

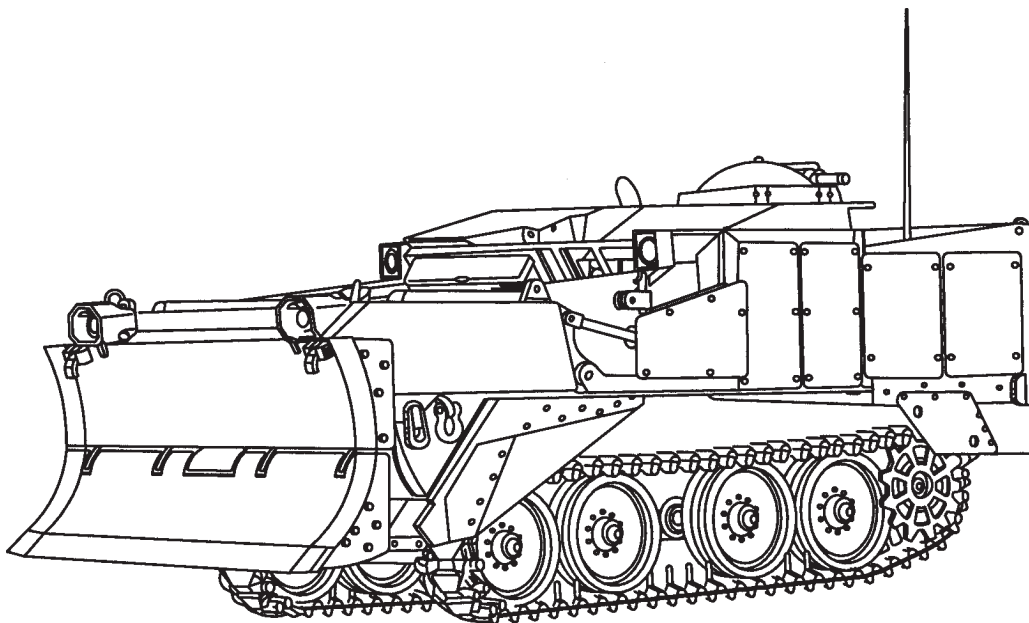
TM 5-2350-377-14&P

TECHNICAL MANUAL

OPERATOR'S, UNIT, DIRECT SUPPORT, AND
GENERAL SUPPORT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)
SUPPORTING THE HYDRAULIC BLADE FOLDER-TRACK TENSIONER
(HBF-TT)
FOR

ARMORED COMBAT EARTHMOVER (ACE), M9

(NSN 2350-00-808-7100) (EIC: ASA)



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

HEADQUARTERS, DEPARTMENT OF THE ARMY

NOVEMBER 2007

WARNING SUMMARY

FOR INFORMATION ON FIRST AID, REFER TO FM 21-11.

WARNING

COMPRESSED AIR

Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.

WARNING

ELECTRICAL SYSTEM

When troubleshooting an electrical malfunction or performing electrical maintenance, **ALWAYS** disconnect intervehicular electrical cable from towing vehicle. Failure to do so may result in injury or death due to electric shock.

WARNING

HANDLING HEAVY COMPONENTS

Lifting devices must have a weight capacity greater than 2,944lb (1,337 kg).

Do not stand or work under apron and dozer assembly unless apron lock pins are installed. Failure to comply may result in severe injury or death to personnel.

WARNING

SOLVENT PF05 HAZARDS

Cleaning solvent (PF05) is combustible. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using cleaning solvent; the flashpoint is 144°F (62°C). Failure to follow this warning may result in injury or death to personnel. A fire extinguisher will be kept nearby when the solvent is used.

If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush them with water and get immediate medical attention.

When PF05 cleaning solvent is used, notify the local medical authority (preventive medicine) and environmental coordinator concerning medical surveillance, respiratory protection, and disposal requirements.

WARNING

Disconnect vehicle power (Battery) after determining the electrical malfunction or trouble shooting to make the repair.

WARNING SUMMARY - continued

WARNING

USING UNAUTHORIZED CLEANING METHODS

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and damage equipment. To prevent this, refer to TM 9-247 for further instructions.

WARNING

Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use only in a well-ventilated area. If adhesive gets in eyes, try to keep eyes open; flush them with water for 15 minutes and get immediate medical attention.

WARNING

When folding dozer blade, work on blade latches from side of vehicle only. Failure to comply may result in serious injury to personnel.

WARNING

Do not unfold blade while driving cross-country. Failure to comply may result in damage to equipment or injury to personnel.

WARNING

Do not work in front or near the blade and apron unless the dozer lockpins are installed. Failure to comply may result in severe injury to personnel or death.

WARNING

Wear face shield or goggles for eye protection when using wire brush. Failure to comply may result in injury to personnel.

WARNING

Block track or roadwheels when parking brake is released, steer unit brake levers are disconnected, or when track is disconnected. Vehicle can roll causing damage to equipment, severe injury, or death to personnel.

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.

WARNING SUMMARY - continued

WARNING

Do not stand or work under apron and dozer assembly unless apron lockpins are installed. Failure to comply may result in severe injury or death to personnel.

WARNING

Do not lift apron and dozer assembly with dozer blade installed unless dozer lockpins are installed. Failure to comply may result in severe injury or death to personnel.

TM 5-2350-377-14&P

LIST OF EFFECTIVE PAGES / WORK PACKAGES

Date of issue for the original manual is:

Original 30 November 2007

**TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 10 AND TOTAL
NUMBER OF WORK PACKAGES IS 57, CONSISTING OF THE FOLLOWING:**

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Warnings	0	WP 0031 00 (2 pgs)	0
A/B blank	0	WP 0032 00 (2 pgs)	0
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HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 November 2007

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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://aeeps.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:TACOM Life Cycle Management Command, ATTN: AMSTA-LC-LMPP/Tech Pubs, Rock Island Arsenal, Rock Island, IL 61299-7630. The e-mail address is ROCK-TACOM-TECH-PUBS@conus.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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HOW TO USE THIS MANUAL

USING THIS MANUAL

When using this manual, read and understand the entire maintenance action before performing the task. Also, read and understand all warnings, cautions, and notes as well as general safety precautions that apply to the task to be performed. The warning summary will inform personnel of hazards associated with the equipment to be worked on. However, the summary is not all inclusive and personnel should be aware at all times of hazardous conditions that may arise.

ACCESSING INFORMATION

Information is accessed by referring to the table of contents, located in the front of this manual, or by looking in the alphabetical index, located in the back of this manual.

To locate information using the table of contents, first scan the chapter titles to determine the general area in which your information will be contained. After locating the proper chapter, look beneath the chapter title to find the desired informational or procedural work package title. To the right of the work package title is a work package sequence number. This work package sequence number will direct you to the proper work package. Work packages are arranged in numerical order in this manual.

To locate information using the alphabetical index, look down the subject column on the left side of the page until you find the desired subject. To the right of the subject is the work package sequence number and page number. Go to the indicated work package and indicated page number to find the desired information.

INITIAL SETUP

Initial setup requirements are located directly above many of the procedures in this manual. The information is given to ensure all materials, expendables, tools, and any other equipment necessary are readily available for use. The initial setup will be accomplished prior to starting the actual steps of each maintenance procedure. There are five basic headings listed under the initial setup:

Tools and Special Tools: This section lists all tools (standard or special) required to perform the task. Tools are identified with an item number and work package number from table 2 of the Maintenance Allocation Chart (MAC).

Materials/Parts: This section lists all of the materials and parts required to perform the task. If the material or part is needed each time the work package is used, then it is listed here. If the part is optional, replaced on a conditional basis, or is only needed for certain specific procedures within the work package, it is not listed.

Personnel Required: This section lists all personnel necessary to perform the task. When a specific MOS or other personnel qualification is required, this MOS or additional requirement is also indicated.

Equipment Condition: This section notes the conditions that must exist before starting the task. The equipment condition will also include any prerequisite maintenance tasks to be performed with reference to the work package number or to the TM number that contains the required maintenance task.

References: This section lists any other publications necessary to complete the task. When there are no references listed, all steps necessary to complete the task are contained within this manual. A listing of reference materials is contained in the Supporting Information chapter at the rear of this manual.

ILLUSTRATIONS

Various visual methods are used to locate and repair components. Locator illustrations in Controls and Indicator tables, Preventive Maintenance Checks and Services (PMCS) tables, exploded views, and cutaway diagrams make the information in the manual easier to understand and follow.

HOW TO USE THIS MANUAL - continued

LOCATING MAJOR COMPONENTS

This work package gives a brief description of the major components, and provides illustrations showing the location of the components. Knowing the major components of the system is the first step to understanding system operation and maintenance.

THEORY OF OPERATION

This work package contains the theory of operation for the system. Theory of operation is provided to familiarize the user system operating principles. Once the operating principles are understood, the user is better equipped to operate, troubleshoot, and maintain the system.

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS

This work package describes all of the operator controls and indicators contained in the system. Use of the operator controls and indicators is also described. Turn to the figure that shows the desired control or indicator. Note the key number corresponding to the control or indicator. Refer to the table below the illustration and find the desired key number in the column on the far left hand side. The center column contains the name of the control or indicator and the right hand column briefly describes the control or indicator's function.

OPERATOR INSTRUCTIONS

Work packages are included in this manual to describe operation under usual conditions as well as operation under unusual conditions. Prior to performing any operating procedure, perform the initial setup by obtaining the expendables, tools, materials, and other items listed prior to starting the task. Always perform the listed steps in the listed order.

TROUBLESHOOTING PROCEDURES

A troubleshooting index work package is contained in this manual to permit easy location of troubleshooting procedures. Full directions for using the troubleshooting index and the accompanying troubleshooting procedures are contained in the troubleshooting index work packages. The troubleshooting procedure work packages immediately follow the troubleshooting index.

MAINTENANCE PROCEDURES

To locate a maintenance procedure, consult the table of contents or the alphabetical index. Each level of maintenance (operator, unit, direct support, and general support) has a chapter dedicated to maintenance procedures for the appropriate level of maintenance. Each maintenance work package contains complete maintenance procedures starting with initial setup and continuing through follow on service as appropriate. Always ensure that all of the initial setup is complete before beginning a maintenance procedure and always ensure that all warnings, cautions, and notes are heeded.

MAINTENANCE ALLOCATION CHART (MAC)

The MAC lists all of the authorized maintenance for the system assigns that maintenance to the appropriate maintenance level (operator, unit, direct support, general support). Use of the MAC is explained fully in the Maintenance Allocation Chart Introduction work package.

HOW TO USE THIS MANUAL - continued

REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

The RPSTL lists all of the repair parts authorized for the system. Illustrations are provided to assist in locating the desired repair parts. Full instructions for use of the RPSTL are contained in the Repair Parts and Special Tools List Introduction work package. Always follow the directions contained in this work package when using the RPSTL.

ALPHABETICAL INDEX

The Alphabetical Index, located in the back of this manual, contains an alphabetical list of all sections of this manual. For example, Location and Description of Major Components is found in section L. The work package sequence number is found on the right side of the title where the Location and Description of Major Components is located. Turn to the work package indicated to find the description and location of each component.

CHAPTER 1

INTRODUCTORY INFORMATION AND THEORY OF OPERATION

GENERAL INFORMATION

SCOPE

This manual describes the operation of and Unit, Direct Support, and General Support maintenance for the M9 Armored Combat Earthmover (ACE) with Hydraulic Blade Folder and Track Tensioner (HBF-TT). The manual also includes the repair parts and special tools for the M9 ACE.

Throughout the manual, the terms "right" and "left" are used to describe views of the vehicle, as viewed from the rear.

MAINTENANCE FORMS, RECORDS, AND REPORTS

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

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRS)

If your M9 ACE 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. Put it on an SF Form 368 (Product Quality Deficiency Report). Mail it to address specified in DA PAM 738-750, Functional Users Manual for the Army Maintenance Management System (TAMMS), or as specified by the acquiring activity. We will send you a reply.

CORROSION PREVENTION AND CONTROL

Corrosion prevention and control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problem with this item be reported so the problem can be corrected and improvements can be made to prevent the problem in future items.

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

If a corrosion problem is identified, it can be reported using an SF Form 368, Product Quality Deficiency Report. The use of key words, such as "corrosion," "rust," "deterioration," and "cracking" will ensure that the information is identified as a CPC problem. The form should be submitted to the address specified in DA PAM 738-750, Functional Users Manual for the Army Maintenance Management System (TAMMS).

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 the Army IETMs is prohibited. A listing of these substances will be provided by the acquiring activity.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

For destruction of Army materiel to prevent enemy use, refer to TM 750-244-6.

SAFETY, CARE, AND HANDLING

For information on general safety precautions and regulations, review the warning summary at the front of this manual that follows the table of contents. Observe all warnings and cautions that appear in the maintenance procedures.

EQUIPMENT DESCRIPTION AND DATA

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

- a. The M9 ACE with HBF-TT is designed to fold the blade and adjust the tracks from the operator's compartment.
- b. The M9 ACE with HBF-TT is equipped with the following:
 - A blade folder system that is operated from the driver's compartment.
 - A track tensioning system that is operated from the driver's compartment.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

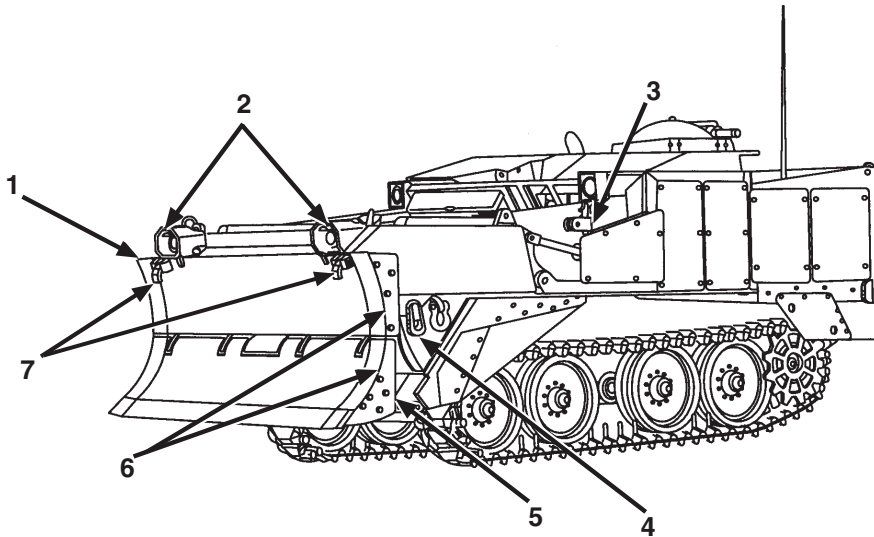


Table 2-1. Major Components.

KEY	COMPONENT	DESCRIPTION
1	Apron and Dozer Assembly	Used for earthmoving operations. Can be raised, or lowered to load or unload material or cargo.
2	Headlights	Provide light for night driving. Include blackout and infrared lights.
3	Upper Apron Lockpins	Lock apron and dozer assembly in raised position as a safety precaution during maintenance.
4	Lower Apron Lockpins	Lock apron and dozer assembly to hull during digging procedures.
5	Dozer Blade Locks	Means of locking dozer blade in DOWN position for digging with reusable pin assembly, modified latch, and steel latch block.
6	Apron and Dozer Extensions	Provide a larger working surface for apron and dozer. May be removed for transporting vehicle.
7	Dozer Blade Latches	Reusable pin assembly locks dozer blade, in folded position during long motor marches and cross-country driving.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - continued

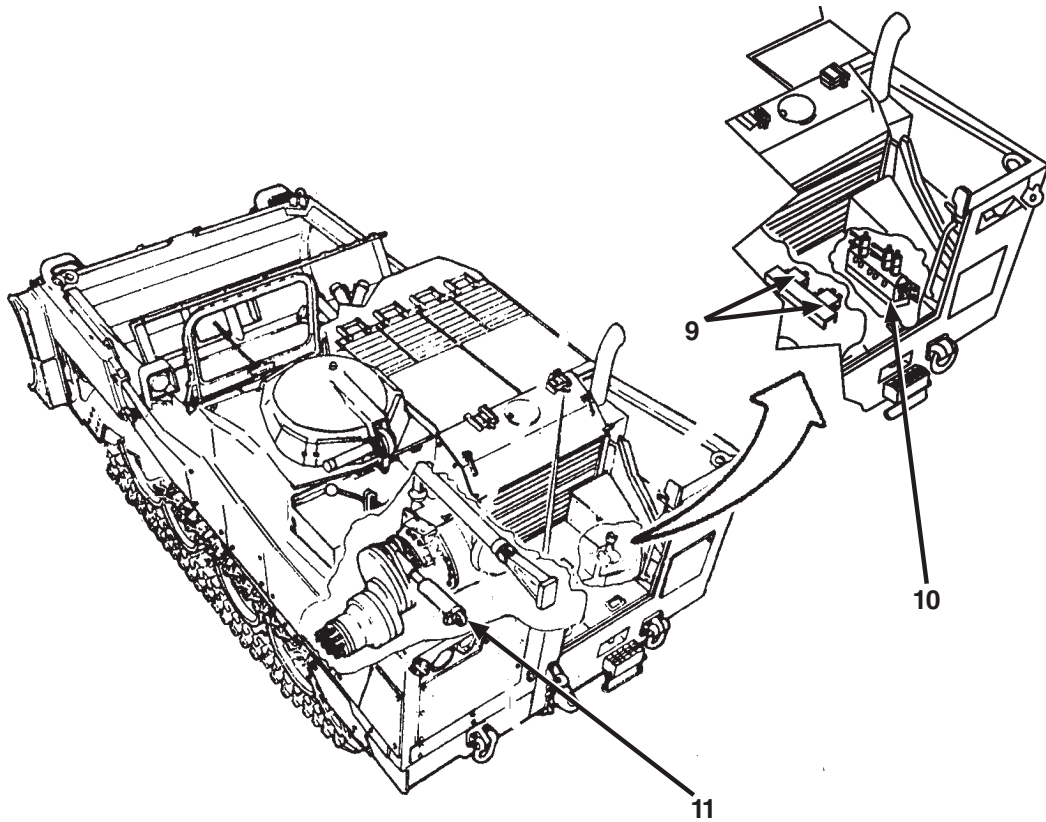


Table 2-1. Major Components - continued.

KEY	COMPONENT	DESCRIPTION
9	Flow and Control Valves	Provides hydraulic fluid for track adjusting and track adjusting cylinders.
10	Track and Blade Manifold	Provides hydraulic adjustment for track adjusting and track adjusting cylinders.
11	Track Adjusting Cylinder	Moves adjusting flange of final drive before and after to adjust track tension (one on each side).

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - continued

M9 ACE Driver's Compartment

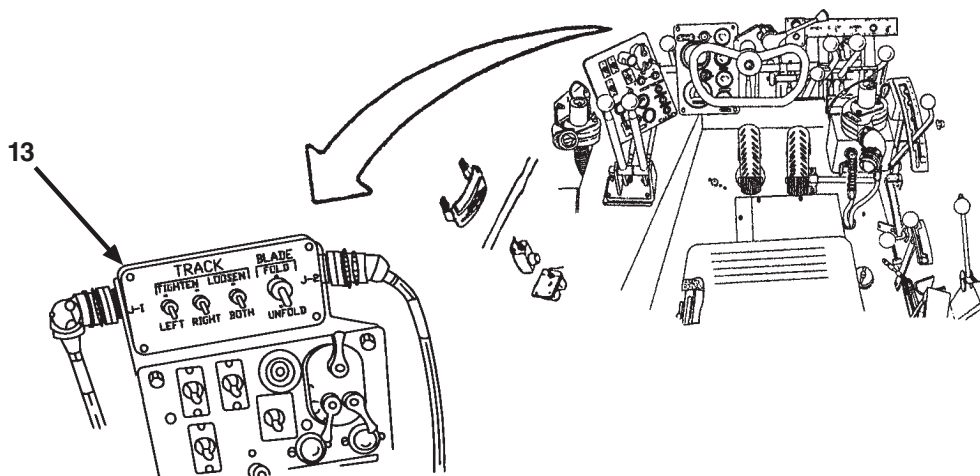


Table 2-1. Major Components - continued.

KEY	COMPONENT	DESCRIPTION
13	Track and Blade Control Panel	Provides capability of adjustment of track tension and raise and lower dozer blade from within the driver's compartment.

LOCATION AND CONTENTS OF DATA PLATES

- a. Refer to TM 5-2350-262-20-1, Data Plates Replacement, for the location and contents of all data plates.
- b. Maintain data plates so that all information remains legible. If any data plate is missing or no longer legible, notify unit maintenance.

EQUIPMENT DATA

M9 ACE with HBF-TT

General

Weight	39,000 lb (17,790 kg)
Weight (gross)	55,000 lb (24,927 kg)
Height	8 ft 9 in. (267 cm)
Length	20 ft 5 in. (622 cm)
Length (dozer folded)	20 ft 3 in. (617 cm)
Width (extensions installed)	10 ft 5 in. (318 cm)
Width (extensions removed)	9 ft 2 in. (279 cm)
Ground Clearance SPRUNG (engine running)	13 in. (33 cm)
Ground Clearance UNSPRUNG	Variable
Ground Pressure	9.5 psi (66 kPa)
Bridge Classification	17 ton (15 t)

Land Performance

Maximum Speed	30 mph (48 km/h)
Cruising Range (secondary roads)	230 mi (370 km)
Grade Ascending Ability - with 18,000 lb (8,174 kg) in bowl	60%
Grade Descending Ability - with 18,000 lb (8,172 kg) in bowl	60%
Gradeability - with 4,000 lb (1,816 kg) in bowl	30%
Gradeability (curb weight)	20%
Trench Width	5 ft 2 in. (157 cm)
Vertical Wall	1 ft 6 in. (46 cm)
Tilt Dozing	5 degrees
Side Slope Limit (curb weight)	20%
Side Slope Limit — with 4,000 lb (1,816 kg) load	30%
Side Slope Limit — with 18,000 lb (8,172 kg) load	40%
Drawbar Pull	31,000 lb (14,074 kg)
Bowl Capacity	8.7 cu yd (67 cu m)
Fording Depth	36 in. (91 cm)
Turning Radius (geared steer mode)	45 ft (14 m)
Turning Radius (clutch brake mode)	Pivots
Angle of Departure (maximum) SPRUNG	27° grade
Angle of Approach (maximum)	29° grade

Capacities

Fuel Tank	134 gal. (507 L)
Fuel Type	Diesel oil, 40 cetane, VV-F-800
Regular Grade (DF-2)	Above +10°F (-12°C)
Winter Grade (DF-1)	Below +10°F (-12°C) to
.....	above -20°F (-29°C)
Arctic Grade (DF-A)	Below -20°F (-29°C)
Aviation Turbine (JP8)	Above -60°F (-5a°C)
Engine Oil, Refill	30 qt w/o filters (28 L)
.....	34 qt w/filters (32 L)
Engine Coolant:	
Refill	94 qt (89 L)
Radiator Capacity	79 qt (47 L)

THEORY OF OPERATION

SCOPE

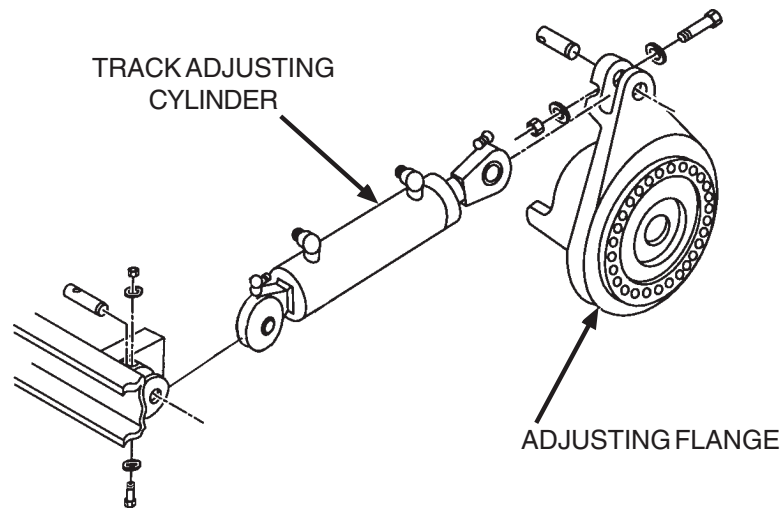
This section contains information relative to the principles of operation for the M9, Armored Combat Earthmover with Hydraulic Blade Folder and Track Tensioner. The general functional description of the vehicle and the HBF-TT system is contained in this section. Maintenance personnel should be familiar with the principles of operation of these systems before working on or troubleshooting this system. A more thorough understanding of the hydraulic system and electrical system can be obtained by referring to TM 5-2350-262-20-1, Vehicle Wiring Diagram and TM 5-2350-262-20-3, Vehicle Hydraulic Schematic.

SUSPENSION SYSTEM

The suspension system consists of tracks, roadwheels, arms, drive sprockets, rotary actuators, and bump stops. The suspension system components used in the HBF-TT system are described below.

TRACK ADJUSTING CYLINDERS

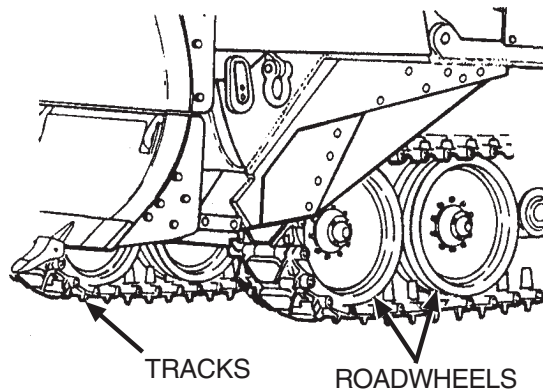
The track adjusting cylinders control the track tension. The track adjusting cylinders can be controlled by a control lever in the driver's compartment.



THEORY OF OPERATION - continued

TRACKS AND ROADWHEELS

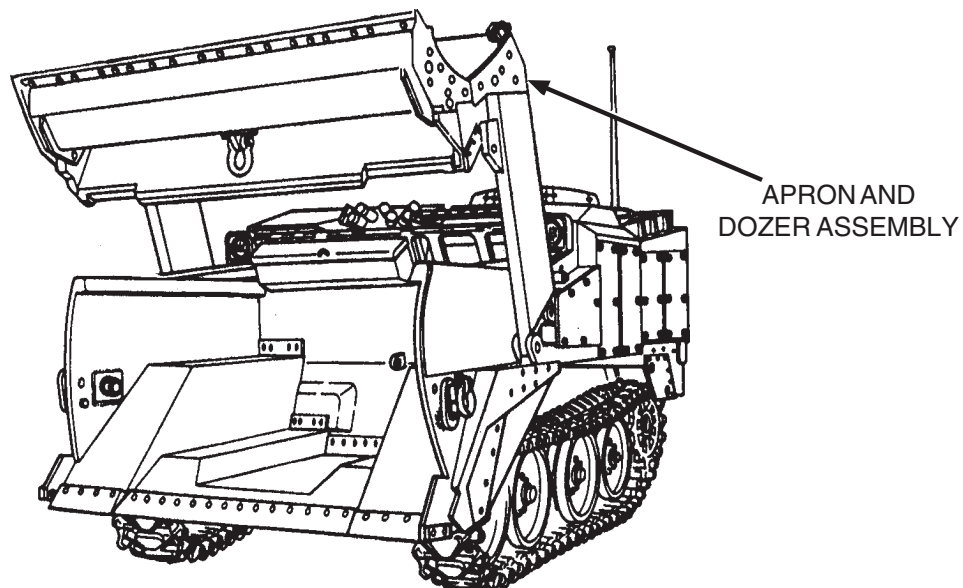
The tracks, drive sprockets, and roadwheels are of conventional design. Track tension is adjusted with cylinders attached to the adjusting flanges of the final drive units. The track tension is controlled by a control lever in the driver's compartment.



EARTHMOVING COMPONENTS

APRON AND DOZER ASSEMBLY

The apron and dozer assembly is raised or lowered by the two apron cylinders, one on each side of the vehicle. These cylinders are controlled by a control lever in the driver's compartment. The dozer blade can be folded and unfolded by a control lever in the driver's compartment.

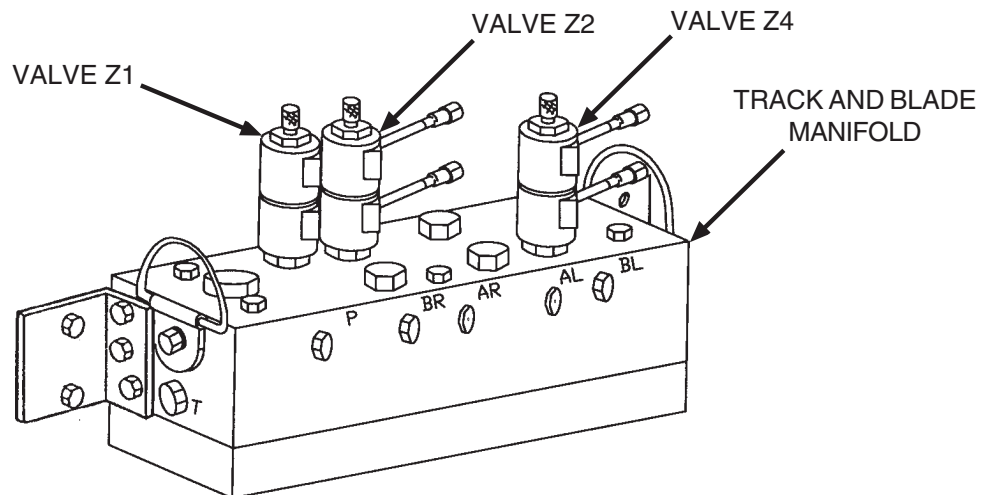


THEORY OF OPERATION - continued

HYDRAULIC SYSTEM

HYDRAULIC MANIFOLD OPERATION

The hydraulic manifold on the track and blade manifold is activated by hydraulic linkages from the operator's compartment and they, in turn, activate the hydraulic functions of the HBF-TT system.



TIGHTEN AND LOOSEN TRACK TENSION ADJUSTMENT

Ports Z1 and Z2, on the back top of the manifold, actuate circuits and tighten and loosen left and right side track tension.

FOLD OR UNFOLD DOZER BLADE

Port Z4, on the front top of the manifold, actuates circuits and folds or unfolds dozer blade.

END OF WORK PACKAGE

CHAPTER 2 OPERATOR INSTRUCTIONS DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS

GENERAL

This section shows the location and function of all M9 ACE with HBF-TT controls and indicators. Review this section thoroughly before operating the vehicle.

CONTROLS AND INDICATORS

M9 ACE HBF-TT Controls

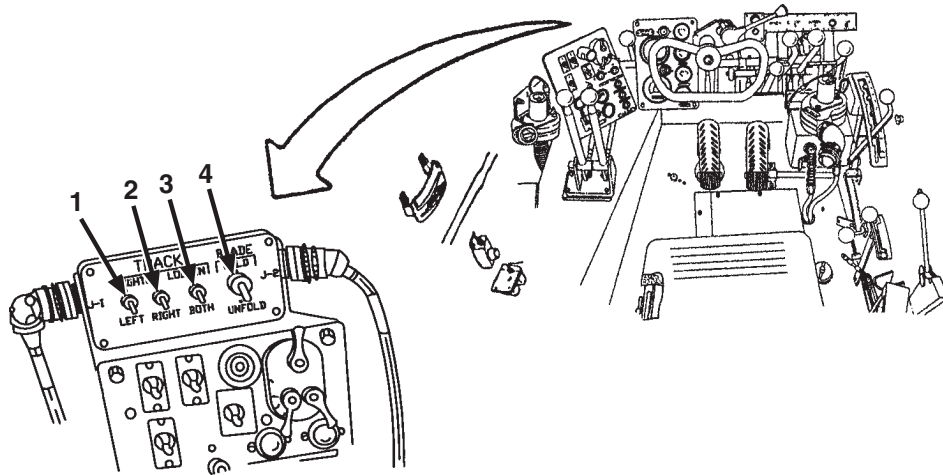


Table 4-1. Controls and Indicators.

KEY	COMPONENT	DESCRIPTION
1	Left Track Adjustment TIGHTEN Switch	Mounted over switch panel, provides operator ability to hydraulically adjust track adjusting cylinder on left side of vehicle.
2	Right Track Adjustment TIGHTEN Switch	Mounted over switch panel, provides operator ability to hydraulically adjust track adjusting cylinder on right side of vehicle.
3	Left and Right Track Adjustment LOOSEN Switch	Mounted over switch panel, provides operator ability to hydraulically loosen right and left track adjusting cylinders on vehicle.
4	Dozer Blade Adjustment RAISE/LOWER Switch	Mounted over switch panel, provides operator ability to hydraulically fold and unfold dozer blade on vehicle.

END OF WORK PACKAGE

OPERATION UNDER USUAL CONDITIONS

GENERAL

- a. This section contains instructions for safely operating the M9 ACE under usual conditions. Unusual conditions are defined and described in WP 0006 00.
- b. Before operating a new or reconditioned M9 ACE, make sure unit maintenance services the vehicle.
- c. Perform all *Before* PMCS listed in WP 0011 00 and WP 0013 00 before operating the M9 ACE to make sure that all adjustments and checks are completed.
- d. Review all towing instructions in towing vehicle manual to prepare for coupling and uncoupling operations.

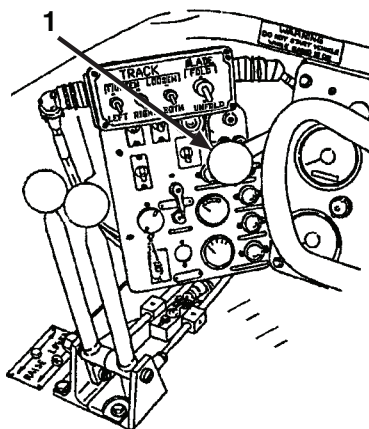
OPERATING PROCEDURES

FOLDING DOZER BLADE

WARNING

**Do not work in front or near the blade and apron unless the dozer lockpins are installed.
Failure to comply may result in severe injury to personnel or death.**

1. Start the engine (TM 5-2350-262-10) and allow it to warm up for three to five minutes.
2. Place SPRUNG/UNSPRUNG control lever (1) in SPRUNG position.

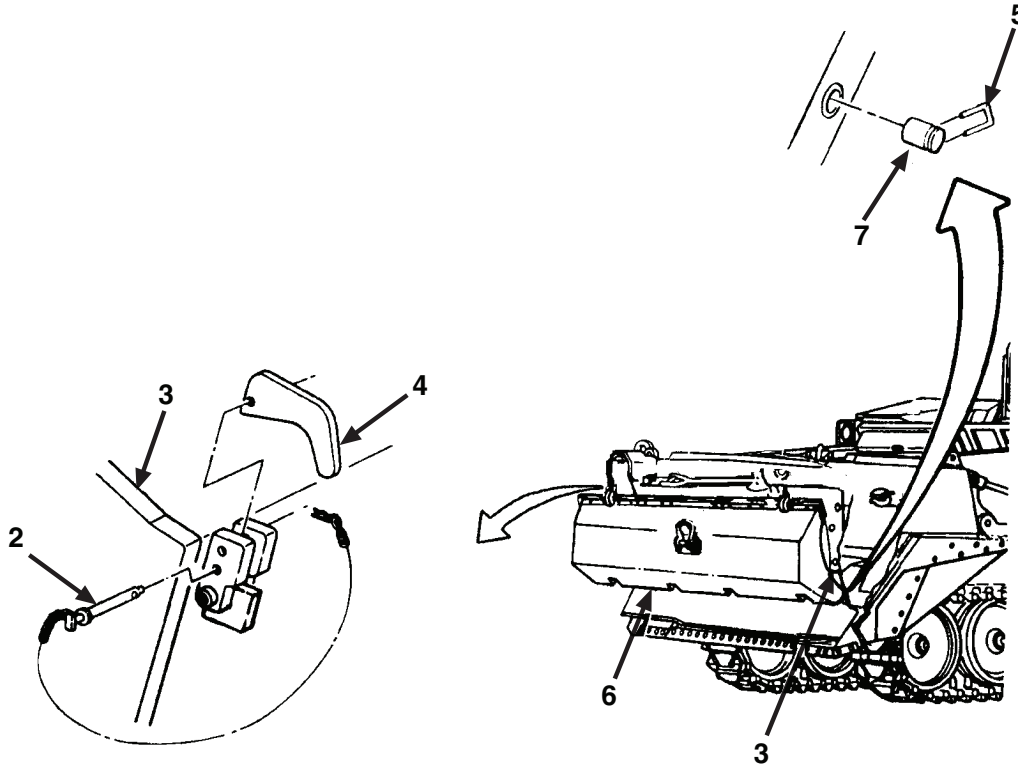


OPERATIONS UNDER USUAL CONDITIONS - continued

CAUTION

Remove clips and dozer lockpins before folding the blade to prevent damage to the equipment.

3. Remove pin assembly (2) and dozer blade latch (4) from each side of apron (3).

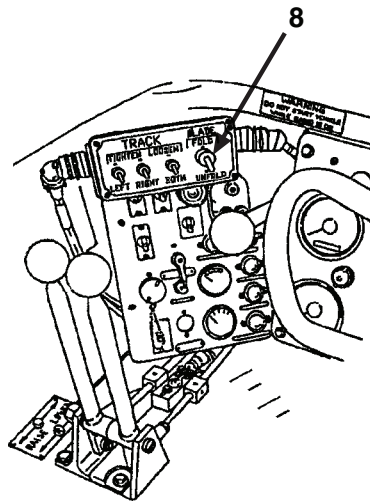


4. Remove two clips (5), then pull out two dozer blade lockpins (7).
5. Secure dozer blade (6) by installing dozer blade latch (4) in forward position, with pin assembly (2) on each side of apron (3) in middle hole.
6. Install two dozer blade lockpins (7) in dozer blade (6), and secure dozer lockpins (7) with two clips (5).

OPERATING PROCEDURES - continued**CAUTION**

Do not release the blade fold/unfold switch unless the blade is completely folded (or unfolded for dozing).

7. Located on the control box, pull blade fold/unfold switch (8) out of locked position and push it up and hold to fold the blade.

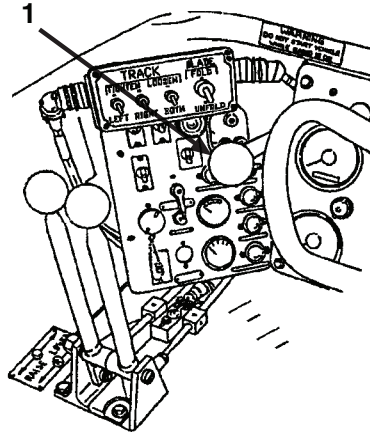
**UNFOLDING DOZER BLADE****WARNING**

Do not unfold blade when driving cross-country. Failure to comply may result in damage to equipment or injury to personnel.

1. Start the engine (TM 5-2350-262-10) and allow it to warm up for 3 to 5 minutes.

OPERATING PROCEDURES - continued

- Place SPRUNG/UNSPRUNG control lever (1) in SPRUNG position.



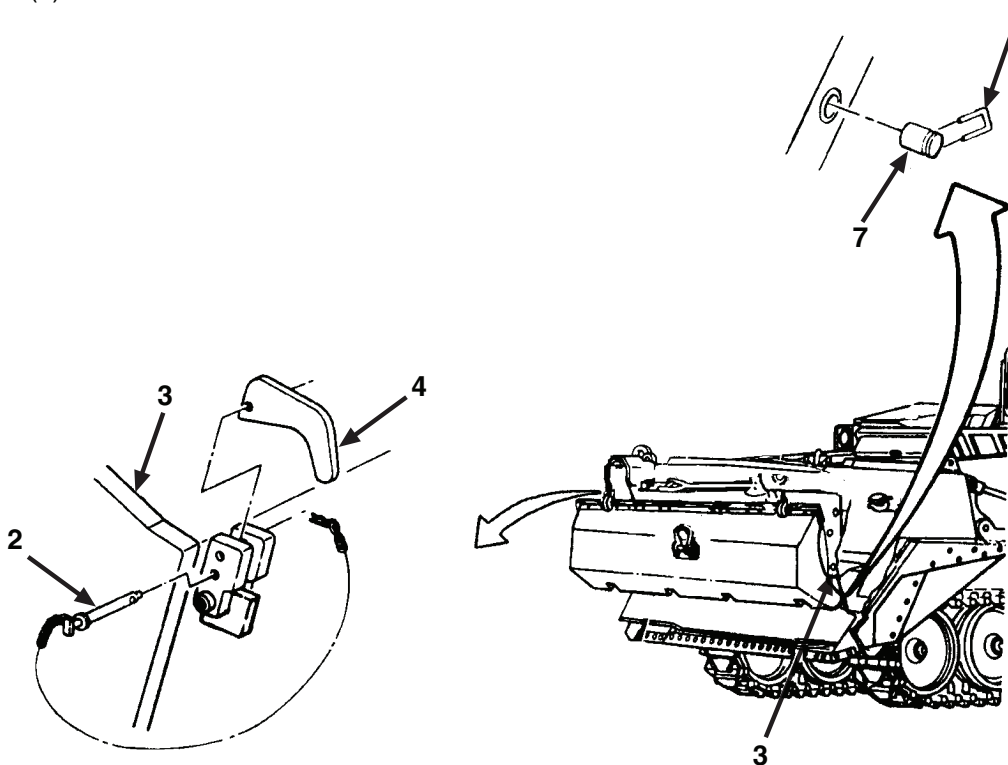
WARNING

When unfolding dozer blade, work on blade latches from side of vehicle only. Failure to comply may result in serious injury to personnel.

CAUTION

Remove clips, dozer lockpins, and blade latch before unfolding the blade to prevent damage to equipment.

- Remove two clips (5). Pull out two dozer lockpins (7). Remove pin assembly (2) and blade latch (4) from each side of apron (3).

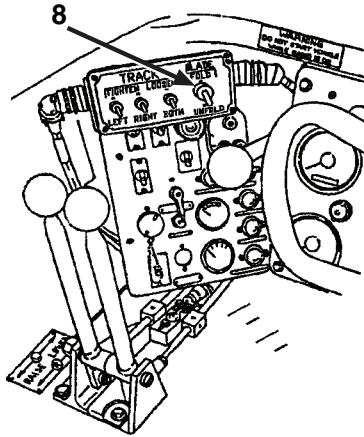


OPERATING PROCEDURES - continued

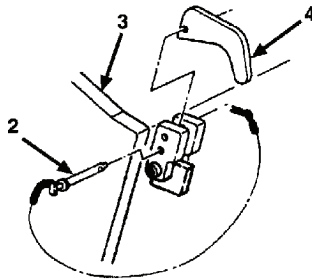
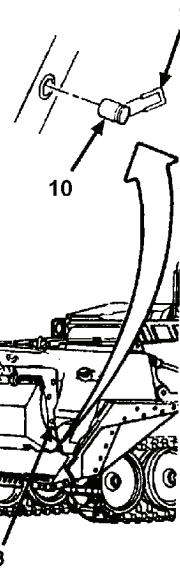
CAUTION

Do not release the blade fold/unfold switch unless the blade is completely folded or unfolded.

4. On control box, pull blade fold/unfold switch (8) out of locked position and push it down and hold to unfold the blade.



5. Install two dozer blade lockpins (10) and two clips (9).



6. Install blade latch (4), facing rearward, with pin assembly (2) on each side of apron (3).

OPERATING PROCEDURES - continued

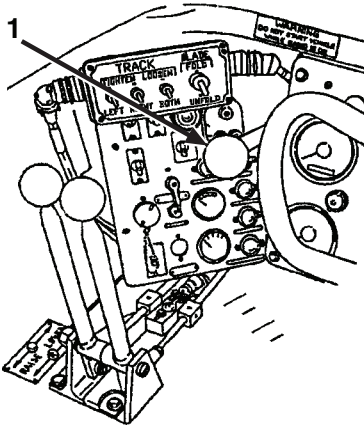
TRACK TENSION ADJUSTMENT

NOTE

Ensure that bowl is empty before adjusting track tension. Optimum track adjustment is when the track is in the tightest possible condition which still allows the vehicle to be lowered to the digging position.

It is normal to have short delays during lowering and raising while the HBF-TT track adjusting components function.

1. Start engine (TM 5-2350-262-10).
2. Place SPRUNG/UNSPRUNG control lever (1) in SPRUNG position and allow suspension system to stabilize.

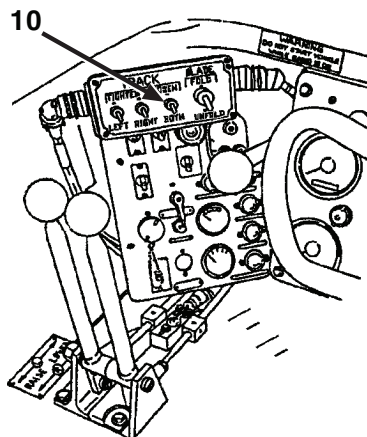


3. Adjust the hard throttle so engine idles at 750-850 rpm to maintain hydraulic pressure. Allow engine to idle for five minutes so that the vehicle will settle into a constant position.

NOTE

Every time the tracks are loosened by track loosening switch, adjust tension in both tracks one at a time using the steps listed below.

4. Move track loosening switch (10) momentarily (two to three seconds) to loosen both tracks. Vehicle will move slightly as track adjust cylinders retract.

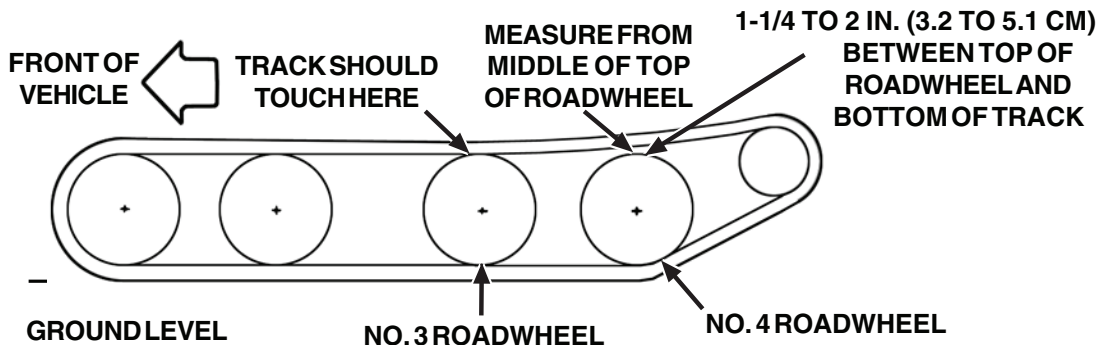


OPERATING PROCEDURES - continued

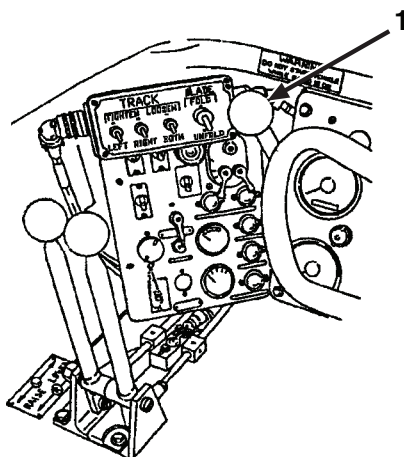
NOTE

Record measurement from middle of top of No. 4 roadwheel to track.

5. Dismount vehicle and inspect track. The track should just touch the top of No. 3 roadwheel, and should be 1-1/4 to 2 inches (3.2 to 5.1 cm) above the top of No. 4 roadwheel.



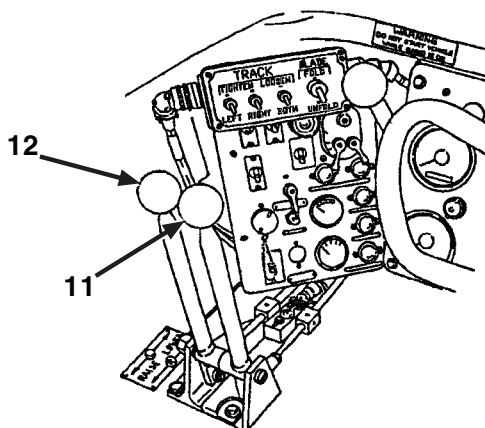
6. If the track is more than 2 inches (5.1 cm) above the top of No. 4 roadwheel, loosen the track by moving the track loosening switch.
7. If the track is less than 1-1/4 inches (3.2 cm) from the top of No. 4 roadwheel, tighten the track as necessary by moving that side track tensioning switch. This operation will tighten that side track only.
8. Repeat steps 5 through 7 for track on the other side. Repeat operation until both tracks have a gap 1-1/4 to 2 inches above the top of No. 4 roadwheel.
9. Move vehicle slightly forward to remove any slack in left and right tracks from behind the sprocket.
10. Place SPRUNG/UNSPRUNG control lever (1) in UNSPRUNG mode.



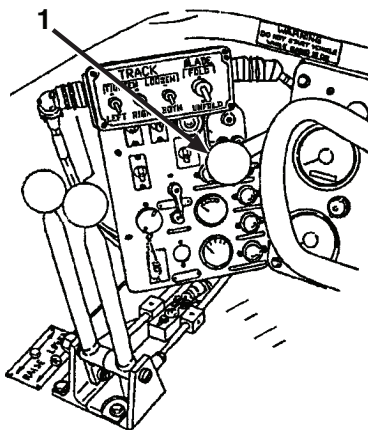
OPERATING PROCEDURES - continued**NOTE**

Suspension control levers must remain in the LOWER position throughout Step 11. If levers are returned to the neutral position before completion of step, Step 11 must be repeated.

11. Push left (12) and right (11) suspension control levers forward to LOWER position and hold for 10 to 12 seconds. (Observe front of vehicle begins to lower, but MAY not completely drop to the ground). If front of vehicle does not contact the ground, follow steps 4 through 9.



12. Return suspension control levers (12) and (11) to neutral position.
13. Pull both left (12) and right (11) suspension control levers rearward to RAISE position and level the vehicle. (Vehicle hull will stop momentarily while track adjusting cylinders function.)
14. Place SPRUNG/UNSPRUNG control lever (1) in SPRUNG mode. Proceed with mission.

**NOTE**

If unable to correctly adjust track tension, notify unit maintenance.

END OF WORK PACKAGE

OPERATION UNDER UNUSUAL CONDITIONS

For special instructions for operating and servicing the M9 ACE with HBF-TT under unusual conditions, refer to TM 5-2350-262-10.

END OF WORK PACKAGE

CHAPTER 3 TROUBLESHOOTING PROCEDURES TROUBLESHOOTING INDEX

GENERAL

- a. This work package provides information for identifying and correcting malfunctions that may develop while operating your M9 ACE.
- b. The Troubleshooting Malfunctions/Symptom Index lists common malfunctions that may occur and refers you to the proper page for a troubleshooting procedure.
- c. If you are unsure of the location of an item mentioned in troubleshooting, refer to WP 0002 00 or to the maintenance task in this manual where the item is replaced.
- d. Before performing troubleshooting, read and follow all safety instructions found in the Warning Summary at the beginning of this manual.
- e. This section cannot list all the malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by the corrective action listed, notify your supervisor.
- f. When troubleshooting a malfunction:
 - Locate the symptom or symptoms in the Troubleshooting Malfunctions/Symptom Index that best describe the malfunction.
 - Turn to the page where the troubleshooting procedures for the malfunction in question are described. Headings at the top of each page show how each troubleshooting procedure is organized: MALFUNCTION, TEST OR INSPECTION, and CORRECTIVE ACTION. The malfunctions, tests or inspections, and corrective actions are indented to line up under the appropriate heading.
 - Perform each step in the order listed until the malfunction is corrected. DO NOT perform any maintenance task unless the troubleshooting procedure tells you to do so.

EXPLANATION OF COLUMNS

Explanations of the columns in WP 0008 00, troubleshooting, are as follows:

MALFUNCTION. A visual or operational indication that something is wrong with the M9 ACE.

TEST OR INSPECTION. A procedure to isolate the problem in a component or system.

CORRECTIVE ACTION. A procedure to correct the problem.

TROUBLESHOOTING MALFUNCTION/SYMPTOM INDEX

- | | |
|---|---------------|
| 1. Headlights do not operate | WP 0008 00-16 |
| 2. Track (left or right) will not tighten or loosen, track adjusting cylinder | WP 0008 00-18 |
| 3. Track (left or right) will not tighten or loosen, track adjusting cylinder | WP 0008 00-32 |
| 4. Front corner (left or right) will not raise or lower in UNSPRUNG mode, track adjusting cylinder | WP 0008 00-38 |
| 5. Left or right track adjusting cylinder will not extend after the suspension control levers are returned to neutral | WP 0008 00-44 |
| 6. Blade will not fold or unfold in SPRUNG mode | WP 0008 00-50 |

END OF WORK PACKAGE

TROUBLESHOOTING PROCEDURES

GENERAL REPAIR AND CLEANING METHODS

This section contains general repair methods and cleaning methods. If special repair or cleaning methods are required for a component or part, specific repair or cleaning instructions are included in the individual maintenance tasks in their work packages.

- a. Complete disassembly is not always necessary to make a repair. Exercise good judgment to keep disassembly and assembly to a minimum.
- b. Repair or replace unserviceable parts and hardware. Replace packings, gaskets, seals, and locking hardware with new parts when necessary.
- c. Remove burrs with a stone or file. Remove burrs on closely fitted mating surfaces by lapping the surfaces with abrasive grade compound.
- d. Remove corrosion or rust with abrasive (crocus) cloth (Item 10, WP 0055 00). Use the method that will not damage the surface being cleaned. Crocus cloth should be used to remove corrosion and rust from polished surfaces. Ensure that critical dimensions are not altered when using crocus cloth.
- e. Repair damaged threads with a thread chaser or die.
- f. When welding is required and authorized, procedures in TM 9-237 must be followed. Welds must be inspected for cracks.
- g. Bearings should be inspected and maintained following procedures in TM 9-214.
- h. Clean electrical ground contacts with crocus cloth (Item 10, WP 0055 00). Ensure ground connections are tight.
- i. Repair chafed, broken, or damaged electrical wiring with insulation tape, electrical, specification HH-I-595. When soldering is required, procedures in TM SIG 222 must be followed.
- j. Paint metal surfaces as required.

CLEANING

WARNING

Wear face shield or goggles for eye protection when using wire brush. Failure to comply may result in injury to personnel.

- a. Use wire brush to remove rust and corrosion from metal parts.

WARNING

Cleaning solvent (PF05) is combustible. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using cleaning solvent; the flashpoint is 144°F (62°C). Failure to follow this warning may result in injury or death to personnel. A fire extinguisher will be kept nearby when the solvent is used.

- b. Clean metal parts with cleaning solvent (Item 7, WP 0055 00). Metal or fiber brushes may be used to apply cleaning solvent and to remove softened or dissolved material. Hand scraping with metal scrapers may be used to remove soft coatings or deposits.

GENERAL REPAIR AND CLEANING METHODS - continued

- c. Soak oily or greasy parts in a tank containing cleaning solvent (Item 7, WP 0055 00). The time the parts must be in solvent varies with the type and amount of material to be removed.
- d. Do not use cleaning solvent to clean electrical insulation, wires, cables, or wiring harnesses. Clean these parts by wiping with a damp cloth. Use a mild soap solution if necessary. Dry immediately with clear, dry cloths. Clean contact points with flint abrasive paper, and dust thoroughly after cleaning.
- e. Do not use cleaning solvent to clean rubber parts. Clean rubber parts by washing with mild solution of soap and water.

WARNING

Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.

- f. Dry parts by blowing with low-pressure compressed air or wiping with clean, lint-free cloths.
- g. Bearings should be cleaned by procedures in TM 9-214.

LUBRICATION

Keep a light coat of lubricating oil (PL-medium or PL-special)(Item 16 or 17, WP 0055 00) on parts during repair procedures to prevent rusting.

TORQUE VALUES

Use the torque values listed in the maintenance procedures, if they are given. When no torque values are given in the maintenance procedures, refer to the torque value guide in this work package for fasteners, or the hydraulic fitting torque value guide in WP 0008 00-14 for hydraulic hoses, tubes, and fillings.

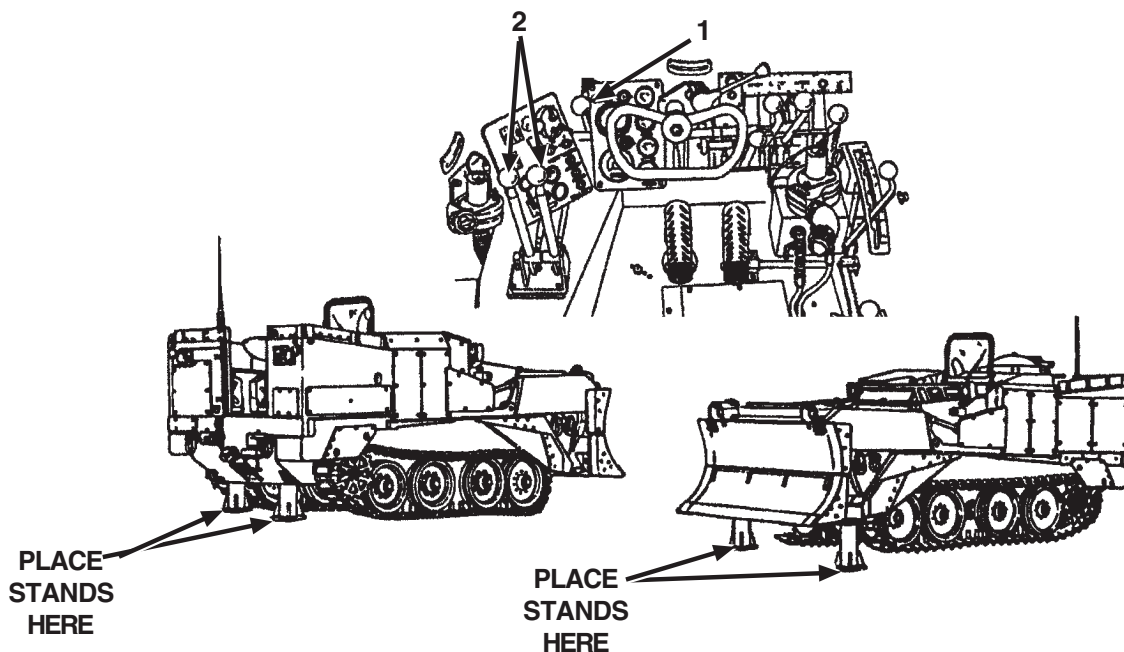
PREPARATION FOR MAINTENANCE

Some maintenance tasks are necessary to prepare the M9 for many of the maintenance procedures. These tasks are required for personnel safety and for ease of maintenance. These preparation steps are described below.

GENERAL REPAIR AND CLEANING METHODS - continued

BLOCKING/UNBLOCKING THE HULL

To block vehicle, start the engine (TM 5-2350-262-10) and place the SPRUNG/UNSPRUNG control lever (1) in UNSPRUNG. Position both suspension control levers (2) to lower front end fully. When rear of vehicle reaches its highest position, have assistant place support stands under both rear corners of hull. Position both suspension control levers (2) to raise front end fully. When front of vehicle reaches its highest position, have assistant place support stands under both front corners of hull. Before shutting off engine (TM 5-2350-262-10), position ejector about midway in bowl. Reverse procedure to unblock hull.

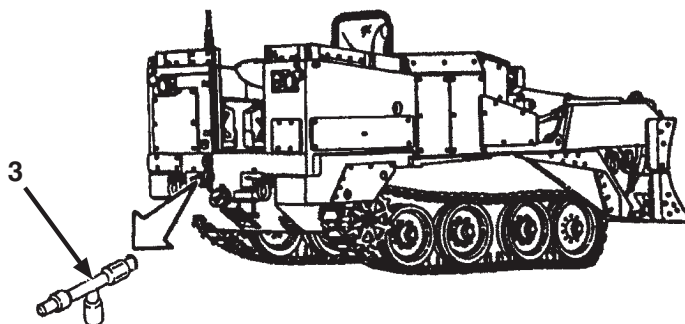


RELIEVING HYDRAULIC PRESSURE

Refer to TM5-2350-262-10.

RELIEVING AIR PRESSURE

Stop engine (TM5-2350-262-10). Press air valve (3) at rear of vehicle and hold open (pressed in) until no air can be heard escaping from the air valve (3).



GENERAL REPAIR AND CLEANING METHODS - continued

BLOCKING TRACK OR ROADWHEELS

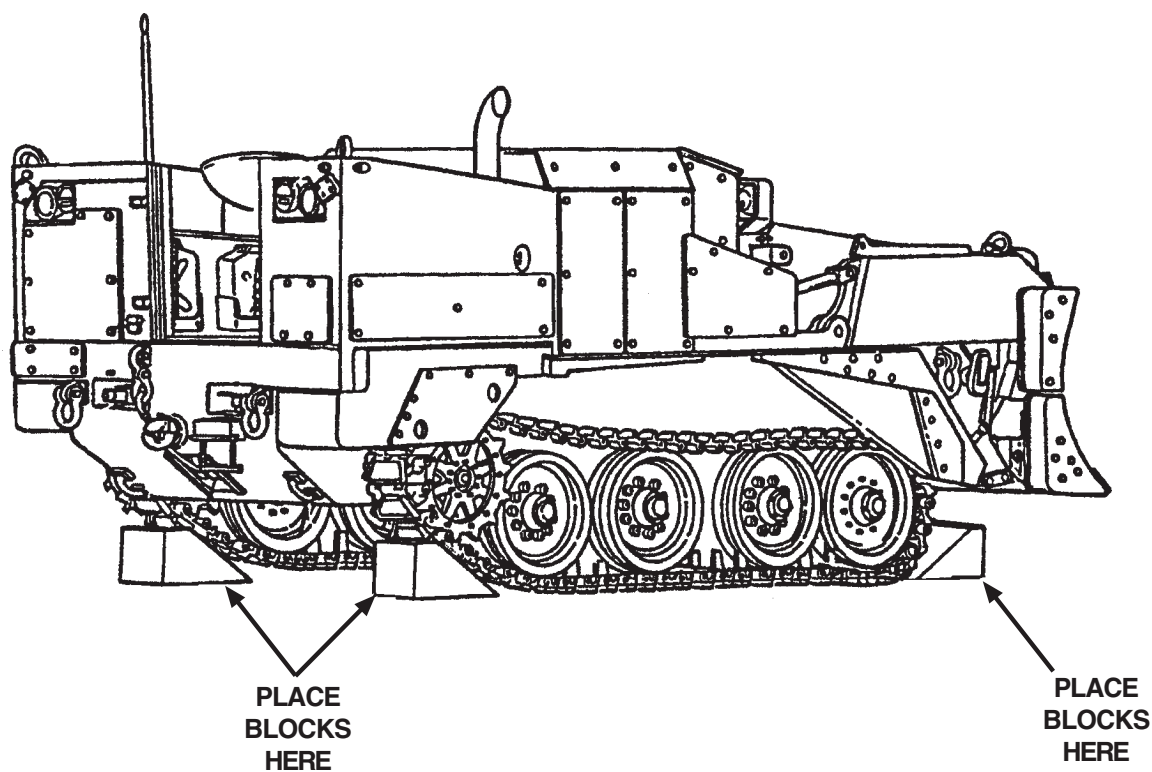
WARNING

Block track or roadwheels when parking brake is released, steer unit brake levers are disconnected, or when track is disconnected. Vehicle can roll causing damage to equipment, severe injury, or death to personnel.

NOTE

If blocks are not available, use timbers 12 to 18 inches high (30 to 46 cm).

- a. Stop vehicle on hard, level surface. Stop engine (TM 5-2350-262-10).
- b. Place blocks or suitable material in front of track at No. 1 road wheel and between drive sprocket and No. 4 roadwheel on each side of vehicle. If track is disconnected, place blocks or suitable material directly against No. 1 and No. 4 roadwheels on each side of vehicle.

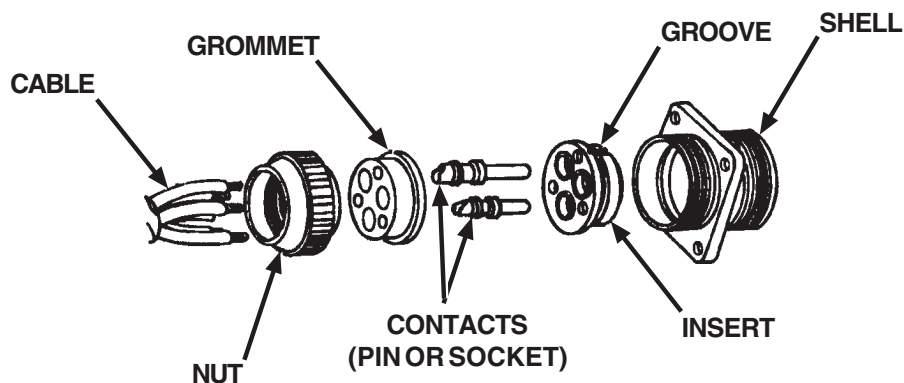


WIRING HARNESS AND CABLE REPAIR

This section contains instructions on repair of wiring harnesses and cables (leads). Repair of wiring harnesses and cables consists of replacement of defective connectors, shells, and terminals, or taping cut or worn insulation and exposed wire conductors. Pages 0008 00-5 through 0008 00-8 show exploded views of typical harness and cable connectors used on the vehicle and give procedures for disassembly and assembly of connectors. When soldering is required, procedures in TB SIG 222 must be followed. If multiple pin connectors are disassembled, tag or label all wires and cables to ensure that correct connections are made at time of assembly.

WIRING HARNESS AND CABLE REPAIR - continued**TYPICAL PANEL MOUNTING RECEPTABLE****DISASSEMBLY**

- a. Remove nut from shell assembly and slide back on cable.



- b. Push grommet back on cable.
- c. Push contacts out through rear of insert with pin extractor.
- d. Push insert out through rear of shell.
- e. Unsolder cable leads from contacts.
- f. Remove grommet and nut from cable.

ASSEMBLY

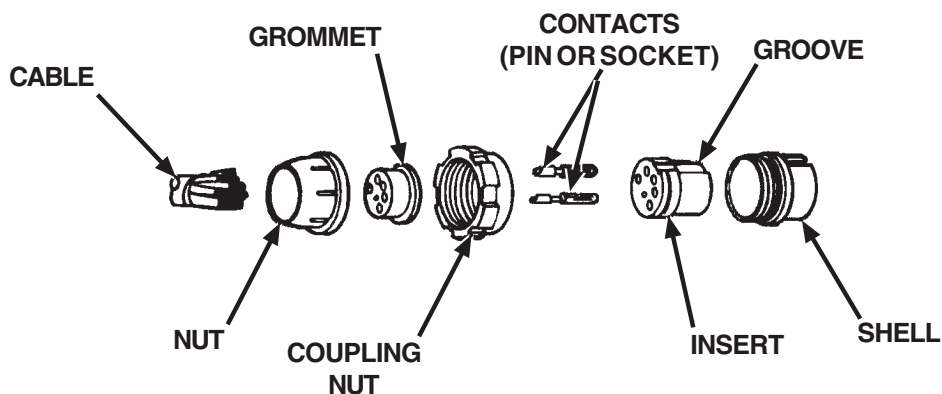
- a. Slide nut over cable.
- b. Slide grommet over cable leads.
- c. Strip cable insulation equal to depth of solder wells of contacts.
- d. Insert cable into solder wells of contacts and solder.
- e. Push insert into shell from rear until seated. Groove in insert must be aligned with guide in shell to ensure proper fit.
- f. Push contacts into insert from rear until seated.
- g. Push grommet down cable and over solder wells of contacts.
- h. Install nut on shell assembly.

WIRING HARNESS AND CABLE REPAIR - continued

TYPICAL PLUG

DISASSEMBLY

- a. Remove nut from shell assembly and slide back on cable.



- b. Slide grommet back on cable.
- c. Slide coupling nut off shell assembly.
- b. Push contacts out through rear of insert with pin extractor.
- e. Push insert out through rear of shell.
- f. Unsolder cable from contacts.
- g. Remove coupling nut, grommet, and nut from cable.

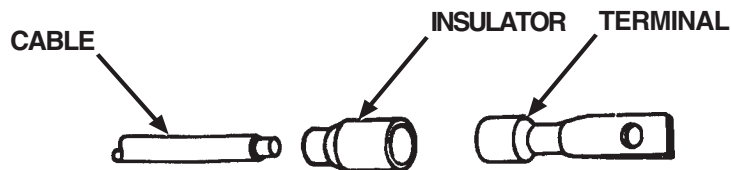
ASSEMBLY

- a. Slide nut over cable.
- b. Slide grommet over cable leads.
- c. Strip cable insulation equal to depth of solder wells of contacts.
- d. Insert cable into solder wells of contacts and solder.
- e. Push insert into shell from rear until seated. Groove in insert must be aligned with guide in shell to ensure proper fit.
- f. Push contacts into insert from rear until seated.
- g. Slide coupling nut onto shell assembly.
- h. Push grommet down cable and over solder wells of contacts.
- i. Install nut on shell assembly.

WIRING HARNESS AND CABLE REPAIR - continued

TERMINAL-TYPE CABLE CONNECTORS REPLACEMENT

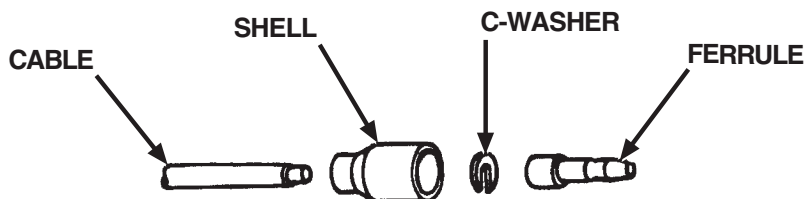
- a. Strip cable insulation equal to depth of terminal well.



- b. Slide insulator over cable.
 c. Insert cable into terminal well and crimp.
 d. Slide insulator over crimped end of terminal.

MALE CABLE CONNECTOR REPLACEMENT

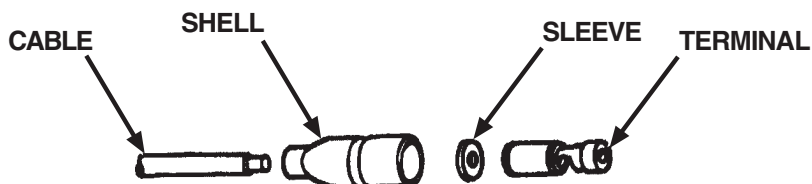
- a. Strip cable insulation equal to depth of ferrule well.



- b. Slide shell over cable, and remove C-washer.
 c. Insert cable into ferrule and crimp.
 d. Place C-washer over cable at crimped junction and slide shell over C-washer and ferrule.

FEMALE CABLE CONNECTOR (WITH WASHER) REPLACEMENT

- a. Strip cable insulation approximately 1/8 inch (3 mm).

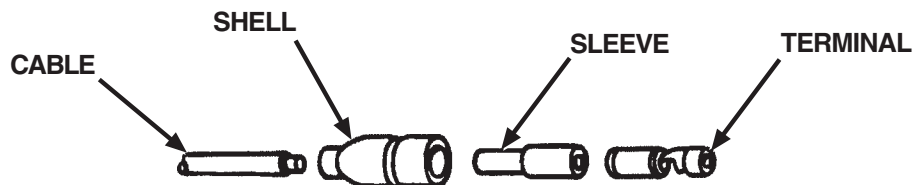


- b. Slide shell and washer over cable.
 c. Place cable into cylindrical end of terminal and crimp.
 d. Slide shell and washer over terminal.

WIRING HARNESS AND CABLE REPAIR - continued

FEMALE CABLE CONNECTOR (WITH SLEEVE) REPLACEMENT

- a. Strip cable insulation approximately 1/8 inch (3 mm).



- b. Slide shell and sleeve over cable.
- c. Insert cable in cylindrical end of terminal and crimp.
- d. Slide shell and sleeve over terminal.

GENERAL HYDRAULIC SYSTEM REPAIR METHODS

This section contains repair methods for the hydraulic system. If special repair methods or procedures are required for the hydraulic system components or parts, specific repair instructions are included in the individual maintenance tasks.

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in severe injury to personnel.

Spilled hydraulic oil is very slippery. Use caution when entering or working in bowl area. Wipe up any spilled oil immediately. Failure to comply may result in severe injury to personnel.

CAUTION

ALWAYS clean around fittings before disconnecting or connecting hoses or fittings. Ensure area is clean before installing hydraulic components. Failure to comply may result in damage to equipment.

Cover, cap, or plug all openings, ports, and tube or hose ends when disconnected. Failure to comply may result in damage to equipment.

Ensure fittings are connected to fittings of the same design or damage to equipment may result. Connecting unlike fittings may not damage threads, but is not a guarantee that the connection will not leak. See illustrations of fitting types on pages 0008 00-9 through 0008 00-12.

Fittings must be installed and tightened. If a fitting cannot be tightened, it may be cross-threaded or have damaged threads. Failure to comply may result in damage to equipment. Use wrench only for final tightening.

GENERAL HYDRAULIC SYSTEM REPAIR METHODS - continued

CAUTION - continued

Do not use TEFLON tape as a sealer on any fittings. It can separate from the fittings and cause control valves, relief valves, and actuators to become contaminated and fail. Failure to comply may result in damage to equipment.

It is possible to connect a male national pipe thread (NPT) to a female straight thread, but the fitting will leak. Learn to recognize the very slight taper which an NPT has (see illustration below). Do not attempt to connect NPT and female straight threads. Failure to comply may result in damage to equipment.

Do not attempt to use the parts of the 37° flare fitting and the flareless fitting with each other. The connection will leak.

Use caution when connecting NPTs. If overtightened, the female pipe thread will split. If a connection leaks, disconnect and apply thread sealant. Reconnect the threads and snug up with wrench. Failure to comply may result in damage to equipment.

Do not apply sealant to the first threads of NPT fittings. If sealant enters the hydraulic system, it may cause components to fail.

Use caution when installing preformed packings. Sharp threads can nick the packing, causing connection to leak. Failure to comply may result in damage to equipment. If fitting leaks, check packing for nicks or cuts and replace if necessary.

Do not overtighten a flareless connection. Observe torque values on page 0008 00-14. Overtightening can cause leakage, requiring replacement of entire tube assembly.

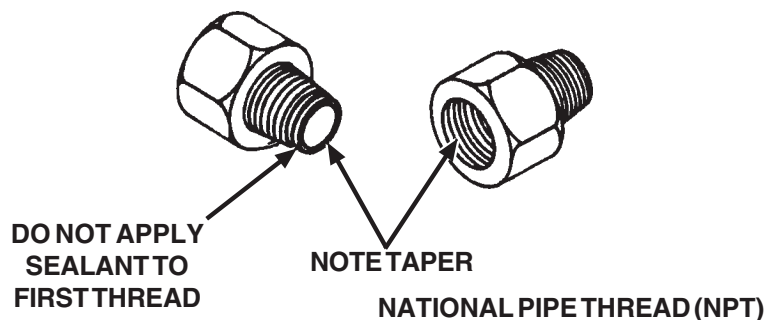
When connecting a hose to a fitting, ALWAYS USE TWO WRENCHES. Use one wrench to turn the swivel nut onto the fittings, and use another wrench to keep the fitting from rotating.

The following information is provided to familiarize personnel with the various types of hydraulic fittings. Refer to this section and the warnings and cautions on the previous page when working on hydraulic systems.

- a. National Pipe Thread (NPT). This thread is commonly found in hydraulic systems. It differs from other fittings in that it is tapered. In order to obtain a proper seal with this thread, you must use a sealant. The sealant should be applied to the male fitting. Torque value guide in this work package, is NOT to be used.

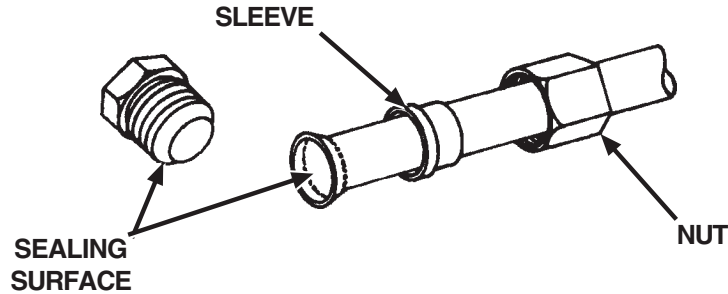
CAUTION

Do not apply sealant to the first threads of fittings. If sealant enters into the hydraulic system, it may cause components to fail.



GENERAL HYDRAULIC SYSTEM REPAIR METHODS - continued

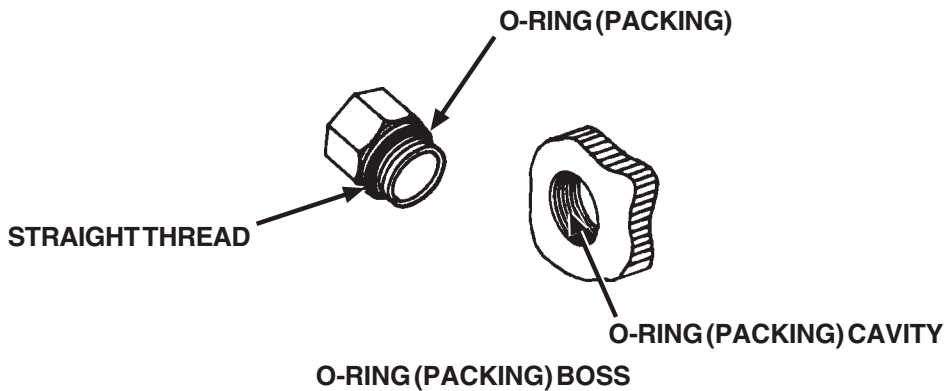
- b. 37° Flare. The 37° flare termination has a male straight thread that mates with a female straight thread. The sealing surface for this termination is the angled nose at the end of the male fitting. This nose mates with a similar surface in the female 37° flare fitting. These sealing surfaces must be free of nicks and scratches in order to seal properly. If nicked or scratched, item must be replaced. For torque requirements, see guide on page 0008 00-14.



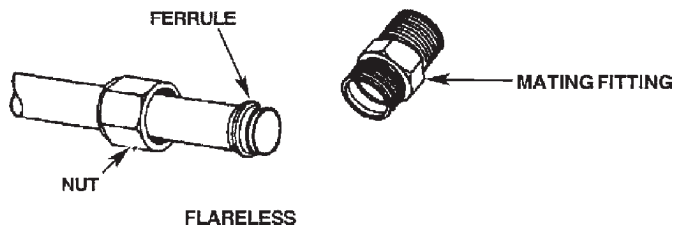
CAUTION

Packing must be seated fully into groove and not on threads. Failure to comply may damage packing, resulting in damage to equipment.

- c. O-ring (preformed packing) Boss. This termination also has a straight thread. The seal for this termination is a preformed packing that fits at the top of the threads on the male fitting. This packing is squeezed into the extra space at the top of the threads of the female fitting and seals the connection. The installed packing must be free of nicks and cuts to seal properly. If packing is nicked or cut, it must be replaced.



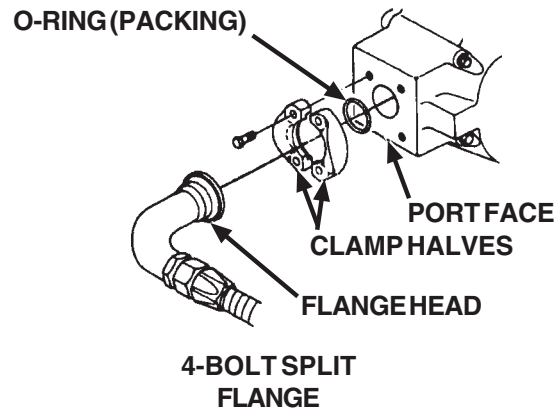
- d. Flareless. This fitting also uses a straight thread. The female fitting contains a ferrule that mates with a cavity in the male fitting. Use recommended torque values to tighten nut (page 0008 00-14). If this fitting is over torqued, the ferrule will be deformed and the fitting will leak.



GENERAL HYDRAULIC SYSTEM REPAIR METHODS - continued**CAUTION**

Nicks, cuts, or scratches are cause for parts replacement or repair. Failure to comply may result in damage to equipment.

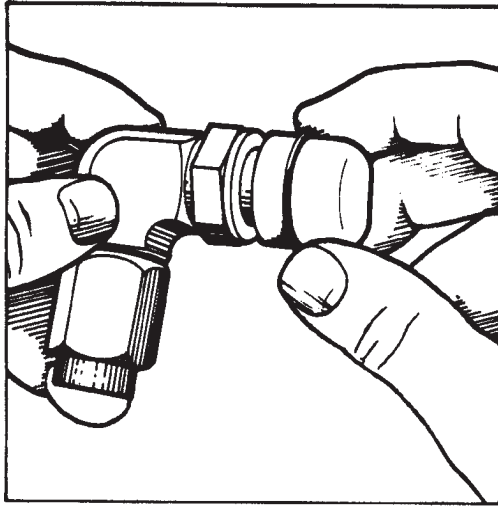
- e. 4-bolt Split Flange. The 4-bolt split flange has a flange head that is clamped to a smooth face. The flange head uses a preformed packing that is squeezed between the head and the face. The face and end of flange head must be free of nicks and scratches to seal properly. The packing must also be free of nicks and cuts, or the connection will leak.

**INSTALLING PACKINGS (O-RINGS)**

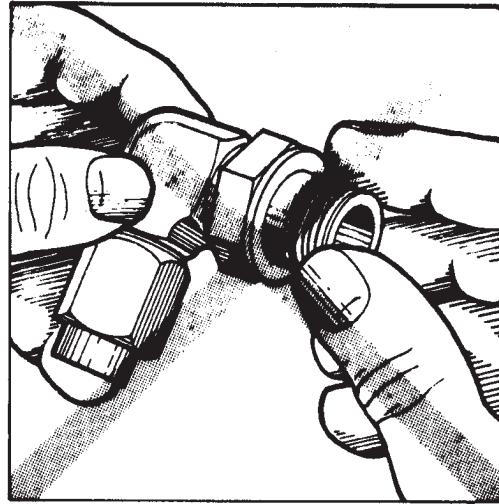
- a. Before installing a new packing, inspect the threads and packing seat (cavity) for nicks, cracks, and distortion. Replace any damaged components.
- b. Ensure the packing is the correct type and size.
- c. Before installation, lubricate the new packing with OE/HDO-10 (Item 15, WP 0055 00).

GENERAL HYDRAULIC SYSTEM REPAIR METHODS - continued

- d. While installing the packing, always protect it from cuts or nicks. Do not install packing directly over threads. If available, install packing over the plastic or rubber thread guard that is supplied with new fittings. If no thread guard is available, protect the packing by wrapping the fitting threads with heavy, smooth, lint-free paper. See the illustrations below.



CORRECT METHOD

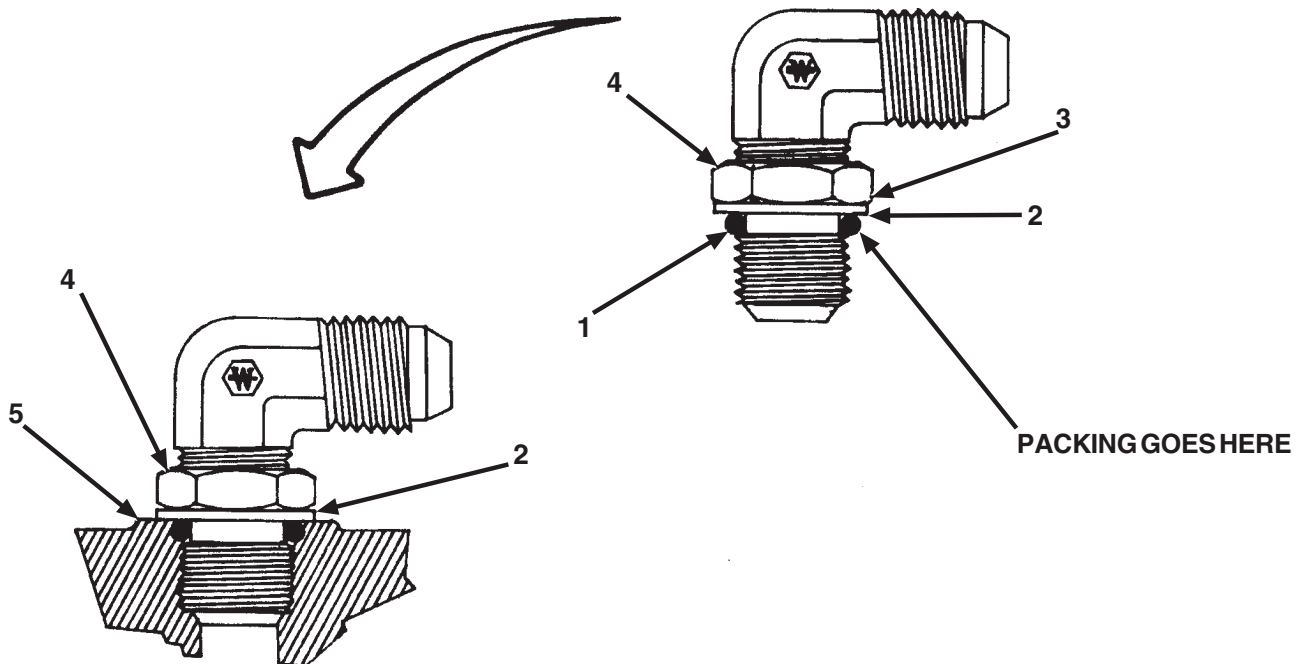


INCORRECT METHOD

- e. If a backup washer is used with the packing, it must be free of cuts, nicks, and distortion. An unserviceable backup washer can cause the packing to distort or rupture when hydraulic pressure is applied and result in a serious oil leak.
- f. After the packing is installed, inspect it for damage and replace it again if necessary. Also, ensure it is not twisted or distorted.

INSTALLATION OF ADJUSTABLE FITTINGS

- a. Lubricate packing (O-ring) (1) with light oil (OE/HDO-10) (Item 15, WP 0055 00).



GENERAL HYDRAULIC SYSTEM REPAIR METHODS - continued

CAUTION

Packing must be located fully in groove and not on threads, or packing will be damaged, resulting in damage to equipment.

- b. Gently push backup washer (2) and packing (1) all the way into groove (3).
- c. Turn locknut (4) down until it just contacts the backup washer (2).
- d. Install fitting, by hand, into boss (5) until the backup washer (2) contacts the face of the boss (5).
- e. Position the fitting to the desired position by backing it out (counterclockwise) to 1 full turn. Hold the fitting in the desired position and tighten locknut (4) with a wrench.
- f. Assemble tube to fitting after fitting is properly positioned and tightened.

GENERAL QUICK-DISCONNECT REPAIR METHODS

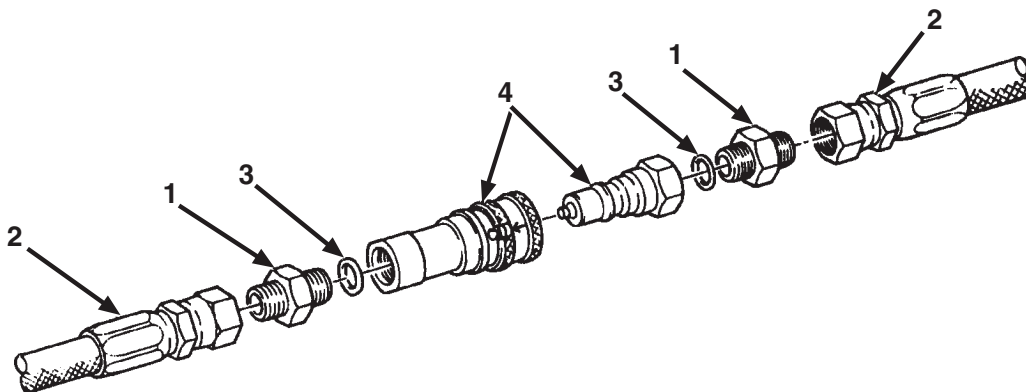
The hydraulic, pneumatic, and fuel systems on the M9, Armored Combat Earthmover with HBF-TT use quick-disconnects on many hoses. All are similar. A faulty or damaged quick-disconnect can obstruct flow through the affected hose. To disassembly and assemble a damaged or leaking quick-disconnect, use the following procedures.

DISASSEMBLY

NOTE

Use two wrenches to disassemble and assemble quick-disconnects.

- a. Remove adapters (1) from hoses (2).



- b. Remove adapters (1) and packings (3) from quick-disconnect coupling halves (4). Discard packings (3).
- c. Separate quick-disconnect coupling halves (4) by aligning arrow on collar and pulling collar.

ASSEMBLY

- a. Coat packings (3) with lubricating oil. (OE/HDO-10) (Item 15, WP 0055 00).
- b. Install packings (3) and adapters (1) in quick-disconnect coupling halves (4).

GENERAL HYDRAULIC SYSTEM REPAIR METHODS - continued

- c. Install adapters (1) in hoses (2).
- d. Connect quick-disconnect coupling halves (4) by aligning arrow on collar and pushing together.

CAUTION

Do not use table for assembly of NPT fittings. Overtightening will damage fittings.

TORQUE VALUE GUIDE FOR HYDRAULIC FITTINGS

Size	Torque in Pound-Inches	Torque in Pound-Feet	Torque in Newton-Meters
-2 (5/16-24 Thread)	36-48	3-4	4-5
-3 (3/8-24 Thread)	84-96	7-8	9-11
-4 (7/16-20 Thread)	132-144	11-12	15-16
-5 (1/2-20 Thread)	180-192	15-16	20-22
-6 (9/16-18 Thread)	264-300	22-25	30-34
-8 (3/4-16 Thread)	444-492	37-41	50-56
-10 (7/8-14 Thread)	648-696	54-58	73-79
-12 (1-1/16-12 Thread)	900-996	75-83	102-113
-14 (1-3/16-12 Thread)	1044-1200	87-100	118-136
-16 (1-5/16-12 Thread)	1200-1392	100-116	136-157
-20 (1-5/8-12 Thread)	1896-2100	158-175	214-237
-24 (1-7/8-12 Thread)	2700-3000	225-250	305-339
-32 (2-1/2-12 Thread)	3996-4500	333-375	452-509

Note 1. Torquing requirements are extracted from MIL-F-18866D, Table III.

Note 2. Torque to be used on hose fittings, tube fittings, straight fittings, and SAE/AN ports.

INITIAL SETUP**Tools/Test Equipment**

Multimeter
(Item 9, WP 0056 00)
Electrical connector slip joint pliers
(Item 5, WP 0056 00)
Test lead set (Item 5, WP 0056 00)
Electrical jumper (as required)

Equipment Conditions

Set master power switch to OFF (TM 5-2350-262-10)

ELECTRICAL SYSTEM**NOTE**

For corrective actions or malfunctions not listed, notify unit maintenance.

Wherever the word "lubricate" appears, see WP 0011 00.

Malfunctions, tests or inspections, and corrective actions are listed/indented according to the heading at the top of each page.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1

HEADLIGHTS DO NOT OPERATE

NOTE

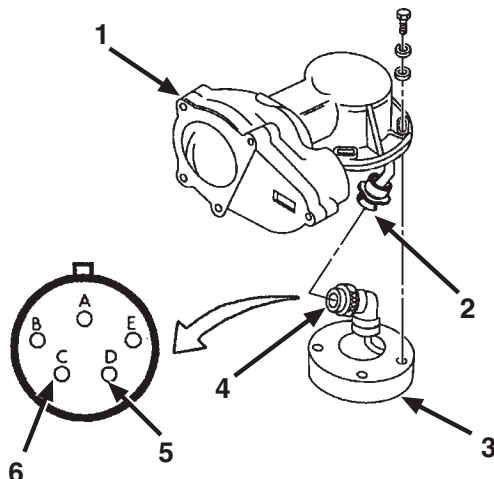
This procedure applies to either headlight.

Step 1. Check headlight wiring harness for a minimum 24VDC at socket C (6) and D (5).

Turn vehicle MASTER switch ON and turn light switch to SER DRIVE. Remove headlight (1) from headlight base (3) and disconnect headlight connector (2) from headlight harness (4).

If no voltage is present at both circuits C (6) and D (5), refer to vehicle electrical wiring diagram, control wiring harness and rear wiring harness, and troubleshoot circuits 17 and 18.

If minimum 24VDC is present at either circuit C (6) or D (5), go to step 2.



Step 2. Check for ground continuity.

Check for ground continuity between ground lead of headlight harness and vehicle ground.

If an open circuit is indicated, check for loose or missing hardware and dirt or paint. Tighten or replace missing hardware, and clean surface where ground lead is connected.

If continuity is indicated, go to step 3.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. HEADLIGHTS DO NOT OPERATE - continued

Step 3. Check headlight plug and headlight connector for continuity.

Remove lamp (9) and blackout bulb (8) from body (1). Disconnect plug J2 from lamp (9) and remove blackout bulb (8). Remove connector J1 and body (1) from base (7). Check for continuity between contacts on plug J2 and connector J1. Connections for lamp are listed in table 8-1 and blackout bulb connections are listing in table 8-2.

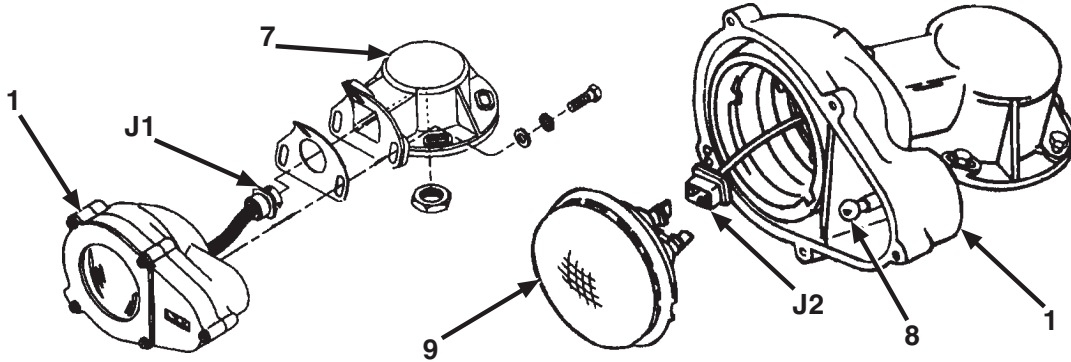


Table 8-1

	J1	J2
LOW BEAM	C	2
HIGH BEAM	D	1
GROUND	A	3

Table 8-2

	J1	J2
BO MARKER	B	CONTACT
GROUND	A	BODY

If continuity is not present on any of the circuits, replace headlight body.

If continuity is present between all the circuits, replace the faulty incandescent lamps.

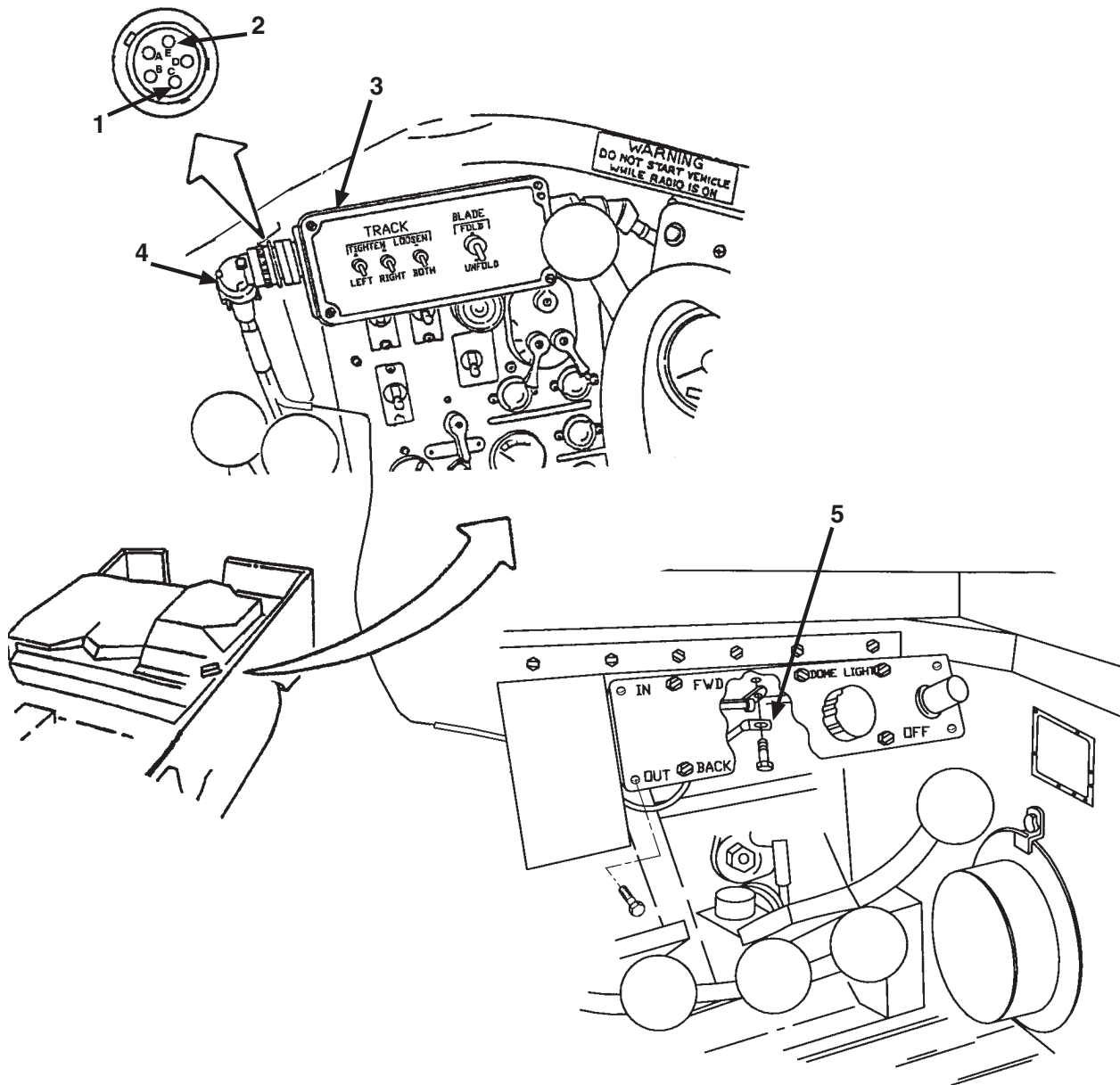
MALFUNCTION
 TEST OR INSPECTION
 CORRECTIVE ACTION

2

TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, HBF-TT SYSTEM (ELECTRICAL)

NOTE

There is one ground for the system. For VOLTAGE TEST, leave master switch off, until ready to take meter reading. For CONTINUITY TEST, leave master switch off to take meter reading.



**MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION**

2. TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, HBF-TT SYSTEM (ELECTRICAL)

WARNING

24 volts DC is present in the M9 electrical system. Do not connect measuring instruments with master switch on or connect measuring instruments incorrectly. Failure to comply could damage vehicle electric equipment, measuring instruments, or injure personnel.

Step 1. Check for ground continuity.

Disconnect control box power harness (4) from control box (3). Check for ground continuity from socket E (2) to ground (5) behind instrument panel.

If an open circuit is indicated, replace control box power harness (4). Verify that problem is solved.

If continuity is indicated, go to step 2.

Step 2. Check control box power wiring harness (4) for a minimum of 24 VDC at socket C (1).

Using volt meter with negative lead in socket E (2) and positive lead in socket C (1), turn on master switch.

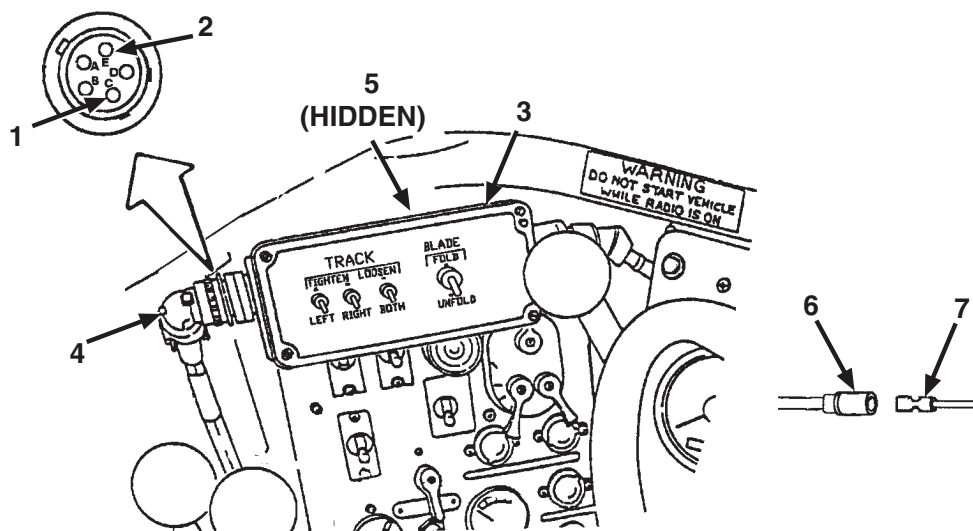
If no voltage is present at socket C (1), turn master switch off, go to step 3.

If minimum 24 VDC is present, turn master switch off, go to step 5.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

2

**TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, HBF-TT SYSTEM (ELECTRICAL)-
 continued**



Step 3. Check control wiring harness circuit 450 for a minimum of 24 VDC at circuit 450.

Disconnect control wiring harness connector (7) behind panel. Connect negative lead of VOM to socket E (2) of control box power wiring harness (4) and connect positive lead to connector (7). Turn on master switch.

If no voltage is present at connector (7), turn master switch off, reconnect connector (7) to control box power wiring harness (4), go to step 4.

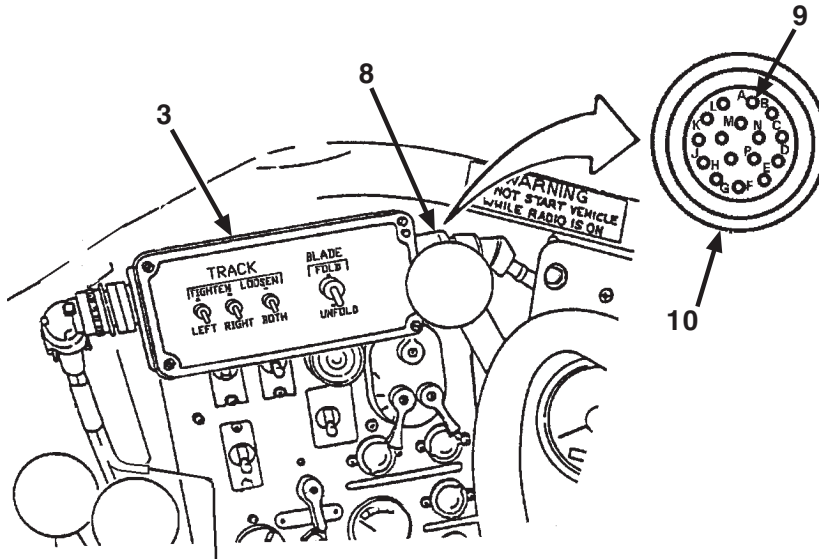
If minimum 24 VDC is present, turn master switch off, replace control box power wiring harness (4), verify problem is solved.

Step 4. Check control wiring harness for a minimum of 24 VDC at circuit 450.

Refer to vehicle electrical system wiring diagram (FO - 1) and control wiring harness (FO - 2 & FO - 3) and troubleshooting circuit 450.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

2. TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, HBF-TT SYSTEM (ELECTRICAL) - continued



Step 5. Check manifold wiring harness and hydraulic valve solenoids for continuity.

Disconnect manifold wiring harness (8) from control box (3). Check continuity between all wiring harness connector pins (9) at connector (10). This will also check continuity of the appropriate valve solenoids. Refer to table 8-3 for lead locations.

Table 8-3

HARNESS CONNECTOR PIN	HARNESS CONNECTOR PIN	SOLENOID PLUG PINS
L	A	Z1U
L	B	Z1L
L	C	Z2U
L	D	Z2L
M	G	Z4U
M	H	Z4L

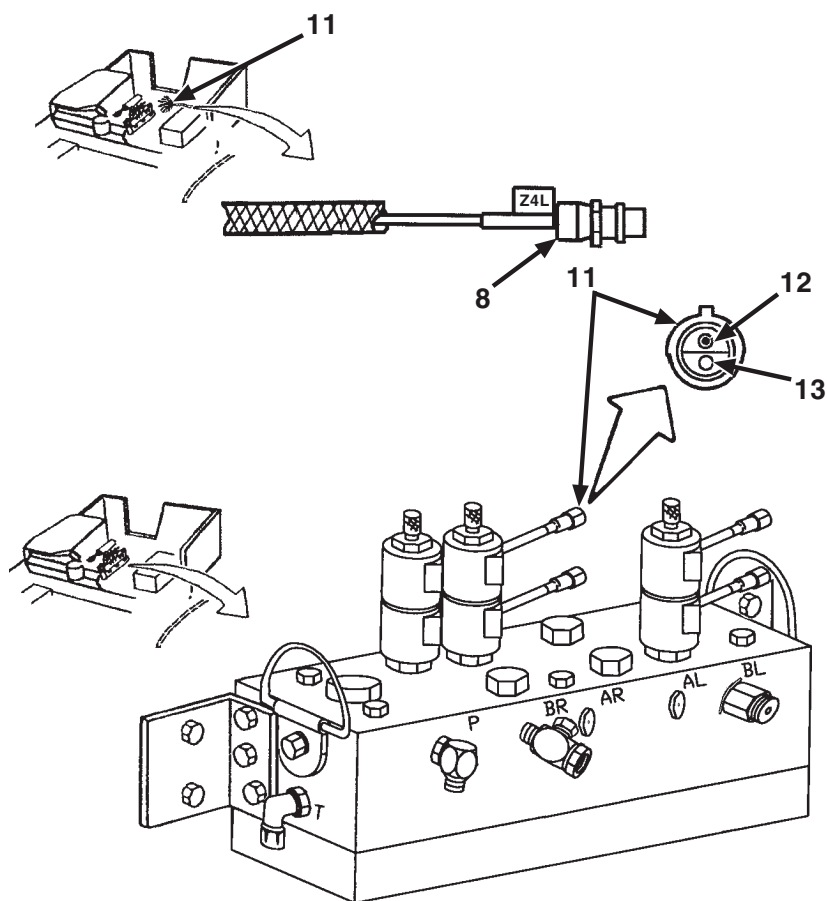
If an open circuit is indicated, the fault must be isolated between the manifold wiring harness (8) or the appropriate valve solenoid. Go to step 6.

If continuity is indicated, reconnect manifold wiring harness (8) to control box (3), go to step 7.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

2

**TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, HBF-TT SYSTEM (ELECTRICAL)-
 continued**



Step 6. Check valve solenoid for continuity.

Disconnect manifold wiring harness (8) from solenoid connector (11) (typical). Connect positive lead to pin (12) and negative lead to socket (13).

If an open circuit is indicated, replace appropriate valve solenoid. Verify that problem is solved.

If continuity is indicated, reconnect manifold wiring harness connector (8) to solenoid connector (11), go to step 7.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

2. TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, HBF-TT SYSTEM (ELECTRICAL)

Step 7. Check control box for continuity - test 1.

Remove connector (4) and connector (8) from each end on control box (3). Check continuity between connector pins on connectors J1 (4) and J2 (8) on control box (3). Refer to tables 8-4 through 8-7 for lead locations.

If an open circuit is indicated, replace control box wiring harness (3) (see Step 13). Verify problem is solved.

If continuity is indicated, go to step 8.

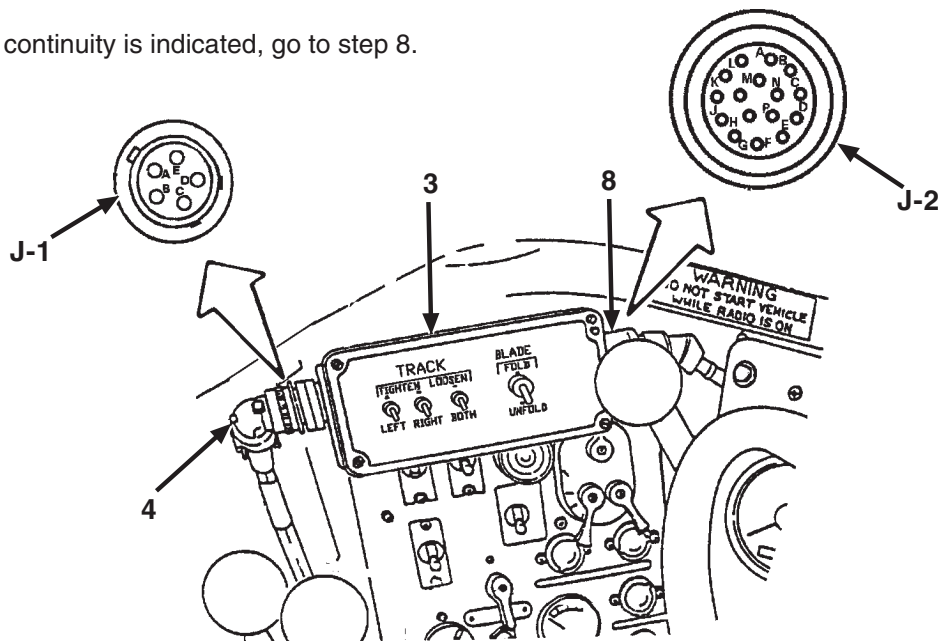


Table 8-4

POSITIVE LEAD		NEGATIVE LEAD	
J-1 (1)	J-2 (2)	J-1 (1)	J-2 (2)
C		D	
E			L
E			M
	A		C
	L		M

**MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION**

2

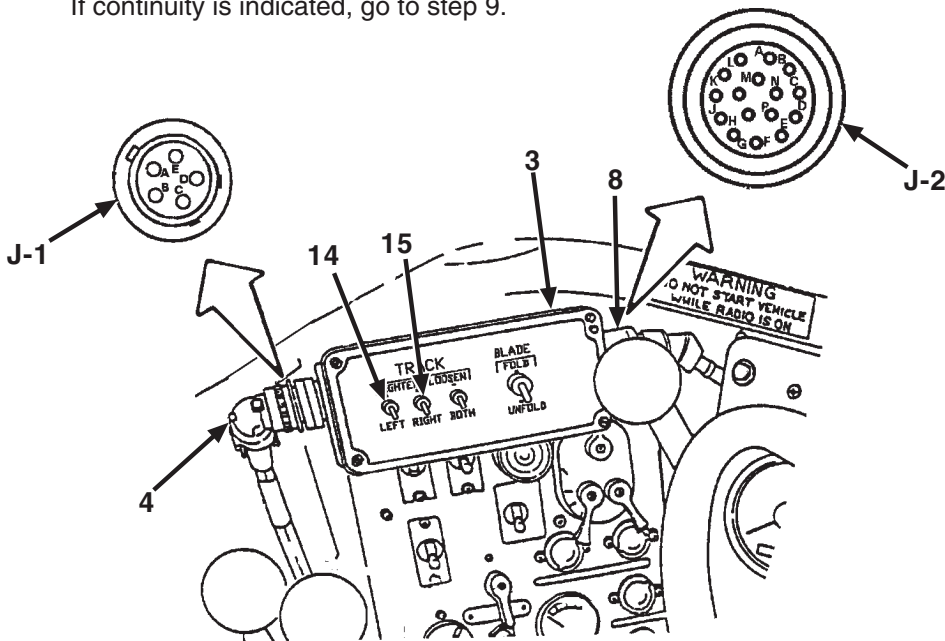
**TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, HBF-TT SYSTEM (ELECTRICAL)-
continued**

Step 8. Check control box for continuity - test 2.

Push left side track tensioning switch (14) up. Check continuity between connector pins on connectors J1 (4) and J2 (8). Refer to table 8-5 for lead locations.

If an open circuit is indicated, replace control box wiring harness (3) (see Step 13). Verify problem is solved.

If continuity is indicated, go to step 9.



Release left side track tensioning switch (14).

Table 8-5

POSITIVE LEAD		NEGATIVE LEAD	
J-1 (1)	J-2 (2)	J-1 (1)	J-2 (2)
C			D
D			D

Step 9. Check control box for continuity - test 3.

Push right side track tensioning switch (15) up. Check continuity between connector pins on connectors (4) and (8). Refer to table 8-6 for lead locations.

**MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION**

2. TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, HBF-TT SYSTEM (ELECTRICAL)

If an open circuit is indicated, replace control box. Verify problem is solved.

If continuity is indicated, go to step 10.

Table 8-6

POSITIVE LEAD		NEGATIVE LEAD	
J-1 (1)	J-2 (2)	J-1 (1)	J-2 (2)
C			B
D			B

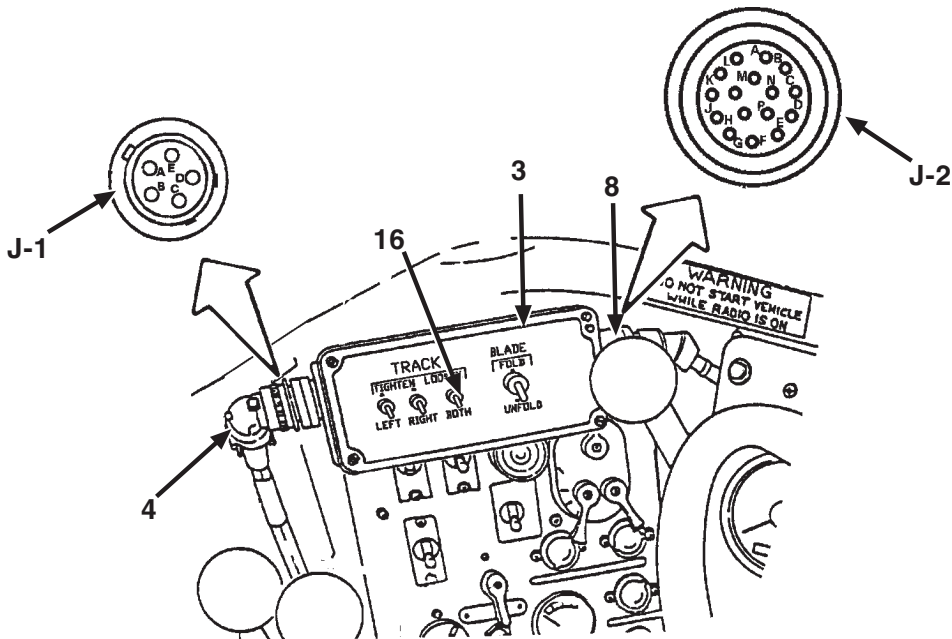
Release right side track tensioning switch (15).

Step 10. Check control box for continuity - test 4.

Push track loosening switch (16) up. Check continuity between connector pins on connectors J1 (4) and J2 (8). Refer to table 8-7 for lead locations.

If an open circuit is indicated, replace control box wiring harness (3) (see Step 13). Verify problem is solved.

If continuity is indicated, connectors J-1 and J-2 on control box are good, go to step 11.



**MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION**

2

**TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, HBF-TT SYSTEM (ELECTRICAL)-
continued**

Table 8-7 - continued

POSITIVE LEAD		NEGATIVE LEAD	
J-1 (1)	J-2 (2)	J-1 (1)	J-2 (2)
C			A
C			C
D			A
D			C

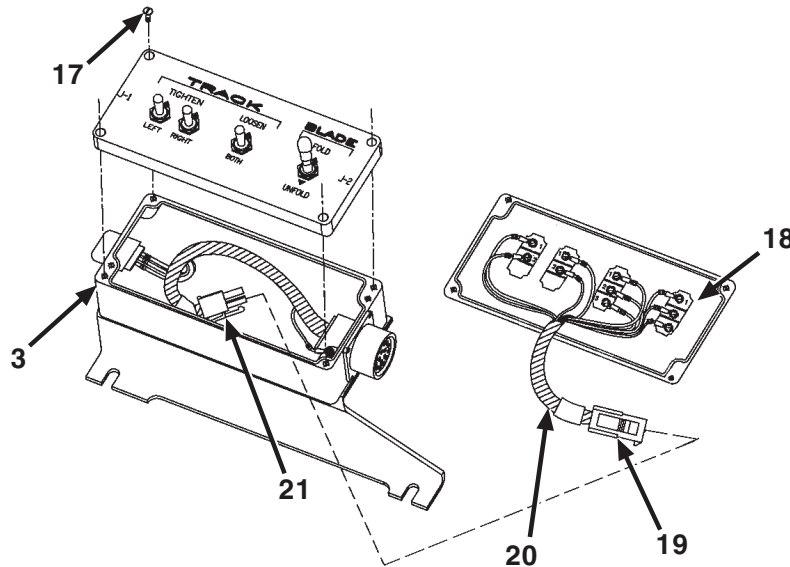
Release the track loosening switch (16).

Step 11. Check control box wiring harness for continuity.

Remove four screws (17) from top of control box (3) and disconnect connector (21) from connector (19). Check continuity between control box wiring harness connector pins (19) and switch connector pins (18). Refer to table 8-8 for lead locations.

If an open circuit is indicated, replace control box wiring harness (20). Verify that problem is solved.

If continuity is indicated, go to step 12.



MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

2. TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, HBF-TT SYSTEM (ELECTRICAL)

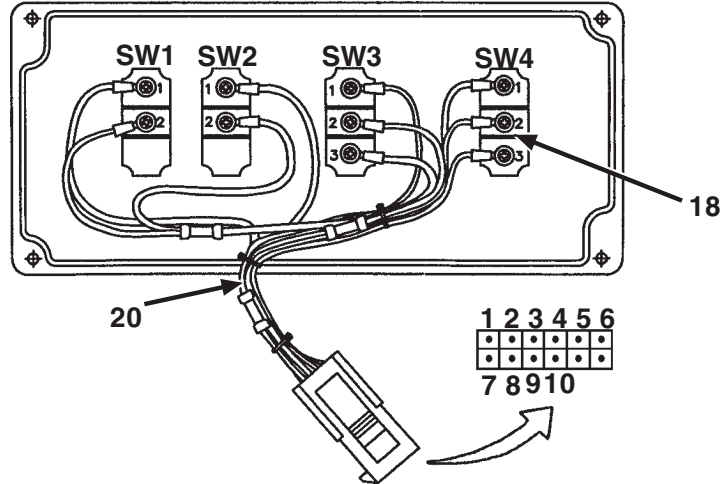


Table 8-8

POSITIVE LEAD	NEGATIVE LEAD
PIN 1	PIN 3
PIN 1	SW 3 TER 1
PIN 2	SW 2 TER 1
PIN 3	SW 3 TER 1
PIN 4	SW 1 TER 1
PIN 5	SW4 TER 3
PIN 6	SW 4 TER 1
PIN 7	PIN 8
PIN 9	PIN 10
PIN 9	SW1 TER 2
PIN 9	SW2 TER 2
PIN 9	SW 3 TER 2
PIN 9	SW 4 TER 2

Step 12. Check control box switches for continuity.

Remove control box wiring harness (20) from switch connector pins (18). Check continuity between switch connector pins. Refer to table 8-9 for lead locations.

If an open circuit is indicated, replace appropriate control box switch. Verify that problem is solved.

If continuity is indicated, go to step 13.

**MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION**

2

**TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, HBF-TT SYSTEM (ELECTRICAL)-
continued**

Table 8-9

SW1	ON/OFF	POSITIVE	NEGATIVE	CONTINUITY STATUS
SW1	OFF	TER1	TER2	NO
SW1	ON	TER1	TER2	YES
SW2	OFF	TER1	TER2	NO
SW2	ON	TER1	TER2	YES
SW3	OFF	TER1	TER2	NO
SW3	OFF	TER1	TER3	NO
SW3	OFF	TER2	TER3	YES
SW3	ON	TER1	TER2	YES
SW3	ON	TER1	TER3	NO
SW3	ON	TER2	TER3	NO
SW4	OFF	TER1	TER2	NO
SW4	OFF	TER1	TER3	NO
SW4	OFF	TER2	TER3	NO
SW4	ON (UP)	TER1	TER2	YES

**MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION**

2. TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, HBF-TT SYSTEM (ELECTRICAL)

Table 8-9 - continued

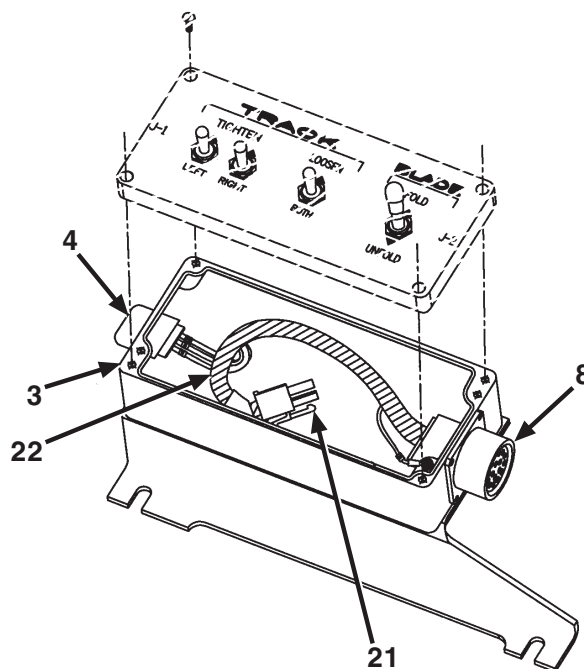
SW1	ON/OFF	POSITIVE	NEGATIVE	CONTINUITY STATUS
SW4	ON (UP)	TER1	TER3	NO
SW4	ON (UP)	TER2	TER3	NO
SW4	ON (DOWN)	TER1	TER2	NO
SW4	ON (DOWN)	TER1	TER3	NO
SW4	ON (DOWN)	TER2	TER3	YES

Step 13. Check control box wiring harness for continuity.

Check continuity between connector ends (4 and 8) on control box (3) and control box wiring harness connector ends (21). Refer to table 8-10 for lead locations.

If an open circuit is indicated, replace control box wiring harness (22). Verify that problem is solved.

If continuity is indicated, control box wiring harness (22) is good.



**MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION**

2

**TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, HBF-TT SYSTEM (ELECTRICAL)-
continued**

Table 8-10

POSITIVE LEAD	NEGATIVE LEAD
SOCKET 1	J-2 SOCKET A
SOCKET 2	J-2 SOCKET B
SOCKET 3	J-2 SOCKET C
SOCKET 4	J-2 SOCKET D
SOCKET 5	J-2 SOCKET G
SOCKET 6	J-2 SOCKET H
SOCKET 7	J-2 SOCKET M
SOCKET 8	J-2 SOCKET L
SOCKET 8	J-1 PIN E
SOCKET 9	J-1 PIN C
SOCKET 10	J-1 PIN D
J-2 SOCKET L	J-1 PIN E

END OF WORK PACKAGE

INITIAL SETUP

Tools/Test Equipment

Chain assembly
(Item 1, WP 0056 00)
Shop equipment, common no. 1
(Item 2, WP 0056 00)
Shop equipment, field basic
(Item 3, WP 0056 00)

Shop equipment, general purpose
(Item 4, WP 0056 00)

Equipment Conditions

Hydraulic pressure relieved (TM5-2350-262-20-1)

HYDRAULIC INSTALLATION

This work package contains information on locating faults and causes of malfunctions that may develop in the M9 ACE with HBF-TT system. An alphabetical listing of symptoms is provided, as well as a symptom index.

Before you begin troubleshooting, make sure the defect is real. If possible, talk to the operator or mechanic that reported the problem. Look for any other problems that could cause the system or component to malfunction, such as a switch or lever in the wrong position. Refer to WP 0005 00 and WP 0006 00 for Operation Under Unusual Conditions for correct operating procedures. Check fluid levels as shown in TM 5-2350-262-10.

Many faults can be located by a good visual inspection. Look for leaks, loose or corroded connections, damaged controls, and loose or damaged linkages.

NOTE

For specific hydraulic troubleshooting symptoms not found in this manual, refer to TM 5-2350-262-20-3.

When working on the hydraulic system, follow the general hydraulic system repair methods and refer to the general hydraulic system troubleshooting procedures.

When trying to isolate a fault, review the past maintenance record on the affected vehicle. Although it doesn't happen often, an incomplete or poorly performed maintenance task may lead to another problem.

NOTE

For corrective actions or malfunctions not listed, notify unit maintenance.

Wherever the word "lubricate" appears, see WP 0011 00.

Malfunctions, tests or inspections, and corrective actions are listed/indented according to the heading at the top of each page.

3

TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, TRACK ADJUSTING CYLINDER

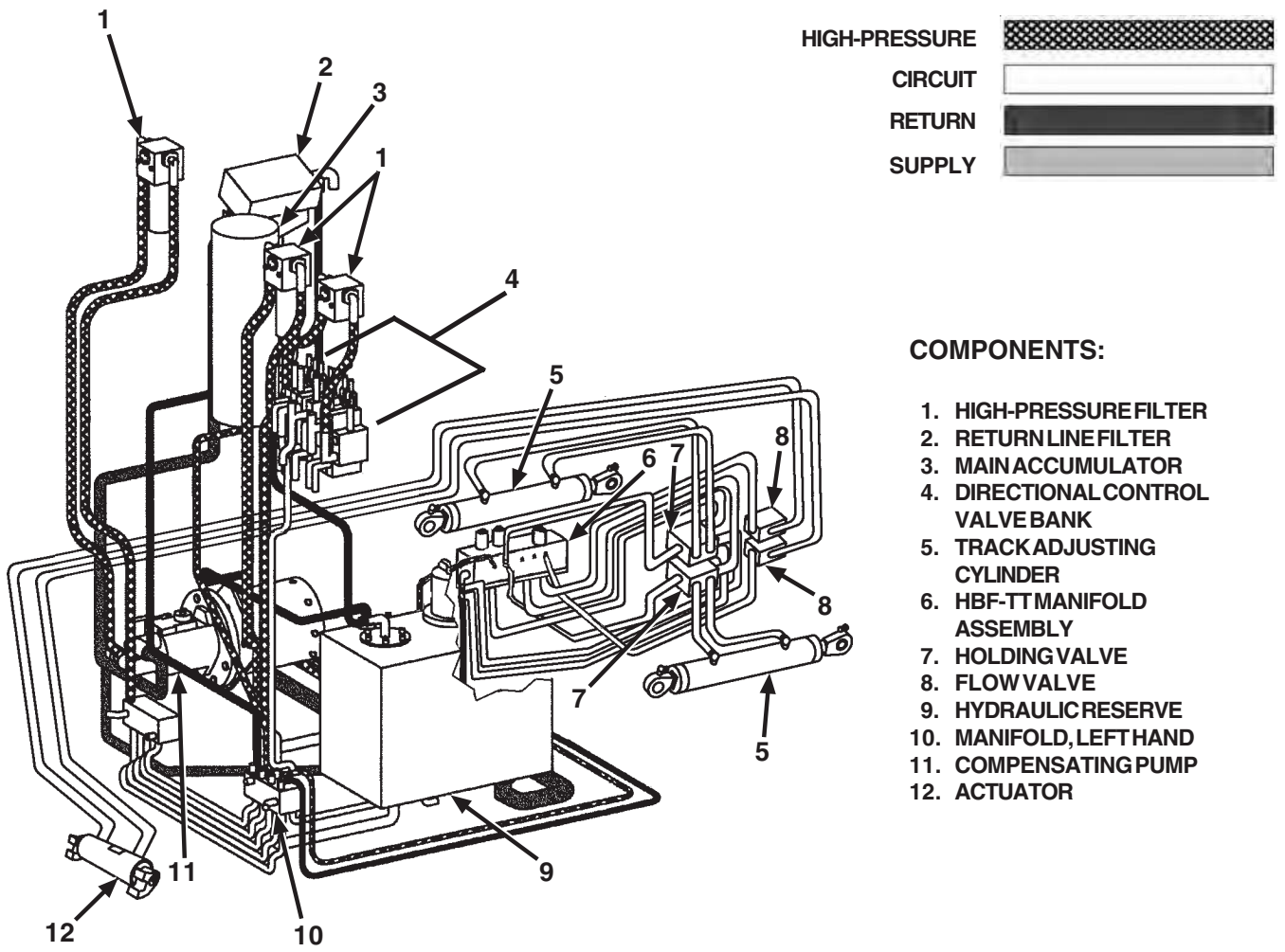
Track adjustment is provided by hydraulic pressure from the compensating pump and controlled by electric current tapped at the UNSPRUNG switch. In the SPRUNG or UNSPRUNG mode, hydraulic pressure is delivered to the track and blade manifold from line 9 and returned through line 7 at the left manifold.

WARNING

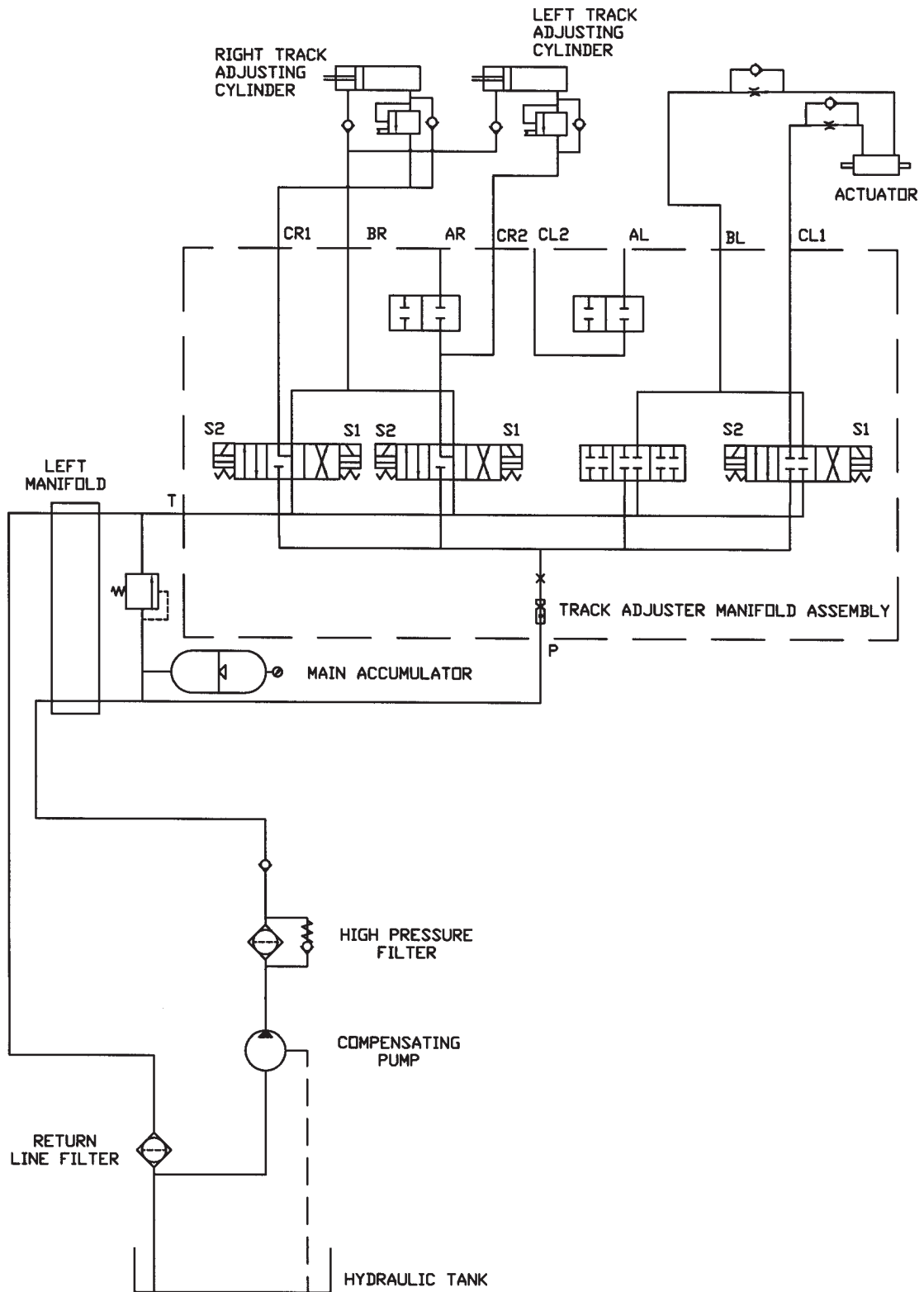
High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each hydraulic control lever is moved several times through all positions and hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury or death to personnel.

NOTE

Use these procedures to troubleshoot either left or right track adjusting cylinder. The hydraulic valves are equipped with manual operators which can be used to check the hydraulic portion of the system. If everything functions by the manual hydraulic operators, the problem will be in the electric circuit (refer to FO - 1).



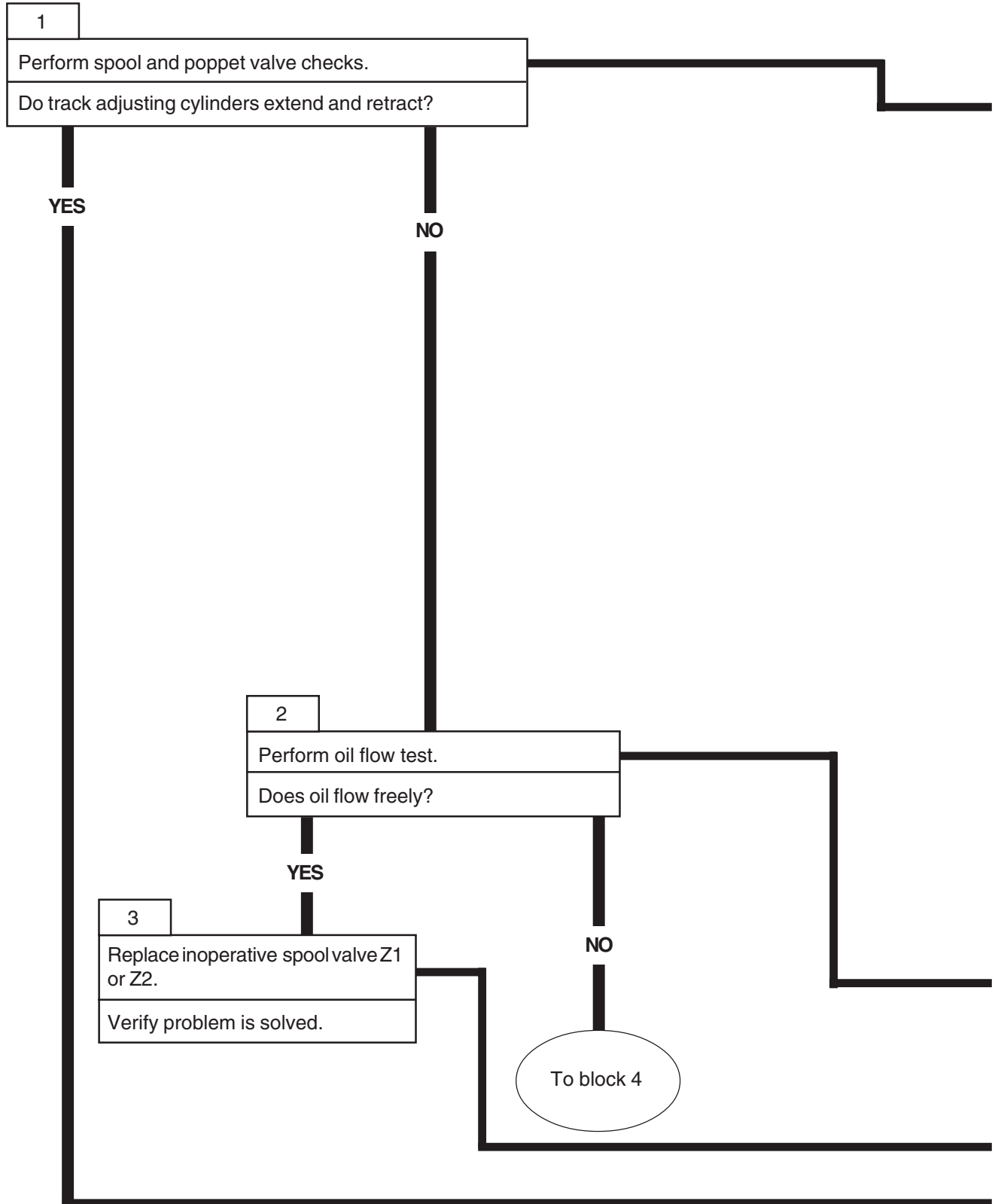
- COMPONENTS:**
- 1. HIGH-PRESSURE FILTER
 - 2. RETURN LINE FILTER
 - 3. MAIN ACCUMULATOR
 - 4. DIRECTIONAL CONTROL VALVE BANK
 - 5. TRACK ADJUSTING CYLINDER
 - 6. HBF-TT MANIFOLD ASSEMBLY
 - 7. HOLDING VALVE
 - 8. FLOW VALVE
 - 9. HYDRAULIC RESERVE
 - 10. MANIFOLD, LEFT HAND
 - 11. COMPENSATING PUMP
 - 12. ACTUATOR



HBF-TT HYDRAULIC SCHEMATIC
0008 00-33

3

TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, TRACK ADJUSTING CYLINDER - continued

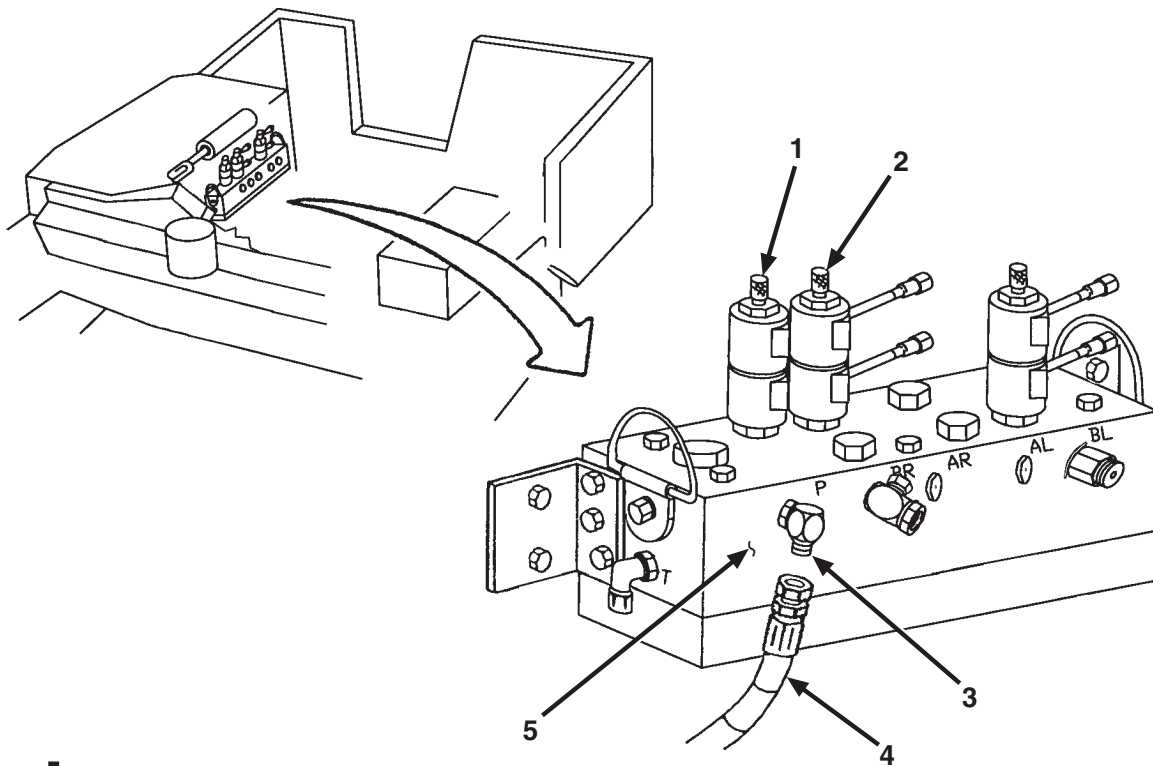


SPOOL AND POPPET VALVE CHECKS

NOTE

To test spool valve, extend and retract track adjusting cylinders. Track adjusting cylinders can be extended individually but cannot be retracted individually. However, they can be retracted simultaneously.

- Have assistant start engine
- To extend left cylinder, depress manual override spool valve Z2 (2).
- To extend right cylinder, depress manual override spool valve Z1 (1).
- To retract both cylinders, lift manual override spool valves Z1 (1) and Z2 (2) simultaneously.
- Stop engine; relieve hydraulic pressure.



OIL FLOW TEST

NOTE

Have suitable container ready to catch oil.

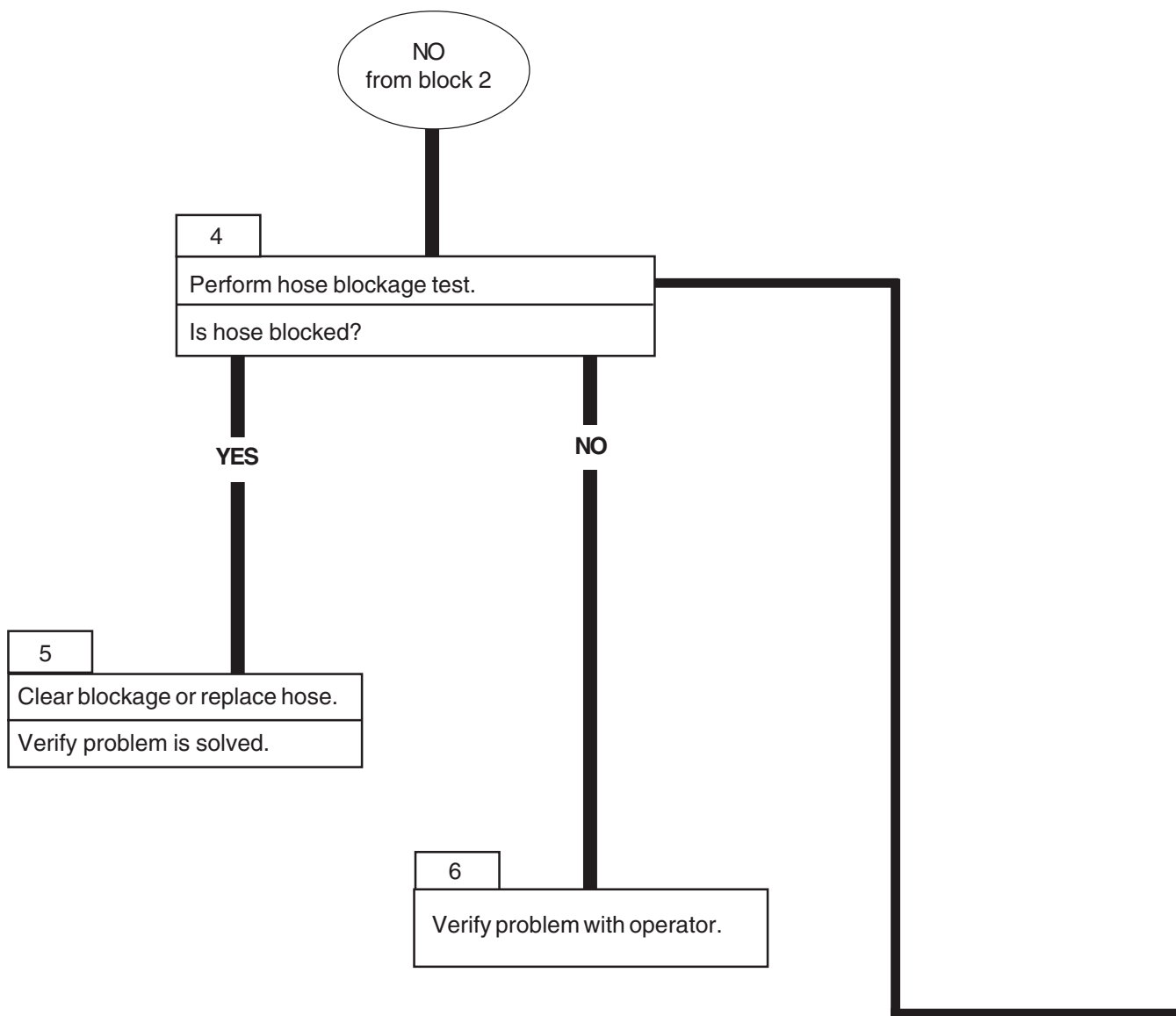
- Disconnect HYDR-MAN-IN-9 hose (4) from elbow (3) at port P on track and blade manifold (5). Cap elbow (3).
- While holding open end of hose (4) in suitable container, have assistant start engine. Check for free flow of hydraulic oil from hose (4).
- Stop engine; relieve hydraulic pressure. Connect hose (4) to elbow (3).

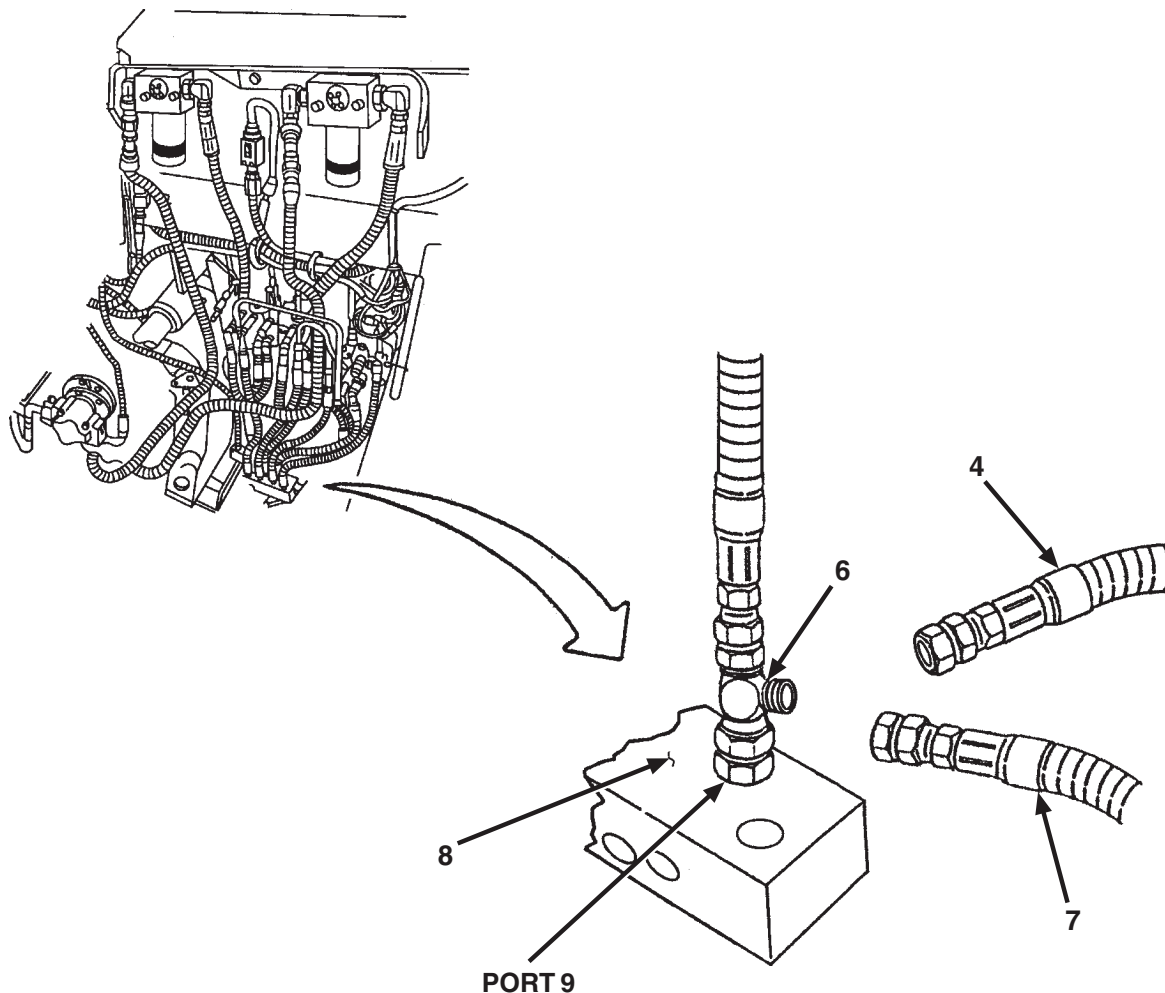
Refer to WP 0029 00.

Perform M9 ACE HBF-TT troubleshooting, refer to WP 0008 00-18.

3

TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, TRACK ADJUSTING CYLINDER
- continued





HOSE BLOCKAGE TEST

NOTE

Have suitable container ready to catch oil.

- Disconnect HYDR-MAN-IN-9 hose (4) from tee (6) at port 9 on LHMAN (1). Plug pressure hose (4). Add short hose (7) to tee (6).
- While holding open end of hose (7) in container, have assistant start engine. Check for free flow of hydraulic oil from hose (7).
- Stop engine; relieve hydraulic pressure. Disconnect hose (7) from tee (6) and connect HYDR-MAN-IN-9 hose (4) to tee (6).

4

FRONT CORNER (LEFT OR RIGHT) DOES NOT RAISE OR LOWER IN UNSPRUNG MODE, TRACK ADJUSTING CYLINDER

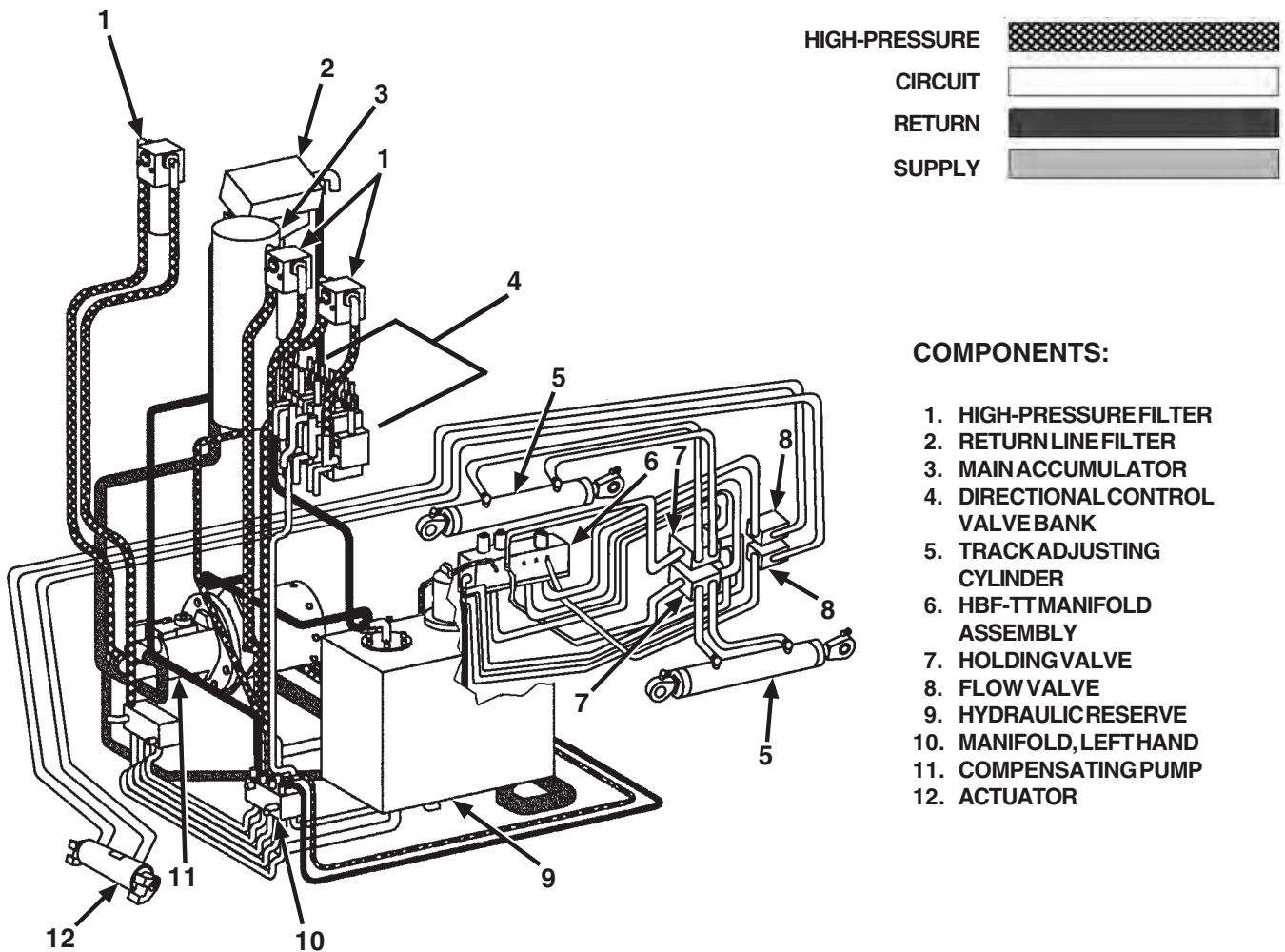
Track adjustment is provided by hydraulic pressure from the compensating pump and controlled by electric current tapped at the SPRUNG/UNSPRUNG pressure switch. In the UNSPRUNG mode, hydraulic pressure is delivered to the track and blade manifold from line 9 and returned through line 7 at the left manifold.

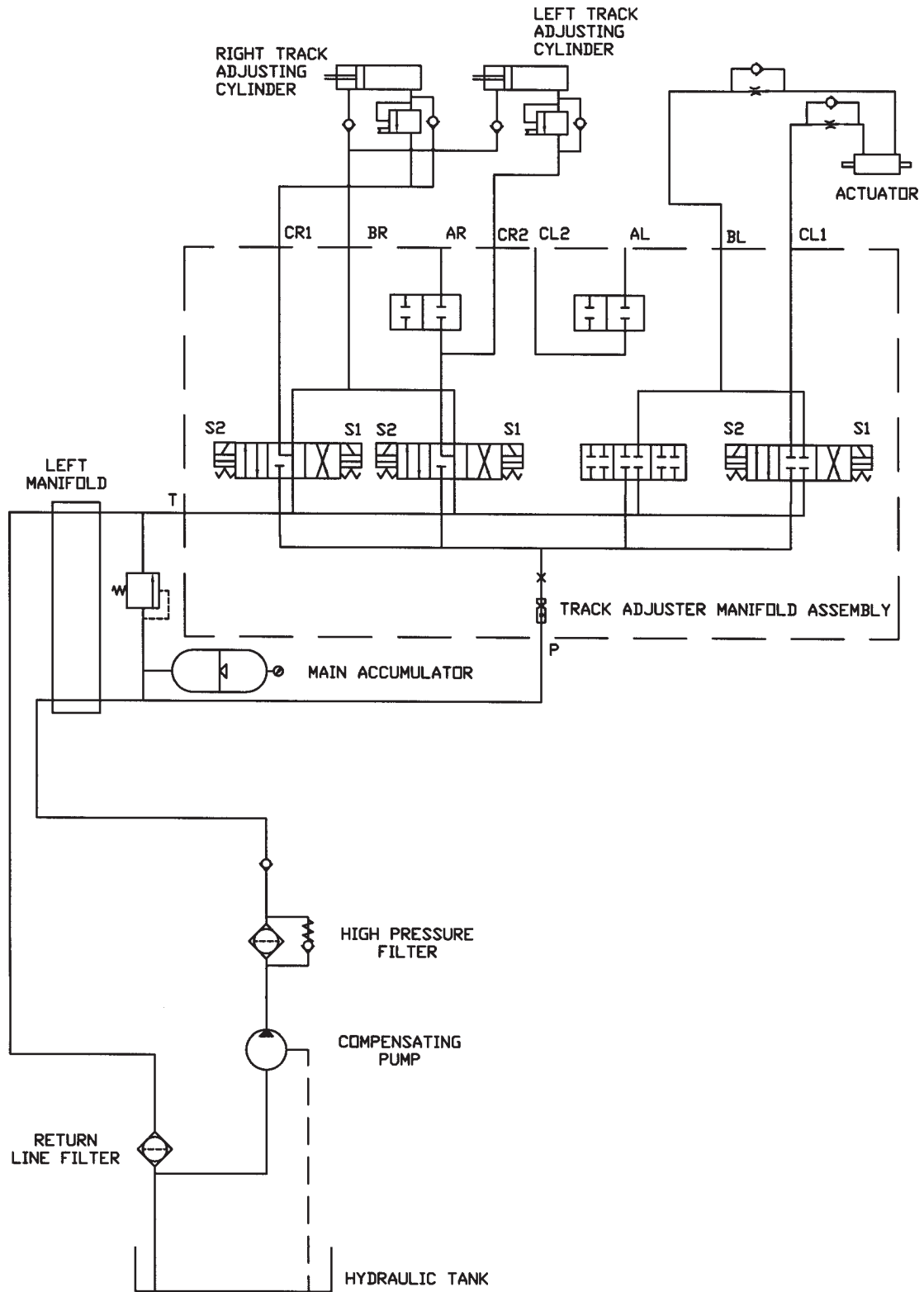
WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each hydraulic control lever is moved several times through all positions and hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury or death to personnel.

NOTE

Use these procedures to troubleshoot either left or right front corner. Front corners will not lower if the track adjusting cylinders are not retracted. The hydraulic valves are equipped with manual operators which can be used to check the hydraulic portion of the system. If everything functions by the manual hydraulic operators, the problem will be in the electric circuit (refer to FO - 1).

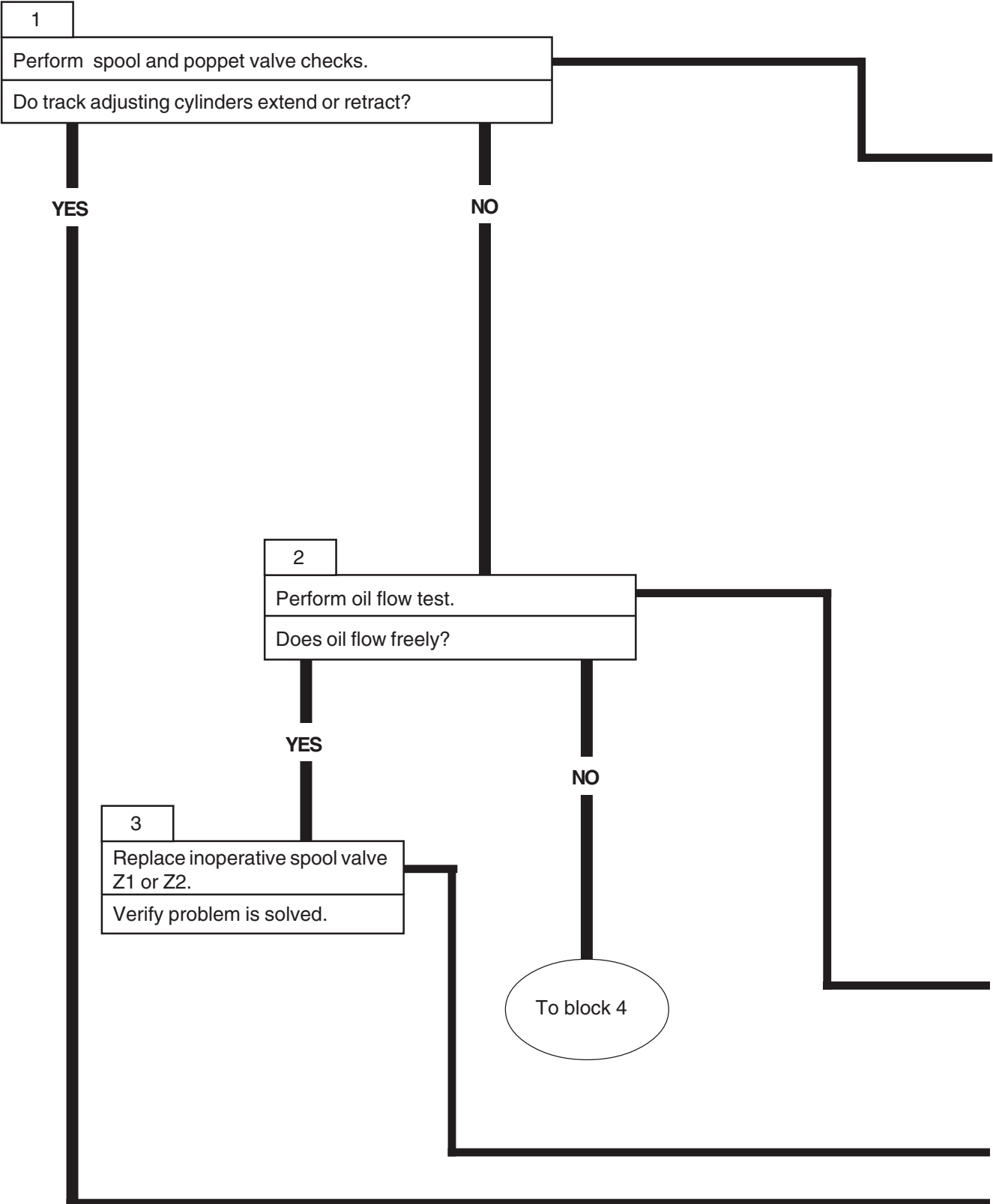




HBF-TT HYDRAULIC SCHEMATIC

4

FRONT CORNER (LEFT OR RIGHT) DOES NOT RAISE OR LOWER IN UNSPRUNG MODE, TRACK ADJUSTING CYLINDER - continued

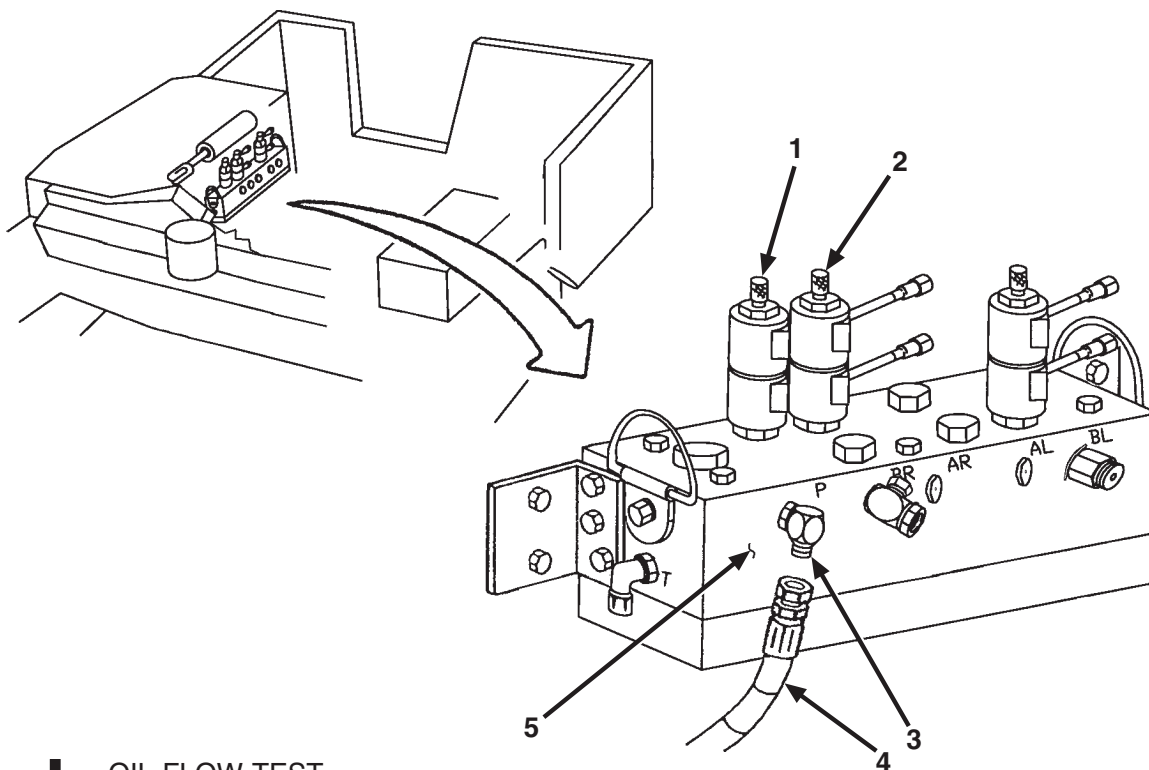


SPOOL AND POPPET VALVE CHECKS

NOTE

The track adjusting cylinders must be retracted to raise or lower front corner(s). To test spool valve, extend and retract track adjusting cylinders.

- Have assistant start engine.
- To extend left cylinder, depress manual override spool valve Z2 (2).
- To extend right cylinder, depress manual override spool valve Z1 (1).
- To retract both cylinders, lift manual override spool valves Z2 (2) and Z1 (1) simultaneously.
- Stop engine; relieve hydraulic pressure.



OIL FLOW TEST

NOTE

Have suitable container ready to catch oil.

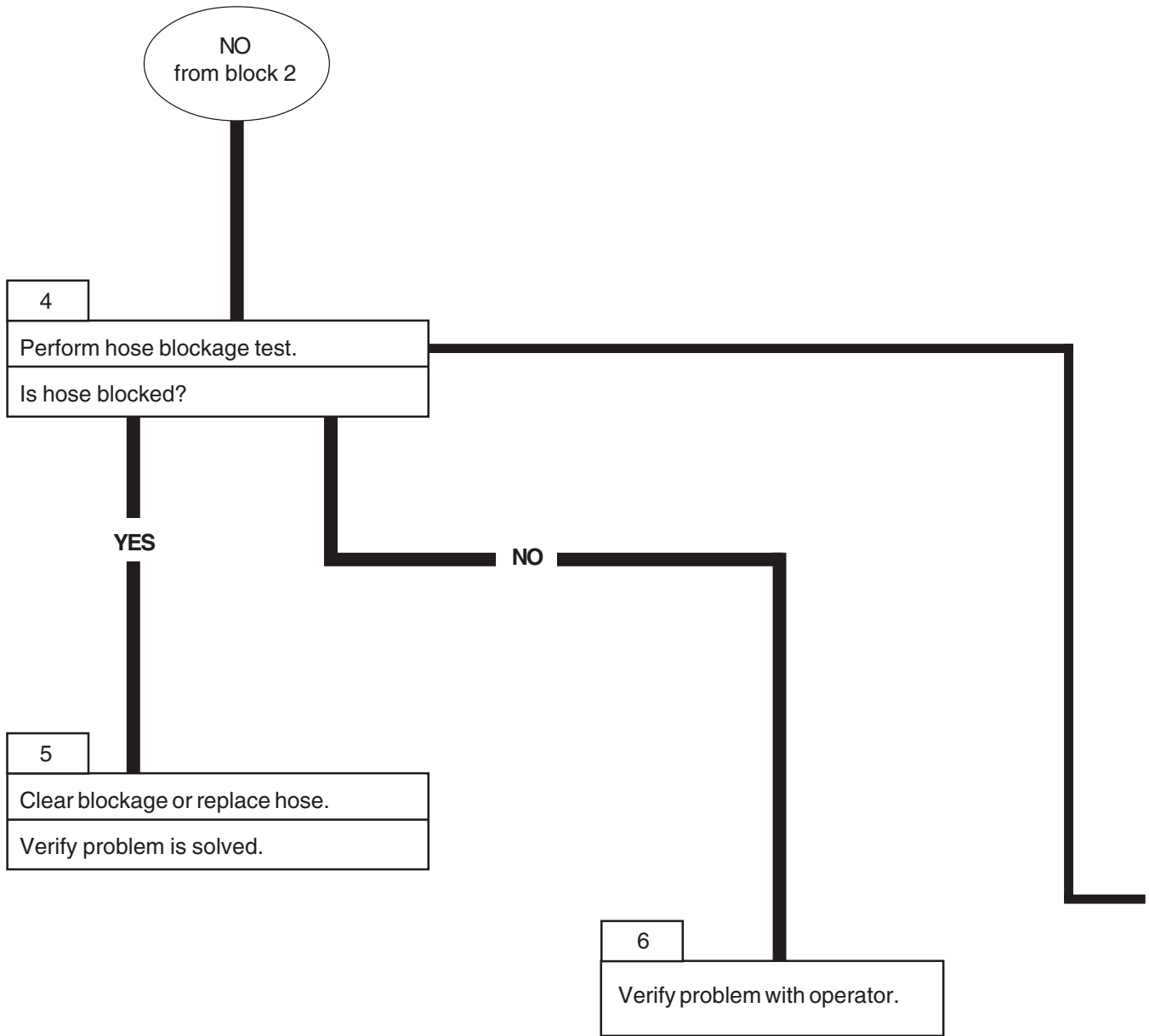
- Disconnect HYDR-MAN-IN-9 hose (4) from elbow (3) at port P on track and blade manifold (5). Cap elbow (3).
- While holding open end of hose (4) in container, have assistant start engine. Check for free flow of hydraulic oil from hose (4).
- Stop engine; relieve hydraulic pressure. Connect hose (4) to elbow (3).

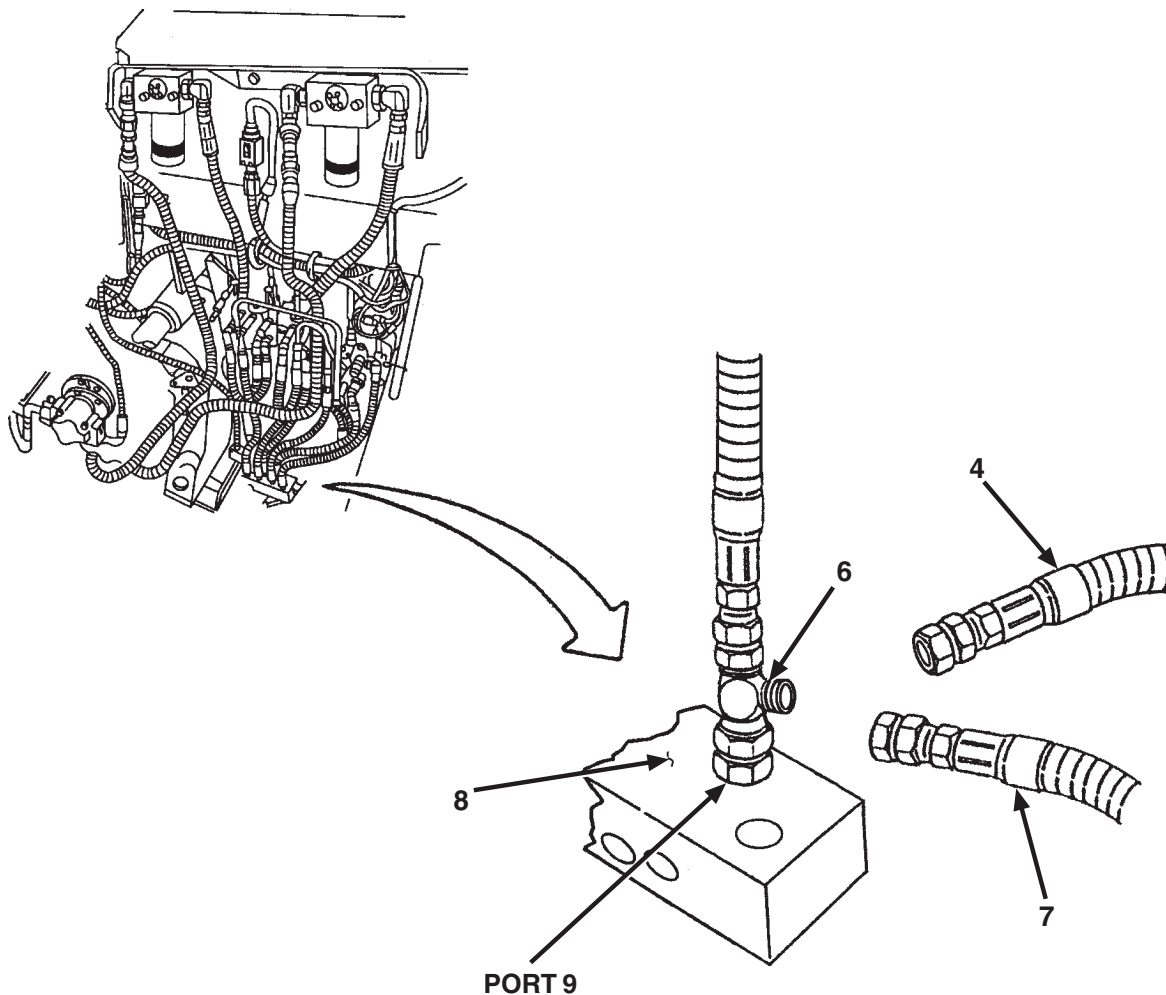
Refer to WP 0029 00.

Perform M9 ACE HBF-TT troubleshooting, refer to WP 0008 00-18.

4

FRONT CORNER (LEFT OR RIGHT) DOES NOT RAISE OR LOWER IN UNSPRUNG MODE,
TRACK ADJUSTING CYLINDER - continued





HOSE BLOCKAGE TEST

NOTE

Have suitable container ready to catch oil.

- Disconnect HYDR-MAN-IN-9 hose (4) from tee (6) at port 9 on LHMAN (8). Plug pressure hose (4), and add short hose (7) to tee (6).
- While holding open end of hose (7) in suitable container, have assistant start engine. Check for free flow of hydraulic oil from hose (7).
- Stop engine; relieve hydraulic pressure. Disconnect hose (7) from tee (6) and connect HYDR-MAN-IN-9 hose (4) to tee (6).

5

LEFT OR RIGHT TRACK ADJUSTING CYLINDERS WILL NOT EXTEND AFTER SUSPENSION CONTROL LEVERS ARE RETURNED TO NEUTRAL

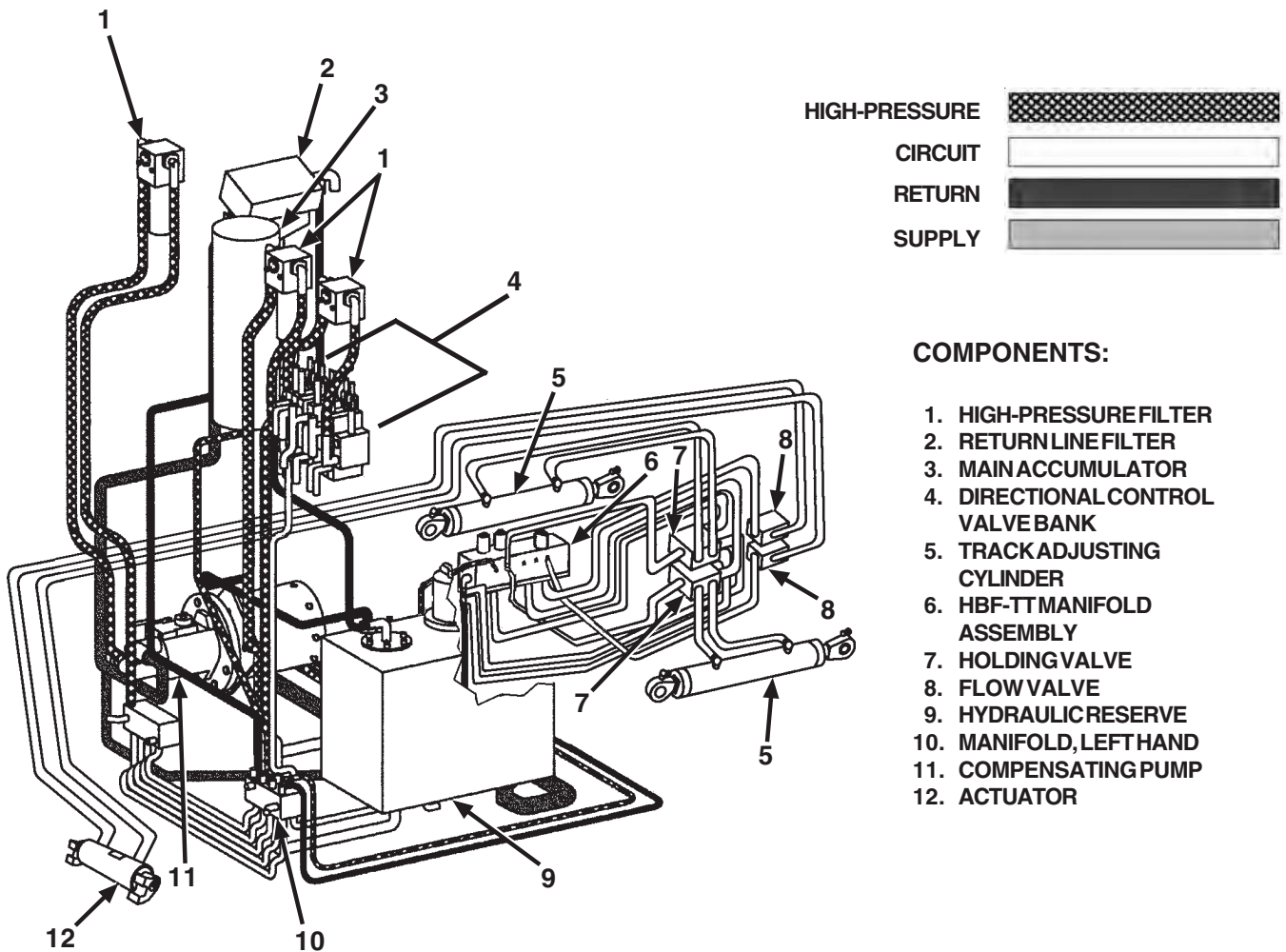
Track adjustment is powered by hydraulic pressure from the compensating pump and controlled by electric current tapped at the SPRUNG/UNSPRUNG pressure switch. In the UNSPRUNG mode, hydraulic pressure is delivered to the track and blade manifold from line 9 and returned through line 7 at the left manifold.

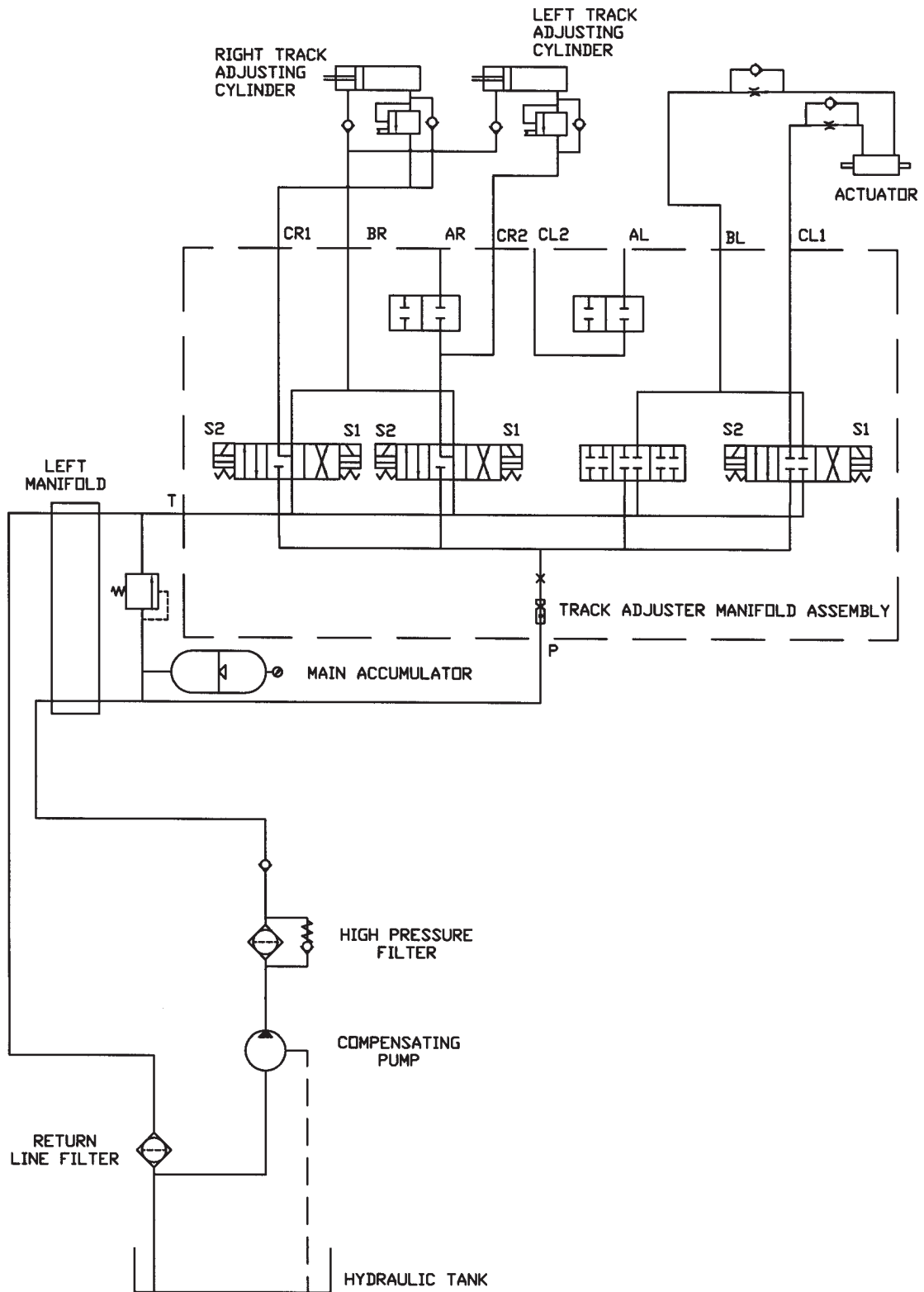
WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each hydraulic control lever is moved several times through all positions and hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury or death to personnel.

NOTE

Use these procedures to troubleshoot either left or right track adjusting cylinder. After reaching required dozer blade height, tracks are tightened for retention. The hydraulic valves are equipped with manual operators which can be used to check the hydraulic portion of the system. If everything functions by the manual hydraulic operators, the problem will be in the electric circuit (refer to FO - 1).

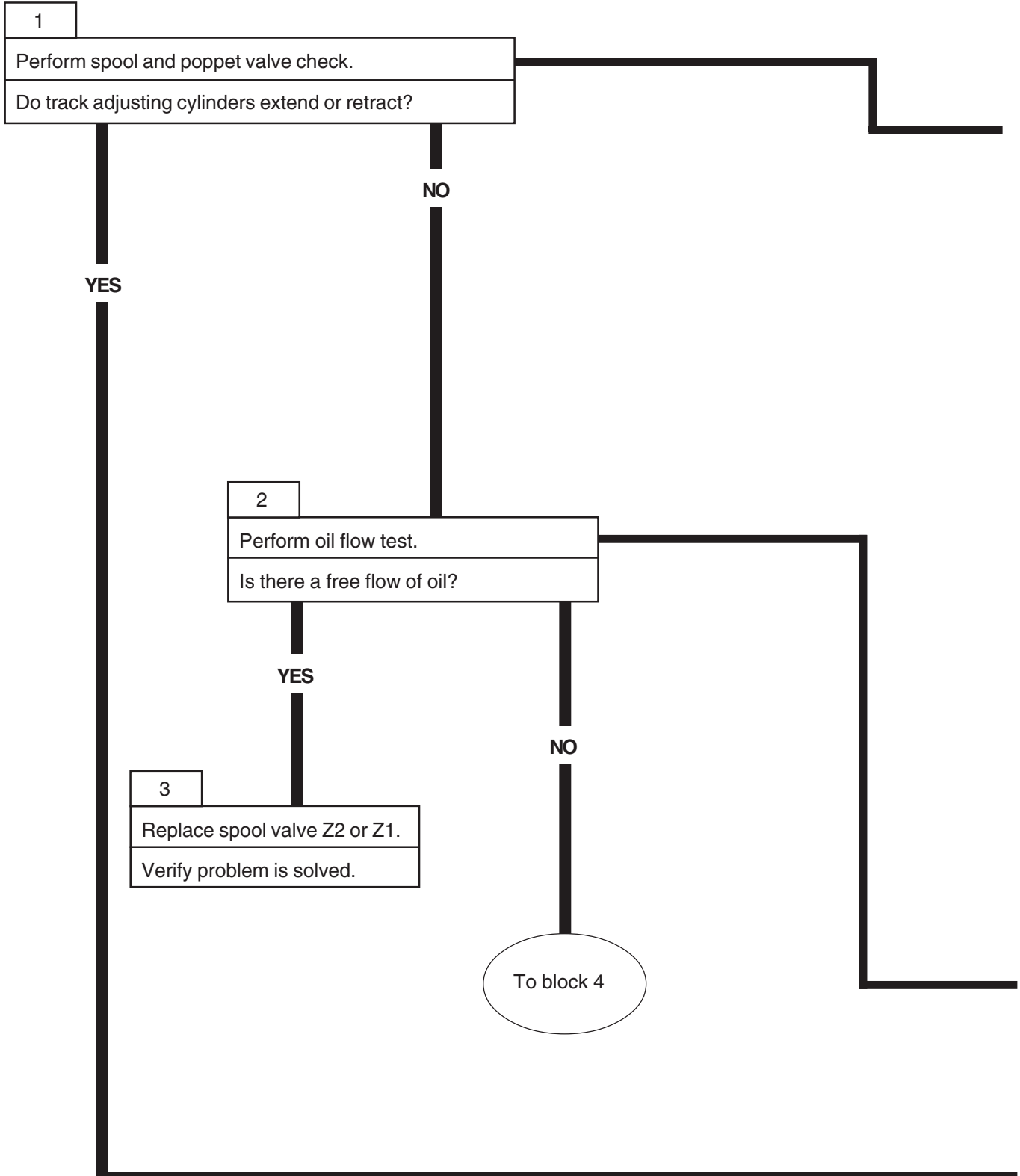




HBF-TT HYDRAULIC SCHEMATIC

5

LEFT OR RIGHT TRACK ADJUSTING CYLINDERS WILL NOT EXTEND AFTER SUSPENSION CONTROL LEVERS ARE RETURNED TO NEUTRAL - continued

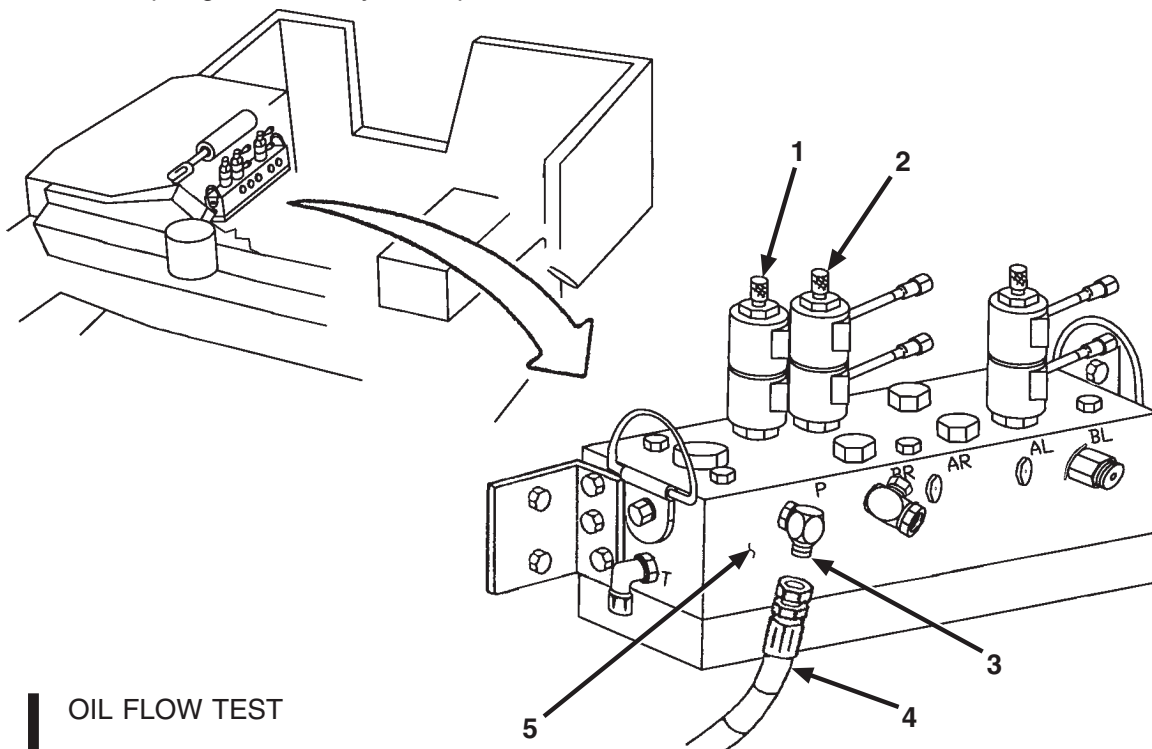


SPOOL AND POPPET VALVE CHECKS

NOTE

To test spool valve, extend and retract track adjusting cylinders. Track adjusting cylinders can be extended individually but cannot be retracted individually. However, they can be retracted simultaneously.

- To test spool valve, retract and extend track adjusting cylinders.
- Have assistant start engine.
- To retract left cylinder, lift manual override spool valve Z2 (2).
- To retract right cylinder, lift manual override spool valve Z1 (1).
- To extend both cylinders, depress manual override spool valves Z1 (1) and Z2 (2) simultaneously.
- Stop engine; relieve hydraulic pressure.



NOTE

Have suitable container ready to catch oil.

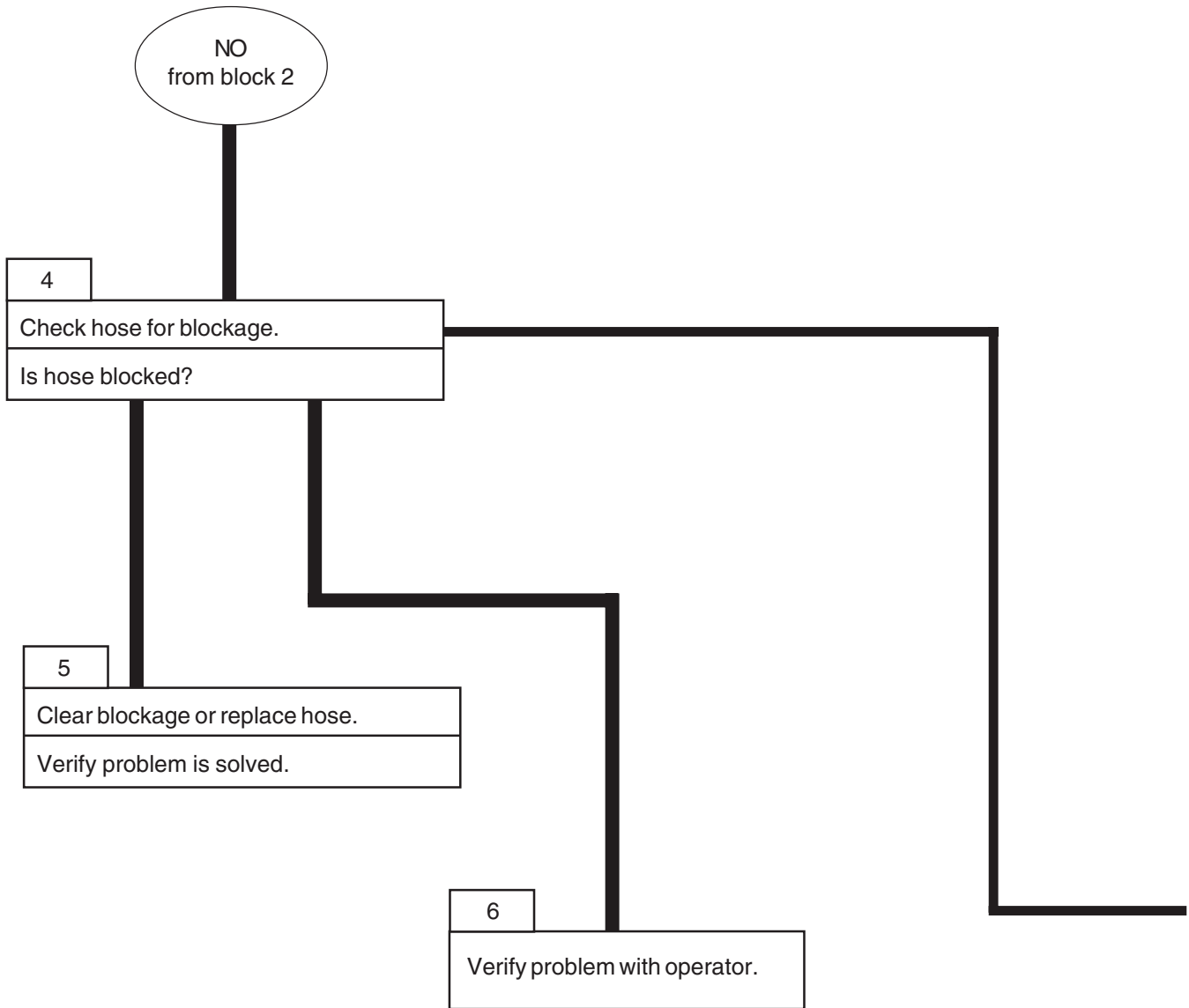
OIL FLOW TEST

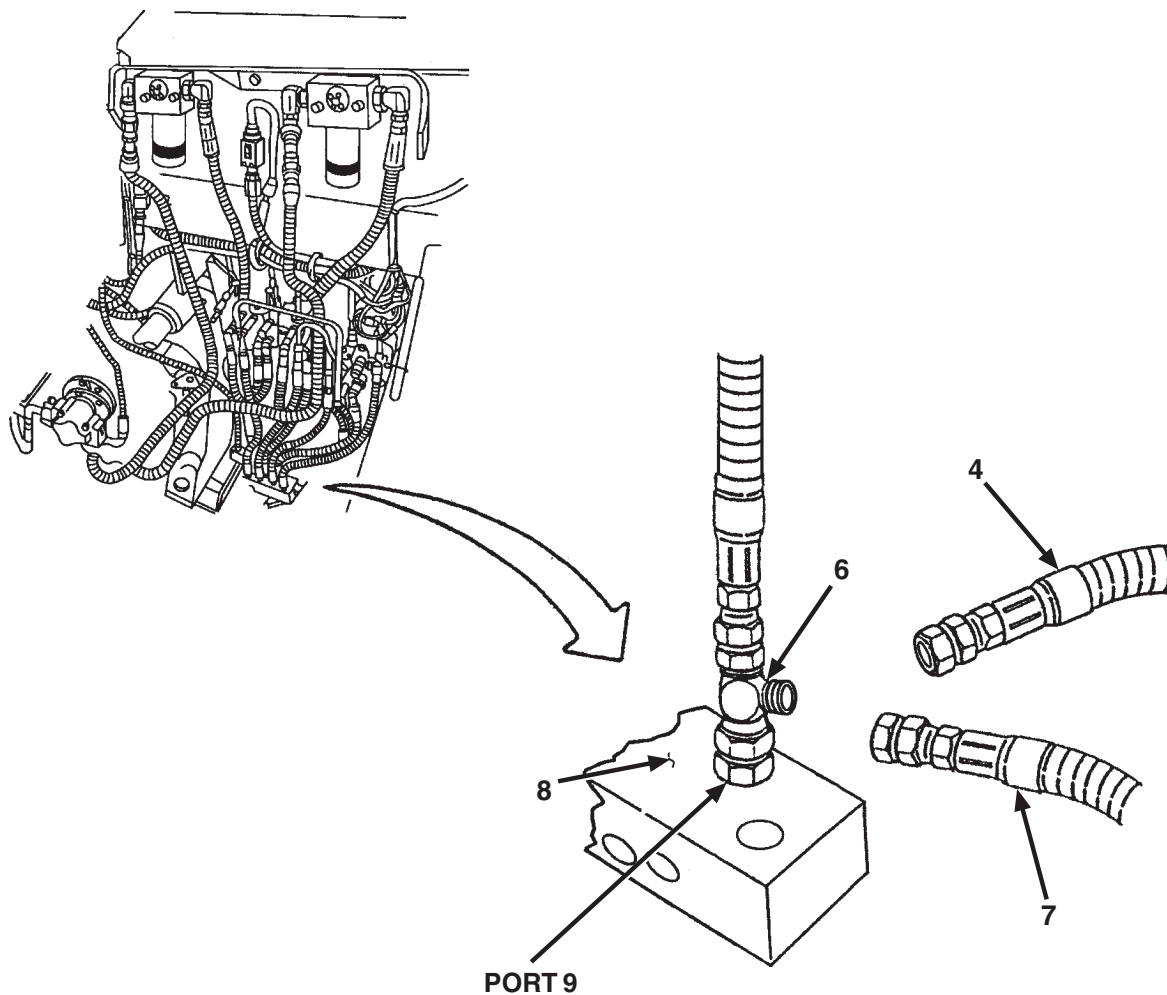
- Disconnect HYDR-MAN-IN-9 hose (4) from elbow (3) at port P on track and blade manifold (5). Cap elbow (3).
- While holding open end of hose (4) in suitable container, have assistant start engine. Check for free flow of hydraulic oil from hose (4).
- Stop engine; relieve hydraulic pressure. Connect hose (4) to elbow (3).

Perform M9 ACE HBF-TT electrical troubleshooting, refer to WP 0008 00-18.

5

LEFT OR RIGHT TRACK ADJUSTING CYLINDERS WILL NOT EXTEND AFTER SUSPENSION CONTROL LEVERS ARE RETURNED TO NEUTRAL - continued





OIL FLOW TEST

NOTE

Have suitable container ready to catch oil.

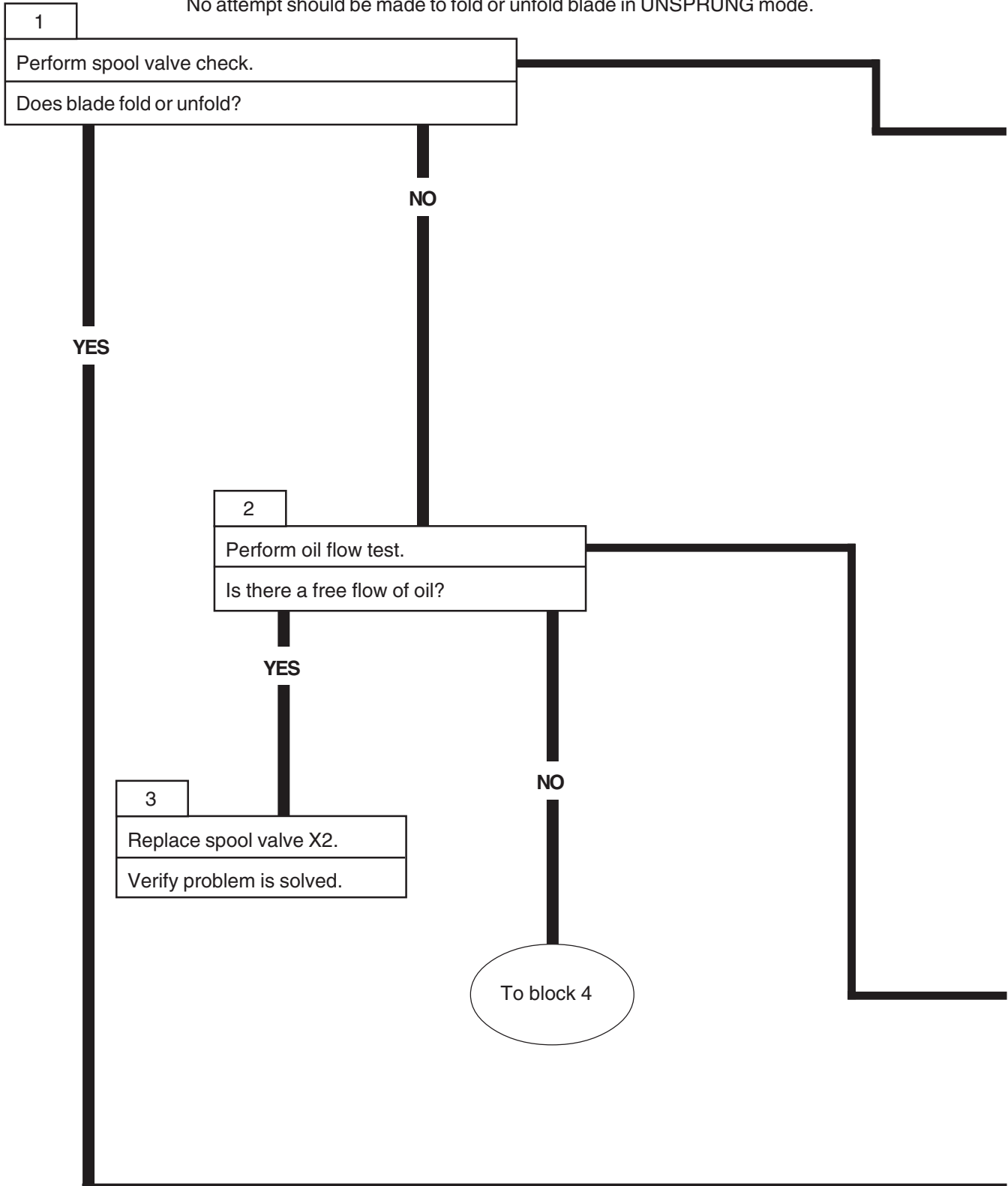
- Disconnect HYDR-MAN-IN-9 hose (4) from tee (6) at port 9 on LH MAN (8). Plug pressure hose (4). Add short hose (7) to tee (6).
- While holding open end of hose (7) in suitable container, have assistant start engine. Check for free flow of hydraulic oil from hose (7).
- Stop engine; relieve hydraulic pressure. Disconnect hose (7) from tee (6) and connect HYDR-MAN-IN-9 hose (4) to tee (6).

6

BLADE WILL NOT FOLD OR UNFOLD IN SPRUNG MODE

NOTE

No attempt should be made to fold or unfold blade in UNSPRUNG mode.

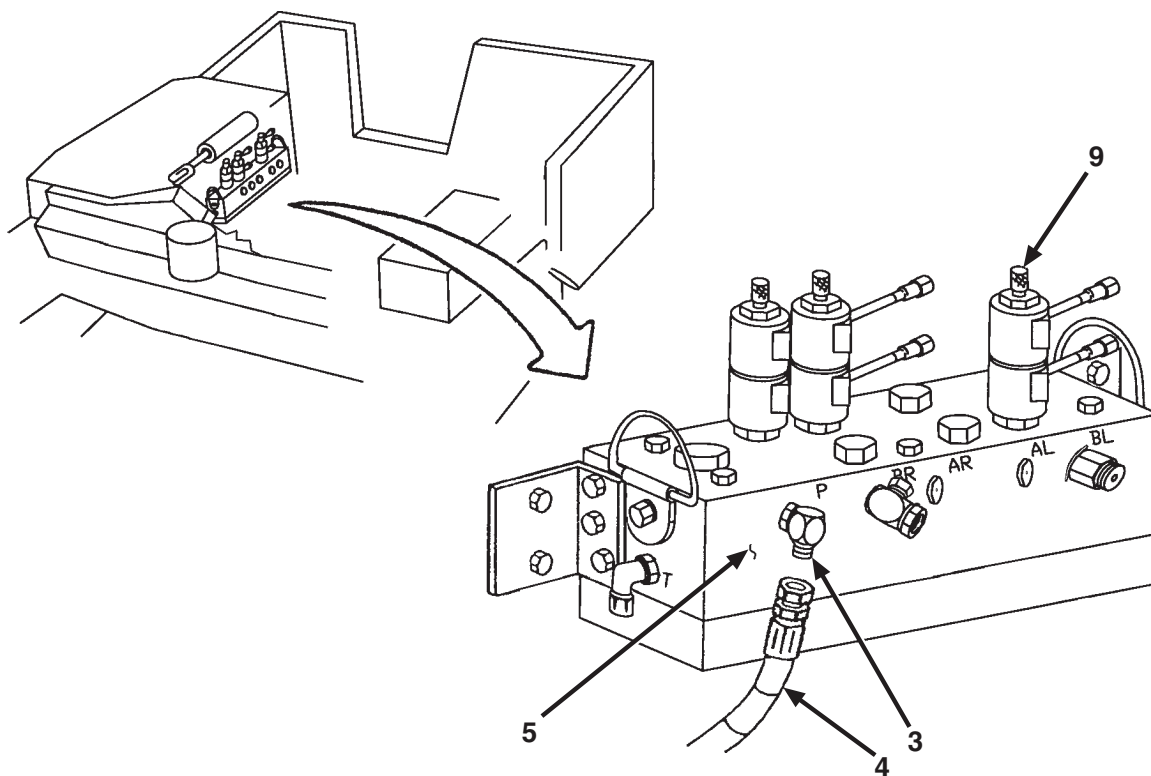


SPOOL VALVE CHECKS

NOTE

No attempt should be made to fold or unfold blade in UNSPRUNG mode.

- To test spool valve, fold and unfold blade in SPRUNG mode.
- Have assistant start engine.
- Have blade in folded position; to unfold blade, lift manual override spool valve Z4 (9).
- Have blade in unfolded position; to fold blade, depress manual override spool valve Z4 (9).
- Stop engine; relieve hydraulic pressure.



OIL FLOW TEST

NOTE

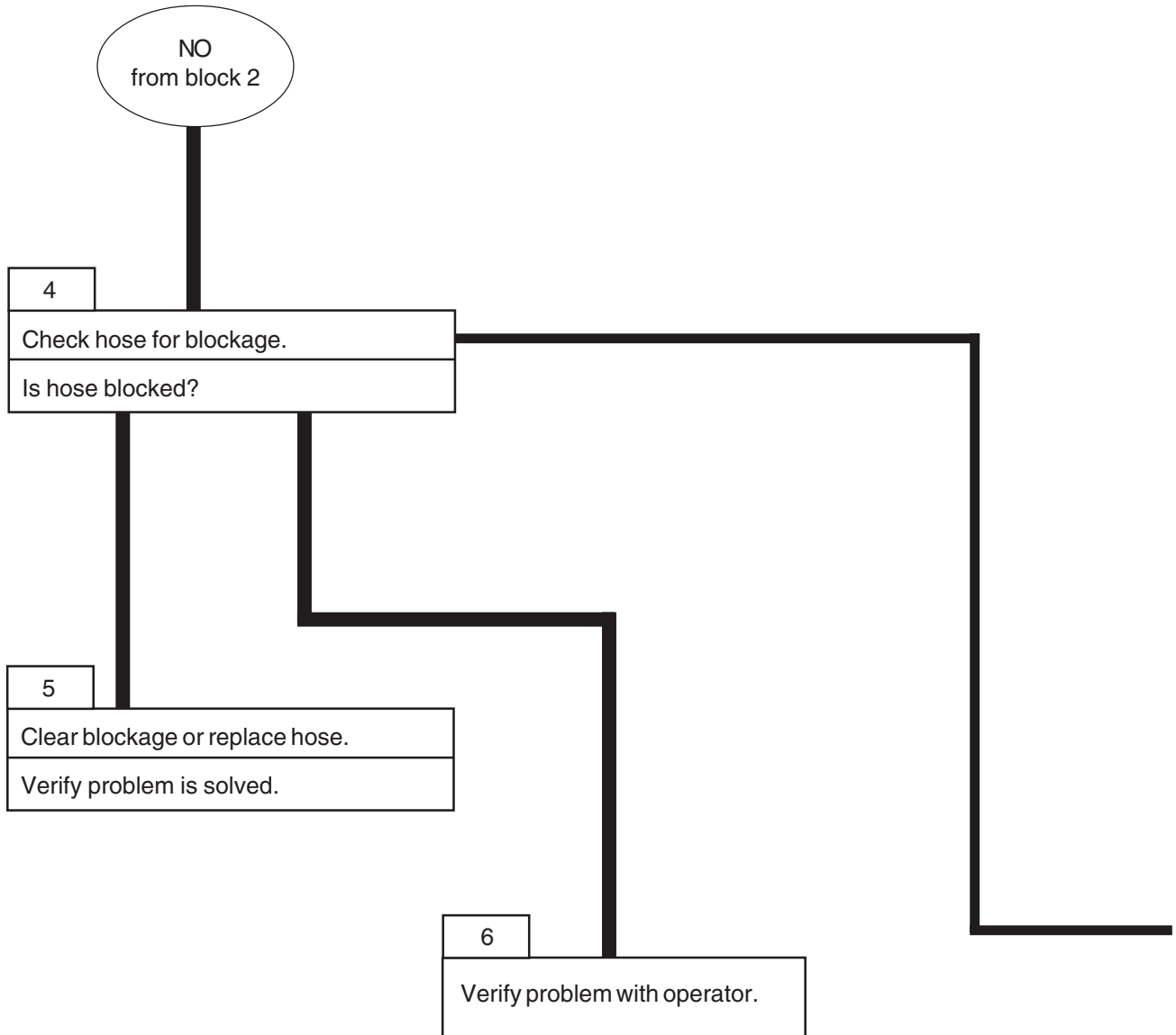
Have suitable container ready to catch oil.

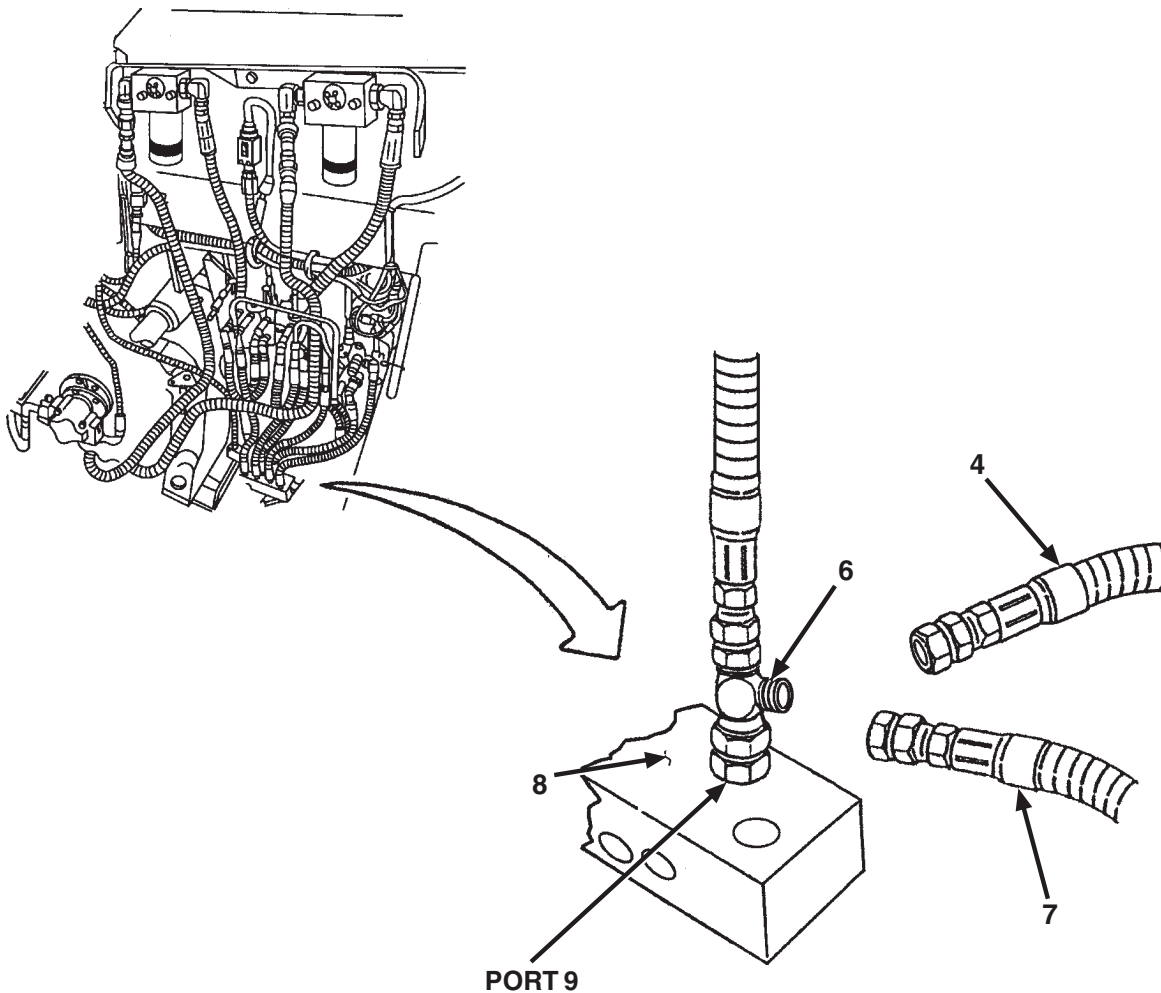
- Disconnect HYDR-MAN-IN-9 hose (4) from elbow (3) at port P on track and blade manifold (5). Cap elbow (3).
- While holding open end of hose (4) in suitable container, have assistant start engine. Check for free flow of hydraulic oil from hose (4).
- Stop engine; relieve hydraulic pressure. Connect hose (4) to elbow (3).

Perform M9 ACE HBF-TT troubleshooting, refer to WP 0008 00-18.

6

BLADE WILL NOT FOLD OR UNFOLD IN SPRUNG MODE - continued





OIL FLOW TEST

NOTE

Have suitable container ready to catch oil.

- Disconnect HYDR-MAN-IN-9 hose (4) from tee (6) at port 9 on LHMAN (8). Plug pressure hose (4). Add short hose (7) to tee (6).
- While holding open end of hose (7) in suitable container, have assistant start engine. Check for free flow of hydraulic oil from hose (7).
- Stop engine; relieve hydraulic pressure. Disconnect hose (7) from tee (6) and connect HYDR-MAN-IN-9 hose (4) to tee (6).

END OF WORK PACKAGE

CHAPTER 4 OPERATOR MAINTENANCE INSTRUCTIONS SERVICE UPON RECEIPT

GENERAL

When a new, used, or reconditioned M9 ACE is received, determine whether it has been properly prepared for service and is capable of performing its mission. Follow the inspection instructions and servicing instructions in WP0011 00 and WP0013 00.

INSPECTION INSTRUCTIONS

- a. Refer to DD Form 1397 for procedures on unpacking the M9 ACE.
- b. Remove all straps, plywood, tape, seals, and wrappings.

WARNING

Cleaning solvent (PF05) is combustible. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using cleaning solvent; the flashpoint is 144°F (62°C). Failure to follow this warning may result in injury or death to personnel. A fire extinguisher will be kept nearby when the solvent is used.

- c. Remove rust preventive compound from coated exterior parts of the HBF-TT using cleaning solvent (Item 7, WP 0055 00) and rags (Item 17, WP 0055 00).
- d. Inspect the M9 ACE for any damage incurred during shipment. Check also to see if the equipment has been modified.
- e. Check the equipment against the packing list to ensure that the shipment is complete. Report any discrepancies in accordance with instructions in DA Pam 738-750.

SERVICING INSTRUCTIONS

- a. Perform all operator/crew and unit preventive maintenance checks and service (PMCS) (WP 0011 00 and WP 0013 00). Schedule the next PMCS for both operator and unit on DD Form 314.
- b. Lubricate all lubrication points as described in WP 0011 00 regardless of interval.
- c. Report any problems on DA Form 2407.

END OF WORK PACKAGE

OPERATOR/CREW PREVENTATIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION

GENERAL

- a. To ensure that the M9 ACE is ready for operation at all times, it must be inspected on a regular basis so that defects may be found before they result in serious equipment damage, equipment failure, or injury to personnel. This section contains systematic instructions on inspections, adjustments, and corrections to be performed by the operator/crew.
- b. While performing PMCS, read and follow all safety instructions found in the warning summary at the front of this manual. Keep in mind all WARNINGS and CAUTIONS.

SERVICE INTERVALS

Perform PMCS, found in Table 11-1, at the following intervals:

- a. Perform *Before* PMCS just before operating the M9 ACE .
- b. Perform *During* PMCS while operating the M9 ACE .
- c. Perform *After* PMCS right after operating the M9 ACE .
- d. Perform *Weekly* PMCS once each week.

REPORTING REPAIRS

All defects that the operator cannot fix must be reported on a DA Form 2404 or DA Form 5988E immediately after completing PMCS. If a serious problem is found, IMMEDIATELY report it to your supervisor.

LEAKAGE DEFINITIONS

- a. It is important to know how fluid leakage affects the status of the M9 ACE. The following are types/classes of leakage an operator must know to determine whether the trailer is mission capable. Learn these leakage definitions. When in doubt, notify your supervisor.

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

LEAKAGE DEFINITIONS - continued**CAUTION**

Equipment operation is allowable with minor leakages (Class I or II). Of course, you must consider the fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor. When operating with Class I or Class II leaks, continue to check fluid levels as required in your PMCS.

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

- b. Equipment operation is allowed with minor (Class I or II) leakage. Fluid levels in an item/system affected with such leakage must be checked more frequently than required in PMCS. When in doubt notify your supervisor.
- c. Report Class III leaks IMMEDIATELY to your supervisor or unit maintenance.

GENERAL PMCS PROCEDURES**WARNING**

Cleaning solvent (PF05) is combustible. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using cleaning solvent; the flashpoint is 144°F (62°C). Failure to follow this warning may result in injury or death to personnel. A fire extinguisher will be kept nearby when the solvent is used.

- a. Keep equipment clean. Dirt, oil, and debris may cover up a serious problem. Clean as you work and as needed. Use cleaning solvent (Item 7, WP 0055 00) on all metal surfaces. Use soap (Item 11, WP 0055 00) and water on rubber, plastic, and painted surfaces.
- b. While performing specific PMCS procedures, inspect the following components:
 - (1) **Bolts, Nuts, and Screws.** Make sure they are not loose, missing, bent, or broken. Report loose or missing bolts, nuts, and screws to Unit maintenance.
 - (2) **Welds.** Inspect for gaps where parts are welded together. Check for loose or chipped paint, rust, and cracks. Report bad welds to Unit maintenance.
 - (3) **Electric Conduit, Wires, or Connectors.** Inspect for cracked or broken conduit insulation, bare wires, and loose or broken connectors. Report loose connections and faulty wiring to Unit maintenance.
 - (4) **Hoses, Lines, Clamps and Fittings.** Inspect for wear, damage, and leaks. Make sure that clamps and fittings are tight. Report any damage, leaks, or loose fittings to unit maintenance.
- c. Check to see that components are adequately lubricated in accordance with Table 11-1.

END OF WORK PACKAGE

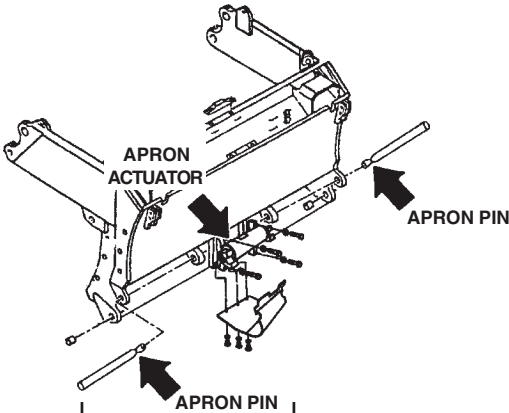
OPERATOR/CREW PMCS INCLUDING LUBRICATION INSTRUCTIONS

SPECIFIC PMCS PROCEDURES

- a. Operator/Crew PMCS is provided in Table 11-1. Always perform PMCS in the order listed. Once PMCS procedures become routine, spotting problems will become much easier.
- b. Before performing PMCS, read all the checks required for the applicable interval and prepare all tools needed for the task. Have several clean rags (Item 17, WP 0055 00) ready for use. Perform ALL inspections at the applicable interval.
- c. If any problems are discovered through PMCS, perform the appropriate troubleshooting task found in WP 0008 00. If any component or system is not serviceable, or if any service does not correct the problem, notify your supervisor.
- d. Explanation of the column headings in Table 11-1 are as follows:
 - (1) **Item No.** The item number column of your PMCS table is to be used for reference. When completing DA Form 2404, include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the intervals listed.
 - (2) **Interval.** This column of your PMCS table tells you when to do a certain check or service.
 - (3) **Location, Item To Check/Service.** This column of your PMCS table provides the location and the item to be checked or serviced.
 - (4) **Procedure.** This column of your PMCS table tells you how to do the required checks and services. Carefully follow these instructions. If you do not have the tools, or if the procedure tells you to, have Unit maintenance do the work.
 - (5) **Not Fully Mission Capable If.** This column tells you when and why your equipment cannot be used.

SPECIFIC PMCS PROCEDURES - continued

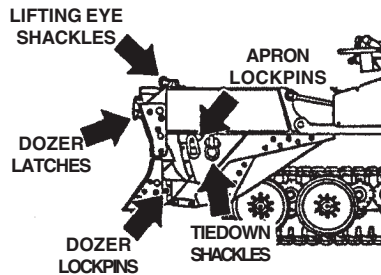
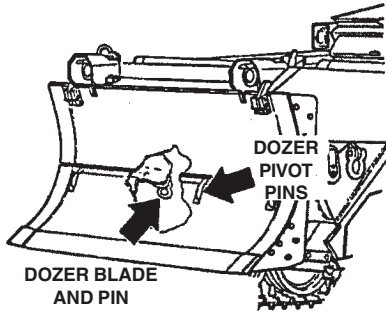
Table 11-1. Operator/Crew Preventative Maintenance Checks and Services for M9 ACE.

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
NOTE					
Perform Weekly as well as Before PMCS if:					
You are the assigned operator but have not operated the M9ACE since the last Weekly PMCS.					
1	After		Track Tension/ HBF-TT Adjuster	Check track tension (WP 0005 00). Adjust track tension as needed (WP 0005 00).	a. Track is loose or cannot be adjusted. Track adjuster cylinder bent, broken, or damaged. b. HBF-TT track adjuster(s) or track and blade manifold assembly Class III leak.
2	After		Exterior Vehicle Lights	Check that headlights operate correctly and are not damaged.	
3	Weekly		Apron Actuator	Lubricate fittings with GAA.	
4	Weekly		Apron pin	Lubricate pins with GAA.	
 <p>The diagram illustrates the mechanical components of the apron assembly. It shows a central 'APRON ACTUATOR' connected to a horizontal arm. Two 'APRON PIN' labels with arrows point to the ends of this arm, indicating the locations for lubrication. The entire assembly is shown in a perspective view, highlighting the linkage and pivot points.</p>					

SPECIFIC PMCS PROCEDURES - continued

Table 11-1. Operator/Crew Preventative Maintenance Checks and Services for M9 ACE.

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
5	Quarterly		Apron	Check lifting eye and tiedown shackles for damage. Lubricate with PL-M or PL-S.	
6	Quarterly		Dozer Blade	Check latched and lockpins for damage. Lubricate with PL-M or PL-S.	



CHAPTER 5 UNIT MAINTENANCE INSTRUCTIONS UNIT PREVENTATIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION

GENERAL

- a. To ensure that the M9 ACE is ready for operation at all times, it must be inspected systematically so that defects can be detected and corrected before they result in serious damage or failure. Table 13-1 contains a listing of preventive maintenance checks and services (PMCS) to be performed by unit maintenance personnel.
- b. While performing PMCS, read and follow all safety instructions found in the warning summary at the front of this manual. Keep in mind all WARNINGS and CAUTIONS.

SERVICE INTERVALS

Perform the PMCS procedures listed in Table 13-1 at the following intervals:

- a. Perform Semiannual PMCS procedures once every six months.
- b. Perform Annual PMCS procedures once each year.

REPORTING REPAIRS

Report all defects and corrective actions on DA Form 2404 or DA Form 5988E. If a serious problem is found, report it to your supervisor immediately.

GENERAL PMCS PROCEDURES

WARNING

Cleaning solvent (PF05) is combustible. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using cleaning solvent; the flashpoint is 144°F (62°C). Failure to follow this warning may result in injury or death to personnel. A fire extinguisher will be kept nearby when the solvent is used.

- a. Keep equipment clean. Dirt, oil, and debris may cover up a serious problem. Clean as you work and as needed. Use cleaning solvent (Item 7, WP 0055 00) on all metal surfaces. Use dishwashing compound (Item 11, WP 0055 00) and water on rubber, plastic, and painted surfaces.
- b. While performing PMCS, inspect the following components:
 - (1) **Bolts, Nuts, and Screws.** Make sure they are not loose, missing, bent, or broken. Tighten any that are loose.
 - (2) **Welds.** Inspect for gaps where parts are welded together. Report bad welds to your supervisor.
 - (3) **Electrical Wires or Connectors.** Inspect for cracked or broken insulation, bare wires, and loose or broken connectors. Make repairs or replace as required.
 - (4) **Hoses, Lines, and Fittings.** Inspect for wear, damage, and leaks. Make sure clamps and fittings are tight. If a leak originates from a loose fitting or connector, tighten it. If a component is broken or worn out, correct problem as authorized by the Maintenance Allocation Chart (MAC) (WP 0046 00). If not authorized, report it to your supervisor.

END OF WORK PACKAGE

UNIT PMCS INSTRUCTIONS

SPECIFIC PMCS PROCEDURES

- a. Unit PMCS procedures are listed in Table 13-1. Always perform PMCS in the order listed. Once your routine becomes a habit, anything that is not right can be spotted in a minute. If anything wrong is discovered through PMCS, perform the appropriate troubleshooting task found in WP 0008 00 of this chapter. If any component or system is not serviceable or if given service does not correct the problem, notify your supervisor.
- b. The PMCS procedures listed in Table 13-1 may be performed at three intervals. Before performing preventive maintenance, read all the checks required for the applicable interval and prepare tools needed to make all checks. Have several clean rags (Item 17, WP 0055) handy. Perform ALL inspections at applicable intervals.
- c. Explanations of the column headings in Table 13-1 are as follows:
 - (1) **Item No.** The item number column of your PMCS table is to be used for reference. When completing DA Form 2404, include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the intervals listed.
 - (2) **Interval.** This column of your PMCS table tells you when to do a certain check or service.
 - (3) **Location, Item To Check/Service.** This column of your PMCS table provides the location and the item to be checked or serviced.
 - (4) **Procedure.** This column of your PMCS table tells you how to do the required checks and services. Carefully follow these instructions. If you do not have the tools, or if the procedure tells you to, have Unit maintenance do the work.
 - (5) **Not Fully Mission Capable If.** Information in this column tells you what faults will keep the equipment from being capable of performing its mission. If PMCS reveals faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failures.

SPECIFIC PMCS PROCEDURES - continued

Table 13-1. Unit Preventative Maintenance Checks and Services for M9 ACE.

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				<p>NOTE</p> <p>Perform Operator/Crew PMCS prior to or along with Unit PMCS.</p>	
1	Semi-annually		Track Adjusting Cylinders	Check cylinders for cracks, leaks, and loose or missing hardware.	Class III leaks, or damaged.
2	Semi-annually		Track Adjusting Hydraulic Manifold	Check manifold assembly for cracks, leaks, and loose or missing hardware.	Class III leaks, or damaged.

END OF WORK PACKAGE

UNIT MAINTENANCE PROCEDURES

GENERAL

- a. These general maintenance instructions contain general shop practices and specific methods you must be familiar with to properly maintain your M9 ACE. You should read and understand these practices and methods before performing any unit maintenance tasks.
- b. Before beginning a task, find out how much repair, modification, or replacement is needed to fix the equipment as described in this manual. Sometimes the reason for equipment failure can be seen right away, and complete teardown is not necessary. Disassemble equipment only as far as necessary to repair or replace damaged or broken parts.
- c. The following "Initial Setup" information applies to all procedures:
 - (1) Resources are not listed unless they apply to the procedure.
 - (2) Personnel are listed only if more than one technician is required to complete task. If "Personnel Required" is not listed, one technician can complete task.
- d. All tags and forms attached to equipment must be checked to learn the reason for removal from service. Modification Work Orders (MWOs) and Technical Bulletins (TBs) must also be checked for equipment changes and updates.
- e. In some cases, a part may be damaged by removal. If the part appears to be good and other parts behind it are not defective, leave it on and continue with the procedure. Here are a few simple rules:
 - (1) Do not remove dowel pins or studs unless loose, bent, broken, or otherwise damaged.
 - (2) Do not remove bearings or bushings unless damaged. If you need to remove them to access parts behind them, pull bearings and bushings out carefully.
 - (3) Replace all gaskets, seals, and preformed packings.

WORK SAFETY

- a. Observe all WARNINGS and CAUTIONS. Always use power tools carefully.
- b. Protect yourself against injury. Wear protective gear, such as safety goggles or lenses, safety shoes, rubber apron, or gloves.
- c. When lifting heavy parts, have someone help you. Make sure that lifting/jacking equipment is working properly, is suitable for assigned the task, and is secure against slipping.

CLEANING INSTRUCTIONS

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and damage equipment. To prevent this, refer to TM 9-247 for further instructions.

- a. **General.** Cleaning instructions will be the same for a majority of parts and components that make up the M9 ACE. The following should apply to all cleaning, inspection, repair, and assembly operations:

CLEANING INSTRUCTIONS - continued

- (1) Clean all parts before inspection, after repair, and before assembly.
- (2) Keep hands free of grease, which can collect dust, dirt, and grit.
- (3) After cleaning, all parts should be covered or wrapped to protect them from dust and dirt. Parts that are subject to rust should be lightly oiled.

b. Steam Cleaning.

- (1) Before steam cleaning exterior of trailer, protect all electrical equipment that could be damaged by steam or moisture.
- (2) Place disassembled parts in a suitable container to steam clean. Parts that are subject to rust should be dried and lightly oiled after cleaning.

c. Castings, Forgings, and Machined Metal Parts.**WARNING**

Cleaning solvent (PF05) is combustible. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using cleaning solvent; the flashpoint is 144°F (62°C). Failure to follow this warning may result in injury or death to personnel. A fire extinguisher will be kept nearby when the solvent is used.

- (1) Clean inner and outer surfaces with cleaning solvent (Item 7, WP 0055 00).
- (2) Remove grease and accumulated deposits with a stiff bristle brush.

WARNING

Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.

- (3) Clear out all threaded holes with compressed air to remove dirt and cleaning fluids.

CAUTION

Do not wash oil seals, electrical cables, and flexible hoses with drycleaning solvent or mineral spirits. Serious damage or destruction of material would result.

- d. **Oil Seals, Electrical Cables, and Flexible Hoses.** Wash electrical cables and flexible hoses with solution of water and dishwashing compound (Item 11, WP 0055 00) and wipe dry with clean rags (Item 17, WP 0055 00).
- e. **Bearings.** Clean bearings in accordance with TM 9-214.

INSPECTION INSTRUCTIONS**NOTE**

All damaged areas should be marked for repair or replacement.

- a. All components and parts must be carefully checked to determine if they are serviceable for reuse, can be repaired, or must be scrapped.

INSPECTION INSTRUCTIONS - continued

- b. Inspect drilled and tapped (threaded) holes for the following:
 - (1) In or around holes—wear, distortion, cracks, and any other damage.
 - (2) Threaded areas—wear, distortion (stretching) and evidence of cross-threading.
- c. Inspect metal lines, flexible lines (hoses), and metal fittings for the following:
 - (1) Metal lines—sharp kinks, cracks, bad bends, and dents.
 - (2) Flexible lines—fraying, evidence of leakage, and loose metal fittings or connectors.
 - (3) Metal fittings and connectors—thread damage and worn or rounded hex heads.
- d. Inspect castings, forgings, and machined metal parts for the following:
 - (1) Machined surfaces—nicks, burrs, raised metal, wear, and other damage.
 - (2) Inner and outer surfaces—breaks and cracks.
- e. With solution of dishwashing compound (Item 11, WP 0055 00) and water, inspect air lines, fittings, and connectors for leaks by coating fittings and connections. No leakage is permissible.
- f. Inspect bearings in accordance with TM 9-214.

REPAIR INSTRUCTIONS

- a. Any repair procedure peculiar to a specific part or component is covered in the section or paragraph relating to that item. After repair, clean all parts thoroughly to prevent dirt, metal chips, or other foreign material from entering any working parts.
- b. Repair casting, forgings, and machined metal parts according to the following instructions:
 - (1) Refer to TM 9-237 for instructions on repairing minor cracked castings or forgings.
 - (2) Repair minor damage to machined surfaces with a fine mill file or abrasive cloth (Item 10, WP 0055 00) dipped in cleaning solvent (Item 11, WP 0055 00).
 - (3) Replace any deeply nicked machined surface that could affect the assembly operation.
 - (4) Repair minor damage to threaded capscrew holes with thread tap of same size, to prevent cutting oversize.
- c. Refer to WP 0008 00-8 for maintenance on metal lines, flexible lines (hoses), and metal fittings.

TAGGING WIRES AND HOSES

- a. As soon as first wire or hose is disconnected, write the number "1" on two tags. Secure one tag to wire or hose and other tag to terminal, nipple, or fitting. After disconnecting second wire or hose, write the number "2" on two tags. Secure one tag to wire or hose and second tag to terminal, nipple, or fitting. Do the same for all wires and hoses.
- b. Note which numbers you used, in pencil, on art in this manual. This will help you to retag properly when you remove tags from some parts to perform cleaning and maintenance work.

TAGGING WIRES AND HOSES - continued

- c. Remove all tags when finished.

END OF WORK PACKAGE

TRACK & BLADE CONTROL BOX REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)

Equipment Conditions

Negative battery cables disconnected (TM 5-2350-
262-20-1)

DISASSEMBLY

NOTE

Steps 1 through 4 apply to Figure 1.

1. Remove control box power harness connector (item 1) from track & blade control box (item 2).
2. Remove manifold harness connector (item 3) from track & blade control box (item 2).
3. Remove two screws (item 6) and two washers (item 5) from instrument panel (item 4).
4. Slide track & blade control box (item 2) upward from behind instrument panel (item 4).

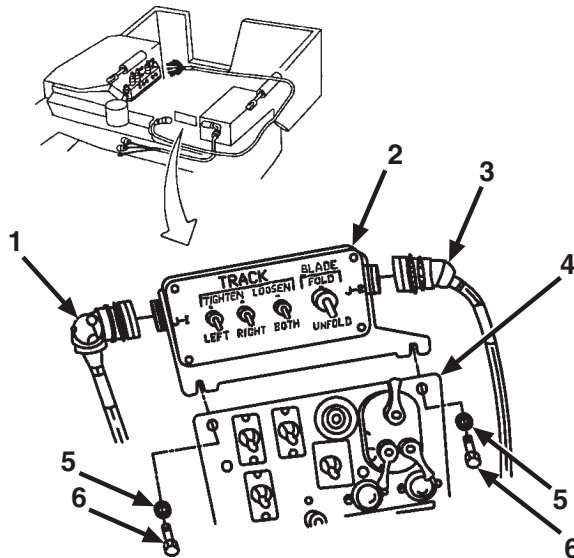


Figure 1. Track & Blade Control Box.

TRACK AND BLADE CONTROL BOX REPLACEMENT - Continued**ASSEMBLY****NOTE**

Steps 1 through 5 apply to Figure 1 on previous page.

1. Slide track & blade control box (item 2) behind instrument panel (item 4) and install two washers (item 5) and two screws (item 6).
2. Install manifold harness connector (item 3) on track & blade control box (item 2).
3. Install control box power harness connector (item 1) on track & blade control box (item 2).
4. Connect negative battery cables (TM 5-2350-262-20-1).
5. Close battery box (TM 5-2350-262-10).

END OF WORK PACKAGE

HEADLIGHT ASSEMBLY REPLACEMENT

INITIAL SETUP:**Tools/Test Equipment:**

Tool kit, general mechanic's
(Item 6, WP 0056 00)

Materials/Parts:

Lockwasher (Item 37, WP 0048 00, Figure 10)

Equipment Conditions:

Front of vehicle blocked (TM 5-2350-262-20-1)
Hydraulic pressure relieved (TM 5-2350-262-20-1)
Negative battery cables disconnected (TM 5-2350-262-20-1)

DISASSEMBLY**CAUTION**

Do not turn or twist headlight during installation. Turning or twisting headlight can damage headlight wiring harness.

NOTE

Installation procedures for the headlight are the same for both sides of the vehicle. The right side is shown here.

Steps 1 through 3, Disassembly and Assembly, apply to Figure 2.

1. Remove four bolts (item 2), lockwashers (item 3), and flat washers (item 4) from headlight (item 1) and apron (item 6).

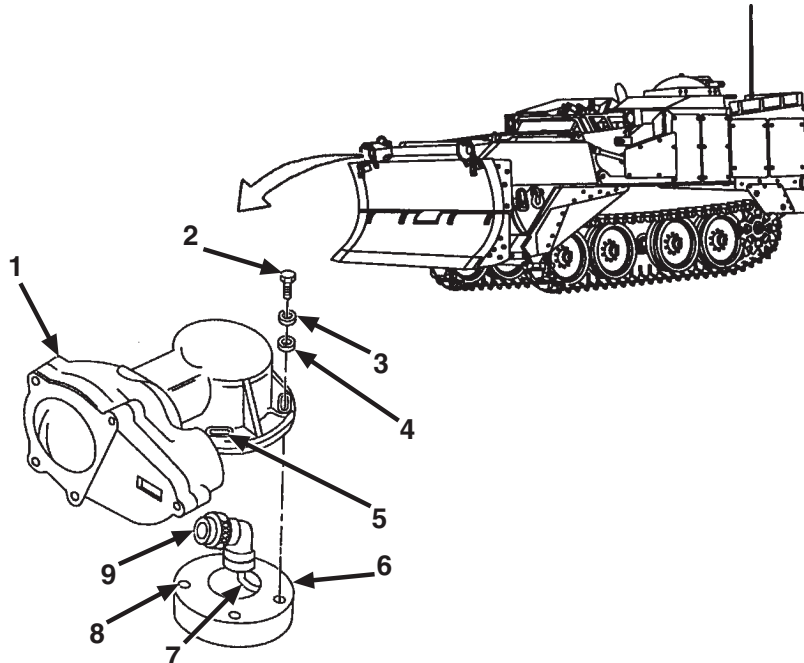


Figure 2. Headlight Assembly.

HEADLIGHT ASSEMBLY REPLACEMENT - continued

2. Carefully lift headlight (item 1) a few inches from apron (item 6) to get at connector (item 9).
3. Disconnect connector (item 9) and pull away from headlight (item 1)

ASSEMBLY

1. Install connector (item 9) on headlight (item 1).
2. Align four holes (item 5) in headlight (item 1) with holes (item 8) on apron (item 6). Make sure cable (item 7) is in groove in headlight (item 1).
3. Attach headlight (item 1) with four bolts (item 2), lock washers (item 3), and flat washers (item 4) to apron (item 6). Torque screws between 40 to 45 lb-ft (54 to 65 N•m).

END OF WORK PACKAGE

HEADLIGHT PLATE SPACER, LIGHT LENS, AND GASKET REPLACEMENT

INITIAL SETUP**Tools/Test Equipment**

Tool kit, general mechanic's
(Item 6, WP 0056 00)

Equipment Conditions

Front of vehicle blocked
(TM5-2350-262-20-1)
Hydraulic pressure relieved (TM5-2350-262-20-1)
Negative battery cables disconnected
(TM5-2350-262-20-1)

DISASSEMBLY**NOTE**

Steps 1 and 2 apply to Figure 3.

Screws are captive to spacer and stay on spacer.

1. Loosen four screws (item 6) on plate spacer (item 7) and remove plate spacer (item 7) from headlight (item 2).

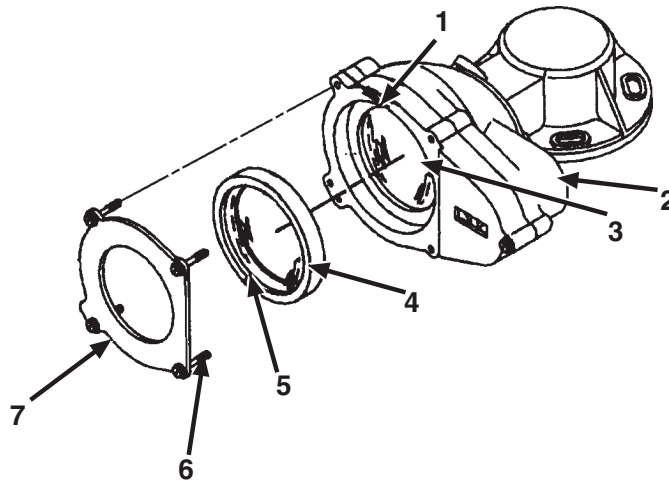


Figure 3. Headlight Plate Spacer.

2. Pry out gasket (item 4) together with lens (item 5) with screwdriver in slot (item 1) from headlight (item 2).

HEADLIGHT PLATE SPACER, LIGHT LENS, AND GASKET REPLACEMENT - continued

- Roll back edge of gasket (item 12) and remove lens (item 13) from groove in gasket (item 12).

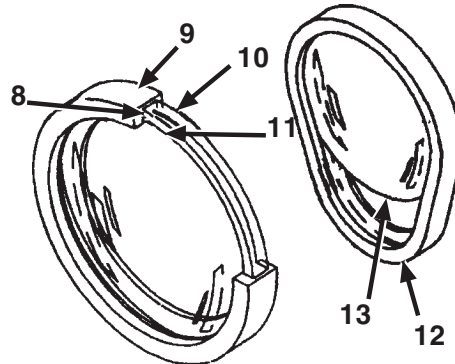


Figure 4. Headlight Gasket.

ASSEMBLY

- Put thicker edge (item 8) of gasket (item 9) toward outside edge (item 11) of lens (item 13). Push lens (item 13) in gasket (item 12).

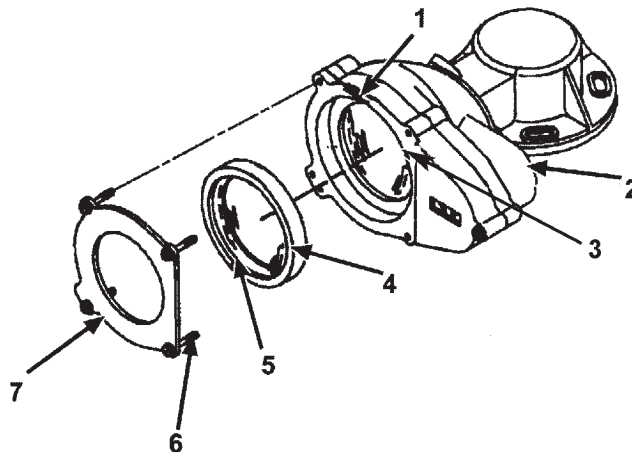


Figure 5. Headlight Plate Spacer Assembly.

- With thick side (item 4) of gasket (item 9) facing forward, put gasket (item 4) and lens (item 5) all the way in lens holder (item 3) until they seat firmly.
- Put plate spacer (item 7) on holder (item 3). Install four captive screws (item 6) on headlight (item 2).
- Install left or right headlight mounting bracket (WP 0020, Assembly).

END OF WORK PACKAGE

HEADLIGHT LENS HOLDER AND LIGHT FILTER, LIGHT LENS, AND RUBBER ROUND SEAL REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Chemical and oil protective gloves
(Item 12, WP 0055 00)
Industrial goggles (Item 13, WP 0055 00)

Wiping rag (Item 18, WP 0055 00)
Rubber round seal (nonmetallic)
(Item 14, WP 0048 00, Figure 10) (1)
Rubber round section (Item 15, WP 0048 00, Figure 10)

Materials/Parts:

Acid swabbing brush (Item 4, WP 0055 00)
Sealant adhesive (Item 1, WP 0055 00)
Cleaning solvent (Item 7, WP 0055 00)

Equipment Conditions

Front of vehicle blocked
(TM5-2350-262-20-1)
Hydraulic pressure relieved (TM5-2350-262-20-1)
Negative battery cables disconnected
(TM5-2350-262-20-1)

DISASSEMBLY

NOTE

Steps 1 and 2 apply to Figure 6.

Screws are captive to holder and stay on holder.

1. Unscrew five screws (item 3) on holder (item 2).
2. Remove holder (item 2) from body (item 1). Pull out rubber round seal (item 4) from holder (item 2).

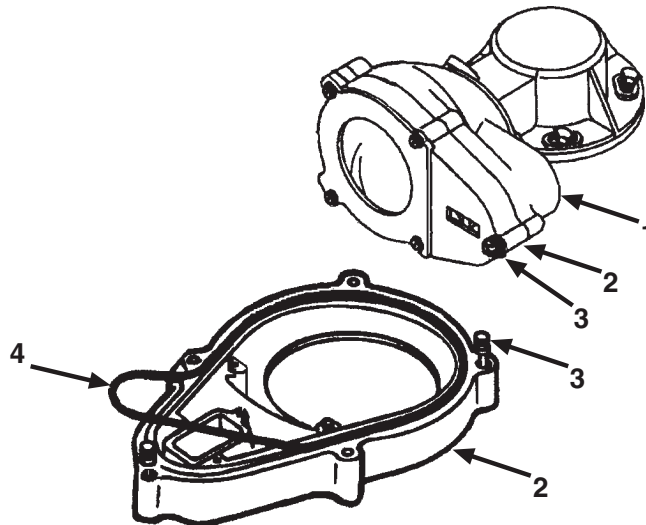


Figure 6. Headlight Rubber Round Seal.

HEADLIGHT LENS HOLDER AND LIGHT FILTER, LIGHT LENS, AND RUBBER ROUND SEAL REPLACEMENT - continued

NOTE

Steps 3 through 4 apply to Figure 7.

3. Remove three screws (item 5) from plate (item 6).

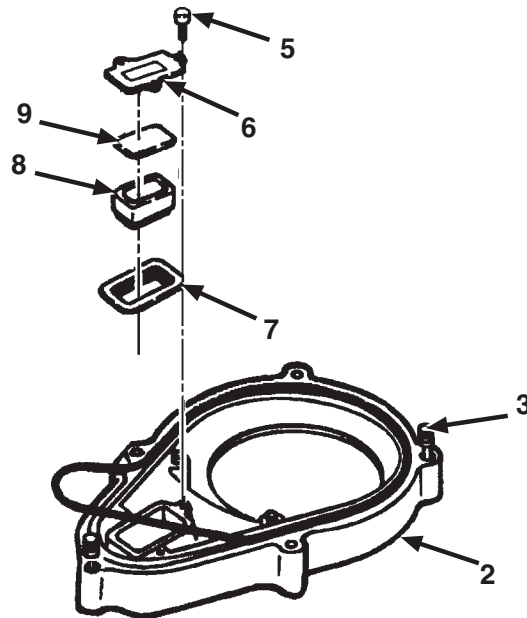


Figure 7. Headlight Lens Holder.

4. Remove plate (item 6), filter (item 9), lens (item 8), and seal (item 7) from holder (item 2).

WARNING

Cleaning solvent (PF05) is combustible. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using cleaning solvent; the flashpoint is 144°F (62°C). Failure to follow this warning may result in injury or death to personnel.

If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush them with water and get immediate medical attention.

When PF05 cleaning solvent is used, notify the local medical authority (preventive medicine) and environmental coordinator concerning medical surveillance, respiratory protection, and disposal requirements.

HEADLIGHT LENS HOLDER AND LIGHT FILTER, LIGHT LENS, AND RUBBER ROUND SEAL REPLACEMENT - continued

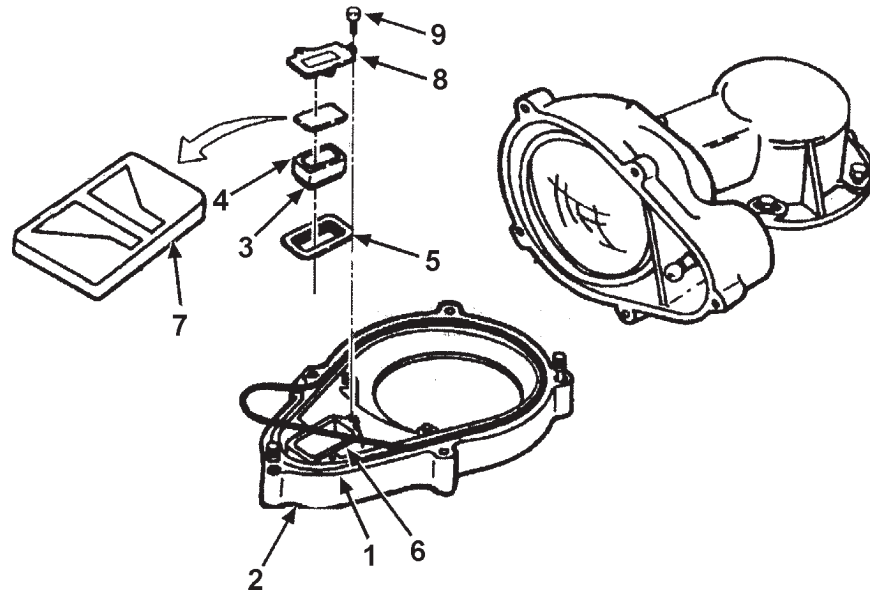


Figure 8. Headlight Light Filter.

ASSEMBLY

NOTE

Steps 1 through 5 apply to Figure 8.

1. Clean rubber round section groove (item 1) in holder (item 2) with solvent (Item 7, WP 0055 00) and rag (Item 17, WP 0055 00).
2. Put front lip (item 3) of lens (item 4) in inside groove of new seal (item 5).
3. Put lens (item 4) with seal (item 5) in lens and filter holder (item 6). Make sure lens (item 4) and seal (item 5) are seated firmly in holder (item 6).

NOTE

Put filter on lens so wide ends of markings face up when holder is installed on body.

4. Lay painted side of filter (item 7) on top of lens (item 3).
5. Put plate (item 8) on top of filter (item 7). Install three screws (item 9) in plate (item 8) and holder (item 6).

HEADLIGHT LENS HOLDER AND LIGHT FILTER, LIGHT LENS, AND RUBBER ROUND SEAL REPLACEMENT - continued

Note

Steps 6 through 11 apply to Figure 9.

6. Install new rubber round section (item 10) in groove (item 11) of holder (item 2). Ends of rubber round section (item 10) should overlap.

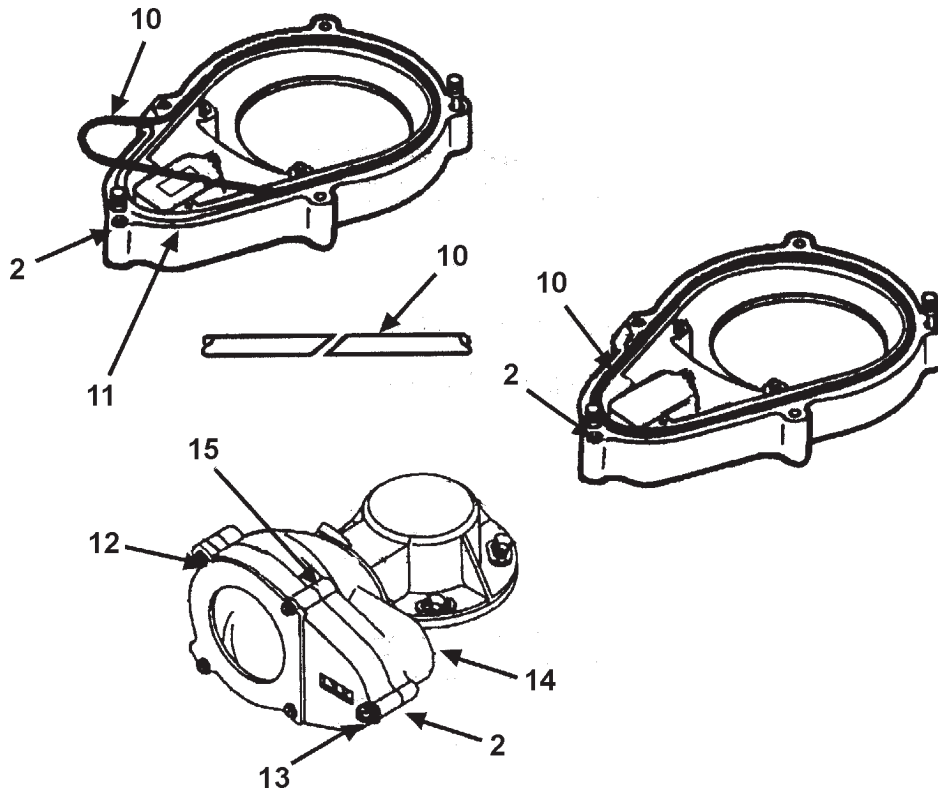


Figure 9. Headlight Round Rubber Seal.

7. Cut ends of rubber round section (item 10) at an angle where they meet in groove (item 11). Remove rubber round section (item 10).
8. Apply adhesive in groove (item 11) with brush (Item 6, WP 0055 00). Put rubber round section (item 10) in groove (item 11) so ends overlap where they are cut.
9. Put plate spacer (item 12) on holder (item 2). Install four screws (item 13) on headlight (item 14).
10. Put holder (item 2) on body (item 14). Loosely install five screws (item 13).
11. Align four holes (item 12) in holder (item 2) with mounting lugs (item 15) on body (item 2). Tighten five screws (item 13).

END OF WORK PACKAGE

HEADLIGHT INCANDESCENT LAMP REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)

Negative battery cables disconnected
(TM5-2350-262-20-1)

Hydraulic pressure relieved (TM5-2350-262-20-1)

Equipment Conditions

Front of vehicle blocked
(TM5-2350-262-20-1)

Headlight lens holder and light filter,
light lens, and rubber round seal removed (WP
0018 00, Disassembly).

DISASSEMBLY

NOTE

Steps 1 through 3 below apply to Figure 10.

1. Remove five screws (item 6) from headlight cover (item 7) and remove cover.
2. Roll front edge of headlight mount (figure 10, item 2) toward back of lamp (figure 10, item 1).
3. Pull out lamp (item 1) from mount (item 2). Pull off connector plug (item 4) from lamp (item 1).

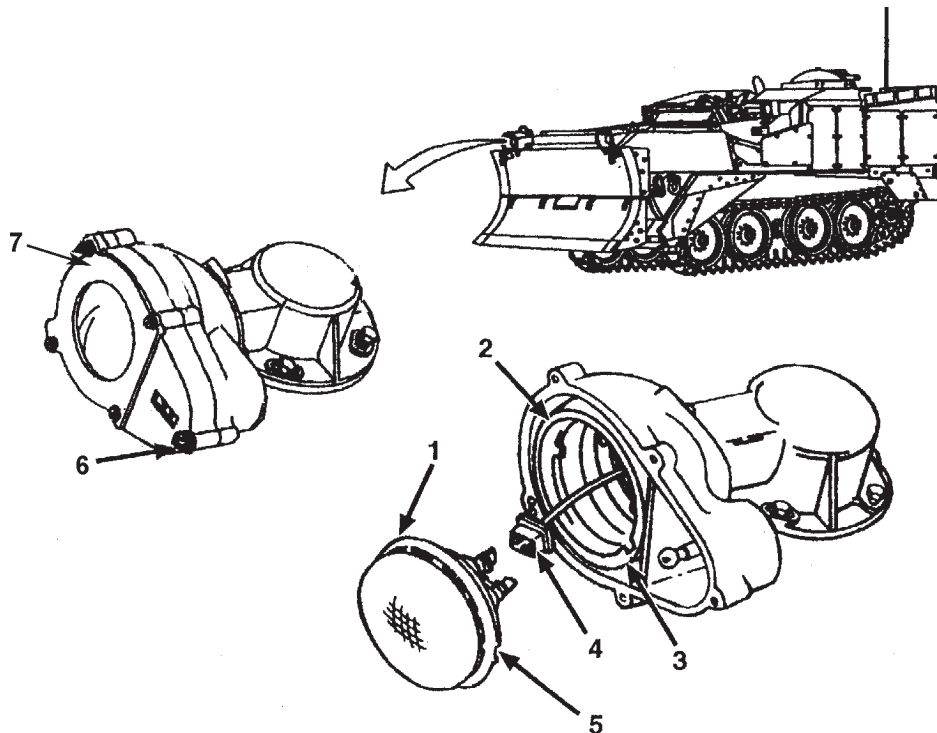


Figure 10. Headlight Incandescent Lamp.

HEADLIGHT INCANDESCENT LAMP REPLACEMENT - continued**ASSEMBLY****NOTE**

Steps 1 through 4 apply to Figure 10.

1. Push plug (item 4) on back of lamp (item 1).
2. Place right side of lamp (item 1) in mount (item 2). Align tab (item 5) with slot (item 3). Align edge of mount (item 2). Start lamp (item 1) under edge of mount (item 2). Work rest of mount (item 2) around lamp (item 1) with screwdriver. Make sure lamp (item 1) is straight in mount (item 2).
3. Install cover (item 7) to headlight mount (2) and secure with five screws (item 6).
4. Install left or right headlight lens holder and light filter, light lens, and rubber round seal (WP 0018 00, Assembly).

END OF WORK PACKAGE

HEADLIGHT MOUNT REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Torque driver wrench, 0-90 kg-cm
(Item 9, WP 0056 00)

Materials/Parts:

Lockwasher (Item 4, WP 0048 00, Figure 10)

Equipment Conditions

Front of vehicle blocked
(TM5-2350-262-20-1)
Negative battery cables disconnected
(TM5-2350-262-20-1)
Hydraulic pressure relieved (TM5-2350-262-20-1)
Headlight incandescent lamp removed
(WP 0019 00, Disassembly)

DISASSEMBLY

NOTE

Steps 1 through 3 apply to Figure 11.

Use this task to replace left or right side headlight mount. Right side mount is shown.

1. Remove five screws (item 5) from headlight cover (item 6). Remove cover.

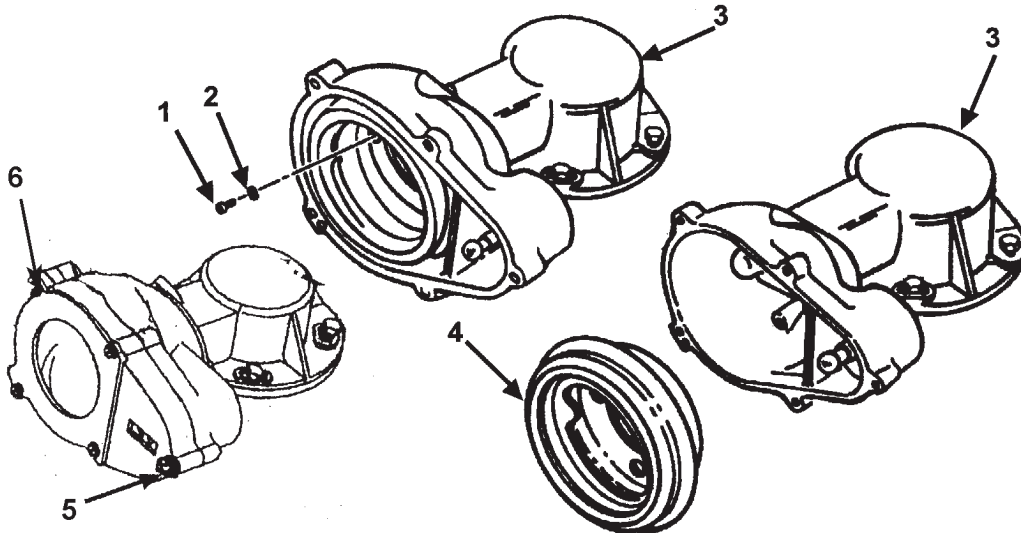


Figure 11. Headlight Mount.

2. Remove three screws (item 1) and lockwashers (item 2) from body (item 3).
3. Pull out mount (item 4) from body (item 3).

HEADLIGHT MOUNT REPLACEMENT - continued**NOTE**

Steps 1 through 4 apply to Figure 12.

1. Put cable (item 5) through middle of mount (item 4). Make sure that cable (item 5) is not pinched between mount (item 4) and body (item 3).

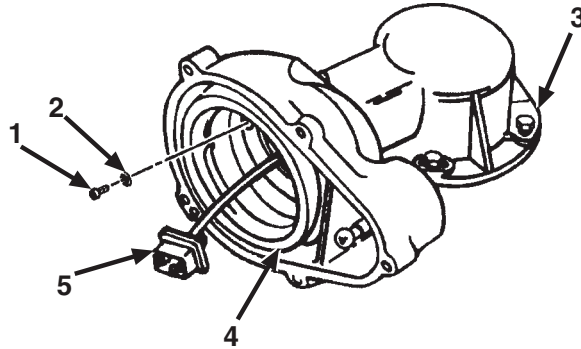


Figure 12. Headlight Cable.

2. Put mount (item 4) in body (item 3) and align three screw holes in mount (item 4) and body (item 3).
3. Install three screws (item 1) and new lockwashers (item 2) and torque between 25-29 lb-in (30-35 kg-cm).
4. Install left or right headlight incandescent lamp (WP 0019 00, Assembly).

END OF WORK PACKAGE

HEADLIGHT SUPPORT REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Chemical and oil protective gloves
(Item 12, WP 0055 00)
Industrial goggles (Item 13, WP 0055 00)
Wire brush (Item 5, WP 0055 00)
Acid swabbing brush (Item 4, WP 0055 00)

Materials/Parts:

Sealant adhesive (Item 1, WP 0055 00)

Cleaning solvent (Item 7, WP 0055 00)
Wiping rag (Item 17, WP 0055 00)
Gasket (Item 26, WP 0048 00, Figure 10)
Lockwasher (Item 24, WP 0048 00, Figure 10)

Equipment Conditions

Front of vehicle blocked
(TM5-2350-262-20-1)
Hydraulic pressure relieved (TM 5-2350-262-20-1)
Negative battery cables disconnected
(TM5-2350-262-20-1)

DISASSEMBLY

WARNING

Cleaning solvent (PF05) is combustible. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using cleaning solvent; the flashpoint is 144°F (62°C). Failure to follow this warning may result in injury or death to personnel.

If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush them with water and get immediate medical attention.

When PF05 cleaning solvent is used, notify the local medical authority (preventive medicine) and environmental coordinator concerning medical surveillance, respiratory protection, and disposal requirements.

NOTE

Use this task to replace left or right support. Right support is shown.
Steps 1 through 5, Disassembly, apply to Figure 13.

1. Remove jamnut (item 9) from receptacle connector (item 2) and support (item 8).

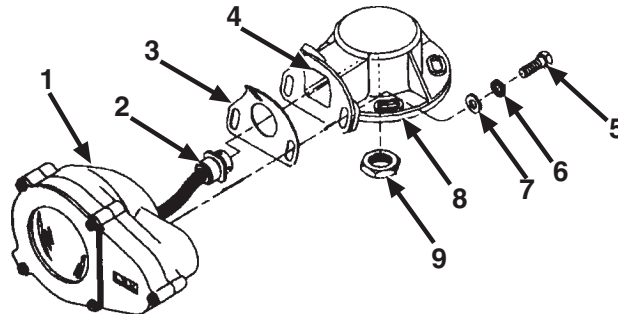


Figure 13. Headlight Support.

HEADLIGHT SUPPORT REPLACEMENT - continued

2. Remove three screws (item 5), lockwashers (item 6) and washers (item 7) from support (item 8) and headlight body (item 1).
3. Gently take support (item 8) off body (item 1) while pushing connector (item 2) through hole (item 4) in support (item 8).
4. Remove gasket (item 3) from support (item 8) and body (item 1).
5. Clean off any gasket material from body (item 1) with solvent (Item 7, WP 0055 00), wire brush (Item 5, WP 0055 00), and rag (Item 17, WP 0055 00).

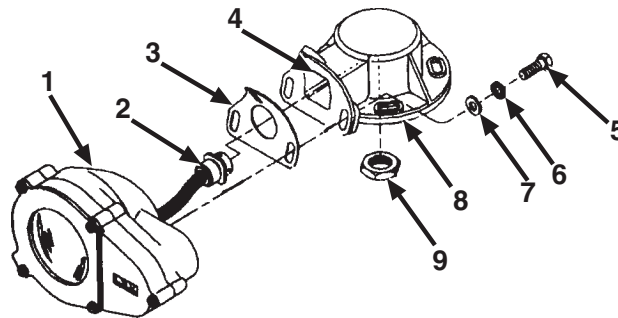


Figure 14. Headlight Support Assembly.

ASSEMBLY**NOTE**

Steps 1 through 4 apply to Figure 14.

1. Apply sealant adhesive (Item 1, WP 0055 00) on new gasket (item 3) with acid swabbing brush (Item 4, WP 0055 00). Position gasket (item 3) on support (item 8).
2. Feed connector (item 2) through hole (item 4) in support (item 8). Install jamnut (item 9) to connector (item 2).
3. Position body (item 1) on support (item 8). Install three screws (item 5), new lockwashers (item 6), and washers (item 7) to support (item 8) and body (item 1).
4. Install left or right headlight assembly (WP 0016 00, Assembly).

END OF WORK PACKAGE

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Shop equipment, common no. 1
(Item 2, WP 0056 00)

Equipment Conditions

Front of vehicle blocked
(TM5-2350-262-20-1)
Apron cylinder armor removed
(TM5-2350-262-20-1)
Chain Assembly
(TM5-2350-262-10)

Personnel Required:

Two Construction Equipment Repairer 62B10

REMOVAL

WARNING

Lifting device must have a weight capacity greater than 2,944 lb (1,337 kg).

Do not stand or work under apron and dozer assembly unless apron lockpins are installed.
Failure to comply may result in severe injury or death to personnel.

NOTE

Step 1 applies to Figure 15.

1. Fold and lock dozer blade into travel mode before connecting chain and lifting device to lifting eye shackles (1) of apron and dozer assembly (2). Raise apron and dozer assembly about 6 in. (15 cm) and support with blocks under dozer blade (3).

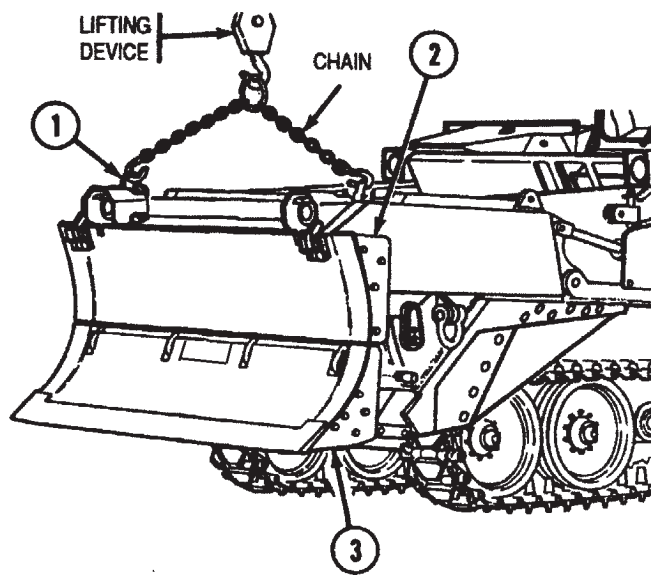


Figure 15. Installing Support Blocks.

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued**WARNING**

Do not lift apron and dozer assembly with dozer blade installed unless dozer lockpins are installed. Failure to comply may result in severe injury or death to personnel.

NOTE

Ensure lower apron lockpins are in the stowed position.

Step 2 applies to Figure 16.

2. If dozer blade (3) has not been removed, connect a chain between lifting device and shackle (4) at back side of dozer blade (3). Tighten chain enough to remove slack.

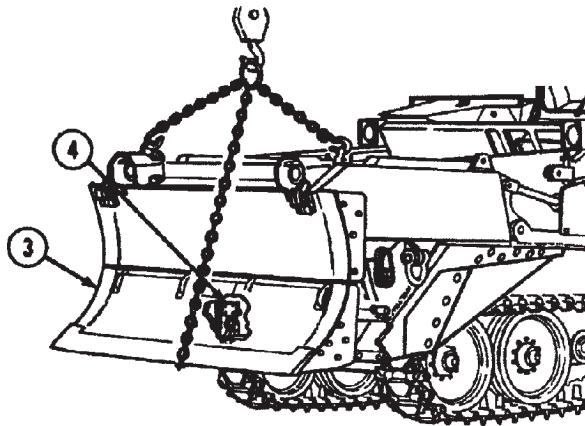


Figure 16. Removal of Dozer Blade.

NOTE

Step 3 applies to Figure 17.

3. Support apron hydraulic cylinders (5) with blocks, and remove screw (6), nut (7), two washers (8), and pin (9) from each side of vehicle.

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued

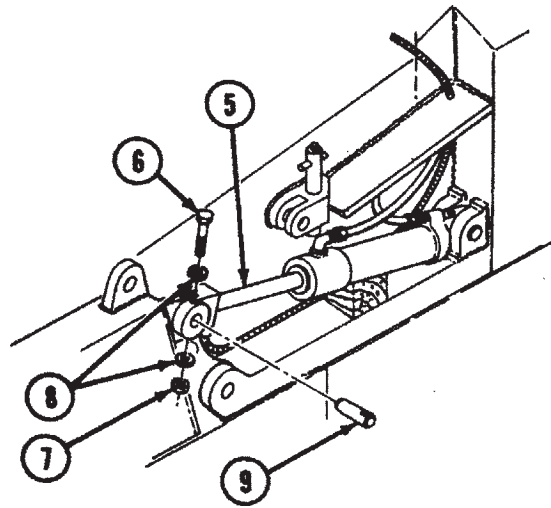


Figure 17. Hydraulic Cylinders.

NOTE

Step 4 applies to Figure 18.

4. Disconnect headlight intermediate wiring harness cannon plug (10) from apron wiring harness receptacle (11) on left side of vehicle.

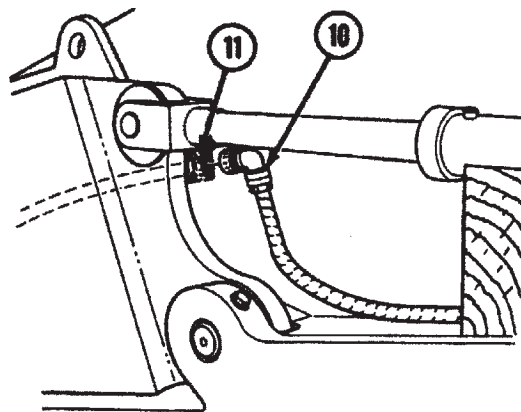


Figure 18. Intermediate Headlight Wiring Harness.

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued**NOTE**

Steps 5 and 6 apply to Figure 19.

5. Remove locknut (12), screw (13), and pivot pin (14) from each side of vehicle. Discard locknuts (12).

WARNING

Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

6. Lift apron and dozer assembly (2) up and away from vehicle. Place apron and dozer assembly (2) on blocks on level surface.

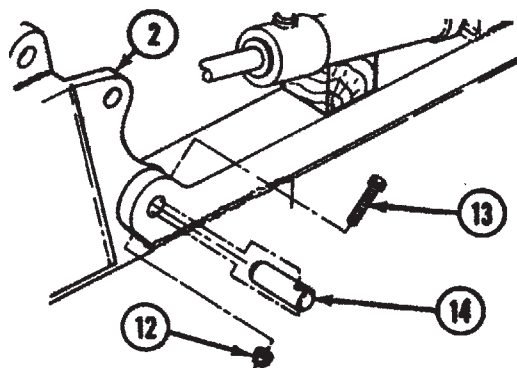


Figure 19. Lifting Apron and Dozer Assembly.

DISASSEMBLY**NOTE**

If complete disassembly of the apron and dozer assembly is necessary, follow steps 1 through 6.

For disassembly of the apron and dozer assembly, follow steps 7 through 13.

1. **Headlight assembly.** Refer to WP 0016 00.

APRON AND DOZER BLADE REPLACEMENT AND REPAIR - continued

NOTE

Steps 2a through 2f apply to figure 20.

2. Cutting edges.

WARNING

Do not work under vehicle unless hull is blocked and apron lockpins are installed. Failure to comply may result in severe injury or death to personnel.

- a. Loosen two lock nuts (1) on screws (2) at dozer cutting edge (3).
- b. Remove sixteen nuts (4), washers (5), and screws (6) from dozer cutting edge (3) and dozer blade (7).
- c. Loosen four lock nuts (8) on screws (9) at dozer extension end bit (10).
- d. Unfold dozer blade (7).
- e. Remove two lock nuts (1), washers (11), screws (2), and dozer cutting edge (3) from dozer blade (7).
- f. Remove four lock nuts (8), washers (12), screws (9), and dozer extension end bit (10) from dozer extension (13).

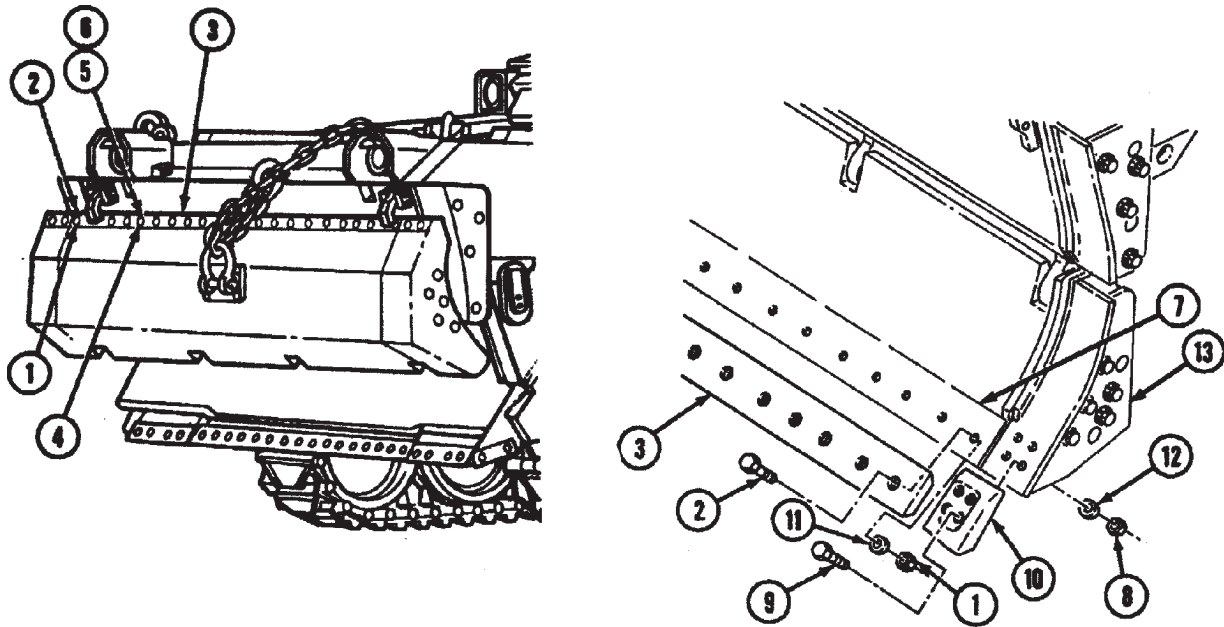


Figure 20. Removal of Cutting Edges.

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued**NOTE**

Steps 3a through 3c apply to Figure 21.

3. Extensions.

- a. Remove four screws (1), washers (2), and apron extension (3) from each side of apron and dozer assembly (4). Pry or hammer extension (3) to loosen from each side of apron and dozer assembly (4).
- b. Remove five screws (5), washers (6), and dozer extension (7) from each side of apron and dozer assembly (4). Pry or hammer to loosen extension (7) from each side of apron and dozer assembly (4).
- c. Remove three screws (8), lockwashers (9), and dozer extension (10) from each side of apron and dozer assembly (4). Pry or hammer to loosen extension (10) from apron and dozer assembly (4). Discard lockwashers (9).

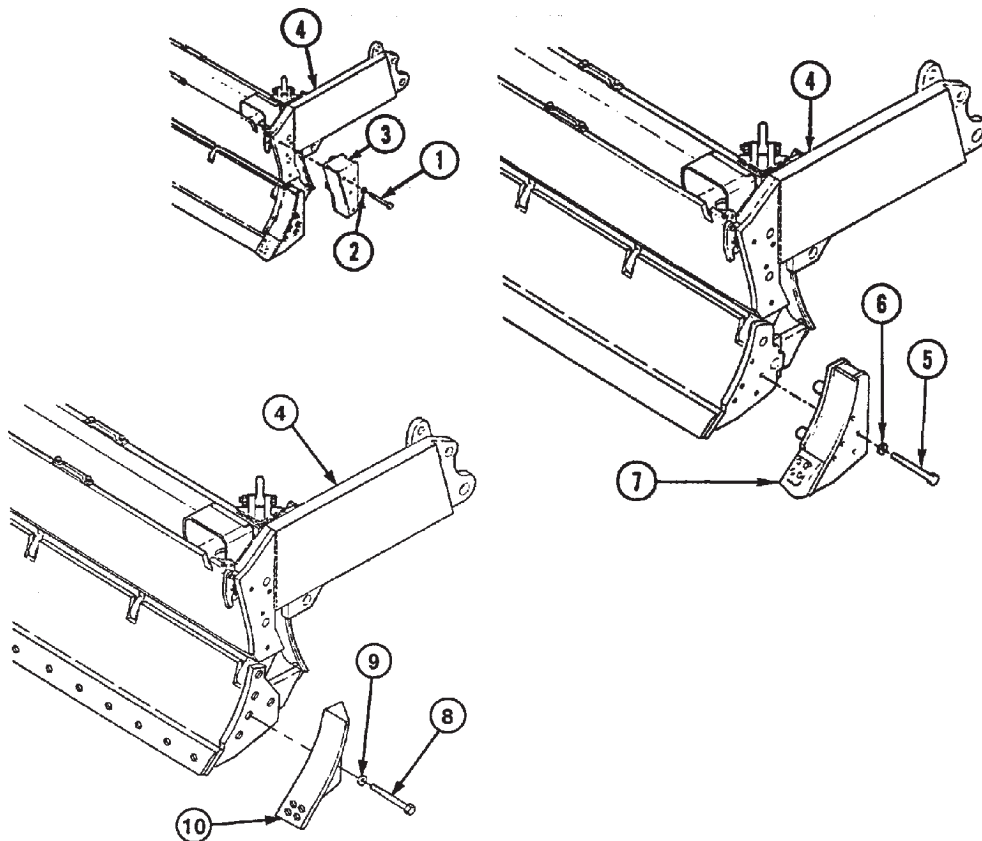


Figure 21. Removal of Extensions.

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued**NOTE**

Step 4 applies to Figure 22.

4. Apron wear plates and side seals.

Remove twenty-one screws (1), two wear plates (2), and wear plate (3) from apron (4).

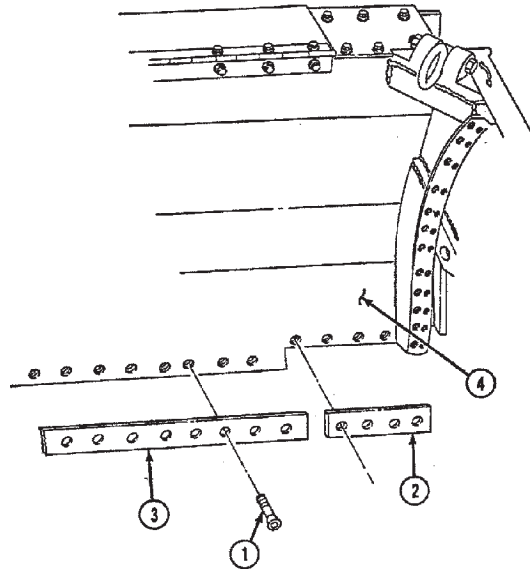


Figure 22. Apron Wear Plates and Side Seals.

NOTE

Step 5 applies to Figure 23.

5. Apron Strips.

Remove three self-locking screws (1), washers (2), and apron strip (3) from apron and dozer assembly (4). Discard self-locking screws (1).

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued

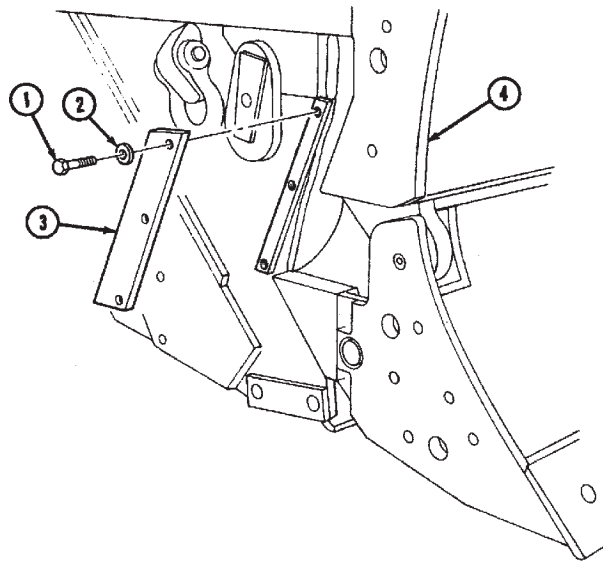


Figure 23. Apron Strip.

- 6. **Dozer blade.** Refer to WP 0023 00

NOTE

Steps 7 through 9 apply to Figure 24.

- 7. Remove two retaining rings (1), bearing (2), and lubrication fitting (3) from each side of apron (4).
- 8. Remove two retaining rings (5), bearing (6), and lubrication fitting (7) from each side of apron (4).
- 9. Remove four screws (8), lockwashers (9), and two chain guides (10) from apron (4). Discard lockwashers (9).

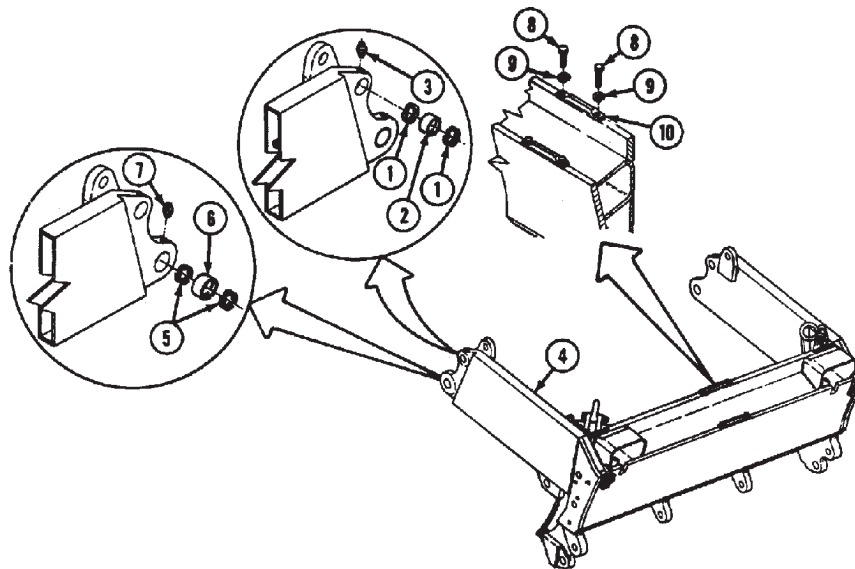


Figure 24. Removal of Retaining Rings from Apron.

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued**NOTE**

Steps 10 through 12 apply to Figure 25.

10. Remove locknut (11), screw (12), and stop (13) from each side of apron (4). Discard locknut (11).
11. Remove lockpin assembly (14), and latch (15) from each side of apron (4).
12. Remove six self-locking screws (16), three straps (17), and three rings (18) from rear of apron (4). Discard self-locking screws (16).

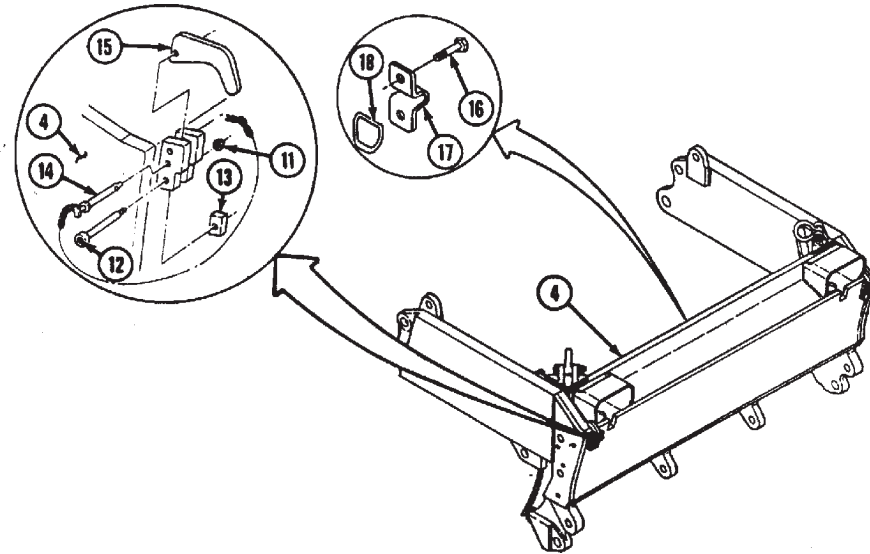


Figure 25. Apron.

NOTE

Step 13 applies to Figure 26.

13. Remove locknut (19), nut (20), two washers (21), stud (22), and lifting eye shackle (23) from each side of apron (4). Discard locknuts (19).

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued

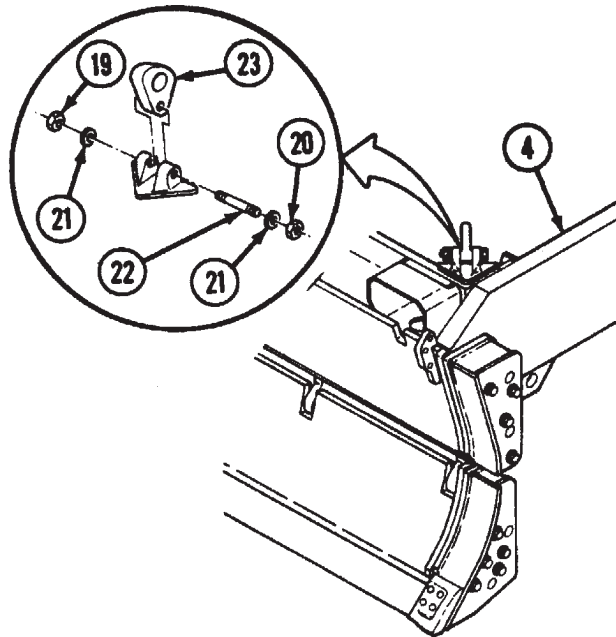


Figure 26. Lifting Eye and Apron.

NOTE

Dozer blade must be removed from apron (WP 0023 00) before replacing bushings.

Step 14 applies to Figure 27.

14. Using hammer and drift, drive out two outer bushings (24) and two inner bushings (25) from apron (4).

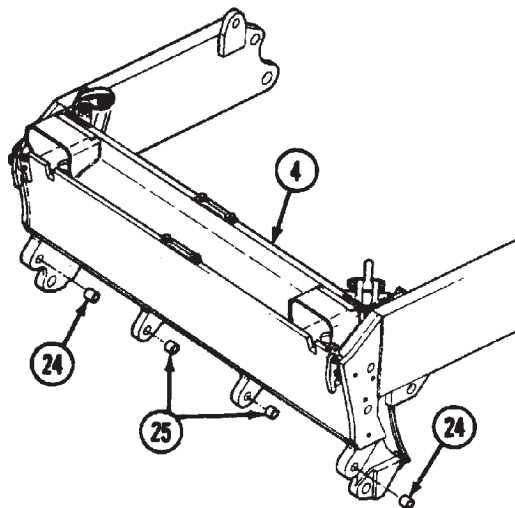


Figure 27. Inner Bushings from Apron.

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued**REPAIR****NOTE**

Steps 1 and 2 apply to Figure 28.

1. Repair apron and dozer assembly by replacing damaged or worn parts and by using general repair methods. If authorized, weld (TM 9-237) and straighten.
2. Bond rubber pad (1) to plate (2) with adhesive.

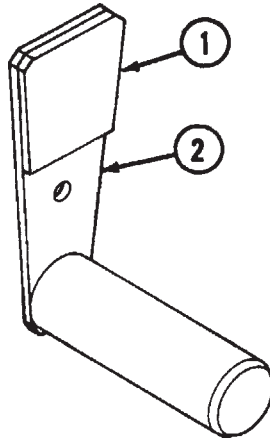


Figure 28. Rubber Pad and Plate.

ASSEMBLY**NOTE**

Step 1 applies to Figure 29.

1. Using hammer and soft drift or wood dowel, install two outer bushings (1) and two inner bushings (2) on apron (3). Coat inside of bushings (1) and (2) with grease.

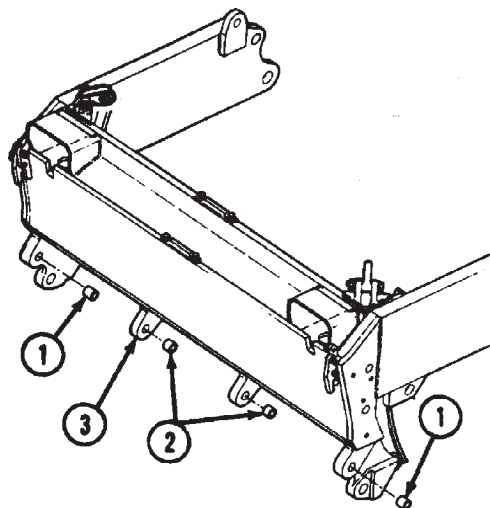


Figure 29. Installation of Bushings onto Apron.

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued**NOTE**

Steps 2 through 8 apply to Figure 30.

2. Install two bushings (1), four retaining rings (2), and two lubrication fittings (3) on each side of apron (4). Coat inside of bearings (1) with grease and apply grease to lubrication fittings (3).

NOTE

Steps 3 should be performed only if plugs are missing.

3. Coat threads of two plugs (5) with sealing compound, and install two plugs (5) on apron (4).

NOTE

- If ripper blade is to be folded, perform step 4.
- If ripper blade is unfolded, perform step 5.

4. Install latch (5) on each side of apron (4) with pin assembly (7) and linchpin (8).
5. Install latch (6) (facing in) on each side of apron (4) with pin assembly (7) and linchpin (8).

NOTE

- For ripper blade application, install stop with words "ripper blade" facing out.
- For cutting edge application, install stop with words "standard blade" facing out.

6. Install stop (9) on each side of apron (4) with screw (10) and locknut (11).
7. Install three rings (12) on rear of apron (4) with three straps (13) and six self-locking screws (14).
8. Install chain guides (15) on apron (4) with four lockwashers (16) and screws (17).

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued

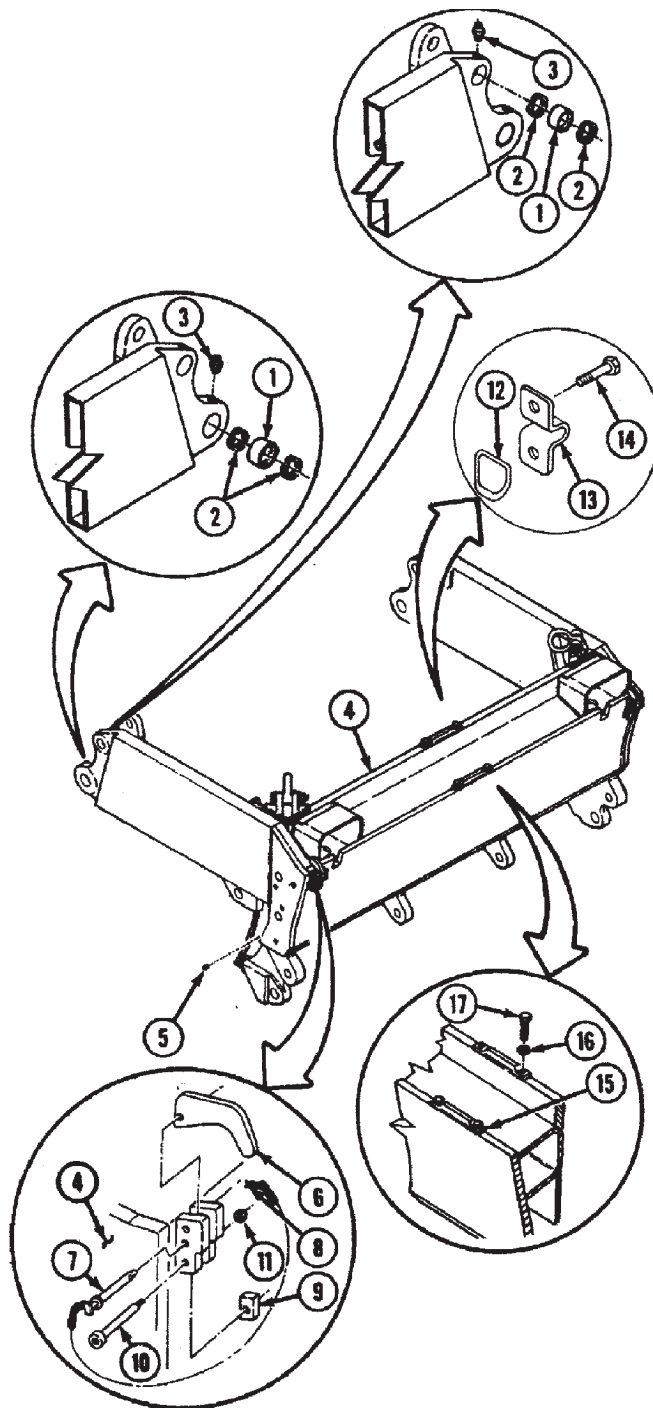


Figure 30. Ripper Blade and Apron.

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued**NOTE**

Steps 9 through 11 apply to Figure 31.

9. Coat short threaded end of two studs (18) with sealing compound, and install washer (19) and nut (20) on each stud (18).
10. Install lift eye shackle (21) on each side of apron (4) with studs (18) from outboard side of bracket.
11. Coat long threaded end of two studs (18) with lubricating oil, and install washer (22) and locknut (23) on each stud (18). Tighten locknuts (23) to 83-91 lb-ft (113-123 N m).

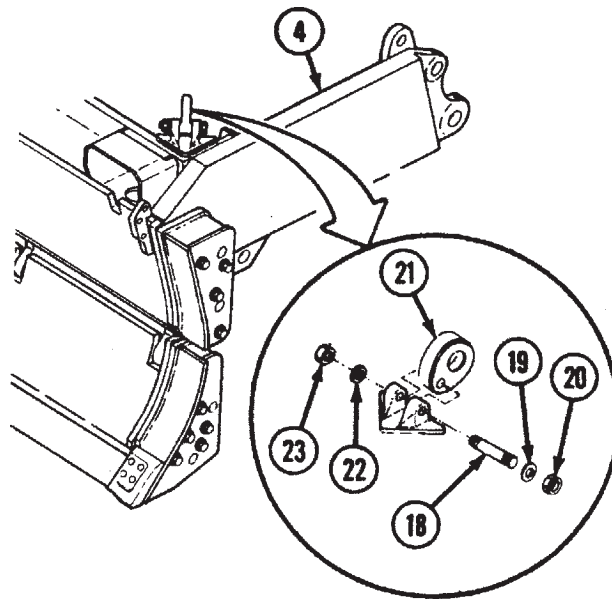


Figure 31. Installation of Studs onto Apron.

NOTE

Refer to the following pages, and install the components and assemblies on the apron and dozer assembly.

12. **Headlight assembly.** Refer to WP 0016 00.
13. **Cutting edges.**

NOTE

Coat threads of screws with lubricating oil prior to installation.

Steps 13a through 13e apply to Figure 32.

- a. Install dozer extension end bit (1) on dozer extension (2) with four screws (3), washers (4), and locknuts (5).
- b. Install dozer cutting edge (6) on dozer blade (7) with screw (8), washer (9), and locknut (10) on each end.
- c. Fold dozer blade (7).

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued

- d. Install sixteen screws (11), washers (12), and locknuts (13) on dozer cutting edge (6) and dozer blade (7).
- e. Tighten locknuts (5), (10), and (13) to 280 lb-ft (379 N m).

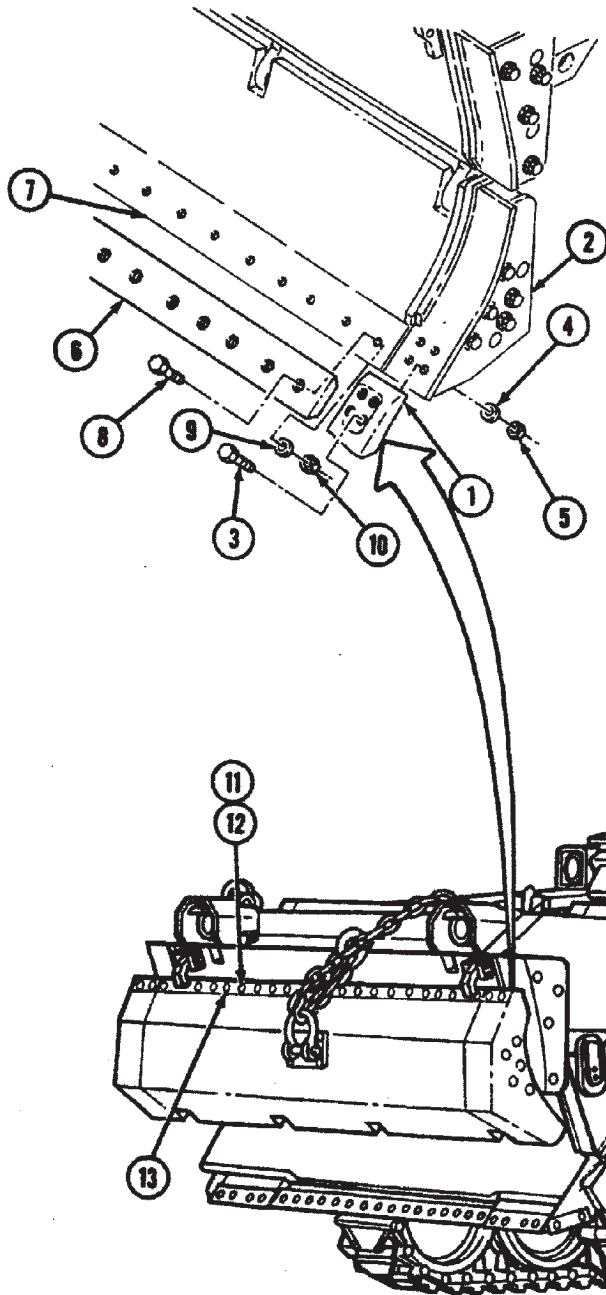


Figure 32. Cutting Edges.

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued**15. Extensions:****NOTE**

New production vehicles are equipped with a steel dozer blade and dozer blade extension. Go to step c for steel dozer blade extensions.

Step 15a applies to Figure 33.

- a. Align dowels (1) with holes in each side of apron and dozer assembly (2). Seat apron extensions (3) and dozer extensions (4) with hammer and wood block.

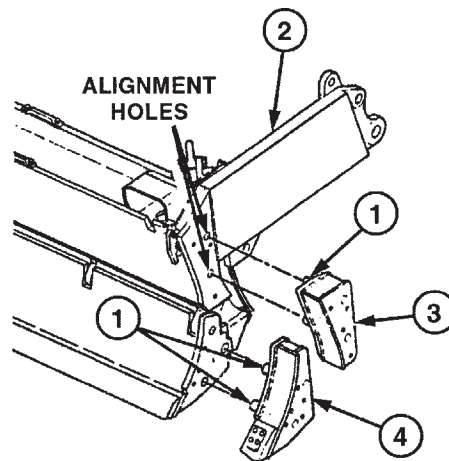


Figure 33. Apron and Dozer Extensions.

NOTE

Apply lubricating oil to threads of screws prior to installation.

Steps 15b and 15c apply to figure 34.

- b. Install four washers (5) and screws (6) in each apron extension (3); install five washers (7) and screws (8) in each dozer extension (4). Tighten screws (6) and (8) to 240 lb-ft (325 N m).

NOTE

- c. Align dozer extension (9) with apron and dozer assembly (2) and secure with three new lockwashers (10) and screws (11). Tighten screws (11) to 280 lb-ft (379 N m).

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued

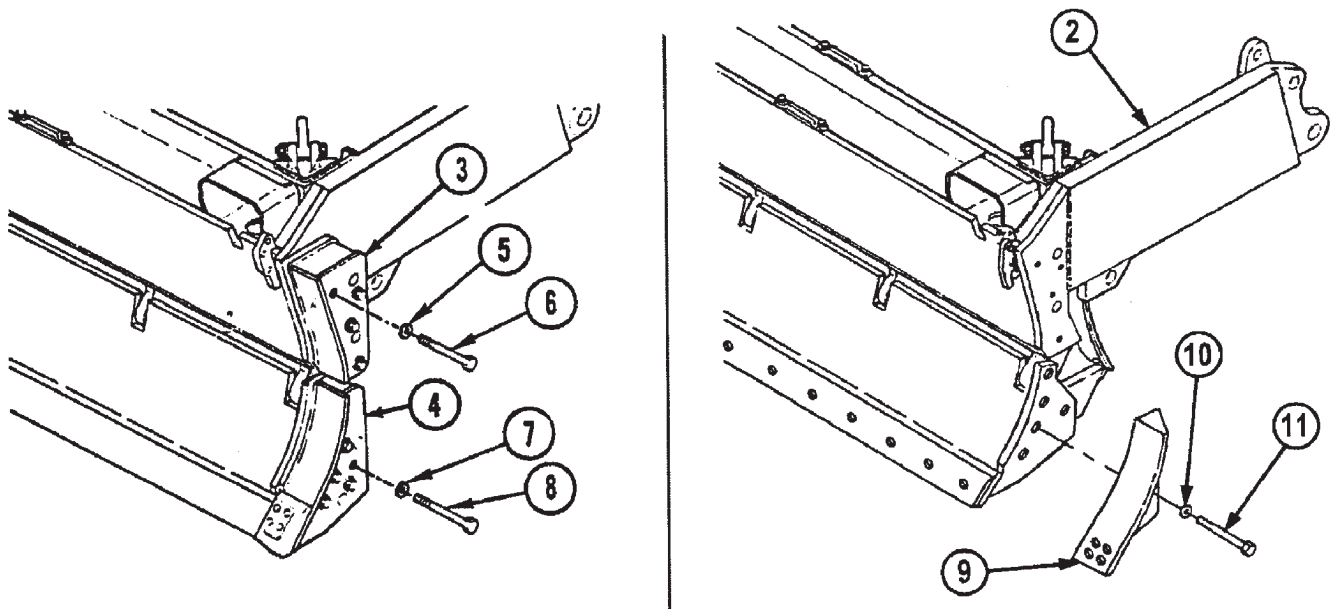


Figure 34. Alignment of Apron and Dozer Assembly.

16. Apron wear plates and side seals.

NOTE

Apply lubricating oil to threads of screws prior to installation.

Step 16 applies to Figure 35.

Install two wear plates (2) and wear plate (3) on apron (4) with twenty-one screws (1).

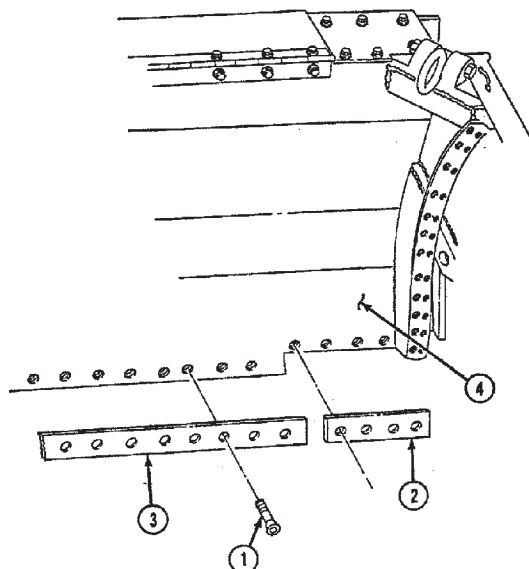


Figure 35. Apron Wear Plates and Side Seals.

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued**17. Apron strips.****NOTE**

Apply lubricating oil to threads of screws prior to installation.

Steps 17a and 17b apply to Figure 36.

- a. Install apron strip (3) on apron and dozer assembly (4) with three washers (2) and self-locking screws (1).
- b. Tighten self-locking screws (1) to 39-41 lb-ft (53-56 N m).

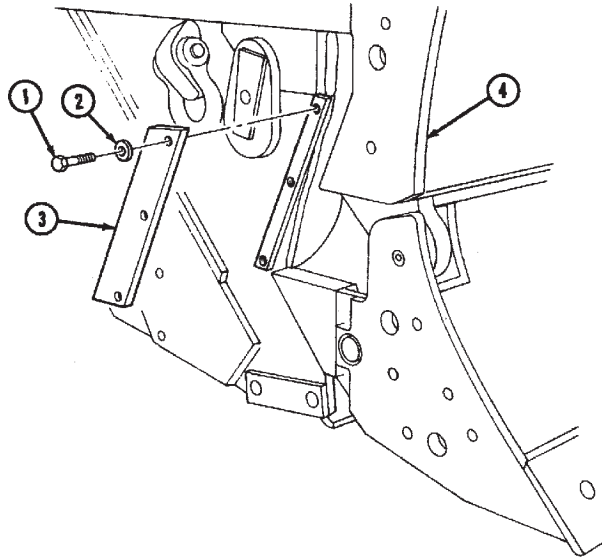


Figure 36. Apron Strips.

18. **Dozer blade.** Refer to WP 0023 00.

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued**INSTALLATION****WARNING**

Do not stand or work under apron and dozer assembly unless apron lockpins are installed. Failure to comply may result in severe injury or death to personnel.

Do not lift apron and dozer assembly with dozer blade installed unless dozer lockpins are installed. Failure to comply may result in severe injury or death to personnel.

Lifting device must have a weight capacity greater than 2,944 lb (1,337 kg).

Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

NOTE

Steps 1 and 2 apply to Figure 37.

1. Connect chain and lifting device to lifting eye shackles (1) of apron and dozer assembly (2). If dozer blade (3) is installed, connect a chain between lifting device and shackle (4) at back side of dozer blade (3). Tighten chain enough to remove back.
2. Lift apron and dozer assembly (2) and position on vehicle.

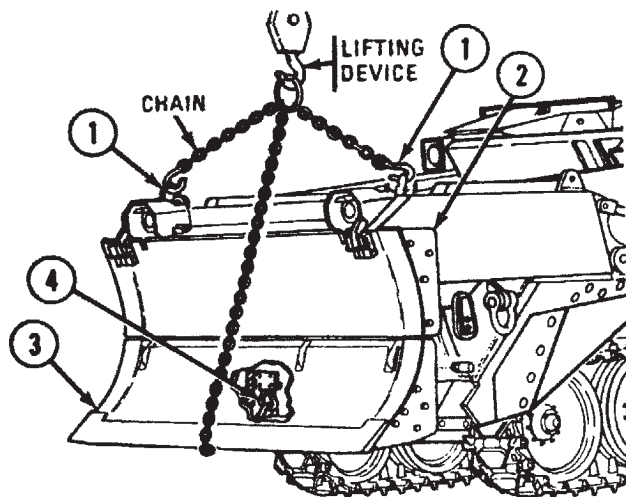


Figure 37. Apron and Dozer Assembly.

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued**NOTE**

Steps 3 and 4 apply to Figure 38.

3. Coat two pivot pins (1) with grease, and install apron (2) on hull with two pivot pins (1).

NOTE

Apply lubricating oil to threads of screws prior to installation.

4. Secure two pivot pins (1) to hull with screws (3) and locknuts (4). Tighten screws (3) to 28-32 lb-ft (38-43 N m).

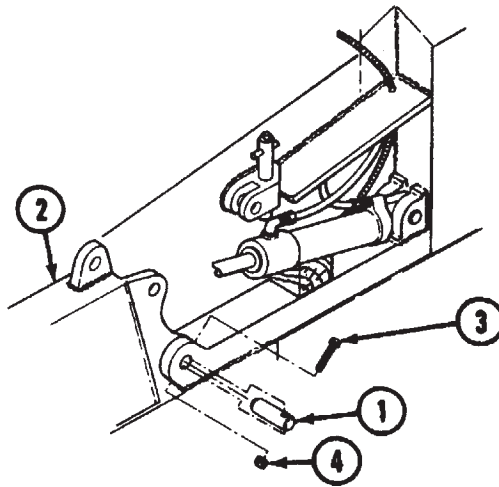


Figure 38. Installation of Apron onto Hull.

NOTE

Step 5 applies to Figure 39.

5. Coat apron hydraulic cylinder pins (5) with grease, and install two cylinders (6) on apron (2) with pins (5), screws (7), four washers (8), and two nuts (9). Remove chains from shackles. Remove blocks.

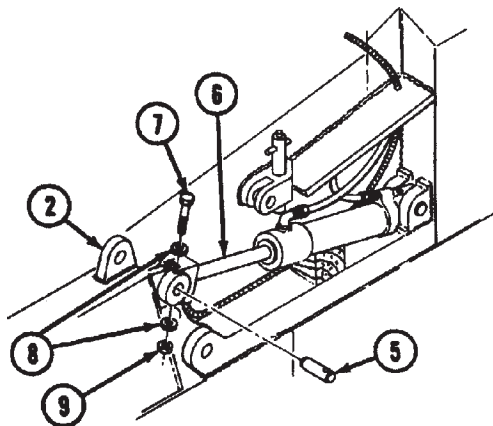


Figure 39. Hydraulic Cylinders.

APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR - continued**NOTE**

Step 6 applies to Figure 40.

6. Connect headlight intermediate wiring harness cannon plug (10) to apron wiring harness receptacle (11).

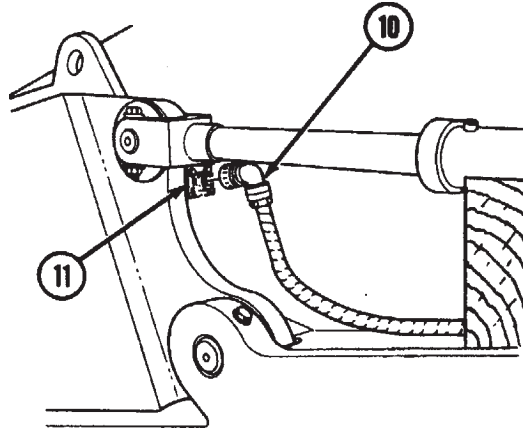


Figure 40. Headlight Intermediate Wiring Harness and Apron Wiring Harness.

END OF WORK PACKAGE

DOZER BLADE REPLACEMENT AND REPAIR

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Shop equipment, common no. 1
(Item 2, WP 0056 00)

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Conditions

Front of vehicle blocked
(TM5-2350-262-20-1)
Dozer blade folded (WP 0005 00)
Dozer cutting edge removed or dozer blade
extensions removed
(TM5-2350-262-20-1)
Chain Assembly
(TM5-2350-262-10)

REMOVAL

NOTE

New Production vehicles are equipped with a steel dozer blade which includes a cut-out and cover at top rear of dozer blade. Perform step 1 if removing cover.

Steps 1 through 3 apply to Figure 41.

1. Remove two screws (11), washers (12), locknuts (13), and cover (14) from dozer blade (3). Discard locknuts (13).
2. Remove two screws (1) and washers (2) from dozer blade (3) and two inner pivot pins (4).
3. Using hammer and brass drift, remove two inner pivot pins (4) from dozer blade (3) and apron (5).

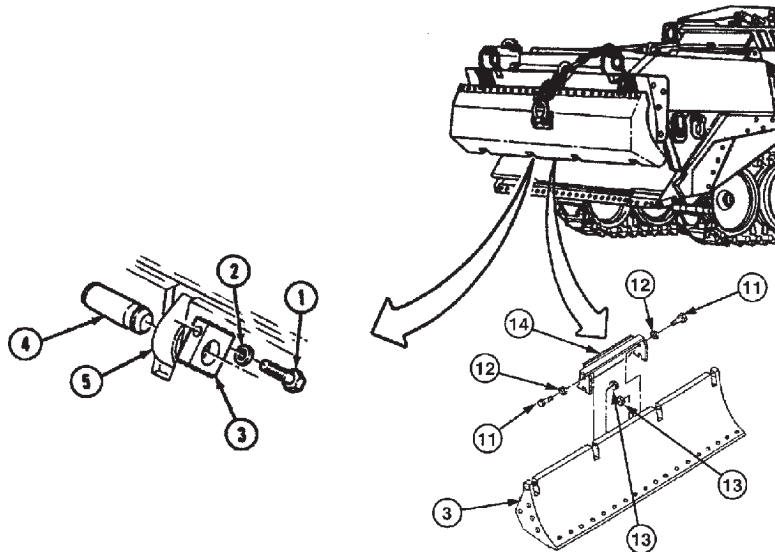


Figure 41. Removal of Inner Pivot Pins from Dozer Blade.

DOZER BLADE REPLACEMENT AND REPAIR - continued**WARNING**

Lifting device must have a weight capacity greater than 585 lb (266 kg). Ensure dozer blade is securely supported before removing outer pivot pins. Failure to comply may result in severe injury to personnel.

NOTE

Steps 4 through 6 apply to Figure 42.

4. Remove pin assembly (6) and latch (7) from each side of apron (5).

NOTE

Supports for dozer blade should be about 18 in. (46 cm) high.

5. Remove screw (8) and washer (9) from both outer pivot pins (10). Remove hull support blocks and lower dozer blade (3) on support.
6. Use eyebolt to pull both outer pivot pins (10). Remove dozer blade (3) from apron (5).

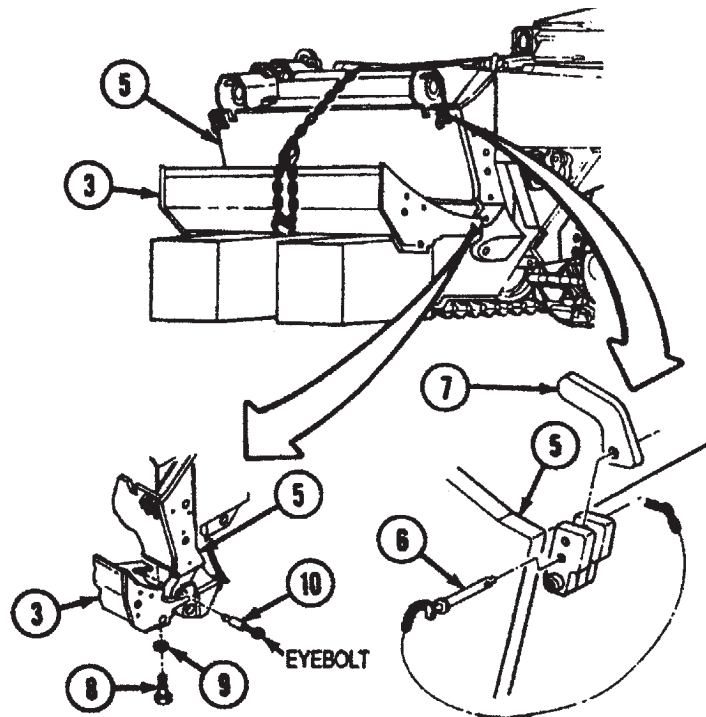


Figure 42. Removal of Outer Pivot Pins from Dozer Blade.

DOZER BLADE REPLACEMENT AND REPAIR - continued**DISASSEMBLY****NOTE**

Steps 1 and 2 apply to Figure 43.

1. Remove four screws (1), lockwashers (2), and shackle (3) from dozer blade (4). Discard lockwashers (2).
2. Using hammer and soft drift, drive out eight bushings (5) from inner and outer pivot points of dozer blade (4). Discard bushings (5).

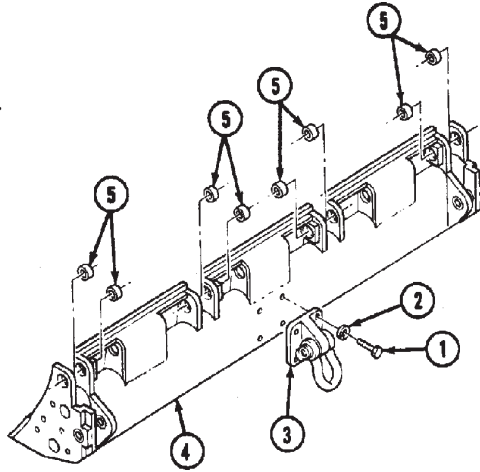
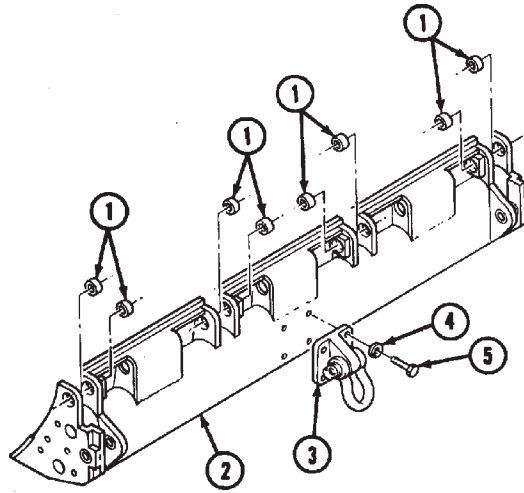


Figure 43. Shackle and Dozer Blade.

ASSEMBLY**NOTE**

Steps 1 and 2 apply to Figure 44.

1. Install eight bushings (1) on inner and outer pivot points of dozer blade (2).
2. Install shackle (3) on dozer blade (2) with four lockwashers (4) and screws (5).

DOZER BLADE REPLACEMENT AND REPAIR - continued**Figure 44. Assembly of Shackle onto Dozer Blade.****INSTALLATION****NOTE**

New Production vehicles are equipped with a steel dozer blade which includes a cut-out and cover at top rear of dozer blade. Perform step 1 if installing cover.

Install new bushings on all pivot points of apron and dozer assembly, if installing new dozer blade.

Steps 1 and 2 apply to Figure 45.

1. Connect chain to dozer blade (1). Connect lifting device to chain and take up slack.

WARNING

Lifting device must have a weight capacity greater than 585 lb (266 kg). Ensure dozer blade is securely supported before installing outer pivot pins. Failure to comply may result in severe injury to personnel.

Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

2. Place dozer blade (1) on supports in front of vehicle, and align pivot points of apron (2) and dozer blade (1).

APRON BLADE REPLACEMENT AND REPAIR - continued

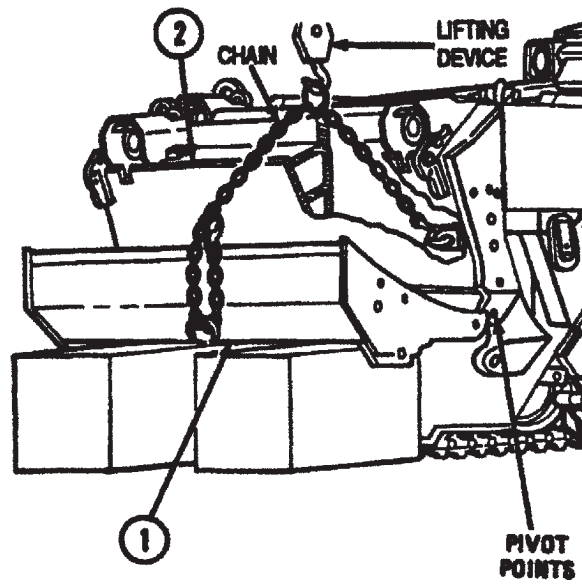


Figure 45. Pivot Points.

NOTE

Steps 3 and 4 apply to Figure 46.

3. Coat two outer pivot pins (3) with grease and install dozer blade (1) on apron (2) with outer pivot pins (3).
4. Remove lifting device and chain.

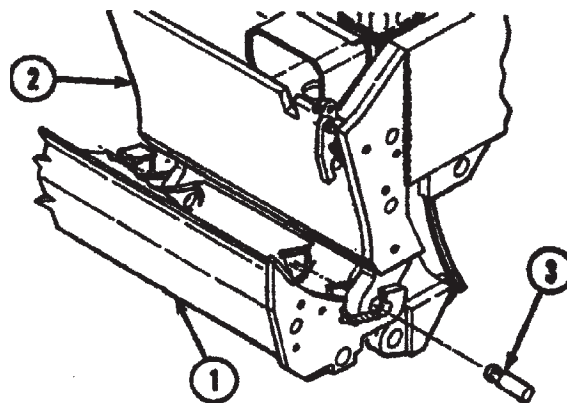


Figure 46. Installation of Dozer Blade onto Apron.

DOZER BLADE REPLACEMENT AND REPAIR - continued

NOTE

Step 5 applies to Figure 47.

5. Move ejector (4) forward, and connect chain between shackle (5) and eye (6) on ejector (4).

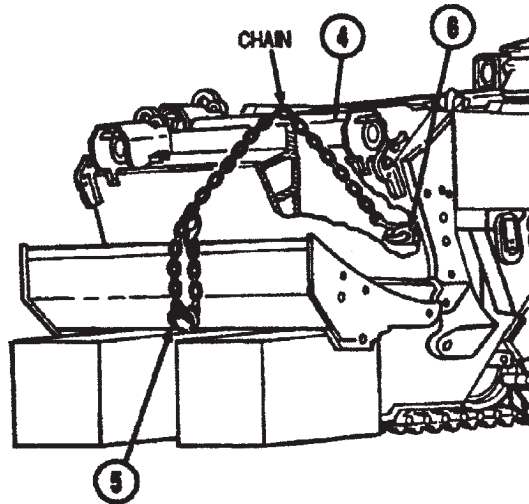


Figure 47. Chain Connection.

NOTE

Steps 6 and 7 apply to Figure 48.

6. Retract ejector (1) until dozer blade (2) is folded against apron (3) with pin assembly (5).
7. Install two washers (6) and screws (7) on dozer blade (2) and outer pivot pins (8).

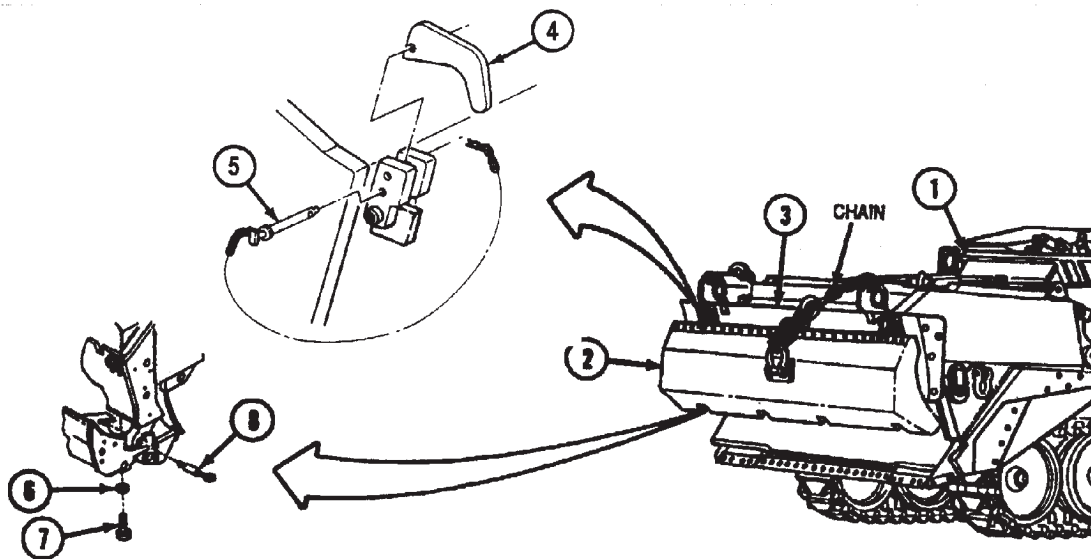


Figure 48. Dozer Blade and Pin Assembly.

DOZER BLADE REPLACEMENT AND REPAIR - continued**NOTE**

Steps 8 and 9 apply to Figure 49.

8. Coat two inner pivot pins (9) with grease, and install inner pivot pins (9) on apron (3) and dozer blade (2) with two washers (10) and screws (11).
9. Align cover (12) on dozer blade (2) and secure with two screws (13), washers (14), and new locknuts (15).

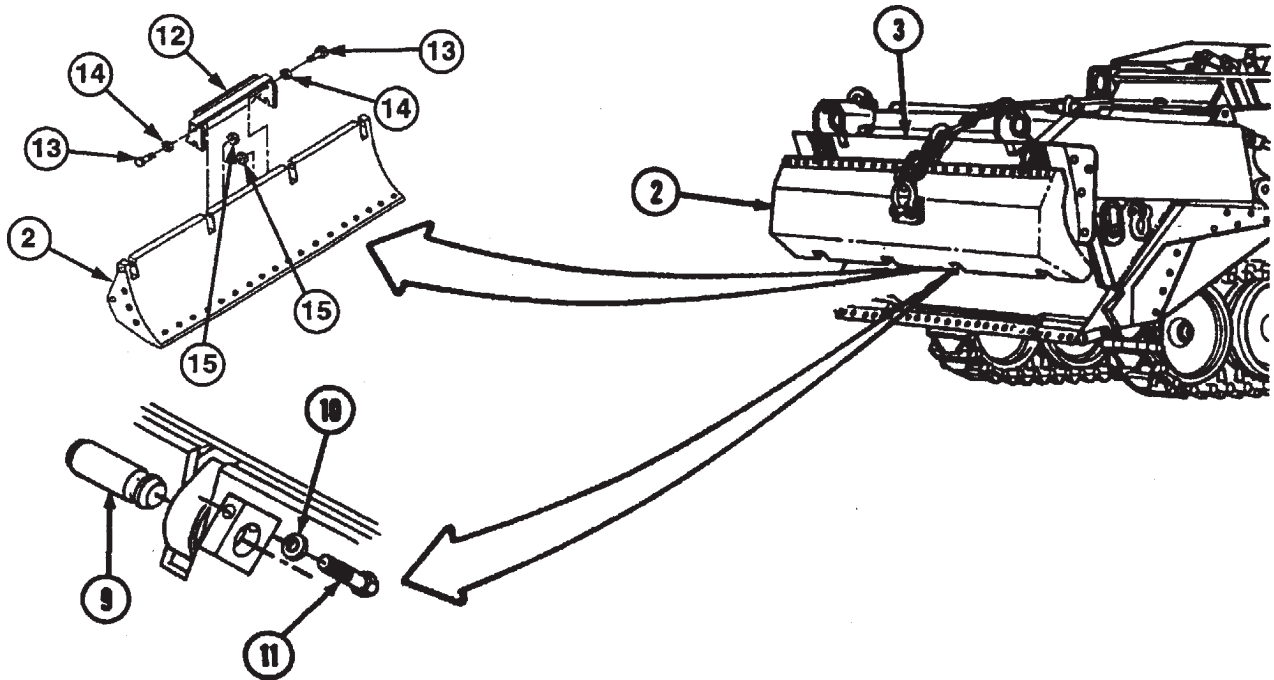


Figure 49. Installation of Inner Pivot Pins.

END OF WORK PACKAGE

HYDRAULIC VALVES REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Shop equipment, common no. 1
(Item 2, WP 0056 00)
Wrench set, open end
(Item 8, WP 0056 00)
Wrench set, crowfoot
(Item 7, WP 0056 00)

Materials/Parts:

Lockwasher (Item 8, Figure 12, WP 0048 00)

Equipment Conditions

Hydraulic pressure relieved
(TM5-2350-262-20-1)
Hydraulic hoses removed
(WP 0027 00, Disassembly)
Right, center, and left rear floor plates removed
(TM5-2350-262-10)

DISASSEMBLY

CAUTION

Be ready to secure valves located under brackets when removing fastening hardware. Failure to do so may cause damage to equipment.

NOTE

Step 1a applies to Figure 50.

1. Flow valve removal:
 - a. Remove screw (item 3), two flat washers (item 1), nut (item 6), two pins (item 2), and flow valve bodies (item 4) from bracket (item 5).

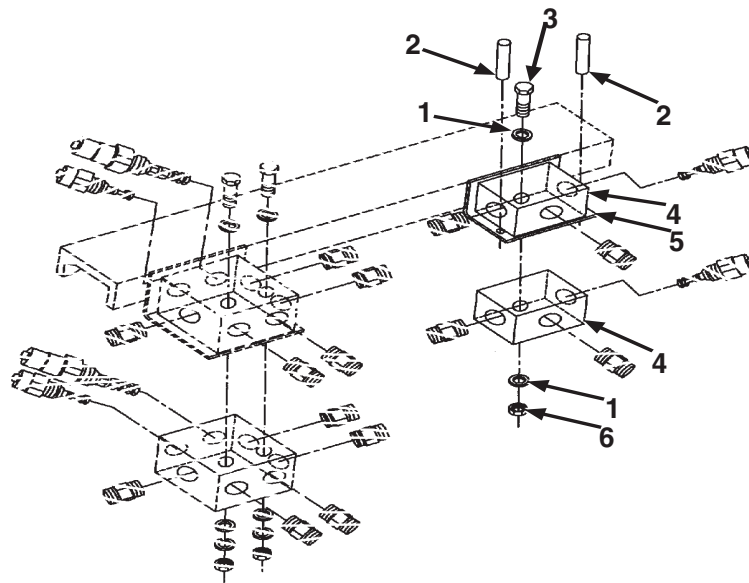


Figure 50. Flow Valve Bodies.

HYDRAULIC VALVES REPLACEMENT - continued

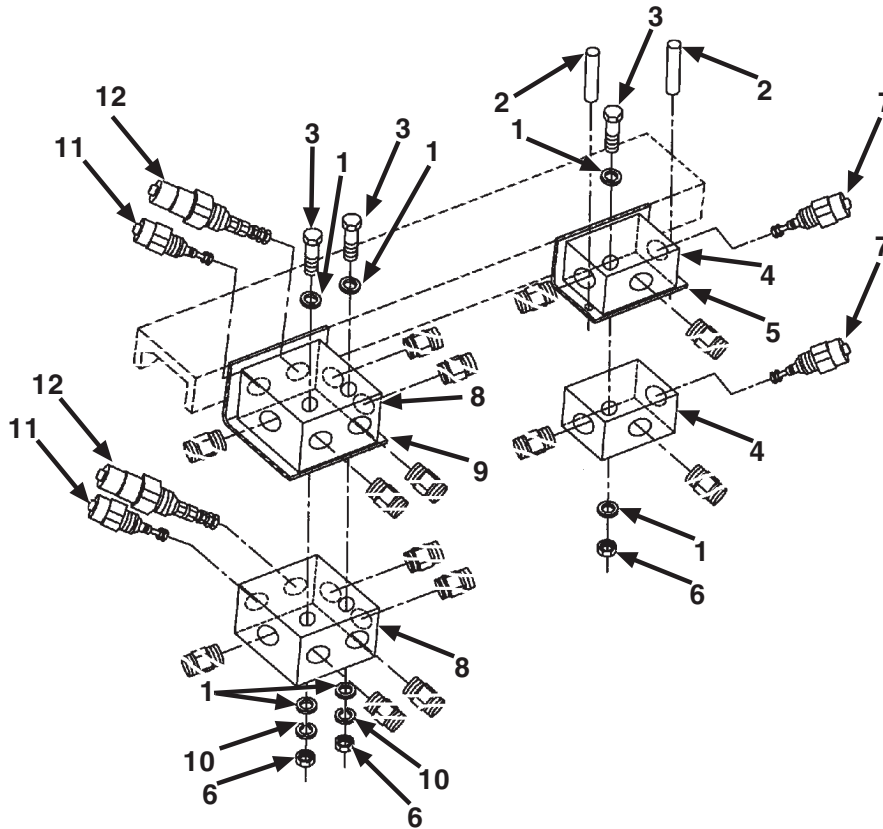


Figure 51. Flow Valves.

Note

Steps below apply to Figure 51.

1. Remove flow valve (item 7) from each valve body (item 4).

CAUTION

Be ready to secure valves located under brackets when removing fastening hardware. Failure to do so may cause damage to equipment.

2. Holding valve removal:
 - a. Remove two screws (item 3), four flat washers (item 1), two lockwashers (item 10), nuts (item 6), and valve bodies (item 8) from bracket (item 9). Discard lockwashers.
 - b. Remove valve (item 12) and check valve (item 11) from each holding valve body (item 8).

ASSEMBLY

1. Flow valve installation:
 - a. Install two flow valves (item 7) to valve bodies (item 4).

HYDRAULIC VALVES REPLACEMENT - continued

- b. Secure two flow valve bodies (item 7) with screw (item 3), two flat washers (item 1), and nut (item 6) to bracket (item 5).
 - c. Secure two pins (item 2) on either side of valve bodies (item 4).
2. Holding valve installation:
- a. Install two valves (item 12) next to port 4 on valve bodies (item 8) .
 - b. Install two check valves (item 11) next to valves (item 12) on valve bodies (item 8).
 - c. Secure two valve bodies (item 8) with two screws (item 3), four flat washers (item 1), two new lockwashers (item 10), and nuts (item 6), to bracket (item 9).

END OF WORK PACKAGE

HYDRAULIC FITTINGS REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
 (Item 6, WP 0056 00)
 Shop equipment, common no. 1
 (Item 2, WP 0056 00)
 Wrench set, open end
 (Item 8, WP 0056 00)
 Wrench set, crowfoot
 (Item 7, WP 0056 00)

Equipment Conditions

Hydraulic pressure relieved
 (TM5-2350-262-20-1)
 Hydraulic hoses removed
 (WP 0027 00, Disassembly)
 Right, center, and left rear floor plates removed
 (TM5-2350-262-10)

DISASSEMBLY

1. Remove two straight adapters (item 4) on ports 1A on top and bottom valve bodies (item 3).

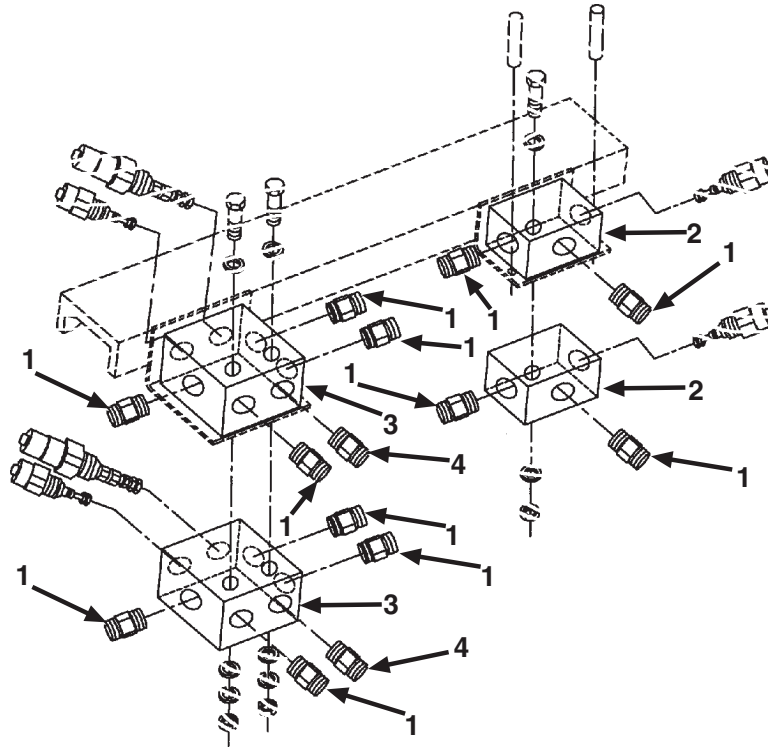


Figure 52. Flow Valves.

2. Remove eight straight adapters (item 1) on remaining valve ports on valve bodies (item 2 and 3).

ASSEMBLY

1. Install two straight adapters (item 4) on ports 1A on top and bottom valve bodies (item 3).
2. Install eight straight adapters (item 1) on remaining valve body ports on valve bodies (item 2 and 3).

END OF WORK PACKAGE

HYDRAULIC INTERMEDIATE MANIFOLD AND FITTINGS REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Wrench set, crowfoot
(Item 7, WP 0056 00)

Lockwasher (Item 19, WP 0026 00, Figure 20)
Packing (Item 31, WP 0026 00, Figure 21)
Self locking screw (Item 40, WP 0026 00, Figure 21)

Materials/Parts:

Caps and plugs (Item 6, WP 0055 00)
Lubricating oil (Item 14, WP 0055 00)
Tiedown strap(s) (Item 18, WP 0055 00)

Equipment Conditions

Ejector forward (TM 5-2350-262-10)
Hydraulic pressure relieved (TM 5-2350-262-20-1)
Hull access covers removed
(TM 5-2350-262-20-1)

DISASSEMBLY

REMOVAL (LEFT SIDE)

WARNING

High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. Ensure each of the hydraulic control levers is moved several times through all positions, and the hydraulic tank dipstick is slowly loosened to relieve pressure. Failure to comply may result in severe injury to personnel.

CAUTION

Cap or plug all port and ends of hoses and tubes to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

NOTE

Removal procedures for right side manifold, reference TM 5-2350-262-20-2, Hydraulic Intermediate Manifolds and Fittings Replacement, Removal (Right Side). Procedures below are for left side only.

Use two wrenches when disconnecting hydraulic lines from fittings.

Tag all hoses and tubes prior to removal, for installation.

HYDRAULIC INTERMEDIATE MANIFOLD AND FITTINGS REPLACEMENT - continued

NOTE

Steps 1 through 7 apply to Figure 53.

1. Disconnect five valve bank hoses (item 17) from adapters (item 12).

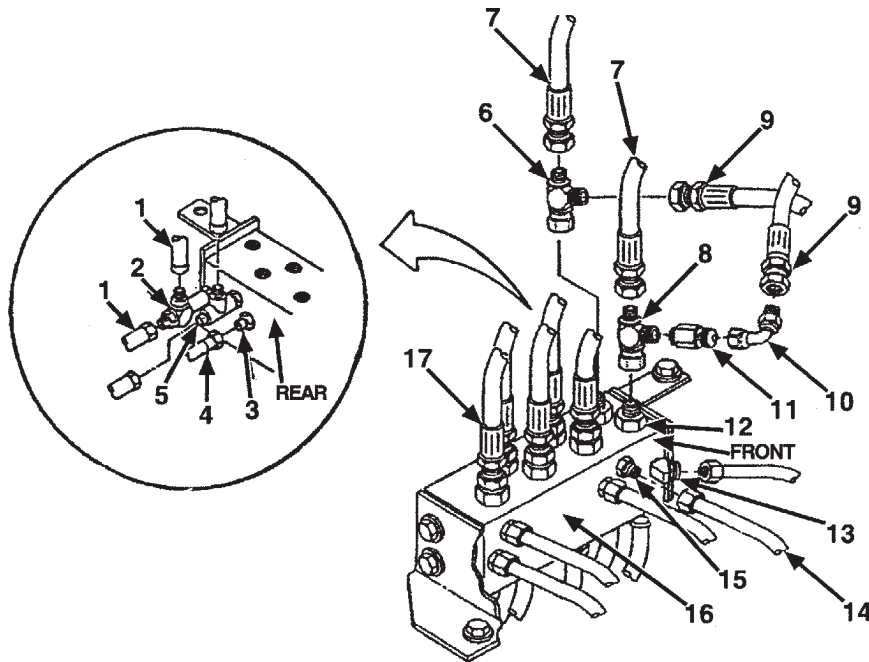


Figure 53. Intermediate Manifold.

2. Disconnect two HBF-TT track adjusting hoses (item 9) from tee (item 6) and elbow (item 10).
3. Disconnect two valve bank hoses (item 7) from tee (item 6) and tee (item 8).
4. Remove reducer (item 11) from tee (item 8).
5. Remove tee (item 6) and tee (item 8) from adapters (item 12).
6. Disconnect five tubes (item 14) from four adapters (item 15) and elbow (item 13) at front of manifold (item 16).
7. From hull access opening, disconnect four tubes (item 1) from tee (item 5), and fitting (item 2) at rear of manifold (item 16). Disconnect hose (item 4) from adapter (item 3).

HYDRAULIC INTERMEDIATE MANIFOLD AND FITTINGS REPLACEMENT - continued**CAUTION**

Do not bend tubes. If necessary, remove tubes from vehicle to avoid bending them. Failure to comply may result in damage to equipment.

NOTE

Step 8 applies to Figure 54.

8. From hull access opening, remove two screws (item 18), lockwashers (item 19), and retaining strap (item 20) from five tubes (item 17) and hull. Discard lockwashers (item 19).

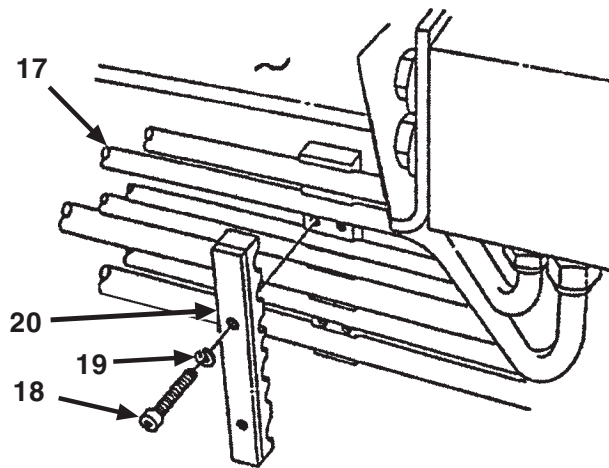


Figure 54. Manifold Tubes.

HYDRAULIC INTERMEDIATE MANIFOLD AND FITTINGS REPLACEMENT - continued**NOTE**

Steps 9 through 16 apply to Figure 55.

9. From hull access opening, disconnect five tubes (item 36) from five adapters (item 38) at bottom of manifold (item 16).

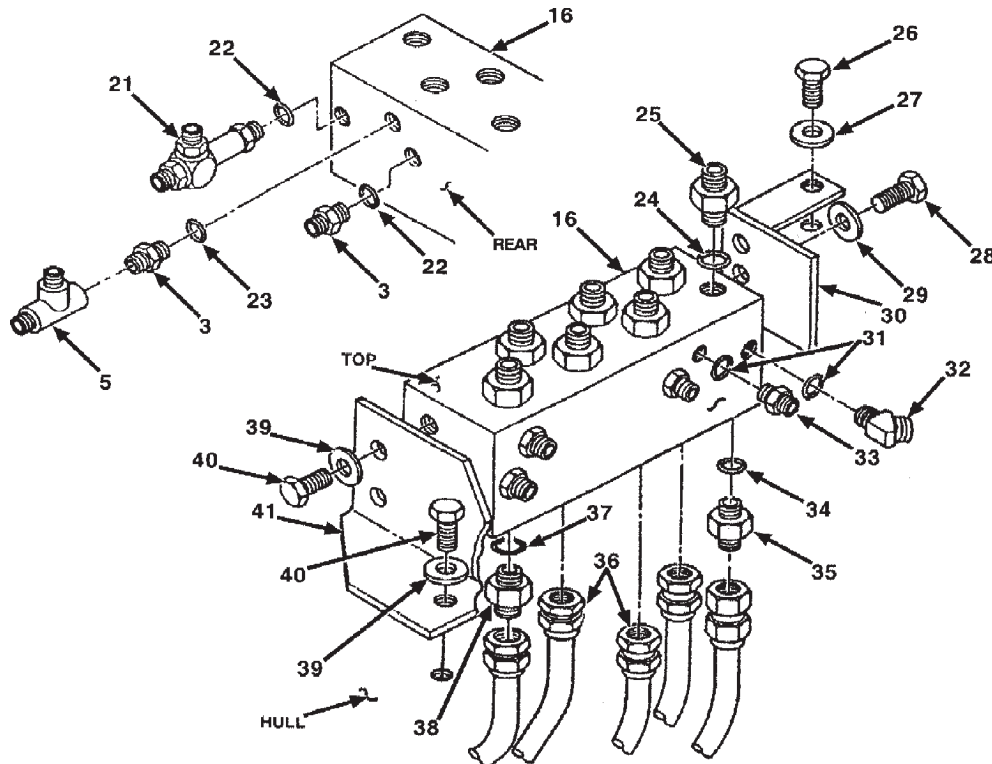


Figure 55. Manifold Tubes.

10. Remove three self locking screws (item 40), washers (item 39), and bracket (item 41) from manifold (item 16) and hull. Discard self locking screws (item 40).
11. Remove self locking screw (item 26), and washer (item 27), from bracket (item 30) and hull. Discard self locking screw (item 26).
12. Remove two self locking screws (item 28), washers (item 29), and bracket (item 30) from manifold (item 16). Discard self locking screws (item 28).
13. Remove seven adapters (item 25) and packings (item 24) from top of manifold (item 16). Discard packings (item 24).
14. Remove four adapters (item 33), elbow (item 32), and five packings (item 31) from front of manifold (item 16). Discard packings (item 31).

HYDRAULIC INTERMEDIATE MANIFOLD AND FITTINGS REPLACEMENT - continued

15. Remove five adapters (item 35) and packings (item 34) from bottom of manifold (item 16). Discard packings (item 34).
16. Remove tee (item 5), adapter (item 3), packing (item 23), fitting (item 21), packing (item 22), from rear of manifold (item 16). Discard packings (item 22).

ASSEMBLY**INSTALLATION (LEFT SIDE)****NOTE**

Installation procedures for right side manifold, reference TM 5-2350-262-20-2, Hydraulic Intermediate Manifolds and Fittings Replacement, Removal (Right Side). Procedures below are for left side only.

Class III leaks can occur if hydraulic lines and fittings are improperly installed or not fully serviceable. Refer to TM 5-2350-262-20-1 when replacing or repairing hydraulic system components. Always inspect system lines, fittings, and packings for serviceability before installation.

Do not tighten fittings until alignment with tube is checked.

Use two wrenches when connecting hydraulic lines to fittings.

Apply lubricating oil to packings prior to installation.

Steps 1 through 4 apply to Figure 56.

1. Install five new packings (item 34) on five adapters (item 35), and install adapters (item 35) on bottom of manifold (item 16).

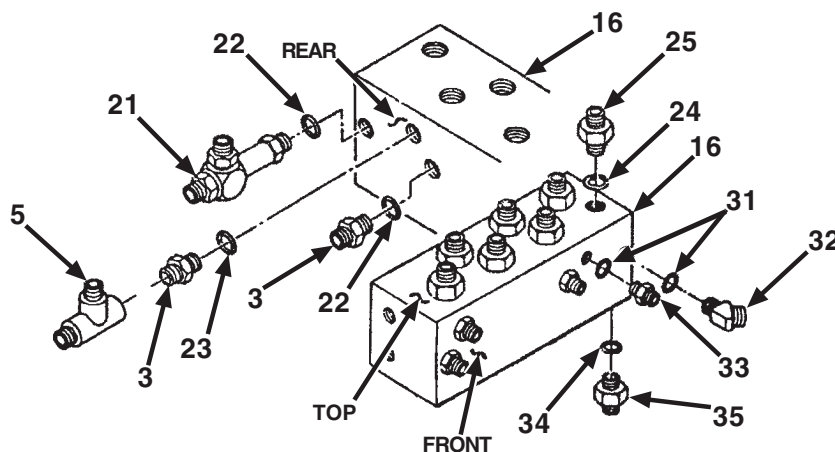


Figure 56. Manifold Tubes.

2. Install three new packings (item 22) on two adapters (item 3) and fitting (item 21), and install adapters (item 3), fitting (item 21), and tee (item 5) on rear of manifold (item 16).

HYDRAULIC INTERMEDIATE MANIFOLD AND FITTINGS REPLACEMENT - continued

3. Install five new packings (item 31) on four adapters (item 33) , and install adapters (item 33) and elbow (item 32) on front of manifold (item 16).
4. Install seven new packings (item 24) on seven adapters (item 25), and install adapters on top of manifold (item 16).

NOTE

Steps 5 through 18 apply to Figure 57.

5. Install left bracket (item 41) on manifold (item 16) with two washers (item 29) and new self locking screws (item 28).

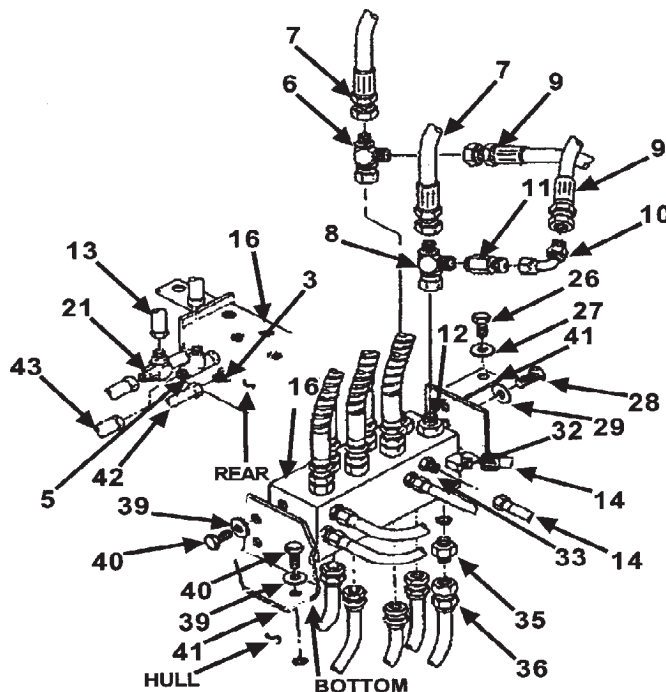


Figure 57. Manifold Tubes.

6. Install right side bracket (item 41) on manifold (item 16) with two washers (item 39) and new self locking screws (item 40).
7. Install manifold (item 16) on hull with two washers (item 27) and new self locking screws (item 26). Do not tighten self locking screws.
8. Connect five tubes (item 14) to four adapters (item 33) and elbow (item 32) at front of manifold (item 16).
9. Connect five tubes (item 36) to five adapters (item 35) at bottom of manifold (item 16).
10. Connect four tubes (item 43) to tee (item 5) and fitting (item 21).
11. Connect hose (item 42) to adapter (item 3) at rear of manifold (item 16).

HYDRAULIC INTERMEDIATE MANIFOLD AND FITTINGS REPLACEMENT - continued

12. Install tee (item 6) and tee (item 8) on adapters (item 12).
13. Install reducer (item 11) on tee (item 8).
14. Connect two valve bank hoses (item 7) on top of tee (item 6) and tee (item 8).
15. Connect elbow (item 10) to reducer (item 11).
16. Connect track and blade track adjuster hose (item 9) to elbow (item 10).
17. Connect track and blade track adjuster hose (item 9) to tee (item 6).
18. Connect five remaining hoses (item 7) to remaining adapters (item 12) on top of manifold (item 16).

NOTE

Step 19 applies to Figure 58.

19. From hull access opening, secure seven tubes (item 17) to hull with retaining strap (item 20), two new lockwashers (item 19), and screws (item 18).

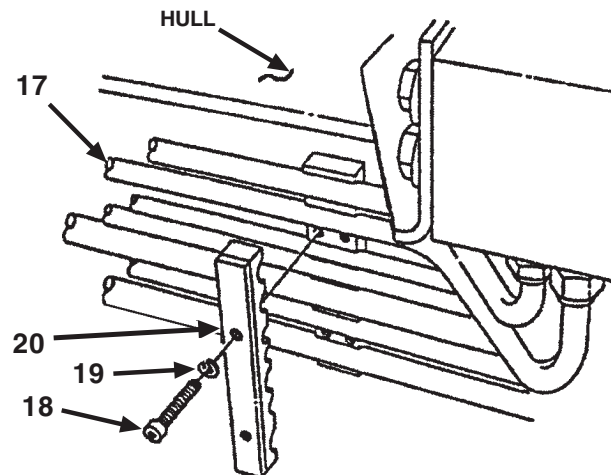


Figure 58. Manifold Tubes.

20. Install hull access covers (TM 5-2350-262-20-1).
21. Service hydraulic tank (TM 5-2350-262-20-1).
22. Retract ejector (TM 5-2350-262-10).

END OF WORK PACKAGE

HYDRAULIC HOSES REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Shop equipment, common no. 1
(Item 2, WP 0056 00)
Wrench set, open end
(Item 8, WP 0056 00)
Wrench set, crowfoot
(Item 7, WP 0056 00)

Materials/Parts:

Lockwasher (Item 4, WP 0048 00, Figure 15)

Equipment Conditions

Hydraulic pressure relieved (TM5-2350-262-20-1)
Hull access covers removed
(TM5-2350-262-20-1)
Floor support removed (TM5-2350-262-20-1)

DISASSEMBLY

1. Remove screw (item 5), lockwasher (item 4), flat washer (item 3), and two clamps (item 1) from boss (item 6) that secures apron hoses to hull. Discard lockwasher.

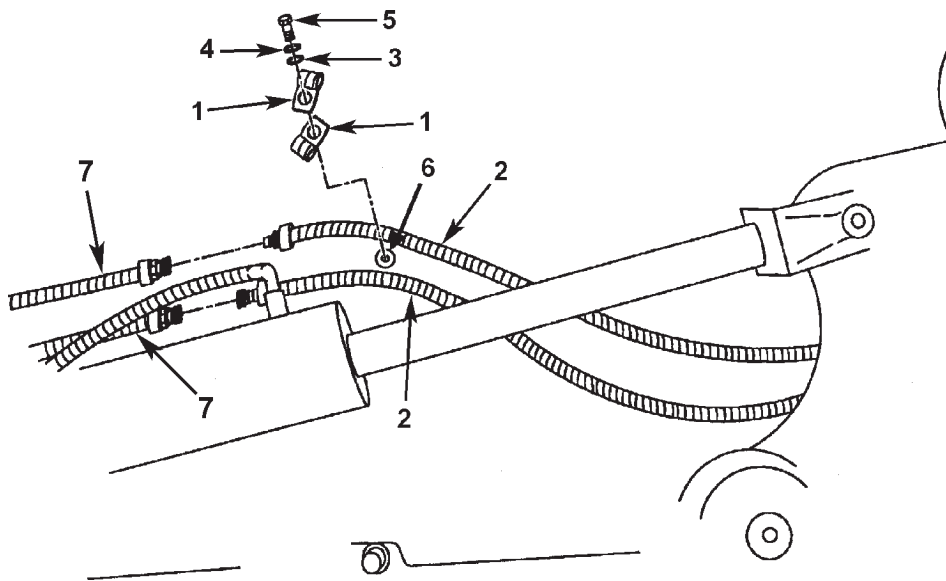
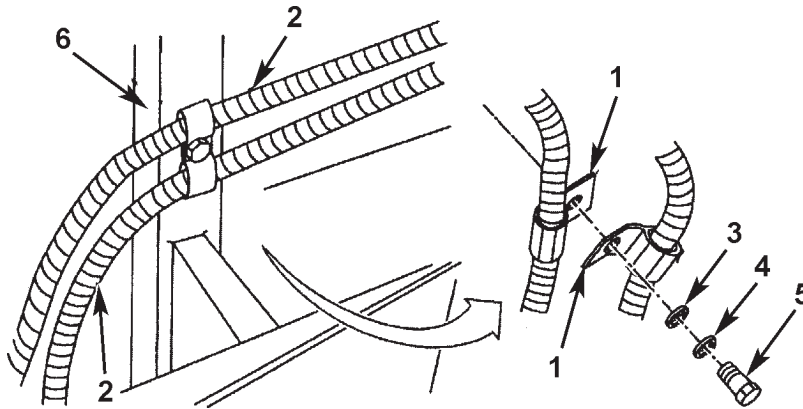


Figure 59. Blade Folder and Apron Hoses.

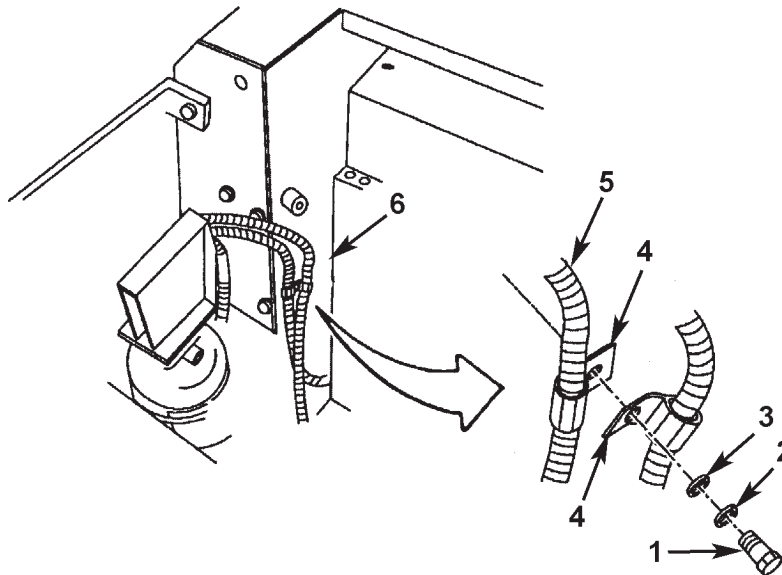
2. Disconnect top blade folder hose (item 2) from apron hose (item 7) at quick-disconnect fittings.
3. Disconnect bottom blade folder hose (item 2) from apron hose (item 7) at quick-disconnect fittings.

HYDRAULIC HOSE REPLACEMENT - continued

4. Remove screw (item 5), lockwasher (item 4), flat washer (item 3), and two clamps (item 1) on blade folder hoses (item 2) on hull member (item 6). Discard lockwasher.

**Figure 60. Blade Folder Hose Clamps.**

5. Remove screw (item 1), lockwasher (item 2), flat washer (item 3), and two clamps (item 4) on apron hoses (item 5) on hull plate (item 6). Discard lockwasher.

**Figure 61. Blade Folder Hose Clamps on Hull Plate.**

HYDRAULIC HOSE REPLACEMENT - continued**NOTE**

Steps 6 and 7+ apply to Figure 62.

6. Disconnect blade folder hose (item 1) from top flow valve (item 2) on port 2.

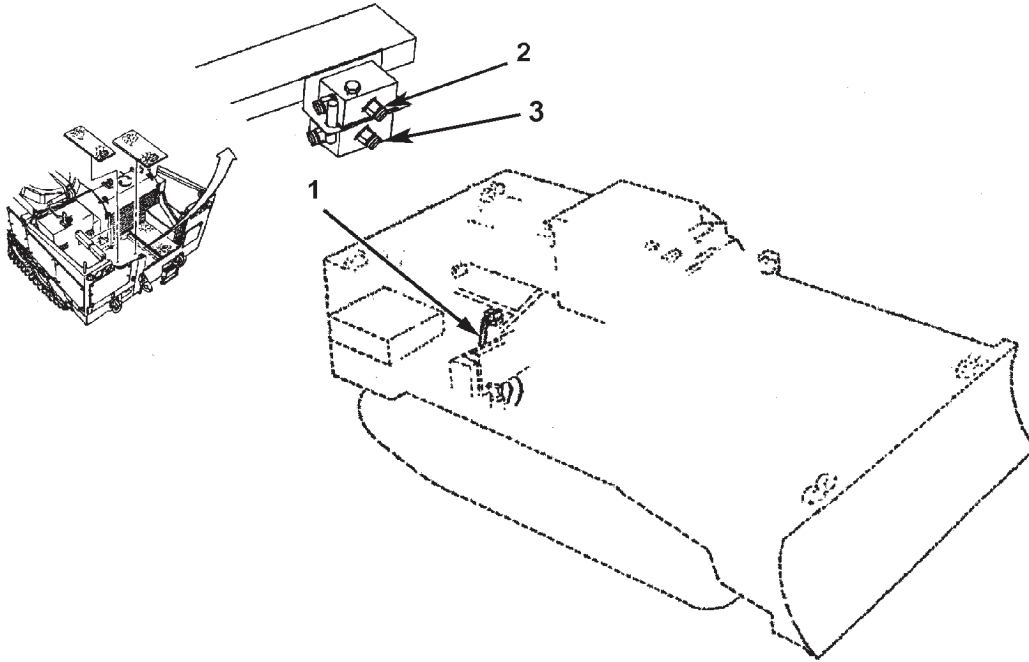


Figure 62. Blade Folder Hoses and Flow Valves.

7. Disconnect blade folder hose (item 1) from bottom flow valve (item 3) on port 2.

NOTE

Steps 8 applies to Figure 63.

8. Remove blade folder hoses (items 1 and 2) from hull by pulling them out access holes (item 1).

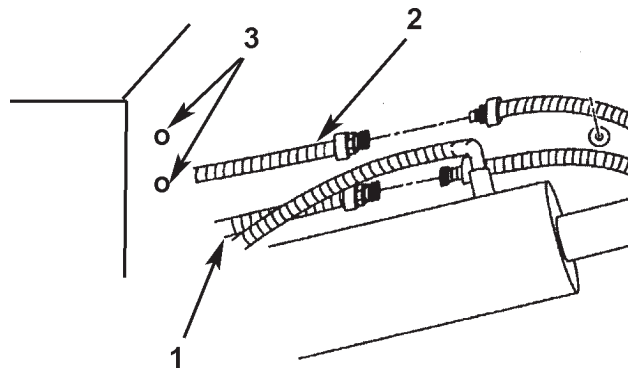


Figure 63. Blade Folder Hoses.

HYDRAULIC HOSE REPLACEMENT - continued**ASSEMBLY****NOTE**

Step 1 applies to Figure 64.

1. Install two blade folder hoses (item 1) to top and bottom flow valves, port 2, (items 2 and 3) and route under radiator and up in front of radiator next to muffler plate.

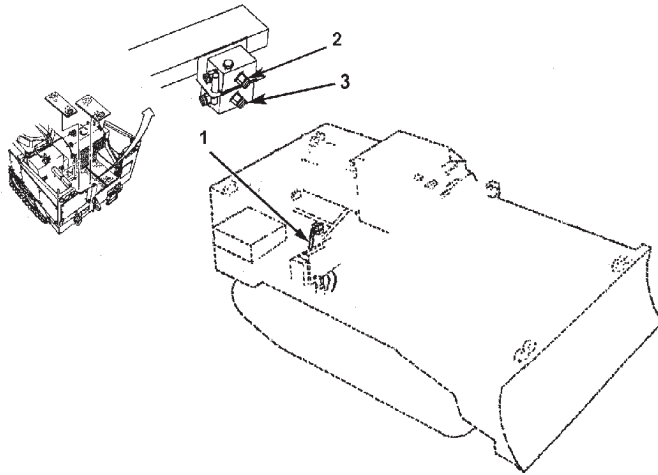


Figure 64. Installation of Blade Folder Hoses.

NOTE

Step 2 applies to Figure 65.

2. Secure two blade folder hoses (item 1) with two clamps (item 2), one flat washer, (item 3) new lock washer (item 4), and screw (item 5) to hole on hull plate (item 6) next to right side fire extinguisher.

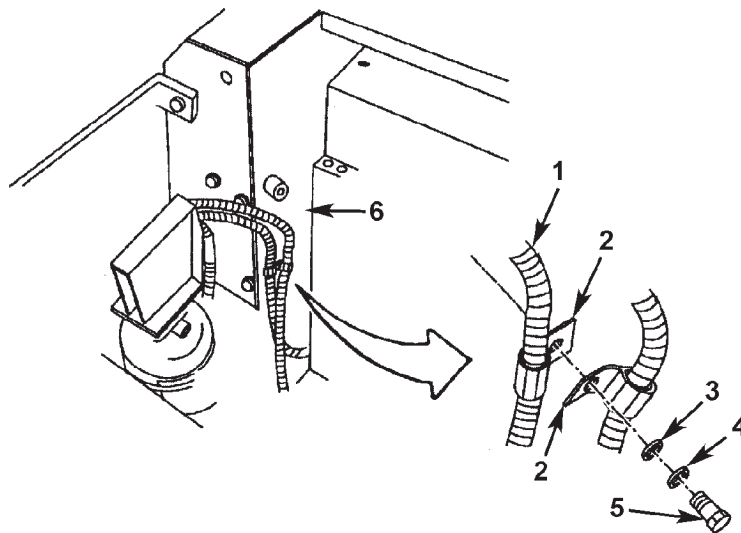


Figure 65. Blade Folder Hose Clamps (1 of 2).

HYDRAULIC HOSE REPLACEMENT - continued**NOTE**

Step 3 applies to Figure 66.

- Secure two blade folder hoses (item 1) with two clamps (item 2), one flat washer (item 3), new lock washer (item 4), and screw (item 5) to hole on hull member (item 6).

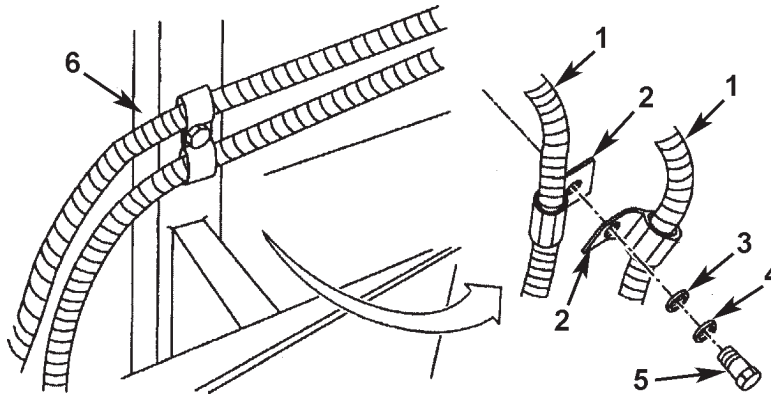


Figure 66. Blade Folder Hose Clamps (2 of 2).

NOTE

Be sure to install blade folder hose, from top flow valve, port 2, through top access hole in hull and to top apron hose.

Steps 4 through apply to Figure 67.

- Route two blade folder hoses (item 1) from inside to outside vehicle through access holes in hull as shown in (item 13).
- Install adapter and o-ring (item 2) and quick-disconnect coupler (item 3) to blade folder hose (item 1).
- Install adapter O-ring (item 2) and quick-disconnect coupler (item 12) to blade folder hose (item 1).
- Connect blade folder hose (item 1) to apron hose (item 4) from top hole on apron (item 10).
- Connect blade folder hose (item 13) to apron hose (item 11) from bottom hole on apron (item 10).

NOTE

Make sure apron hoses have minimum slack between clamps and apron when apron is in down position.

- Secure apron hoses (items 4 and 11) with two clamps (item 8), one flat washer (item 7), lock washer (item 6), and screw (item 5) to boss (item 9).

HYDRAULIC HOSE REPLACEMENT - continued

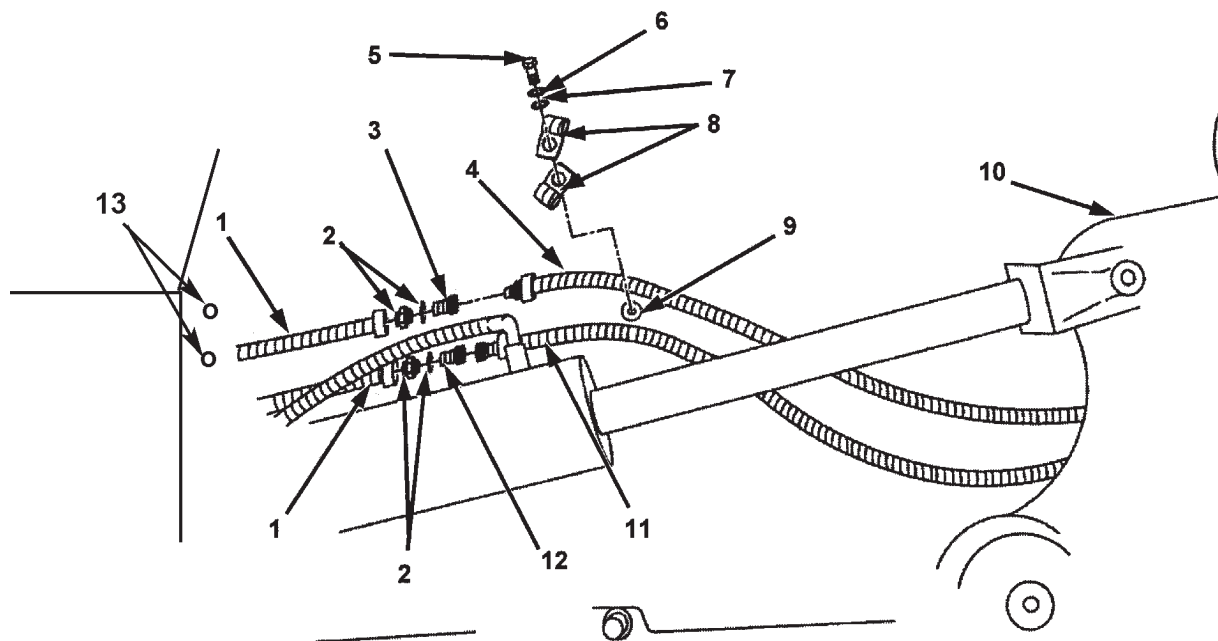


Figure 67. Clamp Locations.

END OF WORK PACKAGE

TRACK ADJUSTING CYLINDER ASSEMBLY REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Shop equipment, common no. 1
(Item 2, WP 0056 00)

Materials/Parts:

Locknut (Item 1, WP 0048 00, Figure 17)
Lubricating oil (Item 14, WP 0055 00)

Cleaning solvent (Item 7, WP 0055 00)
Caps and plugs (Item 6, WP 0055 00)

Equipment Conditions

Right, center, and left rear floor plates removed
(TM5-2350-262-10)
Hydraulic system pressure relieved
(TM5-2350-262-20-1)

DISASSEMBLY

NOTE

Step 1 applies to Figure 68.

1. Remove locknut (item 3), washer (item 2), and rear fuel tank strap (item 1) from hull.

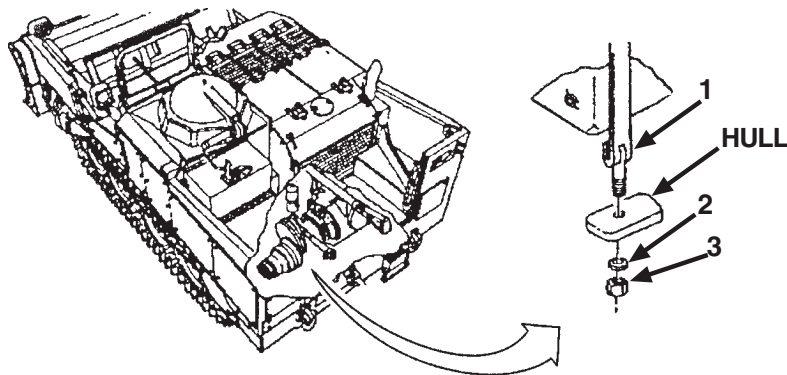


Figure 68. Rear Fuel Tank Strap.

TRACK ADJUSTING CYLINDER ASSEMBLY REPLACEMENT - continued**NOTE**

There is an additional clamp on left hydraulic track adjusting cylinder.

Step 2 applies to Figure 69.

- Remove screw (item 9), washers (item 7), and locknut (item 6), and pin (item 8) and disconnect rod end (item 5) of hydraulic track adjusting cylinder (item 4) from final drive adjusting flange (item 10).

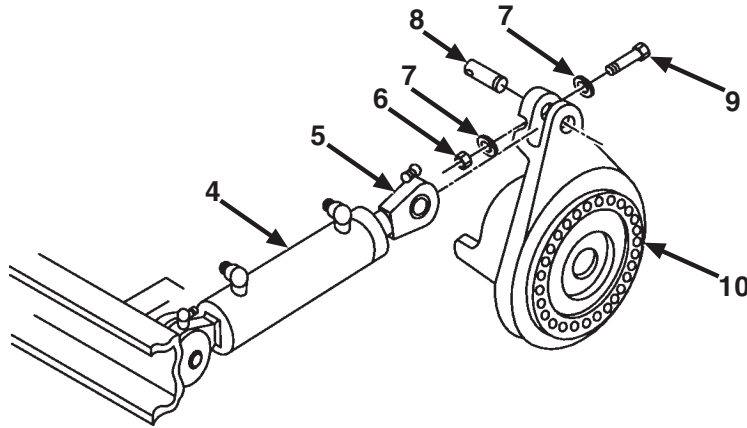


Figure 69. Rear Fuel Tank Strap.

NOTE

Screw must be removed from bottom when connecting fixed end of cylinder to hull.

Step 3 applies to Figure 70.

- Remove screw (item 12), washers (item 7), locknut (item 6), and pin (item 8), and fixed end of track adjusting cylinder (item 4) from hull mounting bracket (item 11).

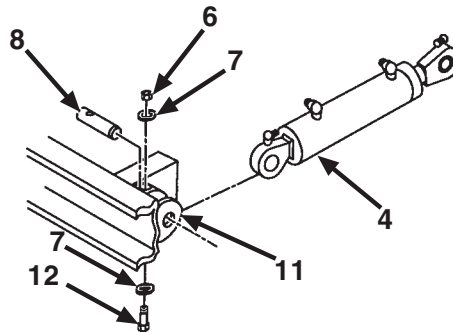


Figure 70. Track Adjusting Cylinder Rod End.

TRACK ADJUSTING CYLINDER ASSEMBLY REPLACEMENT - continued

ASSEMBLY

NOTE

Steps 1 through 5 apply to both cylinders. Step 1 and 2 apply to Figure 71.

1. If new cylinder, install lubrication fitting (item 13) and plug (item 18) on fixed end of hydraulic track adjusting cylinder (item 4), so that lubrication fitting (item 13) faces forward and ports (item 16 and 17) face upward.

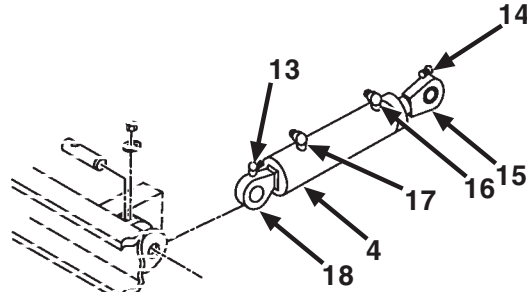


Figure 71. Track Adjusting Cylinder.

2. If new cylinder, remove plug (item 15) and install lubrication fitting (item 14) on rod end of hydraulic track adjusting cylinder (item 4) so that lubrication fitting (item 14) faces rearward.

NOTE

Coat threads of screw and nut with lubricating oil prior to installation.

Screw must be inserted from bottom when connecting fixed end of cylinder to hull.

Step 3 applies to Figure 72.

3. With ports (item 16 and 17) pointing up, connect fixed end of hydraulic track adjusting cylinder (item 4) to hull mounting bracket (item 11) with pin (item 8), washer (item 7), screw (item 12), washer (item 7), and new locknut (item 6).

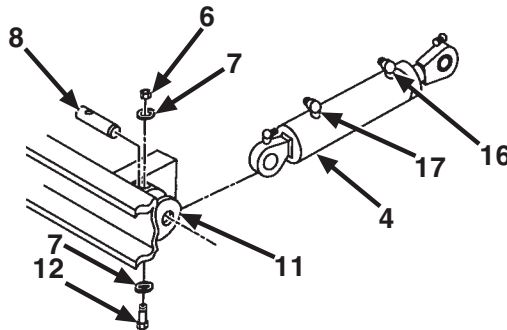


Figure 72. Track Adjusting Cylinder Rod End.

TRACK ADJUSTING CYLINDER ASSEMBLY REPLACEMENT - continued**NOTE**

There is an additional clamp on left hydraulic track adjusting cylinder.

Coat threads of screw and nut with lubricating oil prior to installation.

Step 4 applies to Figure 73.

4. Connect rod end (item 5) of hydraulic track adjusting cylinder (item 4) to final drive adjusting flange (item 10) with pin (item 8), washer (item 7), screw (item 9), washer (item 7), and new locknut (item 6).

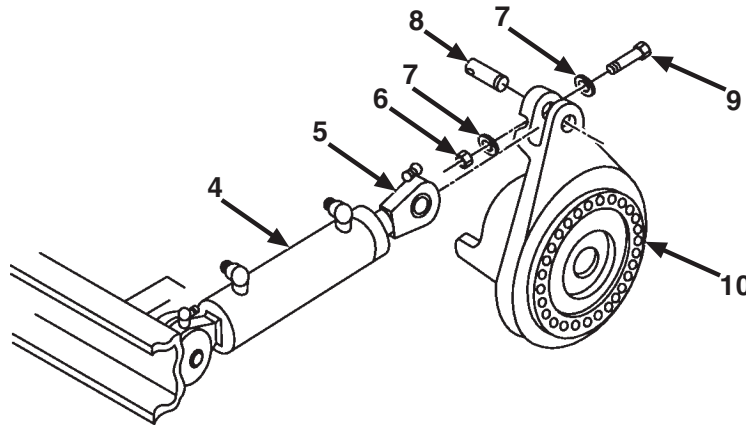


Figure 73. Final Drive Adjusting Flange.

NOTE

Step 5 and 6 applies to Figure 74.

5. Tighten locknuts (item 6) to 19 to 31 lb-ft (39 to 42 N•m).
6. Lubricate bearings (item 19) with grease at lubrication fittings (item 13 and 14).

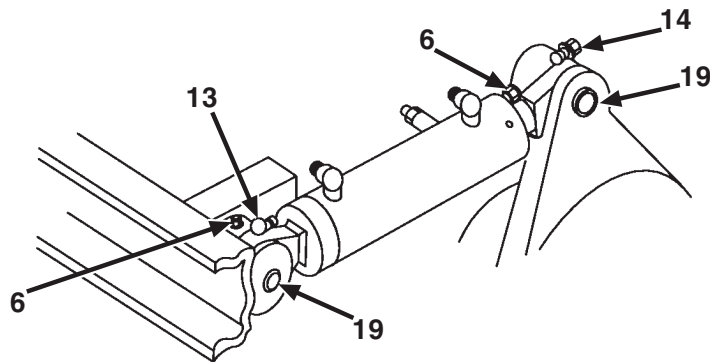


Figure 74. Track Adjusting Cylinder Locknuts.

TRACK ADJUSTING CYLINDER ASSEMBLY REPLACEMENT - continued**NOTE**

Step 7 applies to Figure 75.

7. Connect rear fuel tank strap (item 20) to hull with washer (item 21) and locknut (item 22).

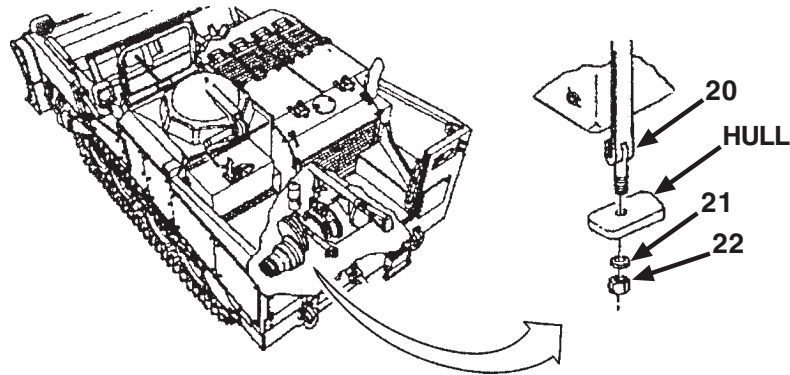


Figure 75. Rear Fuel Tank Strap.

END OF WORK PACKAGE

TRACK AND BLADE MANIFOLD ASSEMBLY REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)

Materials/Parts:

Lubricating oil (Item 15, WP 0055 00)
Caps and plugs (Item 6, WP 0055 00)
Cleaning solvent (Item 7, WP 0055 00)

Equipment Conditions

Right, center, and left rear floor plates removed
(TM5-2350-262-10)
Hydraulic system pressure relieved
(TM5-2350-262-20-1)
Hydraulic hoses removed (WP 0027 00, Disassembly)

DISASSEMBLY

NOTE

Steps 1 through 6 applies to Figure 76.

1. Remove ten control box power harness connectors (item 9) from coil connectors (item 8).

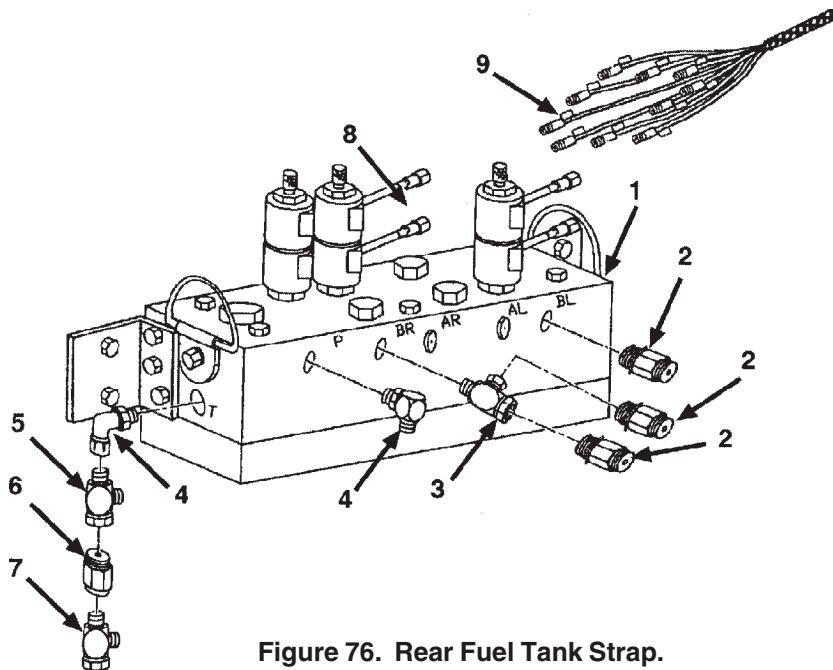


Figure 76. Rear Fuel Tank Strap.

2. Remove tee (item 7), reducer (item 6), and tee (item 5) from elbow (item 4) on track and blade manifold (item 1), port T.
3. Remove elbow (item 4) from track and blade manifold (item 1), port P.
4. Remove two straight adapters (item 2) from tee (item 3).
5. Remove tee (item 3) from track and blade manifold (item 1), port BR.
6. Remove straight adapter (item 2) from track and blade manifold (item 1), port BL.

TRACK AND BLADE MANIFOLD ASSEMBLY REPLACEMENT - continued

NOTE

Step 7 and 8 applies to Figure 77.

7. Use suitable lifting device to support track and blade manifold (item 1) and remove two screws (item 10) from front manifold mount (item 8) and hull (item 11).
8. Remove two screws (item 10) from rear manifold mount (item 9) and hull (item 11).

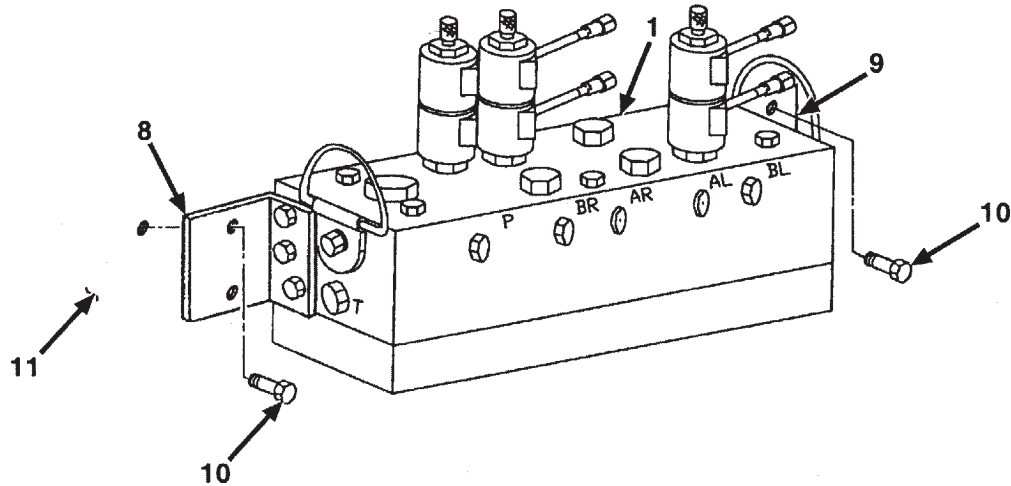


Figure 77. Rear Fuel Tank Strap.

NOTE

Step 9 applies to Figure 78.

9. Remove three straight adapters (item 12) from track and blade manifold bottom (item 1) at ports CR1, CR2, and CL1.

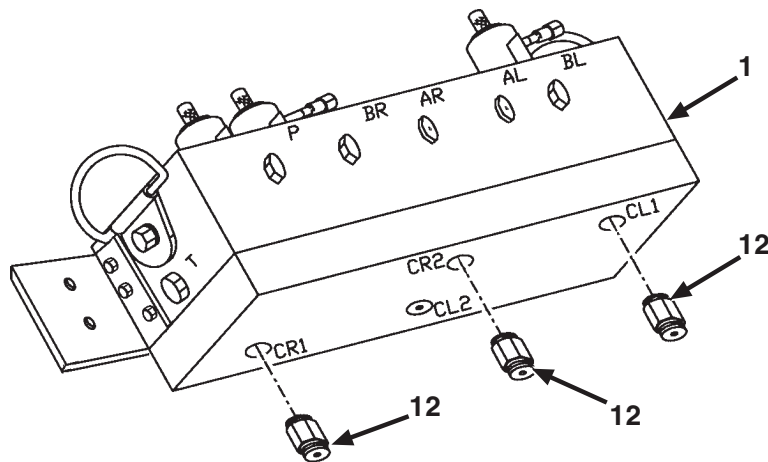


Figure 78. Rear Fuel Tank Strap.

TRACK AND BLADE MANIFOLD ASSEMBLY REPLACEMENT - continued**NOTE**

Steps 10, 11, 1, and 2 apply to Figure 79.

10. Remove two flat washers (item 14), screws (item 13), and tie downs (item 12) from track and blade manifold assembly (item 1).

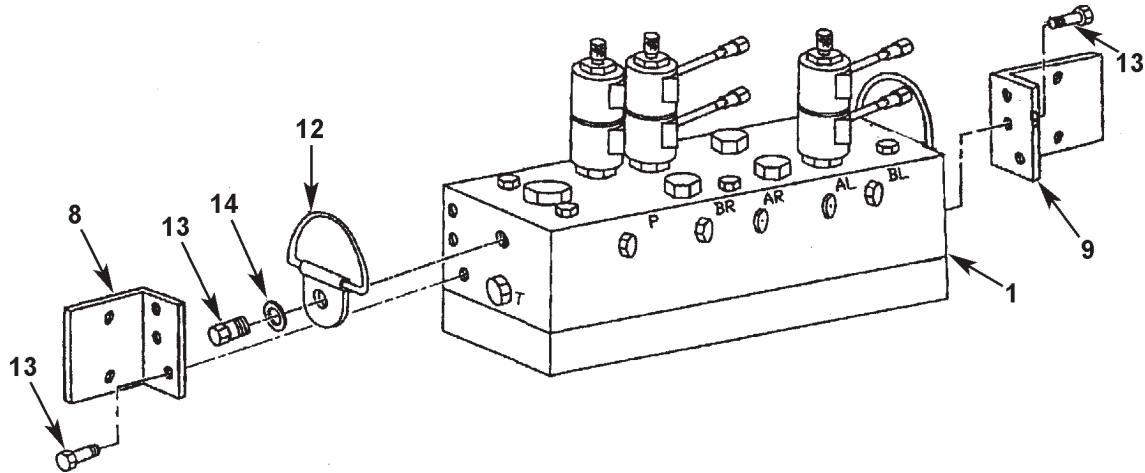


Figure 79. Rear Fuel Tank Strap.

11. Remove six screws (item 13), rear manifold mount (item 9), and front manifold mount (item 8) from track and blade manifold assembly (item 1)

ASSEMBLY

1. Install two tie downs (item 12), flat washers (item 14), and screws (item 13) to track and blade manifold assembly (item 1). Torque to 45.0 to 50.0 lb-ft (200.1 to 222.4 N•m).
2. Install rear manifold mount (item 9), front manifold mount (item 8), and six screws (item 13) to track and blade manifold assembly (item 1).

TRACK AND BLADE MANIFOLD ASSEMBLY REPLACEMENT - continued

NOTE

Step 3 applies to Figure 80.

3. Install three straight adapters (item 12) on track and blade manifold bottom (item 1), ports CR1, CR2, and CL1.

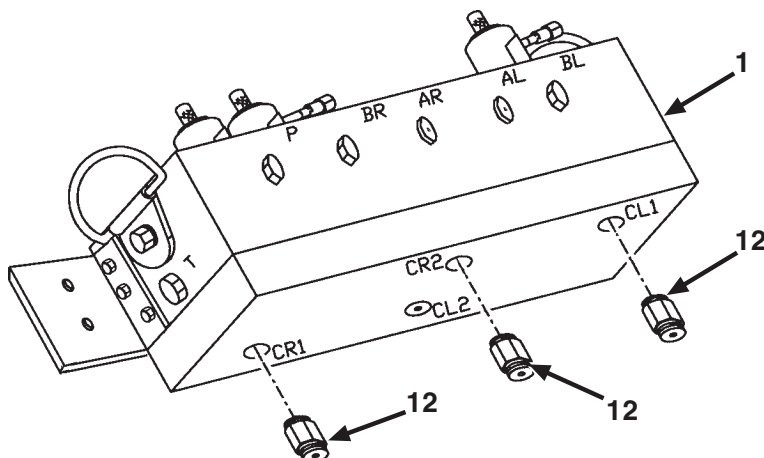


Figure 80. Rear Fuel Tank Strap.

NOTE

Step 4 applies to Figure 81.

4. Use suitable lifting device to lift front manifold mount (item 8), rear manifold mount (item 9), and track and blade manifold (item 1) to hole in hull wall and attach with four screws (item 10).

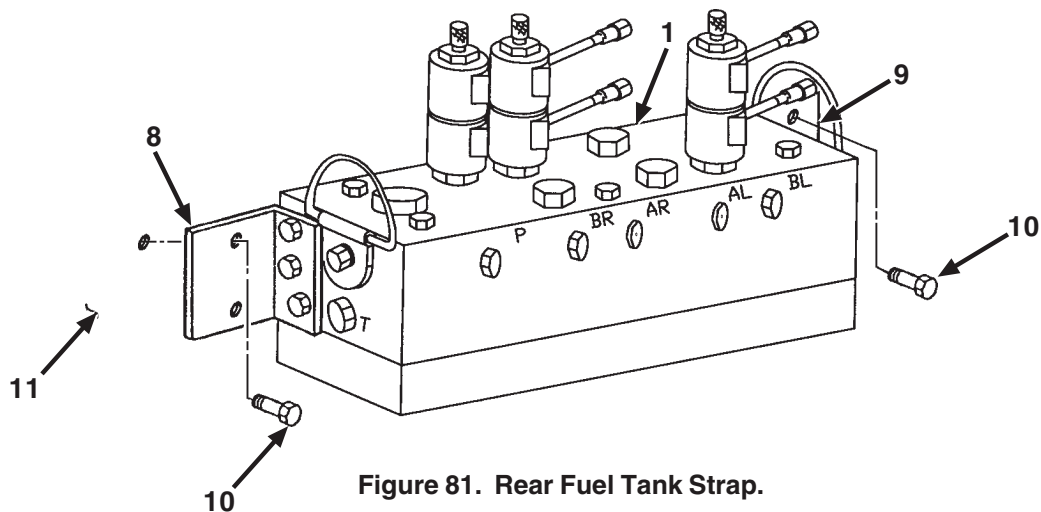


Figure 81. Rear Fuel Tank Strap.

TRACK AND BLADE MANIFOLD ASSEMBLY REPLACEMENT - continued

5. Install elbow (item 4) to track and blade manifold (item 1), port T.

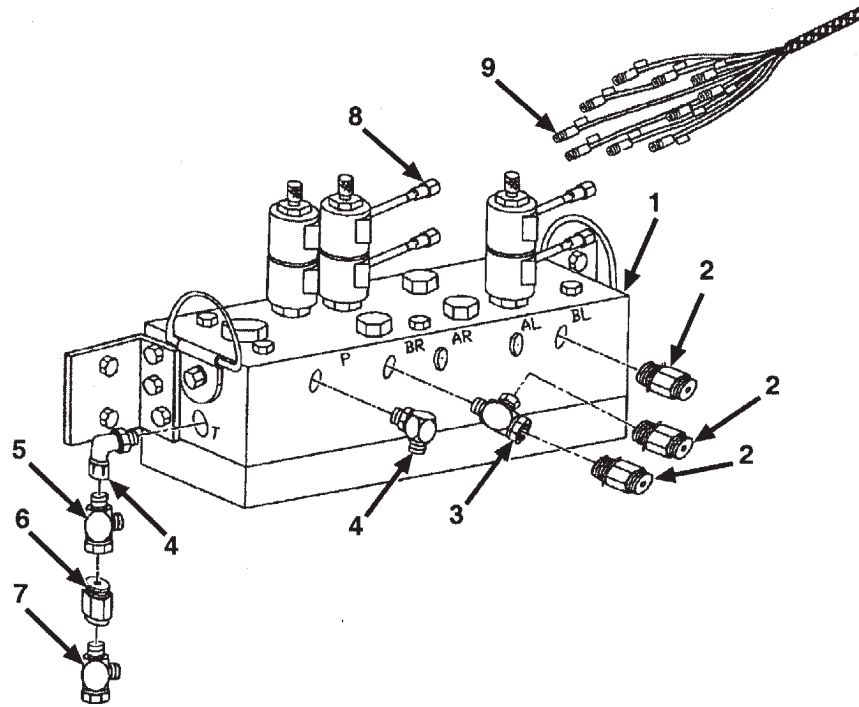


Figure 82. Rear Fuel Tank Strap.

6. Install tee (item 7), reducer (item 6), and tee (item 5) to elbow (item 4) on track and blade manifold (item 1), port T.
7. Install elbow (item 4) to track and blade manifold (item 1), port P.
8. Install tee (item 3) to track and blade manifold (item 1), port BR.
9. Install two straight adapters (item 2) to tee (item 3).
10. Install straight adapter (item 2) to track and blade manifold (item 1), port BL.
11. Install ten control box power harness wiring harness connectors (item 8) to ten coil connectors (item 9).

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE PROCEDURES

GENERAL

- a. These general maintenance instructions contain general shop practices and specific methods you must be familiar with to properly maintain your M9 ACE. You should read and understand these practices and methods before performing any direct support maintenance tasks.
- b. Before beginning a task, find out how much repair, modification, or replacement is needed to fix the equipment as described in this manual. Sometimes the reason for equipment failure can be seen right away, and complete teardown is not necessary. Disassemble equipment only as far as necessary to repair or replace damaged or broken parts.
- c. The following "Initial Setup" information applies to all procedures:
 - (1) Resources are not listed unless they apply to the procedure.
 - (2) Personnel are listed only if more than one technician is required to complete task. If "Personnel Required" is not listed, one technician can complete task.
- d. All tags and forms attached to equipment must be checked to learn the reason for removal from service. Modification Work Orders (MWOs) and Technical Bulletins (TBs) must also be checked for equipment changes and updates.
- e. In some cases, a part may be damaged by removal. If the part appears to be good and other parts behind it are not defective, leave it on and continue with the procedure. Here are a few simple rules:
 - (1) Do not remove dowel pins or studs unless loose, bent, broken, or otherwise damaged.
 - (2) Do not remove bearings or bushings unless damaged. If you need to remove them to access parts behind them, pull bearings and bushings out carefully.
 - (3) Replace all gaskets, seals, and preformed packings.

WORK SAFETY

- a. Observe all WARNINGS and CAUTIONS. Always use power tools carefully.
- b. Protect yourself against injury. Wear protective gear, such as safety goggles or lenses, safety shoes, rubber apron, or gloves.
- c. When lifting heavy parts, have someone help you. Make sure that lifting/jacking equipment is working properly, is suitable for assigned the task, and is secure against slipping.

CLEANING INSTRUCTIONS

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and damage equipment. To prevent this, refer to TM 9-247 for further instructions.

- a. **General.** Cleaning instructions will be the same for a majority of parts and components that make up the M9 ACE. The following should apply to all cleaning, inspection, repair, and assembly operations:

CLEANING INSTRUCTIONS - continued

- (1) Clean all parts before inspection, after repair, and before assembly.
- (2) Keep hands free of grease, which can collect dust, dirt, and grit.
- (3) After cleaning, all parts should be covered or wrapped to protect them from dust and dirt. Parts that are subject to rust should be lightly oiled.

b. Steam Cleaning.

- (1) Before steam cleaning exterior of trailer, protect all electrical equipment that could be damaged by steam or moisture.
- (2) Place disassembled parts in a suitable container to steam clean. Parts that are subject to rust should be dried and lightly oiled after cleaning.

c. Castings, Forgings, and Machined Metal Parts.**WARNING**

Cleaning solvent (PF05) is combustible. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using cleaning solvent; the flashpoint is 144°F (62°C). Failure to follow this warning may result in injury or death to personnel. A fire extinguisher will be kept nearby when the solvent is used.

- (1) Clean inner and outer surfaces with cleaning solvent (Item 7, WP 0055 00).
- (2) Remove grease and accumulated deposits with a stiff bristle brush.

WARNING

Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.

- (3) Clear out all threaded holes with compressed air to remove dirt and cleaning fluids.

CAUTION

Do not wash oil seals, electrical cables, and flexible hoses with drycleaning solvent or mineral spirits. Serious damage or destruction of material would result.

- d. **Oil Seals, Electrical Cables, and Flexible Hoses.** Wash electrical cables and flexible hoses with solution of water and dishwashing compound (Item 11, WP 0055 00) and wipe dry.
- e. **Bearings.** Clean bearings in accordance with TM 9-214.

INSPECTION INSTRUCTIONS**NOTE**

All damaged areas should be marked for repair or replacement.

- a. All components and parts must be carefully checked to determine if they are serviceable for reuse, can be repaired, or must be scrapped.

INSPECTION INSTRUCTIONS - continued

- b. Inspect drilled and tapped (threaded) holes for the following:
 - (1) In or around holes—wear, distortion, cracks, and any other damage.
 - (2) Threaded areas—wear, distortion (stretching) and evidence of cross-threading.
- c. Inspect metal lines, flexible lines (hoses), and metal fittings for the following:
 - (1) Metal lines—sharp kinks, cracks, bad bends, and dents.
 - (2) Flexible lines—fraying, evidence of leakage, and loose metal fittings or connectors.
 - (3) Metal fittings and connectors—thread damage and worn or rounded hex heads.
- d. Inspect castings, forgings, and machined metal parts for the following:
 - (1) Machined surfaces—nicks, burrs, raised metal, wear, and other damage.
 - (2) Inner and outer surfaces—breaks and cracks.
- e. With solution of dishwashing compound (Item 11, WP 0055 00) and water, inspect air lines, fittings, and connectors for leaks by coating fittings and connections. No leakage is permissible.
- f. Inspect bearings in accordance with TM 9-214.

REPAIR INSTRUCTIONS

- a. Any repair procedure peculiar to a specific part or component is covered in the section or paragraph relating to that item. After repair, clean all parts thoroughly to prevent dirt, metal chips, or other foreign material from entering any working parts.
- b. Repair casting, forgings, and machined metal parts according to the following instructions:
 - (1) Refer to TM 9-237 for instructions on repairing minor cracked castings or forgings.
 - (2) Repair minor damage to machined surfaces with a fine mill file or abrasive cloth (Item 10, WP 0055 00) dipped in cleaning solvent (Item 7, WP 0055 00).
 - (3) Replace any deeply nicked machined surface that could affect the assembly operation.
 - (4) Repair minor damage to threaded capscrew holes with thread tap of same size, to prevent cutting oversize.
- c. Refer to WP 0000 00 for maintenance on metal lines, flexible lines (hoses), and metal fittings.

TAGGING WIRES AND HOSES

- a. As soon as first wire or hose is disconnected, write the number "1" on two tags. Secure one tag to wire or hose and other tag to terminal, nipple, or fitting. After disconnecting second wire or hose, write the number "2" on two tags. Secure one tag to wire or hose and second tag to terminal, nipple, or fitting. Do the same for all wires and hoses.
- b. Note which numbers you used, in pencil, on art in this manual. This will help you to retag properly when you remove tags from some parts to perform cleaning and maintenance work.

TAGGING WIRES AND HOSES - continued

- c. Remove all tags when finished.

END OF WORK PACKAGE

APRON WIRING HARNESS REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Shop equipment, field basic
(Item 3, WP 0056 00)

Wire, nonelectrical
(Item 21, WP 0055 00)
Gasket
(Item 5, WP 0048 00, Figure 1)

Materials/Parts:

Tape, electrical
(Item 19, WP 0055 00)

Equipment Conditions

LH headlight assembly removed
(WP0016, Disassembly)

GENERAL

Reference TM 5-2350-262-34, Apron Wiring Harness Replacement, for removal and installation procedures for apron wiring harness.

END OF WORK PACKAGE

HEADLIGHT WIRING HARNESS REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Shop equipment, field basic
(Item 3, WP 0056 00)

Materials/Parts:

Lockwasher (Item 15, WP 0050 00-4, Figure 2)

Equipment Conditions

LH and RH headlight assembly removed
(WP 0016, Disassembly)

DISASSEMBLY

NOTE

Tag all electrical leads prior to removal for installation.

Steps 1 through 5 apply to Figure 83.

1. Remove nut (item 6), lock washer (item 5), flat washer (item 7), and hose clamp (item 8) from headlight wiring harness (item 2) and apron stud (item 9).
2. Disconnect headlight wiring harness (item 2) from apron wiring harness (item 3) at terminals.
3. Disconnect two headlight wiring harness (item 2) terminals from two apron mercury switch terminals (item 1).
4. Remove headlight wiring harness from four braces (item 10) inside apron (item 4) back wall.
5. Remove headlight wiring harness (item 2) from apron (item 4).

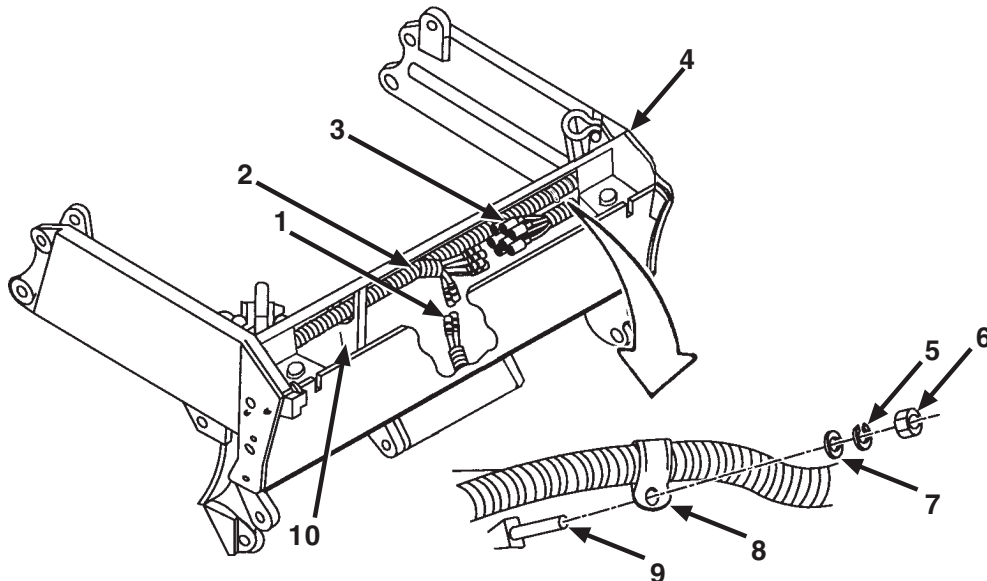


Figure 83. Headlight Wiring Harness.

HEADLIGHT WIRING HARNESS REPLACEMENT - continued**ASSEMBLY****NOTE**

Steps 1 through 5 apply to Figure 83.

1. Route headlight wiring harness (item 2) through openings in top of four braces (item 10) inside apron (item 4) back wall, starting from left headlight to right headlight.
2. Install nut (item 6), lock washer (item 5), flat washer (item 7), and hose clamp (item 8) to headlight wiring harness and apron stud (item 9).
3. Connect two apron wiring harness (item 2) terminals to two apron mercury switch terminals (item 1).
4. Connect headlight wiring harness (item 2) to apron wiring harness (item 3) at terminals.
5. Install LH and RH headlight assemblies, WP 0016, Assembly.

END OF WORK PACKAGE

BLADE FOLDING WIRING HARNESS REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Shop equipment, field basic
(Item 3, WP 0056 00)

Equipment Conditions

Front of vehicle blocked
(TM5-2350-262-20-1)
Hydraulic system pressure relieved
(TM5-2350-262-20-1)

DISASSEMBLY

NOTE

Refer to Figure 84 for all disassembly and assembly.

1. Remove bilge pump light lead #450 (item 2) from blade bolder harness lead #515 (item 1).

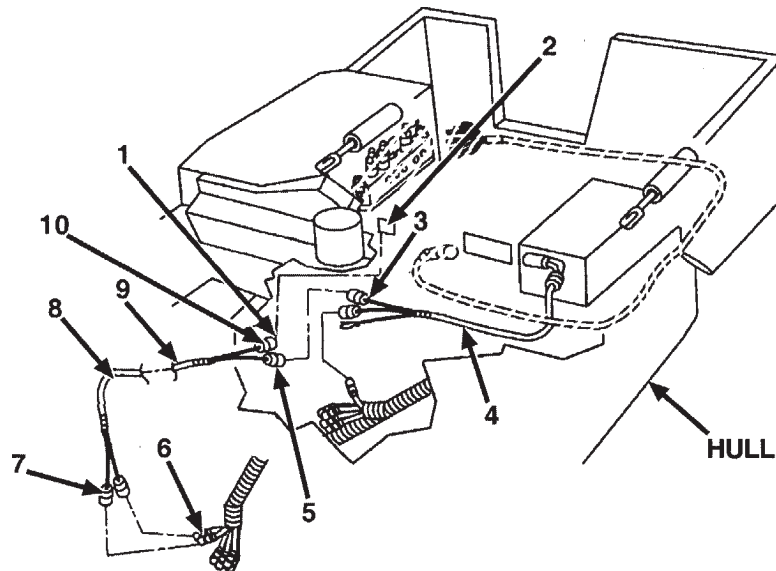


Figure 84. Blade Folder Harness.

2. Remove blade folder harness lead #514 (item 5) from control box power harness (item 3).
3. Remove hull wiring harness leads (item 6) from blade folder harness (item 7) leads.
4. Remove blade folding wiring harness (item 8) from hull.

BLADE FOLDING WIRING HARNESS REPLACEMENT - continued**ASSEMBLY**

1. Connect hull wiring harness leads (item 6) to blade folder harness (item 7), matching lead numbers.
2. Route blade folder harness through opening on lower left side into driver's compartment behind ejector panel.
3. Route control box power harness (item 8) behind ejector panel.
4. Connect blade folder harness lead #514 (item 5) to control box power harness (item 3).
5. Connect bilge pump light lead #450 (item 2) to blade folder harness lead #515 (item 1).

END OF WORK PACKAGE

CONTROL BOX POWER WIRING HARNESS REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0055 00)
Shop equipment, field basic
(Item 3, WP 0055 00)

Equipment Conditions

Front of vehicle blocked
(TM5-2350-262-20-1)
Hydraulic system pressure relieved
(TM5-2350-262-20-1)

DISASSEMBLY

NOTE

Step 1 applies to Figure 85.

1. Remove four screws (item 2) on ejector panel (item 1) and move panel downward, retaining screws for future use.

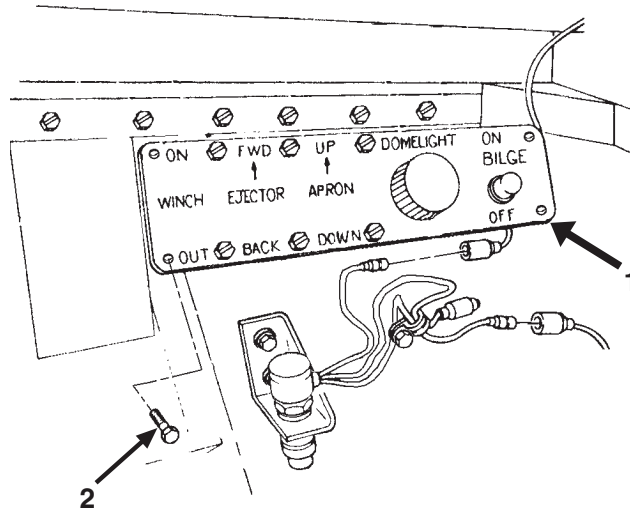


Figure 85. Control Box Power Wiring Harness.

CONTROL BOX POWER WIRING HARNESS REPLACEMENT - continued

NOTE

Steps 2 and 3 apply to Figure 86.

- Remove screw (item 2) and control box power harness ground terminal (item 5) from bilge pump light ground (item 3).

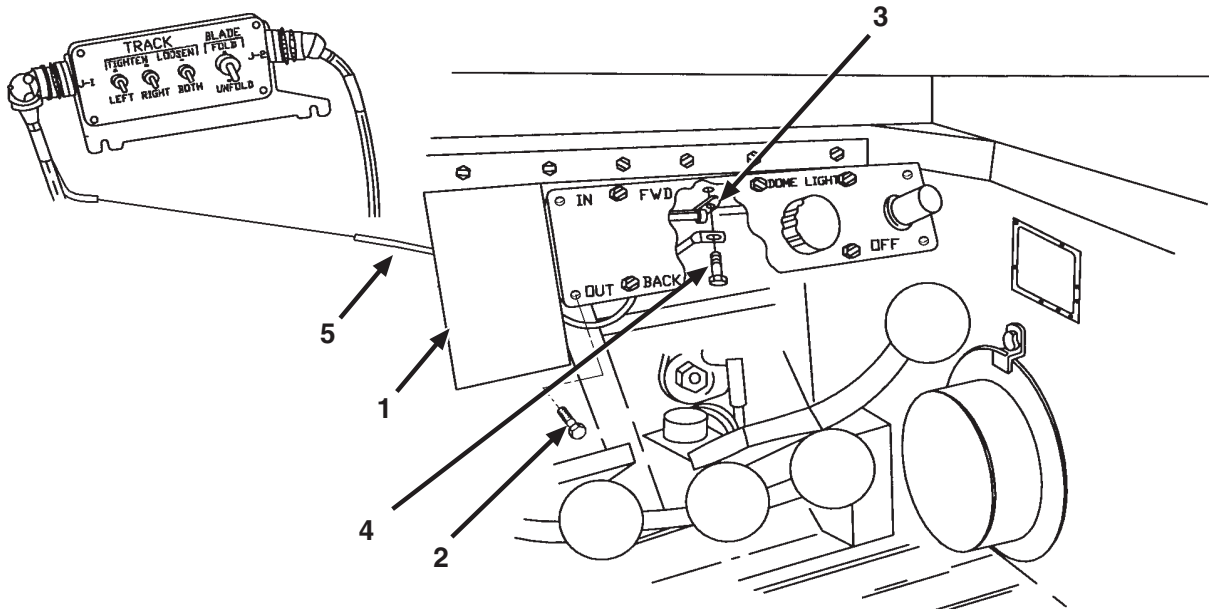


Figure 86. Control Box Power Wiring Harness.

- Install ejector panel (item 1, Figure 51) to hull with four screws (item 2) retained from step 1.

NOTE

Steps 4, 5, and 6 apply to Figure 87.

- Disconnect control harness lead #450 (item 9) from control box power harness (item 8).

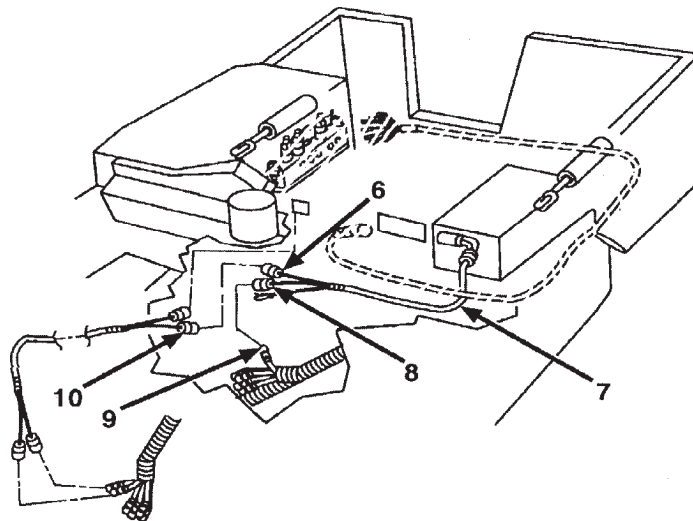


Figure 87. Control Box Power Wiring Harness.

CONTROL BOX POWER WIRING HARNESS REPLACEMENT - continued

5. Disconnect blade folder harness lead #514 (item 10) from control box power harness (item 7).
6. Remove control box power harness (item 7) from behind ejector panel (item 1, Figure 86).

NOTE

Step 7 and step 1 of assembly applies to Figure 88.

7. Disconnect control box power harness connector (item 7) from track and blade control box (item 11).

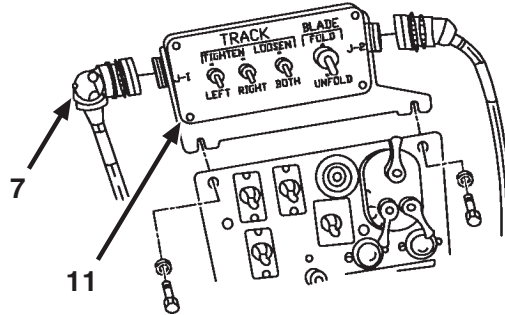


Figure 88. Control Box Power Wiring Harness.

ASSEMBLY

1. Install control box power harness connector (item 7) on track and blade control box (item 11).

NOTE

Step 2 applies to Figure 89.

2. Remove four screws (item 12) from ejector panel (item 1) and move panel downward, retaining screws for future use.

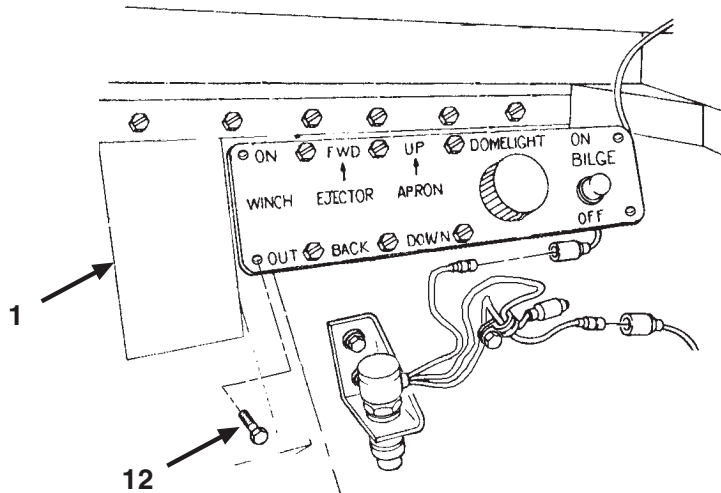


Figure 89. Control Box Power Wiring Harness.

CONTROL BOX POWER WIRING HARNESS REPLACEMENT - continued**NOTE**

Steps 3, 4, and 5 apply to Figure 90.

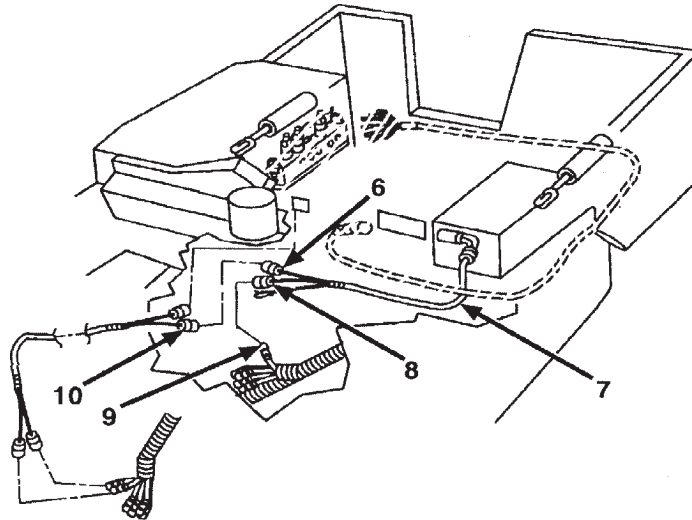


Figure 90. Control Box Power Wiring Harness.

4. Connect blade folder harness lead #514 (item 10) to control box power harness (item 6).
5. Connect control harness lead #450 (item 9) to control box power harness (item 8).

CONTROL BOX POWER WIRING HARNESS REPLACEMENT - continued

NOTE

Steps 6 and 7 apply to Figure 91.

6. Install control box power harness ground terminal (item 5) with bilge pump light ground (item 3) with screw (item 4).

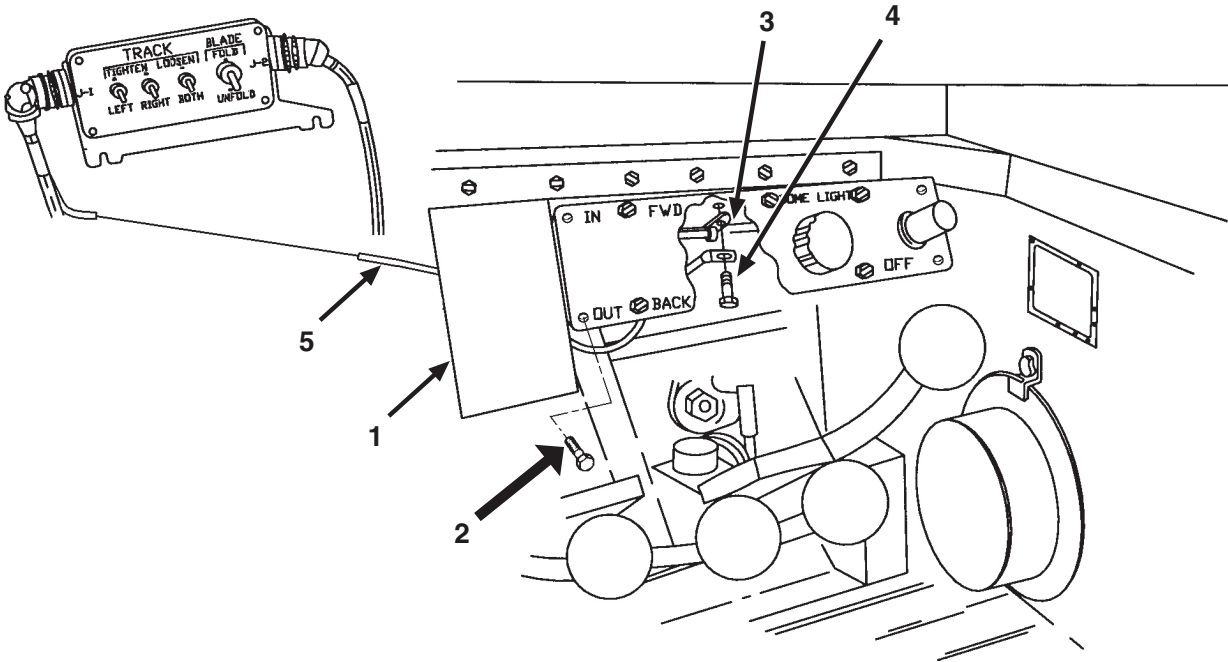


Figure 91. Control Box Power Wiring Harness.

7. Install ejector panel (item 1) to hull with four screws (item 2) retained from step 2.

END OF WORK PACKAGE

MANIFOLD WIRING HARNESS REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Shop equipment, field basic
(Item 3, WP 0056 00)

Equipment Conditions

Front of vehicle blocked
(TM5-2350-262-20-1)
Hydraulic system pressure relieved
(TM5-2350-262-20-1)

DISASSEMBLY

NOTE

Step 1 applies to Figure 92.

Step 2 applies to Figure 93.

1. Remove manifold harness connectors (item 3) from solenoids at ports Z1, Z2, and Z4 on manifold (item 2).

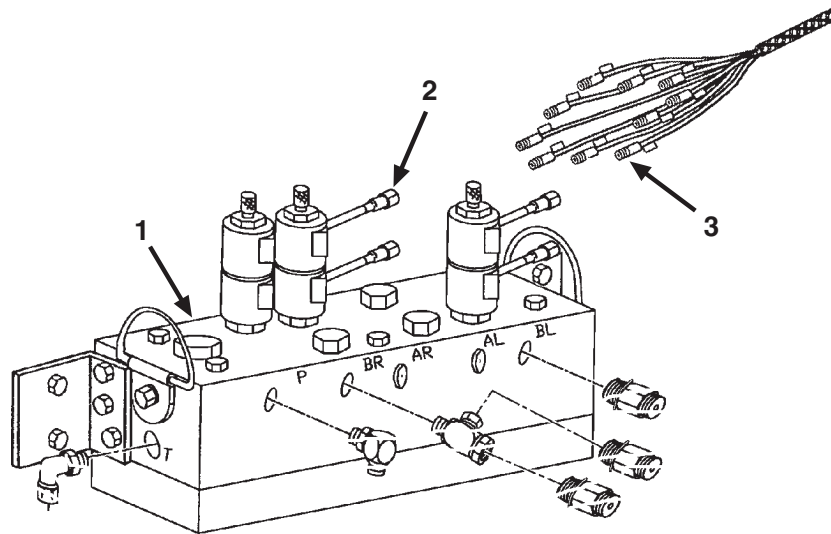


Figure 92. Manifold Wiring Harness.

2. Remove manifold harness connector (item 4) from track and blade control box (item 6).

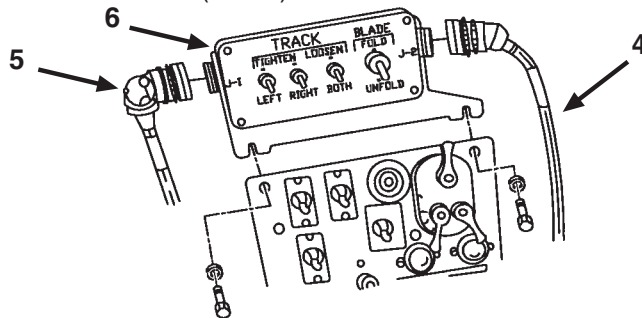


Figure 93. Manifold Wiring Harness Connectors.

MANIFOLD WIRING HARNESS REPLACEMENT - continued

ASSEMBLY

NOTE

Step 1 applies to Figure 94.

1. Install manifold harness connector (item 4) on track and blade control box (item 6).

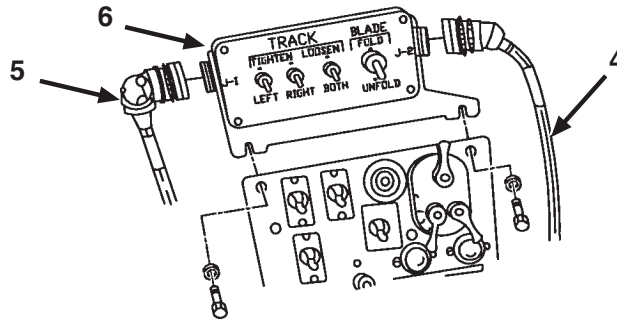


Figure 94. Manifold Wiring Harness Installation.

NOTE

Step 2 applies to Figure 95.

2. Route manifold harness (item 3) through hull and attach connectors (item 3) to solenoids at ports Z1, Z2, and Z4 on manifold (item 1).

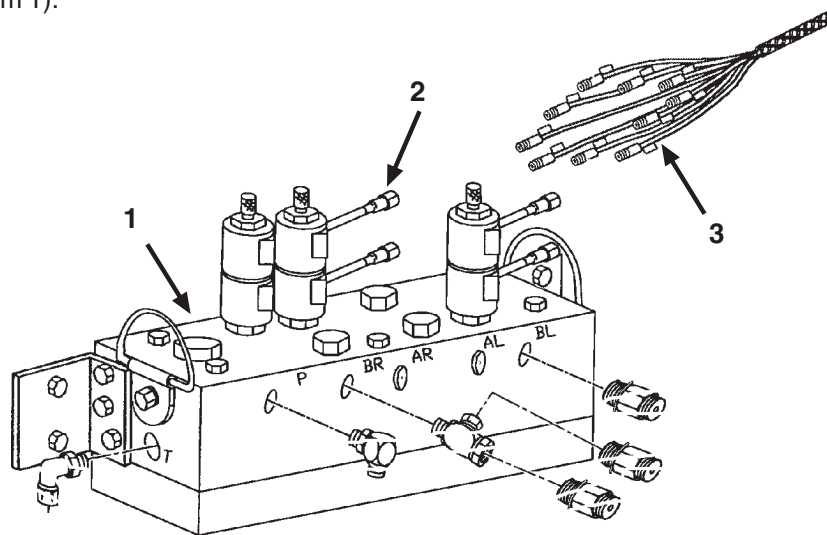


Figure 95. Manifold Wiring Harness Connectors Installation.

END OF WORK PACKAGE

CONTROL BOX WIRING HARNESS REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Shop equipment, field basic
(Item 3, WP 0056 00)

Equipment Conditions

Front of vehicle blocked
(TM5-2350-262-20-1)
Hydraulic system pressure relieved
(TM5-2350-262-20-1)

DISASSEMBLY

NOTE

Steps 1 through 4 apply to Figure 96.

1. Remove four screws (item 1) and cover (item 2) from body assembly (item 9) and retain for future use.

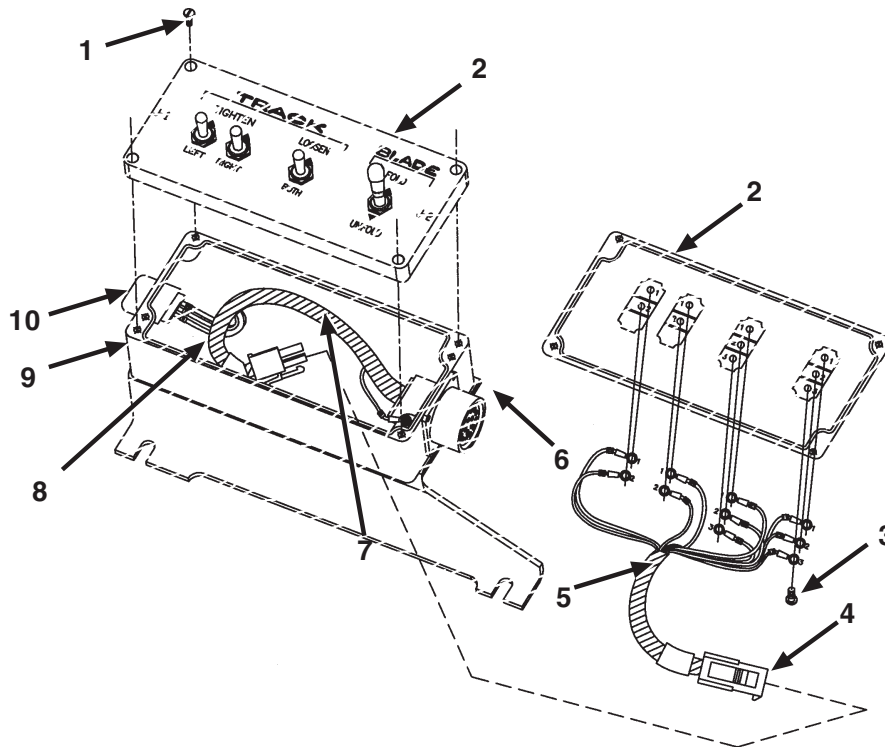


Figure 96. Control Box Harnesses.

2. Disconnect connector (item 4) on control box harness (item 5) from connector (item 7) on control box harness (item 8).
3. Remove control box harness connectors (item 8) from control box connectors (item 10) and from control box assembly (item 9).
4. Remove ten screws (item 3) and control box harness contacts (item 5) from cover (item 2) and retain screws for future use.

CONTROL BOX WIRING HARNESS REPLACEMENT - continued**ASSEMBLY****NOTE**

Steps 1 through 4 apply to Figure 96.

1. Install ten screws (item 3) and control box harness contacts (item 5) to cover (item 2).
2. Install control box harness connectors (item 8) to control box connectors (item 10) on control box assembly (item 9).
3. Install connector (item 4) on control box harness (item 5) to connector (item 7) on control box harness (item 8).
4. Install four screws (item 1) and cover (item 2) to body assembly (item 9).

END OF WORK PACKAGE

TRACK & BLADE CONTROL BOX REPAIR

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)

Equipment Conditions

Front of vehicle blocked
(TM5-2350-262-20-1)
Hydraulic system pressure relieved
(TM5-2350-262-20-1)

DISASSEMBLY

NOTE

Steps 1 through 3 apply to Figure 97.

- Slide track and blade control box (item 2) behind instrument panel (item 6) and remove two screws (item 4) and flat washers (item 5) on instrument panel (item 6).

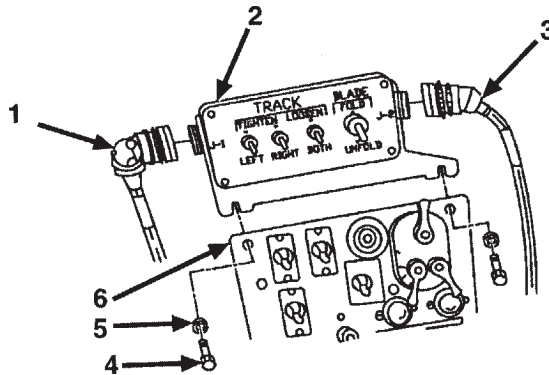


Figure 97. Control Box Assembly.

- Remove manifold harness connector (item 3) from track and blade control box (item 2).
- Remove control box power harness connector (item 1) from track and blade control box (item 2).

TRACK AND BLADE CONTROL BOX REPAIR - continued

NOTE

Steps 4, 5, 6, and 1 of assembly apply to Figure 98.

4. Remove four screws (item 7) and cover from control box (item 2).
5. Refer to WP 0034 00 to remove control box wiring harnesses (items 12 and 13) inside control box (item 2).
6. Remove four jamnuts (item 10), washers (item 11), and switches (item 8) from cover (item 14).

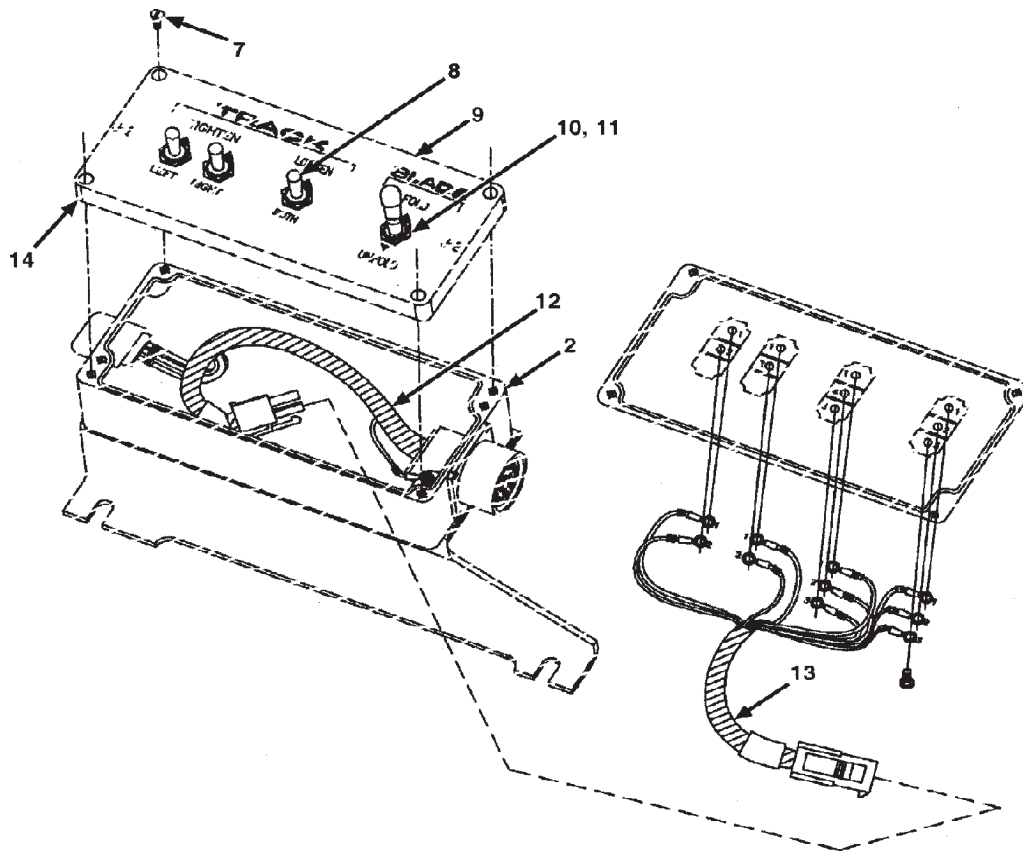


Figure 98. Control Box Harnesses.

ASSEMBLY

1. Install four jamnuts (item 10), washers (item 11), and switches (item 8) on cover (item 14).

TRACK AND BLADE CONTROL BOX REPAIR - continued**NOTE**

Steps 2 through 5 apply to Figure 99.

2. Refer to WP 0034 00 to install control box wiring harness.
3. Install control box power harness connector (item 1) to control box (item 2).

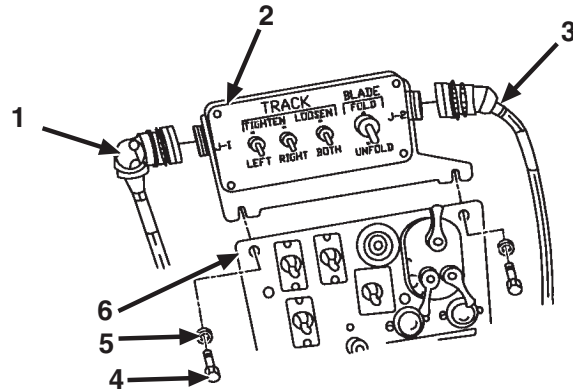


Figure 99. Control Box.

4. Install manifold harness connector (item 3) to track and blade control box (item 2).
5. Slide track and blade control box (item 2) behind instrument panel (item 6) and install two screws (item 4) and flat washers (item 5) on instrument panel (item 6).

END OF WORK PACKAGE

APRON AND DOZER ASSEMBLY REPAIR

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Shop equipment, common no. 1
(Item 2, WP 0056 00)
Chain assembly
(Item 1, WP 0056 00)

Equipment Conditions

Front of vehicle blocked
(TM5-2350-262-20-1)
Hydraulic system pressure relieved
(TM5-2350-262-20-1)

GENERAL

Reference TM5-2350-262-34, Apron and Dozer Assembly Repair, for procedures for apron and dozer assembly repair.

END OF WORK PACKAGE

ACTUATOR ASSEMBLY REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)
Shop equipment, common no. 1
(Item 2, WP 0056 00)

Materials/Parts:

Screw, cap, hex (Item 39, WP 0048 00, Figure 11)
Lockwasher (Item 35, WP 0048 00, Figure 11)

Equipment Conditions

Dozer blade removed (WP)

DISASSEMBLY

NOTE

Steps for disassembly and assembly apply to Figure 100.

1. Remove dozer blade, refer to WP 0023 00.
2. Remove three bolts (item 7), lockwashers (item 6), and cover (item 5) from apron (item 1). Discard lockwashers.

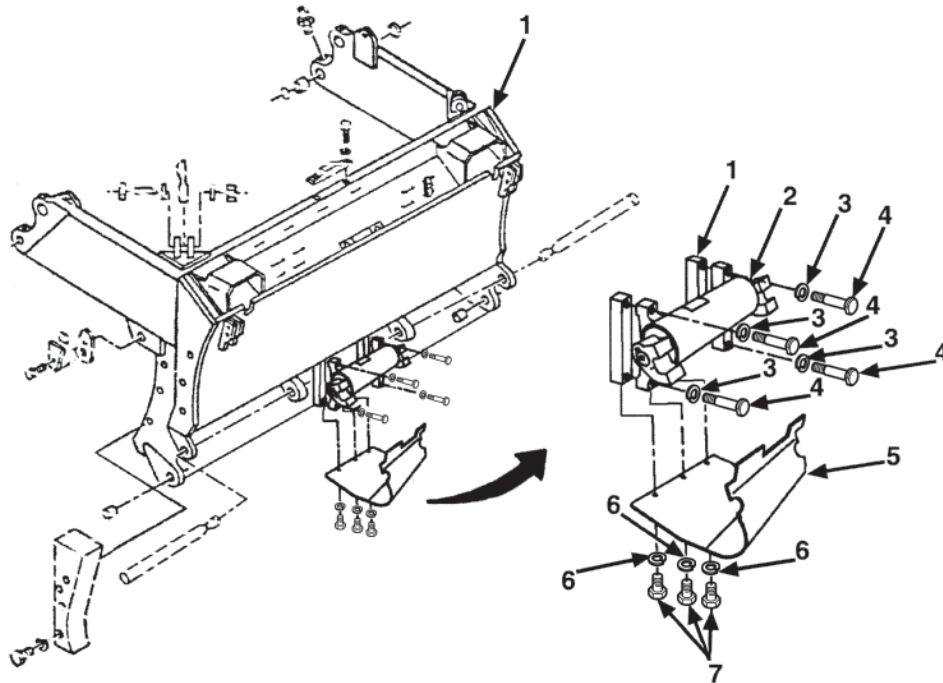


Figure 100. Apron Actuator.

3. Remove four bolts (item 4), lockwashers (item 3), and actuator (item 2) from apron (item 1). Discard lockwashers.

TRACK AND BLADE CONTROL BOX REPAIR - continued**ASSEMBLY**

1. Install four bolts (item 4), new lockwashers (item 3), and actuator (item 2) to apron (item 1).
2. Install three bolts (item 7), new lockwashers (item 6), and cover (item 5) to apron (item 1).
3. Install dozer blade, refer to WP 0023 00.

END OF WORK PACKAGE

GENERAL SUPPORT MAINTENANCE PROCEDURES

GENERAL

- a. These general maintenance instructions contain general shop practices and specific methods you must be familiar with to properly maintain your M9 ACE. You should read and understand these practices and methods before performing any general support maintenance tasks.
- b. Before beginning a task, find out how much repair, modification, or replacement is needed to fix the equipment as described in this manual. Sometimes the reason for equipment failure can be seen right away, and complete teardown is not necessary. Disassemble equipment only as far as necessary to repair or replace damaged or broken parts.
- c. The following "Initial Setup" information applies to all procedures:
 - (1) Resources are not listed unless they apply to the procedure.
 - (2) Personnel are listed only if more than one technician is required to complete task. If "Personnel Required" is not listed, one technician can complete task.
- d. All tags and forms attached to equipment must be checked to learn the reason for removal from service. Modification Work Orders (MWOs) and Technical Bulletins (TBs) must also be checked for equipment changes and updates.
- e. In some cases, a part may be damaged by removal. If the part appears to be good and other parts behind it are not defective, leave it on and continue with the procedure. Here are a few simple rules:
 - (1) Do not remove dowel pins or studs unless loose, bent, broken, or otherwise damaged.
 - (2) Do not remove bearings or bushings unless damaged. If you need to remove them to access parts behind them, pull bearings and bushings out carefully.
 - (3) Replace all gaskets, seals, and preformed packings.

WORK SAFETY

- a. Observe all WARNINGS and CAUTIONS. Always use power tools carefully.
- b. Protect yourself against injury. Wear protective gear, such as safety goggles or lenses, safety shoes, rubber apron, or gloves.
- c. When lifting heavy parts, have someone help you. Make sure that lifting/jacking equipment is working properly, is suitable for assigned the task, and is secure against slipping.

CLEANING INSTRUCTIONS

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and damage equipment. To prevent this, refer to TM 9-247 for further instructions.

- a. **General.** Cleaning instructions will be the same for a majority of parts and components that make up the M9 ACE. The following should apply to all cleaning, inspection, repair, and assembly operations:

CLEANING INSTRUCTIONS - continued

- (1) Clean all parts before inspection, after repair, and before assembly.
- (2) Keep hands free of grease, which can collect dust, dirt, and grit.
- (3) After cleaning, all parts should be covered or wrapped to protect them from dust and dirt. Parts that are subject to rust should be lightly oiled.

b. Steam Cleaning.

- (1) Before steam cleaning exterior of trailer, protect all electrical equipment that could be damaged by steam or moisture.
- (2) Place disassembled parts in a suitable container to steam clean. Parts that are subject to rust should be dried and lightly oiled after cleaning.

c. Castings, Forgings, and Machined Metal Parts.**WARNING**

Cleaning solvent (PF05) is combustible. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using cleaning solvent; the flashpoint is 144°F (62°C). Failure to follow this warning may result in injury or death to personnel. A fire extinguisher will be kept nearby when the solvent is used.

- (1) Clean inner and outer surfaces with cleaning solvent (Item 7, WP 0055 00).
- (2) Remove grease and accumulated deposits with a stiff bristle brush.

WARNING

Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.

- (3) Clear out all threaded holes with compressed air to remove dirt and cleaning fluids.

CAUTION

Do not wash oil seals, electrical cables, and flexible hoses with drycleaning solvent or mineral spirits. Serious damage or destruction of material would result.

- d. **Oil Seals, Electrical Cables, and Flexible Hoses.** Wash electrical cables and flexible hoses with solution of water and dishwashing compound (Item 11, WP 0055 00) and wipe dry.
- e. **Bearings.** Clean bearings in accordance with TM 9-214.

INSPECTION INSTRUCTIONS**NOTE**

All damaged areas should be marked for repair or replacement.

- a. All components and parts must be carefully checked to determine if they are serviceable for reuse, can be repaired, or must be scrapped.

INSPECTION INSTRUCTIONS - continued

- b. Inspect drilled and tapped (threaded) holes for the following:
 - (1) In or around holes—wear, distortion, cracks, and any other damage.
 - (2) Threaded areas—wear, distortion (stretching) and evidence of cross-threading.
- c. Inspect metal lines, flexible lines (hoses), and metal fittings for the following:
 - (1) Metal lines—sharp kinks, cracks, bad bends, and dents.
 - (2) Flexible lines—fraying, evidence of leakage, and loose metal fittings or connectors.
 - (3) Metal fittings and connectors—thread damage and worn or rounded hex heads.
- d. Inspect castings, forgings, and machined metal parts for the following:
 - (1) Machined surfaces—nicks, burrs, raised metal, wear, and other damage.
 - (2) Inner and outer surfaces—breaks and cracks.
- e. With solution of dishwashing compound (Item 11, WP 0055 00) and water, inspect air lines, fittings, and connectors for leaks by coating fittings and connections. No leakage is permissible.
- f. Inspect bearings in accordance with TM 9-214.

REPAIR INSTRUCTIONS

- a. Any repair procedure peculiar to a specific part or component is covered in the section or paragraph relating to that item. After repair, clean all parts thoroughly to prevent dirt, metal chips, or other foreign material from entering any working parts.
- b. Repair casting, forgings, and machined metal parts according to the following instructions:
 - (1) Refer to TM 9-237 for instructions on repairing minor cracked castings or forgings.
 - (2) Repair minor damage to machined surfaces with a fine mill file or abrasive cloth (Item 10, WP 0055 00) dipped in cleaning solvent (Item 7, WP 0055 00).
 - (3) Replace any deeply nicked machined surface that could affect the assembly operation.
 - (4) Repair minor damage to threaded capscrew holes with thread tap of same size, to prevent cutting oversize.
- c. Refer to WP 0008 00-8 for maintenance on metal lines, flexible lines (hoses), and metal fittings.

TAGGING WIRES AND HOSES

- a. As soon as first wire or hose is disconnected, write the number "1" on two tags. Secure one tag to wire or hose and other tag to terminal, nipple, or fitting. After disconnecting second wire or hose, write the number "2" on two tags. Secure one tag to wire or hose and second tag to terminal, nipple, or fitting. Do the same for all wires and hoses.
- b. Note which numbers you used, in pencil, on art in this manual. This will help you to retag properly when you remove tags from some parts to perform cleaning and maintenance work.

TAGGING WIRES AND HOSES - continued

- c. Remove all tags when finished.

END OF WORK PACKAGE

APRON ASSEMBLY REPAIR

INITIAL SETUP

Tools/Test Equipment

Tool kit, general mechanic's
(Item 6, WP 0056 00)

Shop equipment, field basic
(Item 3, WP 0056 00)

Shop equipment, general purpose
(Item 4, WP 0056 00)

Equipment Conditions

Front of vehicle blocked
(TM5-2350-262-20-1)

Hydraulic system pressure relieved
(TM5-2350-262-20-1)

Reference TM5-2350-262-34 for apron assembly repair procedures.

END OF WORK PACKAGE

DEPOT SUPPORT MAINTENANCE PROCEDURES

GENERAL

- a. These depot maintenance instructions contain general shop practices and specific methods you must be familiar with to properly maintain your M9 ACE. You should read and understand these practices and methods before performing any general support maintenance tasks.
- b. Before beginning a task, find out how much repair, modification, or replacement is needed to fix the equipment as described in this manual. Sometimes the reason for equipment failure can be seen right away, and complete teardown is not necessary. Disassemble equipment only as far as necessary to repair or replace damaged or broken parts.
- c. The following "Initial Setup" information applies to all procedures:
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- d. All tags and forms attached to equipment must be checked to learn the reason for removal from service. Modification Work Orders (MWOs) and Technical Bulletins (TBs) must also be checked for equipment changes and updates.
- e. In some cases, a part may be damaged by removal. If the part appears to be good and other parts behind it are not defective, leave it on and continue with the procedure. Here are a few simple rules:
 - (1) Do not remove dowel pins or studs unless loose, bent, broken, or otherwise damaged.
 - (2) Do not remove bearings or bushings unless damaged. If you need to remove them to access parts behind them, pull bearings and bushings out carefully.
 - (3) Replace all gaskets, seals, and preformed packings.

WORK SAFETY

- a. Observe all WARNINGS and CAUTIONS. Always use power tools carefully.
- b. Protect yourself against injury. Wear protective gear, such as safety goggles or lenses, safety shoes, rubber apron, or gloves.
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CLEANING INSTRUCTIONS

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and damage equipment. To prevent this, refer to TM 9-247 for further instructions.

- a. **General.** Cleaning instructions will be the same for a majority of parts and components that make up the M9 ACE. The following should apply to all cleaning, inspection, repair, and assembly operations:

CLEANING INSTRUCTIONS - continued

- (1) Clean all parts before inspection, after repair, and before assembly.
- (2) Keep hands free of grease, which can collect dust, dirt, and grit.
- (3) After cleaning, all parts should be covered or wrapped to protect them from dust and dirt. Parts that are subject to rust should be lightly oiled.

b. Steam Cleaning.

- (1) Before steam cleaning exterior of trailer, protect all electrical equipment that could be damaged by steam or moisture.
- (2) Place disassembled parts in a suitable container to steam clean. Parts that are subject to rust should be dried and lightly oiled after cleaning.

c. Castings, Forgings, and Machined Metal Parts.**WARNING**

Cleaning solvent (PF05) is combustible. Wear protective goggles and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes; and do not breathe vapors. Keep away from heat or flame. Never smoke when using cleaning solvent; the flashpoint is 144°F (62°C). Failure to follow this warning may result in injury or death to personnel. A fire extinguisher will be kept nearby when the solvent is used.

- (1) Clean inner and outer surfaces with cleaning solvent (Item 7, WP 0055 00).
- (2) Remove grease and accumulated deposits with a stiff bristle brush.

WARNING

Compressed air used for cleaning or drying purposes, or for clearing restrictions, should never exceed 30 psi (207 kPa). Wear protective clothing (goggles/shield, gloves, etc.) and use caution to avoid injury to personnel.

- (3) Clear out all threaded holes with compressed air to remove dirt and cleaning fluids.

CAUTION

Do not wash oil seals, electrical cables, and flexible hoses with drycleaning solvent or mineral spirits. Serious damage or destruction of material would result.

- d. **Oil Seals, Electrical Cables, and Flexible Hoses.** Wash electrical cables and flexible hoses with solution of water and dishwashing compound (Item 11, WP 0055 00) and wipe dry.
- e. **Bearings.** Clean bearings in accordance with TM 9-214.

INSPECTION INSTRUCTIONS**NOTE**

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- a. All components and parts must be carefully checked to determine if they are serviceable for reuse, can be repaired, or must be scrapped.

INSPECTION INSTRUCTIONS - continued

- b. Inspect drilled and tapped (threaded) holes for the following:
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- e. With solution of dishwashing compound (Item 11, WP 0055 00) and water, inspect air lines, fittings, and connectors for leaks by coating fittings and connections. No leakage is permissible.
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- a. Any repair procedure peculiar to a specific part or component is covered in the section or paragraph relating to that item. After repair, clean all parts thoroughly to prevent dirt, metal chips, or other foreign material from entering any working parts.
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 - (3) Replace any deeply nicked machined surface that could affect the assembly operation.
 - (4) Repair minor damage to threaded capscrew holes with thread tap of same size, to prevent cutting oversize.
- c. Refer to WP 0008 00-8 for maintenance on metal lines, flexible lines (hoses), and metal fittings.

TAGGING WIRES AND HOSES

- a. As soon as first wire or hose is disconnected, write the number "1" on two tags. Secure one tag to wire or hose and other tag to terminal, nipple, or fitting. After disconnecting second wire or hose, write the number "2" on two tags. Secure one tag to wire or hose and second tag to terminal, nipple, or fitting. Do the same for all wires and hoses.
- b. Note which numbers you used, in pencil, on art in this manual. This will help you to retag properly when you remove tags from some parts to perform cleaning and maintenance work.

TAGGING WIRES AND HOSES - continued

- c. Remove all tags when finished.

— KEY —																								
LUBRICANTS	CAPACITIES	EXPECTED TEMPERATURES																						
		+32°F and above (0°C and above)	-10° to +40°F (-23° to 4°C)	0° to - 65°F (-18° to -54°C)																				
(MIL-L-G18458) GREASE, WIRE ROPE		MIL-G-18458																						
Winch Cable and Drum																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">FUEL REQUIREMENTS</th> <th style="width: 50%;">TEMPERATURE LIMITS (VV-F-800)</th> </tr> </thead> <tbody> <tr> <td>Grade DF-2 Fuel</td> <td>For use above +10°F (-12°C)*</td> </tr> <tr> <td>Grade DF-1**</td> <td>For use below +10°F (-12°C) to above -20°F (-29°C)</td> </tr> <tr> <td>Grade DF-A</td> <td>For use below -20°F (-29°C)</td> </tr> <tr> <td>Grade JP8</td> <td>For use above -60°F (-51°C)</td> </tr> <tr> <td colspan="2">* Usage temperature may vary dependent on the cloud point of the actual DF-2 fuel being supplied in the geographical area.</td> </tr> <tr> <td colspan="2">** DF-1 is not normally procured in CONUS or OCONUS. Refineries will blend DF-2 with kerosene to meet temperature requirements of DF-1.</td> </tr> </tbody> </table>					FUEL REQUIREMENTS	TEMPERATURE LIMITS (VV-F-800)	Grade DF-2 Fuel	For use above +10°F (-12°C)*	Grade DF-1**	For use below +10°F (-12°C) to above -20°F (-29°C)	Grade DF-A	For use below -20°F (-29°C)	Grade JP8	For use above -60°F (-51°C)	* Usage temperature may vary dependent on the cloud point of the actual DF-2 fuel being supplied in the geographical area.		** DF-1 is not normally procured in CONUS or OCONUS. Refineries will blend DF-2 with kerosene to meet temperature requirements of DF-1.							
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LUBRICANTS		CAPACITIES		KEY		
				EXPECTED TEMPERATURES		
				+32°F and above (0°C and above)	-10° to +40°F (-23° to 4°C)	0° to -65°F (-18° to -54°C)
OE/HDO MIL-PRF-2104	LUBRICATING OIL, Internal Combustion Engine Tactical Service			OE/HDO-30	OE/HDO-10	CEA
OEA MIL-PRF-46167	LUBRICATING OIL Internal Combustion Engine Artic					
	Engine Crankcase add 4 additional quarts (3.8 L) for filters	Refill 22 qts. (20.8 L) Dry 30 qts. (28.4 L)				
	Winch 35,000 LB (15,890 Kg)		4.0 qts. (3.8 L)	OE/HDO-10	OE/HDO-10	CEA
	Transmission Steer Unit, Transfer Case Oil Cooler and Lines	Refill 50 qts. (47.3 L) Dry 78 qts. (73.8 L)				
	Hydraulic Tank	Refill 108 qts. (102.2 L) Dry 128 qts. (121.1 L)				
	Hydraulic Tank Return Line Filter		4 qts. (3.8 L)			
GO MIL-PRF-2105	LUBRICATING OIL Gear, Multi-Purpose			GO-80/90		
	Final Drives (2)		2 gal. Each (7.6 L)			
GAA MIL-PRF-10924	GREASE, Automotive and Artillery			GAA		
	Roadwheel Hub Bearing					
GMD MIL-G-21164	Molybdenum Disulfide			GMD		
	Hatch Hinge Assembly					
	Prop Shaft					
PL (Medium) MIL-PRF-3150	LUBRICATING OIL			PL-M Medium	PL-S Special	PL-S Special
PL (Special) MIL-PRF-32033	Oil Can Points					
GENERAL NOTE 1	If OEA lubricant is required to meet the temperature ranges specified in key. OEA is to be used in all places where OE/HDO-10 is specified.					
GENERAL NOTE 2	The use of OE/HDO 15W-40 in lieu of OE/HDO-30 is authorized. The OE/HDO 15W-40 can be used at all temperatures above +5°F (-15°C) for all components except the transmission, transfer case, steer unit, and final drives.					

END OF WORK PACKAGE

TRACK & BLADE MANIFOLD ASSEMBLY REPLACEMENT

INITIAL SETUP

Tools/Test Equipment

- Chain assembly
(Item 1, WP 0056 00)
- Shop equipment, common no. 1
(Item 2, WP 0056 00)
- Shop equipment, field basic
(Item 3, WP 0056 00)

Equipment Conditions

- Track and Blade Manifold Assembly Replacement
(WP 0029 00, Disassembly)
- Front of vehicle blocked
(TM5-2350-262-20-1)
- Hydraulic system pressure relieved
(TM5-2350-262-20-1)

DISASSEMBLY

1. Remove six bolts (item 2) and washers (item 1) from plate (item 4) and track and blade manifold (item 3).

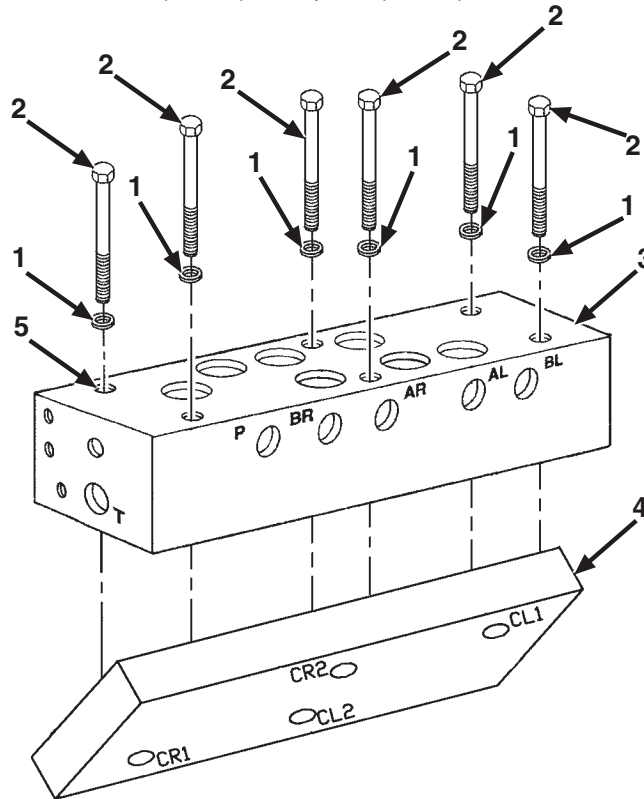


Figure 101. Manifold and Plate.

2. Remove plate (item 4) from track and blade manifold (item 3).

ASSEMBLY

1. Line up six holes (item 5) in track and blade manifold (item 3) with holes in plate (item 4).
2. Install six bolts (item 2) and washers (item 1) and join manifold (item 3) to plate (item 4).

END OF WORK PACKAGE

CHAPTER 9 SUPPORTING INFORMATION REFERENCES

REFERENCES

This work package lists all forms, manuals, bulletins, and other publications referenced in this manual and which apply to the operation, unit, direct support, and general support maintenance of the M9 ACE applicable to material covered in this technical manual. DA Pam 25-30, *Consolidated Index of Army Publications and Blank Forms*, should be consulted frequently for latest changes or revisions and for new publications relevant to material covered in this technical manual.

FIELD MANUALS

FM 21-10	Field Hygiene and Sanitation
FM 21-11	First Aid for Soldiers
FM 21-305	Manual for the Wheeled Vehicle Driver
FM 3-3	NBC Contamination Avoidance
FM 3-5	NBC Decontamination
FM 3-4	NBC Protection
FM 9-207	Operation and Maintenance of Ordnance Materiel in Cold Weather (0°F to - 65°F)

FORMS

Refer to DA Pam 738-750, The Army Maintenance Management System (TAMMS), for instructions on the use of maintenance forms.

DA Form 2404	Equipment Inspection and Maintenance Worksheet
DA Form 2408	Equipment Log Assembly (Records)
DA Form 2407	Maintenance Request
DA Form 2401	Organization Control Record for Equipment
DA Form 5988-E	Maintenance Request Register (EGA)
DD Form 314	Preventive Maintenance Schedule and Record
DD Form 1397	Processing and Deprocessing Record for Shipment, Storage and Issue of Vehicles and Spare Engines
SF Form 368	Product Quality Deficiency Report
DA Form 2028-2	Recommended Changes to Equipment Technical Publications
DA Form 2028	Recommended Changes to Publications and Blank Forms
SF Form 364	Report of Discrepancy (ROD)

OTHER PUBLICATIONS

AR 700-138	Army Logistics Readiness and Sustainability
CTA 8-100	Army Medical Department Expendable/Durable Items
CTA 50-970	Expendable/Durable Items (Except Medical, Class V, Repair Parts and Heraldic Items)
MIL-F-18866D	

PAMPHLETS AND BULLETINS

DA Pam 75-5	List of Storage and Outloading Drawings for Ammunition
SB 740-98-1	Storage and Serviceability Standard: Tracked Vehicles, Wheeled Vehicles, and Component Parts

TECHNICAL MANUALS

TB SIG 222
TB 43-0209

TM 5-2350-262 Series
TM 750-244-6

TM 9-237
TB 43-0001-39 Series

TM 9-214

Solder and Soldering
Color, Marking, and Camouflage Painting of Military
Vehicles, Construction Equipment and Materials Handling
Equipment
Armored Combat Earthmover (ACE), M9
Procedures for Destruction of Tank-automotive Equipment to Prevent
Enemy Use
Operator's Manual for Welding Theory and Application
Equipment Improvement Report and Maintenance Digest
(U.S. Army Tank-Automotive and Armaments Command)
Tank and Automotive Equipment
Inspection Care and Maintenance of Antifriction Bearings

END OF WORK PACKAGE

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION

THE ARMY MAINTENANCE SYSTEM MAC

This introduction provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under the standard Army Maintenance System concept.

The MAC (immediately following the introduction) designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end 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:

- Unit – includes two subcolumns, C (operator/crew) and O (unit) maintenance
- Direct Support – includes an F subcolumn
- General Support – includes an H subcolumn
- Depot – includes a D subcolumn

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:

- a. **Inspect.** To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel). This includes scheduled inspection and gagings and evaluation of cannon tubes.
- b. **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.
- c. **Service.** Operations required periodically to keep an item in proper operating condition; e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases. This includes schedules exercising and purging of recoil mechanisms.
- d. **Adjust.** To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.
- e. **Align.** To adjust specified variable elements of an item to bring about optimum or desired performance.
- f. **Calibrate.** To determine and cause corrections to be made or to be adjusted on instruments of test, measuring, and diagnostic equipment (TMDE) 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.

MAINTENANCE FUNCTIONS - continued

- g. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.
- h. 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 of the Source, Maintenance, and Recoverability (SMR) code.
- i. 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.

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.

- j. 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.
- k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of 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.

EXPLANATION OF COLUMNS IN THE MAC - continued

Column (3)—Maintenance Function. Column (3) lists the functions to be performed on the item listed in Column 2. (For a detailed explanation of these functions, refer to "Maintenance Functions" outlined above.)

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 manhours in whole hours or decimals) in the appropriate subcolumn. This work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are to be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are as follows:

- C—Operator or crew maintenance
- O—Unit maintenance
- F—Direct support maintenance
- H—General support maintenance
- D—Depot maintenance

Column (5)—Tools and Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools), common TMDS, special tools, special TMDE, and special support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.

Column (6)—Remarks Code. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks table entries.

EXPLANATION OF COLUMNS IN THE TOOLS AND TEST EQUIPMENT REQUIREMENTS

Column (1)—Tool or Test Equipment Reference Code. The tool or test equipment reference code correlates with a code used in Column (5) of the MAC.

Column (2)—Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

Column (3)—Nomenclature. Name or identification of the tool or test equipment.

Column (4)—National Stock Number (NSN). The NSN of the tool or test equipment.

Column (5)—Tool Number. The manufacturer's part number, 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.

END OF WORK PACKAGE

MAINTENANCE ALLOCATION CHART (MAC)

Table 46-1. MAC for M9 ACE with HBF-TT.

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REFCODE	(6) REMARKS CODE	
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT			
			C	O	F	H	D			
A	ELECTRICAL SYSTEM									
	Wiring Harness, Apron	Test Replace		1.0		2.0			1, 2, 6 1, 7	
	Wiring Harness, Headlight	Test Replace		1.0		2.0			1, 2, 6 1, 7	
	Wiring Harness, Blade Folder	Test Replace		1.0		2.5			1, 2, 6 1, 7	
	Wiring Harness, Control Box Power	Test Replace		1.0		2.5			1, 2, 6 1, 7	
	Wiring Harness, Manifold	Test Replace		1.0		2.5			1, 2, 6 1, 7	
	Wiring Harness, Control Box	Test Replace		0.3		0.4			1, 2, 6 1, 7	
	Control Box, Track & Blade	Test Replace Repair		1.0 4.0		2.0			1, 2 1 1	
	Headlight Assembly	Test Replace		0.4 0.2					1, 2 1	
B	HULL ASSEMBLY									
	Apron Assembly	Replace Repair		1.2 0.4		2.0	10.0		1, 2, 3 1, 2, 3, 7, 8	A, B
	Dozer Blade	Inspect Service Replace Repair		0.1 0.2 0.8 0.6		2.0			1, 2 1, 2 1, 2	1, 2 A B, C

MAINTENANCE ALLOCATION CHART (MAC) - continued

Table 46-1. MAC for M9 ACE with HBF-TT - continued.

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
C	HYDRAULIC SYSTEM								
	Actuator Assembly	Test Replace		1.0		1.0		1, 2, 6 1, 2, 6	
	Hydraulic Valves	Replace		1.0				1, 2, 4, 5	
	Hydraulic Fittings	Replace		0.7				1, 2, 4, 5	
	Hydraulic Hoses	Replace		0.7				1, 2, 4, 5	
D	SUSPENSION INSTALLATION								
	Cylinder Assembly, Track Adjusting	Replace		1.5				1, 2	
	Manifold Assembly, Track & Blade	Test Replace		1.0 1.5			1.0	1, 2 1, 2, 3	

MAINTENANCE ALLOCATION CHART (MAC) - continued

Table 46-2. Tools and Test Equipment for M9 ACE with HBF-TT.

(1) TOOL OR TEST EQUIPMENT REF CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL STOCK NUMBER	(5) TOOL NUMBER
1	O, F, H	Tool Kit, General Mechanic's, Automotive	5180-00-177-7033	SC5180-90- CL-N26
2	O	Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power	4910-00-754-0654	SC4910- 95CLA74
3	C, F, H	Chain Assembly	4010-01-185-0406	13211E9331
4	O, F, H	Wrench Set, Open End	5120-01-301-5783	5705565
5	O, F, H	Wrench Set, Crowfoot	5120-01-302-4387	5705566
6	F, H	Shop Equipment, Field Basic	4910-00-754-0705	SC4910- 95CLA31
7	H	Shop Equipment, General Purpose	4940-00-287-4894	SC4940- 97CLE03

MAINTENANCE ALLOCATION CHART (MAC) - continued**Table 46-3. Remarks for M9 ACE with HBF-TT.**

REMARKS CODE	REMARKS
A	Lift capability required
B	Repair by straightening, welding, and/or soldering
C	Limited to removal and replacement of bearing and grease fitting at O level

END OF WORK PACKAGE

REPAIR PARTS AND SPECIAL TOOLS LIST INTRODUCTION

SCOPE

This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of Unit, Direct Support, and General Support maintenance of the Armored Combat Earthmover, M9 (including depot maintenance spares and repair parts). It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

GENERAL

In addition to the Introduction work package, this RPSTL is divided into the following work packages:

- a. **Repair Parts List Work Package.** Work packages containing lists of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. These work packages also include parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Sending units, brackets, filters, and bolts are listed with the component they mount on. Bulk materials are listed by item name in FIG. BULK at the end of the work packages. Repair parts kits are listed separately in their own functional group and work package. Repair parts for reparable special tools are also listed in a separate work package. Items listed are shown on the associated illustrations.
- b. **Special Tools List Work Package.** Work packages containing lists of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE (UOC) column). Tools that are components of common tool sets and/or Class VII are not listed.
3. **Cross-Reference Indexes Work Package.** 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 NSN Index work package refers you to the figure and item number. The P/N Index work package refers you to the figure and item number.

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGE

ITEM NO. (Column [1]). Indicates the number used to identify items called out in the illustration.

SMR Code (Column [2]). The SMR code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:

<u>Source Code</u>	<u>Maintenance Code</u>	<u>Recoverability Code</u>
xx	xx	x
1st two positions: How to get an item.	3rd position: Who can install, replace, or use the item.	4th position: Who can do complete repair* on the item.
		5th position: Who determines disposition action on unserviceable items.

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGE - continued

*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 you get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

Source Code

Application/Explanation

PA
PB
PC
PD
PE
PF
PG

Stock items; use the applicable NSN to requisition/request items with these source codes. They are authorized to the level indicated by the code entered in the 3rd position of the SMR code.

NOTE

Items coded PC are subject to deterioration.

KD
KF
KB

Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance level indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.

MO-Made at unit level
MF-Made at DS level
MH-Made at GS level
ML-Made at SRA
MD-Made at depot

Items with these codes are not to be requisitioned/requested individually. They must be made from bulk material which is identified by the P/N in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group work package of the RPSTL. If the item is authorized to you by the 3rd position code of the SMR code, but the source code indicates it is made at higher level, order the item from the higher level of maintenance.

AO-Assembled by unit/AVUM level
AF-Assembled by DS/AVUM level
AH-Assembled by GS level
AL-Assembled by SRA
AD-Assembled by depot

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 of the SMR code authorizes 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.

XA

Do not requisition an "XA" coded item. Order the next higher assembly (refer to NOTE below).

XB

If an item is not available from salvage, order it using the CAGE Code and P/N.

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGE - Continued

XC	Installation drawings, diagrams, instruction sheets, field services drawings; identified by manufacturer's P/N.
XD	Item is not stocked. Order an XD-coded item through normal supply channels using the CAGE Code and P/N given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes except for those items 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:

- a. 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 the following levels of maintenance:

Maintenance Code

Application/Explanation

C —	Crew or operator maintenance done within unit maintenance.
O —	Unit level maintenance can remove, replace, and use the item.
F —	Direct support maintenance can remove, replace, and use the item.
H —	General support maintenance can remove, replace, and use the item.
D —	Depot level can remove, replace, and use the item.

- b. 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 (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.

Maintenance 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.
D —	Depot is the lowest level that can do complete repair of the item.

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGE - Continued

L	—	Reparable item. Repair restricted to designated Specialized Repair Activity.
Z	—	Nonreparable. No repair is authorized.
B	—	No repair is authorized. No parts or special tools are authorized for maintenance of "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 shown in the fifth position of the SMR code as follows:

Recoverability Code	Application/Explanation
Z —	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the third position of the SMR code.
O —	Reparable item. When uneconomically reparable, condemn and dispose of the item at the unit level.
F —	Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support level.
H —	Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D —	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L —	Reparable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA).
A —	Item requires special handling or condemnation procedures because of specific reasons (such as precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

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 five-digit code which 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.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different P/N from the number listed.

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGE - Continued

Description and Usable on Code (UOC) (Column [6]). This column includes the following information:

- a. The federal item name, and when required, a minimum description to identify the item.
- b. P/Ns of bulk materials are referenced in this column in the line entry to be manufactured or fabricated.
- c. Hardness Critical Item (HCI). A support item that provides the equipment with special protection from electromagnetic pulse (EMP) damage during a nuclear attack.
- d. The statement END OF FIGURE appears just below the last item description in column (6) for a given figure in both the repair parts list and special tools list work packages.

QTY (Column [7]). The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column instead of a quantity indicates that the quantity is variable and quantity may change from application to application.

EXPLANATION OF CROSS-REFERENCE INDEXES WORK PACKAGE FORMAT AND COLUMNS

- a. National Stock Number (NSN) Index Work Package.

STOCK NUMBER Column. This column lists the NSN in National item identification number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN.

NSN
(e.g., 5385-01-574-1476)
NIIN

When using this column to locate an item, ignore the first four digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

FIG. Column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in the repair parts list and special tools list work packages.

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.

- b. Part Number (P/N) Index Work Package. P/Ns in this index are listed in ascending alphanumeric sequence (vertical arrangement of letter and number combinations which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9, and each following letter or digit in like order).

PART NUMBER Column. Indicates the P/N assigned to the item.

FIG. Column. This column lists the number of the figure where the item is identified/located in the repair parts list and special tools list work packages.

ITEM Column. The item number is the number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

SPECIAL INFORMATION

Usable on Code (UOC). Not Applicable.

Fabrication Instructions. Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for bulk material are also referenced in the Description Column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in TM 5-2350-262-20-2 and TM 5-2350-262-34.

Index Numbers. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the NSN / P/N index work packages and the bulk material list in the repair parts list work package.

HOW TO LOCATE REPAIR PARTS

a. When NSNs or P/Ns Are Not Known:

- (1) First. Using the table of contents, determine the assembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and lists are divided into the same groups.
- (2) Second. Find the figure covering the functional group or the subfunctional group to which the item belongs.
- (3) Third. Identify the item on the figure and note the number(s).
- (4) Fourth. Look in the repair parts list work packages for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

b. When NSN Is Known:

- (1) First. If you have the NSN, look in the STOCK NUMBER column of the NSN index work package. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN.
- (2) Second. Turn to the figure and locate the item number. Verify that the item is the one you are looking for.

c. When P/N Is Known:

- (1) First. If you have the P/N and not the NSN, look in the PART NUMBER column of the P/N index work package. Identify the figure and item number.
- (2) Second. Look up the item on the figure in the applicable repair parts list work package. Verify that the item is the one you are looking for.

ABBREVIATIONS

The abbreviations used in this publication are common in trade practice and MIL-STD-12, Military Standard Abbreviations for Use on Drawings, and in Specifications, Standards, and Technical Documents.

<u>Abbreviation</u>	<u>Explanation</u>	<u>Abbreviation</u>	<u>Explanation</u>
AAL	Additional Authorization List	BII	Basic Issue Items
AC	Alternating Current	BOI	Basis of Issue
ACE	Armored Combat Earthmover	BRG	Bearing
ADPTR	Adapter	CAGEC	Commercial and Government Entity Code
A/R	As Required	CKT BKR	Circuit Breaker
ASSY	Assembly	CL	Class
BLK	Black		

ABBREVIATIONS - Continued**Abbreviation Explanation**

COEI	Components of End Item
CONN	Connector
CTSK	Countersunk
DEG	Degree
DIA	Diameter
DS	Direct Support
EA	Each
ELEC	Electrical
Ext	External
F	Forward
FIG	Figure
FIL	Fillister
FILH	Fillister Head
FL	Flat
FLH	Flat Head
FT	Foot
GA	Gauge
GND	Ground
GR	Grade
GS	General Support
H	High
HD	Head
HD	Hundred
HDLS	Headless
HEX	Hexagon
HEX HD	Hexagon Head
ID	Inside Diameter
ILLUS	Illustration
IN	Inch
INC	Incorporated
INTL	Internal
L	Low
LB	Pound
LG	Length
LH	Left Hand
LKWR	Lock Wire
LUB	Lubricate
LVL	Level
MACH	Machine
MFD	Manufactured
MIL	Military
MS	Military Standard
MTG	Mounting
NIIN	National Item Identification Number
NO	Number
NOM	Nominal
NPN	No Part Number
NSN	National Stock Number
OD	Outside Diameter
OVE	On-Vehicle Equipment
OVS	Oversize
P/N	Part Number

Abbreviation Explanation

PG	Package
PSI	Pounds per Square Inch
Qty	Quantity
R	Reverse
RBR	Rubber
RD	Round
RH	Right Hand
RLF	Relief
RLR	Roller
RND	Round
RPSTL	Repair Parts and Special Tools List
SAE	Society of Automotive Engineers
SCH	Socket Head
SKT	Socket
SLTD	Slotted
SLVG	Sleeving
SMR	Source, Maintenance, and Recoverability
SP	Speed
SPEC	Specification
SQ	Square
STD	Standard
STE/ICE-R	Simplified Test Equipment for Internal Combustion Engines- Reprogrammable
STL	Steel
STR	Straight
SYN	Synthetic
THD	Thread
THK	Thick
TM	Technical Manual
TMDE	Test, Measurement, and Diagnostic Equipment
TRH	Truss Head
TRK	Track
U/M	Unit of Measure
UN	Unified
V	Variable (in column 7 only)
V	Volt
VDC	Direct-Current Volts
WG	Wire Gauge
WP	Water Pump
WSHR	Washer
XMSN	Transmission
YD	Yard

1 —

2 thru 12

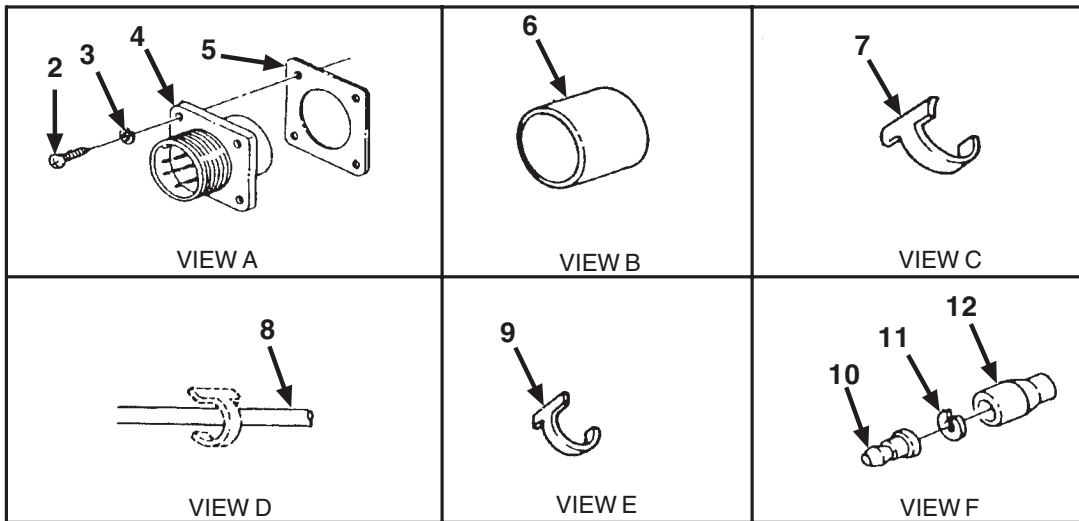
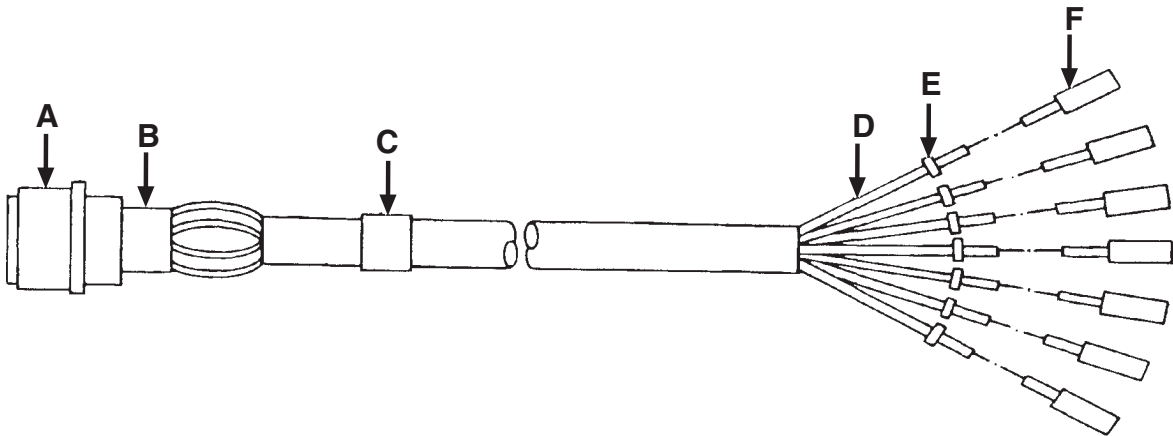


Figure 1. Apron Wiring Harness

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP A: ELECTRICAL SYSTEM FIG. 1 APRON WIRING HARNESS						
1	PAFFF	5995011821321	97403	13214E2064	WIRING HARNESS, BRAN.....	1
2	PAOZZ	5305008892997	80205	MS35206-215	.SCREW, MACHINE.....	4
3	PAOZZ	5310005432410	80205	MS35338-40	.WASHER, LOCK.....	4
4	PAOZA	5935012136433	96906	M43436/4-1	.CONNECTOR, RECEPTACL.....	1
5	PAOZZ	5330011930208	19207	13214E2582	.GASKET.....	1
6	MOOZZ		81349	M23053/1-201-0AR	.INSULATION SLEEVING MAKE FROM INSULATION SLEEVING, ELECTRICAL, P/ N M23053/1-201-0, LENGTH A/R..	V
7	PAOZZ	9905008933570	81349	M43436/1-3	.BAND, MARKER.....	1
8	MOOZZ		81349	M13486/1-5AR	.WIRE, ELECTRICAL MAKE FROM WIRE, ELECTRICAL, P/N M13486/1-5, LENGTH A/R.....	V
9	PAOZZ	9905009353863	81349	M43436/4-1	.BAND, MARKER.....	14
10	PAOZA	5999000572929	19204	572929	.CONTACT, ELECTRICAL.....	7
11	PAOZZ	5310008338567	19207	8338567	.WASHER, SLOTTED.....	7
12	PAOZZ	5935005729180	19207	8338566	.SHELL, ELECTRICAL CO.....	7

END OF FIGURE

1 — 2
thru
17

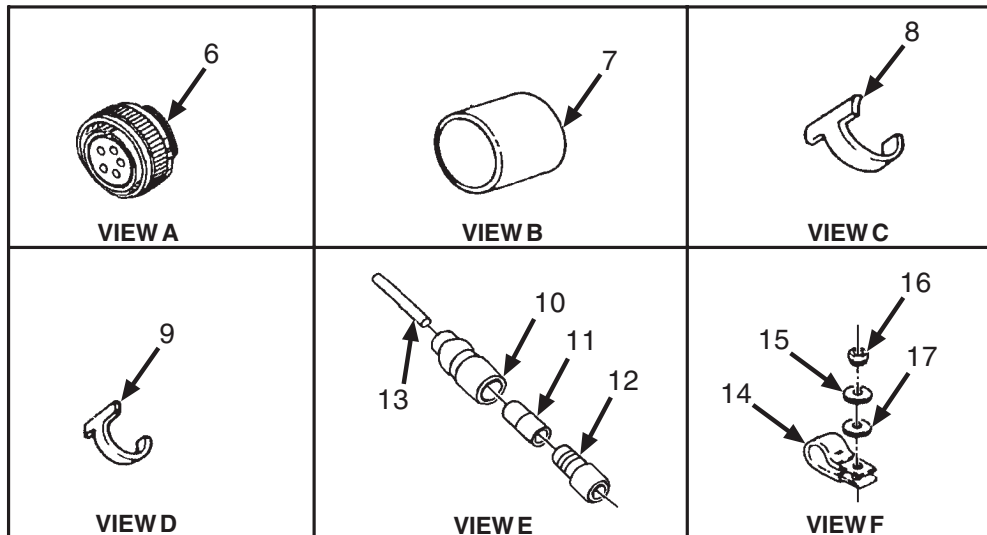
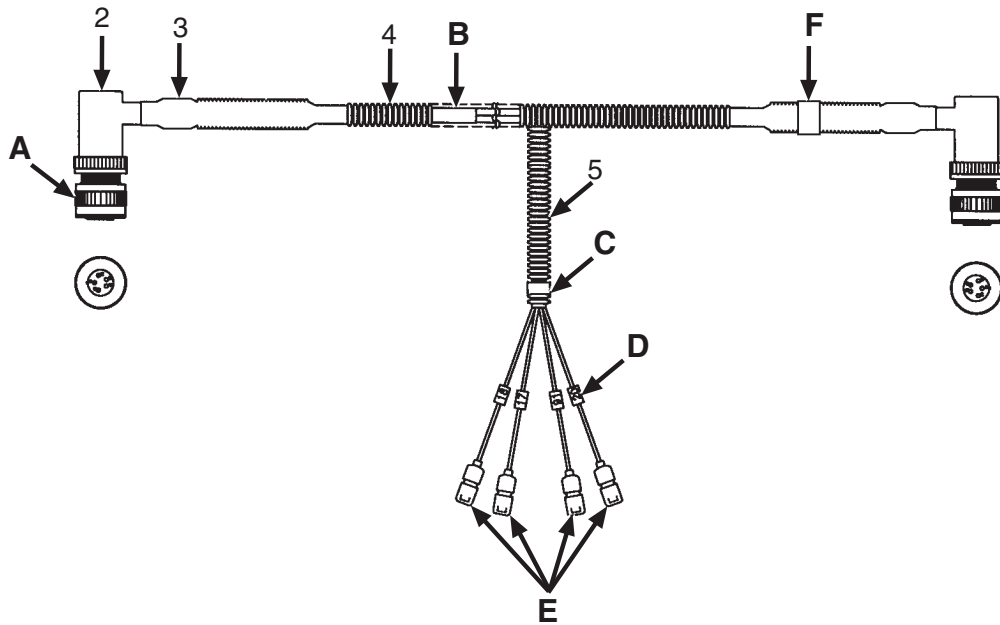


Figure 2. Headlight Wiring Harness & Mounting Hardware

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP A: ELECTRICAL SYSTEM						
FIG. 2 HEADLIGHT WIRING HARNESS & MOUNTING HARDWARE						
1	PAOZA	5995015292108	19207	12491606	WIRING HARNESS, BRAN.....	1
2	XDOZZ		06090	TXR54AB90-1408A1	. ADAPTER.....	2
3	XDOZZ		06090	202C621-50-0	. BOOT, VEHICULAR COMP.....	2
4	PAOZZ	4720014232962	0FW39	12420924-005	. TUBING, NONMETALLIC.....	1
5	PAOZZ	4720014219723	19207	12420924-002	. TUBING, NONMETALLIC.....	1
6	PAOZA	5935011097525	96906	MS3475W14-5S	. CONNECTOR, PLUG, ELEC.....	2
7	MOOZZ		81343	M23053/1-105-0AR	. INSULATION SLEEVING MAKE FROM INSULATION SLEEVING, ELECTRICAL, P/N M23053/1-105-0, LENGTH A/R.....	V
8	PAOZZ	9905008933570	81349	M43436/1-3	. BAND, MARKER.....	2
9	PAOZZ	9905009353863	81349	M43436/4-1	. BAND, MARKER.....	4
10	PAOZZ	5935008338561	19207	8338561	. SHELL, ELECTRICAL CO.....	4
11	PAOZZ	5940003996676	19207	8338564	. TERMINAL SET, QUICK.....	4
12	PAOZZ	5970008338562	19207	8338562	. INSULATOR, BUSHING.....	4
13	MOOZZ		81349	M13486/1-5AR	. WIRE, ELECTRICAL MAKE FROM WIRE, ELECTRICAL, P/NM13486/1-5, LENGTH A/R.	V
14	PAOZZ	5340008546729	96906	MS21333-103	. CLAMP, LOOP.....	1
15	PAOZZ	5310005825965	80205	MS35338-44	. WASHER, LOCK.....	1
16	PAOZZ	5310002509477	80205	MS35649-2254	. NUT, PLAIN, HEXAGON.....	1
17	PAOZZ	5310008094058	96906	MS27183-10	. WASHER, FLAT.....	1

END OF FIGURE

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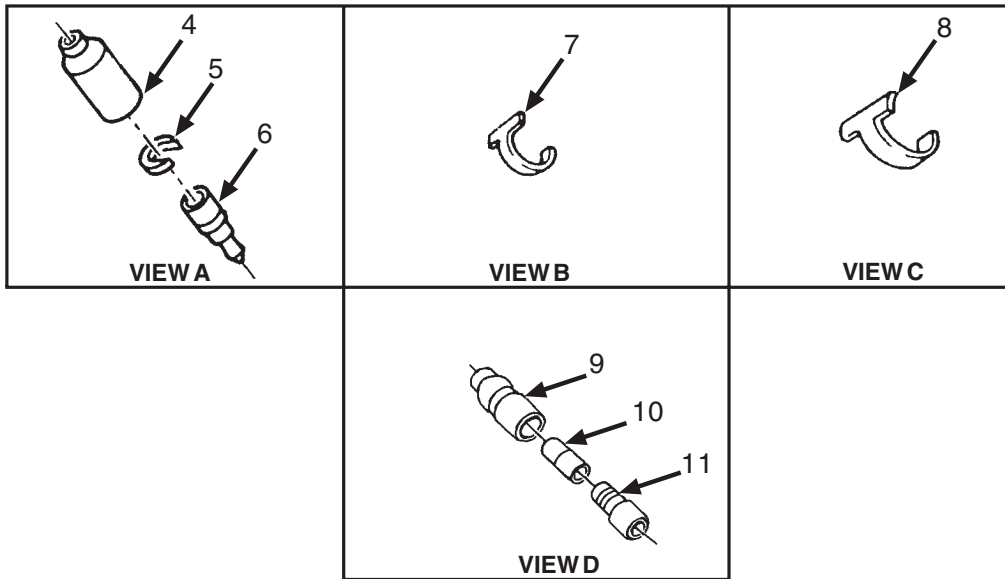
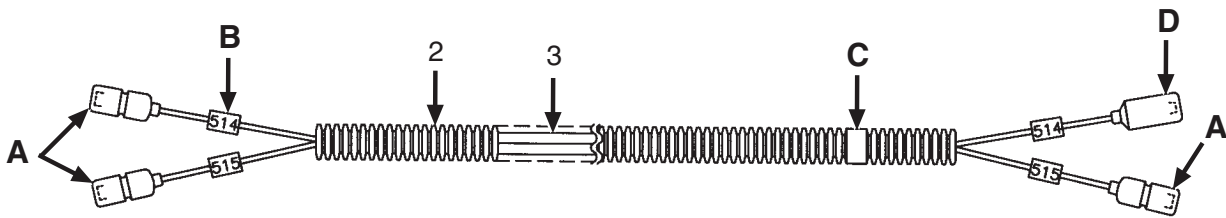


Figure 3. Blade Folder Wiring Harness

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP A: ELECTRICAL SYSTEM						
FIG. 3 BLADE FOLDER WIRING HARNESS						
1	PAOOA	5995015291535	19207	12491607	WIRING HARNESS, BRAN.....	1
2	PAOZZ	4720014219723	19207	12420924-002	. TUBING, NONMETALLIC.....	1
3	MOOZZ		81349	M13486/1-5AR	. WIRE, ELECTRICAL.....	V
4	PAOZZ	5935005729180	19207	8338566	. SHELL, ELECTRICAL CO.....	1
5	PAOZZ	5310008338567	19207	8338567	. WASHER, SLOTTED.....	1
6	PAOZA	5999000572929	19204	572929	. CONTACT, ELECTRICAL.....	1
7	PAOZZ	9905009353863	81349	M43436/4-1	. BAND, MARKER.....	4
8	PAOZZ	9905008933570	81349	M43436/1-3	. BAND, MARKER.....	2
9	PAOZZ	5935008338561	19207	8338561	. SHELL, ELECTRICAL CO.....	3
10	PAOZZ	5940003996676	19207	8338564	. TERMINAL SET, QUICK.....	3
11	PAOZZ	5970008338562	19207	8338562	. INSULATOR, BUSHING.....	3

END OF FIGURE

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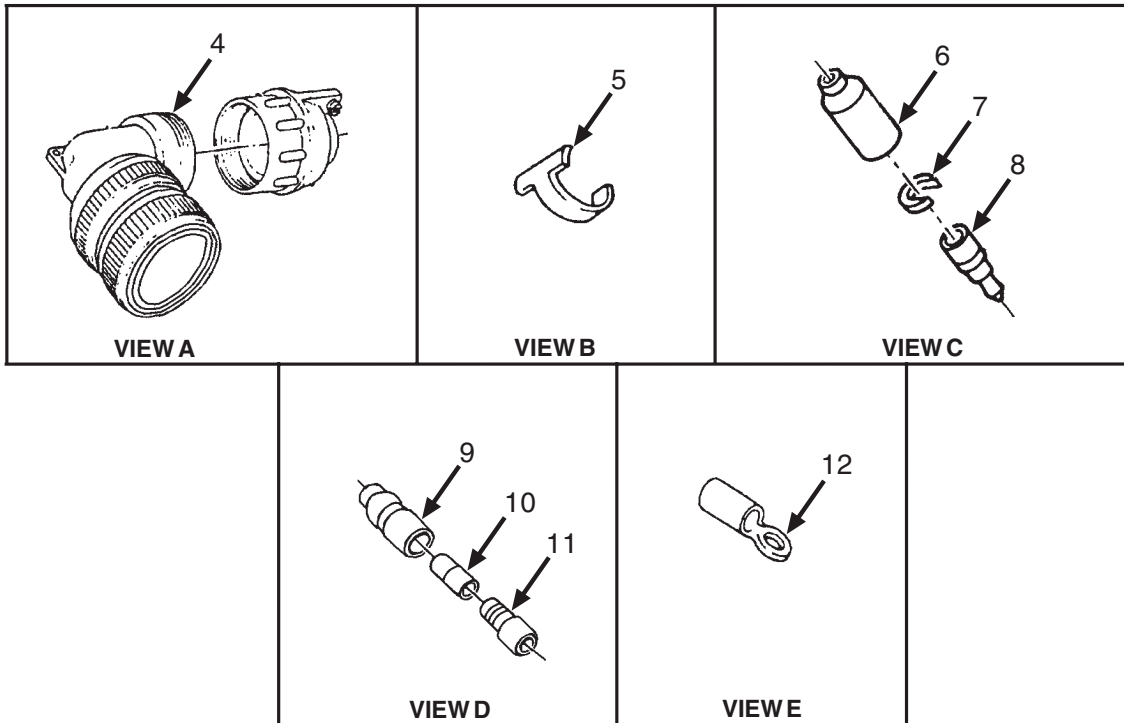
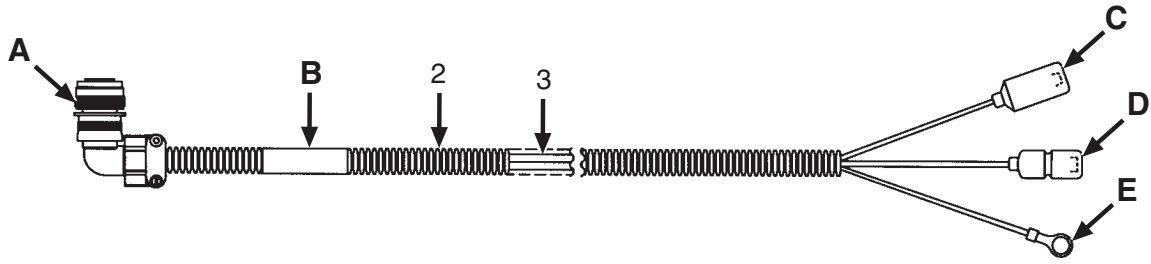
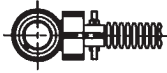


Figure 4. Control Box Power Wiring Harness

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP A: ELECTRICAL SYSTEM						
FIG. 4 CONTROL BOX POWER WIRING						
HARNESS						
1	PAOZZ	5975015291565	19207	12491618	BOX CONNECTOR, ELECT.....	1
2	PAOZZ	4720014219723	19207	12420924-002	.TUBING, NONMETALLIC.....	1
3	MOOZZ		81349	M13486/1-5AR	.WIRE, ELECTRICAL MAKE FROM WIRE, ELECTRICAL, P/NM13486/1-5, LENGTH A/R.	V
4	XDOZZ		96906	MS3476WA-5S	.CONNECTOR.....	1
5	PAOZZ	9905008933570	81349	M43436/1-3	.BAND, MARKER.....	1
6	PAOZZ	5935005729180	19207	8338566	.SHELL, ELECTRICAL CO.....	1
7	PAOZZ	5310008338567	19207	8338567	.WASHER, SLOTTED.....	1
8	PAOZA	5999000572929	19204	572929	.CONTACT, ELECTRICAL.....	1
9	PAOZZ	5935008338561	19207	8338561	.SHELL, ELECTRICAL CO.....	1
10	PAOZZ	5940003996676	19207	8338564	.TERMINAL SET, QUICK.....	1
11	PAOZZ	5970008338562	19207	8338562	.INSULATOR, BUSHING.....	1
12	PAOZZ	5940001434794	81343	MS25036-112	.TERMINAL, LUG.....	1

END OF FIGURE

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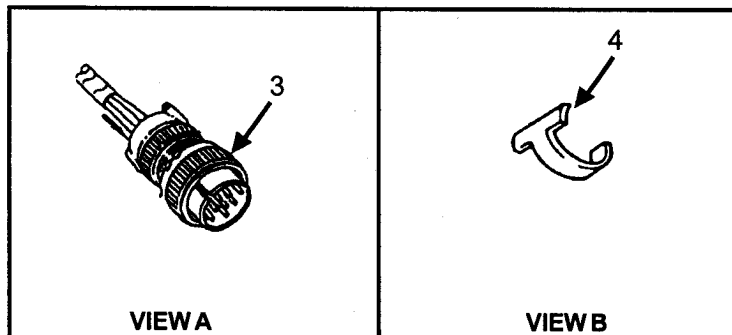
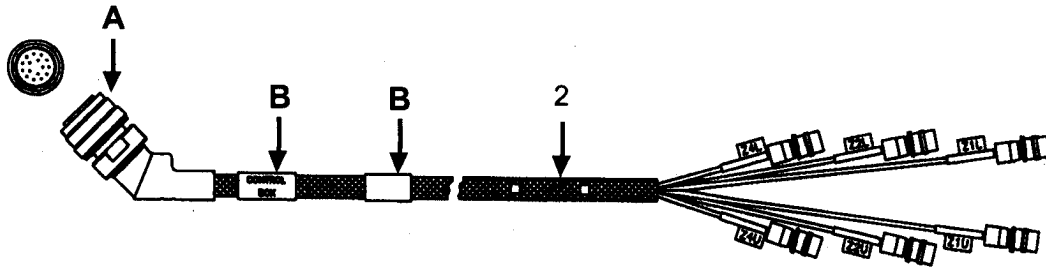


Figure 5. Manifold Wiring Harness

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP A: ELECTRICAL SYSTEM FIG. 5 MANIFOLD WIRING HARNESS						
1	PAOZZ	6150015292140	19207	12491622	WIRING HARNESS, BRAN.....	V
2	XDOZZ		29961	VN4400	.YARN.....	V
3	PAOZZ	5935011097518	96906	MS3476W20-16P	.CONNECTOR, PLUG, ELEC.....	1
4	PAOZZ	9905008933570	81349	M43436/1-3	.BAND, MARKER.....	8
5	PAOZZ	5999011600673	U0759	AAU9798	CONTACT, ELECTRICAL.....	6

END OF FIGURE

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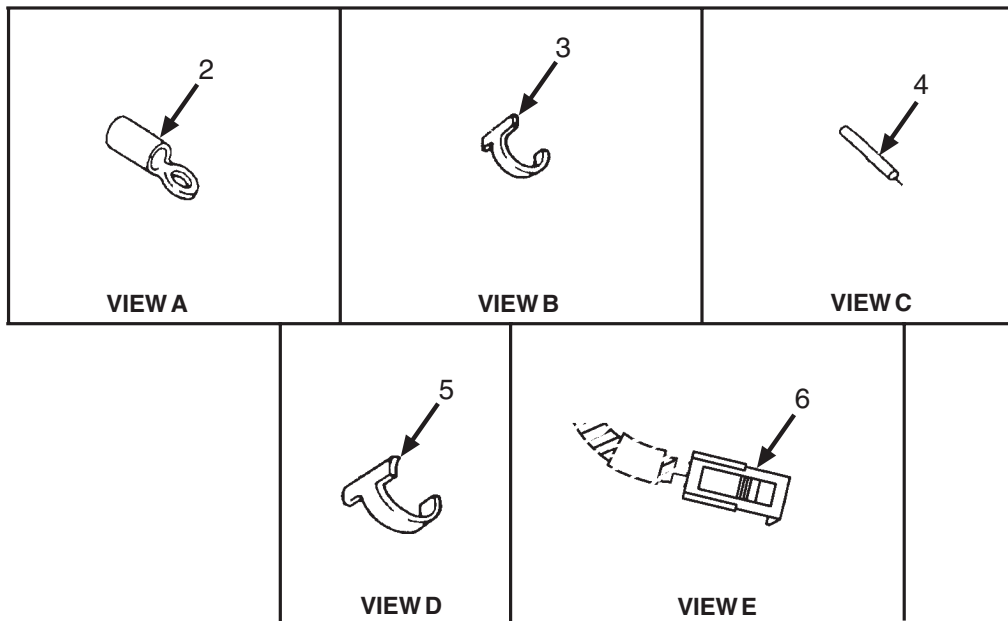
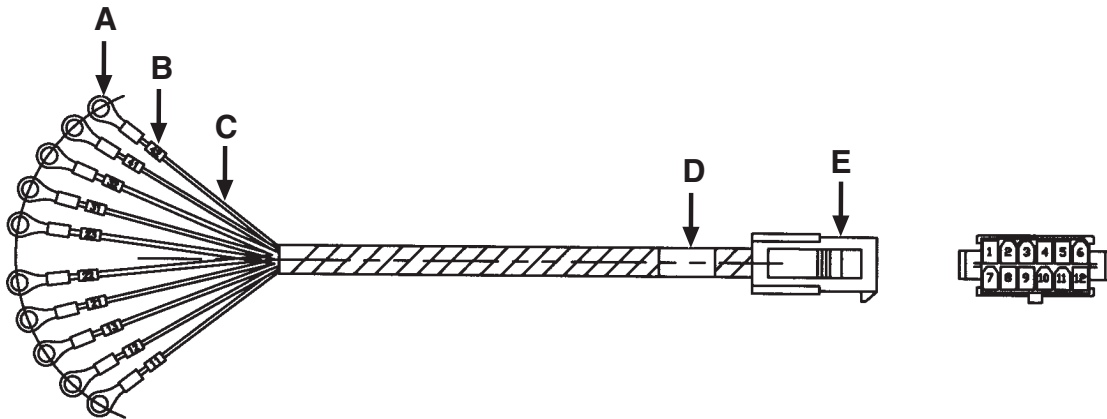
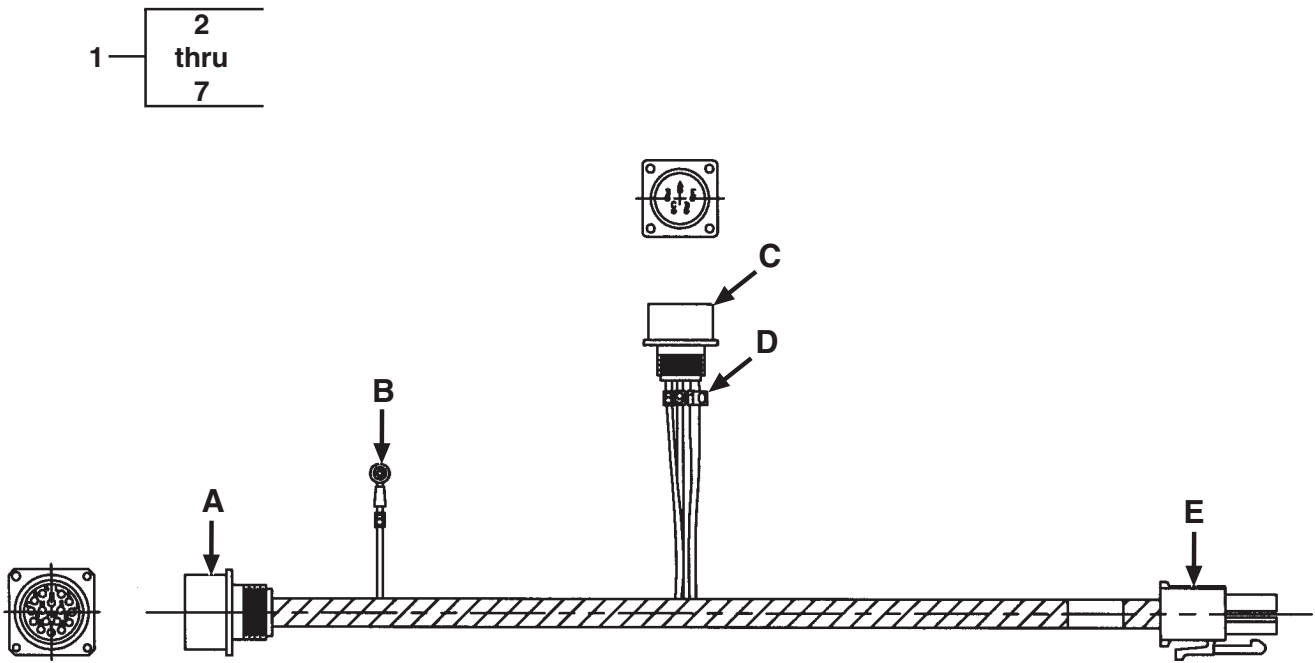


Figure 6. Control Box Wiring Harness

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP A: ELECTRICAL SYSTEM						
FIG. 6 CONTROL BOX WIRING HARNESS						
1	PAOZZ	6150015290116	19207	12491623	WIRING HARNESS, BRAN.....	V
2	PAOZZ	5940008130698	81343	MS25036-101	. TERMINAL, LUG.....	10
3	PAOZZ	9905009353863	81349	M43436/4-1	. BAND, MARKER.....	10
4	MOOZZ		81349	M22759/16-20-9	. WIRE, ELECTRICAL.....	V
5	PAOZZ	9905008933570	81349	M43436/1-3	. BAND, MARKER.....	1
6	PAOZZ	5935015060573	27264	39-01-2121	. CONNECTOR, PLUG, ELEC.....	1

END OF FIGURE



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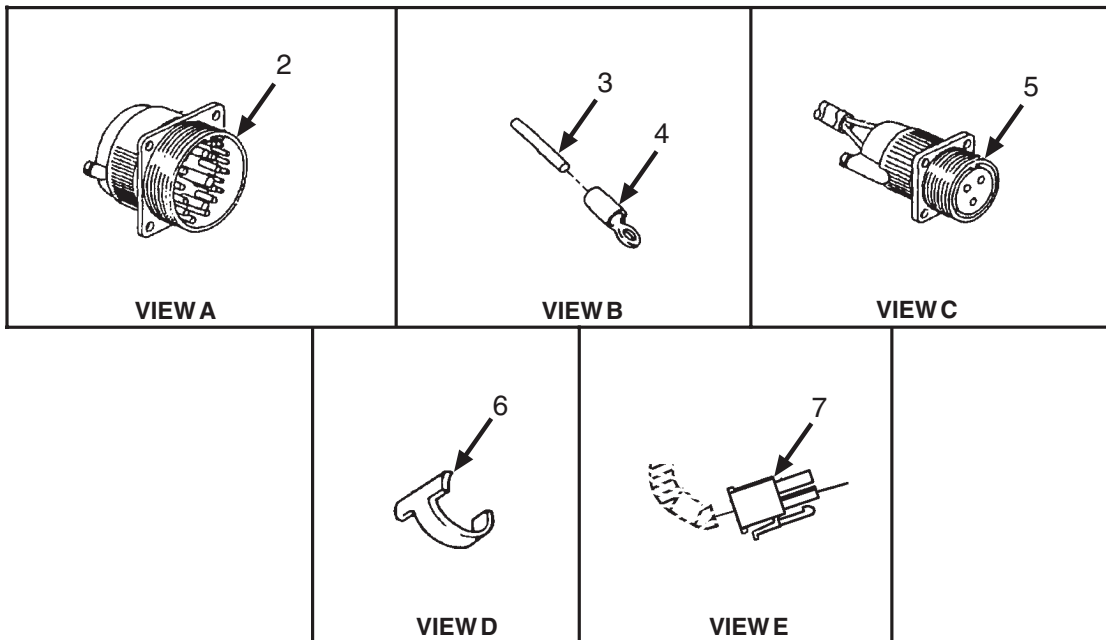


Figure 7. Control Box Wiring Harness

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP A: ELECTRICAL SYSTEM						
FIG. 7 CONTROL BOX WIRING HARNESS						
1	PAOZZ	6150015290111	19207	12491624	WIRING HARNESS, BRAN.....	1
2	PAOZZ	5935010769462	96906	MS3476W20-16S	.CONNECTOR, PLUG, ELEC.....	1
3	MOOZZ		81349	M22759/16-20-9AR	.WIRE, ELECTRICAL.....	V
4	PAOZZ	5940008130698	81343	MS25036-101	.TERMINAL, LUG.....	1
5	PAOZA	5935011192830	96906	MS3470W14-5P	.CONNECTOR, RECEPTACL.....	1
6	PAOZZ	9905008933570	81349	M43436/1-3	.BAND, MARKER.....	1
7	PAOZA	5935014615996	30003	3418AS6402	.CONNECTOR, RECEPTACL.....	1

END OF FIGURE

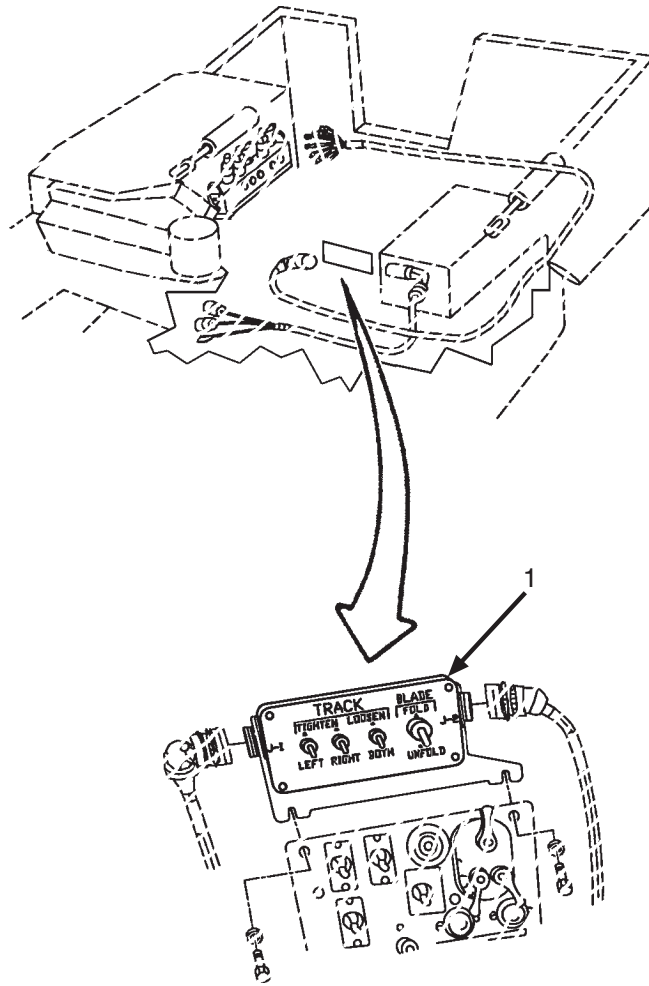


Figure 8. Track & Blade Control Box Installation

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
1	PAOZZ	5975015290044	19207	12491619	GROUP A: ELECTRICAL SYSTEM FIG. 8 TRACK & BLADE CONTROL BOX INSTALLATION BOX CONNECTOR, ELECT ELECTRICAL BOX.	1

END OF FIGURE

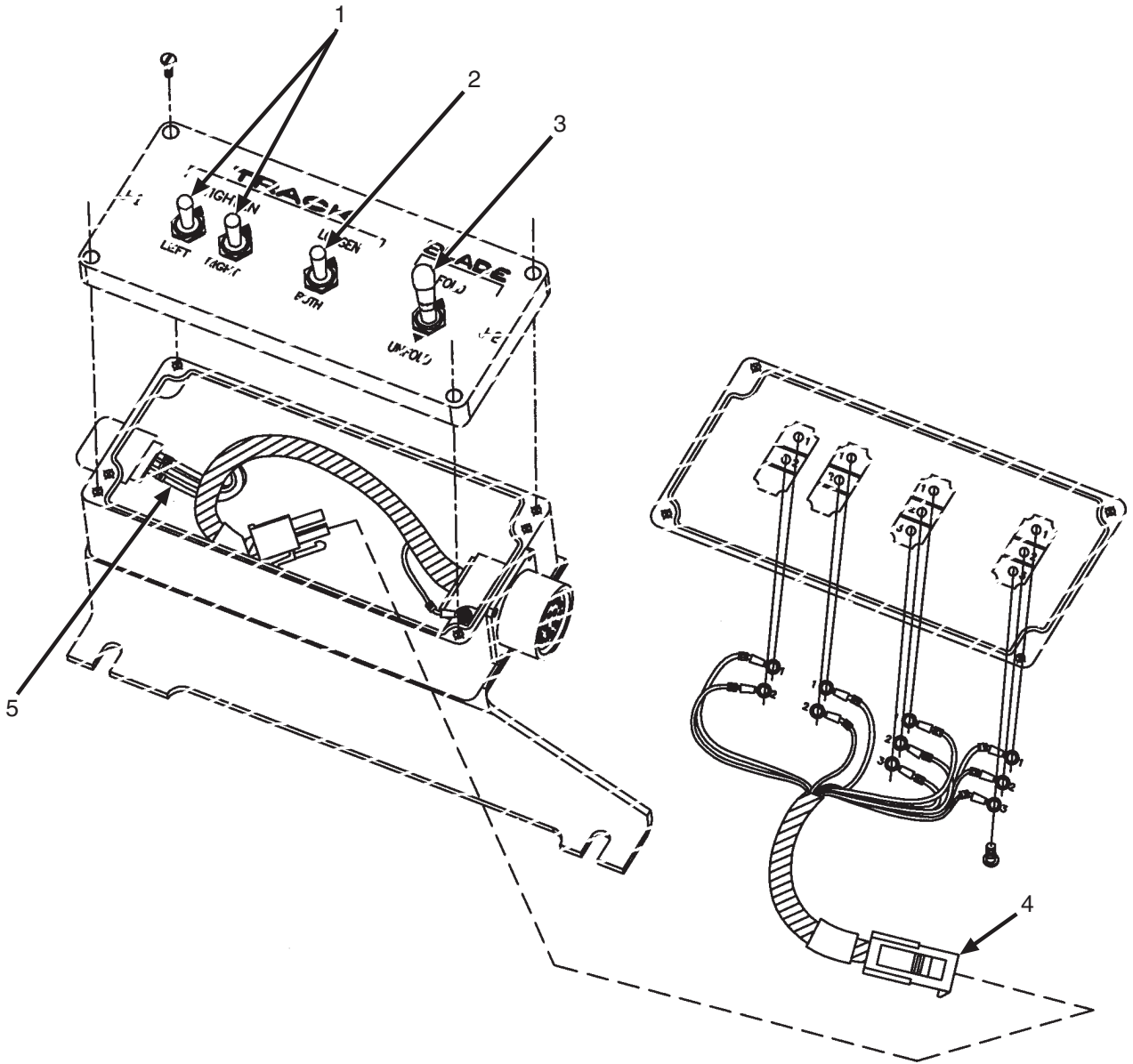


Figure 9. Track & Blade Control Box Cable Installation

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP A: ELECTRICAL SYSTEM						
FIG. 9 TRACK & BLADE CONTROL BOX						
CABLE INSTALLATION						
1	PAOZZ	5930006831626	96906	MS24523-30	SWITCH, TOGGLE.....	2
2	PAOZZ	5930006831629	96906	MS24523-23	SWITCH, TOGGLE.....	1
3	PAOZZ	5930008450177	96906	MS24658-27E	SWITCH, TOGGLE.....	1
4	PAOZZ	6150015290116	19207	12491623	WIRING HARNESS, BRAN.....	1
5	PAOZZ	6150015290111	19207	12491624	WIRING HARNESS, BRAN.....	1

END OF FIGURE

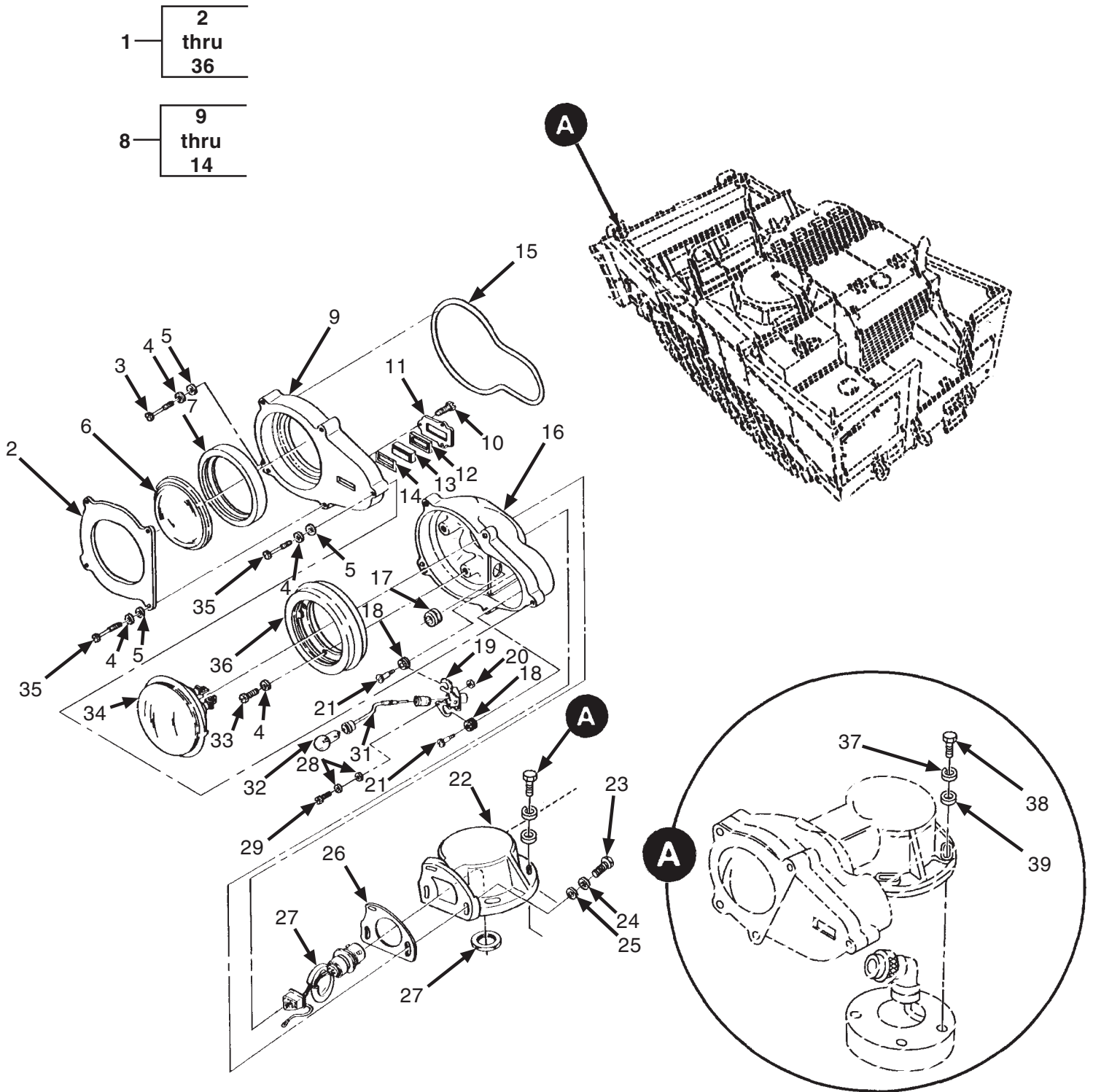


Figure 10. Headlight Assembly

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP A: ELECTRICAL SYSTEM FIG. 10 HEADLIGHT ASSEMBLY						
1	PAOOF	6240011791061	19207	12312192	LAMP, INCANDESCENT.....	2
2	PAOZZ	5365010803291	19207	12287284	.SPACER, PLATE.....	1
3	PAOZZ	5305011133587	19207	12287561-2	.SCREW, EXTERNALLY RE.....	3
4	PAOZZ	5310005435933	80205	MS35333-73	.WASHER, LOCK.....	9
5	PAOZZ	5310006853744	88041	AN960C8	.WASHER, FLAT.....	6
6	PAOZZ	6220005578229	19207	7962266	.LENS, LIGHT.....	1
7	PCOZZ	5330010911657	19207	12281848	.PACKING, PREFORMED.....	1
8	PAOOO	6220010835673	19207	12287285	.HEADLIGHT.....	1
9	PAOOO	6220010835673	19207	12287285	..HEADLIGHT.....	1
10	PAOZZ	5305010886826	80063	SM-D-766931-33	..SCREW, MACHINE.....	3
11	PAOZZ	6220011151547	19207	12287283	..BRACKET, LIGHT RETEN.....	1
12	PAOZZ	6220008933558	18873	HM122	..FILTER, LIGHT, CLEARA.....	1
13	PAOZZ	6220007716580	21450	7716580	..LENS, LIGHT.....	1
14	PAOZZ	5330007716570	19207	7716570	..SEAL, NONMETALLIC RO.....	1
15	MOOZZ		19207	11676794-AR	.RUBBER ROUND SECTIO.....	1
16	XAOZZ		19207	12287288	.HEADLIGHT, BODY.....	1
17	PAOZZ	5325006412792	96906	MS35489-60	.GROMMET, NONMETALLIC.....	1
18	PAOZZ	5325006230928	24617	5942525	.GROMMET, NONMETALLIC.....	2
19	PAOZZ	6250007415451	19207	8741651	.LAMPHOLDER.....	1
20	PAOZZ	5310009349761	80205	MS35649-264	.NUT, PLAIN, HEXAGON.....	1
21	PAOZZ	5305010803287	19207	12281838	.SCREW, SHOULDER.....	2
22	PAOZZ	6250011791062	19207	12312191	.BRACE, LAMPHOLDER.....	1
23	PAOZZ	5305013840620	19207	12387149-1	.SCREW, CAP, HEXAGON H.....	3
24	PAOZZ	5310002641340	96906	MS35333-77	.WASHER, LOCK.....	3
25	PAOZZ	5310013688068	19207	12347656-3	.WASHER, FLAT.....	3
26	PAOZZ	5330010803255	19207	12287708	.GASKET.....	1
27	PAOZZ	5995010803262	19207	12281850	.LEAD ASSEMBLY, ELECT.....	1
28	PAOZZ	5310011454564	80205	MS35333-154	.WASHER, LOCK.....	2
29	PAOZZ	5305013578161	96906	MS51849-33C	.SCREW, MACHINE.....	1
30	PAOZZ	5360010787661	19207	11639534	.SPRING, HELICAL, COMP.....	1
31	PAOZZ	6150010835520	19207	12281849	.LEAD, ELECTRICAL.....	1
32	PAOZZ	6240000190877	58536	AA52463-A08	.LAMP, INCANDESCENT.....	1
33	PAOZZ	5305013425174	96906	MS51849-74C	.SCREW, MACHINE.....	3
34	PAOZZ	6240003684972	96906	MS18003-4811	.LAMP, INCANDESCENT.....	1
35	PAOZZ	5306010835536	19207	12287561-1	.BOLT, EXTERNALLY REL.....	5
36	PAOZZ	6220011380911	19207	12312054	.MOUNT, HEADLIGHT SHO.....	1
37	PAOZZ	5310013819948	19207	12387327-22	WASHER, FLAT.....	8
38	PAOZZ	5305013843438	80204	B18231B10030NF	SCREW, CAP, HEXAGON H.....	8
39	PAOZZ	5310013790007	19207	12387327-20	WASHER, FLAT.....	8

END OF FIGURE

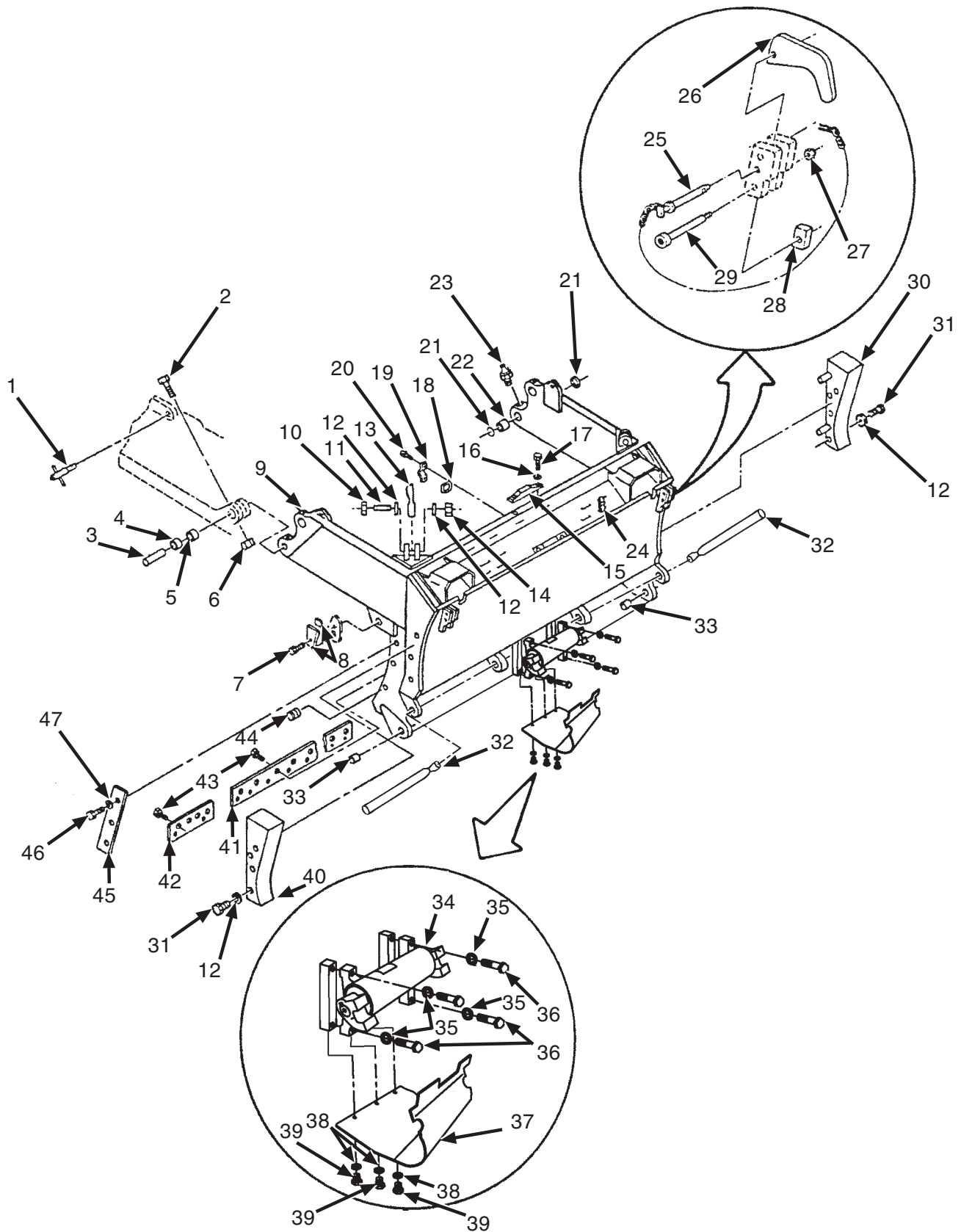


Figure 11. Apron Dozer & Blade Assembly (1 of 2)

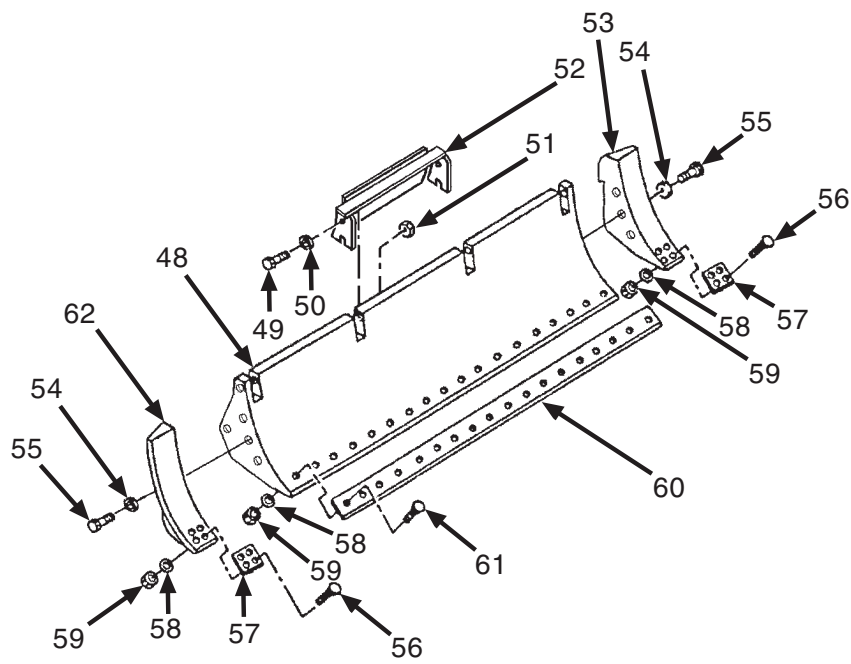


Figure 11. Apron Dozer & Blade Assembly (2 of 2)

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP B: HULL ASSEMBLY FIG. 11 APRON DOZER & BLADE ASSEMBLY						
1	PAOZZ	5315013860443	19207	12412098	PIN, STRAIGHT, HEADED.....	2
2	PAOZZ	5305011951594	97403	13204E2945	SCREW, CAP, HEXAGON H.....	2
3	PAOZZ	5315011844842	97403	13204E2943	PIN, STRAIGHT, HEADLE.....	2
4	PAOZZ	3120011844859	97403	13204E2944	BUSHING, SLEEVE.....	2
5	PAOZZ	3120011957988	19207	13204E2864	BUSHING, SLEEVE.....	2
6	PAOZZ	5310005957421	80205	MS17829-8C	NUT, SELF-LOCKING, HE.....	2
7	PAOZZ	5305009422196	80204	B1821BH038C100D	SCREW, CAP, HEXAGON H.....	2
8	PAOZZ	5315011844785	97403	13214E2664	PIN ASSEMBLY, APRON.....	2
9	PBOHD	3830014964440	31969	1826	APRON NEW DESIGN STEEL.....	1
10	PAOZZ	5310008913426	96906	MS35691-73	NUT, PLAIN, HEXAGON 1.00"X8 UNC-2B R.H. GRADE 8.....	2
11	PAOZZ	5307012308845	19207	12355497	STUD, PLAIN.....	2
12	PAOZZ	5310008098541	96906	MS27183-27	WASHER, FLAT.....	22
13	PFOZZ	2510012206378	19207	12355496	EYE, SUSPENSION.....	2
14	PAOZZ	5310008111377	81349	M45913/1-16CG5C	NUT, SELF-LOCKING, HE.....	2
15	PAOZZ	2590011844778	97403	13214E2412	GUIDE, CHAIN.....	2
16	PAOZZ	5310006379541	81718	H2525M	WASHER, LOCK.....	4
17	PAOZZ	5306011128681	80204	B1821BH038C125L	BOLT, MACHINE.....	4
18	PAOZZ	1670005886272	98897	353512-1	TIE DOWN, CARGO, AIRC.....	3
19	PAOZZ	5340006786574	07878	65B3732	STRAP, RETAINING.....	3
20	PAOZZ	5306012299592	80204	B1821BH038C044L	BOLT, MACHINE.....	6
21	PAOZZ	5325009435353	81349	M2742630176B	RING, RETAINING.....	4
22	PAOZZ	3120008082171	51588	B32L	BEARING, PLAIN, SELF-.....	2
23	PAOZZ	4730000504208	81343	AS15003-1	FITTING, LUBRICATION.....	2
24	PAOZZ	5340011829023	97403	13214E2360-3	STRAP, WEBBING.....	8
25	PAOZZ	5315013738796	19207	12412088	PIN, STRAIGHT, HEADED.....	2
26	PAOZZ	5340013742334	19207	12412086	BAR, LATCH.....	2
27	PAOZZ	5310000874652	81349	M45913/1-6CG5C	NUT, SELF-LOCKING, HE.....	2
28	PAOZZ	5340013745674	19207	12412087	STOP, MECHANICAL.....	2
29	PAOZZ	5305003071592	80205	MS51975-35	SCREW, SHOULDER.....	2
30	PAOZZ	2590011850169	97403	13214E2482	EXTENSION ASSEMBLY.....	1
31	PAOZZ	5305011943001	97403	13211E8616	SCREW, CAP, HEXAGON H.....	18
32	PAOZZ	3040015417341	31969	M2945-019	SHAFT, STRAIGHT.....	2
33	PAOZZ	3120012646006	19207	12357158-2	BUSHING, SLEEVE.....	2
34	PAOZZ	3040015421907	31969	M2715	CYLINDER ASSEMBLY, A.....	1
35	PAOZZ	5310005847888	96906	MS35338-51	WASHER, LOCK.....	4
36	PAOZZ	5305009474354	80204	B1821BH075C300N	SCREW, CAP, HEXAGON H.....	4
37	PAOZZ	5340015415445	31969	M2045-018-1	FACE PLATE, ACTUATOR.....	1
38	PAOZZ	5310006379541	81718	H2525M	WASHER, LOCK.....	3
39	PAOZZ	5305005434372	80204	B1821BH038C075N	SCREW, CAP, HEXAGON H.....	3
40	PAOZZ	2590011828768	97403	13214E2481	EXTENSION ASSEMBLY.....	1
41	PAOZZ	2590011870904	97403	13214E2515	BLADE, BULLDOZER, EAR.....	1
42	PAOZZ	5340012738821	97403	13214E2403	PLATE, MOUNTING.....	2
43	PAOZZ	5305000522234	80205	MS24667-76	SCREW, CAP, SOCKET HE.....	21
44	PAOZZ	4730004290516	81348	WW-P-471ACBAAG	PLUG, PIPE.....	2
45	PAOZZ	5365011832770	19207	12325738	SPACER, PLATE.....	2
46	PAOZZ	5306011128681	80204	B1821BH038C125L	BOLT, MACHINE.....	6
47	PAOZZ	5310000806004	96906	MS27183-14	WASHER, FLAT.....	6
48	PFOZZ	3830014727506	31969	115M2091	BLADE, BULLDOZER, EAR STEEL.....	1

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
49	PAOZZ	5305000712067	80204	B1821BH050C125N	SCREW,CAP,HEXAGON H BOLT IS USED ON STEEL BLADE LOWER BLADE ACTUATOR.	2
50	PAOZZ	5310008095998	96906	MS27183-18	WASHER,FLAT WASHER IS USED ON NEW DESIGN STEEL COVERPLATE FOR NEW STEEL BLADE ASSEMBLY. DIFFERENT SIZE 1/2 IN OR 0.526 FOR NEW STEEL BALDE ASSEMBLY.....	2
51	PAOZZ	5310002256993	81349	M45913/1-8CG5C	NUT,SELF-LOCKING,HE.....	2
52	PAOZZ	5340014916900	31969	115M2091-01	PLATE,ACTUATOR,MOUN STEEL BLADE....	1
53	PAOZZ	5340014917578	31969	M2705	BRACKET,MOUNTING L/H, STEEL.....	1
54	PAOZZ	5310008098541	96906	MS27183-27	WASHER,FLAT.....	6
55	PAOZZ	5305014872938	80204	B1821BH100C1000N	SCREW,CAP,HEXAGON H.....	6
56	PAOZZ	5306014919986	19207	12335260-2	BOLT,SQUARE NECK BOLT USED ON END BIT FOR STEEL BLADE.....	4
57	PAOZZ	5365014915061	31969	CE140801	SPACER,PLATE L.H. AND R.H. FOR STEEL BLADE.....	2
58	PAOZZ	5310008777527	19200	10910174-8	WASHER,FLAT.....	22
59	PAOZZ	5310008381702	96906	MS35691-57	NUT,PLAIN,HEXAGON 3/4"X10 UNC 2B R.H. GRADE 8.....	22
60	PAOZZ	3830011844977	97403	13211E8643	CUTTING EDGE,MOLDBO USED ON BOTH STEEL AND ALUM BLADE.....	1
61	PAOZZ	5306014919984	19207	12335260-1	BOLT,SQUARE NECK BOLT SIZE 3/4-10 UNC BY 2IN LG FOR STEEL BLADE.....	6
62	PAOZZ	5340014917584	31969	M2704	BRACKET,MOUNTING R/H,STEEL.....	1
63	PAOZZ	9510015418566	19207	12502193	BAR,METAL.....	2

END OF FIGURE

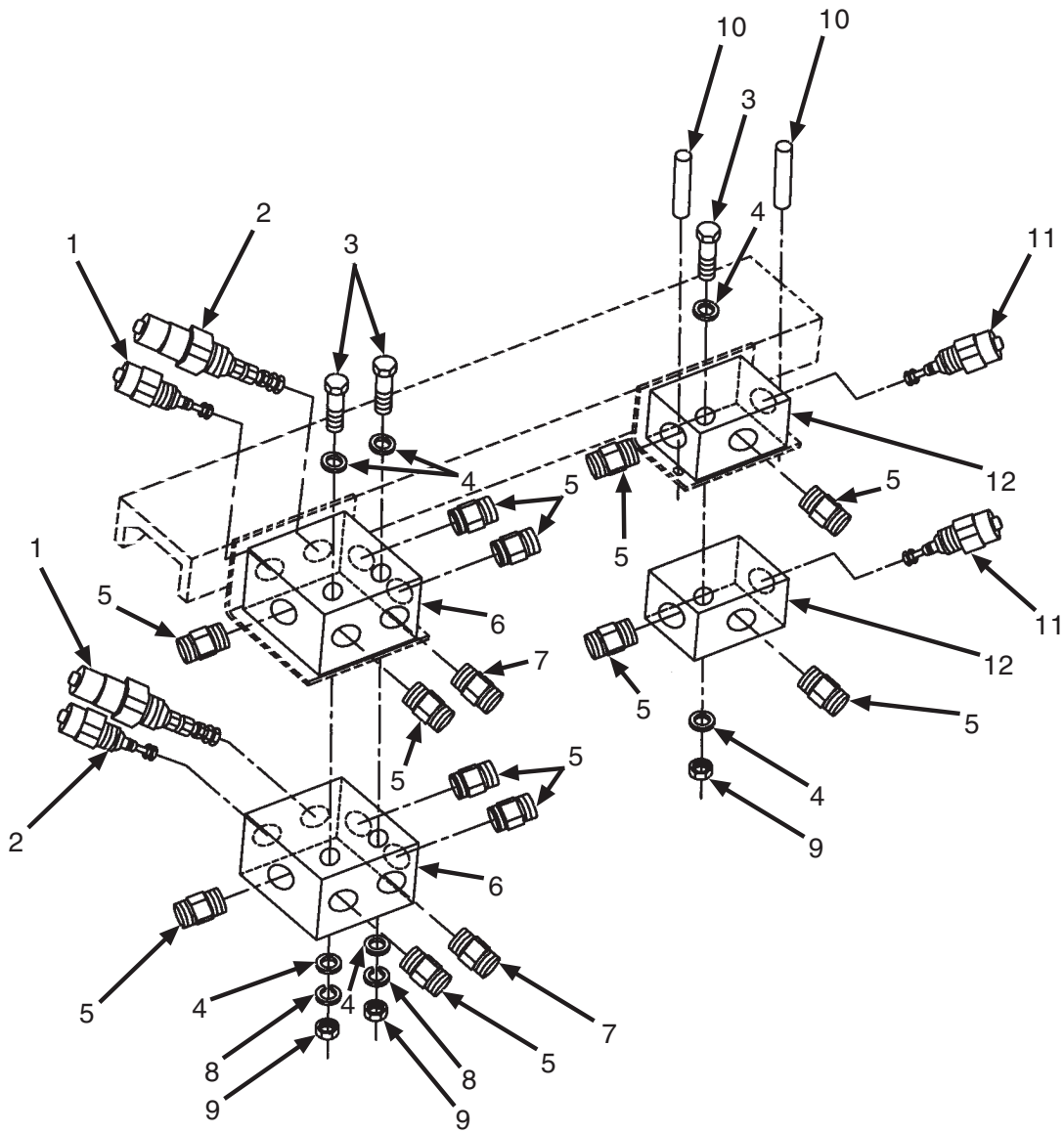


Figure 12. Hydraulic Valves & Fittings

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM NO	SMR CODE	NSN	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
GROUP C: HYDRAULIC SYSTEM FIG. 12 HYDRAULIC VALVES & FITTINGS						
1	PAOZO	4820013291661	54035	CBCG LCN	VALVE,CHECK.....	2
2	PAOZZ	4810015251114	54035	CWCG-LGN	VALVE,LINEAR,DIRECT.....	2
3	PAOZZ	5306011959819	80204	B1821BH031C350L	BOLT,MACHINE.....	3
4	PAOZZ	5310000814219	96906	MS27183-12	WASHER,FLAT.....	10
5	PAOZZ	4730002581864	96906	MS51525B4-6	ADAPTER,STRAIGHT,TU.....	12
6	PAOZZ	4730015251015	54035	XPI/S	MANIFOLD,HYDRAULIC.....	2
7	PAOZZ	4730004919576	96906	MS51525A6	ADAPTER,STRAIGHT,TU.....	2
8	PAOZZ	5310004079566	80205	MS35338-45	WASHER,LOCK.....	2
9	PAOZZ	5310008299981	96906	MS35649-2312	NUT,PLAIN,HEXAGON.....	3
10	PAOZZ	5315008340745	96906	MS16555-631	PIN,STRAIGHT,HEADLE.....	2
11	PAOZZ	4810015251077	54035	FCCB LAV (2.0 GP M)	VALVE,FLOW CONTROL.....	2
12	PAOZZ	4730015251012	54035	GAI/S	MANIFOLD,HYDRAULIC.....	2

END OF FIGURE

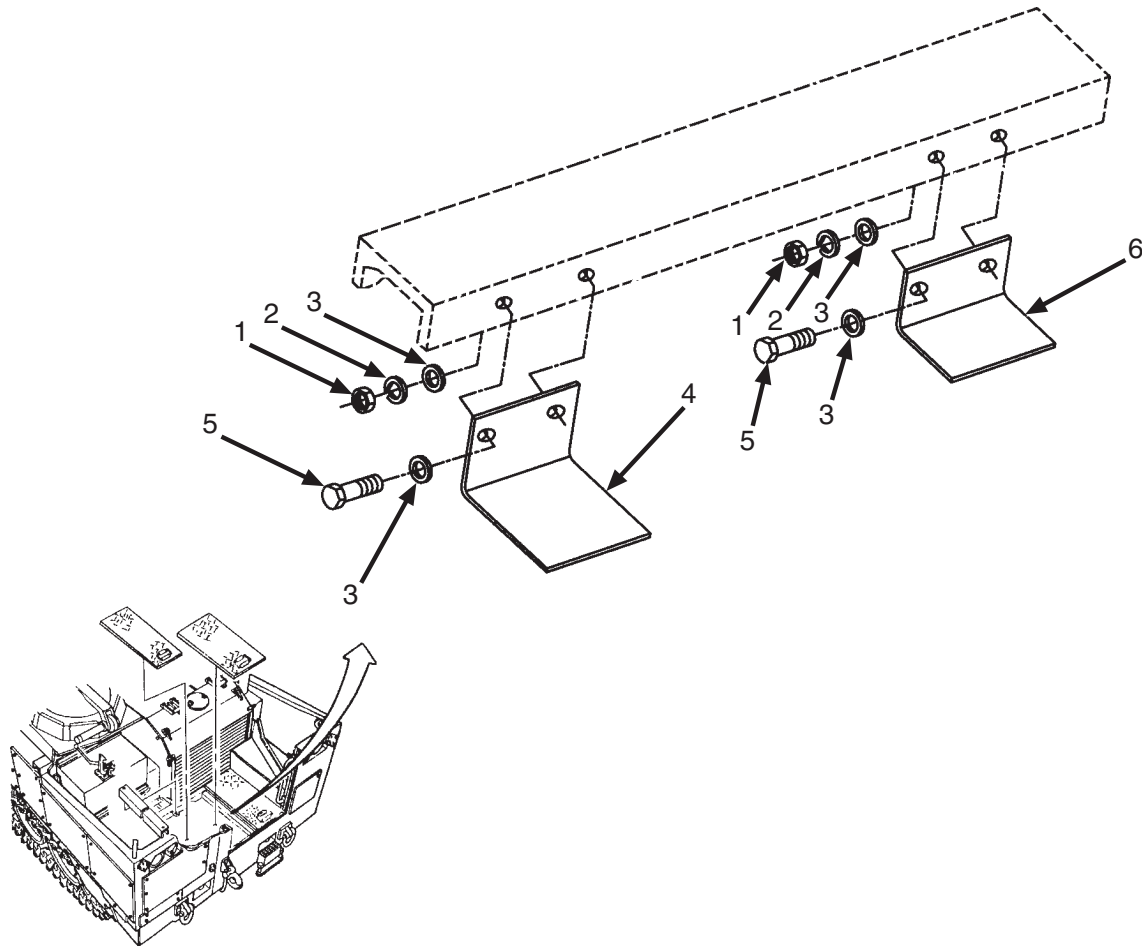


Figure 13. Hydraulic Valve Bracket Installation

SECTION II			TM5-2350-377-14&P		0048 00	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
GROUP C: HYDRAULIC SYSTEM						
FIG. 13 HYDRAULIC VALVE BRACKET						
INSTALLATION						
1	PAOZZ	5310004776768	80205	MS35649-2384	NUT, PLAIN, HEXAGON.....	4
2	PAOZZ	5310006379541	81718	H2525M	WASHER, LOCK.....	4
3	PAOZZ	5310000806004	96906	MS27183-14	WASHER, FLAT.....	8
4	PAOZZ	5340015291586	19207	12491620	BRACKET, ANGLE.....	1
5	PAOZZ	5305005434372	80204	B1821BH038C075N	SCREW, CAP, HEXAGON H.....	4
6	PAOZZ	5340015291580	19207	12491614	BRACKET, ANGLE.....	1

END OF FIGURE

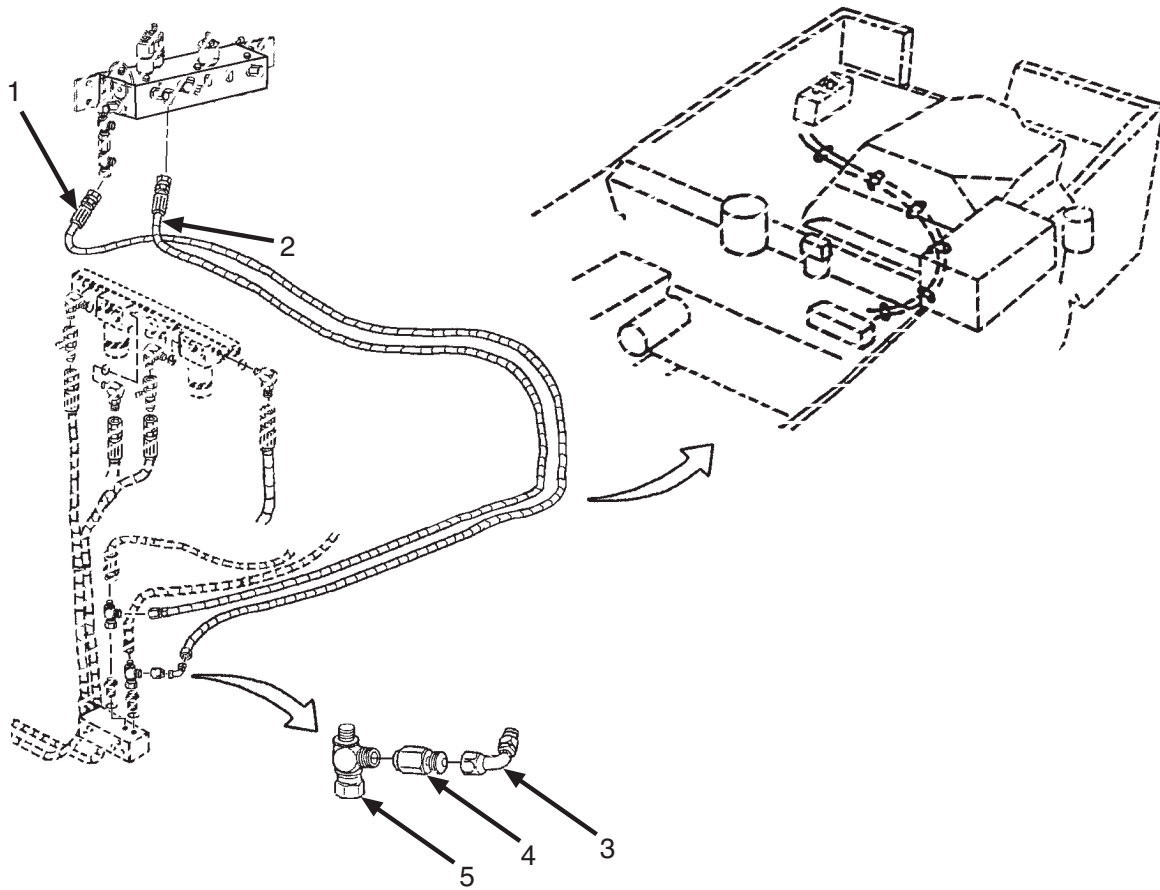


Figure 14. Hydraulic Hoses & Fittings (1 of 3)

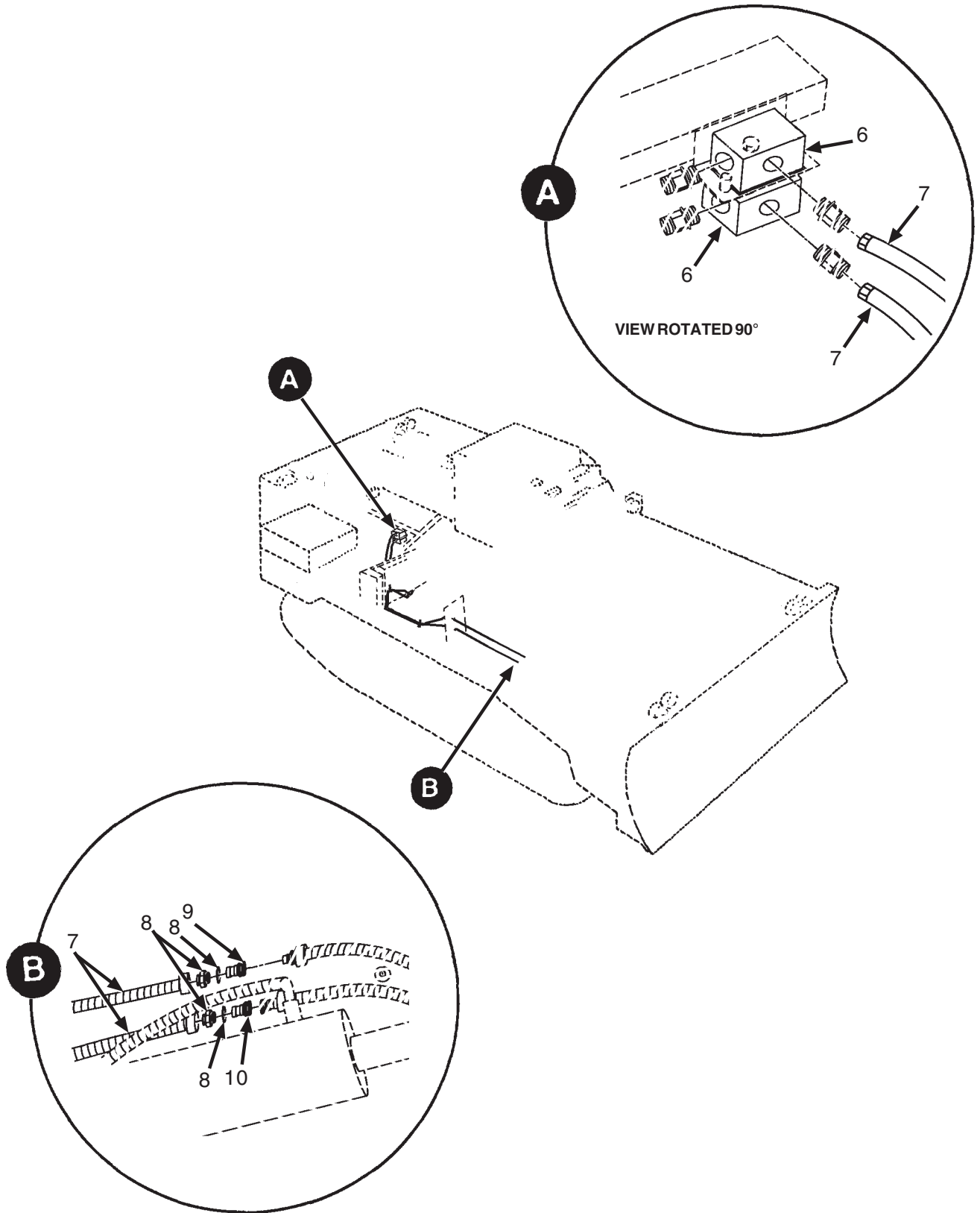


Figure 14. Hydraulic Hoses & Fittings (2 of 3)

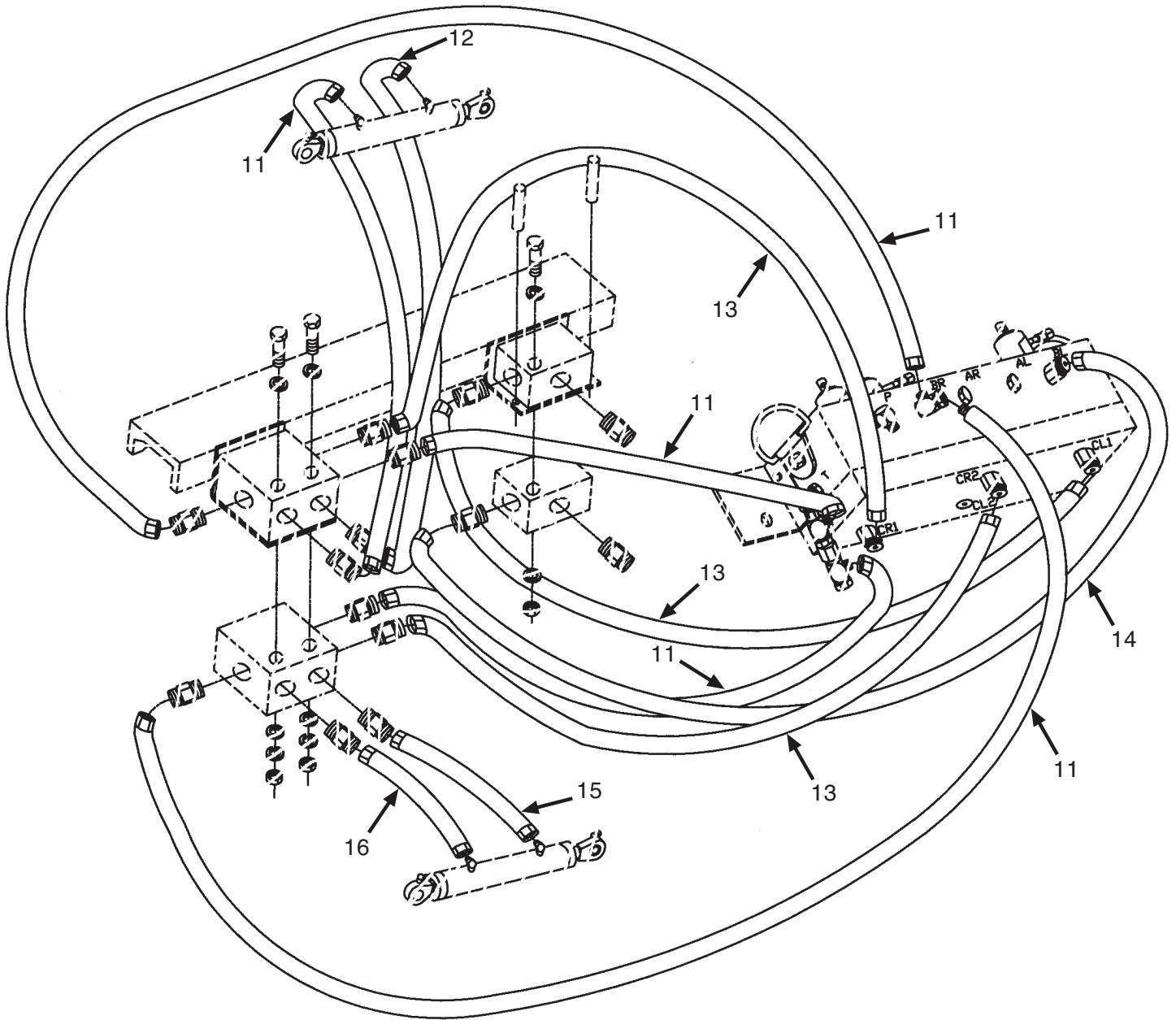


Figure 14. Hydraulic Hoses & Fittings (3 of 3)

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP C: HYDRAULIC SYSTEM FIG. 14 HYDRAULIC HOSES & FITTINGS						
1	PAOZZ	4720014554173	19207	13214E2457-15	HOSE ASSEMBLY, NONME L/H MAIN HYD MANIFOLD TOP 7 TO TRACK ADJUSTER MANIFOLD PORT "T", 130 INCHES LONG...	1
2	PAOZZ	4720014555065	19207	13214E2457-16	HOSE ASSEMBLY, NONME L/H MAIN HYD MANIFOLD TOP 9 TO TRACK ADJUSTER MANIFOLD PORT "P", 130 INCHES LONG...	1
3	PAOZZ	4730011953805	98441	39T3-8-8	ELBOW, TUBE 90 DEGREE.....	1
4	PAOZZ	4730004914983	01276	203102-8-8S	TEE, TUBE L/H MAIN HYD MANIFOLD TOP 9.....	1
5	PAOZZ	4730010240915	96906	MS51523A10	TEE, TUBE L/H MAIN HYD MANIFOLD, TOP 7.....	1
6	PAOZZ	4730015251012	54035	GAI/S	MANIFOLD, HYDRAULIC.....	2
7	PAOZZ	4720015293766	19207	12491616-4	HOSE ASSEMBLY, NONME.....	2
8	PAOZZ	4730002581864	96906	MS51525B4-6	ADAPTER, STRAIGHT, TU.....	2
9	PAOZZ	4730014948226	97111	H2-62-T6	COUPLING HALF, QUICK.....	1
10	PAOZZ	4730012457605	97111	H2-63-T6	COUPLING HALF, QUICK.....	1
11	PAOZZ	4720015293331	19207	12491616-1	HOSE ASSEMBLY, NONME.....	5
12	PAOZZ	4720015293770	19207	12491616-5	HOSE ASSEMBLY, NONME.....	1
13	PAOZZ	4720015293332	19207	12491616-2	HOSE ASSEMBLY, NONME.....	3
14	PAOZZ	4720015293329	19207	12491615	HOSE ASSEMBLY, NONME.....	1
15	PAOZZ	4720015293774	19207	12491616-6	HOSE ASSEMBLY, NONME.....	1
16	PAOZZ	4720015293335	19207	12491616-3	HOSE ASSEMBLY, NONME.....	1

END OF FIGURE

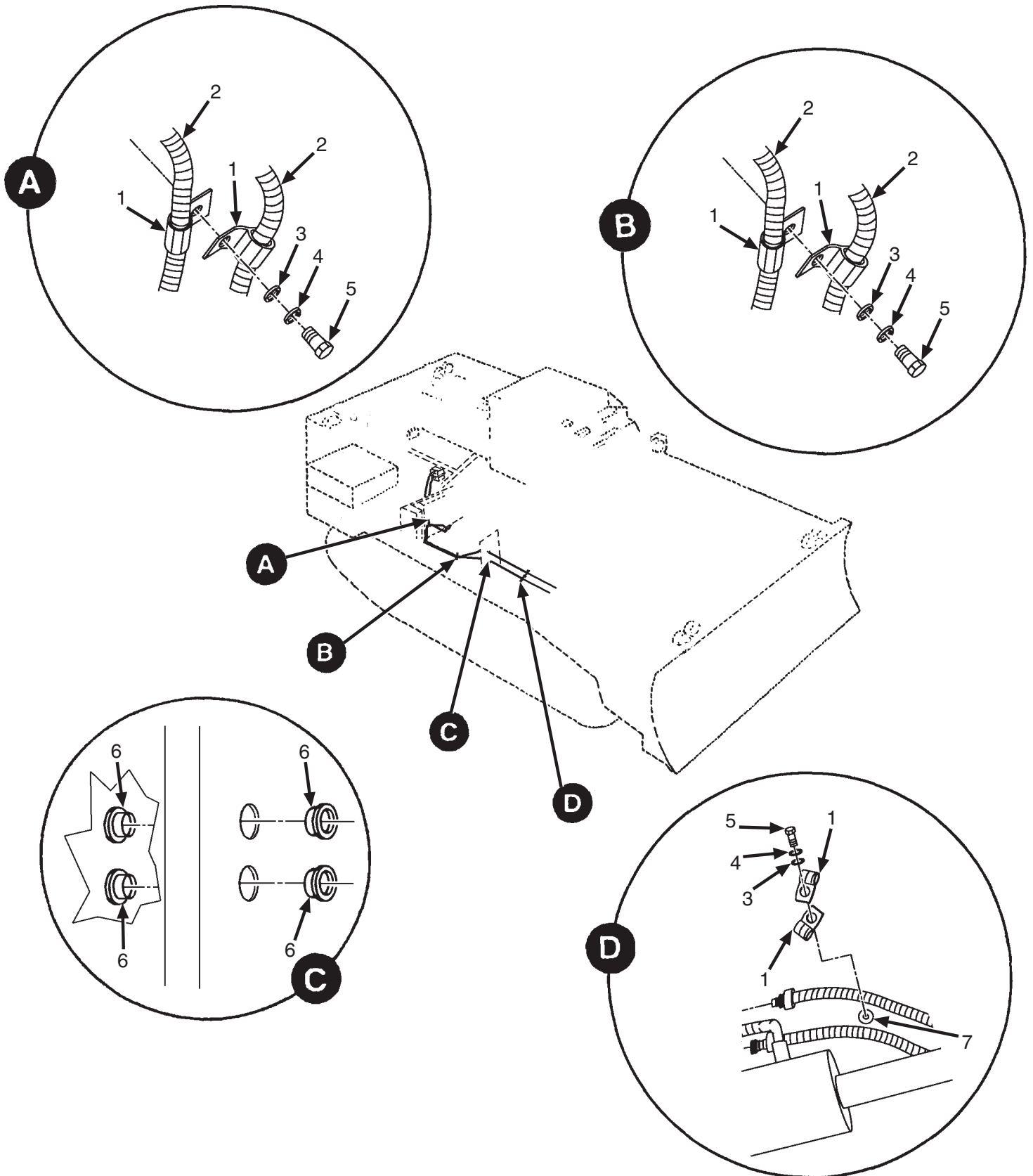


Figure 15. Blade Folding Hose Installation

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP C: HYDRAULIC SYSTEM FIG. 15 BLADE FOLDING HOSE INSTALATION						
1	PAOZZ	5340009856690	01276	900729-3	CLAMP, LOOP.....	6
2	PAOZZ	4720015293766	19207	12491616-4	HOSE ASSEMBLY, NONME.....	2
3	PAOZZ	5310000806004	96906	MS27183-14	WASHER, FLAT.....	3
4	PAOZZ	5310006379541	81718	H2525M	WASHER, LOCK.....	3
5	PAOZZ	5305005434372	80204	B1821BH038C075N	SCREW, CAP, HEXAGON H.....	3
6	PAOZZ	5325001749325	96906	MS35489-107	GROMMET, NONMETALLIC.....	4
7	PAOZZ	5310015293803	19207	12352658	NUT BLANK.....	1

END OF FIGURE

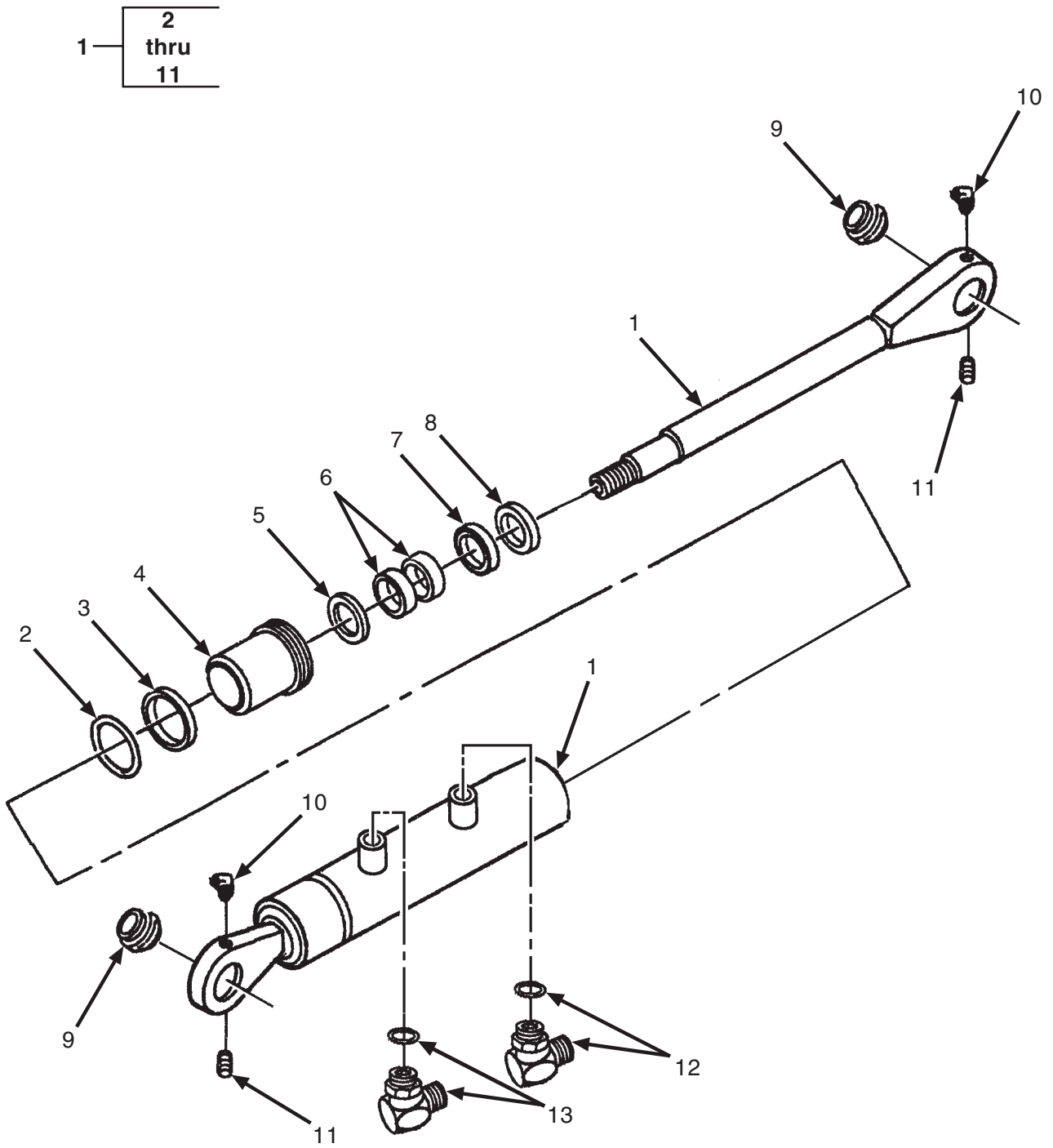


Figure 16. Track Adjusting Cylinder Assembly

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP D: SUSPENSION INSTALLATION FIG. 16 TRACK ADJUSTING CYLINDER ASSEMBLY						
1	PAOFF	3040014467606	19207	12466272	CYLINDER ASSEMBLY, A HYDRAULIC, AUTO ADJUSTING. (NEW PRODUCTION)....	2
2	PCFZZ	5330011604349	81343	M83461/1-336	.PACKING, PREFORMED PART OF KIT P/N 12335044-2.....	1
3	KFFZZ		96906	MS28782-39	.RING, BACK UP PART OF KIT P/N 12335044-2.....	1
4	XAFZZ		62259	B107278-1	.HEAD.....	1
5	KFFZZ		19207	12335304-1	.RING, BUFFER PART OF KIT P/N 12335044-2.....	1
6	KFFZZ		19207	12335305-2	.RING, WEAR PART OF KIT P/N 12335044- 2.....	2
7	KFFZZ		19207	12335044-2	.SEAL PART OF KIT P/N 12335044-2....	1
8	KFFZZ		19207	12335303-2	.WIPER PART OF KIT P/N 12335044-2...	1
9	PAFZZ	3120005874781	60380	13212E4089-2	.BEARING, PLAIN, SELF-.....	2
10	PAOZZ	4730001720034	81343	AS15003-6	.FITTING, LUBRICATION.....	2
11	PAOZZ	4730000189566	24617	G1251	.PLUG, PIPE.....	2
12	PAOZZ	4730012424510	01276	2062-4-6S	ELBOW, TUBE TO BOSS.....	2
13	PAOZZ	4730001433941	96906	MS51527A6	ELBOW, TUBE TO BOSS.....	2

END OF FIGURE

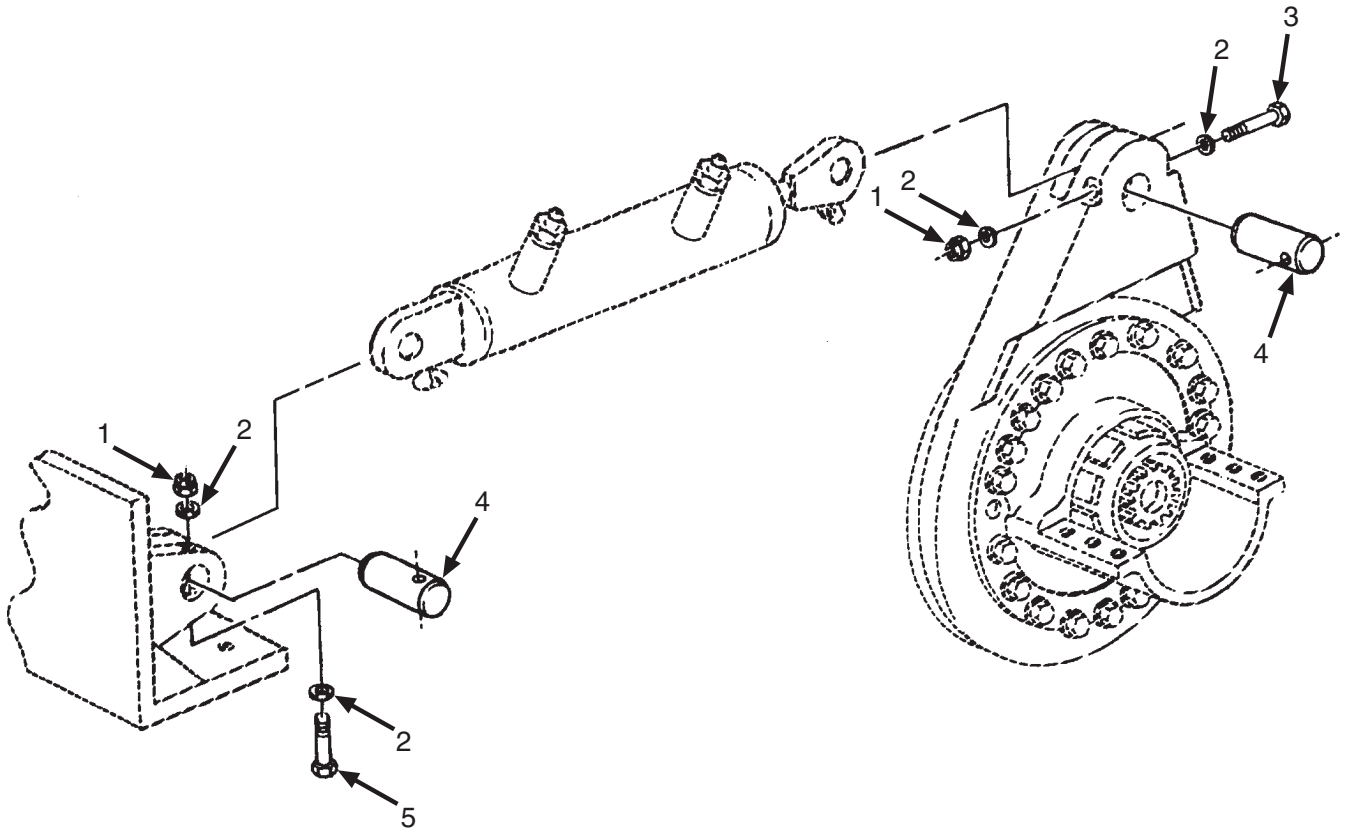
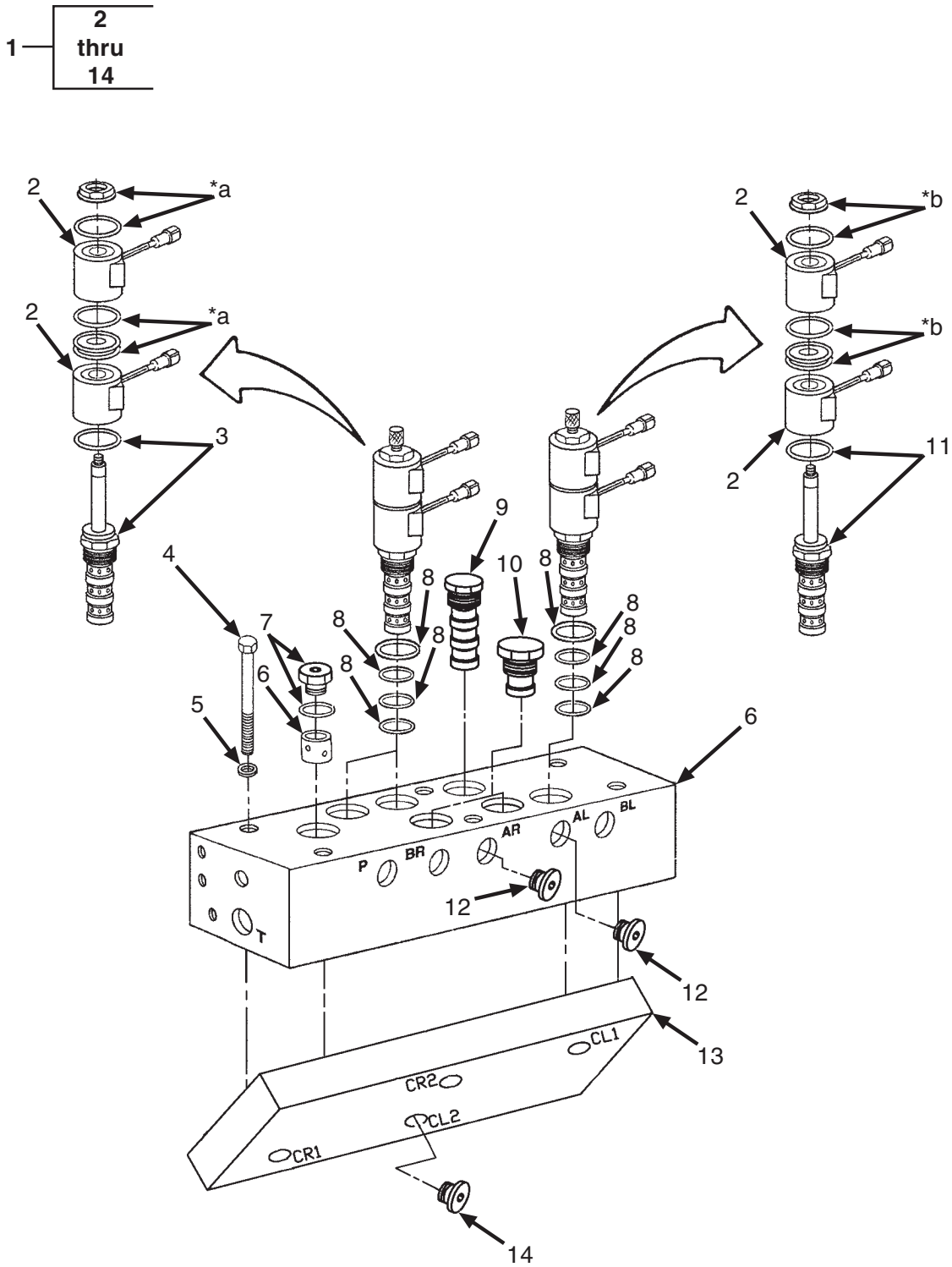


Figure 17. Track Adjusting Cylinder Installation

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP D: SUSPENSION INSTALLATION						
FIG. 17 TRACK ADJUSTING CYLINDER						
INSTALLATION						
1	PAOZZ	5310004838790	80205	MS17829-6C	NUT, SELF-LOCKING, HE.....	4
2	PAOZZ	5310000806004	96906	MS27183-14	WASHER, FLAT.....	8
3	PAOZZ	5305009640503	80204	B1821BH038C500N	SCREW, CAP, HEXAGON H NEW PRODUCTION.	2
4	PAOZZ	5315011808641	97403	13211E8634	PIN, STRAIGHT, HEADLE.....	4
5	PAOZZ	5305002693225	80205	MS90725-75	SCREW, CAP, HEXAGON H.....	2

END OF FIGURE



*a is included with item 3

*b is included with item 11

Figure 18. Track & Blade Manifold Assembly

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP D: SUSPENSION INSTALLATION FIG. 18 TRACK & BLADE MANIFOLD ASSEMBLY						
1	PAOOZ	4730015292099	19207	12491612	MANIFOLD, HYDRAULIC.....	1
2	PAOZZ	5950014727835	005K6	6309802	. COIL, ELECTRICAL WITH ELECTRICAL PLUG.....	6
3	PAOZZ	4810015251156	005K6	SV08-47DM-0-N-0	. VALVE, SOLENOID.....	2
4	PAOZZ	5305002694528	80204	B1821BH038F425N	. SCREW, CAP, HEXAGON H.....	6
5	PAOZZ	5310000806004	96906	MS27183-14	. WASHER, FLAT.....	6
6	PAOZZ	4730014467819	5T142	97-221	. MANIFOLD ASSEMBLY, H.....	1
7	PAOZZ	5365012174133	01276	900598-8S	. PLUG, MACHINE THREAD WITH O-RING...	1
8	PAOZA	5330014629882	0BHP2	SK-08-4P-MMM	. PARTS KIT, SEAL REPL O-RINGS FOR 4 WAY VALVE.....	4
9	PAOZZ	5340015251049	005K6	CP08-40-N	. PLUG ASSEMBLY, SEALI.....	1
10	PAOZZ	5340015251041	005K6	CP08-20-N	. PLUG ASSEMBLY, SEALI.....	2
11	PAOZZ	4810014631795	005K6	SV-08-47CM-0-N-0 0	. VALVE, SOLENOID.....	1
12	PAOZZ	5365015251176	30780	6 HP50N	. PLUG, MACHINE THREAD.....	2
13	PAOZZ	5340015418263	19207	12491613	. PLATE, MOUNTING.....	1
14	PAOZZ	5365010429079	30780	4 HP50N-S	. PLUG, MACHINE THREAD.....	1

END OF FIGURE

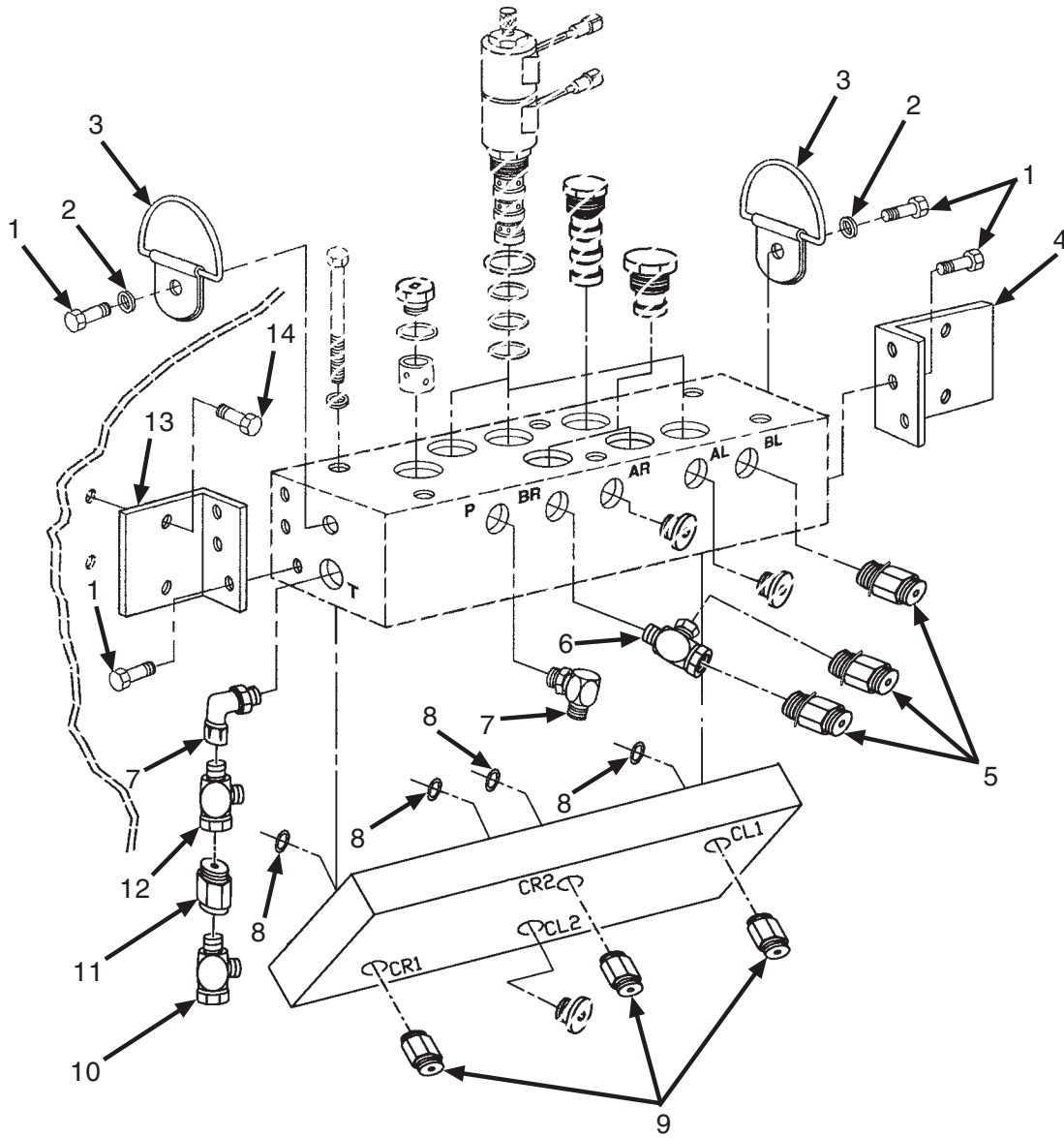


Figure 19. Track & Blade Manifold Installation

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP D: SUSPENSION INSTALLATION FIG. 19 TRACK & BLADE MANIFOLD INSTALLATION						
1	PAOZZ	5305005434372	80204	B1821BH038C075N	SCREW, CAP, HEXAGON H.....	8
2	PAOZZ	5310000806004	96906	MS27183-14	WASHER, FLAT.....	2
3	PAOZZ	3990013148393	19207	12342077	TIE DOWN, CARGO, VEHI.....	2
4	PAOZZ	5340014877145	19207	12466282	BRACKET, ANGLE REAR.....	1
5	PAOZZ	4730002581864	96906	MS51525B4-6	ADAPTER, STRAIGHT, TU.....	3
6	PAOZZ	4730015251065	30780	6 AOG5JG5	TEE, TUBE.....	1
7	PAOZZ	4730008225609	96906	MS51527A8	ELBOW, TUBE TO BOSS 90 DEGREE WITH O-RING, PORT "P".....	2
8	PCOZZ	5331010902741	81343	MS28775-109	O-RING.....	4
9	PAOZZ	4730010075232	96906	MS51525A4Z	ADAPTER, STRAIGHT, TU.....	3
10	PAOZZ	4730004914983	01276	203102-8-8S	TEE, TUBE.....	1
11	PAOZZ	4730006473343	96906	51534A8-4	REDUCER, TUBE.....	1
12	PAOZZ	4730008086668	81343	4-4-4 070432C	TEE, TUBE.....	1
13	PAOZZ	5340014877139	19207	12466281	BRACKET, ANGLE FRONT.....	1
14	PAOZZ	5305000680510	80204	B1821BH038C100N	SCREW, CAP, HEXAGON H.....	4

END OF FIGURE

KIT LIST

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
GROUP E: SPECIAL KITS						
FIG. KITS						
PAFZZ	5330011836826	19207	12335044-2	PARTS KIT, SEAL REPL.....		1
				PACKING, PREFORMED	(1) 16-2	
				RING, BACK UP	(1) 16-3	
				RING, BUFFER	(1) 16-5	
				RING, WEAR	(2) 16-6	
				SEAL	(1) 16-7	
				WIPER	(1) 16-8	

END OF FIGURE

KIT-1

0049 00-1/2 blank

SPECIAL TOOLS LIST

The M9 ACE with HBF-TT does not currently have any assigned special tools list items.

CROSS-REFERENCE INDEXES

STOCK NUMBER	NATIONAL STOCK NUMBER INDEX			
	FIG.	ITEM	STOCK NUMBER	FIG. ITEM
4730-00-018-9566	16	11	5935-00-572-9180	4 6
6240-00-019-0877	10	32	5310-00-582-5965	2 15
4730-00-050-4208	11	23	5310-00-584-7888	11 35
5305-00-052-2234	11	43	3120-00-587-4781	16 9
5999-00-057-2929	1	10	1670-00-588-6272	11 18
	3	6	5310-00-595-7421	11 6
	4	8	5325-00-623-0928	10 18
5305-00-068-0510	19	14	5310-00-637-9541	11 16
5305-00-071-2067	11	49		11 38
5310-00-080-6004	11	47		13 2
	13	3		15 4
	15	3	5325-00-641-2792	10 17
	17	2	4730-00-647-3343	19 11
	18	5	5340-00-678-6574	11 19
	19	2	5930-00-683-1626	9 1
5310-00-081-4219	12	4	5930-00-683-1629	9 2
5310-00-087-4652	11	27	5310-00-685-3744	10 5
4730-00-143-3941	16	13	6250-00-741-5451	10 19
5940-00-143-4794	4	12	5330-00-771-6570	10 14
4730-00-172-0034	16	10	6220-00-771-6580	10 13
5325-00-174-9325	15	6	3120-00-808-2171	11 22
5310-00-225-6993	11	51	5310-00-809-4058	2 17
5310-00-250-9477	2	16	5310-00-809-5998	11 50
4730-00-258-1864	12	5	5310-00-809-8541	11 12
	14	8		11 54
	19	5	5310-00-811-1377	11 14
5310-00-264-1340	10	24	5940-00-813-0698	6 2
5305-00-269-3225	17	5		7 4
5305-00-269-4528	18	4	4730-00-822-5609	19 7
5305-00-307-1592	11	29	5310-00-829-9981	12 9
6240-00-368-4972	10	34	5935-00-833-8561	2 10
5940-00-399-6676	2	11		3 9
	3	10		4 9
	4	10	5970-00-833-8562	2 12
5310-00-407-9566	12	8		3 11
4730-00-429-0516	11	44		4 11
5310-00-477-6768	13	1	5310-00-833-8567	1 11
5310-00-483-8790	17	1		3 5
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	19	10	5315-00-834-0745	12 10
4730-00-491-9576	12	7	5310-00-838-1702	11 59
5310-00-543-2410	1	3	5930-00-845-0177	9 3
5305-00-543-4372	11	39	5340-00-854-6729	2 14
	13	5	5310-00-877-7527	11 58
	15	5	5305-00-889-2997	1 2
	19	1	5310-00-891-3426	11 10
5310-00-543-5933	10	4	6220-00-893-3558	10 12
6220-00-557-8229	10	6	9905-00-893-3570	1 7
5935-00-572-9180	1	12		2 8
	3	4		3 8

CROSS-REFERENCE INDEXES

STOCK NUMBER	NATIONAL STOCK NUMBER INDEX			
	FIG.	ITEM	STOCK NUMBER	FIG. ITEM
9905-00-893-3570	4	5	2590-01-184-4778	11 15
	5	4	5315-01-184-4785	11 8
	6	5	5315-01-184-4842	11 3
	7	6	3120-01-184-4859	11 4
5310-00-934-9761	10	20	3830-01-184-4977	11 60
9905-00-935-3863	1	9	2590-01-185-0169	11 30
	2	9	2590-01-187-0904	11 41
	3	7	5330-01-193-0208	1 5
	6	3	5305-01-194-3001	11 31
5305-00-942-2196	11	7	5305-01-195-1594	11 2
5325-00-943-5353	11	21	4730-01-195-3805	14 3
5305-00-947-4354	11	36	3120-01-195-7988	11 5
5305-00-964-0503	17	3	5306-01-195-9819	12 3
5340-00-985-6690	15	1	5365-01-217-4133	18 7
4730-01-007-5232	19	9	2510-01-220-6378	11 13
	19	9	5306-01-229-9592	11 20
4730-01-024-0915	14	5	5307-01-230-8845	11 11
5365-01-042-9079	18	14	4730-01-242-4510	16 12
5935-01-076-9462	7	2	4730-01-245-7605	14 10
5360-01-078-7661	10	30	3120-01-264-6006	11 33
5330-01-080-3255	10	26	5340-01-273-8821	11 42
5995-01-080-3262	10	27	3990-01-314-8393	19 3
5305-01-080-3287	10	21	4820-01-329-1661	12 1
5365-01-080-3291	10	2	5305-01-342-5174	10 33
6150-01-083-5520	10	31	5305-01-357-8161	10 29
5306-01-083-5536	10	35	5310-01-368-8068	10 25
6220-01-083-5673	10	8	5315-01-373-8796	11 25
	10	9	5340-01-374-2334	11 26
5305-01-088-6826	10	10	5340-01-374-5674	11 28
5331-01-090-2741	19	8	5310-01-379-0007	10 39
5330-01-091-1657	10	7	5310-01-381-9948	10 37
5935-01-109-7518	5	3	5305-01-384-0620	10 23
5935-01-109-7525	2	6	5305-01-384-3438	10 38
5306-01-112-8681	11	17	5315-01-386-0443	11 1
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5305-01-113-3587	10	3		3 2
6220-01-115-1547	10	11		4 2
5935-01-119-2830	7	5	4720-01-423-2962	2 4
6220-01-138-0911	10	36	3040-01-446-7606	16 1
5310-01-145-4564	10	28	4730-01-446-7819	18 6
5999-01-160-0673	5	5	4720-01-455-4173	14 1
5330-01-160-4349	16	2	4720-01-455-5065	14 2
6240-01-179-1061	10	1	5935-01-461-5996	7 7
6250-01-179-1062	10	22	5330-01-462-9882	18 8
5315-01-180-8641	17	4	4810-01-463-1795	18 11
5995-01-182-1321	1	1	3830-01-472-7506	11 48
2590-01-182-8768	11	40	5950-01-472-7835	18 2
5340-01-182-9023	11	24	5305-01-487-2938	11 55
5365-01-183-2770	11	45	5340-01-487-7139	19 13
5330-01-183-6826	KIT		5340-01-487-7145	19 4

CROSS-REFERENCE INDEXES

STOCK NUMBER	NATIONAL STOCK NUMBER INDEX		FIG.	ITEM
	FIG.	ITEM		
5365-01-491-5061	11	57		
5340-01-491-6900	11	52		
5340-01-491-7578	11	53		
5340-01-491-7584	11	62		
5306-01-491-9984	11	61		
5306-01-491-9986	11	56		
4730-01-494-8226	14	9		
3830-01-496-4440	11	9		
5935-01-506-0573	6	6		
4730-01-525-1012	12	12		
	14	6		
4730-01-525-1015	12	6		
5340-01-525-1041	18	10		
5340-01-525-1049	18	9		
4730-01-525-1065	19	6		
4810-01-525-1077	12	11		
4810-01-525-1114	12	2		
4810-01-525-1156	18	3		
5365-01-525-1176	18	12		
5975-01-529-0044	8	1		
6150-01-529-0111	7	1		
	9	5		
6150-01-529-0116	6	1		
	9	4		
5995-01-529-1535	3	1		
5975-01-529-1565	4	1		
5340-01-529-1580	13	6		
5340-01-529-1586	13	4		
4730-01-529-2099	18	1		
5995-01-529-2108	2	1		
6150-01-529-2140	5	1		
4720-01-529-3329	14	14		
4720-01-529-3331	14	11		
4720-01-529-3332	14	13		
4720-01-529-3335	14	16		
4720-01-529-3766	14	7		
	15	2		
4720-01-529-3770	14	12		
4720-01-529-3774	14	15		
5310-01-529-3803	15	7		
3040-01-541-7341	11	32		
5340-01-541-8263	18	13		
9510-01-541-8566	11	63		
3040-01-542-1907	11	34		

CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX STOCK NUMBER	FIG.	ITEM
U0759	AAU9798	5999-01-160-0673	5	5
58536	AA52463-A08	6240-00-019-0877	10	32
88041	AN960C8	5310-00-685-3744	10	5
81343	AS15003-1	4730-00-050-4208	11	23
81343	AS15003-6	4730-00-172-0034	16	10
62259	B107278-1		16	4
80204	B1821BH031C350L	5306-01-195-9819	12	3
80204	B1821BH038C044L	5306-01-229-9592	11	20
80204	B1821BH038C075N	5305-00-543-4372	11	39
			13	5
			15	5
			19	1
80204	B1821BH038C100D	5305-00-942-2196	11	7
80204	B1821BH038C100N	5305-00-068-0510	19	14
80204	B1821BH038C125L	5306-01-112-8681	11	17
			11	46
80204	B1821BH038C500N	5305-00-964-0503	17	3
80204	B1821BH038F425N	5305-00-269-4528	18	4
80204	B1821BH050C125N	5305-00-071-2067	11	49
80204	B1821BH075C300N	5305-00-947-4354	11	36
80204	B1821BH100C1000N	5305-01-487-2938	11	55
80204	B18231B10030NF	5305-01-384-3438	10	38
51588	B32L	3120-00-808-2171	11	22
54035	CBCG LCN	4820-01-329-1661	12	1
31969	CE140801	5365-01-491-5061	11	57
005K6	CP08-20-N	5340-01-525-1041	18	10
005K6	CP08-40-N	5340-01-525-1049	18	9
54035	CWCG-LGN	4810-01-525-1114	12	2
54035	FCCB LAV (2.0 GP M)	4810-01-525-1077	12	11
54035	GAI/S	4730-01-525-1012	12	12
			14	6
24617	G1251	4730-00-018-9566	16	11
18873	HM122	6220-00-893-3558	10	12
97111	H2-62-T6	4730-01-494-8226	14	9
97111	H2-63-T6	4730-01-245-7605	14	10
81718	H2525M	5310-00-637-9541	11	16
			11	38
			13	2
			15	4
96906	MS16555-631	5315-00-834-0745	12	10
80205	MS17829-6C	5310-00-483-8790	17	1
80205	MS17829-8C	5310-00-595-7421	11	6
96906	MS18003-4811	6240-00-368-4972	10	34
96906	MS21333-103	5340-00-854-6729	2	14
96906	MS24523-23	5930-00-683-1629	9	2
96906	MS24523-30	5930-00-683-1626	9	1
96906	MS24658-27E	5930-00-845-0177	9	3
80205	MS24667-76	5305-00-052-2234	11	43
81343	MS25036-101	5940-00-813-0698	6	2
			7	4

CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX STOCK NUMBER	FIG.	ITEM
81343	MS25036-112	5940-00-143-4794	4	12
96906	MS27183-10	5310-00-809-4058	2	17
96906	MS27183-12	5310-00-081-4219	12	4
96906	MS27183-14	5310-00-080-6004	11	47
			13	3
			15	3
			17	2
			18	5
			19	2
96906	MS27183-18	5310-00-809-5998	11	50
96906	MS27183-27	5310-00-809-8541	11	12
			11	54
81343	MS28775-109	5331-01-090-2741	19	8
96906	MS28782-39		16	3
96906	MS3470W14-5P	5935-01-119-2830	7	5
96906	MS3475W14-5S	5935-01-109-7525	2	6
96906	MS3476WA-5S		4	4
96906	MS3476W20-16P	5935-01-109-7518	5	3
96906	MS3476W20-16S	5935-01-076-9462	7	2
80205	MS35206-215	5305-00-889-2997	1	2
80205	MS35333-154	5310-01-145-4564	10	28
80205	MS35333-73	5310-00-543-5933	10	4
96906	MS35333-77	5310-00-264-1340	10	24
80205	MS35338-40	5310-00-543-2410	1	3
80205	MS35338-44	5310-00-582-5965	2	15
80205	MS35338-45	5310-00-407-9566	12	8
96906	MS35338-51	5310-00-584-7888	11	35
96906	MS35489-107	5325-00-174-9325	15	6
96906	MS35489-60	5325-00-641-2792	10	17
80205	MS35649-2254	5310-00-250-9477	2	16
96906	MS35649-2312	5310-00-829-9981	12	9
80205	MS35649-2384	5310-00-477-6768	13	1
80205	MS35649-264	5310-00-934-9761	10	20
96906	MS35691-57	5310-00-838-1702	11	59
96906	MS35691-73	5310-00-891-3426	11	10
96906	MS51523A10	4730-01-024-0915	14	5
96906	MS51525A4Z	4730-01-007-5232	19	9
			19	9
96906	MS51525A6	4730-00-491-9576	12	7
96906	MS51525B4-6	4730-00-258-1864	12	5
			14	8
			19	5
96906	MS51527A6	4730-00-143-3941	16	13
96906	MS51527A8	4730-00-822-5609	19	7
96906	MS51849-33C	5305-01-357-8161	10	29
96906	MS51849-74C	5305-01-342-5174	10	33
80205	MS51975-35	5305-00-307-1592	11	29
80205	MS90725-75	5305-00-269-3225	17	5
81349	M13486/1-5AR		1	8
			2	13
			3	3

CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX STOCK NUMBER	FIG.	ITEM
81349	M13486/1-5AR		4	3
31969	M2045-018-1		11	37
81349	M22759/16-20-9		6	4
81349	M22759/16-20-9AR		7	3
81343	M23053/1-105-0AR		2	7
81349	M23053/1-201-0AR		1	6
31969	M2704	5340-01-491-7584	11	62
31969	M2705	5340-01-491-7578	11	53
31969	M2715	3040-01-542-1907	11	34
81349	M2742630176B	5325-00-943-5353	11	21
31969	M2945-019	3040-01-541-7341	11	32
81349	M43436/1-3	9905-00-893-3570	1	7
			2	8
			3	8
			4	5
			5	4
			6	5
			7	6
96906	M43436/4-1		1	4
		9905-00-935-3863	1	9
			2	9
			3	7
			6	3
81349	M45913/1-16CG5C	5310-00-811-1377	11	14
81349	M45913/1-6CG5C	5310-00-087-4652	11	27
81349	M45913/1-8CG5C	5310-00-225-6993	11	51
81343	M83461/1-336	5330-01-160-4349	16	2
0BHP2	SK-08-4P-MMM	5330-01-462-9882	18	8
80063	SM-D-766931-33	5305-01-088-6826	10	10
005K6	SV-08-47CM-0-N-0	4810-01-463-1795	18	11
	0			
005K6	SV08-47DM-0-N-0	4810-01-525-1156	18	3
06090	TXR54AB90-1408A1		2	2
29961	VN4400		5	2
81348	WW-P-471ACBAAG	4730-00-429-0516	11	44
54035	XPI/S	4730-01-525-1015	12	6
19200	10910174-8	5310-00-877-7527	11	58
31969	115M2091	3830-01-472-7506	11	48
31969	115M2091-01	5340-01-491-6900	11	52
19207	11639534	5360-01-078-7661	10	30
19207	11676794-AR		10	15
19207	12281838	5305-01-080-3287	10	21
19207	12281848	5330-01-091-1657	10	7
19207	12281849	6150-01-083-5520	10	31
19207	12281850	5995-01-080-3262	10	27
19207	12287283	6220-01-115-1547	10	11
19207	12287284	5365-01-080-3291	10	2
19207	12287285	6220-01-083-5673	10	8
			10	9
19207	12287288		10	16
19207	12287561-1	5306-01-083-5536	10	35

CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX STOCK NUMBER	FIG.	ITEM
19207	12287561-2	5305-01-113-3587	10	3
19207	12287708	5330-01-080-3255	10	26
19207	12312054	6220-01-138-0911	10	36
19207	12312191	6250-01-179-1062	10	22
19207	12312192	6240-01-179-1061	10	1
19207	12325738	5365-01-183-2770	11	45
19207	12335044-2		16	7
		5330-01-183-6826	KIT	
19207	12335260-1	5306-01-491-9984	11	61
19207	12335260-2	5306-01-491-9986	11	56
19207	12335303-2		16	8
19207	12335304-1		16	5
19207	12335305-2		16	6
19207	12342077	3990-01-314-8393	19	3
19207	12347656-3	5310-01-368-8068	10	25
19207	12352658	5310-01-529-3803	15	7
19207	12355496	2510-01-220-6378	11	13
19207	12355497	5307-01-230-8845	11	11
19207	12357158-2	3120-01-264-6006	11	33
19207	12387149-1	5305-01-384-0620	10	23
19207	12387327-20	5310-01-379-0007	10	39
19207	12387327-22	5310-01-381-9948	10	37
19207	12412086	5340-01-374-2334	11	26
19207	12412087	5340-01-374-5674	11	28
19207	12412088	5315-01-373-8796	11	25
19207	12412098	5315-01-386-0443	11	1
19207	12420924-002	4720-01-421-9723	2	5
			3	2
			4	2
0FW39	12420924-005	4720-01-423-2962	2	4
19207	12466272	3040-01-446-7606	16	1
19207	12466281	5340-01-487-7139	19	13
19207	12466282	5340-01-487-7145	19	4
19207	12491606	5995-01-529-2108	2	1
19207	12491607	5995-01-529-1535	3	1
19207	12491612	4730-01-529-2099	18	1
19207	12491613	5340-01-541-8263	18	13
19207	12491614	5340-01-529-1580	13	6
19207	12491615	4720-01-529-3329	14	14
19207	12491616-1	4720-01-529-3331	14	11
19207	12491616-2	4720-01-529-3332	14	13
19207	12491616-3	4720-01-529-3335	14	16
19207	12491616-4	4720-01-529-3766	14	7
			15	2
19207	12491616-5	4720-01-529-3770	14	12
19207	12491616-6	4720-01-529-3774	14	15
19207	12491618	5975-01-529-1565	4	1
19207	12491619	5975-01-529-0044	8	1
19207	12491620	5340-01-529-1586	13	4
19207	12491622	6150-01-529-2140	5	1
19207	12491623	6150-01-529-0116	6	1

CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX STOCK NUMBER	FIG.	ITEM
19207	12491623	6150-01-529-0116	9	4
19207	12491624	6150-01-529-0111	7	1
			9	5
19207	12502193	9510-01-541-8566	11	63
19207	13204E2864	3120-01-195-7988	11	5
97403	13204E2943	5315-01-184-4842	11	3
97403	13204E2944	3120-01-184-4859	11	4
97403	13204E2945	5305-01-195-1594	11	2
97403	13211E8616	5305-01-194-3001	11	31
97403	13211E8634	5315-01-180-8641	17	4
97403	13211E8643	3830-01-184-4977	11	60
60380	13212E4089-2	3120-00-587-4781	16	9
97403	13214E2064	5995-01-182-1321	1	1
97403	13214E2360-3	5340-01-182-9023	11	24
97403	13214E2403	5340-01-273-8821	11	42
97403	13214E2412	2590-01-184-4778	11	15
19207	13214E2457-15	4720-01-455-4173	14	1
19207	13214E2457-16	4720-01-455-5065	14	2
97403	13214E2481	2590-01-182-8768	11	40
97403	13214E2482	2590-01-185-0169	11	30
97403	13214E2515	2590-01-187-0904	11	41
19207	13214E2582	5330-01-193-0208	1	5
97403	13214E2664	5315-01-184-4785	11	8
31969	1826	3830-01-496-4440	11	9
06090	202C621-50-0		2	3
01276	203102-8-8S	4730-00-491-4983	14	4
			19	10
01276	2062-4-6S	4730-01-242-4510	16	12
30003	3418AS6402	5935-01-461-5996	7	7
98897	353512-1	1670-00-588-6272	11	18
27264	39-01-2121	5935-01-506-0573	6	6
98441	39T3-8-8	4730-01-195-3805	14	3
30780	4 HP5ON-S	5365-01-042-9079	18	14
81343	4-4-4 070432C		19	12
96906	51534A8-4	4730-00-647-3343	19	11
19204	572929	5999-00-057-2929	1	10
			3	6
			4	8
24617	5942525	5325-00-623-0928	10	18
30780	6 AOG5JG5	4730-01-525-1065	19	6
30780	6 HP5ON	5365-01-525-1176	18	12
005K6	6309802	5950-01-472-7835	18	2
07878	65B3732	5340-00-678-6574	11	19
19207	7716570	5330-00-771-6570	10	14
21450	7716580	6220-00-771-6580	10	13
19207	7962266	6220-00-557-8229	10	6
19207	8338561	5935-00-833-8561	2	10
			3	9
			4	9
19207	8338562	5970-00-833-8562	2	12
			3	11

CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
19207	8338562		5970-00-833-8562	4	11
19207	8338564		5940-00-399-6676	2	11
				3	10
				4	10
19207	8338566		5935-00-572-9180	1	12
				3	4
				4	6
19207	8338567		5310-00-833-8567	1	11
				3	5
				4	7
19207	8741651		6250-00-741-5451	10	19
01276	900598-8S		5365-01-217-4133	18	7
01276	900729-3		5340-00-985-6690	15	1
5T142	97-221		4730-01-446-7819	18	6

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

The M9 ACE with HBF-TT does not currently have any assigned components of end item or basic issue items.

END OF WORK PACKAGE

ADDITIONAL AUTHORIZATION LIST (AAL)

The M9 ACE with HBF-TT does not currently have any additional authorization list items.

END OF WORK PACKAGE

EXPENDABLE AND DURABLE ITEMS LIST

SCOPE

This work package lists expendable/durable items you will need to operate and maintain the M9 ACE. This list is for informational only and is not authority to requisition the listed items. These items are authorized to you 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 IN THE EXPENDABLE/DURABLE ITEMS LIST

Column (1)—Item Number. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., Use cleaning solvent (item 7, WP 0055 00).

Column (2) - Level. This column identifies the lowest level of maintenance that requires the listed item.

C—Operator/Crew
O—Unit
F—Direct Support
H—General Support

Column (3)—National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

Column (4)—Item Name, Description, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). This column provides the other information you need 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 55-1. 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	O	8040-00-157-8677	Adhesive (81348)MMM-A-134	EA
2	O	8040-00-118-2695	Adhesive, 3-Ounce Tube (72799)RTV162WHITE	OZ
3	O	8040-00-938-1535	Adhesive, 12-Ounce Tube (71984) 736 RTV WHT 12OZ	OZ
4	O	7520-00-223-8000	Brush, Acid, Swabbing (45606) 70107	EA
5	O	7920-00-291-5815	Brush, Wire	
6	O	5340-00-324-9158 5340-00-324-9158	Caps and Plugs: Cap, Protective Dust (96906)MS90376-8Y 0.413 ID.0.540 OD	EA
7	O	7930-01-330-0187	Cleaning Solvent, 1-Quart Can (81348)PF05	QT
8	O	7930-01-328-5960	Cleaning Solvent, 1-Gallon Can (81348)PF05	GL
9	O	7930-01-328-2030	Cleaning Solvent, 5-Gallon Can (81348)PF05	GL
10	O	5350-00-192-5051	Cloth, Crocus, 50-Sheets (81348) P-C-451	EA
11	O	7930-00-899-9534	Dishwashing Compound, Hand, 5-Gallon Can (81348)P-D-410	GL
12	O	8415-01-013-7384	Gloves, Chemical and Oil Protective (81349)MIL-G-87066	
13	O	4240-00-190-6432	Goggles, Industrial (58536)A-A-1110	

Table 55-1. Expendable and Durable Items List - continued.

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGE, PART NUMBER	(5) U/M
14	O	9150-01-197-7688 9150-01-197-7693 9150-01-197-7690 9150-01-197-7689 9150-01-197-7692	Grease, Automotive and Artillery (GAA) (81348) MIL-PRF-10924 2.25 Ounce Tube 14 Ounce Tube 1.75 Pound Can 6.5 Pound Can 35 Pound Can	OZ OZ LB LB LB
15	C	9150-01-177-3988 9150-00-186-6668 9150-00-191-2772	Oil, Lubricating, OE/HDO 10 (81349) MIL-PRF-2104 1 Quart Can 5 Gallon Can 55 Gallon Drum, 18 Gage Gallon	QT GAL
16	O	9150-00-231-2361 9150-00-231-2356	Oil, Lubricating, General Purpose: Preservative PL-Medium (81249) MIL-PRF-3150 1 Quart Can 5 Gallon Can	QT GAL
16	O	9150-00-231-6689 9150-00-231-9062	Oil, Lubricating, PL-Special (81349) MIL-PRF-32033 1 Quart Can 5 Gallon Can	QT GAL
17	C	7920-00-205-1711	Rag, Wiping, 50 Pound Bale (58536) A-A-2522	BE
18	O	5975-00-074-2072 5975-00-451-5001	Straps, Tiedown Bundle MS3367-1-9 Bundle MS3367-3-9	BDL BDL
19	O	5970-00-644-2636	Tape, Electrical HH-1-595 1 Roll-108 Feet	FT
20	F	9505-00-555-8648	Wire: Non-Electrical MS20995C47 1 Spool	

TOOL IDENTIFICATION LIST

SCOPE

This work package lists all common tools and supplements and special tools/fixtures needed to maintain the M9 ACE with HBF-TT.

EXPLANATION OF COLUMNS IN THE TOOL IDENTIFICATION LIST

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., Extractor [item 5, WP 0057 00]).

Column (2)—Item Name. This column lists the item by noun nomenclature and other descriptive features (e.g., Gage, belt tension).

Column (3)—National Stock Number (NSN). This is the NSN assigned to the item; use it to requisition the item.

Column (4)—Part Number/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 RPSTL for items listed in this work package.

Table 56-1. Tool Identification List.

(1) ITEM NO.	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER/ CAGEC	(5) REFERENCE
1	Chain Assembly	4010-01-185-0406	13211E9331	
2	Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power	4910-00-754-0654		SC4910-95CLA74
3	Shop Equipment, Field Basic	4910-00-754-0705		SC4910-95CLA31
4	Shop Equipment, Automotive Vehicle	4910-01-490-6453	CL 4910-95-A81 59678	SC4940-97CLE03
5	Tool Kit, General Mechanic's, Automotive	5180-00-177-7033		SC5180-90-CL-N26
6	Wrench Set, Crowfoot	5120-01-302-4387	5705566	
7	Wrench Set, Open End	5120-01-301-5783	5705565	
8	Wrench, Torque Dial, 3/8 Drive, 300 In-Lb		KTCS9087 00NS2	Component of CL 4910-95-A81
9	Multimeter		KTCS0252 00NS2	Component of CL 4910-95-A81

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By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:



JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army

0731804

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RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.						Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE Date you filled out this form.
TO: <i>(Forward to proponent of publication or form) (Include ZIP Code)</i> AMSTA-LC-LMPP / TECH PUBS, TACOM-RI 1 Rock Island Arsenal Rock Island, IL 61299-7630						FROM: <i>(Activity and location) (Include ZIP Code)</i> Your mailing address	
PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS							
PUBLICATION/FORM NUMBER TM 5-2350-377-14&P				DATE 30 Nov 07		Title Hydraulic Blade Folder-Track Tensioner (HBF-TT) for Armored Combat Earthmover (ACE), M9	
ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON (Provide exact wording of recommended changes, if possible).	
SAMPLE							
<i>*Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE <i>Your Name</i>				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION		Signature <i>Your Signature</i>	

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PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER TM 5-2350-377-14&P			DATE 30 Nov 07			TITLE Hydraulic Blade Forlder-Track Tensioner (HBF-TT) for Armored Combat Earthmover (ACE), M9		
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
SAMPLE								

PART III – REMARKS (Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)

TYPED NAME, GRADE OR TITLE Your Name	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE Your Signature
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RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.						Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
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PUBLICATION/FORM NUMBER TM 5-2350-377-14&P						DATE 30 Nov 07	TITLE Hydraulic Blade Folder-Track Tensioner (HBF-TT) for Armored Combat Earthmover (ACE), M9
ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON (Provide exact wording of recommended changes, if possible).	
<i>*Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION		SIGNATURE	

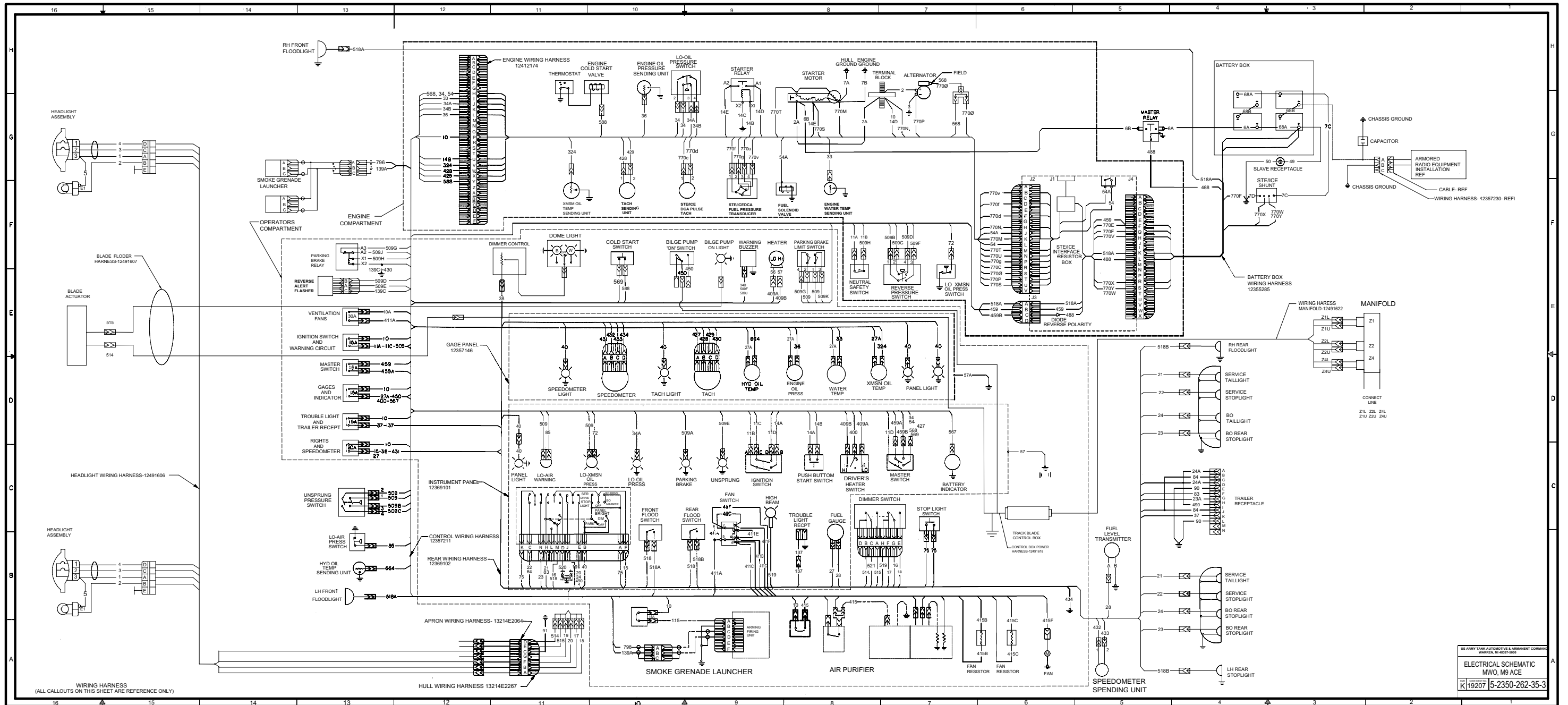
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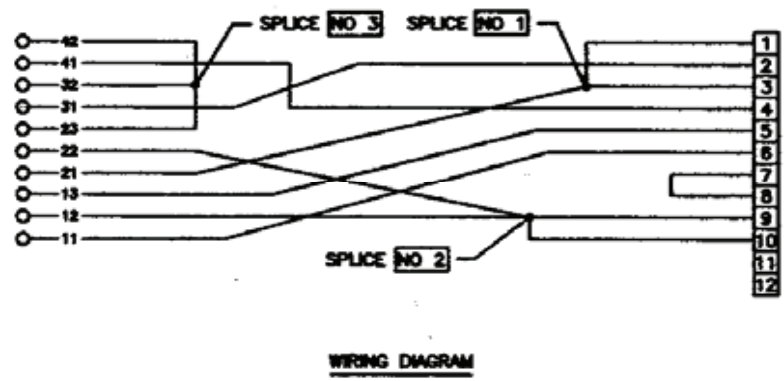
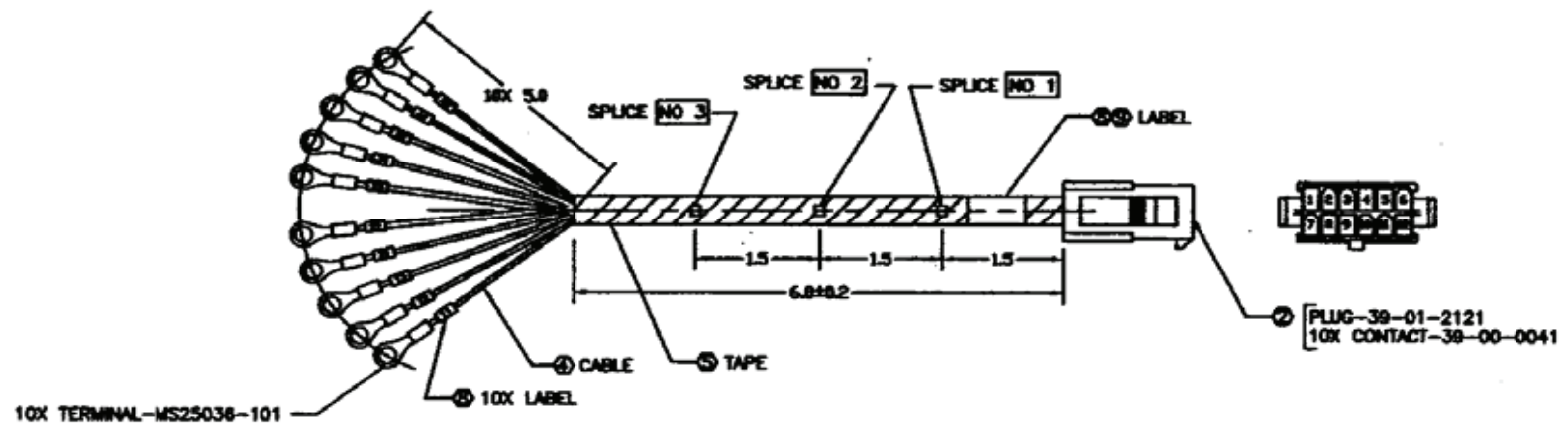
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DATE	DESCRIPTION	BY	APPROVED
	INITIAL RELEASE		
	FOR TAC-18158		

NOTES:

1. APPLICABLE STANDARDS/SPECIFICATIONS:
 - A. DDD-STD-82100(A)
 - B. ANSI Y14.3M
2. PART OF CONNECTOR KIT P/N 27284 WAF-3808PRT (MOLD)
3. WIRING HARNESS ASSEMBLY GUIDELINES IN MIL-HDBK-508 SHALL BE FOLLOWED
4. ALL CABLES SHALL BE M22758/18-25-8 W/ MIL-W-22708/18
5. WIRES SHALL BE BOUND TOGETHER WITH ONE-HALF OVERLAPPING TURNS OF TAPE, THICKNESS .010, WIDTH .750±.05, COLOR BLACK, W/ A-A-55008 OR EQUIVALENT
6. CRIMP CRIMP CONTACTS, TERMINALS, AND SPLICING CONNECTORS TO WIRES W/ SAE-J561 AND SAE-J163
7. SOLDER SOLDER W/ MIL-HDBK-454, GUIDELINE 8
8. VINYL COVERED WIRE MARKING LABEL SHALL BE W/ MIL-W-87958 OR EQUIVALENT
9. ITEM IDENTIFICATION APPLY THE FOLLOWING MARKINGS W/ MIL-STD-130 19207-12491623 MFR- MANUFACTURER'S CODE



PART NO. 12491623	
U S ARMY TRAC AUTOMOTIVE COMMAND BROOKS, MICHIGAN 48307	
WIRING HARNESS, CONTROL BOX	
DATE	12491623
BY	J. BARR
CHKD BY	J. BARR

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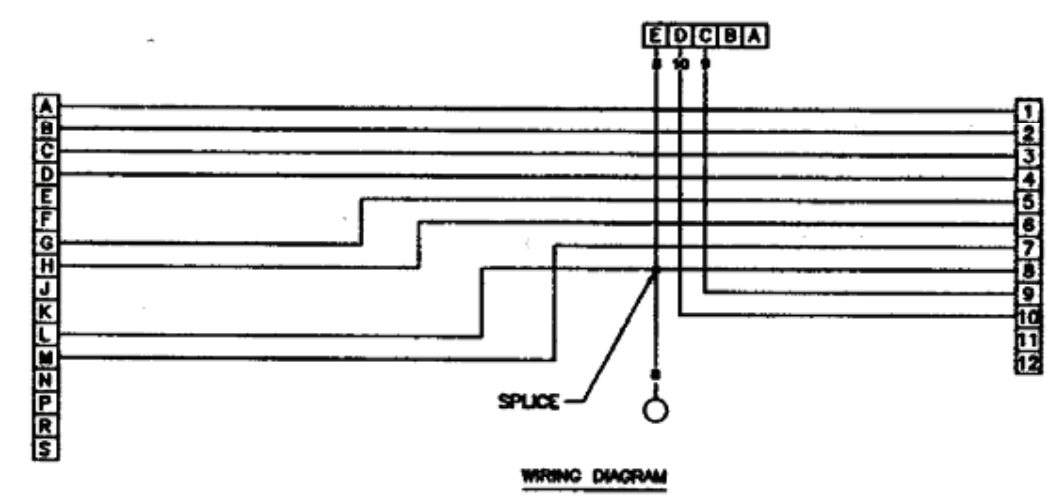
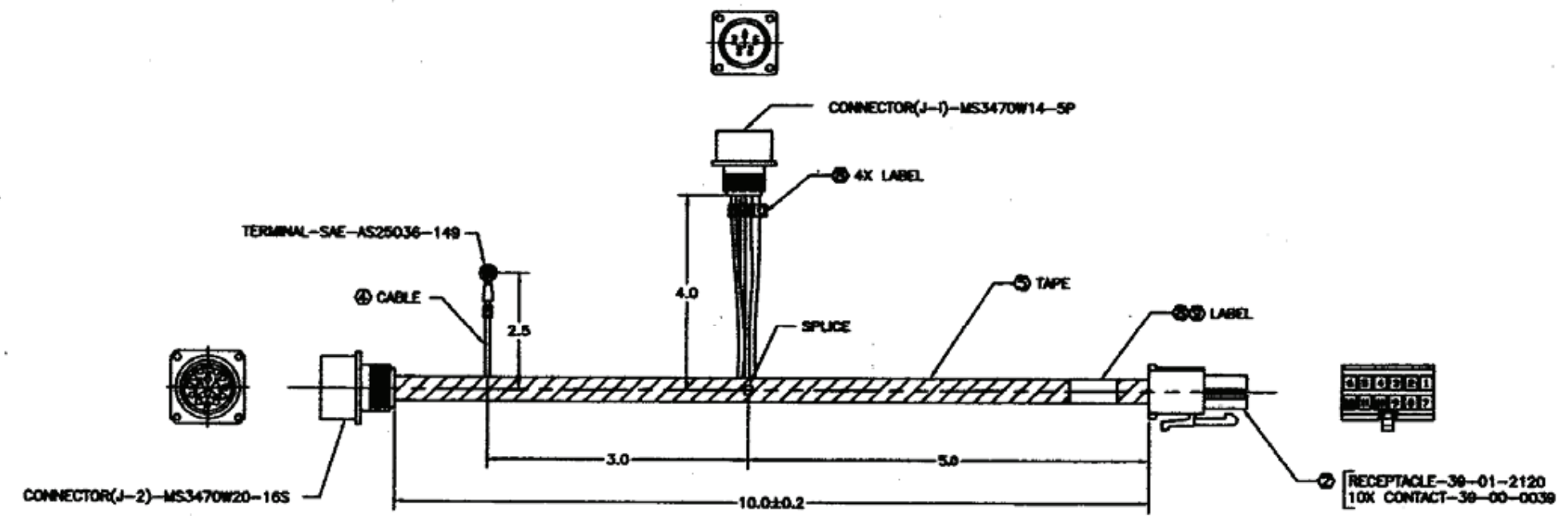
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- NOTES:
- APPLICABLE STANDARDS/SPECIFICATIONS:
 - DOB-STD-66100(A)
 - ANSI Y14.5M
 - PART OF CONNECTOR BY P/N 27284 WMF-3806PRT (BOLDED)
 - WIRING HARNESS ASSEMBLY GUIDELINES IN MIL-HDBK-508 SHALL BE FOLLOWED
 - ALL CABLES SHALL BE M27736/16-20-9 OR MIL-W-22736/16
 - WIRES SHALL BE BOUND TOGETHER WITH ONE-HALF OVERLAPPING TURNS OF TAPE THICKNESS .010, WIDTH .750-25, COLOR BLACK, MW A-A-50888 OR EQUIVALENT
 - CRIMP CRIMP CONTACTS, TERMINALS, AND SPLICING CONNECTORS TO WIRES MW SAE-J581 AND SAE-J163
 - SOLDER SOLDER MW MIL-HDBK-454, GUIDELINE 5
 - VINYL COVERED WIRE MARKING LABEL SHALL BE MW MIL-W-67908 OR EQUIVALENT
 - ITEM IDENTIFICATION: APPLY THE FOLLOWING MARKINGS MW MIL-STD-130: 18207-12491624 MFR: _____ MANUFACTURER'S CAGE CODE



DRAWING NO. 12491624	
U.S. ARMY TANK AUTOMOTIVE COMMAND WARREN, MICHIGAN 48397	
WIRING HARNESS, CONTROL BOX	
12491624	12491624

Fold Out - 3

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
 1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
 1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 Lb
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

TEMPERATURE

$5/9 (^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
 212 $^{\circ}$ Fahrenheit is equivalent to 100 $^{\circ}$ Celsius
 90 $^{\circ}$ Fahrenheit is equivalent to 32.2 $^{\circ}$ Celsius
 32 $^{\circ}$ Fahrenheit is equivalent to 0 $^{\circ}$ Celsius
 $9/5 \text{ C}^{\circ} + 32 = \text{F}^{\circ}$

APPROXIMATE CONVERSION FACTORS

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
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	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621

