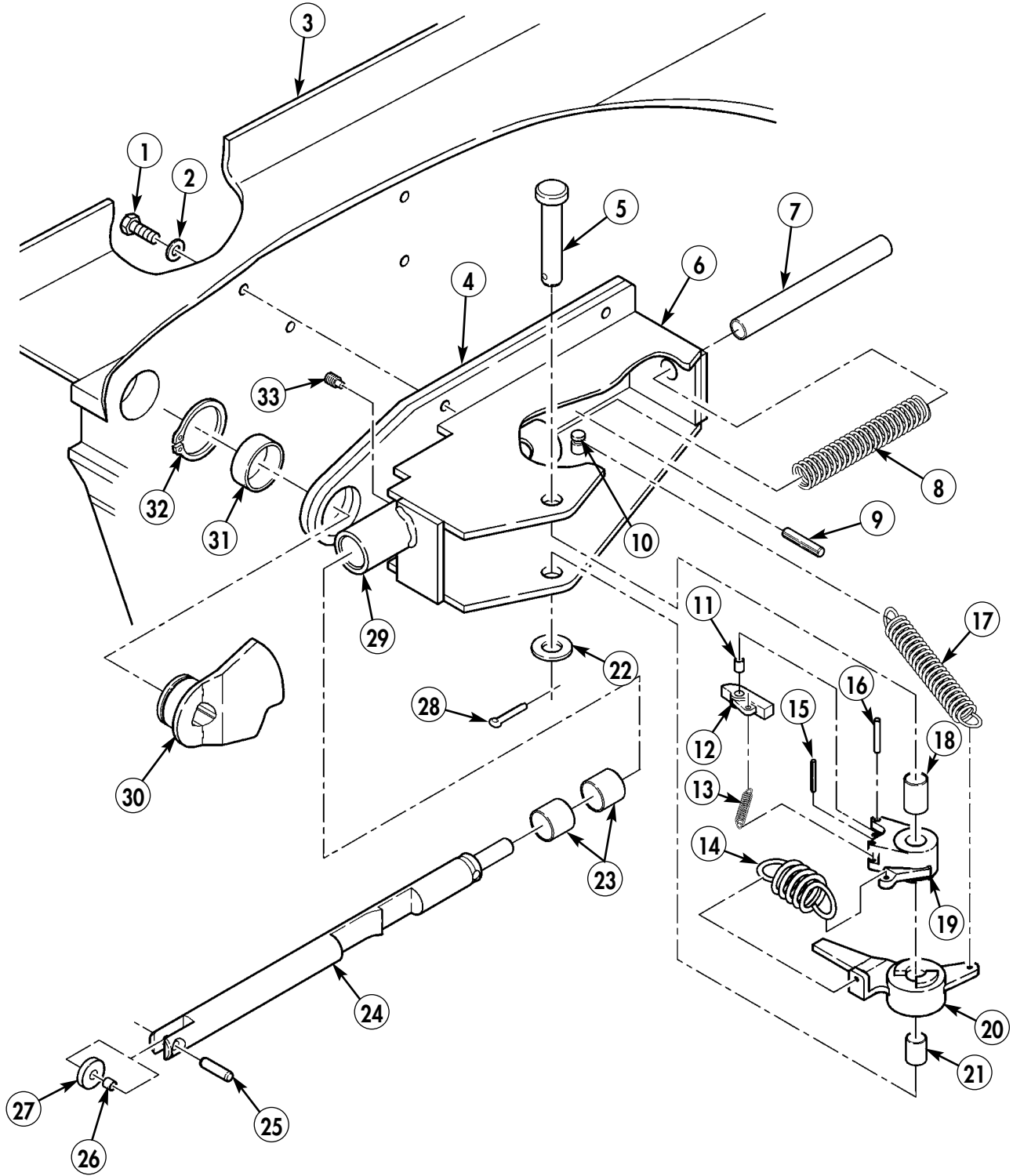
REMOVAL (Contd)

NOTE

Note location of all parts for installation.

10. Remove four screws (1), washers (2), and locking mechanism (4) from bridge quarter (3).
11. Remove spring (17) from cam lever (20) and pin (10) on housing (6).
12. Remove spring (14) from trigger lever (19) and cam lever (20).
13. Remove cotter pin (28), washer (22), pin (5), cam lever (20), and trigger lever (19) from bushings (18) and (21) and housing (6). Discard cotter pin (28).
14. Remove pin (15) and spring (13) from trigger (12) and trigger lever (19).
15. Remove pin (16) from trigger (12), bushing (11), and trigger lever (19).
16. Remove snapping (32) from shaft lever (30) and push shaft lever (30) out of bushing (31) and housing (6).
17. Remove stop screw (33) from housing (6).
18. Turn plunger (24) to access pin (9) and remove pin (9) from plunger (24) and slide plunger (24) out of spring (8), spring retainer (7), two bushings (23), and plunger housing (29).
19. Remove pin (25), bushing (26), and roller (27) from plunger (24).

BRIDGE UPPER COUPLING LOCK LEVER, RECEPTACLE, AND LOCKING MECHANISM MAINTENANCE (Contd)



BRIDGE UPPER COUPLING LOCK LEVER, RECEPTACLE, AND LOCKING MECHANISM MAINTENANCE (Contd)

CLEANING AND INSPECTION

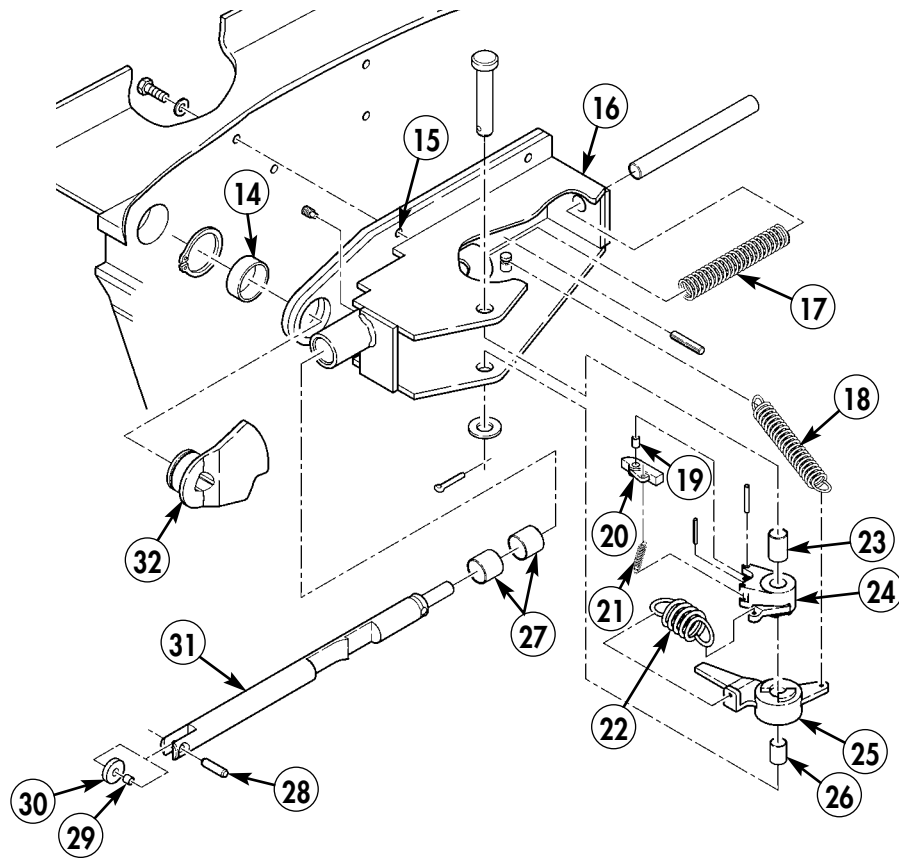
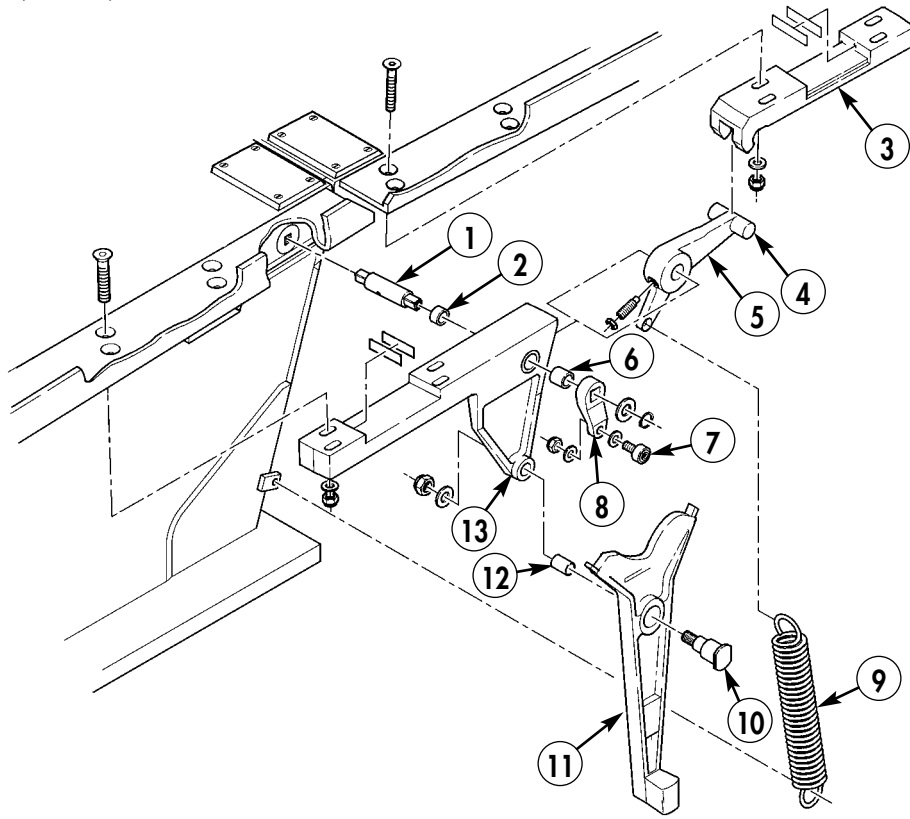
WARNING

Skysol 100 mixture is combustible. Use mechanical ventilation whenever product is used in a confined space. 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. Clean all locking mechanism parts with Skysol 100 and dry with cloth before inspection.
2. Inspect lock lever (5) and receptacle (3) for cracks, wear, or damage to locking pins (4). Replace if worn, damaged, or cracked.
3. Inspect remote control lever (11) for cracks or damage to roller surface. Replace if worn, damaged, or cracked.
4. Inspect remote control lever bushing (12) and shoulder bolt (10) for cracks, wear, or damaged threads. Replace if worn, damaged, or cracked.
5. Inspect needle cam follower (7) for cracks or damaged threads. Replace if worn, damaged, or cracked.
6. Inspect lock lever (8) for cracks or damaged spline. Replace if worn, damaged, or cracked.
7. Inspect shaft (1) for crack or wear on bushing mating surfaces. Replace if worn, damaged, or cracked.
8. Inspect lock lever support bracket (13) for cracks or worn bushings (2) and (6). Replace if worn, damaged, or cracked.
9. Inspect springs (9), (18), (21), and (22) for cracks or broken ends and spring (17) for cracks or missing coils. Replace if worn, damaged, or cracked.
10. Inspect trigger (20) for cracks, damage, or worn bushing (19). Replace if worn, damaged, or cracked.
11. Inspect trigger lever (24) and bushing (23) for wear or damage. Replace if worn.
12. Inspect cam lever (25) for cracked welds, damage, or worn bushing (26). Replace if worn, damaged, or cracked.
13. Inspect shaft lever (32) for cracks or damage. Replace if worn, damaged, or cracked.
14. Inspect plunger (31) for bent shaft or worn bushing mating surfaces. Replace if worn, damaged, or cracked.
15. Inspect plunger housing (16) for worn bushing (14), two bushings (27), and damaged threaded inserts (15). Replace if worn, damaged, or cracked.
16. Inspect roller wheel (30) for damage, bent pin (28) or worn bushing (29). Replace if worn, damaged, or cracked.

BRIDGE UPPER COUPLING LOCK LEVER, RECEPTACLE, AND LOCKING MECHANISM MAINTENANCE (Contd)



BRIDGE UPPER COUPLING LOCK LEVER, RECEPTACLE, AND LOCKING MECHANISM MAINTENANCE (Contd)

INSTALLATION

NOTE

Apply a light coat of grease to all bushings and shafts at installation.

1. If removed, install bushings (11), (18), (21), two bushings (23), and bushings (26) and (31).
2. If removed, install roller wheel (27) on plunger (24) with pin (25). Center punch pin (25) at both ends to hold roller wheel (27).
3. Apply sealing compound to end of plunger (24) and install spring retainer (7) on end of plunger (24).
4. Install plunger (24) halfway in plunger housing (29) and slide spring (8) on end of spring retainer (7), push plunger (24) in until pin (9) can be installed on end of plunger (24).

CAUTION

Ensure end of stop screw comes in contact with slot in plunger. Do not overtighten stop screw or plunger will not lock or release.

5. Turn plunger (24) to align slot for stop screw (33) and install stop screw (33).
6. Install shaft lever (30) on housing (6) with snapping (32).
7. Install trigger (12) on trigger lever (19) with pin (16).
8. Connect trigger lever (19) on trigger (12) with spring (13) and pin (15).
9. Install trigger lever (19) and cam lever (20) on housing (6) with pin (5), washer (22), and new cotter pin (28).
10. Install spring (14) on trigger lever (19) and cam lever (20).
11. Install spring (17) on cam lever (20) and pin (10) on housing (6).

NOTE

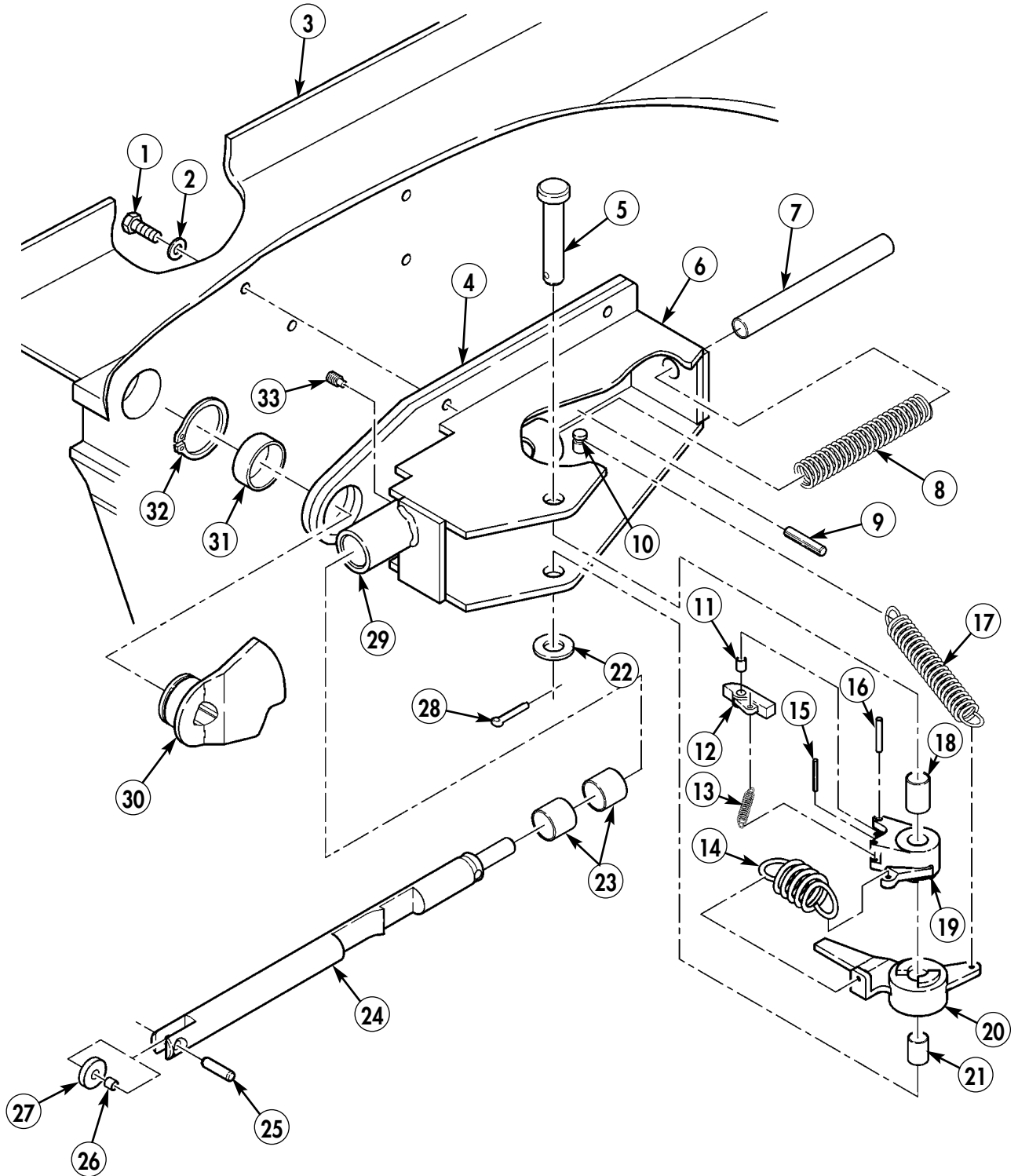
Ensure cam lever is locked on shaft lever prior to installation.

All mounting hardware will be tightened after adjustment.

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

12. Install locking mechanism (4) on bridge quarter (3) with four washers (2) and screws (1).

BRIDGE UPPER COUPLING LOCK LEVER, RECEPTACLE, AND LOCKING MECHANISM MAINTENANCE (Contd)



BRIDGE UPPER COUPLING LOCK LEVER, RECEPTACLE, AND LOCKING MECHANISM MAINTENANCE (Contd)

INSTALLATION (Contd)

13. If removed, install threaded inserts (33).
14. If skid plates (31) was removed, install skid plates (31) on bridge quarter (4) or (5) with four screws (32).

NOTE

All mounting hardware will be tightened after adjustment.

15. If removed, install bushings (7), (15), and (26).
16. Install lock receptacle (11) and shims (10) on mating bridge quarter (5) with four screws (3), washers (12), and new locknuts (13) finger tight.

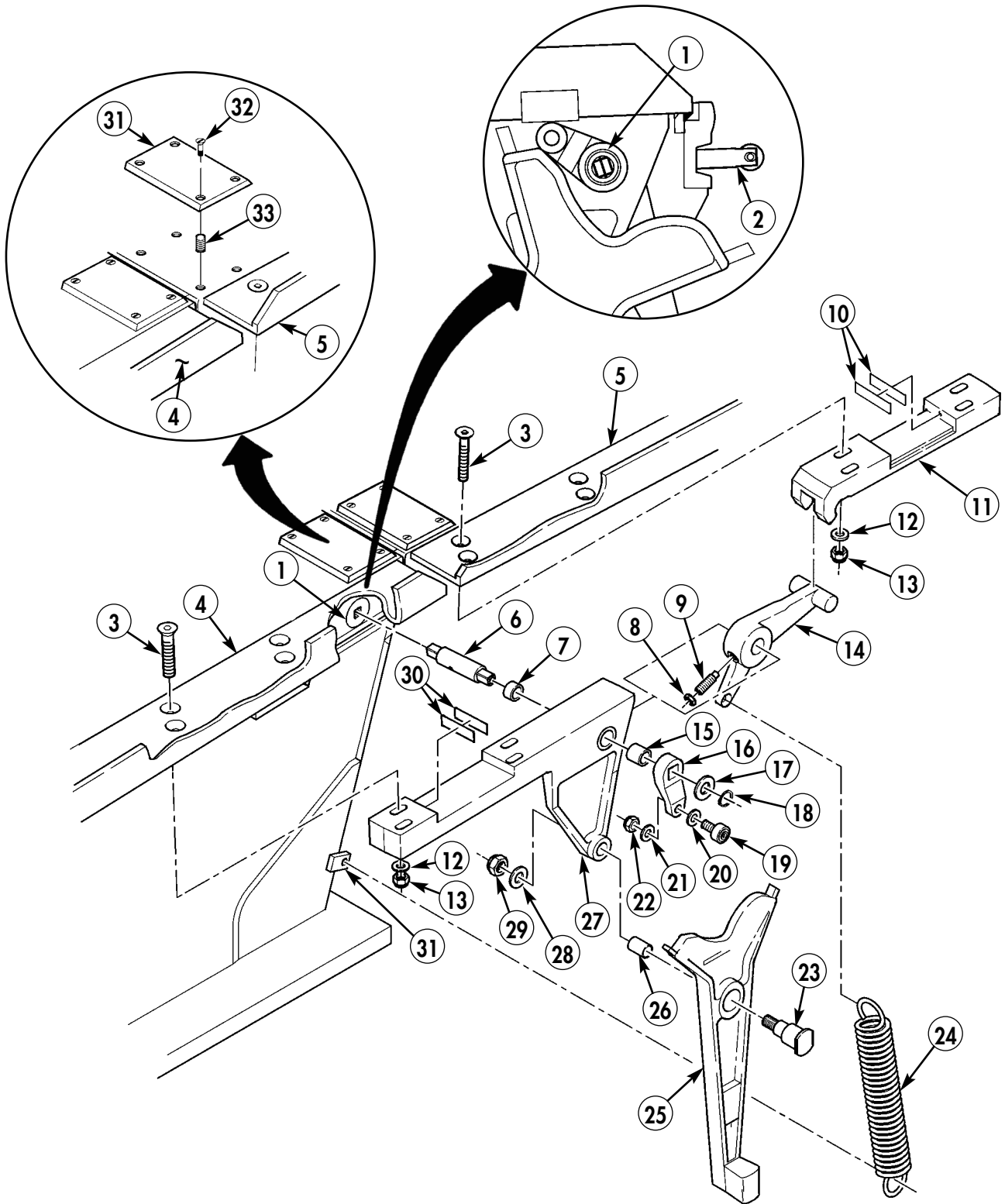
NOTE

If present, install shim as noted during removal.

Support bracket must be installed in same position as marked during removal.

17. Install lock lever support bracket (27) and shims (30) on bridge quarter (4) with four screws (3), washers (12), and new locknuts (13). Tighten locknuts (13) alternately and evenly until locknuts (13) just hold lock lever support bracket (27) in place.
18. Install lock lever (14) on lock lever support bracket (27) and slide shaft (6) through lock lever support bracket (27), lock lever (14), and into lock mechanism (1).
19. Align shaft (6) setscrew hole with lock lever (14) setscrew hole and install setscrew (9) and tighten jamnut (8).
20. Install lever (16) on shaft (6) with washer (17) and snapping (18).
21. Install washer (20) and needle cam follower (19) on lever (16) with washer (21) and new locknut (22).
22. Install remote control lever (25) on lock lever support bracket (27) with shoulder bolt (23), washer (28), and new locknut (29).
23. Push in plunger (2) on locking mechanism (1) and place lock lever (14) in lock position and install spring (24) between lock lever (14) and bracket (31) on bridge quarter (4).

BRIDGE UPPER COUPLING LOCK LEVER, RECEPTACLE, AND LOCKING MECHANISM MAINTENANCE (Contd)



BRIDGE UPPER COUPLING LOCK LEVER, RECEPTACLE, AND LOCKING MECHANISM MAINTENANCE (Contd)

ADJUSTMENT

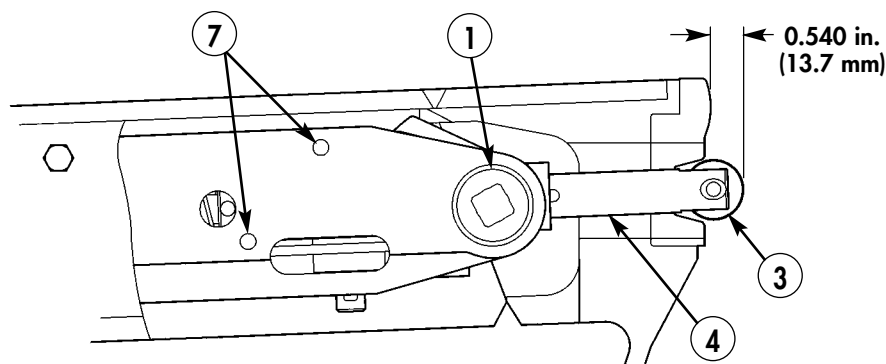
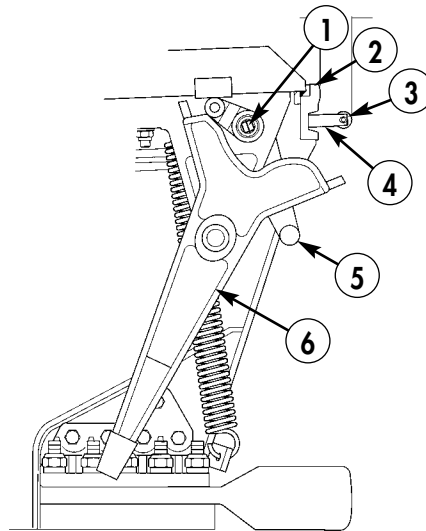
NOTE

Perform adjustment with bridge halves uncoupled.

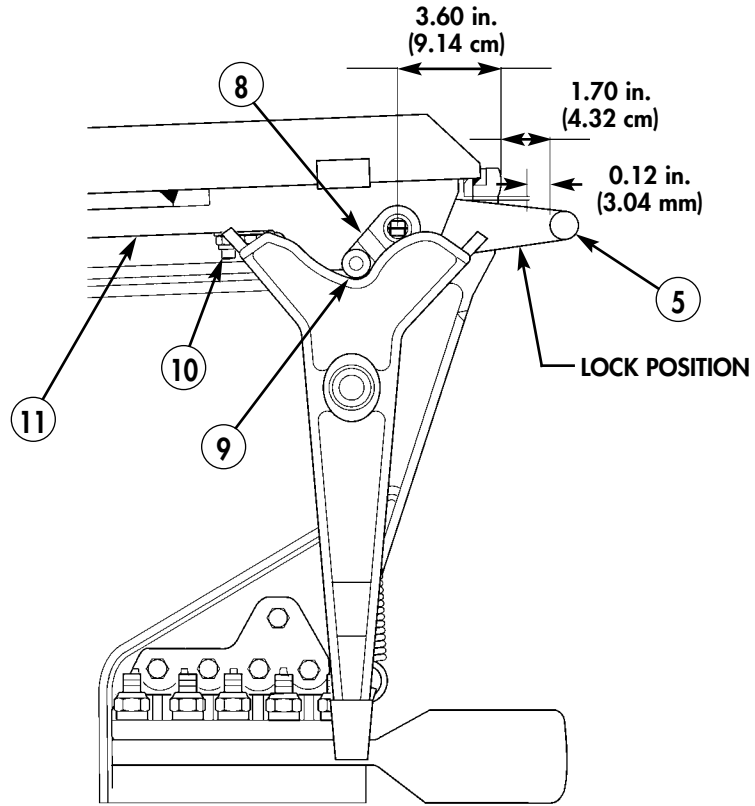
Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

Perform step 1 if locknuts holding support bracket are not loose.

1. Loosen four locknuts (10).
2. Position locking mechanism (1) in unlock position and adjust locking mechanism (1) until roller wheel (3) on plunger (4) is 0.540 in. (13.7 mm) out from upper crossforce coupling (2). Tighten four screws (7).
3. Hold remote control lever (6) and push in on roller wheel (3) on plunger (4), lock lever (5) will move to lock position.
4. Adjust lock lever support bracket (11) until inside of lock lever pins (5) are 0.12 in. (3.04 mm) from upper crossforce coupling (2). Tighten four locknuts (10).
5. Check clearance between top of lock lever (5) and bridge deck. There must be 0.12 in. (3.04 mm) with needle cam follower (9) on lever (8) in the lowest position on remote control lever (6).



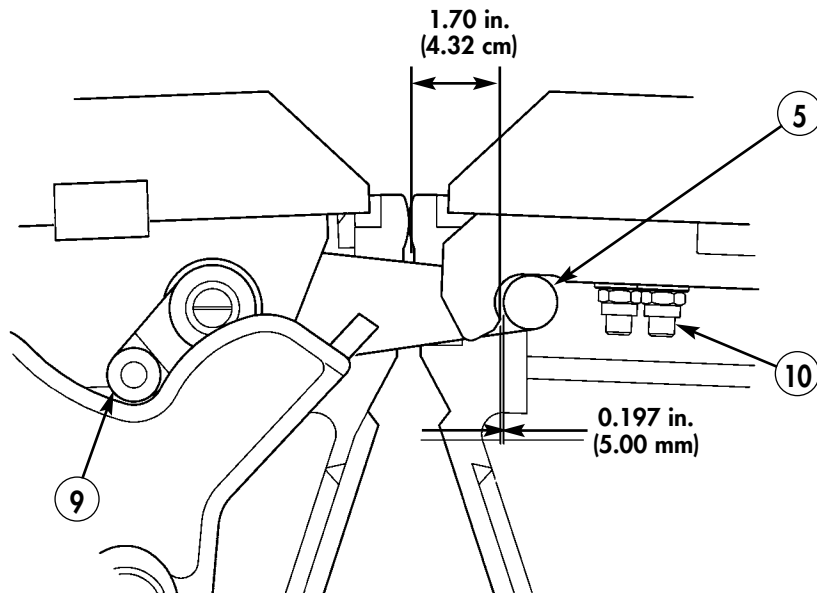
BRIDGE UPPER COUPLING LOCK LEVER, RECEPTACLE, AND LOCKING MECHANISM MAINTENANCE (Contd)



NOTE

Perform adjustment with bridge halves coupled.

6. Check distance from upper crossforce couplings (2) to center of lock lever (5). There must be 2.09 in. (5.3 cm) at this point.
7. Check clearance between lock lever pin (5) and locking point with lock lever (5) in lock position. There must be 0.197 in. (5.00 mm) when locked.



END OF WORK PACKAGE

BRIDGE MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**BRIDGE CROSSFORCE COUPLING BUMPERS REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)**Materials/Parts**Unlike metal compound (Item 18, WP 0205 00)
Six lockwashers (WP 0140 00)

BRIDGE CROSSFORCE COUPLING BUMPERS REPLACEMENT (Contd)

REMOVAL

NOTE

Removal and installation of right and left crossforce coupling bumpers are performed the same way. Right side is shown.

1. Remove six screws (3) and lockwashers (4) from crossforce coupling bumper (2) on bridge quarter (1). Discard lockwashers (4).

CAUTION

Do not overheat coupling or damage to equipment may result.

2. Heat crossforce coupling bumper (2) and remove crossforce coupling bumper (2) from bridge quarter (1).
3. If damaged, replace threaded inserts (5). Refer to WP 0029 00.

INSTALLATION

1. Apply unlike metal compound to mating surfaces of crossforce coupling bumper (2) and bridge quarter (1).

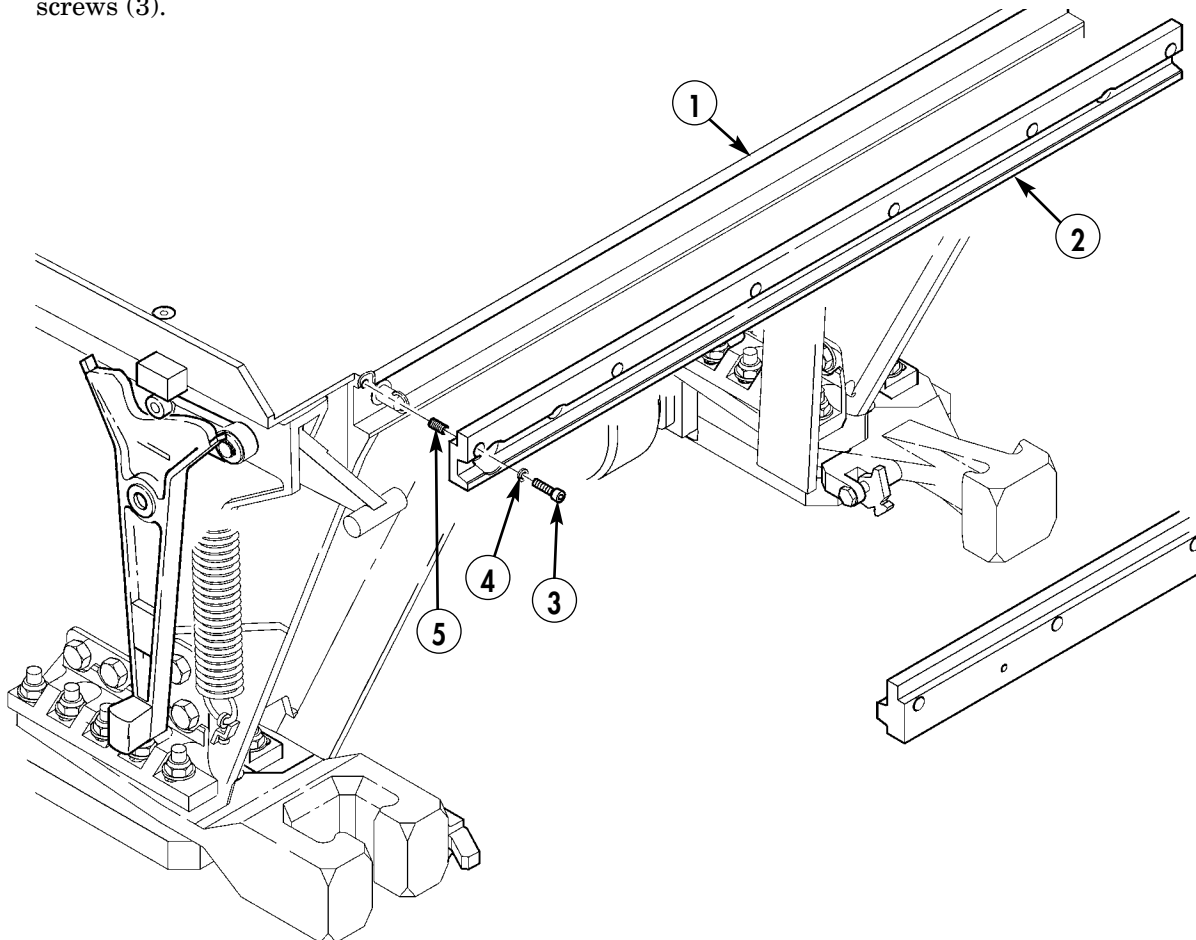
CAUTION

When installing crossforce coupling bumper, do not strike coupling with metal hammer or damage to mating surfaces will result.

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

2. Install crossforce coupling bumper (2) on bridge quarter (1) with six new lockwashers (4) and screws (3).



END OF WORK PACKAGE

0025 00-2

BRIDGE MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**BRIDGE SLIDE LOCK MECHANISM REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Bridge half removed from bridge pallet and
placed on dunnage. Refer to WP 0018 00.

Materials/Parts

Grease (Item 8, WP 0205 00)
Four cotter pins (WP 0141 00)

BRIDGE SLIDE LOCK MECHANISM REPLACEMENT (Contd)

REMOVAL

NOTE

Removal and installation of slide lock mechanisms on bridge quarters are performed the same way. Left side is shown.

1. Unlock and remove clevis locking pin (9) from clevis (10) and locking lever (7) and disconnect rod (11).
2. Repeat step 1 to remove opposite clevis locking pin (9) and rod (11).
3. Remove spring (5) from control lever pin (14) and bracket (15) on bridge quarter (1).
4. Remove two nuts (6) and ball joints (12) with rods (11) from control lever (13).
5. Remove ball joint (12) and clevis (10) from both rods (11).
6. Remove cotter pin (21) and pin (18) from locking lever (7) and brackets (19) on slide beam (8). Discard cotter pin (21).
7. Remove cotter pin (29) and washer (30) from pin (31) on locking lever (7) and lift locking lever (7) out of slot (32) on cam lever (24). Discard cotter pin (29).
8. Remove snapping (23), pin (22), and cam lever (24) from bracket (20) on slide beam (8).

NOTE

Note position of plastic roller for installation.

9. Remove shoulder bolt (28), washer (27), spacer (26), and plastic roller (25) from cam lever (24).
10. Repeat step 5 through 9 to remove opposite locking lever (7).
11. Remove snapping (3) and washer (4) from control lever (13).
12. Push control lever (13) out of bushing (16) on bridge quarter (1).
13. If damaged or worn more than .025 in. (0.63 mm), push bushing (16) out of housing (17).
14. If damaged or worn, remove pin (2) from control lever (13).

INSTALLATION

1. If removed, install pin (2) on control lever (13) and center pin (2) on control lever (13).
2. If removed, press bushing (16) in housing (17) on side of bridge quarter (1).

NOTE

Ensure snapping is installed with bevel edge facing in.

3. Apply grease to control lever (13), and install control lever (13) on bridge quarter (1) with washer (4) and snapping (3).

NOTE

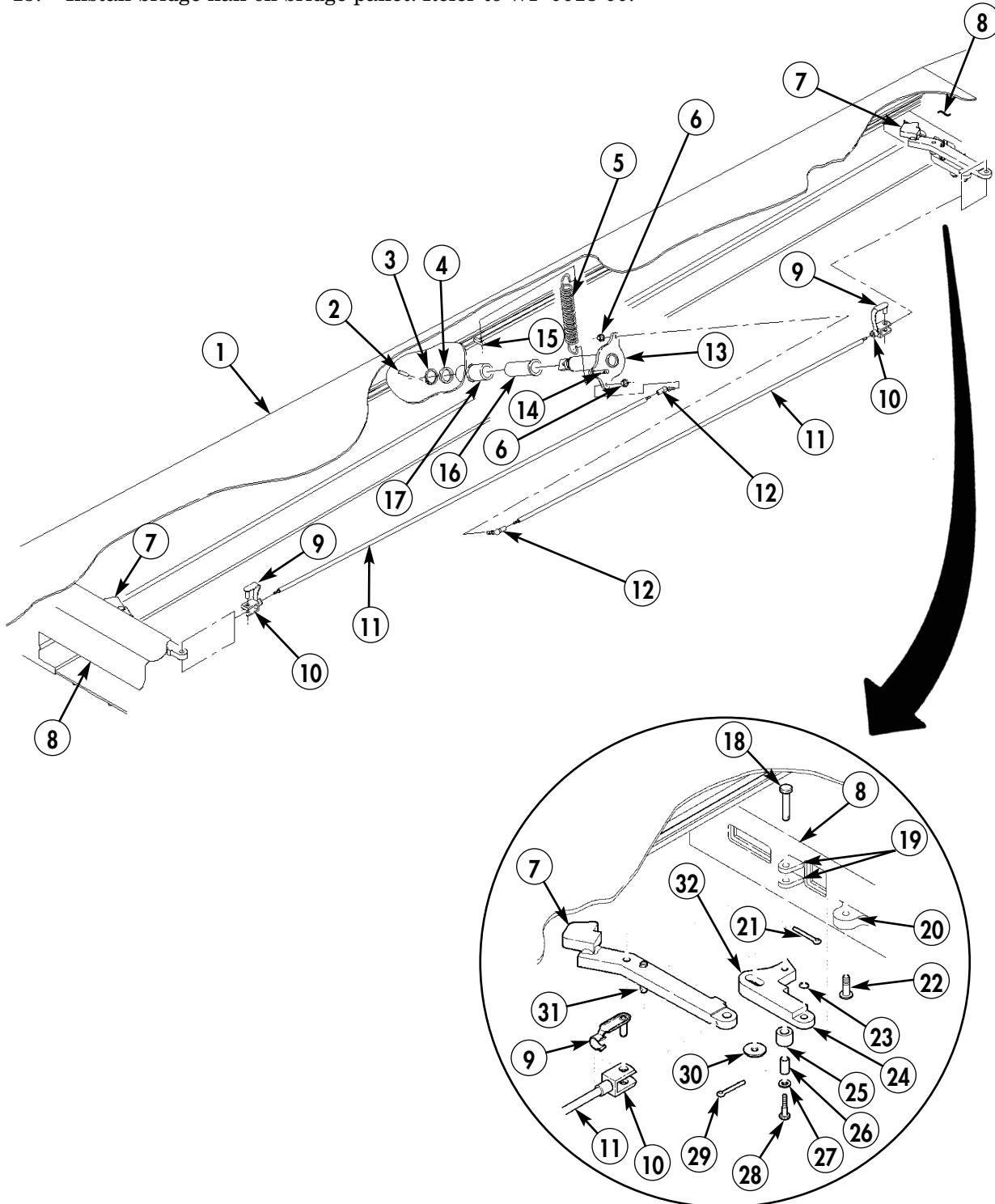
Install plastic roller as noted during installation.

4. Install plastic roller (25), and spacer (26) on cam lever (24) with washer (27) and shoulder bolt (28).
5. Install cam lever (24) on bracket (20) on slide beam (8) with pin (22) and snapping (23).
6. Position locking lever (7) on cam lever (24) with pin (31) in slot (32), and install washer (30) and new cotter pin (29) on pin (31).
7. Install locking lever (7) on brackets (19) of slide beam (8) with pin (18) and new cotter pin (21).
8. Repeat steps 4 through 7 to install opposite locking lever (7).
9. Install clevis (10) and ball joint (12) on both rods (11).
10. Connect ball joint (12) to control lever (13) with nut (6).
11. Repeat step 10 to connect opposite ball joint (12).

BRIDGE SLIDE LOCK MECHANISM REPLACEMENT (Contd)

INSTALLATION (Contd)

12. Install spring (5) on control lever pin (14) and bracket (15), located on side of bridge quarter (1).
13. Connect clevis (10) to locking lever (7) with clevis locking pin (9) and slide clip over clevis (10).
14. Repeat step 13 to connect clevis (10) to locking lever (7) on opposite rod (11).
15. Install bridge half on bridge pallet. Refer to WP 0018 00.



END OF WORK PACKAGE

BRIDGE MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**LAUNCH BEAM LIFTING EYE AND SWIVEL BLOCKS REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Grease (Item 8, WP 0205 00)
Two locking tabs (WP 0142 00)

Equipment Condition

Winch cable disconnected if top bridge half
lifting eye is to be replaced.
Refer to TM 5-5420-280-10.

LAUNCH BEAM LIFTING EYE AND SWIVEL BLOCKS REPLACEMENT (Contd)

REMOVAL

1. Bend two locking tabs (3) away from heads of screws (2) and remove two screws (2) and locking tabs (3) from swivel blocks (4) and launch beam (5). Discard locking tabs (3).

NOTE

It may be necessary to tap lightly on swivel blocks to remove blocks from aligning holes.

2. Remove lifting eye (1) and two swivel blocks (4) from launch beam (5).
3. Remove two swivel blocks (4) from lifting eye pins (8).

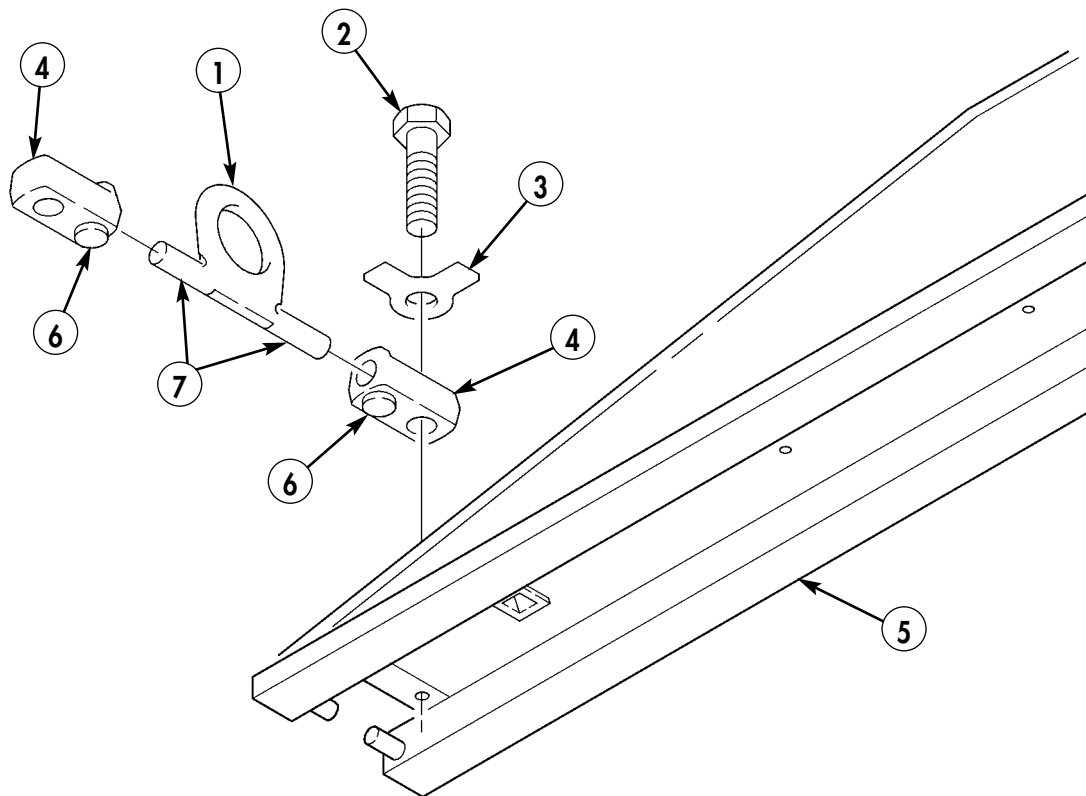
INSTALLATION

1. Apply a light coat of grease to lifting eye pins (7) and slide two swivel blocks (4) on lifting eye pins (7).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

2. Position swivel block dowel pins (6) down, and install lifting eye (1) and swivel blocks (4) on launch beam (5) with two new locking tabs (3) and screws (2). Tighten screws (2), and bend one locking tab up to screw head and other locking tab down to swivel block (4).
3. If removed, connect winch cable to lifting eye. Refer to TM 5-5420-280-10.



END OF WORK PACKAGE

BRIDGE MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**LAUNCH BEAM PIN WHEEL DRIVE BRACKET AND DRIVE PINS REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)**Equipment Condition**Bridge half removed from bridge pallet and
placed on dunnage. Refer to WP 0018 00.

LAUNCH BEAM PIN WHEEL DRIVE BRACKET AND DRIVE PINS REPLACEMENT (Contd)

REMOVAL

1. Remove twelve screws (13), washers (12), and pin wheel bracket (10) from launch beam (1).

NOTE

Note position of smaller teeth on rail track for installation.

2. Remove ten screws (16), washers (17), and rail track (18) from ramp end of launch beam (1).

NOTE

Perform step 3 only if other drive pins are to be removed.

Removal and installation of drive pins are the same; only one drive pin with welded washers is shown.

3. Grind off tack welds from drive pin (15), washers (14), and slide drive pin (15) out of pin wheel bracket (10). Repeat step to remove all pins (15) as needed.
4. Remove six screws (4), washers (3), and three limit switch brackets (2) from launch beam (1).

NOTE

Mark position of stop brackets for installation.

5. Remove eight screws (7), washers (6), and two stop brackets (5) from launch beam (1).
6. Remove two screws (9) and bracket (8) from launch beam (1).

INSTALLATION

1. Install bracket (8) on launch beam (1) with screws (9).
2. Install two stop brackets (5) on launch beam (1) with eight washers (6) and screws (7).
3. Install three limit switch brackets (2) on launch beam (1) with six washers (3) and screws (4).

NOTE

Washers are spot welded in three places on both ends of drive pins.

4. If removed, install drive pins (15) on pin wheel bracket (10) and tack washers (14) on both ends of drive pins (15).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

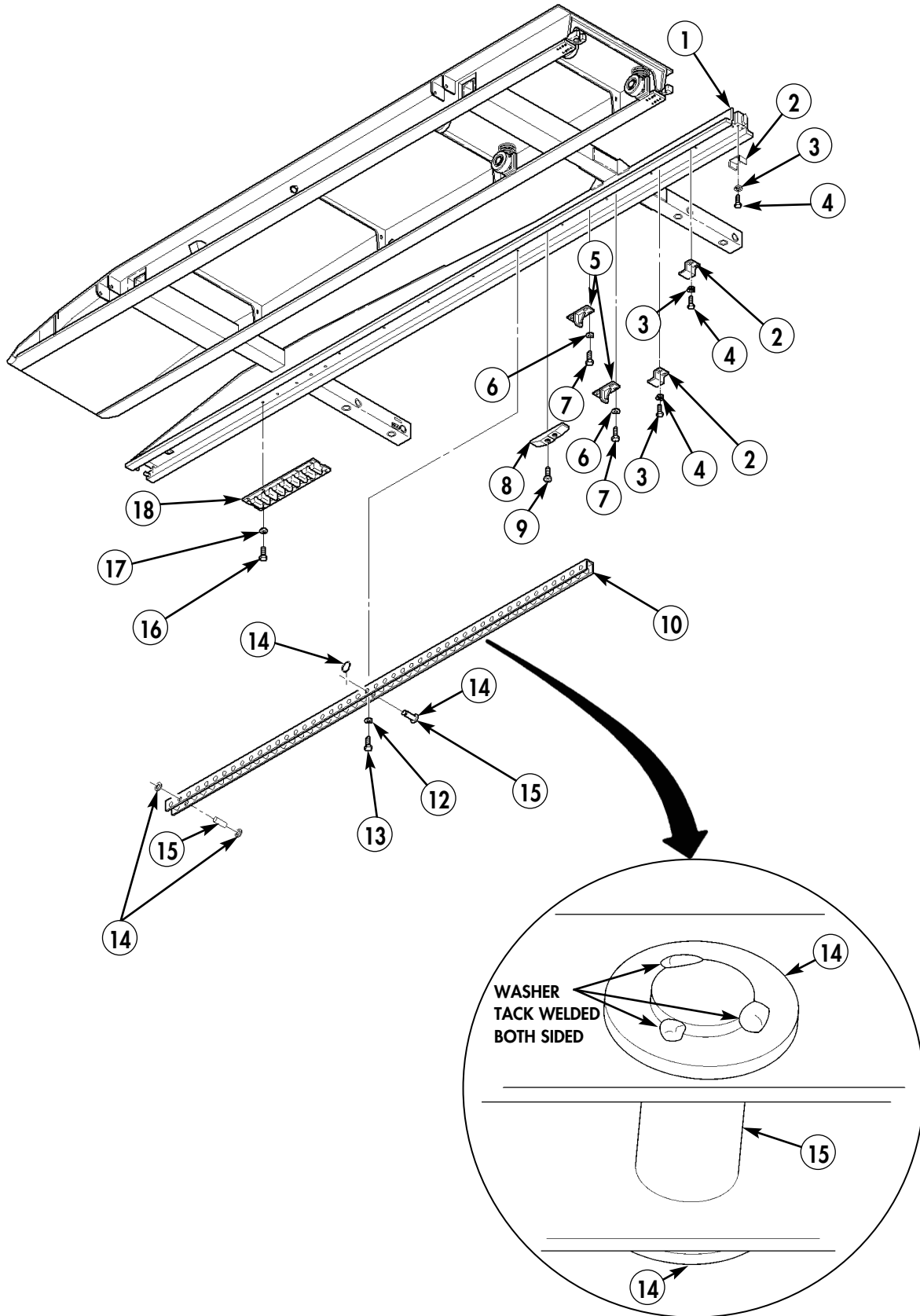
5. Install pin wheel drive bracket (10) on launch beam (1) with twelve washers (12) and screws (13).

NOTE

Install rail track as noted at removal.

6. Install rail track (18) on ramp end of launch beam (1) with ten washers (17) and screws (16).
7. Install bridge half on bridge pallet. Refer to WP 0018 00.

LAUNCH BEAM PIN WHEEL DRIVE BRACKET AND DRIVE PINS REPLACEMENT (Contd)



END OF WORK PACKAGE

BRIDGE MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

THREADED INSERT REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0205 00)

Materials/Parts

Unlike metal compound (Item 18, WP 0205 00)

THREADED INSERT REPLACEMENT (Contd)

NOTE

Removal and installation of all threaded inserts are performed the same way.

REMOVAL

1. Using drill, remove damaged or stripped threaded insert (1).
2. Clean chips out of threaded insert hole.

INSTALLATION

1. Use drill bit that is specified for the size of threaded insert (3) to be installed.
2. Use tap to thread hole for insert (3).

NOTE

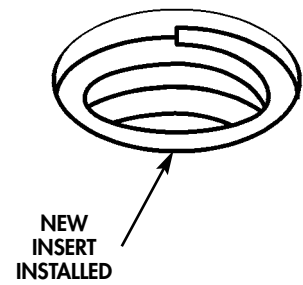
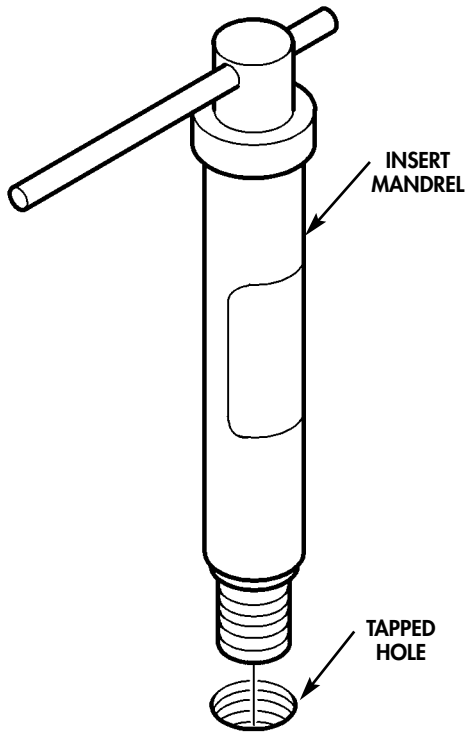
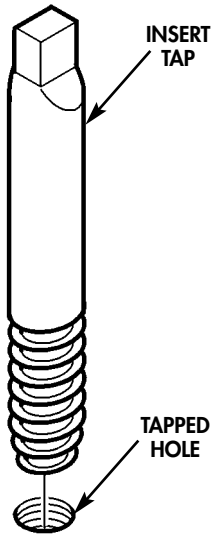
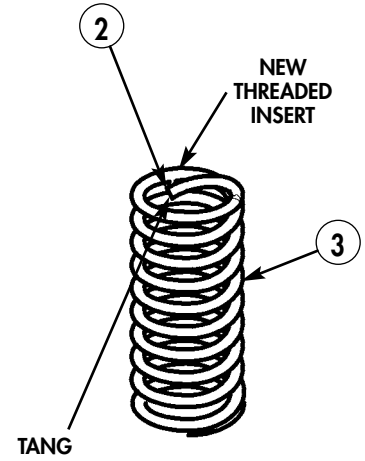
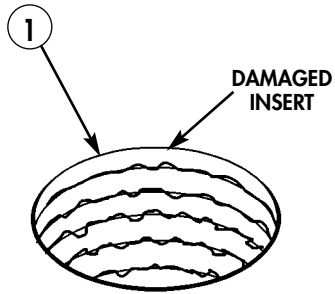
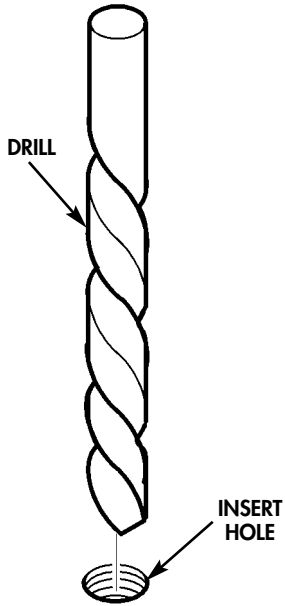
Fine threaded inserts must be prewound on fine thread insert mandrel to reduce insert diameter before installing insert into tapped hole.

Coarse thread inserts can be installed without prewinding insert using coarse thread insert mandrel.

Coat insert with unlike metal compound prior to installation.

3. Install threaded insert (3) on insert mandrel with tang (2) down.
4. Using insert mandrel, install threaded insert (3) in tapped hole.
5. Using insert mandrel, break off tang (2) on threaded insert (3) and remove insert mandrel from threaded insert (3) and tang from bottom of hole.

THREADED INSERT REPLACEMENT (Contd)



END OF WORK PACKAGE

BRIDGE MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**BRIDGE AND PALLET CRACK DEFORMATION INSPECTION AND REPAIR
INSPECTION, PREPARATION, WELDING**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

References

TC 9-237

BRIDGE AND PALLET CRACK DEFORMATION INSPECTION AND REPAIR (Contd)

CRACK DEFORMATION INSPECTION

WARNING

Welding repair of bridge structural components is not allowed at field level. Attempting welding repair of damaged structural areas without proper heat treating will compromise strength of bridge. Failure to comply may result in failure of bridge, damage to equipment, and possible injury or death to personnel.

1. Deformation
 - a. In case of a deformation, there will be an additional evaluation in view of the portion represented within the complete structure required in order to establish the remaining strength.
 - b. Basically, any deformation in the complete cross-sectional area of a component subject to pressure load will lead to complete failure.
 - c. However, if a deformation limit is exceeded in areas of a profile or plate, which reflect a minor width portion only (uncritical width), the latter may be considered negligible (crack free deformations only).
 - d. Due to the fact that evaluation of these marginal conditions may easily lead to misinterpretations, it is recommended to segregate the item in question in any case if and when the critical deformation is reached and the uncritical width is exceeded.
 - e. In components subject to tensile loads, deformation will, normally, be uncritical (check for non-existence of cracks).
 - f. Various deformations arranged in line along a longitudinal axis (crossing direction) are looked upon as one deformation.

2. Inspection Method

The inspection method is given in the inspection plan.

Table 1. Smallest Surface Crack Lengths Definitely to be Detected in Inches and mm.

Inspection Method	Crack Location		
	Even, smooth surface	Uneven surface, weld crown	Tapered corner, weld ground
Visual inspection or using x 10 magnifying means	0.787 in. (20 mm)	1.181 in. (30 mm)	1.969 in. (50 mm)
For smaller cracks use dye-penetrant method	0.197 in. (5 mm)	0.394 in. (10 mm)	0.591 in. (15 mm)

WARNING

Personnel must observe all relevant safety precautions to prevent inhaling toxic fumes or dust when cleaning or welding around epoxy paints used on bridge quarters. Failure to comply may result in injury or death to personnel.

NOTE

The above rates are based on sufficient accessibility, adequate lighting and removed surface coating.

- a. Therefore, in case of a deformation detected, there must always be a crack inspection of that area carried out as well.
- b. If the deformation measured exceeds the critical deformation and the uncritical width, the bridge quarter concerned must be put out of service immediately.
- c. Further use subject to load restrictions is considered acceptable. To that end, however, there must be an evaluation of the overall condition of the bridge quarter and of the damage details carried out. Release for unlimited use will have to be granted by the manufacturer.

BRIDGE AND PALLET CRACK DEFORMATION INSPECTION AND REPAIR (Contd)

3. General Welding

- a. Welding of Aluminum Alloy EN AW 7020 used in fabrication of bridge quarters is only to be carried out by approved welders under supervision of a person who is an international welding specialist using metal insert gas (MIG), shielding gas (Argon), and 0.047 in. (1.2 mm) wire.

CAUTION

Welds may be repaired up to a maximum of four times. This number must NOT be exceeded under any circumstances. Failure to comply may result in equipment damage.

- b. Field repair is only permitted for crack lengths that do not exceed the length given in tables 2 and 3 under unserviceable.

WARNING

Personnel must observe all relevant safety precautions to prevent inhaling toxic fumes or dust when cleaning or welding around epoxy paints used on bridge quarters. Failure to comply may result in injury or death to personnel.

CAUTION

- Removal of damaged welded-on-parts from bridge must be carried out using grinding or milling equipment. Welded-on-parts must not be broken off using a hammer or lever as this will lead to development of cracks.
 - When carrying out any pre-heating procedures, temperatures must be limited to below 248° F (120° C). Higher temperatures will weaken the joined materials.
- c. In order to determine extent of damage, careful visual examination aided by x 10 magnification and dye penetrant testing procedures should be used.
 - d. The surfaces of damaged areas must be thoroughly cleaned prior to welding. Oxides, dirt, paint, and other foreign substances must be removed from approximately 1.181 in. (30 mm) beyond the limits of repair area.

NOTE

Welding must not be carried out at ambient temperature below 41° F (5° C).

- e. At aluminum temperatures below 59° F (15° C) the welding area must be preheated using suitable means, pre-heating mats to a maximum of 248° F (120° C). Pre-heating by naked flame is also permitted.
- f. After each welding pass, clean weld, check temperature weld area should be cooled to below 266° F (130° C) before the next pass is made.
- g. Component of 0.39–0.79 in. (10–20 mm) thickness are to be pre-heated to between 212°–248° F (100–120° C) using heat equipment. Temperature control should be checked using temperature measuring instruments.

NOTE

To compensate for post weld shrinkage in a larger inserted plate over 9.843 x 11.811 in. (250 x 300 mm) the insert should have an additional 0.079 in. (2 mm) added to dimension of each weld seam in direction of load. The plate should be bowed to accommodate this allowance, to enable it to be fitted into repair hole accurately.

- h. Tack welds should be approximately 1.97 in. (50 mm) in length and spaced along seam so as to maintain components to be joined in their correct relative positions before welding.
- i. All welding repairs carried out on bridge should be post weld heat treated. Inspection of heat affected area for cracks, inclusions, and flaws must be carried out.

BRIDGE AND PALLET CRACK DEFORMATION INSPECTION AND REPAIR (Contd)

NOTE

GDSBS recommend after any welding, post heat treatment. If there is no possibility to perform a post-heat treatment, natural aging of 30 days at 68° F (20° C) is also permitted. Natural aging may cause a high risk of stress corrosion cracking.

- j. If heat treated, welding repair must be heated for 24 hours at a temperature of 257° ±41° F (125°±5° C). Welded component must be subjected to heat treatment for the following reasons:
 - (1) To relieve inherent stresses.
 - (2) To restore original strength.
 - (3) To restore resistance to exfoliation corrosion and stress corrosion cracking.

Table 2. Critical Crack Length.

CRACK LOCATION	TYPE OF INSPECTION	SENTENCING	
		UNDER OBSERVATION	UNSERVICEABLE
Bridge top deck, underside and ramp end (roadway)	Visual	1.181 in. (30 mm)	3.150 in. (80 mm)
Girder top & Bottom middle and ramp	Visual	0.787 in. (20 mm)	2.362 in. (60 mm)
Square tubes Front & crossgirders	Visual	0.984 in. (25 mm)	2.362 in. (60 mm)
Side outer plates Side outer middle and ramp plates	Visual	1.181 in. (30 mm)	4.724 in. (120 mm)
Coupling receptacle and connector	Visual or with x 10 magnifying aid	0.236 in. (6 mm)	0.472 in. (12 mm)
Support rail areas and side plates at coupling area	Visual	0.394 in. (10 mm)	1.181 in. (30 mm)

*Table 3. Critical Crack Length.
(measurement on width or height of part)*

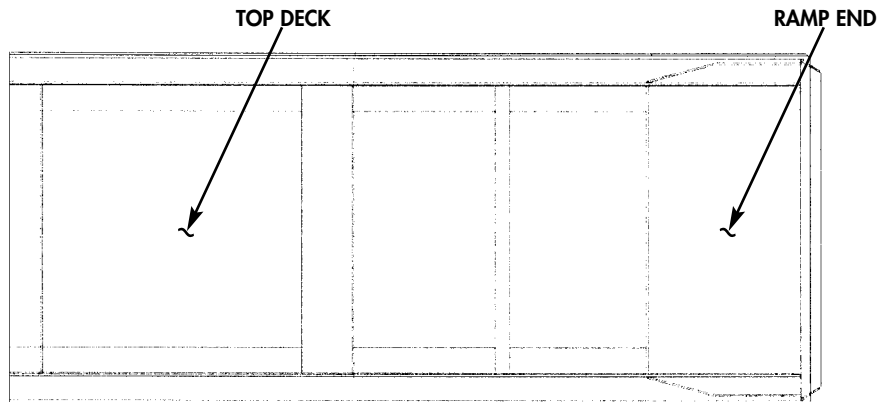
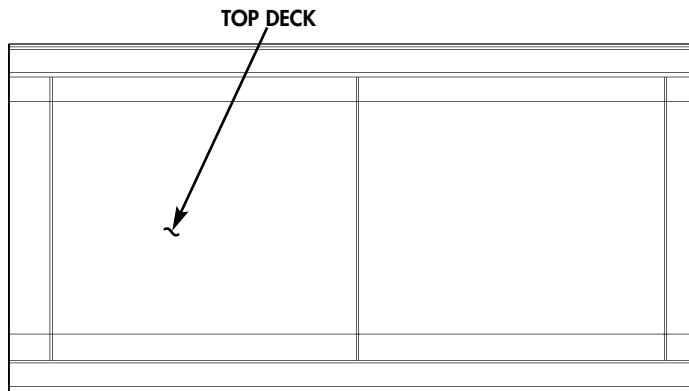
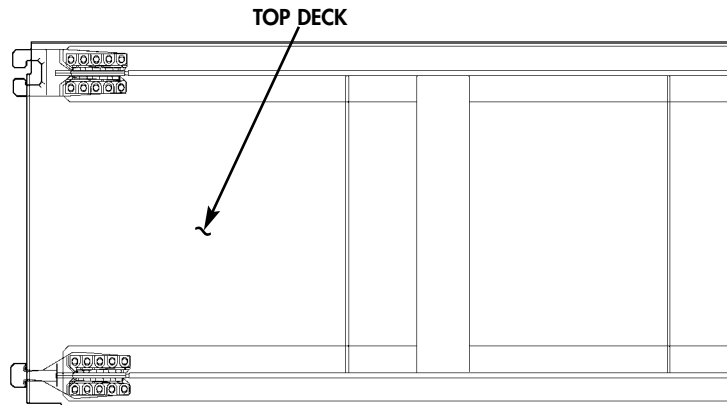
LOCATION	SENTENCING	
	UNDER OBSERVATION	UNSERVICEABLE
Roadway	0.591 in. (15 mm)	0.984 in. (25 mm)
Bottom Girder	0.276 in. (7 mm)	0.472 in. (12 mm)
Side sheet	0.315 in. (8 mm)	0.591 in. (15 mm)

BRIDGE AND PALLET CRACK DEFORMATION INSPECTION AND REPAIR (Contd)

Table 4. Structural Components that ARE Allowed to be Welded by Field Level on Bridge.

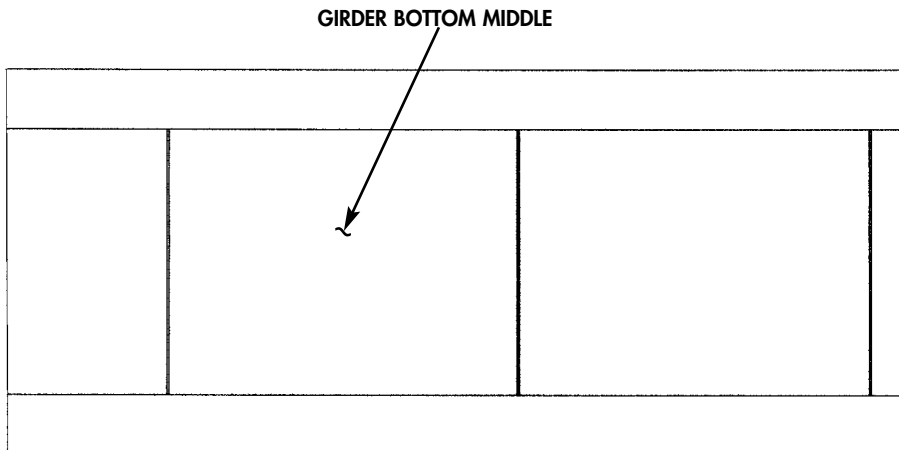
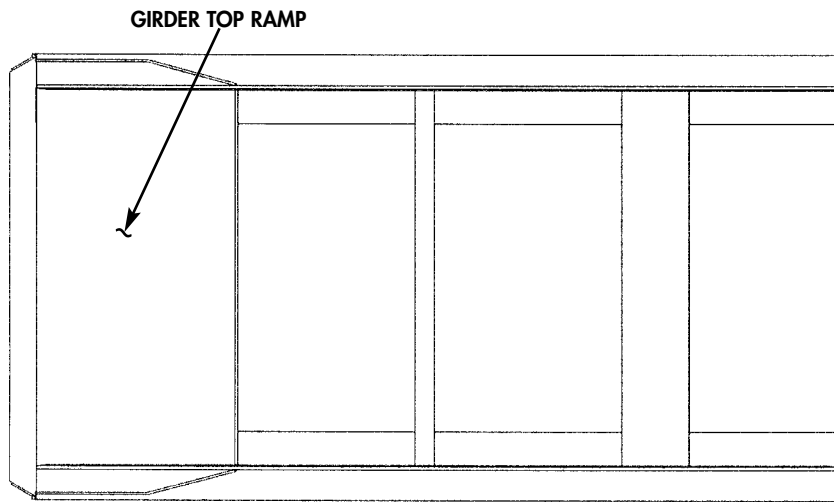
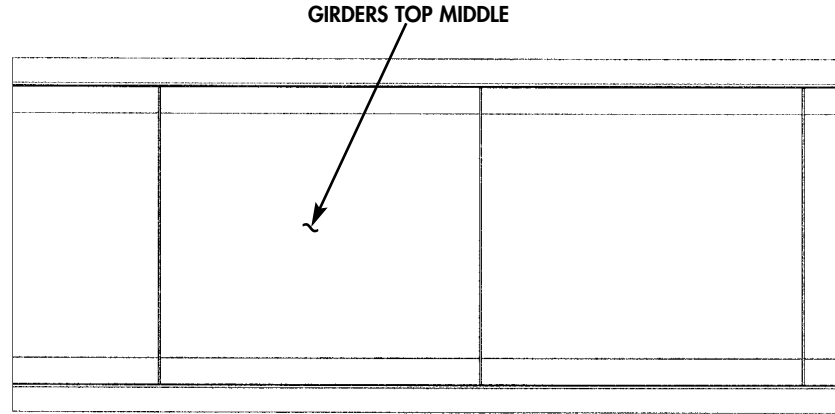
WARNING

Welding repair of bridge structural components is not allowed at field level. Attempting welding repair of damaged structural areas without proper heat treating will compromise strength of bridge. Failure to comply may result in failure of bridge, damage to equipment, and possible injury or death to personnel.



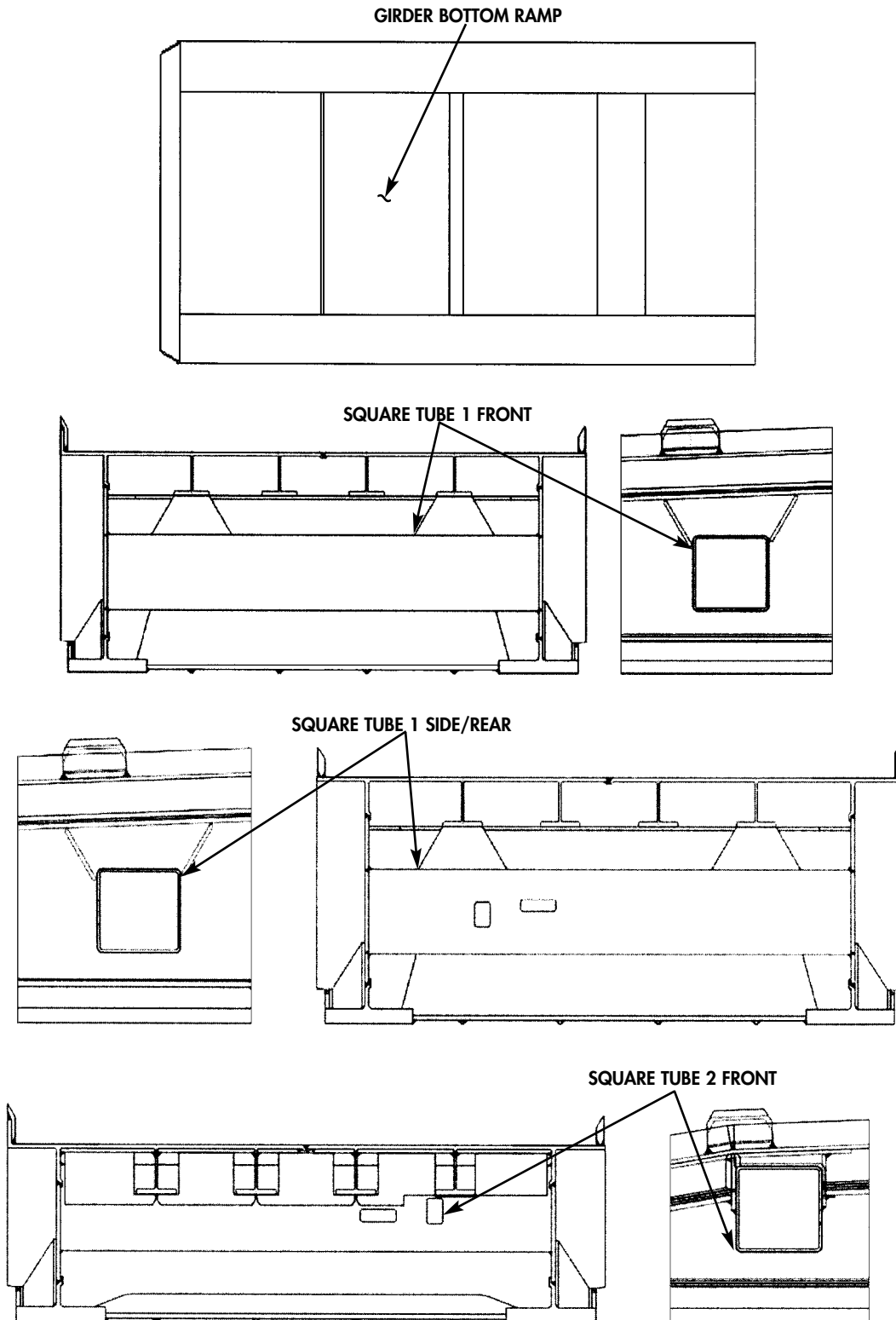
BRIDGE AND PALLET CRACK DEFORMATION INSPECTION AND REPAIR (Contd)

Table 4. Structural Components that ARE Allowed to be Welded by Field Level on Bridge (Contd).



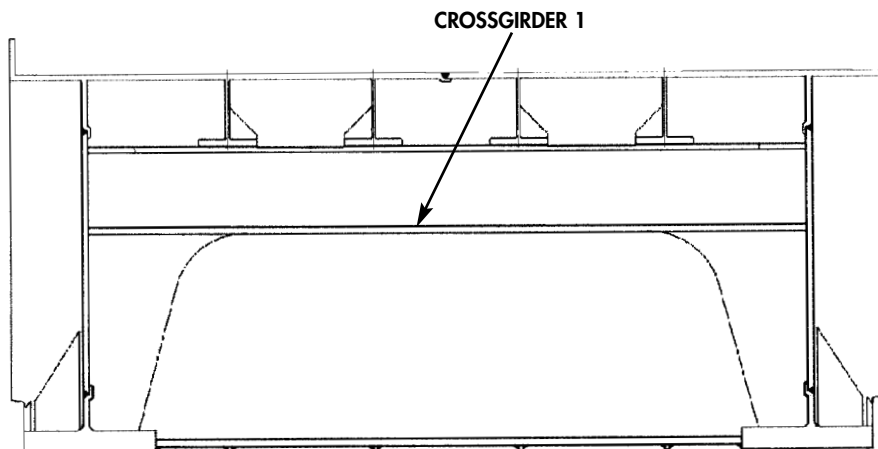
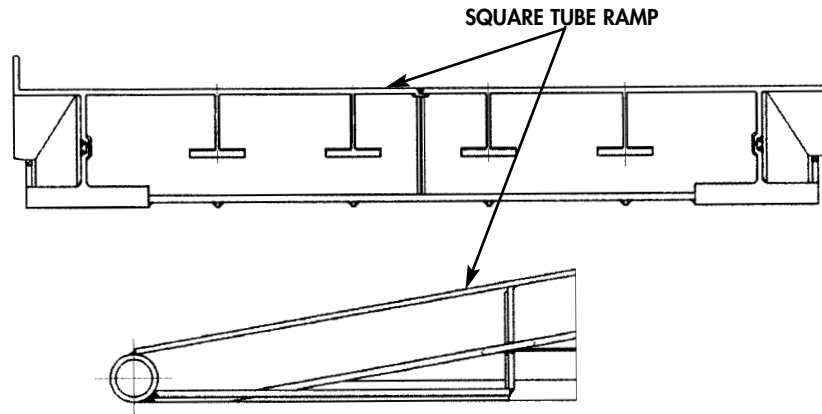
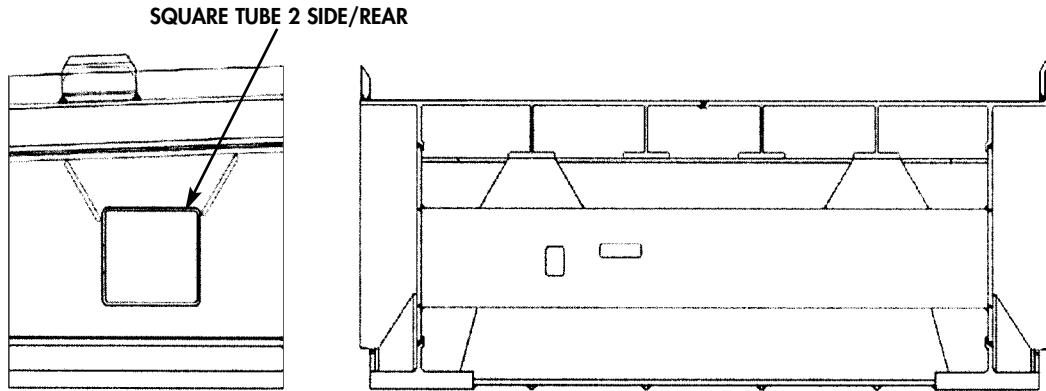
BRIDGE AND PALLET CRACK DEFORMATION INSPECTION AND REPAIR (Contd)

Table 4. Structural Components that ARE Allowed to be Welded by Field Level on Bridge (Contd).



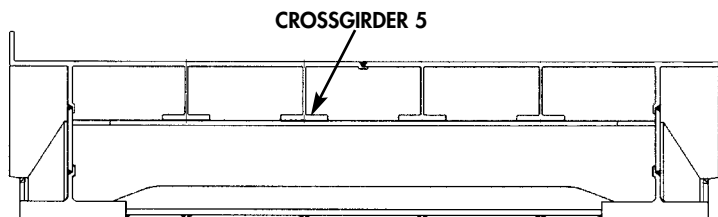
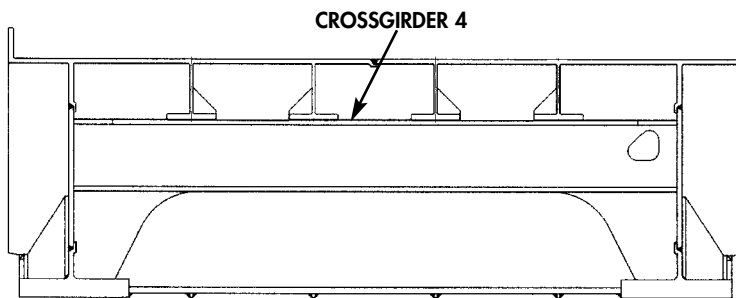
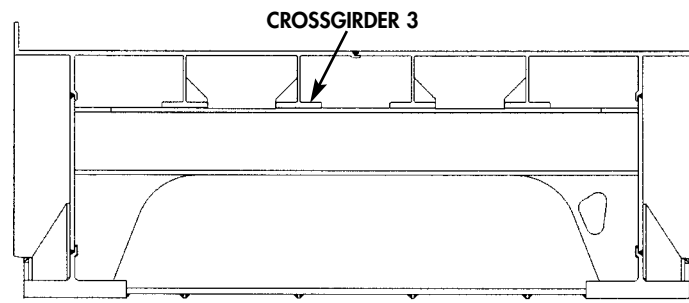
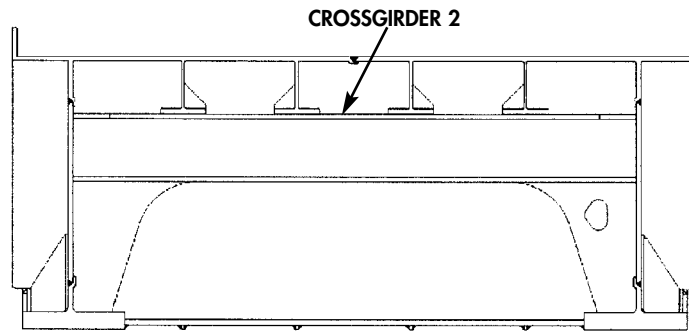
BRIDGE AND PALLET CRACK DEFORMATION INSPECTION AND REPAIR (Contd)

Table 4. Structural Components that ARE Allowed to be Welded by Field Level on Bridge (Contd).



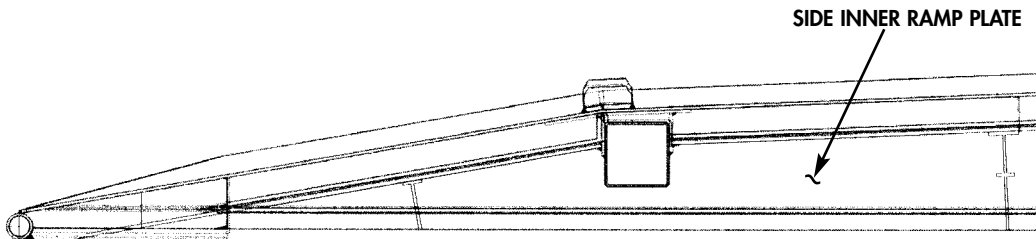
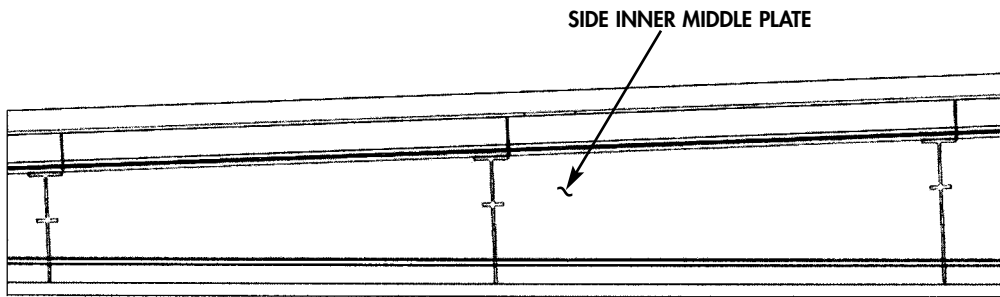
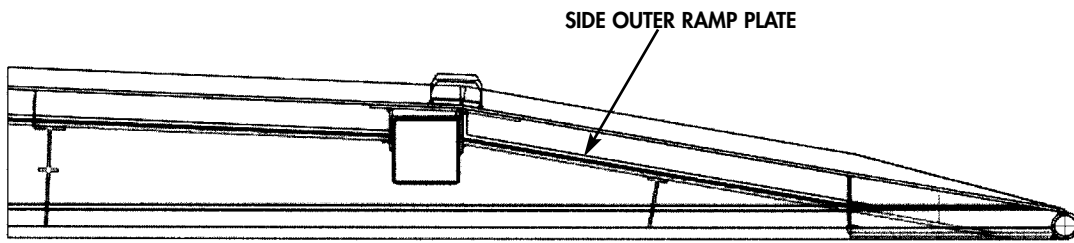
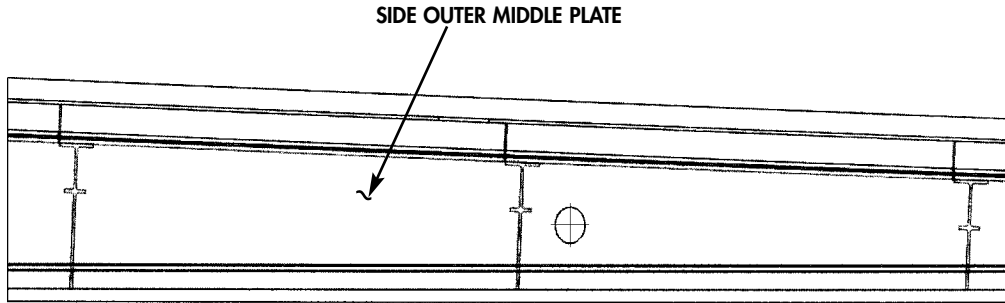
BRIDGE AND PALLET CRACK DEFORMATION INSPECTION AND REPAIR (Contd)

Table 4. Structural Components that ARE Allowed to be Welded by Field Level on Bridge (Contd).



BRIDGE AND PALLET CRACK DEFORMATION INSPECTION AND REPAIR (Contd)

Table 4. Structural Components that ARE Allowed to be Welded by Field Level on Bridge (Contd).

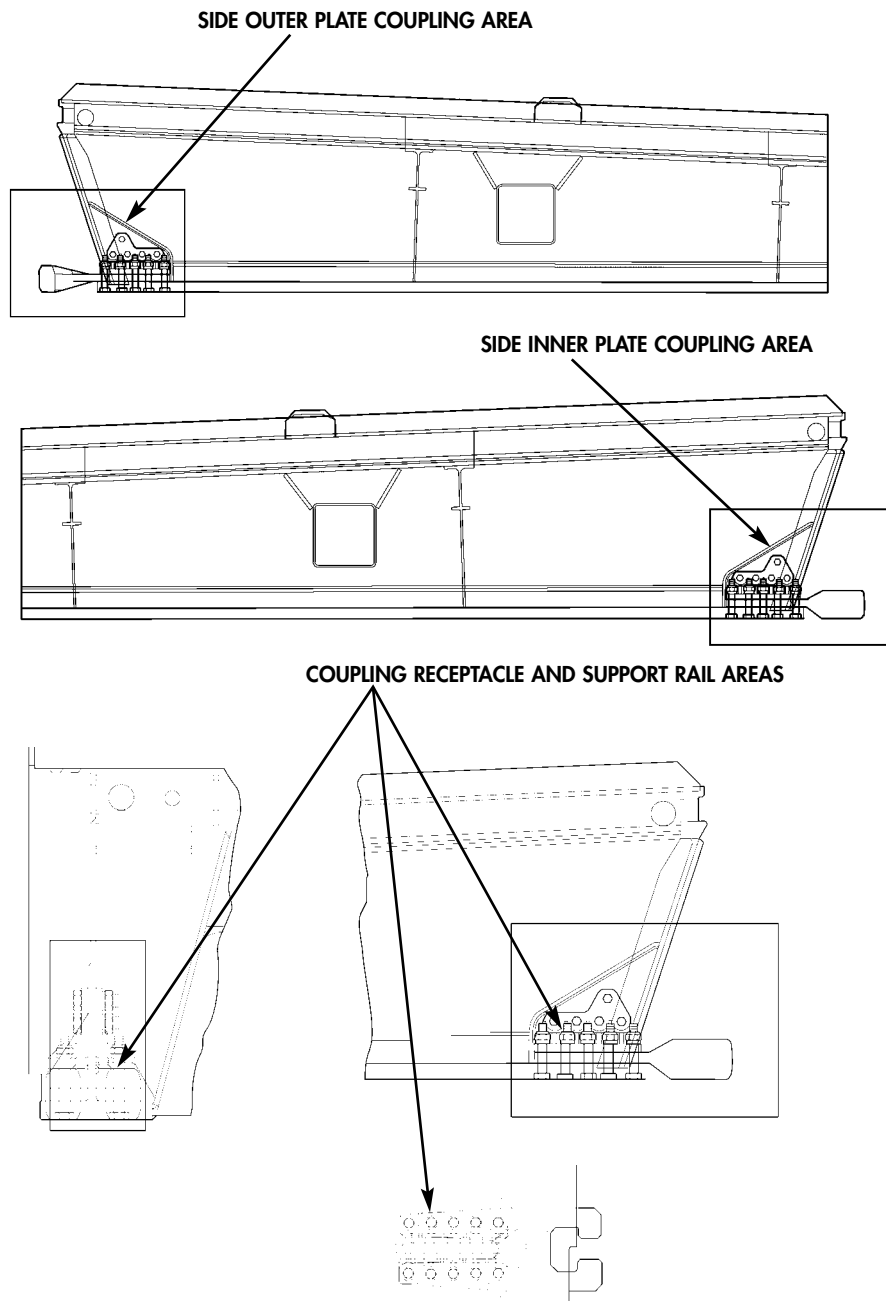


BRIDGE AND PALLET CRACK DEFORMATION INSPECTION AND REPAIR (Contd)

Table 4. Structural Components that ARE Allowed to be Welded by Field Level on Bridge. (Contd)

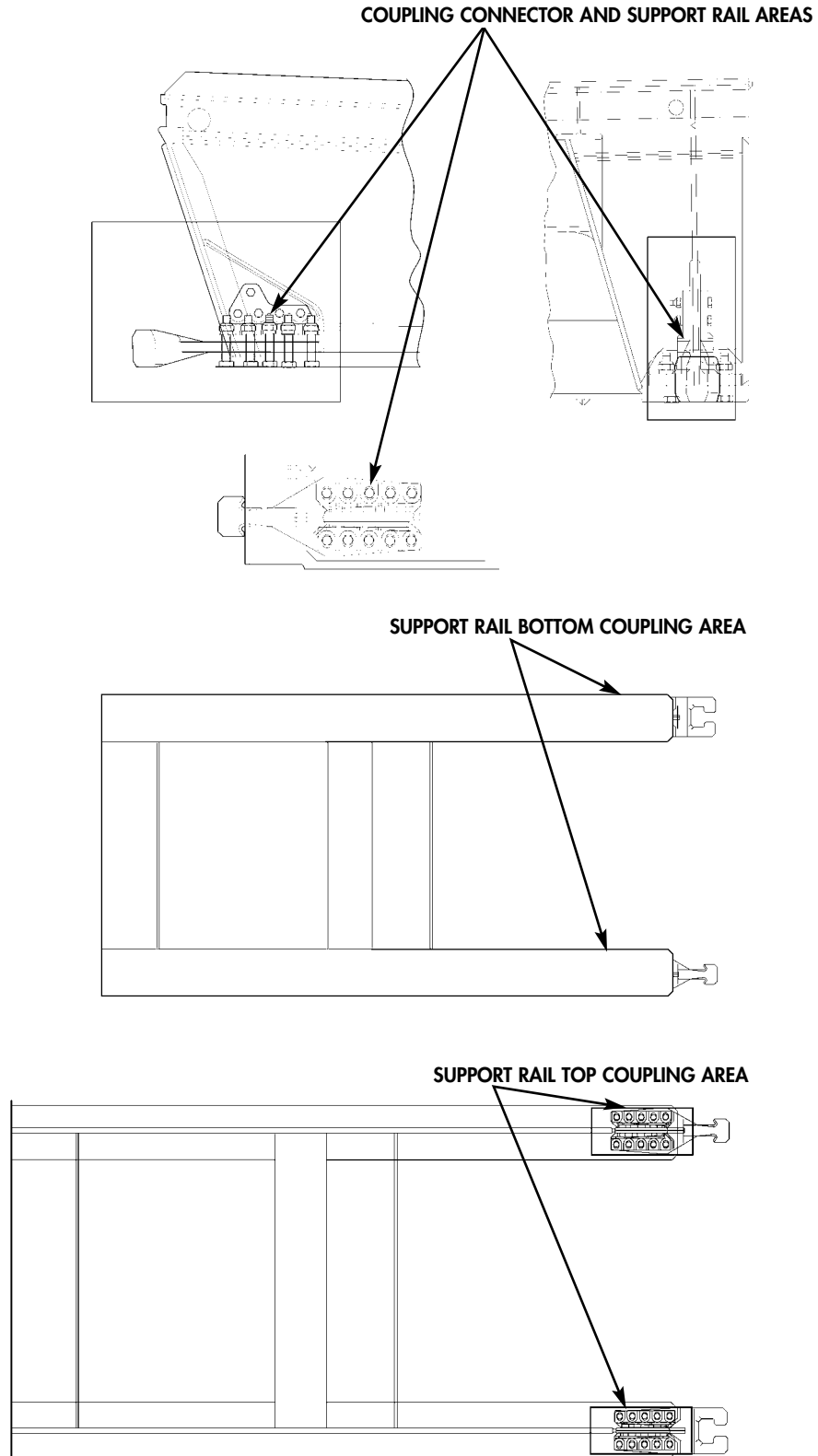
WARNING

Welding repair of bridge structural components is not allowed at field level. Attempting welding repair of damaged structural areas without proper heat treating will compromise strength of bridge. Failure to comply may result in failure of bridge, damage to equipment, and possible injury or death to personnel.



BRIDGE AND PALLET CRACK DEFORMATION INSPECTION AND REPAIR (Contd)

Table 4. Structural Components that ARE Allowed to be Welded by Field Level on Bridge (Contd).



BRIDGE AND PALLET CRACK DEFORMATION INSPECTION AND REPAIR (Contd)**WARNING**

Welding repair of bridge structural components is not allowed at field level. Attempting welding repair of damaged structural areas without proper heat treating will compromise strength of bridge. Failure to comply may result in failure of bridge, damage to equipment, and possible injury or death to personnel.

NOTE

If there are several cracks or holes within a damaged area, repair must be performed by removing damaged area and welding in a new sheet metal plate, P/N AMS-QQ-A-25014, NSN 9535-00-003-6946.

REB are made from Aluminum Alloy EN AW7020 to EN-755, EN-485 etc.

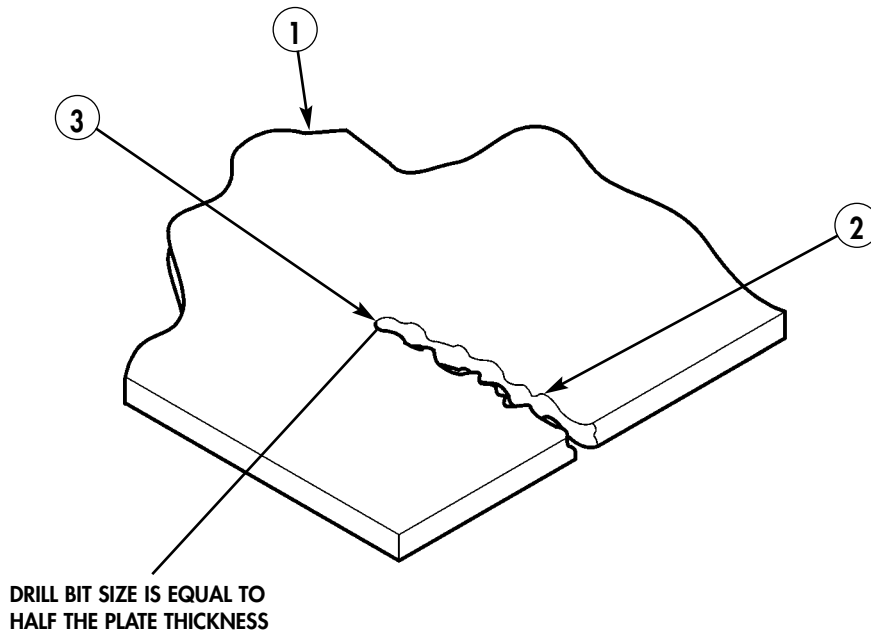
PREPARATION

1. Position bridge (1) so crack (2) is face-up for welding.
2. Grind area and find ends of crack (2).
3. Drill a hole (3) at ends of crack (2) in order to prevent enlargement of crack (2). Use a drill with diameter corresponding to half the plate thickness.

NOTE

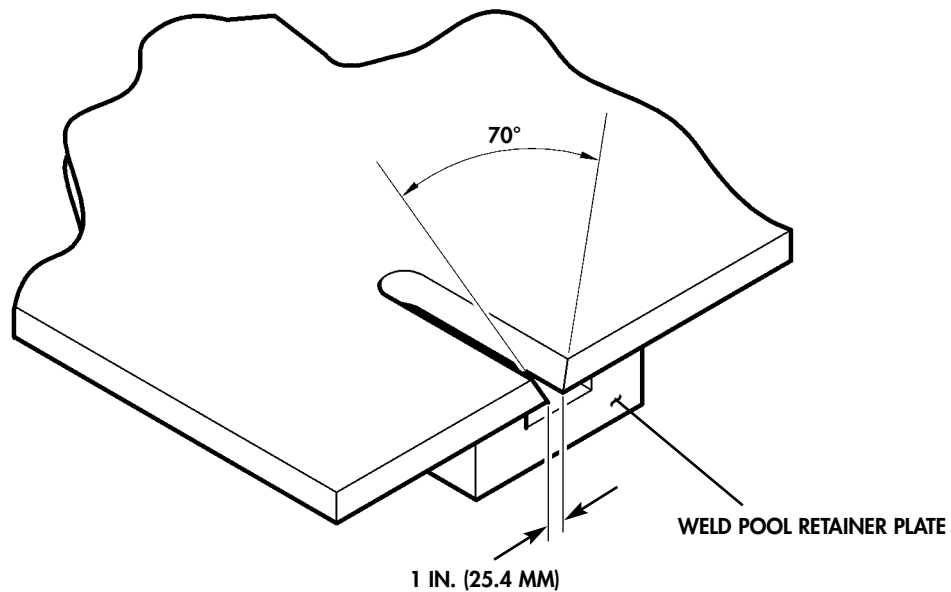
If crack is open 0.098 in. (2.5 mm) or more, and additional permanent weld pool retainer is required. For this retainer, use a metal strip 1 in. (25.4 mm) or more in width and with a milled groove.

4. Mill or grind a V-seam along crack (2) with a groove angle of 70 degrees.
5. Clean area to be welded with a stainless steel wire brush.



BRIDGE AND PALLET CRACK DEFORMATION INSPECTION AND REPAIR (Contd)**WELDING**

1. If necessary, insert and clamp weld pool retainer plate under opening. Refer to TC 9-237.
2. Finish weld area to be welded root, filler, and final pass welds. Refer to TC 9-237.
3. Clean, treat, and paint area. Refer to WP 0019 00 or MIL-T-704 TYPE B.



CHAPTER 5

PALLET MAINTENANCE

RAPIDLY EMPLACED BRIDGE (REB)

Pallet Bridge Remote Control Lever Release Replacement	0031 00-1
Pallet Front and Rear Wheel Lifting Cylinders Replacement	0032 00-1
Pallet Front Wheel Assembly Replacement	0033 00-1
Pallet Steering Linkage Replacement	0034 00-1
Pallet Rear Wheel Assembly Replacement	0035 00-1
Pallet Wheel and Tire Replacement	0036 00-1
Pallet Wheel Hub Maintenance	0037 00-1
Pallet Supporting Cylinders and Bottom Plates Replacement . . .	0038 00-1
Pallet Supporting Cylinder Winch and Strap Replacement	0039 00-1
Pallet Retaining Pins Replacement	0040 00-1
Transport Rollers Replacement	0041 00-1
Telescopic Tube Hydraulic Cylinder Replacement	0042 00-1
Telescopic Tube and Slide Pins Replacement	0043 00-1
Pallet Bridge Support Rollers Replacement	0044 00-1
Pallet Toolbox Replacement	0045 00-1
Pallet Anchoring Stowage Box Replacement	0046 00-1
Pallet Hold-Down Bars Replacement	0047 00-1
Pallet Shoring Pads Replacement	0048 00-1
Electrical Control Box Replacement	0049 00-1
Remote Control Unit (RCU) Replacement	0050 00-1
RCU Cable Plug Receptacle Replacement	0051 00-1
Remote Control Unit (RCU) Stowage Box Replacement	0052 00-1
Pallet Wiring and Harnesses Replacement	0053 00-1
Pallet Main Power Switch Replacement	0054 00-1
NATO Slave Receptacle Replacement	0055 00-1
Limit Switches Maintenance	0056 00-1
Winch Wire Rope and Hook Clip Replacement	0057 00-1
Winch Guide Rollers and Rope Track Replacement	0058 00-1
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CHAPTER 5

PALLET MAINTENANCE (Cont'd)

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PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**PALLET BRIDGE REMOTE CONTROL LEVER RELEASE REPLACEMENT
REMOVAL, INSTALLATION, AND ADJUSTMENT**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Locknut (WP 0180 00)
Grease (Item 8, WP 0205 00)

PALLET BRIDGE REMOTE CONTROL LEVER RELEASE REPLACEMENT (Contd)

REMOVAL

NOTE

Two lock lever releases are mounted on rear of bridge pallet to unlock upper couplings as bridge is retrieved.

Removal and installation of lock lever releases are performed the same way. Left side is shown.

1. Remove spring (5) from pivot bracket (3) and pallet spring bracket (15).

NOTE

Mark position of trip lever for installation.

2. Remove two screws (23), washers (22), and trip lever (1) from trip lever bracket (2).
3. Remove snapping (21) from pin (4). Hold trip lever bracket (2) and slide pin (4) out of pivot bracket (3), trip lever bracket (2), and spring (20).
4. Remove snapping (18), pin (14), and pivot bracket (3) from pivot support bracket (16) on pallet frame rail (17).
5. Remove snapping (19) from pin (11) and hold trigger (12). Slide pin (11) out of trigger (12), spring (13), and trigger support bracket (6), and remove trigger (12) and spring (13).

NOTE

Note position and quantity of spring washers for installation.

6. Remove locknut (8), washer (7), shoulder bolt (10), and spring washers (9) from trigger support bracket (6). Discard locknut (8)

INSTALLATION

NOTE

Apply a light coat of grease to all pins at installation.

Install spring washers as noted in removal.

1. Install spring washers (9) and shoulder bolt (10) on trigger support bracket (6) with washer (7) and new locknut (8).
2. Position spring (13) on trigger (12), and install trigger (12) with spring (13) on trigger support bracket (6) with pin (11) and snapping (19).
3. Install pivot bracket (3) on pivot support bracket (16) on pallet frame rail (17) with pin (14) and snapping (18).
4. Position spring (20) on trip lever bracket (2), and install trip lever bracket (2) with spring (20) on pivot bracket (3) with pin (4) and snapping (21).

NOTE

Install trip lever as marked at removal.

5. Install trip lever (1) on trip lever bracket (2) with two washers (22) and screws (23).
6. Install spring (5) on pivot bracket (3) and pallet spring bracket (15).
7. Check that trip levers (1) and trip lever bracket (2) are at 90 degrees to pallet (17) when pivot bracket (3) is in connect with trigger (12).
8. If necessary, remove or add spring washers (9) until trip lever (1) is at 90 degree position.

PALLET BRIDGE REMOTE CONTROL LEVER RELEASE REPLACEMENT (Contd)

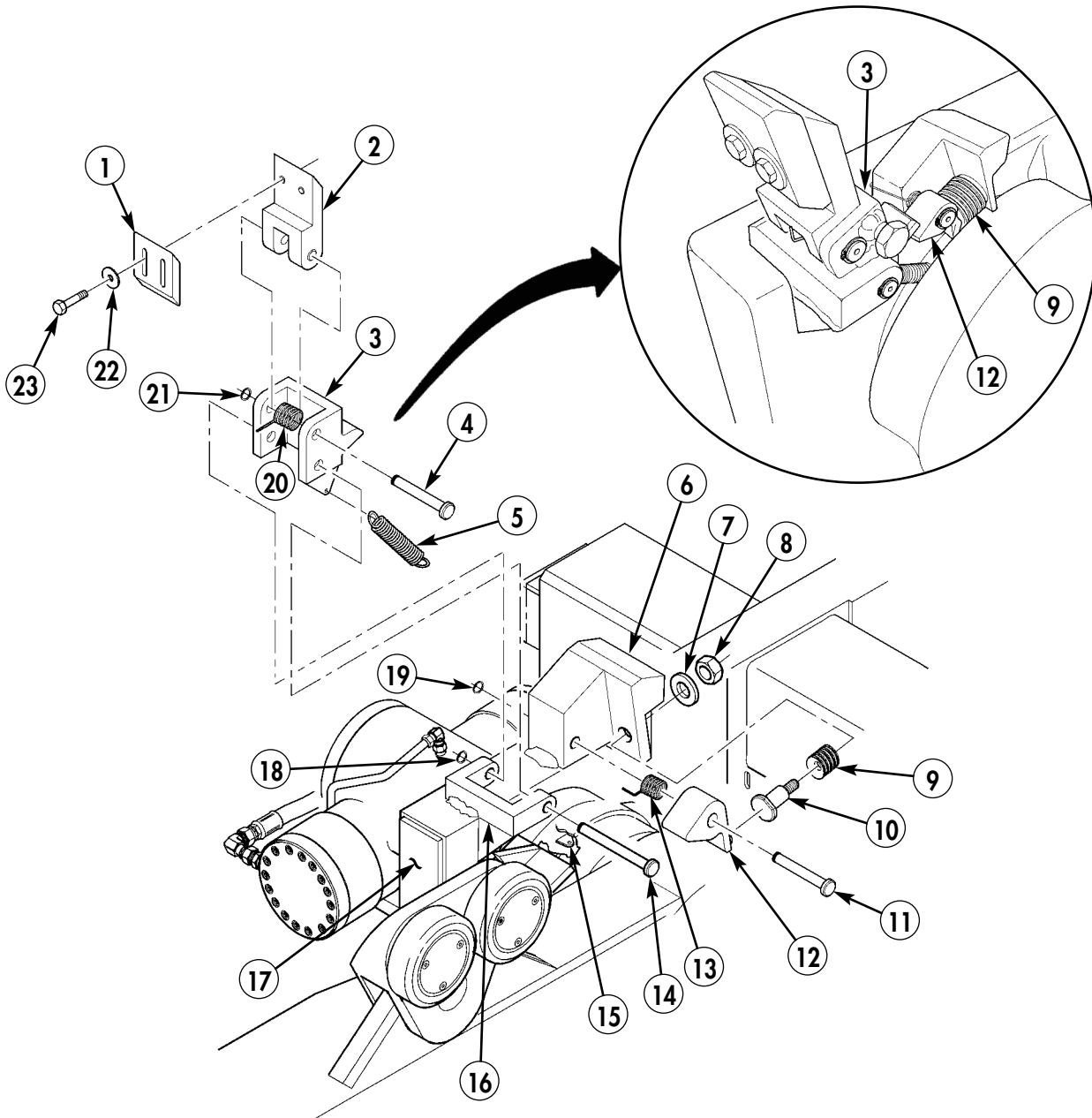
ADJUSTMENT

1. Using torque wrench, check for 52–74 lb-ft (70–100 N·m) pressure to trip pivot bracket (3) by trigger (12).

NOTE

Note position and quantity of spring washers for installation.

2. If necessary, remove locknut (8), washer (7), shoulder bolt (10), and spring washers (9), add spring washers (9) to increase pressure or remove spring washers (9) to decrease pressure.
3. Position spring washers (9) as required on shoulder bolt (10) and install on trigger support bracket (6) with washer (7) and new locknut (8).
4. Repeat steps 1 through 3 if torque is not within limits.



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PALLET FRONT AND REAR WHEEL LIFTING CYLINDERS REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Lubricating oil (Item 12, WP 0205 00)
Cap and plug set (Item 3, WP 0205 00)
Four O-rings
(WP 0143 00 Front and WP 0145 00 Rear)
Eight lockwashers
(WP 0143 00 Front and WP 0145 00 Rear)
Six tube seals (WP 0143 00 front and
WP 0145 00 rear)

Equipment Condition

Pallet wheel and tire removed.
Refer to WP 0036 00.
Pallet wheel supporting cylinders lowered. Refer
to TM 5-5420-280-10.

PALLET FRONT AND REAR WHEEL LIFTING CYLINDERS REPLACEMENT (Contd)

NOTE

Removal and installation of front or rear right and left wheel lifting cylinders are performed the same way. Left rear side is shown.

REMOVAL

CAUTION

Cap or plug all hoses, tubes, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag hoses or tubes for installation.

Note position of jumper tubes for installation.

Have container ready to catch oil.

1. Loosen nuts (1) and (10) and remove steel jumper tube (8) and tube seals (2) from tee fitting (3) and adapter (5) on top of cylinders (22) and (17). Discard tube seals (2).
2. Loosen nuts (27) and (12) and remove steel jumper tube (11) and tube seals (2) from elbows (26) and (13) on bottom of cylinders (22) and (17). Discard tube seals (2).
3. Loosen nut (31) and remove steel tube (30) and tube seals (2) from tee fitting (3). Discard tube seals (2).
4. Loosen nut (28) and remove steel tube (29) and tube seals (2) from tee fitting (24). Discard tube seals (2).

WARNING

Ensure support bracket is supported prior to removing locknuts from cylinder rod ends or wheel support bracket will fall out and injury to personnel may result.

5. Remove four nuts (20) from wheel support brackets (19) and lifting cylinder rod ends (18) and (21).
6. Remove eight screws (15), lockwashers (16), and wheel lifting cylinders (17) and (22) from slide housing (9) on bridge pallet (7) and wheel support brackets (19). Discard lockwashers (16).

NOTE

Note position of elbows for installation.

7. Loosen nuts (14) and (25) and remove elbows (13) and (26) from adapter (5) and tee fitting (24) on cylinders (17) and (22).
8. Loosen nuts (4) and (23) and remove tee fittings (3) and (24) from adapters (5) on cylinder (24).
9. Remove two adapters (5) and O-rings (6) from cylinders (17) and (22). Discard O-rings (6).

INSTALLATION

NOTE

Apply a light coat of lubricating oil to O-rings at installation.

1. Install two new O-rings (6) and adapters (5) on cylinders (17) and (22).
2. Install tee fittings (3) and (24) on adapters (5) of cylinder (22) and tighten nuts (4) and (23).
3. Install wheel lifting cylinder rod ends (18) and (21) on wheel support brackets (19) with four nuts (20).

PALLET FRONT AND REAR WHEEL LIFTING CYLINDERS REPLACEMENT (Contd)

INSTALLATION (Contd)

NOTE

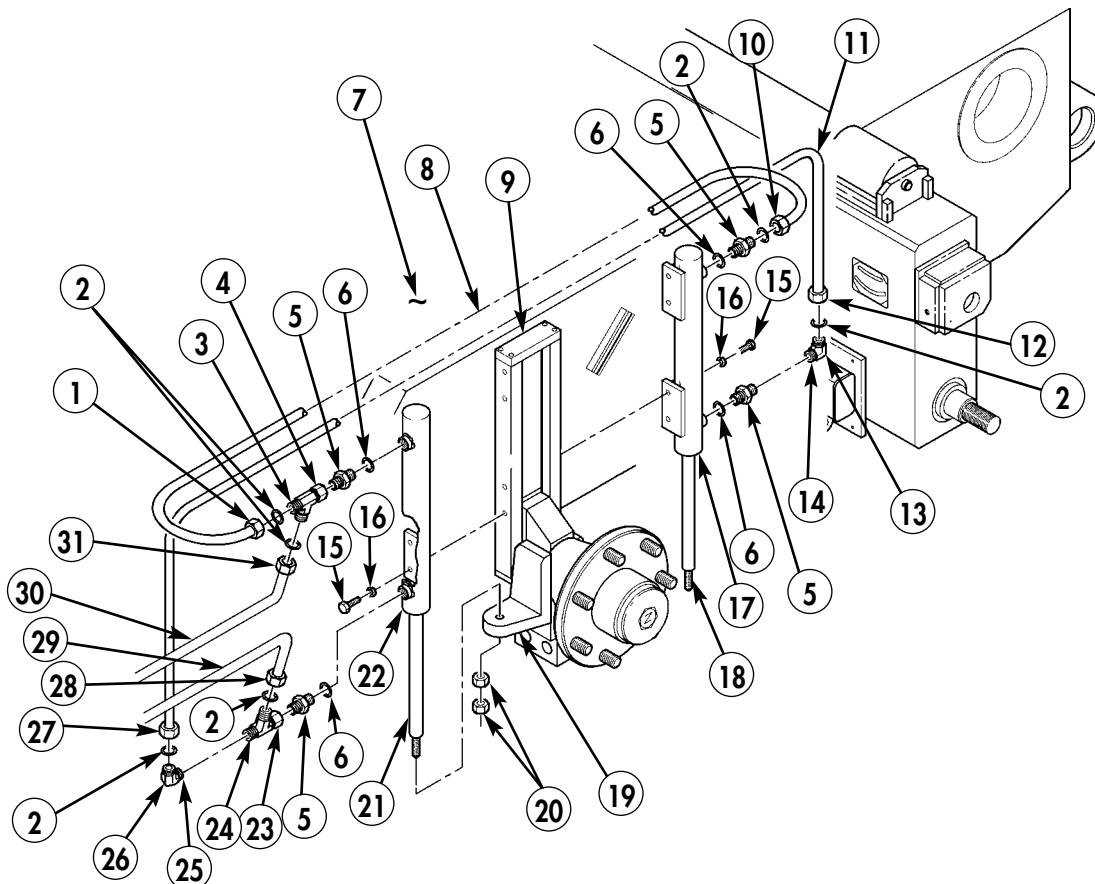
Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

4. Install wheel lifting cylinders (17) and (22) on slide housing (9) of bridge pallet (8) with eight new lockwashers (16) and screws (15).
5. Install elbow (13) on adapter (5) and tighten nut (14).
6. Install elbow (26) on tee fittings (3) and tighten nut (25).
7. Install steel tube (30) on tee fitting (3) with new tube seal (2) and tighten nut (31).
8. Install steel tube (29) on tee fitting (24) with new tube seal (2) and tighten nut (28).
9. Install steel jumper tube (11) on bottom elbows (13) and (26) with new tube seals (2) and tighten nuts (12) and (27).
10. Install steel jumper tube (8) on tee fitting (3) and adapter (5), with new tube seals (2) and tighten nuts (1) and (10).
11. Install pallet wheel and tire. Refer to WP 0036 00.

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

12. Operate supporting cylinders and check for leaks. Refer to TM 5-5420-280-10.
13. Lift pallet wheel supporting cylinder to stowed position. Refer to TM 5-5420-280-10.



END OF WORK PACKAGE

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PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PALLET FRONT WHEEL ASSEMBLY REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Pallet wheel hub removed. Refer to WP 0037 00.

Materials/Parts

Grease (Item 8, WP 0205 00)
Cotter pin (WP 0144 00)

PALLET FRONT WHEEL ASSEMBLY REPLACEMENT (Contd)

REMOVAL

NOTE

Removal and installation of right and left pallet front wheel assemblies are performed the same way. Left side is shown.

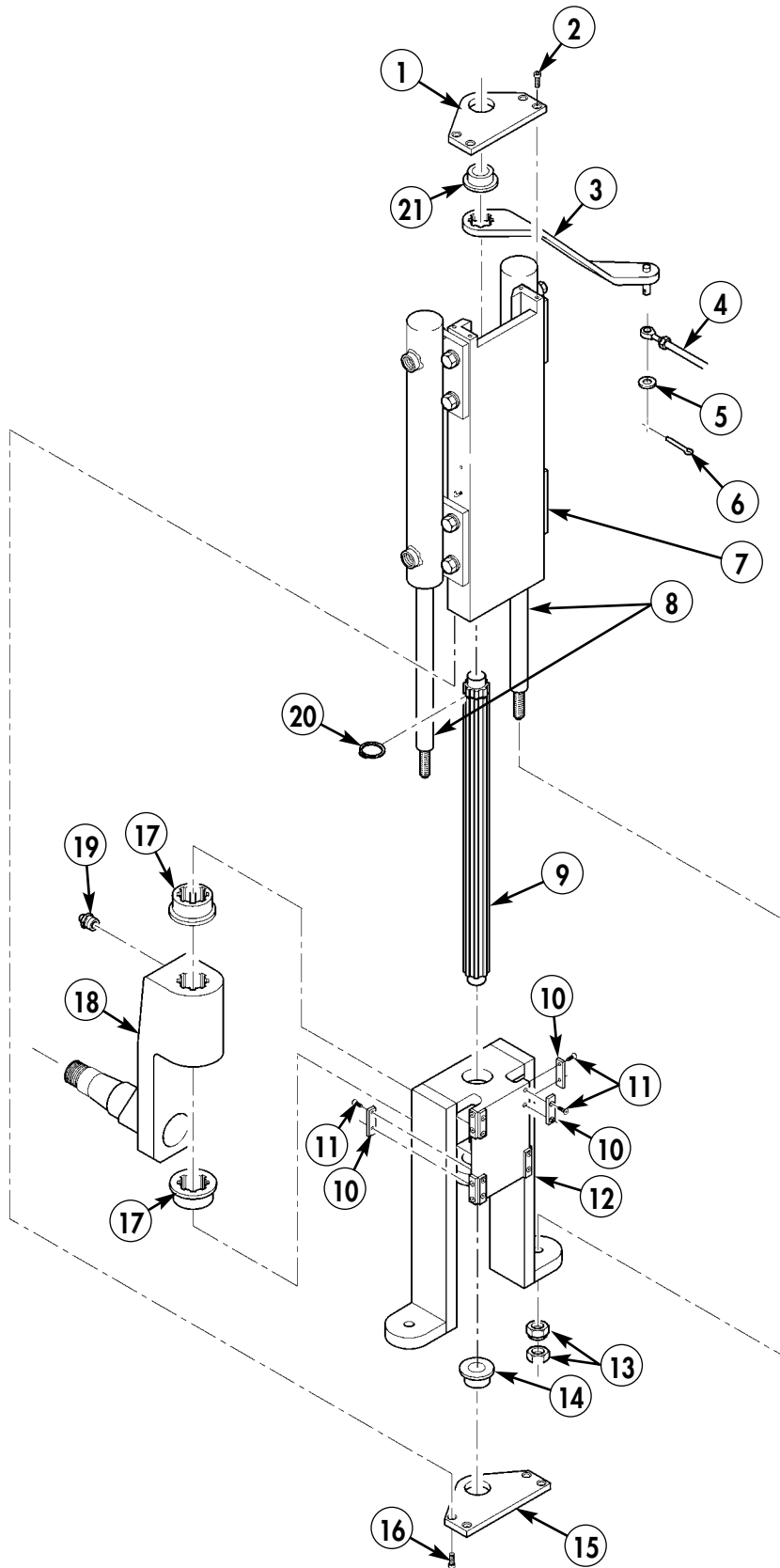
1. Remove cotter pin (6) and washer (5) from steering arm (3), and disconnect steering rod (4) from steering arm (3). Discard cotter pin (6).
2. Remove four screws (2) and top retainer plate (1) with bushing (21) from slide bracket (7). If damaged, remove bushing (21) from top retaining plate (1).

NOTE

Mark position of steering arm for installation.

3. Remove steering arm (3) and snapping (20) from steering shaft (9).
4. Remove four nuts (13) from cylinder rod ends (8) and wheel mounting bracket (12).
5. Remove four screws (16) and bottom retaining plate (15) with bushing (14) from slide bracket (7). If damaged, remove bushing (14) from bottom retaining plate (15).
6. Support wheel spindle bracket (18) and pull steering shaft (9) from wheel spindle bracket (18) with two bushings (17) and wheel mounting bracket (12).
7. Slide wheel spindle bracket (18) out of wheel mounting bracket (12) and remove two bushings (17) from wheel mounting bracket (12) and lube fitting (19) from wheel spindle bracket (18).
8. Slide wheel mounting bracket (12) out of slide bracket (7). If damaged, remove twenty-four screws (11) and twelve guide plates (10) from wheel mounting bracket (12).

PALLET FRONT WHEEL ASSEMBLY REPLACEMENT (Contd)



PALLET FRONT WHEEL ASSEMBLY REPLACEMENT (Contd)

INSTALLATION

NOTE

Apply a light coat of grease to bushings, steering shaft, guide plates, and slide bracket at installation.

1. If removed, install twelve guide plates (10) on wheel mounting bracket (12) with twenty-four screws (11).
2. Install two bushings (17) on wheel mounting bracket (12) and lube fitting (19) on wheel spindle bracket (18).
3. Slide wheel mounting bracket (12) up in slide bracket (7) and through cylinder rod end (8).
4. Position wheel spindle bracket (18) between bushings (17), and install steering shaft (9) through bushings (17) and wheel spindle bracket (18).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

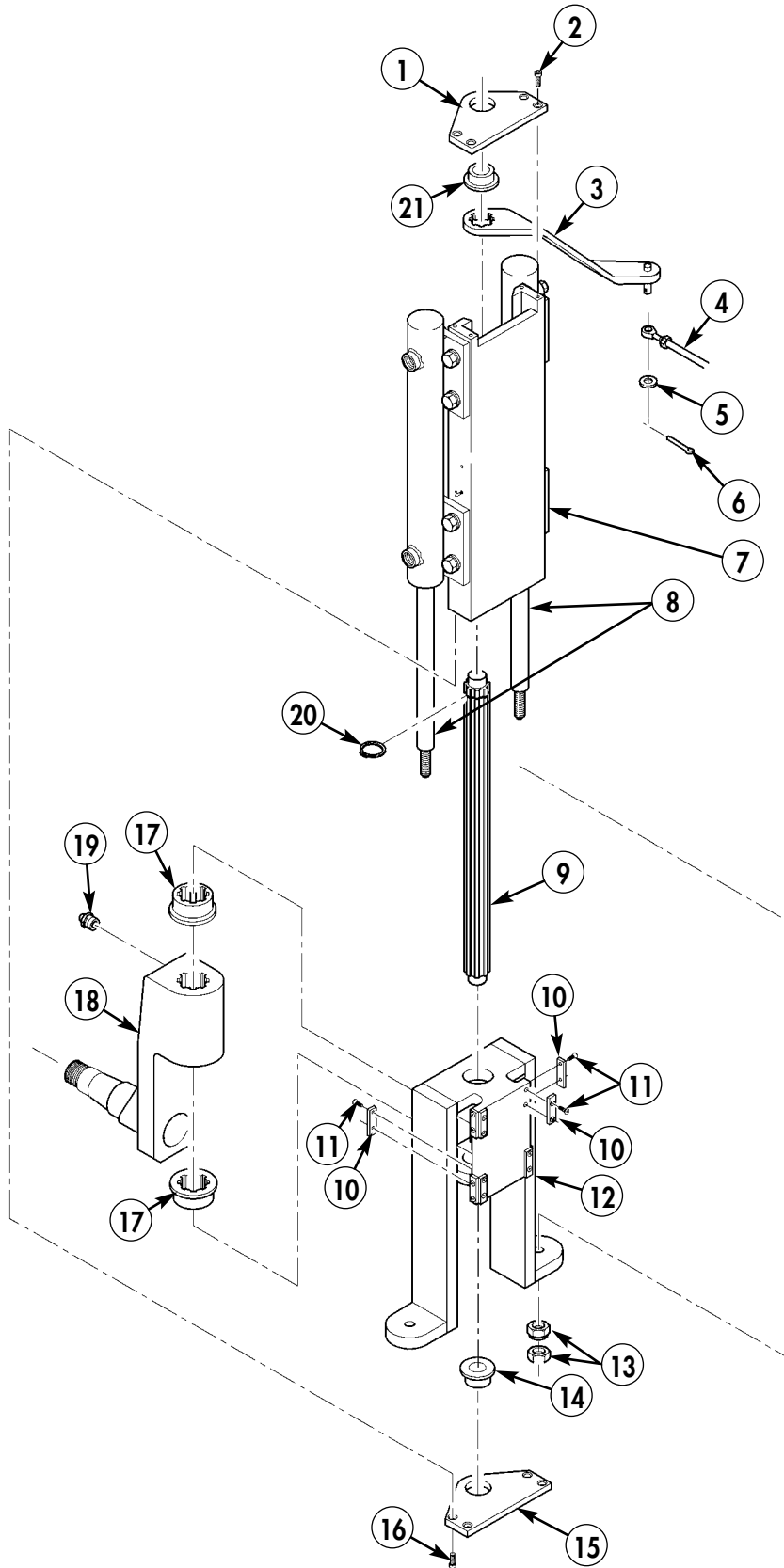
5. Install four nuts (13) and cylinder rod ends (8) on wheel mounting bracket (12).
6. If removed, install bushing (14) on bottom retaining plate (15) and install bottom retaining plate (15) on slide bracket (7) and steering shaft (9) with four screws (16).

NOTE

Ensure steering arm is positioned on steering shaft as marked during removal.

7. Install snapping (20) on steering shaft (9), and place steering arm (3) on steering shaft (9).
8. If removed, install bushing (21) on top retaining plate (1), and install top retaining plate (1) on steering shaft (9) and slide bracket (7) with four screws (2).
9. Connect steering rod end (4) to steering arm (3) with washer (5) and new cotter pin (6).
10. Apply grease to lube fitting (19).
11. Install pallet wheel hub. Refer to WP 0037 00.

PALLET FRONT WHEEL ASSEMBLY REPLACEMENT (Contd)



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**PALLET STEERING LINKAGE REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Bridge halves removed from bridge pallet.
Refer to WP 0018 00.

Materials/Parts

Grease (Item 8, WP 0205 00)
Five cotter pins (WP 0144 00)

PALLET STEERING LINKAGE REPLACEMENT (Contd)

REMOVAL

NOTE

Removal and installation of right and left side steering linkage is performed the same way. Left side is shown.

1. Remove two cotter pins (17), washers (18), and steering rod (19) from left bell crank (20) and wheel steering link (21). Discard cotter pins (17).
2. Remove two cotter pins (17), washers (18), and steering rod (22) from left bell crank (20) and left steering lever (4). Discard cotter pins (17).
3. Remove cotter pin (17), washer (18), and tie rod (16) from left bell crank (20). Discard cotter pin (17).
4. Remove locknut (6), washer (5), and left bell crank (20) from pin (12) on bracket (11). Discard locknuts (6).
5. If damaged, remove bushing (13) from left bell crank (20).
6. Turn locking pin (8) to unlock position and remove screw (10), lanyard (9), and locking pin (8) from bracket (1).
7. If damaged, remove lock pin (7) from bracket (1).
8. Remove locknut (6), washer (5), and left steering lever (4) from pin (2). Discard locknut (6).
9. If damaged, remove bushing (3) from left steering lever (4).

NOTE

Removal and installation of tie rod ends are performed the same way.

Note position of tie rod ends and count threads at removal for installation.

10. Loosen nuts (15) and remove tie rod ends (14) from steering rods (19), (22), or tie rod (16).

INSTALLATION

NOTE

Apply a light coat of grease to all bushings and pins at installation.

All tie rod ends are installed the same way.

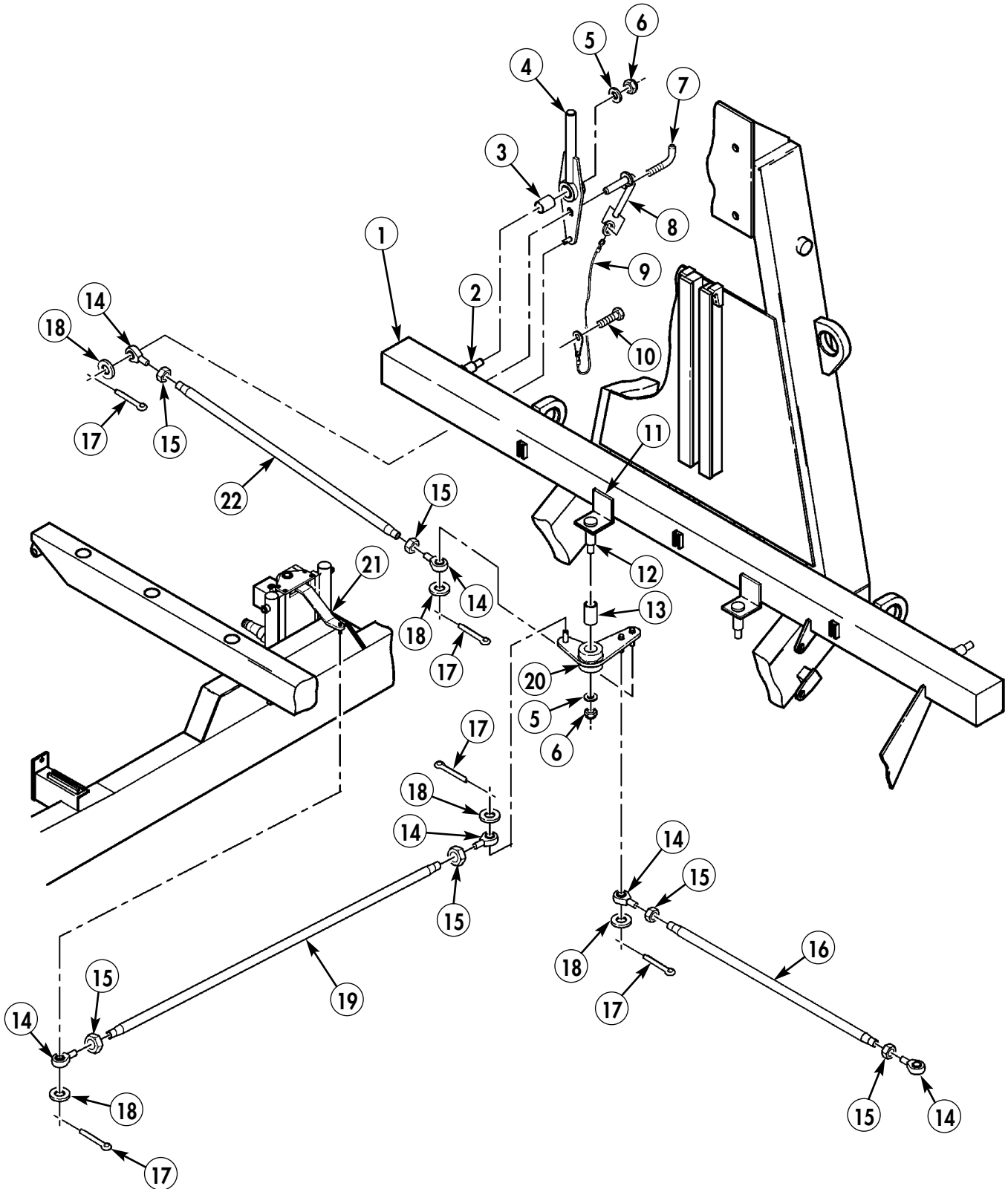
1. Install nuts (15) and tie rod ends (14) on steering rods (19), (22), or tie rod (16) and tighten nuts (15).
2. If removed, install bushing (3) on left steering lever (4).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

3. Install left steering lever (4) on pin (2) with washer (5) and new locknut (6).
4. If removed, install lock pin (7) on bracket (1).
5. Install lanyard (9) on bracket (1) with screw (10), install locking pin (8), and turn to lock position.
6. If removed, install bushing (13) on left bell crank (20).
7. Install left bell crank (20) on pin (12) with washer (5) and new locknut (6).
8. Install tie rod (16) on left bell crank (20) with washer (18) and new cotter pin (17).
9. Install steering rod (22) on left bell crank (20) and left steering lever (4) with two washers (18) and new cotter pins (17).
10. Install steering rod (19) on left bell crank (20) and left wheel steering link (21) with two washers (18) and new cotter pins (17).
11. Install bridge halves on bridge pallet. Refer to WP 0018 00.

PALLET STEERING LINKAGE REPLACEMENT (Contd)



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**PALLET REAR WHEEL ASSEMBLY REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Grease (Item 8, WP 0205 00)

Equipment Condition

Pallet supporting cylinders lowered.

Refer to TM 5-5420-280-10.

Pallet wheel hub removed. Refer to WP 0037 00.

Rear wheels lowered. Refer to TM 5-5420-280-10.

PALLET REAR WHEEL ASSEMBLY REPLACEMENT (Contd)

REMOVAL

NOTE

Removal and installation of right and left pallet rear wheel assemblies are performed the same way. Left side is shown.

1. Support wheel spindle mounting bracket (5), and remove four nuts (6) from cylinder rod ends (2) and wheel spindle mounting bracket (5).
2. Slide wheel spindle mounting bracket (5) out of slide bracket (1).
3. If damaged, remove twenty-four screws (4) and twelve guide plates (3) from wheel spindle mounting bracket (5).

INSTALLATION

NOTE

Apply a light coat of grease to guide plates and slide bracket at installation.

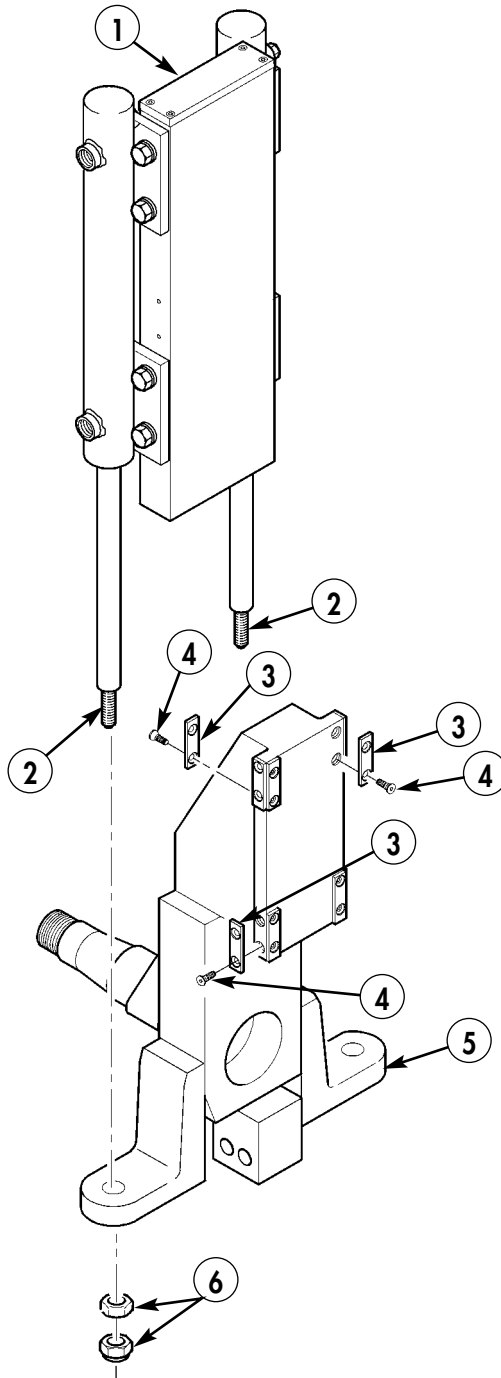
1. If removed, install twelve guide plates (3) on wheel spindle mounting bracket (5) with twenty-four screws (4).
2. Slide wheel spindle mounting bracket (5) up in slide bracket (1) so cylinder rod ends (2) extend through bracket (5), then insert retaining pin (10) in bottom hole to secure bracket (5).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

3. Install four nuts (6) on cylinder rod ends (2) and wheel spindle mounting brackets (5).
4. Install pallet wheel hub. Refer to WP 0037 00.
5. Raise rear wheels. Refer to TM 5-5420-280-10.
6. Lift pallet supporting cylinders to stowed position. Refer to TM 5-5420-280-10.

PALLET REAR WHEEL ASSEMBLY REPLACEMENT (Contd)



END OF WORK PACKAGE

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PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PALLET WHEEL AND TIRE REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Pallet supporting cylinders lowered for two rear
wheels only. Refer to TM 5-5420-280-10.

Materials/Parts

Tire lubricant (Item 20, WP 0205 00)

PALLET WHEEL AND TIRE REPLACEMENT (Contd)

NOTE

Removal and installation of right and left wheels and tires are performed the same way. Left wheel and tire is shown.

REMOVAL

1. Remove seven nuts (2) and wheel and tire assembly (1) from wheel hub (6).

WARNING

Tire must be deflated before removing nuts and screws securing rims together. Failure to comply may result in injury or death to personnel.

2. Remove valve cap (3) and valve core (4) from valve stem (5) on tube (10) and deflate tire assembly (1).
3. Remove seven nuts (7) and screws (13) from wheel rims (8) and (12).
4. Remove outer wheel rim (12) and inner wheel rim (4) from tube (10), center insert (11), and tire (9).
5. Remove center insert (11) and tube (10) from tire (9).

INSTALLATION

NOTE

Apply a light coat of tire lubricant or soap to inside of insert and bead of tire at installation.

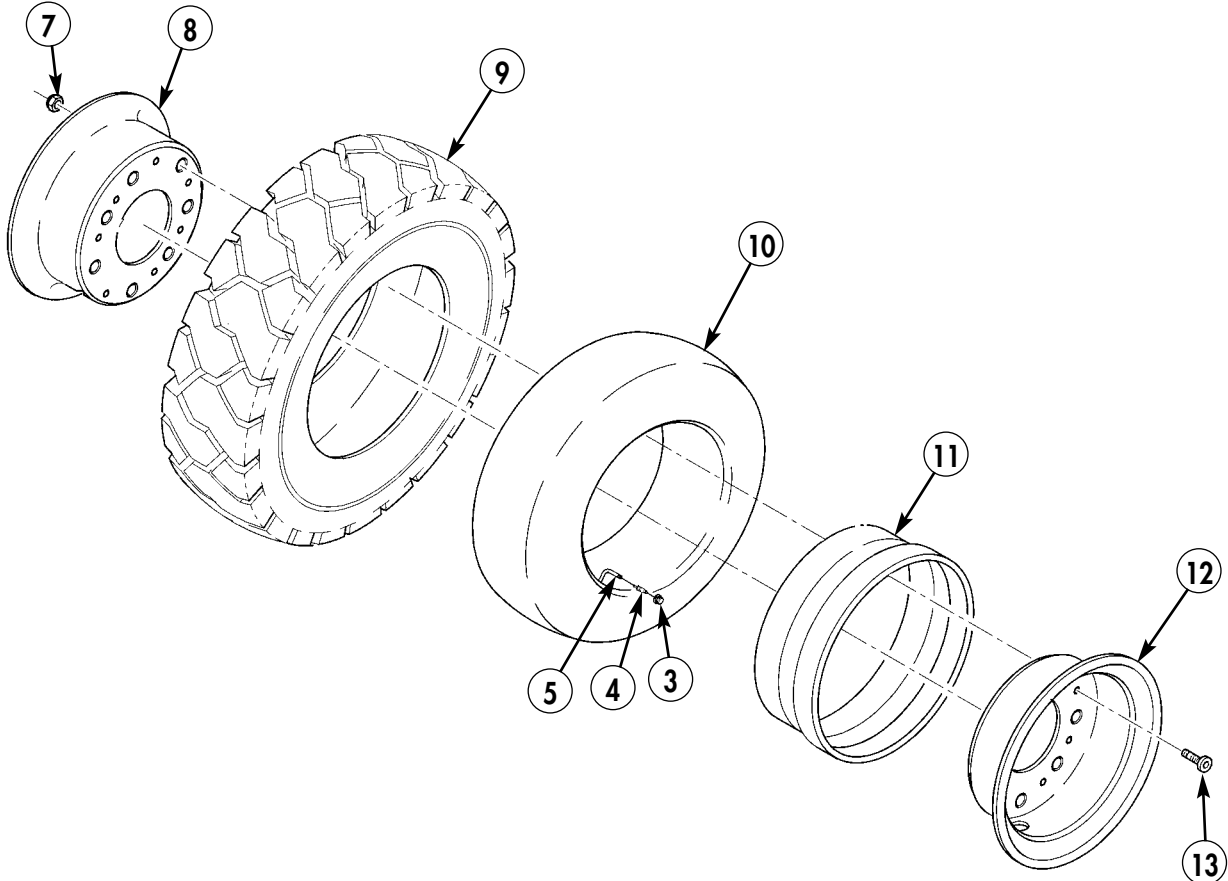
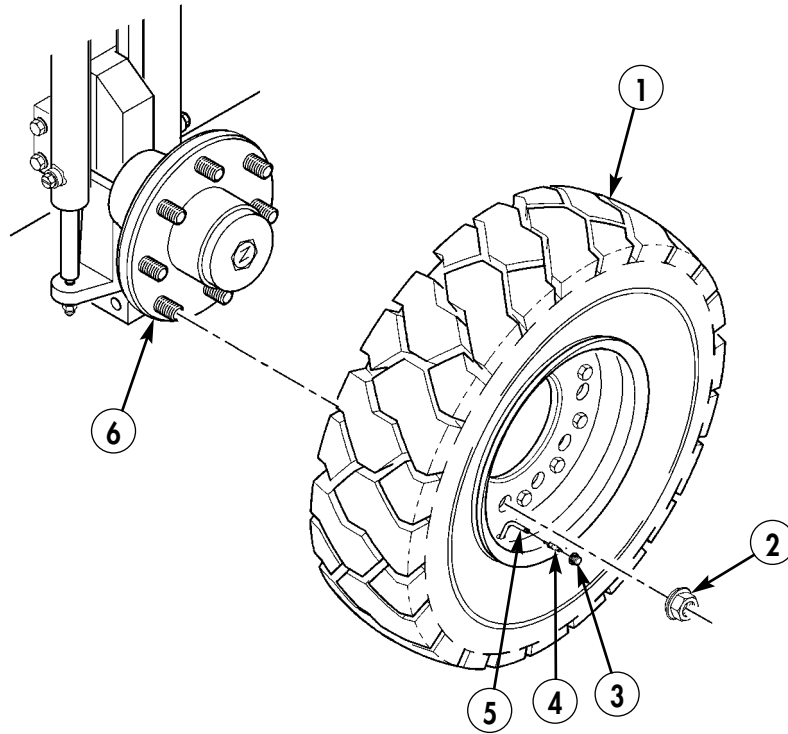
1. Install tube (10) and center insert (11) in tire (9) and mark position of valve stem (5) on tire (9).
2. Install tire (9), center insert (11), and tube (10) on inner wheel rim (8).
3. Position valve stem (5) through opening in outer wheel rim (11) as outer wheel rim (11) is being installed on tire (9) and inner wheel rim (8) with seven screws (13) and nuts (7). Do not tighten nuts (7).
4. Tighten seven screws (13) and nuts (7) to 47 lb-ft (64 N•m).
5. Install valve core (4) on valve stem (5), inflate wheel and tire assembly (1) to 100 psi (690 kpa), and install valve cap (3).
6. Install wheel and tire assembly (1) on wheel hub (6) with seven nuts (2). Tighten nuts (2) to 159 lb-ft (216 N•m).

CAUTION

Front wheels must be stowed when loaded on CBT. Front wheels will hit on fuel tank of CBT and damage return line.

7. Lift pallet supporting cylinders to stowed position for two rear wheels only. Refer to TM 5-5420-280-10.

PALLET WHEEL AND TIRE REPLACEMENT (Contd)



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PALLET WHEEL HUB MAINTENANCE REMOVAL, CLEANING AND INSPECTION, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Pallet wheel removed. Refer to WP 0036 00.

Materials/Parts

Skysol 100 (Item 4, WP 0205 00)
Cloth (Item 5, WP 0205 00)
Grease (Item 8, WP 0205 00)
Cotter pin (WP 0147 00)
Sealing ring (WP 0147 00)

PALLET WHEEL HUB MAINTENANCE (Contd)

NOTE

Removal and installation of wheel hubs are performed the same way. Left steering axle is shown.

REMOVAL

1. Remove cap (1) from wheel hub (7).
2. Remove cotter pin (2) from nut (3) and spindle (12). Discard cotter pin (2).
3. Remove nut (3), washer (4), and outer cone bearing (5) from spindle (12) and wheel hub (7). Discard sealing ring (10).

CLEANING AND INSPECTION

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. Clean all parts with Skysol 100 and dry with cloth before inspection.

NOTE

If cone bearings are worn, cup bearing must be replaced. Bearings are replaced in sets only.

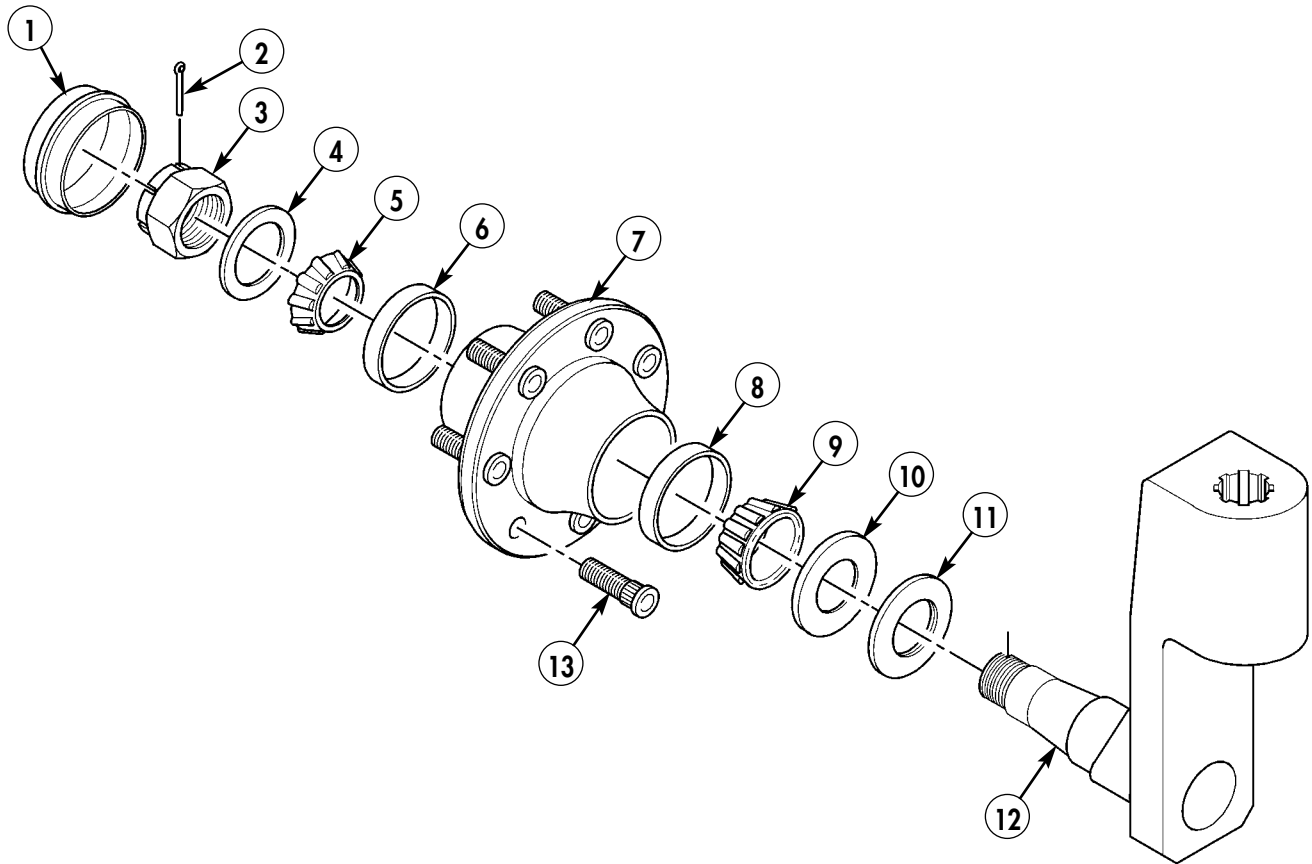
2. Inspect cone bearings (5) and (9) and cup bearings (6) and (8) for pits, cracks, wear, or damage, and replace if damaged.
3. Inspect hub studs (13) for damaged threads or wear, and replace if damaged.
4. Inspect nut (3) for cracks, wear, or damaged threads, and replace if damaged.

NOTE

Spindle is welded to support bracket. If damaged, replace support bracket as assembly.

5. Inspect spindle (12) for cracked welds, wear, or damaged threads, and replace if damaged.

PALLET WHEEL HUB MAINTENANCE (Contd)



PALLET WHEEL HUB MAINTENANCE (Contd)

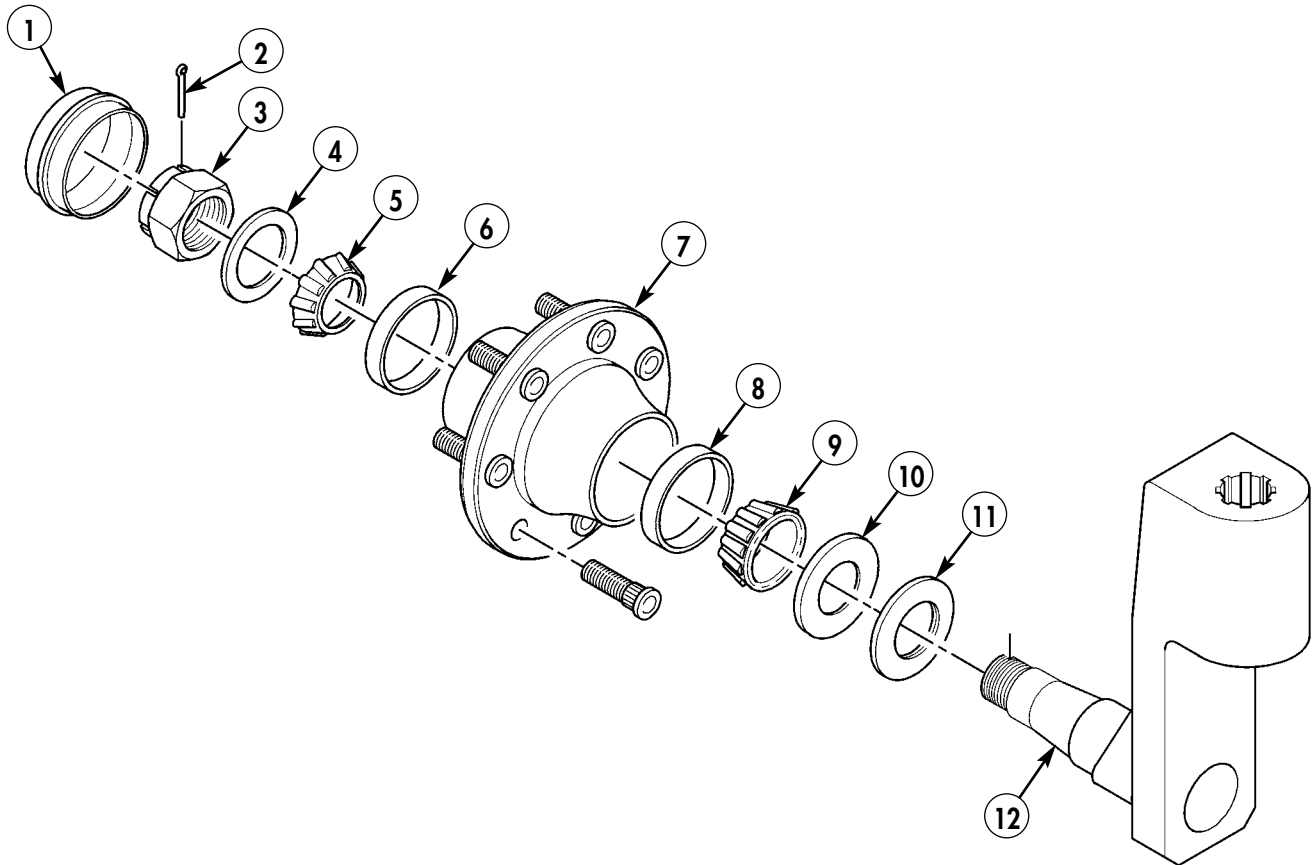
INSTALLATION

1. If removed, install cup bearings (6) and (8) on wheel hub (7).

NOTE

Pack bearings with grease and apply a light coat of grease to spindle and sealing ring at installation.

2. Install distance ring (11) on spindle (12).
3. Install inner cone bearing (9) and new sealing ring (10) on wheel hub (7).
4. Install wheel hub (7) on spindle (12) with outer cone bearing (5), washer (4), and nut (3).
5. Rotate wheel hub (7) and tighten nut (3) until wheel hub (7) is tight, then back off nut (3) one half turn.
6. Align hole in spindle (12) with slot in nut (3) and install new cotter pin (2).
7. Install cap (1) on wheel hub (7).
8. Install wheel and tire. Refer to WP 0036 00.



PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PALLET SUPPORTING CYLINDERS AND BOTTOM PLATES REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)
Grease (Item 8, WP 0205 00)
O-ring (WP 0148 00)
Three O-rings (WP 0148 00)
Lockwasher (WP 0148 00)
Two tube seals (WP 0148 00)

Personnel Required

Two

Equipment Condition

Pallet supporting cylinders lowered halfway from stowed position. Refer to TM 5-5420-280-10.

PALLET SUPPORTING CYLINDERS AND BOTTOM PLATES REPLACEMENT (Contd)**NOTE**

Removal and installation of left and right pallet supporting cylinders and base plates are performed the same way. Right side is shown.

REMOVAL**CAUTION**

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag hoses for installation.

Have container ready to catch oil.

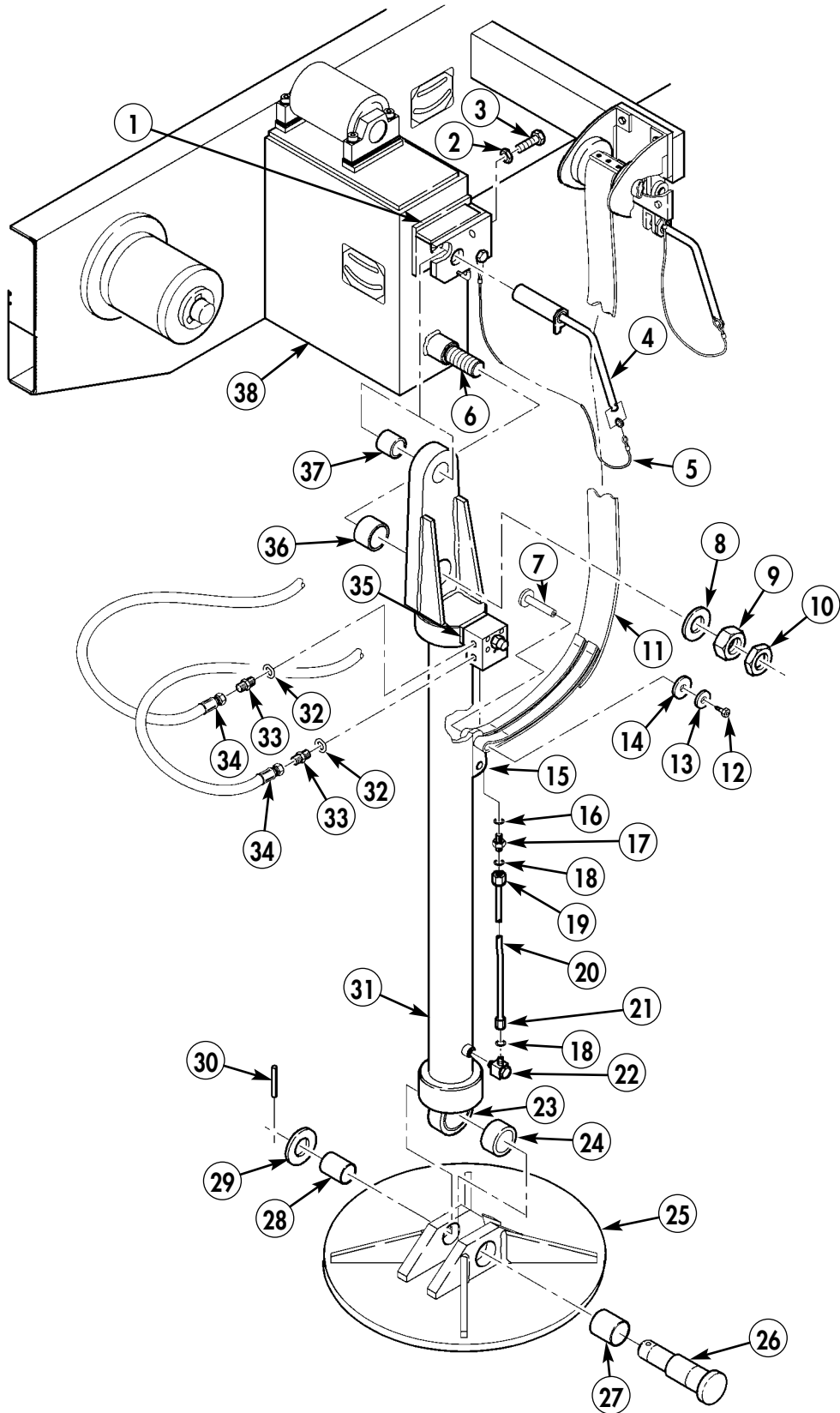
1. Remove two hoses (34) from fittings (33) on supporting cylinder manifold (35).
2. Remove jamnut (10), nut (9), and washer (8) from stud (6) on pallet frame member (38).

NOTE

Assistant will help with step 3.

3. Slide supporting cylinder (31) off stud (6) and lower to ground.
4. Remove screw (12), washers (13) and (14), and pin (7) from winch strap (11) and supporting cylinder bracket (15) on supporting cylinder (31).
5. Support base plate (25) and remove spring pin (30), washer (29), pin (26), and base plate (25) from supporting cylinder rod end (23).
6. If damaged or worn, remove bushings (24), (27), (28), (36), and (37) from supporting cylinder (31) and base plate (25).
7. Loosen nut (2) and remove stop screw (3) from bracket (1) on pallet frame member (38).
8. Loosen nuts (19) and (21) and remove tube (20) and tube seals (18) from cylinder manifold (35) and elbow (22) on supporting cylinder (31). Discard tube seals (18).
9. Remove two fittings (33) and O-rings (32) from supporting cylinder manifold (35). Discard O-rings (32).
10. Remove fitting (17), O-ring (16) and elbow (21) from supporting cylinder (31) and supporting cylinder manifold (35). Discard O-ring (16).
11. If not removed, remove retaining pin (4) with lanyard (5) from bracket (1).

PALLET SUPPORTING CYLINDERS AND BOTTOM PLATES REPLACEMENT (Contd)



PALLET SUPPORTING CYLINDERS AND BOTTOM PLATES REPLACEMENT (Contd)

INSTALLATION

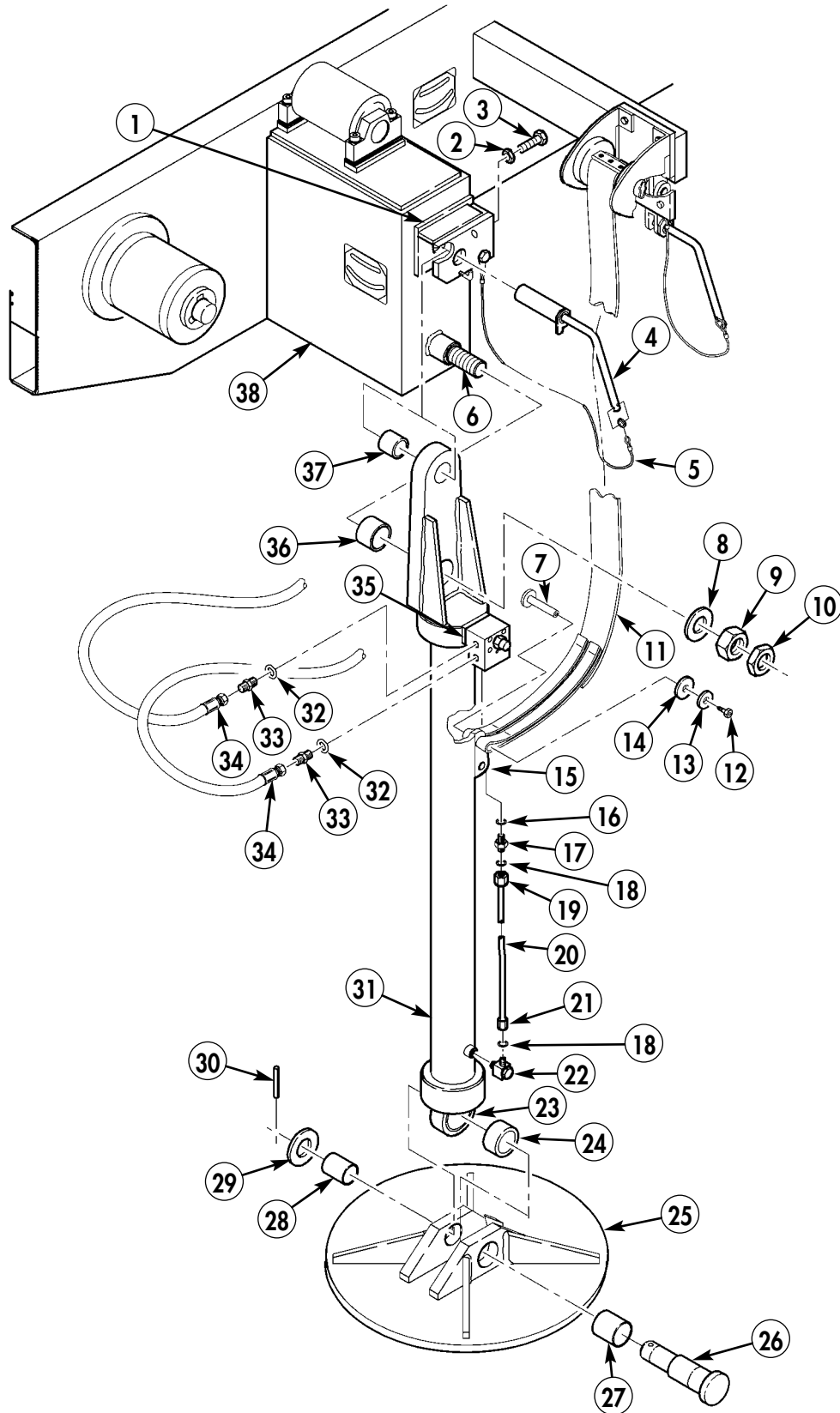
NOTE

Apply a light coat of grease to all bushings and studs at installation.

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

1. Install new O-ring (16), fitting (17), and elbow (22) on supporting cylinder (31) and supporting cylinder manifold (35).
2. Install two new O-rings (32) and fittings (33) on supporting cylinder manifold (35).
3. Install tube (20) between elbow (22) and fitting (17) with two new tube seals (18) and tighten nuts (19) and (21).
4. Install nut (2) and stop screw (3) on bracket (1). Do not thread screw (3) all the way in on bracket (1).
5. If removed, install bushings (37), (36), (28), (27), and (24) on supporting cylinder (31) and base plate (25).
6. Install base plate (25) on supporting cylinder rod end (23) with pin (24), washer (29), and spring pin (30).
7. Install winch strap (11) on supporting cylinder bracket (15) of supporting cylinder (31) with pin (7), washers (14) and (13), and screw (12).
8. Lift supporting cylinder (31) and slide supporting cylinder (31) on stud (6) of pallet frame member (38).
9. Install washer (8), nut (9), and jamnut (10) on stud (6) on pallet frame member (38). Do not overtighten nut (9). Supporting cylinder (31) must swing freely without binding. Tighten jamnut (10).
10. Adjust stopscrew (3) to align bushing (37) with opening for retaining pin (4) with lanyard (5) to slide in and out freely, then tighten nut (2).
11. Install two hoses (34) on supporting cylinder manifold fittings (33).
12. Lift pallet supporting cylinder and place in stowed position. Refer to TM 5-5420-280-10.

PALLET SUPPORTING CYLINDERS AND BOTTOM PLATES REPLACEMENT (Contd)



END OF WORK PACKAGE

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PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**PALLET SUPPORTING CYLINDER WINCH AND STRAP REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Pallet supporting cylinders lowered.
Refer to TM 5-5420-280-10.

PALLET SUPPORTING CYLINDER WINCH AND STRAP REPLACEMENT (Contd)

NOTE

Removal and installation of right and left pallet supporting cylinder winch and strap are performed the same way. Right side is shown.

REMOVAL

1. Remove screw (9) and lanyard (10) with retainer pin (16) from bracket (8) on pallet frame member (22).
2. Remove screw (17), washers (18) and (19), pin (21), and winch strap (1) from cylinder bracket (20).
3. Remove two snaprings (13), pin (12), and connecting link (11) from eye (14).

NOTE

Note position of locking pin for installation.

4. If damaged or bent, remove locking pin (15) from connecting link (11).
5. Remove four screws (4), washers (5), and winch (6) with winch strap (1) from bracket (8).
6. Unwind winch strap (1) and remove three screws (3), plate (2), and winch strap (1) from winch drum (7).

NOTE

If clutch drive is slipping, disassemble, clean and check for damaged clutch disks. Do not oil clutch disks. Replace winch assembly if damaged.

7. If damaged, remove two screws (29) and clutch drive adapter (30) from crank base (26).
8. Remove nut (28), washer (27), clutch disk (25), ratchet wheel (24), and clutch disk (23) from winch drum shaft (31). Clean clutch disks (25) and (23).

INSTALLATION

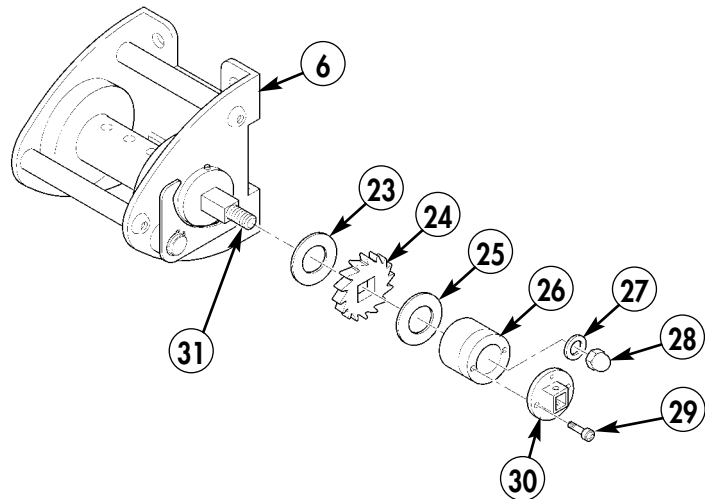
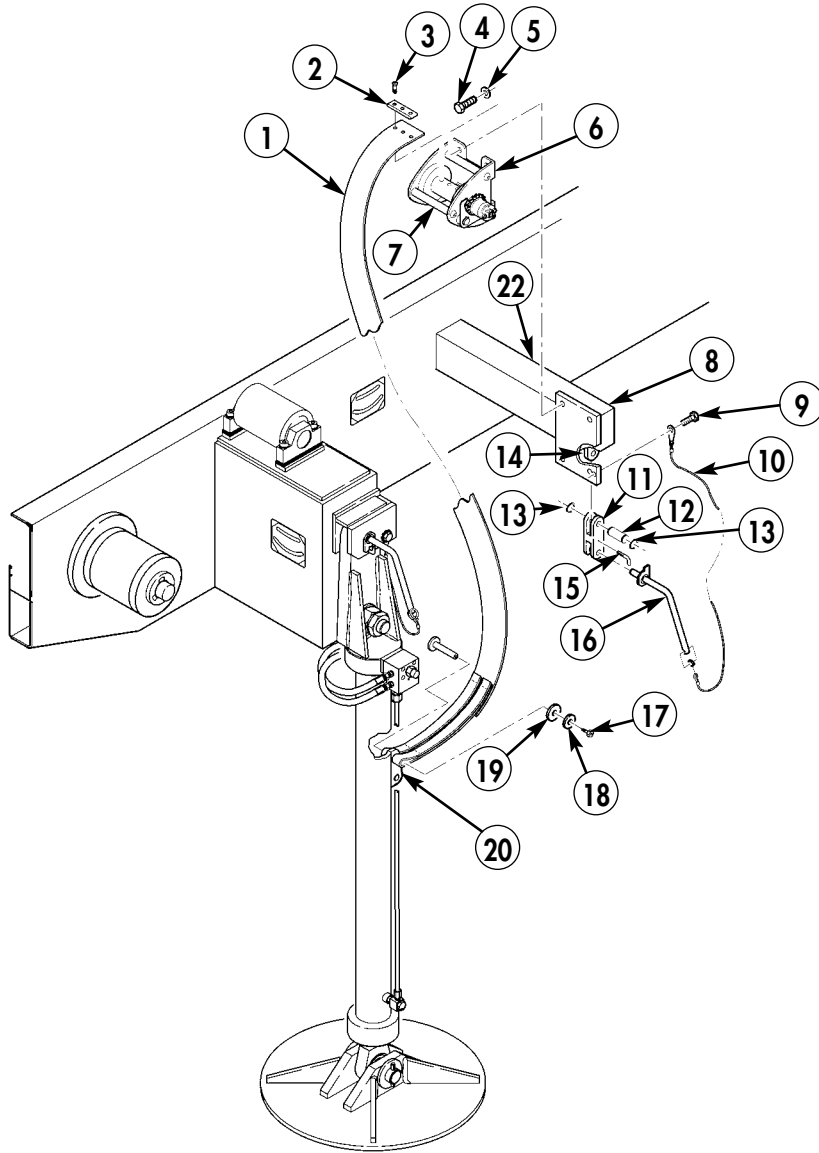
1. If removed, install cleaned clutch disk (23), ratchet wheel (24), cleaned clutch disk (25), and crank base (26) on winch drum shaft (31) with washer (27) and nut (28).
2. Install clutch drive adapter (30) on crank base (26) with two screws (29).
3. Install winch strap (1) on winch drum (7) with plate (2) and three screws (3).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

4. Install winch (6) on bracket (8) with four washers (5) and screws (4).
5. If removed, install locking pin (15) on connecting link (11).
6. Install connecting link (11) on eye (14) with pin (12) and two snaprings (13).
7. Install winch strap (1) on cylinder bracket (20) with pin (21), washers (19) and (18), and screw (17).
8. Install lanyard (10) with retainer pin (16) on bracket (8) with screw (9).
9. Lift supporting cylinders to stow position. Refer to TM 5-5420-280-10.

PALLET SUPPORTING CYLINDER WINCH AND STRAP REPLACEMENT (Contd)



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PALLET RETAINING PINS REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

PALLET RETAINING PINS REPLACEMENT (Contd)

REMOVAL

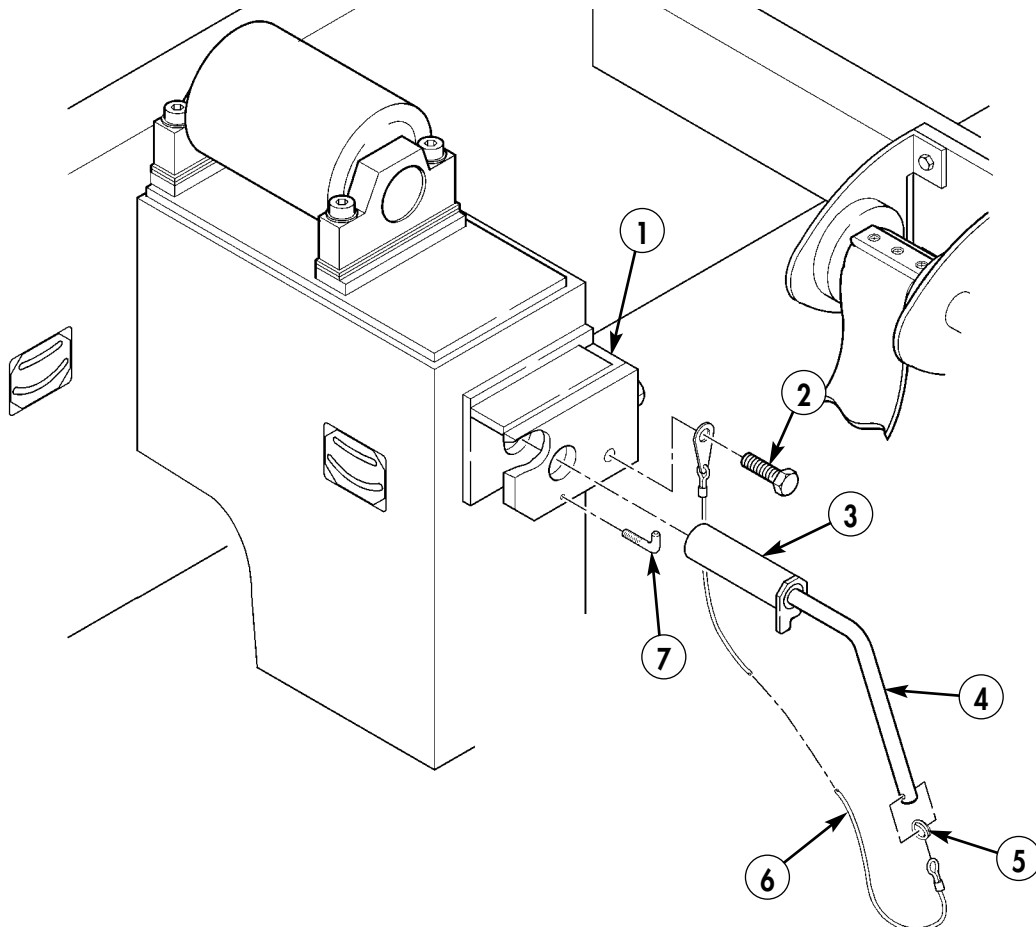
NOTE

Removal and installation of all retaining pins are performed the same way. Right supporting cylinder retaining pin is shown.

1. Turn retaining pin (3) to unlock position and remove retaining pin (3) from bracket (1) and lock pin (7).
2. Remove screw (2), retaining pin (3), and lanyard (6) from bracket (1).
3. Remove lanyard (6) from ring clip (5).
4. Remove ring clip (5) from retaining pin handle (4).
5. If damaged, remove lock pin (7) from bracket (1).

INSTALLATION

1. If removed, install lock pin (7) on bracket (1).
2. Install ring clip (5) on retaining pin handle (4).
3. Install lanyard (6) on ring clip (5).
4. Install lanyard (6) with retaining pin (3) on bracket (1) with screw (2).
5. Install retaining pin (3) on bracket (1) and turn to lock position.



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**TRANSPORT ROLLERS REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Bridge halves removed from bridge pallet.
Refer to WP 0018 00.

Materials/Parts

Grease (Item 8, WP 0205 00)
Two lockwashers (WP 0152 00)

TRANSPORT ROLLERS REPLACEMENT (Contd)

NOTE

Removal and installation of right and left transport rollers are performed the same way. Left side forward transport rollers are shown.

REMOVAL

1. Remove two screws (6), lockwashers (7), washers (8), bracket (5), and roller (3) with shaft (4) from mount (10) on telescopic tube (9). Discard lockwashers (7).
2. Slide shaft (4) out of two bushings (2) and roller (3).
3. If damaged or worn, remove two bushings (2) from roller (3).
4. Repeat steps 1 through 3 to remove other transport roller from telescopic tube.

INSTALLATION

NOTE

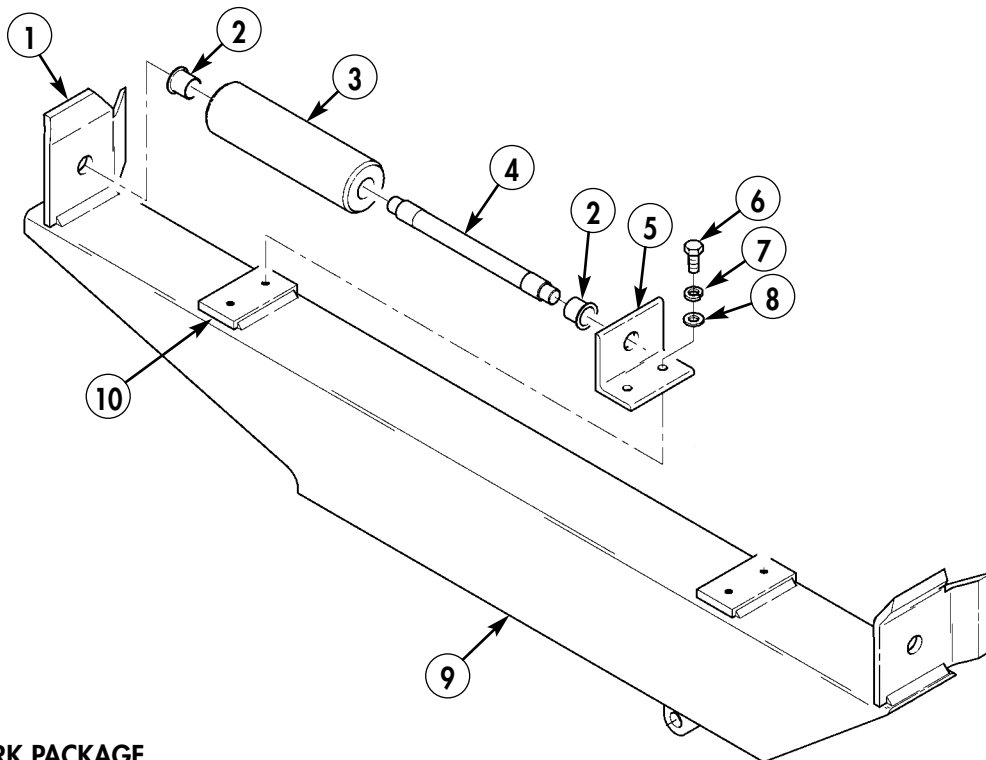
Apply a light coat of grease to bushings and shaft at installation.

1. If removed, install two bushings (2) on roller (3).
2. Slide shaft (4) in bushings (2) and roller (3).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

3. Install end of shaft (4) on bracket (5) and bracket (1) on telescopic tube (9) with two washers (8), new lockwashers (7), and screws (6).
4. Repeat steps 1 through 3 to install other transport roller on telescopic tube.
5. Install bridge halves on bridge pallet. Refer to WP 0018 00.



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**TELESCOPIC TUBE HYDRAULIC CYLINDER REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)**Materials/Parts**Cap and plug set (Item 3, WP 0205 00)
Grease (Item 8, WP 0205 00)
Oil (Item 12, WP 0205 00)
Two O-rings (WP 0151 00)

TELESCOPIC TUBE HYDRAULIC CYLINDER REPLACEMENT (Contd)

WARNING

Before disconnecting any hydraulic hoses you must relieve residual hydraulic pressure from system and use care when loosening any hydraulic tube or hose. Failure to comply may result in injury or death to personnel.

NOTE

Removal and installation of right and left telescopic tube hydraulic cylinders are performed the same way. Left side forward telescopic tube hydraulic cylinder is shown.

REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag hoses for installation.

Have container ready to catch oil.

1. Disconnect two hoses (6) from elbows (5) on fittings (4) of telescopic tube hydraulic cylinder (3).
2. Remove four snaprings (8), washers (9), two pins (1), and hydraulic cylinder (3) from telescopic tube brackets (2) and frame rail brackets (10).

NOTE

Note position of elbows for installation.

3. Remove two elbows (5), fittings (4), and O-rings (7) from hydraulic cylinder (3). Discard O-rings (7).

INSTALLATION

NOTE

Apply a light coat of oil to O-rings and grease to pins at installation.

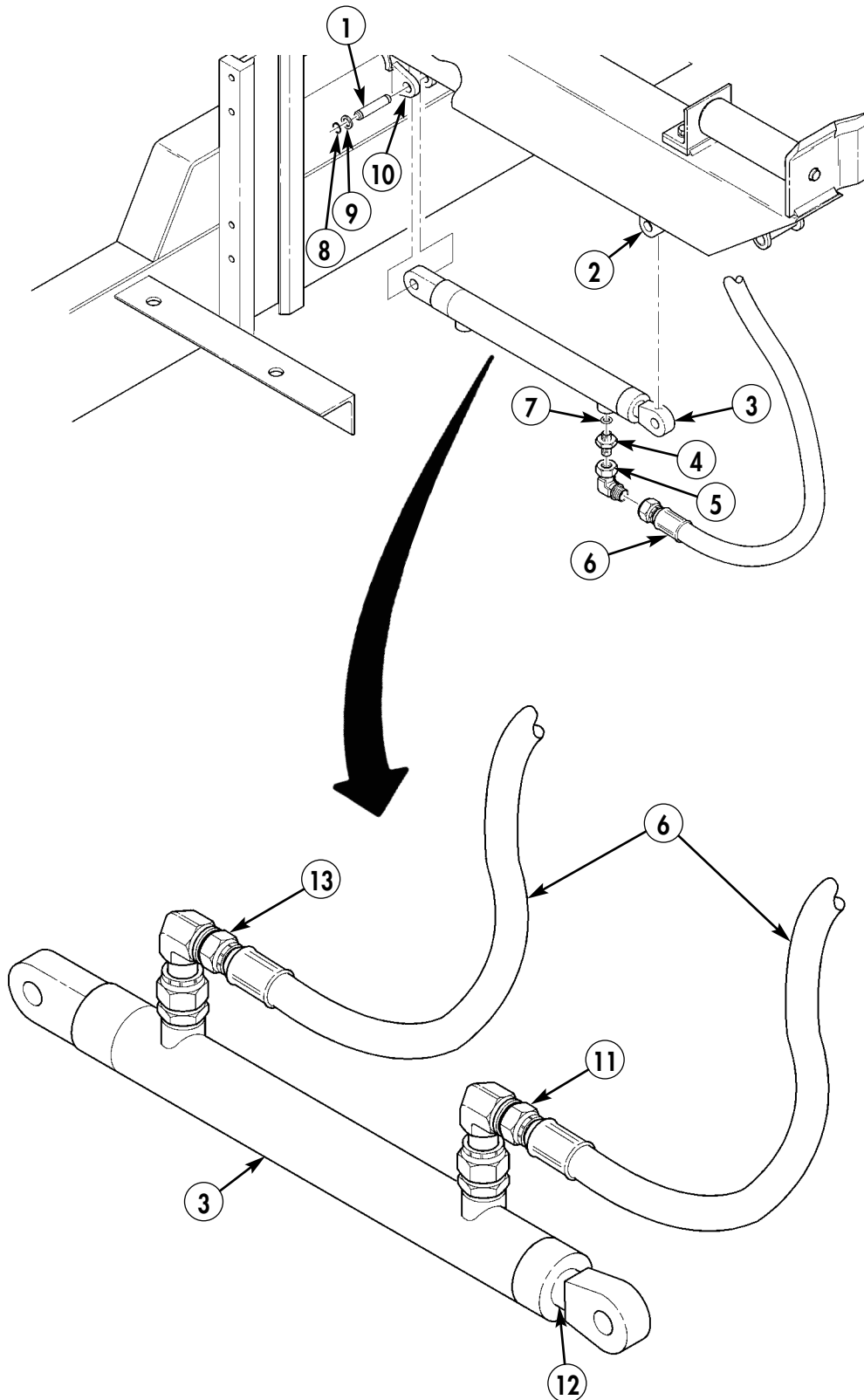
1. Install two new O-rings (7), fittings (4), and elbows (5) on hydraulic cylinder (3).
2. Connect two hoses (6) on elbows (5) of telescopic tube hydraulic cylinder (3). Do not tighten nuts (11) and (13) until air is bled from cylinder (3).

NOTE

Have container ready to catch oil.

3. Turn hydraulic cylinder (3) over so that elbows (5) are on top of cylinder (3).
4. Loosen nut (11) on hose (6) and operate hydraulic cylinder (3). Refer to TM 5-5420-280-10. Extend cylinder rod (12). This will bleed air from one side of hydraulic cylinder (3). Tighten nut (11).
5. Loosen nut (13) on other hose (6) and operate hydraulic cylinder (3). Refer to TM 5-5420-280-10. Retract cylinder rod (12). This will bleed air from other side of hydraulic cylinder (3). Tighten nut (13).
6. Repeat steps 4 and 5 until no air is coming from cylinder (3) at nuts (11) and (13).
7. Install hydraulic cylinder (3) on frame rail brackets (10) and telescopic tube brackets (2) with two pins (1), four washers (9), and snaprings (8).

TELESCOPIC TUBE HYDRAULIC CYLINDER REPLACEMENT (Contd)



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**TELESCOPIC TUBE AND SLIDE PINS REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)**Equipment Condition**Bridge halves removed from bridge pallet.
Refer to WP 0018 00.**Materials/Parts**

Grease (Item 8, WP 0205 00)

Personnel RequiredTwo

TELESCOPIC TUBE AND SLIDE PINS REPLACEMENT (Contd)

NOTE

Removal and installation of right and left telescopic tubes and slide pins are performed the same way. Left forward side is shown.

REMOVAL

1. Remove two snaprings (7), washers (8), and pin (9) from telescopic tube bracket (2) and end of hydraulic cylinder (5) and swing end of cylinder (5) down.

WARNING

Use care when removing telescopic tube from transverse quarter. Slide pins are under spring pressure and will fly out of transverse quarter as telescopic tube is removed. Failure to comply may result in injury to personnel.

NOTE

Assistant will help with step 2.

2. Slowly slide telescopic tube (1) off transverse girder (6) and remove five slide pins (3) and three springs (4) from girder (6).

INSTALLATION

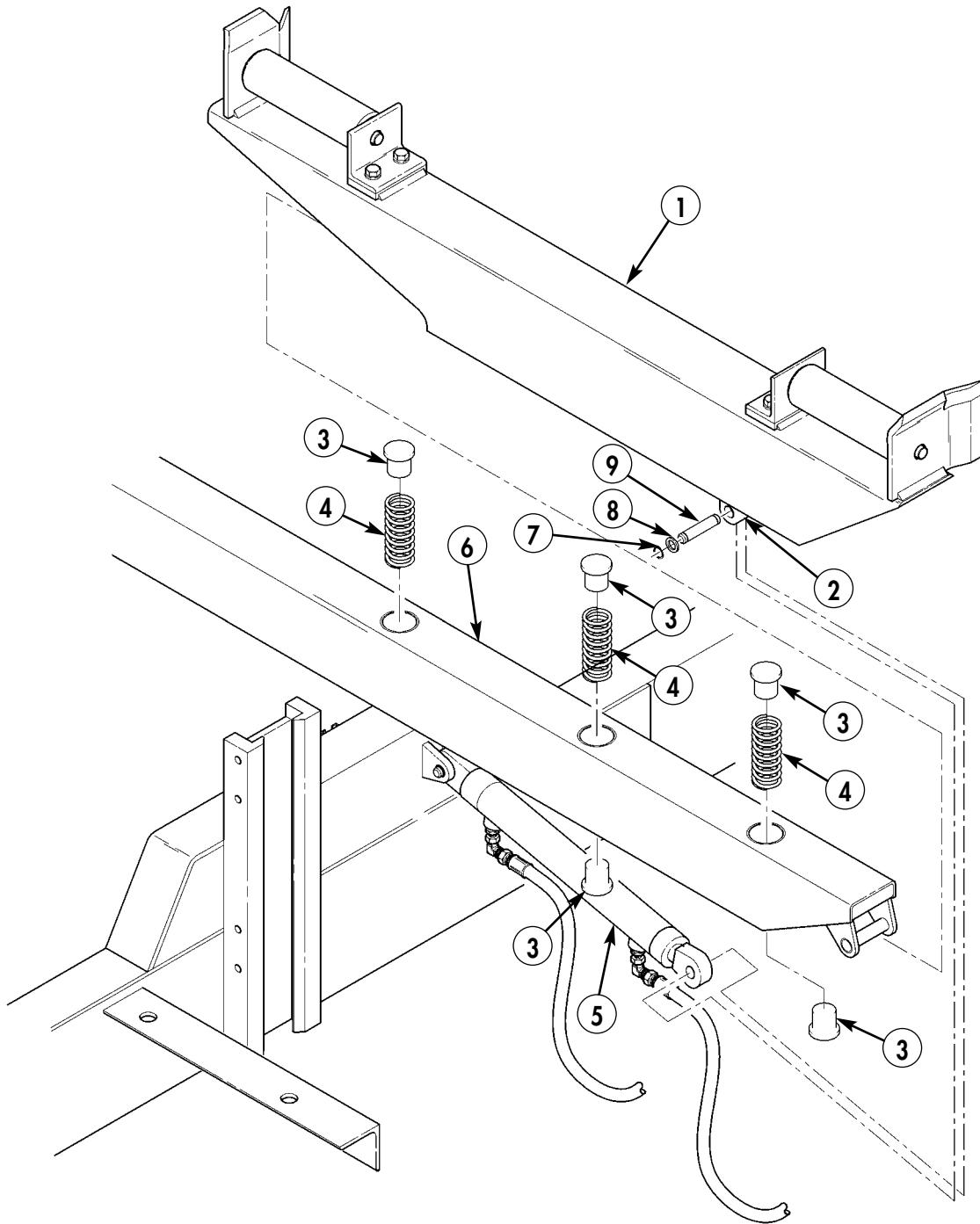
NOTE

Apply a light coat of grease to slide pins, springs, and pin at installation.

Assistant will help with step 1.

1. Install three springs (4) and five slide pins (3) on transverse girder (6) and compress springs (4) and slide pins (3) as telescopic tube (1) is slid on transverse girder (6).
2. Lift end of hydraulic cylinder (5) and install end of cylinder (5) on telescopic tube bracket (2) with pin (9), two washers (7), and snaprings (8).
3. Install bridge halves on bridge pallet. Refer to WP 0018 00.

TELESCOPIC TUBE AND SLIDE PINS REPLACEMENT (Contd)



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**PALLET BRIDGE SUPPORT ROLLERS REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)**Materials/Parts**Grease (Item 8, WP 0205 00)
Four lockwashers (WP 0150 00)

PALLET BRIDGE SUPPORT ROLLERS REPLACEMENT (Contd)

REMOVAL

NOTE

Removal and installation of pallet bridge support rollers are performed the same way. Left support roller is shown.

Note quantity of shim(s) for installation.

1. Remove four screws (4), lockwashers (5), support roller brackets (6), and shims (7) from top of pallet frame member (8). Discard lockwashers (5).
2. Slide end support brackets (6) off roller shafts (3).
3. Slide roller shaft (3) out of roller (2).
4. If damaged, press two bushings (1) out of roller (2). Discard bushings (1) if removed.

INSTALLATION

1. If removed, press two new bushings (1) on roller (2).

NOTE

Apply a light coat of grease to bushings and roller shaft at installation.

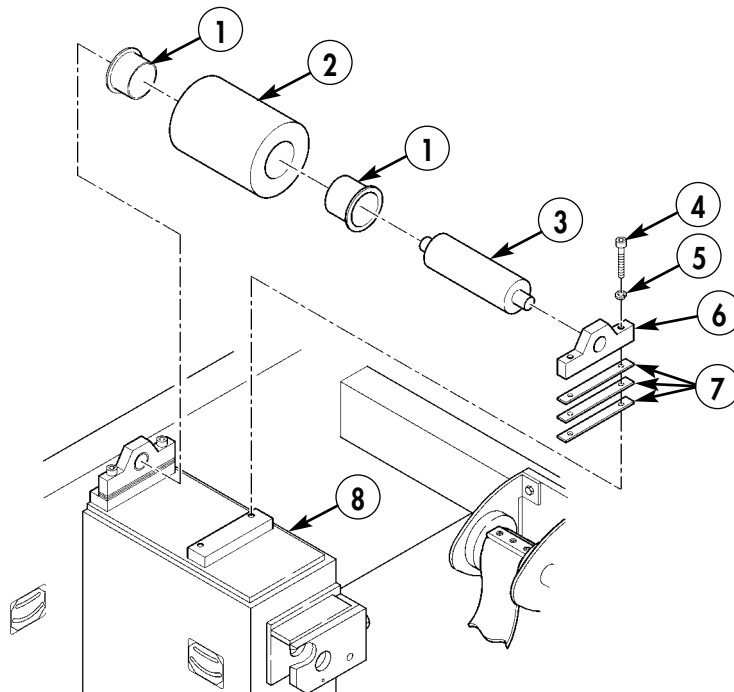
2. Install roller shaft (3) on roller (2).
3. Install end support brackets (6) on roller shaft (3).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

Install same number of shim(s) as noted at removal.

4. Install shims (7) and support roller brackets (6) on pallet frame member (8) with four new lockwashers (5) and screws (4).



END OF WORK PACKAGE

0044 00-2

PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**PALLET TOOLBOX REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Remove all tools from toolbox.
Refer to TM 5-5420-280-10.

Materials/Parts

Four locknuts (WP 0153 00)
Twenty lockwashers (WP 0153 00)

PALLET TOOLBOX REPLACEMENT (Contd)

REMOVAL

NOTE

Removal and installation of right and left pallet toolboxes are performed the same way. The right toolbox has a key and ring mounted on a chain and is secured to inside of box with screw, two washers, and nut. Left side is shown.

1. Support pallet toolbox (8) and remove four locknuts (2), washers (3), two plates (9), screws (12), washers (3), and toolbox (8) from brackets (4) and (37) on pallet (1). Discard locknuts (2).
2. Remove eight screws (5), lockwashers (6), and two support brackets (16) from inside of toolbox (8). Discard lockwashers (6).
3. Remove four screws (5), lockwashers (6), and locking bracket (19) from inside of toolbox (8). Discard lockwashers (6).
4. Remove wingnut (17) and locking plate (18) from stud on locking bracket (19).
5. Remove four locknuts (23), screws (34), washers (28), and holddown clamps (27) from inside of toolbox (8). Discard locknuts (23).
6. Remove four screws (5), lockwashers (6), and two stop brackets (7) from inside of toolbox (8). Discard lockwashers (6).
7. Remove screw (36) and clip (35) from block (20).
8. Remove four screws (5) and (22), lockwashers (6), and two locking brackets (21) from toolbox cover (15). Discard lockwashers (6).
9. Remove two wingnuts (24) and locking plates (24) from studs on locking brackets (21).
10. Remove four nuts (30), washers (29), screws (33), two clips (32), and blocks (31) from inside of toolbox (8).
11. If damaged, remove threaded inserts from brackets (16), (17), (21), and two stop brackets (7).
12. If damaged, remove four rivets (13), two catches (14), four screws (10), and two latches (11) from toolbox cover (15) and toolbox (8).
13. If damaged or broken, remove chain (26) from toolbox (8) and cover (15).

INSTALLATION

NOTE

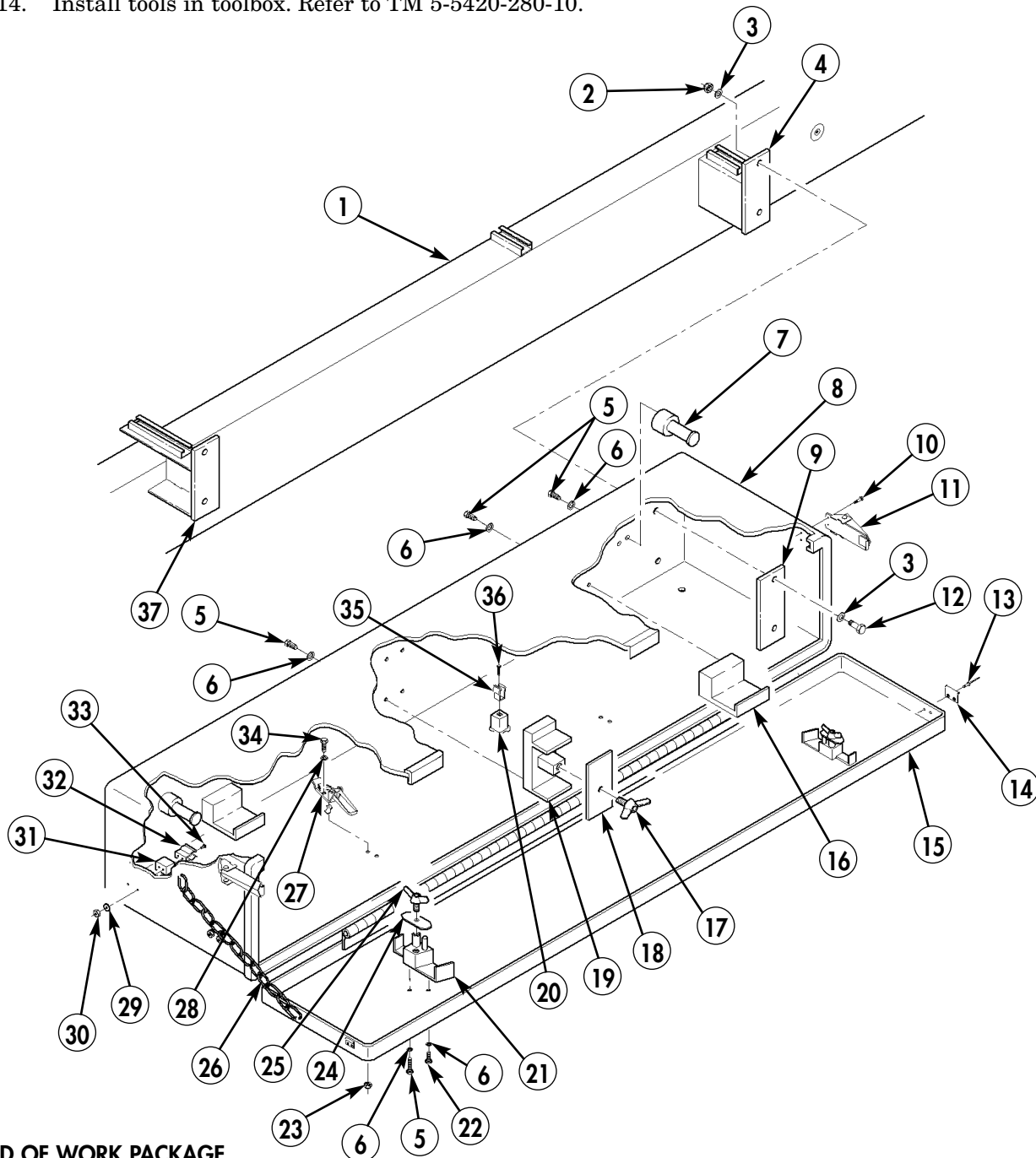
Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

1. If removed, install chain (26) on toolbox cover (15) and toolbox (8).
2. If removed, install two catches (14) and latches (11) on toolbox cover (15) and toolbox (8) with four screws (10) and rivets (13).
3. If removed, install threaded inserts on brackets (16), (19), (21), and two stop brackets (7). (Refer to WP 0029 00.)
4. Install two locking plates (24) on studs of locking brackets (21) with wingnuts (25).
5. Install two blocks (31) and clips (32) on inside of toolbox (8) with four screws (33), washers (29), and nuts (30).
6. Install two locking brackets (21) on toolbox cover (15) with four new lockwashers (6) and screws (22) and (5).
7. Install clip (35) on block (20) with screw (36).
8. Install two stop brackets (7) on inside of toolbox (8) with four new lockwashers (6) and screws (5).

PALLET TOOLBOX REPLACEMENT (Contd)

INSTALLATION (Contd)

9. Install two holddown clamps (27) inside of toolbox (8) with four screws (34), washers (28), and new locknuts (23).
10. Install locking plate (18) on stud of locking bracket (19) with wingnut (17).
11. Install locking bracket (19) on inside of toolbox (8) with four new lockwashers (6) and screws (5).
12. Install two support brackets (16) on inside of toolbox (8) with eight new lockwashers (6) and screws (5).
13. Install toolbox (8) on brackets (4) and (37) of pallet (1) with four washers (3), screws (12), two plates (9), washers (3), and new locknuts (2).
14. Install tools in toolbox. Refer to TM 5-5420-280-10.



END OF WORK PACKAGE

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PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PALLET ANCHORING STOWAGE BOX REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Four rivets (WP 0153 00)

Equipment Condition

Remove all anchoring tools from toolbox.

Refer to TM 5-5420-280-10.

Remove anchoring stowage box from bridge
pallet. Refer to TM 5-5420-280-10.

PALLET ANCHORING STOWAGE BOX REPLACEMENT (Contd)

REMOVAL

NOTE

Both pallet anchoring stowage boxes are replaced the same. Only one stowage box is shown.

1. Remove two nuts (14), washers (13), screws (8), lanyards (9), and retaining pins (10) from pallet anchoring stowage box (1).
2. If damaged, remove locking pin(s) (11) from brackets (12) or (17).
3. Remove four washers (16), screws (15), and two brackets (17) from stowage box (1).
4. Remove four screws (18), washers (19), and two handles (2) from stowage box (1).
5. Remove four screws (7) and two latches (6) from stowage box (1).
6. If damaged, remove four rivets (5) and two catches (4) from stowage box cover (3). Discard rivets (5).

INSTALLATION

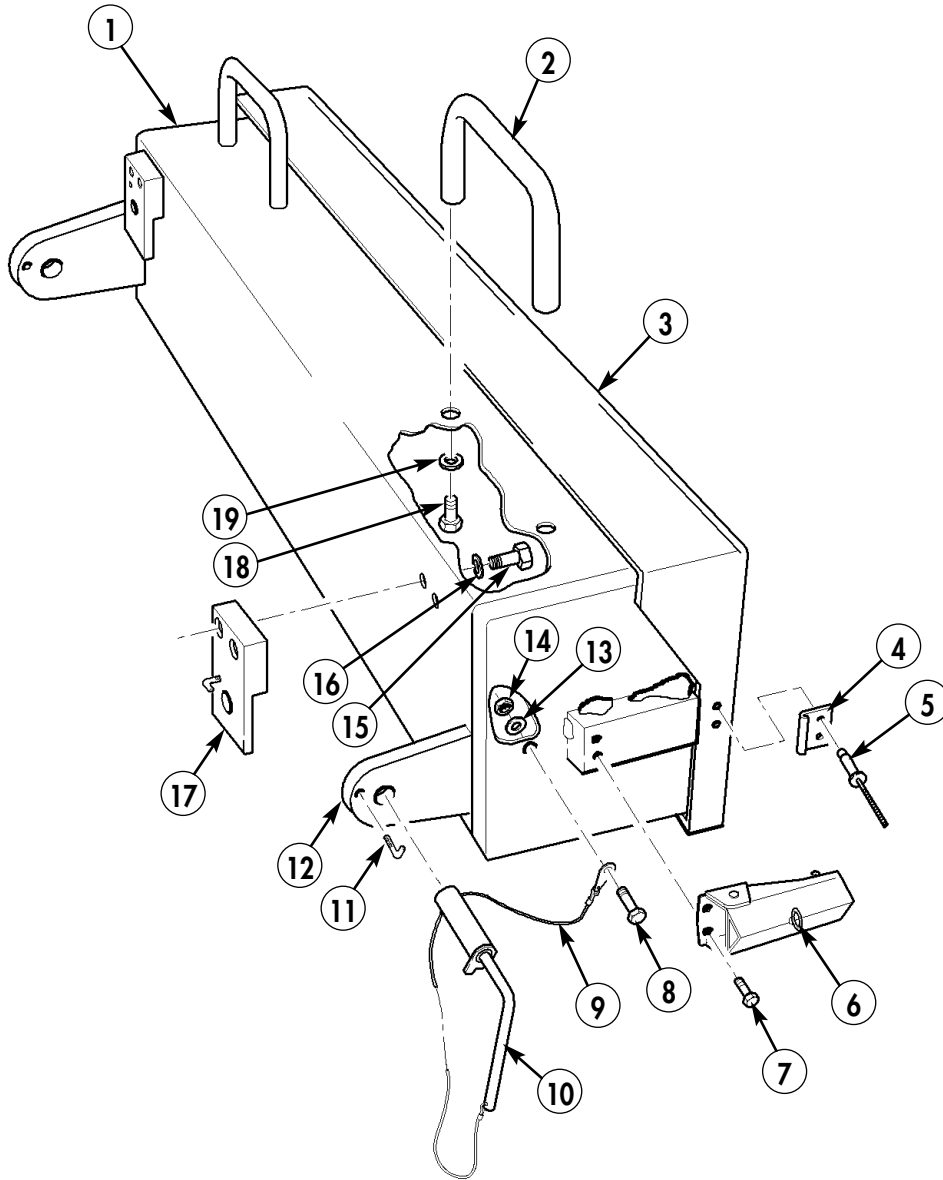
1. If removed, install two catches (4) on stowage box cover (3) with four new rivets (5).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

2. Install two latches (6) on stowage box (1) with four screws (7).
3. Install two handles (2) on stowage box (1) with four washers (19) and screws (18).
4. Install two brackets (17) on stowage box (1) with four screws (15) and washers (16).
5. If removed, install locking pin(s) (11) on brackets (12) or (17).
6. Install two lanyards (9) with retaining pins (10) on to stowage box (1) with two screws (8), washers (13), and nuts (14).
7. Install stowage box on bridge pallet. Refer to TM 5-5420-280-10.
8. Install all anchoring tools in stowage box. Refer to TM 5-5420-280-10.

PALLET ANCHORING STOWAGE BOX REPLACEMENT (Contd)



PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**PALLET HOLD-DOWN BARS REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Grease (Item 8, WP 0205 00)

PALLET HOLD-DOWN BARS REPLACEMENT (Contd)

REMOVAL

NOTE

Removal and installation of right and left pallet hold-down bars are performed the same way. Left side is shown.

1. Loosen jamnut (6) and turn turnbuckle (12) until hook (10) can be removed from Common Bridge Transport (CBT) eye ring or stowage cleat (7) on pallet frame (1).
2. Remove snpring (11), pin (8), and swivel (9) with hook (10) from turnbuckle (12).
3. Remove turnbuckle (12) and jamnuts (6) from threads on upper block assembly (5).
4. If upper block assembly (5) is bent or damaged, cut bracket (3) from crossmember (2) and remove upper block assembly (5) from pin (4).

INSTALLATION

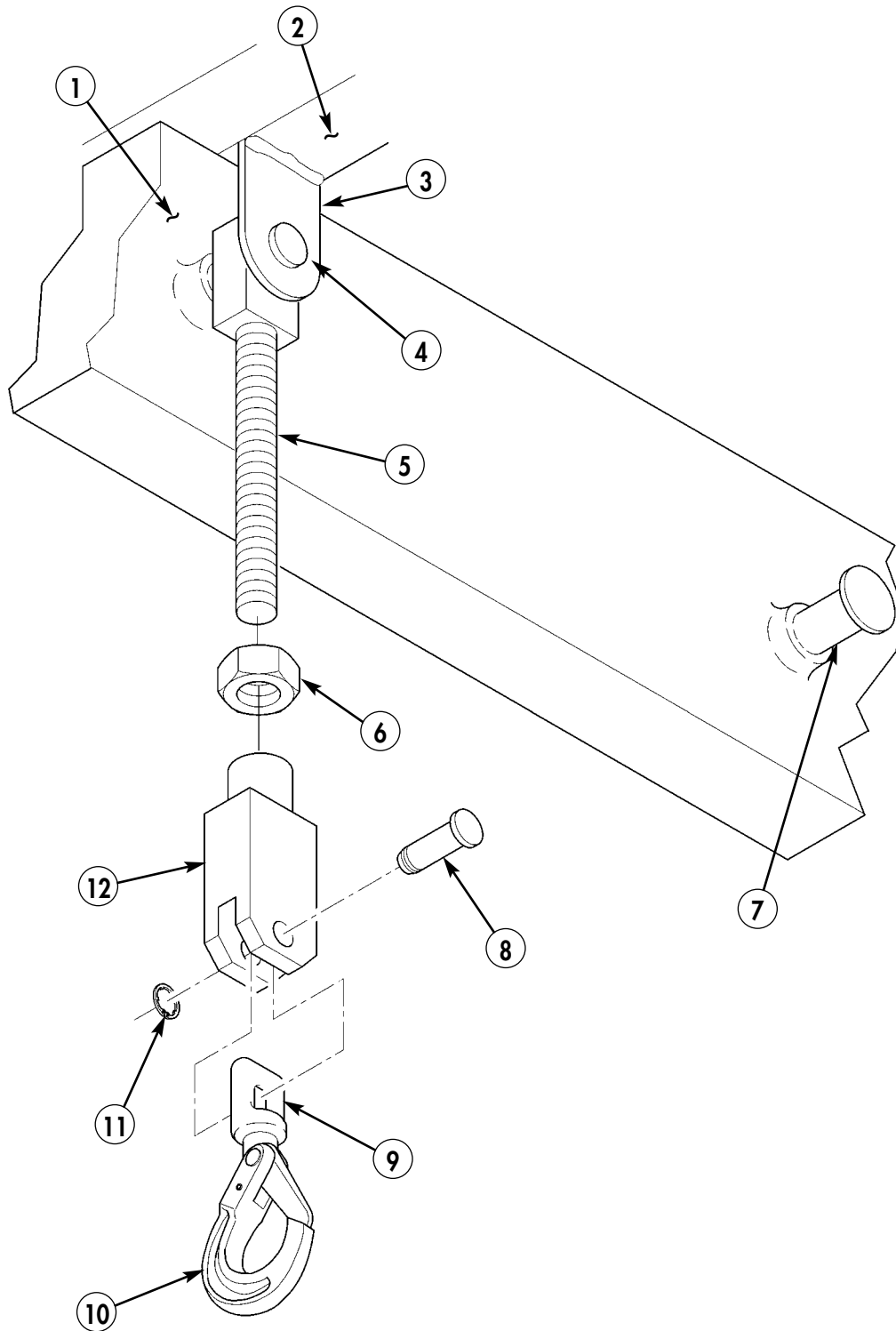
1. If upper block assembly (5) was removed, install upper block assembly (5) on pin (4) and weld bracket (3) in position on crossmember (2).

NOTE

Apply a light coat of grease to threads of upper block assembly at installation.

2. Install jamnut (6) and turnbuckle (12) on threads of upper block assembly (5).
3. Install swivel (9) with hook (10) on turnbuckle (12) with pin (8) and snpring (11).
4. Adjust turnbuckle (12) to clip on either stowage cleat (7) or CBT eye ring, and tighten turnbuckle (12) and jamnut (6).

PALLET HOLD-DOWN BARS REPLACEMENT (Contd)



PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**PALLET SHORING PADS REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Sealing compound (Item 17, WP 0205 00)

PALLET SHORING PADS REPLACEMENT (Contd)

REMOVAL

NOTE

Removal and installation of pallet shoring pads (3) are performed the same way. Right side is shown.

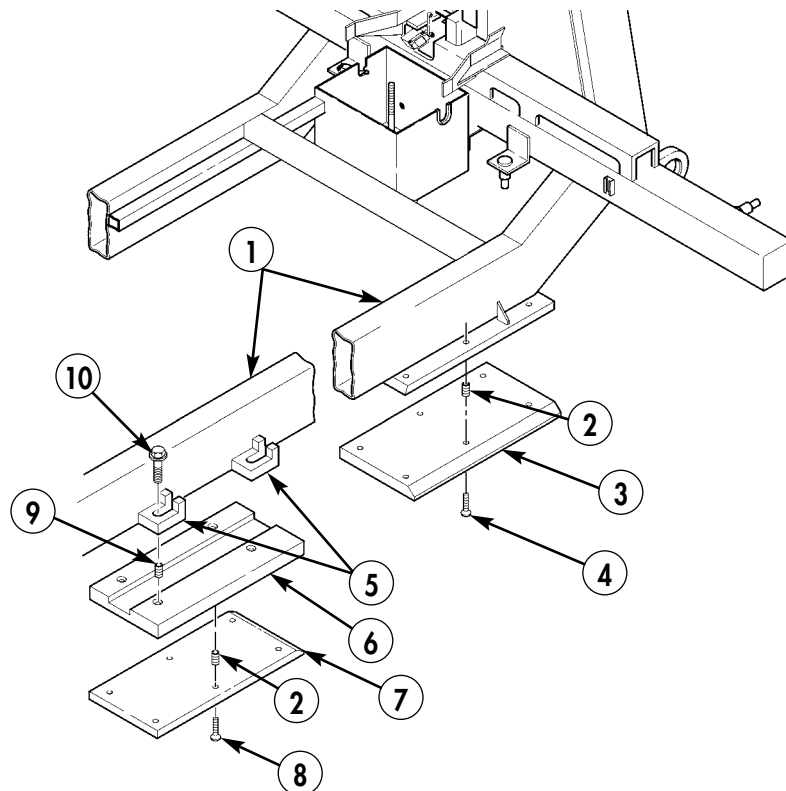
1. Remove six screws (4) and forward pallet shoring pad (3) from forward position on pallet frame rail (1).
2. Remove six screws (8) and rear pallet skid support plate (7) from adapter plate (6) at rear position on pallet frame rail (1).
3. Remove four screws (10) and adapter plate (6) from support brackets (5) at rear position on pallet frame rail (1).
4. If damaged, remove threaded inserts (2) or (9) from frame rail (1) or adapter plate (6). Refer to WP 0029 00.

INSTALLATION

NOTE

Apply a light coat of sealing compound to threads of screws and inserts at installation.

1. If removed, install threaded inserts (2) or (9) on adapter plate or frame rail (1). Refer to WP 0029 00.
2. Install adapter plate (6) on support brackets (5) with four screws (10).
3. Install rear pallet shoring pad (6) on adapter plate (6) with six screws (8).
4. Install forward pallet shoring pad (3) on forward position of pallet frame rail (1) with six screws (4).



PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**ELECTRICAL CONTROL BOX MAINTENANCE
REMOVAL, DISASSEMBLY, ASSEMBLY, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Adhesive (Item 21, WP 0205 00)
Four locknuts (WP 0154 00)
Seal (WP 0154 00)
Gasket (WP 0154 00)
Two lockwashers (WP 0154 00)

Materials/Parts (Contd)

Four lockwashers (WP 0154 00)
Forty O-rings (WP 0154 00)
Tiedown straps (WP 0154 00)
Lockwasher (WP 0154 00)
Four lockwashers (WP 0154 00)

Equipment Condition

Battery ground cables disconnected.
Refer to WP 0113 00.

ELECTRICAL CONTROL BOX REPLACEMENT (Contd)

REMOVAL

1. Loosen four screws (8) and open electrical control box cover (7).

NOTE

Tag all electrical wires and leads for installation. Refer to Electrical System Schematic WP 0122 00.

2. Remove tiedown straps (39) and disconnect eighty-five electrical leads (14) from buss bars (10) and winch relay assembly (4) on inside of control box (5). Discard tiedown straps (39).
3. Loosen nuts (13) and remove forty electrical wires (15) and leads (14) from rubber grommets (16) and fittings (12) on side of control box (5).
4. Support control box (5) and remove four locknuts (2), washers (3), screws (6), and control box (5) from two brackets (1) on pallet (4). Discard locknuts (2).

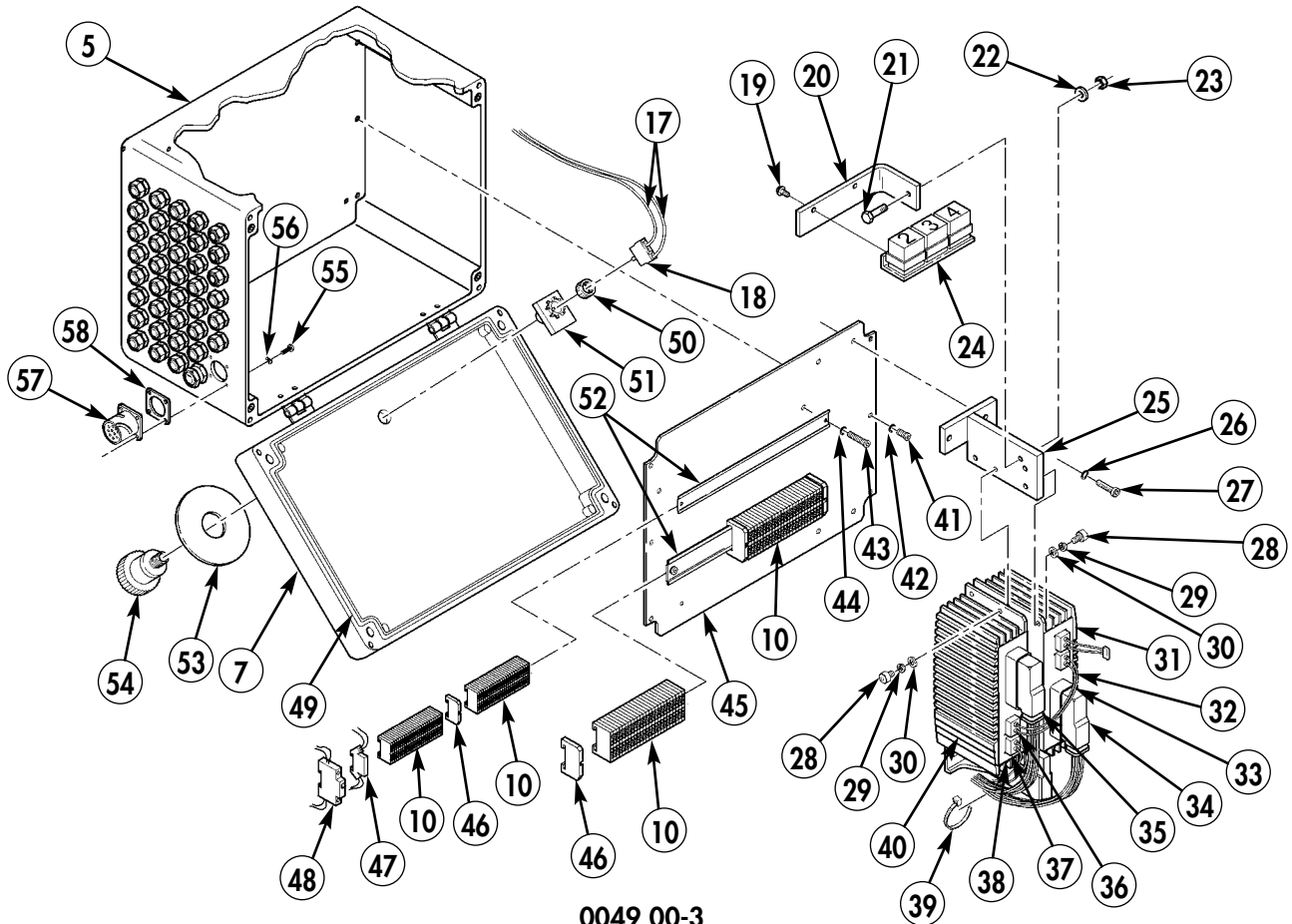
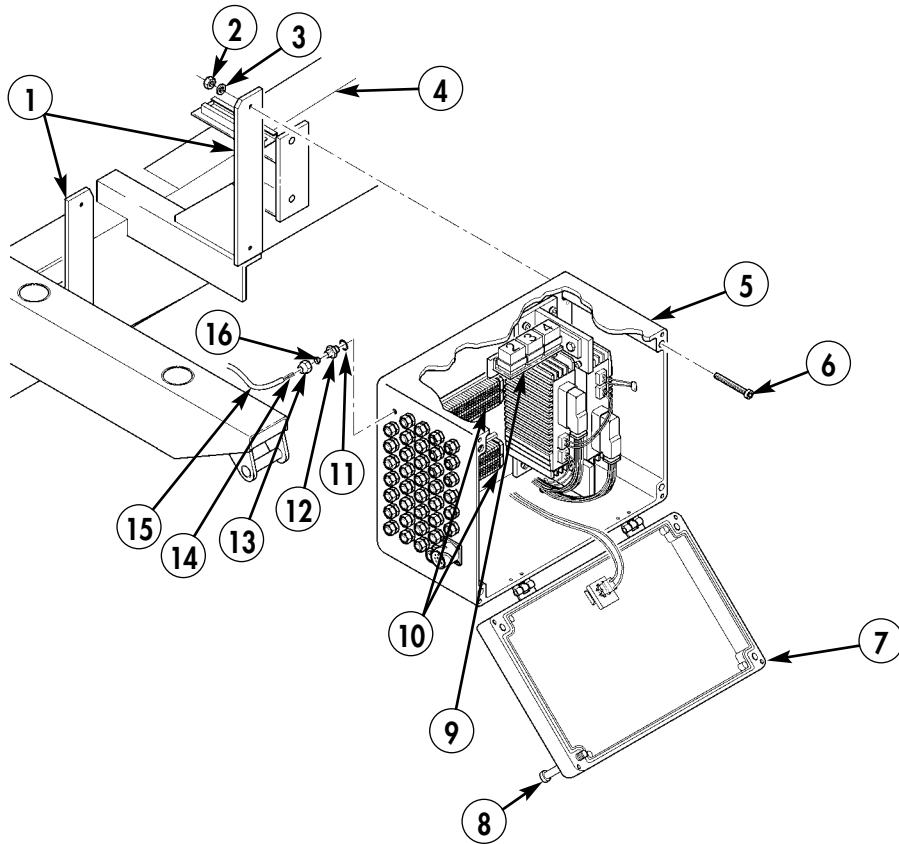
DISASSEMBLY

NOTE

Tag all electrical connectors and leads for installation.

1. Disconnect IQAN-XS connector (35) from IQAN-XS receptacle (38).
2. Disconnect IQAN-XP connector (34) from IQAN-XP receptacle (33).
3. Disconnect jumper connectors (36) and (32) from CAN 1 receptacle on IQAN-XS (40) and CAN 1 receptacle on IQAN-XP (31).
4. Disconnect connector (37) from CAN 2 receptacle on IQAN-XS (40).
5. Disconnect electrical leads from buss bars (10) to IQAN-SX connector (35).
6. Disconnect electrical leads from buss bars (10) to IQAN-XP connector (34).
7. Disconnect electrical leads from AD2, AD3, and AD4 winch relays (24).
8. Remove nut (23), lockwasher (22), screw (21), and winch relay assembly (9) from top IQAN mounting bracket (25). Discard lockwasher (22).
9. Remove two screws (19) and three winch relays (24) from relay mounting bracket (20).
10. Remove four screws (27), washers (26), ground leads, and two IQAN mounting brackets (25) with IQAN-XS (40) and IQAN-XP (31) attached from backing plate (45) on control box (5).
11. Remove two screws (28), lockwashers (29), washers (30), and IQAN-XS (40) from two brackets (25). Discard lockwashers (28).
12. Remove four screws (28), lockwashers (29), washers (30), and IQAN-XP (31) from two brackets (25). Discard lockwashers (28).
13. Disconnect four leads from AD1 relay (47).
14. Disconnect two leads from 15 AMP circuit breaker (48).
15. Remove four screws (43), washers (44), four buss bars (10), and spacers (46) attached to slide plates (52) from backing plate (45).
16. Remove four screws (55), lockwashers (56), RCU receptacle (57), and gasket (58) from side of control box (5). Discard gasket (58) and lockwashers (56).
17. Remove forty fittings (12) and O-rings (11) from side of control box (5). Discard O-rings (11).
18. Remove six screws (41), washers (42), and backing plate (45) from control box (5).
19. Disconnect two leads (17) from emergency stop switch (18) on control box cover (7).
20. If damaged, remove nut (50), lockplate (51), stop switch button (54), and tag (53) from cover (7).
21. If damaged, remove seal (49) from cover (7) and clean old sealant from groove on cover (7). Discard seal (49).

ELECTRICAL CONTROL BOX REPLACEMENT (Contd)



ELECTRICAL CONTROL BOX REPLACEMENT (Contd)

ASSEMBLY

NOTE

Install all leads and connectors as marked at removal. Refer to Electrical System Schematic WP 0122 00 at installation.

1. If removed, apply adhesive to groove and install new seal (35) on cover (39).
2. If removed, install stop switch button (41) and tag (40) on cover (39) with lockplate (37) and nut (36).
3. Install stop switch (3) and connect two leads (2) to stop switch (3).
4. Install backing plate (31) on control box (1) with six washers (27) and screws (26).
5. Install forty new O-rings (53) and fittings (54) on side of control box (1).
6. Install new gasket (45) and RCU receptacle (44) on side of control box (1) with four new lockwashers (43) and screws (42).
7. Install four buss bars (30), spacers (32), and slide plates (38) on backing plate (31) with four washers (29) and screws (28).
8. Install AD1 relay (33) and circuit breaker (34) on upper slide plate (38).
9. Connect two leads to circuit breaker (38).
10. Connect four leads to AD1 relay (33).
11. Install IQAN-XP (16) on two brackets (10) with four washers (15), new lockwashers (14), and screws (13).
12. Install IQAN-XS (25) on other side of brackets (10) with two washers (15), new lockwashers (14), and screws (13).
13. Install attached IQAN-XP and IQAN-XS with brackets (10) on backing plate (31) with four washers (11) and screws (12).
14. Install winch relays AD2, AD3, and AD4 (9) on relay mounting bracket (5) with two screws (4).
15. Install winch relay assembly (51) on top IQAN mounting bracket (10) with screw (6), new lockwasher (7), and nut (8).
16. Connect electrical leads to AD2, AD3, and AD4 winch relays (9).
17. Connect electrical leads from IQAN-XP connector (19) to buss bars (30).
18. Connect electrical leads from IQAN-XS connector (20) to buss bars (30).
19. Connect connector (22) to CAN 2 receptacle on IQAN-XS (25).
20. Connect jumper connectors (17) and (21) between IQAN-XP CAN 1 receptacle and IQAN-XS CAN 1 receptacle.
21. Connect IQAN-XP connector (19) to IQAN-XP receptacle (18).
22. Connect IQAN-XS connector (20) to IQAN-XS receptacle (23).

INSTALLATION

NOTE

Install all electrical leads and wires as marked at removal. Refer to Electrical System Schematic WP 0122 00 at installation.

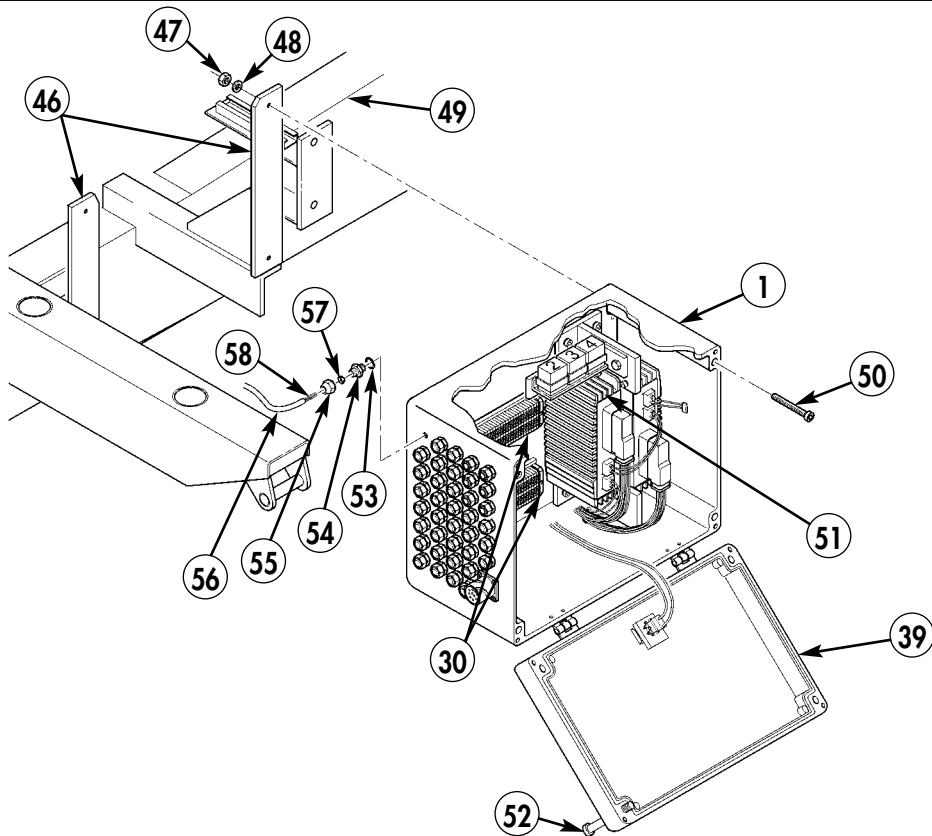
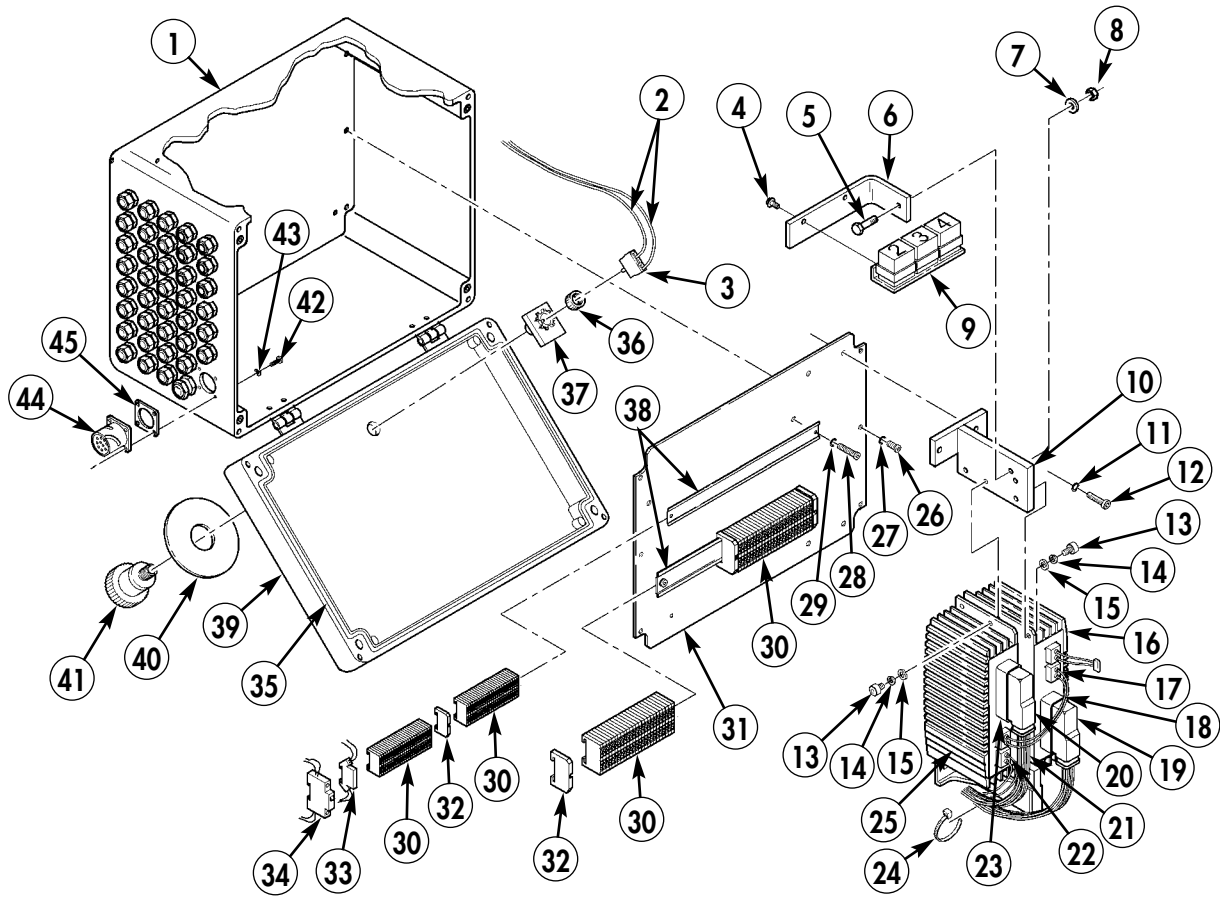
1. Install control box (1) on two brackets (46) on pallet (49) with four screws (50), washers (48), and new locknuts (47).
2. Route forty electrical wires (56) and leads (58) through nuts (55), grommets (57), and fittings (54) to inside of control box (1).

NOTE

Tighten all nuts after leads are installed on buss bars.

3. Connect eighty-five electrical leads (58) to buss bars (30), winch relay assembly (51), and secure leads (58) to inside of control box (1) with tiedown straps (24) as necessary.
4. Close control box cover (39) and tighten four screws (52).
5. Connect battery ground cable. Refer to WP 0113 00.

ELECTRICAL CONTROL BOX REPLACEMENT (Contd)



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

REMOTE CONTROL UNIT (RCU) REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

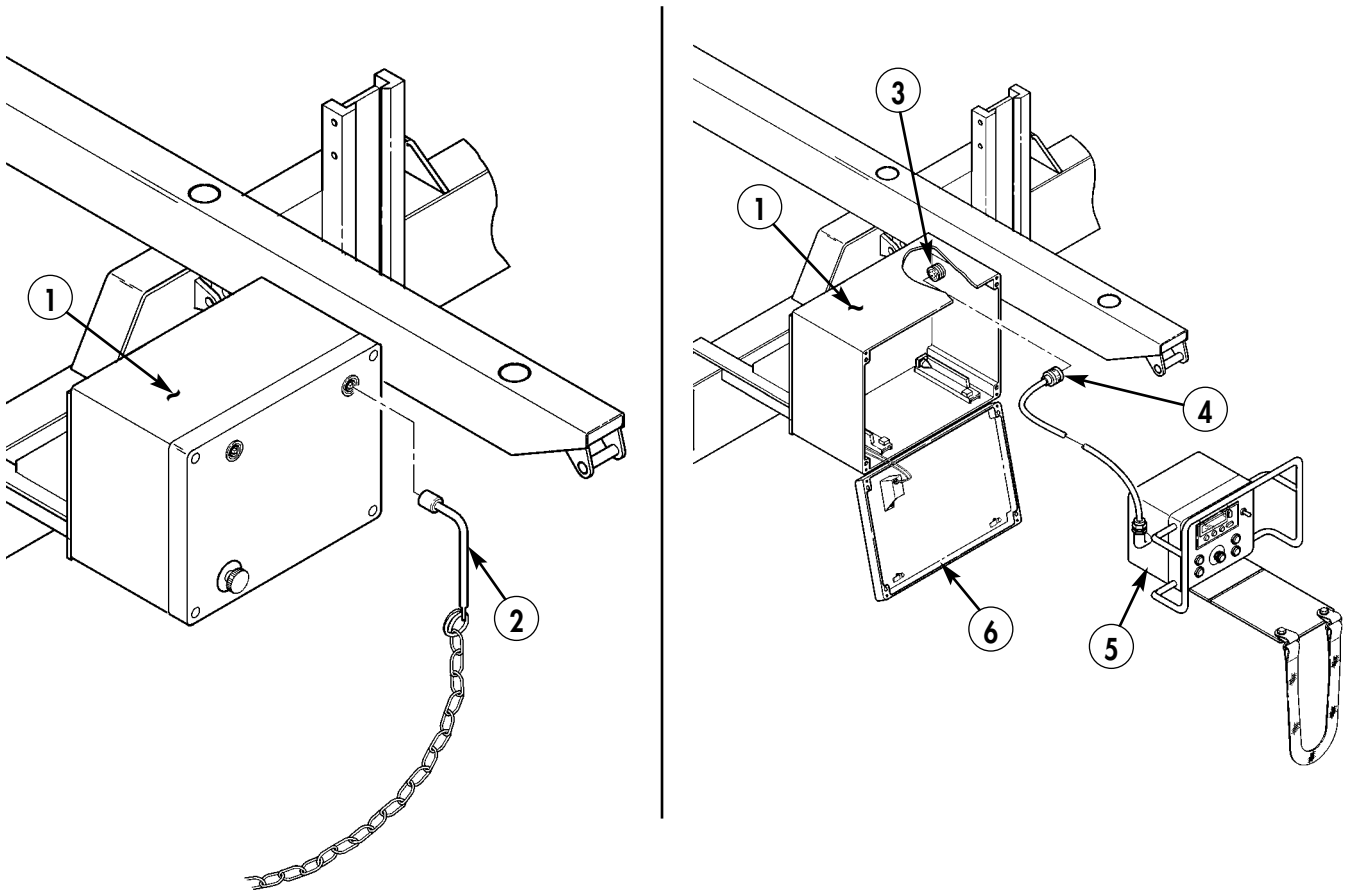
REMOTE CONTROL UNIT (RCU) REPLACEMENT (Contd)

REMOVAL

1. Using key (2), open Remote Control Unit (RCU) stowage box cover (6).
2. Remove RCU (5) from stowage box (1).
3. Disconnect RCU power cable connector (4) from receptacle (3) on inside of stowage box (1).

INSTALLATION

1. Connect RCU power cable connector (4) to receptacle (3) on inside of stowage box (1).
2. Install RCU (5) in stowage box (1).
3. Close stowage box cover (6) and lock using key (2).



PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**REMOTE CONTROL UNIT (RCU) CABLE PLUG RECEPTACLE REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Remote control unit and cable removed from
inside storage box. Refer to WP 0050 00.

Materials/Parts

Gasket (WP 0155 00)
Four lockwashers (WP 0155 00)

REMOTE CONTROL UNIT (RCU) CABLE PLUG RECEPTACLE REPLACEMENT (Contd)

REMOVAL

NOTE

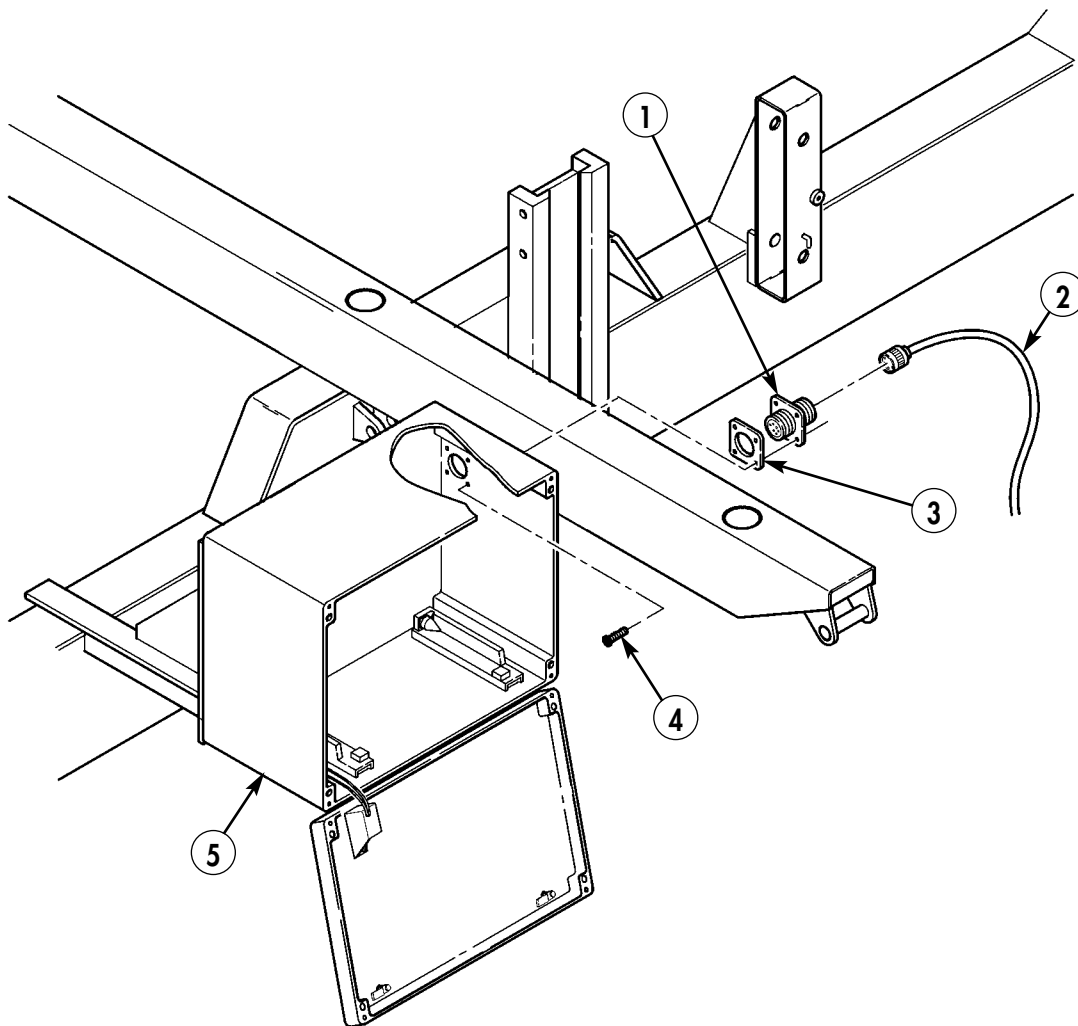
Removal and installation of Remote Control Unit (RCU) cable and receptacle are performed the same way. RCU stowage box receptacle is shown.

Tag all electrical leads for installation (electrical control unit only).

1. Disconnect power jumper cable (2) from receptacle (1) on side of RCU stowage box (6).
2. Remove four screws (5), lockwashers (4), gasket (3), and receptacle (1) from side of RCU stowage box (6). Discard gasket (3) and lockwashers (4).

INSTALLATION

1. Install new gasket (3) and receptacle (1) on side of RCU stowage box (6) with four new lockwashers (4) and screws (5).
2. Connect power jumper cable (2) on receptacle (1) at side of RCU stowage box (6).
3. Install RCU and cable in stowage box. Refer to WP 0050 00.



PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**REMOTE CONTROL UNIT (RCU) STOWAGE BOX REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

RCU cable plug receptacle removed.
Refer to WP 0051 00.

Materials/Parts

Adhesive (Item 21, WP 0205 00)
Four locknuts (WP 0155 00)
Seal (WP 0155 00)

REMOTE CONTROL UNIT (RCU) STOWAGE BOX REPLACEMENT (Contd)

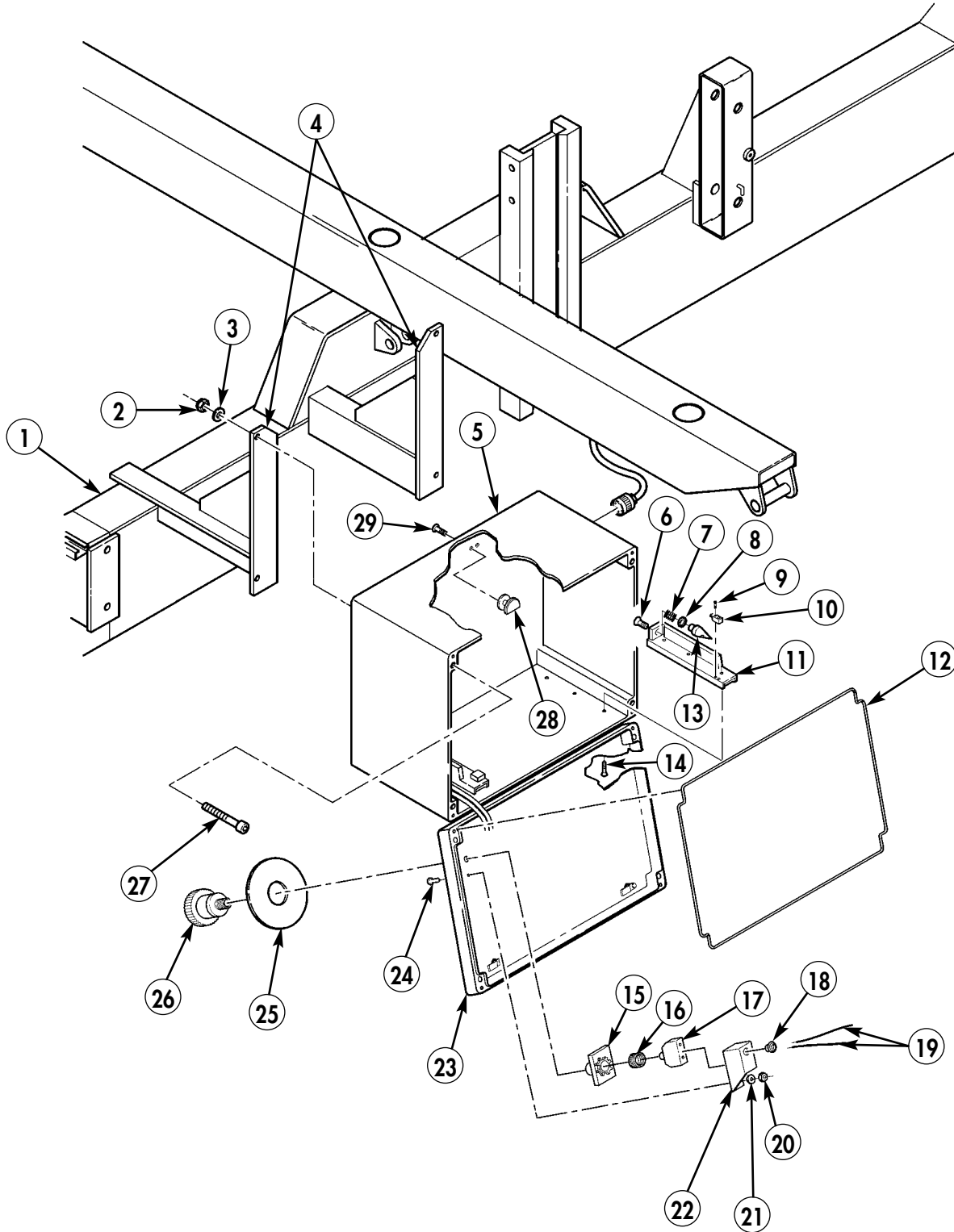
REMOVAL

1. Support Remote Control Unit (RCU) stowage box (5) and remove four locknuts (2), washers (3), screws (27), and stowage box (5) from two brackets (4) on bridge pallet (1). Discard locknuts (2).
2. If damaged, remove seal (12) from RCU stowage box cover (23). Discard seal (12).
3. If emergency stop switch (17) is damaged, remove nut (20), washer (21), screw (24), and cover (22) from over stop switch (17).
4. Disconnect electrical leads (19) from stop switch (17) and remove leads (19) from grommet (18) on cover (22).
5. Remove stop switch (17), nut (16), lockplate (15), stop switch button (26), and tag (25) from cover (23).
6. Remove six screws (14) and two RCU retaining brackets (11) from bottom of stowage box (5).
7. Remove two screws (9) and retaining clips (10) from retaining brackets (11).
8. Remove two lockpins (13), washers (8), springs (7), and screws (6) from retaining brackets (11).
9. If damaged, remove four screws (29) and two cable brackets (28) from inside of stowage box (5).

INSTALLATION

1. If removed, install two cable brackets (28) to inside of stowage box (5) with four screws (29).
2. Install two screws (6), springs (7), washers (8) on retaining brackets (11) with lockpins (13).
3. Install two retaining clips (10) on retaining brackets (11) with two screws (9).
4. Install two retaining brackets (11) on bottom of stowage box (5) with six screws (14).
5. If removed, install tag (25) and stop switch button (26) on cover (23) with lockplate (15), nut (16), and stop switch (17).
6. Install electrical leads (19) through grommet (18), cover (22), and connect leads (19) to stop switch (17).
7. Install cover (22) over stop switch (17) on cover (23) with screw (24), washer (21), and nut (20).
8. If removed, apply adhesive to groove and install new seal (12) on RCU stowage box cover (23).
9. Install RCU stowage box (5) on two brackets (4) on bridge pallet (1) with four screws (27), washers (3), and new locknuts (2).
10. Install RCU cable plug receptacle. Refer to WP 0051 00.

REMOTE CONTROL UNIT (RCU) STOWAGE BOX REPLACEMENT (Contd)



END OF WORK PACKAGE

0052 00-3/4 blank

PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PALLET WIRING AND HARNESSES REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Tie-down straps (WP 0156 00)
Wiring (WP 0156 00)
Harness (WP0156 00)

Equipment Condition

Bridge halves removed from bridge pallet.
Refer to WP 0018 00.
Battery ground cables disconnected.
Refer to WP 0113 00.

PALLET WIRING AND HARNESSES REPLACEMENT (Contd)

REMOVAL

NOTE

All electrical wiring is routed from electrical box mounted on pallet frame rail to limit switches, control valve solenoids, winch assembly, and pressure switches. Only one electrical wire is shown. Refer to Electrical System Schematic WP 0122 00 for removal of electrical leads.

Tag all electrical leads for installation.

1. Loosen four screws (3) and open electrical box cover (2) on electrical box (1).
2. Loosen nut (4) on electrical wire that is to be replaced.
3. Disconnect electrical leads from busbar inside electrical box (1). Refer to Electrical System Schematic WP 0122 00.
4. Cut tie-down straps as necessary to remove electrical leads from inside of electrical box (1).
5. Cut tie-down straps along frame rail (5) to end of electrical wire (7) that is being replaced.
6. Disconnect electrical wire (7) from component (6) and remove electrical wire (7) from pallet (8).

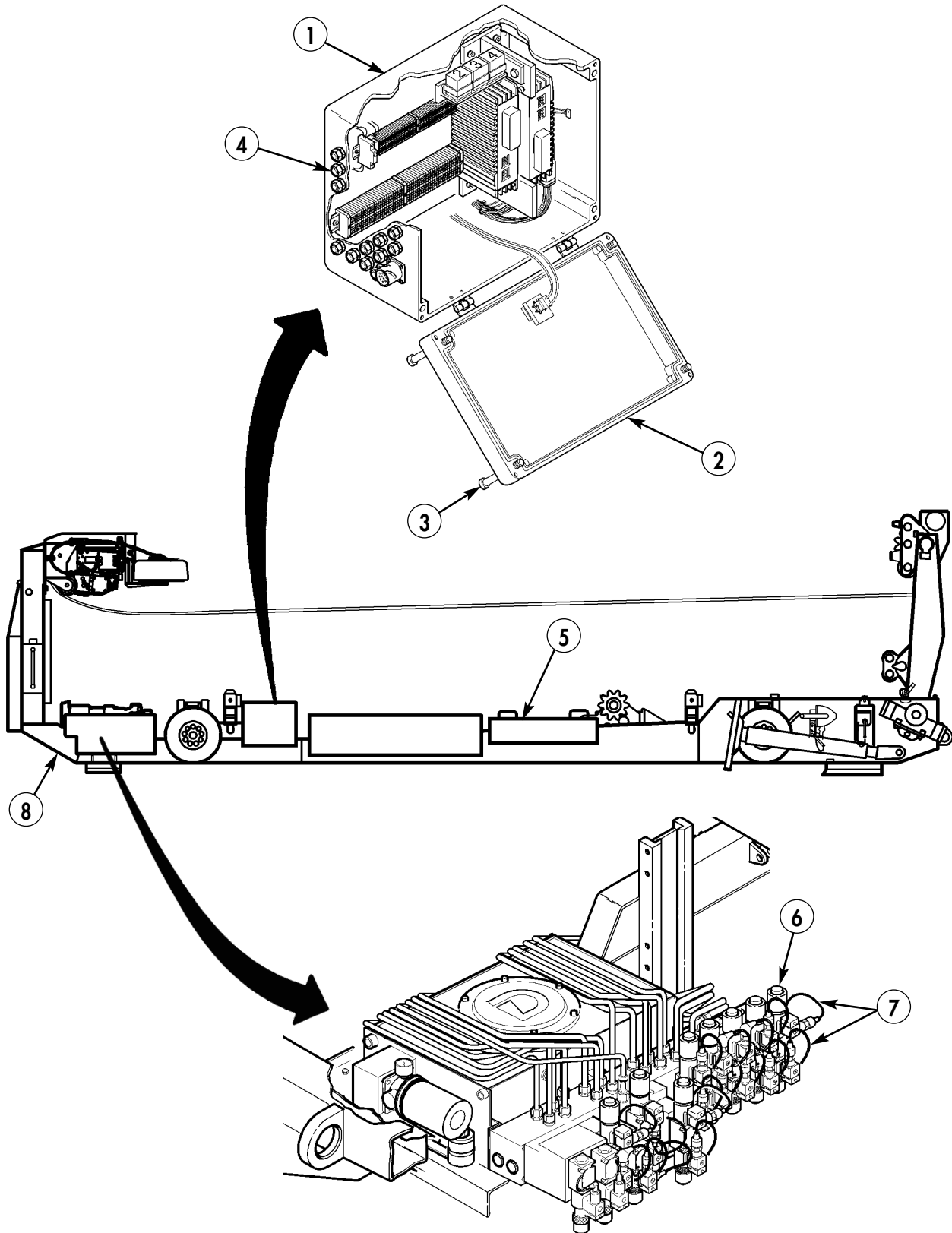
INSTALLATION

NOTE

Install all electrical leads as noted at removal.

1. Connect electrical wire (7) to component (6) and route electrical wire (7) along pallet (8) and frame rail (5) to electrical box (1).
2. Install tie-down straps as necessary along frame rail (5) to secure electrical wire (7).
3. Install electrical wire (7) through nut (4) into electrical box (1).
4. Connect electrical leads to busbar inside electrical box (1). Refer to Electrical System Schematic WP 0122 00. Install tie-down straps as necessary. Tighten nut (4).
5. Close electrical box cover (2) and tighten four screws (3).
6. Connect battery ground cables. Refer to WP 0113 00.
7. Install bridge halves on bridge pallet. Refer to WP 0018 00.

PALLET WIRING AND HARNESSES REPLACEMENT (Contd)



PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**PALLET MAIN POWER SWITCH REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Bridge halves removed from bridge pallet.
Refer to WP 0018 00.
Battery ground cable disconnected.
Refer to WP 0113 00.

PALLET MAIN POWER SWITCH REPLACEMENT (Contd)

REMOVAL

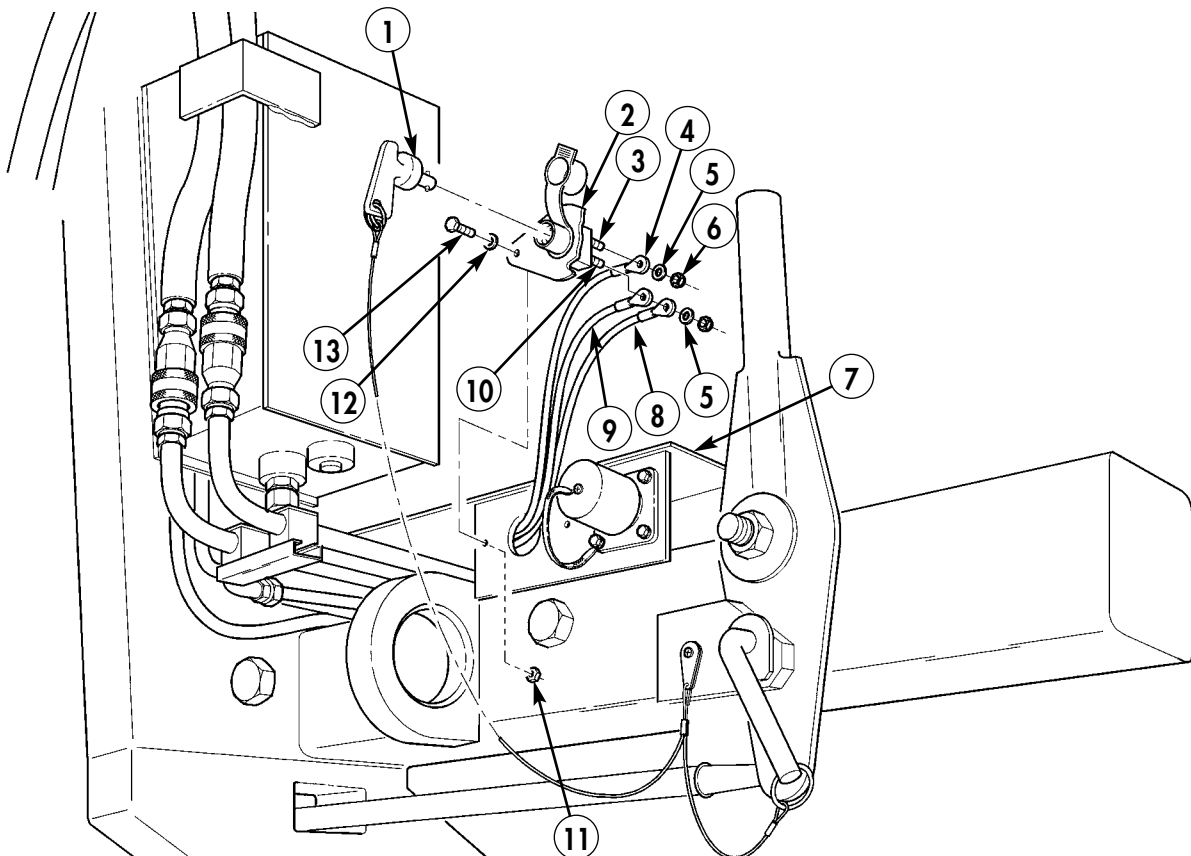
NOTE

Tag all electrical cables prior to removal for installation.

1. Ensure key (1) is in OFF position, and remove key (1) from main power switch (2).
2. Remove two nuts (11), screws (13), washers (12), and main power switch (2) from pallet frame (7).
3. Remove nut (6), washer (5), and negative battery cable (4) from top terminal (3) of main power switch (2).
4. Remove nut (6), washer (5), Launch Power Unit (LPU) negative cable (9), and jumper cable (8) from bottom terminal (10) of main power switch (2).

INSTALLATION

1. Connect LPU negative cable (9) and jumper cable (8) on bottom terminal (10) with washer (5) and nut (6).
2. Connect battery negative cable (4) to top terminal (3) of main power switch (2) with washer (5) and nut (6).
3. Install main power switch (2) on pallet frame (7) with two washers (12), screws (13), and nuts (11).
4. Connect battery ground cable. Refer to WP 0113 00.
5. Install key (1) on main power switch (2).
6. Install bridge halves on bridge pallet. Refer to WP 0018 00.



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

NATO SLAVE RECEPTACLE REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0207 00)

Materials/Parts

Two lockwashers (WP 0199 00)
Gasket (WP 0199 00)

Equipment Condition

Bridge halves removed from bridge pallet.
Refer to WP 0018 00.
Battery ground cable disconnected.
Refer to WP 0113 00.

NATO SLAVE RECEPTACLE REPLACEMENT (Contd)

REMOVAL

WARNING

Ensure battery ground cable is disconnected or damage to equipment or injury to personnel may result.

NOTE

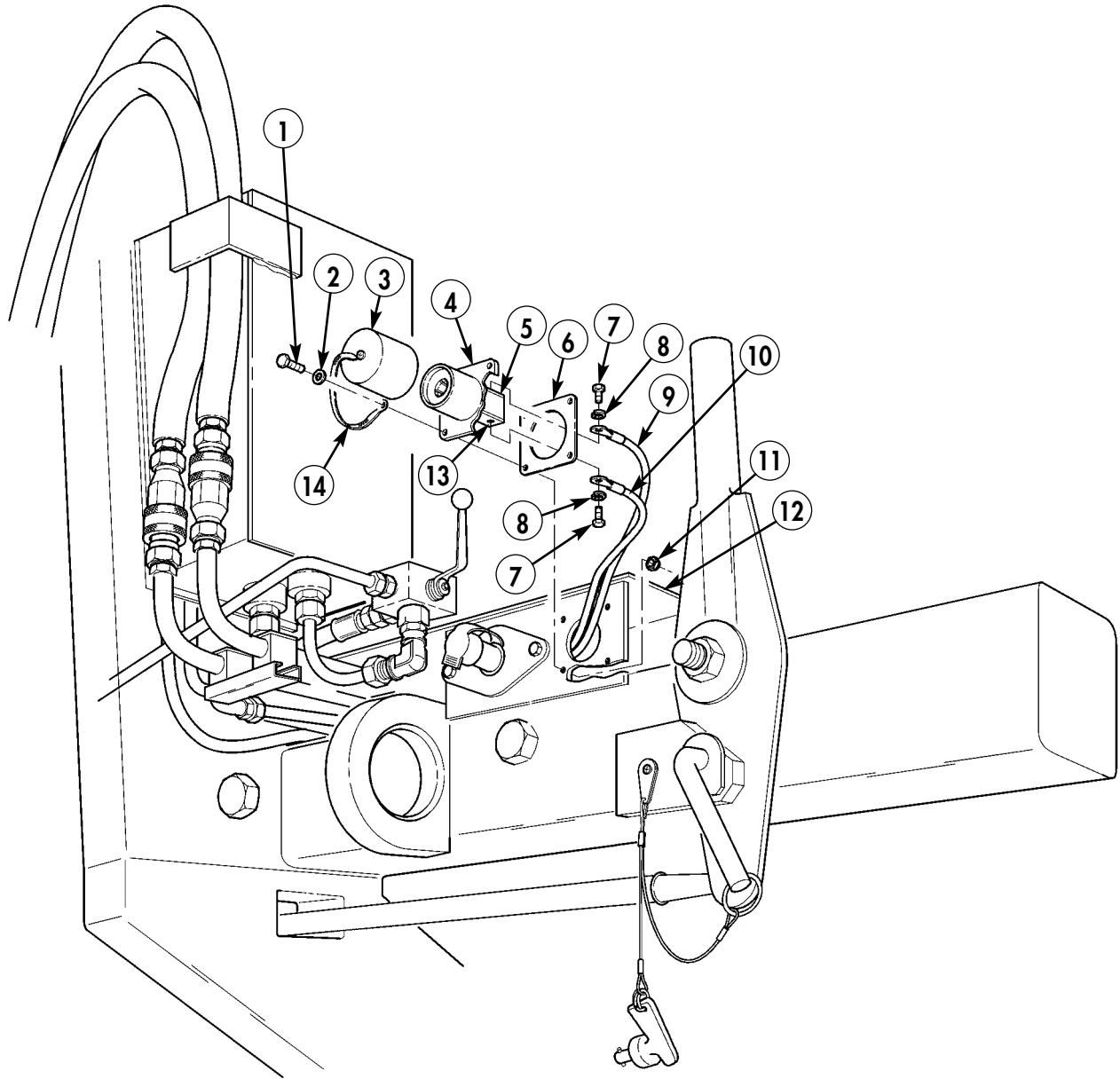
Tag all electrical cables and terminals for installation.

1. Remove screw (7), lockwasher (8), and Launch Power Unit (LPU) starter positive cable (9) from top terminal (5) of NATO slave receptacle (4). Discard lockwasher (8).
2. Remove screw (7), lockwasher (8), and main power switch negative jumper cable (10) from bottom terminal (13) of NATO slave receptacle (4). Discard lockwasher (8).
3. Remove four nuts (11), screws (1), washers (2), lanyard (14) with attached cover (3), NATO slave receptacle (4), and gasket (6) from pallet frame (12). Discard gasket (6).

INSTALLATION

1. Install NATO slave receptacle (4) on pallet frame (12) with new gasket (6), lanyard (14) with attached cover (3), four washers (2), screws (1), and nuts (11).
2. Connect main power switch negative jumper cable (10) on bottom terminal (13) of NATO slave receptacle (4) with new lockwasher (8) and screw (7).
3. Connect LPU starter positive cable (9) to top terminal (5) with new lockwasher (8) and screw (7).
4. Connect battery ground cable. Refer to WP 0113 00.
5. Install bridge halves on bridge pallet. Refer to WP 0018 00.

NATO SLAVE RECEPTACLE REPLACEMENT (Contd)



PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**LIMIT SWITCHES MAINTENANCE
REMOVAL, INSTALLATION, ADJUSTMENT**

INITIAL SETUP:**Tools and Special Tools**Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)**Materials/Parts**Grease (Item 8, WP 0205 00)
Four locknuts (WP 0157 00)
Gasket (WP 0157 00)
Gasket (WP 0157 00)
O-ring (WP 0157 00)

LIMIT SWITCHES MAINTENANCE (Contd)

REMOVAL

NOTE

Removal and installation of all limit switches are performed the same way. Front A-frame mounted KA5 limit switch is shown.

Tag all electrical leads for installation.

1. Remove two screws (7), cover (6), and gasket (5) from limit switch housing (4). Discard gasket (5).
2. Disconnect electrical leads (14) from limit switch (3).
3. Loosen nut (13) and remove nut (13), rubber grommet (12), and electrical cable (15) from fitting (11) and limit switch housing (4).

NOTE

Mark position of limit switch before removal for installation.

4. Remove four locknuts (17), washers (16), screws (8), washers (9), and limit switch (3) from bracket (2) on A-frame (1). Discard locknuts (17).
5. If damaged, remove fitting (11) and O-ring (10) from limit switch housing (4). Discard O-ring (10).
6. If electrical cable (15) is damaged, remove tiedown straps and electrical cable hook to electrical box, and disconnect electrical leads from KA5 terminals inside box. Refer to electrical system schematic WP 0122 00.
7. If removing flexible rod (18) from limit switches K1 through K4, mark position of flexible rod housing (20) before removal.
8. Remove four screws (19), housing (20), and gasket (21) from switch housing (4). Discard gasket (21).

INSTALLATION

1. If removed, install flexible rod housing (20) as marked at removal on limit switch housing (4) with new gasket (21) and four screws (19).
2. If electrical cable (15) was removed, refer to electrical system schematic WP 0122 00 for electrical lead connections. Route electrical cable (15) up to KA5 limit switch and secure with tiedown straps as necessary.

NOTE

Apply a light coat of grease to O-ring and rubber grommet at installation.

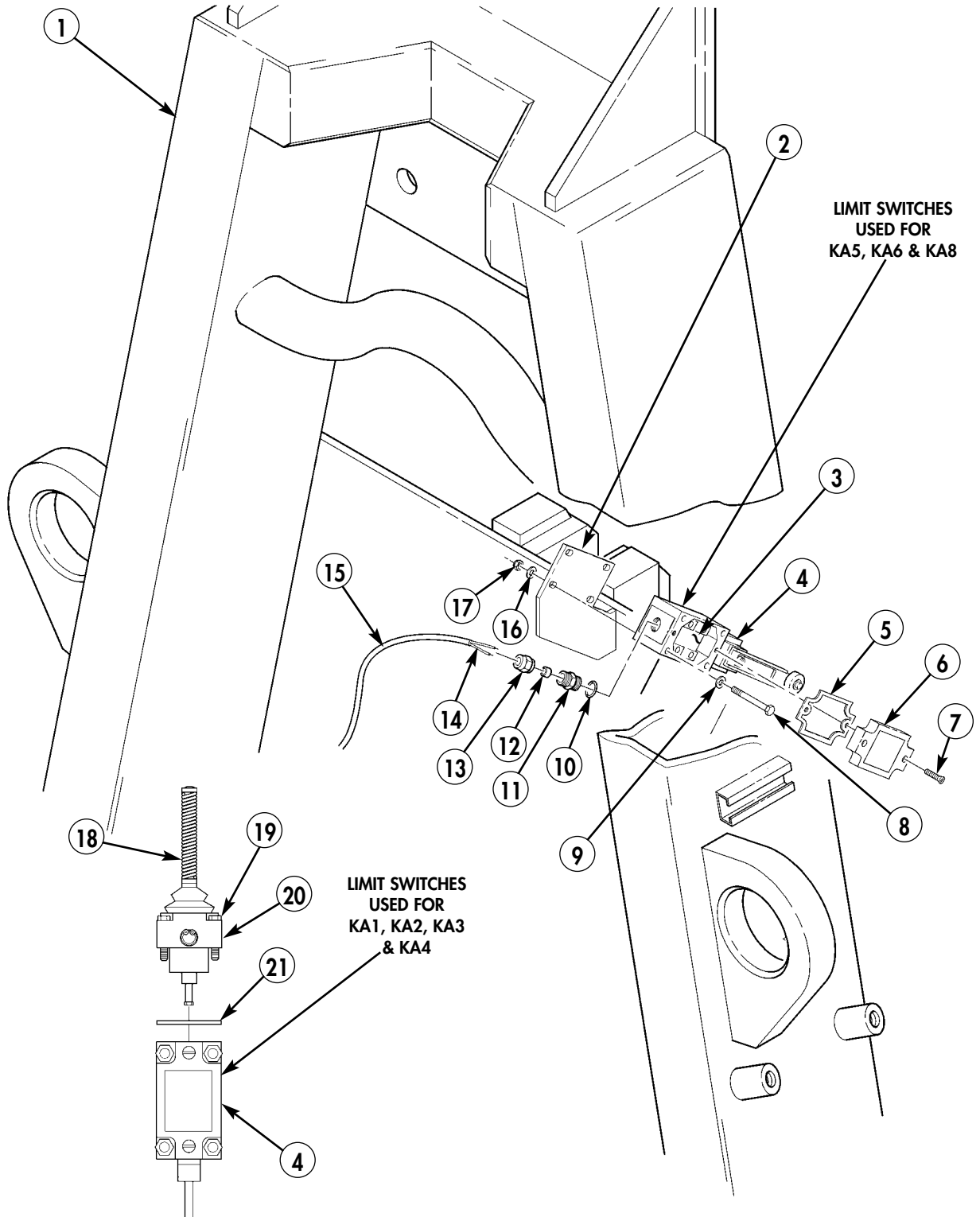
3. If removed, install new O-ring (10) and fitting (11) on limit switch housing (4).

NOTE

Install limit switch as marked at removal.

4. Install limit switch (3) on bracket (2) of A-frame (1) with four washers (9), screws (8), washers (16), and new locknuts (17).
5. Install nut (13), rubber grommet (12), and electrical cable (15) on fitting (11) of limit switch housing (4) and tighten nut (13).
6. Connect electrical leads (14) to limit switch (3).
7. Install new gasket (5) and cover (6) on limit switch housing (4) with two screws (7).

LIMIT SWITCHES MAINTENANCE (Contd)



LIMIT SWITCHES MAINTENANCE (Contd)

ADJUSTMENT

NOTE

All limit switch arm levers on KA1 through KA4 are spring loaded and are not adjustable. Only the position of the lever and setting of the limit of travel on each limit switch may change.

Limit switches KA1 through KA4 are mounted down the center of the pallet and are spring lever type limit switches. These levers are not adjustable and are fixed in the straight up position.

1. KA1 Limit switch (2)

Adjust limit switch (2) so flexible rod (1) is in the straight up position when rod (1) contacts limit switch bracket on underside of bridge launch beam as bridge half moves to rear during launch or forward during retrieval.

NOTE

Limit switches KA2, KA3, and KA4 have cable gaurds mounted next to switches to prevent winch wire rope cable from getting caught under switches.

2. KA2 Limit switch (2)

a. Adjust limit switch arm (2) so flexible rod (1) same contacts limit switch bracket on underside of bridge launch beam as bridge half moves to rear during launch or forward during retrieval.

b. Limit switch KA2 switches operation of forward pin wheel drive to rear pin wheel drive during launch, and switches rear pin wheel drive to forward pin wheel drive during retrieval.

NOTE

Perform step 3 if adjusting limit switches KA3 and KA4.

3. Remove two screws (3) and cable guard bracket (4) from rear crossmember (5).

4. KA3 Limit switch (2)

a. Adjust limit switch (2) so flexible rod (1) same contacts limit switch bracket on underside of bridge launch beam as bridge half moves to rear during launch or forward during retrieval.

b. Limit switch KA3 stops lower bridge half at precoupling position before raising secondary boom during launch, and stops bridge half before lowering secondary boom during retrieval.

NOTE

Ensure KA4 is angled forward and does not contact pin on bridge launch beam.

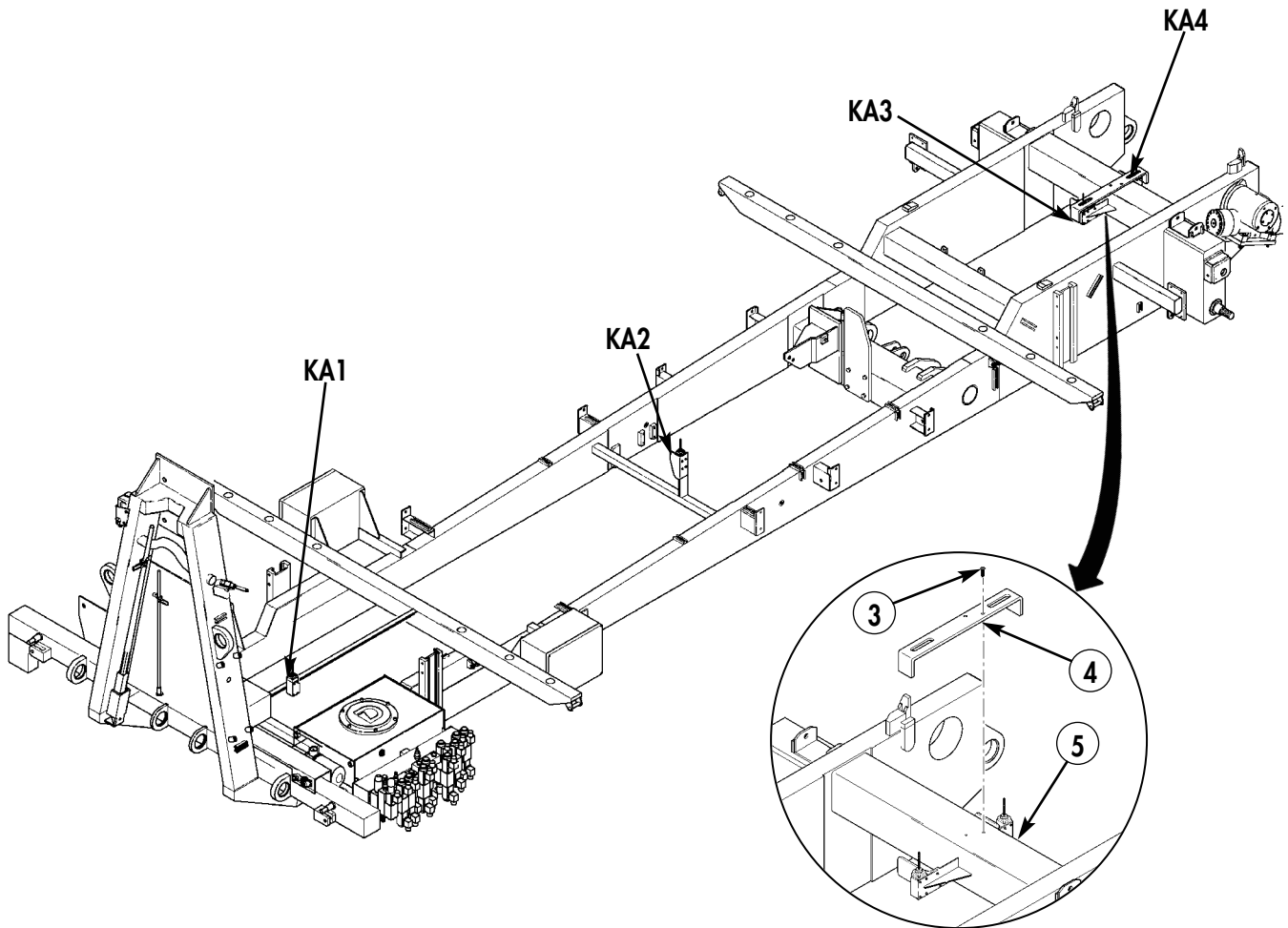
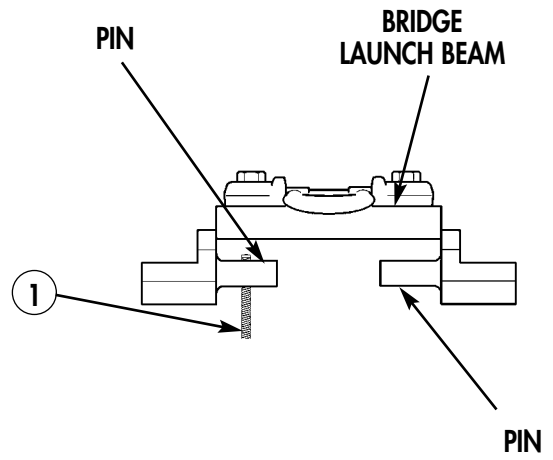
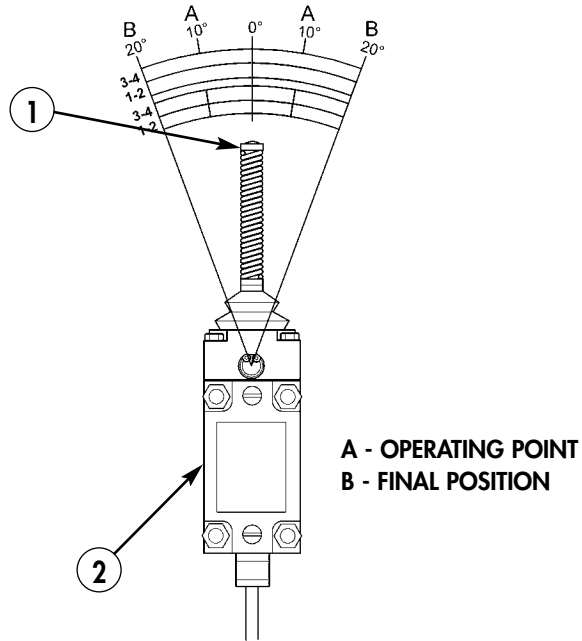
5. KA4 Limit switch (2)

a. Adjust limit switch (2) so flexible rod (1) same contacts limit switch bracket on underside of bridge launch beam as bridge half moves to rear during launch or forward during retrieval.

b. Limit switch KA4 works together with limit switch KA3 during retrieval to stop bridge halves, activate launch boom to raise bridge half to prestress upper coupling, where it is then stopped by the potentiometer, and lastly, stops bridge when driven toward pallet A-frame.

6. If removed, install cable guard bracket (4) or rear crossmember (5) with two screws (3).

LIMIT SWITCHES MAINTENANCE (Contd)



LIMIT SWITCHES MAINTENANCE (Contd)

ADJUSTMENT (Contd)

NOTE

All limit switch arm levers on KA5, KA6, and KA8 are adjusted the same way. Only the position of the lever and setting of the limit of travel on each limit switch may change.

Limit switch KA5 is mounted on A-frame and the lever is adjusted in the straight position lined with switch housing.

5. KA5 Limit switch (3)
 - a. Adjust limit switch arm (2) so roller (1) contacts ramp edge of upper bridge half when lifted by winch.
 - b. Limit switch KA5 stops winch when lifting upper bridge half to upper position.

NOTE

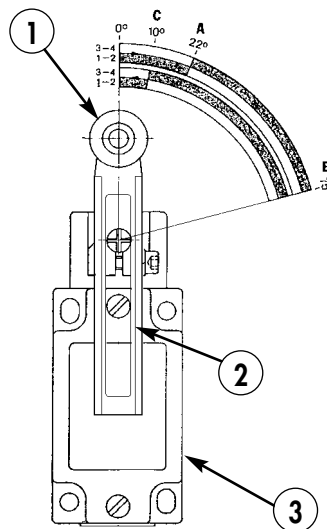
Limit switch KA6 must be adjusted to 8° upwards position from the straight position.

6. KA6 Limit switch (3)
 - a. Adjust limit switch arm (2) so roller (1) contacts secondary boom arm when secondary boom arm is fully lowered.
 - b. Limit switch KA6 stops secondary boom, activates launch boom to go up during launch then stops secondary boom, and lastly, activates launch boom to lower during retrieval.
 - c. Check adjustment by carrying out launch step L13 (first stop of secondary boom) and retrieve step 10 (first stop of secondary boom must be within 6.0 10.0 in. (160–260 mm) from X position).

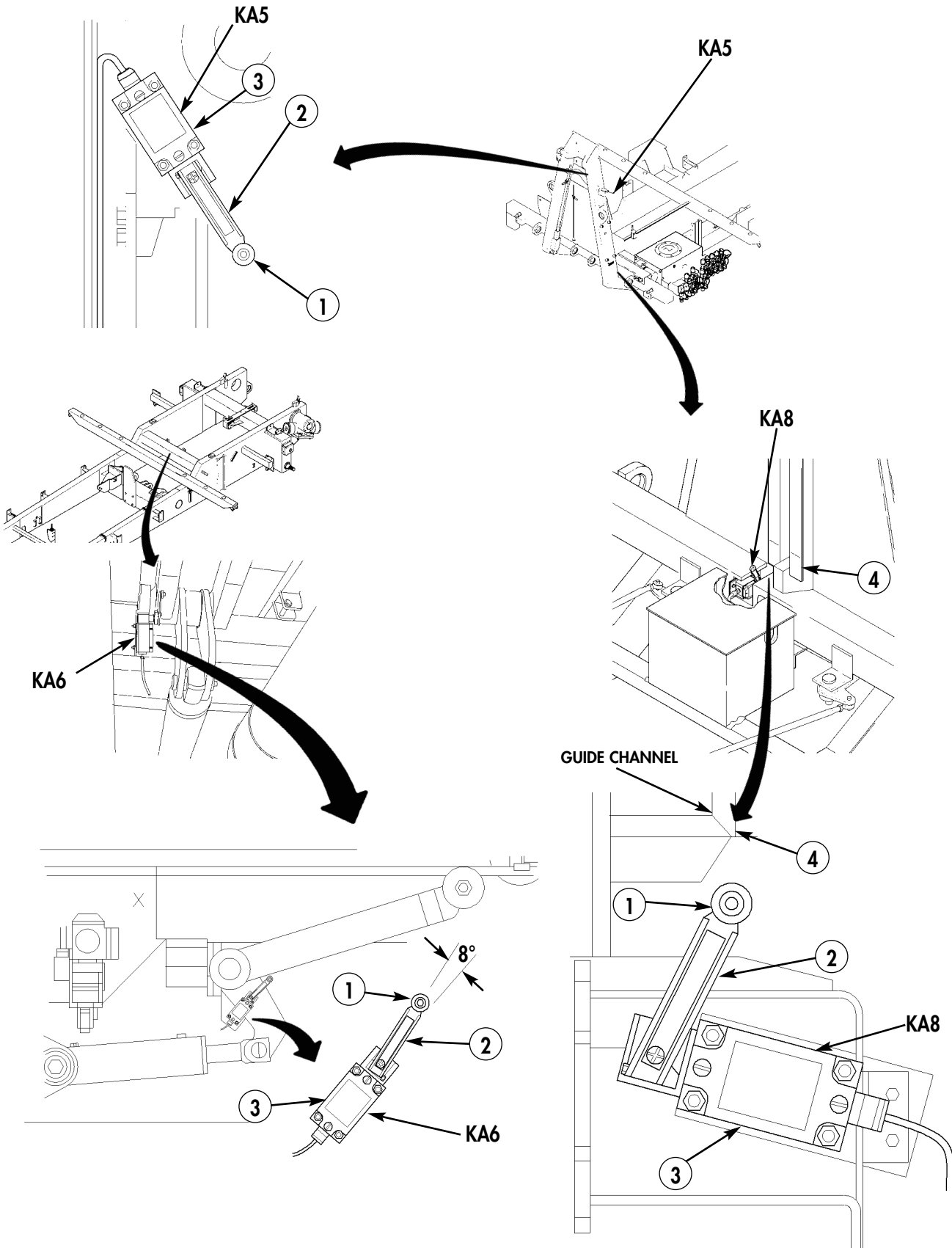
NOTE

Limit switch KA8 must be adjusted with lever flush with inner edge of the guide channel on the A-frame. Limit switch KA7 is no longer used and has been removed.

7. KA8 Limit switch (3)
 - a. Adjust limit switch arm (2) so roller (1) contacts ramp edge of bridge half when it contacts pallet A-frame channel (4).
 - b. Limit switch KA8 stops bridge at base of pallet A-frame and then activates winch to lift upper bridge half until it contacts limit switch KA5.



LIMIT SWITCHES MAINTENANCE (Contd)



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**WINCH WIRE ROPE AND HOOK CLIP REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Rivet (WP 0160 00)

WINCH WIRE ROPE AND HOOK CLIP REPLACEMENT (Contd)

REMOVAL

WARNING

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

NOTE

Perform step 1 and 2 if only hook clip is being replaced.

1. Using emergency switch or remote control unit (RCU) LAUNCH STEP L18-H to operate winch, pay-out wire rope (1) until hook (13) can be disconnected from launch beam lifting eye and swivel block.
2. Remove rivet (10), hook clip (11), and spring (12) from hook (13). Discard rivet (10).

NOTE

Perform steps 3 through 6 for replacement of wire rope.

3. Using emergency switch or remote control unit (RCU) LAUNCH STEP L18-H to operate winch, pay-out wire rope (1) until end (2) of wire rope (1) is clear of winch access cover guide rollers (3).
4. Remove screw plug (5) from wire rope end (2) and install pilot guide rope (4) to wire rope end (2).
5. Pay-out wire rope (1) from winch (7) as pilot guide rope (4) is being fed through guide rollers (6) and pulleys by hand.
6. After wire rope (1) is cleared from rope outlet (8) on winch (7), remove wire rope (1) from pilot guide rope (4).

INSTALLATION

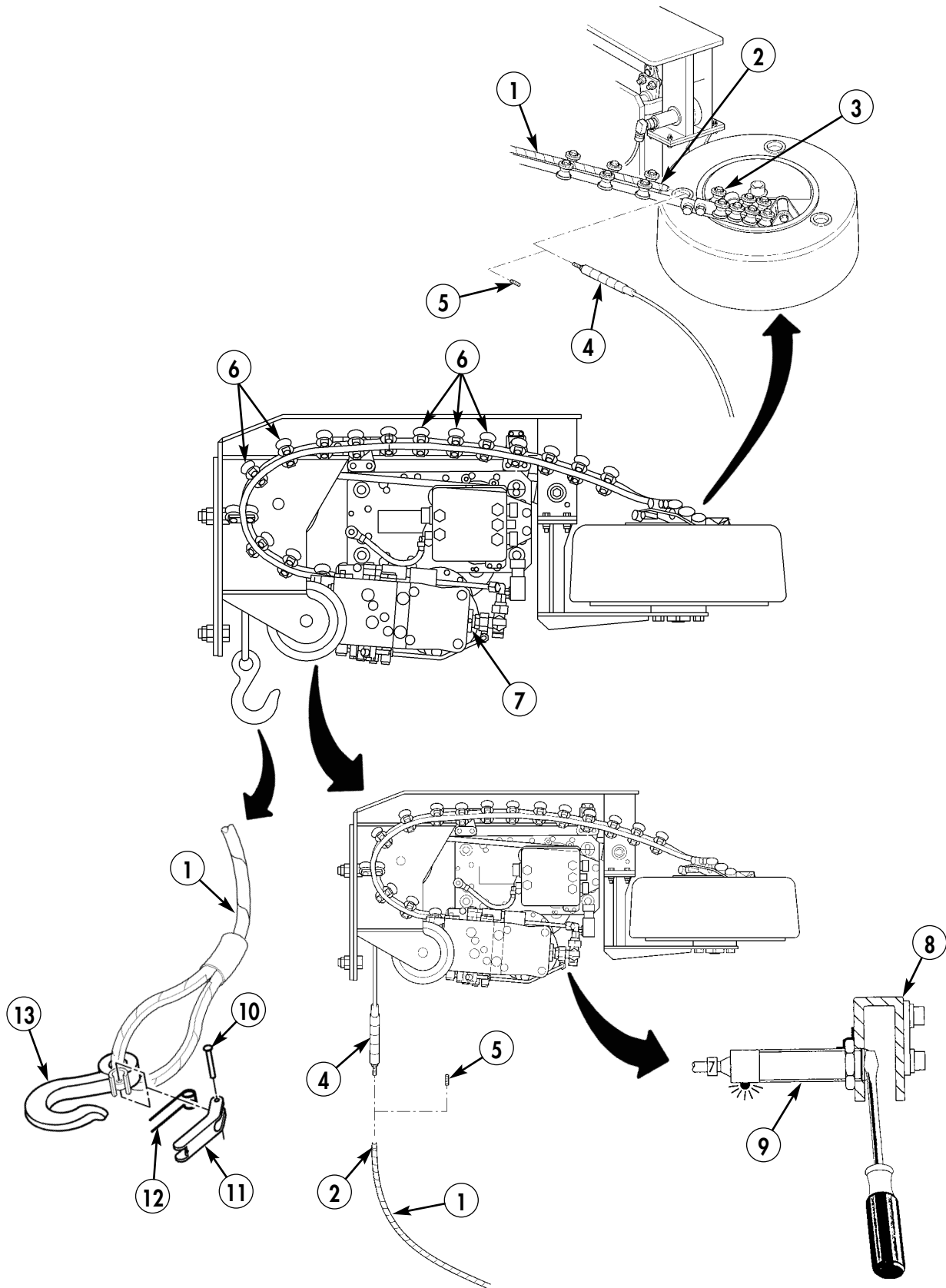
1. Remove screw plug (5) from new wire rope end (2) and install end (2) on pilot guide rope (4).
2. Place a metal screwdriver or equivalent between sensor (9) and rope outlet (8) to show that wire rope (1) is in place.
3. Using RCU RETRIEVAL STEP R5-H or emergency switch, pay-in wire rope (1) and pull pilot rope (4) at same time until wire rope (1) is in place over sensor (9) on rope outlet (8).
4. Pay-in wire rope (1), pay attention that new wire rope (1) is in pulleys and guide rollers (6).
5. Stop paying in wire rope (1) as soon as wire rope (1) is at last guide roller (6) before winch access cover guide rollers (3).
6. Remove pilot rope (4) from wire rope end (2) and install screw plug (5) on wire rope end (2).
7. Pay-in wire rope (1) and guide wire rope end (2) through winch access cover guide rollers (3) and into stowage drum.

NOTE

Perform step 8 if hook clip was removed.

8. Install spring (12) and clip (11) on hook (13) with new rivet (10).
9. Using RCU RETRIEVAL STEP R5-H or emergency switch, pay-in wire rope (1) until hook (13) can be connected to launch beam lifting eye and swivel block.

WINCH WIRE ROPE AND HOOK CLIP REPLACEMENT (Contd)



END OF WORK PACKAGE

0057 00-3/4 blank

PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**WINCH GUIDE ROLLERS AND ROPE TRACK REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)**Materials/Parts**Sealing compound (Item 17, WP 0205 00)
Two locknuts (WP 0159 00)

WINCH GUIDE ROLLERS AND ROPE TRACK REPLACEMENT (Contd)

REMOVAL

WARNING

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

NOTE

If removing rope track for reasons other than replacement, pay out wire rope past rope track and stop before end reaches stowage drum.

1. Remove nuts (10), screws (14), guide rollers (12), and spacers (13) from brackets (11) on rope track (9).
2. Remove wire rope (8) from between guide rollers (16) and (12).
3. Remove two locknuts (21), screws (1), and washers (2) from rope track bracket (22) and support bracket (26). Discard locknuts (21).
4. Loosen jamnuts (7) and (19) and screws (6) and (20) on lower rope guide bracket (25) and rope inlet bracket (5).
5. Slide ends of rope track (9) out of rope inlet bracket (5) and lower rope guide bracket (25), and remove rope track (9) from wire rope (8) and winch assembly (4).
6. Remove two screws (23), washers (24), and lower rope guide bracket (25) from mounting plate (3) on winch assembly (4).
7. Remove two nuts (18), screws (15), and guide rollers (16) from lower rope guide bracket (25).

NOTE

Note position of rollers with spacer washer and spacer for installation.

8. Remove two nuts (18), screws (15), and rollers (16), one with spacer (17) and one with spacer washer (26).

INSTALLATION

NOTE

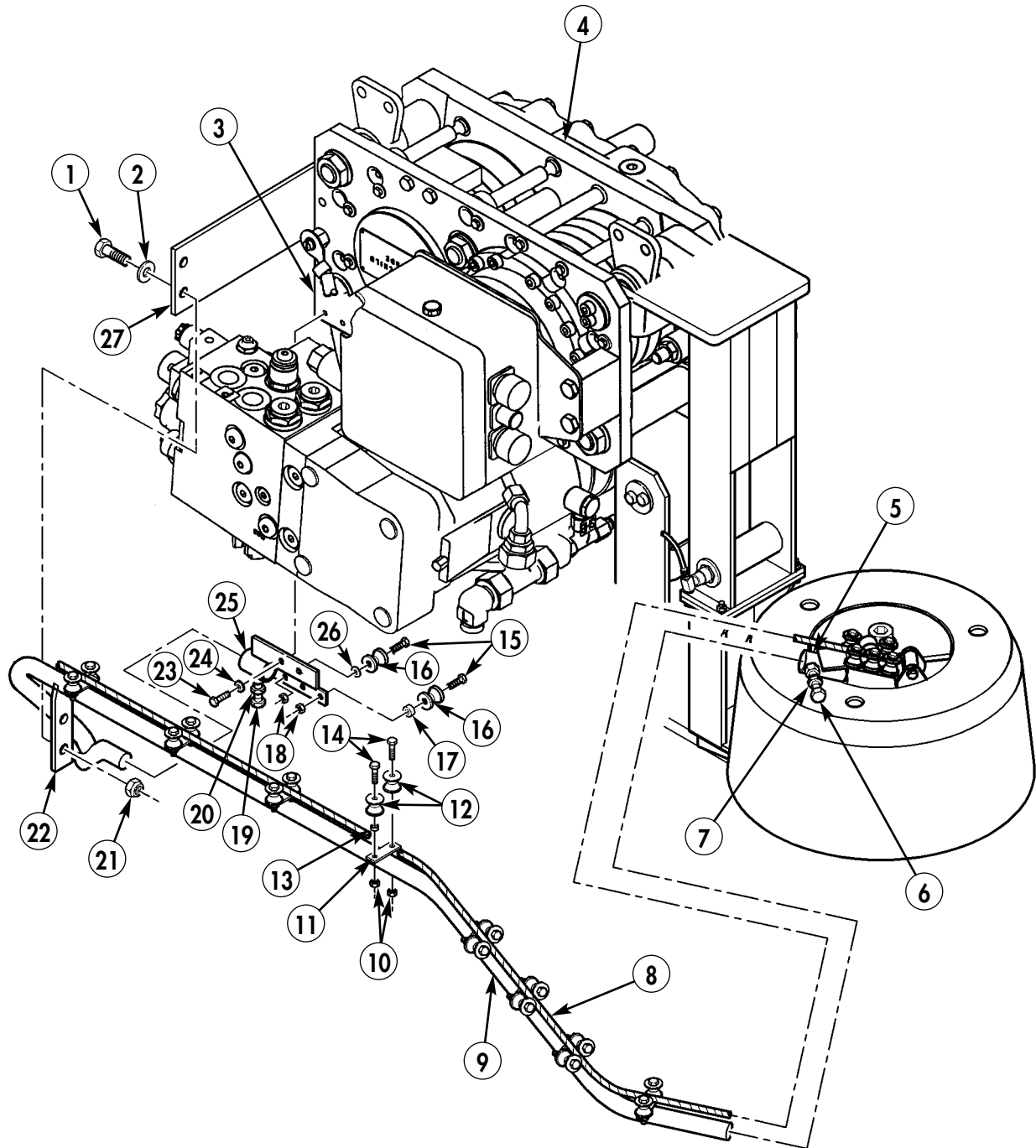
Apply a light coat of sealing compound to threads of all screws at installation.

Wire rope must be positioned between guide rollers at installation.

Install rollers with spacer and spacer washer as noted at removal.

1. Position wire rope (8) between guide rollers (16) and (12).
2. Install spacer (17), spacer washer (26), and two guide rollers (16) on lower rope guide bracket (25) with two screws (15) and nuts (18).
3. Install two guide rollers (16) on lower rope guide bracket (25) with two screws (15) and nuts (18).
4. Install lower rope guide bracket (25) on mounting plate (3) with two washers (24) and screws (23).
5. Slide ends of rope track (9) into rope lower guide bracket (25) and rope inlet bracket (5), and tighten screws (6) and (20) and jamnuts (7) and (19).
6. Install rope track bracket (22) on support bracket (27) with two washers (2), screws (1), and new locknuts (21).
7. Install spacers (13) and guide rollers (12) on brackets (11) on rope track (9) with screws (14) and nuts (10).

WINCH GUIDE ROLLERS AND ROPE TRACK REPLACEMENT (Contd)



PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**WINCH STOWAGE DRUM ROPE INLET COVER AND GUIDE ROLLERS REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Wire rope payed out of stowage drum.
Refer to WP 0057 00.

Materials/Parts

Sealing compound (Item 17, WP 0205 00)
Grease (Item 8, WP 0205 00)

WINCH STOWAGE DRUM ROPE INLET COVER AND GUIDE ROLLERS REPLACEMENT (Contd)

REMOVAL

1. Loosen jamnut (17) and screw (16) on rope guide bracket (2).
2. Remove screw (5), washer (6), and stowage drum rope inlet cover (7) from axle drive motor (10), and slide rope guide bracket (2) off rope track end (1).

NOTE

Perform steps 3 and 4 if replacing rope inlet cover.

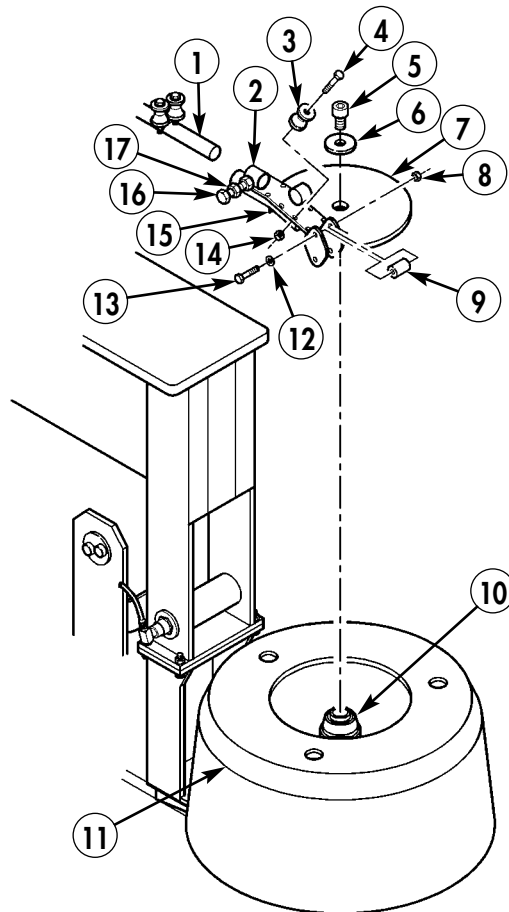
3. Remove seven nuts (14), screws (4), and guide rollers (3) from bracket (1) on inlet cover (7).
4. Remove two nuts (8), screws (13), washers (12), and rollers (9) from bracket (15).

INSTALLATION

NOTE

Apply a light coat of sealing compound to threads of all screws at installation. Apply a light coat of grease to inside of rollers at installation.

1. Install two rollers (9) on bracket (15) with two washers (12), screws (13), and nuts (8).
2. Install seven guide rollers (3) on bracket (15) with seven screws (4) and nuts (13).
3. Slide rope inlet bracket (2) on end of rope track (1), and install rope inlet cover (7) on stowage drum (11) and axle drive motor (10) with washer (6) and screw (5).
4. Tighten screw (16) and jamnut (17) on rope inlet bracket (2).
5. Pay wire rope through guide rollers into stowage drum. Refer to WP 0057 00.



PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**WINCH MOUNTING BRACKET PULLEYS REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Grease (Item 8, WP 0205 00)

Equipment Condition

Winch wire rope disconnected from launch
beam lifting eye and swivel block.
Refer to TM 5-5420-280-10.

WINCH MOUNTING BRACKET PULLEYS REPLACEMENT (Contd)

REMOVAL

NOTE

Both pulleys are removed and installed the same way. Lower pulley is shown and must be removed first.

1. Remove two snaprings (5) from pin (4).
2. Support pulley (3) and push pin (4) out of winch mounting bracket (1) and pulley (3).
3. Lower pulley (3) and remove from winch mounting bracket (1) and winch wire rope (2).
4. Repeat steps 1 through 3 to remove upper pulley (3).

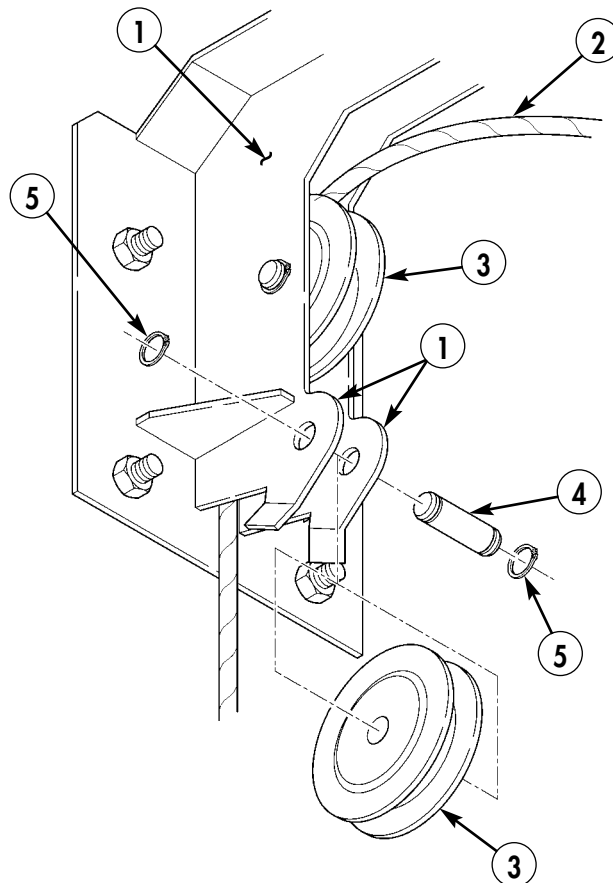
INSTALLATION

1. If upper pulley (3) was removed, install upper pulley (3) on winch mounting bracket (1) with winch wire rope (2) in top groove of pulley (3).

NOTE

Apply a light coat of grease to pins at installation.

2. Support pulley (3) and push pin (4) through winch mounting bracket (1) and pulley (3).
3. Install two snaprings (5) on pin (4).
4. Install bottom pulley (3) on winch mounting bracket (1) with pin (4) and two snaprings (5).
5. Connect winch wire rope to launch beam lifting eye and swivel block. Refer to TM 5-5420-280-10.



PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

WINCH STOWAGE DRUM, MOUNTING BRACKET, AND AXLE UNIT REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Winch stowage drum rope inlet cover removed.
Refer to WP 0059 00.

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)
Four locknuts (WP 0159 00)
Four lockwashers (WP 0205 00)
Sealant (Item 16, WP 0205 00)
Sealing compound (Item 17, WP 0205 00)

WINCH STOWAGE DRUM, MOUNTING BRACKET, AND AXLE UNIT REPLACEMENT (Contd)

REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Have container ready to catch oil.

1. Disconnect hydraulic tube (10) from elbow (9).
2. Disconnect elbow (9) from adapter (8) on axle unit (5).
3. Remove adapter (8) from axle unit (5).
4. Remove six screws (7), washers (6), and stowage drum assembly (4) from mounting bracket (13).
5. Remove six screws (2), washers (3), and axle unit (5) from stowage drum (4).
6. Remove four locknuts (11), lockwashers (12), washers (13), screws (15), and mounting bracket (14) from winch frame (1). Discard locknuts (11) and lockwashers (12).

INSTALLATION

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

1. Install mounting bracket (14) on winch frame (1) with four screws (15), washers (13), new lockwashers (12), and locknuts (11).

NOTE

Apply a light coat of sealing compound to all threads of screws at installation.

2. Install axle unit (5) on stowage drum (4) with six washers (3) and screws (2). Tighten screws (2) to 11 lb-ft (15 N•m).
3. Install stowage drum assembly (4) on mounting bracket (13) with six washers (6) and screws (7). Tighten screws (7) to 24 lb-ft (32 N•m).

NOTE

Apply a light coat of sealant to threads of adapter at installation.

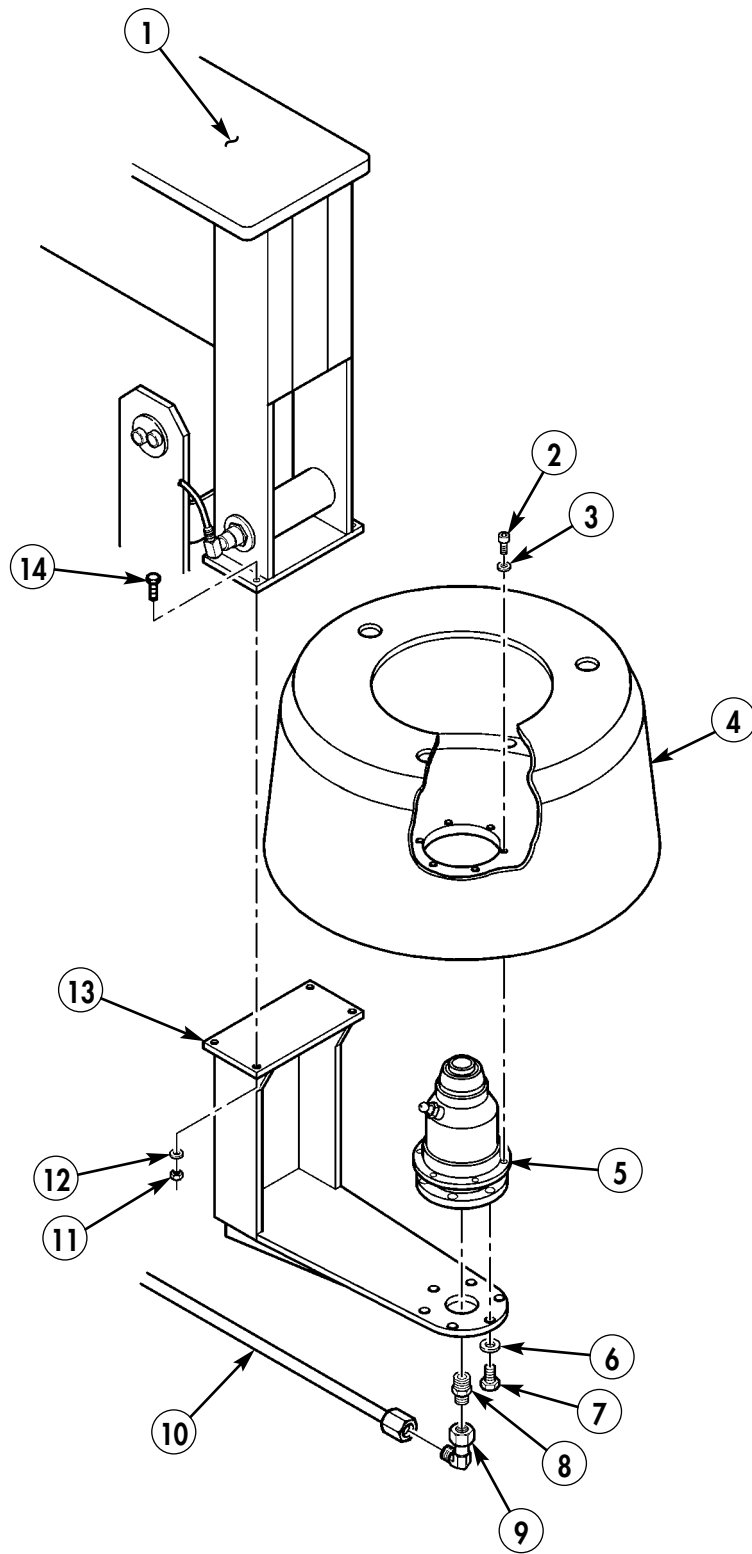
4. Install adapter (8) on axle unit (5).
5. Connect elbow (9) to adapter (8).

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

6. Connect hydraulic tube (10) to elbow (9).
7. Install winch stowage rope inlet cover. Refer to WP 0059 00.

WINCH STOWAGE DRUM, MOUNTING BRACKET, AND AXLE UNIT REPLACEMENT (Contd)



END OF WORK PACKAGE

0061 00-3/4 blank

PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**WINCH CONTROL VALVES AND SOLENOIDS REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Hydraulic oil (Item 12, WP 0205 00)
Two O-rings (WP 0159 00)

WINCH CONTROL VALVES AND SOLENOIDS REPLACEMENT (Contd)

REMOVAL

1. Loosen screw (8), disconnect electrical connector (7) from solenoid (5), and remove seal (6).
2. Remove nut (4), solenoid (5), and O-ring (9) from shaft (10) on control block (11). Discard O-ring (9).

NOTE

All control valves are replaced the same way. Only one control valve is shown.

Have container ready to catch oil.

3. Loosen screw (1), disconnect electrical connector (2) from solenoid (14) on control valve (13), and remove seal (15).
4. Remove four screws (3), control valve (13), and O-rings (12) from control block (11). Discard O-rings (12).

INSTALLATION

NOTE

Apply a light coat of hydraulic oil to O-rings at installation.

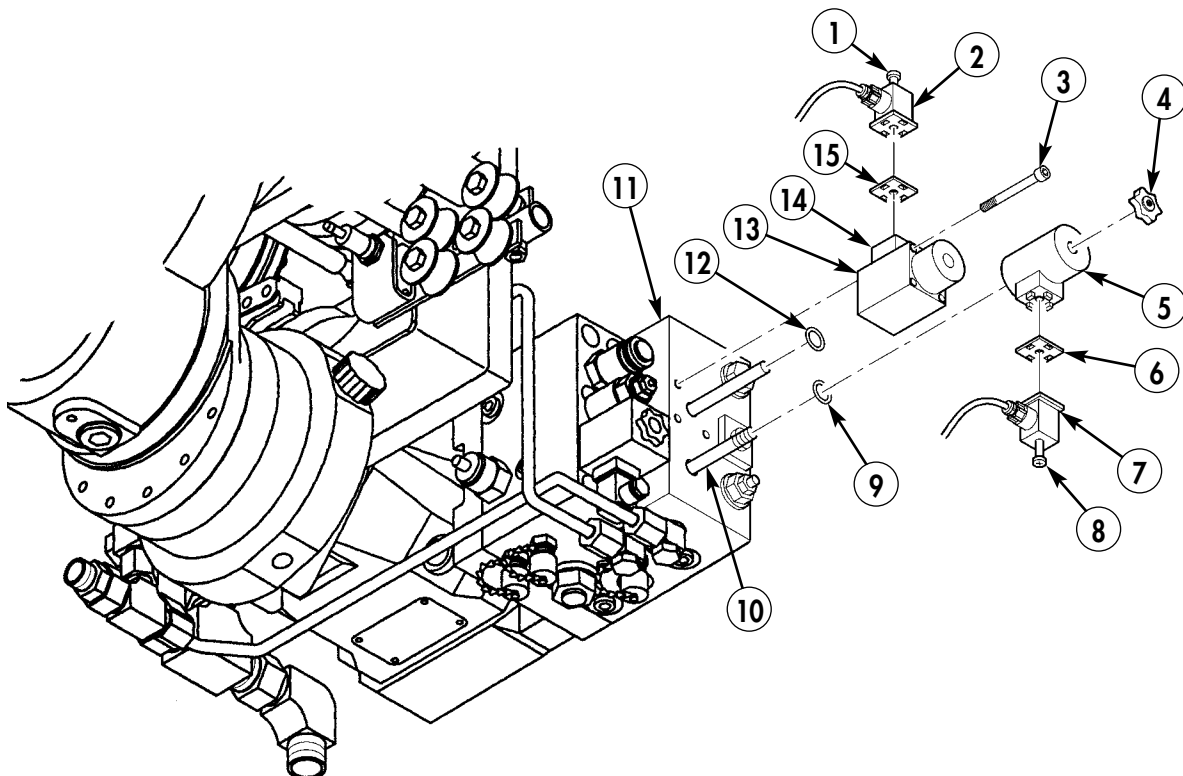
1. Install new O-rings (12) and control valve (13) on control block (11) with four screws (3).
2. Install seal (15) and electrical connector (2) on solenoid (14) and tighten screw (1).

NOTE

Apply a light coat of hydraulic oil to O-ring at installation.

Perform steps 3 and 4 if installing solenoid only on control block.

3. Install new O-ring (9) and solenoid (5) on shaft (10) of control block (11) with nut (4).
4. Install seal (6) and electrical connector (7) on solenoid (5) and tighten screw (8).



PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

WINCH CONTROL BLOCK AND ADAPTER PLATE REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)
Oil (Item 11, WP 0205 00)
Two O-rings (WP 0159 00)
Two O-rings (WP 0159 00)
Two seal washers (WP 0159 00)
Two seal washers (WP 0159 00)

Equipment Condition

Control valve connectors, pressure control valve connector, proportional valve connector, and pressure sensor connector disconnected (WP 0065 00).
Winch hydraulic hoses disconnected (WP 0069 00).

WINCH CONTROL BLOCK AND ADAPTER PLATE REPLACEMENT (Contd)

REMOVAL

CAUTION

Cap or plug all hoses, tubing, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag tubing for installation.

Have container ready to catch oil.

1. Disconnect brake tube (17) from swivel fitting (14) on control block (5).
2. Disconnect pump overflow tube (16) from swivel fitting (11) on control block (5).
3. Remove screw (7), four screws (6), control block (5), and two O-rings (4) from adapter plate (3). Discard two O-rings (4).
4. Remove eight screws (9), adapter plate (3), and two O-rings (2) from pump housing (1). Discard two O-rings (2).
5. Remove screw (12), seal washer (10), swivel fitting (11), and seal washer (10) from control block (5).
6. Remove screw (15), seal washer (13), swivel fitting (14), and seal washer (13) from control block (5).
7. If necessary, remove three pressure test fittings (8) from control block (5).

INSTALLATION

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

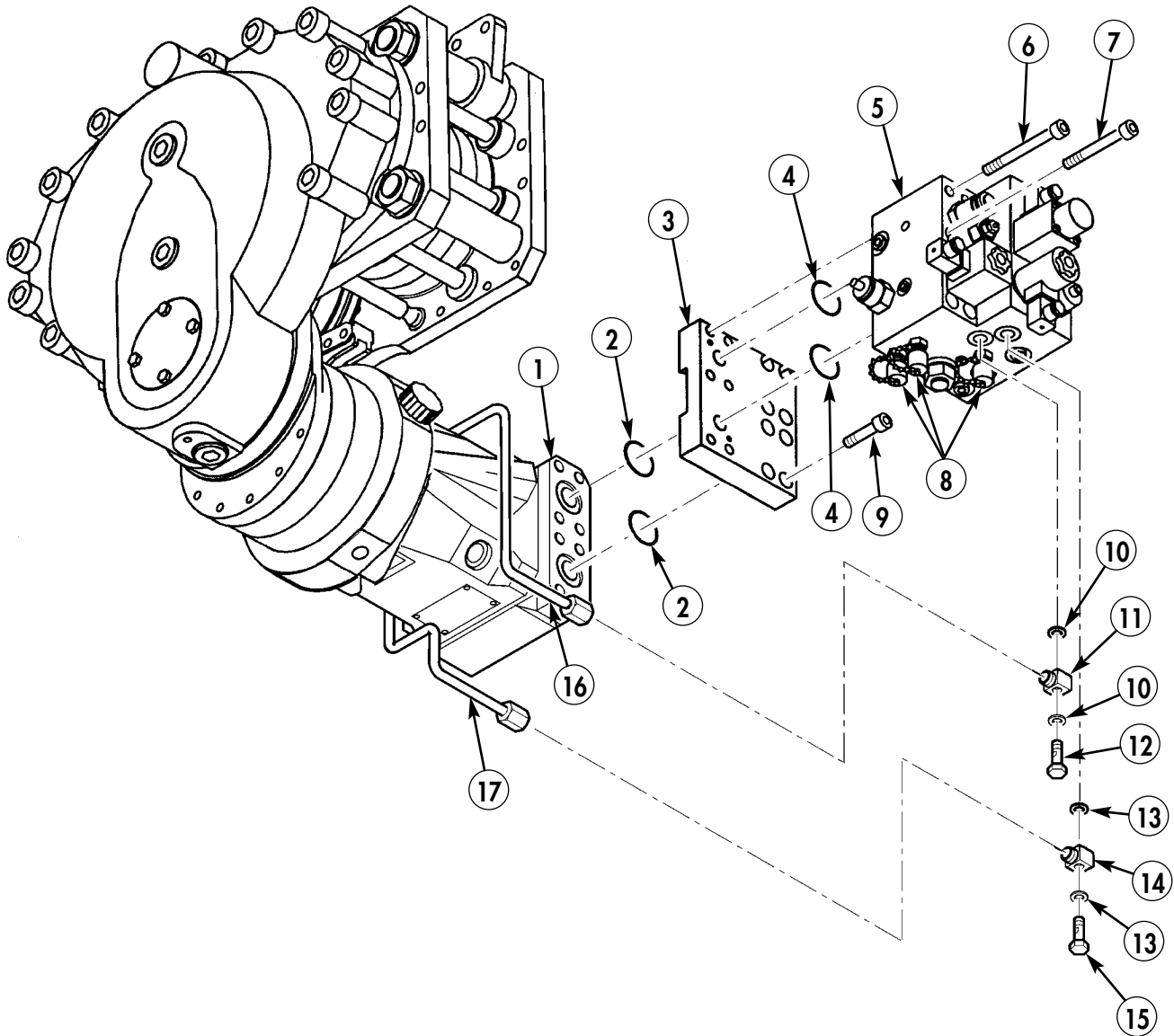
1. If removed, install three pressure test fittings (8) on control block (5).
2. Install seal washer (10), swivel fitting (11), and seal washer (10) on control block (5) with screw (12). Do not tighten screw (12) until pump overflow tube (16) is installed.
3. Install seal washer (13), swivel fitting (14), and seal washer (13) on control block (5) with screw (15). Do not tighten screw (15) until brake tube (17) is installed.

NOTE

Apply a light coat of oil to O-rings at installation.

4. Install adapter plate (3) on pump housing (1) with two new O-rings (2) and eight screws (9). Tighten screws (9) 27 lb-ft (37 N•m).
5. Install control block (5) on adapter plate (3) with two new O-rings (4), four screws (6), and screw (7). Tighten screws (6) and (7) 24 lb-ft (32 N•m).
6. Connect pump overflow tube (16) on swivel fitting (11) of control block (5) and tighten screw (12) on swivel fitting (11).
7. Connect brake tube (17) on swivel fitting (14) on control block (5) and tighten screw (15) on swivel fitting (14).
8. Connect winch hydraulic hoses. Refer to WP 0069 00.
9. Connect control valve connectors, pressure control valve connector, proportional valve connector, and pressure sensor connector. Refer to WP 0065 00.

WINCH CONTROL BLOCK AND ADAPTER PLATE REPLACEMENT (Contd)



PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

WINCH ROPE LOOP SENSOR AND FORCE TRANSMITTER REPLACEMENT REMOVAL, INSTALLATION, ADJUSTMENT

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)
Electrical insulation sheet
(Table 2, Item 1, WP 0206 00)

Materials/Parts

Sealing compound (Item 17, WP 0205 00)
Antiseize compound (Item 2, WP 0205 00)
Grease (Item 8, WP 0205 00)

WINCH ROPE LOOP SENSOR AND FORCE TRANSMITTER REPLACEMENT (Contd)

REMOVAL

NOTE

Perform steps 1 and 2 to remove winch rope loop sensor and steps 3 through 5 to remove force transmitter.

1. Disconnect rope loop sensor (2) and electrical connector (1) from main harness.
2. Loosen jamnut (3) and remove sensor (2) from sensor holder bracket (4) on rope guide (5).
3. Disconnect electrical connector (15) from force transmitter (9).
4. Remove two screws (11), washers (12), and slide locking bracket (13) out of slot (10) on transmitter (9).
5. Push transmitter (9) out of winch mounting bracket (8) and transmitter holder (14).

INSTALLATION

NOTE

Perform steps 1 through 3 to install force transmitter and steps 4 and 5 to install rope loop sensor.

Apply a light coat of grease to housing of force transmitter at installation.

1. Slide force transmitter (9) through winch mounting bracket (8) and transmitter holder (14) until slot (10) is aligned with locking bracket (13) screw holes.

NOTE

Apply a light coat of sealing compound to threads of screws at installation.

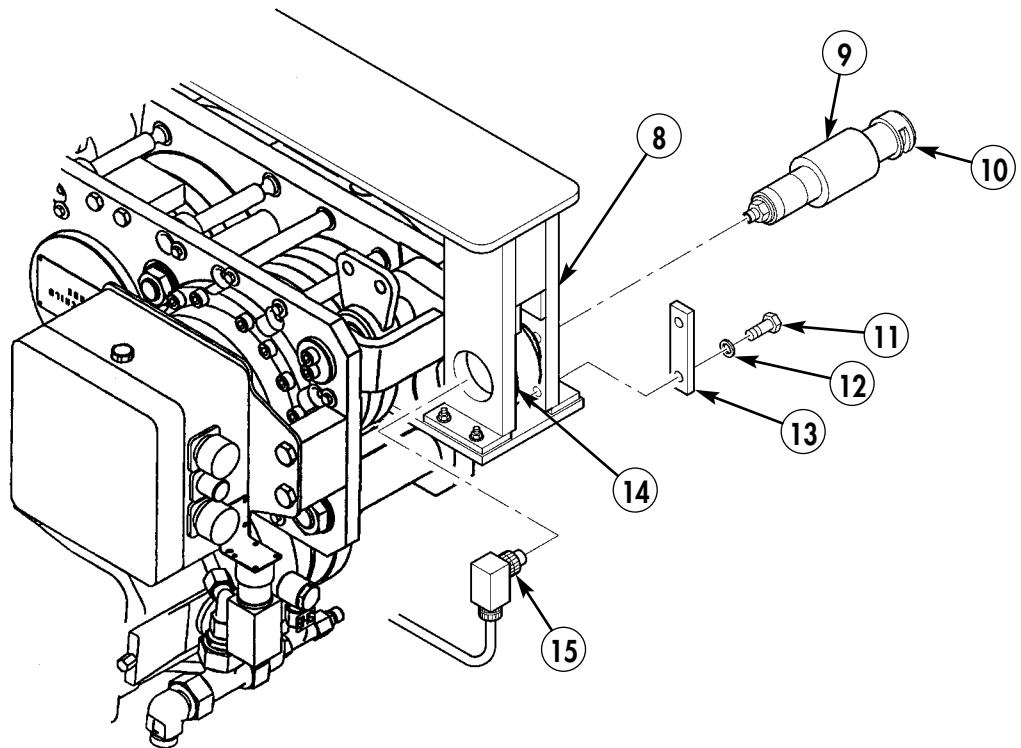
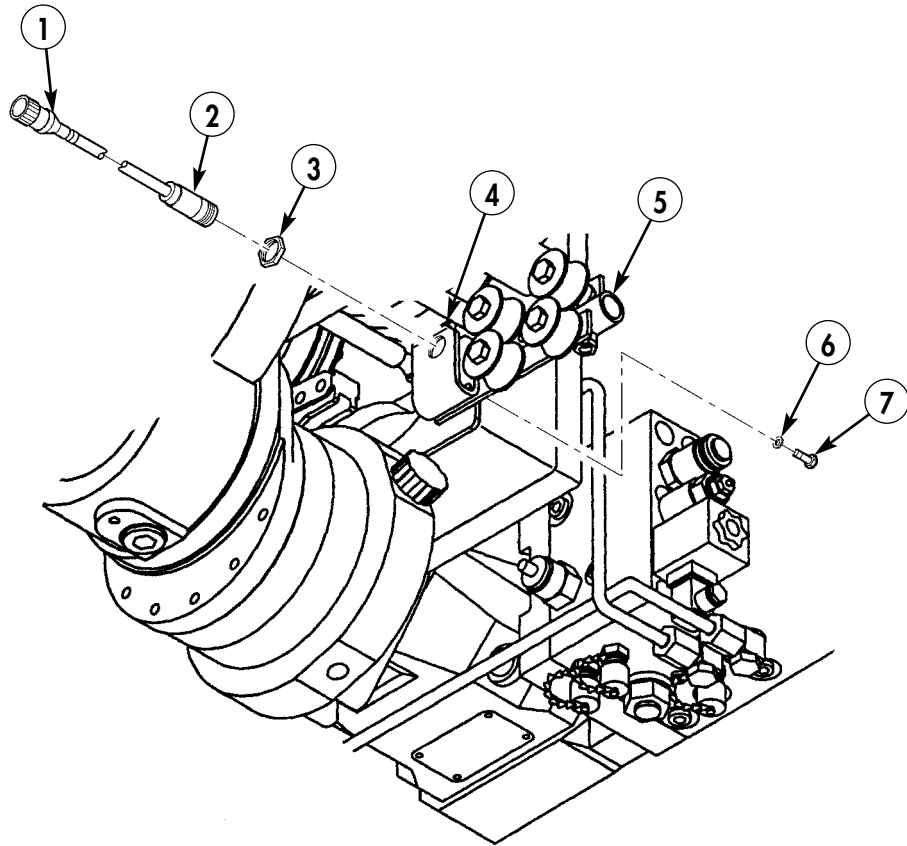
2. Position locking plate (13) in slot (10) on force transmitter (9), align screw holes and install two washers (12) and screws (11).
3. Connect electrical connector (15) to transmitter (9).

NOTE

Apply a light coat of antiseize compound to threads of sensor at installation.

4. Install rope loop sensor (2) on sensor holder bracket (4) finger tight.
5. Connect rope loop sensor (2) and electrical connector (1) to main harness and remove two screws (7), washers (6), and rope loop sensor bracket (4) to perform adjustment before tightening jamnut (3).

WINCH ROPE LOOP SENSOR AND FORCE TRANSMITTER REPLACEMENT (Contd)



WINCH ROPE LOOP SENSOR AND FORCE TRANSMITTER REPLACEMENT (Contd)

NOTE

It may be necessary to remove sensor holder bracket from winch assembly to adjust rope loop sensor.

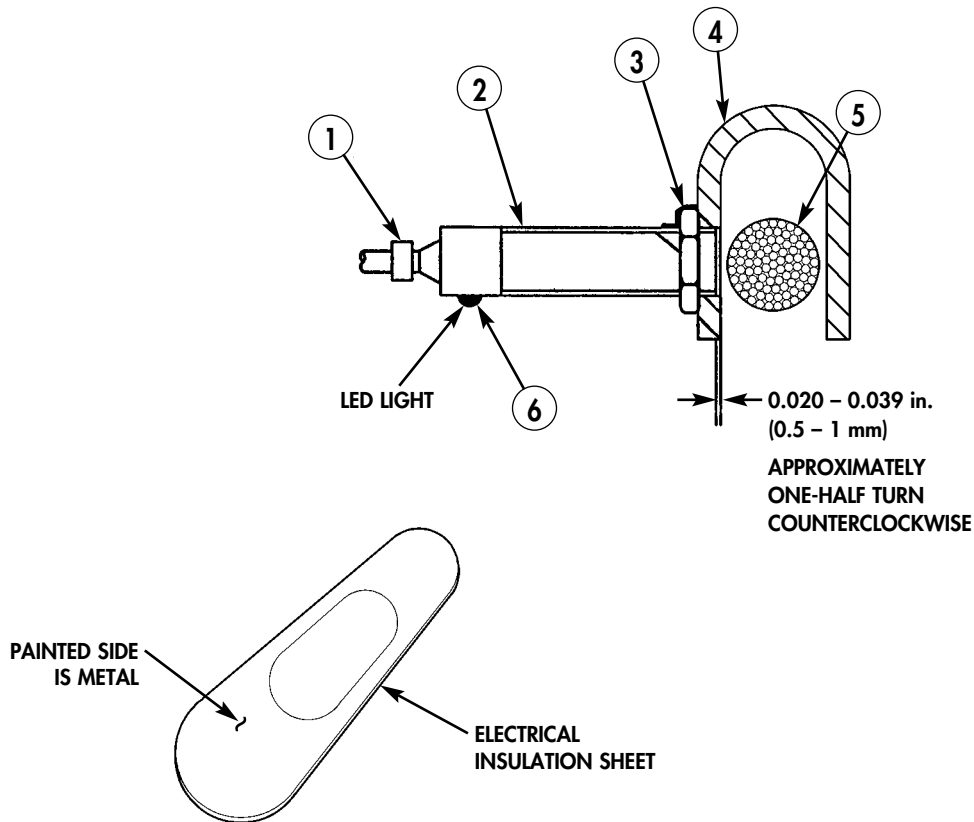
ADJUSTMENT

1. Adjust rope loop sensor (2) in until end of loop sensor (2) is flush with inside of sensor holder bracket (4) and then back out loop sensor (2) counterclockwise one-half turn. This will adjust sensor (2) back inside bracket (4) 0.020–0.039 in. (0.5–2 mm).
2. Power up bridge pallet. Refer to TM 5-5420-280-10.

NOTE

Metal feeler guage will not be used to adjust sensor.

3. Check that LED light (6) is lit on sensor (2), if so, place plastic side of electrical insulation sheet between wire rope (5) and sensor (2). If light goes out, sensor (2) is operating properly.
4. If LED light (6) is not lit on sensor (2), check for power at electrical connector (1) and check adjustment. If necessary, repair electrical connector (1) or adjust sensor (2).



FIELD MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**WINCH ELECTRICAL HARNESS, CONTROL CABLE, AND POWER SUPPLY CABLE REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

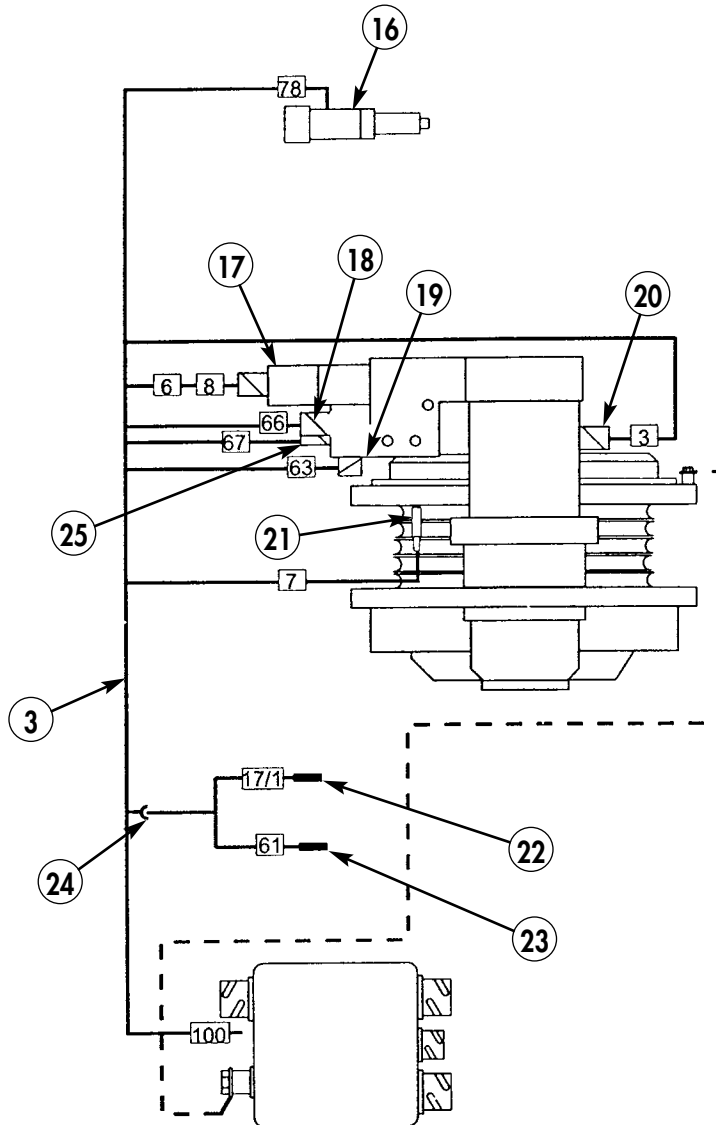
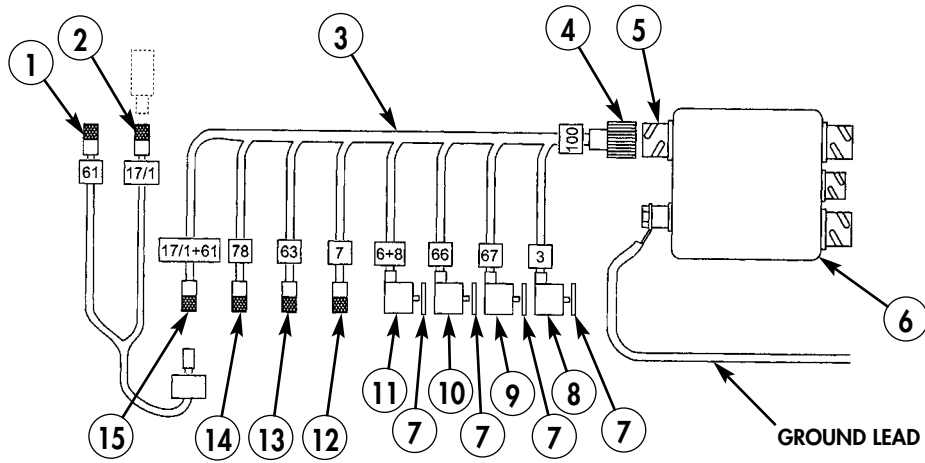
Four gaskets (WP 0159 00)
Tie-down straps (WP 0159 00)

WINCH ELECTRICAL HARNESS, CONTROL CABLE, AND POWER SUPPLY CABLE REPLACEMENT (Contd)**WINCH ELECTRICAL HARNESS REMOVAL****NOTE**

Tag all electrical leads for installation.

1. Disconnect winch electrical harness connector No. 100 (4) from electronic box receptacle (5) on electronic box (6).
2. Loosen screw and disconnect electromagnet motor connector No. 3 (8) from shift valve solenoid receptacle (20). Remove and discard gasket (7).
3. Loosen screw and disconnect proportional valve connector No. 67 (9) from proportional throttle solenoid receptacle (25). Remove and discard gasket (7).
4. Loosen screw and disconnect pressure control valve connector No. 66 (10) from pressure relief valve solenoid receptacle (18). Remove and discard gasket (7).
5. Loosen screw and disconnect control valve rope-out connector No. 6 + 8 (11) from rope in/out control valve solenoid receptacle (17). Remove and discard gasket (7).
6. Disconnect rope loop sensor connector No. 7 (12) from rope loop monitoring sensor (21).
7. Disconnect pressure sensor connector No. 63 (13) from pressure sensor (19).
8. Disconnect force transmitter connector No. 78 (14) from force transmitter receptacle (16).
9. Disconnect distributor cable connector No. 17/1 + 61 (15) from distributor cable receptacle (24) on winch electrical harness (3).
10. Disconnect distributor cable connector No. 17/1 (2) from reduced pulling force sensor (22).
11. Disconnect distributor cable connector No. 61 (1) from signal winch ON sensor (23).
12. Remove tie-down straps as necessary and remove winch electrical harness (3) and distributor cable from winch assembly.

WINCH ELECTRICAL HARNESS, CONTROL CABLE, AND POWER SUPPLY CABLE REPLACEMENT (Contd)

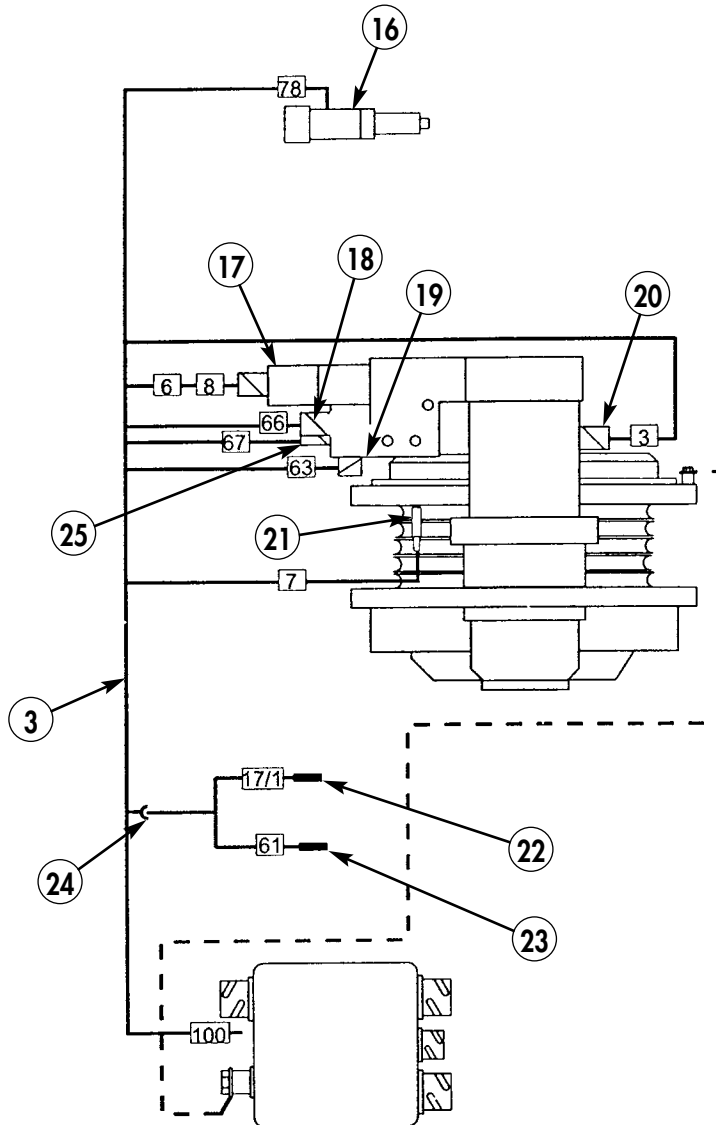
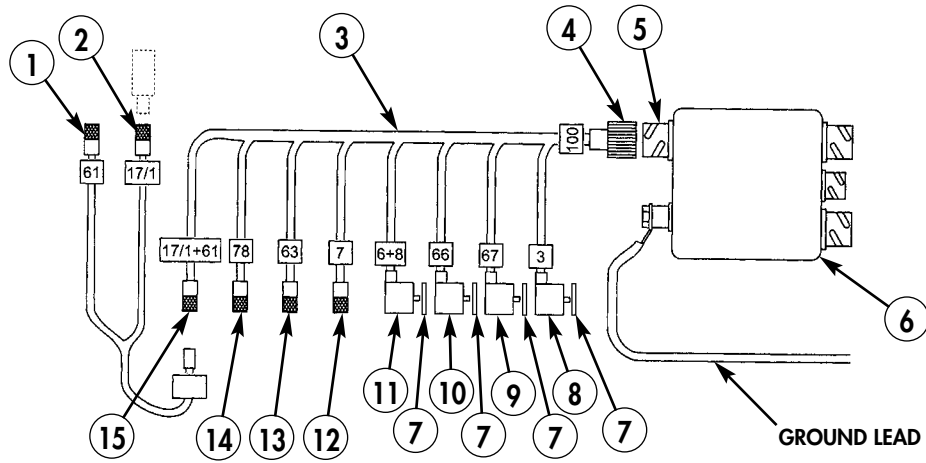


WINCH ELECTRICAL HARNESS, CONTROL CABLE, AND POWER SUPPLY CABLE REPLACEMENT (Contd)**WINCH ELECTRICAL HARNESS INSTALLATION****NOTE**

Install all leads as noted at removal.

1. Connect distributor cable connector No. 61 (1) to signal winch on sensor (23).
2. Connect distributor cable No. 17/1 (15) to reduced pulling force sensor (22).
3. Connect distributor cable No. 17/1 + 61 to distributor cable receptacle (24) on winch electrical harness (3).
4. Connect force transmitter connector No. 78 (14) to force transmitter receptacle (16).
5. Connect pressure sensor connector No. 63. (13) to pressure sensor (19).
6. Connect rope loop sensor connector No. 7 (12) to rope loop monitoring sensor (21).
7. Install new gasket (7) and connect control control valve rope-out connector No. 6 + 8 (11) to rope-out control valve solenoid receptacle (17) and tighten screw.
8. Install new gasket (7) and connect pressure control valve connector No. 66 (10) to pressure control valve solenoid receptacle (18) and tighten screw.
9. Install new gasket (7) and connect proportional valve connector No. 67 (9) to proportional valve solenoid receptacle (25) and tighten screw.
10. Install new gasket (7) and connect electromagnet motor connector No. 3 (8) to shift valve solenoid receptacle (20) and tighten screw.
11. Connect winch electrical harness connector No. 100 (4) to electronic box receptacle (5) on electronic box (6).
12. Install tie-down straps as necessary to secure winch electrical harness (3) and distributor cable.

WINCH ELECTRICAL HARNESS, CONTROL CABLE, AND POWER SUPPLY CABLE REPLACEMENT (Contd)



WINCH ELECTRICAL HARNESS, CONTROL CABLE, AND POWER SUPPLY CABLE REPLACEMENT (Contd)**CONTROL CABLE REMOVAL****NOTE**

Tag all leads for installation.

1. Disconnect control cable connector (3) from electronic box receptacle (6) on electrical box (1).
2. Remove tie-down straps (4) and control cable (5) from winch assembly (2) and A-frame (7) back to electrical box (8) on pallet frame (9).
3. Open cover on electronic box, refer to WP 0049 00 and disconnect seven electrical leads from three relays and buss-bars inside of electrical box (8). Refer to Electrical System Schematic WP 0122 00.
4. Loosen nut on fitting and remove control cable (5) from fitting, grommet, and side of electrical box (8). Refer to WP 0049 00.

CONTROL CABLE INSTALLATION

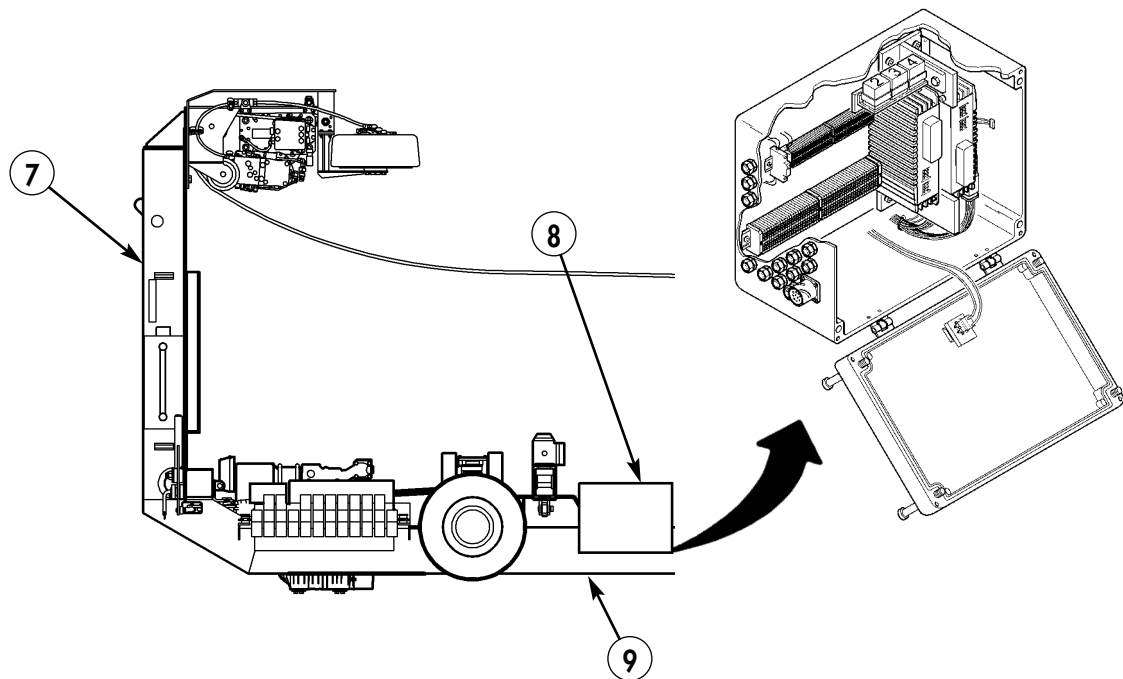
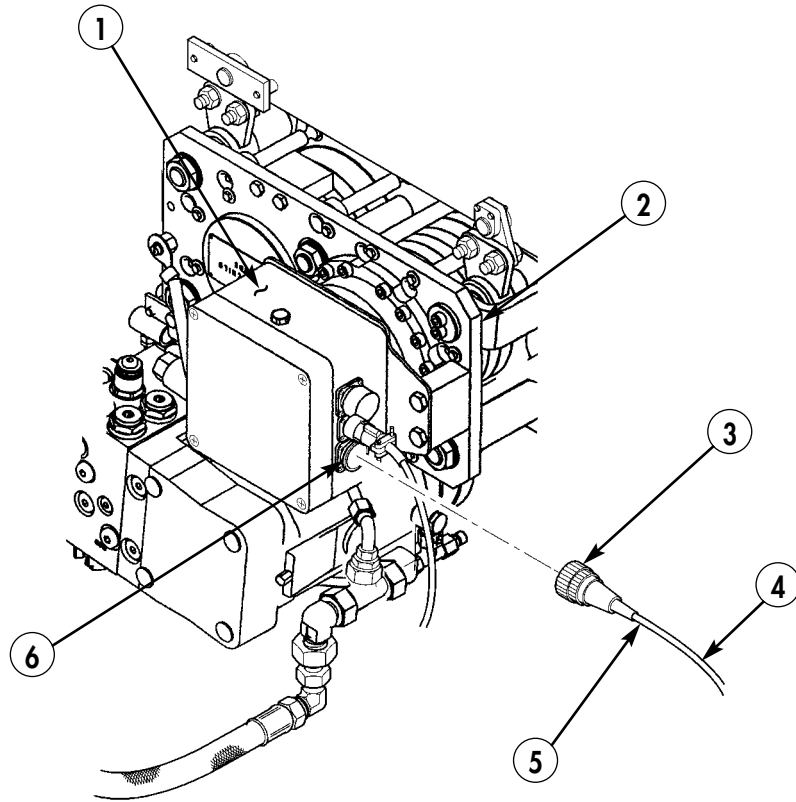
1. Install control cable (5) through nut, grommet, and fitting into electrical box (8). Tighten nut after electrical leads are connected. Refer to WP 0049 00.

NOTE

Connect all electrical leads as tagged at removal.

2. Connect seven electrical leads to three relays and buss-bars as shown. Refer to Electrical System Schematic WP 0122 00 and close cover on electrical box (8). Refer to WP 0049 00.
3. Route control cable (5) up to winch electronic box (1) along A-frame (7) and secure with tie-down straps (4) as necessary.
4. Connect control cable connector (3) to electronic box receptacle (6) on electrical box (1).

WINCH ELECTRICAL HARNESS, CONTROL CABLE, AND POWER SUPPLY CABLE REPLACEMENT (Contd)



WINCH ELECTRICAL HARNESS, CONTROL CABLE, AND POWER SUPPLY CABLE REPLACEMENT (Contd)**POWER SUPPLY CABLE REMOVAL****NOTE**

Tag all leads for installation.

1. Disconnect power supply cable connector (3) from electronic box receptacle (6) on electronic box (1).
2. Remove tie-down straps (4) and power supply cable (5) from winch assembly (2) and A-frame (7) back to electrical box (8) on pallet frame (9).
3. Open cover on electrical box (8) refer to WP 0049 00 and disconnect two electrical leads from power supply. Refer to Electrical System Schematic WP 0122 00.
4. Loosen nut on fitting and remove power supply cable (5) from fitting, grommet, and side electrical box (8). Refer to WP 0049 00.

POWER SUPPLY CABLE INSTALLATION

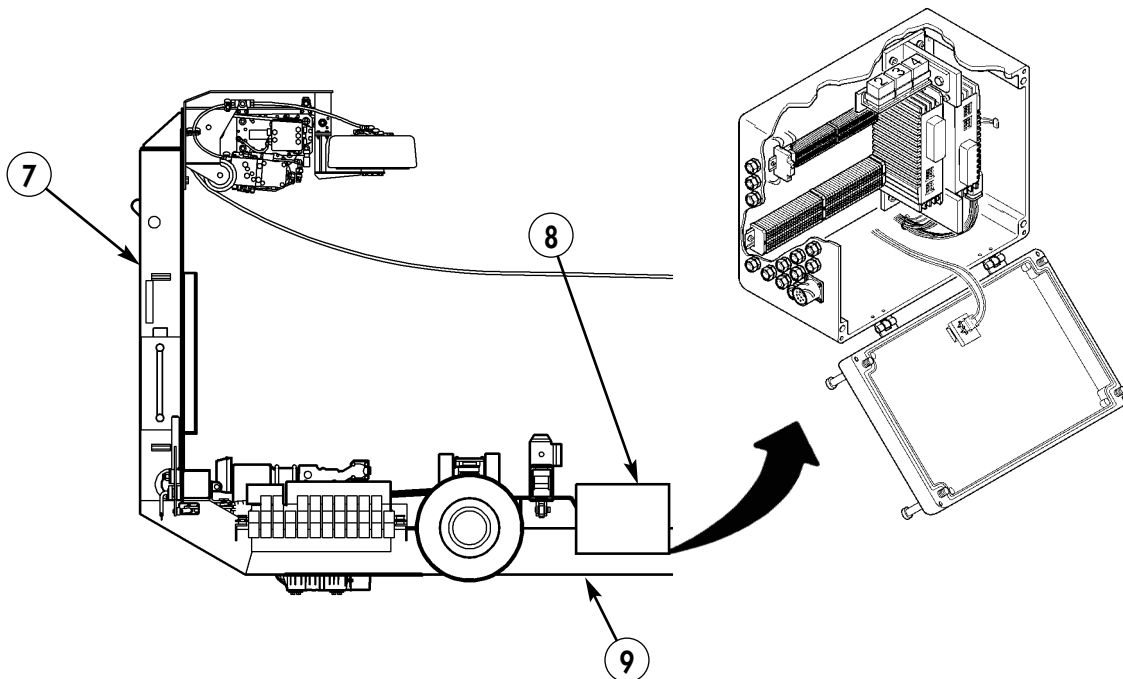
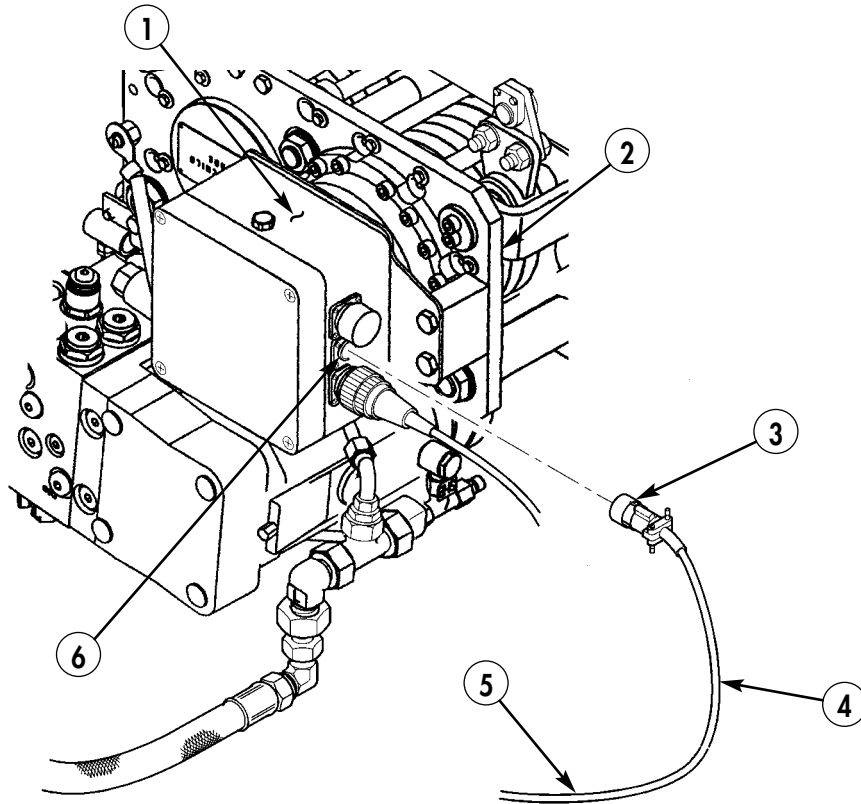
1. Install power supply cable (5) through nut, grommet, and fitting into electrical box (8). Tighten nut after electrical leads are connected. Refer to WP 0049 00.

NOTE

Connect all electrical leads as tagged at removal.

2. Connect two electrical leads to power supply. Refer to Electrical System Schematic WP 0122 00 and close cover on electrical box (8). Refer to WP 0049 00.
3. Route power supply cable (5) up to winch electronic box (1) along A-frame (7) and secure with tie-down straps (4) as necessary.
4. Connect power supply cable connector (3) to electronic box receptacle (6) on electronic box (1).

WINCH ELECTRICAL HARNESS, CONTROL CABLE, AND POWER SUPPLY CABLE REPLACEMENT (Contd)



END OF WORK PACKAGE

FIELD MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**WINCH EMERGENCY SWITCH AND BRACKET REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Sealing compound (Item 17, WP 0205 00)
Gasket (WP 0159 00)

WINCH EMERGENCY SWITCH AND BRACKET REPLACEMENT (Contd)

REMOVAL

1. Disconnect jumper cable (5) from connector (6) on mounting bracket (7).
2. Remove two screws (3), washers (2), and bracket (7) with winch emergency switch (10) and connector (6) attached from side of A-frame (1).
3. Disconnect winch emergency switch (10) from dummy receptacle (12) on bracket (7).
4. Disconnect emergency switch lanyard (11) from bracket (7).
5. Remove four nuts (4), screws (9), dummy receptacle (12), and gasket (8). Discard gasket (8).
6. Remove cap (15) from connector (6).
7. Remove four screws (13), chain (14), and connector (6) from bracket (7).

INSTALLATION

NOTE

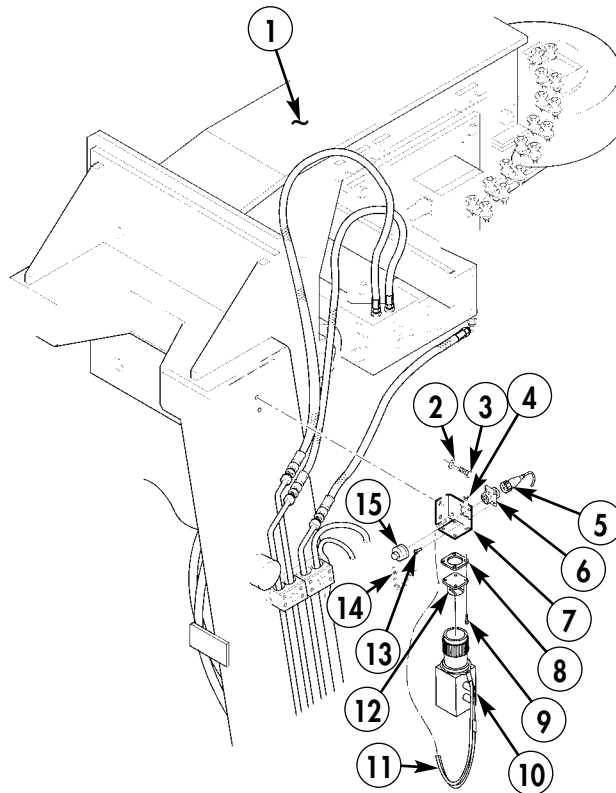
Apply sealing compound to threads of all screws at installation.

1. Install connector (6) and chain (14) on bracket (7) with four screws (13).
2. Install cap (15) on connector (6).
3. Install dummy receptacle (12) on bracket (7) with new gasket (8), four screws (9), and nuts (4).
4. Connect emergency switch lanyard (11) on bracket (7).
5. Connect winch emergency switch (10) on dummy receptacle (12) on bracket (7).

NOTE

Apply sealing compound to threads of all screws at installation.

6. Install bracket (7) with winch emergency switch (10) and connector (6) attached on side of A-frame (1) with two washers (2) and screws (3).
7. Connect jumper cable (15) on connector (6).



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**WINCH ELECTRONIC BOX REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)**Materials/Parts**Four locknuts (WP 0159 00)
Lockwasher (WP 0159 00)
Sealing compound (Item 17, WP 0205 00)

WINCH ELECTRONIC BOX REPLACEMENT (Contd)

REMOVAL

NOTE

Tag all electrical leads for installation.

1. Disconnect power supply connector (5) from electronic box (8).
2. Disconnect control connector (7) from electronic box (8).
3. Disconnect winch harness connector (11) from electronic box (8).
4. Remove screw (1), two ground cables (16), and lockwasher (2) from side of electrical box (8). Discard lockwasher (2).
5. Remove two screws (6), electronic box (8), adapter plate (13), and space block (4) from winch assembly (3).

NOTE

Electronic box cover must be removed to access screws when removing adapter plate from electronic box.

6. Loosen four screws (9) and remove electronic box cover (10) from electronic box (8).
7. Remove four locknuts (15), adapter plate (13), four washers (14), and screws (12) from electronic box (8). Discard locknuts (15).

INSTALLATION

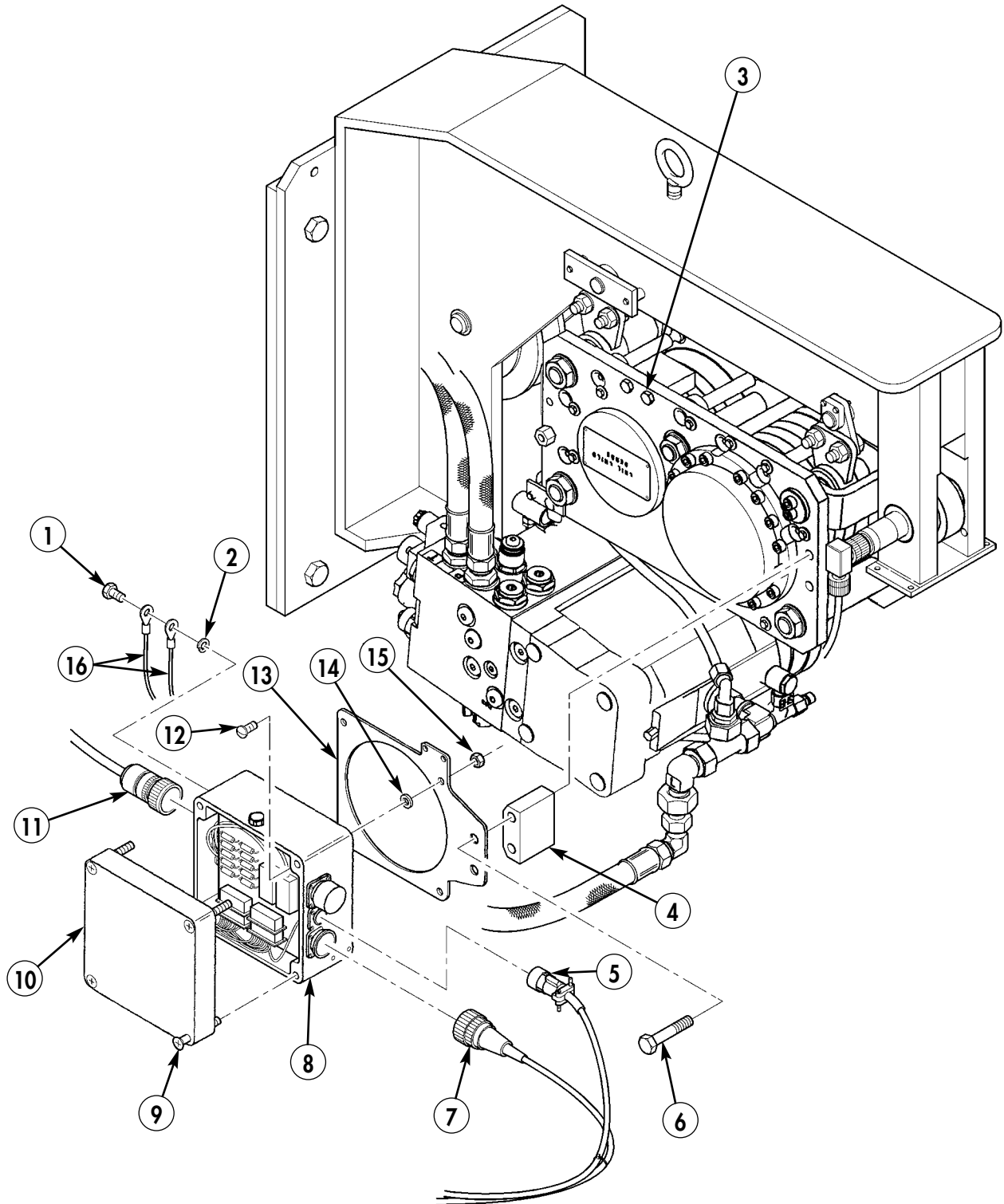
1. If removed, install four washers (14) and adapter plate (13) on electronic box (8) with four screws (12) and new locknuts (15).
2. If removed, install electronic box cover (10) on electronic box (8) and tighten four screws (9).

NOTE

Apply sealing compound to threads of screws at installation.

3. Install spacer block (4), adapter plate (13), and electronic box (8) on winch assembly (3) with two screws (6). Tighten screws (6) to 34 lb-ft (46 N•m).
4. Install new lockwasher (2) and two ground cables (16) on side of electrical box (8) with screw (1).
5. Connect winch harness connector (11) to electronic box (8).
6. Connect control connector (7) to electronic box (8).
7. Connect power supply connector (5) to electronic box (8).
8. Install winch emergency switch and bracket. Refer to WP 0066 00.

WINCH ELECTRONIC BOX REPLACEMENT (Contd)



END OF WORK PACKAGE

0067 00-3/4 blank

PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**WINCH HYDRAULIC MOTOR REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)
Grease (Item 8, WP 0205 00)
Sealing compound (Item 17, WP 0205 00)

Materials/Parts (Contd)

Sealant (Item 16, WP 0205 00)
Oil (Item 11, WP 0205 00)

Equipment Condition

Winch control block and adapter plate removed.
Refer to WP 0063 00.

WINCH HYDRAULIC MOTOR REPLACEMENT (Contd)

REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag tubing and hoses for installation.

Have container ready to catch oil.

1. Remove elbow (8) and tee fitting (9) from elbow (10) on side of winch motor (5).
2. Remove elbow (10) and adapter (11) from side of winch motor (5).

NOTE

It may be necessary, to tap on winch motor housing with a plastic hammer to loosen winch motor housing from brake housing.

Note location and quantity of two axial washers and adjusting washers for installation.

3. Remove two screws (6), washers (7), winch motor (5), adjusting washer (2), and two axial washers (3) from brake housing (1).
4. Clean sealant from mating surfaces of winch motor flange (4) and brake housing (1).

INSTALLATION

NOTE

Perform step 1 to adjust end play clearance if new winch motor is being installed or location and quantity of axial washers or adjusting washers were not noted.

1. Measure end play clearance between end of motor shaft (12) and drive gear inside of brake housing (1).
 - a. Using a depth gauge, measure the depth from brake housing flange (1) to inside drive gear and record.
 - b. Using a depth gauge, measure the height from winch motor flange (4) to the end of motor shaft (12) and record.
 - c. Subtract one number from other number recorded and this is clearance.
 - d. Adjust end play to 0.008–0.031 in. (0.2–0.8 mm) by adding or removing adjusting washers (2).
2. Apply sealant to mating surfaces of brake housing (1) and winch motor flange (4).

NOTE

Apply a light coat of grease to motor shaft at installation.

Install axial washers and adjusting washers as noted at removal.

Apply sealing compound to threads of screws at installation.

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

3. Install adjusting washers (2), axial washers (3), and winch motor (5) on brake housing (1) with two washers (7) and screws (6).
4. Install adapter (11) and elbow (10) on side of winch motor (5).
5. Install tee fitting (9) and elbow (8) on elbow (10).
6. Install winch control block and adapter plate. Refer to WP 0063 00.

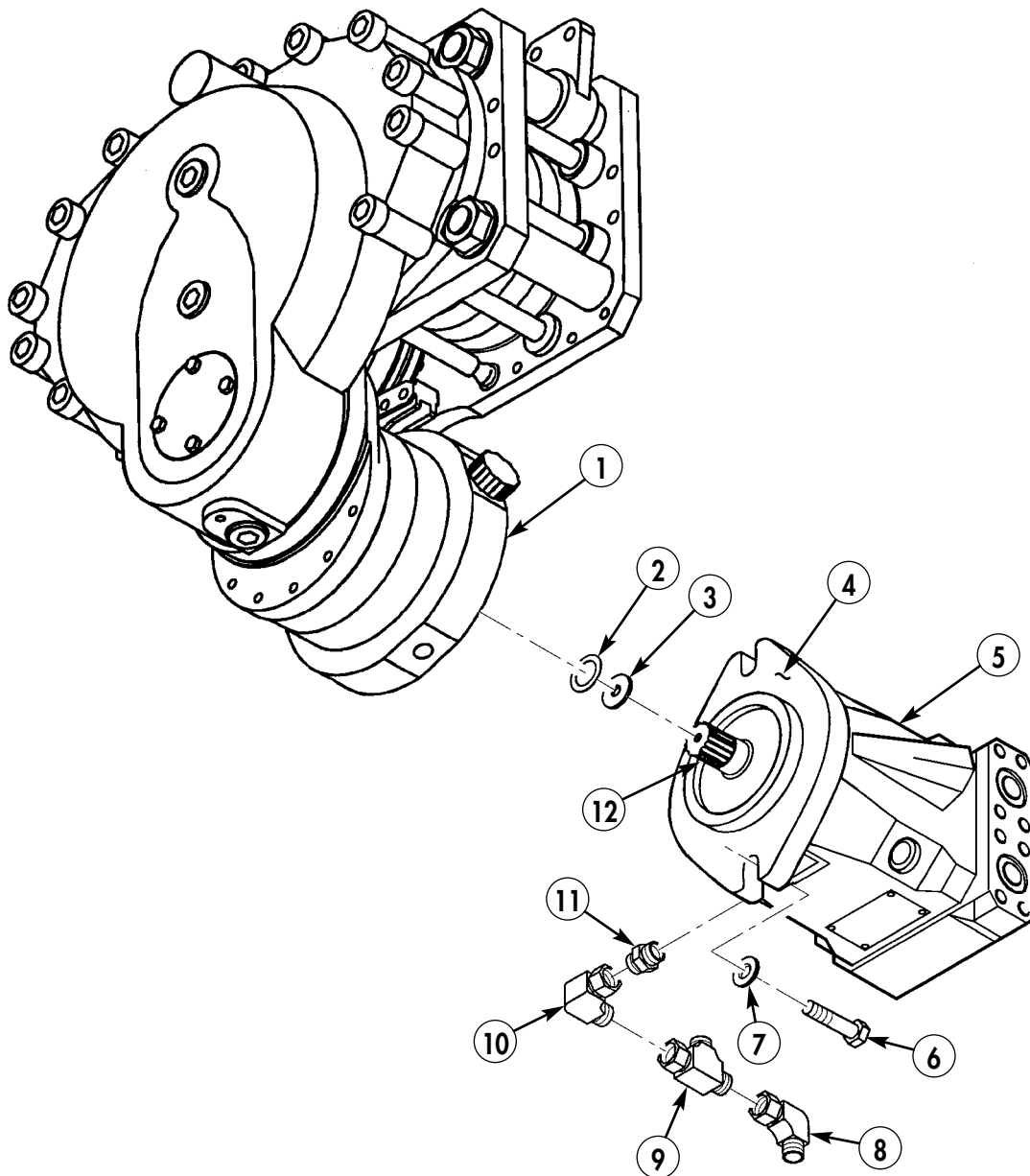
WINCH HYDRAULIC MOTOR REPLACEMENT (Contd)

INSTALLATION (Contd)

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

7. Fill winch motor (5) with clean oil before operating winch system.



PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

WINCH HYDRAULIC HOSES AND TUBING REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)
Sealing compound (Item 16, WP 0205 00)
Six tube seals (WP 0159 00)
Tie-down straps (WP 0159 00)

WINCH HYDRAULIC HOSES AND TUBING REPLACEMENT (Contd)

WINCH HYDRAULIC HOSES REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag hoses for installation.

Have container ready to catch oil.

1. Loosen nut (2) and disconnect pump supply hose (1) from fitting (19) on control block (7).
2. Loosen nut (20) and disconnect other end of pump supply hose (1) from adapter (21) on pump supply tube (24).
3. Remove tie-down straps (6) and pump supply hose (1) from winch assembly (5).
4. Loosen nut (3) and disconnect load sensing return hose (4) from fitting (18) on control block (7).
5. Loosen nut (17) and disconnect other end of load sensing return hose (4) from adapter (16) on load sensing return tube (22).
6. Remove tie-down straps (6) and load sensing return hose (4) from winch assembly (5).
7. Loosen nut (9) and disconnect return leakage hose (10) from hydraulic motor elbow (8).
8. Loosen nut (11) and disconnect other end of return leakage hose (10) from adapter (12) on return leakage tube (14).
9. Loosen nut (25) and remove adapter (21) and tube seal (13) from pump supply tube (24). Discard tube seal (13).
10. Loosen nut (23) and remove adapter (16) and tube seal (13) from load sensing return tube (22). Discard tube seal (13).
11. Loosen nut (15) and remove adapter (12) and tube seal (13) from return leakage tube (14). Discard tube seal (13).

WINCH HYDRAULIC HOSES INSTALLATION

NOTE

Install hoses as noted at removal.

1. Install new tube seal (13) and adapter (12) on return leakage tube (14) and tighten nut (15).
2. Install new tube seal (13) and adapter (16) on load sensing return tube (22) and tighten nut (23).
3. Install new tube seal (13) and adapter (21) on pump supply tube (24) and tighten nut (25).
4. Connect return leakage hose (10) to adapter (12) on return leakage tube (14) and tighten nut (11).
5. Connect other end of return leakage hose (10) to hydraulic motor elbow (8) and tighten nut (9).
6. Connect load sensing return hose (4) to adapter (16) on load sensing return tube (22) and tighten nut (17).
7. Connect other end of load sensing return hose (4) to fitting (18) on control block (7) and tighten nut (3).
8. Connect pump supply hose (1) to adapter (21) on pump supply tube (24) and tighten nut (20).
9. Connect other end of pump supply hose (1) to fitting (19) on control block (7) and tighten nut (2).
10. Secure load sensing return hose (4) and pump supply hose (1) together and to winch assembly (5) with tie-down straps (6) as necessary.

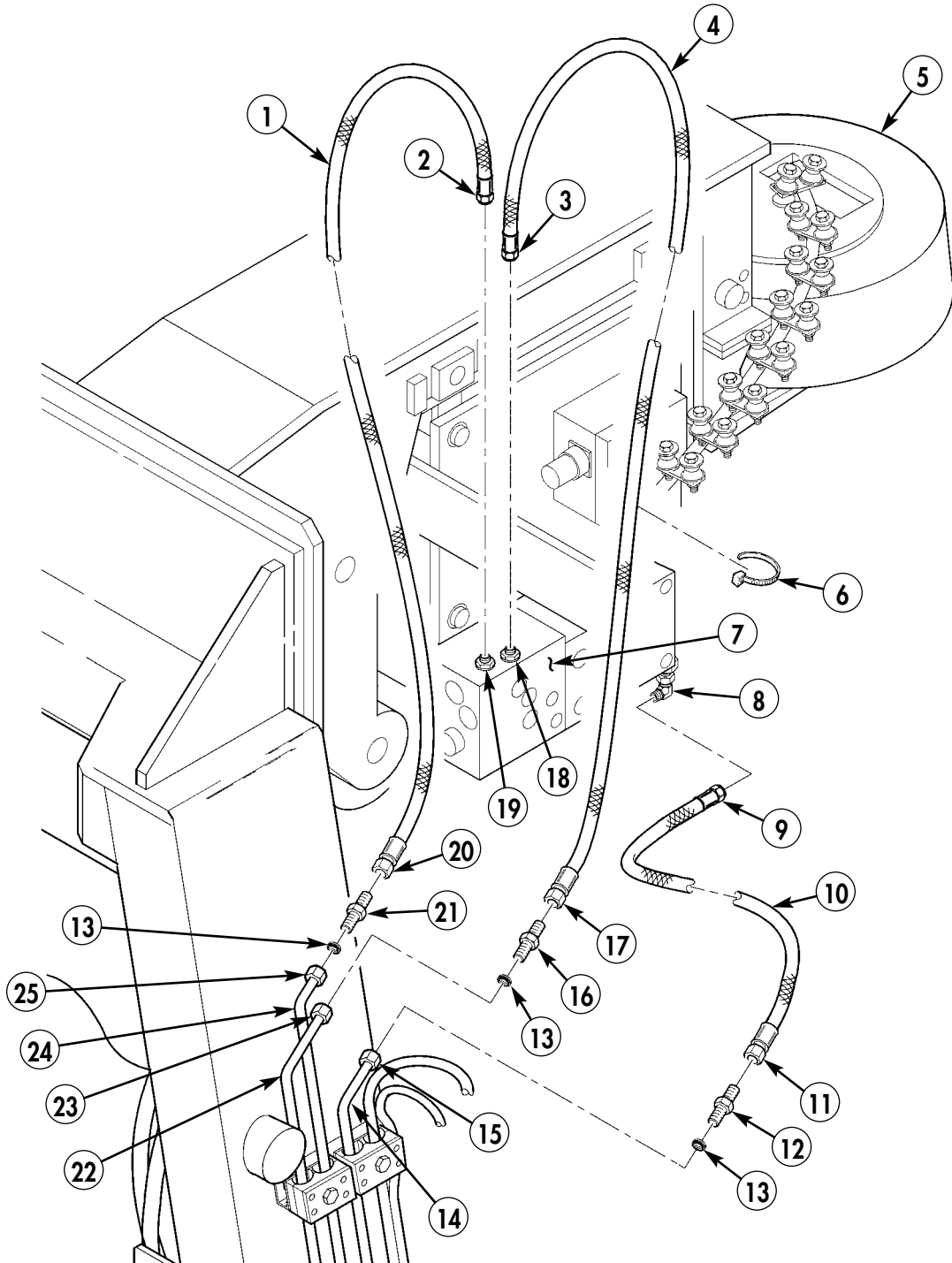
WINCH HYDRAULIC HOSES AND TUBING REPLACEMENT (Contd)

WINCH HYDRAULIC HOSES INSTALLATION (Contd)

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

11. Operate winch and check for leaks. Refer to TM 5-5420-280-10.



WINCH HYDRAULIC HOSES AND TUBING REPLACEMENT (Contd)

WINCH HYDRAULIC TUBE REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Perform winch hydraulic hoses removal in this work package to disconnect hydraulic hoses and adapters from end of tubes.

Tag tubing for installation.

Have container ready to catch oil.

1. Remove four screws (14), washers (13), and hydraulic auxiliary reservoir (11) from standoffs (12) on A-frame (1).
2. Remove four screws (7), retainer plates (6), and rubber tube retainers (5) from tubes (2), (3), and (4) and rubber tube retainers (15) on A-frame (1).
3. Loosen nuts (10) on tubes (2), (3), and (4) and remove tubes (2), (3), and (4) and three tube seals (9) from three elbows (8). Discard tube seals (9).
4. Remove tie-down straps as necessary from tubes (2), (3), or (4) and remove tubes (2), (3), and (4) from A-frame (1).

WINCH HYDRAULIC TUBE INSTALLATION

NOTE

Install tubing as noted at removal.

1. Install tubes (2), (3), and (4) on three elbows (8) with three new tube seals (9) and tighten nuts (10).
2. Install tubes (2), (3), and (4) on rubber tube retainers (15) of A-frame (1) with four rubber tube retainers (5), retainer plates (6), and screws (7).

NOTE

Apply sealing compound to threads of screws at installation.

3. Install hydraulic auxiliary reservoir (11) on standoffs (12) of A-frame (1) with four washers (13) and screws (14).

NOTE

Perform winch hydraulic hoses installation in this work package to connect hydraulic hoses and adapters to end of tubes.

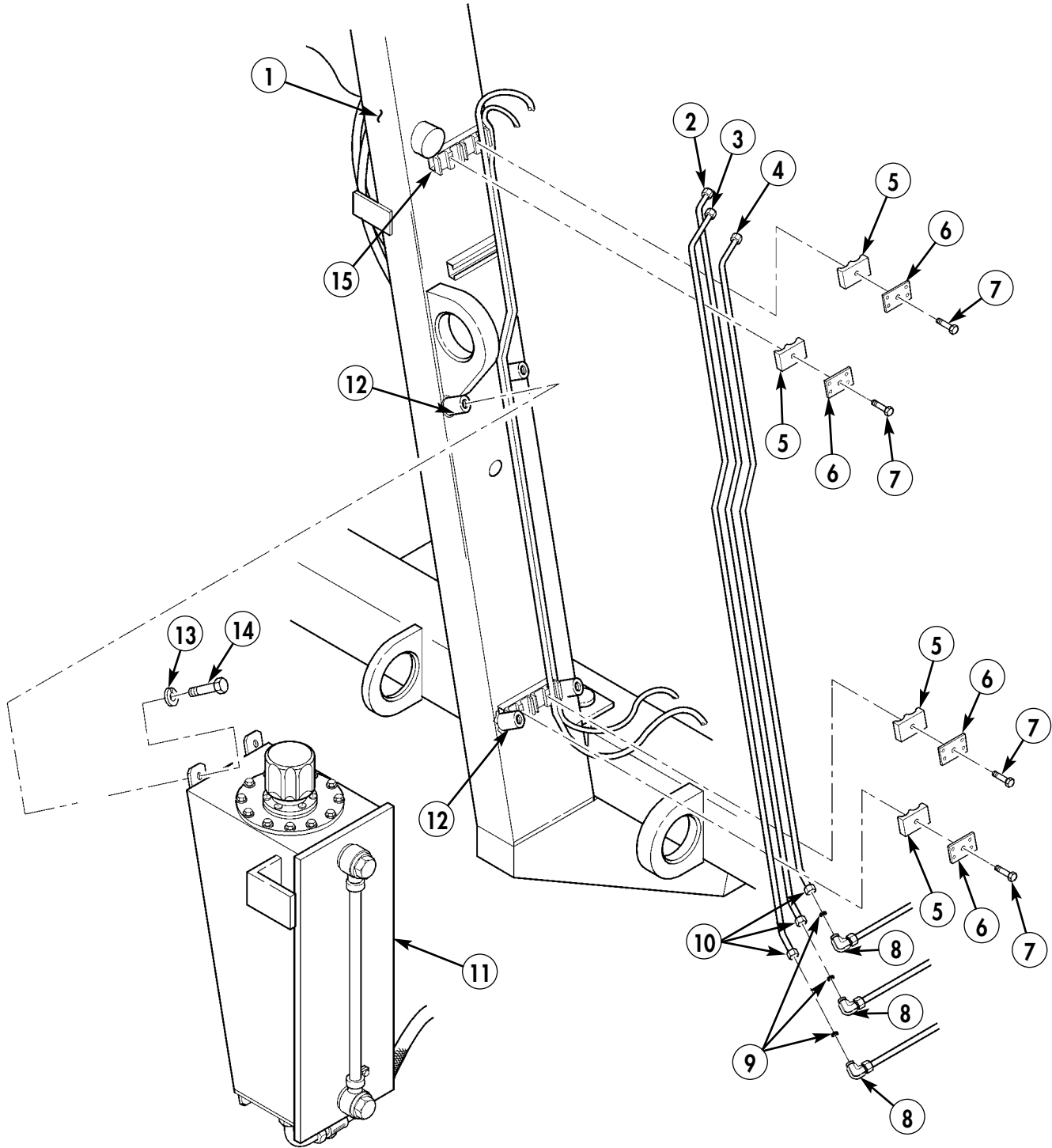
4. Install tie-down straps as necessary.

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

5. Operate winch and check for leaks. Refer to TM 5-5420-280-10.

WINCH HYDRAULIC HOSES AND TUBING REPLACEMENT (Contd)



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

WINCH ASSEMBLY REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)
Lifting device
Sling or chain

Materials/Parts

Sealing compound (Item 17, WP 0205 00)
Four locknuts (WP 0158 00)
Four locknuts (WP 0158 00)
Lockwasher (WP 0158 00)

Equipment Condition

Winch wire rope removed.
(Refer to WP 0057 00.)
Winch guide rollers and rope track removed.
(Refer to WP 0058 00.)
Winch stowage drum and bracket removed.
(Refer to WP 0061 00.)

WINCH ASSEMBLY REPLACEMENT (Contd)

REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag hoses for installation.

Have container ready to catch oil.

1. Disconnect pump supply hose (25) and load sensing return hose (27) from two fittings (21) on control block (20).
2. Disconnect return leakage hose (17) from hydraulic motor fitting (16).

NOTE

Tag all electrical leads for installation.

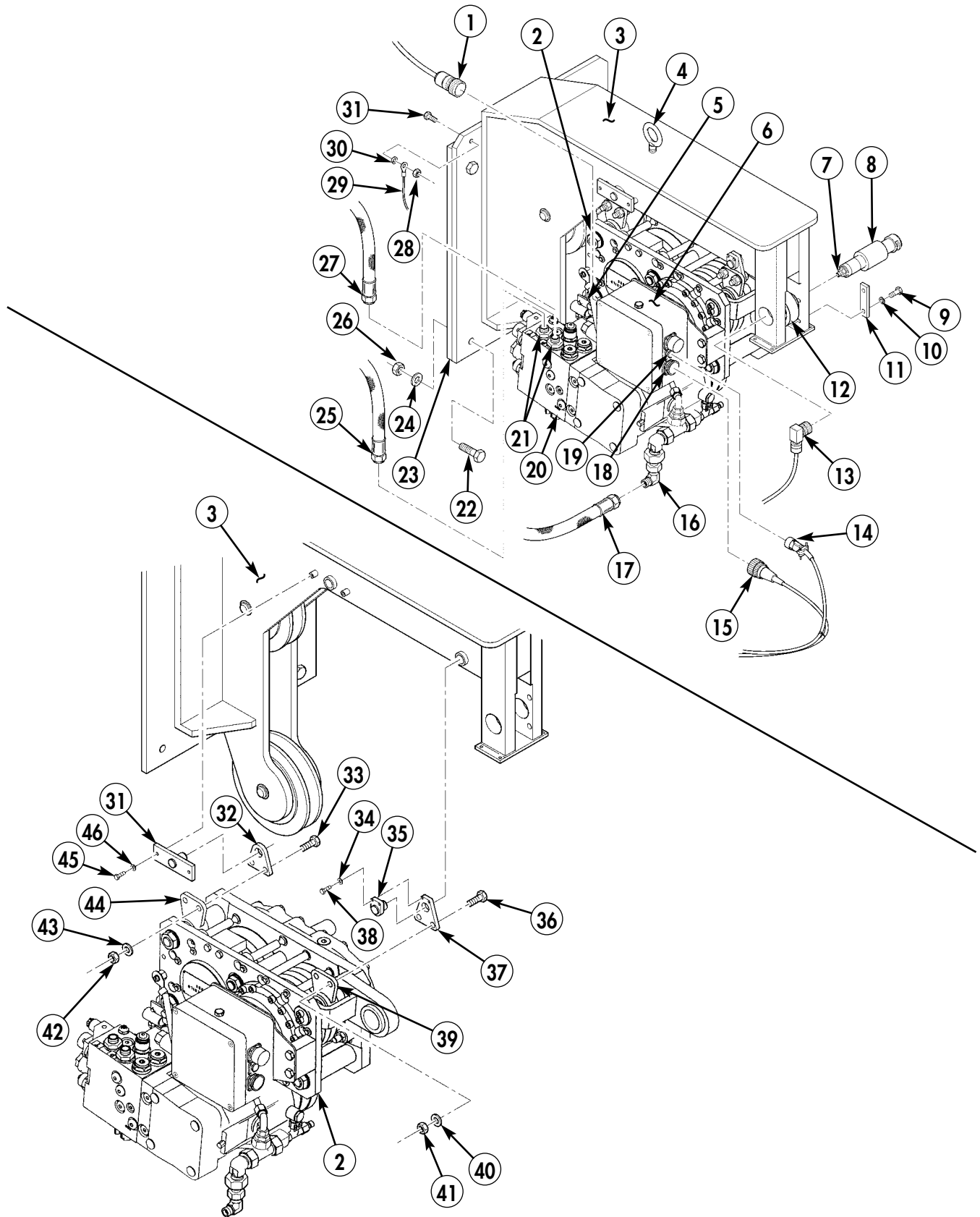
3. Disconnect power supply connector (14) from electronic box receptacle (19).
4. Disconnect control connector (15) from electronic box receptacle (18).
5. Disconnect winch harness connector (1) from electronic box receptacle (5).
6. Disconnect force transmitter connector (13) from force transmitter receptacle (7).
7. Remove nut (28), ground cable (29), lockwasher (30), and screw (31) from mounting bracket (3). Discard lockwasher (30).

WARNING

Winch assembly weighs approximately 525 lb (238 kg). Support winch assembly during removal and installation. Failure to comply may result in injury or death to personnel.

8. Attach lifting device and sling or chain to winch lifting eye (4) or mounting bracket (3) and take up tension.
9. Remove four locknuts (26), washers (24), screws (22), and winch mounting bracket (3) with winch assembly (2) attached from pallet A-frame (23). Discard locknuts (26).
10. Lift and place winch assembly (2) on dunnage before removing winch mounting bracket (3).
11. Remove two screws (9), washers (10), and locking plate (11) from winch mounting bracket (3) and slide force transmitter (8) out of transmitter holder (12) and winch mounting bracket (3).
12. Remove two screws (38) and (45), washers (34) and (46), and pin assemblies (35) and (31) from winch mounting bracket (3) and winch holder brackets (37) and (32).
13. Lift winch mounting bracket (3) off winch assembly (2) and place on ground. Remove lifting device and sling or chain.
14. If winch holder brackets (32) or (37) are damaged, remove two locknuts (41) and (42), washers (40) and (43), screws (36) and (33), and winch holder brackets (32) and (37) from winch swing brackets (39) and (44). Discard locknuts (41) and (42).

WINCH ASSEMBLY REPLACEMENT (Contd)



WINCH ASSEMBLY REPLACEMENT (Contd)

INSTALLATION

1. If removed, install winch holder brackets (2) and (7) on winch swing brackets (15) and (9) with two screws (3) and (6), washers (14) and (10), and new locknuts (13) and (11).
2. Attach lifting device and sling or chain to lifting eye (20) or winch mounting bracket (1) and place mounting bracket (1) over winch assembly (12).

NOTE

Apply sealing compound to threads of screws at installation.

3. Install winch assembly (12) on winch mounting bracket (1) with pin assemblies (5) and (18), two washers (4) and (17), and screws (8) and (16).
4. Install force transmitter (24) on winch mounting bracket (1) and force transmitter holder (28) with locking plate (27), two washers (26) and screws (25).

WARNING

Winch assembly weighs approximately 525 lb (238 kg). Support winch assembly during removal and installation. Failure to comply may result in injury or death to personnel.

5. Lift winch mounting bracket (1) with winch assembly (12) off dunnage.

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

6. Install winch mounting bracket (1) on pallet A-frame (39) with four screws (38), washers (40), and new locknuts (42).
7. Remove lifting device and sling or chain.

NOTE

Install all electrical leads as noted in removal.

8. Install screw (47), new lockwasher (46), ground cable (45) on mounting bracket (1) with nut (44).
9. Connect force transmitter connector (29) on force transmitter receptacle (23).
10. Connect winch harness connector (19) on electronic box receptacle (21).
11. Connect control connector (31) on electronic box receptacle (34).
12. Connect power supply connector (30) to electronic box receptacle (35).

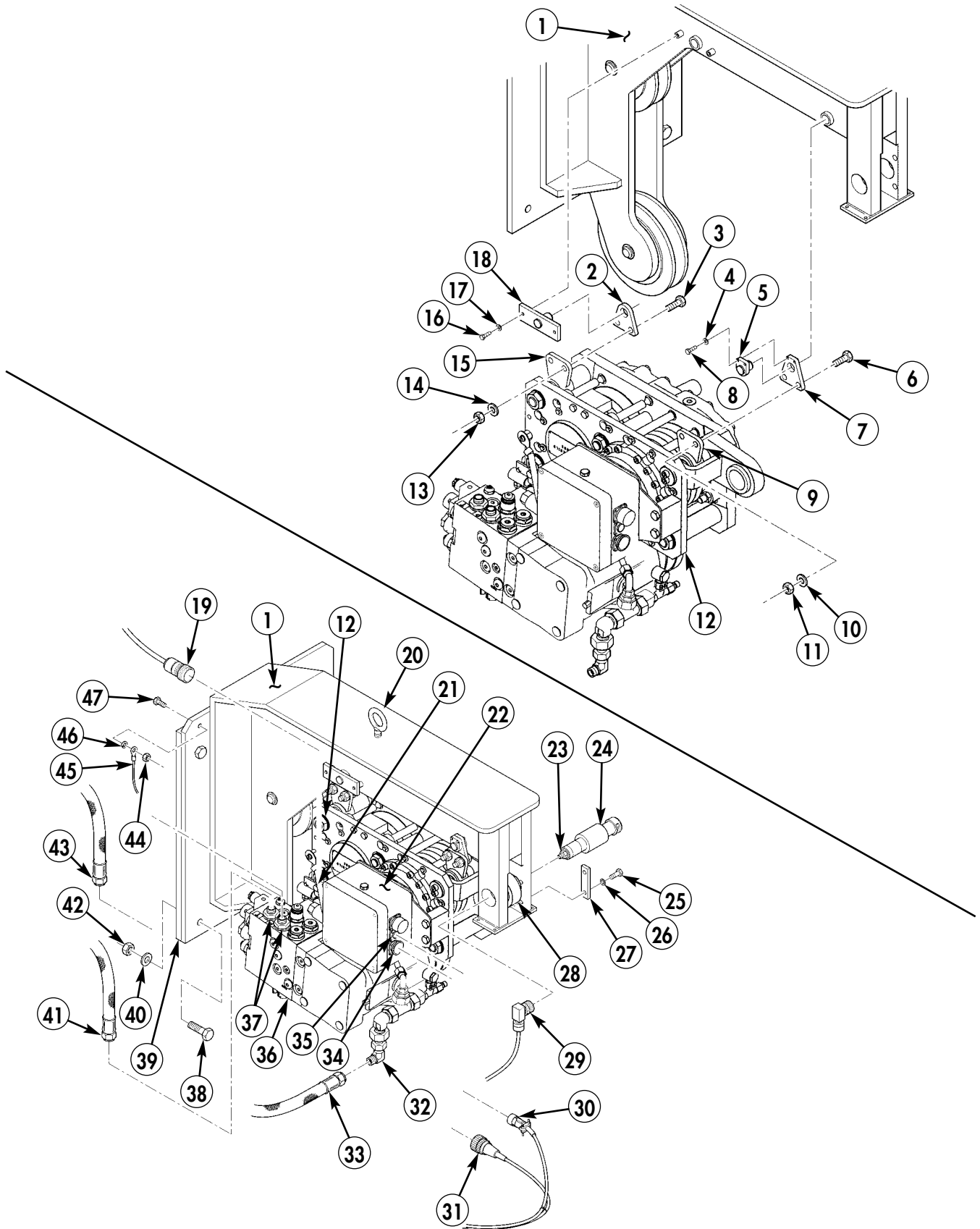
NOTE

Install all hydraulic lines as noted at removal.

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

13. Connect return leakage hose (33) to hydraulic motor fitting (32).
14. Connect pump supply hose (41) and load sensing return hose (43) on two fittings (37) of control block (36).
15. Install winch stowage drum and bracket (WP 0061 00).
16. Install winch guide rollers and rope track (WP 0058 00).
17. Install winch wire rope (WP 0057 00).

WINCH ASSEMBLY REPLACEMENT (Contd)



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**HYDRAULIC SYSTEM TUBING AND HOSES REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)
Two tube seals (WP 0161 00)

HYDRAULIC SYSTEM TUBING AND HOSES REPLACEMENT (Contd)

REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

All hydraulic system tubing and hoses are replaced the same way. This task covers replacement of one hydraulic tube and hose from the rear pinwheel drive brake on the launch boom.

Tag tubing and hoses for installation.

Have container ready to catch oil.

1. Loosen nut (3) on hose (4) and remove hose (4) from adapter (19) on side of stop cylinder (1).
2. Loosen nut (5) on other end of hose (4) and remove hose (4) from adapter (6) on tube (12).
3. Loosen nut (13) on tube (12) and remove tube (12) and tube seal (14) from adapter (16) on launch boom main shaft (15). Discard tube seal (14).
4. Remove two screws (11), retainer plates (10), rubber tube retainers (9), and tube (12) from launch boom tube support brackets (17) and (18) on launch boom (2).
5. Loosen nut (8) and remove adapter (6) and tube seal (7) from tube (12). Discard tube seal (7).

INSTALLATION

NOTE

Install tubing and hoses as noted at removal.

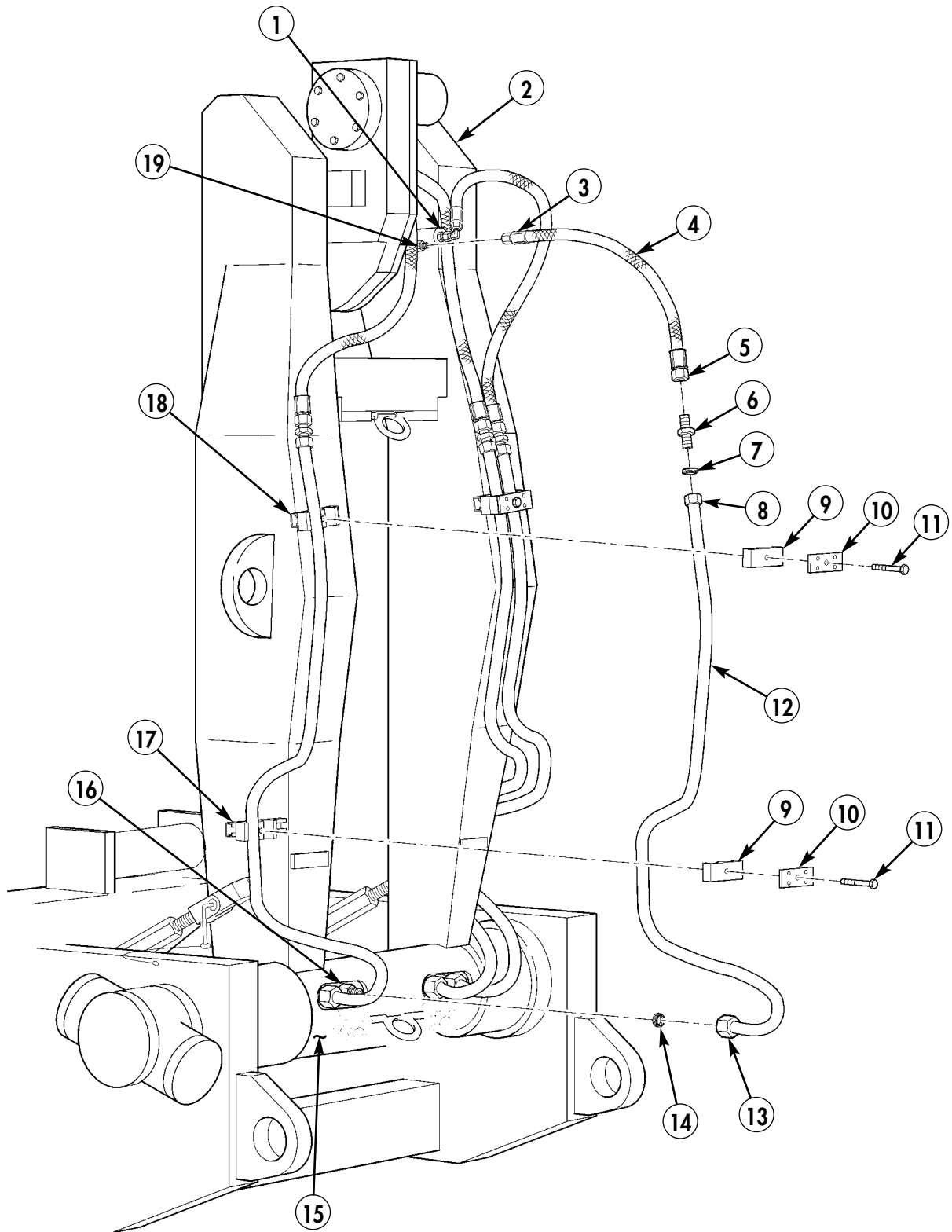
1. Install adapter (6) on end of tube (12) with new tube seal (7) and tighten nut (8).
2. Install tube (12) on launch boom tube support brackets (17) and (18) with two rubber tube retainers (9), retainer plates (10), and screws (11).
3. Install other end of tube (12) with new tube seal (14) on adapter (16) of launch boom main shaft (15) and tighten nut (13).
4. Install hose (4) on adapter (6) of tube (12) and tighten nut (5).
5. Install other end of hose (4) on adapter (19) of stop cylinder (1) and tighten nut (3).

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

6. Operate hydraulic system and check for leaks TM 5-5420-280-10.

HYDRAULIC SYSTEM TUBING AND HOSES REPLACEMENT (Contd)



END OF WORK PACKAGE

0071 00-3/4 blank

PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**HYDRAULIC CONTROL VALVE AND RESERVOIR ASSEMBLY REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Material/Parts

Four locknuts (WP 0163 00)
Gasket (WP 0163 00)

Equipment Condition

Hydraulic lines removed. Refer to WP 0071 00.
Hydraulic reservoir drained.
Refer to WP 0016 00.

HYDRAULIC CONTROL VALVE AND RESERVOIR ASSEMBLY REPLACEMENT (Contd)

REMOVAL

NOTE

Tag all solenoid connectors for installation.

1. If necessary, remove six cover nuts (9), nuts (8), washers (7), cover (6), and gasket (10) from hydraulic control valve and reservoir assembly (1). Discard gasket (10).
2. If damaged, remove six studs (11) from hydraulic control valve and reservoir assembly (1).
3. Loosen twenty screws (13), disconnect solenoid connectors (12) from control valves (14), and move wiring harness leads away from control valves (14).
4. Remove four locknuts (17), washers (18), washers (2), insulators (3), washers (4), and screws (5) from hydraulic control valve and reservoir assembly (1) and brackets (15) on frame (16). Discard locknuts (17).
5. Remove hydraulic control valve and reservoir assembly (1) from brackets (15).
6. Remove four insulators (3) from brackets (15).

INSTALLATION

1. Position four insulators (3) on brackets (15). Align holes in brackets (15) with holes in insulators (3).
2. Carefully install hydraulic control valve and reservoir assembly (1) on four insulators (3) and brackets (15) with four screws (5), washers (4), insulators (3), washers (2), washers (18), and new locknuts (17).

NOTE

Ensure solenoid connectors are connected as noted during removal.

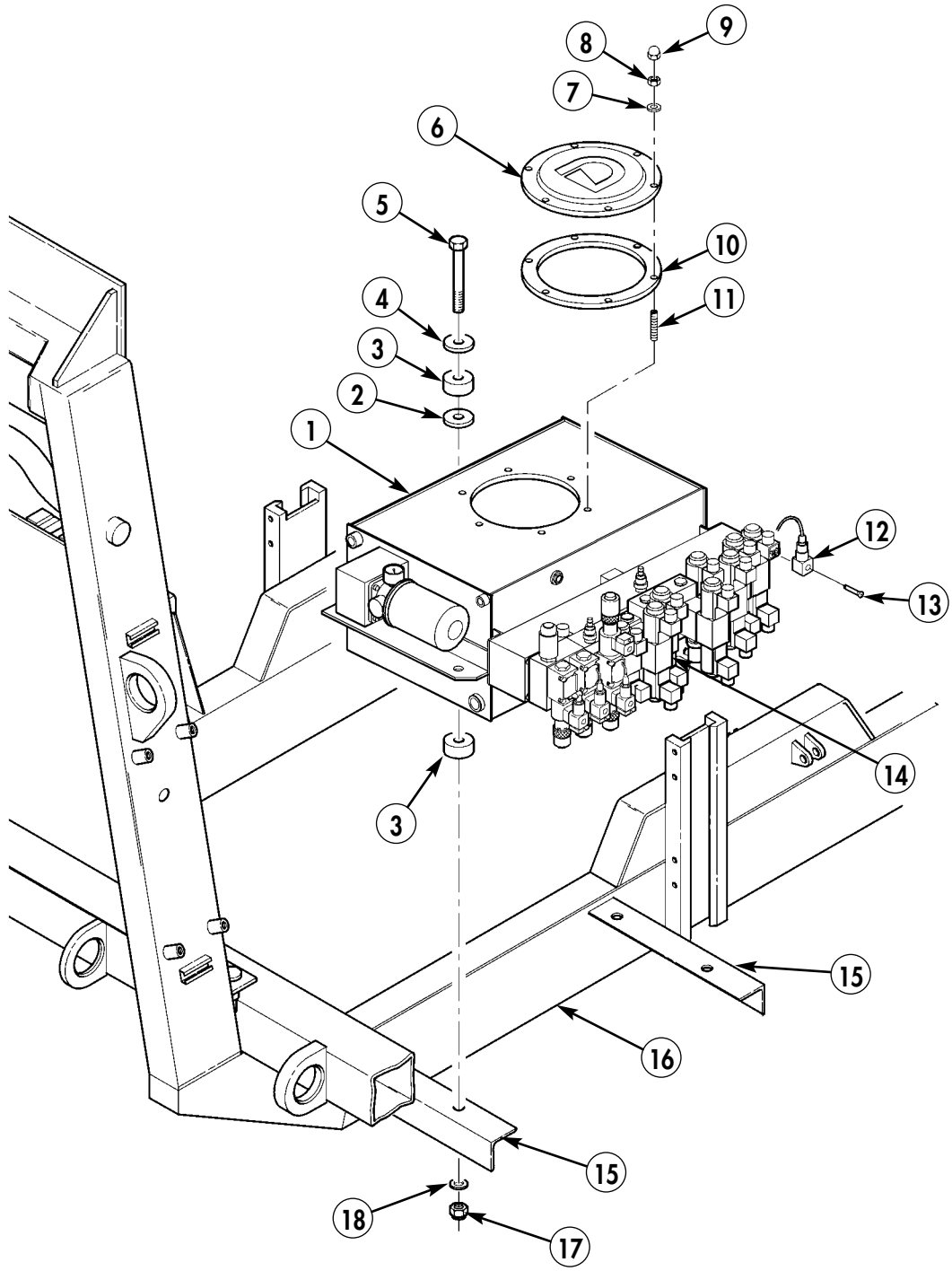
3. Connect twenty solenoid connectors (12) to control valves (14) and tighten screws (13).
4. If removed, install six studs (11) on hydraulic control valve and reservoir assembly (1).
5. If removed, install new gasket (10), cover (6), six washers (7), nuts (8), and cover nuts (9) on hydraulic control valve and reservoir assembly (1).
6. Install hydraulic lines. Refer to WP 0071 00.
7. Fill hydraulic reservoir. Refer to WP 0016 00.

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

8. Operate hydraulic system and check for leaks. Refer to TM 5-5420-280-10.

HYDRAULIC CONTROL VALVE AND RESERVOIR ASSEMBLY REPLACEMENT (Contd)



PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

HYDRAULIC AUXILIARY RESERVOIR AND TRANSFER VALVE REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Sealing compound (Item 16, WP 0205 00)
Hydraulic oil (Item 12, WP 0205 00)
Cap and plug set (Item 3, WP 0205 00)
Gasket (WP 0160 00)
O-ring (WP 0160 00)
Four seal washers (WP 0163 00)
Five tube seals (WP 0163 00)
Three O-rings (WP 0163 00)

HYDRAULIC AUXILIARY RESERVOIR AND TRANSFER VALVE REPLACEMENT (Contd)

REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

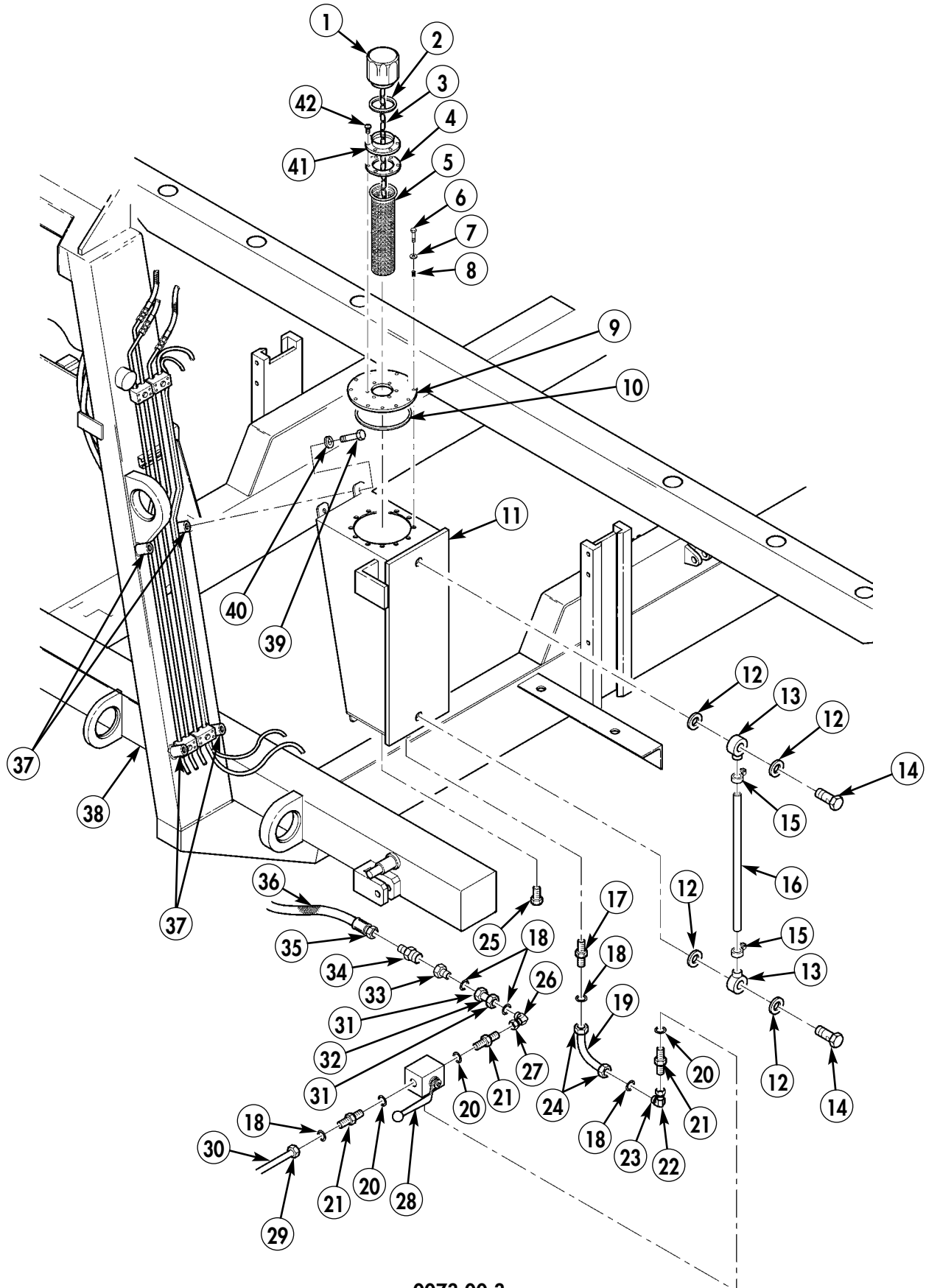
NOTE

Tag hoses and tubing for installation.

Have container ready to catch oil.

1. Remove breather cap (1), seal (2), and chain (3) from filter screen (5).
2. Remove six screws (42), flange cover (41) with filter screen (5), and gasket (4) from clean out cover (9). Discard gasket (4).
3. Remove twelve screws (6), washers (7), clean out cover (9), and O-ring (10) from hydraulic auxiliary reservoir (11). Discard O-ring (10).
4. If reservoir (11) contains oil, remove drain plug (25) and drain oil from reservoir (11).
5. Loosen nut (29) and disconnect steel tube (30) and tube seal (18) from adapter (21) on transfer valve (28). Discard tube seal (18).
6. Loosen nut (35) and disconnect hose (36) from adapter (34).
7. Loosen two nuts (24) and remove steel tube (19) and two tube seals (18) from adapter (17) on reservoir (11) and elbow (22) on bottom of transfer valve (28). Discard tube seals (18).
8. Loosen two nuts (31) and remove steel tube (32) and two tube seals (18) from elbow (26) on side of transfer valve (28) and adapter (33). Discard tube seals (18).
9. Remove adapter (34) from adapter (33).
10. Loosen nuts (23) and (27) and remove elbows (22) and (26) from adapters (21) on transfer valve (28).
11. Remove three adapters (21) and O-rings (20) from transfer valve (28). Discard O-rings (20).
12. Support reservoir (11) and remove four screws (39), washers (40), and reservoir (11) from standoffs (37) on A-frame (38).
13. Remove adapter (17) from reservoir (11).
14. If necessary, remove two clamps (15) and oil level hose (16) from two fittings (13) on reservoir (11).
15. Remove two screws (14), seal washers (12), fittings (13), and seal washers (12) from reservoir (11). Discard seal washers (12).
16. If damaged, remove threaded inserts (8) from reservoir (11).

HYDRAULIC AUXILIARY RESERVOIR AND TRANSFER VALVE REPLACEMENT (Contd)



HYDRAULIC AUXILIARY RESERVOIR AND TRANSFER VALVE REPLACEMENT (Contd)

INSTALLATION

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

1. If removed, install threaded inserts (8) on reservoir (11). Refer to WP 0029 00.
2. If removed, install four new seal washers (12) and two fittings (13) on reservoir (11) with two screws (14).
3. Install oil level hose (16) between fittings (13) with two clamps (15).

NOTE

Apply sealing compound to threads of adapter at installation.

4. Install adapter (17) on reservoir (11).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

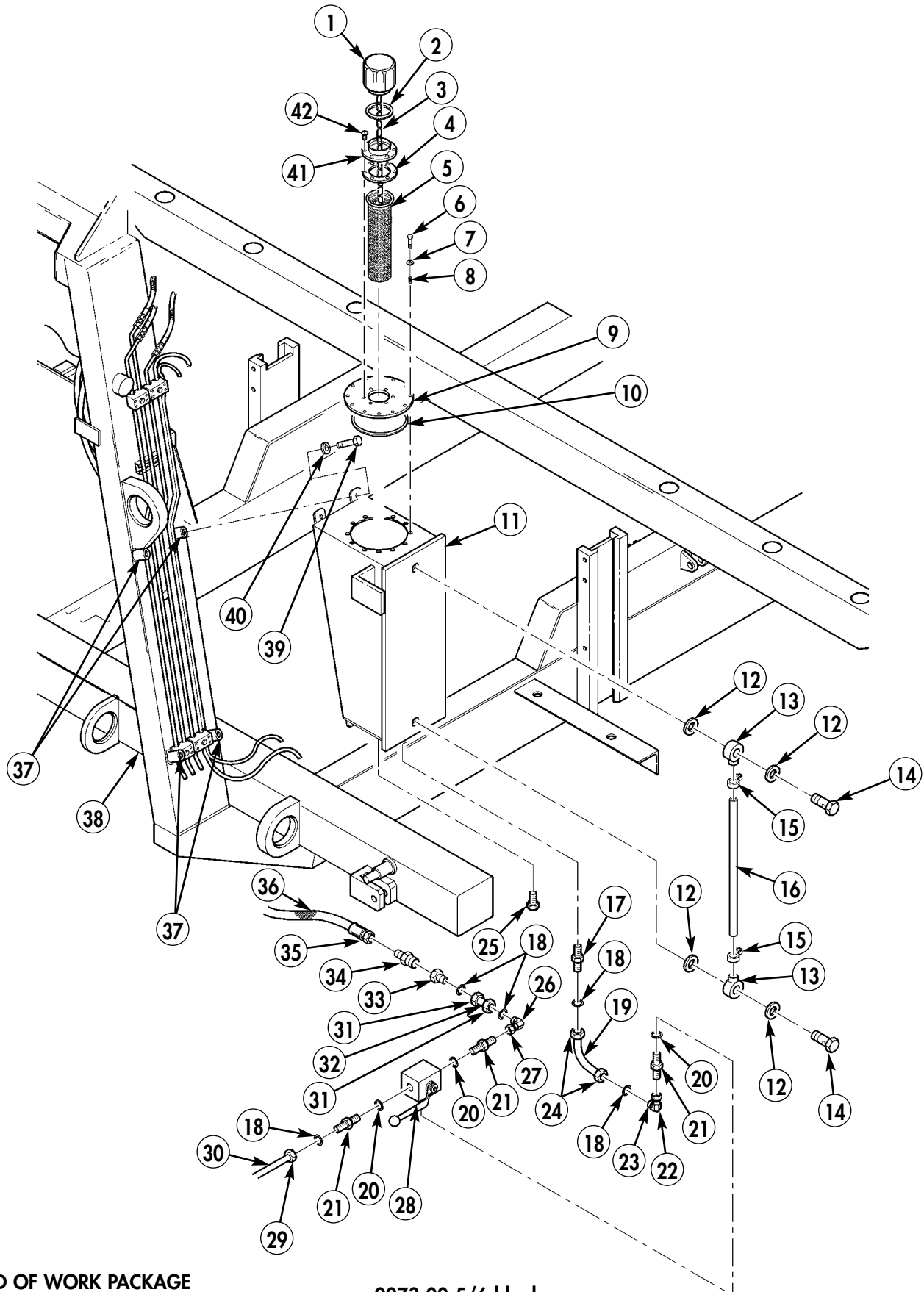
5. Install reservoir (11) on four standoffs (37) of A-frame (35) with four washers (40) and screws (39).
6. If removed, install drain plug (25) on bottom of reservoir (11).

NOTE

Apply a light coat of hydraulic oil to O-rings and tube seals at installation.

7. Install three new O-rings (20) and adapters (21) on transfer valve (28).
8. Install elbows (26) and (22) on adapters (21) and tighten nuts (27) and (23).
9. Install adapter (33) on adapter (34).
10. Install two new tube seals (18) and steel tube (32) on elbow (26) on side of transfer valve (28) and adapter (33) and tighten two nuts (31).
11. Install two new tube seals (18) and steel tube (19) on elbow (22) on bottom of transfer valve (28) and adapter (17) on reservoir (11) and tighten two nuts (24).
12. Connect hose (36) to adapter (34) and tighten nut (35).
13. Connect steel tube (30) with new tube seal (18) to adapter (21) on transfer valve (28) and tighten nut (29).
14. Install new O-ring (10) and clean out cover (9) on top of reservoir (11) with twelve washers (7) and screws (6).
15. Install new gasket (4) and flange cover (41) with filter screen (5) on clean out cover (9) with six screws (42).
16. Install chain (3), seal (2), and breather cap (1) on flange cover (42).

HYDRAULIC AUXILIARY RESERVOIR AND TRANSFER VALVE REPLACEMENT (Contd)



END OF WORK PACKAGE

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PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

HYDRAULIC CONTROL VALVE MANIFOLDS REPLACEMENT REMOVAL, INSTALLATION, ADJUSTMENT

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Hydraulic lines removed. Refer to WP 0071 00.

Materials/Parts

Hydraulic oil (Item 12, WP 0205 00)
Eighty O-rings (WP 0164 00)
Two O-rings (WP 0164 00)
O-ring (WP 0164 00)
O-ring (WP 0164 00)

HYDRAULIC CONTROL VALVE MANIFOLDS REPLACEMENT (Contd)

REMOVAL

NOTE

Have container ready to catch oil.

Tag all control valves, flow control valve, and manifold adapters for installation.

1. Loosen nut (10) and disconnect steel tube (11) from adapter (9) on manifold (7).
2. Loosen nut (1) while holding adapter (2) and remove elbow (12) from adapter (2) on manifold (7).
3. Remove adapters (2) and (9) and O-rings (3) and (8) from manifold (7). Discard O-rings (3) and (8).

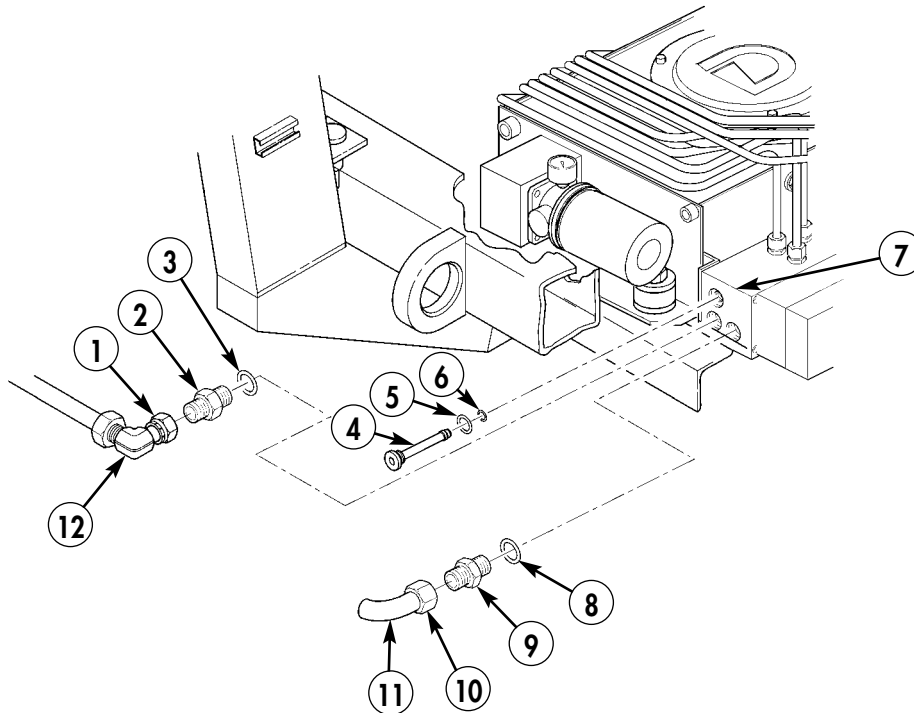
NOTE

Note position of manifold adapters and control valves for installation.

4. If necessary, remove plug (4) and O-rings (5) and (6) from end of manifold (7). Discard O-rings (5) and (6).
5. Remove twenty-four screws (19), eight screws (20), four screws (26), control valves (18) and (24), flow control valve (23), manifold adapters (17), (21), (22), (25), and (27), and eighty O-rings (16). Discard O-rings (18).
6. Remove six screws (15) and manifold (7) from three brackets (14) on reservoir (13).

INSTALLATION

1. Install manifold (7) on three brackets (14) with six screws (15).



HYDRAULIC CONTROL VALVE MANIFOLDS REPLACEMENT (Contd)

INSTALLATION (Contd)

NOTE

Apply a light coat of hydraulic oil to O-rings at installation.

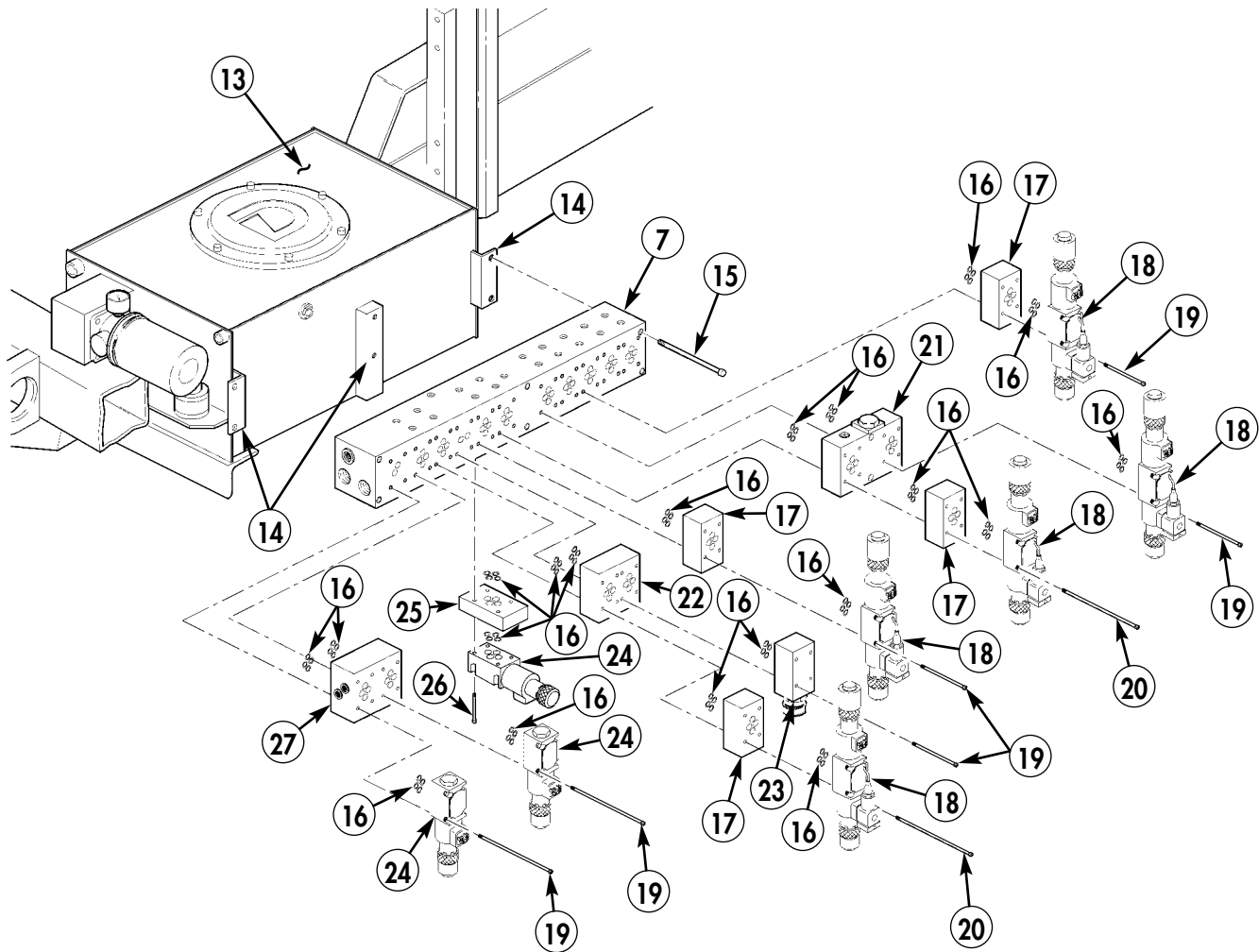
Install manifold adapters and control valves as noted in removal.

2. Install eighty new O-rings (16), and manifold adapters (17), (21), (22), (25), and (27), control valves (18) and (24), and flow control valve (23) on manifold (7) with screws (19), (20) and (26) and tighten screws (19), (20), and (26) evenly to 44 lb-in. (5 N•m).
3. Install new O-rings (5) and (6) and plug (4) on end of manifold (7).
4. Install new O-rings (3) and (8) and fittings (2) and (9) on manifold (7).
5. Install steel tube (11) on adapter (9) and tighten nut (10).
6. Connect elbow (12) on adapter (2) and tighten nut (1).
7. Install hydraulic lines. Refer to WP 0071 00.
8. Fill hydraulic reservoir. Refer to WP 0016 00.

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

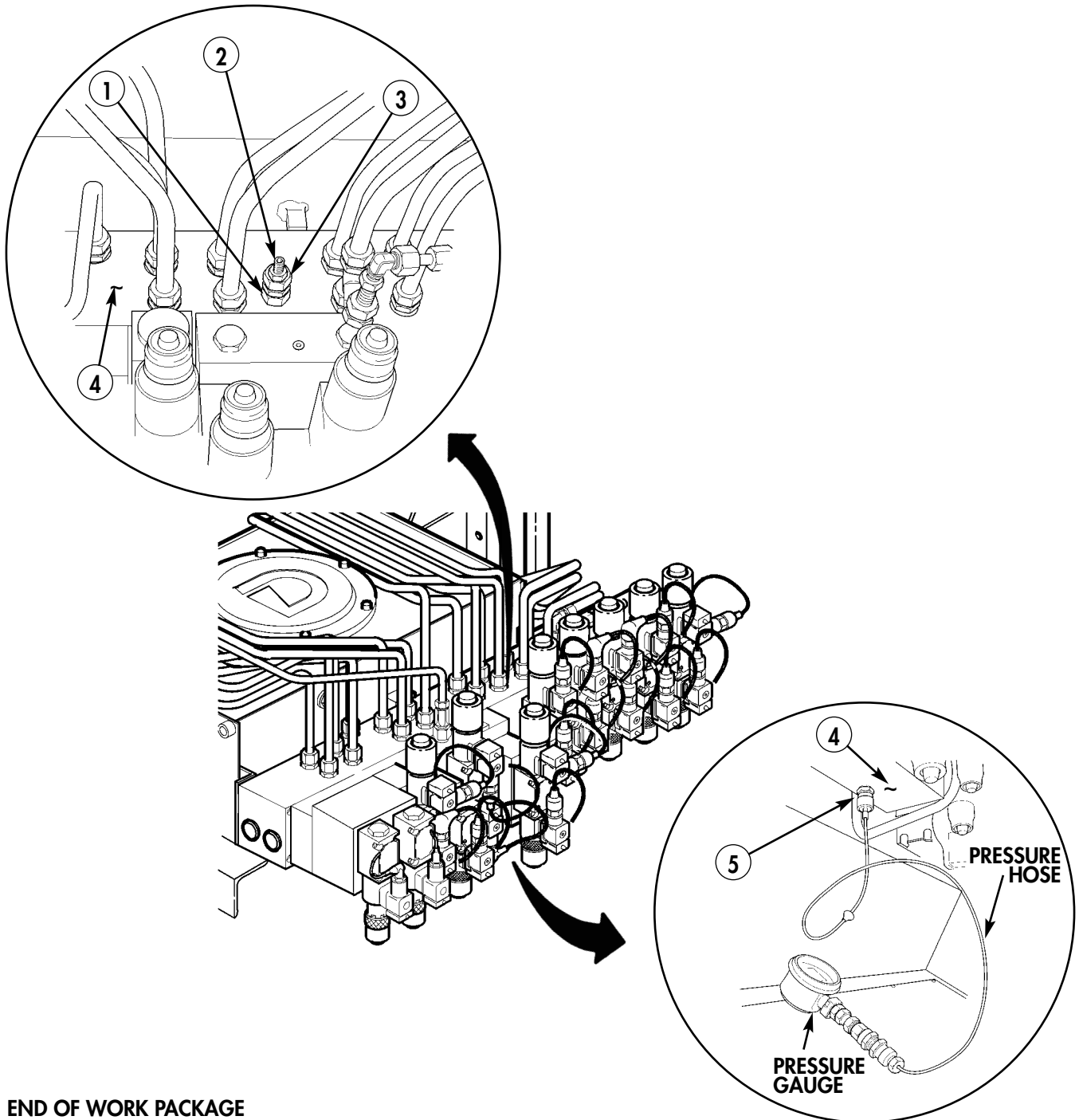
9. Operate hydraulic system and check for leaks. Refer to TM 5-5420-280-10.



HYDRAULIC CONTROL VALVE MANIFOLDS REPLACEMENT (Contd)

ADJUSTMENT

1. Install pressure hose and pressure gauge on pressure port (5) on bottom of manifold (4).
2. Loosen jamnut (3) on pressure relief valve (1) on top of manifold (4).
3. Start Launch Power Unit (LPU) or CBT, lock KY1 control valve in the ON position and adjust pressure relief valve setscrew (2) until pressure gauge reads 3,263.3 PSI (225 Bar), then tighten jamnut (3) and unlock KY1 control valve.
4. Shut down LPU or CBT.



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**HYDRAULIC CONTROL VALVE AND SOLENOID REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)**Materials/Parts**Hydraulic oil (Item 12, WP 0205 00)
Sixteen O-rings (WP 0164 00)
O-ring (WP 0164 00)

HYDRAULIC CONTROL VALVE AND SOLENOID REPLACEMENT (Contd)

REMOVAL

NOTE

Control valve solenoids can be replaced without removing hydraulic control valves from manifold. Only one solenoid is shown.

All control valve solenoids are replaced the same. Control valve solenoids KY1 and KY23 have locking clips, all other control valve solenoids have rubber push buttons. Control valve solenoid KY1 with clip is shown.

Perform steps 1 through 3 to remove control valve solenoid with valve installed on manifold.

1. Loosen screw (7) on connector (6) and disconnect connector (6) with electrical lead (5) from control valve (8).
2. Remove button retainer (10), button (11), spring (12), and locking clip (18) from control valve shaft (15).

NOTE

Note position of solenoid aligning pin and hole in control valve for installation.

3. Remove O-ring (13) and control valve solenoid (14) from control valve (8) and control valve shaft (15). Discard O-ring (13).

NOTE

All control valves are replaced the same. One single control valve and one double control valve are shown.

Have container ready to catch oil.

Tag all connectors for installation.

4. Loosen screw (7) on connector (6) and disconnect connector (6) with electrical lead (5) from control valve (8).
5. Remove four screws (4), control valve (8), four O-rings (2), manifold adapter (9), and four O-rings (2) from manifold (1). Discard O-rings (2).
6. Repeat steps 4 and 5 if removing double control valve (3).

INSTALLATION

NOTE

Apply a light coat of hydraulic oil to O-rings at installation.

1. Install four new O-rings (2) on control valve (3), and install manifold adapter (9) and control valve (3) on manifold (1) with four screws (4). Tighten screws (4) to 44 lb-in. (5 N•m).
2. Install four new O-rings (2) on control valve (8), and install manifold adapter (9) and control valve (8) on manifold (1) with four screws (4). Tighten screws (4) to 44 lb-in. (5 N•m).
3. Connect connector (6) to control valve (3) or (8) and tighten screw (7).
4. Operate hydraulic system and check for leaks. Refer to TM 5-5420-280-10.
5. Repeat steps 1 through 4 if installing double control valve (3).

NOTE

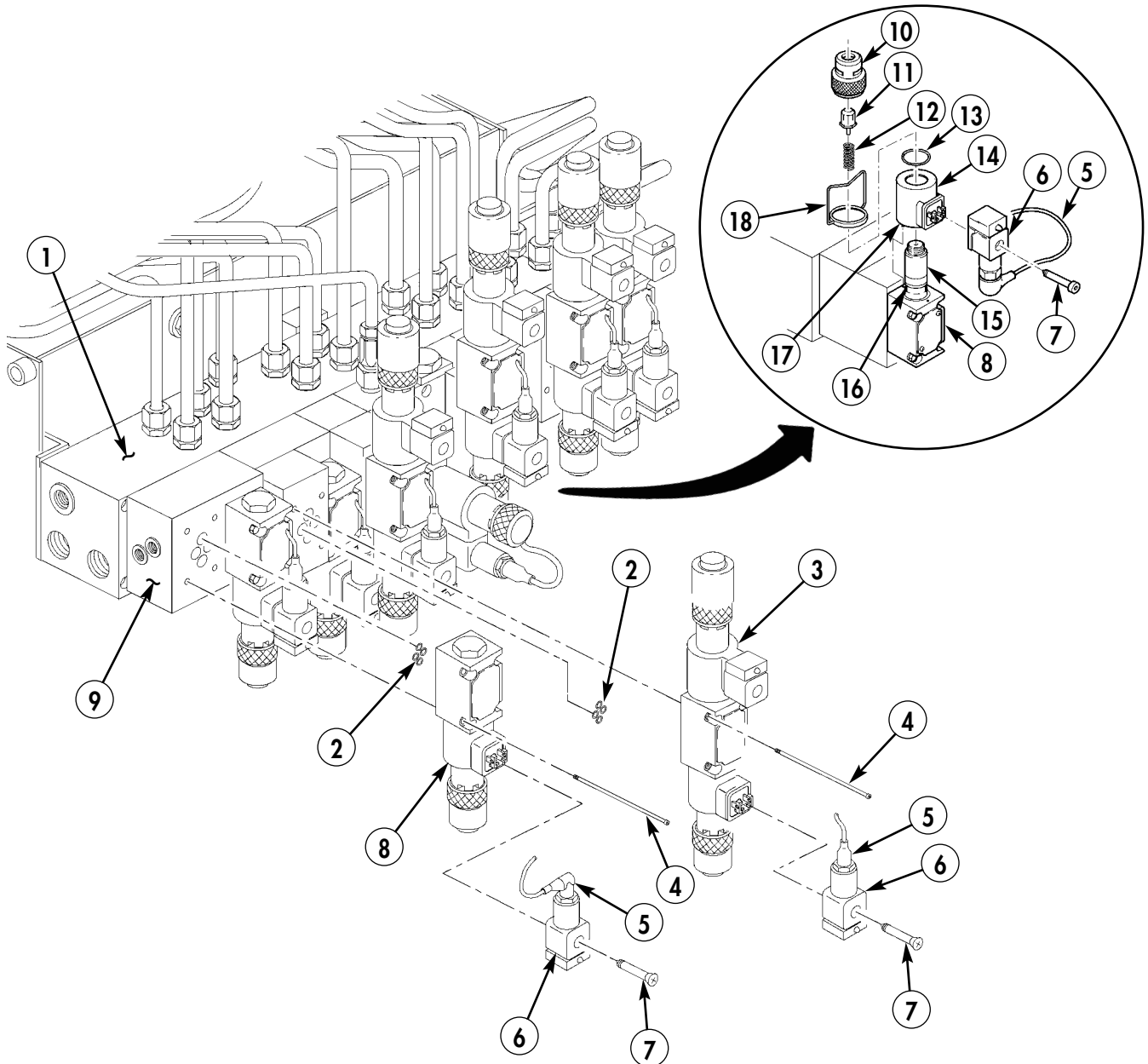
Apply a light coat of hydraulic oil to O-ring and control shaft at installation. Perform steps 6 through 9, if installing control valve solenoid on valve on manifold.

6. Install control valve solenoid (14) on control valve shaft (15) and align pin (17) on solenoid (14) with hole (16) on control valve (8).

HYDRAULIC CONTROL VALVE AND SOLENOID REPLACEMENT (Contd)

INSTALLATION (Contd)

7. Install new O-ring (13) on control valve shaft (15) and top of control valve solenoid (14).
8. Install locking clip (18), spring (12), and button (11) on control valve shaft (15) with button retainer (10).
9. Connect connector (6) to control valve (8) and tighten screw (7).



PALLET MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**HYDRAULIC PRESSURE RELIEF VALVES AND SOLENOID REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Hydraulic oil (Item 12, WP 0205 00)
Four O-rings (WP 0165 00)
Four tube seals (WP 0165 00)

References

TM 5-5420-280-10

Equipment Condition

Bridge halves removed from bridge pallet
(rear pressure relief valve only).
Refer to WP 0018 00.

HYDRAULIC PRESSURE RELIEF VALVES AND SOLENOID REPLACEMENT (Contd)

REMOVAL

CAUTION

Cap or plug all hoses, tubes, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag tubing for installation.

Have container ready to catch oil.

1. Loosen screw (1) and disconnect electrical plug (2) from receptacle (3) on solenoid (24) on hydraulic pressure relief valve (6).
2. Loosen nut (22) and disconnect steel tube (21) and tube seal (9) from adapter (23) on rear valve (6). Discard tube seal (9).
3. Loosen nut (10) and disconnect steel tube (11) and tube seal (9) from adapter (8) on valve (6). Discard tube seal (9).
4. Loosen nut (15) and disconnect steel tube (16) and tube seal (9) from adapter (19) on valve (6). Discard tube seal (9).
5. Loosen nut (13) and disconnect steel tube (14) from adapter (12) on valve (6). Discard tube seal (9).
6. Remove two nuts (18), washers (5), screws (4), and valve (6) from two brackets (17) on pallet (20).
7. If necessary, remove adapters (8), (12), (19), and (23) and four O-rings (7) from valve (6). Discard O-rings (7).

INSTALLATION

NOTE

Apply a light coat of hydraulic oil to O-rings and tube seals at installation.

Install tubing as noted at removal.

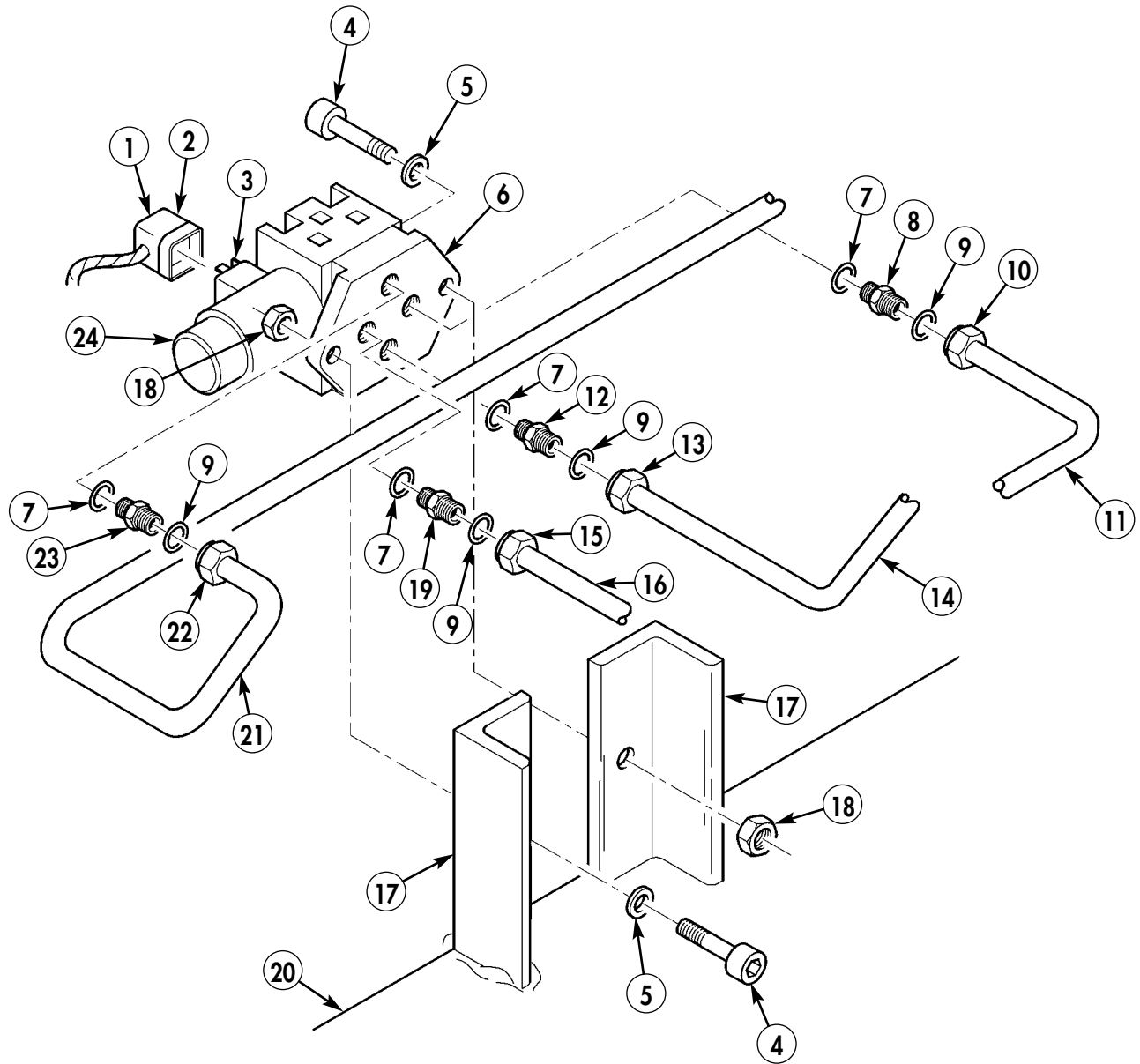
1. If removed, install four new O-rings (7) and adapters (23), (19), (12), and (8) on valve (6).
2. Install valve (6) on two brackets (17) of pallet (20) with two screws (4), washers (5), and nuts (18).
3. Connect steel tube (14) to adapter (12) with new tube seal (9) and tighten nut (13).
4. Connect steel tube (16) to adapter (19) with new tube seal (9) and tighten nut (15).
5. Connect steel tube (11) to adapter (8) with new tube seal (9) and tighten nut (10).
6. Connect steel tube (21) to adapter (23) with new tube seal (9) and tighten nut (22).
7. Connect electrical plug (2) to receptacle (3) on solenoid (24) of valve (6) and tighten screw (1).

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

8. Operate hydraulic system and check for leaks. Refer to TM 5-5420-280-10.
9. Install bridge halves on bridge pallet. Refer to WP 0018 00.

HYDRAULIC PRESSURE RELIEF VALVES AND SOLENOID REPLACEMENT (Contd)



PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

HYDRAULIC CHECK VALVES REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)
Hydraulic oil (Item 12, WP 0205 00)
Eight O-rings (WP 0166 00)
Twelve tube seals (WP 0166 00)
Five tube seals (WP 0166 00)

References

TM 5-5420-280-10

Equipment Condition

Bridge halves removed from bridge pallet for
supporting cylinders check valve.
Refer to WP 0018 00.

HYDRAULIC CHECK VALVES REPLACEMENT (Contd)

SWIVEL DRIVE HYDRAULIC CHECK VALVE REMOVAL

CAUTION

Cap or plug all hoses, tubes, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag tubing for installation.

Have container ready to catch oil.

1. Loosen two nuts (13) and remove steel tube (14) and two tube seals (8) from one-way check ball tee fitting (12) and elbow (30). Discard tube seals (8).
2. Loosen nut (11) and disconnect steel tube (10) and tube seal (8) from check ball tee fitting (12). Discard tube seal (8).
3. Loosen two nuts (9) and remove steel tube (15) and two tube seals (8) from top adapter (7) on swivel drive hydraulic check valve (5) and check ball tee fitting (12). Discard tube seals (8).
4. Loosen nut (18) and disconnect steel tube (17) and tube seal (19) from middle adapter (20) on swivel drive hydraulic check valve (5). Discard tube seal (19).
5. Loosen two nuts (24) and remove steel tube (25) and two tube seals (19) from lower adapter (20) on swivel drive hydraulic check valve (5) and elbow (23). Discard tube seals (19).
6. Loosen nut (32) and disconnect steel tube (31) and tube seal (19) from forward adapter (20) on swivel drive hydraulic check valve (5). Discard tube seal (19).
7. Remove two nuts (1), washers (2), screws (16), and swivel drive hydraulic check valve (5) from bracket (3) on pallet (4).
8. Remove three adapters (20), adapter (7), and four O-rings (6) from check valve (5). Discard O-rings (6).
9. If necessary, loosen nut (22) and remove elbow (23) from fitting (21).
10. If necessary, loosen nut (26) and remove elbow (30) from tube adapter (29).
11. If necessary, loosen nut (28) and remove tube adapter (29) and tube seal (19) from tee fitting (27). Discard tube seal (19).

SWIVEL DRIVE HYDRAULIC CHECK VALVE INSTALLATION

NOTE

Install tubing as noted at removal.

Apply a light coat of hydraulic oil to tube seals and O-rings at installation

1. If removed, install new tube seal (19) and tube adapter (29) on tee fitting (27) and tighten nut (28).
2. If removed, install elbow (30) on tube adapter (29) and tighten nut (26).
3. If removed, install elbow (23) on fitting (21) and tighten nut (22).
4. Install four new O-rings (6), three adapters (20), and adapter (7) on swivel drive hydraulic check valve (5).
5. Install swivel drive hydraulic check valve (5) on bracket (3) of pallet (4) with two screws (16), washers (2), and nuts (1).
6. Connect steel tube (31) with new tube seal (19) to forward adapter (20) on swivel drive check valve (5) and tighten nut (32).

HYDRAULIC CHECK VALVES REPLACEMENT (Contd)

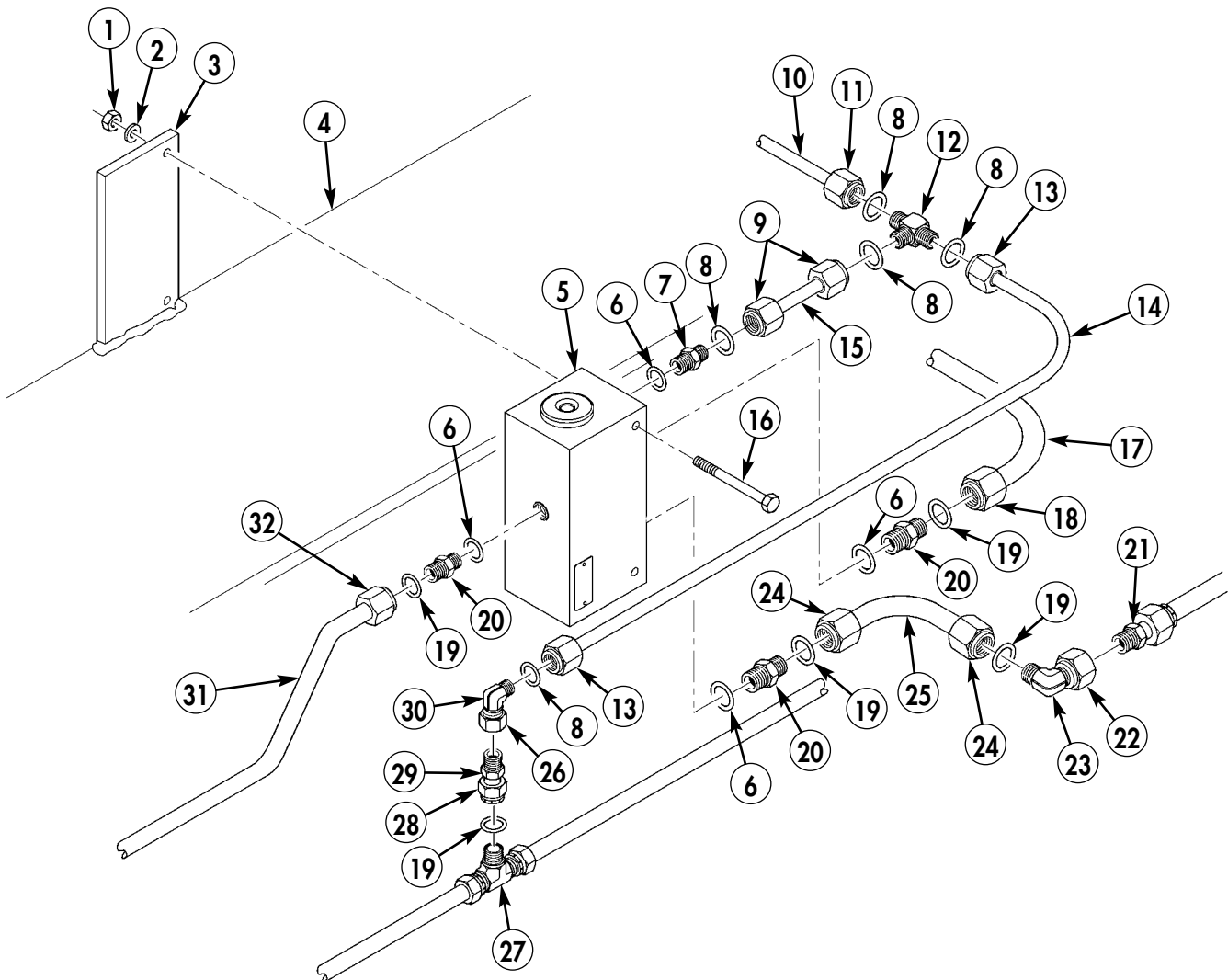
SWIVEL DRIVE HYDRAULIC CHECK VALVE INSTALLATION (Contd)

7. Install two new tube seals (19) and steel tube (25) on elbow (23) and lower adapter (20) of swivel drive hydraulic check valve (5) and tighten two nuts (24).
8. Connect steel tube (17) with new tube seal (19) to middle adapter (20) on check valve (5) and tighten nut (18).
9. Install one-way check ball tee fitting (12) on steel tube (15) with new tube seal (8) and tighten nut (9).
10. Connect other end of steel tube (15) with new tube seal (8) to top adapter (7) on check valve (5) and tighten nut (9).
11. Connect steel tube (10) with new tube seal (8) to check ball tee fitting (12) and tighten nut (11).
12. Install two new tube seals (8) and steel tube (14) on check ball tee fitting (12) and elbow (30) and tighten two nuts (13).

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

13. Operate hydraulic system and check for leaks. Refer to TM 5-5420-280-10.



HYDRAULIC CHECK VALVES REPLACEMENT (Contd)

SUPPORT CYLINDERS HYDRAULIC CHECK VALVE REMOVAL

CAUTION

Cap or plug all hoses, tubes, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

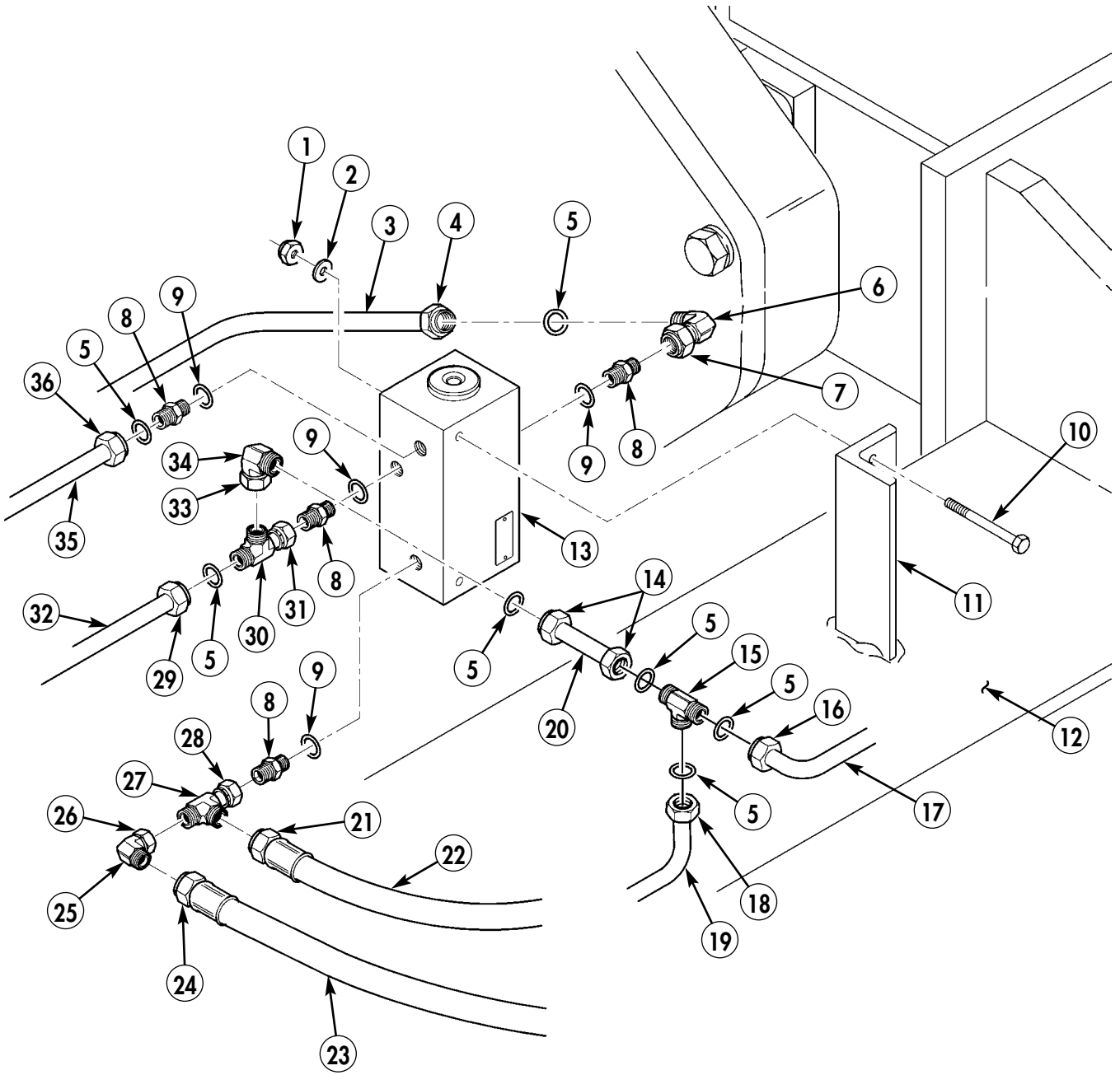
NOTE

Tag hoses and tubing for installation.

Have container ready to catch oil.

1. Loosen nut (4) and disconnect steel tube (3) and tube seal (5) from elbow (6) on support cylinders hydraulic check valve (13). Discard tube seal (5).
2. Loosen nut (7) and remove elbow (6) from adapter (8) on check valve (13).
3. Loosen nut (36) and disconnect steel tube (35) and tube seal (5) from top adapter (8) on check valve (13). Discard tube seal (5).
4. Loosen nut (29) and disconnect steel tube (32) and tube seal (5) from end of tee fitting (30) on middle of check valve (13). Discard tube seal (5).
5. Loosen nut (16) and disconnect steel tube (17) and tube seal (5) from end of tee fitting (15). Discard tube seal (5).
6. Loosen nut (18) and disconnect steel tube (19) and tube seal (5) from bottom of tee fitting (15). Discard tube seal (5).
7. Loosen two nuts (14) and remove steel tube (20) and two tube seals (5) from tee fitting (15) and elbow (34) on check valve (13). Discard tube seals (5).
8. Loosen nut (24) and disconnect hose (23) from elbow (25) on bottom of check valve (13).
9. Loosen nut (21) and disconnect hose (22) from tee fitting (27) on bottom of check valve (13).
10. Loosen nut (26) and remove elbow (25) from end of tee fitting (27).
11. Loosen nut (28) and remove tee fitting (27) from adapter (8) on bottom of check valve (13).
12. Loosen nut (33) and remove elbow (34) from tee fitting (30) on middle of check valve (13).
13. Loosen nut (31) and remove tee fitting (30) from middle adapter (8) on check valve (13).
14. Remove two nuts (1), washers (2), screws (10), and check valve (13) from bracket (11) on crossmember (12).
15. If necessary, remove four adapters (8) and O-rings (9) from check valve (13). Discard O-rings (9).

HYDRAULIC CHECK VALVES REPLACEMENT (Contd)



HYDRAULIC CHECK VALVES REPLACEMENT (Contd)

SUPPORT CYLINDERS HYDRAULIC CHECK VALVE INSTALLATION

NOTE

Install tubing and hoses as noted at removal.

Apply a light coat of hydraulic oil to tube seals and O-rings at installation.

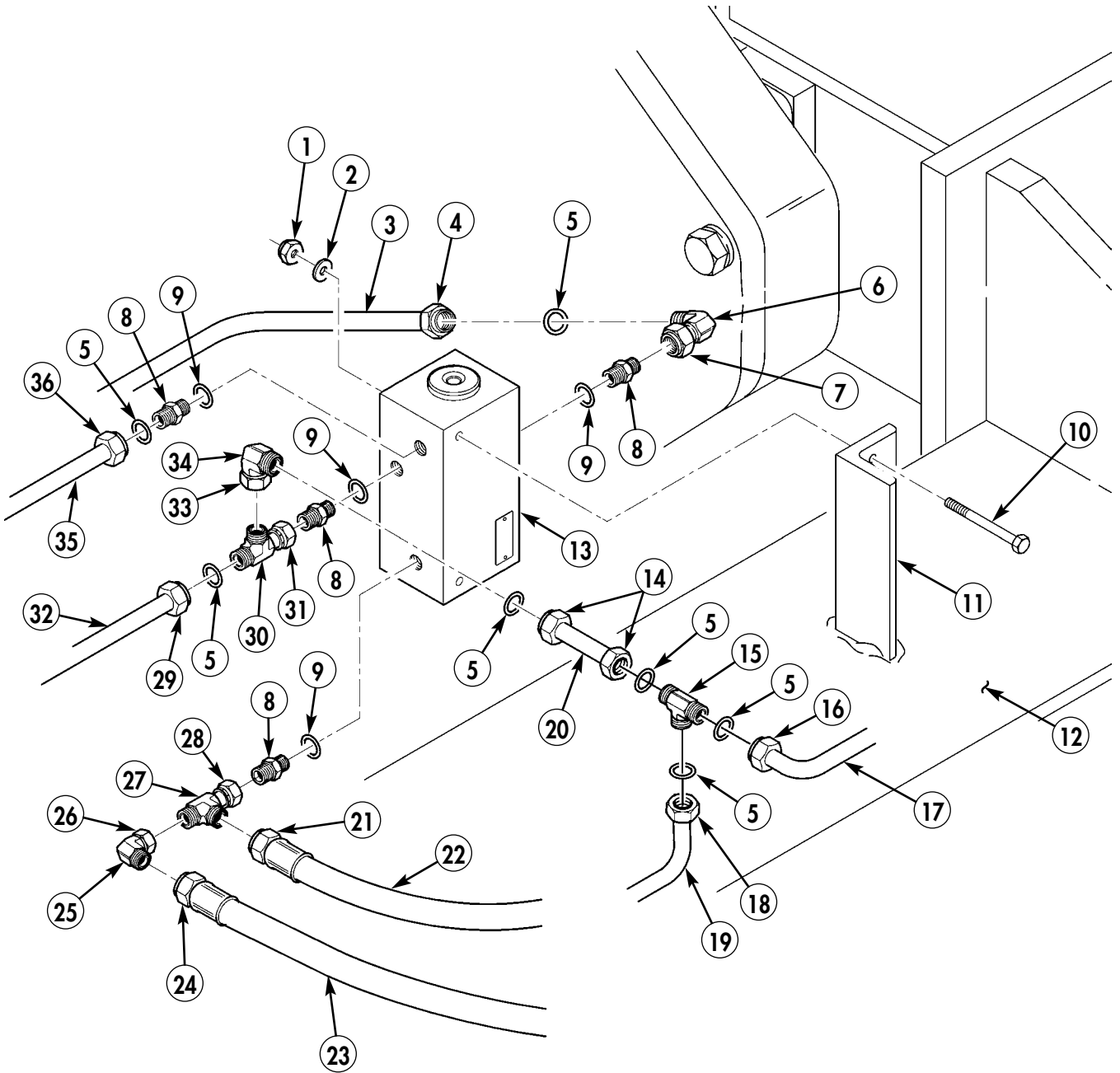
1. If removed, install four new O-rings (9) and adapters (8) on support cylinders hydraulic check valve (13).
2. Install check valve (13) on bracket (11) of crossmember (12) with two screws (10), washers (2), and nuts (1).
3. Install tee fitting (30) on middle adapter (8) of check valve (13) and tighten nut (31).
4. Install elbow (34) on top of tee fitting (30) and tighten nut (33).
5. Install tee fitting (27) on bottom adapter (8) of check valve (13) and tighten nut (28).
6. Install elbow (25) on end of tee fitting (27) and tighten nut (26).
7. Connect hose (22) to tee fitting (27) on check valve (13) and tighten nut (21).
8. Connect hose (23) to elbow (25) on check valve (13) and tighten nut (24).
9. Install end of tee fitting (15) on steel tube (20) with new tube seal (5) and tighten nut (14).
10. Connect other end of steel tube (20) with new tube seal (5) on elbow (34) of check valve (13) and tighten nut (14).
11. Connect steel tube (19) to bottom of tee fitting (15) with new tube seal (5) and tighten nut (18).
12. Connect steel tube (17) to end of tee fitting (15) with new tube seal (5) and tighten nut (16).
13. Connect steel tube (32) to end of middle tee fitting (30) with new tube seal (5) and tighten nut (29).
14. Connect steel tube (35) to top adapter (8) with new tube seal (5) and tighten nut (36).
15. Install elbow (6) on adapter (8) and tighten nut (7).
16. Connect steel tube (3) on elbow (6) with new tube seal (5) and tighten nut (4).
17. Operate hydraulic system and check for leaks. Refer to TM 5-5420-280-10.

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

18. Install bridge halves on bridge pallet WP 0018 00.

HYDRAULIC CHECK VALVES REPLACEMENT (Contd)



PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

FRONT EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, MAIN EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, REAR EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, FORWARD SUPPORT WHEEL CYLINDERS FLOW DIVIDER, AND REAR SUPPORT WHEEL CYLINDERS FLOW DIVIDER REPLACEMENT

REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Bridge halves removed from bridge pallet.
Refer to WP 0018 00.

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)
Hydraulic oil (Item 12, WP 0205 00)
Fifteen O-rings (WP 0167 00)
Fifteen locknuts (WP 0167 00)
Fourteen tube seals (WP 0167 00)
Tube seal (WP 0167 00)

FRONT EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, MAIN EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, REAR EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, FORWARD SUPPORT WHEEL CYLINDERS FLOW DIVIDER, AND REAR SUPPORT WHEEL CYLINDERS FLOW DIVIDER REPLACEMENT (Contd)

REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

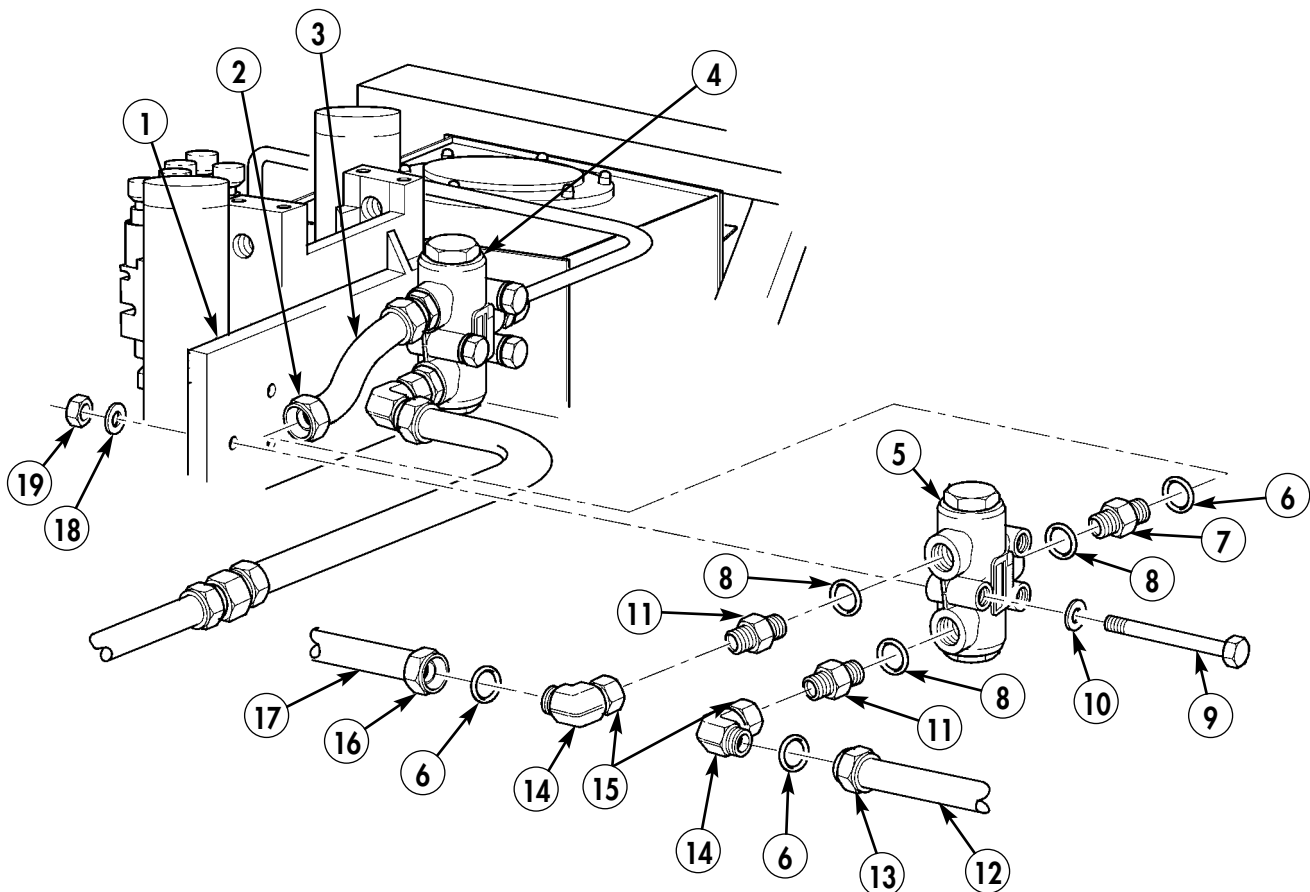
NOTE

Tag tubing for installation.

Have container ready to catch oil.

a. Front Expanding Cylinders Flow Divider

1. Loosen nuts (13) and (16) and remove steel tubes (12) and (17) and tube seals (6) from two elbows (14) on fittings (11) of front flow divider (5). Discard tube seals (6).
2. Loosen two nuts (15) and remove elbows (14) from fittings (11) on front flow divider (5).
3. Loosen nut (2) on steel tube (3) at fitting (7) on front flow divider (5).
4. Remove three locknuts (19), washers (18), screws (9), washers (10), and front flow divider (5) from steel tube (3), tube seal (6), and bracket (1). Discard locknuts (19) and tube seal (6).
5. Remove two fittings (11), fitting (7), and three O-rings (8) from front flow divider (5). Discard O-rings (8).

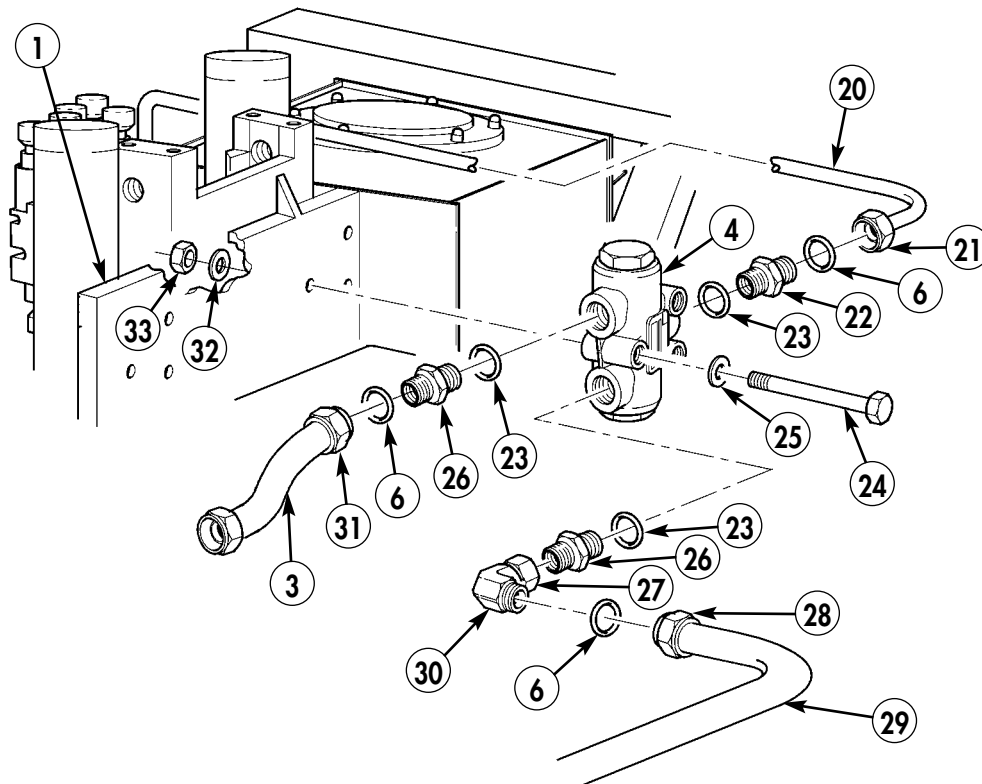


FRONT EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, MAIN EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, REAR EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, FORWARD SUPPORT WHEEL CYLINDERS FLOW DIVIDER, AND REAR SUPPORT WHEEL CYLINDERS FLOW DIVIDER REPLACEMENT (Contd)

REMOVAL (Contd)

b. Main Expanding Cylinders Flow Divider

1. Loosen nuts (31), (28), and (21) and remove steel tubes (3), (29), and (20), and three tube seals (6) from fitting (26), elbow (30), and fitting (22) on main flow divider (4). Discard tube seals (6).
2. Loosen nut (27) and remove elbow (30) from fitting (26) on main flow divider (4).
3. Remove three locknuts (33), washers (32), screws (24), washers (25), and main flow divider (4) from bracket (1). Discard locknuts (33).
4. Remove two fittings (26), fitting (22), and three O-rings (23) from main flow divider (4). Discard O-rings (23).



FRONT EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, MAIN EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, REAR EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, FORWARD SUPPORT WHEEL CYLINDERS FLOW DIVIDER, AND REAR SUPPORT WHEEL CYLINDERS FLOW DIVIDER REPLACEMENT (Contd)

REMOVAL (Contd)

c. Rear Expanding Cylinders Flow Divider

1. Loosen nut (2) and remove steel tube (1) and tube seal (3) from adapter (4) on rear flow divider (6). Discard tube seals (3).
2. Loosen nut (10) and remove steel tube (9) and tube seal (3) from adapter (11) on rear flow divider (6). Discard tube seals (3).
3. Loosen nut (13) and remove steel tube (14) and tube seal (3) from adapter (12) on rear flow divider (6). Discard tube seals (3).
4. Remove three locknuts (16), washers (15), screws (8), washers (7), and rear flow divider (6) from bracket (17) on forward pin wheel drive bracket (18). Discard locknuts (16).
5. Remove adapters (4), (11), and (12), and three O-rings (5) from rear flow divider (6). Discard O-rings (5).

INSTALLATION

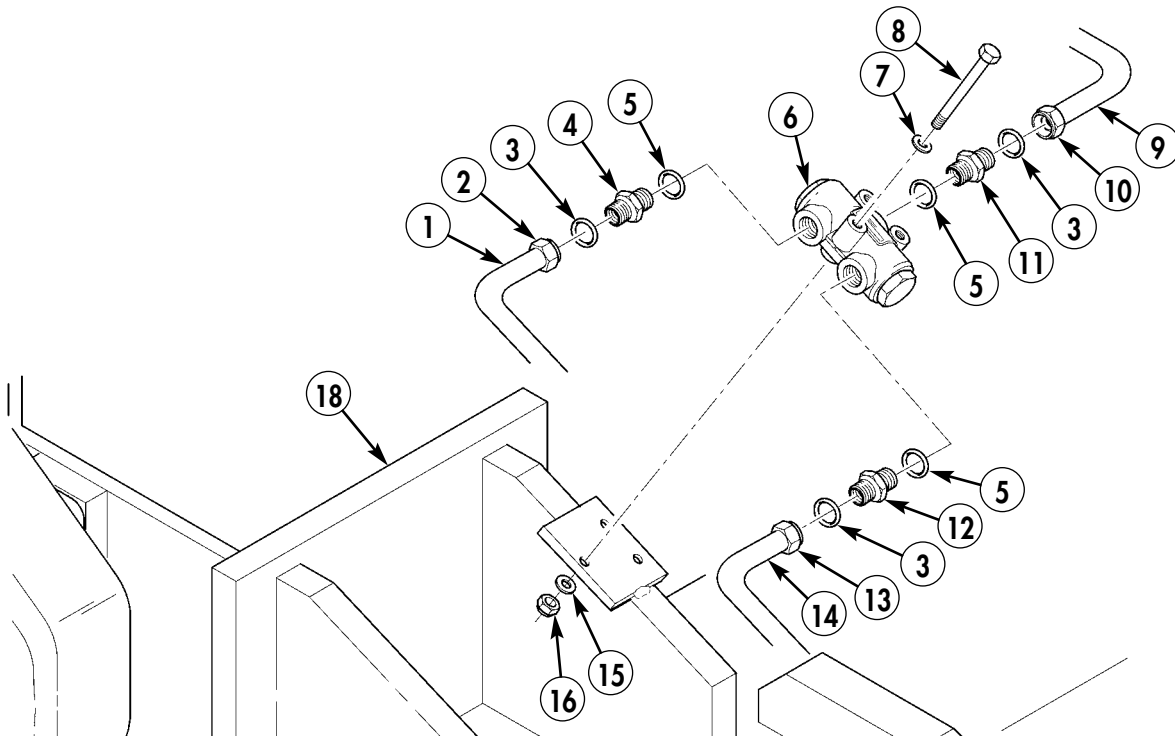
NOTE

Apply a light coat of hydraulic oil to O-rings at installation.

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

d. Rear Expanding Cylinders Flow Divider

1. Install three new O-rings (5) and adapters (4), (11), and (12) on rear flow divider (6).
2. Install rear flow divider (6) on bracket (17) of forward pin wheel drive bracket (18) with three washers (7), screws (8), washers (15), and new locknuts (16).
3. Install new tube seal (3) and steel tube (14) on adapter (12) of rear flow divider (6) and tighten nut (13).
4. Install new tube seal (3) and steel tube (9) on adapter (11) of rear flow divider (6) and tighten nut (10).
5. Install new tube seal (3) and steel tube (1) on adapter (4) of rear flow divider (6) and tighten nut (2).

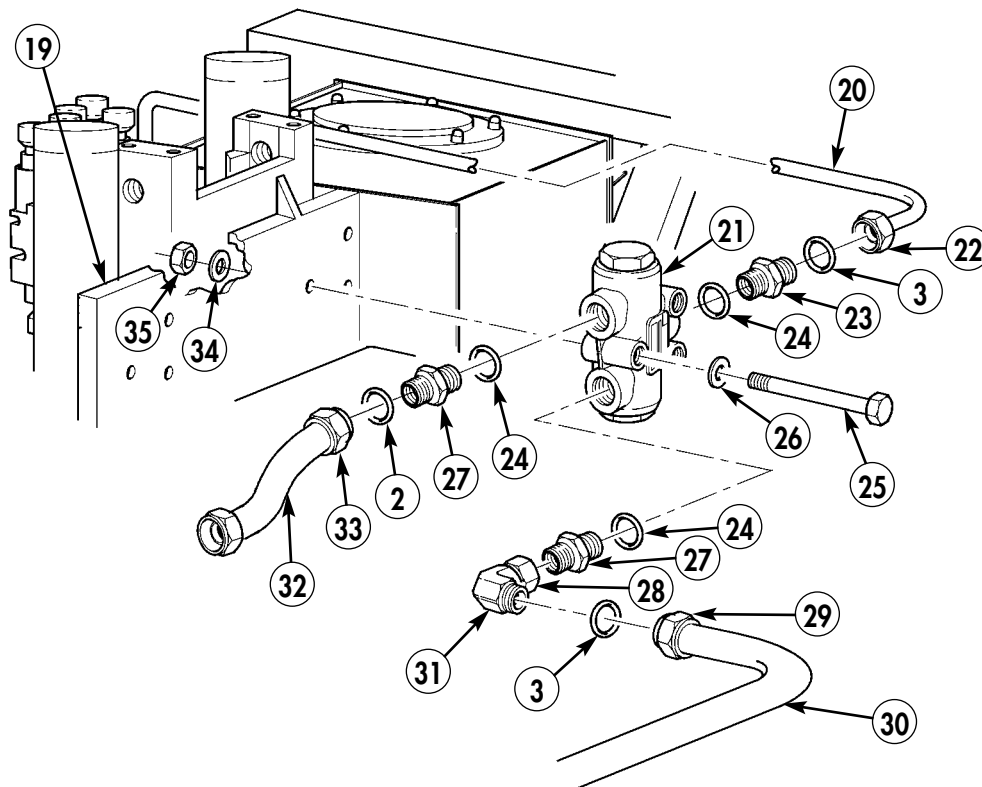


FRONT EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, MAIN EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, REAR EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, FORWARD SUPPORT WHEEL CYLINDERS FLOW DIVIDER, AND REAR SUPPORT WHEEL CYLINDERS FLOW DIVIDER REPLACEMENT (Contd)

INSTALLATION (Contd)

e. Main Expanding Cylinders Flow Divider

1. Install three new O-rings (24), fitting (23), and two fittings (27) on main flow divider (21).
2. Install elbow (31) on bottom fitting (27) and tighten nut (28).
3. Install main flow divider (21) on bracket (19) with three washers (26), screws (25), washers (34), and new locknuts (35).
4. Install three new tube seals (3) and steel tubes (20), (30), and (32) on fitting (27), elbow (31), and fitting (23) of main flow divider (21) and tighten nuts (22), (29), and (33).

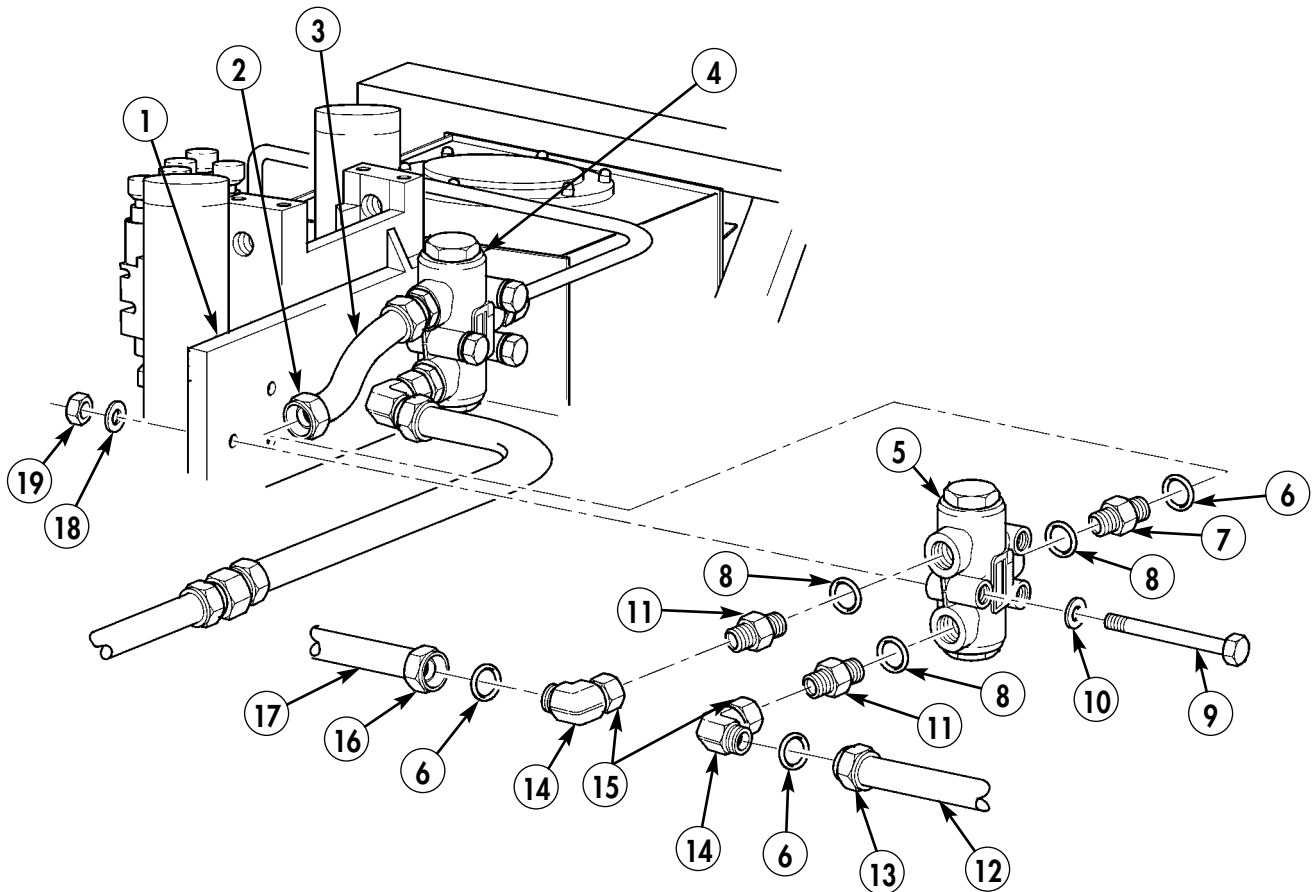


FRONT EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, MAIN EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, REAR EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, FORWARD SUPPORT WHEEL CYLINDERS FLOW DIVIDER, AND REAR SUPPORT WHEEL CYLINDERS FLOW DIVIDER REPLACEMENT (Contd)

INSTALLATION (Contd)

f. Front Expanding Cylinders Flow Divider

1. Install three new O-rings (8), fitting (7), and two fittings (11) on front flow divider (5).
2. Install two elbows (14) on fittings (11) and tighten nuts (15).
3. Install front flow divider (5) and new tube seal (6) on steel tube (3) from main flow divider (4) and bracket (1) with three washers (10), screws (9), washers (18), and new locknuts (19) and tighten nut (2) on steel tube (3) from main flow divider (4).
4. Install two new tube seals (6) and steel tubes (12) and (17) on elbows (14) of front flow divider (5) and tighten nuts (13) and (16).
5. Install bridge halves on bridge pallet. Refer to WP 0018 00.



FRONT EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, MAIN EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, REAR EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, FORWARD SUPPORT WHEEL CYLINDERS FLOW DIVIDER, AND REAR SUPPORT WHEEL CYLINDERS FLOW DIVIDER REPLACEMENT (Contd)

REMOVAL

g. Forward Support Wheel Cylinders Flow Divider

1. Loosen nut (6) and remove steel tube (5) and tube seal (4) from adapter (3) on flow divider (10). Discard tube seals (4).
2. Loosen nut (16) and remove steel tube (15) and tube seal (4) from adapter (17) on flow divider (10). Discard tube seals (4).
3. Loosen nut (13) and remove steel tube (14) and tube seal (4) from elbow (12) on adapter (11) on flow divider (10).
4. Remove elbow (12) from adapter (11).
5. Remove three locknuts (9), washers (18), screws (1) washers (18), and flow divider (10) from crossmember (7). Discard locknuts (9).
6. Remove adapters (3), (11), and (17), and three O-rings (2) from flow divider (10). Discard O-rings (2).

INSTALLATION

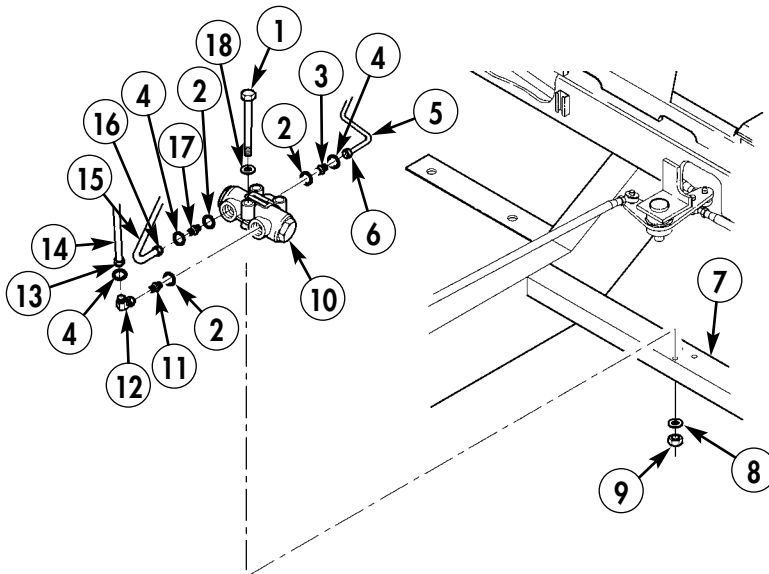
NOTE

Apply a light coat of hydraulic oil to O-rings at installation.

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is not requirement for bleeding air from the system.

h. Forward Support Wheel Cylinders Flow Divider

1. Install three new O-rings (2) and adapters (4), (11), and (17) on flow divider (10).
2. Install flow divider (10) on crossmember (7) with three washers (18), screws (1), washers (8), and new locknuts (9).
3. Install elbow (12) on adapter (11).
4. Install new tube seal (4) and steel tube (13) on elbow (12) on flow divider (10) and tighten nut (13).
5. Install new tube seal (4) and steel tube (15) on adapter (17) on flow divider (10) and tighten nut (16).
6. Install new tube seal (4) and steel tube (5) on adapter (3) on flow divider (10) and tighten nut (6).



FRONT EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, MAIN EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, REAR EXPANDING CYLINDERS HYDRAULIC FLOW DIVIDER, FORWARD SUPPORT WHEEL CYLINDERS FLOW DIVIDER, AND REAR SUPPORT WHEEL CYLINDERS FLOW DIVIDER REPLACEMENT (Contd)

REMOVAL

i. Rear Support Wheel Cylinders Flow Divider

1. Loosen nut (2) and remove steel tube (1) and tube seal (3) from adapter (4) on reducer (5) on flow divider (8). Discard tube seals (3).
2. Loosen nut (15) and remove steel tube (16) and tube seal (3) from elbow (14) on adapter (12) on flow divider (8). Discard tube seals (3).
3. Loosen nut (18) and remove steel tube (17) and tube seal (19) from adapter (20) on flow divider (8). Discard tube seals (19).
4. Loosen nut (13) and remove elbow (14) and adapters (12) and (4) from reducers (5) and (11).
5. Remove three locknuts (10), washers (9), screws (21) washers (22), and flow divider (8) from crossmember (7). Discard locknuts (10).
6. Remove adapter (20), reducers (5) and (11), and three O-rings (6) from flow divider (8). Discard O-rings (6).

INSTALLATION

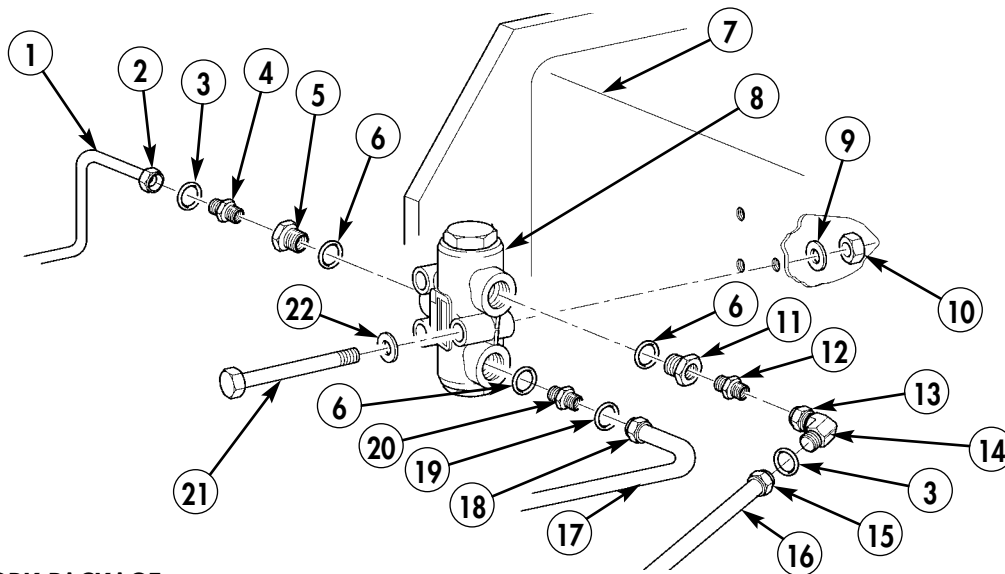
NOTE

Apply a light coat of hydraulic oil to O-rings at installation.

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is not requirement for bleeding air from the system.

j. Rear Support Wheel Cylinders Flow Divider

1. Install three new O-rings (6), adapter (20), and reducers (5) and (11) on flow divider (8).
2. Install flow divider (8) on crossmember (7) with three washers (22), screws (21), washers (14), and new locknuts (10).
3. Install adapters (12), and elbow (14) on reducer (11) and tighten nut (13) on elbow (14).
4. Install adapters (4) on reducer (5), and adapter (20) on flow divider (8).
5. Install new tube seal (19) and steel tube (17) on adapter (20) on flow divider (8) and tighten nut (18).
6. Install new tube seal (3) and steel tube (16) on elbow (14) on flow divider (8) and tighten nut (15).
7. Install new tube seal (3) and steel tube (1) on adapter (4) on flow divider (8) and tighten nut (2).



END OF WORK PACKAGE

0078 00-8

PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

HYDRAULIC SYSTEM FILTER ASSEMBLY AND GAUGE REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Hydraulic oil (Item 12, WP 0205 00)
Sealing compound (Item 16, WP 0205 00)
O-ring (WP 0168 00)
Oil filter (WP 0168 00)

Equipment Condition

Drain auxiliary hydraulic reservoir.
Refer to WP 0016 00.
Drain main hydraulic reservoir.
Refer to WP 0016 00.

HYDRAULIC SYSTEM FILTER ASSEMBLY AND GAUGE REPLACEMENT (Contd)

REMOVAL

NOTE

Have container ready to catch oil.

1. Remove oil filter (2) and O-ring (3) from oil filter housing (4) on hydraulic reservoir (1). Discard oil filter (2) and O-ring (3).
2. Remove gauge (5) from oil filter housing (4).

INSTALLATION

NOTE

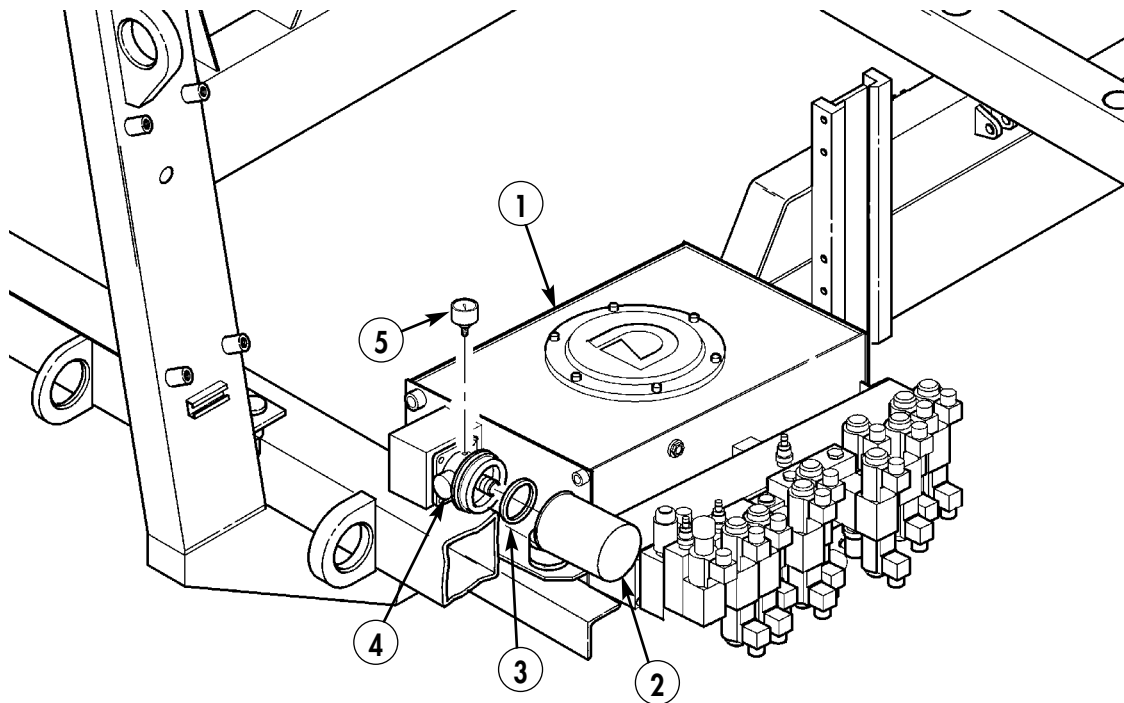
Apply a light coat of hydraulic oil to O-ring at installation.

1. Apply sealing compound to thread of gauge (5) and install gauge (5) on oil filter housing (4).
2. Install new O-ring (3) and new oil filter (2) on oil filter housing (4).
3. Fill hydraulic reservoir (1) at auxiliary hydraulic reservoir until oil level in main hydraulic reservoir (1) is at center of site glass. Refer to WP 0016 00.

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

4. Operate hydraulic system and check for leaks. Refer to TM 5-5420-280-10.



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

HYDRAULIC SYSTEM PRE-FILTER AND FLOW CONTROL VALVE REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Hydraulic oil (Item 12, WP 0205 00)
Cap and plug set (Item 3, WP 0205 00)
Eight lockwashers (WP 0169 00)
Five O-rings (WP 0169 00)
Seven tube seals (WP 0169 00)

HYDRAULIC SYSTEM PRE-FILTER AND FLOW CONTROL VALVE REPLACEMENT (Contd)**REMOVAL****CAUTION**

Cap or plug all hoses, tubes, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Have container ready to catch oil.

Tag all steel tubes and hoses for installation.

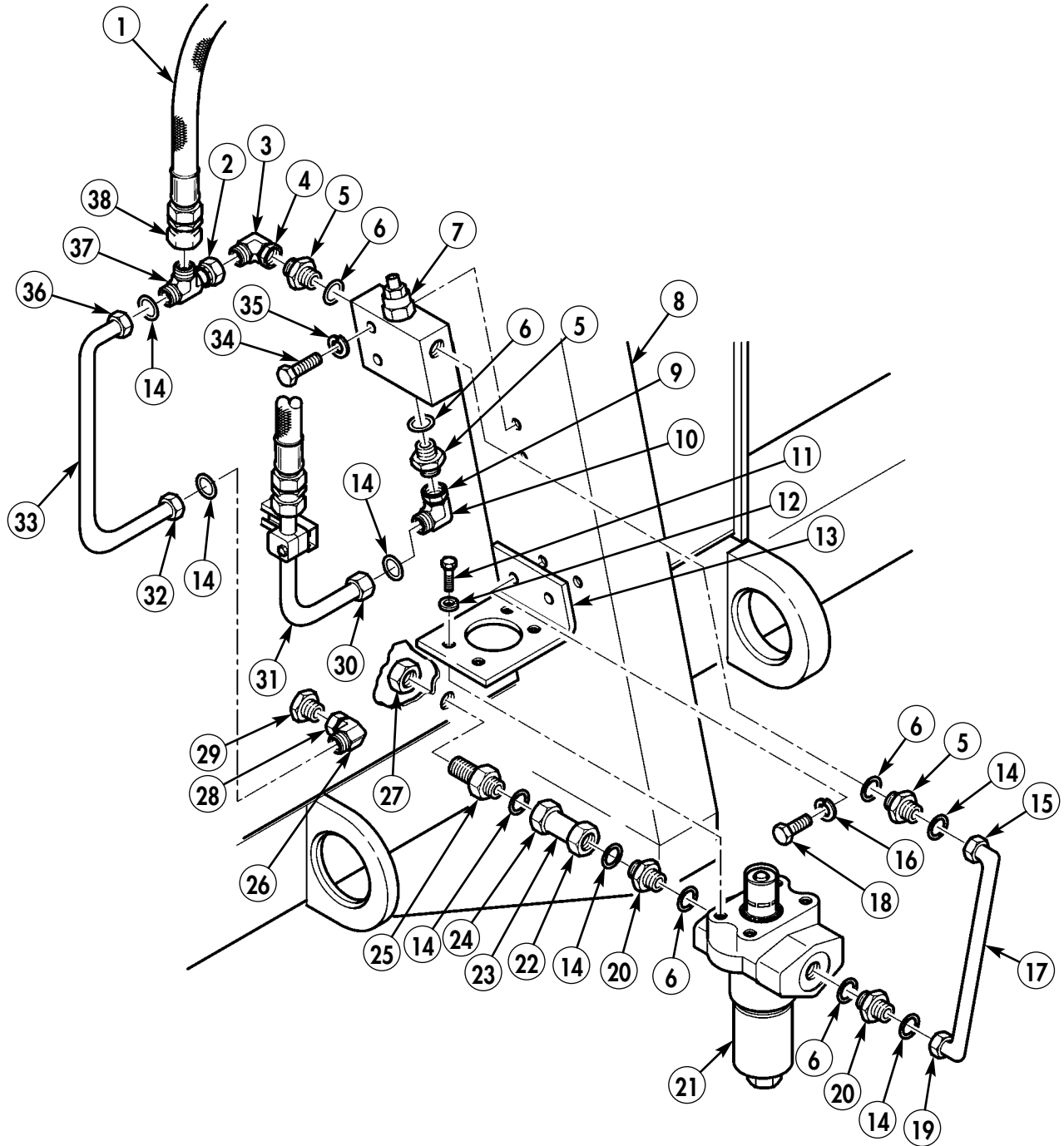
1. Loosen nut (38) and disconnect hose (1) from tee fitting (37) on elbow (3).
2. Loosen nuts (36) and (32) and remove steel tube (33) and tube seals (14) from tee fitting (37) on flow control valve elbow (3) and bulkhead elbow (26). Discard tube seals (14).
3. Loosen nut (30) and disconnect steel tube (31) and tube seal (14) from elbow (10) on bottom of flow control valve (7). Discard tube seal (14).
4. Loosen nuts (15) and (19) and disconnect steel tube (17) and two tube seals (14) from adapter (5) on flow control valve (7) and adapter (20) on pre-filter (21). Discard tube seals (14).
5. Remove two screws (34), lockwashers (35), and flow control valve (7) from A-frame (8). Discard lockwashers (35).

NOTE

Note position of tee fitting and elbows for installation.

6. Loosen nut (2) and remove tee fitting (37) from elbow (3).
7. Loosen nuts (4) and (9) and remove elbows (3) and (10) from two adapters (5) on flow control valve (7).
8. Remove three adapters (5) and O-rings (6) from flow control valve (7). Discard O-rings (6).
9. Loosen nut (28) and remove elbow (26) from bulkhead fitting (29) on A-frame (8).
10. Loosen nuts (22) and (24) and remove steel tube (23) and two tube seals (14) from between adapter (20) on pre-filter (21) and bulkhead fitting (25) on A-frame (8). Discard tube seals (14).
11. Remove two screws (18), lockwashers (16), and pre-filter bracket (13) with pre-filter (21) from A-frame (8). Discard lockwashers (16).
12. Remove four screws (11), lockwashers (12), and pre-filter (21) from filter bracket (13). Discard lockwashers (12).
13. Remove two adapters (20) and O-rings (6) from pre-filter (21). Discard O-rings (6).
14. Remove two nuts (27) and bulkhead fittings (25) and (29) from A-frame (8).

HYDRAULIC SYSTEM PRE-FILTER AND FLOW CONTROL VALVE REPLACEMENT (Contd)



HYDRAULIC SYSTEM PRE-FILTER AND FLOW CONTROL VALVE REPLACEMENT (Contd)

INSTALLATION

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

1. Install bulkhead fittings (25) and (29) on A-frame (8) with two nuts (27).

NOTE

Apply a light coat of oil to O-rings and tube seals at installation.

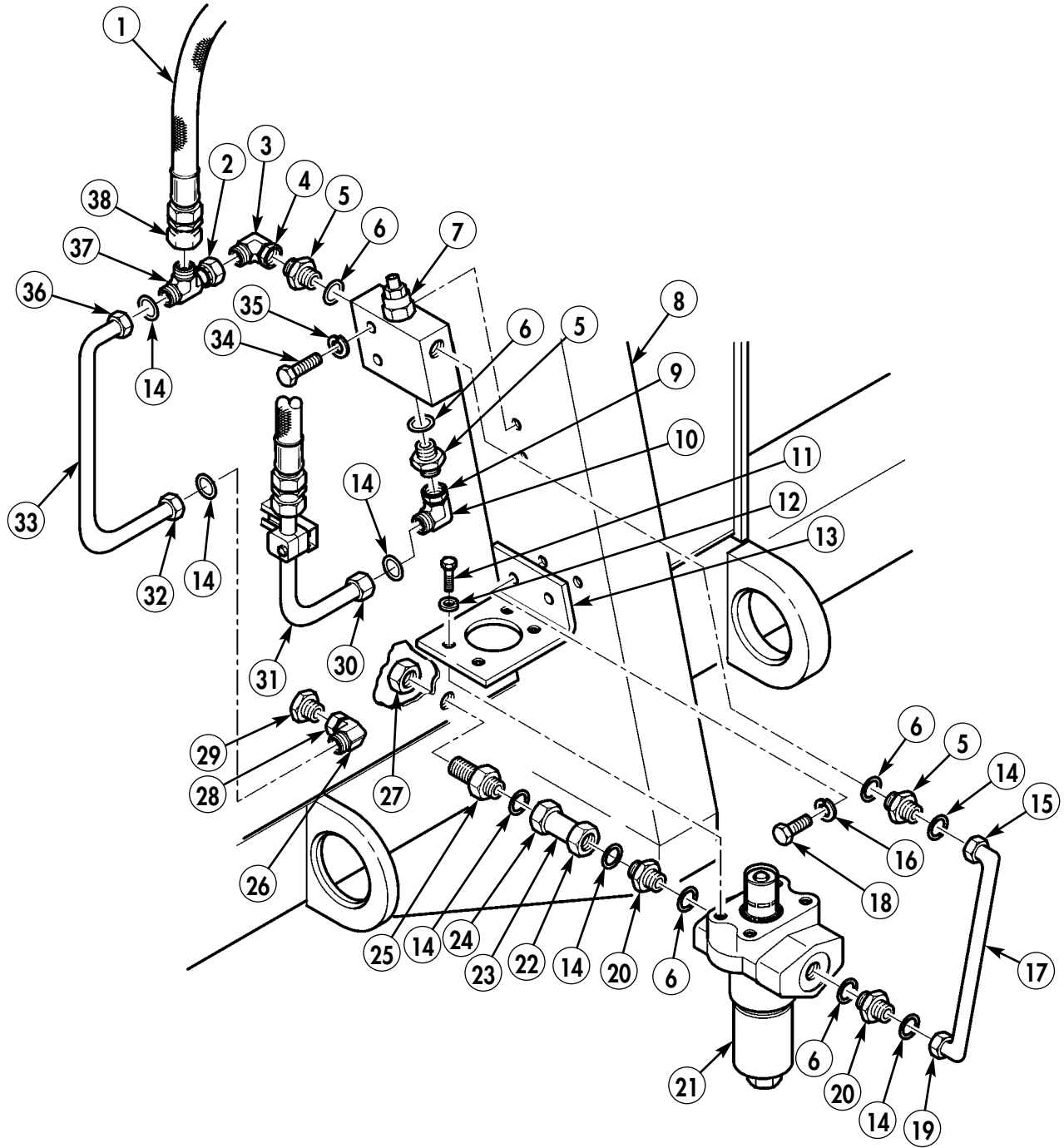
2. Install two new O-rings (6) and adapters (20) on pre-filter (21).
3. Install pre-filter (21) on filter bracket (13) with four new lockwashers (12) and screws (11).
4. Install filter bracket (13) with pre-filter (21) on A-frame (8) with two new lockwashers (16) and screws (18).
5. Install two new tube seals (14) and steel tube (23) between adapter (20) on pre-filter (21) and bulkhead fitting (25) on A-frame (8) and tighten nuts (22) and (24).
6. Install elbow (26) on bulkhead fitting (29) and tighten nut (28).
7. Install three new O-rings (6) and adapters (5) on flow control valve (7).

NOTE

Install elbows and tee fitting as noted at removal.

8. Install elbows (3) and (10) on adapters (5) of flow control valve (7) and tighten nuts (4) and (9).
9. Install tee fitting (37) on elbow (3) and tighten nut (2).
10. Install flow control valve (7) on A-frame (8) with two new lockwashers (35) and screws (34).
11. Install two new tube seals (14) and steel tube (17) between adapter (20) on pre-filter (21) and adapter (5) on flow control valve (7) and tighten nuts (19) and (15).
12. Install new tube seal (14) and connect steel tube (31) to bottom elbow (10) on flow control valve (7) and tighten nut (30).
13. Install two new tube seals (14) and steel tube (33) between tee fitting (37) on flow control valve (7) and elbow (26) on bulkhead fitting (29) and tighten nuts (36) and (32).
14. Connect hose (1) on tee fitting (37) and tighten nut (38).

HYDRAULIC SYSTEM PRE-FILTER AND FLOW CONTROL VALVE REPLACEMENT (Contd)



END OF WORK PACKAGE

PALLET MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

HYDRAULIC SUPPORTING WHEELS CONTROL VALVE, SELECTOR VALVE, PRESSURE REGULATOR VALVE, PRESSURE GAUGE, AND PUMP REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

References

TM 5-5420-280-10

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)
Hydraulic oil (Item 12, WP 0205 00)
Thirteen O-rings (WP 0170 00)
Two locknuts (WP 0170 00)
Two locknuts (WP 0170 00)
Two locknuts (WP 0170 00)
Three O-rings (WP 0170 00)
O-ring (WP 0170 00)
Two O-rings (WP 0170 00)
Two locknuts (WP 0170 00)
Twenty tube seals (WP 0170 00)

HYDRAULIC SUPPORTING WHEELS CONTROL VALVE, SELECTOR VALVE, PRESSURE REGULATOR VALVE, PRESSURE GAUGE, AND PUMP REPLACEMENT (Contd)

CONTROL VALVE REMOVAL

CAUTION

Cap or plug all tubes, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag tubing for installation.

Have container ready to catch oil.

1. Loosen nut (7) on tube (8) and remove tube (8) and tube seal (6) from adapter (5) on control valve (2). Discard tube seal (6).
2. Loosen nut (10) on tube (11) and remove tube (11) and tube seal (6) from adapter (9) on control valve (2). Discard tube seal (6).
3. Loosen nut (18) on tube (17) and remove tube (17) and tube seal (6) from adapter (19) on control valve (2). Discard tube seal (6).
4. Loosen nut (13) on tube (14) and remove tube (14) and tube seal (6) from adapter (12) on control valve (2). Discard tube seal (6).
5. Remove two locknuts (1), washers (20), screws (15), and control valve (2) from A-frame bracket (16). Discard locknuts (1).
6. Remove adapters (5), (9), (12), and (19) from four reducers (4) on bottom of control valve (2).
7. Remove four reducers (4) and O-rings (3) from bottom of control valve (2). Discard O-rings (3).

CONTROL VALVE INSTALLATION

NOTE

Apply a light coat of hydraulic oil to O-rings and tube seals at installation.

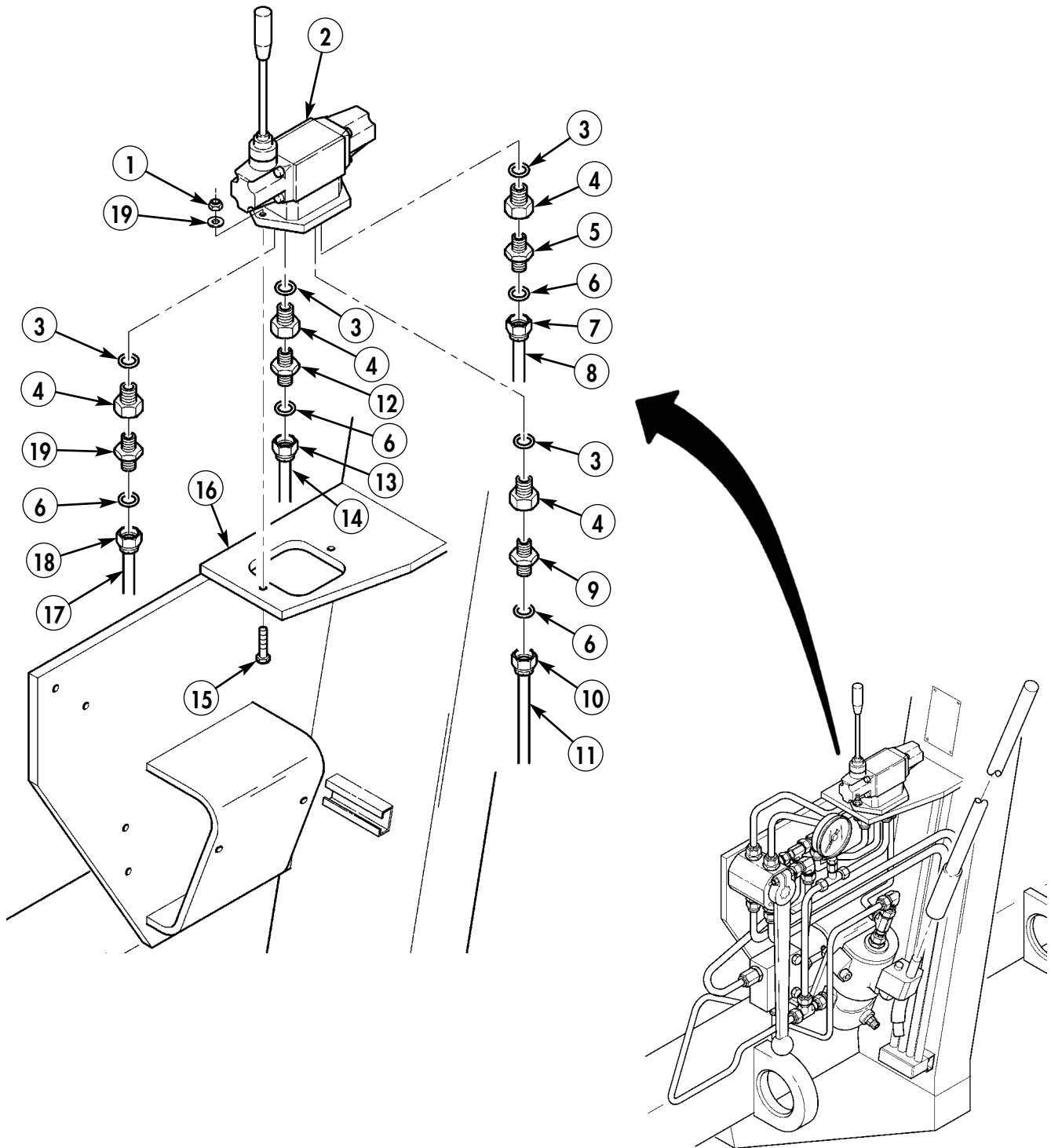
1. Install four new O-rings (3) and reducers (4) on bottom of control valve (2).
2. Install adapters (19), (12), (9), and (5) on four reducers (4) on bottom of control valve (2).
3. Install control valve (2) on A-frame bracket (16) with two screws (15), washers (20), and new locknuts (1).

NOTE

Install tubing as noted at removal.

4. Install new tube seal (6) and tube (14) on adapter (11) on bottom of control valve (2) and tighten nut (12).
5. Install new tube seal (6) and tube (17) on adapter (19) on bottom of control valve (2) and tighten nut (18).
6. Install new tube seal (6) and tube (11) on adapter (9) on bottom of control valve (2) and tighten nut (10).
7. Install new tube seal (6) and tube (8) on adapter (5) on bottom of control valve (2) and tighten nut (7).
8. Operate hydraulic supporting wheels and check for leaks. Refer to TM 5-5420-280-10.

HYDRAULIC SUPPORTING WHEELS CONTROL VALVE, SELECTOR VALVE, PRESSURE REGULATOR VALVE, PRESSURE GAUGE, AND PUMP REPLACEMENT (Contd)



HYDRAULIC SUPPORTING WHEELS CONTROL VALVE, SELECTOR VALVE, PRESSURE REGULATOR VALVE, PRESSURE GAUGE, AND PUMP REPLACEMENT (Contd)

SELECTOR VALVE AND PRESSURE REGULATOR VALVE REMOVAL

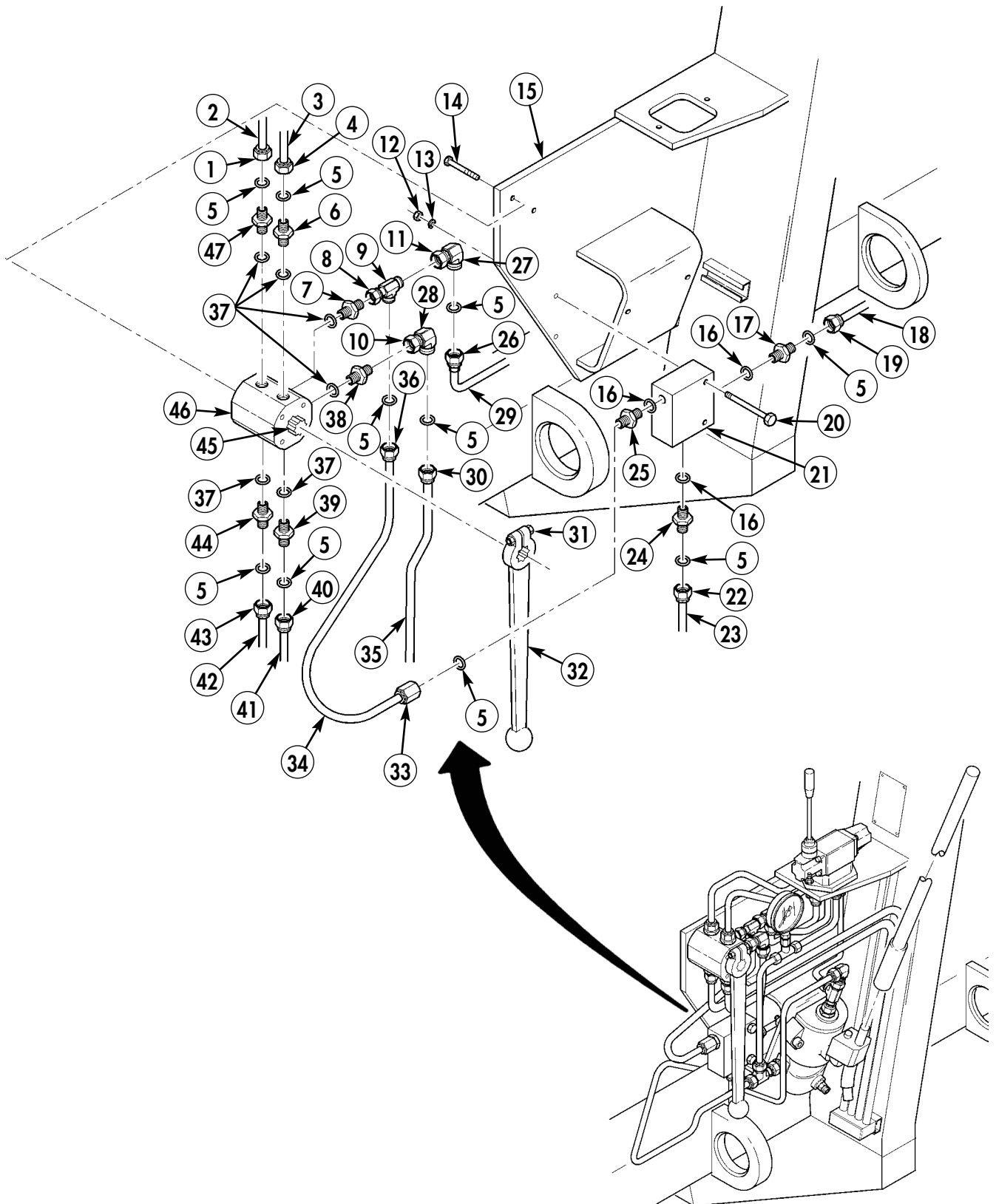
1. Loosen nut (30) and remove tube (35) and tube seal (5) from elbow (28) on adapter (38). Discard tube seal (5).
2. Loosen nut (26) and remove tube (29) and tube seal (5) from elbow (27) on tee fitting (9). Discard tubes seal (5).
3. Loosen nuts (10) and (11) and remove elbows (27) and (28) from adapter (38) and tee fitting (9) on selector valve (46).
4. Loosen nut (36) and remove tube (34) and tube seal (5) from bottom of tee fitting (9). Discard tube seal (5).
5. Loosen nut (8) and remove tee fitting (9) from adapter (7) on selector valve (46).
6. Loosen nuts (40) and (43) and remove tubes (41) and (42) and two tube seals (5) from adapters (39) and (44) on bottom of selector valve (46).
7. Loosen nuts (4) and (1) and remove tubes (3) and (2) and tube seals (5) from adapters (6) and (47) on top of selector valve (46). Discard tube seals (5).
8. Loosen screw (31) and remove handle (32) from selector valve shaft (45).
9. Remove two screws (14) and selector valve (46) from A-frame bracket (15).
10. Remove adapters (47), (6), (7), (38), (39), and (44) and six O-rings (37) from selector valve (46). Discard O-rings (37).

NOTE

Tag tubing for installation.

11. Loosen nut (33) and remove tube (34) and tube seal (5) from adapter (25) on pressure regulator valve (21). Discard tube seal (5).
12. Loosen nut (22) and remove tube (23) and tube seal (5) from adapter (24) on bottom of pressure regulator valve (21). Discard tube seal (5).
13. Loosen nut (19) and remove tube (18) and tube seal (5) from adapter (17) on pressure regulator valve (21). Discard tube seal (5).
14. Remove two locknuts (12), washers (13), screws (20), and pressure regulator valve (21) from A-frame bracket (15). Discard locknuts (12).
15. Remove adapters (17), (24), and (20) and three O-rings (16) from pressure regulator valve (21). Discard O-rings (16).

HYDRAULIC SUPPORTING WHEELS CONTROL VALVE, SELECTOR VALVE, PRESSURE REGULATOR VALVE, PRESSURE GAUGE, AND PUMP REPLACEMENT (Contd)



HYDRAULIC SUPPORTING WHEELS CONTROL VALVE, SELECTOR VALVE, PRESSURE REGULATOR VALVE, PRESSURE GAUGE, AND PUMP REPLACEMENT (Contd)

PRESSURE REGULATOR VALVE AND SELECTOR VALVE INSTALLATION

NOTE

Apply hydraulic oil to O-rings at installation.

1. Install three new O-rings (16) and adapters (25), (24), and (17) on pressure regulator valve (21).
2. Install pressure regulator valve (21) on A-frame bracket (15) with two screws (20), washers (13), and new locknuts (12).

NOTE

Apply a light coat of hydraulic oil to tube seals at installation.

Install tubing as noted at removal.

3. Install new tube seal (5) and tube (18) on adapter (17) of pressure regulator valve (21) and tighten nut (19).
4. Install new tube seal (5) and tube (23) on bottom adapter (24) of pressure regulator valve (21) and tighten nut (22).
5. Install new tube seal (5) and tube (34) on adapter (25) of pressure regulator valve (21) and tighten nut (33).

NOTE

Apply a light coat of hydraulic oil to O-rings at installation.

6. Install six new O-rings (37) and adapters (44), (39), (38), (7), (6), and (47) on selector valve (46).
7. Install selector valve (46) on A-frame bracket (15) with two screws (14).
8. Install handle (32) on selector valve shaft (45) and tighten screw (31).

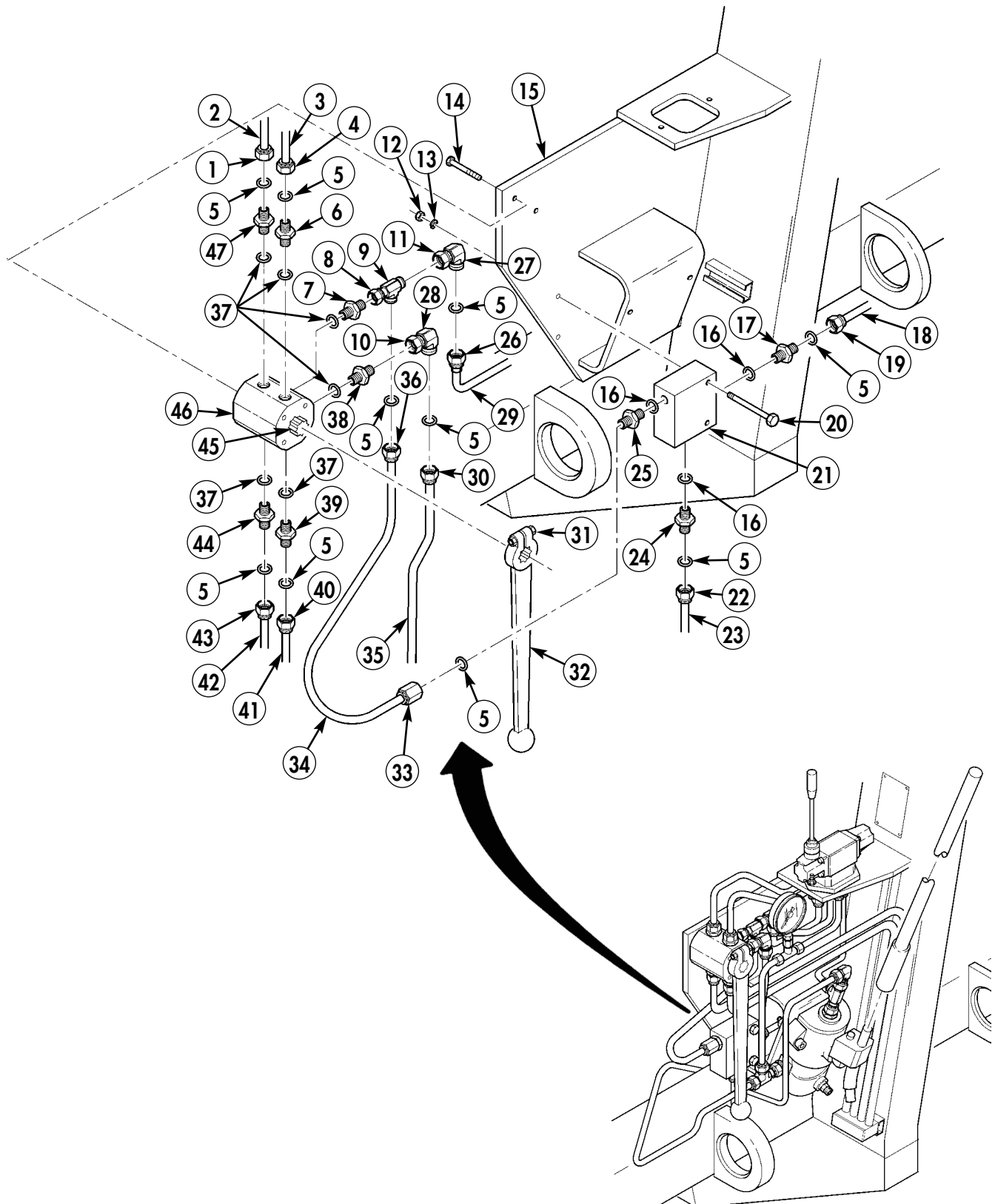
NOTE

Apply a light coat of hydraulic oil to tube seals at installation.

Install tubing as noted at removal.

9. Install two new tube seals (5) and tubing (2) and (3) on top adapters (47) and (6) of selector valve (46) and tighten nuts (1) and (4).
10. Install two new tube seals (5) and tubing (42) and (41) on bottom adapters (44) and (39) of selector valve (46) and tighten nuts (43) and (40).
11. Install tee fitting (9) on adapter (7) of selector valve (46) and tighten nut (8).
12. Install new tube seal (5) and tube (34) on bottom of tee fitting (9) and tighten nut (36).
13. Install elbows (27) and (28) on adapter (38) and tee fitting (9) of selector valve (46) and tighten nuts (11) and (10).
14. Install new tube seal (5) and tube (29) on elbow (27) of tee fitting (9) and tighten nut (26).
15. Install new tube seal (5) and tube (35) on elbow (28) of adapter (38) and tighten nut (30).
16. Operate hydraulic supporting wheels and check for leaks. Refer to TM 5-5420-280-10.

HYDRAULIC SUPPORTING WHEELS CONTROL VALVE, SELECTOR VALVE, PRESSURE REGULATOR VALVE, PRESSURE GAUGE, AND PUMP REPLACEMENT (Contd)



HYDRAULIC SUPPORTING WHEELS CONTROL VALVE, SELECTOR VALVE, PRESSURE REGULATOR VALVE, PRESSURE GAUGE, AND PUMP REPLACEMENT (Contd)

PRESSURE GAUGE AND PUMP REMOVAL

CAUTION

Cap or plug all tubes, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag tubing for installation.

Have container ready to catch oil.

1. Loosen nuts (27) and (29) on tubing (6) and (30), and remove two tube seals (9) and tee fitting (28) with pressure gauge (3) attached. Discard tube seals (9).
2. Remove pressure gauge (3), reducer (4), and O-ring (5) from tee fitting (28). Discard O-ring (5).
3. Loosen nut (25) on tube (26) and remove tube (26) and tube seal (9) from elbow (10) on top of tee fitting (12). Discard tube seal (9).
4. Loosen nut (8) on tube (7) and remove tube (7) and tube seal (9) from tee fitting (12) on top of pump (16). Discard tube seal (9).
5. Loosen nut (11) on elbow (10) and remove elbow (10) from tee fitting (12).
6. Loosen nut (13) on tee fitting (12) and remove tee fitting (12) from adapter (14) on top of pump (16).
7. Loosen nut (21) on tube (22) and remove tube (22) and tube seal (9) from end of tee fitting (20). Discard tube seal (9).
8. Loosen nut (23) on tube (24) and remove tube (24) and tube seal (9) from top of tee fitting (20). Discard tube seal (9).
9. Loosen nut (19) on tee fitting (20) and remove tee fitting (20) from adapter (18) on pump (16).
10. Remove two locknuts (32), washers (31), screws (17), and pump (16) from pump support bracket (2) on A-frame bracket (1). Discard locknuts (32).
11. Remove adapters (14) and (18) and two O-rings (15) from pump (16). Discard O-rings (15).

PUMP AND PRESSURE GAUGE INSTALLATION

NOTE

Apply a light coat of hydraulic oil to O-rings at installation.

1. Install two new O-rings (15) and adapters (18) and (14) on pump (15).
2. Install pump (16) on pump support bracket (2) of A-frame bracket (1) with two screws (17), washers (31), and new locknuts (32).
3. Install tee fitting (20) on adapter (18) of pump (16) and tighten nut (19).

NOTE

Apply a light coat of hydraulic oil to tube seals and O-ring at installation.

Install tubing as noted at removal.

4. Install new tube seal (9) and tube (24) on top of tee fitting (20) and tighten nut (23).
5. Install new tube seal (9) and tube (22) on end of tee fitting (20) and tighten nut (21).
6. Install tee fitting (12) on adapter (14) on top of pump (16) and tighten nut (13).
7. Install elbow (10) on tee fitting (12) and tighten nut (11).
8. Install new tube seal (9) and tube (7) on tee fitting (12) and tighten nut (8).
9. Install new tube seal (9) and tube (26) on elbow (10) on top of tee fitting (12) and tighten nut (25).

HYDRAULIC SUPPORTING WHEELS CONTROL VALVE, SELECTOR VALVE, PRESSURE REGULATOR VALVE, PRESSURE GAUGE, AND PUMP REPLACEMENT (Contd)

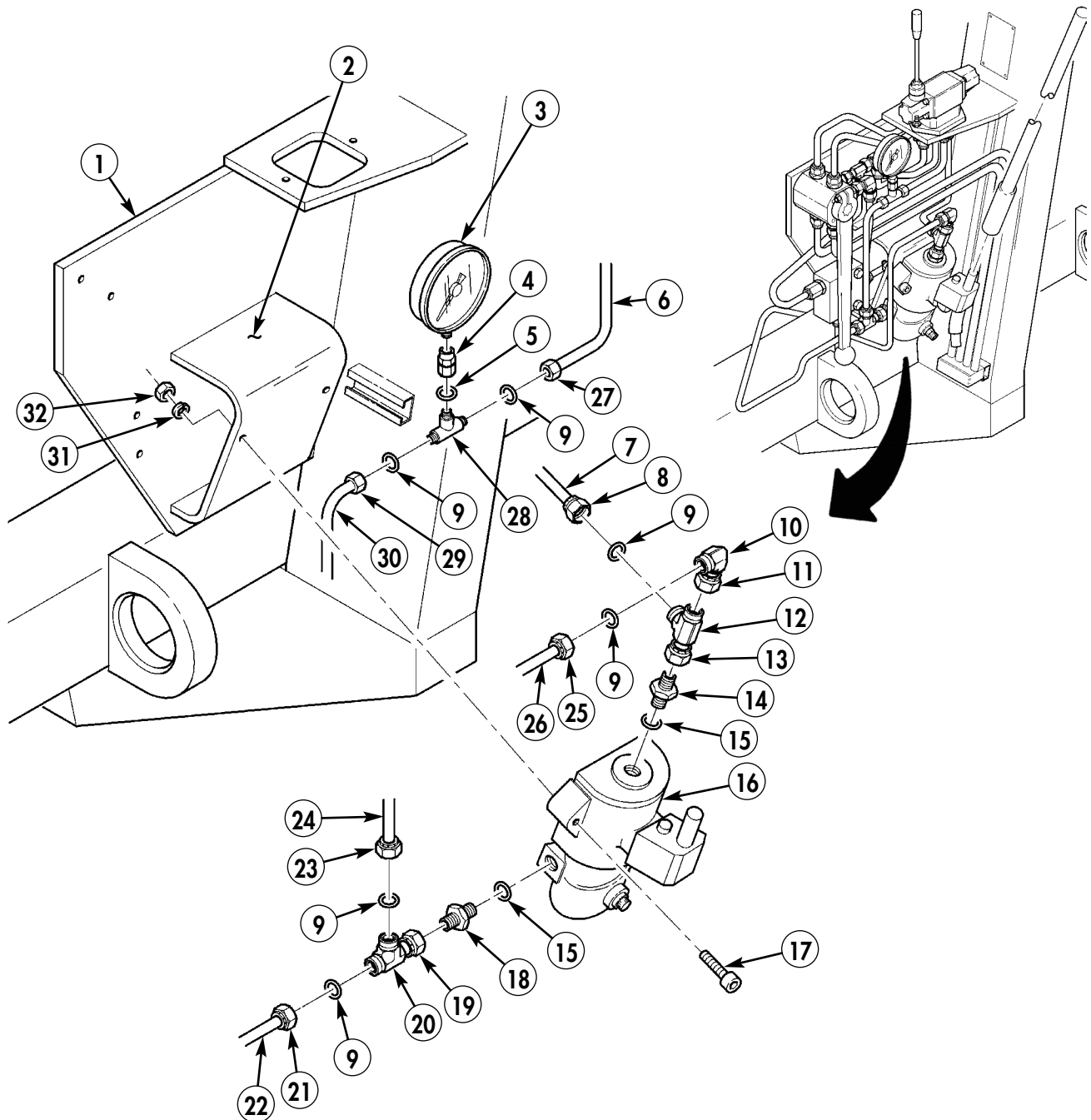
PUMP AND PRESSURE GAUGE INSTALLATION (Contd)

10. Install new O-ring (5), reducer (4), and pressure gauge (3) on tee fitting (28).
11. Install two new tube seals (9) and tubing (30) and (6) on tee fitting (28) with pressure gauge (3) attached and tighten nuts (29) and (27).

NOTE

The pallet hydraulic system is self-bleeding, and with the exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

12. Operate hydraulic supporting wheels and check for leaks. Refer to TM 5-5420-280-10.



END OF WORK PACKAGE

CHAPTER 6
LAUNCHER MAINTENANCE
RAPIDLY EMPLACED BRIDGE (REB)

Pin Wheel Drive Assembly Replacement	0082 00-1
Pin Wheel Drive Gear Replacement	0083 00-1
Forward Pin Wheel Drive Hydraulic Motor Replacement	0084 00-1
Stop Cylinder Replacement	0085 00-1
Rear Pin Wheel Drive Hydraulic Motor Replacement	0086 00-1
Launch Boom Roller Guides Replacement	0087 00-1
Lower Support Roller Assembly Replacement	0088 00-1
Lower Support Guide Rollers, Lower Rollers, and Skid Plates Replacement	0089 00-1
Upper Roller Block Assembly Replacement	0090 00-1
Launch Boom Rope Guide Roller Replacement	0091 00-1
Bearing Shaft Manifold Replacement	0092 00-1
Potentiometer Maintenance	0093 00-1
Launch Boom Swivel Drive Replacement	0094 00-1
Launch Boom Replacement	0095 00-1
Lower Support Boom Cylinders Replacement	0096 00-1
Lower Support Boom Replacement	0097 00-1
Secondary Boom Rollers Replacement	0098 00-1
Secondary Boom Cylinder Replacement	0099 00-1
Secondary Boom Replacement	0100 00-1

LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PIN WHEEL DRIVE ASSEMBLY REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)

Equipment Condition

Bridge halves removed for forward pin wheel drive assembly (refer to WP 0018 00) or launch boom lowered to 0 degrees position for rear pin wheel drive assembly.
Refer to TM 5-5420-280-10.

PIN WHEEL DRIVE ASSEMBLY REPLACEMENT (Contd)

NOTE

Removal and installation of front and rear pin wheel drive assemblies are performed the same way. Only the number of hoses or steel tubes change for the rear pin wheel drive assembly. Rear pin wheel drive assembly is shown.

REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag hoses for installation.

Have container ready to catch oil.

1. Loosen nut (1) and disconnect hose (11) from adapter (2) on pin wheel drive assembly (3).
2. Loosen nut (9) and disconnect hose (10) from adapter (8) on pin wheel drive assembly (3).
3. Support pin wheel drive assembly (3) and remove three screws (6), washers (5), and pin wheel drive assembly (3) from roller track assembly (4) on launch boom (7).
4. Remove adapters (2) and (8) from pin wheel drive assembly (3).

INSTALLATION

NOTE

Apply a light coat of hydraulic oil to O-rings at installation.

The pallet hydraulic system is self-bleeding, and with the exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

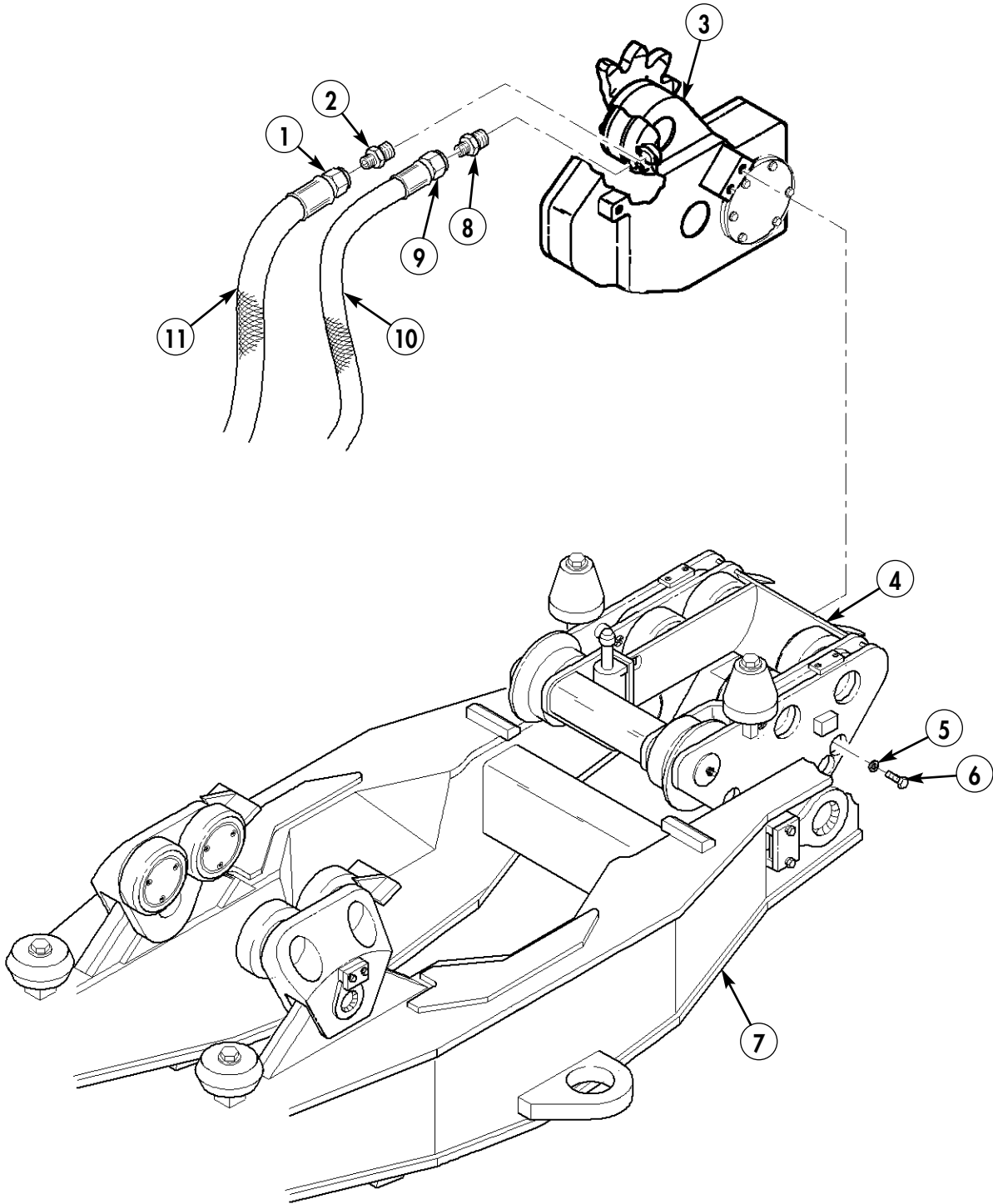
1. Install adapters (2) and (8) on pin wheel drive assembly (3).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

2. Install pin wheel drive assembly (3) on roller track assembly (4) of launch boom (7) with three washers (5) and screw (6).
3. Connect hose (10) to adapter (8) of pin wheel drive assembly (3) and tighten nut (9).
4. Connect hose (11) to adapter (2) of pin wheel drive assembly (3) and tighten nut (1).
5. Lift launch boom to 90 degrees position. Refer to TM -5-5420-280-10 or install bridge halves on bridge pallet. Refer to WP 0018 00.

PIN WHEEL DRIVE ASSEMBLY REPLACEMENT (Contd)



END OF WORK PACKAGE

0082 00-3/4 blank

LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PIN WHEEL DRIVE GEAR REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Sealing compound (242) (Item 16, WP 0205 00)

Equipment Condition

Bridge halves removed from bridge pallet for
forward pin wheel drive gear.
Refer to WP 0018 00.

PIN WHEEL DRIVE GEAR REPLACEMENT (Contd)

REMOVAL

NOTE

Removal and installation of front and rear pin wheel drive gears are performed the same way. Forward pin wheel drive gear is shown.

1. Remove screw (8) and washer (7) from pin wheel drive gear (1) and output drive gear (6) on gear box (5).
2. Pull pin wheel drive gear (1) off key (2) and output drive gear (6) on gear box (5).
3. Remove key (2) from output drive gear (6).
4. Remove spacer washer (3) and oil slinger (4) from output drive gear (6) and gear box (5).

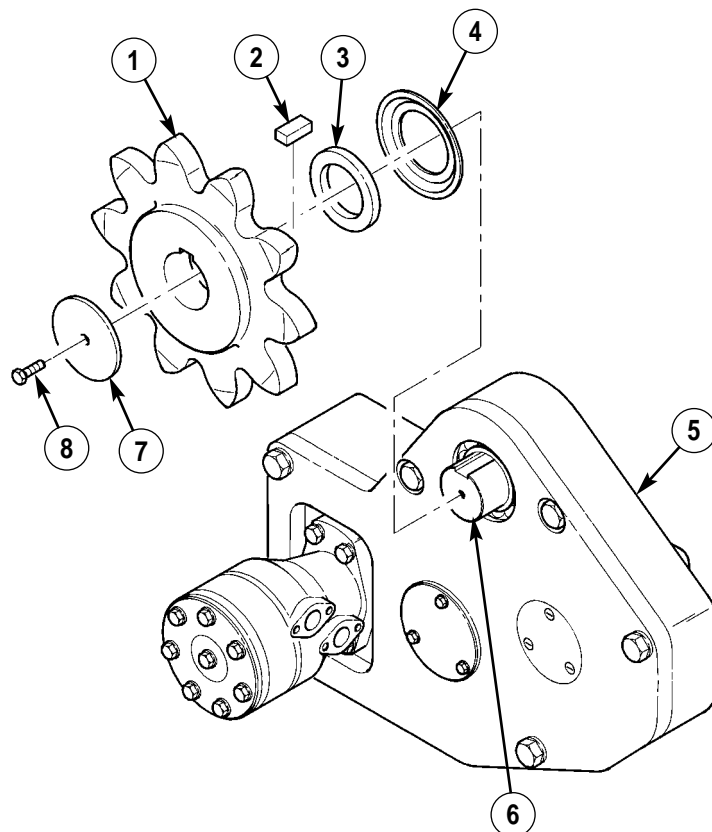
INSTALLATION

1. Install oil slinger (4) and spacer washer (3) on output drive gear (6) and gear box (5).
2. Install key (2) on output drive gear (6).
3. Press pin wheel drive gear (1) on output drive gear (6) and key (2).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

4. Apply a light coat of sealing compound (242) to threads of screw (8) and install washer (7) and screw (8) on pin wheel drive gear (1) and output drive gear (6).
5. Install bridge halves on bridge pallet. Refer to WP 0018 00.



END OF WORK PACKAGE

LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

FORWARD PIN WHEEL DRIVE HYDRAULIC MOTOR REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Gear oil (Item 15, WP 0205 00)
Cap and plug set (Item 3, WP 0205 00)
O-ring (WP 0173 00)
Two O-rings (WP 0173 00)
O-ring (WP 0173 00)
O-ring (WP 0173 00)
Four lockwashers (WP 0173 00)
Three tube seals (WP 0173 00)

Equipment Condition

Bridge halves removed from bridge pallet (refer to WP 0018 00) or bridge launched to ground. Refer to TM 9-5420-280-10.

FORWARD PIN WHEEL DRIVE HYDRAULIC MOTOR REPLACEMENT (Contd)

REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag hoses for installation.

Have container ready to catch oil.

1. Loosen nut (26) and remove steel tube (27), and tube seal (16) from elbow (25) on forward pin wheel drive motor (3). Discard tube seal (16).
2. Loosen nuts (15) and (20) and remove steel tubes (14) and (21) and two tube seals (16) from adapters (17) on drive motor (3). Discard tube seals (16).
3. Remove two drain plugs (4) and O-rings (5) from bottom and side of gear box (6) and drain gear oil from gear box (6). Discard O-rings (5).
4. Remove twelve screws (12), washers (11), cover (13), and O-ring (10) from gear box (6). Discard O-ring (10).
5. Remove screw (9), washer (8), and gear (7) from drive motor shaft (19).
6. Remove four screws (1), lockwashers (2), drive motor (3), and O-ring (18) from gear box (6). Discard O-ring (18) and lockwashers (2).
7. Loosen nut (24) and remove elbow (25), adapter (23), and O-ring (22) from end of drive motor (3). Discard O-ring (22).
8. Remove two adapters (17) from side of drive motor (3).

INSTALLATION

1. Install two adapters (17) on side of drive motor (3).

NOTE

Apply a light coat of gear oil to O-rings at installation.

2. Install new O-ring (22), adapter (23) and elbow (25) on end of drive motor (3) and tighten nut (24).
3. Install new O-ring (18) and drive motor (3) on gear box (6) with four new lockwashers (2) and screws (1).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

4. Install gear (7) on drive motor shaft (19), short end first, with washer (8) and screw (9).
5. Install new O-ring (10) and cover (13) on gear box (6) with twelve washers (11) and screws (12).
6. Install two new O-rings (5) and drain plugs (4) on bottom and side of gear box (6).

NOTE

Rear pin wheel drive must be set at 0-degrees position when filling gear box housing. Refer to WP 0086 00.

7. Remove fill plug and O-ring from end of gear box (6), and fill gear box (6) with gear oil until oil comes out of fill plug hole. Install O-ring and fill plug on end of gear box (6).
8. Install two new tube seals (16) and steel tubes (14) and (21) on two adapters (17) of drive motor (3) and tighten nuts (15) and (20).
9. Install new tube seal (16) and steel tube (27) on elbow (25) and tighten nuts (24).

LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

STOP CYLINDER REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Sealing compound (Item 16, WP 0205 00)
Gear oil (Item 15, WP 0205 00)
Cap and plug set (Item 3, WP 0205 00)
Two O-rings (WP 0174 00)
Oil seal (WP 0174 00)
O-ring (WP 0174 00)

STOP CYLINDER REPLACEMENT (Contd)

REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Have container ready to catch oil.

1. Start Launch Power Unit (LPU). Remove retaining pins on launch boom and depress KY1 and KY18 control valves to lower launch boom (6) to 0-degrees position. Release control valves and shut down LPU.
2. Loosen nut (22) and disconnect hose (23) from elbow (21) on bottom of stop cylinder (1).
3. Loosen nut (11) and disconnect hose (12) from adapter (10) side of stop cylinder (1).
4. Remove four screws (4), washers (3), and stop cylinder (1) on mounting bracket (2) of roller track assembly (5).
5. Loosen nut (20) and remove elbow (21) from adapter (19) on bottom of stop cylinder (1).
6. Remove adapter (19) and O-ring (18) from bottom of stop cylinder (1). Discard O-ring (18).
7. Loosen nut (13) on adapter (9) and remove adapter (10).
8. Loosen two nuts (15) and remove steel tube (16) from adapter (9) and coupling fitting (17) on side of stop cylinder (1).
9. Remove screw (7), seal washer (8), coupling fitting (17), and seal washer (8) from side of stop cylinder (1). Discard seal washers (8).

INSTALLATION

NOTE

Apply a light coat of gear oil to seal washers and O-rings at installation.

1. Install new seal washer (8), coupling fitting (17), and new seal washer (8) on side of stop cylinder (1) with screw (7).
2. Install steel tube (16) on coupling fitting (17) with adapter (9) and tighten nuts (15).
3. Install adapter (10) on adapter (9) and tighten nut (13).
4. Install new O-ring (18) and adapter (19) on bottom of stop cylinder (1).
5. Install elbow (21) on adapter (19) and tighten nut (20).

NOTE

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

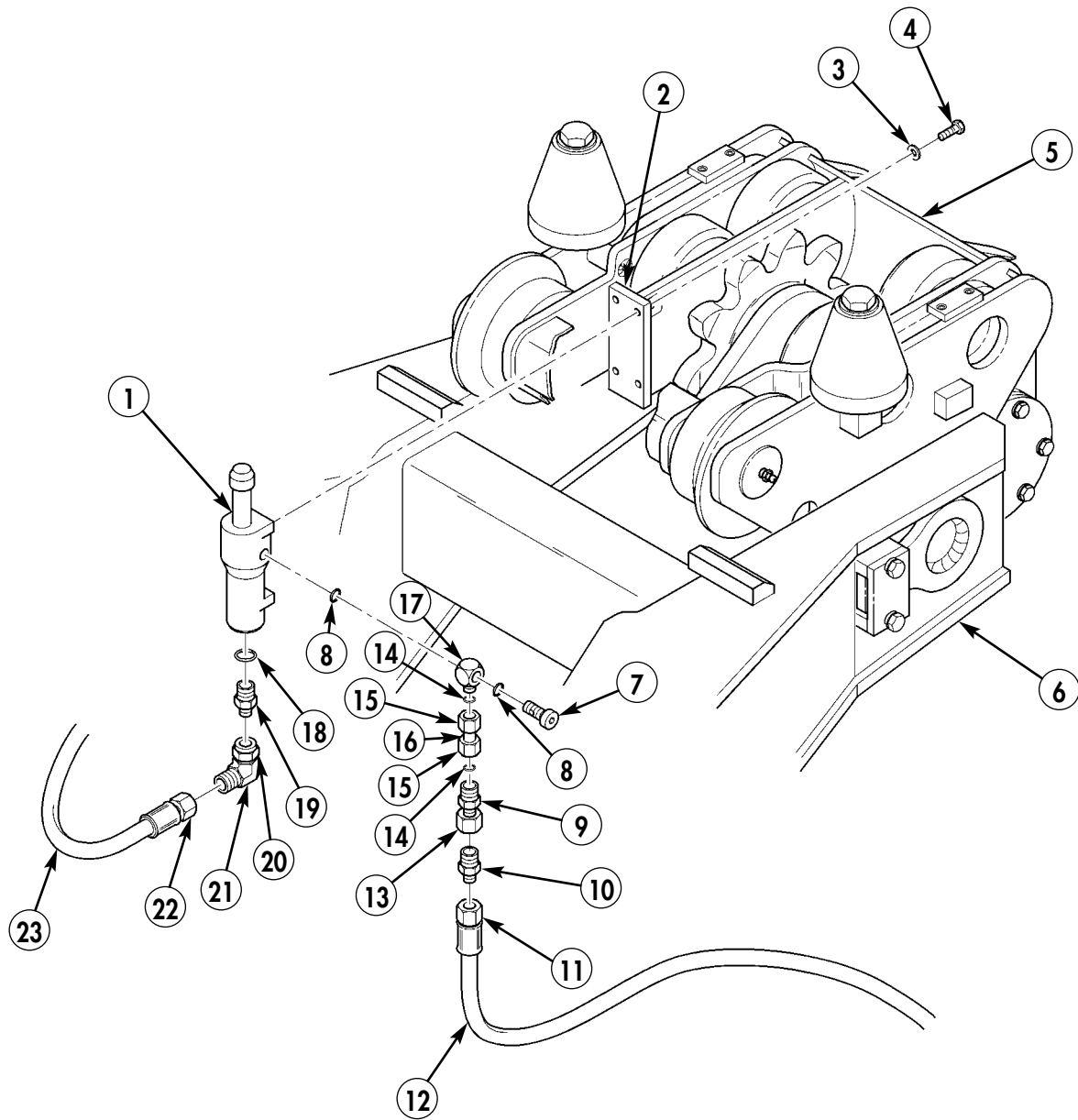
6. Install stop cylinder (1) on mounting bracket (2) of roller track assembly (5) with four washers (3) and screws (4).
7. Connect hose (12) on adapter (10) on side of stop cylinder (1) and tighten nut (11).
8. Connect hose (23) on elbow (21) on bottom of stop cylinder (1) and tighten nut (22).

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

9. Start LPU and depress KY1 and KY19 simultaneously to raise launch boom (5) to +90-degrees position. Install retaining pins on launch boom.

STOP CYLINDER REPLACEMENT (Contd)



END OF WORK PACKAGE

LAUNCH MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

REAR PIN WHEEL DRIVE HYDRAULIC MOTOR REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)
Gear oil (Item 15, WP 0205 00)
O-ring (WP 0175 00)
O-ring (WP 0175 00)
Four lockwashers (WP 0175 00)
Two O-rings (WP 0175 00)

REAR PIN WHEEL DRIVE HYDRAULIC MOTOR REPLACEMENT (Contd)

REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag hoses for installation.

Have container ready to catch oil.

1. Start Launch Power Unit (LPU). Remove retaining pins on launch boom (19) and depress KY1 and KY18 control valves to lower launch boom (19) to 0-degrees position. Release control valves and shut down LPU.

NOTE

Have container ready to catch oil.

2. Loosen nut (21) and disconnect hose (20) from adapter (22) on rear pin wheel drive hydraulic motor (1).
3. Loosen nut (7) and disconnect hoses (8) from adapters (6) on rear pin wheel drive motor (1).
4. Remove drain plug (18) and O-ring (17) from bottom of gear box (9) and drain gear oil from gear box (9). Discard O-ring (17).
5. Remove twelve screws (16), washers (15), cover (14), and O-ring (13) from gear box (9). Discard O-ring (13).
6. Remove screw (12), washer (11), and gear (10) from spline shaft (5) on hydraulic motor (1).
7. Remove four screws (2), lockwashers (3), drive motor (1), and O-ring (4) from gear box (13). Discard O-ring (4) and lockwashers (3).
8. Remove adapter (6) and (22) from hydraulic motor (1).

INSTALLATION

1. Install adapters (6) and (22) on hydraulic motor (1).

NOTE

Apply a light coat of gear oil to O-rings and oil seal at installation.

Ensure that all mounting hardware is tightened to metric standards unless otherwise noted. Refer to metric torque limits in WP 0118 00.

2. Install new O-ring (4) and hydraulic motor (1) on gear box (13) with four new lockwashers (3) and screws (2).
3. Install drive motor gear (10) on spline shaft (5), short end first with washer (11) and screw (12).
4. Install new O-ring (13) and cover (14) on gearbox (9) with twelve washers (15) and screws (16).
5. Connect hose (8) on adapters (6) of hydraulic motor (1) and tighten nut (7).
6. Connect hose (20) on adapter (22) of hydraulic motor (1) and tighten nut (21).
7. Install new O-ring (17) and drain plug (18) on bottom of gear box (9).

NOTE

Rear pin wheel drive must be set at 0-degrees position when filling gear box housing.

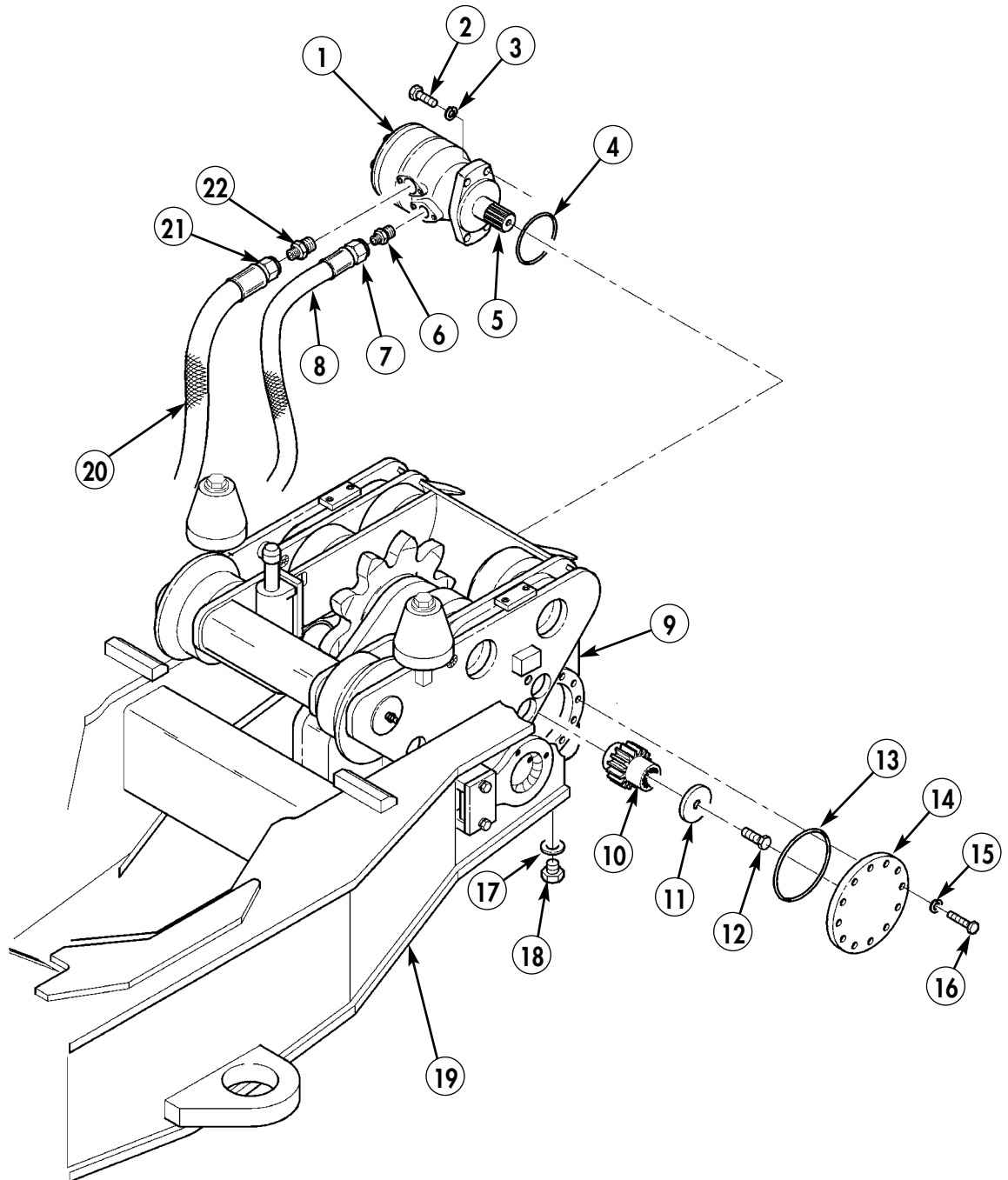
8. Remove fill plug and O-ring from end of gear box (9), discard O-ring, and fill gear box (9) with gear oil until oil comes out of fill plug hole. Install new O-ring and fill plug on end of gear box (9).

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

9. Start LPU, check for leaks and operate hydraulic system and depress KY1 and KY19 simultaneously to raise launch boom (16) to +90-degrees position. Install retaining pins on launch boom (16).

REAR PIN WHEEL DRIVE HYDRAULIC MOTOR REPLACEMENT (Contd)



END OF WORK PACKAGE

0086 00-3/4 blank

LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**LAUNCH BOOM ROLLER GUIDES REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0207 00)

Materials/Parts

Grease (Item 8, WP 0206 00)

LAUNCH BOOM GUIDES REPLACEMENT (Contd)

REMOVAL

NOTE

There are two flat roller guides on launch boom and two cone roller guides on roller track frame. This procedure will cover removal and installation of one flat roller guide and one cone roller guide.

Measure distance between flat roller and side of launch boom, and record measurement for installation.

1. Start Launch Power Unit (LPU), remove retaining pins on launch boom and depress KY1 and KY18 control valves simultaneously to lower launch boom (2) to 0-degrees position. Release control valves and shut down LPU.
2. Remove screw (1), adjustable bushing (11), flat roller guide (10), and washer (6) from welded block (9) on launch boom (2).

NOTE

Measure distance between cone roller and pin wheel drive gear, and record measurement for installation.

3. Remove screw (3), adjustable bushing (4), cone roller guide (5), and washer (6) from welded block (8) on roller track frame (7).
4. Perform steps 2 and 3 to remove other two roller guides.

INSTALLATION

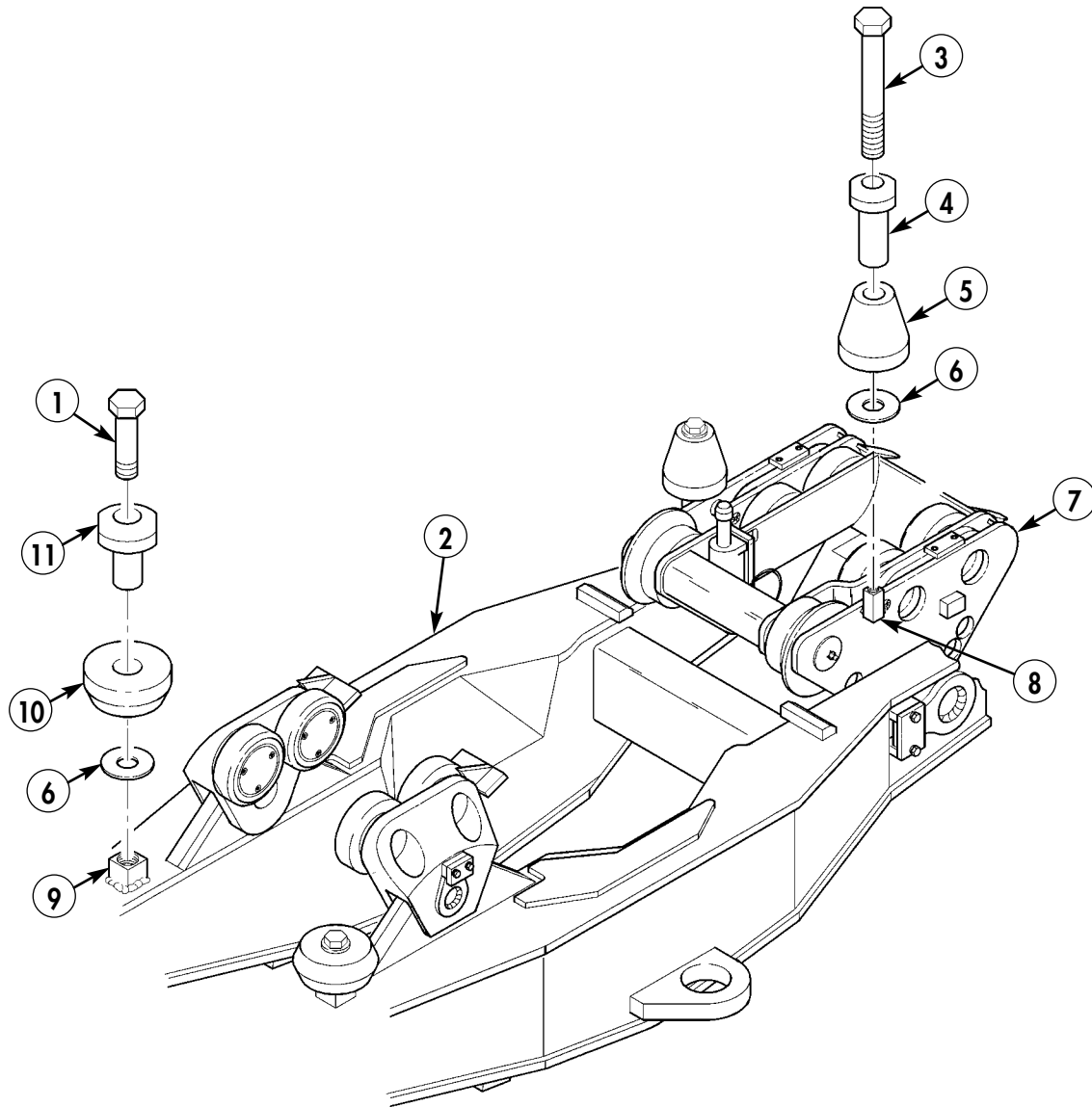
NOTE

Apply a light coat of grease to adjustable bushings at installation.

Ensure rollers are adjusted to measurement recorded during removal prior to tightening screws.

1. Install washer (6), cone roller guide (5), and adjustable bushing (4) on welded block (8) on roller track frame (7) with screw (3). Hold adjustable bushing (4) in position and tighten screw (3).
2. Install washer (6), flat roller guide (10), and adjustable bushing (11) on welded block (9) on launch boom (2) with screw (1). Hold adjustable bushing (11) in position and tighten screw (1).
3. Repeat steps 1 and 2 to install other two roller guides.
4. Start LPU, depress KY1 and KY19 control valves simultaneously to raise launch boom to +90-degrees position. Install retaining pins on launch boom.

LAUNCH BOOM GUIDES REPLACEMENT (Contd)



LAUNCHER MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**LOWER SUPPORT ROLLER ASSEMBLY REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)
Lifting device
Chain or sling

Materials/Parts

Grease (Item 9, WP 0205 00)
Four lockwashers (WP 0176 00)

Personnel Required

Two

LOWER SUPPORT ROLLER ASSEMBLY REPLACEMENT (Contd)

REMOVAL

WARNING

Launch boom must be supported during removal and installation.
Failure to comply may result in injury or death to personnel.

1. Start Launch Power Unit (LPU), remove retaining pins on launch boom and depress KY1 and KY18 control valves simultaneously to lower launch boom (11) to 0-degrees position. Release control valves and shut down LPU.

CAUTION

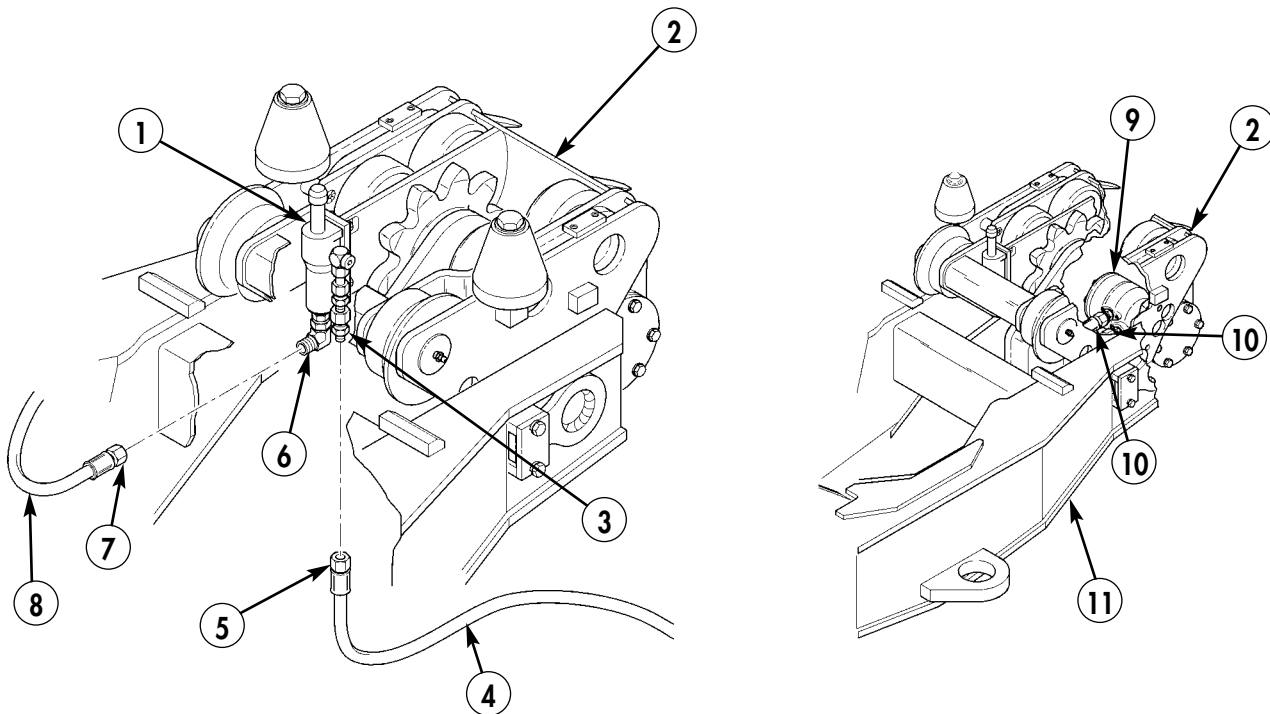
Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

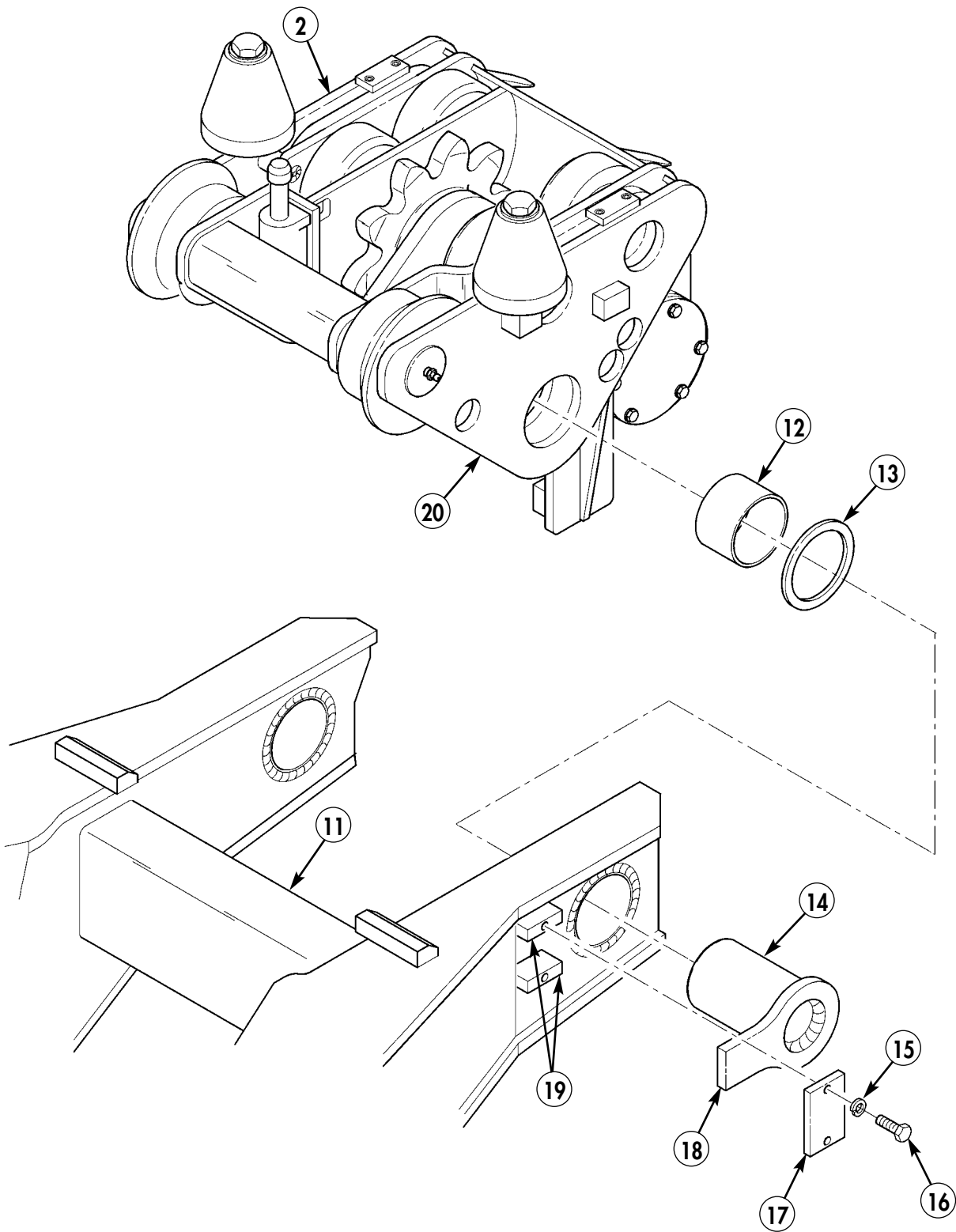
Tag hoses for installation.

Have container ready to catch oil.

2. Loosen nuts (5) and (7) and disconnect hoses (4) and (8) from adapter (3) and elbow (6) on stop cylinder (1).
3. Disconnect two hoses (10) from pin wheel drive hydraulic motor (9).
4. Attach lifting device and chain or sling to boom roller track assembly (2) and take up slack.
5. Remove four screws (16), lockwashers (15), and two retainer plates (17) from over tab (18) on pins (14) and launch boom brackets (19). Discard lockwashers (5).
6. Support boom roller track assembly (2) and remove two pins (14), boom roller track assembly (2), and spacers (13) from launch boom (11) and two bushings (12).
7. If worn or damaged, remove two bushings (12) from roller track frame (20).



LOWER SUPPORT ROLLER ASSEMBLY REPLACEMENT (Contd)



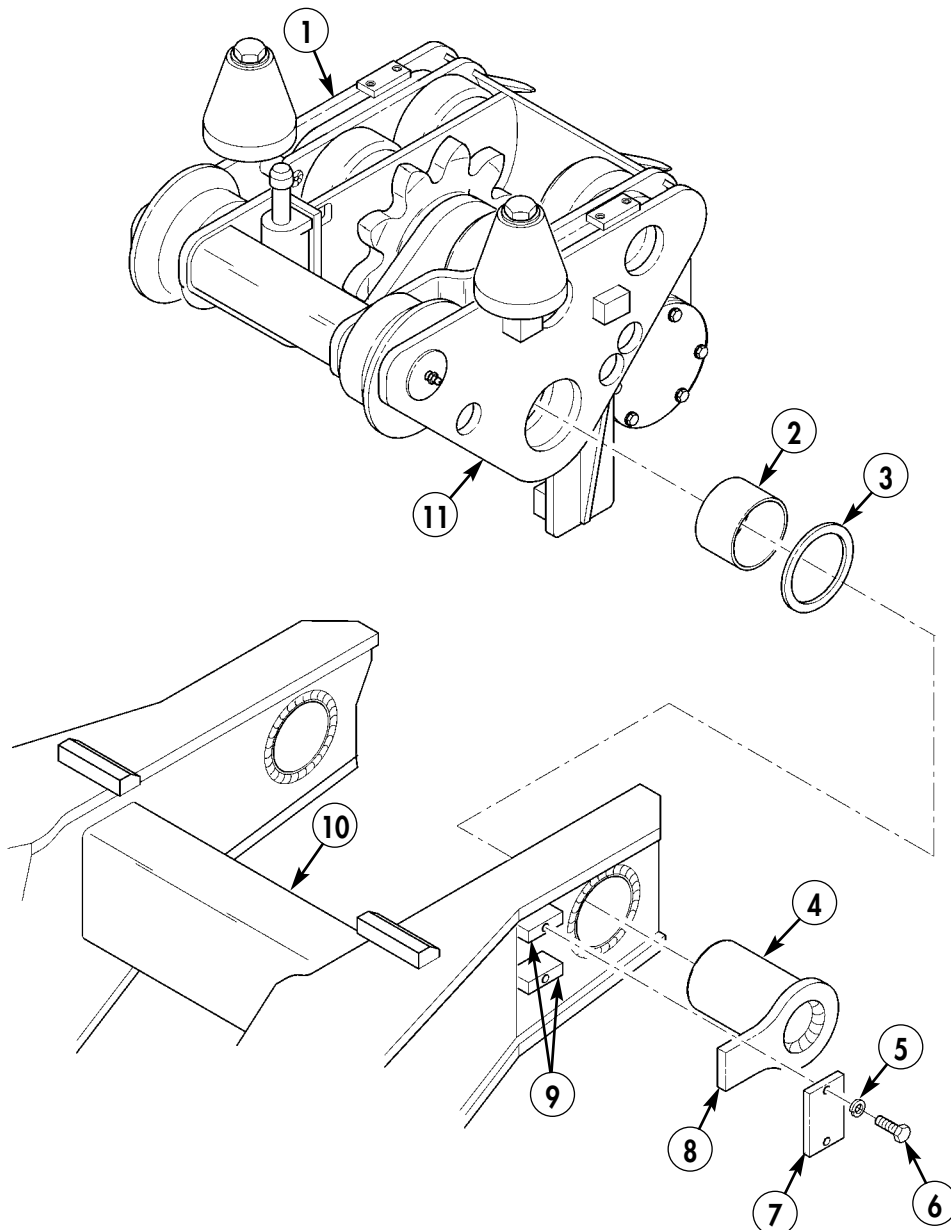
LOWER SUPPORT ROLLER ASSEMBLY REPLACEMENT (Contd)

INSTALLATION

NOTE

Apply a light coat of grease to all parts at installation.

1. If removed, install two bushings (2) on roller track frame (11).
2. Attach lifting device and chain or sling to boom roller track assembly (1) and position on launch boom (10).
3. Install boom roller track assembly (1) and two spacers (3) on launch boom (10) with two pins (4).
4. Position tabs (8) on pins (4) between brackets (9) on launch boom (10) and install two retainer plates (7) with four new lockwashers (5) and screws (6).



LOWER SUPPORT ROLLER ASSEMBLY REPLACEMENT (Contd)

INSTALLATION (Contd)

- Remove lifting device and chain or sling.

NOTE

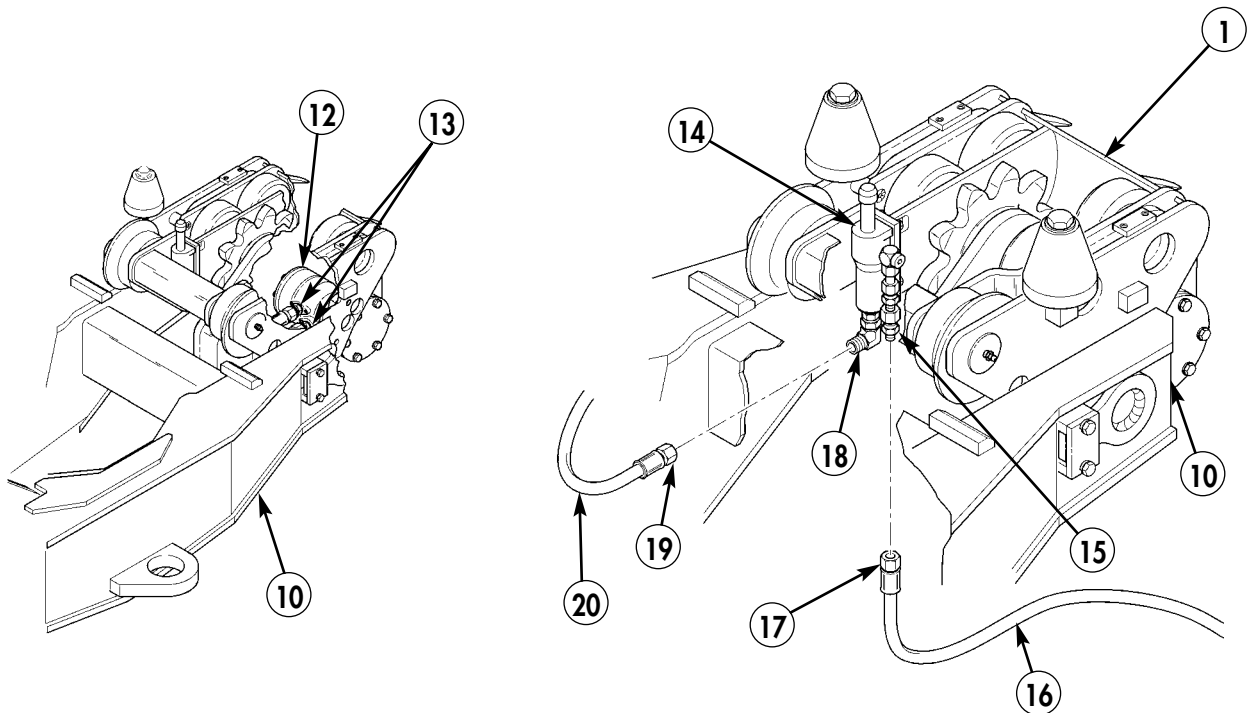
Install hoses as noted at removal.

- Connect two hoses (13) to pin wheel drive hydraulic motor (12).
- Connect hoses (16) and (20) on adapter (15) and elbow (18) of stop cylinder (14) and tighten hex nuts (17) and (19).

NOTE

The pallet hydraulic system is self-bleeding, and with exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

- Start LPU, depress KY1 and KY19 control valves simultaneously to raise launch boom (10) to +90-degrees position. Install retaining pins on launch boom.



END OF WORK PACKAGE

LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

LOWER SUPPORT GUIDE ROLLERS, LOWER ROLLERS, AND SKID PLATES REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Grease (Item 8, WP 0205 00)

LOWER SUPPORT GUIDE ROLLERS, LOWER ROLLERS, AND SKID PLATES REPLACEMENT (Contd)

NOTE

Removal and installation of all support rollers and skid plates are performed the same way. Only one support guide roller and skid plate is shown.

a. Lower Support Guide Roller Removal

1. Start Launch Power Unit (LPU) or CBT, remove retaining pin from launch boom and depress KY1 and KY18 control valves simultaneously to lower launch boom to 0-degrees position. Release control valves and shut down CBT or auxiliary engine.
2. Remove screw (1) and washer (2) from pin (12).
3. Remove pin (12) and guide roller (16) from roller track frame (4).
4. Remove lube fitting (11) from pin (12).
5. Remove washer (17), two retainers (13), ball bearings (14), and grease ring (15) from guide roller (16).

b. Lower Rollers Removal

NOTE

Removal and installation of lower rollers are performed the same way. One side roller is shown.

Inner bearing hub is welded to roller trackframe. If bearing hubs are damaged, install a new lower roller track frame.

1. Remove three screws (6), cover (7), and lower roller (5) from inner bearing hubs (8) on roller track frame (4).
2. Remove lube fitting (3) from inner bearing hubs (8).
3. Repeat steps 1 and 2 to remove other three lower rollers (5).

c. Skid Plate Removal

Remove two screws (9) and skid plate (10) from top of roller track frame (4).

d. Skid Plate Installation

Install skid plate (10) on top of roller track frame (4) with two screws (9).

e. Lower Rollers Installation

NOTE

Apply a light coat of grease to all parts at installation.

1. Install lower roller (5) on inner bearing hub (8) with lower cover (7) and three screws (6).
2. Install lube fitting (3) on inner bearing hub (8) and grease lower roller (5).
3. Repeat steps 1 and 2 to install other three lower rollers (5).

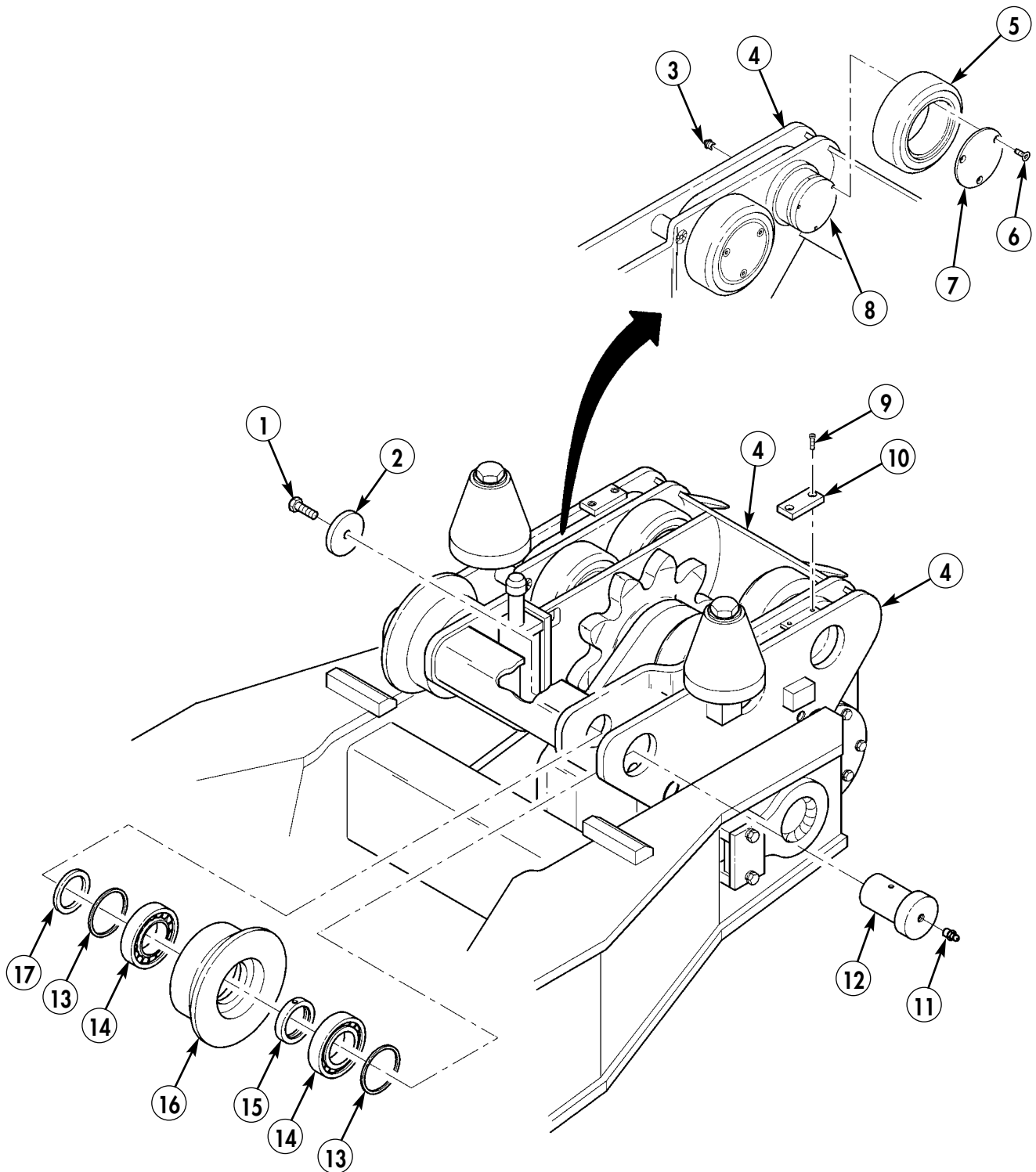
f. Lower Support Guide Roller Installation

NOTE

Apply a light coat of grease to bearings and pin at installation.

1. Install grease ring (15), two ball bearings (14), retainers (13), and washer (17) on guide roller (16).
2. Install guide roller (16) on roller track frame (4) with pin (12), washer (2), and screw (1).
3. Install lube fitting (11) on pin (12) and grease guide roller (16).
4. Start LPU or CBT and depress KY1 and KY19 control valves simultaneously to raise launch boom to +90-degrees position. Install retaining pins on launch boom.

LOWER SUPPORT GUIDE ROLLERS, LOWER ROLLERS, AND SKID PLATES REPLACEMENT (Contd)



END OF WORK PACKAGE

LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**UPPER ROLLER BLOCK ASSEMBLY REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Grease (Item 8, WP 0205 00)
Four lockwashers (WP 0177 00)

UPPER ROLLER BLOCK ASSEMBLY REPLACEMENT (Contd)

NOTE

Removal and installation of upper roller block assemblies are performed the same way. Right side is shown.

REMOVAL

1. Start Launch Power Unit (LPU) or CBT, remove retaining pin from launch boom (12) and depress KY1 and KY18 control valves simultaneously to lower launch boom (12) to 0-degrees position. Release control valves and shut down LPU.
2. Remove four screws (10), lockwashers (9), two retaining plates (8), pins (11), and roller block assemblies (7) from launch boom brackets (14) on launch boom (12). Discard lockwashers (9).

NOTE

Inner bearing hub is welded to roller block housing. If bearing hubs are damaged, install a new upper roller block assembly.

3. Remove twelve screws (6), four covers (5), and outer roller bearings (4) from inner bearing hubs (3) on two roller block housings (1).
4. Remove four lube fittings (2) from inner bearing hubs (3).
5. If worn or damaged, remove two bushings (13) from launch boom brackets (14).

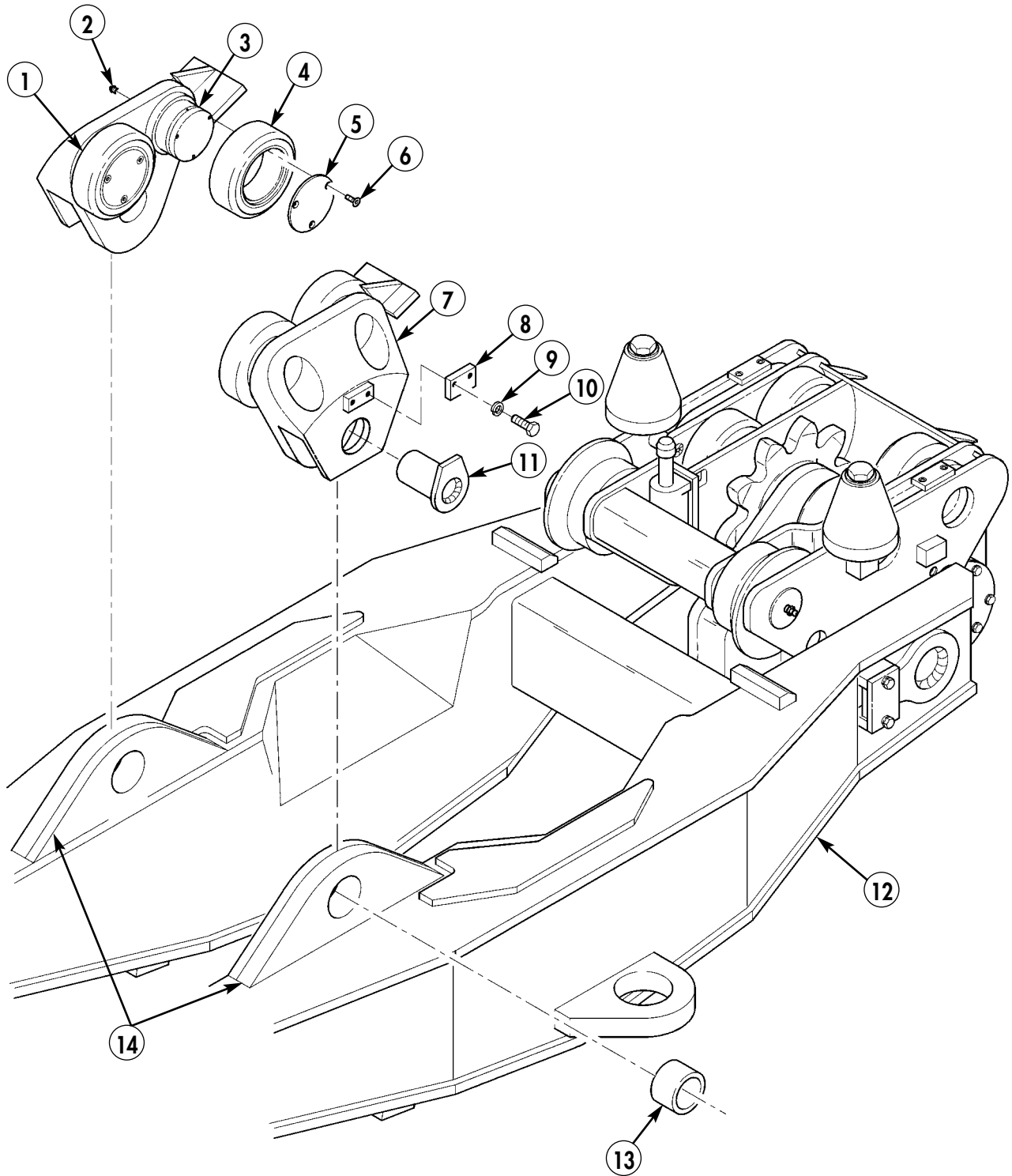
INSTALLATION

NOTE

Apply a light coat of grease to all parts at installation.

1. If removed, install two bushings (13) on launch boom brackets (14).
2. Install four outer roller bearings (4) on inner bearing hubs (3) with four covers (5) and twelve screws (6).
3. Install four lube fittings (2) on inner bearing hubs (3) and grease outer roller bearings (4).
4. Install two roller block assemblies (7) on launch boom brackets (14) with two pins (11), retaining plates (8), four new lockwashers (9), and screws (10).
5. Start LPU or CBT and depress KY1 and KY19 control valves simultaneously to raise launch boom (12) to +90-degrees position. Install retaining pin on launch boom (12).

UPPER ROLLER BLOCK ASSEMBLY REPLACEMENT (Contd)



END OF WORK PACKAGE

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LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**LAUNCH BOOM ROPE GUIDE ROLLER REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Grease (Item 8, WP 0205 00)
Two cotter pins (WP 0178 00)

LAUNCH BOOM ROPE GUIDE ROLLER REPLACEMENT (Contd)

REMOVAL

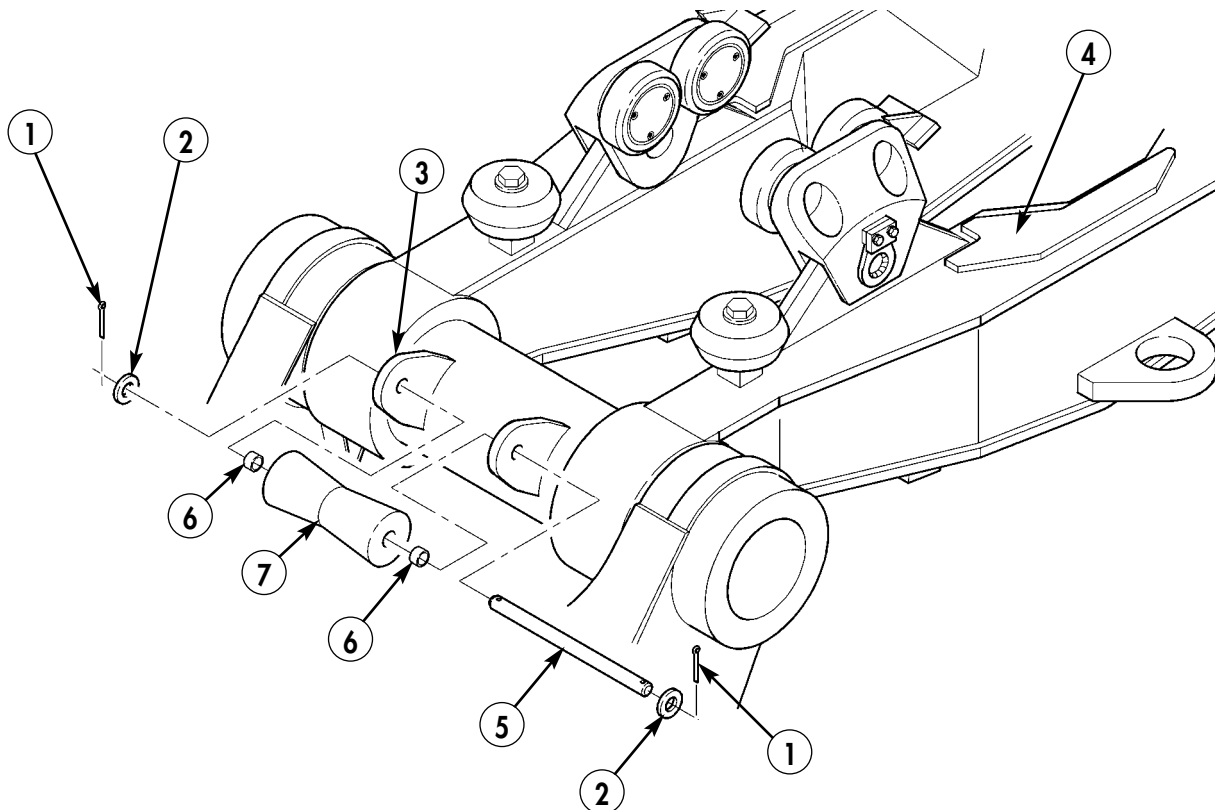
1. Start Launch Power Unit (LPU) or CBT, remove retaining pin from launch boom (4) and depress KY1 and KY18 control valves simultaneously to lower launch boom (4) to -90-degrees position. Release control valves and shut down LPU.
2. Remove two cotter pins (1), washers (2), pin (5), and rope guide roller (7) from two launch boom brackets (3) on launch boom (4). Discard cotter pins (1).
3. If damaged or worn, remove two bushings (6) from rope guide roller (7).

INSTALLATION

NOTE

Apply a light coat of grease to bushings and pin at installation.

1. If removed, install two bushings (6) on rope guide roller (7).
2. Install rope guide roller (7) between launch boom brackets (3) on launch boom (4) with pin (5), two washers (2), and new cotter pins (1).
3. Start LPU or CBT and depress KY1 and KY19 control valves simultaneously to raise launch boom (4) to +90-degrees position. Install retaining pin on launch boom (4).



LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

BEARING SHAFT MANIFOLD REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Grease (Item 8, WP 0205 00)
Cap and plug set (Item 3, WP 0205 00)
Six seal ring assemblies (WP 0179 00)
Seal washer (WP 0179 00)
O-ring (WP 0179 00)
Four O-rings (WP 0179 00)
Four tube seals (WP 0179 00)

BEARING SHAFT MANIFOLD REPLACEMENT (Contd)

REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag tubes for installation.

Note position of manifold and manifold adapter plate for installation.

Have container ready to catch oil.

1. Disconnect four steel tubes (25) and tube seals (26) from adapters (27) on bearing shaft manifold (5). Discard tube seals (26).
2. Remove four adapters (27) and O-rings (28) from manifold (5). Discard O-rings (28).
3. Remove four screws (15), cover (14), and O-ring (16) from potentiometer adapter plate (17). Discard O-ring (16).

NOTE

Note position of potentiometer and wires for installation.

4. Mark location of potentiometer (9) on potentiometer adapter plate (17), and remove two screws (13), washers (12), ground wire (10), and potentiometer (9) from adapter plate (17).
5. Mark location of potentiometer adapter plate (17) on manifold (5), and remove three screws (7), washers (6), and adapter plate (17) from two dowel pins (8) and manifold (5).
6. Remove three screws (20) and cover (21) from end of bearing shaft (2) and manifold (5).

NOTE

Mark position of drive screw before removal for installation.

7. If necessary, loosen nut (18) and remove potentiometer drive screw (19) from cover (21).
8. Remove two screws (30), washers (31), and retaining bracket (32) from manifold (5) and pallet (1).
9. Remove manifold (5) with bearing ring (4) and bearing ring (22) from end of bearing shaft (2).

NOTE

Note positions of bearing rings for installation.

10. Remove six screws (3) and bearing rings (4) and (22) from ends of manifold (5).
11. Remove six seal ring assemblies (24) and seal ring (23) from inside of manifold (5). Discard seal rings (24) and (23).
12. If damaged, remove two dowel pins (8) from manifold (5).

INSTALLATION

NOTE

Ensure manifold, adapter plate, and potentiometer are installed as marked during removal.

Apply a light coat of grease to all seal ring assemblies, O-rings, tube seals, and seal washers at installation.

1. If removed, install two dowel pins (8) on manifold (5).
2. Install six new seal ring assemblies (24) and new seal ring (23) on manifold (5).

NOTE

Install bearing rings on ends of manifold as noted at removal.

3. Install bearing rings (4) and (22) on manifold (5) with six screws (3).

BEARING SHAFT MANIFOLD REPLACEMENT (Contd)

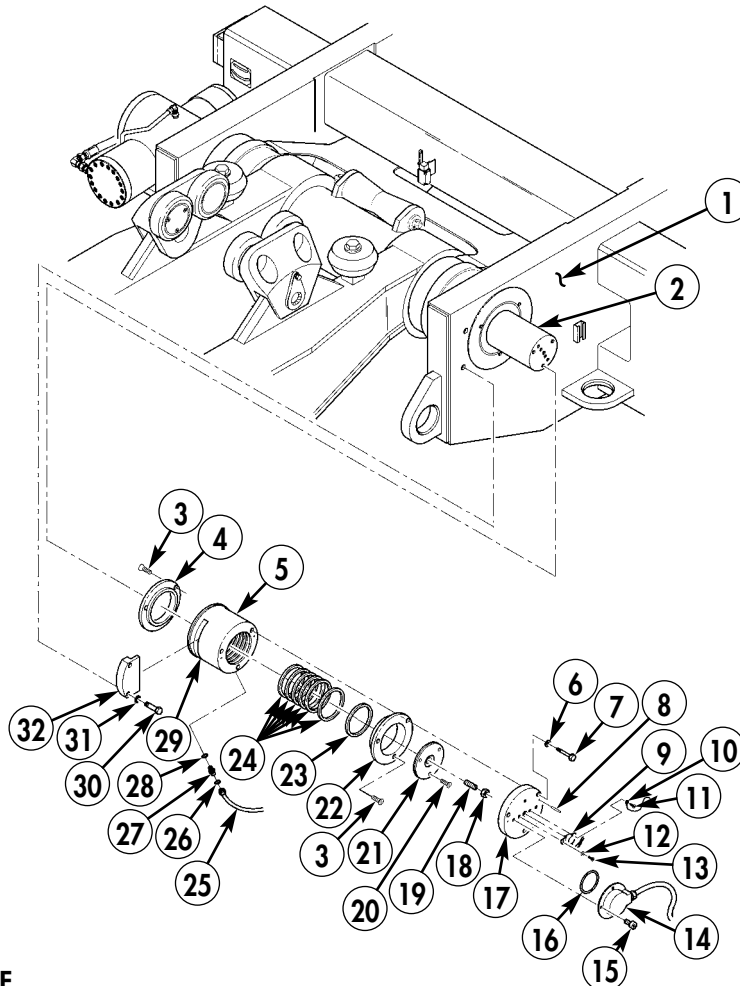
INSTALLATION (Contd)

4. Install manifold (5) on bearing shaft (2).
5. Install retaining bracket (32) on pallet (1) and slot (29) on manifold (5) with washers (31) and screws (30).
6. If removed, install potentiometer drive screw (19) on cover (21) with nut (18).
7. Install cover (21) on bearing shaft (2) with three screws (20).
8. Install four new O-rings (28) and adapters (27) on manifold (5).
9. Connect four steel tubes (25) with new tube seals (26) to adapters (27).
10. Install potentiometer adapter plate (17) on two dowel pins (8) and manifold (5) with three washers (6) and screws (7).
11. Install potentiometer (9) and ground wire (10) on adapter plate (17) with two washers (12) and screws (13). Do not tighten screws (13).
12. Adjust potentiometer. Refer to WP 0093 00.
13. Install cover (14) on potentiometer adapter plate (17) with new O-ring (16) and four screws (15).

NOTE

The pallet hydraulic system is self-bleeding, and with the exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system

14. Operate hydraulic system and check for leaks. Refer to TM 5-5420-280-10.



END OF WORK PACKAGE

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LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

POTENTIOMETER MAINTENANCE REMOVAL, ADJUSTMENT, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

O-ring (WP 0179 00)

References

TM 5-5420-280-10

POTENTIOMETER MAINTENANCE (Contd)

REMOVAL

1. Position launch boom (1) in +90-degree position with retaining pins (2) installed.
2. Turn on main power switch. Refer to TM 5-5420-280-10.
3. Open Remote Control Unit (RCU) stowage box and turn on RCU by releasing STOP button. Refer to TM 5-5420-280-10. Display screen will read TURN ON RCU. If not, perform step 4.
4. Depress LAUNCH, ACTION 1, and ACTION 2 buttons simultaneously to return to TURN ON RCU.
5. Depress F1 button (6).
6. Depress ESC button (5).
7. Depress UP/DN button (4) until display screen (3) reads MEASURE.
8. Depress F1 button (6) until display screen (3) reads VOLTAGE IN.
9. Depress F1 button (6).
10. Depress UP/DN button (4) until display screen (3) reads VIN Poti- (above SCALED bar (17) at bottom left of display screen (3).
11. Record in mV voltage value displayed above SCOPE bar (7) bottom right of display screen (3).
12. Remove four screws (14) and potentiometer cover (13) from potentiometer adapter plate (8).

NOTE

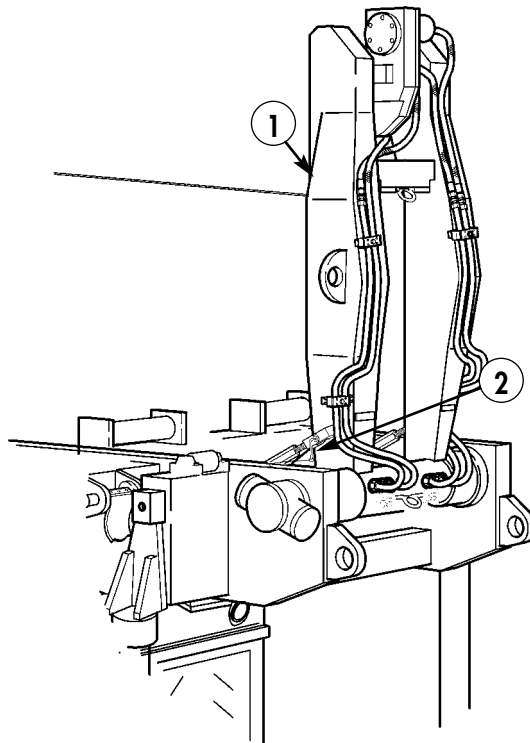
Note position of potentiometer and wires for installation.

13. Scribe location of potentiometer (9) on potentiometer adapter plate (8).

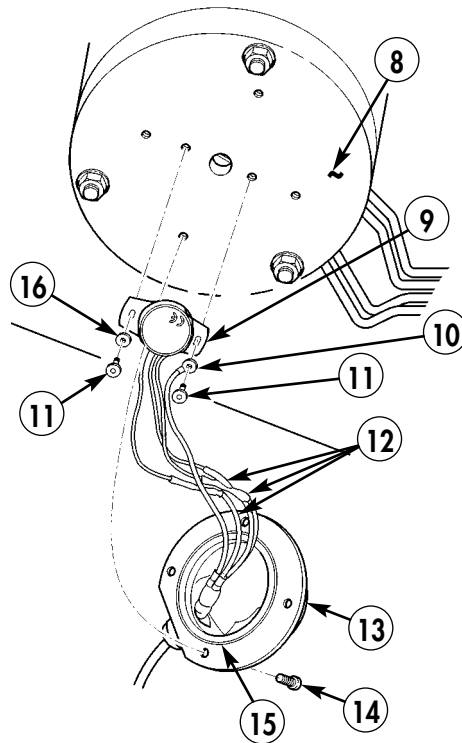
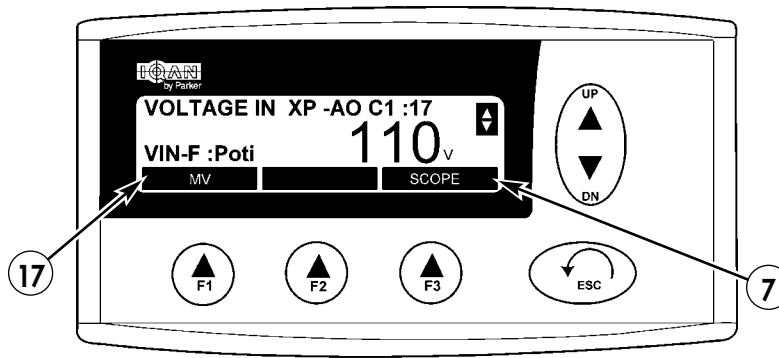
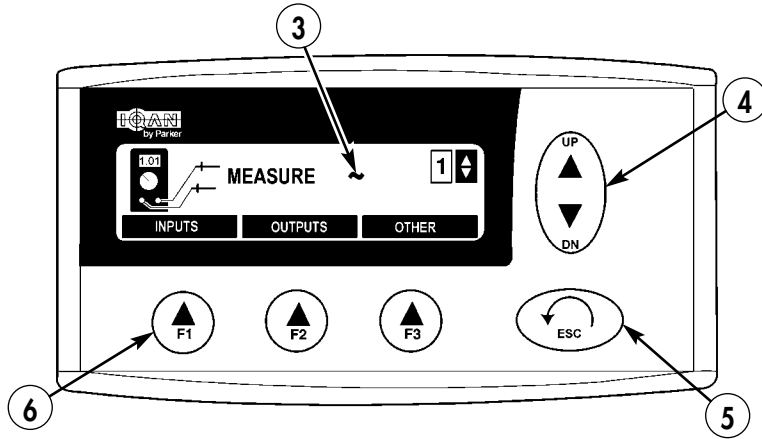
NOTE

Tag wires for installation.

14. Remove two screws (11), washer (16), ground wire (10), and potentiometer (9) from potentiometer adapter plate (8).
15. Disconnect three wires (12) and remove and discard O-ring (15) if replacing potentiometer (9).



POTENTIOMETER MAINTENANCE (Contd)



POTENTIOMETER MAINTENANCE (Contd)

ADJUSTMENT

NOTE

Perform steps 1-6 if potentiometer was removed following Removal steps 1-11.

Perform steps 7-18 if potentiometer is faulty or was removed without following Removal steps 1-11.

Bridge must be on pallet prior to performing steps 7-18.

1. If disconnected, install new O-ring (9) before connecting three electrical leads (6) to potentiometer (3).
2. If necessary, repeat Removal steps 3-11 and note mV voltage value displayed above SCOPE bar (14) at bottom right of display screen (13).
3. Turn potentiometer drive pin (12) until mV value is same number value recorded during removal.
4. Align potentiometer drive pin (12) with slot (1) on manifold cover drive screw (11), and position potentiometer (3) on potentiometer adapter plate (2) with scribe marks aligned.
5. Install potentiometer (3) and ground wire (4) on potentiometer adapter plate (2) with washer (10) and two screws (5). Do not tighten screws (5).

CAUTION

Do not over-tighten potentiometer mounting screws.

NOTE

Assistant will help with step 6.

6. Slowly turn potentiometer (3) right or left until mV value on RCU display screen (13) is the same number recorded during removal, then tighten two screws (5).
7. If disconnected, install new O-ring (9) before connecting electrical leads (6) to potentiometer (3). Depress launch, action 1, and action 2 buttons simultaneously to return display to TURN ON RCU.
8. Perform Launch of Bridge. Refer to TM 5-5420-280-10 in normal sequence until LOWER LAUNCH BOOM TO LAUNCH POSITION is displayed on RCU display screen.
9. Depress and hold ACTION 1 button until launch boom lowers and rests on bridge launch beam. Release ACTION 1 button.
10. Depress LAUNCH, ACTION 1, and ACTION 2 buttons simultaneously to return RCU display screen to TURN ON RCU.
11. Repeat removal steps 3-11 and observe mV value displayed above SCOPE bar (14) at bottom right of display screen (13).
12. Turn potentiometer drive pin (12) until mV value is 2448 as shown on display screen (13).
13. Align potentiometer drive pin (12) with slot (1) on manifold cover drive screw (11), and position potentiometer (3) on potentiometer adapter plate (2) with scribe marks aligned.
14. Install potentiometer (3) and ground wire (4) on potentiometer adapter plate (2) with washer (10) and two screws (5). Do not tighten screws.

NOTE

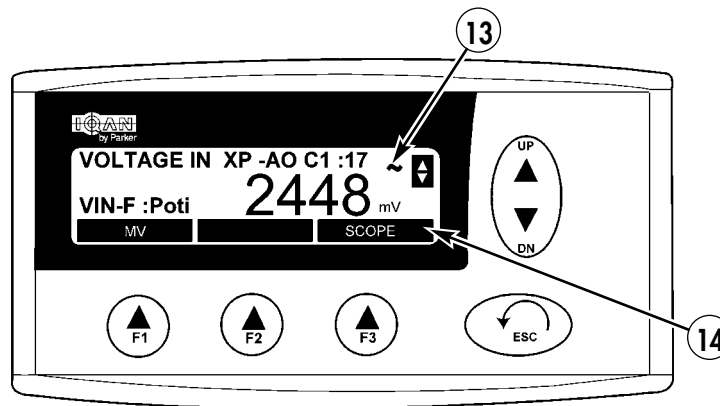
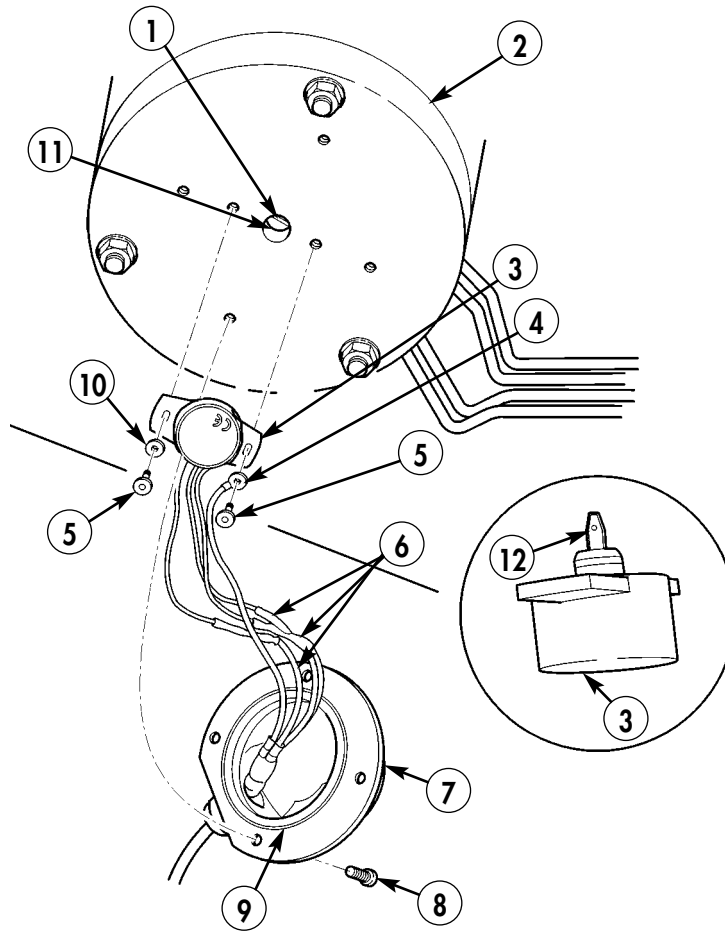
Assistant will help with step 15.

15. Slowly turn potentiometer (3) right or left until mV value on RCU display screen (13) is 2448, then tighten two screws (5) on potentiometer (3).
16. Depress LAUNCH, ACTION 1, and ACTION 2 buttons simultaneously to return RCU display screen to TURN ON RCU.
17. Depress and hold LAUNCH button until display advances to start of retrieval. Then hold RETRIEVAL button until display advance to RAISE LAUNCH BOOM TO TRAVEL POSITION.
18. Complete bridge retrieval. Refer to TM 5-5420-280-10 in normal sequence.

POTENTIOMETER MAINTENANCE (Contd)

INSTALLATION

1. Install potentiometer cover (7) on potentiometer adapter plate (2) with four screws (8).
2. Depress LAUNCH, ACTION 1, and ACTION 2 buttons simultaneously to return RCU display to TURN ON RCU. Refer to TM 5-5420-280-10.
3. Depress STOP button on RCU. Refer to TM 5-5420-280-10.
4. Turn off main power switch. Refer to TM 5-5420-280-10.



END OF WORK PACKAGE

LAUNCHER MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**LAUNCH BOOM SWIVEL DRIVE REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)
Lifting device
Sling or chain

Materials/Parts

Grease (Item 8, WP 0205 00)
Cap and plug set (Item 3, WP 0205 00)
Four locknuts (WP 0180 00)
Lockwasher (WP 0180 00)
Five O-rings (WP 0180 00)
Three tube seals (WP 0180 00)

LAUNCH BOOM SWIVEL DRIVE REPLACEMENT (Contd)

REMOVAL

1. Start Launch Power Unit (LPU) or CBT, remove retaining pins from launch boom and depress KY1 and KY18 control valves simultaneously to lower launch boom to -90-degrees position. Release control valves and shut down LPU.

WARNING

Launch boom is very heavy and must be supported before disconnecting hydraulic hoses or tubes. Failure to comply may result in injury or death to personnel.

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag hoses for installation.
Have container ready to catch oil.

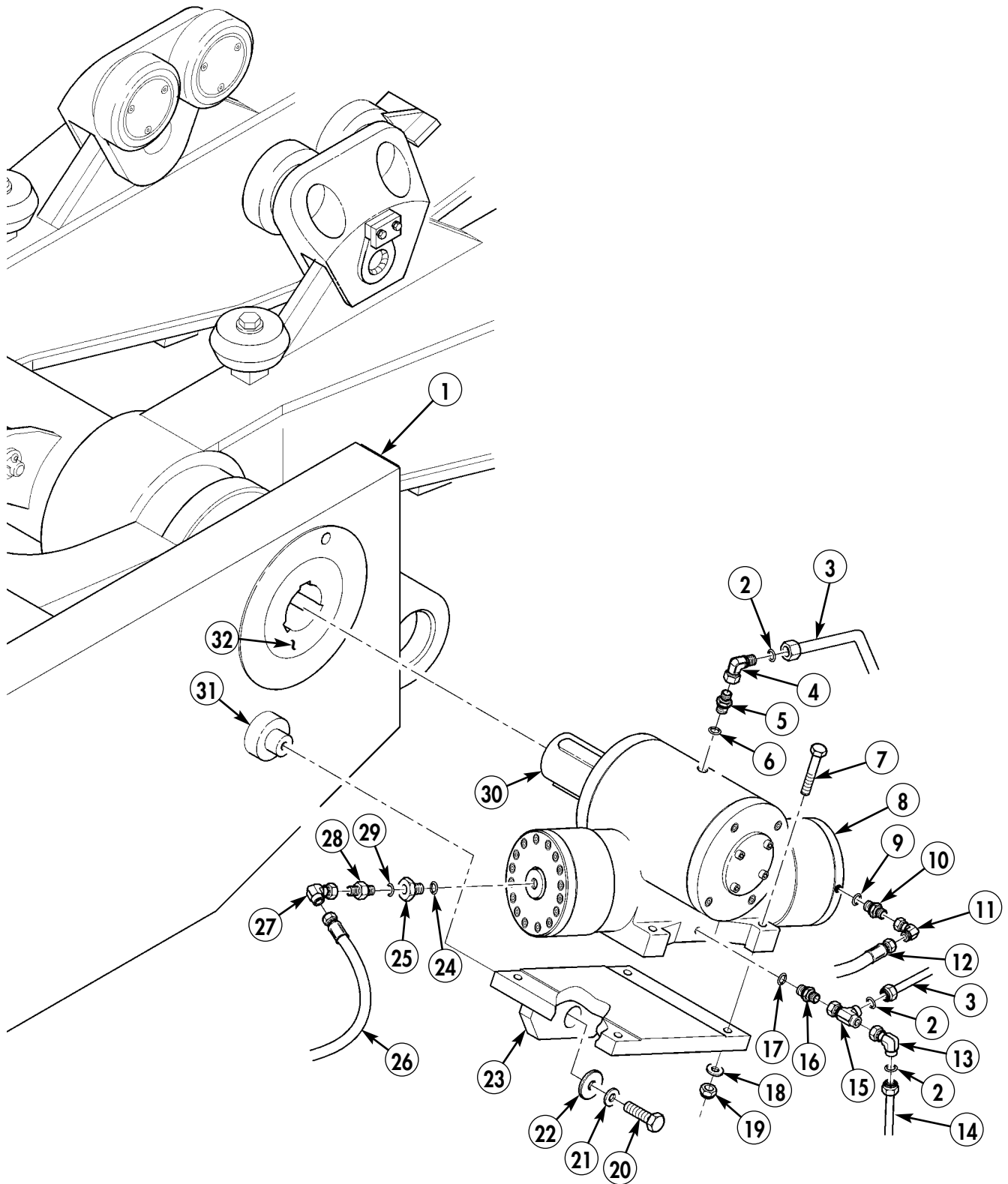
2. Disconnect steel tubes (3) and (14) and tube seals (2) from elbows (4) and (13) and tee fitting (15) on launch boom swivel drive (8). Discard tube seals (2).
3. Disconnect hoses (12) and (26) from elbows (11) and (27) on swivel drive (8).
4. Remove four locknuts (19), washers (18), and screws (7) from bracket (23) and swivel drive (8). Discard locknuts (19).
5. Attach lifting device and sling or chain to swivel drive (8) and remove screw (20), lockwasher (21), washer (22), and bracket (23) from standoff bracket (31). Discard lockwasher (21).

NOTE

Note position of swivel drive shaft and bearing shaft for installation.

6. Pull swivel drive shaft (30) out of bearing shaft (32) and remove swivel drive (8) from pallet frame (1).
7. Remove elbow (4), adapter (5), and O-ring (6) from swivel drive (8). Discard O-ring (6).
8. Remove elbow (11), adapter (10), and O-ring (9) from swivel drive (8). Discard O-ring (9).
9. Remove elbow (13), tee fitting (15), adapter (16), and O-ring (17) from swivel drive (8). Discard O-ring (17).
10. Remove elbow (27), adapter (28), O-ring (29), reducer (25), and O-ring (24) from swivel drive (8). Discard O-rings (29) and (24).
11. Remove sling or chain and lifting device from swivel drive (8).

LAUNCH BOOM SWIVEL DRIVE REPLACEMENT (Contd)



LAUNCH BOOM SWIVEL DRIVE REPLACEMENT (Contd)

INSTALLATION

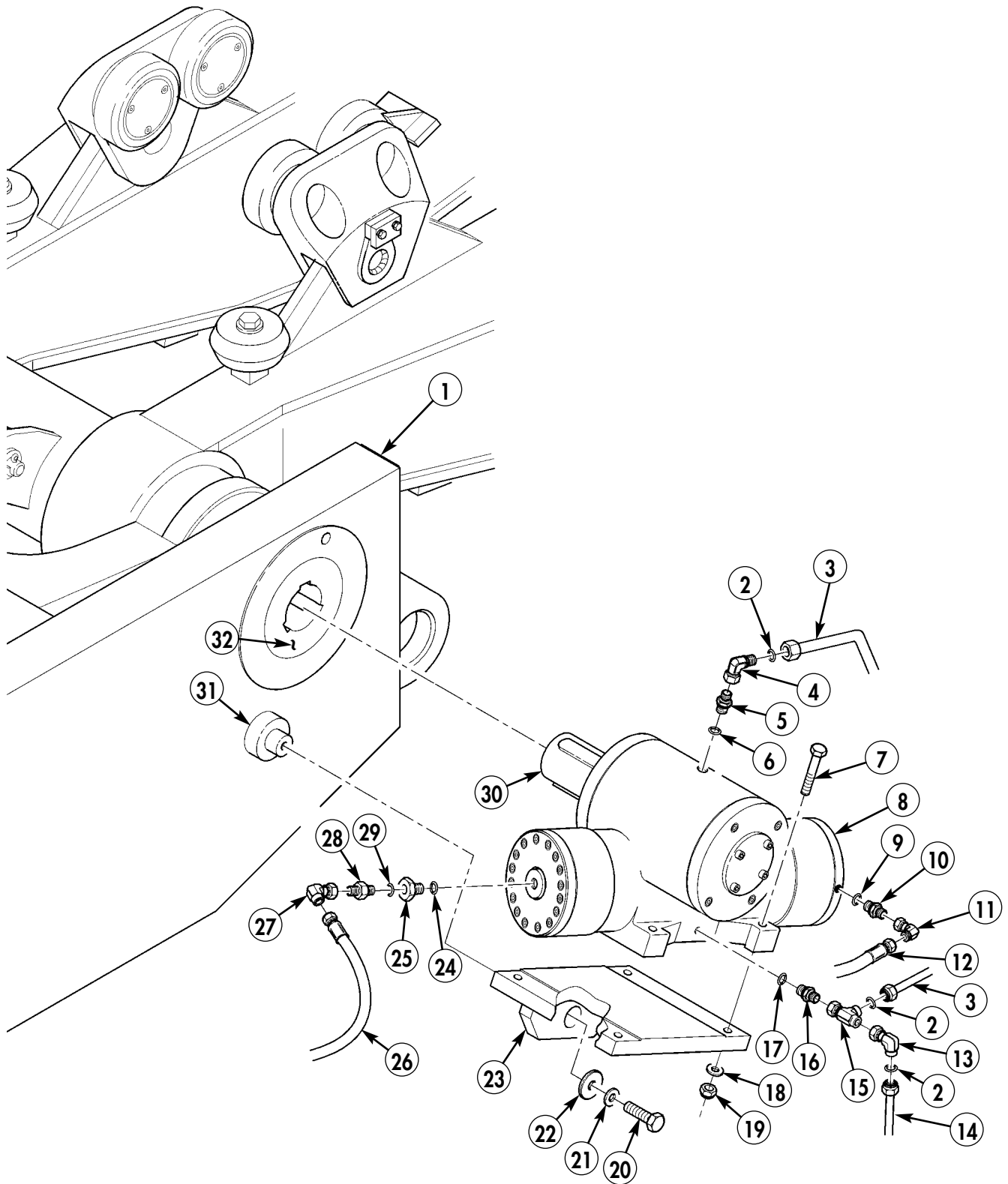
NOTE

Apply a light coat of grease to bearing shaft and swivel drive shaft at installation.

The pallet hydraulic system is self-bleeding, and with the exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

1. Install new O-ring (24), reducer (25), new O-ring (29), adapter (28), and elbow (27) on swivel drive (8).
2. Install new O-ring (17), adapter (16), tee fitting (15), and elbow (13) on swivel drive (8).
3. Install new O-ring (9), adapter (10), and elbow (11) on swivel drive (8).
4. Install new O-ring (6), adapter (5), and elbow (4) on swivel drive (8).
5. Apply air pressure to ports at either end of swivel drive (8) to rotate swivel drive shaft (30) to position noted at removal.
6. Attach sling or chain and lifting device on swivel drive (8).
7. Install swivel drive shaft (30) on bearing shaft (32) and swivel drive (8) on pallet frame (1).
8. Install bracket (23) on standoff bracket (31) with washer (22), new lockwasher (21), and screw (20).
9. Install four screws (7), washers (18), and new locknuts (19) on bracket (23) and swivel drive (8).
10. Remove sling or chain and lifting device from swivel drive (8).
11. Connect hoses (26) and (12) to elbows (27) and (11) on swivel drive (8).
12. Connect steel tubes (14) and (3) with new tube seals (2) to tee fitting (15) and elbows (13) and (4).
13. Start LPU or CBT, depress KY1 and KY18 control valves simultaneously to raise launch boom to +90-degrees position. Release control valves and shut down LPU and install launch boom retaining pins.

LAUNCH BOOM SWIVEL DRIVE REPLACEMENT (Contd)



END OF WORK PACKAGE

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LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

LAUNCH BOOM REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)
Lifting device
Sling or chains

Materials/Parts

Grease (Item 8, WP 0205 00)
Cap and plug set (Item 3, WP 0205 00)
Four O-rings (WP 0181 00)

Equipment Condition

Bridge pallet removed from CBT and placed on dunnage. Refer to TM 5-5420-280-10.
Lower support roller assembly removed. Refer to WP 0088 00.
Upper roller block assemblies removed. Refer to WP 0090 00.
Launch boom rope guide roller removed. Refer to WP 0091 00.
Bearing shaft manifold removed. Refer to WP 0092 00.
Hydraulic lines removed. Refer to WP 0071 00.
Launch boom swivel drive removed. Refer to WP 0094 00.

LAUNCH BOOM REPLACEMENT (Contd)

REMOVAL

WARNING

Lower support boom and launch boom are extremely heavy and must be supported during removal and installation. Failure to comply may result in injury or death to personnel.

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag hoses for installation.

Have container ready to catch oil.

1. Place dunnage under lower support boom (3) and attach lifting device and sling or chain to launch boom (10).
2. Remove four fittings (8) and O-rings (9) from bearing shaft (1). Discard O-rings (9).
3. Remove two screws (7), retaining plate (6), and straight pin (5) from launch boom (10) and bearing shaft (1).

NOTE

It will be necessary to remove bearing shaft using suitable pulling device.

4. Take up slack on lifting device and pull bearing shaft (1) out of lower support boom (3), launch boom (10), and pallet (2) and remove launch boom (10) from lower support boom (3) and pallet (2) and place on ground.
5. Remove chain or sling and lifting device from launch boom (10).
6. If damaged, remove two bushings (4) from launch boom (10).

INSTALLATION

NOTE

Apply a light coat of grease to all bushings, O-rings, and bearing shaft at installation.

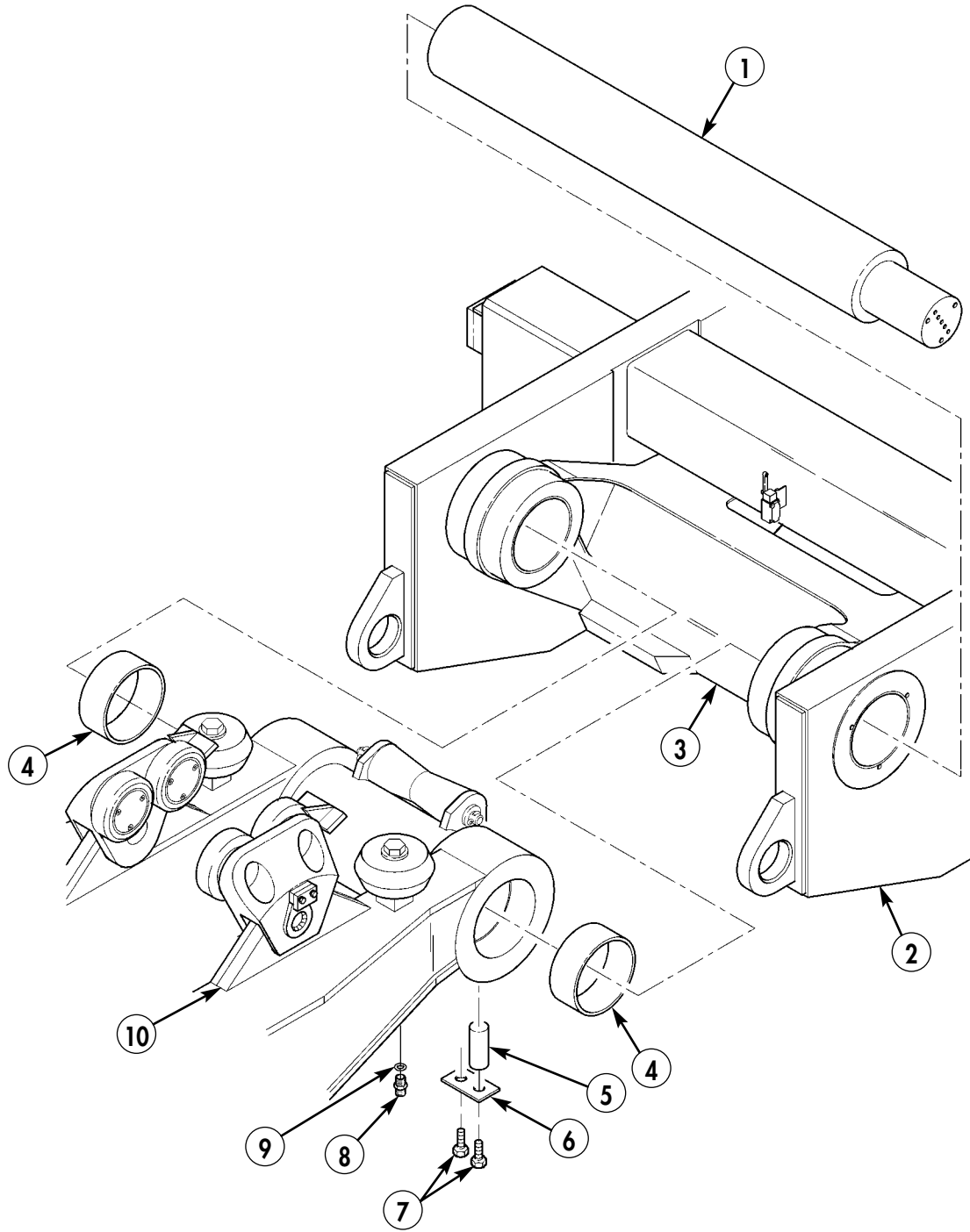
1. If removed, install two bushings (4) on launch boom (10).
2. Install lifting device and chain or sling on launch boom (10).
3. Lift launch boom (10) and position launch boom (10) on pallet (2), aligning launch boom (10), lower support boom (3), and pallet (2).

NOTE

Holes for fittings and straight pin must be aligned with openings on bottom of launch boom at installation.

4. Slide bearing shaft (1) through pallet (2), lower support boom (3), launch boom (10).
5. Install straight pin (5) on launch boom (10) and bearing shaft (1) with retainer plate (6), and two screws (7).
6. Install four new O-rings (9) and fittings (8) on bearing shaft (1).
7. Remove dunnage from lower support boom (3).
8. Install upper roller block assemblies. Refer to WP 0090 00.
9. Install launch boom rope guide roller. Refer to WP 0091 00.
10. Install bearing shaft manifold. Refer to WP 0092 00.
11. Install lower support roller assembly. Refer to WP 0088 00.
12. Install launch boom swivel drive. Refer to WP 0094 00.
13. Install hydraulic lines. Refer to WP 0071 00.

LAUNCH BOOM REPLACEMENT (Contd)



LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

LOWER SUPPORT BOOM CYLINDERS REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)
Lifting strap or sling
Lifting device

Equipment Condition

Bridge halves removed from bridge pallet.
Refer to WP 0018 00.

Materials/Parts

Hydraulic oil (Item 11, WP 0205 00)
Grease (Item 8, WP 0205 00)
Cap and plug set (Item 3, WP 0205 00)
Three O-rings (WP 0182 00)
O-ring (WP 0182 00)
Two tube seals (WP 0182 00)

LOWER SUPPORT BOOM CYLINDERS REPLACEMENT (Contd)

NOTE

Removal and installation of right and left lower support boom cylinders are performed the same way. Left side lower support boom cylinder is shown.

REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag hoses for installation.

Have container ready to catch oil.

1. Disconnect hoses (8) and (16) from adapter (9) and elbow (17) on cylinder manifold (11).
2. Loosen screw (23) and disconnect electrical connector (24) from pressure switch (25).
3. Remove pressure switch (25) and O-ring (22) from adapters (26). Discard O-ring (22).
4. Loosen two nuts (20) and remove steel tube (21) and two tube seals (19) from adapters (26) and (9). Discard tube seals (19)

WARNING

Lower support boom must be supported on dunnage before cylinders are removed. Failure to comply may result in injury or death to personnel.

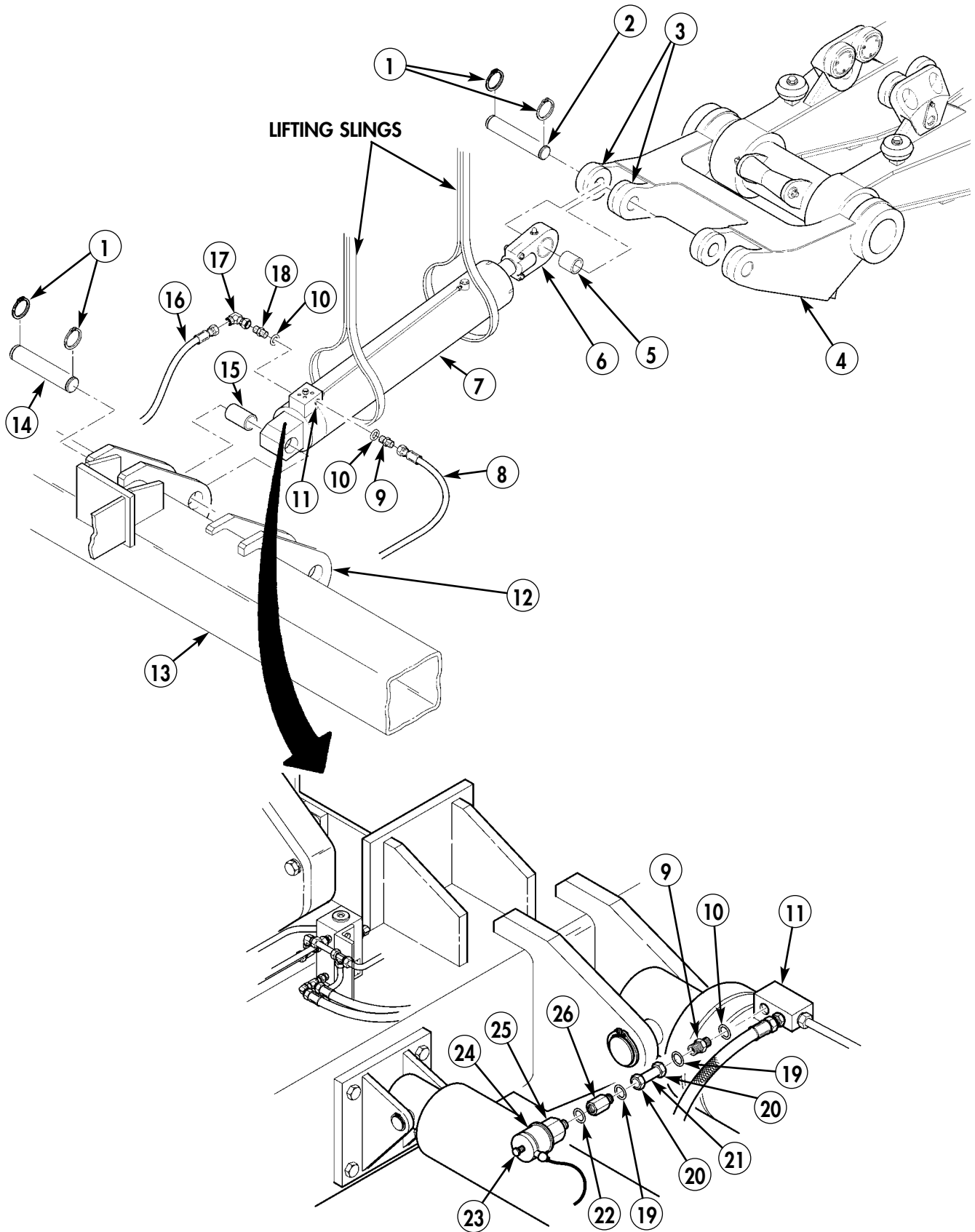
5. Secure lower support boom (4) from moving when lower support boom cylinder (7) is removed.
6. Attach a lifting sling around lower support boom cylinder (7) and connect to lifting device. Take up slack in sling.
7. Remove four snaprings (1) and pins (2) and (14) from lower support boom cylinder (7), support boom brackets (3), and crossmember brackets (12) on bridge pallet (13).
8. Lift lower support boom cylinder (7) from bridge pallet (13) and place on ground.

NOTE

If replacing cylinder, note quantity and thickness of shims on end of shaft. Replace as necessary.

9. If damaged or worn, remove bushings (5) and (15) from ends of lower support boom cylinder (7).
10. Remove elbow (17), adapters (9) and (18), and two O-rings (10) from cylinder manifold (11). Discard O-rings (10).

LOWER SUPPORT BOOM CYLINDERS REPLACEMENT (Contd)



LOWER SUPPORT BOOM CYLINDERS REPLACEMENT (Contd)

INSTALLATION

NOTE

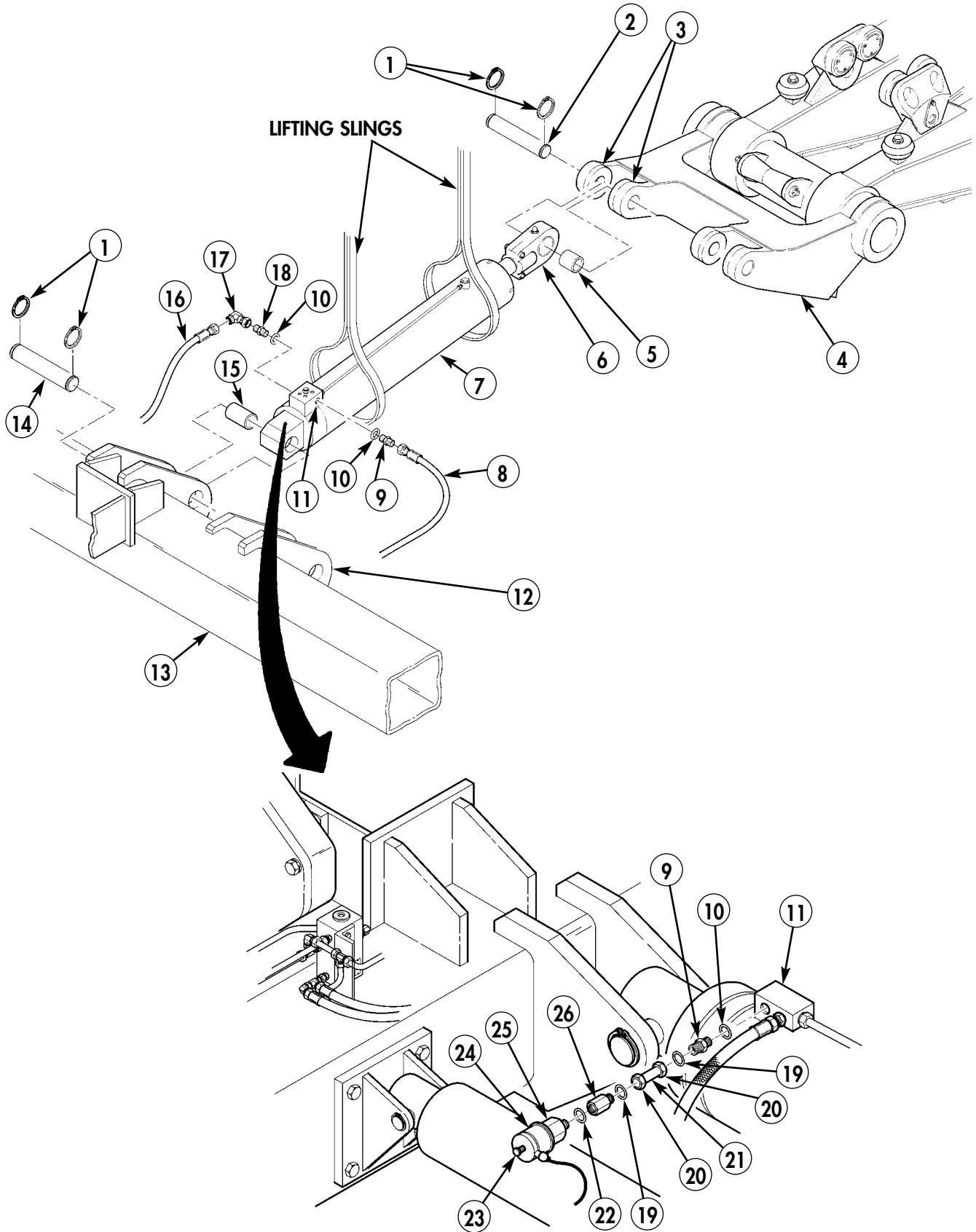
Apply a light coat of hydraulic oil to O-rings and tube seals at installation.

Apply a light coat of grease to pins and bushings at installation.

The pallet hydraulic system is self-bleeding, and with the exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system

1. Install three new O-rings (10), adapters (9) and (18), and elbow (17) on cylinder manifold (11).
2. If removed, install bushings (5) and (15) on ends of lower support boom cylinder (7).
3. Using sling and lifting device, install lower support boom cylinder (7) on crossmember brackets (12) and support boom brackets (3) with pins (2) and (14) and four snaprings (1).
4. Install steel tube (21) with two new tube seals (19) and adapter (26) on adapter (9) and tighten two nuts (20).
5. Install new O-ring (22) and pressure switch (25) on adapter (26).
6. Connect electrical connector (24) on pressure switch (25) and tighten screw (23).
7. Connect hoses (8) and (16) to adapter (9) and elbow (17) on cylinder manifold (11).
8. Unsecure lower support boom (4).
9. Install bridge halves on bridge pallet. Refer to WP 0018 00.

LOWER SUPPORT BOOM CYLINDERS REPLACEMENT (Contd)



END OF WORK PACKAGE

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LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

LOWER SUPPORT BOOM REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)
Lifting device
Sling
Chain

Materials/Parts

Grease (Item 8, WP 0205 00)
Cap and plug set (Item 3, WP 0205 00)
Four O-rings (WP 0162 00)

Equipment Condition

Bridge pallet removed from CBT and placed on
dunnage. Refer to TM 5-5420-280-10.
Bearing shaft manifold removed.
Refer to WP 0092 00.
Hydraulic lines removed. Refer to WP 0071 00.
Launch boom swivel drive removed.
Refer to WP 0094 00.

LOWER SUPPORT BOOM REPLACEMENT (Contd)

REMOVAL

WARNING

Lower support boom and launch boom are extremely heavy and must be supported during removal and installation. Failure to comply may result in injury or death to personnel.

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag hoses for installation.

Have container ready to catch oil.

1. Support lower support boom (11) and remove four snaprings (7) and two pins (9) from lower support boom (11) and two hydraulic cylinder rod ends (4). Disconnect rod ends (4) from support boom (11) and lower hydraulic cylinders (3) to ground.
2. Attach lifting device and sling or chain to launch boom (15) and take up slack.
3. Remove four fittings (6) and O-rings (5) from bearing shaft (1). Discard O-rings (5).
4. Remove two screws (12), retaining plate (13), and straight pin (14) from launch boom (15) and bearing shaft (1).

NOTE

It will be necessary to remove bearing shaft using a suitable pulling device.

5. Place dunnage or floor jack under lower support boom (11) and pull bearing shaft (1) out of lower support boom (11), launch boom (16), and pallet (2).
6. Remove lower support boom (11) from launch boom (15) and pallet (2).
7. If damaged, remove two bushings (10) and (8) from lower support boom (11) and cylinder rod ends (4).

INSTALLATION

NOTE

Apply a light coat of grease to all bushings, pins, and bearing shaft at installation.

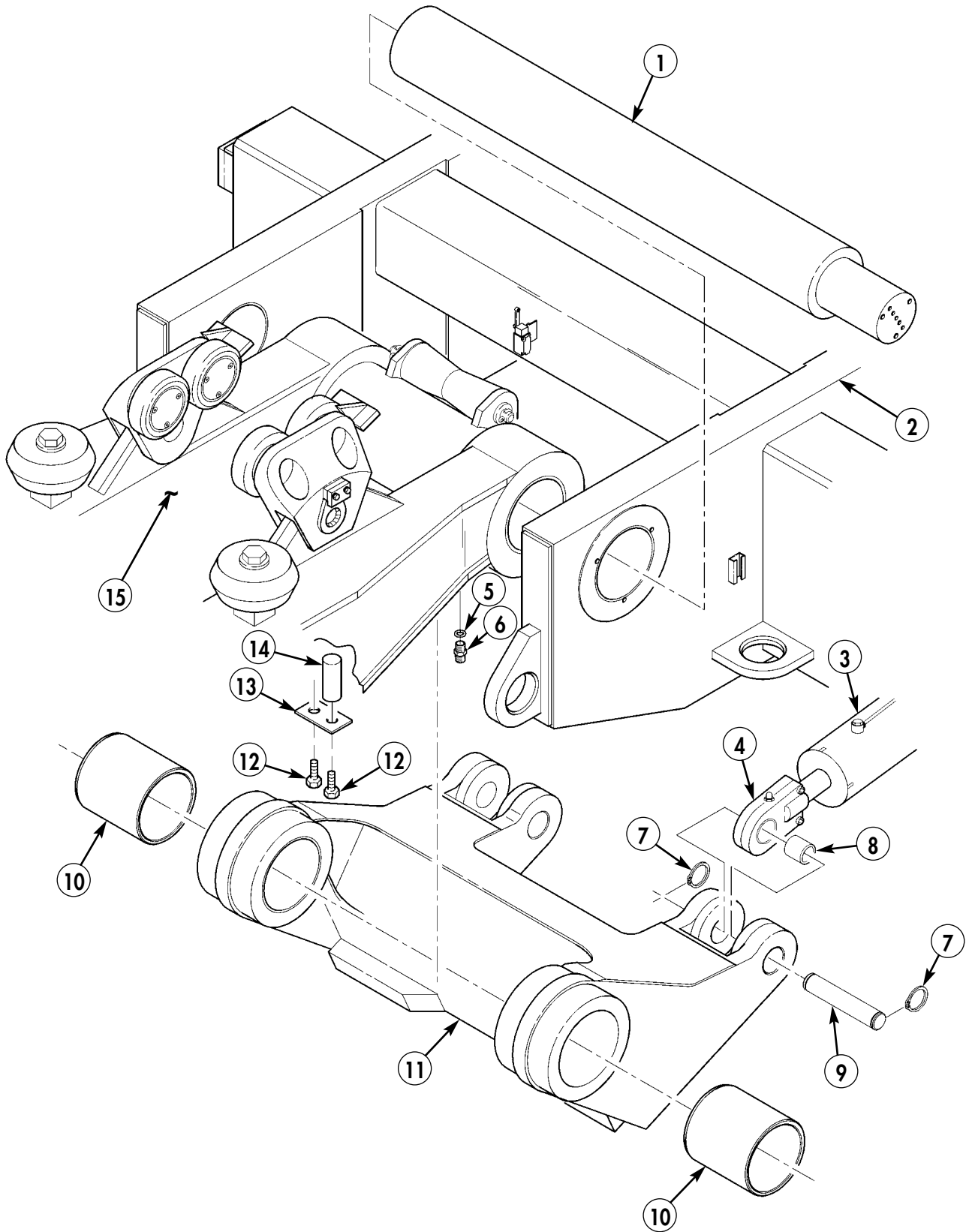
1. If removed, install two bushings (8) and (10) on hydraulic cylinder rod ends (4) and lower support boom (11).
2. Position lower support boom (11) on pallet (2) and launch boom (16).

NOTE

Align holes for fittings and straight pin with openings on bottom of launch boom at installation.

3. Position lower support boom (11) and launch boom (15) with pallet (2) openings and slide bearing shaft (1) through pallet (2), lower support boom (11), launch boom (15).
4. Install straight pin (14) on launch boom (15) and bearing shaft (1) with retaining plate (13), and two screws (12).
5. Install four new O-rings (5) and fittings (6) on bearing shaft (1).
6. Lift two hydraulic cylinders (3) and connect hydraulic cylinder rod ends (4) on lower support boom (11) with two pins (9) and four snaprings (7).
7. Remove chain or sling and lifting devices from launch boom (15).
8. Install launch boom swivel drive. Refer to WP 0094 00.
9. Install hydraulic lines. Refer to WP 0071 00.
10. Install bearing shaft manifold. Refer to WP 0092 00.
11. Install bridge pallet on CBT. Refer to TM 5-5420-280-10.

LOWER SUPPORT BOOM REPLACEMENT (Contd)



END OF WORK PACKAGE

LAUNCHER MAINTENANCE INSTRUCTIONS**RAPIDLY EMPLACED BRIDGE (REB)**

NSN 5420-01-481-3959 P/N 12480471

**SECONDARY BOOM ROLLERS REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)**Equipment Condition**Bridge halves removed from bridge pallet.
Refer to WP 0018 00.**Materials/Parts**Grease (Item 8, WP 0205 00)
Two lockwashers (WP 0185 00)

SECONDARY BOOM ROLLERS REPLACEMENT (Contd)

REMOVAL

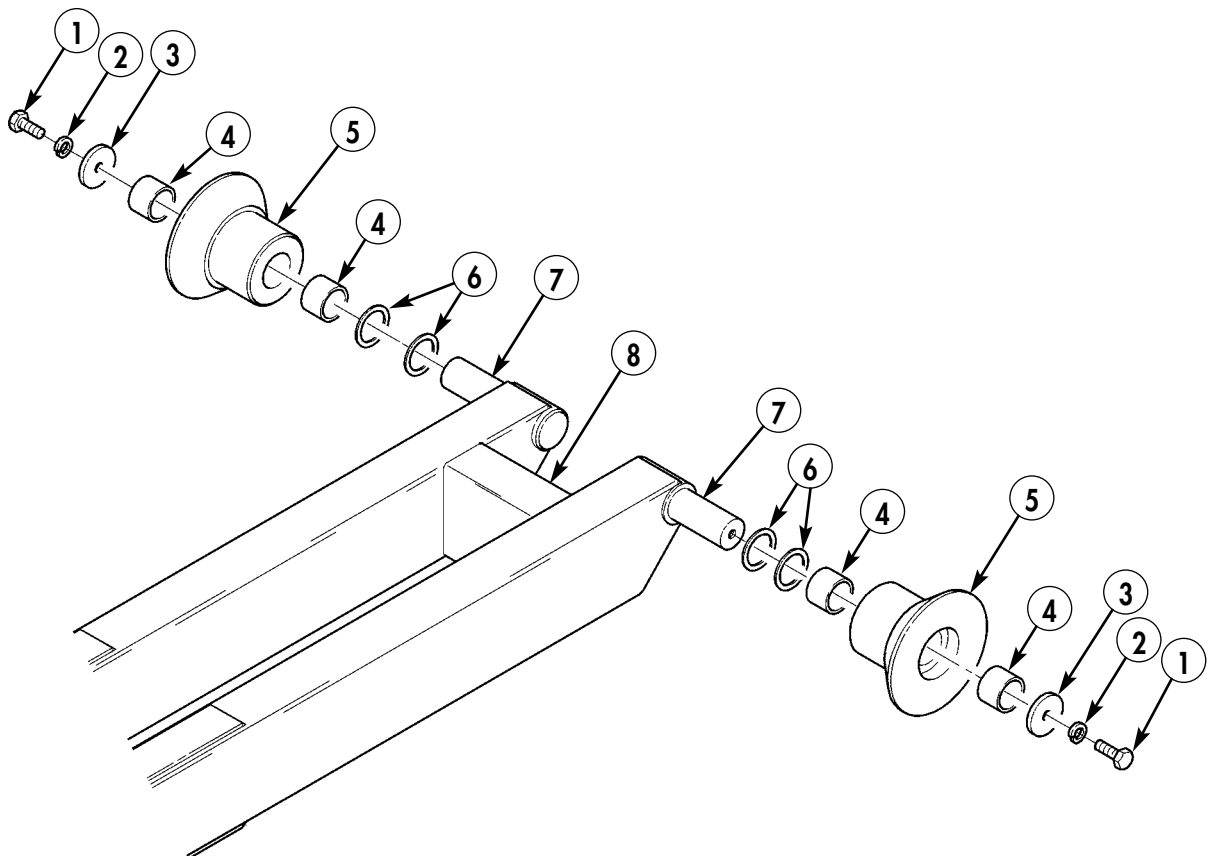
1. Remove two screws (1), lockwashers (2), and washers (3) from secondary boom shaft (7) on secondary boom (8). Discard lockwashers (2).
2. Remove two rollers (5) and four washers (6) from boom shafts (7).
3. If damaged, remove four bushings (4) from two rollers (5).

INSTALLATION

NOTE

Apply a light coat of grease to bushings and shafts at installation.

1. If removed, install four bushings (4) on two rollers (5).
2. Install four washers (6) and two rollers (5) on shafts (7) of secondary boom (8).
3. Install two washers (3), new lockwashers (2), and screws (1) on ends of shafts (7).
4. Install bridge halves on bridge pallet. Refer to WP 0018 00.



LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

SECONDARY BOOM CYLINDER REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Bridge halves removed from bridge pallet.
Refer to WP 0018 00.

Materials/Parts

Grease (Item 8, WP 0205 00)
Cap and plug set (Item 3, WP 0205 00)
Two O-rings (WP 0184 00)

SECONDARY BOOM CYLINDER REPLACEMENT (Contd)

REMOVAL

CAUTION

Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Tag hoses for installation.

Have container ready to catch oil.

1. Disconnect two hoses (8) from elbows (5) on secondary boom cylinder (10).
2. Support cylinder (10) and remove four snaprings (3), two pins (2), and cylinder (10) from support brackets (13) and secondary boom brackets (4).
3. Remove two elbows (5), adapters (6), and O-rings (7) from cylinder (10). Discard O-rings (7).
4. If damaged, remove two bushings (9) from ends of cylinder (10).
5. If damaged, remove four screws (11), washers (12), and support bracket (13) from crossmember (1).

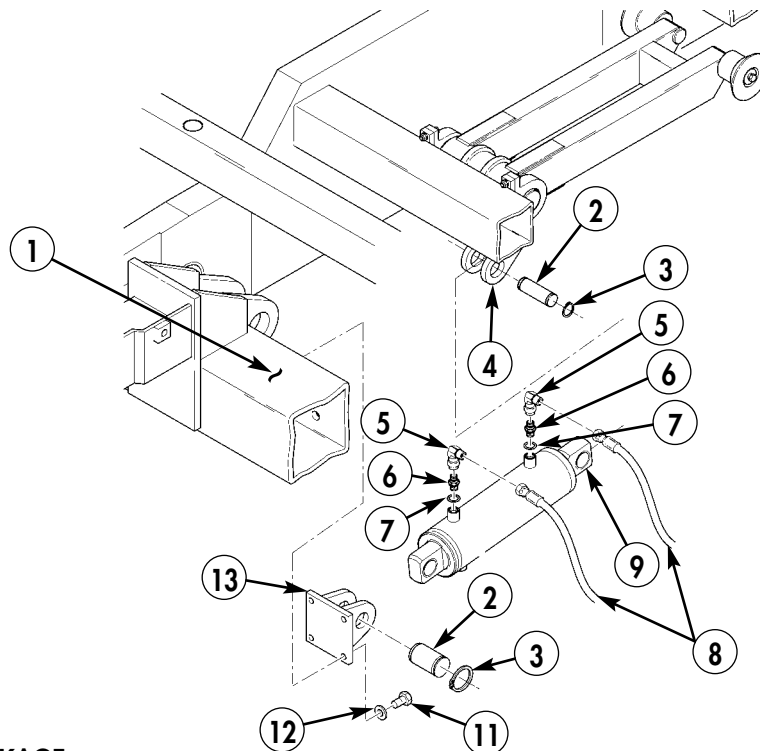
INSTALLATION

NOTE

Apply a light coat of grease to bushings, pins, and O-rings at installation.

The pallet hydraulic system is self-bleeding, and with the exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

1. If removed, install support bracket (13) on crossmember (1) with four washers (12) and screws (11).
2. If removed, install two bushings (9) on ends of boom cylinder (10).
3. Install two new O-rings (7), adapters (6), and elbows (5) on cylinder (10).
4. Install cylinder (10) on secondary boom brackets (4) and support brackets (13) with two pins (2) and four snaprings (3).
5. Connect two hoses (8) to elbows (5) on cylinder (10).
6. Install bridge halves on bridge pallet. Refer to WP 0018 00.



END OF WORK PACKAGE

LAUNCHER MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

SECONDARY BOOM REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Bridge halves removed from bridge pallet.
Refer to WP 0018 00.

Materials/Parts

Grease (Item 8, WP 0205 00)
Four locknuts (WP 0157 00)
Four locknuts (WP 0185 00)

SECONDARY BOOM REPLACEMENT (Contd)

WARNING

Secondary boom is heavy and must be supported during removal or installation. Failure to comply may result in injury or death to personnel.

REMOVAL

1. Support cylinder (10) and remove two snaprings (7) and pin (8) from secondary boom brackets (6) and lower front of cylinder (10).

NOTE

Mark position of limit switch in two places prior to removal.

2. Remove four locknuts (20), washers (19), screws (15), and limit switch (16) from bracket (17) on boom support bearing (1). Discard locknuts (20).
3. Remove four locknuts (13), washers (14), screws (2), and two boom support bearings (1) with support boom (5) from two pallet support brackets (11) on pallet (12). Discard locknuts (13).
4. Slide two boom support bearings (1) off secondary boom shafts (4).
5. If damaged, remove bushings (3) from two boom support bearings (1).

INSTALLATION

NOTE

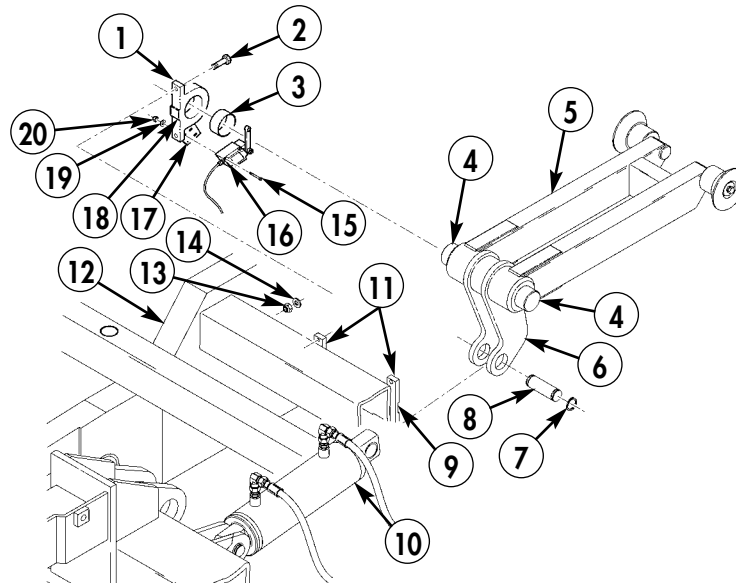
Apply a light coat of grease to bushings and pins at installation.

1. If removed, install bushings (3) on two boom support bearings (1).
2. Slide two boom support bearings (1) on secondary boom shafts (4).
3. Align tabs (18) with slots (9) on two pallet support brackets (11) and install two boom support bearings (1) with support boom (5) on pallet (12) with four screws (2), washers (14), and new locknuts (13).
4. Swing cylinder (10) up and install pin (8) on secondary boom brackets (6) and cylinder (10) with two snaprings (7).

NOTE

Ensure limit switch is installed as marked.

5. Install limit switch (16) on bracket (17) on boom support bearing (1) with four screws (15), washers (19), and new locknuts (20).
6. Install bridge halves on bridge pallet. Refer to WP 0018 00.



END OF WORK PACKAGE

CHAPTER 7
LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE
RAPIDLY EMPLACED BRIDGE (REB)

Engine Fuel Pump Replacement	0101 00-1
Engine Fuel Tank Filter and Tank Inlet Filter Replacement	0102 00-1
Engine Fuel Tank and Drain Valve Replacement	0103 00-1
Hydraulic Pump Assembly, Drive Gears, and Adapter Replacement	0104 00-1
Engine Starter Motor Replacement	0105 00-1
Engine Alternator Replacement	0106 00-1
Engine Oil Filter Replacement	0107 00-1
Engine Oil Bath Air Cleaner and Adapter Flanges Maintenance .	0108 00-1
Engine Exhaust Muffler Replacement	0109 00-1
Engine Fuel Injection Pump Replacement	0110 00-1
Engine Fuel Injector Replacement	0111 00-1
Valve Clearance Maintenance	0112 00-1
Battery and Cables Replacement	0113 00-1
Engine Throttle and Shutoff Lever Replacement	0114 00-1
Engine Electrical Control Box, Switch, and Indicators Replacement	0115 00-1
Engine Assembly Replacement	0116 00-1

**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**ENGINE FUEL PUMP REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

References

TM 5-5420-280-10

Materials/Parts

Grease (Item 8, WP 0205 00)
Seal washer (WP 0186 00)
Four seal washers (WP 0186 00)
Gasket (WP 0186 00)
Two locking tabs (WP 0186 00)

ENGINE FUEL PUMP REPLACEMENT (Contd)

REMOVAL

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF PALLET.

1. Shut off fuel supply to fuel pump (7) by closing fuel supply valve if so equipped, clamping fuel hose (11), or remove screw (19) and seal washer (18) and drain fuel tank. Discard seal washer (18).
2. Remove screw (17), seal washer (16), fuel supply hose fitting (15), and seal washer (14) from fuel pump (7). Discard seal washers (16) and (14).
3. Remove screw (3), seal washer (4), fuel discharge hose fitting (5) on hose (2), and seal washer (6) from fuel pump (7). Discard seal washers (4) and (6).
4. Bend two locking tabs (8) away from nuts (10) and remove two nuts (10), washers (9), locking tabs (8), fuel pump (7), gasket (13), and fuel pump push rod (12) from studs (20) and engine (1). Discard locking tabs (8) and gasket (13).
5. If necessary, clean old gasket material from engine (1) and around studs (20).

INSTALLATION

NOTE

Apply a light coat of grease to seal washers and fuel pump push rod at installation.

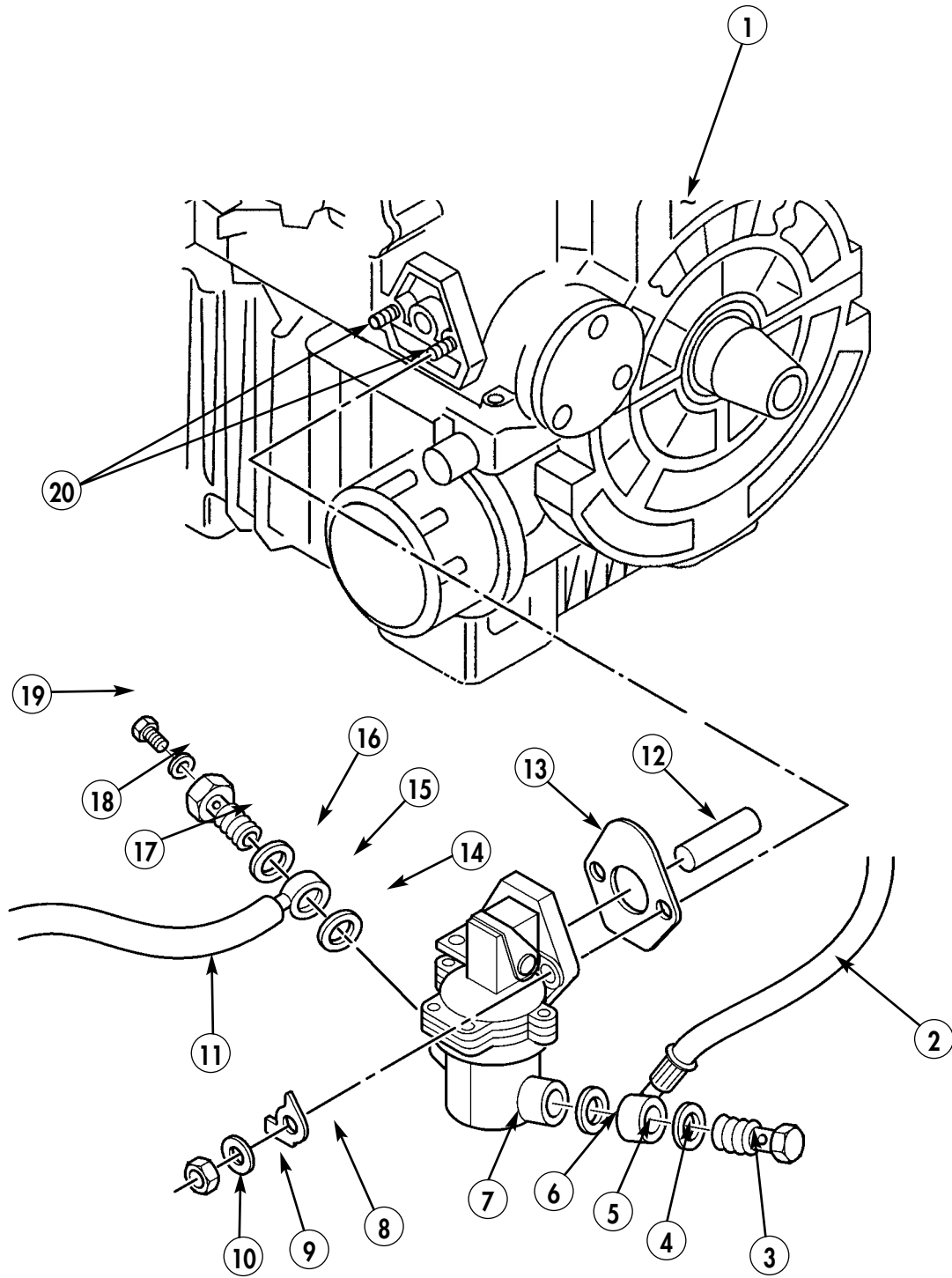
1. Install fuel pump push rod (12), new gasket (13), and fuel pump (7) on two studs (20) of engine (1) with new locking tabs (8), washers (9), and nuts (10). After tightening nuts (10), bend one tab up and other tab down on locking tabs (8).
2. Install new seal washer (6), fuel discharge hose fitting (5) on hose (2), new seal washer (4), and screw (3) on fuel pump (7).
3. Install new seal washer (14), fuel supply hose fitting (15), new seal washer (16), and screw (17) on fuel pump (7).
4. Install new seal washer (18) and screw (19) on end of screw (17) if removed or open fuel supply hose (11) to fuel pump (7).

CAUTION

Never use starting fluid (ether) to assist starting LPU. Failure to comply will result in damage to engine.

5. If necessary, operate fuel priming pump. Refer to TM 5-5420-280-10.
6. Run engine briefly to check for leaks. Refer to TM 5-5420-280-10.

ENGINE FUEL PUMP REPLACEMENT (Contd)



END OF WORK PACKAGE

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**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**ENGINE FUEL TANK FILTER AND TANK INLET FILTER REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

References

TM 5-5420-280-10

Materials/Parts

O-ring (WP 0187 00)
Gasket (WP 0187 00)
Four lockwashers (WP 0187 00)
Two seal washers (WP 0187 00)

ENGINE FUEL TANK FILTER AND TANK INLET FILTER REPLACEMENT (Contd)**WARNING**

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF PALLET.

REMOVAL

1. Remove fuel tank filter cap (2) with chain (3) from fuel tank (5).
2. Remove inlet filter (4) from filler neck (1) on fuel tank (5) and clean inlet filter (4) if necessary.

NOTE

Have container ready to catch fuel.

3. Remove screw (9), seal washer (8), fuel line (10), and seal washer (8) from fuel filter flange (13) and drain fuel into container. Discard seal washers (8).
4. Remove four capscrews (11) and lockwashers (12) from fuel filter flange (13) and fuel tank (5). Discard lockwashers (12).
5. Remove fuel filter flange (13), O-ring (7), fuel filter (14), and gasket (6) from fuel tank (5) and clean fuel filter (14). Discard O-ring (7) and gasket (6).

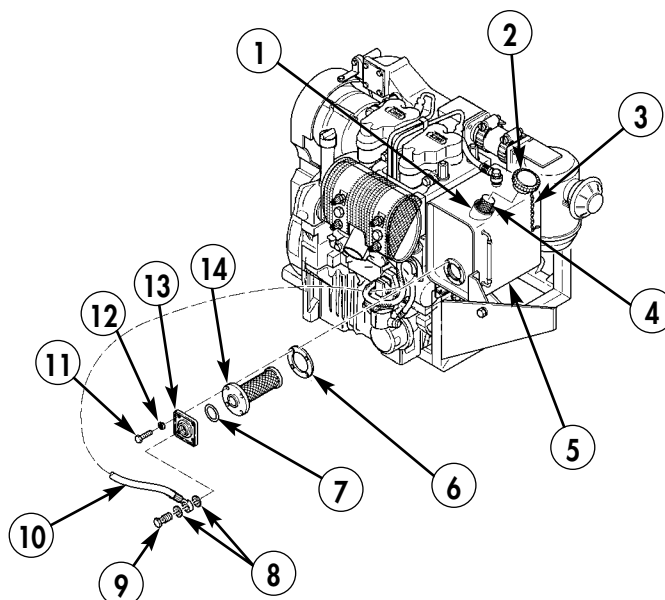
INSTALLATION

1. Install new gasket (6) and cleaned fuel filter (14) in fuel tank (5).
2. Install new O-ring (7) and flange (13) on fuel tank (5) with four new lockwashers (12) and capscrews (11).
3. Install fuel line (10) on fuel filter flange (13) with two new seal washers (8) and screw (9).
4. Install clean inlet filter (4) in filler neck (1) on fuel tank (5).
5. Connect chain (3) and filler cap (2) to fuel tank (5).

CAUTION

Never use starting fluid (ether) to assist starting LPU. Failure to comply will result in damage to engine.

6. Fill fuel tank (5), start engine and check for fuel leaks. Refer to TM 5-5420-280-10.



END OF WORK PACKAGE

**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**ENGINE FUEL TANK AND DRAIN VALVE REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)
Five locknuts (WP 0187 00)
Four seal washers (WP 0187 00)
Seal (WP 0187 00)

ENGINE FUEL TANK AND DRAIN VALVE REPLACEMENT

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. When working with fuel, post signs that read NO SMOKING WITHIN 50 FEET OF PALLET.

CAUTION

Cap or plug all hoses, tubes, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Have a container ready to catch fuel.

REMOVAL

1. Remove screw (19), seal washer (18), fuel supply hose (20), and seal washer (17) from fuel tank filter (23) and drain fuel into container. Discard seal washers (17) and (18).
2. Remove screw (1), seal washer (26), fuel return hose (2), and seal washer (25) from top of fuel tank (24). Discard seal washers (25) and (26).
3. Remove locknut (8), washers (7), screws (15) and washer (14) from side support bracket (6) on fuel tank (24) and side engine support brackets (13). Discard locknut (8).
4. Remove four locknuts (22), washers (21), screws (12), washers (11), and fuel tank bracket (16) from upper engine support brackets (10). Discard locknuts (22).
5. If damaged, remove insulation strips (9) from upper engine support bracket (10) under fuel tank (24).
6. Remove two clamps (4) and fuel sight level hose (5) from two elbows (3) on fuel tank (24).
7. Remove drain valve (28) and seal (27) from fuel tank (24). Discard seal (27).

INSTALLATION

1. Install drain valve (28) on fuel tank (24) with new seal (27).
2. Install fuel sight level hose (5) on two elbows (3) of fuel tank (24) with two clamps (4).
3. If removed, install new insulation strips (9) on engine support bracket (10) under fuel tank (24).
4. Install fuel tank bracket (16) on engine support bracket (10) with four washers (11), screws (12), washers (21), and new locknuts (22).
5. Install fuel tank (24) side support bracket (6) on engine support bracket (13) with washer (14), screw (15), washer (7) and new locknut (8).
6. Install fuel supply hose (20) on fuel tank filter (23) with new seal washers (17) and (18), and screw (19).
7. Install fuel return hose (2) on top of fuel tank (24) with new seal washers (25) and (26) and screw (1).

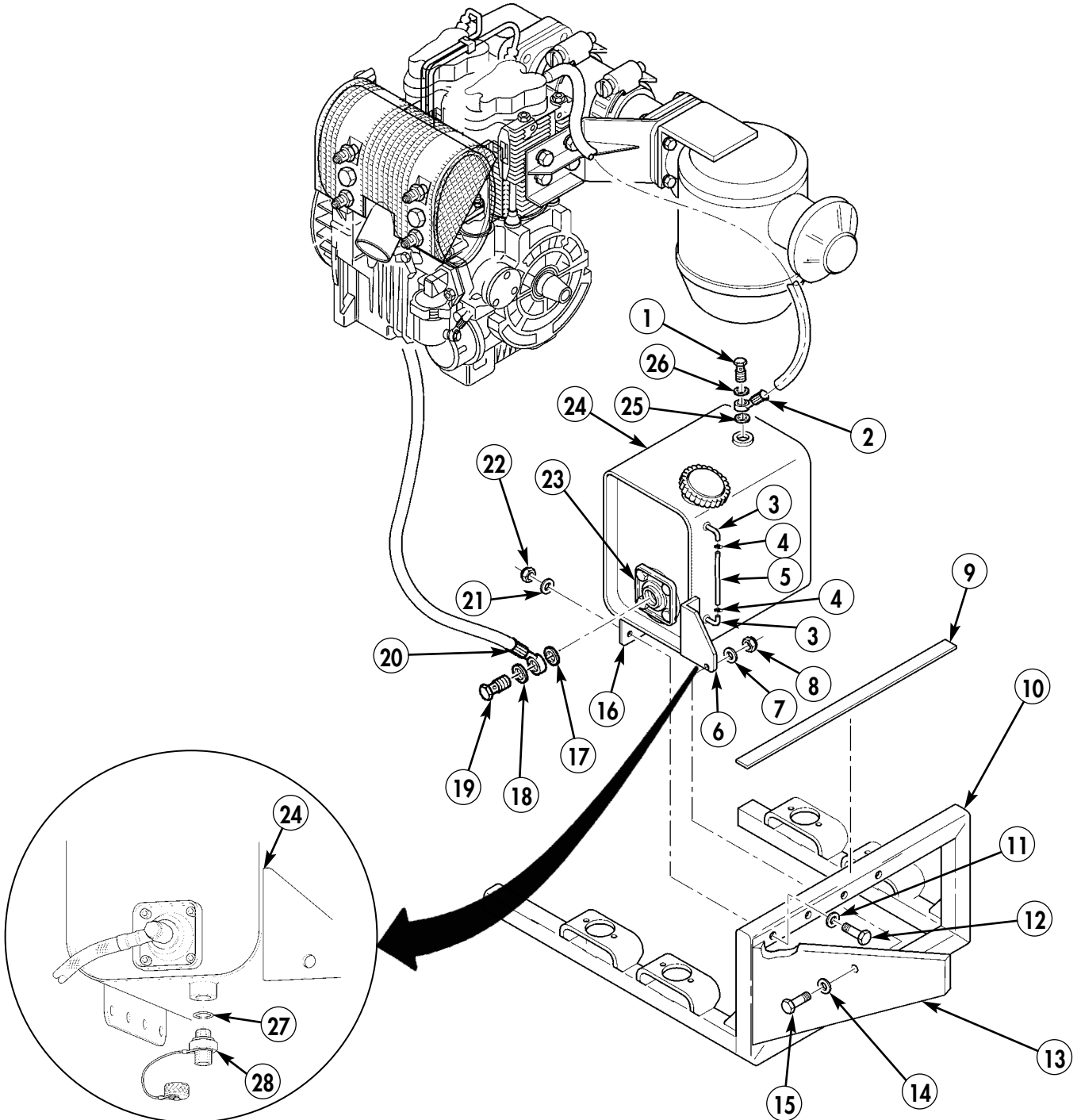
ENGINE FUEL TANK AND DRAIN VALVE REPLACEMENT (Contd)

INSTALLATION (Contd)

CAUTION

Never use starting fluid (ether) to assist starting LPU. Failure to comply will result in damage to engine.

7. Fill fuel tank (24), start engine and check for fuel leaks. Refer to TM 9-5420-280-10.



END OF WORK PACKAGE

**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**HYDRAULIC PUMP ASSEMBLY, DRIVE GEARS, AND ADAPTER REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Reference

TM 5-5420-280-10

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)
Hydraulic oil (Item 12, WP 0205 00)
Four lockwashers (WP 0188 00)
Five lockwashers (WP 0188 00)
Eight lockwashers (WP 0188 00)
Two O-rings (WP 0188 00)
Locknut (WP 0188 00)
Two O-rings (WP 0188 00)

HYDRAULIC PUMP ASSEMBLY, DRIVE GEARS, AND ADAPTER REPLACEMENT (Contd)

REMOVAL

CAUTION

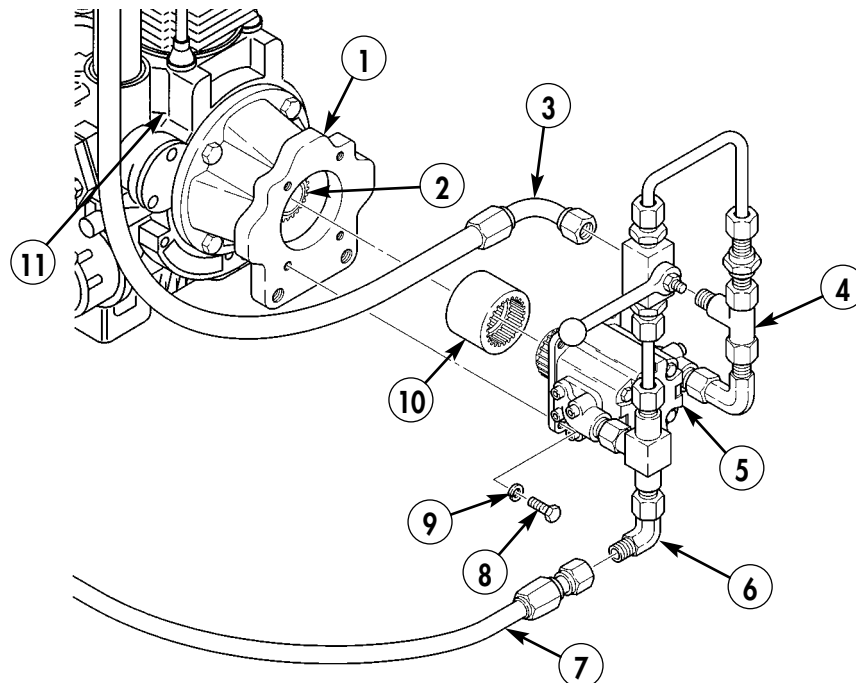
Cap or plug all hoses, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

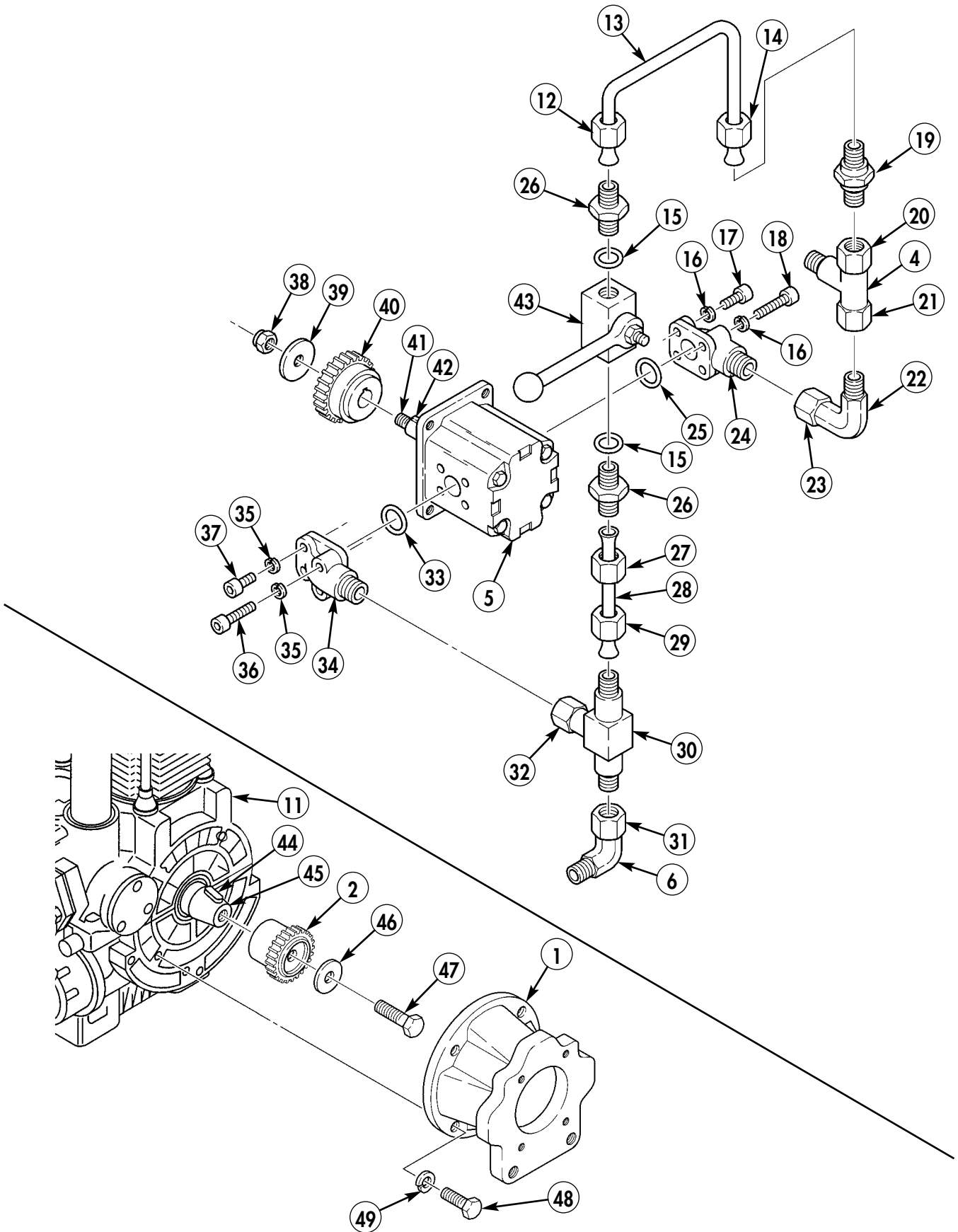
Tag hoses for installation.

Have container ready to catch oil.

1. Remove oil supply hose (3) from tee fitting (4) on hydraulic pump assembly (5).
2. Remove oil pressure hose (7) from elbow (6) on hydraulic pump assembly (5).
3. Support hydraulic pump assembly (5) and remove four screws (8), lockwashers (9), and pump (5) from adapter housing (1) on engine (11). Discard lockwashers (9).
4. Remove drive coupler (10) from engine drive gear (2) if not removed with pump (5).
5. Loosen nuts (12) and (14) and remove bypass tube (13) from shutoff valve (43) and adapter (19) on tee fitting (4) of pump (5).
6. Loosen nut (27) and remove shutoff valve (43) from tube (28) on tee fitting (30).
7. Remove two adapters (26) and O-rings (15) from shutoff valve (43). Discard O-rings (15).
8. Loosen nut (29) and remove tube (28) from tee fitting (30).
9. Loosen nut (31) and remove elbow (6) from tee fitting (30).
10. Loosen nut (32) and remove tee fitting (30) from pump adapter (34) on side of pump (5).
11. Remove two screws (36) and (37), four lockwashers (35), adapter (34), and O-ring (33) from side of pump (5). Discard lockwashers (35) and O-ring (33).
12. Loosen nut (20) and remove adapter (19) from tee fitting (4).
13. Loosen nut (21) and remove tee fitting (4) from elbow (22).
14. Remove two screws (17) and (18), four lockwashers (16), adapter (24) with elbow (22), and O-ring (25) from side of pump (5). Discard lockwashers (16) and O-ring (25).
15. Loosen nut (23) and remove elbow (22) from adapter (24).
16. Remove locknut (38), washer (39), and pump drive gear (40) from pump shaft (41) and key (42). Discard locknut (38).
17. Remove five screws (48), lockwashers (49), and adapter housing (1) from engine (11). Discard lockwashers (49).
18. Remove screw (47) washer (46), and engine drive gear (2) from engine crankshaft (45) and key (44).



HYDRAULIC PUMP ASSEMBLY, DRIVE GEARS, AND ADAPTER REPLACEMENT (Contd)



HYDRAULIC PUMP ASSEMBLY, DRIVE GEARS, AND ADAPTER REPLACEMENT (Contd)

INSTALLATION

NOTE

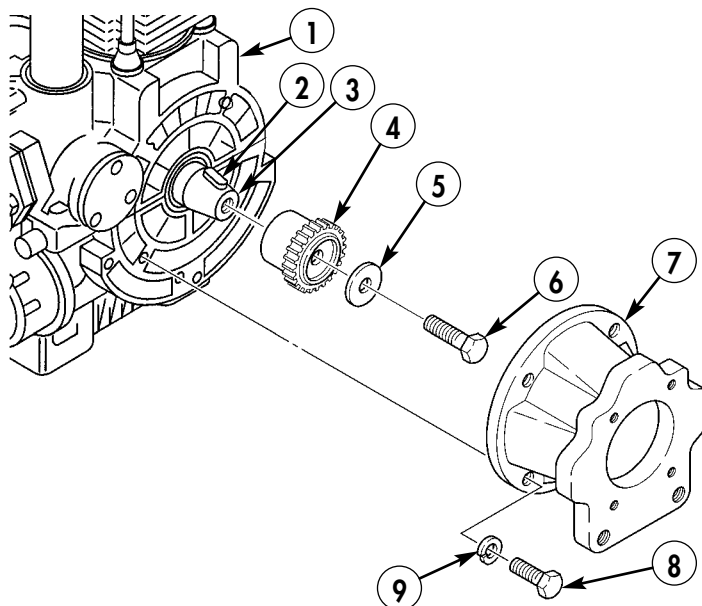
Apply a light coat of hydraulic oil on O-rings at installation.

1. Install engine drive gear (4) on key (2) and engine crankshaft (3) with washer (5), and screw (6).
2. Install adapter housing (7) on engine (1) with five new lockwashers (9) and screws (8).
3. Install pump drive gear (12) on key (14) and pump shaft (13) with washer (11) and new locknut (10).
4. Install elbow (27) on pump adapter (30) and tighten nut (28).
5. Install adapter (30) on side of pump (39) with new O-ring (31), four new lockwashers (21), and two screws (22) and (29).
6. Install tee fitting (25) on elbow (27) and tighten nut (26).
7. Install adapter (23) on tee fitting (25) and tighten nut (24).
8. Install pump adapter (41) on side of pump (39) with new O-ring (40), four new lockwashers (42), and two screws (43) and (44).
9. Install tee fitting (35) on pump adapter (41) and tighten nut (38).
10. Install elbow (37) on tee fitting (35) and tighten nut (36).
11. Install tube (33) on tee fitting (35) and tighten nut (34).
12. Install two new O-rings (16) and adapters (20) on shutoff valve (15).
13. Install shutoff valve (15) on tube (33) and tighten nut (32).
14. Install bypass tube (17) on tee fitting adapter (23) and shutoff valve adapter (20) and tighten nuts (18) and (19).
15. Install drive coupling (49) on engine drive gear (4).
16. Align pump drive gear (12) with drive coupling (49) and install pump (39) on adapter housing (7) with four new lockwashers (48) and screws (47).
17. Install oil pressure hose (46) on elbow (37) of pump (39).
18. Install oil supply hose (45) on tee fitting (25) of pump (39).

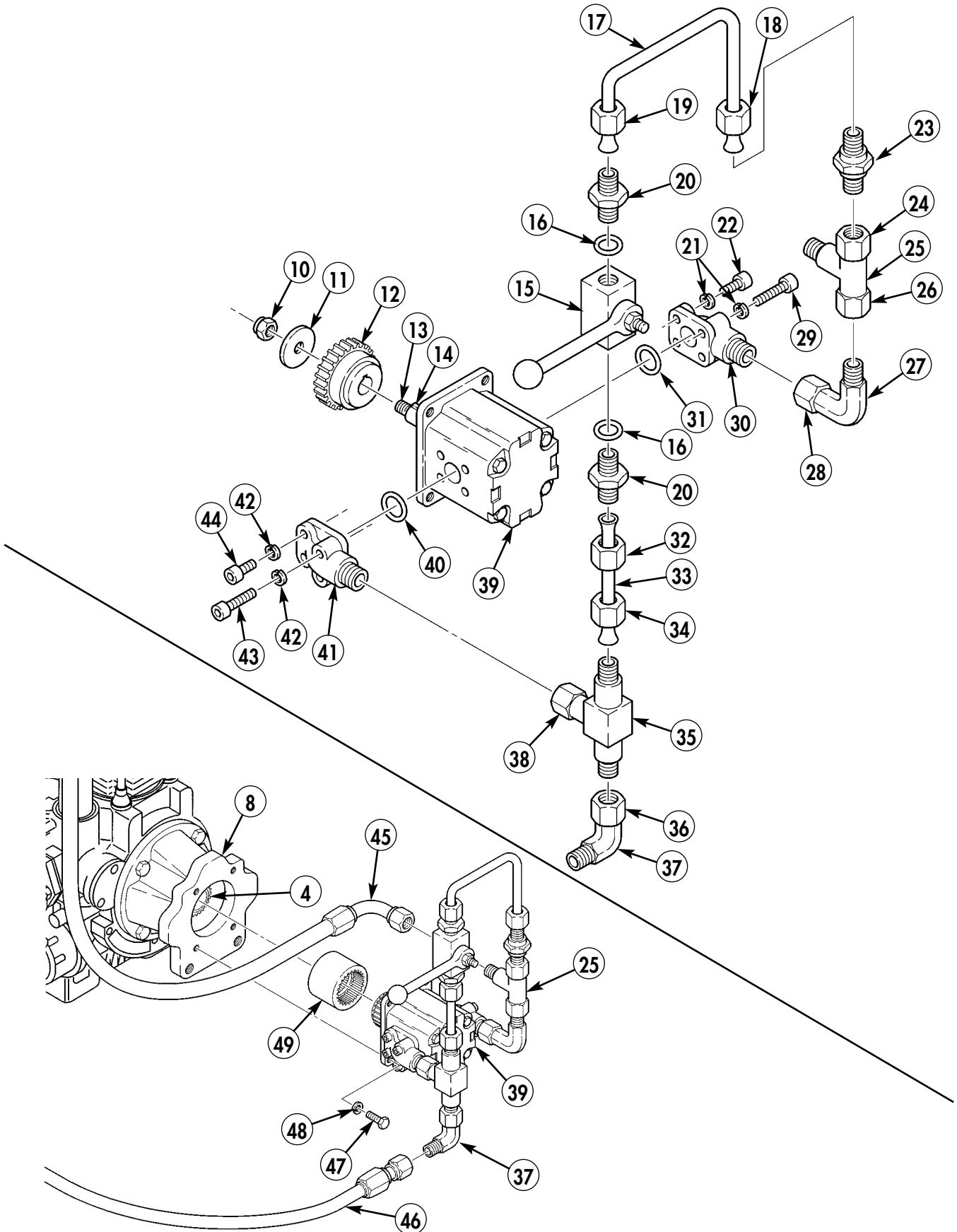
NOTE

The pallet hydraulic system is self-bleeding, and with the exception of the telescopic tube hydraulic cylinders, there is no requirement for bleeding air from the system.

19. Start engine, operate system, and check all pump lines for leaks. Refer to TM 5-5420-280-10.



HYDRAULIC PUMP ASSEMBLY, DRIVE GEARS, AND ADAPTER REPLACEMENT (Contd)



END OF WORK PACKAGE

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**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**ENGINE STARTER MOTOR REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Two lockwashers (WP 0189 00)
Lockwasher (WP 0189 00)
Lockwasher (WP 0189 00)

Reference

TM 5-5420-280-10

Equipment Condition

Bridge halves removed from bridge pallet.
Refer to WP 0018 00.
Battery ground cable disconnected.
Refer to WP 0113 00.

ENGINE STARTER MOTOR REPLACEMENT (Contd)

REMOVAL

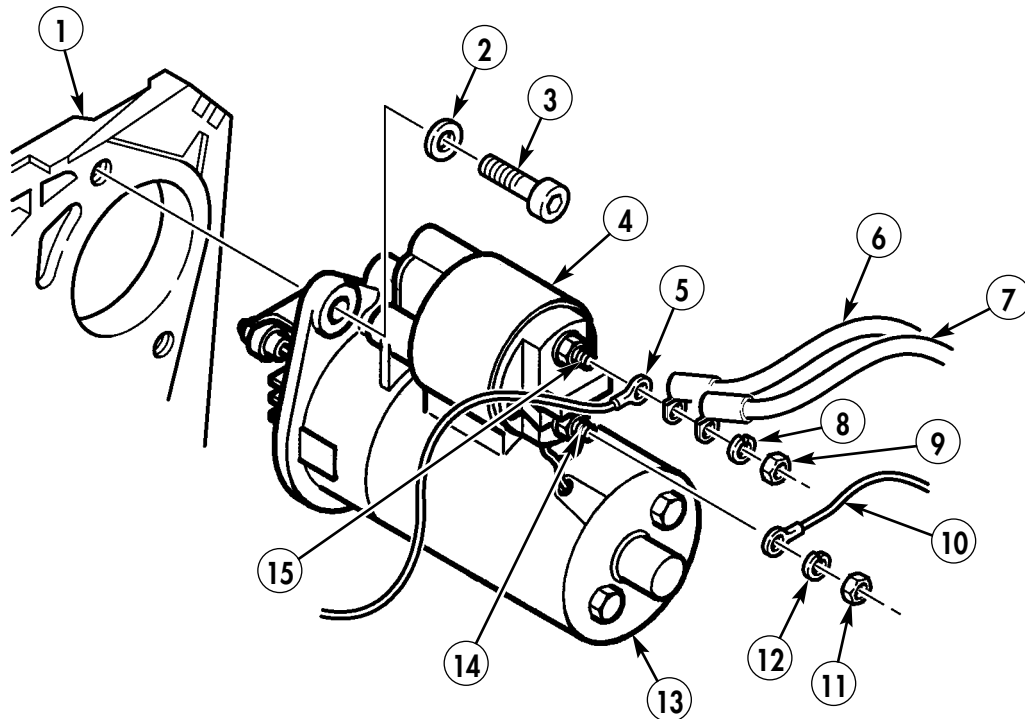
NOTE

Tag all leads for installation.

1. Remove nut (9), lockwasher (8), battery cable (6), NATO slave cable (7), and lead (5) from terminal stud (15) on solenoid (4). Discard lockwasher (8).
2. Remove nut (11), lockwasher (12), and lead (10) from terminal stud (14) on solenoid (4). Discard lockwasher (12).
3. Remove two screws (3), lockwashers (2), and engine starter motor (13) from engine (1). Discard lockwashers (2).

INSTALLATION

1. Install starter motor (13) on engine (1) with two new lockwashers (2) and screws (3).
2. Install lead (10) on terminal stud (14) of solenoid (4) with new lockwasher (12) and nut (11).
3. Install lead (5), battery cable (6), and NATO slave cable (7) on terminal stud (15) of solenoid (4) with new lockwasher (8) and nut (9).
4. Connect battery ground cable. Refer to WP 0113 00.
5. Operate starter motor. Refer to TM 5-5420-280-10.
6. Install bridge halves on bridge pallet. Refer to WP 0018 00.



**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**ENGINE ALTERNATOR REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Two lockwashers (WP 0189 00)
Lockwasher (WP 0189 00)

Equipment Condition

Bridge halves removed from bridge pallet.
Refer to WP 0018 00.
Battery ground cable disconnected.
Refer to WP 0113 00.

ENGINE ALTERNATOR REPLACEMENT (Contd)

REMOVAL

NOTE

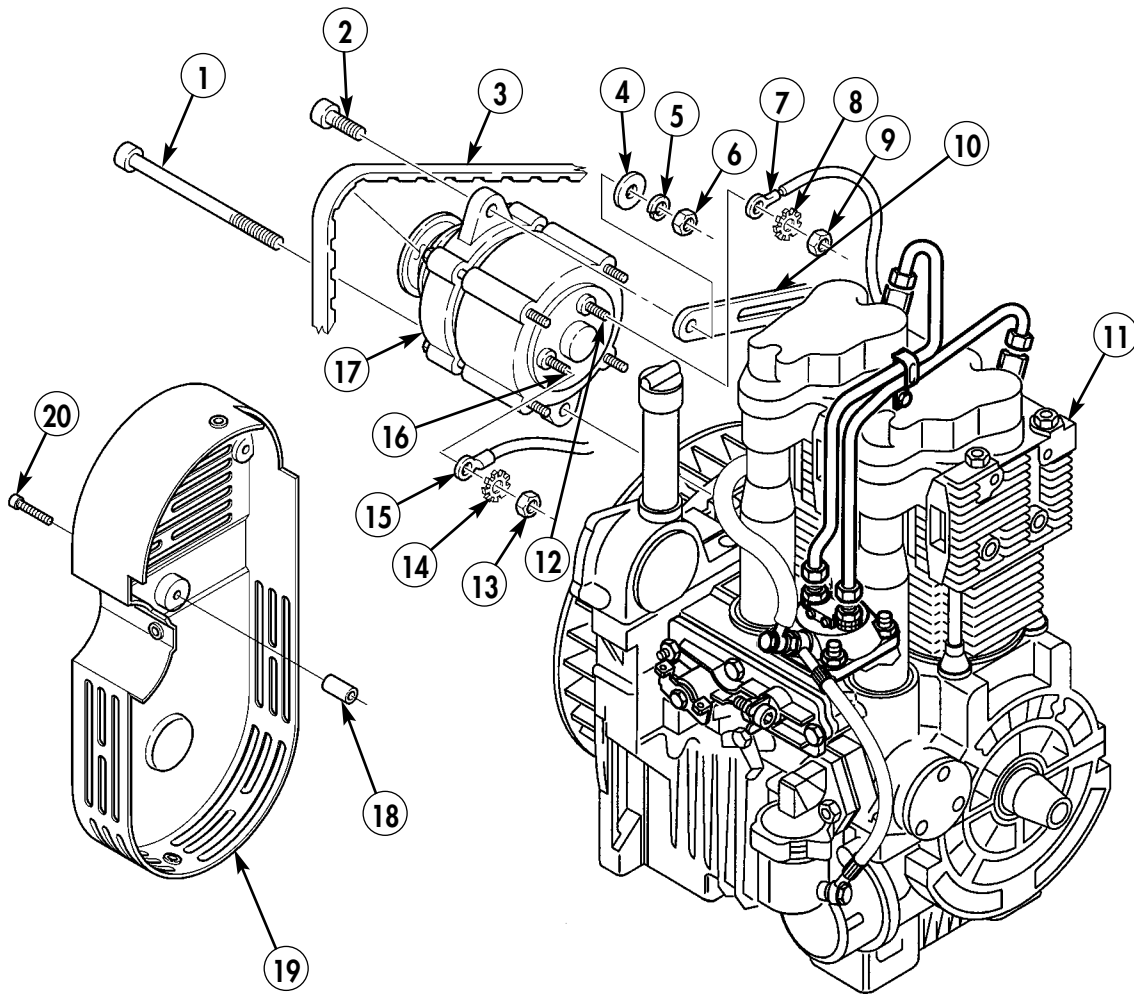
Tag all leads for installation.

1. Remove three screws (20), belt and pulley guard (19), and three spacers (18) from front of engine (11).
2. Loosen nut (6), capscrew (2), pivot alternator (17) to loosen, and remove alternator belt (3).
3. Remove nut (6), lockwasher (5), washer (4), and capscrew (2) from alternator (17) and bracket (10). Discard lockwasher (5).
4. Remove nut (9), lockwasher (8), and power cable (7) from alternator stud (12) on alternator (17). Discard lockwasher (8).
5. Remove nut (13), lockwasher (14), and cable (15) from alternator stud (16) on alternator (17). Discard lockwasher (14).
6. Support alternator (17) and remove capscrew (1) and alternator (17) from engine (11).

INSTALLATION

1. Install alternator (17) on engine (11) with capscrew (1).
2. Install cable (15) on alternator stud (16) of alternator (17) with new lockwasher (14) and nut (13).
3. Install power cable (7) on alternator stud (12) of alternator (17) with new lockwasher (8) and nut (9).
4. Install bracket (10) on alternator (17) with capscrew (2), washer (4), new lockwasher (5), and nut (6). Finger tighten nut (6).
5. Install alternator belt (3) on alternator (17) and engine (11) pulleys. Pivot alternator (17) to tighten alternator belt (3) and tighten nut (6).
6. Install three spacers (18) and pulley guard (19) on front of engine (11) with three screws (20).
7. Connect battery ground cable. Refer to WP 0113 00.
8. Install bridge halves on bridge pallet. Refer to WP 0018 00.

ENGINE ALTERNATOR REPLACEMENT (Contd)



END OF WORK PACKAGE

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**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**ENGINE OIL FILTER REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

References

TM 5-5420-280-10

Materials/Parts

Engine oil (Item 11, WP 0205 00)
Skysol 100 (Item 4, WP 0205 00)
Oil filter (WP 0191 00)
Four lockwashers (WP 0201 00)

ENGINE OIL FILTER REPLACEMENT (Contd)

REMOVAL

1. Remove four forward engine mounting screws (8) and lockwashers (7) from engine support bracket (6) and engine oil pan (5). Discard lockwashers (7).
2. Lift engine (3) off support bracket (6) to remove oil filter (9).

NOTE

Have container ready to catch oil.

3. Turn oil filter (9) counterclockwise and remove oil filter (9) from engine (3). Discard oil filter (9).
4. Remove mesh screen (1) from safety relief valve (2).

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. Failure to comply may result in injury to personnel.

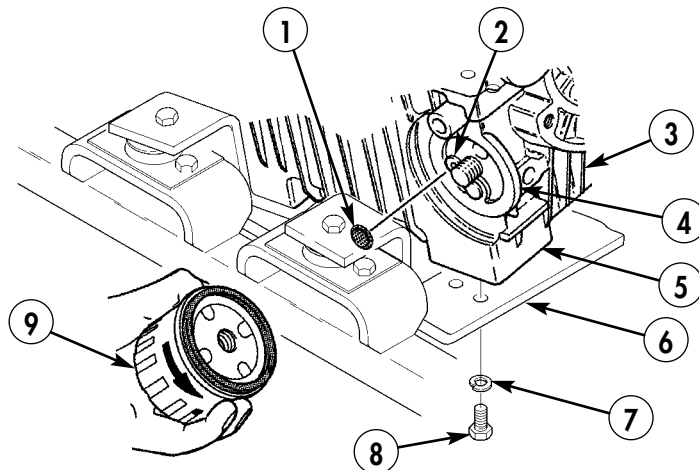
5. Clean mesh screen (1) and filter base (4) with Skysol 100.

INSTALLATION

NOTE

Apply a light coat of engine oil to oil filter seal at installation.

1. Install mesh screen (1) on safety relief valve (2).
2. Install oil filter (9) on engine (3) and tighten oil filter (9) clockwise hand tight.
3. Lower engine (3) down onto engine support bracket (6).
4. Align holes in support bracket (6) with holes in oil pan (5) and install four new lockwashers (7) and screws (8).
5. Start engine and check for oil leaks. Refer to TM 5-5420-280-10.



END OF WORK PACKAGE

**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**ENGINE OIL BATH AIR CLEANER AND ADAPTER FLANGES MAINTENANCE
REMOVAL, CLEANING AND INSPECTION, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Skysol 100 (Item 4, WP 0205 00)
Cloth (Item 5, WP 0205 00)
Engine oil (Item 11, WP 0205 00)
Three gaskets (WP 0192 00)
O-ring seal (WP 0192 00)
Eight lockwashers (WP 0192 00)

ENGINE OIL BATH AIR CLEANER AND ADAPTER FLANGES MAINTENANCE (Contd)

REMOVAL

1. Support air cleaner base (12) and unlock two clips (13) from base (12) and air cleaner housing (10).
2. Remove base (12) and O-ring seal (11) from housing (10). Discard O-ring seal (11).
3. Loosen screw (15) and remove dust cap (14) from inlet tube (16) on housing (10).
4. Remove four screws (3), lockwashers (4), housing (10), and gasket (5) from adapter flange (1) and mounting bracket (8). Discard lockwashers (4) and gasket (5).
5. Loosen two clamps (2) on hose (7) and two adapter flanges (1).
6. Remove four screws (3), lockwashers (4), adapter flange (1), and gasket (5) from intake manifold (6). Discard lockwashers (4) and gasket (5).
7. Remove two adapter flanges (1), clamps (2), hose (7), and gasket (5) from between mounting bracket (8) and intake manifold (6). Discard gasket (5).

CLEANING AND INSPECTION

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. Failure to comply may result in injury to personnel.

1. Clean all parts with Skysol 100 and dry with cloth before inspection.
2. Inspect filter packing (17) for uneven sealing surface. Replace if uneven.
3. Inspect filter packing (17) for missing filter wool. Replace if wool is missing.
4. Inspect filter housing (10) for cracks. Replace if cracked.
5. Inspect weld nuts (9) for damaged or worn threads. Replace if damaged or worn.

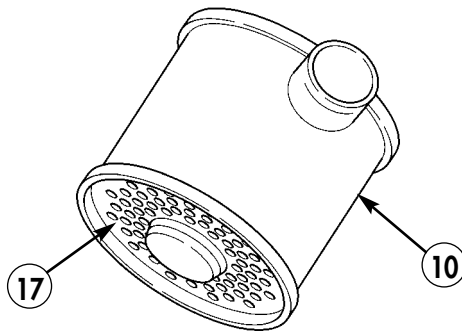
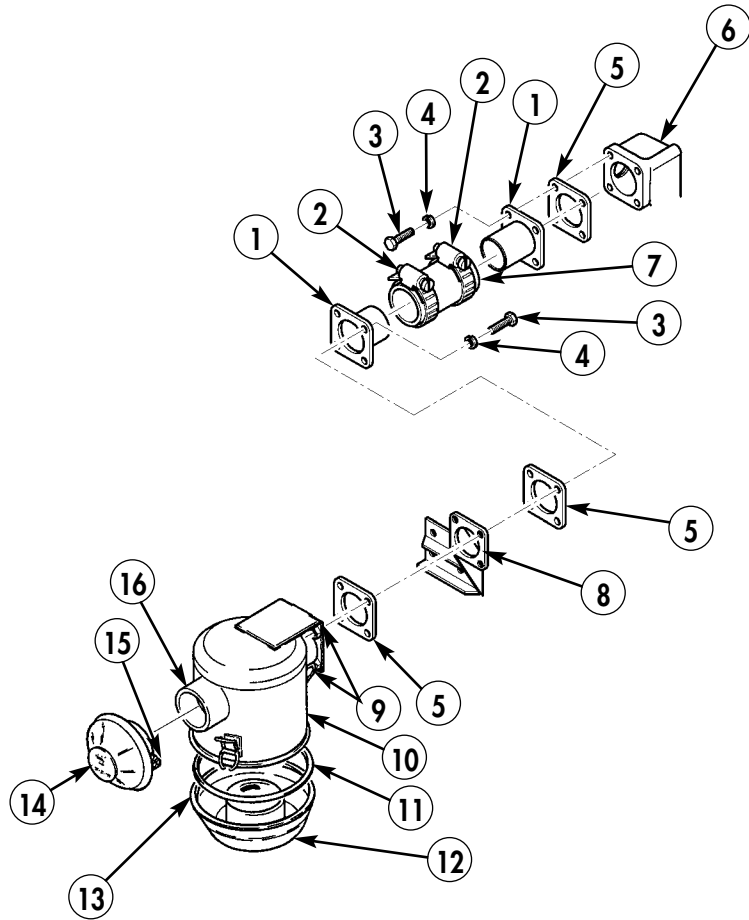
INSTALLATION

1. Install two clamps (2), hose (7), two new gaskets (5), and adapter flanges (1) between intake manifold (6) and mounting bracket (8).
2. Align holes in adapter flange (1), gasket (5), and intake manifold (6) and install four new lockwashers (4) and screws (3).
3. Position new gasket (5) and housing (10) on mounting bracket (8), align holes in two gaskets (5), mounting bracket (8), and weld nuts (9) on housing (10), and install four new lockwashers (4) and screws (3).
4. Tighten two clamps (2).

ENGINE OIL BATH AIR CLEANER AND ADAPTER FLANGES MAINTENANCE (Contd)

INSTALLATION (Contd)

5. Install dust cap (14) on inlet tube (16) and tighten screw (15).
6. Fill air cleaner base (12) to level mark with clean engine oil.
7. Install new O-ring seal (11) and base (12) on housing (10) and lock two clips (13) on housing (10) to base (12).



**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**ENGINE EXHAUST MUFFLER REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Two gasket sets (WP 0192 00)
Four locknuts (WP 0193 00)

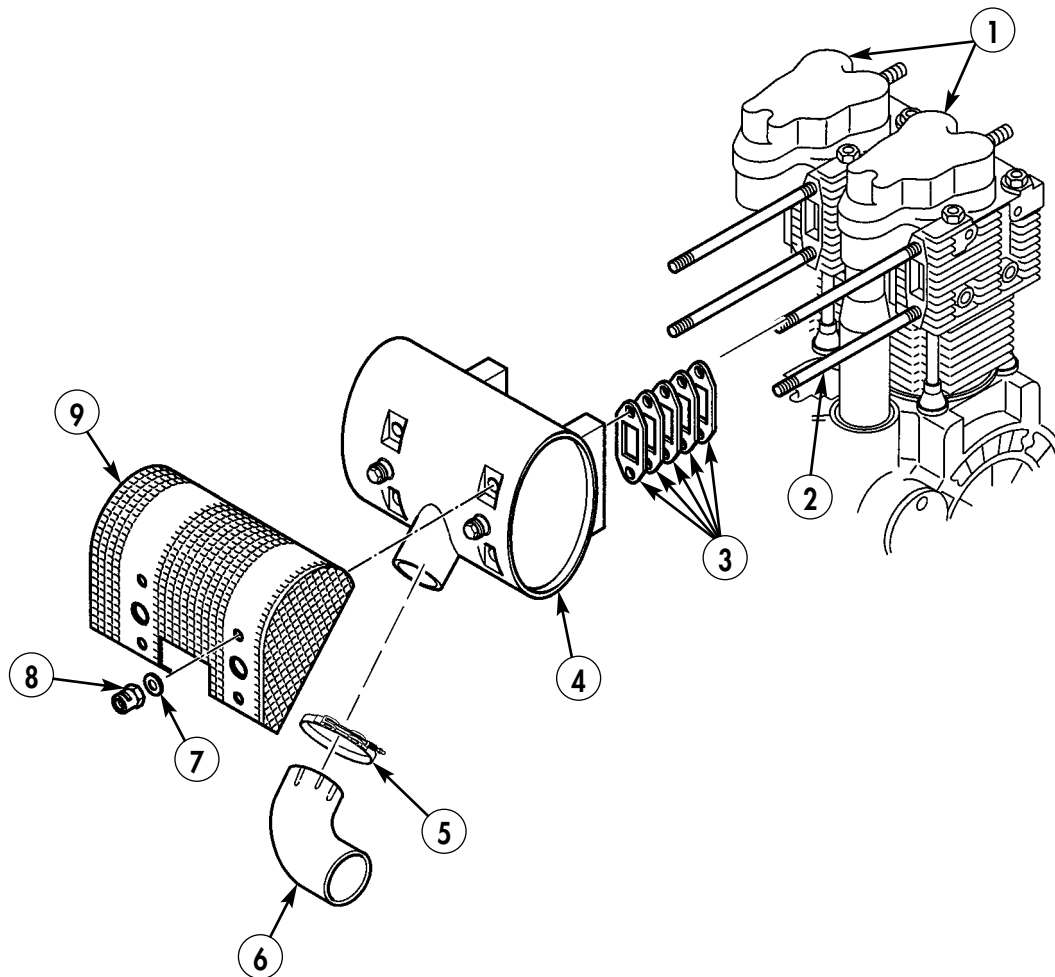
ENGINE EXHAUST MUFFLER REPLACEMENT (Contd)

REMOVAL

1. Remove four locknuts (8), washers (7), and heat shield (9) from four studs (2) and exhaust muffler (4). Discard locknuts (8).
2. Loosen clamp (5) and remove exhaust elbow (6) from exhaust muffler (4).
3. Remove muffler (4) and two gasket sets (3) from studs (2) on two engine cylinder heads (1). Discard gasket sets (3).
4. If damaged, remove stud(s) (2) from cylinder head(s) (1).

INSTALLATION

1. If removed, install stud(s) (2) on cylinder head(s) (1).
2. Install two new gasket sets (3) and muffler (4) on four studs (2).
3. Install clamp (5) and exhaust elbow (6) on exhaust muffler (4) and tighten clamp (5).
4. Install heat shield (9) on muffler (4) and four studs (2) with washers (7) and new locknuts (8).



**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**ENGINE FUEL INJECTION PUMP REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)
Gasket (WP 0194 00)
Cotter pin (WP 0194 00)
Two seal washers (WP 0194 00)
Two gaskets (WP 0194 00)
Gasket kit (WP 0194 00)

ENGINE FUEL INJECTION PUMP REPLACEMENT (Contd)

CAUTION

Cap or plug all hoses, tubes, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment

REMOVAL

1. Remove three capscrews (8), nut (9), governor plate (7), and gasket (6) from crankcase (2). Discard gasket (6).
2. Remove cotter pin (5) and end of governor lever (4) from control rack (3) of injection pump (19). Discard cotter pin (5).
3. Loosen nuts (10), (13), (27), and (28) and remove fuel pressure pipe assemblies (11) and (12) from fuel injectors (14) and (15) and injection pump fittings (26) and (30).
4. Remove fluid passage bolt (22), two seal washers (21), return hose (31), nipple (23), adapter (24), two gaskets (25), and fitting (20) from injector pump (19). Discard seal washers (21) and gaskets (25).
5. Remove four nuts (29) from injection pump studs (16).

NOTE

To remove injection pump from crankcase, control rack of injection pump must be positioned under cutout in crankcase

6. Position control rack (3) of injection pump (19) under cutout (17) in crankcase (2), and remove injection pump (19) and gasket(s) (18) from crankcase (2). Discard gasket(s) (18).

INSTALLATION

NOTE

The thickness of the gasket(s) to be installed is determined by the number stamped on the side of the crankcase next to the injection pump. For example, if the number "6" is stamped on the crankcase, the total thickness of the gaskets should be 0.60 mm. Gaskets come in sets of three gaskets of varying thickness.

1. Install enough new gaskets (18) on crankcase (2) to reach thickness indicated by number stamped on crankcase (2).

NOTE

To install injection pump in crankcase, control rack of injection pump must be positioned under cutout in crankcase

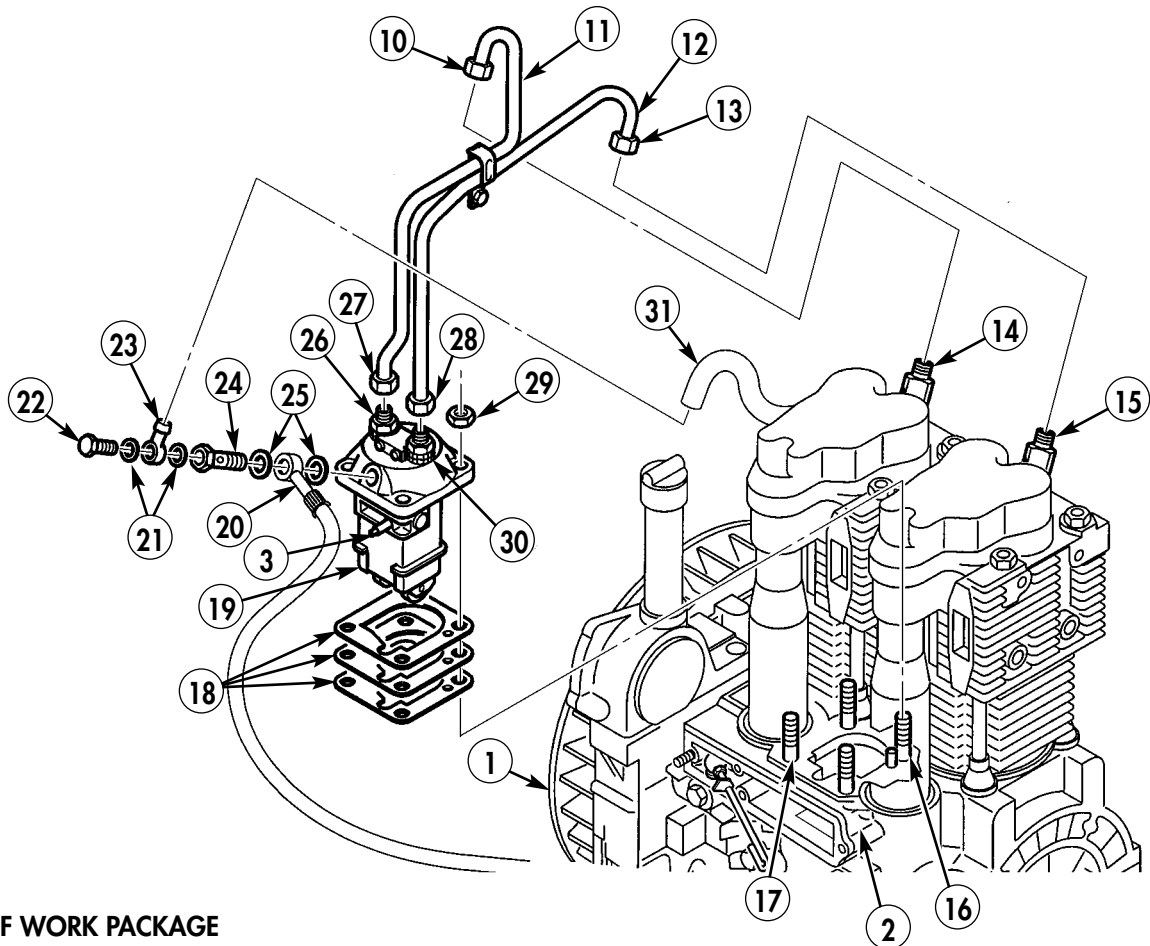
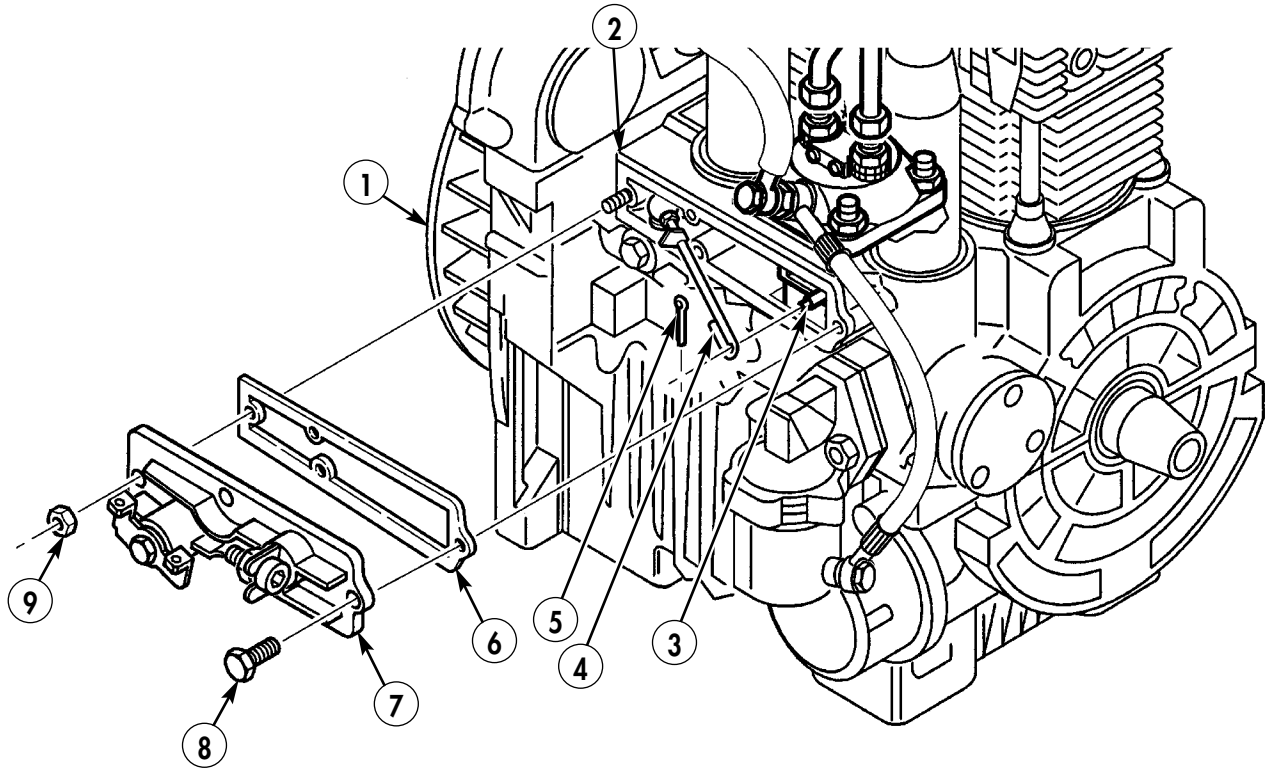
2. Position control rack (3) of injection pump (19) over cutout (17), and install injection pump (19) in crankcase (2). Turn flywheel (1) to allow injection pump (19) to sit all the way down in opening.
3. Install four nuts (29) on studs (16).
4. Install fuel pressure pipe assemblies (11) and (12) on fuel injectors (14) and (15) and injection pump fittings (26) and (30) and tighten nuts (10), (13), (27), and (28).
5. Install two new gaskets (25) and fitting (20) on injector pump (19) with adapter (24). Tighten adapter (24) to 26 ft-lb (35 N•m).
6. Install two new seal washers (21), return hose (31), and nipple (23) on adapter (24) with fluid passage bolt (22). Tighten fluid passage bolt (22) to 18.5 ft-lb (25 N•m).
7. Install end of governor lever (4) on control rack (3) of injection pump (19) with new cotter pin (5).
8. Install new gasket (6) and governor plate (7) on crankcase (2) with nut (9) and three capscrews (8).

CAUTION

Never use starting fluid (ether) to assist starting LPU. Failure to comply will result in damage to engine.

9. If necessary, operate fuel priming pump. Refer to TM 5-5420-280-10.
10. Run engine briefly to check for leaks. Refer to TM 5-5420-280-10.

ENGINE FUEL INJECTION PUMP REPLACEMENT (Contd)



END OF WORK PACKAGE

**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**ENGINE FUEL INJECTOR REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Cap and plug set (Item 3, WP 0205 00)
Spring washer (WP 0195 00)
Two gaskets (WP 0195 00)
Gasket (WP 0195 00)

ENGINE FUEL INJECTOR REPLACEMENT (Contd)

CAUTION

Cap or plug all hoses, tubes, connections, and openings immediately after disconnection to prevent contamination. Remove caps or plugs prior to installation. Failure to do so may result in damage to equipment.

NOTE

Removal and installation of each fuel injector is performed the same way. Cylinder number two is shown.

REMOVAL

1. Loosen nuts (1), (4), (15), and (20) and remove fuel pressure pipe assemblies (2) and (3) from fuel injectors (9) and (19) and injection pump fitting (13) and (14).
2. Remove fuel return hose (16) from hose nipple (17).
3. Remove fluid passage bolt (21), gasket (18), hose nipple (17), and gasket (18) from fuel injector (9). Discard gaskets (18).
4. Remove nut (5), spring washer (6), spacer (7), and fuel injector clamp (8) from stud (11). Discard spring washer (6)

NOTE

Gasket may stay in bore of cylinder head. Check bore if gasket is not on the end of fuel injector.

5. Remove fuel injector (9) and gasket (10) from engine (12). Discard gasket (10).

INSTALLATION

NOTE

Make sure that soft, graphite-coated surface of gasket is facing fuel injector.

Make sure tapered side of spacer is toward injector clamp and that tapered side of injector clamp is facing up.

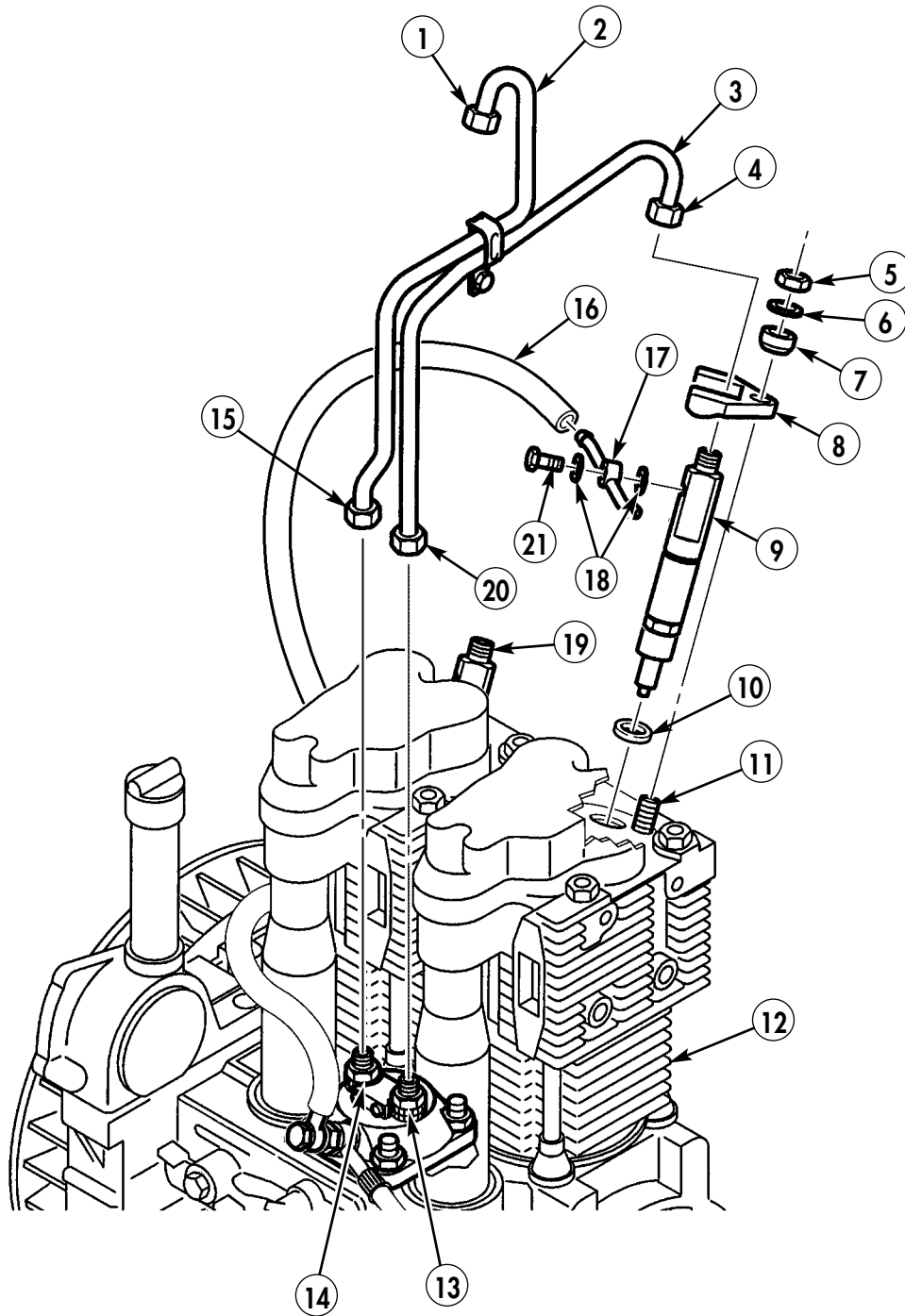
1. Install new gasket (10) on fuel injector (9) and install fuel injector (9) in cylinder number two with fuel injector clamp (8), spacer (7), new spring washer (6), and nut (5). Tighten nut (5) to 17 ft-lb (23 N•m).
2. Install new gasket (18), hose nipple (17), new gasket (18), and fluid passage bolt (21) on fuel injector (9).
3. Install fuel return hose (16) on hose nipple (17).
4. Install fuel pressure pipe assemblies (2) and (3) on fuel injectors (9) and (19) and injection pump fittings (13) and (14) and tighten nuts (1), (4), (15), and (20).

CAUTION

Never use starting fluid (ether) to assist starting LPU. Failure to comply will result in damage to engine.

5. If necessary, operate fuel priming pump. Refer to TM 5-5420-280-10.
6. Run engine briefly to check for leaks. Refer to TM 5-5420-280-10.

ENGINE FUEL INJECTOR REPLACEMENT (Contd)



END OF WORK PACKAGE

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**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**VALVE CLEARANCE MAINTENANCE
COVER REMOVAL, VALVE ADJUSTMENT, COVER INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Four sealing rings (WP 0196 00)
Two cover gaskets (WP 0196 00)

VALVE CLEARANCE MAINTENANCE (Contd)

CAUTION

Clean all dust, dirt, or other foreign material from around cylinder heads and valve covers before removing valve covers. Failure to comply may result in damage to equipment.

COVER REMOVAL

Remove four screws (1), sealing rings (2), two valve covers (3), and cover gaskets (4) from cylinder heads (6). Discard sealing rings (2) and valve cover gaskets (4).

VALVE ADJUSTMENT

NOTE

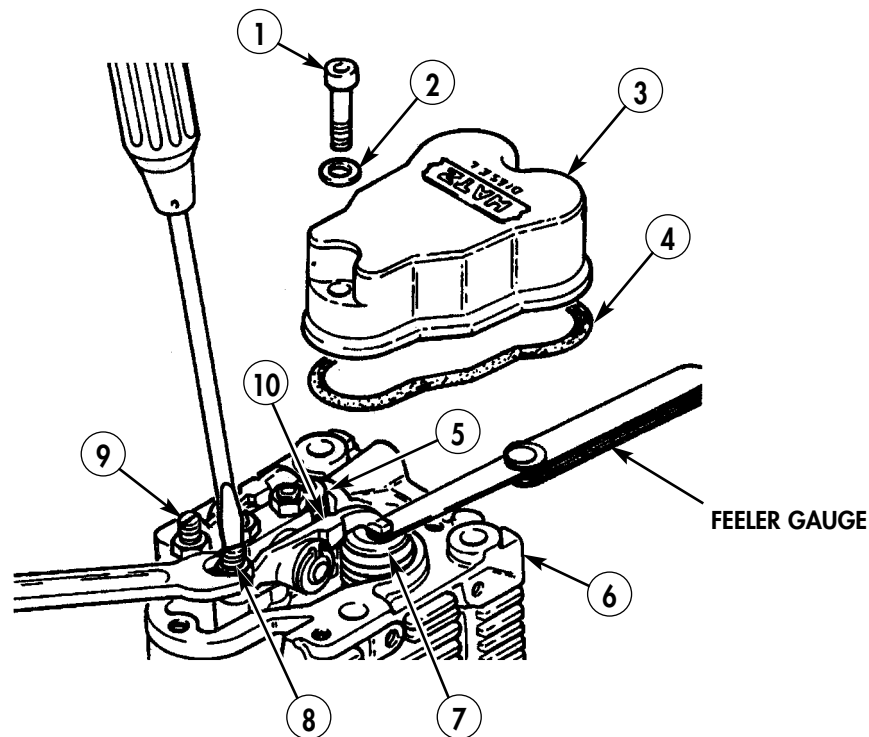
Only adjust valves on a cold 50–86°F (10–30°C) engine.

No. 1 cylinder is at the flywheel end of the engine and No. 2 cylinder is at the power takeoff end. Only one cylinder head is shown.

1. Rotate engine flywheel in its normal direction of rotation until valves (5) and (7) on cylinder No. 2 are in overlap position, exhaust valve (7) is not yet closed and intake valve (5) is starting to open.
2. Rotate flywheel 180 degrees in normal direction and check valve clearance on No. 1 cylinder using a .025 in. (0.10 mm) feeler gauge. If necessary, perform step 4.
3. Rotate flywheel 180 degrees more and check valve clearance on No. 2 cylinder using a .025 in. (0.10 mm) feeler gauge. If necessary, perform step 4.
4. If adjustment is necessary, loosen nut (8) and turn screw (9) until .025 in. (0.10 mm) feeler gauge will just pull through between valve stem and rocker arm (10) and tighten nut (8). Recheck clearance and adjust if necessary.

COVER INSTALLATION

Install two new cover gaskets (4) and valve covers (3) on cylinder heads (6) with four new sealing rings (2) and screws (1).



END OF WORK PACKAGE

**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**BATTERY AND CABLES REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Equipment Condition

Bridge halves removed from bridge pallet.
Refer to WP 0018 00.

BATTERY AND CABLES REPLACEMENT (Contd)

WARNING

Battery acid (electrolyte) is harmful. Always wear safety goggles and rubber gloves, and do not smoke when performing battery maintenance. Severe injury will result if acid contacts eyes or skin.

Remove all jewelry such as rings, dogtags, bracelets, etc. If jewelry or disconnected battery ground cable contacts battery terminal, a direct short can result, causing instant heating of tools, severe injury to personnel, or damage to equipment.

When removing battery cable clamps, disconnect ground cables first. Ensure all switches are in OFF position before disconnecting. Do not allow tools to come in contact with pallet when disconnecting cable camps. A direct short can result, causing instant heating of tools, tool damage, battery damage, or battery explosion.

REMOVAL

1. Remove wingnut (2), washer (3) cover (1), and spacer (4) from stud (12) on battery box (11).
2. Remove nut (5), washer (3), and holddown plate (6) from stud (12) and batteries (14).

NOTE

Note position of battery terminals for installation.

3. Unlock and open two terminal lug covers (8) and (10).
4. Disconnect battery ground cable (9) and position battery ground cable (9) out of way.
6. Disconnect battery positive cable (7) and position battery positive cable (7) out of way.

NOTE

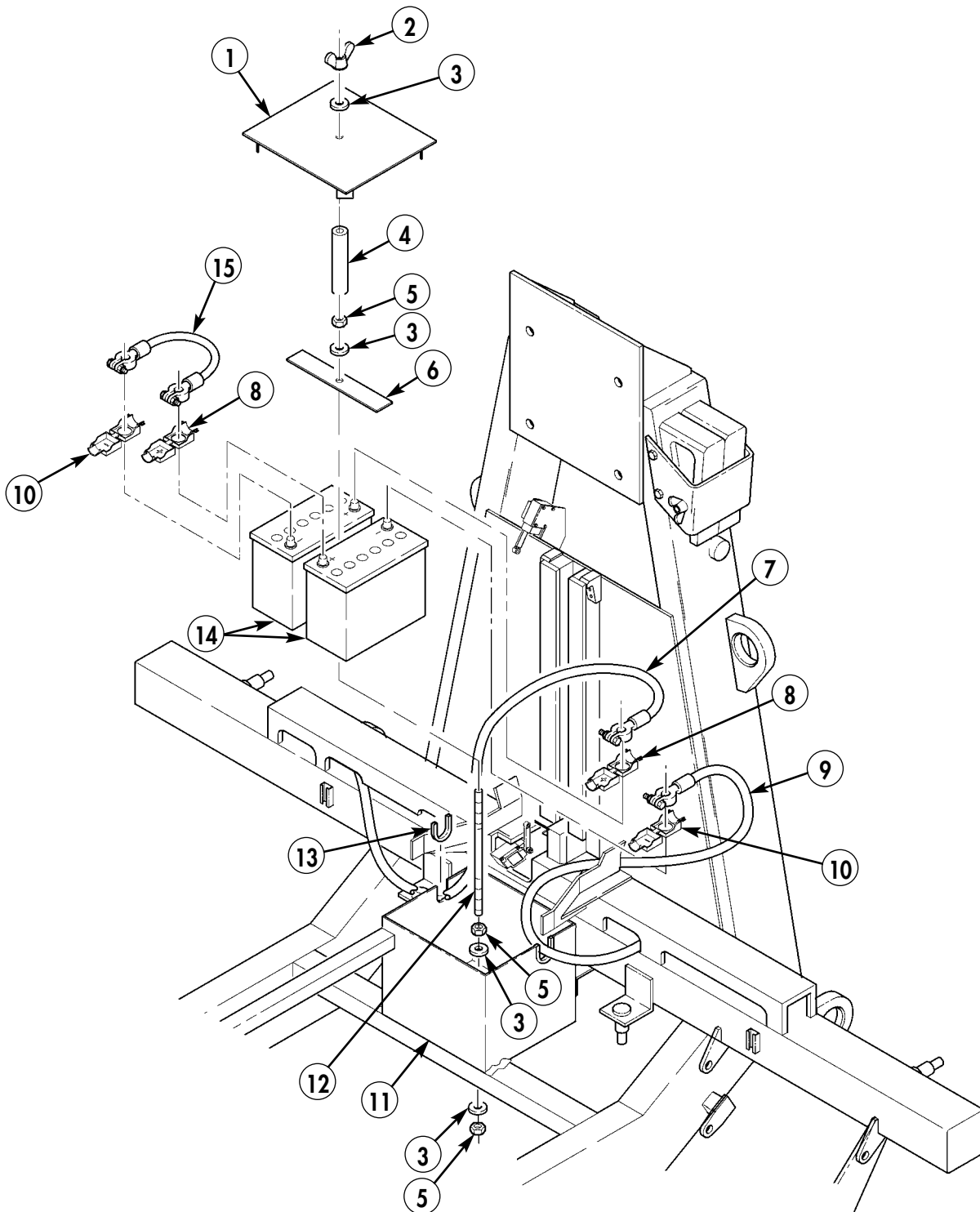
Note position of battery jumper cable for installation.

6. Disconnect both ends of battery jumper cable (15) and remove from batteries (14).
7. Remove two terminal tug covers (8) and (10) from positive and negative post on batteries (14).
8. Carefully remove batteries (14) from battery box (11).
9. If damaged, remove two cable guides (13) from battery box (11).
10. If stud (12) is damaged, remove bottom nut (5), washer (3), and stud (12) from battery box (11).

INSTALLATION

1. If removed, install stud (12) on battery box (11) with two washers (3) and nuts (5). Adjust top nut (5) down until the threads of stud (12) are one inch above cover (1) and tighten bottom nut (5).
2. If removed, install two cable guides (13) on battery box (11).
3. Carefully install batteries (14) into battery box (11).
4. Install two positive and negative terminal lug covers (8) and (10) on battery post.
5. Connect each end of battery jumper cable (15) to batteries (14).
6. Connect battery positive cable (7) to battery positive post (+).
7. Connect battery ground cable (9) to battery negative post (-).
8. Close and lock terminal log covers (8) and 10) around cables.
9. Install battery holddown plate (6), washer (3), and nut (5) on stud (12).
10. Install spacer (4) and cover (1) on stud (12) of battery box (11) with washer (3) and wingnut (2).
11. Install bridge halves on pallet. Refer to WP 0018 00.

BATTERY AND CABLES REPLACEMENT (Contd)



**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**ENGINE THROTTLE AND SHUTOFF LEVER REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Locknut (WP 0198 00)

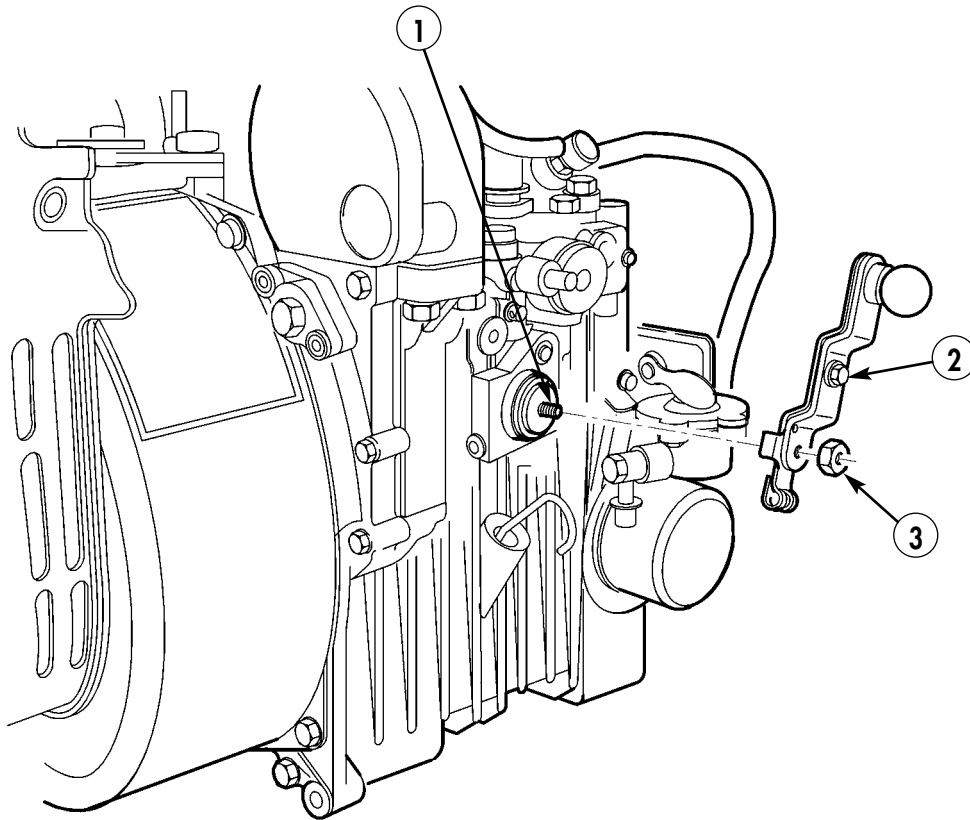
ENGINE THROTTLE AND SHUTOFF LEVER REPLACEMENT (Contd)

REMOVAL

Remove locknut (3) and lever (2) from throttle shaft (1). Discard locknut (3).

INSTALLATION

Install lever (2) on throttle shaft (1) with new locknut (3).



**LAUNCH POWER UNIT (LPU) ENGINE
MAINTENANCE INSTRUCTIONS**

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

**ENGINE ELECTRICAL CONTROL BOX, SWITCH, AND INDICATORS REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)

Materials/Parts

Hydraulic oil (Item 12, WP 0205 00)
O-ring (WP 0200 00)
O-ring (WP 0200 00)
Two locknuts (WP 0200 00)

References

TM 5-5420-280-10

Equipment Condition

Bridge halves removed from bridge pallet.
Refer to WP 0018 00.
Battery ground cable disconnected.
Refer to WP 0113 00).

ENGINE ELECTRICAL CONTROL BOX, SWITCH, AND INDICATORS REPLACEMENT (Contd)**REMOVAL**

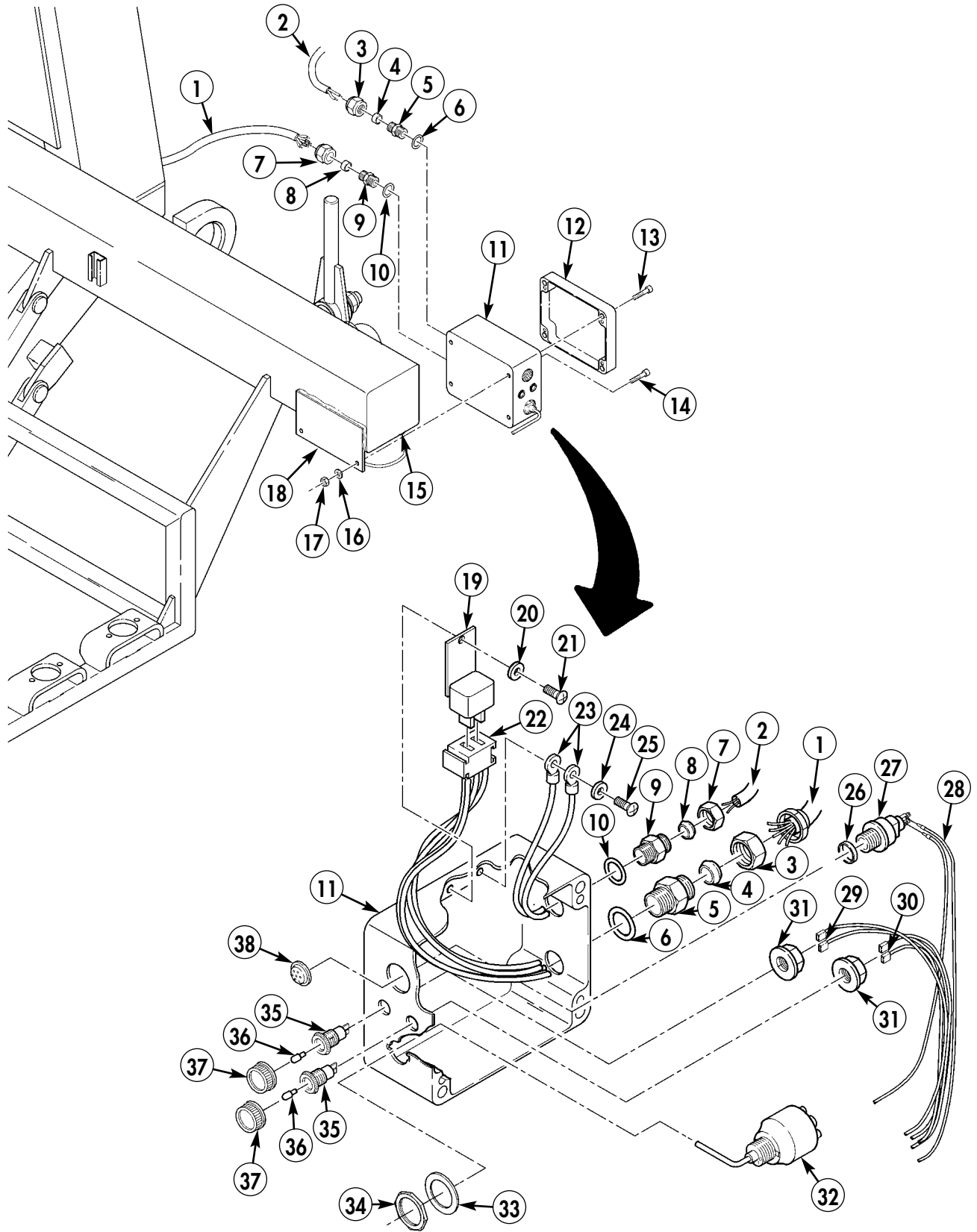
1. Loosen four screws (13) and remove control box cover (12) from control box housing (11).

NOTE

Tag all electrical leads for installation.

2. Disconnect relay plug (22) from relay (19) and remove electrical leads from relay plug (22).
3. Remove screw (21), washer (20), and relay (19) from control box housing (11).
4. Remove screw (25), washer (24) and two ground leads (23) from control box housing (11).
5. Disconnect electrical leads (28) from engine pre-heater switch (27).
6. Disconnect electrical leads (29) and (30) from engine oil pressure and engine temperature indicators (35).
7. Disconnect all electrical leads (28) from engine starter switch (32).
8. Loosen nuts (3) and (7) on connectors (5) and (9) and remove harnesses (1) and (2) with electrical leads from control box housing (11) and connectors (5) and (9).
9. Remove lamp covers (37) and lamps (36) from battery and oil pressure indicators (35).
10. Remove nuts (31) and indicators (35) from control box housing (11).
11. Remove cap (38), nut (26), and engine pre-heater switch (27) from control box housing (11).
12. Remove nut (34), washer (33), and engine starter switch (32) from control box housing (11).
13. Remove nuts (3) and (7), grommets (4) and (8), connectors (5) and (9), and O-rings (6) and (10) from control box housing (11), Discard O-rings (6) and (10).
14. Remove two locknuts (17), washers (16), screws (14), and control box housing (11) from bracket (18) on pallet frame (15). Discard locknuts (17).

ENGINE ELECTRICAL CONTROL BOX, SWITCH, AND INDICATORS REPLACEMENT (Contd)



ENGINE ELECTRICAL CONTROL BOX, SWITCH, AND INDICATORS REPLACEMENT (Contd)**INSTALLATION**

1. Install control box housing (11) on bracket (18) of pallet frame (15) with two screws (14), washers (16), and new locknuts (17).

NOTE

Apply a light coat of hydraulic oil to O-rings at installation.

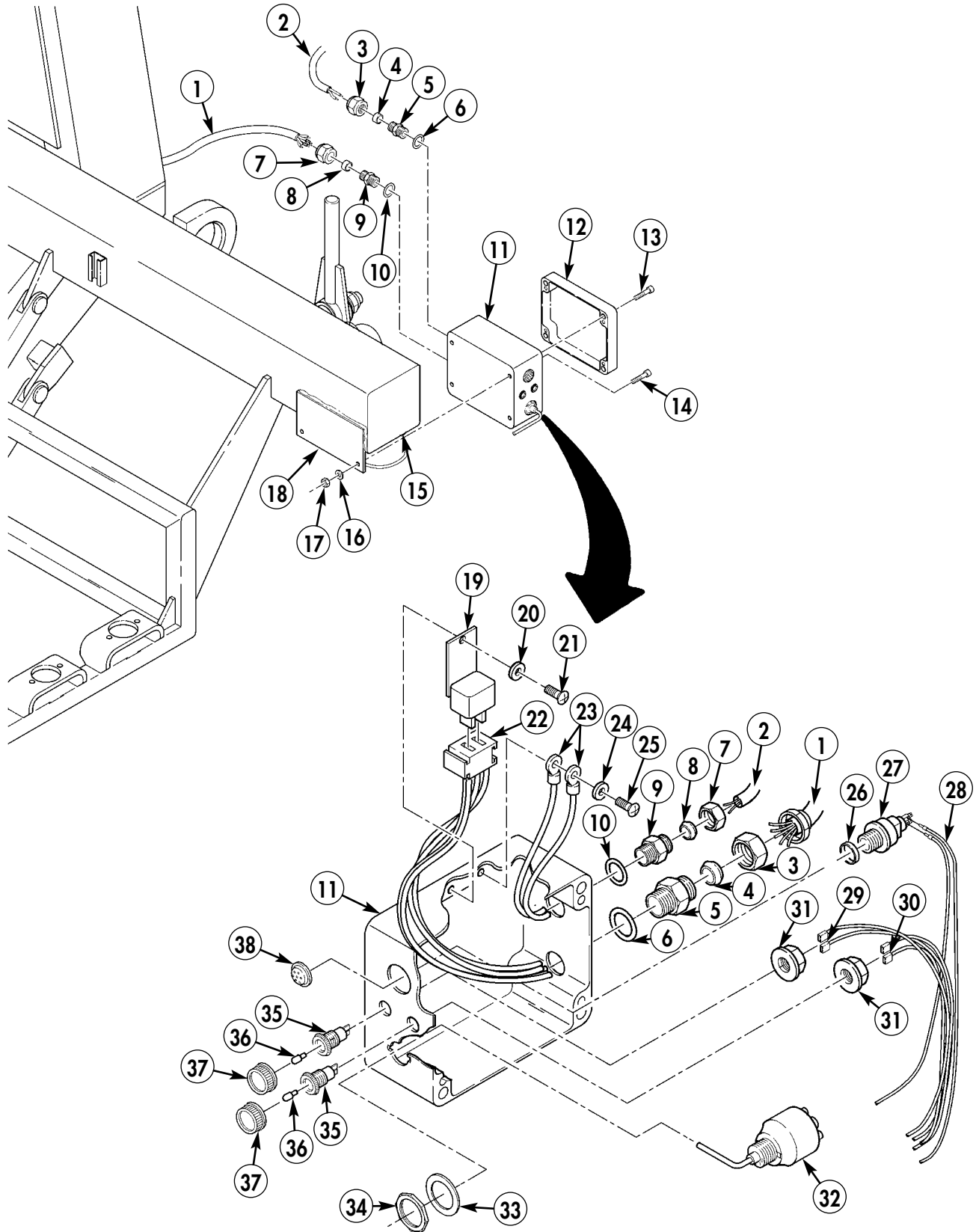
2. Install new O-rings (6) and (10) and connectors (5) and (9) on control box housing (11) with grommets (4) and (8) and nuts (3) and (7). Do not tighten nuts (3) and (7) until control box harnesses (1) and (2) are installed.
3. Install engine starter switch (32) on control box housing (11) with washer (33) and nut (34).
4. Install engine pre-heater switch (27) on control box housing (11) with nut (26) and cap (38).
5. Install engine oil pressure and engine temperature indicators (35) on control box housing (11) with two nuts (31).
6. Install lamps (36) and lamp covers (37) on indicators (35).
7. Install harnesses (1) and (2) through nuts (3) and (7) and grommets (4) and (8) on connectors (5) and (9) and tighten nuts (3) and (7).

NOTE

Connect electrical leads as noted at removal.

8. Connect electrical leads (28) to engine starter switch (32).
9. Connect electrical leads (29) and (30) to engine oil pressure and battery indicators (35).
10. Connect electrical leads (28) to engine pre-heater switch (27).
11. Install two ground leads (23) on control box housing (11) with washer (24) and screw (25).
12. Install relay (19) on control box housing (11) with washer (20) and screw (21).
13. Install electrical leads on relay plug (22) and connect relay plug (22) to relay (19).
14. Install control box cover (12) on control box housing (11) and tighten four screws (13).
15. Connect battery ground cable. Refer to WP 0113 00.
16. Start engine and check control box operation. Refer to TM 9-5420-280-10.
17. Install bridge halves on bridge pallet. Refer to WP 0018 00.

ENGINE ELECTRICAL CONTROL BOX, SWITCH, AND INDICATORS REPLACEMENT (Contd)



END OF WORK PACKAGE

LAUNCH POWER UNIT (LPU) ENGINE MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

ENGINE ASSEMBLY REPLACEMENT REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Forward Repair System (FRS)
(Table 1, Item 2, WP 0206 00)
Lifting device
Chain

Materials/Parts

Twelve locknuts (WP 0201 00)
Eight lockwashers (WP 0201 00)
Lockwasher (WP 0201 00)
Lockwasher (WP 0201 00)

Equipment Condition

Hydraulic pump assembly removed.
Refer to WP 0104 00.
Bridge halves removed from bridge pallet.
Refer to WP 0018 00.
Battery ground cable disconnected.
Refer to WP 0113 00.
Engine fuel tank removed.
Refer to WP 0103 00.

ENGINE ASSEMBLY REPLACEMENT (Contd)

REMOVAL

NOTE

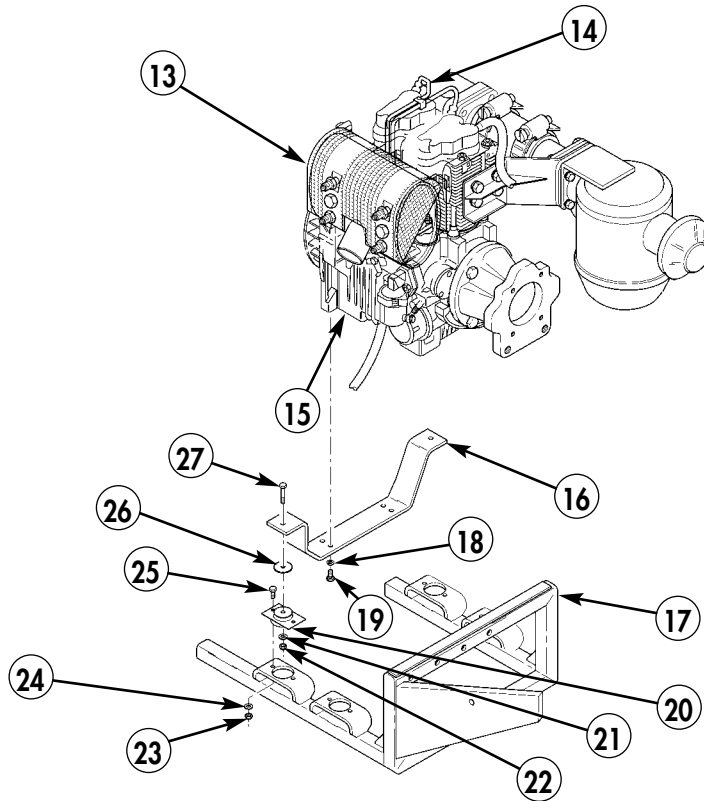
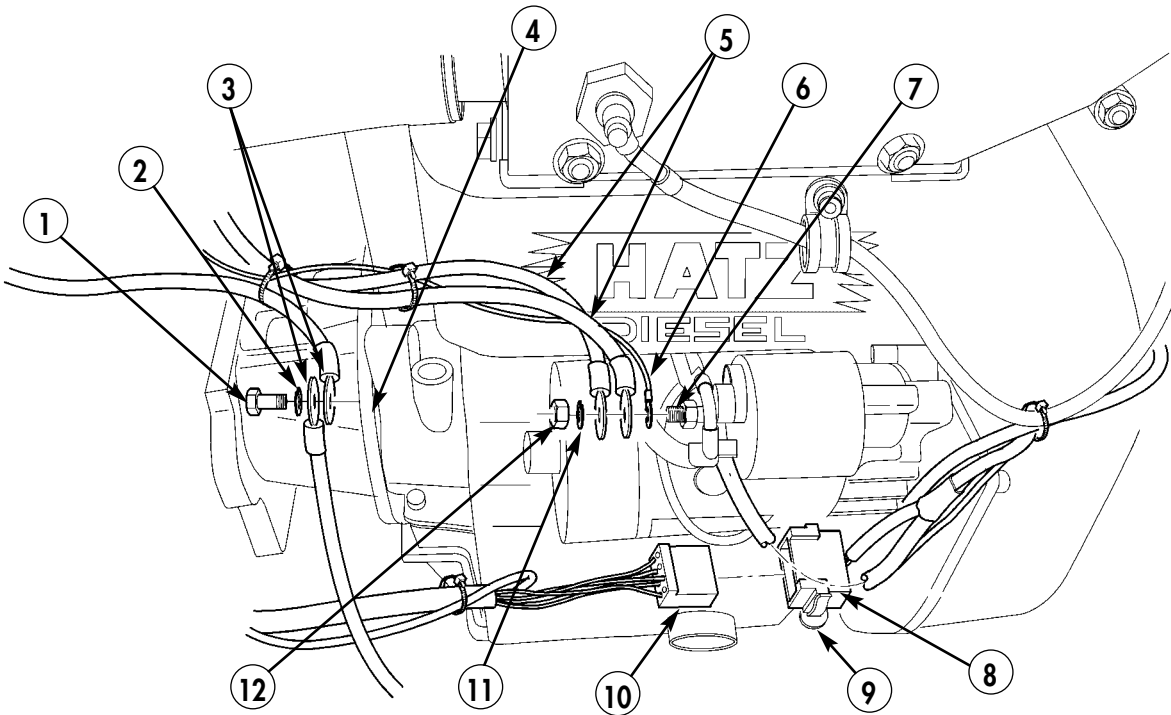
Tag all electrical leads and cables for installation.

1. Remove screw (1), lockwasher (2), and two ground cables (3) from housing (4). Discard lockwasher (2).
2. Remove nut (12), lockwasher (11), two positive battery cables (5), and electrical lead (6) from starter solenoid stud (7). Discard lockwasher (11).
3. Disconnect electrical plug (10) from connector (8) on bracket (9).
4. Remove four locknuts (22), washers (21), and screws (27) from two engine support brackets (16) and four motor mounts (20) on engine support (17). Discard locknuts (22).
5. Attach chain and lifting device to lifting eye (14) on engine (13) and remove engine (13) from engine support (17) and four washers (26) from motor mounts (20).
6. Remove eight screws (19), lockwashers (18), and two engine support brackets (16) from engine oil pan (15). Discard lockwashers (18).
7. Remove chain and lifting device from lifting eye (14) on engine (13).
8. Remove eight locknuts (23), washers (24), screws (25), and four motor mounts (20) from engine support (17). Discard locknuts (23).

INSTALLATION

1. Install four motor mounts (20) on engine support (17) with eight screws (25), washers (24), and new locknuts (23).
2. Install chain and lifting device on lifting eye (14) on engine (13).
3. Install two engine support brackets (16) on engine oil pan (15) with eight new lockwashers (18) and screws (19).
4. Install engine (13) and four washers (26) and motor mounts (20) of engine support (17) with four screws (27), washers (21), and new locknuts (22).
5. Remove chain and lifting device from lifting eye (14) on engine (13).
6. Connect electrical plug (10) to connector (8) on bracket (9).
7. Install electrical lead (6) and two positive battery cables (5) on starter solenoid stud (7) with new lockwasher (11) and nut (12).
8. Install two ground cables (3) on housing (4) with new lockwasher (2) and screw (1).
9. Install hydraulic pump assembly. Refer to WP 0104 00.
10. Connect battery ground cable. Refer to WP 0113 00.
11. Install engine fuel tank. Refer to WP 0103 00.
12. Install bridge halves on bridge pallet. Refer to WP 0018 00.

ENGINE ASSEMBLY REPLACEMENT (Contd)



END OF WORK PACKAGE

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CHAPTER 8
GENERAL MAINTENANCE PROCEDURES
RAPIDLY EMPLACED BRIDGE (REB)

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Pallet Electrical System Schematic	0122 00-1
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Winch Electronic Box Electrical Schematic	0124 00-1

GENERAL MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

ILLUSTRATED LIST OF MANUFACTURED ITEMS

SCOPE

This work package includes complete instructions for making items authorized to be manufactured or fabricated at field maintenance levels.

HOW TO USE THE INDEX OF MANUFACTURED ITEMS

A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the page which covers fabrication criteria.

EXPLANATION OF THE ILLUSTRATIONS OF MANUFACTURED ITEMS

Instructions to manufacture the item are provided in procedural form below each illustration. All bulk materials required for manufacture of an item are listed by part number or specification number within the procedure, and in Table 1, Manufactured Items Part Number Index.

NOTE

Rapidly Emplaced Bridge (REB) has no manufactured items at this time.

GENERAL MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

TORQUE LIMITS

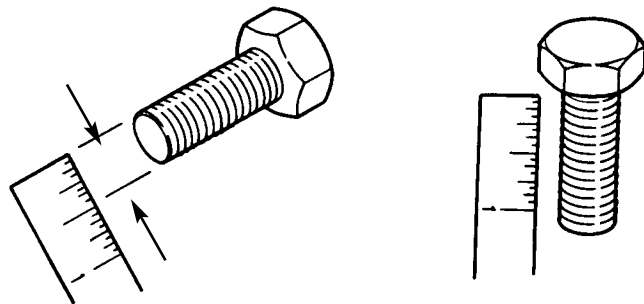
GENERAL

This work package provides general torque limits for screws used on the Rapidly Emplaced Bridge (REB). Special torque limits are indicated within the maintenance tasks for applicable components. The general torque limits given in this work package shall be used when specific torque limits are not indicated in the maintenance task. These general torque limits cannot be applied to screws that retain rubber components. Rubber components will become damaged before the correct torque limit can be reached.

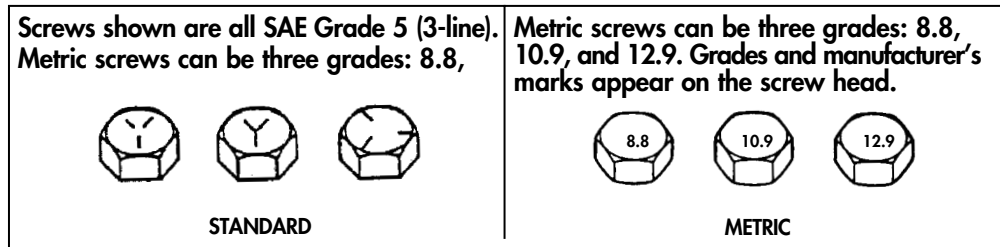
TORQUE TABLES

Table 1 lists dry torque limits. Dry torque limits are used on screws that do not have lubricants applied to the threads. Table 2 lists wet torque limits. Wet torque limits are used on screws that have high pressure lubricants applied to the threads. For metric fasteners, refer to table 3 for torque limit requirements.

HOW TO USE TORQUE TABLES



1. Measure the diameter of the screw.
2. Count the number of threads per inch.
3. Under the heading SIZE, look down the left hand column and find the diameter of the screw. (There will usually be two lines beginning with the same size).
4. In the second column under SIZE, find the number of threads per inch that matches the number of threads you counted in step 2. (Not required for metric screws).
5. Determine the grade of screw by matching the markings on the head of the screw to the correct picture of CAPSCREW HEAD MARKINGS in the illustration preceding the torque limits table.



6. Look down the column under the picture you found in step 5. until you find the torque limit (in lb-ft or N-m) for the diameter and threads per inch of the screw.

TORQUE LIMITS (Contd)

Table 1. Torque Limits for Dry Fasteners.

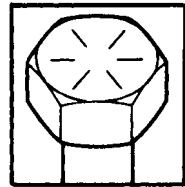
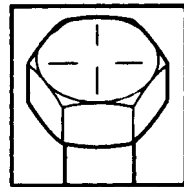
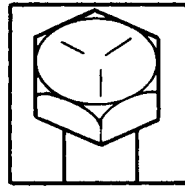
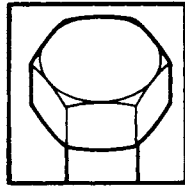
SIZE			TORQUE							
			SAE GRADE NO. 1 or 2		SAE GRADE NO. 5		SAE GRADE NO. 6 or 7		SAE GRADE NO. 8	
DIA. INCHES	THREADS PER INCH	DIA. MILLIMETERS	POUND FEET	NEWTON METERS	POUND FEET	NEWTON METERS	POUND FEET	NEWTON METERS	POUND FEET	NEWTON METERS
1/4	20	6.35	5	7	8	11	10	14	12	16
1/4	28	6.35	6	9	10	14	12	16	14	19
5/16	18	7.94	11	15	17	23	21	28	24	33
5/16	24	7.94	12	16	19	26	24	33	27	37
3/8	16	9.53	20	27	30	41	40	54	45	61
3/8	24	9.53	23	31	35	47	45	61	50	68
7/16	14	11.11	30	31	50	68	60	81	70	95
7/16	20		35	37	55	75	70	95	80	108
1/2	13	12.70	50	68	75	102	95	129	110	149
1/2	20		55	75	90	122	100	136	120	163
9/16	12	14.29	65	88	110	149	135	183	150	203
9/16	18		75	102	120	163	150	203	170	231
5/8	11	15.88	90	122	150	203	190	258	220	298
5/8	18		100	136	180	244	210	285	240	325
3/4	10	19.05	160	217	260	353	320	434	380	515
3/4	16		180	244	300	407	360	488	420	597
7/8	9	22.23	140	190	400	542	520	705	600	814
7/8	14		155	210	440	597	580	786	660	895
1	8	25.40	220	298	580	786	800	1085	900	1220
1	12		240	325	640	868	860	1166	1000	1356
1 1/8	7	25.58	300	407	800	1085	1120	1519	1280	1736
1 1/8	12		340	461	880	1193	1260	1709	1440	1953
1 1/4	7	31.75	420	570	1120	1519	1580	2142	1820	2468
1 1/4	12		460	624	1240	1681	1760	2387	2000	2712
1 3/8	6	34.93	560	759	1460	1980	2080	2820	2380	3227
1 3/8	12		640	868	1690	2278	2380	3227	2720	3688
1 1/2	6	38.10	740	1003	1940	2631	2780	3770	3160	4285
1 1/2	12		840	1139	2200	2983	3100	4204	3560	4827

CAPSCREW HEAD MARKINGS

Manufacturer's marks may




vary. Screws shown above are all SAE Grade 5 (3-line).

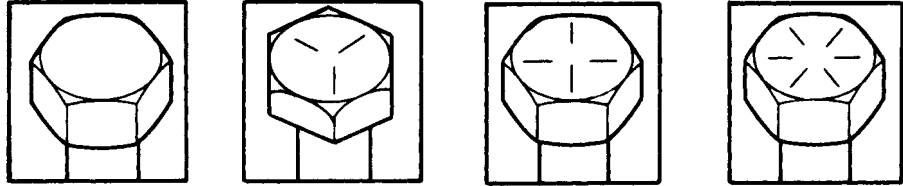


TORQUE LIMITS (Contd)

Table 2. Torque Limits for Wet Fasteners.

SIZE			TORQUE							
			SAE GRADE NO. 1 or 2		SAE GRADE NO. 5		SAE GRADE NO. 6 or 7		SAE GRADE NO. 8	
DIA. INCHES	THREADS PER INCH	DIA. MILLIMETERS	POUND FEET	NEWTON METERS	POUND FEET	NEWTON METERS	POUND FEET	NEWTON METERS	POUND FEET	NEWTON METERS
1/4	20	6.35	4	6	6	8	8	11	9	12
1/4	28	6.35	5	7	7	9	9	12	10	14
5/16	18	7.94	8	11	13	18	16	22	18	24
5/16	24	7.94	9	12	14	19	18	24	20	27
3/8	16	9.53	15	20	23	31	30	41	40	54
3/8	24	9.53	17	23	25	34	30	41	44	60
7/16	14	11.11	24	33	35	47	45	61	55	75
7/16	20		25	34	40	54	50	68	60	81
1/2	13	12.70	35	47	55	75	70	95	80	108
1/2	20		40	54	65	88	80	108	90	122
9/16	12	14.29	50	68	80	108	100	136	110	149
9/16	18		55	75	90	122	110	149	130	176
5/8	11	15.88	70	95	110	149	140	190	170	231
5/8	18		80	108	130	176	160	217	180	244
3/4	10	19.05	120	163	200	271	240	325	280	380
3/4	16		140	190	220	298	280	380	320	434
7/8	9	22.23	110	149	300	407	400	542	460	624
7/8	14		120	163	320	434	440	597	500	678
1	8	25.40	160	217	440	597	600	814	680	922
1	12		170	231	480	651	660	895	740	1003
1 1/8	7	25.58	220	298	600	814	840	1139	960	1302
1 1/8	12		260	353	660	895	940	1275	1080	1464
1 1/4	7	31.75	320	434	840	1139	1100	1492	1360	1844
1 1/4	12		360	488	920	1248	1320	1790	1500	2034
1 3/8	6	34.93	420	570	1100	1492	1560	2115	1780	2414
1 3/8	12		460	624	1260	1709	1780	2414	2040	2766
1 1/2	6	38.10	560	760	1460	1980	2080	2820	2360	3200
1 1/2	12		620	841	1640	2224	2320	3146	2660	3607

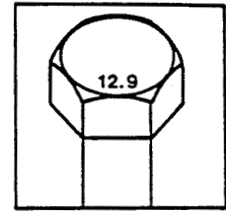
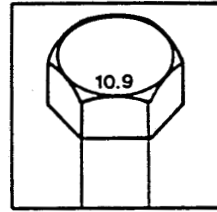
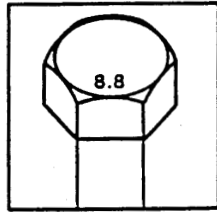
CAPSCREW HEAD MARKINGS
 Manufacturer's marks may vary.

 Screws shown above are all SAE Grade 5 (3-line).



TORQUE LIMITS (Contd)

Table 3. Torque Limits for Metric Fasteners.

SIZE		TORQUE					
		METRIC GRADE 8.8		METRIC GRADE 10.9		METRIC GRADE 12.9	
DIAMETER INCHES	DIAMETER MILLIMETERS	POUND FEET	NEWTON METERS	POUND FEET	NEWTON METERS	POUND FEET	NEWTON METERS
.157	4	2	3	3	4	4	5
.197	5	4	5	6	8	7	9
.237	6	7	9	10	14	11	15
.276	7	11	15	16	22	20	27
.315	8	18	24	25	34	29	39
.394	10	32	43	47	64	58	79
.473	12	58	79	83	113	100	136
.552	14	94	127	133	180	159	216
.630	16	144	195	196	266	235	319
.709	18	190	258	269	365	323	438
.788	20	260	353	366	496	440	597
.867	22	368	499	520	705	678	919
.946	24	470	637	664	900	794	1077
1.064	27	707	959	996	1351	1235	1675
1.182	30	967	1311	1357	1840	1630	2210



CAPSCREW HEAD
MARKINGS

TORQUE LIMITS (Contd)

TUBING APPLICATION TIGHTENING ASSEMBLY INSTRUCTIONS

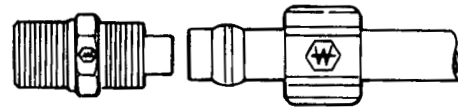
Slide tubing over barbed insert until it bottoms on fitting.

MINI-BARB



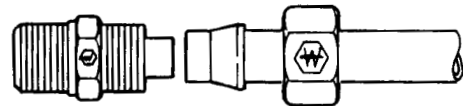
1. Slide nut and then sleeve on tubing.
2. Slide I.D. of tubing onto fitting insert until it bottoms.
3. Assemble nut to fitting body.
4. Tighten assembly finger tight to cover body threads.

KNURL-ON



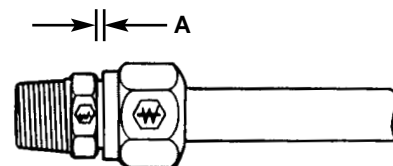
1. Slide nut and then sleeve on tubing.
2. Slide I.D. of tubing onto fitting insert until it bottoms.
3. Assemble nut to fitting body.
4. Finger tighten nut. From that point, tighten with a wrench two complete turns.

SELF-ALIGN-PTF



1. Cut tubing to desired length. Ensure ends are cut reasonably square.
2. Slide tubing into the preassembled fitting and push until tube bottoms.
3. Tighten nut as indicated in chart. Another check on proper assembly is dimension A, when nut is fully tightened.

NYLON TUBING FOR AIRBRAKE



DISASSEMBLY — Remove nut and pull tubing out of fitting body. Insert will remain on tubing.

REASSEMBLY — Push tubing and insert into fitting body until it bottoms. Thread nut onto fitting body and tighten as in step 3.

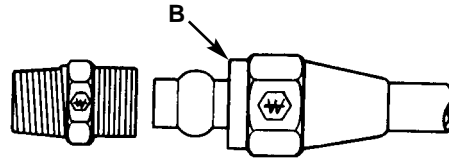
TUBE O.D.	TIGHTEN NUT TO:	A GAP DIMENSION
1/4	85 - 115 lb-in. (9.6 - 13.0 N.m)	.085/.105
3/8	12 - 17 lb-ft (16.3 - 23.1 N.m)	.125/.145
1/2	25 - 33 lb-ft (33.9 - 44.7 N.m)	.100/.120
5/8	26 - 35 lb-ft (35.3 - 47.5 N.m)	.115/.135
3/4	38 - 50 lb-ft (51.5 - 67.8 N.m)	.180/.200

TORQUE LIMITS (Contd)

TUBING APPLICATION TIGHTENING ASSEMBLY INSTRUCTIONS (Contd)

1. Slide nut and then sleeve on tubing. Threaded end of nut (B) must face out.
2. Insert tubing into fitting. Ensure tubing is bottomed on fitting shoulder.
3. Thread nut onto fitting body until it is hand tight.
4. From that point, tighten with a wrench the number of turns indicated at right.

**COPPER TUBING
FOR HAND AIRBRAKE**



TUBE SIZE	ADDITIONAL NUMBER OF TURNS FROM HAND TIGHT
1-3/4	1-3/4
3-1/4	3-1/4

TORQUE WRENCH ADAPTERS

Some maintenance tasks require the use of a torque wrench adapter when the nut or screw cannot be reached with a regular socket on the end of the torque wrench. These adapters add to the overall length of the torque wrench and make the dial or scale reading less than the actual torque applied to the nut or screw. To prevent overtightening and damage to equipment, calculate the correct dial or scale reading using the conversion formula provided; refer to Conversion Formula in this WP.

TORQUE LIMITS (Contd)

CONVERSION FORMULA

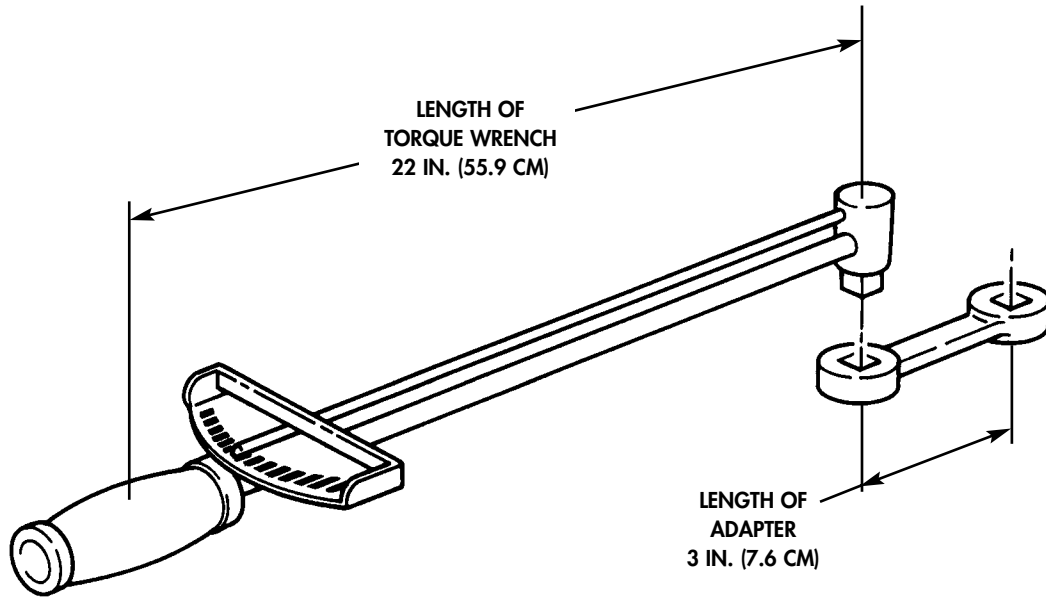
Corrected dial or scale readings are determined by the use of the following formula:

$$\text{Corrected reading} = \frac{\text{Required torque value}}{\frac{\text{Length of torque wrench} + \text{Length of adapter}}{\text{Length of torque wrench}}}$$

NOTE

The length of the torque wrench is measured from the center of the handle to the center of the drive. The length of the adapter is measured from the center of the drive to the center of the wrench.

EXAMPLE:



In this example, the torque wrench measures 22 in. (55.9 cm) and the adapter is 3 in. (7.6 cm). The required torque is 19 lb-ft (25.8 N•m).

$$\begin{aligned} \text{Corrected reading} &= \frac{19 \text{ lb-ft (25.8 N}\cdot\text{m)}}{\frac{22 \text{ in. (55.9 cm)} + 3 \text{ in. (7.6 cm)}}{22 \text{ in. (55.9 cm)}}} \\ \text{Corrected reading} &= \frac{19 \text{ lb-ft (25.8 N}\cdot\text{m)}}{25 \text{ in. (63.5 cm)}} \\ \text{Corrected reading} &= \frac{19 \text{ lb-ft (25.8 N}\cdot\text{m)}}{22 \text{ in. (55.9 cm)}} \\ \text{Corrected reading} &= 1.14 \\ \text{Corrected reading} &= 17 \text{ lb-ft (23.1 N}\cdot\text{m)} \end{aligned}$$

GENERAL MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PAINTING INSTRUCTIONS

GENERAL

For specific painting procedures and techniques, refer to Painting Instructions for Field Use, TM 43-0139.

TREATMENT AND PAINTING

The bridge and bridge pallet normally painted shall be cleaned and treated in accordance with TT-C-490 if ferrous, or MIL-C-5541 if aluminum, primed and painted with chemical agent resistance coating (CARC) in accordance with MIL-DTL-53072. Refer to TM 43-0139 for painting instructions. Unless otherwise specified, the topcoat color shall be Color Chip No. 34094, Green 383, of FED-STD-595. When camouflage patterns are required, the top coat shall be overcoated per the Government furnished camouflage patterns and top coat colors conforming to MIL-C-53072. Refer to Camouflage Patterns (WP 0120 00). The roadway and walkway plates are coated with a non-slip material called Ardopen-KS 55-Type A resin and hardener. Surface preparation and application instructions are provided with the container and further described in this work package.

APPLICATION AND REPAIR OF NONSLIP COATING

a. Application of Coating.

CAUTION

To avoid damage to equipment, do not use steel-shot blasting. Clean roadway in compliance with cleaning directive E 02 005 0803.

1. Clean roadway by shot-blasting with coarsest possible granulation (approximately 0.6–0.8 in. (16–20 mm)) to avoid contamination.

PAINTING INSTRUCTIONS (Contd)**WARNING**

Wear neoprene gloves and eye protection when mixing or coating KS 55. Skin irritation or eye damage may occur if procedure is performed without neoprene gloves or eye protection.

Ensure proper ventilation and wear a respirator apparatus when working with KS 55. Injury to personnel may occur if used in a confined area.

Wash hands and wrists with skin protectant and rub with skin protectant ointment before and after performing task. Skin irritation may occur if hands and wrists are not properly cleaned and protected.

NOTE

Ensure area to be coated is dry.

Coat bridge in a temperature range of 64–75°F (18–24°C).

Coat roadway within eight hours of cleaning. If roadway coating shows any contamination, perform a follow-up treatment in compliance with E 02 005 0803.

Pre-heat the area to be coated to a temperature range of 68–77°F (20–25°C).

2. With a 7 in. (18 cm) lamb-wool roller, apply a 0.04 in. (1 mm) layer of non-skid surface compound to roadway. Let compound dry for one hour at 72°F (22°C) or two hours at 64°F (18°C).
3. Apply a special corundum mixture (aluminum oxide) with granulation 0.02–0.04 in. (0.5–1 mm).
4. Let corundum mixture dry for twelve hours at temperatures of 59°F (15°C) or above.
5. Sweep off non-adhering corundum granulation and use for further application. Sieve out potential contamination.

CAUTION

Stack parts with sufficient ventilation to allow coating to complete the setting process. Coating may be damaged if parts are stacked directly on top of one another before coating has set.

6. If stacking coated parts, use wooden blocks as spacers to assure sufficient space between parts.

CAUTION

Coatings can stand full chemical and mechanical stress after seven days of normal temperatures. Coating may be damaged if exposed to stress before it is completely dry.

NOTE

Once KS 55 has hardened, it cannot be removed and used for further application.

7. Store parts in the open after 48 hours of temperatures 64–75°F (18–24°C).

CAUTION

Scrub tools and equipment after each use. Dipping equipment and tools in solution does not constitute sufficient cleaning. Insufficient cleaning may cause damage to equipment.

8. Clean equipment and tools after each use with methychloroform (non-combustible).

b. Repair of Damaged Roadway Cover.**CAUTION**

Repair damage to coating as quickly as possible. Damage to coating may cause further damage to metal surface.

1. Removing coating from damaged area with scrapers and steel brushes until coating around damaged area becomes adhesive.
2. Clean damaged area until all coating is removed from metal.

PAINTING INSTRUCTIONS (Contd)

WARNING

Wear neoprene gloves and eye protection when mixing or coating KS 55. Skin irritation or eye damage may occur if procedure is performed without neoprene gloves or eye protection.

Ensure proper ventilation and wear a respirator apparatus when working with KS 55. Injury to personnel may occur if used in a confined area.

Wash hands and wrists with skin protectant and rub with skin protectant ointment before and after performing task. Skin irritation may occur if hands and wrists are not properly cleaned and protected.

PNOTE

Ensure area to be coated is dry.

Coat bridge in a temperature range of 64–75°F (18–24°C)

Coat roadway within eight hours of cleaning. If the area shows any contamination, perform a follow-up treatment in compliance with E 02 005 0803.

Pre-heat the area to be coated to a temperature range of 68–77°F (20–25°C).

To adapt the repaired spot to existing coating, apply a second coat of KS 55 to the wet first coat.

3. Apply KS 55 with a brush to damaged area.
4. Apply corundum mixture per task a, steps 3 through 5.
5. Allow parts to dry and store per task a, steps 6 and 7.

SURFACE TREATMENT WITH METAL SEPARATING AGENT

a. Preparation of Mixing Components.

NOTE

To ensure proper bonding, joint flanks or bonded surfaces must be dry, clean, free of dust and grease.

1. Clean per aluminum cleaning specification E 02 005 0803.

CAUTION

An excess dosing of hardener (max 10:1 by volume) does not cause a deterioration of the material properties. However, under-dosing of the hardener will cause a deterioration of the hardener and must be avoided in every case. A deterioration of the hardener may cause damage to equipment. When preparing mixture with automatic mixer, ensure correct setting of the dosing cylinders.

2. Mix components in proportion of 10:1 by volume. Use two-component mixture within approximately 30 minutes (pot time at 75°F (23°C)).

CAUTION

To avoid metal separating agent failure, do not process GD 677 under 50°F (10°C).

NOTE

Pot time is shorter at higher temperatures. As a general rule, cut time in approximately half for every increase of ten degrees celsius:

30 min pot time at 68°F (20°C).

15 min pot time at 86°F (30°C).

8 min pot time at 104°F (40°C).

3. Mix only the quantity to be processed in this time.

PAINTING INSTRUCTIONS (Contd)

b. Application of Components.

1. Coat all individual parts with separating agent on the sealing surfaces. Apply a 0.04 in (1 mm) thick layer with a toothed plastic spatula.
2. Assemble steel parts with prescribed torques. Separating agent must exude from all sides. Remove excess material.

c. Hardening.

The hardening speed and the bonding structure of GD 677 essentially depend on the storage temperature of the parts manufactured with it. At 50°F (10°C), the hardening times are doubled to tripled, and they are shortened by about half at 86°F (30°C). A non-tacky surface is achieved after approximately 5 hours at 75°F (23°C).

Hardening development at 75°F (23°C) on basis of the increase of Shore A Hardness:

Time (H)	2	3	4	5	6	12	24
Shore A (+/-4)	5	14	20	25	28	34	40

d. Operation of Automatic Mixer.

NOTE

To ensure mixing of proper proportions, completely empty the can.

1. Add component B (black) (8) to component A (2).
2. Insert tin containing component A (2) in the retaining tin (3) and secure the tension lock (4).
3. Mount spiral stirrer (6) in drill (9).

NOTE

Components should be sufficiently homogeneously blended after approximately 5 minutes.

To ensure proper bonding, component mixture must be used within 40 minutes at 68°F (20°C).

4. Blend component B (8) in the upper third of the tin containing component A (2). Proceed slowly to the bottom of the tin, stirring in an even, counterclockwise direction.

e. Filling the SVV 50 Gun.

1. Insert the pressing plate (1) into the tin containing component mixture (10). Press plate (1) downwards until the opening in the center of the plate is filled with sealant.
2. Remove nozzle head of the SVV 50 gun (7) and insert the gun (7) into the center opening of the pressing plate (1).
3. Position red valve lever, located at bottom of gun handle, for suction mode.

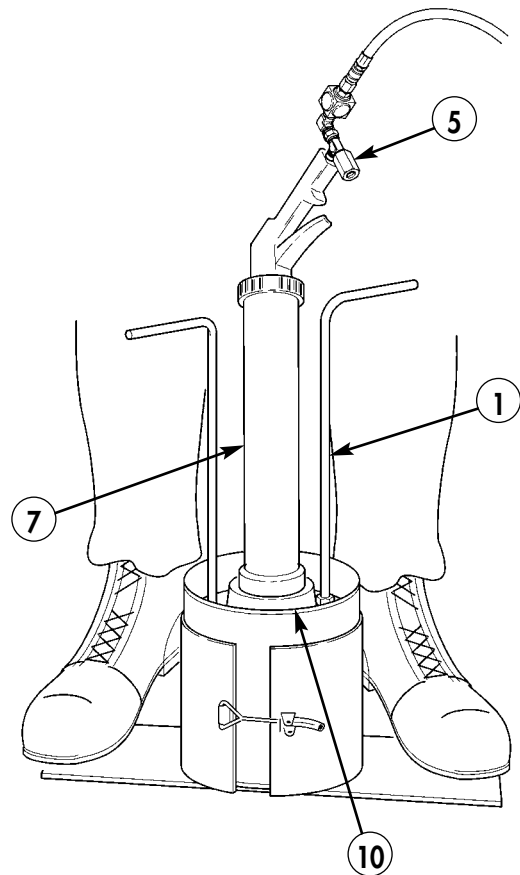
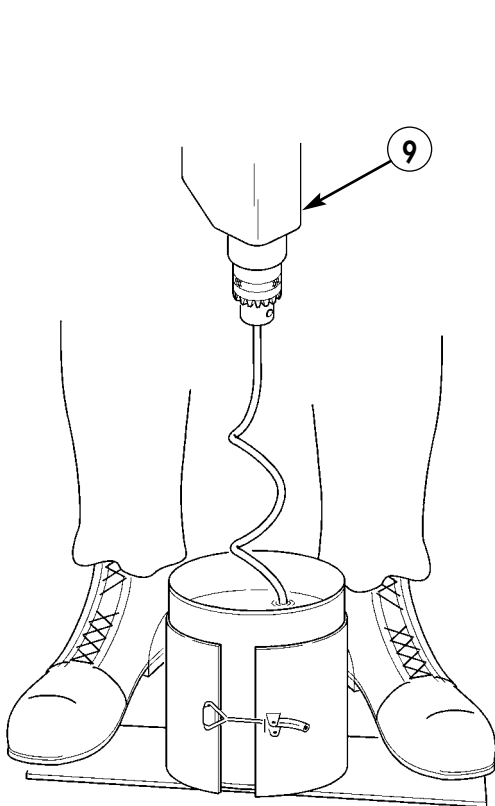
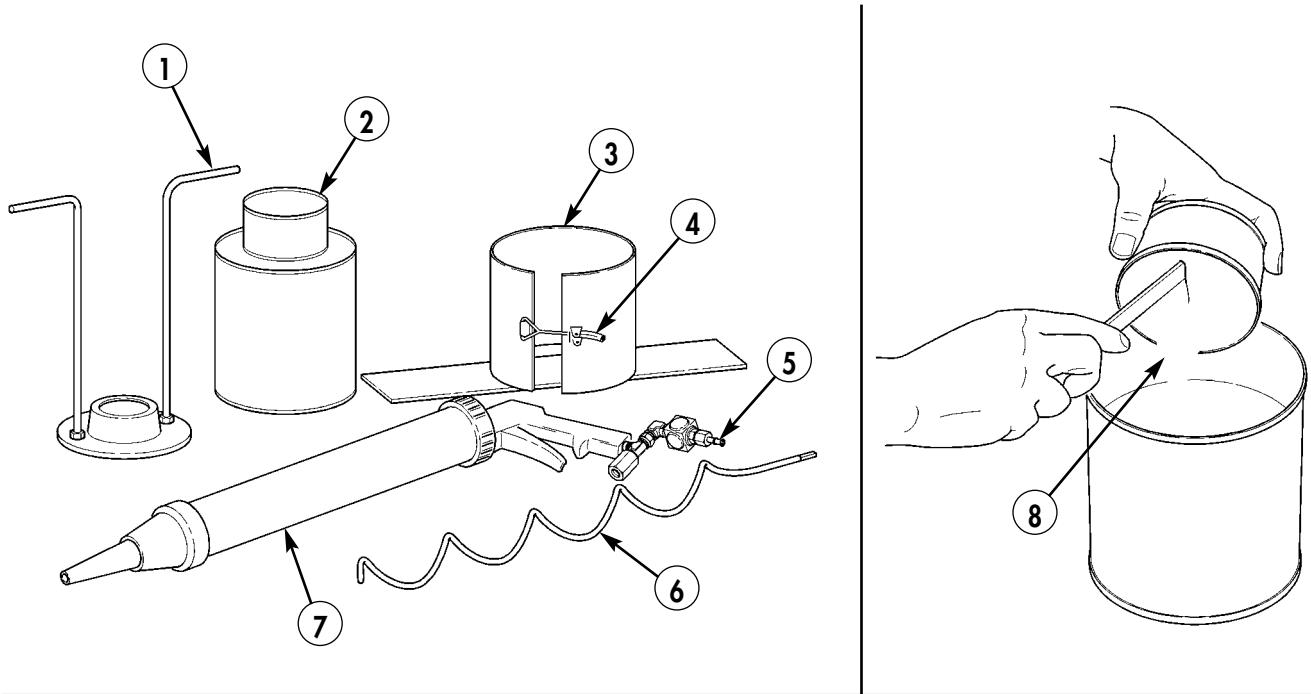
NOTE

For most efficient suction of component into gun, ensure gun remains in as perfect of a perpendicular position as possible.

When pressing plate comes to a standstill, the gun tube is filled with sealant.

4. Actuate gun trigger and press gun securely against pressing plate (1). Pressing plate (1) will begin to lower.
5. Release gun trigger and shift red valve lever (5) to pressure position.
6. Apply component per task b, step 1.

PAINTING INSTRUCTIONS (Contd)



GENERAL MAINTENANCE INSTRUCTIONS

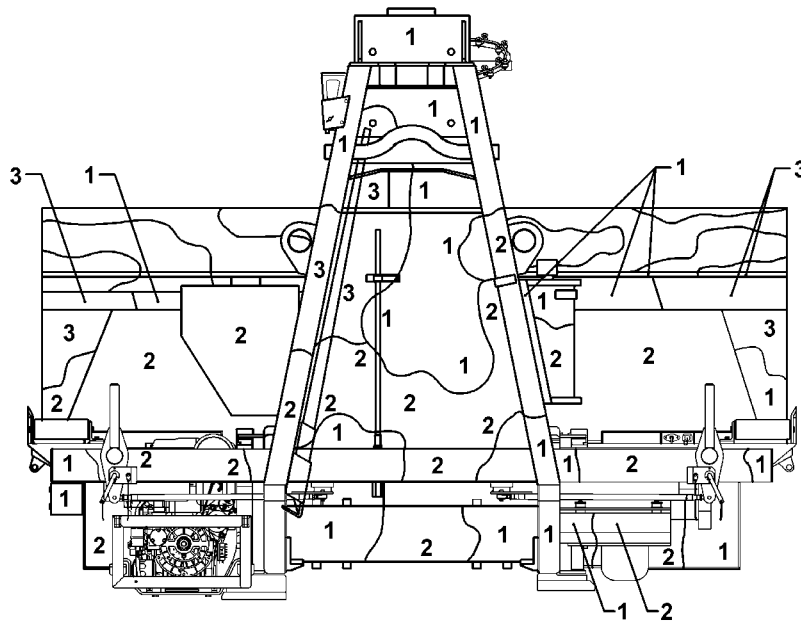
RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

CAMOUFLAGE PATTERNS AND ALIGNMENT MARKS

Refer to Painting Instructions (WP 0119 00) for preparation and painting of REB camouflage patterns and alignment marks.

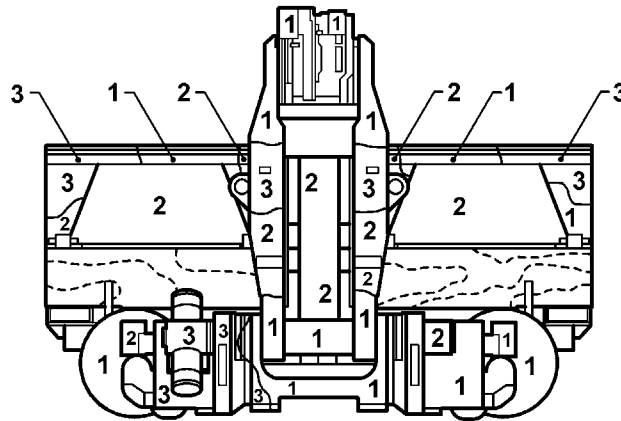
COLOR CODES			
NO.	STANDARD	DESERT	WINTER/SNOW
1	BLACK	TAN 686	BLACK
2	GREEN 383	TAN 686	WHITE
3	BROWN 383	TAN 686	BROWN 383



BRIDGE, FRONT VIEW

CAMOUFLAGE PATTERNS AND ALIGNMENT MARKS (Contd)

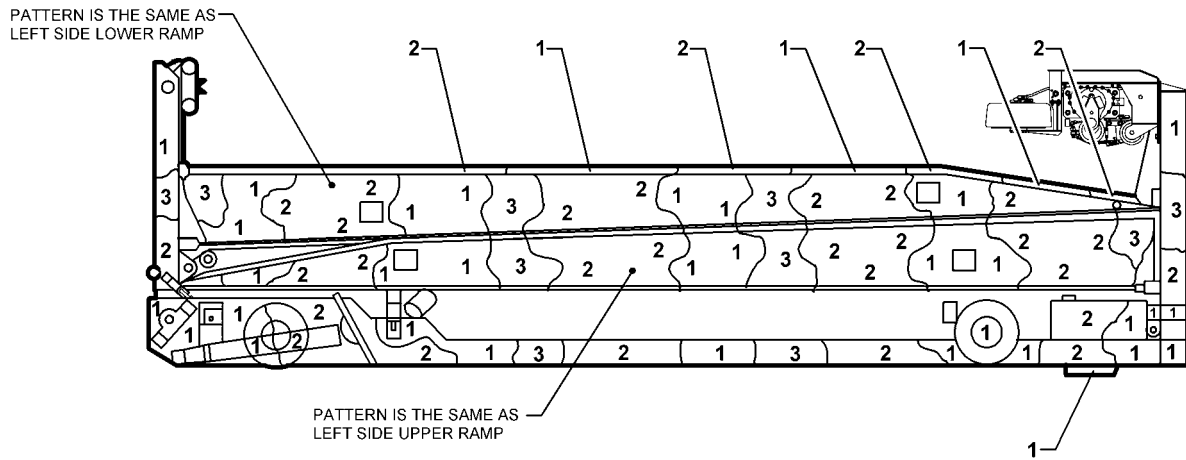
COLOR CODES			
NO.	STANDARD	DESERT	WINTER/SNOW
1	BLACK	TAN 686	BLACK
2	GREEN 383	TAN 686	WHITE
3	BROWN 383	TAN 686	BROWN 383



BRIDGE, REAR VIEW

CAMOUFLAGE PATTERNS AND ALIGNMENT MARKS (Contd)

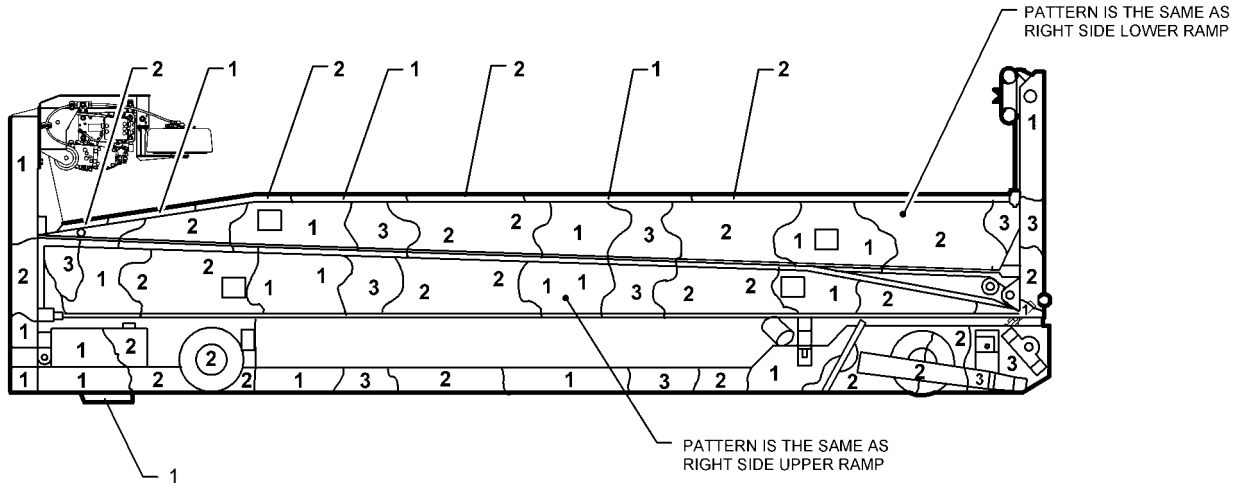
COLOR CODES			
NO.	STANDARD	DESERT	WINTER/SNOW
1	BLACK	TAN 686	BLACK
2	GREEN 383	TAN 686	WHITE
3	BROWN 383	TAN 686	BROWN 383



BRIDGE, RIGHT SIDE VIEW

CAMOUFLAGE PATTERNS AND ALIGNMENT MARKS (Contd)

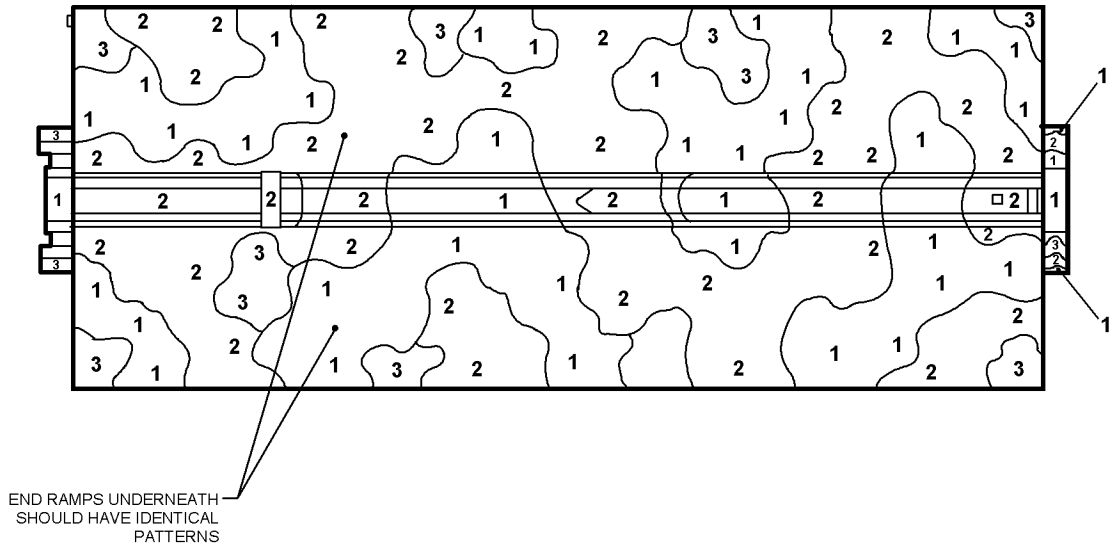
COLOR CODES			
NO.	STANDARD	DESERT	WINTER/SNOW
1	BLACK	TAN 686	BLACK
2	GREEN 383	TAN 686	WHITE
3	BROWN 383	TAN 686	BROWN 383



BRIDGE, LEFT SIDE VIEW

CAMOUFLAGE PATTERNS AND ALIGNMENT MARKS (Contd)

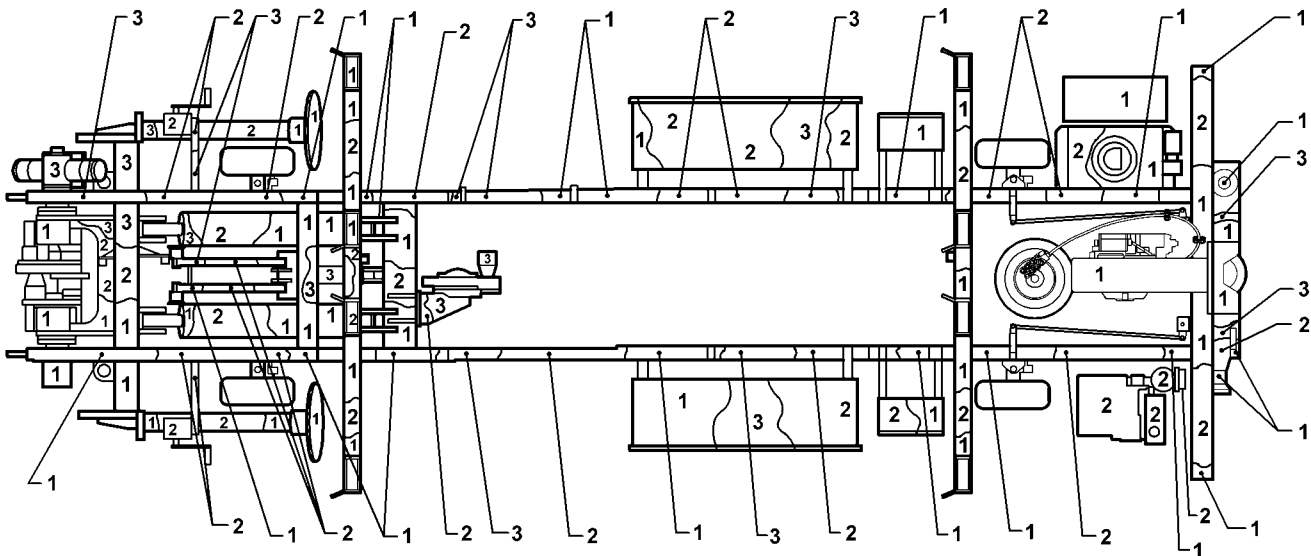
COLOR CODES			
NO.	STANDARD	DESERT	WINTER/SNOW
1	BLACK	TAN 686	BLACK
2	GREEN 383	TAN 686	WHITE
3	BROWN 383	TAN 686	BROWN 383



BRIDGE, TOP VIEW

CAMOUFLAGE PATTERNS AND ALIGNMENT MARKS (Contd)

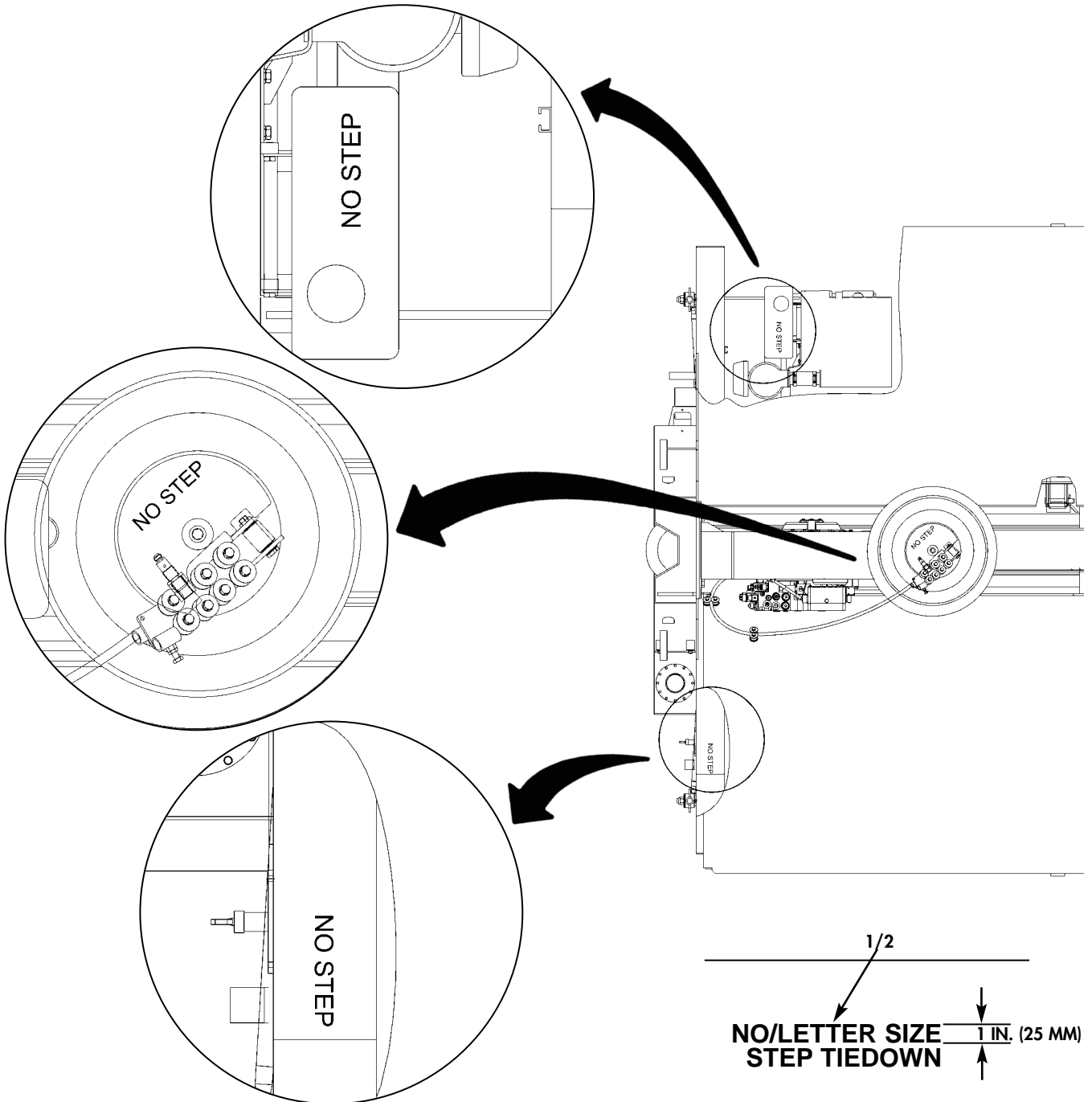
COLOR CODES			
NO.	STANDARD	DESERT	WINTER/SNOW
1	BLACK	TAN 686	BLACK
2	GREEN 383	TAN 686	WHITE
3	BROWN 383	TAN 686	BROWN 383



PALLET, TOP VIEW

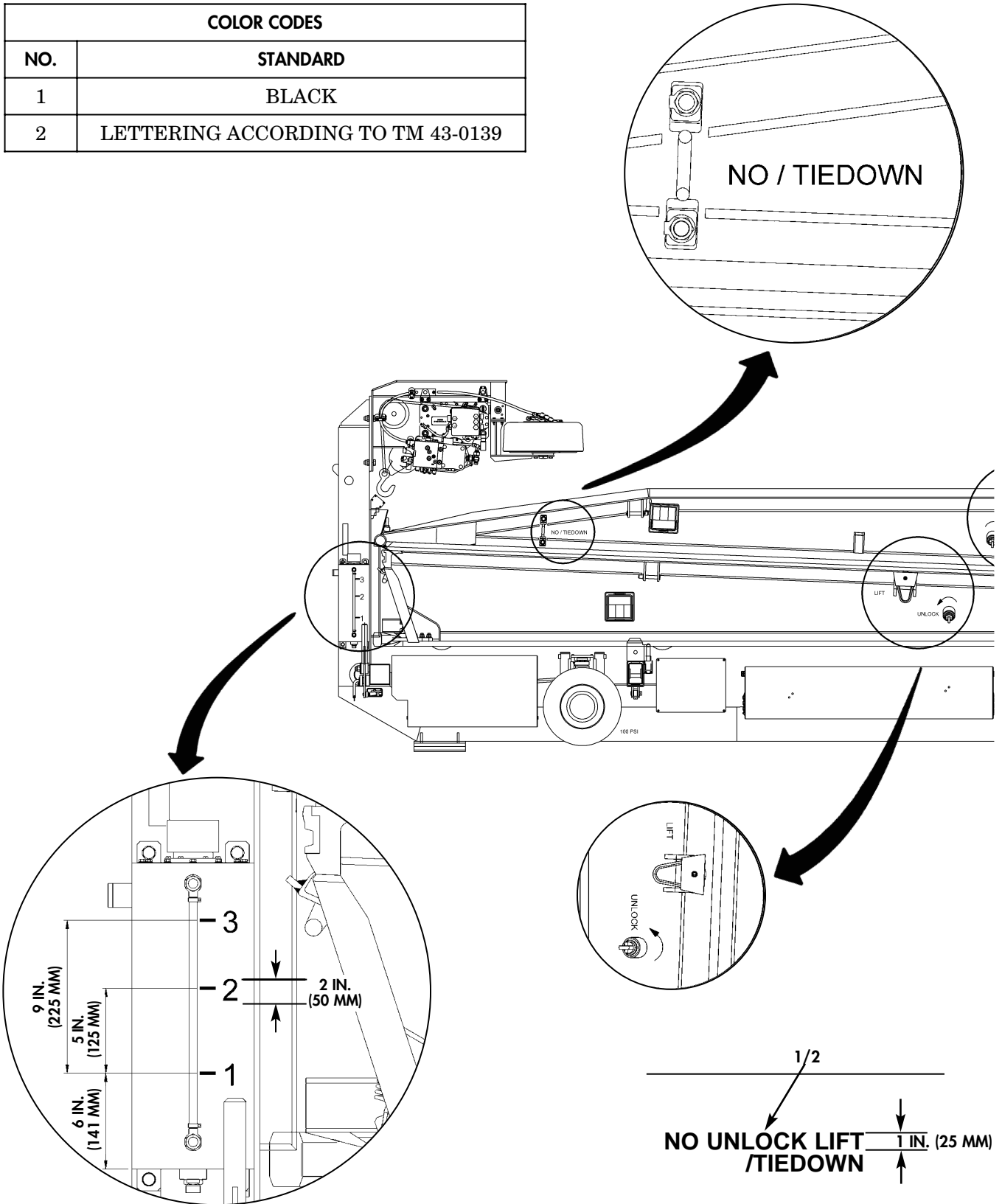
CAMOUFLAGE PATTERNS AND ALIGNMENT MARKS (Contd)

COLOR CODES	
NO.	STANDARD
1	BLACK
2	LETTERING ACCORDING TO TM 43-0139



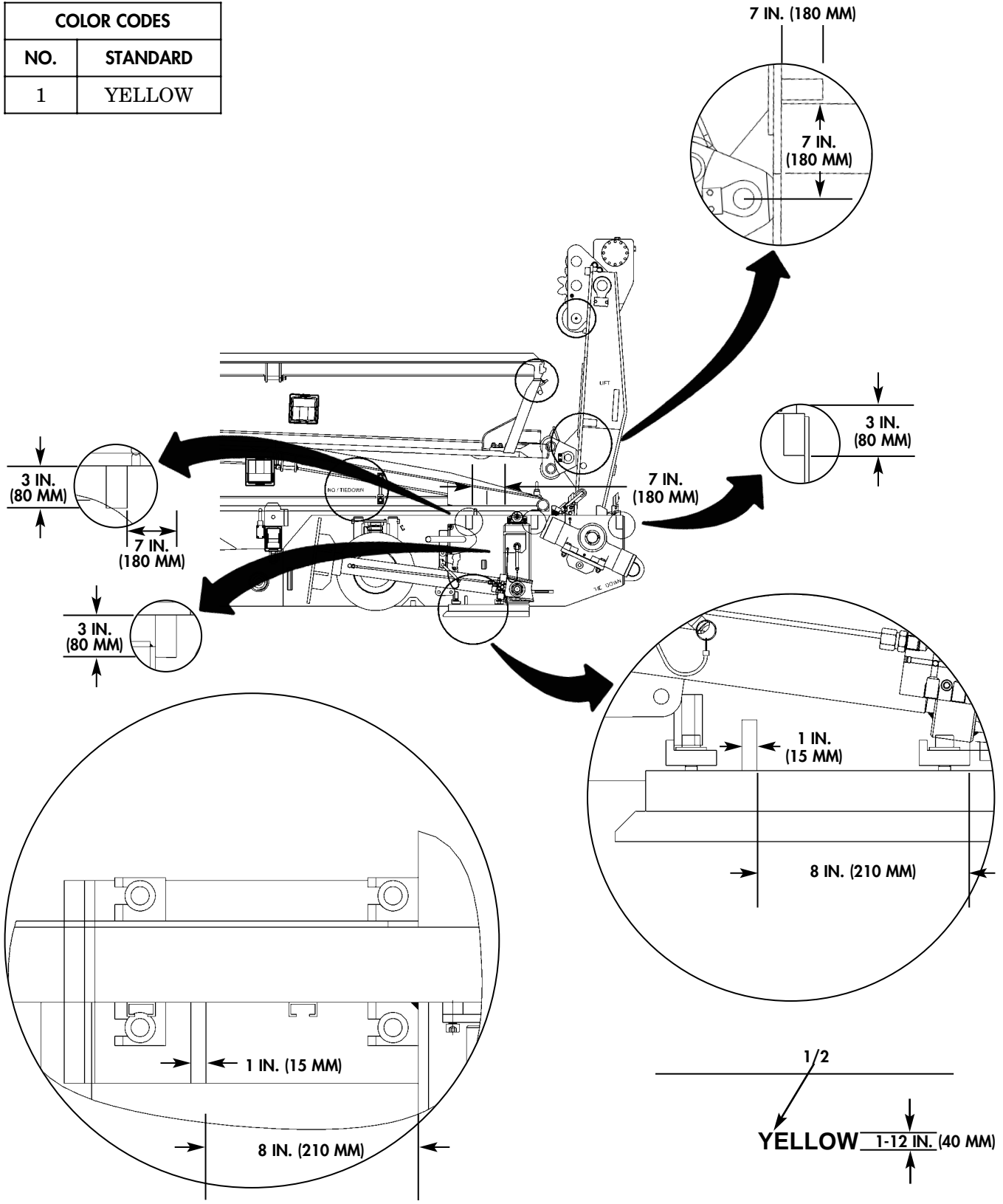
CAMOUFLAGE PATTERNS AND ALIGNMENT MARKS (Contd)

COLOR CODES	
NO.	STANDARD
1	BLACK
2	LETTERING ACCORDING TO TM 43-0139



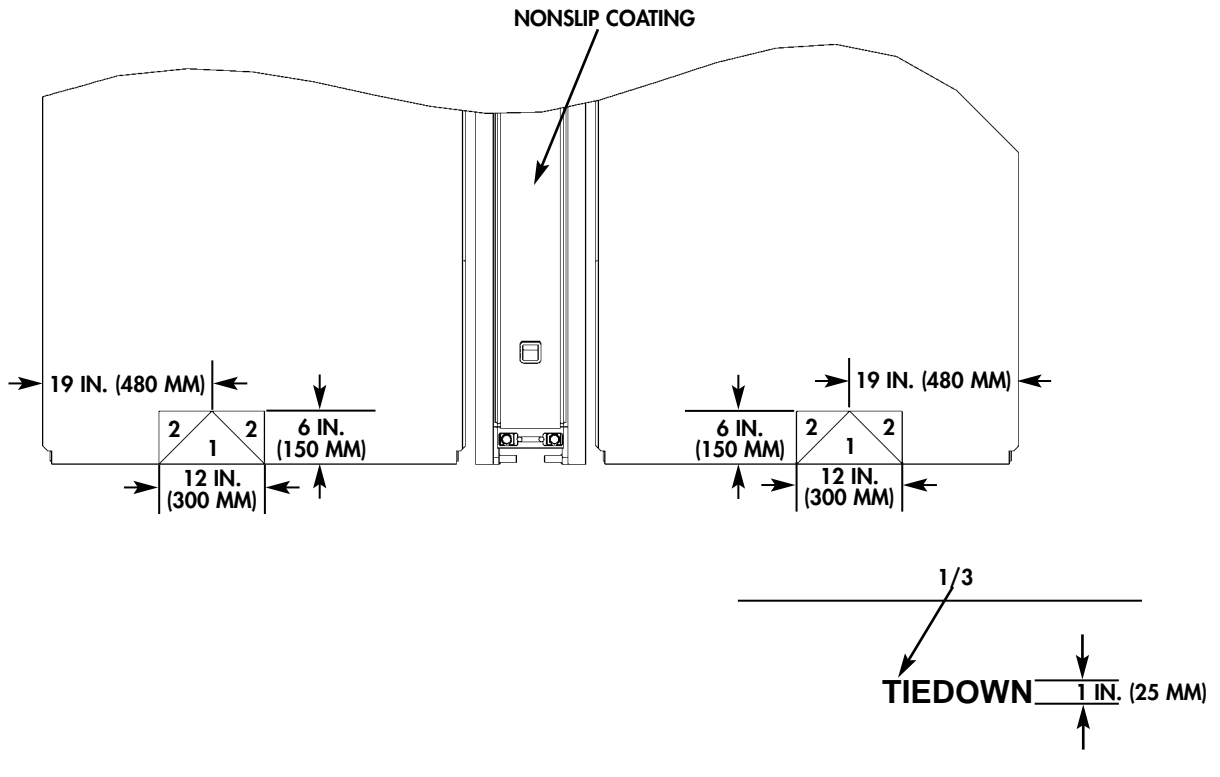
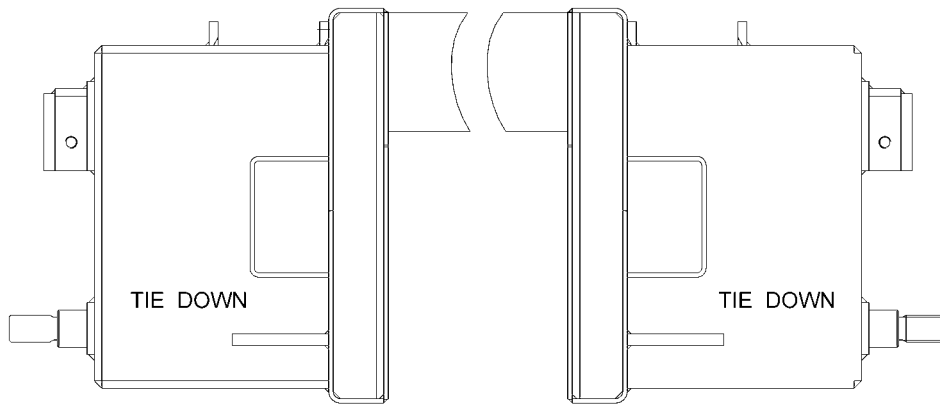
CAMOUFLAGE PATTERNS AND ALIGNMENT MARKS (Contd)

COLOR CODES	
NO.	STANDARD
1	YELLOW

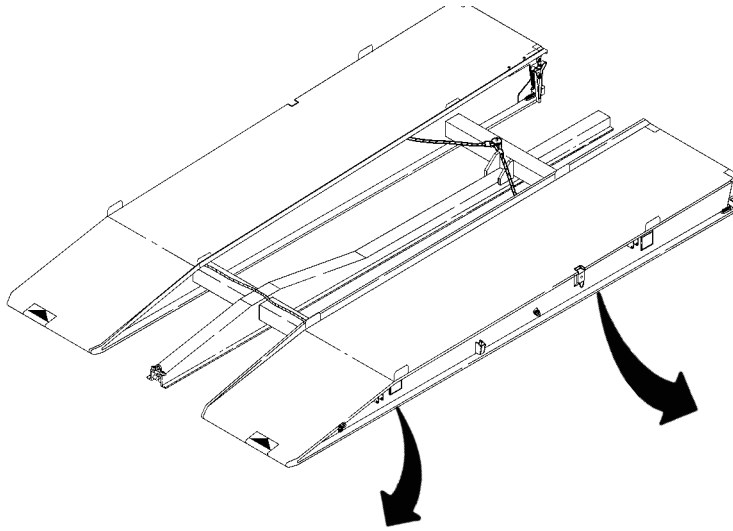


CAMOUFLAGE PATTERNS AND ALIGNMENT MARKS (Contd)

COLOR CODES	
NO.	STANDARD
1	BLACK
2	LETTERING ACCORDING TO TM 43-0139
3	RED
	NONSLIP COATING REFER TO WP 0119 00

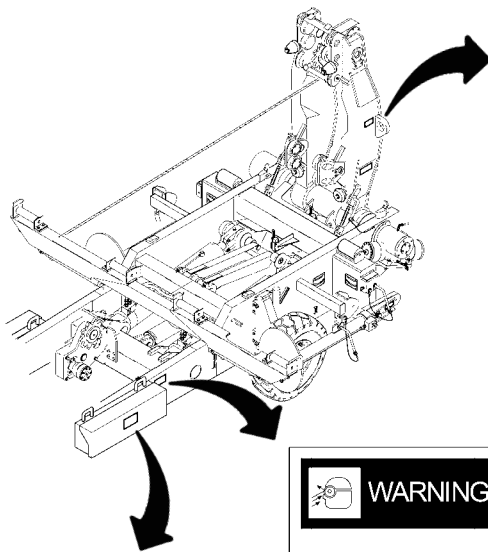


CAMOUFLAGE PATTERNS AND ALIGNMENT MARKS (Contd)



 **WARNING**
GROUND HELICOPTER
CONNECTING RING
PRIOR TO CONNECTING

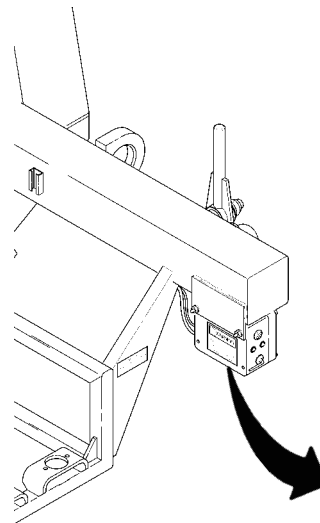
 **WARNING**
BRIDGE EXPANDS




 **WARNING**
STAND CLEAR

 **WARNING**
HIGH PRESSURE LINES

 **WARNING**
WEAR EYE PROTECTION
WHEN USING
SLEDGE HAMMER



 **WARNING**
HIGH INTENSITY NOISE
HEARING PROTECTION
REQUIRED WHEN
ENGINE IS RUNNING

END OF WORK PACKAGE

FIELD MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PALLET HYDRAULIC SYSTEM SCHEMATIC

SCOPE

The REB pallet hydraulic system schematic contains pictorial references designed to assist in isolating components and their hose connections for maintenance repair and/or replacement.

COMPONENT TABLES

The callout numbers referenced in the pallet hydraulic system schematic are used to identify individual components located in the REB pallet hydraulic system configuration.

SCHEMATIC SYMBOLS

Schematic symbols are in accordance with standard symbols for fluid components. A list of component nomenclature is provided and is identified with the schematic symbols by callout number.

MAJOR SYSTEM SCHEMATIC

The following schematic covers the complete REB pallet hydraulic system, from hydraulics and control valves to cylinders and the complete routing of fluid hoses and tubing.

FIELD MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

PALLET ELECTRICAL SYSTEM SCHEMATIC

SCOPE

The REB pallet electrical system schematic contains pictorial references designed to assist in isolating components and their connections for maintenance repair and/or replacement.

COMPONENT TABLES

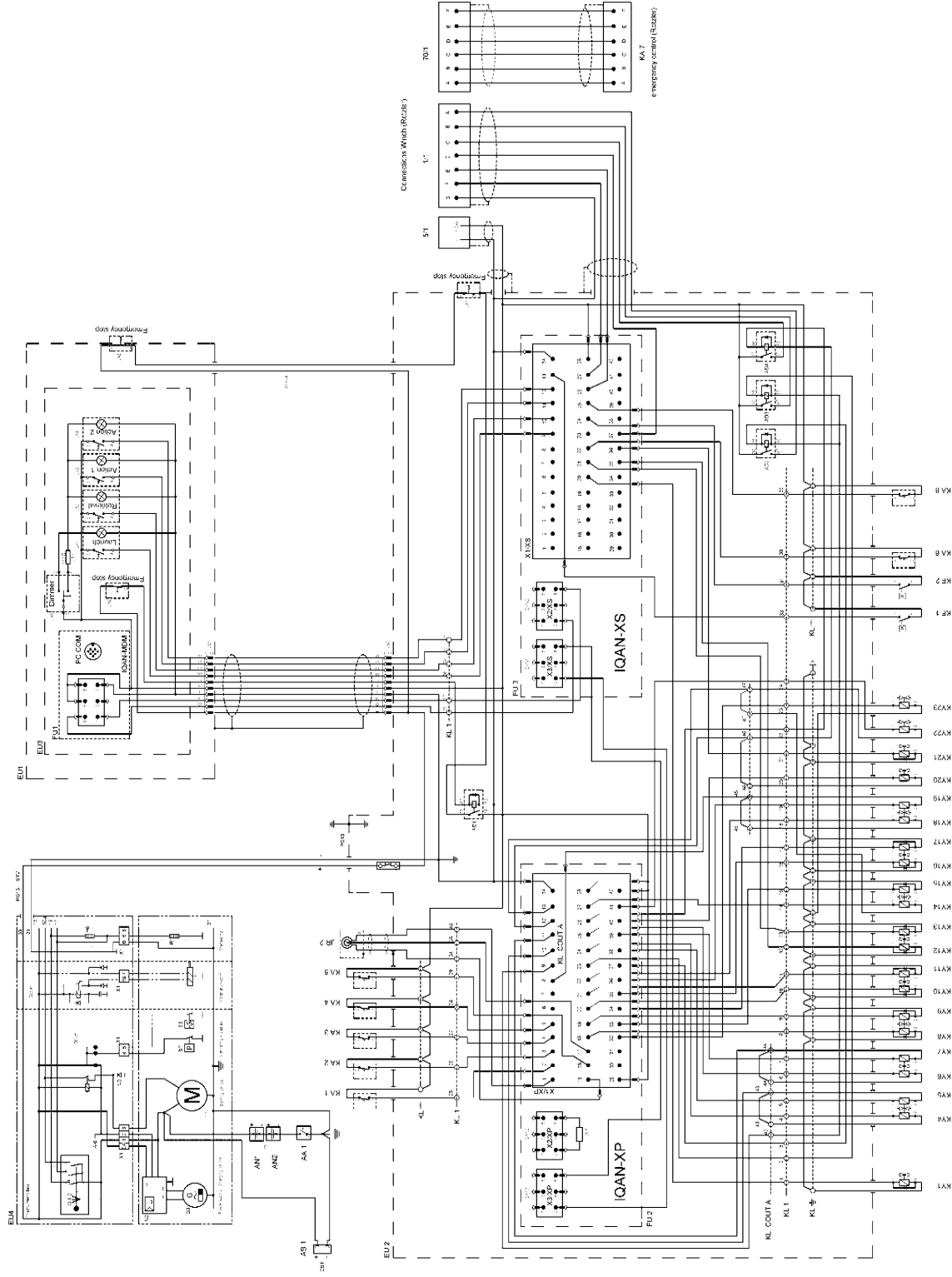
The callout numbers referenced in the pallet electrical system schematic are used to identify individual components located in the REB pallet electrical system configuration.

SCHEMATIC SYMBOLS

Schematic symbols are in accordance with standard symbols for electrical components. A list of component nomenclature is provided and is identified with the schematic symbols by callout number.

MAJOR SYSTEM SCHEMATIC

The following schematic covers the complete REB pallet electrical system, from electrical control box, control valves, limit switches, remote control unit, and auxiliary engine electrical system and the complete routing of electrical wiring.



FIELD MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

WINCH CONTROL BLOCK HYDRAULIC SCHEMATIC

SCOPE

The REB winch control block hydraulic schematic contains pictorial references designed to assist in isolating components and their hose connections for maintenance repair and/or replacement.

COMPONENT TABLES

The callout numbers referenced in the winch control block hydraulic schematic are used to identify individual components located in the REB winch control block hydraulic configuration.

SCHEMATIC SYMBOLS

Schematic symbols are in accordance with standard symbols for fluid components. A list of component nomenclature is provided and is identified with the schematic symbols by callout number.

MAJOR SYSTEM SCHEMATIC

The following schematic covers the complete REB winch control block hydraulic, from hydraulics and control valves to cylinders and the complete routing of fluid hoses and tubing.

FIELD MAINTENANCE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

WINCH ELECTRONIC BOX ELECTRICAL SCHEMATIC

SCOPE

The REB winch electronic box electrical schematic contains pictorial references designed to assist in isolating components and their connections for maintenance repair and/or replacement.

COMPONENT TABLES

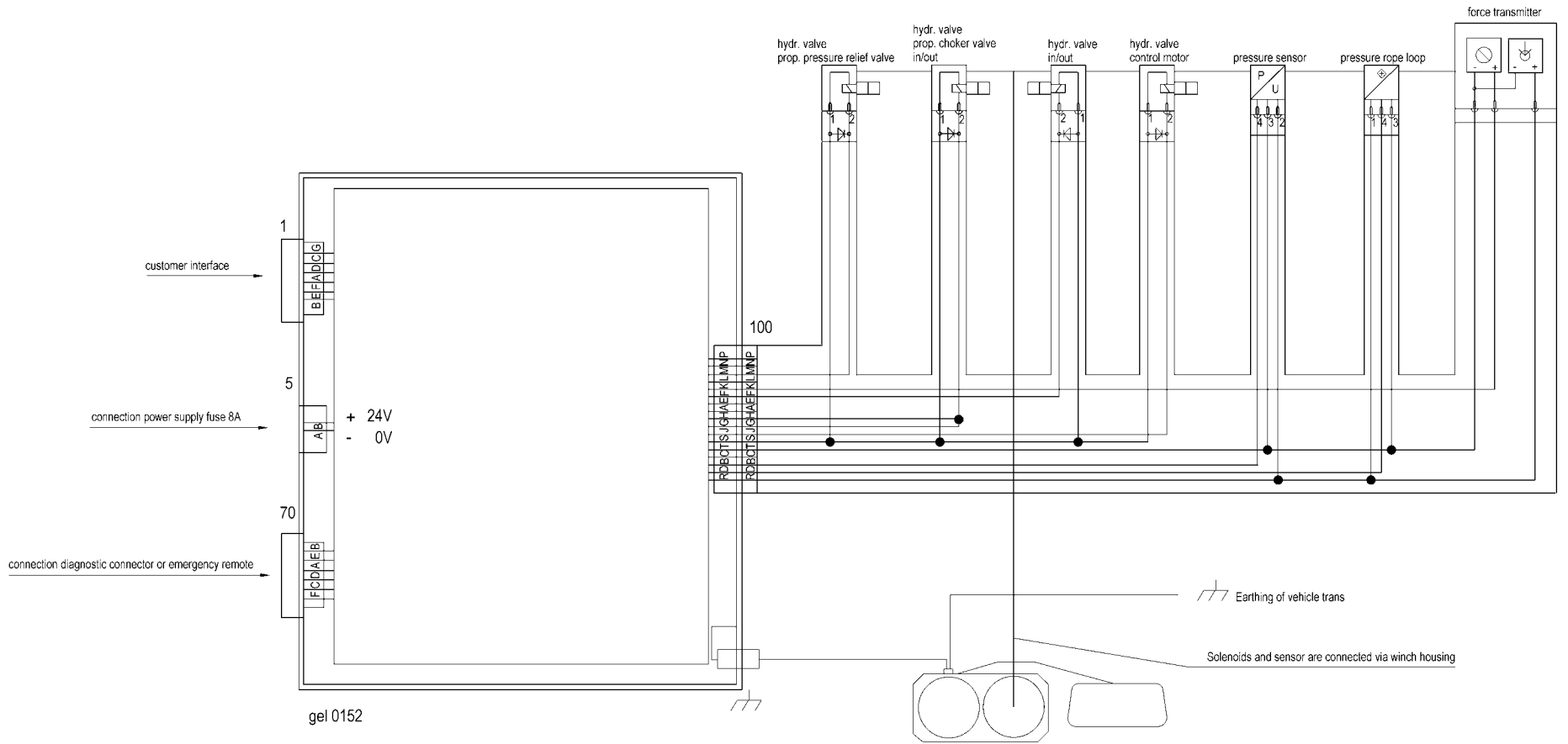
The callout numbers referenced in the winch electronic box electrical schematic are used to identify individual components located in the REB winch electronic box electrical configuration.

SCHEMATIC SYMBOLS

Schematic symbols are in accordance with standard symbols for electrical components. A list of component nomenclature is provided and is identified with the schematic symbols by callout number.

MAJOR SYSTEM SCHEMATIC

The following schematic covers the complete REB winch electronic box electrical, from electrical control box, control valves, limit switches, remote control unit, and auxiliary engine electrical system and the complete routing of electrical wiring.



END OF WORK PACKAGE

CHAPTER 9
SHIPMENT AND LIMITED STORAGE INSTRUCTIONS
RAPIDLY EMPLACED BRIDGE (REB)

General Preparation for Shipment	0125 00-1
Loading and Movement of Equipment	0126 00-1
Limited Storage	0127 00-1

SHIPMENT AND LIMITED STORAGE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

GENERAL PREPARATION FOR SHIPMENT

SCOPE

- a. This work package provides instructions on preserving and protecting REB for shipment.
- b. Protection for REB and accompanying equipment must be sufficient to protect the material against deterioration and physical damage.

CLEANING

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.

Prior to application of preservatives, surfaces must be cleaned to ensure removal of corrosion, soil, grease, or vehicle acid and alkali residues.

- a. Remove all dirt, grease, oil, and other foreign matter from all painted metal surfaces of the REB by scrubbing with cloths soaked in Skysol 100 (Item 4, WP 0206 00). Use warm water for cleaning rubber parts.
- b. Clean exterior surfaces of REB by power washing with water, to ensure removal of all dirt and foreign matter. After cleaning, allow parts to air dry or wipe with clean, dry, cloths (Item 5, WP 0206 00).

PRESERVATION

All critical unpainted metal surfaces must be protected during shipment. Coat all unpainted, exposed, or machined metal surfaces on REB with approved corrosion-preventive compound only (Item 6, WP 0206 00). Equipment protected must be closely watched for signs of corrosion.

GENERAL PREPARATION FOR SHIPMENT (Contd)

PACKING

Pack all Basic Issue Items (BII) and Additional Authorization List (AAL) items to prevent physical damage.

SHIPMENT OF ARMY DOCUMENTS

Prepare all army shipping documents accompanying REB in accordance with DA Pam 750-8.

END OF WORK PACKAGE

SHIPMENT AND LIMITED STORAGE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

LOADING AND MOVEMENT OF EQUIPMENT

SHIPPING DATA PLATE

A shipping data plate showing a silhouette of the side view of the REB, overall dimensions, lifting and tiedown provisions, and center of gravity locations is depicted on the following page.

LOADING AND MOVEMENT

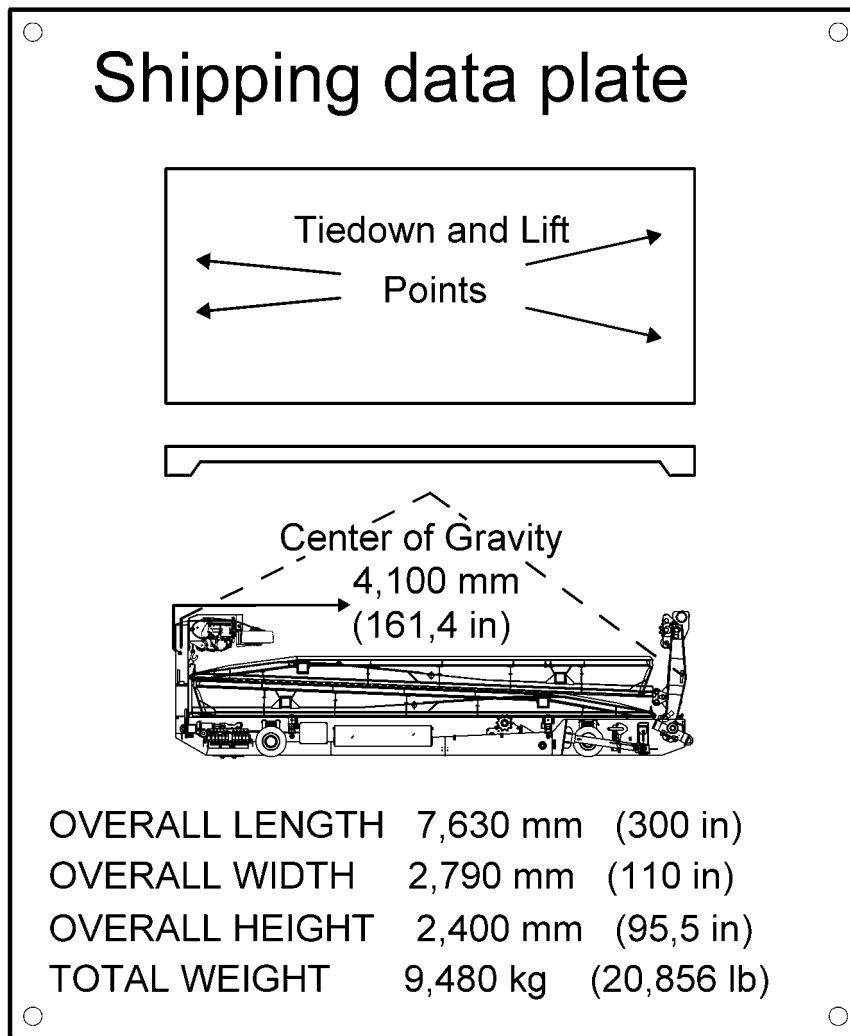
For transportability guidance, in handling and movement of REB, refer to TM 38-400 Joint Service Manual for, Storage and Materials Handling, and TM 55-2200-001-12, Transportability Guidance for Application of Blocking, Bracing, and Tiedown Materials. Refer to TM 5-5420-280-10 or TM 5-5420-234-14&P for information on the Common Bridge Transporter (CBT) and the Bridge Pallet (BP).

SLINGING PROVISIONS

Refer to TM 5-5420-280-10 for pallet lifting instructions by helicopter or crane.

LOADING AND MOVEMENT OF EQUIPMENT (Contd)

CENTER OF GRAVITY LOCATIONS



SHIPMENT AND LIMITED STORAGE INSTRUCTIONS

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

LIMITED STORAGE

SCOPE

Commanders are responsible for ensuring that all REB 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 REB that is beyond the maintenance capability of the unit in administrative storage. For detailed information, refer to AR 750-1.

LIMITED STORAGE INSTRUCTIONS

NOTE

Ensure each bay is drained prior to removal from storage. Water may accumulate from condensation inside bay pontons.

a. Time Limitations. Administrative storage is restricted to a period of 90 days and must not be extended unless the REB is reprocessed in accordance with b. below.

b. Storage Procedure. Perform disassembly only as required to clean and preserve exposed surfaces. Except as otherwise noted, and to the maximum extent consistent with safe storage, place the REB in administrative storage in as nearly a completely assembled condition as practicable. Install and adjust equipment so that the bay(s) may be placed in service and operated with minimum delay.

(1) The REB should be stored on level ground in the most favorable location available, preferably one which affords protection from exposure to the elements and from pilferage. The REB shall withstand indefinite storage in any ambient temperature in the range of -50° F (-45.6° C) to 160° F (71.1° C).

(2) This maintenance consists of inspecting, cleaning, servicing, preserving, lubricating, adjusting, and replacing mandatory repair parts as required.

(3) Provide access to the REB to permit inspection, servicing, and subsequent removal from storage.

INSPECTION IN LIMITED STORAGE

a. Conduct visual inspection of REB in limited storage at least once a month and immediately following hard rains, heavy snowstorms, windstorms, or other severe weather conditions. Perform disassembly as required to fully ascertain the extent of any discovered deterioration or damage. Maintain a record of these inspections for each bay. Attach record to bay so that it is protected from the weather.

b. Perform necessary reprocessing for limited storage when rust or deterioration is found on any unpainted area. Immediately repair damage caused to bay(s) by severe weather conditions. Repair damage to On-Equipment Material (OEM) as necessary. Thoroughly clean, dry, and repaint painted surfaces showing evidence of wear. Refer to Painting Instructions, WP 0119 00.

LIMITED STORAGE (Contd)

REMOVAL FROM LIMITED STORAGE

Material removed from administrative storage will be:

- a. Restored to normal operating conditions.
- b. Repaired as required.
- c. Returned to normal PMCS schedule using last type service completed as a starting point.

STORAGE OF NEW REB

a. If new REB is placed in storage at either contractor or Government facilities, before being put in service, the warranty period shall not start until each such REB is withdrawn from that storage, or until nine months from the date shown on the Materiel Inspection and Receiving Report (DD Form 250); whichever occurs first.

b. If new REB is placed in contractor storage, the contractor shall maintain and exercise such stored REB in accordance with the contractor's approved technical manual. Upon removal from storage, and before delivering the REB to the Government, the contractor shall exercise and perform all PMCS tasks in accordance with the contractor's approved technical manual.

c. If new REB is placed in Government storage, the Government will exercise stored REB in accordance with the contractor's approved technical manual. The Government shall notify the contractor before placing each such REB in storage, and again at the time it is withdrawn. If there are any contractor-caused retrofits that must be applied to the REB, the storage time does not start until those retrofits are completed.

CHAPTER 10

SUPPORTING INFORMATION

RAPIDLY EMPLACED BRIDGE (REB)

References	0128 00-1
Maintenance Allocation Chart (MAC) Introduction	0129 00-1
Maintenance Allocation Chart (MAC)	0130 00-1
Repair Parts and Special Tools List (RPSTL)	0131 00-1
Bridge Half and Data Plates	0132 00-1
Bridge Retaining Cables	0133 00-1
Bridge Quarter	0134 00-1
Bridge Anchoring Eye and Lifting Eye	0135 00-1
Bridge Lower Coupling and Receptacle	0136 00-1
Bridge Support Wheels	0137 00-1
Bridge Upper Coupling Lock Lever	0138 00-1
Bridge Upper Coupling Receptacle	0139 00-1
Bridge Crossforce Couplings Bumper	0140 00-1
Bridge Slide Lock Mechanism	0141 00-1
Launch Beam Lifting Eye, Pin Wheel Drive Bracket, and Drive Pins	0142 00-1
Front Wheel Lifting Cylinder and Related Parts	0143 00-1
Steering Linkage, Manual Levers, Bell Cranks, and Shoring Pads	0144 00-1
Rear Wheel Lifting Cylinder and Related Parts	0145 00-1
Tire and Wheel Assembly	0146 00-1
Wheel Hub	0147 00-1
Supporting Cylinders and Bottom Plate	0148 00-1
Supporting Cylinders, Winch, Strap, and Retaining Pins	0149 00-1
Supporting Rollers and Retaining Pins	0150 00-1
Telescopic Tube Hydraulic Cylinder	0151 00-1
Transport Rollers, Telescopic Tube, and Slide Pins	0152 00-1
Toolboxes and Related Parts	0153 00-1
SPS Control Unit Stowage Box	0154 00-1
RCU Stowage Box, Remote Control, Cable, and Receptacle	0155 00-1
Pallet Wiring Harness	0156 00-1
Limit Switches	0157 00-1
Winch Mounting Brackets, Pulleys, and Related Parts	0158 00-1
Winch Assembly and Related Parts	0159 00-1
Winch Wire Rope Assembly	0160 00-1
Pallet Hydraulic Tubes	0161 00-1
Launch Boom Hydraulic Tubes	0162 00-1
Reservoir Assembly and Related Parts	0163 00-1

CHAPTER 10

SUPPORTING INFORMATION (Contd)

Control Valves and Manifold	0164 00-1
Pressure Relief Valve	0165 00-1
Check Valves	0166 00-1
Flow Dividers	0167 00-1
Hydraulic Filter and Gauge	0168 00-1
Hydraulic System Pre-Filter	0169 00-1
Support Wheel Control Valve	0170 00-1
Pin Wheel Drive Assembly, Rear	0171 00-1
Rear Hydraulic Motor	0172 00-1
Pin Wheel Drive and Motor, Front	0173 00-1
Pin Wheel Drive Gear	0174 00-1
Stop Cylinder	0175 00-1
Lower Support Roller Assembly	0176 00-1
Upper Roller Block Assembly	0177 00-1
Launch Boom Cable Guide Roller	0178 00-1
Bearing Shaft Manifold	0179 00-1
Launch Boom Swivel Drive and Remote Control Lever Release	0180 00-1
Launch Boom and Locks	0181 00-1
Lower Support Boom and Pallet Holddown	0182 00-1
Supporting Boom Roller	0183 00-1
Secondary Support Boom Cylinder	0184 00-1
Secondary Support Boom	0185 00-1
Fuel Pump	0186 00-1
Fuel Tank and Filters	0187 00-1
Hydraulic Pump Assembly	0188 00-1
Starter Motor	0189 00-1
Alternator and Related Parts	0190 00-1
Oil Filter	0191 00-1
Oil Bath Air Cleaner	0192 00-1
Exhaust System	0193 00-1
Fuel Injection Pump	0194 00-1
Fuel Injector	0195 00-1
Valve Cover and Related Parts	0196 00-1
Battery Box, Batteries, and Cables	0197 00-1
Engine Throttle and Shutoff Lever	0198 00-1
Main Power Switch and Slave Receptacle	0199 00-1
Electrical Control Box, Engine	0200 00-1
Engine Assembly	0201 00-1
Special Purpose Kits	0204 00-1
National Stock Number Index	0202 00-1
Part Number Index	0203 00-1
Expendable and Durable Items List	0205 00-1
Tool Identification List	0206 00-1

SUPPORTING INFORMATION

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

REFERENCES

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 750-8 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 750-8, The Army Maintenance Management System (TAMMS), for instructions on the use of maintenance forms pertaining to this manual.

DA Form 2028	Recommended Changes to Publications and Blank Forms
DA Form 2402	Exchange Tag
DA Form 2404	Equipment Inspection and Maintenance Worksheet
DA Form 2408-9	Equipment Control Record
DA Form 2407	Maintenance Request
DD Form 250	Material Inspection and Receiving Report
DD Form 314	Preventive Maintenance Schedule and Report Card
SF 361	Transportation Discrepancy Report and Regulation
SF 364	Report of Discrepancy (ROD)
SF 368	Product Quality Deficiency Report (Category 11)

FIELD MANUALS

AR 750-1	Army Materiel Maintenance Policy
FM 3-11.4	Nuclear, Biological, and Chemical (NBC) Protection
FM 3-11.5	Nuclear, Biological, and Chemical (NBC) Decontamination
FM 20-3	Camouflage Pattern Painting
FM 5-34	Engineer Field Data

REFERENCES (Contd)**TECHNICAL MANUALS**

TM 9-2815-250-24&P	Unit, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tool List), For Engine Assembly, Diesel Hatz 2G 40
TM 5-5420-234-14&P	Operator's Unit, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List) Truck, Cargo, 10-Ton, 8x8, Common Bridge Transporter
TM 5-5420-280-10	Operator's Manual, Rapidly Emplaced Bridge (REB)
TC 9-237	Welding Theory and Application
TM 9-214	Inspection, Care, and Maintenance of Antifriction Bearing Subscription Form
TM 9-247	Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel and Related Materiels Including Chemicals
TC 9-510	Metal Body Repair and Related Operations
TM 43-0139	Painting Instructions for Field Use
TM 43-1043	Equipment Improvement Report and Maintenance Summary
TM 55-2200-001-12	Transportability Guidance for Application of Blockings
TM 38-400	Joint Service Manual for 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 Us

TECHNICAL BULLETINS

TB 43-0142	Safety Inspection and Testing of Lifting Devices
TB 43-0209	Color, Marking, and Camouflage Painting of Military Vehicles, Construction Equipment and Materials Handling Equipment
TB 5-5420-234-15	Warrant Program for Common Bridge Transporter (CBT)

OTHER PUBLICATIONS

CTA 50-970	Expendable/Durable Items (except Medical, Class V, Repair Parts, and Heraldic Items)
ASME Y14.38	Military Standard Abbreviations for Use on Drawings and in Specifications, Standards and Technical Documents

SUPPORTING INFORMATION

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION

THE ARMY MAINTENANCE SYSTEM (AMS)

This introduction provides a general explanation of all maintenance and repair functions authorized at the two maintenance levels under the Two-Level Maintenance System concept.

The Maintenance Allocation Chart (MAC) (WP 0130 00) designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component shall be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

Field Level (Tactical)-C (operator/crew), O (unit) maintenance, and F (Direct Support).

Field Maintenance is on-system maintenance and is mainly replacement of defective parts and preventative maintenance. Field maintenance returns repaired equipment to operation. It covers crew, unit, and selected DS maintenance tasks. Some "off-system" maintenance can be done at field level if, based on task analysis, it is simple to complete or it is critical to mission readiness.

Sustainment Level (Sustainment)-H (General Support) and D (Depot).

Sustainment is off-system maintenance and is mainly repair of defective or worn out equipment/parts. Sustainment maintenance returns repaired equipment/parts to the supply system. It covers selected DS tasks, GS, and Depot maintenance.

The tools and test equipment requirements (immediately following the MAC) list the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks (immediately following the tools and test equipment requirements) contain supplemental instructions and explanatory notes for a particular maintenance function.

MAINTENANCE FUNCTIONS

Maintenance functions are limited to and defined as follows:

- 1. Inspect.** To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel). This includes scheduled inspection and gagings and evaluation of cannon tubes.
- 2. Test.** To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.
- 3. Service.** Operations required periodically to keep an item in proper operating condition; i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases. This includes scheduled exercising and purging of recoil mechanisms.
- 4. Adjust.** To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.
- 5. Align.** To adjust specified variable elements of an item to bring about optimum or desired performance.

MAINTENANCE FUNCTIONS (Contd)

6. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

7. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

8. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and assigned maintenance level is shown as the third position code of the Source, Maintenance and Recoverability (SMR) code.

NOTE

The following definitions are applicable to the repair maintenance function:

Services — Inspect, test, service, adjust, align, calibrate, and/or replace.

Fault location/troubleshooting — The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or Unit Under Test (UUT).

Disassembly/assembly — The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

Actions — Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

9. Repair. The application of maintenance services, including fault location/troubleshooting, removal/installation, disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

10. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

11. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles) considered in classifying Army equipment/components.

EXPLANATION OF COLUMNS IN THE MAC

Column (1) – Group Number. Column (1) lists Functional Group Code (FGC) numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).

Column (2) – Component/ Assembly. Column (2) contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

Column (3) – Maintenance Function. Column (3) lists the functions to be performed on the item listed in column (2). (For detailed explanation of these functions refer to Maintenance Functions outlined above.)

EXPLANATION OF COLUMNS IN THE MAC (Contd)

Column (4) – Maintenance Level. Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicating work-time required (expressed as man-hours in whole hours or decimals) in the appropriate subcolumn. This work-time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are shown for each level. The worktime figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC.

Field:

C Operator or crew maintenance
O Unit maintenance
F Direct support maintenance

Sustainment

H General support maintenance
D Depot maintenance

NOTE

The “L” maintenance level is not included in Column 4 of the MAC. Functions to this level of maintenance are identified by a work time figure in the “H” column of Column 4, and an associated reference code is used in the REMARKS Column 6. This code is keyed to the remarks and the SRA complete repair application is explained there.

Column (5) – Tools and Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools), common Test, Measurement and Diagnostic Equipment (TMDE), and special tools, special TMDE, and special support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.

Column (6) – Remarks Code. When applicable this column contains a letter code, in alphabetic order, which is keyed to the remarks table entries.

EXPLANATION OF COLUMNS IN THE TOOLS, SPECIAL TOOLS, AND TEST EQUIPMENT IDENTIFICATION LIST

Column (1) – Tool or Test Equipment Reference Code. The tool and test equipment reference code correlates with a code used in column (5) of the MAC.

Column (2) – Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

Column (3) – Nomenclature. Name or identification of the tool or test equipment.

Column (4) – National Stock Number (NSN). The NSN of the tool or test equipment.

Column (5) – Tool Number. The manufacturer’s part number, model number, or type number.

EXPLANATION OF COLUMNS IN THE REMARKS

Column (1) – Remarks Code. The code recorded in column (6) of the MAC.

Column (2) – Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC.

SUPPORTING INFORMATION

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

MAINTENANCE ALLOCATION CHART (MAC)

Table 1. Maintenance Allocation Chart.

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF. CODE	(6) REMARKS
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
01	Bridge								
0101	Bridge Half	Inspect Service Replace Repair Overhaul	0.2 0.2 2.2 1.5 2.0				4, 5, 6	C A L	
0102	Bridge Retaining Cables	Inspect Replace	0.1 0.5				1		
0103	Bridge Quarter	Inspect Service Replace Repair Overhaul	0.1 0.1 3.0 1.5 2.5				4 & 5	C A L	
0104	Bridge Anchoring Eye and Swivel Block	Inspect Replace	0.1 0.1				1 or 4		
0105	Bridge Lower Coupling and Receptacle	Inspect Service Replace	0.1 0.1 0.1	0.5			1 or 4		
0106	Bridge Support Wheel Hub and Tire, Bearings, Axle Bracket and Spring Support Assembly	Inspect Service Replace	0.1 0.1 0.5				4		
0107	Bridge Upper Coupling Lock Lever and Receptacle	Inspect Service Adjust Replace	0.1 0.1 0.2 2.5				4		
0108	Bridge Cross Force Couplings	Inspect Replace Service	0.1 0.1 0.3				4		
0109	Bridge Slide Lock Mechanism	Inspect Service Adjust Replace	0.1 0.1 0.1 0.5				4		
0110	Launch Beam Lifting Eye and Lifting Eye Swivel Block	Inspect Replace	0.1 0.1				1 or 4		
0111	Launch Beam Pin Wheel Drive Bracket and Drive Pins	Inspect Service Replace	0.1 0.1 0.5				1 or 4		

Table 1. Maintenance Allocation Chart (Contd).

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF. CODE	(6) REMARKS
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
02	Pallet								
0201	Wheel Lifting Cylinder	Inspect Replace Repair Overhaul	0.1	0.5	1.5	2.0	1 or 4	L	
0201	Front Wheel Assembly	Inspect Service Replace	0.1 0.1	1.1			1 or 4		
0202.1	Skid Support Plate	Inspect Replace	0.1	0.1			1 or 4		
0202	Steering Linkage	Inspect Service Replace	0.1	0.1 0.5			4 1 or 4		
0203	Rear Wheel Assembly	Inspect Service Replace Repair	0.1 0.1	0.3	1.5		4 1 or 4		
0204	Tire, Wheel, and Hubs	Inspect Service Replace Repair	0.1 0.1	0.3	1.5		4 & 6		
0206	Supporting Cylinders	Inspect Adjust Replace Repair Overhaul	0.1	0.1 0.3	1.5	2.0	1 or 4	L	
0207	Supporting Cylinders Bottom Plate	Inspect Replace Repair	0.1	0.2	0.5		4		
0207	Supporting Cylinders Winch, Clutch and Strap	Inspect Service Replace Repair	0.1 0.1	0.3	0.5		1 or 4		
0208	Retaining Pins	Inspect Replace Service	0.1	0.2			1 or 4		
0208	Transport Roller	Inspect Replace Repair	0.1	0.1	0.5		1 or 4		
0209	Telescopic Tube Hydraulic Cylinder	Inspect Replace Repair Overhaul	0.1	0.2	1.0	2.0	1 or 4	L	

Table 1. Maintenance Allocation Chart (Contd).

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF. CODE	(6) REMARKS
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0210	Telescopic Tube and Slide Pins	Inspect Service Replace	0.1 0.1	0.2				1 or 4	
0211	Tool Box	Inspect Replace Repair	0.1	0.2	0.5			1 or 4	A
0212	Electrical Control Box	Inspect Replace	0.1	2.5				1 or 4	
0213	RCU Stowage Box	Inspect Replace	0.1	0.5				1 or 4	
0213.1	Anchorage Box	Inspect Replace Repair	0.1	0.1	0.5			1 or 4	A
0214	Pallet Wiring Harnesses	Inspect Test Replace	0.1	0.8 4.5				4 4	
0215	Electrical Control Box Stowage Box	Inspect Replace	0.1	2.5				1 or 4	
0217	Limit Switches	Inspect Service Test Adjust Replace	0.1 0.1	0.1 0.2 0.2				4 4 4	
0218	Control Valve Solenoid Circuit Breakers	Inspect Test Replace		0.2 0.1 0.3				4 4	
0218	Winch								
0219	Solenoids	Inspect Test Replace	0.1	0.1 0.2				4 4	
0219	Winch Wire Rope and Hook Clip	Inspect Service Replace	0.1 0.1	0.2				1 or 4	B
	Winch Guide Rollers and Rope Track	Inspect Service Replace	0.1 0.1	0.5				1 or 4	
	Winch Stowage Drum Rope Inlet Cover and Guide Rollers	Inspect Service Replace	0.1 0.1	0.3				1 or 4	
	Winch Mounting Bracket Pulleys	Inspect Service	0.1 0.1						

Table 1. Maintenance Allocation Chart (Contd).

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF. CODE	(6) REMARKS		
			FIELD		SUSTAINMENT						
			UNIT		DS	GS	DEPOT				
			C	O	F	H	D				
0221	Winch Stowage Drum, Mounting Bracket, and Axle Unit	Replace		0.2					1 or 4	1 or 4 & 3	
		Inspect	0.1								
		Service	0.1								
	Winch Control Valves and Solenoids	Replace		0.3							1 or 4
		Inspect	0.1								
	Winch Control Block and Adapter Plate	Replace		0.5							1 or 4
		Inspect	0.1								
	Winch Control Block and Adapter Plate	Replace		1.0							1 or 4
		Inspect	0.1								
		Service			0.1						
	Winch Rope Loop Sensor and Force Transmitter	Adjust				0.3					
		Replace				0.5					
		Inspect	0.1								
	Winch Electrical Harness, Control Cable, and Power Supply Cable	Replace		0.2							1 or 4
Inspect		0.2		1.0							
Winch Emergency Switch and Bracket	Replace		0.1						1 or 4		
	Inspect	0.1		0.1							
Winch Electronic Box	Replace		0.1						1 or 4		
	Inspect	0.1		0.5							
RCU Cable Plug and Receptacle	Replace		0.1						4		
	Test			0.1					4		
	Replace			0.2							
0222	Hydraulic System										
0223	Lines and Hoses	Replace		0.2					1 or 4		
		Inspect	0.2		5.0						
0224	Control Valves and Reservoir Assembly	Replace		0.1					4		
		Service	0.1		2.5						
		Inspect	0.1		0.6				1 or 4		
0224	Winch Hydraulic Motor	Replace		0.1					1 or 4		
		Overhaul			1.0		3.0				
		Inspect	0.1						L		
0225	Winch Hydraulic Hoses and Tubing	Replace		0.1					1 or 4		
0225	Control Valves and Manifold	Replace		0.1					4		
		Inspect	0.1		2.0						

Table 1. Maintenance Allocation Chart (Contd).

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF. CODE	(6) REMARKS
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0226	Winch Assembly	Inspect Service Replace Repair Overhaul	0.1 0.1 2.0 	 3.0 	 4.0 	 	1 or 4	L	
0227	Pressure Relief Valve	Inspect Replace	0.1 	 0.7 	 	 	2 & 4		
0228	Check Valves	Inspect Replace	0.1 	 0.4 	 	 	2 & 4		
0229	Flow Dividers	Inspect Replace	0.1 	 0.4 	 	 	2 & 4		
0230	Filter and Gauge Assembly	Inspect Replace	0.1 	 0.2 	 	 	 	1 or 4	
	Pre-Filter Assembly	Inspect Service Replace	0.1 0.1 	 0.2 0.3 	 	 	1 or 4		
0231	Control Valve	Inspect Test Replace	0.1 0.1 	 0.1 0.3 	 	 	2 2 & 4		
0232	Support Wheel Control Valve	Inspect Replace	0.1 	 0.2 	 	 	1 or 4		
03	Launcher								
0301	Pin Wheel Drive Assembly	Inspect Service Replace Repair Overhaul	0.1 0.1 1.0 	 2.0 	 3.0 	 	1 or 4	L	
0302	Rear Pin Wheel Drive Hydraulic Motor	Inspect Replace Overhaul	0.1 	 1.2 	 	 3.0 	1 or 4	L	
0303	Forward Pin Wheel Drive Hydraulic Motor	Inspect Replace Overhaul	0.1 	 0.3 	 	 3.0 	1 or 4	L	
0304	Pin Wheel Drive Gear Front or Rear	Inspect Service Replace	0.1 0.1 	 0.2 	 	 	1 or 4		
	Gear Box Assembly	Inspect Service Replace Repair Overhaul	0.1 0.1 1.5 	 0.1 1.5 	 2.0 	 3.0 	4	L	

Table 1. Maintenance Allocation Chart (Contd).

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF. CODE	(6) REMARKS
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0305	Rear Pin Wheel Drive Stop Cylinder	Inspect Adjust Replace Overhaul	0.1	0.5 1.0			2.0	1 or 4	L
0307	Lower Support Rollers Assembly	Inspect Service Replace Repair Overhaul	0.1	0.1 1.5		2.0	4.0	4	A L
	Launch Boom Roller Guides	Inspect Service Replace Repair	0.1 0.1	1.0		2.0		1 or 4	A
	Lower Support Rollers	Inspect Service Replace	0.1 0.1	0.2				4	
0309	Upper Roller Block Assembly	Inspect Service Replace Repair	0.1	0.1 0.3		1.5		4	A
0310	Launch Boom Cable Guide Roller	Inspect Service Replace	0.1 0.1	0.2				4	
0311	Bearing Shaft Manifold	Inspect Replace	0.1	1.2				1 or 4	
	Potentiometer	Inspect Adjust Replace		0.2 0.5 1.1				1 or 4	
0312	Launch Boom Swivel Drive	Inspect Replace Repair	0.1	1.1		2.0		1 or 4	
0312.1	Bridge Lock Lever Release	Inspect Service Replace Repair	0.1 0.1	0.5		1.5		1 or 4	A
0313	Launch Boom	Inspect Service Replace Repair Overhaul	0.1	0.1 1.0		1.5	4.0	4	L
0314	Lower Support Boom Cylinder	Inspect Service Replace Repair Overhaul	0.1 0.1	1.5		2.0	4.0	1 or 4	L

Table 1. Maintenance Allocation Chart (Contd).

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF. CODE	(6) REMARKS
			FIELD		SUSTAINMENT				
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0315	Lower Support Boom	Inspect Service Replace Repair	0.1	0.1 5.0			8.0	1 or 4	L
0315.1	Hold-Down Bars	Inspect Service Replace Repair	0.1 0.1	0.1	1.0			1 or 4	A
0316	Supporting Boom Roller	Inspect Service Replace	0.1 0.1	0.3				1 or 4	
0317	Support Boom Cylinder	Inspect Service Replace Repair Overhaul	0.1 0.1	1.0	2.0		4.0	1 or 4	L
0318	Support Boom	Inspect Service Replace Repair	0.1 0.1	1.5	2.5			1 or 4	A
04	Engine								
0401	Fuel Pump	Inspect Replace		0.1 0.2				1 or 4	
0402	Fuel Tank Filter	Inspect Service Replace		0.1 0.2 0.1				1 or 4	
0402	Fuel Tank	Inspect Replace Repair	0.1	0.2	0.5			1 or 4	A
0403	Hydraulic Pump Assembly	Inspect Replace Repair Overhaul	0.1	0.3	0.5		2.5	1 or 4	L
0404	Starter Motor	Inspect Replace Repair Overhaul	0.1	0.2	1.5		2.5	1 or 4	L
0405	Alternator	Inspect Replace Repair		0.1 0.1	1.5			1 or 4	
0406	Oil Filter	Inspect Replace	0.1	0.1				1 or 4	

Table 1. Maintenance Allocation Chart (Contd).

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF. CODE	(6) REMARKS
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0407	Oilbath Air Cleaner	Inspect Service Replace	0.1	0.1 0.2				1 or 4	
0408	Exhaust System	Inspect Replace	0.1	0.2				1 or 4	
0409	Fuel Injection Pump	Inspect Replace Overhaul		0.1 0.2			3.0	1 or 4	L
0410	Fuel Injector	Inspect Adjust Replace Overhaul		0.1 0.2 0.3			2.0	1 or 4 1 or 4	L
0411	Valve Clearance	Adjust		0.3					
0412	Battery and Cables	Inspect Replace Repair	0.1	0.1	0.5			1 or 4	
0412	Battery Box	Inspect Replace Repair	0.1	0.3	0.5			1 or 4	A
0413	Fuel Shut-Off Lever	Inspect Replace	0.1	0.1				1 or 4	
0415	Engine Control Box	Inspect Replace Repair	0.1	1.0	2.0			1 or 4	
0414	Pallet Main Power Switch	Inspect Replace	0.1	0.6				1 or 4	
	NATO Slave Receptacle	Inspect Replace	0.1	0.6				1 or 4	
0416	Engine Assembly	Inspect Replace Repair Overhaul	0.1	0.8	0.3		8.0	4	L

Table 2. Tools, Special Tools, and Test Equipment Identification List.

(1) TOOL OR TEST EQUIPMENT REF CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/STOCK NUMBER (NSN)	(5) TOOL NUMBER
1	F	Tool kit, general mechanic's: automotive	5180-00-177-7033	5180-95-N26
2	F	Fixture, vehicular maintenance hydraulic test set	4910-01-378-8863	3SK912
3	F	Insulation, sheet, electrical	5970-12-360-0817	230595-4000
4	F	Forward Repair System (FRS)	4940-01-463-7940	
5	F	Sling, endless	3940-01-483-8575	TUFKS1000 EEX22FT ONM47

Table 3. Remarks.

(1) REMARKS CODE	(2) REMARKS
A	Repair by straightening and spot welding cracks.
B	Replace entire wire rope if kinked or frayed. Use only specified wire rope.
C	Use only specified cable.
L	Contract Support Facility

SUPPORTING INFORMATION

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

SCOPE

This RPSTL lists and authorizes spare and repair parts; special tools; test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of field maintenance of the Rapidly Emplaced Bridge (REB). It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the source, maintenance, and recoverability (SMR) codes.

GENERAL

In addition to the Introduction Work Package, this Repair Parts and Special Tools List is divided into the following work packages:

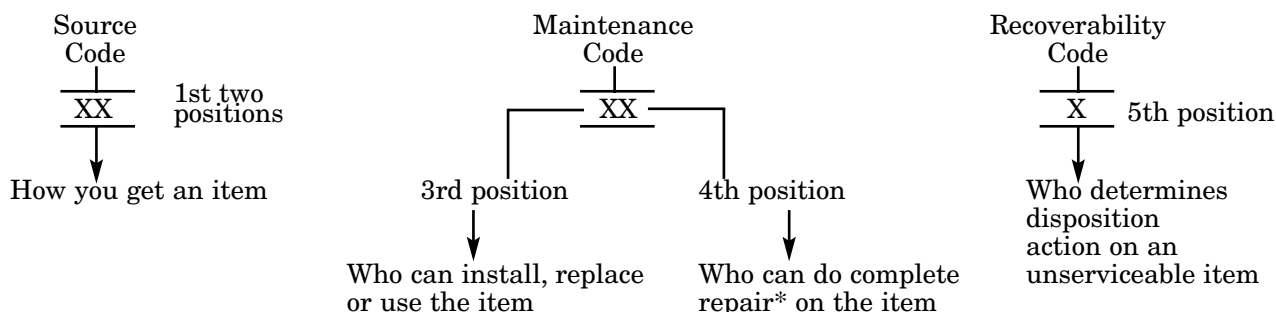
- 1. Repair Parts List Work Packages.** Work packages list of spare and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Sending units, brackets, filters, and bolts are listed with the component they mount on. Bulk materials are listed by item name at the end of the work package. Repair parts kits are listed separately in their own functional group and work package. Repair parts for reparable special tools are also listed in a separate work package. Items listed are shown on the associated illustration(s)/figure(s).
- 2. Special Tools List Work Packages.** Work packages containing lists of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in DESCRIPTION AND USABLE ON CODE column). Tools that are components of common tool sets and/or Class VII are not listed.
- 3. Cross-Reference Indexes Work Packages.** There are two cross-reference indexes work packages in this RPSTL: The National Stock Number (NSN) Index work package and the Part Number (P/N) Index work package. The National Stock Number Index work package refers you to the figure and item number appearance. The Part Number Index work package list all part numbers in alphanumeric sequence and refers you to the figure and item number appearance.

REPAIR PARTS AND SPECIAL TOOLS LIST (Contd)

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES

Item No. (Column (1)). Indicates the number used to identify items called out in the illustration.

SMR Code (Column (2)). The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:



* Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the Repair function in a use/user environment in order to restore serviceability to a failed item.

Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follows:

Code	Explanation
PA	Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3rd position of the SMR code. ** NOTE: Items coded PC are subject to deterioration.
PB	
PC**	
PD	
PE	
PF	
PG	
KD	
KF	
KB	
MO- (Made at Unit Level)	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.
MF- (Made at DS Level)	
MH- (Made at Specialized Repair Act (SRA))	
MD- (Made at Depot)	
AO- (Assembled by Unit Level)	
AF- (Assembled by DS Level)	
AH- (Assembled by GS Level)	
AL- (Assembled by SRA)	
AD- (Assembled by Depot)	
XA-	
XB-	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3rd position code of the SMR code authorized you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.
XC-	
XD-	
XD-	

REPAIR PARTS AND SPECIAL TOOLS LIST (Contd)**NOTE**

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded XA.

Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

Third Position. The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance.

Code	Application/Explanation
C	– TBD or operator maintenance done within organizational maintenance.
O	– Unit level can remove, replace, and use the item.
F	– Direct support level can remove, replace, and use the item.
H	– General support level can remove, replace, and use the item.
L	– Specialized repair activity can remove, replace, and use the item.
D	– Depot level can remove, replace, and use the item.

Fourth Position. The maintenance code entered in the fourth position tells you whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions).

NOTE

Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.) This position will contain one of the following maintenance codes.

Code	Application/Explanation
O	– Unit is the lowest level that can do complete repair of the item.
F	– Direct support is the lowest level that can do complete repair of the item.
H	– General support is the lowest level that can do complete repair of the item.
L	– Specialized repair activity (designate the specialized repair activity) is the lowest level that can do complete repair of the item.
D	– Depot is the lowest level that can do complete repair of the item.
Z	– Nonrepairable. No repair is authorized.
B	– No repair is authorized. (No parts or special tools are authorized for the maintenance of a B-coded item.) However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR code as follows:

Recoverability Code	Application/Explanation
Z	– Nonrepairable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3rd position of SMR code.
O	– Repairable item. When uneconomically repairable, condemn and dispose of the item at unit level.
F	– Repairable item. When uneconomically repairable, condemn and dispose of the item at the direct support level.
H	– Repairable item. When uneconomically repairable, condemn and dispose of the item at the general support level.
D	– Repairable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L	– Repairable item. Condemnation and disposal not authorized below specialized repair activity (SRA).
A	– Item requires special handling or condemnation procedures because of specific reasons (e.g.; precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

REPAIR PARTS AND SPECIAL TOOLS LIST (Contd)

NSN (Column (3)). The NSN for the item is listed in this column.

CAGEC (Column (4)). The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code is used to identify the manufacturer, distributor, or Government agency/activity, that supplies the item.

Part Number (Column (5)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items. Part numbers not available (N/A) will be provided as updates to this manual when available.

NOTE

When you use a NSN to requisition an item, the item you receive may have a different part number from the part ordered.

Description and Usable on Code (UOC) (Column (6)). This column includes the following information:

- (1) The Federal item name and, when required, a minimum description to identify the item.
- (2) Items that are included in kits and sets are listed below the name of the kit or set.
- (3) Spare/repair parts that make up an assembled item are indented and listed immediately following the assembled item line entry.
- (4) Part numbers for bulk materials are referenced in this column in the line item entry for the item to be manufactured/fabricated.
- (5) When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line(s) of the description (before UOC).
- (6) The usable on code, when applicable (refer to paragraph 5, Special Information).
- (7) In the Special Tools List section, the Basis of Issue (BOI) appears as the last line(s) in the entry for each special tool, special TMDE, and other special support equipment. When density of equipment supported exceeds density spread indicated in the Basis of Issue, the total authorization is increased proportionately.
- (8) The statement END OF FIGURE appears just below the last item description in column 6 for a given figure in both the repair parts list and special tools list work packages.

QTY (Column (7)). The QTY (quantity per figure column) indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that the quantity is variable and the quantity may change from application to application.

EXPLANATION OF CROSS-REFERENCE INDEXES WORK PACKAGES FORMAT AND COLUMNS

1. National Stock Number (NSN) Index Work Packages.

STOCK NUMBER Column. This column lists the NSN by National Item Identification Number (NIIN)

NSN

sequence. The NIIN consists of the last nine digits of the NSN (i.e., 5305-01-674-1467). When using this column

NIIN

to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

FIG. Column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in the repair parts and special tools list work packages.

ITEM Column. The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

REPAIR PARTS AND SPECIAL TOOLS LIST (Contd)

2. Part Number (P/N) Index Work Package. Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

CAGEC Column. The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

PART NUMBER Column. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

STOCK NUMBER Column. This column lists the NSN for the associated part number and manufacturer identified in the PART NUMBER and CAGEC columns to the left

FIG. Column. This column lists the number of the figure where the item is identified/located in the repair parts list and special tool list work packages.

ITEM Column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

SPECIAL INFORMATION

USABLE ON CODE. The usable on code appears in the lower left corner of the Description column heading. Usable on codes are shown as “UOC:” in the Description Column (justified left) on the first line applicable item description/nomenclature. Uncoded items are applicable to all models. Identification of the usable on codes used in the RPSTL are:

Code	Used On
REB	M21

Fabrication Instructions. Bulk materials required to manufacture items are listed in the Bulk Material Functional Group of this RPSTL. Part numbers for bulk materials are also referenced in the description column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source code to be manufactured or fabricated are found in TM 5-5420-280-23&P.

Assembly Instruction. Detailed assembly instructions for items source coded to be assembled from component spare/repair parts are found in TM 5-5420-280-23&P. Items that make up the assembly are listed immediately following the assembly item entry or reference is made to an applicable figure.

Kits. Line item entries for repair parts kits appear in group 9401 KITS in the repair parts list work packages.

Index Numbers. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the National Stock Number/Part Number Index and the bulk material list in the repair parts list work packages.

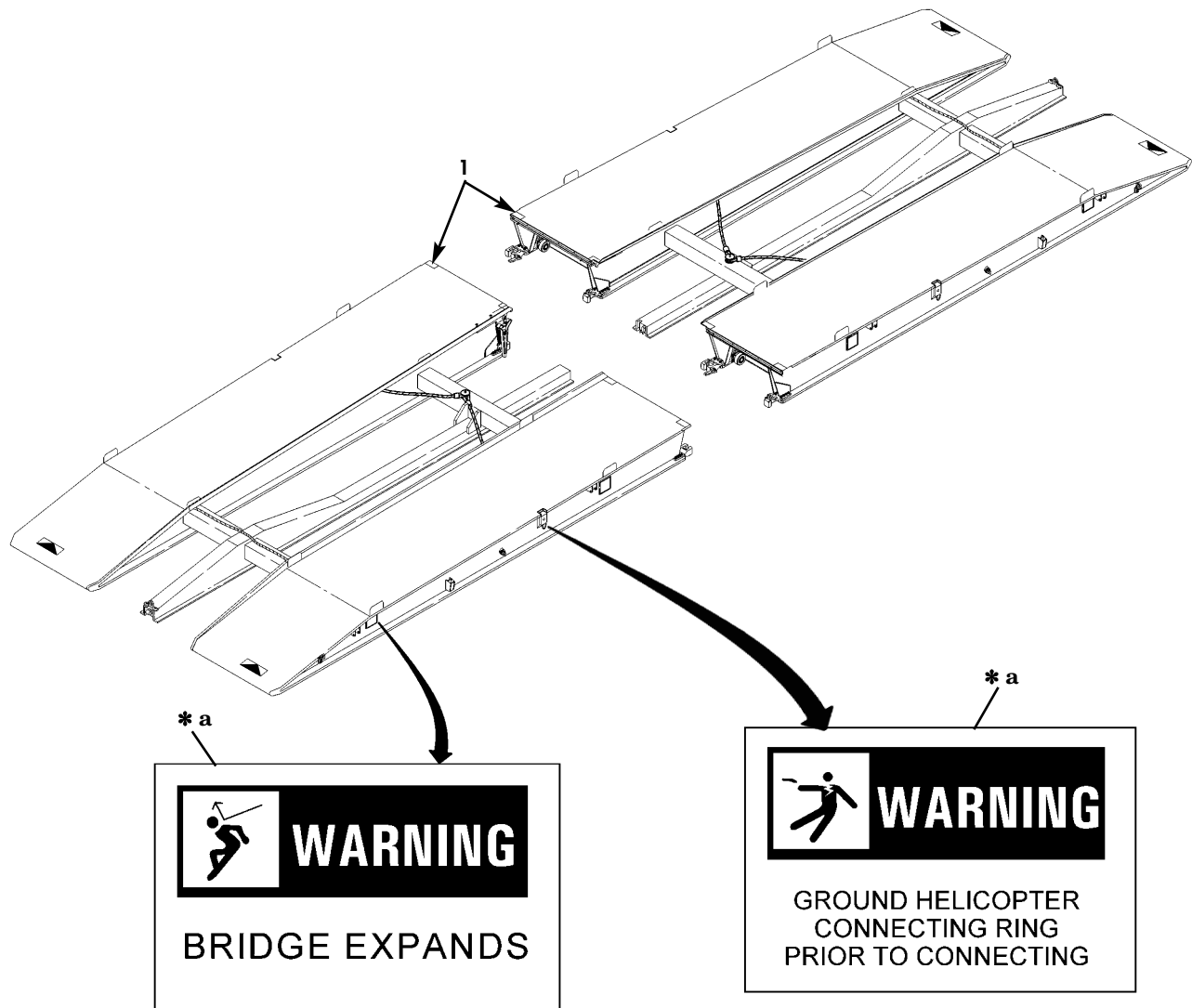
Associated Publications. The publications listed below pertain to the Rapidly Emplaced Bridge (REB) and its components:

TM 5-5420-280-10	Operator’s Manual
TM 5-5420-280-23&P	Field Maintenance Manual (including Repair Parts and Special Tools List)

Illustrations. Item numbers on illustrations have been assigned in clockwise sequence, starting at the 11 o’clock position (upper left).

END OF WORK PACKAGE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)



* a SEE WP 0120 00 FOR
PAINTING INSTRUCTIONS

Figure 1. Bridge Half and Data Plates (Sheet 1 of 4).

**SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)**

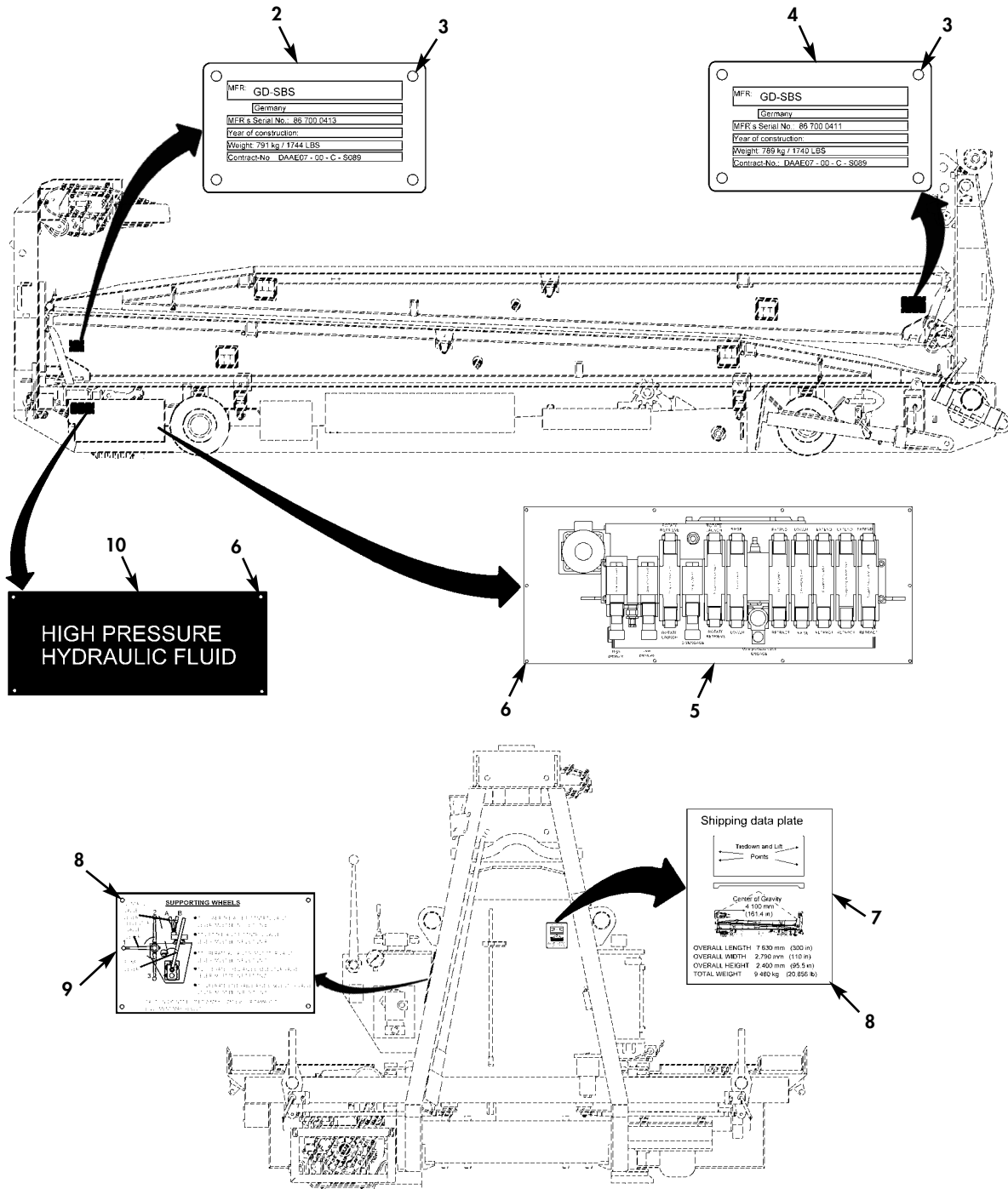
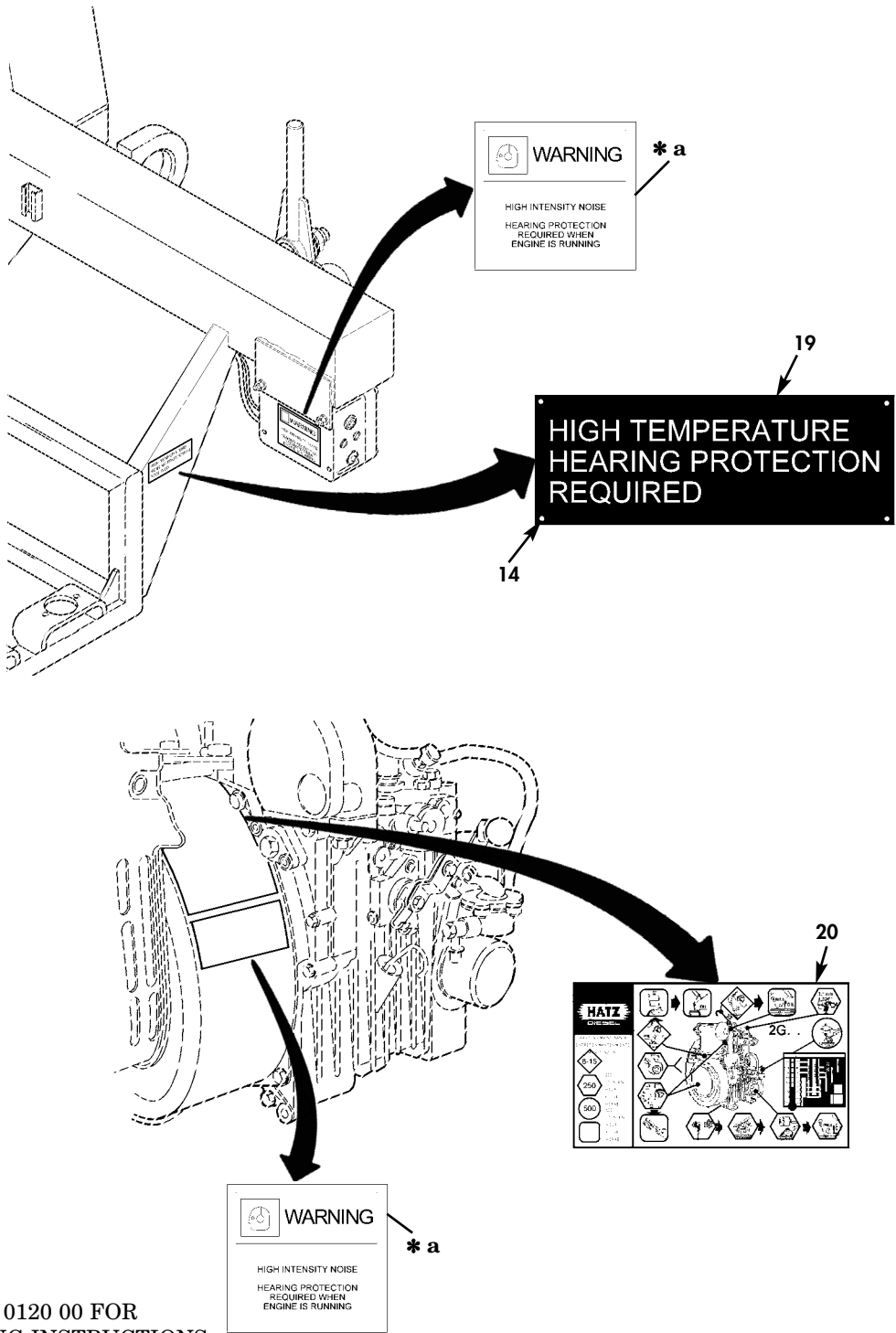


Figure 1. Bridge Half and Data Plates (Sheet 2 of 4).

**SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)**



*** a SEE WP 0120 00 FOR
PAINTING INSTRUCTIONS**

Figure 1. Bridge Half and Data Plates (Sheet 4 of 4).

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 01 BRIDGE						
0101 BRIDGE HALF AND DATA PLATES						
FIG. 1 BRIDGE HALF AND DATA PLATES						
1	PAOOO	5420-12-357-7676	D9913	867000004	DECK UNIT, BRIDGING.....	2
2	XDOZZ		D9913	869270139	PLATE, IDENTIFICATIO.....	2
3	PAOZZ	5320-12-152-7831	D2040	0317-4016	RIVET, BLIND.....	24
4	XDOZZ		D9913	869270138	PLATE, IDENTIFICATIO.....	2
5	XDOZZ		D9913	869270144	PLATE, IDENTIFICATIO.....	1
6	PAOZZ	5320-12-324-5148	D2040	0317-4008	RIVET, BLIND.....	10
7	XDOZZ		D9913	869270143	PLATE, INSTRUCTION.....	1
8	PAOZZ	5320-12-317-7651	D2040	0517-4012	RIVET, BLIND.....	16
9	XDOZZ		D9913	869270145	PLATE, INSTRUCTION.....	1
10	XDOZZ		D9913	869271538	PLATE, INSTRUCTION.....	1
11	XDOZZ		D9913	869270142	PLATE, IDENTIFICATIO.....	1
12	XDOZZ		D9913	869270140	PLATE, IDENTIFICATIO.....	1
13	XDOZZ		D9913	869271540	PLATE, INSTRUCTION.....	1
14	PAOZZ	5315-12-152-2484	D8266	001476003007	PIN, GROOVED, HEADED.....	20
15	XDOZZ		D9913	869271541	PLATE, INSTRUCTION.....	1
16	PAOZZ	6605-21-905-4042	S4903	MODEL 131	CLINOMETER, INCLINAT.....	4
17	PAOZZ	5310-12-361-6535	D8286	DIN125-B3, 2-140H V	WASHER, FLAT.....	16
18	PAOZZ	5305-12-142-0051	D8286	DIN84-M3X12-5.8- A2P	SCREW, MACHINE.....	16
19	XDOZZ		D9913	869271539	PLATE, INSTRUCTION.....	1
20	PAOZZ	9905-12-361-6322	D2081	04009600	PLATE, INSTRUCTION.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

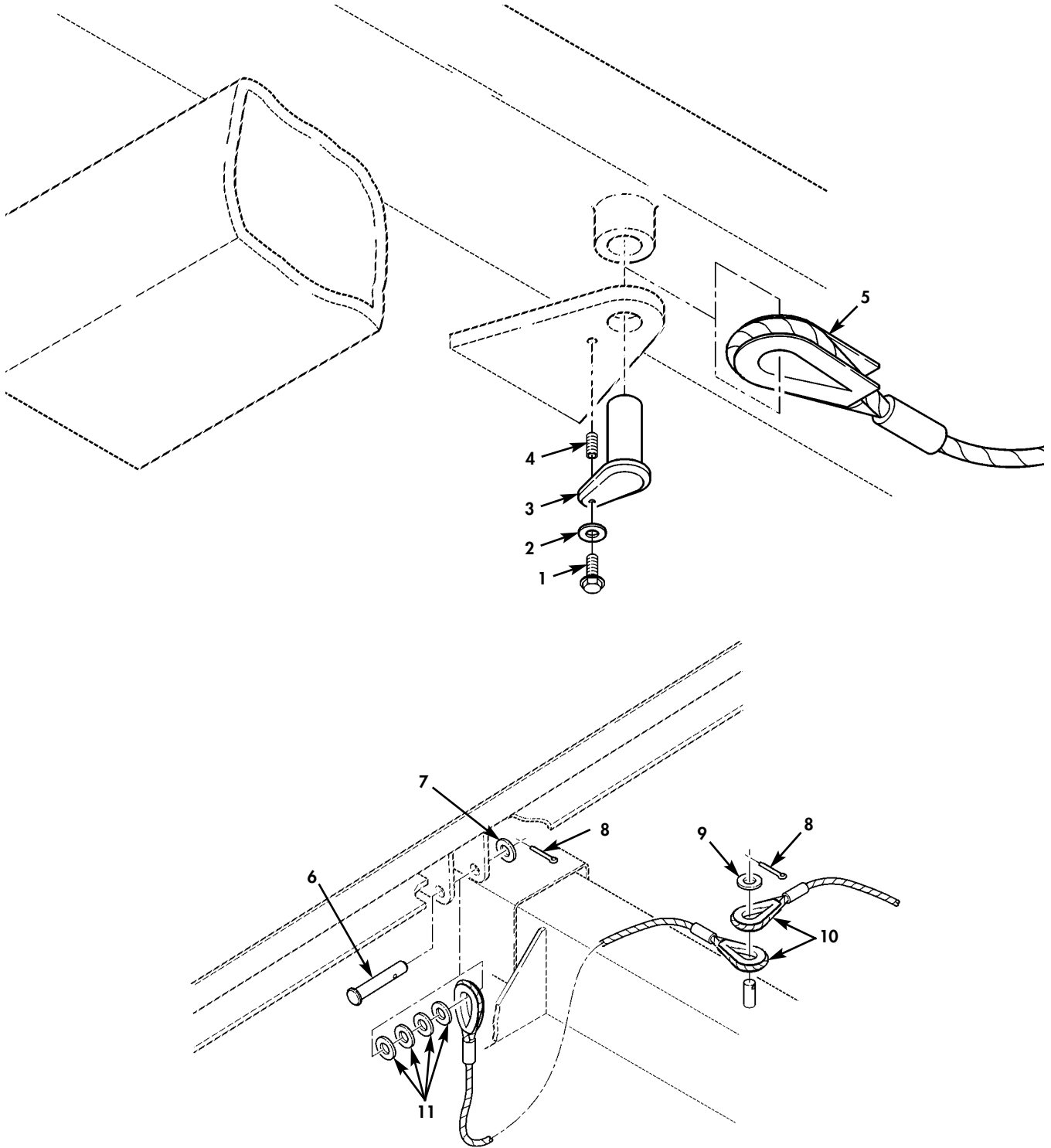


Figure 2. Bridge Retaining Cables.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0102 BRIDGE RETAINING CABLES						
FIG. 2 BRIDGE RETAINING CABLES						
1	PAOZZ	5305-12-141-9810	D8286	DIN933-M4X12-8.8 -A2P	SCREW,CAP,HEXAGON H.....	4
2	PAOZZ	5310-12-156-4922	D8286	DIN125-A4,3-140H V-A3P	WASHER,FLAT.....	4
3	PAOZZ	5315-12-357-7871	D9913	867005001	PIN,STRAIGHT,HEADED.....	4
4	PAOZZ	5340-12-134-8752	D8442	LN9039-02060	INSERT,SCREW THREAD.....	4
5	PAOZZ	4010-12-357-7870	D9913	867012604	WIRE ROPE ASSEMBLY FRONT.....	2
6	PAOZZ	5315-12-357-9772	D9913	130037	PIN,STRAIGHT,HEADED.....	16
7	PAOZZ	5310-12-147-2103	D8286	DIN1440-20-ST-A3 P	WASHER,FLAT.....	16
8	PAOZZ	5315-12-178-5636	D9913	942070	PIN,COTTER.....	18
9	PAOZZ	5310-12-194-3021	D8286	DIN125-A21-140HV -A3P	WASHER,FLAT.....	2
10	XDOZZ		D9913	867012605	WIRE ROPE ASSEMBLY REAR.....	4
11	PAOZZ	5310-12-140-9515	D8286	DIN125-B21-140HV -A2	WASHER,FLAT.....	24

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

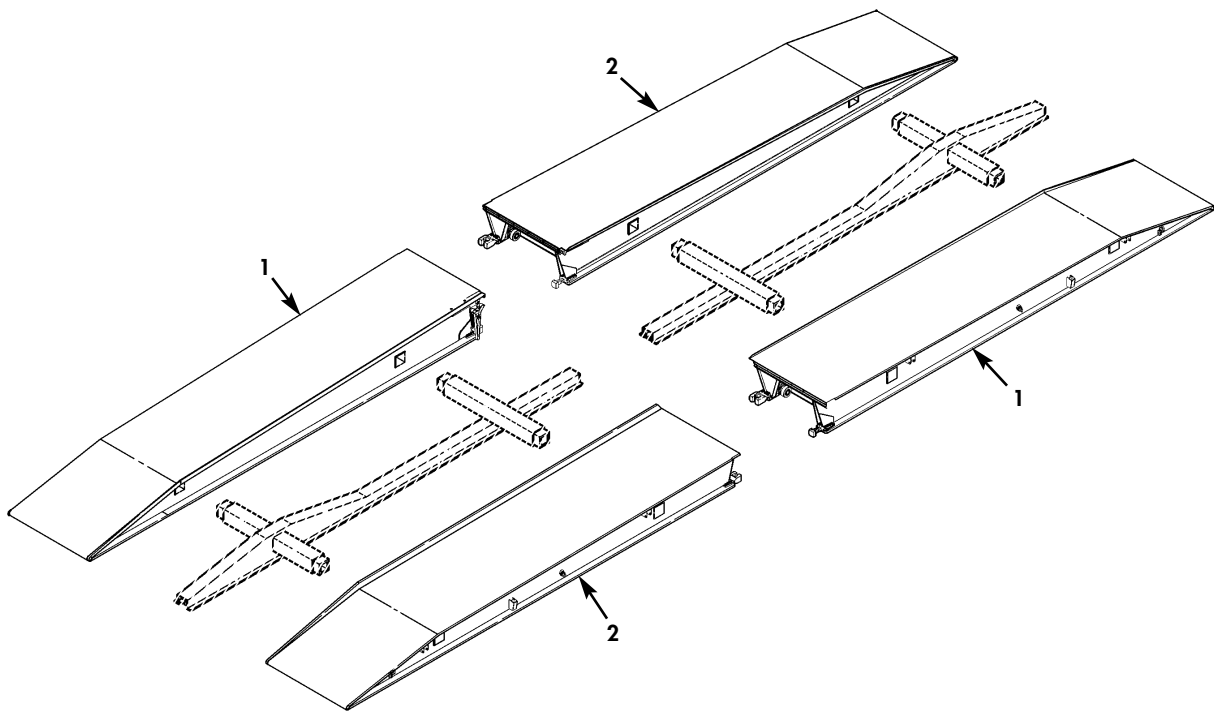
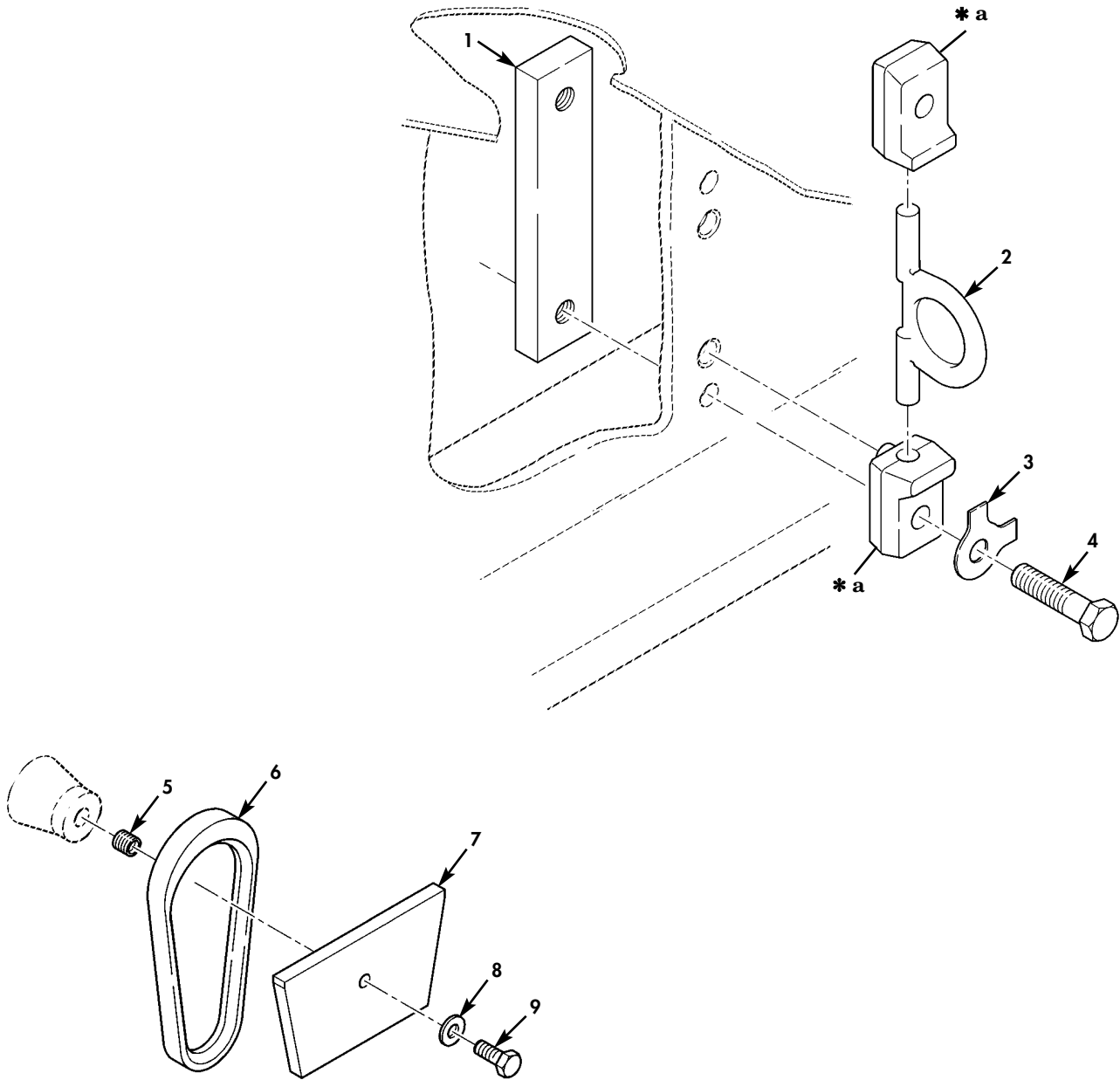


Figure 3. Bridge Quarter.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0103 BRIDGE QUARTER	
					FIG. 3 BRIDGE QUARTER	
1	PAOOO	5420-12-357-7672	D9913	867000413	DECK UNIT, BRIDGING L.H.....	2
2	PAOOO	5420-12-357-7675	D9913	867000411	DECK UNIT, BRIDGING R.H.....	2

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
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* a PART OF ITEM 2

Figure 4. Bridge Anchoring Eye and Lifting Eye.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0104 BRIDGE ANCHORING EYE AND LIFTING EYE						
FIG. 4 BRIDGE ANCHORING EYE AND LIFTING EYE						
1	PAOZZ	5340-12-358-0088	D9913	867014003	PLATE, MOUNTING.....	4
2	PAOZZ	5340-12-357-7988	D9913	909666707	PAD EYE.....	4
3	PAOZZ	5310-12-130-4738	D8286	DIN463-17-ST	WASHER, KEY.....	8
4	PAOZZ	5305-12-143-0017	D8286	DIN931-M16X55-10 .9-A3P	SCREW, CAP, HEXAGON H.....	8
5	PAOZZ	5340-12-142-8193	D8442	LN9039-10150	INSERT, SCREW, THREAD.....	4
6	XDOZZ		D9913	867074102	RING, LIFTING.....	4
7	XDOZZ		D9913	867010336	PLATE, MOUNTING.....	4
8	PAOZZ	5310-12-142-0481	D8286	DIN125-B10,5-140 HV-A3P	WASHER, FLAT.....	4
9	XDOZZ		D9913	932026	SCREW, CAP, HEXAGON H.....	4

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)

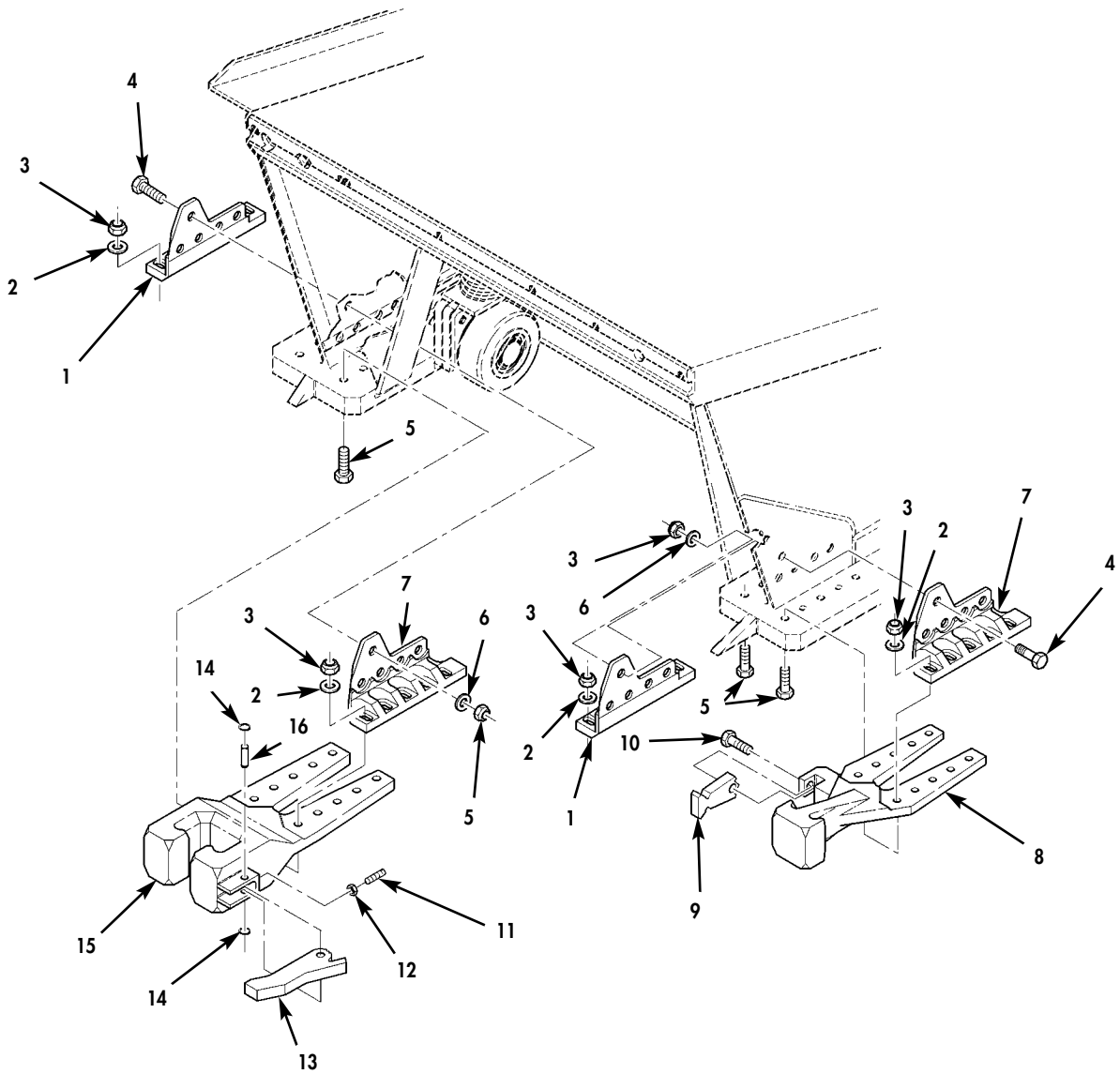


Figure 5. Bridge Lower Coupling and Receptacle.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0105 BRIDGE LOWER COUPLING AND RECEPTACLE						
FIG. 5 BRIDGE LOWER COUPLING AND RECEPTACLE						
1	XDOZZ		D9913	867011704	BRACKET,MOUNTING.....	4
2	PAOZZ	5310-12-193-8599	D8286	DIN125-B17-140HV -A2	WASHER,FLAT.....	40
3	PAOZZ	5310-12-300-8145	D8286	DIN6925-M16-8-A2 P	NUT,SELF-LOCKING,HE.....	60
4	XDOZZ		D8286	DIN609-M16X60-8. 8	SCREW,CLOSE TOLERAN.....	20
5	XDOZZ		D8286	DIN609-M16X80-8. 8	SCREW,CLOSE TOLERAN.....	40
6	XDOZZ		D8286	DIN125-1-B17	WASHER,FLAT.....	20
7	XDOZZ		D9913	867011705	BRACKET,MOUNTING.....	4
8	XDOZZ		D9913	867016306	ARM,STRUCTURAL,BRID MALE.....	4
9	XDOZZ		D9913	867011917	LEVER,LOCKING.....	4
10	XDOZZ		D9913	867018501	SCREW,CAP,HEXAGON H.....	4
11	XDOZZ		D9913	909590805	PIN,SPRING.....	4
12	PAOZZ	5310-12-175-8245	D8286	DIN439-BM8-A2-70	NUT,PLAIN,HEXAGON.....	4
13	XDOZZ		D9913	867011918	LEVER,LOCKING.....	4
14	PAOZZ	5325-12-151-5610	D8286	DIN471-10X1-X10C RNI18-8	RING,RETAINING.....	8
15	XDOZZ		D9913	867016307	ARM,STRUCTURAL,BRID FEMALE.....	4
16	XDOZZ		D9913	867015011	PIN,SHOULDER HEADLE.....	4

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)

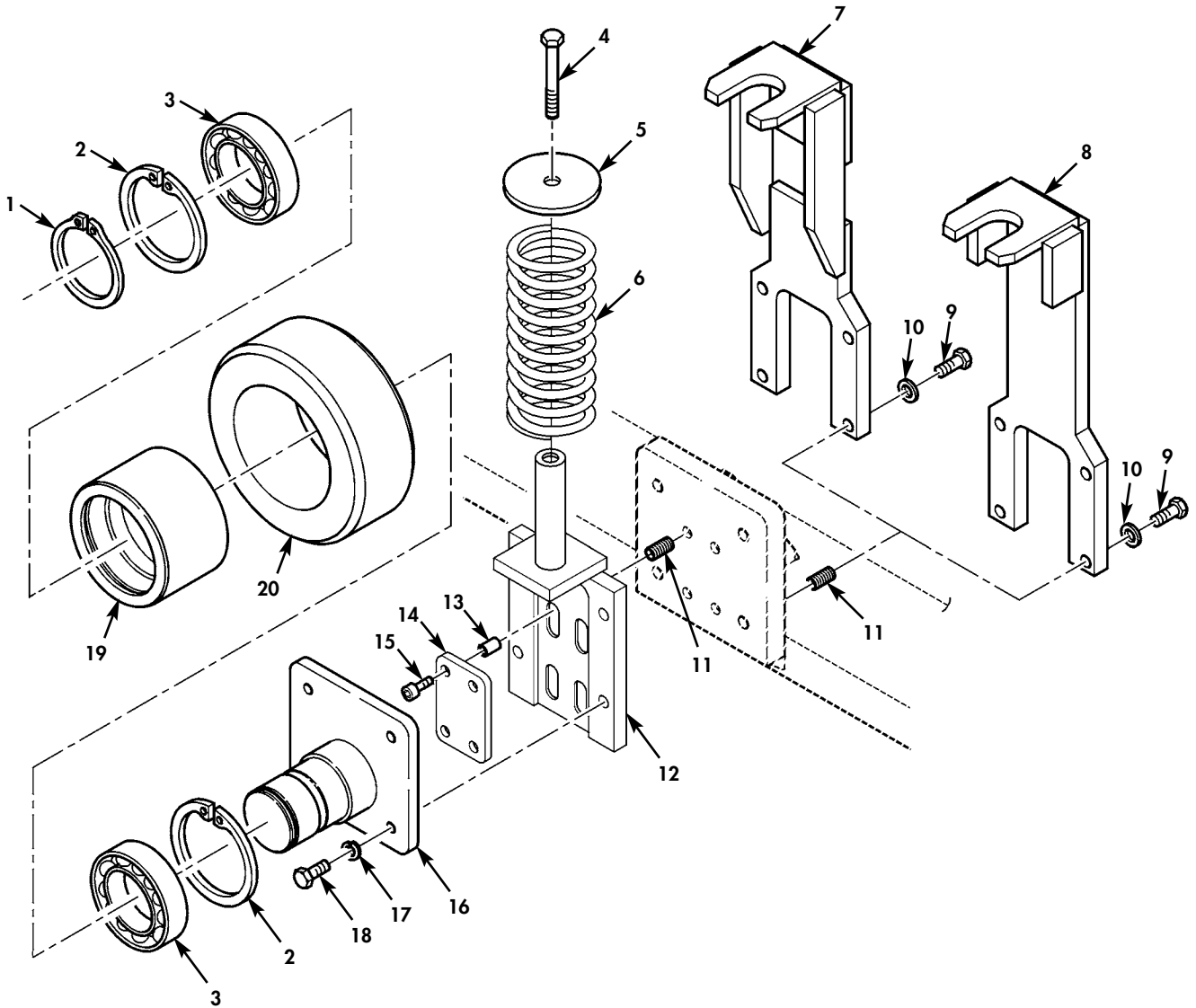


Figure 6. Bridge Support Wheels.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0106 BRIDGE SUPPORT WHEELS						
FIG. 6 BRIDGE SUPPORT WHEELS						
1	PAOZZ	5325-12-196-1418	D8286	DIN471-50X2-A3P	RING,RETAINING.....	16
2	PAOZZ	5325-12-193-7215	D8286	DIN472-80X2,5-A3 P	RING,RETAINING.....	32
3	PAOZZ	3110-12-156-3504	D8286	DIN625-6010-2RS	BEARING,BALL,ANNULA.....	32
4	PAOZZ	5305-12-141-9881	D8286	DIN933-M8X80-8.8 -A2P	SCREW,CAP,HEXAGON H.....	16
5	XDOZZ		D9913	862918103	WASHER,FLAT.....	16
6	XDOZZ		D9913	909573044	SPRING,HELICAL,COMP.....	16
7	XDOZZ		D9913	862904310	BRACKET,MOUNTING OUTER FORWARD....	4
8	XDOZZ		D9913	862904309	BRACKET,MOUNTING.....	12
9	PAOZZ	5305-12-125-0154	D8286	DIN933-M8X30-8.8	SCREW,CAP,HEXAGON H.....	64
10	PAOZZ	5310-12-154-1380	D8286	DIN125-B8,4-140H V-A4	WASHER,FLAT.....	64
11	PAOZZ	5340-12-142-1293	D8442	LN9039-07120	INSERT,SCREW THREAD.....	128
12	XDOZZ		D9913	862907701	BRACKET,SPRING HOLD.....	16
13	XDOZZ		D9913	862915301	BUSHING,SLEEVE.....	64
14	XDOZZ		D9913	862910303	PLATE,RETAING,SHAFT.....	16
15	PAOZZ	5310-12-165-0656	D8286	DIN6912-M8X20-8. 8-A2P	SCREW,CAP,SOCKET HE.....	64
16	PAOZZ	5315-12-357-7775	D9913	862905001	PIN,GROOVED,HEADED.....	16
17	PAOZZ	5310-12-306-1456	D8286	DIN128-A8-FST-A3 D	WASHER,LOCK.....	64
18	PAOZZ	5305-12-143-7855	D8286	DIN933-M8X22-8.8 -A2P	SCREW,CAP,HEXAGON H.....	64
19	PAOZZ	2530-12-357-8430	D9913	862910501	RIM,WHEEL,PNEUMATIC.....	16
20	XDOZZ		D9913	902950831	TIRE,SOLID.....	8

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)

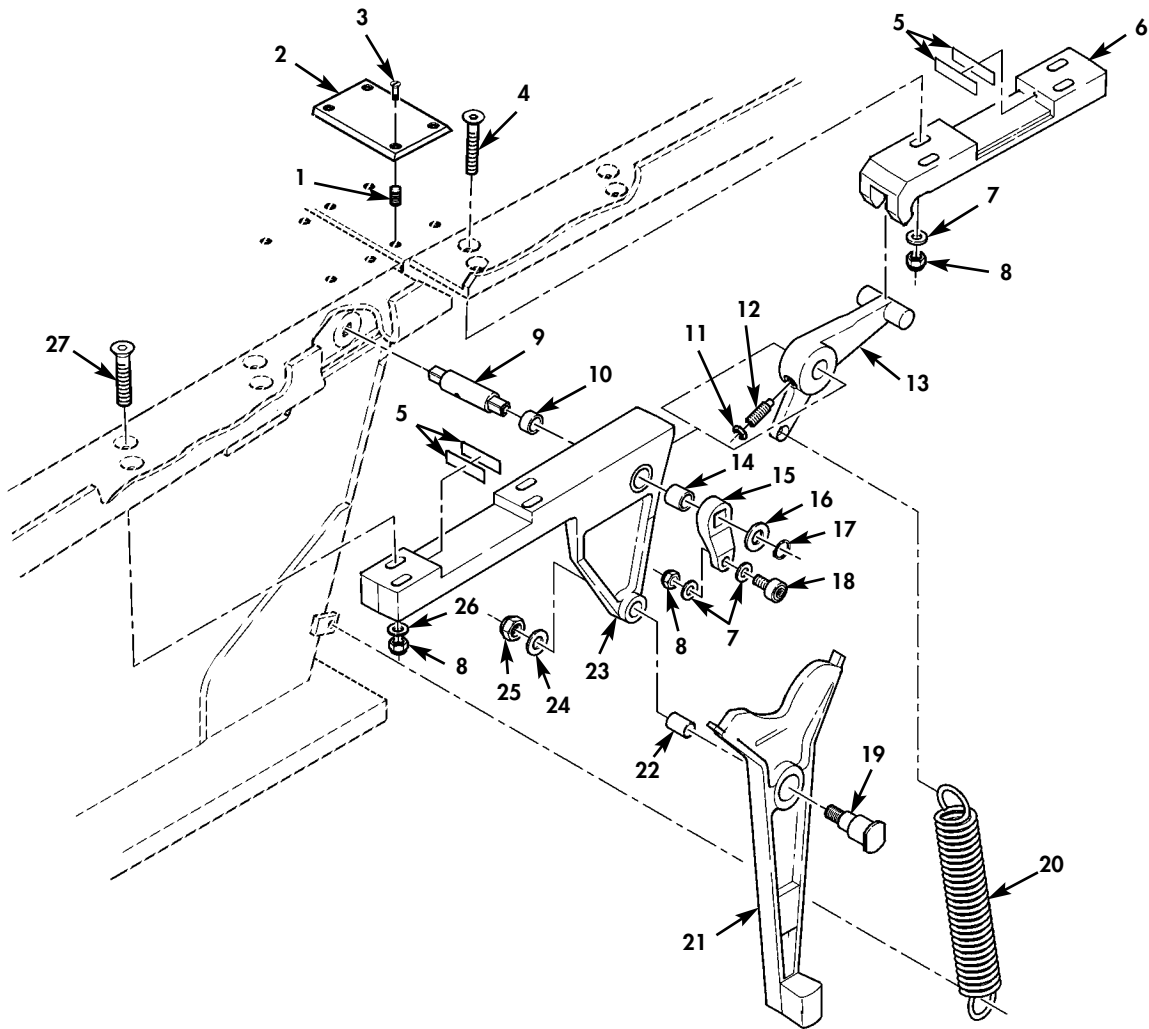


Figure 7. Bridge Upper Coupling Lock Lever.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0107 BRIDGE UPPER COUPLING LOCK LEVER						
FIG. 7 BRIDGE UPPER COUPLING LOCK LEVER						
1	PAOZZ	5340-12-138-4525	D8442	LN9039-04060	INSERT, SCREW, THREAD.....	32
2	XDOZZ		D9913	867014005	PLATE, SKID.....	8
3	PAOZZ	5305-12-163-1371	D8286	DIN7991-M6X16-8. 8-A2P	SCREW, CAP, SOCKET HE.....	32
4	PAOZZ	5305-12-192-5712	D8286	DIN7991-M12X60-8 .8-A3P	SCREW, CAP, SOCKET HE.....	8
5	PAOZZ	5365-12-357-9322	D9913	867010320	SPACER, PLATE.....	8
6	PAOZZ	5340-12-358-0087	D9913	867017102	BRACKET, MOUNTING.....	2
7	PAOZZ	5310-12-156-4899	D8286	DIN125-B13-140HV -A3P	WASHER, FLAT.....	12
8	PAOZZ	5310-12-300-8140	D8286	DIN6925-M12-8-A2 P	NUT, SELF-LOCKING, HE.....	18
9	PAOZZ	5315-12-357-7874	D9913	867015001	PIN, SHOULDER HEADLE.....	2
10	PAOZZ	3120-12-357-7882	D9913	909562480	BEARING, SLEEVE.....	2
11	PAOZZ	5310-12-145-8126	D8286	DIN7967-M10-A3P	NUT, PLAIN, SLOTTED, H.....	2
12	PAOZZ	5305-12-310-5959	D8286	DIN915-M10X30-45 H	SETSCREW.....	2
13	PAOZZ	3040-12-357-7873	D9913	867011909	LEVER, REMOTE CONTRO.....	2
14	PAOZZ	3120-12-357-7881	D9913	909562481	BEARING, SLEEVE.....	2
15	PAOZZ	3040-12-357-7974	D9913	867011911	LEVER, REMOTE CONTRO.....	2
16	PAOZZ	5310-12-167-0194	D8286	DIN1440-18-ST-A3 P	WASHER, FLAT.....	2
17	PAOZZ	5365-12-156-4448	D8286	DIN471-18X1,2	RING, RETAINING.....	2
18	PAOZZ	3110-12-157-6727	D8984	KR30PP	CAM FOLLOWER, NEEDLE.....	2
19	PAOZZ	5315-12-357-7875	D9913	867015002	PIN, SHOULDER HEADED.....	2
20	PAOZZ	5360-12-358-0461	D9913	909571261	SPRING, HELICAL, EXTE.....	2
21	XDOZZ		D9913	867001904	LEVER, REMOTE CONTRO.....	2
22	PAOZZ	3120-12-152-8613	D9913	909560150	BEARING, SLEEVE.....	2
23	PAOZZ	5340-12-358-0090	D9913	867014305	BRACKET, MOUNTING.....	2
24	PAOZZ	5310-12-142-0640	D8286	DIN125-B17-140HV -A3P	WASHER, FLAT.....	2
25	PAOZZ	5310-12-328-3687	D8286	DIN6925-M16-10-A 2P	NUT, SELF-LOCKING, HE.....	2
26	PAOZZ	5310-12-173-3119	D8286	DIN6916-13-A3P	WASHER, RECESSED.....	8
27	PAOZZ	5305-12-182-8806	D8286	DIN7991-M12X70-8 .8-A3P	SCREW, CAP, SOCKET HE.....	8

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)

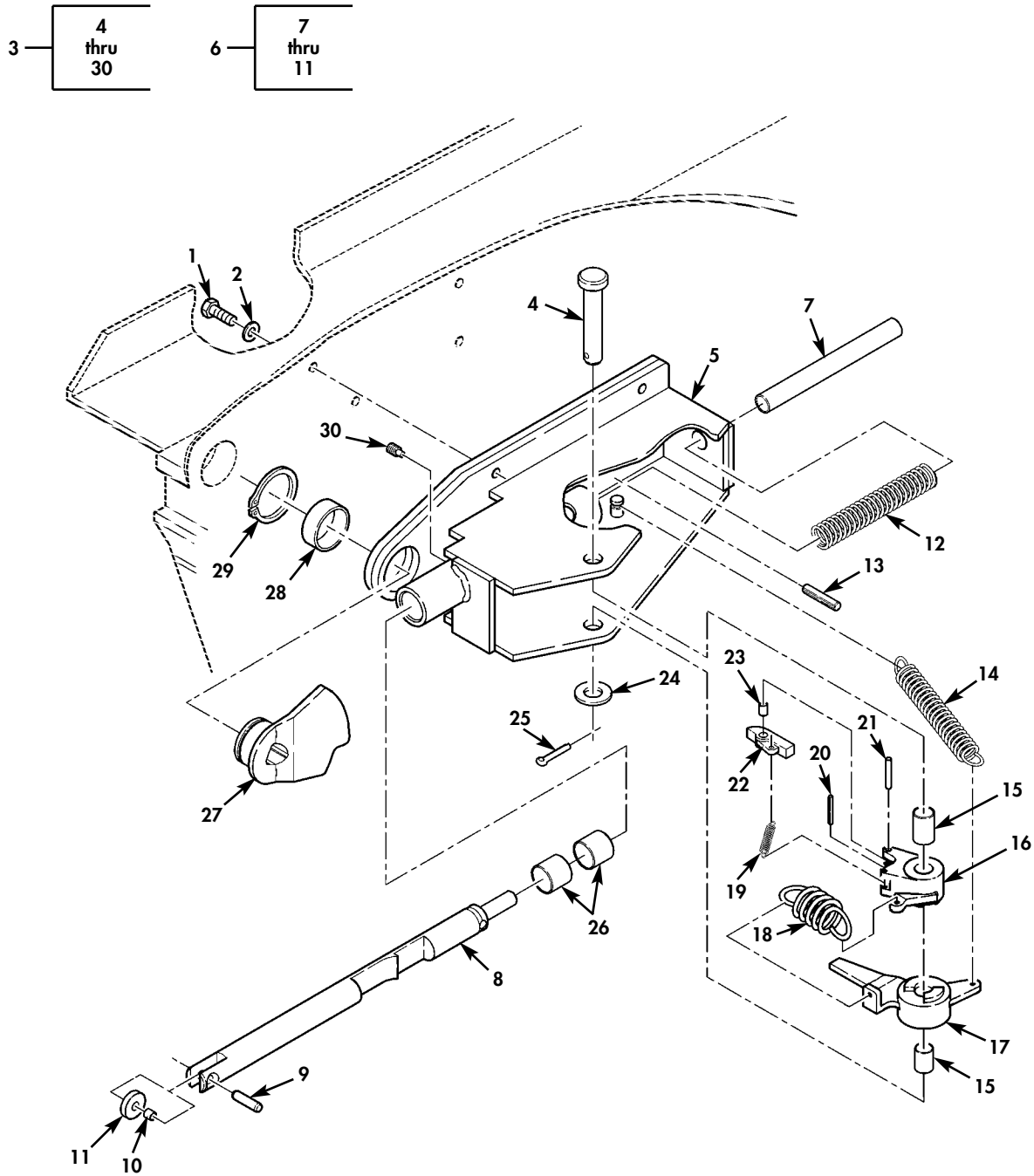


Figure 8. Bridge Upper Coupling Receptacle.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0108 BRIDGE UPPER COUPLING RECEPTACLE						
FIG. 8 BRIDGE UPPER COUPLING RECEPTACLE						
1	PAOZZ	5305-12-165-0743	D8286	DIN933-M8X25-8.8 -A2C	SCREW,CAP,HEXAGON H.....	8
2	PAOZZ	5310-12-142-0645	D8286	DIN125-B8,4-140H V-A3P	WASHER,FLAT.....	8
3	PAOOO	5420-12-357-8792	D9913	867007603	LOCK ASSEMBLY,BRIDG.....	2
4	PAOZZ	5315	D9913	130036	.PIN,STRAIGHT,HEADED.....	1
5	PAOZZ	3010-12-359-3448	D9913	867000703	.HOUSING,MECHAICAL A.....	1
6	PAOOO	3040-12-359-3280	D9913	867008902	.CONNECTING LINK,RID.....	1
7	XDOZZ		D9913	867015509	..TUBE,METALLIC.....	1
8	XDOZZ		D9913	867018901	..CONNECTING LINK,RID.....	1
9	PAOZZ	5320-12-197-5368	D8286	DIN7341-A6H11X18 -CUZN	..RIVET,STRAIGHT,HEAD.....	1
10	PAOZZ	3120-12-156-2257	D8092	PAP0606P10	..BEARING,SLEEVE.....	1
11	PAOZZ	5365-12-359-2834	D9913	867016601	..SPACER,SLEEVE.....	1
12	PAOZZ	5360-12-359-3452	D9913	909572023	.SPRING,HELICAL,COMP.....	1
13	PAOZZ	5315-12-345-2168	I9008	ISO8752-6X28-N-S T	.PIN,SPRING.....	1
14	PAOZZ	5360-12-157-6735	D1839	23305-311500-12- 0	.SPRING,HELICAL,EXTE.....	1
15	PAOZZ	3120-12-149-8711	D8092	PAP1215P10	.BEARING,SLEEVE.....	2
16	PAOZZ	5340-12-359-3449	D9913	867001902	.BRACKET,LEVER.....	1
17	PAOZZ	5340-12-359-3450	D9913	867001903	.BRACKET,LEVER.....	1
18	PAOZZ	5360-12-157-6736	D1839	23305-311500-02- 0	.SPRING,HELICAL,EXTE.....	1
19	PAOZZ	5360-12-359-3453	D9913	909571260	.SPRING,HELICAL,EXTE.....	1
20	PAOZZ	5315-14-529-0403	I9008	ISO8740-3X18-A1	.PIN,GROOVED,HEADLES.....	1
21	XDOZZ		I9008	ISO-8741-4X24-A4	.PIN,GROOVED,HEADLES.....	1
22	PAOZZ	3040-12-359-3281	D9913	867011907	.LEVER,REMOTE CONTRO.....	1
23	PAOZZ	3120-12-199-6770	D8092	PAP0406P10	.BUSHING,SLEEVE.....	1
24	PAOZZ	5310-12-156-4899	D8286	DIN125-B13-140HV -A3P	.WASHER,FLAT.....	1
25	PAOZZ	5315-12-345-7226	I9008	ISO1234-3,2X20-S T-A3P	.PIN,COTTER.....	1
26	PAOZZ	3120-12-146-1743	D8092	PAP1815P10	.BEARING,SLEEVE.....	2
27	PAOZZ	5340-12-359-3451	D9913	867011908	.LOCK,RELEASE.....	1
28	XDOZZ		D9913	909562403	.BEARING,SLEEVE.....	1
29	PAOZZ	5365-12-156-4438	D8286	DIN471-30X1,5	.RING,RETAINING.....	1
30	PAOZZ	5305-12-307-0092	D8286	DIN915-M6X8-A2-7 0	.SETSCREW.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST

RAPIDLY EMPLACED BRIDGE (REB)

M21 (NSN 5420-01-481-3959)

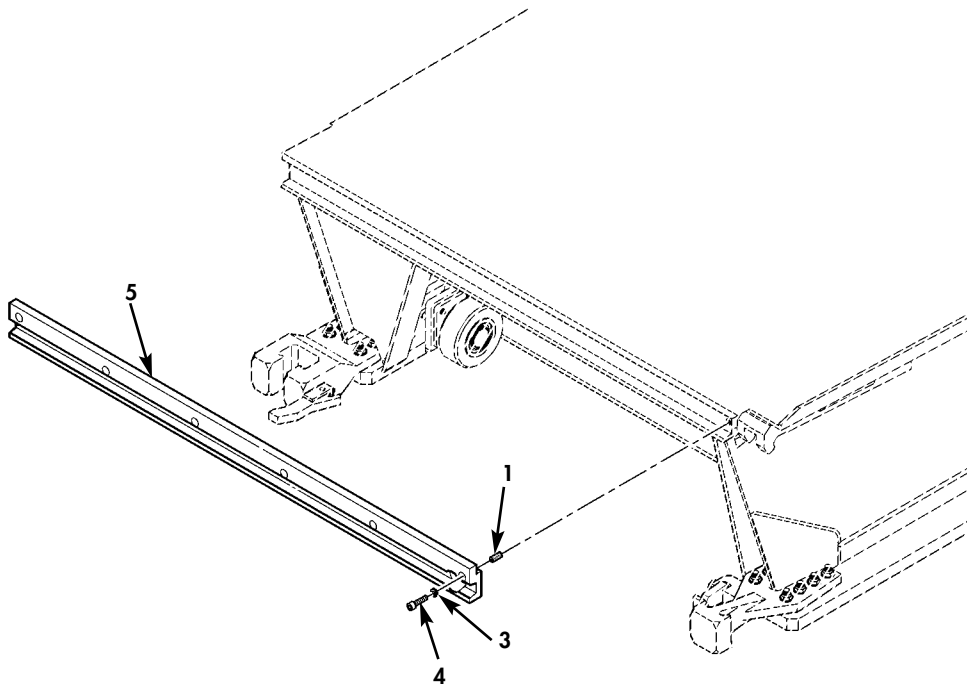
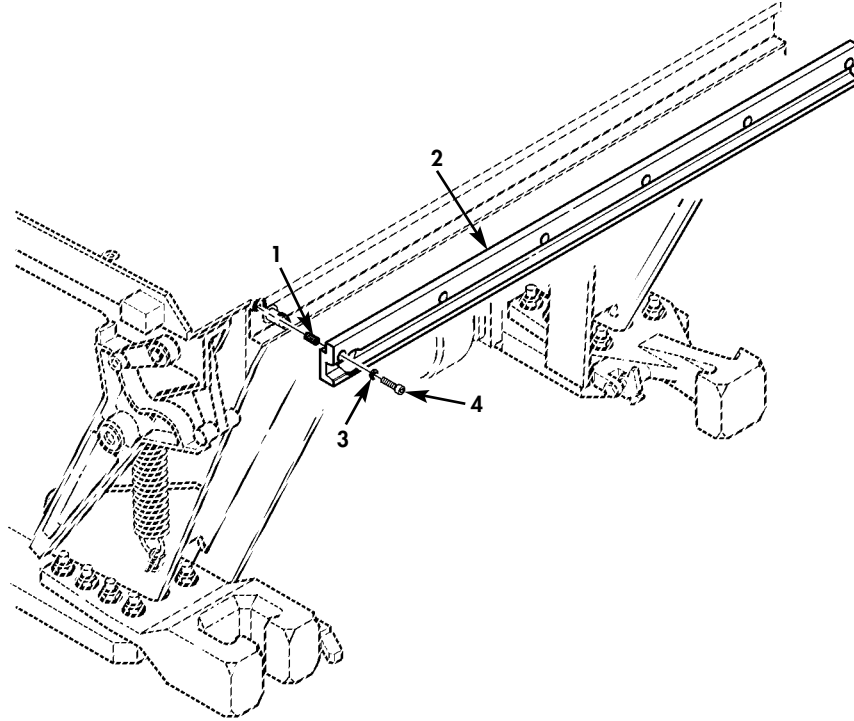
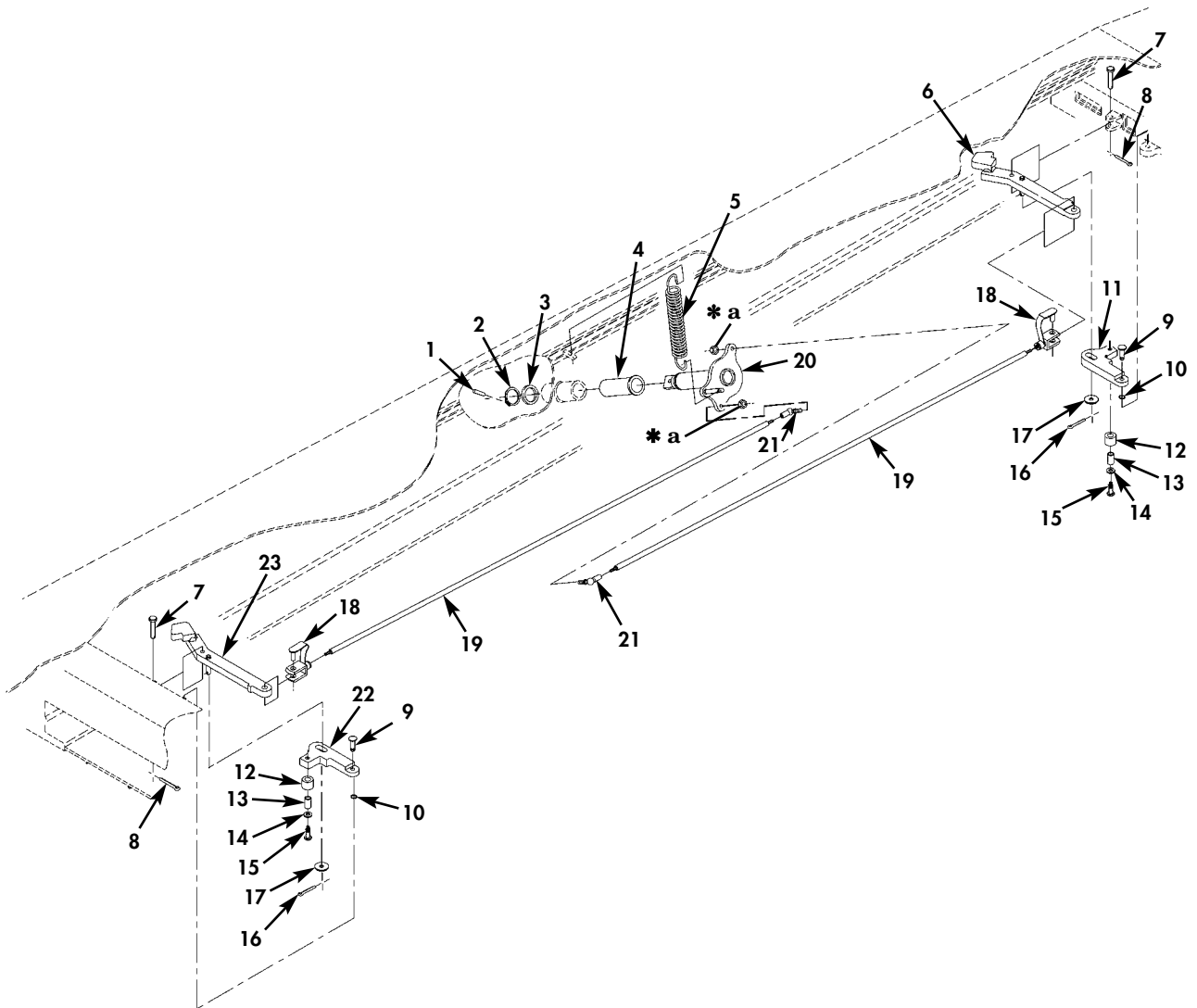


Figure 9. Bridge Crossforce Coupling Bumper.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0109 BRIDGE CROSSFORCE COUPLING BUMPER						
FIG. 9 BRIDGE CROSSFORCE COUPLING BUMPER						
1	PAOZZ	5340-12-142-8479	D8442	LN9039-07160	INSERT,SCREW THREAD.....	24
2	PAOZZ	5340-12-358-0091	D9913	867013804	BUMPER,NONMETALLIC.....	2
3	PAOZZ	5310-12-151-4627	D8286	DIN128-A8-FST-A3 P	WASHER,LOCK.....	24
4	PAOZZ	5305-12-142-2957	D8286	DIN912-M8X35-8.8 -A2P	SCREW,CAP,SOCKET,HE.....	24
5	PAOZZ	5340-12-358-0089	D9913	867013805	BUMPER,NONMETALLIC.....	2

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)



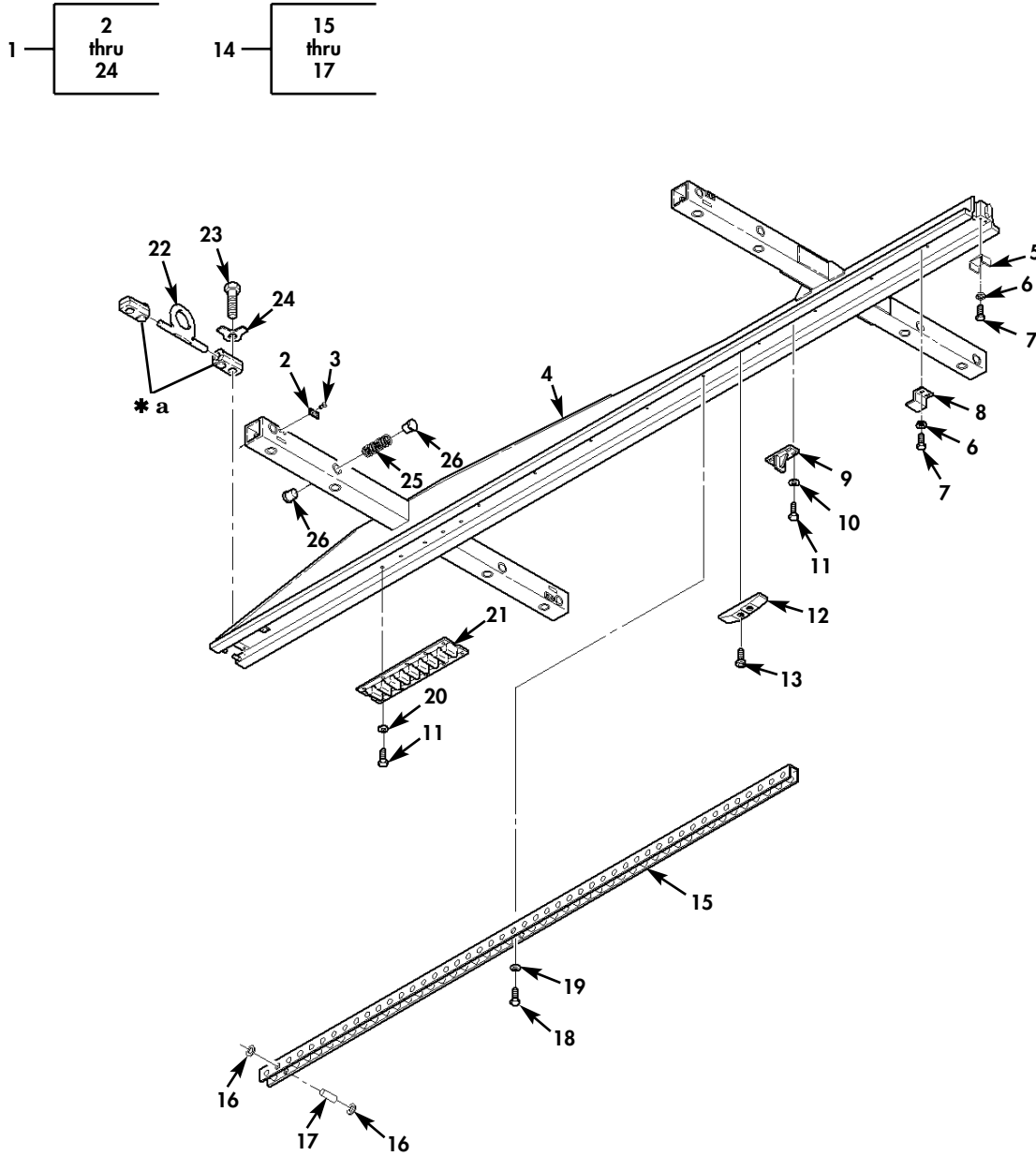
* a PART OF ITEM 21

Figure 10. Bridge Slide Lock Mechanism.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0110 BRIDGE SLIDE LOCK MECHANISM						
FIG. 10 BRIDGE SLIDE LOCK MECHANISM						
1	PAOZZ	5315-12-359-4136	D9913	867015005	PIN, STRAIGHT, HEADLE.....	4
2	PAOZZ	5325-12-196-1418	D8286	DIN471-50X2-A3P	RING, RETAINING.....	4
3	PAOZZ	5365-12-359-2833	D9913	867018101	WASHER, FLAT.....	4
4	PAOZZ	3120-12-359-2738	D9913	867016001	BUSHING, SLEEVE.....	4
5	PAOZZ	5360-12-359-3445	D9913	867013006	SPRING, HELICAL, EXTE.....	4
6	PAOZZ	3040-12-359-3279	D9913	867001203	LEVER, REMOTE CONTRO.....	4
7	PAOZZ	5315-12-180-4464	IREF0	NO PRIMARY REF 121804464	PIN, STRAIGHT, HEADED.....	8
8	PAOZZ	5315-12-346-8386	I9008	IS01234-3, 2X18-S T-A3P	PIN, COTTER.....	8
9	PAOZZ	5315-12-362-9027	D9913	867015007	PIN, GROOVED, HEADED.....	8
10	PAOZZ	5325-12-362-7788	D8286	DIN471-12X1-X35C RM017	RING, RETAINING.....	8
11	XDOZZ		D9913	867011914	LEVER, REMOTE CONTRO.....	4
12	XDOZZ		D9913	867016602	ROLLER, LH.....	8
13	XDOZZ		D9913	867015513	TUBE, METALLIC.....	8
14	PAOZZ	5310-12-142-0645	D8286	DIN125-B8, 4-140H V-A3P	WASHER, FLAT.....	8
15	PAOZZ	5305-12-156-4898	D8286	DIN931-M8X35-8.8 -A2P	SCREW, CAP, HEXAGON H.....	8
16	PAOZZ	5315-12-199-2968	D8266	000094003238	PIN, COTTER.....	8
17	PAOZZ	5310-12-156-4899	D8286	DIN125-B13-140HV -A3P	WASHER, FLAT.....	8
18	XDOZZ		C0488	GN751-14-28-M14- B	CLEVIS, ROD END.....	8
19	PAOZZ	5340-12-359-3446	D9913	867018902	ROD, STRAIGHT HEADLE.....	8
20	PAOZZ	5340-12-359-2943	D9913	867007702	LEVER, LOCK-RELEASE R.H.....	2
20	PAOZZ	5340-12-359-3447	D9913	867007701	LEVER, LOCK-RELEASE L.H.....	2
21	XDOZZ		D8286	DIN71802-16-M12- CSN	BALL JOINT.....	8
22	XDOZZ		D9913	867011913	LEVER, REMOTE CONTRO.....	4
23	XDOZZ		D9913	867001204	LEVER, REMOTE CONTRO.....	4

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)



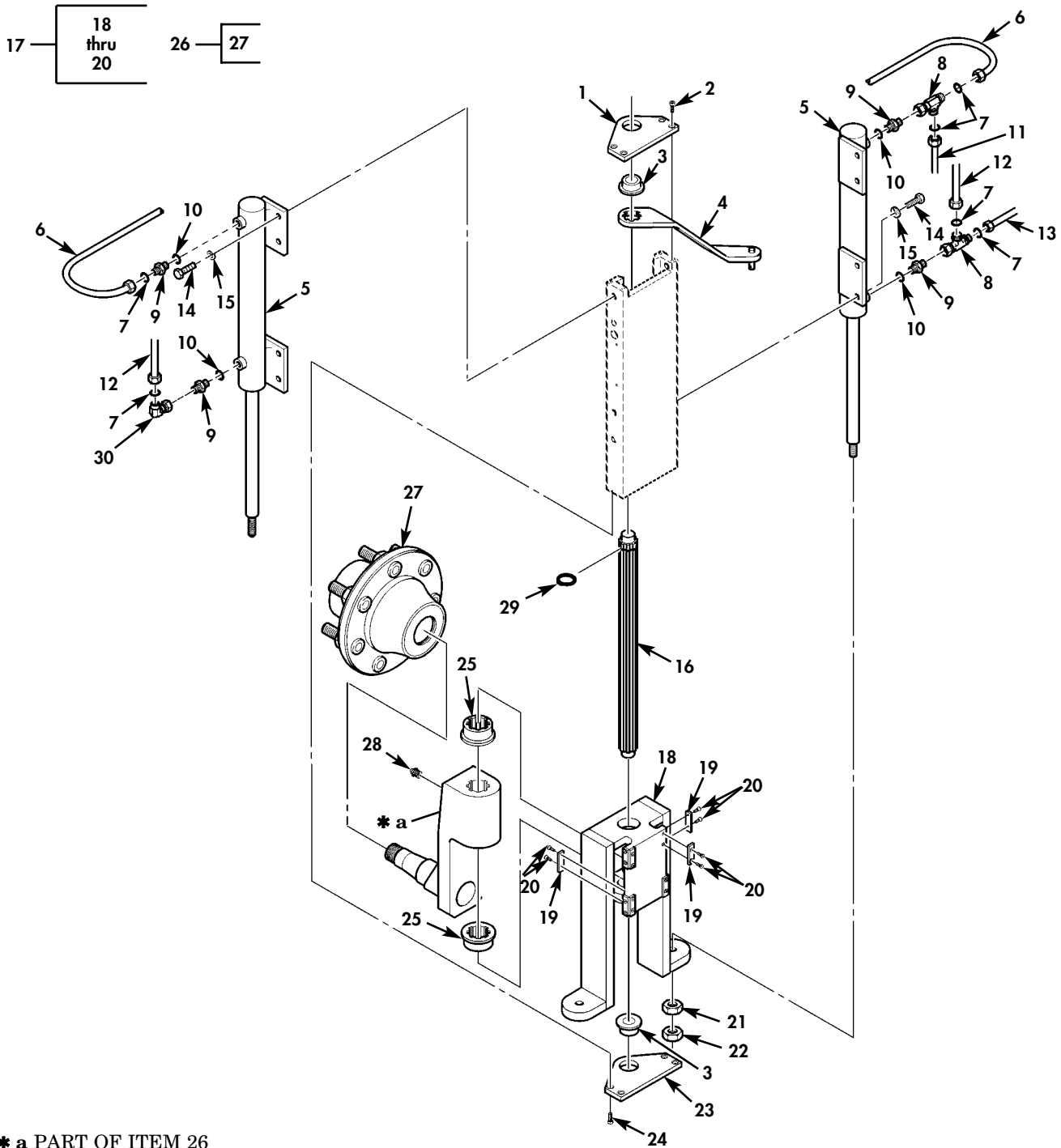
* a PART OF ITEM 22

Figure 11. Launch Beam Lifting Eye, Pin Wheel Drive Bracket, and Drive Pins.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0111 LAUNCH BEAM LIFTING EYE,PIN WHEEL DRIVE BRACKET,AND DRIVE PINS						
FIG. 11 LAUNCH BEAM LIFTING EYE,PIN WHEEL DRIVE BRACKET,AND DRIVE PINS						
1	PAOOO	5420-12-357-7674	D9913	867004501	ARM, STRUCTUAL, BRIDG.....	2
2	XDOZZ		D9913	867014004	.PLAT, METAL.....	4
3	PAOZZ	5305-12-146-2633	D8286	DIN933-M6X16-8.8 -A2P	.SCREW, CAP, HEXAGON H.....	26
4	PAOZZ	5420-12-357-7673	D9913	867004502	.ARM, STRUCTUAL, BRIDG.....	2
5	XDOZZ		D9913	867012208	.BRACKET, LIMIT SWITC.....	1
6	PAOZZ	5310-12-142-0644	D8286	DIN125-B6, 4-140H V-A3P	.WASHER, FLAT.....	26
7	PAOZZ	5305-12-156-4862	D8286	DIN933-M6X20-8.8 -A2P	.SCREW, CAP, HEXAGON H.....	6
8	XDOZZ		D9913	867012207	.BRACKET, LIMIT SWITC.....	4
9	XDOZZ		D9913	867007101	.BRACKET, STOP, CONTRO.....	2
10	XDOZZ		D8286	DIN9021-B8, 4-ST- A3C	.WASHER, FLAT.....	8
11	PAOZZ	5305-12-125-0321	D8286	DIN933-M8X20-8.8	.SCREW, CAP, HEXAGON H.....	18
12	XDOZZ		D9913	867013701	.BRACKET, SLIDE, NONME.....	1
13	PAOZZ	5305-12-162-6704	D8286	DIN912-M8X30-A2- 70	.SCREW, CAP, SOCKET, HE.....	2
14	XDOOO		D9913	867007703	.BRACKET, PIN, RETAINI.....	1
15	PAOZZ	9520-12-357-8273	D9913	867017701	..CHANNEL, STRUCTUAL.....	2
16	PAOZZ	5310-12-140-9515	D8286	DIN125-B21-140HV -A2	..WASHER, FLAT.....	188
17	PAOZZ	5315-12-357-7872	D9913	867015004	..PIN, GROOVED, HEADLES.....	93
18	PAOZZ	5305-12-129-9435	D8286	DIN933-M8X16-8.8	.SCREW, CAP, HEXAGON H.....	13
19	PAOZZ	5310-12-142-0645	D8286	DIN125-B8, 4-140H V-A3P	.WASHER, FLAT.....	12
20	PAOZZ	5310-12-136-2611	D8286	DIN125-B8, 4-140H V	.WASHER, FLAT.....	10
21	XDOZZ		D9913	867017711	.RAIL, TRACK.....	1
22	PAOZZ	5340-12-357-7988	D9913	909666707	.PAD EYE.....	1
23	PAOZZ	5305-12-143-0017	D8286	DIN931-M16X55-10 .9-A3P	.SCREW, CAP, HEXAGON H.....	4
24	PAOZZ	5310-12-130-4738	D8286	DIN463-17-ST	.WASHER, KEY.....	4
25	PAOZZ	5360-12-357-9321	D9913	909573042	SPRING, HELICAL, COMP.....	32
26	PAOZZ	5315-12-357-7869	D9913	867011802	PIN, STRIAGHT, HEADED.....	64

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)



* a PART OF ITEM 26

ITEMS 6, 11, 12, AND 13 INCLUDE
 PACKING, PREFORMED ITEM 7

ITEM 9 INCLUDES PACKING,
 PREFORMED ITEM 10

Figure 12. Front Wheel Lifting Cylinder and Related Parts.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 02 PALLET						
0201 FRONT WHEEL LIFTING CYLINDER AND RELATED PARTS						
FIG. 12 FRONT WHEEL LIFTING CYLINDER AND RELATED PARTS						
1	PAOZZ	3110-12-357-7979	D9913	862914005	PLATE,RETAINING,BEA.....	2
2	PAOZZ	5305-12-148-8185	D8286	DIN7984-M8X12-8. 8-A2P	SCREW,CAP,SOCKET HE.....	8
3	XDOZZ		D9913	862916002	BUSHING,SLEEVE.....	4
4	PAOZZ	3040-12-357-7975	D9913	862901901	CONNECTING LINK,RID.....	2
5	PAOZZ	3040-12-357-7879	D9913	904060543	CYLINDER ASSEMBLY,A L.H.....	2
5	PAOZZ	3040-12-357-7880	D9913	904060542	CYLINDER ASSEMBLY,A R.H.....	2
6	XDOZZ		D9913	864005661	TUBE ASSEMBLY,METAL.....	2
7	XDOZZ		D8134	DOZ08L/71	PACKING,PREFORMED.....	8
8	XDOZZ		D9913	119238	TEE,PIPE.....	4
9	XDOZZ		D8134	GE08ZLMEDA3C	ADAPTER,STRAIGHT TU.....	8
10	PAOZZ	5330-12-305-2052	D8134	ED12X1,5X	PACKING,PREFORMED.....	8
11	XDOZZ		D9913	864005697	TUBE ASSEMBLY,METAL.....	1
11	XDOZZ		D9913	864005701	TUBE ASSEMBLY,METAL.....	1
12	XDOZZ		D9913	864005699	TUBE ASSEMBLY,METAL.....	2
13	XDOZZ		D9913	864005702	TUBE ASSEMBLY,METAL.....	1
13	XDOZZ		D9913	864005593	TUBE ASSEMBLY,METAL.....	1
15	PAOZZ	5310-12-151-4843	D8286	DIN128-A14-FST-A 3P	WASHER,LOCK.....	16
16	PAOZZ	3040-12-357-8270	D9913	862914601	SHAFT,SHOULDERED.....	2
17	PAOOO	5340-12-358-0095	D9913	862904302	BRACKET,MOUNTING.....	2
18	XDOZZ		D9913	862904304	.BRACKET,MOUNTING.....	1
19	PAOZZ	5340-12-359-3457	D9913	862914003	.BUMPER,METALLIC.....	12
20	PAOZZ	5305-12-179-7349	D8286	DIN7991-M5X12-8. 8-A2P	.SCREW,CAP,SOCKET HE.....	24
21	PAOZZ	5310-12-159-4324	D8286	DIN934-M16X1.5-1 0-A2P	NUT,SELF-LOCKING,HE.....	4
22	PAOZZ	5310-12-145-2077	D8286	DIN80705-M16X1,5 -14H-A2P	NUT,PLAIN,HEXAGON H.....	4
23	XDOZZ		D9913	862914009	PLATE,RETAINING,BEA.....	2
24	PAOZZ	5305-12-184-2237	D8286	DIN7984-M6X12-8. 8-A2C	SCREW,CAP,SOCKET HE.....	8
25	PAOZZ	3120-12-357-8271	D9913	862916001	BUSHING,SLEEVE.....	4
26	PAOZZ	3040-12-357-8530	D9913	862905401	BRACKET,EYE,ROTATIO.....	2
27	PAOZZ	2530-12-359-3454	D9913	902845207	.HUB,WHEEL VEHICULAR.....	1
28	PAOZZ	4730-12-125-0313	D8286	DIN71412-AM8X1	FITTING,LUBRICATION.....	2
29	PAOZZ	5365-12-124-0246	D8286	DIN471-38X1,75-A 3P	RING,RETAINING.....	2
30	PAOZZ	4730-14-413-4642	F0644	EVW08L71	ELBOW,TUBE.....	2

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)

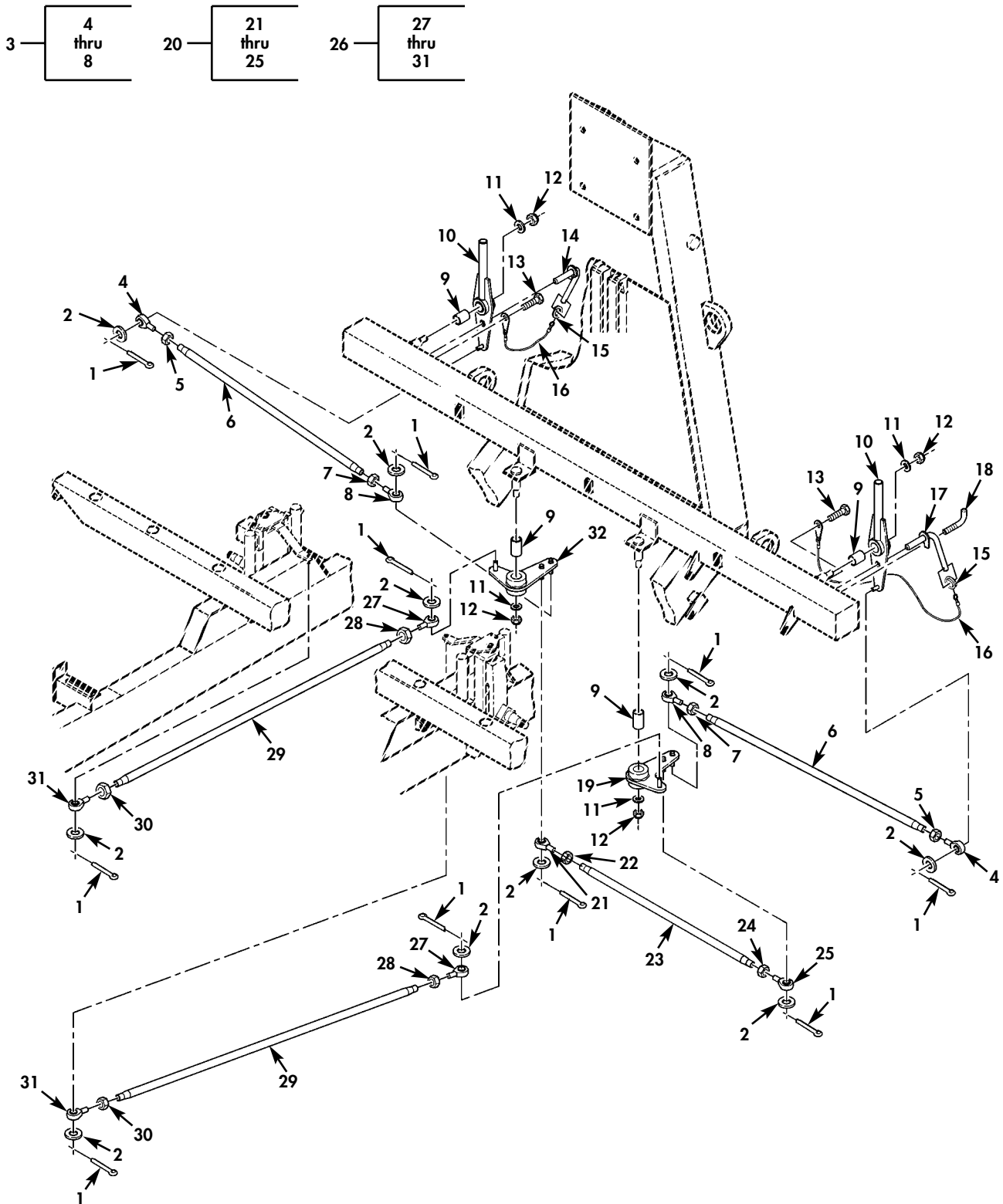


Figure 13. Steering Linkage, Manual Levers, Bell Cranks, and Shoring Pads (Sheet 1 of 2).

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST

RAPIDLY EMPLACED BRIDGE (REB)

M21 (NSN 5420-01-481-3959)

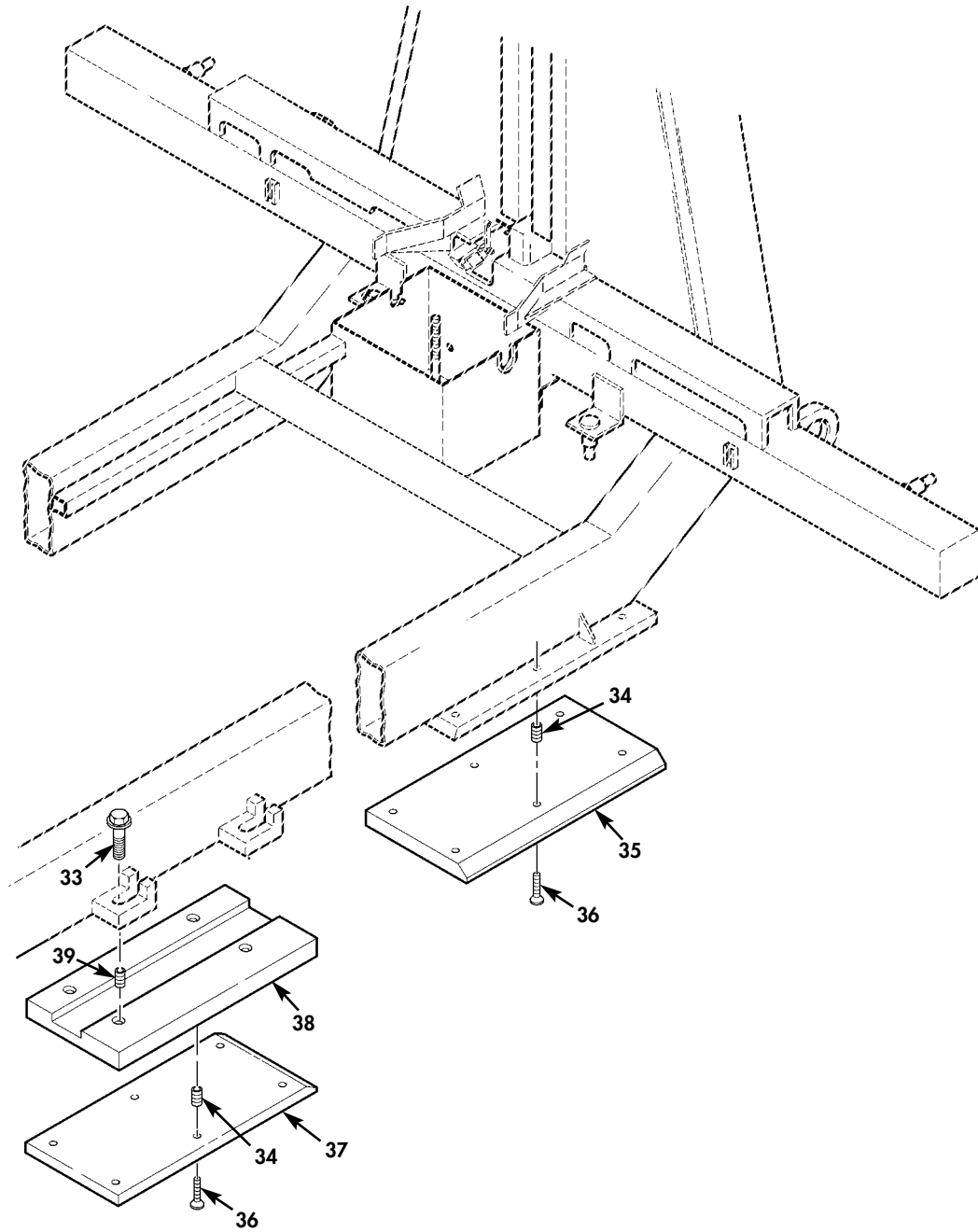
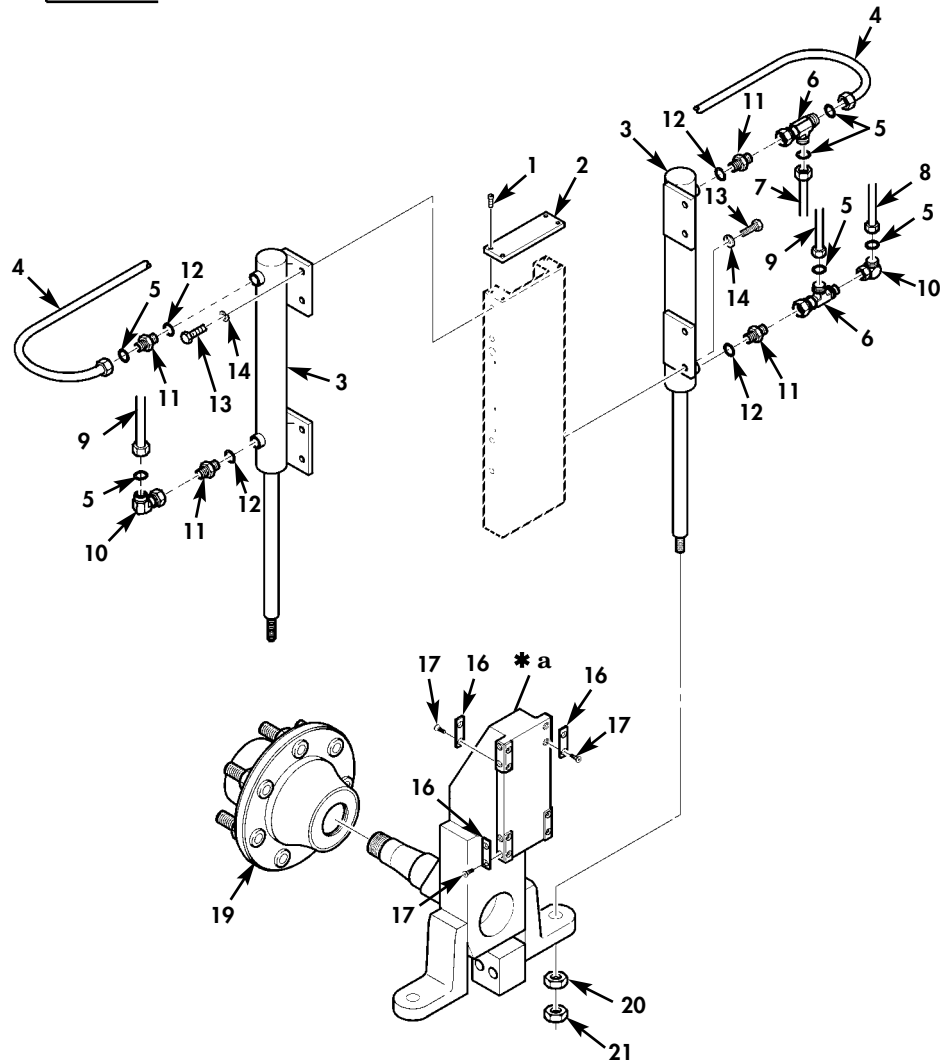
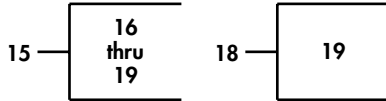


Figure 13. Steering Linkage, Manual Levers, Bell Cranks, and Shoring Pads (Sheet 2 of 2).

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0202 STEERING LINKAGE, MANUAL LEVERS, BELL CRANKS, AND SHORING PADS						
FIG. 13 STEERING LINKAGE, MANUAL LEVERS, BELL CRANKS, AND SHORING PADS						
1	PAOZZ	5315-12-346-8378	I9008	ISO1234-2, 5X18-S T-A3P	PIN, COTTER.....	10
2	PAOZZ	5310-12-149-4352	D8286	DIN125-A13-140HV -A3P	WASHER, FLAT.....	10
3	PAOOO	5340-12-358-0100	D9913	862908905	TURNBUCKLE.....	2
4	PAOZZ	3120-12-359-1901	D9913	909646220	.ROD END, THREADED.....	1
5	PAOZZ	5310-12-344-2690	D3273	06112712265	.NUT, PLAIN, HEXAGON.....	1
6	XDOZZ		D9913	862908906	.HOUSING ASSEMBLY.....	1
7	PAOZZ	5310-12-163-6759	D8286	DIN439-BM12-04-A 2P	.NUT, PLAIN, HEXAGON.....	1
8	PAOZZ	3120-12-359-1900	D9913	909646221	.ROD END, THREADED.....	1
9	PAOZZ	3120-12-357-7980	D9913	862916003	BEARING, SLEEVE.....	4
10	PAOZZ	3040-12-357-7978	D9913	862901904	LEVER, MANUAL CONTRO.....	2
11	PAOZZ	5310-12-357-7981	D9913	862918101	WASHER, FLAT.....	4
12	PAOZZ	5310-12-305-3906	D8286	DIN6925-M20-8-A2 P	NUT, SELF-LOCKING, HE.....	4
13	PAOZZ	5305-12-141-9810	D8286	DIN933-M4X12-8.8 -A2P	SCREW, CAP, HEXAGON H.....	2
14	PAOZZ	5340-12-358-0097	D9913	862905005	HANDLE, MANUAL CONTR.....	1
15	PAOZZ	5365-12-356-2200	D9913	701718701	RING, CONNECTING, ROU.....	2
16	PAOZZ	4010-12-179-1461	D2040	LT1504-C6-10	WIRE ROPE.....	2
17	PAOZZ	5340-12-358-0096	D9913	862905004	HANDLE, MANUAL CONTR.....	1
18	PAOZZ	5340-12-357-8432	D9913	862913401	HOOK, SUPPORT.....	2
19	PAOZZ	3040-12-357-7976	D9913	862901902	BELL CRANK.....	1
20	PAOOO	5340-12-358-0099	D9913	862908903	TURNBUCKLE.....	1
21	PAOZZ	3120-12-359-1900	D9913	909646221	.ROD END, THREADED.....	1
22	PAOZZ	5310-12-163-6759	D8286	DIN439-BM12-04-A 2P	.NUT, PLAIN, HEXAGON.....	1
23	XDOZZ		D9913	862908904	.HOUSING ASSEMBLY.....	1
24	PAOZZ	5310-12-344-2690	D3273	06112712265	.NUT, PLAIN, HEXAGON.....	1
25	PAOZZ	3120-12-359-1901	D9913	909646220	.ROD END, THREADED.....	1
26	PAOOO	5340-12-358-0098	D9913	862908901	TURNBUCKLE.....	2
27	PAOZZ	3120-12-359-1900	D9913	909646221	.ROD END, THREADED.....	1
28	PAOZZ	5310-12-163-6759	D8286	DIN439-BM12-04-A 2P	.NUT, PLAIN, HEXAGON.....	1
29	XDOZZ		D9913	862908902	.HOUSING ASSEMBLY.....	1
30	PAOZZ	5310-12-344-2690	D3273	06112712265	.NUT, PLAIN, HEXAGON.....	1
31	PAOZZ	3120-12-359-1901	D9913	909646220	.ROD END, THREADED.....	1
32	PAOZZ	3040-12-357-7977	D9913	862901903	BELL CRANK.....	1
33	XDOZZ		D9913	865308501	SCREW, CAP, HEXAGON H.....	8
34	PAOZZ	5340-12-142-8479	D8442	LN9039-07160	INSERT, SCREW THREAD.....	12
35	XDOZZ		D9913	865343703	BUMPER, NONMETALLIC.....	2
36	PAOZZ	5305-12-310-8740	D8286	DIN7991-M8X40-8. 8-A2P	SCREW, CAP, SOCKET HE.....	24
37	XDOZZ		D9913	865343702	PLATE, MOUNTING.....	2
38	XDOZZ		D9913	865340381	PLATE, MOUNTING L.H.....	2
38	XDOZZ		D9913	865340380	PLATE, MOUNTING R.H.....	2
39	PAOZZ	5325-12-152-5813	D8442	LN9499-13240	INSERT, SCREW THREAD.....	8

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)



* a PART OF ITEM 18

ITEMS 4, 7, 8, AND 9 INCLUDE
 PACKING, PREFORMED ITEM 5

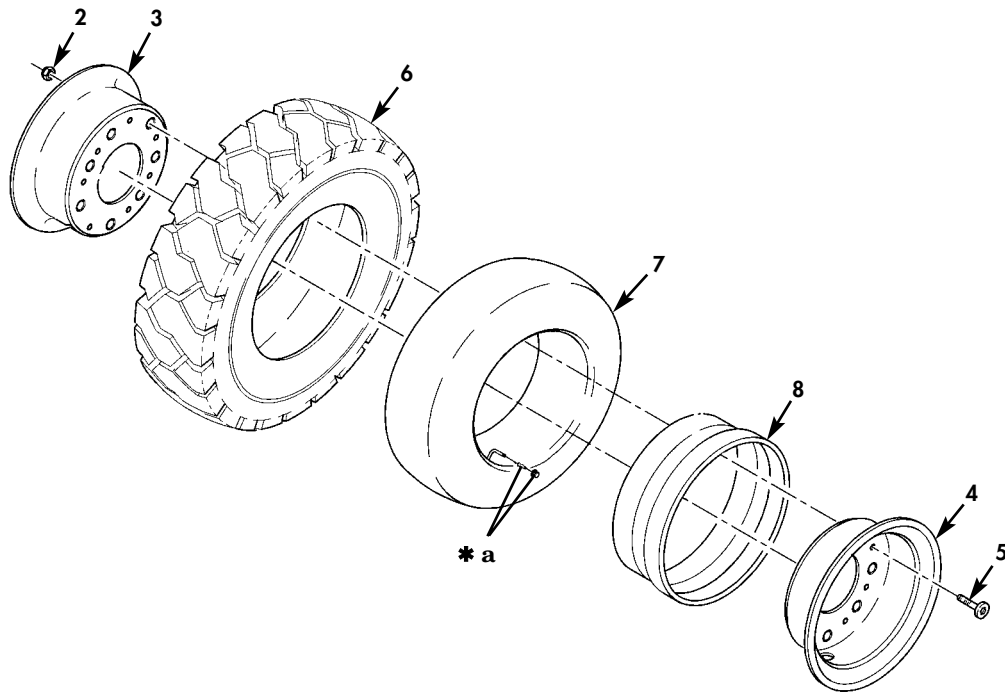
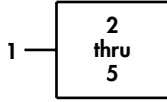
ITEM 11 INCLUDES PACKING,
 PREFORMED ITEM 12

Figure 14. Rear Wheel Lifting Cylinder and Related Parts.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0203 REAR WHEEL LIFTING CYLINDER AND RELATED PARTS						
FIG. 14 REAR WHEEL LIFTING CYLINDER AND RELATED PARTS						
1	PAOZZ	5305-12-184-2237	D8286	DIN7984-M6X12-8.8-A2C	SCREW,CAP, SOCKET HE.....	8
2	PAOZZ	5340-12-357-9703	D9913	862914006	COVER, ACCESS.....	4
3	PAOZZ	3040-12-357-7879	D9913	904060543	CYLINDER ASSEMBLY,A.....	2
3	PAOZZ	3040-12-357-7880	D9913	904060542	CYLINDER ASSEMBLY,A.....	2
4	XDOZZ		D9913	864005661	TUBE ASSEMBLY,METAL.....	1
5	PAOZZ	5340-12-357-8432	D9913	862913401	HOOK,SUPPORT.....	2
6	XDOZZ		D8134	EVL08L71	TEE,TUBE.....	4
7	PAOZZ	4710-01-K77-4047	D9913	864005538	TUBE ASSEMBLY,METAL.....	1
7	XDOZZ		D9913	864005512	TUBE ASSEMBLY,METAL.....	1
8	PAOZZ	4710-01-K77-4048	D9913	864005526	TUBE ASSEMBLY,METAL.....	1
8	XDOZZ		D9913	864005525	TUBE ASSEMBLY,METAL.....	1
9	XDOZZ		D9913	864005599	TUBE ASSEMBLY,METAL.....	1
10	PAOZZ	4730-14-413-4642	F0644	EVW08L71	ELBOW,TUBE.....	4
11	XDOZZ		D8134	GE08ZLMEDA3C	ADAPTER, STRAIGHT TU.....	8
12	PAOZZ	5330-12-305-2052	D8134	ED12X1,5X	PACKING,PREFORMED.....	8
13	PAOZZ	5305-12-167-5376	D8286	DIN933-M12X35-8.8-A3C	SCREW,CAP, HEXAGON H.....	16
14	PAOZZ	5310-12-151-4078	D8286	DIN128-A12-FST-A3P	WASHER, LOCK.....	16
15	PAOOO	5340-12-357-7993	D9913	862904305	BRACKET,MOUNTING R.H.....	1
15	PAOOO	5340-12-357-7991	D9913	862904306	BRACKET,MOUNTING L.H.....	1
16	PAOZZ	5340-12-359-3457	D9913	862914003	.BUMPER,METALLIC.....	12
17	PAOZZ	5305-12-179-7349	D8286	DIN7991-M5X12-8.8-A2P	.SCREW,CAP, SOCKET HE.....	24
18	XDOZZ		D9913	862904307	.BRACKET,MOUNTING.....	1
18	PAOZZ	5340-12-359-3456	D9913	862904308	.BRACKET,MOUNTING.....	1
19	PAOZZ	2530-12-359-3454	D9913	902845207	.HUB,WHEEL VEHICULAR.....	1
20	PAOZZ	5310-12-159-4324	D8286	DIN934-M16X1.5-10-A2P	NUT, SELF-LOCKING, HE.....	4
21	PAOZZ	5310-12-145-2077	D8286	DIN80705-M16X1,5-14H-A2P	NUT, PLAIN, HEXAGON H.....	4

END OF FIGURE

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* a PART OF ITEM 7

Figure 15. Tire and Wheel Assembly.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0204 TIRE AND WHEEL ASSEMBLY						
FIG. 15 TIRE AND WHEEL ASSEMBLY						
1	XDOOO		D9913	862910502	CYLINDER,SUPPORT.....	4
2	XDOZZ		D9913	909520377	.NUT,SELF-LOCKING.....	7
3	XDOZZ		D9913	902911019	.WHEEL,INNER.....	1
4	XDOZZ		D9913	902911020	.WHEEL,OUTER.....	1
5	XDOZZ		D9913	909551085	.SCREW,CAP,SOCKET.....	7
6	XDOZZ		D9913	902950832	TIRE.....	4
7	XDOZZ		D9913	902516213	TUBE,INNER.....	4
8	XDOZZ		D9913	902951105	FLAP,CLINCHER BAND.....	4

END OF FIGURE

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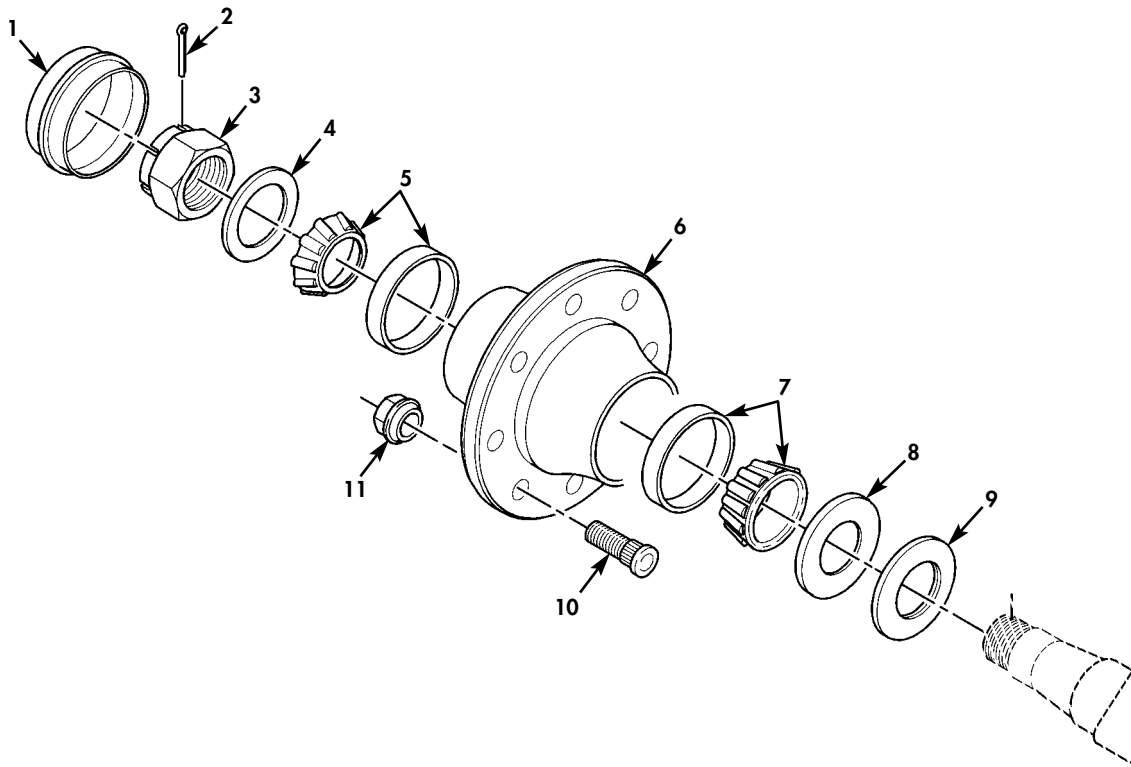
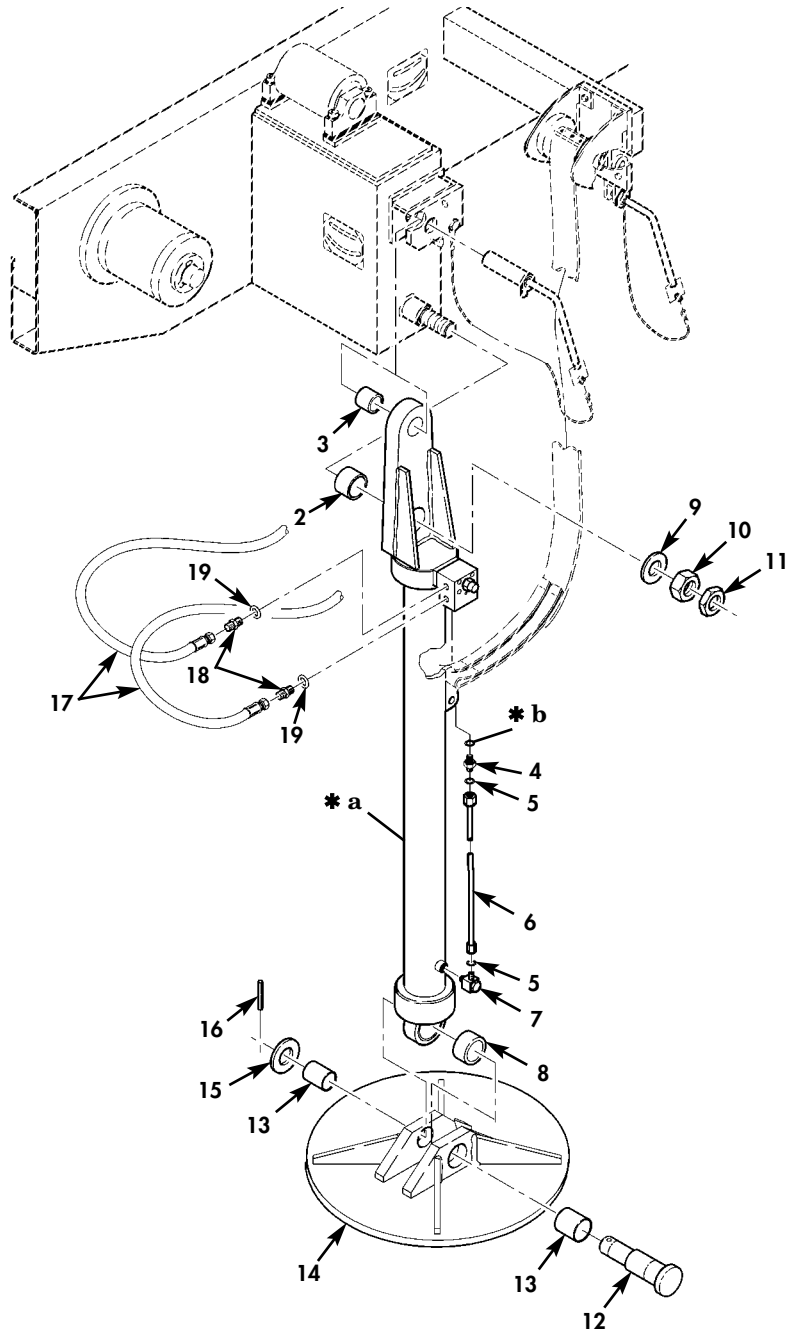
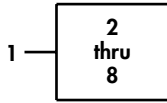


Figure 16. Wheel Hub.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0205 WHEEL HUB						
FIG. 16 WHEEL HUB						
1	XDOZZ		D9913	902847301	WHEEL CAP.....	4
2	PAOZZ	5315-12-131-7424	D8286	DIN94-4X40-ST-A3 P	PIN,COTTER.....	4
3	XDOZZ		D9913	909520376	CROWN NUT.....	4
4	XDOZZ		D9913	909541023	WASHER.....	4
5	XDOZZ		D9913	909740334	CONICAL ROLLER BEAR.....	4
6	XDOZZ		D9913	902845208	WHEEL HUB.....	4
7	XDOZZ		D9913	909770335	CONICAL ROLLER BEAR.....	4
8	XDOZZ		D9913	902848704	SEALING RING.....	4
9	XDOZZ		D9913	902848705	DISTANCE RING.....	4
10	XDOZZ		D9913	902925009	WHEEL BOLT.....	28
11	PAOZZ	5310-12-359-2880	D8286	DIN74361-A18-8-A 3C	NUT,PLAIN,SINGLE BA.....	28

END OF FIGURE

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* a PART OF ITEM 1
 * b PART OF ITEM 4

ITEM 18 INCLUDES PACKING,
 PREFORMED ITEM 19

Figure 17. Supporting Cylinder and Bottom Plate.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0206 SUPPORTING CYLINDERS						
FIG. 17 SUPPORTING CYLINDER AND BOTTOM PLATE						
1	XDOOO		D9913	904060541	SUPPORT CYLINDER.....	2
2	XDOZZ		D9913	904066001	.BUSHING,SLEEVE.....	2
3	XDOZZ		D9913	904066002	.BUSHING,SLEEVE.....	2
4	PAOZZ	4730-12-182-9102	D8286	DIN2353-CL10-ST	.ADAPTER,STRAIGHT,TU.....	1
6	XDOZZ		D9913	904005501	.ASSEMBLY,TUBE.....	1
7	PAOZZ	4730-12-142-9165	D8134	SWVE10-PLM	.SWIVEL JOINT,HYDRAU.....	1
8	XDOZZ		D2457	GE50TGR	.BEARING,SLEEVE.....	1
9	PAOZZ	5310-12-142-3025	D8286	DIN125-B36-140HV -A3P	WASHER,FLAT.....	2
10	XDOZZ		D9913	937090	NUT,HEXAGON.....	2
11	XDOZZ		D9913	936682	NUT,PLAIN,HEXAGON.....	2
12	XDOZZ		D9913	904065001	PIN,STRAIGHT HEADE.....	2
13	XDOZZ		D9913	904066003	BUSHING,SLEEVE.....	4
14	XDOZZ		D9913	904064001	SHOE,JACK SUPPORT.....	2
15	XDOZZ		D9913	938340	WASHER,FLAT.....	2
16	XDOZZ		D9913	940953	PIN,STRAIGHT HEADED.....	2
17	PAOZZ	4720-12-359-3737	D9913	909724861	HOSE ASSEMBLY,NONME.....	2
18	XDOZZ		D8134	GE12ZLM14X1.5EDA	ADAPTER,STRAIGHT TU.....	4
19	PAOZZ	5330-12-184-0390	D8134	ED14X1,5X	PACKING,PREFORMED.....	4

END OF FIGURE

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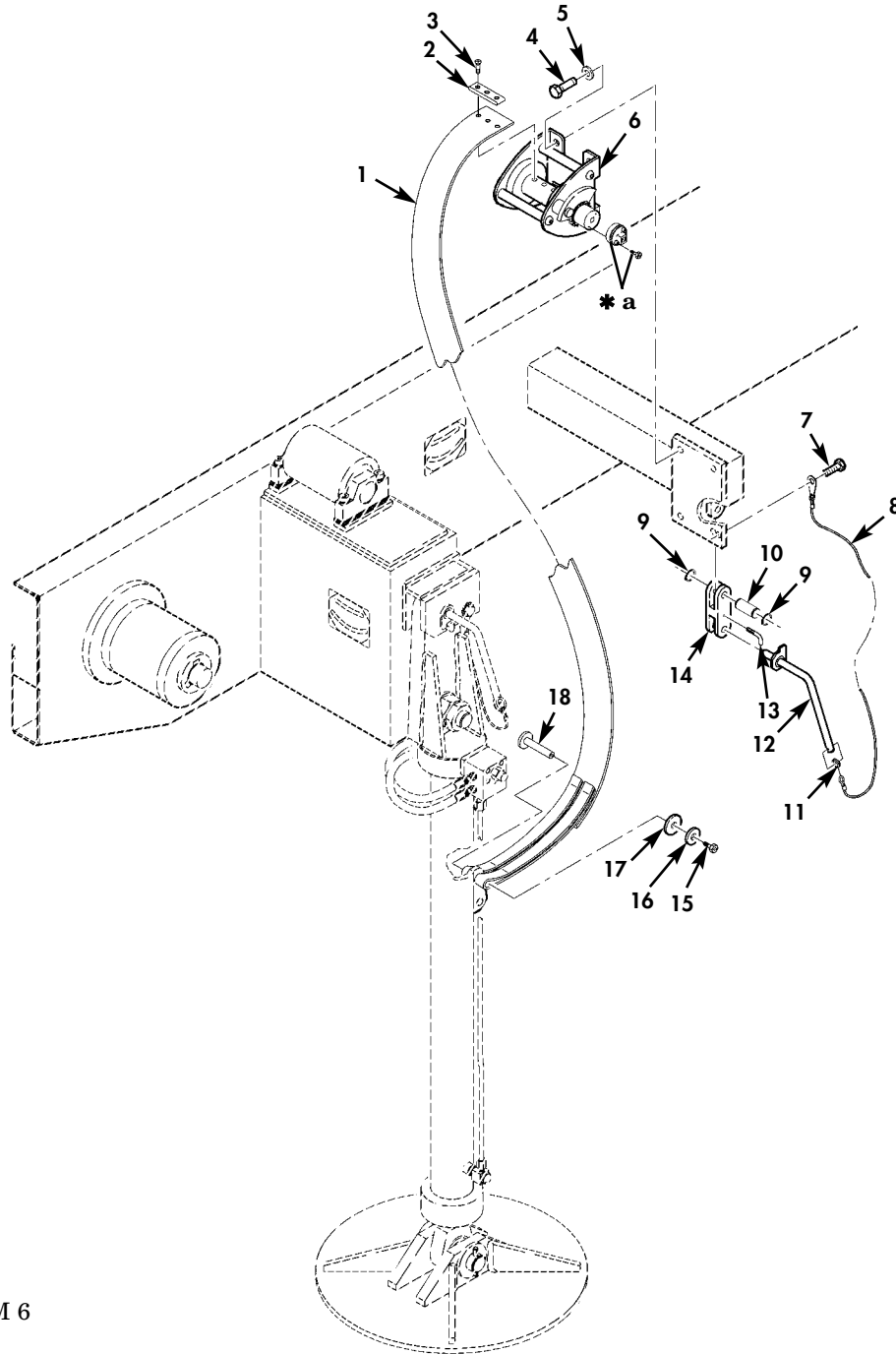


Figure 18. Supporting Cylinder, Winch, Strap, and Retaining Pins.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0207 SUPPORTING CYLINDER,WINCH, STRAP,AND RETAINING PINS						
FIG. 18 SUPPORTING CYLINDER,WINCH,STRAP, AND RETAINING PINS						
1	XDOZZ		D9913	864063801	STRAP,WEBBING.....	2
2	XDOZZ		D9913	864064004	PLATE,MOUNTING.....	2
3	XDOZZ		D9913	935719	SCREW, MACHINE.....	6
4	PAOZZ	5305-12-141-9888	D8286	DIN933-M10X20-8. 8-A3P	SCREW,CAP,HEXAGON H.....	8
5	PAOZZ	5310-12-142-0481	D8286	DIN125-B10,5-140 HV-A3P	WASHER,FLAT.....	8
6	PAOZZ	3950-12-357-7666	D9913	863810101	WINCH,DRUM,HAND OPE.....	2
7	PAOZZ	5305-12-156-4868	D8286	DIN933-M4X10-8.8 -A2P	SCREW,CAP,HEXAGON H.....	2
9	PAOZZ	5365-12-313-6741	D8286	DIN471-15X1-A3P	RING,RETAINING.....	4
10	PAOZZ	5315-12-357-7982	D9913	864065003	PIN,GROOVED,HEADLES.....	2
11	PAOZZ	5365-12-356-2200	D9913	701718701	RING,CONNECTING,ROU.....	2
12	PAOZZ	5340-12-358-0102	D9913	864005002	HANDLE,MANUAL CONTR R.H.....	1
12	PAOZZ	5340-12-357-7994	D9913	864005003	HANDLE,MANUAL CONTR L.H.....	1
13	PAOZZ	5340-12-357-8432	D9913	862913401	HOOK,SUPPORT.....	2
14	PAOZZ	3040-12-357-8272	D9913	864065901	CONNECTING LINK,RID.....	2
15	PAOZZ	5305-12-142-5914	D8286	DIN912-M5X12-8.8 -A2P	SCREW,SOCKETHEAD.....	2
16	PAOZZ	5310-12-175-0041	D8286	DIN125-B5,3-140H V-A4	WASHER,FLAT.....	2
17	XDOZZ		D9913	864068107	WASHER,FLAT.....	2
18	XDOZZ		D9913	864065007	PIN,STRAIGHT,HEADED.....	2

END OF FIGURE

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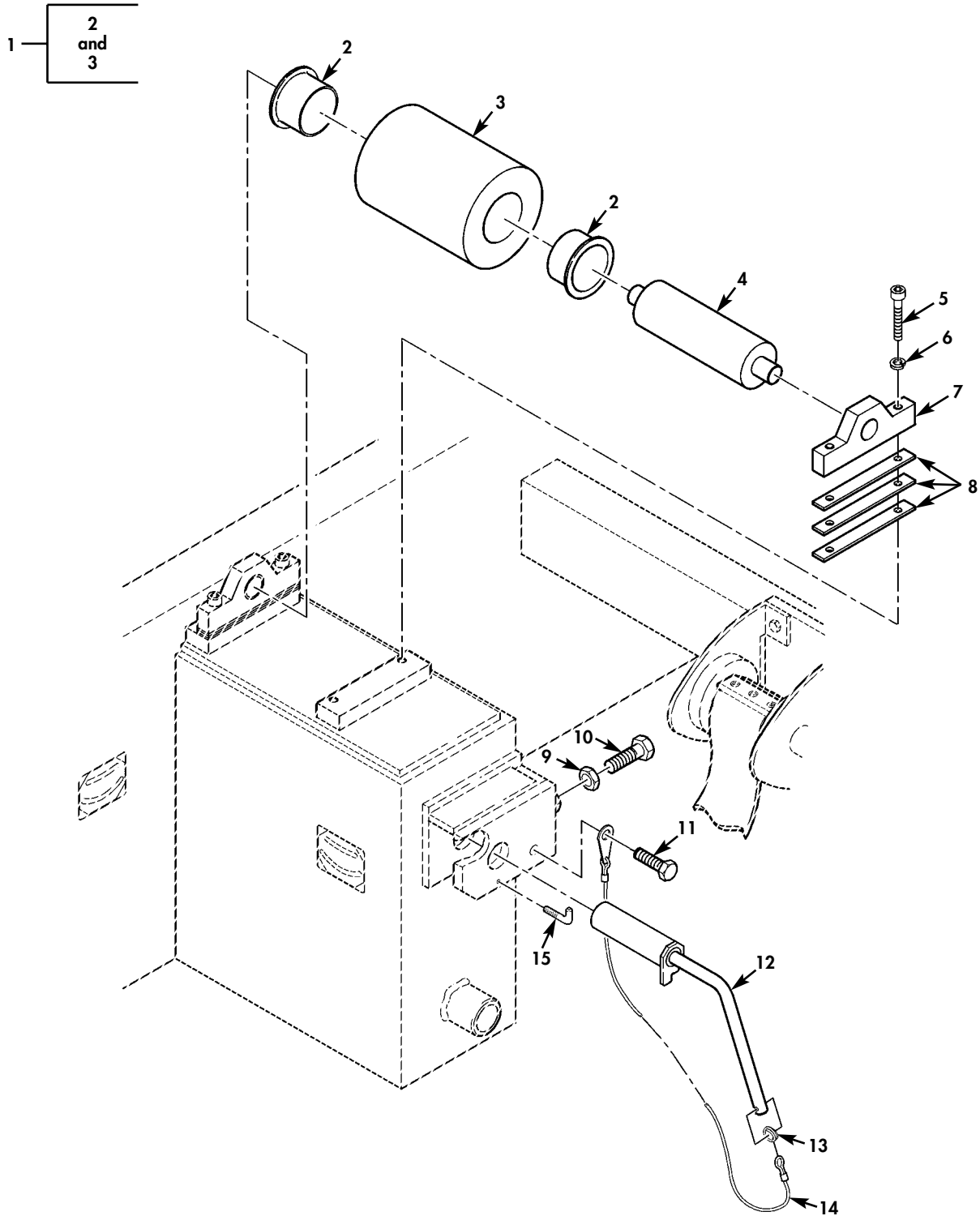


Figure 19. Support Roller and Retaining Pins.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0208 SUPPORT ROLLER AND RETAINING PINS						
FIG. 19 SUPPORT ROLLER AND RETAINING PINS						
1	XDOOO		D9913	865306604	SUPPORT ROLLER ASSE.....	2
2	PAOZZ	3120-12-346-3316	D9913	909562483	.BEARING,SLEEVE.....	2
3	XDOZZ		D9913	865346601	.SUPPORT ROLLER.....	1
4	XDOZZ		D9913	865344602	SHAFT, SHOULDERED.....	2
5	PAOZZ	5305-12-142-2957	D8286	DIN912-M8X35-8.8 -A2P	SCREW,CAP, SOCKET, HE.....	8
6	PAOZZ	5310-12-175-0141	D8286	DIN125-A8, 4-140H V-A3C	WASHER, FLAT.....	8
7	XDOZZ		D9913	865345402	BRACKET, SUPPORT.....	4
8	XDOZZ		D9913	865340376	SHIM.....	12
9	PAOZZ	5310-12-166-7736	D8286	DIN439-BM16-06-A 2P	NUT, PLAIN, HEXAGON.....	2
9	PAOZZ	5310-12-166-7736	D8286	DIN439-BM16-05-A 2P	NUT, PLAIN, HEXAGON.....	2
10	PAOZZ	5305-12-141-9959	D8286	DIN933-M16X50-8. 8-A3P	SCREW,CAP, HEXAGON H.....	2
11	PAOZZ	5305-12-156-4868	D8286	DIN933-M4X10-8.8 -A2P	SCREW,CAP, HEXAGON H.....	2
12	PAOZZ	5340-12-358-0101	D9913	864005001	HANDLE, MANUAL CONTR.....	2
13	PAOZZ	5365-12-357-9331	D9913	909193017	RING, CONNECTING, ROU.....	2
14	PAOZZ	4010-12-178-9346	D2040	LT1504-C6-12	WIRE ROPE ASSEMBLY.....	2
15	PAOZZ	5340-12-357-8432	D9913	862913401	HOOK, SUPPORT.....	2

END OF FIGURE

SUPPORTING INFORMATION
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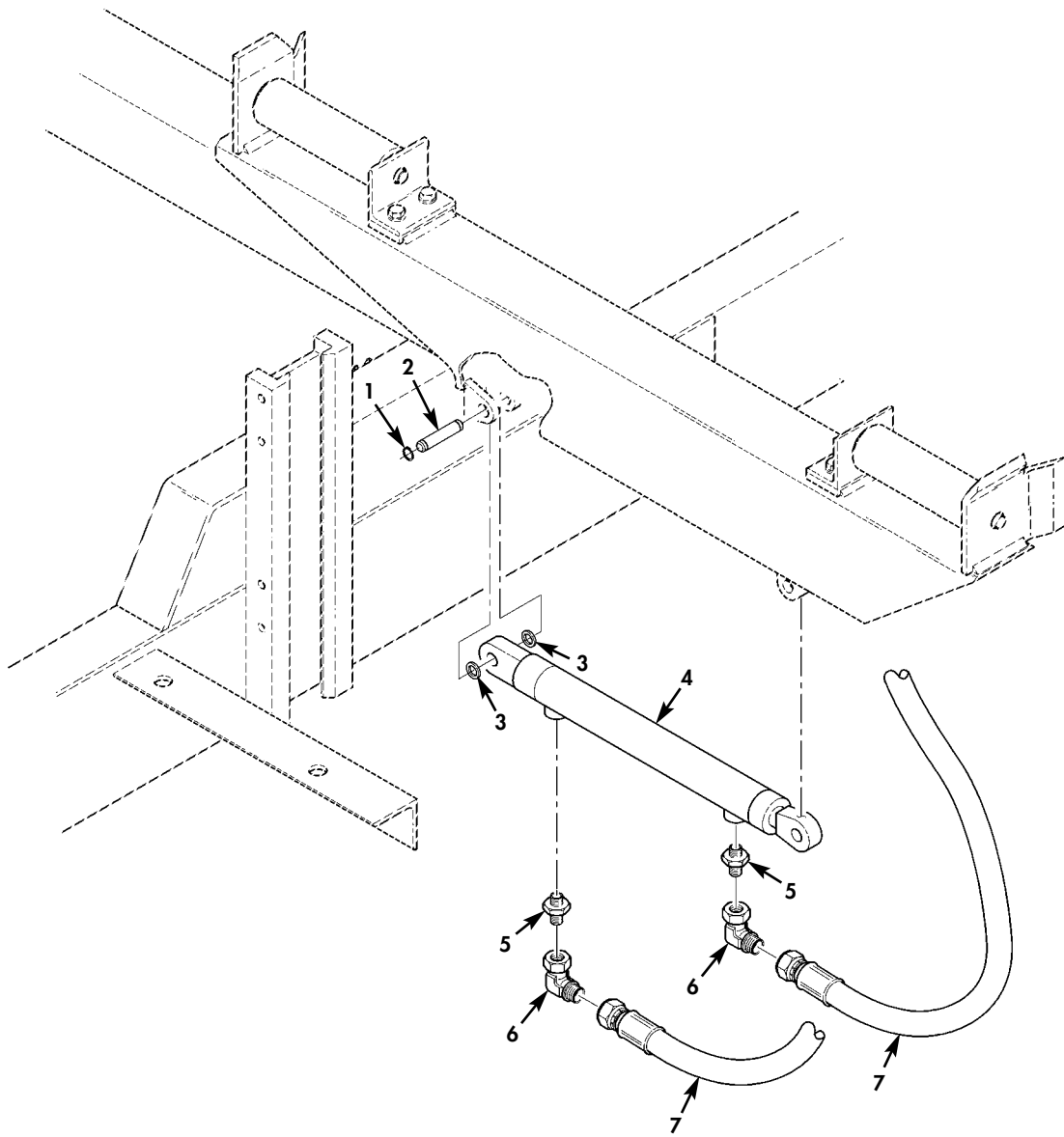
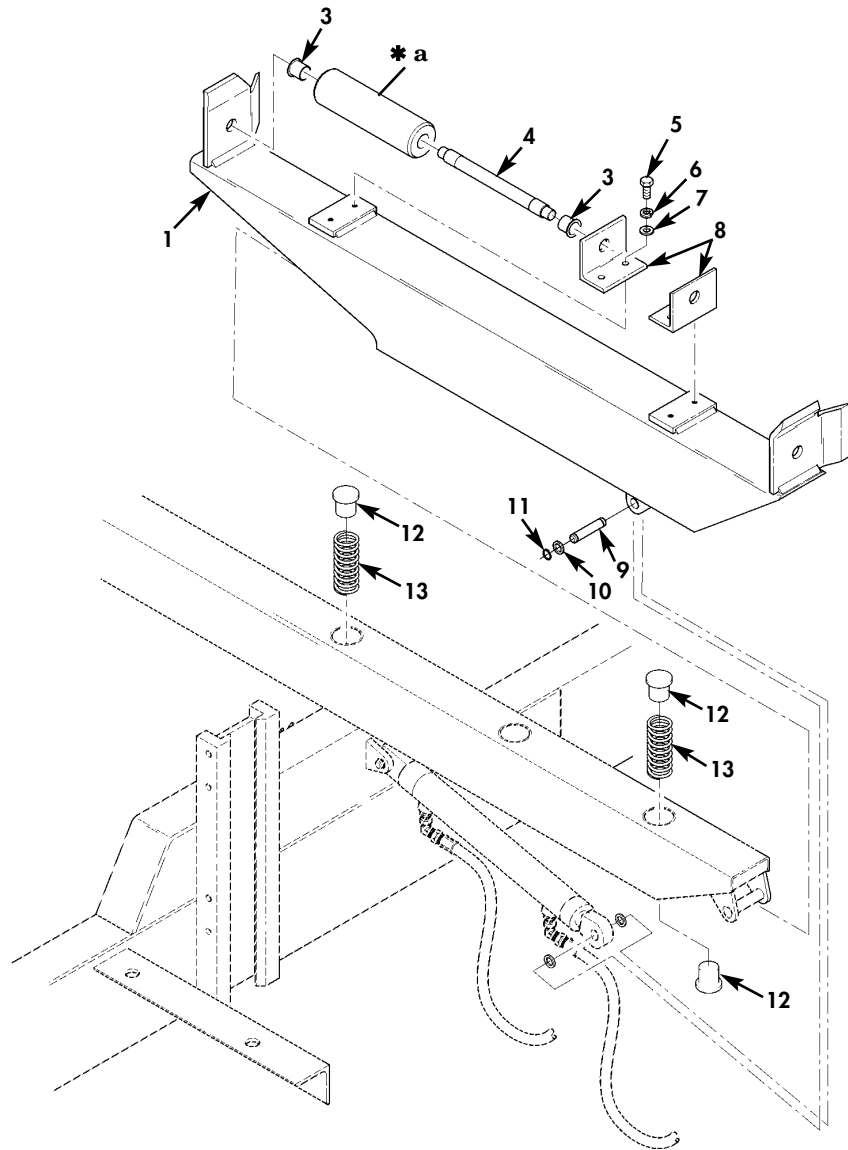
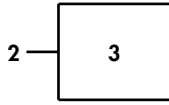


Figure 20. Telescopic Tube Hydraulic Cylinder.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0209 TELESCOPIC TUBE HYDRAULIC CYLINDER	
					FIG. 20 TELESCOPIC TUBE HYDRAULIC CYLINDER	
1	PAOZZ	5325-12-362-8049	D8286	DIN471-16X1-A3P	RING,RETAINING.....	8
2	PAOZZ	5315-12-357-9778	D9913	865345001	PIN,GROOVED,HEADLES.....	4
3	PAOZZ	5310-12-145-9176	D8286	DIN1440-16-ST-A3 P	WASHER,FLAT.....	8
4	PAOZZ	3040-12-357-7883	D9913	904060538	CYLINDER ASSEMBLY,A.....	4
5	XDOZZ		D8134	GE12ZLM14X1.5EDA 3C	ADAPTER,STRAIGHT,TU.....	8
6	XDOZZ		D9913	119140	ELBOW,TUBE.....	8
7	PAOZZ	4720-12-359-3737	D9913	909724861	HOSE ASSEMBLY,NONME.....	4

END OF FIGURE

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* a PART OF ITEM 2

Figure 21. Transport Rollers, Telescopic Tube, and Slide Pins.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0210 TRANSPORT ROLLERS, TELESCOPIC TUBE, AND SLIDE PINS						
FIG. 21 TRANSPORT ROLLERS, TELESCOPIC TUBE, AND SLIDE PINS						
1	PBOFL	2510-12-357-9382	D9913	865300103	FRAME, SECTION STRUC R.H.....	2
1	PBOFL	2510-12-357-8793	D9913	865300102	FRAME, SECTION STRUC L.H.....	2
2	PAOZZ	3990-12-357-7667	D9913	865306601	ROLLER, LINEAR.....	8
3	PAOZZ	3120-12-346-3316	D9913	909562483	.BEARING, SLEEVE.....	8
4	PAOZZ	3040-12-357-9067	D9913	865344601	SHAFT, SHOULDERED.....	8
5	PAOZZ	5305-12-129-9435	D8286	DIN933-M8X16-8.8	SCREW, CAP, HEXAGON H.....	16
6	PAOZZ	5310-12-306-1456	D8286	DIN128-A8-FST-A3 D	WASHER, LOCK.....	16
7	PAOZZ	5310-12-142-0645	D8286	DIN125-B8, 4-140H V-A3P	WASHER, FLAT.....	16
7	PAOZZ	5310-12-149-4353	D8286	DIN125-A8, 4-140H V-A3P	WASHER, FLAT.....	16
8	XDOZZ		D9913	865344303	BRACKET, ANGLE.....	8
9	PAOZZ	5315-12-357-9778	D9913	865345001	PIN, GROOVED, HEADLES.....	4
10	PAOZZ	5310-12-145-9176	D8286	DIN1440-16-ST-A3 P	WASHER, FLAT.....	8
11	PAOZZ	5325-12-362-8049	D8286	DIN471-16X1-A3P	RING, RETAINING.....	8
12	PAOZZ	5315-12-357-7877	D9913	865341801	PIN, STRAIGHT, HEADED.....	20
13	PAOZZ	5360-12-357-9321	D9913	909573042	SPRING, HELICAL, COMP.....	12

END OF FIGURE

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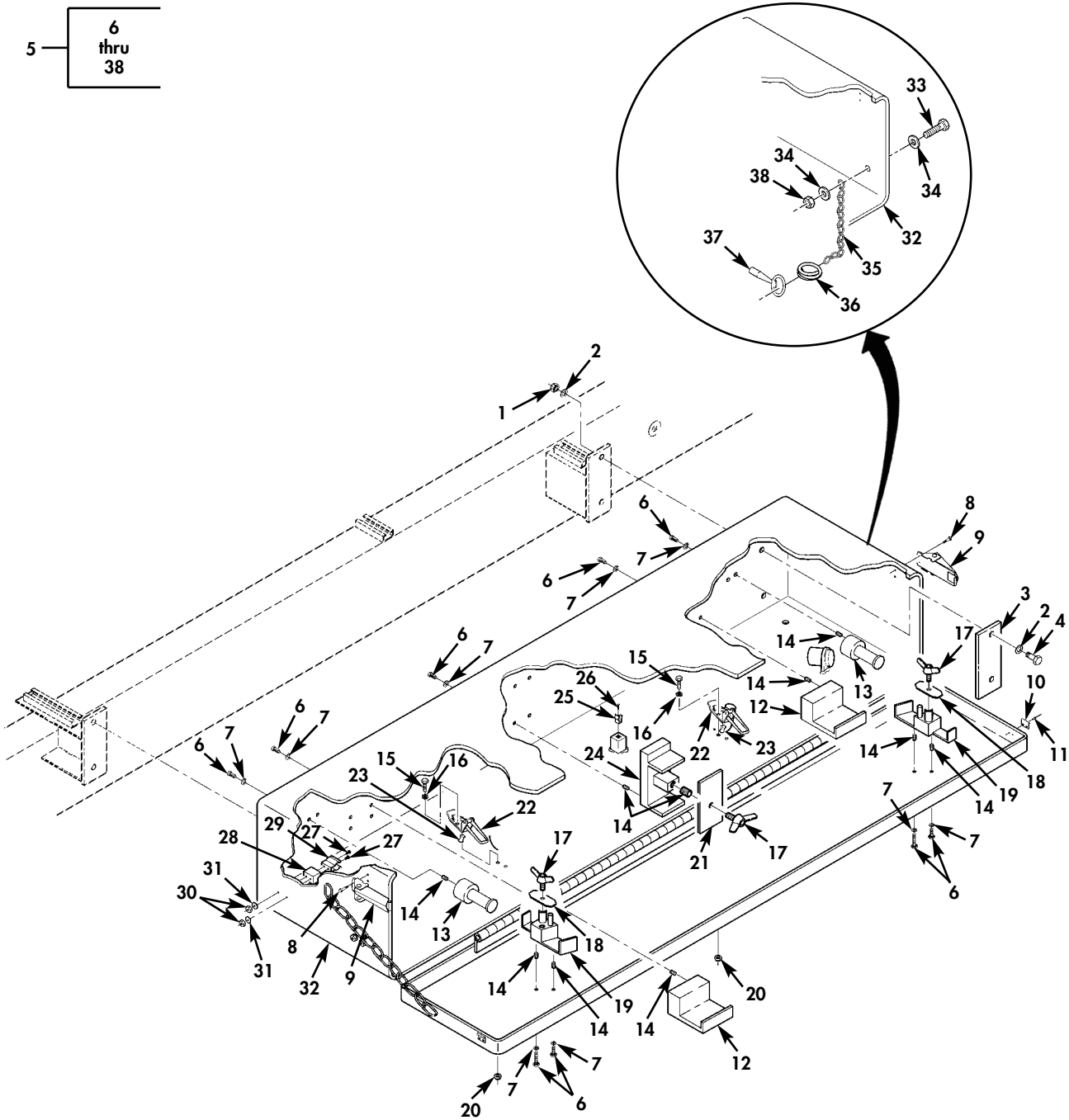


Figure 22. Toolboxes and Related Parts (Sheet 1 of 2).

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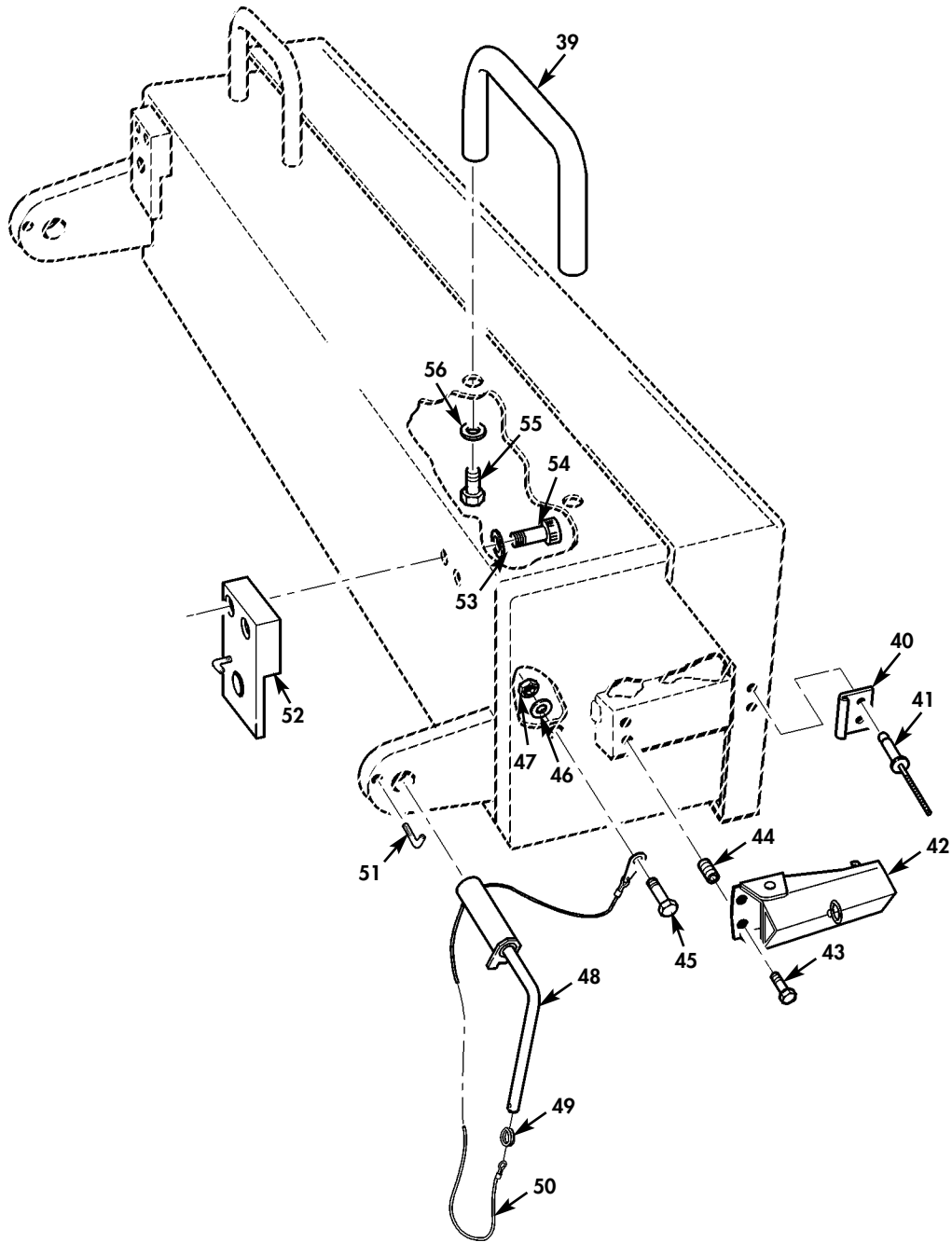


Figure 22. Toolboxes and Related Parts (Sheet 2 of 2).

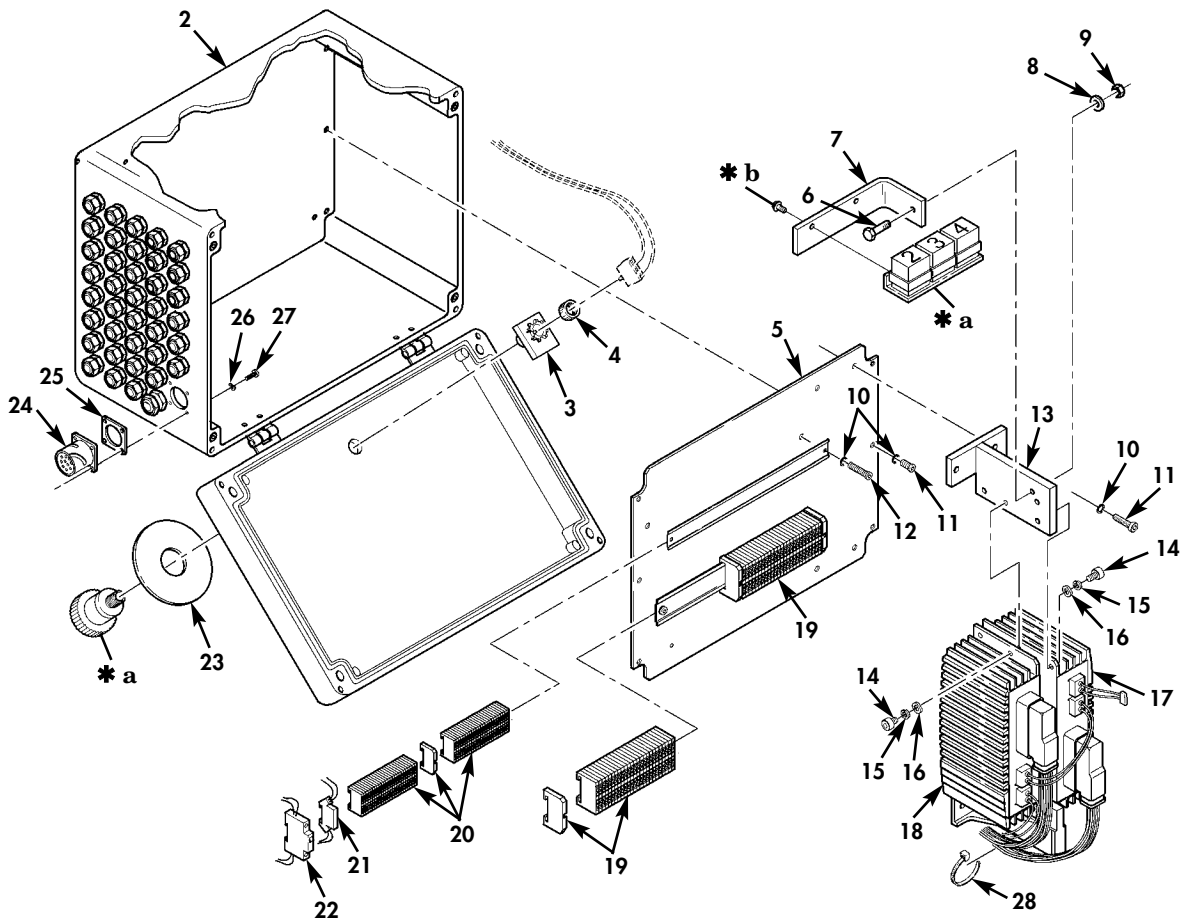
(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0211 TOOLBOX						
FIG. 22 TOOLBOXES AND RELATED PARTS						
1	PAOZZ	5310-12-319-2300	D8286	DIN6925-M10-8-A2 P	NUT, SELF-LOCKING, HE.....	8
2	PAOZZ	5310-12-189-7275	D8286	DIN125-B10, 5-140 HV-A4	WASHER, FLAT.....	16
3	XDOZZ		D9913	869140315	PLATE, MOUNTING.....	4
4	PAOZZ	5305-12-156-4858	D8286	DIN933-M10X35-8. 8-A3P	SCREW, CAP, HEXAGON H.....	8
5	PAOOO	2540-12-359-3455	D9913	869107202	BOX, ACCESSORY STOWA L.H.....	1
5	XDOOO		D9913	869107208	BOX, ACCESSORY STOWA R.H.....	1
6	PAOZZ	5305-12-156-4962	D8286	DIN933-M8X18-8.8 -A2P	.SCREW, CAP, HEXAGON H.....	20
7	PAOZZ	5310-12-306-1456	D8286	DIN128-A8-FST-A3 D	.WASHER, LOCK.....	20
8	PAOZZ	5305-12-141-9822	D8286	DIN933-M5X10-8.8 -A2P	.SCREW, CAP, HEXAGON H.....	4
9	PAOZZ	5340-12-311-7250	D0680	V917L01-1Y1AG	.CATCH, CLAMPING.....	2
10	PAOZZ	5340-12-338-3975	D0680	V917L11-1-1BP	.STRIKE, CATCH.....	2
11	PAOZZ	5320-12-152-7835	D8286	DIN7337-A5X10-AL -ST-A1P	.RIVET, BLIND.....	4
12	PAOZZ	5340-12-359-2946	D9913	869144306	.BRACKET, MULTIPLE AN.....	2
13	PAOZZ	5315-12-359-4138	D9913	869145007	.PIN, SHOULDER HEADED.....	2
14	PAOZZ	5340-12-142-8479	D8442	LN9039-07160	.INSERT, SCREW THREAD.....	23
15	PAOZZ	5305-12-170-6506	D8286	DIN963-M5X16-8.8 -A2P	.SCREW, MACHINE.....	4
16	PAOZZ	5310-12-175-0041	D8286	DIN125-B5, 3-140H V-A4	.WASHER, FLAT.....	4
17	PAOZZ	5305-12-176-0911	D8286	DIN316-M8X40-ST- B-A2P	.THUMBSCREW.....	3
18	PAOZZ	5340-12-359-2948	D9913	869144003	.PLATE, METAL.....	2
19	PAOZZ	5340-12-359-2944	D9913	869104304	.BRACKET, MULTIPLE AN.....	2
20	PAOZZ	5310-12-156-4990	D8286	DIN934-M5-8-A2P	.NUT, PLAIN, HEXAGON.....	4
21	PAOZZ	5340-12-359-2947	D9913	869144002	.PLATE, METAL.....	1
22	PAOZZ	2590-12-125-0335	D8905	6020150	.BRACKET, VEHICULAR C.....	2
23	PAOZZ	5340-12-359-3458	D9913	909842501	.MOUNT, RESILIENT.....	2
24	PAOZZ	5340-12-359-2945	D9913	869144305	.BRACKET, MULTIPLE AN.....	1
25	XDOZZ		D9913	909571802	.CLIP, RETAINING.....	1
26	PAOZZ	5305-12-351-3186	I9008	ISO4017-M3X8-8.8 -A2P	.SCREW, CAP, HEXAGON H.....	1
27	PAOZZ	5305-12-141-9814	D8286	DIN933-M4X30-8.8 -A2P	.SCREW, CAP, HEXAGON H.....	4
28	PAOZZ	5340-12-359-3459	D9913	869144308	.BRACKET, MOUNTING.....	2
29	PAOZZ	5360-12-123-3202	D8060	1236753EE8928-80	.SPRING, FLAT.....	2
30	PAOZZ	5310-12-327-8286	D8286	DIN6925-M4-8-A2P	.NUT, SELF-LOCKING, HE.....	4
31	PAOZZ	5310-12-156-4922	D8286	DIN125-A4, 3-140H V-A3P	.WASHER, FLAT.....	4
32	XDOZZ		D9913	869107203	.BOX, ACCESSORIES, STO L.H.....	1
32	XDOZZ		D9913	869107209	.BOX, ACCESSORIES, STO R.H.....	1
33	PAOZZ	5305-12-141-9828	D0589	6-107-0751	.SCREW, CAP, HEXAGON H.....	2
34	PAOZZ	5310-12-184-8509	D8286	DIN125-A6, 4-140H V-A3P	.WASHER, FLAT R.H. ONLY.....	1
35	XDOZZ		D9913	909661081	.CHAIN, WELDED R.H ONLY.....	1
36	PAOZZ	5365-12-357-9331	D9913	909193017	.RING, CONNECTING, ROU R.H. ONLY.....	1
37	PAOZZ	5120-12-140-9246	C0242	10.047004	.WRENCH, SOCKET R.H. ONLY.....	1
38	PAOZZ	5310-12-300-8148	D8286	DIN6925-M5-8-A2P	.NUT, SELF-LOCKING R.H. ONLY.....	1
39	XDOZZ		D9913	869141902	HANDLE, ARCHED.....	2
40	PAOZZ	5340-12-338-3975	D0680	V917L11-1-1BP	STRIKE, CATCH.....	2
41	PAOZZ	5320-12-152-7835	D2040	0317-5010	RIVET, BLIND.....	4
42	PAOZZ	5340-12-311-7250	D0680	V917L01-1Y1AG	CATCH, CLAMPING.....	2

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
43	PAOZZ	5305-12-141-9822	D8286	DIN933-M5X10-8.8 -A2P	SCREW,CAP,HEXAGON H.....	4
44	PAOZZ	5325-12-303-8988	D9728	41320050125	INSERT,SCREW THREAD.....	4
45	PAOZZ	5305-12-141-9810	D8286	DIN933-M4X12-8.8 -A2P	SCREW,CAP,HEXAGON H.....	2
46	PAOZZ	5310-12-156-4922	D8286	DIN125-A4,3-140H V-A3P	WASHER,FLAT.....	2
47	PAOZZ	5310-12-327-8286	D8286	DIN6925-M4-8-A2P	NUT,SELF-LOCKING,HE.....	4
48	XDOZZ		D9913	869105003	HANDLE,MANUAL CONTR R.H.....	1
48	XDOZZ		D9913	869105004	HANDLE,MANUAL CONTR L.H.....	1
49	PAOZZ	5365-12-356-2200	D9913	701718701	RING,CONNECTING,ROU.....	2
50	PAOZZ	4010-12-178-9346	D2040	LT1504-C6-12	WIRE ROPE ASSEMBLY.....	2
51	PAOZZ	5340-12-357-8432	D9913	862913401	HOOK,SUPPORT.....	4
52	XDOZZ		D9913	869104307	BRACKET,SUPPORT.....	2
53	PAOZZ	5310-12-154-1380	D8286	DIN125-B8,4-140H V-A4	WASHER,FLAT.....	4
54	PAOZZ	5305-12-142-0989	D8286	DIN912-M8X25-8.8 -A2P	SCREW,CAP,SOCKET HE.....	4
55	PAOZZ	5305-12-156-4863	D8286	DIN933-M8X20-8.8 -A2P	SCREW,CAP,HEXAGON H.....	4
56	PAOZZ	5310-12-142-0645	D8286	DIN125-B8,4-140H V-A3P	WASHER,FLAT.....	4

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)

1 — 2 thru 28



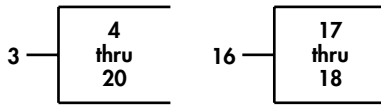
* a PART OF ITEM 3
 * b PART OF ITEM 7

Figure 23. SPS Control Unit Stowage Box.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0212 SPS CONTROL UNIT STOWAGE BOX						
FIG. 23 SPS CONTROL UNIT STOWAGE BOX						
1	XDOOO		D9913	868002201	DISTRIBUTION BOX.....	1
2	XDOZZ		D9913	908010616	.STOWAGE BOX.....	1
3	XDOZZ		D9913	908070577	.CONNECTOR,ELECTRIC.....	1
4	XDOZZ		D9913	908074815	.NUT,UNION.....	1
5	XDOZZ		D9913	868024002	.PLATE,MOUNTING.....	1
6	PAOZZ	5305-12-146-2633	D8286	DIN933-M6X16-8.8 -A2P	.SCREW,CAP,HEXAGON H.....	1
7	XDOZZ		D9913	868000401	.ASSEMBLY,RELAY.....	1
8	PAOZZ	5310-12-184-8509	D8286	DIN125-A6,4-140H V-A3P	.WASHER,FLAT.....	1
9	PAOZZ	5310-12-156-4991	D8286	DIN934-M6-8-A2P	.NUT,PLAIN,HEXAGON.....	1
10	PAOZZ	5310-12-151-4842	D8286	DIN128-A6-A3P	.WASHER,LOCK.....	10
11	PAOZZ	5305-12-165-0426	D8286	DIN912-M6X12-A2- 70	.SCREW,CAP,SOCKET HE.....	2
12	PAOZZ	5305-12-163-1351	D8286	DIN7985-M5X8-A2- 70-H	.SCREW,MACHINE.....	2
13	XDOZZ		D9913	868024302	.BRACKET,MOUNTING.....	2
14	PAOZZ	5305-12-162-6708	D8286	DIN912-M5X12-A2- 70	.SCREW,CAP,SOCKET HE.....	6
15	PAOZZ	5310-12-152-2034	D8286	DIN128-A5-FST-A3 P	.WASHER,LOCK.....	6
16	PAOZZ	5310-12-159-3204	D8286	DIN125-A5,3-140H V-A2	.WASHER,FLAT.....	6
17	XDOZZ		D1929	908311601	.CONVERTER.....	1
18	XDOZZ		D1929	908311602	.CONVERTER.....	1
19	XDOZZ		D9913	908068726	.CONNECTOR.....	42
20	XDOZZ		D9913	908068725	.CONNECTOR.....	20
21	XDOZZ		D9913	908067207	.RELAY,AD1.....	1
22	XDOZZ		D9913	908051019	.CIRCUIT BREAKER.....	1
23	XDOZZ		D9913	909271588	.TAG.....	1
24	PAOZZ	5935-12-159-5248	D9477	VG95234B1-18-1SN	.CONNECTOR,RECEPTACL.....	1
25	PAOZZ	5330-15-119-3769	A6854	VG95234DH18-2	.GASKET,FLANGE.....	1
26	PAOZZ	5310-12-152-2097	D8286	DIN128-A4-FST-A3 P	.WASHER,LOCK.....	4
27	PAOZZ	5305-12-318-4623	D8286	DIN7985-M4X10-8. 8-A2P	.SCREW.....	4
28	XDOZZ		D9913	908097561	.STRAP,TIEDOWN,ELECT.....	10

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
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 M21 (NSN 5420-01-481-3959)



- * a PART OF ITEM 8
- * b PART OF ITEM 16

Figure 24. RCU Stowage Box, Remote Control, Cable, and Receptacle.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0213 RCU STOWAGE BOX,REMOTE CONTROL,CABLE,AND RECEPTACLE						
FIG. 24 RCU STOWAGE BOX,REMOTE CONTROL, CABLE,AND RECEPTACLE						
1	PAOZZ	5310-12-156-4991	D8286	DIN934-M6-8-A2P	NUT,PLAIN,HEXAGON.....	4
2	PAOZZ	5310-12-142-0644	D8286	DIN125-B6,4-140H V-A3P	WASHER,FLAT.....	4
3	XDOOO		S3465	868007203	STORAGE BOX.....	1
4	XDOZZ		D9913	908083631	.BOX,STORAGE.....	1
5	PAOZZ	5330-15-119-3769	A6854	VG95234DH18-2	.GASKET,FLANGE.....	1
6	PAOZZ	5935-12-310-3836	D9477	VG95234N1-18-1SN	.CONNECTOR,RECEPTCL.....	1
7	PAOZZ	5305-12-159-1330	D8286	DIN84-M4X10-A2-7 0	.SCREW,MACHINE.....	4
8	XDOZZ		D9913	868007702	.BRACKET,R.H.....	1
8	XDOZZ		D9913	868007701	.BRACKET,L.H.....	1
9	PAOZZ	5305-12-199-2021	D8286	DIN965-M4X16-8.8 -A2P	.SCREW,MACHINE.....	10
10	PAOZZ	5305-12-188-3729	D8286	DIN965-M5X16-8.8 -A2P	.SCREW,MACHINE.....	4
11	XDOZZ		D9913	908090108	.BRACKET.....	2
12	XDOZZ		D9913	868094001	.GROMMET,RUBBER.....	1
13	PAOZZ	5310-12-156-4990	D8286	DIN934-M5-8-A2C	.NUT,PLAIN,HEXAGON.....	1
14	PAOZZ	5310-12-156-4912	D8286	DIN125-B5,3-140H V-A3C	.WASHER,FLAT.....	1
15	XDOZZ		D9913	868007202	.CASE,PROTECTIVE.....	1
16	XDOZZ		D8036	100635	.SWITCH,PUSH.....	1
17	XDOZZ		D8036	5.00.100.139	..SWITH,PUSH.....	1
18	XDOZZ		D8036	1.30243.501/0300	..PUSH BUTTON.....	1
19	PAOZZ	5305-12-141-3933	D8286	DIN84-M5X16-5,8- A2P	.SCREW,MACHINE.....	1
20	XDOZZ		D9913	909271588	.TAG.....	1
21	PAOZZ	5310-12-142-5949	D8286	DIN912-M6X40-8.8 -A2P	SCREW,CAP,SOCKET HE.....	2
22	XDOZZ		D9913	868003601	CONTROL UNIT,REMOTE.....	1
23	XDOZZ		E0764	VLG02332MPS-NA	CABLE ASSEMBLY,SPE.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
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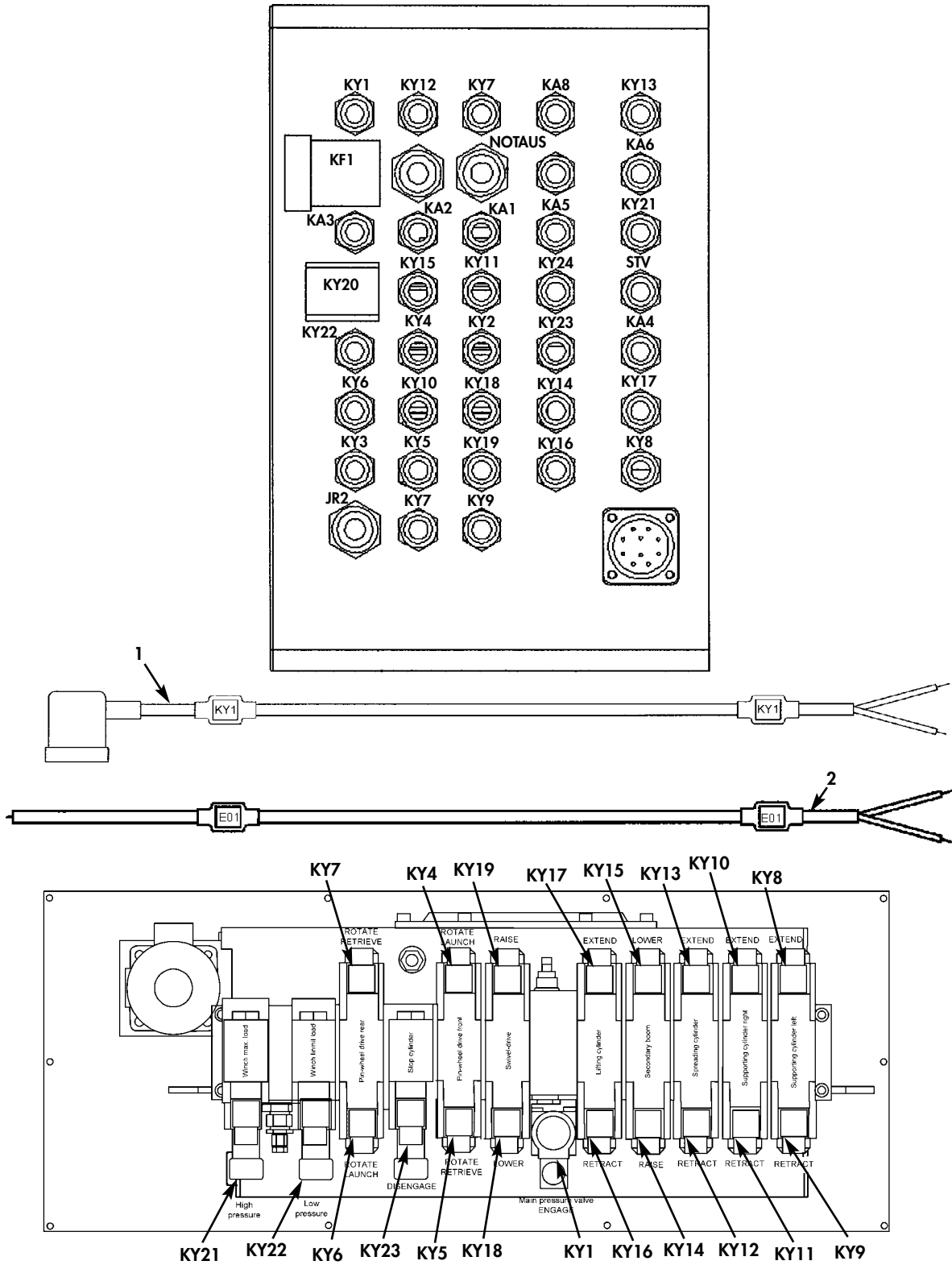


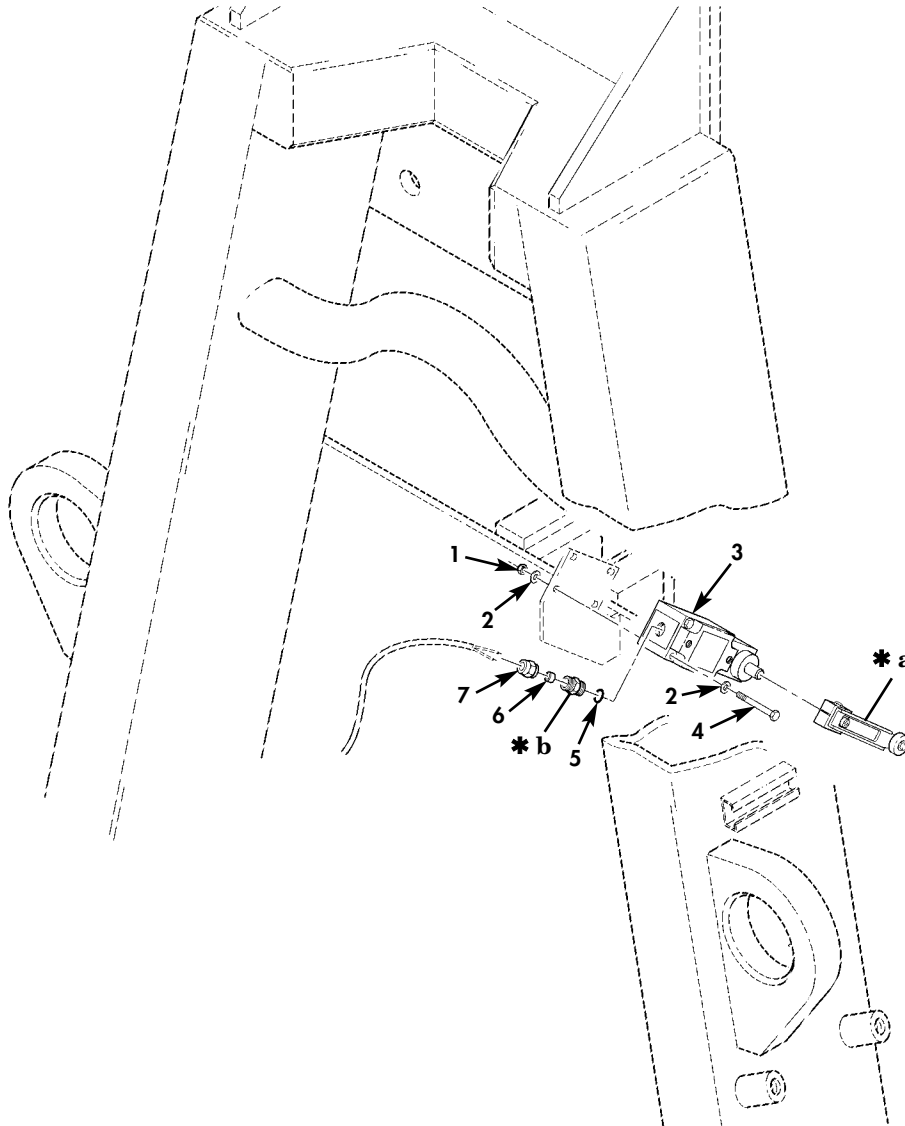
Figure 25. Pallet Wiring Harnesses.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0214 PALLET WIRING						
FIG. 25 PALLET WIRING HARNESSSES						
1	XDOZZ		C6730	MPS003102K31	CABLE ASSEMBLY,SPEC KY12 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K32	CABLE ASSEMBLY,SPEC KY13 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K33	CABLE ASSEMBLY,SPEC KY14 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K20	CABLE ASSEMBLY,SPEC KY1 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K23	CABLE ASSEMBLY,SPEC KY4 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K24	CABLE ASSEMBLY,SPEC KY5 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K25	CABLE ASSEMBLY,SPEC KY6 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K26	CABLE ASSEMBLY,SPEC KY7 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K27	CABLE ASSEMBLY,SPEC KY8 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K28	CABLE ASSEMBLY,SPEC KY9 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K29	CABLE ASSEMBLY,SPEC KY10 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K30	CABLE ASSEMBLY,SPEC KY11 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K34	CABLE ASSEMBLY,SPEC KY15 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K35	CABLE ASSEMBLY,SPEC KY16 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K36	CABLE ASSEMBLY,SPEC KY17 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K37	CABLE ASSEMBLY,SPEC KY18 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K38	CABLE ASSEMBLY,SPEC KY19 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K39	CABLE ASSEMBLY,SPEC KY20 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K40	CABLE ASSEMBLY,SPEC KY21 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K41	CABLE ASSEMBLY,SPEC KY22 TO SPS CONTROL UNIT.....	1
1	XDOZZ		C6730	MPS003102K42	CABLE ASSEMBLY,SPEC KY23 TO SPS CONTROL UNIT.....	1
2	XDOZZ		C6730	MPS003102K60	CABLE ASSEMBLY,SPEC KF2 TO SPS CONTROL UNIT.....	1
2	XDOZZ		C6730	MPS003102K44	CABLE ASSEMBLY,SPEC KF1 TO SPS CONTROL UNIT.....	1
2	XDOZZ		C6730	MPS003102K45	CABLE ASSEMBLY,SPEC KA6 TO SPS CONTROL UNIT.....	1
2	XDOZZ		C6730	MPS003102K47	CABLE ASSEMBLY,SPEC KA8 TO SPS CONTROL UNIT.....	1
2	XDOZZ		C6730	MPS003102K50	CABLE ASSEMBLY,SPEC KA1 TO SPS CONTROL UNIT.....	1
2	XDOZZ		C6730	MPS003102K51	CABLE ASSEMBLY,SPEC KA2 TO SPS CONTROL UNIT.....	1
2	XDOZZ		C6730	MPS003102K52	CABLE ASSEMBLY,SPEC KA3 TO SPS CONTROL UNIT.....	1

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
2	XDOZZ		C6730	MPS003102K53	CABLE ASSEMBLY,SPEC KA4 TO SPS CONTROL UNIT.....	1
2	XDOZZ		C6730	MPS003102K54	CABLE ASSEMBLY,SPEC KA5 TO SPS CONTROL UNIT.....	1
2	XDOZZ		C6730	MPS003102K55	CABLE ASSEMBLY,SPEC JR2 TO POTENTIOMETER.....	1
2	XDOZZ		C6730	MPS003102K56	CABLE ASSEMBLY,SPEC STV TO ENGINE ELECTRICAL CONTROL BOX.....	1
2	XDOZZ		C6730	MPS003102K57	CABLE ASSEMBLY,SPEC NA TO RCU STOWAGE BOX.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
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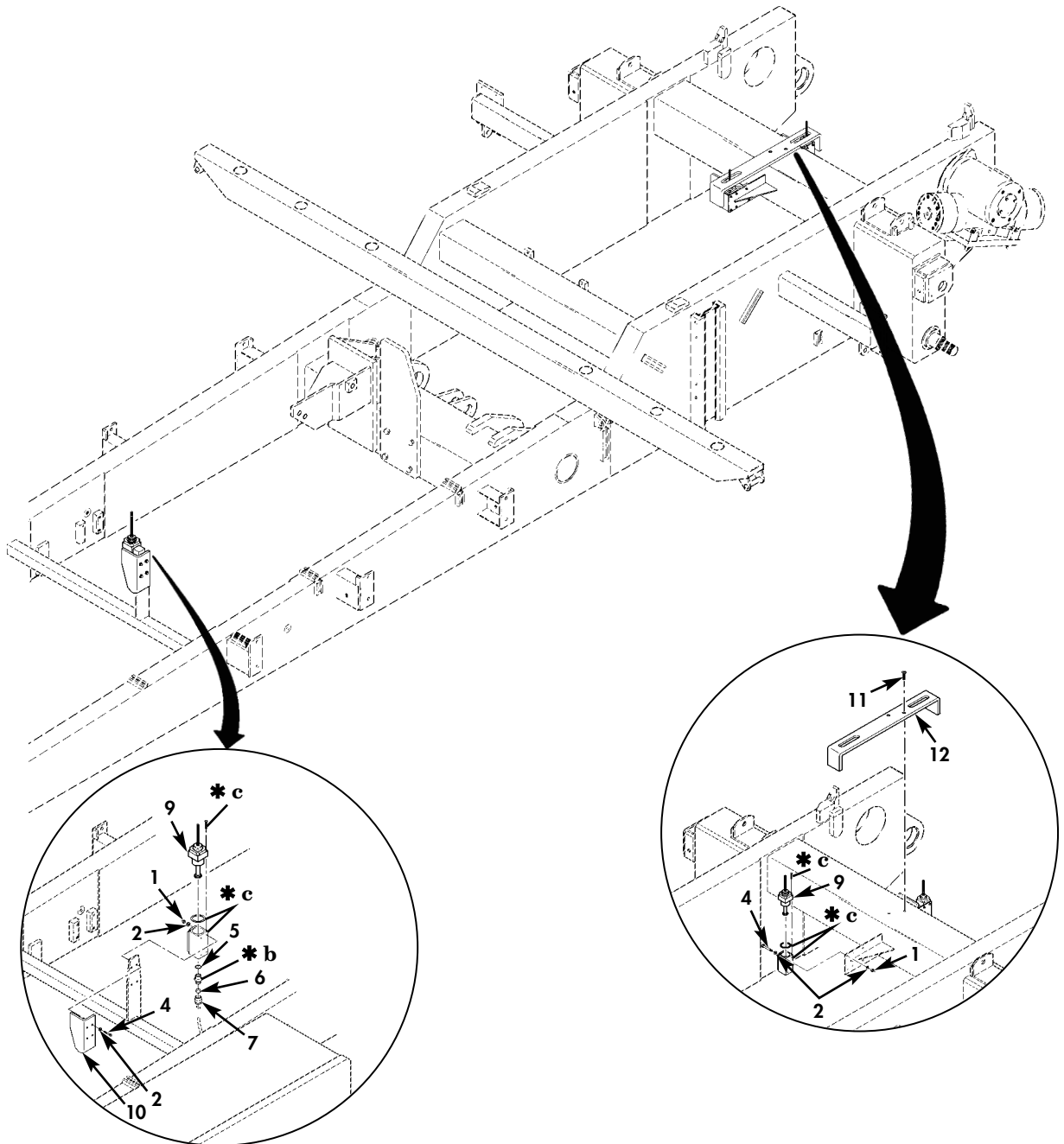
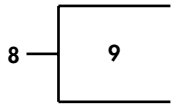


* a PART OF ITEM 3

* b PART OF ITEM 7

Figure 26. Limit Switches (Sheet 1 of 2).

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)



- * b PART OF ITEM 7
- * c PART OF ITEM 8

Figure 26. Limit Switches (Sheet 2 of 2).

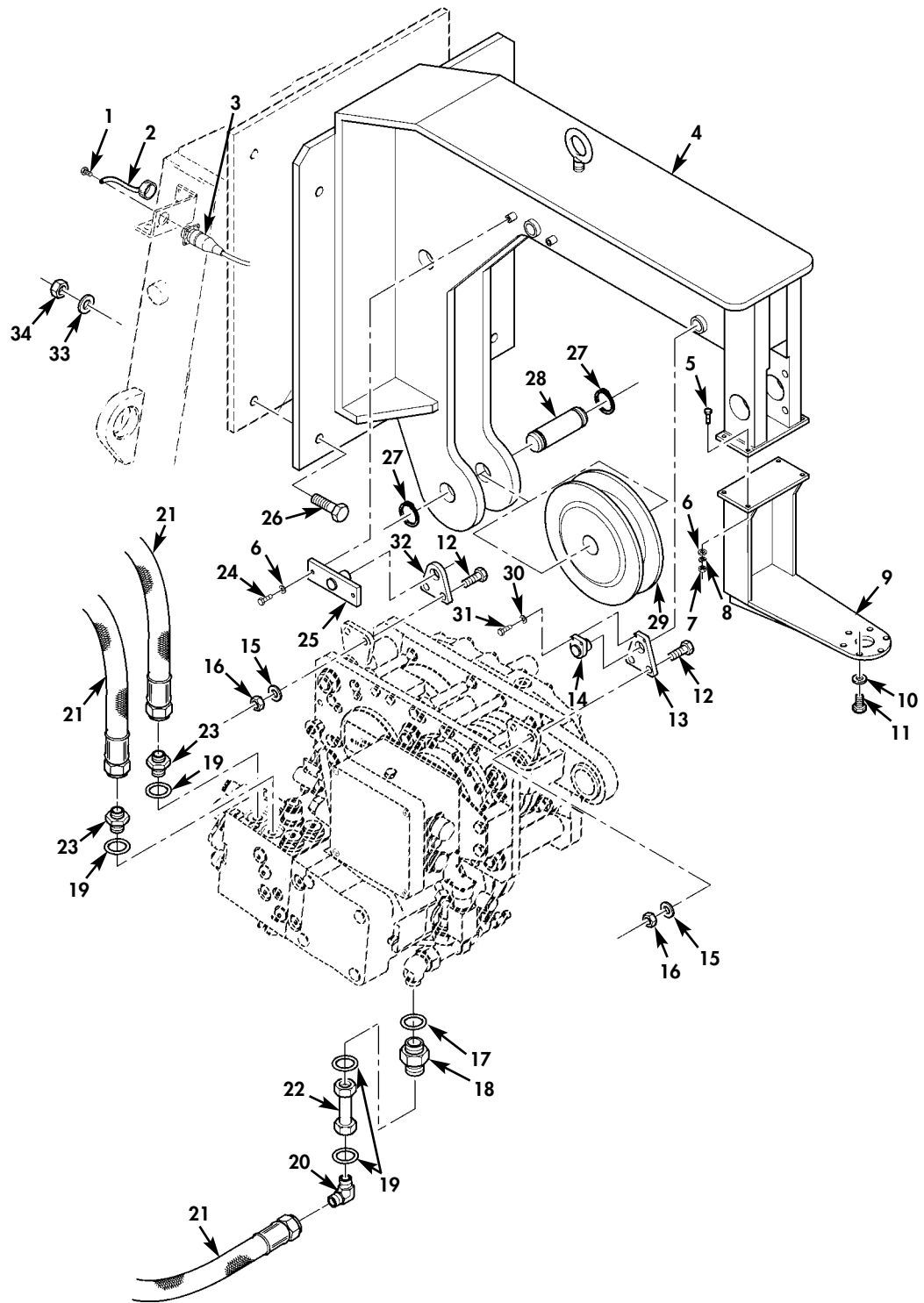
(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0217 LIMIT SWITCHES						
FIG. 26 LIMIT SWITCHES						
1	PAOZZ	5310-12-156-4990	D8286	DIN934-M5-8-A2P	NUT,PLAIN,HEXAGON.....	10
2	PAOZZ	5310-12-156-4912	D8286	DIN125-B5,3-140H V-A3P	WASHER,FLAT.....	20
3	PAOZZ	5930-12-358-9809	C0634	NG1VS-510	SWITCH,LEVER.....	7
4	PAOZZ	5305-12-357-4733	I9006	ISO4017-M5X45-8. 8-A2P	SCREW,CAP,HEXAGON H.....	10
5	XDOZZ		D9913	909771738	O-RING.....	7
6	XDOZZ		D1690	450977	SLEEVE,COMPRESSION.....	1
7	XDOZZ		D9913	908047156	TUBE,STUFFING.....	7
8	XDOOO		D9913	908071104	SWITCH,SENSITIVE ASSEMBLY.....	4
9	XDOZZ		D9913	908092706	.SWITCH,SENSITIVE.....	1
10	XDOZZ		D9913	868298201	BRACKET,MOUNTING.....	1
11	XDOZZ		D8286	DIN7991-M5X16	SCREW,CAP,SOCKET HE.....	2
12	XDOZZ		D9913	868235601	BRACKET,MOUNTING.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST

RAPIDLY EMPLACED BRIDGE (REB)

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ITEM 18 INCLUDES PACKING,
PREFORMED ITEM 17

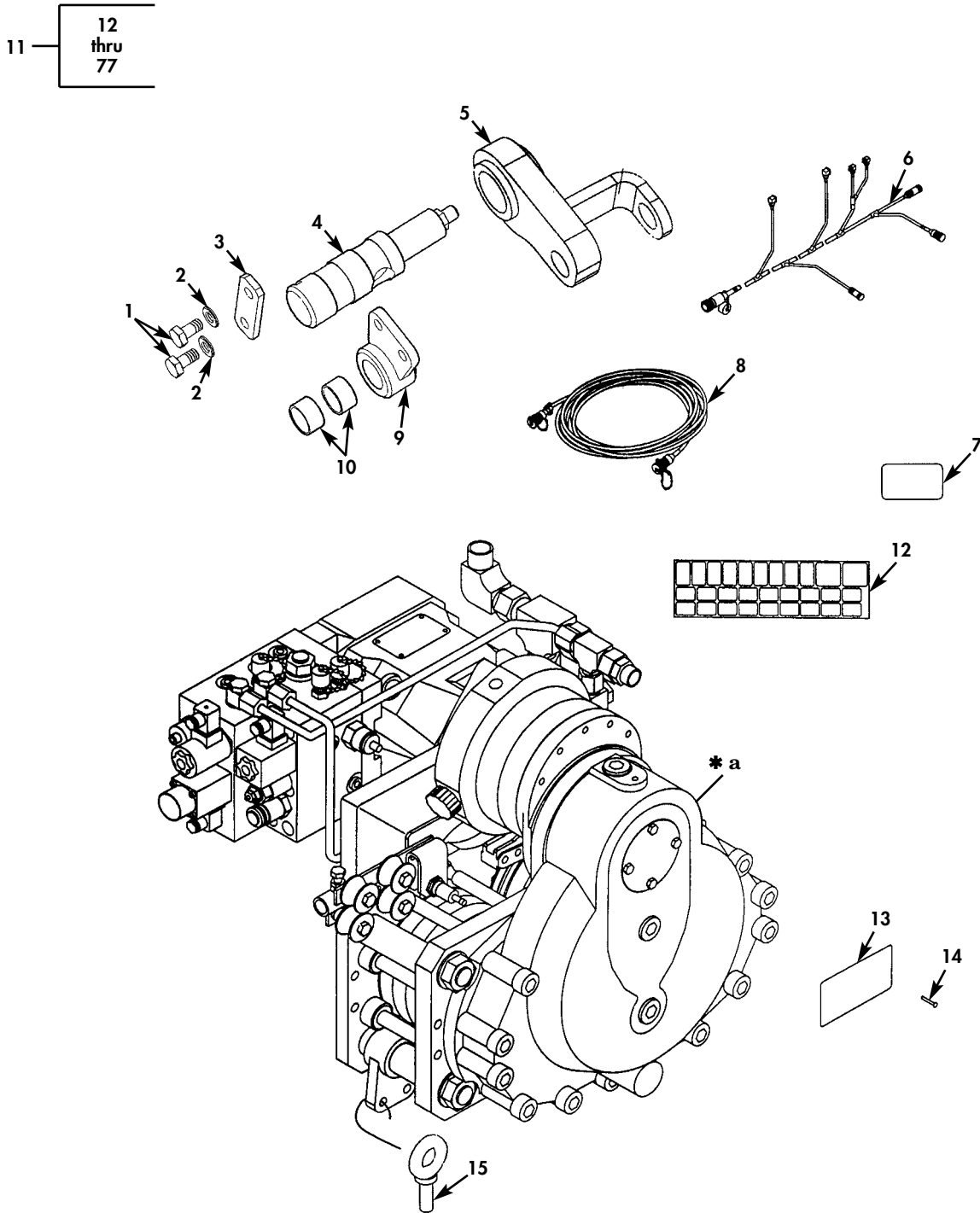
ITEMS 22 AND 23 INCLUDE PACKING,
PREFORMED ITEM 19

Figure 27. Winch Mounting Brackets, Pulleys, and Related Parts.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0218 WINCH ASSEMBLY						
FIG. 27 WINCH MOUNTING BRACKETS,PULLEYS, AND RELATED PARTS						
1	XDOZZ		D9913	934401	SCREW,CAP, SOCKET HE.....	4
2	PAOZZ	5935-01-460-5508	71468	CA121003-3	COVER,ELECTRICAL CO.....	1
3	XDOZZ		D9913	868001156	CABLE ASSEMBLY,SPEC.....	1
4	XDOZZ		D9913	863804301	BRACKET,MOUNTING.....	1
5	PAOZZ	5305-12-141-9870	D8286	DIN933-M8X35-8.8 -A2P	BOLT,MACHINE.....	4
6	PAOZZ	5310-12-142-0645	D8286	DIN125-B8,4-140H V-A3P	WASHER,FLAT.....	6
7	PAOZZ	5310-12-300-8139	D8286	DIN6925-M8-8-A2P	NUT,SELF-LOCKING,HE.....	4
8	PAOZZ	5310-12-151-4627	D8286	DIN128-A8-FST-A3 P	WASHER,LOCK.....	4
9	XDOZZ		D9913	863804302	BRACKET,MOUNTING.....	1
10	XDOZZ		D8286	DIN125-B6,4-140H V-DACROM500-6MY	WASHER,FLAT.....	6
11	PAOZZ	5305-12-144-4026	D8286	DIN933-M12X22-10 .9-A3P	SCREW,CAP,HEXAGON H.....	6
12	XDOZZ		D8286	DIN933-M10X35-8. 8-A3P	SCREW.....	4
13	XDOZZ		D9913	863814302	BRACKET,MOUNTING.....	1
14	XDOZZ		D9913	863805001	PIN,STRAIGHT,HEADED.....	1
15	PAOZZ	5310-12-142-0481	D8286	DIN125-B10,5-140 HV-A3P	WASHER,FLAT.....	4
16	PAOZZ	5310-12-156-4996	D8286	DIN934-M10-8-A2P	NUT,PLAIN,HEXAGON.....	4
17	XDOZZ		D8134	DOZ18L/71	PACKING,PREFORMED.....	1
18	XDOZZ		D9913	909619927	REDUCER,PIPE.....	1
19	XDOZZ		D8134	DOZ12L/71	PACKING,PREFORMED.....	4
20	XDOZZ		D9913	118470	ELBOW,HOSE.....	1
21	PAOZZ	4720-12-336-5306	D2497	FC310-06	HOSE,NONMETALLIC.....	3
22	XDOZZ		D9913	864005682	TUBE ASSEMBLY,METAL.....	1
23	XDOZZ		D9913	909617835	ADAPTER,STRAIGHT,TU.....	2
24	PAOZZ	5305-12-165-0743	D8286	DIN933-M8X25-8.8 -A2C	SCREW,CAP,HEXAGON H.....	2
25	XDOZZ		D9913	863805002	PIN,STRAIGHT,HEADED.....	1
26	PAOZZ	5305-12-143-0028	D8286	DIN933-M20X55-10 .9-A3P	SCREW,CAP,HEXAGON H.....	4
27	PAOZZ	5325-12-357-6557	D8286	DIN471-25X1,2-A3 P	RING,RETAINING.....	4
28	XDOZZ		D9913	863815002	PIN,SHOULDER,HEADLE.....	2
29	XDOZZ		E0119	7533.00.10	PULLEY,GROOVED.....	2
30	PAOZZ	5310-12-174-2405	D8286	DIN125-A5,3-140H V-A3P	WASHER,FLAT.....	2
31	PAOZZ	5305-12-141-9828	D8286	DIN933-M5X20-8.8 -A2P	SCREW,CAP,HEXAGON H.....	2
32	XDOZZ		D9913	863814301	BRACKET,MOUNTING.....	1
33	PAOZZ	5310-12-156-4905	D8286	DIN125-B21-140HV -A3P	WASHER,FLAT.....	8
34	PAOZZ	5310-12-305-3906	D8286	DIN6925-M20-8-A2 P	NUT,SELF-LOCKING,HE.....	4

END OF FIGURE

SUPPORTING INFORMATION
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* a PART OF ITEM 11

Figure 28. Winch Assembly and Related Parts (Sheet 1 of 5).

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REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

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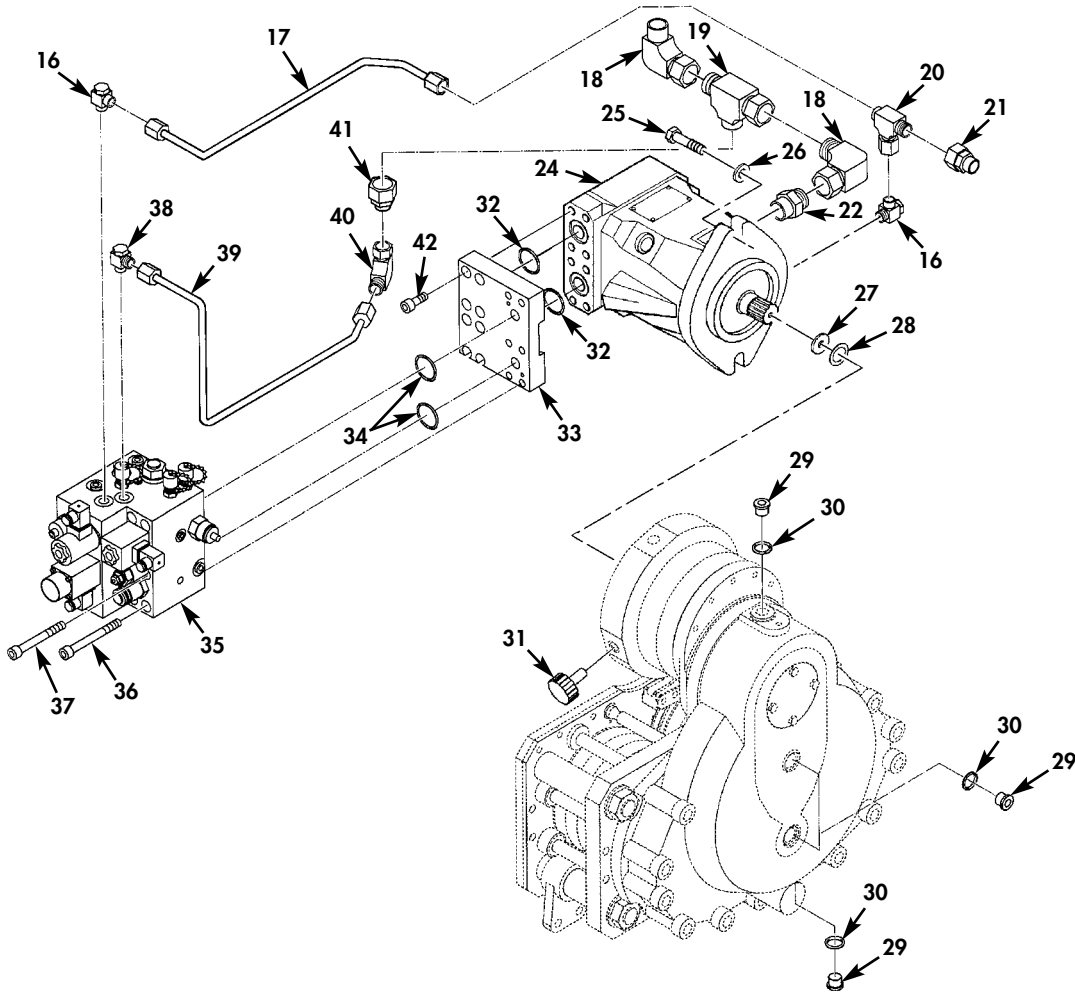


Figure 28. Winch Assembly and Related Parts (Sheet 2 of 5).

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

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64

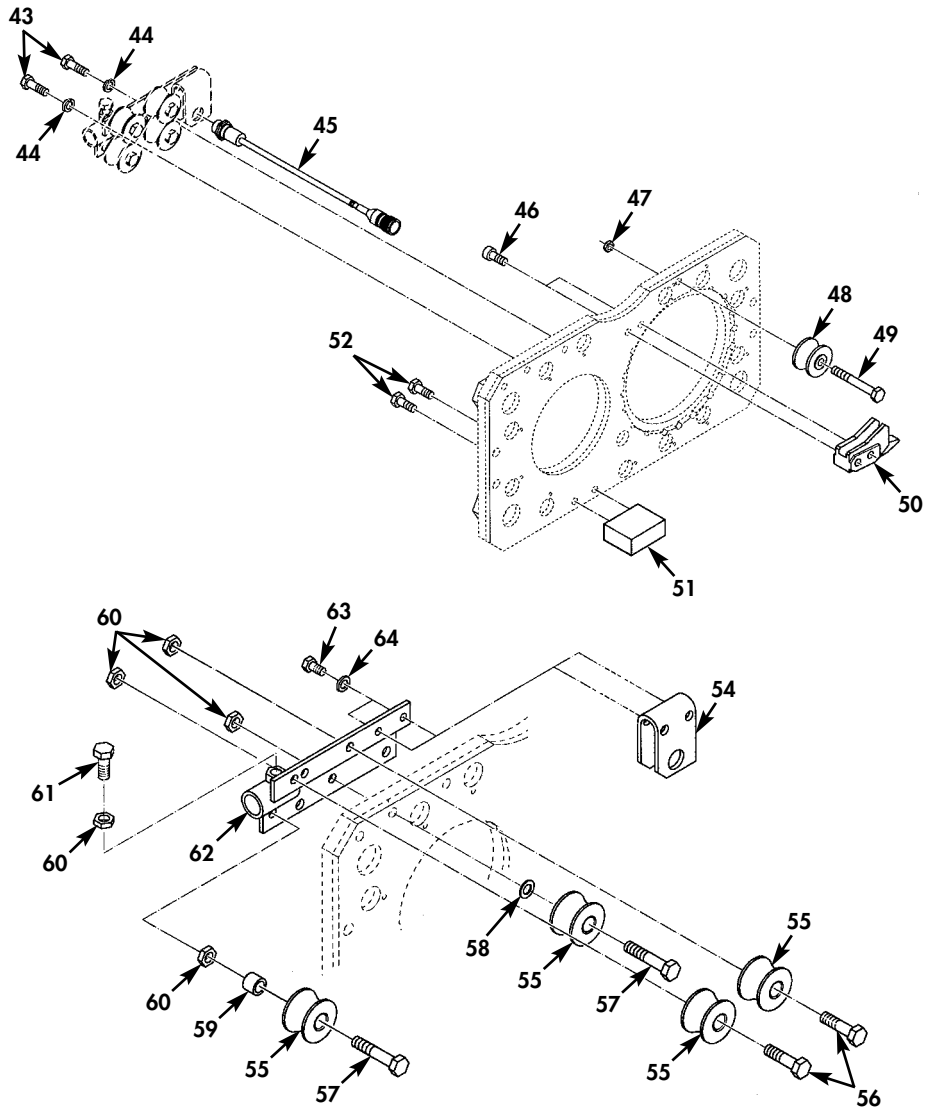
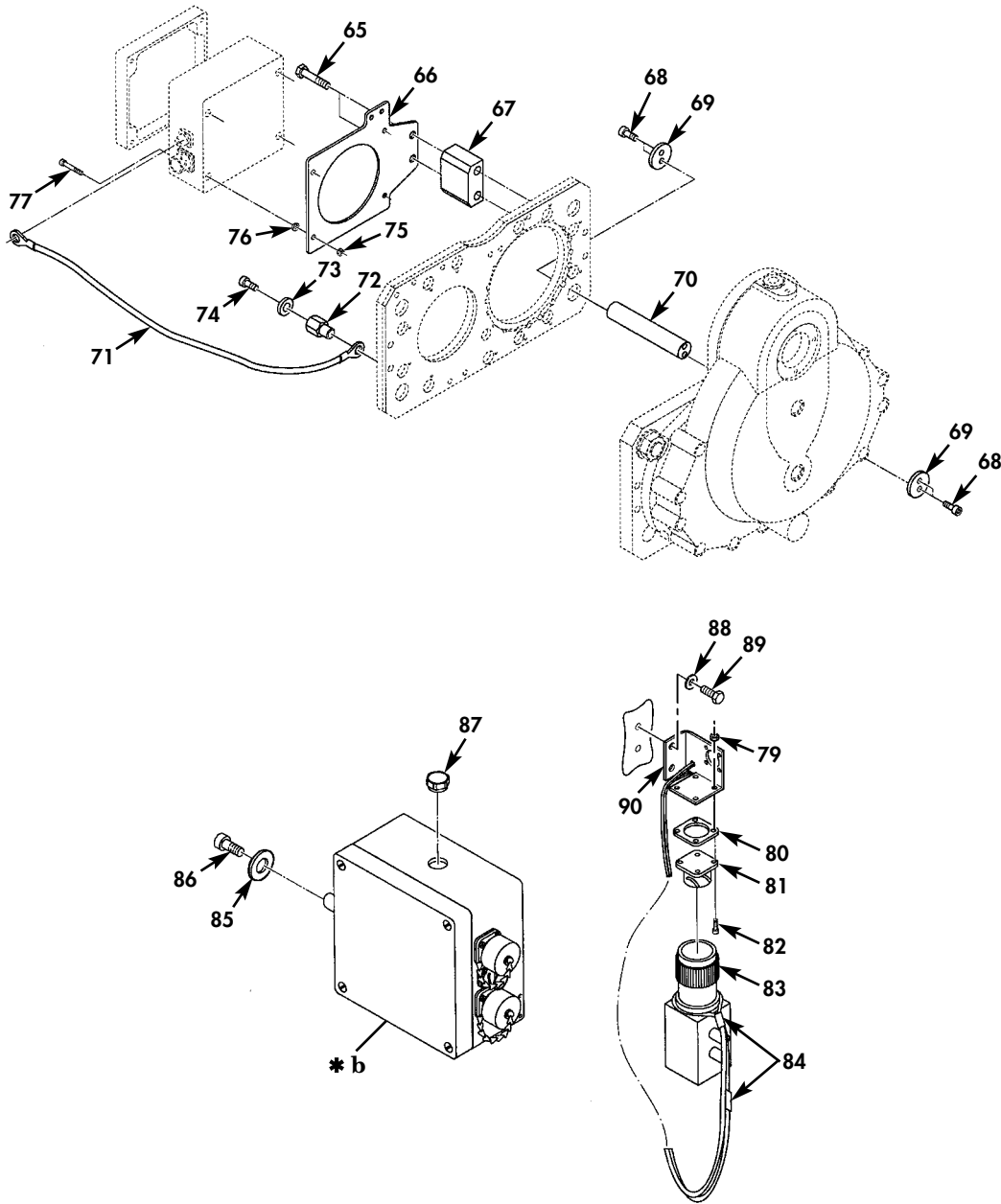


Figure 28. Winch Assembly and Related Parts (Sheet 3 of 5).

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)

78 — 79
thru
87



* b PART OF ITEM 78

Figure 28. Winch Assembly and Related Parts (Sheet 4 of 5).

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

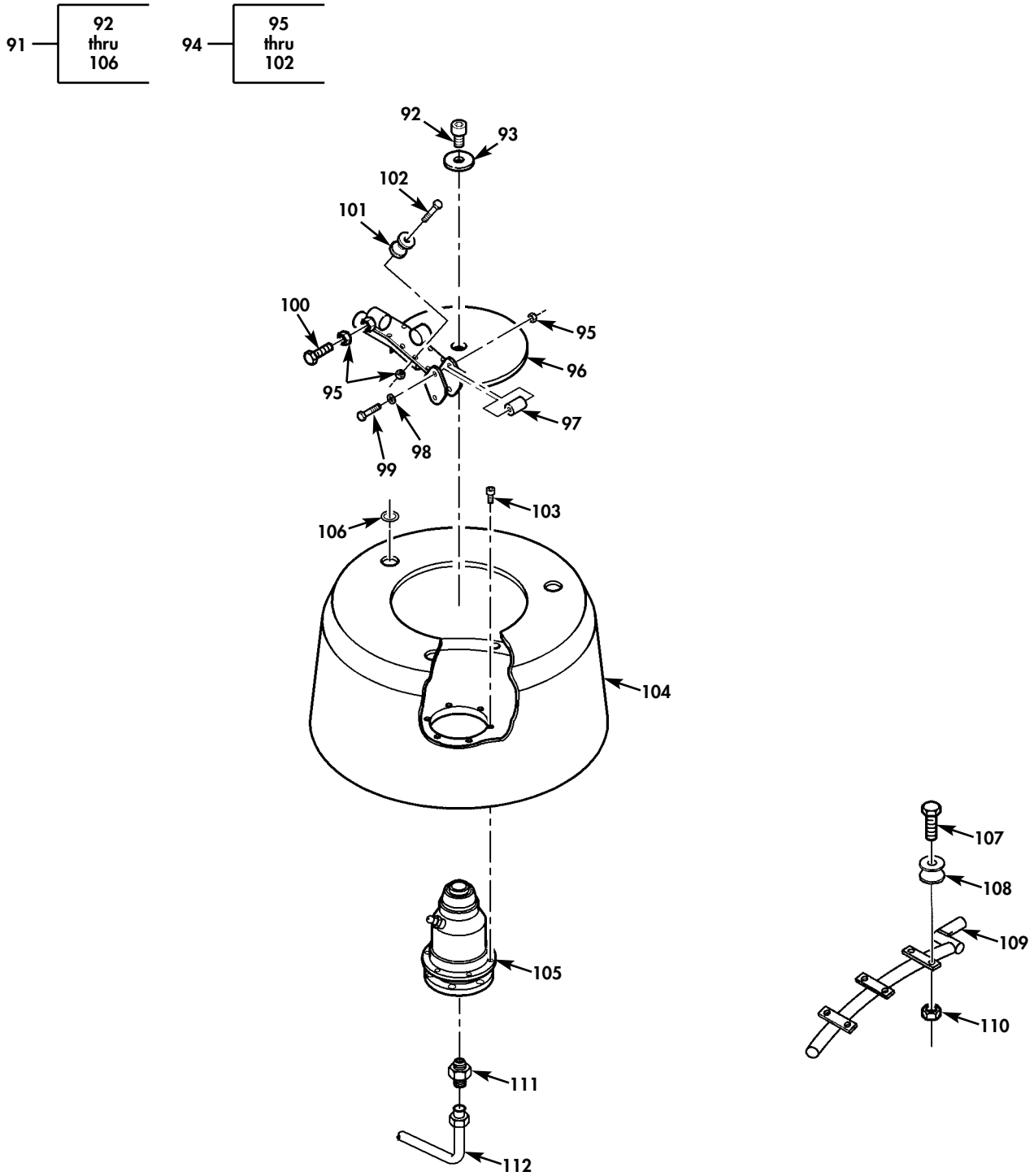


Figure 28. Winch Assembly and Related Parts (Sheet 5 of 5).

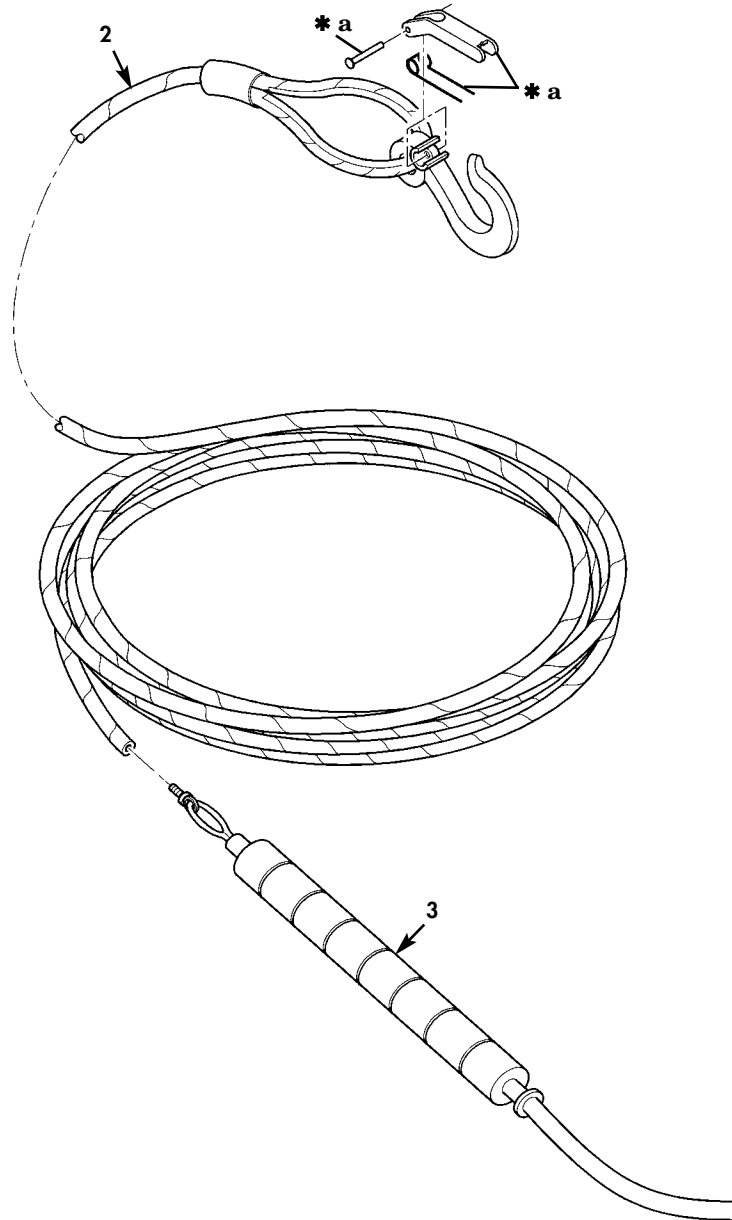
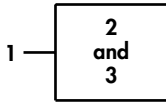
(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0218 WINCH ASSEMBLY						
FIG. 28 WINCH ASSEMBLY AND RELATED PARTS						
1	PAOZZ	5305-12-141-9888	D8286	DIN933-M10X20-8. 8-A3P	SCREW,CAP,HEXAGON H.....	2
2	PAOZZ	5310-12-142-0481	D8286	DIN125-B10,5-140 HV-A3P	WASHER,FLAT.....	2
3	PAOZZ	5340-12-362-8343	D8218	2323984000	PLATE,MOUNTING.....	1
4	PAOZZ	6670-12-362-8036	C5008	3510.503.101	PIN,LOAD MEASURING.....	1
5	PAOZZ	5340-12-362-8341	D8218	2323951000	BRACKET,MOUNTING.....	1
6	PAOZZ	6150-12-363-0347	D8218	9270751025	WIRING HARNESS,BRAN.....	1
7	PAOZZ	9905-12-363-0785	D8218	9255254000	PLATE,IDENTIFICATIO.....	1
8	XDOZZ		D9913	868001156	CABLE ASSEMBLY,SPEC.....	1
9	PAOZZ	5340-12-362-8342	D8218	2323963000	BRACKET,MOUNTING.....	1
10	PAOZZ	3120-12-363-2706	D2121	25X28X15B09	BEARING,SLEEVE.....	2
11	PAOOO	3950-12-363-5059	D8218	9267401000	WINCH DRUM,POWER OP.....	1
12	PAOZZ	9905-12-362-7907	D8218	9270832000	.PLATE SET,DESIGNATI.....	1
13	PAOZZ	9905-12-362-8038	D8218	9255244000	.PLATE,IDENTIFICATIO.....	2
14	PAOZZ	5315-12-345-6419	D8218	0018390000	.PIN,GROOVED,HEADED.....	4
15	PAOZZ	5306-12-143-8587	D8286	DIN580-M12	.BOLT,EYE.....	1
16	PAOZZ	4730-12-321-4687	D0826	RSWS 8 LR	.SWIVEL JOINT,HYDRAU.....	2
17	PAOZZ	4710-12-362-8346	D8218	9270713000	.TUBE ASSEMBLY,METAL.....	1
18	PAOZZ	4730-12-326-5411	D0826	EWSD 18 L	.ELBOW,TUBE.....	2
19	PAOZZ	4730-12-328-3597	D8218	0020500001	.TEE,TUBE.....	1
20	PAOZZ	4730-12-363-1587	D8218	0042600001	.TEE,TUBE.....	1
21	PAOZZ	4730-12-347-7417	D0826	RESD 8/6 L	.REDUCER,TUBE.....	1
22	PAOZZ	4730-12-363-1588	D8218	0101400001	.ADAPTER,STRAIGHT,TU.....	1
23	PAOOO	4320-12-362-7906	D8218	9260712001	.MOTOR,HYDRAULIC COMPLETE.....	1
24	PAOZZ	2540-12-362-4090	D8218	9260763000	.MOTOR,HYDRAULIC.....	1
25	PAOZZ	5305-12-167-5388	D8286	DIN933-M12X30-8. 8-A3C	.SCREW,CAP,HEXAGON H.....	2
26	PAOZZ	5310-12-166-6738	D8286	DIN6916-13	.WASHER,RECESSED.....	2
27	PAOZZ	5310-12-362-1850	D8218	0077280000	.WASHER,FLAT.....	2
28	PAOZZ	5310-12-326-0884	D8286	DIN988-13X19X0,5	.WASHER,FLAT.....	1
29	PAOZZ	5365-12-178-6535	D8286	DIN908-M18X1,5-S T-A3P	.PLUG,MACHINE THREAD.....	4
30	PAOZZ	5330-12-156-4526	D8286	DIN7603-A18X22-C U	.GASKET.....	4
31	PAOZZ	4820-12-347-4144	D8218	0127230000	.VALVE,VENT.....	1
32	PAOZZ	5331-12-362-5173	D8218	0117070000	.O-RING.....	2
33	PAOZZ	4810-12-362-8042	D8218	9270261000	.PLATE,ATTACHMENT.....	1
34	PAOZZ	5331-12-362-5172	D8218	9269274024	.O-RING.....	2
35	PAOZZ	4810-12-362-8041	D8218	9269260000	.VALVE ASSEMBLY,MANI.....	1
36	PAOZZ	5305-12-126-9990	D8286	DIN912-M10X70-8. 8	.SCREW,CAP,SOCKET,HE.....	4
37	PAOZZ	5305-12-126-8928	D8286	DIN912-M10X65-8. 8	.SCREW,CAP,SOCKET,HE.....	1
38	PAOZZ	4730-12-362-3984	D8218	0107950001	.SWIVEL JOINT,HYDRAU.....	1
39	PAOZZ	4710-12-362-8347	D8218	9270723000	.TUBE ASSEMBLY,METAL.....	1
40	PAOZZ	4730-12-362-3983	D8218	0049550001	.ELBOW,TUBE.....	1
41	PAOZZ	4730-12-362-2099	D8218	9269244000	.REDUCER,TUBE.....	1
42	PAOZZ	5305-12-362-3400	D8218	0015240000	.SCREW,CAP,SOCKET,HE.....	8
43	PAOZZ	5305-12-155-6878	D8286	DIN933-M8X16-8.8 -A2P	.SCREW,CAP,HEXAGON H.....	2
44	PAOZZ	5310-12-142-8158	D8286	DIN127-A8-FST-A3 P	.WASHER,LOCK.....	2
45	PAOZZ	5930-12-362-8716	D8218	2307024000	.SWITCH,PROXIMITY.....	1
46	PAOZZ	5305-12-124-0436	D8286	DIN912-M8X20-8.8	.SCREW,CAP,SOCKET,HE.....	2

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
47	PAOZZ	5310-12-144-5088	D8286	DIN439-BM8-04-A2 P	.NUT, PLAIN, HEXAGON.....	25
48	PAOZZ	3815-12-362-2166	D8218	9213754513	.ROLLER, ROLLER FAIRL.....	1
49	PAOZZ	5305-12-142-2962	D8286	DIN931-M8X45-8.8 -A2P	.SCREW, CAP, HEXAGON H.....	1
50	PAOZZ	3950-12-362-3327	D8218	9235503000	.ROPE FINGER.....	1
51	PAOZZ	5340-12-362-8345	D8218	9240024000	.PLATE, MOUNTING.....	1
52	PAOZZ	5305-99-147-3536	I9008	ISO 4017-M8X30-8 .8	.SCREW, CAP, SOCKET HE.....	2
53	PAOOO	3950-12-362-8040	D8218	9238633005	.GUIDE, CABLE ASSEMBLY.....	1
54	XDOZZ		D8218	9241104000	.BRACKET, MOUNTING.....	1
55	PAOZZ	3815-12-362-2166	D8218	9213754513	.ROLLER, ROLLER FAIRL.....	4
56	PAOZZ	5305-12-311-5295	D8218	9191664001	.SCREW, CAP, HEXAGON H.....	2
57	PAOZZ	5305-12-124-0471	D8286	DIN931-M8X50-8.8	.SCREW, CAP, HEXAGON H.....	2
58	PAOZZ	5310-12-175-0502	D8286	DIN988-8X14X0,5	.WASHER, FLAT.....	1
59	XDOZZ		D8218	9241344000	.BUSHING.....	1
60	PAOZZ	5310-12-144-5088	D8286	DIN439-BM8-04-A2 P	.NUT, PLAIN, HEXAGON.....	5
61	PAOZZ	5305-12-156-4863	D8286	DIN933-M8X20-8.8 -A2P	.SCREW, CAP, HEXAGON H.....	1
62	PAOZZ	5340-12-362-8352	D8218	9238623003	.BRACKET, MOUNTING.....	1
63	PAOZZ	5305-12-124-3839	D8286	DIN933-M6X10-8.8	.SCREW, CAP, HEXAGON H.....	2
64	PAOZZ	5310-12-142-0644	D8286	DIN125-B6, 4-140H V-A3P	.WASHER, FLAT.....	2
65	PAOZZ	5305-12-142-8224	D8286	DIN931-M10X65-8. 8	.SCREW, CAP, HEXAGON H.....	2
66	PAOZZ	5340-12-362-8349	D8218	9261272100	.PLATE, MOUNTING.....	1
67	PAOZZ	5365-12-362-8348	D8218	9261294000	.SPACER, STRAIGHT.....	1
68	PAOZZ	5305-12-156-0700	D8286	DIN912-M8X16-8.8	.SCREW, CAP, SOCKET, HE.....	4
69	PAOZZ	5365-12-362-8350	D8218	9240374000	.SPACER, PLATE.....	4
70	PAOZZ	5315-12-362-3326	D8218	9235724000	.PIN, STRAIGHT, HEADLE.....	1
71	PAOZZ	6150-12-363-0348	D8218	9271284000	.CABLE ASSEMBLY, SPEC.....	1
72	PAOZZ	5340-12-362-8351	D8218	2321234003	.STANDOFF, THREADED, S.....	1
73	PAOZZ	5310-12-175-8208	D8286	DIN125-B6, 4-140H V-A2	.WASHER, FLAT.....	1
74	PAOZZ	5305-12-185-3921	D8286	DIN84-M6X8-A2-70	.SCREW, MACHINE.....	1
75	PAOZZ	5310-12-170-1309	D8286	DIN980-VM6-8-A2P	.NUT, SELF-LOCKING, HE.....	4
76	PAOZZ	5310-12-142-0644	D8286	DIN125-B6, 4-140H V-A3P	.WASHER, FLAT.....	4
77	PAOZZ	5305-12-124-1677	D8286	DIN912-M6X30-8.8	.SCREW, CAP, SOCKET, HE.....	4
78	PAOOO	2590-12-363-0109	D8218	2308001500	CONTROL, REEL COMPLETE.....	1
79	PAOZZ	5310-12-131-3382	D8286	DIN934-M3-8	.NUT, PLAIN, HEXAGON.....	4
80	PAOZZ	5330-12-154-3963	A1587	16952	.GASKET.....	2
81	PAOZZ	5935-12-363-1586	D1371	CA3106E14S-6P-B- 14-FO	.SHELL, ELECTRICAL CO.....	1
82	PAOZZ	5305-12-183-3411	D8286	DIN84-M3X10-4.8- A2P	.SCREW, MACHINE.....	4
83	PAOZZ	2590-12-363-0111	D8218	2320163000	.CONTROL, REEL EMERGENCY STOP.....	1
84	PAOZZ	4020-12-362-8039	D8218	9265904000	.CORD, FIBROUS.....	2
85	PAOZZ	5310-12-175-8208	D8286	DIN125-B6, 4-140H V-A2	.WASHER, FLAT.....	1
86	PAOZZ	5305-12-185-3921	D8286	DIN84-M6X8-A2-70	.SCREW, MACHINE.....	1
87	PAOZZ	4820-12-362-4403	D8218	9264534000	.VALVE, VENT.....	1
88	XDOZZ		D9913	937901	WASHER, FLAT.....	2
89	XDOZZ		D9913	931992	SCREW, CAP, SOCKET H.....	2
90	XDOZZ		D9913	868204301	BRACKET, MOUNTING.....	1
91	PAOOO	2590-12-363-0108	D8218	9219603010	DRUM, WINCH.....	1
92	PAOZZ	5305-12-187-3449	D8286	DIN912-M16X40-12 .9	.SCREW, CAP, SOCKET, HE.....	1
93	PAOZZ	5310-12-152-5467	D8286	DIN6340-17	.WASHER, FLAT.....	1

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
94	PAOOO	2590-12-363-0110	D8218	2221023011	.EXECUTION,ROPE ROPE INLET.....	1
95	PAOZZ	5310-12-144-5088	D8286	DIN439-BM8-04-A2 P	..NUT,PLAIN,HEXAGON.....	10
96	XDOZZ		D8218	2221012008	..INLET,ROPE.....	1
97	PAOZZ	3815-12-340-8820	D8218	222423-4000	..ROLLER,ROLLER FAIRL.....	2
98	PAOZZ	5310-12-142-0645	D8286	DIN125-B8,4-140H V-A3P	..WASHER,FLAT.....	2
99	PAOZZ	5305-12-340-0619	D8218	2221454001	..SCREW,CAP,HEXAGON H.....	2
100	PAOZZ	5305-12-156-4863	D8286	DIN933-M8X20-8.8 -A2P	..SCREW,CAP,HEXAGON H.....	1
101	PAOZZ	3815-12-362-2166	D8218	9213754513	..ROLLER,ROLLER FAIRL.....	7
102	PAOZZ	5305-12-311-5295	D8218	9191664001	..SCREW,CAP,HEXAGON H.....	7
103	PAOZZ	5305-12-156-0700	D8286	DIN912-M8X16-8.8	.SCREW,CAP,SOCKET,HE.....	6
104	XDOZZ		D8218	9091771002	.DRUM,STORAGE.....	1
105	PAOZZ	3040-12-328-1147	D8218	9190752700	.SHAFT ASSEMBLY,SHOU.....	1
106	PAOZZ	5340-12-347-7096	C7569	12547	.COVER,PLASTIC LOCKI.....	3
107	PAOZZ	5305-12-311-5295	D8218	9191664001	SCREW,CAP,HEXAGON H.....	32
108	PAOZZ	3020-12-337-9042	D8218	921375-4500	PULLEY,GROOVE.....	32
109	XDOZZ		D8218	2323921000	PATH,ROLLER.....	1
110	PAOZZ	5310-12-144-5088	D8286	DIN439-BM8-04-A2 P	NUT,PLAIN,HEXAGON.....	32
111	XDOZZ		D8134	GE6LLM71	NIPPLE,TUBE.....	1
112	XDOZZ		D9913	864005683	TUBE ASSEMBLY,METAL.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)



* a PART OF ITEM 2

Figure 29. Winch Wire Rope Assembly.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0219 WINCH WIRE ROPE ASSEMBLY	
					FIG. 29 WINCH WIRE ROPE ASSEMBLY	
1	XDOOO		D9913	909660412	WIRE ROPE ASSEMBLY, COMPLETE.....	1
2	XDOZZ		D9913	909660410	.WIRE ROPE ASSEMBLY,.....	1
3	PAOZZ	4010-12-362-8037	D8218	9229983001	.WIRE ROPE ASSEMBLY, SINGLE LEG....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

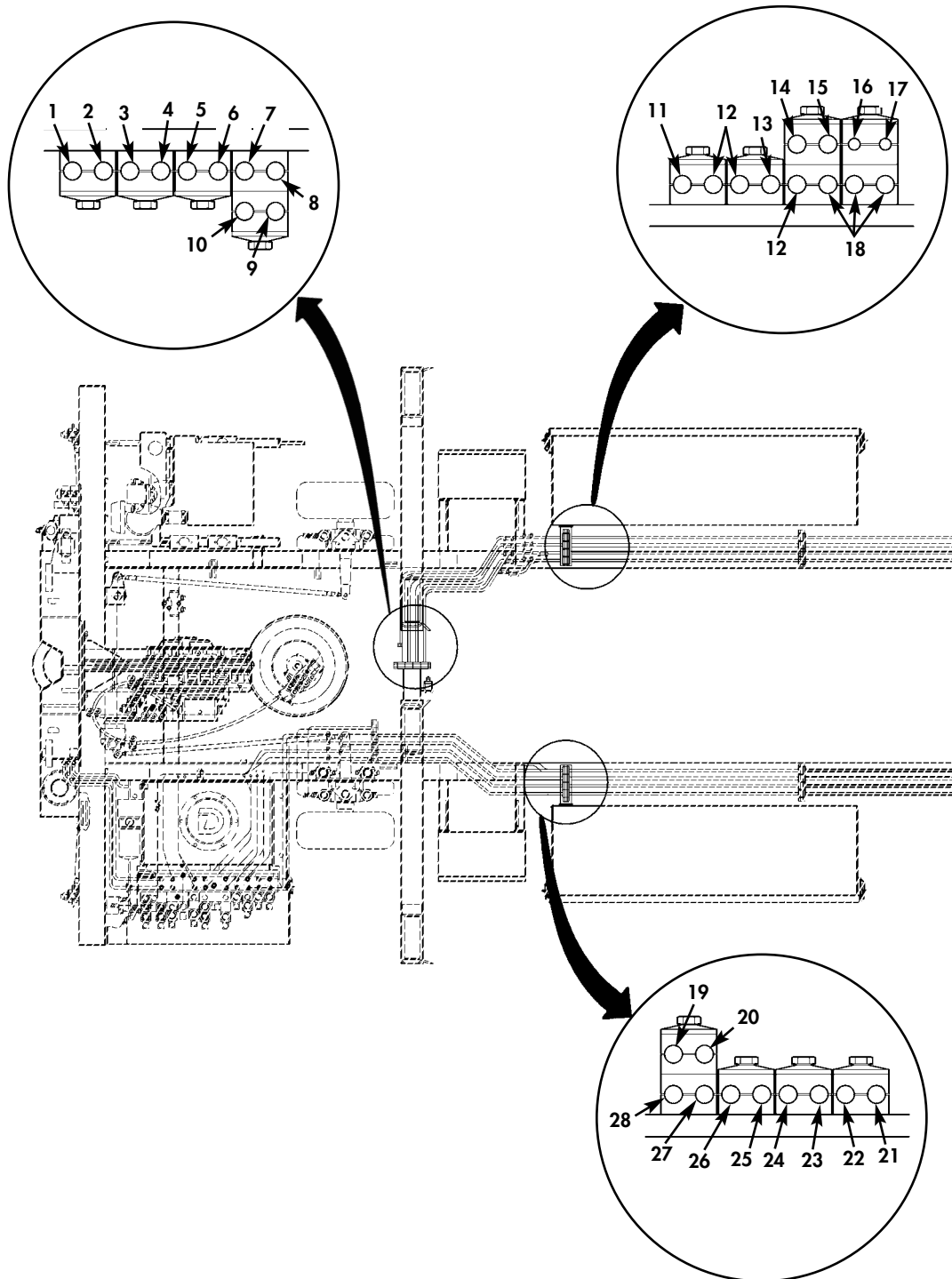
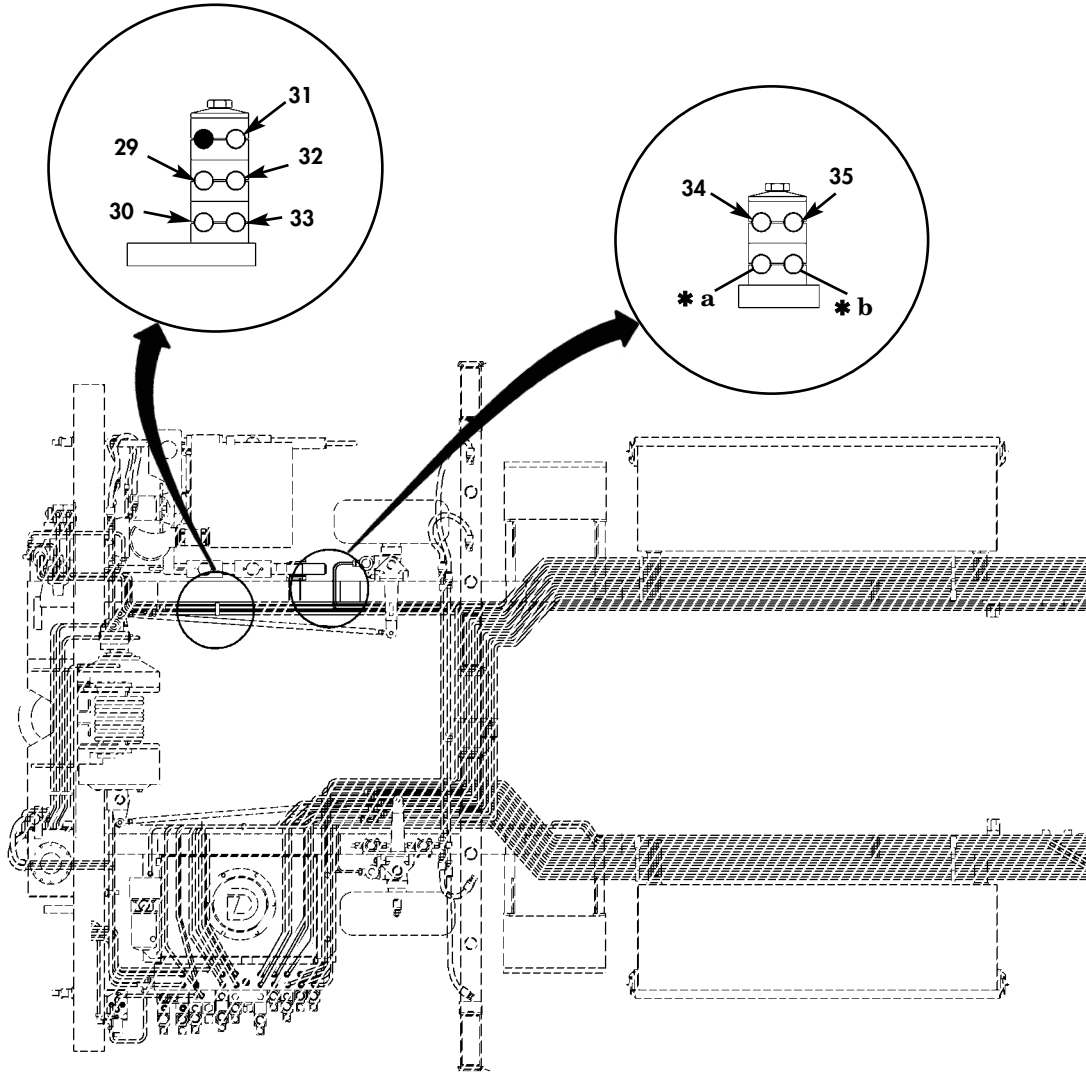


Figure 30. Pallet Hydraulic Tubes (Sheet 1 of 3).

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)



- * a PART OF ITEM 30
- * b PART OF ITEM 33

Figure 30. Pallet Hydraulic Tubes (Sheet 2 of 3).

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

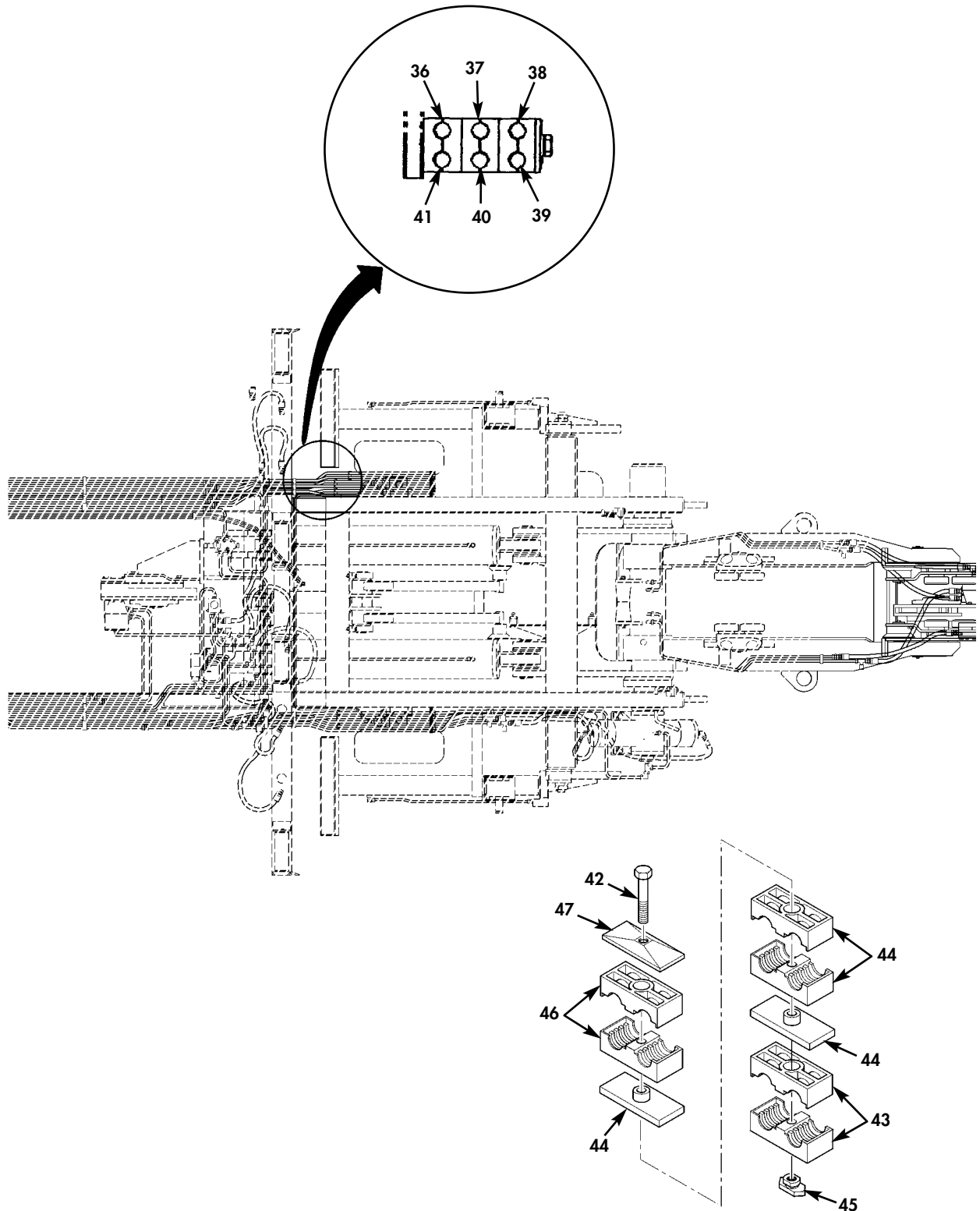
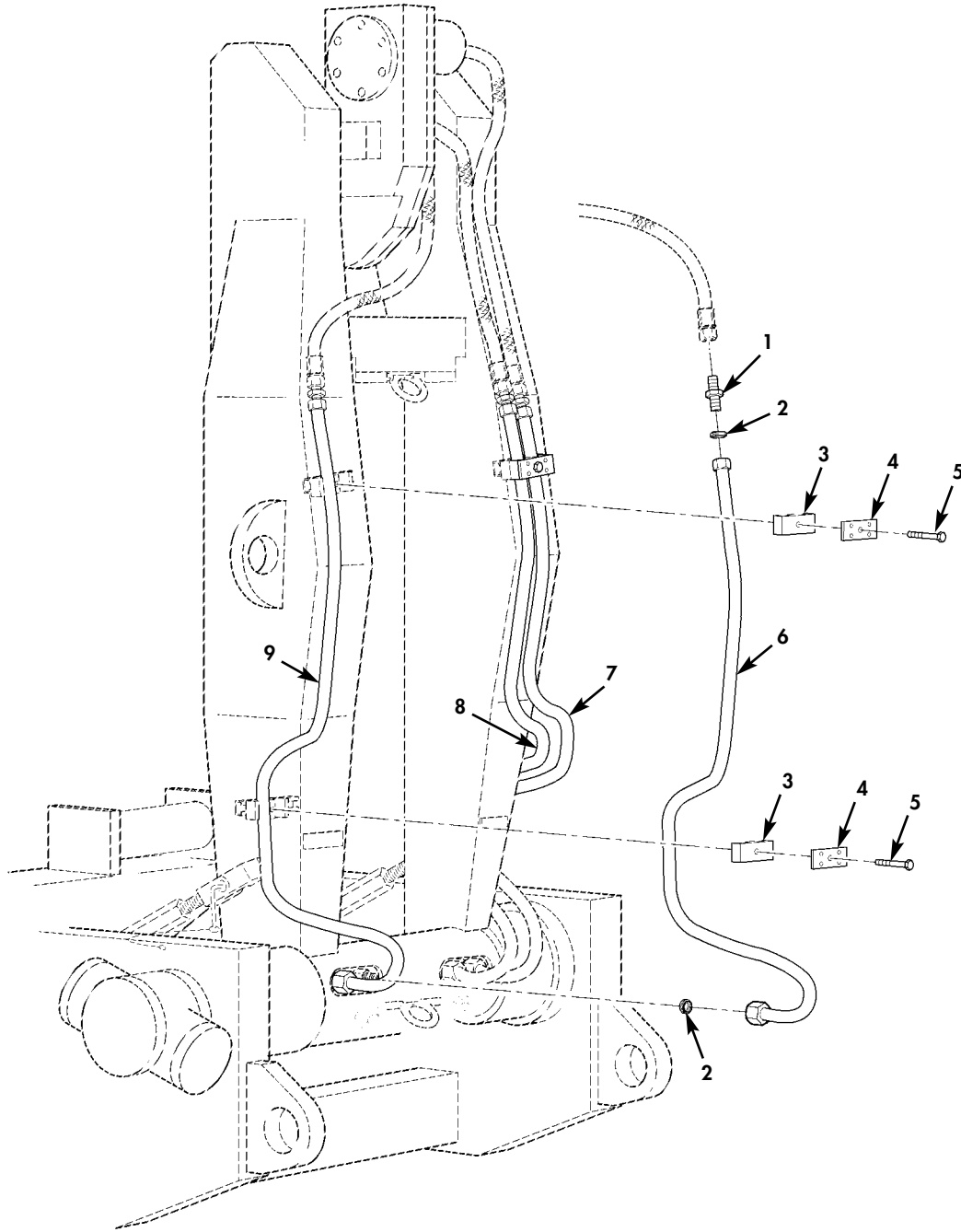


Figure 30. Pallet Hydraulic Tubes (Sheet 3 of 3).

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0222 PALLET HYDRAULIC TUBES						
FIG. 30 PALLET HYDRAULIC TUBES						
1	XDOZZ		D9913	864005511	TUBE ASSEMBLY, METAL.....	1
2	XDOZZ		D9913	864005523	TUBE ASSEMBLY, METAL.....	1
3	XDOZZ		D9913	864005524	TUBE ASSEMBLY, METAL.....	1
4	XDOZZ		D9913	864005516	TUBE ASSEMBLY, METAL.....	1
5	XDOZZ		D9913	864005515	TUBE ASSEMBLY, METAL.....	1
6	XDOZZ		D9913	864005513	TUBE ASSEMBLY, METAL.....	1
7	XDOZZ		D9913	864005514	TUBE ASSEMBLY, METAL.....	1
8	XDOZZ		D9913	864005535	TUBE ASSEMBLY, METAL.....	1
9	XDOZZ		D9913	864005711	TUBE ASSEMBLY, METAL.....	1
10	XDOZZ		D9913	864005740	TUBE ASSEMBLY, METAL.....	1
11	XDOZZ		D9913	864005510	TUBE ASSEMBLY, METAL.....	1
12	XDOZZ		D9913	864005640	TUBE ASSEMBLY, METAL.....	3
13	XDOZZ		D9913	864005739	TUBE ASSEMBLY, METAL.....	1
14	XDOZZ		D9913	864005738	TUBE ASSEMBLY, METAL.....	1
15	XDOZZ		D9913	864005721	TUBE ASSEMBLY, METAL.....	1
16	XDOZZ		D9913	864005541	TUBE ASSEMBLY, METAL.....	1
17	XDOZZ		D9913	864005542	TUBE ASSEMBLY, METAL.....	1
18	XDOZZ		D9913	864005560	TUBE ASSEMBLY, METAL.....	1
19	XDOZZ		D9913	864005563	TUBE ASSEMBLY, METAL.....	1
20	XDOZZ		D9913	864005564	TUBE ASSEMBLY, METAL.....	1
21	XDOZZ		D9913	864005552	TUBE ASSEMBLY, METAL.....	1
22	XDOZZ		D9913	864005559	TUBE ASSEMBLY, METAL.....	1
23	XDOZZ		D9913	864005554	TUBE ASSEMBLY, METAL.....	1
24	XDOZZ		D9913	864005551	TUBE ASSEMBLY, METAL.....	1
25	XDOZZ		D9913	864005550	TUBE ASSEMBLY, METAL.....	1
26	XDOZZ		D9913	864005569	TUBE ASSEMBLY, METAL.....	1
27	XDOZZ		D9913	864005548	TUBE ASSEMBLY, METAL.....	1
28	XDOZZ		D9913	864005547	TUBE ASSEMBLY, METAL.....	1
29	XDOZZ		D9913	864005595	TUBE ASSEMBLY, METAL.....	1
30	XDOZZ		D9913	864005597	TUBE ASSEMBLY, METAL.....	1
31	XDOZZ		D9913	864005697	TUBE ASSEMBLY, METAL.....	1
32	XDOZZ		D9913	864005703	TUBE ASSEMBLY, METAL.....	1
33	XDOZZ		D9913	864005598	TUBE ASSEMBLY, METAL.....	1
34	XDOZZ		D9913	864005695	TUBE ASSEMBLY, METAL.....	1
35	XDOZZ		D9913	864005696	TUBE ASSEMBLY, METAL.....	1
36	XDOZZ		D9913	864005506	TUBE ASSEMBLY, METAL.....	1
37	XDOZZ		D9913	864005505	TUBE ASSEMBLY, METAL.....	1
38	XDOZZ		D9913	864005521	TUBE ASSEMBLY, METAL.....	1
39	XDOZZ		D9913	864005522	TUBE ASSEMBLY, METAL.....	1
40	XDOZZ		D9913	864005508	TUBE ASSEMBLY, METAL.....	1
41	XDOZZ		D9913	864005509	TUBE ASSEMBLY, METAL.....	1
42	PAOZZ	5305-12-171-8798	D8286	DIN931-M6X35-8.8 -A2C	SCREW, CAP, HEXAGON H.....	25
43	XDOZZ		D9913	909624026	PLATE, CLAMP.....	50
44	XDOZZ		D9913	945314	CLAMP, PIPE 12MM.....	50
45	XDOZZ		D9913	909628503	PLATE, MOUNTING.....	25
46	XDOZZ		D9913	909623057	MOUNT, RAILSTRIP.....	25
47	XDOZZ		D9913	945313	CLAMP, PIPE.....	25

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)



ITEMS 1 AND 6 THRU 9 INCLUDE
 PACKING, PREFORMED ITEM 2

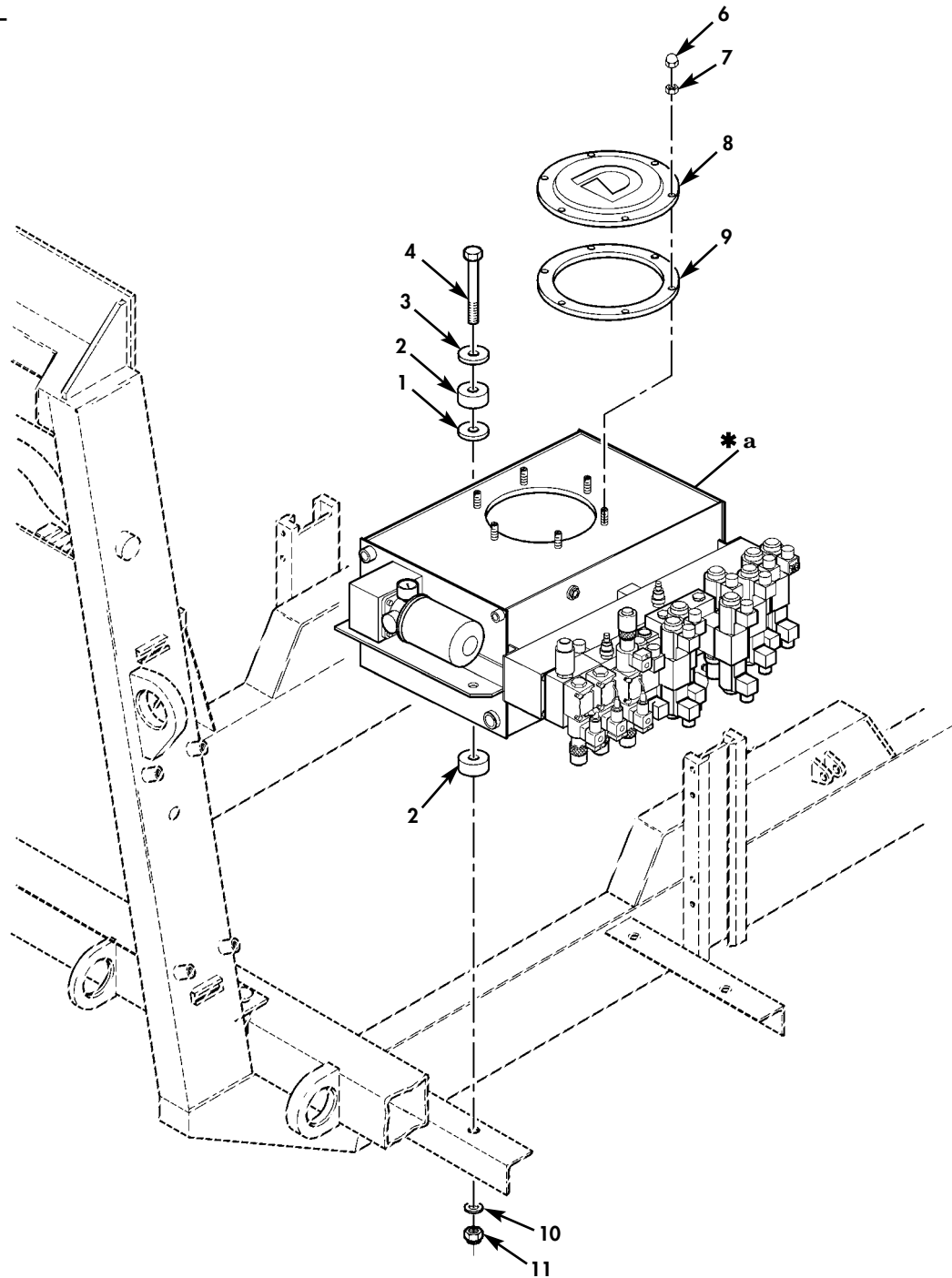
Figure 31. Launch Boom Hydraulic Tubes.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0223 LAUNCH BOOM HYDRAULIC TUBES						
FIG. 31 LAUNCH BOOM HYDRAULIC TUBES						
1	PAOZZ	4730-00-160-8232	15526	GE12L	ADAPTER, STRAIGHT, PI.....	4
2	XDOZZ		D8134	DOZ12L/71	PACKING, PREFORMED.....	8
3	XDOZZ		D9913	945314	CLAMP, PIPE.....	4
4	XDOZZ		D9913	90962406	BRACKET, MOUNTING.....	4
5	XDOZZ		D9913	931211	SCREW, CAP, HEXAGON H.....	4
6	XDOZZ		D9913	864005636	TUBE ASSEMBLY, METAL.....	1
7	XDOZZ		D9913	864005639	TUBE ASSEMBLY, METAL.....	1
8	XDOZZ		D9913	864005638	TUBE ASSEMBLY, METAL.....	1
9	XDOZZ		D9913	864005637	TUBE ASSEMBLY, METAL.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

5 — 6
thru
9

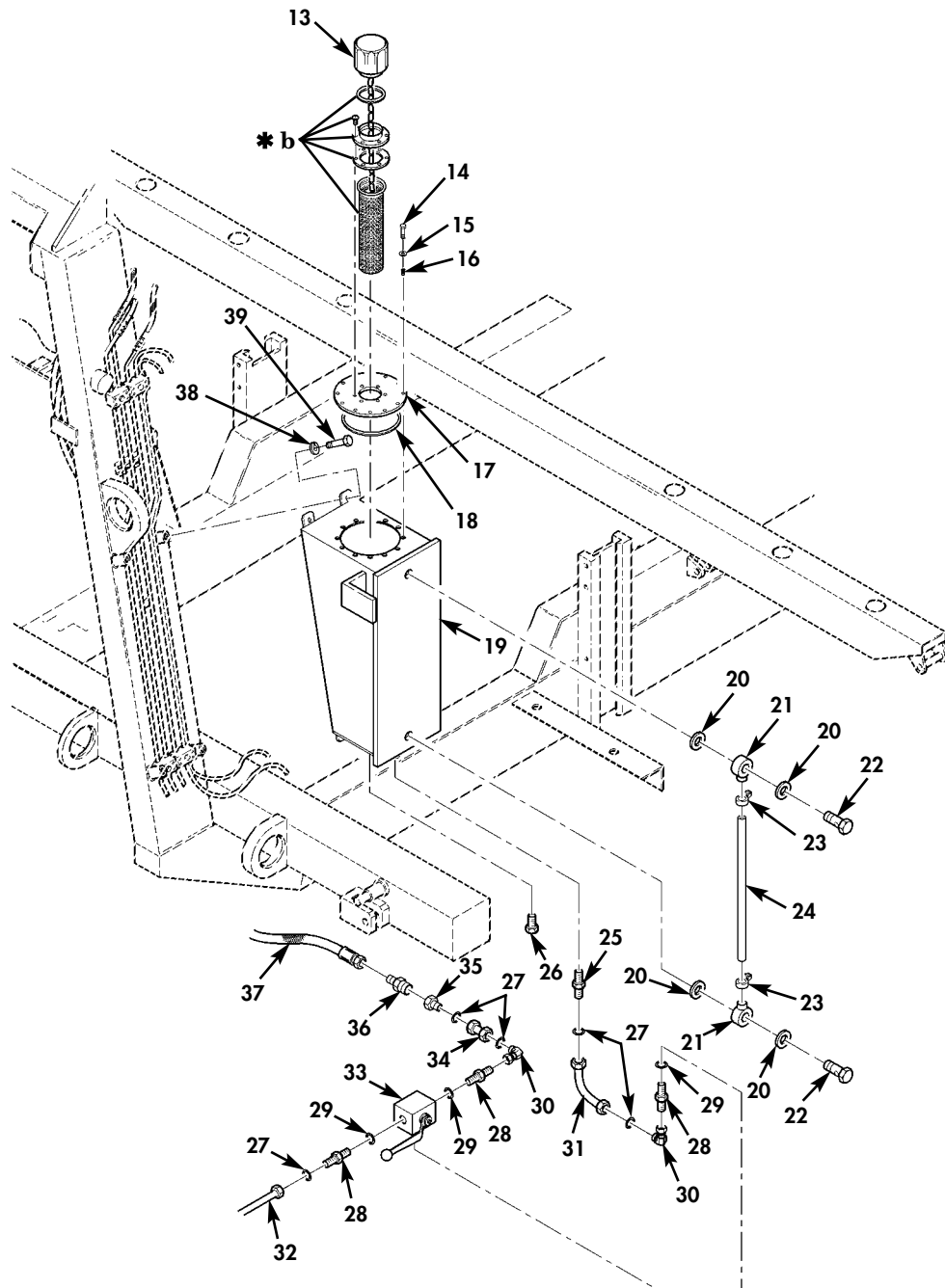


* a PART OF ITEM 5

Figure 32. Reservoir Assembly and Related Parts (Sheet 1 of 3).

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)

12 — 13
 thru
 26



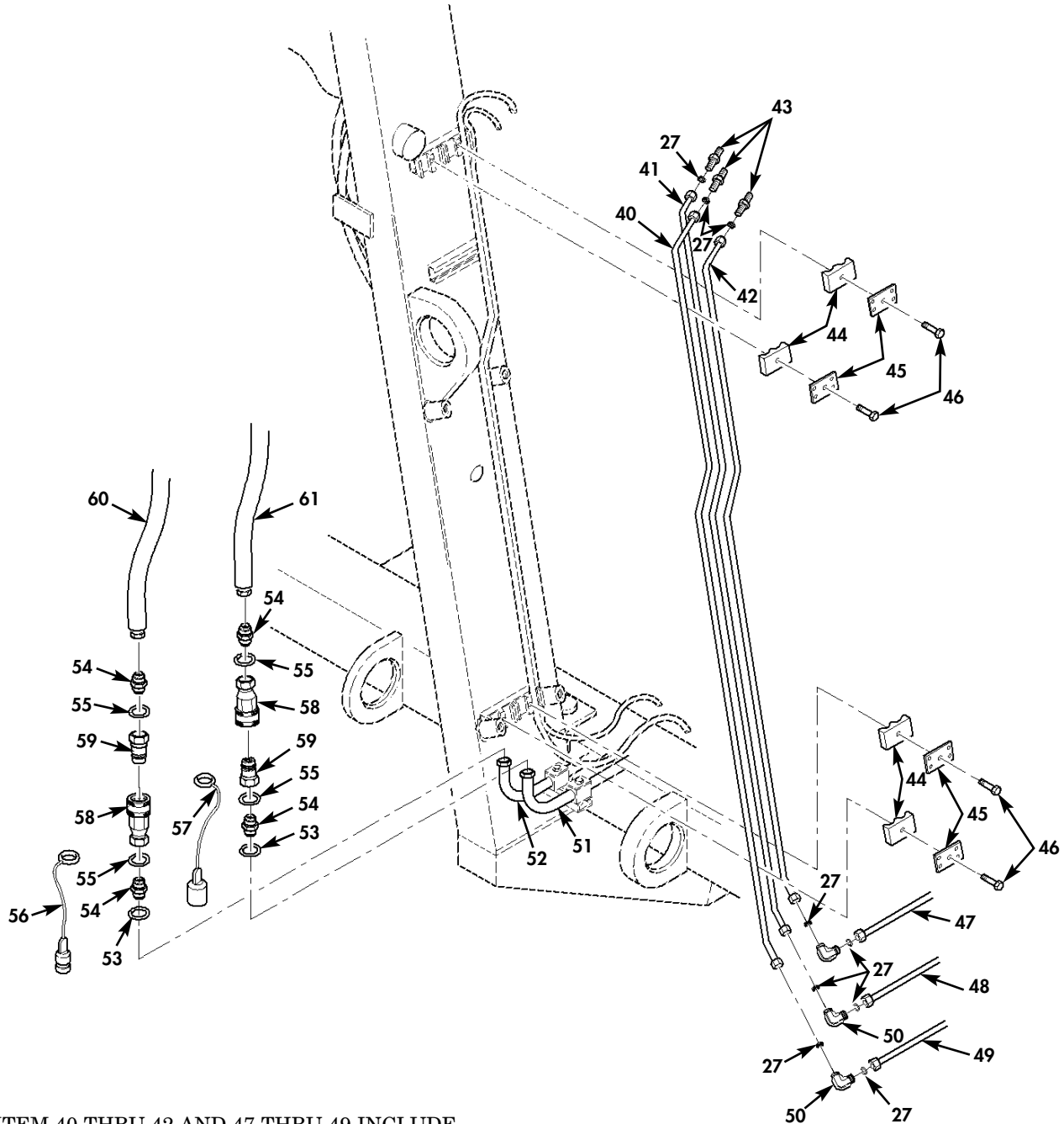
*** b** PART OF ITEM 13

ITEM 28 INCLUDES PACKING,
 PREFORMED ITEM 29

ITEMS 31,32, 34 INCLUDE PACKING,
 PREFORMED ITEM 27

Figure 32. Reservoir Assembly and Related Parts (Sheet 2 of 3).

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)



ITEM 40 THRU 42 AND 47 THRU 49 INCLUDE
 PACKING, PREFORMED ITEM 27

ITEMS 51 AND 52 INCLUDE PACKING,
 PREFORMED ITEM 53

ITEM 54 INCLUDES PACKING, PREFORMED
 ITEM 55

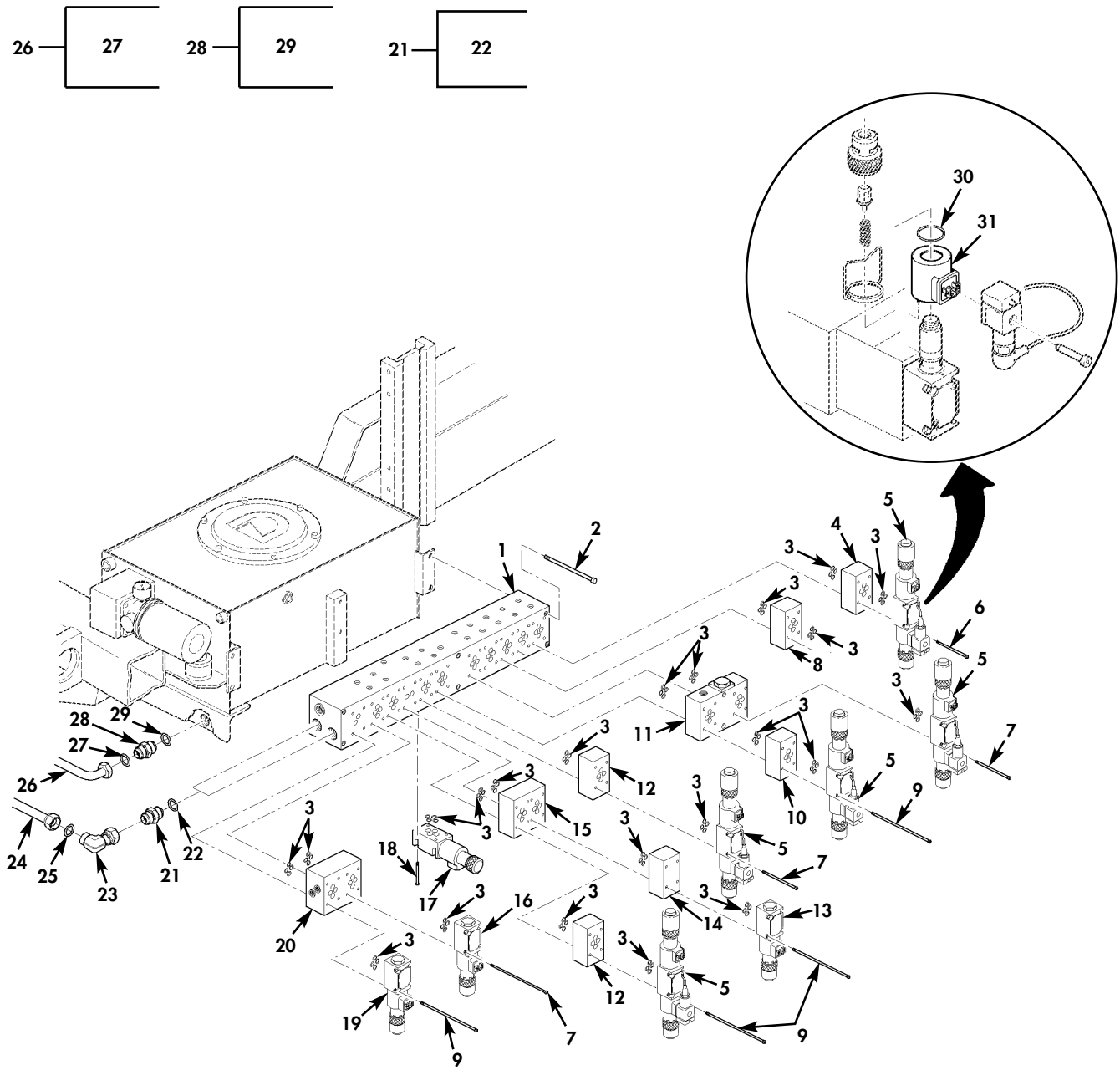
Figure 32. Reservoir Assembly and Related Parts (Sheet 3 of 3).

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0224 RESERVOIR ASSEMBLY AND RELATED PARTS						
FIG. 32 RESERVOIR ASSEMBLY AND RELATED PARTS						
1	PAOZZ	5310-12-357-7785	D9913	864068104	WASHER, FLAT.....	4
2	PAOZZ	5340-12-357-7997	D9913	909743201	BUMPER, NONMETALLIC.....	8
3	PAOZZ	5310-12-357-7784	D9913	864068103	WASHER, FLAT.....	4
4	PAOZZ	5305-12-141-6606	D8286	DIN931-M8X60-8.8 -A2P	SCREW, CAP, HEXAGON H.....	4
5	XDOOO		D9913	864010201	HYDRAULIC AGGREGATE.....	1
6	PAOZZ	5310-12-126-6075	D8286	DIN1587-M8-6-B2A	.NUT, PLAIN, CAP.....	6
7	XDOZZ		D9913	937864	.NUT, SELF-LOCKING.....	6
8	XDOZZ		D9913	909417311	.COVER, ACCESS.....	1
9	XDOZZ		D9913	909770196	.GASKET.....	1
10	PAOZZ	5310-12-142-0645	D8286	DIN125-B8, 4-140H V-A3P	WASHER, FLAT.....	4
11	PAOZZ	5310-12-300-8139	D8286	DIN6925-M8-8-A2P	NUT, SELF-LOCKING, HE.....	4
12	XDOOO		D9913	864004201	RESERVOIR, HYDRAULIC.....	1
13	XDOZZ		D9913	909470128	.CAP, FILTER.....	1
14	PAOZZ	5305-12-141-9828	D8286	DIN933-M5X20-8.8 -A2P	.SCREW, CAP, HEXAGON H.....	12
15	PAOZZ	5310-12-156-4912	D8286	DIN125-B5, 3-140H V-A3P	.WASHER, FLAT.....	12
16	PAOZZ	5310-12-348-5792	D7523	336242	.NUT, PLAIN, BLIND RIV.....	12
17	XDOZZ		D9913	864021001	.COVER, ACCESS.....	1
18	XDOZZ		D9913	944659	.O-RING.....	1
19	XBOZZ		D9913	864004202	.TANK, OIL, HYDRAULIC.....	1
20	PAOZZ	5330-12-156-4522	D8286	DIN7603-A14X18-C U	.GASKET.....	4
21	PAOZZ	4730-12-300-5234	D1257	881 0800	.CONNECTOR, MULTIPLE,.....	2
22	PAOZZ	4730-12-325-1269	D8286	DIN7643-10-3-S	.BOLT, FLUID PASSAGE.....	2
23	PAOZZ	4730-12-353-9982	D8286	DIN3017AL10-16W4	.CLAMP, HOSE.....	2
24	XDOZZ		D9913	909722841	.HOSE, NONMETALLIC MAKE FROM HOSE P/N 02 16 382 050, LENGTH AS REQUIRED	1
25	PAOZZ	4730-12-193-7698	D8134	GE15-LM-EDOMDVI	.ADAPTER, STRAIGHT.....	1
26	PAOZZ	5365-12-301-8555	D8134	VSTIM14X1, 5EDA3C	.PLUG, MACHINE THREAD.....	1
27	XDOZZ		D8134	DOZ12L/71	PACKING, PREFORMED.....	14
28	PAOZZ	4730-33-107-9373	1927B	GE 15LM-ED/OMD	ADAPTER, STRAIGHT.....	3
29	PAOZZ	5330-12-330-1127	D8134	ED16X1, 5X	PACKING, PREFORMED.....	14
30	XDOZZ		D9913	119140	ELBOW, TUBE.....	2
31	XDOZZ		D9913	864005689	TUBE ASSEMBLY, METAL.....	1
32	XDOZZ		D9913	864005736	TUBE ASSEMBLY, METAL.....	1
33	XDOZZ		D9913	909420160	VALVE, BALL.....	1
34	XDOZZ		D9913	864005635	TUBE ASSEMBLY, METAL.....	1
35	XDOZZ		D9913	909618472	REDUCER, TUBE.....	1
36	XDOZZ		D9913	118009	ADAPTER, HOSE.....	1
37	PAOZZ	4720-12-359-3737	D9913	909724861	HOSE ASSEMBLY, NONME.....	1
38	PAOZZ	5310-12-142-0481	D8286	DIN125-B10, 5-140 HV-A3P	WASHER, FLAT.....	4
39	PAOZZ	5305-12-144-4699	D8286	DIN933-M10X22-8. 8-A3P	SCREW, CAP, HEXAGON H.....	4
40	XDOZZ		D9913	864005679	TUBE ASSEMBLY, METAL.....	1
41	XDOZZ		D9913	864005680	TUBE ASSEMBLY, METAL.....	1
42	XDOZZ		D9913	864005678	TUBE ASSEMBLY, METAL.....	1
43	PAOZZ	4730-12-193-7698	D8134	GE15-LM-EDOMDVI	ADAPTER, STRAIGHT.....	3
44	XDOZZ		D9913	945313	CLAMP, PIPE.....	4
45	XDOZZ		D9913	909624026	PLATE, CLAMP.....	4
46	PAOZZ	5305-12-124-0462	D8286	DIN931-M6X35-8.8	SCREW, CAP, HEXAGON H.....	1

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
47	XDOZZ		D9913	864005681	TUBE ASSEMBLY,METAL.....	1
48	XDOZZ		D9913	864005654	TUBE ASSEMBLY,METAL.....	1
49	XDOZZ		D9913	864005653	TUBE ASSEMBLY,METAL.....	1
50	PAOZZ	4730-12-337-8644	D8286	DIN3952-L12-1.45 71	ELBOW,TUBE.....	1
51	XDOZZ		D9913	864005618	TUBE ASSEMBLY,METAL.....	1
52	XDOZZ		D9913	864005609	TUBE ASSEMBLY,METAL.....	1
53	XDOZZ		D8134	DOZ15L/71	PACKING,PREFORMED.....	2
54	XDOZZ		D9913	RED22/15L-71	REDUCER.....	4
55	XDOZZ		D8134	DOZ22L/71	PACKING,PREFORMED.....	2
56	PAOZZ	5340-01-260-6009	01276	FD45-1041-16	CAP,PROTECTIVE,DUST.....	1
57	PAOZZ	5340-01-223-9986	01276	FD45-1040-16	CAP,PROTECTIVE,DUST.....	1
58	PAOZZ	4730-01-221-2080	01276	FD45-1169-16-16	COUPLING HALK,QUICK.....	2
59	PAOZZ	4730-01-220-8297	01276	FD45-1168-16-16	COUPLING HALF,QUICK.....	2
60	PAOZZ	4720-01-418-6505	01276	FC310-08-12000	HOSE,NONMETALLIC.....	1
61	PAOZZ	4720-01-175-6380	01276	FC310-12	HOSE,NONMETALLIC.....	1

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)



ITEMS 24, 32 THRU 41, AND 43 THRU 52
 INCLUDE PACKING, PREFORMED ITEM 25

Figure 33. Control Valves and Manifold (Sheet 1 of 2).

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

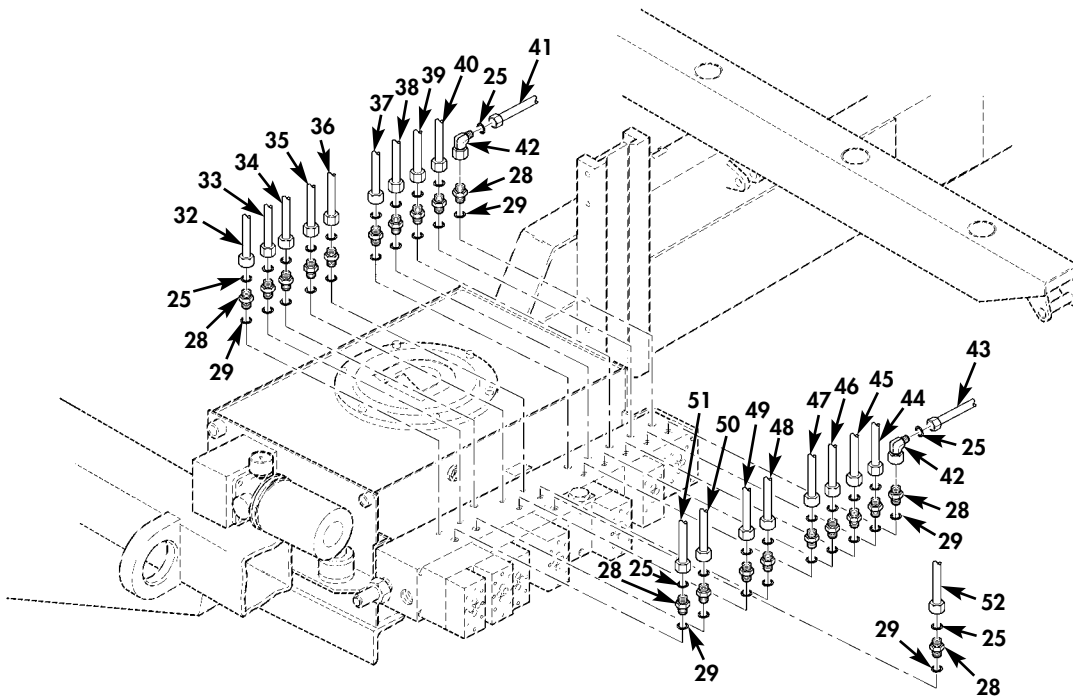


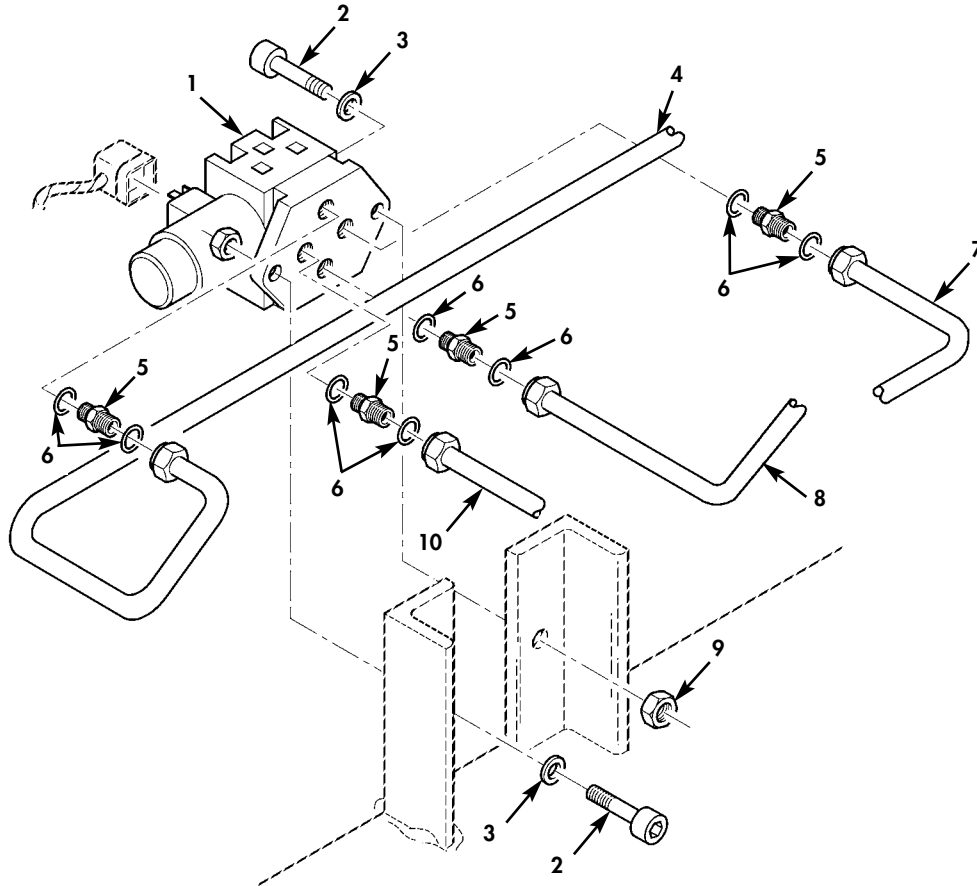
Figure 33. Control Valves and Manifold (Sheet 2 of 2).

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0225 CONTROL VALVES AND MANIFOLD						
FIG. 33 CONTROL VALVES AND MANIFOLD						
1	XDOZZ		D9913	909413813	MANIFOLD ASSEMBLY,H.....	1
2	PAOZZ	5305-12-126-7053	D8286	DIN912-M8X100-8.8	SCREW,CAP,SOCKET HE.....	4
3	PAOZZ	5331-15-120-7343	A4498	2037	O-RING.....	88
4	XDOZZ		D9913	904034007	MANIFOLD ASSEMBLY,H.....	1
5	XDOZZ		D9913	909410208	VALVE,FLOW CONTROL.....	9
6	PAOZZ	5305-12-152-6235	D8286	DIN912-M5X70-8.8 -A3P	SCREW,CAP,SOCKET HE.....	12
7	PAOZZ	5305-12-178-4642	D8286	DIN912-M5X80-8.8 -A3P	SCREW,CAP,SOCKET HE.....	8
8	XDOZZ		D9913	904034008	MANIFOLD ASSEMBLY,H.....	2
9	XDOZZ		D8286	DIN912-M5X125-8.8	SCREW,CAP,SOCKET,HE.....	24
10	XDOZZ		D9913	909419054	MANIFOLD ASSEMBLY,H.....	1
11	XDOZZ		D9913	904034013	MANIFOLD ASSEMBLY,H.....	1
12	XDOZZ		D9913	904034005	MANIFOLD ASSEMBLY,H.....	1
13	XDOZZ		D9913	909410210	VALVE,FLOW CONTROL.....	1
14	XDOZZ		D9913	864064005	MANIFOLD ASSEMBLY,H.....	1
15	XDOZZ		D9913	904034012	MANIFOLD ASSEMBLY,H.....	1
16	XDOZZ		D9913	909410215	VALVE,SOLENOID.....	1
17	XDOZZ		D9913	909410206	VALVE.....	1
18	PAOZZ	5305-12-126-7717	D8286	DIN912-M5X40-8.8	SCREW,CAP,SOCKET HE.....	4
19	XDOZZ		D9913	909410214	VALVE,SOLENOID.....	1
20	XDOZZ		D9913	909413812	MANIFOLD ASSEMBLY,H.....	1
21	XDOZZ		D8134	GE12ZLM18X1.5EDA 3C	ADAPTER,STRAIGHT TU.....	1
22	PAOZZ	5330-12-186-8899	D8134	ED18X1,5	.PACKING,PREFORMED.....	1
23	XDOZZ		D8134	EVW15L71	ELBOW,TUBE TO BOSS.....	1
24	XDOZZ		D9913	864005713	TUBE ASSEMBLY,METAL.....	1
25	XDOZZ		D8134	DOZ12L/71	PACKING,PREFORMED 2 INCLUDED WITH TUBE ASSEMBLIES.....	2
26	XDOZZ		D9913	864005612	TUBE ASSEMBLY,METAL.....	1
27	XDOZZ		D8134	DOZ22L/71	.PACKING,PREFORMED.....	2
28	XDOZZ		D8134	GE12ZLM14X1.5EDA 3C	ADAPTER,STRAIGHT,TU.....	1
29	PAOZZ	5330-12-184-0390	D8134	ED14X1,5X	.PACKING,PREFORMED.....	1
30	XDOZZ		A0761	1985406	PARTS KIT,SEAL.....	9
31	XDOZZ		C2535	301RC008273	SOLENOID,ELECTRICAL.....	9
32	XDOZZ		D9913	864005654	TUBE ASSEMBLY,METAL.....	1
33	XDOZZ		D9913	864005517	TUBE ASSEMBLY,METAL.....	1
34	XDOZZ		D9913	864005705	TUBE ASSEMBLY,METAL.....	1
35	XDOZZ		D9913	864005531	TUBE ASSEMBLY,METAL.....	1
35	XDOZZ		D9913	864005561	TUBE ASSEMBLY,METAL.....	1
37	XDOZZ		D9913	864005555	TUBE ASSEMBLY,METAL.....	1
38	XDOZZ		D9913	864005507	TUBE ASSEMBLY,METAL.....	1
39	XDOZZ		D9913	864005537	TUBE ASSEMBLY,METAL.....	1
40	XDOZZ		D9913	864005527	TUBE ASSEMBLY,METAL.....	1
41	XDOZZ		D9913	864005645	TUBE ASSEMBLY,METAL.....	1
42	XDOZZ		D8134	EVW12L71	ELBOW,TUBE.....	2
43	XDOZZ		D9913	864005546	TUBE ASSEMBLY,METAL.....	1
44	XDOZZ		D9913	864005528	TUBE ASSEMBLY,METAL.....	1
45	XDOZZ		D9913	864005549	TUBE ASSEMBLY,METAL.....	1
46	XDOZZ		D9913	864005558	TUBE ASSEMBLY,METAL.....	1
47	XDOZZ		D9913	864005556	TUBE ASSEMBLY,METAL.....	1
48	XDOZZ		D9913	864005562	TUBE ASSEMBLY,METAL.....	1
49	XDOZZ		D9913	864005573	TUBE ASSEMBLY,METAL.....	1

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
50	XDOZZ		D9913	864005715	TUBE ASSEMBLY,METAL.....	1
51	XDOZZ		D9913	864005653	TUBE ASSEMBLY,METAL.....	1
52	XDOZZ		D9913	864005694	TUBE ASSEMBLY,METAL.....	1

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)



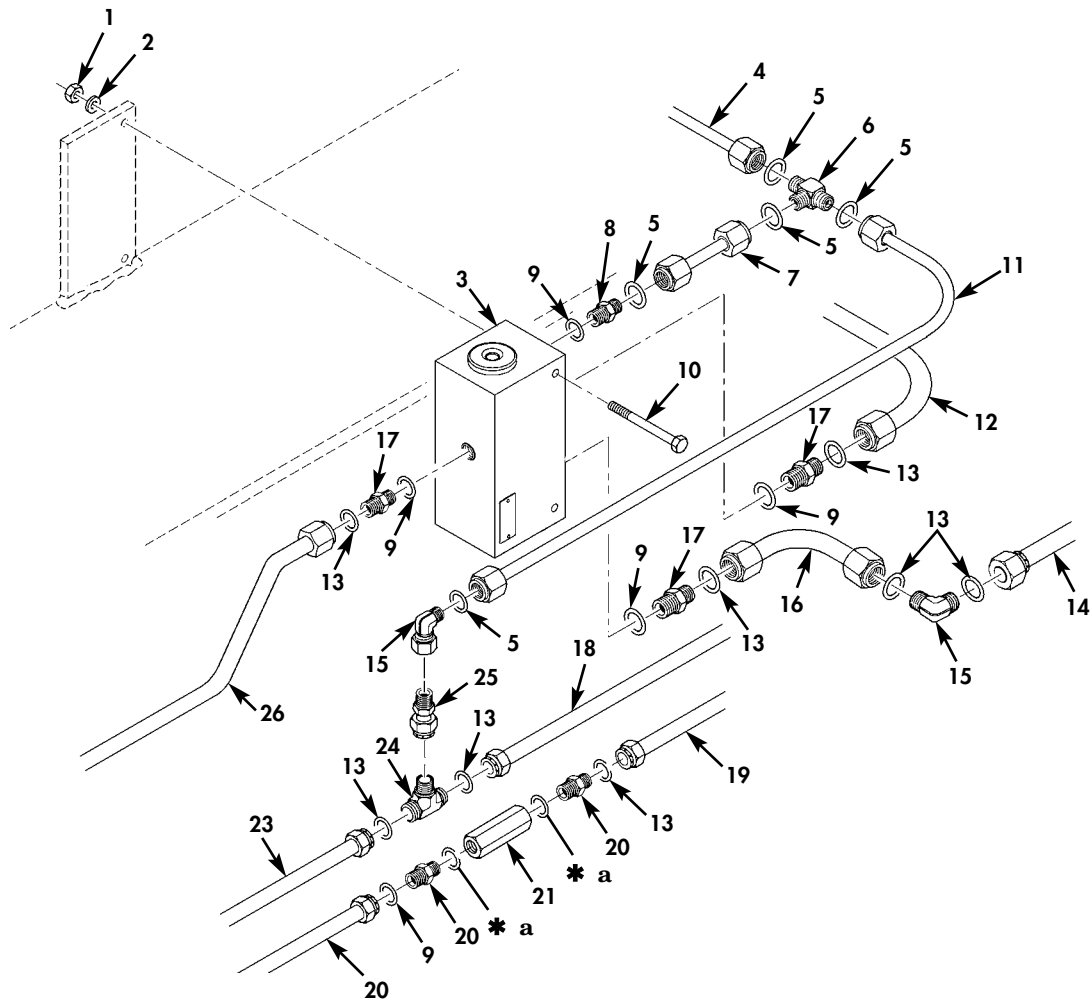
ITEMS 4, 5, 7, 8, AND 10 INCLUDE
 PACKING, PREFORMED ITEM 6

Figure 34. Pressure Relief Valve.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0227 PRESSURE RELIEF VALVE						
FIG. 34 PRESSURE RELIEF VALVE						
1	XDOZZ		D2429	301RC006194	VALVE, LINEAR, DIRECT.....	1
2	PAOZZ	5305-12-141-9848	D8286	DIN933-M6X30-8.8 -A2P	SCREW, CAP, SOCKET HE.....	2
3	PAOZZ	5310-12-175-8208	D8286	DIN125-B6, 4-140H V-A2	WASHER, FLAT.....	2
4	XDOZZ		D9913	864005545	TUBE ASSEMBLY, METAL.....	1
5	PAOZZ	4730-12-364-2202	D8134	GE12LM14X1, 5EDOM DA3C	ADAPTER, STRAIGHT, TU.....	4
6	XDOZZ		D8134	DOZ12L/71	PACKING, PREFORMED.....	8
7	XDOZZ		D9913	864005570	TUBE ASSEMBLY, METAL.....	1
8	XDOZZ		D9913	864005718	TUBE ASSEMBLY, METAL.....	8
9	PAOZZ	5310-12-156-4991	D8286	DIN934-M6-8-A2P	NUT, PLAIN, HEXAGON.....	2
10	XDOZZ		D9913	864005584	TUBE ASSEMBLY, METAL.....	1

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)



* a PART OF ITEM 20

ITEMS 4, 7, AND 11 INCLUDE
 PACKING, PREFORMED ITEM 5

ITEM 8 AND 17 INCLUDES PACKING,
 PREFORMED ITEM 9

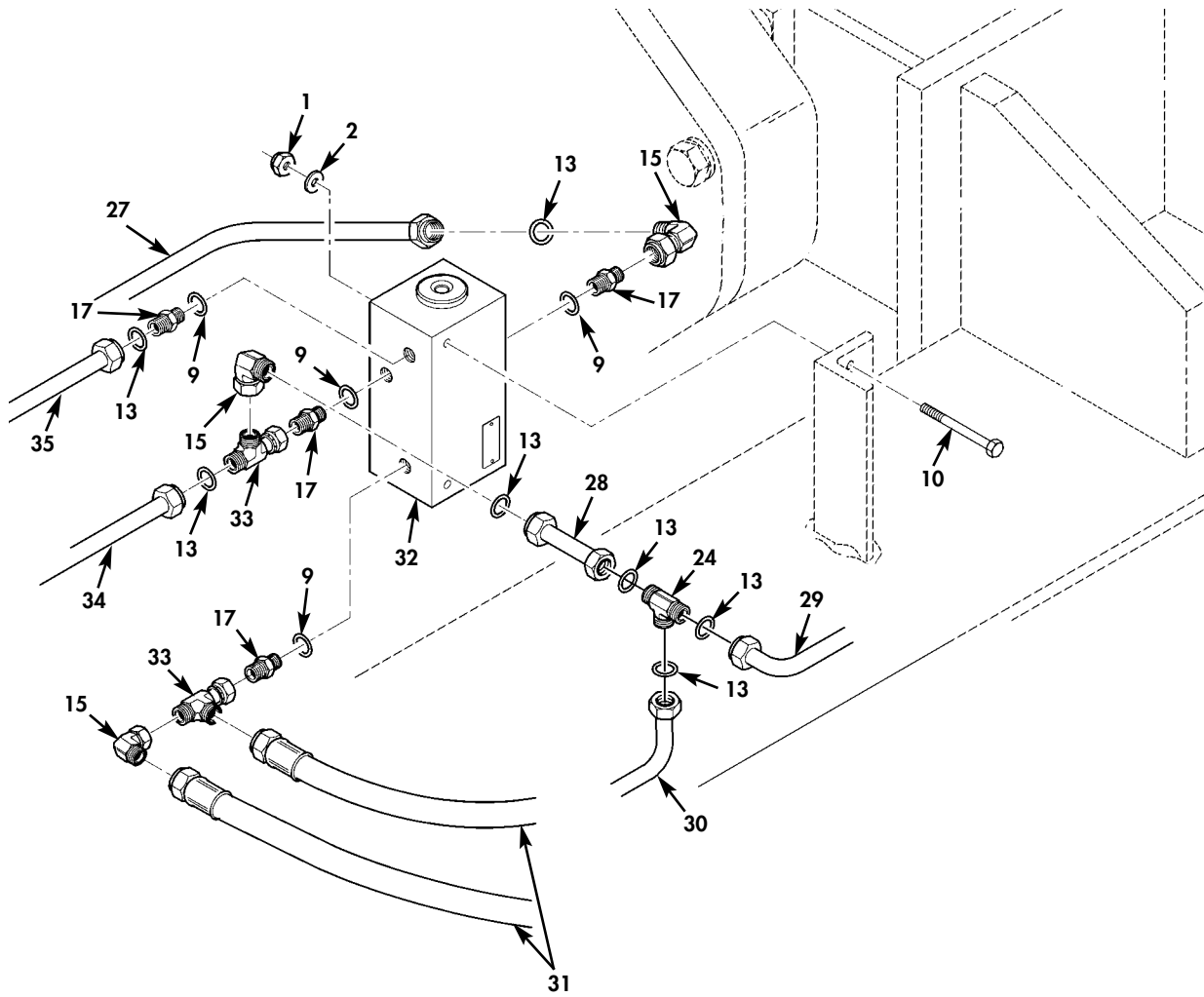
ITEMS 12, 14, 16, 18, 19, 22, 23, AND 26
 INCLUDE PACKING, PREFORMED ITEM 13

Figure 35. Check Valves (Sheet 1 of 2).

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST

RAPIDLY EMPLACED BRIDGE (REB)

M21 (NSN 5420-01-481-3959)



ITEMS 27 THRU 30 AND 34 AND 35
INCLUDE PACKING, PREFORMED ITEM 13

Figure 35. Check Valves (Sheet 2 of 2).

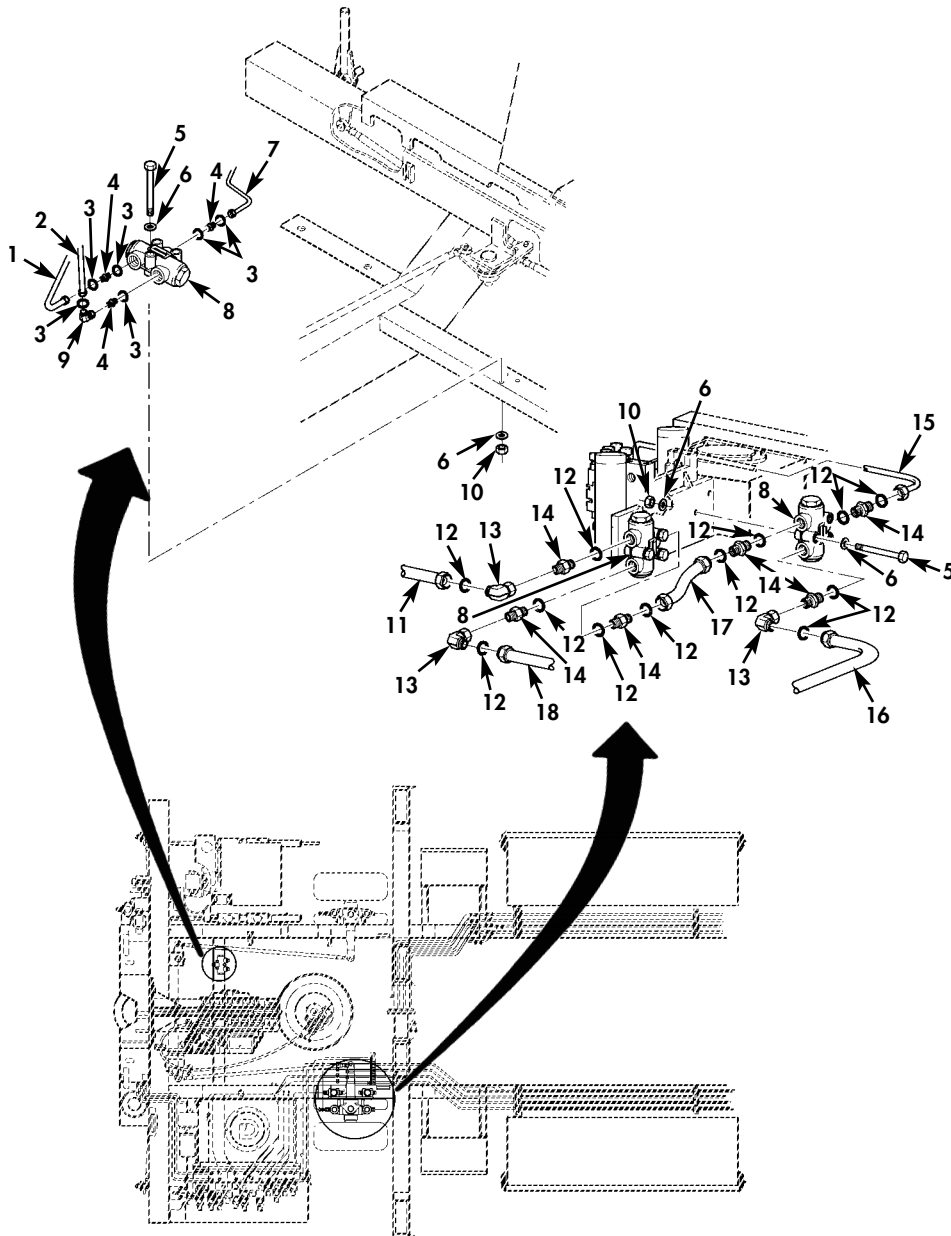
(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0228 CHECK VALVES						
FIG. 35 CHECK VALVES						
1	PAOZZ	5310-12-156-4991	D8286	DIN934-M6-8-A2P	NUT, PLAIN, HEXAGON.....	4
2	PAOZZ	5310-12-142-0644	D8286	DIN125-B6, 4-140H V-A3P	WASHER, FLAT.....	4
3	XDOZZ		D9913	909413205	VALVE ASSEMBLY, MANI.....	1
4	XDOZZ		D9913	864005724	TUBE ASSEMBLY, METAL.....	1
5	XDOZZ		D8134	DOZ08L/71	PACKING, PREFORMED.....	6
6	XDOZZ		D9913	909410171	TEE, SPECIAL.....	6
7	XDOZZ		D9913	864005729	TUBE ASSEMBLY, METAL.....	1
8	XDOZZ		D8134	GE12ZLM14X1.5EDA 3C	ADAPTER, STRAIGHT, TU.....	1
9	PAOZZ	5330-12-184-0390	D8134	ED14X1, 5X	PACKING, PREFORMED.....	6
10	PAOZZ	5305-12-142-8456	D8286	DIN931-M6X75-8.8 -A2P	SCREW, CAP, HEXAGON.....	4
11	XDOZZ		D9913	864005723	TUBE ASSEMBLY, METAL.....	1
12	XDOZZ		D9913	864005534	TUBE ASSEMBLY, METAL.....	1
13	XDOZZ		D8134	DOZ12L/71	PACKING, PREFORMED 2 INCLUDED WITH TUBE ASSEMBLIES	2
14	XDOZZ		D9913	864005505	TUBE ASSEMBLY, METAL.....	1
15	PAOZZ	4730-12-337-8644	D8286	DIN3952-L12-1.45 71	ELBOW, TUBE.....	5
16	XDOZZ		D9913	864005731	TUBE ASSEMBLY, METAL.....	1
17	XDOZZ		D9913	GE12-LM14X1	ADAPTER, STRAIGHT, TU.....	7
18	XDOZZ		D9913	864005574	TUBE ASSEMBLY, METAL.....	1
19	XDOZZ		D9913	864005559	TUBE ASSEMBLY, METAL.....	1
20	XDOZZ		D9913	909610994	ADAPTER, STRAIGHT, TU.....	4
21	XDOZZ		D9913	909476541	RESTRICTOR, FLUID FL.....	2
22	XDOZZ		D9913	864005579	TUBE ASSEMBLY, METAL.....	1
23	XDOZZ		D9913	864005552	TUBE ASSEMBLY, METAL.....	1
24	PAOZZ	4730-01-518-3963	30780	T12L71	TEE, TUBE.....	2
25	XDOZZ		D9913	909618470	REDUCER, TUBE 12MM-8MM.....	1
26	XDOZZ		D9913	864005719	TUBE ASSEMBLY, METAL.....	1
27	XDOZZ		D9913	864005545	TUBE ASSEMBLY, METAL.....	1
28	XDOZZ		D9913	864005722	TUBE ASSEMBLY, METAL.....	1
29	XDOZZ		D9913	864005712	TUBE ASSEMBLY, METAL.....	1
30	XDOZZ		D9913	864005576	TUBE ASSEMBLY, METAL.....	1
31	PAOZZ	4720-12-359-3737	D9913	909724861	HOSE ASSEMBLY, NONME.....	2
32	XDOZZ		D9913	909413206	VALVE, CHECK.....	1
33	PAOZZ	4730-12-148-9481	D8134	EVL12-PL	TEE, TUBE.....	2
34	XDOZZ		D9913	864005716	TUBE ASSEMBLY, METAL.....	1
35	XDOZZ		D9913	864005586	TUBE ASSEMBLY, METAL.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST

RAPIDLY EMPLACED BRIDGE (REB)

M21 (NSN 5420-01-481-3959)



ITEMS 1, 2, 4, 7, 22, AND 24 INCLUDE PACKING,
PREFORMED ITEM 3

ITEMS 11, 14 THRU 21, AND 25 INCLUDE
PACKING, PREFORMED ITEM 12

Figure 36. Flow Dividers (Sheet 1 of 2).

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

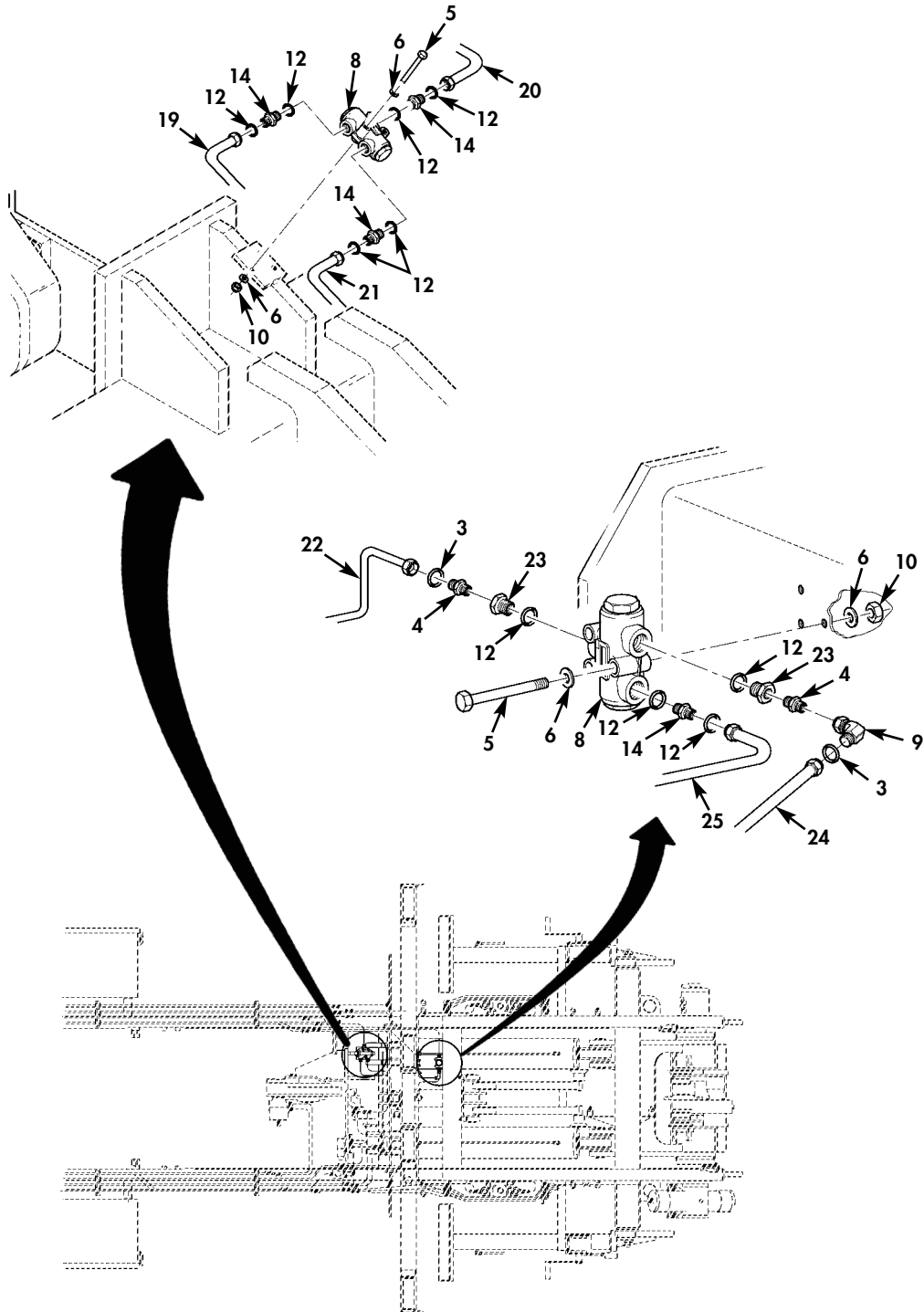
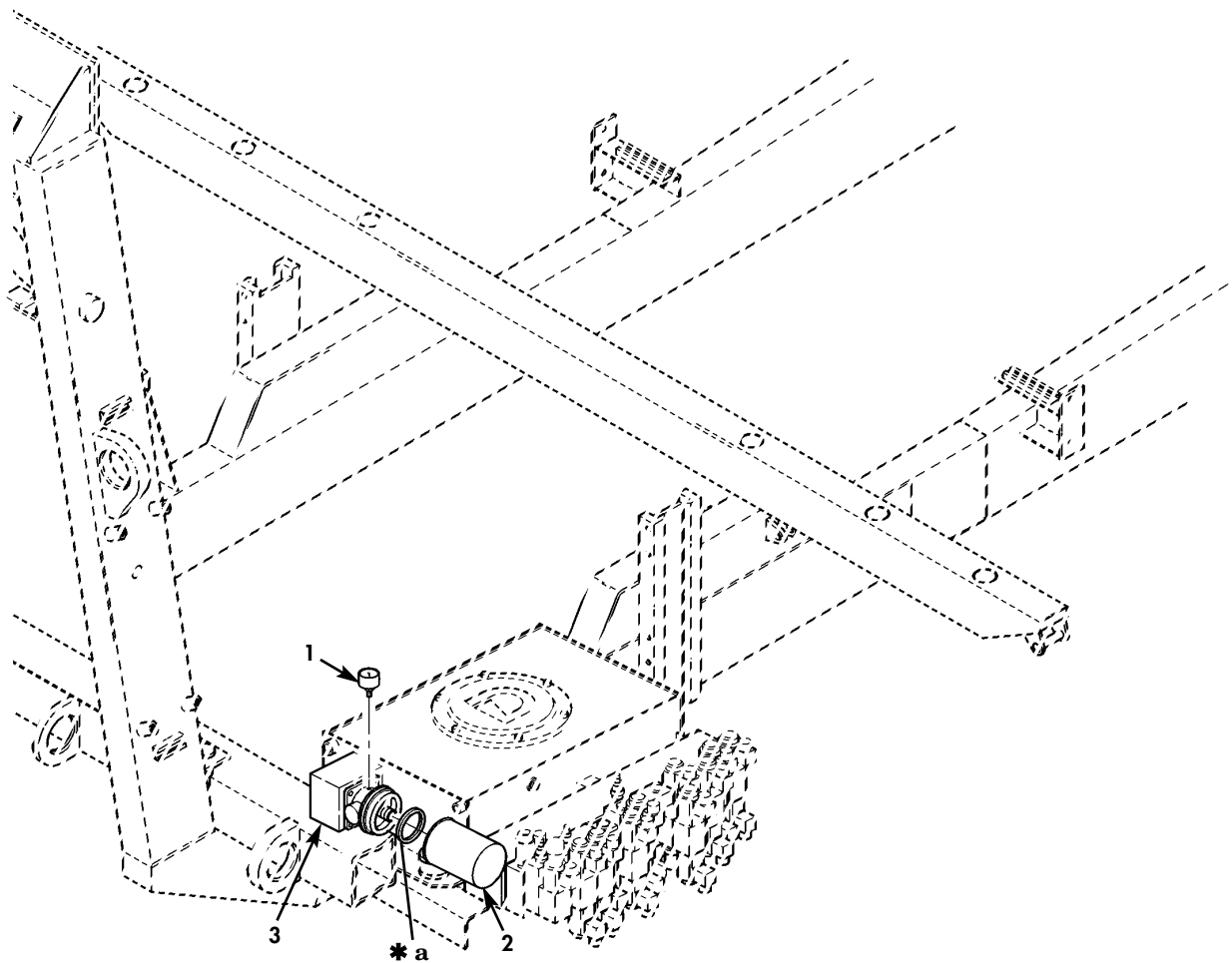


Figure 36. Flow Dividers (Sheet 2 of 2).

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0229 FLOW DIVIDERS						
FIG. 36 FLOW DIVIDERS						
1	XDOZZ		D9913	864005697	TUBE ASSEMBLY,METAL.....	1
2	XDOZZ		D9913	864005703	TUBE ASSEMBLY,METAL.....	1
3	XDOZZ		D8134	DOZ08L/71	PACKING,PREFORMED.....	8
4	PAOZZ	4730-12-364-2203	D8134	GE12LM18X1,5EDOM D	ADAPTER,STRAIGHT.....	5
5	PAOZZ	5305-33-003-5359	0131B	5305-005977	SCREW,CAP,HEXAGON.....	15
6	PAOZZ	5310-12-175-8208	D8286	DIN125-B6,4-140H V-A2	WASHER,FLAT.....	30
7	XDOZZ		D9913	864005704	TUBE ASSEMBLY,METAL.....	1
8	PAOZZ	4730-12-357-7782	D9913	904011713	CONNECTOR,MULTIPLE FLUID PRESSURE LINE.....	5
9	PAOZZ	4730-14-413-4642	F0644	EVW08L71	ELBOW,TUBE.....	2
10	PAOZZ	5310-12-156-4991	D8286	DIN934-M6-8-A2P	NUT,PLAIN,HEXAGON.....	15
11	PAOZZ	4720-12-359-3737	D9913	909724861	HOSE ASSEMBLY,NONME.....	1
12	XDOZZ		D8134	DOZ12L/71	PACKING,PREFORMED.....	22
13	XDOZZ		D8134	EVW12L71	ELBOW,TUBE.....	3
14	XDOZZ		D9913	909617834	ADAPTER,STRAIGHT,TU.....	10
15	XDOZZ		D9913	864005537	TUBE ASSEMBLY,METAL.....	1
16	XDOZZ		D9913	864005536	TUBE ASSEMBLY,METAL.....	1
17	XDOZZ		D9913	864005620	TUBE ASSEMBLY,METAL.....	1
18	XDOZZ		D9913	864005590	TUBE ASSEMBLY,METAL.....	1
19	XDOZZ		D9913	864005530	TUBE ASSEMBLY,METAL.....	1
20	XDOZZ		D9913	864005533	TUBE ASSEMBLY,METAL.....	1
21	XDOZZ		D9913	864005529	TUBE ASSEMBLY,METAL.....	1
22	XDOZZ		D9913	864005735	TUBE ASSEMBLY,METAL.....	1
23	XDOZZ		D9913	909618470	REDUCER,TUBE.....	2
24	XDOZZ		D9913	864005733	TUBE ASSEMBLY,METAL.....	1
25	XDOZZ		D9913	864005734	TUBE ASSEMBLY,METAL.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)



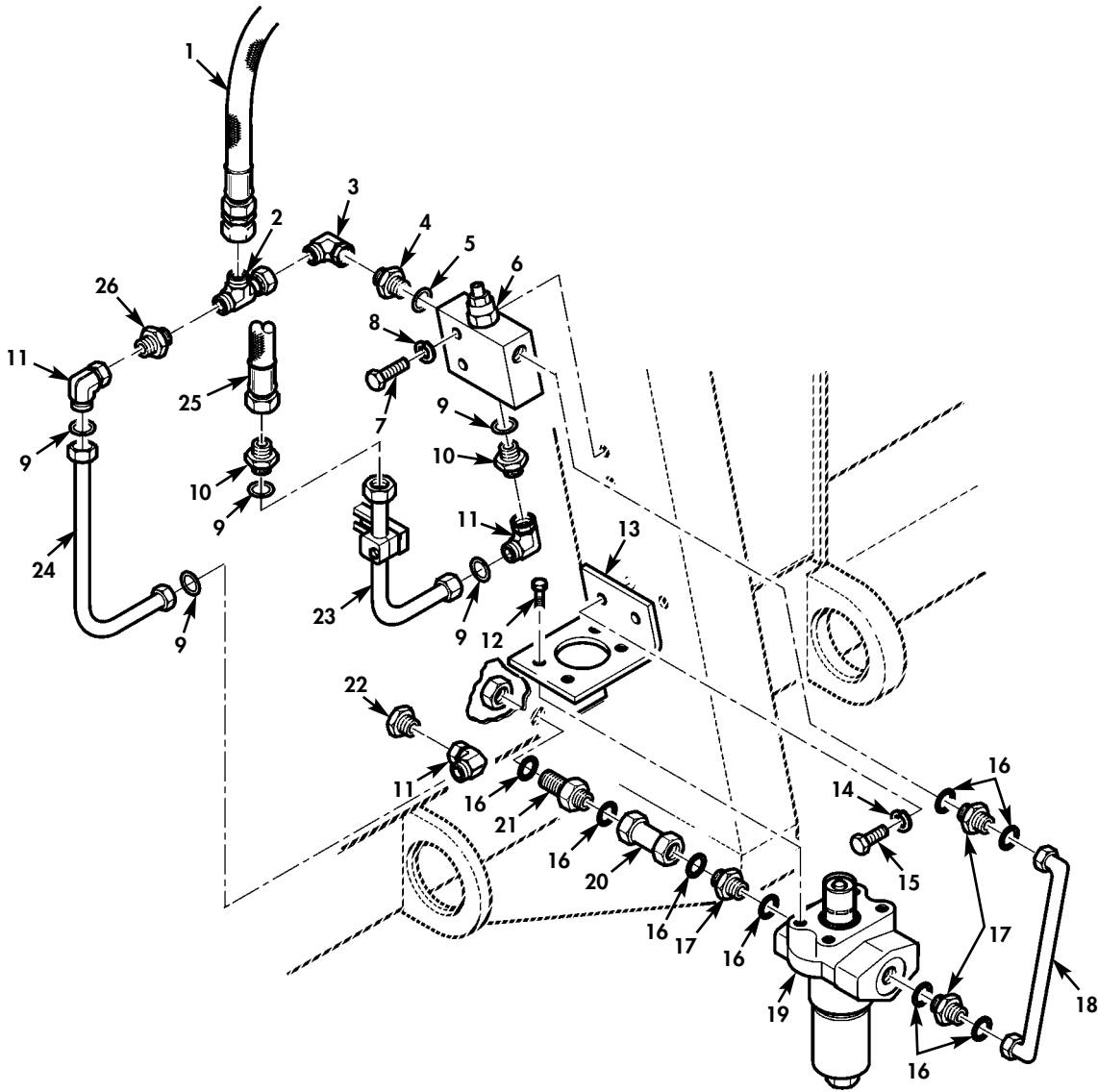
* a PART OF ITEM 2

Figure 37. Hydraulic Filter and Gauge.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0230 HYDRAULIC FILTER AND GAUGE	
					FIG. 37 HYDRAULIC FILTER AND GAUGE	
1	XDOZZ		D9913	909475113	GAGE,PRESSURE,DIAL.....	1
2	XDOZZ		D9913	909472711	FILTER ELEMENT,FLUI.....	1
3	XDOZZ		D9913	909470358	MANIFOLD ASSEMBLY,H.....	1

END OF FIGURE

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ITEM 4 INCLUDES PACKING,
 PREFORMED ITEM 5
 ITEMS 10, 23, AND 24 INCLUDE
 PACKING, PREFORMED ITEM 9
 ITEMS 17, 18, 20, AND 21 INCLUDE
 PACKING, PREFORMED ITEM 16

Figure 38. Hydraulic System Pre-Filter.

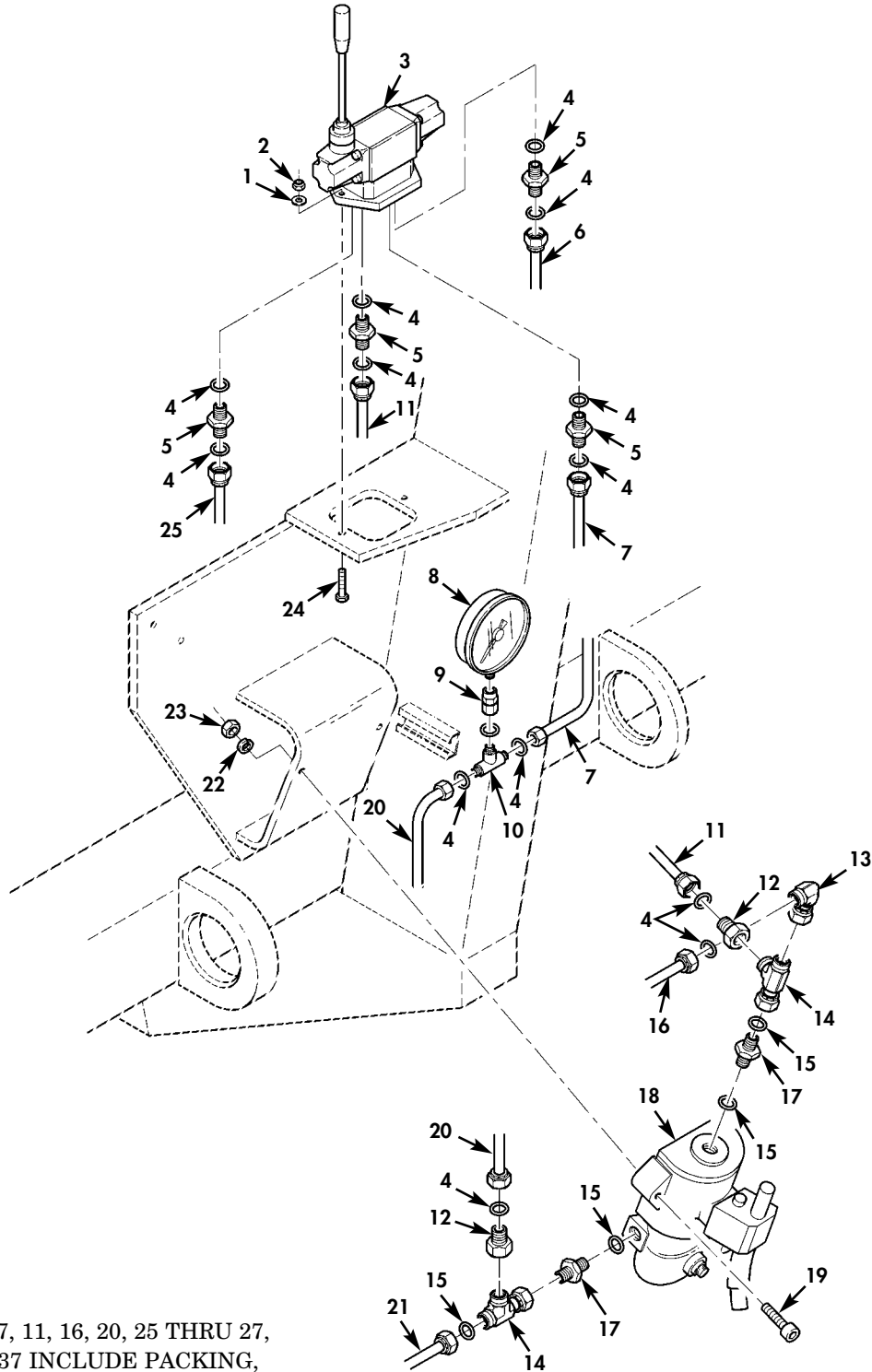
(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0231 HYDRAULIC SYSTEM PRE-FILTER						
FIG. 38 HYDRAULIC SYSTEM PRE-FILTER						
1	XDOZZ		D9913	909724864	HOSE, NONMETALLIC.....	1
2	PAOZZ	4730-12-185-5224	D8134	EVL22-PL	TEE, TUBE.....	1
3	PAOZZ	4730-12-148-9153	D8134	EVW22-PLM	ELBOW, TUBE TO BOSS.....	1
4	XDOZZ		D8134	GE22LR71	ADAPTER, STRAIGHT.....	1
5	XDOZZ		D8134	DOZ12L/71	PACKING, PREFORMED.....	1
6	XDOZZ		D9913	909411230	VALVE, FLOW CONTROL.....	1
7	PAOZZ	5305-12-124-0471	D8286	DIN931-M8X50-8.8	SCREW, CAP, HEXAGON H.....	2
8	PAOZZ	5310-12-142-0645	D8286	DIN125-B8, 4-140H V-A3P	WASHER, FLAT.....	2
9	XDOZZ		D8134	DOZ15L/71	PACKING, PREFORMED.....	5
10	PAOZZ	4730-12-352-4362	D8134	GE15-PL/R3/4/71	ADAPTER, STRAIGHT, TU.....	2
11	XDOZZ		D8134	EVW15L71	ELBOW, TUBE TO BOSS.....	3
12	PAOZZ	5305-12-156-4860	D8286	DIN933-M6X12-8.8 -A2P	SCREW, CAP, HEXAGON H.....	4
13	XDOZZ		D9913	865340355	BRACKET, MOUNTING.....	1
14	PAOZZ	5310-12-142-0644	D8286	DIN125-B6, 4-140H V-A3P	WASHER, FLAT.....	2
15	PAOZZ	5305-12-156-4862	D8286	DIN933-M6X20-8.8 -A2P	SCREW, CAP, HEXAGON H.....	2
16	XDOZZ		D8134	DOZ12L/71	PACKING, PREFORMED.....	8
17	XDOZZ		D8134	GE12LR1/271	ADAPTER, STRAIGHT, TU.....	3
18	XDOZZ		D9913	864005649	TUBE ASSEMBLY, METAL.....	1
19	PAOZZ	4330-12-359-3835	C1861	1278657	FILTER, FLUID.....	1
20	XDOZZ		D9913	864005635	TUBE ASSEMBLY, METAL.....	1
21	XDOZZ		D8134	SV12L71	NIPPLE, TUBE.....	1
22	XDOZZ		D8134	SV15L71	NIPPLE, TUBE.....	1
23	XDOZZ		D9913	864005676	TUBE ASSEMBLY, METAL.....	1
24	XDOZZ		D9913	864005710	TUBE ASSEMBLY, METAL.....	1
25	XDOZZ		D9913	909724863	HOSE ASSEMBLY, NONME.....	1
26	XDOZZ		D8134	KOR22/15L71	ADAPTER, STRAIGHT, TU.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST

RAPIDLY EMPLACED BRIDGE (REB)

M21 (NSN 5420-01-481-3959)



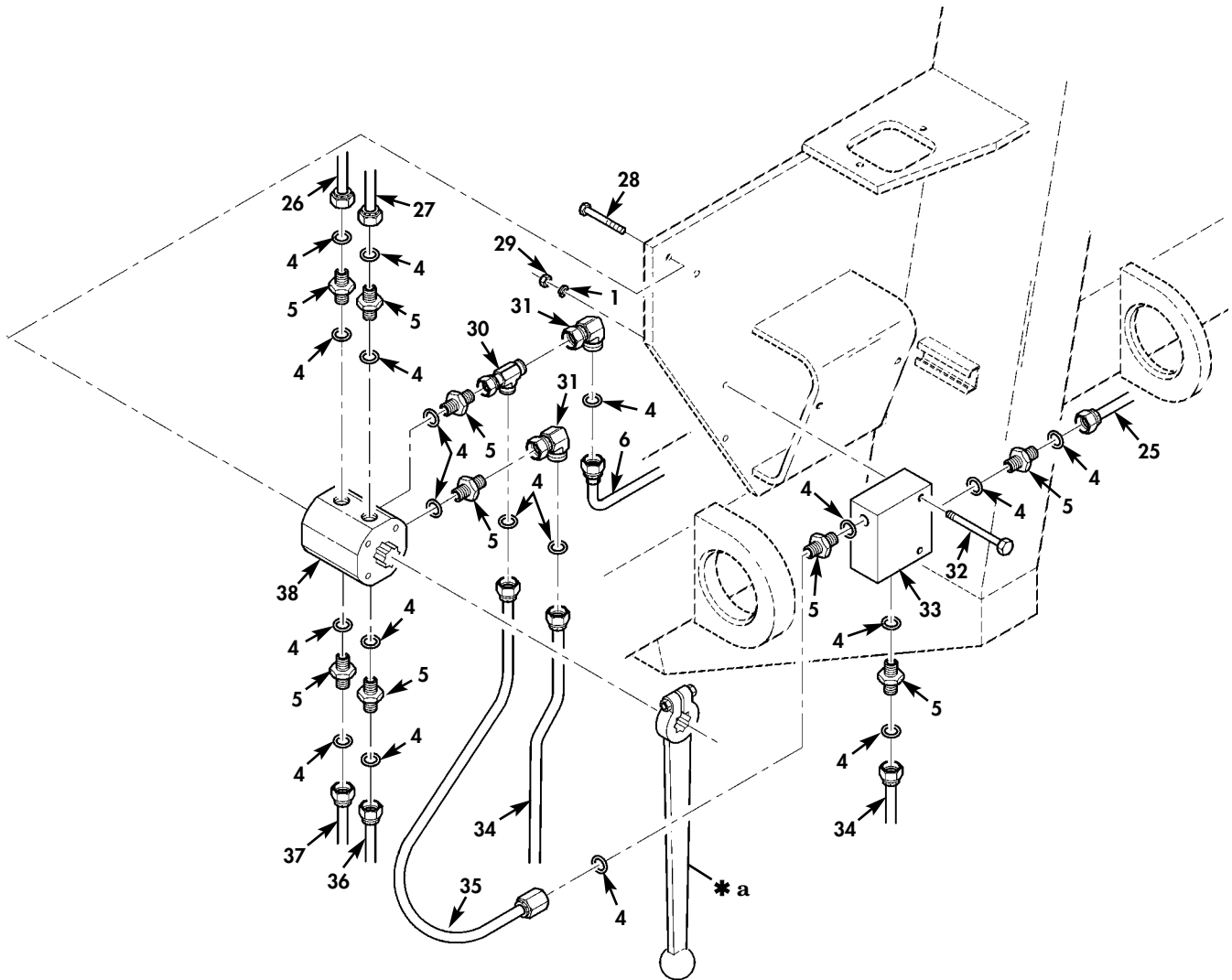
ITEMS 5 THRU 7, 11, 16, 20, 25 THRU 27,
AND 34 THRU 37 INCLUDE PACKING,
PREFORMED ITEM 4
ITEMS 17 AND 21 INCLUDE PACKING,
PREFORMED ITEM 15

Figure 39. Support Wheel Control Valve (Sheet 1 of 2).

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* a PART OF ITEM 38

Figure 39. Support Wheel Control Valve (Sheet 2 of 2).

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0232 SUPPORT WHEEL CONTROL VALVE						
FIG. 39 SUPPORT WHEEL CONTROL VALVE						
1	PAOZZ	5310-12-142-0644	D8286	DIN125-B6,4-140H V-A3P	WASHER,FLAT.....	4
2	PAOZZ	5310-12-156-4991	S3465	4536226-786	NUT,PLAIN,HEXAGON.....	2
3	XDOZZ		D2429	909411463	VALVE,SELECTOR.....	1
4	XDOZZ		D8134	DOZ08L/71	PACKING,PREFORMED 2 INCLUDED WITH TUBE ASSEMBLIES	2
5	XDOZZ		D8134	909617882	ADAPTER,STRAIGHT,TU.....	13
6	XDOZZ		D9913	864005626	TUBE ASSEMBLY,METAL.....	1
7	XDOZZ		D9913	864005601	TUBE ASSEMBLY,METAL.....	1
8	XDOZZ		D9913	908532533	GAGE,PRESSURE.....	1
9	XDOZZ		D9913	909653009	ADAPTER,STRAIGHT.....	1
10	PAOZZ	4730-12-188-4780	D8286	DIN2353-QL8-1.45 71	TEE,TUBE.....	1
11	XDOZZ		D9913	864005602	TUBE ASSEMBLY,METAL.....	1
12	XDOZZ		D9913	909618470	REDUCER,TUBE.....	2
13	PAOZZ	4730-12-337-8644	D8286	DIN3952-L12-1.45 71	ELBOW,TUBE.....	1
14	XDOZZ		D9913	118393	TEE,TUBE TO BOSS.....	2
15	XDOZZ		D8134	DOZ12L/71	PACKING,PREFORMED 2 INCLUDED WITH TUBE ASSEMBLIES	2
16	XDOZZ		D9913	864005599	TUBE ASSEMBLY,METAL.....	1
17	PAOZZ	4730-12-188-4804	D8286	DIN2353-DL12-1.4 571	ADAPTER,STRAIGHT,TU.....	2
18	PAOZZ	4320-12-340-5774	C4235	PM-112SAS-007-V/ 1/E	PUMP,HYDRAULIC RAM.....	1
19	PAOZZ	5310-12-142-5854	D8286	DIN912-M10X50-8. 8-A3P	SCREW,CAP,SOCKET HE.....	2
20	XDOZZ		D9913	864005628	TUBE ASSEMBLY,METAL.....	1
21	XDOZZ		D9913	864005641	TUBE ASSEMBLY,METAL.....	1
22	PAOZZ	5310-12-142-0481	D8286	DIN125-B10,5-140 HV-A3P	WASHER,FLAT.....	2
23	PAOZZ	5310-12-156-4996	D8286	DIN934-M10-8-A2P	NUT,PLAIN,HEXAGON.....	2
24	PAOZZ	5305-12-171-8798	D8286	DIN931-M6X35-8.8 -A2C	SCREW,CAP,HEXAGON H.....	2
25	XDOZZ		D9913	864005613	TUBE ASSEMBLY,METAL.....	1
26	XDOZZ		D9913	864005608	TUBE ASSEMBLY,METAL.....	1
27	XDOZZ		D9913	864005607	TUBE ASSEMBLY,METAL.....	1
28	PAOZZ	5305-12-141-6606	D8286	DIN931-M8X60-8.8 A2P	-SCREW,CAP,HEXAGON H.....	2
29	PAOZZ	5310-12-156-4991	D8286	DIN934-M6-8-A2P	NUT,PLAIN,HEXAGON.....	2
30	XDOZZ		D9913	119238	TEE,PIPE.....	1
31	XDOZZ		D9913	119091	ELBOW,TUBE.....	2
32	PAOZZ	5305-12-196-4116	D8286	DIN7991-M6X50-8. 8-A2P	SCREW,CAP,HEXAGON.....	2
33	XDOZZ		D9913	909416537	VALVE.....	1
34	XDOZZ		D9913	864005604	TUBE ASSEMBLY,METAL.....	1
35	XDOZZ		D9913	864005603	TUBE ASSEMBLY,METAL.....	1
36	XDOZZ		D9913	864005606	TUBE ASSEMBLY,METAL.....	1
37	XDOZZ		D9913	864005605	TUBE ASSEMBLY,METAL.....	1
38	PAOZZ	4820-12-359-3639	C3180	99402-03-412-343 17	VALVE ASSEMBLY.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST

RAPIDLY EMPLACED BRIDGE (REB)

M21 (NSN 5420-01-481-3959)

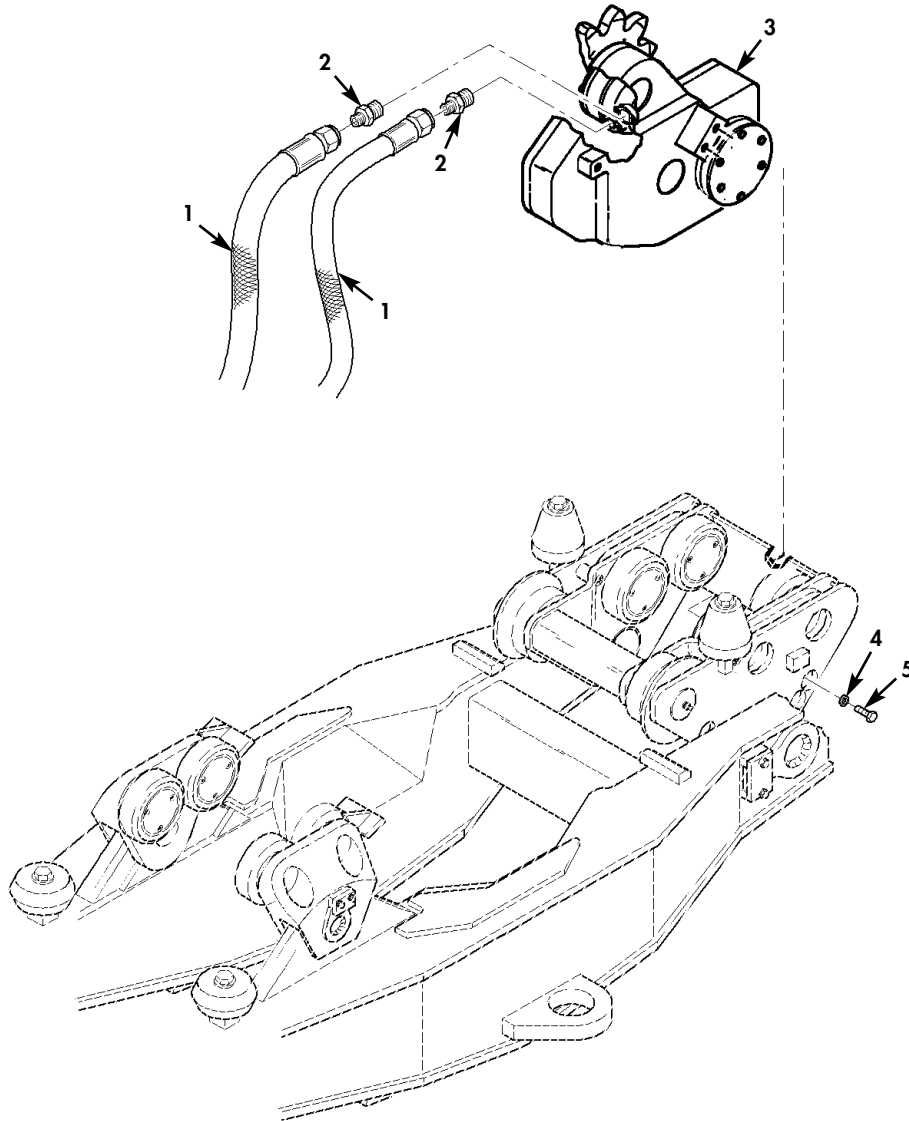


Figure 40. Pin Wheel Drive Assembly, Rear.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 03 LAUNCHER						
0301 PIN WHEEL DRIVE ASSEMBLY, REAR						
FIG. 40 PIN WHEEL DRIVE ASSEMBLY, REAR						
1	PAOZZ	4720-12-359-3737	D9913	909724861	HOSE ASSEMBLY, NONME.....	2
2	XDOZZ		D8134	GE12LR1/271	ADAPTER, STRAIGHT, TU.....	2
3	PAOOO	2540-12-357-8435	D9913	862300101	MOTOR, HYDRAULIC PIN WHEEL DRIVE, SEE FIG 41 AND 43 FOR REPAIR PARTS.....	1
4	PAOZZ	5310-12-180-5961	D8286	DIN125-A17-140HV -A3P	WASHER, FLAT.....	3
5	PAOZZ	5305-12-141-9958	D8286	DIN933-M16X45-8. 8-A3P	SCREW, CAP, HEXAGON H.....	3

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

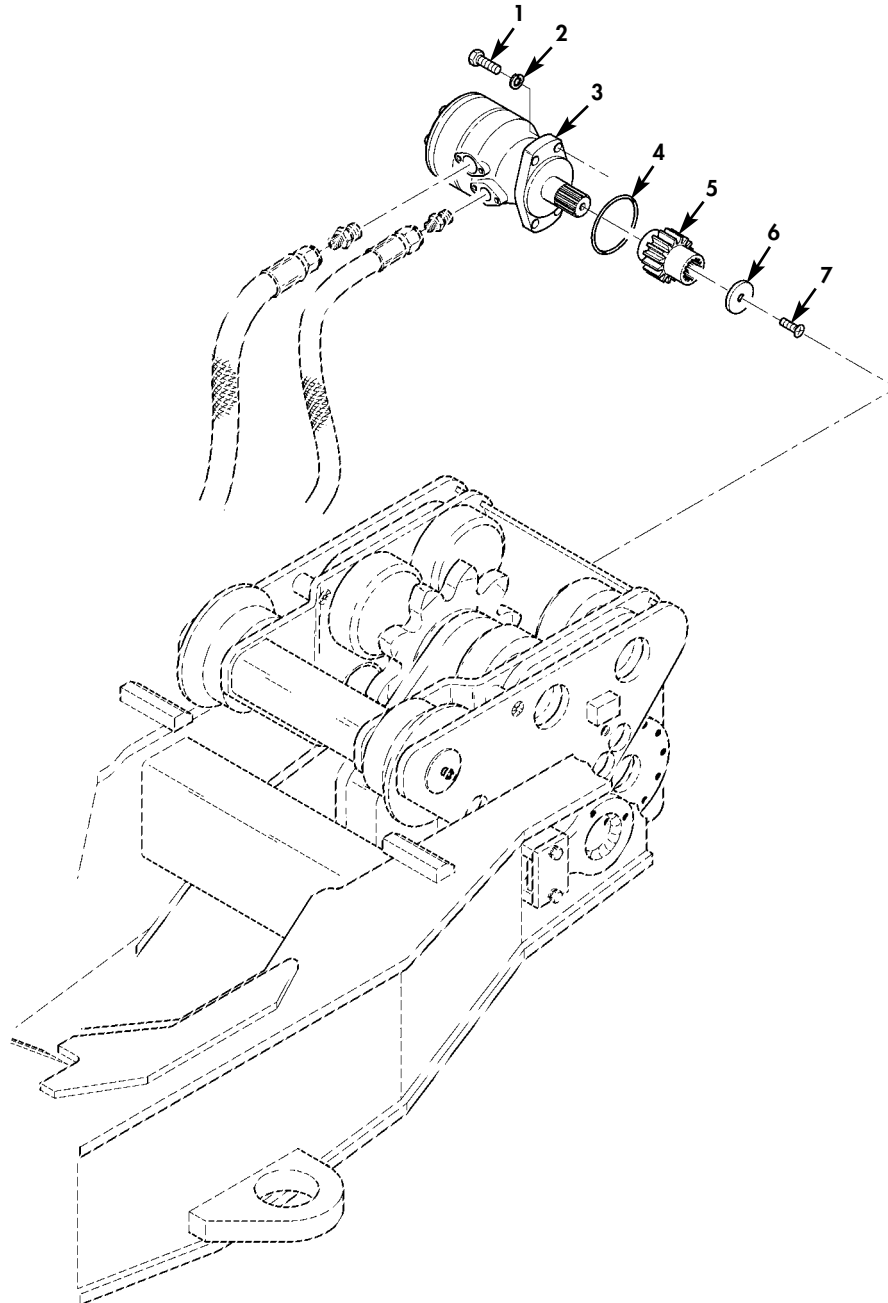
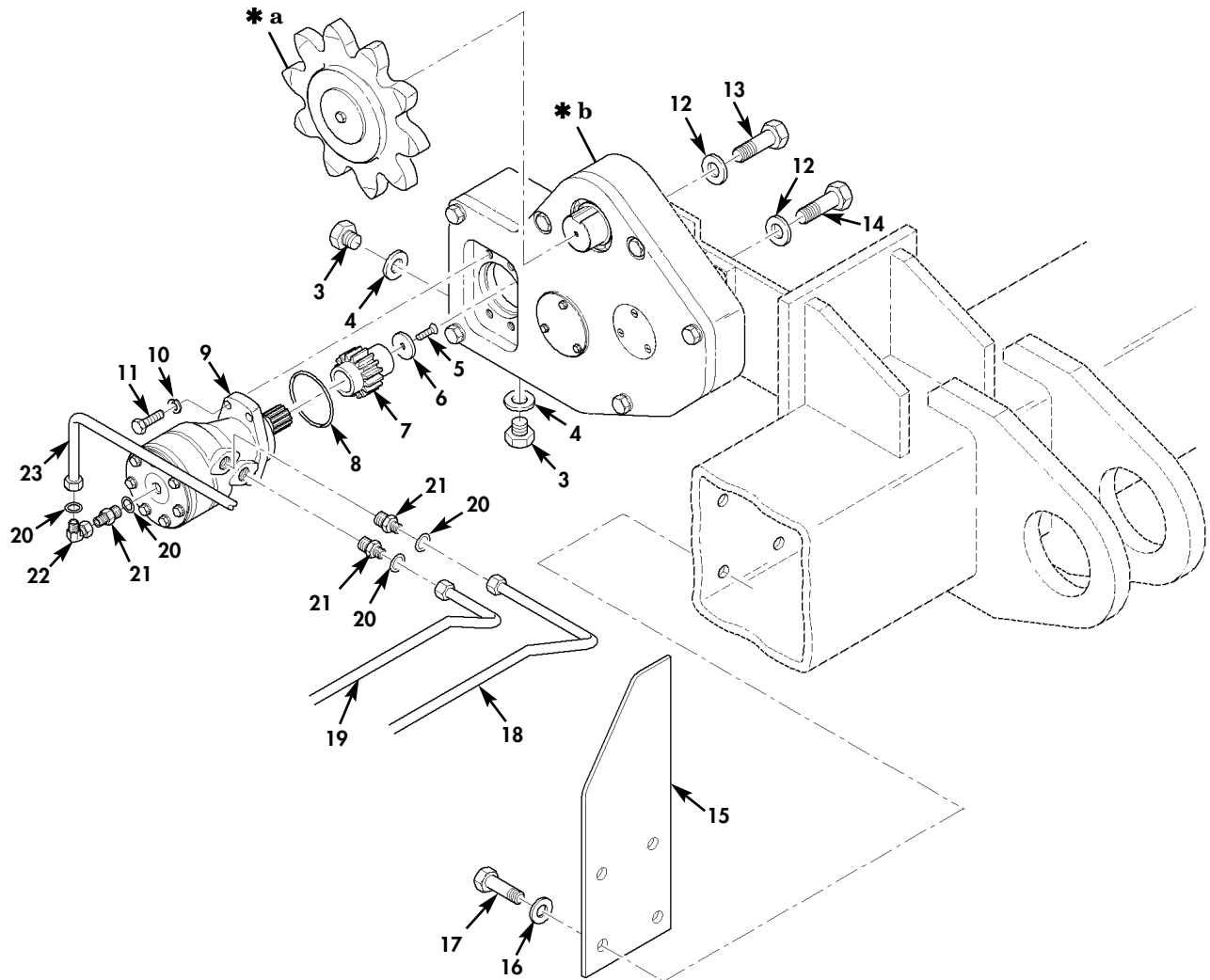
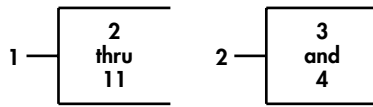


Figure 41. Rear Hydraulic Motor.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0302 REAR HYDRAULIC MOTOR						
FIG. 41 REAR HYDRAULIC MOTOR						
1	PAOZZ	5305-12-167-5376	D8286	DIN933-M12X35-8. 8-A3C	SCREW,CAP,HEXAGON H.....	4
2	PAOZZ	5310-12-149-4352	D8286	DIN125-A13-140HV -A3P	WASHER,FLAT.....	4
3	XDOZZ		D9913	904010548	MOTOR,HYDRAULIC.....	1
4	PAOZZ	5331-12-357-8795	D2480	OR75X3,5-88NBR/1 56	O-RING.....	1
5	PAOZZ	3020-12-357-9013	D9913	862320401	GEAR,SPUR.....	1
6	PAOZZ	5310-12-357-8697	D9913	862318101	WASHER,FLAT.....	1
7	PAOZZ	5305-12-310-8740	D8286	DIN7991-M8X40-8. 8-A2P	SCREW,CAP,SOCKET HE.....	1

END OF FIGURE

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- * a PART OF ITEM 1
SEE FIGURE 43 FOR BREAKDOWN
- * b PART OF ITEM 2
- ITEMS 18, 19, AND 23 INCLUDE
PACKING, PREFORMED ITEM 20

Figure 42. Pin Wheel Drive and Motor, Front.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0303 PIN WHEEL DRIVE AND MOTOR, FRONT						
FIG. 42 PIN WHEEL DRIVE AND MOTOR,FRONT						
1	PBOOL	2540-12-357-8434	D9913	862300102	MOTOR, HYDRAULIC PIN WHEEL DRIVE....	1
2	PAOOO	3010-12-357-8902	D9913	862300201	.TRANSMISSION, MECHAN.....	1
3	XDOZZ		D8286	DIN7604-A-M22X1, 5-A1	..PLUG, MACHINE THREAD.....	1
4	PAOZZ	5330-12-124-0979	D8286	DIN7603-A22X27-A L	..GASKET.....	2
6	PAOZZ	5310-12-357-8697	D9913	862318101	.WASHER, FLAT.....	1
7	PAOZZ	3020-12-357-9013	D9913	862320401	.GEAR, SPUR.....	1
8	PAOZZ	5331-12-357-8795	D2480	OR75X3,5-88NBR/1 56	.O-RING.....	1
9	PAOZZ	4320-12-357-7774	D9913	904010544	.MOTOR, HYDRAULIC.....	1
10	PAOZZ	5310-12-149-4352	D8286	DIN125-A13-140HV -A3P	.WASHER, FLAT.....	4
11	PAOZZ	5305-12-167-5376	D8286	DIN933-M12X35-8. 8-A3C	.SCREW, CAP, HEXAGON H.....	4
12	PAOZZ	5310-12-180-5961	D8286	DIN125-A17-140HV A3P	WASHER, FLAT.....	3
13	PAOZZ	5305-12-156-4881	D8286	DIN933-M16X30-8. 8-A3P	SCREW, CAP, HEXAGON H.....	2
14	PAOZZ	5305-12-141-9958	D8286	DIN933-M16X45-8. 8-A3P	SCREW, CAP, HEXAGON H.....	1
15	XDOZZ		D9913	865348201	PLATE, PROTECTOR.....	1
16	XDOZZ		D8286	DIN125-B6,4-140H V-DACROM500-6MY	WASHER, FLAT.....	4
17	XDOZZ		D8286	DIN933-M6X22-8.8 DACROMET500-6MY	SCREW, CAP, HEXAGON H.....	4
18	XDOZZ		D9913	864005568	TUBE ASSEMBLY, METAL.....	1
19	XDOZZ		D9913	864005567	TUBE ASSEMBLY, METAL.....	1
20	XDOZZ		D8134	DOZ12L/71	PACKING, PREFORMED 2 INCLUDED WITH TUBE ASSEMBLIES.....	2
21	XDOZZ		D8134	GE12-LR1/271X	ADAPTER, STRAIGHT, TU.....	2
22	PAOZZ	4730-12-337-8644	D8286	DIN3952-L12-1.45 71	ELBOW, TUBE.....	1
23	XDOZZ		D9913	864005577	TUBE ASSEMBLY, METAL.....	1

END OF FIGURE

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REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

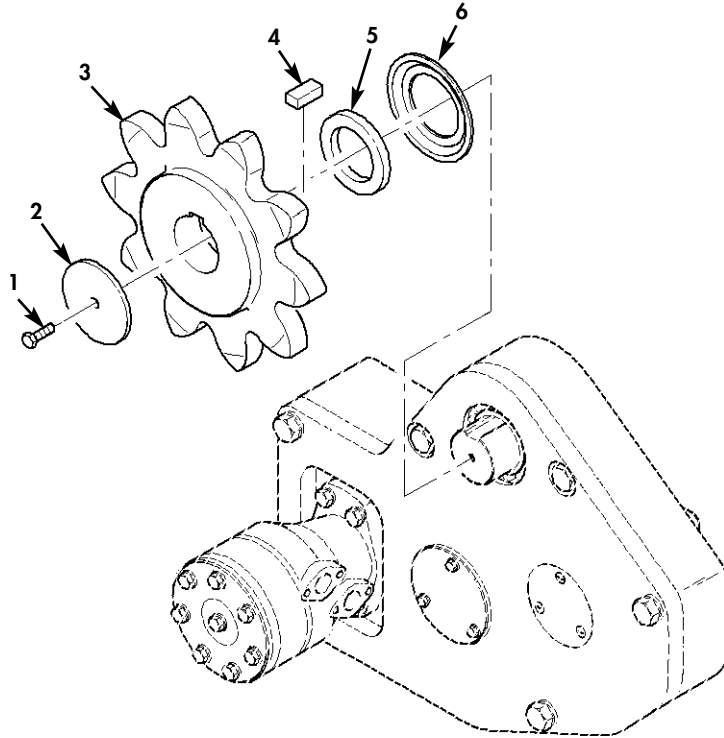
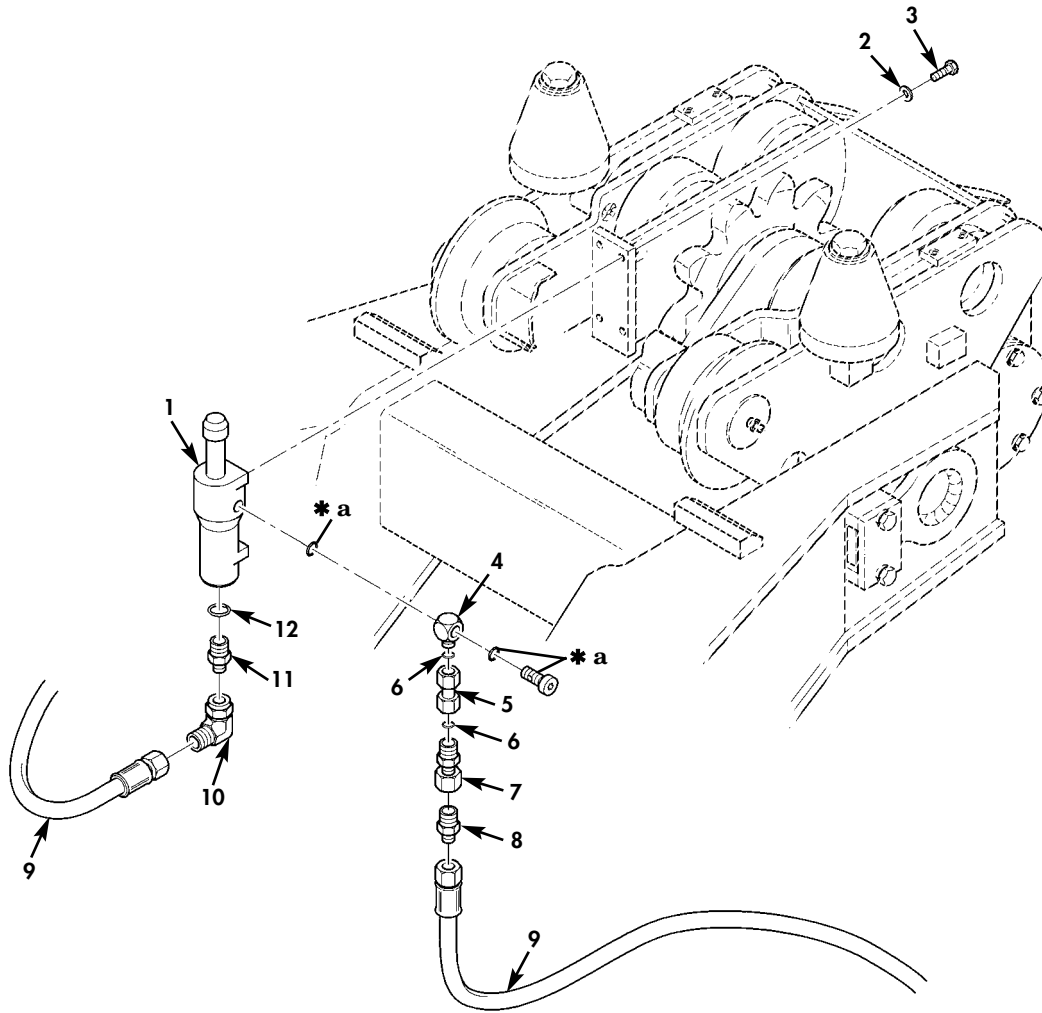


Figure 43. Pin Wheel Drive Gear, Front or Rear.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0304 PIN WHEEL DRIVE GEAR						
FIG. 43 PIN WHEEL DRIVE GEAR, FRONT OR REAR						
1	PAOZZ	5305-12-156-4962	D8286	DIN933-M8X18-8.8 -A2P	SCREW, CAP, HEXAGON H.....	1
2	PAOZZ	5310-12-357-8700	D9913	862328104	WASHER, FLAT.....	1
3	PAOZZ	3020-12-357-9013	D9913	862320406	GEAR, SPUR.....	1
4	XDOZZ		D9913	862323901	KEY BAR.....	1
5	PAOZZ	5365-12-357-9329	D9913	862328105	SPACER, RING.....	1
6	XDOZZ		D9913	122844	SEALING RING.....	1

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
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* a PART OF ITEM 4
 ITEM 5 INCLUDES PACKING,
 PREFORMED ITEM 6
 ITEM 11 INCLUDES PACKING,
 PREFORMED ITEM 12

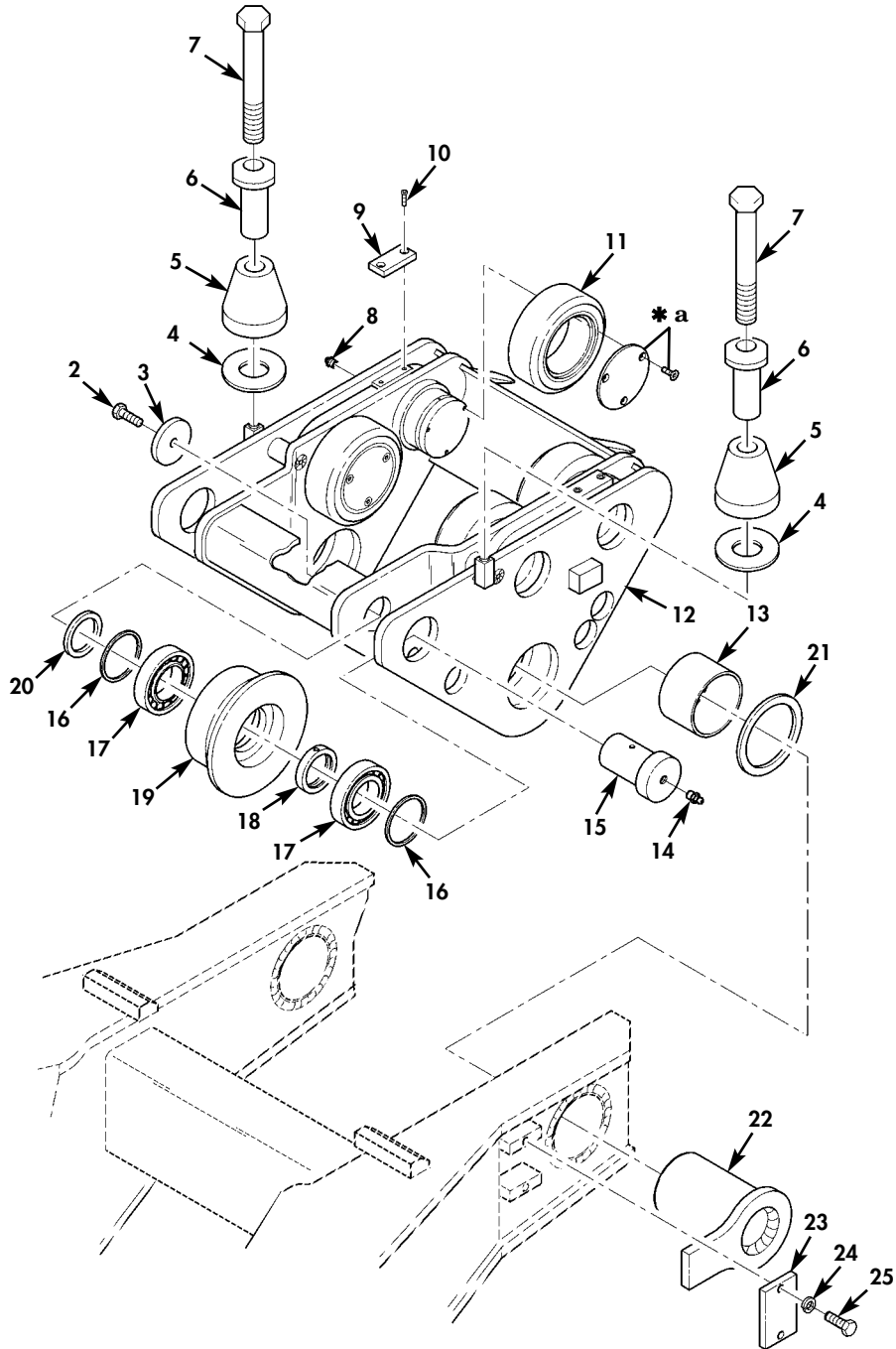
Figure 44. Stop Cylinder.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0305 STOP CYLINDER						
FIG. 44 STOP CYLINDER						
1	XDOZZ		D9913	904060547	CYLINDER ASSEMBLY,A.....	1
2	PAOZZ	5310-12-189-7275	D8286	DIN125-B10,5-140 HV-A4	WASHER,FLAT.....	4
3	PAOZZ	5305-12-124-0539	D8286	DIN933-M10X22-8. 8	SCREW,CAP,HEXAGON H.....	4
4	XDOZZ		D8134	DSVW10-LM PHR	SWIVEL JOINT,HYDRAU.....	1
5	XDOZZ		D9913	864005666	TUBE ASSEMBLY,METAL.....	1
6	XDOZZ		D8134	DOZ10L/71	PACKING,PREFORMED.....	2
7	XDOZZ		D8134	KOR12/10L71	REDUCER,TUBE.....	1
8	XDOZZ		D8134	GE12-LR1/271X	ADAPTER,STRAIGHT,TU.....	1
9	PAOZZ	4720-12-336-5306	D2497	FC310-06	HOSE,NONMETALLIC.....	2
10	XDOZZ		D8134	EVW12L71	ELBOW,TUBE.....	1
11	PAOZZ	4730-12-178-7150	D8134	XG12-L-A3P	NIPPLE,TUBE.....	1
12	XDOZZ		D8134	DOZ12L/71	PACKING,PREFORMED.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
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1 — 2 thru 20



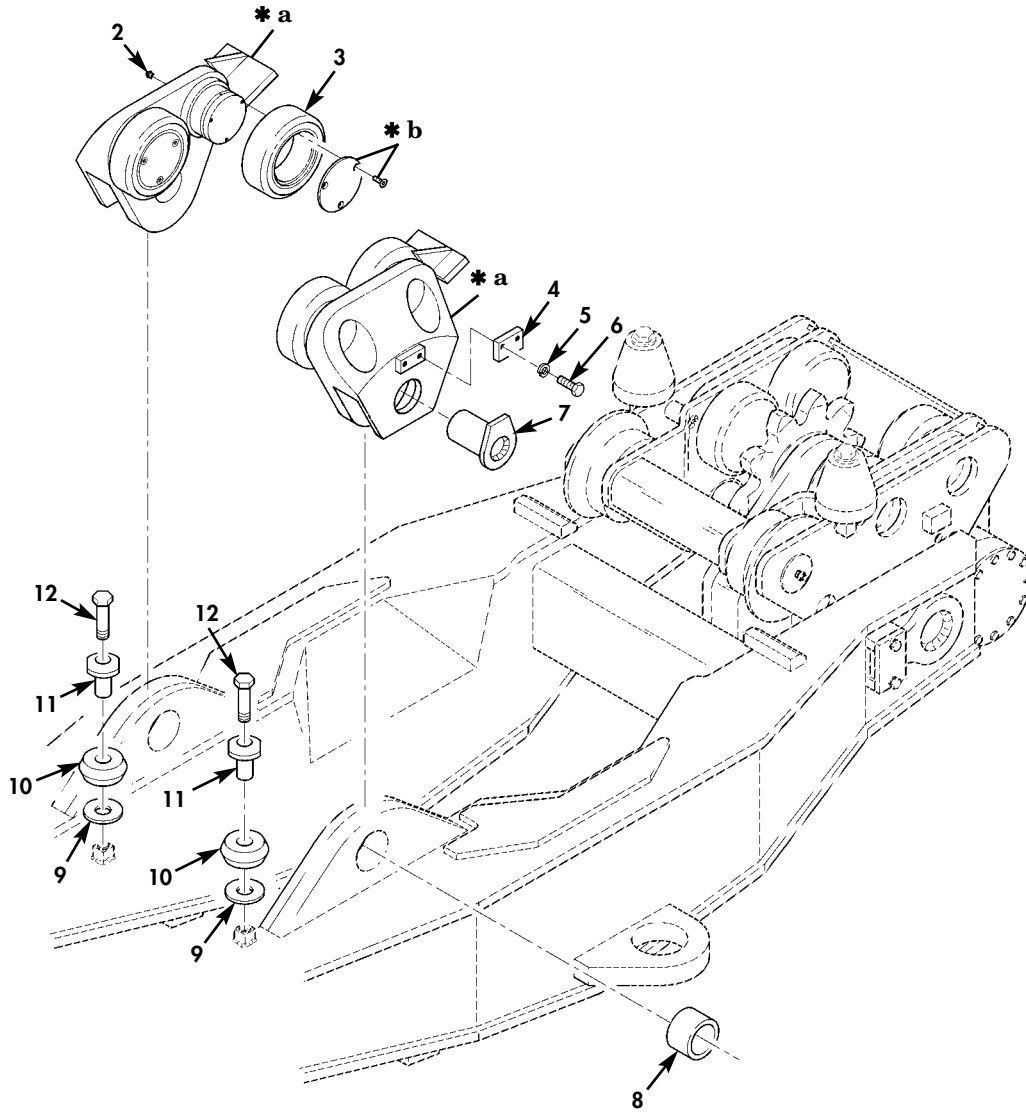
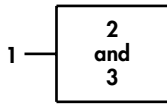
* a PART OF ITEM 11

Figure 45. Lower Support Roller Assembly.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0307 LOWER SUPPORT ROLLER ASSEMBLY						
FIG. 45 LOWER SUPPORT ROLLER ASSEMBLY						
1	PAOOO	3990-12-357-8701	D9913	866404501	ROLLER, MATERIAL HAN.....	1
2	PAOZZ	5305-12-156-4876	D8286	DIN933-M12X30-8. 8-A3P	.SCREW, CAP, HEXAGON H.....	1
3	PAOZZ	5310-12-357-8702	D9913	866418102	.WASHER, FLAT.....	2
4	XDOZZ		D9913	866418110	.WASHER, FLAT.....	2
5	XDOZZ		D9913	866416605	.BUMPER, RUBBER.....	5
6	XDOZZ		D9913	866415303	.INSERT.....	6
7	XDOZZ		D9913	115669	.SCREW, CAP, HEXAGON.....	2
8	PAOZZ	4730-12-125-0310	D8286	DIN71412-AM6	.FITTING, LUBRICATION.....	2
9	XDOZZ		D9913	86641005	.SKID, PLATE.....	2
10	XDOZZ		D8286	DIN7984-M8X16-8. 8	.SCREW, CAP, SOCKET HE.....	4
11	PAOZZ	3110-12-357-7884	D9913	909741302	.BEARING, WASHER, THRU.....	2
12	XDOZZ		D9913	866404502	.ROLLER CARRIER DOWN.....	1
13	PAOZZ	3120-12-357-7885	D9913	909562605	.BEARING, SLEEVE.....	2
14	PAOZZ	4730-12-125-0311	D8286	DIN71412-AM10X1	.FITTING, LUBRICATION.....	2
15	PAOZZ	3040-12-357-9068	D9913	866414601	.SHAFT, SHOULDERED.....	2
16	PAOZZ	3110-12-152-1044	D8201	NUP209AV	.SHIELD, BEARING, REPL.....	4
17	PAOZZ	3110-12-357-6559	D8286	DIN635-20209	.BEARING, ROLLER, SELF.....	4
18	PAOZZ	5365-12-357-9330	D9913	866415301	.SPACER, RING.....	2
19	PAOZZ	5340-12-358-0544	D9913	866416601	.WHEEL, SOLID, METALLI.....	2
20	PAOZZ	5365-12-357-8702	D9913	866418103	.WASHER, FLAT.....	2
21	PAOZZ	5365-12-357-9325	D9913	866418108	SPACER, RING.....	2
22	PAOZZ	5315-12-357-9776	D9913	866405002	PIN, STRAIGHT, HEADED.....	2
23	PAOZZ	5365-12-357-9324	D9913	866414003	SPACER, PLATE.....	2
24	PAOZZ	5310-12-175-0141	D8286	DIN125-A8, 4-140H V-A3C	WASHER, FLAT.....	4
25	PAOZZ	5305-12-156-4863	D8286	DIN933-M8X20-8.8 -A2P	SCREW, CAP, HEXAGON H.....	4

END OF FIGURE

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* a PART OF ITEM 1
 * b PART OF ITEM 3

Figure 46. Upper Roller Block Assembly.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0309 UPPER ROLLER BLOCK ASSEMBLY						
FIG. 46 UPPER ROLLER BLOCK ASSEMBLY						
1	PAOOO	3990-12-357-8703	D9913	866405101	ROLLER, MATERIAL HAN.....	1
1	XDOOO		D9913	866405102	ROLLER, MATERIAL HAN.....	1
2	PAOZZ	4730-12-125-0310	D8286	DIN71412-AM6	.FITTING, LUBRICATION.....	2
3	PAOZZ	3110-12-357-7884	D9913	909741302	.BEARING, WASHER, THRU.....	2
4	XDOZZ		D9913	866410335	PLATE, RETAINING.....	2
5	PAOZZ	5310-12-175-0141	D8286	DIN125-A8, 4-140H V-A3C	WASHER, FLAT.....	4
6	XDOZZ		D8286	DEN24017-M8X18-8 .8	SCREW, CAP, HEXAGON H.....	4
7	PAOZZ	5315-12-357-9774	D9913	866405001	PIN, STRAIGHT, HEADED.....	2
8	XDOZZ		D9913	909741921	BEARING, SLEEVE.....	2
9	XDOZZ		D9913	866418110	WASHER, FLAT.....	2
10	XDOZZ		D9913	866416604	BUMPER, RUBBER.....	2
11	XDOZZ		D9913	866415302	INSERT.....	2
12	XDOZZ		D9913	DIN933-M24X80-8. 8-A3P	SCREW, CAP, HEXAGON H.....	2

END OF FIGURE

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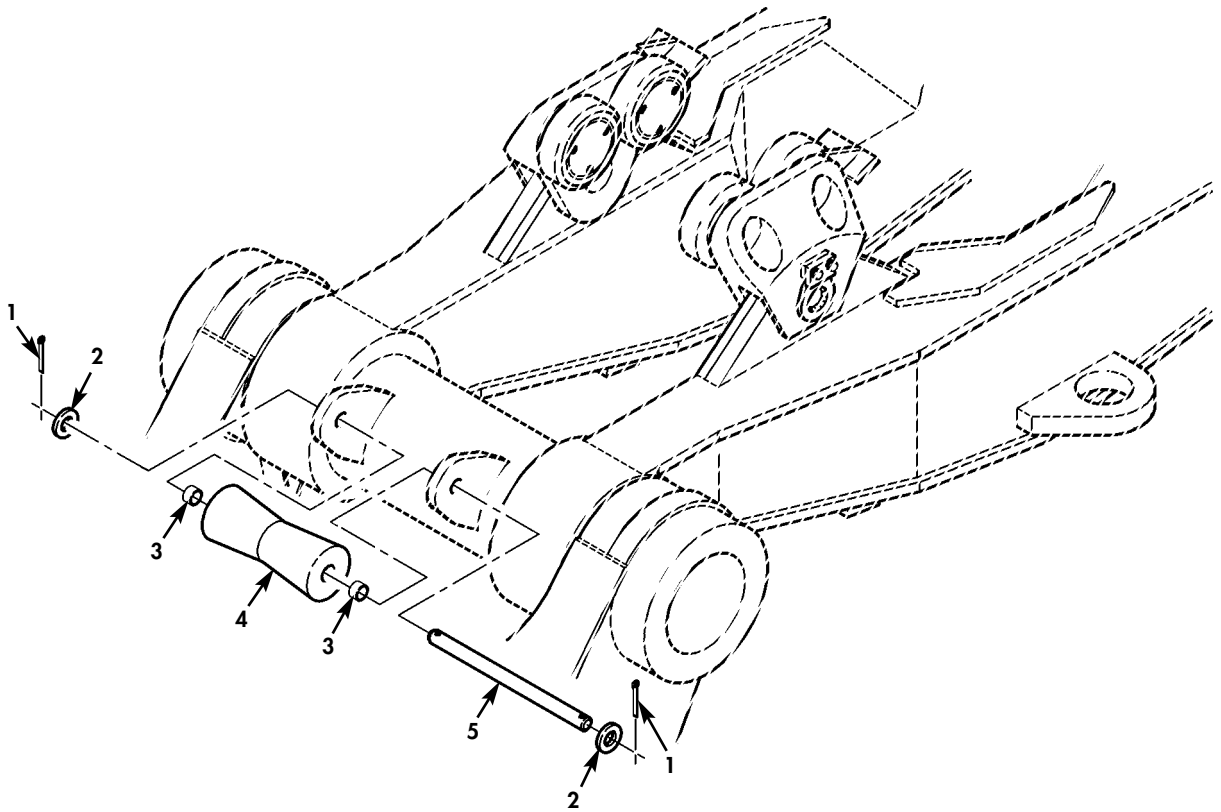


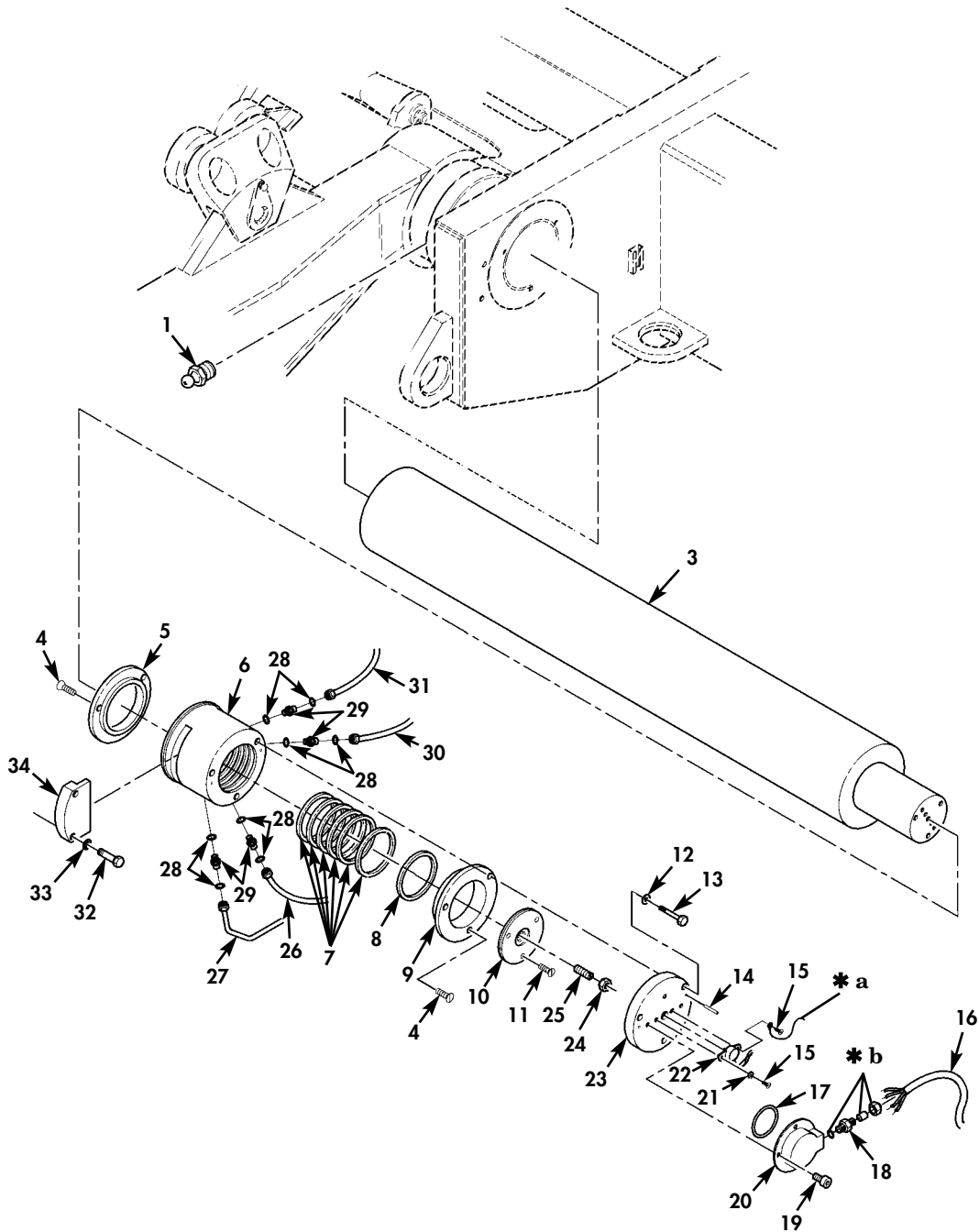
Figure 47. Launch Boom Cable Guide Roller.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0310 LAUNCH BOOM CABLE GUIDE ROLLER						
FIG. 47 LAUNCH BOOM CABLE GUIDE ROLLER						
1	PAOZZ	5315-12-346-8414	I9008	ISO1234-5X36-ST-A3P	PIN,COTTER.....	2
2	PAOZZ	5310-12-194-3021	D8286	DIN125-A21-140HV-A3P	WASHER,FLAT.....	2
3	XDOZZ		D9913	124485	BEARING,SLEEVE.....	2
4	PAOZZ	5340-12-358-0587	D9913	866416603	WHEEL,SOLID,METALLI.....	1
5	PAOZZ	5315-12-357-9775	D9913	866414603	PIN,STRAIGHT,HEADLE.....	1

END OF FIGURE

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2 — 3
thru
11



* a PART OF ITEM 16

* b PART OF ITEM 18

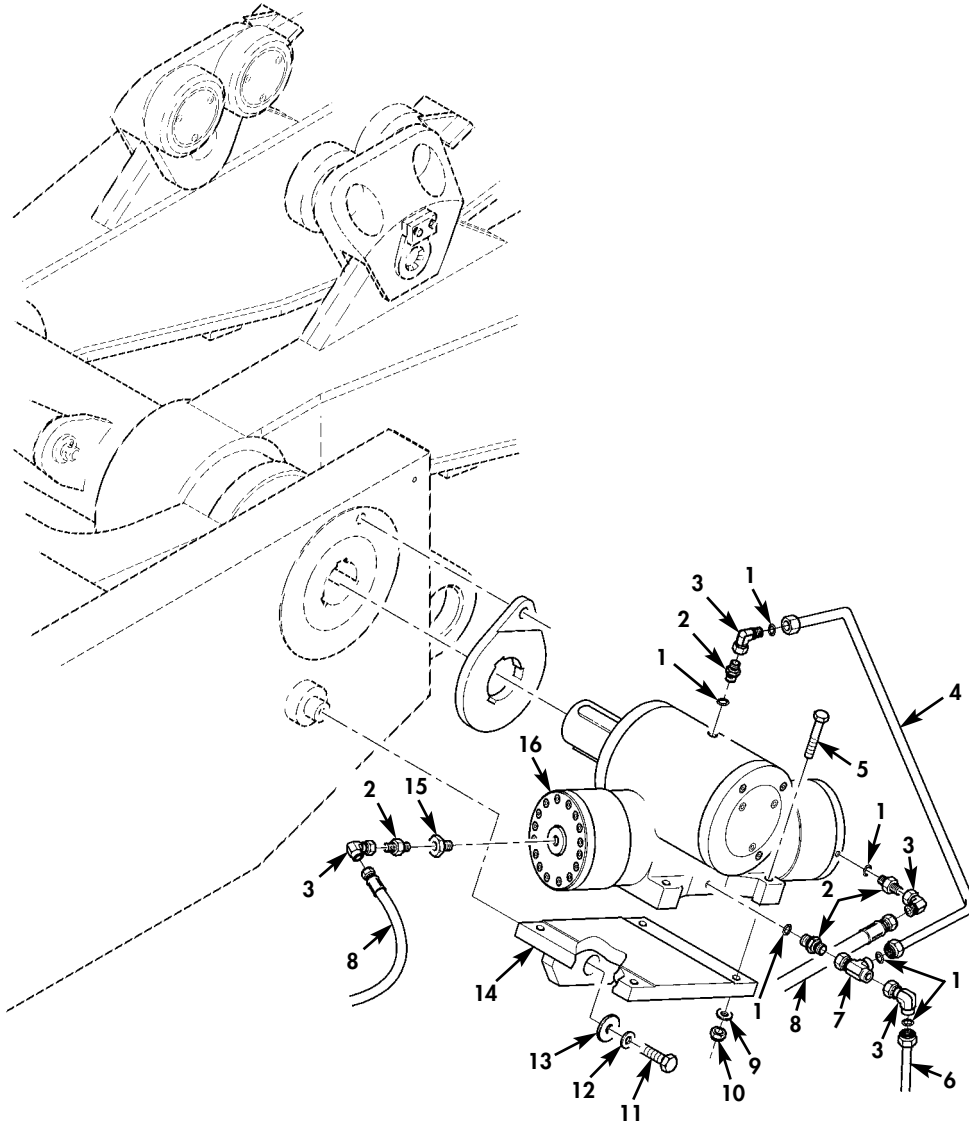
ITEMS 26, 27, AND 29 THRU 31 INCLUDE
 PACKING, PREFORMED ITEM 28

Figure 48. Bearing Shaft Manifold.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0311 BEARING SHAFT MANIFOLD						
FIG. 48 BEARING SHAFT MANIFOLD						
1	XDOZZ		D8286	DIN71412-AM8X1-A 3P	FITTING,LUBRICATION.....	2
2	PAOOO	4730-12-357-7989	D9913	866407701	MANIFOLD,HYDRAULIC.....	1
3	XDOZZ		D9913	909668303	.SHAFT.....	1
4	XDOZZ		D8286	DIN84-M3X18-8.8- A2P	.SCREW.....	1
5	XDOZZ		D9913	909770952	.SEALING RING.....	1
6	XDOZZ		D9913	909560154	.BUSHING.....	1
7	XDOZZ		D9913	909770950	.ROTOMATIC SEALING R.....	6
8	XDOZZ		D9913	909770951	.SEALING RING.....	1
9	XDOZZ		D9913	909770953	.BEARING RING.....	1
10	XDOZZ		D9913	909128505	.CAP.....	1
11	XDOZZ		D9912	866418501	.SCREW.....	3
12	PAOZZ	5310-12-142-0481	D8286	DIN125-B10,5-140 HV-A3P	WASHER,FLAT.....	3
13	PAOZZ	5305-12-156-4900	D8286	DIN931-M10X50-8. 8-A3P	SCREW,CAP,HEXAGON H.....	3
14	PAOZZ	5315-01-155-3867	56161	10501816	PIN,SPRING.....	2
15	XDOZZ		D9913	933459	SCREW,CAP,HEXAGON H.....	3
16	XDOZZ		C6730	MPS003102K55	CABLE ASSEMBLY,SPEC.....	1
17	XDOZZ		D9913	909771739	SEAL.....	1
18	XDOZZ		D9913	908047108	CONNECTOR.....	1
19	PAOZZ	5305-12-142-5912	D8286	DIN912-M5X10-8.8 -A2P	SCREW,CAP,SOCKET HE.....	19
20	XDOZZ		D9913	908596501	COVER.....	1
21	XDOZZ		D9913	DIN125-B4,3-140H V-A3C	WASHER,FLAT.....	2
22	XDOZZ		D9913	908552516	POTENTIOMETER.....	1
23	XDOZZ		D9913	866411001	COVER.....	1
24	PAOZZ	5310-12-145-1847	D8286	DIN936-M12-05-A2 P	NUT,PLAIN,HEXAGON.....	1
25	XDOZZ		D9913	866415401	ROD,END,THREADED.....	1
26	XDOZZ		D9913	864005503	TUBE ASSEMBLY,METAL.....	1
27	XDOZZ		D9913	864005502	TUBE ASSEMBLY,METAL.....	1
28	XDOZZ		D8134	DOZ12L/71	PACKING,PREFORMED.....	8
29	PAOZZ	4730-12-131-3966	D8286	DIN2353-CL12B-ST -A3P	ADAPTER,STRAIGHT,TU.....	4
30	XDOZZ		D9913	864005501	TUBE ASSEMBLY,METAL.....	1
31	XDOZZ		D9913	864005504	TUBE ASSEMBLY,METAL.....	1
32	PAOZZ	5305-12-125-0133	D8286	DIN931-M8X45-8.8	SCREW,CAP,HEXAGON.....	2
33	PAOZZ	5310-12-136-2611	D8286	DIN125-B8,4-140H V	WASHER,FLAT.....	2
34	XDOZZ		D9913	866414307	BRACKET,MOUNTING.....	1

END OF FIGURE

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ITEMS 2, 4, AND 6 INCLUDE
 PACKING, PREFORMED ITEM 1

Figure 49. Launch Boom Swivel Drive and Remote Control Lever Release (Sheet 1 of 2).

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
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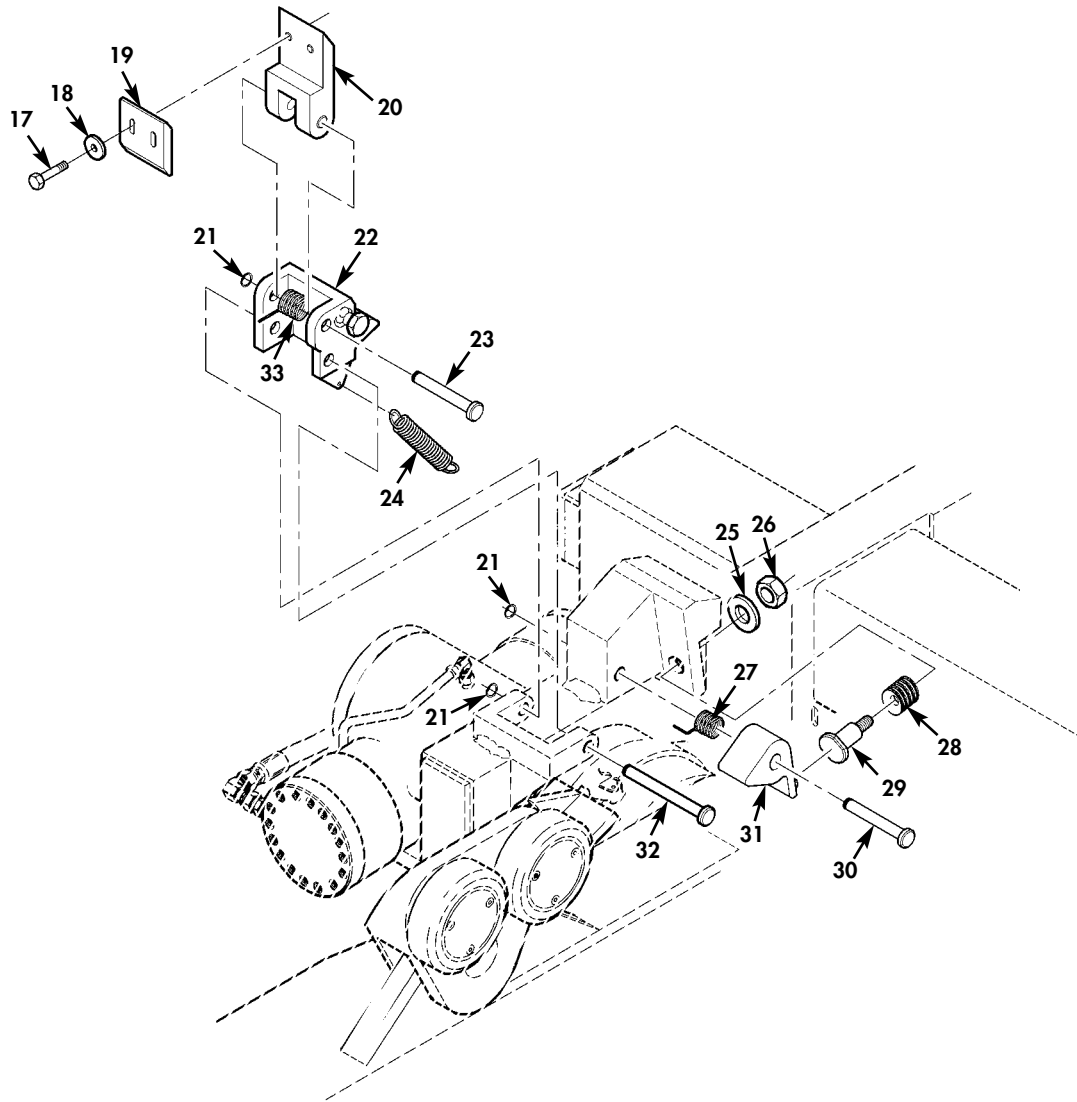
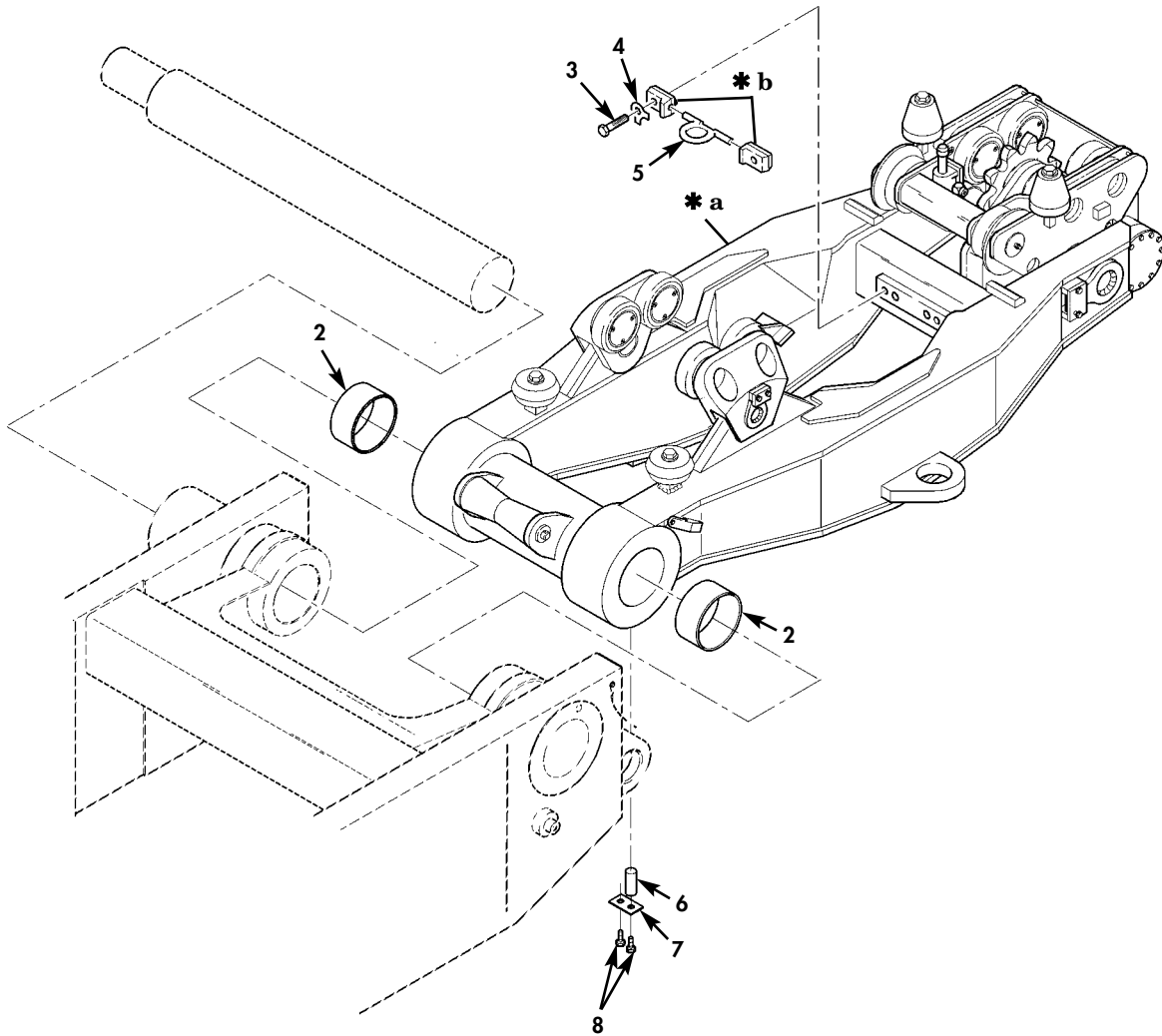
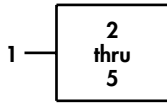


Figure 49. Launch Boom Swivel Drive and Remote Control Lever Release (Sheet 2 of 2).

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0312 LAUNCH BOOM SWIVEL DRIVE AND REMOTE CONTROL LEVER RELEASE						
FIG. 49 LAUNCH BOOM SWIVEL DRIVE AND REMOTE CONTROL LEVER RELEASE						
1	XDOZZ		D8134	DOZ12L/71	PACKING, PREFORMED.....	6
2	XDOZZ		D8134	GE12LR1/471	ADAPTER, STRAIGHT, TU.....	4
3	XDOZZ		D9913	119140	ELBOW, TUBE.....	4
4	XDOZZ		D9913	864005732	TUBE ASSEMBLY, METAL.....	1
5	PAOZZ	5305-12-142-8328	D8286	DIN931-M16X75-8. 8-A3P	SCREW, CAP, HEXAGON H.....	4
6	XDOZZ		D9913	864005580	TUBE ASSEMBLY, METAL.....	1
7	XDOZZ		D8134	EVL12L71	TEE, TUBE TO HOSE.....	1
8	PAOZZ	4720-12-359-3737	D9913	909724861	HOSE ASSEMBLY, NONME.....	2
9	PAOZZ	5310-12-142-0640	D8286	DIN125-B17-140HV -A3P	WASHER, FLAT.....	4
10	PAOZZ	5310-12-156-4984	D8286	DIN934-M16-8-A2P	NUT, PLAIN, HEXAGON.....	4
11	PAOZZ	5305-12-141-9888	D8286	DIN933-M10X20-8. 8-A3P	SCREW, CAP, HEXAGON H.....	2
12	PAOZZ	5310-12-142-0481	D8286	DIN125-B10, 5-140 HV-A3P	WASHER, FLAT.....	1
13	PAOZZ	5310-12-357-7780	D9913	864068102	WASHER, FLAT.....	1
14	PAOZZ	5340-12-357-7995	D9913	864004301	BRACKET, ANGLE.....	1
15	XDOZZ		D9913	869619201	REDUCER PIPE.....	2
16	XDOZZ		D9913	864000502	SWIVEL GEAR.....	1
17	PAOZZ	5305-12-156-4862	D8286	DIN933-M6X20-8.8 -A2P	SCREW, CAP, HEXAGON H.....	4
18	PAOZZ	5310-12-359-3462	D9913	866418109	WASHER, FLAT.....	4
19	PAOZZ	5365-12-359-4502	D9913	866410325	PLATE, MOUNTING.....	2
20	XDOZZ		D9913	866411905	LEVER, MANUAL CONTRO.....	2
21	XDOZZ		D8286	DIN471-10X1-A3P	RING, RETAINING.....	6
22	XDOZZ		D9913	866414306	BRACKET, MOUNTING R.H.....	1
22	XDOZZ		D9913	866414305	BRACKET, MOUNTING L.H.....	1
23	XDOZZ		D9913	866415012	PIN, STRAIGHT, HEADLE.....	2
24	XDOZZ		D9913	901323016	SPRING, COMPRESSION.....	2
25	XDOZZ		D9913	937901	WASHER, FLAT.....	2
26	XDOZZ		D9913	DIN934-M8-8-A2C	NUT, PLAIN, HEXAGON	2
27	XDOZZ		D9913	901323015	SPRING, HELICAL, TORS L.H.....	1
27	XDOZZ		D9913	901323014	SPRING, HELICAL, TORS R.H.....	1
28	XDOZZ		D9913	936736	BUMPER.....	24
29	XDOZZ		D9913	866415014	PIN, SHOULDER HEADED.....	2
30	XDOZZ		D9913	866415011	PIN, SHOULDER HEADED.....	2
31	XDOZZ		D9913	866415402	LATCH.....	2
32	XDOZZ		D9913	866415013	PIN.....	2
33	XDOZZ		D9913	901323013	SPRING.....	2

END OF FIGURE

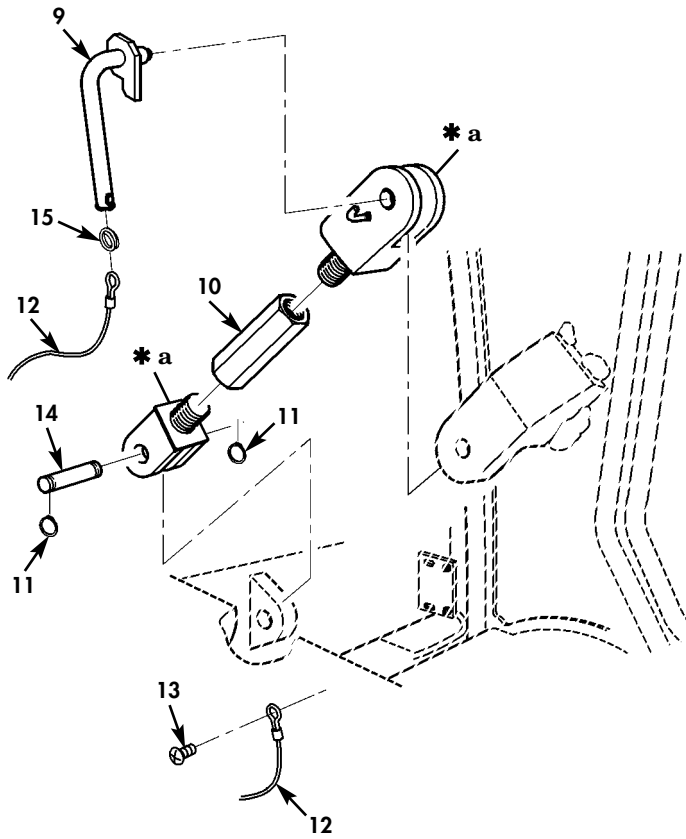
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 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
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* a PART OF ITEM 1
 * b PART OF ITEM 5

Figure 50. Launch Boom and Locks (Sheet 1 of 2).

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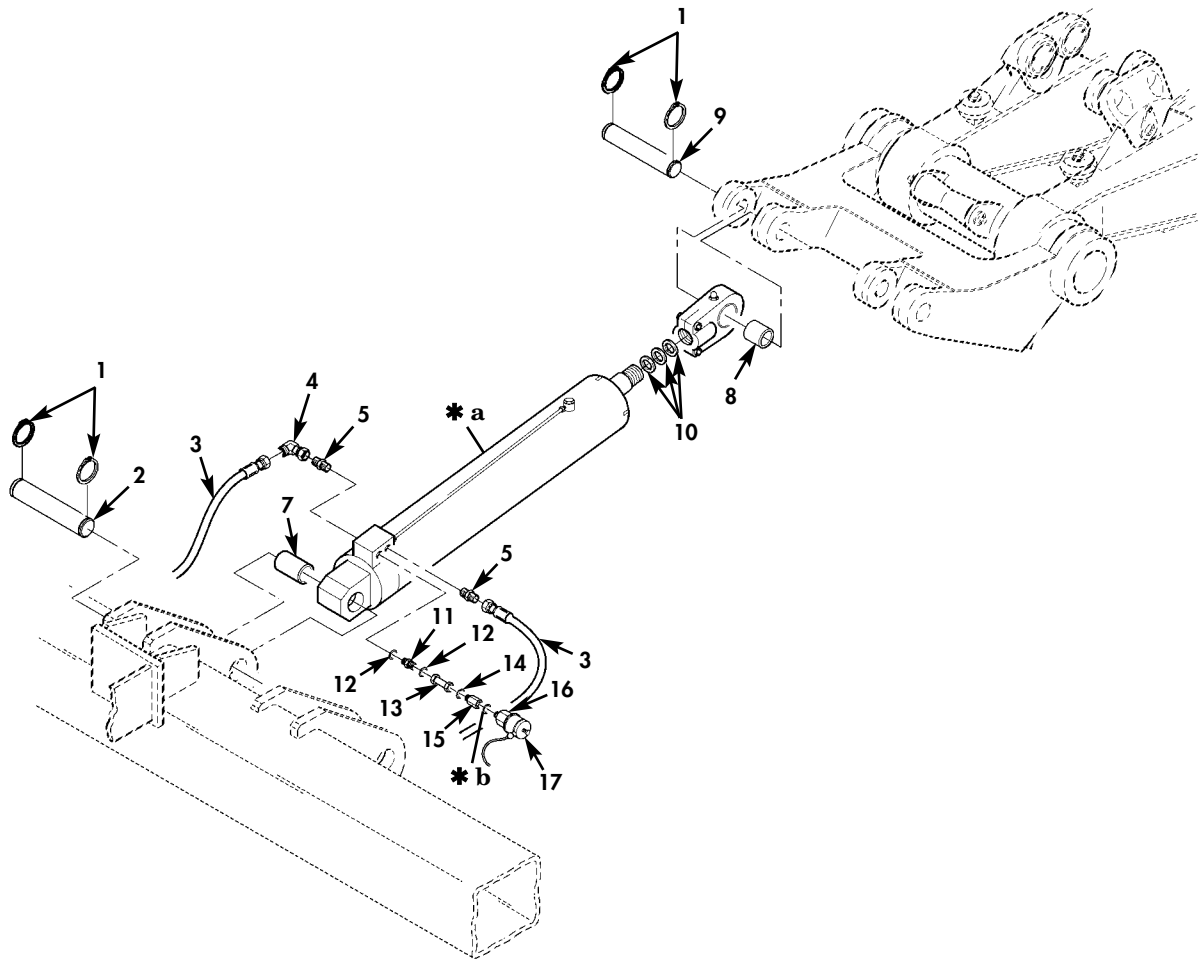
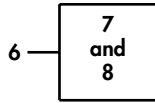
* a PART OF ITEM 10

Figure 50. Launch Boom and Locks (Sheet 2 of 2).

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0313 LAUNCH BOOM AND LOCKS						
FIG. 50 LAUNCH BOOM AND LOCKS						
1	PBOFL	5420-12-357-7670	D9913	866406101	BOOM ASSEMBLY, LAUNC.....	1
2	PAOZZ	3120-12-357-8901	D9913	866416003	.BUSHING, SLEEVE.....	2
3	PAOZZ	5305-12-141-9958	D8286	DIN933-M16X45-8. 8-A3P	.SCREW, CAP, HEXAGON H.....	4
4	PAOZZ	5310-12-130-4738	D8286	DIN463-17-ST	.WASHER, KEY.....	4
5	PAOZZ	5340-12-357-7988	D9913	909666707	.PAD EYE.....	2
6	PAOZZ	5306-12-357-7778	D9913	866415008	PIN, SHOULDER, HEADLE.....	1
7	XDOZZ		D9913	866410327	PLATE, RETAINING.....	1
8	PAOZZ	5305-12-155-6878	D8286	DIN933-M8X16-8.8 -A2P	SCREW, CAP, HEXAGON H.....	2
9	XDOZZ		D9913	866405004	HANDLE, MANUAL CONTR LEFT HAND.....	9
9	XDOZZ		D9913	866405003	HANDLE, MANUAL CONTR RIGHT HAND.....	1
10	XDOZZ		D9913	869108906	ROD, SPECIAL.....	2
11	XDOZZ		D9913	939232	RING, RETAINING.....	4
12	PAOZZ	4010-12-178-9346	D2040	LT1504-C6-12	WIRE ROPE ASSEMBLY.....	2
13	PAOZZ	5305-12-156-4868	D8286	DIN933-M4X10-8.8 -A2P	SCREW, CAP, HEXAGON H.....	2
14	XDOZZ		D9913	866415010	PIN, SHOULDER, HEADLE.....	2
15	PAOZZ	5365-12-356-2200	D9913	701718701	RING, CONNECTING, ROU.....	2

END OF FIGURE

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- * a PART OF ITEM 6
- * b PART OF ITEM 15

Figure 51. Lower Support Boom and Pallet Holddown (Sheet 1 of 2).

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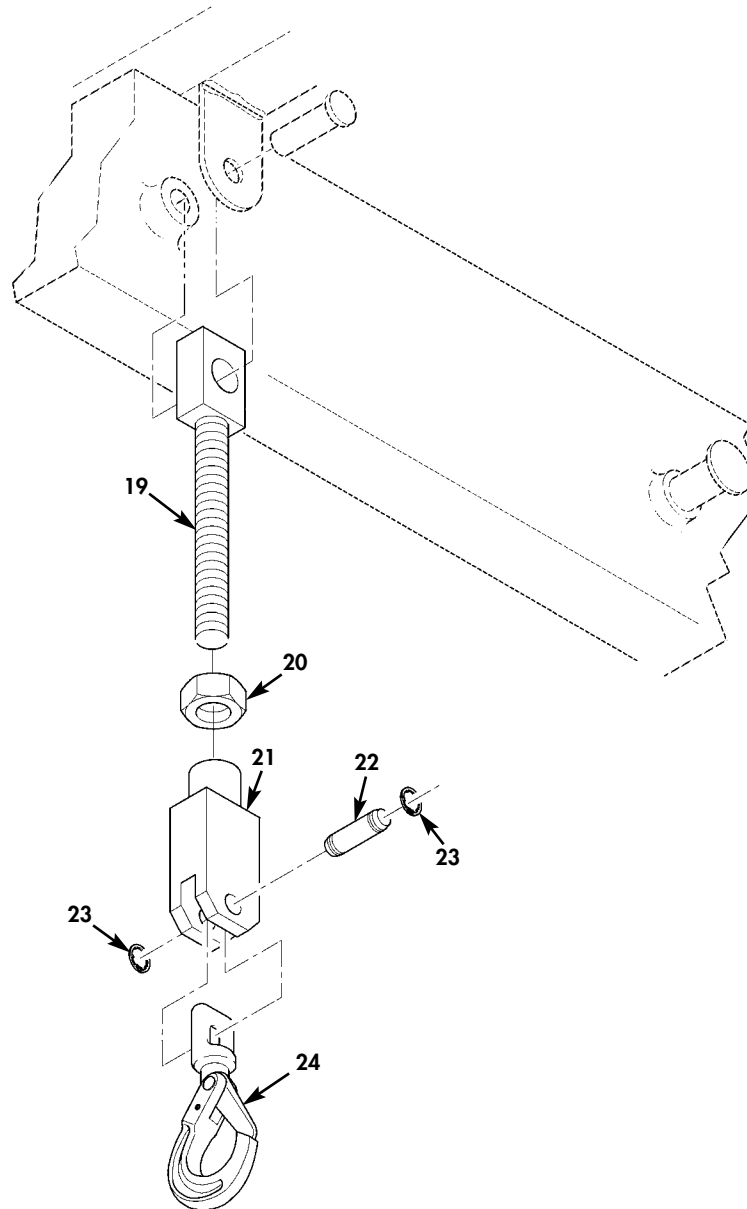


Figure 51. Lower Support Boom and Pallet Holddown (Sheet 2 of 2).

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0315 LOWER SUPPORT BOOM AND PALLET HOLDDOWN						
FIG. 51 LOWER SUPPORT BOOM AND PALLET HOLDDOWN						
1	PAOZZ	5325-12-156-4712	D8286	DIN471-60X2	RING,RETAINING.....	8
2	PAOZZ	5315-12-357-7776	D9913	866415006	PIN,GROOVED,HEADLES.....	2
3	PAOZZ	4720-12-359-3737	D9913	909724861	HOSE ASSEMBLY,NONME.....	4
4	PAOZZ	4730-12-337-8644	D8286	DIN3952-L12-1.45 71	ELBOW,TUBE.....	2
5	XDOZZ		D9913	909617841	ADAPTER,STRAIGHT,TU.....	4
6	XDOOO		D9913	904060539	CYLINDER ASSEMBLY.....	2
7	XDOZZ		D9913	904066004	.BUSHING,SLEEVE.....	1
8	XDOZZ		D9913	904066005	.BUSHING.....	1
9	PAOZZ	5315-12-357-7777	D9913	866415007	PIN,GROOVED,HEADLES.....	2
10	XDOZZ		D8286	75/60X0,2,DIN988 ,A3C	SPACER,RING 0.2MM THICK,USE AS REQUIRED.....	V
10	XDOZZ		D8286	75/60X1,DIN988,A 3C	SPACER,RING 1.0MM THICK,USE AS REQUIRED.....	V
10	XDOZZ		D8286	75/60X2,DIN988,A 3C	SPACER,RING 2.0MM THICK,USE AS REQUIRED.....	V
11	XDOZZ		D9913	909610143	ADAPTER,STRAIGHT.....	1
12	XDOZZ		D8134	ED8X1X	PACKING,PREFORMED.....	2
13	XDOZZ		D9913	864005621	TUBE ASSEMBLY,METAL.....	2
14	XDOZZ		D8134	DOZ08L/71	PACKING,PREFORMED.....	8
15	XDOZZ		D9913	909610533	ADAPTER.....	2
16	XDOZZ		S3147	0171460033003	SWITCH,PRESSURE.....	2
17	PAOZZ	5935-12-317-2495	D9707	1-1-80-652-002	CONNECTOR,PLUG,ELEC.....	2
18	XDOOO		D9913	865308901	HOLD DOWN ASSEMBLY.....	2
19	XDOZZ		D9913	865308902	.TIE BAR ASSEMBLY.....	1
20	PAOZZ	5310-12-338-4814	D8286	DIN6915-M24	.NUT,PLAIN,HEXAGON.....	1
21	XDOZZ		D9913	865305401	.BRACKET,RETAINING.....	1
22	XDOZZ		D9913	865345012	.PIN.....	1
23	PAOZZ	5325-12-176-1058	D8286	DIN471-20X1,2-A4 P	.RING,RETAINING.....	2
23	XDOZZ		D9913	909665031	.HOOK,RETINING.....	1

END OF FIGURE

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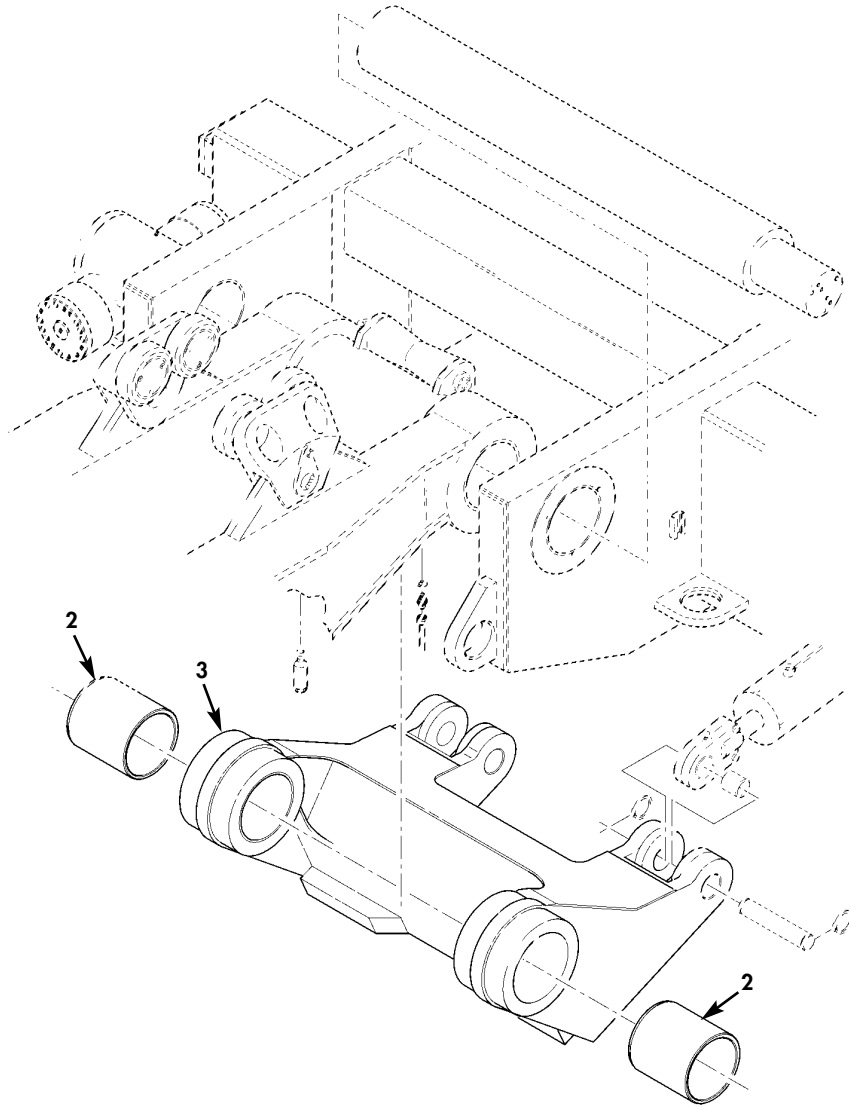
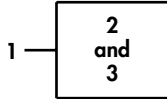


Figure 52. Supporting Boom Roller.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0316 SUPPORTING BOOM ROLLER	
					FIG. 52 SUPPORTING BOOM ROLLER	
1	PAOOO	3040-12-357-9066	D9913	866401901	LEVER,REMOTE CONTRO.....	1
2	PAOZZ	3120-12-357-8903	D9913	866416002	.BUSHING,SLEEVE.....	2
3	XDOZZ		D9913	866401902	.LEVER.....	1

END OF FIGURE

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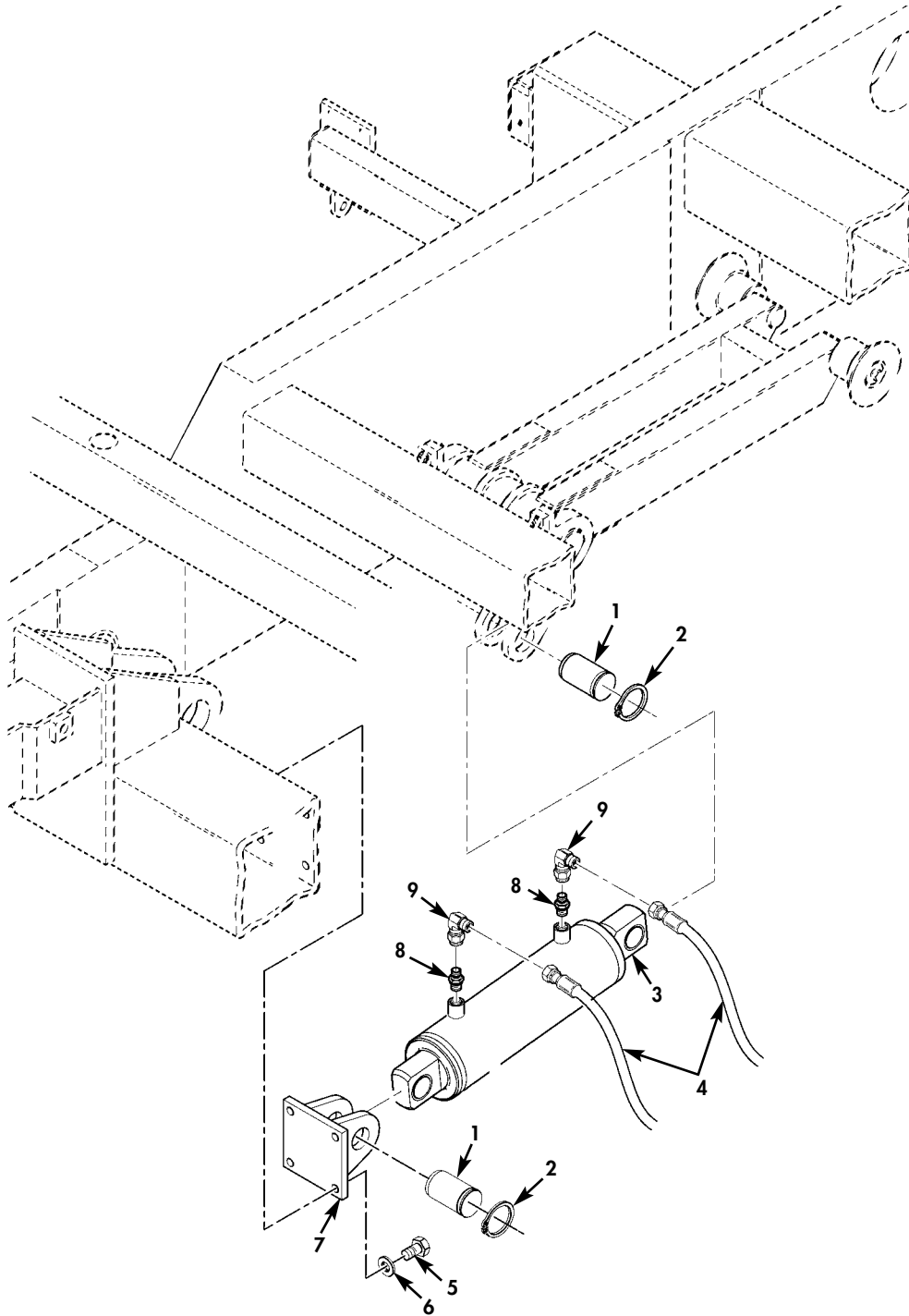
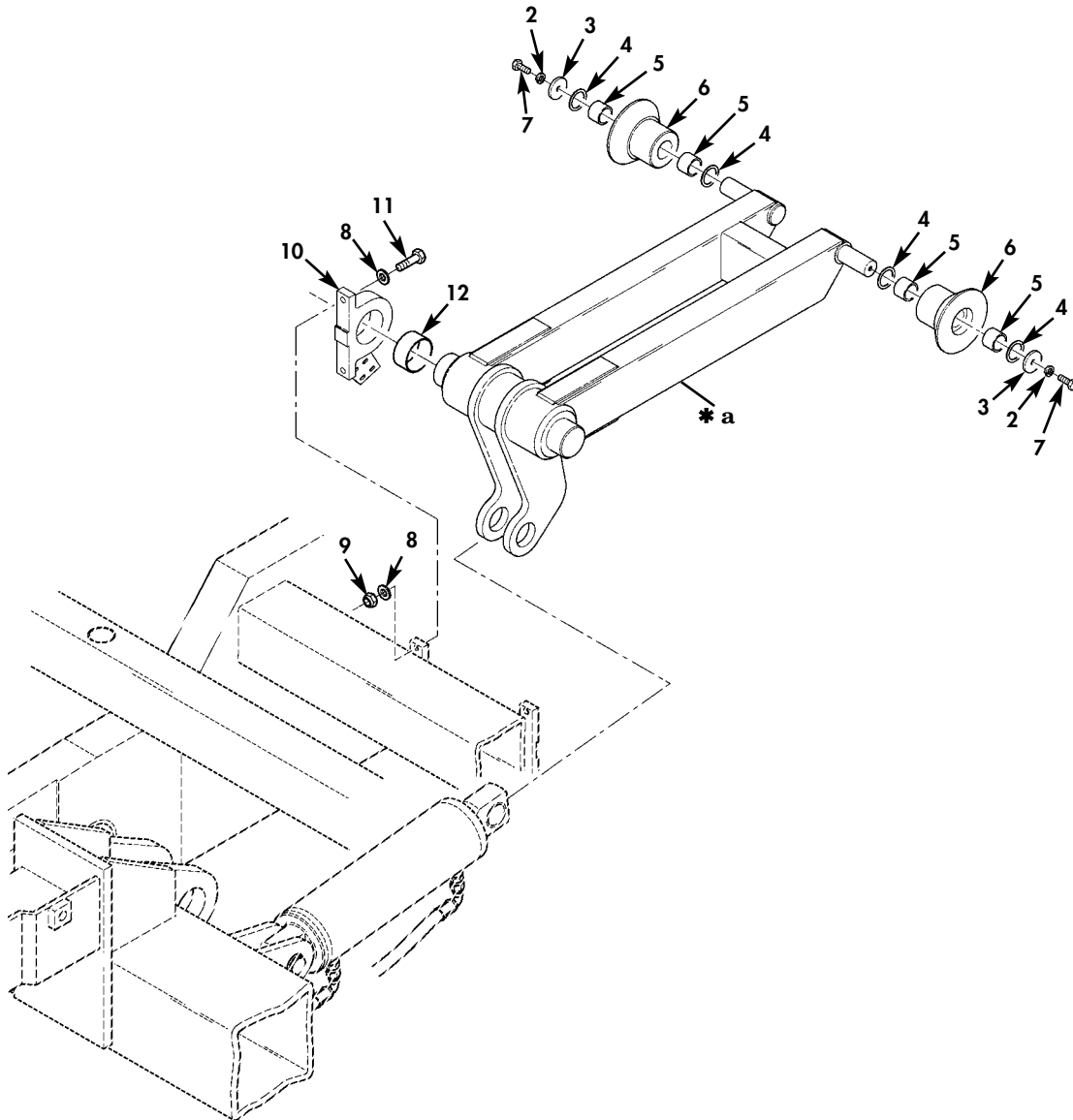
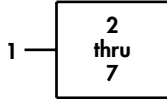


Figure 53. Secondary Support Boom Cylinder.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0317 SECONDARY SUPPORT BOOM CYLINDER						
FIG. 53 SECONDARY SUPPORT BOOM CYLINDER						
1	PAOZZ	5315-12-357-7779	D9913	866415009	PIN,GROOVED,HEADLES.....	2
2	PAOZZ	5325-12-189-6025	D8286	DIN471-40X1,75-A 3P	RING,RETAINING.....	4
3	XDOZZ		D9913	904060540	CYLINDER ASSEMBLY,A.....	1
4	PAOZZ	4720-12-359-3737	D9913	909724861	HOSE ASSEMBLY,NONME.....	2
5	PAOZZ	5305-12-141-9893	D8286	DIN933-M10X30-10 .9-A3P	SCREW,CAP,HEXAGON H.....	4
6	PAOZZ	5310-12-142-0481	D8286	DIN125-B10,5-140 HV-A3P	WASHER,FLAT.....	4
7	XDOZZ		D9913	866404301	BRACKET.....	1
8	XDOZZ		D8134	GE12ZLM14X1.5EDA 3C	ADAPTER,STRAIGHT,TU.....	2
9	XDOZZ		D9913	119140	ELBOW,TUBE.....	2

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)



* a PART OF ITEM 1

Figure 54. Secondary Support Boom.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0318 SECONDARY SUPPORT BOOM						
FIG. 54 SECONDARY SUPPORT BOOM						
1	PAOOO	5340-12-357-7987	D9913	866406105	ASSEMBLY,SUPPORT B.....	1
2	PAOZZ	5310-12-306-1456	D8286	DIN128-A8-FST-A3 D	.WASHER,LOCK.....	2
3	PAOZZ	5310-12-357-8698	D9913	866418106	.WASHER,FLAT.....	2
4	PAOZZ	5365-12-357-9328	D9913	866418105	.WASHER.....	4
5	PAOZZ	3120-12-152-8613	D9913	909560150	.BEARING,SLEEVE.....	4
6	PAOZZ	5340-12-358-0542	D9913	866416602	.WHEEL,SOLID,METALLI.....	2
7	PAOZZ	5305-12-125-0321	D8286	DIN933-M8X20-8.8	.SCREW,CAP,HEXAGON H.....	2
8	PAOZZ	5310-12-156-5471	D8286	DIN125-A10,5-140 HV-A3P	WASHER,FLAT.....	8
9	PAOZZ	5310-12-156-4996	D8286	DIN934-M10-8-A2P	NUT,PLAIN,HEXAGON.....	4
10	XDOZZ		D9913	866406701	BRACKET,MOUNTING.....	1
10	XDOZZ		D9913	866406702	BRACKET,MOUNTING.....	8
11	PAOZZ	5305-12-141-9899	D8286	DIN933-M10X50-8. 8-A3P	SCREW,CAP,HEXAGON H.....	4
12	XDOZZ		D9913	909560106	BUSHING,SLEEVE.....	2

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST

RAPIDLY EMPLACED BRIDGE (REB)

M21 (NSN 5420-01-481-3959)

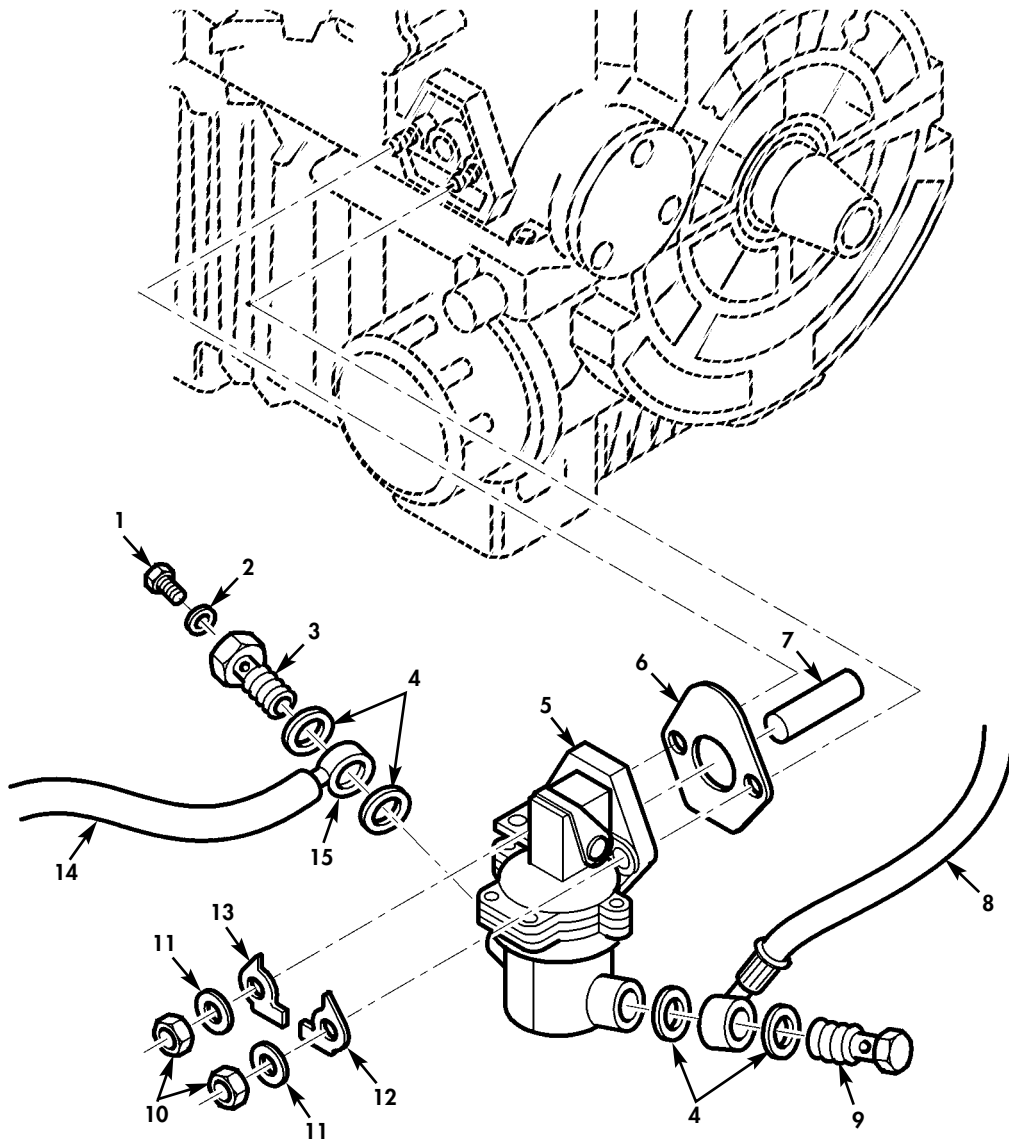
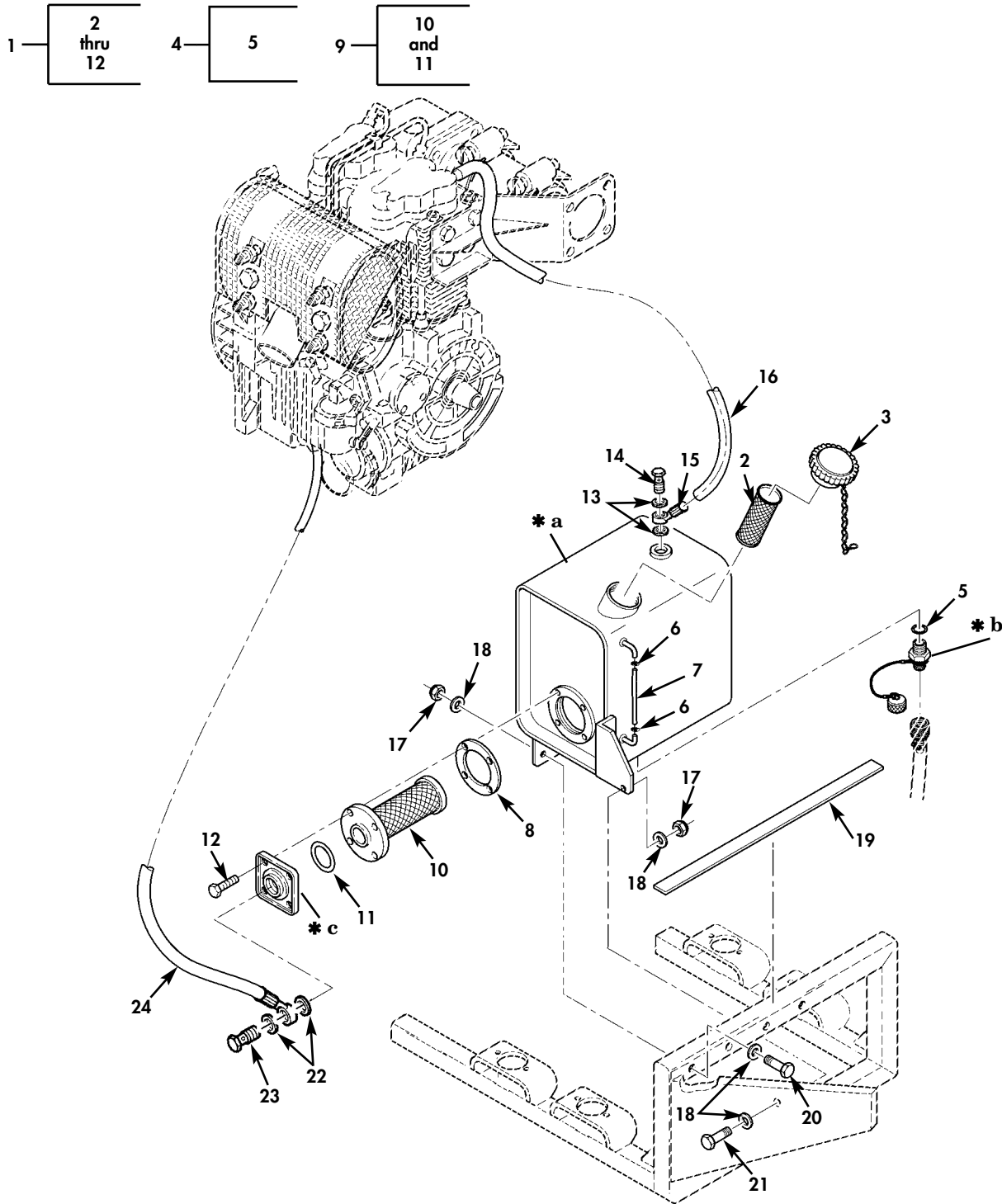


Figure 55. Fuel Pump.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 04 ENGINE						
0401 FUEL PUMP						
FIG. 55 FUEL PUMP						
1	XDOZZ		D8286	DIN EN 24017- M5X10-8.8	SCREW,CAP,HEXAGON H.....	1
2	PAOZZ	5330-12-156-4820	D8286	DIN7603-A5X9-CU	GASKET.....	1
3	XDOZZ		D9913	862118502	BOLT,FLUID PASSAGE.....	1
4	PAOZZ	5330-01-074-2109	61080	50001000	GASKET.....	4
5	PAOZZ	2910-14-525-2587	F8825	01601300	PUMP,FUEL,METERING.....	1
6	XDOZZ		D2081	04118501	GASKET 1.0 MM.....	1
6	XDOZZ		D2081	04118601	GASKET 1.4 MM.....	1
7	PAOZZ	2815-01-438-4874	61080	50291500	TAPPET,ENGINE POPPE.....	1
8	XDOZZ		D2081	01353300	HOSE ASSEMBLY,NONME.....	1
9	PAOZZ	4730-01-102-4010	61080	50006200	BOLT,FLUID PASSAGE.....	1
10	PAOZZ	5310-01-400-3719	61080	50335300	NUT,PLAIN,HEXAGON.....	2
11	PAOZZ	5310-01-399-7305	61080	50095100	WASHER,SPRING TENSI.....	2
12	PAOZZ	5365-12-359-9442	D2081	04132400	SPACER,SPECIAL SHAP.....	1
13	PAOZZ	5365-12-359-9443	D2081	04132500	SPACER,SPECIAL SHAP.....	1
14	PAOZZ	4720-12-346-2689	D2081	03493200	HOSE,PREFORMED.....	1
15	PAOZZ	4730-01-454-7573	61080	40092600	FITTING,RING PIECE.....	1

END OF FIGURE

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 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)



- * a PART OF ITEM 1
- * b PART OF ITEM 4
- * c PART OF ITEM 9

Figure 56. Fuel Tank and Filter.

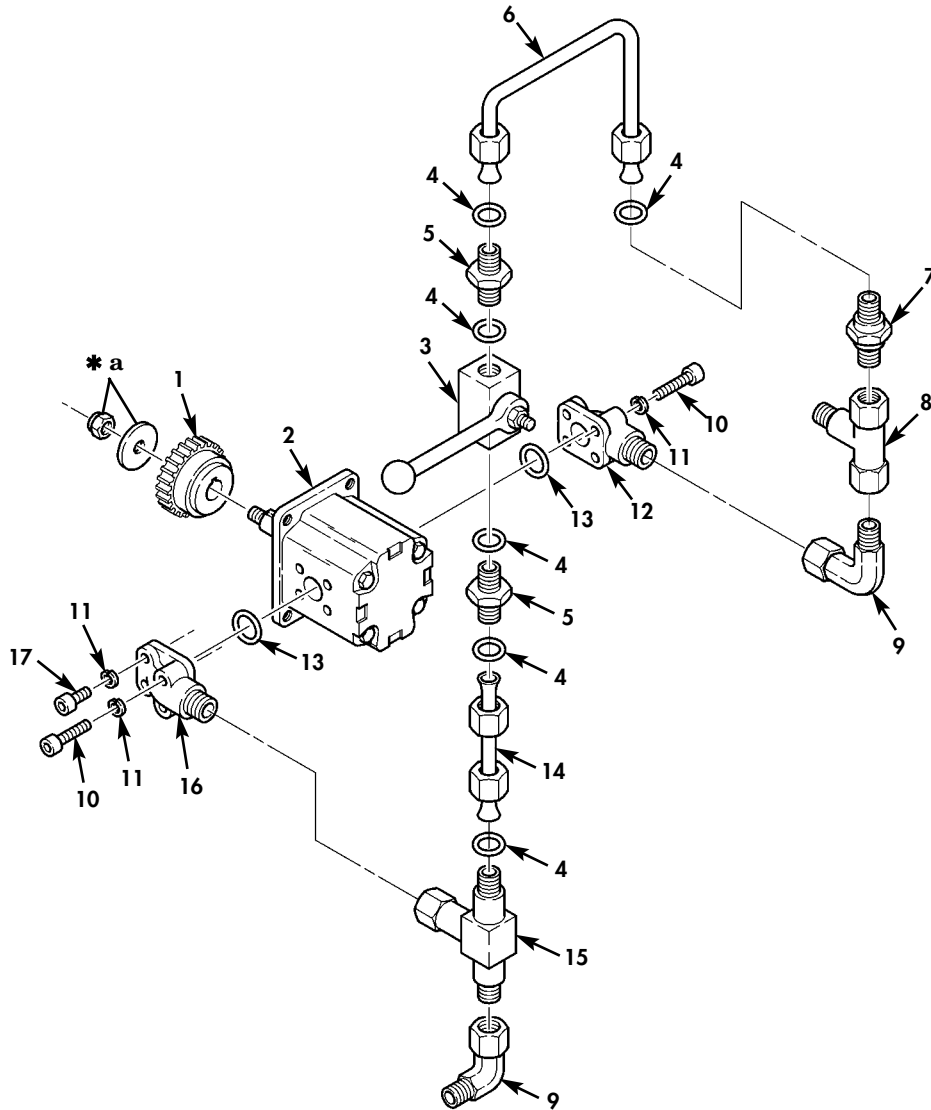
(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0402 FUEL TANK AND FILTER						
FIG. 56 FUEL TANK AND FILTER						
1	XDOOO		D9913	862107502	TANK,FUEL,ENGINE.....	1
2	XDOZZ		D9913	908100049	.SCREEN,INLET,FILTER.....	1
3	PAOZZ	2910-99-203-2479	K5358	40032700	.CAP,FUEL TANK.....	1
4	XDOOO		D9913	902137901	.VALVE,DRAIN FUEL.....	1
5	XDOZZ		D8286	DIN 7603 A M22X1 ,5	..SEAL RING,METAL.....	1
6	XDOZZ		D9913	905120016	.CLAMP,HOSE.....	2
7	XDOZZ		D9913	669300015	.HOSE,NONMETALLIC.....	1
8	PAOZZ	5330-12-343-2866	D2081	03150202	.GASKET.....	1
9	PAOOO	2910-12-164-4947	D2081	00329102	.PARTS KIT,FLUID PRE.....	1
10	PAOZZ	4330-12-150-5355	D2081	40043800	..FILTER ELEMENT,FLUI.....	1
11	PAOZZ	5342-01-089-8498	12339	03150600	..DISK.....	1
12	PAOZZ	5305-01-274-1095	61080	500-627-00	.SCREW,CAP,HEXAGON H.....	4
13	PAOZZ	5310-01-090-0938	61080	50000900	WASHER,FLAT.....	2
14	PAOZZ	4730-01-103-3202	61080	50006100	BOLT,FLUID PASSAGE.....	1
15	PAOZZ	4730-01-454-7567	61080	50015700	FITTING,RING PIECE.....	1
16	PAOZZ	4720-14-500-8133	F8825	03962100	HOSE,PREFORMED.....	1
17	XDOZZ		D8286	DIN6925-M8	NUT,SELF-LOCKING,HE.....	5
18	XDOZZ		D8286	DIN125-1-B8.4	WASHER,FLAT.....	10
19	XDOZZ		D9913	862113701	INSULATOR.....	1
20	XDOZZ		D8286	DIN EN 24017M8X6 0	SCREW,CAP,HEXAGON H.....	5
21	XDOZZ		D8286	DIN EN 24017M8X3 0-A4	SCREW,CAP,HEXAGON H.....	1
22	PAOZZ	5330-12-156-4522	D8286	DIN7603-A14X18-C U	GASKET.....	1
23	PAOZZ	4730-12-318-4400	D8286	DIN7643-10-3-A3P	BOLT,FLUID PASSAGE.....	1
24	XDOZZ		D9913	909721918	HOSE,NONMETALLIC.....	1

END OF FIGURE

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* a PART OF ITEM 2

ITEMS 5, 6, AND 14 INCLUDE PACKING,
PREFORMED ITEM 4

Figure 57. Hydraulic Pump Assembly (Sheet 1 of 2).

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST

RAPIDLY EMPLACED BRIDGE (REB)

M21 (NSN 5420-01-481-3959)

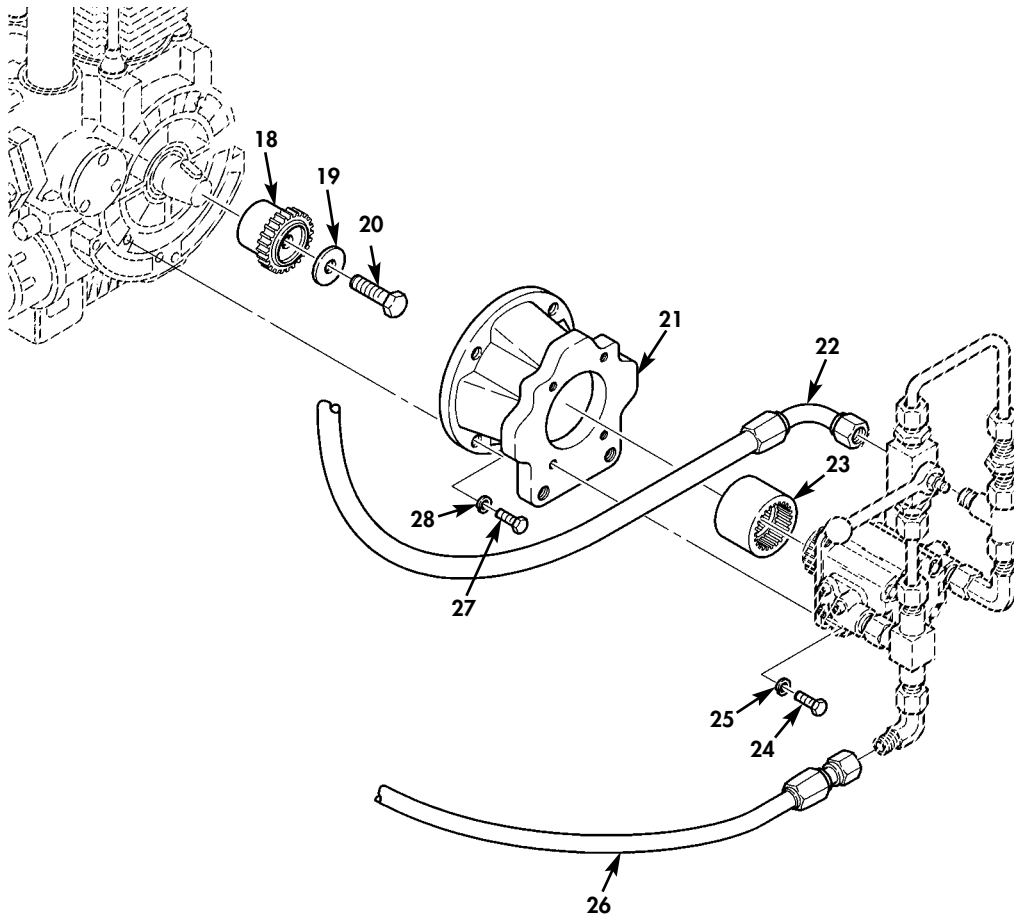


Figure 57. Hydraulic Pump Assembly (Sheet 2 of 2).

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0403 HYDRAULIC PUMP ASSEMBLY						
FIG. 57 HYDRAULIC PUMP ASSEMBLY						
1	XDOZZ		D2081	909614080	HUB, CLUTCH.....	1
2	PAOZZ	4320-12-357-7781	D9913	904011099	PUMP, ROTARY.....	1
3	XDOZZ		D9913	909420127	VALVE, FLOW CONTROL.....	1
4	XDOZZ		D8134	DOZ12L/71	PACKING, PREFORMED.....	6
5	XDOZZ		D9913	909618463	ADAPTER, STRAIGHT PI.....	2
6	XDOZZ		D9913	864005610	TUBE BENT, METALLIC.....	1
7	XDOZZ		D9913	909618436	REDUCER, PIPE.....	1
8	XDOZZ		D8134	EVL22L71	TEE, TUBE TO BOSS.....	1
9	XDOZZ		D9913	119140	ELBOW, TUBE.....	1
10	XDOZZ		D9913	ZYLS6X22A3CX	SCREW, CAP, SOCKET HE.....	6
11	XDOZZ		D8134	FEDERGA6A3CX	WASHER, LOCK.....	8
12	XDOZZ		D9913	909610388	FLANGE.....	1
13	XDOZZ		D8134	140R20X2.50	SEAL, NONMETALLIC.....	2
14	XDOZZ		D9913	864005609	TUBE ASSEMBLY, METAL.....	1
15	XDOZZ		D8134	T12L71X	TEE, TUBE.....	1
16	XDOZZ		D9913	909613082	FLANGE.....	1
17	XDOZZ		D8134	ZYLS6X35A3CX	SCREW, CAP, SOCKET HE.....	2
18	XDOZZ		D9913	909614082	GEAR, HELICAL.....	1
19	XDOZZ		D9913	909541024	WASHER, FLAT.....	1
20	XDOZZ		D9913	909510281	SCREW, CAP, HEXAGON H.....	1
21	XDOZZ		D9913	862110701	COUPLING, HUB.....	1
22	XDOZZ		D9913	127238	HOSE.....	1
23	XDOZZ		D9913	909614083	COVER, GEAR.....	1
24	PAOZZ	5305-12-125-0154	D8286	DIN933-M8X30-8.8	SCREW, CAP, HEXAGON H.....	4
25	PAOZZ	5310-12-142-0645	D8286	DIN125-B8, 4-140H V-A3P	WASHER, FLAT.....	4
26	PAOZZ	4720-12-359-3737	D9913	909724861	HOSE ASSEMBLY, NONME.....	1
27	PAOZZ	5310-12-142-0481	D8286	DIN125-B10, 5-140 HV-A3P	WASHER, FLAT.....	4
28	XDOZZ		D8286	DIN125-B8, 4-140H V-A3C	WASHER, FLAT.....	4

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST

RAPIDLY EMPLACED BRIDGE (REB)

M21 (NSN 5420-01-481-3959)

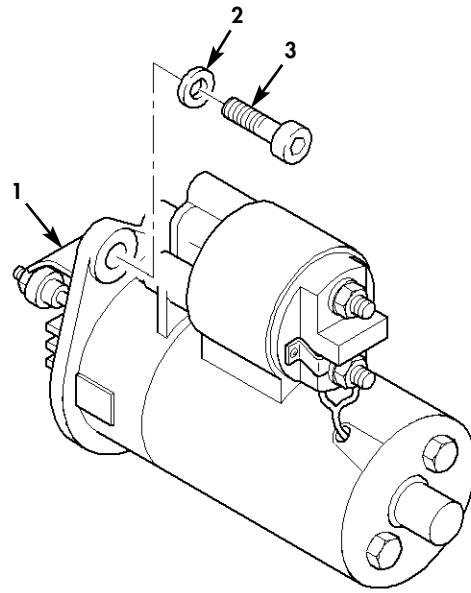


Figure 58. Starter Motor.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0404 STARTER MOTOR	
					FIG. 58 STARTER MOTOR	
1	PAOZZ	6105-01-476-2350	61080	50364400	MOTOR, CONTROL.....	1
2	PAOZZ	5310-12-156-5471	D8286	DIN125-A10,5-140 HV-A3P	WASHER, FLAT.....	2
3	PAOZZ	5305-01-406-0005	61080	50093400	SCREW, CAP, SOCKET H.....	2

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)

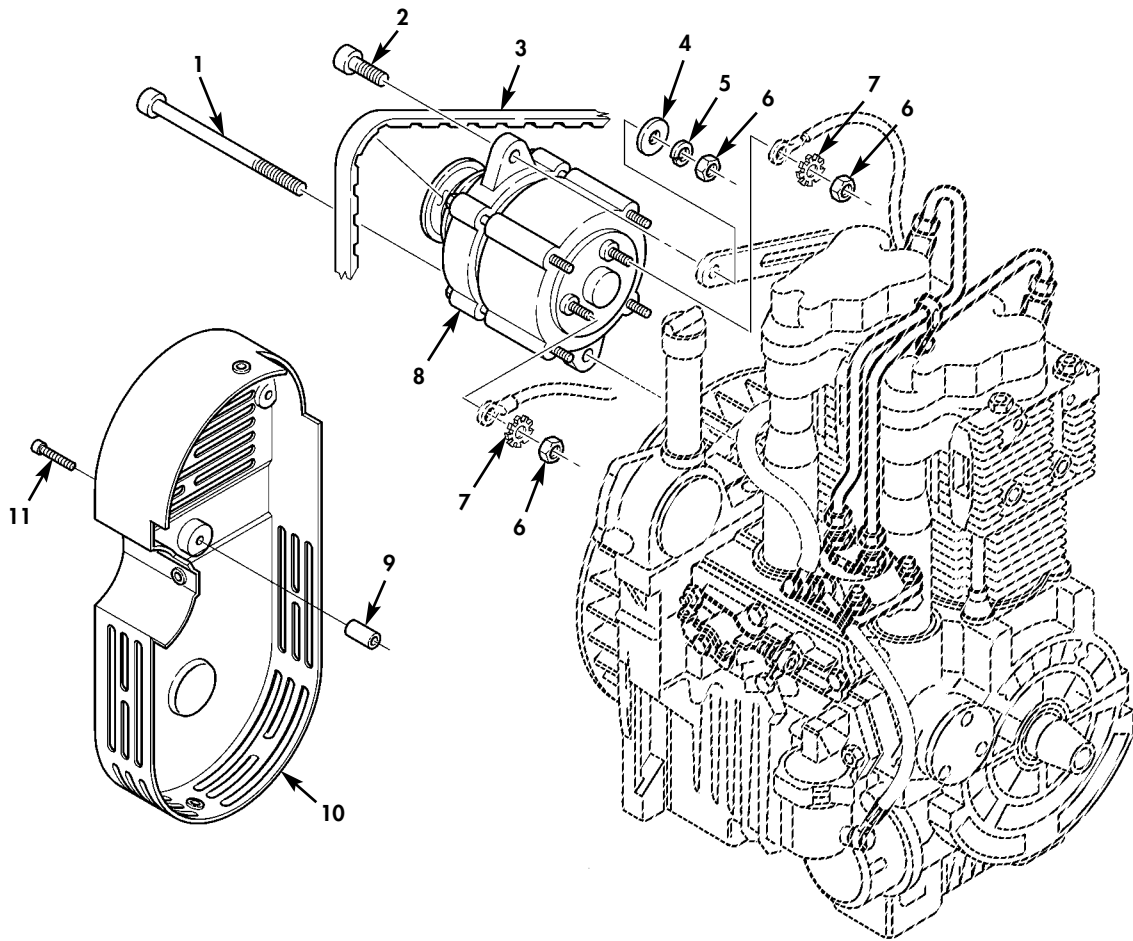


Figure 59. Alternator and Related Parts.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0405 ALTERNATOR AND RELATED PARTS						
FIG. 59 ALTERNATOR AND RELATED PARTS						
1	PAOZZ	5305-01-455-1247	61080	50183100	SCREW,CAP, SOCKET H.....	1
2	PAOZZ	5305-01-455-1242	61080	50175900	SCREW,CAP, SOCKET HE.....	1
3	XDOZZ		D2081	50373300	BELT,V.....	1
4	PAOZZ	5310-01-455-8480	61080	50148100	WASHER,FLAT.....	1
5	PAOZZ	5310-01-399-7303	61080	50208500	WASHER, SPRING TENSI.....	1
6	PAOZZ	5310-01-400-3720	61080	50148000	NUT,PLAIN,HEXAGON.....	3
7	PAOZZ	5310-01-399-7305	61080	50095100	WASHER, SPRING TENSI.....	2
8	XDOZZ		D2081	50366500	GENERATOR,ENGINE.....	1
9	XDOZZ		D2081	03071200	STANDOFF, THREADED,S.....	1
10	XDOZZ		D2081	03968500	COVER,PROTECT.....	1
11	PAOZZ	5305-01-405-9903	61080	50177500	SCREW,MACHINE.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST

RAPIDLY EMPLACED BRIDGE (REB)

M21 (NSN 5420-01-481-3959)

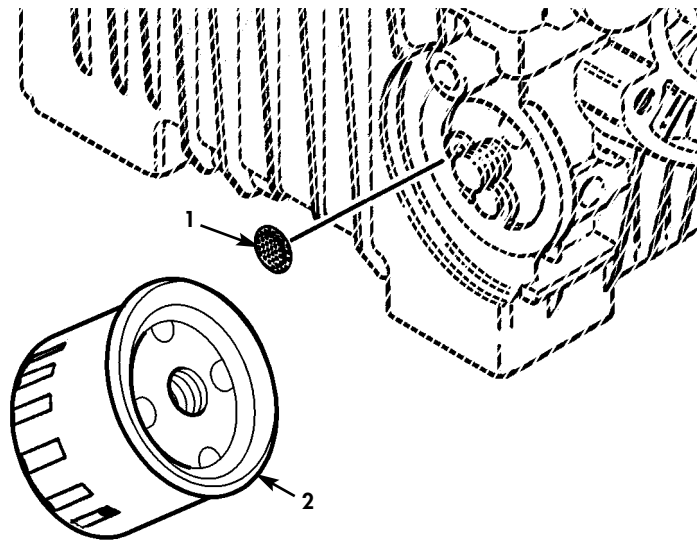


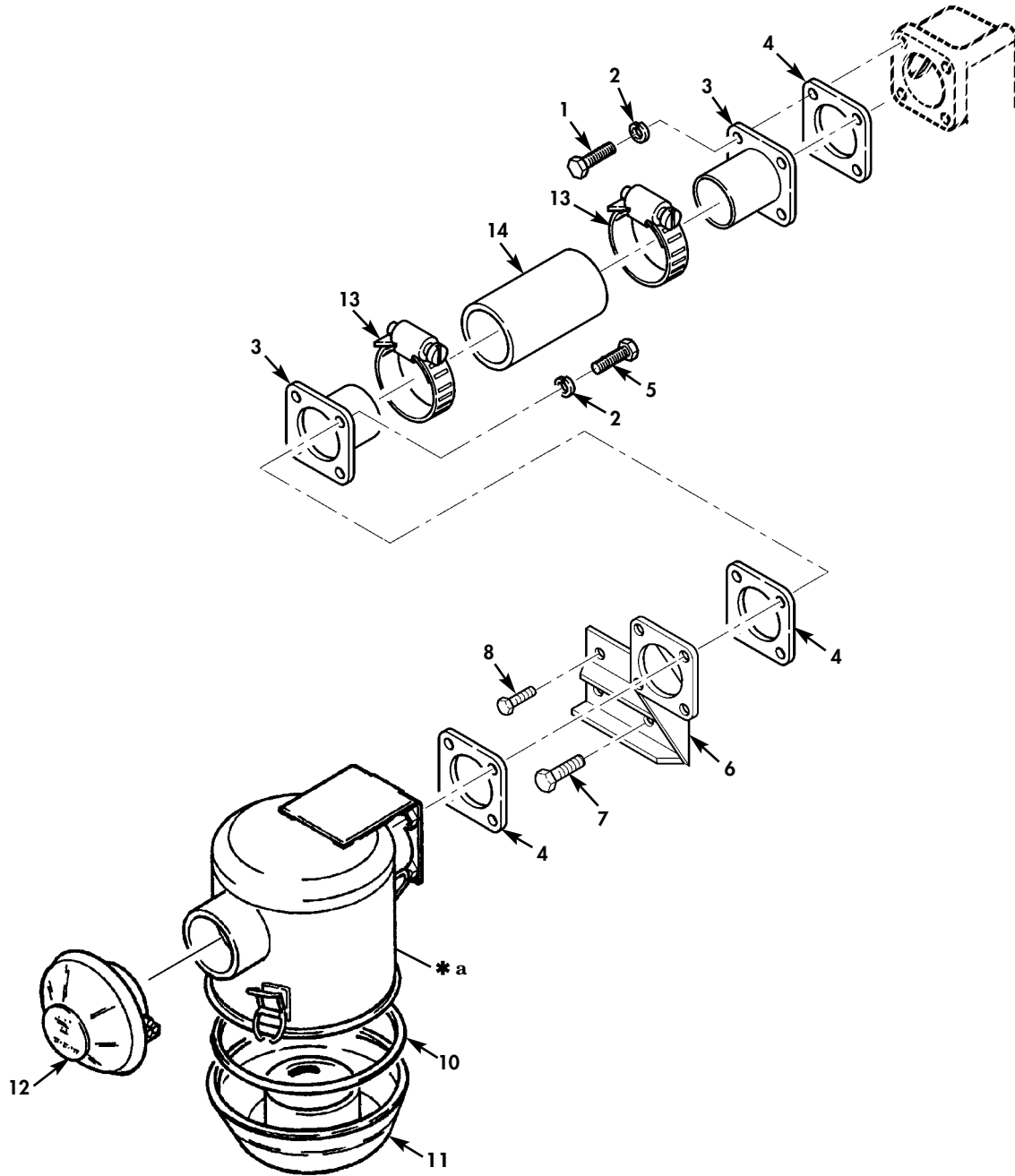
Figure 60. Oil Filter.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0406 OIL FILTER	
					FIG. 60 OIL FILTER	
1	PAOZZ	4730-01-454-7545	61080	05034900	STRAINER,ELEMENT,SE.....	1
2	PAOZZ	2940-01-242-1405	61080	50302800	FILTER ELEMENT,FLUI.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

9 — 10
thru
11



* a PART OF ITEM 9

Figure 61. Oil Bath Air Cleaner.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0407 OIL BATH AIR CLEANER						
FIG. 61 OIL BATH AIR CLEANER						
1	PAOZZ	5305-01-455-1247	61080	50183100	SCREW,CAP, SOCKET H.....	4
2	PAOZZ	5310-12-149-4353	D8286	DIN125-A8,4-140H V-A3P	WASHER,FLAT.....	8
3	XDOZZ		D9913	909478802	ADAPTER,STRAIGHT,FL.....	2
4	PAOZZ	5330-01-455-7823	61080	01285600	GASKET.....	1
5	PAOZZ	5305-01-455-1242	61080	50175900	SCREW,CAP, SOCKET HE.....	4
6	PAOZZ	5340-12-358-0185	D9913	862104301	BRACKET,MOUNTING.....	1
7	PAOZZ	5305-12-156-4860	D8286	DIN933-M6X12-8.8 -A2P	SCREW,CAP,HEXAGON H.....	2
8	PAOZZ	5305-12-129-9435	D8286	DIN933-M8X16-8.8	SCREW,CAP,HEXAGON H.....	2
9	PAOOO	2940-12-362-6657	D8086	31 020 62 191	AIR CLEANER,INTAKE.....	1
10	PAOZZ	5330-12-190-9011	D8086	2313831121	.GASKET.....	1
11	PAOZZ	2940-12-346-3636	D8086	31 020 12 961	.COVER,FLUID FILTER.....	1
12	PAOZZ	2940-12-180-4315	D8086	3902067900	PLUG,PROTECTIVE,DUS.....	1
13	PAOZZ	4730-12-357-6687	D8286	DIN3017-B1-63X15 -W1-1	CLAMP,HOSE.....	2
14	XDOZZ		D8086	3900027202	HOSE,NONMETALLIC.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

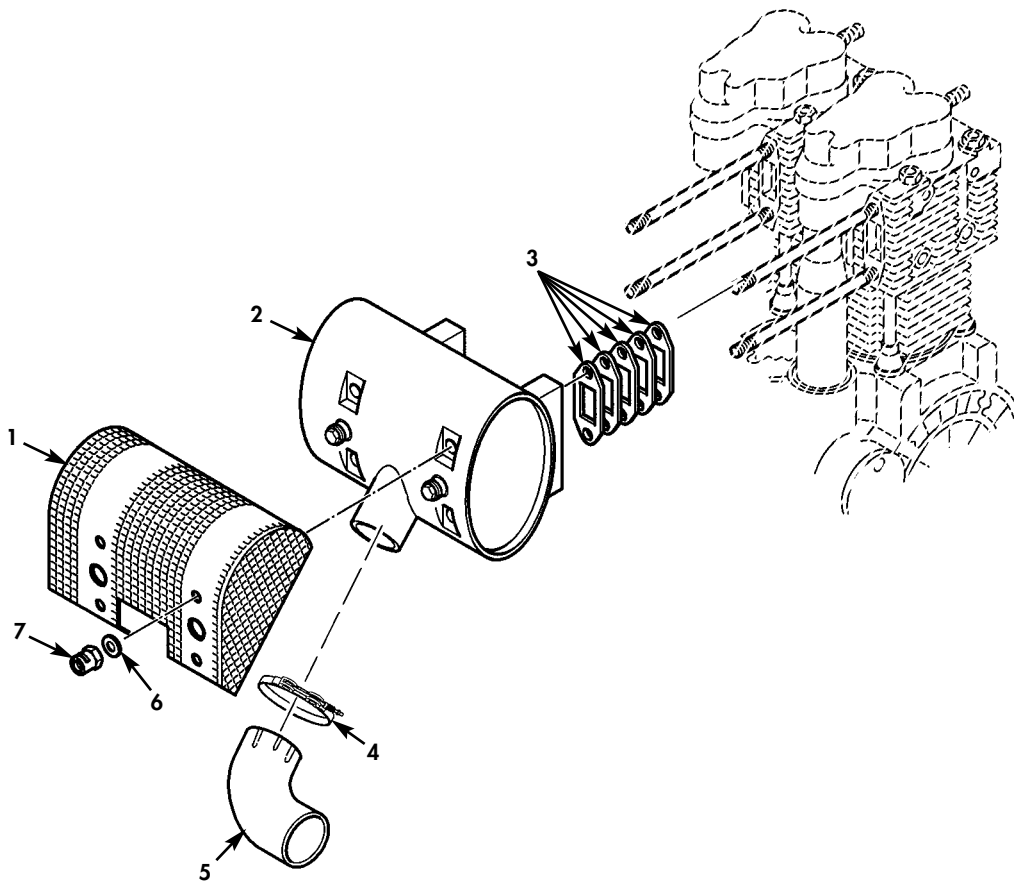


Figure 62. Exhaust System.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0408 EXHAUST SYSTEM						
FIG. 62 EXHAUST SYSTEM						
1	XDOZZ		D2081	01139500	HEAT SHIELD,EXHAUST.....	1
2	PAOZZ	2990-12-338-8688	D2081	01129000	MUFFLER,EXHAUST.....	1
3	PAOZZ	5330-01-455-7566	61080	01285500	GASKET SET.....	1
4	XDOZZ		E0557	9333	CLAMP,HOSE.....	1
5	XDOZZ		D9913	909621918	ELBOW,TUBE.....	1
6	PAOZZ	5310-01-455-8480	61080	50148100	WASHER,FLAT.....	4
7	PAOZZ	5310-01-101-2028	61080	40028400	NUT,SELF-LOCKING,HE.....	4

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

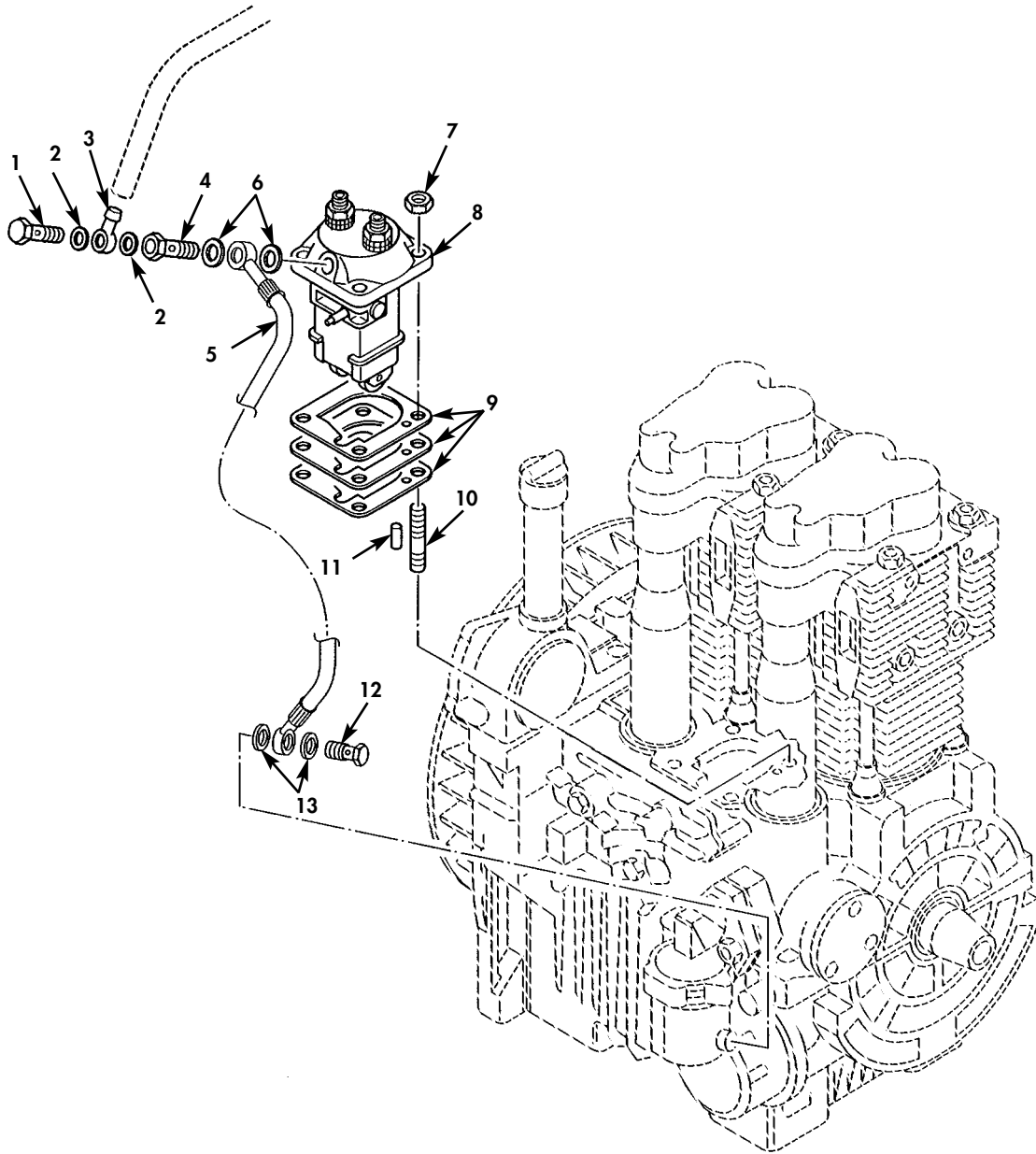


Figure 63. Fuel Injection Pump.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0409 FUEL INJECTION PUMP						
FIG. 63 FUEL INJECTION PUMP						
1	PAOZZ	4730-01-454-7569	61080	50311700	BOLT,FLUID,PASSAGE.....	1
2	PAOZZ	5310-01-090-0938	61080	50000900	WASHER,FLAT.....	2
3	PAOZZ	4730-01-454-7567	61080	50015700	FITTING,RING PIECE.....	2
4	PAOZZ	4730-01-454-7560	D2081	01223200	ADAPTER,STRAIGHT,TU.....	1
5	XDOZZ		D2081	01353300	HOSE ASSEMBLY,NONME.....	1
6	PAOZZ	5330-01-080-1776	61080	50001100	GASKET.....	2
7	PAOZZ	5310-01-400-3720	61080	50148000	NUT,PLAIN,HEXAGON.....	4
8	PAOZZ	2910-12-356-4342	D2081	50493200	PUMP,FUEL INJECTION.....	1
9	PAOZZ	5330-01-399-7307	61080	50312300	GASKET 0,10 MM.....	1
9	PAOZZ	5330-01-399-7308	61080	50312400	GASKET 0,20 MM.....	1
9	PAOZZ	5330-01-399-7306	61080	50312500	GASKET 0,30 MM.....	1
10	PAOZZ	5307-01-405-9905	61080	50098300	STUD,PLAIN.....	4
11	PAOZZ	5315-01-400-0445	61080	50312200	PIN,STRAIGHT,HEADLE.....	1
12	PAOZZ	4730-01-102-4010	61080	50006200	BOLT,FLUID PASSAGE.....	1
13	PAOZZ	5330-01-074-2109	61080	50001000	GASKET.....	2

END OF FIGURE

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0410 FUEL INJECTOR						
FIG. 64 FUEL INJECTOR						
1	PAOZZ	4720-12-335-2224	D2081	03902000	HOSE, NONMETALLIC.....	1
2	PAOZZ	5305-01-405-9901	61080	50098500	SCREW, MACHINE.....	1
3	PAOZZ	5310-12-149-4353	D8286	DIN125-A8, 4-140H V-A3P	WASHER, FLAT.....	1
4	PAOZZ	5340-01-399-7969	61080	03174700	CLAMP, LOOP.....	1
5	XDOZZ		D2081	01240910	TUBE ASSEMBLY, METAL.....	1
6	PAOZZ	4710-01-518-8125	61080	01241010	TUBE ASSEMBLY, METAL.....	1
7	PAOZZ	5340-01-406-1646	61080	50314100	CLAMP, LOOP.....	1
8	PAOZZ	4730-12-307-3729	D1257	828030303	TEE, HOSE.....	2
9	PAOZZ	4720-12-358-4702	D2081	03780710	HOSE, NONMETALLIC.....	1
10	PAOZZ	5310-01-400-3720	61080	50148000	NUT, PLAIN, HEXAGON.....	1
11	PAOZZ	5310-01-399-7303	61080	50208500	WASHER, SPRING TENSI.....	1
12	PAOZZ	5310-01-400-0995	61080	04035700	WASHER, FLAT.....	1
13	PAOZZ	4730-01-399-4252	61080	03792400	CLAMP, HOSE.....	1
14	PAOZZ	5307-01-405-9899	61080	50038400	STUD, PLAIN.....	1
15	PAOZZ	2910-12-356-4469	D2081	50493300	PUMP, FUEL METERING.....	2
16	PAOZZ	2910-12-337-7727	D8015	0432291593	.INJECTOR ASSEMBLY, F.....	1
17	PAOZZ	5330-12-337-6421	D2081	04025800	SEAL.....	2
18	PAOZZ	4730-01-399-4254	61080	50313000	BOLT, FLUID PASSAGE.....	2
19	PAOZZ	5330-01-405-9900	61080	50313100	GASKET.....	4
20	PAOZZ	4730-12-337-7116	D2081	50333400	CONNECTOR, MULTIPLE.....	2
21	PAOZZ	4720-12-358-4703	D2081	04187500	HOSE, NONMETALLIC.....	2

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST
RAPIDLY EMPLACED BRIDGE (REB)
M21 (NSN 5420-01-481-3959)

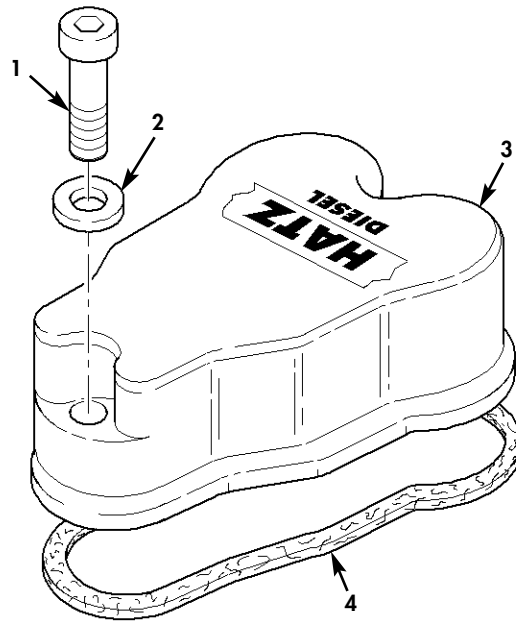


Figure 65. Valve Cover and Related Parts.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0411 VALVE COVER AND RELATED PARTS						
FIG. 65 VALVE COVER AND RELATED PARTS						
1	PAOZZ	5305-01-405-9903	61080	50177500	SCREW,MACHINE.....	4
2	PAOZZ	5310-01-415-2649	61080	50162900	WASHER,FLAT.....	4
3	PAOZZ	2815-12-330-5422	D2081	03783800	COVER,ENGINE POPPET.....	2
4	PAOZZ	5331-12-330-3443	D2081	50290200	PACKING,PREFORMED.....	2

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST

RAPIDLY EMPLACED BRIDGE (REB)

M21 (NSN 5420-01-481-3959)

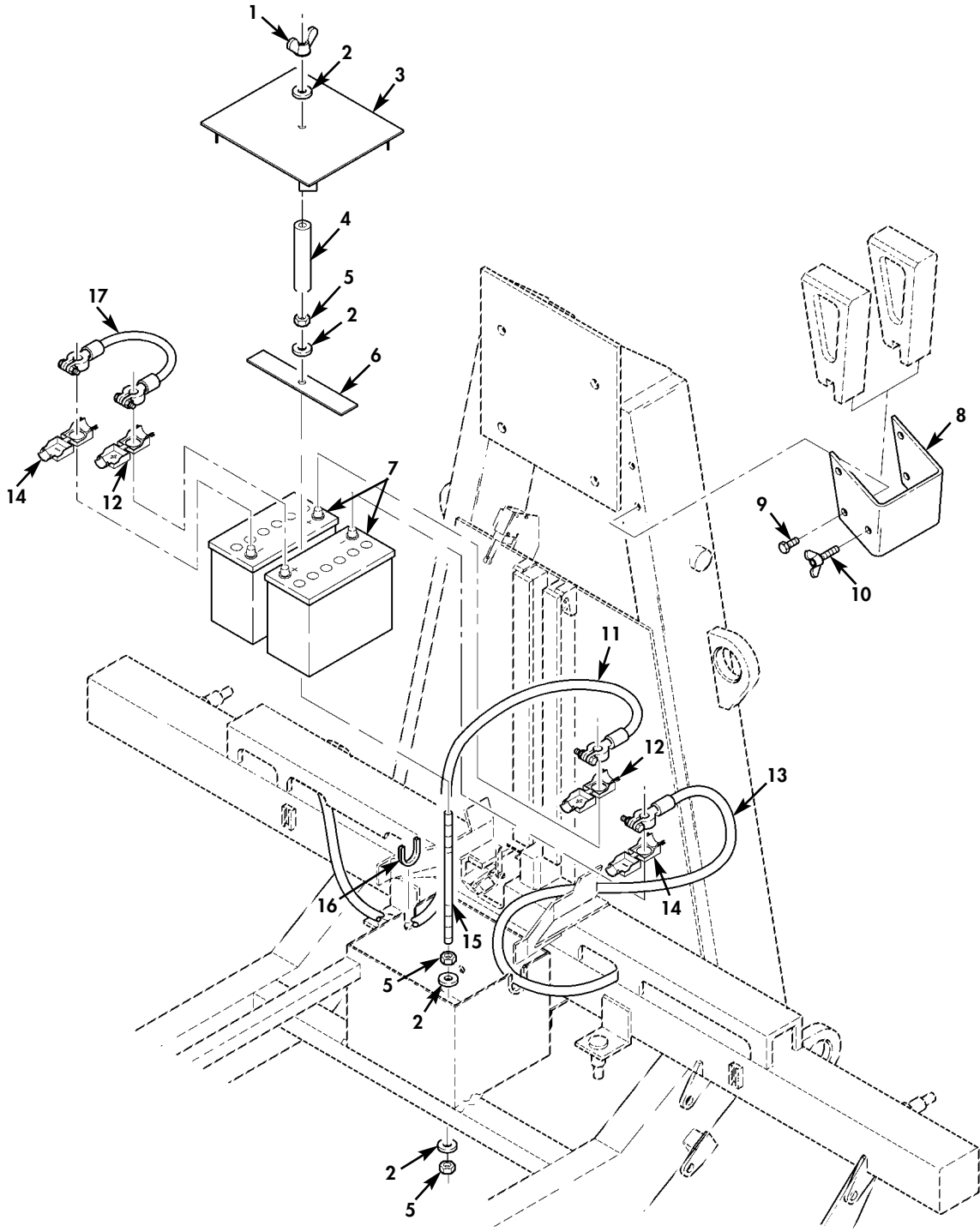


Figure 66. Battery Box, Batteries, and Cables.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0412 BATTERY BOX, BATTERIES, AND CABLES						
FIG. 66 BATTERY BOX, BATTERIES, AND CABLES						
1	XDOZZ		D8286	DIN315-M8-5-C-A2 C	NUT, PLAIN, WING.....	1
2	PAOZZ	5310-12-142-0645	D8286	DIN125-B8, 4-140H V-A3P	WASHER, FLAT.....	4
3	PAOZZ	5340-12-359-4324	D9913	868201001	COVER, ACCESS.....	1
4	PAOZZ	5365-12-359-4503	D9913	868024301	SPACER, SLEEVE.....	1
5	PAOZZ	5310-12-167-7145	D8286	DIN934-M8-8-A2C	NUT, PLAIN, HEXAGON.....	3
6	PAOZZ	5365-12-359-4504	D9913	868020302	PLATE, METAL.....	1
7	PAOZZ	6140-12-199-0973	D7505	08 1 90660 23	BATTERY, STORAGE.....	2
8	XDOZZ		D9913	865304322	BRACKET, MOUNTING.....	1
9	PAOZZ	5305-12-141-6587	D8286	DIN933-M6X18-8.8 -A2P	SCREW, CAP, HEXAGON H.....	4
10	XDOZZ		D8286	DIN316M8X50-ST-C -A2C	THUMBSCREW.....	2
11	PAOZZ	6150-12-359-5755	D9913	868001107	LEAD, ELECTRICAL.....	1
12	XDOZZ		C0093	K9H91792	COVER, TERMINAL LUG.....	2
13	PAOZZ	6150-12-359-5757	D9913	868001109	CABLE ASSEMBLY.....	1
14	XDOZZ		C0093	K9H91791	COVER, TERMINAL LUG.....	2
15	PAOZZ	5306-12-133-8568	D9913	909519107	ROD, CONTINUOUS THRE.....	1
16	XDOZZ		D9913	909843094	CHAFE GUARD, 100MM.....	2
17	PAOZZ	6150-12-359-5756	D9913	868001108	CABLE ASSEMBLY.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST

RAPIDLY EMPLACED BRIDGE (REB)

M21 (NSN 5420-01-481-3959)

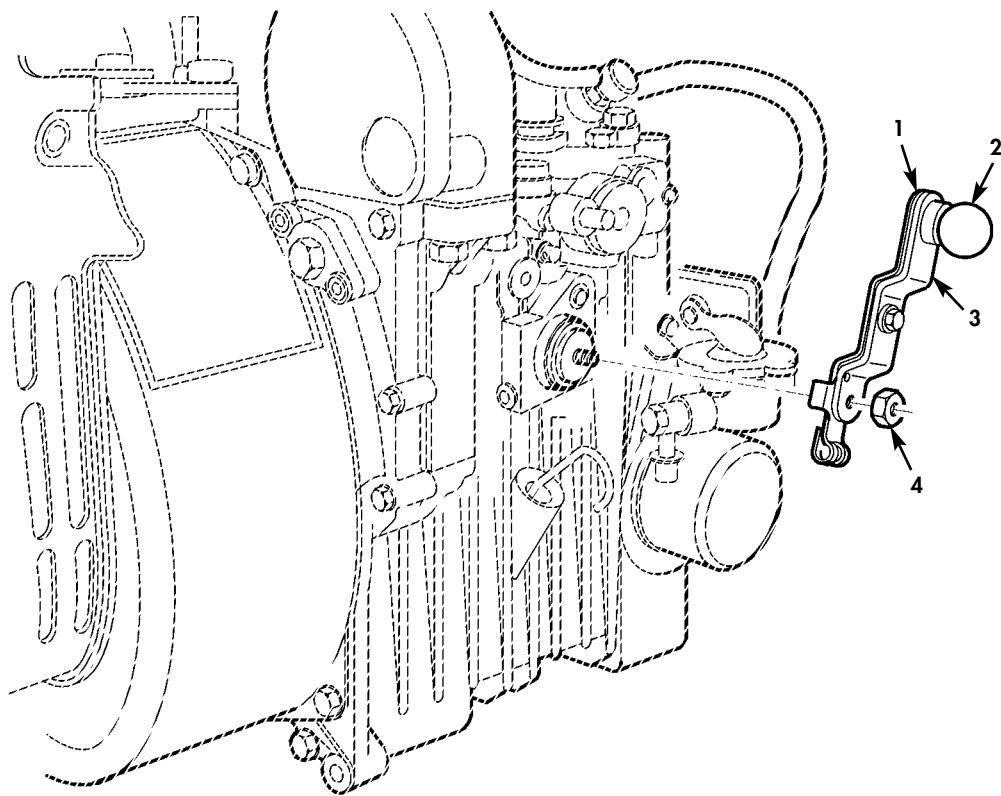
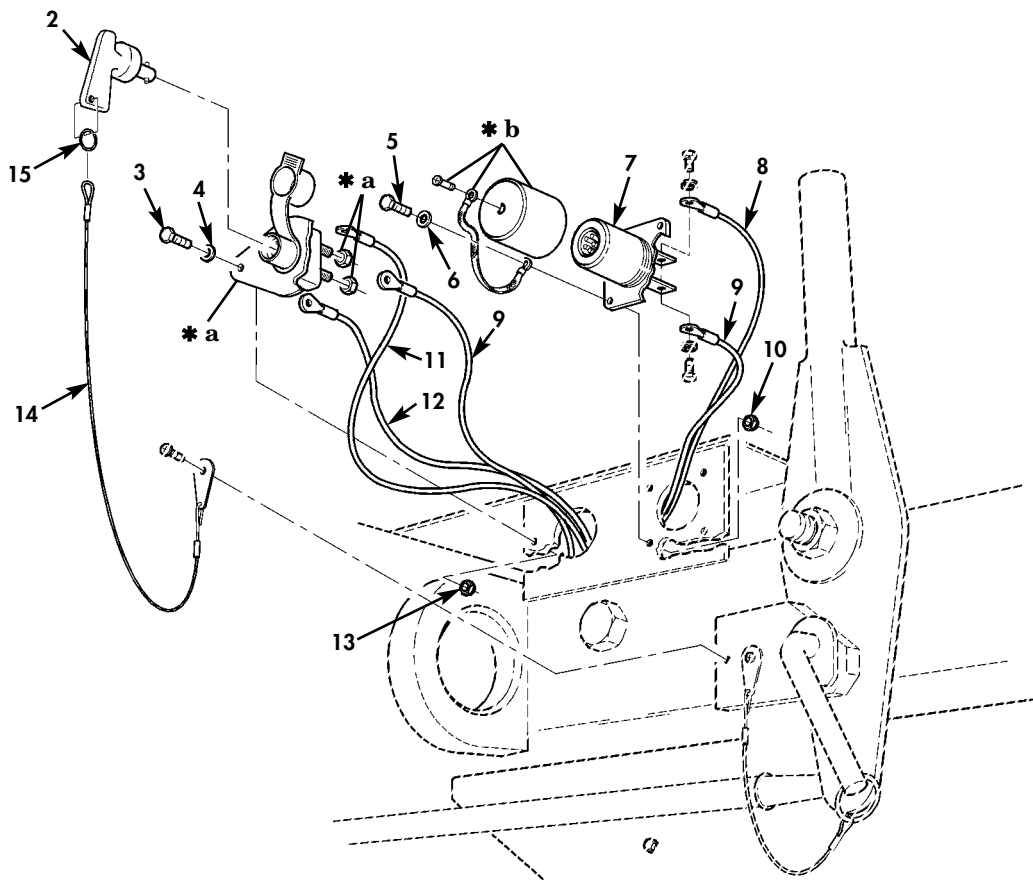
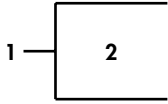


Figure 67. Engine Throttle and Shutoff Lever.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0413 ENGINE THROTTLE AND SHUTOFF LEVER	
					FIG. 67 ENGINE THROTTLE AND SHUTOFF LEVER	
1	PAOZZ	2990-01-454-9177	61080	50309400	LEVER,ASSEMBLY POWER-SPEED CONTROL INNER.....	1
2	XDOZZ		D2081	50195100	KNOB.....	1
3	XDOZZ		D2081	05045510	LEVER,ASSEMBLY POWER-SPEED CONTROL OUTER.....	1
4	PAOZZ	5310-01-525-7457	61080	50328300	NUT,PLAIN,HEXAGON.....	1

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)



- * a PART OF ITEM 1
- * b PART OF ITEM 7

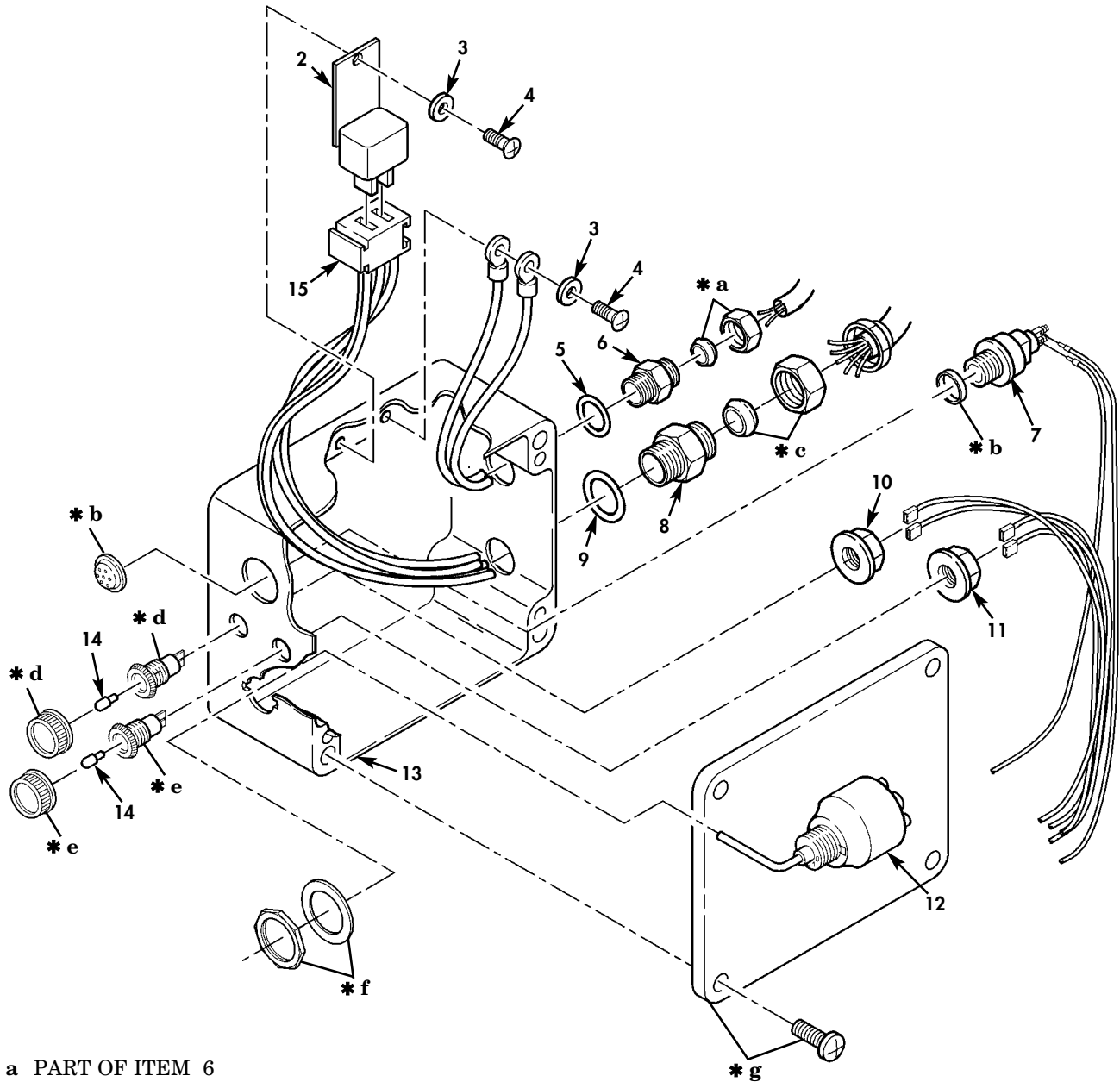
Figure 68. Main Power Switch and Slave Receptacle.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0414 MAIN POWER SWITCH AND SLAVE RECEPTACLE	
					FIG. 68 MAIN POWER SWITCH AND SLAVE RECEPTACLE	
1	PAOZZ	5930-12-333-6869	D0728	290025	SWITCH, LOCK.....	1
2	PAOZZ	5930-12-331-9999	D0728	14682	.KEY, SWITCH.....	1
3	PAOZZ	5305-12-156-4862	D8286	DIN933-M6X20-8.8 -A2P	SCREW, CAP, HEXAGON H.....	2
4	PAOZZ	5310-12-142-0644	D8286	DIN125-B6, 4-140H V-A3P	WASHER, FLAT.....	2
5	PAOZZ	5305-12-141-9828	D8286	DIN933-M5X20-8.8 -A2P	SCREW, CAP, HEXAGON H.....	4
6	PAOZZ	5310-12-156-4912	D8286	DIN125-B5, 3-140H V-A3P	WASHER, FLAT.....	4
7	PAOZZ	5935-01-044-8382	19207	11682345	CONNECTOR, RECEPTACLE.....	1
8	PAOZZ	6150-12-359-5758	D9913	868001110	LEAD, ELECTRICAL.....	1
9	PAOZZ	6150-12-359-5760	D9913	868001112	LEAD, ELECTRICAL.....	1
10	PAOZZ	5310-12-156-4990	D8286	DIN934-M5-8-A2P	NUT, PLAIN, HEXAGON.....	4
11	PAOZZ	6150-12-359-5755	D9913	868001107	LEAD, ELECTRICAL.....	1
12	PAOZZ	6150-12-359-5759	D9913	868001111	LEAD, ELECTRICAL.....	1
13	PAOZZ	5310-12-156-4991	D8286	DIN934-M6-8-A2P	NUT, PLAIN, HEXAGON.....	2
14	PAOZZ	4010-12-178-9346	D2040	LT1504-C6-12	WIRE ROPE ASSEMBLY.....	1
15	PAOZZ	5365-12-357-9331	D9913	909193017	RING, CONNECTING, ROU.....	1

END OF FIGURE

SUPPORTING INFORMATION
 REPAIR PARTS AND SPECIAL TOOLS LIST
 RAPIDLY EMPLACED BRIDGE (REB)
 M21 (NSN 5420-01-481-3959)

1 — 2
 thru
 15



- * a PART OF ITEM 6
- * b PART OF ITEM 7
- * c PART OF ITEM 8
- * d PART OF ITEM 10
- * e PART OF ITEM 11
- * f PART OF ITEM 12
- * g PART OF ITEM 13

Figure 69. Electrical Control Box, Engine.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0415 ELECTRICAL CONTROL BOX,ENGINE						
FIG. 69 ELECTRICAL CONTROL BOX,ENGINE						
1	XDOOO		D9913	868007201	ELECTRICAL CONTROL.....	1
2	XDOZZ		D9913	908067206	.RELAY,ELECTRICAL.....	1
3	PAOZZ	5310-12-151-4842	D8286	DIN128-A6-FST-A3 P	.WASHER,LOCK.....	2
4	PAOZZ	5305-12-142-0097	D8286	DIN84-M6X10-8.8- A2P	.SCREW,MACHINE.....	2
5	XDOZZ		D9913	909771753	.O-RING.....	1
6	XDOZZ		D9913	908047159	.ADAPTER.....	1
7	PAOZZ	2920-12-127-5038	D9913	168112501	.PLUG,SOCKET,ELECTRI LIGHT INDICATOR.....	1
8	XDOZZ		D9913	908047160	.ADAPTER.....	1
9	XDOZZ		D9913	909771754	.O-RING.....	1
10	XDOZZ		D9913	908110112	.INDICATOR, LIGHT.....	1
11	XDOZZ		D9913	908110113	.INDICATOR, LIGHT.....	1
12	PAOZZ	5930-12-129-3370	D9913	908070585	.ELECTRICAL SWITCH.....	1
13	XDOZZ		D9913	908083629	.ELECTRICAL BOX.....	1
14	PAOZZ	6240-12-120-7952	D9913	955662	.BULB.....	2
15	XDOZZ		D9913	908044507	.HARNES, WIRING.....	1

END OF FIGURE

SUPPORTING INFORMATION
REPAIR PARTS AND SPECIAL TOOLS LIST

RAPIDLY EMPLACED BRIDGE (REB)

M21 (NSN 5420-01-481-3959)

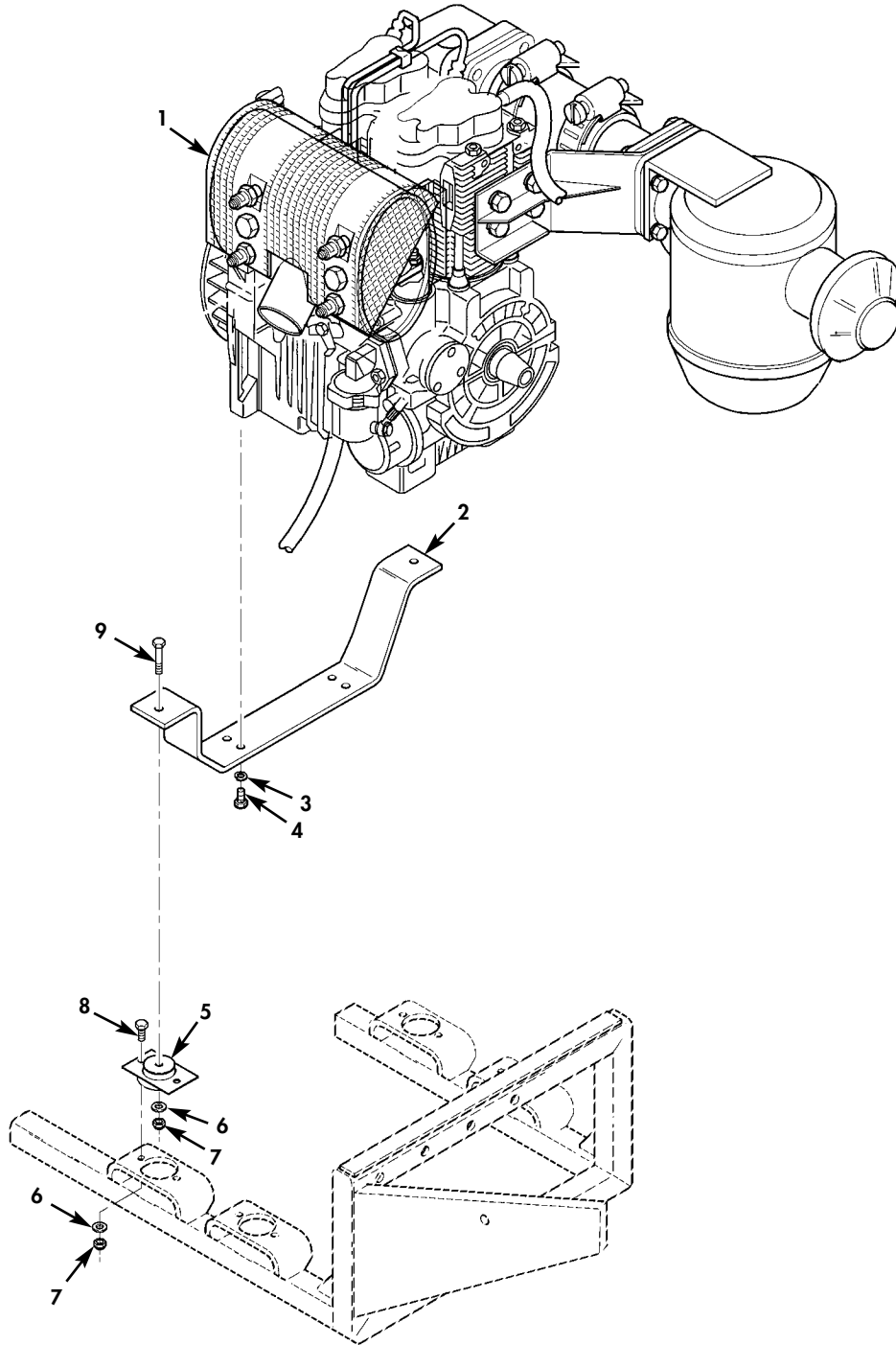


Figure 70. Engine Assembly.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
GROUP 0416 ENGINE ASSEMBLY						
FIG. 70 ENGINE ASSEMBLY						
1	PBOFF	2815-12-357-8436	D9913	862100101	ENGINE,DIESEL.....	1
2	PAOZZ	2510-12-357-8431	D9913	862114303	BRACKET,ENGINE MOUN.....	2
3	PAOZZ	5310-12-151-4235	D8286	DIN128-A10-FST-A 3P	WASHER,LOCK.....	8
4	PAOZZ	5305-12-144-4699	D8286	DIN933-M10X22-8. 8-A3P	SCREW,CAP,HEXAGON H.....	8
5	PAOZZ	5342-12-358-4225	D9913	909742803	MOUNT,RESILIENT.....	4
6	PAOZZ	5310-12-136-2611	D8286	DIN125-B8,4-140H V	WASHER,FLAT.....	12
7	PAOZZ	5310-12-342-6136	D8286	DIN6925-M8-8	NUT,PLAIN,HEXAGON.....	12
8	PAOZZ	5305-12-165-0743	D8286	DIN933-M8X25-8.8 -A2C	SCREW,CAP,HEXAGON H.....	8
9	PAOZZ	5305-12-156-4949	D8286	DIN931-M8X55-8.8 -A2P	SCREW,CAP,HEXAGON H.....	4

END OF FIGURE

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
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GROUP 05 SPECIAL PURPOSE KITS
 0500 SPECIAL PURPOSE KITS

FIG. SPECIAL PURPOSE KITS

SPECIAL PURPOSE KITS NOT AVAILABLE AT THIS TIME

CROSS REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIGURE NO	ITEM NO	STOCK NUMBER	FIGURE NO	ITEM NO
4730-00-160-8232	31	1	2990-01-454-9177	67	1
5935-01-044-8382	68	7	5305-01-455-1242	59	2
5330-01-074-2109	55	4		61	5
	63	13	5305-01-455-1247	59	1
5330-01-080-1776	63	6		61	1
5342-01-089-8498	56	11	5330-01-455-7566	62	3
5310-01-090-0938	56	13	5330-01-455-7823	61	4
	63	2	5310-01-455-8480	59	4
5310-01-101-2028	62	7		62	6
4730-01-102-4010	55	9	5935-01-460-5508	27	2
	63	12	6105-01-476-2350	58	1
4730-01-103-3202	56	14	4730-01-518-3963	35	24
5315-01-155-3867	48	14	4710-01-518-8125	64	6
4720-01-175-6380	32	61	5310-01-525-7457	67	4
4730-01-220-8297	32	59	4710-01-K77-4047	14	7
4730-01-221-2080	32	58	4710-01-K77-4048	14	8
5340-01-223-9986	32	57	6240-12-120-7952	69	14
2940-01-242-1405	60	2	5360-12-123-3202	22	29
5340-01-260-6009	32	56	5365-12-124-0246	12	29
5305-01-274-1095	56	12	5305-12-124-0436	28	46
4730-01-399-4252	64	13	5305-12-124-0462	32	46
4730-01-399-4254	64	18	5305-12-124-0471	28	57
5310-01-399-7303	59	5		38	7
	64	11	5305-12-124-0539	44	3
5310-01-399-7305	55	11	5330-12-124-0979	42	4
	59	7	5305-12-124-1677	48	77
5330-01-399-7306	63	9	5305-12-124-3839	28	63
5330-01-399-7307	63	9	5305-12-125-0133	48	32
5330-01-399-7308	63	9	5305-12-125-0144	42	17
5340-01-399-7969	64	4	5305-12-125-0154	6	9
5315-01-400-0445	63	11		57	24
5310-01-400-0995	64	12	4730-12-125-0310	45	8
5310-01-400-3719	55	10		46	2
5310-01-400-3720	59	6	4730-12-125-0311	45	14
	63	7	4730-12-125-0313	12	28
	64	10	5305-12-125-0321	11	11
5307-01-405-9899	64	14		54	7
5330-01-405-9900	64	19	2590-12-125-0335	22	22
5305-01-405-9901	64	2	5310-12-126-6075	32	6
5305-01-405-9903	59	11	5305-12-126-7053	33	2
	65	1	5305-12-126-7717	33	18
5307-01-405-9905	63	10	5305-12-126-8928	28	37
5305-01-406-0005	58	3	5305-12-126-9990	28	36
5340-01-406-1646	64	7	2920-12-127-5038	69	7
5310-01-415-2649	65	2	5930-12-129-3370	69	12
4720-01-418-6505	32	60	5305-12-129-9435	11	18
2815-01-438-4874	55	7		21	5
4730-01-454-7545	60	1		61	8
4730-01-454-7560	63	4	5310-12-130-4738	4	3
4730-01-454-7567	56	15		11	24
	63	3		50	4
4730-01-454-7569	63	1	5310-12-131-3382	28	79
4730-01-454-7573	55	15	4730-12-131-3966	48	29

CROSS REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIGURE NO	ITEM NO	STOCK NUMBER	FIGURE NO	ITEM NO
5315-12-131-7424	16	2	5310-12-142-0644	11	6
5306-12-133-8568	66	15		24	2
5340-12-134-8752	2	4		28	64
5310-12-136-2611	11	20		28	76
	28	88		35	2
	48	33		38	14
	49	25		39	1
	70	6		68	4
5340-12-138-4525	7	1	5310-12-142-0645	8	2
5120-12-140-9246	22	37		10	14
5310-12-140-9515	2	11		11	19
	11	16		21	7
5305-12-141-3933	24	19		22	56
5305-12-141-6587	66	9		27	6
5305-12-141-6606	32	4		28	98
	39	28		32	10
5305-12-141-9810	2	1		38	8
	13	13		57	25
	22	45		66	2
5305-12-141-9814	22	27	5305-12-142-0989	22	54
5305-12-141-9822	22	8	5340-12-142-1293	6	11
	22	43	5305-12-142-2957	9	4
5305-12-141-9828	22	33		19	5
	27	31	5305-12-142-2962	28	49
	32	14	5310-12-142-3025	17	9
	68	5	5310-12-142-5854	39	19
5305-12-141-9848	34	2	5305-12-142-5912	48	19
5305-12-141-9870	27	5	5305-12-142-5914	18	15
5305-12-141-9881	6	4	5310-12-142-5949	24	21
5305-12-141-9888	18	4	5310-12-142-8158	28	44
	28	1	5340-12-142-8193	4	5
	49	11	5305-12-142-8224	28	65
5305-12-141-9893	53	5	5305-12-142-8328	49	5
5305-12-141-9899	54	11	5305-12-142-8456	35	10
5305-12-141-9958	40	5	5340-12-142-8479	9	1
	42	14		13	34
	50	3		22	14
5305-12-141-9959	19	10	4730-12-142-9165	17	7
5305-12-142-0004	46	12	5305-12-143-0017	4	4
5305-12-142-0051	1	18		11	23
5305-12-142-0097	69	4	5305-12-143-0028	27	26
5310-12-142-0481	4	8	5305-12-143-7855	6	18
	18	5	5306-12-143-8587	28	15
	27	15	5305-12-144-4026	27	11
	28	2	5305-12-144-4699	32	39
	32	38		70	4
	39	22	5310-12-144-5088	28	47
	48	12		28	60
	49	12		28	95
	53	6		28	110
	57	27	5310-12-145-1847	48	24
5310-12-142-0640	7	24	5310-12-145-2077	12	22
	49	9		14	21

CROSS REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIGURE NO	ITEM NO	STOCK NUMBER	FIGURE NO	ITEM NO
5310-12-145-8126	7	11	5330-12-156-4526	28	30
5310-12-145-9176	20	3	5325-12-156-4712	51	1
	21	10	5330-12-156-4820	55	2
3120-12-146-1743	8	26	5305-12-156-4858	22	4
5305-12-146-2633	11	3		27	12
	23	6	5305-12-156-4860	38	12
5310-12-147-2103	2	7		61	7
5305-12-148-8185	12	2		77	12
4730-12-148-9153	38	3	5305-12-156-4862	11	7
4730-12-148-9481	35	33		38	15
5310-12-149-4352	13	2		49	17
	41	2		68	3
	42	10	5305-12-156-4863	22	55
5310-12-149-4353	21	7		28	61
	61	2		28	100
	64	3		45	25
3120-12-149-8711	8	15	5305-12-156-4868	18	7
4330-12-150-5355	56	10		19	11
5310-12-151-4078	14	14		50	13
5310-12-151-4235	70	3		77	2
5310-12-151-4627	9	3	5305-12-156-4876	45	2
	27	8	5305-12-156-4881	42	13
5310-12-151-4842	23	10	5305-12-156-4898	10	15
	69	3	5310-12-156-4899	7	7
5310-12-151-4843	12	15		8	24
5325-12-151-5610	5	14		10	17
3110-12-152-1044	45	16	5305-12-156-4900	48	13
5310-12-152-2034	23	15	5310-12-156-4905	27	33
5310-12-152-2097	23	26	5310-12-156-4912	24	14
5315-12-152-2484	1	14		26	2
5310-12-152-5467	28	93		32	15
5325-12-152-5813	13	39		68	6
5305-12-152-6235	33	6	5310-12-156-4922	2	2
5320-12-152-7831	1	3		22	31
5320-12-152-7835	22	11		22	46
	22	41	5305-12-156-4949	70	9
3120-12-152-8613	7	22	5305-12-156-4962	22	6
	54	5		43	1
5310-12-154-1380	6	10	5310-12-156-4984	49	10
	22	53	5310-12-156-4990	22	20
5330-12-154-3963	28	80		24	13
5305-12-155-6878	28	43		26	1
	28	89		68	10
	50	8	5310-12-156-4991	23	9
5305-12-156-0700	28	68		24	1
	28	103		34	9
3120-12-156-2257	8	10		35	1
3110-12-156-3504	6	3		36	10
5310-12-156-4418	77	1		39	2
5365-12-156-4438	8	29		39	29
5365-12-156-4448	7	17		68	13
5330-12-156-4522	32	20	5310-12-156-4996	27	16
	56	22		39	23

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	54	9	5305-12-176-0911	22	17
5310-12-156-5471	54	8	5325-12-176-1058	51	23
	58	2	5305-12-178-4642	33	7
3110-12-157-6727	7	18	5315-12-178-5636	2	8
5360-12-157-6735	8	14	5365-12-178-6535	28	29
5360-12-157-6736	8	18	4730-12-178-7150	44	11
5305-12-159-1330	24	7	4010-12-178-9346	19	14
5310-12-159-3204	23	16		22	50
5310-12-159-4324	12	21		50	12
	14	20		68	14
5935-12-159-5248	23	24		77	6
5305-12-162-6704	11	13	4010-12-179-1461	13	16
5305-12-162-6708	23	14	5305-12-179-7349	12	20
5305-12-163-1351	23	12		14	17
5305-12-163-1371	7	3	2940-12-180-4315	61	12
5310-12-163-6759	13	7	5315-12-180-4464	10	7
	13	22	5310-12-180-5961	40	4
	13	28		42	12
2910-12-164-4947	56	9	5305-12-182-8806	7	27
5305-12-165-0426	23	11	4730-12-182-9102	17	4
5310-12-165-0656	6	15	5305-12-183-3411	28	82
5305-12-165-0743	8	1	5330-12-184-0390	17	19
	27	24		33	29
	70	8		35	9
5305-12-165-7469	45	10	5305-12-184-2237	12	24
5310-12-166-6738	28	26		14	1
5310-12-166-7736	19	9	5310-12-184-8509	22	34
5305-12-166-8756	48	4		23	8
5310-12-167-0194	7	16	5305-12-185-3921	28	74
5305-12-167-5376	14	13		28	86
	41	1	4730-12-185-5224	38	2
	42	11	5330-12-186-8899	33	22
5305-12-167-5388	28	25	5305-12-187-3449	28	92
5310-12-167-7145	66	5	5305-12-188-3729	24	10
5310-12-170-1309	28	75	4730-12-188-4780	39	10
5305-12-170-6506	22	15	4730-12-188-4804	39	17
5305-12-171-8798	30	42	5325-12-189-6025	53	2
	31	5	5310-12-189-7275	22	2
	39	24		44	2
5310-12-173-3119	7	26	5330-12-190-9011	61	10
5310-12-174-2405	27	30	5305-12-192-5712	7	4
5315-12-174-3608	77	7	5325-12-193-7215	6	2
5310-12-175-0041	18	16	4730-12-193-7698	32	25
	22	16		32	43
5310-12-175-0141	19	6	5310-12-193-8599	5	2
	45	24	5310-12-194-3021	2	9
	46	5		47	2
5310-12-175-0502	28	58	5325-12-196-1418	6	1
5310-12-175-8208	28	73		10	2
	28	85	5305-12-196-4116	39	32
	34	3	5320-12-197-5368	8	9
	36	6	6140-12-199-0973	66	7
5310-12-175-8245	5	12	5305-12-199-2021	24	9

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5315-12-199-2968	10	16	5330-12-337-6421	64	17
3120-12-199-6770	8	23	4730-12-337-7116	64	20
4730-12-300-5234	32	21	2910-12-337-7727	64	16
5310-12-300-8139	27	7	4730-12-337-8644	20	6
	32	11		32	30
5310-12-300-8140	7	8		32	50
5310-12-300-8145	5	3		35	15
5310-12-300-8148	22	38		39	13
5365-12-301-8555	32	26		42	22
5325-12-303-8988	22	44		49	3
5330-12-305-2052	12	10		51	4
	14	12		53	9
5310-12-305-3906	13	12		57	9
	27	34	3020-12-337-9042	28	108
5310-12-306-1456	6	17	5340-12-338-3975	22	10
	21	6		22	40
	22	7	5310-12-338-4814	51	20
	54	2	2990-12-338-8688	62	2
5305-12-307-0092	8	30	5305-12-340-0619	28	99
4730-12-307-3729	64	8	4320-12-340-5774	39	18
5935-12-310-3836	24	6	3815-12-340-8820	28	97
5305-12-310-5959	7	12	5310-12-342-6136	70	7
5305-12-310-8740	13	36	5330-12-343-2866	56	8
	41	7	5310-12-344-2690	13	5
5305-12-311-5295	28	56		13	24
	28	102		13	30
	28	107	5315-12-345-2168	8	13
5340-12-311-7250	22	9	5315-12-345-6419	28	14
	22	42	5315-12-345-7226	8	25
5365-12-313-6741	18	9	4720-12-346-2689	55	14
5935-12-317-2495	51	17	3120-12-346-3316	19	2
5320-12-317-7651	1	8		21	3
4730-12-318-4400	56	23	2940-12-346-3636	61	11
5305-12-318-4623	23	27	5315-12-346-8378	13	1
5310-12-319-2300	22	1	5315-12-346-8386	10	8
4730-12-321-4687	28	16	5315-12-346-8414	47	1
5320-12-324-5148	1	6	4820-12-347-4144	28	31
4730-12-325-1269	32	22	5340-12-347-7096	28	106
5310-12-326-0884	28	28	4730-12-347-7417	28	21
4730-12-326-5411	28	18	5310-12-348-5792	32	16
5310-12-327-8286	22	30	5305-12-351-3186	22	26
	22	47	4730-12-352-4362	38	10
3040-12-328-1147	28	105	5340-12-352-8808	77	11
4730-12-328-3597	28	19	4730-12-353-9982	32	23
5310-12-328-3687	7	25	5365-12-356-2200	13	15
5330-12-330-1127	32	29		18	11
5331-12-330-3443	65	4		22	49
2815-12-330-5422	65	3		50	15
5930-12-331-9999	68	2	2910-12-356-4342	63	8
5930-12-333-6869	68	1	2910-12-356-4469	64	15
4720-12-335-2224	64	1	5305-12-357-4733	26	4
4720-12-336-5306	27	21	5325-12-357-6557	27	27
	44	9	3110-12-357-6559	45	17

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4730-12-357-6687	61	13	5340-12-357-7994	18	12
3950-12-357-7666	18	6	5340-12-357-7995	49	14
3990-12-357-7667	21	2	5340-12-357-7997	32	2
5420-12-357-7670	50	1	3040-12-357-8270	12	16
5420-12-357-7672	3	1	3120-12-357-8271	12	25
5420-12-357-7673	11	4	3040-12-357-8272	18	14
5420-12-357-7674	11	1	9520-12-357-8273	11	15
5420-12-357-7675	3	2	2530-12-357-8430	6	19
5420-12-357-7676	1	1	2510-12-357-8431	70	2
4320-12-357-7774	42	9	5340-12-357-8432	13	18
5315-12-357-7775	6	16		14	5
5315-12-357-7776	51	2		18	13
5315-12-357-7777	51	9		19	15
5306-12-357-7778	50	6		22	51
5315-12-357-7779	53	1		77	3
5310-12-357-7780	49	13	2540-12-357-8434	42	1
4320-12-357-7781	57	2	2540-12-357-8435	40	3
5310-12-357-7784	32	3	2815-12-357-8436	70	1
5310-12-357-7785	32	1	3040-12-357-8530	12	26
5315-12-357-7869	11	26	5310-12-357-8696	77	13
4010-12-357-7870	2	5	5310-12-357-8697	41	6
5315-12-357-7871	2	3		42	6
5315-12-357-7872	11	17	5310-12-357-8698	54	3
3040-12-357-7873	7	13	5310-12-357-8700	43	2
5315-12-357-7874	7	9	3990-12-357-8701	45	1
5315-12-357-7875	7	19	5310-12-357-8702	45	3
5315-12-357-7877	21	12	5365-12-357-8702	45	20
3040-12-357-7879	12	5	3990-12-357-8703	46	1
	14	3	5420-12-357-8792	8	3
3040-12-357-7880	12	5	2510-12-357-8793	21	1
	14	3	5331-12-357-8795	41	4
3120-12-357-7881	7	14		41	8
3120-12-357-7882	7	10	3120-12-357-8900	77	14
3040-12-357-7883	20	4	3120-12-357-8901	50	2
3110-12-357-7884	45	11	3010-12-357-8902	42	2
	46	3	3120-12-357-8903	52	2
3120-12-357-7885	45	13	3020-12-357-9013	41	5
3040-12-357-7974	7	15		42	7
3040-12-357-7975	12	4		43	3
3040-12-357-7976	13	19	3040-12-357-9065	77	9
3040-12-357-7977	13	32	3040-12-357-9066	52	1
3040-12-357-7978	13	10	3040-12-357-9067	21	4
3110-12-357-7979	12	1	3040-12-357-9068	45	15
3120-12-357-7980	13	9	5360-12-357-9321	11	25
5310-12-357-7981	13	11		21	13
5315-12-357-7982	18	10	5365-12-357-9322	7	5
5340-12-357-7987	54	1	2510-12-357-9323	77	10
5340-12-357-7988	4	2	5365-12-357-9324	45	23
	11	22	5365-12-357-9325	45	21
	50	5	5365-12-357-9328	54	4
4730-12-357-7989	48	2	5365-12-357-9329	43	5
5340-12-357-7991	14	15	5365-12-357-9330	45	18
5340-12-357-7993	14	15	5365-12-357-9331	19	13

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	68	15	5360-12-359-3445	10	5
	77	5	5340-12-359-3446	10	19
2510-12-357-9382	21	1	5340-12-359-3447	10	20
5340-12-357-9703	14	2	3010-12-359-3448	8	5
5315-12-357-9772	2	6	5340-12-359-3449	8	16
5340-12-357-9773	77	4	5340-12-359-3450	8	17
5315-12-357-9774	46	7	5340-12-359-3451	8	27
5315-12-357-9775	47	5	5360-12-359-3452	8	12
5315-12-357-9776	45	22	5360-12-359-3453	8	19
5315-12-357-9778	20	2	2530-12-359-3454	12	27
	21	9		14	19
5340-12-358-0087	7	6	2540-12-359-3455	22	5
5340-12-358-0088	4	1	5340-12-359-3456	14	18
5340-12-358-0089	9	5	5340-12-359-3457	12	19
5340-12-358-0090	7	23		14	16
5340-12-358-0091	9	2	5340-12-359-3458	22	23
5340-12-358-0095	12	17	5340-12-359-3459	22	28
5340-12-358-0096	13	17	5310-12-359-3462	49	18
5340-12-358-0097	13	14	4820-12-359-3639	39	38
5340-12-358-0098	13	26	4720-12-359-3737	17	17
5340-12-358-0099	13	20		20	7
5340-12-358-0100	13	3		32	37
5340-12-358-0101	19	12		35	31
5340-12-358-0102	18	12		36	11
5340-12-358-0185	61	6		40	1
5340-12-358-0308	77	15		49	8
5360-12-358-0461	7	20		51	3
5340-12-358-0542	54	6		53	4
5340-12-358-0544	45	19		57	26
5340-12-358-0587	47	4	4330-12-359-3835	38	19
5342-12-358-4225	70	5	5315-12-359-4136	10	1
4720-12-358-4702	64	9	5315-12-359-4138	22	13
4720-12-358-4703	64	21	5340-12-359-4324	66	3
5930-12-358-9809	26	3	5365-12-359-4502	49	19
3120-12-359-1900	13	8	5365-12-359-4503	66	4
	13	21	5365-12-359-4504	66	6
	13	27	6150-12-359-5755	66	11
3120-12-359-1901	13	4		68	11
	13	25	6150-12-359-5756	66	17
	13	31	6150-12-359-5757	66	13
3120-12-359-2738	10	4	6150-12-359-5758	68	8
5365-12-359-2833	10	3	6150-12-359-5759	68	12
5365-12-359-2834	8	11	6150-12-359-5760	68	9
5310-12-359-2880	16	11	5365-12-359-9442	55	12
5340-12-359-2943	10	20	5365-12-359-9443	55	13
5340-12-359-2944	22	19	4730-12-360-6481	48	1
5340-12-359-2945	22	24	9905-12-361-6322	1	20
5340-12-359-2946	22	12	5310-12-361-6535	1	17
5340-12-359-2947	22	21	5310-12-362-1850	28	27
5340-12-359-2948	22	18	4730-12-362-2099	28	41
3040-12-359-3279	10	6	3815-12-362-2166	28	48
3040-12-359-3280	8	6		28	55

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3950-12-362-3327	28	50	4720-14-500-8133	56	16
5305-12-362-3400	28	42	2910-14-525-2587	55	5
4730-12-362-3983	28	40	5315-14-529-0403	8	20
4730-12-362-3984	28	38	5330-15-119-3769	23	25
2540-12-362-4090	28	24		24	5
4820-12-362-4403	28	87	5331-15-120-7343	33	3
5331-12-362-5172	28	34	6605-21-905-4042	1	16
5331-12-362-5173	28	32	5305-33-003-5359	36	5
2940-12-362-6657	61	9	4730-33-107-9373	32	28
5325-12-362-7788	10	10	5305-99-147-3536	28	52
4320-12-362-7906	28	23	2910-99-203-2479	56	3
9905-12-362-7907	28	12			
6670-12-362-8036	28	4			
4010-12-362-8037	29	3			
9905-12-362-8038	28	13			
4020-12-362-8039	28	84			
3950-12-362-8040	28	53			
4810-12-362-8041	28	35			
4810-12-362-8042	28	33			
5325-12-362-8047	49	21			
5325-12-362-8049	20	1			
	21	11			
5340-12-362-8341	28	5			
5340-12-362-8342	28	9			
5340-12-362-8343	28	3			
5340-12-362-8345	28	51			
4710-12-362-8346	28	17			
4710-12-362-8347	28	39			
5365-12-362-8348	28	67			
5340-12-362-8349	28	66			
5365-12-362-8350	28	69			
5340-12-362-8351	28	72			
5340-12-362-8352	28	62			
5930-12-362-8716	28	45			
5315-12-362-9027	10	9			
2590-12-363-0108	28	91			
2590-12-363-0109	28	78			
2590-12-363-0110	28	94			
2590-12-363-0111	28	83			
6150-12-363-0347	28	6			
6150-12-363-0348	28	71			
9905-12-363-0785	28	7			
5935-12-363-1586	28	81			
4730-12-363-1587	28	20			
4730-12-363-1588	28	22			
3120-12-363-2706	28	10			
3950-12-363-5059	28	11			
4730-12-364-2202	34	5			
4730-12-364-2203	36	4			
4730-14-413-4642	12	30			
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000094003238	10	16	118009	32	36
001476003007	1	14	118470	27	20
0015240000	28	42	122844	43	6
0018390000	28	14	1236753EE8928-80	22	29
0020500001	28	19	124485	47	3
00329102	56	9	12547	28	106
0042600001	28	20	127238	57	22
0049550001	28	40	1278657	38	19
0077280000	28	27	130036	8	4
0101400001	28	22	130037	2	6
0107950001	28	38	140R20X2.50	57	13
01129000	62	2	14682	68	2
01139500	62	1	168112501	69	7
0117070000	28	32	16952	28	80
01223200	63	4	1985406	33	30
01240910	64	5	2037	33	3
01241010	64	6	2221012008	28	96
0127230000	28	31	2221023011	28	94
01285500	62	3	2221454001	28	99
01285600	61	4	222423-4000	28	97
01353300	55	8	2307024000	28	45
	63	5	2308001500	28	78
01601300	55	5	2313831121	61	10
0171460033003	51	16	2320163000	28	83
03071200	59	9	2321234003	28	72
03150202	56	8	2323921000	28	109
03150600	56	11	2323951000	28	5
0317-4008	1	6	2323963000	28	9
0317-4016	1	3	2323984000	28	3
0317-5010	22	41	23305-311500-02-0	8	18
03174700	64	4	23305-311500-12-0	8	14
03493200	55	14	25X28X15B09	28	10
03780710	64	9	290025	68	1
03783800	65	3	301RC006194	34	1
03792400	64	13	301RC008273	33	31
03902000	64	1	31 020 12 961	61	11
03962100	56	16	31 020 62 191	61	9
03968500	59	10	336242	32	16
04009600	1	20	3510.503.101	28	4
04025800	64	17	3900027202	61	14
04035700	64	12	3902067900	61	12
04118501	55	6	40028400	62	7
04118601	55	6	40032700	56	3
04132400	55	12	40043800	56	10
04132500	55	13	40092600	55	15
04187500	64	21	41320050125	22	44
0432291593	64	16	450977	26	6
05034900	60	1	4536226-786	39	2
05045510	67	3	5.00.100.139	24	17
0517-4012	1	8	500-627-00	56	12
06112712265	13	5	50000900	56	13
	13	24		63	2
	13	30	50001000	55	4
08 1 90660 23	66	7		63	13
1-1-80-652-002	51	17	50001100	63	6
1.30243.501/0300	24	18	50006100	56	14
10.047004	22	37	50006200	55	9
100635	24	16		63	12
10501816	48	14	50015700	56	15
115669	45	7		63	3
11682345	68	7	50038400	64	14

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50093400	58	3	862113701	56	19
50095100	55	11	862114303	70	2
	59	7	862116001	77	14
50098300	63	10	862118101	77	13
50098500	64	2	862118502	55	3
50148000	59	6	862300101	40	3
	63	7	862300102	42	1
	64	10	862300201	42	2
50148100	59	4	862318101	41	6
	62	6		42	6
50162900	65	2	862320401	41	5
50175900	59	2		42	7
	61	5	862320406	43	3
50177500	59	11	862323901	43	4
	65	1	862328104	43	2
50183100	59	1	862328105	43	5
	61	1	862901901	12	4
50195100	67	2	862901902	13	19
50208500	59	5	862901903	13	32
	64	11	862901904	13	10
50290200	65	4	862904302	12	17
50291500	55	7	862904304	12	18
50302800	60	2	862904305	14	15
50309400	67	1	862904306	14	15
50311700	63	1	862904307	14	18
50312200	63	11	862904308	14	18
50312300	63	9	862904309	6	8
50312400	63	9	862904310	6	7
50312500	63	9	862905001	6	16
50313000	64	18	862905004	13	17
50313100	64	19	862905005	13	14
50314100	64	7	862905401	12	26
50328300	67	4	862907701	6	12
50333400	64	20	862908901	13	26
50335300	55	10	862908902	13	29
50364400	58	1	862908903	13	20
50366500	59	8	862908904	13	23
50373300	59	3	862908905	13	3
50493200	63	8	862908906	13	6
50493300	64	15	862910303	6	14
5305-005977	36	5	862910501	6	19
6-107-0751	22	33	862910502	15	1
6020150	22	22	862913401	13	18
669300015	56	7		14	5
701718701	13	15		18	13
	18	11		19	15
	22	49		22	51
	50	15		77	3
75/60X0,2,DIN988,A3C	51	10	862914003	12	19
75/60X1,DIN988,A3C	51	10		14	16
75/60X2,DIN988,A3C	51	10	862914005	12	1
7533.00.10	27	29	862914006	14	2
828030303	64	8	862914009	12	23
862100101	70	1	862914601	12	16
862103601	77	10	862915301	6	13
862104301	61	6	862916001	12	25
862105001	77	4	862916002	12	3
862107502	56	1	862916003	13	9
862108901	77	15	862918101	13	11
862110701	57	21	862918103	6	5
862111901	77	9	863804301	27	4

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863805001	27	14	864005554	30	23
863805002	27	25	864005555	33	37
863810101	18	6	864005556	33	47
863814301	27	32	864005558	33	46
863814302	27	13	864005559	30	22
863815002	27	28		35	19
864000502	49	16	864005560	30	18
864004201	32	12	864005561	33	35
864004202	32	19	864005562	33	48
864004301	49	14	864005563	30	19
864005001	19	12	864005564	30	20
864005002	18	12	864005567	42	19
864005003	18	12	864005568	42	18
864005501	48	30	864005569	30	26
864005502	48	27	864005570	34	7
864005503	48	26	864005573	33	49
864005504	48	31	864005574	35	18
864005505	30	37	864005576	35	30
	35	14	864005577	42	23
864005506	30	36	864005579	35	22
864005507	33	38	864005580	49	6
864005508	30	40	864005584	34	10
864005509	30	41	864005586	35	35
864005510	30	11	864005590	36	18
864005511	30	1	864005593	12	13
864005512	14	7	864005595	30	29
864005513	30	6	864005597	30	30
864005514	30	7	864005598	30	33
864005515	30	5	864005599	14	9
864005516	30	4		39	16
864005517	33	33	864005601	39	7
864005521	30	38	864005602	39	11
864005522	30	39	864005603	39	35
864005523	30	2	864005604	39	34
864005524	30	3	864005605	39	37
864005525	14	8	864005606	39	36
864005526	14	8	864005607	39	27
864005527	33	40	864005608	39	26
864005528	33	44	864005609	32	52
864005529	36	21		57	14
864005530	36	19	864005610	57	6
864005531	33	35	864005612	33	26
864005533	36	20	864005613	39	25
864005534	35	12	864005618	32	51
864005535	30	8	864005620	36	17
864005536	36	16	864005621	51	13
864005537	33	39	864005626	39	6
	36	15	864005628	39	20
864005538	14	7	864005635	32	34
864005541	30	16		38	20
864005542	30	17	864005636	31	6
864005545	34	4	864005637	31	9
	35	27	864005638	31	8
864005546	33	43	864005639	31	7
864005547	30	28	864005640	30	12
864005548	30	27	864005641	39	21
864005549	33	45	864005645	33	41
864005550	30	25	864005649	38	18
864005551	30	24	864005653	32	49
864005552	30	21		33	51

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864005654	32	48	865300103	21	1
	33	32	865304322	66	8
864005661	12	6	865305401	51	21
	14	4	865306601	21	2
864005666	44	5	865306604	19	1
864005676	38	23	865308501	13	33
864005678	32	42	865308901	51	18
864005679	32	40	865308902	51	19
864005680	32	41	865340355	38	13
864005681	32	47	865340376	19	8
864005682	27	22	865340380	13	38
864005683	28	112	865340381	13	38
864005689	32	31	865341801	21	12
864005694	33	52	865343702	13	37
864005695	30	34	865343703	13	35
864005696	30	35	865344303	21	8
864005697	12	11	865344601	21	4
	30	31	865344602	19	4
	36	1	865345001	20	2
864005699	12	12		21	9
864005701	12	11	865345012	51	22
864005702	12	13	865345402	19	7
864005703	30	32	865346601	19	3
	36	2	865348201	42	15
864005704	36	7	866401901	52	1
864005705	33	34	866401902	52	3
864005710	38	24	866404301	53	7
864005711	30	9	866404501	45	1
864005712	35	29	866404502	45	12
864005713	33	24	866405001	46	7
864005715	33	50	866405002	45	22
864005716	35	34	866405003	50	9
864005718	34	8	866405004	50	9
864005719	35	26	866405101	46	1
864005721	30	15	866405102	46	1
864005722	35	28	866406101	50	1
864005723	35	11	866406105	54	1
864005724	35	4	866406701	54	10
864005729	35	7	866406702	54	10
864005731	35	16	866407701	48	2
864005732	49	4	866410325	49	19
864005733	36	24	866410327	50	7
864005734	36	25	866410335	46	4
864005735	36	22	866411001	48	23
864005736	32	32	866411905	49	20
864005738	30	14	866414003	45	23
864005739	30	13	866414005	45	9
864005740	30	10	866414305	49	22
864010201	32	5	866414306	49	22
864021001	32	17	866414307	48	34
864063801	18	1	866414601	45	15
864064004	18	2	866414603	47	5
864064005	33	14	866415006	51	2
864065003	18	10	866415007	51	9
864065007	18	18	866415008	50	6
864065901	18	14	866415009	53	1
864068102	49	13	866415010	50	14
864068103	32	3	866415011	49	30
864068104	32	1	866415012	49	23
864068107	18	17	866415013	49	32
865300102	21	1	866415014	49	29

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866415301	45	18	867014004	11	2
866415302	46	11	867014005	7	2
866415303	45	6	867014305	7	23
866415401	48	25	867015001	7	9
866415402	49	31	867015002	7	19
866416002	52	2	867015004	11	17
866416003	50	2	867015005	10	1
866416601	45	19	867015007	10	9
866416602	54	6	867015011	5	16
866416603	47	4	867015509	8	7
866416604	46	10	867015513	10	13
866416605	45	5	867016001	10	4
866418102	45	3	867016306	5	8
866418103	45	20	867016307	5	15
866418105	54	4	867016601	8	11
866418106	54	3	867016602	10	12
866418108	45	21	867017102	7	6
866418109	49	18	867017701	11	15
866418110	45	4	867017711	11	21
	46	9	867018101	10	3
866418501	48	11	867018501	5	10
867000004	1	1	867018901	8	8
867000411	3	2	867018902	10	19
867000413	3	1	867074102	4	6
867000703	8	5	868000401	23	7
867001203	10	6	868001107	66	11
867001204	10	23		68	11
867001902	8	16	868001108	66	17
867001903	8	17	868001109	66	13
867001904	7	21	868001110	68	8
867004501	11	1	868001111	68	12
867004502	11	4	868001112	68	9
867005001	2	3	868001156	27	3
867007101	11	9		28	8
867007603	8	3	868002201	23	1
867007701	10	20	868003601	24	22
867007702	10	20	868007201	69	1
867007703	11	14	868007202	24	15
867008902	8	6	868007203	24	3
867010320	7	5	868007701	24	8
867010336	4	7	868007702	24	8
867011704	5	1	868020302	66	6
867011705	5	7	868024002	23	5
867011802	11	26	868024301	66	4
867011907	8	22	868024302	23	13
867011908	8	27	868094001	24	12
867011909	7	13	868201001	66	3
867011911	7	15	868204301	28	90
867011913	10	22	868235601	26	12
867011914	10	11	868298201	26	10
867011917	5	9	869104304	22	19
867011918	5	13	869104307	22	52
867012207	11	8	869105003	22	48
867012208	11	5	869105004	22	48
867012604	2	5	869107202	22	5
867012605	2	10	869107203	22	32
867013006	10	5	869107208	22	5
867013701	11	12	869107209	22	32
867013804	9	2	869108906	50	10
867013805	9	5	869140315	22	3
867014003	4	1	869141902	22	39

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869144002	22	21	904066004	51	7
869144003	22	18	904066005	51	8
869144305	22	24	905120016	56	6
869144306	22	12	908010616	23	2
869144308	22	28	908044507	69	15
869145007	22	13	908047108	48	18
869270138	1	4	908047156	26	7
869270139	1	2	908047159	69	6
869270140	1	12	908047160	69	8
869270142	1	11	908051019	23	22
869270143	1	7	908067206	69	2
869270144	1	5	908067207	23	21
869270145	1	9	908068725	23	20
869271538	1	10	908068726	23	19
869271539	1	19	908070577	23	3
869271540	1	13	908070585	69	12
869271541	1	15	908071104	26	8
869619201	49	15	908074815	23	4
881 0800	32	21	908083629	69	13
901.39.420	77	7	908083631	24	4
901323013	49	33	908090108	24	11
901323014	49	27	908092706	26	9
901323015	49	27	908097561	23	28
901323016	49	24	908100049	56	2
902137901	56	4	908110112	69	10
902516213	15	7	908110113	69	11
902845207	12	27	908311601	23	17
	14	19	908311602	23	18
902845208	16	6	908532533	39	8
902847301	16	1	908552516	48	22
902848704	16	8	908596501	48	20
902848705	16	9	909128505	48	10
902911019	15	3	9091771002	28	104
902911020	15	4	909193017	19	13
902925009	16	10		22	36
902950831	6	20		68	15
902950832	15	6		77	5
902951105	15	8	909271588	23	23
904005501	17	6		24	20
904010544	42	9	909410171	35	6
904010548	41	3	909410206	33	17
904011099	57	2	909410208	33	5
904034005	33	12	909410210	33	13
904034007	33	4	909410214	33	19
904034008	33	8	909410215	33	16
904034012	33	15	909411230	38	6
904034013	32	11	909411463	39	3
904060538	20	4	909413205	35	3
904060539	51	6	909413206	35	32
904060540	53	3	909413812	33	20
904060541	17	1	909413813	33	1
904060542	12	5	909416537	39	33
	14	3	909417311	32	8
904060543	12	5	909419054	33	10
	14	3	909420127	57	3
904060547	44	1	909420160	32	33
904064001	17	14	909470128	32	13
904065001	17	12	909470358	37	3
904066001	17	2	909472711	37	2
904066002	17	3	909475113	37	1
904066003	17	13	909476541	35	21

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909510281	57	20		50	5
909519107	66	15	909668303	48	3
909520376	16	3	909721918	56	24
909520377	15	2	909722841	32	24
909541023	16	4	909724861	17	17
909541024	57	19		20	7
909551085	15	5		32	37
909560106	54	12		35	31
909560150	7	22		36	11
	54	5		40	1
909560154	48	6		49	8
909562403	8	28		51	3
909562480	7	10		53	4
909562481	7	14		57	26
909562483	19	2	909724863	38	25
	21	3	909724864	38	1
909562605	45	13	909740334	16	5
909571260	8	19	909741302	45	11
909571261	7	20		46	3
909571802	22	25	909741921	46	8
909572023	8	12	909742803	70	5
909573042	11	25	909743201	32	2
	21	13	909770196	32	9
909573044	6	6	909770335	16	7
909590805	5	11	909770950	48	7
909610143	51	11	909770951	48	8
909610388	57	12	909770952	48	5
909610533	51	15	909770953	48	9
909610994	35	20	909771738	26	5
909613082	57	16	909771739	48	17
909614080	57	1	909771753	69	5
909614082	57	18	909771754	69	9
909614083	57	23	909842501	22	23
909617841	51	5	909843094	66	16
909617882	39	5	9190752700	28	105
909618436	57	7	9191664001	28	56
909618463	57	5		28	102
909618470	35	25		28	107
	36	23	921375-4500	28	108
	39	12	9213754513	28	48
909618472	32	35		28	55
909619927	27	18		28	101
909621918	62	5	9219603010	28	91
909623057	30	46	9229983001	29	3
909624026	30	43	9235503000	28	50
	31	4	9235724000	28	70
	32	45	9238623003	28	62
909628503	30	45	9238633005	28	53
909646220	13	4	9240024000	28	51
	13	25	9240374000	28	69
	13	31	9241104000	28	54
909646221	13	8	9241344000	28	59
	13	21	9255244000	28	13
	13	27	9255254000	28	7
909653009	39	9	9260712001	28	23
909660410	29	2	9260763000	28	24
909660412	29	1	9261272100	28	66
909661081	22	35	9261294000	28	67
909665031	51	23	9264534000	28	87
909666707	4	2	9265904000	28	84

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9267401000	28	11	DIN125-B10,5-140HV-A3P	4	8
9269244000	28	41		18	5
9269260000	28	35		27	15
9269274024	28	34		28	2
9270261000	28	33		32	38
9270713000	28	17		39	22
9270723000	28	39		48	12
9270751025	28	6		49	12
9270832000	28	12		53	6
9271284000	28	71		57	27
932026	4	9	DIN125-B10,5-140HV-A4	22	2
9333	62	4		44	2
933459	48	15	DIN125-B13-140HV-A3P	7	7
934401	27	1		8	24
935719	18	3		10	17
936682	17	11	DIN125-B17-140HV-A2	5	2
936736	49	28	DIN125-B17-140HV-A3P	7	24
937090	17	10		49	9
937864	32	7	DIN125-B21-140HV	77	1
938340	17	15	DIN125-B21-140HV-A2	2	11
939232	50	11		11	16
940953	17	16	DIN125-B21-140HV-A3P	27	33
942070	2	8	DIN125-B3,2-140HV	1	17
944659	32	18	DIN125-B36-140HV-A3P	17	9
945313	30	47	DIN125-B4,3-140HV-A3C	48	21
	32	44	DIN125-B5,3-140HV-A3C	24	14
945314	30	44	DIN125-B5,3-140HV-A3P	26	2
	31	3		32	15
955662	69	14		68	6
99402-03-412-34317	39	38	DIN125-B5,3-140HV-A4	18	16
CA121003-3	27	2		22	16
CA3106E14S-6P-B-14-FO	28	81	DIN125-B6,4-140HV-A2	28	73
DEN24017-M8X18-8.8	46	6		28	85
DIN 7603 A M22X1,5	56	5		34	3
DIN EN 24017-M5X10-8.8	55	1		36	6
DIN EN 24017M8X30-A4	56	21	DIN125-B6,4-140HV-A3P	11	6
DIN EN 24017M8X60	56	20		24	2
DIN125-1-B17	5	6		28	64
DIN125-1-B8.4	56	18		28	76
DIN125-A10,5-140HV-A3P	54	8		35	2
	58	2		38	14
DIN125-A13-140HV-A3P	13	2		39	1
	41	2		68	4
	42	10	DIN125-B6,4-140HV-		
DIN125-A17-140HV-A3P	40	4	DACROM500-6MY	27	10
	42	12		42	16
DIN125-A21-140HV-A3P	2	9	DIN125-B8,4-140HV	11	20
	47	2		28	88
DIN125-A4,3-140HV-A3P	2	2		48	33
	22	31		49	25
	22	46		70	6
DIN125-A5,3-140HV-A2	23	16	DIN125-B8,4-140HV-A3C	57	28
DIN125-A5,3-140HV-A3P	27	30	DIN125-B8,4-140HV-A3P	8	2
DIN125-A6,4-140HV-A3P	22	34		10	14
	23	8		11	19
DIN125-A8,4-140HV-A3C	19	6		21	7
	45	24		22	56
	46	5		27	6
DIN125-A8,4-140HV-A3P	21	7		28	98
	61	2		32	10
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DIN125-B8,4-140HV-A4	6	10	DIN471-20X1,2-A4P	51	23
	22	53	DIN471-25X1,2-A3P	27	27
DIN127-A8-FST-A3P	28	44	DIN471-30X1,5	8	29
DIN128-A10-FST-A3P	70	3	DIN471-38X1,75-A3P	12	29
DIN128-A12-FST-A3P	14	14	DIN471-40X1,75-A3P	53	2
DIN128-A14-FST-A3P	12	15	DIN471-50X2-A3P	6	1
DIN128-A4-FST-A3P	23	26		10	2
DIN128-A5-FST-A3P	23	15	DIN471-60X2	51	1
DIN128-A6-A3P	23	10	DIN472-80X2,5-A3P	6	2
DIN128-A6-FST-A3P	69	3	DIN580-M12	28	15
DIN128-A8-FST-A3D	6	17	DIN609-M16X60-8.8	5	4
	21	6	DIN609-M16X80-8.8	5	5
	22	7	DIN625-6010-2RS	6	3
	54	2	DIN6340-17	28	93
DIN128-A8-FST-A3P	9	3	DIN635-20209	45	17
	27	8	DIN6912-M8X20-8.8-A2P	6	15
DIN1440-16-ST-A3P	20	3	DIN6915-M24	51	20
	21	10	DIN6916-13	28	26
DIN1440-18-ST-A3P	7	16	DIN6916-13-A3P	7	26
DIN1440-20-ST-A3P	2	7	DIN6925-M10-8-A2P	22	1
DIN1587-M8-6-B2A	32	6	DIN6925-M12-8-A2P	7	8
DIN2353-CL10-ST	17	4	DIN6925-M16-10-A2P	7	25
DIN2353-CL12B-ST-A3P	48	29	DIN6925-M16-8-A2P	5	3
DIN2353-DL12-1.4571	39	17	DIN6925-M20-8-A2P	13	12
DIN2353-QL8-1.4571	39	10		27	34
DIN3017-B1-63X15-W1-1	61	13	DIN6925-M4-8-A2P	22	30
DIN3017AL10-16W4	32	23		22	47
DIN315-M8-5-C-A2C	66	1	DIN6925-M5-8-A2P	22	38
DIN316-M8X40-ST-B-A2P	22	17	DIN6925-M8	56	17
DIN316M8X50-ST-C-A2C	66	10	DIN6925-M8-8	70	7
DIN3952-L12-1.4571	20	6	DIN6925-M8-8-A2P	27	7
	32	30		32	11
	32	50	DIN71412-AM10X1	45	14
	35	15	DIN71412-AM6	45	8
	39	13		46	2
	42	22	DIN71412-AM8X1	12	28
	49	3	DIN71412-AM8X1-A3P	48	1
	51	4	DIN71802-16-M12-CSN	10	21
	53	9	DIN7337-A5X10-AL-ST-A1P	22	11
	57	9			
DIN439-BM12-04-A2P	13	7	DIN7341-A6H11X18-CUZN	8	9
	13	22	DIN74361-A18-8-A3C	16	11
	13	28	DIN7603-A14X18-CU	32	20
DIN439-BM16-05-A2P	19	9		56	22
DIN439-BM16-06-A2P	19	9	DIN7603-A18X22-CU	28	30
DIN439-BM8-04-A2P	28	47	DIN7603-A22X27-AL	42	4
	28	60	DIN7603-A5X9-CU	55	2
	28	95	DIN7604-A-M22X1,5-A1	43	3
	28	110	DIN7643-10-3-A3P	56	23
DIN439-BM8-A2-70	5	12	DIN7643-10-3-S	32	22
DIN463-17-ST	4	3	DIN7967-M10-A3P	7	11
	11	24	DIN7984-M6X12-8.8-A2C	12	24
	50	4		14	1
DIN471-10X1-A3P	49	21	DIN7984-M8X12-8.8-A2P	12	2
DIN471-10X1-X10CRNI18-8	5	14	DIN7984-M8X16-8.8	45	10
			DIN7985-M4X10-8.8-A2P	23	27
DIN471-12X1-X35CRM017	10	10	DIN7985-M5X8-A2-70-H	23	12
DIN471-15X1-A3P	18	9	DIN7991-M12X60-8.8-A3P	7	4
DIN471-16X1-A3P	20	1	DIN7991-M12X70-8.8-A3P	7	27

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PART NUMBER	FIGURE NO	ITEM NO	PART NUMBER	FIGURE NO	ITEM NO
DIN7991-M5X12-8.8-A2P	12	20		39	28
	14	17	DIN933-M10X20-8.8-A3P	18	4
DIN7991-M5X16	26	11		28	1
DIN7991-M6X16-8.8-A2P	7	3		49	11
DIN7991-M6X50-8.8-A2P	39	32	DIN933-M10X22-8.8	44	3
DIN7991-M8X40-8.8-A2P	13	36	DIN933-M10X22-8.8-A3P	32	39
	41	7		70	4
DIN80705-M16X1,5-14H-A2P	12	22	DIN933-M10X30-10.9-A3P	53	5
	14	21	DIN933-M10X35-8.8-A3P	22	4
	28	82		27	12
DIN84-M3X10-4.8-A2P	28	82	DIN933-M10X50-8.8-A3P	54	11
DIN84-M3X12-5.8-A2P	1	18	DIN933-M12X22-10.9-A3P	27	11
DIN84-M3X18-8.8-A2P	48	4	DIN933-M12X30-8.8-A3C	28	25
DIN84-M4X10-A2-70	24	7	DIN933-M12X30-8.8-A3P	45	2
DIN84-M5X16-5,8-A2P	24	19	DIN933-M12X35-8.8-A3C	14	13
DIN84-M6X10-8.8-A2P	69	4		41	1
DIN84-M6X8-A2-70	28	74		42	11
	28	86	DIN933-M16X30-8.8-A3P	42	13
DIN9021-B8,4-ST-A3C	11	10	DIN933-M16X45-8.8-A3P	40	5
DIN908-M18X1,5-ST-A3P	28	29		42	14
DIN912-M10X50-8.8-A3P	39	19		50	3
DIN912-M10X65-8.8	28	37	DIN933-M16X50-8.8-A3P	19	10
DIN912-M10X70-8.8	28	36	DIN933-M20X55-10.9-A3P	27	26
DIN912-M16X40-12.9	28	92	DIN933-M24X80-8.8-A3P	46	12
DIN912-M5X10-8.8-A2P	48	19	DIN933-M4X10-8.8-A2P	18	7
DIN912-M5X12-8.8-A2P	18	15		19	11
DIN912-M5X12-A2-70	23	14		50	13
DIN912-M5X125-8.8	33	9		77	2
DIN912-M5X40-8.8	33	18	DIN933-M4X12-8.8-A2P	2	1
DIN912-M5X70-8.8-A3P	33	6		13	13
DIN912-M5X80-8.8-A3P	33	7		22	45
DIN912-M6X12-A2-70	23	11	DIN933-M4X30-8.8-A2P	22	27
DIN912-M6X30-8.8	48	77	DIN933-M5X10-8.8-A2P	22	8
DIN912-M6X40-8.8-A2P	24	21		22	43
DIN912-M8X100-8.8	33	2	DIN933-M5X20-8.8-A2P	27	31
DIN912-M8X16-8.8	28	68		32	14
	28	103		68	5
DIN912-M8X20-8.8	28	46	DIN933-M6X10-8.8	28	63
DIN912-M8X25-8.8-A2P	22	54	DIN933-M6X12-8.8-A2P	38	12
DIN912-M8X30-A2-70	11	13		61	7
DIN912-M8X35-8.8-A2P	9	4		77	12
	19	5	DIN933-M6X16-8.8-A2P	11	3
DIN915-M10X30-45H	7	12		23	6
DIN915-M6X8-A2-70	8	30	DIN933-M6X18-8.8-A2P	66	9
DIN931-M10X50-8.8-A3P	48	13	DIN933-M6X20-8.8-A2P	11	7
DIN931-M10X65-8.8	28	65		38	15
DIN931-M16X55-10.9-A3P	4	4		49	17
	11	23		68	3
DIN931-M16X75-8.8-A3P	49	5	DIN933-M6X22-8.8	42	17
DIN931-M6X35-8.8	32	46	DIN933-M6X30-8.8-A2P	34	2
DIN931-M6X35-8.8-A2C	30	42	DIN933-M8X16-8.8	11	18
	31	5		21	5
	39	24		61	8
DIN931-M6X75-8.8-A2P	35	10	DIN933-M8X16-8.8-A2P	28	43
DIN931-M8X35-8.8-A2P	10	15		28	89
DIN931-M8X45-8.8	48	32		50	8
DIN931-M8X45-8.8-A2P	28	49	DIN933-M8X18-8.8-A2P	22	6
DIN931-M8X50-8.8	28	57		43	1
	38	7	DIN933-M8X20-8.8	11	11
DIN931-M8X55-8.8-A2P	70	9		54	7
DIN931-M8X60-8.8-A2P	32	4	DIN933-M8X20-8.8-A2P	22	55

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	28	61		38	9
	28	100	DOZ18L/71	27	17
	45	25	DOZ22L/71	32	55
DIN933-M8X22-8.8-A2P	6	18		33	27
DIN933-M8X25-8.8-A2C	8	1	DSVW10-LM PHR	44	4
	27	24	ED12X1,5X	12	10
	70	8		14	12
DIN933-M8X30-8.8	6	9	ED14X1,5X	17	19
	57	24		33	29
DIN933-M8X35-8.8-A2P	27	5		35	9
DIN933-M8X80-8.8-A2P	6	4	ED16X1,5X	32	29
DIN934-M10-8-A2P	27	16	ED18X1,5	33	22
	39	23	ED8X1X	51	12
	54	9	EVL08L71	12	8
DIN934-M16-8-A2P	49	10		14	6
DIN934-M16X1.5-10-A2P	12	21		39	30
	14	20	EVL12-PL	35	33
DIN934-M3-8	28	79	EVL12L71	39	14
DIN934-M5-8-A2C	24	13		49	7
DIN934-M5-8-A2P	22	20	EVL22-PL	38	2
	26	1	EVL22L71	57	8
	68	10	EVW08L71	12	30
DIN934-M6-8-A2P	23	9		14	10
	24	1		36	9
	34	9		39	31
	35	1	EVW12L71	33	42
	36	10		36	13
	39	29		44	10
	68	13	EVW15L71	33	23
DIN934-M8-8-A2C	49	26		38	11
	66	5	EVW22-PLM	38	3
DIN936-M12-05-A2P	48	24	EWSL 18 L	28	18
DIN94-4X40-ST-A3P	16	2	FC310-06	27	21
DIN963-M5X16-8.8-A2P	22	15		44	9
DIN965-M4X16-8.8-A2P	24	9	FC310-08-12000	32	60
DIN965-M5X16-8.8-A2P	24	10	FC310-12	32	61
DIN980-VM6-8-A2P	28	75	FD45-1040-16	32	57
DIN988-13X19X0,5	28	28	FD45-1041-16	32	56
DIN988-8X14X0,5	28	58	FD45-1168-16-16	32	59
DOZ08L/71	12	7	FD45-1169-16-16	32	58
	35	5	FEDERGA6A3CX	57	11
	36	3	GE 15LM-ED/OMD	32	28
	39	4	GE08ZLMEDA3C	12	9
	51	14		14	11
DOZ10L/71	44	6	GE12-LM14X1	35	17
DOZ12L/71	27	19	GE12-LR1/271X	42	21
	31	2		44	8
	32	27	GE12L	31	1
	33	25	GE12LM14X1,5EDOMDA3C	34	5
	34	6	GE12LM18X1,5EDOMD	36	4
	35	13	GE12LR1/271	27	23
	36	12		38	17
	38	5		40	2
	38	16	GE12LR1/471	49	2
	39	15	GE12ZLM14X1.5EDA	17	18
	42	20	GE12ZLM14X1.5EDA3C	20	5
	44	12		33	28
	48	28		35	8
	49	1		53	8
	57	4	GE12ZLM18X1.5EDA3C	33	21
DOZ15L/71	32	53		36	14

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PART NUMBER	FIGURE NO	ITEM NO	PART NUMBER	FIGURE NO	ITEM NO
GE15-LM-EDOMDVI	32	25	MPS003102K47	25	2
	32	43	MPS003102K50	25	2
GE15-PL/R3/4/71	38	10	MPS003102K51	25	2
GE22LR71	38	4	MPS003102K52	25	2
GE50TGR	17	8	MPS003102K53	25	2
GE6LLM71	28	111	MPS003102K54	25	2
GN615.1-M5-BN	77	11	MPS003102K55	25	2
GN751-14-28-M14-B	10	18		48	16
ISO 4017-M8X30-8.8	28	52	MPS003102K56	25	2
ISO-8741-4X24-A4	8	21	MPS003102K57	25	2
ISO1234-2,5X18-ST-A3P	13	1	MPS003102K60	25	2
ISO1234-3,2X18-ST-A3P	10	8	NG1VS-510	26	3
ISO1234-3,2X20-ST-A3P	8	25	NO PRIMARY REF		
ISO1234-5X36-ST-A3P	47	1	121804464	10	7
ISO4017-M3X8-8.8-A2P	22	26	NUP209AV	45	16
ISO4017-M5X45-8.8-A2P	26	4	OR75X3,5-88NBR/156	41	4
ISO8740-3X18-A1	8	20		41	8
ISO8752-6X28-N-ST	8	13	PAP0406P10	8	23
K9H91791	66	14	PAP0606P10	8	10
K9H91792	66	12	PAP1215P10	8	15
KOR12/10L71	44	7	PAP1815P10	8	26
KOR22/15L71	38	26	PM-112SAS-007-V/1/E	39	18
KR30PP	7	18	RED22/15L-71	32	54
LN9039-02060	2	4	REDSO 8/6 L	28	21
LN9039-04060	7	1	RSWS 8 LR	28	16
LN9039-07120	6	11	SV12L71	38	21
LN9039-07160	9	1	SV15L71	38	22
	13	34	SWVE10-PLM	17	7
	22	14	T12L71	35	24
LN9039-10150	4	5	T12L71X	57	15
LN9499-13240	13	39	V917L01-1Y1AG	22	9
LT1504-C6-10	13	16		22	42
LT1504-C6-12	19	14	V917L11-1-1BP	22	10
	22	50		22	40
	50	12	VG95234B1-18-1SN	23	24
	68	14	VG95234DH18-2	23	25
	77	6		24	5
MODEL 131	1	16	VG95234N1-18-1SN	24	6
MPS003102K20	25	1	VLG02332MPS-NA	24	23
MPS003102K23	25	1	VSTIM14X1,5EDA3C	32	26
MPS003102K24	25	1	XG12-L-A3P	44	11
MPS003102K25	25	1	ZYLS6X22A3CX	57	10
MPS003102K26	25	1	ZYLS6X35A3CX	57	17
MPS003102K27	25	1			
MPS003102K28	25	1			
MPS003102K29	25	1			
MPS003102K30	25	1			
MPS003102K31	25	1			
MPS003102K32	25	1			
MPS003102K33	25	1			
MPS003102K34	25	1			
MPS003102K35	25	1			
MPS003102K36	25	1			
MPS003102K37	25	1			
MPS003102K38	25	1			
MPS003102K39	25	1			
MPS003102K40	25	1			
MPS003102K41	25	1			
MPS003102K42	25	1			
MPS003102K44	25	2			
MPS003102K45	25	2			

SUPPORTING INFORMATION

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

EXPENDABLE AND DURABLE ITEMS LIST

INTRODUCTION

This work package lists expandable and durable items required to operate and maintain the Rapidly Emplaced Bridge (REB). This list is for information 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), or CTA 8-100, Army Medical Department Expendable/Durable Items.

EXPLANATION OF COLUMNS

Column (1) - Item Number. Number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., Use cap and plug set (item 03, WP 0205 00).

Column (2) - Level. This column identifies the lowest level of maintenance that requires the listed item (F = Field/Crew Operator/Mechanic, H = Sustainment).

Column (3) - National Stock Number (NSN). The NSN assigned to the item to be used to requisition it.

Column (4) - Item Name, Description, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). This column provides information necessary to identify the item.

Column (5) - Unit of Measure (U/M). This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Table 1. Expendable and Durable Items List.

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGE, PART NUMBER	(5) U/M
1	F	8040-00-833-9563	ADHESIVE: silicone rubber, Non-Hardening (94833) 52498 1-Kit	KT
2	F	8030-00-155-6444	ANTISEIZE COMPOUND: (15145) NSA16 16-Ounce Can	OZ
3	F	5340-00-450-5718	CAP AND PLUG SET: (19207) 10935405 1 Set	SET
4	F	6850-01-381-4423	CLEANING SOLVENT COMPOUND: SKYSOL 100 (0K209) 5-Gallon Can	GAL.
5	F	7920-00-044-9281	CLOTH: cleaning, general purpose, white (58536) A-A-59323 10-Pound Box	LB
6	F	8030-00-244-1297	CORROSION PREVENTIVE COMPOUND: grade II, soft film (81349) MIL-PRF-16173 1-Gallon Can	GAL.
7	F	7930-00-282-9699	DETERGENT, GENERAL: liquid (81349) MIL-D-16791 1-Gallon Can	GAL.
8	F	9150-01-197-7693	GREASE: automotive and artillery: (81349) MIL-PRF-10924 14-Ounce Cartridge	OZ
9	F	9150-01-197-7690	GREASE: automotive and artillery: (81349) MIL-PRF-10924 1-3/4-Pound Can	LB
10	F	9150-00-234-5197	LUBRICATING OIL, EXPOSED GEAR: CW (81348) VV-L-751 5-Pound Can	LB
11	F	9150-00-188-9862	LUBRICATING OIL, GEAR: OE/HDO 15W40, multi-purpose (81349) MIL-PRF-2104 55-Gallon Drum	GAL.
12	F	9150-00-189-6729	LUBRICATING OIL, GEAR: OE/HDO 30 (81349) M2104-4-30W 55 Gallon Drum	GAL.

Table 1. Expendable and Durable Items List (Contd).

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGE, PART NUMBER	(5) U/M
13	F	9535-00-855-6919	PLATE, METAL (ALUMINUM) (81343) AMS-QQ-A-250/11	IN
14	F	8010-00-281-7399	ALUMINUM OXIDE PRIMER (81349) DOD-P-17545	QT
15	F	8010-01-260-7481	POLYURETHANE COATING, GREEN (81349) MIL-C-46168	QT
17	F	8010-01-260-0913	POLYURETHANE COATING, BLACK (81349) M46168-4-37030-1Q1/2P	QT
18	F	8010-01-260-7482	POLYURETHANE COATING, BROWN (81349) M46168-4-30051-1Q1/2P	QT
19	F	8010-01-306-9681	POLYURETHANE COATING, TAN (81349) M46168-4-33446-1Q1/2P	QT
20	F	8010-01-144-9883	POLYURETHANE COATING, WHITE (81349) M46168-4-37875-1Q1/2P	QT
21	F	8010-01-175-2345	POLYURETHANE COATING, RED (81349) M83286-1-3-11105	QT
22	F	8010-00-181-8287	POLYURETHANE COATING, YELLOW (81349) M83286-1-3-13538	QT
23	F		UNLIKE METAL COMPOUND (660 421) GD677	QT
24	F		NON-SKID SURFACE COMPOUND ARDOPEN - KS55	QT
25	F	9150-01-278-1357	LUBRICATING OIL, GEAR: OE/HDO 5W-30, Multi-purpose (81349) MIL-L-46152 5W-30 1-Quart Plastic Bottle	QT
26	F	9150-01-054-6853	CLEANER, LUBRICANT AND PRESERVATIVE (CLP) (81349) MIL-RRF-63460 1-Pint Bottle	PT

END OF WORK PACKAGE

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SUPPORT INFORMATION

RAPIDLY EMPLACED BRIDGE (REB)

NSN 5420-01-481-3959 P/N 12480471

TOOL IDENTIFICATION LIST

SCOPE

This work package lists all common tools and supplements and special tools/fixtures needed to maintain the Rapidly Emplaced Bridge (REB).

EXPLANATION OF COLUMNS

Column (1) - Item Number. This number is assigned to the entry in the list and is referenced in the initial setup to identify the item (e.g., Forward Repair System (FRS) (Item 2, WP 0207 00)).

Column (2) - Item Name. This column lists the item by noun nomenclature and other descriptive features (e.g., Gauge, depth micrometer).

Column (3) - National Stock Number. This is the National Stock Number (NSN) assigned to the item; use it to requisition the item.

Column (4) - Part Number/Commercial and Government Entity Code (CAGEC). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity) which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items. The manufacturer's Commercial and Government Entity Code (CAGEC) is also included.

Column (5) - Reference. This column identifies the authorizing supply catalog or Repair Parts and Special Tools List (RPSTL) for items listed in this work package.

Table 1. Common Tool Identification List.

(1) ITEM NO.	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER	(4) PART NO./ CAGEC	(5) REFERENCE
1	Common No. 1 – Tool Kit Organizational Maintenance	4910-00-754-0654		SC 4910-95-CL-A74
2	Forward Repair System (FRS)	4940-01-463-7940		

Table 2. Special Tool and Test Equipment Identification List.

(1) ITEM NO.	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER	(4) PART NO./ CAGEC	(5) REFERENCE
1	Insulation Sheet, Electrical	5970-12-360-0817	230595-4000/ D8218	
2	Fixture, Vehicular Maintenance Hydraulic Test Set	4910-01-378-8863	35K912	
3	Sling Endless	3940-01-483-8575	TUFKS 1000 EE X 20 ft ONM47	

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 from where they first appear. Refer to ASME Y14.38 for a complete list of standard military abbreviations.

Bar – pressure	N•m – Newton-meter
BII – Basic Issue Items	NATO – North Atlantic Treaty Organization
CAGEC – Commercial and Government Entity Code	NSN – National Stock Number
CBT – Common Bridge Transporter	ODS – Ozone Depleting Substance
cm – centimeter	oz – Ounces
CPC – Corrosion Prevention and Control	PLS – Palletized Load System
EIC – End Item Code	PMCS – Preventive Maintenance Checks and Services
EIR – Equipment Improvement Recommendation	POL – Army Petroleum, Oil, and Lubricants
EDRS – Electronic Deficiency Reporting System	PQDR – Product Quality Deficiency Report
FCG – Functional Group Code	PSI – Pressure Per Square Inch
FM – Field Maintenance	QDR – Quality Deficiency Report
ft – foot	REB – Rapidly Emplaced Bridge
FRS – Forward Repair System	RMC – Remote Control Unit
GAL. – Gallon	RPSTL – Repair Parts and Special Tools List
HEMTT – Heavy Expanded Mobility Tactical Truck	SMR – Sources, Maintenance, and Recoverability
in. – inch	SPS – Stored Program System
kg – kilogram	TAMMS – The Army Maintenance Management System
Kpa – kilopascals	TM – Technical Manual
lb – pound	TMDE – Test, Measuring, and Diagnostic Equipment
lb-ft – pound-foot	Vdc – Volts Direct Current
LED – Light Emitting Diode	WP – Work Package
LHS – Load Handling System	
LPU – Launch Power Unit	
MAC – Maintenance Allocation Chart	
MLC – Military Load Class	
mm – millimeters	

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PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER TM 5-5420-280-23&P	DATE 31 August 06	TITLE UNIT AND DIRECT SUPPORT MAINTENANCE AND REPAIR PARTS AND SPECIAL TOOLS LIST FOR RAPIDLY EMPLACED BRIDGE (REB)
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ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO.*	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON <i>(Provide exact wording of recommended changes, if possible).</i>
	0020					Illustration needs to show bushing separate from bottom retaining plate (15). Add a step after 15 to remove oil seal from gearbox housing only if a pin wheel drive gear was used on rear of bridge pallet.
	00-3					
	0053 01-2					

SAMPLE

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE, OR TITLE Pat Smith	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION AV272-4162	SIGNATURE <i>Pat Smith</i>
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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
<h1>SAMPLE</h1>								

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PART III - REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE, OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
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By Order of the Secretary of the Army:

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

Official:

A handwritten signature in black ink that reads "Joyce E. Morrow". The signature is written in a cursive, flowing style.

JOYCE E. MORROW
Administrative Assistant to
the Secretary of the Army
0622003

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 256912, requirements for TM 5-5420-280-23&P.

STANDARD AND METRIC CONVERSIONS

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) = $^{\circ}\text{C} \cdot 9 \div 5 + 32$
- Degrees Celsius (C) = $\text{F}^{\circ} - 32 \cdot 5 \div 9$
- 212° Fahrenheit is equivalent to 100° Celsius
- 90° 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	25.4
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	Bar	0.06895
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
Bar	Pounds Per Square Inch	14.503
Kilopascals	Pounds Per Square Inch	0.145
Kilometers Per Liter	Miles Per Gallon	2.354
Kilometers Per Hour	Miles Per Hour	0.621

