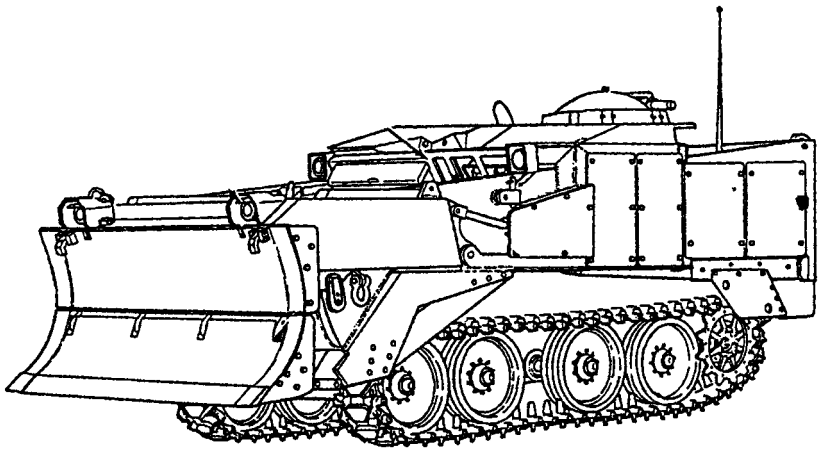
TM 5-2350-262-20-1*

TECHNICAL MANUAL

UNIT MAINTENANCE MANUAL

VOLUME 1 OF 3



ARMORED COMBAT EARTHMOVER (ACE), M9 (NSN 2350-00-808-7100)

***This manual supersedes TM 5-2350-262-20-1, dated 1 November 1990, and all related changes.**

HEADQUARTERS, DEPARTMENT OF THE ARMY

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JANUARY 1997
Change 3

CHANGE

NO. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *27 March 2000*

UNIT MAINTENANCE MANUAL
ARMORED COMBAT EARTHMOVER
(ACE), M9
(NSN 2350-00-808-7100)

TM 5-2350-262-20-1, 3 January, 1997 is changed as follows:

1. Remove old pages and insert new pages as indicated below.
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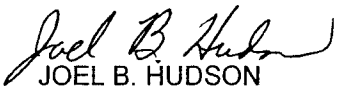
Back Cover	Back Cover

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:



JOEL B. HUDSON
Administrative Assistant to the
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CHANGE

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HEADQUARTERS
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UNIT MAINTENANCE MANUAL
ARMORED COMBAT EARTHMOVER
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(NSN 2350-00-808-7100)

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Remove Pages	**Insert Pages**
	List of Effective Pages
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ix thru xiv (Blank)	ix thru xiv (Blank)
1-5 thru 1-10	1-5 thru 1-10
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INDEX 1 thru INDEX 10 (Blank)	INDEX 1 thru INDEX 10

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General, United States Army
Chief of Staff

Official: Joel B. Hudson

JOEL B. HUDSON
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CHANGE

NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *16 November 1998*

UNIT MAINTENANCE MANUAL

ARMORED COMBAT EARTHMOVER

(ACE), M9

(NSN 2350-00-808-7100)

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1. Remove old pages and insert new pages as indicated below.
2. New or changed material is indicated by a vertical bar in the margin.
3. Added or revised illustrations are indicated by a vertical bar adjacent to the illustration.

Remove pages	Insert pages	Remove pages	Insert pages
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		Blank DA Forms 2028-2	Blank DA Forms 2028-2
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By Order of the Secretary of the Army:

DENNIS J. REIMER
General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
05360

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WARNING

CARBON MONOXIDE POISONING CAN BE DEADLY

CARBON MONOXIDE IS A COLORLESS, ODORLESS, DEADLY POISONOUS GAS WHICH, WHEN BREATHED, DEPRIVES THE BODY OF OXYGEN AND CAUSES SUFFOCATION. EXPOSURE TO AIR CONTAMINATED WITH CARBON MONOXIDE PRODUCES SYMPTOMS OF HEADACHE, DIZZINESS, LOSS OF MUSCULAR CONTROL, APPARENT DROWSINESS, AND COMA. PERMANENT BRAIN DAMAGE OR DEATH CAN RESULT FROM SEVERE EXPOSURE.

CARBON MONOXIDE OCCURS IN THE EXHAUST FUMES OF FUEL-BURNING HEATERS AND INTERNAL COMBUSTION ENGINES AND BECOMES DANGEROUSLY CONCENTRATED UNDER CONDITIONS OF INADEQUATE VENTILATION. THE FOLLOWING PRECAUTIONS MUST BE OBSERVED TO ENSURE THE SAFETY OF PERSONNEL WHENEVER THE PERSONNEL HEATER, MAIN, OR AUXILIARY ENGINE OF ANY VEHICLE IS OPERATED FOR MAINTENANCE PURPOSES OR TACTICAL USE.

1. DO NOT operate heater or engine of vehicle in an enclosed area unless it is ADEQUATELY VENTILATED.
2. DO NOT idle engine for long periods without maintaining ADEQUATE VENTILATION in personnel compartments.
3. DO NOT drive any vehicle with inspection plates, cover plates, or engine compartment doors removed unless necessary for maintenance purposes.
4. BE ALERT at all times during vehicle operation for exhaust odors and exposure symptoms. If either are present, IMMEDIATELY VENTILATE personnel compartments. If symptoms persist, remove affected personnel from vehicle and treat as follows: expose to fresh air; keep warm; DO NOT PERMIT PHYSICAL EXERCISE; if necessary, administer artificial respiration.

THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS ADEQUATE VENTILATION.

WARNING

- Do not operate ejector when personnel are in bowl. Do not work in bowl unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.
- Do not stand or work in bowl area unless ejector lock is engaged. Do not stand in bowl to observe roller guide travel. Failure to comply may result in severe injury to personnel.
- 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.

WARNING - CONTINUED

- Do not stand or work under raised apron and dozer assembly unless apron lockpins are installed. Failure to comply may result in severe injury or death to personnel.
- Block track or roadwheels when parking brake is released or when steer unit brake levers are disconnected, or when track is disconnected. Vehicle can roll causing damage to equipment, severe injury, or death to personnel.
- The NBC system of the M9 ACE will not protect against carbon monoxide. Failure to take necessary precautions may result in severe injury to personnel or death.
- The NBC protection filters use a type of carbon that contains Chromium VI. This is a known carcinogen; do not inhale or swallow. Damaged or unusable filters are classified as hazardous waste.
  - Do not throw away damaged or unusable filters as trash.
  - Turn in damaged or unusable filters to your hazardous waste management office or Defense Reutilization and Marketing Office (DRMO).

  Filters are completely safe to handle and use if they are not damaged in such a way that carbon leaks from them. If carbon does leak, use protection such as a dust respirator to cover nose and mouth and put carbon in a container such as a self-sealing plastic bag; turn it in to the hazardous waste management office or DRMO. Disposal of hazardous waste is restricted by law. Violation is subject to criminal penalties.
- If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your unit NBC officer or NBC NCO for appropriate handling or disposal instructions.
- DS2 is combustible. DS2 can also severely burn the skin, cause blindness, or deteriorate the battle dress and chemical protective overgarments. Do not use DS2 near an open flame, in confined spaces, or allow it to touch skin or clothing. Personnel handling DS2 must wear protective clothing and eye protection.
- Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Failure to comply may result in severe injury or death to personnel.
- Prolonged breathing of fuel vapors can be fatal. If eyes or skin become irritated by fuel, flush with water.
- Drycleaning solvent is flammable and will not be used near open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or injury to personnel.
- Radiator and related components may be very hot. Do not work on cooling system until it is cool. Failure to comply may result in severe injury to personnel.

WARNING - CONTINUED

- Under no circumstances should any cover or grille leading to the engine compartment be opened when a fire exists. Failure to comply may result in severe injury to personnel.
- Remove all jewelry, dog tags, bracelets, etc. If jewelry or disconnected battery ground cable contacts positive battery terminal, a direct short will result, causing instant heating of tools, tool damage, battery damage, or battery explosion. Failure to comply may result in severe injury to personnel.
- Do not smoke, have open flames, or make sparks around batteries. Failure to comply may result in severe injury to personnel.
- Electrolyte is extremely harmful. Always wear goggles and rubber gloves when performing battery maintenance. Failure to comply may result in severe injury to personnel.
- Always wear leather gloves when handling wire rope. Never allow wire rope to run through hands. Failure to comply may result in severe injury to personnel.
- Stand clear of wire rope. Should wire rope break or snap loose, severe injury or death to personnel may result.
- Wear safety goggles when using hammer with driftpin or track pin. Failure to comply may result in injury to personnel.
- Engine speed must be at least 1,000 rpm for bilge pump to discharge water. Failure to comply may result in damage to equipment or injury to personnel.
- Antenna adds an extra 9-1/2 ft (2.9 m) to the vehicle clearance. Always check the area to be worked in for powerlines, their height, and power poles or towers. Do not stop your vehicle under powerlines. If you are not sure the antenna will clear a powerline, stop before you get too close to the powerline and either tie down the antenna or remove antenna sections to make sure you can proceed safely. Failure to comply may result in damage to equipment or injury to personnel.
- Compressed air can injure you and others. Do not aim compressed air hoses at anyone. Do not use more than 30 psi (207 kPa). Always wear goggles.
- 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.
- Transmission shifting lines are pressurized. Do not disconnect lines, fittings, or accumulator unless transmission shift control valve pressure has been relieved. Discharge transmission shift accumulator by moving shift control lever through all forward and reverse ranges several times, with engine off. Failure to comply may result in severe injury to personnel.

WARNING - CONTINUED

- Driver's hatch assembly weighs 900 lb (409 kg); hatch cover weighs 200 lb (91 kg). Do not put hands or feet under hatch assembly while lifting. Ensure all lifting devices and workstands can support at least 900 lb (409 kg). Failure to comply may result in severe injury or death to personnel.
- Dozer blade weighs 585 lb (265 kg). Ensure it is securely supported before removing outer pivot pins. Failure to comply may result in severe injury to personnel.
- Ejector assembly weighs 500 lb (227 kg). Keep feet and hands from under ejector assembly while lifting or moving. Failure to comply may result in severe injury or death to personnel.
- Ejector cylinder weighs 325 lb (148 kg). Support ejector cylinder before disconnecting or removing. Failure to comply may result in severe injury to personnel.
- Support hatch cover while removing springs. Hatch cover weighs 200 lb (91 kg) and can cause serious injury if dropped on hands, arms, or feet.
- Support apron cylinder while removing or installing. Apron cylinder weighs 85 lb (39 kg) and can cause serious injury if dropped on hands or feet.
- Use caution when lifting batteries. Each battery weighs 72 lb (33 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Ensure feet are firmly planted on a level surface and use a helper when removing track retainers or armor plate. Some armor plates weigh 50 lb (23 kg). Track retainers weigh 60 lb (27 kg). Failure to comply may result in severe injury to personnel.
- Support radio box during removal so it will not drop. Radio box weighs over 50 lb (23 kg) and can injure personnel if dropped.
- Do not work on smoke grenade launcher system unless smoke grenades are removed from dischargers (TM 5-2350-262-10) and negative battery cables have been disconnected. 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.
- Do not lift apron and dozer assembly with dozer blade attached unless dozer lockpins are installed. Failure to comply may result in severe injury or death to personnel.
- Do not work on heater system unless engine coolant is cool. Hot engine coolant can cause serious burns.
- Wear face shield or goggles for eye protection when removing, cleaning, or installing seal. Failure to comply may result in injury to personnel.
- Do not stand between ejector and ejector cylinder while performing ejector leak checks. Failure to comply may result in severe injury to personnel.

WARNING - CONTINUED

- Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved. Failure to comply may result in severe injury to personnel.
- Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.
- Air system must be pressurized and parking brake engaged during reverse pressure tests. Failure to comply may result in damage to equipment and injury to personnel.
- Do not stand directly behind vehicle or directly in front of vehicle when positioning jack stands. Failure to comply may result in severe injury or death to personnel.
- Before performing any hydraulic troubleshooting in the bowl, move the ejector forward and disable it by disconnecting the ejector cylinder or by engaging the ejector lock. Failure to comply may result in severe injury to personnel.
- Hot coolant can cause severe burns. Do not open radiator cap access cover or remove cap until coolant gauge reads in bottom one-quarter of green zone. Failure to comply may result in severe injury to personnel.
- Do not use inclinometer as a step. Failure to comply may result in damage to equipment and injury to personnel.
- Hull access covers may be heavier than they appear due to accumulation of fluid and dirt. Take extra precautions when removing access covers. Failure to comply may result in injury to personnel.
- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in injury to personnel.
- Do not disconnect accelerator and throttle linkage without disconnecting return springs first. Failure to comply may result in damage to equipment or 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.
- Keep hands from ejector cylinder when hydraulically moving cylinder to align eye of cylinder for installation. Failure to comply may result in severe injury to personnel.
- Do not work under vehicle or on track retainers unless hull is blocked or vehicle has settled on bump stops. Failure to comply may result in severe injury to death to personnel.
- Vehicle brakes will not hold vehicle when track is disconnected. Block roadwheels before working on vehicle when track is disconnected. Failure to comply may result in damage to equipment and severe injury or death to personnel.

WARNING - CONTINUED

- If winch operates erratically, appropriate troubleshooting steps and repairs should be performed immediately. Failure to comply may result in damage to equipment or severe injury to personnel.
- Keep hands and tools away from moving parts. Failure to comply may result in injury to personnel.
- Do not touch coils on condenser. Coils may become hot enough to burn you. Failure to comply may result in injury to personnel.
- MCS unit will not filter out carbon monoxide. If using vehicle exhaust as a warm air supply, do not breathe outlet air. Run unit for at least 15 minutes after vehicle exhaust has been stopped to clear system. Failure to comply may result in severe injury or death to personnel.
- Ensure hydraulic pressure is relieved after ejector cylinder is pushed forward. Pressure may build up and cause the ejector to retract.Failure to comply may result in severe injury to personnel.
- Transmission lines contain hot oil under pressure when hot.Do not disconnect hoses, tubes, or fittings unless oil is cool and pressure has been relieved. Failure to comply may result in severe injury to personnel.
- Hot exhaust system can cause serious burns. Do not work on or near hot exhaust system components unless exhaust system is cool. Failure to comply may result in injury to personnel.
- Ensure stop is in locked position to prevent any movement of ejector control valve plunger, or ejector can move. Failure to comply may result in severe injury to personnel.
- High-pressure nitrogen gas is used in this equipment. Keep hands and face away from valves and hose ends. Failure to comply may result in severe injury to personnel.
- Do not breathe nitrogen gas. Failure to comply may result in death to personnel.
- Hot hydraulic oil can cause serious burn. Pump and fittings must be cool to touch before working on hydraulic system. Failure to comply may result in severe injury to personnel.
- Ethyl ether is highly combustible. Do not work on start-aid system in presence of sparks or open flame. Failure to comply may result in severe injury to personnel.
- Parts inside shell can fly out is not held securely during disassembly. Failure to comply may result in injury to personnel.
- Do not adjust fan belt tension with vehicle engine running. Fan blades can strike hands or tools. Failure to comply may result in damage to equipment or injury to personnel.
- Spring is under tension. Relieve tension slowly. Failure to comply may result in injury to personnel.

WARNING - CONTINUED

- Hot oil can cause serious burns. Ensure transfer case is cool before disconnecting any tubes or hoses. Failure to comply may result in severe injury to personnel.
- Hot oil can cause serious burns. Do not work on scavenger pump filter unless oil and filter are cool. Failure to comply may result in severe injury to personnel.
- Do not operate parking brake lever when personnel are working on parking brake linkage or bracket. Failure to comply may result in severe injury to personnel.
- Wear face shield or goggles for eye protection when using wire brush. Failure to comply may result in injury to personnel.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: The portion of text or illustration effected by the updates is indicated by a vertical line in the outer margin of the page. Updates to wiring diagrams are indicated by shaded areas.

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

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Change 2 ..2 .. 30 JUN 99
Change 3 ..3.. 27 MAR 00

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1-5	0	2-27 to 2-28	3	3-128 to 3-131	3	3-309	0
1-6	3	2-29 to 2-38	0	3-132 to 3-135	0	3-310 to 3-316	3
1-7	2	2-39 to 2-40	3	3-136 to 3-137	3	3-317	0
1-8	3	2-41 to 2-50 (Blank)	0	3-138 to 3-139	0	3-318 to 3-325	3
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1-16	0	3-27 to 3-33	0	3-149	0	3-332	3
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2-4 to 2-5	0	3-80 to 3-81	0	3-170	3	4-6	0
2-6	1	3-82	3	3-171	2	4-7 to 4-8	3
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		2-106 to 3-110	0	3-177	1		

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4-33	3
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4-39 to 4-56	0
4-57 to 4-64	1
4-65	2
4-66	3
4-67	0
4-68	3
4-69 to 4-88	0
4-89	3
4-90 to 4-91	0
4-92	3
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4-94	3
4-95 to 4-100	0
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4-107	0
4-108	3
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4-141	3
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4-224	3
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TECHNICAL MANUAL

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *3 January 1997*

UNIT MAINTENANCE MANUAL

ARMORED COMBAT EARTHMOVER (ACE), M9
(NSN 2350-00-808-7100)

VOLUME 1 OF 3

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028-2 (Recommended Changes to Equipment Technical Publications), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is http://aeps.ria.army.mil. If you need a password, scroll down and click on "ACCESS REQUEST FORM". The DA Form 2028 is located in the ONLINE FORMS PROCESSING section of the AEPS. Fill out the form and click on SUBMIT. Using this form on the ADPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax, or email your letter, DA Form 2028, or DA Form 2028-2 direct to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-AC-NML, Rock Island, IL 61299-7630. The email address is amsta-ac-nml@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

This manual is published in three volumes. TM 5-2350-262-20-1 contains chapter 1 through chapter 4, section X. TM 5-2350-262-20-2 contains chapter 4, section XI through XXII and appendixes A through H. This manual contains a table of contents, a group index, list of tasks, appendixes, and an alphabetical index covering both volumes. TM 5-2350-262-20-3 contains hydraulic system principles operation and hydraulic system troubleshooting.

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* This manual supersedes TM 5-2350-262-20-1 dated November 1990 and all related changes.

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HOW TO USE THIS MANUAL

This manual describes the unit maintenance tasks and procedures for the M9, Armored Combat Earthmover. Before performing any work on the M9, you should become thoroughly familiar with this manual, its content, organization, and features.

OVERVIEW

This manual is organized by chapters, sections, and appendixes. A summary of the organization of this manual, by major divisions, follows:

Front cover index provides quick reference to chapters, sections, and appendixes that you will use often.

WARNINGS – All warnings must be observed while you work on or around the M9. Warnings are listed in the front of this manual, and repeated throughout the manual where they apply.

Table of Contents – The contents of the chapters and appendixes are listed.

Chapter 1 – This chapter contains general information about the M9. It also shows and describes major components and lists specific data to assist you when performing unit maintenance tasks.

Chapter 2 – This chapter describes services and inspections that must be performed at the unit level, such as services you must perform upon receipt of the vehicle, and preventive maintenance checks and services. Other sections contain painting and restenciling of markings, general repair and cleaning methods, general hydraulic system repair methods, general quick-disconnect repair methods, general hull repair procedures, and battery box insulation replacement and battery service.

Chapter 3 – This chapter outlines troubleshooting of the M9 and its systems. It includes a troubleshooting index, by symptom and system, and procedures on how to use the STE/ICE-R components while troubleshooting. The STE/ICE-R CI Engine GO NO-GO chain test procedures are also contained in this chapter.

Chapter 4 – This chapter contains step-by-step instructions for doing the maintenance tasks. Each system of the M9 has its own section within the chapter, and any special tools, equipment, or supplies required for a task are listed.

Appendix A – This appendix lists Army regulations, forms, field manuals, technical manuals, and other publications referenced in this manual and which apply to unit maintenance of the M9 ACE.

Appendix B – This appendix contains the Maintenance Allocation Chart (MAC) for the M9.

Appendix C - This appendix lists and illustrates special tools and equipment you will need to perform unit maintenance on the M9.

Appendix D - This appendix lists the expendable/durable supplies and materials you will need to perform unit maintenance on the M9.

Appendix E - This appendix illustrates and describes manufactured items you will need to perform unit maintenance on the M9.

Appendix F - This appendix lists torque limits and describes the proper method of tightening fasteners.

Appendix G - The vehicle hydraulic system and electrical system schematic diagrams for the M9 are contained in this appendix.

Appendix H - This appendix lists the proper charges at ambient air temperatures for the main hydraulic and the actuator accumulators.

Index - The index is an alphabetical listing of the contents of this manual.

Back Cover - The inside back cover contains a metric conversion table.

USING THE MANUAL ON THE JOB

Find the task or component/part to be replaced or repaired by using the list of tasks (p vii) or the index (p Index 1), then turn to the page listed for that task or component/part.

Read the INITIAL SETUP procedures, and gather the necessary items and personnel. Pay attention to the warnings. The INITIAL SETUP sheet is described on page v.

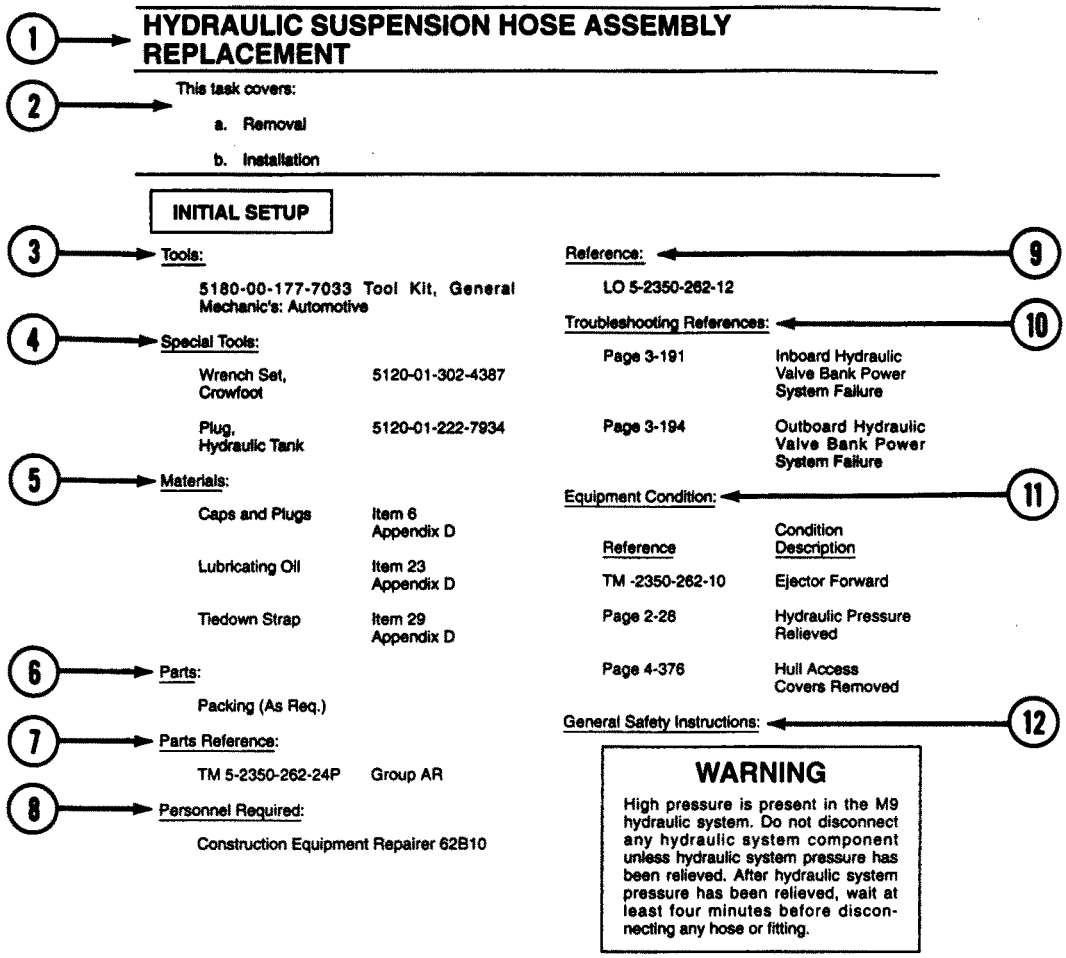
TROUBLESHOOTING TASKS

Note

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

Find the problem in the alphabetical symptom index (p 3-124) or the symptom index, by system (p 3-126), then go to the page listed for that malfunction.

Perform the test or inspection required for that malfunction, then go to the page listed of the correcrive action.



1. TITLE – This is the name of the task.
2. TASKS – This lists all the maintenance actions included in the task.
3. TOOLS – These are the tools and equipment you will need to perform the task.
4. SPECIAL TOOLS – These are special tools you will need to complete the task. If no special tools are required, this heading will not be used. If not readily available, it will be necessary to requisition special tools (before starting the task) using the data supplied in TM 5-2350-262-24P, the repair parts and special tools list, for this level of maintenance. A list of special tools is located in appendix C in TM 5-2350-262-20-2.
5. MATERIALS – These are the supplies you will need to perform the task.
6. PARTS – If parts are required, they are listed here by nomenclature.
7. PARTS REFERENCE – To be referred to for parts requisition data.
8. PERSONNEL REQUIRED – These are the personnel required to perform the task.
9. REFERENCES – These are the other technical publications you will need to perform the task.
10. TROUBLESHOOTING REFERENCES – These are troubleshooting tasks designed to assist you in determining which component or item is defective.
11. EQUIPMENT CONDITION – This is the condition the vehicle must be in before you start the task. Other tasks that must be performed first are listed by page number reference to this manual or the publication number if another manual is required.
12. GENERAL SAFETY INSTRUCTIONS – These are the safety precautions that you must observe while performing the task.

TROUBLESHOOTING TASKS

Find the problem in the alphabetical symptom index (p 3-124) or the symptom index, by system (p 3-126), then go to the page listed for that malfunction.

Perform the test or inspection required for that malfunction, then go to the page listed for the corrective action.

LIST OF TASKS

Maintenance tasks included in this manual are listed below and on the following pages. Use the table of contents for page reference by chapter and section, and use the alphabetical index for page cross reference to tasks by component/part name.

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END OF VOLUME 2

CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

SCOPE

Type of Manual: Unit Maintenance

Model Number and Equipment Name: M9, Armored Combat Earthmover

Purpose of Equipment: A combat engineer vehicle used for dozing, grading, hauling, and defilade preparation.

MAINTENANCE FORMS, RECORDS, AND REPORTS

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

CALIBRATION

Torque wrenches and multimeters require calibration before use. See TB 43-180 for calibration requirements for torque wrenches. See TB 9-6625-2147-35 for calibration requirements for multimeters AN/PSM-45, Simpson model 160, and TS-352 B/U.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

When the tactical situation requires that Army materiel be abandoned, refer to TM 750-244-6, Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use.

PREPARATION FOR STORAGE OR SHIPMENT

Instructions for storage and shipment are found in TM 55-2350-262-14, Transportability Guidance, Armored Combat Earthmover, M9 (NSN 2350-00-808-7100).

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S)

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. Put it on an SF 368 (Quality Deficiency Report). Mail it to:

Commander
U.S. Army Tank-automotive and Armaments Command
Attn: AMSTA-TR-E/MPA
Warren, MI 48397-5000

Section II. EQUIPMENT DESCRIPTION AND DATA

SCOPE

This section contains information that is useful when performing unit level maintenance tasks on the M9. The following information is provided in this section:

- Equipment Characteristics, Capabilities, and Features
- Location and Description of Major Components
- Equipment Data
- Safety, Care, and Handling

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

The M9 ACE is an armored, combat earthmover, used for:

- Dozing.
- Rough grading.
- Excavating.
- Hauling.
- Scraping.

It is a multi-purpose vehicle, and can be used as:

- An earth hauler.
- A cargo carrier.
- A prime mover.

Some of the M9 capabilities are:

- Travels on land up to 30 mph (48 km/h).

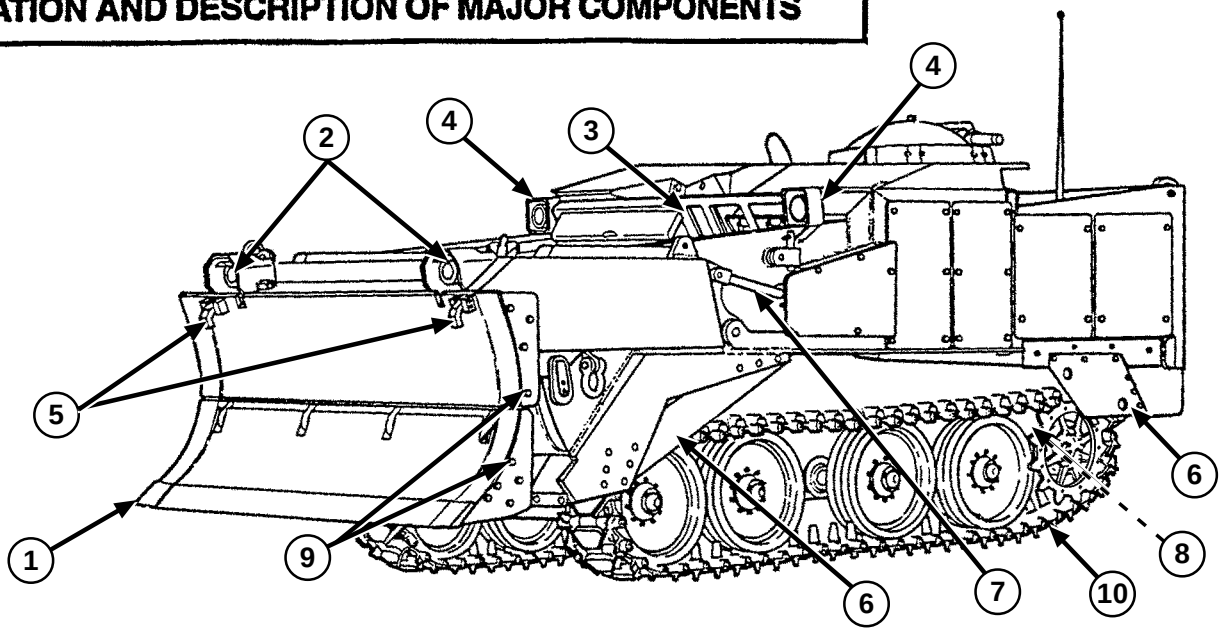
  Deleted

- Climbs up to 60 percent grades
- Drawbar pull of up to 30,000 lb (13,620 kg) at 1.5 mph (2.4 km/h).
- Winch pull of up to 25,000 lb (11,350 kg).

The features of the M9 are:

- Full tracked.
- Air transportable.
- Highly mobile.
- Armored.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS



(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. Includes blackout and infrared lights.

(3) EJECTOR. Moves back and forth in bowl to discharge material, to load or unload palletized cargo, and to fold the dozer blade.

(4) FLOODLIGHTS. Provide light for night operations.

(5) Deleted

(6) TRACK RETAINERS. Keep tracks on sprockets, when suspension is lowered, for earthmoving operations.

(7) APRON CYLINDER. Raises and lowers apron and dozer assembly (one on each side).

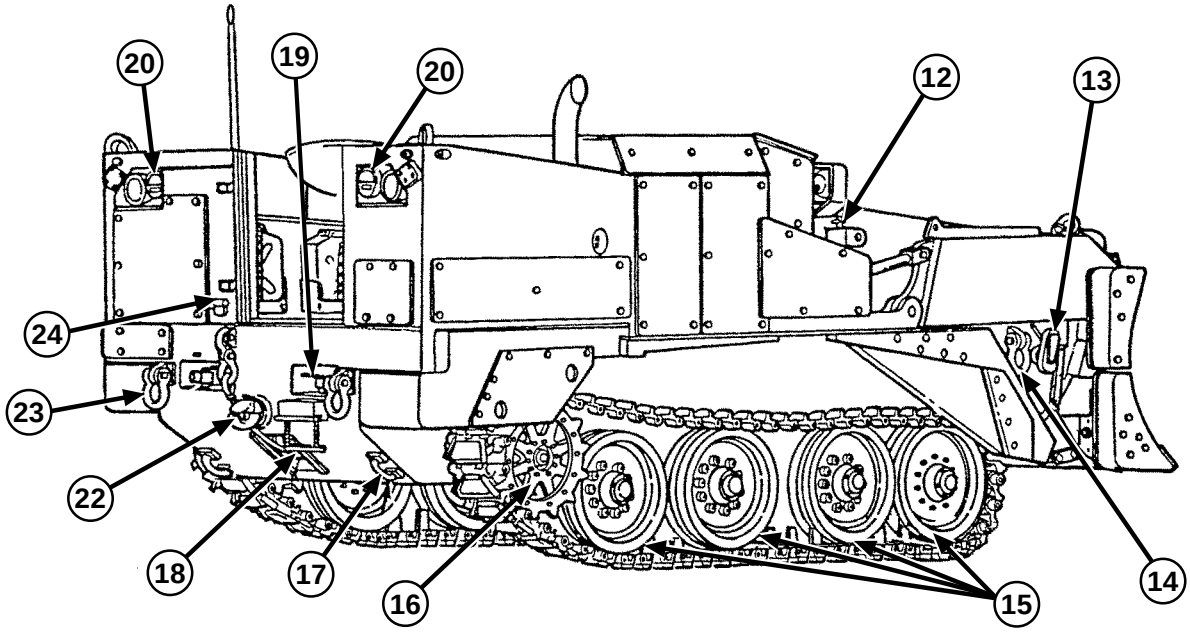
(8) TRACK WEAR PLATES. Replaceable steel plates keep track from wearing welded parts on the aluminum hull.

(9) APRON AND DOZER EXTENSIONS. Provide larger working surface for apron and dozer assembly. May be removed for transporting vehicle.

(10) TRACK. Consists of 58 rubber padded steel track shoes that are driven by the sprockets (one on each side).

(11) DOZER BLADE UP-LOCKS. Provide means of locking dozer blade in UP position with reusable pin assembly, modified latch, and steel latch block, which prevent steel ripper teeth from damaging apron.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS – CONTINUED



(12) UPPER APRON LOCKPINS. Lock apron and dozer assembly in raised position as a safety precaution during maintenance.

(13) LOWER APRON LOCKPINS. Lock apron and dozer assembly to hull during certain maintenance procedures.

(14) TIEDOWN SHACKLES. Two tiedown shackles are provided to secure the vehicle during air or ground transportation.

(15) ROADWHEELS. Eight pairs of roadwheels provide support and guides for the track and suspension of the vehicle.

(16) SPROCKETS. The drive sprockets are mounted to the final drives and drive the track.

(17) TIEDOWN BRACKETS. Two tiedown brackets are used to secure the vehicle during air or ground transportation.

(18) WINCH ASSEMBLY. The winch assembly is mounted in the rear hull and may be used in recovery operations.

(19) TRAILER BRAKE COUPLINGS. Provide air for brakes of towed trailer.

(20) TAILLIGHTS. Used for night driving and to indicate when vehicle brakes are used.

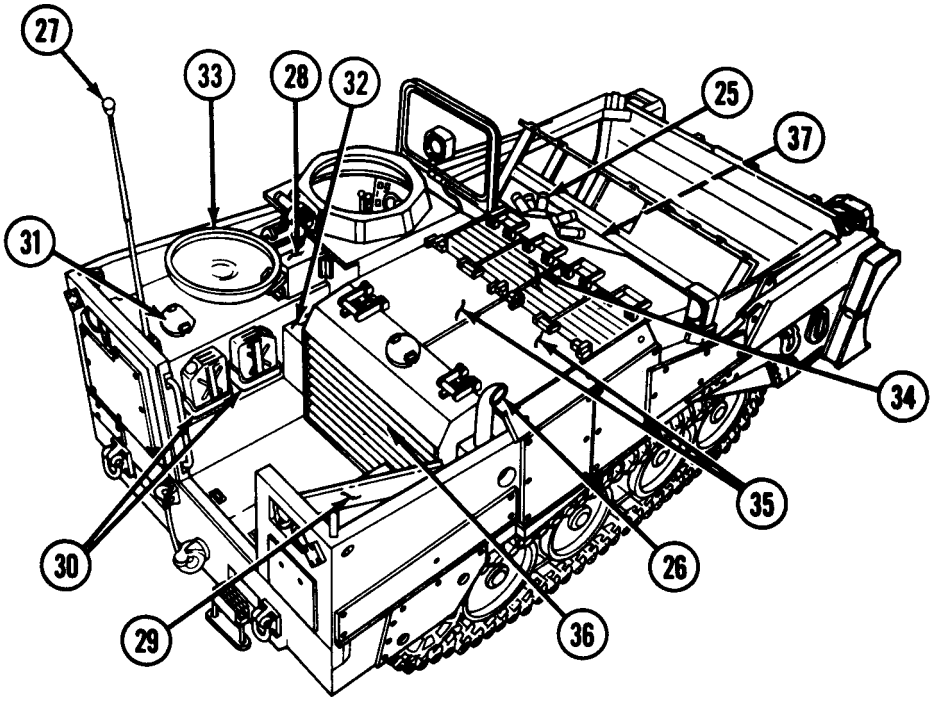
(21) Deleted

(22) TOWING PINTLE. Used in towing operations to attach tow bar or to tow trailer.

(23) TOW SHACKLES. Two tow shackles are provided to attach tow cable or chain for towing or recovery operations. Also used to secure the vehicle for ground transportation.

(24) TRAILER ELECTRICAL RECEPTACLE. Supplies electrical power to towed trailer.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS-CONTINUED



(25) SMOKE GRENADE LAUNCHERS. Launches smoke grenades when required by the tactical situation.

(26) MUFFLER. Reduces noise level of vehicle exhaust system.

(27) ANTENNA. Allows transmission and reception by the vehicle radio.

(28) RADIO. Provides two-way radio communication.

(29) BATTERY BOX AND DEFLECTORS. Protects the four vehicle batteries. Deflects radiator hot air flow away from battery box preventing battery boil-over in high ambient temperatures.

(30) LIQUID CONTAINER BRACKETS. Two liquid container brackets provide stowage for one 5 gal. (18.9L) liquid container and one M-13 decontaminating apparatus.

(31) FUEL TANK. The armored fuel tank contains fuel for the vehicle engine operation.

(32) HYDRAULIC OIL FILL PORT. Fill point for the vehicle hydraulic tank.

(33) DRIVER'S HATCH ASSEMBLY. Armored cover for driver's compartment that can be latched open or locked closed.

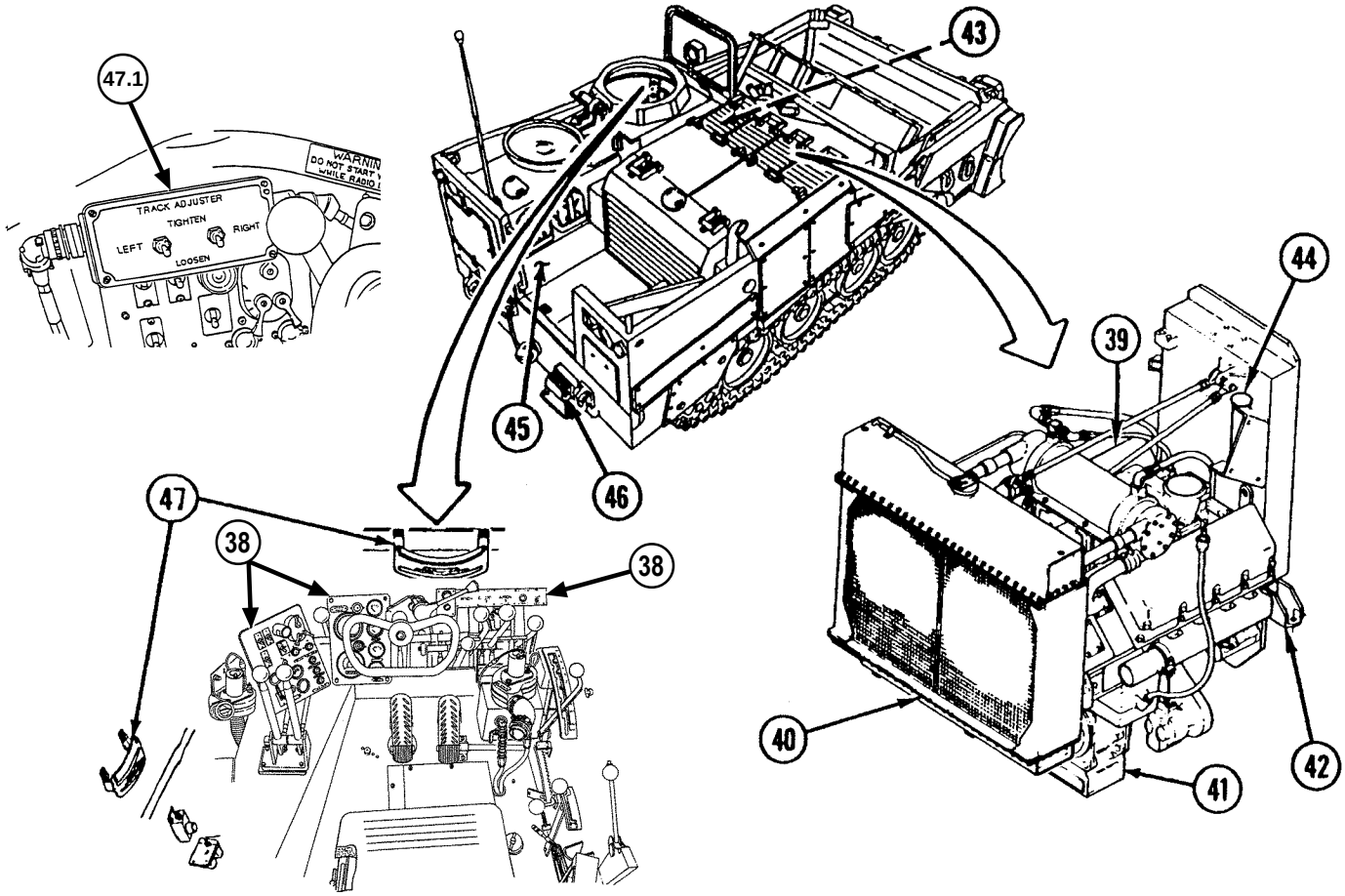
(34) INTAKE GRILLES. Louvered armor plates provide passage of air for engine cooling while protecting engine compartment from projectiles. Grilles are hinged for maintenance access.

(35) ACCESS COVERS. Non-louvered armor plates to protect engine. Access covers are hinged for maintenance access.

(36) EXHAUST GRILLES. Louvered armor plates provide passage of radiator hot air from engine cooling, while protecting the radiator and engine compartment from projectiles.

(37) DEBRIS SHIELD. Prevents debris from accumulating on hose assemblies and fittings in lower bowl area.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS – CONTINUED



(38) DRIVER'S CONTROLS AND INDICATORS. Used by operator to drive the vehicle and perform earthmoving operations.

(39) ENGINE. Provides power to operate the vehicle and all vehicle subsystems.

(40) RADIATOR. Keeps engine at proper operating temperature.

(41) TRANSMISSION. Transmits engine power to the steer unit.

(42) TRANSFER CASE. Couples power from the engine to the transmission and drives hydraulic and oil pumps.

(43) MAIN HYDRAULIC ACCUMULATOR. Helps keep pressure constant in the hydropneumatic suspension system.

(44) ENGINE COLD START SYSTEM. Aids in starting vehicle engine in cold weather.

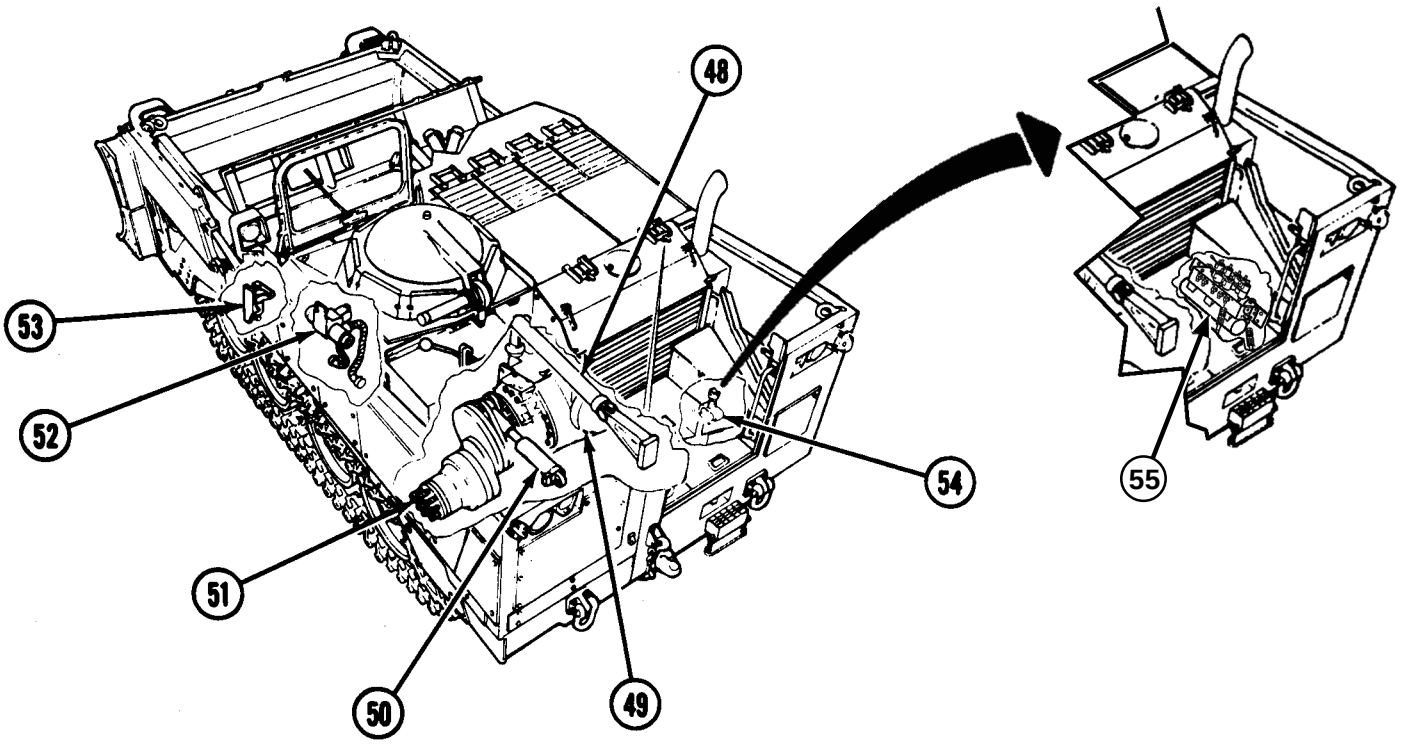
(45) REAR FLOOR PLATES. Panels lift out for access to systems and components under platform in rear hull of vehicle.

(46) REAR STEP. Provides access to rear platform area of vehicle.

(47) INCLINOMETERS. Front inclinometer indicates vehicle side slope. Side inclinometer indicates the grade vehicle is climbing or descending.

(47.1) SEMI-AUTOMATIC TRACK ADJUSTER CONTROL PANEL (NEW PRODUCTION). Provides the capability of adjustment and semi-automatic control of track tension from within the driver's compartment.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED



(48) EJECTOR CYLINDER. Moves ejector forward and back.

(49) STEER UNIT. Transmits power from transmission to final drives and controls tracks for steering and braking of vehicle.

(50) TRACK ADJUSTING CYLINDER. Moves adjusting flange of final drive fore and aft to adjust track tension (one on each side).

(51) FINAL DRIVES. Transmit power from steer unit to drive sprockets.

(52) NBC INSTALLATION. Provides driver protection from nuclear, biological, and chemical contaminants. If MCS unit is installed, the NBC equipment is removed, but driver protection is provided by the MCS unit's own NBC equipment.

(53) BUMP STOPS. Limit upward travel of roadwheel arms when in SPRUNG position (one on each side).

(54) HULL DRAIN VALVE. Drains water from rear hull area.

(55) SEMI-AUTOMATIC TRACK ADJUSTER HYDRAULIC MANIFOLD (NEW PRODUCTION). Provides hydraulic adjustment of track adjusting cylinders.

EQUIPMENT DATA

Crew
- Number 1

Engine
- Manufacturer . . . . . Cummins Engine Company, Inc.
- Type . . . . . 4-stroke diesel, 8 cylinder
- Model V903C
- Horsepower (gross @ 2,600 rpm) 295

Engine Oil Filter
- Manufacturer . . . . . Fleetguard Inc.
- Model 252916
- Type . . . . . Replaceable element

Engine Air Cleaner
- Manufacturer . . . . . Donaldson
- Model . . . . . STB 14-0138
- Type . . . . . Dry, replaceable element

Fuel System
- Fuel pump
  - Manufacturer . . . . . Cummins Engine Company, Inc.
- Fuel/Water Separator
  - Manufacturer . . . . . Cummins Engine Company, Inc.
  - Type 3-stage
- Fuel Check Valve
  - Manufacturer . . . . . Republic Manufacturing Company
  - Pressure . . . . . 3 psi (21 kPa)
- Start-Aid
  - Manufacturer . . . . . Turner Corp.
- Fuel Type . . . . . Diesel oil, 40 cetane, FED-VV-F-800DF
  - Regular Grade (DF-2) (NATO F-54) . . . . . Above 10°F (-12°C)
  - Winter Grade (DF-1) . . . . . -20°F to 10°F (-29°C to -12°C)
  - Arctic Grade (DF-1) (NATO) (NATO F-56) . . . . . -65°F to -20°F (-54°C to -29°C)
  - Aviation, Turbine (JP8) . . . . . Above -60°F (-51°C)
- Capacity . . . . . 134 U.S. gal. (507.2 L)

Cooling System
- Capacity (total capacity) . . . . . 94 qt (89 L)
  79 qt (75 L) (refill)

Electrical System
- Alternator
  - Deleted

  - Amperage . . . . . 200 amp
  - Manufacturer . . . . . Niehoff
  - Voltage . . . . . 26-30 V(DC)
  - Drive . . . . . One belt, driven by engine

EQUIPMENT DATA – CONTINUED

Batteries
- Number 4
- Type . . . . . Lead-acid
- Voltage . . . . . 12 V(DC)
- Connected . . . . . Series-parallel
- Output . . . . . 24 V(DC)
- Post to Ground . . . . . Negative
- Weight (each) . . . . . 72 lb (33 kg)

Starter Relay
- Manufacturer . . . . . Cook Electric Co.
  Guardian Electric Co.
  Struters-Dunn, Inc.
  Riverside Mfg. & Elec. Sup.
- Type . . . . . Normally open
- Voltage . . . . . 24 V(DC)
- Current . . . . . 50 amps

Transmission
- Shift Accumulator
  - Manufacturer . . . . . Greer Olear
  - Charging Pressure . . . . . 100 psi (690 kPa)
- Transmission Oil Filter
  - Manufacturer . . . . . AC Spark Plug Co.
- Scavenger Oil Filter
  - Manufacturer . . . . . Air-Maze Corp.

Brake System
- Air Reservoir
  - Manufacturer . . . . . Bendix-Westinghouse
  - Pressure Test . . . . . 250 psi (1,724 kPa)
- Brake Chamber
  - Manufacturer . . . . . Bendix-Westinghouse
- Service Brake Valve
  - Manufacturer . . . . . Bendix-Westinghouse
  - Type . . . . . Foot pedal operated
  - Operating Pressure (max. travel) . . . . . 60 psi (414 kPa) min.
    125 psi (862 kPa) max.
- Trailer Brake Valve
  - Manufacturer . . . . . Bendix-Westinghouse
  - Initial Pressure . . . . . 5 psi (35 kPa)
  - Final Pressure . . . . . 75-85 psi (517-586 kPa)

Suspension System
- Track Adjusting Cylinder
  - Manufacturer . . . . . Cylinder City
  - Type . . . . . Double acting, grease actuated (OLD PRODUCTION)
    Double acting, hydraulic actuated (NEW PRODUCTION)
  - Stroke . . . . . 9 in. (23 cm)

EQUIPMENT DATA – CONTINUED

Winch, 25,000 lb (11,350 kg)
Deleted

Winch, 35,000 lb (15,890 kg)
Manufacturer ..... Lake Shore
Type ..... Planetary
Wire Rope Length ..... 206 ft ± 2 ft (63 m ± 0.6 m)
Wire Rope Diameter ..... 3/4 in. (19.1 mm)
Line Pull ..... 35,000 lb ± 1,500 lb (15,890 kg ± 681 kg)
Spooling Rate (Low Range) ..... 8.5 ft/min. (2.6 m/min.)
Spooling Rate (High Range) ..... 36 ft/min. (11 m/min.)
Winch Motor:
Type ..... Gear, Geroter or Vane

Operator's Heater
Deleted

Manufacturer ..... Hunter Mfg Co.
Model 50115
Heater Output ..... 30,000 btu

Hydraulic System
Hydraulic Reservoir Capacity
Dry ..... 128 qt (121 L)
Refill ..... 108 qt (102 L)
Operating Pressure ..... 4,500 psi (31,028 kPa)
Main Accumulator
Manufacturer ..... Parker-Hannifin
Type ..... Nitrogen Gas
Capacity (max. oil volume) ..... 578 cu in. (9.5 L)

Compensating Pump
Manufacturer ..... Vickers, Inc.
Type ..... Piston
Output @ 2,400 rpm ..... 13.4 gpm (50.7 Lpm)

Apron Cylinder
Manufacturer ..... Cylinder City
Ejector Cylinder
Manufacturer ..... Cylinder City

SAFETY, CARE, AND HANDLING

Warnings are listed in the warning summary in front of the manual, at the beginning of each task in the initial setup, and before specific steps where they apply in the maintenance tasks. In addition to these warnings, always keep in mind the following when working on the M9:

- The hydraulic system operates at pressures up to 4,500 psi (31,028 kPa).
- Ensure the upper apron lockpins are installed any time personnel are working on the apron or dozer blade and any time the apron is raised.
- Never operate the ejector when personnel are in the bowl.
- Always place support stands under the hull before crawling under the vehicle. The vehicle suspension will settle down after engine has been shut off.
- Always remove all jewelry such as rings, dog tags, bracelets, watches, etc., and ensure batteries are disconnected at the negative terminals before working on the electrical system.

Section III. PRINCIPLES OF OPERATION

SCOPE

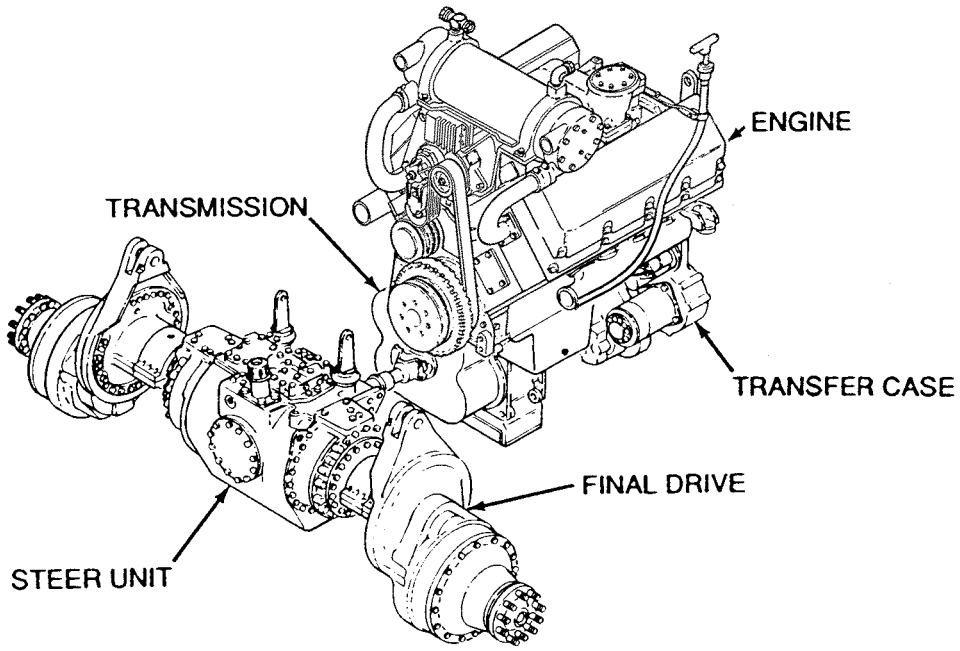
This section contains information relative to the principles of operation for the M9, Armored Combat Earthmover. The general functional description of the vehicle and separate systems is contained in this section. Unit maintenance personnel should be familiar with the principles of operation of these systems before working on or troubleshooting these systems. A more thorough understanding of the hydraulic system and electrical system can be obtained by referring to the vehicle wiring diagram (p FP-3) and the vehicle hydraulic schematic (TM 5-2350-262-20-3).

POWERTRAIN

ENGINE The engine is a 903-cubic inch (14.8-L) displacement diesel.

TRANSFER CASE The transfer case connects the engine to the transmission. It receives power from the engine and supplies it, through a series of gears, to the input shaft of the transmission. It also serves as a mount and supplies power to the two hydraulic pumps and the transmission scavenger pump.

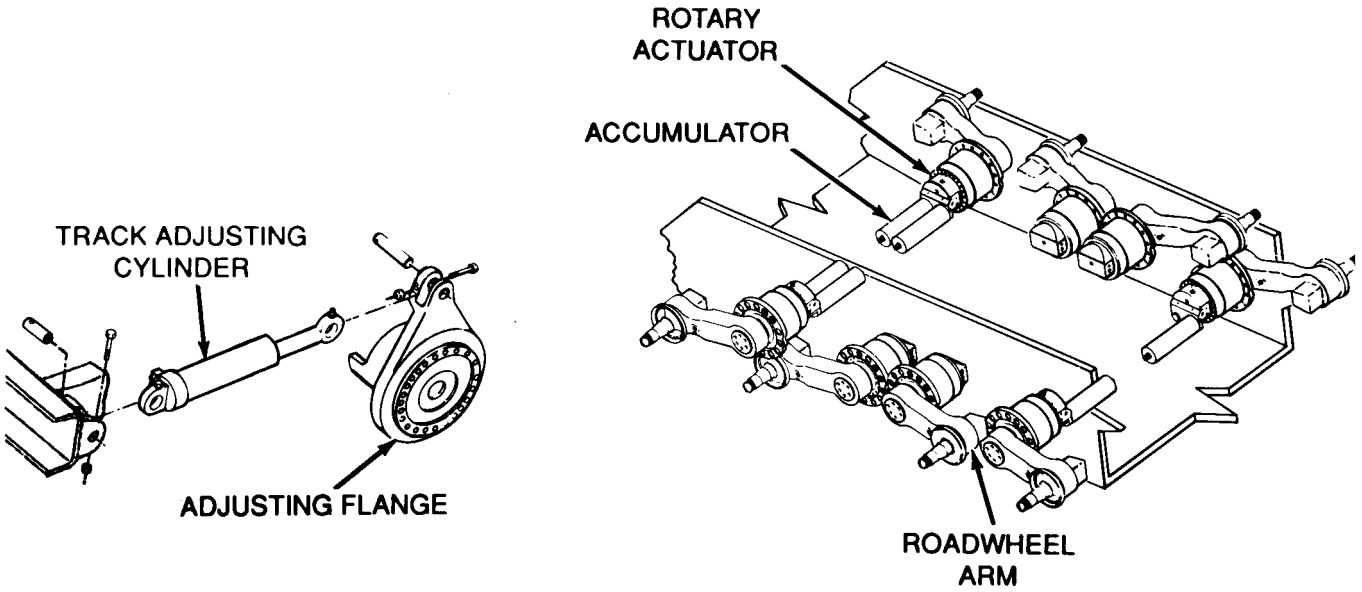
STEER UNIT Power output from the transmission is transmitted by a driveshaft to the steer unit. Through a series of gears, clutches, and brakes, the steer unit transmits power to the final drive units, which in turn drive the tracks. The steer unit provides the two modes of vehicle steering: Geared Steer (GS), where, when tracking, one track is driven at a higher speed than the other, and Clutch Brake (CB), where, when turning, one track is stopped and the other is driven, for pivot steering. The steer unit also provides braking for the vehicle. The steer unit braking components are operated by an air-operated brake chamber connected to the steer unit brake levers.



FINAL DRIVES The final drives are speed reducing units that take power from the steer unit and apply it to the track drive sprockets to drive the vehicle tracks.

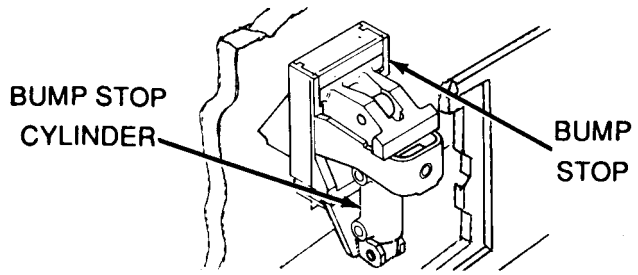
SUSPENSION SYSTEM

The suspension system consists of tracks, roadwheels, arms, drive sprockets, rotary actuators, and bump stops. The suspension system has two modes of operation, SPRUNG and UNSPRUNG, which can be selected by a control lever in the driver's compartment. The major suspension system components and their operation are described below.



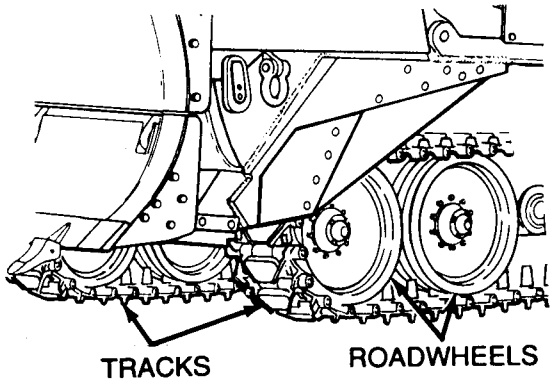
ROTARY ACTUATORS For normal driving, the rotary actuators should be set to SPRUNG. This allows the actuators to rotate, which in turn allows the roadwheels attached to them to move up and down over uneven terrain. Accumulators attached to the four corner actuators act as shock absorbers, as fluid is forced into them by the rotation of the actuators. When the UNSPRUNG mode is selected, the rotary actuators can be moved by controls in the driver's compartment. Hydraulic control valves permit the rotary actuators to move the roadwheel arms up and down, in various combinations, to position the vehicle for scraping, dozing, and tilt dozing.

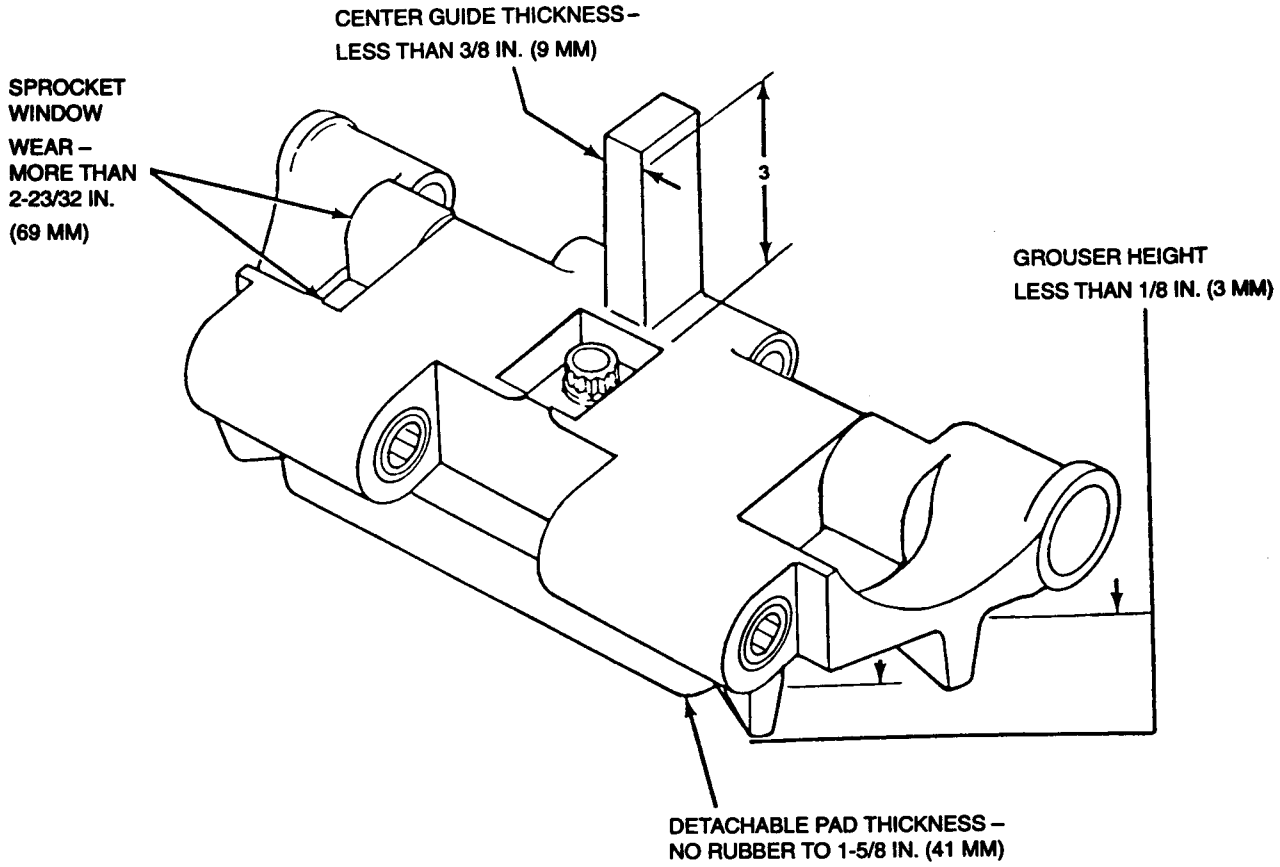
BUMP STOPS Bump stops are mounted above the front roadwheel arms. In the SPRUNG mode, the stops stick out of the vehicle hull and prevent the roadwheel arms and the front rotary actuators from traveling too far upward and damaging the components. When the UNSPRUNG mode of operation is selected, the bump stops are retracted into the hull by the hydraulically operated bump stop cylinders.



SUSPENSION SYSTEM – CONTINUED

TRACKS AND ROADWHEELS The tracks, drive sprockets, and roadwheels are of conventional design. Track tension is adjusted with grease-actuated cylinders attached to the adjusting flanges of the final drive units. Track wear limits are given below:

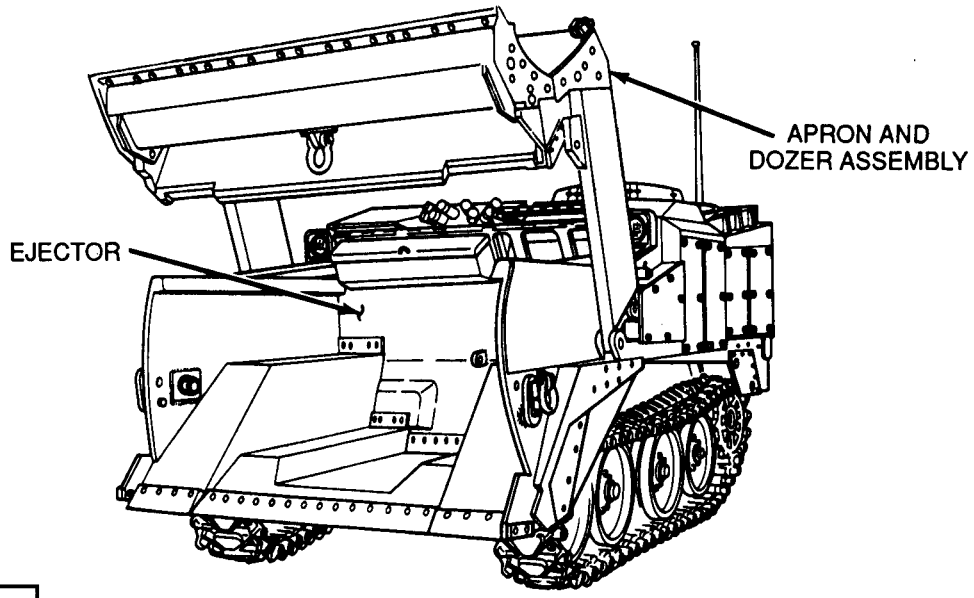




EARTHMOVING COMPONENTS

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.

EJECTOR The ejector is used to push material out of the bowl. It is supported in the bowl and travels on ten rollers. Position of the ejector is controlled by the ejector hydraulic cylinder. The ejector hydraulic cylinder is controlled by a lever in the driver's compartment.

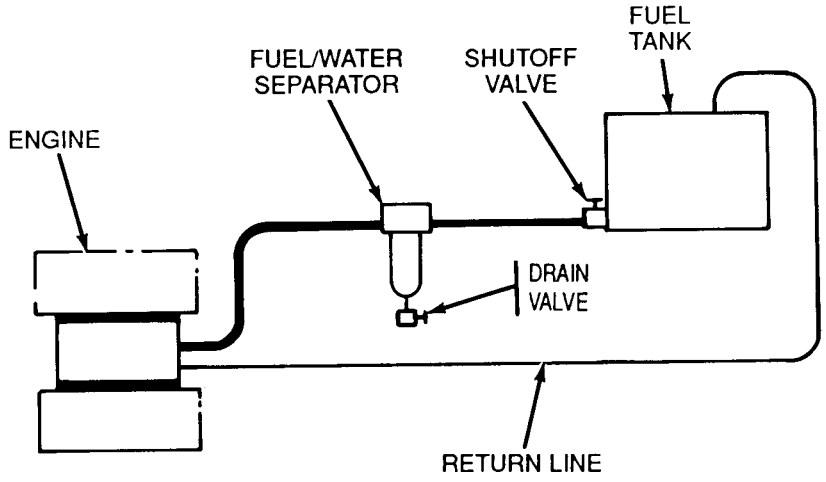


FUEL SYSTEM

The fuel to power the engine is pumped out of the fuel tank by an engine-mounted fuel pump. The fuel pump is driven by the air compressor. Fuel is filtered before it reaches the engine by a fuel/water separator that is located under the fuel tank.

Fuel may be shut off at the fuel tank by a shutoff valve. Fuel is drained from the fuel/water separator by a drain valve located in the rear of the vehicle.

Refer to the diagram below for a description of fuel flow through the fuel system.



AIR SYSTEM

Compressed air is used to operate the vehicle service brakes and is also provided at outlets on the rear of the vehicle to operate airbrakes of a towed trailer.

AIR COMPRESSOR The air compressor is mounted on the engine. It compresses air for the air system.

AIR COMPRESSOR GOVERNOR The air compressor governor regulates the air system pressure by loading and unloading the air compressor.

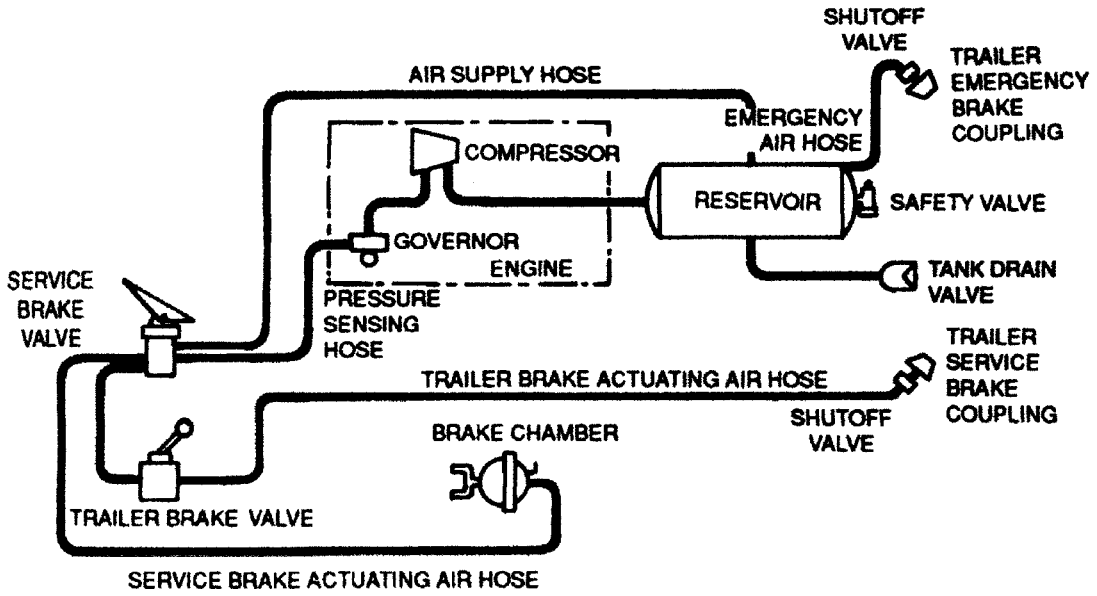
AIR RESERVOIR The air reservoir maintains a supply of compressed air for the air system.

SERVICE BRAKE VALVE The brake valve controls the flow of compressed air to the brake chamber to operate the vehicle brakes. A low air pressure warning switch and a brake light switch are mounted on the brake valve.

BRAKE CHAMBER The brake chamber is activated when the brake valve pedal is depressed. The brake chamber moves the steer unit brake levers, which in turn operate the braking components inside the steer unit.

DELETED.

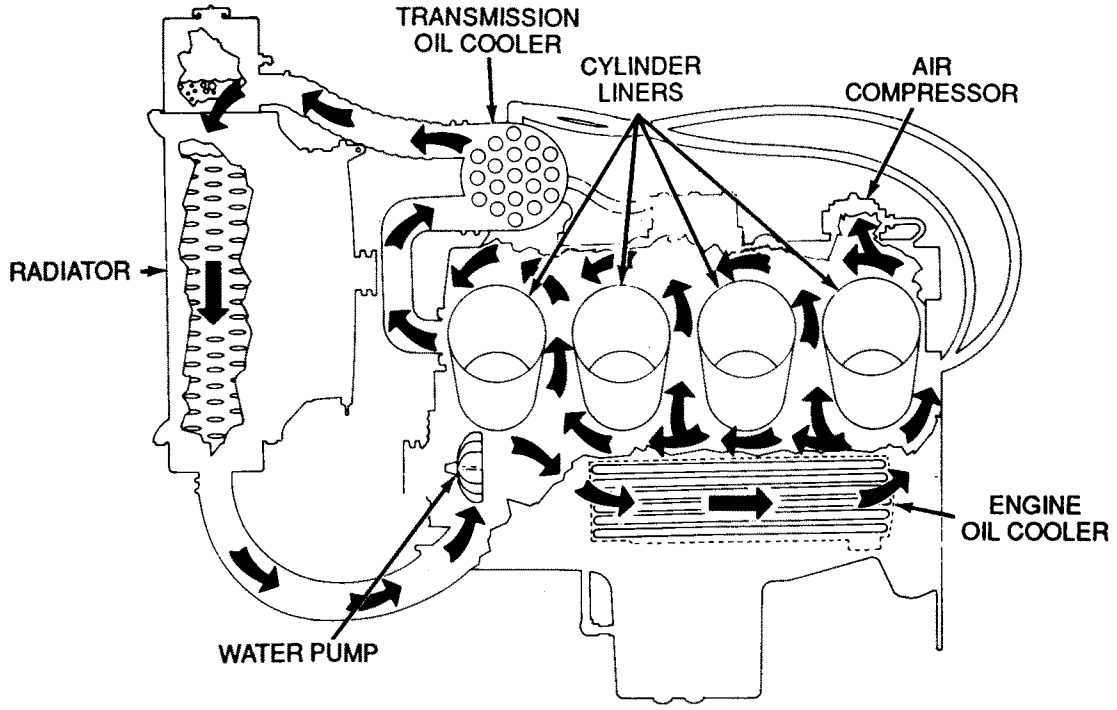
TRAILER BRAKE VALVE The trailer brake valve supplies compressed air to the brake system of a towed trailer.



COOLING SYSTEM

The cooling system removes heat from the engine, engine oil, air compressor, and transmission oil. Refer to the diagram below for a description of the coolant flow.

The water pump circulates coolant from the radiator through the engine. Water jackets in the engine block direct the coolant around the cylinder liners, cylinder heads, and out through the exterior mounted engine oil cooler. Coolant flows from the left cylinder head to the air compressor and returns to the water pump through a bypass tube. The coolant from the engine flows through the transmission oil cooler before returning to the radiator.



HYDRAULIC SYSTEM

Note

Refer to the vehicle hydraulic schematic TM 5-2350-262-20-3.

The hydraulic system provides hydraulic pressure to energize the suspension system, operate the winch, ejector and apron cylinders, and bilge pump. Some hydraulic components are briefly described below.

HYDRAULIC RETURN LINE FILTER This filter, located on top of the engine, filters out contaminants from the hydraulic oil returning to the hydraulic reservoir.

MAIN HYDRAULIC ACCUMULATOR The main hydraulic accumulator is located on the left side of the filter support. It is charged with nitrogen to 1,800 psi (12,411 kPa) at 70°F (21°C) and provides immediate response to temporary needs of the SPRUNG mode that the compensating pump cannot meet. A charge and gauge assembly is mounted on the accumulator and is used to check accumulator charge status and to charge the accumulator.

HYDRAULIC HIGH-PRESSURE FILTERS Two high-pressure filters located directly in front of the driver's compartment filter hydraulic fluid from the main hydraulic pump while it is enroute to the directional control valve bank.

HYDRAULIC RESERVOIR The hydraulic reservoir is located beneath the driver's compartment and its check and fill point is located in the driver's compartment. It has a capacity of 32 gal. (121 L) of OE/HDO-10.

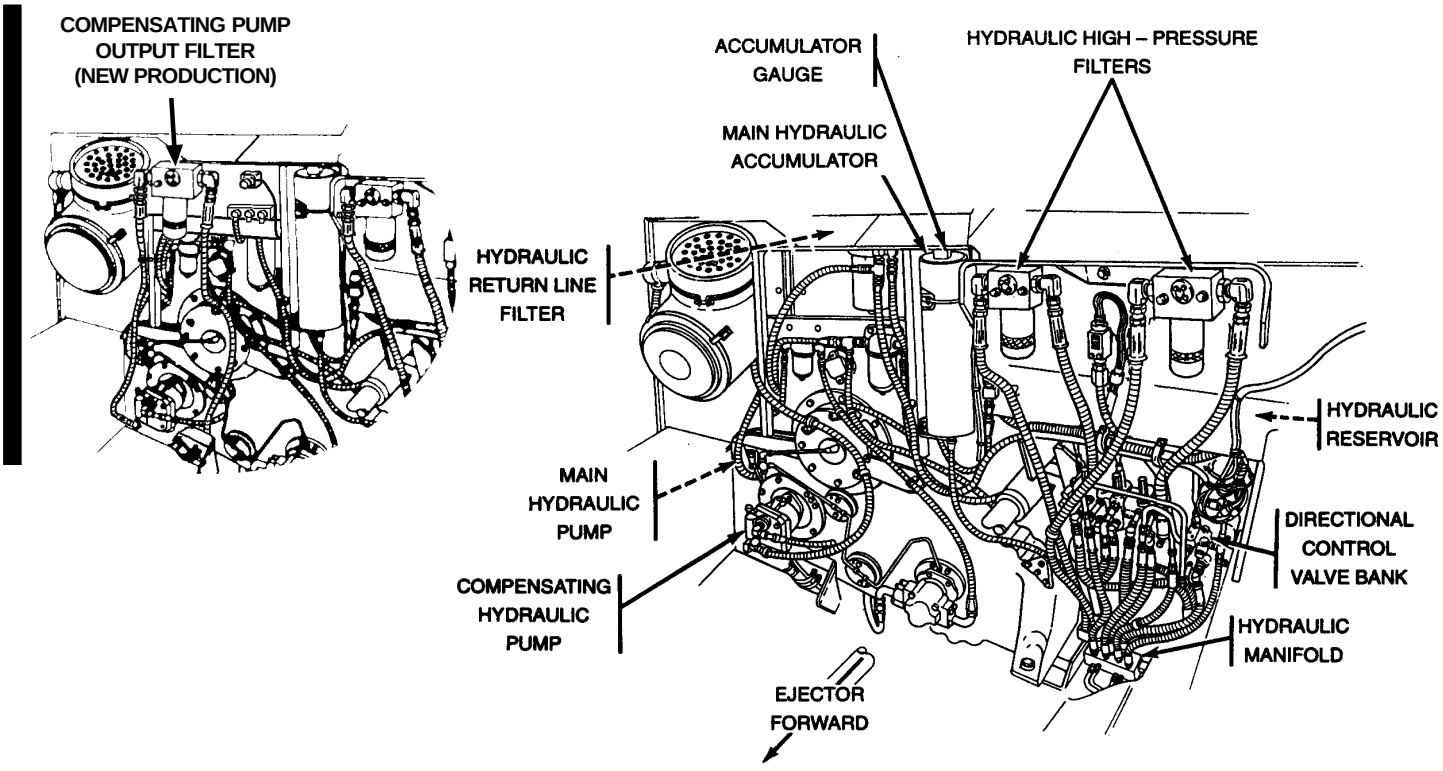
DIRECTIONAL CONTROL VALVE BANK The control valve bank is located beneath the hydraulic high-pressure filters. The control valves in the valve bank are activated by mechanical linkages from the operator's compartment and they, in turn, activate the hydraulic functions of the vehicle.

HYDRAULIC MANIFOLDS Located in the hull, the manifolds route the flow of hydraulic fluid to the vehicle components.

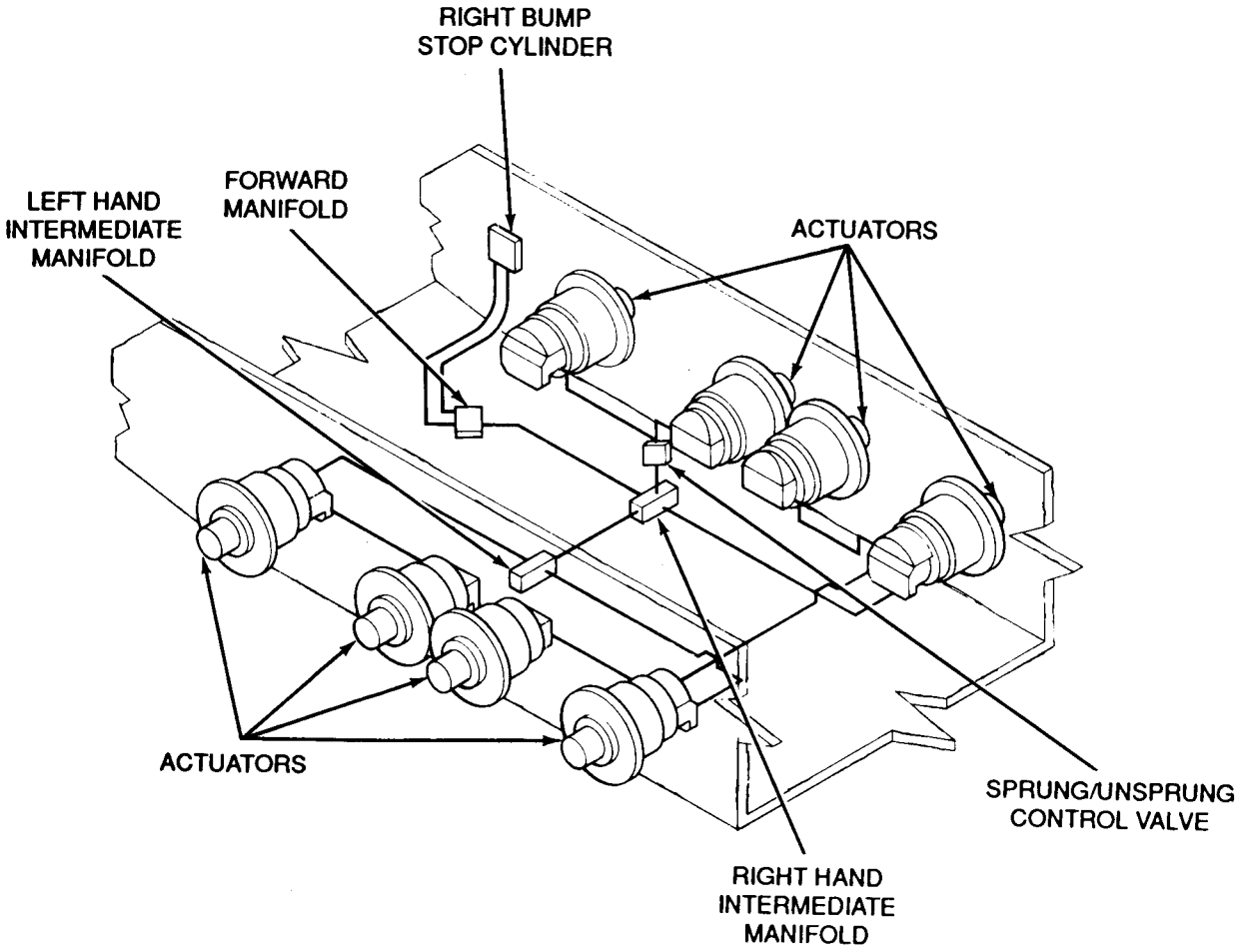
COMPENSATING HYDRAULIC PUMP Located on the front of the transfer case, the pump provides pressure at a constant 2,850 psi (19,651 kPa) to the SPRUNG/UNSPRUNG hydraulic operation. Capacity of this variable displacement pump is 10 gpm (38 Lpm).

COMPENSATING PUMP OUTPUT FILTER (NEW PRODUCTION) The filter, located in bowl area directly above compensating pump, filters out contaminants from the hydraulic oil while it is enroute to the main hydraulic system.

MAIN HYDRAULIC PUMP A fixed displacement pump is mounted on the rear of the transfer case. The pump pulls fluid from the hydraulic reservoir and circulates it through the hydraulic filters at 13 gpm (49 L), then splits the pressure at the directional control valves to provide pressure to both left and right suspension controls.



HYDRAULIC SYSTEM – CONTINUED



HYDRAULIC SUSPENSION OPERATION

Sprung/Unsprung Circuit The key to the operation of the M9 ACE is its hydropneumatic suspension system that allows the vehicle to operate in both SPRUNG and UNSPRUNG modes.

SPRUNG Mode Pressure is delivered via line 9 to bump stops and front actuator fill valves, causing the bump stops to extend and limit movement of the front roadwheel arms. The actuators become a fixed suspension with the accumulators acting like shock absorbers for the system, providing a smooth ride up to 30 MPH (48 Km/H). SPRUNG mode is used for road marches and parking.

UNSPRUNG Mode Pressure is routed via the SPRUNG/UNSPRUNG valve to line 11 and to the actuator wheel valves, causing bump stops to retract and the suspension system to become variable. The front of the vehicle can be raised or lowered, and the operator has independent control of the left and right suspension components. UNSPRUNG mode is used for earthmoving operations.

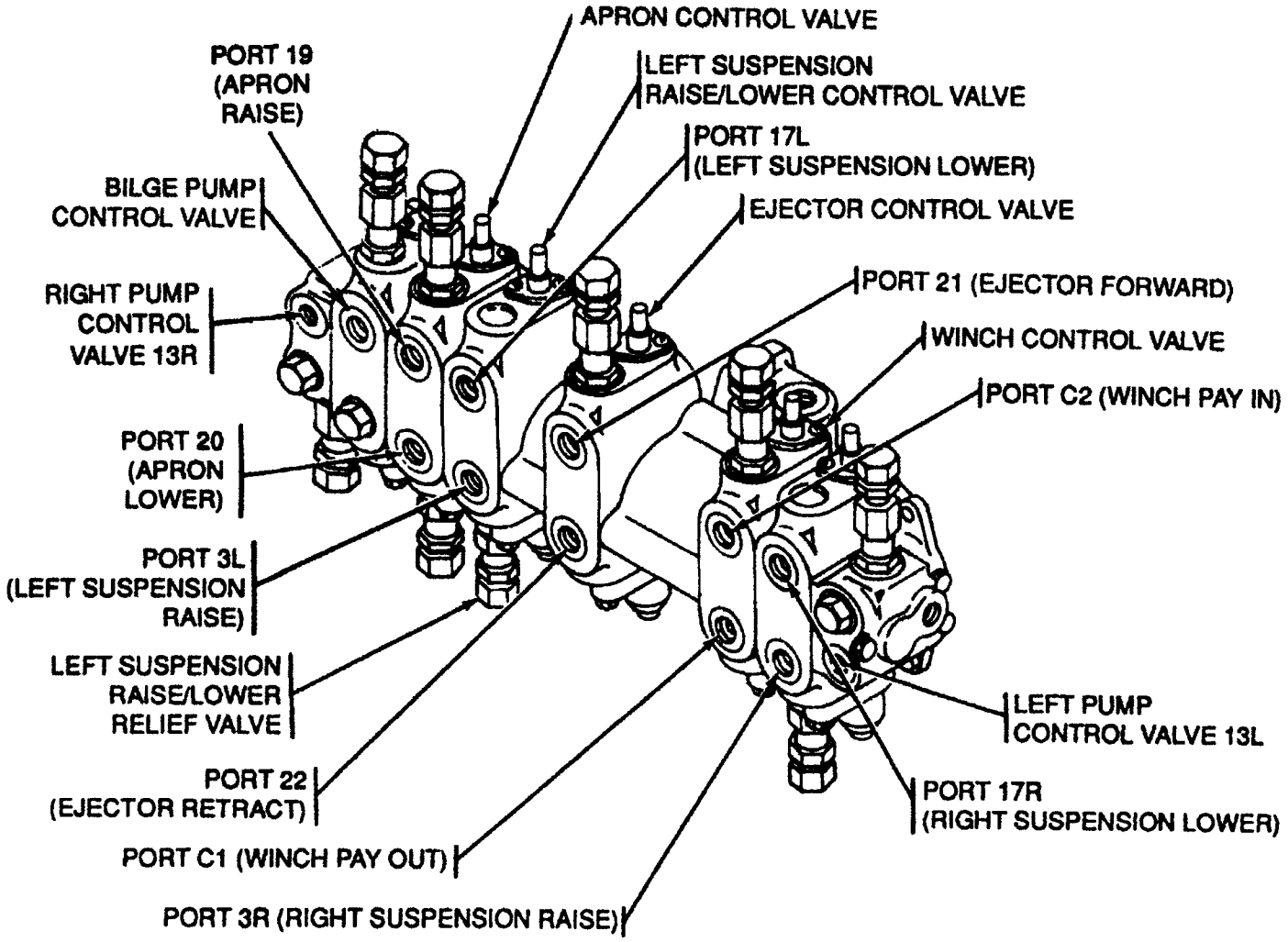
SPRUNG/UNSPRUNG CONTROL VALVE Located to the right of the main valve bank, this valve regulates pressurized fluid flow for whichever mode is selected.

HYDRAULIC CONTROL VALVE OPERATION The hydraulic control valves on the directional control valve bank are activated by mechanical linkages from the operator's compartment and they, in turn, activate the hydraulic functions of the vehicle.

Note

Although the Bilge Pump is considered Not Mission Essential and will no longer be supported with spare and repair parts, this manual contains troubleshooting and maintenance procedures For Your Information Only. See TB 43-0001-62-7 (dated Oct 98) for Instructions to Isolate and disconnect a Non-Functional Bilge Pump.

This page, and pages 1-20 through 1-23, describe the functions of valves and circuits they activate. Refer to this page when following the bilge pump, apron raise/lower, winch, and ejector valve circuits.



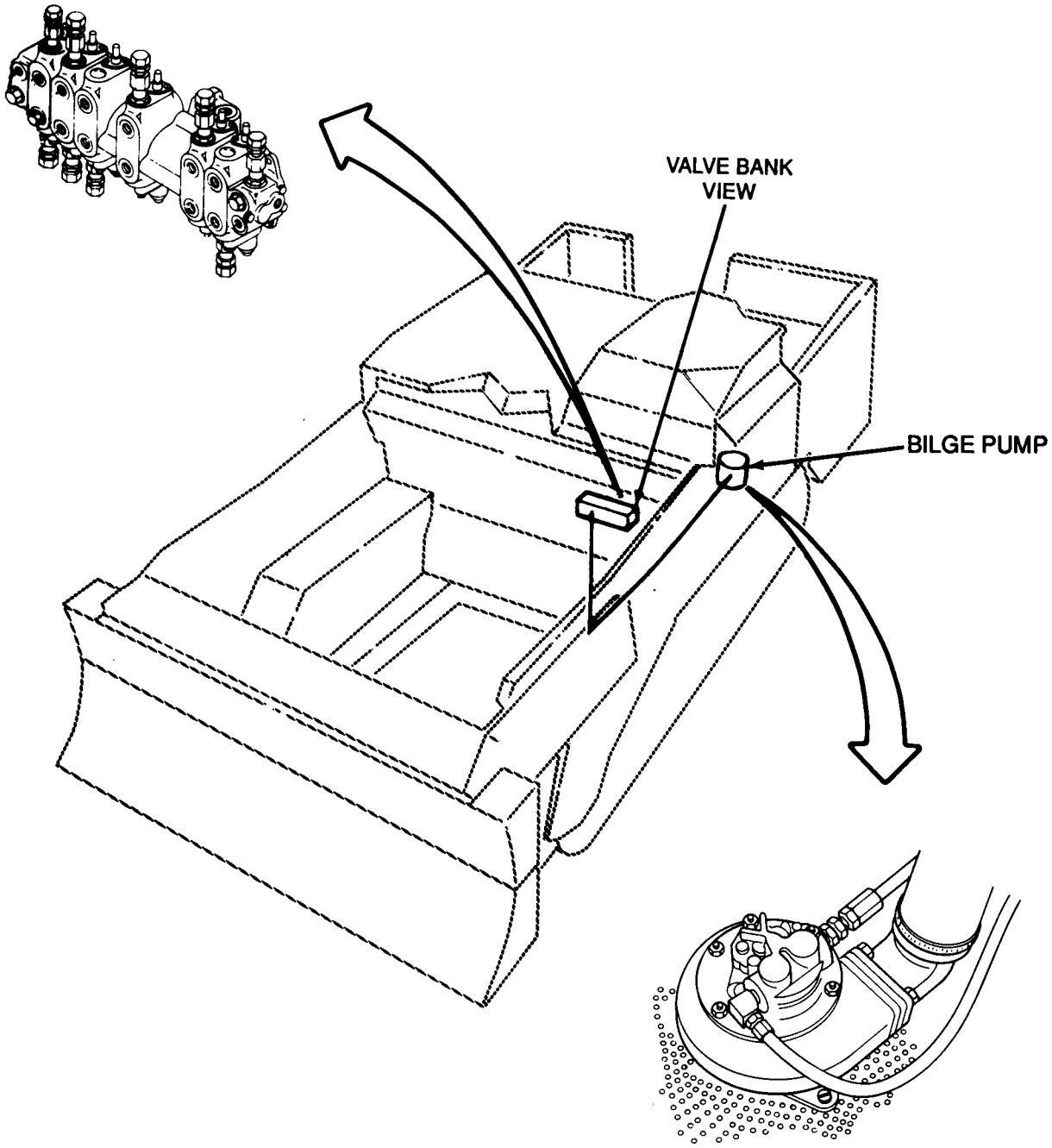
RIGHT PUMP CONTROL VALVE (13R) Receives oil flow from the main hydraulic pump and maintains pressure at 4,000 psi (27,580 kPa) for right side hydraulic functions.

LEFT PUMP CONTROL VALVE (13L) Receives oil flow from main hydraulic pump and maintains pressure at 4,000 psi (27,580 kPa) for left side hydraulic functions.

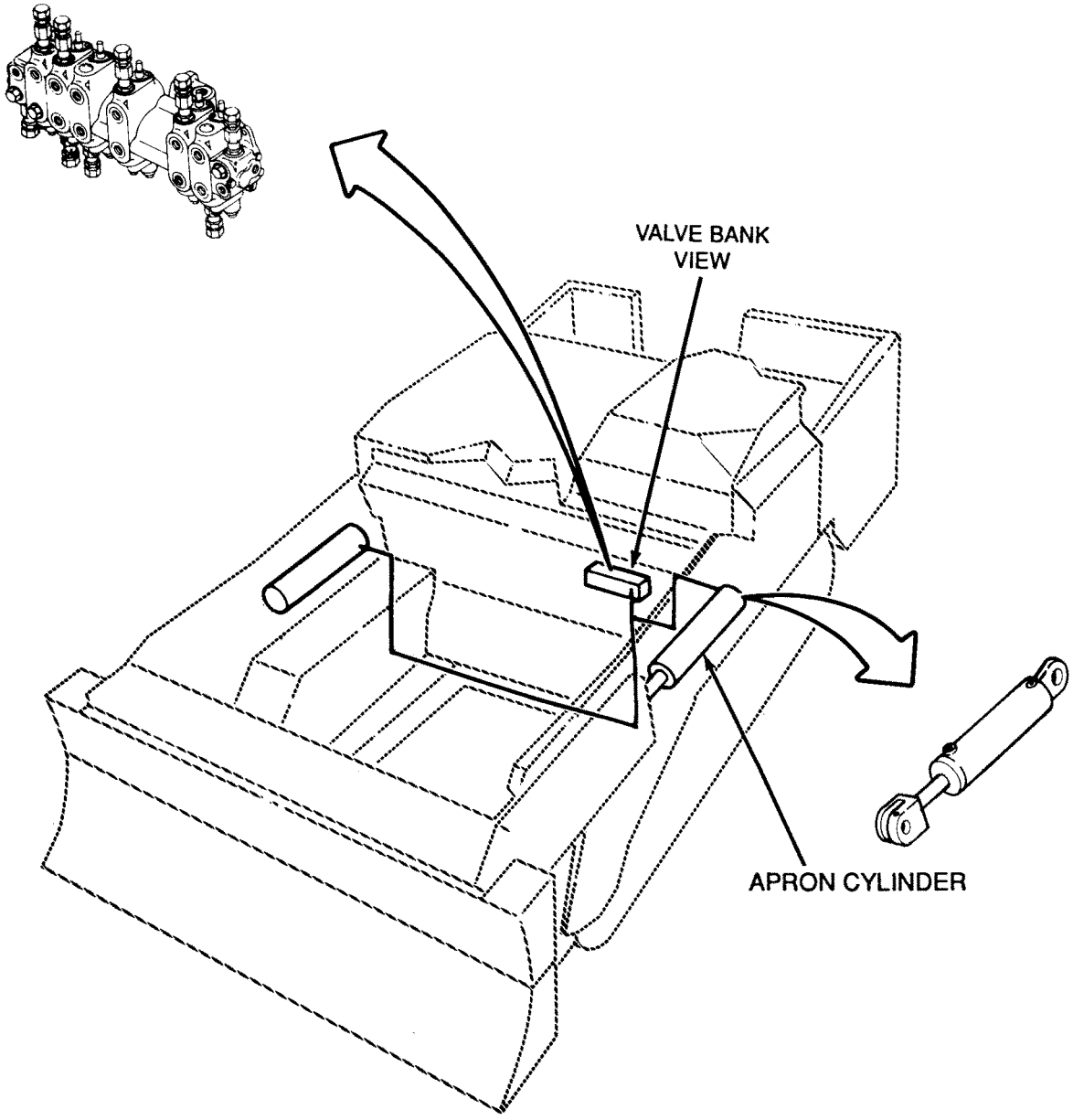
RIGHT SUSPENSION CONTROL VALVE (3R/17R) Port 3R, front bottom of valve, raises the right front side of vehicle. Port 17R, above port 3R, lowers right front side of vehicle. Relief valve is set at 3,500 psi (24,133 kPa).

LEFT SUSPENSION CONTROL VALVE (3L/17L) Port 3L, front bottom of valve, raises the left front side of vehicle. Port 17L, above port 3L, lowers the left front side front of vehicle. Relief valve is set at 3,500 psi (24,133 kPa).

HYDRAULIC SYSTEM – CONTINUED

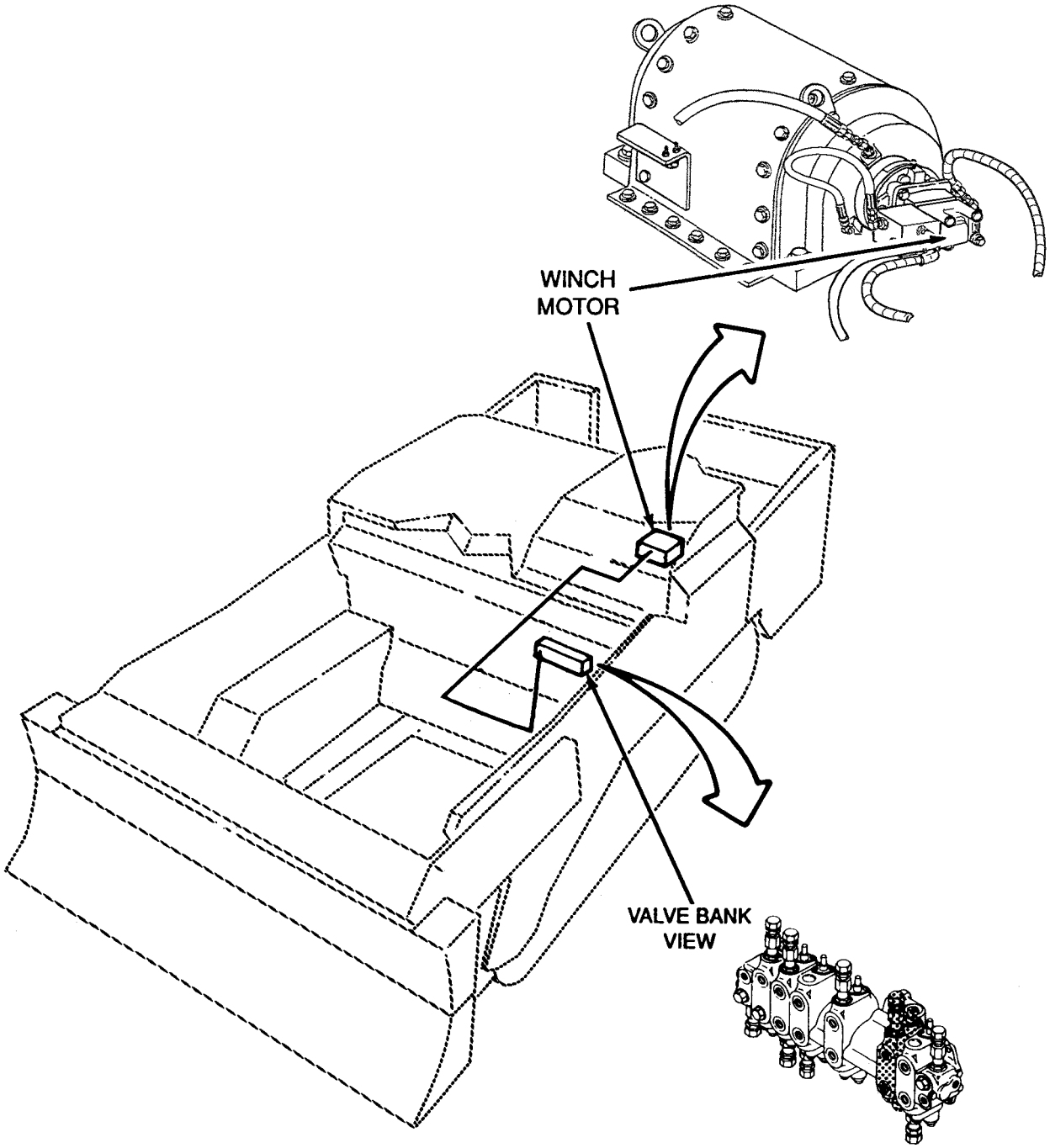


BILGE PUMP CONTROL VALVE (24) When activated, pressurizes bilge pump circuit at 1,500 psi (10,343 kPa) and starts bilge pump action.

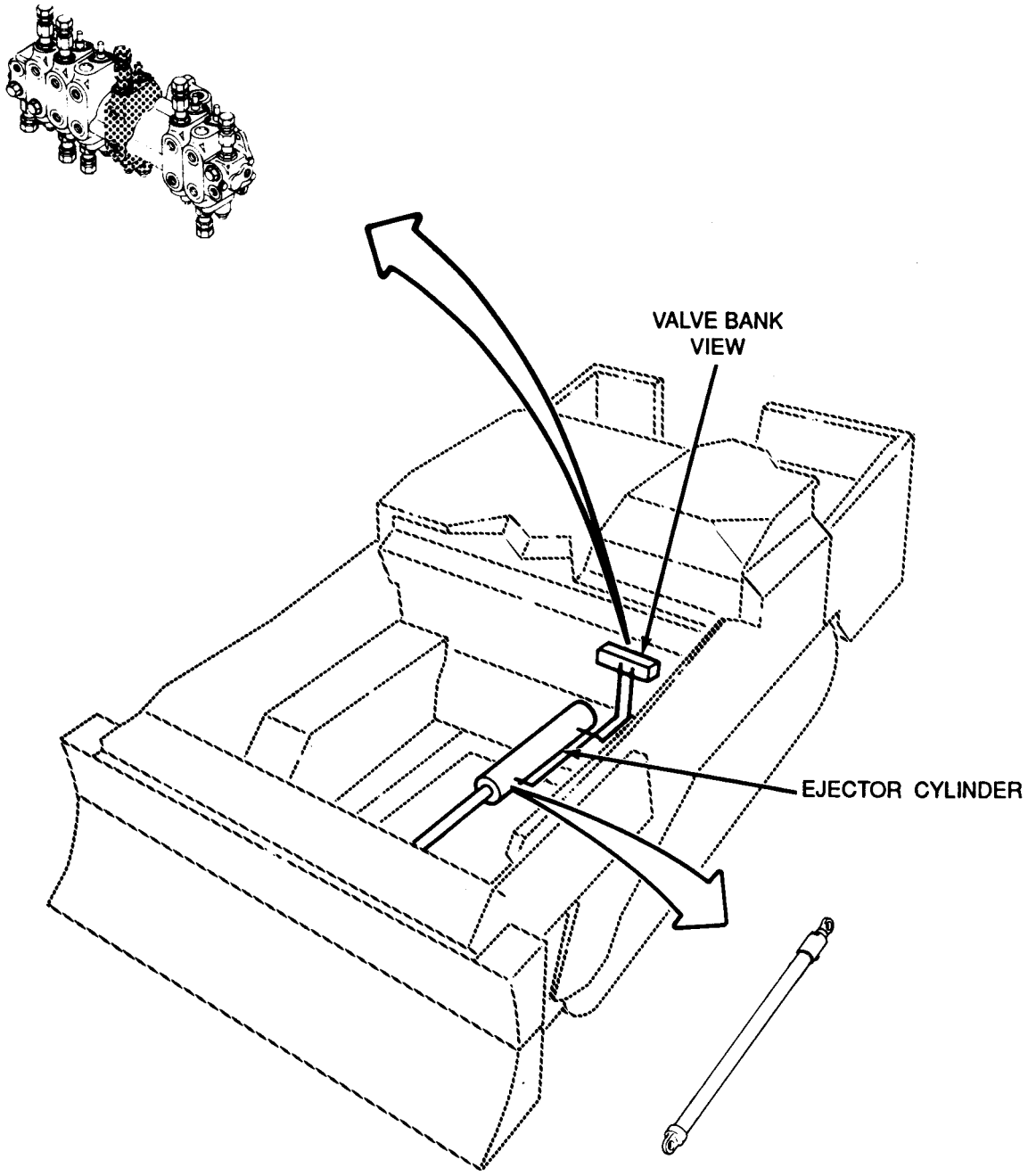


APRON RAISE/LOWER CONTROL VALVE (19/20) Port 19, front top of valve, actuates circuit and raises apron. Port 20, below port 19, actuates circuit and lowers apron. Relief valve #19 is set at 4,500 psi (31,028 kPa) and relief valve #20 is set at 2,000 psi (13,790 kPa).

HYDRAULIC SYSTEM – CONTINUED



WINCH CONTROL VALVE (C1/C2) Port C1, front bottom of valve, actuates circuit and moves cable out of winch. Port C2, above port C1, brings cable into winch. Relief valve is set at 1,950-2,050 psi (13,445-14,135 kPa).



EJECTOR CONTROL VALVE (21/22) Port 21, front top of valve, actuates circuit and moves ejector forward. Port 22, below port 21, actuates and retracts the ejector. Relief valve is set between 1,950 - 2,050 psi (13,445 - 14,135 kPa).

CHAPTER 2
SERVICES AND SCHEDULED MAINTENANCE

SCOPE

This chapter contains information you will need to prepare the vehicle for daily use and to perform preventive and scheduled maintenance. The following sections are included in this chapter.

		Page
Section I	Repair Parts, Special Tools, TMDE, and Support Equipment	2-1
Section II	Service Upon Receipt	2-2
Section III	Preventive Maintenance Checks and Services (PMCS)	2-3
Section IV	Painting and Restenciling Markings	2-23
Section V	General Repair and Cleaning Methods	2-26
Section VI	General Hydraulic System Repair Methods	2-29
Section VII	General Quick-Disconnect Repair Methods	2-34
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Section IX	Battery Box Insulation Replacement and Battery Service	2-48

Section I. REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

GENERAL

This section includes information on tools and equipment you need to support the M9 ACE.

COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), applicable to your unit. Tool kits required for each task in this manual are listed on the INITIAL SETUP page for each task.

SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Special tools required to maintain the M9 ACE are listed in the Maintenance Allocation Chart (MAC) in appendix B and in appendix C of this manual. Special tools are also listed in TM 5-2350-262-24P. Tools that are to be fabricated are described and listed in volume 2, appendix E, of this manual.

REPAIR PARTS

Repair parts are listed and illustrated in the Repair Parts and Special Tools List (TM 5-2350-262-24P) covering unit maintenance for this equipment.

Section II. SERVICE UPON RECEIPT

OVERVIEW

This section contains information on what to do when the vehicle is received.

CHECKING EQUIPMENT

A Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6, Packaging Improvement Report.

B Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions in DA Pam 738-750.

C Check to see whether the equipment has been modified.

INITIAL SERVICES

A Follow all precautions and instructions on tag DD Form 1397.

B Remove all packing and shipping material, such as tape, tiedowns, protective covers, and shipping seals.

C Remove all BII, AAL, and COEI equipment and store in accordance with TM 5-2350-262-10.

D If batteries have not been serviced, refer to TM 9-6140-200-14.

E Service the vehicle in accordance with TM 5-2350-262-10.

F Refer to TM 5-2350-262-10 and perform functional checks of all major vehicle systems.

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

SCOPE

This section details the Preventive Maintenance Checks and Services (PMCS) required for the M9 ACE. PMCS is a scheduled, step-by-step inspection and service of the vehicle and vehicle components. Its purpose is to keep the vehicle in good condition and to identify and correct problems before costly and time-consuming repairs are needed.

MAINTENANCE FORMS AND RECORDS

Use DA Form 2404, Equipment Inspection and Maintenance Worksheet, to record periodic maintenance services performed and faults corrected. The item number on the DA Form 2404 must be the same as the item number of the PMCS. For information on maintenance forms and records, see DA Pam 738-750.

OPERATOR PARTICIPATION

The operator will perform operator PMCS (TM 5-2350-262-10) and will also help unit maintenance perform unit PMCS and lubrication in accordance with TM 5-2350-262-10.

INTERVALS

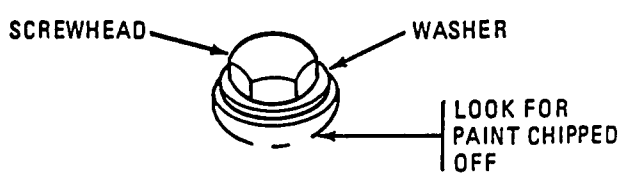
Unit PMCS should be performed every three months or after each 100 hours of vehicle operation, whichever comes first.

EXAMPLE: If a vehicle had a normal quarterly service on 21 September and the hour meter reads 250 hours, the next quarterly service is due on 21 December or on the date the hour meter reads 350 hours, if this is before 21 December.

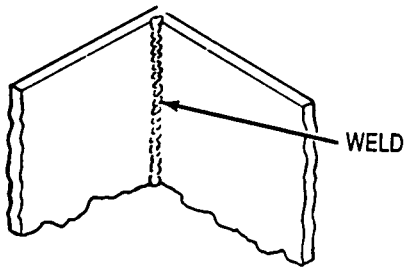
PROCEDURES

Refer to the following illustrations and descriptions for information on how to inspect common items on the vehicle.

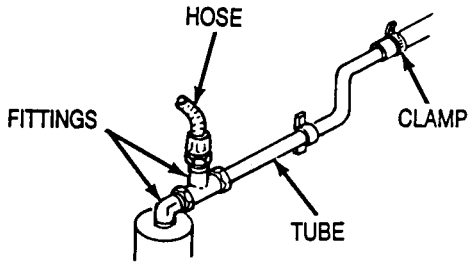
NUTS, BOLTS, AND SCREWS: Check for loose parts by looking for cracked or chipped paint around screws and bolt-heads. Check for missing or broken cotter pins or lockwire.



PROCEDURES – CONTINUED



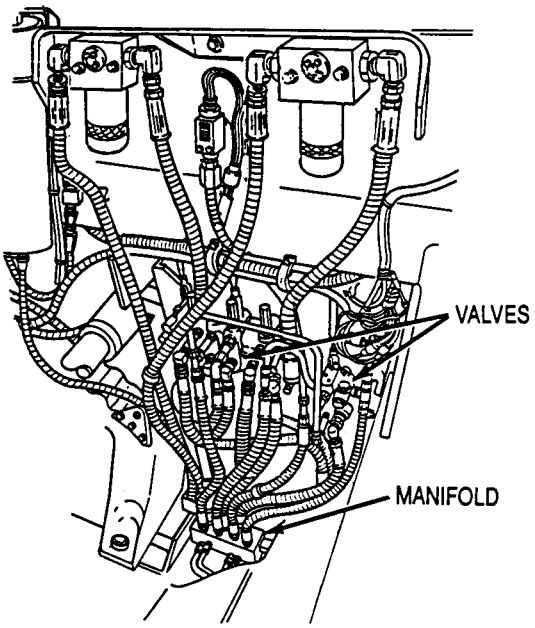
WELDS: Check for damaged welds by checking for cracks in paint or metal, and chipped paint in seams.



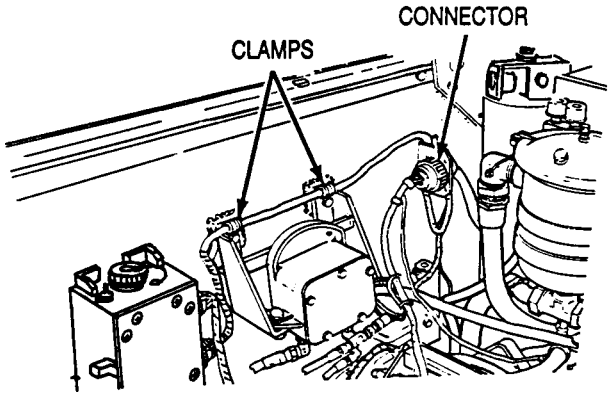
HOSES, TUBES, AND FITTINGS: Check all hoses, tubes, and fittings of the hydraulic system and powertrain for damage, loose clamps, improper routing, leaks, and chafing.

Check fittings for evidence of leaks and looseness. Do not overtighten hoses, tubes, or fittings. Refer to the hydraulic fitting torque valve guide on page 2-35.

In addition to common tools, wrench set P/N 5705565 is available (See TM 5-2350-262-24P).



MANIFOLDS, ACTUATORS, VALVES, AND CYLINDERS: Check for leaks, damage, and loose fittings.



ELECTRICAL LEADS AND HARNESSES: Check for loose or corroded leads and connectors, improper routing of harnesses, loose clamps, or chafing.

Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Mission Capable If:
1	Semi-Annual	Road Test	a. Ensure that all operator PMCS, Before through Bi-Monthly, in TM 5-2350-262-10 have been completed prior to performing unit PMCS. b. Ensure that operator performed vehicle road test by driving the vehicle at least 5 mi. (8 km).	
2	Semi-Annual	Block Vehicle	a. Start the engine and place SPRUNG/UNSPRUNG control lever in UNSPRUNG (TM 5-2350-262-10). b. Position both suspension control levers to lower front end fully. **WARNING** **Do not stand directly behind vehicle or directly in front of vehicle when positioning jack stands. Failure to comply may result in severe injury or death to personnel.** c. When rear of vehicle reaches its highest position, have assistant place support stands (12355345) under both rear corners of hull. d. Position both suspension control levers to raise front end fully. e. When front of vehicle reaches its highest position, have assistant place support stands (12355345) under both front corners of hull. f. Before shutting off engine, position ejector about midway in bowl. g. Raise front and then rear of vehicle to highest positions, and have assistant remove support stands.	

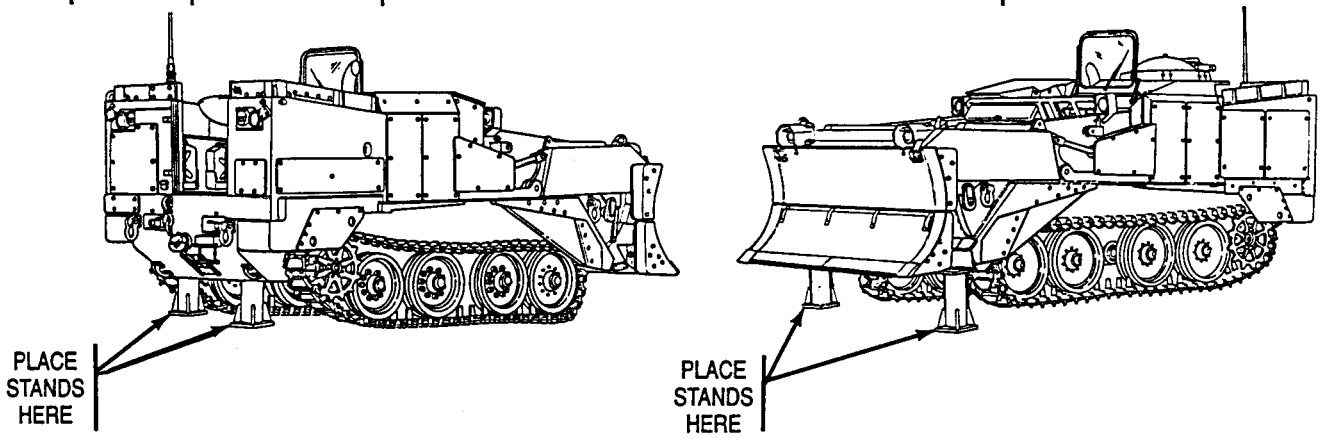


Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Mission Capable If:
3			Deleted	
4	Semi-Annual	Hydraulic Tank	**WARNING** **High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic 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.** a. Check tank for damage and leaks. b. Check hydraulic hoses for deterioration, cracks, and leaks. c. Remove dipstick and strainer filter from filler housing.	a. Class III leak. b. Hose is damaged or Class III leak.

Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Mission Capable If:
4	Semi-Annual	Hydraulic Tank – Continued	d. Remove preformed packings from dipstick and strainer filter and discard packings. **WARNING** **Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or injury to personnel.** e. Clean cap, dipstick, and strainer filter with drycleaning solvent. Allow parts to air dry. f. Place new preformed packing on dipstick and strainer filter. g. Install strainer filter and dipstick in filler housing.	

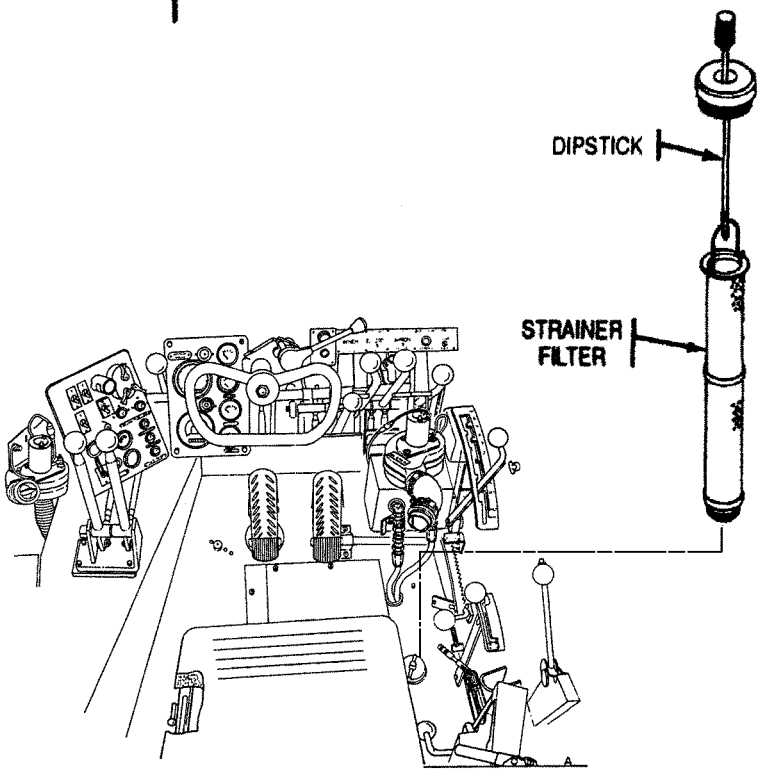
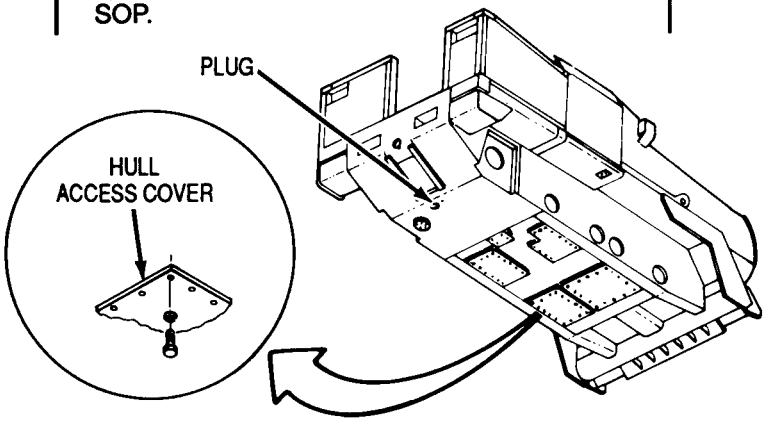


Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Mission Capable If:
5	Semi-Annual	Access Covers	**WARNING** **Hull access covers may be heavier than they appear due to accumulation of fluid and dirt. Take extra precautions when removing access covers. Failure to comply may result in severe injury to personnel.** a. Remove five hull protective plates, access covers, and drain plug from bottom of hull. b. Check hull access cover for cracks, tears, and deterioration. c. Remove rear floor panels. d. Lube drive shaft through bottom rear access plate. **NOTE** Have operator clean hull compartment, remove debris, and wipe up spilled oil and fuel. Allow to drain thoroughly. Dispose of spilled oil and fuel in accordance with unit SOP.	b. Access cover cannot be installed or missing. d. Yoke cap is not secured or missing.



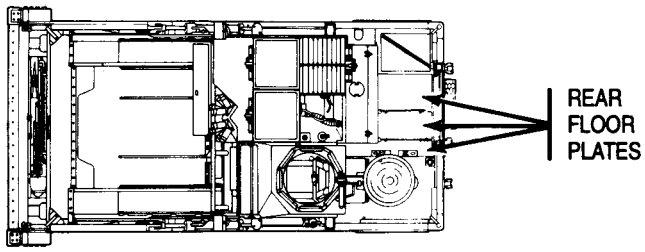
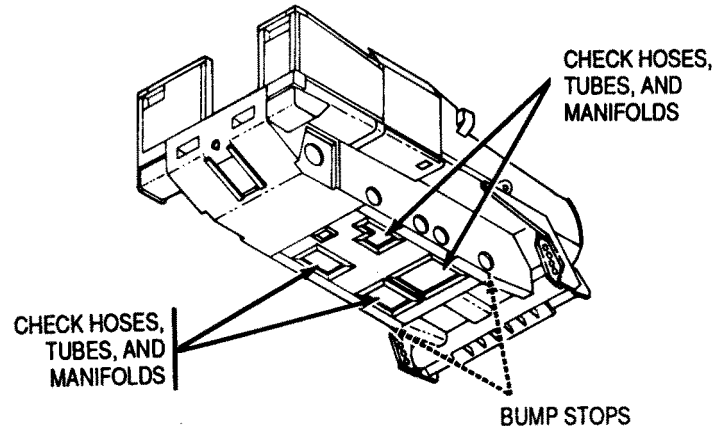


Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Mission Capable If:
6	Semi-Annual	Hull Bottom	a. Check hoses, tubes, and manifolds in hull bottom for leaks or damage. b. Check left and right bump stops for security and hydraulic cylinder leaks. c. Check underside for damage to hull access covers, and protective plates.	a. Hoses, tubes, or manifolds are damaged, or Class III leak. b. Loose bump stops, or Class III leak. c. Damage is severe enough to have caused damage to components inside hull, access covers cannot be installed, or missing.
7	Semi-Annual	Rotary Actuators and Actuator Accumulators	a. Check actuator accumulators for leakage and damage. b. Charge actuator accumulators (p 4-846). c. Check rotary actuators, inside and outside the hull, for loose mounting screws, oil leaks, damage, and cracks.	a. Actuator accumulator is damaged or leaks. b. Actuator accumulator will not hold charge. c. No more than two (2) broken, stripped, and missing mounting screws, Class III leak, damaged assembly



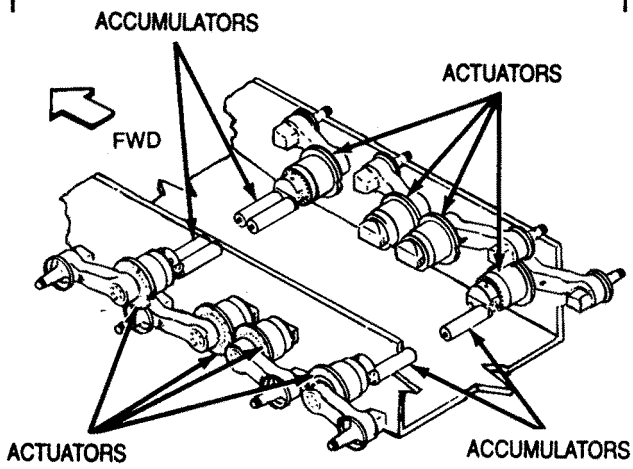


Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Mission Capable If:
8	Semi-Annual	Driver's Hatch	Check driver's hatch seal for cuts, tears, and damage.	
9	Semi-Annual	Ejector and Ejector Cylinder	a. Check ejector for damage, weld cracks, and connection to cylinder.	a. Ejector is damaged, cracked, or not secured to cylinder.
			b. Check cylinder for leaks, damage, and galling or corrosion to cylinder rod.	b. Cylinder or rod is damaged or Class III leak.
			c. Check ejector guide rollers for wear and improper adjustment.	c. Rollers are worn or out of adjustment.
			d. Check ejector wear plates for damage. Adjust as necessary to achieve 0.25-in. (.64-cm) clearance from hull.	d. Wear plates missing or damaged or will not adjust.

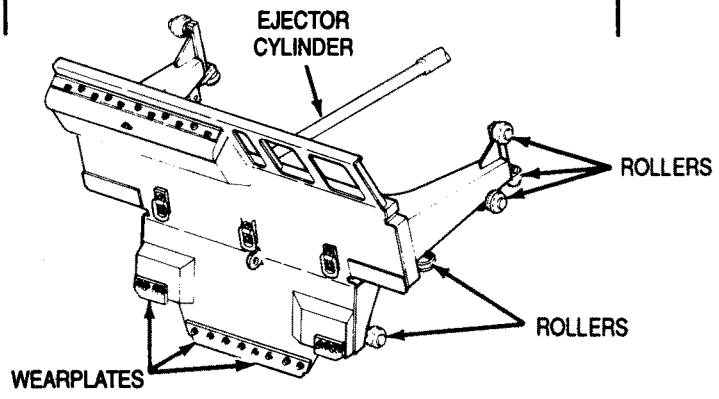


Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

Item No.	Interval	Location Item to Check/ Service	Procedure	Not Mission Capable If:
10	Semi-Annual	Compensating Pump	a. Check external lines and fittings for leaks and damage.	a. Lines or fittings are damaged, or Class III leak.
			b. Check housing for leaks, cracks, and loose bolts.	b. Housing is damaged, missing bolts, or Class III leak.
			c. Check shock mounts for condition of rubber insulators.	c. Rubber insulators are cut, torn, or do not prevent metal contact.

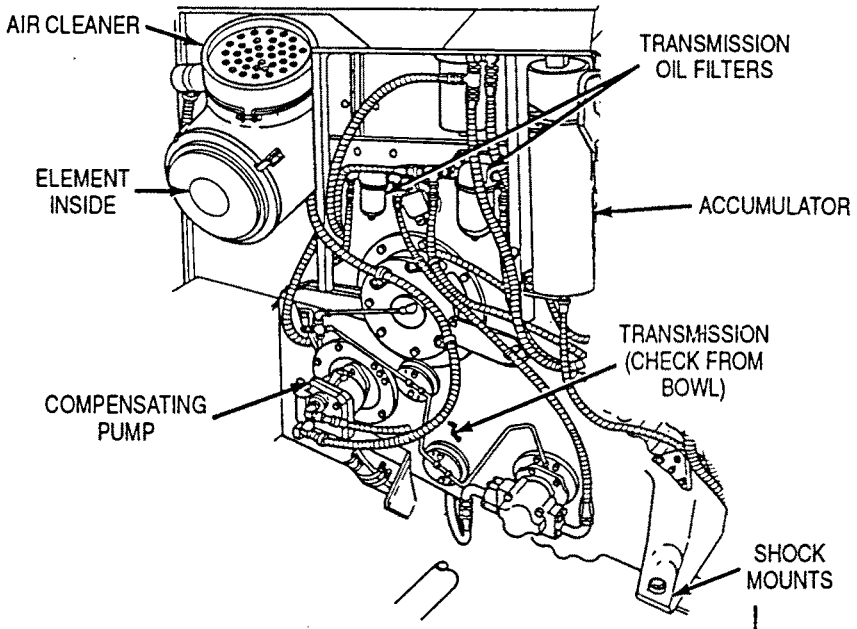


Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Mission Capable If:
11	Semi-Annual	Transmission Shift Accumulator	a. Check accumulator for leaks and loose fittings. b. Charge accumulator (p 4-678).	a. Leaks, or missing fittings. b. Accumulator will not hold charge.
12	Semi-Annual	Transmission and Transmission Oil Filters	a. Check transmission case for cracks and leaks. b. Check transmission oil filter for leaks, cracked or distorted case, and loose or missing hardware. c. Change transmission oil filter. d. Change scavenger pump filter. e. Change hydraulic return line filter.	a. Transmission is cracked, or Class III leak. b. Class III leak, damaged case, or missing hardware.
13	Semi-Annual	Engine Air Cleaner	a. Check case for damage and loose mounting bolts. b. Check air cleaner element and housing for damage. **WARNING** • **Compressed air can injure you and others. Do not point compressed air hoses at anyone. Do not use more than 30 psi (207 kPa). Always wear goggles.** • **If NBC exposure is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your unit NBC Officer or NBC NCO for appropriate handling or disposal instructions.** c. Clean air cleaner element with compressed air directed from inside element.	b. Housing is bent or broken, element is torn, or has holes.

Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Mission Capable If:
14	Semi-Annual	Muffler and Exhaust Pipes	a. Check exhaust system for damage, deterioration, and loose or missing mounting hardware. b. Check exhaust manifold for cracks and evidence of leakage around gasket.	a. Exhaust pipes or muffler are cracked or damaged. b. Exhaust manifold is cracked or leaks.
15	Semi-Annual	Engine and Engine Oil Filter	a. Check engine for loose connections of hoses, tubes, and wiring, and loose or missing mounting hardware and leaks. b. Check oil filter housing and lines for damage and leaks.	a. Damaged connections, Class III leaks. b. Housing or lines damaged, Class III leak.

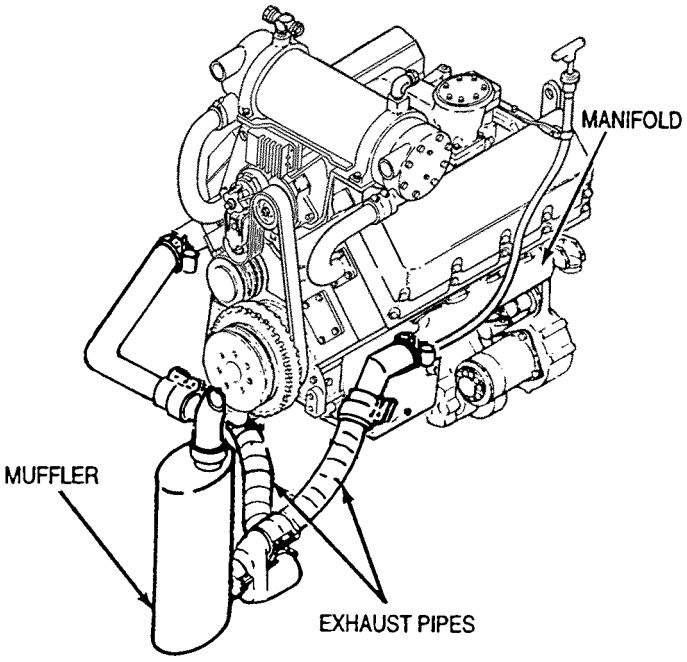


Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

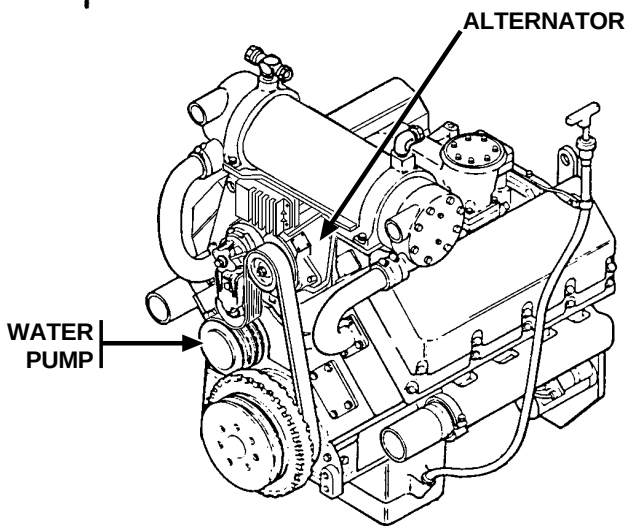
Item No.	Interval	Location Item to Check/ Service	Procedure	Not Mission Capable If:
15	Semi-Annual	Engine and Engine Oil Filter – Continued	c. Check hoses, tubes, and wiring for chafing, rubbing, and kinks. d. Check water pump for leaks, cracks, and loose mounting bolts. e. Change oil filter. 	c. Damaged hoses, tubes, or wiring. d. Class III leak, water pump cracked, or missing mounting bolts.
16	Semi-Annual	Alternator	a. Check for loose mounting and defective electrical connections. b. Check alternator belt for cracking, fraying, and breaks. Check for tightness. Play should be about 1/2-in. (1.3-cm).	a. Missing mounting bolts, damaged electrical wires and connectors. b. Belt is broken, cracked to belt fiber, has more than one crack (1/8-in. (3.2-mm) in depth or 50% of belt thickness), has frays more than 2-in. (5.1-cm) long, or excessive play.

Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Mission Capable If:
17	Semi-Annual	Cooling System	**WARNING** **Compressed air can injure you and others. Do not point compressed air hoses at anyone. Do not use more than 30 psi (207 kPa). Always wear goggles.** a. Clean outside of radiator, including fins. Use air gun. b. Check radiator for damage, cracks, and leaks. c. Check hoses for kinks, cracks, or breaks. d. Check engine coolant pump belt for cracking, fraying, and breaks. Check for tightness. Play should be about 1/2-in. (1.3-cm). e. Check for bent damaged pulley. **WARNING** **Hot coolant can cause severe burns. Do not open radiator cap access cover or remove cap until coolant gauge reads in bottom one-quarter of green zone. Failure to comply may result in severe injury to personnel.**	b. Class III leak. c. Class III leak. d. Belt is broken, cracked to belt fiber, has more than one crack (1/8-in. (3.2-mm) in depth or 50% of belt thickness), has frays more than 2-in. (5.1-cm) long, or excessive play. e. Pulley damaged or unserviceable.

Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

Item No.	Interval	Location Item to Check/ Service	Procedure	Not Mission Capable If:
17	Semi-Annual	Cooling System – Continued	**Table 1.** **Lowest Estimated Temperature in Geographic Area** / **Pints of Ethylene Glycol Antifreeze to be Included in Preparation of 1-Gal. Antifreeze Solution** +20° F (-7° C) . . . . . 1-1/2 +10° F (-12° C) . . . . . 2 0° F (-18° C) . . . . . 2-3/4 -10° F (-23° C). . . . . 3-1/4 -20° F (-29° C). . . . . 3-1/2 -30° F (-34° C). . . . . 4 -40° F (-40° C). . . . . 4-1/4 -50° F (-46° C). . . . . 4-1/2 -55° F (-48° C). . . . . 4-3/4 **NOTE** A freeze protection indication beyond the limits shown in table 1 or below -55° F (-48° C), when MIL-A-46153 antifreeze is used, will require partial coolant drain and replacement with water. Freeze protection must not exceed -55° F (-48° C) when MIL-A-46153 is used. f. Test for antifreeze protection by use of a combination antifreeze and battery tester. g. Test for reserve alkalinity (corrosion protection) by means of the Test Kit, Reserve Alkalinity (NSN 6630-01-011-5039). Color indication of the test kit stick will determine condition of the coolant and its potential corrosion protection. Instructions for use are as follows: 1. Dip stick into coolant, and remove immediately. Do not use test stick if coolant temperature is below +50° F (+10° C) or if using a commercial brand antifreeze. 2. Fifteen seconds after dipping, compare color on the stick with the color chart on the container and annotate.	f. Antifreeze protection does not comply with table 1. g. Test kit indicates the coolant is unsafe.

Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Mission Capable If:
17	Semi-Annual	Cooling System – Continued	(a) Blue indicates coolant is safe to use. (b) Green indicates reserve alkalinity and corrosion protection of coolant is marginal but may be used safely until the next service inspection. **NOTE** Do not use antifreeze extender additive (MIL-A-53009) when arctic antifreeze is used in the cooling system. (c) Yellowish green indicates the coolant is unsafe to use. If the DD Form 314 identifies the coolant as the original charge, then add three percent by volume (1 pint per 17 quarts) of the antifreeze extender additive (MIL-A-53009) to the cooling system. Addition of extender to antifreeze is a one-time service. When the extender is added to the antifreeze, the date must be recorded in the "remarks" block of DD Form 314. If the DD Form 314 identifies the unsafe coolant as having been extended before, or the coolant as arctic antifreeze, then the coolant must be drained and replaced with fresh coolant. See Flush Cooling System. h. Check coolant cleanliness by draining a small amount of coolant into a clean container, and look for excessive rust, foreign particles, and/or sediment.	h. Excessive coolant contamination is found.

Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Mission Capable If:
18	Semi-Annual	Fuel Filter	**NOTE** • Close fuel valve before removing filter canister. Open after completed. • Change fuel filter by removing canister and discarding fuel, filter, and gasket (see unit SOP). Clean canister and cover. Install new filter and gasket.	
19	Semi-Annual	Batteries	a. Check battery compartment for corrosion and debris. b. Clean slave receptacle, if needed. c. Check and record specific gravity of each cell. **NOTE** Refer to TM 9-6140-200-14 for more details on batteries.	c. Any cell reading below 1.180 specific gravity for operation in tropical climates or 1.225 specific gravity for operation in temperate climates, or there is more than 0.025 specific gravity difference between high and low cells.
20	Semi-Annual	Air Reservoir	**NOTE** Air reservoir must be charged before it is checked for leaks. a. Start engine and run until low air pressure warning light goes off (TM 5-2350-262-10). b. Check for loose or damaged air hose and connections.	a. Warning light does not go off. b. Air hose or connections are damaged.

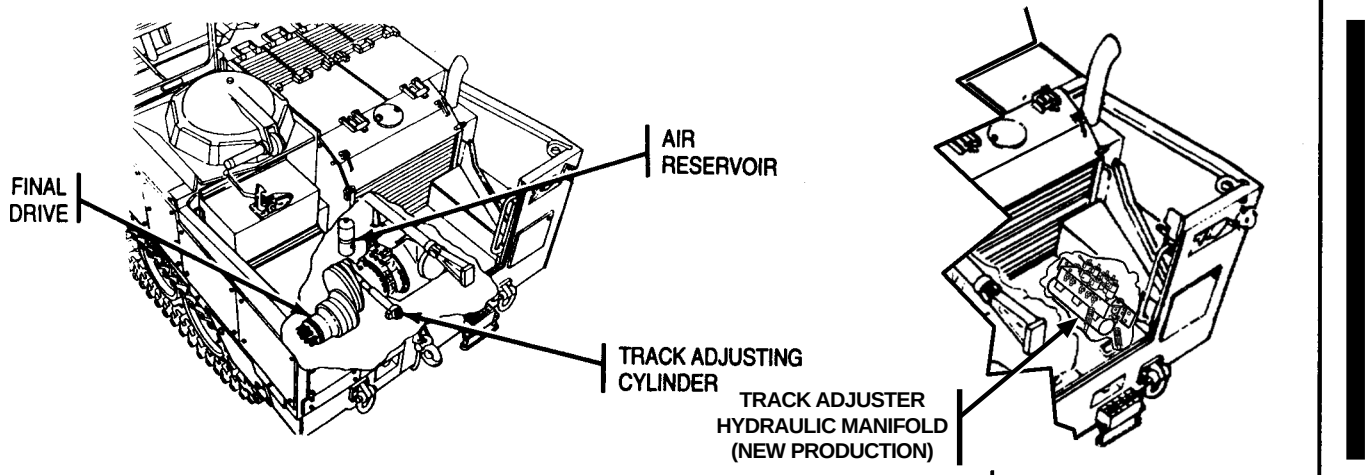


Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Mission Capable If:
21	Semi-Annual	Track Adjusting Cylinders	Check cylinders for cracks, leaks, and loose or missing hardware.	Class III leaks, or damaged.
21.1	Semi-Annual	Track Adjusting Hydraulic Manifold (New Production)	Check manifold assembly for cracks, leaks, and loose or missing hardware.	Class III leaks, or damaged.
22	Semi-Annual	Final Drive Components and Sprockets	a. Check for cracks, leaks, and loose or missing hardware. b. Check torque on inner drive sprocket screws, 170-190 lb-ft (231-258 N•m). c. Check both final drive flanges for cracks	a. Class III leaks, or damaged. b. Missing or broken screw. Flange is cracked.
23	Semi-Annual	Steer Unit	a. Check case for cracks and leaks. b. Check filter housing for damage and leaks. c. Adjust brake levers (p 4-738). d. Remove steering unit filler screen. Clean and repair (TM 5-2350-262-10).	a. Case damaged, or Class III leak. b. Class III leak.

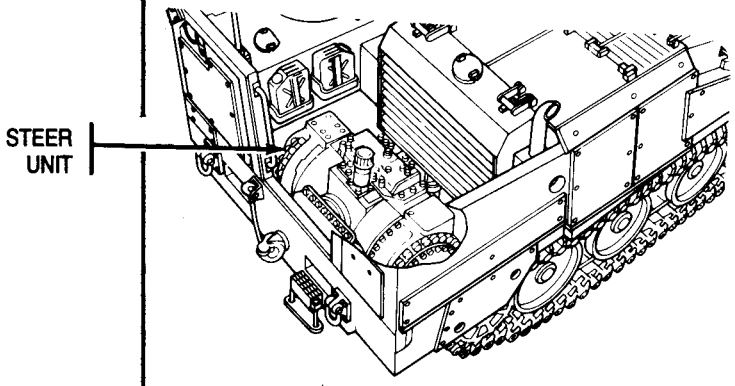


Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

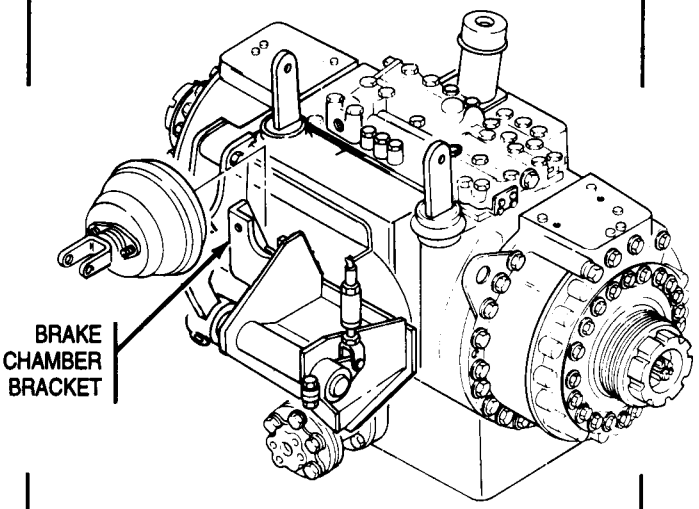
Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Mission Capable If:
24	Semi-Annual	Brake Chamber Bracket	a. Check for cracks and weld breaks. b. Ensure bracket is secure around chamber.  	a. Bracket is cracked or has weld breaks. b. Bracket is loose and cannot be tightened.
25			DELETED	
26	Semi-Annual	Road Test	a. Perform final vehicle road test. Drive vehicle at least 5 mi (8 km). b. Check vehicle in Geared Steer (GS) and Clutch Brake (CB) and check steering yoke operation. c. Check steering in forward range and in reverse range.	b. Vehicle wanders to right or left when steering yoke in centered. Steering yoke does not center itself when released. c. Vehicle does not finish complete turn when yoke is turned left

Table 2-1 Unit Level Preventive Maintenance Checks and Services for M9 ACE (Continued)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not Mission Capable If:
26	Semi-Annua	Road Test – Continued	d. Check vehicle braking.	d. Vehicle does not slow down with brake slightly depressed, or stop with brake fully depressed.
			e. Check hydraulic controls for smooth and responsive operation.	e. Hydraulic operations are not smooth or responsive.
			f. Check power unit operation for erratic idle, loss of power, and excessive black smoke.	f. Erratic idle or loss of power.
			g. Check for fluid leaks at completion of road test.	g. Class III leaks.
27	Semi-Annual	NBC/MCS System	a. Check the NBC/MCS system, if installed, for proper operation. Check for damage to hoses or connections that may impair proper operation of NBC/MCS system, if installed.	
			b. Check gas particulate filter units for presence and proper operation of spring clip.	
28	Annual	Winch	Drain winch oil, clean plugs,and fill to proper level. Dispose of oil in accordance with unit SOP.	

Section IV. PAINTING AND RESTENCILING MARKINGS

GENERAL

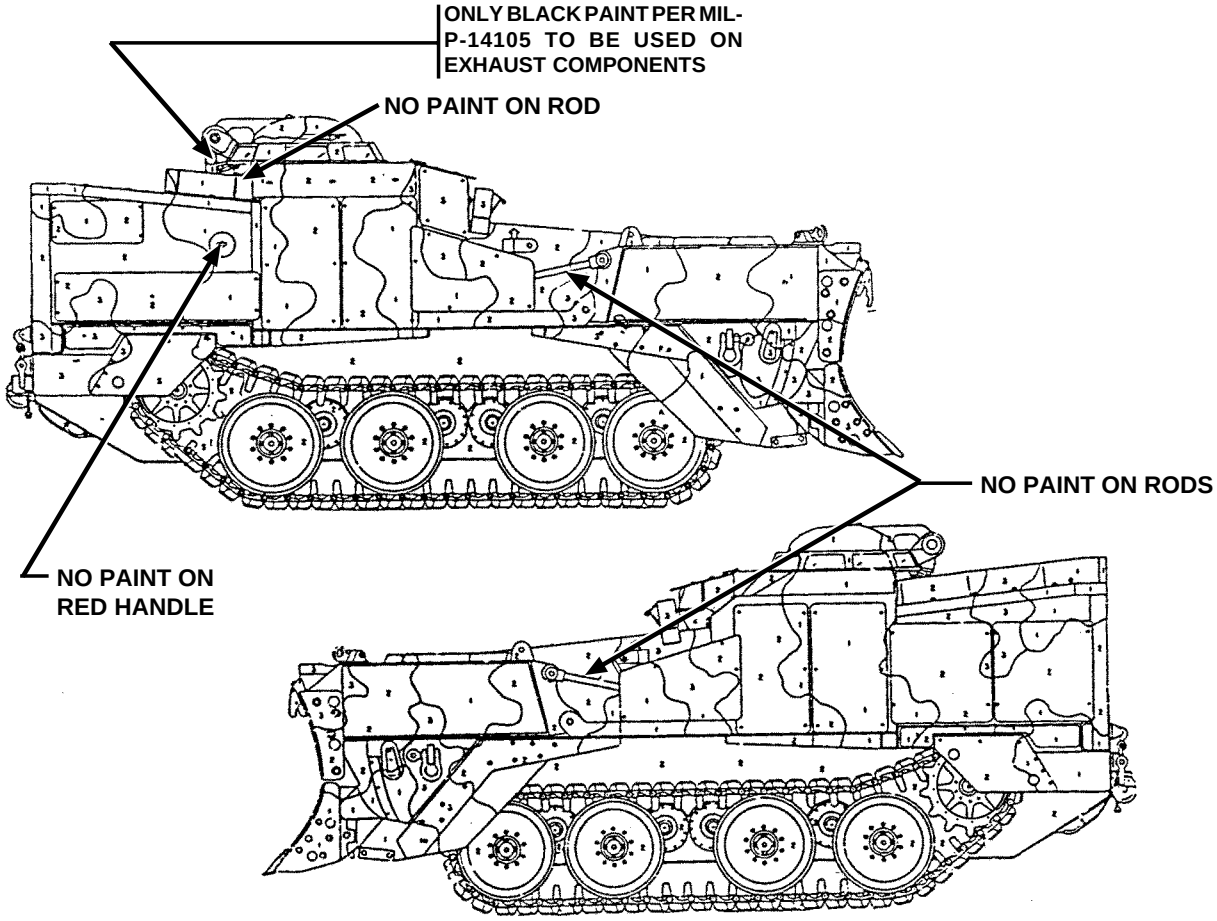
Complete painting of the vehicle is authorized for and done by direct support maintenance or higher. Spot painting and restenciling vehicle markings are done by unit maintenance. Instructions for materiel preparation and painting are given in TM 43-0139.

VEHICLE INTERIOR

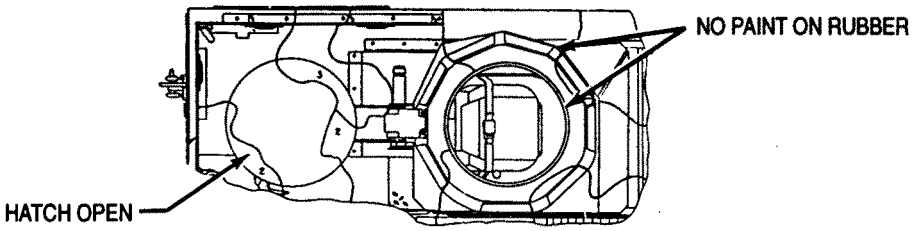
Prepare surface in accordance with TM 43-0139 and MIL-STD-193. Coat surface with white, specification MIL-C-22750.

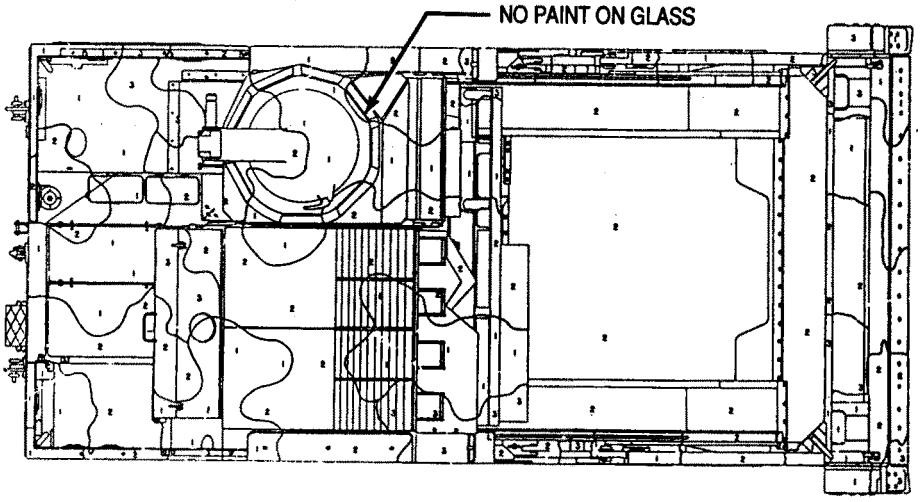
VEHICLE EXTERIOR

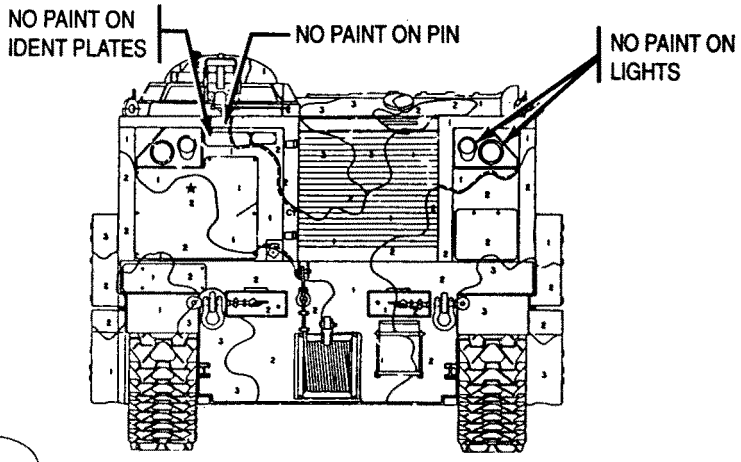
Prepare surface in accordance with TM 43-0139 and MIL-STD-193. Coat surfaces (1) with black, (2) with color green 383, and (3) with color brown 383, specification MIL-C-46168 or MIL-C-53039.

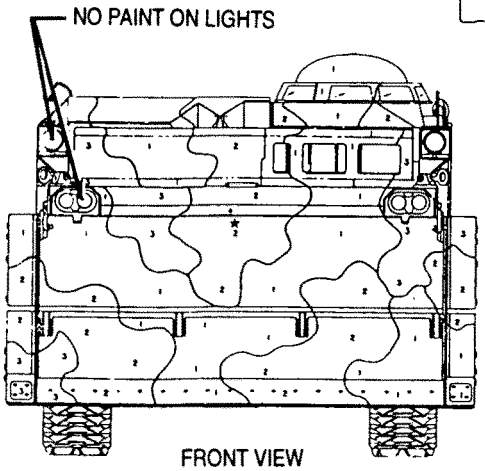


VEHICLE EXTERIOR – CONTINUED

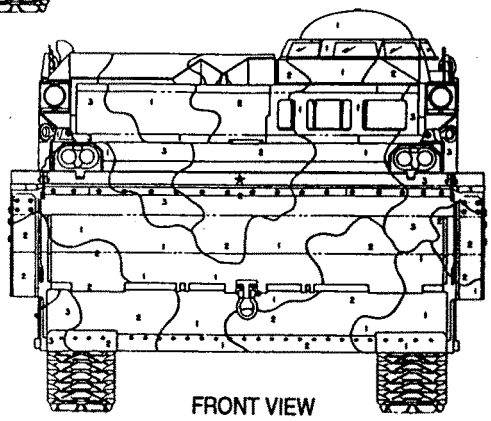








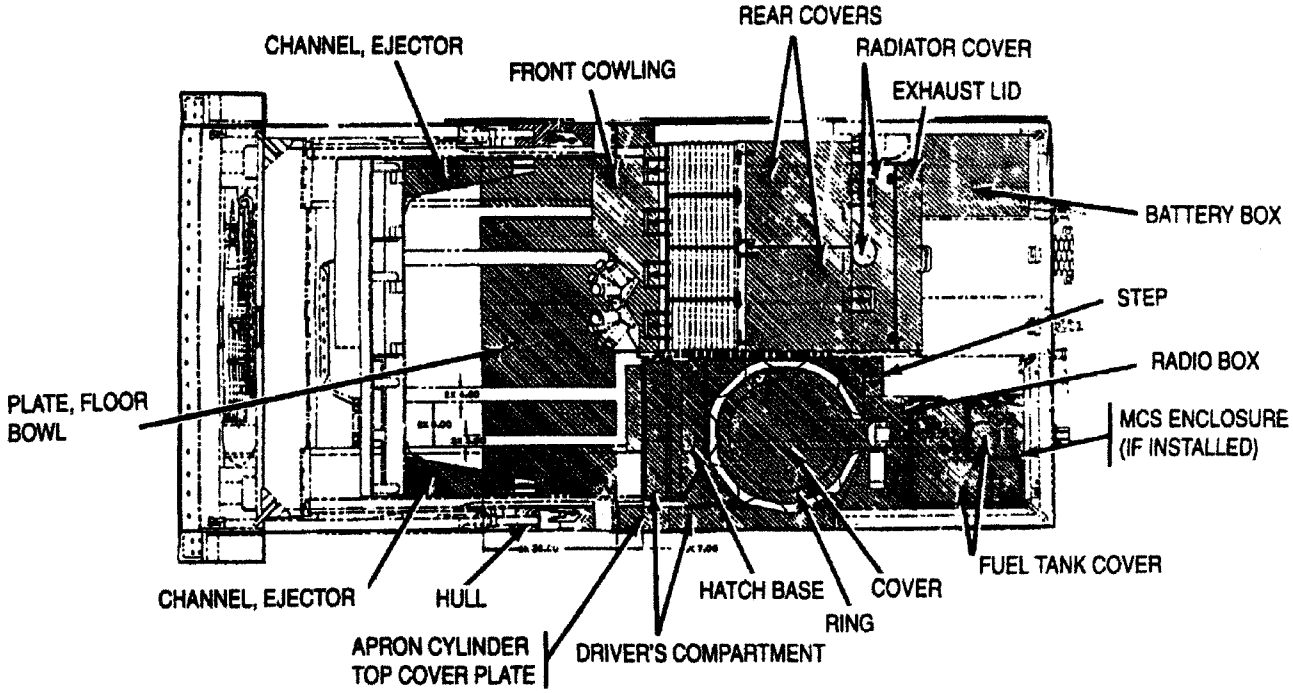
FRONT VIEW
DOZER BLADE DOWN



FRONT VIEW
DOZER BLADE UP

NONSKID AREAS

Deck covering compound, non-skid, Type 1A, Grade B, Class 1, color gray (haze or dark), DOD-C-24667, will be used to coat deck areas where personnel walk.

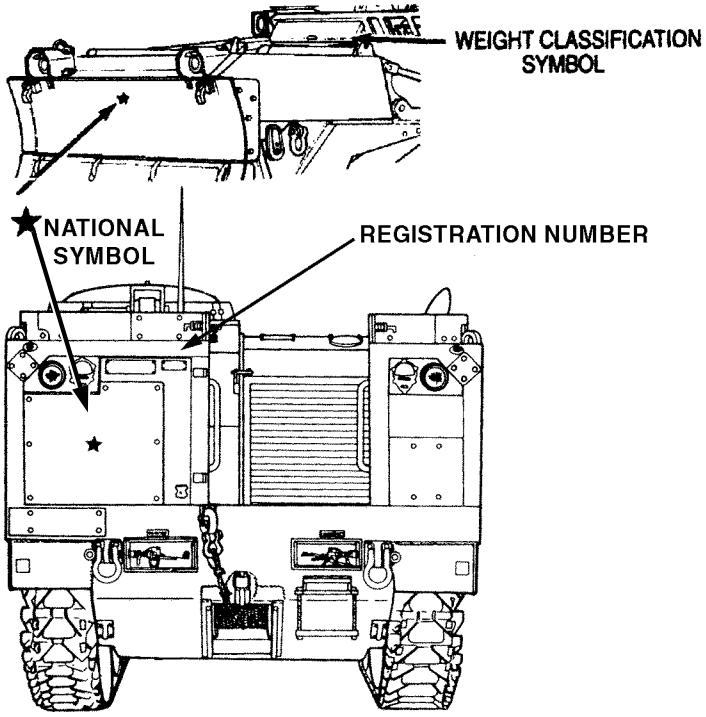


SHADED AREAS INDICATE NONSKID LOCATIONS

RESTENCILING MARKINGS

All stenciled markings on the M9 are black. Use paint conforming to specification MIL-C-46168 or MIL-C-53039.

Location and dimensions of stenciled markings are shown below:



Weight (Bridge) Classification Symbol:
Characters: 1-1/2 to 1-5/8 in. (3.8 to 4.1 cm)
Circle: 3-3/4 to 4 in. (9.5 to 10.2 cm) diameter.

National Symbol:
Five-pointed star, with maximum size of 3-1/8 in. (7.9 cm), minimum size 2-7/8 in. (7.3 cm).

Registration Number:
Located on left taillight housing; 1 in. (2.5 cm) high characters.

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Section V. GENERAL REPAIR AND CLEANING METHODS

SCOPE

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 chapter 4.

Note

General repair methods for the hydraulic system are in section VI, page 2-29.

REPAIR METHODS

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. 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. 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 TB SIG 222 must be followed.

J Paint metal surfaces as required (p 2-22).

CLEANING

WARNING

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

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

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated places. Failure to comply may result in damage to equipment or injury to personnel.

B Clean metal parts with drycleaning solvent. Metal or fiber brushes may be used to apply drycleaning solvent and to remove softened or dissolved material. Hand scraping with metal scrapers may be used to remove soft coatings or deposits.

C Soak oily or greasy parts in a tank containing drycleaning solvent. The time the parts must be in solvent varies with the type and amount of material to be removed.

D Do not use drycleaning 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 clean, dry cloths. Clean contact points with flint abrasive paper, and dust thoroughly after cleaning.

E Do not use drycleaning solvent to clean rubber parts. Clean rubber parts by washing with mild solution of soap and water.

WARNING

Compressed air can injure you and others. Do not aim compressed air hose at anyone. Do not use more than 30 psi (207 kPa). Always wear goggles.

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) on parts during repair procedures to prevent rusting.

TORQUE VALUES

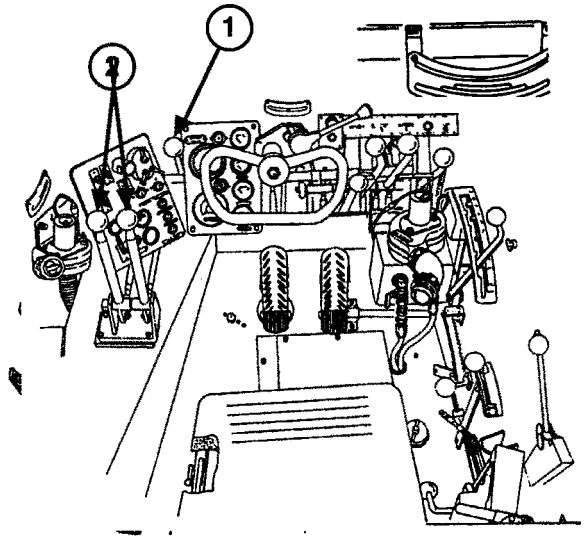
Use the torque values listed in the maintenance procedures, if they are given. When no torque values are given in the maintenance procedures, refer to the torque value guide in appendix F for fasteners, or the hydraulic fitting torque value guide on page 2-35 for hydraulic hoses, tubes, and fittings.

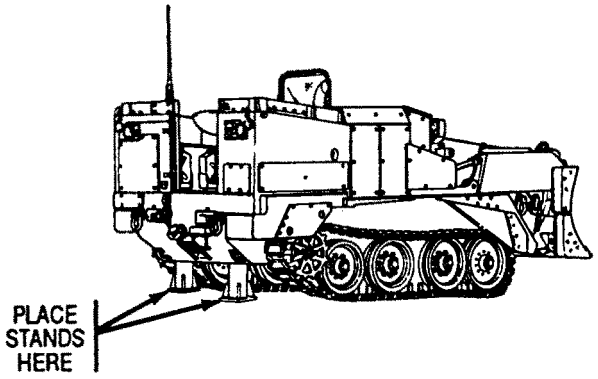
PREPARATION FOR MAINTENANCE

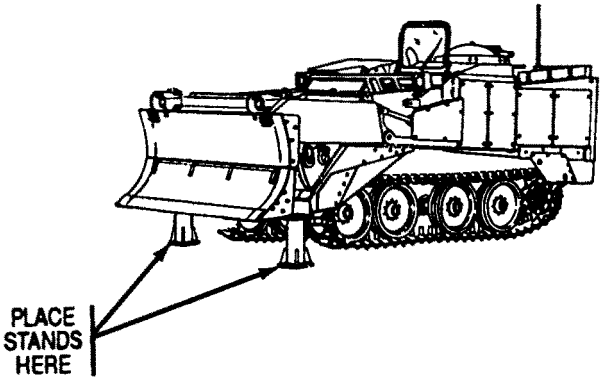
Some maintenance tasks are necessary to prepare the M9 for many of the maintenance procedures in chapter 4. These tasks are required for personnel safety and for ease of maintenance. These preparation steps are described below.

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.







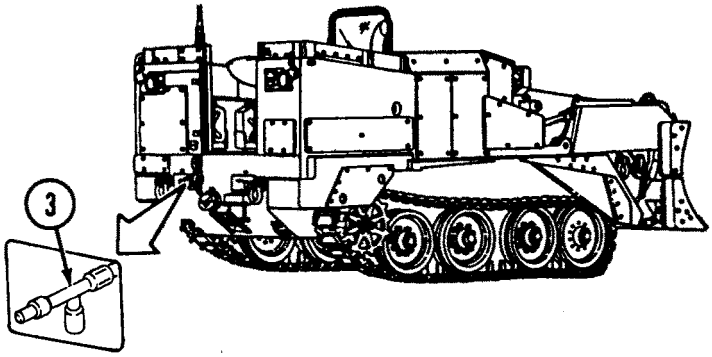
RAISE FRONT OF VEHICLE TO BLOCK FRONT

RELIEVING HYDRAULIC PRESSURE

See page 3-82

RELIEVING AIR PRESSURE

Stop engine (TM 5-2350-262-10). 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).



BLOCKING TRACK OR ROADWHEELS

WARNING

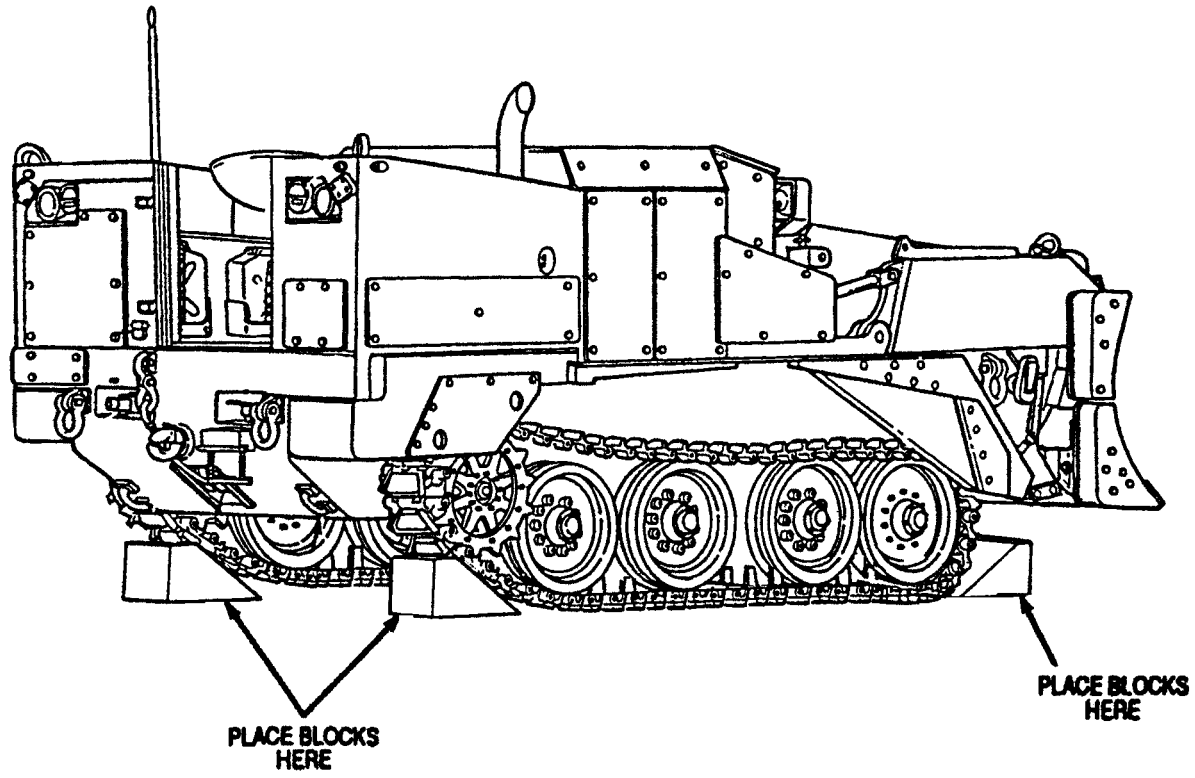
Block track or roadwheels when parking brake is released, steer unit brake levers are disconnected, or when track is disconnected. Vehicle can roll causing damage to equipment, severe injury, or death to personnel.

Note

If blocks are not available, use timbers 12 to 18-in. 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 roadwheel 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.



Section VI. GENERAL HYDRAULIC SYSTEM REPAIR METHODS

SCOPE

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 in chapter 4.

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 2-30 and 2-31.
- Fittings must be installed and hand-tightened. If a fitting cannot be hand-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.
- 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 page 2-30, para. A). 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 (see page 2-30, para. A).
- 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.

CAUTION – CONTINUED

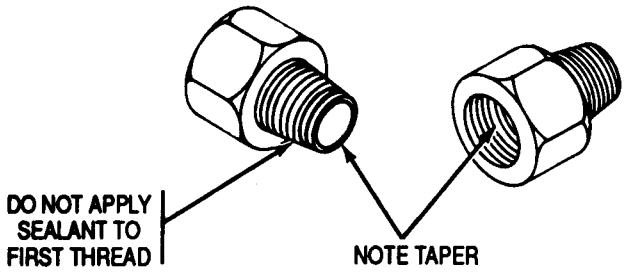
- Do not overtighten a flareless connection (see page 2-31, para D). Observe torque values on page 2-35. Overtightening can cause leakage, requiring replacement of entire tube assembly.
- When connecting a hose to a fitting, ALWAYS USE TWO WRENCHES. Use one wrench to turn the swivel nut onto the fitting, 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, page 2-35, is NOT to be used.

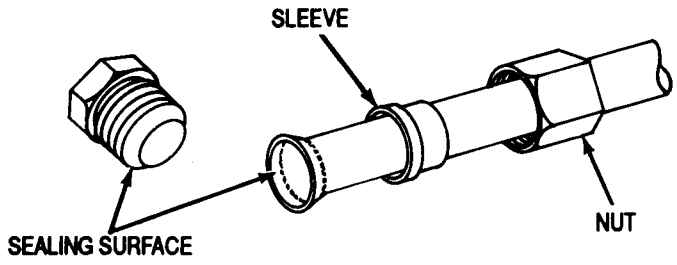
CAUTION

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



NATIONAL PIPE THREAD (NPT)

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 2-35.



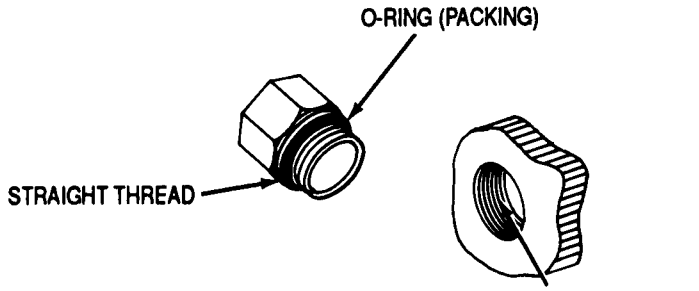
37° FLARE NUT

GENERAL HYDRAULIC SYSTEM REPAIR METHODS – CONTINUED

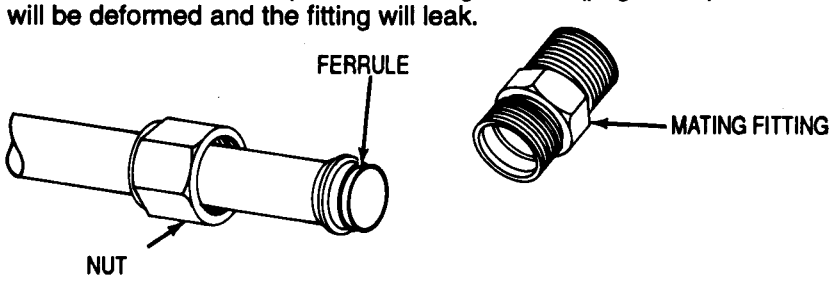
CAUTION

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.



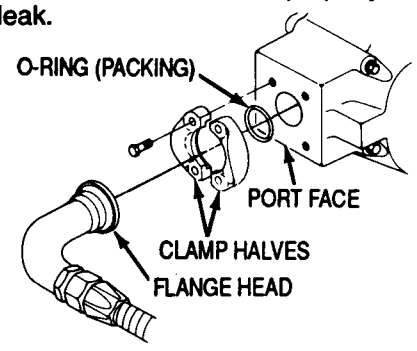
D Flareless. This fitting also uses a straight thread. The female fitting contains a ferrule that mates with a cavity in the male fitting. Use recommended torque values to tighten nut (page 2-35). If this fitting is overtorqued, the ferrule will be deformed and the fitting will leak.



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.



4-BOLT SPLIT FLANGE

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.

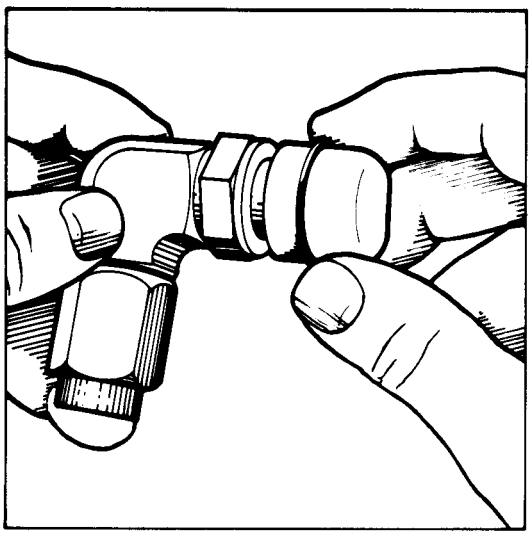
B Ensure the packing is the correct type and size. If unsure, check the Repair Parts and Special Tools List, TM 5-2350-262-24P.

C Before installation, lubricate the new packing with OE/HDO-10.

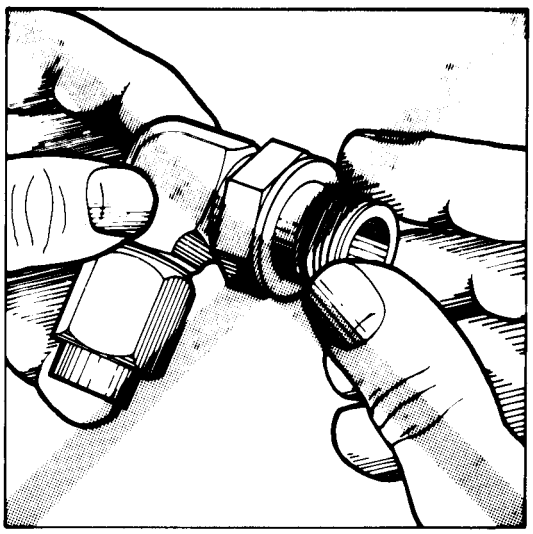
D While installing the packing, always protect it from cuts or nicks. Do not install packing directly over threads. If available, install packing over the plastic or rubber thread guard that is supplied with new fittings. If no thread guard is available, protect the packing by wrapping the fitting threads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

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.



CORRECT METHOD



INCORRECT METHOD

INSTALLATION OF ADJUSTABLE FITTINGS

A Lubricate packing (O-ring) (1) with light oil (OE/HDO-10).

CAUTION

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

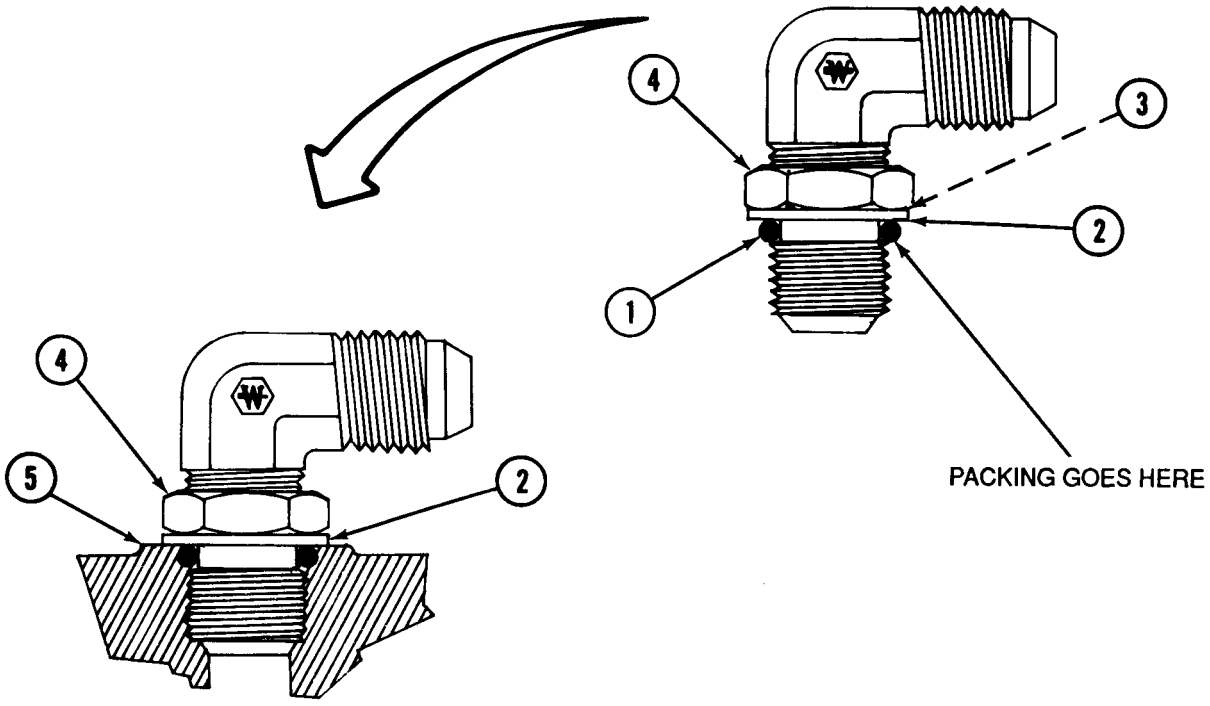
B Gently push backup washer (2) and packing (1) all the way into groove (3).

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.

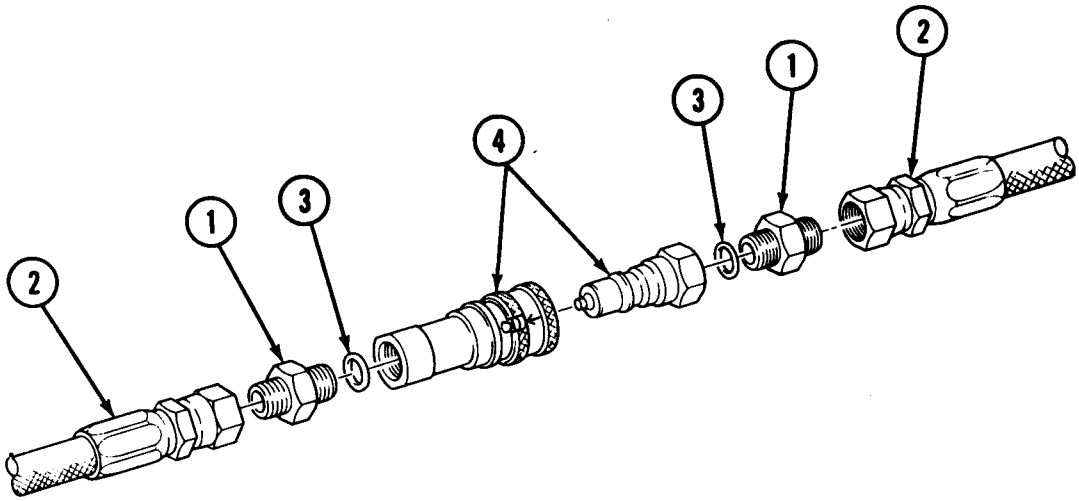
F Assemble tube to fitting after fitting is properly positioned and tightened.



Section VII. GENERAL QUICK-DISCONNECT REPAIR METHODS

GENERAL QUICK-DISCONNECT REPAIR METHODS

The hydraulic, pneumatic, and fuel systems on the M9, Armored Combat Earthmover use quick-disconnects on many hoses. All are similar. A faulty or damaged quick-disconnect can obstruct flow through the affected hose. To disassemble 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 alining arrow on collar and pulling collar.

ASSEMBLY

A Coat packings (3) with lubricating oil.

B Install packings (3) and adapters (1) in quick-disconnect coupling halves (4).

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 thread fittings, and SAE/AN ports.

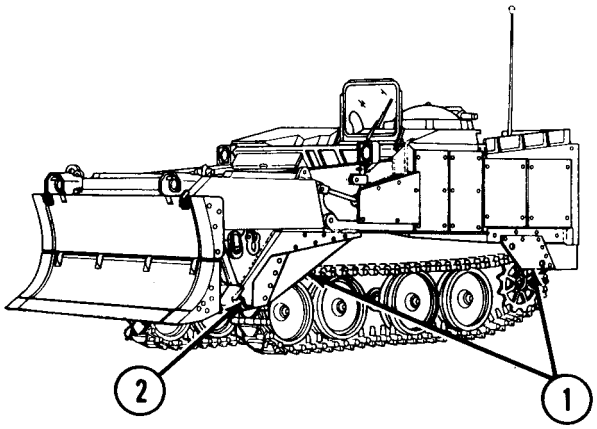
Section VIII. GENERAL HULL REPAIR PROCEDURES

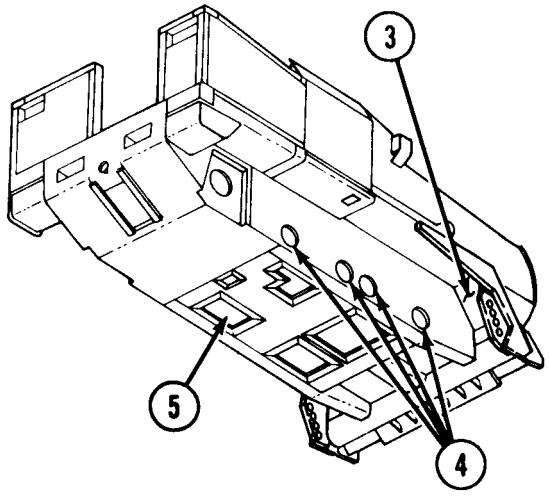
SCOPE

This section describes general hull repair procedures for the M9 hull at unit level. The following procedures identify parts of the M9 hull that are repairable.

	Page
General	2-36
General Inspection and Repair Procedures	2-37
Front Track Retainer Plates Inspection and Repair	2-37
Rear Track Retainer Plates Inspection and Repair	2-39
Front Hull Slope Area Inspection and Repair	2-41
Rotary Actuator Mounting Area Inspection and Repair	2-42
Hull Protective Plates, Access Covers, and Mounting Area Inspection and Repair	2-43
Threaded Inserts Inspection and Repair	2-44

GENERAL





Many parts of the M9 hull can be damaged during operation. These include:

1. Front and rear track retainer plates (1) (high strength alloy steel, ASTM A514).
2. Track retainer supports (2) (Florida plates) (aluminum alloy 5083 or 5456, temper H321).
3. Front hull slope areas (3) (aluminum alloy 5083 or 5456, temper H321).
4. Rotary actuator mounting areas (4) (aluminum alloy 5083 or 5456, temper H321).
5. Hull protective plates (5), access covers, and mounting areas (aluminum alloy 5083 or 5456, temper H321).

GENERAL – CONTINUED

The parts listed above are not authorized for repair, but can be returned to service by straightening, grinding, and welding by direct support maintenance.

Track retainer supports (Florida plates) may be made from alternate aluminum alloys. These include: alloy 5083 or 5456, temper H321 or H116, ASTM B209, alloy 5086, temper H32, H34, H116, ASTM B209, alloy 6061, temper T651, ASTM B204, or aluminum alloy armor plate 5083, or 5456 per MIL-A-46027.

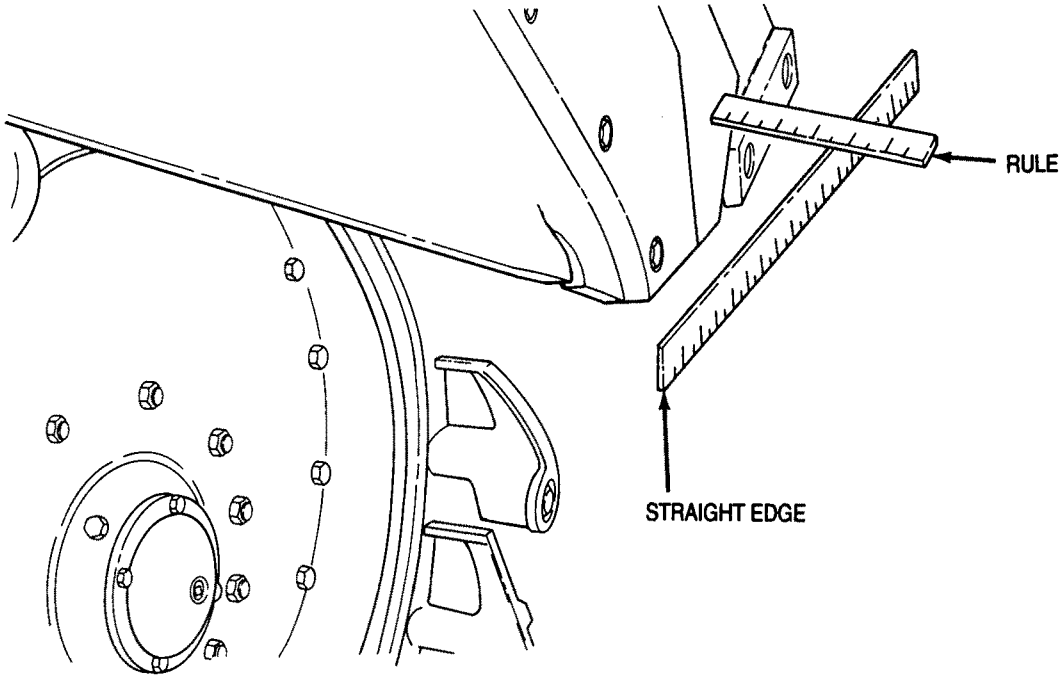
GENERAL INSPECTION AND REPAIR PROCEDURES

Inspecting parts before beginning any hull repair can eliminate wasted time. General inspection criteria is given in this section, but not all possible inspection criteria is given. Use your best judgment. If unsure, ask your supervisor.

Send parts to direct support maintenance for welding.

If available, use a press to straighten bent plates.

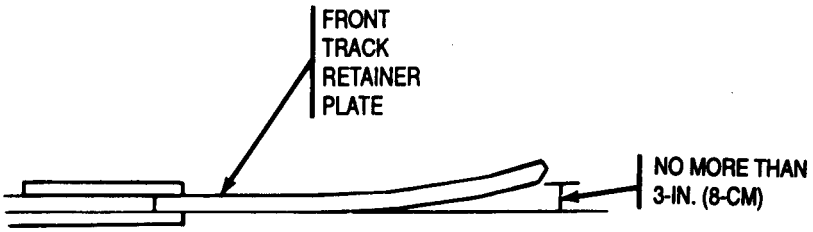
FRONT TRACK RETAINER PLATES INSPECTION AND REPAIR



Check front track retainer plates for bends, cracks, or rips. To measure bend in track retainer plate:

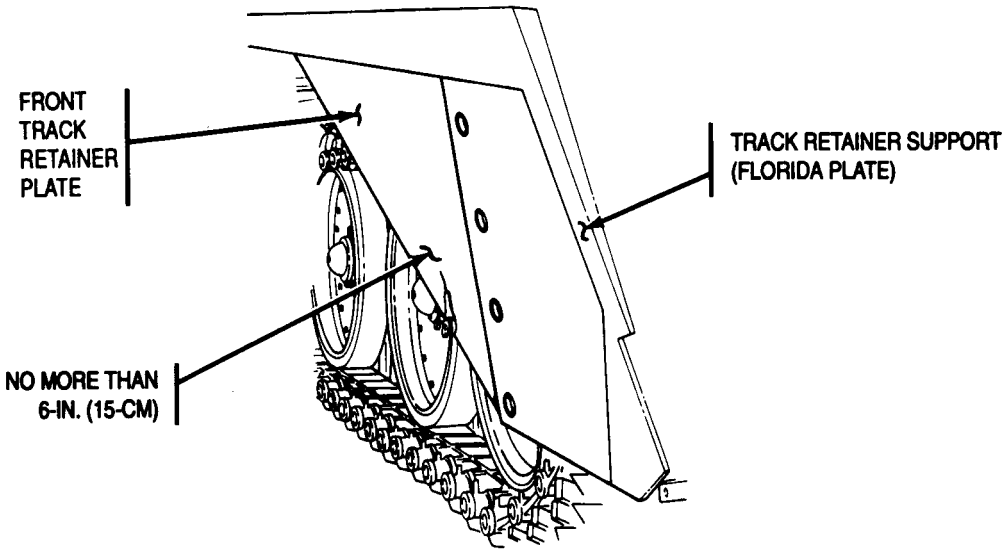
- Tighten front track retainer plate screws.
- Use a straight edge about 18-in. (46-cm) long and a 6-in. (15-cm) rule. Position rule on outside and forward of track support. Use straight edge to measure widest point of bend in retainer.

- If front track retainer plate is bent out 3-in. (8-cm) or more, replace or try to straighten plate. Front track retainer plates bent out less than 3-in. (8-cm) should be straightened.



To confirm that track retainer plates are bent 3-in. (8-cm) or more, remove retainer plate (p 4-363), and lay plate on level flat surface, with track side of plate facing down.

Have an assistant step on plate near mounting holes, so one edge of plate is flat against surface. Measure gap between surface and other edge of plate. If gap no longer exceeds 3-in. (8-cm), straighten plate.



Front track retainer plates that are cracked more than 6-in. (15-cm) or have cracks connecting two or more mounting holes should be replaced. Cracks less than 6-in. (15-cm) should be stop-drilled and sent to direct support maintenance for welding.

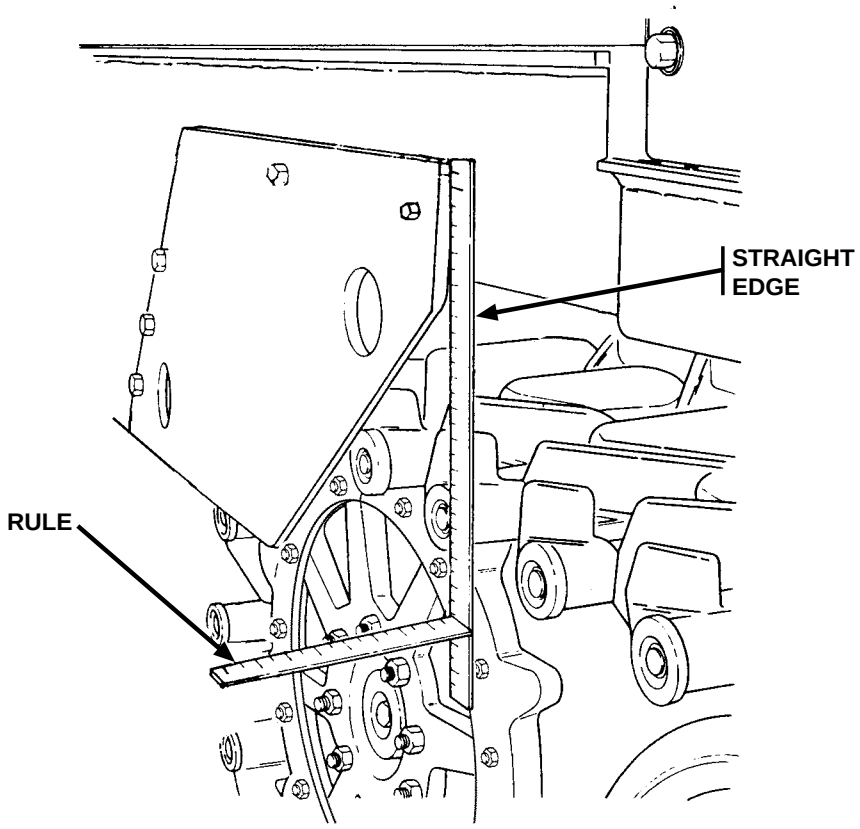
FRONT TRACK RETAINER PLATES INSPECTION AND REPAIR – CONTINUED

Front track retainer plates with rips 6-in. (15-cm) long or more and with gaps 3-in. (8-cm) or more should be replaced. Rips less than 6-in. (15-cm) long with smaller than 3-in. (8-cm) gaps should be straightened, stop-drilled, and sent to direct support maintenance for welding.

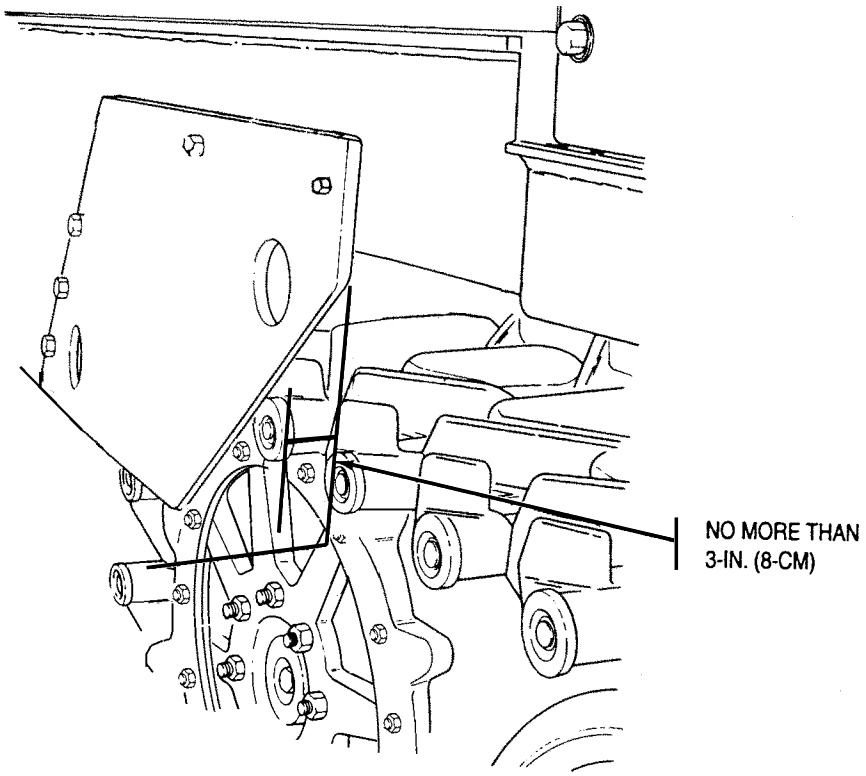
Front track retainer plates ripped 6-in. (15-cm) or less with gaps exceeding 3-in. (8-cm) should be straightened, stop-drilled, and sent to direct support maintenance for welding.

REAR TRACK RETAINER PLATES INSPECTION AND REPAIR

Check rear track retainer plates for bends, cracks, or rips. To measure bend in rear track retainer plate:



- Tighten track retainer screws.
- Use a straight edge about 18-in. (46-cm) long and a 6-in. (15-cm) rule.
- Hold straight edge against hull, near edge of retainer, pointing down.
- Visually line up straight edge with rear of vehicle. Measure gap between inside edge of plate and straight edge.
- If retainer plate is bent out 3-in. (8-cm) or more, replace retainer plate (p 4-363). Rear track retainer plates bent out less than 3-in. (8-cm) should be straightened.

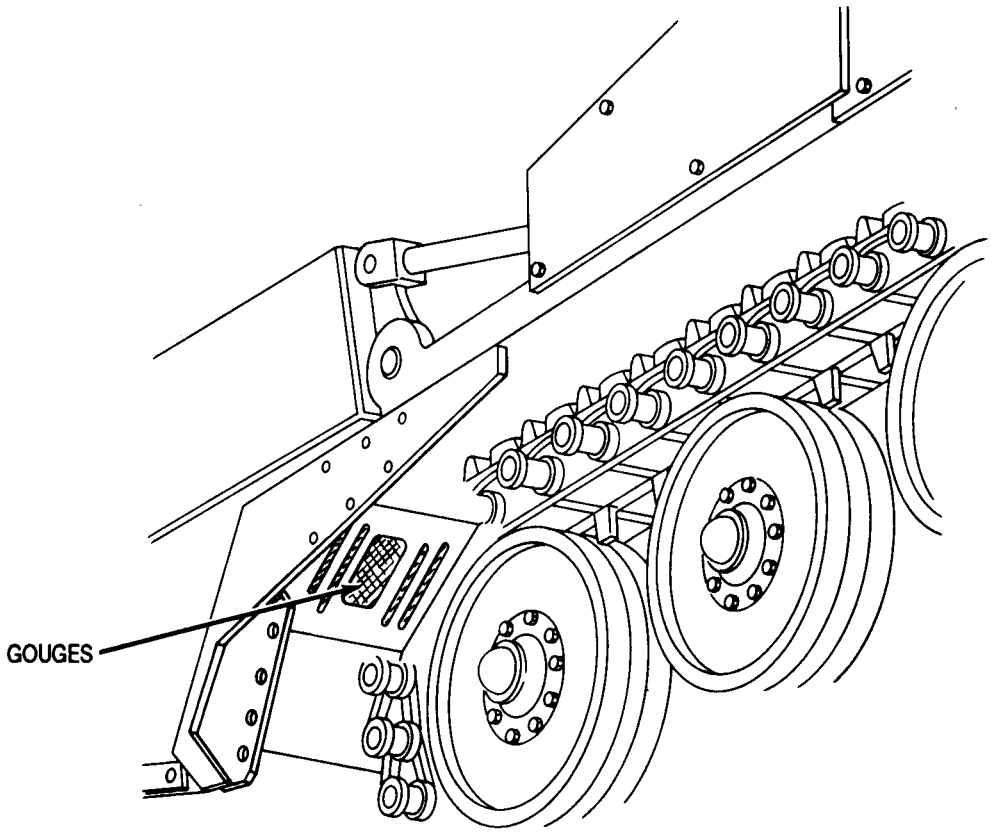


Rear track retainer plates that are cracked 6-in. (15-cm) or more or have cracks connecting two or more bolt holes should be replaced. Plates cracked less than 6-in. (15-cm) should be stop-drilled and sent to direct support maintenance for welding.

Rear track retainer plates with rips 6-in. (15-cm) or more and gaps of 3-in. (8-cm) or more should be replaced. Rips less than 6-in. (15-cm) and gaps less than 3-in. (8-cm) should be straightened, stop-drilled, and sent to direct support maintenance for welding.

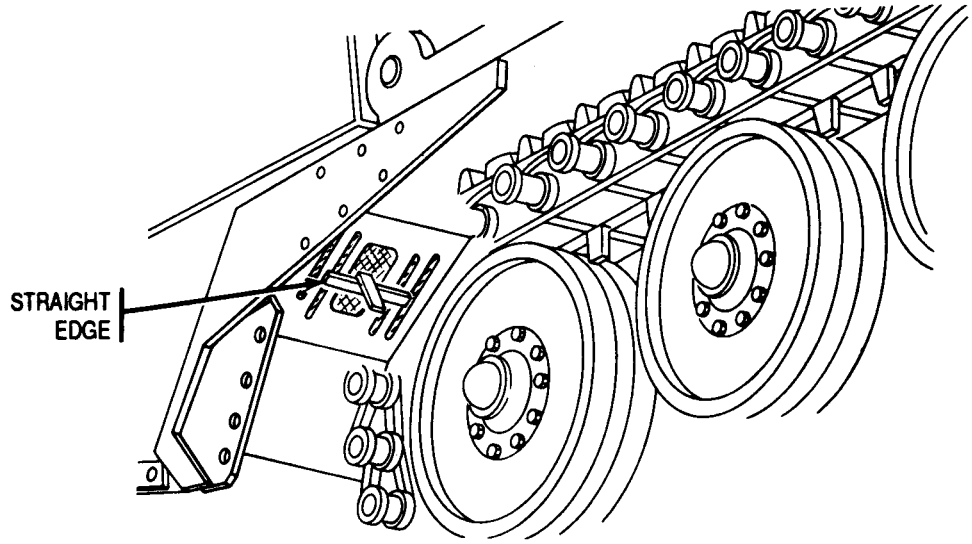
Rear track retainer plates ripped less than 6-in. (15-cm) with gaps exceeding 3-in. (8-cm) should be straightened, stop-drilled, and sent to direct support maintenance for welding.

FRONT HULL SLOPE AREA INSPECTION AND REPAIR



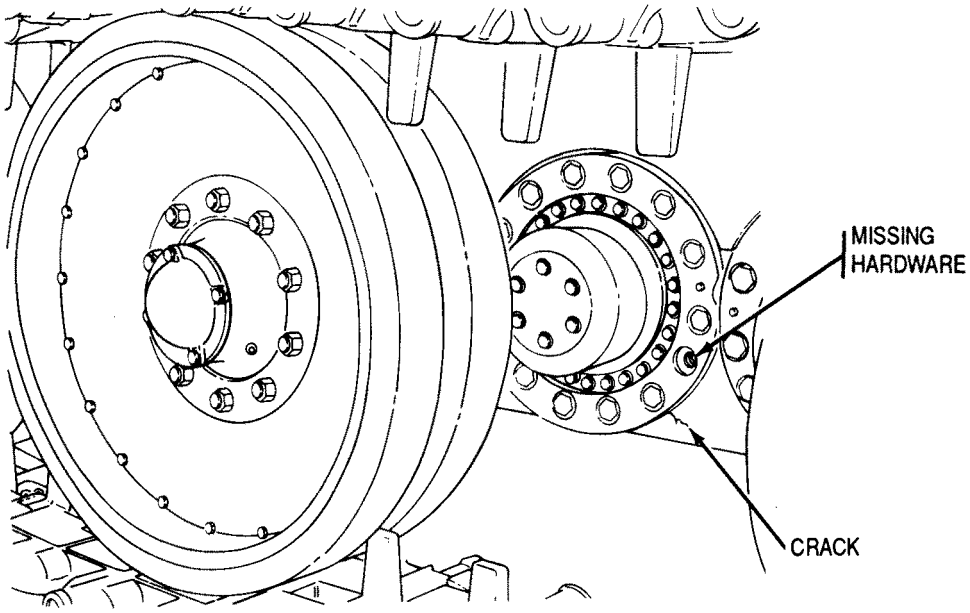
Check front hull slope area for gouges or worn-through condition.

- If front hull slope is worn through, notify direct support maintenance.
- To measure depth of gouges in front hull slope, use straight edge and 6-in. (15-cm) rule. Position straight edge over deepest part of gouge. Use rule to measure depth of gouge.
- If gouge is 1/2-in. (13-mm) deep or greater, notify direct support maintenance.
- If gouge is less than 1/2-in. (13-mm) deep, no maintenance action is required at this time.



ROTARY ACTUATOR MOUNTING AREA INSPECTION AND REPAIR

Check rotary actuator mounting areas for cracks between mounting holes, punctures, or other damage.

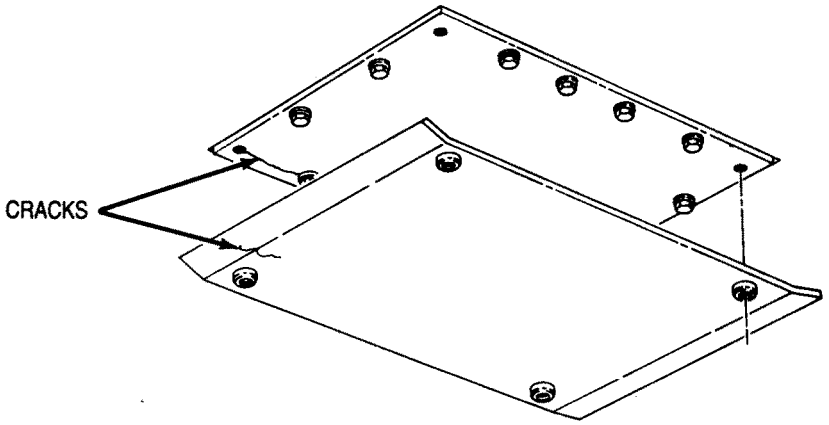


When performing maintenance on roadwheel arms, visually inspect mounting area around rotary actuators. Check for cracks radiating from behind rotary actuator. Notify direct support maintenance if cracks are found.

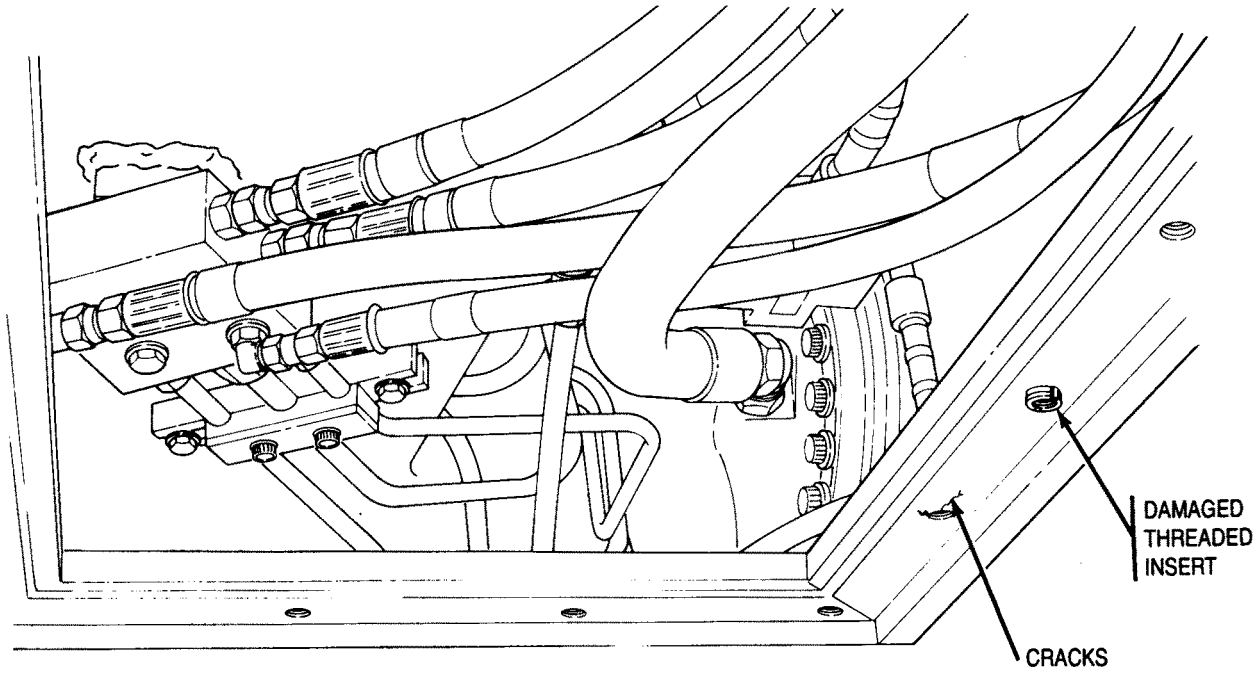
Check mounting hardware for damaged or missing screws and unserviceable threaded inserts (p 2-44).

HULL PROTECTIVE PLATES, ACCESS COVERS, AND MOUNTING AREA INSPECTION AND REPAIR

Check hull protective plates and access covers for cracks, bends, punctures, and damage to mounting surfaces.



- If access covers have cracks connecting two or more bolt holes, cracks running from bolt holes, or cracks 6-in. (15-cm) or longer, replace access cover. Cracks less than 6-in. (15-cm) long can be stop-drilled and sent to direct support maintenance for welding. Straighten bent access covers.

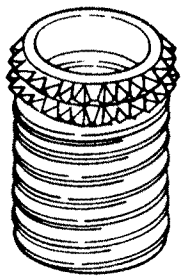


Check hull access cover mounting areas for cracks around mounting holes or damaged threaded inserts (p 2-44). Notify direct support maintenance to repair damage around mounting holes or unserviceable threaded inserts.

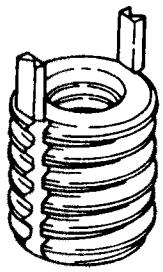
THREADED INSERTS INSPECTION AND REPAIR

Threaded inserts are replaced by direct support maintenance. Sometimes an insert can be pulled out of its tapped hole slightly and still be serviceable. For instance, a thrown track may cause the rear track retainer plate to pull away from the hull. Inserts may be pulled out as well.

There are two kinds of threaded inserts used in the M9 hull:



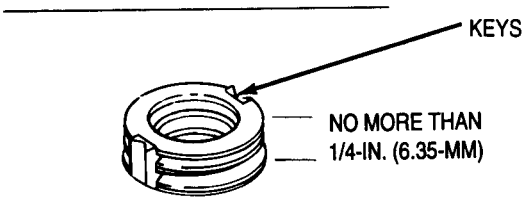
SERRATED LOCKRING INSERTS



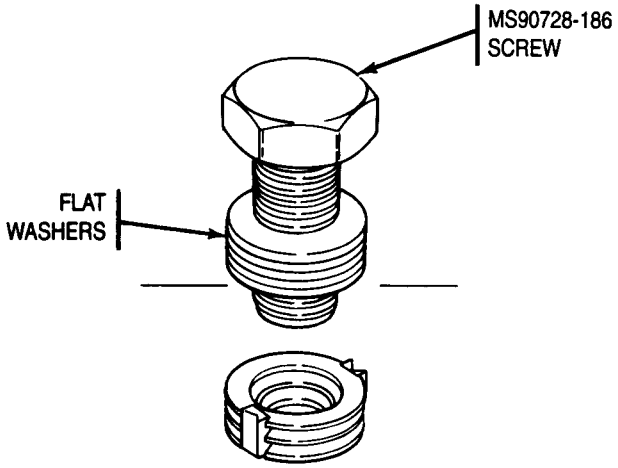
KEY-LOCKED INSERTS

- Key-locked inserts are locked into place when keys, part of the insert, are driven down between the insert and tapped hole. Key-locked inserts are used where rear track retainers and hull access covers mount.
- Serrated lockring inserts are locked into place by driving the lockring inserts into a countersink, in the tapped mounting hole. Serrated lockring inserts are used around rotary actuators.

THREADED INSERTS INSPECTION AND REPAIR – CONTINUED



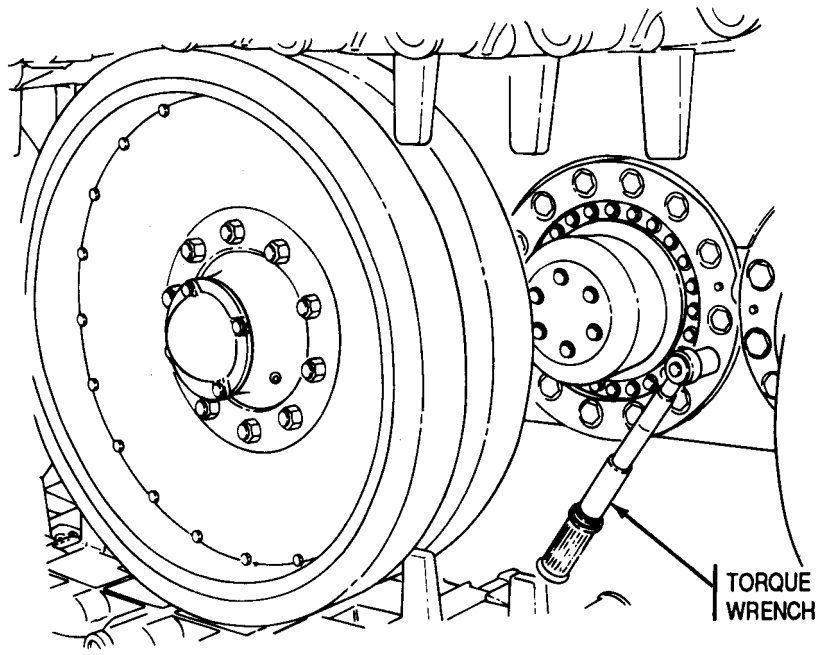
- If an insert where a rear track retainer mount is pulled out 1/4-in. (6.35-mm) or less and keys are undamaged, drive keys flush with hull using soft drift and hammer.
- If an insert is pulled out more than 1/4-in. (6.35-mm) or keys are damaged, tag insert for replacement by direct support maintenance.



Always check stacked inserts to ensure they hold torqued bolts.

- Install a series of washers, which equal 1/2-in. (13-mm) thick, and screw (MS90728-186). Washers simulate thickness of track retainer.
- Tighten screw to 205-227 lb-ft (278-308 N·m).
- If insert holds torque without turning, remove screw and washers. If insert does not hold torque, tag it for replacement by direct support maintenance.

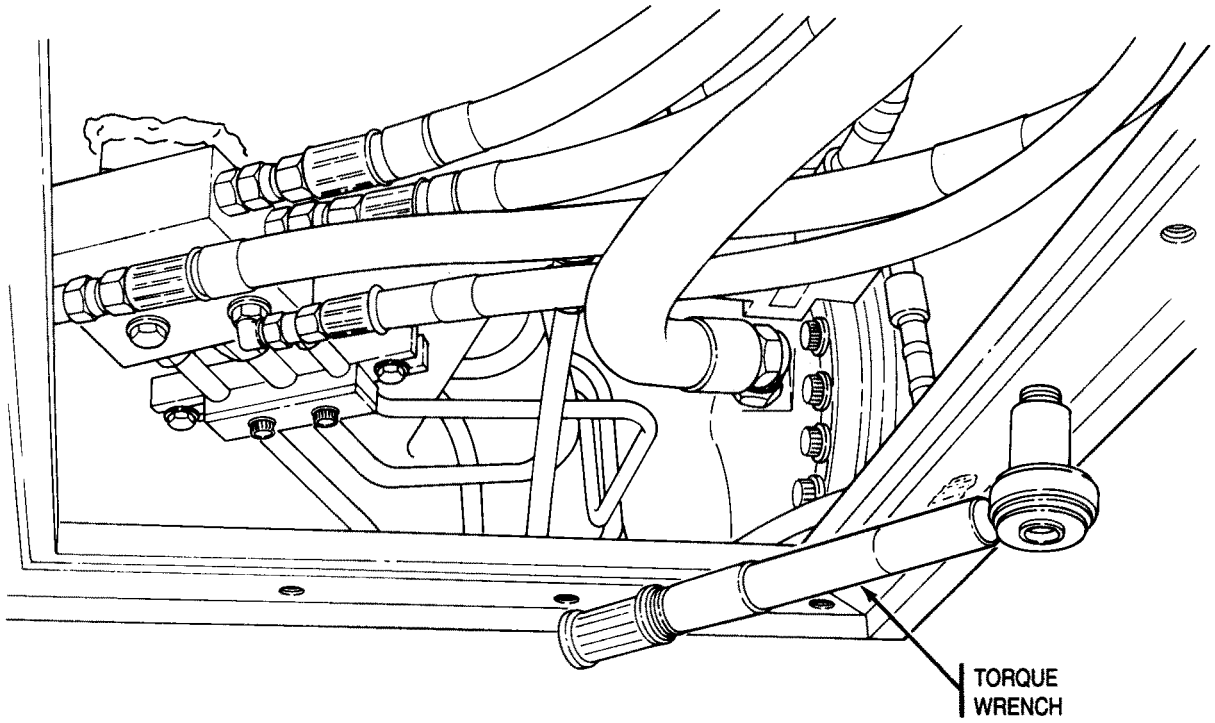
Check rotary actuator threaded inserts by tightening screws to 170-190 lb-ft (231-258 N·m).



- If screw won't hold torque, remove and inspect screw for damaged or stripped threads. If screw is undamaged, tag mounting hole for inspection by direct support maintenance.
- If serrated lockring threaded inserts for rotary actuators become loose or damaged, tag insert for replacement by direct support maintenance. Rotary actuators must fit flush against hull to ensure water-tightness during amphibious operations.

THREADED INSERTS INSPECTION AND REPAIR – CONTINUED

Check threaded inserts in hull where hull access covers mount by installing cover mounting screw and tightening screw to 22-26 lb-ft (30-35 N•m).



- If screw won't hold torque, remove and inspect screw for damaged or stripped threads. If screw is undamaged, tag insert for replacement by direct support maintenance.
- Visually check inserts to make sure they are flush or slightly recessed from surrounding hull. Check for cracks or other damage. Do not restake inserts on hull where access covers mount. Any damaged insert on the underside of the hull must be tagged for replacement by direct support maintenance. Hull access covers must fit flush against hull to ensure water-tightness during amphibious operations.

Section IX. BATTERY BOX INSULATION REPLACEMENT AND BATTERY SERVICE

BATTERY BOX FOAM INSULATION REPLACEMENT

WARNING

Drycleaning solvent is flammable and will not be used near sparks or open flames. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated places. Failure to comply may result in damage to equipment or injury to personnel.

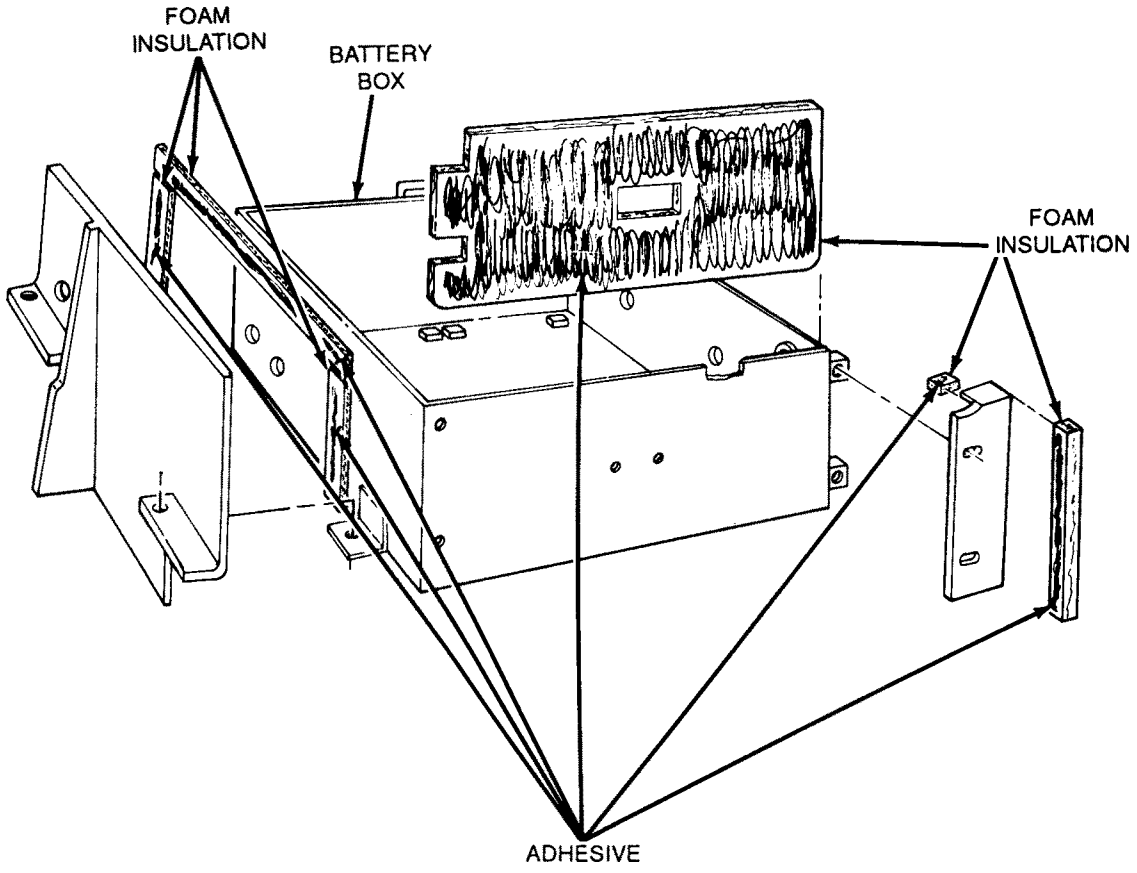
Scrape off damaged insulation and clean metal parts with drycleaning solvent. Metal or fiber brushes may be used to apply cleaning solvent and to remove softened or dissolved adhesive material.

Use part requiring insulation as template to measure and/or cut foam insulation.

Note

Position foam away from adhesive. Adhesive is quick drying and may bond immediately.

Apply adhesive sealant (appendix D, item 4) to both the insulation and metal mating surfaces.



BATTERY SERVICE

To remove and retard corrosion:

Corrosion is the greenish "fuzz" that builds up on battery posts, terminals, and cables. This corrosion can prevent starting and eat up the cables and connectors.

WARNING

- Do not smoke, have open flames, or make sparks around batteries. Failure to comply may result in severe injury to personnel.
- Electrolyte is extremely harmful. Always wear goggles and rubber gloves when performing battery maintenance. Failure to comply may result in severe injury to personnel.
- Remove all jewelry, dog tags, bracelets, etc. If jewelry or disconnected battery ground cable contacts positive battery terminal, a direct short will result, causing instant heating of tools, tool damage, battery damage, or battery explosion. Failure to comply may result in severe injury to personnel.

CAUTION

- Ensure battery caps are tight and no cracks are visible in battery case, so no alkaline solution (acid neutralizer) reaches electrolyte. Failure to comply may result in damage to equipment.
- If cables overheat, there may be corrosion or a break within the wiring causing electrical resistance. If possible, remove corrosion or replace cables or damaged wiring. Failure to comply may result in damage to equipment.

Note

Refer to TM 9-6140-200-14 (1989), Operator's, Organizational, Direct Support and General Support Maintenance Manual for Lead-Acid Storage Batteries.

A Remove corrosion with an alkaline solution of sodium bicarbonate and water.

B Clean terminal clamps with terminal brush and a water/sodium bicarbonate solution.

C Clean screws and nuts. Check for corrosive effects.

D Clean battery posts with a wire brush and a water/sodium bicarbonate solution. Dry battery posts.

E Clean any corrosion from tiedowns.

F Rinse batteries, connections, cables, and tiedowns with clear water to remove alkaline solution; then dry.

G Apply grease to terminals, screws, and posts to retard corrosion.

H Keep tops of batteries clean and dry to prevent a current leakage between terminals.

CHAPTER 3
TROUBLESHOOTING

SCOPE

This chapter contains information necessary to troubleshoot the M9. It includes information on use of electrical test equipment, harness and cable repair, use of Simplified Test Equipment for Internal Combustion Engines-Reprogrammable (STE/ICE-R), hydraulic valves, hoses, and tubes identification; a malfunction symptom index; and troubleshooting charts.

		Page
Section I	Wiring Harness and Cable Repair	3-1
Section II	Using STE/ICE-R with the M9	3-6
Section III	General Hydraulic System Troubleshooting Procedures	3-77
Section IV	Troubleshooting Charts	3-123

Section I. WIRING HARNESS AND CABLE REPAIR

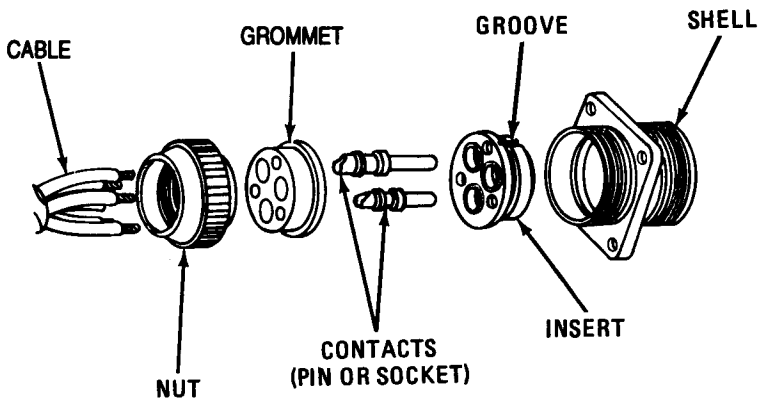
SCOPE

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 3-2 through 3-5 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.

The following procedures are contained in this section:

	Page
Typical Panel Mounting Receptacle: Disassembly and Assembly	3-2
Typical Plug: Disassembly and Assembly	3-3
Terminal-type Cable Connectors Replacement	3-4
Male Cable Connector Replacement	3-4
Female Cable Connector (with Washer) Replacement	3-5
Female Cable Connector (with Sleeve) Replacement	3-5

TYPICAL PANEL MOUNTING RECEPTACLE: DISASSEMBLY AND ASSEMBLY



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.

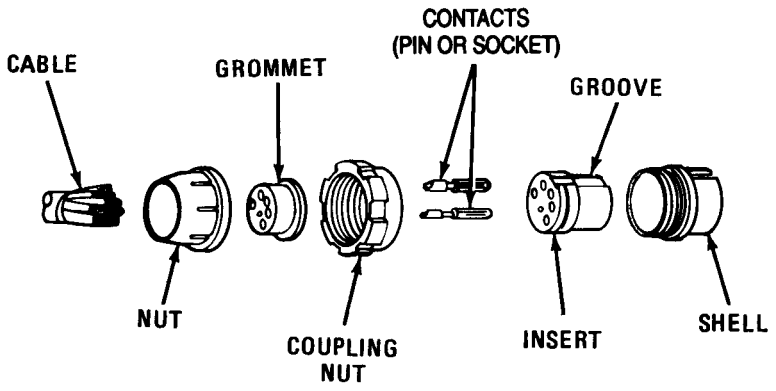
E Push insert into shell from rear until seated. Groove in insert must be aligned with guide in shell to ensure proper fit.

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.

TYPICAL PLUG: DISASSEMBLY AND ASSEMBLY



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.

D 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.

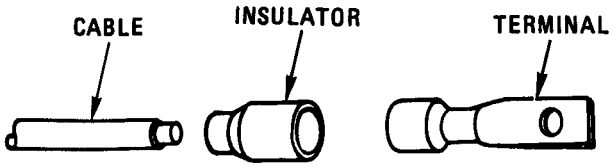
F Push contacts into insert from rear until seated.

G Slide coupling nut onto shell assembly.

H Push grommet down cable and over solder wells of contacts.

I Install nut on shell assembly.

TERMINAL-TYPE CABLE CONNECTORS REPLACEMENT



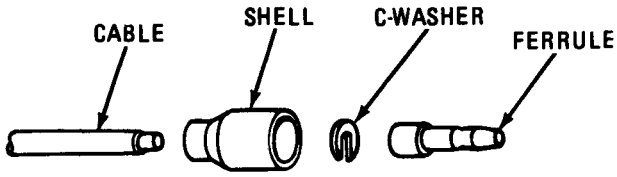
A Strip cable insulation equal to depth of terminal well.

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



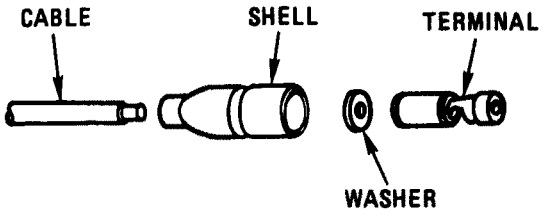
A Strip cable insulation equal to depth of ferrule well.

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



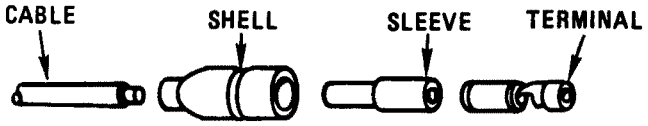
A Strip cable insulation approximately 1/8 in. (3 mm).

B Slide shell and washer over cable.

C Place cable into cylindrical end of terminal and crimp.

D Slide shell and washer over terminal.

FEMALE CABLE CONNECTOR (WITH SLEEVE) REPLACEMENT



A Strip cable insulation approximately 1/8 in. (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.

Section II. USING STE/ICE-R WITH THE M9

SCOPE

This section contains information on the use of Simplified Test Equipment for Internal Combustion Engines-Reprogrammable (STE/ICE-R) for the M9. Information in this section should be used with the troubleshooting charts (p 3-123) when troubleshooting. The STE/ICE-R CI engine GO NO-GO Chain test procedures to be used on the vehicle are also contained in this section.

The STE/ICE-R Operator's Manual, TM 9-4910-571-12&P, should be referred to when using STE/ICE-R.

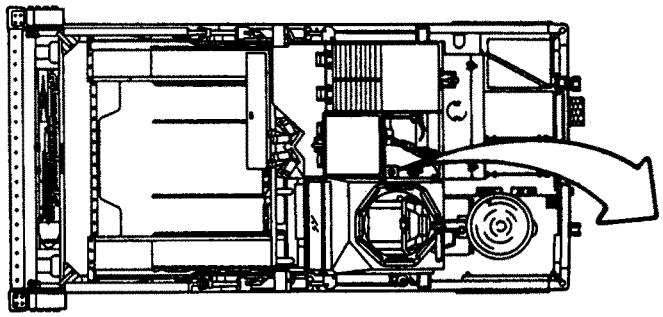
Procedures and information included in this section are listed below:

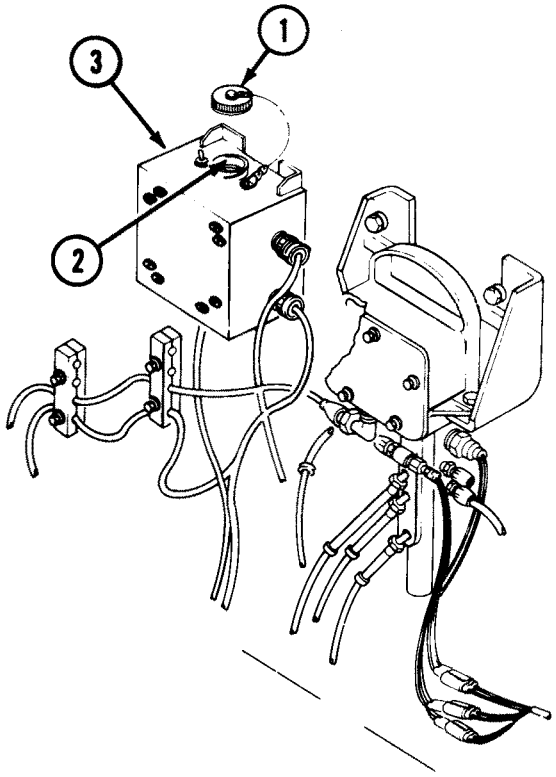
	Page
Using STE/ICE-R for Troubleshooting	3-6
Pretest Inspection	3-7
STE/ICE-R Diagnostic Connector Assembly (DCA) Location	3-7
STE/ICE-R Power Cable W5 Connection	3-7
Initial Entry	3-8
Error Messages	3-8
Status Messages	3-9
Prompting Messages	3-10
Control Functions	3-10
M9 STE/ICE-R Tests	3-14
STE/ICE-R CI Engine GO NO-GO Chain	3-16
GO NO-GO Chain Index	3-16

USING STE/ICE-R FOR TROUBLESHOOTING

When a STE/ICE-R test is called for in the troubleshooting charts (p 3-122):

- Follow the test procedures in TM 9-4910-571-12&P to run the STE/ICE-R CI Engine GO NO-GO Chain (p 3-16).
- Match the test result in TM 9-4910-571-12&P and the STE/ICE-R CI Engine GO NO-GO Chain (p 3-16) with the test limits for the M9 in the STE/ICE-R Test Table (p 3-14).
- Check the troubleshooting charts (p 3-123) for corrective action of any faults found during STE/ICE-R tests.
- Refer to chapter 4 for repair or replacement procedures of any faults discovered during troubleshooting.
- Remember that certain STE/ICE-R tests may require different equipment conditions before starting testing. Refer to TM 9-4910-571-12&P and repair or replacement procedures in chapter 4 to complete all equipment conditions.





PRETEST INSPECTION

Perform STE/ICE-R PMCS as required in TM 9-4910-571-12&P. Report any damage and correct any malfunction.

Check the following items on the vehicle before using STE/ICE-R.

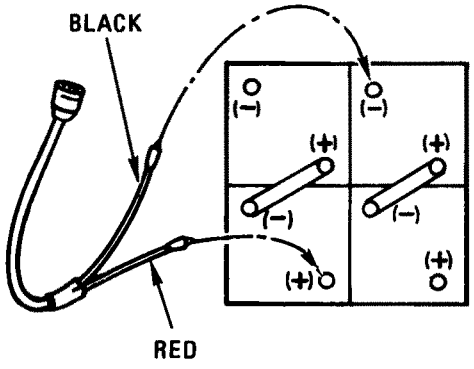
- Fan Belt
- Alternator/Water Pump Belt
- Coolant Level
- Fuel Level
- Batteries
- If battery output is low, STE/ICE-R can be connected to another vehicle's battery.

STE/ICE-R DIAGNOSTIC CONNECTOR ASSEMBLY (DCA) LOCATION

A Open engine covers (TM 5-2350-262-10).

B Disconnect dust cover (1) from DCA connector (2) of STE/ICE-R interface resistor box (3).

C Connect DCA cable W1 (part of STE/ICE-R kit) between M9 DCA connector (2) and connector J1 of Vehicle Test Meter (VTM).



STE/ICE-R POWER CABLE W5 CONNECTION

Refer to the illustration at right when a STE/ICE-R test requires the use of Power Cable W5.

INITIAL ENTRY

Make the following initial entries when required. Refer to TM 9-4910-571-12&P for test information.

Confidence Test #66 – This procedure provides an overall check of the vehicle test meter (VTM), and should be run before and after each STE/ICE-R use to ensure accuracy of results.

Enter Vehicle Identification Test #60 – This procedure allows the user to enter a vehicle identification number (VID) into VTM. The VTM has been programmed to recognize a VID to allow performance of specific vehicle dependent tests. VID for the M9 is 24.

Display Vehicle Identification Test #61 – This procedure allows the user to check VID information stored in the VTM so the user can ensure the correct VID has been entered.

ERROR MESSAGES

An error message indicates that the VTM requires additional or corrected information before testing can continue, or that additional procedures are required.

All error messages are displayed with an E followed by three numbers. To correct the problem, refer to specific procedures in TM 9-4910-571-12&P.

The following error messages may be displayed on the VTM:

DISPLAY	MEANING
E000	VTM has been asked for information it does not have.
E001	A test number which does not exist has been entered on the TEST SELECT switches.
E002	The required transducer is not connected.
E003	Test number wrong for DCA connected. This can occur if test selected does not apply to the class of vehicle/equipment under test or if the DCA harness does not have the required transducers.
E004	Not currently used. If message appears, turn in test set.
E005	Required offset test was not performed.
E007	The VID number and number-of-cylinders information entered do not agree.
E008	VTM is not receiving required voltage signal for selected test. This message can occur on tests 14, 15, and 72 through 79.
E009	VTM is not receiving engine speed signal. This applies only to engine power test.
E010	A wrong VID number was entered. The VTM will only accept numbers between 01 and 99. If E010 is displayed when the VID entered was between 01 and 99, it means that the VID does not agree with the identity of DCA harness powering the VTM. Testing may continue.
E011	Throttle control was operated incorrectly. It was taking too long to accelerate or decelerate during power test.
E012	SI ignition adapter or C1 pulse tachometer is missing or is not connected to the VTM.
E013	VTM is unable to use data received.
E014	The wrong number of cylinders was entered.
E015	Not currently used. If message appears, turn in test set.
E017	VTM is not receiving ignition information during dwell test.
E018	Test discontinued due to no information being detected by VTM. This will occur after several minutes of no-signal operation.
E020	No first peak information was detected by the VTM.
E021	VTM cannot calculate result. Current is over current probe's range and VTM did not sample correct portion of data.

ERROR MESSAGES – CONTINUED

DISPLAY	MEANING
E022	External voltage was detected in the circuit under test while measuring resistance.
E023	VTM's constant voltage source is not working.
E024	Test is not valid for VID entered.
E027	Error in entry of compression unbalance constants.
E028	Test just entered cannot be used with control function 06.
E030	VID entered conflicts with speed transducer attached.
E032	Vehicle's cranking speed is varying too much for a compression unbalance measurement.
E033	Error in entry of power test constants.
	NOTE: If any error message not listed above is displayed, return STE/ICE-R set to DS maintenance.

STATUS MESSAGES

Status messages keep the operator informed of what the VTM condition is. The status messages and their meanings are as follows:

DISPLAY	MEANING
.8.8.8.8	There is power to the VTM and the display is working properly. This appears only for a short period after power is turned on, and during the confidence test.
.9.9.9.9	VTM is reading a test value beyond its range.
AUE	Numerical display is an average value.
Con	Accepted control function input.
FAIL	Unit being tested has failed test.
PASS	Unit being tested has passed test.
- - - -	With the power on, VTM is ready for testing. During compression unbalance test and frequency measurement, means testing is in progress.
⊣⊣⊣⊣	VTM is busy.

PROMPTING MESSAGES

A prompting message indicates that the operator must perform a task. After the operator action is completed, testing will continue. The prompting messages and their meanings are as follows:

DISPLAY	MEANING
0066	Set TEST SELECT switches to 99 during confidence test.
CAL	Release the TEST button during an offset test.
CIP	Apply full throttle in a CI power test.
Cu-1	Enter 1st compression unbalance value.
Cu-2	Enter 2nd compression unbalance value.
Cu-3	Enter 3rd compression unbalance value.
Cu-4	Enter 4th compression unbalance value.
Cu-5	Enter 5th compression unbalance value.
CYCL	Test that displays this message is not valid in the STE/ICE-R set.
CYL	Enter the number-of-cylinders into the VTM.
GO	Crank engine.
OFF	Stop the operation being performed. Stop cranking the engine. Release the accelerator.
OP-1	Enter number of 1st test to be used with control function 06.
OP-2	Enter number of 2nd test to be used with control function 06.
Po-1	Enter 1st power test value.
Po-2	Enter 2nd power test value.
Po-3	Enter 3rd power test value.
UEH	Enter VID on the TEST SELECT switches.

CONTROL FUNCTIONS

A. USING CONTROL FUNCTIONS

Control functions change the way a measurement is displayed or run. There are six control functions.

01 Display RPM with next measurement.

02 Display minimum value of next measurement.

03 Display maximum value of next measurement.

04 Display peak-to-peak value of next measurement.

05 SI full power simulation. This function is not used with the M9.

06 Display two measurements.

The control functions available for each test are in table 3-1 (p 3-12). Control functions can be used together except as indicated in the table.

By combining control functions, for example, you can display maximum battery voltage alternating with speed under full power simulation. The control function test numbers can be entered in any order prior to entering the measurement test number. The exceptions are 02, 03, 04, and 06, of which only the last one entered will be active.

CONTROL FUNCTIONS – CONTINUED

The steps taken to use a control function are:

1. Check table 3-1 (p 3-12) to see if control functions can be used for the measurement.
2. Perform offset test (if required).
3. Enter any control functions that are desired. VTM will display Con after each entry.
4. Perform desired measurement.

B. DISPLAY RPM WITH NEXT MEASUREMENT FUNCTION #01

This function causes the VTM display to alternate between the test that was entered and a measurement of engine speed. This is useful when a measurement is to be made at a particular engine speed. If the VTM is not powered through a DCA, then it must have an ignition adapter cable or pulse tachometer attached.

C. DISPLAY MINIMUM VALUE OF NEXT MEASUREMENT FUNCTION #02

This function causes the VTM to display the lowest value measured during a test. It is useful when the lowest value of a measurement is needed; for example, when looking for the lowest manifold vacuum on a spark ignition engine.

D. DISPLAY MAXIMUM VALUE OF NEXT MEASUREMENT FUNCTION #03

This function causes the VTM to display the highest value measured during a test. It is useful when the greatest value of a measurement is needed; for example, when measuring cylinder pressure.

E. DISPLAY PEAK-TO-PEAK VALUE OF NEXT MEASUREMENT FUNCTION #04

This function causes the VTM to display the difference between the highest value and the lowest value measured between display changes during a test. The peak-to-peak control function can be used with the dwell measurement to determine dwell difference between the cam lobes.

F. SPARK IGNITION FULL POWER SIMULATION FUNCTION #05

This function is not used on the M9. The M9 uses a compression ignition (CI) engine.

G. DISPLAY TWO MEASUREMENTS FUNCTION #06

This function allows the user to make two general measurements at the same time. The control function causes the VTM display to alternate between the results of the first measurement and the results of the second measurement. Table 3-1 (p 3-12) shows those tests that can be used with control function 06. As an example, this control function can be used to measure pressure versus current to adjust bypass valves and main pumps on motor generators and cranes. It can also be used to determine the proper operation of charging systems by measuring battery voltage versus battery current.

CONTROL FUNCTIONS – CONTINUED

Table 3-1. STE/ICE-R Control Function Applications

Test	Description	Control Functions					
		Use only one					
		#01	#02	#03	#04	#05	#06
10	Engine RPM (Average)						
11	Engine RPM (Cranking)						
12	Power Test (rpm/sec)						
13	Power Test (% power)						
14	Compression Unbalance (W1 or W5)						
15	Compression Unbalance (W2)						
18	DCA Only	X	X	X	X		X
21	DCA Only	X	X	X	X		X
22	DCA Only	X	X	X	X		X
23	DCA Only	X	X	X	X		X
24	DCA Only	X	X	X	X		X
25	DCA Only	X	X	X	X		X
26	DCA Only	X					X
27	DCA Only	X	X	X	X		X
28	DCA Only	X	X	X	X		X
29	DCA Only	X	X	X	X		X
30	DCA Only	X	X	X	X		X
31	DCA Only	X	X	X	X		X
32	DCA Only	X	X	X	X		X
33	DCA Only	X	X	X	X		X
34	DCA Only	X					
35	DCA Only	X	X	X	X		X
36	DCA Only	X	X	X	X		X
37	DCA Only	X	X	X	X		X
38	DCA Only	X	X	X	X		X
39	DCA Only	X	X	X	X		X
40	DCA Only	X	X	X	X		X
41	DCA Only	X	X	X	X		X
42	DCA Only	X	X	X	X		X
43	DCA Only	X	X	X	X		X
44	DCA Only	X	X	X	X		X
45	Vacuum 0 to 30 in. Mercury	X	X	X	X		X
46	Vac Variation 0 to 30 in. Mercury	X					
47	Pressure 0 to 50 in. Mercury	X	X	X	X		X
48	Vacuum 0 to 150 in. Water	X	X	X	X		X
49	Pressure 0 to 25 psig	X	X	X	X		X
50	Pressure 0 to 1000 psig	X	X	X	X		X
51	Pressure 0 to 9999 psig	X	X	X	X		X

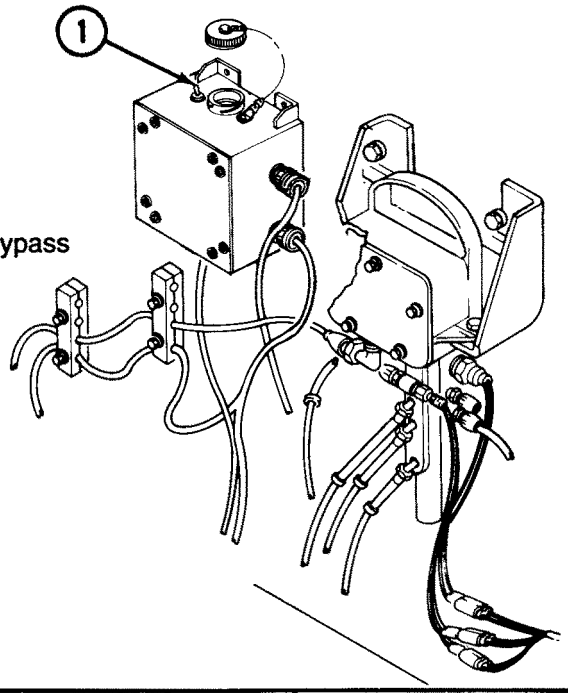
CONTROL FUNCTIONS – CONTINUED

Table 3-1. STE/ICE-R Control Function Applications (Continued)

Test	Description	Control Functions					
		Use only one					
		#01	#02	#03	#04	#05	#06
58	Enter Number of Cylinders						
59	Display Number of Cylinders						
60	Enter VID						
61	Display VID						
62	Display DCA ID						
63	Display J2 TK ID						
64	Display J3 TK ID						
66	Confidence Test						
67	Battery Voltage	X	X	X	X		X
68	DCA Only	X	X	X	X		X
69	DCA Only	X	X	X	X		X
70	DCA Only	X	X	X	X		X
71	DCA Only	X	X	X	X		X
72	Current First Peak						
73	Battery Internal Resistance						
74	Starter Circuit Resistance						
75	Battery Resistance Change						
76	Current First Peak						
77	Battery Internal Resistance						
78	Starter Circuit Resistance						
79	Battery Resistance Change						
80	DCA Only	X	X	X	X		X
81	DCA Only						
82	DCA Only	X	X	X	X		X
83	DCA Only	X	X	X	X		X
84	DCA Only	X	X	X	X		X
85	DCA Only	X	X	X			X
86	DCA Only	X	X	X			X
87	DCA Only						
88	Live Circuit Resistance (Low Ohms)	X					X
89	DC Voltage 0 to 45 Volts DC	X	X	X	X		X
90	DC Current 0 to 1500 Amps DC	X	X	X	X		X
91	Resistance and Continuity 0 to 4500 Ohms	X	X	X	X		X
92	Resistance 0 to 40 K/ohms	X	X	X	X		X
93	AC Voltage 0 to 35 Volts AC	X	X	X			X
95	AC Current 0 to 700 Amps AC	X	X	X			X
96	AC Frequency (Test Probe) 40 to 500 Hz						
97	AC Frequency (Current Probe) 40 to 500 Hz Frequency						
98	DCA Only	X	X	X	X		X
99	DCA Only	X	X	X			X

Note

- All voltages are DC.
- Read "greater than" for this symbol: >
- Read "less than" for this symbol: <
- For engine cranking tests, hold fuel solenoid bypass switch (1) open to prevent engine from starting.



M9 STE/ICE-R TESTS

TEST NUMBER	OFFSET LIMITS (±)	TEST DESCRIPTION	TEST LIMITS
10	------	Engine Cranking Speed	100 rpm
10	------	Engine Idle rpm	750-850 rpm
10	------	Maximum Governed Speed, No Load	2,960 rpm max.
12	------	Power rpm/sec.	2,427-3,280 rpm/sec.
13	------	Power Percent	60-75 percent
14	------	Compression Unbalance	0-20 percent
24	------	Fuel Supply Pressure at Stall Speed: rpm/fuel pressure	2,250-2,350 rpm/ 168-198 psi (1,158-1,365 kPa)
67	------	Battery Voltage, Engine Off	> 22 volts
67	------	Battery Voltage, Engine Crank	> 19 volts
67	------	Battery Voltage, Fast Idle*	26.5-29.5 volts
68	------	Battery Voltage, Engine Off	> 22 volts
68	------	Starter Voltage, Engine Crank	> 19 volts
68	------	Starter Voltage, Fast Idle*	0 volts

M9 STE/ICE-R TESTS – CONTINUED

TEST NUMBER	OFFSET LIMITS (±)	TEST DESCRIPTION	TEST LIMITS
69	------	Starter Negative Cable Voltage Drop, Engine Crank	< 0.5 volts
70	------	Starter Solenoid Voltage, Engine Off	0 volts
70	------	Starter Solenoid Voltage, Engine Crank	> 19 volts
70	------	Starter Solenoid Voltage, Fast Idle*	0 volts
71	150	Starter Current Average	350-450 amps
72	------	Starter Current, First Peak	1,297-1,462 amps
73	± 6.8	Battery Internal Resistance	max. 13.0 milliohms
74	-225 to +225	Starter Circuit Resistance	5-16 milliohms
75	± 6.8	Battery Resistance Change	max. 25 milliohms/sec.
82	------	Alternator Positive Voltage, Engine Off	> 22 volts
82	------	Alternator Positive Voltage, Fast Idle*	27-29 volts
83	------	Alternator Field Voltage, Engine Off, Ignition On	> 22 volts
83	------	Alternator Field Voltage, Fast Idle*	27-29 volts
84	------	Alternator Negative Voltage Cable Drop, Fast Idle*	< 0.05 volts
		* Fast Idle is 1,100-1,300 rpm	

STE/ICE-R CI ENGINE GO NO-GO CHAIN

Run the STE/ICE-R CI Engine GO NO-GO Chain when called for in troubleshooting charts (p 3-123). Refer to STE/ICE-R Diagnostic Connector Assembly (DCA) location (p 3-7), STE/ICE-R Power Cable W5 Connection (p 3-7), and TM 9-4910-571-12&P for setup and interpretation of test results.

Perform all GO steps listed until a NO-GO (NG) condition exists, then perform the NO-GO (NG) steps indicated. Complete all repair or replacement tasks specified, using the list of tasks (p vii) or alphabetical index (INDEX 1). Notify direct support maintenance if condition persists.

GO NO-GO CHAIN INDEX

DCA MODE

G01	- VTM Connections and Checkout	3-17
G02	- First Peak Test	3-21
G03	- Engine Start/Fluid Level Checks	3-23
G04	- Charging Circuit/Battery Voltage Check	3-26
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NG20	- Engine Cranking Check	3-33
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NG50	Deleted	
NG50	- Alternator Output Check	3-37
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NG150	- Engine Tightness Check	3-46

TK MODE

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G05	- Leaks/Oil Pressure Checks	3-58
G06	- Governor Check	3-60
G07	- Power Test	3-61
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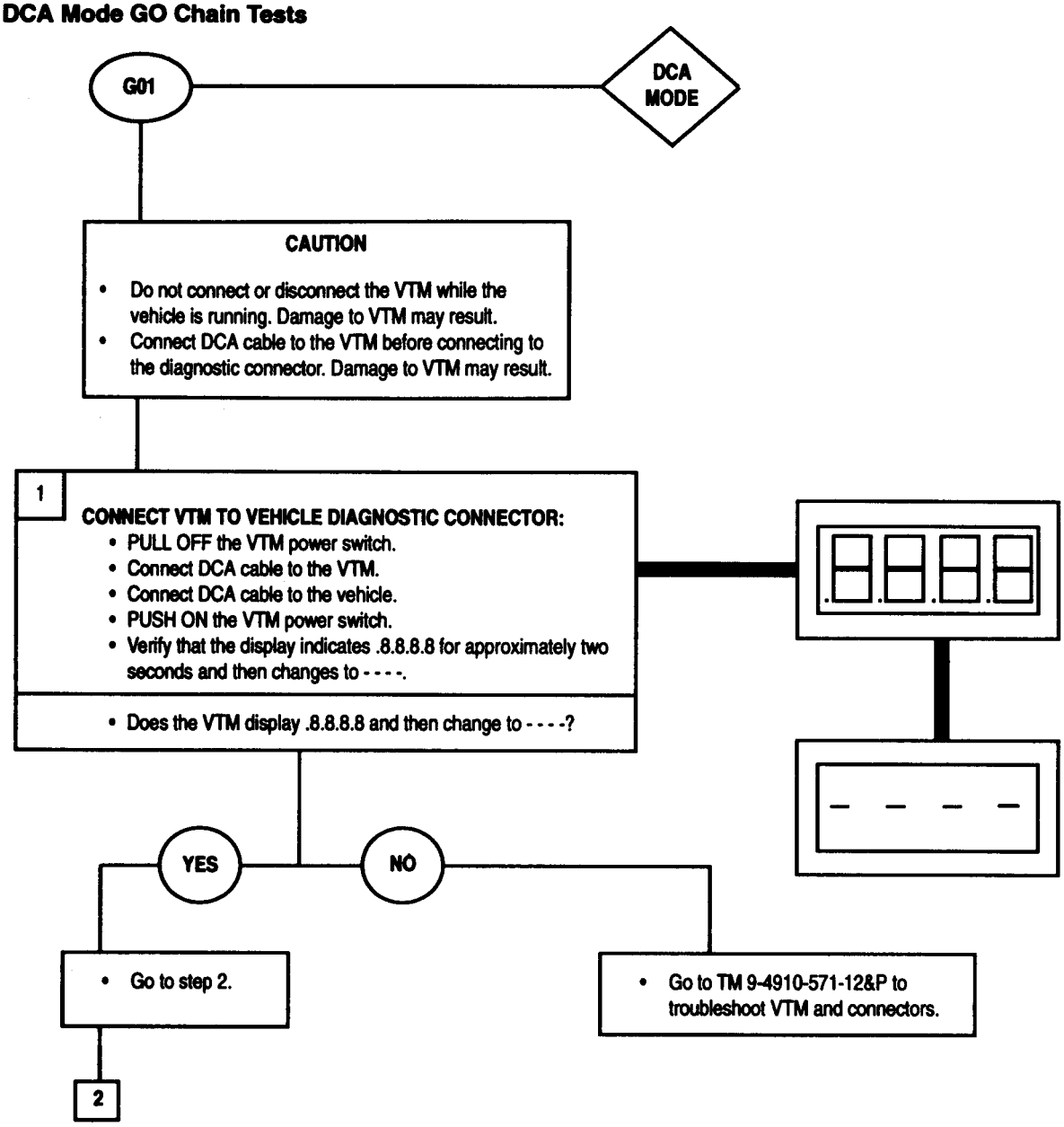
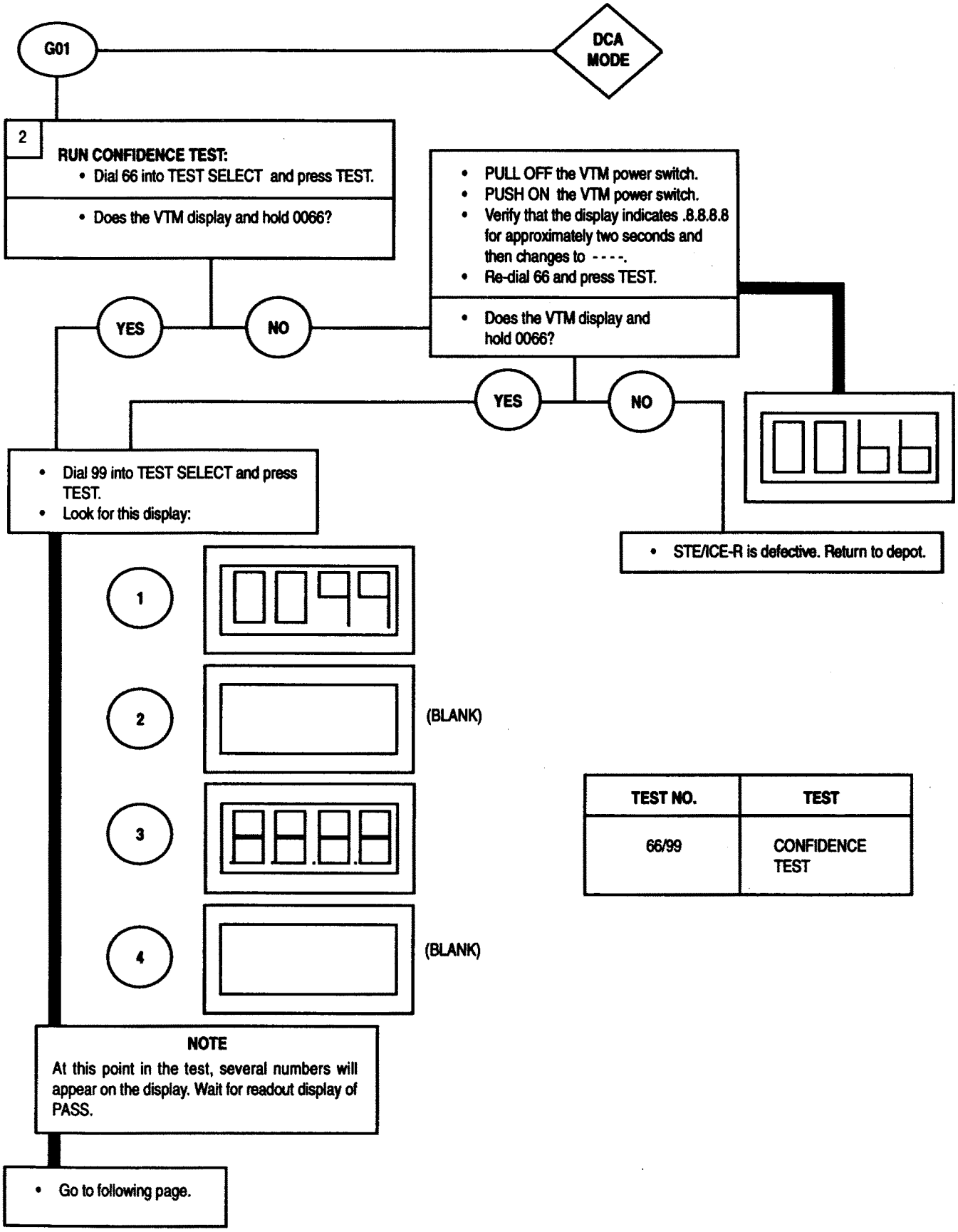
NG20	- Engine Cranking Check	3-66
NG30	- Engine Cranking Speed Check	3-67
NG50	- Alternator Output Check	3-70
NG80	- Starter Check	3-72
NG81	- Battery Current Check	3-74
NG90	- Engine Power Check	3-76

DCA Mode GO Chain Tests

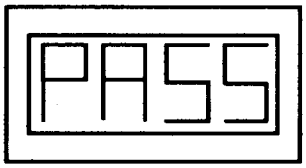




TEST NO.	TEST
66/99	CONFIDENCE TEST

G01

DCA MODE



NOTE

The VTM can fail Confidence Test if a bad transducer is connected to it. If the VTM fails Confidence Test when powered by W1 (DCA mode), remove all cables from the VTM and connect only W5, then clip W5 to the vehicle batteries. If it passes Confidence Test this way, there is a bad transducer in the vehicle's DCA. If it fails, the VTM has failed internally.

- Does the VTM display PASS?

YES / NO

- Repeat step 2.
- Does the VTM display PASS?

YES / NO

- STE/ICE is defective. Return to depot.

3

MEASURE BATTERY VOLTAGE:

- Dial 67 into TEST SELECT and press and release TEST.
- Watch the display and verify that the battery voltage is above 22 VDC.

TEST NO.	TEST
67	BATTERY VOLTAGE

Is the battery voltage above the limit?

YES / NO

NOTE

After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.

- Check VTM connections.
- Clean battery terminals.
- Check battery specific gravity.
- Charge battery, if necessary.
- Troubleshoot power cable W5.

NOTE

DCA tests 10, 67, 68, 82 and 84 do not require a VID.

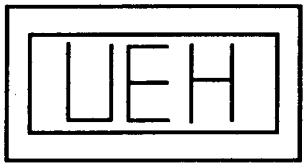
4

ENTER TEMPORARY VEHICLE IDENTIFICATION NUMBER (VID):

- Dial 60 into TEST SELECT and press TEST.
- When UEH appears, dial the temporary vehicle Identification number 24 into TEST SELECT and press TEST.
- The number 24 will appear briefly on the display, followed by the message E010.

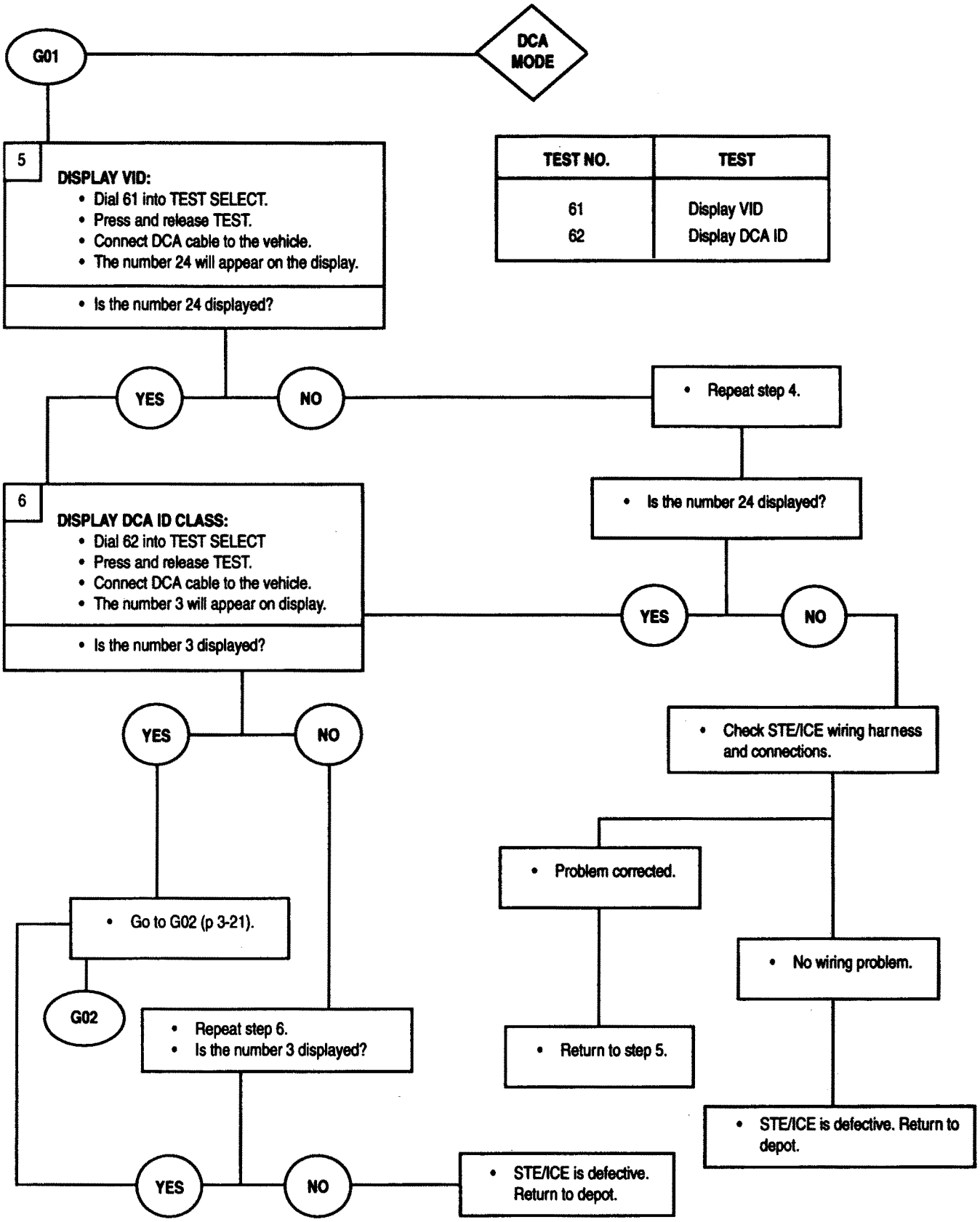
NOTE

Temporary VID 24 is used to allow testing to continue until a permanent VID is assigned.



- Go to step 5.

5


G01
DCA MODE
5
DISPLAY VID:
• Dial 61 into TEST SELECT.
• Press and release TEST.
• Connect DCA cable to the vehicle.
• The number 24 will appear on the display.
• Is the number 24 displayed?
TEST NO.
TEST
61
Display VID
62
Display DCA ID
YES
NO
• Repeat step 4.
• Is the number 24 displayed?
YES
NO
6
DISPLAY DCA ID CLASS:
• Dial 62 into TEST SELECT
• Press and release TEST.
• Connect DCA cable to the vehicle.
• The number 3 will appear on display.
• Is the number 3 displayed?
YES
NO
• Check STE/ICE wiring harness and connections.
• Problem corrected.
• Go to G02 (p 3-21).
• No wiring problem.
G02
• Repeat step 6.
• Is the number 3 displayed?
• Return to step 5.
• STE/ICE is defective. Return to depot.
YES
NO
• STE/ICE is defective. Return to depot.

G02

DCA MODE

1 **CONDITION CURRENT PROBE-DO OFFSET:**
- Dial 72 into TEST SELECT.
- Press and hold TEST until CAL message appears.
- Release TEST.
- Wait for offset value to appear.

- Is the offset value within the limits of -225 to +225?

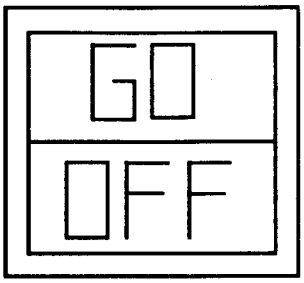
TEST NO.	TEST
72	CURRENT FIRST PEAK

YES

NO

- Go to TM 9-4910-571-12&P for offset fault isolation.

2 **MEASURE STARTER CURRENT - FIRST PEAK:**
- Deactivate fuel solenoid (p 3-14).
- Press TEST momentarily.
- Wait for prompting message GO to appear on display.



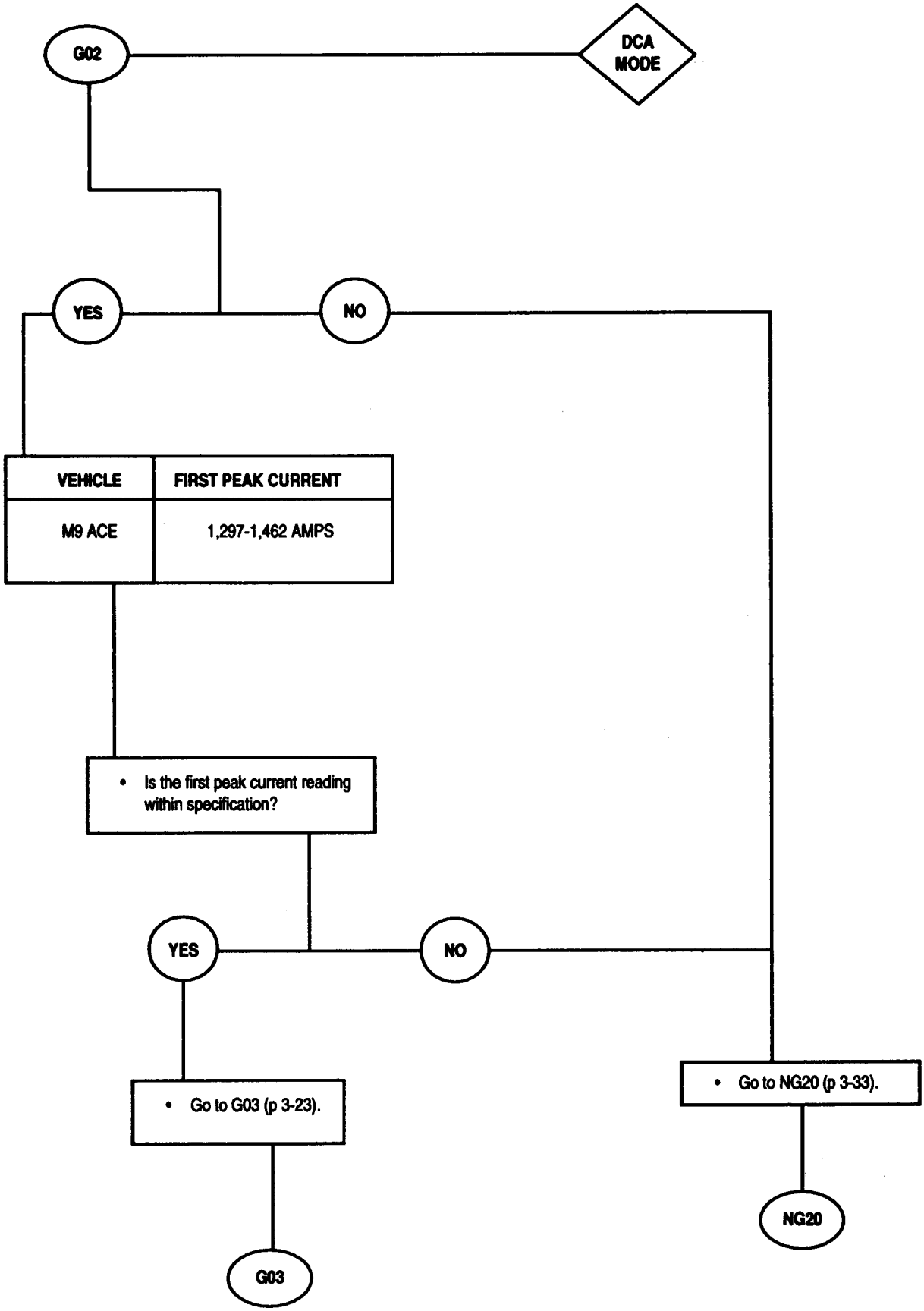
- When GO appears, crank engine until OFF or an error message is displayed.
- While cranking the engine with bad or discharged batteries, it is possible for the VTM to lose power and come on again after the cranking is stopped, displaying ----. If this happens, proceed to NG81 (p 3-43).

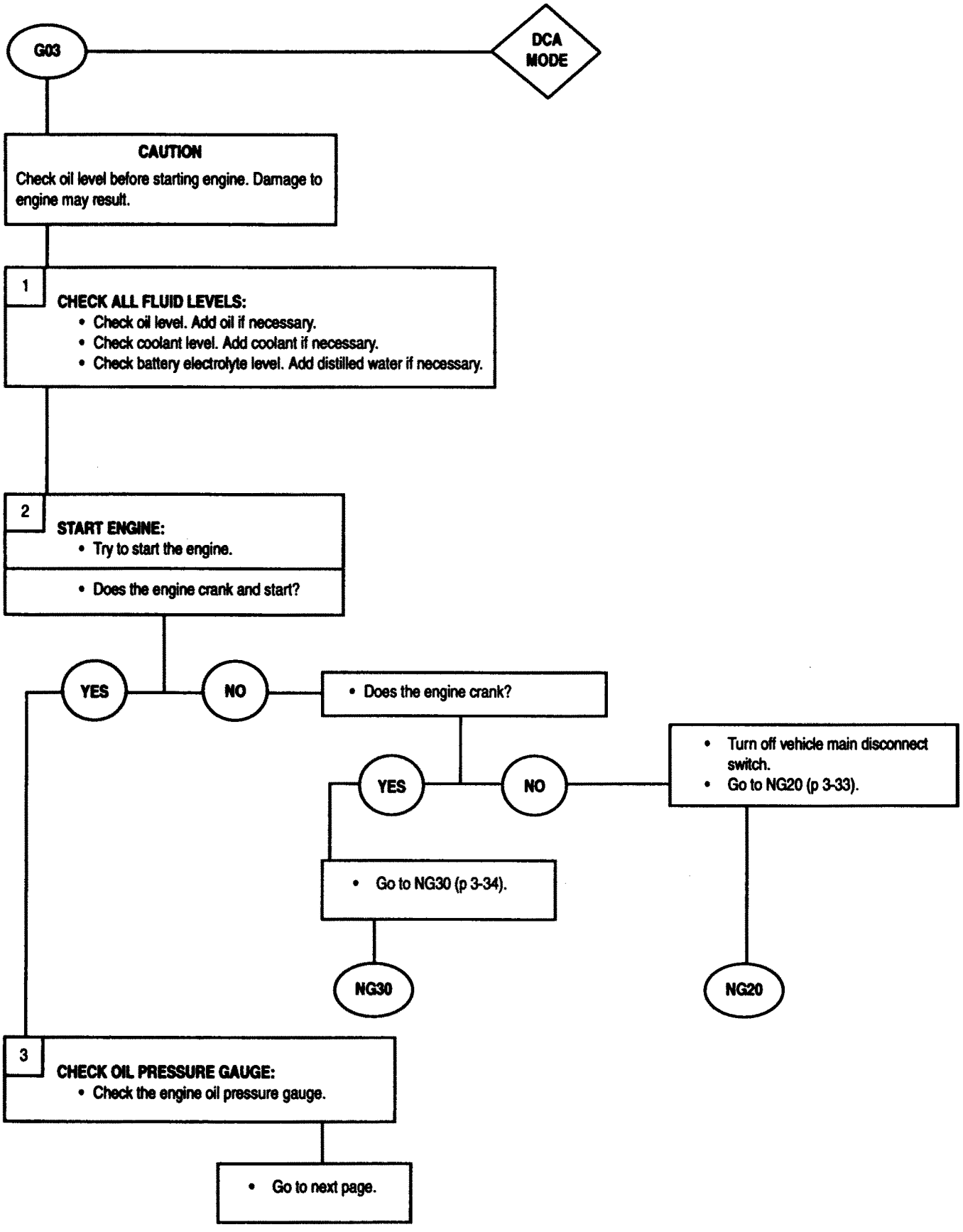
NOTE
If engine does not crank, go to NG20 (p 3-33).

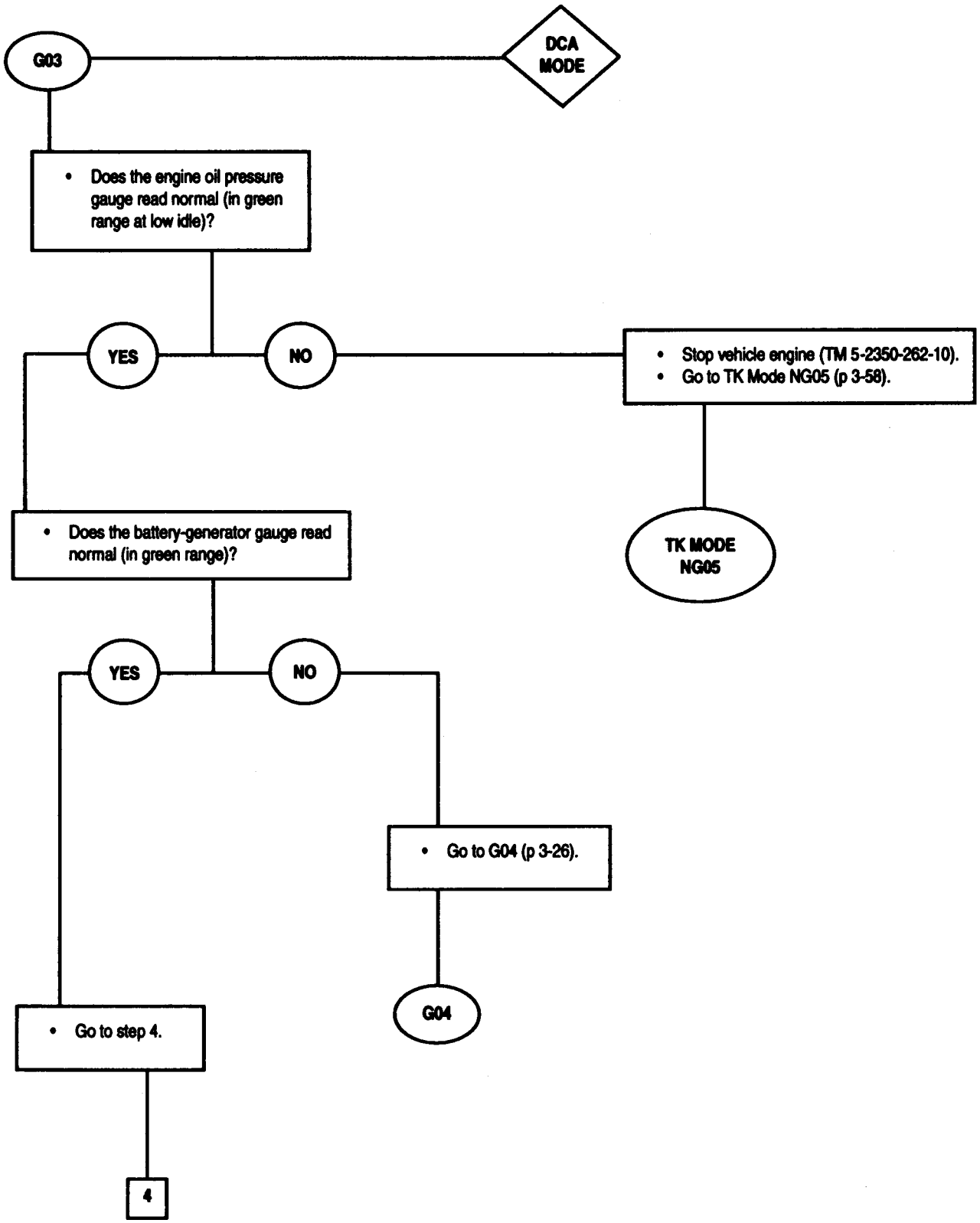
NG20

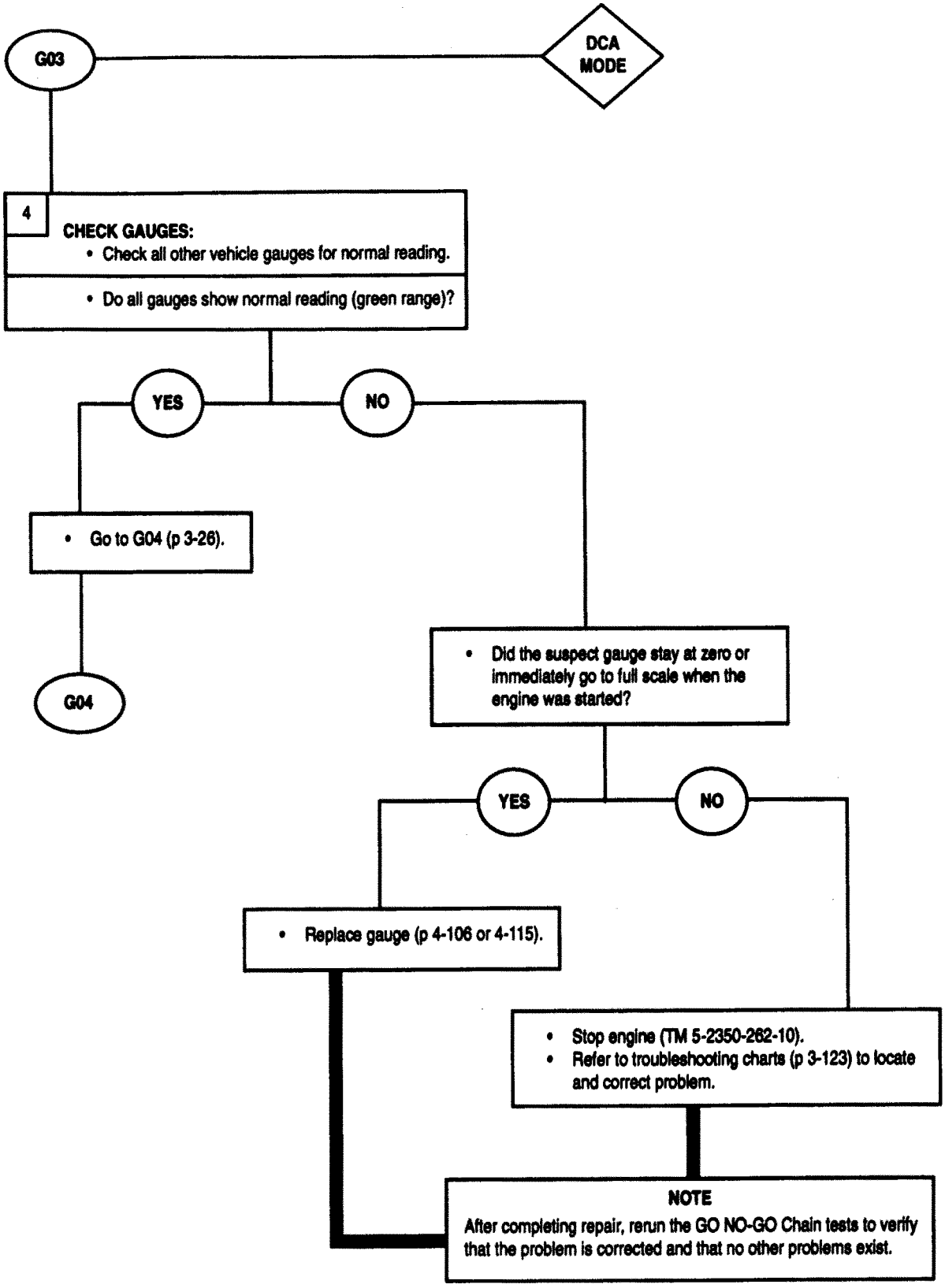
- Is a number displayed?

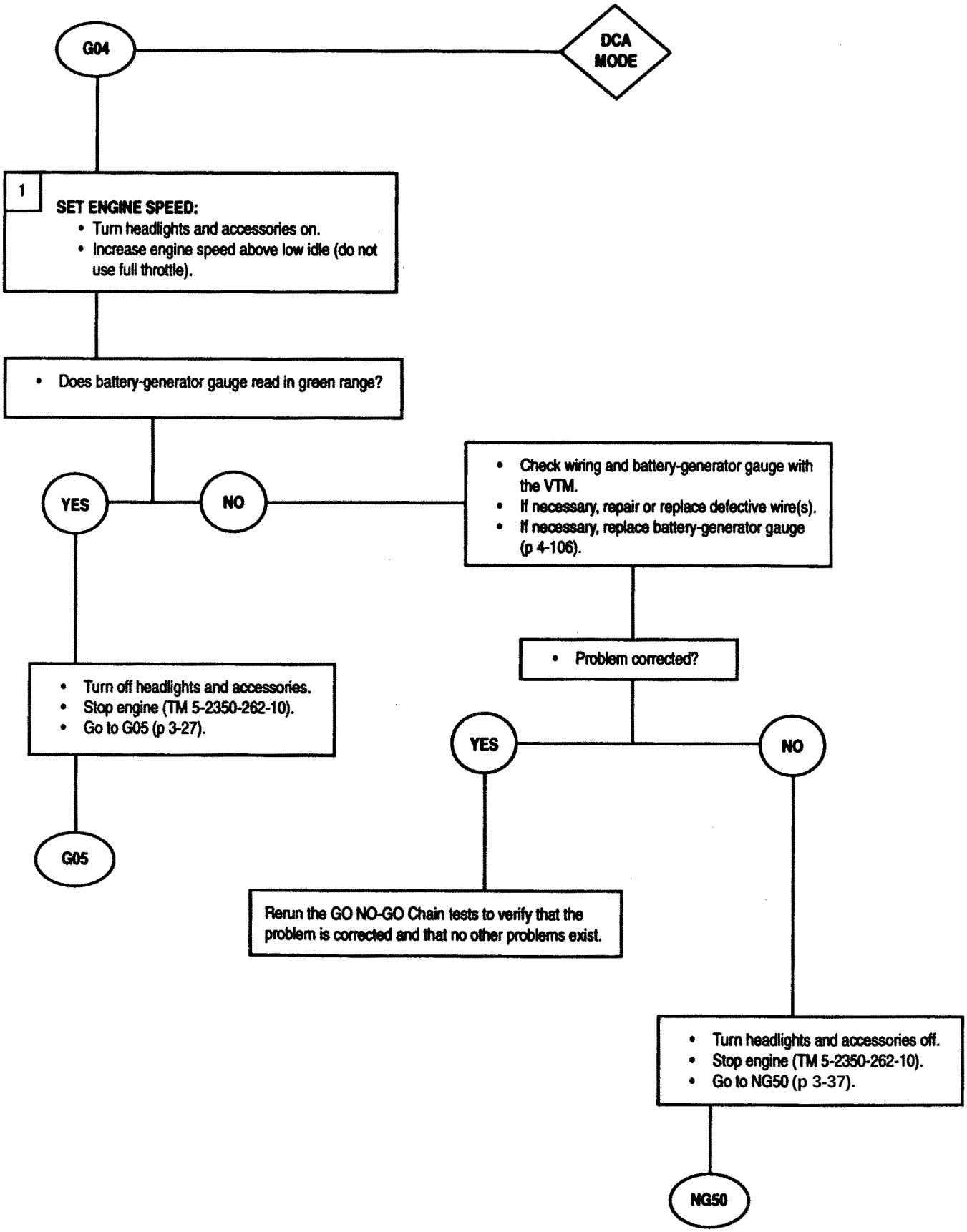
- Go to next page.

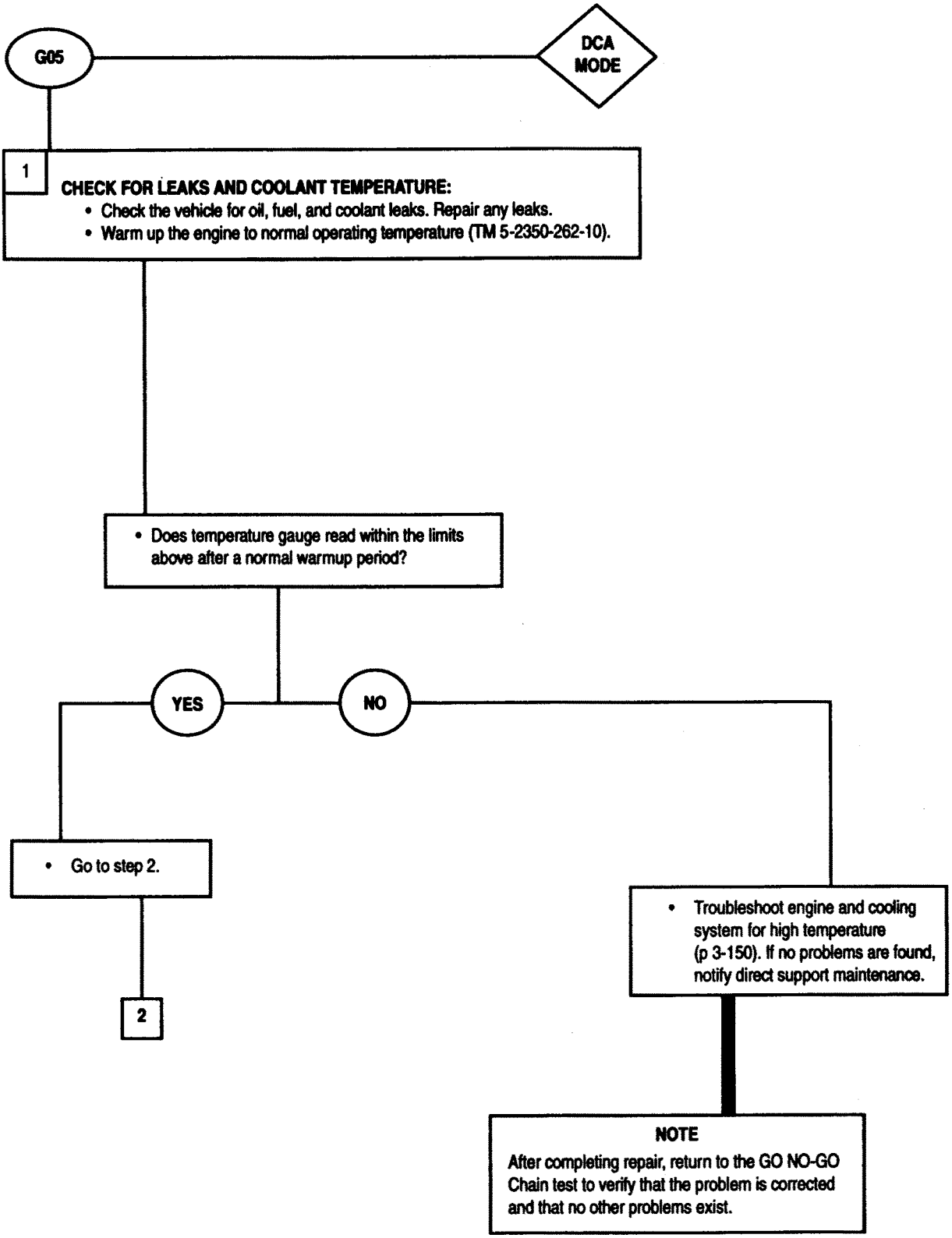

G02
DCA MODE
YES
NO
VEHICLE
FIRST PEAK CURRENT
M9 ACE
1,297-1,462 AMPS
• Is the first peak current reading within specification?
YES
NO
• Go to G03 (p 3-23).
• Go to NG20 (p 3-33).
G03
NG20

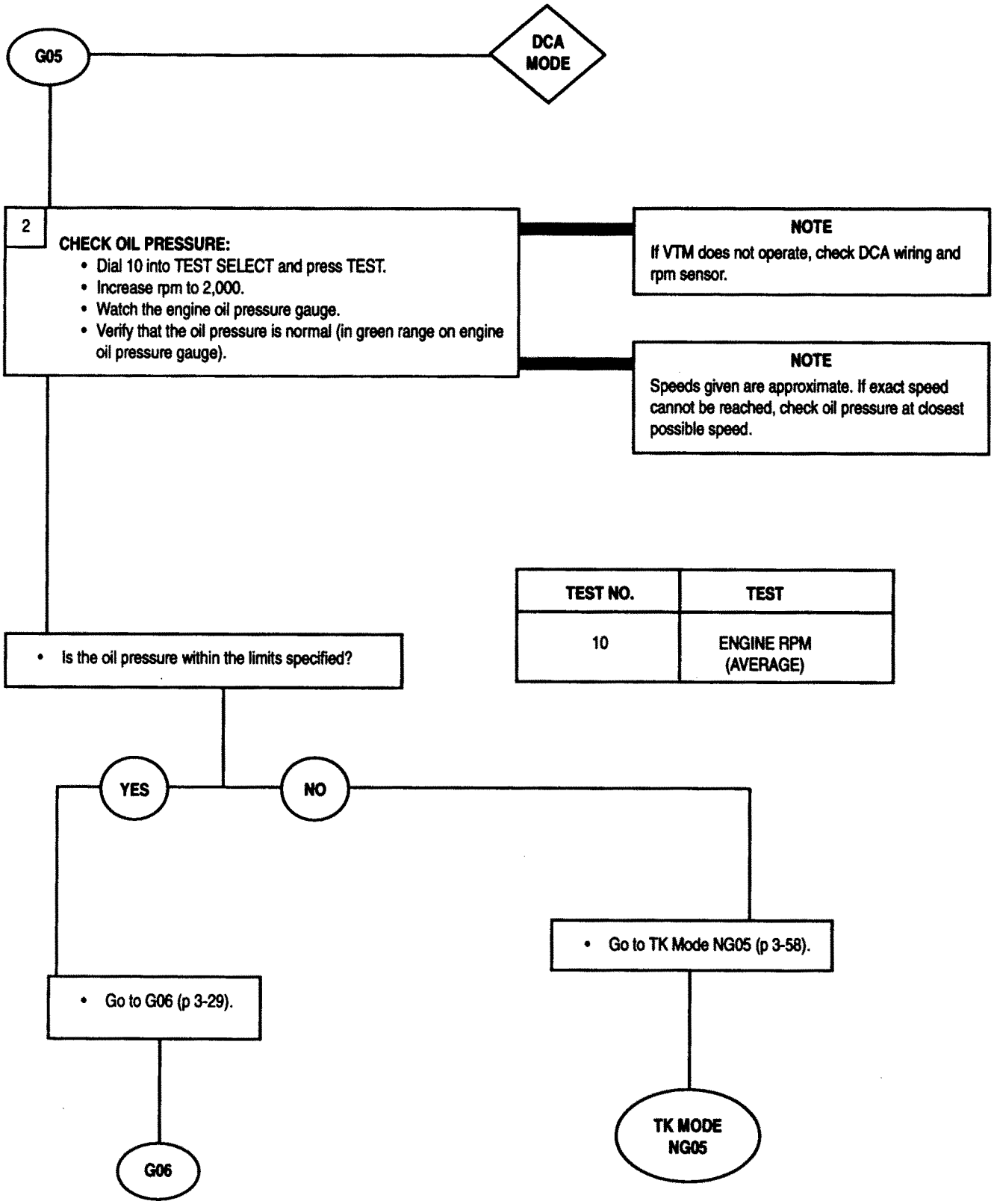

G03
DCA MODE
CAUTION
Check oil level before starting engine. Damage to engine may result.
1
CHECK ALL FLUID LEVELS:
• Check oil level. Add oil if necessary.
• Check coolant level. Add coolant if necessary.
• Check battery electrolyte level. Add distilled water if necessary.
2
START ENGINE:
• Try to start the engine.
• Does the engine crank and start?
YES
NO
• Does the engine crank?
YES
NO
• Turn off vehicle main disconnect switch.
• Go to NG20 (p 3-33).
• Go to NG30 (p 3-34).
NG30
NG20
3
CHECK OIL PRESSURE GAUGE:
• Check the engine oil pressure gauge.
• Go to next page.

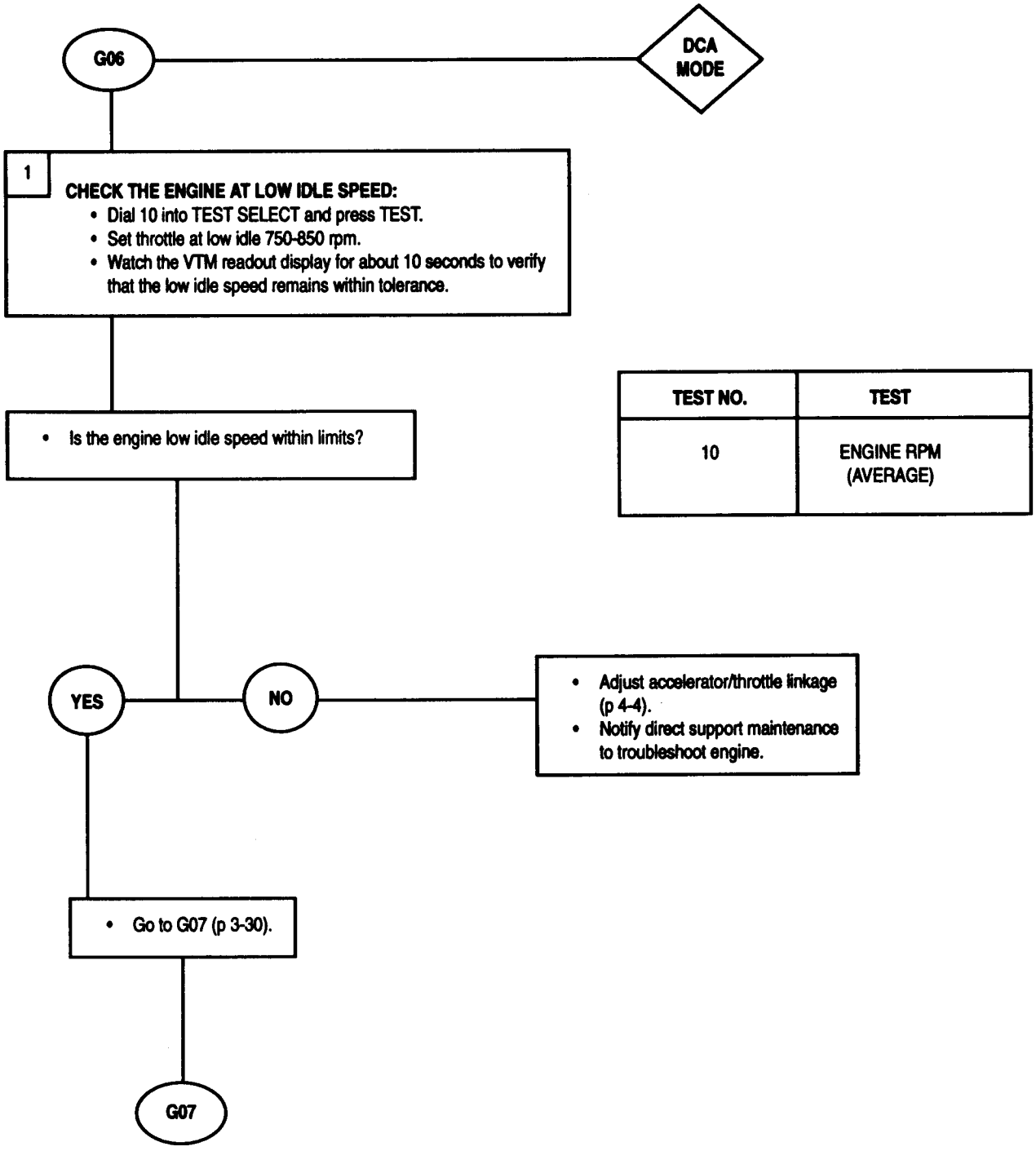

G03
DCA MODE
• Does the engine oil pressure gauge read normal (in green range at low idle)?
YES
NO
• Stop vehicle engine (TM 5-2350-262-10).
• Go to TK Mode NG05 (p 3-58).
TK MODE NG05
• Does the battery-generator gauge read normal (in green range)?
YES
NO
• Go to G04 (p 3-26).
G04
• Go to step 4.
4


G03
DCA MODE
4
CHECK GAUGES:
• Check all other vehicle gauges for normal reading.
• Do all gauges show normal reading (green range)?
YES
NO
• Go to G04 (p 3-26).
G04
• Did the suspect gauge stay at zero or immediately go to full scale when the engine was started?
YES
NO
• Replace gauge (p 4-106 or 4-115).
• Stop engine (TM 5-2350-262-10).
• Refer to troubleshooting charts (p 3-123) to locate and correct problem.
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.


G04
DCA MODE
1
SET ENGINE SPEED:
• Turn headlights and accessories on.
• Increase engine speed above low idle (do not use full throttle).
• Does battery-generator gauge read in green range?
YES
NO
• Check wiring and battery-generator gauge with the VTM.
• If necessary, repair or replace defective wire(s).
• If necessary, replace battery-generator gauge (p 4-106).
• Problem corrected?
YES
NO
• Turn off headlights and accessories.
• Stop engine (TM 5-2350-262-10).
• Go to G05 (p 3-27).
G05
Rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.
• Turn headlights and accessories off.
• Stop engine (TM 5-2350-262-10).
• Go to NG50 (p 3-37).
NG50


G05
DCA MODE
1
CHECK FOR LEAKS AND COOLANT TEMPERATURE:
• Check the vehicle for oil, fuel, and coolant leaks. Repair any leaks.
• Warm up the engine to normal operating temperature (TM 5-2350-262-10).
• Does temperature gauge read within the limits above after a normal warmup period?
YES
NO
• Go to step 2.
2
• Troubleshoot engine and cooling system for high temperature (p 3-150). If no problems are found, notify direct support maintenance.
NOTE
After completing repair, return to the GO NO-GO Chain test to verify that the problem is corrected and that no other problems exist.


G05
DCA MODE
2
CHECK OIL PRESSURE:
• Dial 10 into TEST SELECT and press TEST.
• Increase rpm to 2,000.
• Watch the engine oil pressure gauge.
• Verify that the oil pressure is normal (in green range on engine oil pressure gauge).
NOTE
If VTM does not operate, check DCA wiring and rpm sensor.
NOTE
Speeds given are approximate. If exact speed cannot be reached, check oil pressure at closest possible speed.
TEST NO.
TEST
10
ENGINE RPM (AVERAGE)
• Is the oil pressure within the limits specified?
YES
NO
• Go to G06 (p 3-29).
• Go to TK Mode NG05 (p 3-58).
G06
TK MODE NG05



TEST NO.	TEST
10	ENGINE RPM (AVERAGE)

G07

DCA MODE

1 **CHECK GOVERNOR OPERATION:**
- Dial 10 into TEST SELECT and press TEST.
- Watch the VTM display.
- Gradually increase the engine speed to high idle speed 2,600 rpm.

CAUTION
Governor operation must be checked before performing the power test to avoid possible engine damage.

CAUTION
Do not allow engine speed to exceed 2,600 rpm. Damage to engine may result.

TEST NO.	TEST
10	ENGINE RPM (AVERAGE)

- Is the engine high idle speed within limits?

YES

NO

- Adjust accelerator/throttle linkage (p 4-4).
- Notify direct support to troubleshoot engine.

2 **PERFORM POWER TEST:**
- Dial 13 into TEST SELECT and press TEST.
- Wait for prompting message CIP to appear.
- When CIP appears, press down on the throttle and hold it to the floor until VTM displays OFF.
- When OFF appears, release the throttle.
- A number representing % power will appear on the VTM. Compare this number to that noted in the table.

CAUTION
Do not perform the power test if the engine temperature is above normal operating temperature. However, the engine should be at operating temperature before performing the power test.

- Does engine speed indicate 980 ± 30 rpm?

TEST NO.	TEST
13	POWER TEST (% POWER)

YES

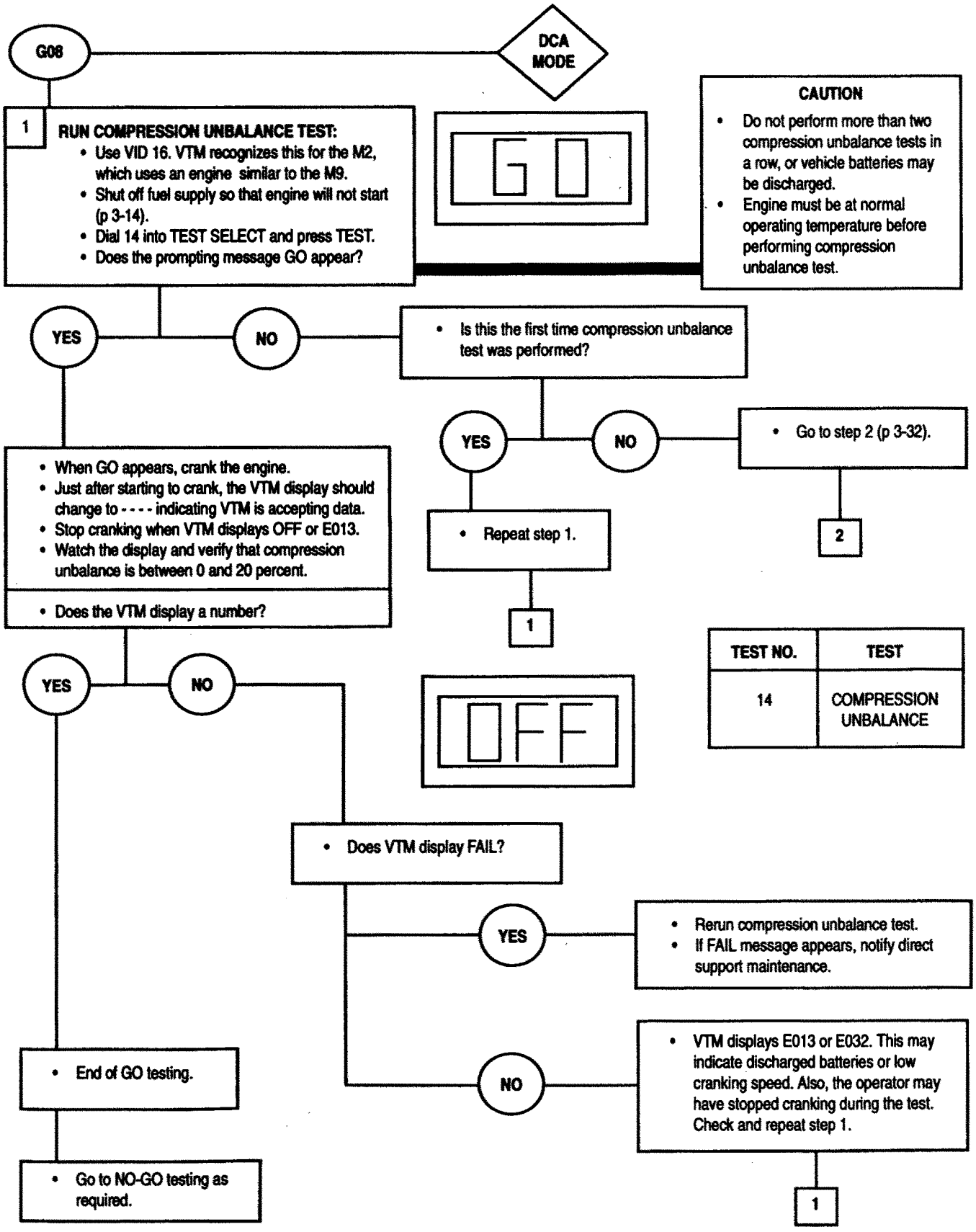
NO

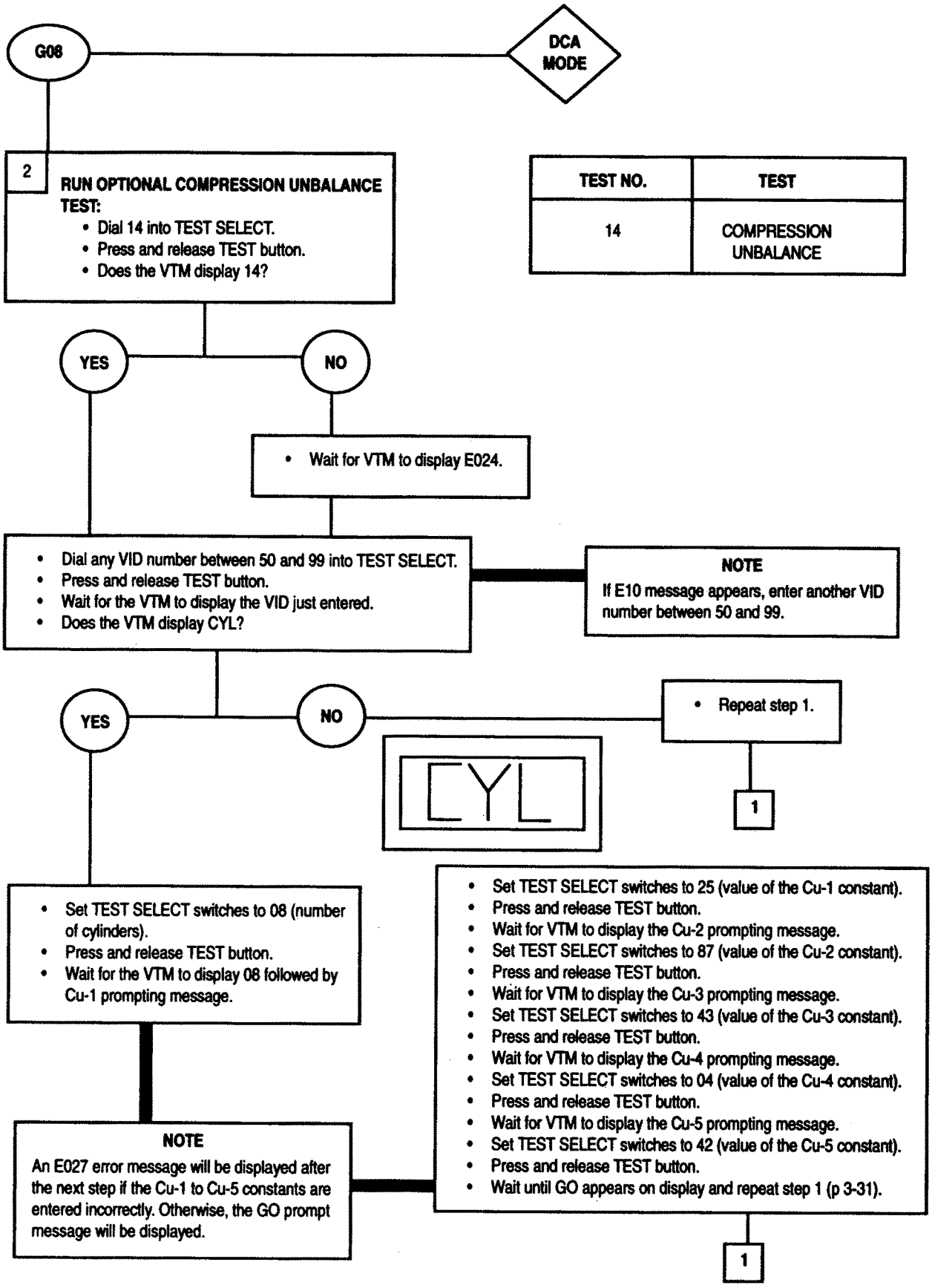
- Go to G08 (p 3-31).

G08

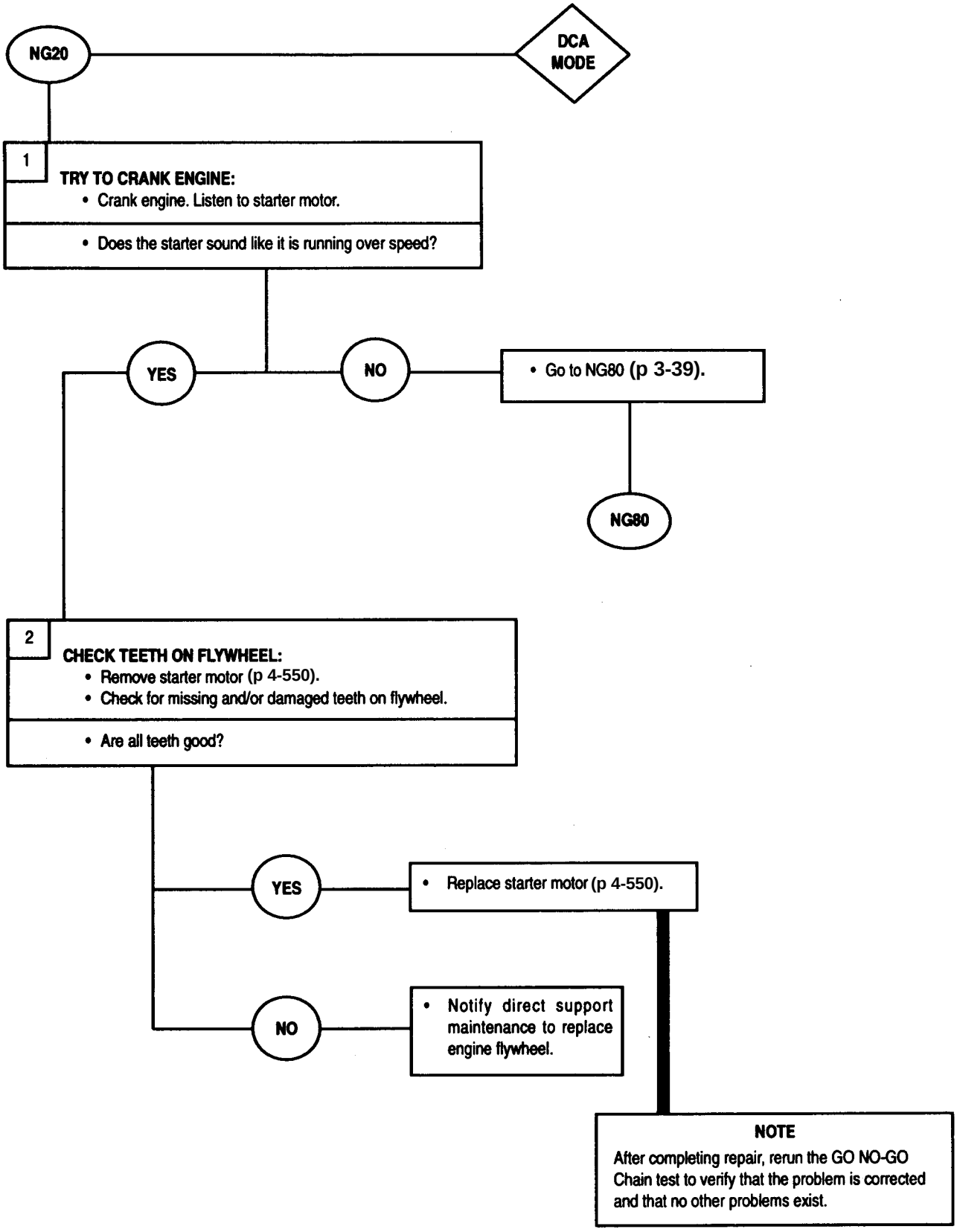
- Clean fuel/water separator (p 4-230).
- Repeat power test.

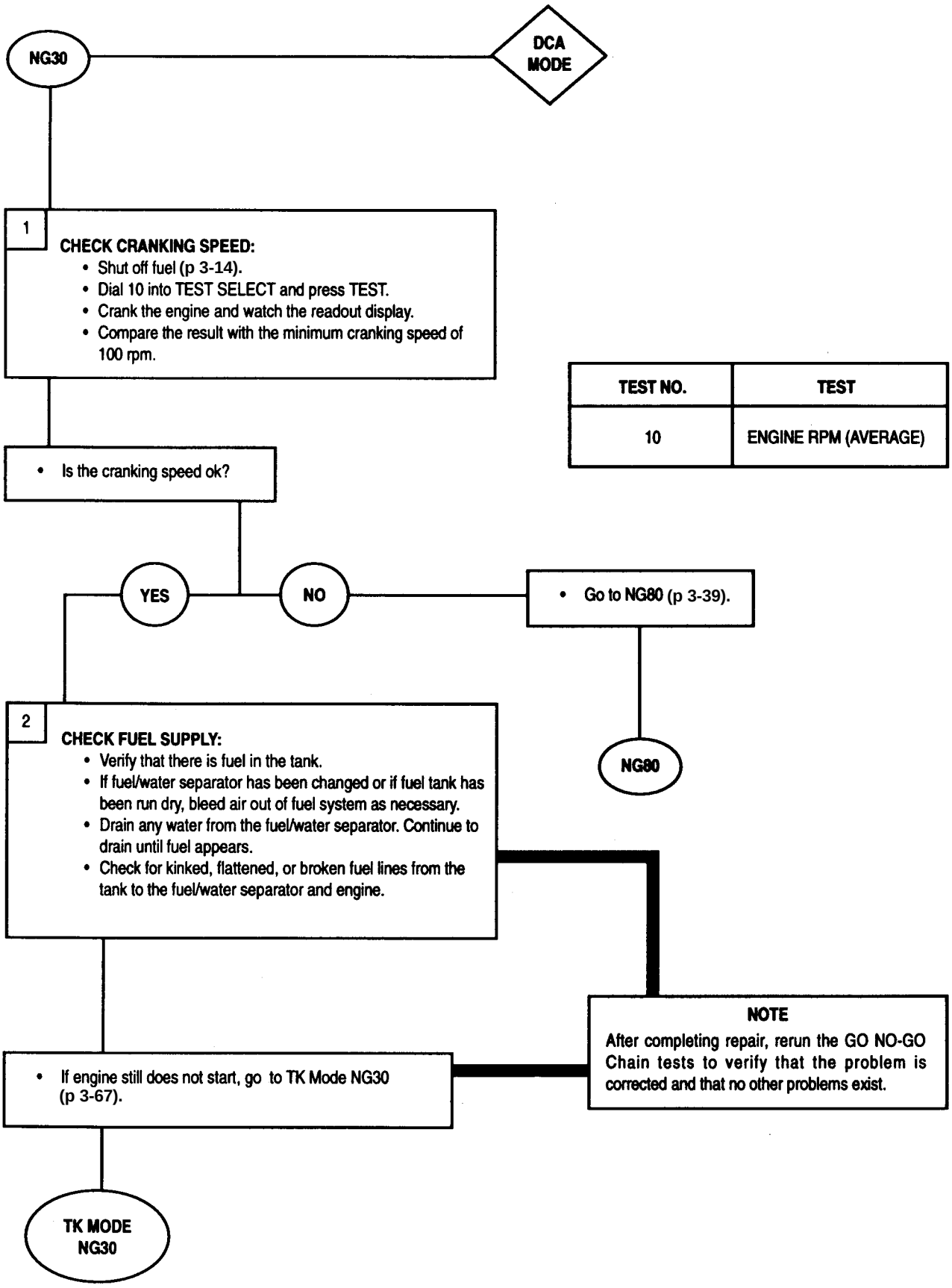
- If power test still fails, notify direct support maintenance to troubleshoot engine.

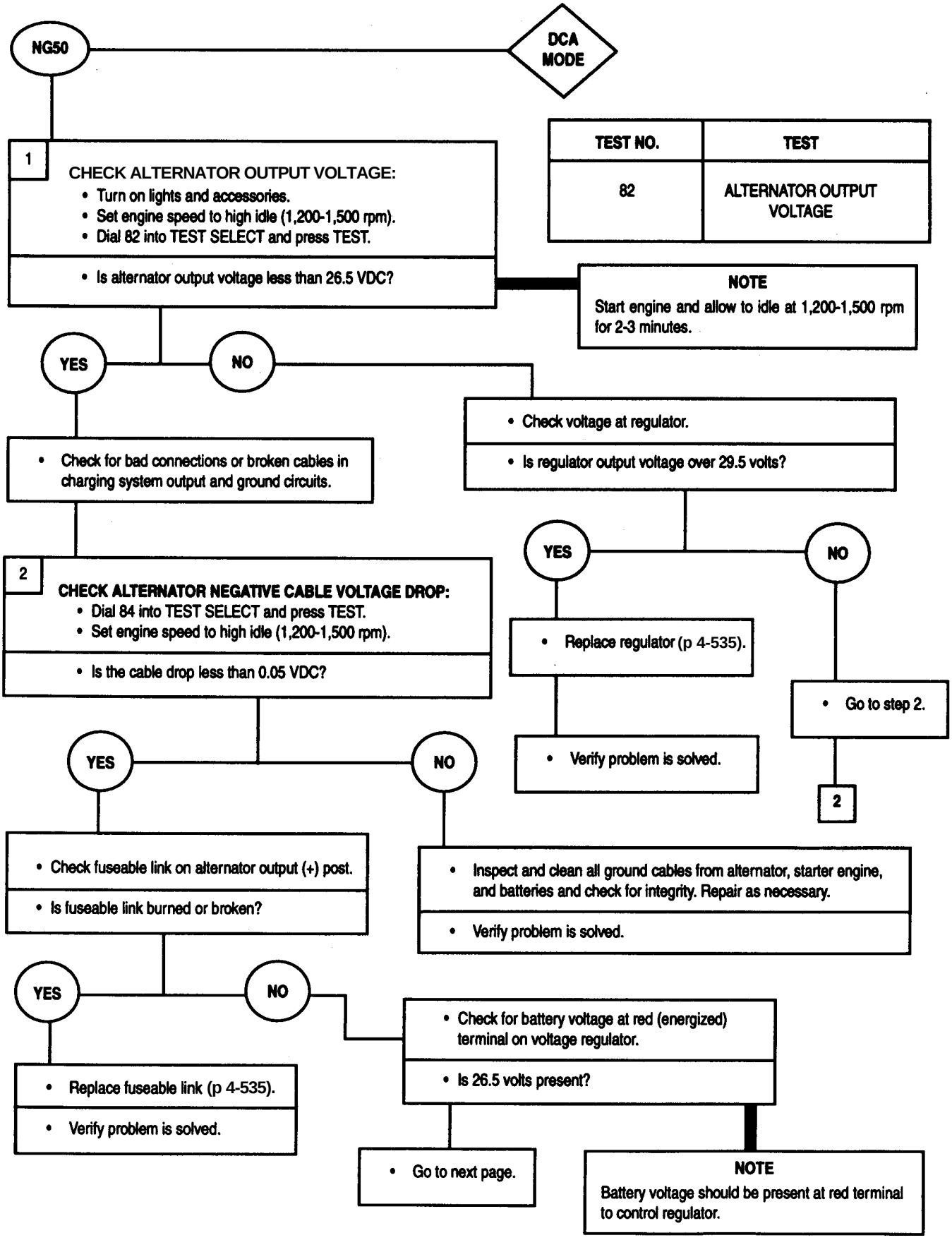

G08
DCA MODE
1
RUN COMPRESSION UNBALANCE TEST:
• Use VID 16. VTM recognizes this for the M2, which uses an engine similar to the M9.
• Shut off fuel supply so that engine will not start (p 3-14).
• Dial 14 into TEST SELECT and press TEST.
• Does the prompting message GO appear?
GO
CAUTION
• Do not perform more than two compression unbalance tests in a row, or vehicle batteries may be discharged.
• Engine must be at normal operating temperature before performing compression unbalance test.
YES
NO
• Is this the first time compression unbalance test was performed?
YES
NO
• Go to step 2 (p 3-32).
2
• Repeat step 1.
1
• When GO appears, crank the engine.
• Just after starting to crank, the VTM display should change to - - - - indicating VTM is accepting data.
• Stop cranking when VTM displays OFF or E013.
• Watch the display and verify that compression unbalance is between 0 and 20 percent.
• Does the VTM display a number?
YES
NO
OFF
TEST NO. | TEST
14 | COMPRESSION UNBALANCE
• Does VTM display FAIL?
YES
• Rerun compression unbalance test.
• If FAIL message appears, notify direct support maintenance.
NO
• VTM displays E013 or E032. This may indicate discharged batteries or low cranking speed. Also, the operator may have stopped cranking during the test. Check and repeat step 1.
1
• End of GO testing.
• Go to NO-GO testing as required.

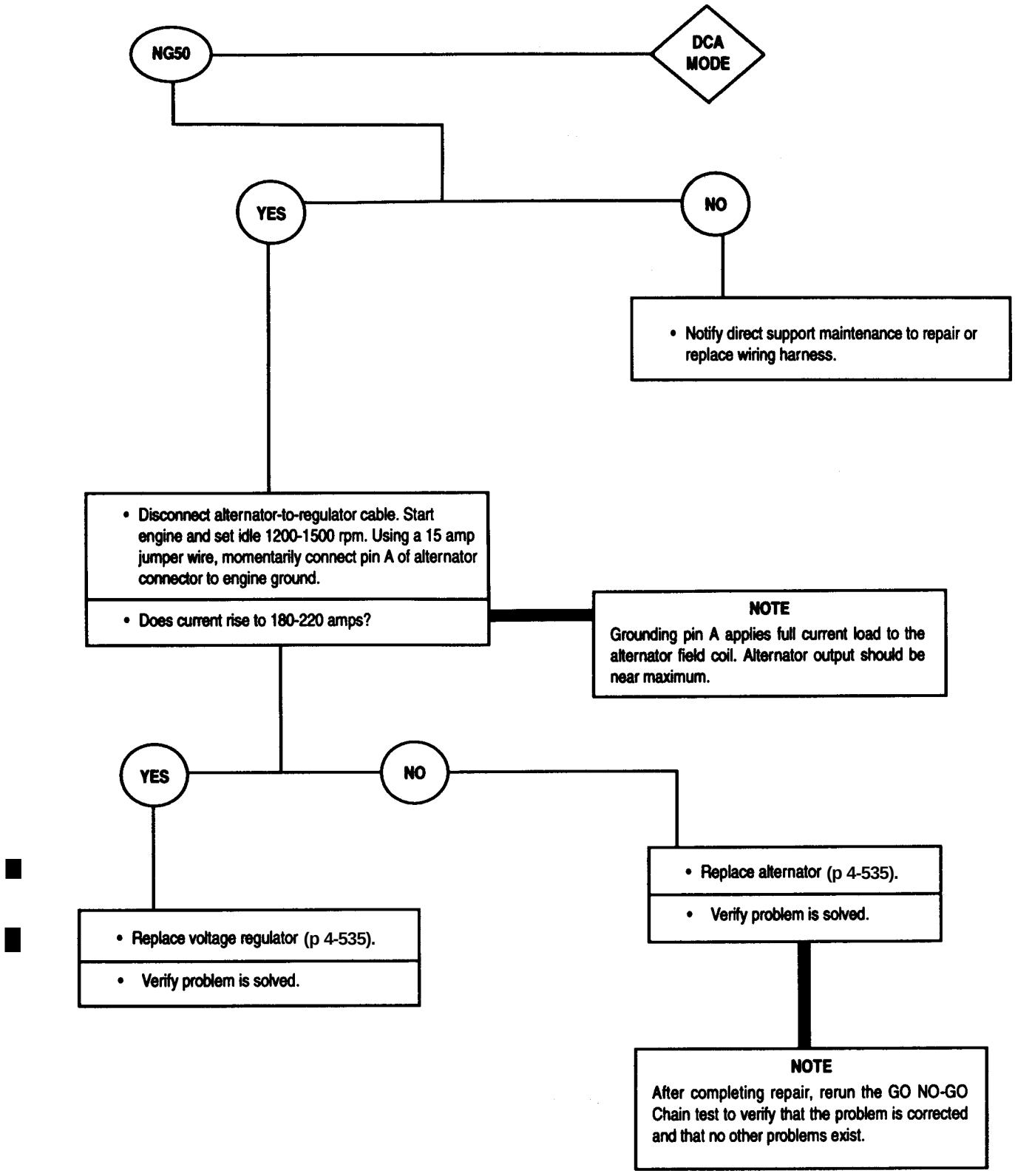

G08
DCA MODE
2
RUN OPTIONAL COMPRESSION UNBALANCE TEST:
• Dial 14 into TEST SELECT.
• Press and release TEST button.
• Does the VTM display 14?
TEST NO.
TEST
14
COMPRESSION UNBALANCE
YES
NO
• Wait for VTM to display E024.
• Dial any VID number between 50 and 99 into TEST SELECT.
• Press and release TEST button.
• Wait for the VTM to display the VID just entered.
• Does the VTM display CYL?
NOTE
If E10 message appears, enter another VID number between 50 and 99.
YES
NO
• Repeat step 1.
CYL
1
• Set TEST SELECT switches to 08 (number of cylinders).
• Press and release TEST button.
• Wait for the VTM to display 08 followed by Cu-1 prompting message.
• Set TEST SELECT switches to 25 (value of the Cu-1 constant).
• Press and release TEST button.
• Wait for VTM to display the Cu-2 prompting message.
• Set TEST SELECT switches to 87 (value of the Cu-2 constant).
• Press and release TEST button.
• Wait for VTM to display the Cu-3 prompting message.
• Set TEST SELECT switches to 43 (value of the Cu-3 constant).
• Press and release TEST button.
• Wait for VTM to display the Cu-4 prompting message.
• Set TEST SELECT switches to 04 (value of the Cu-4 constant).
• Press and release TEST button.
• Wait for VTM to display the Cu-5 prompting message.
• Set TEST SELECT switches to 42 (value of the Cu-5 constant).
• Press and release TEST button.
• Wait until GO appears on display and repeat step 1 (p 3-31).
NOTE
An E027 error message will be displayed after the next step if the Cu-1 to Cu-5 constants are entered incorrectly. Otherwise, the GO prompt message will be displayed.
1

DCA Mode NO-GO Chain Tests




NG30
DCA MODE
1
CHECK CRANKING SPEED:
• Shut off fuel (p 3-14).
• Dial 10 into TEST SELECT and press TEST.
• Crank the engine and watch the readout display.
• Compare the result with the minimum cranking speed of 100 rpm.
TEST NO.
TEST
10
ENGINE RPM (AVERAGE)
• Is the cranking speed ok?
YES
NO
• Go to NG80 (p 3-39).
NG80
2
CHECK FUEL SUPPLY:
• Verify that there is fuel in the tank.
• If fuel/water separator has been changed or if fuel tank has been run dry, bleed air out of fuel system as necessary.
• Drain any water from the fuel/water separator. Continue to drain until fuel appears.
• Check for kinked, flattened, or broken fuel lines from the tank to the fuel/water separator and engine.
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.
• If engine still does not start, go to TK Mode NG30 (p 3-67).
TK MODE NG30


NG50
DCA MODE
TEST NO.
TEST
82
ALTERNATOR OUTPUT VOLTAGE
1
CHECK ALTERNATOR OUTPUT VOLTAGE:
• Turn on lights and accessories.
• Set engine speed to high idle (1,200-1,500 rpm).
• Dial 82 into TEST SELECT and press TEST.
• Is alternator output voltage less than 26.5 VDC?
NOTE
Start engine and allow to idle at 1,200-1,500 rpm for 2-3 minutes.
YES
NO
• Check for bad connections or broken cables in charging system output and ground circuits.
• Check voltage at regulator.
• Is regulator output voltage over 29.5 volts?
YES
NO
2
CHECK ALTERNATOR NEGATIVE CABLE VOLTAGE DROP:
• Dial 84 into TEST SELECT and press TEST.
• Set engine speed to high idle (1,200-1,500 rpm).
• Is the cable drop less than 0.05 VDC?
• Replace regulator (p 4-535).
• Verify problem is solved.
• Go to step 2.
2
YES
NO
• Check fuseable link on alternator output (+) post.
• Is fuseable link burned or broken?
• Inspect and clean all ground cables from alternator, starter engine, and batteries and check for integrity. Repair as necessary.
• Verify problem is solved.
YES
NO
• Replace fuseable link (p 4-535).
• Verify problem is solved.
• Check for battery voltage at red (energized) terminal on voltage regulator.
• Is 26.5 volts present?
• Go to next page.
NOTE
Battery voltage should be present at red terminal to control regulator.


NG50
DCA MODE
YES
NO
• Notify direct support maintenance to repair or replace wiring harness.
• Disconnect alternator-to-regulator cable. Start engine and set idle 1200-1500 rpm. Using a 15 amp jumper wire, momentarily connect pin A of alternator connector to engine ground.
• Does current rise to 180-220 amps?
NOTE
Grounding pin A applies full current load to the alternator field coil. Alternator output should be near maximum.
YES
NO
• Replace voltage regulator (p 4-535).
• Verify problem is solved.
• Replace alternator (p 4-535).
• Verify problem is solved.
NOTE
After completing repair, rerun the GO NO-GO Chain test to verify that the problem is corrected and that no other problems exist.

NG80

DCA MODE

NOTE

While cranking the engine with bad or discharged batteries, it is possible for the VTM to lose power and come on again after the cranking has stopped, displaying - - - -. If this occurs, clean battery posts and clamps and try again. If VTM still loses power, connect the VTM power cable to good batteries in another vehicle and perform the following tests using the test probe cable W2.

1 **DO CURRENT PROBE OFFSET:**

- Dial 74 into TEST SELECT.
- Press and hold TEST until CAL message appears on the display.
- Release TEST.
- Wait for offset value to appear.

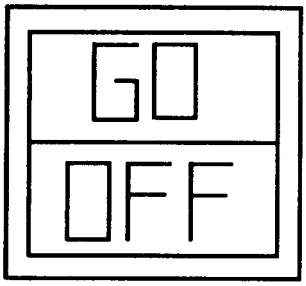
- Is the offset value within the limits of -225 to +225?

TEST NO.	TEST
74	STARTER CIRCUIT RESISTANCE

YES

NO

- Go to TM 9-4910-571-12&P for offset fault isolation.



2 **CHECK STARTER CIRCUIT RESISTANCE:**

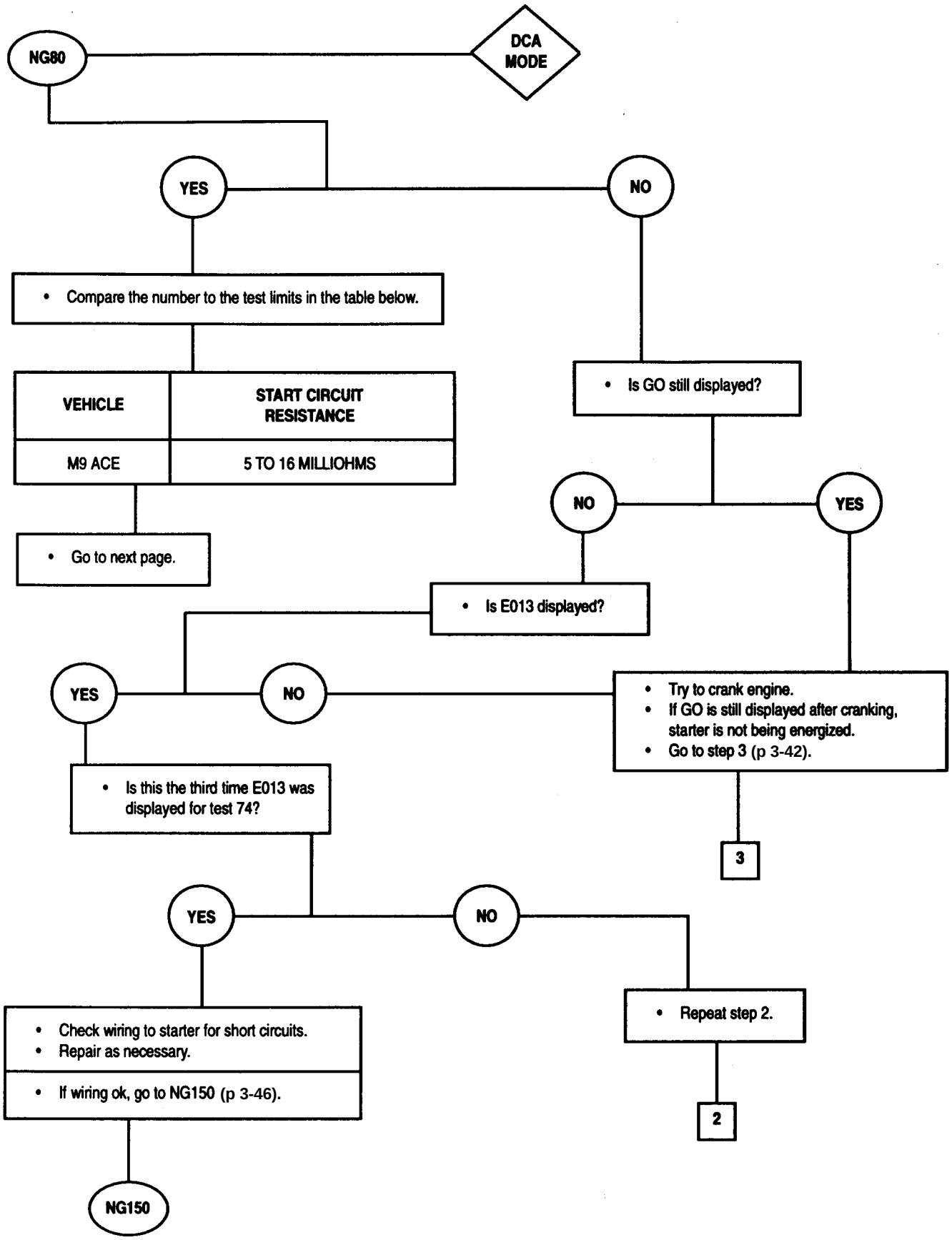
- Shut off fuel (p 3-14).
- Press and release TEST.
- When GO appears, attempt to crank engine.
- Stop cranking the engine when the VTM displays OFF or an error message.

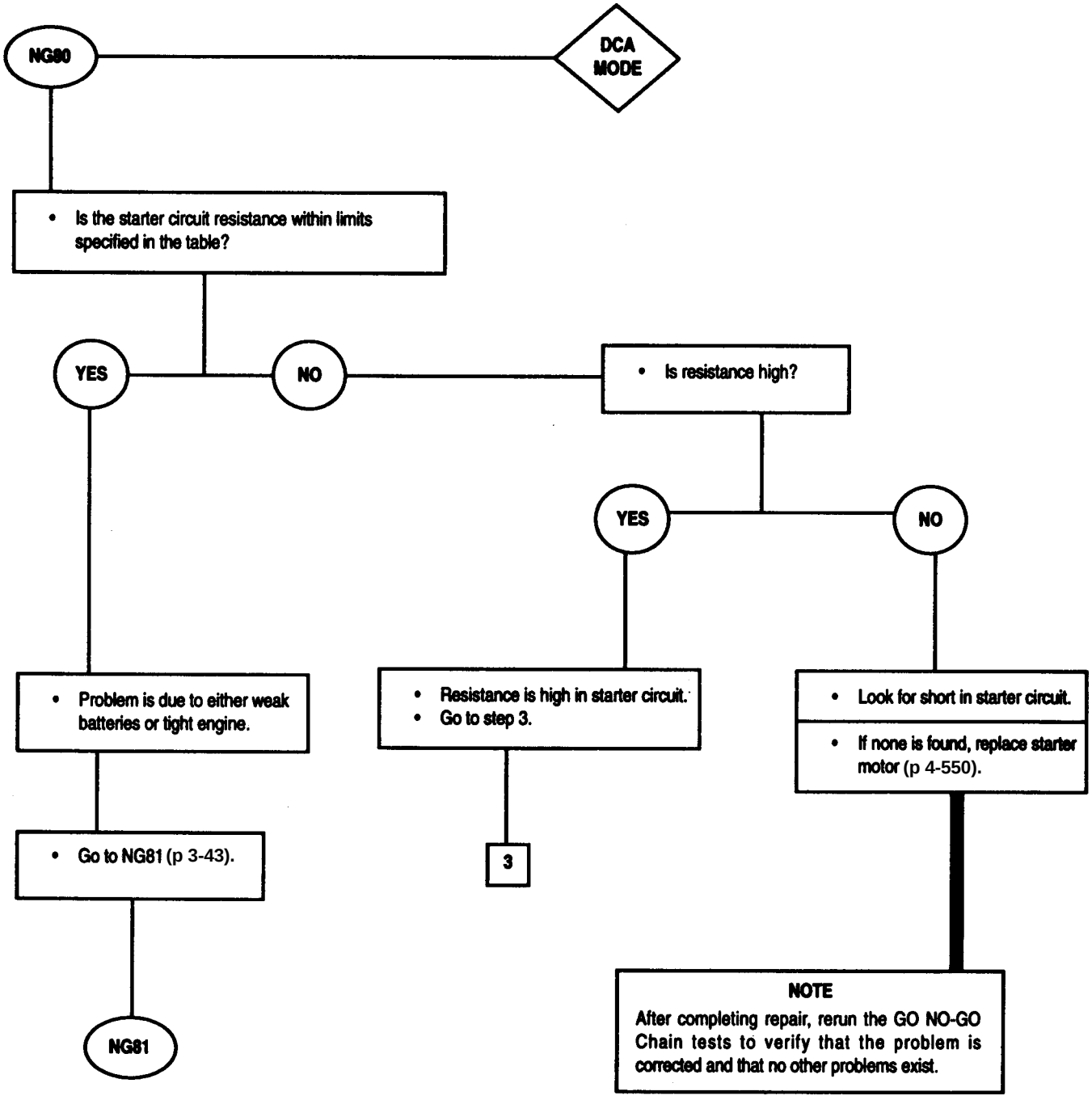
- Is a number displayed?

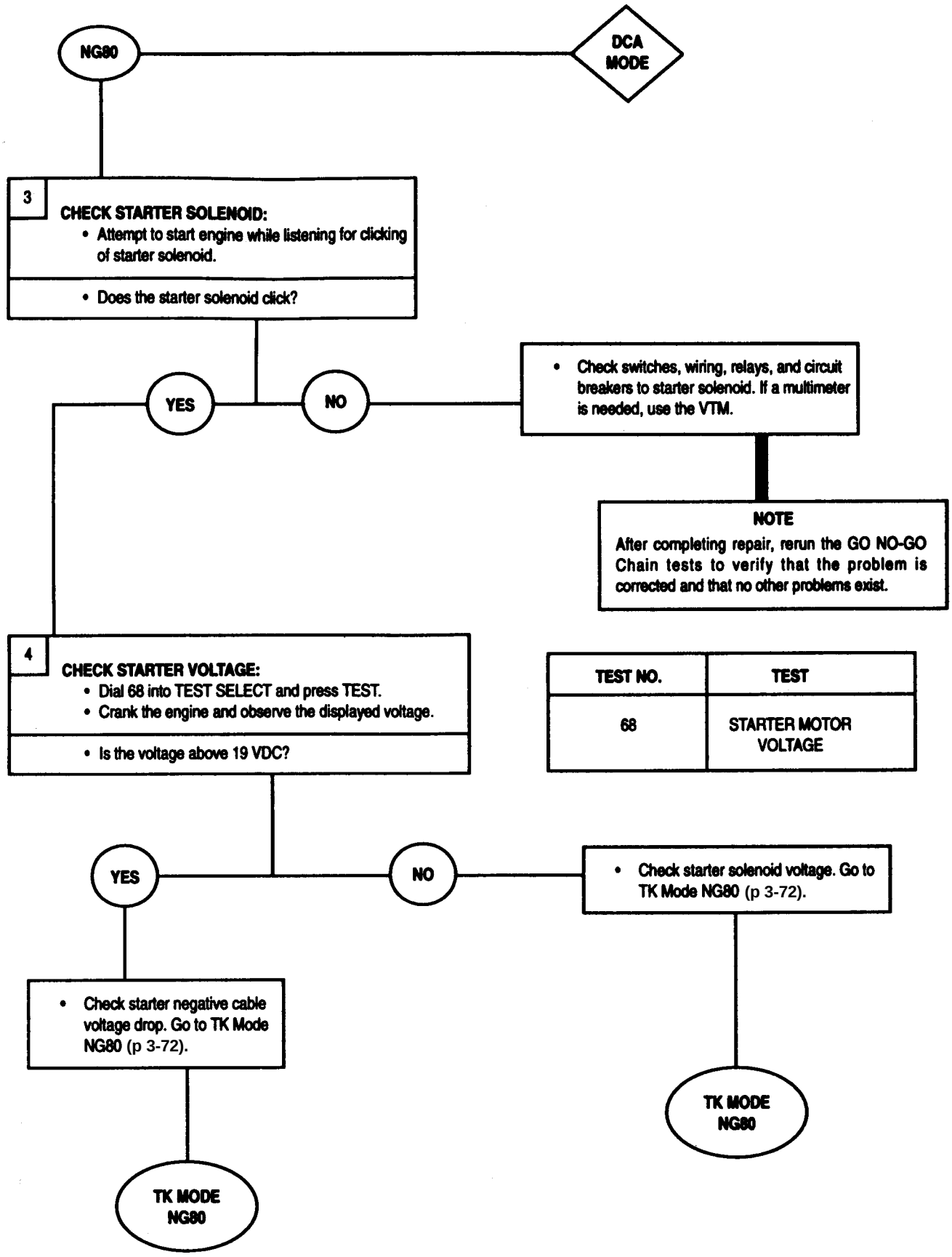
NOTE

Error message indicates short circuit, frozen starter, or tight engine.

- Go to next page.


NG80
DCA MODE
YES
NO
• Compare the number to the test limits in the table below.
VEHICLE
START CIRCUIT RESISTANCE
M9 ACE
5 TO 16 MILLIOHMS
• Go to next page.
• Is GO still displayed?
NO
YES
• Is E013 displayed?
YES
NO
• Try to crank engine.
• If GO is still displayed after cranking, starter is not being energized.
• Go to step 3 (p 3-42).
3
• Is this the third time E013 was displayed for test 74?
YES
NO
• Repeat step 2.
2
• Check wiring to starter for short circuits.
• Repair as necessary.
• If wiring ok, go to NG150 (p 3-46).
NG150


NG80
DCA MODE
• Is the starter circuit resistance within limits specified in the table?
YES
NO
• Is resistance high?
YES
NO
• Problem is due to either weak batteries or tight engine.
• Resistance is high in starter circuit.
• Go to step 3.
• Look for short in starter circuit.
• If none is found, replace starter motor (p 4-550).
• Go to NG81 (p 3-43).
3
NG81
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.


NG80
DCA MODE
3
CHECK STARTER SOLENOID:
• Attempt to start engine while listening for clicking of starter solenoid.
• Does the starter solenoid click?
YES
NO
• Check switches, wiring, relays, and circuit breakers to starter solenoid. If a multimeter is needed, use the VTM.
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.
4
CHECK STARTER VOLTAGE:
• Dial 68 into TEST SELECT and press TEST.
• Crank the engine and observe the displayed voltage.
• Is the voltage above 19 VDC?
TEST NO.
TEST
68
STARTER MOTOR VOLTAGE
YES
NO
• Check starter solenoid voltage. Go to TK Mode NG80 (p 3-72).
• Check starter negative cable voltage drop. Go to TK Mode NG80 (p 3-72).
TK MODE NG80
TK MODE NG80

NG81

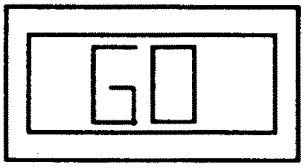
DCA MODE

TEST NO.	TEST
75	BATTERY RESISTANCE CHANGE

1

MEASURE BATTERY RESISTANCE CHANGE:

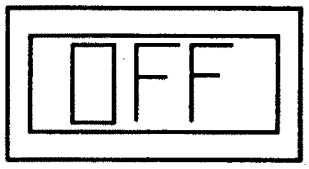
- Dial 75 into TEST SELECT. Push and release TEST.
- Does GO appear?



YES

NO

- Shut off fuel (p 3-14).
- Engage starter motor until OFF appears on the display.
- Wait for display to change.
- Is a test value displayed?



- Error message is displayed.
- Refer to TM 9-4910-571-12&P, correct as necessary, and repeat step 1.

1

NO

YES

- If display shows GO, there is a bad connection in the starter circuit. Check cables and connections to starter and retest. If display still shows GO, then a battery may be weak. Charge or replace battery (p 4-78).
- If display shows .9.9.9.9, there may be a bad connection on a battery. Clean and tighten battery connections and retest.
- If display shows - - - - or .9.9.9.9, a battery may be in a discharged state. Check battery electrolyte level, charge battery, and then retest.
- If display shows E013 three consecutive times, or - - - -, or .9.9.9.9 after a battery has been charged, replace battery (p 4-78).

- Go to next page.

NOTE

After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.

NG81

DCA MODE

- Compare the number to the test limits in the table below.

VEHICLE	MAXIMUM RESISTANCE CHANGE
M9 ACE	25 MILLIOHMS/SEC

- Is the battery resistance less than the above limit?

YES

NO

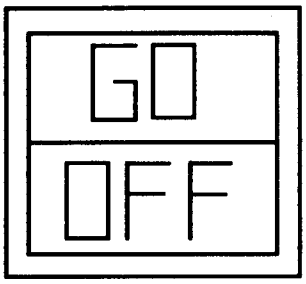
- Go to step 3.

3

2

MEASURE BATTERY INTERNAL RESISTANCE:

- Dial 73 into TEST SELECT and press TEST.
- Shut off fuel (p 3-14).
- If GO appears, engage starter motor until OFF appears on VTM display.
- If error message appears, refer to TM 9-4910-571-12&P. Correct as necessary and repeat test.



YES

- Is test value displayed?

TEST NO.	TEST
73	BATTERY INTERNAL RESISTANCE

NO

VEHICLE	MAXIMUM RESISTANCE CHANGE
M9 ACE	25 MILLIOHMS/SEC

- Go to step 3.

3

- Is the battery resistance less than the above limit?

YES

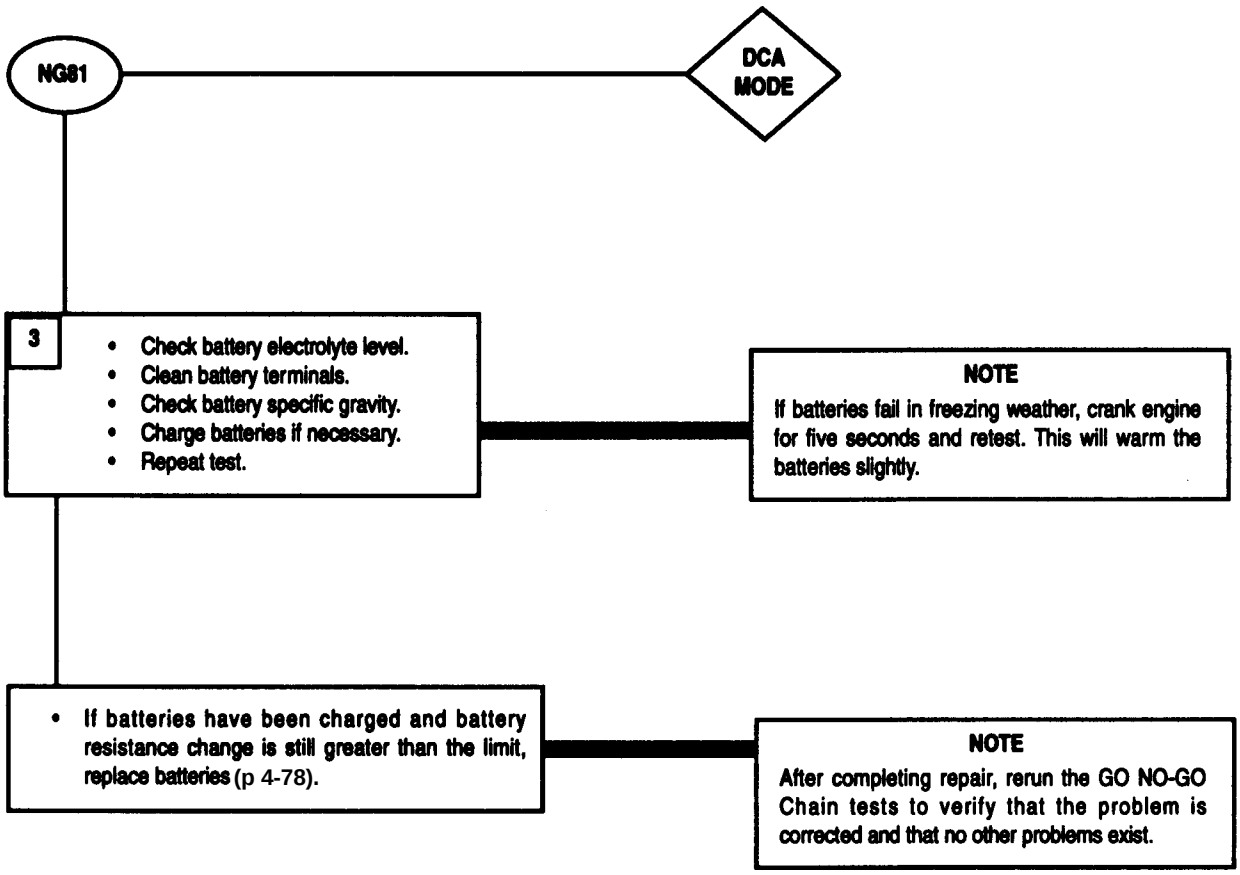
NO

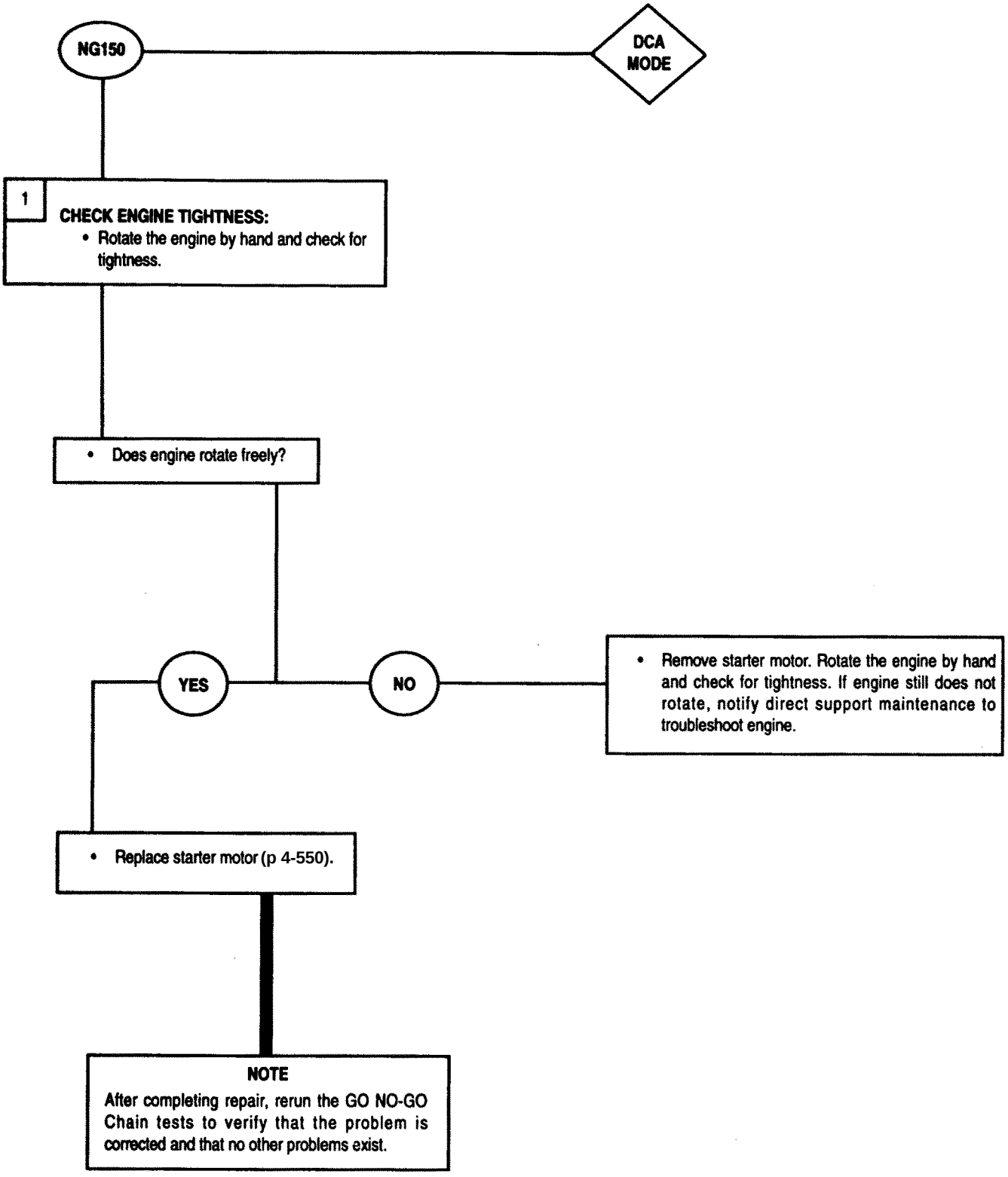
- Go to NG150 (p 3-46).

NG150

- Go to step 3.

3


NG81
DCA MODE
3
• Check battery electrolyte level.
• Clean battery terminals.
• Check battery specific gravity.
• Charge batteries if necessary.
• Repeat test.
NOTE
If batteries fail in freezing weather, crank engine for five seconds and retest. This will warm the batteries slightly.
• If batteries have been charged and battery resistance change is still greater than the limit, replace batteries (p 4-78).
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.


NG150
DCA MODE
1
CHECK ENGINE TIGHTNESS:
• Rotate the engine by hand and check for tightness.
• Does engine rotate freely?
YES
NO
• Remove starter motor. Rotate the engine by hand and check for tightness. If engine still does not rotate, notify direct support maintenance to troubleshoot engine.
• Replace starter motor (p 4-550).
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.

TK Mode GO Chain Tests

NOTE
Perform all GO steps until a NO-GO (NG) condition exists, then perform the NO-GO (NG) step indicated.

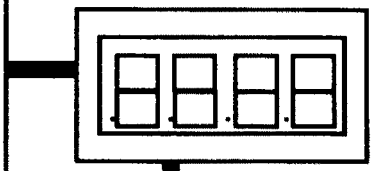
G01

TK MODE

CAUTION
- Do not connect or disconnect the VTM while the vehicle is running.
- Connect the P1 of power cable W5 to J1 on the VTM before connecting the clips to the battery.

1

CONNECT BATTERY POWER TO VTM:
- PULL OFF the VTM power switch.
- Connect P1 of the power cable W5 to J1 on the VTM.
- Connect the red clip of cable W5 to the positive terminal of the vehicle battery.
- Connect the black clip of power cable W5 to the negative terminal of the vehicle battery.
- Check that all connections are correct and secure.
- PUSH ON the VTM power switch.
- Verify that the display indicates .8.8.8.8 for approximately 2 seconds and then changes to - - - -.



AFTER 2 SECONDS

- Does the VTM display .8.8.8.8 and then change to - - - -?

YES

- Go to step 2.

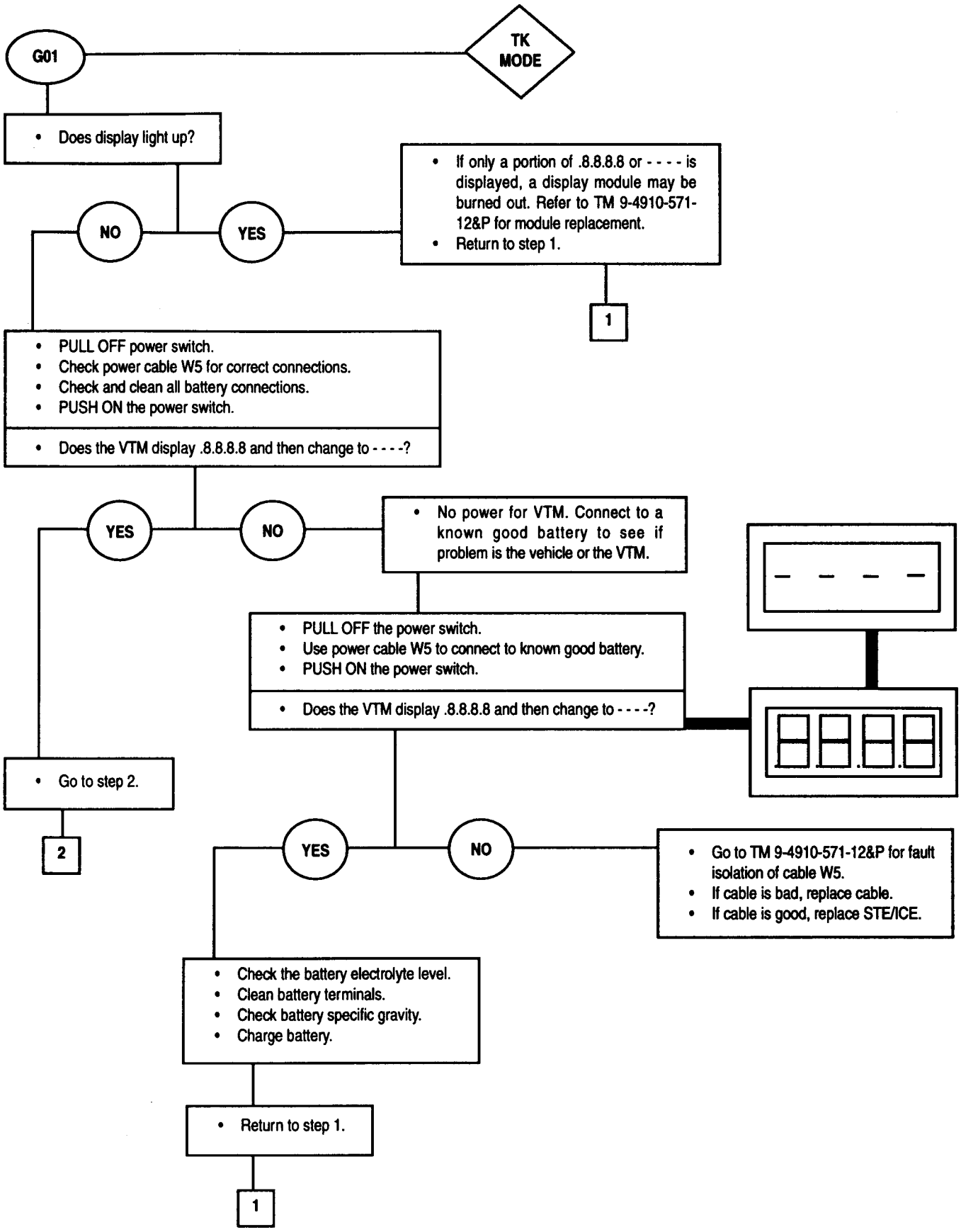
2

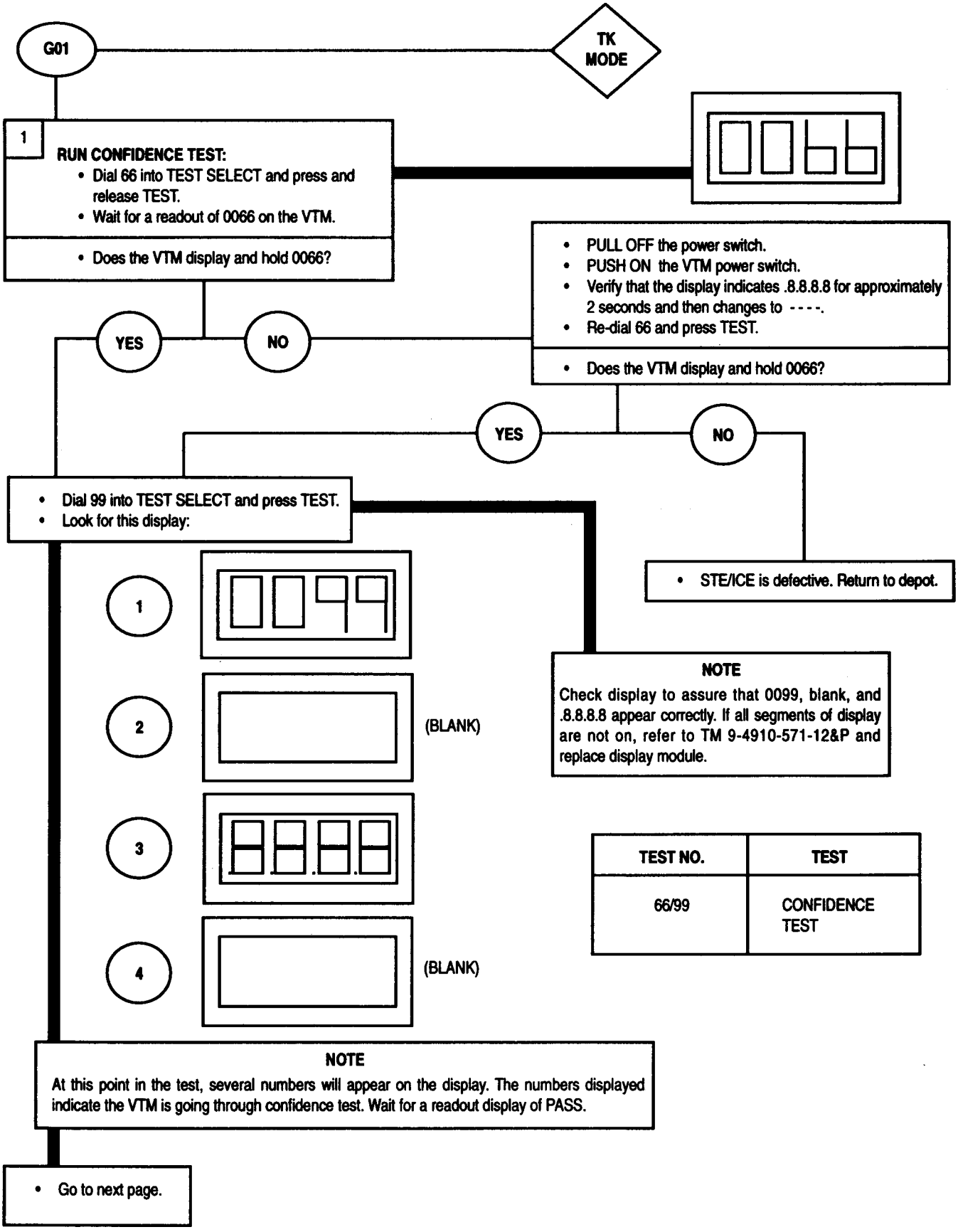
NO

- Go to next page.

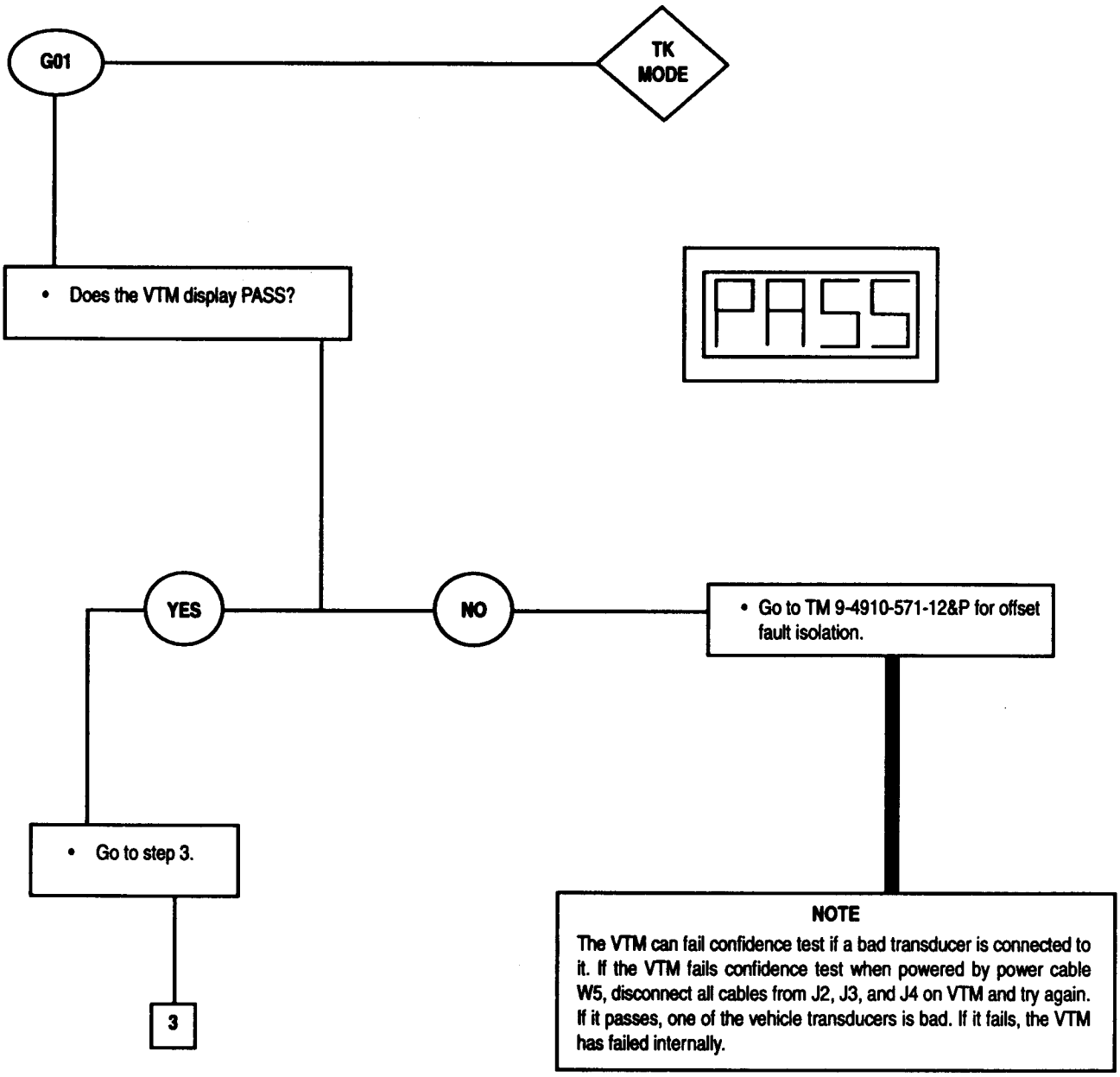
INDICATES VTM IS PROPERLY CONNECTED AND READY FOR TESTS

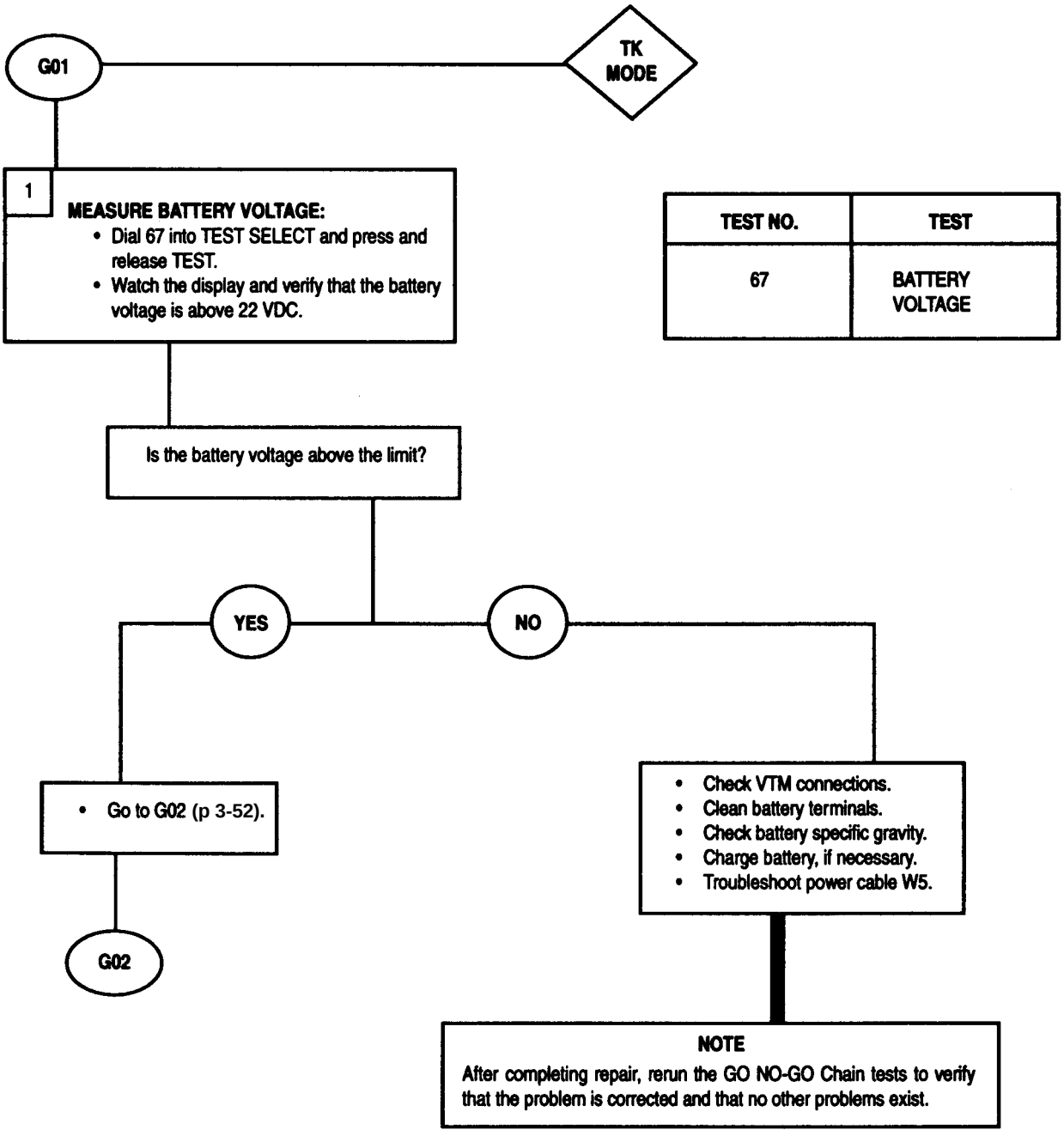
INDICATES GO-CONDITION AFTER CONFIDENCE TESTS

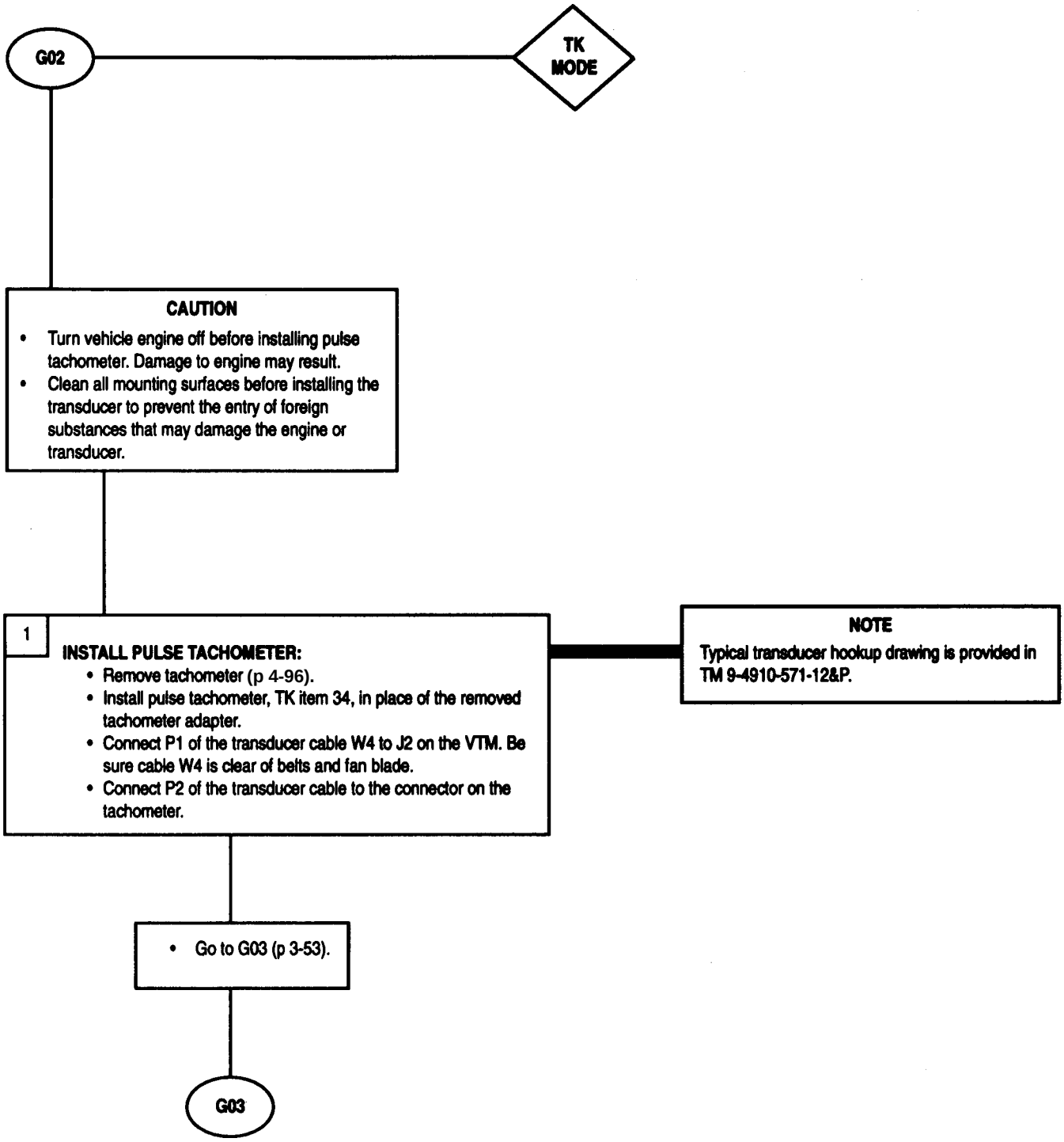

G01
TK MODE
• Does display light up?
NO
YES
• If only a portion of .8.8.8.8 or - - - - is displayed, a display module may be burned out. Refer to TM 9-4910-571-12&P for module replacement.
• Return to step 1.
1
• PULL OFF power switch.
• Check power cable W5 for correct connections.
• Check and clean all battery connections.
• PUSH ON the power switch.
• Does the VTM display .8.8.8.8 and then change to - - - -?
YES
NO
• No power for VTM. Connect to a known good battery to see if problem is the vehicle or the VTM.
• PULL OFF the power switch.
• Use power cable W5 to connect to known good battery.
• PUSH ON the power switch.
• Does the VTM display .8.8.8.8 and then change to - - - -?
• Go to step 2.
2
YES
NO
• Go to TM 9-4910-571-12&P for fault isolation of cable W5.
• If cable is bad, replace cable.
• If cable is good, replace STE/ICE.
• Check the battery electrolyte level.
• Clean battery terminals.
• Check battery specific gravity.
• Charge battery.
• Return to step 1.
1

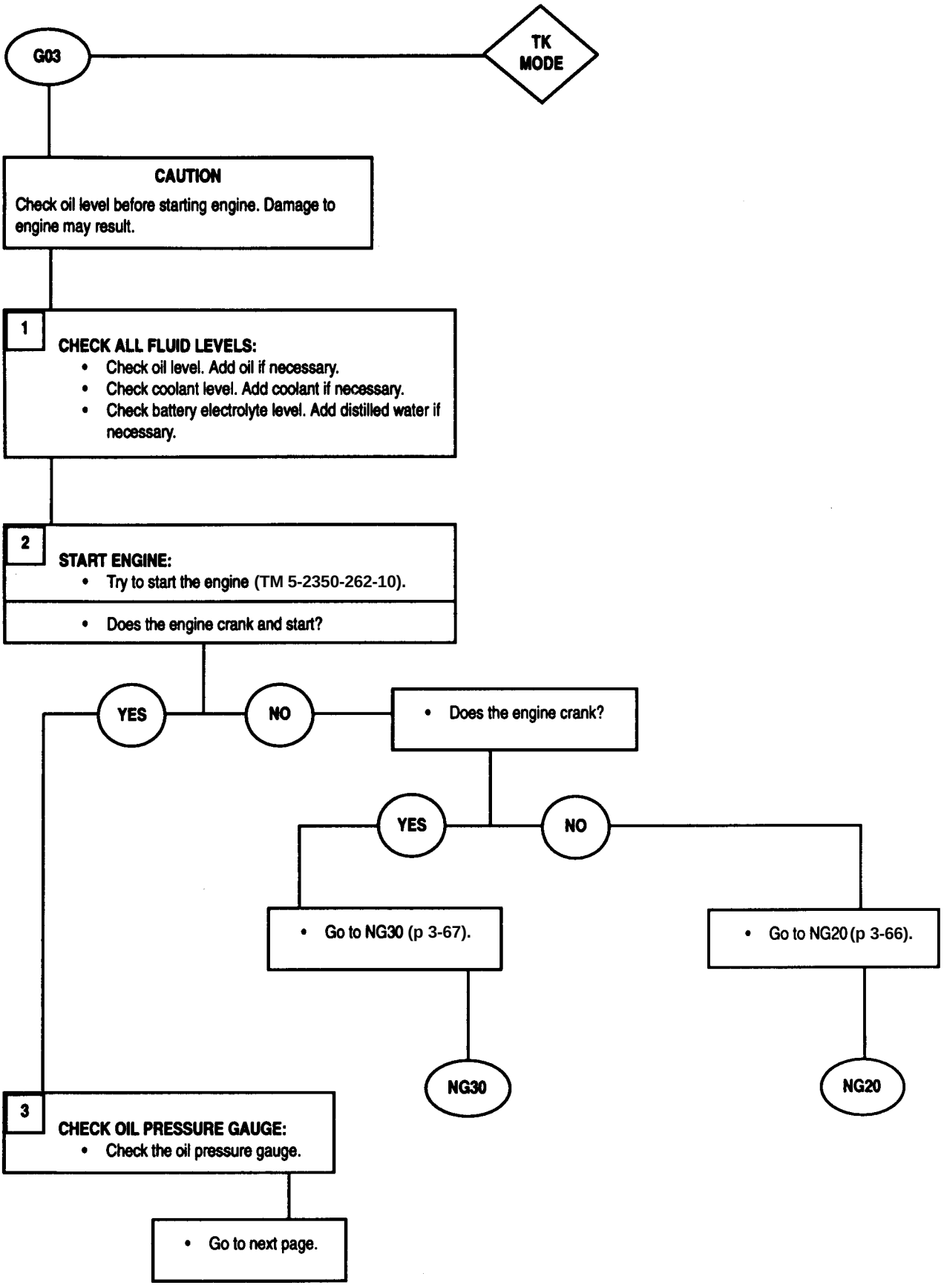


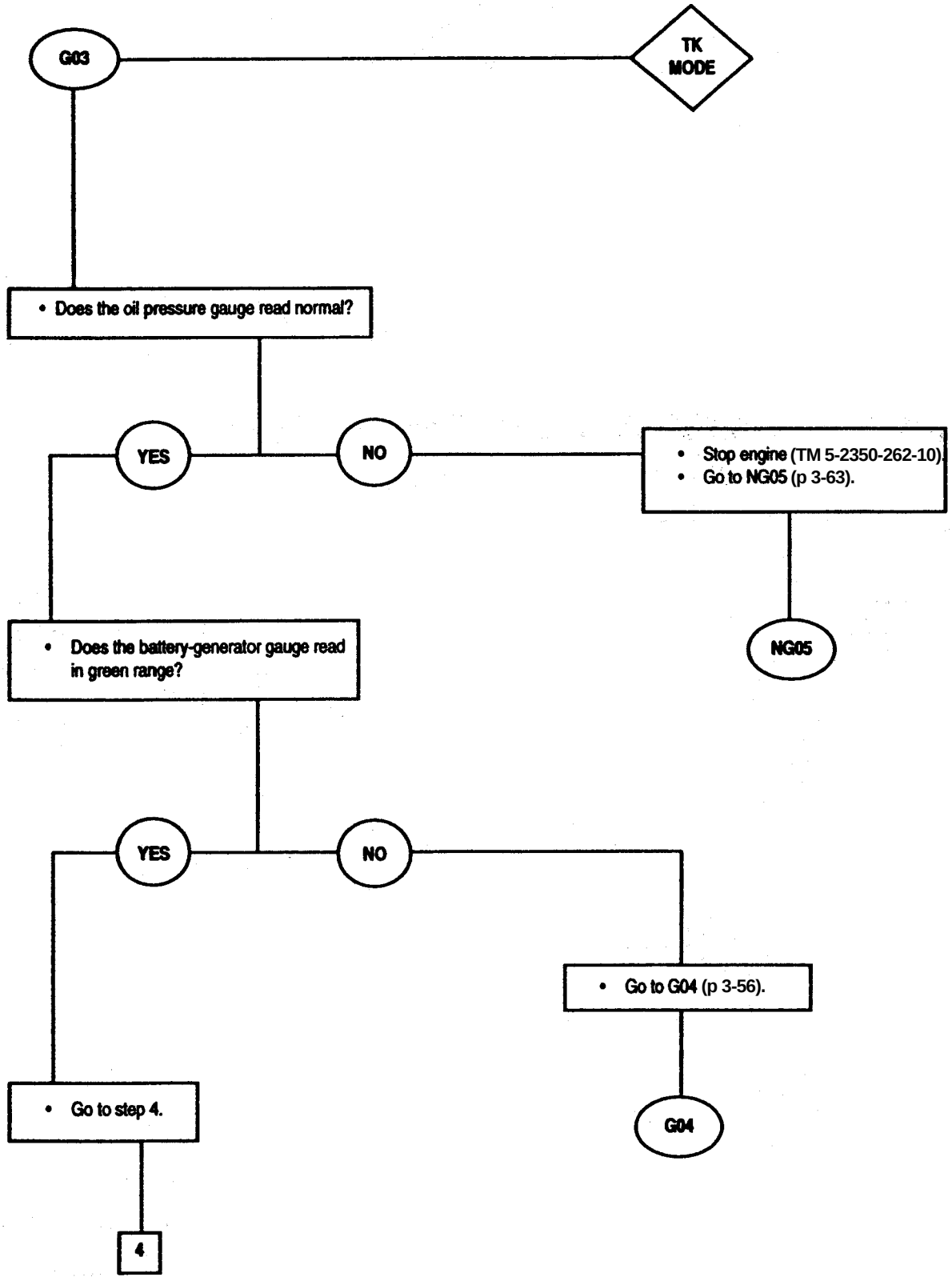
TEST NO.	TEST
66/99	CONFIDENCE TEST

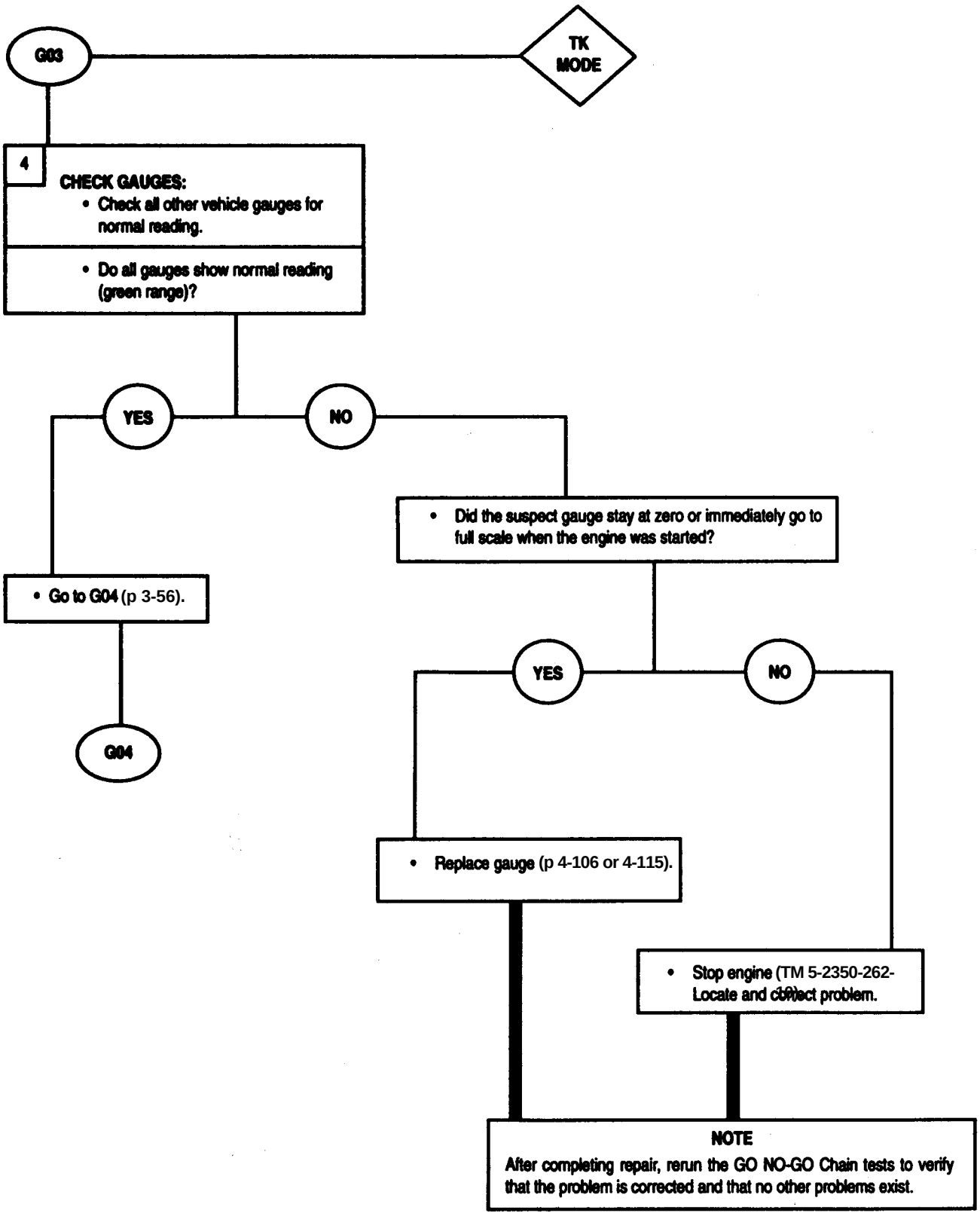

G01
TK MODE
• Does the VTM display PASS?
PASS
YES
NO
• Go to TM 9-4910-571-12&P for offset fault isolation.
• Go to step 3.
3
NOTE
The VTM can fail confidence test if a bad transducer is connected to it. If the VTM fails confidence test when powered by power cable W5, disconnect all cables from J2, J3, and J4 on VTM and try again. If it passes, one of the vehicle transducers is bad. If it fails, the VTM has failed internally.

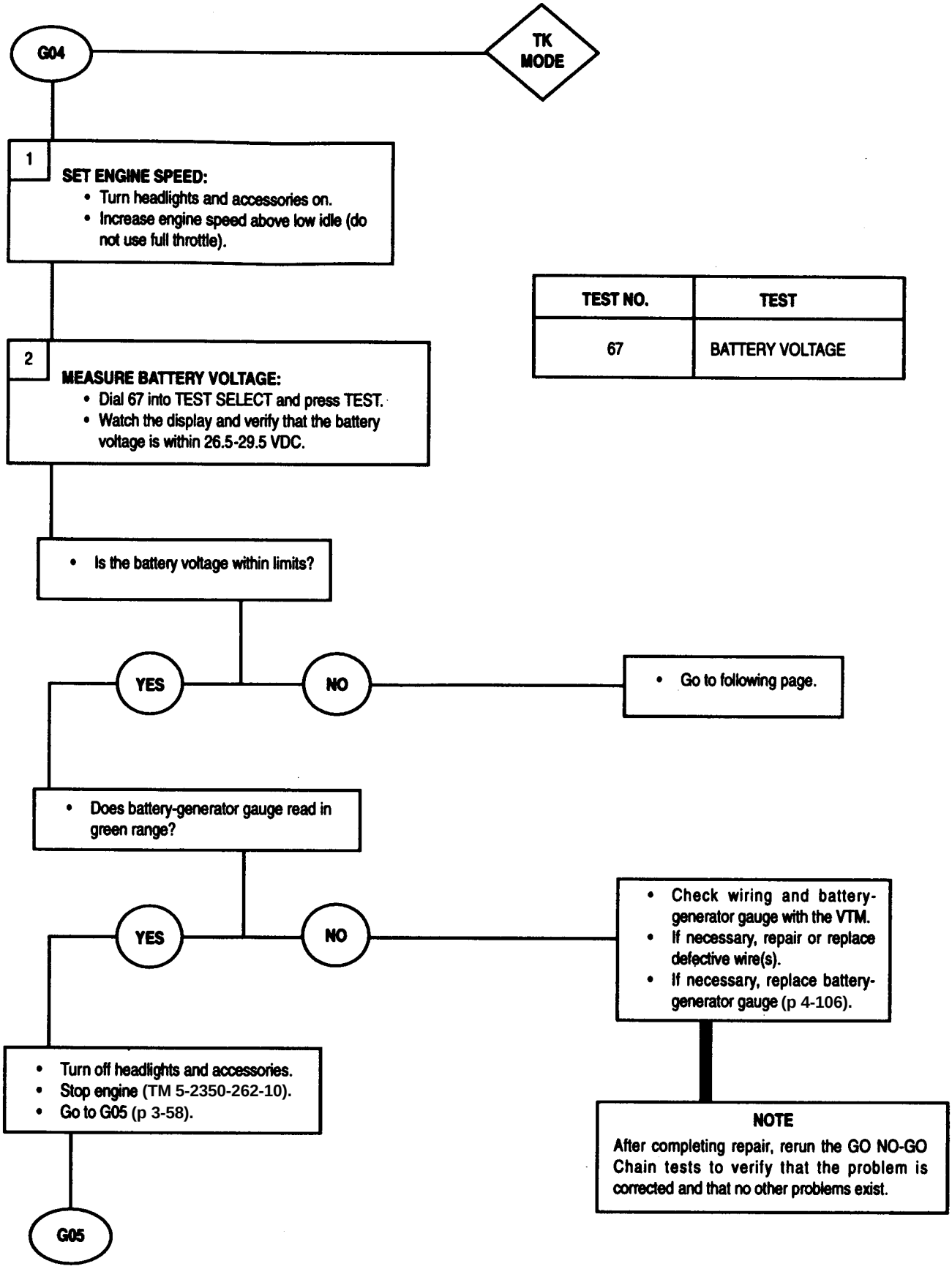

G01
TK MODE
1
MEASURE BATTERY VOLTAGE:
• Dial 67 into TEST SELECT and press and release TEST.
• Watch the display and verify that the battery voltage is above 22 VDC.
TEST NO.
TEST
67
BATTERY VOLTAGE
Is the battery voltage above the limit?
YES
NO
• Go to G02 (p 3-52).
G02
• Check VTM connections.
• Clean battery terminals.
• Check battery specific gravity.
• Charge battery, if necessary.
• Troubleshoot power cable W5.
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.

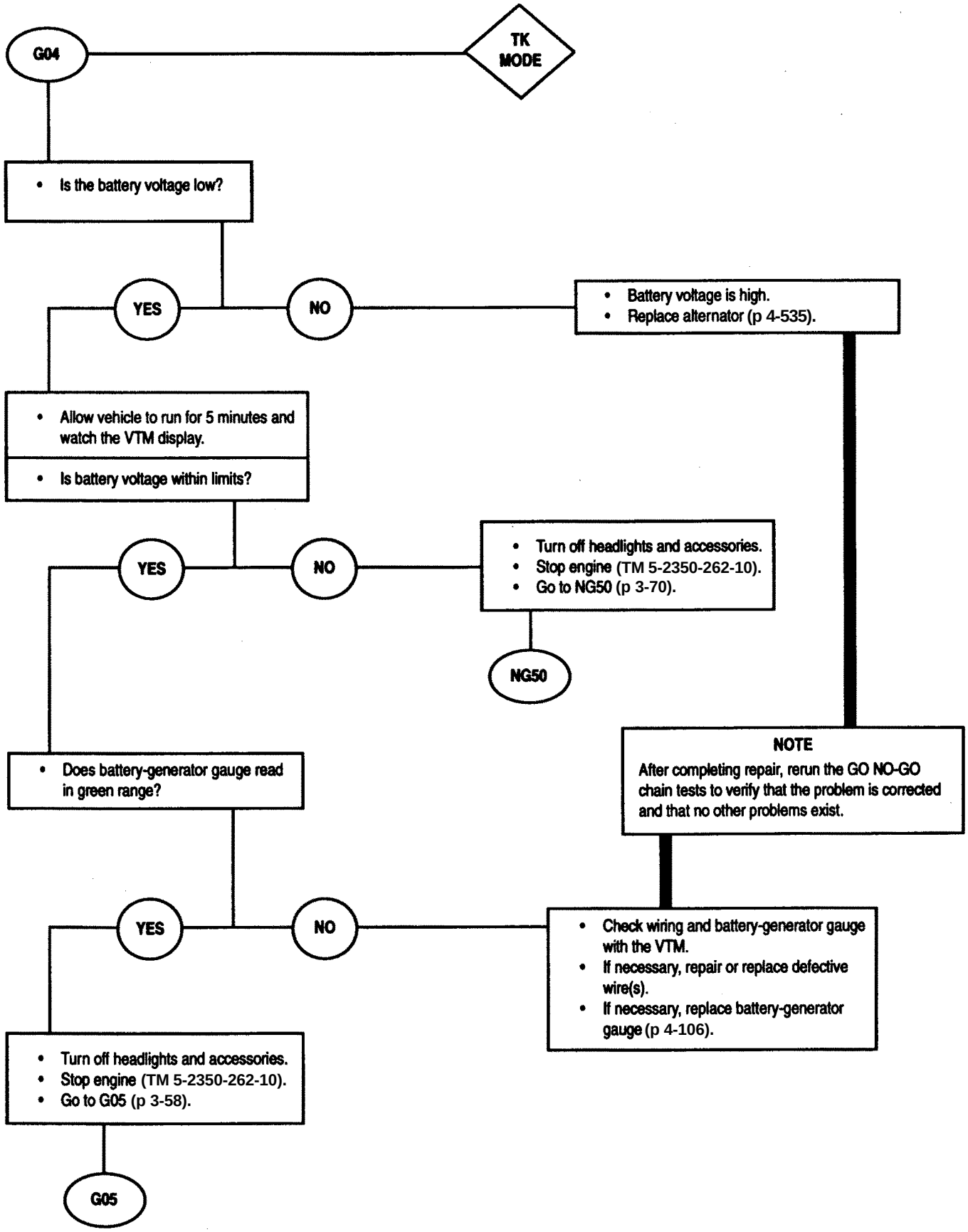

G02
TK MODE
CAUTION
• Turn vehicle engine off before installing pulse tachometer. Damage to engine may result.
• Clean all mounting surfaces before installing the transducer to prevent the entry of foreign substances that may damage the engine or transducer.
1
INSTALL PULSE TACHOMETER:
• Remove tachometer (p 4-96).
• Install pulse tachometer, TK item 34, in place of the removed tachometer adapter.
• Connect P1 of the transducer cable W4 to J2 on the VTM. Be sure cable W4 is clear of belts and fan blade.
• Connect P2 of the transducer cable to the connector on the tachometer.
NOTE
Typical transducer hookup drawing is provided in TM 9-4910-571-12&P.
• Go to G03 (p 3-53).
G03

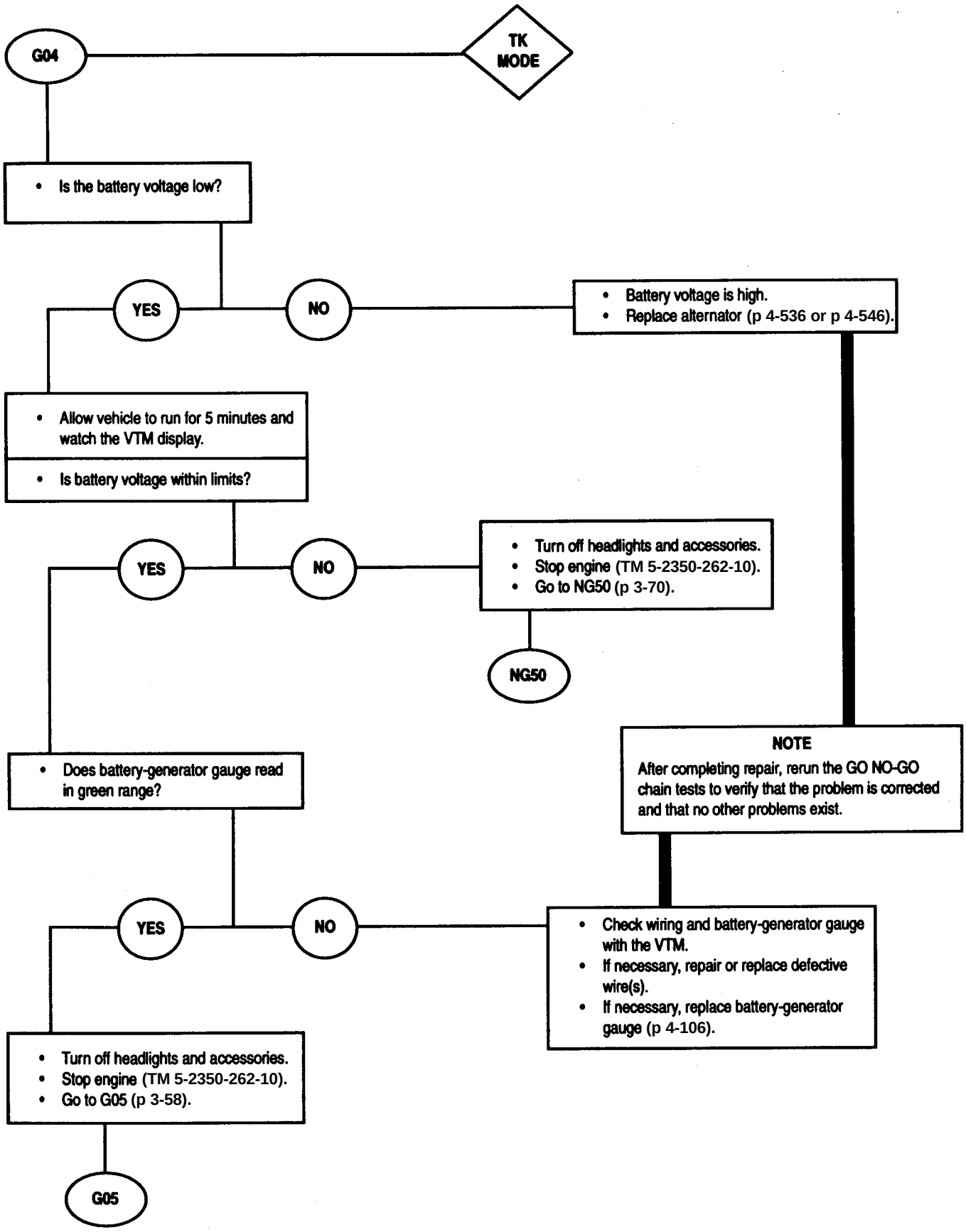

G03
TK MODE
CAUTION
Check oil level before starting engine. Damage to engine may result.
1
CHECK ALL FLUID LEVELS:
• Check oil level. Add oil if necessary.
• Check coolant level. Add coolant if necessary.
• Check battery electrolyte level. Add distilled water if necessary.
2
START ENGINE:
• Try to start the engine (TM 5-2350-262-10).
• Does the engine crank and start?
YES
NO
• Does the engine crank?
YES
NO
• Go to NG30 (p 3-67).
• Go to NG20 (p 3-66).
NG30
NG20
3
CHECK OIL PRESSURE GAUGE:
• Check the oil pressure gauge.
• Go to next page.

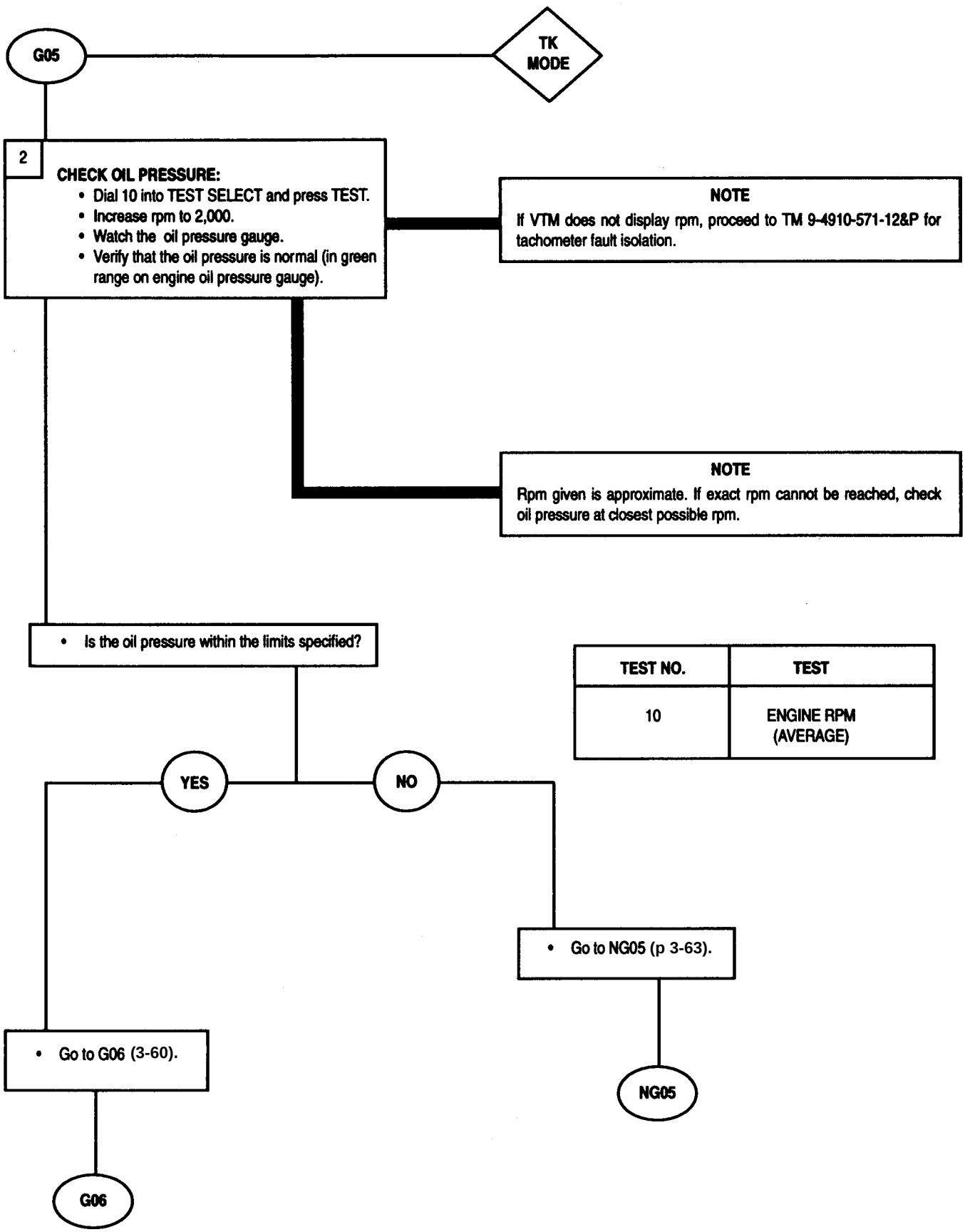

G03
TK MODE
• Does the oil pressure gauge read normal?
YES
NO
• Stop engine (TM 5-2350-262-10).
• Go to NG05 (p 3-63).
NG05
• Does the battery-generator gauge read in green range?
YES
NO
• Go to G04 (p 3-56).
G04
• Go to step 4.
4

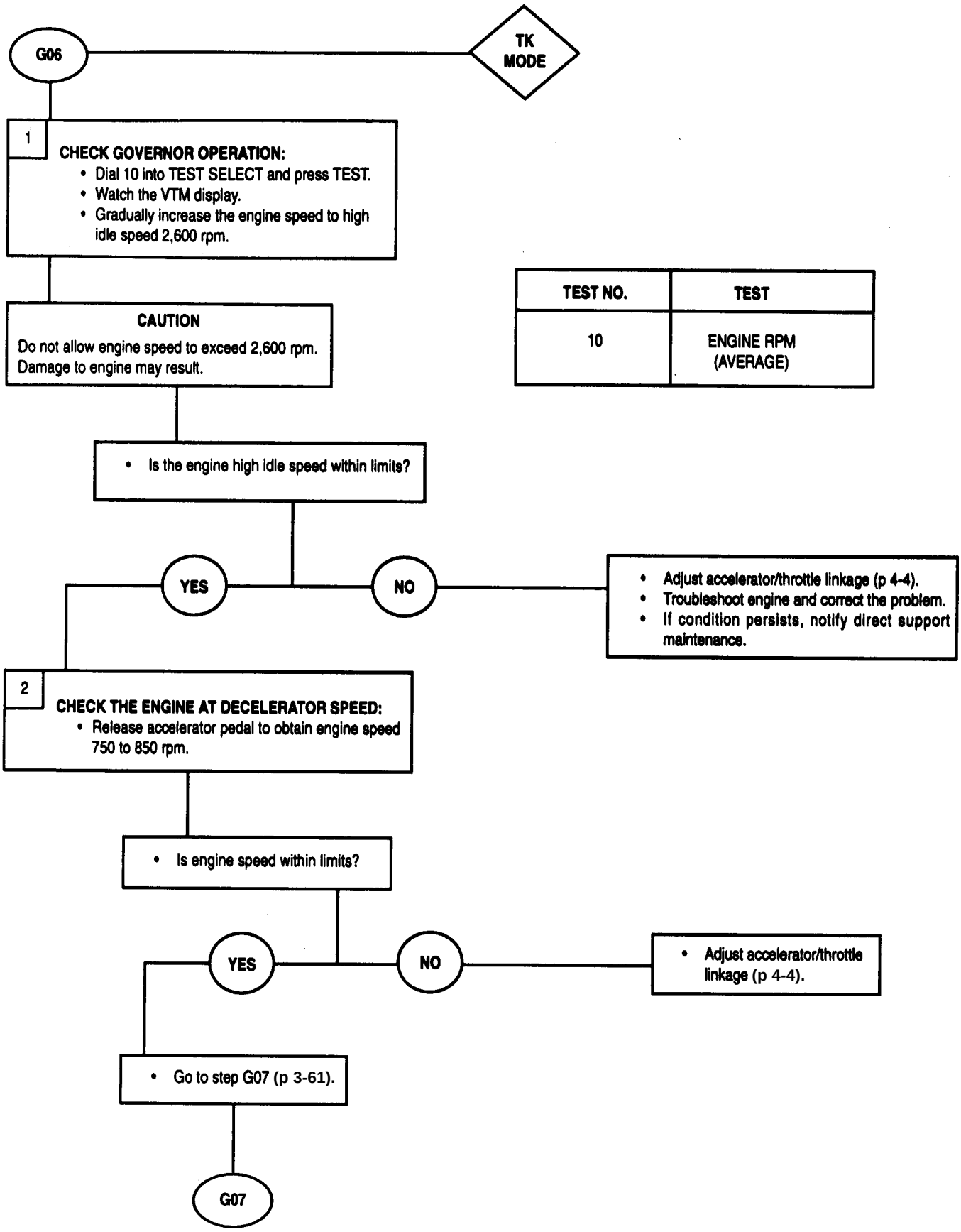

G03
TK MODE
4
CHECK GAUGES:
• Check all other vehicle gauges for normal reading.
• Do all gauges show normal reading (green range)?
YES
NO
• Go to G04 (p 3-56).
G04
• Did the suspect gauge stay at zero or immediately go to full scale when the engine was started?
YES
NO
• Replace gauge (p 4-106 or 4-115).
• Stop engine (TM 5-2350-262-
Locate and correct problem.
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.


G04
TK MODE
1
SET ENGINE SPEED:
• Turn headlights and accessories on.
• Increase engine speed above low idle (do not use full throttle).
TEST NO.
TEST
67
BATTERY VOLTAGE
2
MEASURE BATTERY VOLTAGE:
• Dial 67 into TEST SELECT and press TEST.
• Watch the display and verify that the battery voltage is within 26.5-29.5 VDC.
• Is the battery voltage within limits?
YES
NO
• Go to following page.
• Does battery-generator gauge read in green range?
YES
NO
• Check wiring and battery-generator gauge with the VTM.
• If necessary, repair or replace defective wire(s).
• If necessary, replace battery-generator gauge (p 4-106).
• Turn off headlights and accessories.
• Stop engine (TM 5-2350-262-10).
• Go to G05 (p 3-58).
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.
G05


G04
TK MODE
• Is the battery voltage low?
YES
NO
• Battery voltage is high.
• Replace alternator (p 4-535).
• Allow vehicle to run for 5 minutes and watch the VTM display.
• Is battery voltage within limits?
YES
NO
• Turn off headlights and accessories.
• Stop engine (TM 5-2350-262-10).
• Go to NG50 (p 3-70).
NG50
NOTE
After completing repair, rerun the GO NO-GO chain tests to verify that the problem is corrected and that no other problems exist.
• Does battery-generator gauge read in green range?
YES
NO
• Check wiring and battery-generator gauge with the VTM.
• If necessary, repair or replace defective wire(s).
• If necessary, replace battery-generator gauge (p 4-106).
• Turn off headlights and accessories.
• Stop engine (TM 5-2350-262-10).
• Go to G05 (p 3-58).
G05


G04
TK MODE
• Is the battery voltage low?
YES
NO
• Battery voltage is high.
• Replace alternator (p 4-536 or p 4-546).
• Allow vehicle to run for 5 minutes and watch the VTM display.
• Is battery voltage within limits?
YES
NO
• Turn off headlights and accessories.
• Stop engine (TM 5-2350-262-10).
• Go to NG50 (p 3-70).
NG50
NOTE
After completing repair, rerun the GO NO-GO chain tests to verify that the problem is corrected and that no other problems exist.
• Does battery-generator gauge read in green range?
YES
NO
• Check wiring and battery-generator gauge with the VTM.
• If necessary, repair or replace defective wire(s).
• If necessary, replace battery-generator gauge (p 4-106).
• Turn off headlights and accessories.
• Stop engine (TM 5-2350-262-10).
• Go to G05 (p 3-58).
G05


G05
TK MODE
2
CHECK OIL PRESSURE:
• Dial 10 into TEST SELECT and press TEST.
• Increase rpm to 2,000.
• Watch the oil pressure gauge.
• Verify that the oil pressure is normal (in green range on engine oil pressure gauge).
NOTE
If VTM does not display rpm, proceed to TM 9-4910-571-12&P for tachometer fault isolation.
NOTE
Rpm given is approximate. If exact rpm cannot be reached, check oil pressure at closest possible rpm.
• Is the oil pressure within the limits specified?
TEST NO.
TEST
10
ENGINE RPM (AVERAGE)
YES
NO
• Go to NG05 (p 3-63).
• Go to G06 (3-60).
NG05
G06


G06
TK MODE
1
CHECK GOVERNOR OPERATION:
• Dial 10 into TEST SELECT and press TEST.
• Watch the VTM display.
• Gradually increase the engine speed to high idle speed 2,600 rpm.
CAUTION
Do not allow engine speed to exceed 2,600 rpm. Damage to engine may result.
TEST NO.
TEST
10
ENGINE RPM (AVERAGE)
• Is the engine high idle speed within limits?
YES
NO
• Adjust accelerator/throttle linkage (p 4-4).
• Troubleshoot engine and correct the problem.
• If condition persists, notify direct support maintenance.
2
CHECK THE ENGINE AT DECELERATOR SPEED:
• Release accelerator pedal to obtain engine speed 750 to 850 rpm.
• Is engine speed within limits?
YES
NO
• Adjust accelerator/throttle linkage (p 4-4).
• Go to step G07 (p 3-61).
G07

G07

TK MODE

CAUTION

Do not perform the power test if the engine temperature is above normal operating temperature. However, the engine should be at operating temperature before performing the power test. Damage to engine may result.

TEST NO.	TEST
12	POWER TEST (RPM/SEC)

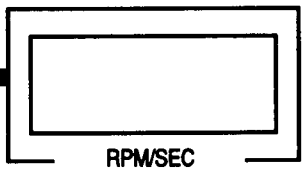
NOTE

Engine has to be running below 1,000 rpm before power test starts.

1 **PERFORM POWER TEST:**

- Dial 12 into TEST SELECT and press and release TEST.
- Wait for prompting message CIP to appear.
- When CIP appears, rapidly move throttle control lever to high idle position until VTM displays a number.
- Return throttle control lever to low idle position.

- RPM/SEC should be displayed.



- Is 2,427-3,280 rpm/sec displayed?

YES

NO

- Go to G08 (p 3-62).

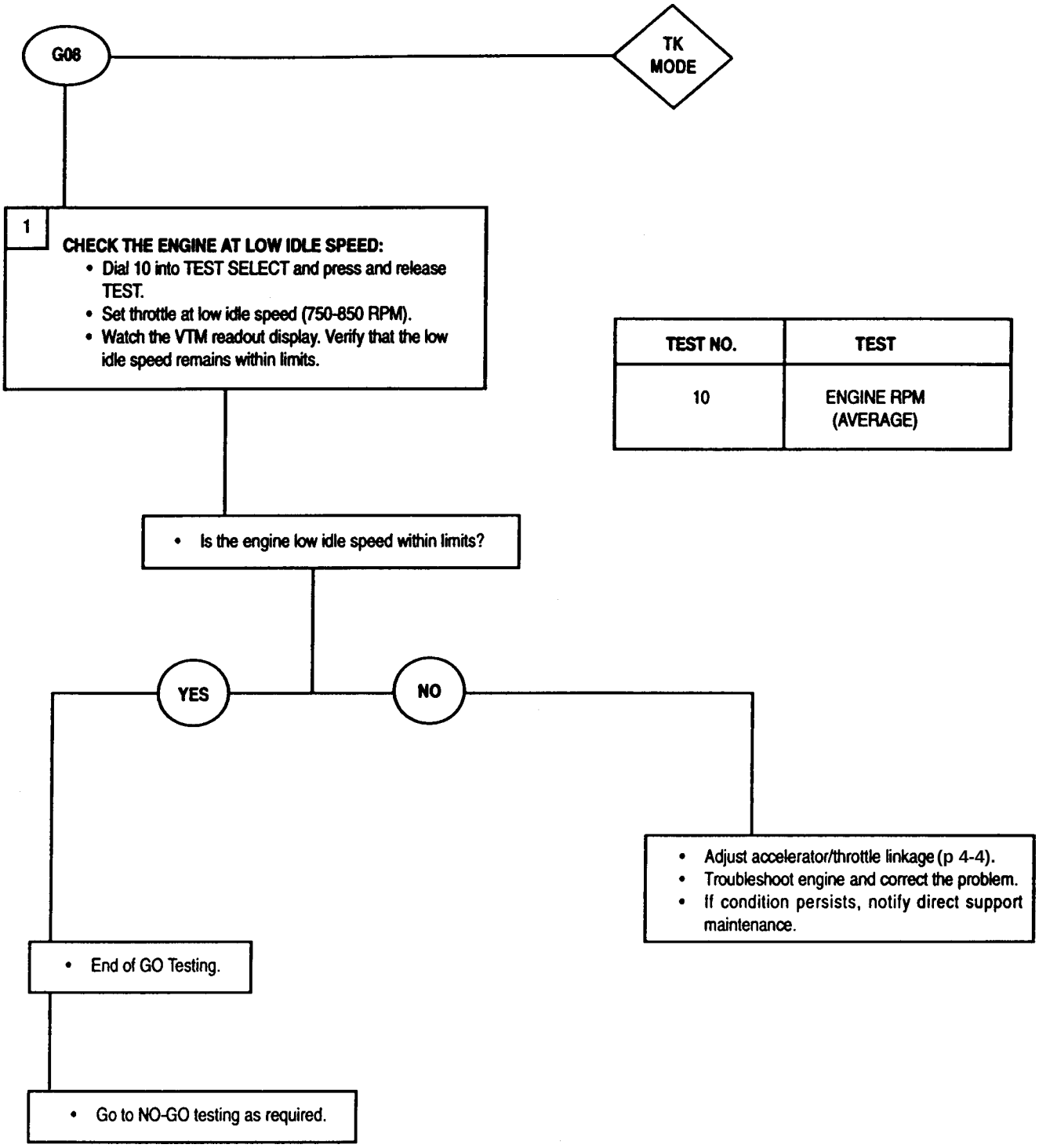
- Go to NG90 (p 3-76).

G08

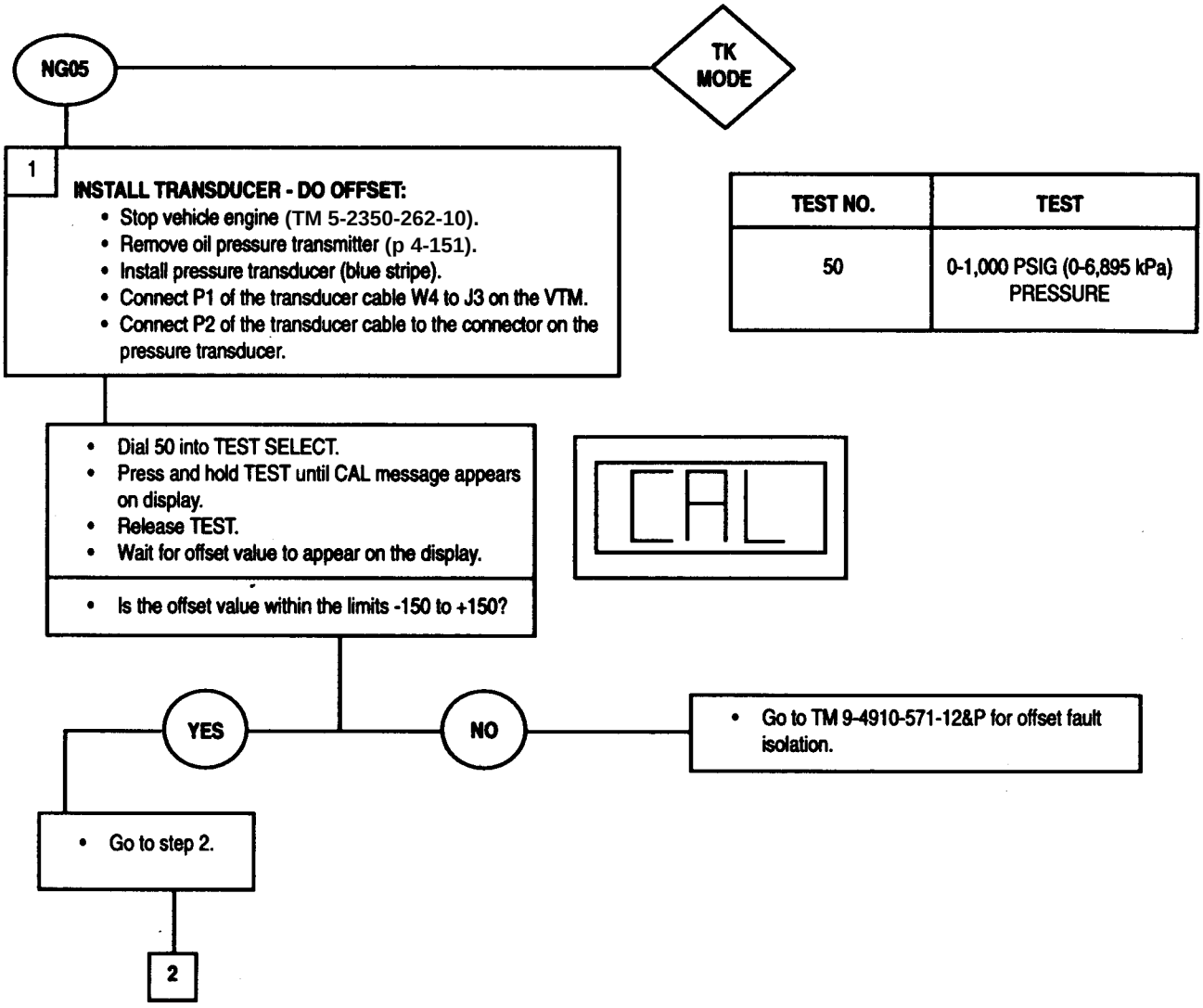
NG90

CAUTION

Allow engine to idle for at least 2 minutes after running power test to prevent damage to equipment.


G08
TK MODE
1
CHECK THE ENGINE AT LOW IDLE SPEED:
• Dial 10 into TEST SELECT and press and release TEST.
• Set throttle at low idle speed (750-850 RPM).
• Watch the VTM readout display. Verify that the low idle speed remains within limits.
TEST NO.
TEST
10
ENGINE RPM (AVERAGE)
• Is the engine low idle speed within limits?
YES
NO
• Adjust accelerator/throttle linkage (p 4-4).
• Troubleshoot engine and correct the problem.
• If condition persists, notify direct support maintenance.
• End of GO Testing.
• Go to NO-GO testing as required.

TK Mode NO-GO Chain Tests



NG05

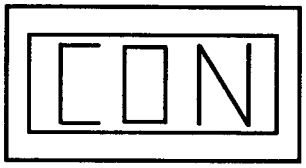
TK MODE

2

CHECK OIL PRESSURE:

- Dial 01 into TEST SELECT and press TEST.
- When CON appears, dial 50 into TEST SELECT. Press and release TEST. VTM will now display RPM and oil pressure alternately.
- Start the engine (TM 5-2350-262-10)and hold at 2,000 rpm.
- Check the VTM display for correct oil pressure, 59-71 psi (407-490 kPa).

- Is the oil pressure within limits?



TEST NO.	TEST
01	INTERLEAVE
50	0-1,000 PSIG (0-6,895 kPa) PRESSURE

NO

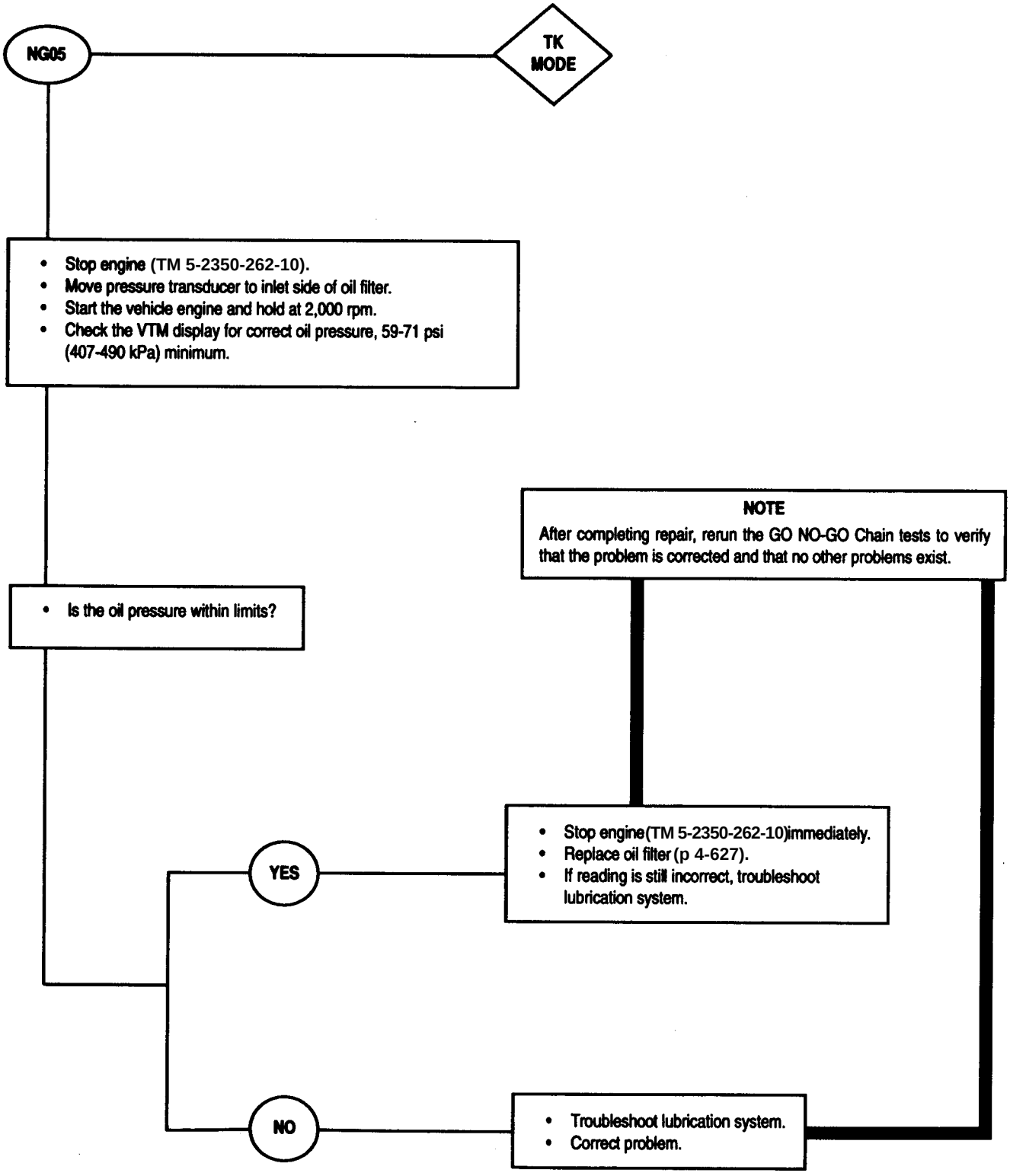
- Go to following page.

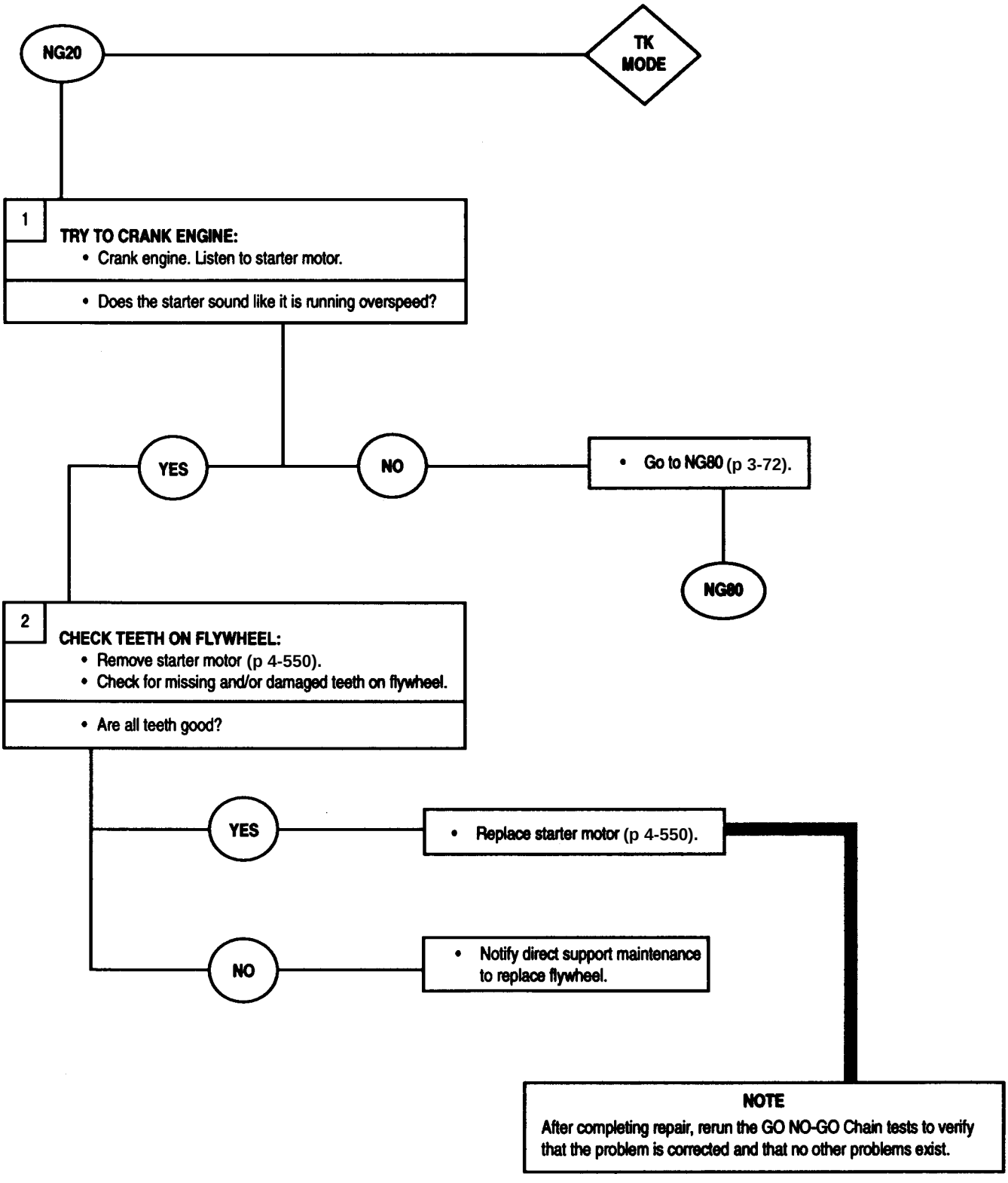
YES

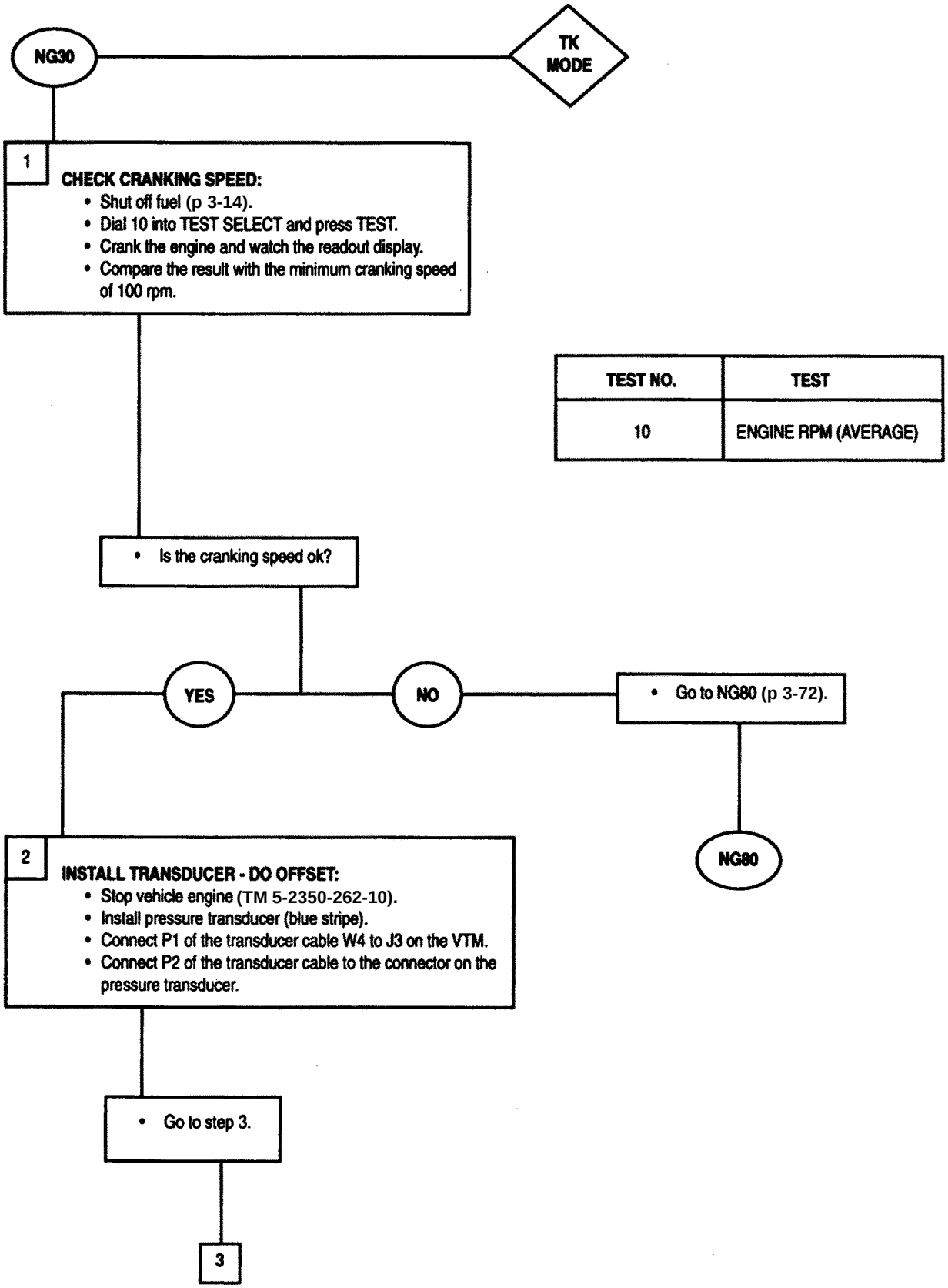
- Replace gauge (p 4-115).

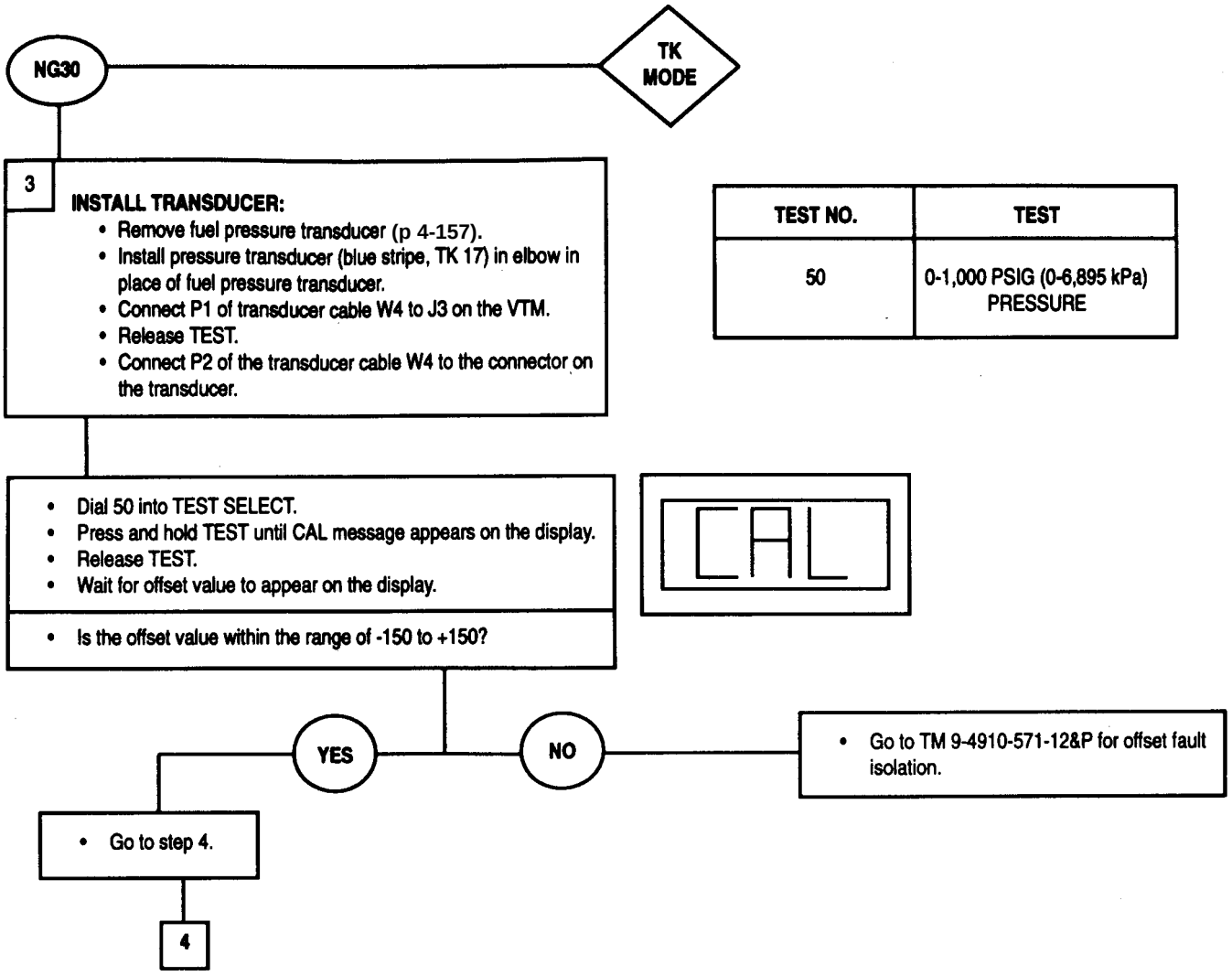
NOTE

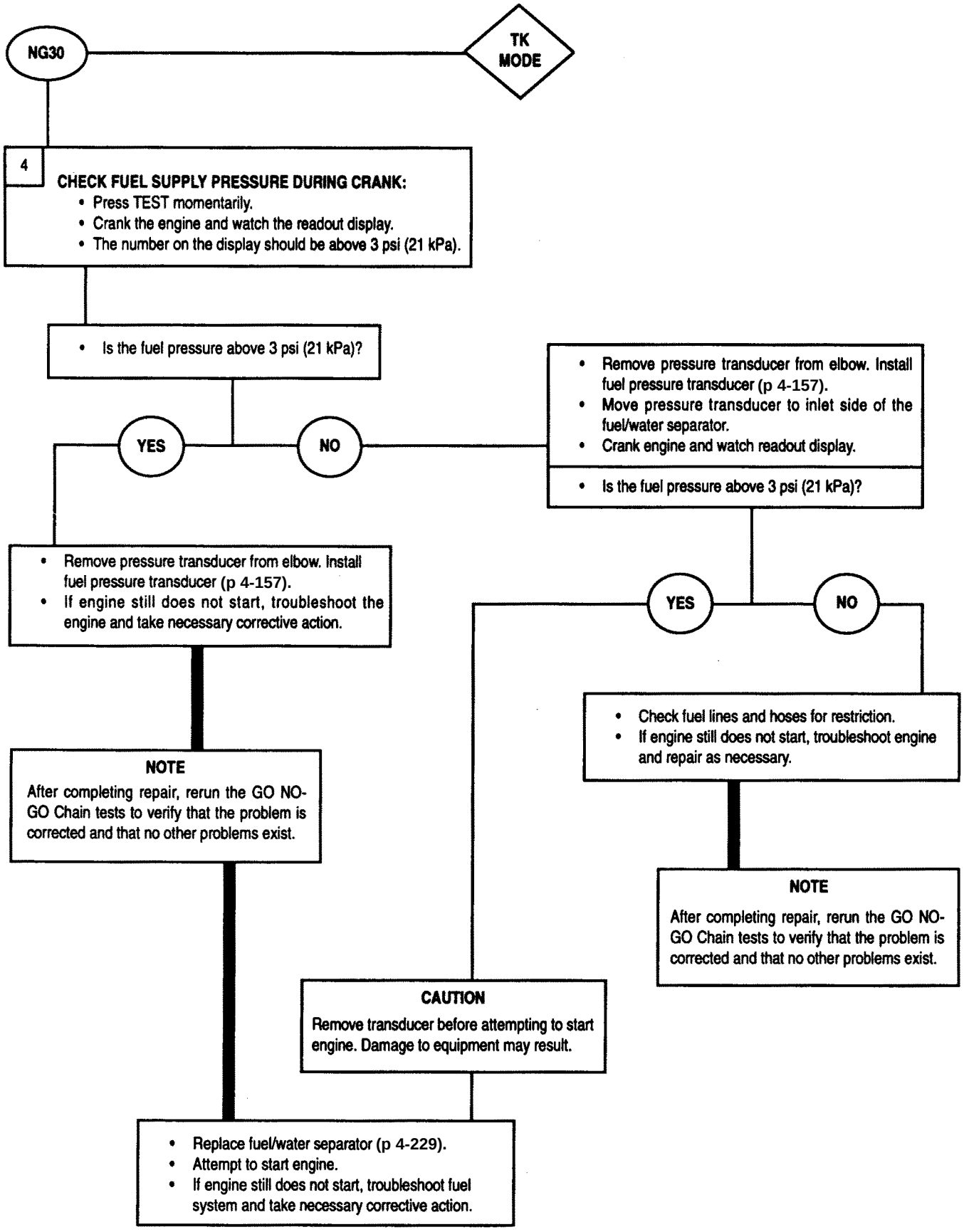
After completing repair, rerun the GO NO-GO chain tests to verify that the problem is corrected and that no other problems exist.


NG05
TK MODE
• Stop engine (TM 5-2350-262-10).
• Move pressure transducer to inlet side of oil filter.
• Start the vehicle engine and hold at 2,000 rpm.
• Check the VTM display for correct oil pressure, 59-71 psi (407-490 kPa) minimum.
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.
• Is the oil pressure within limits?
YES
• Stop engine(TM 5-2350-262-10)immediately.
• Replace oil filter (p 4-627).
• If reading is still incorrect, troubleshoot lubrication system.
NO
• Troubleshoot lubrication system.
• Correct problem.


NG20
TK MODE
1
TRY TO CRANK ENGINE:
• Crank engine. Listen to starter motor.
• Does the starter sound like it is running overspeed?
YES
NO
• Go to NG80 (p 3-72).
NG80
2
CHECK TEETH ON FLYWHEEL:
• Remove starter motor (p 4-550).
• Check for missing and/or damaged teeth on flywheel.
• Are all teeth good?
YES
• Replace starter motor (p 4-550).
NO
• Notify direct support maintenance to replace flywheel.
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.


NG30
TK MODE
1
CHECK CRANKING SPEED:
• Shut off fuel (p 3-14).
• Dial 10 into TEST SELECT and press TEST.
• Crank the engine and watch the readout display.
• Compare the result with the minimum cranking speed of 100 rpm.
TEST NO.
TEST
10
ENGINE RPM (AVERAGE)
• Is the cranking speed ok?
YES
NO
• Go to NG80 (p 3-72).
NG80
2
INSTALL TRANSDUCER - DO OFFSET:
• Stop vehicle engine (TM 5-2350-262-10).
• Install pressure transducer (blue stripe).
• Connect P1 of the transducer cable W4 to J3 on the VTM.
• Connect P2 of the transducer cable to the connector on the pressure transducer.
• Go to step 3.
3


NG30
TK MODE
3
INSTALL TRANSDUCER:
• Remove fuel pressure transducer (p 4-157).
• Install pressure transducer (blue stripe, TK 17) in elbow in place of fuel pressure transducer.
• Connect P1 of transducer cable W4 to J3 on the VTM.
• Release TEST.
• Connect P2 of the transducer cable W4 to the connector on the transducer.
TEST NO.
TEST
50
0-1,000 PSIG (0-6,895 kPa) PRESSURE
• Dial 50 into TEST SELECT.
• Press and hold TEST until CAL message appears on the display.
• Release TEST.
• Wait for offset value to appear on the display.
CAL
• Is the offset value within the range of -150 to +150?
YES
NO
• Go to TM 9-4910-571-12&P for offset fault isolation.
• Go to step 4.
4


NG30
TK MODE
4
CHECK FUEL SUPPLY PRESSURE DURING CRANK:
• Press TEST momentarily.
• Crank the engine and watch the readout display.
• The number on the display should be above 3 psi (21 kPa).
• Is the fuel pressure above 3 psi (21 kPa)?
YES
NO
• Remove pressure transducer from elbow. Install fuel pressure transducer (p 4-157).
• Move pressure transducer to inlet side of the fuel/water separator.
• Crank engine and watch readout display.
• Is the fuel pressure above 3 psi (21 kPa)?
• Remove pressure transducer from elbow. Install fuel pressure transducer (p 4-157).
• If engine still does not start, troubleshoot the engine and take necessary corrective action.
YES
NO
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.
• Check fuel lines and hoses for restriction.
• If engine still does not start, troubleshoot engine and repair as necessary.
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.
CAUTION
Remove transducer before attempting to start engine. Damage to equipment may result.
• Replace fuel/water separator (p 4-229).
• Attempt to start engine.
• If engine still does not start, troubleshoot fuel system and take necessary corrective action.

NG50

TK MODE

TEST NO.	TEST
90	0-1,500 AMPS DC

1

INSTALL CURRENT PROBE:

- If necessary, stop engine (TM 5-2350-262-10).
- Clamp the current probe, TK item 11, around the battery positive cable connected to the starter.
- Point the arrow on the probe toward the starter. Make sure current probe is closed.
- Crank engine for several cycles with fuel shut off (p 3-14).

2

DO CURRENT PROBE OFFSET:

- Turn off all vehicle electrical power.
- Dial 90 into TEST SELECT.
- Press and hold TEST until CAL message appears on the display.
- Release TEST.
- Wait for the offset value to appear on the display.

- Is the offset value within the limits of -225 to +225?

YES

NO

- Go to TM 9-4910-571-12&P for offset fault isolation.

- Remove current probe from battery cable.
- Start engine (TM 5-2350-262-10).
- Install current probe around the battery positive cable.
- Point the arrow on the probe toward the battery.

- Go to step 3.

3

NG50

TK MODE

3 CHECK ALTERNATOR OUTPUT CURRENT:

- Dial 01 into TEST SELECT and press and release TEST.
- When CON appears, dial 03 into TEST SELECT and press and release TEST.
- When CON appears, dial 90 into TEST SELECT and press and release TEST.
- VTM will alternately display maximum charging current and RPM.
- Start engine (TM 5-2350-262-10).Turn on vehicle lights and accessories.
- Set engine speed to 2000 rpm.
- Watch the VTM readout display and verify that alternator output current is 50 amps.

TEST NO.	TEST
01	INTERLEAVE RPM
03	MAXIMUM VALUE
90	0-1,500 AMPS DC

- Is the output current low?

YES

NO

- Output current is greater. Use current probe to locate accessory or wire drawing excessive current.
- If current is going into batteries, check electrolyte level and specific gravity.

NOTE

After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.

- Shut engine (TM 5-2350-262-10)and vehicle accessories off.
- Remove current probe.

4 **CHECK DRIVEBELT:**

- Check the alternator drivebelt for proper tension.
- Is the belt OK?

YES

NO

5

- Check tension of alternator belt for proper operation.
- Is tensioner OK?

YES

NO

- Go to DCA Mode NG50 (p 3-37).

- Adjust or replace belt (p 3-596).

- Replace tensioner (p 4-596).

- Verify problem is solved.

DCA MODE NG50

NG80

TK MODE

TEST NO.	TEST
89	0 TO 45 VOLTS DC

1 **INSTALL TEST PROBE CABLE:**
- Connect P1 of test probe cable W2 to J4 on VTM.
- Connect the red and black clips together.

2 **DO TEST PROBE CABLE OFFSET:**
- Dial 89 into TEST SELECT.
- Press and hold TEST until CAL message appears on the display.
- Release TEST.
- Wait for the offset value to appear on the display.

- Is the offset value within the limits of -6.8 to +6.8?

YES

NO

- Go to TM 9-4910-571-12&P for offset fault isolation.

3 **STARTER NEGATIVE CABLE VOLTAGE DROP:**
- Connect black clip of test probe cable W2 to the negative battery terminal.
- Connect red clip of test probe cable W2 to the ground terminal of the starter motor.
- Press and release TEST.
- Crank the engine and observe the displayed voltage.

- Is voltage drop less than 0.05 volts?

YES

NO

- Inspect and clean all ground cables from starter, engine, and batteries and check for integrity. Repair if necessary.

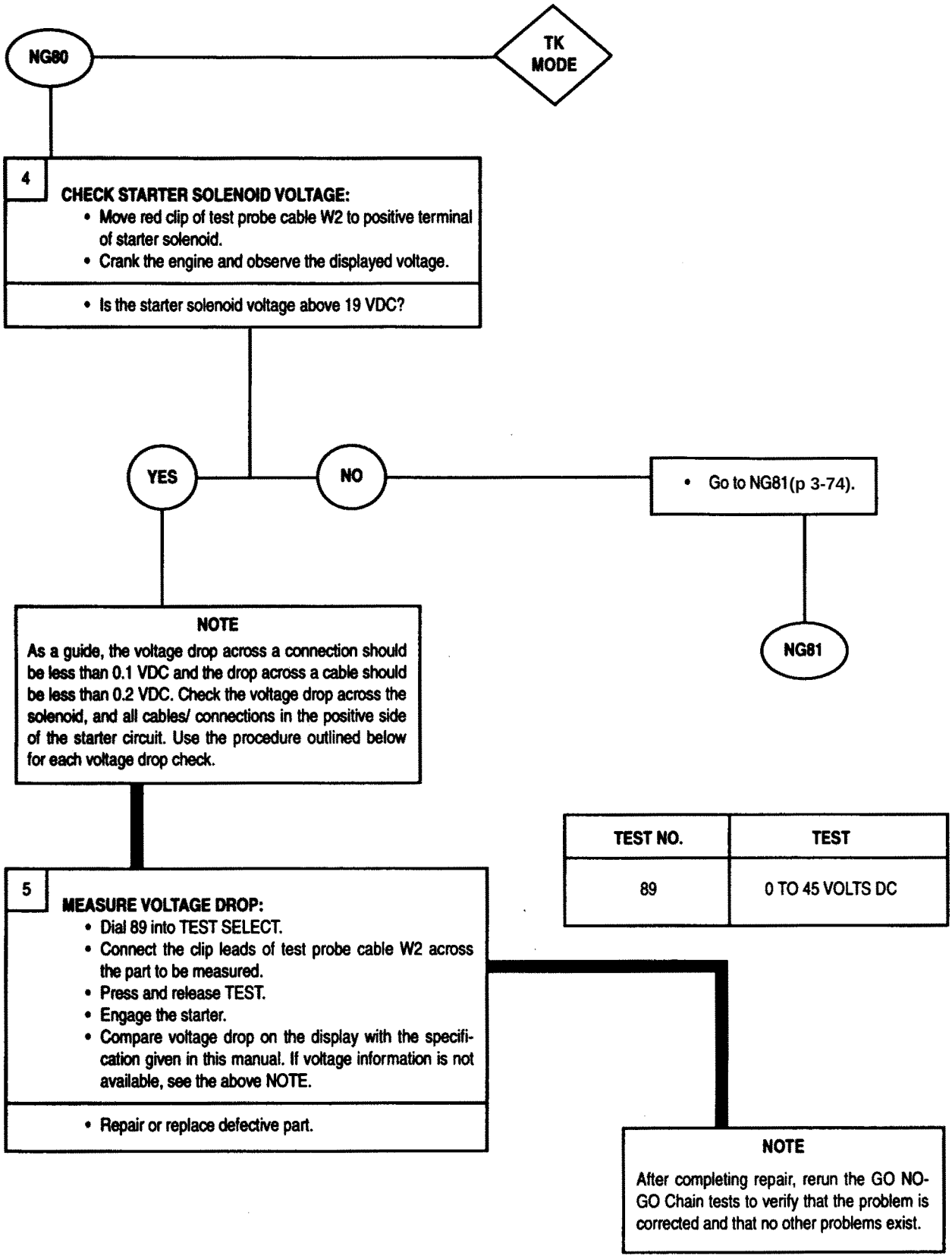
NOTE

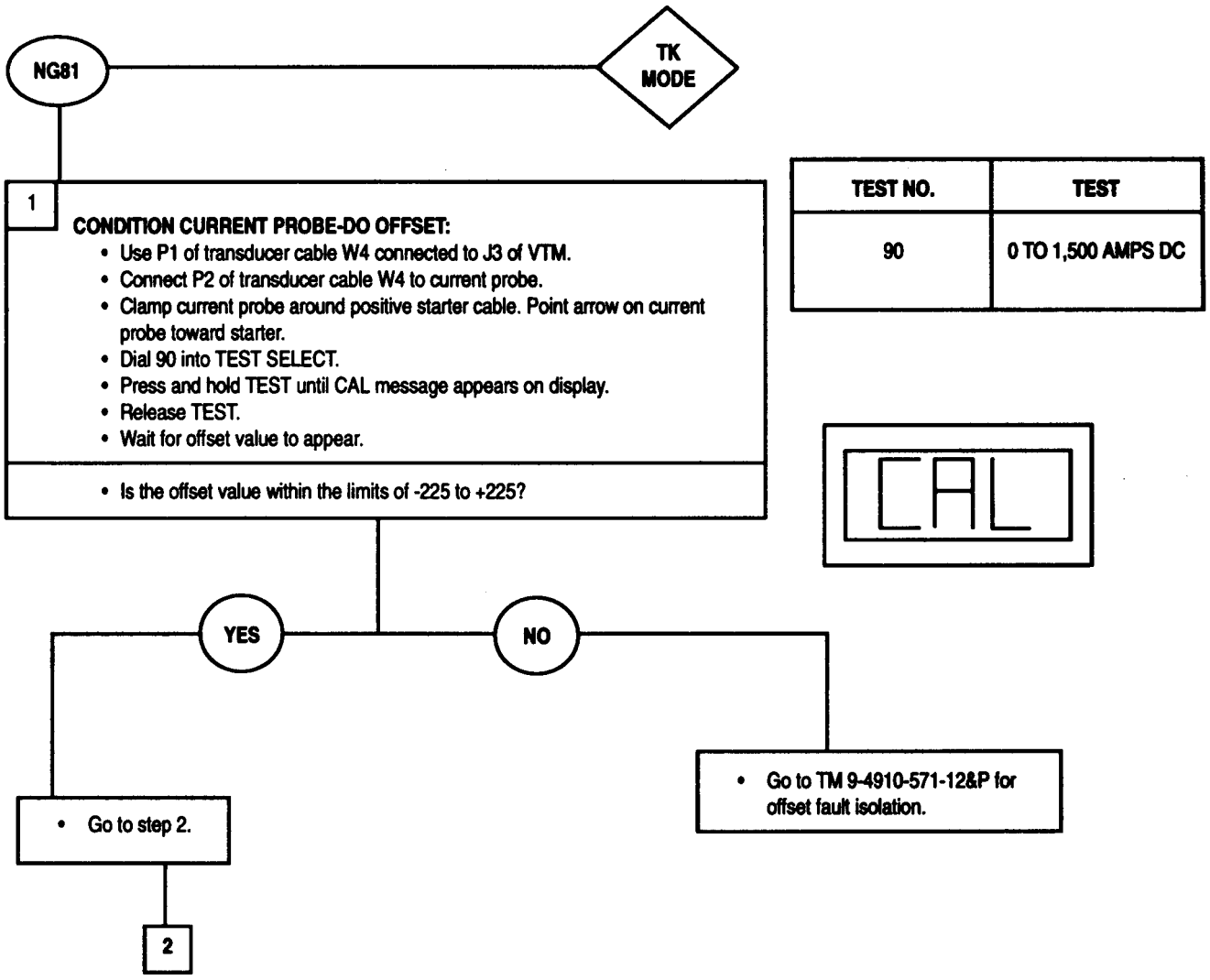
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.

- Replace starter motor (p 4-550).

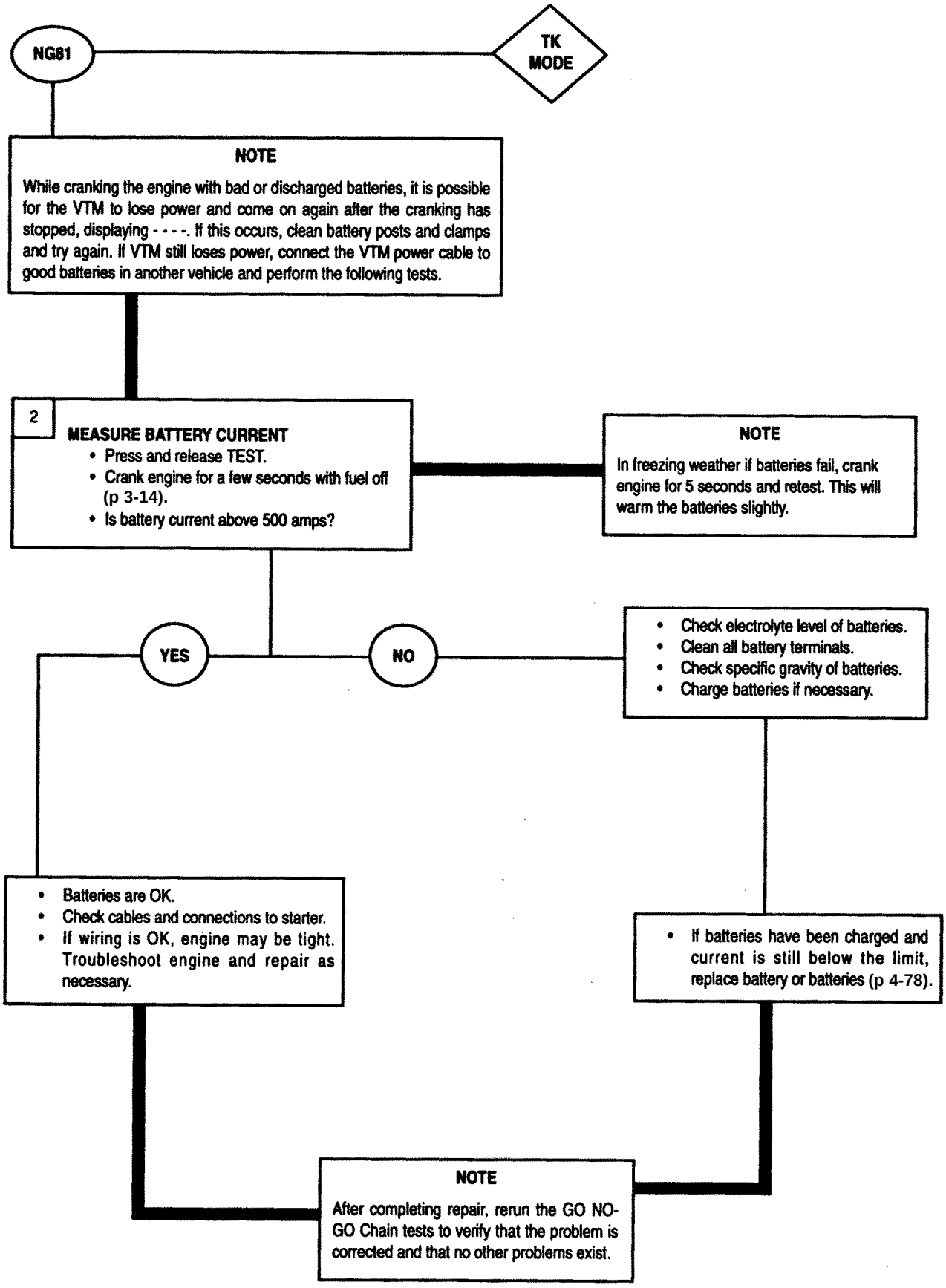
- If problem persists, go to step 4.

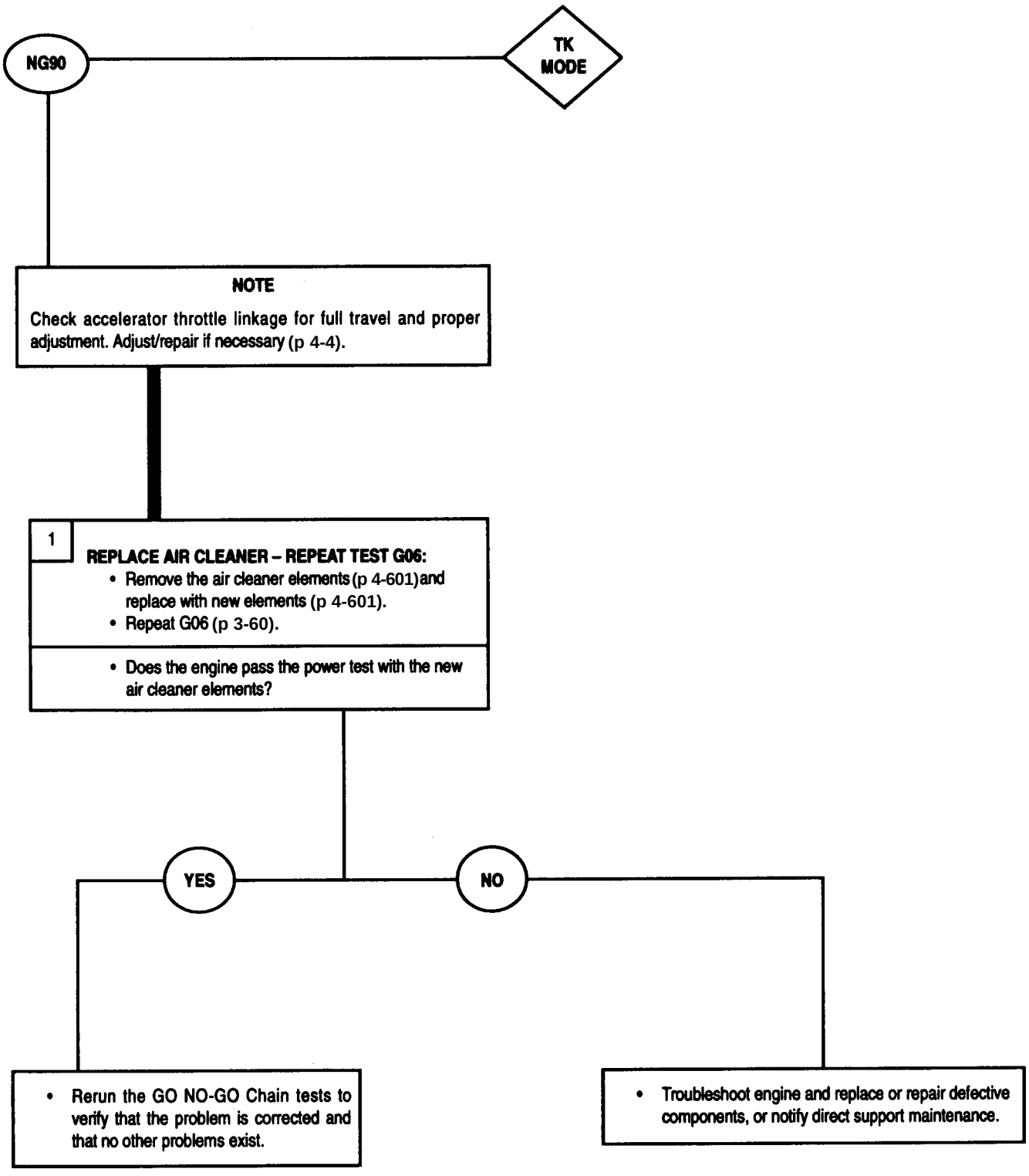
4


NG80
TK MODE
4
CHECK STARTER SOLENOID VOLTAGE:
• Move red clip of test probe cable W2 to positive terminal of starter solenoid.
• Crank the engine and observe the displayed voltage.
• Is the starter solenoid voltage above 19 VDC?
YES
NO
• Go to NG81 (p 3-74).
NG81
NOTE
As a guide, the voltage drop across a connection should be less than 0.1 VDC and the drop across a cable should be less than 0.2 VDC. Check the voltage drop across the solenoid, and all cables/ connections in the positive side of the starter circuit. Use the procedure outlined below for each voltage drop check.
TEST NO.
TEST
89
0 TO 45 VOLTS DC
5
MEASURE VOLTAGE DROP:
• Dial 89 into TEST SELECT.
• Connect the clip leads of test probe cable W2 across the part to be measured.
• Press and release TEST.
• Engage the starter.
• Compare voltage drop on the display with the specification given in this manual. If voltage information is not available, see the above NOTE.
• Repair or replace defective part.
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.



TEST NO.	TEST
90	0 TO 1,500 AMPS DC


NG81
TK MODE
NOTE
While cranking the engine with bad or discharged batteries, it is possible for the VTM to lose power and come on again after the cranking has stopped, displaying - - - -. If this occurs, clean battery posts and clamps and try again. If VTM still loses power, connect the VTM power cable to good batteries in another vehicle and perform the following tests.
2
MEASURE BATTERY CURRENT
• Press and release TEST.
• Crank engine for a few seconds with fuel off (p 3-14).
• Is battery current above 500 amps?
NOTE
In freezing weather if batteries fail, crank engine for 5 seconds and retest. This will warm the batteries slightly.
YES
NO
• Check electrolyte level of batteries.
• Clean all battery terminals.
• Check specific gravity of batteries.
• Charge batteries if necessary.
• Batteries are OK.
• Check cables and connections to starter.
• If wiring is OK, engine may be tight. Troubleshoot engine and repair as necessary.
• If batteries have been charged and current is still below the limit, replace battery or batteries (p 4-78).
NOTE
After completing repair, rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.


NG90
TK MODE
NOTE
Check accelerator throttle linkage for full travel and proper adjustment. Adjust/repair if necessary (p 4-4).
1
REPLACE AIR CLEANER – REPEAT TEST G06:
• Remove the air cleaner elements (p 4-601) and replace with new elements (p 4-601).
• Repeat G06 (p 3-60).
• Does the engine pass the power test with the new air cleaner elements?
YES
NO
• Rerun the GO NO-GO Chain tests to verify that the problem is corrected and that no other problems exist.
• Troubleshoot engine and replace or repair defective components, or notify direct support maintenance.

Section III. GENERAL HYDRAULIC SYSTEM TROUBLESHOOTING PROCEDURES

SCOPE

This section describes the general procedures for troubleshooting the M9 hydraulic system at the unit maintenance level. These procedures should be referred to before you start troubleshooting, and during troubleshooting when these procedures are referenced in the troubleshooting charts of section IV. Procedures contained in this section are listed below.

Page

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Relieving Hydraulic System Pressure 3-82
Directional Control Valve Pressure Checks 3-83
Accumulator Dump Valve Installation 3-84
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Main Hydraulic Pump Efficiency Test 3-87
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Hose and Tube Marker Bands Identification 3-91
Hydraulic Circuit Efficiency Test 3-115
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Typical Corner Actuator Schematic Diagram 3-122

GENERAL

The causes of many hydraulic system malfunctions cannot be isolated by visual inspection and require special procedures to locate. When a thorough visual inspection does not indicate the cause of a hydraulic malfunction, troubleshoot the hydraulic system to locate the faulty component. The troubleshooting procedures in this section and in the troubleshooting charts (p 3-123) cannot cover all the possible malfunctions and deficiencies that may occur on the M9. Carefully listen and observe all hydraulic actions to assist in the location of troubles. The more symptoms that can be evaluated, the easier it will be to isolate the defect.

Refer to the information in this section for preliminary troubleshooting procedures and connections of test equipment and adapters necessary for fault isolation. While troubleshooting the hydraulic system, refer to the vehicle hydraulic schematic diagram (TM 5-2350-262-20-3)to determine flow paths, pressures, routing of lines, and position of control valves.

Note

Although the Bilge Pump is considered Not Mission Essential and will no longer be supported with spare and repair parts, this section contains troubleshooting procedures For Your Information Only. See TB 43-0001-62-7 (dated Oct 98) for Instructions to Isolate and Disconnect a Non-Functional Bilge Pump.

GENERAL NOTES

WARNING

- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic 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.
- Before performing any hydraulic troubleshooting in the bowl, move the ejector forward and disable it by disconnecting the ejector cylinder or by engaging the ejector lock. Failure to comply may result in severe injury to personnel.

Hydraulic troubleshooting can often be reduced by taking the following steps:

- Before removing the hull access plates from the bottom of the hull, thoroughly and carefully inspect all readily and easily accessible hydraulic lines and components for leaks or damage.
- If hull access plates must be removed from the bottom of the hull, remove the front access plates first. More suspension malfunctions occur in the front of the vehicle than at the rear.
- Always observe the general hydraulic system repair methods described in chapter 2, section VI.
- Instead of replacing a relief valve for troubleshooting purposes, temporarily switch it with another relief valve on the directional control valve bank.
- When proceeding from one troubleshooting task to another, read the next task to determine what test equipment or configuration is required. Time can be saved by not repeating gauge, fitting, and hose connections.

When troubleshooting is complete, make sure all test equipment and test fittings are removed, and all hydraulic components are returned to the original configuration, before operating the vehicle.

Note

Fluid leaks are classified as either Class I, Class II, or Class III.

Class I Seepage of fluid, as indicated by wetness or discoloration, not great enough to form drops.

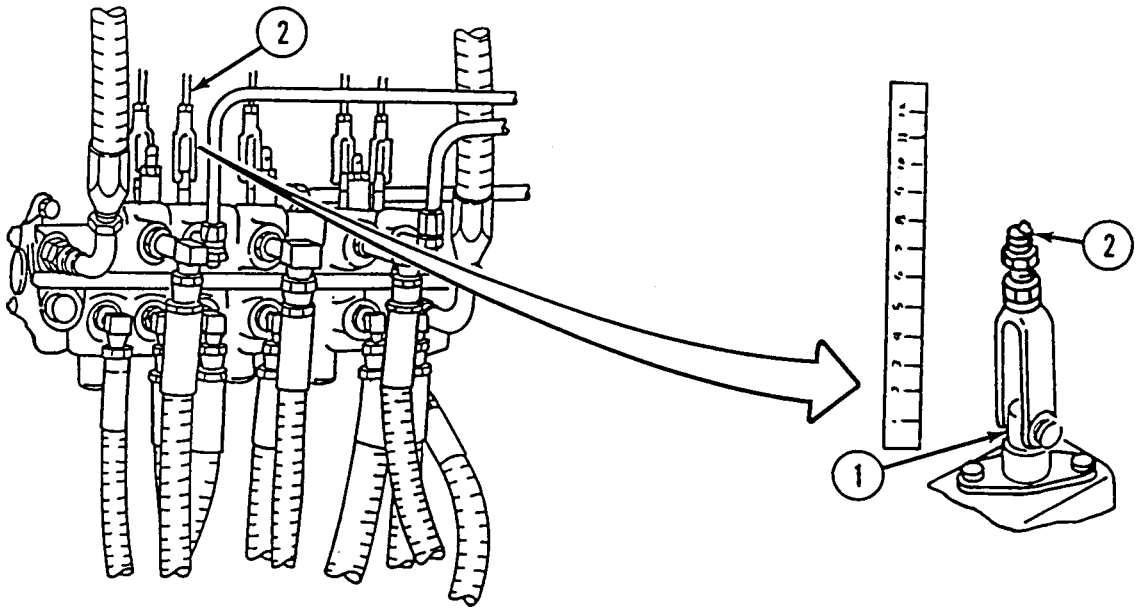
Class II Leakage of fluid great enough to form drops, but not enough to cause drops to drip from the item being checked or observed.

Class III Leakage of fluid great enough to form drops that fall from the item being checked or observed.

PRELIMINARY TROUBLESHOOTING PROCEDURES

Before starting any specific troubleshooting procedures, perform the following procedures:

- Visually check for ruptured oil hoses or tubes, and for Class II or Class III leaks. Replace any damaged components **(TM 5-2350-262-20-2).**
- Visually check both high-pressure filters and return line filter for cracks, loose fittings, damaged hoses, and broken brackets. Replace or repair any damaged components **(TM 5-2350-262-20-2).**
- Check for mechanical jamming or binding caused by rocks or other foreign matter.
- Check oil level in hydraulic tank **(TM 5-2350-262-10)** and service as necessary.
- Check temperature of hydraulic oil at hydraulic oil temperature gauge in driver's compartment (TM 5-2350-262-10). Temperature should not be more than 180°F (82°C).
- Check operation and adjustment of each hydraulic control and valve plunger (1) **(TM 5-2350-262-20-2).** Plungers should move 9/32 in. (7 mm) above or below neutral position when control rod (2) is operated. (Bilge pump and SPRUNG/UNSPRUNG plungers only move up.)



PRELIMINARY TROUBLESHOOTING PROCEDURES – CONTINUED

Make sure all equipment and tools are available before performing hydraulic system troubleshooting. The following items are required for hydraulic system troubleshooting:

STE/ICE-R – 4910-01-222-6589 – 12258880
Wiping rags
Hand tools from Common No. 1 Kit
Bushing – 4730-00-580-7417 – 2081-8-4S
Adapter – 4730-01-305-5796 – 4-4F6BX-S
Adapter – N/A – 2027-12-12S
Tee – 4730-00-738-7558 – 203102-12-12S
Reducer – 4700-00-675-9216 – 221501-12-8S
Liquid measures from Common No. 1 Kit:
2 qt (1.9 L) capacity – NSN 7240-00-255-8113
8 qt (7.6 L) capacity – NSN 7240-00-255-5996
Packing (O-rings) – Quantity determined by tasks. Refer to TM 5-2350-262-24P.
Hydraulic Troubleshooting Kit (NSN 2590-01-216-8646) comprised of the following components:

Item	NSN	Part No.	Quantity
Adapter	4730-00-441-8700	MS51500A8-4	4
Adapter	4730-00-800-7570	MS51503A4	2
Adapter	4730-01-305-5796	4-4F6BX-S	1
Adapter	4730-01-183-7167	2242-8-8S	2
Bushing	4730-00-729-4930	2081-8-2S	2
Cap	4730-00-542-5911	MS51532B10	2
Cap	4730-00-647-3311	MS51532B12	4
Cap	4730-01-044-0878	MS51532B4	4
Cap	4730-00-540-1525	MS51532B6	8
Cap	4730-00-625-2212	MS51532B8	8
Hose Assembly	4720-01-246-0992	12355351	2
Hose Assembly	4720-01-252-8425	12355352	2
Nipple	4730-00-855-4799	MS51519A10S	2
Nipple	4730-01-079-1986	MS51519A4	2
Nipple	4730-01-329-4994	MS51519A8	4
Nut	4730-00-203-3831	C5105X6	2
Plug	5365-01-249-9707	MS51518B10	2
Plug	4730-01-203-6941	MS51518B12	4
Plug	4730-01-021-3850	MS51518B4	8
Plug	4730-01-070-9214	MS51518B8	8
Plug	5365-01-251-2034	MS51518B6	4
Reducer	4730-00-805-5094	MS24399-19	4
Reducer	4730-01-214-1741	10-8070123C	2
Reducer	4730-00-706-8711	MS51534A6-4	2
Reducer	4730-00-676-3075	MS51534A8-4	2
Tee	4730-00-074-0713	MS51523A8	4
Tube Assembly	4730-01-270-7650	12355353	2
Check Valve	4820-00-045-7415	MS24593-8	2
Globe Valve	4820-00-513-5471	10F0-1-3T	2
Box Hydraulic Assembly Troubleshooting Kit	2540-01-298-3975	12367609	1

PRELIMINARY TROUBLESHOOTING PROCEDURES – CONTINUED

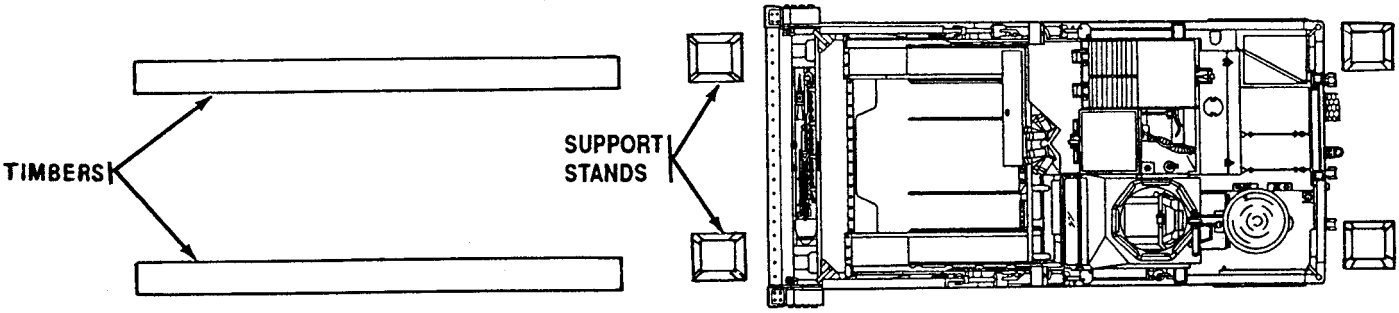
Wrench Set (NSN 5120-01-302-4387) comprised of one each of the following components:

Item	NSN
Wrench, crowfoot, 9/16 in.	5120-00-184-8397
Wrench, crowfoot, 5/8 in.	5120-00-184-8398
Wrench, crowfoot, 11/16 in.	5120-00-236-2261
Wrench, crowfoot, 3/4 in.	5120-00-184-8400
Wrench, crowfoot, 13/16 in.	5120-00-184-8401
Wrench, crowfoot, 7/8 in.	5120-00-541-4071
Wrench, crowfoot, 15/16 in.	5120-00-184-8403
Wrench, crowfoot, 1 in.	5120-00-595-8213
Wrench, crowfoot, 1-1/16 in.	5120-00-184-8405
Wrench, crowfoot, 1-1/8 in.	5120-00-517-7021
Wrench, crowfoot, 1-3/16 in.	5120-00-184-8407
Wrench, crowfoot, 1-1/4 in.	5120-00-293-2567
Wrench, crowfoot, 1-5/16 in.	5120-00-184-8409
Wrench, crowfoot, 1-3/8 in.	5120-00-184-8410
Wrench, crowfoot, 1-1/2 in.	5120-00-184-8412
Wrench, crowfoot, 1-5/8 in.	5120-00-184-8414
Wrench, crowfoot, 1-11/16 in.	5120-00-184-8415
Wrench, crowfoot, 1-3/4 in.	5120-00-184-8416
Wrench, crowfoot, 1-7/8 in.	5120-00-184-8418
Wrench, crowfoot, 2 in.	5120-00-184-8420
Wrench, crowfoot, 2-1/8 in.	5120-00-184-8422
Wrench, crowfoot, 2-1/4 in.	5120-00-184-8424
Wrench, crowfoot, 2-1/2 in.	5120-00-184-8428
Box, tool	5140-01-298-3983

SUSPENDING THE M9 FOR SUSPENSION SYSTEM CHECKS

While troubleshooting the hydraulic components of the suspension system, the pressure tests are more reliable if the vehicle is supported by the suspension. If conditions do not permit this, pressure tests should be re-checked to ensure accurate readings. If the suspension must be supported, perform the following procedure:

Place the vehicle on support stands to allow a safe working area under the vehicle while performing procedures that require working through hull access plate openings. If vehicle support stands are not available, use two long, parallel timbers, or similar supports, between 12 and 18 in. (30 and 46 cm) high.



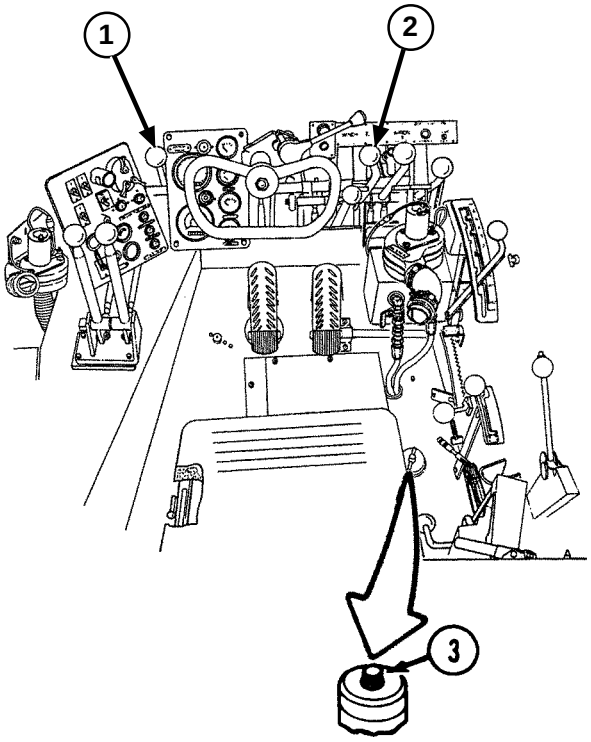
RELIEVING HYDRAULIC SYSTEM PRESSURE

A If necessary, stop vehicle engine (TM 5-2350-262-10). Place SPRUNG/UNSPRUNG control lever (1) in SPRUNG position.

B Relieve pressure from main accumulator by slowly moving SPRUNG/UNSPRUNG control lever (1) toward UNSPRUNG position until a hissing can be heard. Hold in that intermediate position until hissing ceases, then place SPRUNG/UNSPRUNG control lever (1) in SPRUNG position.

C Operate each of the four control levers (2) several times, through all positions, to relieve any residual pressure in hydraulic subsystems.

D Slowly loosen hydraulic tank dipstick (3) to allow air pressure to escape. Tighten dipstick (3).



DIRECTIONAL CONTROL VALVE PRESSURE CHECKS

Perform the following procedure when it is specified in the troubleshooting charts (p 3-123).

Note

Some disassembly of components of hydraulic troubleshooting kit is necessary before they can be used in troubleshooting the hydraulic system.

A Stop vehicle engine (TM 5-2350-262-20-10) and relieve hydraulic pressure (3-82).

B Disconnect hose (1) from adapter (2) at port 13L (3) or 13R (4). Specific ports will be identified in the troubleshooting charts.

C Install 203102-12-12S tee (5) on adapter (2) and connect hose (1) to tee (5).

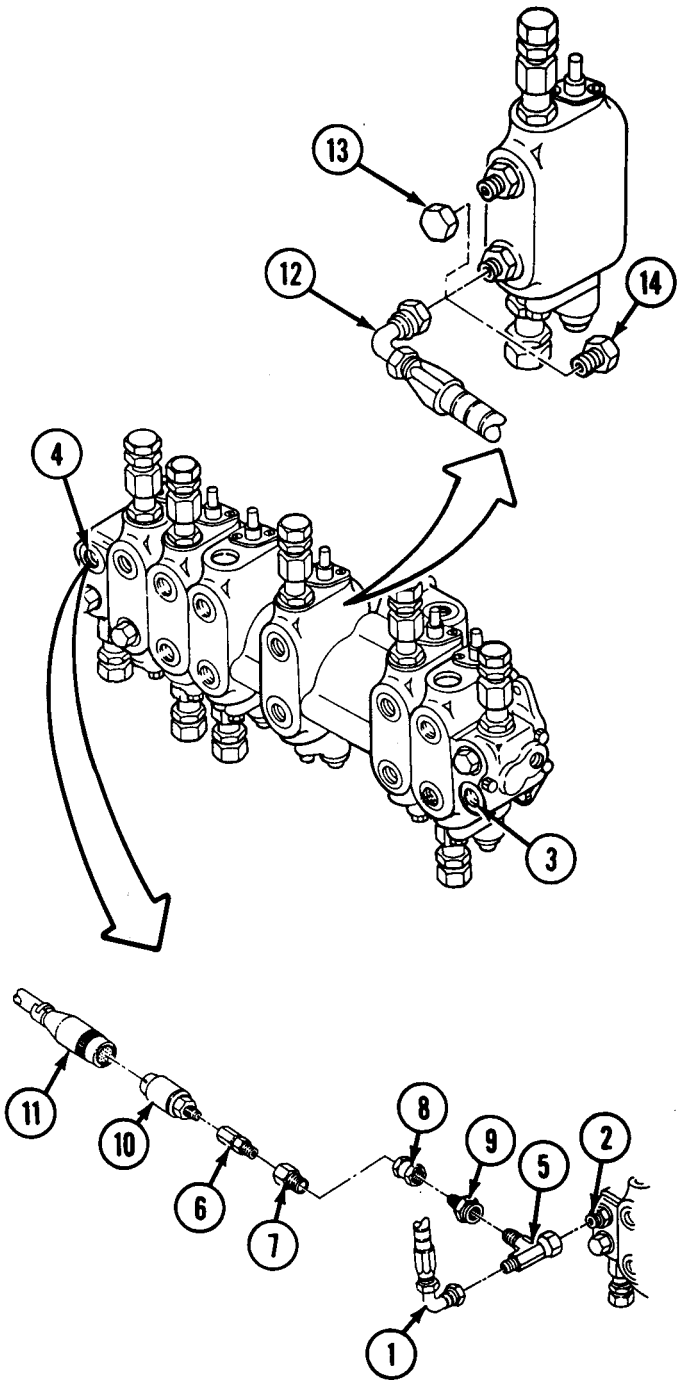
D Install 4-4F6BX-S adapter (6) on tee (5) with 2081-8-4S bushing (7), 2242-8-8S adapter (8), and 221501-12-8S reducer (9). Install 6685-01-193-1733, 10,000 psi (68,950 kPa) transducer (10) on adapter (6). Connect cable W4 (11) from vehicle test meter (VTM) to transducer (10).

E Disconnect hose (12) from the fitting designated in the troubleshooting chart, and install MS51532B8 cap (13) on fitting to block flow of hydraulic oil. (Fitting at port 21 requires a MS51532B10 cap.) Plug hose (12) with MS51518B8 or MS51518B10 plug (14).

F Start vehicle engine (TM 5-2350-262-10) and set engine speed at idle (750-850 rpm). Move the control lever (as designated in the troubleshooting chart) to the specified position.

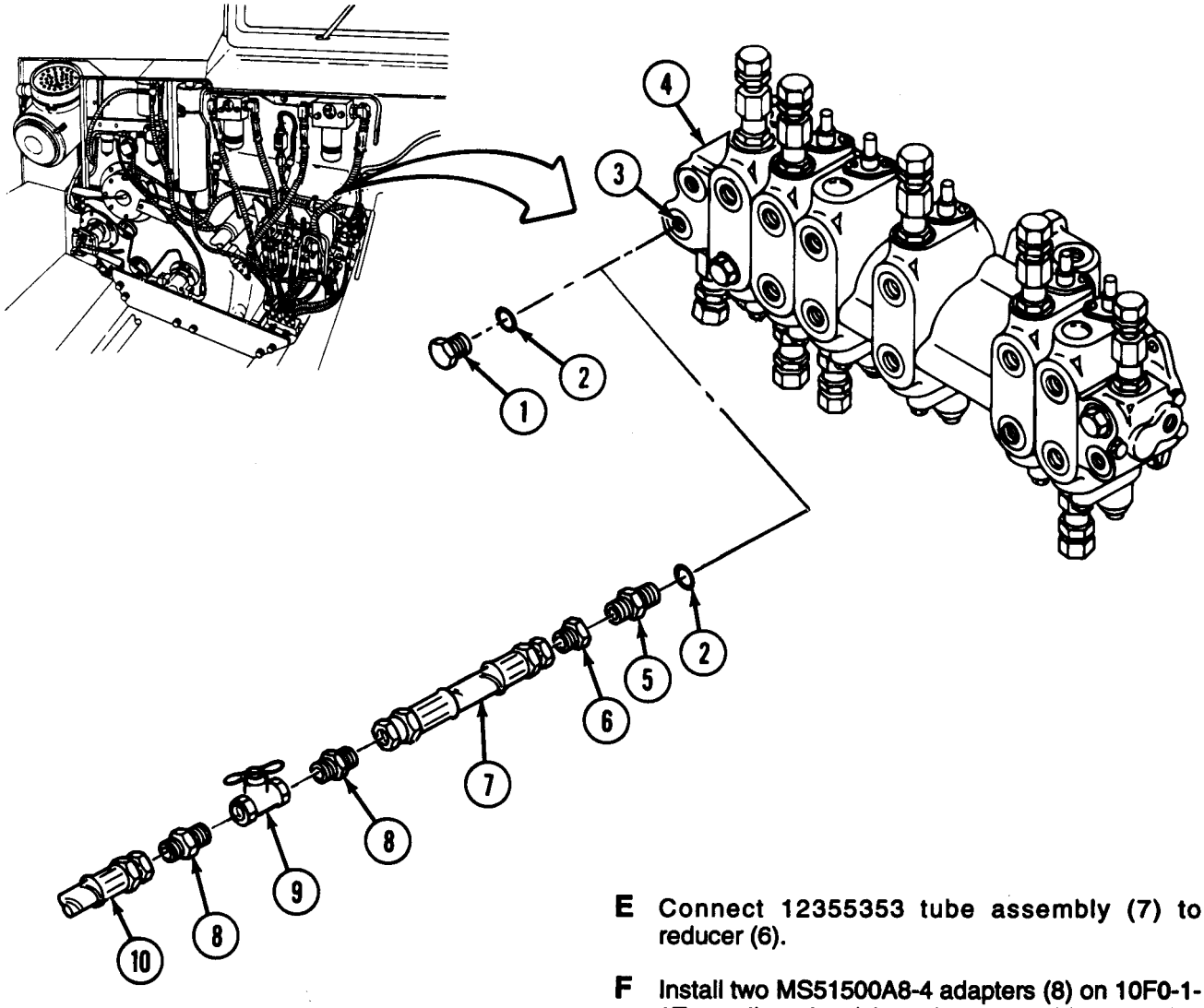
G Compare the pressure indicated on VTM to the required indication for that hydraulic circuit and control valve.

H When troubleshooting is complete, return hoses and fittings to their normal configuration.



ACCUMULATOR DUMP VALVE INSTALLATION

Some procedures in the troubleshooting charts (p 3-123) require starting and stopping the engine several times. To rapidly and safely relieve pressure from the main hydraulic accumulator, a dump valve may be installed in the system. When the troubleshooting procedure calls for the installation of the dump valve, use the procedure described below.



A Stop vehicle engine (TM 5-2350-262-20-2) and relieve hydraulic pressure (p 3-82).

B Remove plug (1) and packing (2) from port 7 (3) of valve 13R (4). Discard packing (2).

C Install MS28778-8 packing (2) and MS51519A10S nipple (5) in port 7 (3).

D Install 10-8070123C reducer (6) to nipple (5).

E Connect 12355353 tube assembly (7) to reducer (6).

F Install two MS51500A8-4 adapters (8) on 10F0-1-3T needle valve (9), and connect this assembly to tube (7), with arrow of globe valve (9) pointed toward port 7 (3).

CAUTION

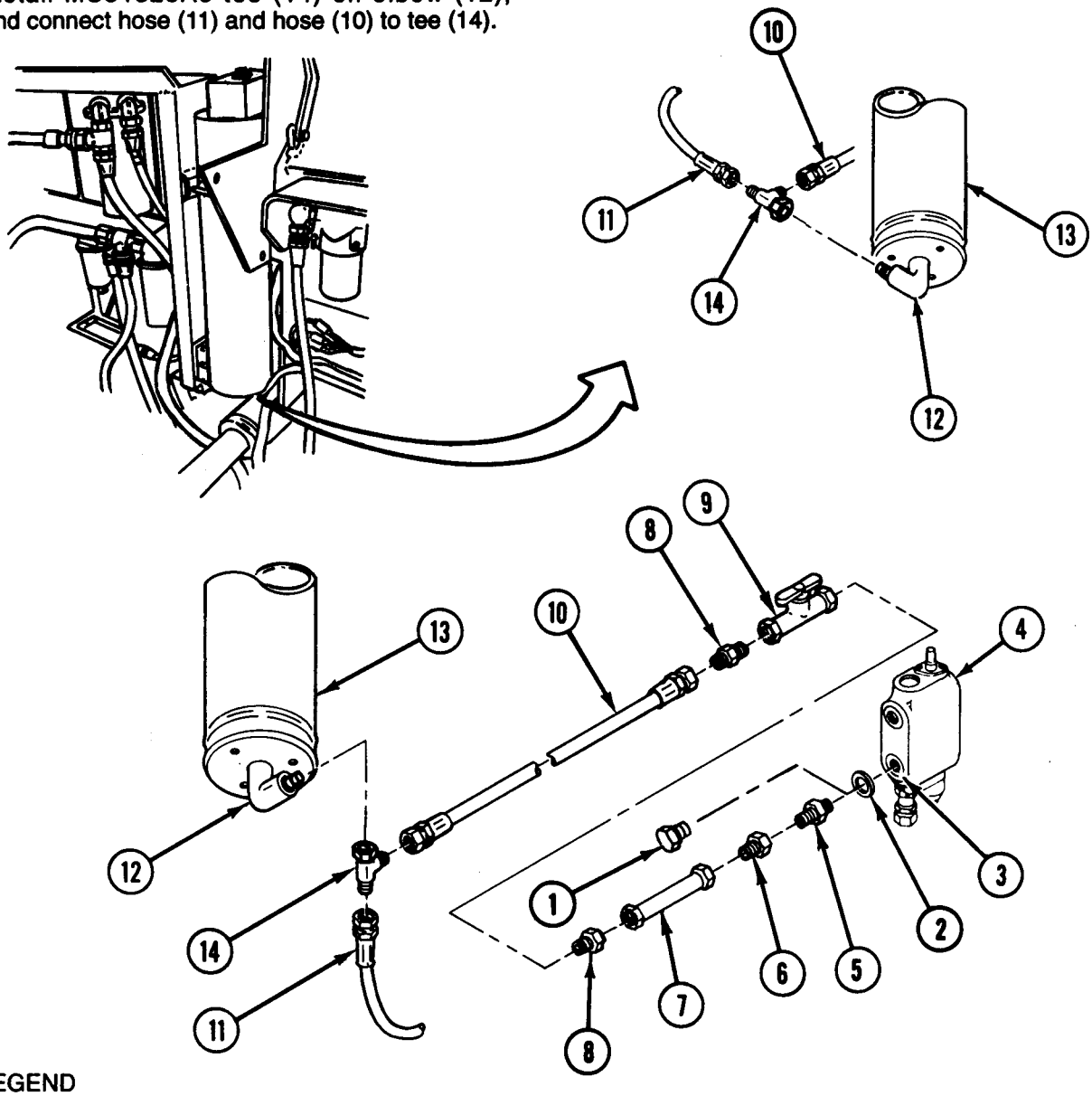
Make sure globe valve is closed when dump valve is not in use or when engine is running. Damage to equipment may result.

G Connect 12355352 hose assembly (10) to adapter (8) at end of globe valve (9).

ACCUMULATOR DUMP VALVE INSTALLATION – CONTINUED

H Disconnect ACCUMULATOR-9 hose (11) from elbow (12) at bottom of main hydraulic accumulator (13).

I Install MS51523A8 tee (14) on elbow (12), and connect hose (11) and hose (10) to tee (14).



LEGEND

1 Plug
2 Packing (MS28778-10)
3 Port 7
4 Valve 13R
5 Nipple (MS51519A10S)
6 Reducer (10-8070123-C)
7 Tube Assembly (12355353)
8 Adapter (MS51500A8-4)
9 Needle Valve (10F0-1-3T)
10 Hose Assembly (12355352)
11 Accumulator Hose
12 Accumulator Elbow
13 Accumulator
14 Tee MS51523A8

MAIN HYDRAULIC PUMP OUTPUT FLOW RATE TEST

Some procedures in the troubleshooting charts (p 3-123) call for testing the main hydraulic pump output flow rate. The main hydraulic pump is a two-section pump, essentially two pumps in one housing. The two outputs of the pump provide pressurized hydraulic oil to both sections 13R and 13L of the directional control valve. The troubleshooting charts specify testing the flow rate at 13R or 13L, or total pump output (both 13R and 13L).

The following procedure describes how to test the flow rate for section 13R. To test the output of 13L, substitute 13L for 13R in this procedure.

A Stop engine (TM 5-2350-262-10) and relieve hydraulic pressure (p 3-82).

B Disconnect FLTR-OUT-13R high-pressure filter inlet hose (1) from elbow (2) of filter 13R (3) and install MS51532B8 cap (4) on elbow (2).

C Install 2242-8-8S adapter (5) on end of hose (1), and connect end of 12355352 hose assembly (6) to adapter (5).

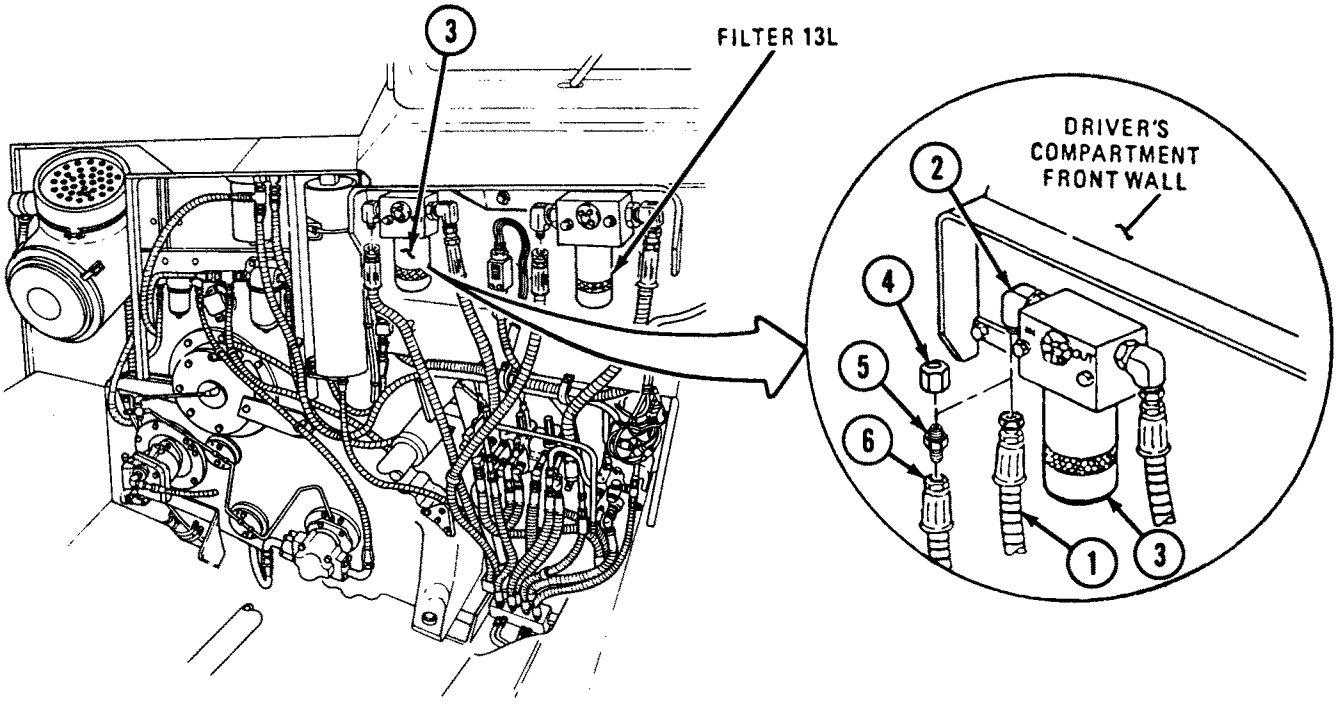
D Place opposite end of hose (6) in container having at least 2 gal. (7.6 L) capacity.

E Start vehicle engine (TM 5-2350-262-10) and run at idle speed, 750 to 850 rpm, while holding end of hose (5) in container.

F Measure flow of oil from hose (5). Flow should be a minimum of 3 gpm (11.4 Lpm). To measure oil flow in gallons per minute (gpm) (Lpm), collect oil in marked container (p 3-88). Let oil flow for 15 seconds. Measure oil, then multiply this amount by four to convert to gpm (Lpm).

If flow is unsteady and less than 3 gpm (11.4 Lpm), notify direct support maintenance to replace main hydraulic pump.

If flow is steady and less than 3 gpm (11.4 Lpm), perform main hydraulic pump efficiency test.



MAIN HYDRAULIC PUMP EFFICIENCY TEST

The following procedure describes how to perform the main hydraulic pump efficiency test. A complete pump efficiency test requires checking both pump sections (13R and 13L). The procedure below uses pump section 13R; to check section 13L of the pump, repeat the procedure, but substitute 13L for 13R in the task.

Before starting the pump efficiency test, do the following:

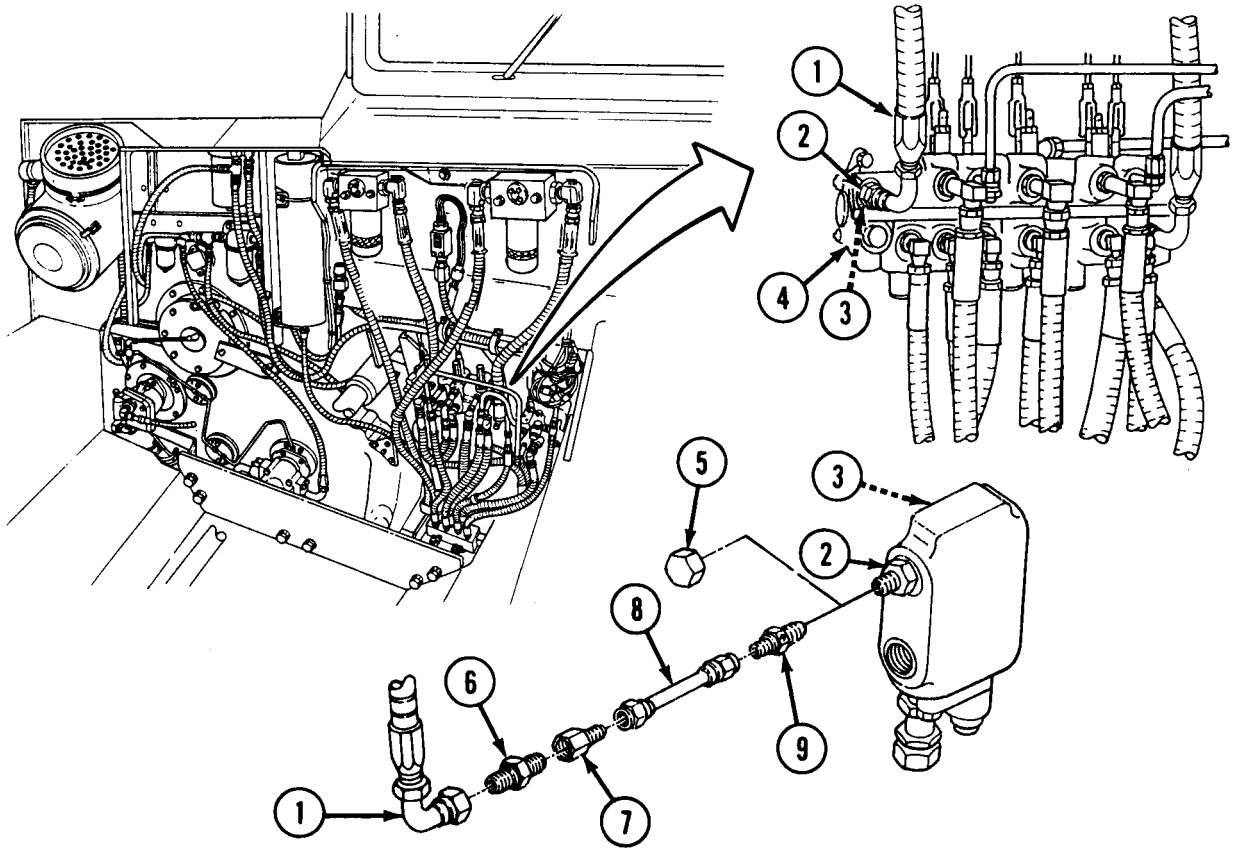
- Relieve hydraulic system pressure (p 3-82).
- Check nitrogen charge of main hydraulic accumulator (p 4-467) and service accumulator charge and gauge assembly if necessary (p 4-473), or replace accumulator (p 4-471).
- Install main hydraulic accumulator dump valve (p 3-84).

A Disconnect CONT VLV-13R hose (1) from adapter (2) at port 13R (3) of the directional control valve assembly (4), and install MS51532B12 cap (5) on adapter (2).

CAUTION

Extremely high pressure can develop quickly when engine is started. Ensure flow direction arrow on check valve is pointing to open end of check valve. Failure to comply may result in damage to equipment.

B Install 2027-12-12S adapter (6), 221501-12-8S reducer (7), 12355353 tube (8), and MS24593-8 miniature check valve (9) in open end of hose (1), with flow direction arrow of check valve (9) pointing away from hose (toward open end of check valve).

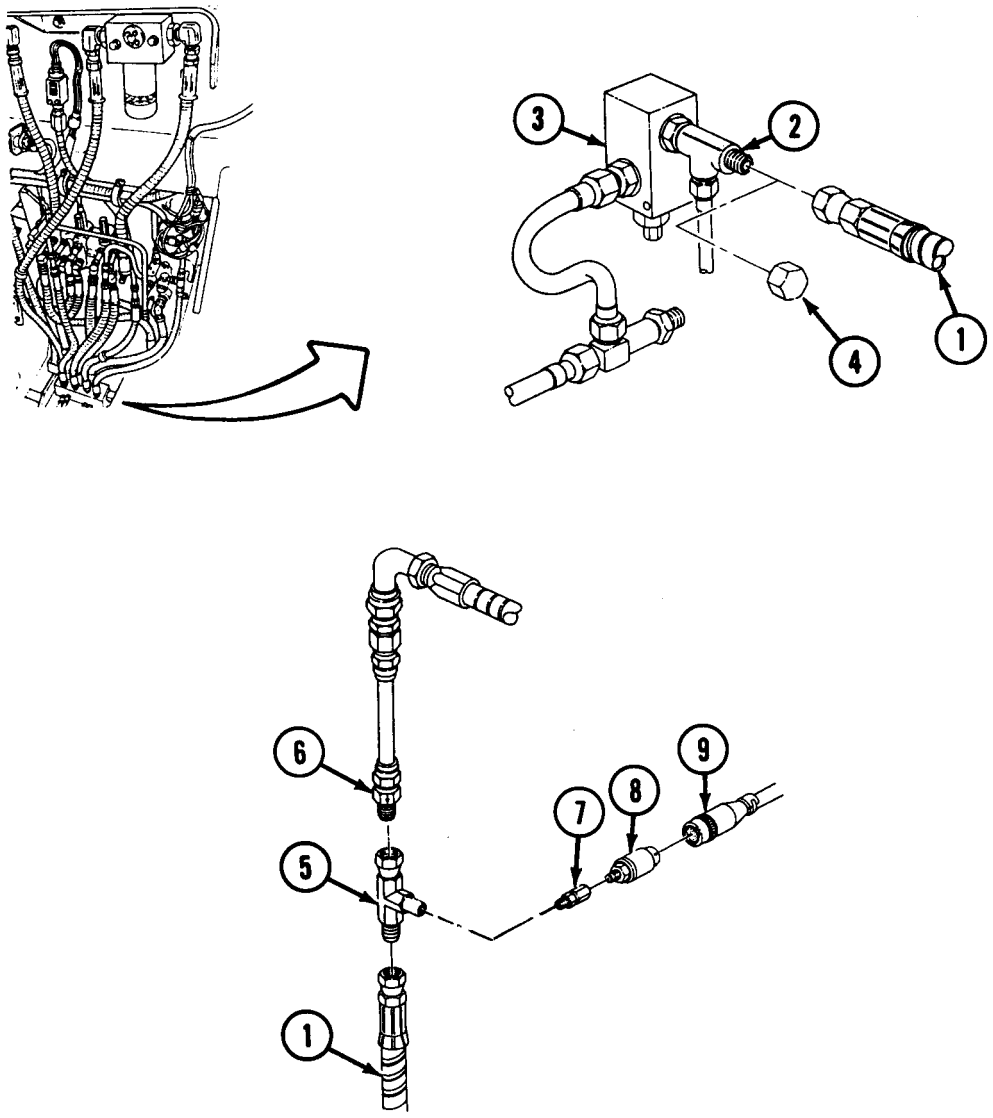


MAIN HYDRAULIC PUMP EFFICIENCY TEST – CONTINUED

C Disconnect RLF VLV-9 TEE hose (1) (hose to main hydraulic accumulator) from tee (2) at suspension relief valve (3). Install MS51532B8 cap (4) on tee (2).

D Connect 12258880 tee (5) to check valve (6), and connect hose (1) to tee (5).

E Install 4-4F6BX-S adapter (7) on tee (5). Install 6685-01-193-1783, 10,000 psi (68,950 kPa) transducer (8) on adapter (7). Connect W4 cable (9) from VTM to transducer (8).



MAIN HYDRAULIC PUMP EFFICIENCY TEST – CONTINUED

Note

- Verify that all connections, lines, and adapters are correctly installed. Refer to the diagram below. Make sure accumulator dump valve is closed.
- Inspect main hydraulic pump hoses and fittings for damage or incorrect installation.

F Check time required for pump to charge main accumulator. Be prepared to measure charging time as soon as engine starts, and stop as soon as charge (as indicated on VTM) reaches 3,500 psi (24,133 kPa).

- Start engine (TM 5-2350-262-10), and set engine speed to 1,000 rpm.

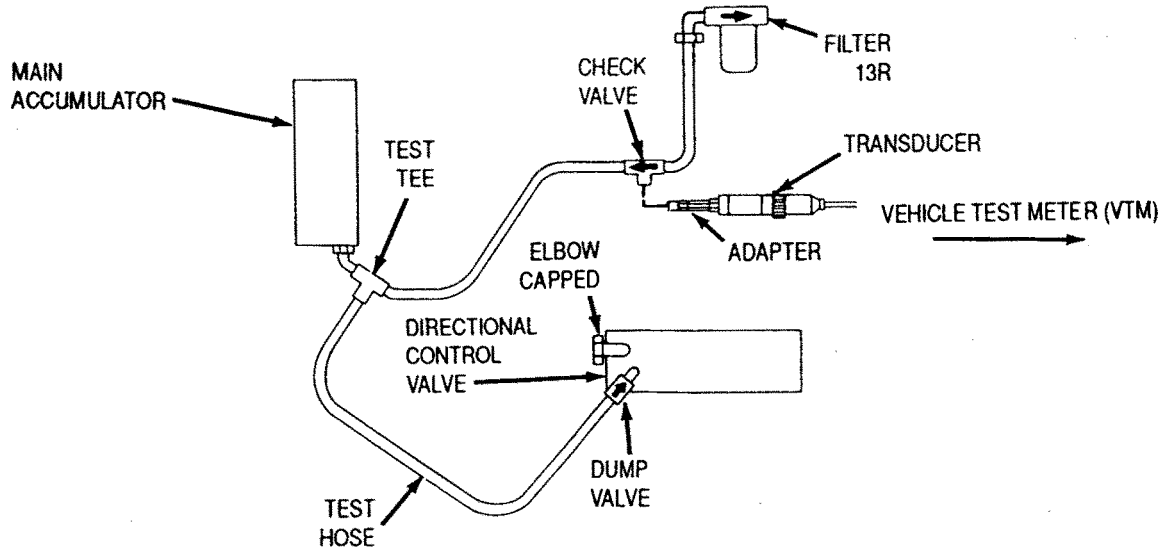
CAUTION

If engine is not stopped when pressure reaches 4,200 psi (28,959 kPa), accumulator may be damaged.

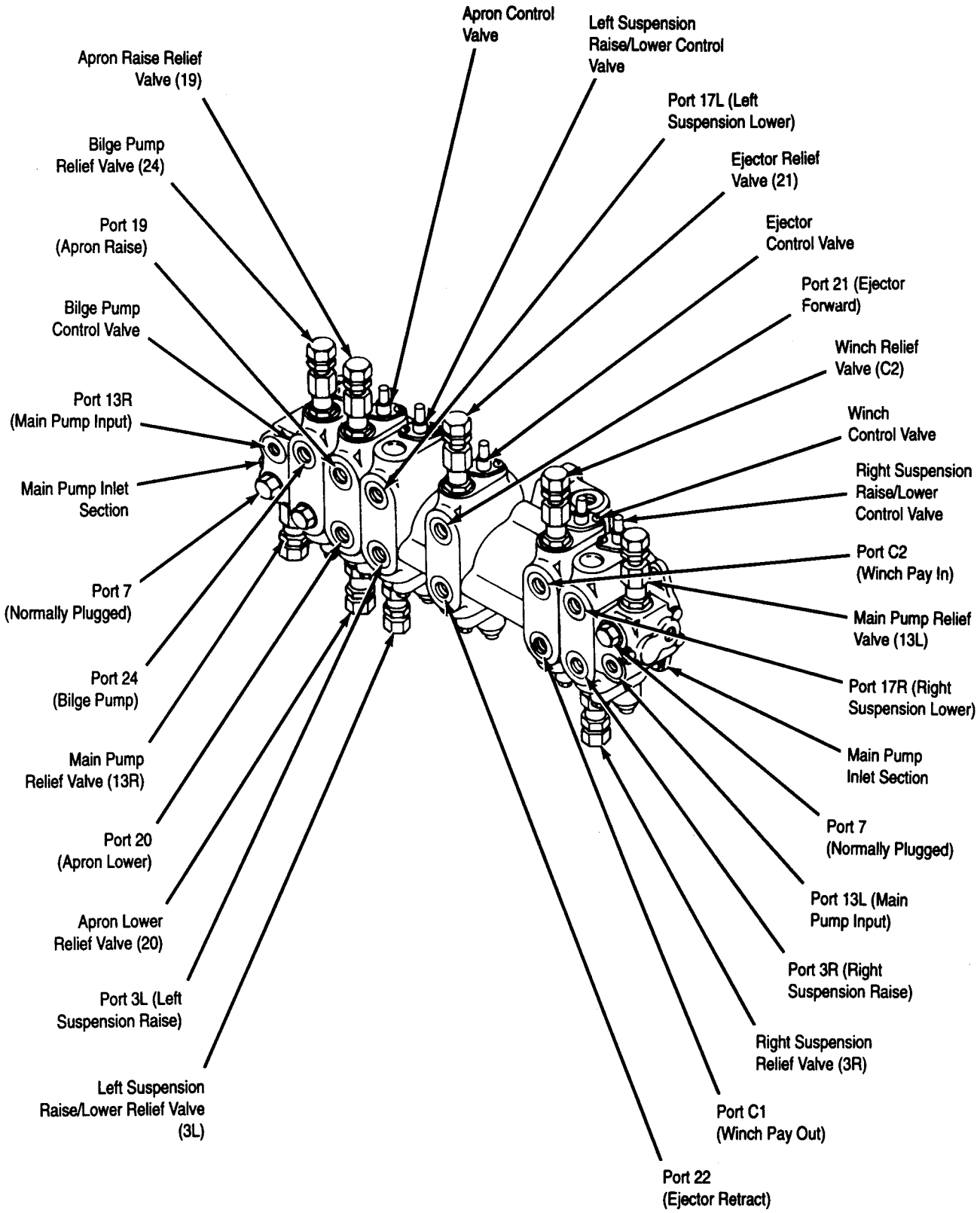
- Note the time it takes for pressure to reach 4,200 psi (28,959 kPa), and IMMEDIATELY STOP ENGINE. Charging time for a normal system is about 20 seconds.
- If charging time is longer than 30 seconds, the main hydraulic pump may be defective. Open dump valve 1/2 turn to discharge accumulator. Disconnect main hydraulic pump output hose and check for obstructions or other damage. Replace output hose or eliminate obstruction. Connect main hydraulic pump output hose. Disconnect main hydraulic pump supply hose. If free flow is present, the main hydraulic pump is defective. Notify direct support maintenance. If flow is restricted, find and eliminate line blockage between the reservoir and the main hydraulic pump.
- If charging time is less than 30 seconds, pump is serviceable and directional control valve bank should be replaced (p 4-498).

G When test is completed, open dump valve 1/2 turn to discharge accumulator.

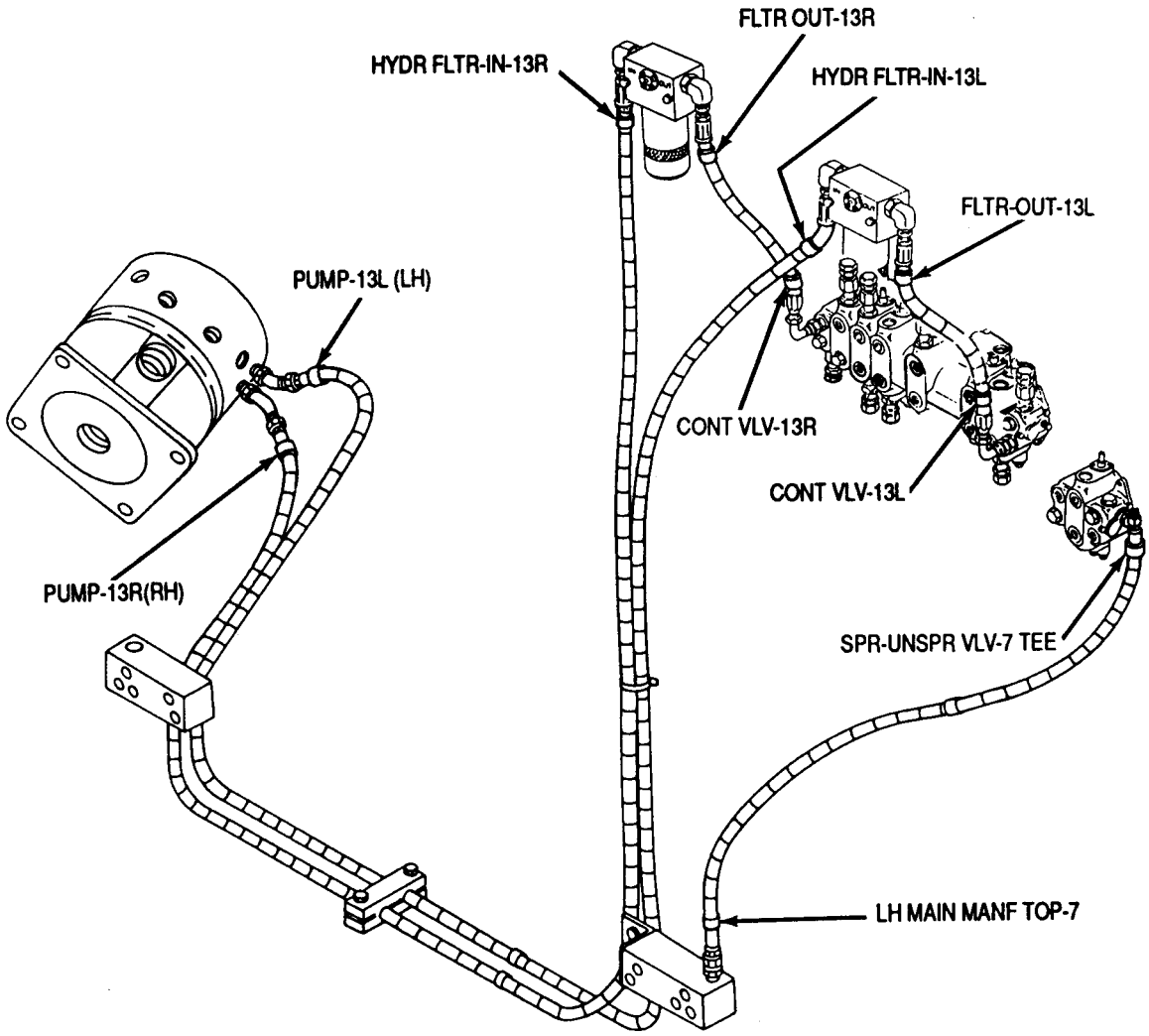
MAIN HYDRAULIC PUMP EFFICIENCY TEST CONNECTIONS



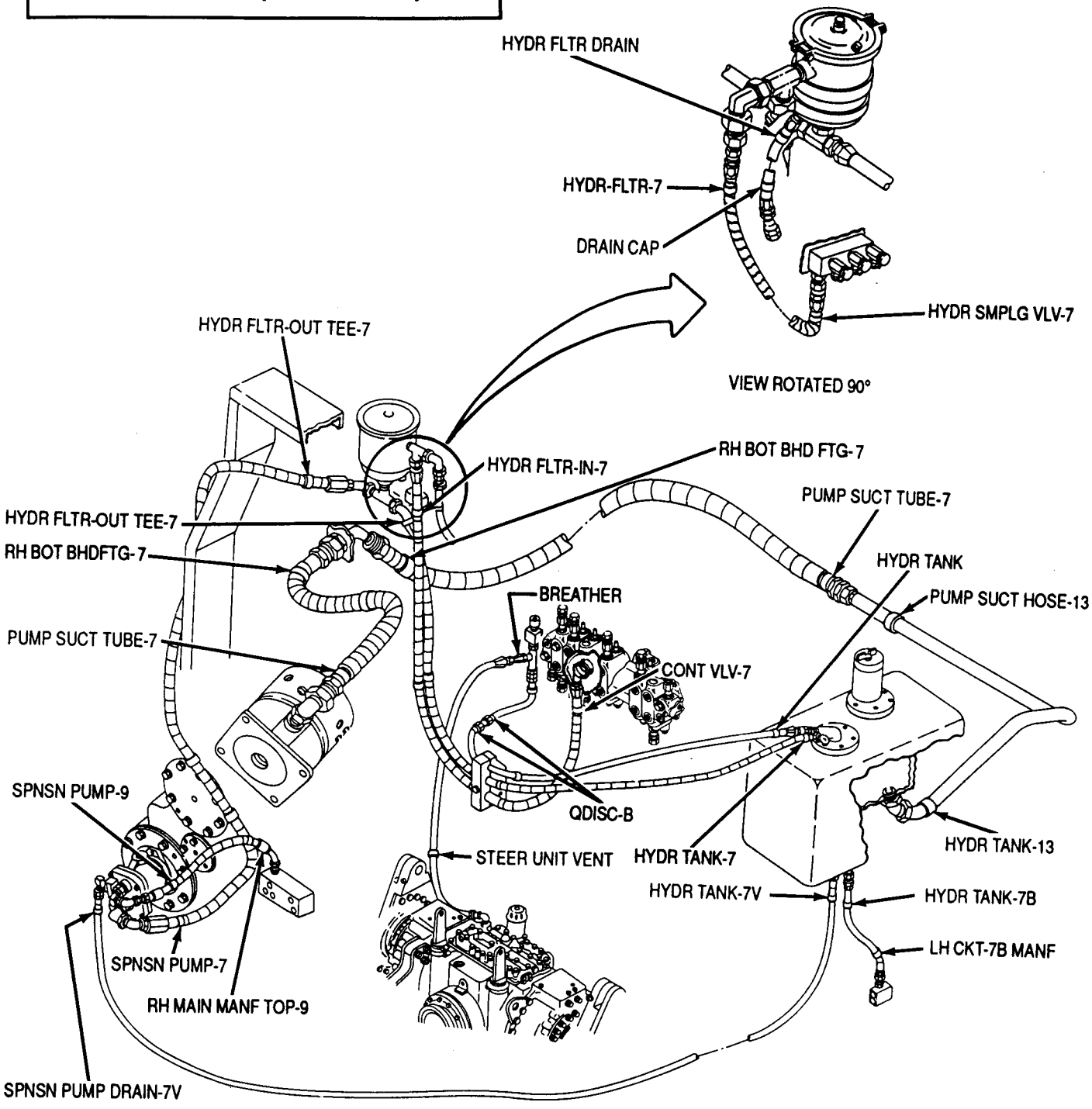
DIRECTIONAL CONTROL VALVE IDENTIFICATION



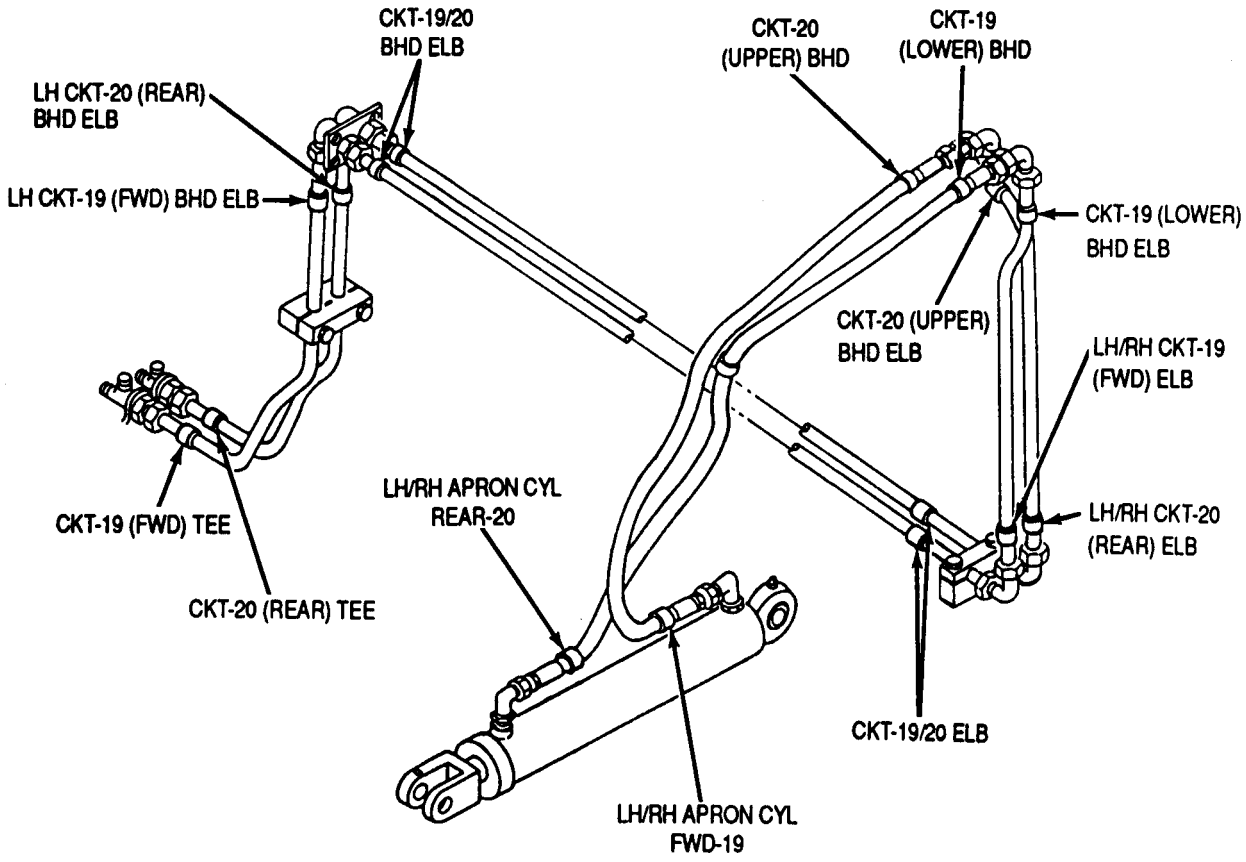
HOSE AND TUBE MARKER BANDS IDENTIFICATION



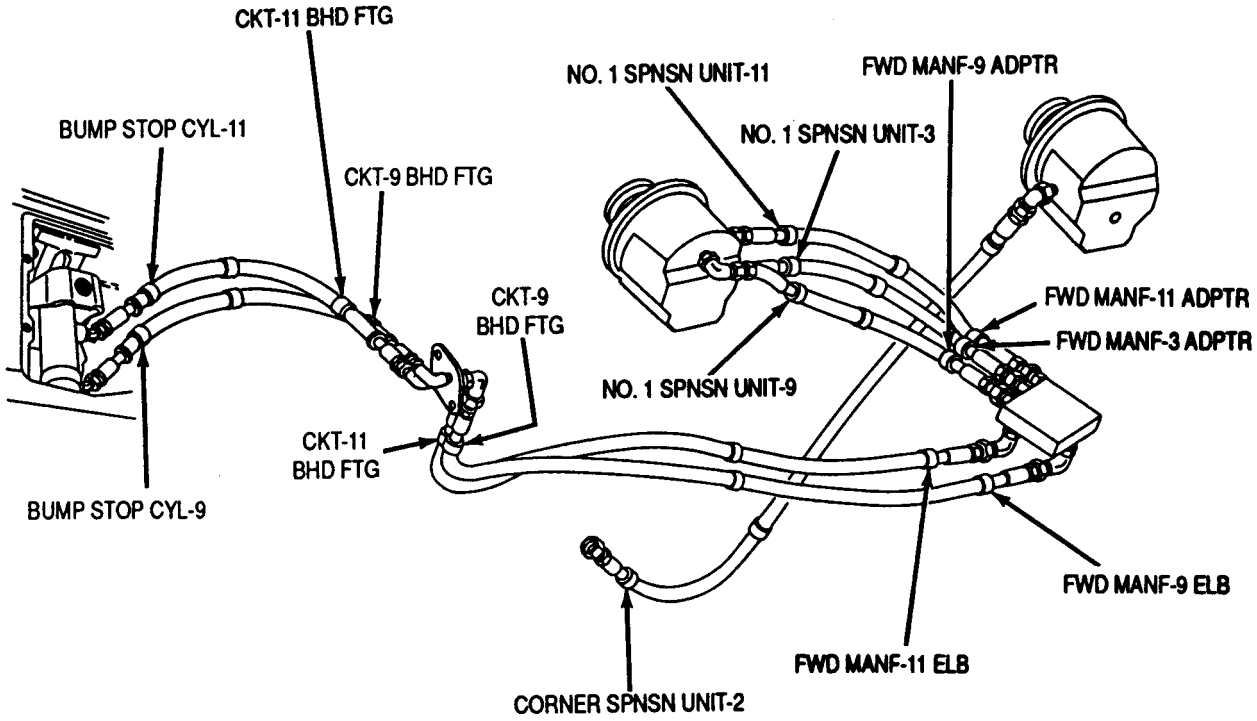
HOSE AND TUBE MARKER BANDS IDENTIFICATION (CONTINUED)



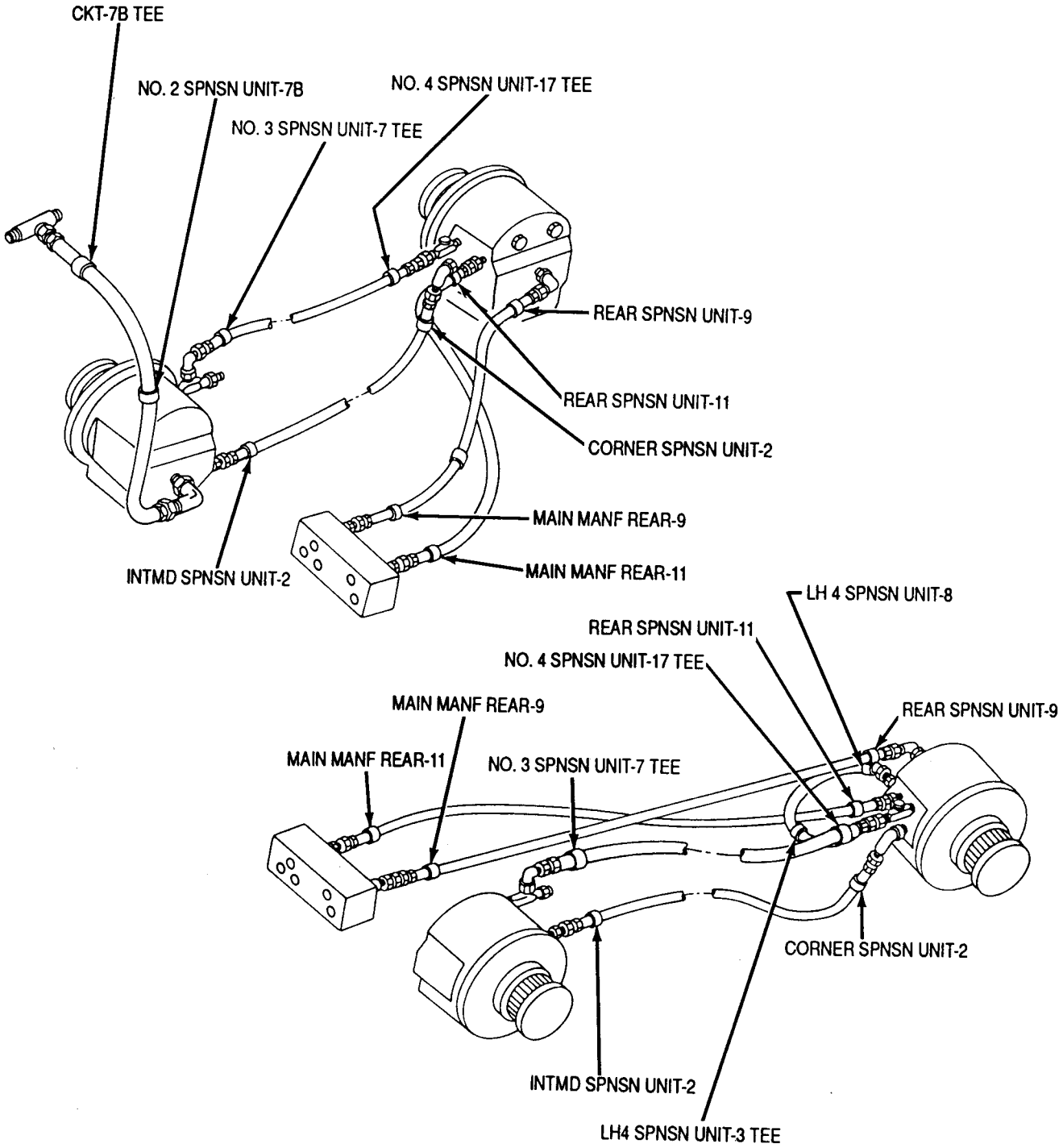
HOSE AND TUBE MARKER BANDS IDENTIFICATION (CONTINUED)



HOSE AND TUBE MARKER BANDS IDENTIFICATION (CONTINUED)



HOSE AND TUBE MARKER BANDS IDENTIFICATION (CONTINUED)



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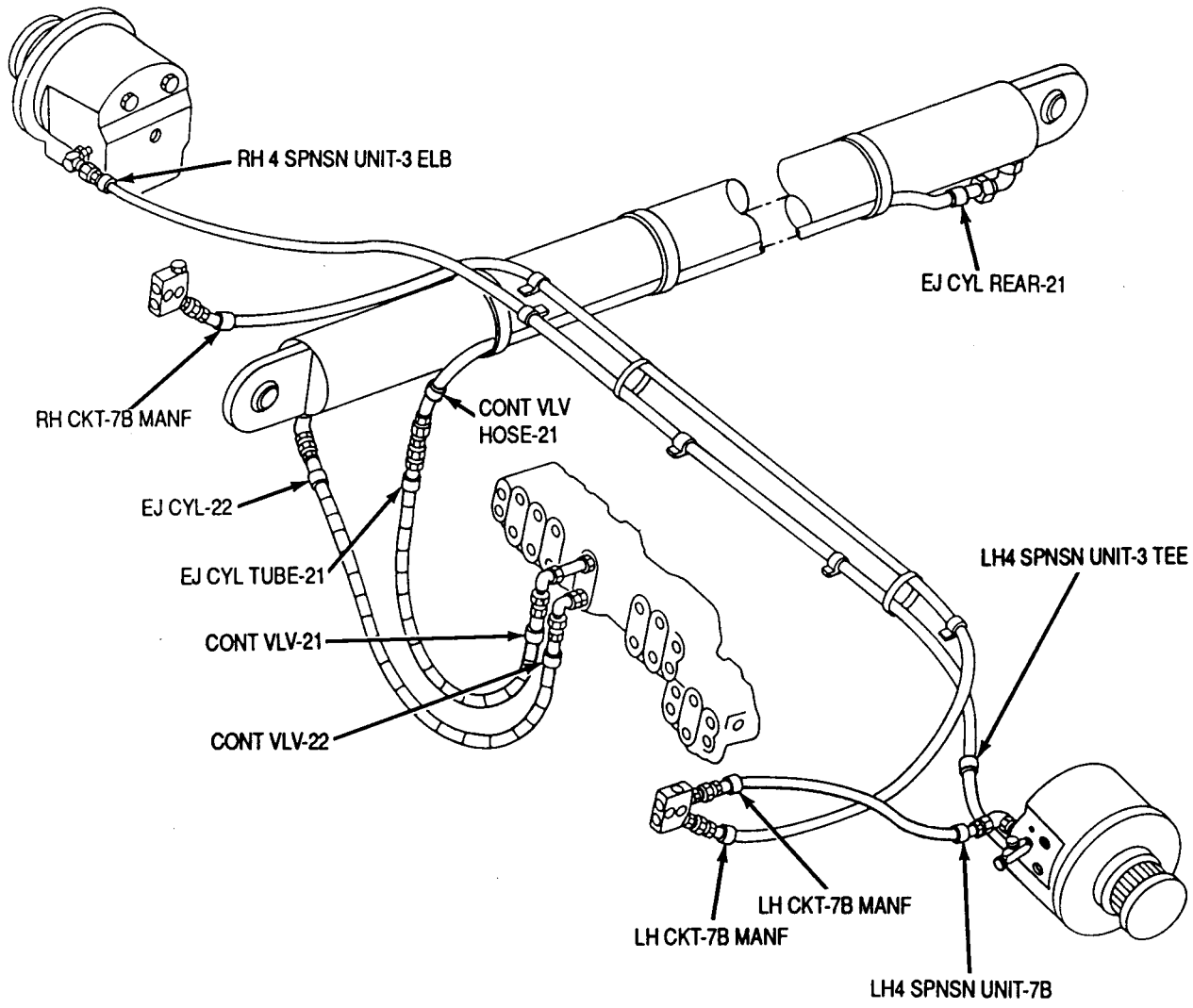

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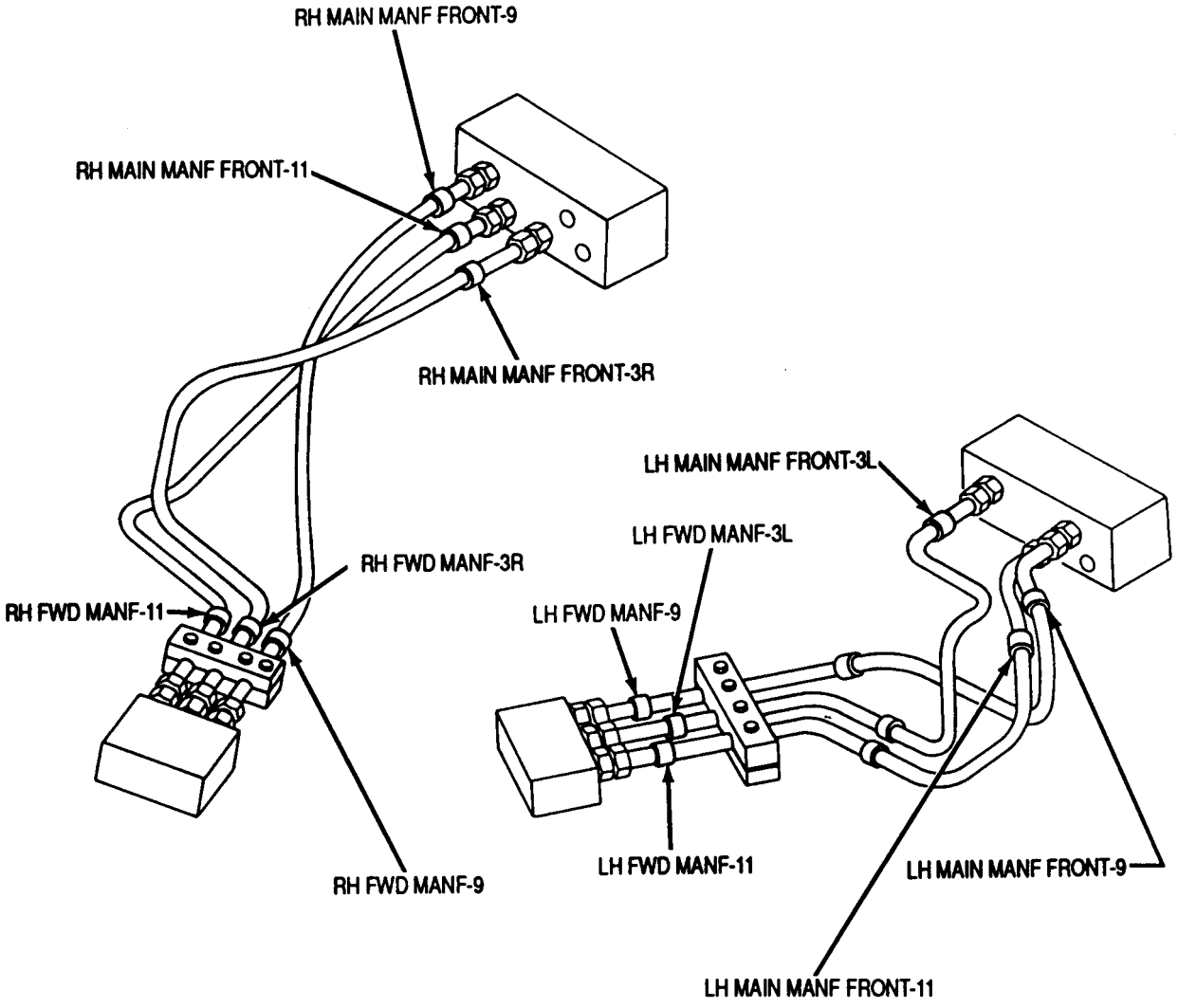

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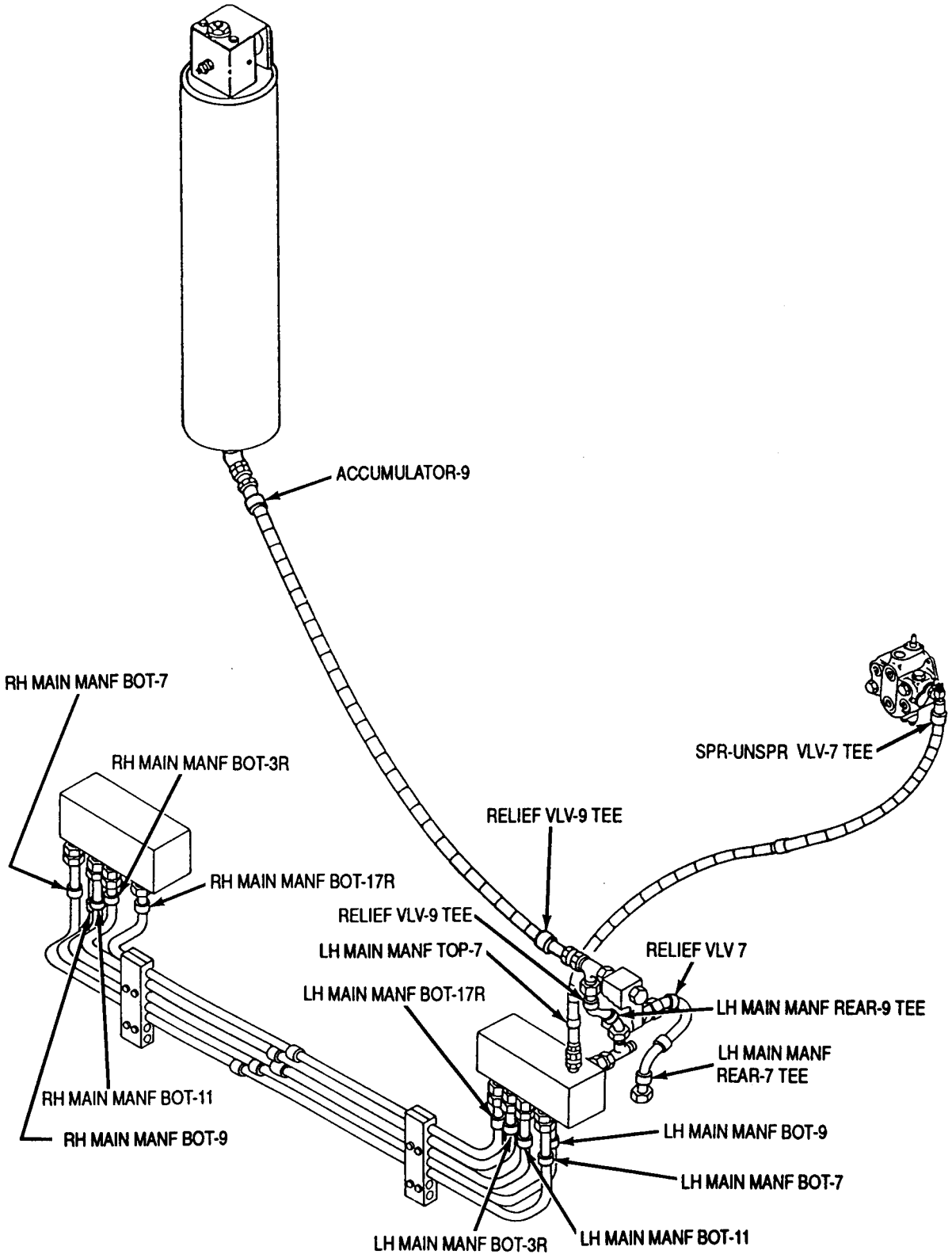

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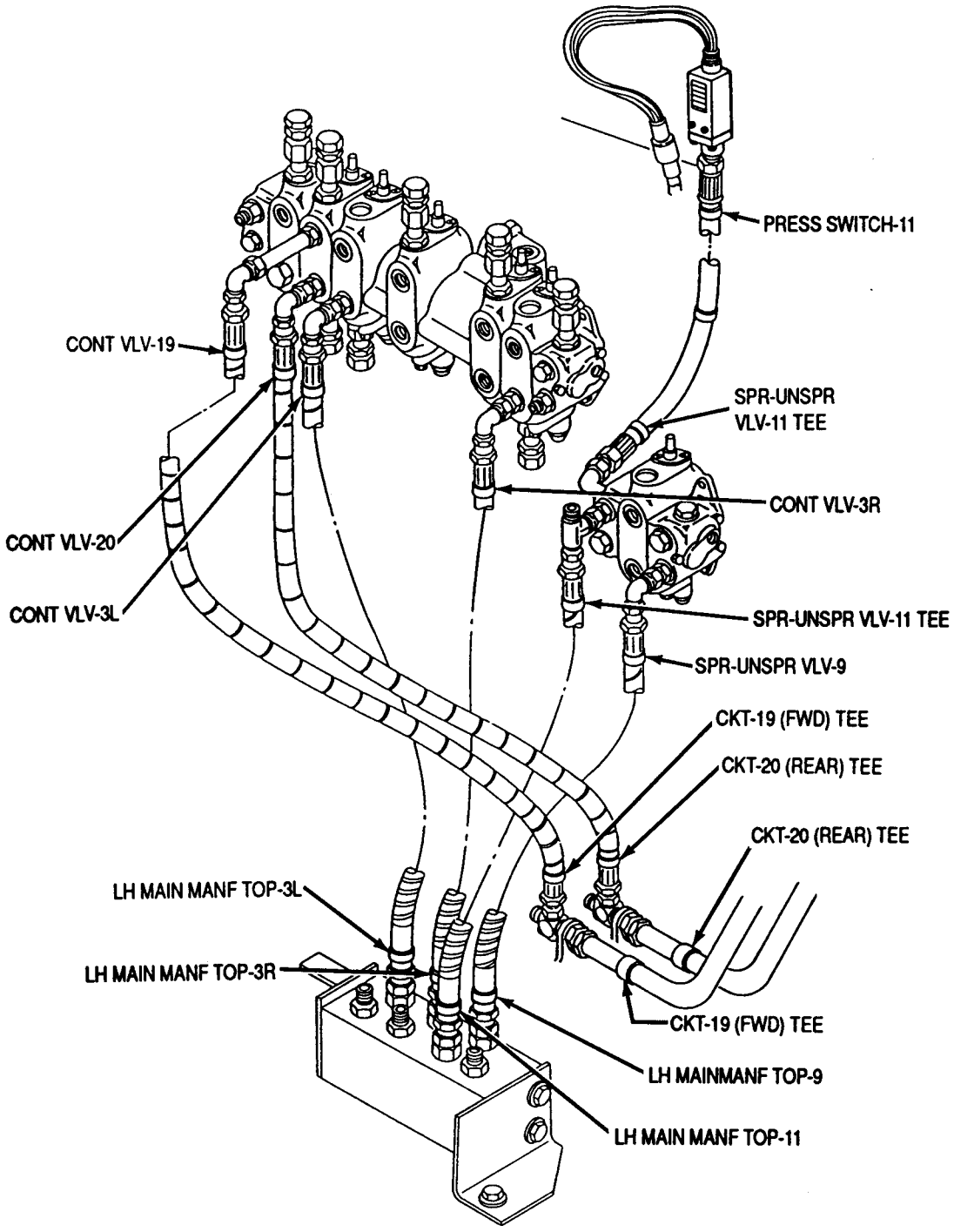

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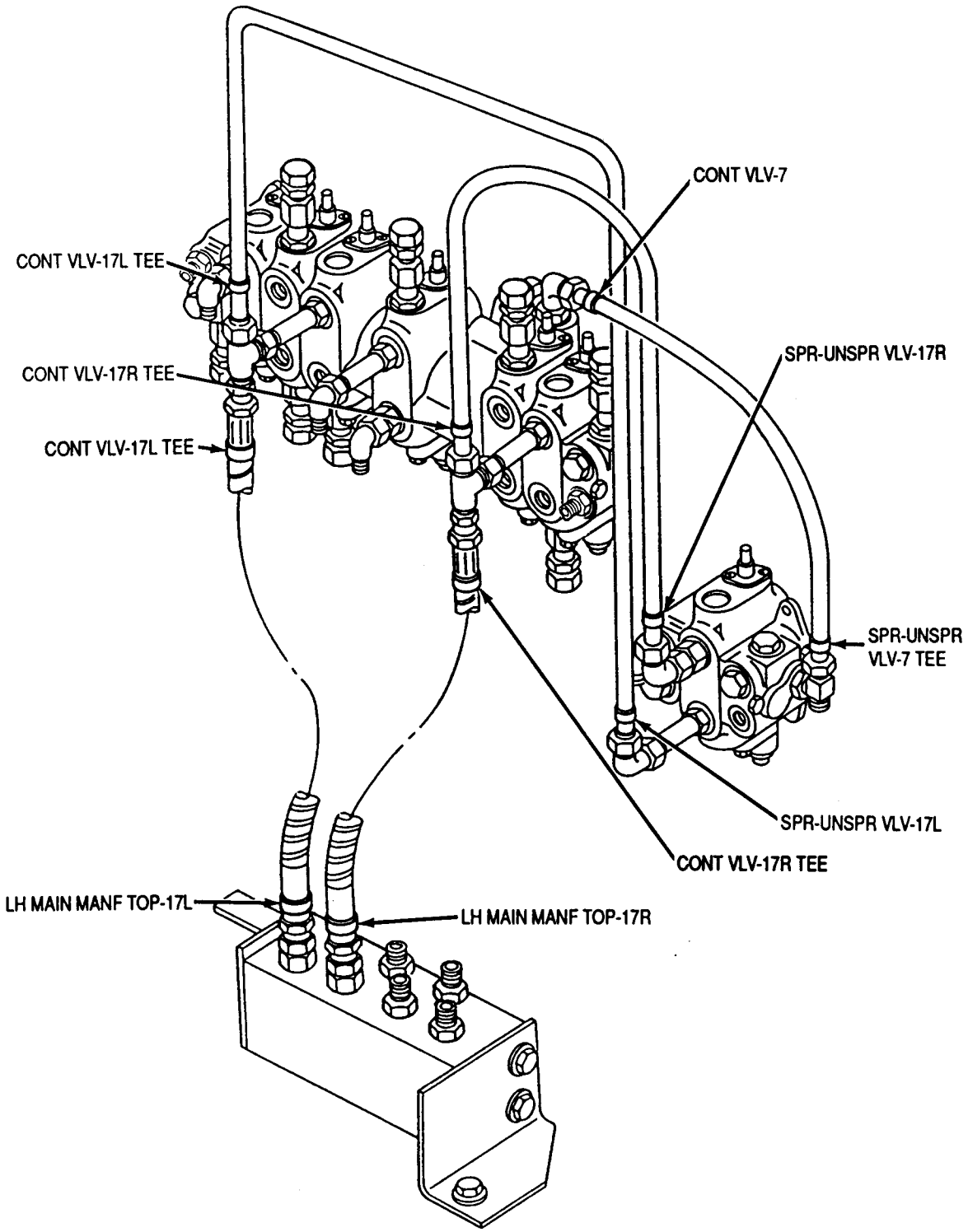

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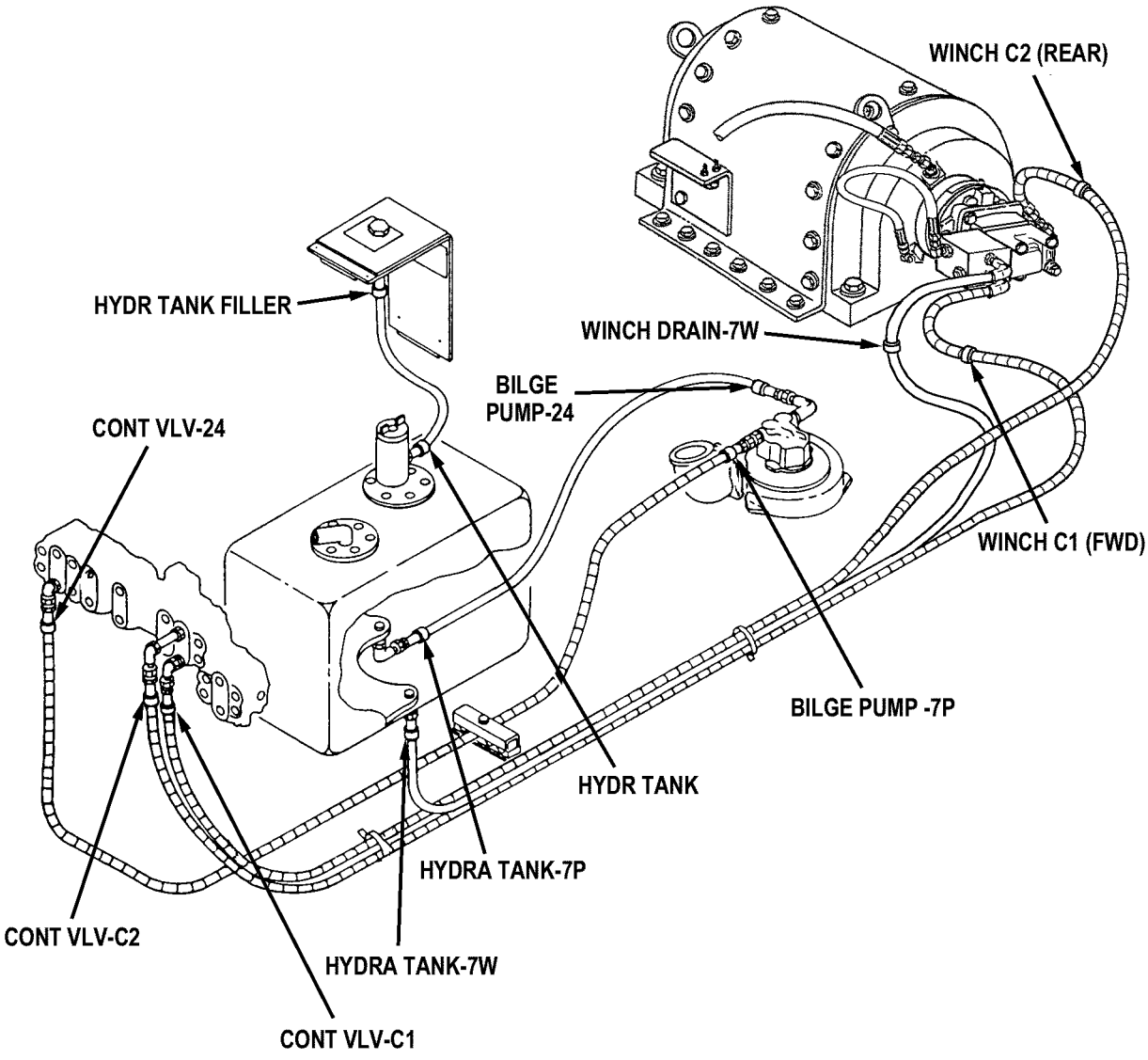

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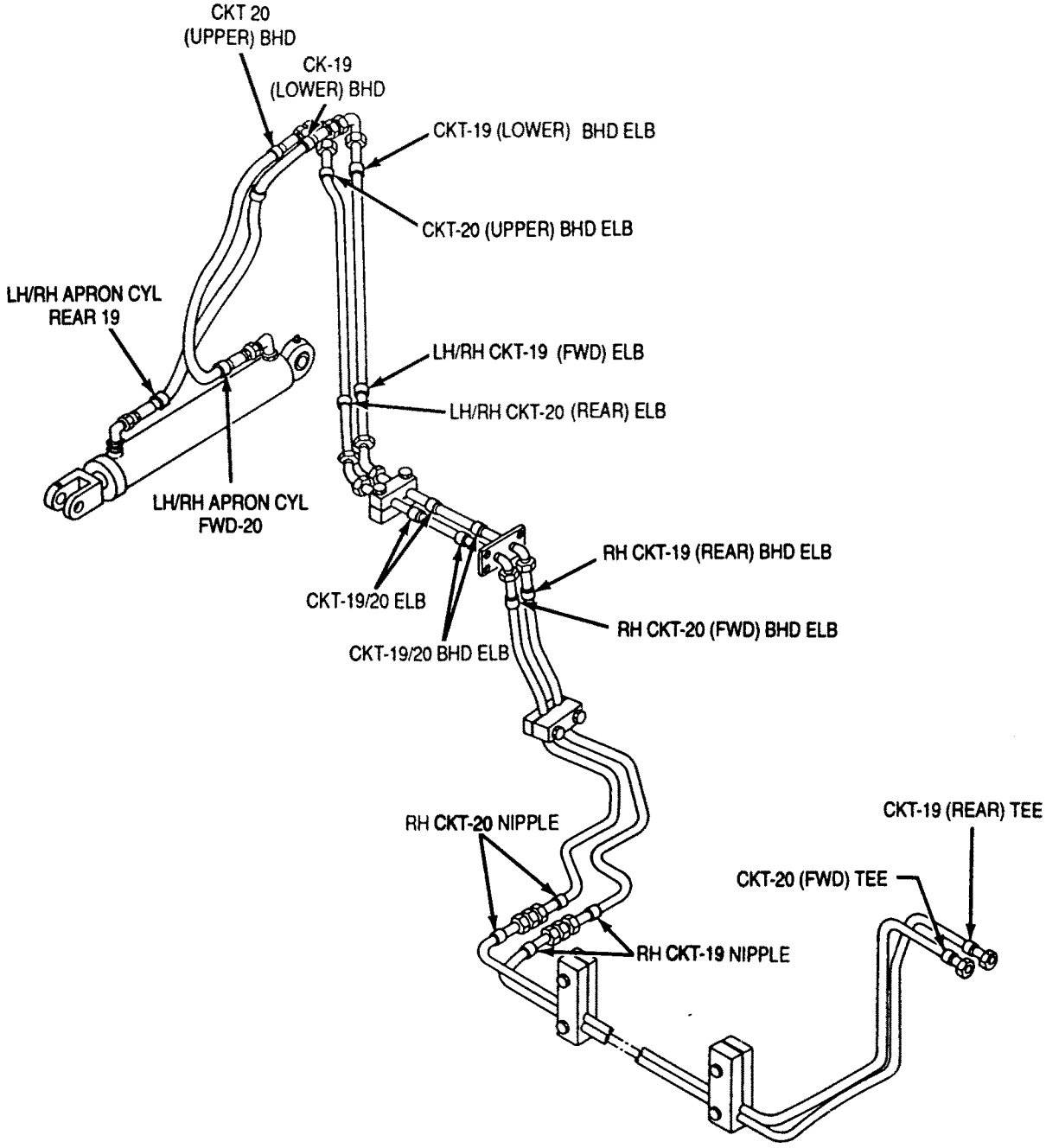

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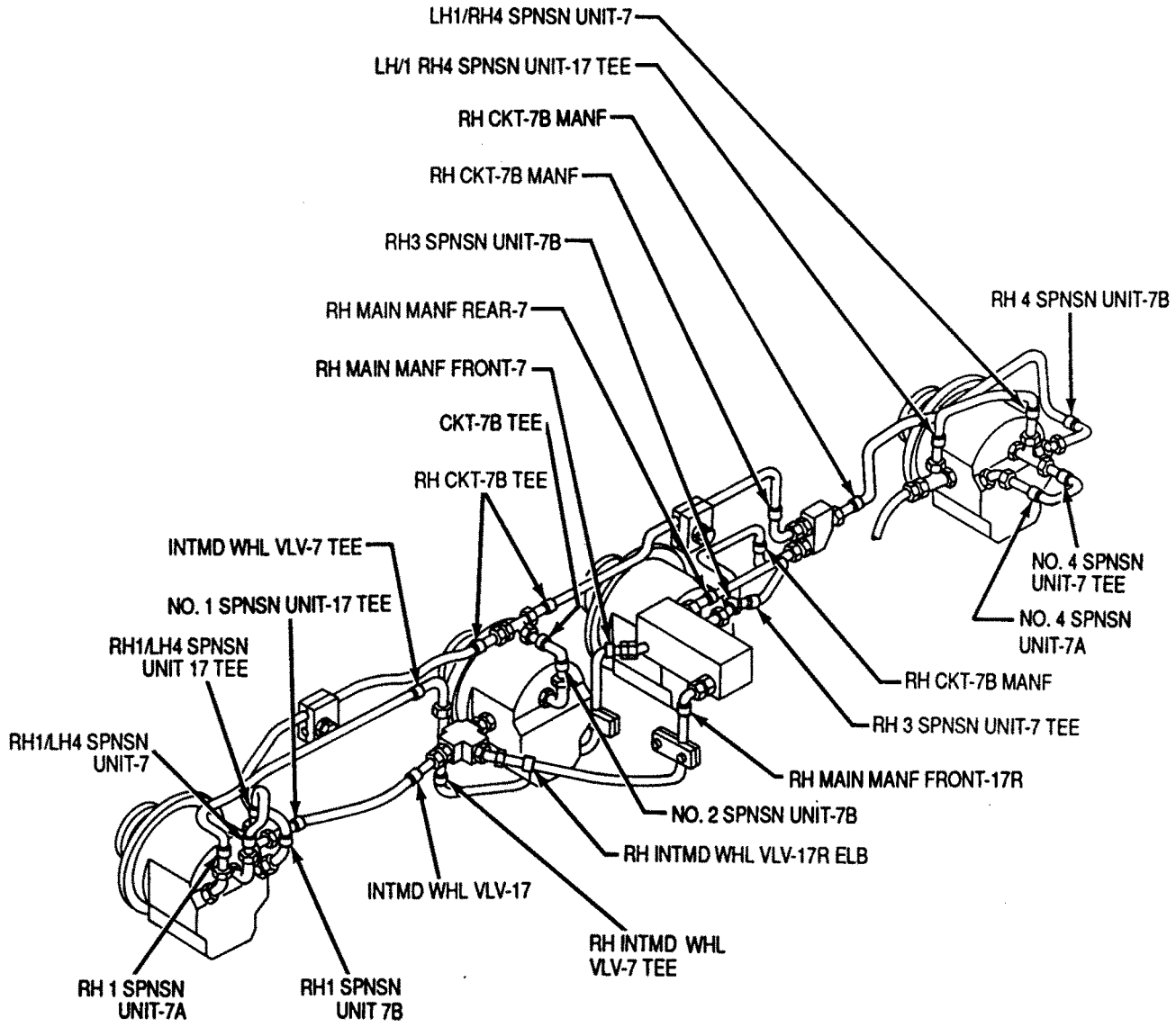

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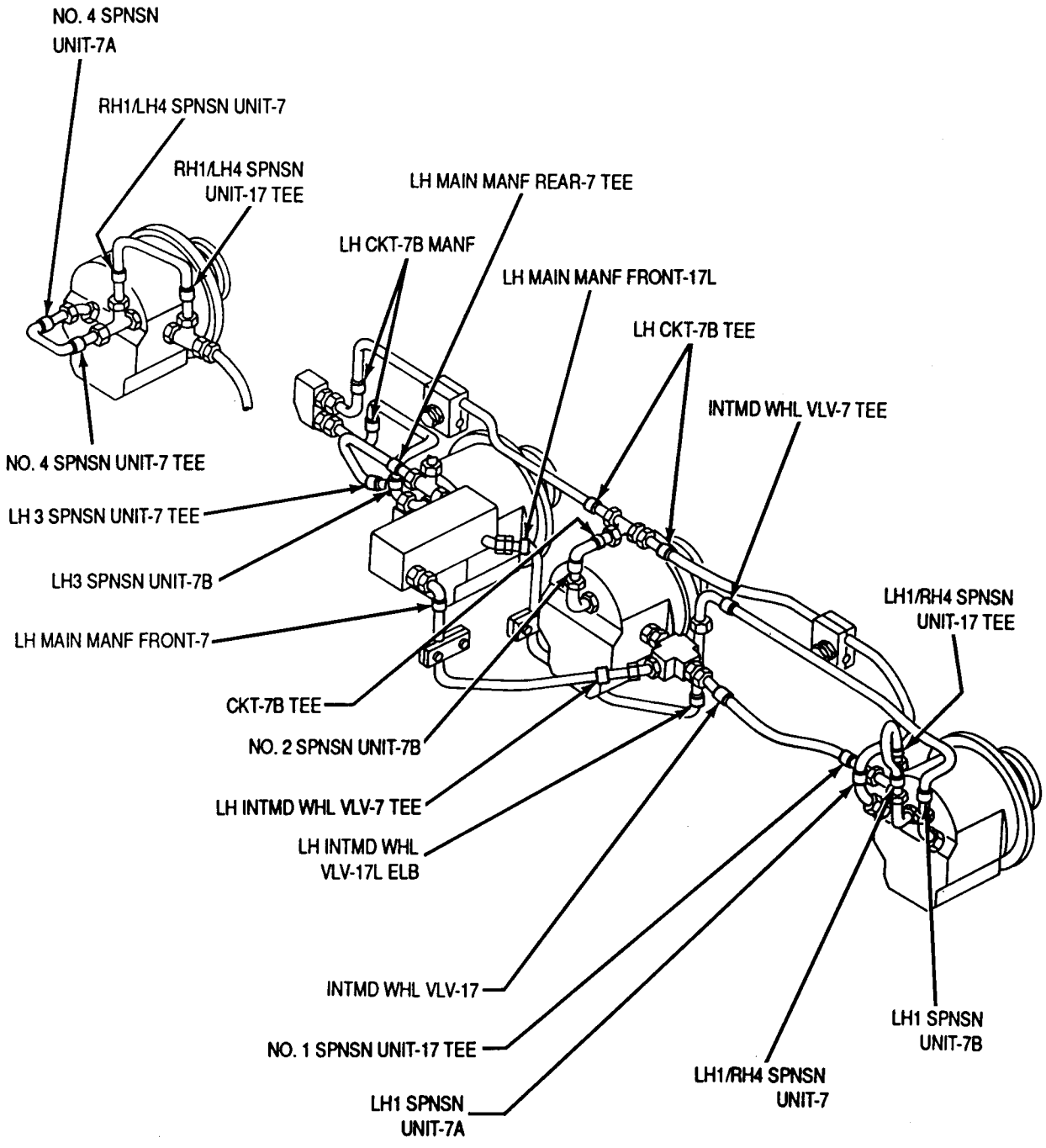

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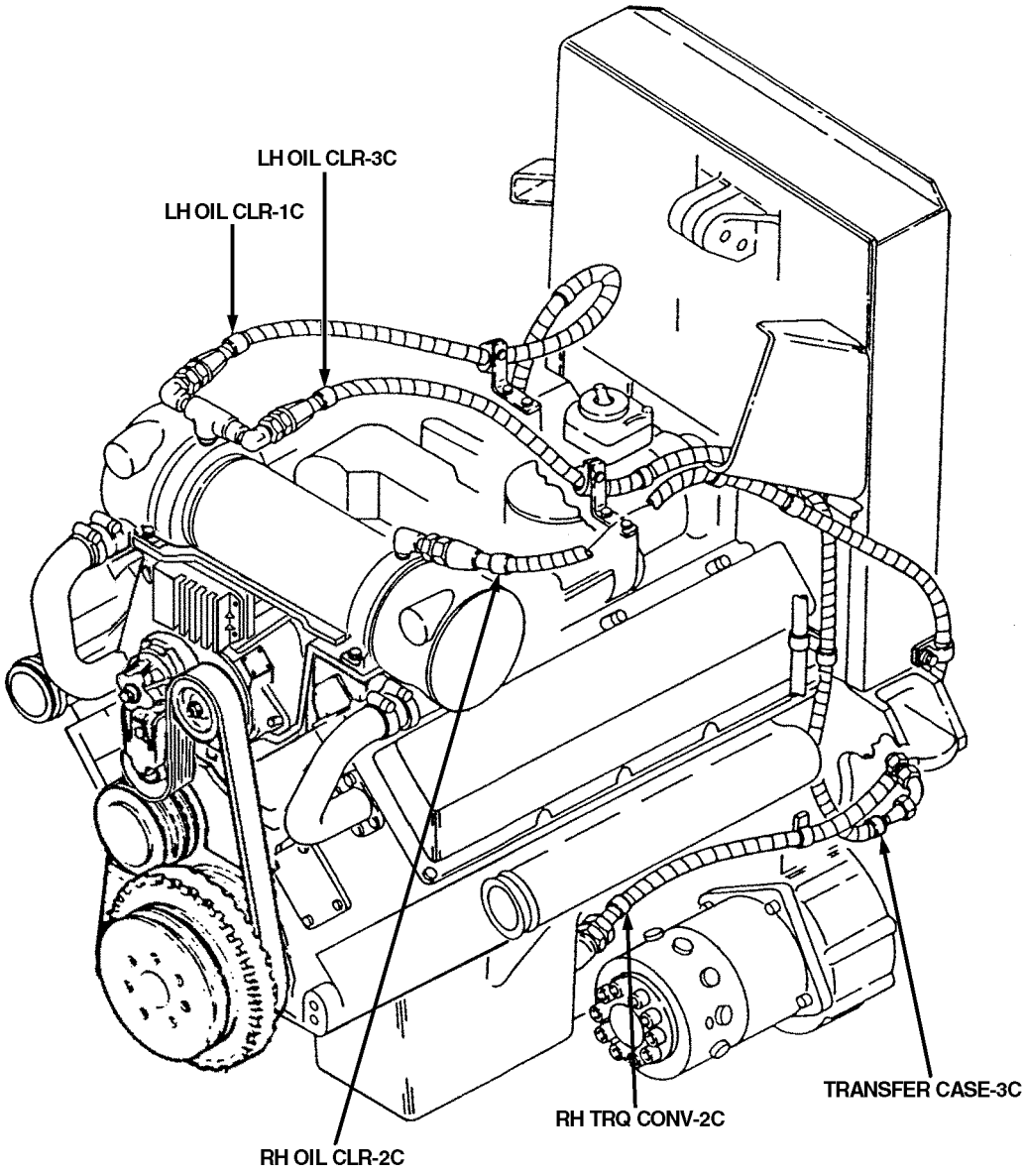

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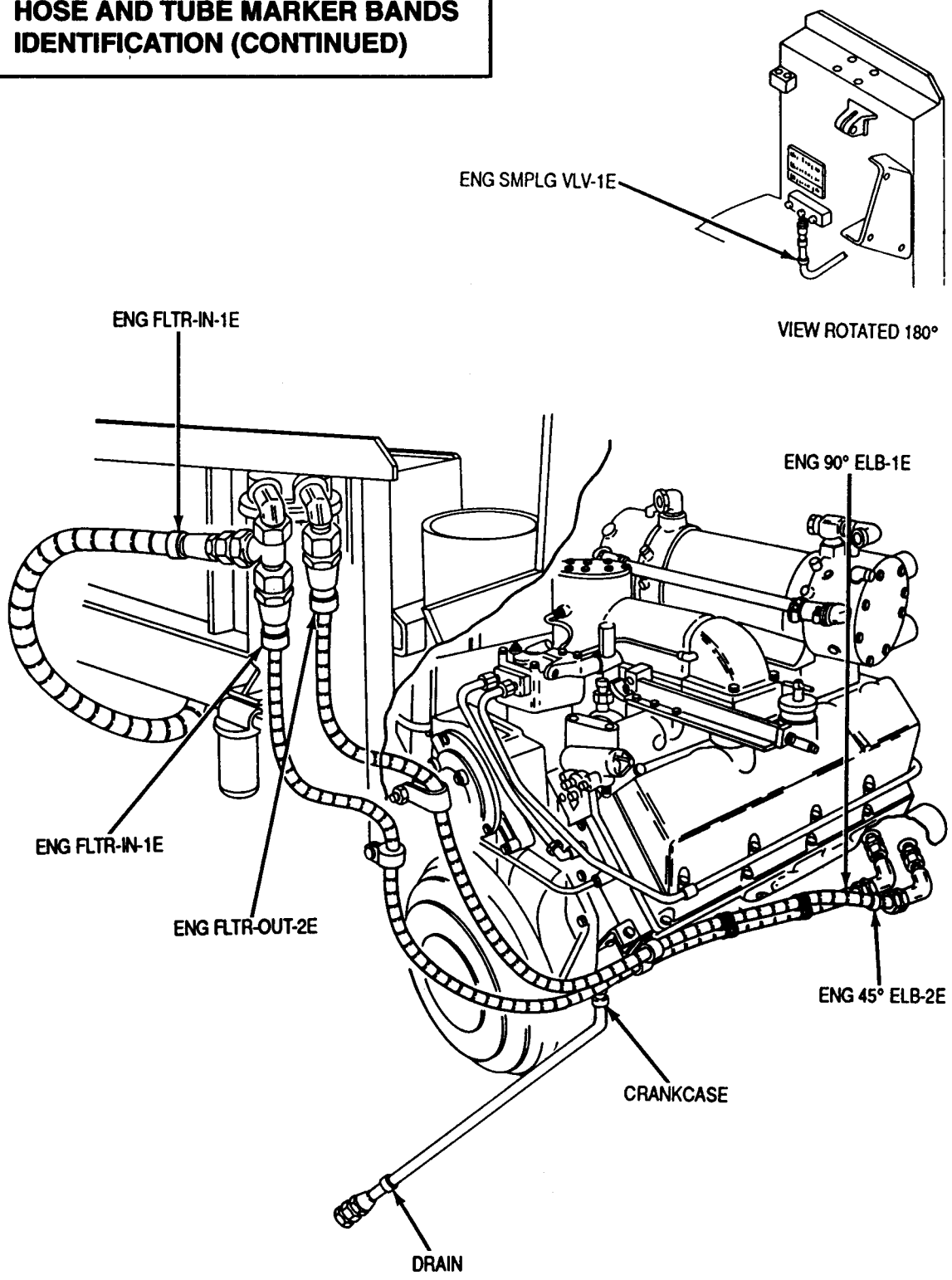

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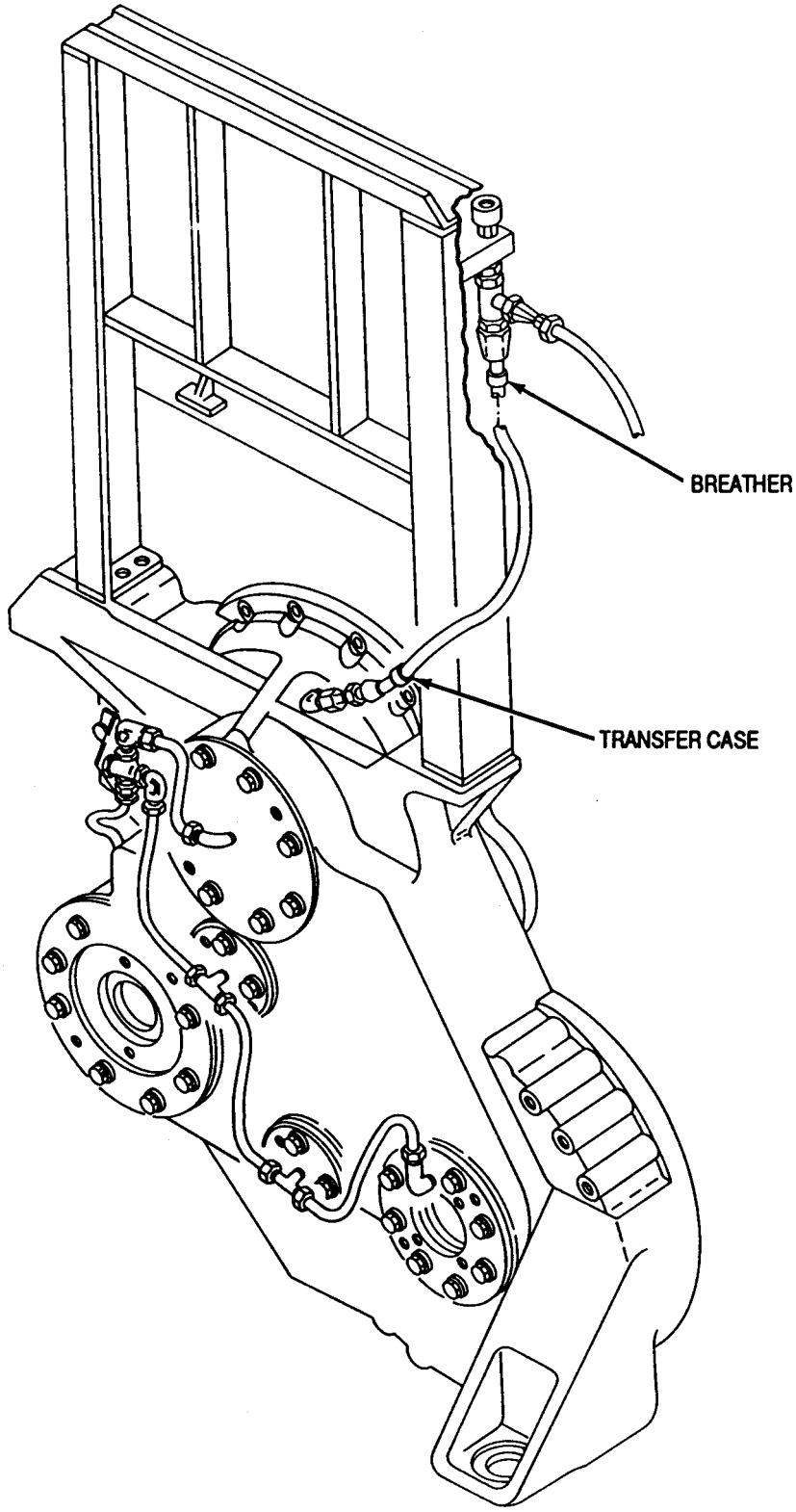

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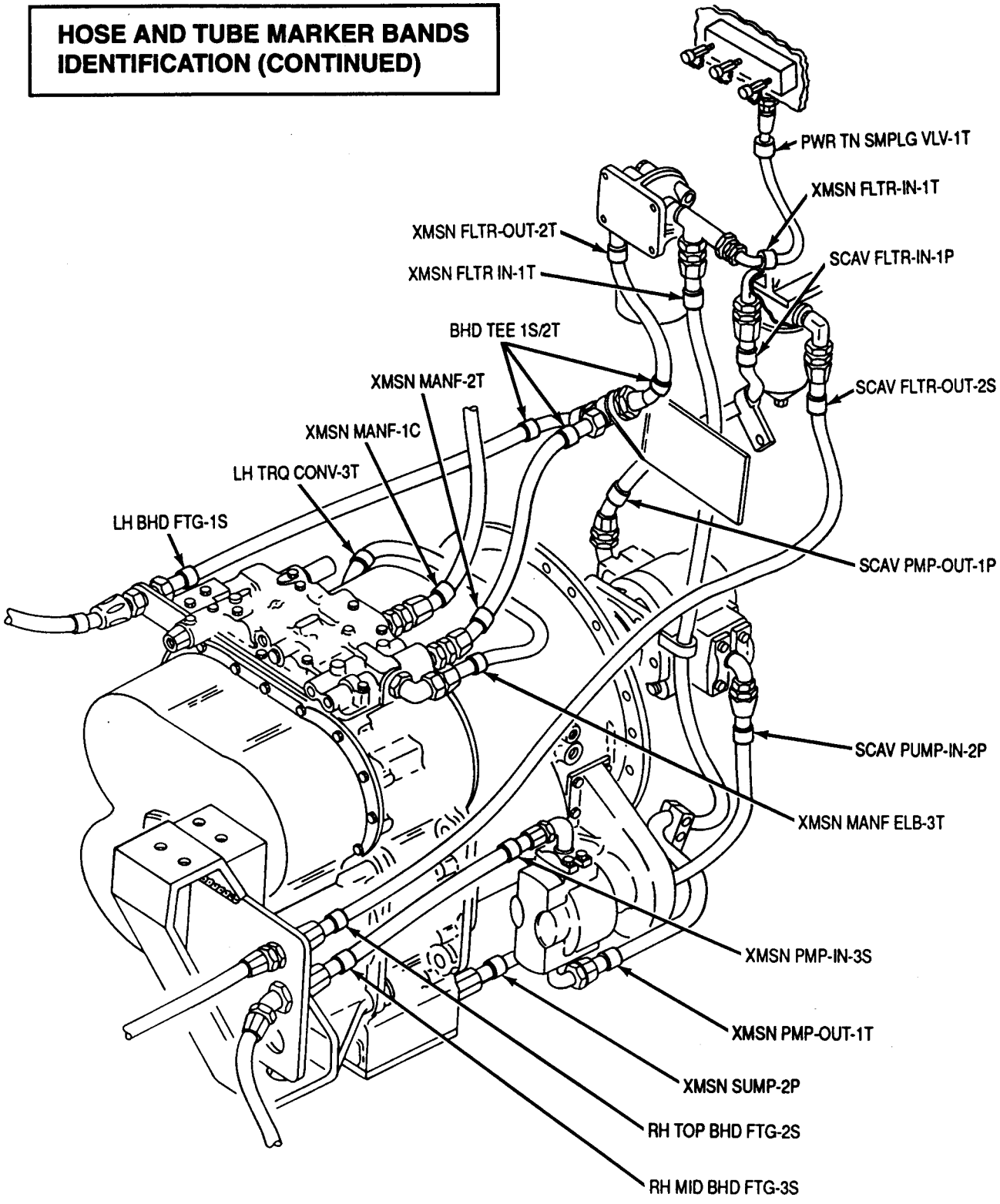

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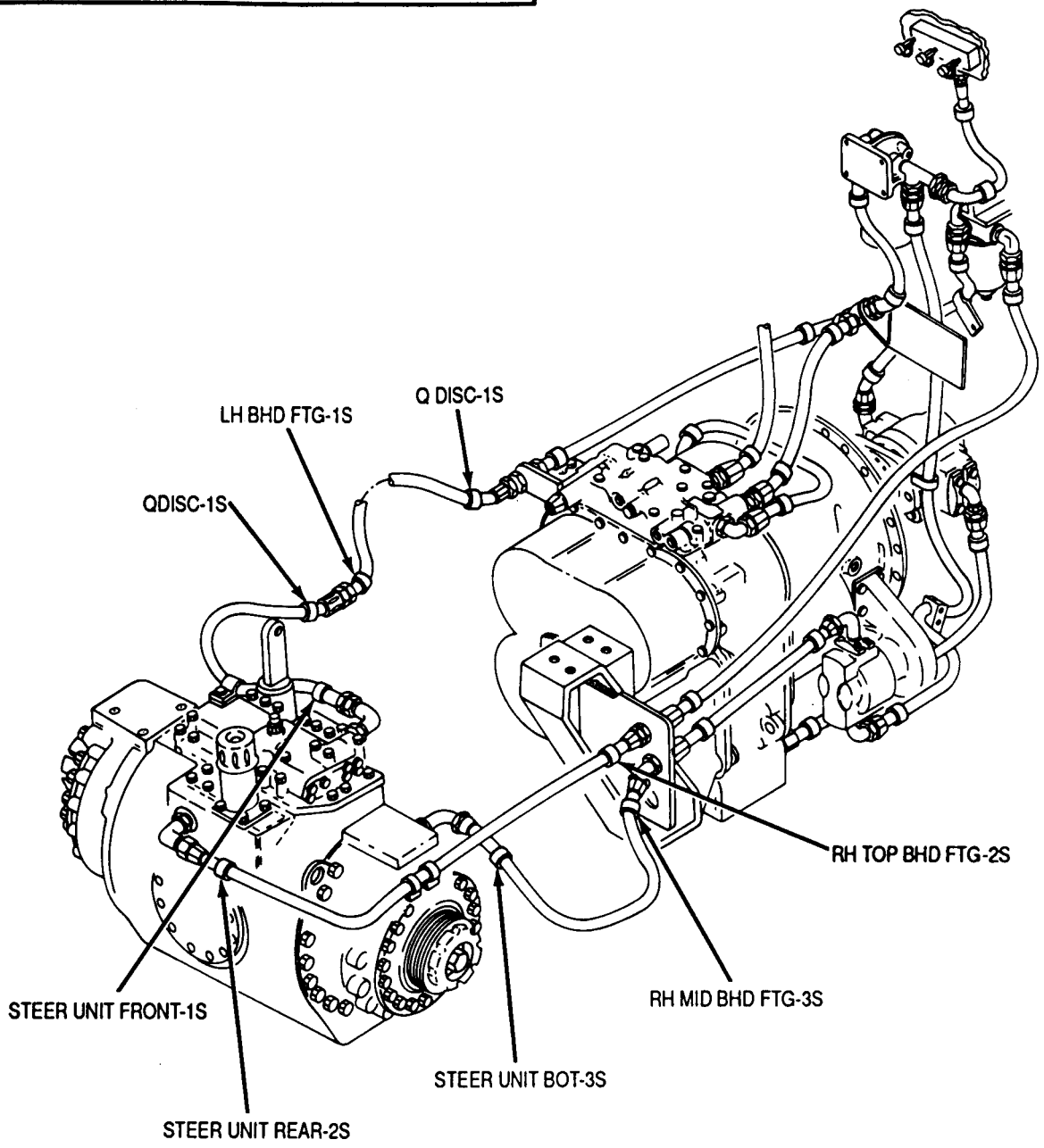

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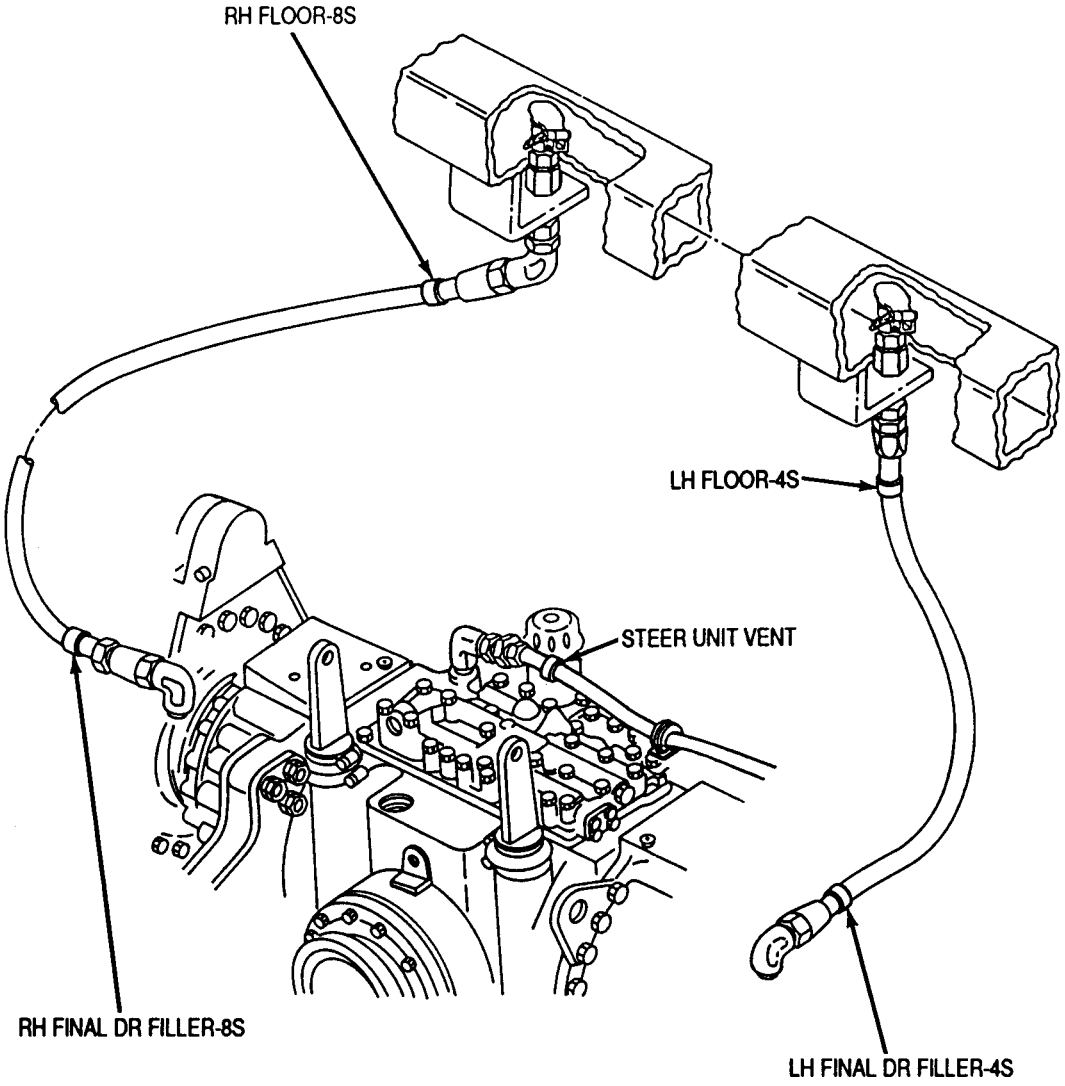
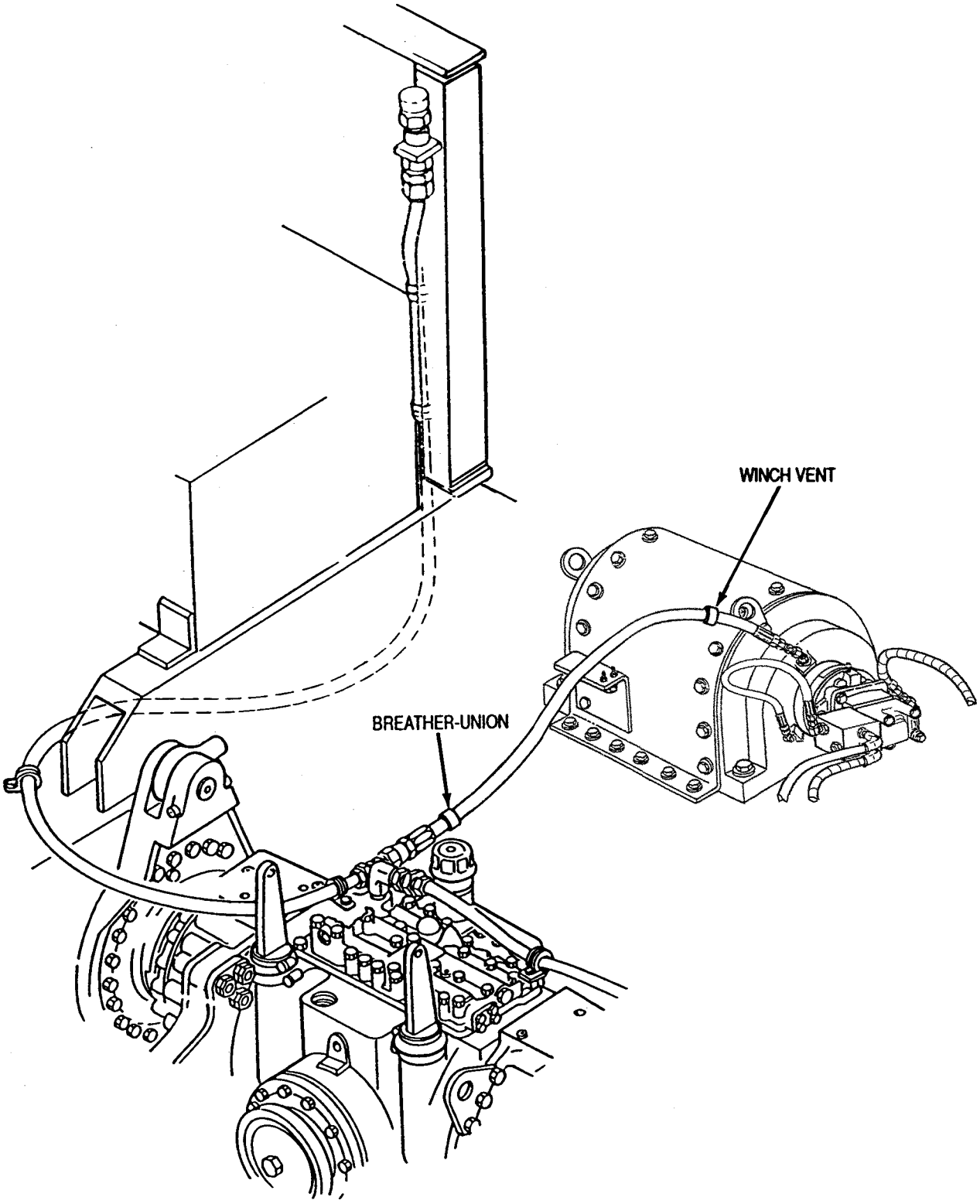
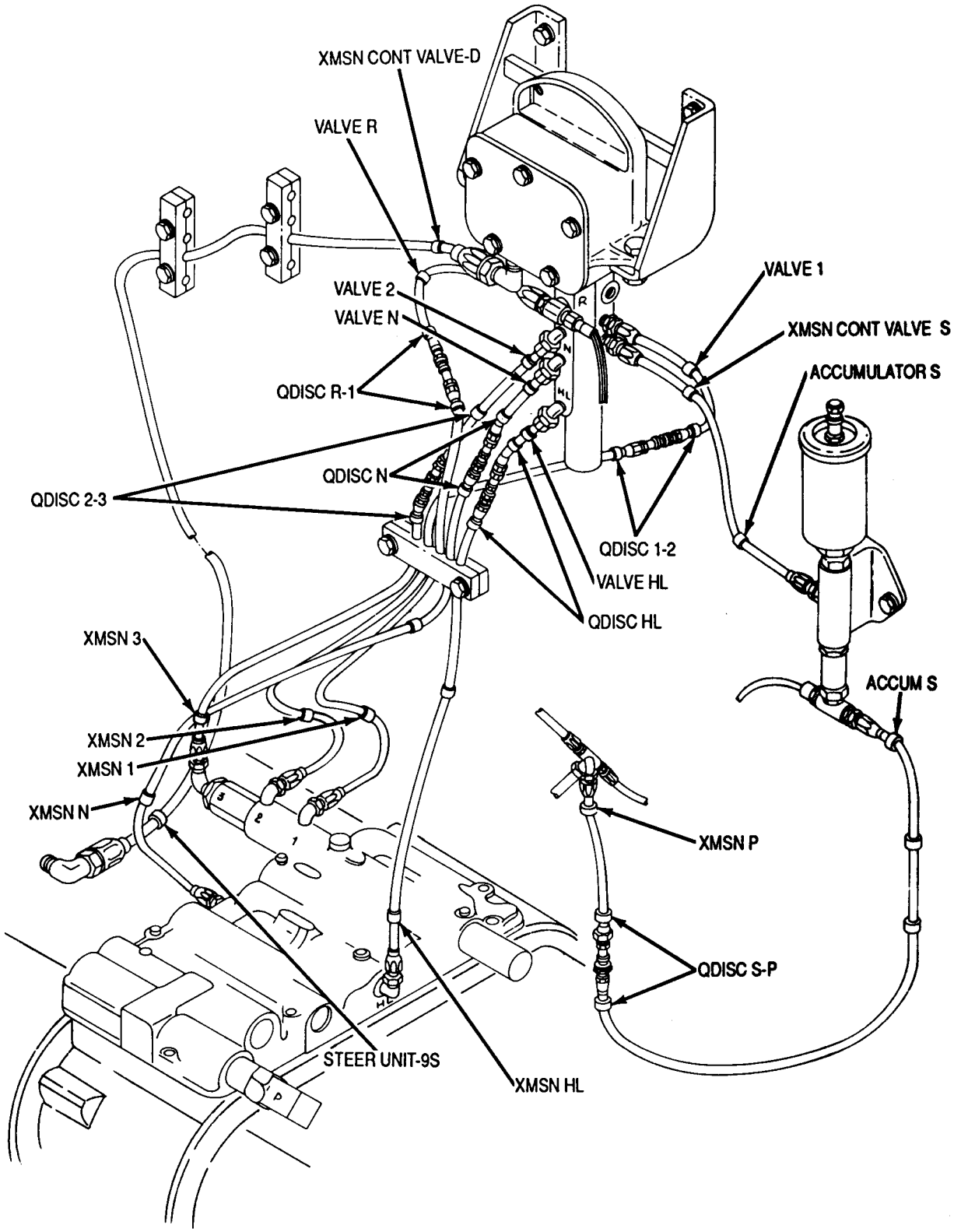


HOSE AND TUBE MARKER BANDS IDENTIFICATION (CONTINUED)



HOSE AND TUBE MARKER BANDS IDENTIFICATION (CONTINUED)



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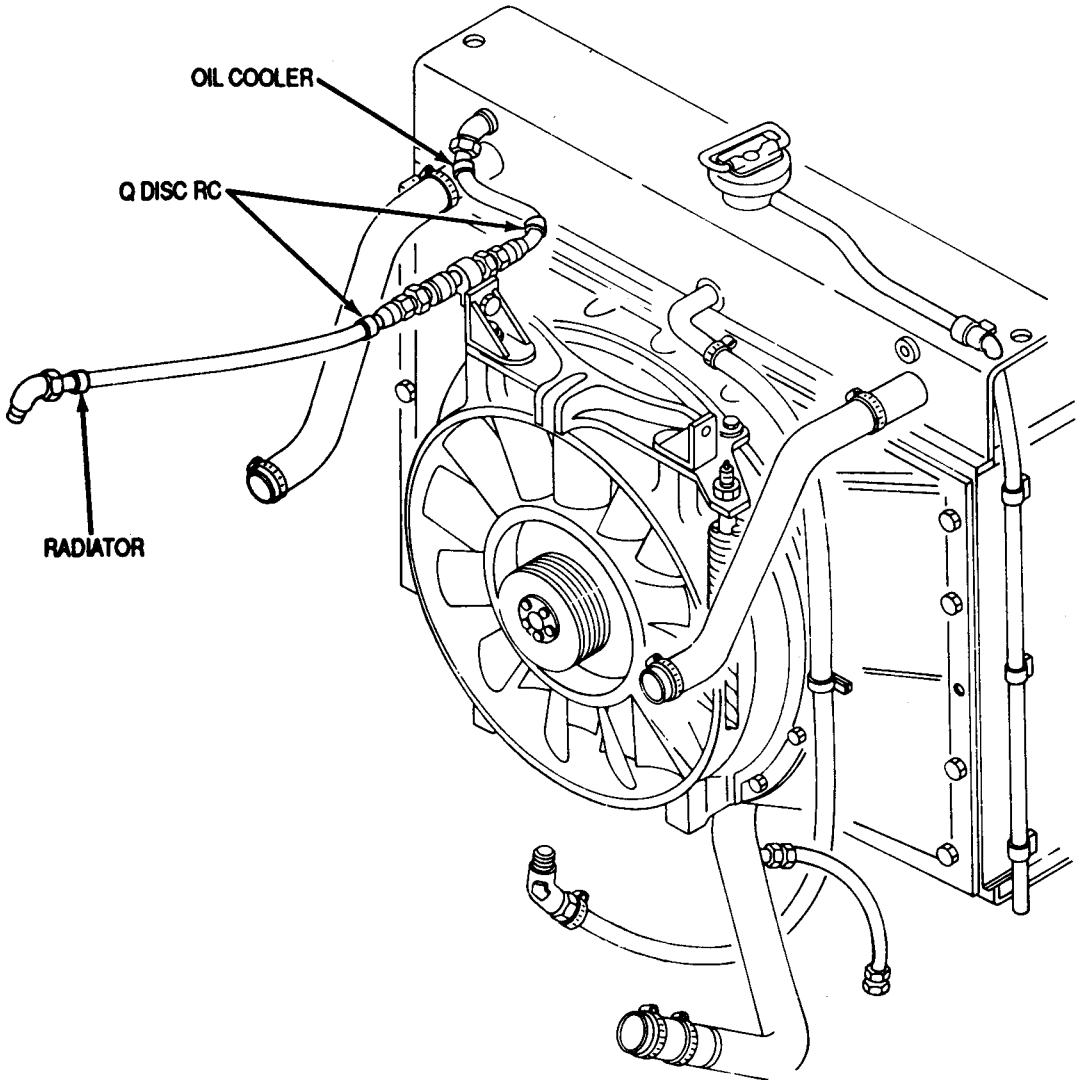

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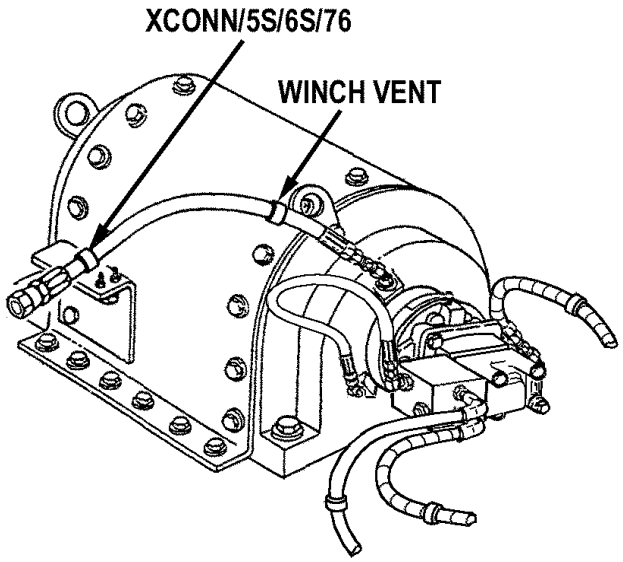


HYDRAULIC CIRCUIT EFFICIENCY TEST

Some procedures in the troubleshooting charts (p 3-123) require an efficiency test of a specific hydraulic circuit. The following procedures explain how to perform the efficiency test. The procedure is to be used for all the hydraulic circuits, so specific valves and hoses are not indicated. The specific troubleshooting step will indicate the following information that should be used with the efficiency test:

- Hose that should be disconnected and plugged.
- Control valve fitting that will be connected to the test hose assembly.
- Control lever that is to be activated, and in which direction.
- Pressure reading that should be indicated.

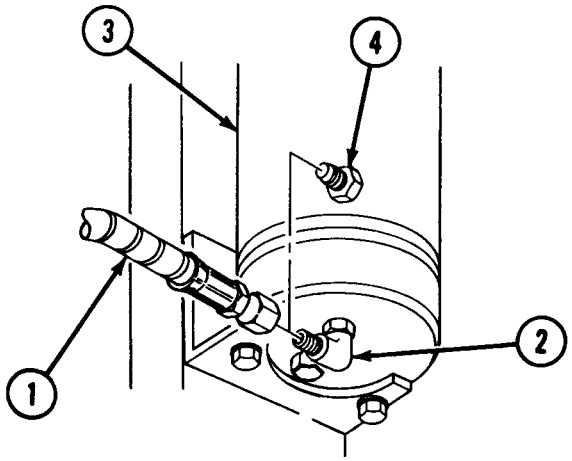
Note

The troubleshooting charts will indicate specific hoses, valves, and levers used in these procedures.

A Stop vehicle engine (TM 5-2350-262-10) and relieve hydraulic pressure (p 3-82).

B Check nitrogen charge of main hydraulic accumulator (p 4-467) or replace accumulator (p 4-471).

C Disconnect ACCUMULATOR-9 hose (1) from elbow (2) at bottom of main hydraulic accumulator (3). Install MS51518B8 plug (4) in hose (1).



HYDRAULIC CIRCUIT EFFICIENCY TEST – CONTINUED

D Connect 12355353 tube assembly (1) to elbow (2).

E Install MS51500A8-4 adapter (3), 10F0-1-3T needle valve (accumulator dump valve) (4), and adapter (3) on tube (1).

F Disconnect hose (5) (to be identified in troubleshooting step) from elbow (6), and install MS51518B8 plug (7) on hose (5). If port 21 is tested, use MS51518B10 plug.

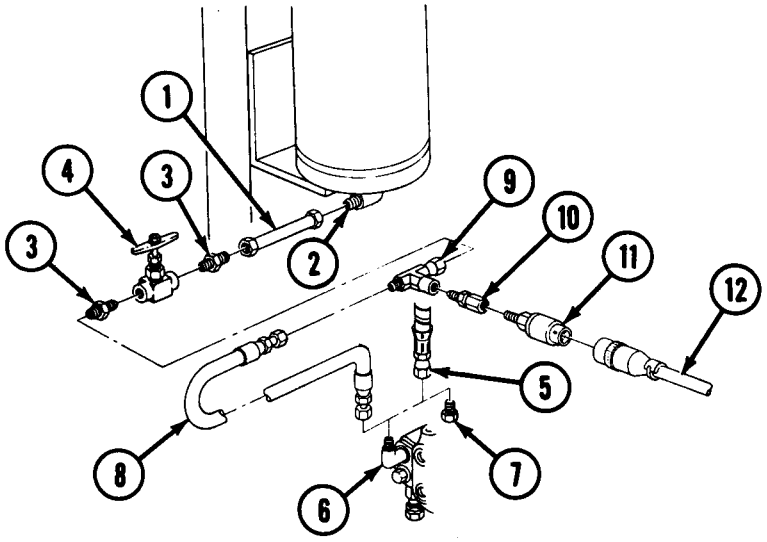
G Install 12355352 hose assembly (8) on 12258880 tee (9) and elbow (6) of control valve to be tested. If port 21 will be tested, use 10-8070123-C reducer with hose (8).

H Connect 12258880 tee (9) to adapter (3). Install 4-4F6BX-S adapter (10) and 6685-01-193-1733, 10,000 psi (68,950 kPa), transducer (11) on tee (9).

I Connect W4 cable (12) from VTM to transducer (11).

J Note how long it takes for hydraulic pressure to reach the pressure required by the specific troubleshooting steps:

- Open needle valve (4) to its full open position.
- Start vehicle engine (TM 5-2350-262-20) and run at 1,000 rpm.
- Move control lever (to be specified in troubleshooting step), and note when VTM indicates the required pressure. When required pressure is reached, RELEASE CONTROL LEVER AND SHUT OFF ENGINE (TM 5-2350-262-20).
- Fully close needle valve (4) 1/2 turn, and move control lever (same as above lever) to its original position to slowly discharge the main accumulator.



GENERAL SUSPENSION TROUBLESHOOTING INFORMATION

A PRESSURE CHECKS: The 2,800 to 2,900 psi (19,306 to 19,996 kPa) maximum suspension system pressure is controlled by an adjustment on the compensating pump. This adjustment should always be checked (step 1, MALFUNCTION 43) prior to performing suspension system pressure checks. The suspension system pressure checks (p 3-118) can then be performed when specified in the troubleshooting procedures.

B SUSPENSION SYSTEM RELIEF VALVE: The sole function of this valve is to protect the suspension hydraulic circuit in the event that the pressure control device on the pump should fail. This valve is set to open at approximately 3,800 psi (26,201 kPa).

C DESCRIPTION OF THE SPRUNG SUSPENSION CIRCUIT: When the SPRUNG/UNSPRUNG control lever is in the SPRUNG position, the operator has no control over the suspension. The height of the vehicle is automatically controlled by leveling valves in the corner actuators. Each corner actuator and its paired intermediate actuator is independent of the other three corners (fully independent suspension). Therefore, the SPRUNG suspension system can be considered as consisting of five major areas as follows:

1. The right rear pair of actuators.
2. The left rear pair of actuators.
3. The right front pair of actuators, with the right front bump stop cylinder.
4. The left front pair of actuators, with the left front bump stop cylinder.
5. The power system: pump, suspension relief valve, SPRUNG/UNSPRUNG valve, and the main accumulator.

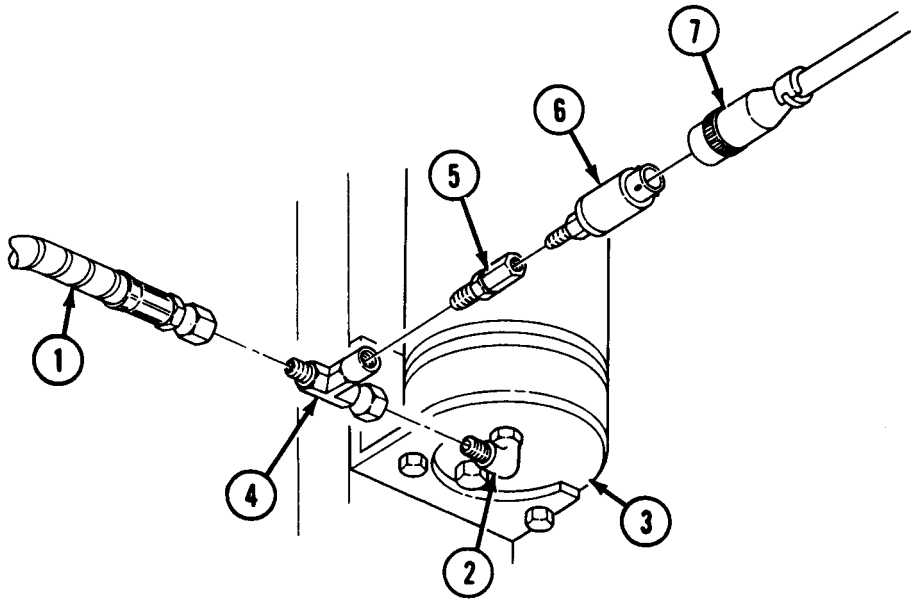
When the suspension will not raise, the most probable cause is excessive internal leakage in one or more components. The troubleshooting procedures eliminate these major areas from the circuit one by one to locate the fault.

D DESCRIPTION OF THE UNSPRUNG SUSPENSION CIRCUIT: When the SPRUNG/UNSPRUNG control lever is placed in the UNSPRUNG position, the operator assumes control of the four front actuators. However, the four rear actuators remain in an automatic mode. Hydraulic valves in the corner actuators shift position to cause all four rear actuators to share a common pressure line (the two rear corners are no longer independent). This is necessary so the front of the vehicle can be tilted (one front side of the vehicle lowered more than the other side). Therefore, problems can develop in either the front or rear areas of the suspension hydraulic system that could affect performance in the SPRUNG mode only, the UNSPRUNG mode only, or both modes.

E OPERATIONAL VEHICLE: The vehicle should be considered operational if it will rise within 2 minutes of engine start and will stay up long enough to perform its mission.

SUSPENSION SYSTEM PRESSURE CHECKS

Perform the following procedure when it is specified in the troubleshooting charts (p 3-123).



A Connect STE/ICE-R transducer to main accumulator:

- Disconnect hose (1) from elbow (2) on bottom of main accumulator (3).
- Install 12258880 tee (4) on elbow (2) on bottom of main accumulator (3). Connect hose (1) to tee (4).
- Install 4-4F6BX-S adapter (5) on tee (4). Install 6685-01-193-1733, 10,000 psi (68,950 kPa) transducer (6) on adapter (5). Connect W4 cable (7) from VTM to transducer (6).

B Place the SPRUNG/UNSPRUNG control lever in the SPRUNG position unless otherwise specified.

C Start engine (TM 5-2350-262-10) and set at idle, 750 to 850 rpm, and observe VTM.

D Normal pressure should rise to between 2,800 and 2,900 psi (19,306 and 19,996 kPa) within 30 seconds of engine start. The front of the vehicle should start to rise when the pressure is about 800 psi (5,516 kPa), and the rear at about 1,600 psi (11,032 kPa) (with the bowl empty). When the engine is shut off, it should take at least 1 minute for the VTM message to drop from 2,800 to 1,800 psi (19,306 to 12,411 kPa). The pressure should drop slowly to about 1,800 psi (12,411 kPa), then abruptly drop to 0 psi. After the pressure drops to 0, the vehicle should remain up for at least 10 seconds. As the actuator accumulators exhaust their oil supply, the vehicle should settle on the bump stops.

SUSPENSION SYSTEM PRESSURE CHECKS – CONTINUED

E **NORMAL HEIGHT OF VEHICLE:** The normal height of the vehicle, above the bump stops, is approximately 3-1/2 to 5 in. (8.9 to 12.7 cm).

F **PUMP PRESSURE SETTING:** The 2,800 to 2,900 psi (19,306 to 19,996 kPa) maximum suspension system pressure is controlled by an adjustment on the compensating pump. This adjustment should always be checked (step 1, MALFUNCTION 43) prior to performing suspension system pressure checks.

G **ACCUMULATOR NITROGEN CHARGE:** After the engine is shut off during step D, the pressure drops slowly to a certain point, then abruptly drops to 0 psi. This transition point is the nitrogen charge pressure and it should be between 1,500 and 2,000 psi (10,343 and 13,790 kPa).

ACTUATOR LEAKAGE CHECK ON VEHICLE

When the troubleshooting procedure indicates that a specific actuator is faulty, confirm by checking for leakage from the unit before notifying direct support maintenance to replace the actuator.

- Stop engine (TM 5-2350-262-10) and relieve hydraulic pressure (p 3-82).
- Disconnect lines and fittings, as necessary, to obtain oil flow. Specific ports are identified below.
- Use MS51532 series caps, and MS51518 series plugs, to cover all open tubes, hoses, fittings, and ports.
- Catch oil in a graduated 2 gal. (7.6 L) container. After oil flows for 15 seconds, measure quantity in container and multiply by four. This converts the 15 second flow to gallons per minute (gpm) or Liters per minute (Lpm).
- Suspension must be in SPRUNG mode for these tests.

A INTERMEDIATE ACTUATORS

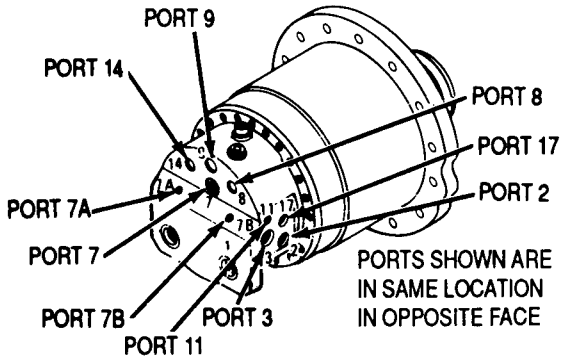
- Disconnect NO 1SPNSN UNIT-9 hose or REAR SPNSN UNIT-9 hose from port 9 of nearest corner actuator, and connect the port 9 hose to port 2 of the intermediate actuator.
- Start engine (TM 5-2350-262-10) and check leakage from ports 7 and 7B.

B CORNER ACTUATORS

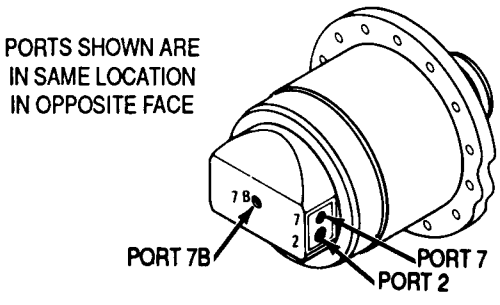
- Disconnect SPNSN UNIT-9 hose NO 1 or REAR SPNSN UNIT-9 hose from port 9 and connect to port 2.
- Start engine (TM 5-2350-262-10) and check leakage from ports 7, 7B, and 17.

If total oil flow from actuator is more than 1/2 gpm (2 Lpm), notify direct support maintenance to replace actuator.

If total oil flow from actuator is less than 1/2 gpm (2 Lpm), repeat the troubleshooting steps. (A previous step provided a misleading result.)

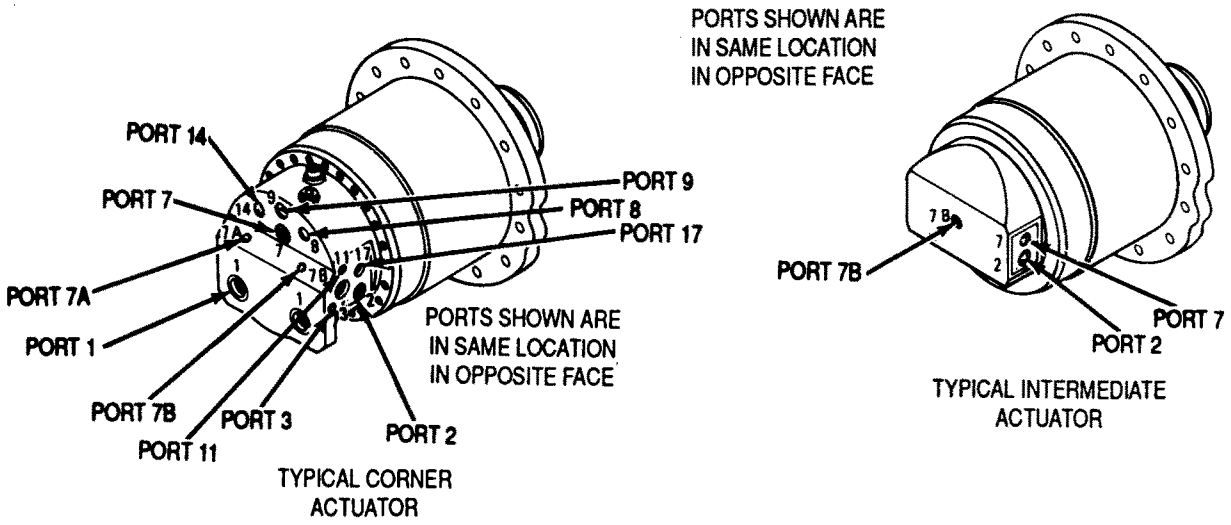


TYPICAL CORNER ACTUATOR



TYPICAL INTERMEDIATE ACTUATOR

ACTUATOR PORT IDENTIFICATION AND DESCRIPTION



Port	Description
1	Actuator accumulator to wheel valve and leveling dump valve.
2	External port and passages to wheel valve and actuator shaft vanes (pressurized to raise vehicle).
3	External port and passage to wheel valve (pressurized to raise vehicle when in UNSPRUNG mode).
4	Internal passage from leveling dump valve to wheel valve (see diagram, p 4-467).
7	External port for relief valve outlet flow.
7A	External port and passage from wheel valve (carries leveling dump valve flow when vehicle is in SPRUNG mode).
7B	External port and passage from drain chamber.
8	External port and auxiliary passage to actuator accumulator, from port 9.
9	External port and passage through leveling fill valve to actuator accumulator (pressurized to charge accumulator when leveling fill valve is held open by cam).
11	External port and passage to wheel valve (pressurized to shift wheel valve into UNSPRUNG mode).
14	External port and auxiliary passage to actuator accumulator.
17	External port and passages to actuator shaft vanes (pressurized to lower vehicle when in UNSPRUNG mode, and is return line passage when raising vehicle in both SPRUNG and UNSPRUNG mode).

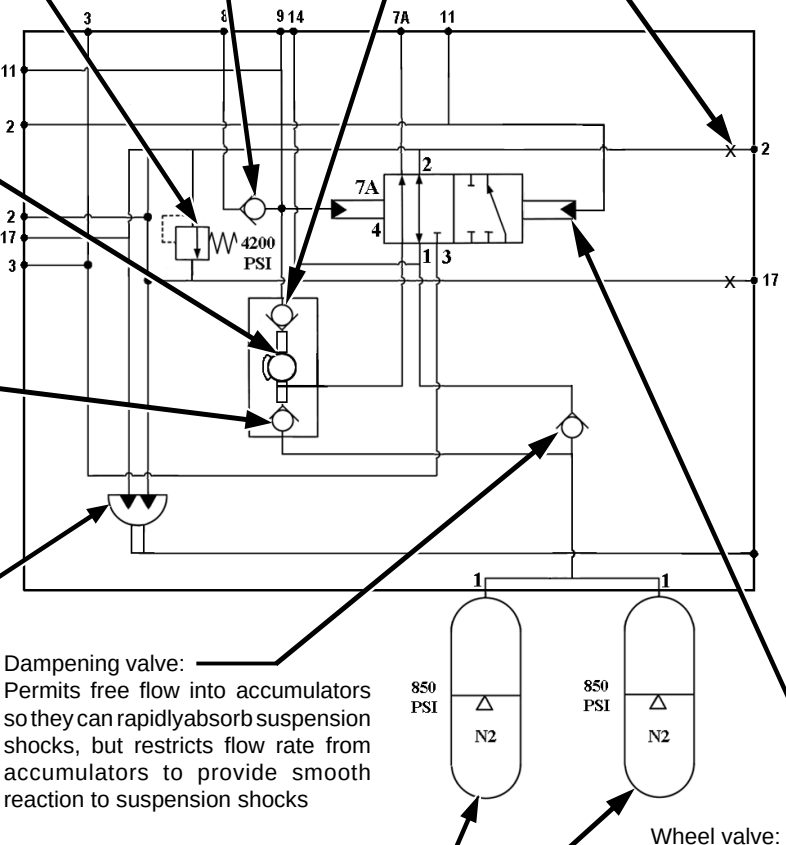
TYPICAL CORNER ACTUATOR SCHEMATIC DIAGRAM

Shock load and replenishing check valve:
Permits replenishing of accumulator via port 9, but prevents accumulator pressure surges from entering circuit No. 9

Leveling fill valve:
Opened by cam to replenish accumulators and raise vehicle when vehicle is too low

Relief valve:
Protects unit from high- pressure surges

Ports 11, 17, 2 and 3 are plugged on LH or RH side of unit, depending on desired direction of shaft rotation. When plugs are installed as shown, pressure to port 2 will cause clockwise shaft rotation



Cam:
Bolted to actuator shaft, opens and closes leveling valves at appropriate points of shaft rotation (at appropriate vehicle height)

Leveling dump valve:
Opened by cam to drain accumulators and lower vehicle when vehicle is too high

Rotary actuator shaft:
(mounts roadwheel arm)

Dampening valve:
Permits free flow into accumulators so they can rapidlyabsorb suspension shocks, but restricts flow rate from accumulators to provide smooth reaction to suspension shocks

Wheel valve:

A. In SPRUNG mode (shown), actuator shaft is hydraulically connected to accumulators (suspension has springs), and flow from leveling dump valve can return to reservoir through port 7A

B. In UNSPRUNG mode (port 11 pressurized), actuator shaft is isolated from accumulator (suspension has no springs), flow from leveling dump valve is blocked to prevent loss of accumulator pressure during dozing, and actuator shaft is hydraulically connected to main control valve via port 3

Wheel accumulators:
Attach to port 1 of rotary actuator, function as suspension springs when vehicle is in SPRUNG mode

Section IV. TROUBLESHOOTING CHARTS

SCOPE

This section contains information on locating faults and causes of malfunctions that may develop in the M9. An alphabetical listing of symptoms is provided, as well as a symptom index.

GENERAL

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 **TM 5-2350-262-10** 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 **(p 2-29)** and refer to the general hydraulic system troubleshooting procedures **(p 3-77).**

If you use the STE/ICE-R tests, use the STE/ICE-R Operator's Manual (TM 9-4910-571-12&P) for reference before and during testing.

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.

USING THE TROUBLESHOOTING CHARTS

Find the symptom in the alphabetical symptom index **(p 3-124)** or the symptom index, by system **(p 3-126).** Go to the page referenced for that symptom. All possible malfunctions cannot be listed. If the specific malfunction is not listed in this section, refer to the vehicle electrical system schematic diagram **(p FP-3),** vehicle hydraulic schematic diagram **(TM 5-2350-262-20-3), or TM 9-4910-571-12&P for additional information or reference data.**

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34.	Deleted	
35.	Deleted	
36.	Deleted	
37.	Deleted	
38.	Deleted	
39.	Deleted	
40.	Deleted	
41.	Deleted	
42.	Deleted	
43.	Deleted	
44.	Deleted	
45.	Deleted	
46.	Deleted	
47.	Deleted	
48.	Deleted	

Note

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

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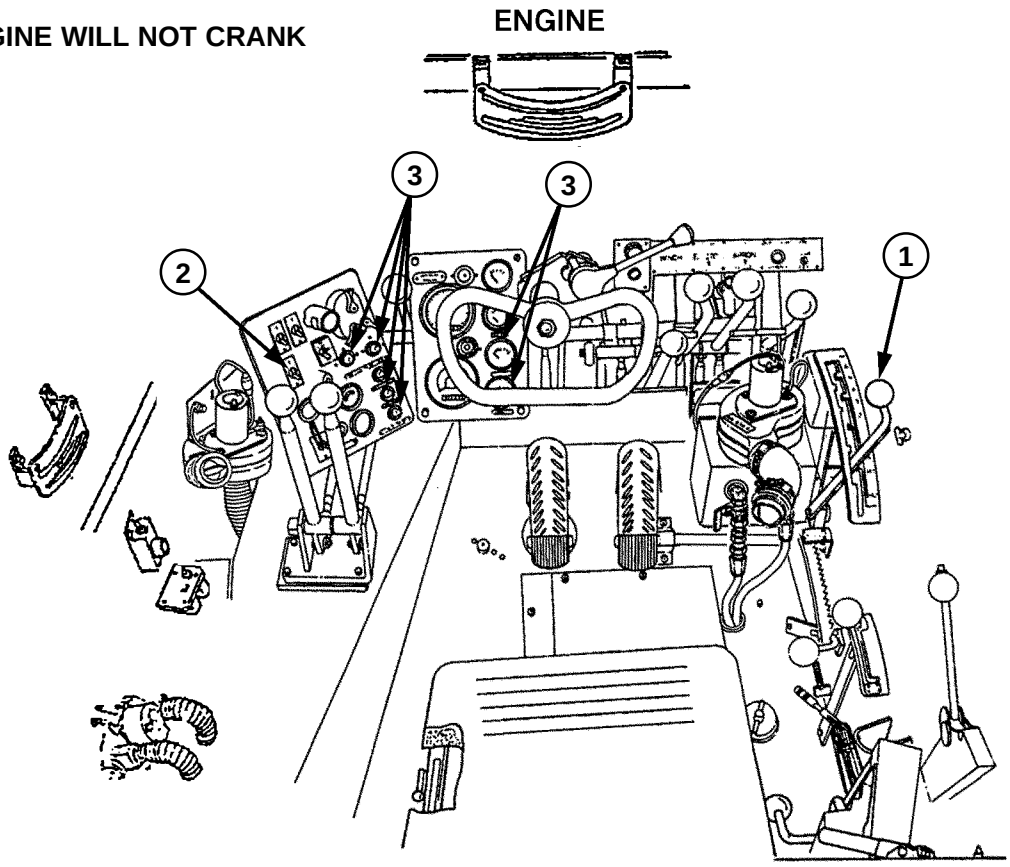
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. ENGINE WILL NOT CRANK



Step 1. Ensure transmission shift lever (1) is in N. Move lever (1) forward and back through several gear ranges, then return to N. Attempt to start vehicle (TM 5-2350-2262-10).

If condition persists, go to step 2.

Step 2. Turn on MASTER switch (2). Observe panel lights and gauges (3) to see that there is sufficient electrical power to operate panel lights and gauges (3).

If lights and gauges (3) do not indicate there is electrical power, refer to MALFUNCTION 49.

If lights and gauges (3) indicate there is electrical power, go to step 3.

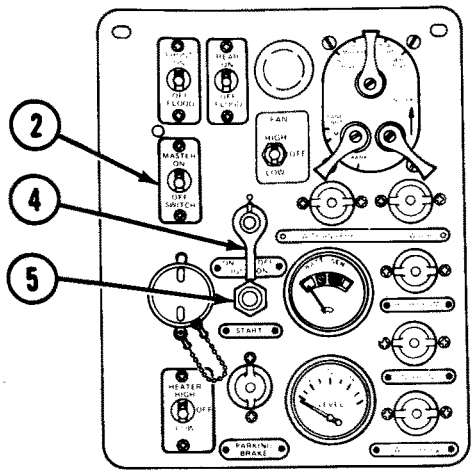
Step 3. Check battery voltage. Use a multimeter or STE/ICE-R in the DCA mode.

If voltage is less than 24VDC, charge batteries.

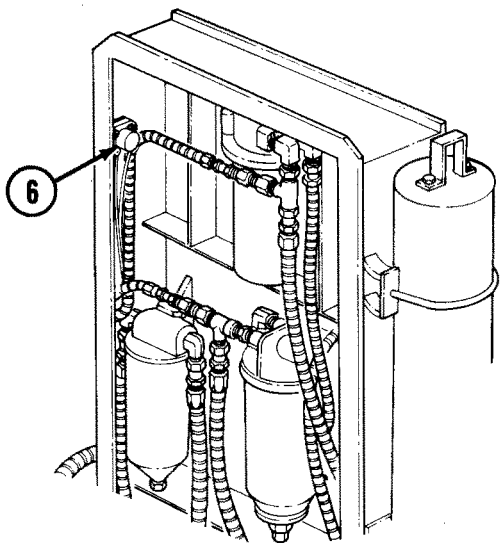
If voltage is at least 24VDC, go to step 4.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. ENGINE WILL NOT CRANK – CONTINUED



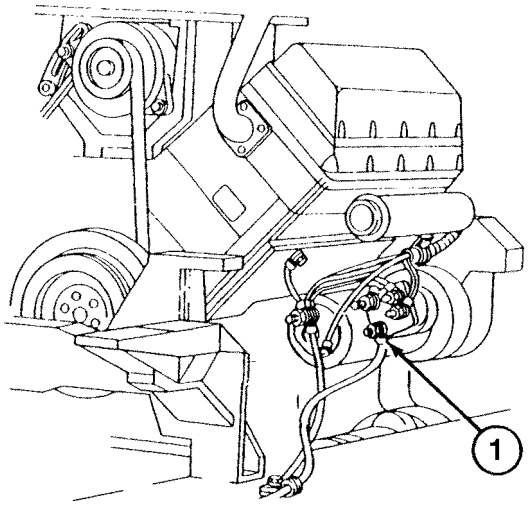
INSTRUMENT PANEL



Step 4. Turn on MASTER switch (2) and ignition switch (4). Press start switch (5). Have another mechanic listen for click from starter relay (6). Turn off switches (2) and (4) after test.

If relay (6) clicks, go to step 5.

If relay (6) does not click, go to step 11.



Step 5. Check main starter cable (7) for loose connections or other damage. Turn on MASTER switch (2) and ignition switch (4), and check for minimum 24VDC at cable (7). Turn off switches (2) and (4) after test.

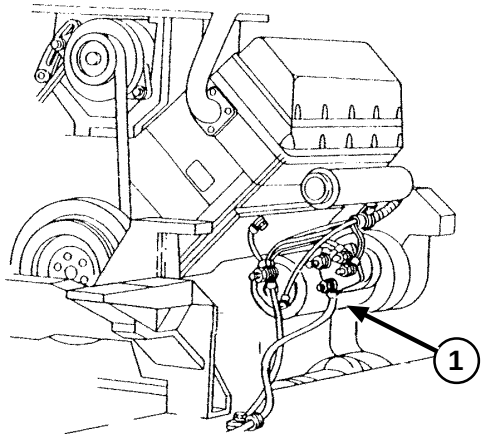
Tighten connections or replace damaged cable (7) (p 4-88).

If no damage or loose connections are evident, and 24VDC is present, go to step 6.

If no damage or loose connections are evident, and 24VDC is not present, go to step 26.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

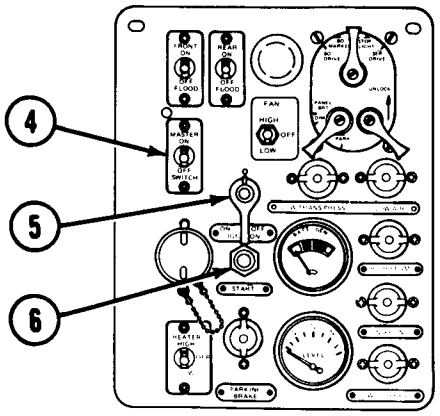
1. ENGINE WILL NOT CRANK – CONTINUED



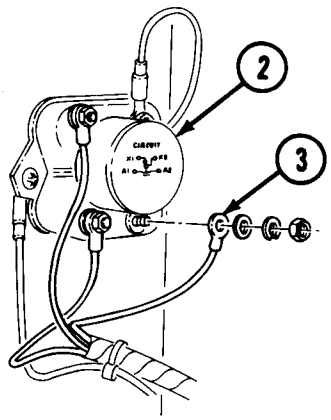
Step 6. Check wiring on starter (1) for loose or missing leads, incorrectly routed leads, or loose or damaged ground cables.

Tighten loose connections, reroute incorrectly routed leads, or replace damaged leads or ground cables.

If no damage, loose connections, missing or incorrectly routed leads or ground cables are found, go to step 7.



INSTRUMENT PANEL



Step 7. Check starter relay (2) for loose or missing connections, or a loose or missing ground lead.

Tighten connections or ground lead, or replace missing connections or ground lead.

If no loose or damaged leads are found, go to step 8.

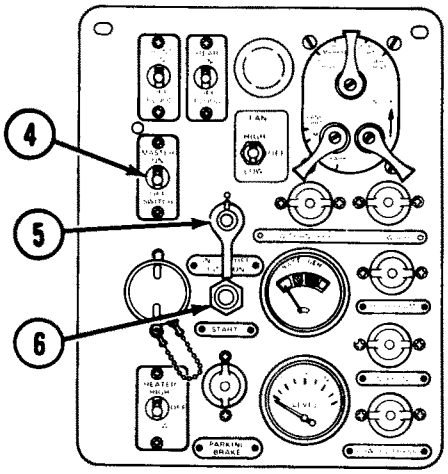
Step 8. Disconnect lead (3) from relay (2). Have another mechanic or operator turn on MASTER switch (4) and ignition switch (5), and press start switch (6). Using multimeter, check for minimum 24VDC output at terminal A2 of relay (2). Turn off switches (4) and (5), and connect lead (3) to relay (2) when test is complete.

If minimum 24VDC is present, go to step 9.

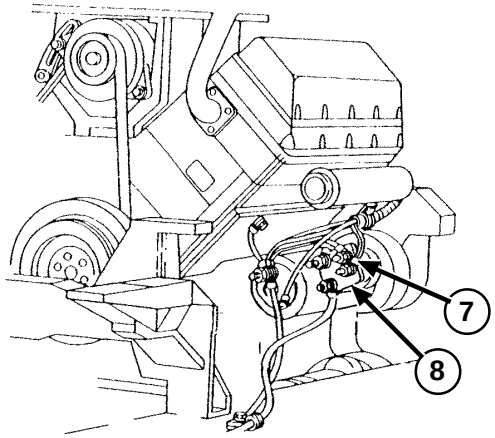
If low or no voltage is present, go to step 10.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. ENGINE WILL NOT CRANK – CONTINUED



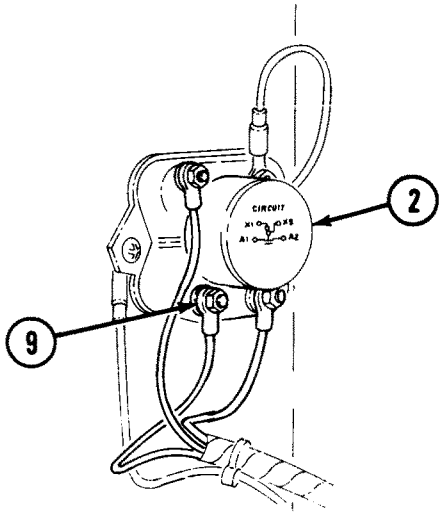
INSTRUMENT PANEL



Step 9. Disconnect lead 14E (7) from solenoid (8). Have another mechanic or operator turn on MASTER switch (4) and ignition switch (5), and press start switch (6). Using multimeter, measure voltage at lead 14E (7). Turn off switches (4) and (5), and connect lead 14E (7) after test.

If minimum 24VDC is present, go to step 22.

If minimum 24VDC is not present, troubleshoot engine wiring harness circuit 14E, and replace damaged components (p 3-1).



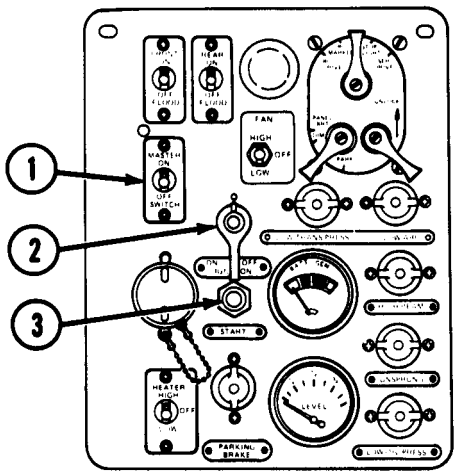
Step 10. Turn on MASTER switch (4). Using multimeter, check voltage at terminal A1 (9) of starter relay (2). Turn off MASTER switch (4) after test.

If minimum 24VDC is present at terminal A1 (9), replace starter relay (2) (p 4-159).

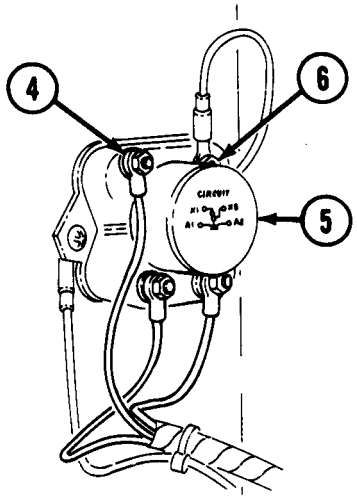
If minimum 24VDC is not present at terminal A1 (9), troubleshoot engine wiring harness circuit 14D, and replace damaged components (p 3-1).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. ENGINE WILL NOT CRANK — CONTINUED



INSTRUMENT PANEL



Step 11. Turn on MASTER switch (1) and ignition switch (2). While another mechanic or operator presses start switch (3), measure voltage at terminal X1 (4) of starter relay (5). Turn off MASTER switch (1) and ignition switch (2) after test.

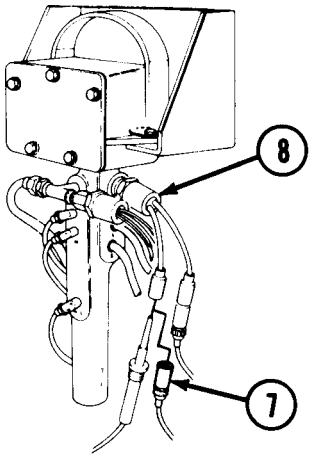
If minimum 24VDC is present, go to step 12.

If minimum 24VDC is not present, go to step 13.

Step 12. Check for continuity from terminal X1 (4) to terminal X2 (6) of starter relay (5).

This check should indicate an open circuit, confirming the need to replace starter relay (5) (p 4-159).

If a completed circuit is indicated, an earlier step led to a false conclusion. Return to step 4.



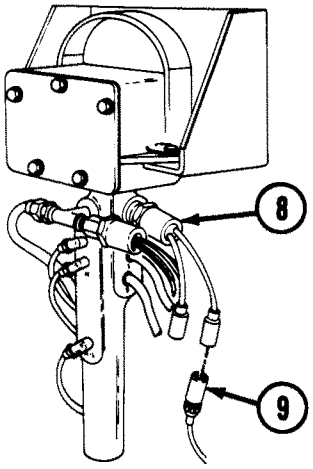
Step 13. Open left engine intake grille (TM 5-2350-262-10). Disconnect lead (7) from neutral start switch (8). With MASTER switch (1) and ignition switch (2) on, check for minimum 24VDC at lead (7).

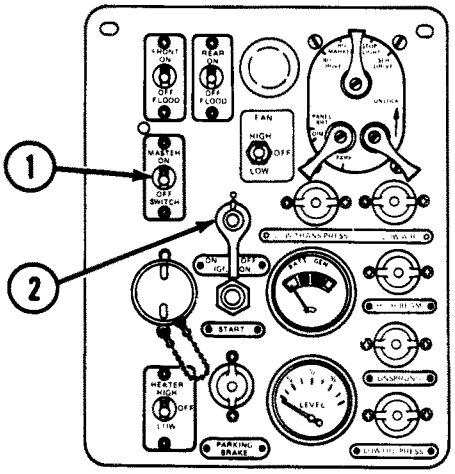
If minimum 24VDC is not present, go to step 14.

If minimum 24VDC is present, go to step 18.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. ENGINE WILL NOT CRANK – CONTINUED



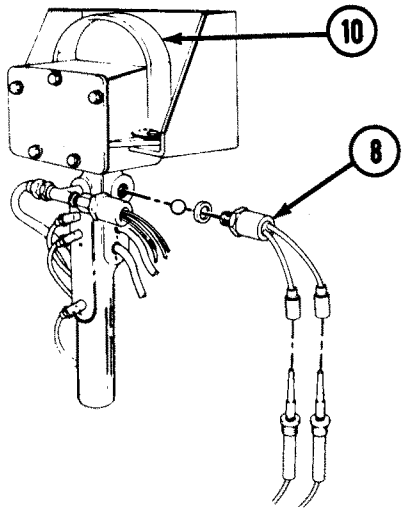


INSTRUMENT PANEL

Step 14. Disconnect lead (9) from neutral start switch (8). Check for minimum 24VDC at lead (9). Turn off MASTER switch (1) and ignition switch (2) after test.

If minimum 24VDC is present, go to step 15.

If minimum 24VDC is not present, go to step 16.



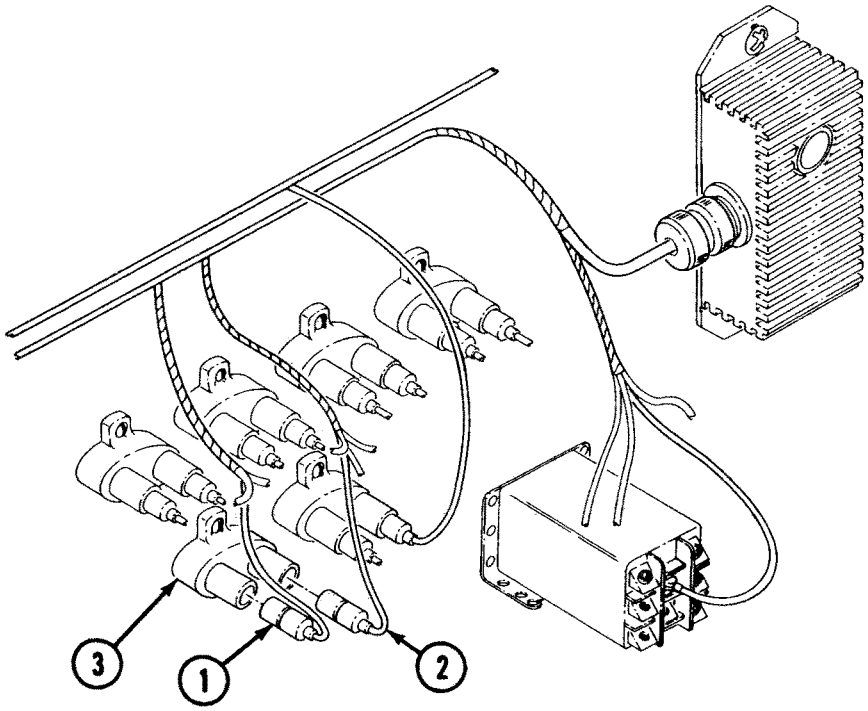
Step 15. Remove neutral start switch (8) from shift control valve (10) (p 4-694). Using multimeter, check switch (8) for continuity.

If test indicates continuity, install neutral start switch (8) (p 4-694), with the proper number of shims.

If test does not indicate continuity, replace neutral start switch (8) (p 4-694).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

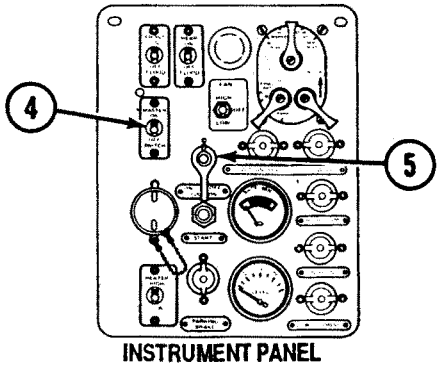
1. ENGINE WILL NOT CRANK — CONTINUED



Step 16. Disconnect leads (1) and (2) from circuit breaker (3). Using multimeter, check circuit breaker (3) for continuity. Connect lead (1) after test.

If test does not indicate continuity, replace circuit breaker (3) (p 4-123).

If test indicates continuity, go to step 17.



INSTRUMENT PANEL

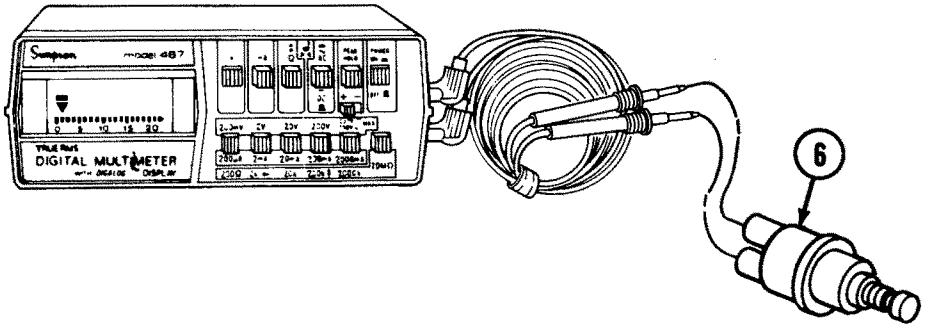
Step 17. Turn on MASTER switch (4) and ignition switch (5). Using multimeter, check for minimum 24VDC at lead (2). Turn off switches (4) and (5), and connect lead (2) after test.

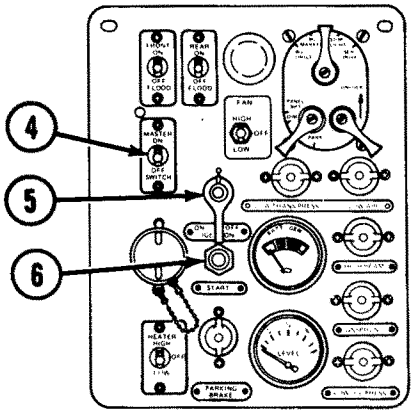
If minimum 24VDC is present, troubleshoot control wiring harness circuit 11A-11C-509, and replace damaged components (p 3-1).

If minimum 24VDC is not present, check lead (2) for a bad connector, breaks or shorts, and repair damaged components (p 3-1).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. ENGINE WILL NOT CRANK – CONTINUED





INSTRUMENT PANEL

Note

Do not disconnect batteries when removing start switch.

Step 18. Turn off MASTER switch (4) and ignition switch (5), and remove start switch (6) (p 4-106). While pressing switch (6), check for continuity across the poles.

If check does not indicate continuity, replace start switch (6) (p 4-106).

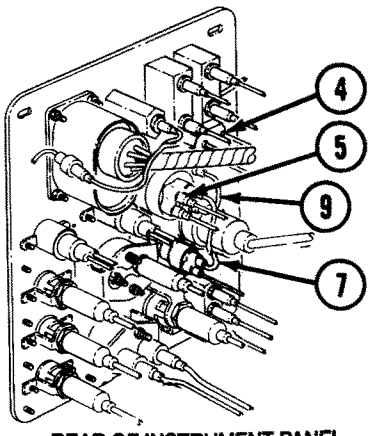
If check indicates continuity, go to step 19.

Inspect for fuel leaks or obstructions.

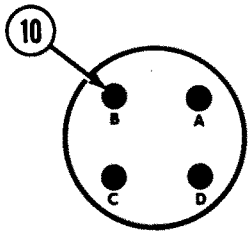
Step 19. Turn on MASTER switch (4) and ignition switch (5). Disconnect lead (7) from start switch (6). Using multimeter, check for minimum 24VDC at terminal (8).

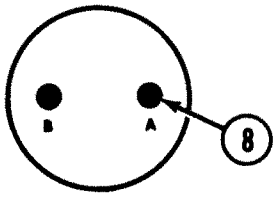
If minimum 24VDC is present, troubleshoot control wiring harness circuit 14B and engine wiring harness circuit 14B. Replace any damaged components (p 3-1).

If minimum 24VDC is not present, go to step 20.



REAR OF INSTRUMENT PANEL





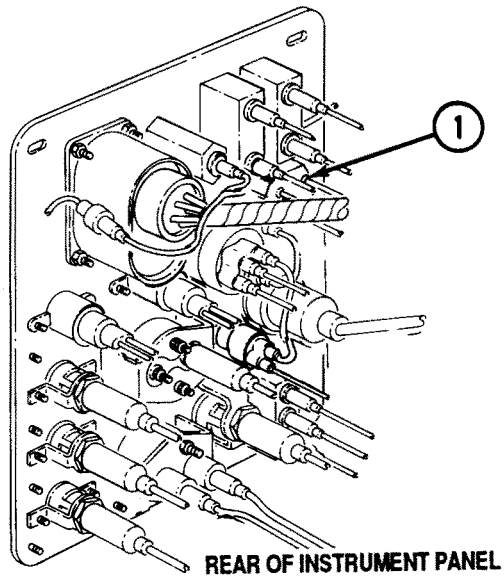
Step 20. Disconnect lead (9) from ignition switch (5). Using multimeter, check for minimum 24VDC at terminal B (10). Turn off switch (5) after test.

If minimum 24VDC is present, troubleshoot control wiring harness circuit 14A and replace any damaged components (p 3-1).

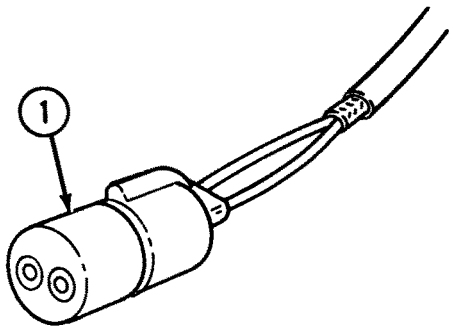
If minimum 24VDC is not present, go to step 21.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. ENGINE WILL NOT CRANK — CONTINUED



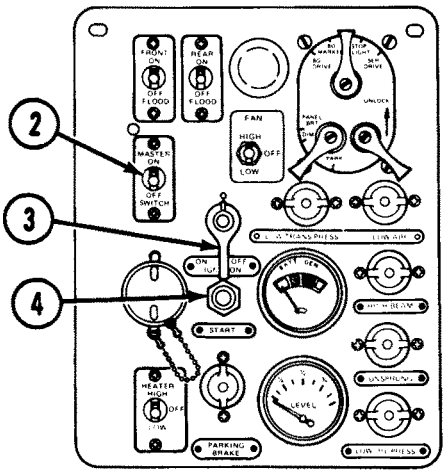
REAR OF INSTRUMENT PANEL



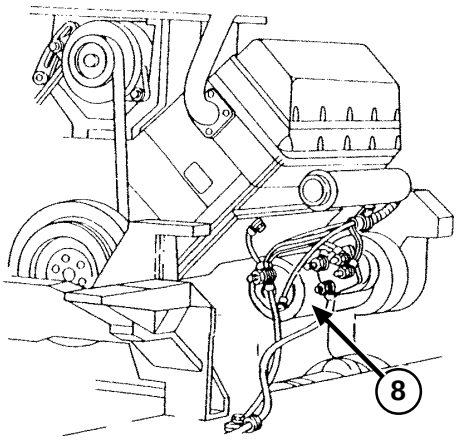
Step 21. Disconnect lead (1) from MASTER switch (2). Using multimeter, check for minimum 24VDC at lead (1). Turn off MASTER switch (2) after test.

If minimum 24VDC is not present, replace MASTER switch (2) (p 4-106).

If minimum 24VDC is present, replace ignition switch (3) (p 4-106).



INSTRUMENT PANEL



Step 22. Turn on MASTER switch (2) and ignition switch (3). While another mechanic or operator presses start switch (4), listen to starter motor (5) for sounds of binding or overloading.

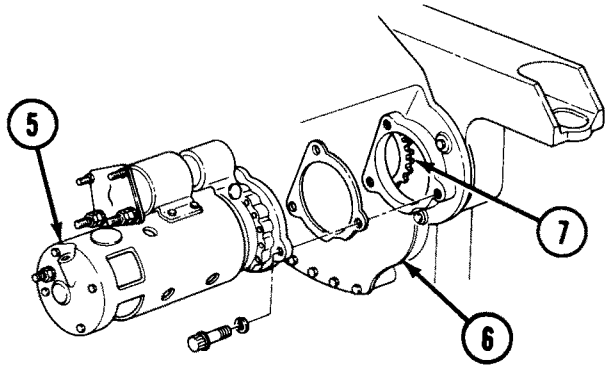
If motor (5) sounds as if it is binding or overloading, go to step 24.

If there is no sound from motor (5), go to step 23.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. ENGINE WILL NOT CRANK – CONTINUED

Step 23. Perform STE/ICE-R test 72, starter current first peak (p 3-21), and follow the STE/ICE-R Go No-Go Chain to isolate the malfunction.

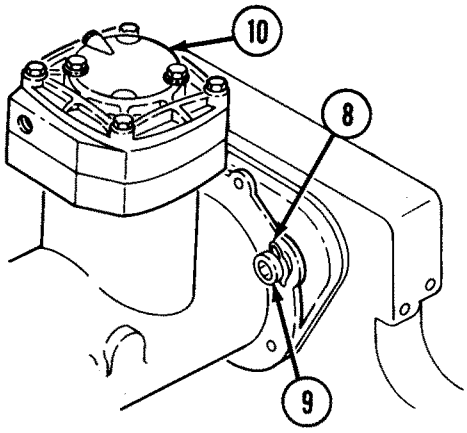


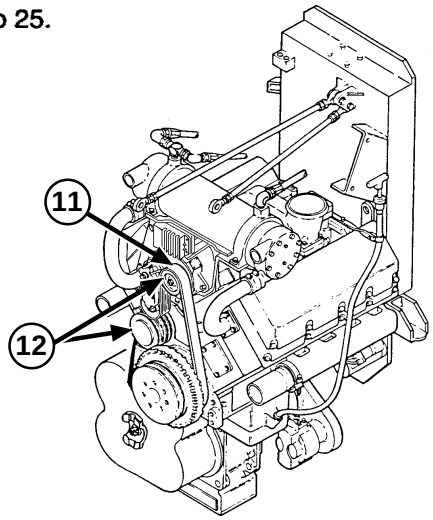
Step 24. Remove starter motor (5) from engine (6) (p 4-550). Check motor (5) and flywheel (7) for worn or missing gear teeth or other damage.

Replace damaged starter motor (5) (p 4-550).

Notify direct support maintenance to replace damaged flywheel (7).

If no damage is found, go to step 25.





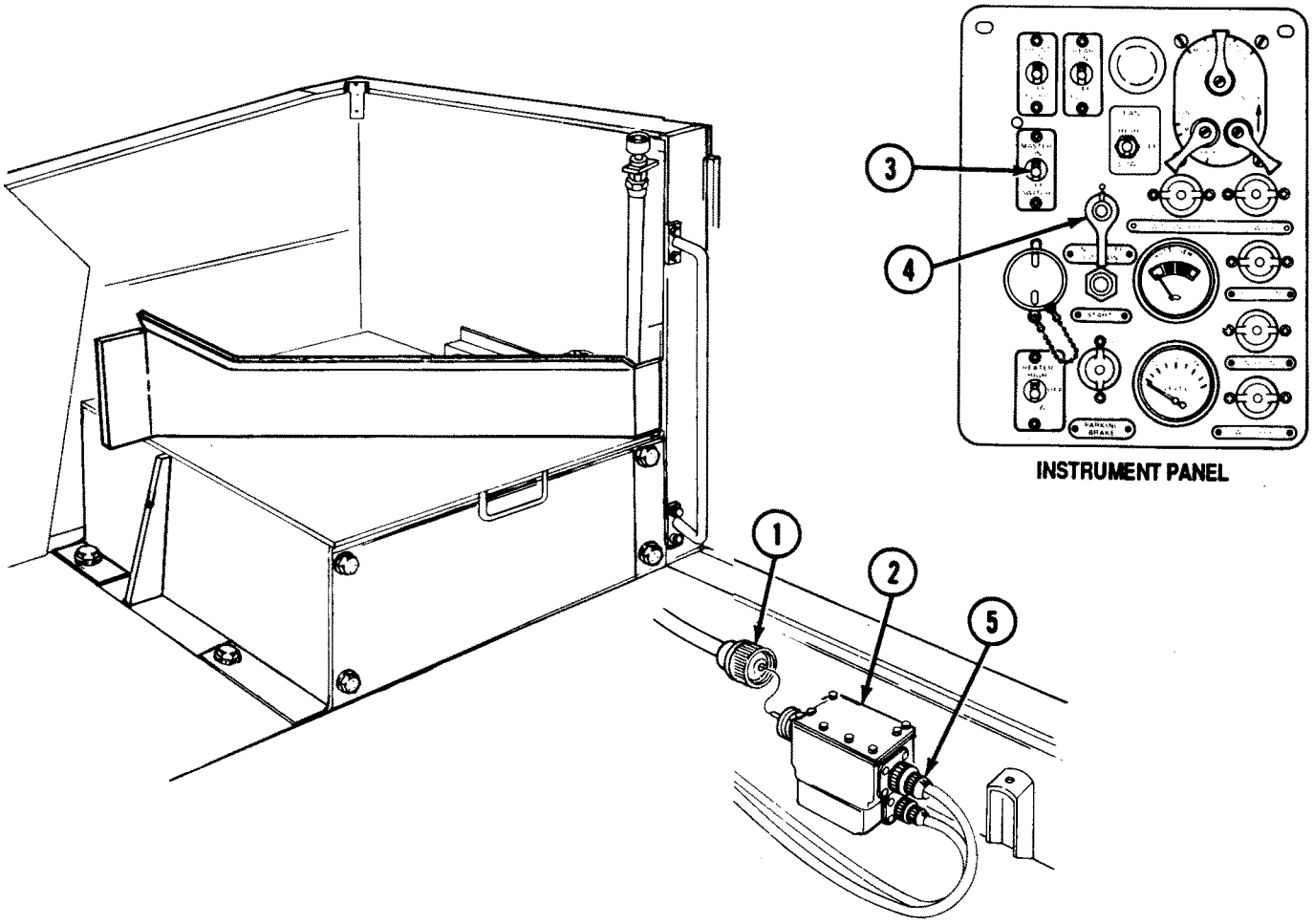
Step 25. Remove transfer case input gear (p 4-665). Remove clip (8) from barring screw (9) on compressor (10). Using socket wrench socket set, push screw (9) in, and turn slowly counterclockwise. Observe belt (11) and pulleys (12) to see if engine is turning. Install starter motor (5) after test (p 4-552).

If engine does not turn, notify direct support maintenance that engine will not crank.

If engine turns, notify direct support maintenance that transfer case is faulty.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. ENGINE WILL NOT CRANK – CONTINUED



INSTRUMENT PANEL

Step 26. Disconnect cable (1) from master relay (2). With MASTER switch (3) and ignition switch (4) on, check for minimum 24VDC from relay (2). Turn off switches (3) and (4), and connect cable (1) to relay (2) after test.

If minimum 24VDC is present, replace starter cable (p 4-68).

If minimum 24VDC is not present, go to step 27.

Step 27. Disconnect cable (5) from master relay (2). Check for minimum 24VDC at cable (5).

If minimum 24VDC is present, replace master relay (2) (p 4-74).

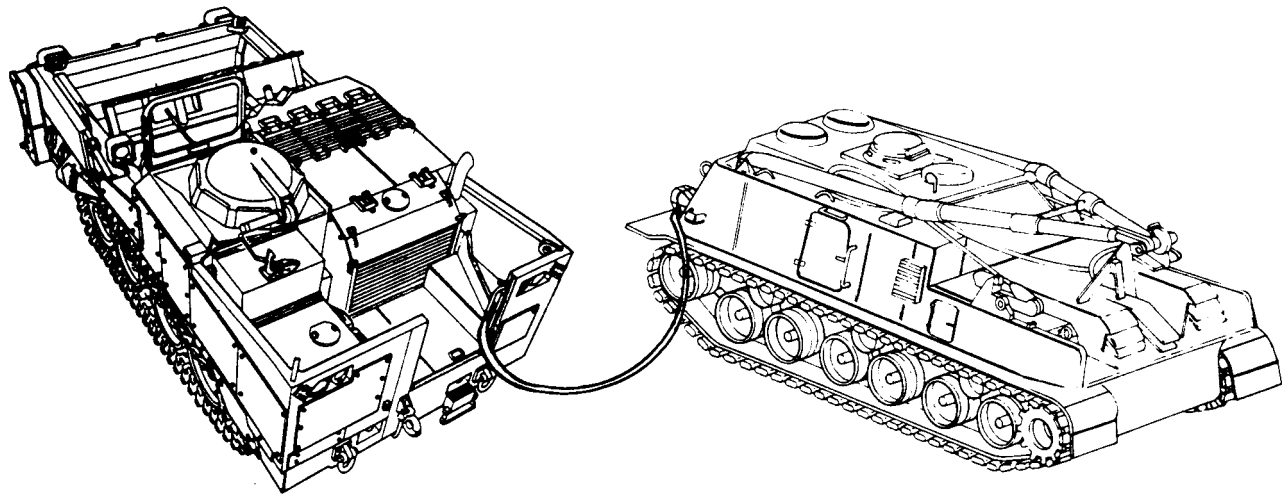
If minimum 24VDC is not present, check battery cables and terminals for damage, corrosion, or looseness. Replace any defective components (p 4-78 and 4-84).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

2. ENGINE CRANKS SLOWLY

Note

Cold weather may drain battery power, change engine oil viscosity, and lead to slow cranking speeds.



Step 1. Attempt to start vehicle engine using an auxiliary source (TM 5-2350-262-10).

If engine cranks normally, service and charge vehicle batteries.

If engine does not crank normally, go to step 2.

Step 2. Refer to TM 9-4910-571-12&P and perform the following tests and troubleshooting procedures.

T/N	Test Description	Offset	Test Limits
72	Starter Current First Peak	± 150	1,240-1,840 amps
71	Starter Current Average	± 150	350-450 amps
67	Battery Volt. Eng. Crank	–	> 19 volts
68	Starter Volt. Eng. Crank	–	> 19 volts
69	Starter Neg. Cable Voltage Drop, Eng.Crank	–	> 0.5 volts
70	Starter Solenoid Voltage, Eng. Crank	–	> 19 volts
74	Starter Circuit Resistance	–	5-16 milliohms
10	Engine Cranking Speed	–	100 rpm

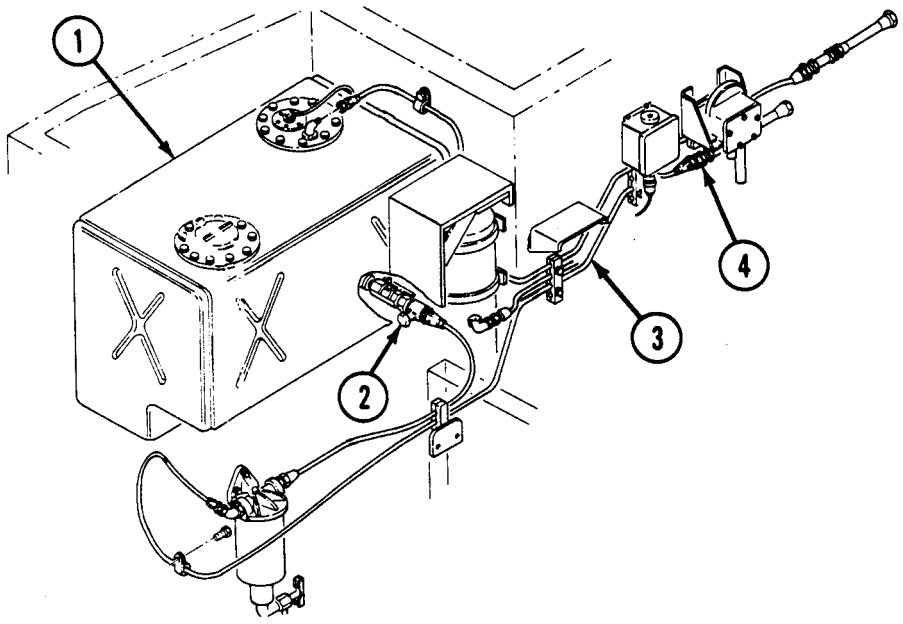
Refer to list of tasks (p vii) or alphabetical index (p INDEX 1) and repair or replace necessary components.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

3. ENGINE CRANKS, BUT FAILS TO START

Note

If engine will not start in cold weather, start-aid system may be faulty. Refer to MALFUNCTION 13.



Step 1. Check fluid level in fuel tank (1) (TM 5-2350-262-10).

If tank (1) is low or empty, service tank (1) (TM 5-2350-262-10).

If there is fluid in tank (1), go to step 2.

Step 2. Check fuel tank shutoff valve (2).

Open valve (2), if closed.

If valve (2) is open, go to step 2.1.

Step 2.1 Check for proper installation of the fuel check valve (TM 5-2815-240-34P).

If fuel check valve is properly installed, go to step 3.

Step 3. Disconnect fuel supply tube (3) at quick-disconnect (4). Hold open quick-disconnect (4) over bucket, and check for fuel flow. Connect tube (3) after test.

If fuel does not flow from quick-disconnect (4), locate and remove obstruction in tube (3).

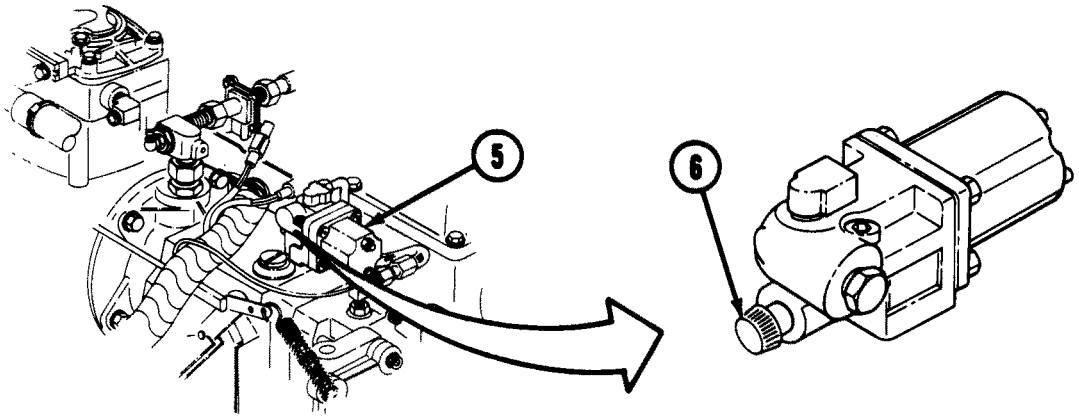
If fuel flows from quick-disconnect (4), go to step 4.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

3. ENGINE CRANKS, BUT FAILS TO START – CONTINUED

WARNING

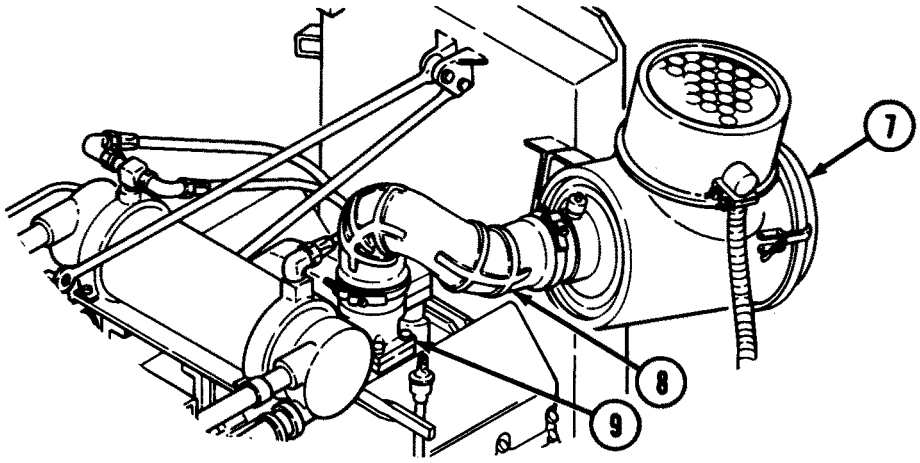
Vehicle engine can't be shut off from driver's compartment when fuel shutdown valve is manually opened. Valve must be manually closed. Keep hands and tools clear of moving engine parts when closing valve. Failure to comply may result in severe injury to personnel.



Step 4. Bypass fuel shutdown valve (5) by turning knob (6) counterclockwise. Attempt to start engine (TM 5-2350-262-5).

If engine starts, turn knob (6) clockwise to shut off engine, and go to step 8.

If engine still does not start, go to step 5.



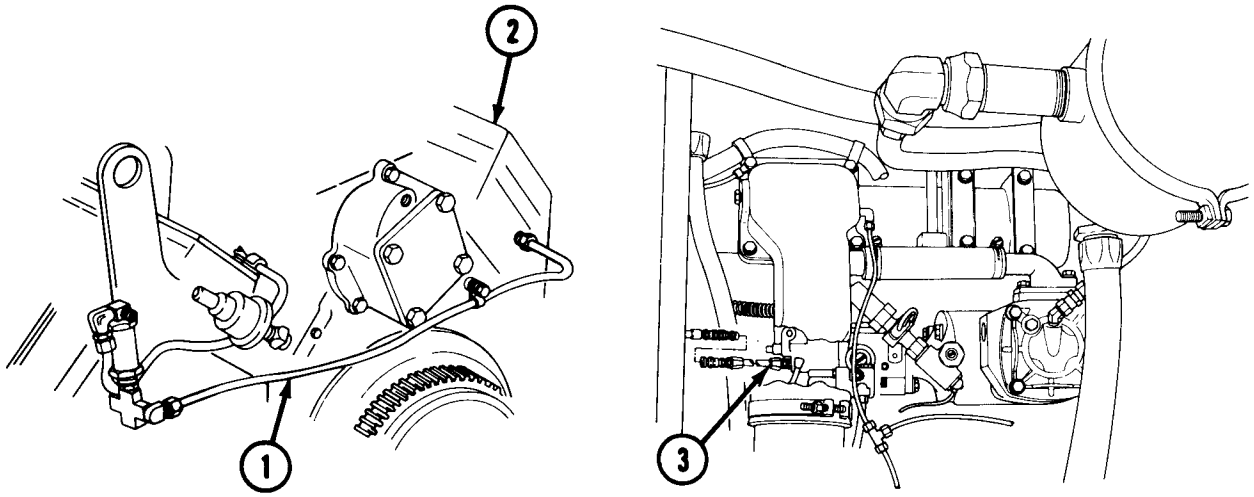
Step 5. Check air cleaner (7), hose (8), and intake manifold (9) for obstructions, excessive dirt, or other blockages.

Clean items, and remove any obstructions.

If no obstructions, excessive dirt, or other blockages are found, go to step 6.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

3. ENGINE CRANKS, BUT FAILS TO START — CONTINUED



Step 6. Check fuel supply tube (1) on engine for cracks, kinks, or other damage.

Notify direct support maintenance to replace any damaged fuel tube (1).

If no damage is evident, go to step 7.

CAUTION

Do not crank starter motor for more than 20 seconds. Failure to comply may result in damage to equipment.

Step 7. Disconnect fuel supply tube (1) from two cylinder heads (2). Holding supply tube (1) over a container, crank the starter and check for a steady flow of fuel.

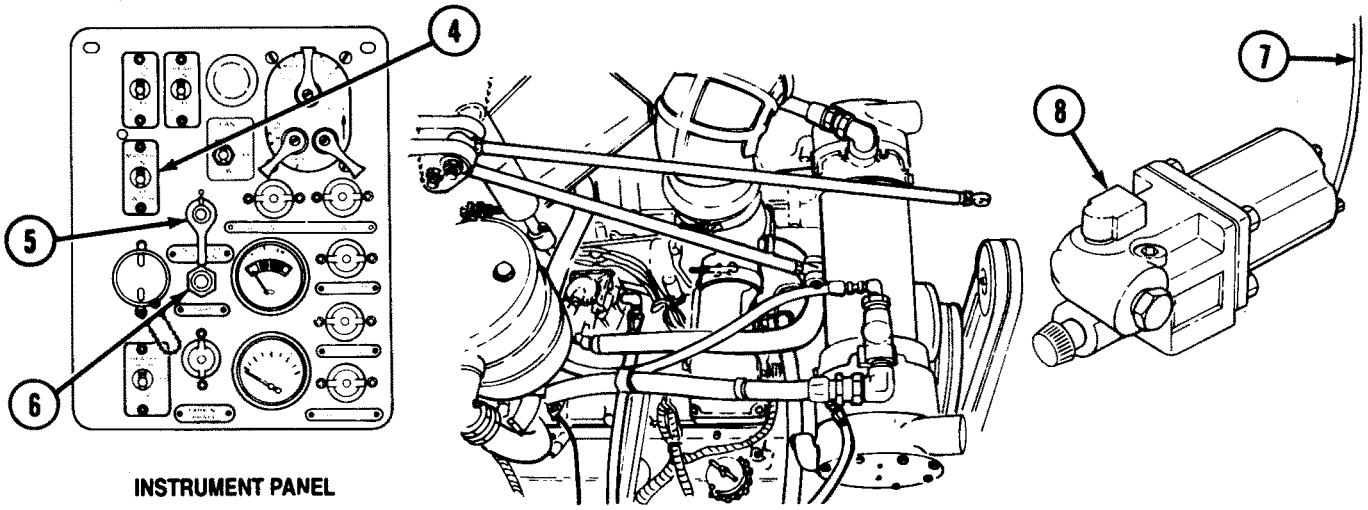
If there is a steady flow of fuel, notify direct support maintenance to troubleshoot further.

If there is air in supply tube (1), check for a loose fitting or leak on the supply side of fuel pump (3). Tighten fitting or repair leaks.

If the fuel flow is intermittent, check supply tube (1) for blockage. If there are no obstructions in the supply tube, notify direct support maintenance to replace fuel pump (3).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

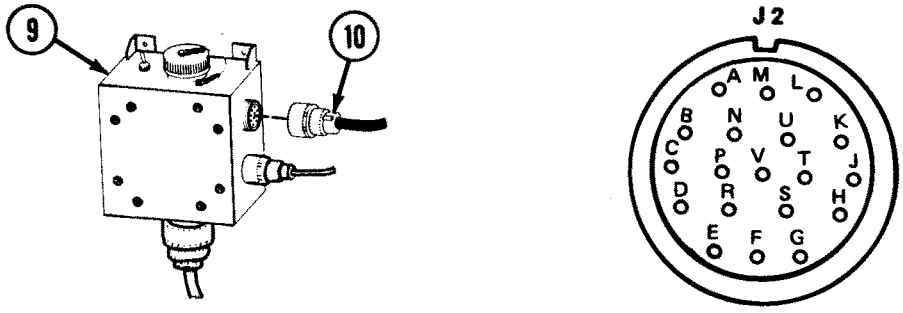
3. ENGINE CRANKS, BUT FAILS TO START – CONTINUED



Step 8. Turn MASTER switch (4) and ignition switch (5) on. While helper or another mechanic presses start switch (6), check for minimum 24VDC at lead 54A (7) on fuel shutdown valve (8).

If minimum 24VDC is present at lead 54A (7), replace fuel shutdown valve (8) (p 4-559).

If minimum 24VDC is not present at lead 54A (7), go to step 9.



Step 9. Remove STE/ICE-R interface resistor box (9) (p 4-70). Using multimeter, check for continuity between contacts J and L of J2 connector (10) of box (9).

If continuity is indicated, refer to engine wiring harness schematic (p FP-3) to troubleshoot circuit 54A. Replace any damaged components (p 3-11). ■

If continuity is not indicated, replace STE/ICE-R interface resistor box (9) (p 4-70).

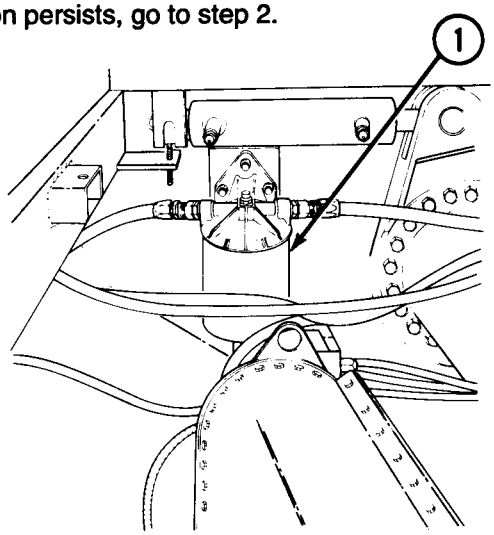
MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

4. ROUGH IDLING OR STALLING

Step 1. Check for contaminated fuel/water separator (1).

Service fuel/water separator (1) (p 4-229).

If condition persists, go to step 2.

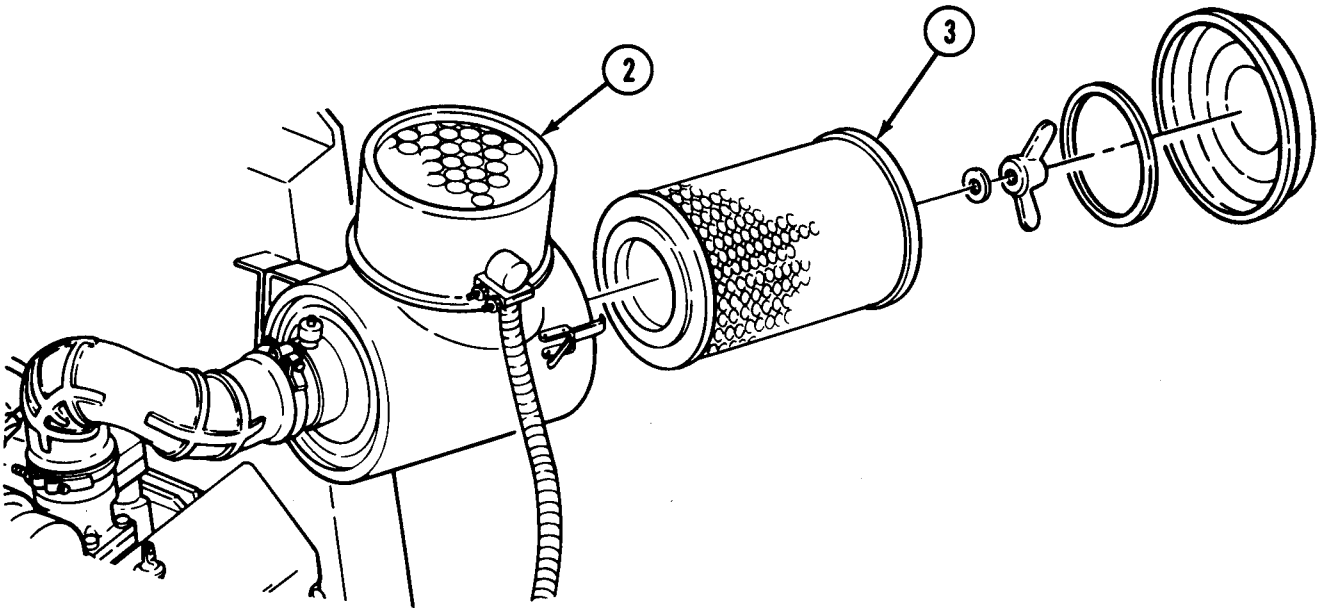


Step 2. Check for obstructed air cleaner assembly (2).

Remove any foreign material or obstructions from air cleaner assembly (2).

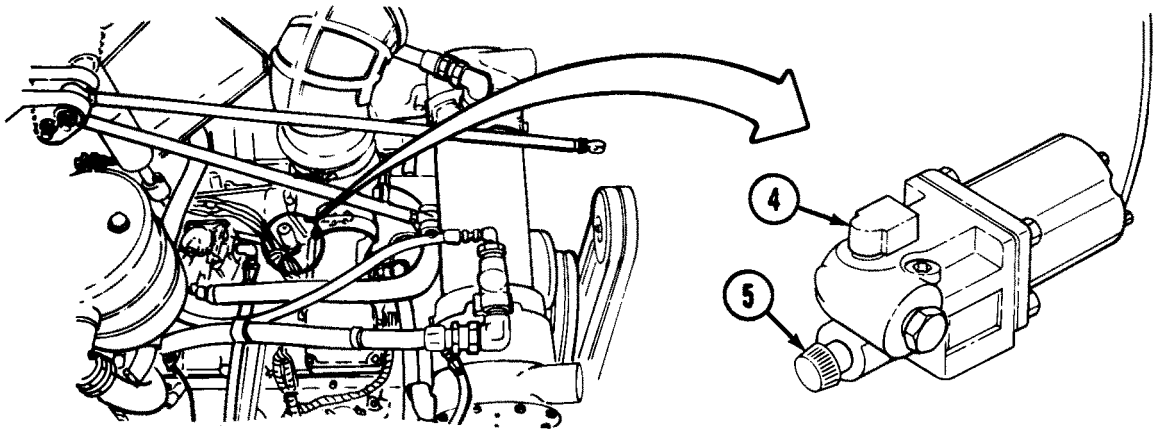
Service air filter (3) (TM 5-2350-262-10).

If condition persists, go to step 3.



MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

4. ROUGH IDLING OR STALLING – CONTINUED



Step 3. Manually open fuel shutdown valve (4) by turning knob (5) counterclockwise, and start engine (TM 5-2350-262-10).

If engine now runs without rough idling or stalling, replace damaged fuel shutdown valve (4) (p 4-559).

If conditions persists, go to step 4.

Step 4. Check for presence of white exhaust smoke. Check radiator for oily film on coolant, smell of fuel, or bubbles in coolant.

If there is white exhaust smoke, oily film on coolant, if coolant smells of diesel fuel, or there are excessive bubbles in coolant, notify direct support maintenance that head gasket may be damaged, or a cylinder liner may be leaking.

If none of the above damage is found, go to step 5.

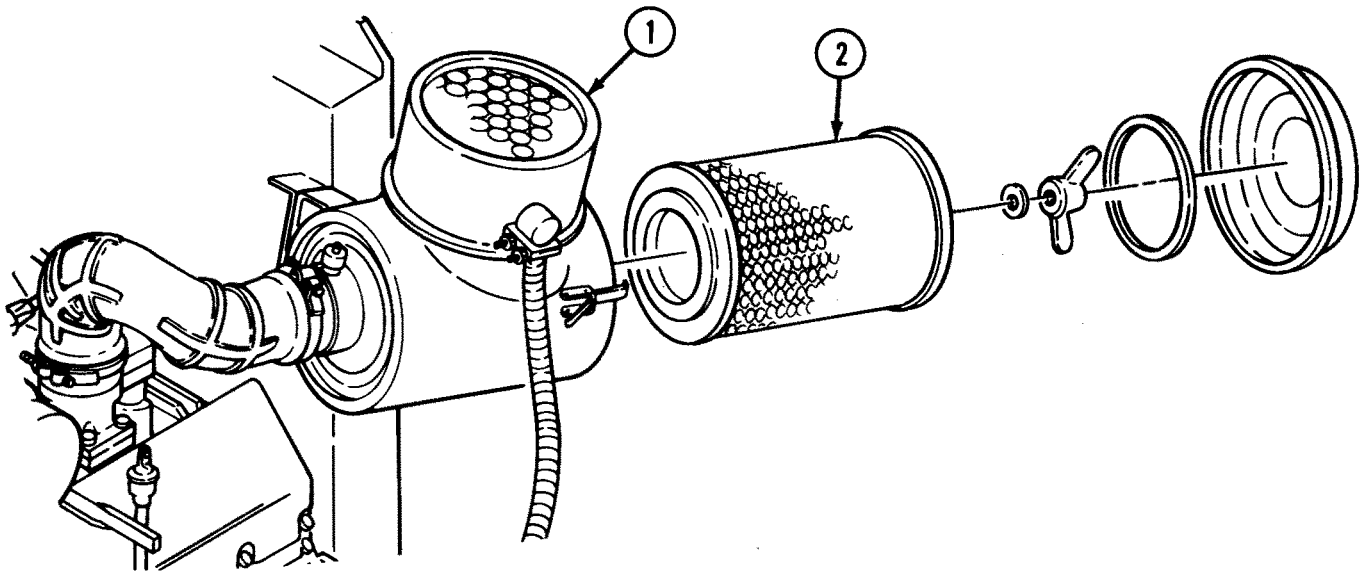
Step 5. Perform STE/ICE-R CI engine GO NO-GO Chain test procedures in the DCA diagnostic mode (p 3-16).

Refer to list of tasks (p vii) or alphabetical index (p INDEX 1) to repair or replace any damaged or faulty components.

If condition persists, notify direct support maintenance.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

5. ENGINE DOES NOT REACH FULL POWER



Step 1. Check for obstructed air cleaner assembly (1).

Remove any foreign material or obstructions from air cleaner assembly (1).

Service air filter (2) (TM 5-2350-262-10).

If condition persists, go to step 2.

Step 2. Service fuel/water separator (p 4-229).

If condition persists, go to step 3.

Step 3. Adjust accelerator and throttle linkage (p 4-4).

If condition persists, go to step 4.

Step 4. Perform STE/ICE-R CI engine GO NO-GO Chain test procedures in the DCA diagnostic mode (p 3-16).

Refer to list of tasks (p vii) or alphabetical index (p INDEX 1). to repair or replace damaged or faulty components.

If condition persists, notify direct support maintenance.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

6. ENGINE USES TOO MUCH FUEL

Step 1. Check fuel system for leaks.

Replace damaged or leaking fuel lines (p 4-218, p 4-221, or p 4-225) or fuel tank (p 4-234).

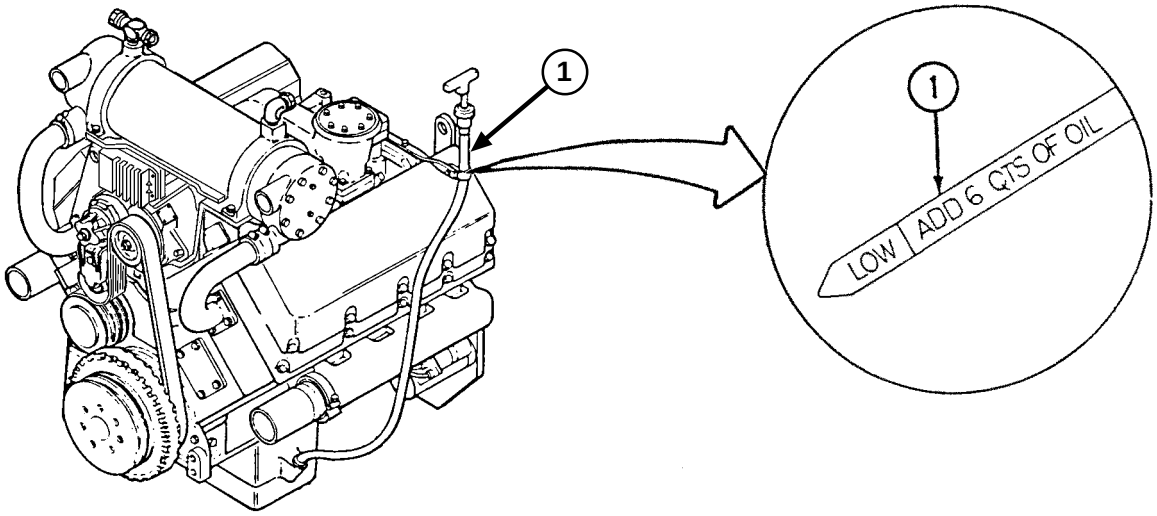
If condition persists, go to step 2.

Step 2. Start vehicle engine (TM 5-2350-262-10), and observe exhaust.

If exhaust is black, check fuel return lines for obstructions, and replace (p 4-218).

If condition persists, notify direct support maintenance.

If exhaust is not black, go to step 3.



Step 3. Remove engine oil level indicator (1) and check for odor of fuel in engine oil.

If odor of fuel is present, notify direct support maintenance.

If odor of fuel is not present, there may not be a problem. Monitor vehicle's fuel consumption on missions before taking maintenance action.

7. ENGINE USES TOO MUCH OIL

Step 1. Start vehicle engine (TM 5-2350-262-10) and observe exhaust.

If exhaust is blue, refer to MALFUNCTION 10.

If exhaust is not blue, go to step 2.

Step 2. Check oil level in steer unit (TM 5-2350-262-10).

If oil level is high, notify direct support maintenance that engine may have a malfunctioning crankcase rear seal.

If oil level is normal, go to step 3.

Step 3. Check external oil lines, gaskets, and seals for damage or leaks.

Refer to list of tasks (p vii) or alphabetical index (p INDEX 1) to repair or replace damaged or faulty components.

If there are no evident leaks, there may not be a problem. Monitor oil consumption on missions before taking maintenance action.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

8. ENGINE KNOCKS (MECHANICAL)

Step 1. Check engine oil level

If oil level is low, add engine oil **(TM 5-2350-262-10).**

If oil level is normal, go to step 2.

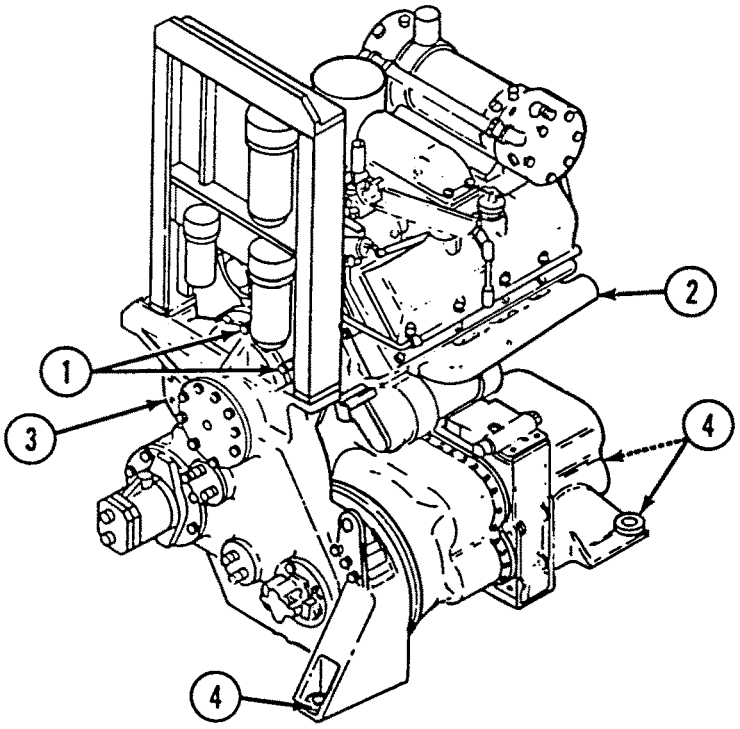
Step 2. Remove transfer case input gear **(p 4-664)** to isolate engine from the power package, and start engine **(TM 5-2350-262-10).** Listen for knock to determine if it is inside or outside the engine.

If knock is inside the engine, notify Direct Support maintenance.

If knock is outside the engine, isolate the sound to the malfunctioning component. Refer to list of tasks **(p vii)** or alphabetical index **(p INDEX 1).** to repair or replace damaged or faulty components.

If knock is no longer heard, install transfer case input gear **(p 4-664)** and isolate the sound to the malfunctioning component. Refer to list of tasks (p vii) or alphabetical index **(p INDEX 1)** to repair or replace damaged or faulty components.

9. ENGINE VIBRATES EXCESSIVELY



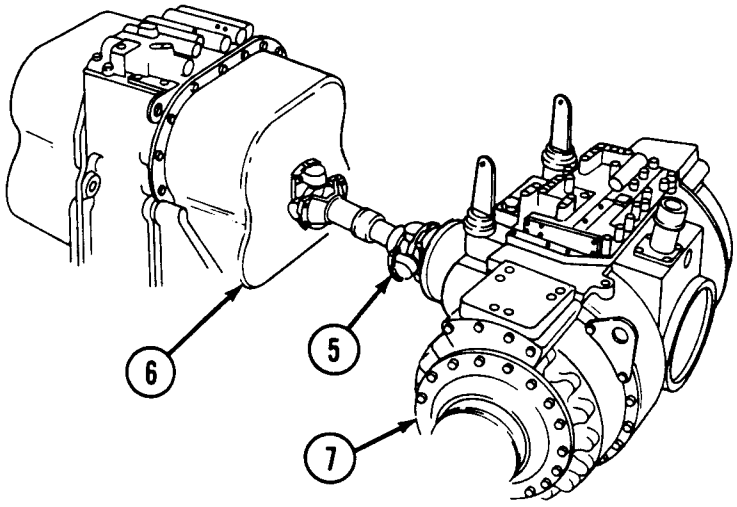
Step 1. Check for loose or missing screws (1) holding engine (2) to transfer case (3). Check for loose or missing flexible mounts (4).

Tighten loose screws (1) or mounts (4). Notify direct support maintenance to replace missing mounts (4).

If condition persists, go to step 2.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

9. ENGINE VIBRATES EXCESSIVELY — CONTINUED



Step 2. Check driveshaft (5) for damage, or loose or missing mounting hardware. Ensure driveshaft (5) is properly aligned with transmission (6) and steer unit (7) (p 4-734).

Repair driveshaft (5) (p 4-734) or adjust torque link (p 4-734).

If there is no evident damage to driveshaft (5), notify direct support maintenance.

10. EXCESSIVE EXHAUST

Exhaust is blue.

Service fuel/water separator (p 4-229).

Drain and refill fuel tank (p 4-217) and (TM 5-2350-262-10).

If condition persists, notify direct support maintenance.

Exhaust is white.

Service fuel/water separator (p 4-229).

If condition persists, notify direct support maintenance.

Exhaust is black.

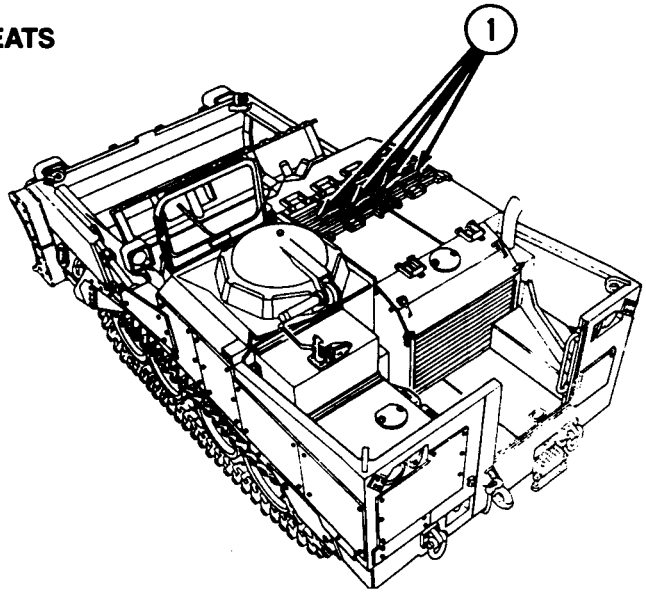
Service air cleaner filter (TM 5-2350-262-10).

Perform step 7, MALFUNCTION 3, and take specified corrective action.

If condition persists, notify direct support maintenance.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

11. ENGINE OVERHEATS



Step 1. Check radiator fins and engine intake grilles (1) for clogging, dirt or other obstructions that could cause improper air flow.

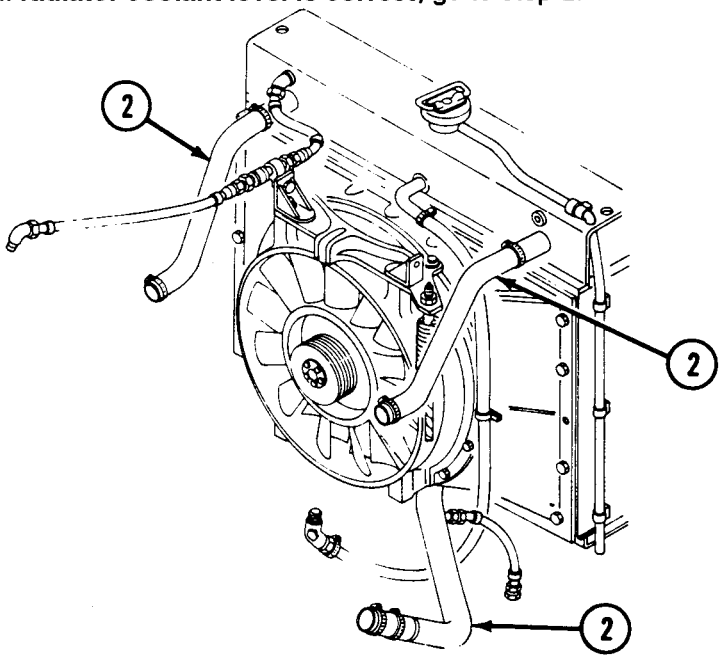
Remove obstructions.

If there are no obstructions, go to step 1.1.

Step 1.1. Check radiator coolant level (TM 5-2350-262-10).

Fill radiator with coolant to proper level.

If radiator coolant level is correct, go to step 2.



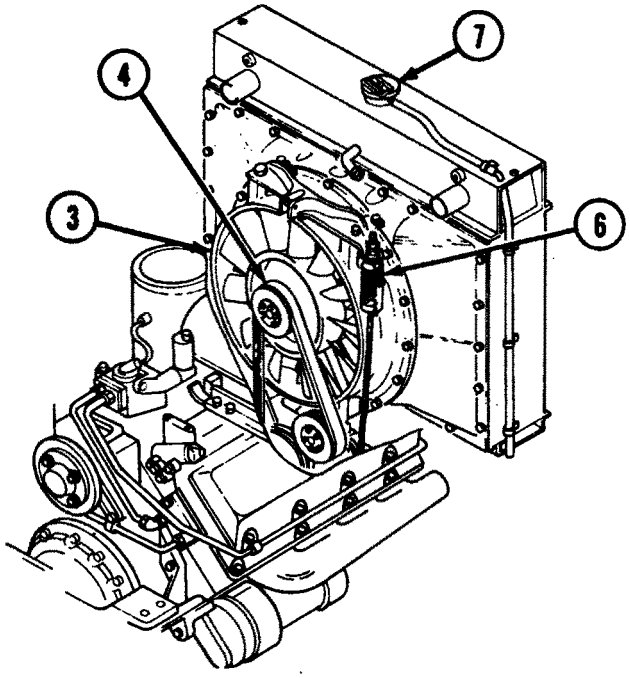
Step 2. Check radiator hoses (2) for kinks, blockages, or other obstructions.

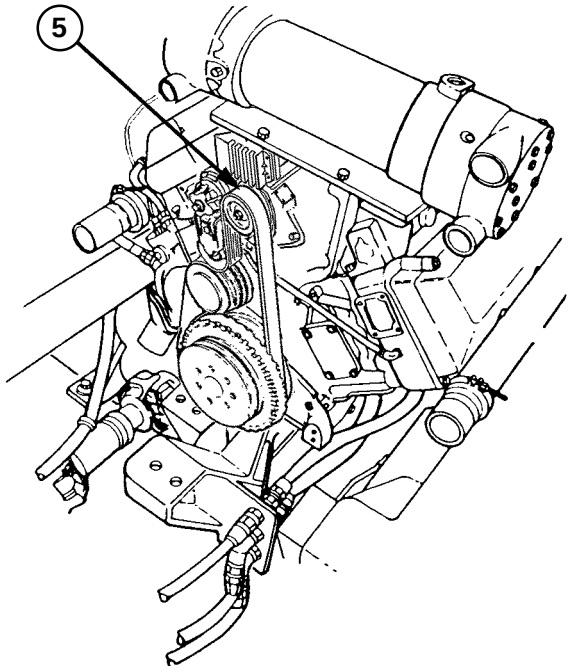
Remove obstructions, or replace damaged hoses (p 4-582).

If no damage or obstructions are found, go to step 3.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

11. ENGINE OVERHEATS – CONTINUED





Step 3. Check cooling system fan assembly and shroud (3) for damaged parts or obstructions.

Remove obstructions, or replace damaged fan assembly and shroud (p 4-635).

If no obstructions are found, go to step 4.

Step 4. Check for loose or damaged fan belt (4) and water pump/alternator belts (5).

Adjust or replace damaged fan belt (4) (p 4-633 or p 4-631). If belt (4) cannot be adjusted, replace fan belt tensioner assembly (6) (p 4-639).

Adjust or replace damaged water pump/alternator belt (5) (p 4-597).

If there is no evident damage, go to step 5.

WARNING

Hot coolant can cause severe burns. Do not open radiator cap access cover or remove cap until coolant gauge reads in bottom one-quarter of green zone. Failure to comply may result in severe injury to personnel.

Step 5. Remove and inspect radiator cap (7) for deteriorated rubber seal, broken spring, or other damage.

If damaged, replace radiator cap (7).

If cap is serviceable, go to step 6.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

11. ENGINE OVERHEATS – CONTINUED

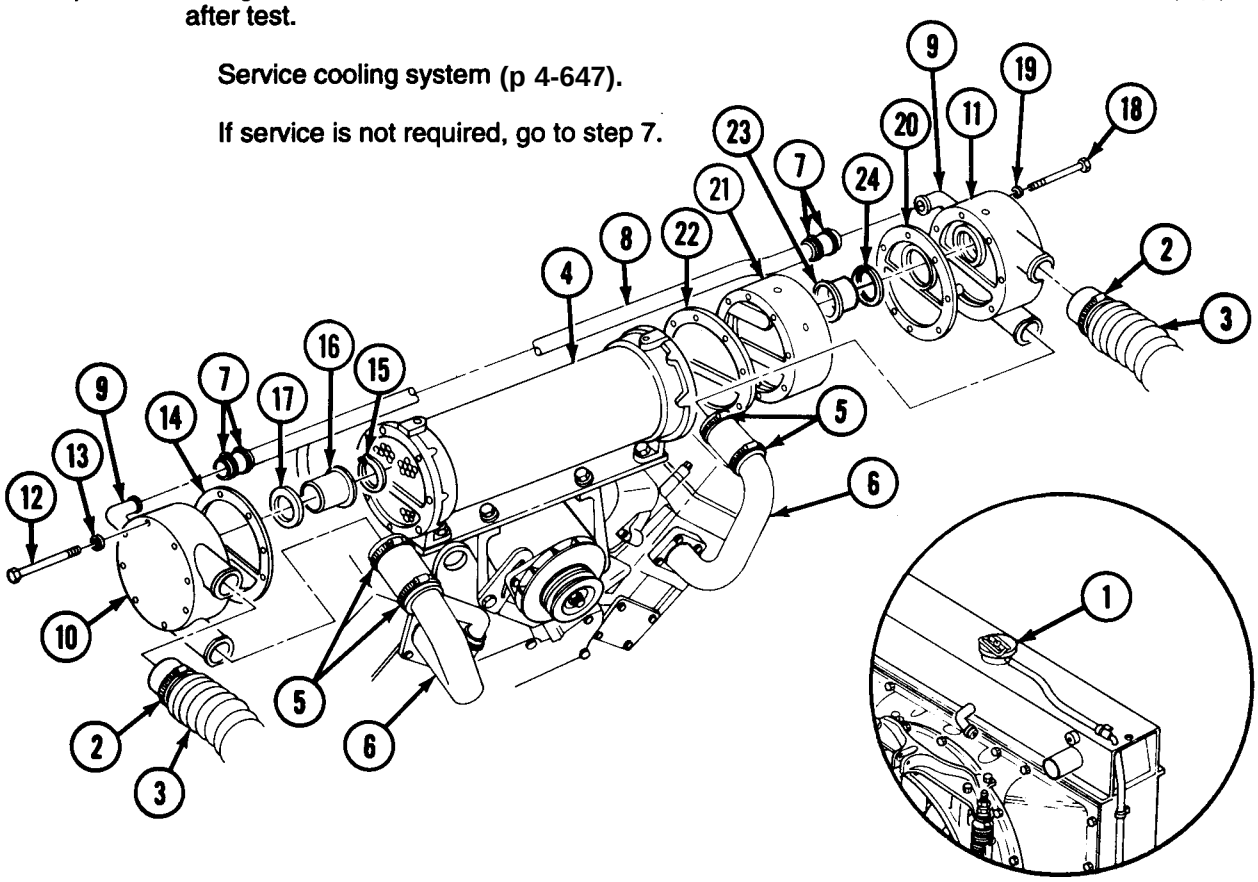
Note

- Use antifreeze tester NSN 6630-00-105-1418 to check coolant/water mix.
- If oily film is found on coolant, notify direct support maintenance.

Step 6. Using antifreeze tester, check mix of coolant and water in radiator. Install radiator cap (1) after test.

Service cooling system (p 4-647).

If service is not required, go to step 7.



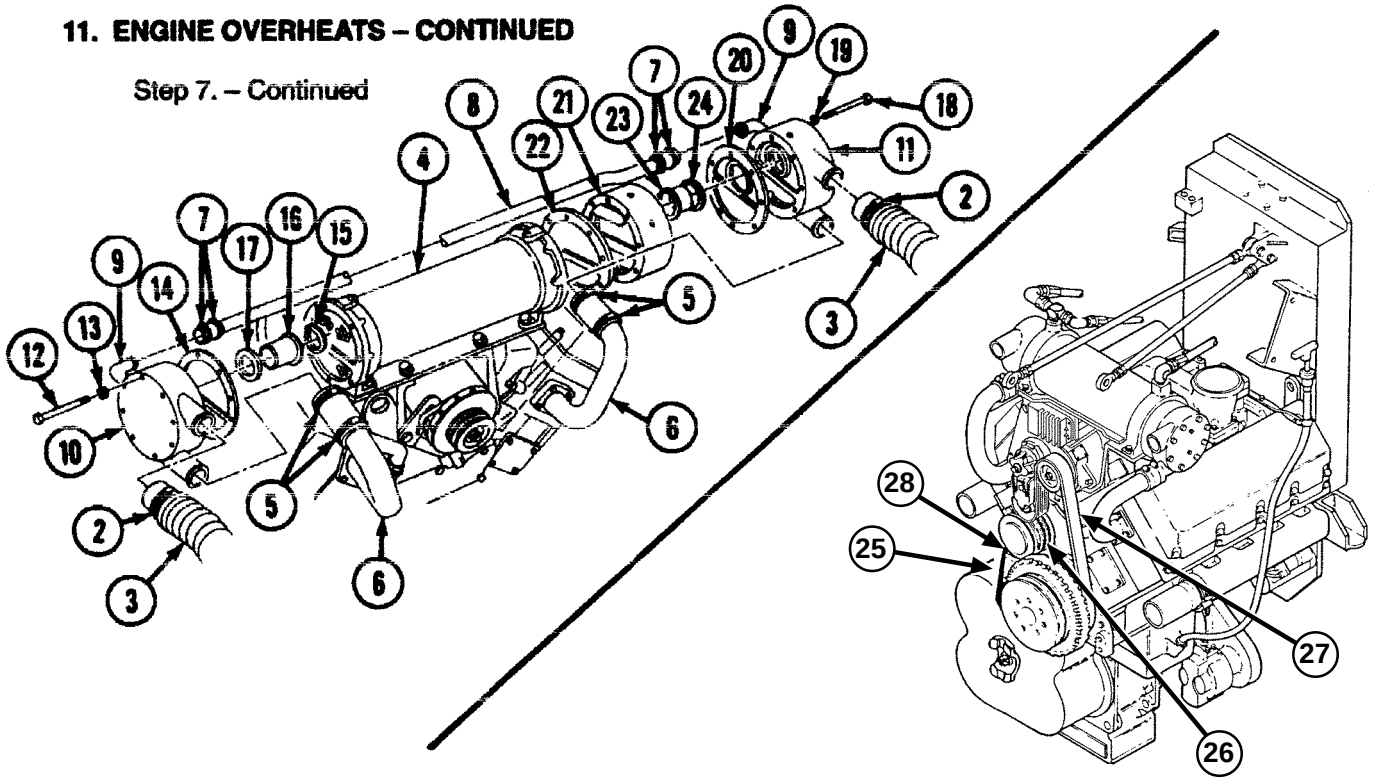
Step 7. Drain cooling system (p 4-647). Loosen two clamps (2) and disconnect two hoses (3) from transmission oil cooler (4). Loosen four clamps (5) and push two hoses (6) clear of oil cooler (4). Loosen four clamps (7) and remove tube (8) from two elbows (9) on thermostat housings (10) and (11). Remove eight screws (12), lockwashers (13), right thermostat housing (10), and gasket (14) from oil cooler (4). Remove snapring (15), thermostat (16), and seal (17) from housing (10). Remove eight screws (18), lockwashers (19), left thermostat housing (11), gasket (20), access cover (21), gasket (22), thermostat (23), and seal (24) from housing (11). Discard snapring (15), gaskets (20) and (22), and lockwashers (13) and (19).

Heat a container of coolant to 190°F (88°C). Immerse thermostats (16) and (23), one at a time, for 10 minutes, while maintaining coolant temperature. Remove thermostats (16) and (23) and check that the plunger has raised from the flange on each thermostat (16) and (23).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

11. ENGINE OVERHEATS – CONTINUED

Step 7. – Continued



If thermostats (23) and (16) are open, allow them to cool, then reinstall in oil cooler (4). Go to step 8.

If thermostats (23) and (16) are not open, replace thermostats (23) and (16).

Using mandrel, tap seal (24), lip down, into housing (11). Install gasket (20), access cover (21), thermostat (23), gasket (22), and housing (11) on oil cooler (4) with eight lockwashers (19) and screws (18). Tighten screws (18) to 18-20 lb-ft (24-27 N-m). Using mandrel, tap seal (17), lip down, into housing (10). Install thermostat (16) on housing (10) with snapring (15). Install gasket (14) and housing (10) on oil cooler (4) with eight lockwashers (13) and screws (12). Tighten screws (12) to 18-20 lb-ft (24-27 N-m). Install tube (8) on two elbows (9) of thermostat housings (11) and (10) and tighten four clamps (7). Connect two hoses (6) to oil cooler (4) and tighten four clamps (5). Fill cooling system (p 4-648). Connect two hoses (3) to housings (11) and (10) and tighten two clamps (2).

Step 8. Check water pump housing (25) for leaks, or excessive play in pulley (26). Remove water pump/alternator belt (27) (p 4-597). Hold pulley (26) and move from side-to-side.

If pulley (26) moves from side-to-side, or there is evidence of leakage around water pump housing (25), replace water pump (28) (p 4-599).

If pulley (26) does not move side-to-side, and there is no evidence of leakage around water pump housing (25), install belt (27) (p 4-597), and go to step 9.

Step 9. Flush and retest coolant system (TM 750-313).

If problem persists, replace radiator (p 4-650).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

12. ENGINE DOES NOT REACH OPERATING TEMPERATURE

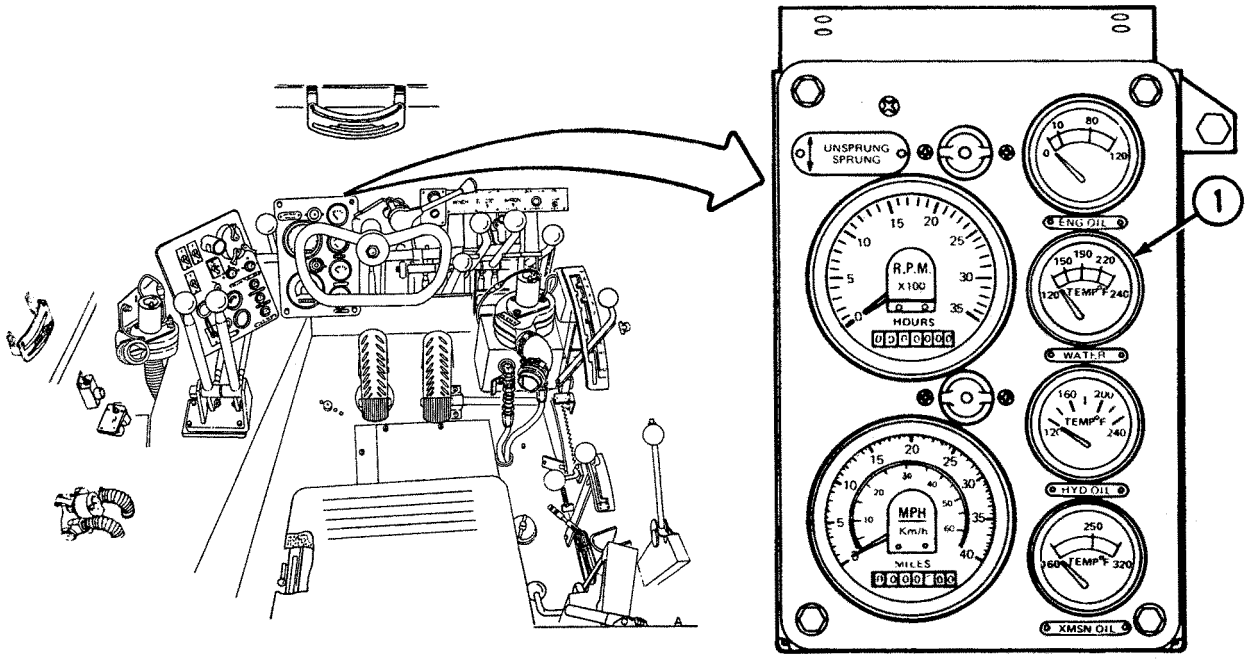
Note

In cold weather operation, the engine may not reach normal operating temperatures. Check mission report before taking maintenance action.

Start vehicle engine (TM 5-2350-262-10) and run until gauge (1) begins to move. Use a thermometer to check coolant temperature.

If thermometer reading varies by 20°F (11°C) from gauge (1) reading, refer to MALFUNCTION 67.

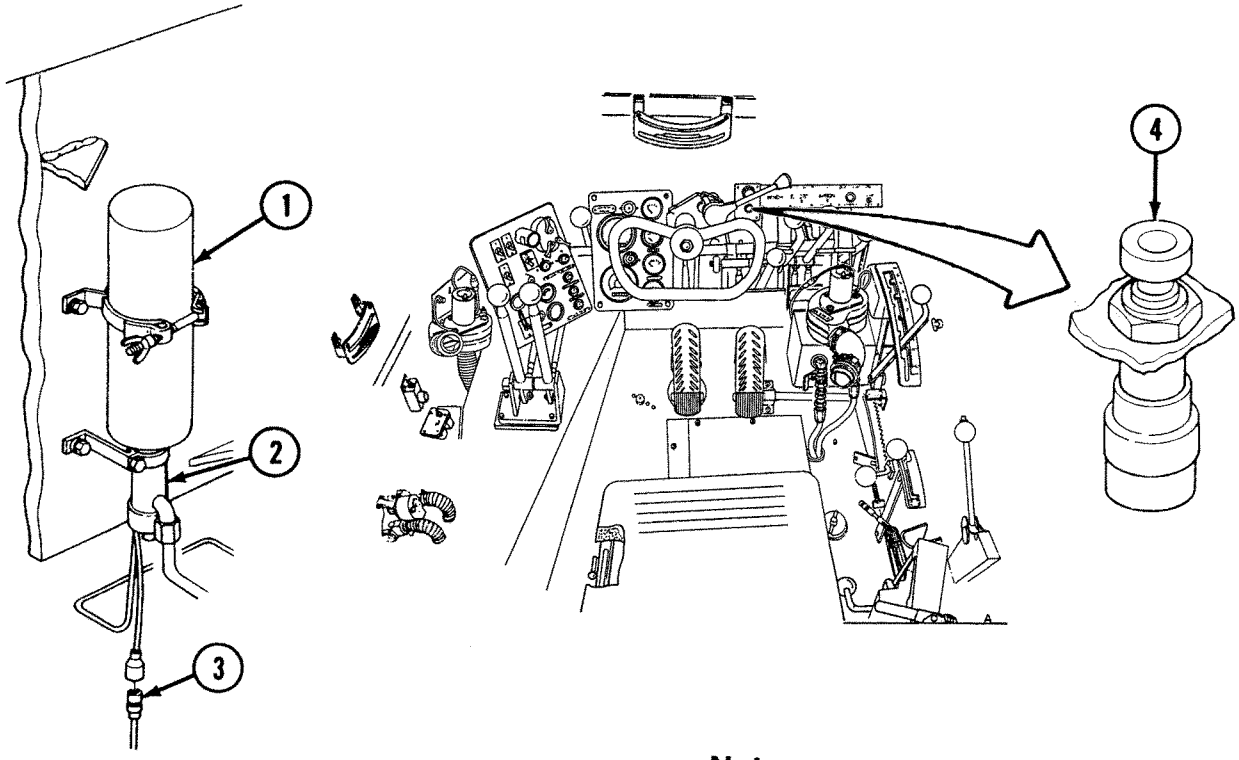
If thermometer and gauge (1) agree, refer to MALFUNCTION 11, step 7 to remove and test thermostats. Replace faulty thermostats.



GAUGE PANEL

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

13. START-AID DOES NOT OPERATE



Note

Start-aid system may not operate below -25°F (-32°C). Replace start-aid cartridge with one warmed to room temperature before beginning troubleshooting.

Step 1. Remove cartridge (1) from valve (2) **(p 4-619).** Shake cartridge (1) to see if there is fluid in cartridge (1).

If cartridge (1) is empty, replace cartridge (1).

If there is fluid in cartridge (1), install cartridge (1) on valve (2) **(p 4-630),** and go to step 2.

Note

Any reading between 0 VDC and 24 VDC implies a good switch. Check batteries
for low voltage before continuing troubleshooting.

Step 2. Disconnect lead (3) from valve (2). Turn MASTER and ignition switches to ON, and press start-aid control switch (4). With switch (4) pushed in, check for 24 VDC at lead (3).

If no voltage is present at lead (3), connect lead (3) to valve (2) and go to step 3.

If 24 VDC is present at lead (3), connect lead (3) to valve (2) and go to step 4.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

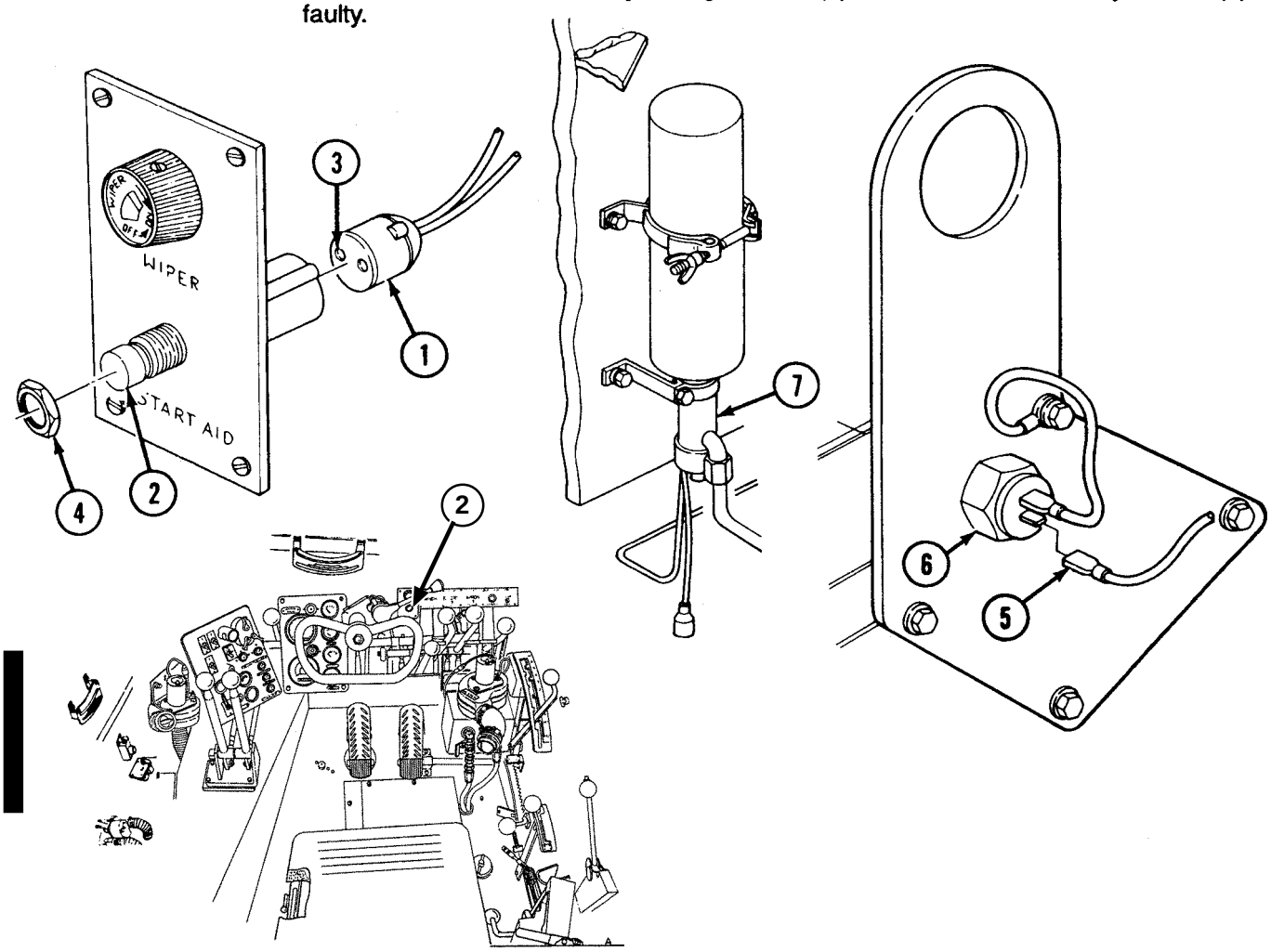
13. START-AID DOES NOT OPERATE — CONTINUED

Step 3. In driver's compartment, disconnect connector (1) from start-aid control switch (2). With MASTER and ignition switches turned to ON, check for 24VDC at lead (3) in connector (1).

If no voltage is present at lead (3), check MASTER switch, ignition switch, circuit breaker, and circuit 569 for faults. Replace faulty components (p 3-11).

If 24VDC is present at lead (3), replace start-aid control switch (2) (p 4-121).

To confirm the findings, remove nut (4) and switch (2) from panel. With switch (2) activated, check for continuity through switch (2). If there is no continuity, switch (2) is faulty.



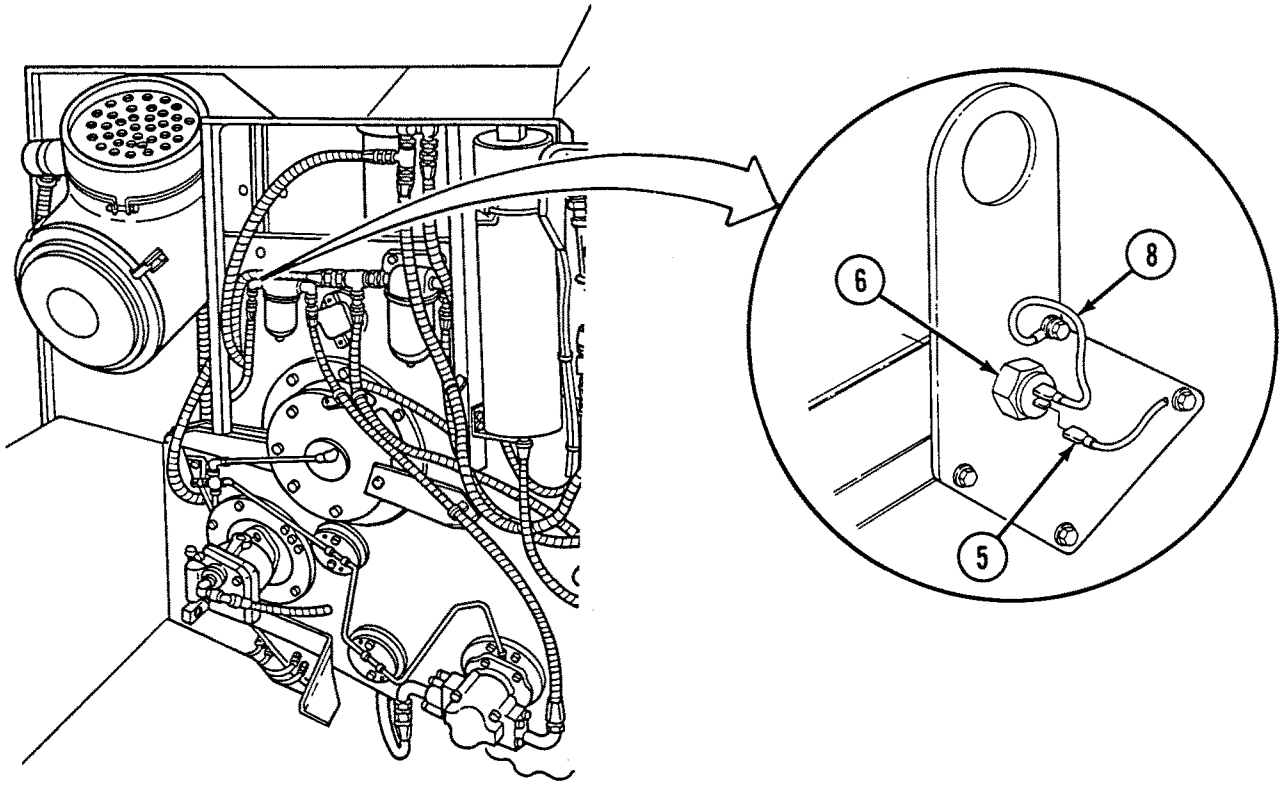
Step 4. Disconnect lead (5) from start-aid thermostat (6). Use a jumper wire to ground lead (5). With MASTER and ignition switches on, press start-aid control switch (2), and listen for click from start-aid valve (7).

If valve (7) does not click, replace start-aid valve (7) (p 4-617).

If valve (7) clicks, go to step 5. Connect lead (5) to thermostat (6).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

13. START-AID DOES NOT OPERATE — CONTINUED



Step 5. Check to ensure thermostat ground lead (8) is securely connected to thermostat (6) and is making good contact with ground.

If ground lead (8) is loose or not making good contact, correct the problem.

If ground lead (8) is damaged, replace lead (8) **(p 4-623).**

If ground lead (8) is secure and making good contact, go to step 6.

Note

Engine coolant temperature must be below 90°F (32°C) for thermostat to operate properly.

Step 6. Disconnect leads (5) and (8) from thermostat (6). Use multimeter to check thermostat (6) for continuity.

This should confirm that thermostat (6) is faulty. Replace thermostat (6) **(p 4-623).**

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

LUBRICATING SYSTEM

14. LOW OIL PRESSURE

Step 1. Check level of engine oil **(TM 5-2350-262-10).**

Add oil if necessary **(TM 5-2350-262-10).**

If oil smells of diesel fuel, notify direct support maintenance.

If oil level is normal, go to step 2.

Step 2. Check viscosity of oil through AOAP sampling.

Drain oil and refill if necessary **(TM 5-2350-262-10).**

If viscosity tests properly, go to step 3.

Step 3. Check external oil lines, gaskets, and seals on engine or transfer case for leaks, or loose or missing hardware.

Tighten or replace loose or missing oil lines **(p 4-560 or p 4-656).**

If condition persists, notify Direct Support maintenance.

15. HIGH OIL PRESSURE

Note

Engine oil pressure gauge may indicate excessive pressure before vehicle reaches operating temperature.

Step 1. Check level of engine oil **(TM 5-2350-262-10).**

Drain oil if necessary **(TM 5-2350-262-10).**

If oil level is normal, go to step 2.

Step 2. Check viscosity of oil through AOAP sampling.

Drain oil and refill if necessary **(TM 5-2350-262-10).**

If viscosity tests properly, go to step 3.

Step 3. Check power package external oil lines for obstructions, kinks, or other damage.

If necessary, replace power package external oil lines **(p 4-560).**

Service engine oil filter **(TM 5-2350-262-10)** and go to step 4.

Step 4. Check engine oil pressure transmitter and gauge.

Troubleshoot engine oil pressure transmitter and gauge, MALFUNCTION 66.

If transmitter and gauge are functioning properly, notify Direct Support maintenance.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

SUSPENSION, STEERING, AND BRAKES

16. VEHICLE IS DIFFICULT TO STEER

Step 1. Check fluid levels in steer unit **(TM 5-2350-262-10).**

Service steer unit **(TM 5-2350-262-10).**

If oil level is normal, go to step 2.

Step 2. Check adjustment of track tension **(TM 5-2350-262-10).**

Adjust track tension **(TM 5-2350-262-10).**

If track tension cannot be adjusted, count the number of track shoes on the affected side. There should be 58 shoes per side. Remove or add shoes as necessary **(p 4-789).**

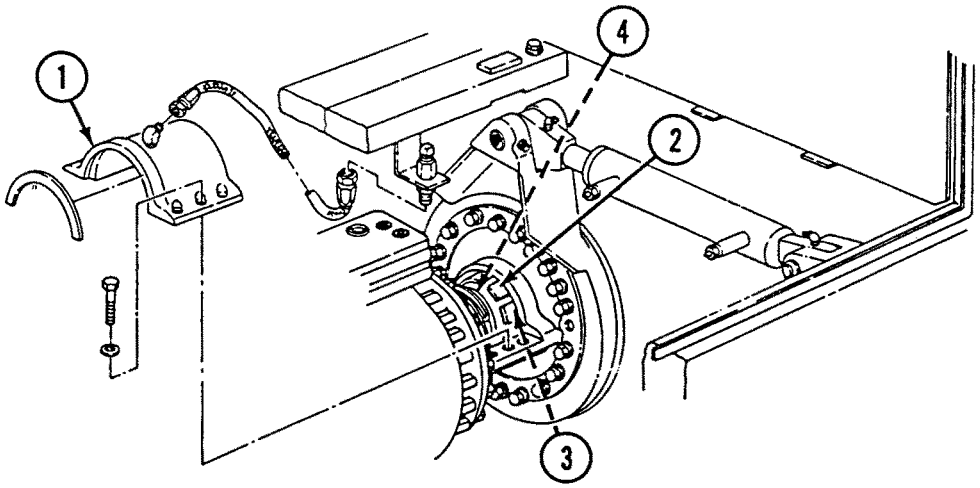
If adjustment is correct, go to step 3.

Step 3. Adjust steering wheel and linkage **(p 4-703).**

If linkage cannot be adjusted, replace or repair damaged parts **(p 4-706).**

If condition persists, notify Direct Support maintenance to replace the steer unit.

17. VEHICLE STEERS TO ONE SIDE ONLY



Step 1. Remove saddle cap (1) **(p 4-734).** Inspect coupling nut (2), final drive input shaft (3), and steer unit output coupling (4) to ensure input shaft (3) is securely connected to output coupling (4).

Connect final drive **(p 4-749),** if necessary.

Notify direct support maintenance to replace damaged final drive input shaft (3) or steer unit output coupling (4).

If input shaft is securely connected to output coupling (4), go to step 2.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

17. VEHICLE STEERS TO ONE SIDE ONLY — CONTINUED

Step 2. Check brake lever adjustment, and brake linkages for damage, binding, or missing parts.

Adjust steer unit brake levers **(p 4-738),** if necessary.

Replace damaged, binding, or missing parts of brake linkage **(p 4-54).**

If condition persists, notify Direct Support maintenance.

18. FINAL DRIVE LEAKING OIL

If leaked oil is inside hull, check final drive fill tubes and plugs, and sealant on saddle caps. If leak is outside vehicle, check drain plug.

Replace damaged fill tube components **(p 4-748),** reseal saddle caps **(p 4-749),** or replace fill plug **(TM 5-2350-262-10).**

If no damage is evident, notify Direct Support maintenance.

19. OIL BLOWN FROM REAR BREATHER

Note

Small amounts of oil are normally blown from the rear breather.

Step 1. Check steer unit oil level **(TM 5-2350-262-10)** to ensure it is not overfilled. Check breather vent line for accumulated oil.

Service steer unit **(TM 5-2350-262-10).**

If problem persists, go to step 2.

Step 2. Check winch motor hydraulic return lines for obstructions.

Remove obstructions, or replace return line **(p 4-420).**

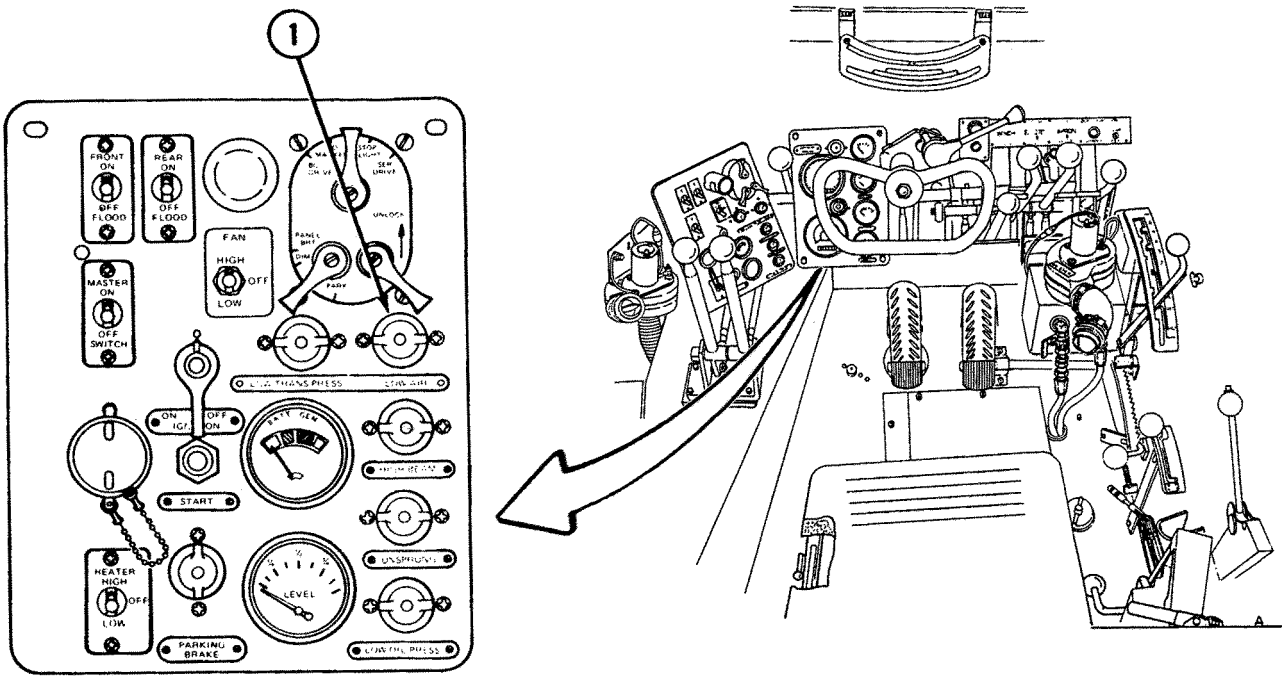
If problem persists, notify Direct Support maintenance to check steer unit output coupling bolt, and replace it if necessary.

20. OIL BLOWN FROM HYDRAULIC BREATHER

Check level of hydraulic reservoir, and drain as necessary **(TM 5-2350-262-10).**

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

21. BRAKES WEAK OR INOPERATIVE



INSTRUMENT PANEL

Note

Brake problems can be caused by mechanical components or air-actuated components. Both types of components are covered in this procedure.

Step 1. If necessary, stop engine (TM 5-2350-262-10). Relieve air pressure (p 2-27). Once pressure is relieved, start vehicle engine (TM 5-2350-262-10). Low air pressure indicator (1) should illuminate.

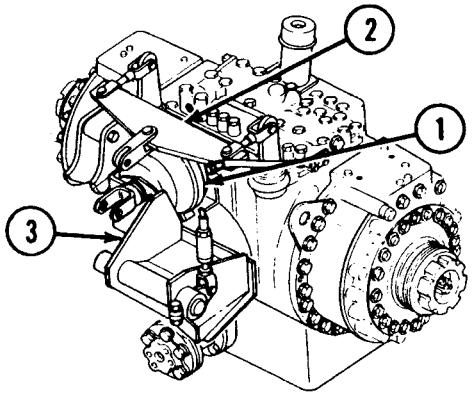
If indicator (1) does not illuminate when engine is started, troubleshoot low air pressure indicator circuit MALFUNCTION 62 before continuing with brake fault isolation.

If indicator (1) stays illuminated longer than 30 seconds, an air pressure problem is indicated. Go to step 10.

If indicator (1) goes out 20-30 seconds after engine start, a mechanical problem may be indicated. Go to step 2.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

21. BRAKES WEAK OR INOPERATIVE – CONTINUED



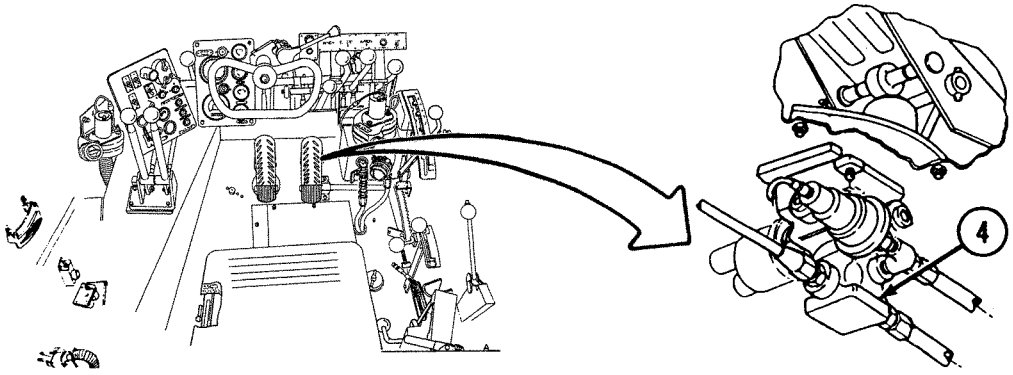
Step 2. Remove rear floor plates (p 4-361), rear floor plates supports (p 4-356), and driver's compartment step (p 4-353).

Check brake chamber (1) and brake linkage (2) for loose, damaged, or missing hardware.

Tighten or replace brake linkage (2) components (p 4-55).

Tighten hardware mounting brake chamber (1) to brake chamber bracket (3).

If no loose, damaged, or missing hardware is found, go to step 3.



Step 3. Stop engine (TM 5-2350-262-10) and relieve air pressure (p 2-27).

Check operation and hardware on service brake valve (4).

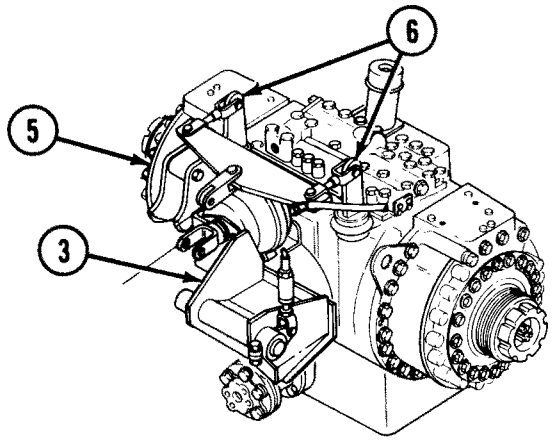
If mounting hardware and hardware on service brake valve (4) are undamaged and operation of service brake valve (4) is smooth without binding, go to step 4.

If mounting hardware or hardware on service brake valve (4) is loose, missing, or damaged, tighten or replace hardware as necessary (p 4-35).

If service brake valve (4) binds during operation, replace service brake valve (4) (p 4-35).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

21. BRAKES WEAK OR INOPERATIVE – CONTINUED



Step 4. Check brake chamber bracket (3) for loose mounting hardware, cracks, or other damage.

Try to shake brake chamber bracket (3). If bracket (3) moves, hardware is loose or missing.

Tighten hardware securing bracket (3) to steer unit (5).

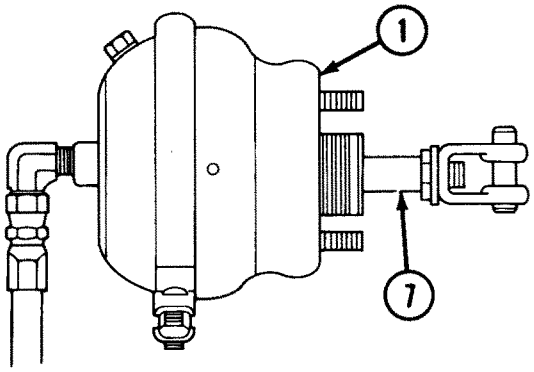
If bracket (3) is loose or damaged, replace bracket (3) (p 4-55).

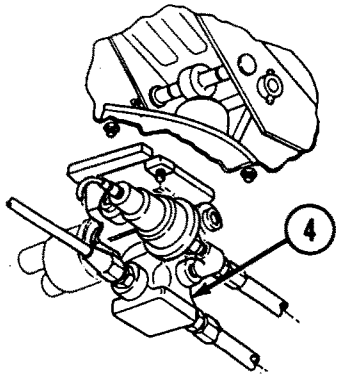
If bracket (3) is undamaged, go to step 5.

Step 5. Adjust steer unit brake levers (6) (p 4-739).

If problem persists, go to step 6.

If brake levers (6) cannot be adjusted, notify direct support maintenance to replace steer unit (5).





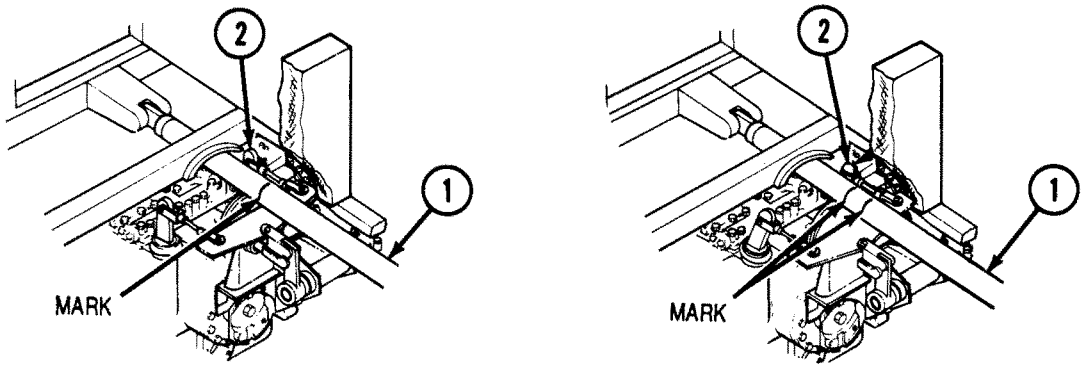
Step 6. Start engine (TM 5-2350-262-10) and observe rod (7) on brake chamber (1).

If rod (7) moves when engine is started, without operating service brake valve (4), a service brake valve (4) is faulty. Replace service brake valve (4) (p 4-35).

If rod (7) does not move, go to step 7.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

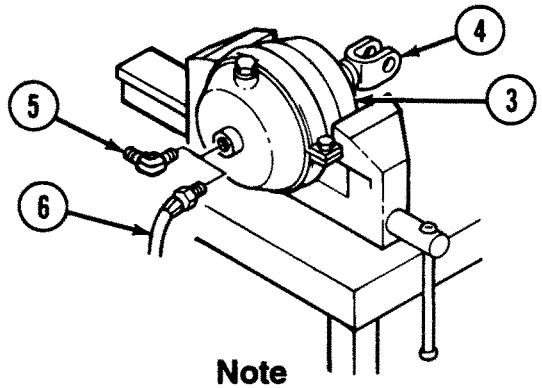
21. BRAKES WEAK OR INOPERATIVE – CONTINUED



Step 7. Scribe a mark on ejector cylinder (1) to mark center of brake lever (2) when brakes are not applied. With engine running and service brake applied, scribe a second mark on ejector cylinder (1) to mark center of brake lever (2). Measure the distance between the two marks. This is the brake stroke.

If brake stroke is 2-3/8-2-5/8 in. (60-67 mm), the brake chamber (3) and external components are in good working order. A problem with internal brake components in the steer unit is possible. Check air system to make sure low air pressure is not complicating the problem, then notify direct support maintenance to replace steer unit.

If brake stroke is not 2-3/8-2-5/8 in. (60-67 mm), go to step 8.



Note

If oil is found in air lines or brake chamber, a faulty compressor is indicated. Notify direct support to replace compressor.

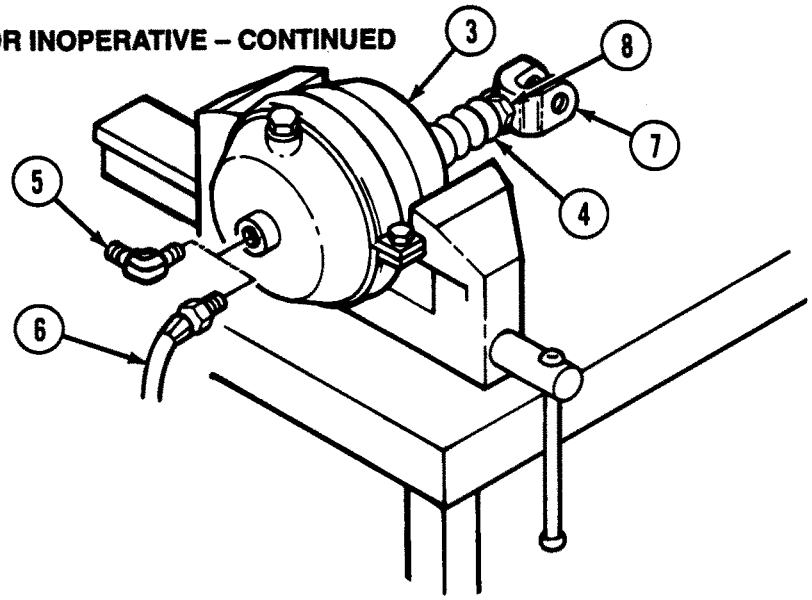
Step 8. Remove brake chamber (3) from vehicle (p 4-22). Place brake chamber (3) in a vise so stroke of rod (4) may be measured. Remove elbow (5) from brake chamber (3). Connect air hose (6) from BII to air source and brake chamber (3). Pressurize brake chamber (3).

If a whistling noise is heard from brake chamber (3), a punctured or leaking diaphragm in brake chamber (3) is indicated. Replace brake chamber (3) (p 4-22).

If no whistling sound is heard, go to step 9.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

21. BRAKES WEAK OR INOPERATIVE – CONTINUED



WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting until air pressure has been relieved. Failure to comply may result in severe injury to personnel.

Note

Air source should be 75-85 psi (517-586 kPa).

Step 9. Relieve air pressure from brake chamber (3). Measure distance from rear of brake chamber (3) to yoke (7) on rod (4). Apply air pressure to brake chamber (3) and measure from rear of brake chamber (3) to yoke (7). Subtract first measurement from second measurement to calculate stroke of rod (4). Stroke of rod (4) should be 2-1/8-2-1/4 in. (54-57 mm).

If stroke of rod (4) is between 2-1/8-2-1/4 in. (54-57 mm), an air system problem has led to a false conclusion. Go to step 10 to troubleshoot air system.

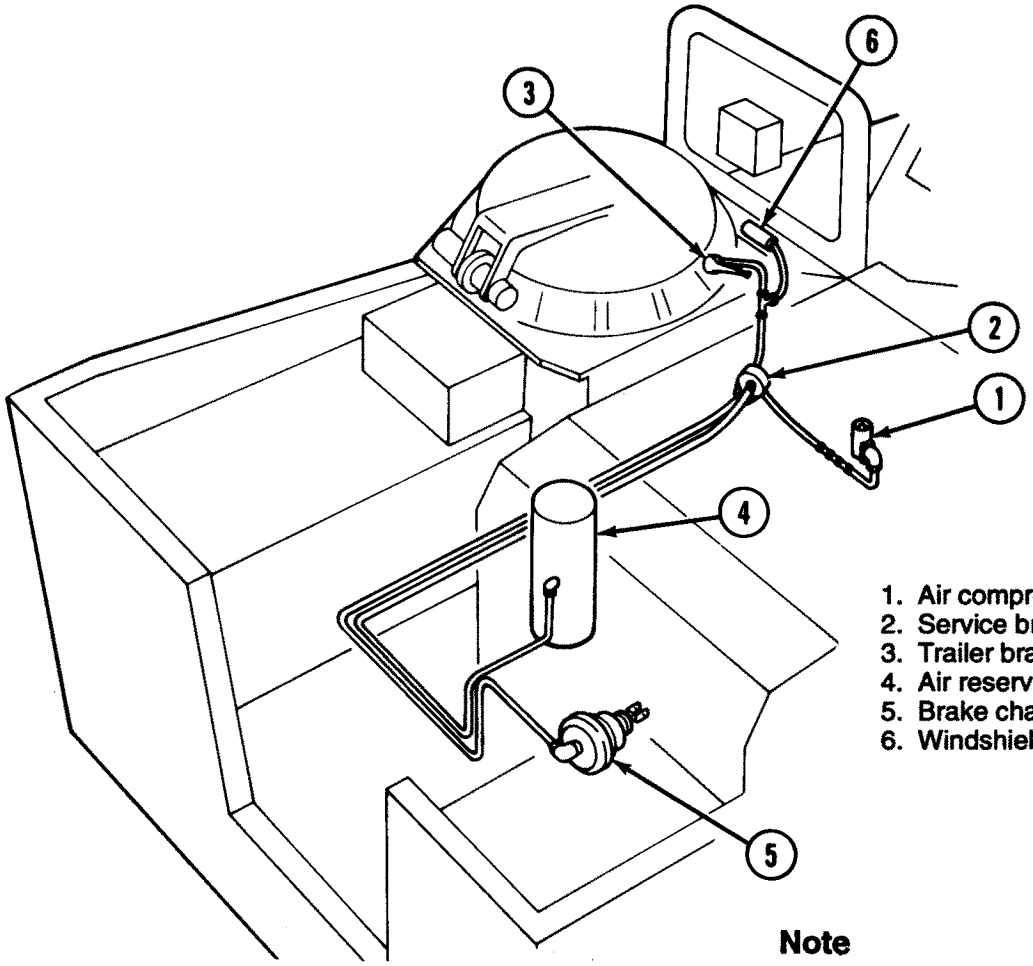
If stroke of rod (4) is less than 2-1/8 in. (54 mm), relieve air pressure from brake chamber (1). Loosen jamnut (8) on rod (4) and pressurize brake chamber (3). Turn yoke (7) to the left to lengthen stroke, or to the right to shorten stroke, until stroke of rod (8) is 2-3/16 in. (56 mm). Turn yoke (7) three more full turns to the left. This will keep squash plate inside brake chamber (3) from bottoming out. Tighten jamnut (8) against back of yoke (7). Relieve pressure from brake chamber (3), disconnect air hose (6), install elbow (5) in brake chamber (3), remove brake chamber (3) from vise, and install brake chamber (3) on vehicle (p 4-22).

If brake chamber (3) cannot be adjusted, replace brake chamber (3) (p 4-22).

If problem persists, a problem with internal brake components in the steer unit is possible. Check air system to make sure low air pressure is not complicating the problem, then notify direct support maintenance to replace steer unit.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

21. BRAKES WEAK OR INOPERATIVE – CONTINUED



1. Air compressor governor
2. Service brake valve
3. Trailer brake valve
4. Air reservoir
5. Brake chamber
6. Windshield wiper control

Note

Idle engine for 45 seconds to 1 minute to pressurize air system as completely as possible, then shut off engine. Step 10 may have to be performed several times to locate a leak.

Step 10. Remove rear floor plates (p 4-361), rear floor plates supports (p 4-356), and driver's compartment step (p 4-353).

With air system pressurized, listen for leaks at components listed in above illustration.

Tighten loose connections, or refer to list of tasks (p vii), or alphabetical index (p INDEX 1) and replace damaged components. If problem persists, go to step 11.

If no leaks, loose connections, or damaged components are found, go to step 11.

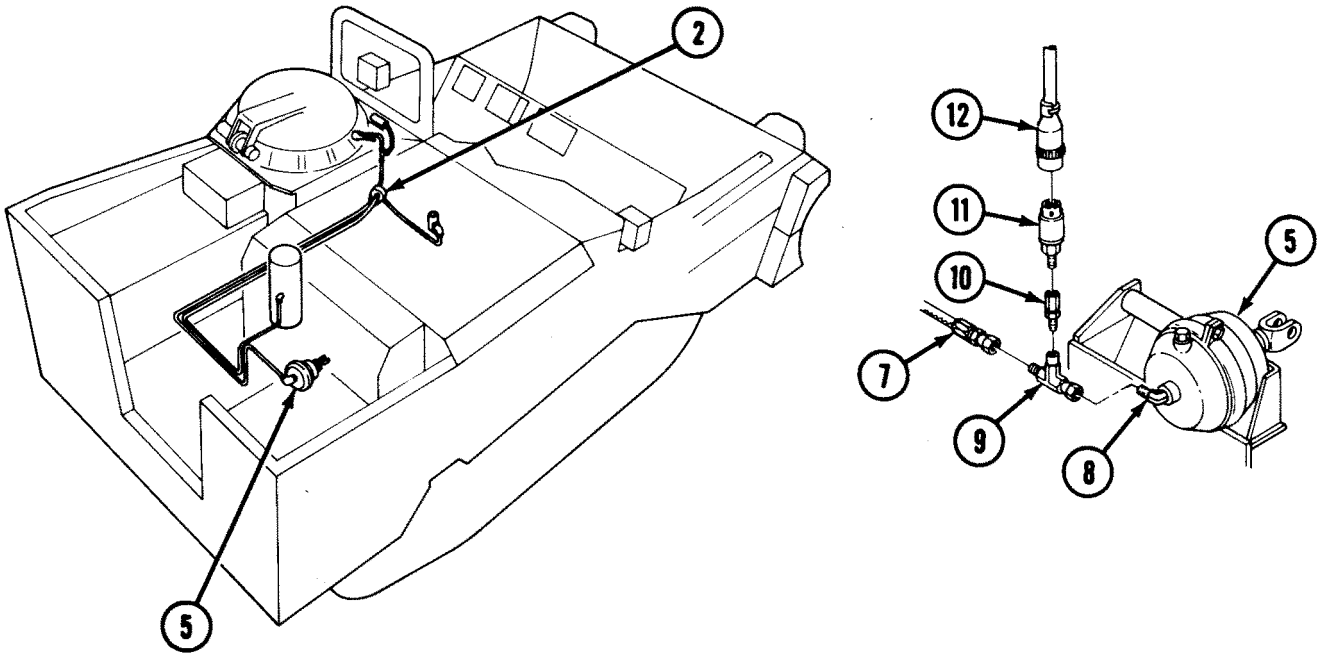
Step 11. Adjust air compressor governor (1) (p 4-28).

If governor adjustment does not correct problem, go to step 12.

If governor (1) cannot be adjusted, go to step 15.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

21. BRAKES WEAK OR INOPERATIVE – CONTINUED



Note

STE/ICE-R pressure tests take continual readings until highest value is attained. Run test until highest value is reached.

Step 12. Stop vehicle engine (TM 5-2350-262-10) and relieve air pressure (p 2-27). Remove hose (7) from elbow (8) on brake chamber (5).

Install 12258800 tee (9) on elbow (8). Install hose (7), 4730-01-305-5796 adapter (10), and transducer (11) on tee (9). Connect W4 cable (12) from VTM to transducer (11).

Start engine (TM 5-2350-262-10). Perform pressure test 50 on VTM.

If VTM indicates more than 0 psi with engine running and without operating service brake valve (2), service brake valve (2) is allowing leakage. Replace service brake valve (2) (p 4-35).

If VTM indicates 0 psi, go to step 13.

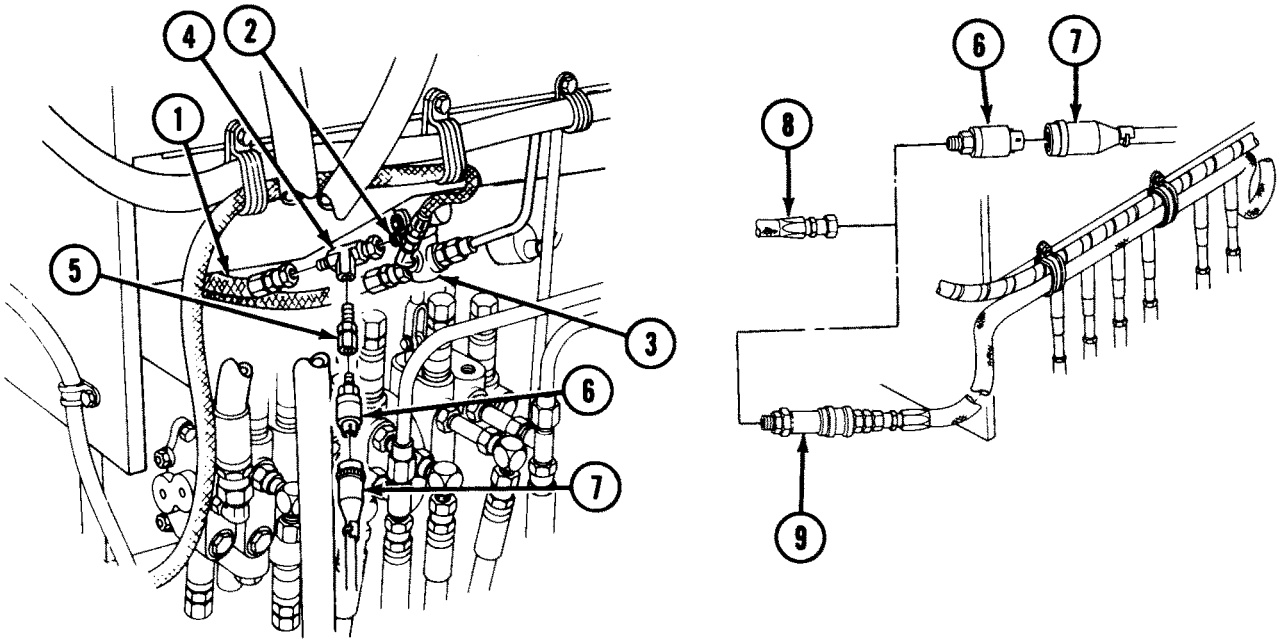
Step 13. With engine running and transducer (11) still connected to hose (7) and elbow (8), apply and hold open service brake valve (2). Perform pressure test 50 on VTM while service brake valve (2) is applied.

If VTM indicates 120-127 psi (827-876 kPa), replace brake chamber (5) (p 4-22).

If VTM does not indicate 120-127 psi (827-876 kPa), go to step 14.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

21. BRAKES WEAK OR INOPERATIVE – CONTINUED



Note

STE/ICE-R pressure tests take continual readings until highest value is attained. Run test until highest value is reached.

Step 14. Stop vehicle engine (TM 5-2350-262-10) and relieve air pressure (p 2-27). Disconnect hose (1) from adapter (2) on service brake valve (3). Install MS51523B8 tee (4) on adapter (2). Install 4730-01-305-5796 adapter (5) and transducer (6) on tee (4). Connect hose (1) to tee (4). Connect W4 cable (7) from VTM to transducer (6). Start engine (TM 5-2350-262-10). Apply and hold down service brake valve (3). Perform pressure test 50 while brake valve (3) is held down.

If VTM indicates 120-127 psi (827-876 kPa), check hose (1) for blockage.

If VTM indicates less than 120 psi (827 kPa), remove hose (1), transducer (6), adapter (5), and tee (4) from adapter (2). Connect hose (1) to adapter (2), and go to step 15.

Note

Air hose is a 37 degree flare fitting and transducer is an NPT fitting. Use an adapter, if available. If not, tighten transducer only until snug in hose.

Step 15. Disconnect hose (8) from quick-disconnect (9). Install pressure transducer (6) on hose (8). Connect W4 cable (7) from VTM to transducer (6). Start engine (TM 5-2350-262-10) and perform pressure test 50.

If VTM indicates 120 psi (827 kPa) or greater, replace air compressor governor (p 4-31).

If VTM indicates less than 120 psi (827 kPa), notify direct support maintenance to replace air compressor.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

22. BRAKES DRAG

If brakes drag, check for leaking service brake valve, MALFUNCTION 21, step 6.

23. PARKING BRAKE CANNOT BE ENGAGED, OR DOES NOT HOLD VEHICLE

Step 1. Check parking brake lever and cable adjustment (p 4-47).

Adjust lever and cable (p 4-47).

If lever and cable cannot be adjusted, replace damaged components (p 4-50).

Step 2. Check service brakes for weak or inoperative condition.

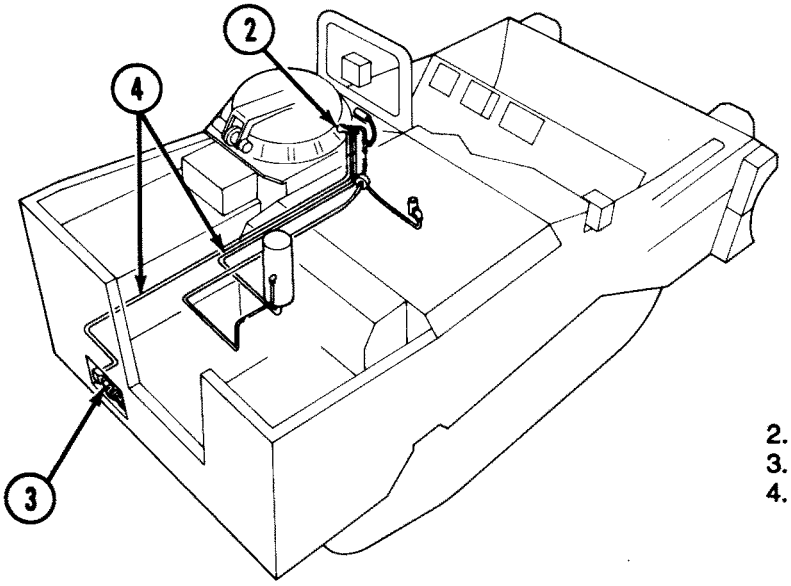
Refer to MALFUNCTION 21.

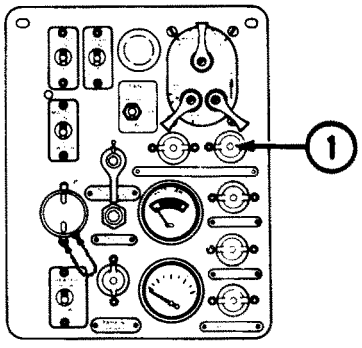
24. TRAILER BRAKES WEAK OR INOPERATIVE

Step 1. With engine running, check low air pressure indicator (1).

If indicator (1) illuminates, refer to MALFUNCTION 63.

If indicator (1) does not illuminate, go to step 2.





INSTRUMENT PANEL

2. Trailer Brake Valve (2)
3. Trailer Brake Coupling (3)
4. Trailer Brake Air Hoses (4)

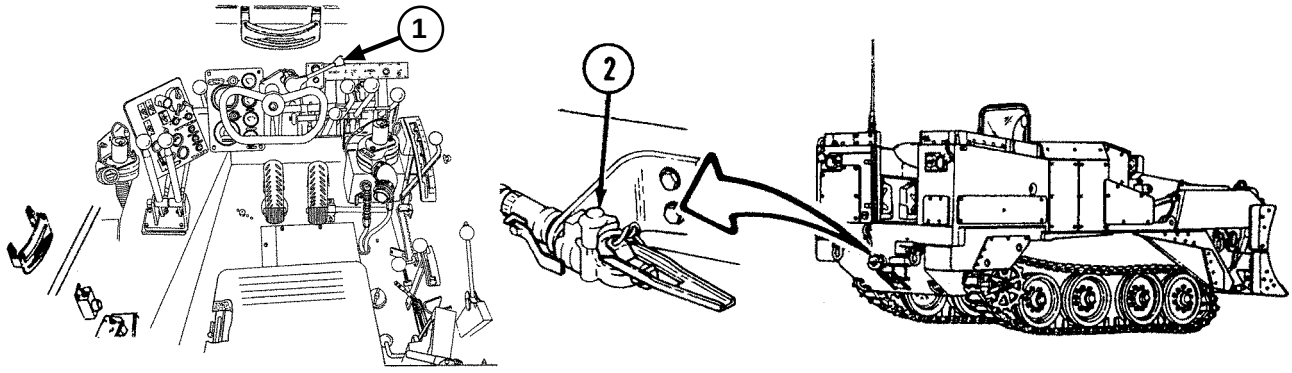
Step 2. With engine running and trailer brake valve (2) activated, use soap solution to check for leaks at trailer brake valve (2), coupling (3), hoses (4), and all connections.

Replace damaged components (p 4-16 or p 4-33).

If no leaks are found, go to step 3.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

24. TRAILER BRAKES WEAK OR INOPERATIVE – CONTINUED



Step 3. With engine running, operate trailer brake valve (1) and listen for escape of air from coupling (2).

If no air escapes from coupling (2), replace trailer brake valve (1) (p 4-38).

If air escapes from coupling (2), troubleshoot braking system of towed vehicle.

25. BRAKES PULL TO ONE SIDE

Step 1. Check adjustment of track tension

Adjust track tension (TM 5-2350-262-10).

If track tension cannot be adjusted, count number of track shoes on affected side of vehicle. There should be 58. Remove or add shoes (p 4-789) as necessary.

If problem persists, go to step 2.

Step 2. Inspect parking brake and service brake linkage components for damage, binding, or excessive wear.

Repair or replace defective components (p 4-50 and p 4-55).

If no damage, binding, or wear is evident, go to step 3.

Step 3. Check adjustment of steer unit brake levers (p 4-739).

Adjust steer unit brake levers (p 4-739).

If condition persists, go to step 4.

Step 4. Remove the saddle cap (p 4-750) on the side opposite of braking problem. For example, if brakes pull to the right, disconnect the left side final drive. Inspect coupling nut, final drive input shaft, steer unit output coupling, and output coupling bolt.

Connect final drive (p 4-752) and stake coupling nut, if necessary.

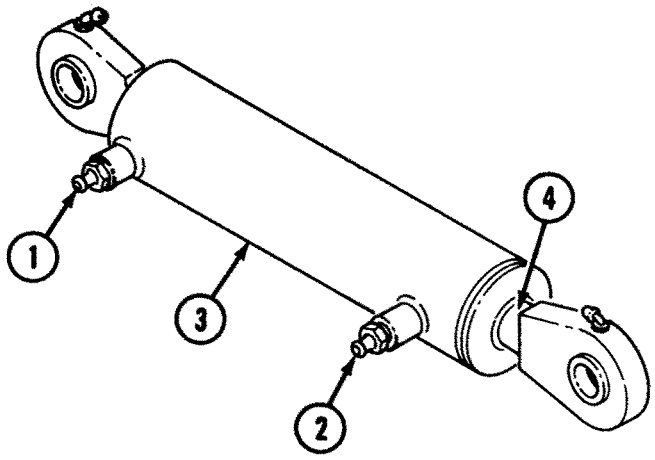
Notify direct support maintenance to replace damaged components.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

26. TRACK ADJUSTING CYLINDER DOES NOT MAINTAIN PROPER TRACK TENSION

Note

For Semi-Automatic track adjusting system (NEW PRODUCTION), refer to TM 5-2350-262-20-3.



Note

It is harder to maintain proper track tension on a worn track.

Step 1. Check valves (1) and (2) to see if grease is leaking. If grease is leaking from valves (1) and (2), remove valves, wipe clean, and check for sticking or other damage. Replace damaged valve (1) or (2). Check cylinder (3) for cracks. Replace cracked cylinder (3) (p 4-866).

If no grease leaking is evident, go to step 2.

Step 2. Remove cylinder (3) from vehicle (p 4-866). Open valves (1) and (2) and fully extend piston rod (4). Close and tighten valve (2). Fill cylinder (3) with grease at valve (1) until piston rod (4) is fully retracted. Tighten valve (1) and install cylinder (3) in vehicle (p 4-866). Adjust track tension (TM 5-2350-262-10).

If unable to maintain track tension, replace cylinder (3) (p 4-866).

27. VEHICLE THROWS TRACK

CAUTION

Do not attempt to walk track back on. Failure to comply may result in damage to track and suspension.

Step 1. Install track (p 4-784) and check track tension (TM 5-2350-262-10).

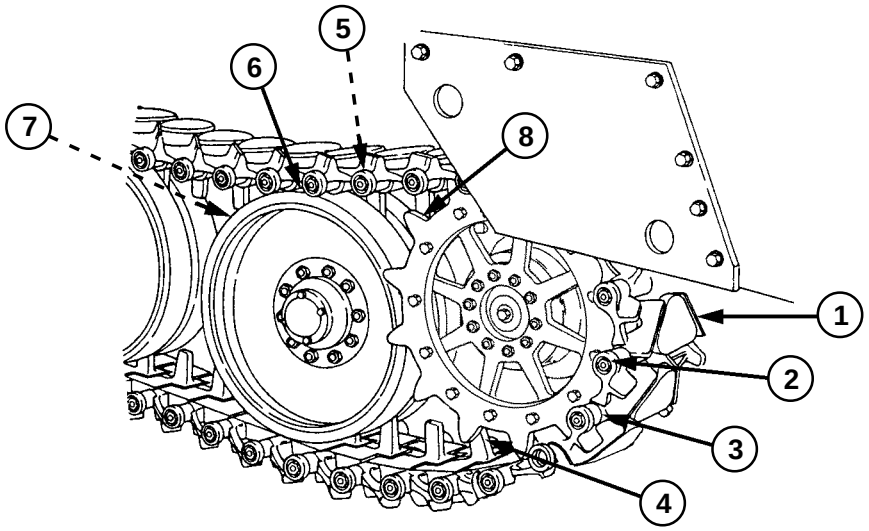
Adjust track tension, if necessary (TM 5-2350-262-10).

If track tension cannot be adjusted, check the number of track shoes on the affected side. There should be 58 track shoes. Remove extra shoes (p 4-789) as necessary.

If track tension is correct, go to step 2.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

27. VEHICLE THROWS TRACK — CONTINUED



Step 2. **Inspect track retainers for loose or missing hardware, or other damage** (p 4-363).

If necessary, replace damaged retainers (p 4-363).

Tighten or replace damaged or missing hardware. If no damage is evident, go to step 3.

Step 3. **Check track for broken track shoes (1), track pins (2), bushings (3), and center guides (4).**

Replace defective components (p 4-783 or p 4-789).

If no damage is evident, go to step 4.

Step 4. **Inspect roadwheel arms (5) for bent, broken, or missing mounting hardware, and inspect roadwheels (6) for chipped, worn, or missing rubber, and for broken or missing wear rings (7).**

Replace damaged roadwheel arms (5) (p 4-854).

Replace broken or missing roadwheel arm mounting hardware (p 4-854).

Replace defective roadwheels (6) (p 4-760, p 4-767, or p 4-771).

If no damage is evident, go to step 5.

Step 5. **Inspect drive sprocket (8) for missing, bent, or worn teeth, and missing bolts, nuts, or broken, or bent final drive studs.**

Replace damaged drive sprocket (8) (p 4-758.1).

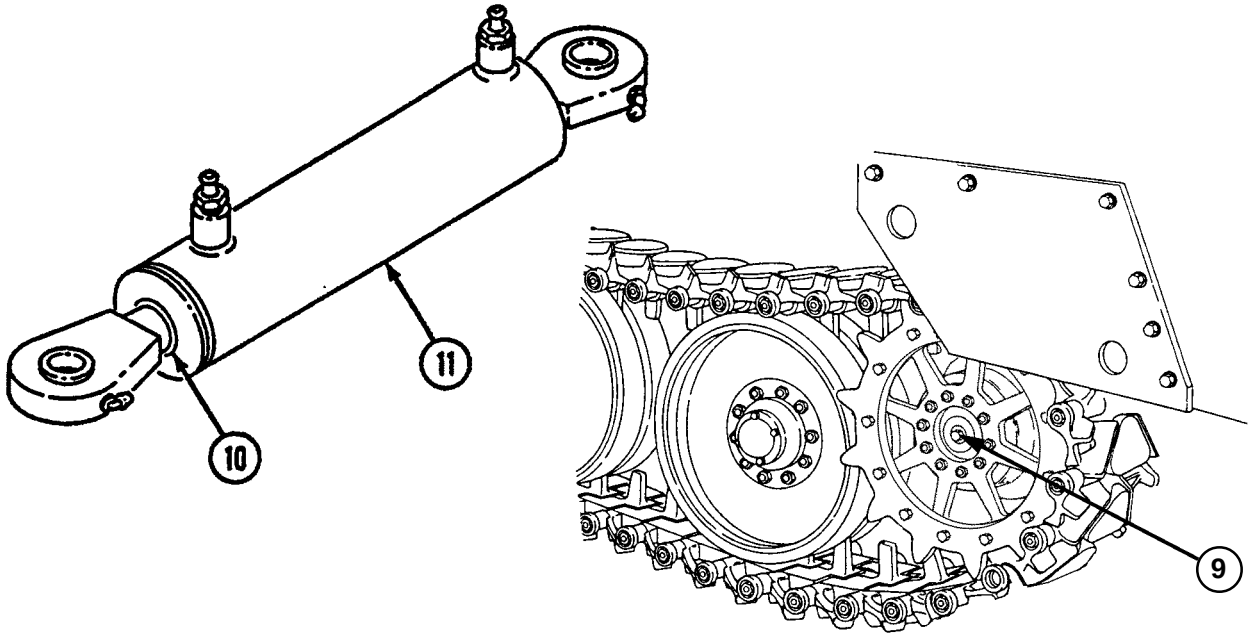
Replace missing mounting hardware.

Notify direct support maintenance to replace broken or bent final drive stud.

If no damage is evident, go to step 6.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

27. VEHICLE THROWS TRACK – CONTINUED



Step 6. Inspect final drive bolt (9) for looseness or other damage.

Notify Direct Support maintenance to replace final drive bolt (9).

If no damage is evident, go to step 7.

Step 7. Note position of piston rod (10) of track adjusting cylinder (11). Drive vehicle backward and forward several times and check position of rod (10).

If position of piston rod (10) has changed, refer to MALFUNCTION 26.

TRANSMISSION

28. TRANSMISSION OIL TEMPERATURE TOO HIGH

Step 1. Check steer unit oil level (TM 5-2350-262-10).

Service steer unit (TM 5-2350-262-10).

If oil level is within operating range, go to step 2.

Step 2. Check temperature indicating circuit for faults. Refer to MALFUNCTION 64.

If circuit is operating properly, go to step 3.

28. TRANSMISSION OIL TEMPERATURE TOO HIGH — CONTINUED

Step 3. Check oil lines for leaks, loose connections, or signs of obstructions.

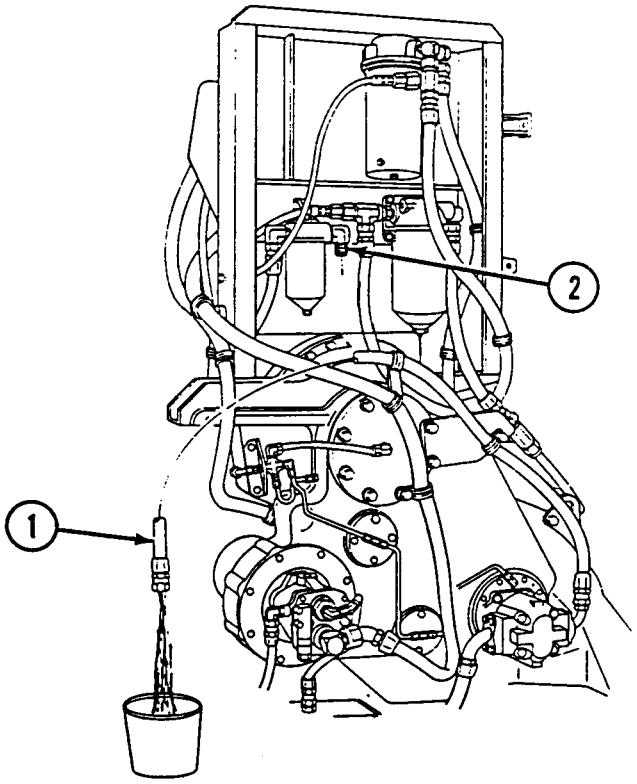
Tighten all connections securely, or replace damaged lines **(p 4-565).**

If no damage is evident, go to step 4.

Step 4. Check transmission oil filter elements or scavenger pump filter element for obstructions or clogging.

Replace transmission oil filter element **(p 4-695).** Clean and inspect scavenger pump filter element, or replace if damaged **(p 4-659).**

If condition persists, go to step 5.



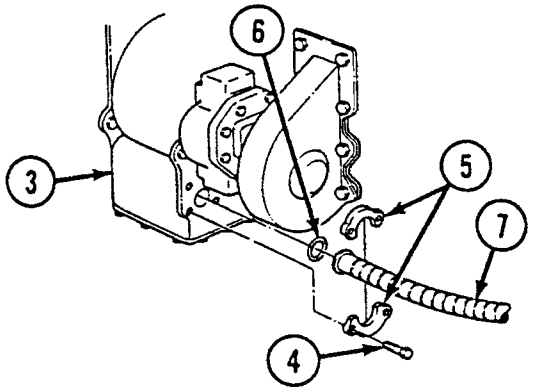
Step 5. Disconnect hose (1) from scavenger pump filter inlet (2). Hold hose over a bucket or container with at least 5 gal. (19 L) capacity. Start engine **(TM 5-2350-262-10),** and run vehicle for 15 seconds. Stop engine **(TM 5-2350-262-10)** and measure quantity of oil in bucket or container. Multiply by four to convert to gallons per minute (Liters per minute). Service steer unit after test **(TM 5-2350-262-10).**

If flow is at least 14.7 gpm (55.6 Lpm), go to step 8.

If flow is less than 14.7 gpm (55.6 Lpm), go to step 6.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

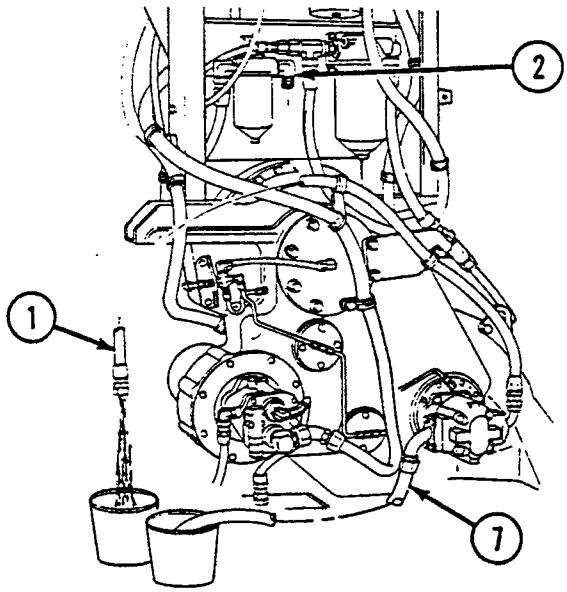
28. TRANSMISSION OIL TEMPERATURE TOO HIGH – CONTINUED



Step 6. Remove access cover under transmission (3) (p 4-376). Drain oil from transmission (3) (TM 5-2350-262-10). Remove four screws (4), two fittings (5), packing (6), and hose (7) from transmission (3). Check transmission (3) and hose (7) for obstructions. Discard packing (6).

Remove obstructions, or replace hose (7) (p 4-566).

If no obstructions are evident, go to step 7.



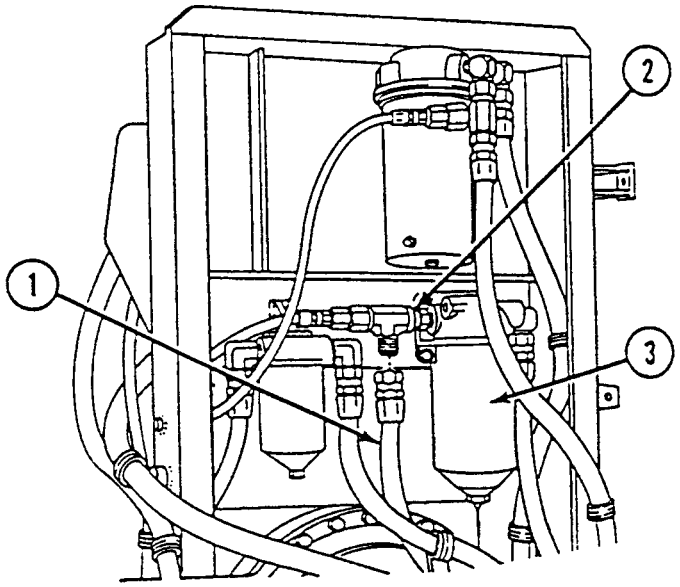
Step 7. Plug opening in transmission (3). Pull hose (7) into bowl area and place end of hose (7) in container containing 5 gal. (19 L) of oil. Disconnect hose (1) from scavenger pump filter inlet (2). Place end of hose (1) in a container with a 5 gal. (19 L) capacity. Start vehicle engine (TM 5-2350-262-10) and run for 15 seconds. Stop engine (TM 5-2350-262-10), and measure quantity of oil in container. Multiply quantity by four to convert to gallons per minute (Liters per minute). Connect hose (1) to filter inlet (2), and install hose (7) on transmission (3) with packing (6), two fittings (5), and four screws (4) after test. Tighten screws (4) to 25-28 lb-ft (34-38 N·m).

If flow is at least 13.2 gpm (50 Lpm), go to step 8.

If flow is less than 13.2 gpm (50 Lpm), replace scavenger pump (p 4-669).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

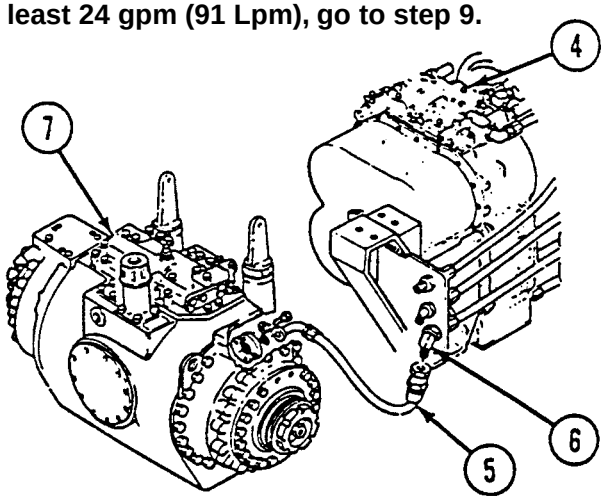
28. TRANSMISSION OIL TEMPERATURE TOO HIGH – CONTINUED



Step 8. Service transmission, steer unit, and transfer case oil level (TM 5-2350-262-10). Disconnect hose (1) from transmission oil filter inlet (2) and place in container with a 5 gal. (19 L) capacity. Start engine (TM 5-2350-262-10), and increase engine speed to 2,600 rpm for 5 seconds, then stop engine. Measure quantity of oil, and multiply by 12 to convert to gpm (Lpm). Connect hose (1) to filter inlet (2) after test.

If flow is less than 24 gpm (91 Lpm), isolate and replace restricted hose between transmission oil filter (3) and transmission valve body (4) (p 4-565).

If flow is at least 24 gpm (91 Lpm), go to step 9.



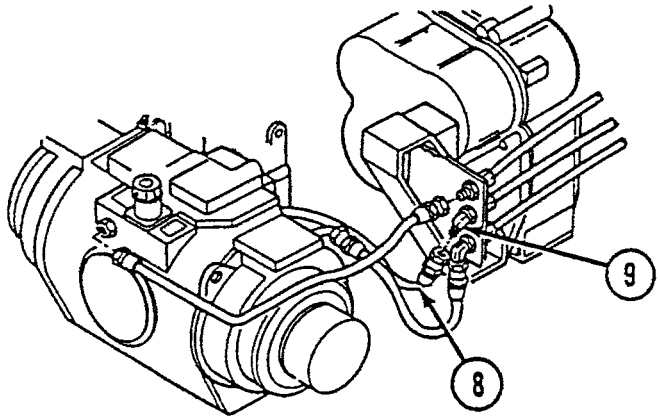
Step 9. Drain oil from steer unit (TM 5-2350-262-10). Disconnect hose (5) from elbow (6) and steer unit (7). Check hose (5) for obstructions.

If hose (5) is obstructed, replace it.

If no damage is evident, connect hose (5) to elbow (6) and steer unit (7), and go to step 10.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

28. TRANSMISSION OIL TEMPERATURE TOO HIGH – CONTINUED

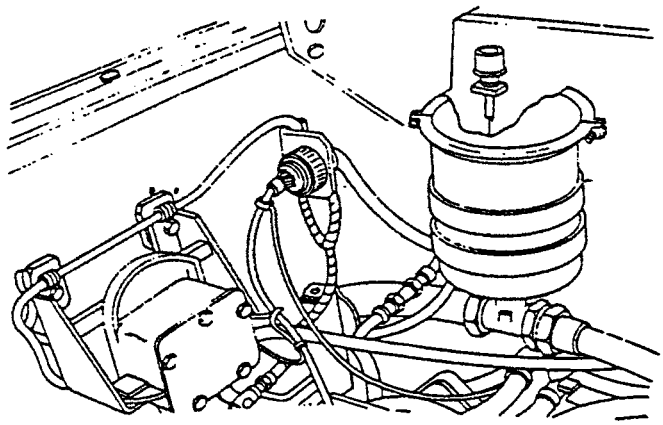


Step 10. Disconnect hose (8) from elbow (9). Check hose (8) for obstruction.

If hose (8) is obstructed, replace hose (8) (p 4-725).

If hose (8) is not obstructed, cause of problem could be either a clogged strainer inside the front of the steer unit, through which oil passes to the transmission charging pump, or a faulty charging pump. Notify Direct Support maintenance.

29. OIL BLOWN FROM TRANSFER CASE BREATHER



Step 1. Check oil level in transmission, steer unit, and transfer case (p 4-363).

Drain oil if necessary (TM 5-2350-262-10).

If oil level is normal, go to step 2.

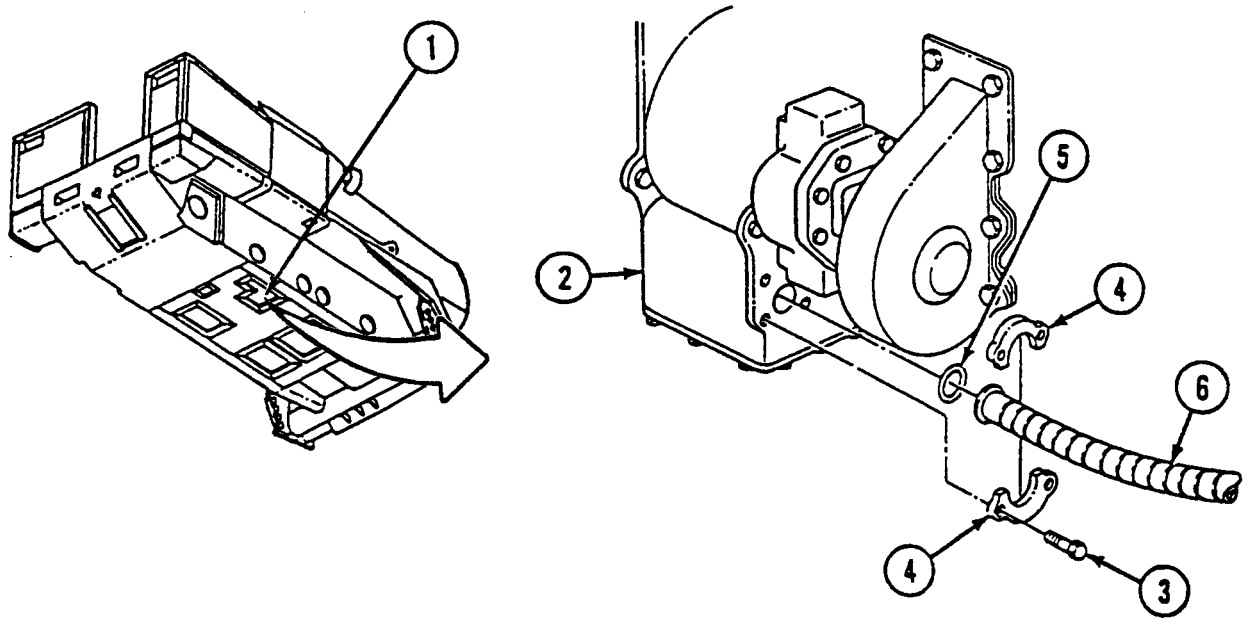
Step 2. Check filters and hoses for obstructions.

Replace clogged filter elements (p 4-659 or p 4-695) or obstructed hoses (p 4-565).

If no obstructions are found, go to step 3.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

29. OIL BLOWN FROM TRANSFER CASE BREATHER — CONTINUED



Step 3. Remove access cover (1) under transmission (2) (p 4-375). Drain oil from transmission (2) (TM 5-2350-262-10). Remove four screws (3), two fittings (4), packing (5), and hose (6) from transmission (2). Check transmission (2) and hose (6) for obstructions.

If hose (6) is obstructed, replace hose (6) (p 4-565).

If hose (6) is not obstructed, notify Direct Support maintenance to replace transmission.

30. TRANSMISSION DOES NOT SHIFT PROPERLY

Step 1. Check oil level in steer unit (TM 5-2350-262-10).

Add oil, if necessary (TM 5-2350-262-10).

If condition persists, check oil level in steer unit again. If level has dropped, an obstruction leading to the scavenger pump is indicated. Refer to MALFUNCTION 28, step 4.

If oil level is normal, go to step 2.

Step 2. Check for loose or leaking transmission shifting lines and fittings.

Tighten or replace leaking fittings (p 4-565).

If no damage is evident, go to step 3.

Step 3. Check transmission oil filters and scavenger pump filter for obstructions or clogging.

Replace clogged filter elements (p 4-659 or p 4-695).

If no damage is evident, go to step 4.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

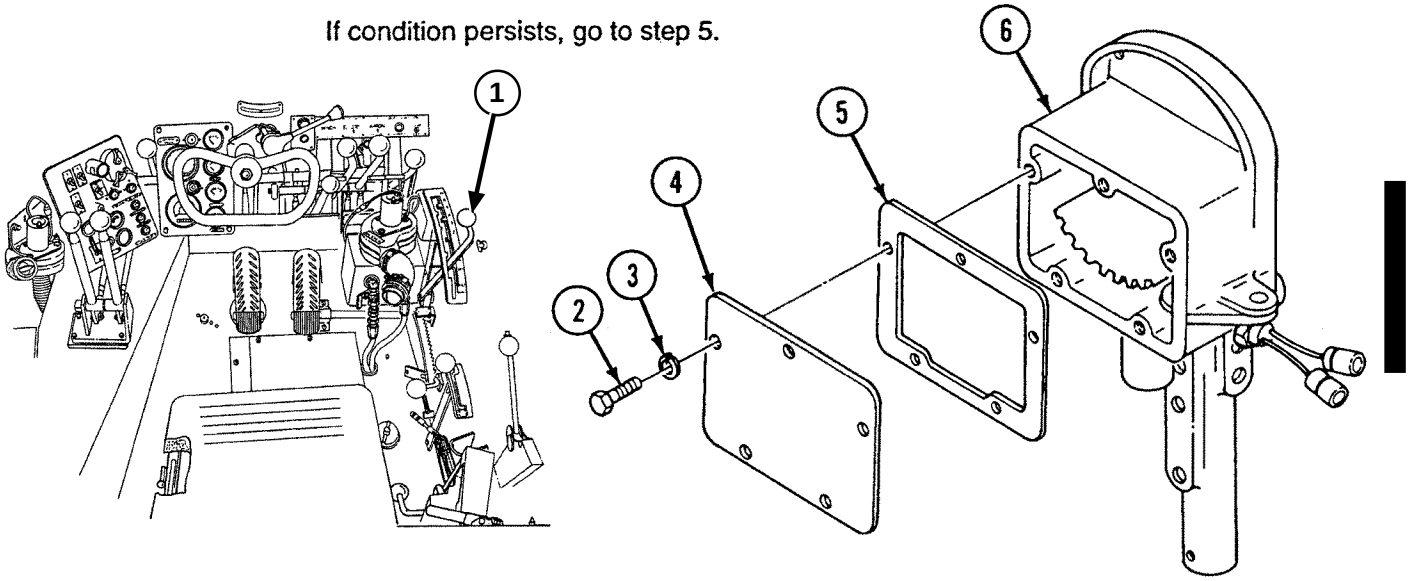
30. TRANSMISSION DOES NOT SHIFT PROPERLY — CONTINUED

Step 4. Check shift accumulator for proper charge **(p 4-679).**

Charge accumulator, if necessary **(p 4-679).**

If accumulator will not hold a charge, replace accumulator **(p 4-684).**

If condition persists, go to step 5.



Step 5. Relieve shifting pressure by moving shift control lever (1) through all ranges several times. Remove five screws (2), washers (3), cover (4), and gasket (5) from shift control valve (6). Discard gasket (5). While another mechanic or helper moves the control lever (1) through gear ranges, observe the operation of the control valve (6). Install gasket (5), cover (4), five washers (3), and screws (2) after test.

If control valve (6) binds, or other damage is evident, replace control valve (6) **(p 4-686).**

If no damage is evident, go to step 6.

Step 6. Inspect shift control valve lines for loose or leaking fittings.

Tighten or replace leaking lines and fittings **(p 4-673).**

If no damage is evident, go to step 7.

Step 7. Check for correct linkage adjustment.

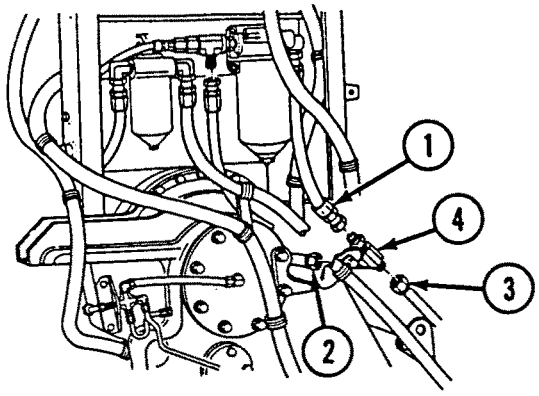
Adjust linkage **(p 4-692).**

If linkage cannot be adjusted, replace damaged parts **(p 4-690).**

If condition persists, go to step 8.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

30. TRANSMISSION DOES NOT SHIFT PROPERLY — CONTINUED



Step 8. Disconnect hose (1) and tubes (2) and (3) from tee (4). Check tube (2) for obstructions. Cover ends of tubes (2) and (3) after test.

If tube (2) is damaged or obstructed, replace tube (2) **(p 4-565).**

If tube (2) is undamaged, go to step 9.

Step 9. Place hose (1) in a container with a 5 gal. (19 L) capacity. Start vehicle **(TM 5-2350-262-10)** and increase engine speed to 2,600 rpm. Stop engine after 5 seconds. Measure quantity of oil in container, then multiply by 12 to convert to gallons per minute (Liters per minute).

If flow is at least 24 gpm (91 Lpm), notify direct support maintenance to replace transmission.

If flow is less than 24 gpm (91 Lpm), check hoses from transmission charging pump for obstructions. Replace damaged hoses (p 4-565). If hoses are undamaged, notify direct support maintenance to replace transmission charging pump.

31. EXCESSIVE NOISE OR VIBRATION

Step 1. Check for damaged components or transmission output flange.

Replace damaged output flange **(p 4-701).**

Replace damaged components **(p 4-742).**

If condition persists, go to step 2.

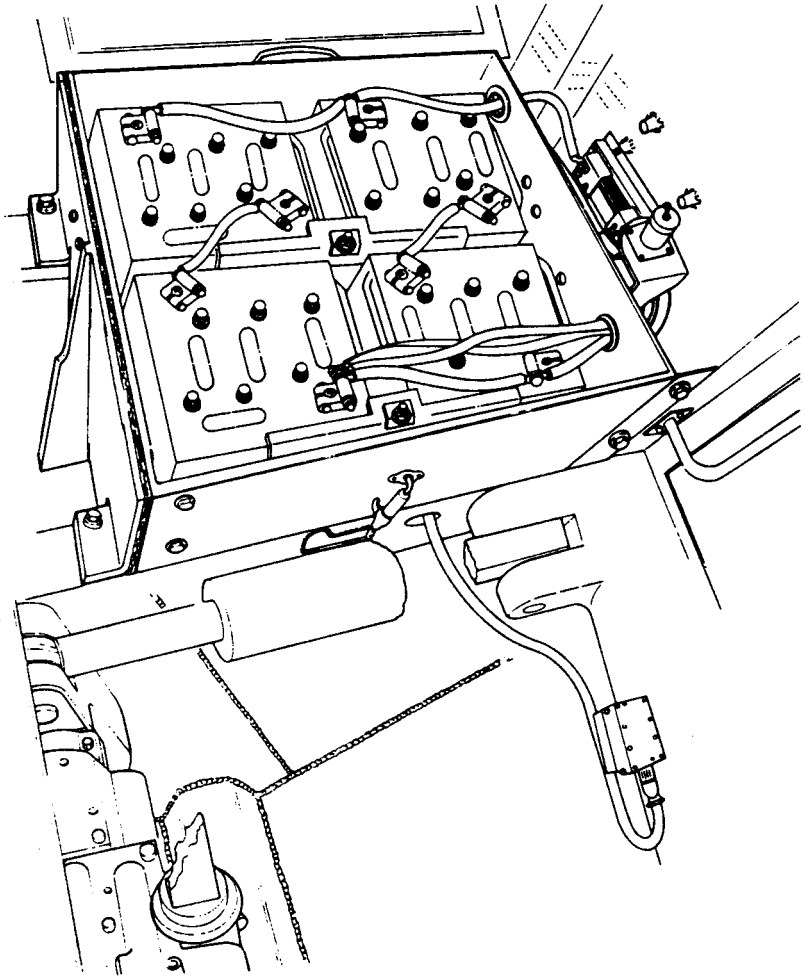
Step 2. Disconnect driveshaft from transmission and steer unit **(p 4-742)** and turn 180 degrees. Reconnect driveshaft **(p 4-742).**

If condition persists, replace driveshaft **(p 4-742).**

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

ELECTRICAL SYSTEM

49. NO ELECTRICAL POWER TO VEHICLE WHEN MASTER SWITCH IS ON



Step 1. Check condition of batteries (TM 9-6140-200-14).

Service or replace batteries (p 4-78) as necessary, and go to step 2.

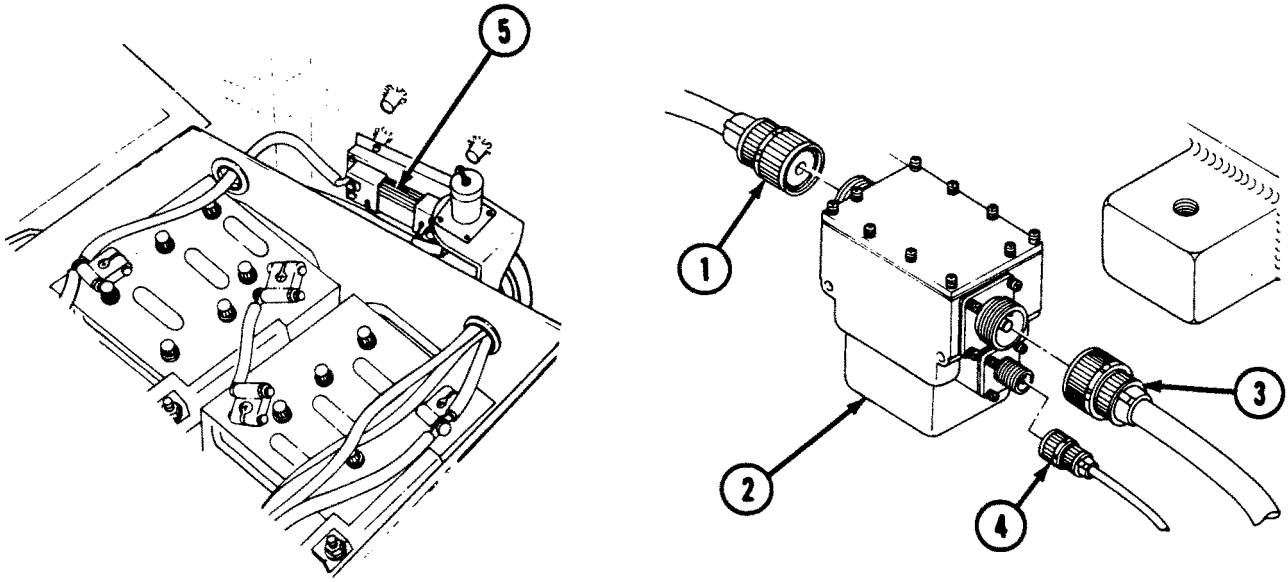
Step 2. Check battery terminals, interconnecting cables, and battery box wiring harness for corrosion, loose connecting hardware, or other damage.

Service or replace battery terminals and interconnecting cables (p 4-84).

Replace or tighten missing hardware (p 4-84), and go to step 3.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

49. NO ELECTRICAL POWER TO VEHICLE WHEN MASTER SWITCH IS ON — CONTINUED



Step 3. Check for power to master relay.

Disconnect cable (1) from relay (2). With MASTER switch on, check for minimum 24VDC at cable (1). Turn off MASTER switch and connect cable (1) to relay (2) after test.

If minimum 24VDC is present, go to step 4.

If minimum 24VDC is not present, replace cable (1) (p 4-68).

Step 4. Check master relay.

Disconnect cable (3) from relay (2). With MASTER switch on, check for minimum 24VDC at cable (3).

If minimum 24VDC is not present, refer to step 2 (p 3-281).

If minimum 24VDC is present, turn off MASTER switch and connect cable (3) to relay (2).

Disconnect cable (4) from relay (2). With MASTER switch on, check for minimum 24VDC at cable (4).

If minimum 24VDC is not present, go to step 7.

If minimum 24VDC is present, turn off MASTER switch and connect cable (4) to relay (2).

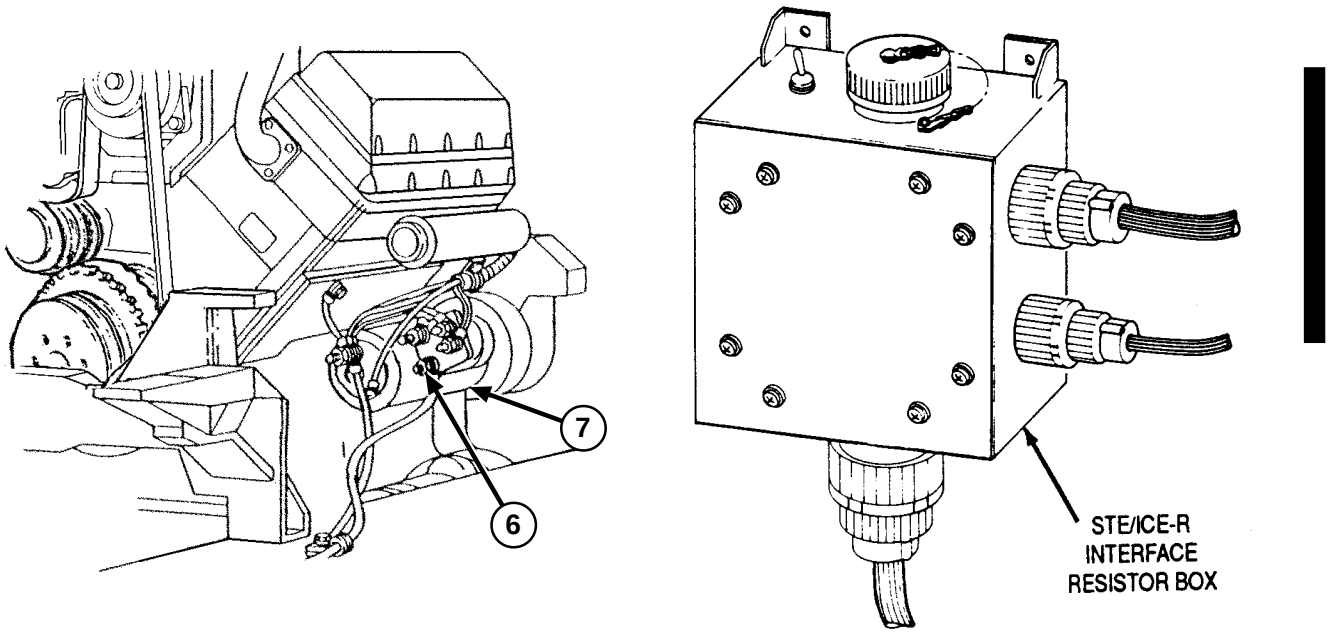
Disconnect cable (1) from relay (2). With MASTER switch on, check for minimum 24VDC at terminal (1) of relay (2).

If minimum 24VDC is not present at terminal (1), replace relay (p 4-74).

If minimum 24VDC is present at terminal (1), go to step 5.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

49. NO ELECTRICAL POWER TO VEHICLE WHEN MASTER SWITCH IS ON — CONTINUED



Step 5. Visually inspect STE/ICE-R shunt (5). Make sure all connections are tight. Check leaves of shunt (5) for signs of charring, warping, or separating.

If shunt (5) is damaged, replace it (p 4-72).

If shunt (5) is undamaged, go to step 6.

Step 6. Check main starter cable.

With MASTER switch and ignition switch on, check for minimum 24VDC at terminal (6) of starter (7). If minimum 24VDC is not present, replace starter cable (p 4-68).

If minimum 24VDC is present, turn off MASTER and ignition switches and go to step 7.

Step 7. Check external connections to STE/ICE-R interface resistor box for loose connections, corrosion, broken or frayed wires, or moisture damage.

Tighten connections or repair damaged wiring.

If no damage is evident, go to step 8.

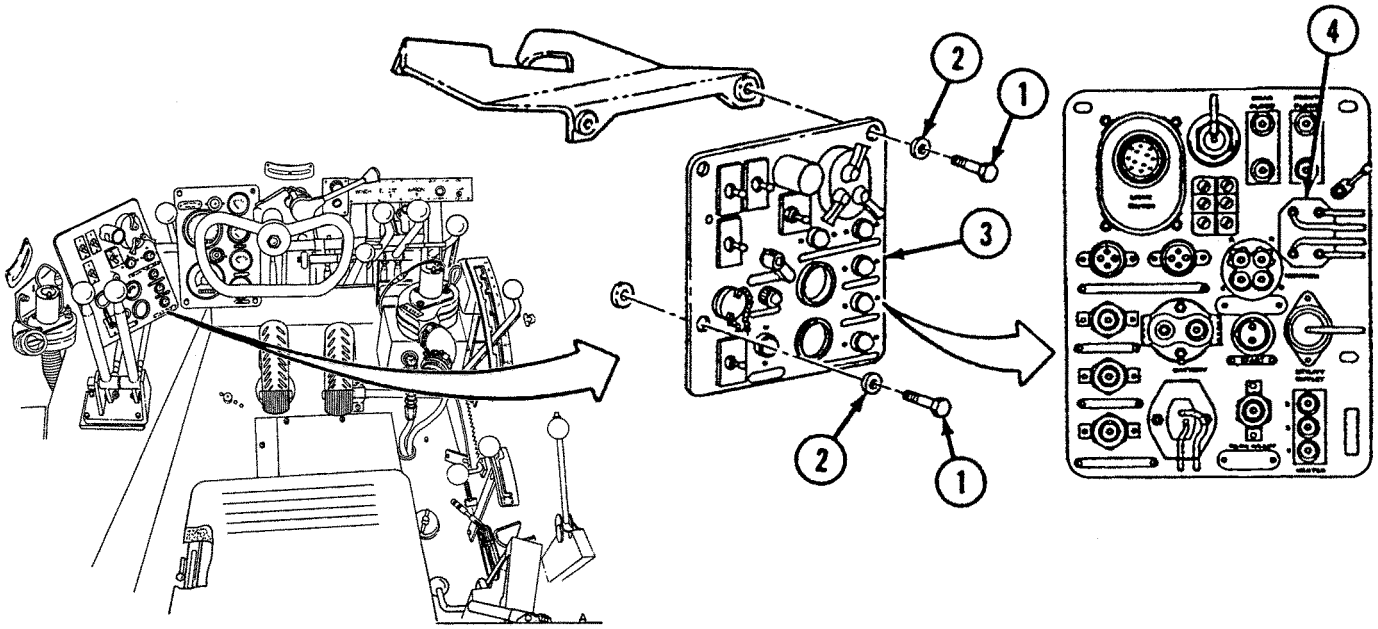
Step 8. Open STE/ICE-R interface resistor box and inspect internal components and wiring harness for loose connections, broken or damaged wires, missing or loose hardware, or moisture damage.

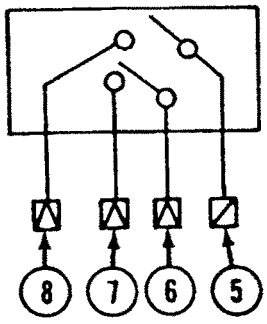
If damaged, replace STE/ICE-R interface resistor box (p 4-70).

If no damage is evident, go to step 9.

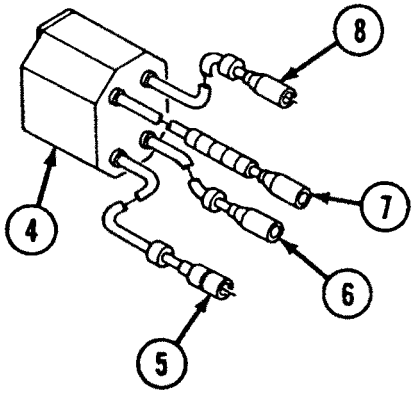
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

49. NO ELECTRICAL POWER TO VEHICLE WHEN MASTER SWITCH IS ON – CONTINUED





MASTER SWITCH SCHEMATIC



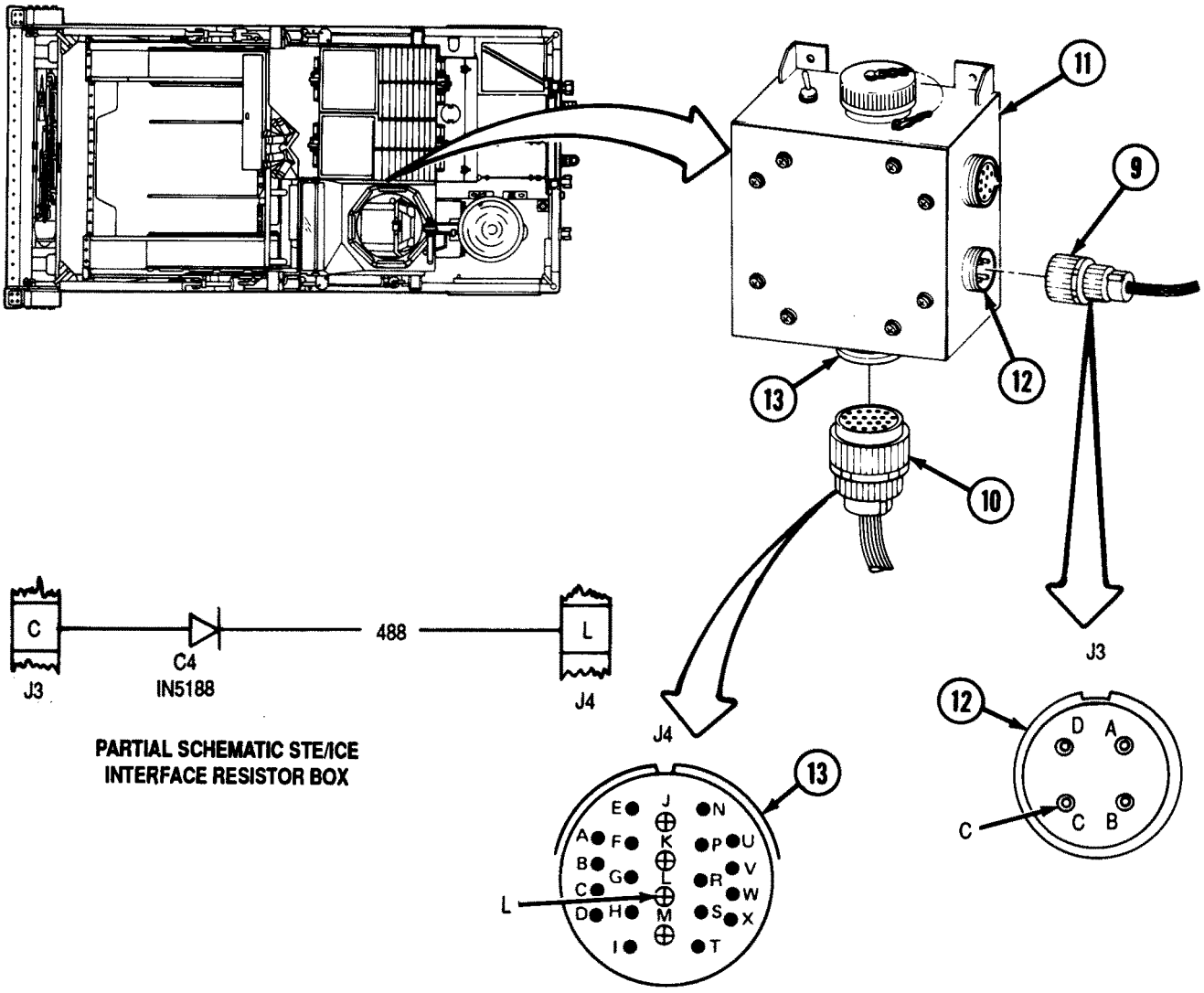
Step 9. Remove three screws (1) and washers (2). Pull instrument panel (3) out far enough to gain access to leads of MASTER switch (4) at rear of instrument panel. Disconnect four leads (5), (6), (7), and (8) from MASTER switch (4). Turn MASTER switch (4) ON and measure resistance between contacts of leads (5) and (6), and resistance between contacts of leads (7) and (8).

If resistance (more than zero Ω) is indicated between contacts of leads (5) and (6), or between contacts of leads (7) and (8), replace MASTER switch (p 4-106).

If no resistance (zero Ω) is indicated between contacts of leads (5) and (6), and between contacts of leads (7) and (8), go to step 10.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

49. NO ELECTRICAL POWER TO VEHICLE WHEN MASTER SWITCH IS ON – CONTINUED



Step 10. Disconnect connectors (9) and (10) from STE/ICE-R interface resistor box (11). Measure resistance between contact C of J3 (12) and contact L of J4 (13) and note reading. Reverse the leads of the multimeter and repeat the resistance check between contact C of J3 (12) and contact L of J4 (13). Note the reading.

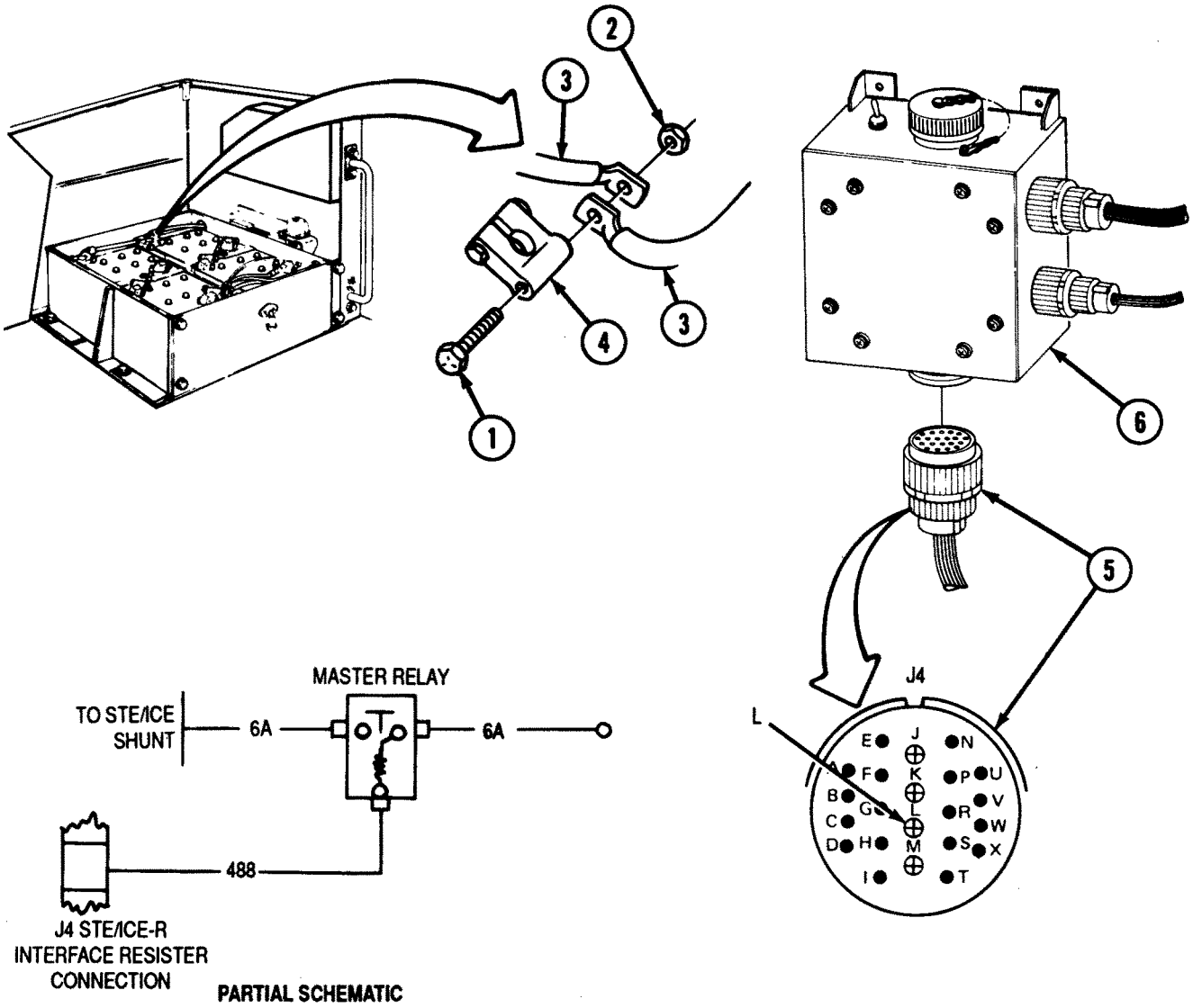
If the resistance between contact C of J3 (12) and contact L of J4 (13) is zero or infinity, replace STE/ICE-R interface resistor box (p 4-70).

If the ratio of resistance is less than 10 to 1 when the multimeter leads are reversed, replace STE/ICE-R interface resistor box (p 4-70).

If resistance checks are within normal range, go to step 11.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

49. NO ELECTRICAL POWER TO VEHICLE WHEN MASTER SWITCH IS ON – CONTINUED



PARTIAL SCHEMATIC

Step 11. Remove screw (1) and nut (2).

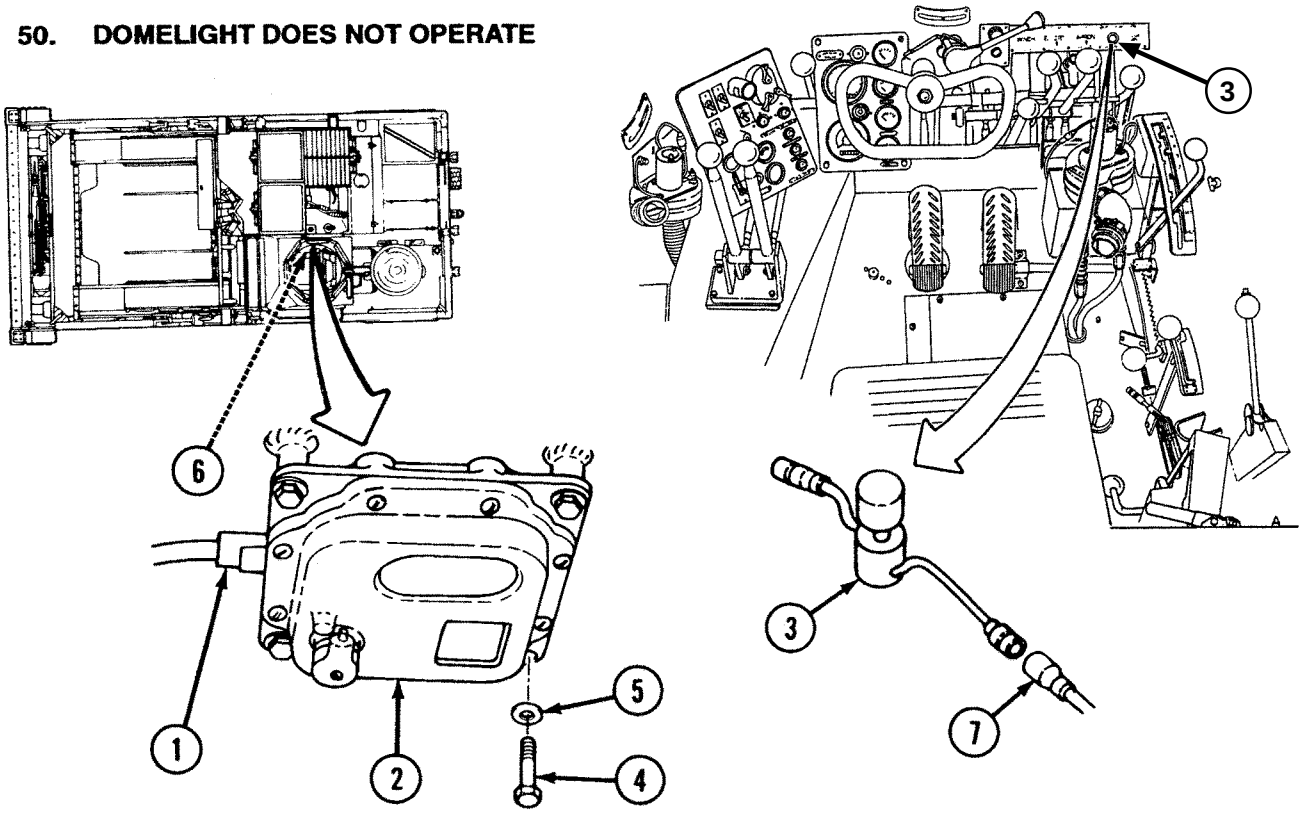
Disconnect leads (3) from negative battery terminal adapter (4). Disconnect connector J4 (5) from STE/ICE-R interface resistor box (6). Measure resistance between lead (3) and contact L of connector J4 (5).

If an open circuit (∞ Ω) is indicated, replace master relay (p 4-74).

If continuity (less than 10 Ω resistance) is indicated, refer to vehicle electrical system wiring diagram (p FP-3) and battery box wiring harness (p FP-13), and troubleshoot circuits 6, 488, and 459B.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

50. DOMELIGHT DOES NOT OPERATE



Step 1. Disconnect lead (1) from domelight assembly (2), turn domelight dimmer control (3) fully clockwise, and turn vehicle MASTER switch ON. Check for minimum 24VDC at lead (1).

If minimum 24VDC is present at lead (1), replace domelight lamp (p 4-191) or domelight assembly (p 4-191).

If no voltage is present at lead (1), go to step 2.

Step 2. Remove four screws (4), lockwashers (5), and domelight assembly (2) from hatch (6). Discard lockwashers (5). Remove any paint, dirt, or corrosion from area of hatch (6) where domelight assembly (2) mounts. Install domelight assembly (2) on hatch (6) with four lockwashers (5) and screws (4).

If condition persists, go to step 3.

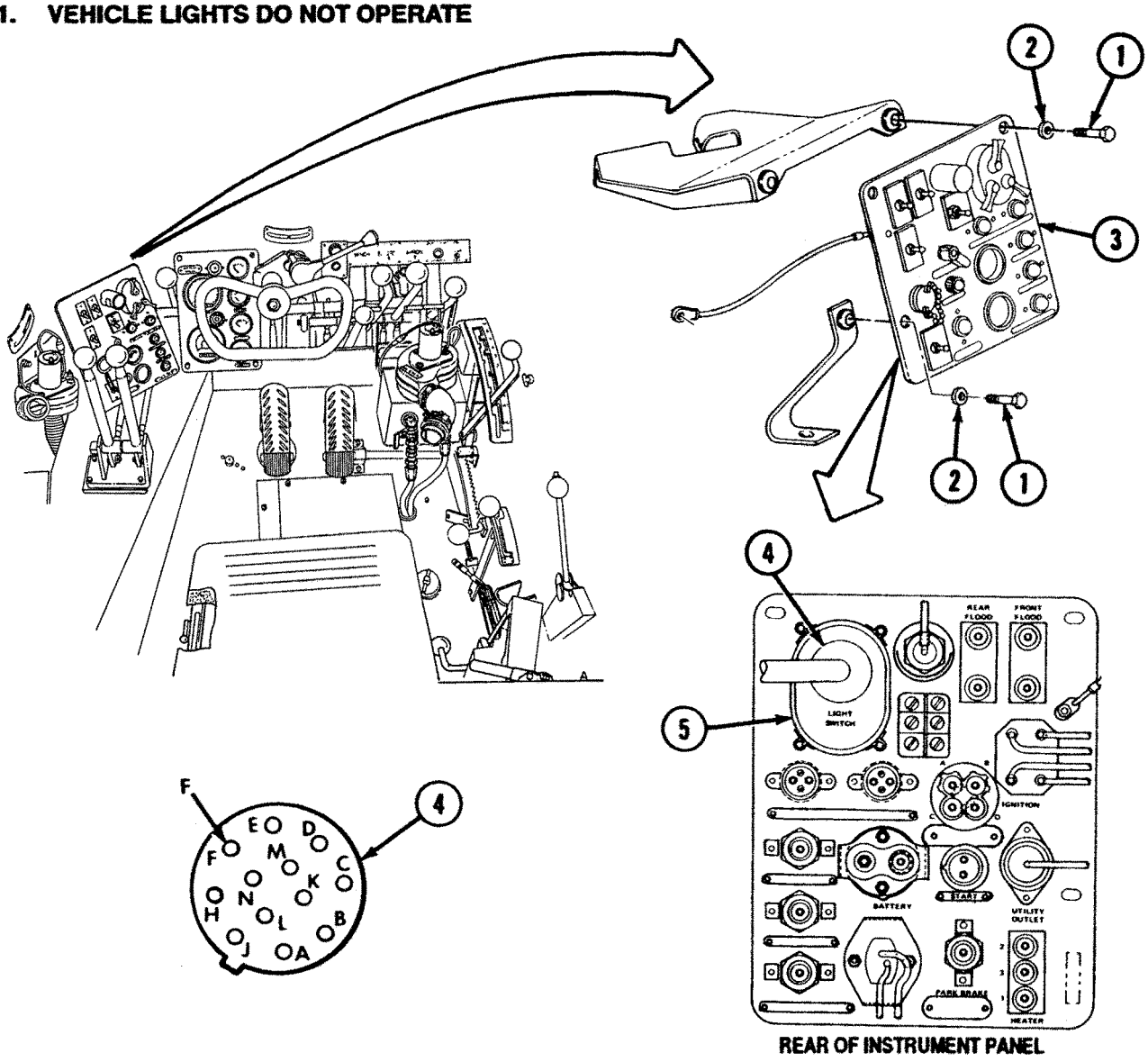
Step 3. Disconnect lead (7) from domelight dimmer control (3) and check for minimum 24VDC at lead (7).

If minimum 24VDC is present at lead (7), replace domelight dimmer control (3) (p 4-91).

If no voltage is present at lead (7), refer to vehicle electrical system wiring diagram (p FP-3), control wiring harness (p FP-7), and rear wiring harness (p FP-15), and troubleshoot circuit 38.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

51. VEHICLE LIGHTS DO NOT OPERATE



Remove three screws (1) and washers (2). Pull instrument panel (3) out far enough to gain access to connector (4) of light switch (5).

Disconnect connector (4) from light switch (5). Turn MASTER switch ON and check for minimum 24VDC at contact F of connector (4).

If minimum 24VDC is present at contact F of connector (4), replace light switch (5) (p 4-106).

If no voltage is present at contact F of connector (4), refer to vehicle electrical system wiring diagram (FP-3), control wiring harness (FP-7), and rear wiring harness (p FP-15), and troubleshoot circuit 15.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

52. HEADLIGHTS DO NOT OPERATE

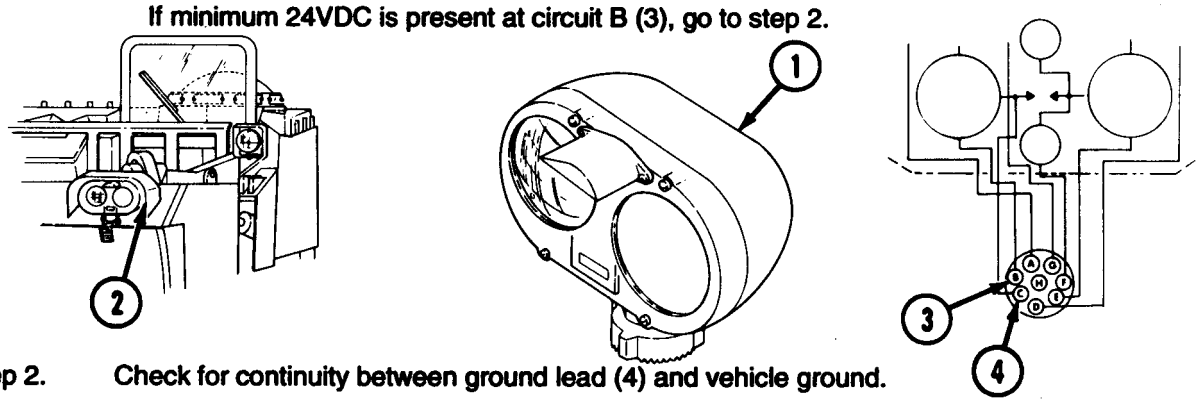
Note

The infrared circuit leads 514D and 515E are not in use.

Step 1. Turn vehicle MASTER switch ON and turn light switch to SER DRIVE. Remove headlamp body (1) from headlight housing (2). Check for minimum 24VDC at circuit B (3).

If no voltage is present at circuit B (3). Refer to vehicle electrical wiring diagram (p FP-3), control wiring harness (p FP-7), and rear wiring harness (p FP-15), and troubleshoot circuits 17 and 18.

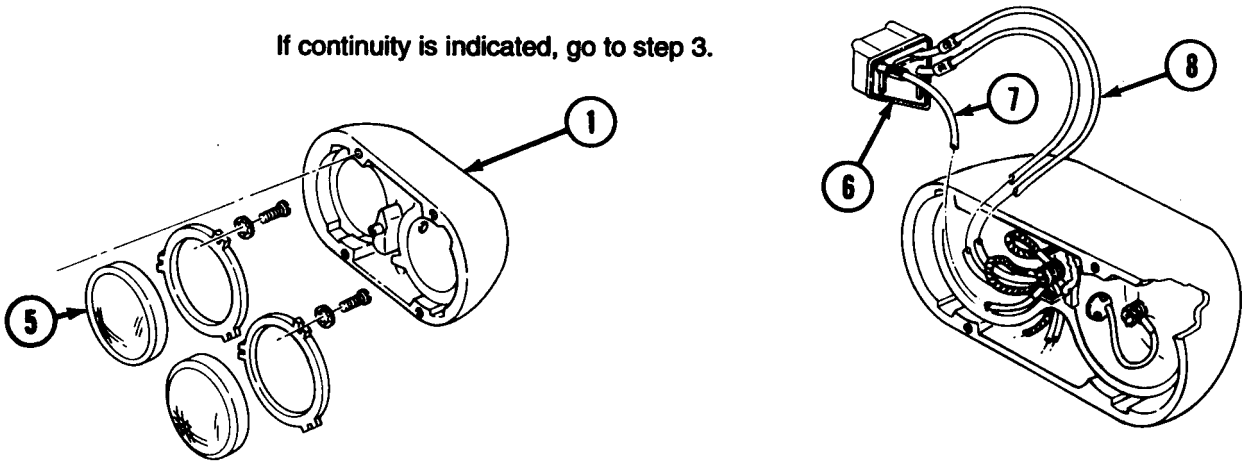
If minimum 24VDC is present at circuit B (3), go to step 2.



Step 2. Check for continuity between ground lead (4) 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.



Step 3. Remove headlamp (5) from headlamp body (1). Disconnect electrical connector (6) from headlamp (5). Check for minimum 24VDC at leads (7) and (8).

If no voltage is present at leads (7) and (8), replace electrical connector (p 4-177).

If minimum 24VDC is present at leads (7) and (8), replace headlamp (p 4-169).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

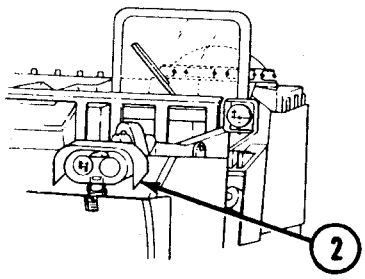
53. FRONT BLACKOUT MARKER DOES NOT OPERATE

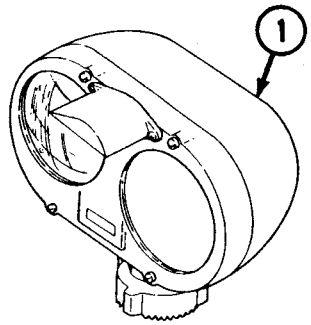
Step 1. Turn vehicle MASTER switch ON and turn light switch to BO MARKER. Remove headlamp body (1) from headlight housing (2). Check for minimum 24VDC at circuit F (3).

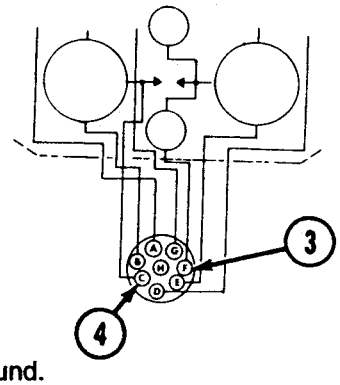
If no voltage is present at circuit F (3), refer to vehicle electrical system wiring diagram (p FP-3) and troubleshoot circuit 20.

If minimum 24VDC is present at circuit F (3), go to step 2.

If condition persists, notify direct support maintenance to replace or repair apron and/or hull wiring harnesses.



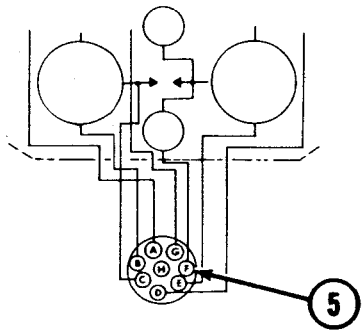


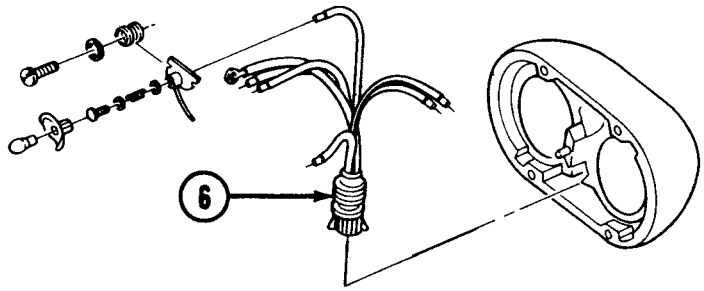


Step 2. Check for continuity between ground lead C (4) and vehicle ground.

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.





Step 3. Disconnect lead F (5) from socket assembly (6). Check for minimum 24VDC at lead F (5).

If no voltage is present at lead F (5), refer to vehicle electrical system wiring diagram (p FP-3), control wiring harness (p FP-7), and rear wiring harness (p FP-15), and troubleshoot circuit 20.

If minimum 24VDC is present at lead F (5), replace blackout marker lamp (p 4-177).

If condition persists, notify direct support maintenance to replace wiring harness assembly.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

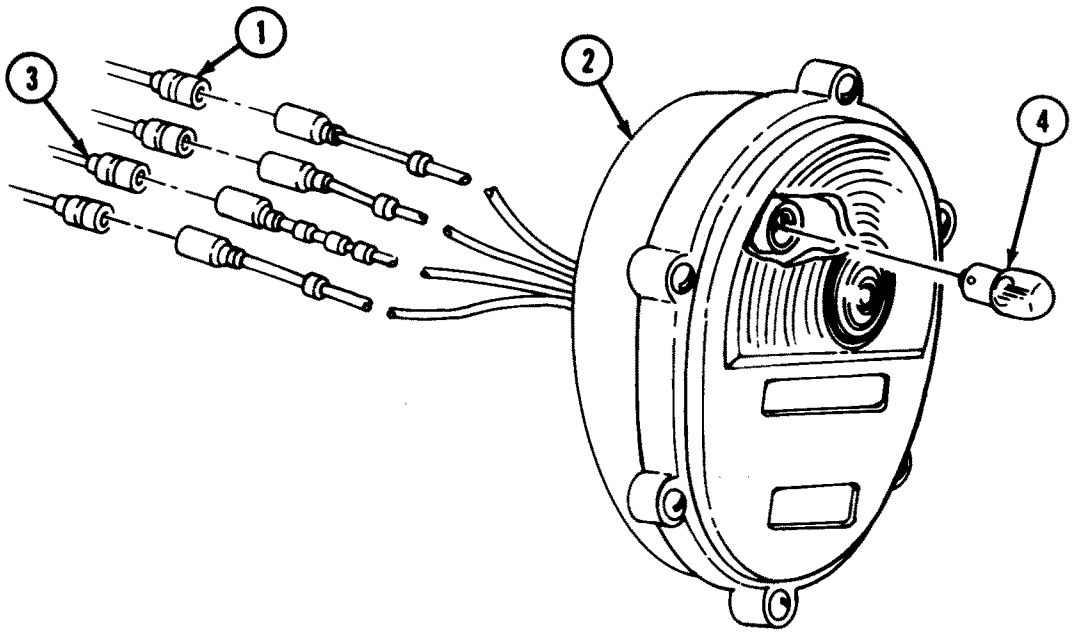
54. SERVICE TAILLIGHTS DO NOT OPERATE

Step 1. Turn vehicle MASTER switch ON and turn light switch to SER DRIVE. Disconnect lead (1) from body assembly (2) and check for minimum 24VDC at lead (1).

If no voltage is present at lead (1), refer to vehicle electrical system wiring diagram (p FP-3), control wiring harness (p FP-7), and rear wiring harness (p FP-15), and troubleshoot circuit 21.

If minimum 24VDC is present at lead (1), go to step 2.

If condition persists, notify direct support maintenance to replace or repair rear wiring harness.



Step 2. Check for continuity between ground lead (3) 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, replace taillight lamp (4) (p 4-172).

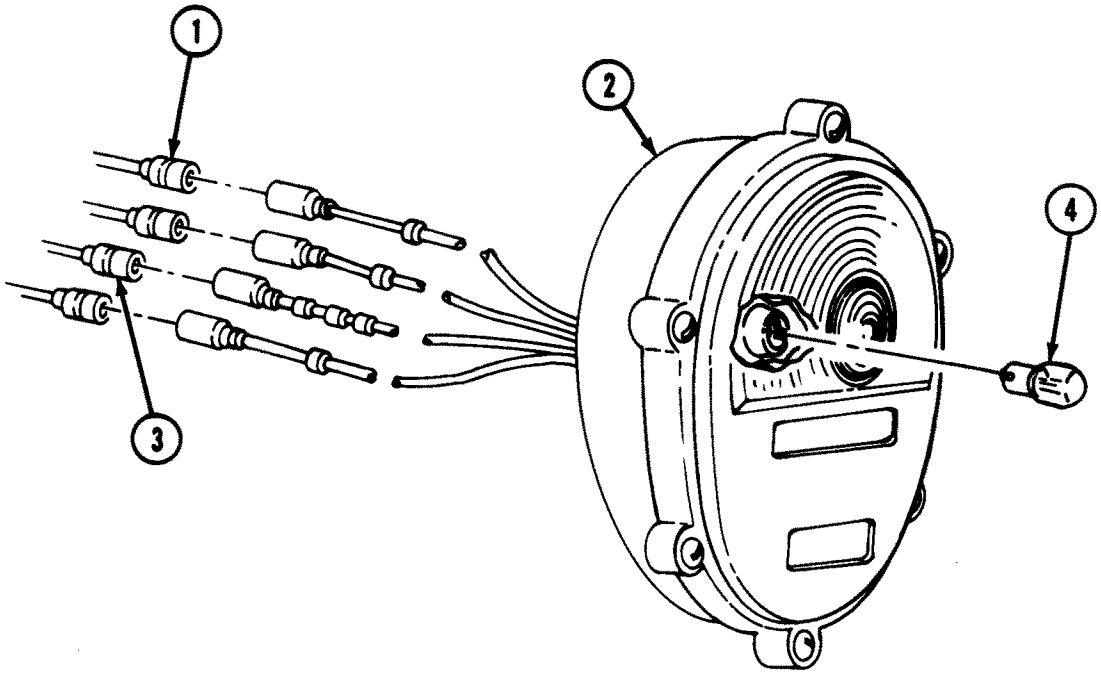
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

55. STOPLIGHTS DO NOT OPERATE

Step 1. Turn vehicle MASTER switch ON. Disconnect lead (1) from body assembly (2). Apply brakes and check for minimum 24VDC at lead (1).

If no voltage is present at lead (1), refer to vehicle electrical system wiring diagram (p FP-3), control wiring harness (p FP-7), and rear wiring harness (p FP-15, and troubleshoot circuit 22.

If minimum 24VDC is present at lead (1), go to step 2.



Step 2. Check for continuity between ground lead (3) 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, replace stoplight lamp (4) (p 4-172).

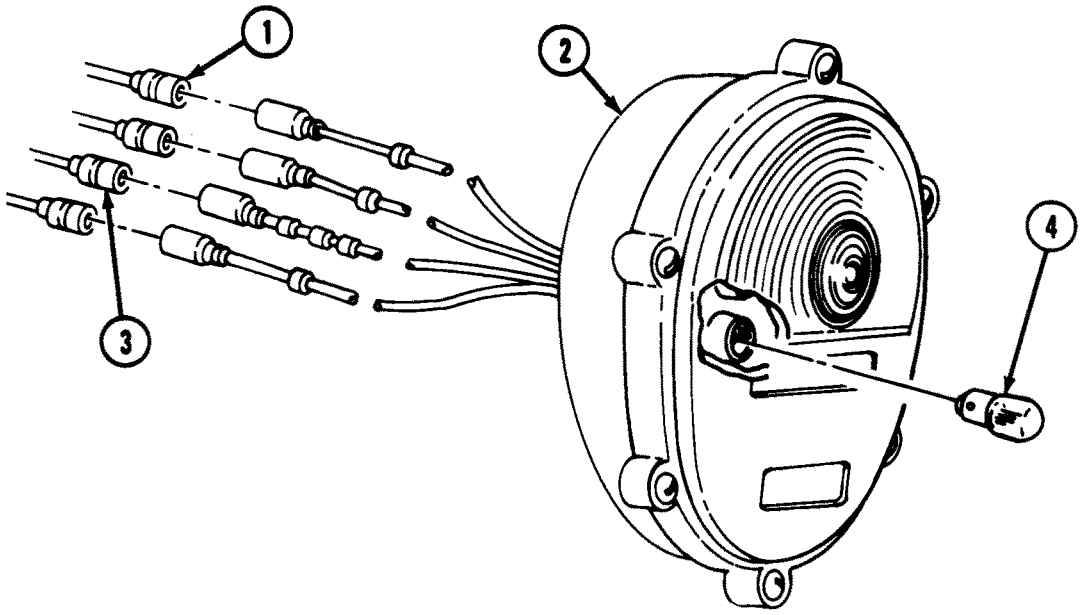
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

56. BLACKOUT TAILLIGHTS DO NOT OPERATE

Step 1. Turn vehicle MASTER switch ON and turn light switch to BO DRIVE. Disconnect lead (1) from body assembly (2) and check for minimum 24VDC at lead (1).

If no voltage is present at lead (1), refer to vehicle electrical system wiring diagram (p FP-3), control wiring harness (FP-7), and rear wiring harness (p FP-15), and troubleshoot circuit 24.

If minimum 24VDC is present at lead (1), go to step 2.



Step 2. Check for continuity between ground lead (3) 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, replace blackout taillight lamp (4) (p 4-172).

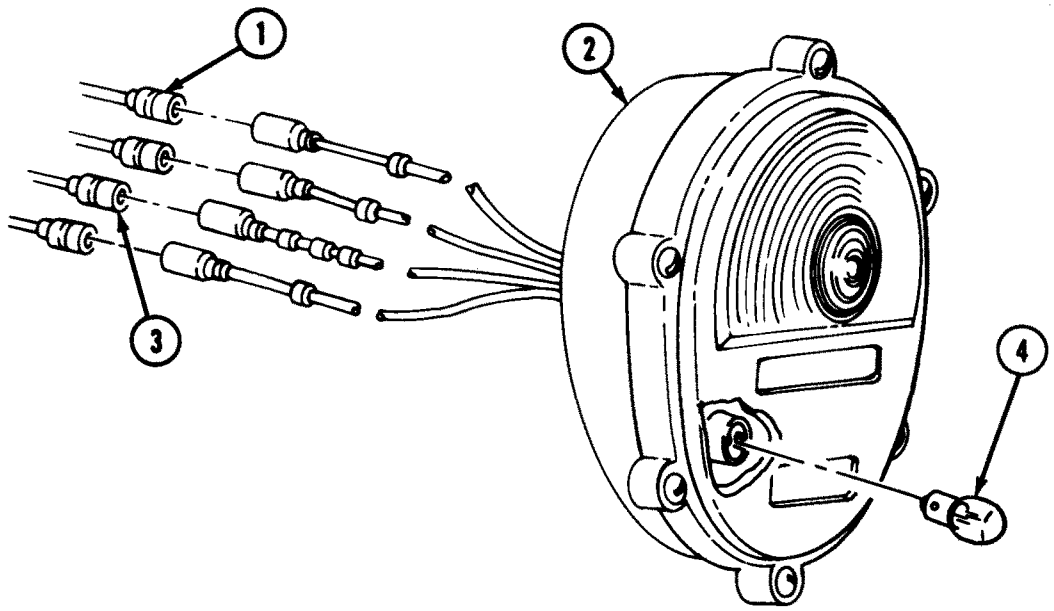
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

57. BLACKOUT STOPLIGHTS DO NOT OPERATE

Step 1. Turn vehicle MASTER switch ON and turn light switch to BO DRIVE. Disconnect lead (1) from body assembly (2) and check for minimum 24VDC at lead (1).

If no voltage is present at lead (1), refer to vehicle electrical system wiring diagram (p FP-3), control wiring harness (FP-7), and rear wiring harness (p FP-15), and troubleshoot circuit 23.

If minimum 24VDC is present at lead (1), go to step 2.



Step 2. Check for continuity between ground lead (3) 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, replace blackout stoplight lamp (4) (p 4-172).

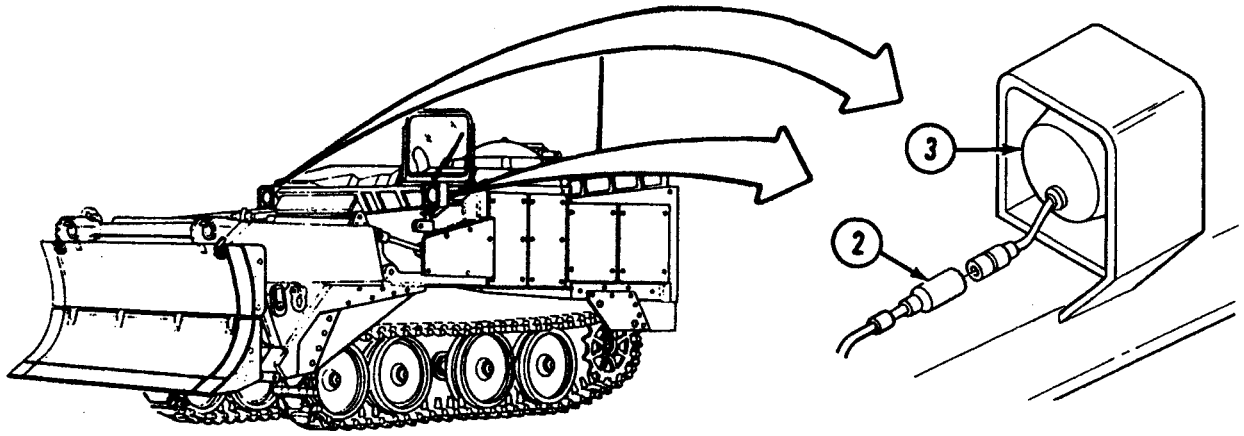
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

58. FRONT FLOODLIGHTS DO NOT OPERATE

Step 1. Turn MASTER switch ON, light switch to SER DRIVE, and front floodlight switch (1) ON. Disconnect lead (2) from floodlight (3) and check for minimum 24VDC at lead (2).

If minimum 24VDC is present at lead (2), replace floodlight (3) (p 4-174).

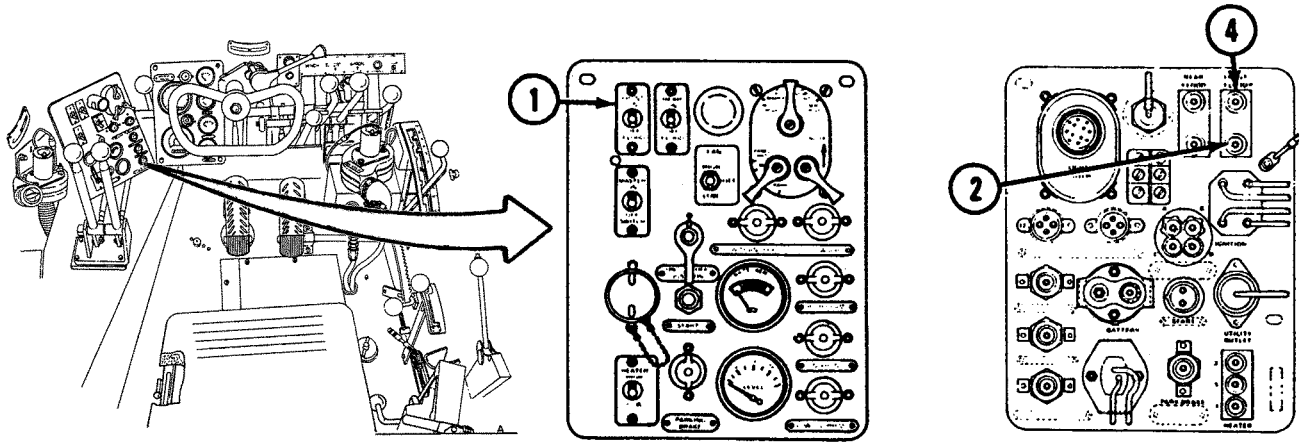
If no voltage is present at lead (2), connect lead (2) to floodlight (3) and go to step 2.



Step 2. Disconnect lead (4) from front floodlight switch (1) and check for minimum 24VDC at lead (4).

If minimum 24VDC is present at lead (4), replace front floodlight switch (2) (p 4-106).

If no voltage is present at lead (4), refer to vehicle electrical system wiring diagram (p FP-3), battery box harness (p FP-13), and rear wiring harness (p FP-15), and troubleshoot circuit 518.



INSTRUMENT PANEL

REAR VIEW OF INSTRUMENT PANEL

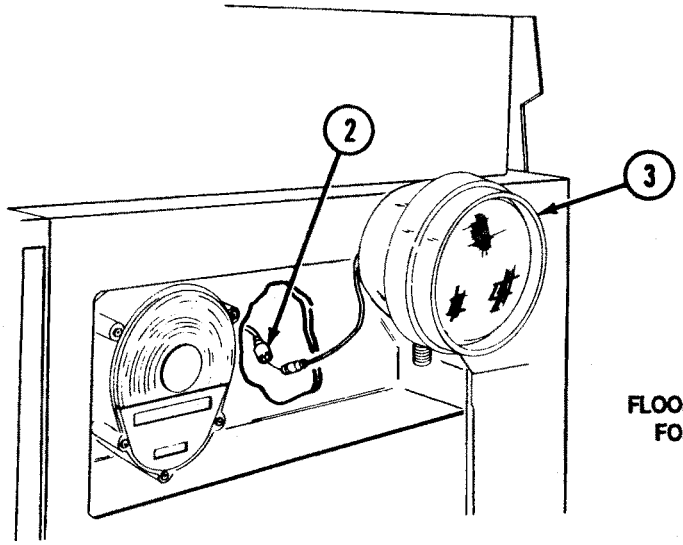
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

59. REAR FLOODLIGHTS DO NOT OPERATE

Step 1. Turn MASTER switch ON, light switch to SER DRIVE, and rear floodlight switch (1) ON. Disconnect lead (2) from floodlight (3) and check for minimum 24VDC at lead (2).

If minimum 24VDC is present at lead (2), replace rear floodlight (p 4-174).

If no voltage is present at lead (2), connect lead (2) to floodlight (3) and go to step 2.

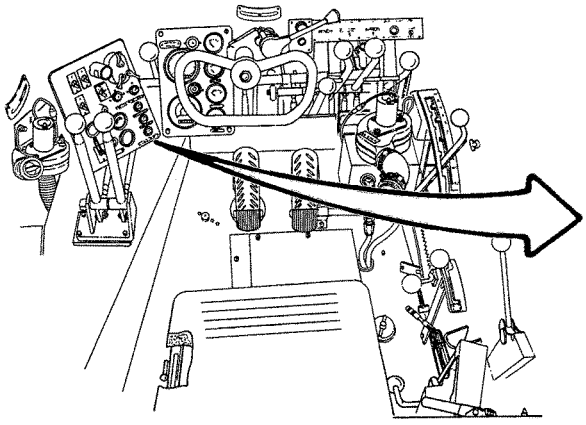


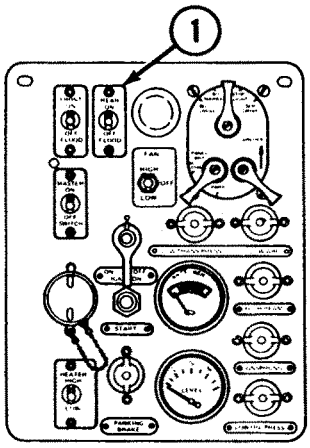
FLOODLIGHT REMOVED FOR ART CLARITY

Step 2. Disconnect lead (4) from rear floodlight switch (1) and check for minimum 24VDC at lead (4).

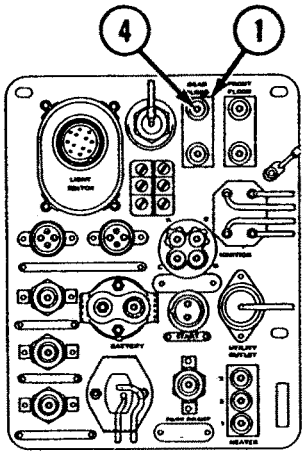
If minimum 24VDC is present at lead (4), replace rear floodlight switch (1) (p 4-106).

If no voltage is present at lead (4), refer to vehicle electrical system wiring diagram (p FP-3, battery box wiring harness (FP-13), and rear wiring harness (p FP-15, and troubleshoot circuit 518.





INSTRUMENT PANEL



REAR VIEW OF INSTRUMENT PANEL

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

60. PANEL LIGHTS DO NOT OPERATE

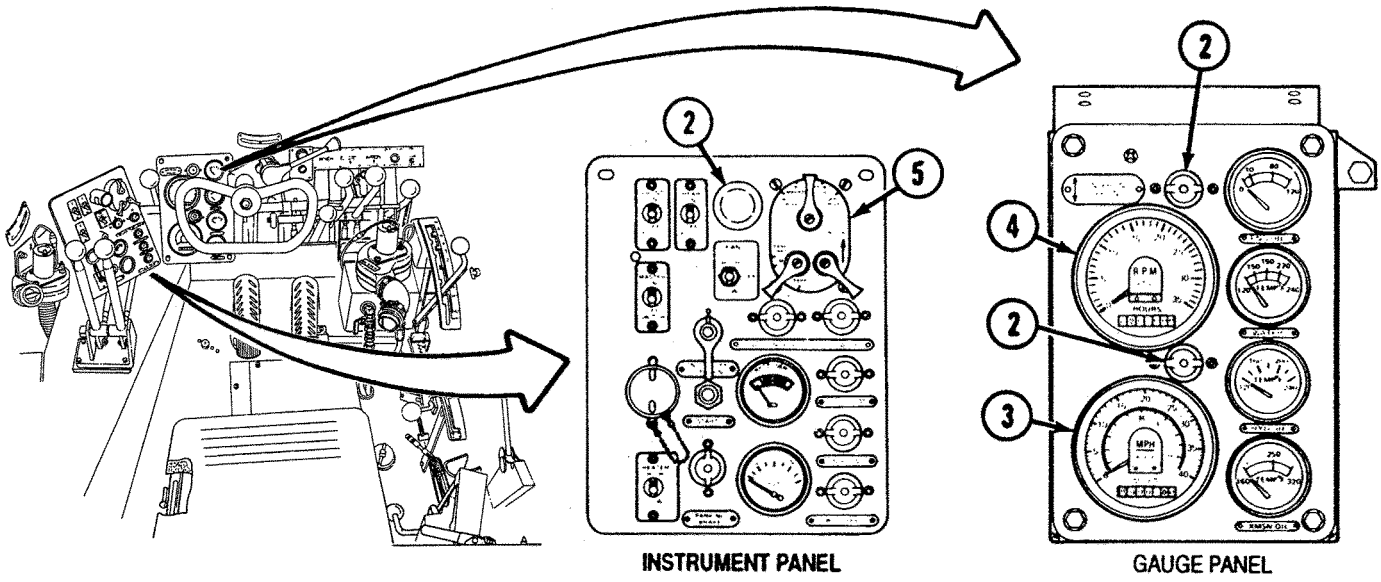
Note

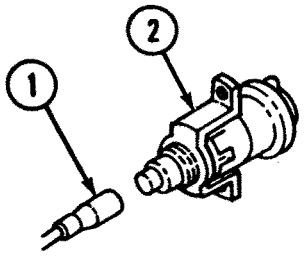
This procedure should be used if any, or all, panel lights do not illuminate. Refer to the illustration to locate specific lights.

Step 1. Remove lead (1) from panel light (2), speedometer (3), or tachometer (4). Turn MASTER switch ON and select SER DRIVE position on light switch (5). Check for minimum 24VDC at lead (1).

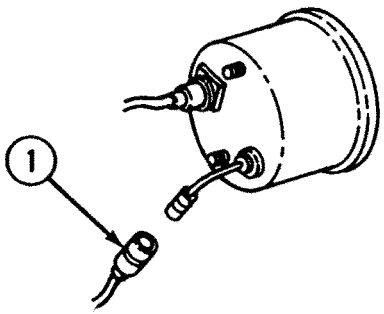
If minimum 24VDC is present at lead (1), replace panel light lamp (p 4-106).

If no voltage is present at lead (1), connect lead (1) to panel light (2), speedometer (3), or tachometer (4), and go to step 2.





PANEL LIGHT



SPEEDOMETER OR TACHOMETER

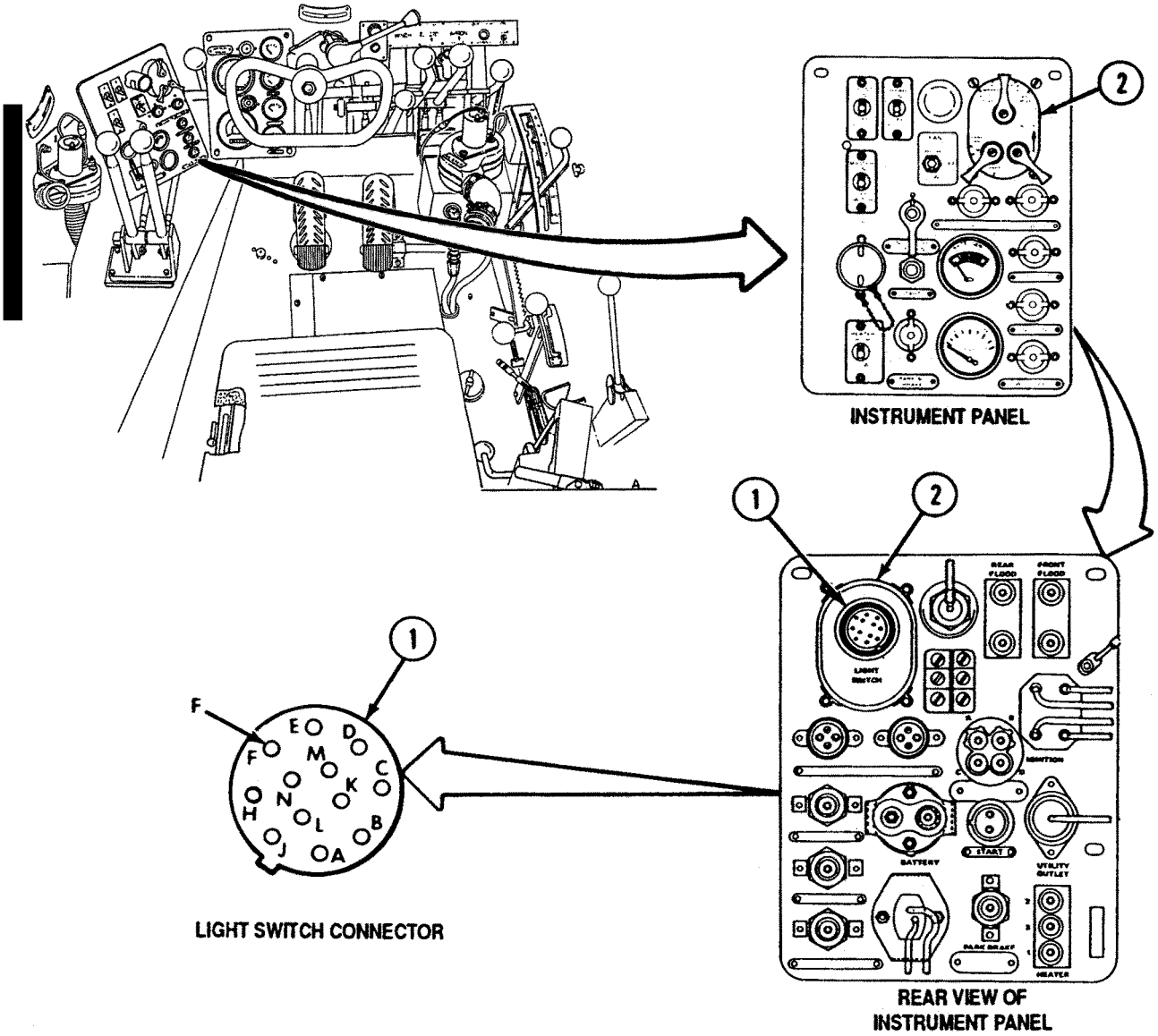
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

60. PANEL LIGHTS DO NOT OPERATE – CONTINUED

Step 2. Disconnect light switch connector (1) from light switch (2). Check for minimum 24VDC at contact F of connector (1).

If minimum 24VDC is present at contact F of connector (1), replace light switch (2) (p 4-106).

If no voltage is present at contact F of connector (1), refer to vehicle electrical system wiring diagram (p FP-3), control wiring harness (p FP-7), and rear wiring harness (p FP-15), and troubleshoot circuit 15.



MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

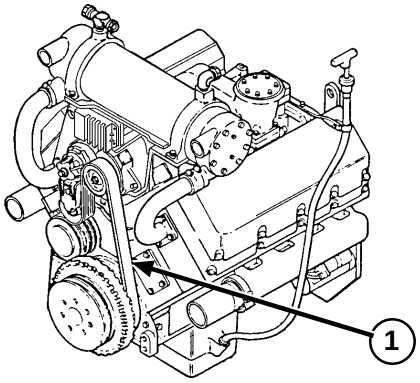
GAUGES AND INDICATORS

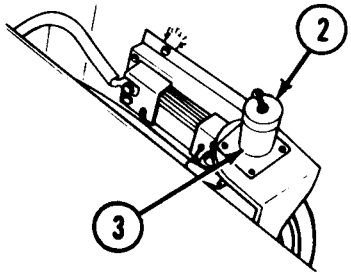
61. BATTERY-GENERATOR GAUGE INDICATES LOW OR NO VOLTAGE WHEN ENGINE IS RUNNING

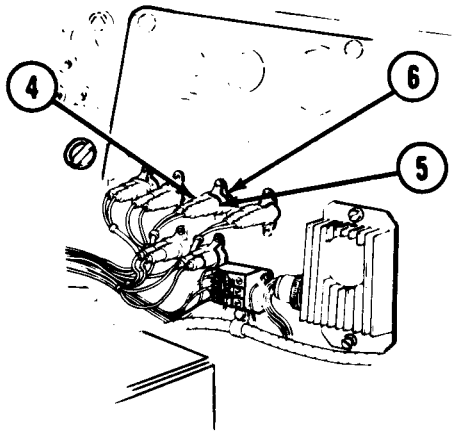
Step 1. With engine shut off, inspect alternator/water pump belt (1) for excessive wear, evidence of slipping, or looseness.

Replace belt (1) or adjust belt tension (p 4-593).

If no damage is evident, go to step 2.







Step 2. Verify gauge reading.

Remove cap (2) and check voltage at slave receptacle (3) with vehicle running. Stop engine (TM 5-2350-262-10) after test.

If reading at receptacle is the same low reading on gauge, go to step 5 (p 3-300).

If reading at receptacle is a minimum 27 VDC, and gauge is still reading low or no voltage, go to step 3.

Step 3. Check circuit breaker for continuity.

Disconnect leads (4) and (5) from circuit breaker (6). Using multimeter, check for continuity across circuit breaker (6).

If continuity is indicated, go to step 4.

If open circuit is indicated, replace circuit breaker (p 4-123).

Step 4. Start vehicle (TM 5-2350-262-10). Using multimeter, check for minimum 27 VDC between lead (5) and ground. Stop engine (TM 5-2350-262-10) after test.

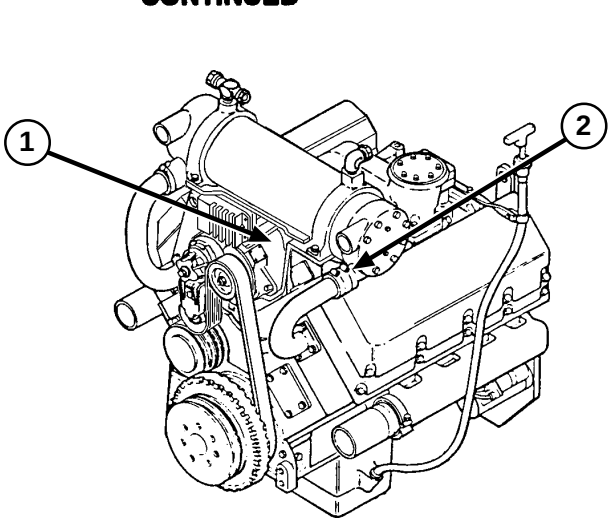
If minimum 27 VDC is present at lead (5), refer to vehicle eletrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuit 567.

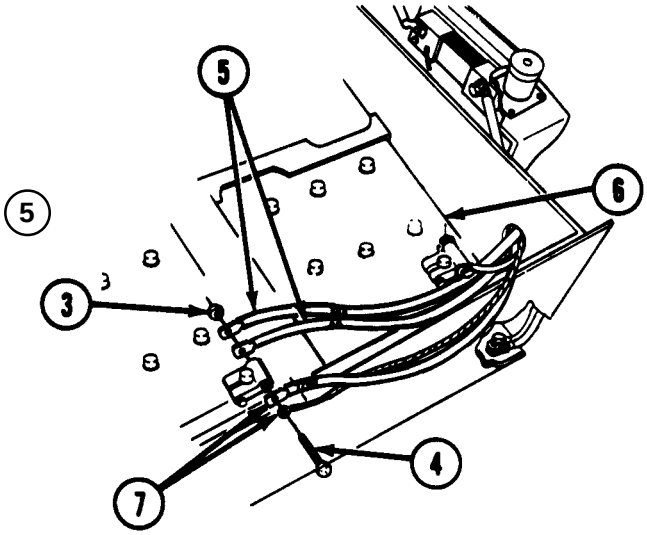
If circuit 567 is functioning properly, replace gauge (p 4-115).

If minimum 27 VDC is not present at lead (5), refer to vehicle eletrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and engine wiring harness (p FP-11), and troubleshoot circuit 10.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

61. BATTERY-GENERATOR GAUGE INDICATES LOW OR NO VOLTAGE WHEN ENGINE IS RUNNING – CONTINUED





Step 5. Inspect alternator (1) and engine wiring harness (2) for corrosion and loose or broken leads or connections.

Repair or replace damaged components.

Notify direct support maintenance to replace engine wiring harness.

If no damage is evident, go to step 6.

Step 6. Perform STE/ICE-R test 82.

If system passes test, replace gauge (p 4-115).

If system fails test, go to step 7.

Step 7. Perform STE/ICE-R test 83.

If system fails test, notify direct support maintenance.

If system passes test, record value. Go to step 8.

Step 8. Remove nut (3), screw (4), and leads (5) from battery (6). Install nut (3) and screw (4) to secure other leads (7). Start engine (TM 5-2350-262-10).

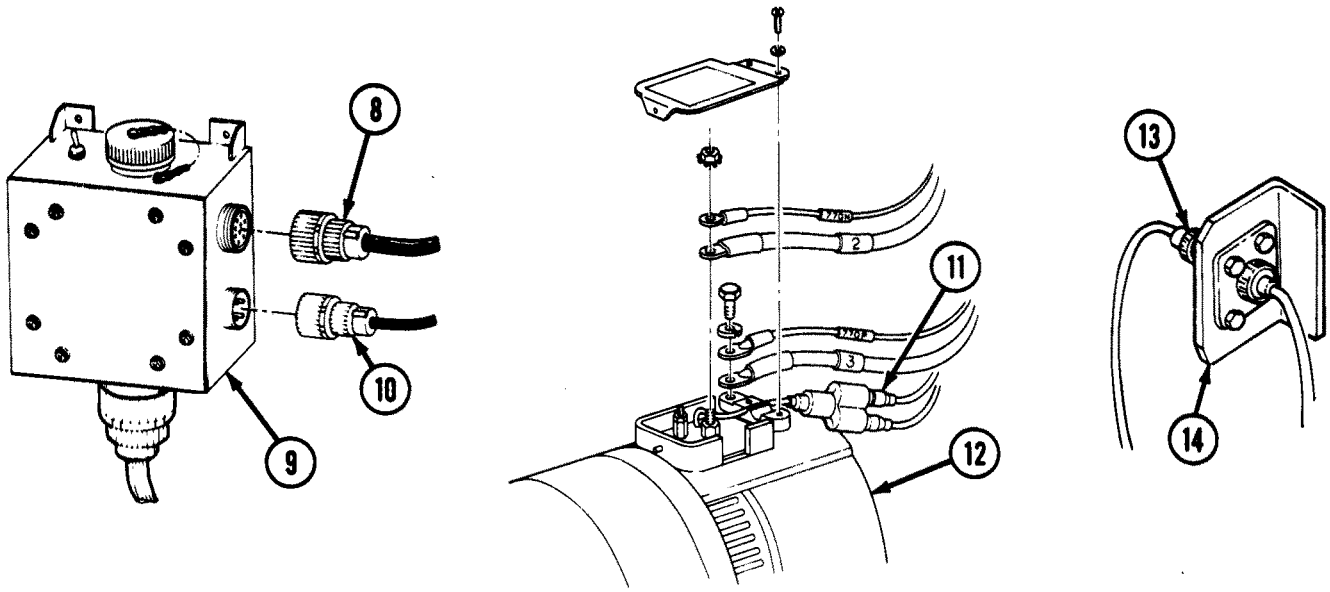
Using multimeter, check voltage at leads (5).

If voltage at leads (5) matches or exceeds test value from step 7, no further maintenance action is required.

If voltage at leads (5) is less than test value from step 7, turn off engine, reconnect leads (5), and go to step 9.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

61. BATTERY-GENERATOR GAUGE INDICATES LOW OR NO VOLTAGE WHEN ENGINE IS RUNNING – CONTINUED



Step 9. Start engine (TM 5-2350-262-10). Disconnect connector (8) from STE/ICE-R resistor box (9). Using multimeter, measure voltage at contact F of connector (8).

If voltage at contact F of connector (8) matches or exceeds test value from step 8, refer to battery box wiring harness schematic diagram (p FP-13), and isolate and repair fault (p 3-1).

If voltage at contact F of connector (8) is less than test value from step 8, connect connector (8) to box (9) and go to step 10.

Step 10. Disconnect connector (10) from box (9). With engine running, check for voltage at contact B of connector (10). Stop engine (TM 5-2350-262-10) after test.

If voltage at contact B of connector (10) is less than value from step 8, replace STE/ICE-R resistor box (9) (p 4-70).

If voltage at contact B of connector (10) is less than test value from step 8, connect connector (10) to box (9) and go to step 11.

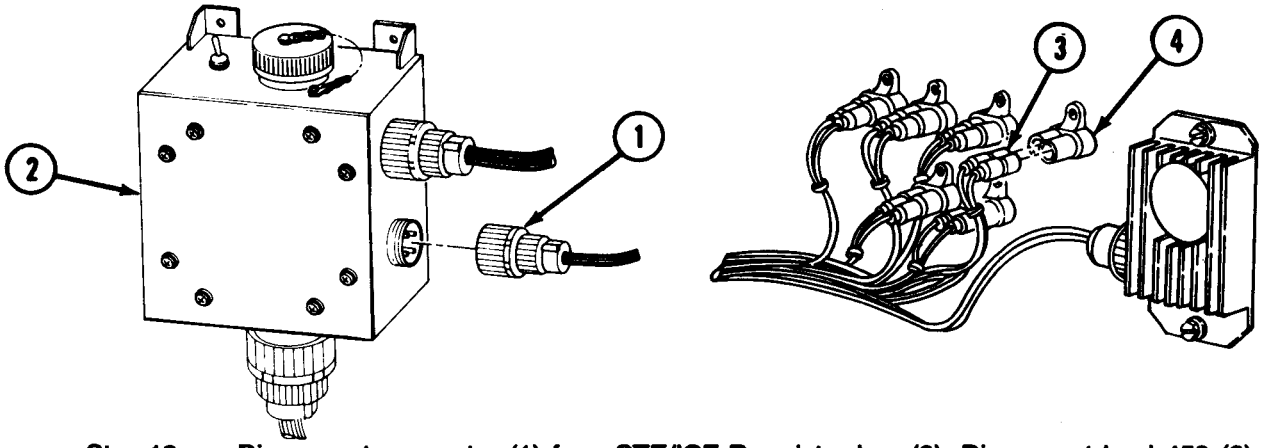
Step 11. Disconnect lead (11) from alternator (12). Disconnect harness (13) from bracket (14). Measure resistance between contact H of harness (13) and lead (11).

If resistance is greater than zero, isolate and replace lead (11).

If resistance is zero, connect harness (13) to bracket, and lead (11) to alternator (12), and go to step 12.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

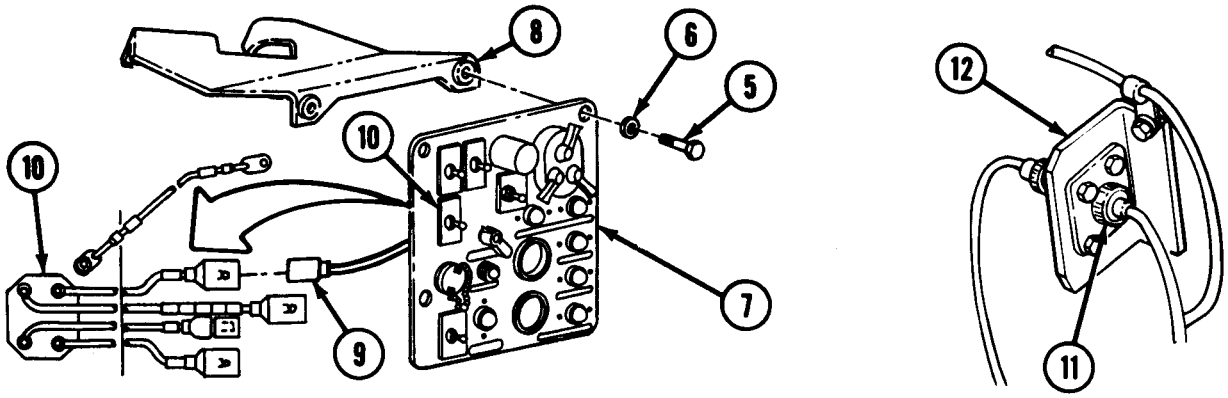
61. BATTERY-GENERATOR GAUGE INDICATES LOW OR NO VOLTAGE WHEN ENGINE IS RUNNING – CONTINUED



Step 12. Disconnect connector (1) from STE/ICE-R resistor box (2). Disconnect lead 459 (3) from circuit breaker (4). Measure resistance between contact B of connector (1) and lead (3).

If resistance is greater than zero, isolate and replace lead (3).

If resistance is zero, connect connector (1) to box (2), and connect lead 459 (3) to circuit breaker (4), and go to step 13.



Step 13. Remove three screws (5), washers (6), and panel (7) from bracket (8). Disconnect lead (9) from MASTER switch (10). Disconnect connector (11) from bracket (12). Check for resistance between lead (9) and contact H of connector (11).

If resistance is greater than zero, isolate and replace lead (9).

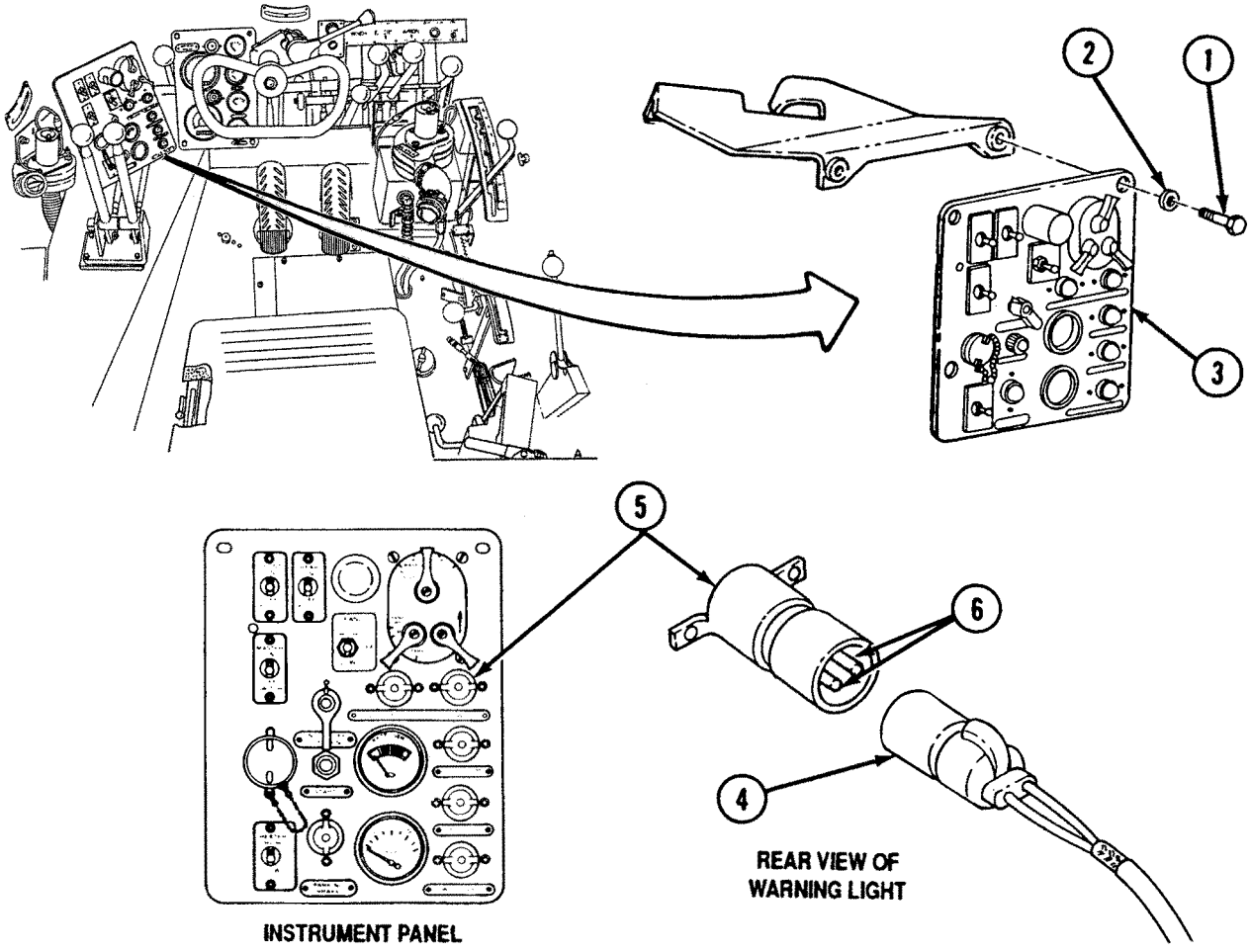
If resistance is zero, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuit 459A.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

62. LOW AIR PRESSURE WARNING LIGHT DOES NOT ILLUMINATE WHEN MASTER SWITCH IS TURNED ON (ENGINE NOT RUNNING)

Note

Low air pressure warning light may illuminate only during first vehicle start of the day.



Step 1. Remove three screws (1) and washers (2). Pull instrument panel (3) out far enough to gain access to leads at rear of panel (3). With MASTER switch OFF, disconnect plug (4) from low air pressure warning light (5). Measure resistance between two contacts (6) on back of low air pressure warning light (5).

If an open circuit (∞ Ω) is indicated, replace low air pressure warning light lamp (5) (p 4-106).

If continuity (3 Ω or less) is indicated, go to step 2.

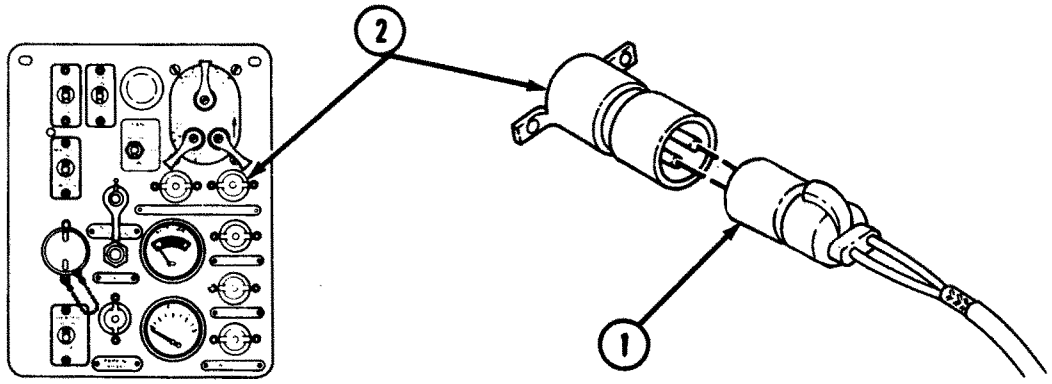
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

62. LOW AIR PRESSURE WARNING LIGHT DOES NOT ILLUMINATE WHEN MASTER SWITCH IS TURNED ON (ENGINE NOT RUNNING) – CONTINUED

Step 2. Turn MASTER switch ON. Check for minimum 24VDC at plug (1).

If minimum 24VDC is present at plug (1), turn MASTER switch OFF, connect plug (1) to low air pressure warning light (2), and go to step 3.

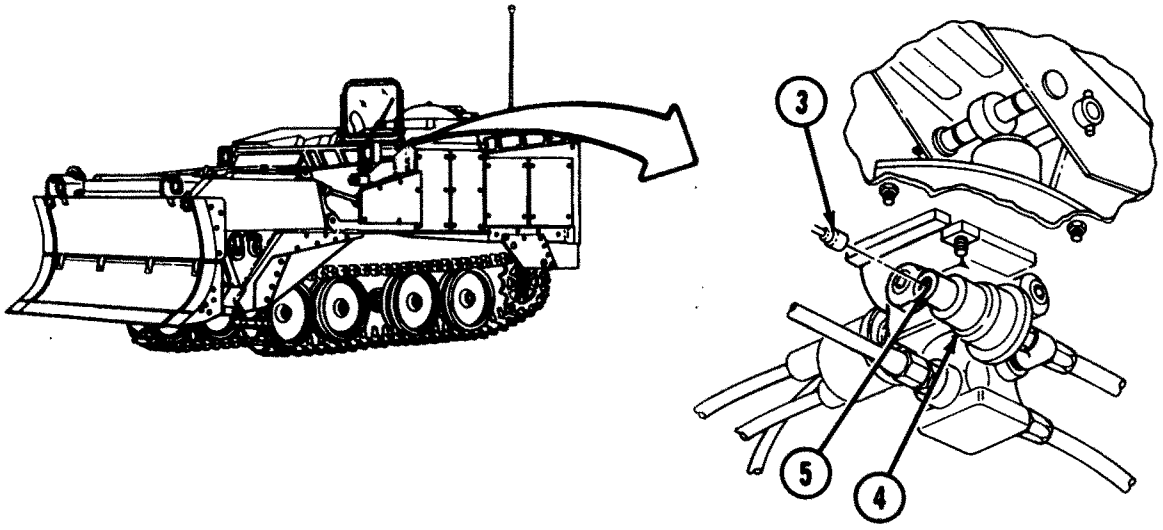
If no voltage is present at plug (1), refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuit 509.



Step 3. Disconnect lead (3) from low air pressure warning switch (4). Check resistance between contact (5) of low air pressure warning switch (4) and ground.

If a short (zero Ω) is indicated, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuit 85.

If a short (zero Ω) is not indicated, replace low air pressure warning switch (4) (p 4-145).



MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

63. LOW AIR PRESSURE WARNING LIGHT STAYS LIT WHEN VEHICLE IS RUNNING

Step 1. Check air system pressure.

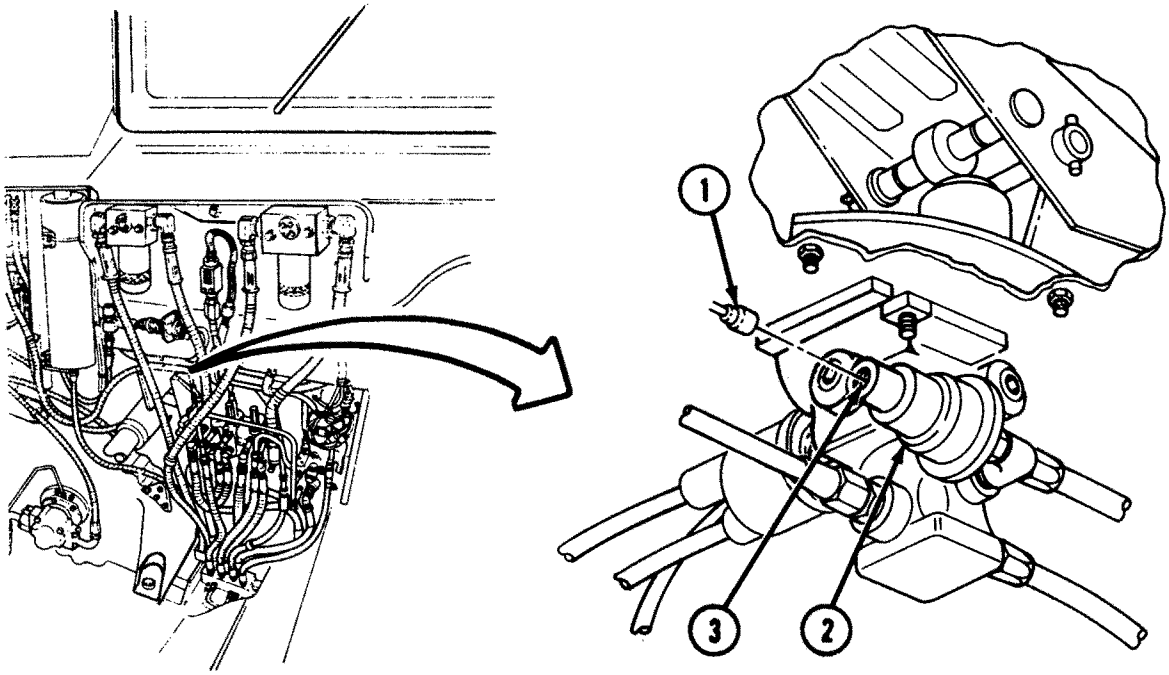
If air system pressure is correct, go to step 2.

If air system pressure is not correct, adjust air compressor governor assembly (p 4-28). If assembly cannot be adjusted, go to MALFUNCTION 21, step 6 (p 3-163).

Step 2. Remove lead 85 (1) from low air pressure warning switch (2). With vehicle engine running, check resistance between contact (3) of low air pressure warning switch (2) and ground.

If a short (zero Ω) is not indicated, replace low air pressure warning switch (2) (p 4-145).

If a short (zero Ω) is indicated, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuit 85.



MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

64. TRANSMISSION OIL TEMPERATURE GAUGE DOES NOT INDICATE TRANSMISSION OIL TEMPERATURE AFTER ENGINE WARMUP

Step 1. Ensure panel ground wire is secure and free of damage.

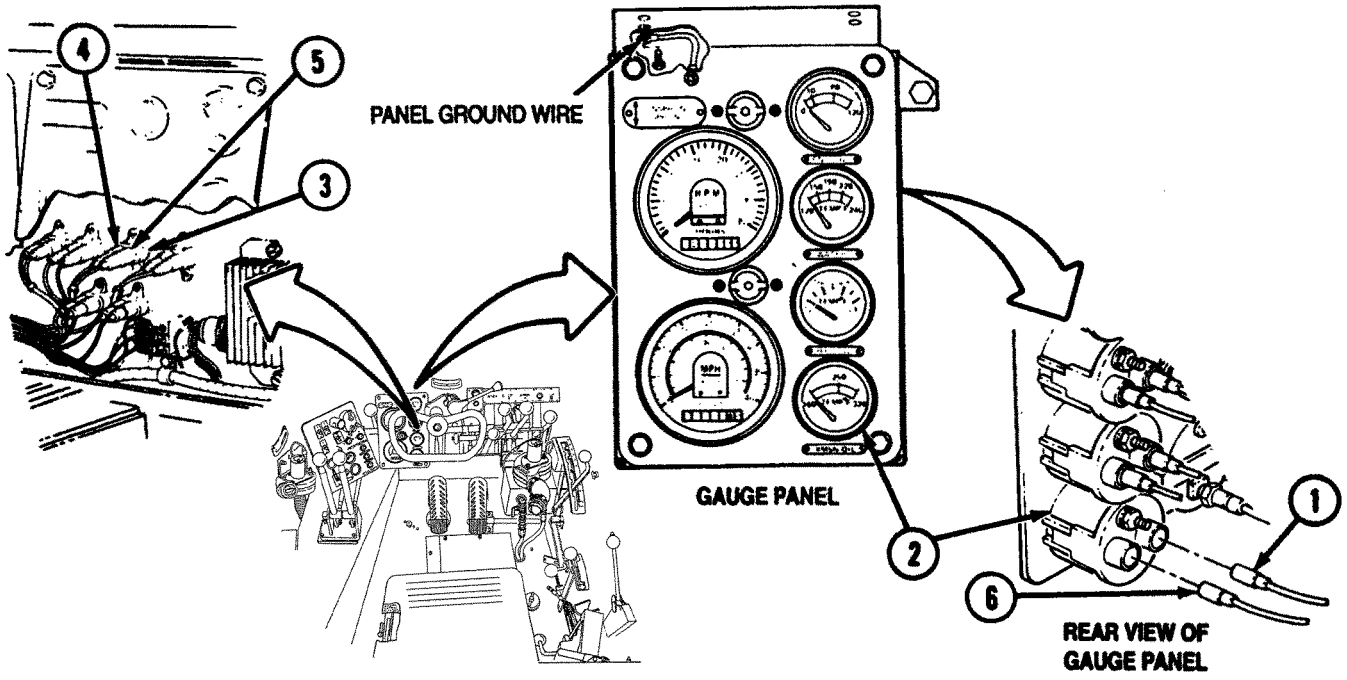
If damaged, replace panel ground wire (p 4-115).

If ground wire is undamaged, go to step 2.

Step 2. Remove lead 27A (1) from transmission oil temperature gauge (2). With MASTER switch ON, check for voltage at lead (1).

If minimum 24VDC is present at lead (1), go to step 4.

If no voltage is present at lead (1), go to step 3.



Step 3. Check circuit breaker 324 (3) for continuity. Disconnect leads (4) and (5) from circuit breaker (3). Using multimeter, check circuit breaker (3) for continuity.

If circuit is open, replace circuit breaker (3)

If circuit is complete, refer to vehicle electrical system wiring diagram (p FP-3) and rear wiring harness (p FP-15), and troubleshoot circuit 27A.

Note

STEWART-WARNER gauge will immediately indicate maximum temperature when transmitter wire is disconnected, if gauge is good.

Step 4. Turn MASTER switch OFF. Remove lead (6) from transmission oil temperature gauge (2). Connect a jumper wire between transmitter terminal on gauge (2) and ground. Turn MASTER switch to ON.

If gauge (2) indicates maximum temperature, go to step 5.

If gauge (2) does not indicate maximum temperature, replace gauge (2) (p 4-115).

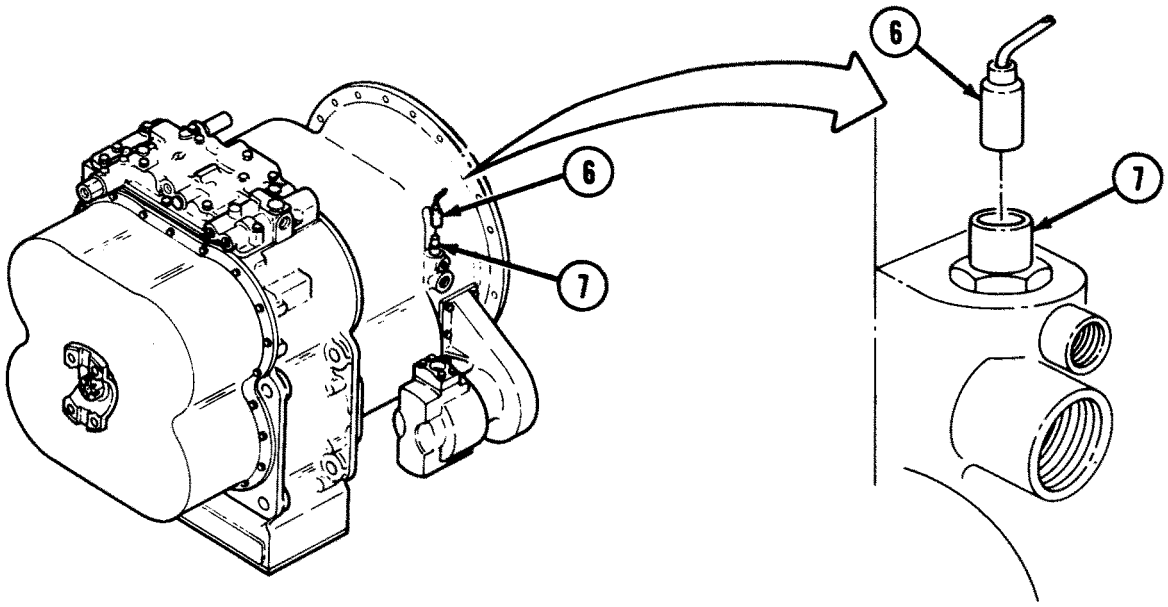
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

64. TRANSMISSION OIL TEMPERATURE GAUGE DOES NOT INDICATE TRANSMISSION OIL TEMPERATURE AFTER ENGINE WARMUP – CONTINUED

Step 5. Disconnect lead (6) from transmission oil temperature transmitter (7) and check continuity of sending unit wire.

If lead is good, replace transmission oil temperature transmitter (7) (p 4-147).

If lead is bad, replace lead (6).



MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

65. HYDRAULIC OIL TEMPERATURE GAUGE DOES NOT INDICATE HYDRAULIC OIL TEMPERATURE AFTER ENGINE WARMUP

Step 1. Ensure panel ground wire is secure and free of damage.

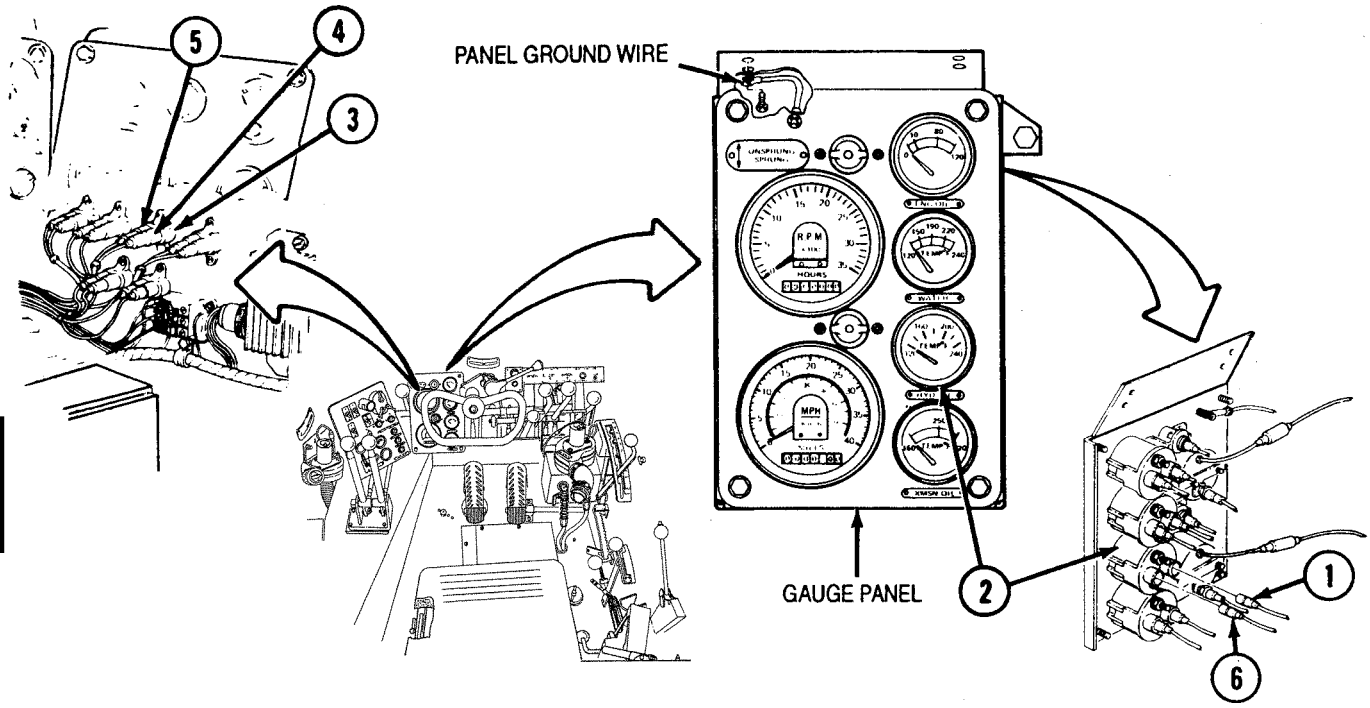
If damaged, replace ground wire (p 4-115).

If undamaged, go to step 2.

Step 2. Disconnect lead 27A (1) from hydraulic oil temperature gauge (2). Turn MASTER switch ON and check for minimum 24VDC at lead (1).

If no voltage is present at lead (1), go to step 3.

If minimum 24VDC is present at lead (1), go to step 4.



Step 3. Check circuit breaker (3) for continuity. Disconnect leads (4) and (5) from circuit breaker (3). Using multimeter, check circuit breaker (3) for continuity.

If circuit is open, replace circuit breaker (3) (p 4-123).

If circuit is complete, refer to vehicle electrical system wiring diagram (p FP-3) and rear wiring harness (p FP-15), and troubleshoot circuit 27A.

Note

STEWART-WARNER gauge will immediately indicate maximum temperature when transmitter lead is disconnected, if gauge is good.

Step 4. Turn MASTER switch OFF. Disconnect lead 664 (6) from hydraulic oil temperature gauge (2). Connect a jumper wire between transmitter terminal on gauge (2) and ground. Turn MASTER switch ON.

If gauge (2) does not indicate maximum temperature, replace gauge (2) (p 4-115).

If gauge (2) does indicate maximum temperature, go to step 5.

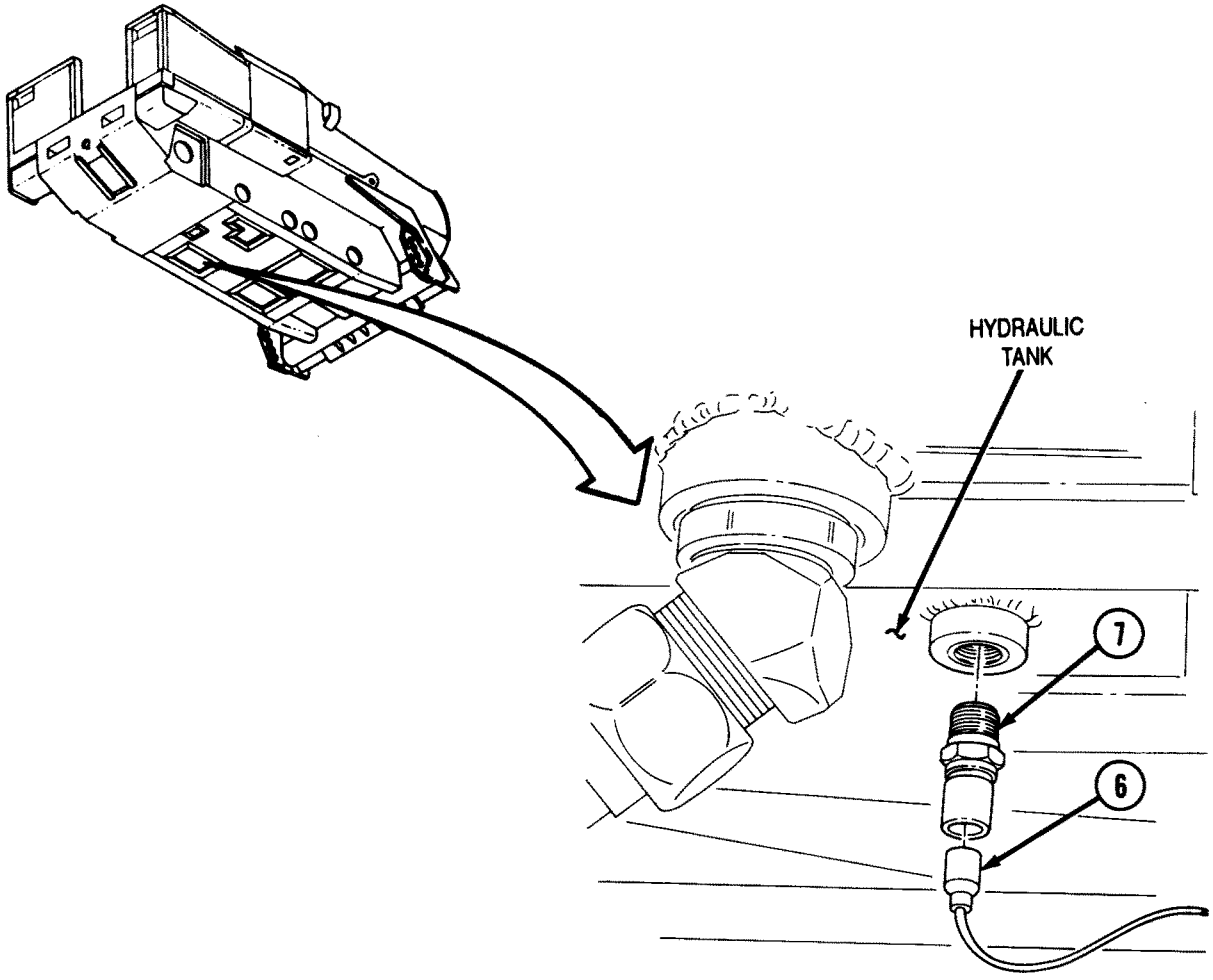
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

65. HYDRAULIC OIL TEMPERATURE GAUGE DOES NOT INDICATE HYDRAULIC OIL TEMPERATURE AFTER ENGINE WARMUP – CONTINUED

Step 5. Disconnect lead (6) from hydraulic oil temperature transmitter (7). Check continuity of lead (6).

If lead is bad, replace lead (6).

If lead is good, replace transmitter (7) (p 4-143).



MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

66. ENGINE OIL PRESSURE GAUGE DOES NOT INDICATE ENGINE OIL PRESSURE

CAUTION

The vehicle engine can be damaged if oil pressure is too low or too high. Use this procedure only for oil pressure indicating malfunctions. Damage to equipment may result.

Step 1. Ensure panel ground wire is secure and undamaged.

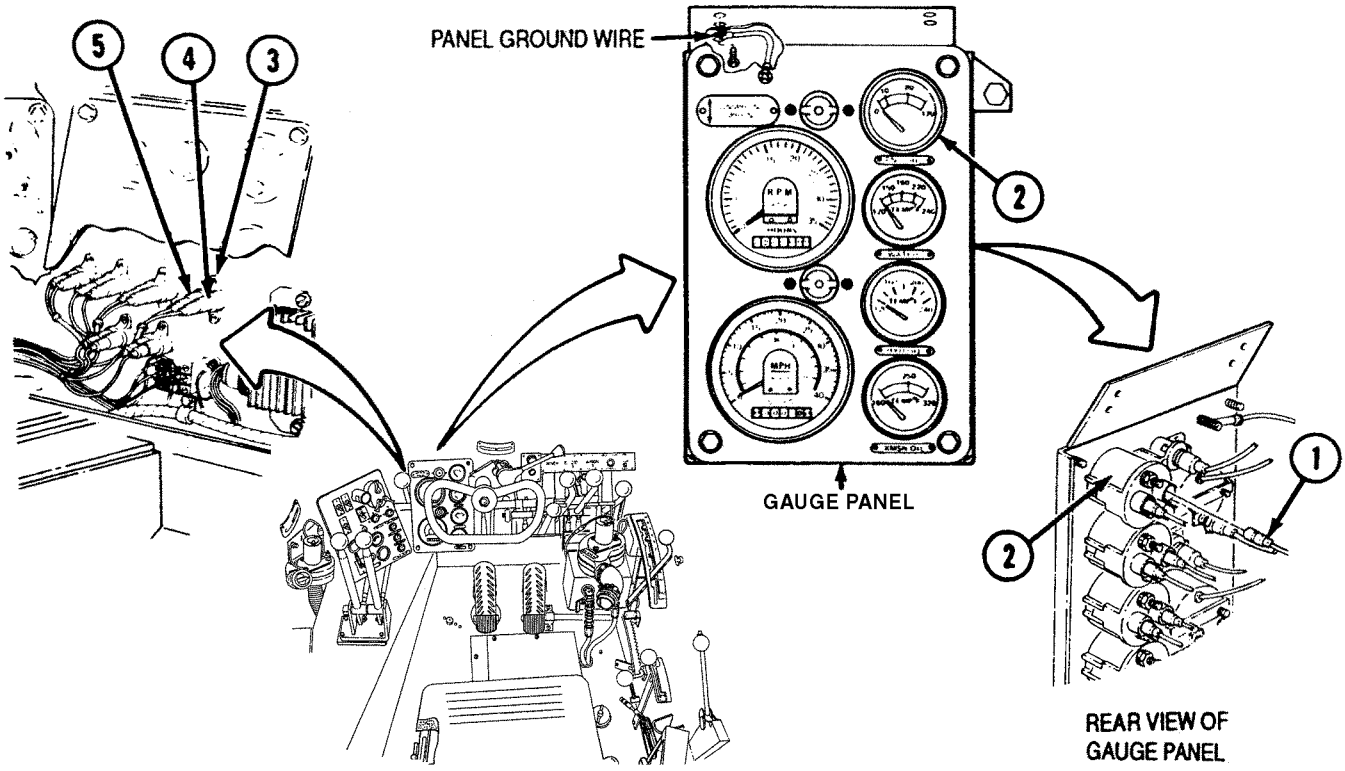
If damaged, replace ground wire (p 4-115).

If undamaged, go to step 2.

Step 2. Remove lead 27A (1) from engine oil pressure gauge (2). Turn MASTER switch ON and check for minimum 24VDC at lead (1).

If minimum 24VDC is present at lead (1), go to step 4.

If no voltage is present at lead (1), go to step 3.



Step 3. Check circuit breaker (3) for continuity. Disconnect leads (4) and (5) from circuit breaker (3). Using multimeter, check circuit breaker (3) for continuity.

If circuit is open, replace circuit breaker (p 4-123).

If circuit is complete, go to step 4.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

66. ENGINE OIL PRESSURE GAUGE DOES NOT INDICATE ENGINE OIL PRESSURE – CONTINUED

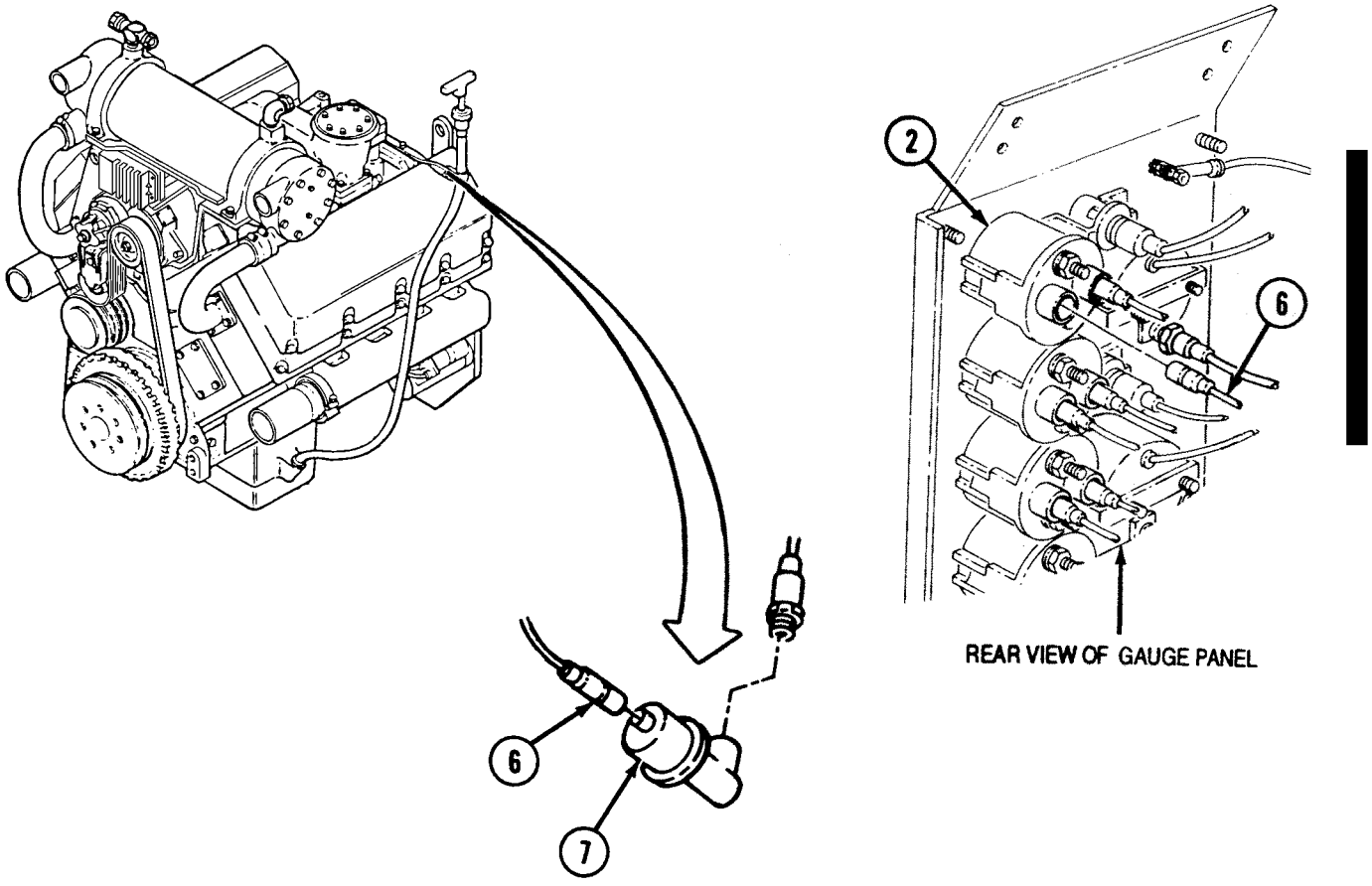
Note

STEWART-WARNER gauge will immediately indicate maximum pressure when transmitter lead is disconnected, if gauge is good.

Step 4. Disconnect transmitter lead 36 (6) from engine oil pressure gauge (2). Connect a jumper wire between transmitter terminal on gauge (2) and ground.

If gauge (2) indicates maximum pressure, go to step 5.

If gauge (2) does not indicate maximum pressure, replace gauge (2) (p 4-115).



Step 5. Disconnect lead (6) from engine oil pressure transmitter (7). Check lead (6) for continuity.

If lead (6) is bad, replace lead 36.

If lead (6) is good, replace engine oil pressure transmitter (7) (p 4-151).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

67. WATER TEMPERATURE GAUGE DOES NOT INDICATE WATER TEMPERATURE AFTER WARMUP

Step 1. Ensure panel ground wire is secure and undamaged.

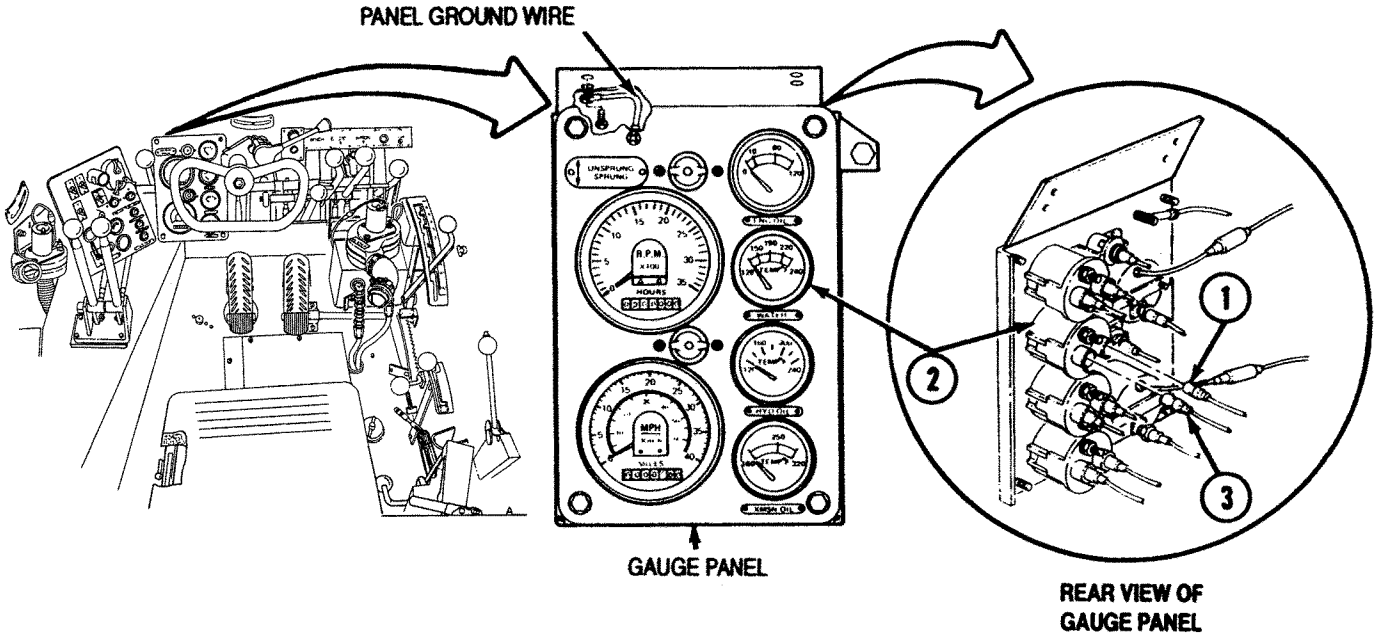
If damaged, replace panel ground wire (p 4-115).

If undamaged, go to step 2.

Step 2. Disconnect lead 27A (1) from water temperature gauge (2). Turn MASTER switch ON and check for minimum 24VDC at lead (1).

If minimum 24VDC is present at lead (1), turn MASTER switch OFF, connect lead (1) to water temperature gauge (2), and go to step 3.

If no voltage is present at lead (1), turn MASTER switch OFF. Refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7) and troubleshoot circuit 27A.



Note

STEWART-WARNER gauge will immediately indicate maximum temperature when transmitter lead is disconnected, if gauge is good.

Step 3. Remove lead 33 (3) from water temperature gauge (2) and connect a jumper wire between transmitter terminal on gauge (2) and ground. Turn MASTER switch ON.

If gauge (2) indicates maximum temperature, go to step 4.

If gauge (2) does not indicate maximum temperature, replace gauge (2) (p 4-106).

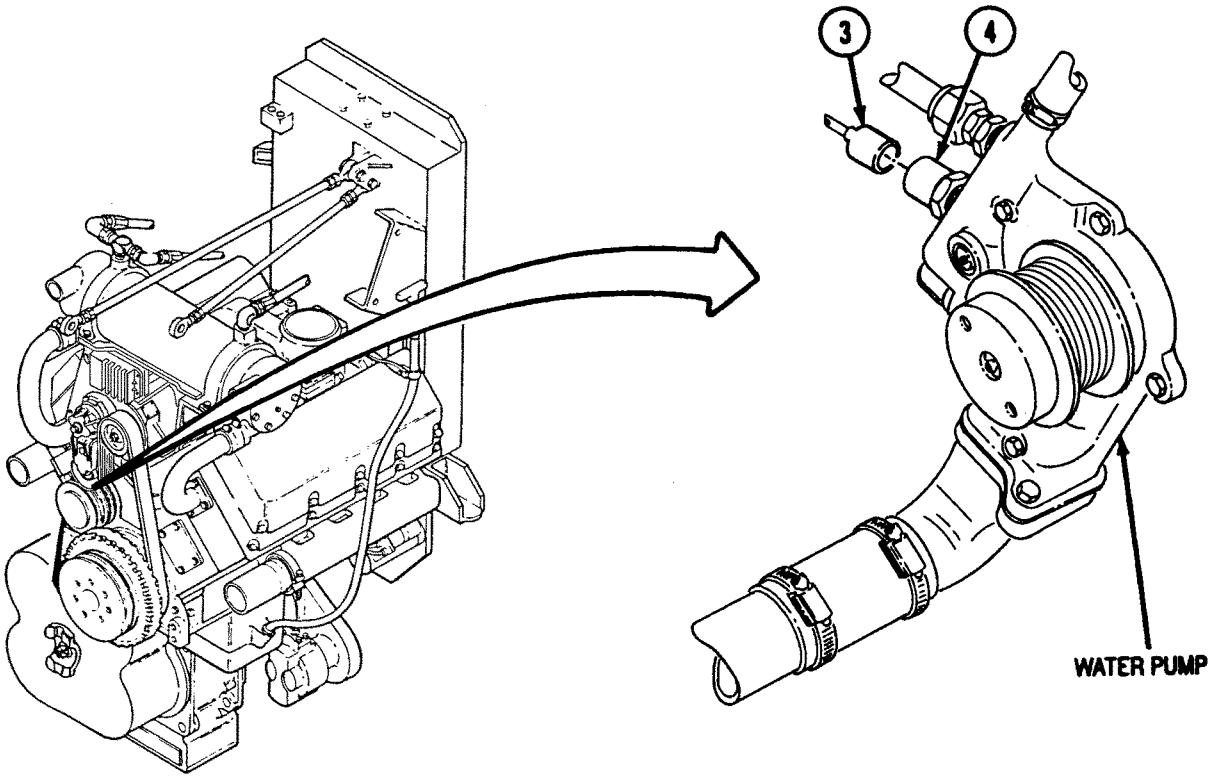
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

67. WATER TEMPERATURE GAUGE DOES NOT INDICATE WATER TEMPERATURE AFTER WARMUP – CONTINUED

Step 4. Disconnect lead (3) from water temperature transmitter (4). Check continuity of lead 33 (3).

If lead 33 (3) is good, replace water temperature transmitter (4) (p 4-153).

If lead 33 (3) is bad, replace lead 33 (3).



MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

68. PARKING BRAKE INDICATOR LIGHT STAYS ON

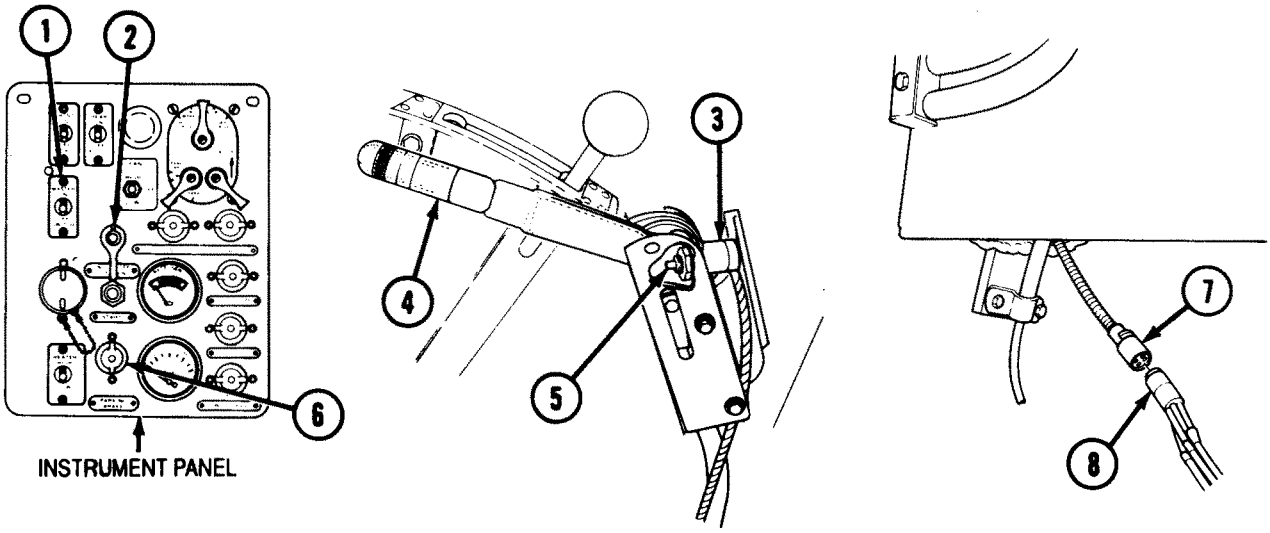
Perform steps with parking brake applied, and vehicle MASTER switch (1) and ignition switch (2) ON.

Step 1. Check adjustment of parking brake warning switch (3). Parking brake lever (4) should depress plunger (5) of parking brake warning switch (3).

Release parking brake lever (4). Plunger (5) should protrude from parking brake warning switch (3).

If plunger (5) protrudes, go to step 2.

If plunger (5) does not protrude, replace parking brake warning switch (3) (p 4-134).



Step 2. If plunger (5) protrudes and indicator light (6) stays ON, in engine compartment, disconnect electrical connector (7) of parking brake warning switch (3) from wiring harness connector (8). Check for minimum 24VDC at lead 509K in connector (8).

If no voltage is present, go to step 3.

If voltage is present, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7) and troubleshoot circuit 509K.

Step 3. Check for minimum 24VDC at lead 509 in connector (8).

If voltage is present, replace parking brake warning switch (3) (p 4-134).

If no voltage is present, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7) and troubleshoot circuit 509K.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

69. PARKING BRAKE INDICATOR LIGHT STAYS OFF

Perform steps with parking brake applied, and vehicle MASTER switch (1) and ignition switch (2) ON.

Step 1. Remove lamp lens (9) and lamp (10) from instrument panel (11) and check for minimum 24VDC at indicator light assembly (6).

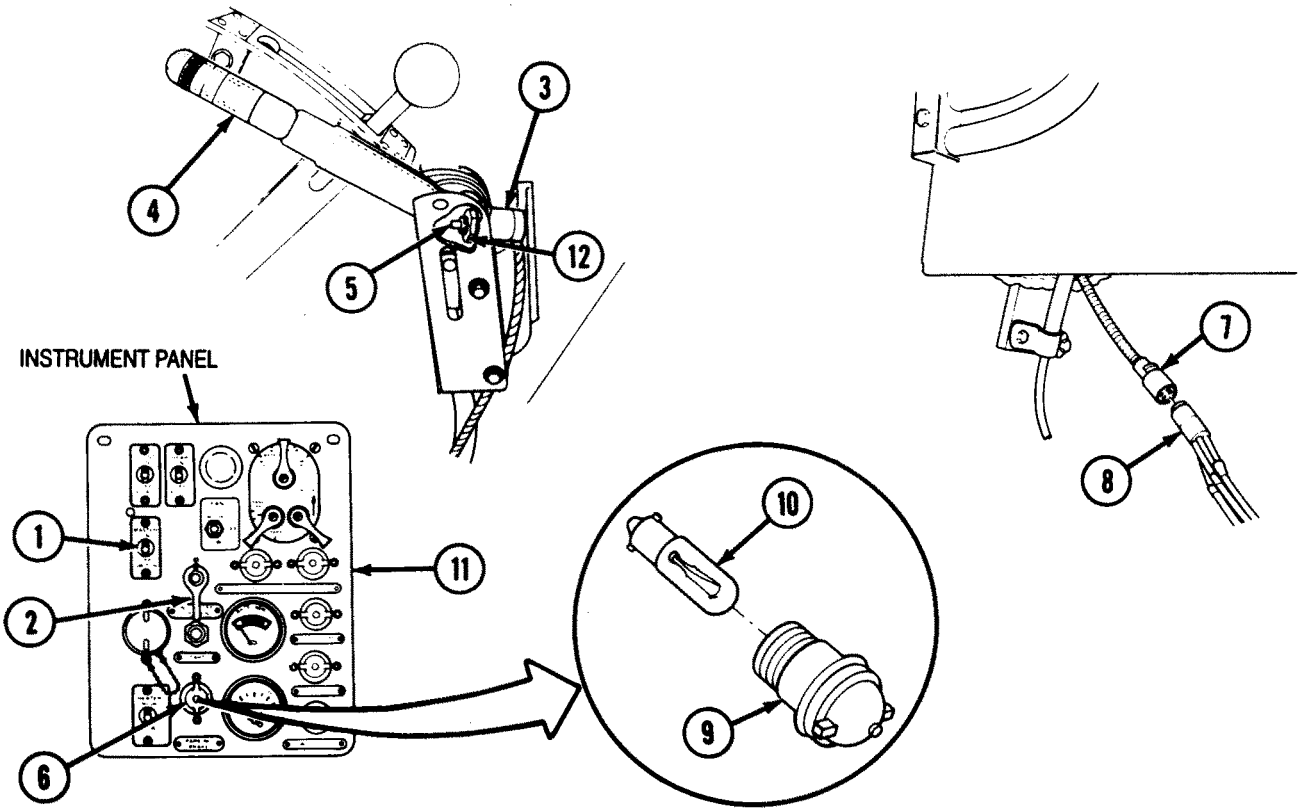
If voltage is present, inspect lamp (10) for broken or burned filament. Replace lamp (10) if damaged (p 4-106).

If no voltage is present, go to step 2.

Step 2. Check adjustment of parking brake warning switch (3). Parking brake lever (4) should depress plunger (5) of parking brake warning switch (3).

If plunger (5) is depressed, go to step 3.

If plunger (5) is not depressed, loosen jamnuts (12), and adjust parking brake warning switch (3), until plunger (5) is depressed by parking brake lever (4). Replace warning switch (3) (p 4-134) if it cannot be adjusted.



Step 3. From engine compartment, disconnect electrical connector (7) of parking brake warning switch (3) from wiring harness connector (8). Check for minimum 24VDC at lead 509K in connector (8).

If voltage is present, replace parking brake warning switch (3) (p 4-106).

If no voltage is present, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7) and troubleshoot circuit 509K.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

70. FUEL GAUGE DOES NOT INDICATE FUEL LEVEL

Step 1. Ensure instrument panel ground lead is secure and undamaged.

If damaged, replace ground wire (p 4-106).

If undamaged, go to step 2.

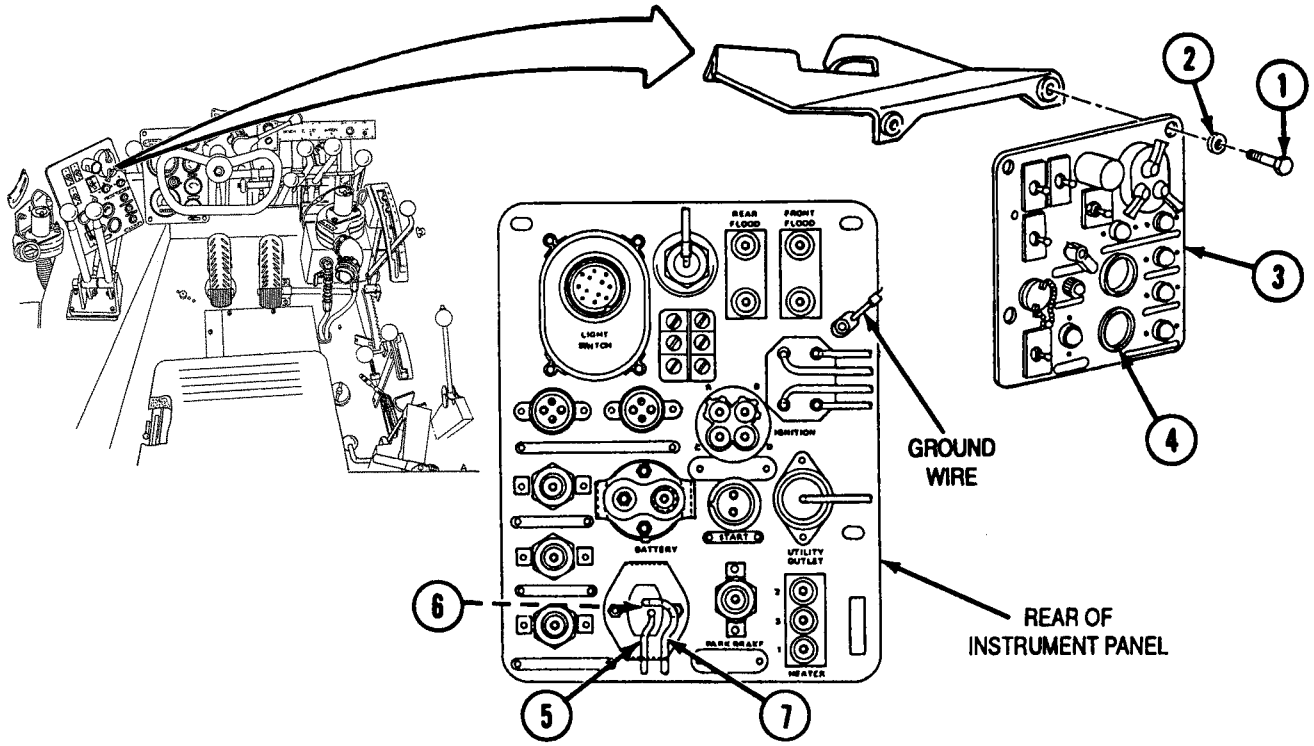
Note

STEWART-WARNER gauge will immediately indicate maximum level when transmitter lead is disconnected, if gauge is good.

Step 2. Remove three screws (1) and washers (2). Pull instrument panel (3) out far enough to gain access to electrical leads of fuel gauge (4). Disconnect lead (5) from fuel gauge (4). Connect a jumper wire between transmitter terminal (6) on gauge (4) and ground. Turn MASTER switch ON.

If gauge (4) does not indicate maximum level, go to step 3.

If gauge (4) indicates maximum level, go to step 4.



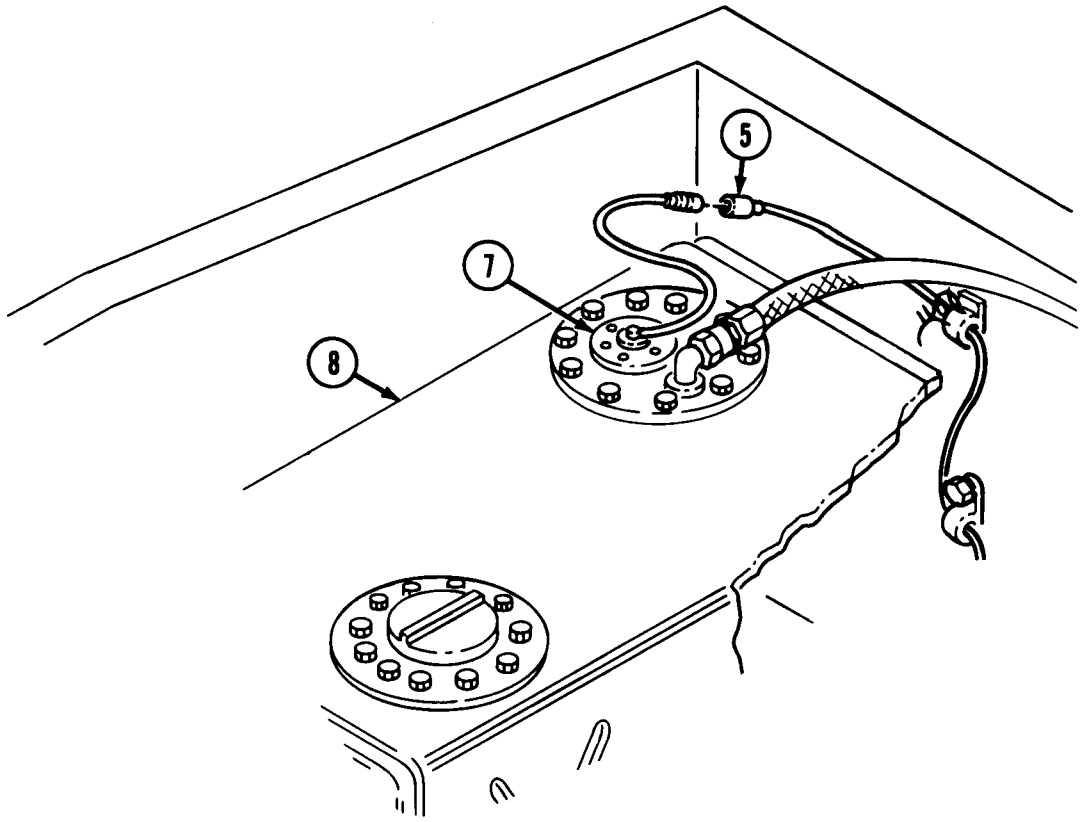
Step 3. Disconnect lead (7) from back of fuel gauge (4). With MASTER switch ON, check for voltage at lead (7).

If voltage is present, go to step 4.

If no voltage is present, refer to vehicle electrical system wiring diagram (p FP-3) and rear wiring harness (p FP-7) and troubleshoot circuit 27.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

70. FUEL GAUGE DOES NOT INDICATE FUEL LEVEL – CONTINUED



Step 4. Remove MCS unit if installed (p 4-912).

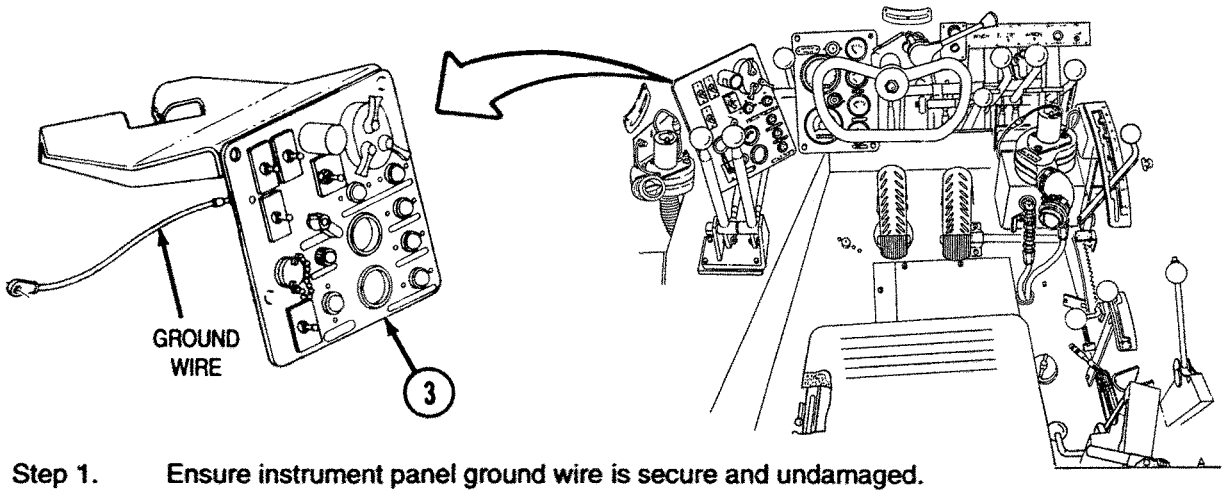
Step 5. Disconnect lead (5) from fuel level transmitter (7) on fuel tank (8). Check continuity of lead (5).

If lead (5) is bad, replace lead (5).

If lead (5) is good, replace fuel level transmitter (6) (p 4-98).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

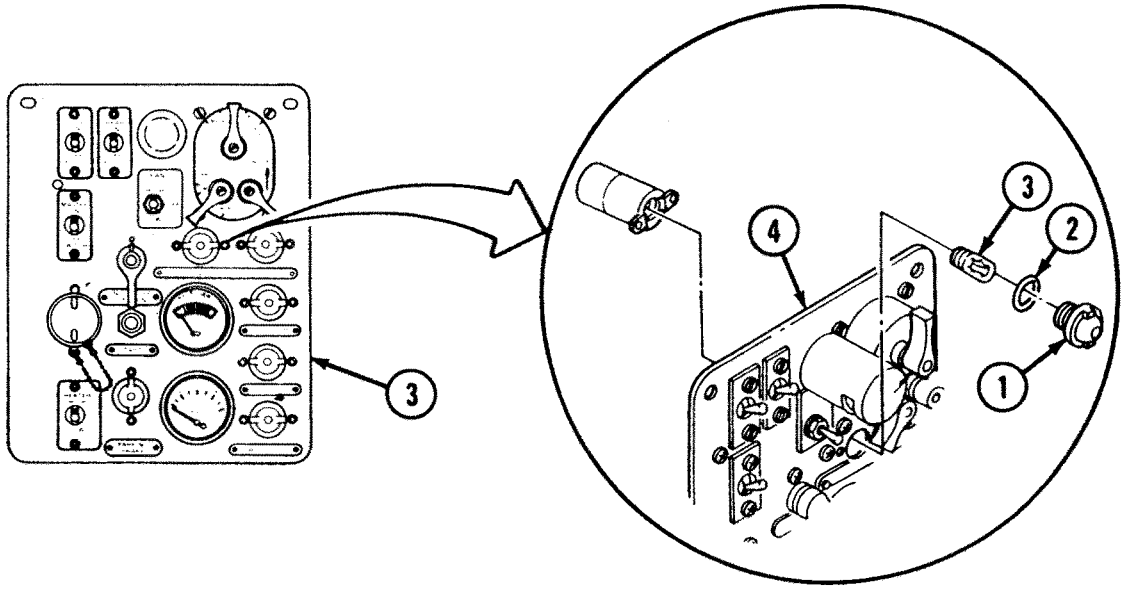
71. LOW TRANSMISSION OIL PRESSURE INDICATOR DOES NOT LIGHT WHEN VEHICLE MASTER SWITCH IS ON (ENGINE NOT RUNNING)



Step 1. Ensure instrument panel ground wire is secure and undamaged.

If damaged, replace ground wire (p 4-106).

If undamaged, go to step 2.



Step 2. Remove lamp lens (1), seal (2), and lamp (3) from instrument panel (4). Check lamp (3) for continuity.

If circuit is open, replace lamp (3).

If circuit is complete, go to step 3.

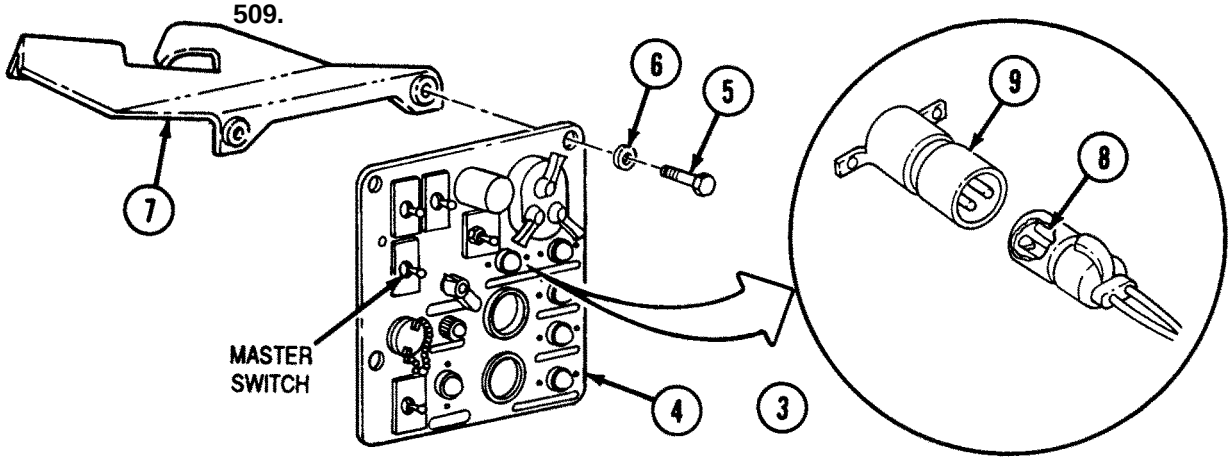
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

71. LOW TRANSMISSION OIL PRESSURE INDICATOR DOES NOT LIGHT WHEN VEHICLE MASTER SWITCH IS ON (ENGINE NOT RUNNING) – CONTINUED

Step 3. Remove three screws (5), washers (6), and instrument panel (4) from bracket (7). Turn MASTER switch ON. Check for minimum 24VDC at plug (8).

If minimum 24VDC is indicated at plug (8), turn MASTER switch OFF, connect plug (8) to low transmission oil pressure warning light (9), and go to step 4.

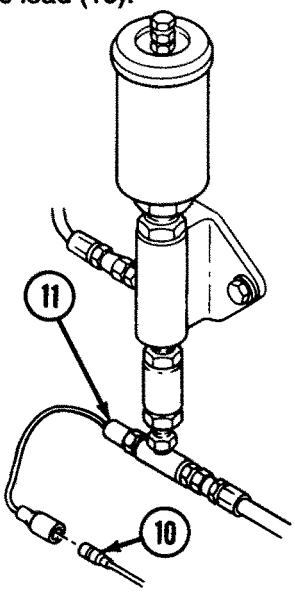
If no voltage is present at plug (8), refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuit 509. ■



Step 4. Disconnect lead (10) from low transmission oil pressure warning transmitter (11) and check continuity of lead (10).

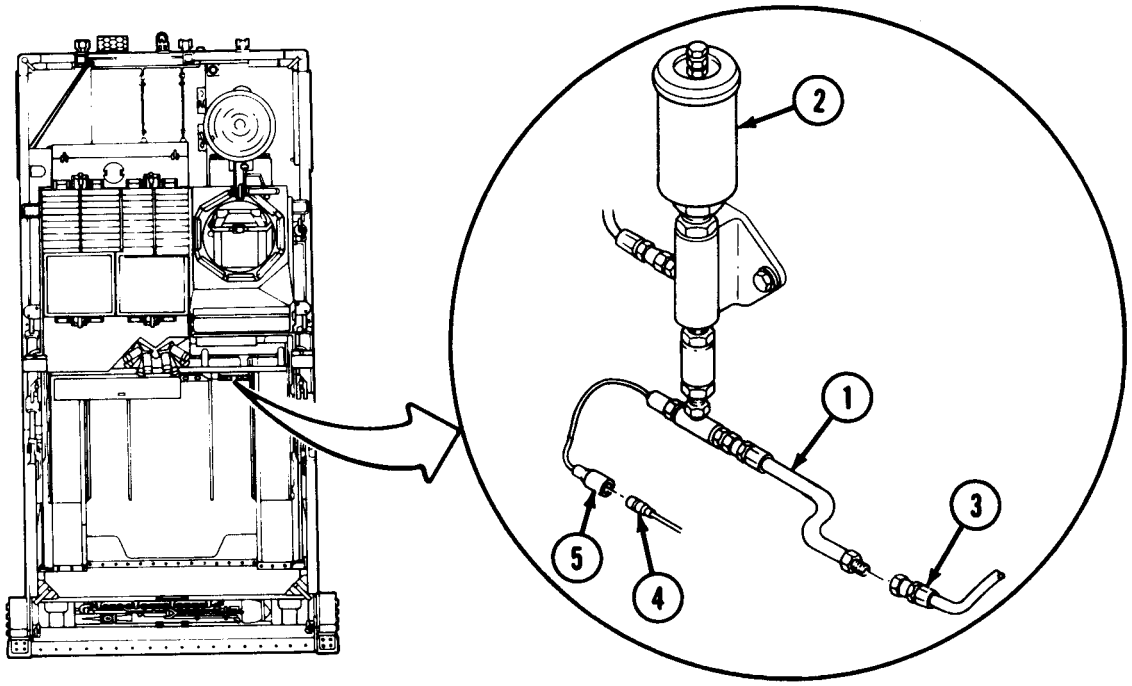
If lead (10) is good, replace low transmission oil pressure warning transmitter (11) (p 4-149).

If lead (10) is bad, replace lead (10).



MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

72. LOW TRANSMISSION PRESSURE INDICATOR STAYS LIT WHEN VEHICLE IS RUNNING



Note

Low transmission pressure indicator may light briefly when shifting.

Step 1. Check hose (1) connecting transmission shift accumulator (2) to transmission line (3).

Ensure quick-disconnect is in good repair.

If damaged, replace hose (1) (p 4-673).

If undamaged, go to step 2.

Step 2. Remove lead (4) from low transmission oil pressure warning transmitter (5). Using test on (p 3-5), check resistance between contact of low transmission oil pressure warning transmitter (5) and ground.

If a short is not indicated, replace low transmission oil pressure warning transmitter (5) (p 4-149).

If short (zero Ω) is indicated, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuit 72. Go to step 3.

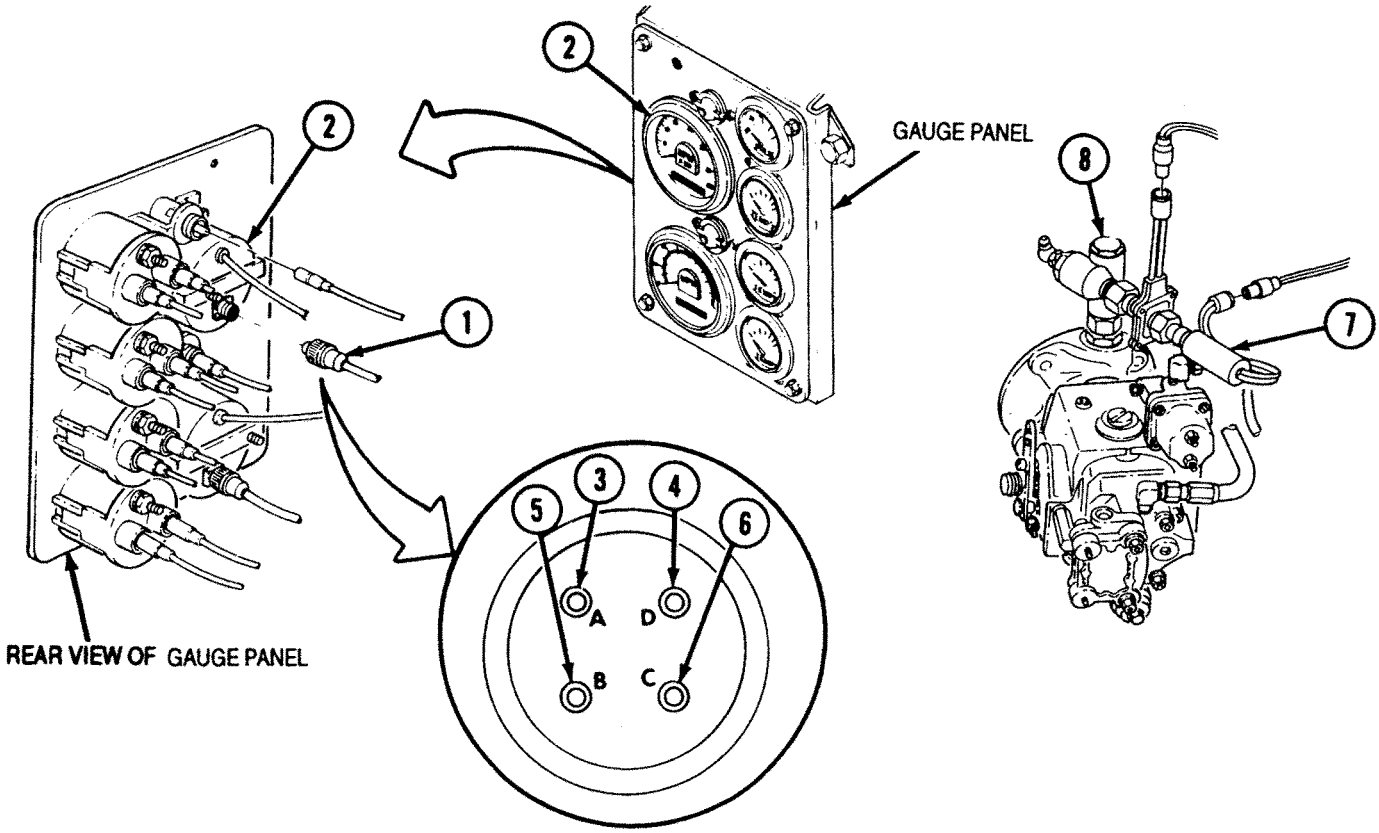
Step 3. Check pressure of transmission shift accumulator (2).

Charge accumulator (2) (p 4-679).

If accumulator (2) cannot be charged, replace accumulator (2) (p 4-684).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

73. TACHOMETER DOES NOT OPERATE



Step 1. Disconnect plug (1) from tachometer gauge (2). Turn MASTER switch ON and check for minimum 24VDC at terminal A (3).

If no voltage is present at terminal A (3), refer to vehicle electrical system wiring diagram (p FP-3) and troubleshoot circuit 427.

If minimum 24VDC is present at terminal A (3), go to step 2.

Step 2. Check for continuity between ground terminal D (4) and vehicle ground.

If an open circuit (∞ Ω) is indicated, check for loose or missing hardware and dirt or paint. Tighten or replace missing hardware and clean surface where ground terminal D (4) is connected.

If continuity is indicated, go to step 3.

Step 3. Check for continuity between terminals B (5) and C (6).

If an open circuit (∞ Ω) is indicated, refer to vehicle electrical system wiring diagram (p FP-3) and troubleshoot circuits 428 and 429.

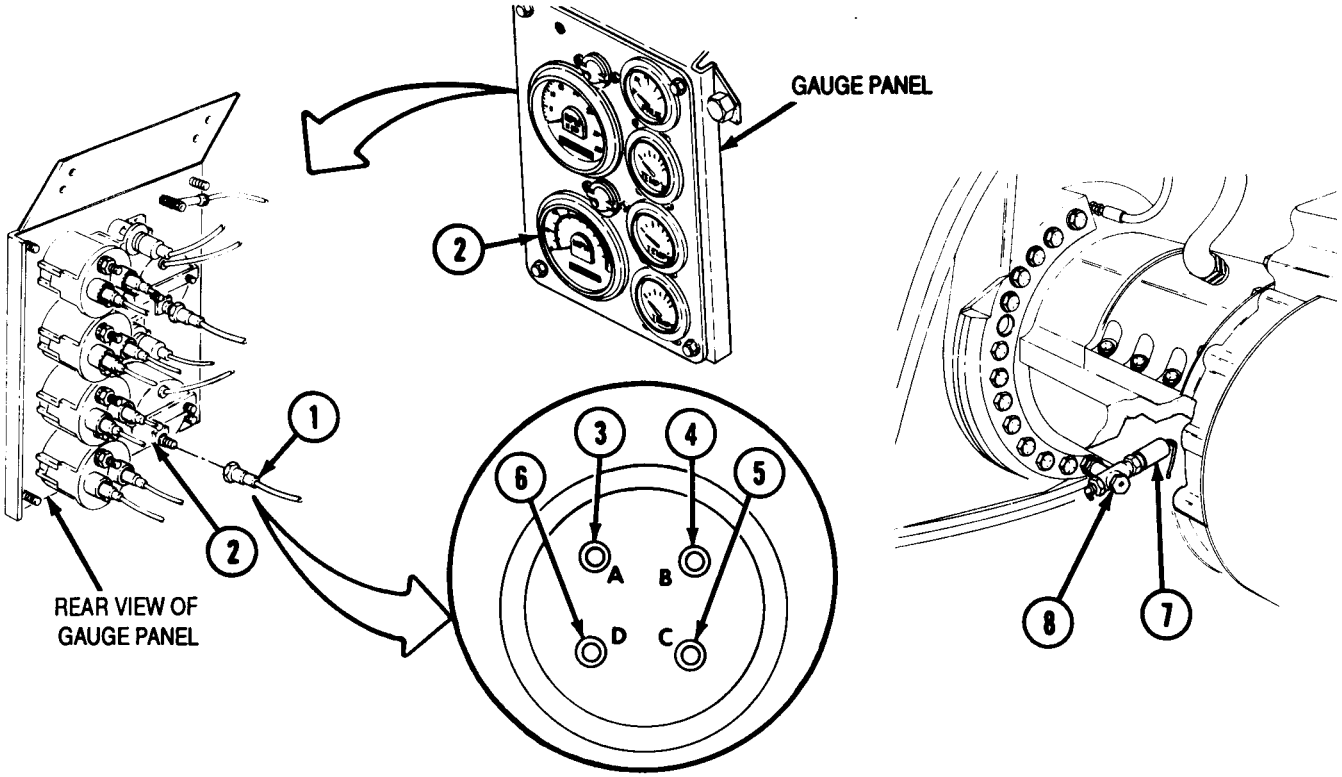
If continuity of terminals B (5) and C (6) is indicated, remove and inspect tachometer sender (7) and adapter (8) (p 4-96). If damaged or deteriorated, replace tachometer sender (7) or adapter (8). Proceed to step 4.

Step 4. Check for continuity between terminals B (5) and C (6).

If continuity is indicated and tachometer gauge (2) still does not work, replace tachometer gauge (2) (p 4-115).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

74. SPEEDOMETER DOES NOT OPERATE



Step 1. Disconnect plug (1) from speedometer gauge (2). Turn MASTER switch ON and check for minimum 24VDC at terminal A (3).

If no voltage is present at terminal A (3), refer to vehicle electrical system wiring diagram (p FP-3) and rear wiring harness (p FP-15), and troubleshoot circuit 431.

If minimum 24VDC is present at terminal A (3), go to step 2.

Step 2. Check for continuity between ground terminal B (4) and vehicle ground.

If an open circuit (∞ Ω) 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.

Step 3. Check for continuity between terminals C (5) and D (6).

If an open circuit (∞ Ω) is indicated, refer to vehicle electrical system wiring diagram (p FP-3), and troubleshoot circuits 432 and 433.

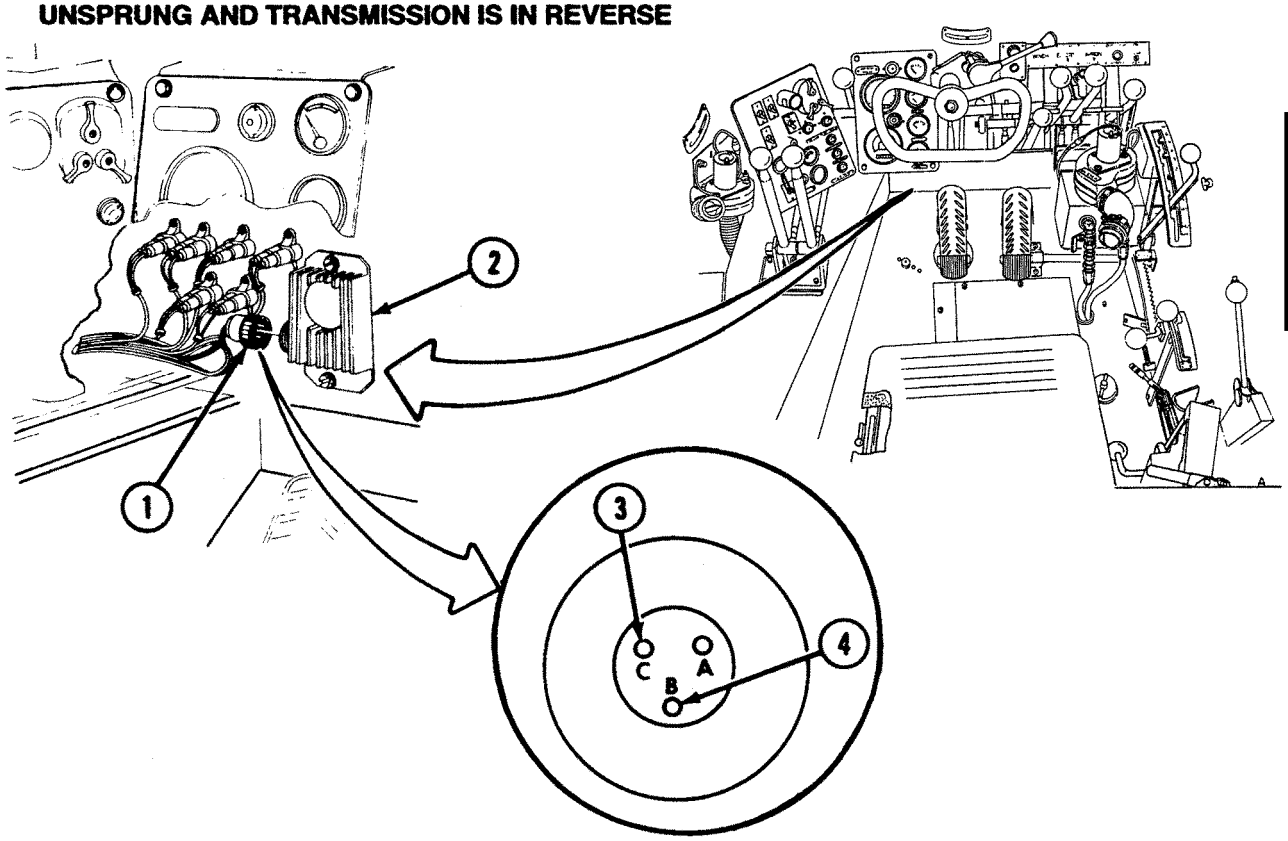
If continuity is indicated, remove and inspect speedometer sender (7) and adapter (8) (p 4-154). If damaged or deteriorated, replace speedometer sender (7) or adapter (8). Proceed to step 4.

Step 4. Check for continuity between terminals C (5) and D (6).

If continuity is indicated and speedometer gauge (2) still does not work, replace speedometer gauge (2) (p 4-115).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

75. WARNING BUZZER AND EMERGENCY FLASHER DO NOT OPERATE WHEN SUSPENSION IS IN UNSPRUNG AND TRANSMISSION IS IN REVERSE



Step 1. Disconnect plug (1) from reverse/unsprung alert flasher (2). Check for continuity between pin C (3) and vehicle ground.

If an open circuit (∞ Ω) 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 2.

WARNING

Air system must be pressurized and parking brake engaged during reverse pressure tests. Failure to comply may result in damage to equipment or injury to personnel.

Step 2. With engine running and parking brake engaged, shift transmission into R1. Check for voltage at pin B (4).

If minimum 24VDC is present at pin B (4), replace reverse/unsprung alert flasher (p 4-130).

If no voltage is present at pin B (4), refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuit 509D. Go to step 3.

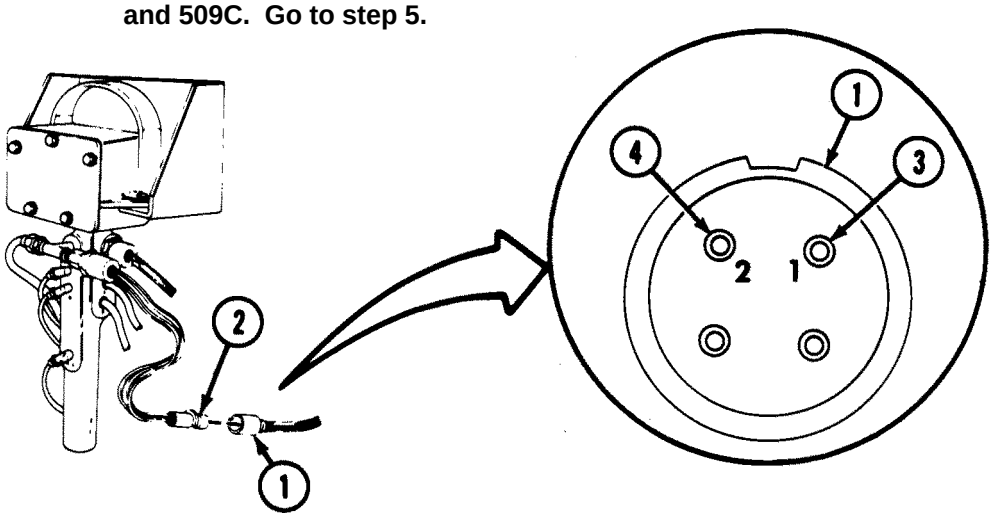
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

75. WARNING BUZZER AND EMERGENCY FLASHER DO NOT OPERATE WHEN SUSPENSION IS IN UNSPRUNG AND TRANSMISSION IS IN REVERSE — CONTINUED

Step 3. Remove plug (1) from reverse pressure switch (2). With MASTER switch and ignition switch ON, check for voltage at terminal 1 (3) and pin 2 (4) in plug (1).

If minimum 24VDC is present at terminal 1 (3) and pin 2 (4), go to step 4.

If no voltage is present at circuits 1 and 2, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuits 509B and 509C. Go to step 5.



WARNING

Air system must be pressurized and parking brake engaged during reverse pressure tests. Failure to comply may result in damage to equipment or injury to personnel.

Step 4. With engine running and parking brake engaged, shift transmission into R1. Check for continuity on the reverse pressure switch (2) between pin 3 (5) and terminal 1 (6); and between terminal 2 (7) and pin 4 (8).

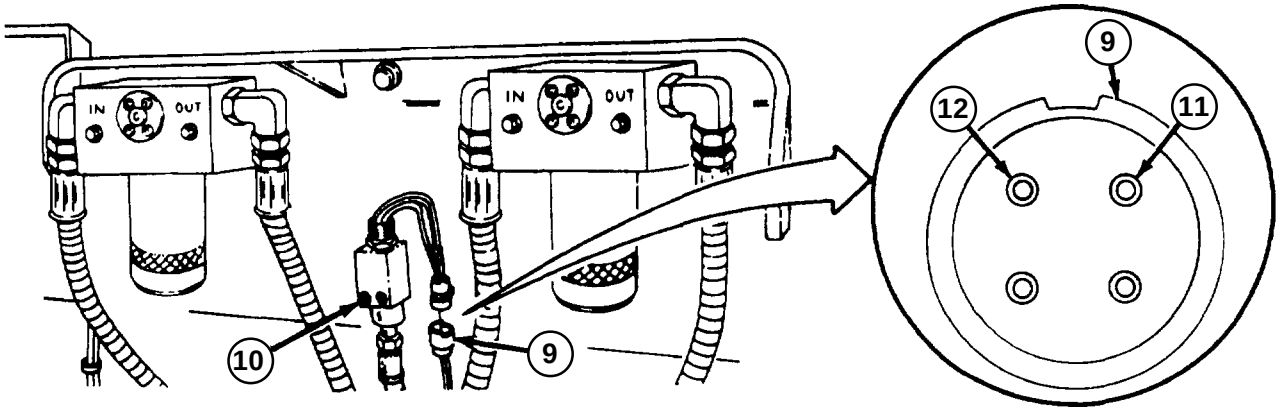
If an open circuit (∞ Ω) is indicated between any of the pins tested, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuits 509B, 509C, 509D, and 509F.

If problem persists, replace reverse alarm pressure switch (2) (p 4-141).

If continuity is indicated, go to step 5.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

75. WARNING BUZZER AND EMERGENCY FLASHER DO NOT OPERATE WHEN SUSPENSION IS IN UNSPRUNG AND TRANSMISSION IS IN REVERSE - CONTINUED

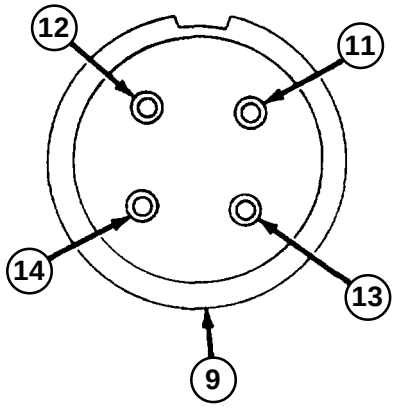


Step 5. Remove plug (9) from unsprung pressure switch (10). With engine running and suspension in UNSPRUNG, check for voltage at pins (11) and (12).

If minimum 24 VDC is present at pins (11) and (12), go to step 6.

If no voltage is present at pins (11) and (12), refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuit 509.

If problem persists, troubleshoot warning buzzer, MALFUNCTION 77 (p 3-329).



Step 6. With engine running and suspension in UNSPRUNG, check for continuity between pins (12) and (13); and between pins (11) and (14).

If an open circuit (∞ Ω)is indicated between any of the pins in test, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuits 509, 509B, and 509C.

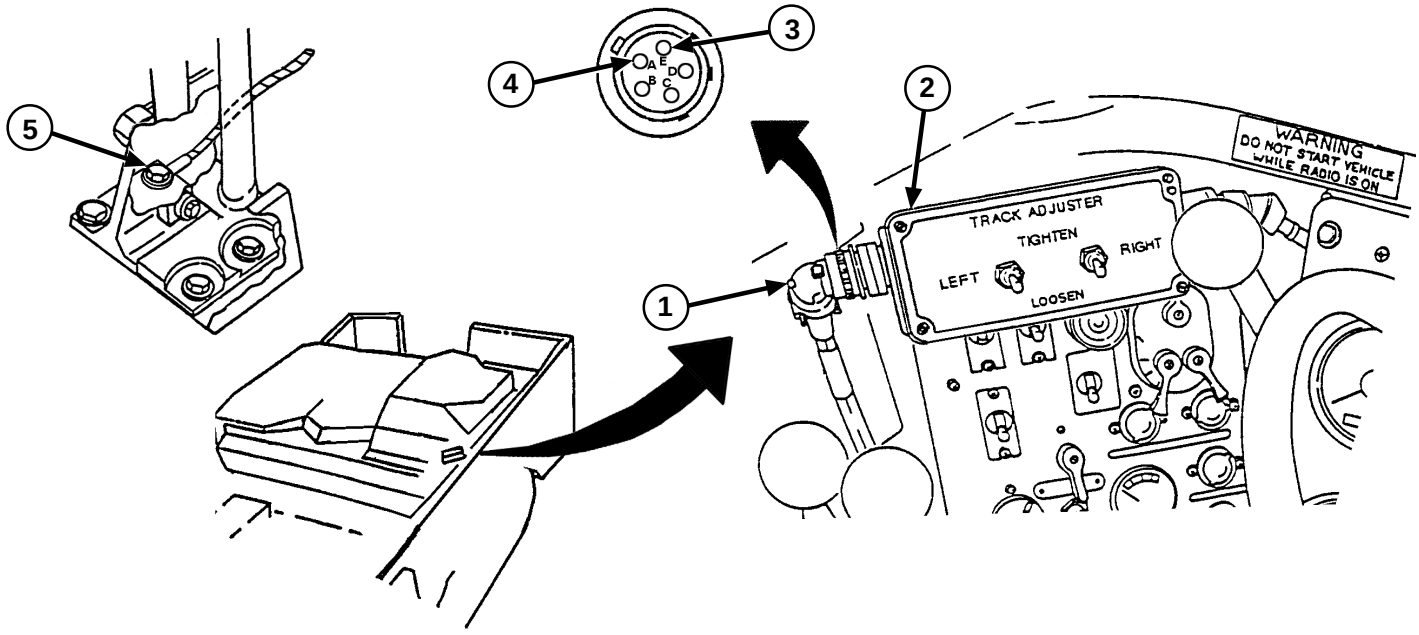
If problem persists, replace unsprung pressure switch (p 4-139).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

75A. TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, SEMI-AUTOMATIC TRACK ADJUSTER (ELECTRICAL) (NEW PRODUCTION)

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.



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 track control wiring harness (1) from suspension control box (2). Check for ground continuity from socket E (3) to the ground (5) at the suspension control levers.

If an open (∞ Ω)circuit is indicated, replace the track control harness (1). Verify that problem is solved.

If continuity is indicated, go to step 2.

Step 2. Check track control wiring harness for a minimum of 24 VDC at socket A (4).

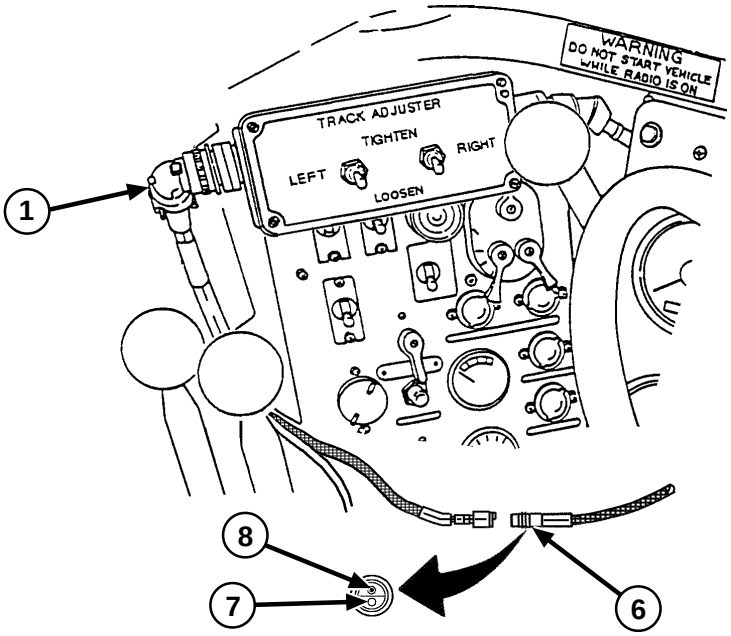
Using VOM with negative lead in socket E (3) and positive lead in socket A (4), turn on master switch.

If no voltage is present at socket A, 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

75A. TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, SEMI-AUTOMATIC TRACK ADJUSTER (ELECTRICAL) (NEW PRODUCTION) - CONTINUED

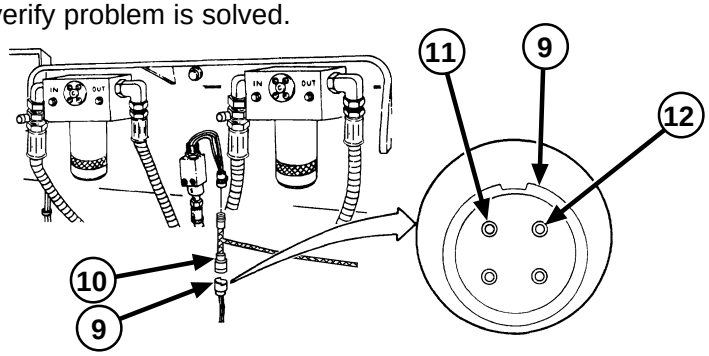


Step 3. Check SPRUNG/UNSPRUNG tap wiring harness for a minimum of 24 VDC at pin 509.

Disconnect plug 509 (6) behind panel. Connect negative lead of VOM to socket (7) of SPRUNG/UNSPRUNG tap wiring harness and connect positive lead to pin of plug 509 (8). Turn on master switch.

If no voltage is present at pin 509 (8), turn master switch off, reconnect plug 509 (6) to track control wiring harness (1), go to step 4.

If minimum 24 VDC is present, turn master switch off, replace track control wiring harness (1), verify problem is solved.



Step 4. Check main power circuit for a minimum of 24VDC at pin 509.

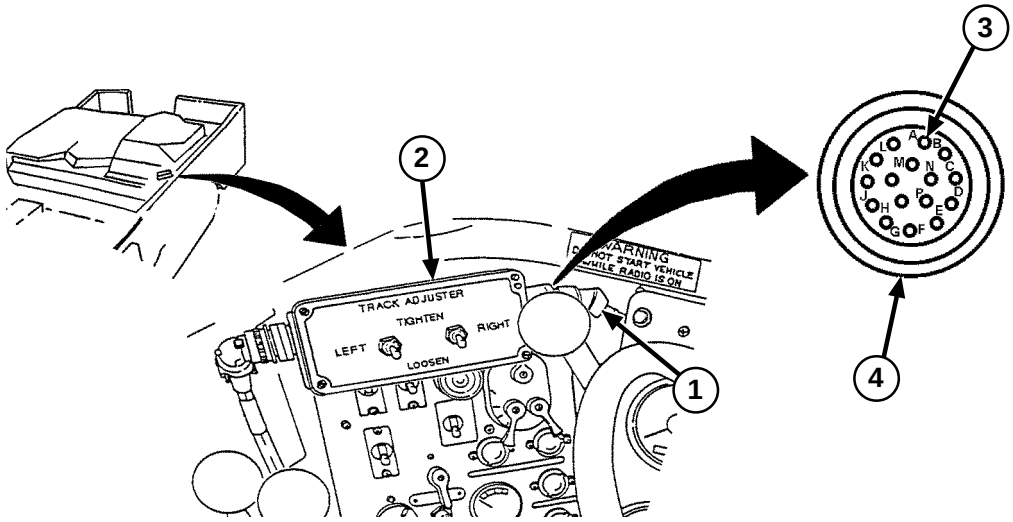
Remove plug (9) from SPRUNG/UNSPRUNG tap harness (10). Turn master switch on, check for voltage between pins (11) and (12).

If 24 VDC is present between pins (11) and (12), turn master switch off, replace SPRUNG/UNSPRUNG tap wiring harness (10). Verify problem is solved.

If no voltage is present between pins (11) and (12), turn master switch off, reconnect plug (9) to SPRUNG/UNSPRUNG tap wiring harness (10), refer to vehicle electrical system wiring diagram (TM 5-2350-262-20-2), and track control wiring harness (TM 5-2350-262-20-2), and troubleshoot circuit 509.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

75A. TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, SEMI-AUTOMATIC TRACK ADJUSTER (ELECTRICAL) (NEW PRODUCTION) - CONTINUED



Step 5. Check track adjuster main wiring harness and hydraulic valve solenoids for continuity.

Disconnect track adjuster main wiring harness (1) from suspension control box (2). Check continuity between all wiring harness connector pins (3) at connector (4). This will also check continuity of the appropriate valve solenoids. Refer to table 2 for lead locations.

Table 2

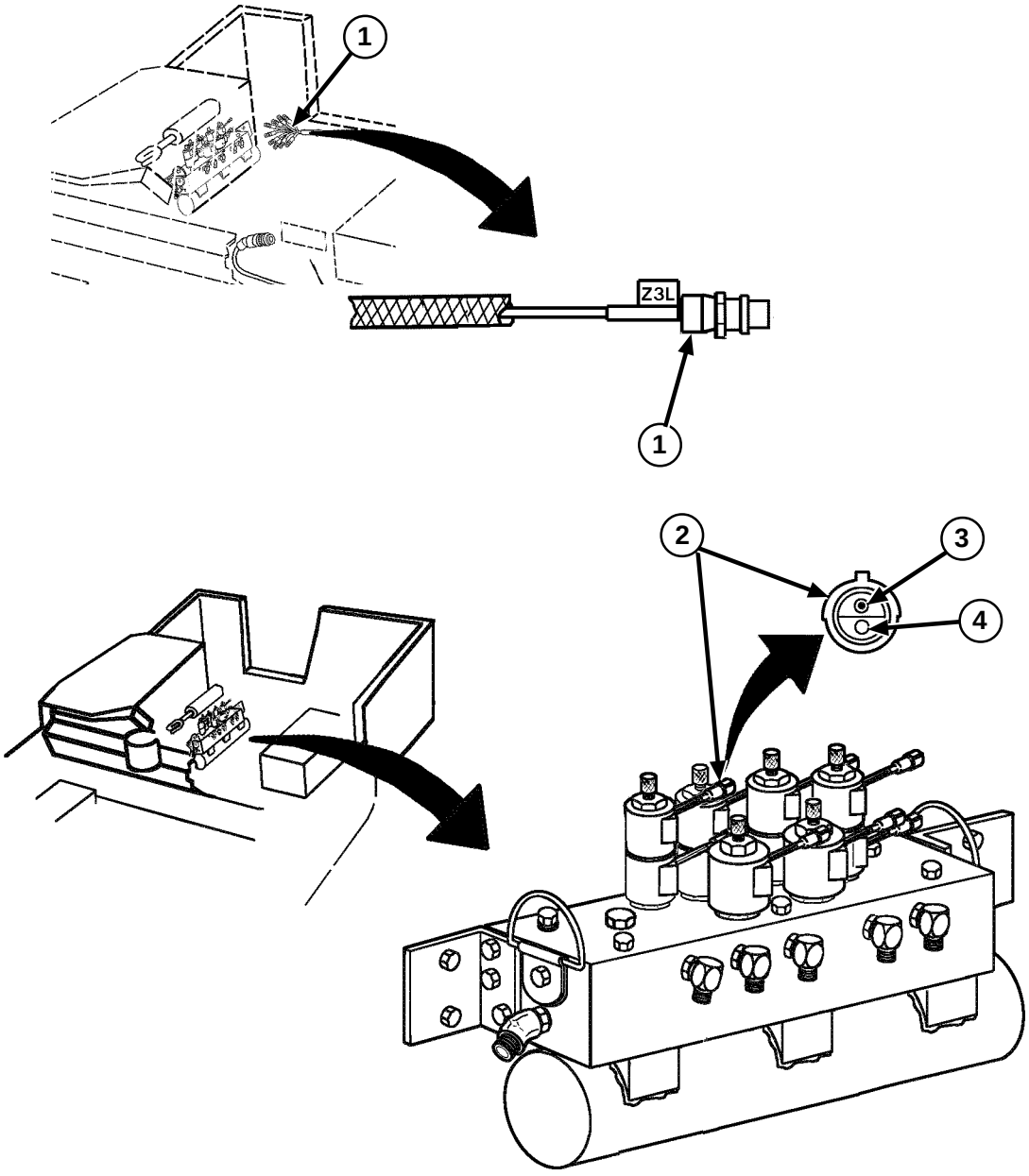
HARNESS CONNECTOR PIN	HARNESS CONNECTOR PIN	SOLENOID PLUG PINS
L	A	Z1U
L	B	Z1L
L	C	Z2U
L	D	Z2L
L	J	X1
M	E	Z3U
M	F	Z3L
M	G	Z4U
M	H	Z4L
M	K	X2

If an open circuit (∞ Ω)is indicated the fault must be isolated between the track adjuster main wiring harness or the appropriate valve solenoid. Go to step 6.

If continuity is indicated, reconnect track adjuster main wiring harness (1) to suspension control box (2), go to step 7.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

75A. TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, SEMI-AUTOMATIC TRACK ADJUSTER (ELECTRICAL) (NEW PRODUCTION) - CONTINUED



Step 6. Check valve solenoid for continuity.

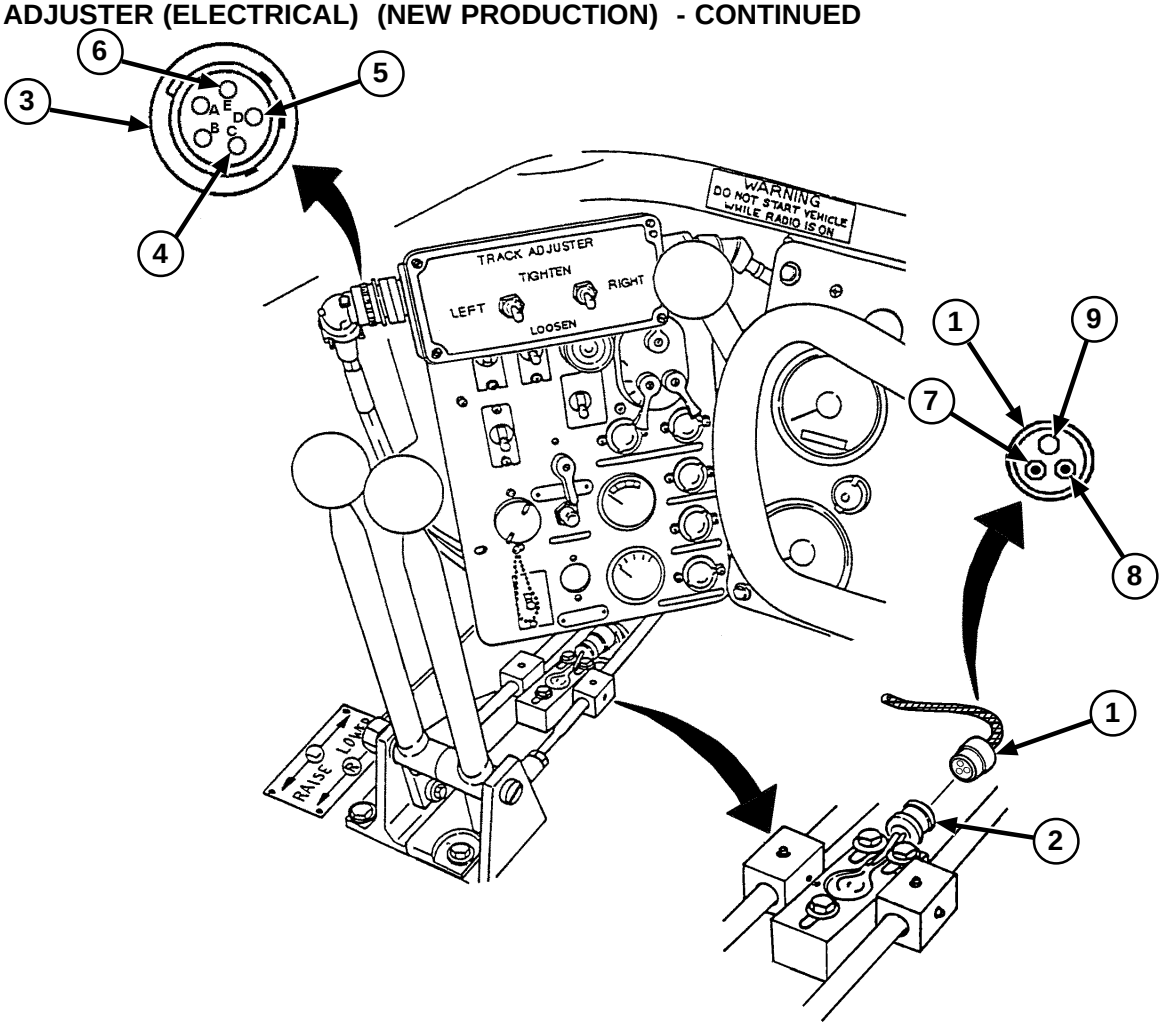
Disconnect track adjuster main wiring harness (1) from solenoid connector (2) (typical). Connect positive lead to pin (3) and negative lead to socket (4).

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

If continuity is indicated, reconnect track adjuster main wiring harness connector (1) to solenoid connector (2), go to step 7.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

75A. TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, SEMI-AUTOMATIC TRACK ADJUSTER (ELECTRICAL) (NEW PRODUCTION) - CONTINUED



Step 7. Check track control wiring harness circuit for continuity, (continued).

Disconnect track control wiring harness connector (1) from track control switch connector (2) and check continuity from track control wiring harness connector (3) to track control switch connector (1). Refer to table 3 for lead locations.

Table 3

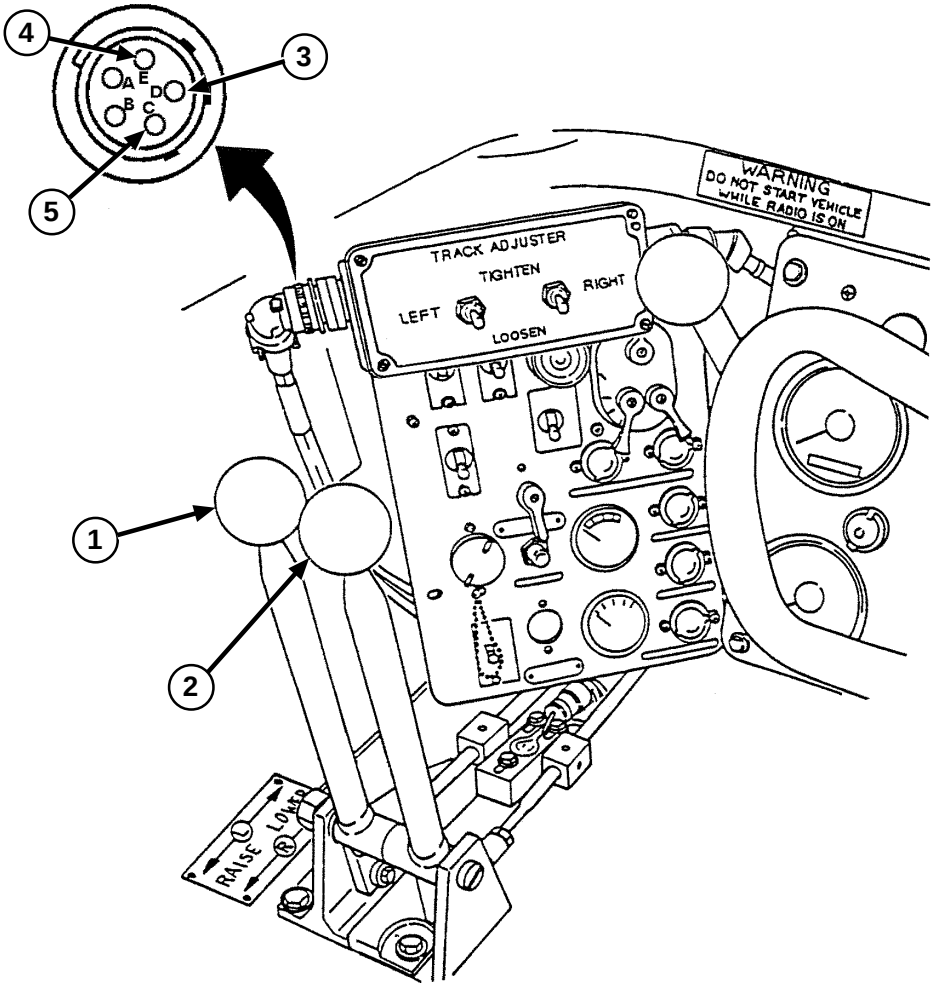
HARNESS CONNECTOR PIN	SWITCH CONNECTOR LOCATIONS
C (4)	#3 PIN (7)
D (5)	#2 PIN (8)
E (6)	#1 SOCKET (9)

If continuity is indicated, reconnect track control wiring harness connector (1) to track control switch connector (2), go to step 8.

If an open circuit (∞ Ω) is indicated, replace track control wiring harness (1). Verify that problem is solved.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

75A. TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, SEMI-AUTOMATIC TRACK ADJUSTER (ELECTRICAL) (NEW PRODUCTION) - CONTINUED



Step 8. Check operation of track control and track operator switches.

Left control lever (1) operates the left circuit and right control lever (2) operates the right circuit. Cycle suspension control levers forward and backward. Refer to Table 4 for lead locations.

Table 4

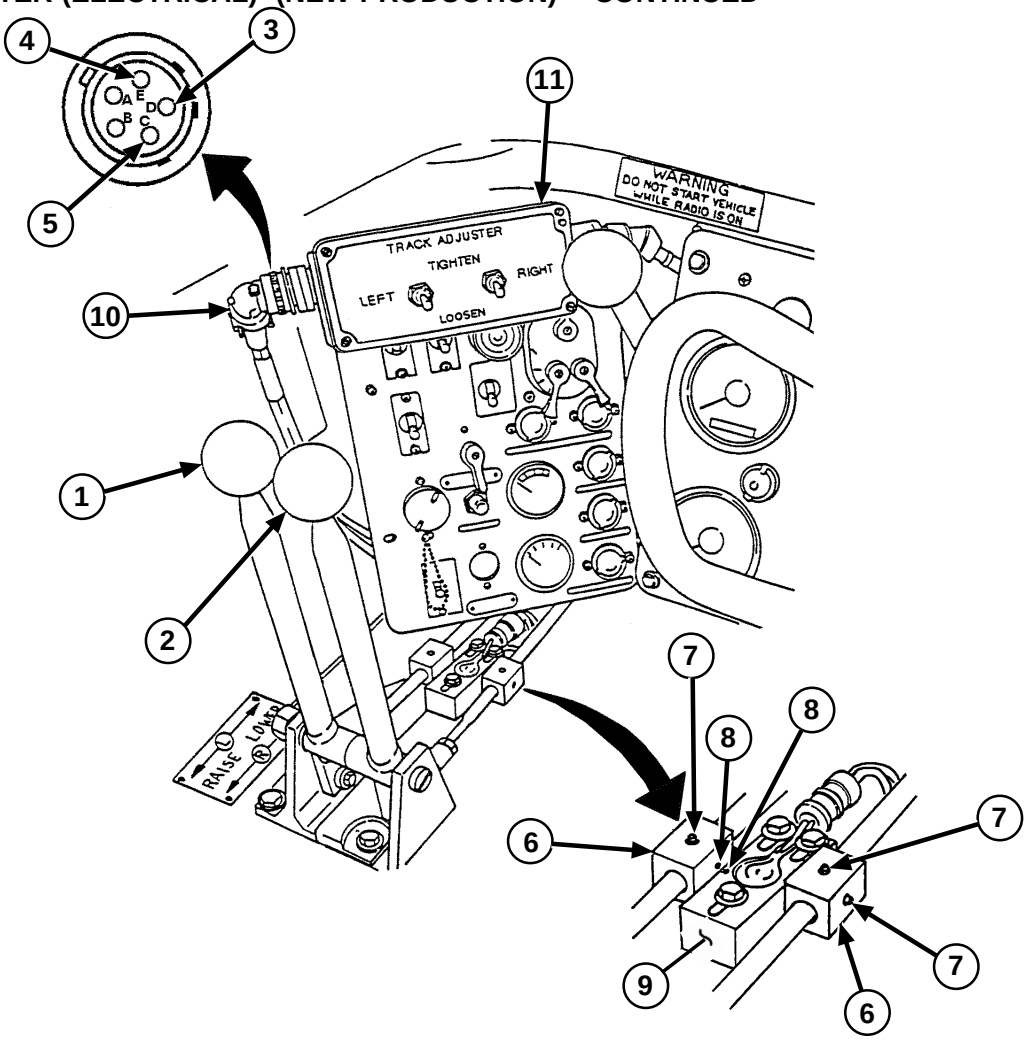
FRONT CORNER	POSITIVE LEAD	NEGATIVE LEAD	CONTROL LEVER
Left	D (3)	E (4)	(1)
Right	C (5)	E (4)	(2)

a. With control levers in stationary (centered) position, check continuity from D (3) to E (4) and E (4) to C (5). Continuity should be indicated.

b. Check continuity from D (3) to E (4). Push left control lever (1) forward to LOWER position. An open circuit (∞ Ω) should be indicated. Pull left control lever (1) rearward to RAISE position. An open circuit (∞ Ω) should be indicated.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

75A. TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, SEMI-AUTOMATIC TRACK ADJUSTER (ELECTRICAL) (NEW PRODUCTION) - CONTINUED



c. Check continuity from E (4) to C (5). Push right control lever (2) forward to LOWER position. An open circuit (∞ Ω) should be indicated. Pull right control lever (2) rearward to RAISE position. An open (∞ Ω) circuit should be indicated.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

75A. TRACK (LEFT OR RIGHT) WILL NOT TIGHTEN OR LOOSEN, SEMI-AUTOMATIC TRACK ADJUSTER (ELECTRICAL) (NEW PRODUCTION) - CONTINUED

If incorrect readings are indicated in tests a, b, and c, adjust track operator switches (6).

ADJUSTMENT

Left and right operator switches are adjusted the same way. Left track operator switch is shown for clarity.

Table 4

FRONT CORNER	POSITIVE LEAD	NEGATIVE LEAD	CONTROL LEVER
Left	D (3)	E (4)	(1)
Right	C (5)	E (4)	(2)

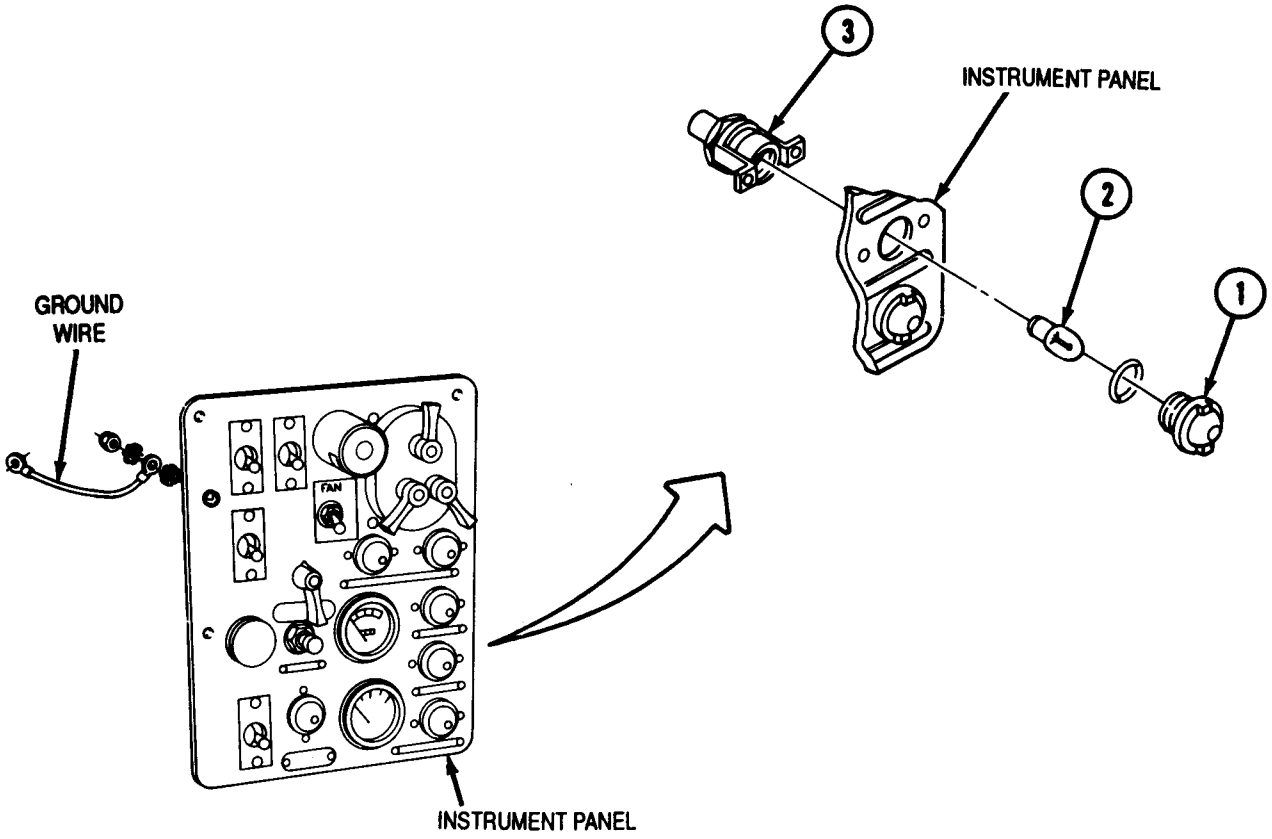
To adjust track operator switches, refer to table 4 above and retain VOM connections. Loosen set screws (7) in track operator switch (6), and move block so two dimples (8) line up. Snug top set screw (7). Move left lever (1) forward and backward. Circuit must open with either move. To adjust, move track operator block (6) fore or aft and rotate to change space between it and track control switch (9) until circuit opens and closes with lever movement. When adjustment is correct, tighten both set screws (7) to retain proper adjustment. Reconnect track control wiring harness (10) to suspension control electrical box (11). Once correct readings are obtained. Verify that problem is solved.

If correct readings cannot be obtained during adjustment above, replace track control and operator switches. Then readjust. Verify problem is solved.

If correct readings are indicated in test a, b, and c above, replace suspension control electrical box (11). Verify problem is solved.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

76. REVERSE/UNSPRUNG WARNING LIGHT STAYS OFF



Step 1. Ensure instrument panel ground wire is secure and undamaged.

If damaged, replace ground wire (p 4-106).

If undamaged, go to step 2.

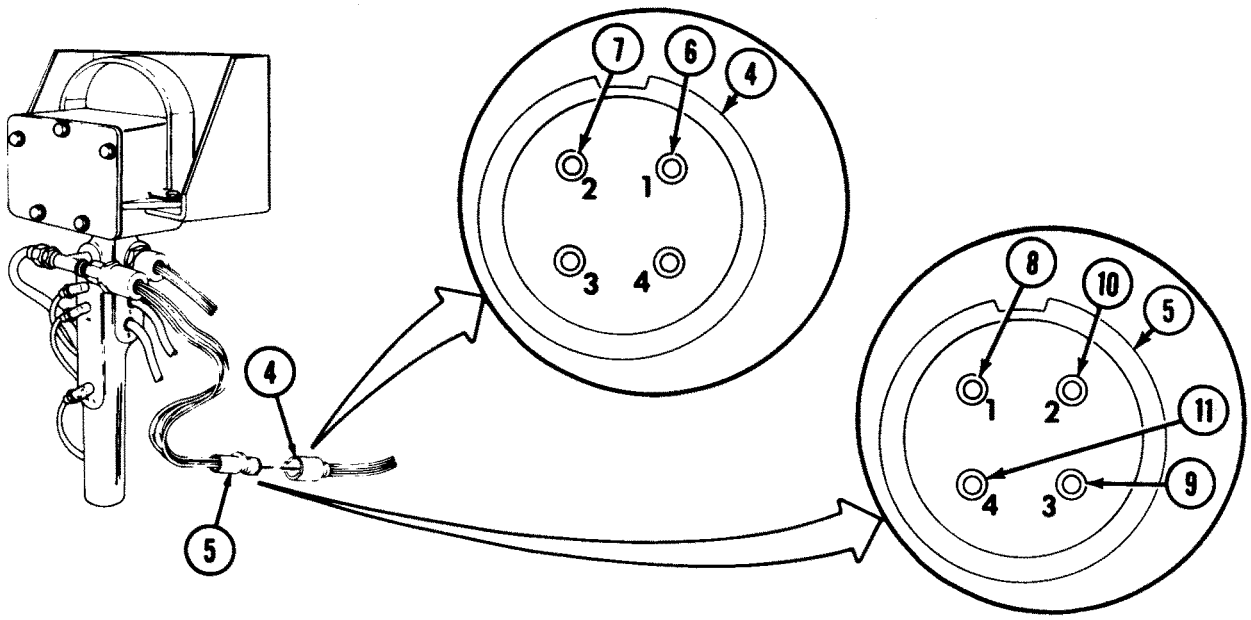
Step 2. Remove lamp lens and seal (1), lamp (2), and reverse/unsprung light indicator (3). With MASTER switch ON, check for voltage in indicator (3).

If minimum 24VDC is present, replace bulb (2).

If no voltage is present, go to step 3.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

76. REVERSE/UNSPRUNG WARNING LIGHT STAYS OFF — CONTINUED



Step 3. Remove plug (4) from reverse pressure switch (5). With MASTER switch and ignition switch ON, check for voltage at terminals 1 (6) and 2 (7) on plug (4).

If minimum 24VDC is present at terminals 1 (6) and 2 (7), go to step 4.

If no voltage is present at terminals 1 (6) and 2 (7), refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuits 509B and 509C. Go to step 5. ■

WARNING

Air system must be pressurized and parking brake engaged during reverse pressure tests. Failure to comply may result in damage to equipment or injury to personnel.

Step 4. With engine running and parking brake engaged, shift transmission into R1. Check for continuity on the reverse pressure switch (5) between pins 1 (8) and 3 (9); and between pins 2 (10) and 4 (11).

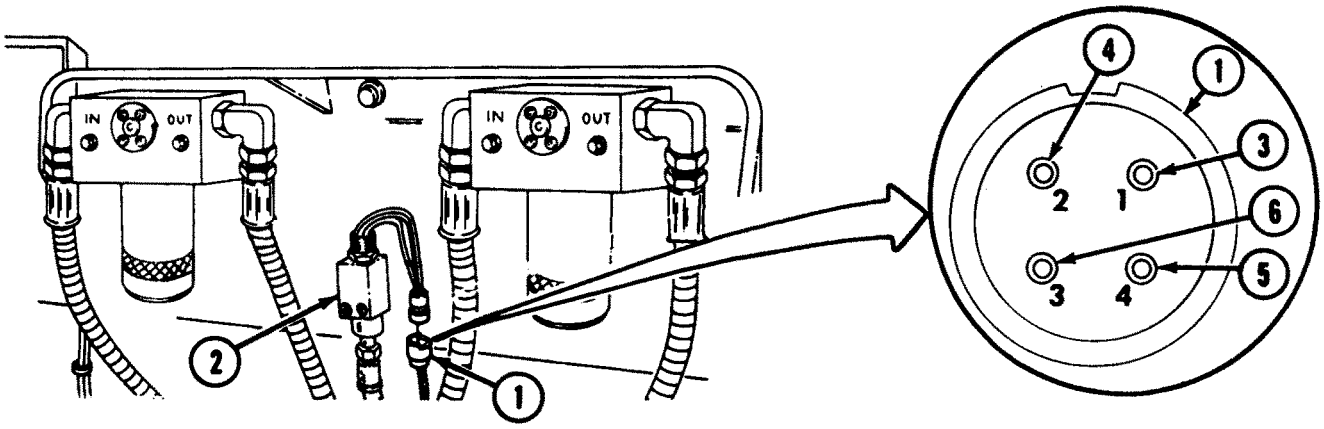
If an open circuit (∞ Ω) is indicated between any of the pins tested, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuits 509B, 509C, 509D, and 509F. ■

If problem persists, replace reverse alarm pressure switch (5) (p 4-141).

If continuity is indicated, go to step 5.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

76. REVERSE/UNSPRUNG WARNING LIGHT STAYS OFF – CONTINUED



Step 5. Remove plug (1) from unsprung pressure switch (2). With engine running and suspension in UNSPRUNG, check for voltage in terminals 1 (3) and 2 (4).

If minimum 24VDC is present at terminals 1 (3) and 2 (4), go to step 6.

If no voltage is present at terminals 1 (3) and 2 (4), refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuit 509.

If problem persists, troubleshoot warning buzzer, MALFUNCTION 77 (p 3-329).

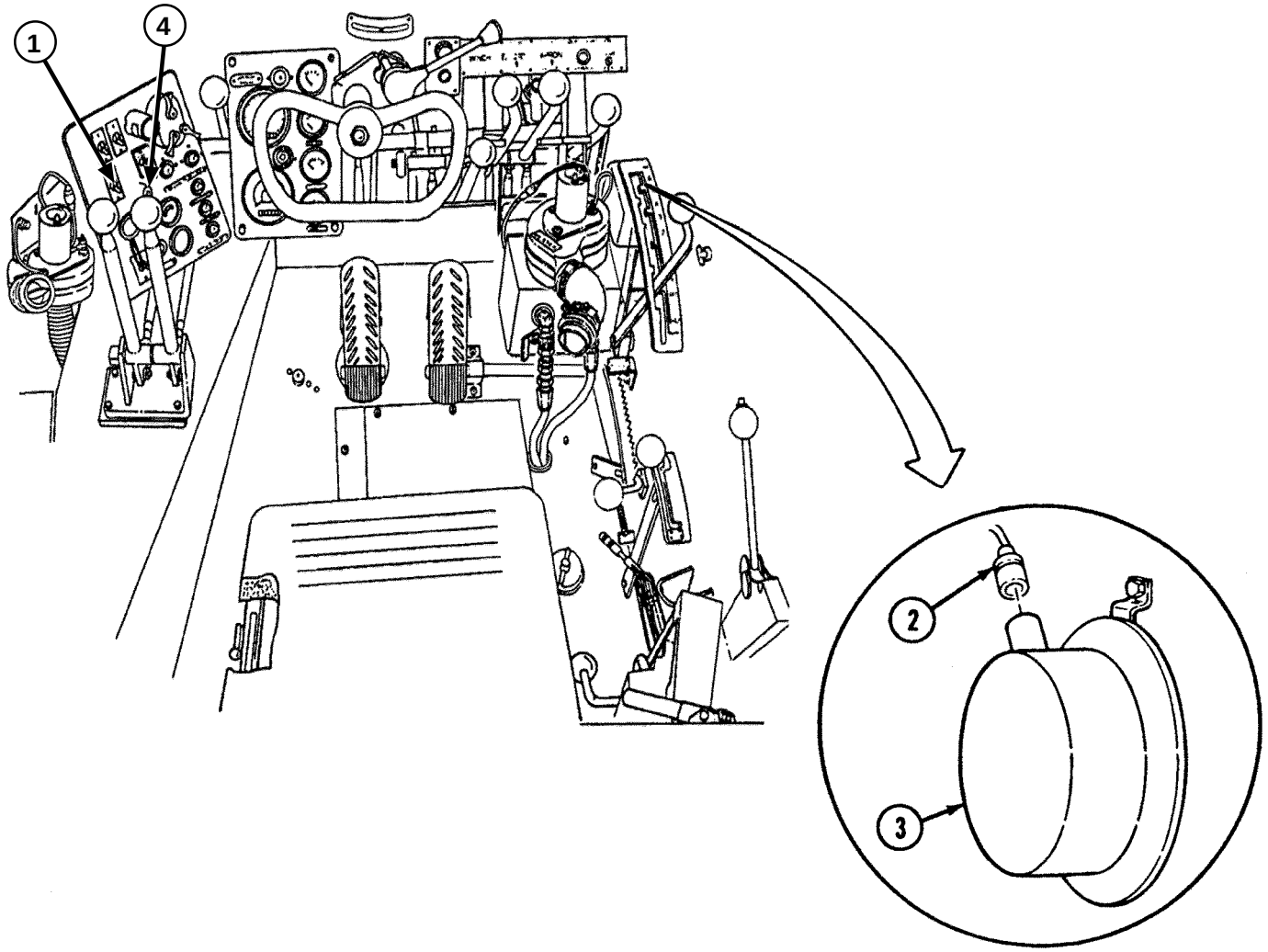
Step 6. With engine running and suspension in UNSPRUNG, check for continuity between terminal 2 (4) and pin 4 (5), and between terminal 1 (3) and pin 3 (6).

If an open circuit (∞ Ω) is indicated between any of the pins in test, refer to vehicle electrical system wiring diagram (p FP-3), and control wiring harness (p FP-7), and troubleshoot circuits 509, 509B, and 509C.

If problem persists, replace unsprung pressure switch (p 4-139).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

77. WARNING BUZZER INOPERATIVE



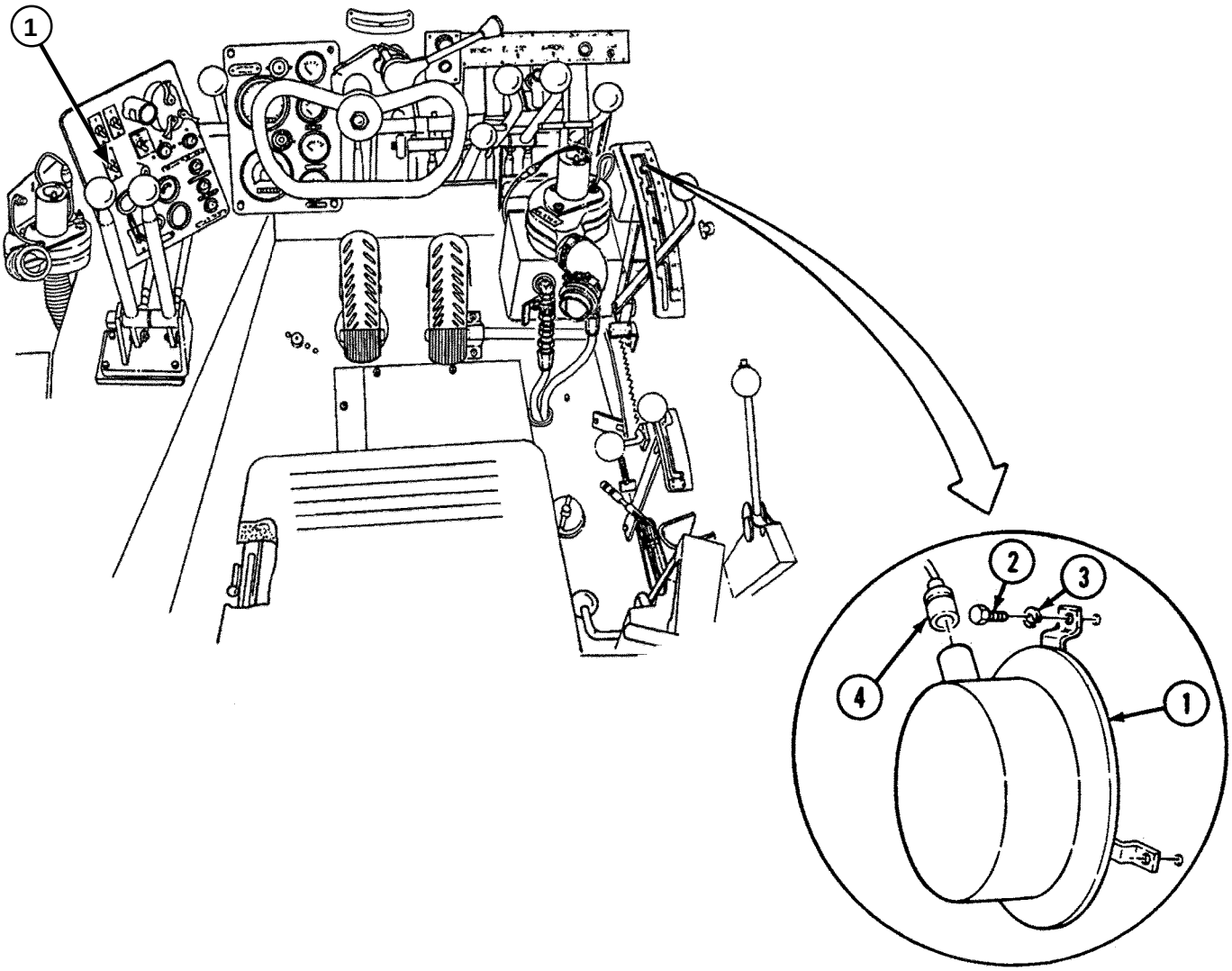
Step 1. With MASTER switch (1) OFF, disconnect electrical lead (2) from warning buzzer (3). Turn MASTER switch (1) and ignition switch ON. Measure voltage at lead (2).

If minimum 24VDC is present at lead (2), turn MASTER switch (1) OFF and go to step 2.

If no voltage is present at lead (1), refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuits 34B, 509F, and 509J.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

77. WARNING BUZZER INOPERATIVE — CONTINUED



Step 2. Check ground behind buzzer (1).

Remove three screws (2), lockwashers (3), and buzzer (1) from driver's compartment wall. Discard lockwashers (3). Clean surface of wall and buzzer (1) to ensure good grounding of buzzer (1). Install buzzer (1) on wall with three lockwashers (3) and screws (2). Connect lead (4) and turn on MASTER switch (5).

If buzzer (1) does not sound, replace buzzer (1) (p 4-137).

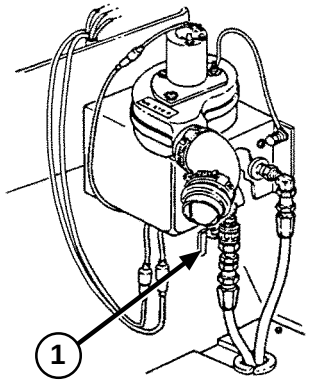
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

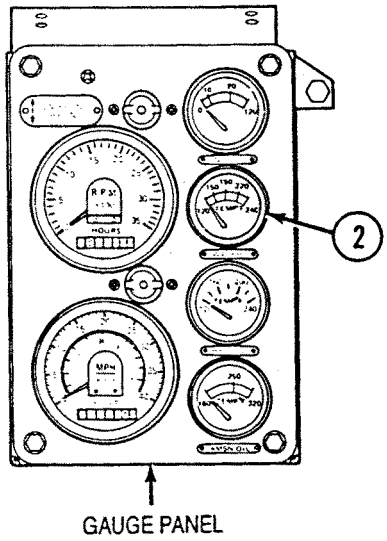
AUXILIARY EQUIPMENT

78. DELETED

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

79. HEATER DOES NOT PROVIDE ENOUGH HEAT





Step 1. Ensure heater valve (1) is open.

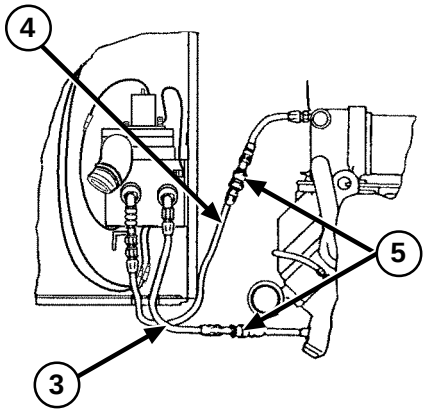
If closed, open valve (1).

If condition persists, go to step 2.

Step 2. Check water temperature gauge (2) after engine warms to normal operating temperature of 150°F to 190°F (66°C to 88°C).

If engine temperature does not reach normal operating temperature, refer to MALFUNCTION 11 (p 3-150).

If engine reaches normal operating temperature after five minutes of operation, go to step 3.



Step 3. Inspect heater hoses (3) and (4) and quick-disconnects (5) for damage, leaks, or obstructions.

Repair or replace defective components **(p 4-242.2).**

If no damage, leaks, or obstructions are found, go to step 4.

Step 4. Check for air in heater core.

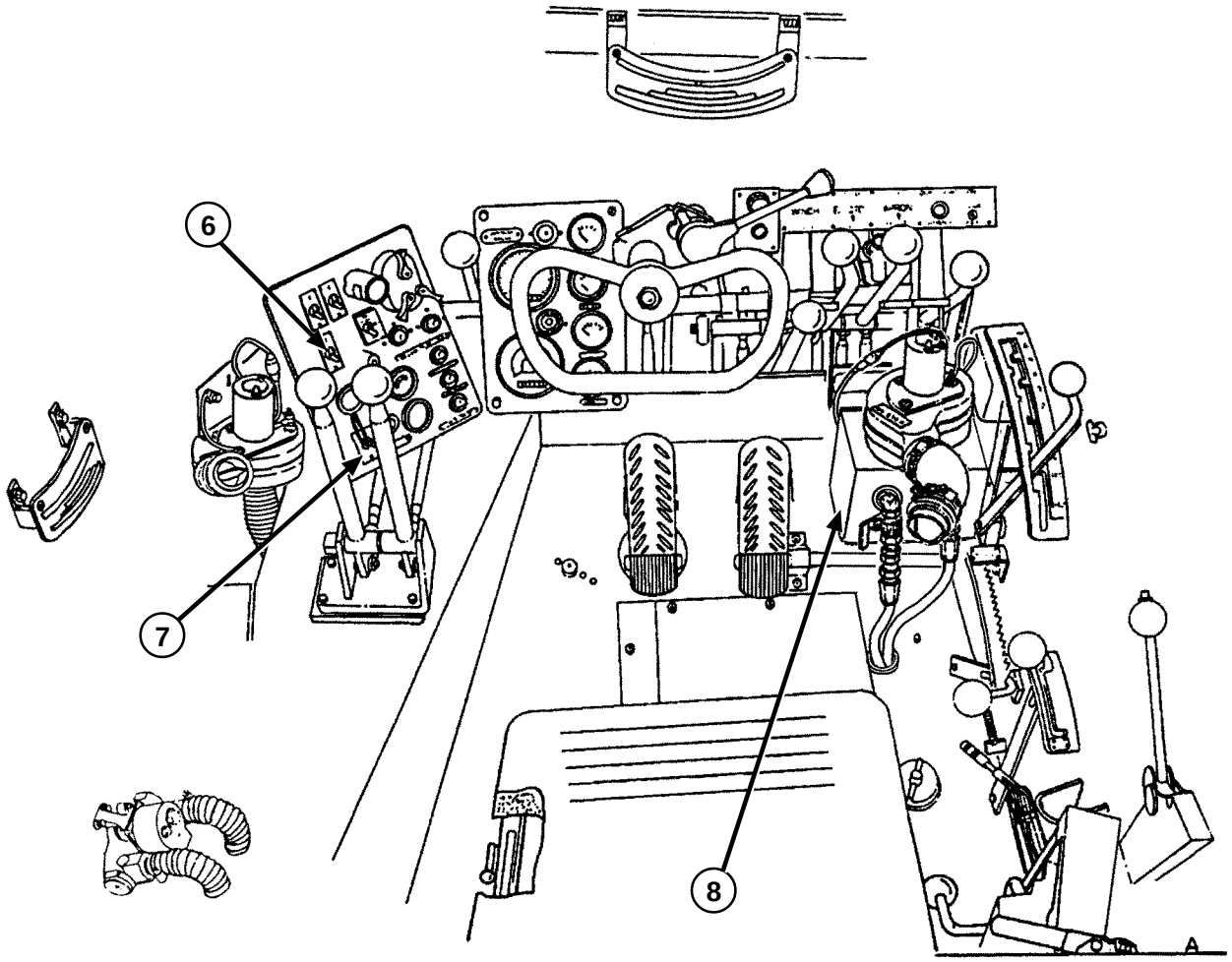
Disconnect hose (4) at quick-disconnect (5). Pull hose (4) into driver's compartment and hold over bucket. With engine running and valve (1) open, hold open collar on quick-disconnect. Release any air in system.

If coolant does not flow from hose (4), replace heater **(p 4-242.2).**

If condition persists, go to step 5.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

79. HEATER DOES NOT PROVIDE ENOUGH HEAT – CONTINUED



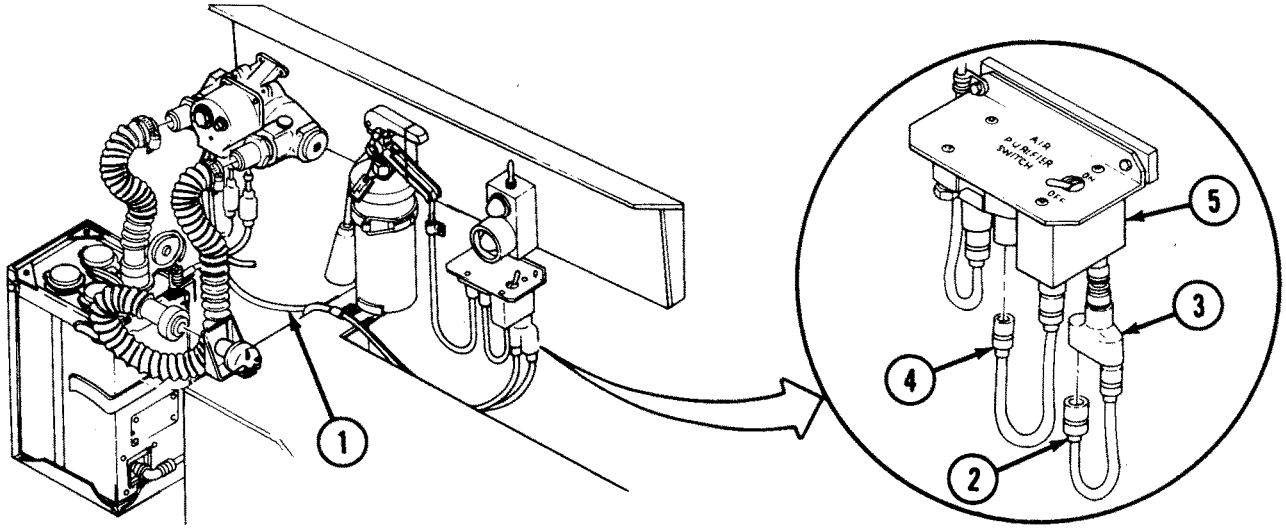
Step 5. With engine at operating temperature, MASTER switch (6) ON, and heater switch (7) to HIGH, place hand on or near heater (8).

If heater (8) does not feel warm, replace heater (8) (p 4-242.2).

If heater (8) feels warm, but fan does not move air, refer to MALFUNCTION 82 (p 3-336).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

80. AIR PURIFIER DOES NOT OPERATE



Step 1. Check for continuity between ground wire (1) and vehicle ground.

If an open circuit (∞ Ω) is indicated, check for loose or missing hardware and dirt or paint. Tighten or replace missing hardware and clean surface where ground wire (1) is connected.

If continuity is indicated, go to step 2.

Step 2. Remove lead (2) from circuit breaker (3). With MASTER switch ON, check for voltage at lead (2).

If minimum 24VDC is present at lead (2), reconnect lead (2) and go to step 3.

If no voltage is present at lead (2), refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuit 10.

Step 3. Remove lead (4) from air purifier switch (5). With MASTER switch ON, check for voltage at lead (4).

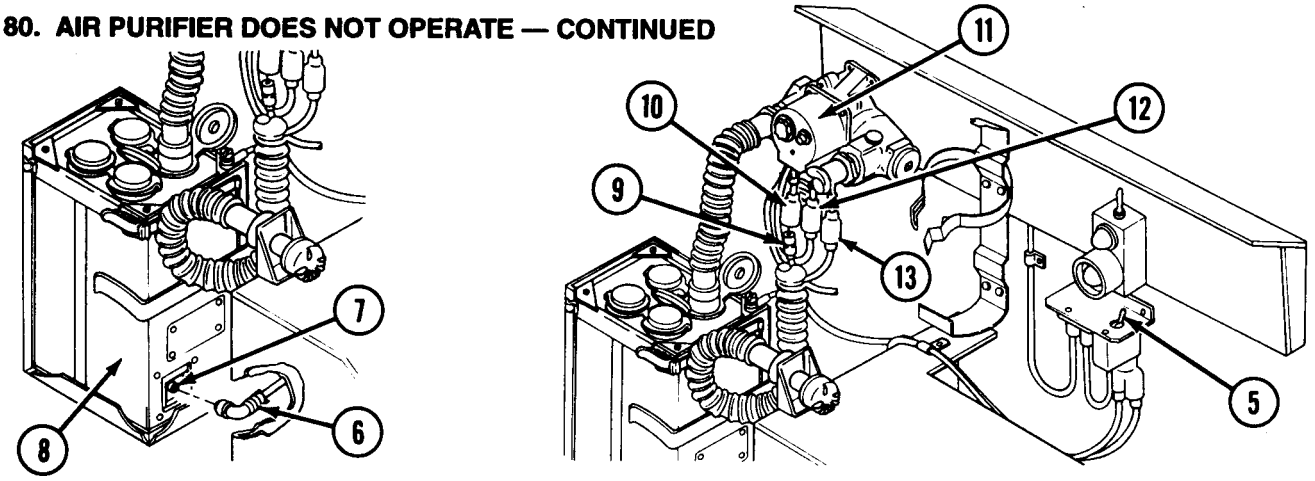
If minimum 24VDC is present at lead (4), reconnect lead (4) and go to step 4.

If no voltage is present at lead (4), replace circuit breaker (3) (p 4-123).

If problem persists, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuit 4.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

80. AIR PURIFIER DOES NOT OPERATE — CONTINUED



Step 4. Remove lead (6) from air purifier receptacle (7) on air purifier (8). With air purifier switch (5) ON, check for voltage at lead (6).

If minimum 24VDC is present at lead (6), replace air purifier (8) (p 4-803).

If no voltage is present at lead (6), refer to vehicle electrical system wiring diagram (p FP-3) and troubleshoot circuit 415. Go to step 5.

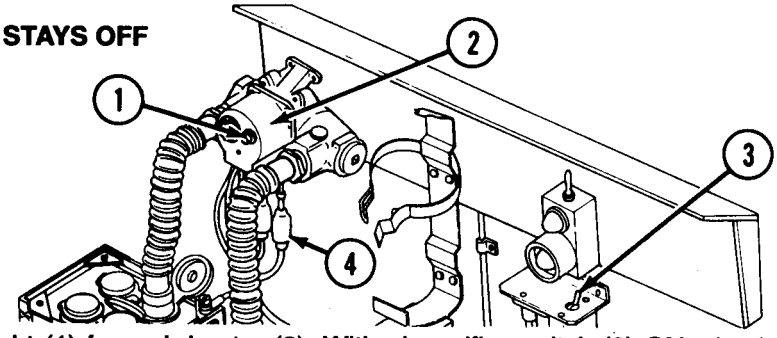
If problem persists, replace air purifier switch (5) (p 4-807).

Step 5. Remove lead (9) from air heater lead (10) on air heater (11). With air purifier switch (5) ON, check for voltage at lead (9).

If minimum 24VDC is present at lead (9), check for loose connections between air heater leads (12) and (13). If problem persists, replace air heater (11) (p 4-799).

If no voltage is present at lead (9), refer to vehicle electrical system wiring diagram (p FP-3), and troubleshoot circuit 10.

81. AIR HEATER LIGHT STAYS OFF



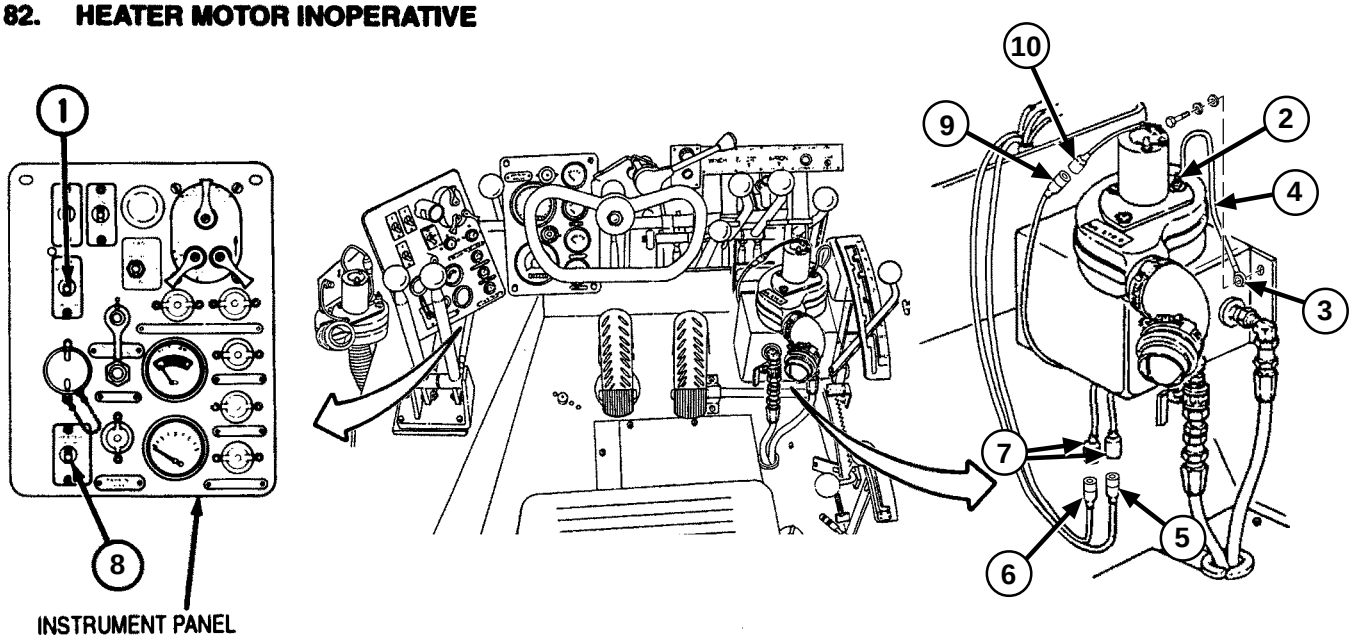
Remove indicator light (1) from air heater (2). With air purifier switch (3) ON, check for voltage in light indicator circuit (4).

If minimum 24VDC is present at light indicator circuit (4), replace indicator light (1).

If no voltage is present at light indicator circuit (4), perform MALFUNCTION 80, step 3 (p 3-334).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

82. HEATER MOTOR INOPERATIVE



Step 1. Ensure MASTER switch (1) is OFF. Check continuity between heater motor ground stud (2) and connector (3).

If an open (∞ Ω) circuit is indicated, replace electrical lead (4), verify problem is solved.

If continuity is indicated, go to step 2.

Step 2. Disconnect leads (5) and (6) from resistor electrical leads (7). Turn MASTER switch (1) ON and heater switch (8) alternately to HIGH and LOW. Measure voltage at leads (5) and (6).

If minimum 24 VDC is present at leads (5) and (6), turn MASTER switch (1) OFF and reconnect leads (5) and (6) to leads (7). Go to step 3.

If no voltage is present at leads (5) and (6), go to step 4.

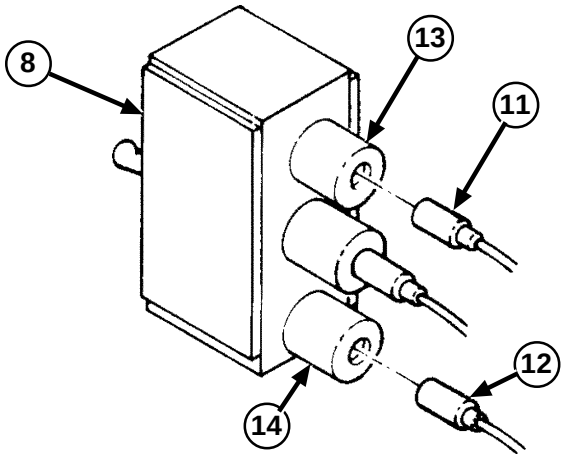
Step 3. Disconnect lead (9) from heater motor lead (10). Turn MASTER switch (1) ON and heater switch (8) alternately to high and low. Measure voltage at lead (9), turn MASTER switch (1) OFF.

If voltage is present at lead (9), replace to heater motor (p 4-242.4), verify problem is solved.

If no voltage is present at lead (9), replace the heater resistor (p 4-242.4), verify problem is solved.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

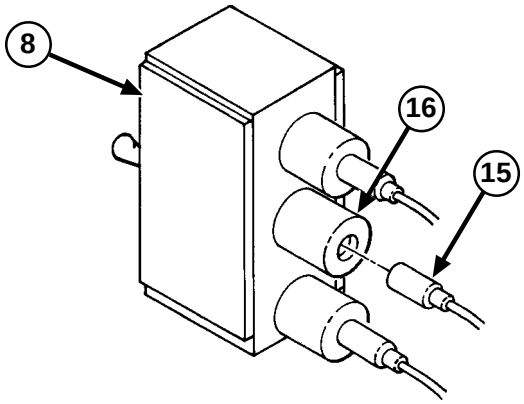
82. HEATER MOTOR INOPERATIVE - CONTINUED



Step 4. Disconnect leads (11) and (12) from heater switch (8). Check for voltage at contact 2 (13) and contact 1 (14) of heater switch (8), while alternately moving heater switch (8) to HIGH and LOW positions.

If minimum 24 VDC is present at contact 2 (13) and 1 (14) of heater switch (8), repair electrical leads (11) or (12), (p 3-1) of control wiring harness, verify problem is solved.

If no voltage is present at contacts 2 (13) and 1 (14) of heater switch (8), go to step 5.



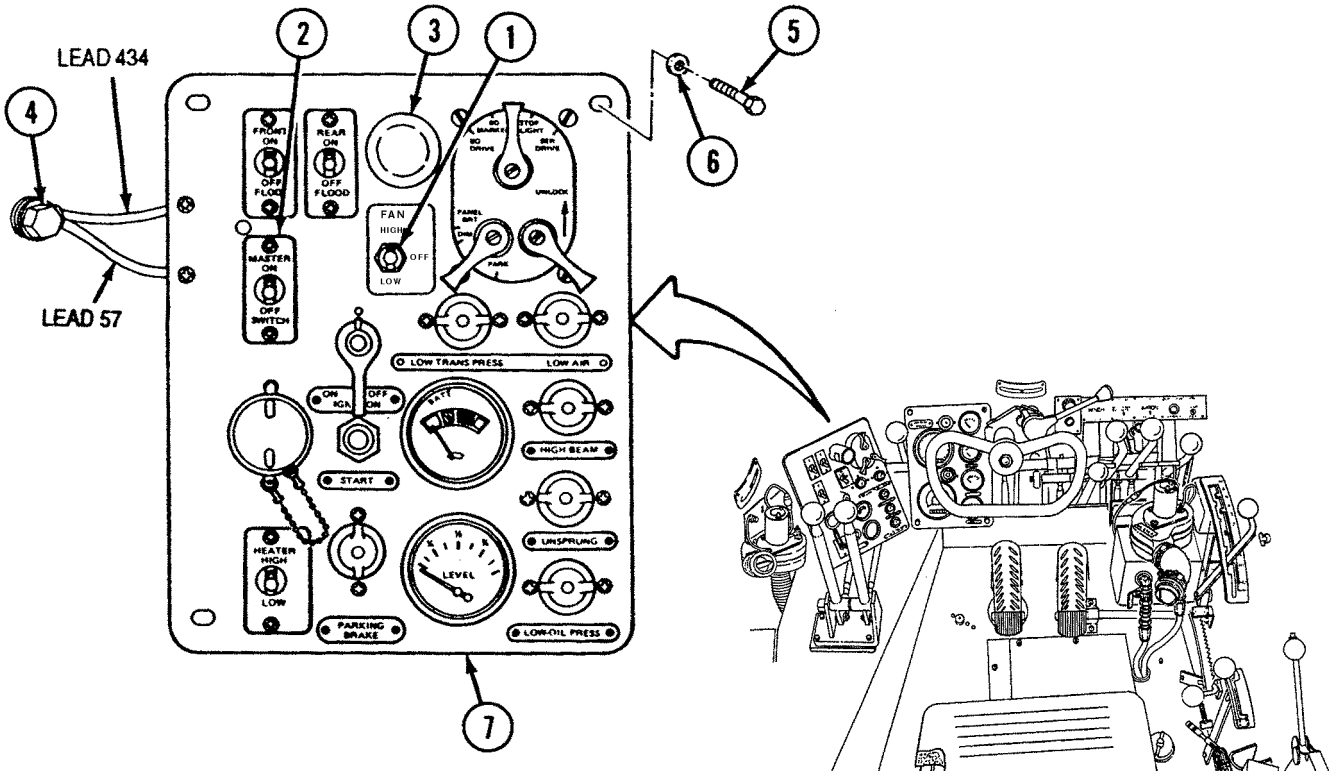
Step 5. Disconnect lead (15) from contact 3 (16) of the heater switch (8). Check for voltage at lead (15).

If minimum 24 VDC is present at lead (15), replace heater switch (8) (p 4-106), verify problem is solved.

If no voltage is present at lead (15), refer to vehicle electrical wiring schematic (p FP-3) and control wiring harness schematic (p FP-7), and troubleshoot circuit 400.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

83. DRIVER'S VENTILATION FAN MALFUNCTIONS



If fan operates normally when fan switch (1) is set to LOW, but malfunctions when set to HIGH, or operates normally when set to HIGH, but malfunctions when set to LOW, start troubleshooting at step 6.

If fan malfunctions when fan switch (1) is set to both LOW and HIGH, begin troubleshooting at step 1.

Step 1. Turn MASTER switch (2) ON, turn fan switch (1) to HIGH.

If fan produces low air flow, replace driver's ventilation fan filter (p 4-247), verify problem is solved.

If fan produces normal air flow, go to step 3.

If panel light (3) does not come on, clean and tighten ground connector (4), securing leads 434, and 57, verify problem is solved.

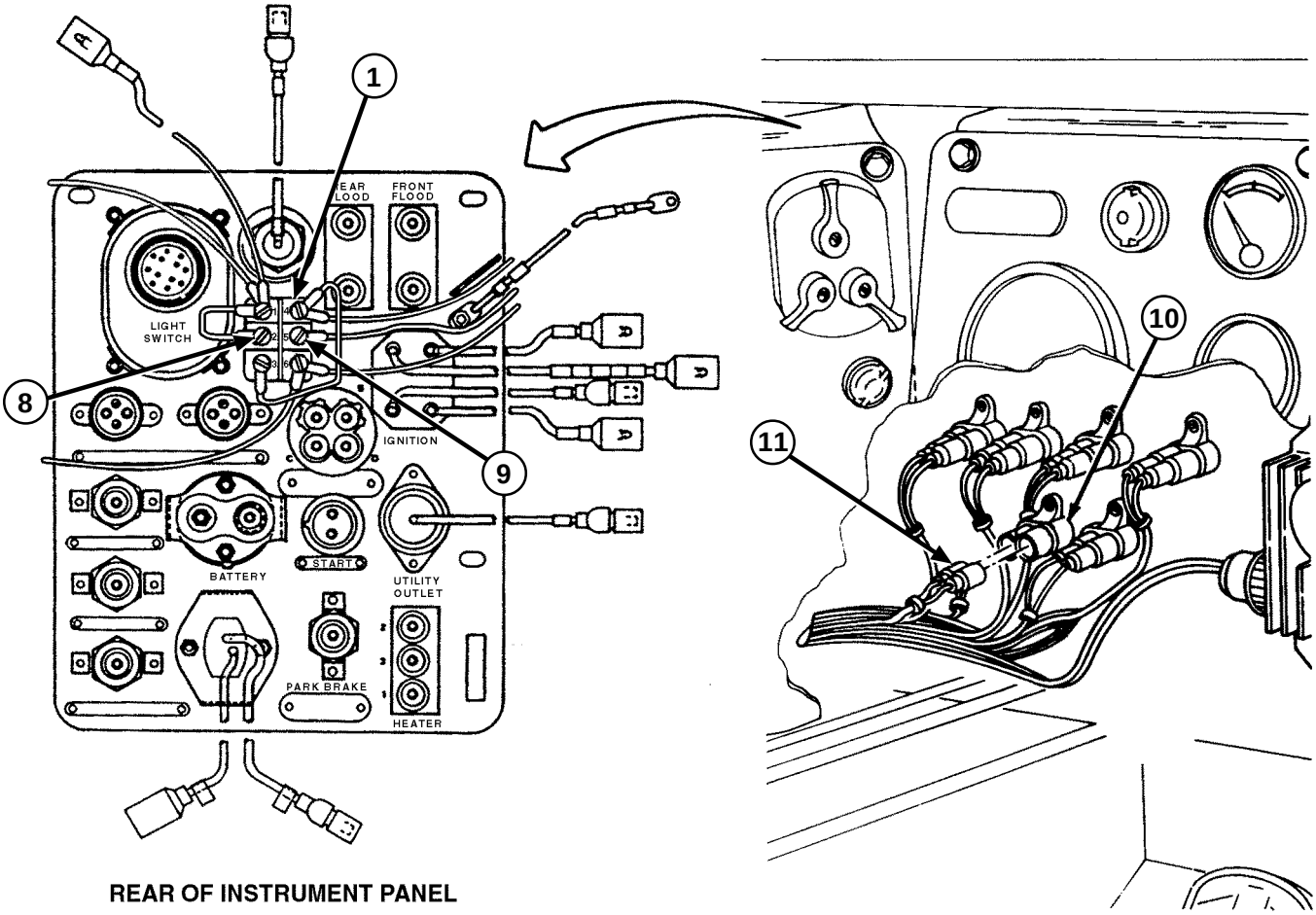
If panel light (3) comes on, and ventilation fan still does not operate in either HIGH or LOW, turn MASTER switch (2) to OFF, go to step 2.

Step 2. Check fan switch for power, 24VDC.

Remove three screws (5) and washers (6). Pull instrument panel (7) out far enough to gain access to terminals on back of fan switch (1).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

83. DRIVER'S VENTILATION FAN MALFUNCTIONS – CONTINUED



REAR OF INSTRUMENT PANEL

Step 2. - Continued

Turn MASTER switch (2) ON, check for minimum 24VDC at center terminal 2, circuit 411D (8) and terminal 5, circuit 411A (9) of fan switch (1). Turn MASTER switch OFF after test.

If minimum 24VDC is present at center terminal 2, circuit 411D (8) and terminal 5, circuit 411A (9), replace fan switch (1) (p 4-106), verify problem is solved.

If no voltage is present, go to step 3.

Step 3. Check circuit breaker (10) for continuity.

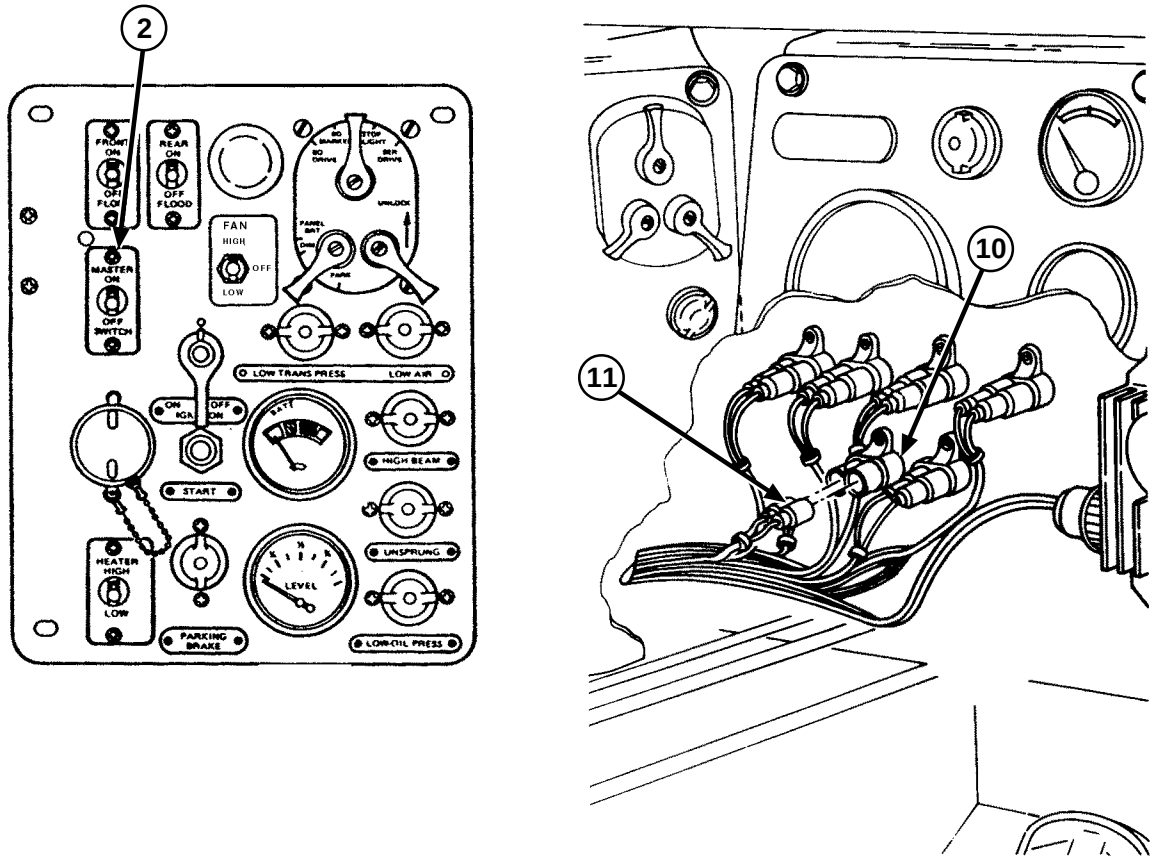
Disconnect electrical lead 10A/411A (11) from circuit breaker (10). Check circuit breaker (10) for continuity.

If an open circuit (∞ Ω) is indicated, replace circuit breaker (10) (p 4-123), verify problem is solved.

If continuity is indicated, go to step 4.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

83. DRIVER'S VENTILATION FAN MALFUNCTIONS — CONTINUED



Step 4. Check for 24VDC at electrical connector of electrical lead 10A (11).

Turn MASTER switch (2) ON, check for minimum 24VDC at electrical connector of electrical lead 10A (11). Turn MASTER switch OFF after test.

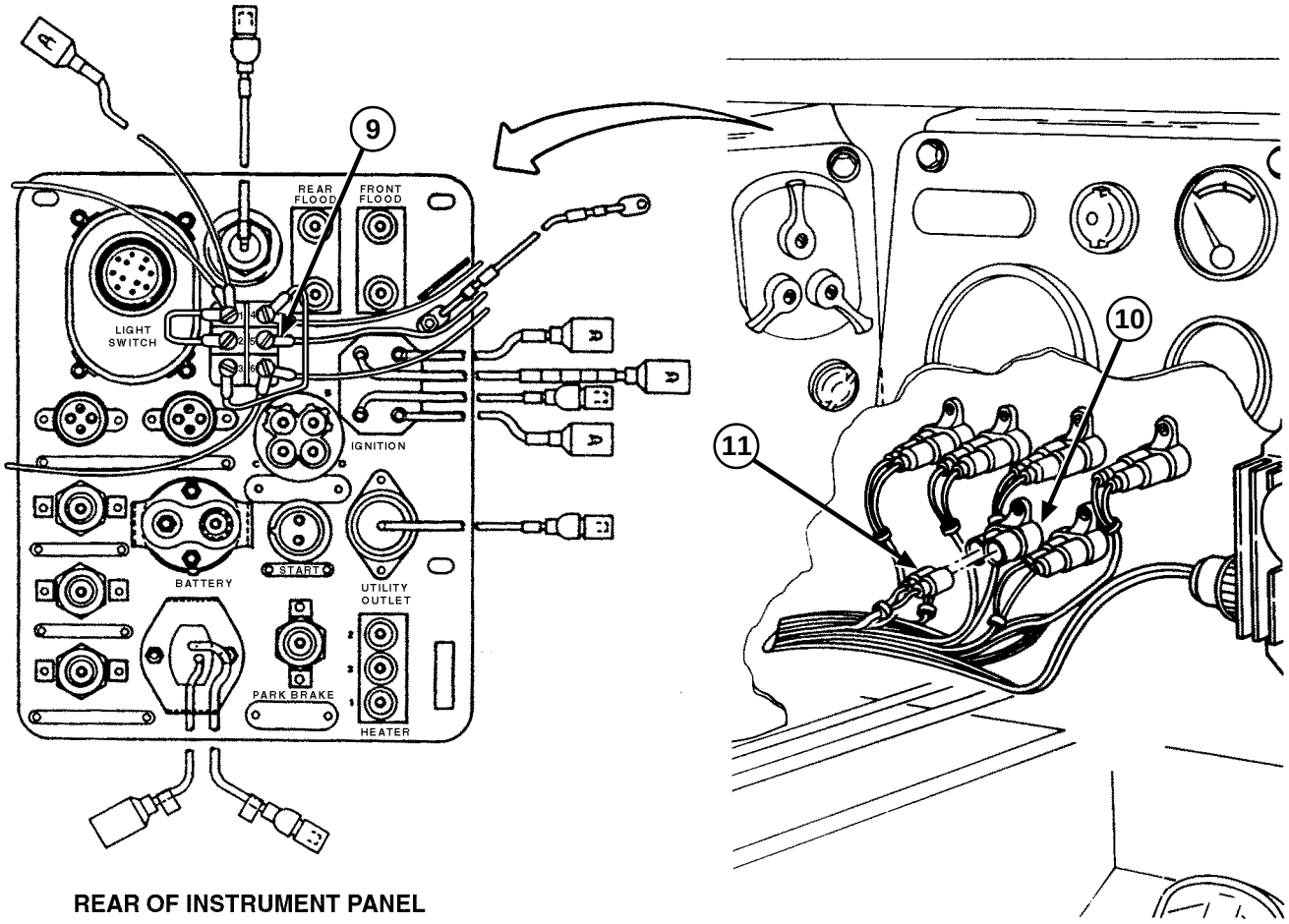
If minimum 24VDC is present at electrical lead 10A (11), replace electrical lead 10A/411A on circuit breaker (10).

Verify problem is solved.

If no voltage is present, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness (p FP-7), and troubleshoot circuit 10A. Go to step 5.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

83. DRIVER'S VENTILATION FAN MALFUNCTIONS — CONTINUED



REAR OF INSTRUMENT PANEL

Step 5. Check circuit 411A for continuity.

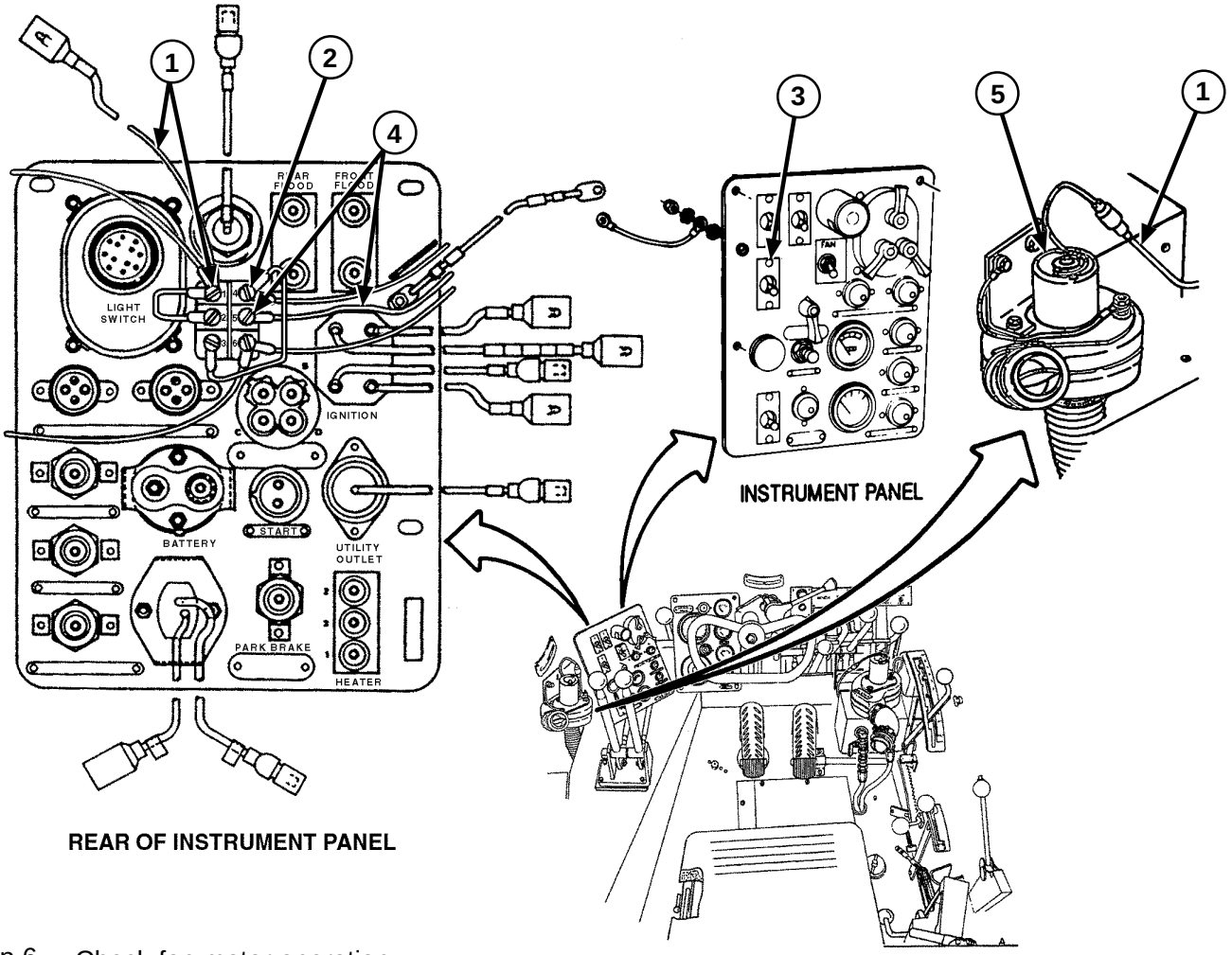
Disconnect electrical lead (9), circuit 411A, from fan switch (1). Check circuit 411A for continuity between electrical connector (11), circuit 411A and end of electrical lead (9).

If continuity is indicated, reconnect electrical connector (11) to circuit breaker (10), go to step 6.

If an open circuit (∞ Ω) is indicated, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness diagram (p FP-7), and troubleshoot circuit 411A. Verify problem is solved.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

83. DRIVER'S VENTILATION FAN MALFUNCTIONS – CONTINUED



Step 6. Check fan motor operation.

Disconnect electrical lead (1), circuit 411F, from terminal 1 on back of fan switch (2).

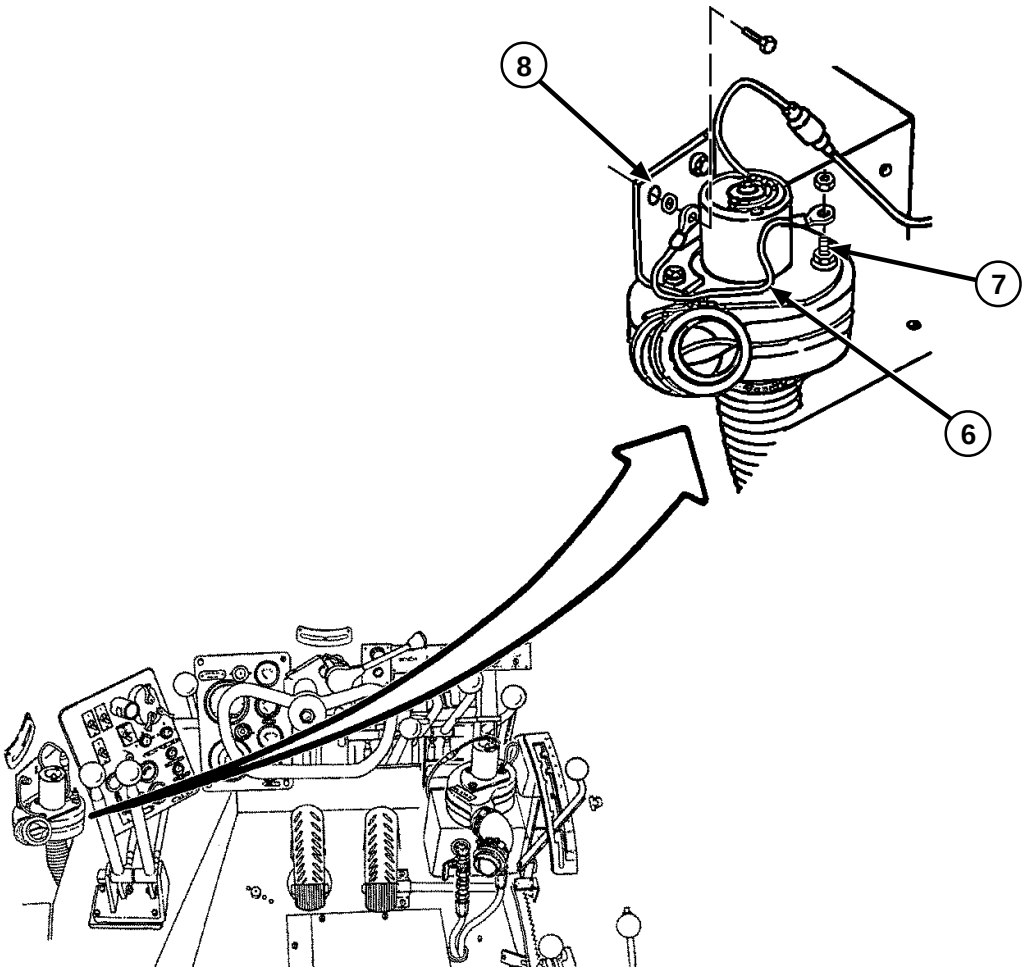
Turn MASTER switch (3) ON.

Momentarily connect electrical lead (1), circuit 411F, to electrical lead (4), circuit 411A. The fan motor should run. Turn MASTER switch (3) OFF after test.

If fan motor (5) does not operate, go to step 7.

If fan motor operates, replace fan switch (p 4-106), verify problem is solved.

83. DRIVER'S VENTILATION FAN MALFUNCTIONS – CONTINUED



Step 7. Check fan motor ground electrical lead (6) for continuity.

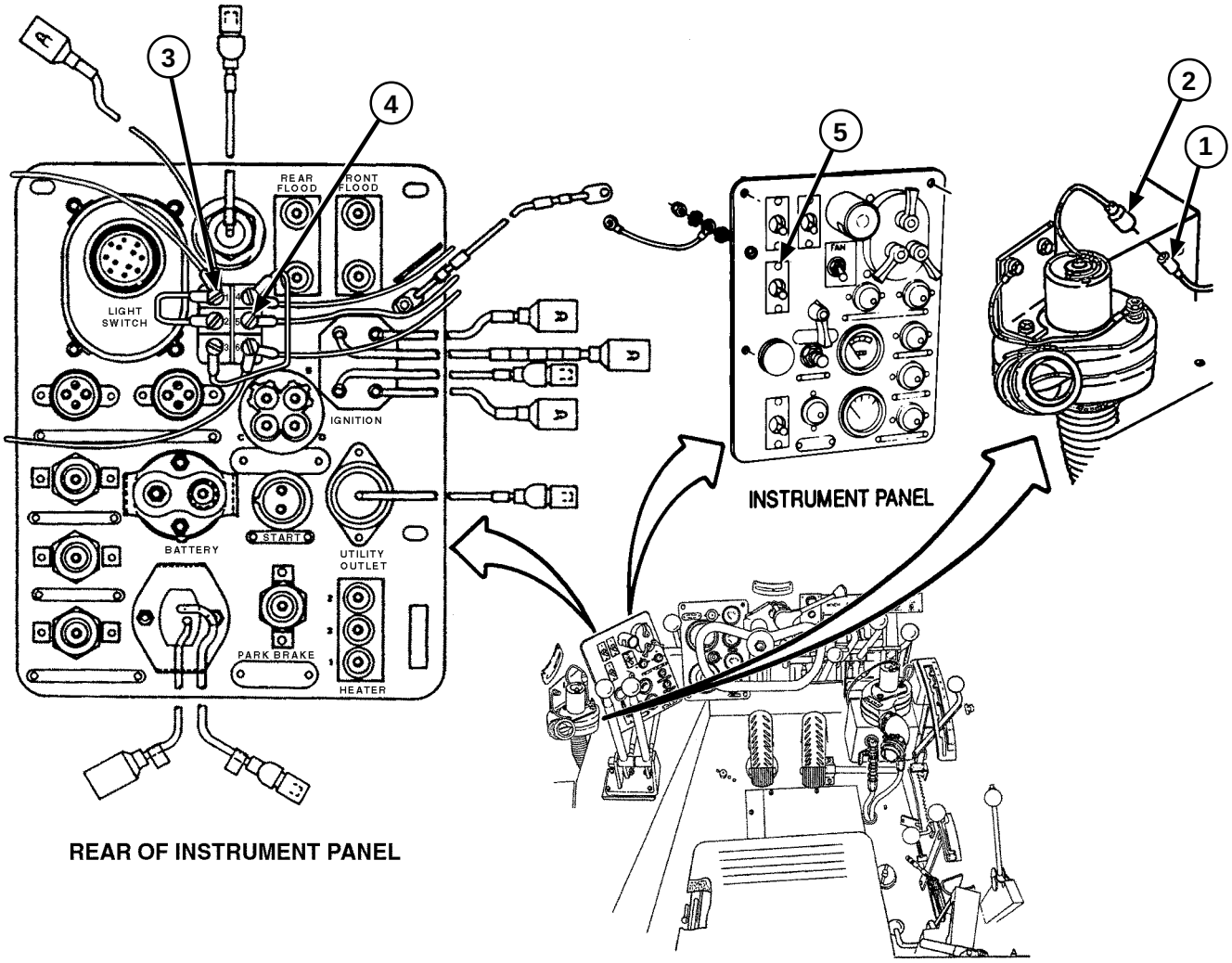
Disconnect fan motor ground electrical lead (6) from fan motor ground stud (7) and mounting bracket (8). Check electrical lead (6) for continuity.

If continuity is indicated, reconnect fan motor electrical ground lead (6) to fan motor ground stud (7) and mounting bracket (8), go to step 8.

If an open circuit (∞ Ω) is indicated, replace fan motor electrical ground lead (6). Verify problem is solved.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

83. DRIVER'S VENTILATION FAN MALFUNCTIONS — CONTINUED



Step 8. Check for 24VDC at electrical connector (1), circuit 411A to fan motor.

Disconnect electrical connector (1), circuit 411A from fan motor electrical connector (2). Momentarily connect lead (3), circuit 411F, to lead (4), circuit 411A and turn MASTER switch (5) ON.

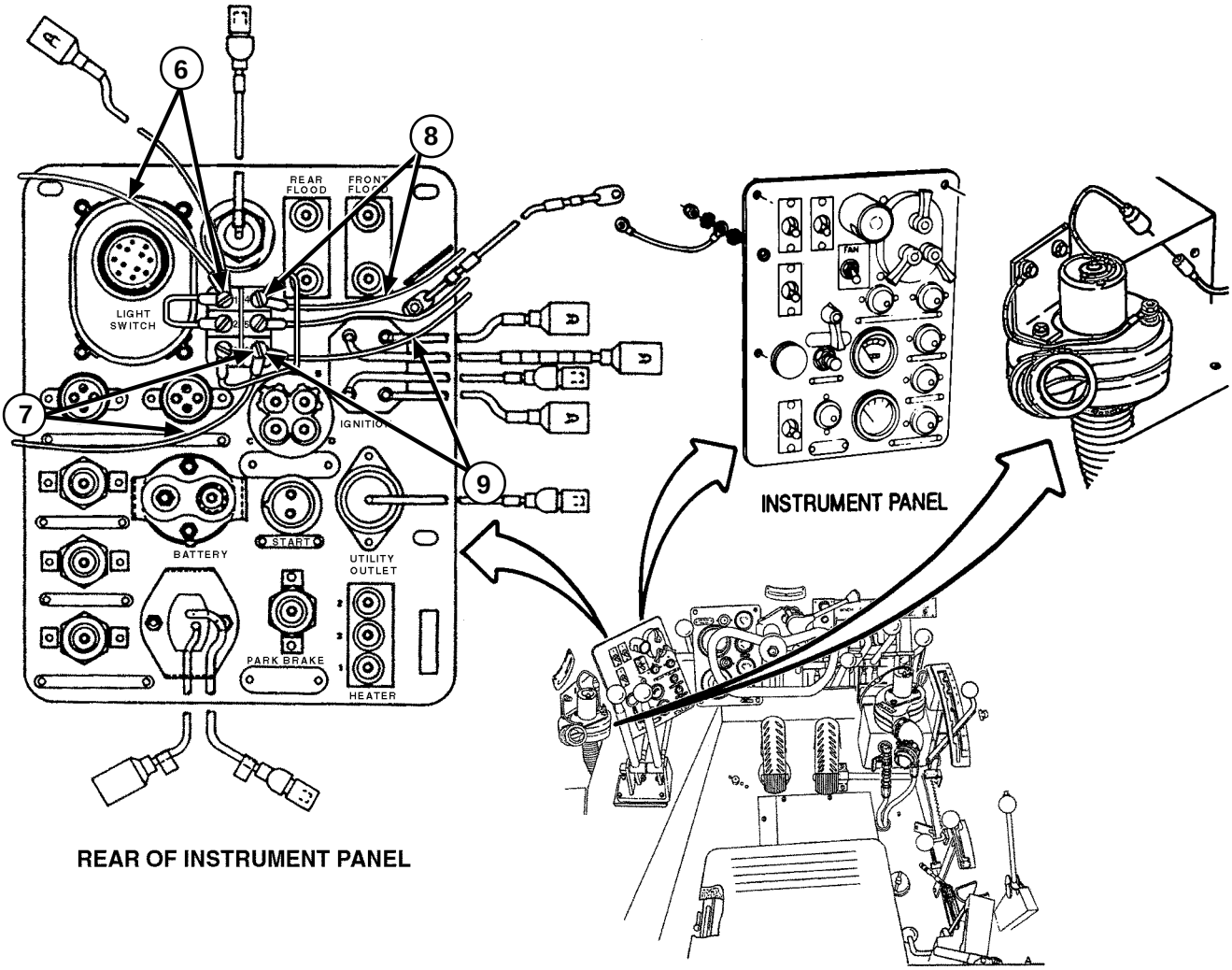
Check for minimum 24 VDC at contact B inside connector (1), circuit 411A. If minimum 24VDC is present at contact B, replace fan motor (1) (p 4-242.4), verify problem is solved

Reconnect lead (4), circuit 411A to terminal 5, lead (3), circuit 411F to terminal 1 on back of fan switch (3), and connector (1), circuit 411A to fan motor electrical connector (2), go to step 9.

If 24VDC is not present, refer to vehicle electrical system wiring diagram (p FP-3) and control wiring harness diagram (p FP-7), and troubleshoot circuit 411A.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

83. DRIVER'S VENTILATION FAN MALFUNCTIONS — CONTINUED



Step 9. Check ventilation fan resistors for continuity.

Disconnect resistor lead (6), circuit 411C, from fan switch at contact 1, and disconnect the other end of resistor lead (7), circuit 411C, from fan switch at contact 6.

Disconnect resistor lead (8), circuit 411B, from fan switch at contact 4, and disconnect the other end of resistor lead (9), circuit 411B, from fan switch at contact 6.

Check resistors for continuity.

If continuity is indicated, reconnect resistor lead (6), circuit 411C to fan switch contact 1, resistor lead (7), circuit 411C and (9), circuit 411B to fan switch contact 6, and resistor lead (8), circuit 411B to fan switch contact 4.

If an open circuit (∞ Ω) is indicated for either resistor, replace malfunctioning resistor (p 4-244), verify problem is solved.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

84. SMOKE GRENADE DISCHARGERS INOPERATIVE

> **WARNING**
>
> Do not work on smoke grenade launcher system unless smoke grenades are removed from dischargers (TM 5-2350-262-10) and batteries have been disconnected at the negative terminals. Failure to comply may result in severe injury to personnel.

Step 1. Make sure smoke grenades have been removed from dischargers (1). With arming/firing unit (2) in armed position and fire switch (3) depressed, check for minimum 24VDC at the firing pins of dischargers (1).

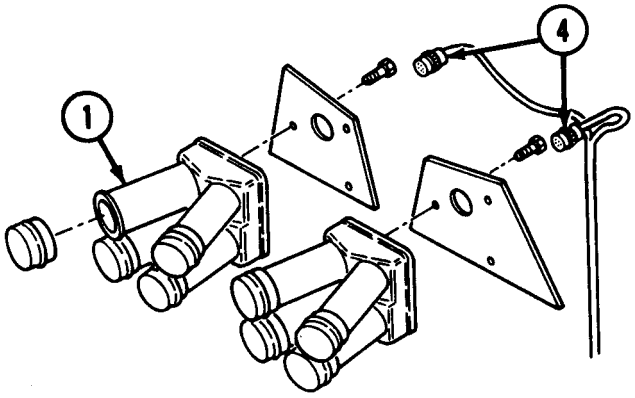
If voltage is present, there is no fault in the firing system.

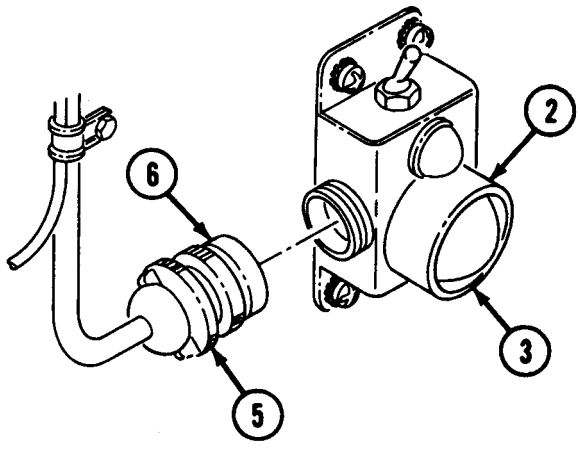
If no voltage is present, make sure electrical connectors (4) are tight at dischargers (1), then go to step 2.

Step 2. With cable (5) disconnected from arming/firing unit (2), check for minimum 24VDC at connector of lead (6).

If voltage is present, replace arming/firing unit (2).

If no voltage is present, go to step 3.





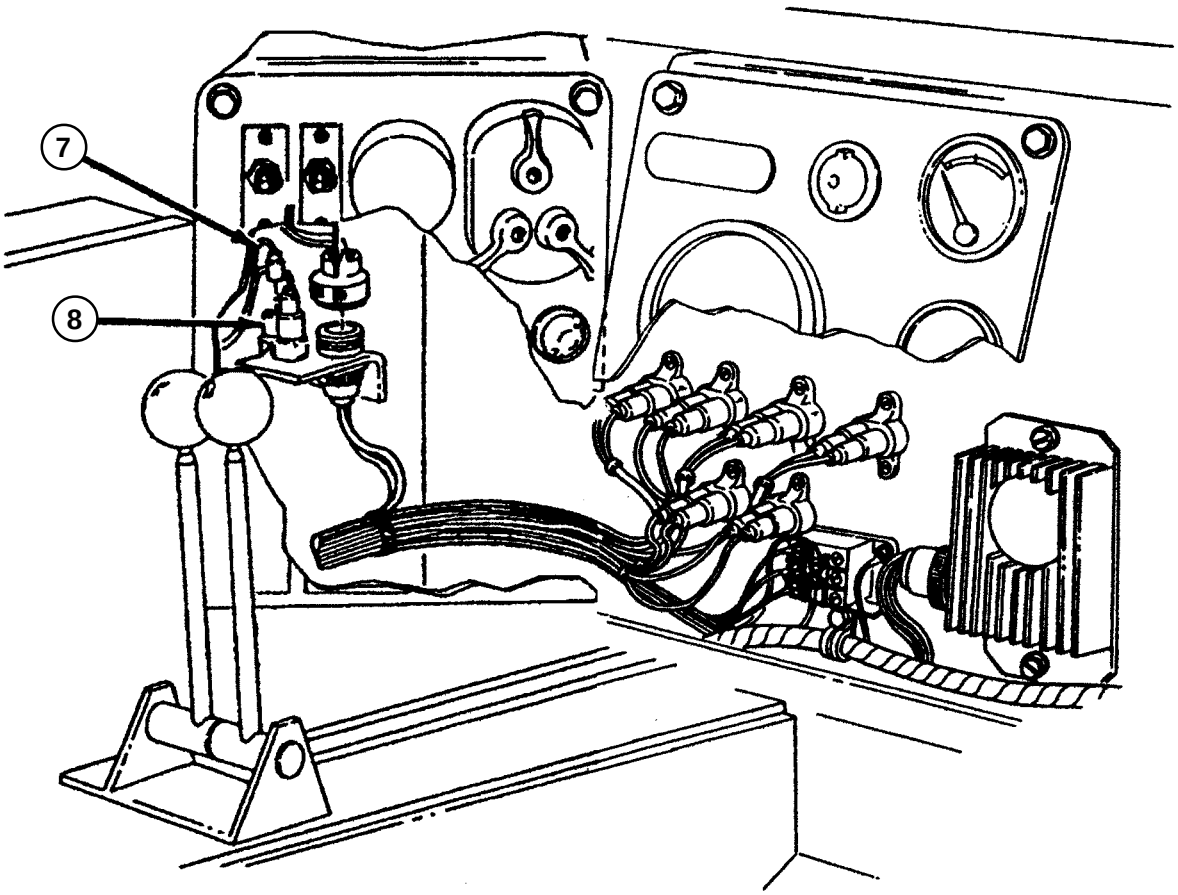
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

84. SMOKE GRENADE DISCHARGERS INOPERATIVE – CONTINUED

Step 3. With connector (7) disconnected from circuit breaker (8), check for minimum 24VDC at connector lead (7).

If voltage is present, replace circuit breaker (8).

If no voltage is present, refer to vehicle electrical system wiring diagram (p FP-3), control wiring harness (p FP-7), and engine wiring harness (p FP-11), and troubleshoot circuit 10.



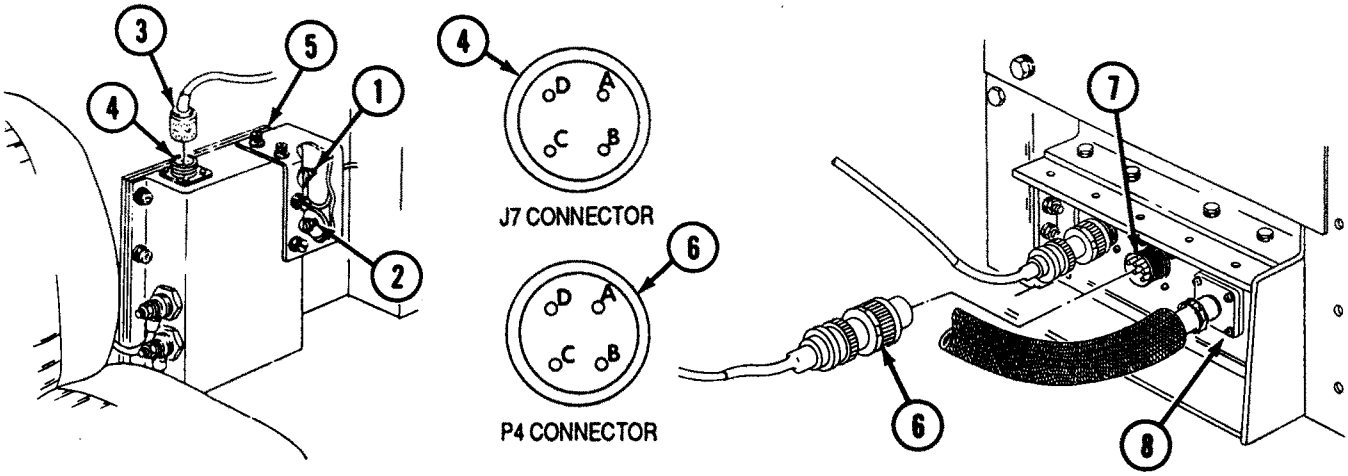
MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

85. NO AIR FLOW FROM MCS UNIT

Step 1. Check all electrical connections for looseness, poor contacts, or corrosion.

Repair, replace, or connect affected wiring.

If electrical connections are in good condition, go to step 2.



WARNING

- Keep hands and tools away from moving parts. Failure to comply may result in injury to personnel.
- Do not touch coils on condenser. Coils may become hot enough to burn you. Failure to comply may result in injury to personnel.

Step 2. Remove EMI filter box guard (p 4-923). With vehicle running, check for minimum 27 VDC at terminals (1) and (2).

If no voltage is present, notify direct support maintenance to replace circuit breaker.

If problem persists, check vehicle electrical system for voltage malfunction.

If voltage is present, install EMI filter box guard (p 4-925) and go to step 3.

Step 3. Disconnect connector P7 (3) from EMI filter box connector (4). With vehicle running, check for minimum 27 VDC at contacts J7A and J7C of connector (4). Connect connector (3) to connector (4) after test.

If no or low voltage is present, replace EMI filter box (p 4-923) (5).

If voltage is present, go to step 4.

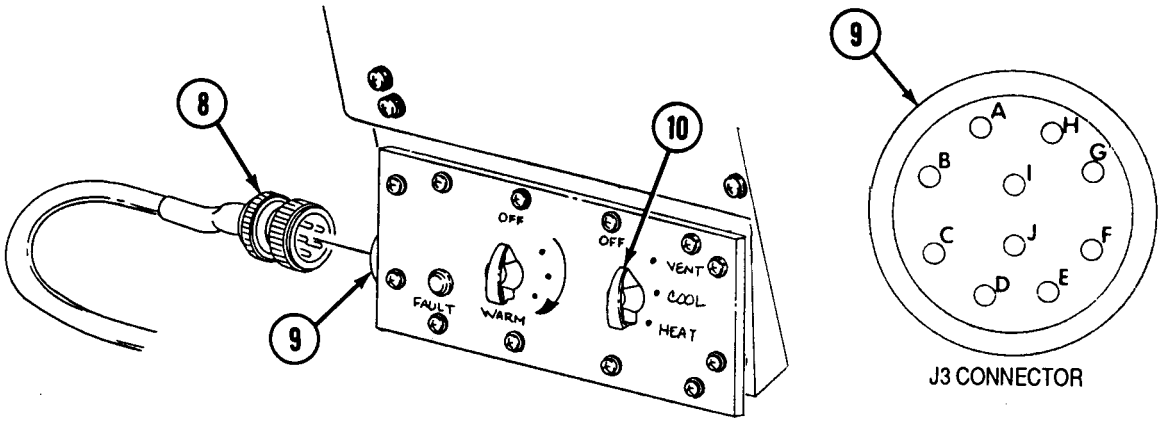
Step 4. Disconnect connector P4 (6) from J4 connector (7) of interface plate (8). With vehicle running, check for minimum 27 VDC at contacts P4A and P4C of connector (6). Connect connector (6) to connector (7) after test.

If voltage is present, go to step 5.

If no or low voltage is present, replace or repair J1 wiring harness.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

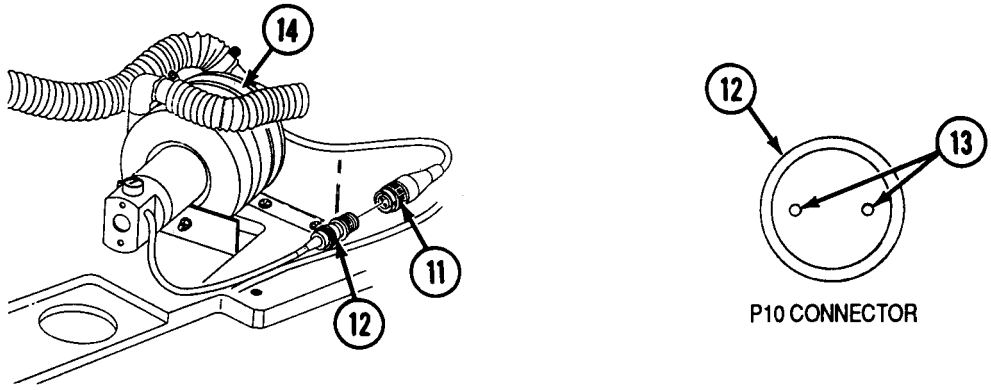
85. NO AIR FLOW FROM MCS UNIT — CONTINUED



Step 5. Disconnect connector P3 (8) from control box connector (9). Turn switch (10) to VENT and check for continuity from J3A to J3E of connector (9). Turn switch (10) to HEAT and check for continuity from J3E to J3A, J3E to J3C, and J3E to J3D of connector (9). Turn switch (10) to COOL and check for continuity from J3E to J3A, J3E to J3B, and J3E to J3C of connector (9).

If any continuity check indicates an open circuit, replace switch (10) (p 4-917).

If all continuity checks reveal complete circuits, go to step 6.



Step 6. Remove MCS enclosure (p 4-914). Disconnect electrical connector (11) from evaporator fan connector (12). Start engine and operate MCS unit (TM 5-2350-262-10). Turn switch (10) to VENT and check for minimum 27 VDC across pins (13) of connector (12). Stop MCS unit and engine, and connect connector (11) to connector (12) when test is complete.

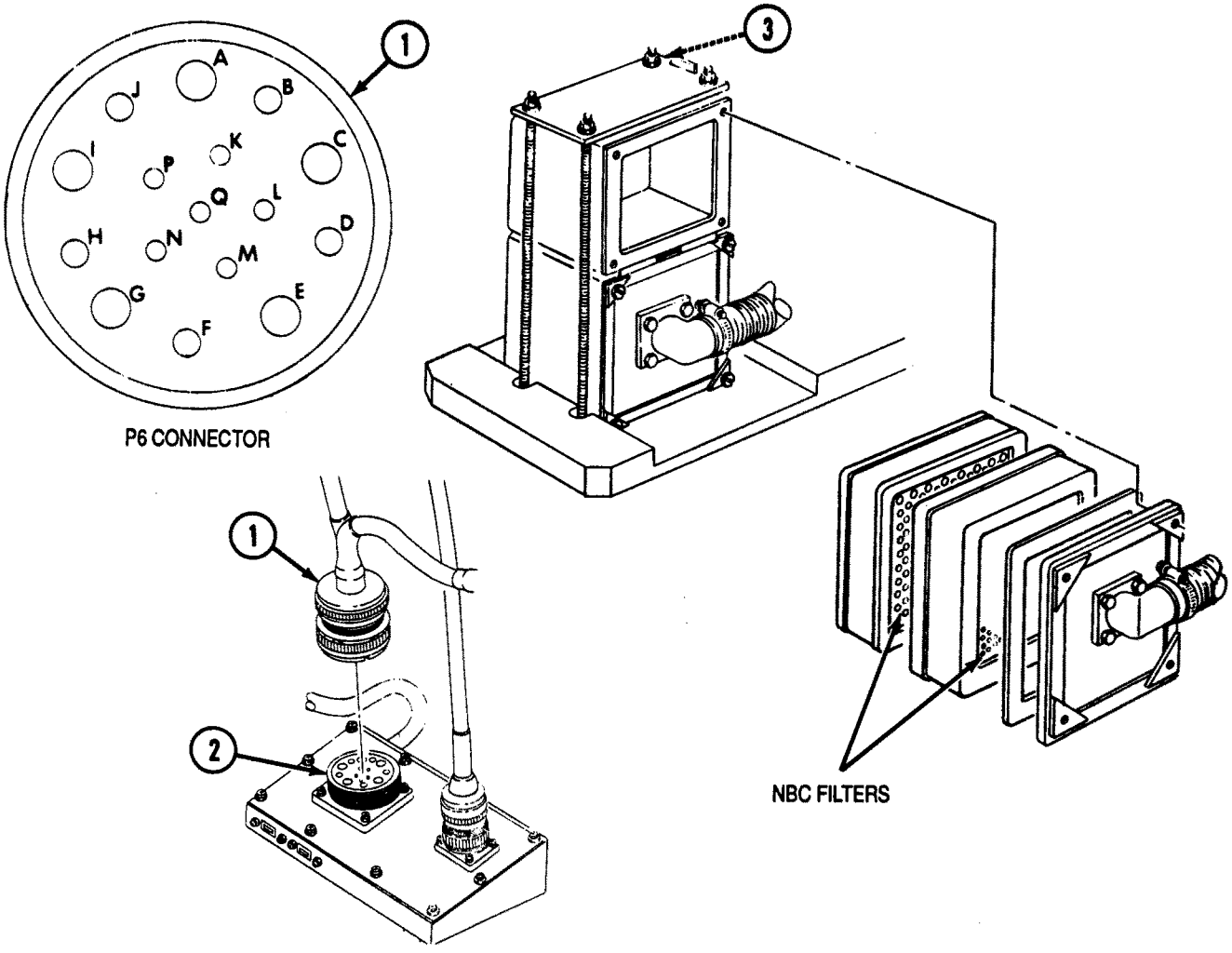
If 27 VDC is present, notify direct support to replace evaporator fan (14).

If less than 27 VDC is present, troubleshoot vehicle electrical system to isolate fault.

If no voltage is present, go to step 7.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

85. NO AIR FLOW FROM MCS UNIT — CONTINUED



Step 7. Ensure NBC filters are properly installed (p 4-898). Disconnect connector P6 (1) from electrical housing connector (2). Check for continuity from pin P6P to P6N.

If check indicates an open circuit, go to step 8.

If check indicates a complete circuit, connect connector (1) to connector (2) and go to step 9.

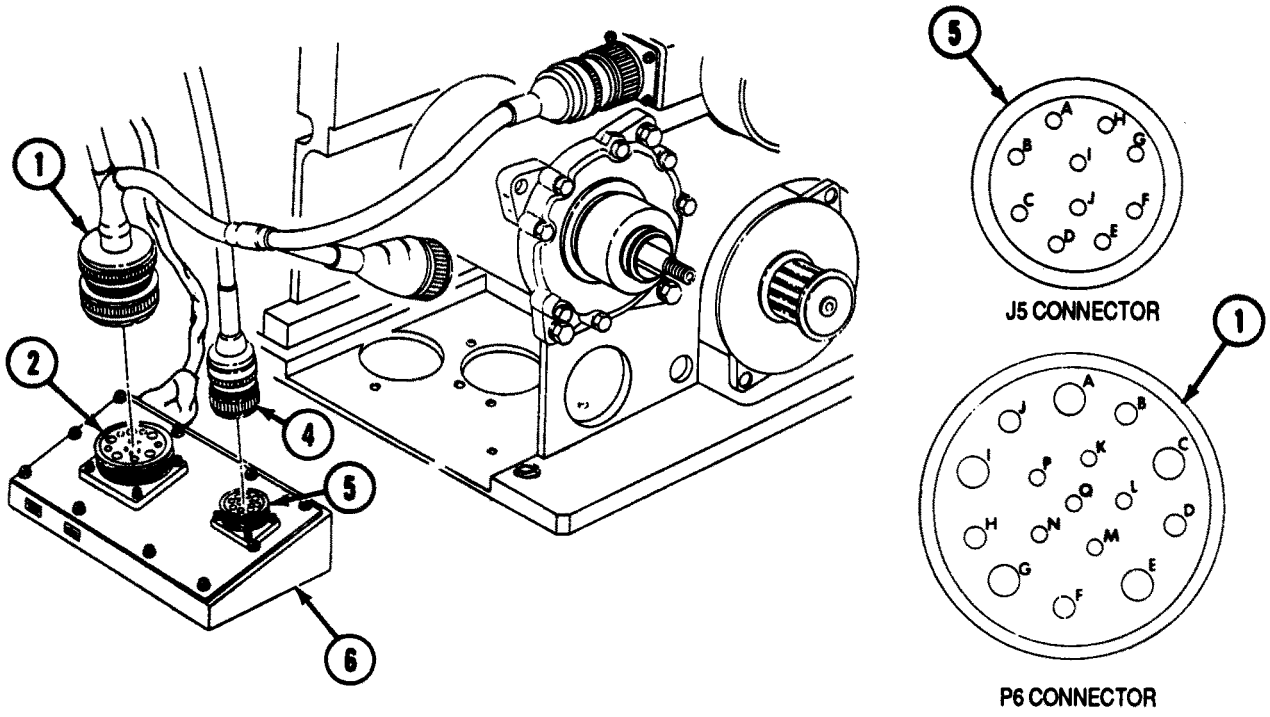
Step 8. Remove NBC filters (p 4-898), and disconnect connector P6 (1) from electrical housing connector (2). Actuate each switch (3) and check for continuity from P6P to P6Q. Actuate both switches and check for continuity from P6P to P6N. Connect connector (1) to connector (2) after test.

If switches fail continuity checks, replace them (p 4-931).

If switches pass continuity checks, go to step 9.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

85. NO AIR FLOW FROM MCS UNIT — CONTINUED



Step 9. Disconnect connector P5 (4) from electrical housing connector (5). Check for continuity from J5A to ground. Connect connector (4) to connector (5) after test.

If check indicates an open circuit, notify direct support maintenance to check wiring in electrical housing (6) and replace K1 relay in electrical housing, if necessary.

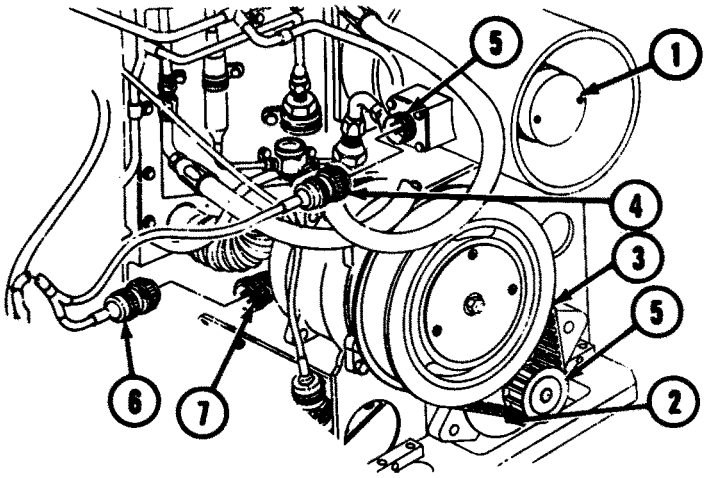
If continuity is indicated, go to step 10.

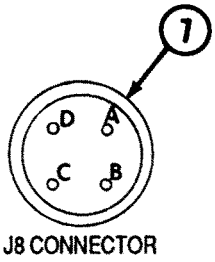
Step 10. Disconnect connector P6 (1) from electrical housing connector (2). Using a jumper from electrical test kit, connect P6 to ground. Start engine and operate MCS unit (TM 5-2350-262-10). Check for minimum 27 VDC at J6B and turn switch to VENT, COOL, or HEAT. Remove jumper and connect connector (1) to connector (2) after test. Stop engine and turn off MCS unit.

If no or low voltage is present, notify direct support maintenance to check wiring in electrical housing (6), and replace K1 relay in electrical housing (6), if necessary.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

86. SAME AIR TEMPERATURE FLOWS IN COOL AND VENT MODES (MCS)





J8 CONNECTOR

WARNING

- Keep hands and tools away from moving parts. Failure to comply may result in injury to personnel.
- Do not touch coils on condenser. Coils may become hot enough to burn you. Failure to comply may result in injury to personnel.

Step 1. Remove MCS armor enclosure (p 4-913). Start engine and operate MCS unit (TM 5-2350-262-10). Turn switch to COOL and check to see that condenser fan (1) and compressor motor (2) start six seconds after unit starts. Ensure gear belt (3) is intact.

If motor (2) starts, but grinds or emits peculiar noises, replace motor (2) (p 4-940).

If motor (2) starts, and compressor grinds or makes peculiar noises, notify direct support maintenance to replace compressor.

If fan (1) and motor (2) do not start, go to step 6.

If motor (2) starts, and no unusual noises are noticed, refer to MALFUNCTION 85 (p 3-346).

If fan (1) does not start, but motor (2) does, go to step 2.

If fan (1) starts, but motor (2) does not, go to step 3.

Step 2. Disconnect connector P8 (4) from fan connector (5). Check for continuity across connector terminals. Connect connector (4) to connector (5) after test.

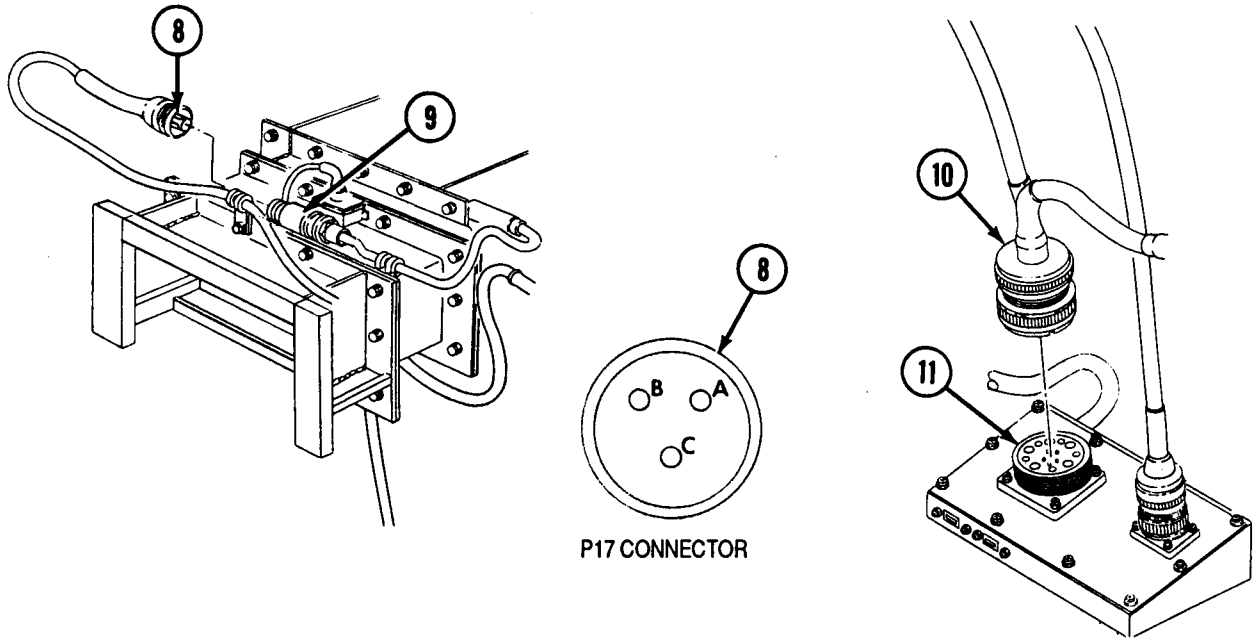
If check indicates an open circuit, fan (1) needs new brushes, has an open armature, or a loose or missing brush wire. Replace fan (1) (p 4-956).

Step 3. Disconnect connector (6) from compressor motor connector (7). Check for continuity from J8B to J8D on motor connector (7). Connect connector (6) to connector (7) after test.

If check indicates an open circuit, motor (2) needs new brushes, has an open armature, or a loose or missing brush wire. Replace motor (2) (p 4-958). Go to step 4.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

86. SAME AIR TEMPERATURE FLOWS IN COOL AND VENT MODES (MCS) — CONTINUED



P17 CONNECTOR

Step 4. Disconnect connector P17 (8) from head pressure switch (9). Check for continuity between poles of switch (9).

If continuity is indicated, head pressure switch (9) is activating. Go to step 5.

Step 5. Notify direct support to service MCS unit. Check operating pressures.

Restrict flow into condenser fan. Pressure greater than 325 psi (2,241 kPa) will activate the head pressure switch, defaulting the system to VENT mode.

If pressure rises above 325 psi (2,241 kPa), check for obstructed or kinked lines, overcharged refrigerant, or a clogged condenser or filter dryer.

Note

Low temperature switch opens to energize compressor motor and condenser fan at 40-48°F (4-9°C). Unit should be operating in at least 48°F (9°C) temperatures for switch to allow operation in COOL.

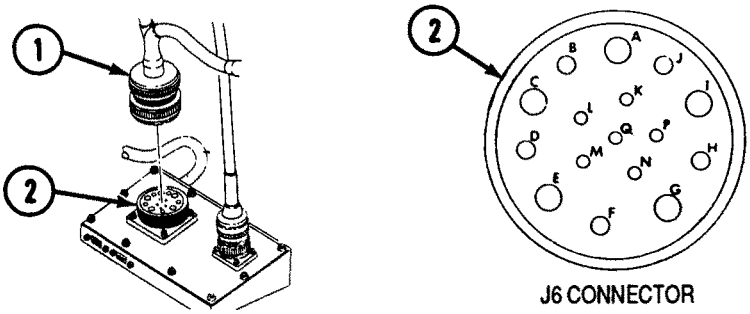
Step 6. Disconnect connector P6 (10) from electrical housing connector (11). With connector P17 (8) disconnected from head pressure switch (9), check for continuity from P6M to P17B and across pins A and B on head pressure switch (9). Connect connector (8) to head pressure switch (9) after test.

If an open circuit is indicated, connect connector (10) to connector (11) and check the main wiring harness (p 4-942) to the low temperature switch. Notify direct support maintenance and replace low temperature switch and head pressure switch (9) if necessary.

If check indicates a complete circuit, go to step 7.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

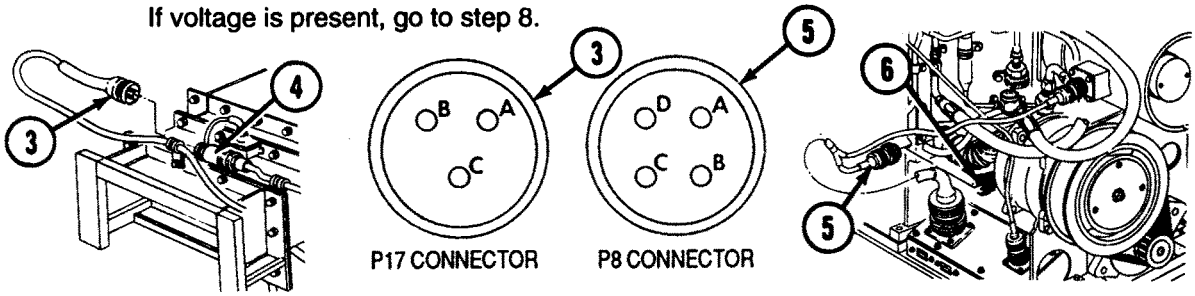
86. SAME AIR TEMPERATURE FLOWS IN COOL AND VENT MODES (MCS) — CONTINUED



Step 7. Disconnect connector P6 (1) from electrical housing connector (2). Use jumper to connect J6P to ground. Start engine and operate MCS unit (TM 5-2350-262-10). Turn switch to COOL and check for minimum 27 VDC at J6L of connector (2) after six second delay.

If no or low voltage, connect connector (1) to connector (2) and notify direct support maintenance to check wiring in electrical housing, and replace K2 relay, if necessary.

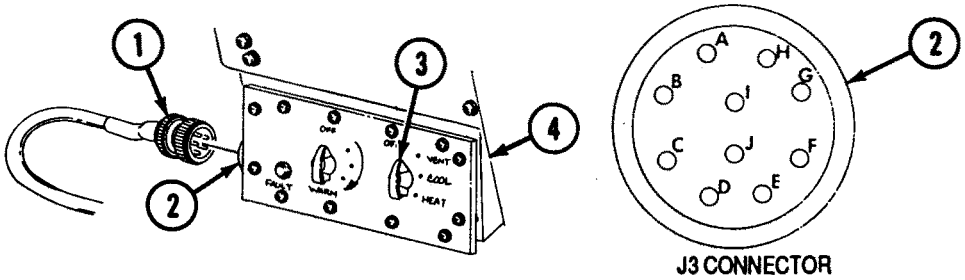
If voltage is present, go to step 8.



Step 8. Disconnect connector P17 (3) from head pressure switch connector (4) and connector P8 (5) from compressor motor connector (6). Check for continuity from P17B to P8A. Connect connectors (3) and (5) to connectors (4) and (6) after test.

If no continuity is present, notify direct support maintenance to check wiring in electrical housing, and replace K3 relay, if necessary.

87. MINIMAL TEMPERATURE DIFFERENCE IN AIR FLOW FROM HEAT AND VENT MODES (MCS)



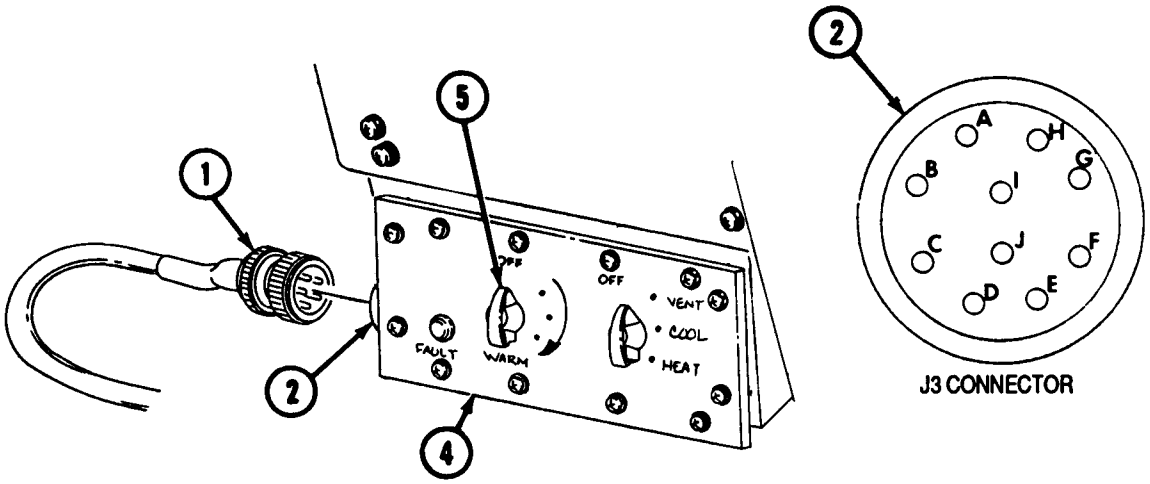
Step 1. In driver's compartment, disconnect connector P3 (1) from control box connector J3 (2). Turn mode selector switch (3) to HEAT and check for continuity in control box connector (2) from J3E to J3D, J3C, and J3A.

If an open circuit is indicated, check wiring inside control box (4) and replace switch (3) (p 4-917), if necessary

If circuit is complete, go to step 2.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

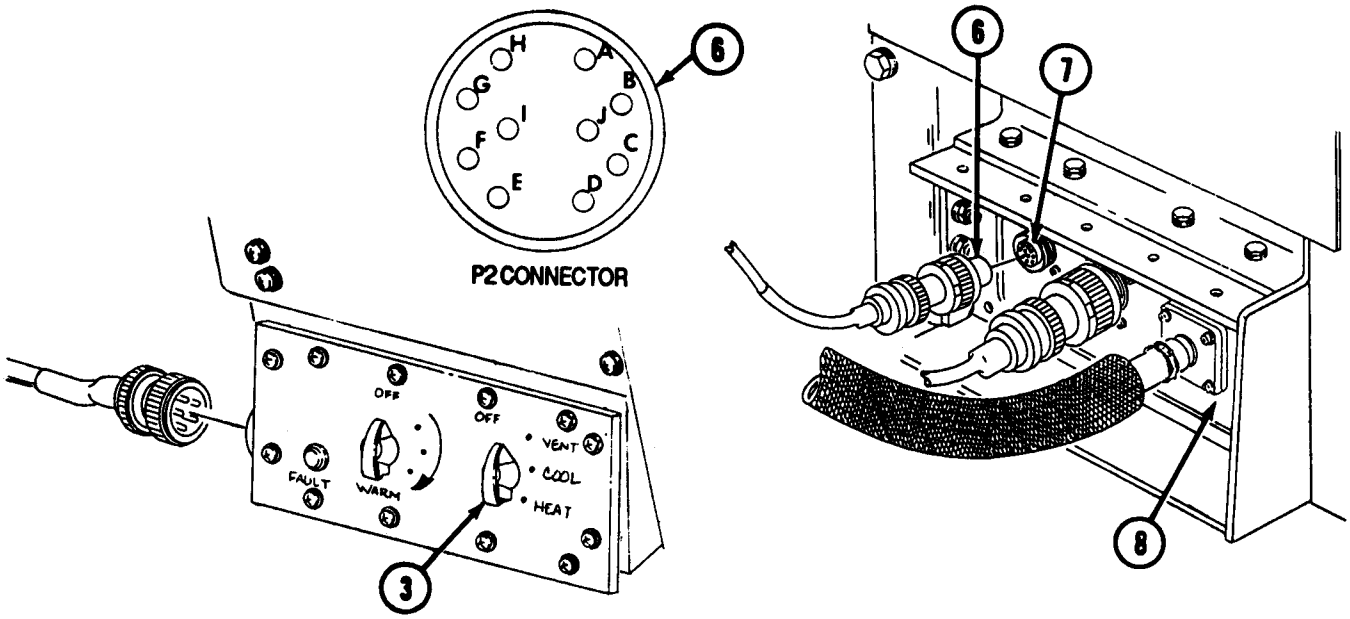
87. MINIMAL TEMPERATURE DIFFERENCE IN AIR FLOW FROM HEAT AND VENT MODES (MCS) — CONTINUED



Step 2. Position temperature control switch (5) at highest setting. Check for continuity from J3F to J3G, J3H, and J3I. Connect connector P3 (1) to control box connector J3 (2) after test.

If an open circuit is indicated, check wiring inside control box (4) and replace switch (5) (p 4-917), if necessary.

If circuit is complete, go to step 3.



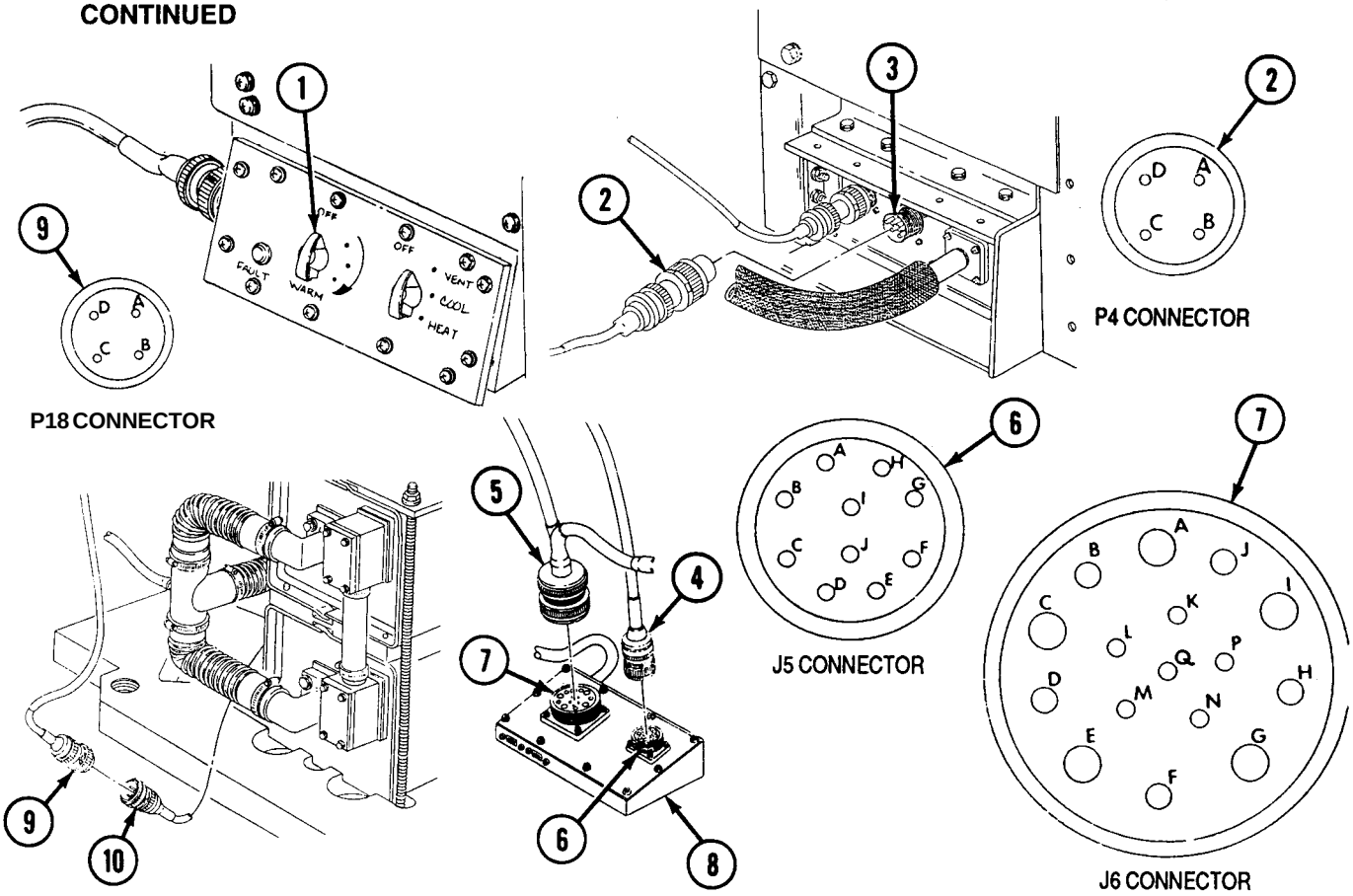
Step 3. Disconnect connector P2 (6) from J2 connector (7) of interface plate (8). Turn mode selector switch (3) to HEAT and check for continuity from P4E and P4D, P4C, and P4A.

If an open circuit is indicated, wiring harness is faulty. Replace wiring harness (p 4-942 or p 4-947).

If circuit is complete, go to step 4.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

87. MINIMAL TEMPERATURE DIFFERENCE IN AIR FLOW FROM HEAT AND VENT MODES (MCS) — CONTINUED



Step 4. With temperature control switch (1) in highest setting, check for continuity from P2F, and P4G, P4H, and P4I of connector (2). Connect connector (2) to connector (3) after test.

If an open circuit is indicated, wiring harness is faulty. Replace wiring harness (p 4-942 or p 4-497).

If circuit is complete, go to step 5.

Step 5. Remove MCS enclosure (p 4-914). Disconnect connectors P5 (4) and P6 (5) from electrical housing connectors (6) and (7). Check for continuity between contacts J5C and J6P. Connect connector (4) to housing connector (6) after test.

If open circuit is indicated, connect connector (5) to connector (7) and notify direct support maintenance to check wiring in electrical housing (8), and replace K4 relay, if necessary.

If complete circuit is indicated, reconnect system and go to step 6.

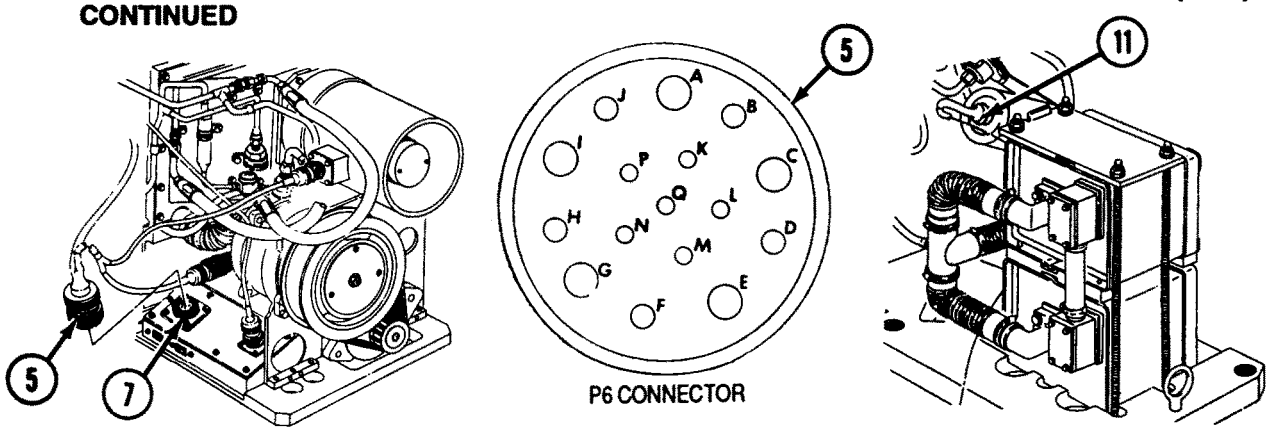
Step 6. Disconnect connector P18 (9) from heater connector (10). Turn temperature control switch (1) to highest setting and check voltages at P18A, B, and C.

If voltage is present, go to step 7.

If no or low voltage is present, replace temperature control switch (p 4-935).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

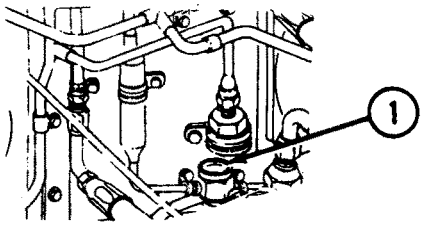
87. MINIMAL TEMPERATURE DIFFERENCE IN AIR FLOW FROM HEAT AND VENT MODES (MCS) — CONTINUED



Step 7. Disconnect connector P6 (5) from electrical housing connector (7). Check for continuity from contacts P6F to P6I, P6H to P6I, and P6J to P6I. Connect connector (5) to connector (7) after test.

If the check indicates an open circuit, notify direct support maintenance to replace heater core (11).

88. AIR FLOW TEMPERATURE BECOMES INCREASINGLY WARM IN COOL MODE (MCS)



WARNING

MCS unit will not filter out carbon monoxide. Do not operate MCS unit or engine of vehicle in an enclosed area unless adequately ventilated. Failure to comply may result in severe injury or death to personnel.

Step 1. Start engine and MCS system (TM 5-2350-262-10). Check for presence of refrigerant in sight glass (1). There should be some bubbles present.

If a large amount of bubbles or a continuous stream is present, insufficient refrigerant is indicated. Notify direct support maintenance to charge system.

If no bubbles are present, either too much refrigerant or no refrigerant is in the system. Go to step 2.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

88. AIR FLOW TEMPERATURE BECOMES INCREASINGLY WARM IN COOL MODE (MCS) — CONTINUED

Note

Pressures are temperature sensitive. Test unit at room temperature 72°F (22°C).

Step 2. Shut off unit (TM 5-2350-262-10). Connect charging and testing manifold to compressor. Start unit (TM 5-2350-262-10). Select COOL and run unit for about 10 minutes. Observe gauges on manifold. Refer to chart for corrective actions.

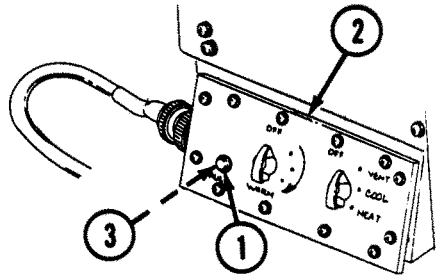
Low Pressure (Suction) Gauge	High Pressure (Discharge) Gauge	Problem
40-50 psi	240-275 psi	Normal.
40-50 psi	More than 275 psi	Check condenser fan for proper operation. Go to MALFUNCTION 86 (p 3-350). If fan is working, notify direct support maintenance to discharge and charge system. Inspect for and identify leaks. If problem persists, notify direct support maintenance to inspect condenser for clogged or damaged line. If problem persists, inspection and replacement of a clogged evaporator is indicated.
More than 50 psi	More than 275 psi	Check condenser fan for proper operation. Go to MALFUNCTION 86 (p 3-350). If fan is working, notify direct support maintenance to discharge and charge system. If problem persists, notify direct support maintenance to check main air inlet filter and condenser for clogged or restricted air flow.
More than 50 psi	Less than 240 psi	Notify direct support maintenance to replace compressor.
Less than 40 psi	Less than 240 psi	Notify direct support maintenance to charge system. Inspect for and identify leaking components.
Less than 0 psi (vacuum)	240-275 psi	Notify direct support maintenance to discharge and charge system. If problem persists, carefully run hand over filter dryer. If dryer is cool in spots, line leading out is cool, and line leading in is hot. Notify direct support to replace filter dryer. If dryer is good, notify direct support to replace expansion valve.
More than 50 psi	240-275 psi	Notify direct support maintenance to inspect and replace insulation sleeving around expansion valve sending unit.
40-50 psi	240-275 psi	Notify direct support maintenance to discharge and charge system to remove moisture.

Remove charging and testing manifold after test.

If system will not hold charge, inspect for and identify leaks. Notify direct support maintenance to replace components such as ruptured disc or to repair leaks.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

89. NO AIR FLOW IN ANY TEMPERATURE SETTING (MCS)



Step 1. Observe fault indicator light (1) on control box (2) in driver's compartment.

If light (1) is illuminated, service NBC filters (p 4-898).

If filters are in good condition, refer to MALFUNCTION 85 (p 3-346).

If light (1) is not illuminated, press light (1). Light (1) should illuminate.

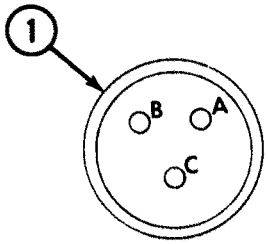
If light (1) illuminates when pressed, refer to MALFUNCTION 85 (p 3-346).

If light (1) does not illuminate, go to step 2.

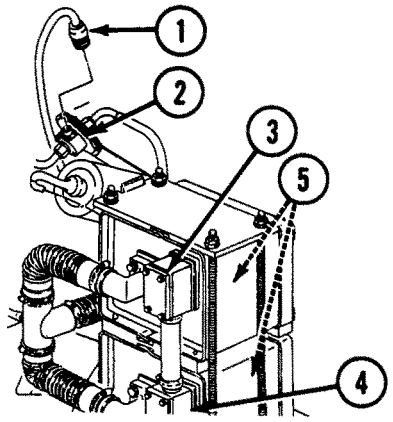
Step 2. Remove bulb (3) (p 4-935) from fault indicator light (1). Check for continuity across contacts of bulb (3).

If continuity is not indicated, replace bulb (3) (p 4-937).

90. FAULT INDICATOR LIGHT STAYS LIT (MCS)



P14 CONNECTOR



Step 1. Remove MCS enclosure (p 4-913). Disconnect connector P14 (1) from delta pressure switch (2). Connect connector (1) to switch (2) after test.

If fault indicator light goes out, check for continuity from P14B to ground. If continuity is indicated, replace switch (2) (p 4-949). If continuity is not indicated, check wiring for shorts.

If condition persists, go to step 2.

Step 2. Remove NBC filters (p 4-898), and inspect filter switches (3) and (4) for signs of damage, sticking, or improper or poor contact with filters (5).

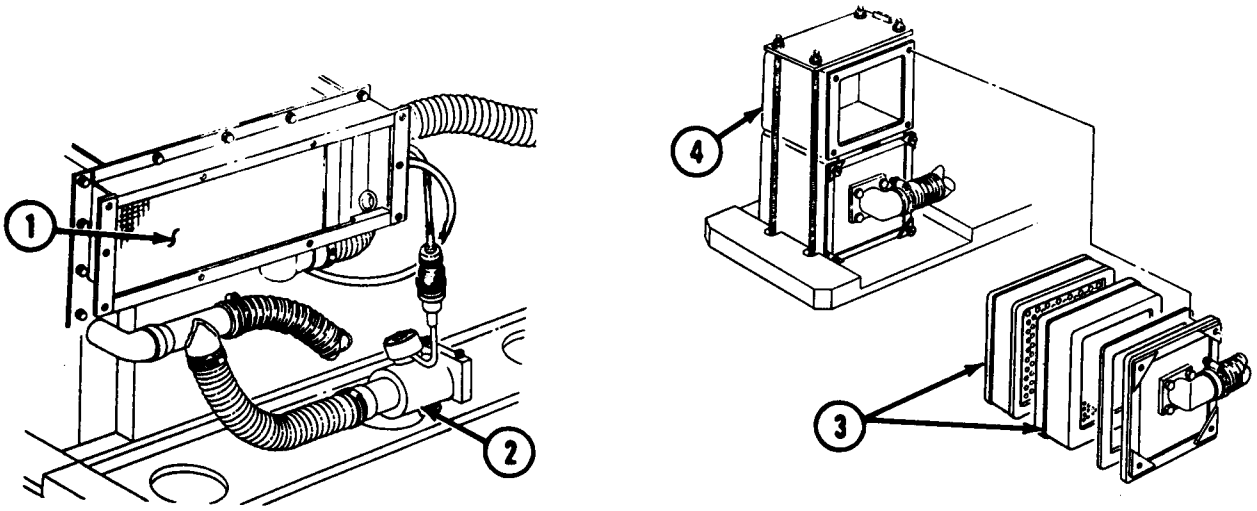
If switch (3) or (4) is damaged or sticking, replace switch (3) or (4) (p 4-931). If filters appear clogged, replace NBC filters (5) (p 4-898).

Check contact between switches (3) and (4) and filters (5).

Check switches (3) and (4) for continuity, refer to MALFUNCTION 85 (p 3-346).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

91. DECREASED AIR FLOW DURING OPERATION (MCS)



Step 1. Check all hoses and main air inlet filter (1) for clogs, kinks, obstructions, or other damage.

Replace any damaged or clogged hose, or replace main air inlet filter (1) (p 4-910).

If problem persists, go to step 2.

WARNING

- Keep hands and tools away from moving parts. Failure to comply may result in injury to personnel.
- Do not touch coils on condenser. They may become hot enough to burn you. Failure to comply may result in injury to personnel.

Step 2. Remove MCS enclosure (p 4-913). Start engine and operate MCS unit (TM 5-2350-262-10). Run unit set to COOL or VENT, with temperature selector switch OFF. Feel for significant amount of air being expelled from the dump valve (2).

If significant amount of air is coming from dump valve (2), replace dump valve (2) (p 4-954).

If little or no air is coming from valve (2), go to step 3.

Step 3. Remove NBC filters (3) (p 4-898). Check NBC filters (3) and filter housing (4) for clogs.

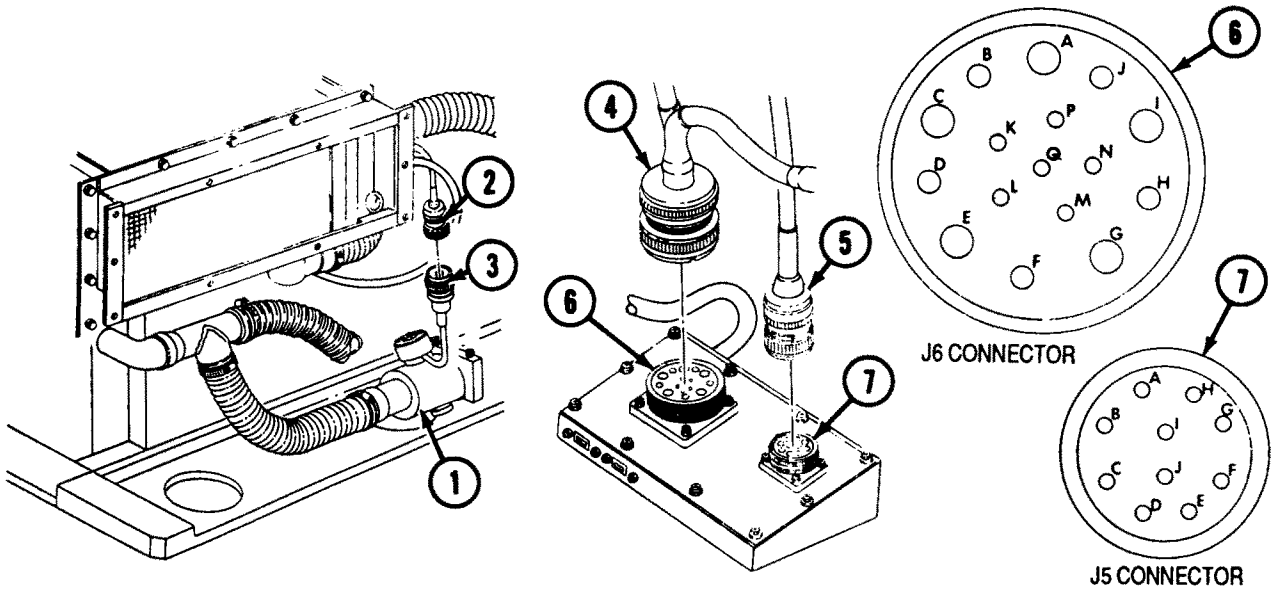
If NBC filters (3) are clogged, replace NBC filters (3) (p 4-898). Remove any clogs from filter housing (4).

If NBC filters (3) are clogged, and fault indicator light did not light, replace the delta pressure switch (p 4-949).

If NBC filters (3) are unclogged, notify direct support maintenance to check the evaporator for blockage.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

92. EXCESSIVE HOT AIR FLOW DURING OPERATION (MCS)



Step 1. Remove MCS enclosure (p 4-913). Check dump valve (1) for obstructions and remove any blockages.

If valve (1) is clogged, replace dump valve (1) (p 4-954).

If valve (1) is not clogged, go to step 2.

Step 2. Disconnect connector P19 (2) from valve connector (3). Check for voltage at connector (3).

If voltage is present, replace valve (1).

If voltage is not present, go to step 3.

Step 3. Disconnect connectors P6 (4) and P5 (5) from electrical housing connectors (6) and (7). Check coil of relay K5 for continuity from pins J5D to J6P.

If no continuity is present, notify direct support maintenance and replace relay K5.

93. CONTINUAL HOT AIR FLOW, OR NO INCREASE IN HOT AIR FLOW IN A HIGHER TEMPERATURE MODE (MCS)

Delivery of continually-heated air, or failure to control the level of heating, indicates a failure of the temperature control switch. Replace temperature control switch (p 4-935).

CHAPTER 4
VEHICLE MAINTENANCE INSTRUCTIONS

SCOPE

This chapter contains maintenance procedures for the M9 ACE.

VOLUME 1

		Page
Section I	Group AA, Accelerator Installation	4-2
Section II	Group AB, Air System Installation	4-13
Section III	Group AD, Armor Installation	4-39
Section IV	Group AF, Brake Control Installation	4-45
Section V	Deleted	
Section VI	Group AJ, Electrical Installation	4-65
Section VII	Group AL, Fire Extinguisher Installation	4-200
Section VIII	Group AM, Fuel System Installation	4-215
Section IX	Group AN, Heater and Ventilation Installation	4-240
Section X	Group AP, Bolted Hull Assembly Installation	4-248

VOLUME 2

Section XI	Group AQ, Hydraulic Control Installation	4-397
Section XII	Group AR, Hydraulic Installation	4-412
Section XIII	Group AU, Powertrain Installation	4-533
Section XIV	Group AV, Air Purifier Installation	4-797
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Section XVII	Deleted	
Section XVIII	Group A2, Stowage Installation	4-839
Section XIX	Group A3, Suspension Installation	4-845
Section XX	Group A5, Winch Installation	4-877
Section XXI	Group A6, Special Purpose Kits Installation	4-896
Section XXII	Preparation for Transport	4-945

Section I. GROUP AA, ACCELERATOR INSTALLATION

TASK	PAGE
Accelerator and Throttle Linkage Adjustment	4-3
Accelerator and Throttle Linkage Replacement and Repair	4-6

ACCELERATOR AND THROTTLE LINKAGE ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 11 Appendix D
Sealing Compound Primer	Item 13 Appendix D

Parts:

Locknut (2)

Parts Reference:

TM 5-2350-262-24P	Group AA

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Access Covers Opened

General Safety Instructions:

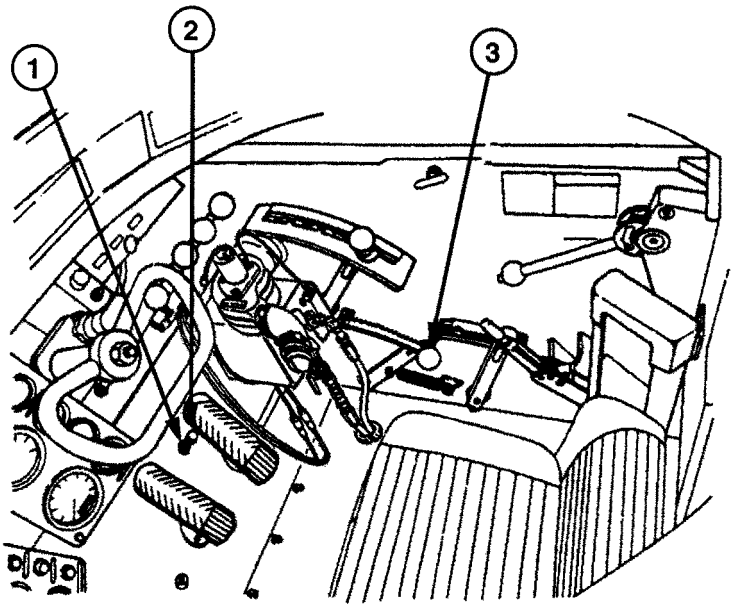
WARNING

Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool.

ADJUSTMENT

A Loosen jamnut (1) and turn screw (2) counterclockwise several turns.

B Move hand throttle lever (3) rearward to IDLE position.



WARNING

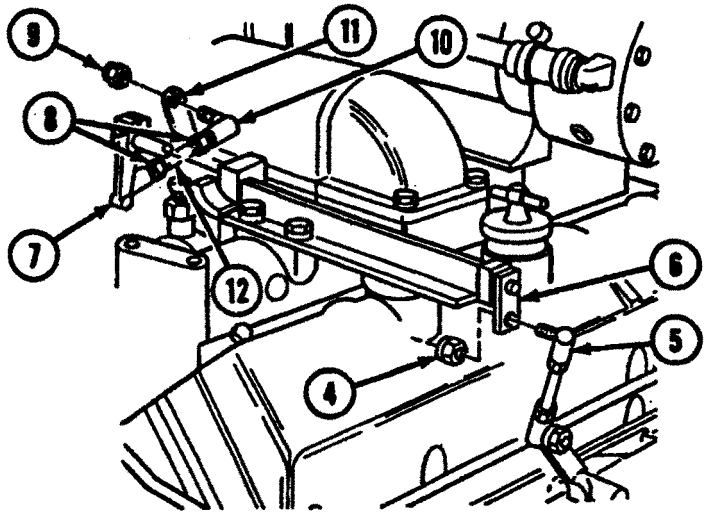
Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in injury to personnel.

CAUTION

Rods must be installed on ball joints a distance equal to the rod diameter. Failure to comply may result in damage to threads.

Rod callout number	Minimum distance into ball joint
12	1/4 in. (6.4 mm)
14	1/2 in. (12.7 mm)
16	3/8 in. (9.5 mm)

C Remove locknut (4), and disconnect ball joint (5) from bracket (6). Discard locknut (4).



D If bellcrank (7) is not vertical (straight up and down), loosen two jamnuts (8), remove locknut (9), and disconnect ball joint (10) from lever (11). Discard locknut (9).

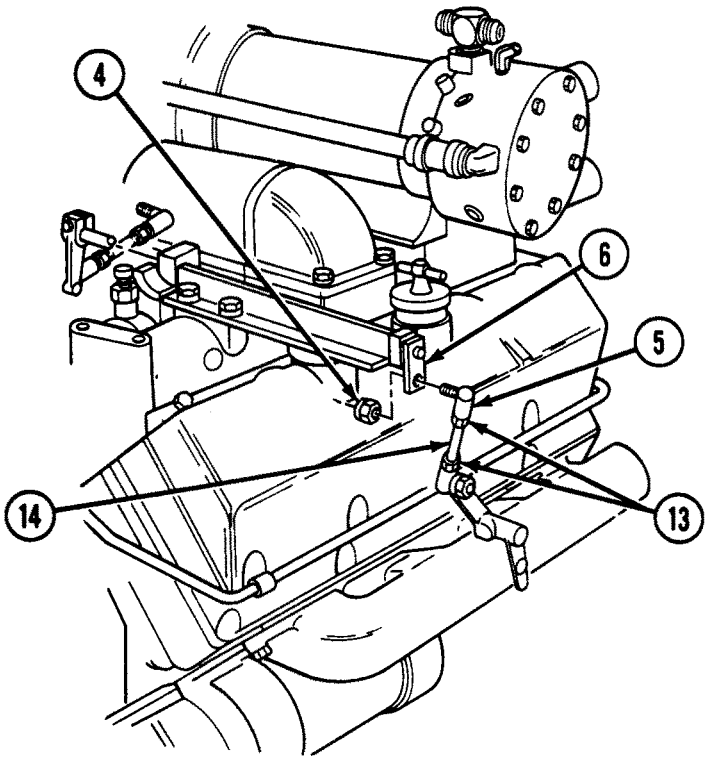
E Coat threads of rod (12) with sealing compound primer and sealing compound, and turn ball joint (10) and rod (12) until bellcrank (7) is vertical when ball joint (10) is connected to lever (11). Tighten two jamnuts (8).

F Connect ball joints (5) and (10) to bracket (6) and lever (11) with locknuts (4) and (9).

G If engine does not idle between 750 and 850 rpm, loosen two jamnuts (13), remove locknut (4), and disconnect ball joint (5) from bracket (6).

H Coat threads of rod (14) with sealing compound primer and sealing compound, and turn ball joint (5) and rod (14) until engine idle speed is between 750 and 850 rpm when ball joint (5) is connected to bracket (6). Tighten two jamnuts (13).

I Connect ball joint (5) to bracket (6) with locknut (4).



J Move hand throttle lever (3) forward to FULL. If engine speed does not reach 2,600 rpm under load, loosen jamnut (15).

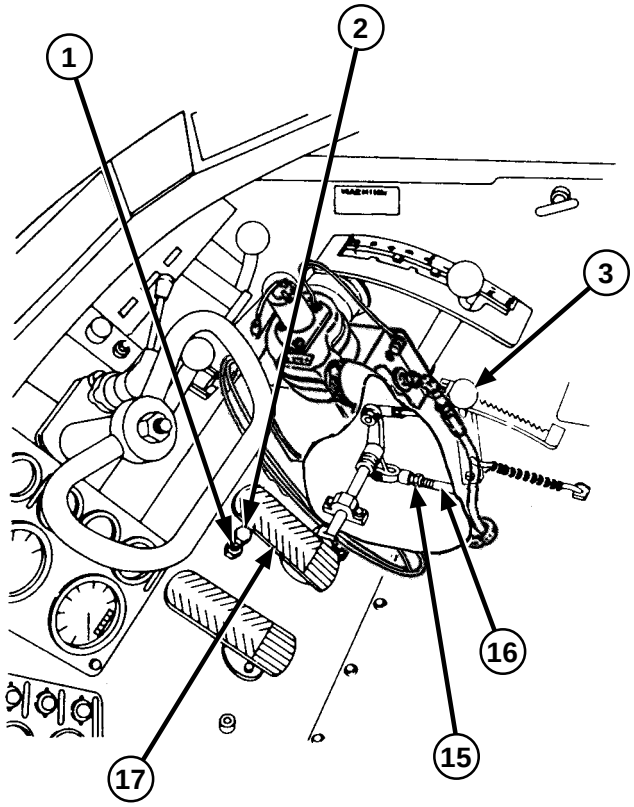
Note

If engine speed will not reach 2,600 rpm by adjusting rod, notify direct support maintenance.

K Coat threads of rod (16) with sealing compound primer and sealing compound. Turn rod (16) until engine reaches 2,600 rpm. Tighten jamnut (15), return hand throttle lever (3) to idle, and shut off engine.

L Move hand throttle lever (3) to FULL. Turn screw (2) counterclockwise until head of screw (2) touches accelerator pedal (17). Tighten jamnut (1).

FOLLOW-ON TASK:
Close engine intake grilles and access covers (TM 5-2350-262-10).



ACCELERATOR AND THROTTLE LINKAGE REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Repair
d. Assembly
e. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 11 Appendix D
Sealing Compound Primer	Item 13 Appendix D
Solid Film Lubricant	Item 24 Appendix D

Parts:

Cotter Pin

Locknut (6)

Lockwasher (6)

Self-locking Screw (8)

Parts Reference:

TM 5-2350-262-24P	Group AA Group AN

Reference:

TM 5-2350-262-10

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Access Covers Opened
TM 5-2350-262-10	Ejector Forward
Page 4-823	Driver's Seat Removed

General Safety Instructions:

WARNING

- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool.
- Do not disconnect accelerator and throttle linkage without disconnecting return springs first.

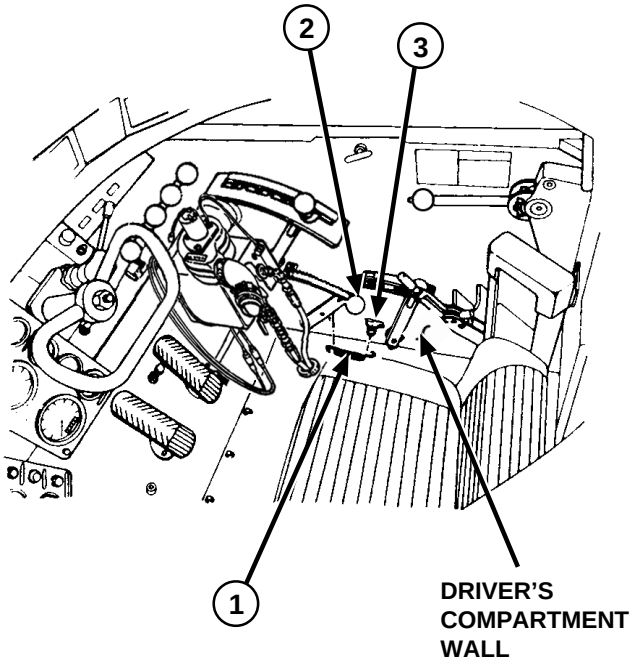
REMOVAL

WARNING

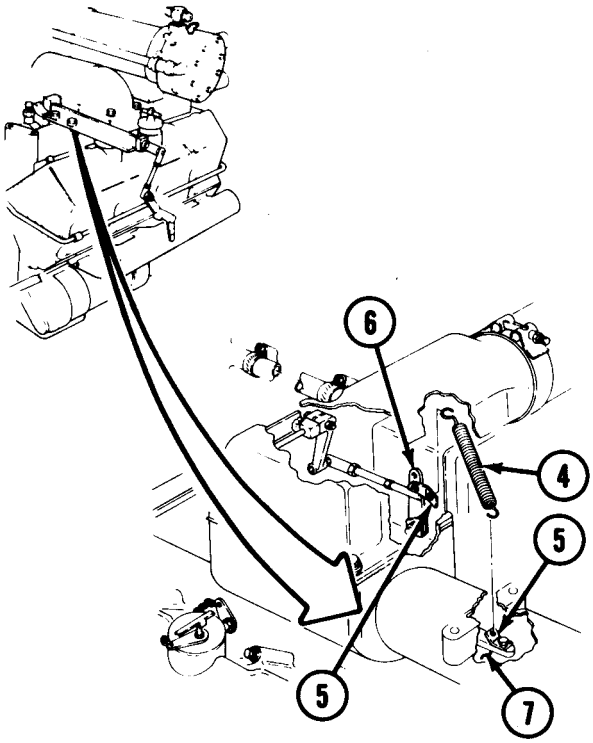
- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in injury to personnel.
- Do not disconnect accelerator and throttle linkage without disconnecting return springs first. Failure to comply may result in damage to equipment or injury to personnel.

Note

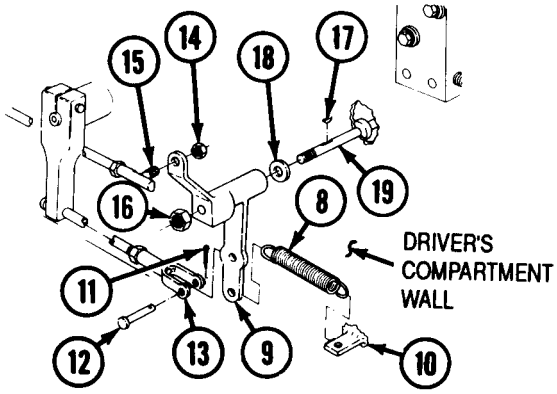
Ends of springs may have to be straightened to remove the springs.



A Remove spring (1) from hand throttle lever (2) and welded loop (3) on inside driver's compartment wall.



B Remove spring (4) from two links (5) on fuel pump throttle (6) and intake manifold (7).

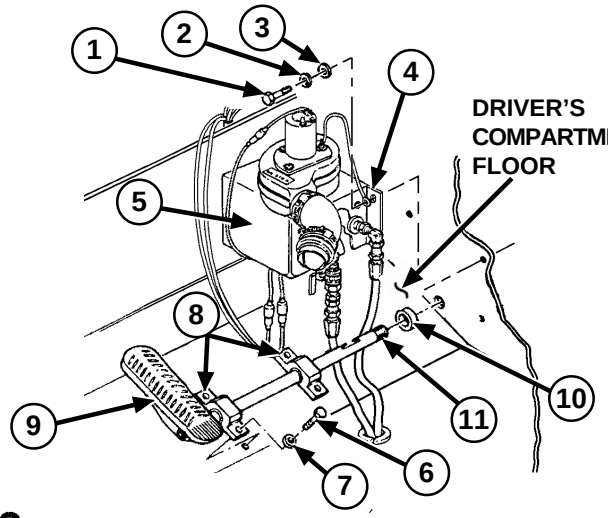


C Remove spring (8) from lever of bellcrank (9) and weld loop (10) on outside driver's compartment wall.

D Remove cotter pin (11) and pin (12), and disconnect clevis (13) from bellcrank (9). Discard cotter pin (11).

E Remove locknut (14) and ball joint (15) from bellcrank (9). Discard locknut (14).

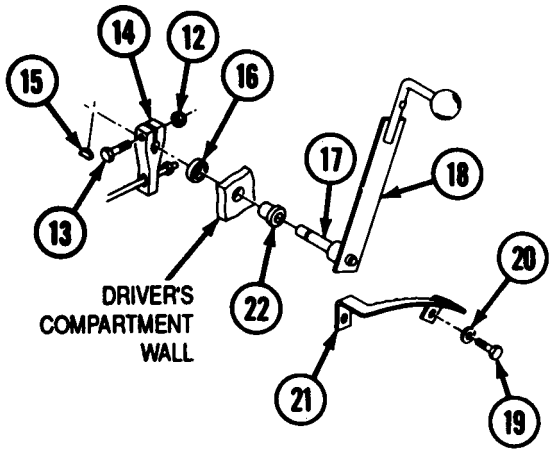
F Remove locknut (16), bellcrank (9), woodruff key (17), and washer (18) from shaft of accelerator pedal (19). Discard locknut (16).



G Remove three screws (1), lockwashers (2), and washers (3) from heater flange (4), and move heater (5) aside. Discard lockwashers (2).

H Remove four self-locking screws (6) and washers (7) from two bearing blocks (8), and remove accelerator pedal (9) from driver's compartment floor. Discard self-locking screws (6).

I Remove spacer (10) from shaft (11) of accelerator pedal (9).



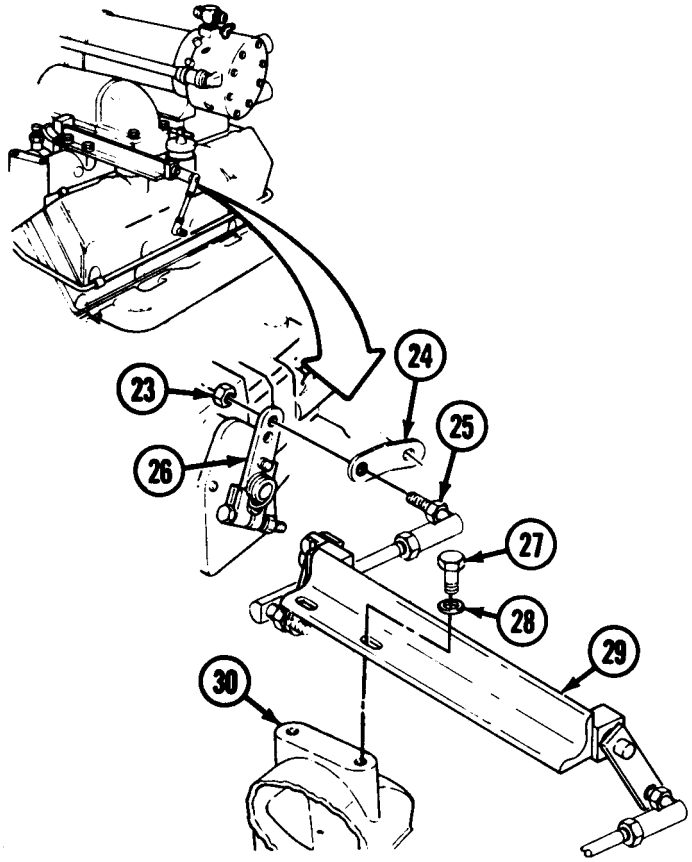
J Remove locknut (12), screw (13), control link (14), woodruff key (15), and spacer (16) from shaft (17) of hand throttle lever (18). Discard locknut (12).

K Remove two self-locking screws (19), washers (20), and hand throttle plate (21) from driver's compartment wall. Discard self-locking screws (19).

L Remove hand throttle lever (18) and flanged bearing (22) from driver's compartment wall.

M Remove locknut (23), link (24), and ball joint (25) from fuel pump throttle lever (26). Discard locknut (23).

N Remove two self-locking screws (27), washers (28), and bracket (29) from intake manifold (30). Discard self-locking screws (27).



DISASSEMBLY

Note

Mark location of clevis and ball joints before disassembling rods.

A Loosen two jamnuts (1) on rod (2), and remove ball joint (3), rod (2), and jamnuts (1) from ball joint (4).

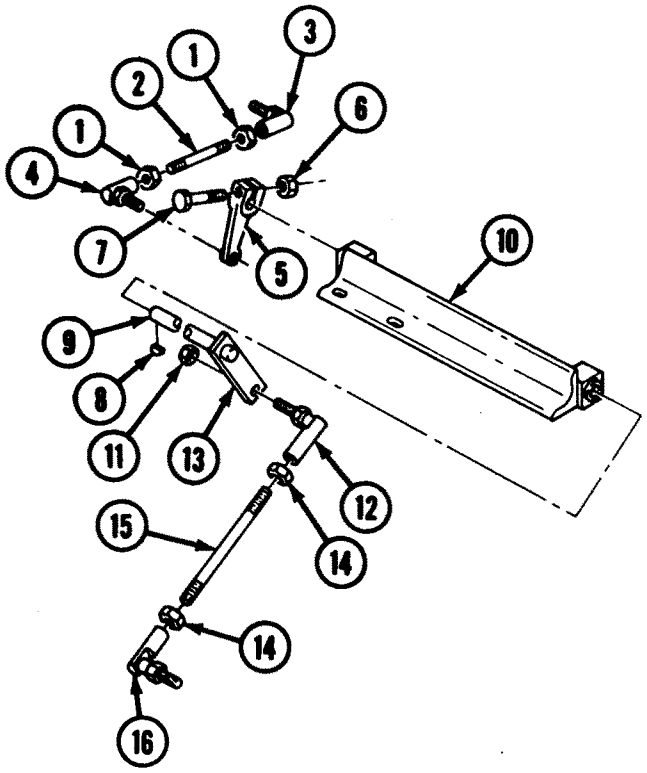
B Remove ball joint (4) from bellcrank (5).

C Remove locknut (6), screw (7), bellcrank (5), and woodruff key (8) from straight shaft (9). Discard locknut (6).

D Remove straight shaft (9) from bracket (10).

E Remove locknut (11) and ball joint (12) from lever (13) of straight shaft (9). Discard locknut (11).

F Loosen two jamnuts (14) on rod (15), and remove ball joints (12) and (16) and jamnuts (14) from rod (15).

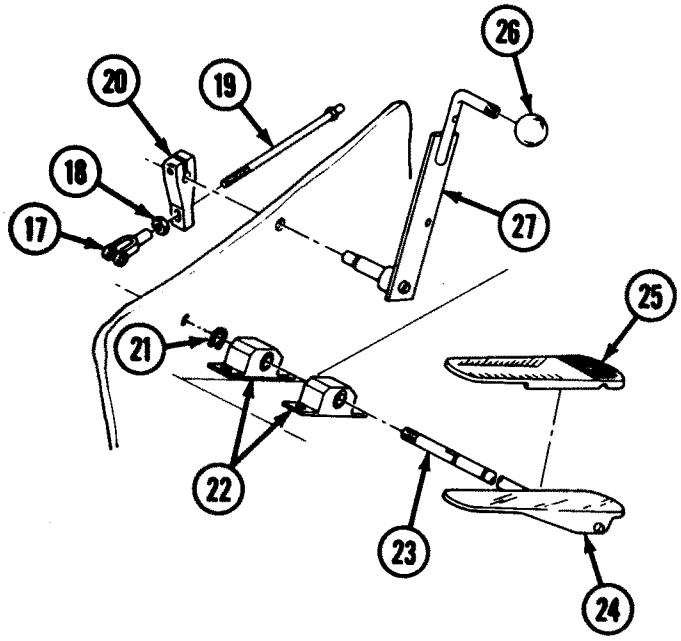


G Remove clevis (17), jamnut (18), and rod (19) from throttle link (20).

H Remove retaining ring (21) and two bearing blocks (22) from shaft (23) of accelerator pedal (24).

I Remove pad (25) from accelerator pedal (24).

J Remove knob (26) from hand throttle lever (27).



REPAIR

Use general repair methods to repair damaged parts (p 2-25) and replace all unserviceable parts.

ASSEMBLY

Note

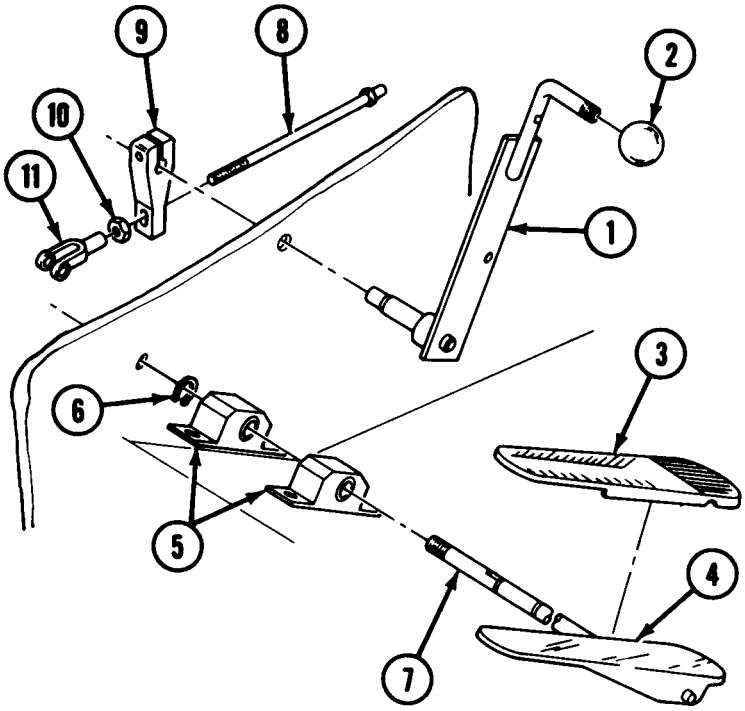
Ensure ball joints and clevis are installed on rods at marked locations.

A Coat threads of throttle lever (1) with sealing compound primer and sealing compound, and install ball (2) on throttle lever (1).

B Install pad (3) on accelerator pedal (4).

C Install two bearing blocks (5) and retaining ring (6) on shaft (7) of accelerator pedal (4).

D Coat threads of rod (8) with sealing compound primer and sealing compound, and install rod (8) on throttle link (9) with jamnut (10) and clevis (11).



E Coat threads of rod (12) with sealing compound primer and sealing compound, and install two jamnuts (13) and ball joints (14) and (15) on rod (12).

F Install ball joint (15) on lever (16) of straight shaft (17) with locknut (18).

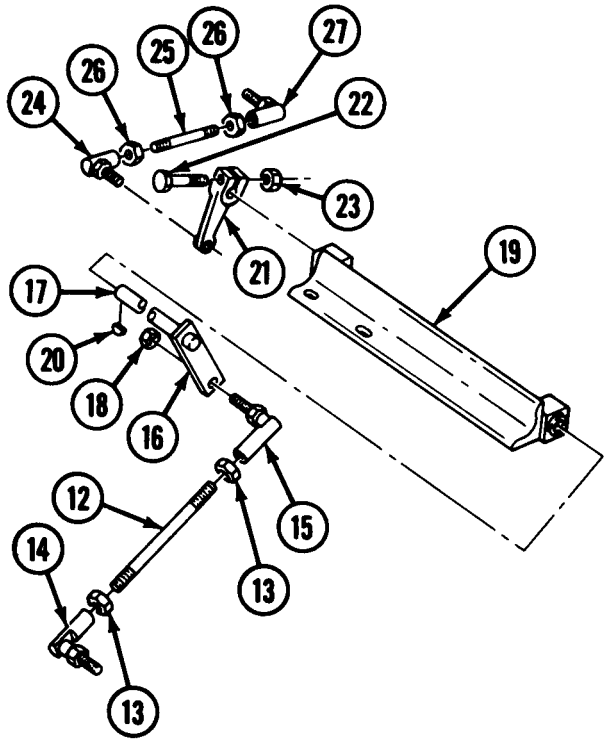
G Coat straight shaft (17) with solid film lubricant, and install straight shaft (17) on bracket (19).

H Install woodruff key (20) and bellcrank (21) on straight shaft (17) with screw (22) and locknut (23).

I Install ball joint (24) on bellcrank (21).

J Coat threads of rod (25) with sealing compound primer and sealing compound, and install two jamnuts (26) and ball joint (27) on rod (25).

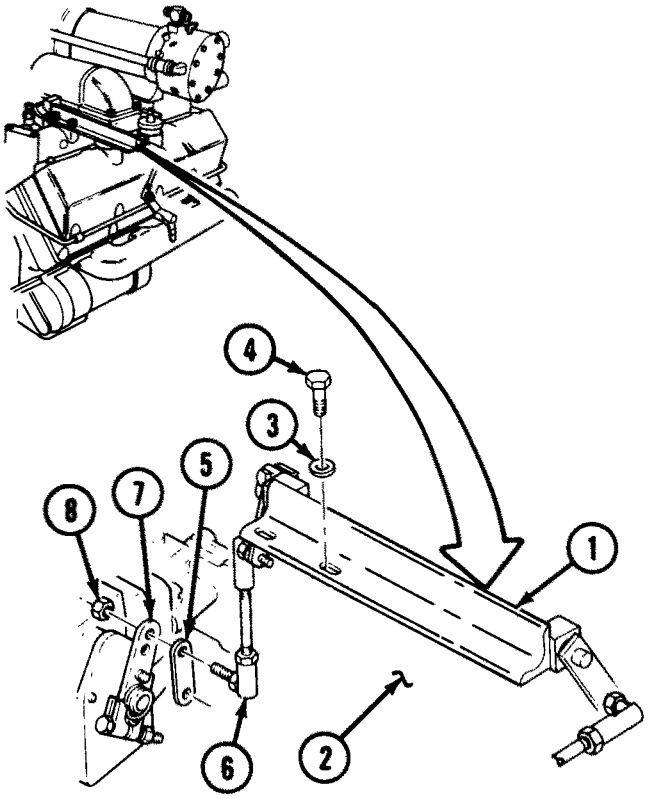
K Install rod (25) on ball joint (24).

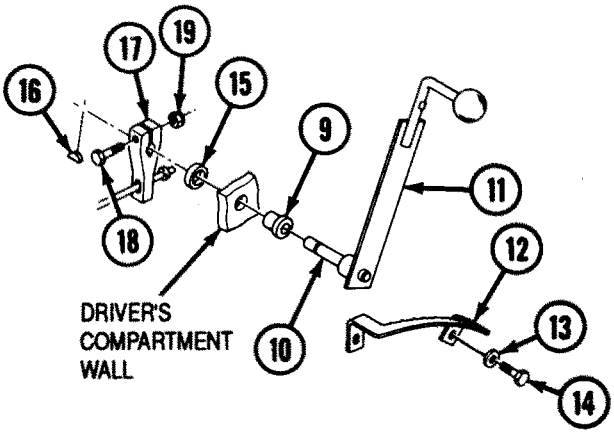


INSTALLATION

A Install bracket (1) on intake manifold (2) with two washers (3) and self-locking screws (4).

B Connect link (5) and ball joint (6) to fuel pump throttle lever (7) with locknut (8).

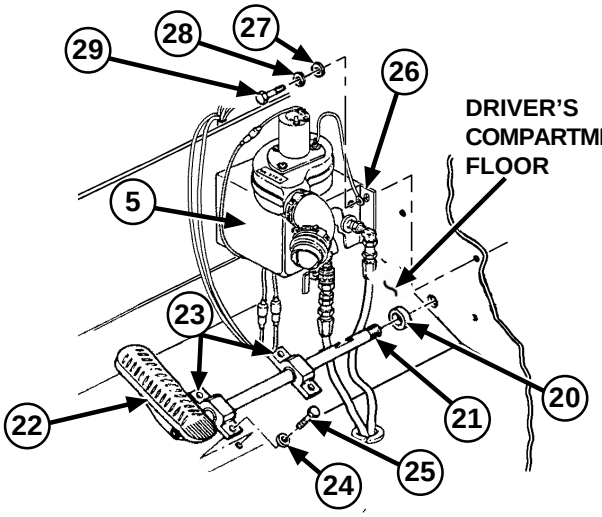




C Install flanged bearing (9) on driver's compartment wall.

D Position shaft (10) of hand throttle lever (11) through flanged bearing (9), and install hand throttle plate (12) on driver's compartment wall with two washers (13) and self-locking screws (14).

E Install spacer (15), woodruff key (16), and hand throttle link (17) on shaft (10) of hand throttle lever (11) with screw (18) and locknut (19).



F Install spacer (20) on shaft (21) of accelerator pedal (22).

G Install accelerator pedal (22) on driver's compartment floor with two bearing blocks (23), four washers (24), and self-locking screws (25).

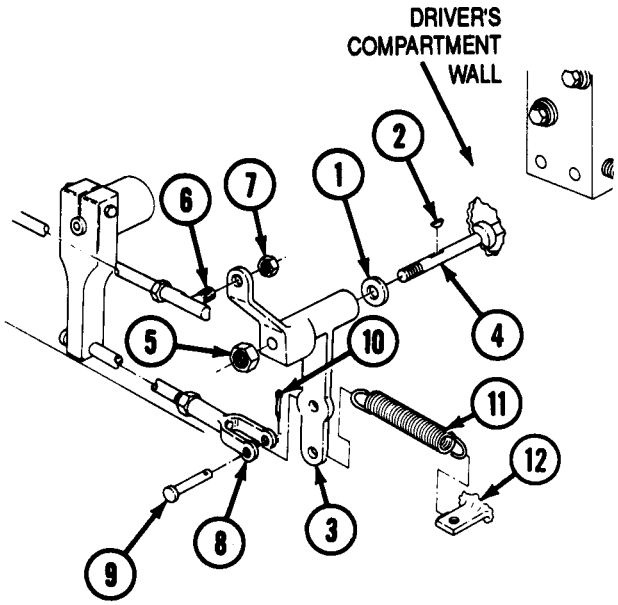
H Install heater (26) on driver's compartment wall with three washers (27), lockwashers (28), and screws (29).

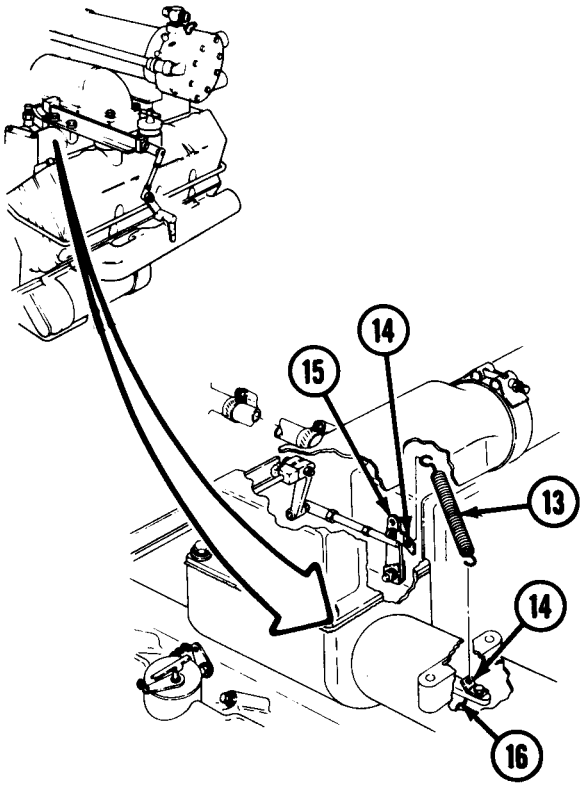
I Install washer (1), woodruff key (2), and bellcrank (3) on shaft of accelerator pedal (4) with locknut (5).

J Connect ball joint (6) to bellcrank (3) with locknut (7).

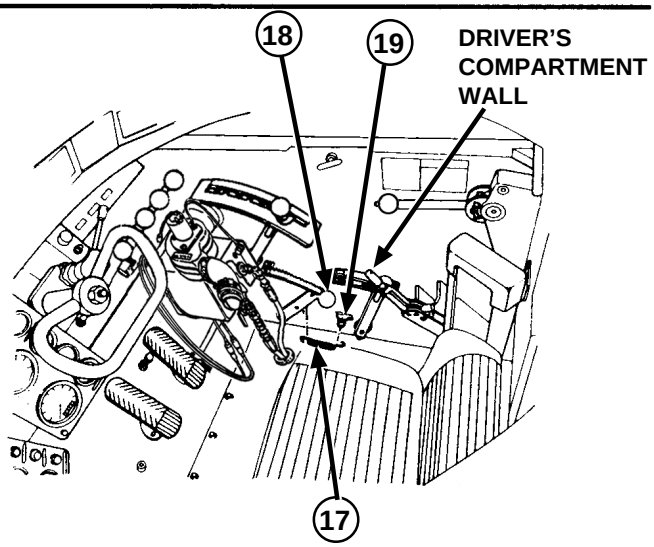
K Install clevis (8) on bellcrank (3) with straight pin (9) and cotter pin (10).

L Install spring (11) on lever of bellcrank (3) and welded loop (12) on outside driver's compartment wall.





M Install spring (13) on two links (14) on fuel pump throttle (15) and intake manifold (16).



N Install spring (17) on hand throttle lever (18) and welded loop (19) on inside driver's compartment wall.

FOLLOW-ON TASKS:

- Install driver's seat (p 4-831).
- Retract ejector (TM 5-2350-262-10).
- Adjust throttle and accelerator linkage (p 4-4).
- Close engine intake grilles and access covers (TM 5-2350-262-10).

Section II. GROUP AB, AIR SYSTEM INSTALLATION

TASK	PAGE
Air Compressor Governor Adjustment	4-27
Air Compressor Governor Replacement	4-30
Air Lines and Fittings Replacement	4-14
Air Reservoir Replacement	4-24
Brake Chamber Replacement and Adjustment	4-21
Service Brake Valve Replacement	4-34
Trailer Brake Coupling and Valve Replacement	4-32
Trailer Brake Valve Replacement	4-37
Deleted	

AIR LINES AND FITTINGS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 **Appendix D**

Parts Reference:

TM 5-2350-262-24P	Group AB

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-161	Brakes Weak or Inoperative
Page 3-169	Trailer Brakes Weak or Inoperative
Page 3-305	LOW AIR Pressure Warning Light Stays Lit When Vehicle is Running

Deleted

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Access Covers Opened
TM 5-2350-262-10	Ejector Forward
Page 2-27	Air Pressure Relieved
Page 4-354	Driver's Compartment Step Removed
Page 4-359	Driver's Compartment Floor Plate Removed

General Safety Instructions:

WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved.

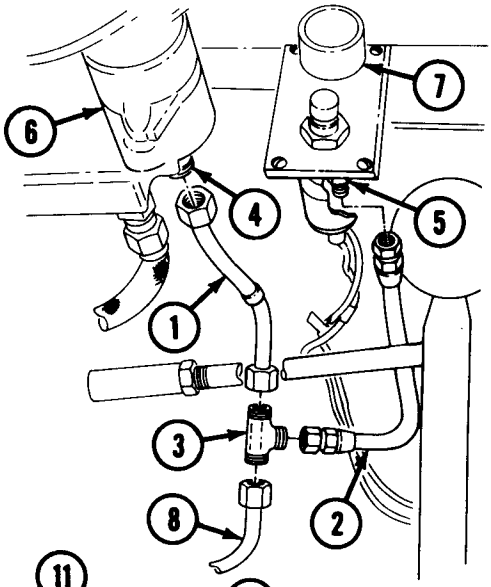
REMOVAL

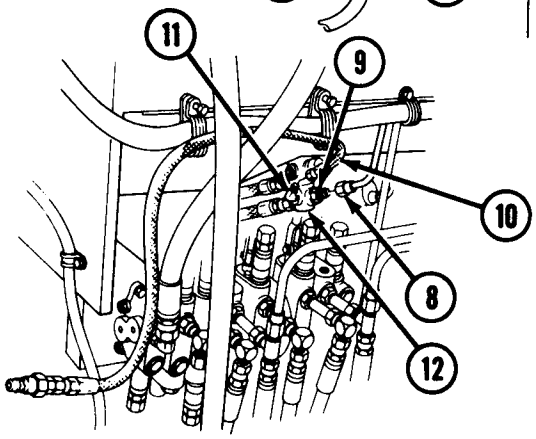
WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved. Failure to comply may result in injury to personnel.

Note

- All air system tubes, hoses, and fittings are removed the same way. This procedure covers replacement of service brake valve lines.
- Tag all tubes, hoses, and fittings prior to removal for installation.

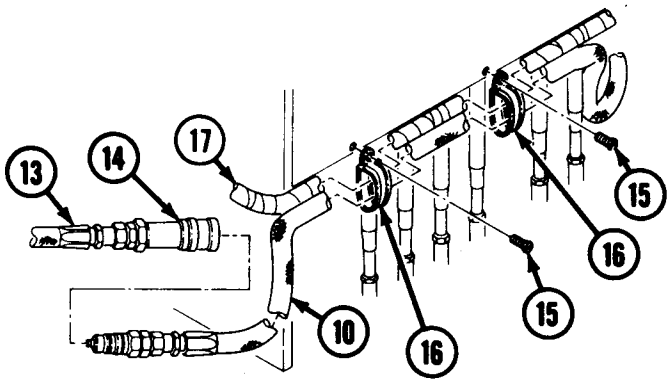




A In driver's compartment, remove tubes (1) and (2) from tee (3) and adapters (4) and (5) on trailer brake valve (6) and wiper control valve (7).

B Remove tee (3) from tube (8).

C Remove tube (8) from adapter (9) and hose (10) from elbow (11) on service brake valve (12).

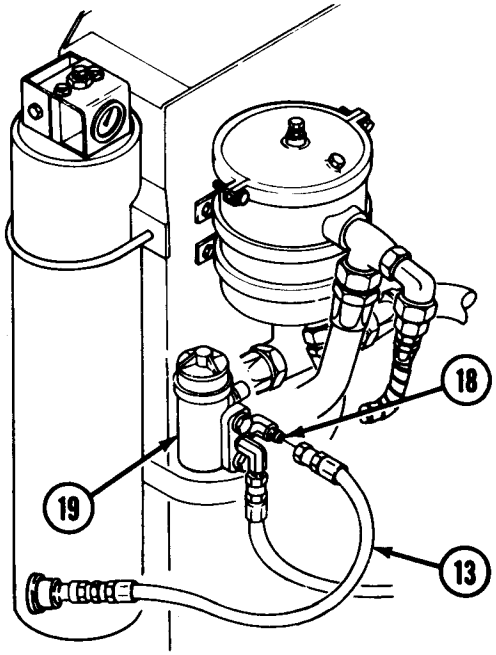


Note

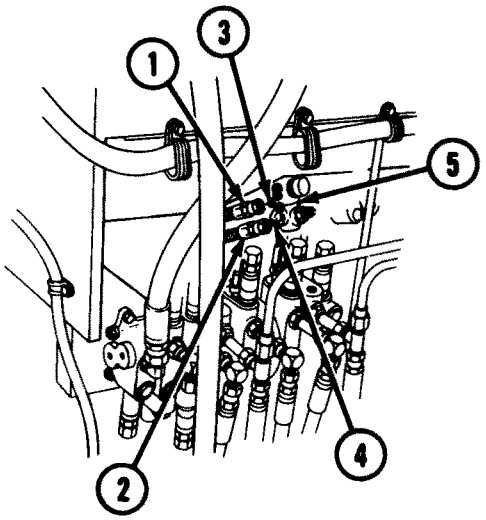
If quick-disconnect is not operating properly, refer to p 2-34 for general repair methods.

D Disconnect hoses (13) and (10) at quick-disconnect (14).

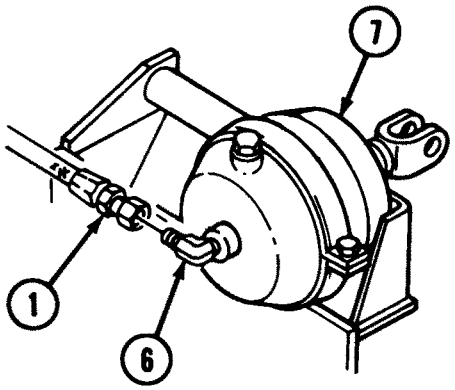
E Remove two screws (15), clamps (16), and hose (10) from wiring harness (17) and bowl side of driver's compartment wall.



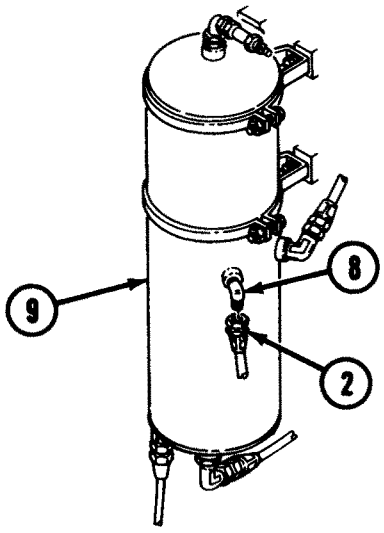
F Remove hose (13) from elbow (18) on air compressor governor (19).



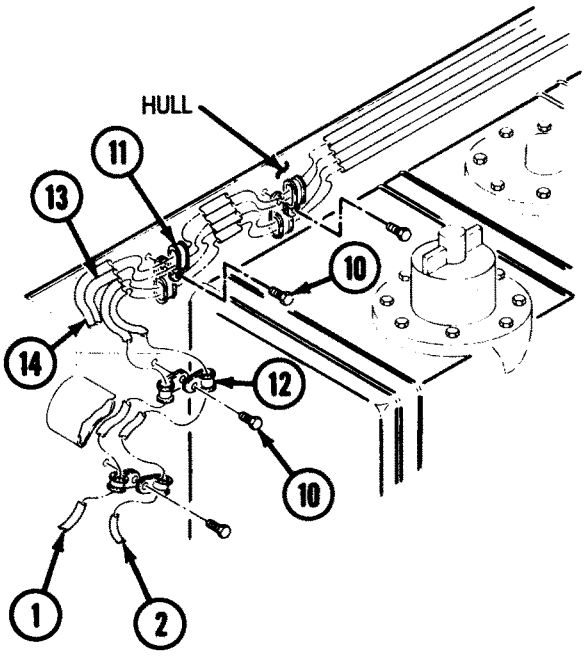
G Disconnect hoses (1) and (2) from adapters (3) and (4) on service brake valve (5).



H Disconnect hose (1) from elbow (6) on air brake chamber (7).

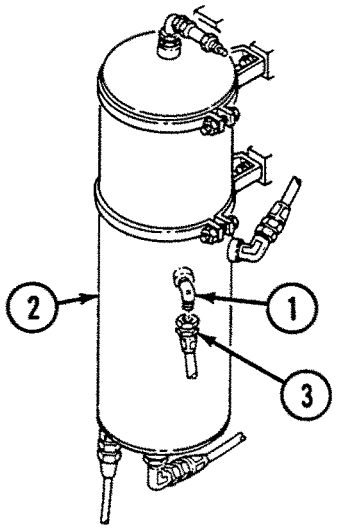


I Disconnect hose (2) from elbow (8) on air reservoir (9).

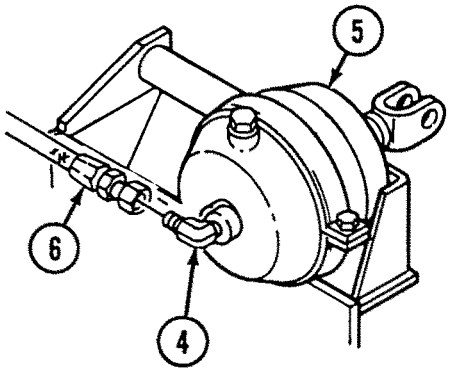


J Working through driver's compartment floor, remove four screws (10), clamps (11) and (12), and hoses (1) and (2) from hull. Do not remove clamps (11) from hose (13) and harness (14).

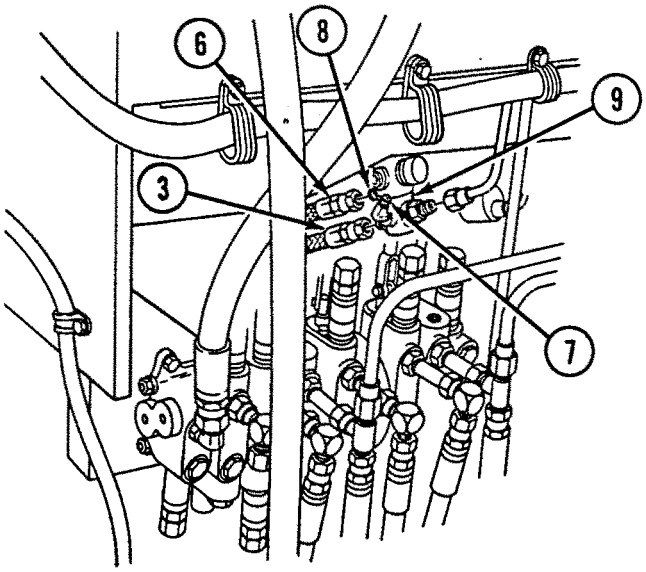
INSTALLATION



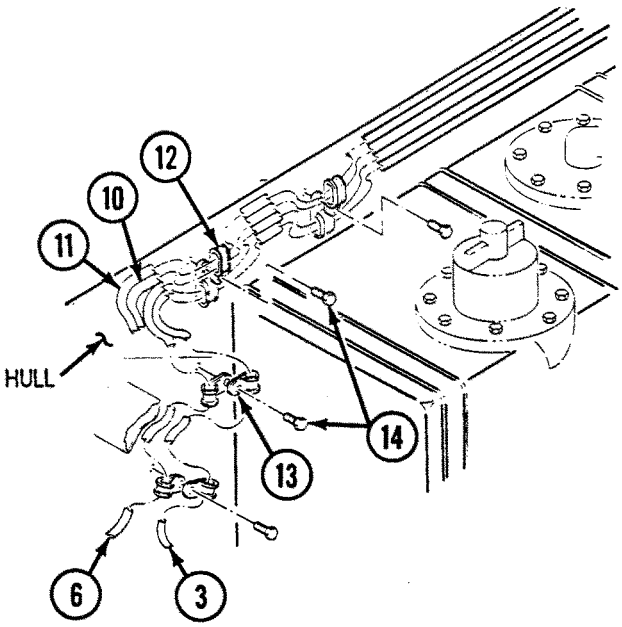
A Coat threads of elbow (1) on air reservoir (2) with sealing compound, and install hose (3) on elbow (1).



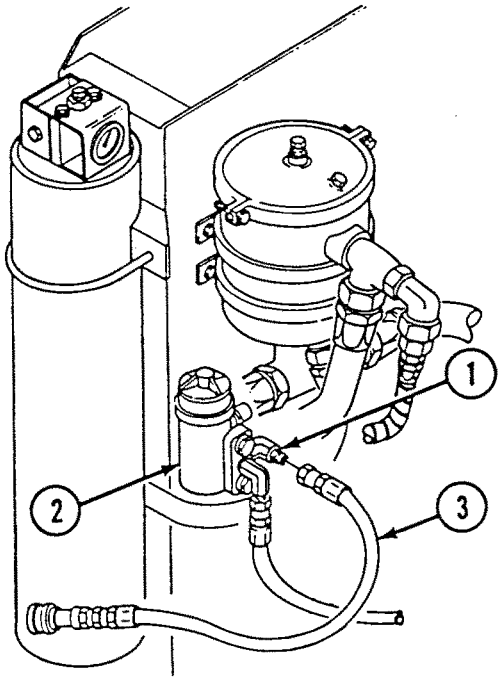
B Coat threads of elbow (4) on air brake chamber (5) with sealing compound, and install hose (6) on elbow (4).



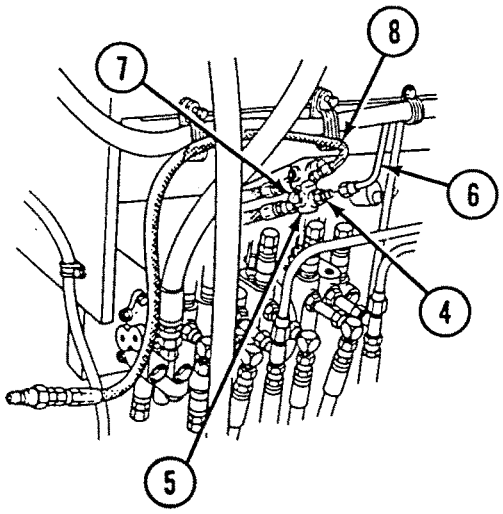
C Coat threads of adapters (7) and (8) on service brake valve (9) with sealing compound, and connect hoses (3) and (6) to adapters (7) and (8).



D Working through driver's compartment floor, secure hoses (3), (6), and (10) and wiring harness (11) to hull with four clamps (12) and (13) and screws (14).

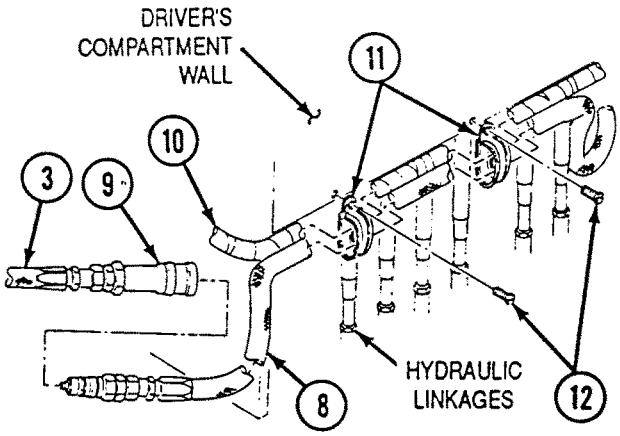


E Coat threads of elbow (1) on air compressor governor (2) with sealing compound and install hose (3) on elbow (1).



F Coat threads of adapter (4) on service brake valve (5) with sealing compound, and connect tube (6) to adapter (4). **Do not** tighten fitting on tube (6).

G Coat threads of elbow (7) on service brake valve (5) with sealing compound and install hose (8) on elbow (7).

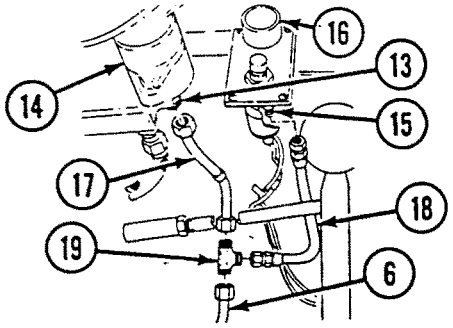


Note

Ensure hose is routed clear of hydraulic control valve linkages.

H Connect hoses (3) and (8) at quick-disconnect (9).

I Secure hose (8) and wiring harness (10) to bowl side of driver's compartment wall with two clamps (11) and screws (12).



J Coat threads of adapter (13) on trailer brake valve (14) and adapter (15) on wiper control valve (16) with sealing compound, and install tubes (17) and (18) on adapters (13) and (15). Do not tighten fittings on tubes (17) and (18).

K Coat threads of tee (19) with sealing compound, and connect tubes (17), (18), and (6) to tee (19). Tighten fittings on tubes (17), (18), and (6).

FOLLOW-ON TASKS:

- Install driver's compartment floor plate **(p 4-358).**
- Install driver's compartment step **(p 4-353).**
- Close engine intake grilles and access covers **(TM 5-2350-262-10).**
- Retract ejector **(TM 5-2350-262-10).**

BRAKE CHAMBER REPLACEMENT AND ADJUSTMENT

This task covers:

a. Removal

b. Installation

c. Adjustment

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 Appendix D

Parts:

Cotter Pin

Lockwasher (2)

Parts Reference:

TM 5-2350-262-24P	Group AB

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-161	Brakes Weak or Inoperative

Reference:

TM 5-2350-262-10

Equipment Condition:

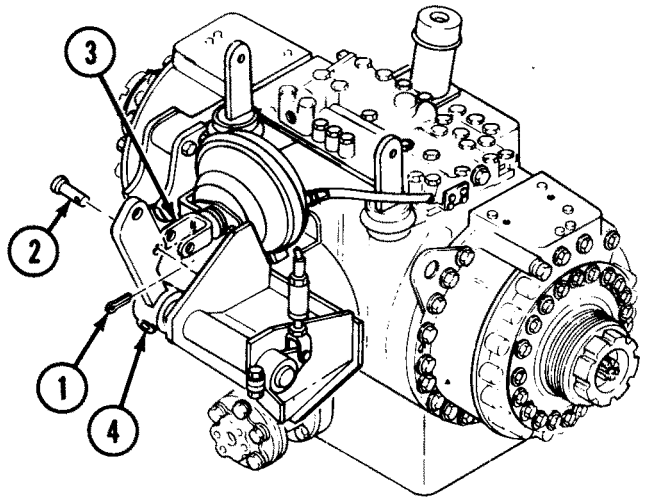
Reference	Condition Description
TM 5-2350-262-10	Parking Brake Released
Page 2-27	Air Pressure Relieved
Page 4-650	Radiator Removed
Page 4-55	Brake Linkage Removed

General Safety Instructions:

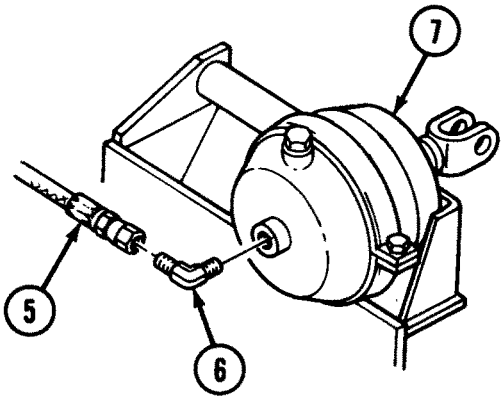
WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved.

REMOVAL



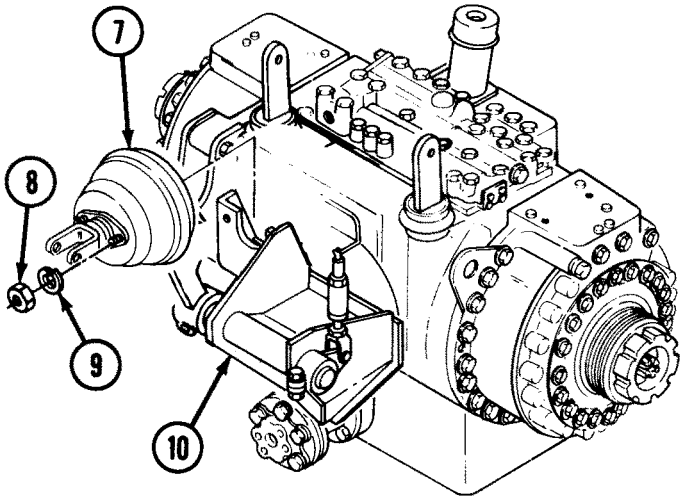
A Remove cotter pin (1), straight pin (2), and yoke (3) from lever (4). Discard cotter pin (1).



WARNING

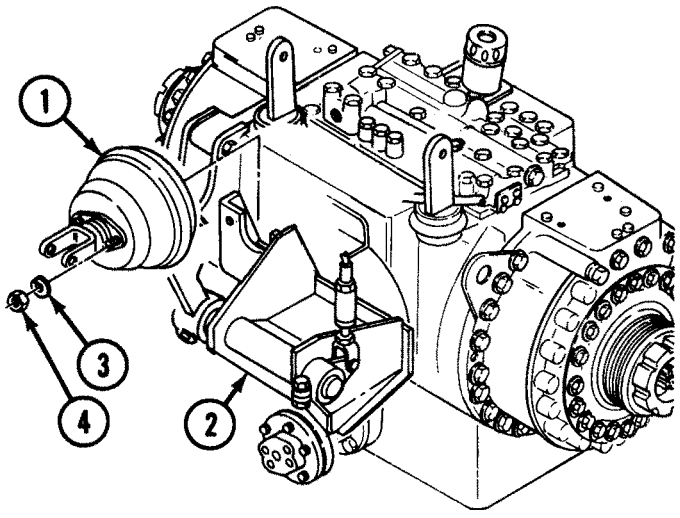
Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved. Failure to comply may result in injury to personnel.

B Disconnect hose (5) from elbow (6) and remove elbow (6) from brake chamber (7).

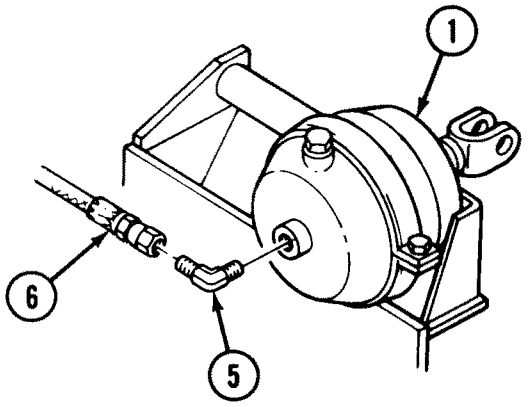


C Remove two nuts (8), lockwashers (9), and brake chamber (7) from bracket (10). Discard lockwashers (9).

INSTALLATION

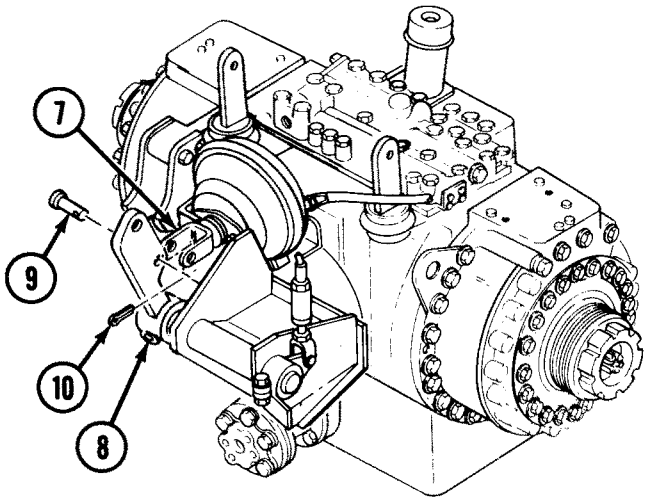


A Install brake chamber (1) on bracket (2) with two lockwashers (3) and nuts (4).



B Coat threads of elbow (5) with sealing compound, and install elbow (5) on brake chamber (1).

C Connect hose (6) to elbow (5).



D Install yoke (7) on lever (8) with straight pin (9) and cotter pin (10).

ADJUSTMENT

A If installed, remove rear floor plates (p 4-361).

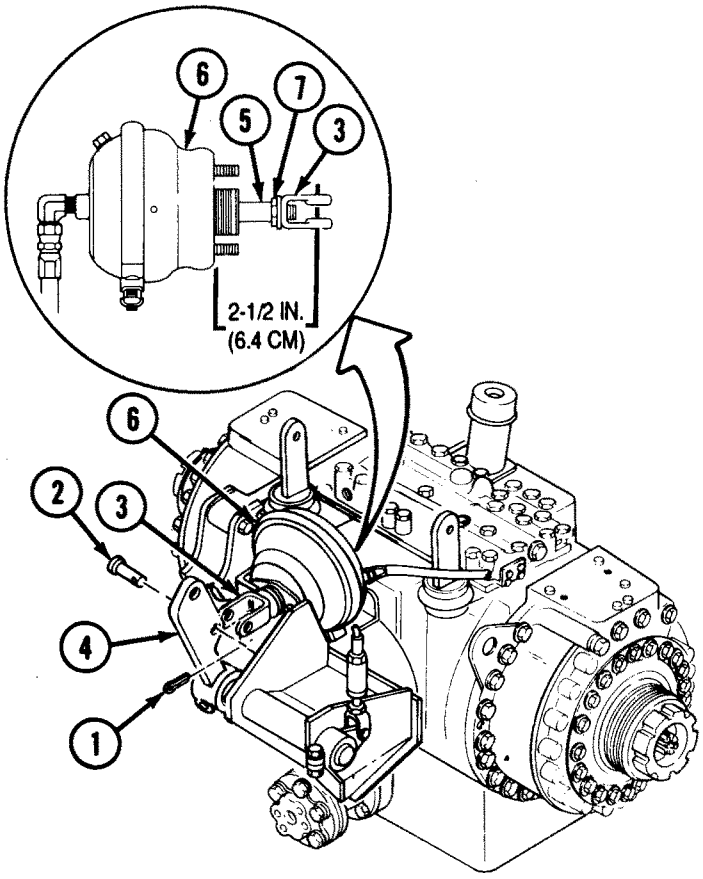
B Remove cotter pin (1) and straight pin (2) from clevis (3), and pull clevis (3) free from lever (4). Discard cotter pin (1).

C Pull rod (5) out to end of travel, and measure distance from brake chamber (6) to center line of holes in clevis (3). Maximum stroke is 2-1/2 in. (6.4 cm).

D If maximum stroke is not 2-1/2 in. (6.4 cm), loosen jamnut (7) and turn clevis (3) until maximum stroke is 2-1/2 in. (6.4 cm). Tighten jamnut (7).

E Connect clevis (3) to lever (4) with straight pin (2) and cotter pin (1).

FOLLOW-ON TASKS:
- Install brake linkage (p 4-57).
- Install radiator (p 4-652).
- Install rear floor plates (p 4-361).



AIR RESERVOIR REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 Appendix D

Parts:

Lockwasher (4)

Parts Reference:

TM 5-2350-262-24P	Group AB

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting References:

Page 3-161	Brakes Weak or Inoperative
Page 3-305	LOW AIR Pressure Warning Light Stays Lit When Vehicle is Running

Equipment Condition:

Reference	Condition Description
Page 2-27	Air Pressure Relieved
Page 4-44	Liquid Container Bracket Assembly Removed
Page 2-354	Driver's Compartment Step Removed

General Safety Instructions:

WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved.

REMOVAL

WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved. Failure to comply may result in injury to personnel.

Note

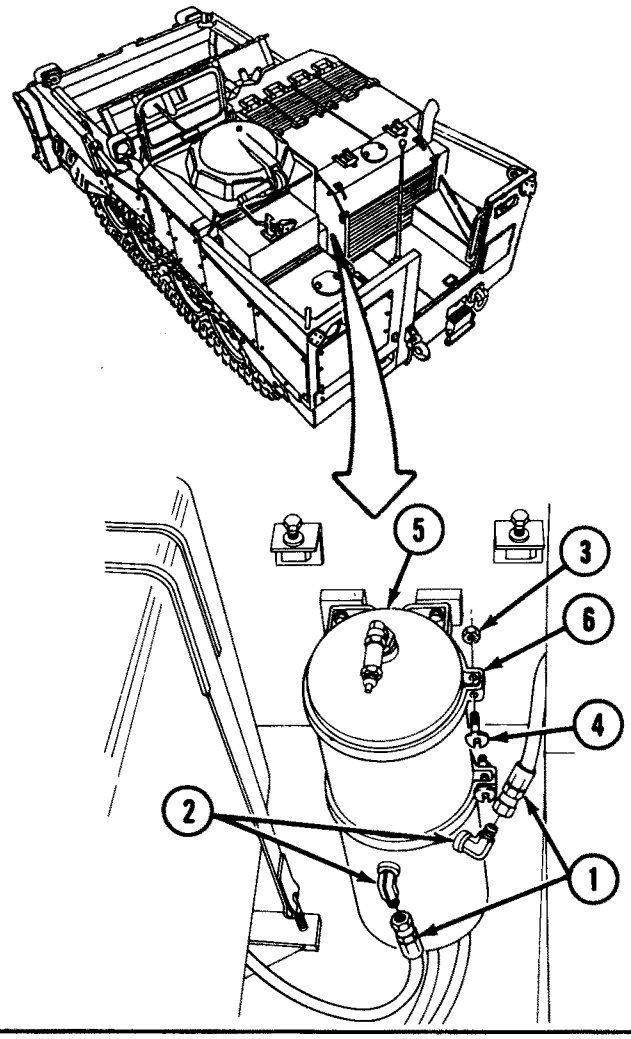
- Tag hoses prior to removal for installation.
- Note location of fittings prior to removal for installation.

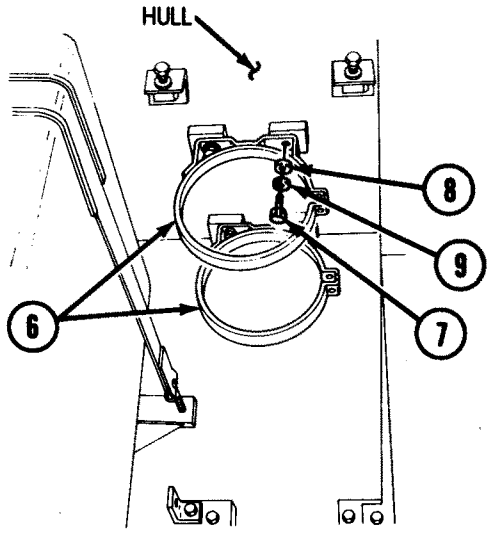
A Disconnect two hoses (1) from elbows (2).

CAUTION

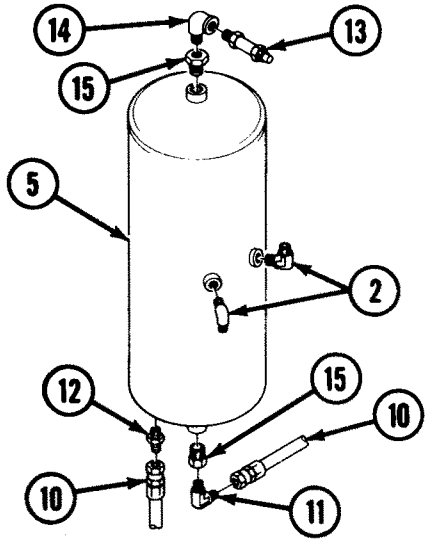
Air reservoir can drop suddenly when mounting bands are loosened, resulting in damage to reservoir.

B Remove two nuts (3), screws (4), and air reservoir (5) from two mounting clamps (6).





C Remove four screws (7), washers (8), lockwashers (9), and two mounting clamps (6) from hull. Discard lockwashers (9).



D Disconnect two hoses (10) from elbow (11) and adapter (12).

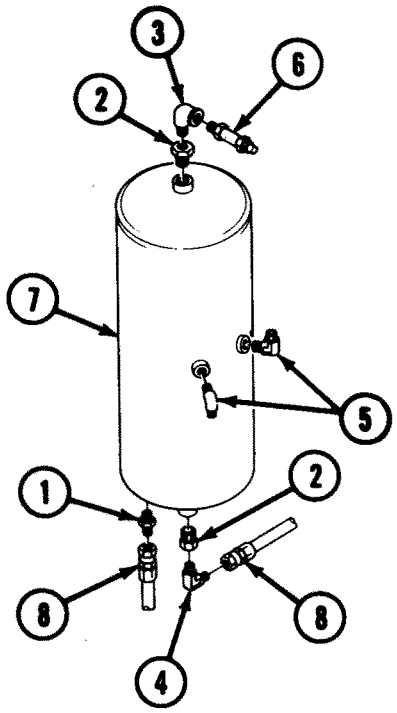
E Remove safety valve (13), two elbows (2), elbows (11) and (14), two bushings (15), and adapter (12) from air reservoir (5).

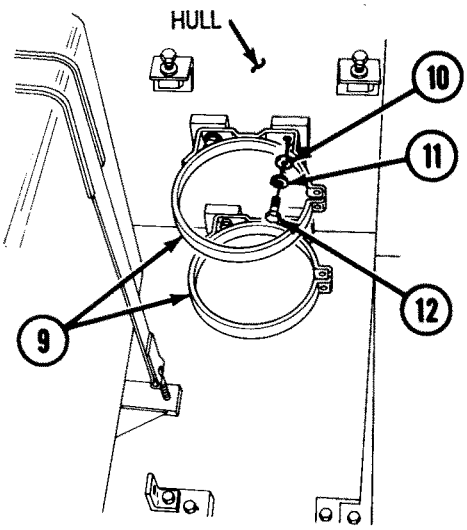
INSTALLATION

A Coat threads of adapter (1), two bushings (2), elbows (3) and (4), two elbows (5), and safety valve (6) with sealing compound.

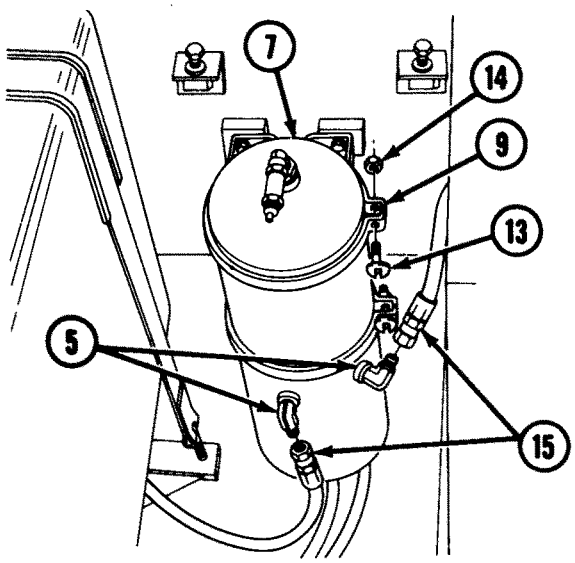
B Install adapter (1), two bushings (2), elbows (3) and (4), two elbows (5), and safety valve (6) on air reservoir (7).

C Connect two hoses (8) to adapter (1) and elbow (4).





D Install two mounting clamps (9) on hull with four washers (10), lockwashers (11), and screws (12).



E Install air reservoir (7) on two mounting clamps (9) with two screws (13) and nuts (14).

F Connect two hoses (15) to elbows (5).

FOLLOW-ON TASKS:

- Install driver's compartment step (p 4-354).
- Install liquid container bracket (p 4-44).

AIR COMPRESSOR GOVERNOR ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Kit, STE/ICE-R	4910-01-222-6589

Materials:

Sealing Compound	Item 10 Appendix D

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-161	Brakes Weak or Inoperative
Page 3-305	Low Air Pressure Warning Light Stays Lit When Vehicle is Running

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Engine Intake Grilles Opened
Page 2-27	Air Pressure Relieved

General Safety Instructions:

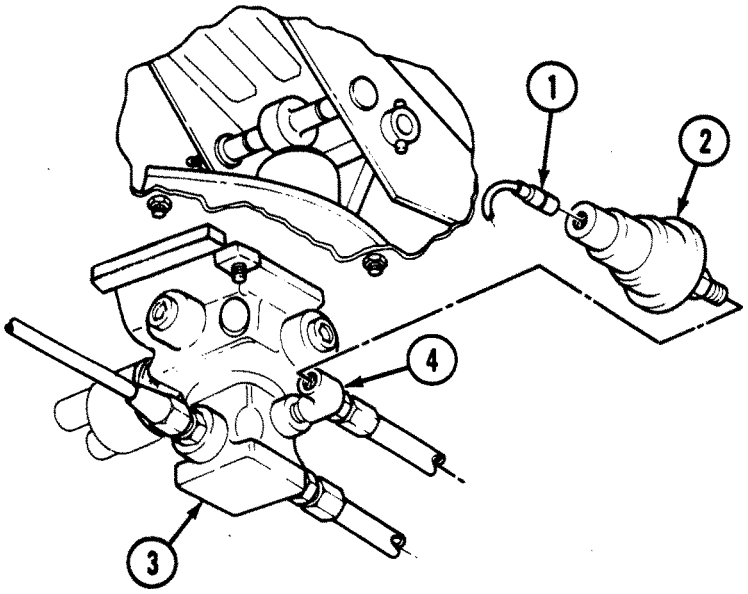
WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved.

ADJUSTMENT

WARNING

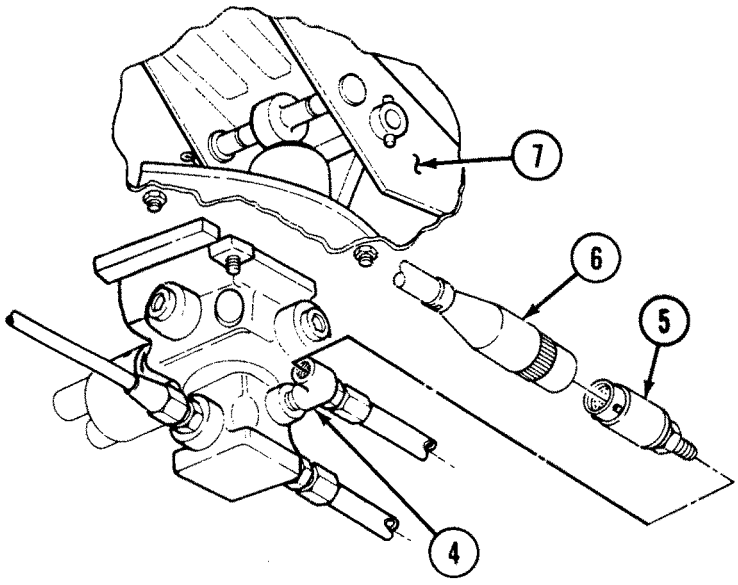
Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved. Failure to comply may result in injury to personnel.



A Disconnect electrical lead (1) from pressure switch (2) on service brake valve (3), and remove pressure switch (2) from elbow (4).

Note

Use 1,000 psi transducer supplied with STE/ICE-R kit 4910-01-222-6589 to perform this task.



B Install transducer (5) on elbow (4), and connect W4 cable (6) from VTM to transducer (5).

C Start engine (TM 5-2350-262-10) and run at idle (750-850 rpm) while assistant observes VTM. Air compressor should unload (pressure stabilizes) at 120-127 psi (827-876 kPa).

D Depress brake pedal (7) once while assistant observes VTM. Air compressor should load (pressure increases) at 102-108 psi (703-745 kPa).

E **If air compressor loads and unloads at correct pressures, shut off engine (TM 5-2350-262-10) and relieve air pressure (p 2-27).**

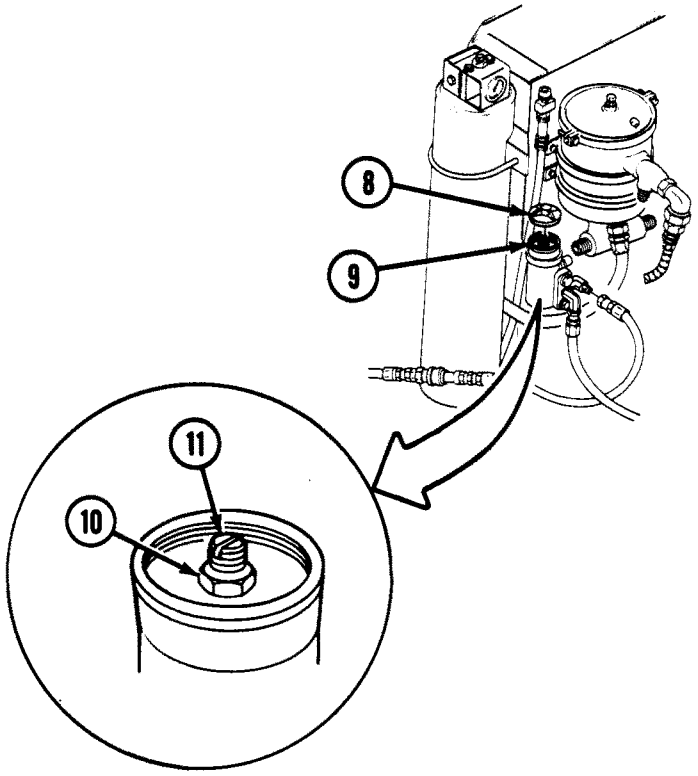
Note

Perform steps F through H if air compressor does not load and unload at correct pressures.

F Remove cap (8) from governor (9), and loosen jamnut (10) on adjusting screw (11).

G Turn adjusting screw (11) until air compressor loads at 102-108 psi (703-745 kPa) and unloads at 120-127 psi (827-876 kPa). Tighten jamnut (10), and install cap (8) on governor (9).

H If governor (9) does not regulate air compressor to load and unload at correct pressures, replace governor (9) (p 4-31).



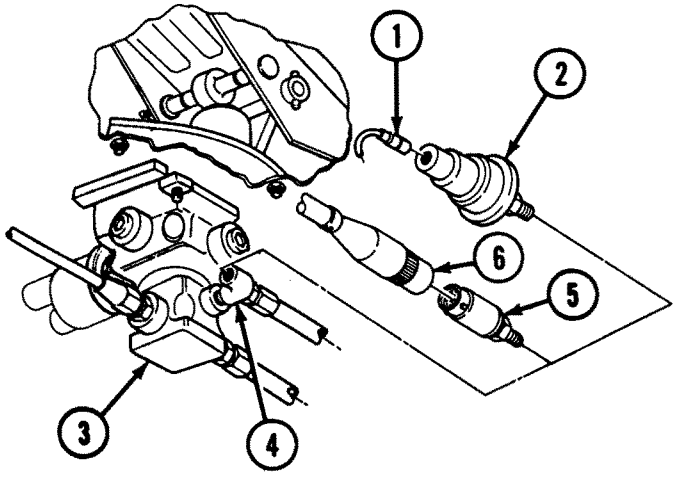
WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved. Failure to comply may result in injury to personnel.

I Disconnect cable (6) from transducer (5), and remove transducer (5) from elbow (4) on service brake valve (3).

J Coat threads of pressure switch (2) with sealing compound, and install pressure switch (2) on elbow (4).

K Connect electrical lead (1) to pressure switch (2).



FOLLOW-ON TASKS:

- Retract ejector (TM 5-2350-262-10).
- Close engine intake grilles (TM 5-2350-262-10).

AIR COMPRESSOR GOVERNOR REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 Appendix D

Parts:

Lockwasher (4)

Parts Reference:

TM 5-2350-262-24P	Group AB

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-161	Brakes Weak or Inoperative

Equipment Condition:

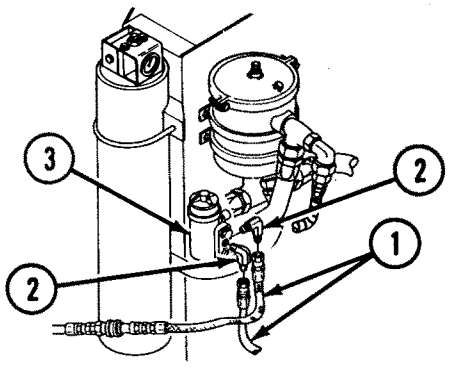
Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles Opened
Page 2-27	Air Pressure Relieved

General Safety Instructions:

WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved.

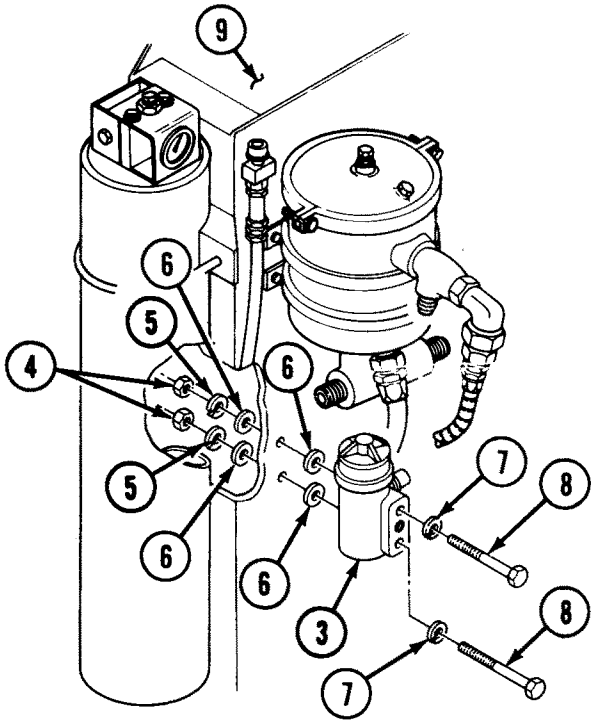
REMOVAL



WARNING

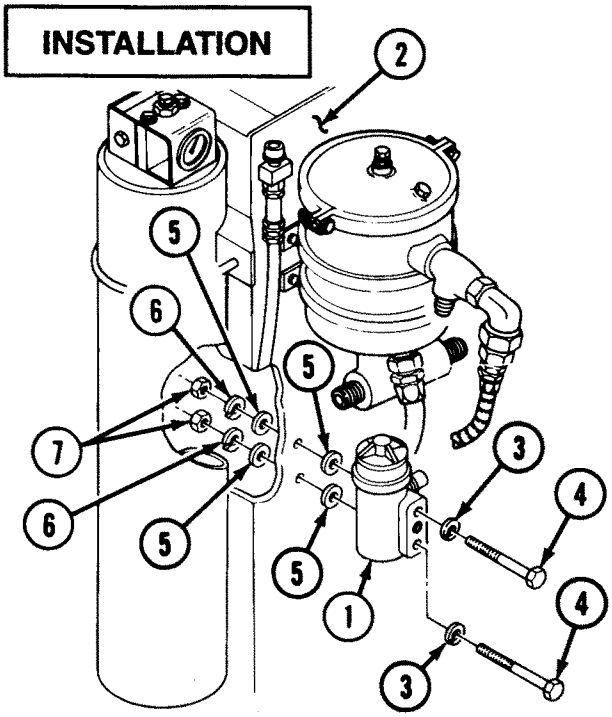
Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved. Failure to comply may result in injury to personnel.

A Disconnect two hoses (1) from elbows (2) on governor (3), and remove two elbows (2) from governor (3).

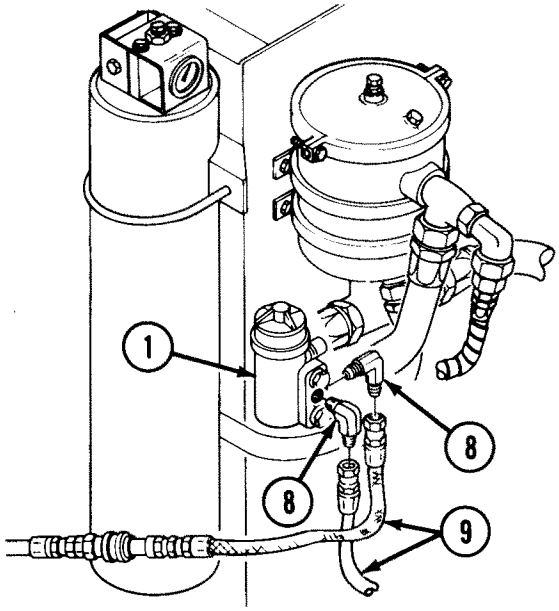


B Remove two nuts (4), lockwashers (5), four washers (6), governor (3), two lockwashers (7), and screws (8) from filter support (9). Discard lockwashers (5) and (7).

INSTALLATION



A Install governor (1) on filter support (2) with two lockwashers (3), screws (4), four washers (5), two lockwashers (6), and nuts (7).



B Coat threads of two elbows (8) with sealing compound, install elbows (8) on governor (1), and connect two hoses (9) to elbows (8).

FOLLOW-ON TASK:
Close engine intake grilles (TM 5-2350-262-10).

TRAILER BRAKE COUPLING AND VALVE REPLACEMENT

This task covers:

a. Removal
b. Inspection
c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 Appendix D

Parts:

Packing

Parts Reference:

TM 5-2350-262-24P	Group AB

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-169	Trailer Brakes Weak or Inoperative

Equipment Condition:

Reference	Condition Description
Page 2-27	Air Pressure Relieved

General Safety Instructions:

WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved.

REMOVAL

WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved. Failure to comply may result in injury to personnel.

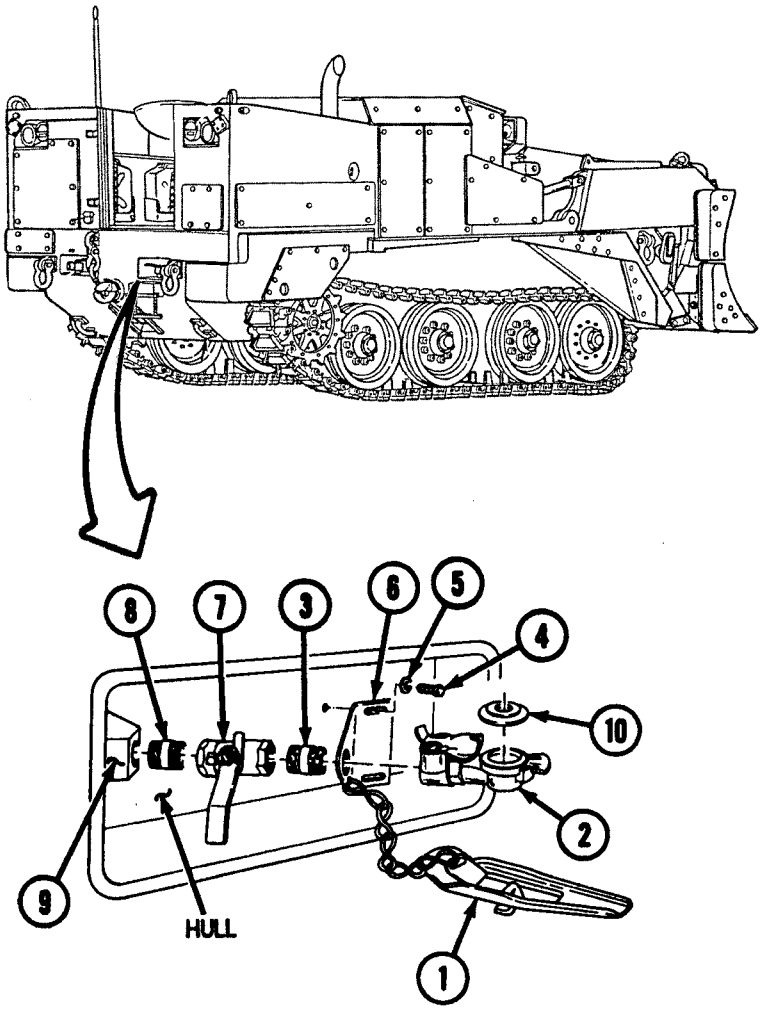
Note

Both brake couplings are replaced the same way.

A Disconnect dummy coupling (1) from coupling (2), and remove coupling (2) from nipple (3).

B Remove two screws (4), washers (5), and bracket (6) from hull and nipple (3).

C Remove nipple (3), ball valve (7), and nipple (8) from bulkhead (9).



INSPECTION

Inspect packing (10) in coupling (2) for signs of damage or deterioration. Remove and replace packing (10) if damaged or deteriorated.

INSTALLATION

A Coat threads of nipples (8) and (3) with sealing compound, and install nipple (8), ball valve (7), and nipple (3) on bulkhead (9).

B Install bracket (6) on nipple (3) and hull with two washers (5) and screws (4).

C Install coupling (2) on nipple (3), and connect dummy coupling (1) to coupling (2).

SERVICE BRAKE VALVE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 Appendix D

Parts:

Locknut (3)

Parts Reference:

TM 5-2350-262-24P	Group AB

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-161	Brakes Weak or Inoperative

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 2-27	Air Pressure Relieved
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved.

REMOVAL

WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved. Failure to comply may result in severe injury to personnel.

Note

Tag hoses and tube prior to removal for installation.

A Disconnect tube (1) and hose (2) from adapter (3) and elbow (4), and remove adapter (3) and elbow (4) from brake valve (5).

B Disconnect two hoses (6) from adapters (7), and remove adapters (7) and two bushings (8) from brake valve (5).

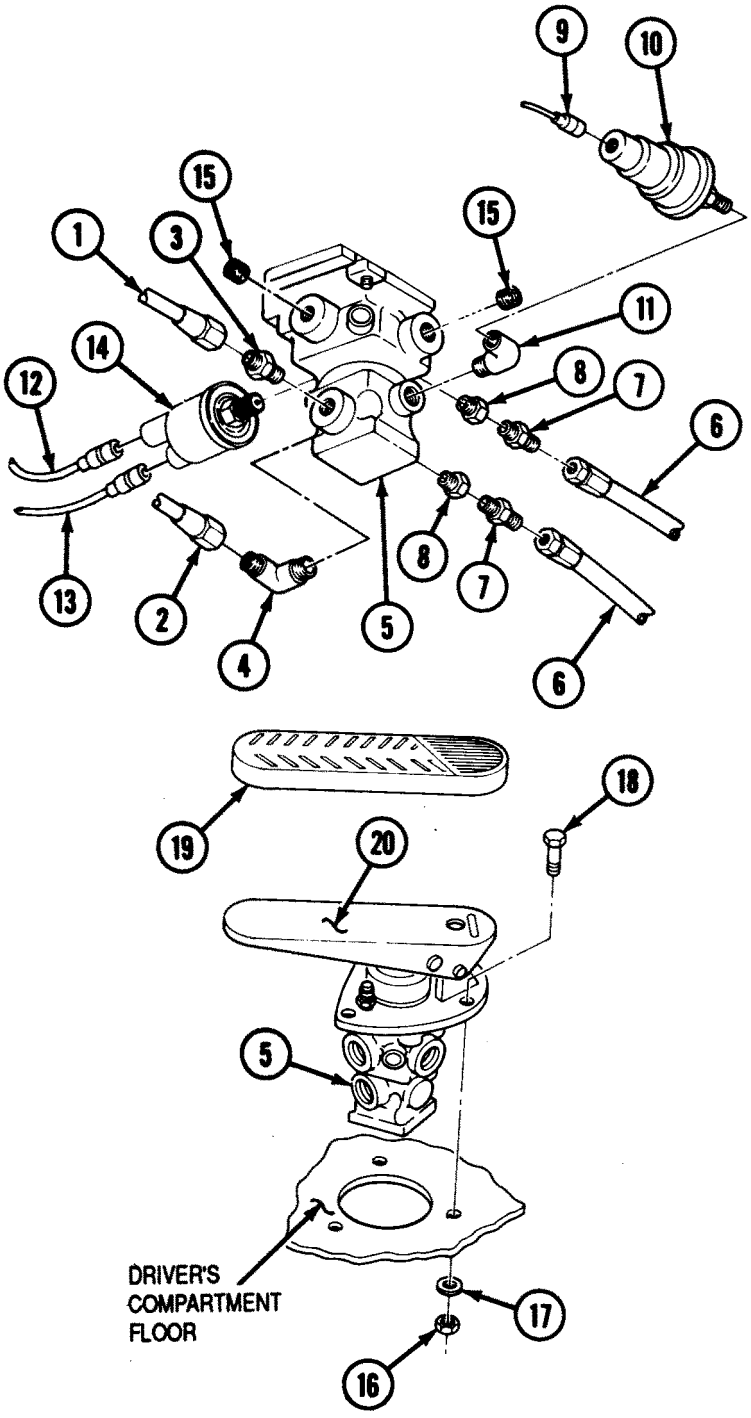
C Disconnect electrical lead (9) from pressure switch (10), and remove pressure switch (10) and elbow (11) from brake valve (5).

D Disconnect electrical leads (12) and (13) from stoplight switch (14), and remove stoplight switch (14) from brake valve (5).

E Remove two plugs (15) from brake valve (5).

F Remove three locknuts (16), washers (17), screws (18), and brake valve (5) from driver's compartment floor. Discard locknuts (16).

G Remove pad (19) from brake valve pedal (20).



INSTALLATION

A Install pad (1) on brake valve pedal (2), and install brake valve (3) on driver's compartment floor with three screws (4), washers (5), and locknuts (6).

CAUTION

Vehicle brakes will not operate if tube and hoses are installed in wrong location. Ensure that tube and hoses are installed at the correct location on service brake valve. Failure to comply may result in damage to equipment.

B Coat threads of two plugs (7) with sealing compound, and install plugs (7) on brake valve (3).

C Coat threads of stoplight switch (8) with sealing compound, and install stoplight switch (8) on brake valve (3).

D Coat threads of elbow (9) and pressure switch (10) with sealing compound, and install elbow (9) and pressure switch (10) on brake valve (3).

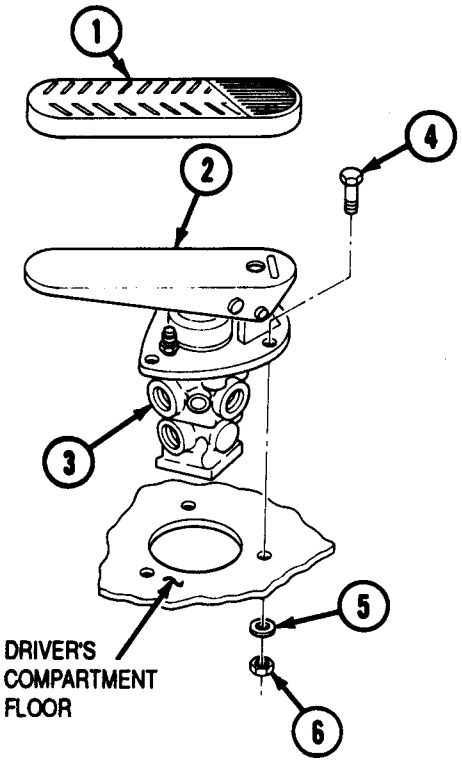
E Coat threads of two bushings (11) and adapters (12) with sealing compound, install bushings (11) and adapters (12) on brake valve (3), and connect two hoses (13) to adapters (12).

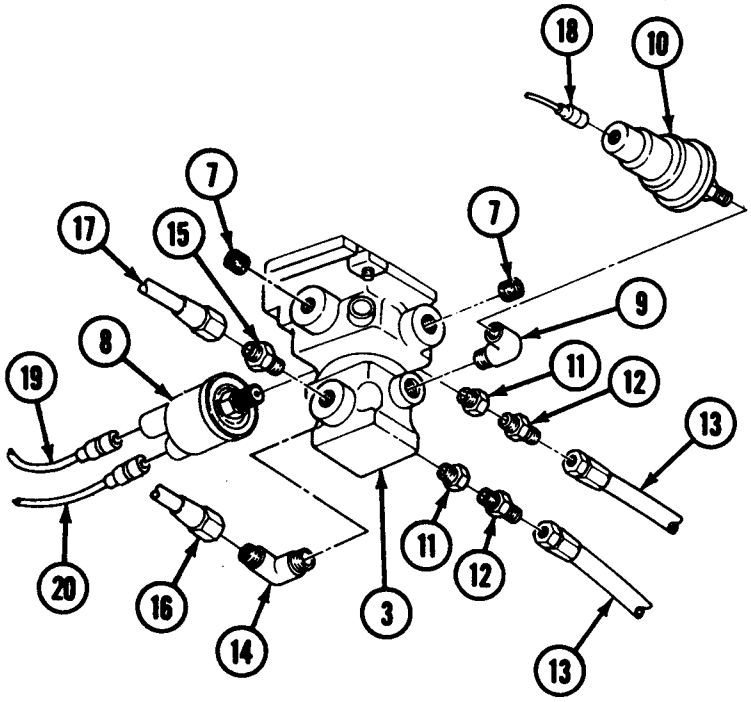
F Coat threads of elbow (14) and adapter (15) with sealing compound, install elbow (14) and adapter (15) on brake valve (3), and connect hose (16) to elbow (14) and tube (17) to adapter (15).

G Connect electrical lead (18) to pressure switch (10) and electrical leads (19) and (20) to stoplight switch (8).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Retract ejector (TM 5-2350-262-10).





TRAILER BRAKE VALVE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 Appendix D

Parts:

Lockwasher (2)

Parts Reference:

TM 5-2350-262-24P	Group AB

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-169	Trailer Brakes Weak or Inoperative

Equipment Condition:

Reference	Condition Description
Page 2-27	Air Pressure Relieved

General Safety Instructions:

WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved.

REMOVAL

WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved. Failure to comply may result in injury to personnel.

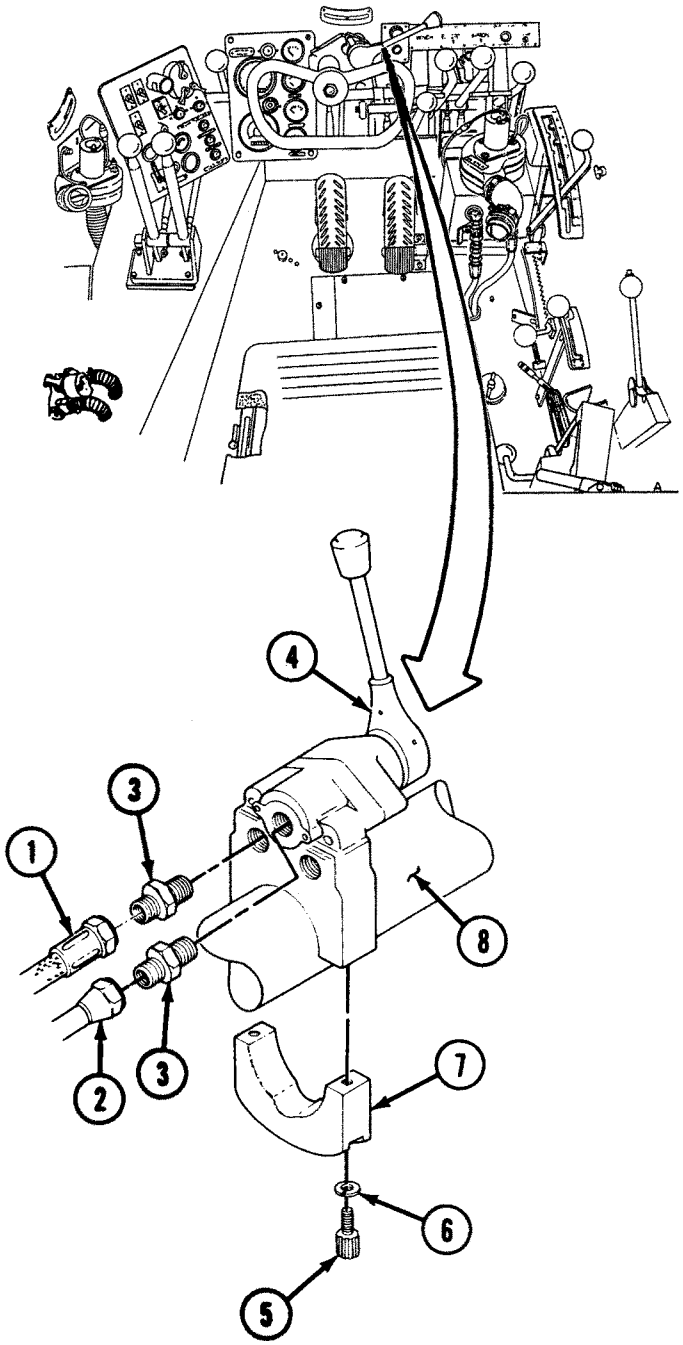
A Disconnect hose (1) and tube (2) from two adapters (3), and remove adapters (3) from brake valve (4).

B Remove two screws (5), lockwashers (6), clamp (7), and brake valve (4) from steering column (8). Discard lockwashers (6).

INSTALLATION

A Install brake valve (4) on steering column (8) with clamp (7), two lockwashers (6), and screws (5).

B Coat threads of two adapters (3) with sealing compound, install adapters (3) on brake valve (4), and connect tube (2) and hose (1) to adapters (3).



Section III. GROUP AD, ARMOR INSTALLATION

TASK	PAGE
Exterior Armor Plates Replacement	4-40
Liquid Container Brackets Replacement and Repair	4-43

EXTERIOR ARMOR PLATES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

Special Tools:

Armor Alignment Pin (2) 5315-01-186-7991

Parts:

Lockwasher (75)

Parts Reference:

TM 5-2350-262-24P Group AD

Personnel Required:

Construction Equipment Repairer 62B10

General Safety Instructions:

WARNING

Ensure feet are firmly planted on a level surface and use a helper when removing armor plates. Some armor plates weigh 50 lb (23 kg).

REMOVAL

Note

- All exterior armor plates are removed the same way. This task covers replacement of armor plate 4R.
- There are two configurations of armor plate 4R. On vehicles equipped with smoke grenade stowage box, perform step B.
- If removing armor plate 2L or 2R, armor plate 1L or 1R must be removed first.

A Remove two screws (1), lockwashers (2), and washers (3) from armor plate (4), filler plate (5), and two support brackets (6). Discard lockwashers (2).

B Remove smoke grenade stowage box (p 4-841) from hull.

C Install two armor alignment pins in place of two screws (1) removed in step A.

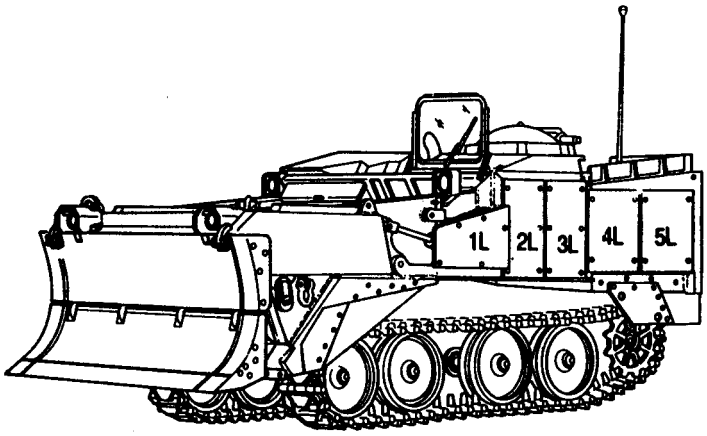
D Remove two screws (7), lockwashers (8), and washers (9) from hull. Discard lockwashers (8).

WARNING

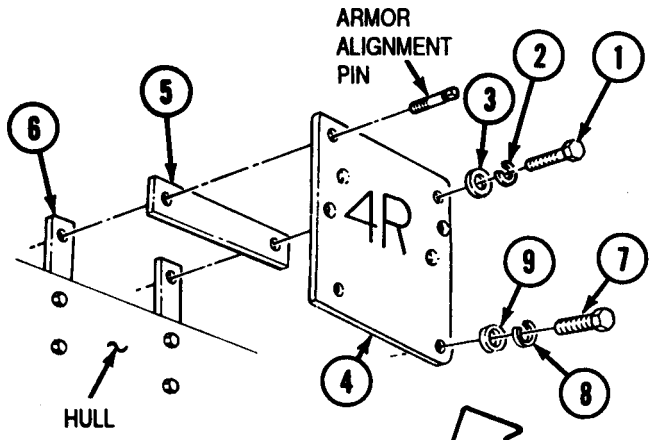
Ensure feet are firmly planted on level surface and use a helper when installing armor plates. Some armor plates weigh 50 lb (23 kg). Failure to comply may result in injury to personnel.

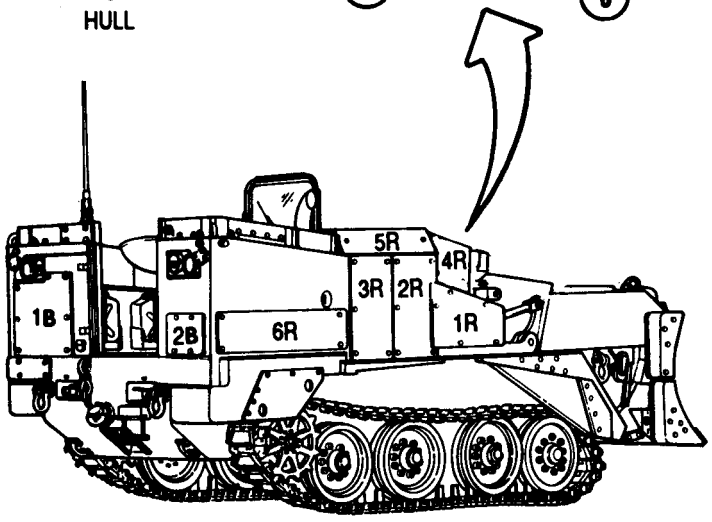
E Using both hands, remove armor plate (4) from two armor alignment pins.

F Remove filler plate (5) and two armor alignment pins from support brackets (6).



EXTERIOR ARMOR PLATES
LEFT SIDE





EXTERIOR ARMOR PLATES
RIGHT SIDE AND REAR

INSTALLATION

Note

- All exterior armor plates are installed the same way. This task covers replacement of armor plate 4R.
- Install armor plate 2L or 2R before 1L or 1R.

A Install two armor alignment pins on support brackets (1) and position filler plate (2) on armor alignment pins.

WARNING

Ensure feet are firmly planted on level surface and use a helper when installing armor plates. Some armor plates weigh 50 lb (23 kg). Failure to comply may result in injury to personnel.

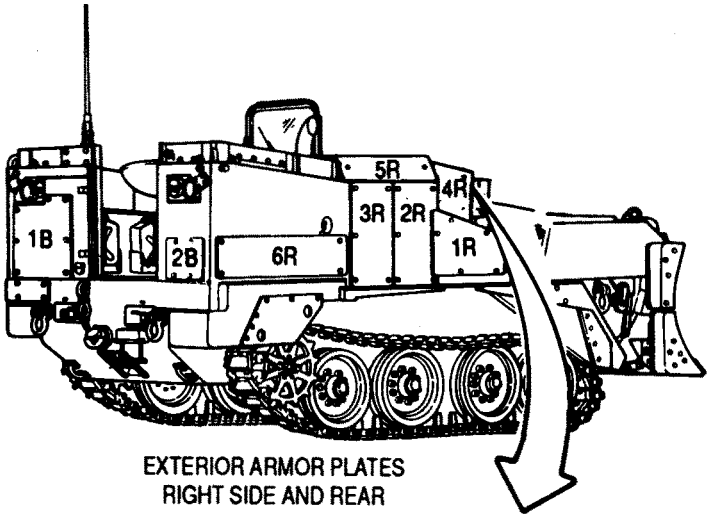
B Using both hands, position armor plate (3) on two armor alignment pins.

C Install armor plate (3) on hull with two washers (4), lockwashers (5), and screws (6). Do not tighten screws (6).

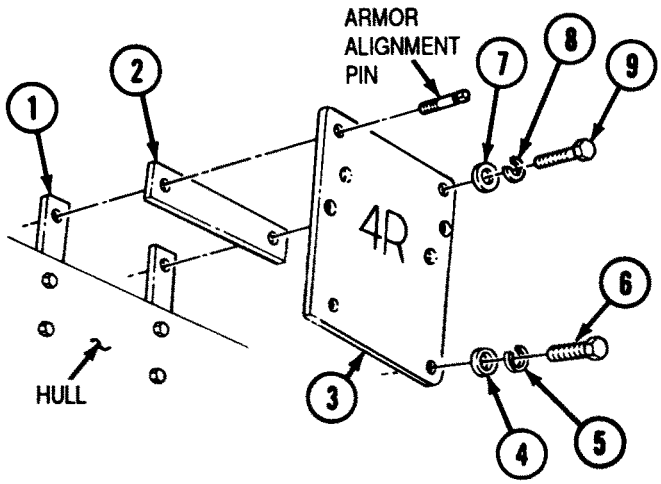
D Remove two armor alignment pins from support brackets (1) and install filler plate (2) and armor plate (3) on support brackets (1) with two washers (7), lockwashers (8), and screws (9).

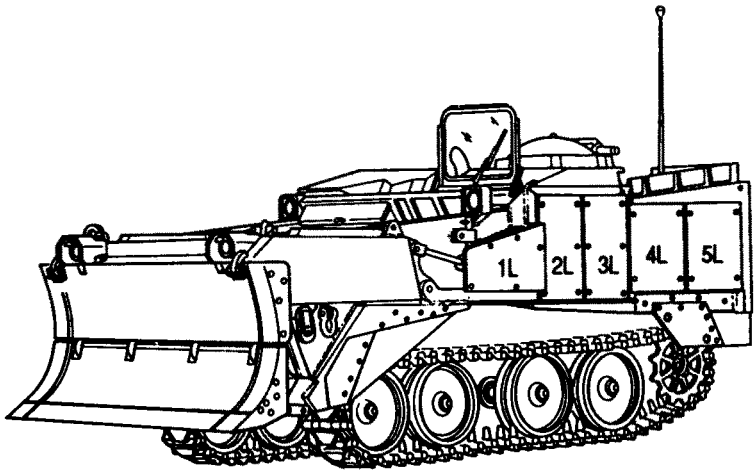
E Tighten four screws (6) and (9) to 40-50 lb-ft (54-68 N·m).

F Install smoke grenade stowage box (p 4-844) on hull if removed.



EXTERIOR ARMOR PLATES
RIGHT SIDE AND REAR





EXTERIOR ARMOR PLATES
LEFT SIDE

LIQUID CONTAINER BRACKETS REPLACEMENT AND REPAIR

This task covers:

a. Removal

b. Repair

c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (8)

Parts Reference:

TM 5-2350-262-24P Group AD

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

TM 9-237

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Liquid Containers Removed

REMOVAL

Remove eight screws (1), lockwashers (2), washers (3), and two liquid container brackets (4) from fuel tank armor (5). Discard lockwashers (2).

REPAIR

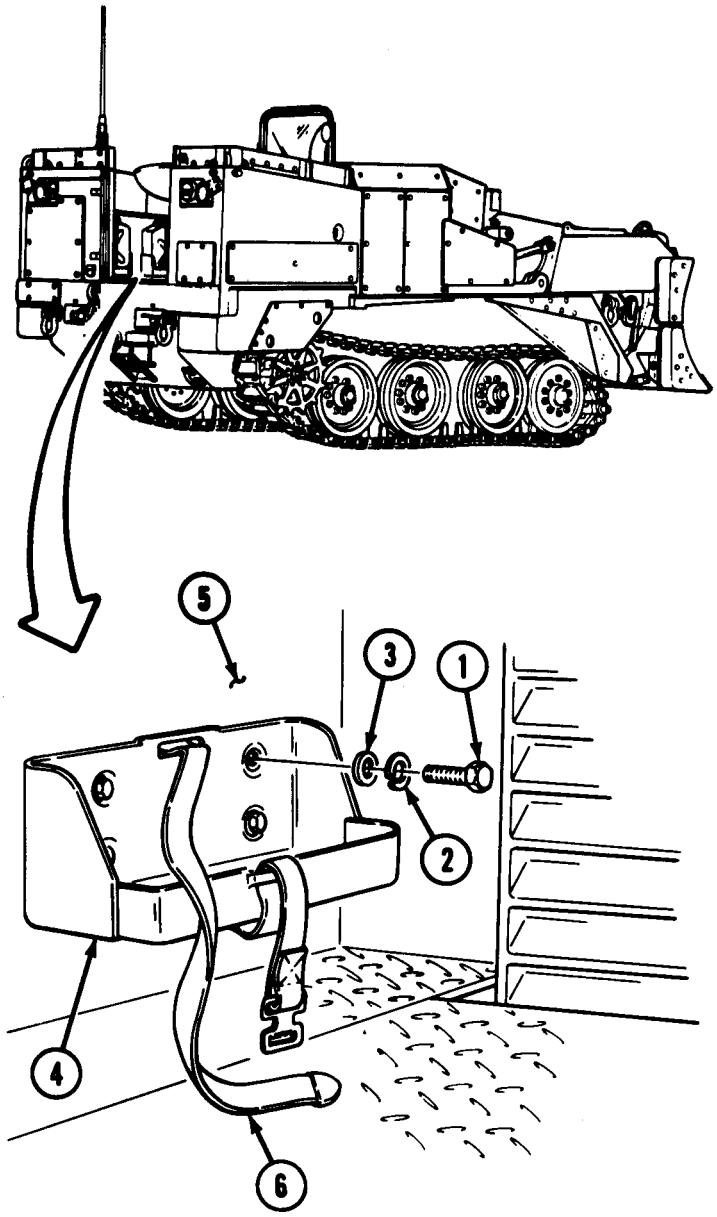
A Inspect strap (6) for damage and wear. Remove and replace if damaged or worn.

B If liquid container bracket (4) is bent, cracked, or has broken welds, repair by welding (TM 9-237) and straightening.

INSTALLATION

Install two liquid container brackets (4) on fuel tank armor (5) with eight washers (3), lockwashers (2), and screws (1).

FOLLOW-ON TASK:
Install liquid containers (TM 5-2350-262-10).



Section IV. GROUP AF, BRAKE CONTROL INSTALLATION

TASK	PAGE
Brake Linkage and Bracket Replacement and Repair	4-54
Parking Brake Lever and Cable Adjustment	4-46
Parking Brake Lever and Cable Replacement	4-49

PARKING BRAKE LEVER AND CABLE ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Self-locking Screw (2)

Cotter Pin (2)

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-161	Brakes Weak or Inoperative

Equipment Condition:

Reference	Condition Description
Page 2-28	Tracks Blocked
TM 5-2350-262-10	Left and Center Armored Floor Plates Removed
Page 4-739	Steer Unit Brake Levers Adjusted

General Safety Instructions:

WARNING

Block track or roadwheels when parking brake is released.

ADJUSTMENT

WARNING

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

A Start engine (TM 5-2350-262-10), and idle (750-850 rpm) to pressurize the air system.

B Release parking brake by pressing down on service brake pedal and moving parking brake lever (1) down.

CAUTION

Ensure service brake is applied before setting parking brake, or parking brake cable may stretch.

C With service brake applied, turn adjusting knob (2) clockwise as tight as possible by hand, and pull parking brake lever (1) up until set. Test parking brake following procedure outlined in (TM 5-2350-262-10).

Note

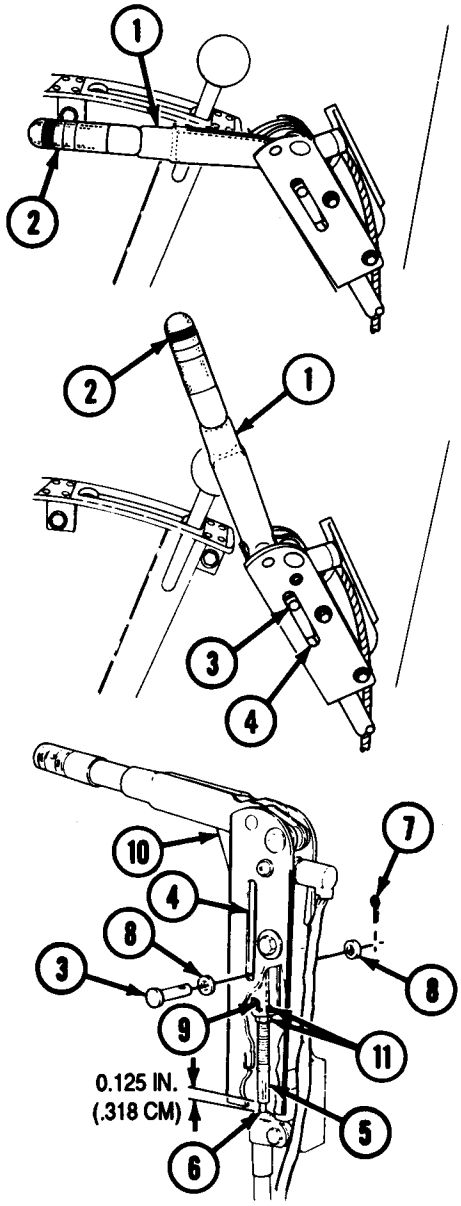
If parking brake lever cannot be set, or parking brake does not hold, proceed to step D.

D Stop engine (TM 5-2350-262-10), and turn adjusting knob (2) counterclockwise until pin (3) rests on bottom of slots (4).

Note

There are two configurations of parking brake linkage. Perform step E on vehicles equipped with adjustable clevis at parking brake lever. Perform step H on vehicles equipped with nonadjustable clevis at parking brake lever.

E Measure clearance between parking cable (5) and end of cable housing (6). Clearance should measure 1/8 in. (3.2 mm).



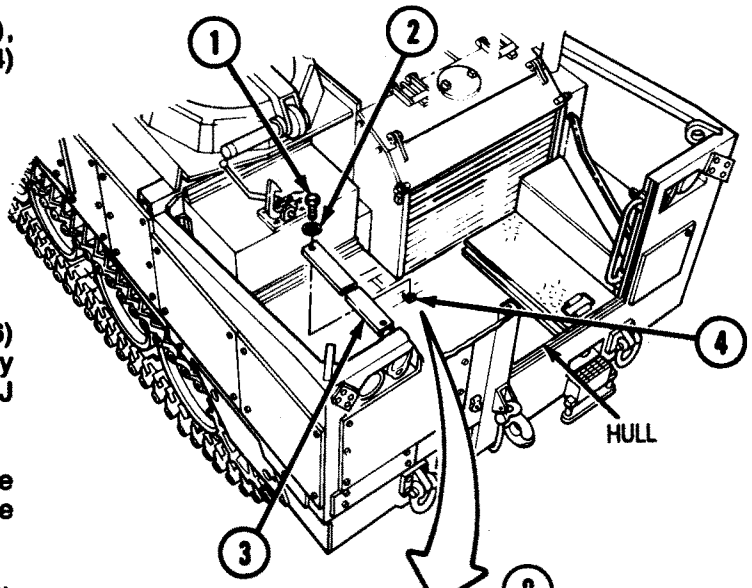
Note

If clearance is incorrect, perform steps F and G. Proceed to step H if clearance is correct.

F Remove cotter pin (7), two washers (8), and pin (3) from clevis (9) and rod (10). Discard cotter pin (7).

G Loosen two jamnuts (11), and turn clevis (9) until clearance is attained. Tighten jamnuts (11), and install pin (3), two washers (8), and cotter pin (7) on clevis (9) and rod (10).

H Remove two self-locking screws (1), washers (2), and bracket (3) from frame (4) and hull. Discard self-locking screws (1).

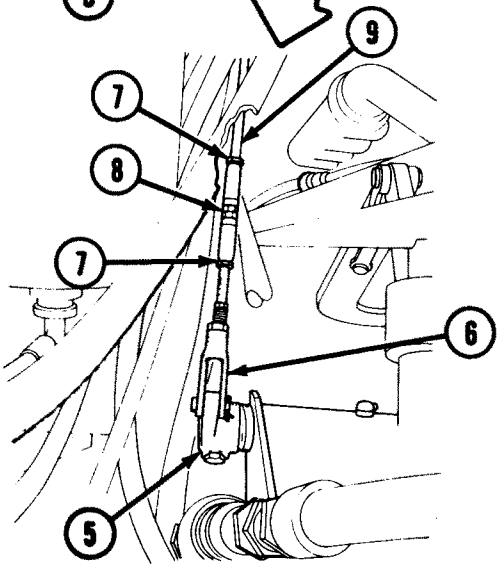


Note

Perform steps I and J on vehicles equipped with turnbuckle. Perform steps K through N on vehicles without turnbuckle.

I Check free play at brake lever (5). Clevis (6) should rest so that 1/4-in. (6.4-mm) free play can be felt at brake lever (5). Perform step J if free play is incorrect.

J Loosen two jamnuts (7), and turn turnbuckle (8), loosening or tightening parking brake cable (9) until free play is correct.

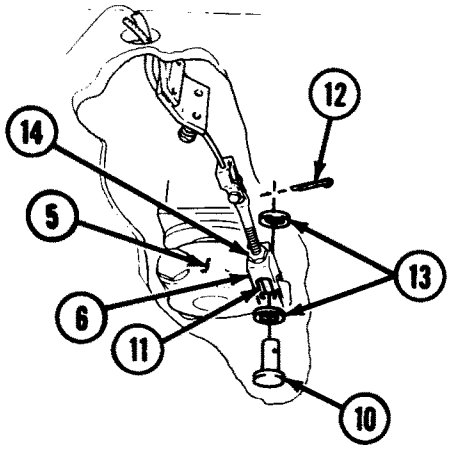


K Check free play at brake lever (5). Clevis (6) should rest so that pin (10) is in center of slot (11). Perform steps L through N if free play is incorrect.

L Remove cotter pin (12), two washers (13), and pin (10) from brake lever (5). Discard cotter pin (12).

M Loosen jamnut (14) and turn clevis (6) until pin (10) lines up with center of slot (11) when installed on brake lever (5). Tighten jamnut (14).

N Install pin (10) on brake lever (5) with two washers (13) and cotter pin (12).



O Install bracket (3) on hull and frame (4) with two washers (2) and self-locking screws (1).

P Repeat steps A through C.

FOLLOW-ON TASKS:

- Install left and center armored floor panels (TM 5-2350-262-10).
- Remove blocks from tracks (p 2-28)

PARKING BRAKE LEVER AND CABLE REPLACEMENT

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 11 Appendix D
Sealing Compound Primer	Item 13 Appendix D

Parts:

Cotter Pin (2)

Locknut (3)

Lockwasher (5)

Parts Reference:

TM 5-2350-262-24P Group AF

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
Page 2-28	Tracks Blocked
TM 5-2350-262-10	Engine Intake Covers Opened
Page 4-134	Parking Brake Warning Switch Removed
Page 4-356	Left Rear Floor Plate Support Removed

General Safety Instructions:

WARNING

Block track or roadwheels when parking brake is released or disconnected.

REMOVAL

WARNING

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

A Start engine (TM 5-2350-262-10) and idle (750-850 rpm) to pressurize the air system.

B Release parking brake by pressing down on service brake pedal and moving parking brake lever (1) down. Stop engine (TM 5-2350-262-10).

C Turn adjusting knob (2) counterclockwise until pin (3) rests on bottom of slots (4).

Note

There are two configurations of parking brake linkage. Perform steps D through F on vehicles equipped with nonadjustable clevis. Perform steps G through I on vehicles equipped with adjustable clevis.

D Remove cotter pin (5), washer (6), and pin (3) from clevis (7) and lever (8). Discard cotter pin (5).

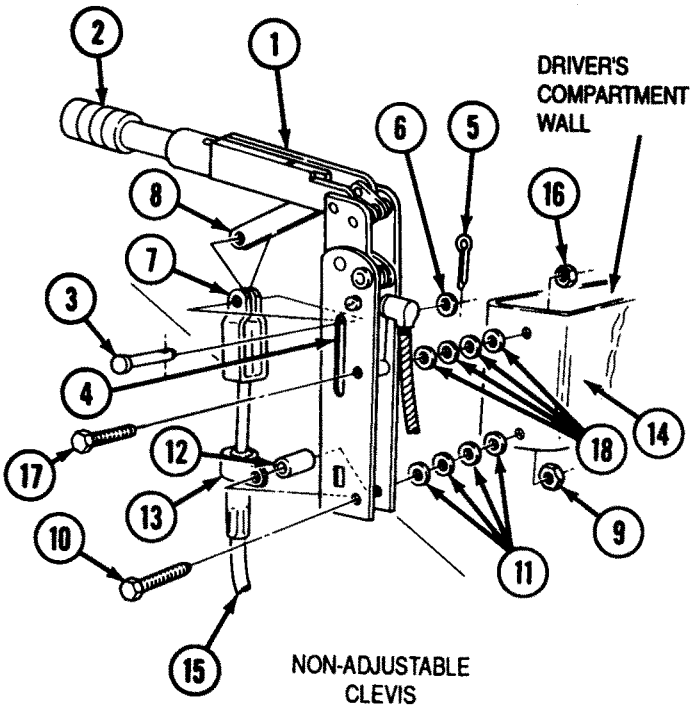
E Remove locknut (9), screw (10), four washers (11), spacer (12), and clamp (13) from mounting bracket (14), parking brake lever (1), and cable housing (15). Discard locknut (9).

F Remove locknut (16), screw (17), four washers (18), and parking brake lever (1) from mounting bracket (14). Discard locknut (16).

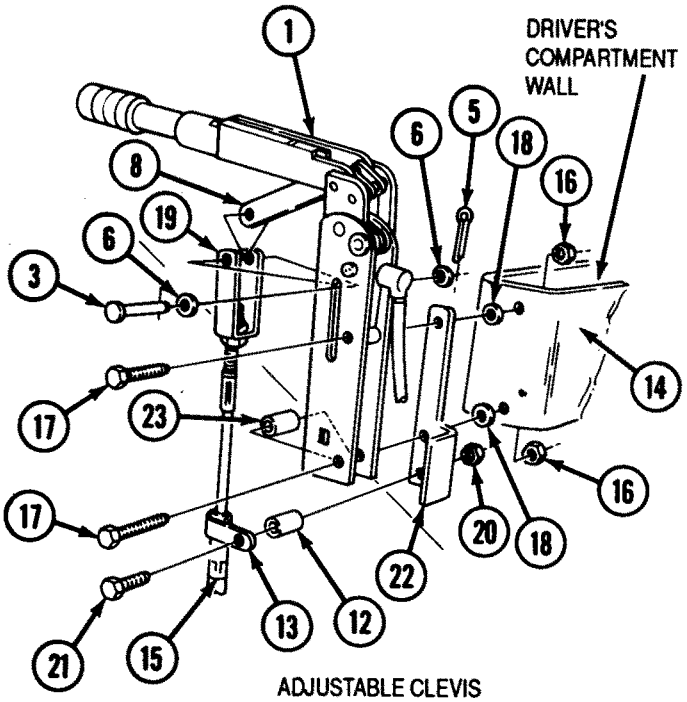
G Remove cotter pin (5), pin (3), and two washers (6) from clevis (19) and lever (8). Discard cotter pin (5).

H Remove locknut (20), screw (21), spacer (12), and clamp (13) from extension (22) and cable housing (15). Discard locknut (20).

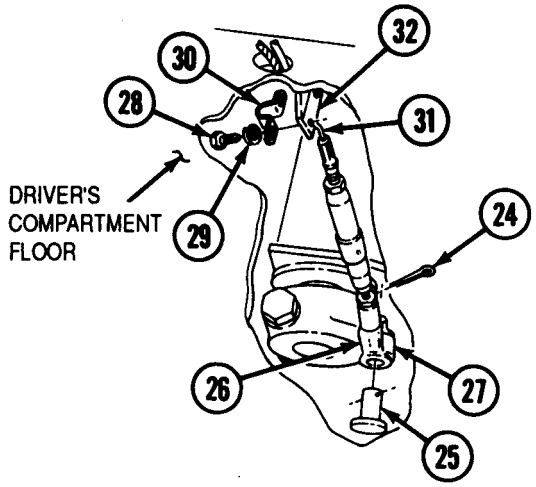
I Remove two locknuts (16), washers (18), screws (17), spacer (23), extension (22), and parking brake lever (1) from mounting bracket (14). Discard locknuts (16).



NON-ADJUSTABLE CLEVIS



ADJUSTABLE CLEVIS

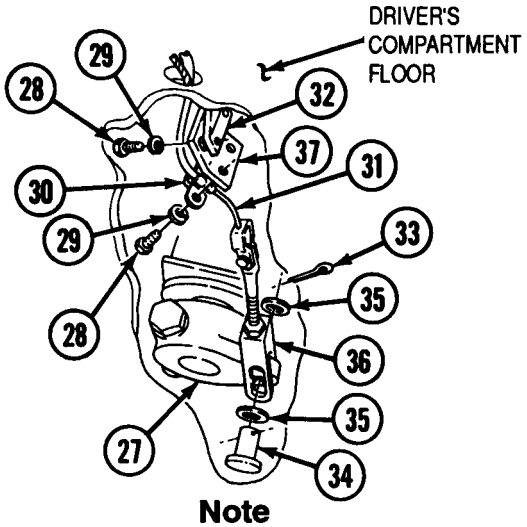


Note

Perform steps J and K on vehicles equipped with single bracket and turnbuckle.

J Remove cotter pin (24) and pin (25) from clevis (26) and brake lever (27). Discard cotter pin (24).

K Remove two screws (28), lockwashers (29), strap (30), and parking brake cable (31) from bracket (32). Discard lockwashers (29).



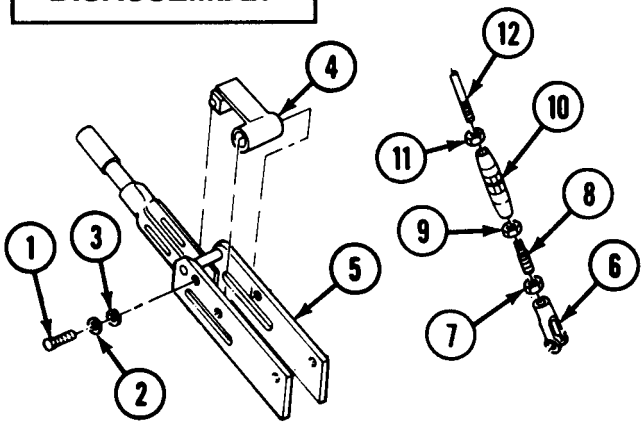
Note

Perform steps L and M on vehicles equipped with two brackets and no turnbuckle.

L Remove cotter pin (33), pin (34), and two washers (35) from clevis (36) and brake lever (27). Discard cotter pin (33).

M Remove four screws (28), lockwashers (29), strap (30), bracket (37), and parking brake cable (31) from bracket (32). Discard lockwashers (29).

DISASSEMBLY

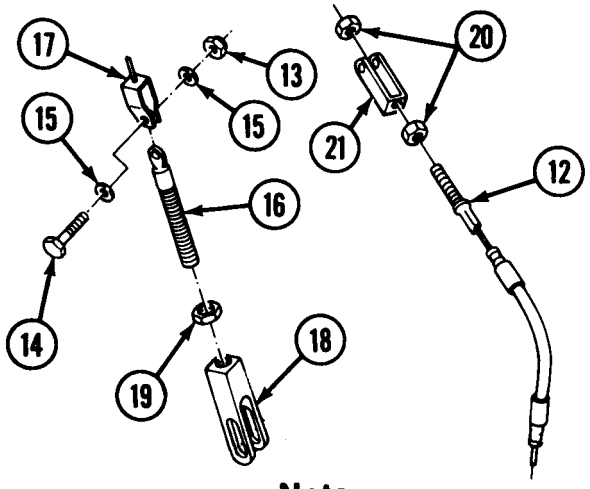


A Remove screw (1), washer (2), lockwasher (3), and bracket (4) from parking brake lever (5). Discard lockwasher (3).

Note

Perform step B on vehicles equipped with turnbuckle.

B Remove clevis (6), jamnut (7), stud (8), jamnut (9), turnbuckle (10), and jamnut (11) from parking brake cable (12).



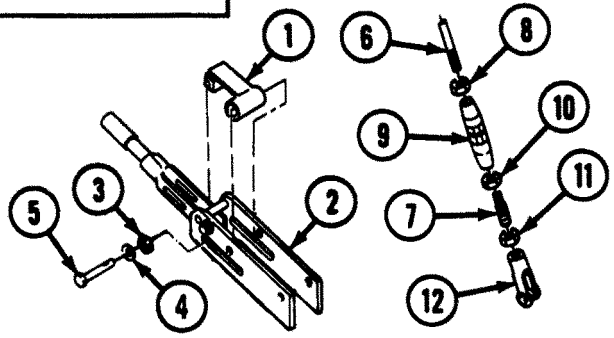
Note

Perform steps C and D on vehicles equipped with adjustable clevises at both ends of parking brake cable.

C Remove locknut (13), screw (14), two washers (15), and adapter (16) from clevis (17), and remove clevis (18) and jamnut (19) from adapter (16). Discard locknut (13).

D Remove two jamnuts (20) and clevis (21) from parking brake cable (12).

ASSEMBLY

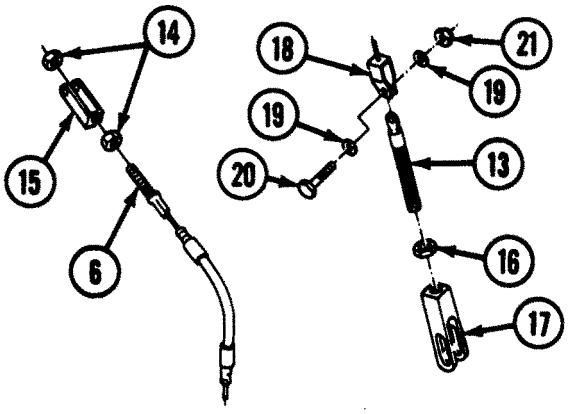


A Install bracket (1) on parking brake lever (2) with lockwasher (3), washer (4), and screw (5).

Note

Perform step B on vehicles equipped with turnbuckle.

B Coat threads of parking brake cable (6) and stud (7) with sealing compound primer and sealing compound, and install jamnut (8), turnbuckle (9), jamnut (10), stud (7), jamnut (11), and clevis (12) on parking brake cable (6).



Note

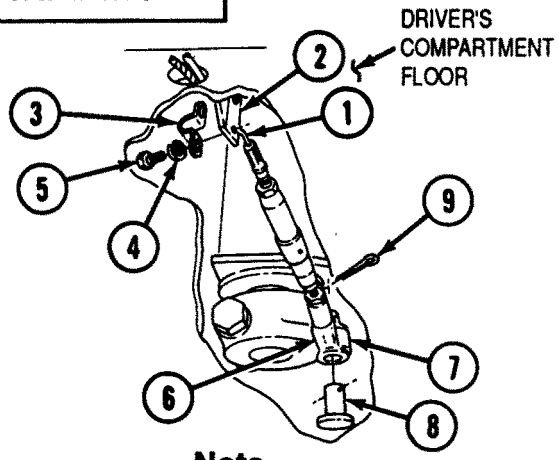
Perform steps C through E on vehicles equipped with adjustable clevises at both ends of parking brake cable.

C Coat threads of parking brake cable (6) and adapter (13) with sealing compound primer and sealing compound.

D Install two jamnuts (14) and clevis (15) on parking brake cable (6).

E Install jamnut (16) and clevis (17) on adapter (13), and install adapter (13) on clevis (18) with two washers (19), screw (20), and locknut (21).

INSTALLATION

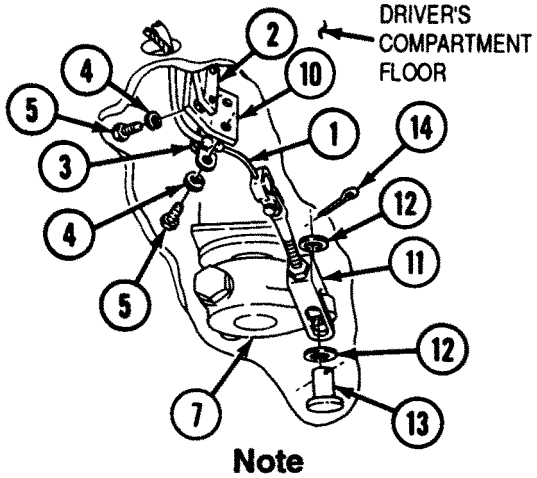


Note

Perform steps A and B on vehicles equipped with single bracket and turnbuckle.

A Install parking brake cable (1) on bracket (2) with strap (3), two lockwashers (4), and screws (5). Do not tighten screws (5).

B Connect clevis (6) to brake lever (7) with pin (8) and cotter pin (9).



Note

Perform steps C and D on vehicles equipped with two brackets and no turnbuckle.

C Install bracket (10) and parking brake cable (1) on bracket (2) with strap (3), four lockwashers (4), and screws (5). Do not tighten screws (5).

D Connect clevis (11) to brake lever (7) with two washers (12), pin (13), and cotter pin (14).

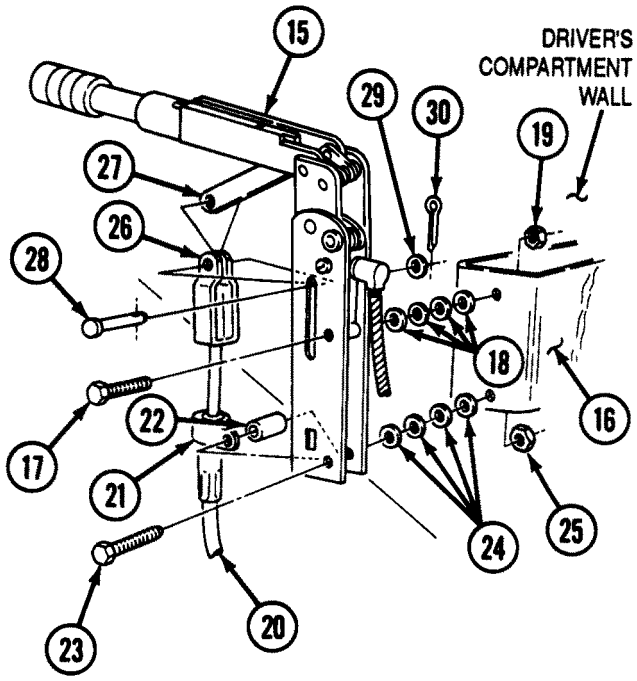
Note

There are two configurations of parking brake linkage. Perform steps E through G on vehicles equipped with nonadjustable clevis. Perform steps H through J on vehicles equipped with adjustable clevis.

E Install parking brake lever (15) on mounting bracket (16) with screw (17), four washers (18), and locknut (19).

F Install cable housing (20) on parking brake lever (15) with clamp (21), spacer (22), screw (23), four washers (24), and locknut (25).

G Connect clevis (26) to lever (27) with pin (28), washer (29), and cotter pin (30).



H Install extension (31) and parking brake lever (15) on mounting bracket (16) with spacer (32), two screws (17), washers (18), and locknuts (19).

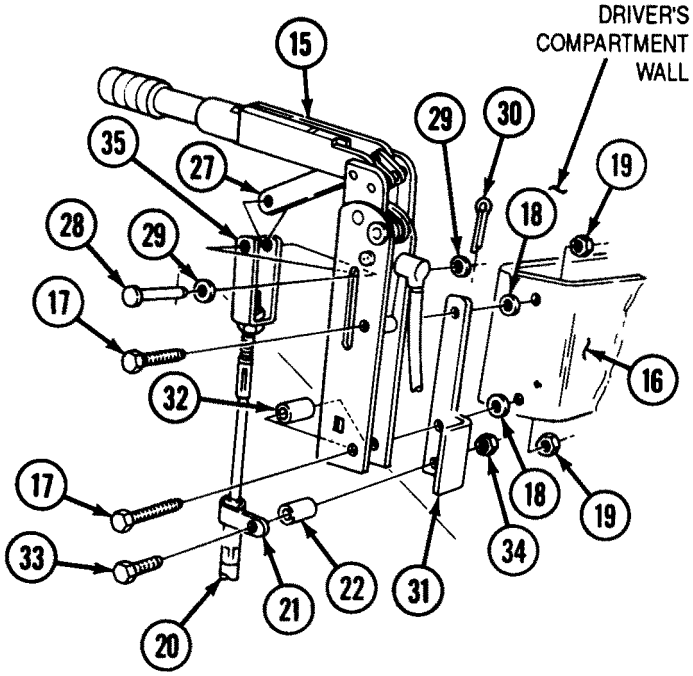
I Install cable housing (20) on extension (31) with spacer (22), clamp (21), screw (33), and locknut (34).

J Connect clevis (35) to lever (27) with pin (28), two washers (29), and cotter pin (30).

K Tighten screws (5) (installed in step A) securing cable housing (20) to bracket (2) or (10).

FOLLOW-ON TASKS:

- Close engine intake covers (TM 5-2350-262-10).
- Install left rear floor plate support (p 4-357).
- Install parking brake warning switch (p 4-134).
- Adjust parking brake lever and cable (p 4-47).



BRAKE LINKAGE AND BRACKET REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Repair
d. Assembly
e. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Grease	Item 20 Appendix D
Solid Film Lubricant	Item 24 Appendix D
Lubricating Oil	Item 27 Appendix D

Parts:

Cotter Pin (7)

Self-locking Screw (6)

Parts Reference:

TM 5-2350-262-24P	Group AF

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
Page 2-28	Tracks Blocked
TM 5-2350-262-10	Parking Brake Released
Page 4-22	Brake Chamber Removed

General Safety Instructions:

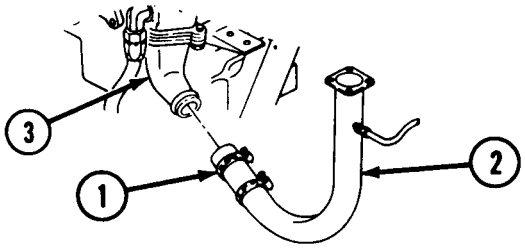
WARNING

- Block track or roadwheels when parking brake is released.
- Do not operate parking brake lever when personnel are working on brake linkage or bracket.
- Ensure cotter pins are splayed.

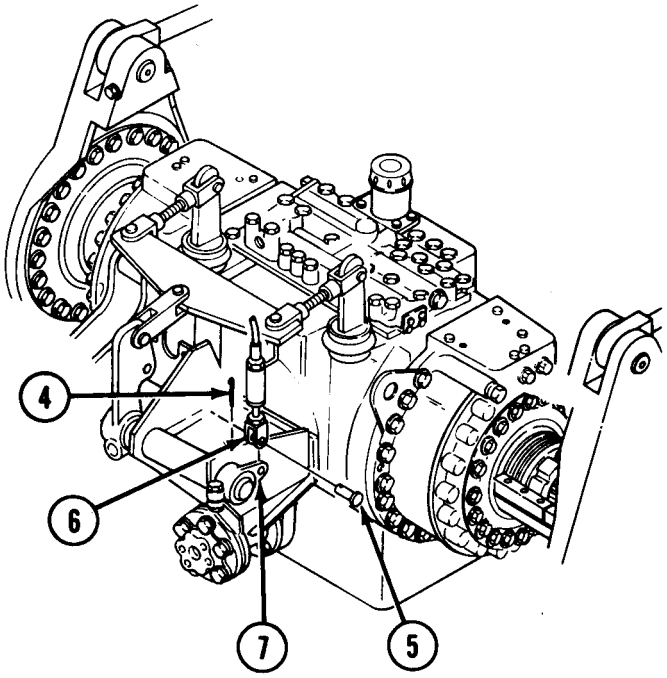
REMOVAL

WARNING

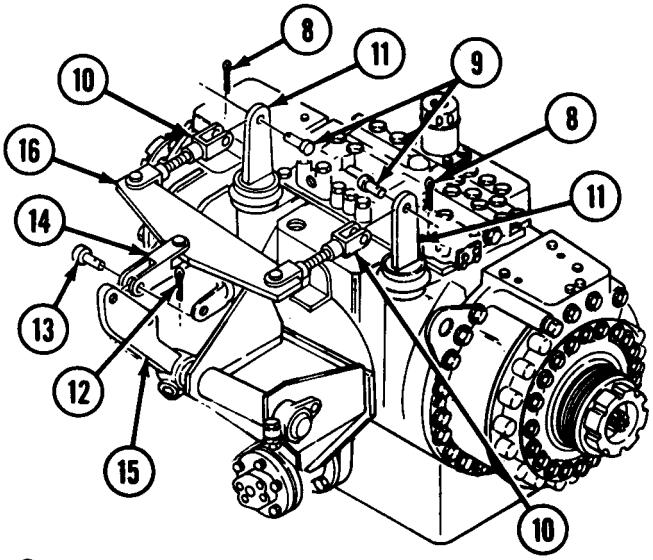
- Block track or roadwheels when parking brake is released. Vehicle can roll causing damage to equipment, severe injury or death to personnel.
- Do not operate parking brake lever when personnel are working on brake linkage or bracket. Failure to comply may result in severe injury to personnel.



A Loosen clamp (1) and remove tube (2) from water pump outlet (3).

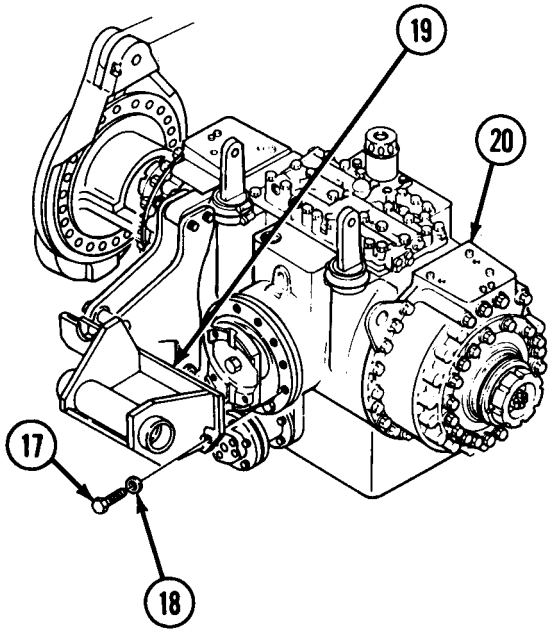


B Remove cotter pin (4), pin (5), and clevis (6) from brake lever (7). Discard cotter pin (4).



C Remove two cotter pins (8), pins (9), and clevises (10) from brake levers (11). Discard cotter pins (8).

D Remove cotter pin (12), pin (13), and clevis (14) from lever (15), and remove equalizer bar assembly (16) from vehicle. Discard cotter pin (12).



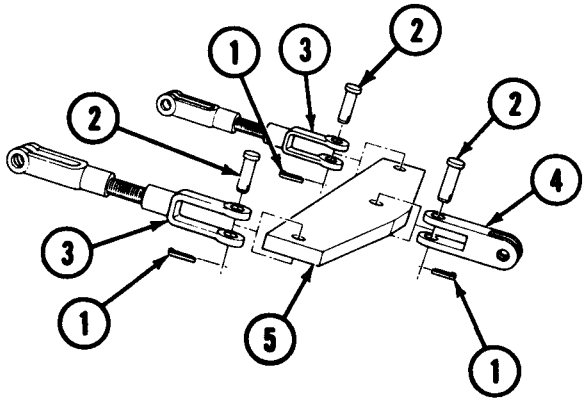
E Remove six self-locking screws (17), washers (18), and bracket (19) from steer unit (20). Discard self-locking screws (17).

DISASSEMBLY

A Remove three cotter pins (1), pins (2), two clevises (3), and clevis (4) from equalizer bar (5). Discard cotter pins (1).

B Remove two nuts (6), screws (7), levers (8) and (9), and woodruff keys (10) from shaft (11), and remove shaft (11) from bracket (12).

C Using slide puller, remove two bearings (13) from bracket (12).



REPAIR

A Repair or replace worn or damaged components (p 2-25).

B Clean all parts (p 2-26).

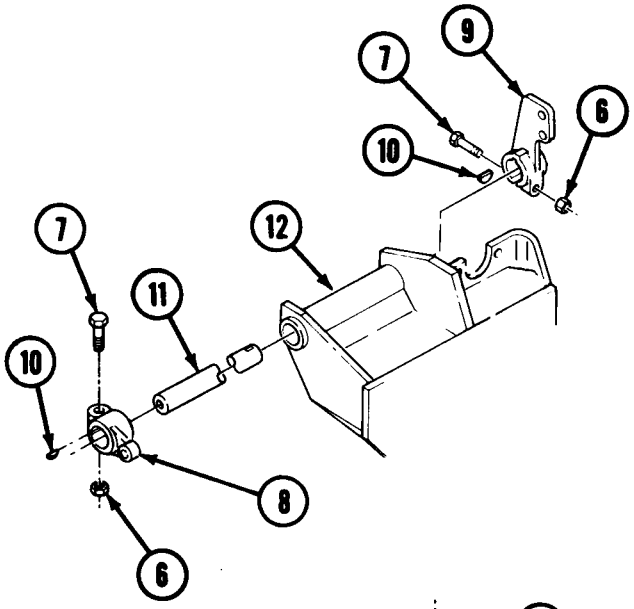
ASSEMBLY

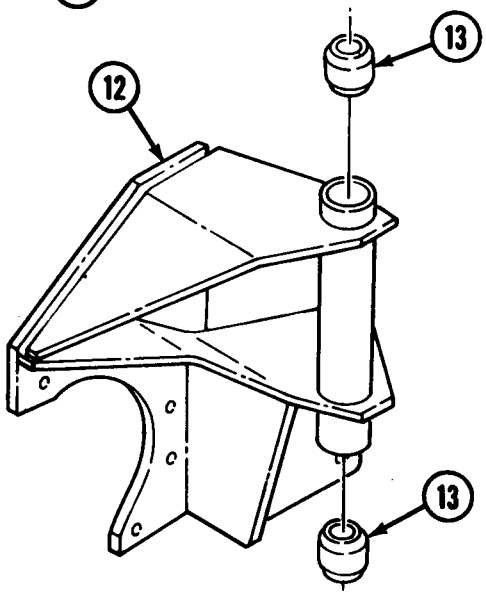
A Lightly coat exterior of two bearings (13) with grease, and using a wood block and hammer, install two bearings (13) on bracket (12).

B Coat inner surfaces of two bearings (13) with grease, coat shaft (11) with solid film lubricant, and install shaft (11) on bracket (12).

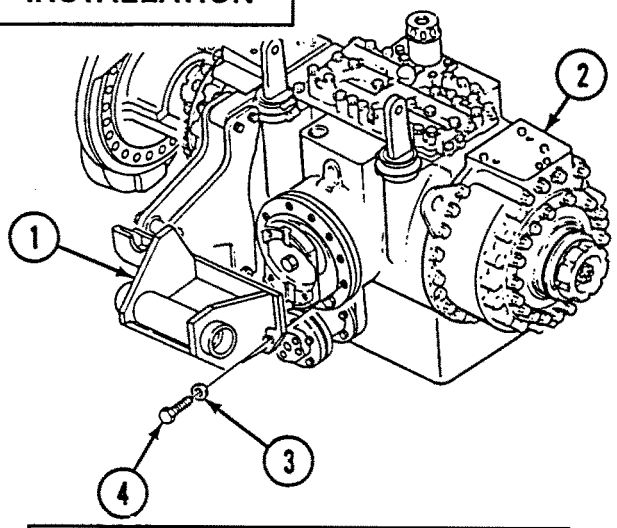
C Install two woodruff keys (10) and levers (9) and (8) on shaft (11) with two screws (7) and nuts (6).

D Install clevis (4) and two clevises (3) on equalizer bar (5) with three pins (2) and cotter pins (1).





INSTALLATION



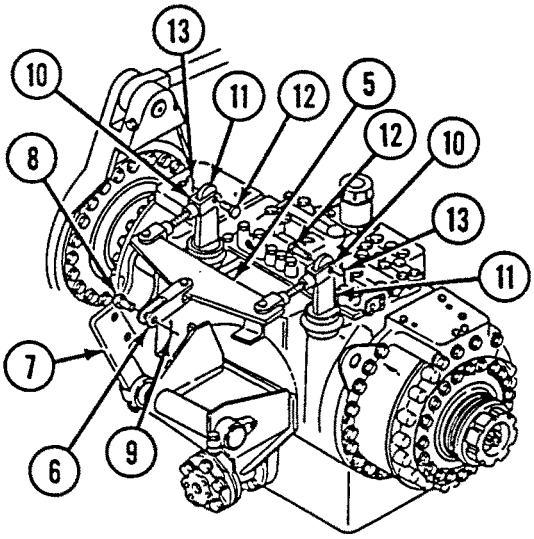
CAUTION

Ensure the six self-locking screws are 2.25 in. (57.2 mm) or damage to steer unit housing will result.

Note

Apply lubricating oil to threads of screws prior to installation.

A Install bracket (1) on steer unit (2) with six washers (3) and self-locking screws (4). Tighten screws (4) to 44-46 lb-ft (60-62 N·m).



WARNING

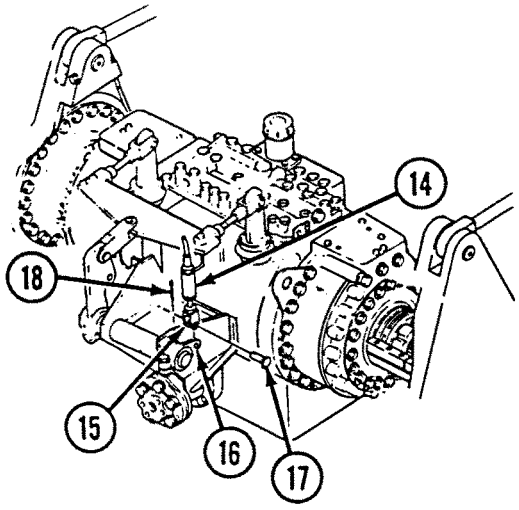
Ensure cotter pins are splayed. Failure to comply may result in damage to equipment or injury to personnel.

B Install equalizer bar assembly (5) and clevis (6) on lever (7) with pin (8) and cotter pin (9).

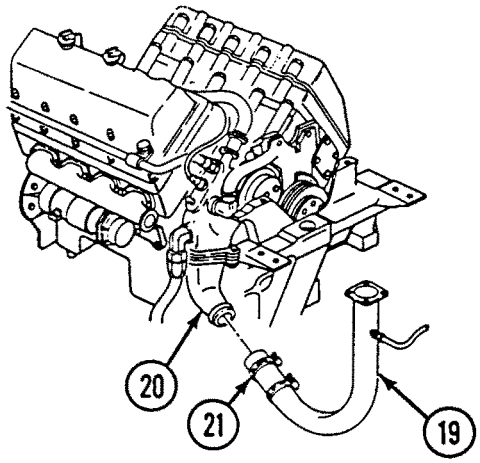
Note

Ensure straight pins are installed with heads facing in to prevent interference with ejector cylinder.

C Connect two clevises (10) to brake levers (11) with two pins (12) and cotter pins (13).



D Install parking brake cable (14) and clevis (15) to brake lever (16) with pin (17) and cotter pin (18).



E Install tube (19) on water pump outlet (20) and tighten clamp (21).

FOLLOW-ON TASKS:

- Install brake chamber (p 4-21).
- Adjust brake chamber (p 4-21).
- Adjust steer unit brake levers (p 4-738).
- Remove blocks from tracks (p 4-28).

Section V. DELETED

TASK	PAGE
Deleted	

Section VI. GROUP AJ, ELECTRICAL INSTALLATION

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Battery Box Replacement	4-80
Battery Cables Replacement	4-83
Battery Replacement and Service	4-77
Bilge Pump “On” Lamp Receptacle Replacement	4-124
Bilge Pump “On” Switch Replacement	4-126
Circuit Breakers Replacement	4-122
Discharger Wiring Harness Replacement and Repair	4-164
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Starter Relay Replacement	4-158

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Stoplight Switch Replacement 4-99
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UNSPRUNG/Reverse Warning Light Flasher Replacement 4-129
Ventilation Fan Wiring Harness Replacement and Repair 4-101
Warning Buzzer Replacement 4-136

STARTER CABLE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Adhesive — Item 4, Appendix D

Parts:

Lockwasher

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 4-84	Negative Battery Cables Disconnected
Page 4-361	Rear Floor Plates Removed

REMOVAL

A Disconnect starter cable (1) from master relay receptacle (2).

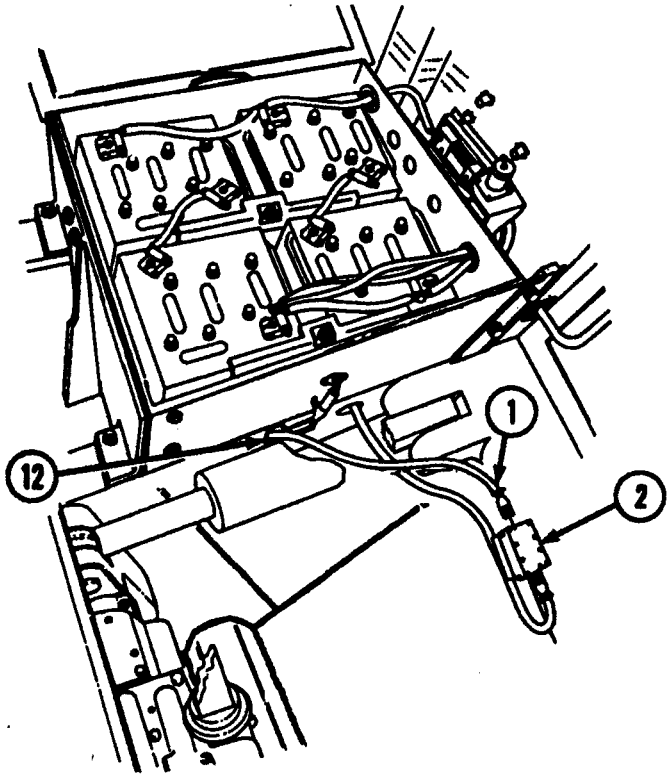
B Remove two screws (3) and clamps (4) from hull and starter cable (1).

C Remove screw (5), washer (6), clamp (7), and engine ground cable (8) from hull and starter cable (1).

D Remove nut (9) and lockwasher (10) securing starter cable (1) to solenoid terminal (11). Discard lockwasher (10).

E Tie rope or twine to end of starter cable (1). Pull starter cable (1) from vehicle, leaving twine or rope in place to aid installation.

F Remove grommet (12) from hull, if damaged.



INSTALLATION

Note

Perform step A if grommet was removed or found missing during removal.

A Apply adhesive to opening on hull, and install grommet (12) on hull.

Note

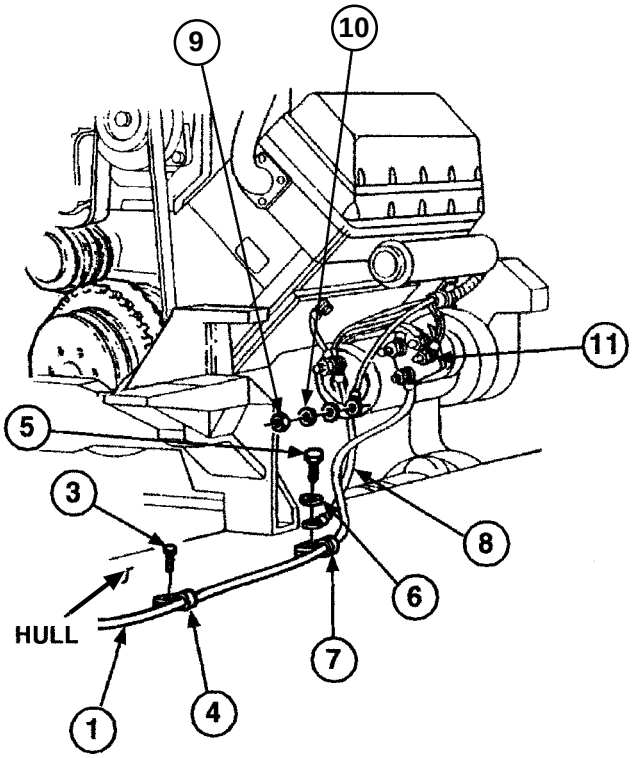
Ensure 6B starter cable is routed under track adjusting cylinder and exhaust tube.

B Route 6B starter cable (1) to approximate mounting location.

C Connect 6B starter cable (1) to solenoid terminal (11), and secure with lockwasher (10) and nut (9).

D Connect 6B starter cable (1) to master relay receptacle (2).

E Secure 6B starter cable (1) and 7A engine ground cable (8) to hull with clamp (7), washer (6), screw (5), two clamps (4), and screws (3).



FOLLOW-ON TASKS:

- **Connect negative battery cables** (p 4-84).
- **Install rear floor plates** (p 4-361).
- **Retract ejector** (TM 5-2350-262-10).

STE/ICE-R INTERFACE RESISTOR BOX REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (4)

Parts Reference:

TM 5-2350-262-10 Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Access Covers Opened
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool.

REMOVAL

WARNING

Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in injury to personnel.

A Disconnect engine wiring harness (1), control wiring harness (2), and battery box wiring harness (3) from STE/ICE-R interface resistor box receptacles (4), (5), and (6).

B Remove four screws (7), lockwashers (8), and STE/ICE-R interface resistor box (9) from driver's compartment wall. Discard lockwashers (8).

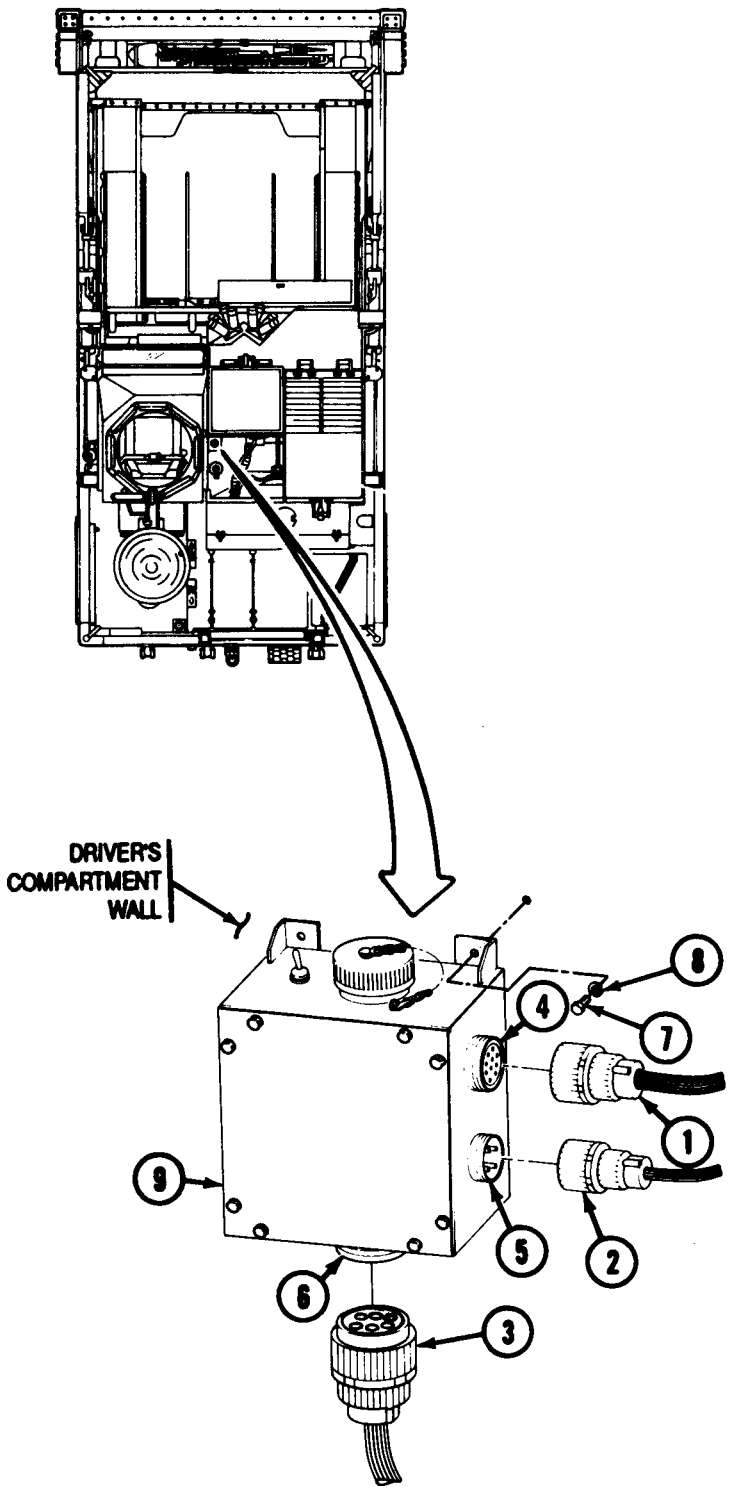
INSTALLATION

A Install STE/ICE-R interface resistor box (9) on driver's compartment wall with four lockwashers (8) and screws (7).

Note

Hand tighten electrical connectors.

B Connect battery box wiring harness (3), control wiring harness (2), and engine wiring harness (1) to STE/ICE-R interface resistor box receptacles (6), (5), and (4).



FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Close engine intake grilles and access covers (TM 5-2350-262-10).

STE/ICE-R SHUNT REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

Parts:

Lockwasher (8)

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Stowage Box Raised
Page 4-84	Negative Battery Cables Disconnected

REMOVAL

Note

Note location of electrical leads prior to removal for installation.

A Remove two screws (1), lockwashers (2), and washers (3), and disconnect battery box wiring harness electrical leads (4) and (5) from STE/ICE-R shunt (6). Discard lockwashers (2).

B Remove two screws (7) and lockwashers (8) securing negative leads (9) and (10) to STE/ICE-R shunt (6). Discard lockwashers (8).

C Remove four screws (11), lockwashers (12), and STE/ICE-R shunt (6) from hull. Discard lockwashers (12).

INSTALLATION

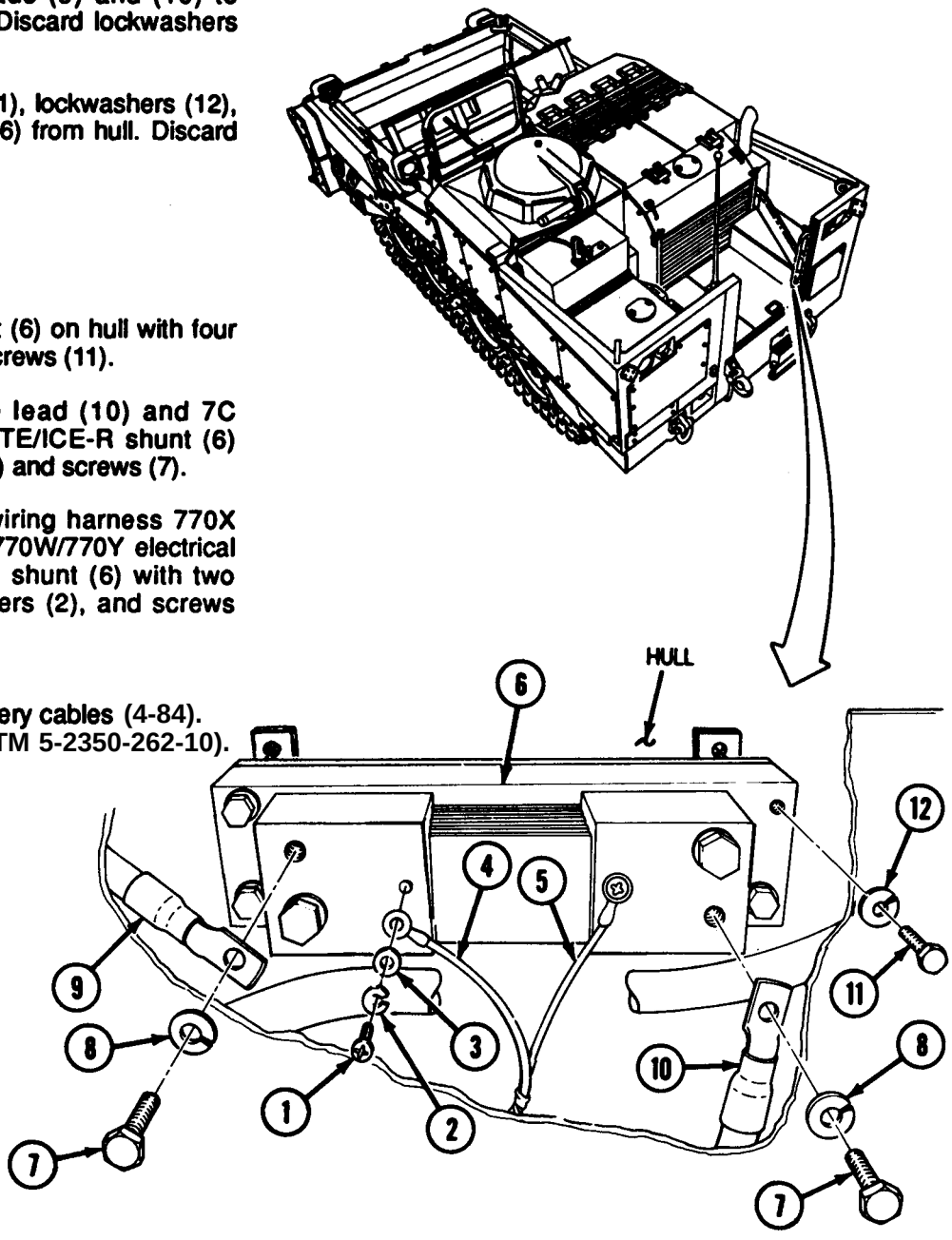
A Install STE/ICE-R shunt (6) on hull with four lockwashers (12) and screws (11).

B Connect 7D negative lead (10) and 7C negative lead (9) to STE/ICE-R shunt (6) with two lockwashers (8) and screws (7).

C Connect battery box wiring harness 770X electrical lead (5) and 770W/770Y electrical lead (4) to STE/ICE-R shunt (6) with two washers (3), lockwashers (2), and screws (1).

FOLLOW-ON TASKS:

- Connect negative battery cables (4-84).
- Lower stowage box (TM 5-2350-262-10).



MASTER RELAY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (2)

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-128	Engine Will Not Crank
Page 3-281	No Electrical Power to Vehicle When MASTER Switch is ON

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected
Page 4-361	Rear Floor Plates Removed

REMOVAL

A Disconnect starter cable (1), cable (2), and battery box wiring harness (3) from master relay receptacles (4), (5), and (6).

B Remove two screws (7), lockwashers (8), and master relay (9) from hull. Discard lockwashers (8).

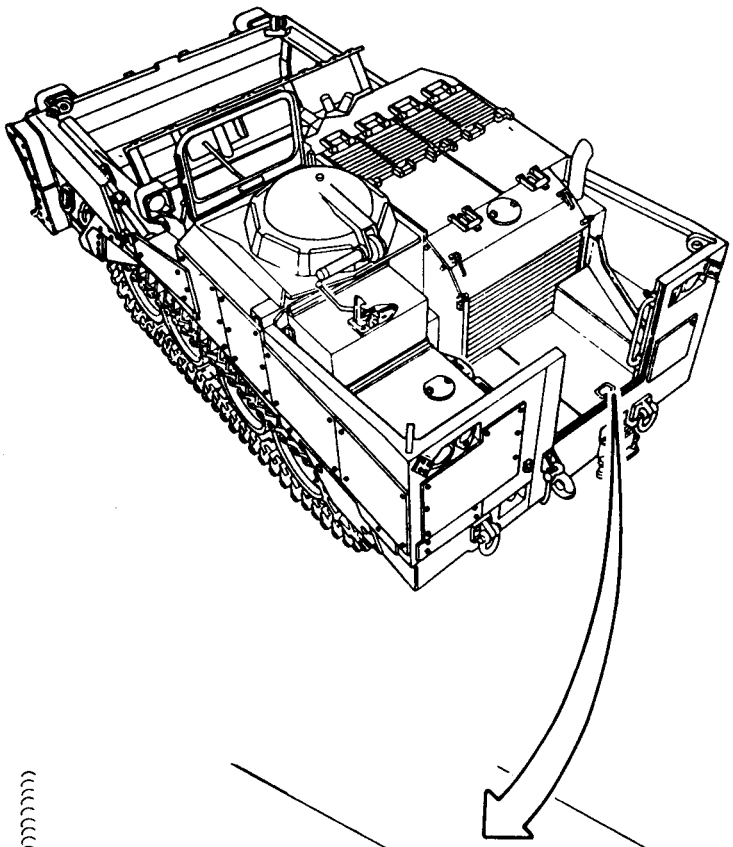
INSTALLATION

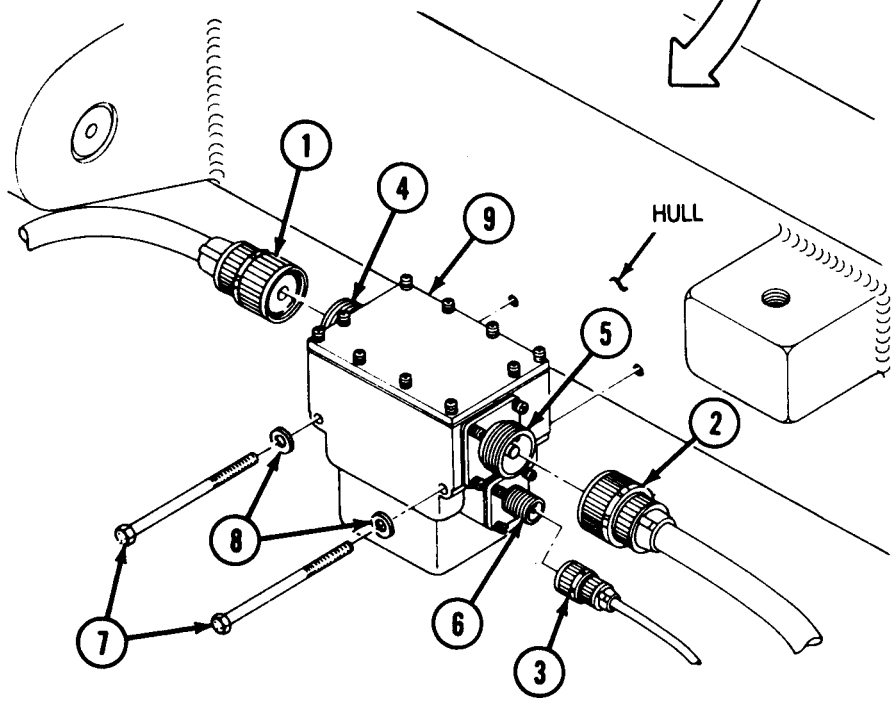
A Install master relay (9) on hull with two lockwashers (8) and screws (7).

B Connect 448 battery box wiring harness (3), 6A cable (2), and 6B starter cable (1) to master relay receptacles (6), (5), and (4).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Install rear floor plates (4-361).





SLAVE RECEPTACLE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Gasket

Locknut (4)

Lockwasher (2)

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Battery Box Open
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Remove jewelry when working on or around batteries.

REMOVAL

WARNING

Remove jewelry, dog tags, bracelets, etc. If jewelry, tools, or disconnected battery ground cable contacts positive battery terminal, a direct short will result, causing instant heating of tools, tool damage, battery damage, or battery explosion. Failure to comply may result in severe injury to personnel.

Note

Tag electrical leads prior to removal for installation.

A Remove nut (1) and screw (2) securing positive leads (3) and (4) to battery terminal clamp (5).

B Remove two screws (6) and lockwashers (7) securing positive lead (3) and negative lead (8) to slave receptacle terminals (9) and (10). Discard lockwashers (7).

C Remove four locknuts (11), washers (12), screws (13), insulator plate (14), gasket (15), dust cap cord (16), and slave receptacle (17) from bracket (18). Discard locknuts (11) and gasket (15).

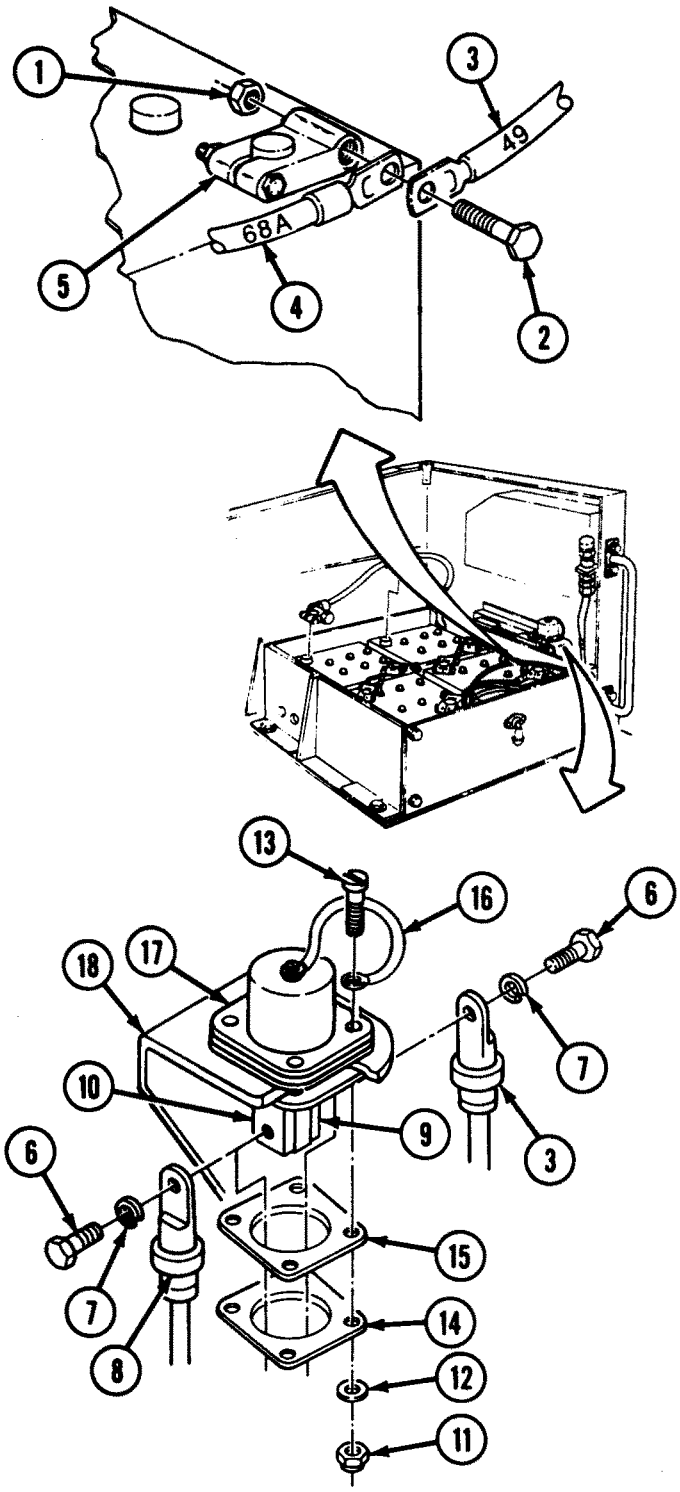
INSTALLATION

A Install slave receptacle (17) and dust cap cord (16) on bracket (18) with four screws (13), gasket (15), insulator plate (14), four washers (12), and locknuts (11).

CAUTION

Ensure lead 49 goes to positive terminal of slave receptacle, and lead 50 goes to negative terminal of slave receptacle. Incorrect electrical polarity can damage equipment.

B Connect 50 negative lead (8) and 49 positive lead (3) to slave receptacle terminals (10) and (9) with two lockwashers (7) and screws (6).



C Connect 68A positive lead (4) and 49 positive lead (3) to battery terminal clamp (5) with screw (2) and nut (1).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Close battery box (TM 5-2350-262-10).

BATTERY REPLACEMENT AND SERVICE

This task covers:

a. Removal

b. Service

c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

Materials:

Grease	Item 20 Appendix D
Sodium Bicarbonate	Item 30 Appendix D

Parts:

Lockwasher (2)

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 9-6140-200-14

Troubleshooting Reference:

Page 3-281	No Electrical Power to Vehicle When MASTER Switch is ON

Equipment Condition:

Reference	Condition Description
Page 4-85	Battery Cables Removed

General Safety Instructions:

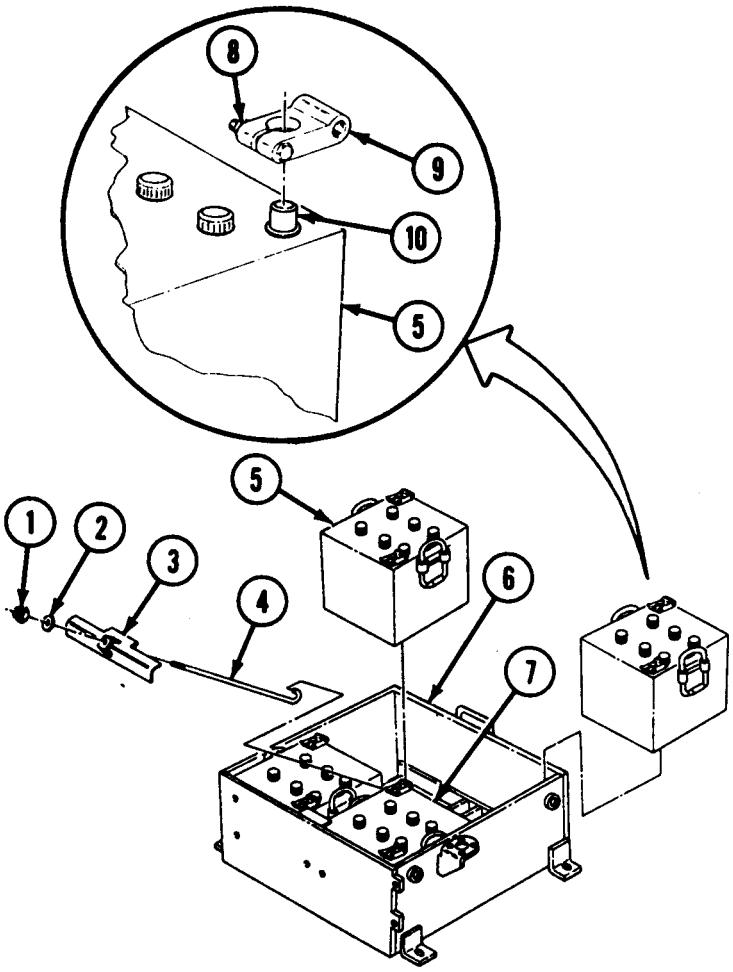
WARNING

- Remove jewelry when working on or around batteries.
- Do not smoke, have open flames, or make sparks around batteries.
- Use caution when lifting batteries. Each battery weighs 72 lb (33 kg).
- Electrolyte is extremely harmful. Always wear goggles and rubber gloves when performing battery maintenance.

REMOVAL

WARNING

- Remove all jewelry, dog tags, bracelets, etc. If jewelry, tools, or disconnected battery ground cable contacts positive battery terminal, a direct short will result, causing instant heating of tools, tool damage, battery damage, or battery explosion. Failure to comply may result in severe injury to personnel.
- Do not smoke, have open flames, or make sparks around batteries. Failure to comply may result in severe injury to personnel.
- Use caution when lifting batteries. Each battery weighs 72 lb (33 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Electrolyte is extremely harmful. Always wear goggles and rubber gloves when performing battery maintenance. Failure to comply may result in severe injury to



A Remove two nuts (1), lockwashers (2), and retainers (3) from hooked bolts (4). Discard lockwashers (2).

CAUTION

To avoid draining current and damaging cells, place batteries on a board or wooden pallet after removal from vehicle.

B Remove four batteries (5) from battery box (6).

C Remove two hooked bolts (4) from battery trays (7).

Note

- Use two wrenches to loosen screws and nuts on terminal clamps.
- Repeat step D for each terminal clamp.

D Loosen nut (8), and using battery terminal puller, remove terminal clamp (9) from battery post (10).

SERVICE

Refer to battery service (p 2-49) to remove and retard corrosion. Replace all unserviceable batteries and parts.

INSTALLATION

WARNING

- Remove all jewelry, dog tags, bracelets, etc. If jewelry, tools, or disconnected battery ground cable contacts positive battery terminal, a direct short will result, causing instant heating of tools, tool damage, battery damage, or battery explosion. Failure to comply may result in severe injury to personnel.
- Do not smoke, have open flames, or make sparks around batteries. Failure to comply may result in severe injury to personnel.
- Use caution when lifting batteries. Each battery weighs 72 lb (33 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Electrolyte is extremely harmful. Always wear goggles and rubber gloves when performing battery maintenance. Failure to comply may result in severe injury to personnel.

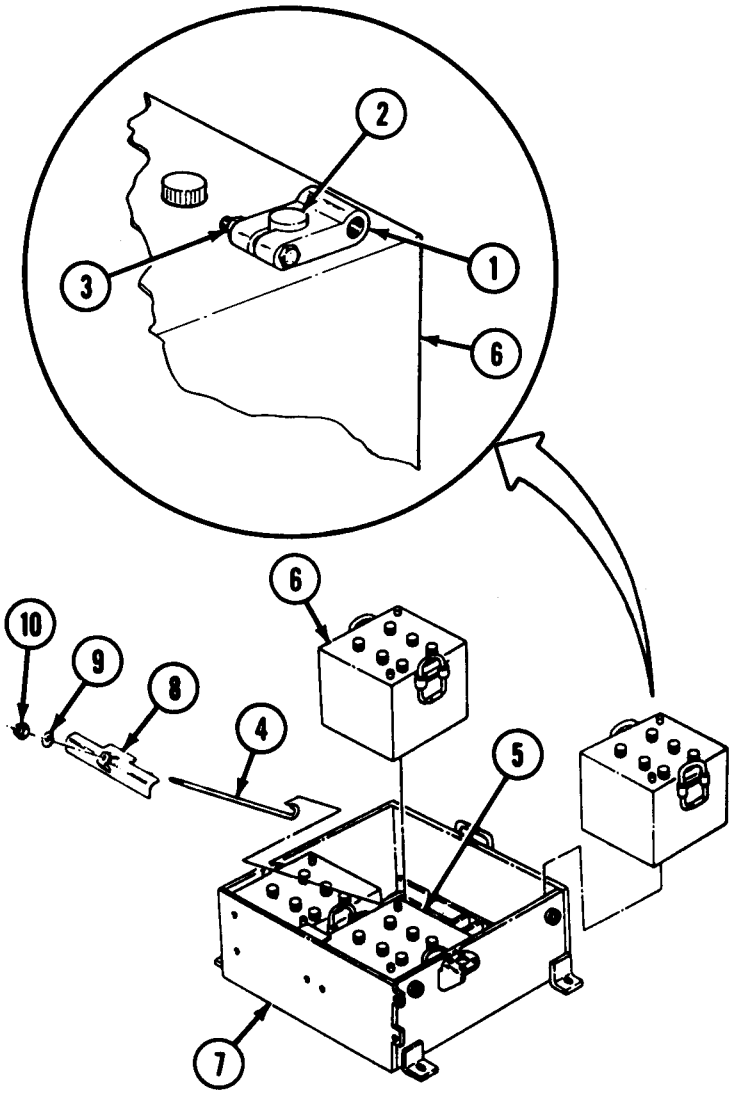
CAUTION

- Do not hammer terminal clamps on battery posts. Damage to the battery covers or the undercover post connections will result. Spread clamp terminals open if too tight prior to installation.
- Do not twist clamps with pliers to test for tightness. Damage to post and clamp will result.

Note

- Positive terminal posts are marked P and +; negative terminal posts are marked N and -.
- Use two wrenches to tighten nuts and screws on terminal clamps.
- Repeat step A for each terminal clamp.

A Install terminal clamp (1) on post (2). Tighten nut (3) after final positioning of terminal clamp (1) and after battery cables are installed.



Note

Ensure positive battery posts are toward rear of vehicle when installing batteries.

B Install two hooked bolts (4) on battery trays (5), and position four batteries (6) in battery box (7).

C Secure batteries (6) in battery trays (5) by installing two retainers (8) on batteries (6) and hooked bolts (4) with two lockwashers (9) and nuts (10). Tighten nuts (10) to 7-10 lb-ft (10-14 N-m).

FOLLOW-ON TASK:
Install battery cables (p 4-85).

BATTERY BOX REPLACEMENT

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Parts:

Self-locking Screw (10)

Locknut (2)

Lockwasher (12)

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 9-6140-200-14

Equipment Condition:

Reference	Condition Description
Page 4-85	Battery Cables Removed
Page 4-78	Batteries Removed
Page 4-340	Engine Exhaust Grilles Removed
Page 4-607	Rear Muffler Shield Removed

General Safety Instructions:

WARNING

Lifting device must have a weight capacity greater than 140 lb (64 kg).

REMOVAL

WARNING

Lifting device must have a weight capacity greater than 140 lb (64 kg). Failure to comply may result in damage to equipment or injury to personnel.

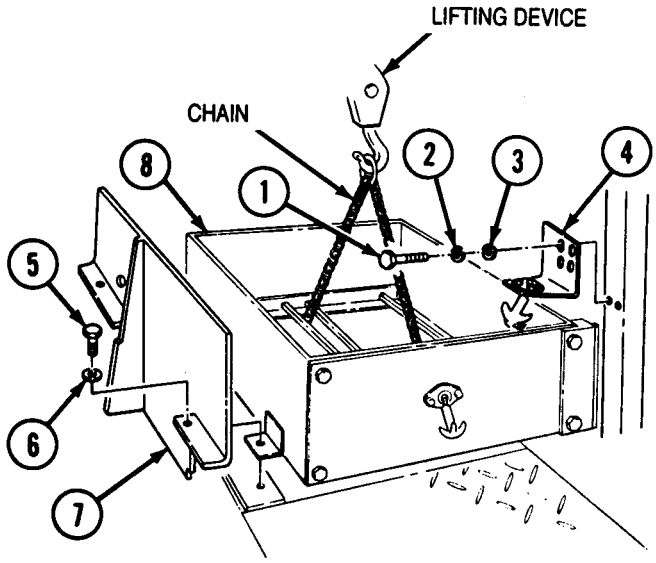
Note

- Refer to TM 9-6140-200-14 for procedures to clean battery box.
- Mark location of bracket on rear hull wall for installation.

A Remove four screws (1), lockwashers (2), washers (3), and bracket (4) from hull rear wall. Discard lockwashers (2).

B Remove four self-locking screws (5), washers (6), and bottom deflector (7) from battery box (8) and hull. Discard self-locking screws (5).

C Using chain and lifting device, remove battery box (8) from vehicle.



DISASSEMBLY

A Remove eight screws (1), lockwashers (2), and two battery trays (3) from battery box (4). Discard lockwashers (2).

B Remove two self-locking screws (5), washers (6), and fastener (7) from armor plate (8) and battery box (4). Discard self-locking screws (5).

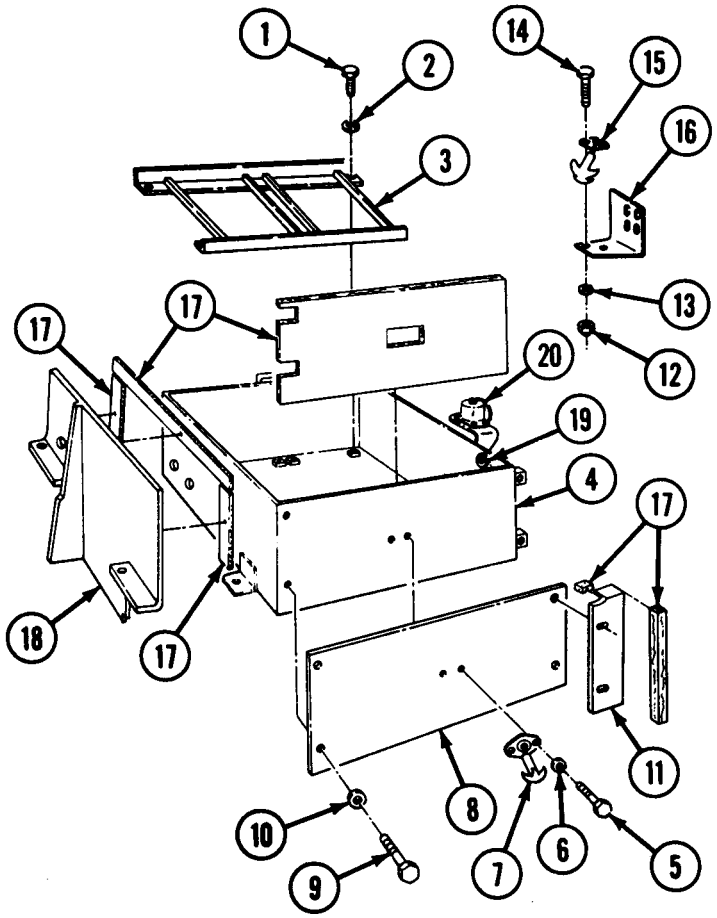
C Remove four self-locking screws (9), washers (10), armor plate (8), and side deflector (11) from battery box (4). Discard self-locking screws (9).

D Remove two locknuts (12), washers (13), screws (14), and fastener (15) from bracket (16). Discard locknuts (12).

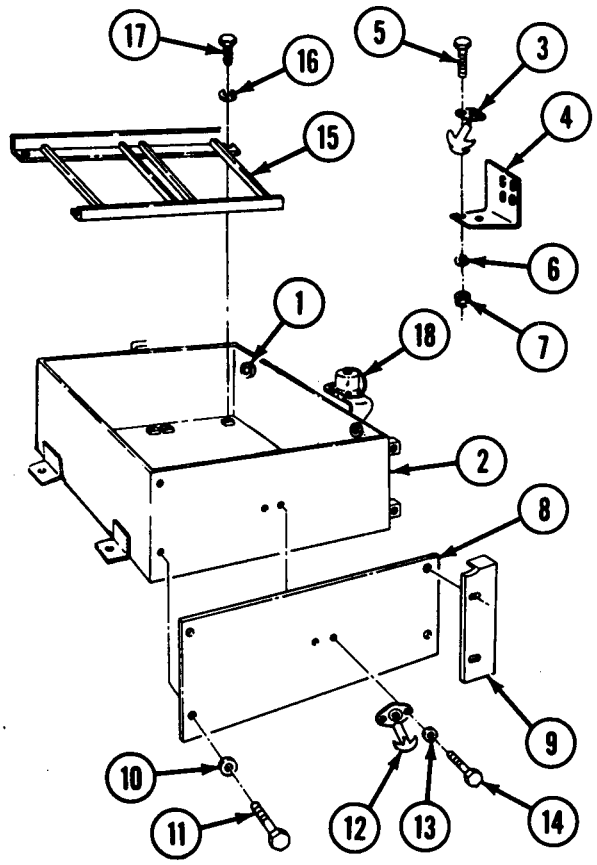
E Remove and replace loose or damaged foam insulation (17) from bottom deflector (18), side deflector (11), and battery box (4) (p 2-48).

F Remove two grommets (19) from battery box (4), if damaged.

G Remove slave receptacle (20) (p 4-76).



ASSEMBLY



A If removed, install two grommets (1) on battery box (2).

Note

Ensure notch on bottom deflector fits over steer unit breather hose.

B Install fastener (3) on bracket (4) with two screws (5), washers (6), and locknuts (7).

C Install armor plate (8) and side deflector (9) on battery box (2) with four washers (10) and self-locking screws (11). Do not tighten self-lockings screws (11).

D Install fastener (12) on armor plate (8) and battery box (2) with two washers (13) and self-locking screws (14).

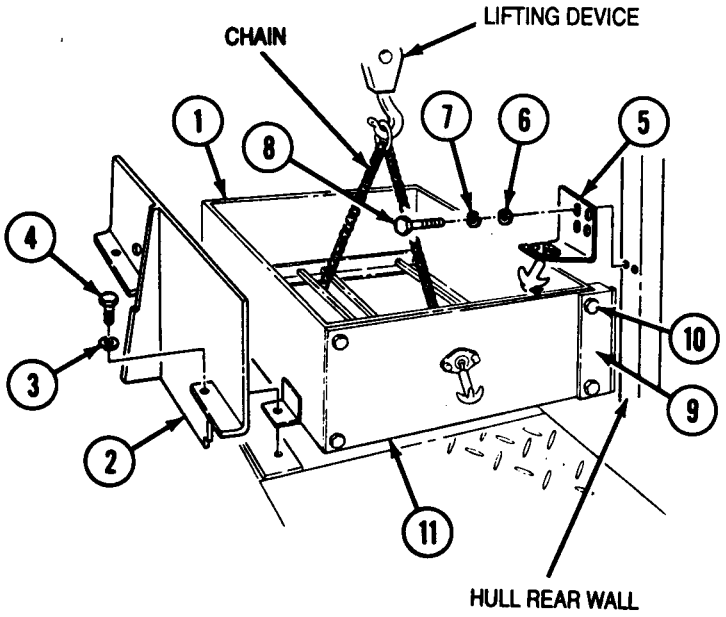
E Install two battery trays (15) on battery box (2) with eight lockwashers (16) and screws (17).

F Install slave receptacle (18) (p 4-76).

INSTALLATION

WARNING

Lifting device must have a weight capacity greater than 140 lb (64 kg). Failure to comply may result in damage to equipment or injury to personnel.



A Using chain and lifting device, position battery box (1) on vehicle.

B Install battery box (1) and bottom deflector (2) on hull with four washers (3) and self-locking screws (4).

C Install bracket (5) on hull rear wall with four washers (6), lockwashers (7), and screws (8).

D Position side deflector (9) against hull rear wall, and tighten four self-locking screws (10) securing side deflector (9) and armor plate (11) to battery box (1).

FOLLOW-ON TASKS:

- Install rear muffler shield (p 4-603).
- Install engine exhaust grilles (p 4-340).
- Install batteries (p 4-79).
- Install battery cables (p 4-85).

BATTERY CABLES REPLACEMENT

This task covers:

a. Cleaning and Inspection
b. Negative Cables Disconnect
c. Negative Cables Connect
d. Negative Cables Removal
e. Negative Cables Installation
f. Interconnecting Cables Removal
g. Interconnecting Cables Installation
h. Positive Cables Removal
i. Positive Cables Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Grease	Item 19 Appendix D
Sodium Bicarbonate	Item 30 Appendix D

Parts:

Lockwasher (5)

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-281	No Electrical Power to Vehicle When MASTER Switch is ON

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Battery Box Opened

General Safety Instructions:

WARNING

- Remove jewelry when working on or around batteries.
- Do not smoke, have open flames, or make sparks around batteries.
- Electrolyte is extremely harmful. Always wear goggles and rubber gloves when performing battery maintenance.

WARNING

- Remove all jewelry, dog tags, bracelets, etc. If jewelry, tools, or disconnected battery ground cable contacts positive battery terminal, a direct short will result, causing instant heating of tools, tool damage, battery damage, or battery explosion. Failure to comply may result in severe injury to personnel.
- Do not smoke, have open flames, or make sparks around batteries. Failure to comply may result in severe injury to personnel.
- Electrolyte is extremely harmful. Always wear goggles and rubber gloves when performing battery maintenance. Keep electrolyte from contact with eyes and skin. Failure to comply may result in severe injury to personnel.

Note

- Tag all cables, prior to removal, for installation.
- Use two wrenches to loosen and tighten nuts and screws on terminal clamps.

CLEANING AND INSPECTION

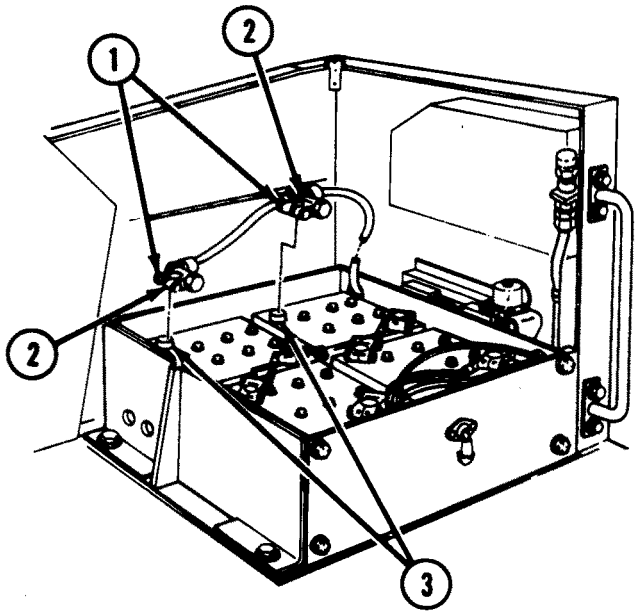
Inspect cables for corrosion and cracks. Remove and replace defective cables and/or clean with wire brush and sodium bicarbonate solution (p 2-50).

NEGATIVE CABLES DISCONNECT

Loosen two nuts (1), and using battery terminal puller, disconnect two terminal clamps (2) from negative battery posts (3).

NEGATIVE CABLES RECONNECT

Connect two terminal clamps (2) to negative battery posts (3), and tighten two nuts (1).



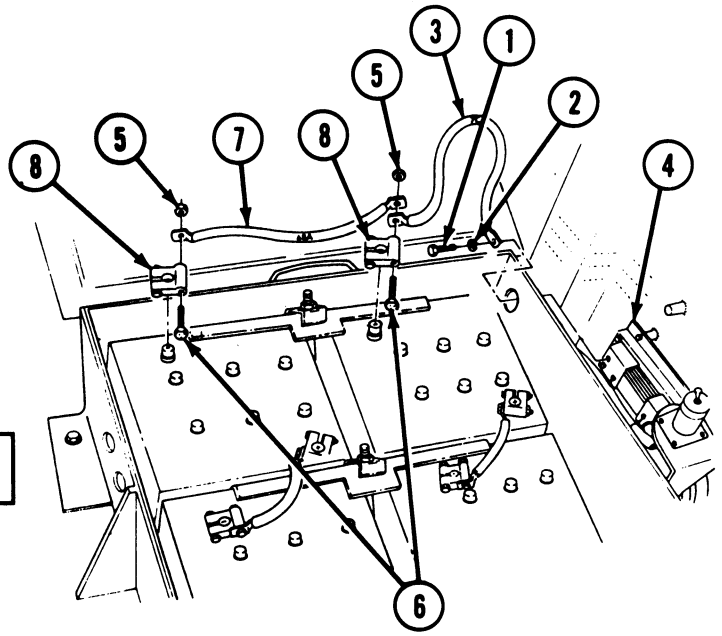
NEGATIVE CABLES REMOVAL

Note

For access to hardware, it may be necessary to loosen and remove the battery terminal clamps.

A Remove screw (1), lockwasher (2), and cable (3) from STE/ICE shunt (4). Discard lockwasher (2).

B Remove two nuts (5), screws (6), and cables (7) and (3) from negative terminal clamps (8).



NEGATIVE CABLES INSTALLATION

A Install 7C cable (3) and 68A cable (7) on two negative terminal clamps (8) with screws (6) and nuts (5).

B Connect 7C cable (3) to STE/ICE-R shunt (4) with lockwasher (2) and screw (1).

C Coat negative terminal clamps (8) with grease.

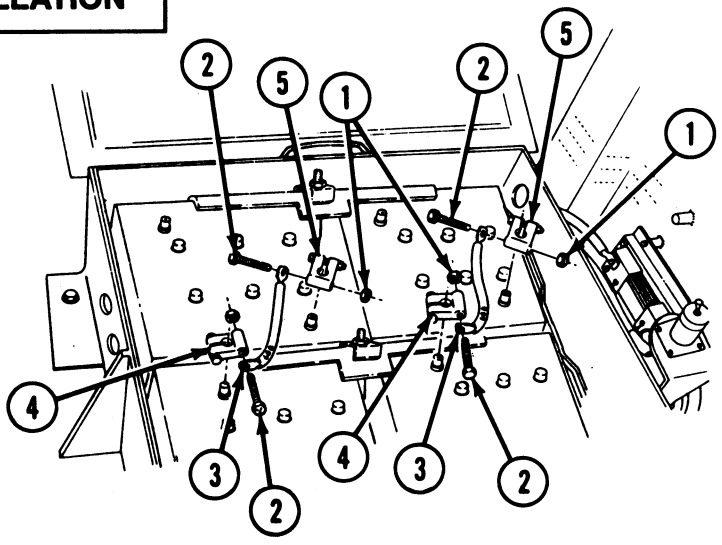
INTERCONNECTING CABLES REMOVAL

Remove four nuts (1), screws (2), and two interconnecting cables (3) from negative terminal clamps (4) and positive terminal clamps (5).

INTERCONNECTING CABLES INSTALLATION

A Install two 68B interconnecting cables (3) on positive terminal clamps (5) and negative terminal clamps (4) with four screws (2) and nuts (1).

B Coat negative terminal clamps (4) and positive terminal clamps (5) with grease.



POSITIVE CABLES REMOVAL

A Remove nut (1) and screw (2), and disconnect cables (3), (4), (5), and (6) from terminal clamp (7).

B Remove nut (8), screw (9), and cable (3), and disconnect cable (10) from terminal clamp (11).

C Remove screw (12), lockwasher (13), and cable (10) from slave receptacle terminal (14). Discard lockwasher (13).

D Remove screw (15) and lockwasher (16), and disconnect cable (17) from slave receptacle terminal (18). Discard lockwasher (16).

E Remove screw (19), lockwasher (20), and cable (17), and disconnect cable (21) from hull. Discard lockwasher (20).

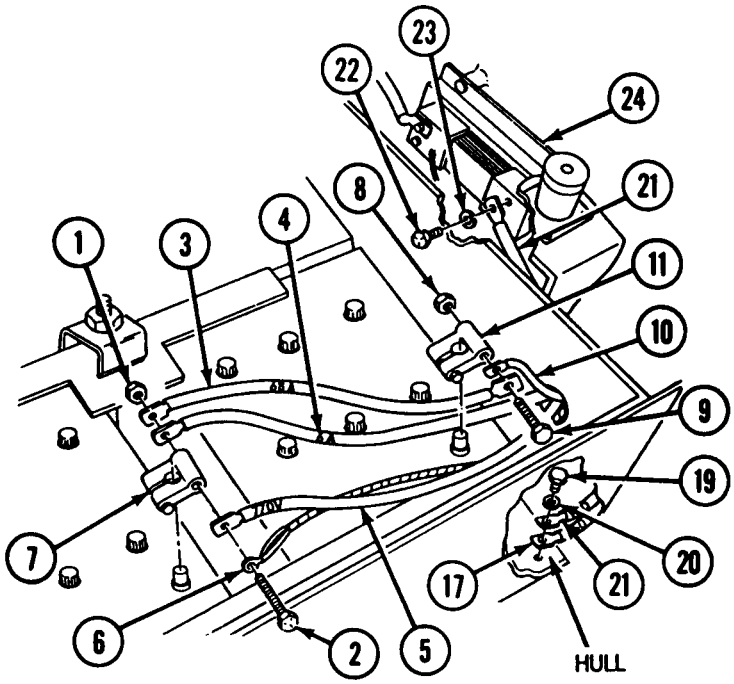
F Remove screw (22), lockwasher (23), and cable (21) from STE/ICE-R shunt (24). Discard lockwasher (23).

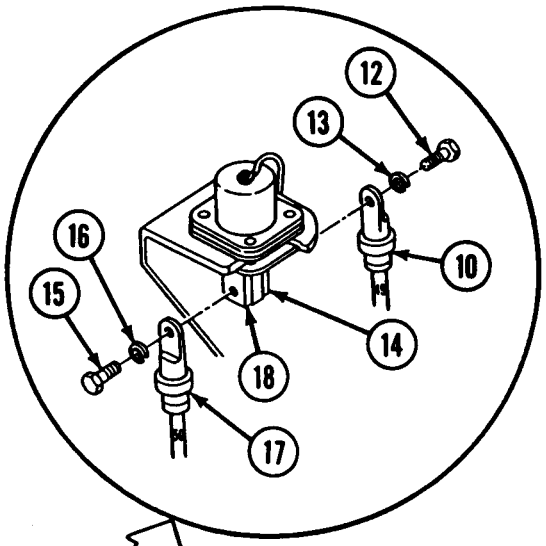
Note

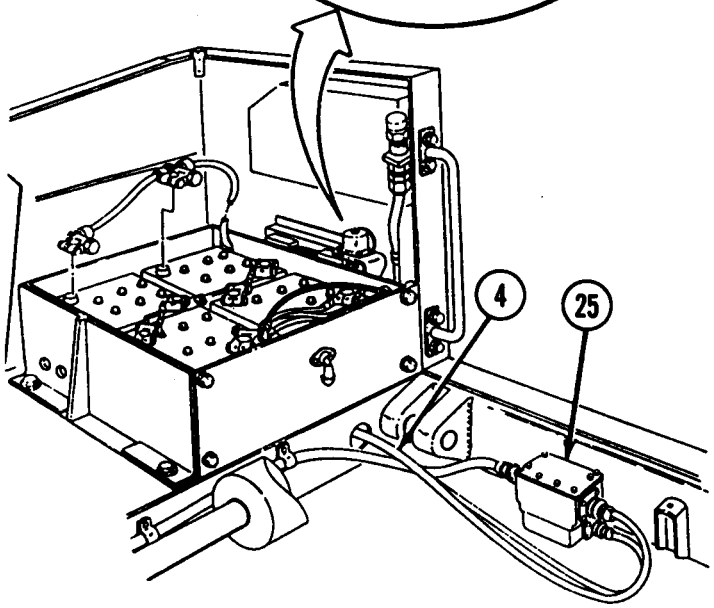
If cable 6A is to be replaced, perform steps G and H.

G Remove batteries (p 4-78) and battery box (p 4-81).

H Disconnect cable (4) from master relay receptacle (25), and remove cable (4) from vehicle.







POSITIVE CABLES INSTALLATION

Note

Perform steps A and B if cable 6A was replaced. If cable 6A was not replaced, begin at step C.

A Route and connect 6A cable (1) to master relay receptacle (2).

B Install battery box (p 4-82) and batteries (p 4-79).

C Install 7D cable (3) and 50 cable (4) on hull with lockwasher (5) and screw (6).

D Connect 7D cable (3) to STE/ICE-R shunt (7) with lockwasher (8) and screw (9).

CAUTION

Ensure lead 49 goes to positive terminal of slave receptacle and lead 50 goes to negative terminal of slave receptacle. Incorrect electrical polarity can damage equipment.

E Connect 50 cable (4) to slave receptacle terminal (10) with lockwasher (11) and screw (12).

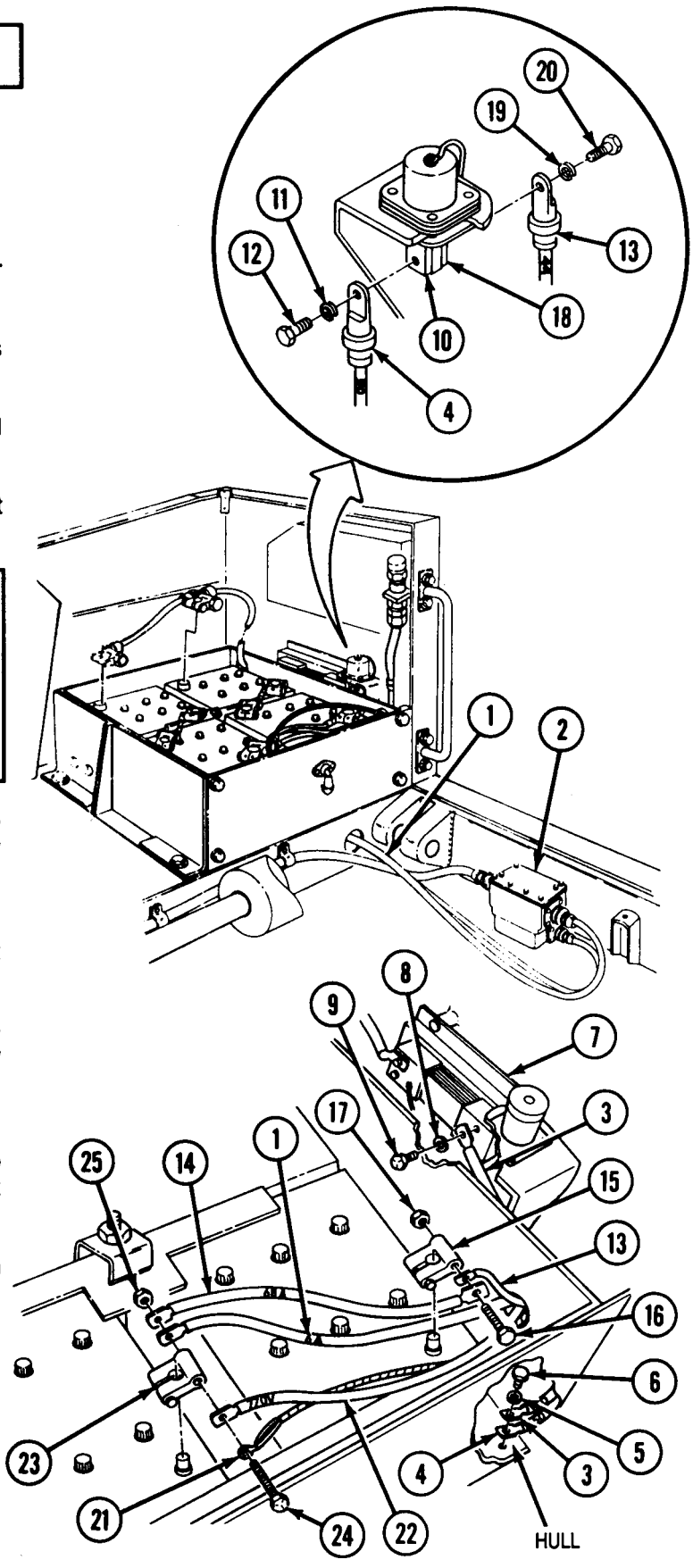
F Install 49 cable (13) and 68A cable (14) on terminal clamp (15) with screw (16) and nut (17).

G Connect 49 cable (13) to slave receptacle terminal (18) with lockwasher (19) and screw (20).

H Connect 770E/459 cable (21), 770V cable (22), 6A cable (1), and 68A cable (14) to terminal clamp (23) with screw (24) and nut (25).

I Coat terminal clamps (15) and (23) with grease.

FOLLOW-ON TASK:
Close battery box (TM 5-2350-262-10).



HEADLIGHT BEAM SELECTING SWITCH REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (3)

Parts Reference:

TM 5-2350-262-10 Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Troubleshooting Reference:

Page 3-288 Vehicle Lights Do Not Operate

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Do not operate ejector when personnel are in bowl. Do not work in bowl unless ejector lock is engaged.

REMOVAL

WARNING

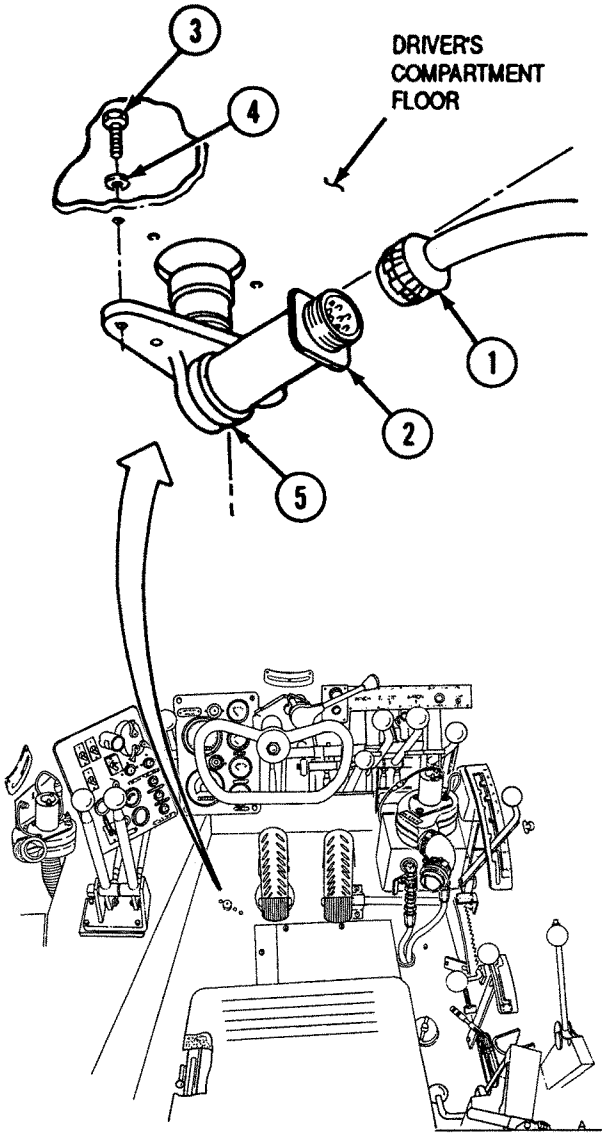
Do not operate ejector when personnel are in bowl. Do not work in bowl unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

A Disconnect electrical connector (1) from receptacle (2).

Note

Helper will assist with step B.

B Remove three screws (3), lockwashers (4), and headlight beam selecting switch (5) from driver's compartment floor. Discard lockwashers (4).



INSTALLATION

Note

Helper will assist with step A.

A With receptacle (2) facing front of vehicle, install headlight beam selecting switch (5) on driver's compartment floor with three lockwashers (4) and screws (3).

B Connect electrical connector (1) to receptacle (2).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Retract ejector (TM 5-2350-262-10).

DOMELIGHT DIMMER CONTROL SWITCH REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected

REMOVAL

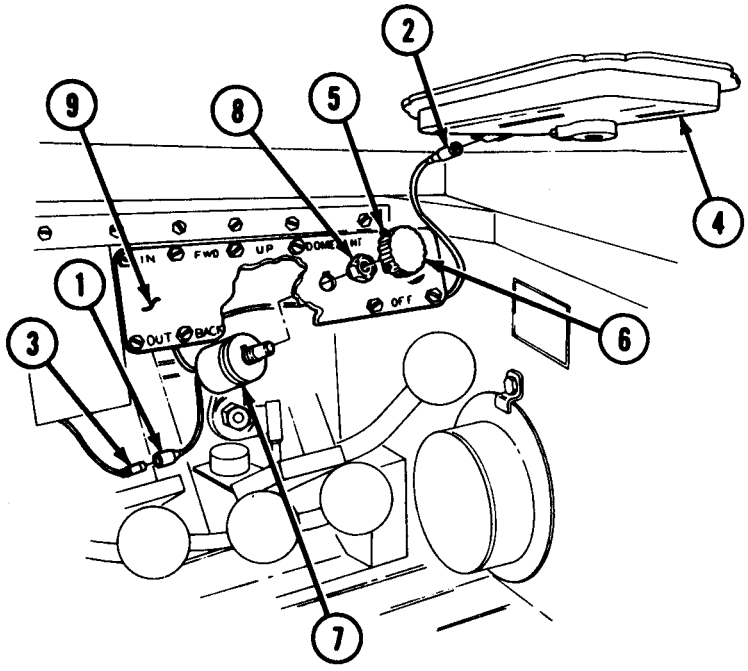
Note

Tag electrical leads prior to removal for installation.

A Disconnect leads (1) and (2) from lead (3) and domelight (4).

B Loosen two setscrews (5), and remove knob (6) from domelight dimmer control switch (7).

C Remove threaded hexagon dust and mositure boot (8) and domelight dimmer control switch (7) from panel (9).



INSTALLATION

A Install domelight dimmer control switch (7) on panel (9) with threaded hexagon dust and moisture boot (8).

B Install knob (6) on domelight dimmer control switch (7), and tighten two setscrews (5).

C Connect leads (1) and (2) to 38 lead (3) and domelight (4).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

TRAILER RECEPTACLE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound — Item 16 Appendix D

Parts:

Gasket

Locknut (4)

Lockwasher (4)

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

TB SIG 222

Equipment Condition:

Reference	Condition Description
Deleted	
Page 4-84	Negative Battery Cables Disconnected

REMOVAL

A Remove four locknuts (1), two ground leads (2), lockwashers (3), four screws (4), and cover (5) from receptacle (6) and hull. Discard locknuts (1) and lockwashers (3).

B Carefully pull receptacle (6), gasket (7), and wiring harness (8) from hull.

Note

Ensure all electrical leads are tagged prior to removal for installation.

C Remove knurled nut (9) from receptacle (6), and slide knurled nut (9) and bushing (10) back on cable leads (11) of wiring harness (8) and ground leads (2).

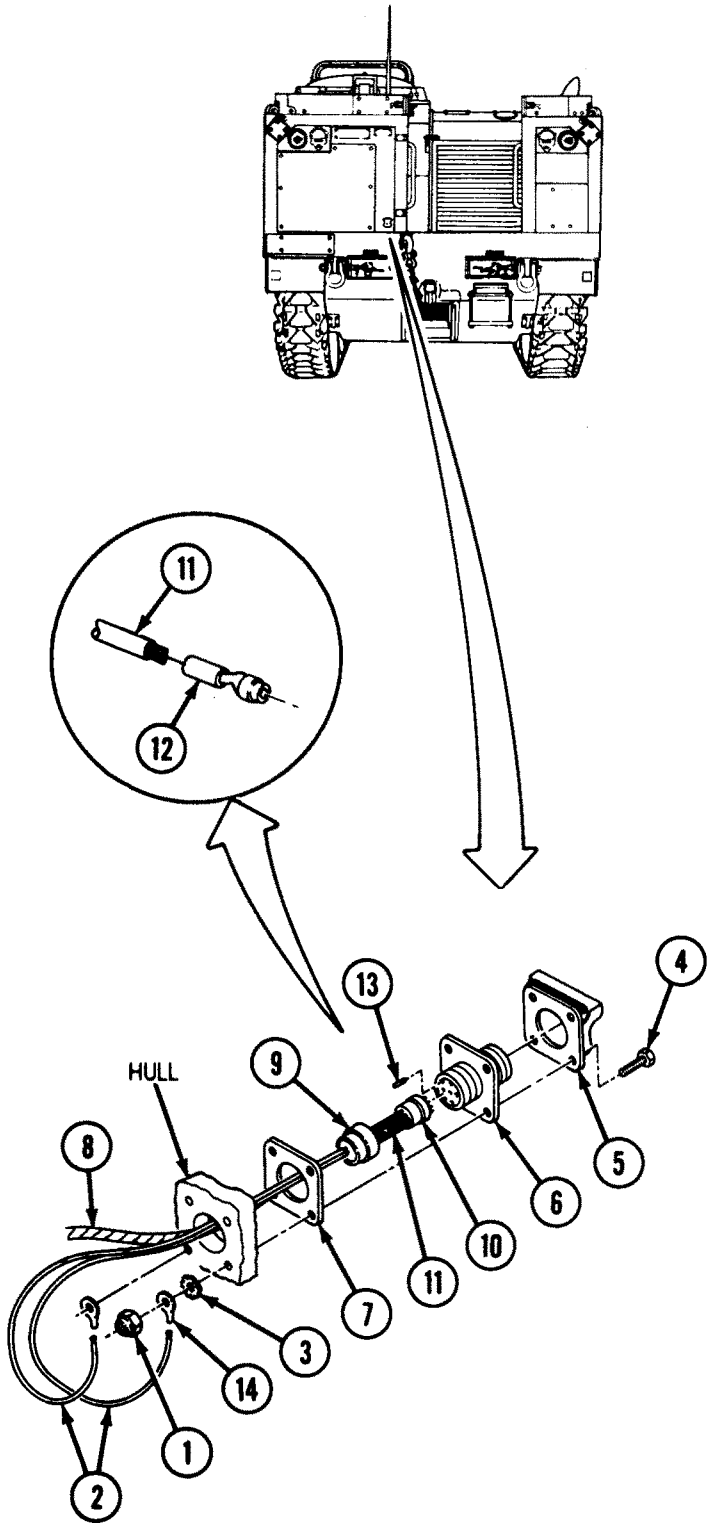
D Push ten contacts (12) out of receptacle (6) and bushing (10), and remove receptacle (6), bushing (10), knurled nut (9), and gasket (7) from cable leads (11) and ground leads (2). Discard gasket (7).

E Remove two nonmetallic rods (13) from bushing (10) or receptacle (6).

Note

Perform step F if contacts or terminals require replacement.

F Clip contacts (12) and terminals (14) from cable leads (11) and ground leads (2). Discard contacts (12) and terminals (14).



INSTALLATION

Note

Perform step A if contacts or terminals were removed.

A Strip insulation equal to depth of solder wells of contacts (1) and terminals (2), and insert and solder contacts (1) and terminals (2) to cable leads (3) and ground leads (4). Refer to TB SIG 222 for soldering information.

B Slide gasket (5) and knurled nut (6) on cable leads (3) and ground leads (4), and coat contacts (1) with silicone compound.

C Push cable leads (3) and ground leads (4) through holes in bushing (7) and receptacle (8) in the following order: 24A (9) to A, 84 (10) to B, 24A (11) to C, 90 (4) to D, 83 (12) to E, 23A (13) to F, 490 (14) to H, 84 (15) to J, 37 (16) to K, and 90 (4) to L.

D Insert two nonmetallic rods (17) in holes M and N of bushing (7), and slide bushing (7) tight against receptacle (8).

E Install knurled nut (6) on receptacle (8), and install gasket (5), receptacle (8), cover (18), and two 90 ground leads (4) on hull with four screws (19), lockwashers (20), and locknuts (21).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).

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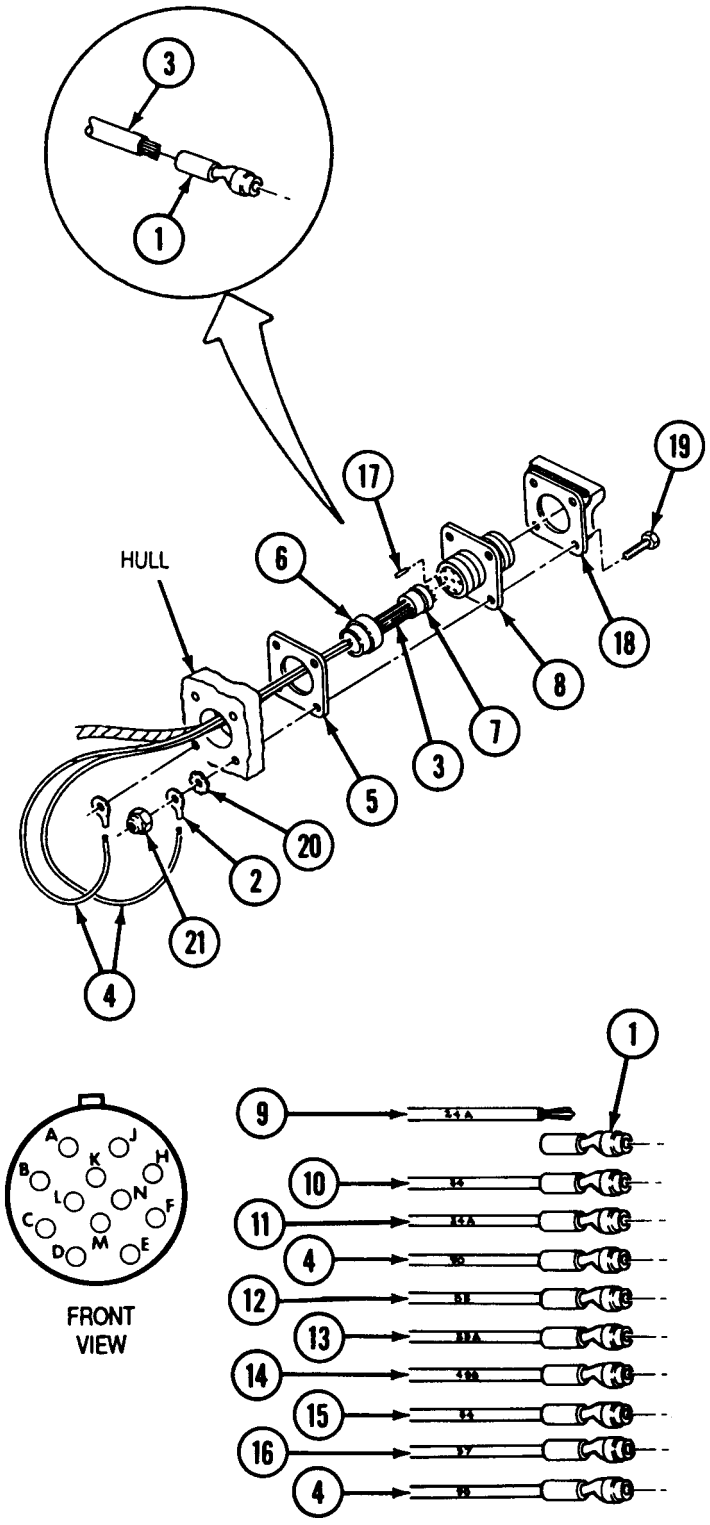


TACHOMETER SENDER AND ADAPTER REPLACEMENT

This task covers:

a. Removal

b. Inspection

c. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Grease	Item 19 Appendix D

Parts:

Gasket

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

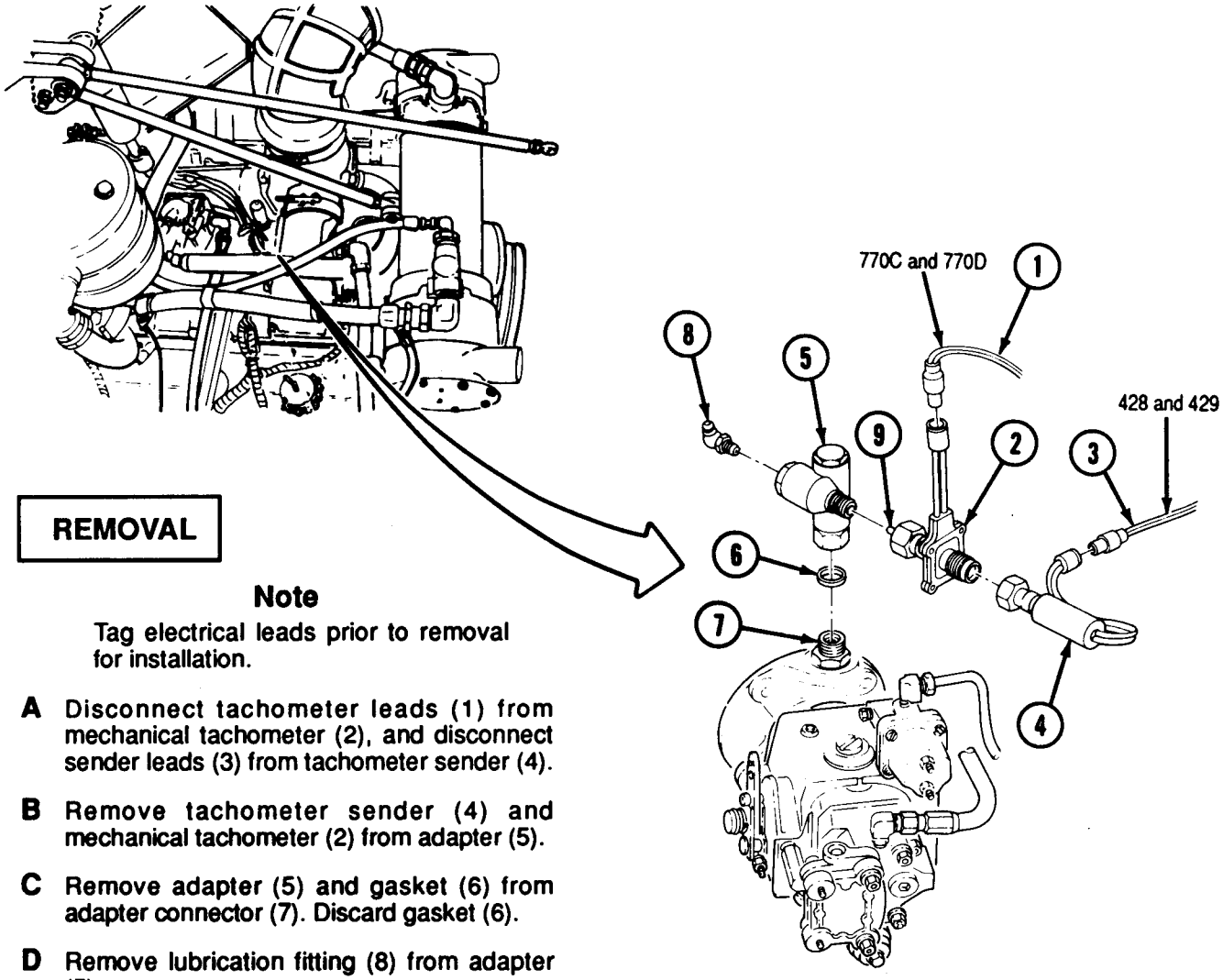
Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles Opened
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

Note

Tag electrical leads prior to removal for installation.

A Disconnect tachometer leads (1) from mechanical tachometer (2), and disconnect sender leads (3) from tachometer sender (4).

B Remove tachometer sender (4) and mechanical tachometer (2) from adapter (5).

C Remove adapter (5) and gasket (6) from adapter connector (7). Discard gasket (6).

D Remove lubrication fitting (8) from adapter (5).

INSPECTION

Inspect tachometer drive shaft (9) for signs of damage or deterioration. Remove and replace tachometer drive shaft (9) if unserviceable.

INSTALLATION

Note

Ensure lubrication fitting is positioned to allow for grease gun access.

A Install lubrication fitting (8) on adapter (5). Install gasket (6) and adapter (5) on adapter connector (7).

B Install mechanical tachometer (2) on adapter (5).

C Install tachometer sender (4) on mechanical tachometer (2).

D Connect 428 and 429 sender leads (3) to tachometer sender (4), and connect 770C and 770D tachometer leads (1) to mechanical tachometer (2).

E Lubricate adapter (5) with grease.

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Close engine intake grilles TM 5-2350-262-10.

FUEL LEVEL TRANSMITTER REPLACEMENT AND REPAIR

This task covers:

a. Removal

b. Repair

c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound — Item 16 Appendix D

Parts:

Gasket

Self-locking Screw (6)

Parts Reference:

TM 5-2350-262-24P — Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

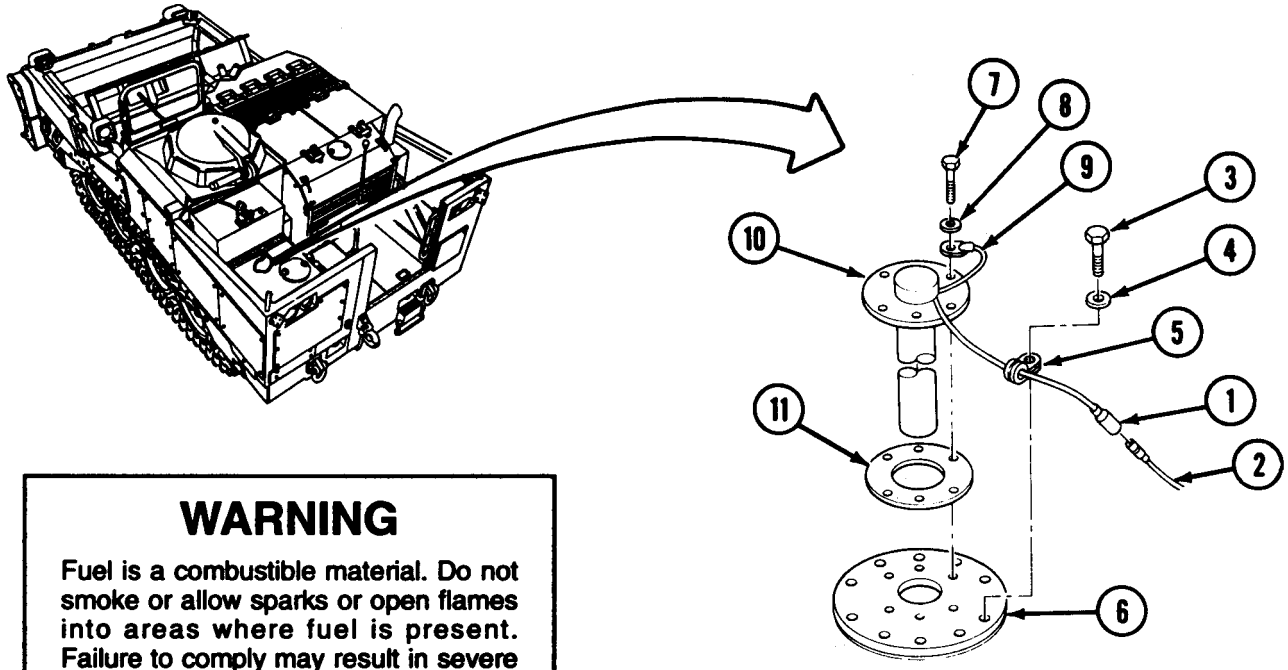
Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected
Page 4-324	Fuel Tank Armor Removed

General Safety Instructions:

WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present.



WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Failure to comply may result in severe injury or death to personnel.

REMOVAL

A Disconnect fuel level transmitter lead (1) from wiring harness (2).

B Remove screw (3), washer (4), and clamp (5) from fuel tank cover (6). Remove clamp (5) from transmitter lead (1).

C Remove six self-locking screws (7), washers (8), terminal (9), fuel level transmitter (10), and gasket (11) from fuel tank cover (6). Discard self-locking screws (7) and gasket (11).

CAUTION

Cover opening in fuel tank to keep foreign matter out of fuel tank. Failure to comply may result in damage to equipment.

REPAIR

Use general wiring harness and cable repair procedures (p 3-1) to repair fuel level transmitter.

INSTALLATION

A Position gasket (11) and fuel level transmitter (10) on fuel tank cover (6).

B Secure terminal (9) and fuel level transmitter (10) to fuel tank cover (6) with six washers (8) and self-locking screws (7).

C Install clamp (5) on fuel level transmitter lead (1) and fuel tank cover (6) with washer (4) and screw (3).

D Apply a thin coat of silicone compound to shell of fuel level transmitter lead (1), and connect fuel level transmitter lead (1) to wiring harness (2).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Install fuel tank armor (p 4-325).

STOPLIGHT SWITCH REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

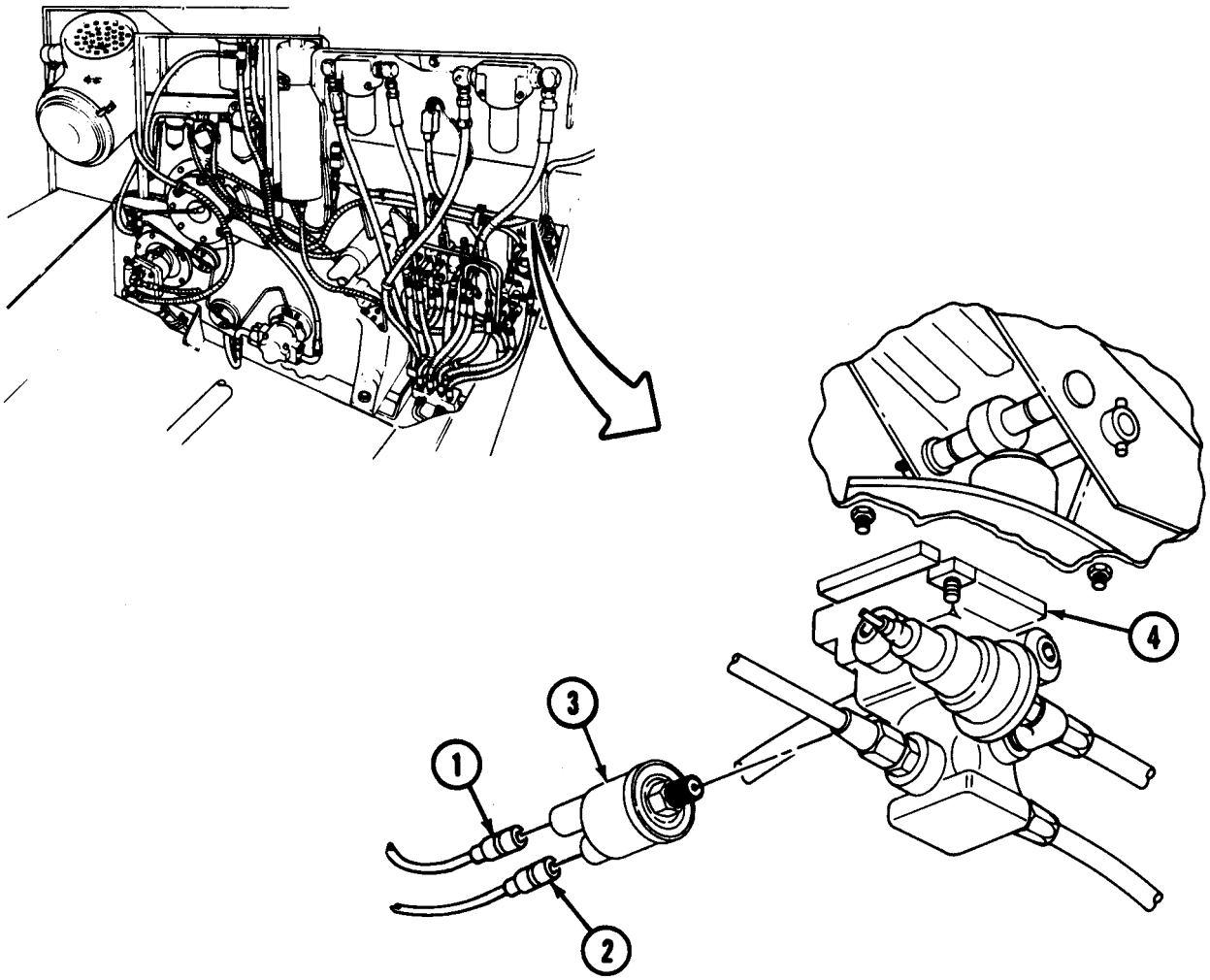
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 2-27	Air Pressure Relieved
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been bled.



WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved. Failure to comply may result in severe injury to personnel.

REMOVAL

A Disconnect electrical leads (1) and (2) from stoplight switch (3).

B Remove stoplight switch (3) from service brake valve (4).

INSTALLATION

A Coat threads of stoplight switch (3) with sealing compound, and install stoplight switch (3) on service brake valve (4).

B Connect electrical leads (1) and (2) to stoplight switch (3).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Retract ejector (TM 5-2350-262-10).

VENTILATION FAN WIRING HARNESS REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Repair
c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Emery Cloth	Item 8 Appendix D

Parts:

Lockwasher	(2)

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

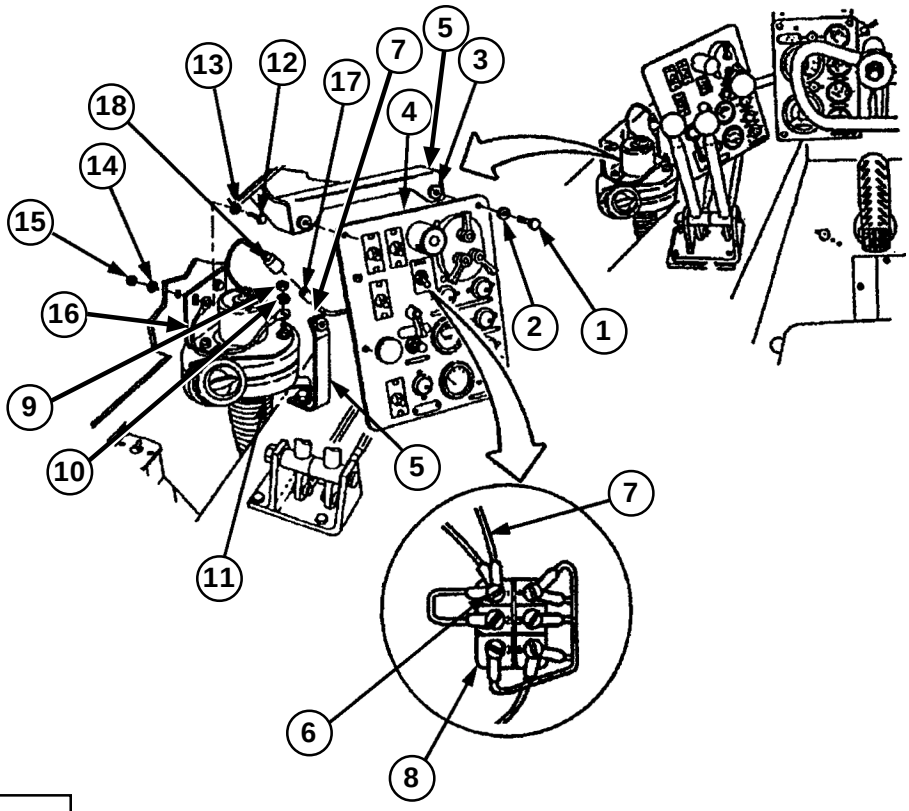
Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-338	Driver's Ventilation Fan Malfunctions

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

Note

- Tag electrical leads prior to removal for installation.
- Remove sleeve nuts only if damaged.

A Remove three screws (1), washers (2), and sleeve nuts (3) from instrument panel (4).

B Carefully pull driver's instrument panel (4) away from brackets (5) to expose the rear of panel (4).

C Remove screw (6), and electrical lead (7), ventilation fan wiring harness, from fan switch (8).

D Remove nut (9), lockwasher (10), from fan motor (11). Discard lockwasher (10).

E Remove screw (12), lockwasher (13), washer (14), nut (15), and ground lead (16), from driver's compartment wall. Discard lockwasher (13).

F Disconnect electrical connector (17) from ventilation fan wire receptacle (18), and remove ventilation fan wiring harness (7).

REPAIR

A Refer to page 3-1 to repair ventilation fan wiring harness.

B Clean ends of ground lead (16) and mounting surface with emery cloth until metal is clean and free of paint or corrosion. This will ensure a good ground is obtained during re-assembly.

INSTALLATION

A Install ventilation fan wiring harness (7), electrical connector (17) to vent fan wire receptacle (18). Route harness (7) to back of instrument panel (4).

Note

Align tangs on connector for correct installation.

B Install ground lead (16) to driver's compartment wall with nut (15), washer (14), new lockwasher (13) and screw (12). Install other end of ground lead with new lockwasher (10) and nut (9).

C Install other end of vent fan wiring harness (7) to fan switch (8) with screw (6). Ensure three wires are connected to the fan switch with screw (6).

D Carefully replace driver's instrument panel (4) on brackets (5) with three washers (2), nuts (3), and screws (1).

FOLLOW-ON TASK:

Connect battery cable (p 4-84)

DRIVER'S INSTRUMENT PANEL ASSEMBLY REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Repair
d. Assembly
e. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No.1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Emery Cloth	Item 8 Appendix D
Silicone Compound	Item 16 Appendix D

Parts:

Locknut
Lockwasher (16)
Electrical Connector (4)
Packing (As Req.)
Terminal
Pin Contact (3)
Slotted Washer (3)
Washer
Marker Band (8)
Shell (4)

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TB SIG 222

Troubleshooting Reference:

Page 3-281	No Electrical Power to Vehicle When MASTER Switch is ON
Page 3-288	Vehicle Lights Do Not Operate
Page 3-295	Front Floodlights Do Not Operate
Page 3-296	Rear Floodlights Do Not Operate
Page 3-297	Panel Lights Do Not Operate
Page 3-299	Battery-Generator Gauge Indicates Low or No Voltage When Engine is Running
Page 3-303	LOW AIR Pressure Warning Light Does Not Illuminate When MASTER Switch is Turned ON
Page 3-305	LOW AIR Pressure Warning Light Stays Lit When Vehicle is Running
Page 3-336	Heater Motor Inoperative
Page 3-338	Driver's Ventilation Fan Malfunctions

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected

REMOVAL

Note

Remove sleeve nuts only if damaged.

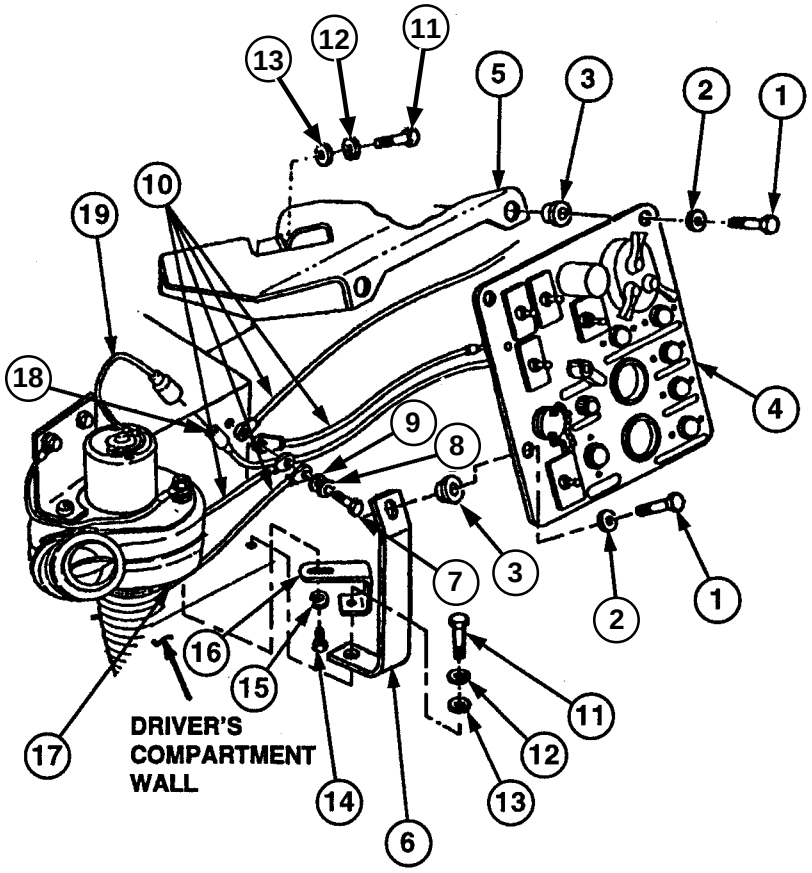
A Remove three screws (1), washers (2), and sleeve nuts (3) from instrument panel (4) and brackets (5) and (6). Carefully pull instrument panel (4) away from brackets (5) and (6) to gain access to rear of panel (4).

B Remove screw (7), lockwasher (8), washer (9), and four ground leads (10). Discard lockwasher (8).

B.1 Disconnect electrical leads (18) and (19).

C Remove four screws (11), lockwashers (12), washers (13), and brackets (5) and (6) from driver's compartment wall. Discard lockwashers (12).

D Remove screw (14), lockwasher (15), and bracket (16) from fan motor (17). Discard lockwasher (15).

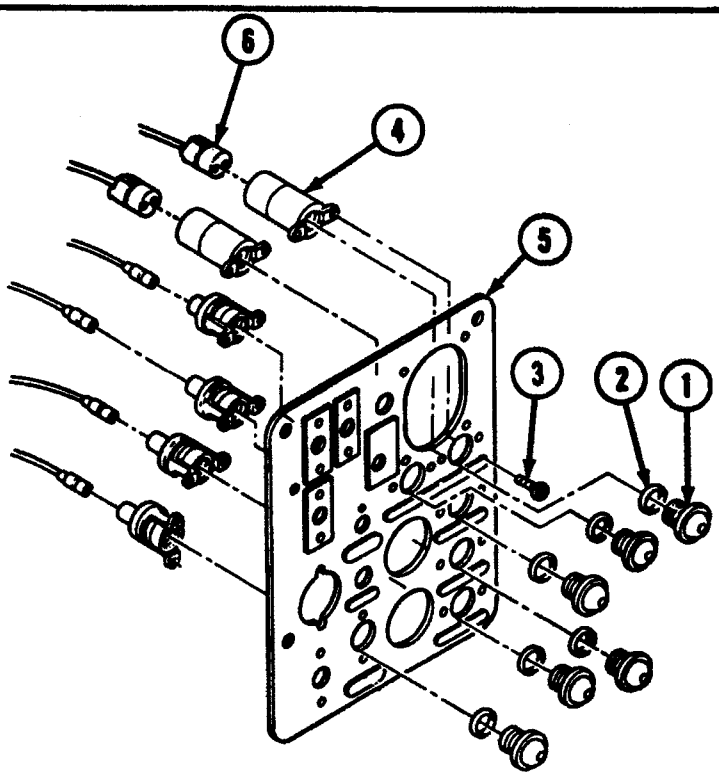


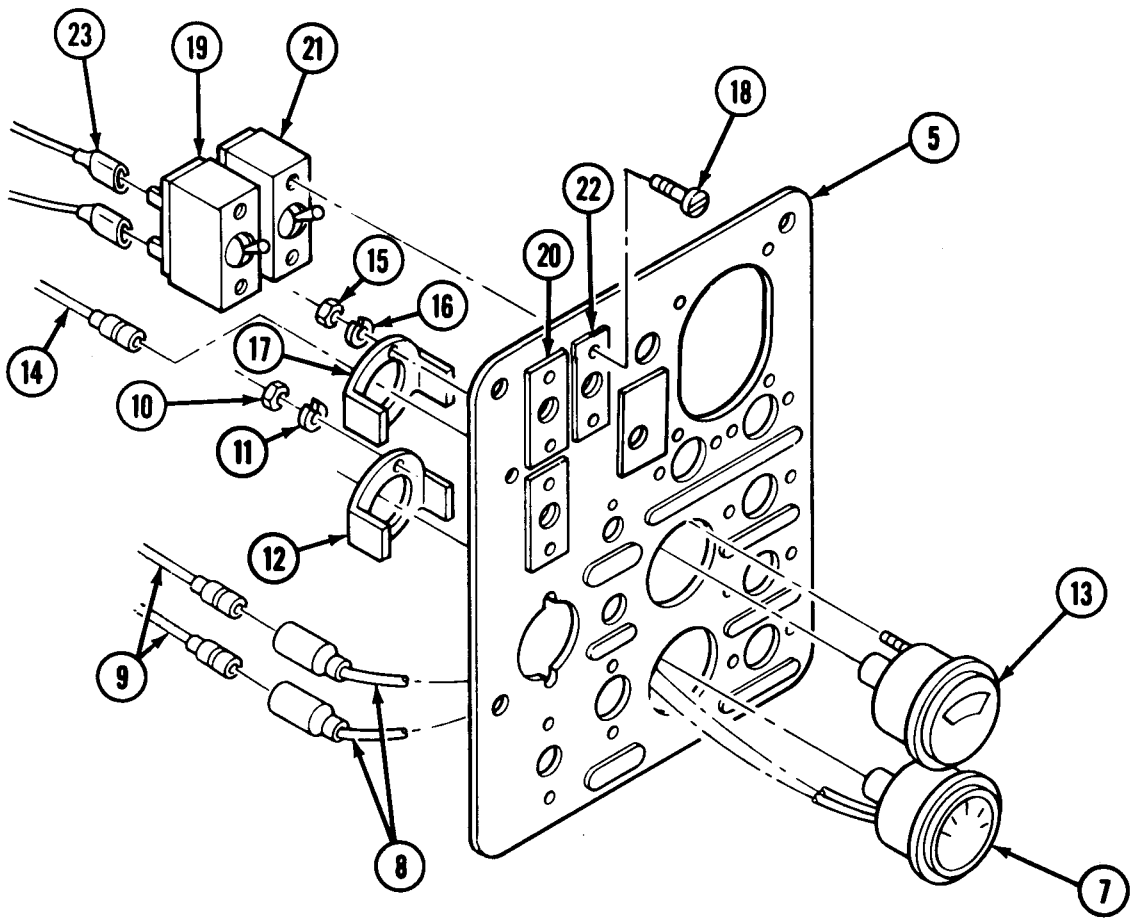
DISASSEMBLY

Note

- Tag electrical leads prior to removal for installation.
- All indicator lights are removed the same way. Step A covers one indicator light.

A Remove lamp lens (1), packing (2), two screws (3), and indicator light (4) from front of panel (5). Disconnect lead (6) from indicator light (4). Discard packing (2).

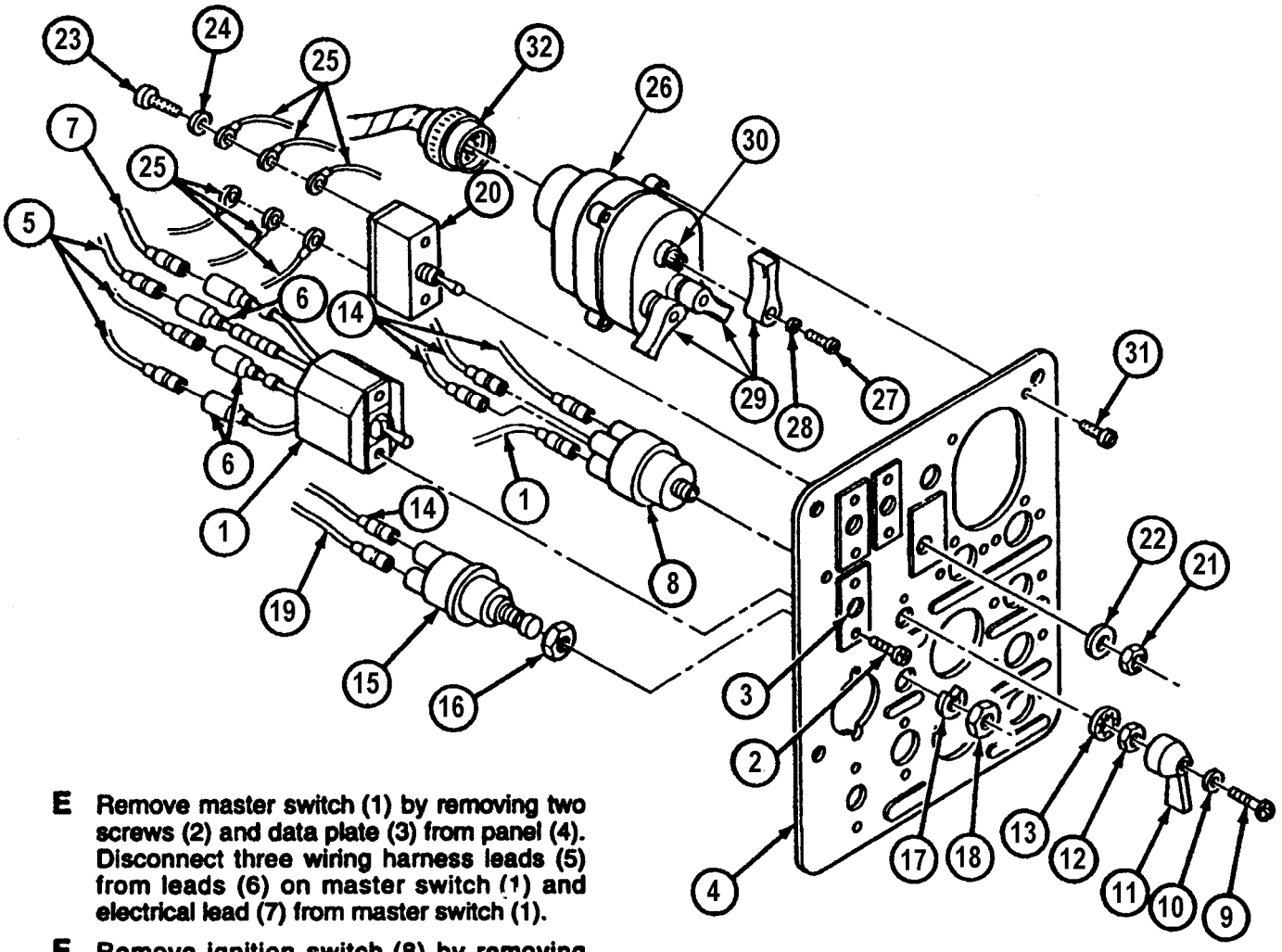




B Remove fuel indicator level gauge (7) by disconnecting two leads (8) from rear wiring harness (9). Remove two nuts (10), lockwashers (11), gauge (7), and bracket (12) from panel (5). Discard lockwashers (11).

C Remove battery generator gauge (13) by disconnecting electrical lead (14) from gauge (13). Remove two nuts (15), lockwashers (16), gauge (13), and bracket (17) from panel (5). Discard lockwashers (16).

D Remove four screws (18), front floodlight switch (19), data plate (20), rear floodlight switch (21), and data plate (22) from panel (5). Disconnect four electrical leads (23) from switches (19) and (21).



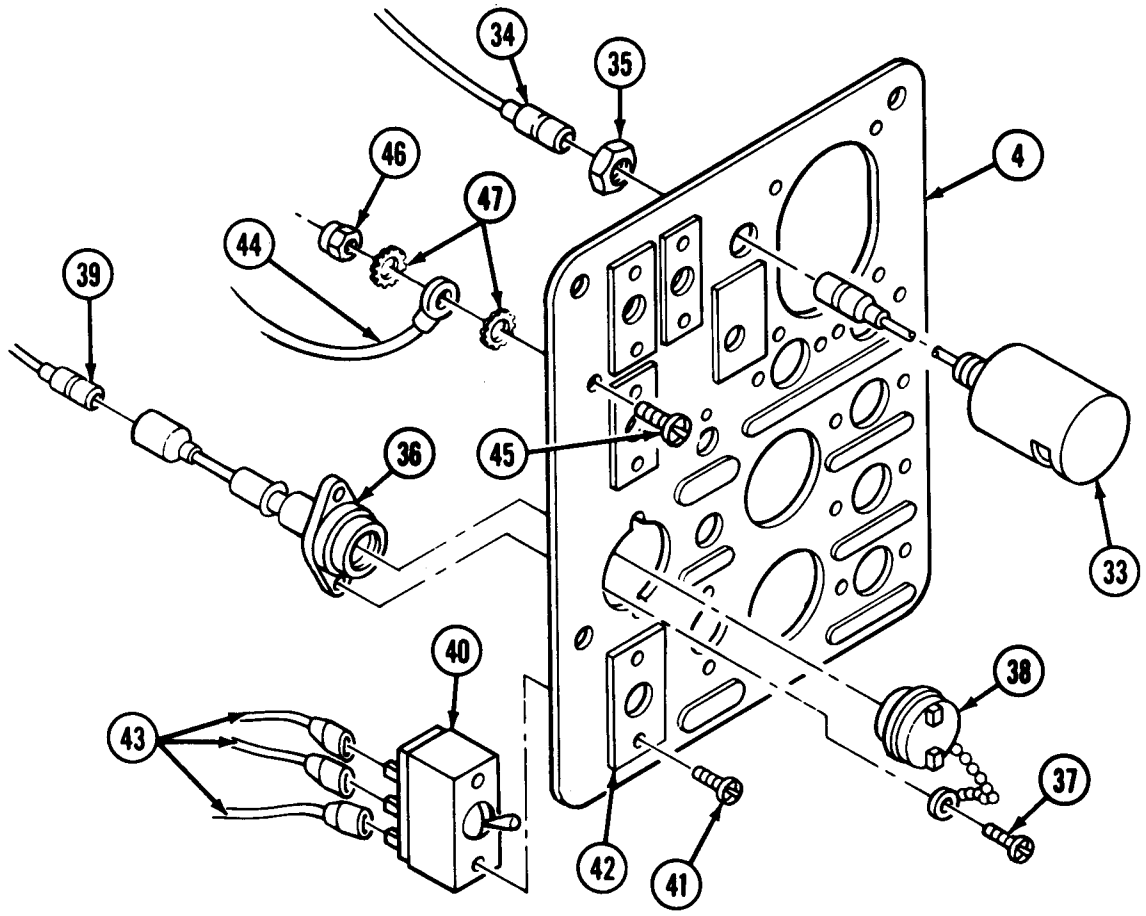
E Remove master switch (1) by removing two screws (2) and data plate (3) from panel (4). Disconnect three wiring harness leads (5) from leads (6) on master switch (1) and electrical lead (7) from master switch (1).

F Remove ignition switch (8) by removing screw (9), washer (10), lever (11), nut (12), and lockwasher (13) from front of panel (4). Disconnect three electrical leads (14) and electrical lead (7) from ignition switch (8). Discard lockwasher (13).

G Remove engine start switch (15) by removing nut (16), lockwasher (17), and nut (18). Disconnect electrical leads (19) and (14) from switch (15). Discard lockwasher (17).

H Remove fan switch (20) by removing nut (21) and washer (22) from front of panel (4). Remove two screws (23), lockwashers (24), and six electrical leads (25) from fan switch (20). Discard lockwashers (24).

I Remove vehicle light switch (26) by removing three screws (27), washers (28), levers (29), and spacers (30) from switch (26). Remove four screws (31) and connector (32) from switch (26).



J Remove dash lamp assembly (33) from panel (4) by disconnecting electrical lead (34) from lamp assembly (33) and removing nut (35).

K Remove utility outlet (36) from panel (4) by removing two screws (37) and cap (38). Disconnect electrical lead (39) from outlet (36).

L Remove heater switch (40) from panel (4) by removing two screws (41) and data plate (42). Disconnect three electrical leads (43) from switch (40).

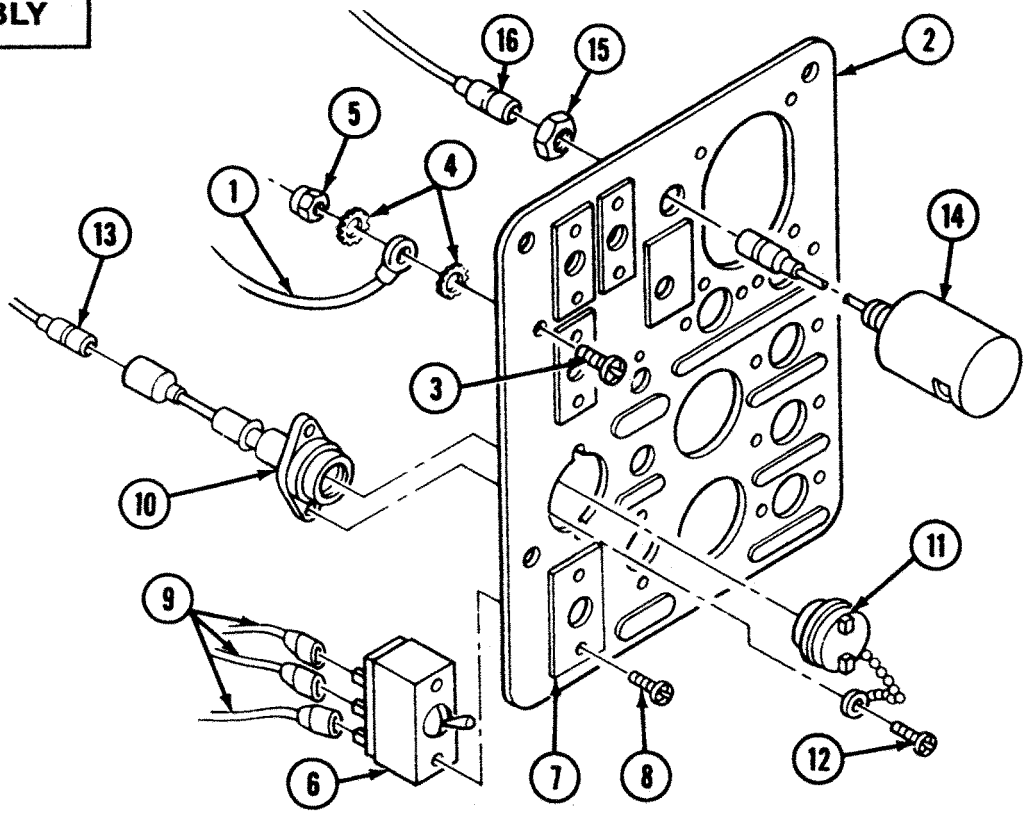
M Remove ground lead (44) from panel (4) by removing screw (45), locknut (46), and two lockwashers (47). Discard locknut (46) and lockwashers (47).

REPAIR

A Refer to p 3-1 for wiring and cable leads repair.

B Clean mounting surfaces and ground leads with emery cloth until metal is clean and free of paint or corrosion.

ASSEMBLY



Note

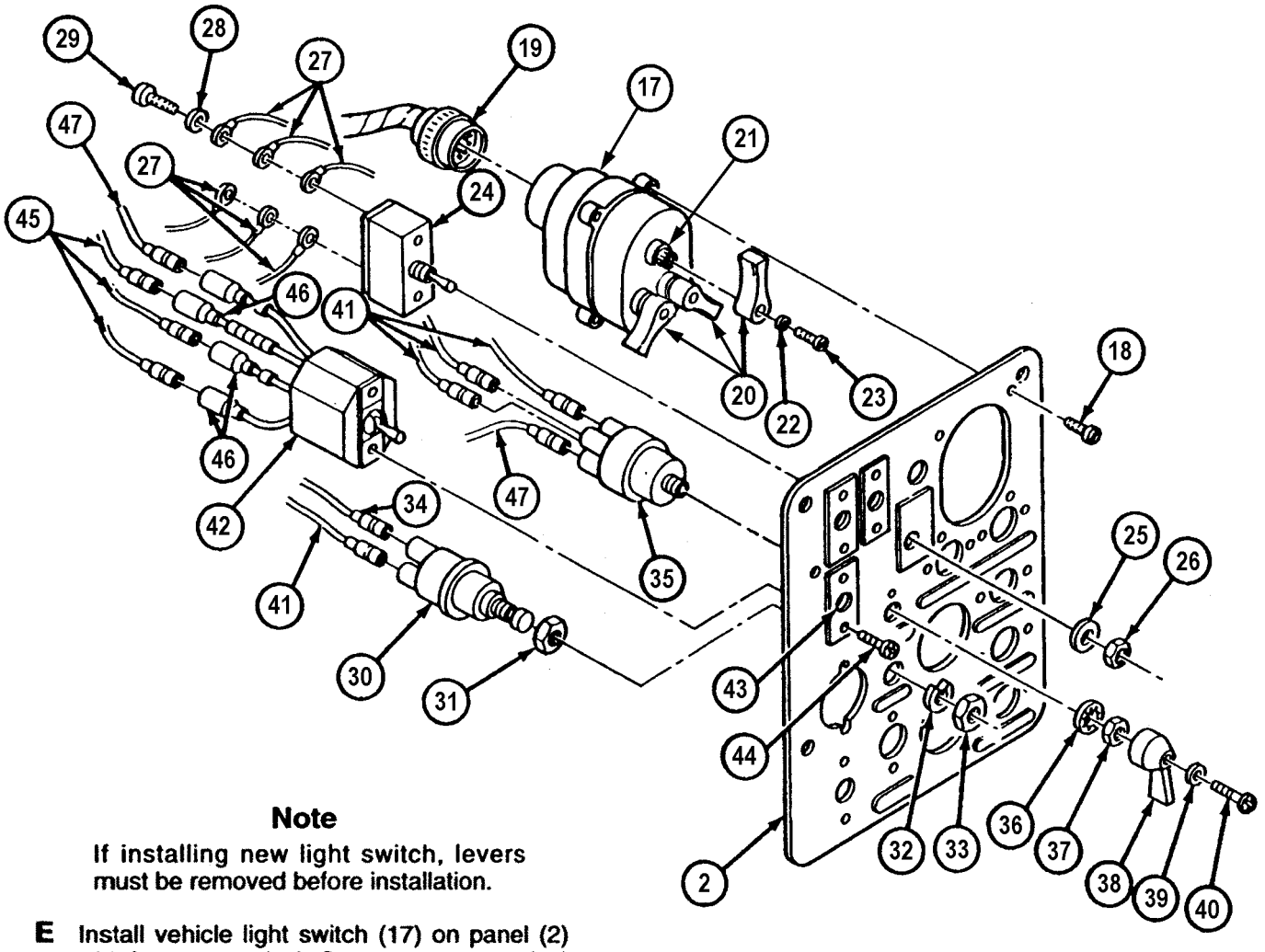
- Refer to vehicle electrical system wiring diagram (p FP-3) before connecting electrical leads to ensure proper installation.
- Coat all electrical connectors and leads with silicone compound prior to connecting.
- Refer to TB SIG 222 for soldering information.

A Install ground lead (1) on panel (2) with screw (3), two lockwashers (4), and locknut (5).

B Install heater switch (6) and data plate (7) on panel (2) with two screws (8). Connect three electrical leads (9) to switch (6).

C Install utility outlet (10) and cap (11) on panel (2) with two screws (12). Connect electrical lead (13) to outlet (10). Install cap (11) on outlet (10).

D Install dash lamp assembly (14) on front of panel (2) and secure with nut (15). Connect electrical lead (16) to lamp assembly (14).



Note

If installing new light switch, levers must be removed before installation.

E Install vehicle light switch (17) on panel (2) with four screws (18). Connect connector (19) to light switch (17). Attach three levers (20) and spacers (21) to switch (17) with three washers (22) and screws (23).

F Install fan switch (24) on panel (2) with washer (25) and nut (26). Connect six electrical leads (27) to switch (24) with two lockwashers (28) and screws (29).

Note

If engine start switch does not protrude far enough out of panel, turn nut on switch clockwise.

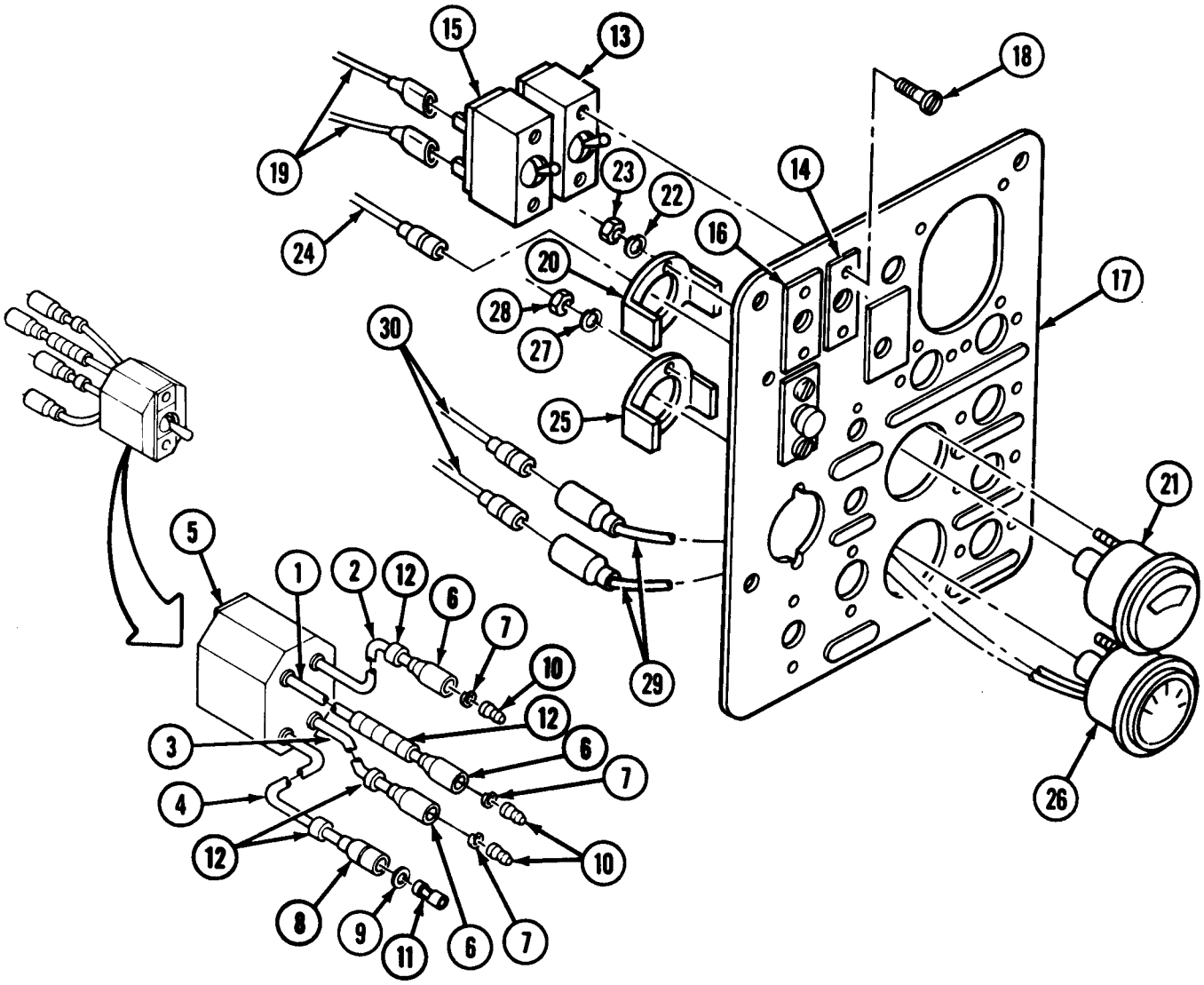
G Install engine start switch (30) and nut (31) on panel (2) with lockwasher (32) and nut (33). Connect two electrical leads (34) to switch (30).

H Install ignition switch (35) on panel (2) with lockwasher (36) and nut (37). Install lever (38), washer (39), and screw (40) on switch (35). Connect two electrical leads (41) and lead (34) to switch (35).

Note

If installing new master switch, go to steps J through N prior to performing step I.

I Install master switch (42) and data plate (43) on panel (2) with two screws (44). Connect three electrical leads (45) to wiring harness leads (46) and lead (47) to master switch (42) and ignition switch (35).



J If necessary, strip 1/8-in. (3-mm) of cable insulation from leads (1), (2), (3), and (4) of master switch (5).

K Slide three shells (6) and slotted washers (7) over leads (1), (2), and (3). Slide shell (8) and washer (9) over lead (4).

L Slide ends of leads (1), (2), and (3) into pin contacts (10) and crimp pin contacts (10). Slide end of lead (4) into terminal (11).

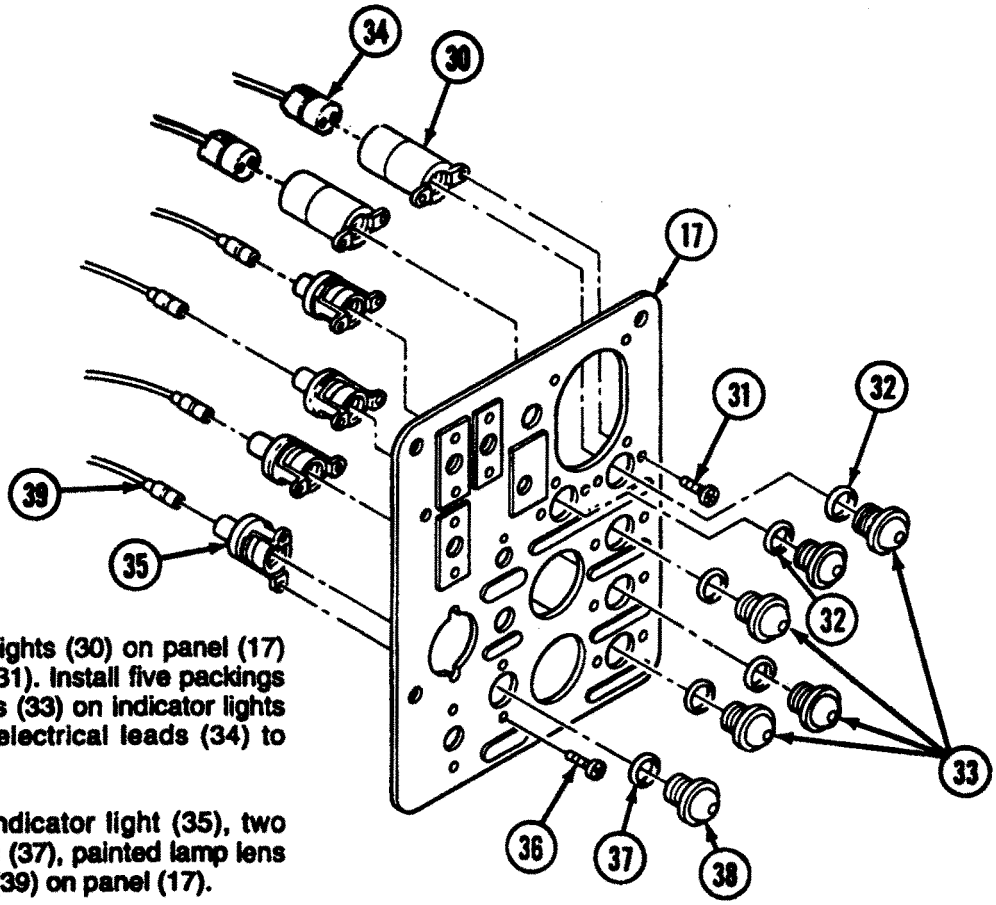
M Slide three slotted washers (7) and shells (6) over contacts (10) and washer (9) and shell (8) over terminal (11).

N Connect 427, 568, 569, 54, and 34 marker bands (12) to lead (1), 459A marker band (12) to lead (2), 459B marker band (12) to lead (3), and 11D marker band (12) to lead (4).

O Install front floodlight switch (13), data plate (14), rear floodlight switch (15), and data plate (16) on panel (17) with four screws (18). Connect four electrical leads (19) to switches (13) and (15).

P Position bracket (20) on panel (17). Install battery generator gauge (21) in bracket (20) with two lockwashers (22) and nuts (23). Connect electrical lead (24) to gauge (21).

Q Position bracket (25) on panel (17). Install fuel level indicator gauge (26) in bracket (25) with two lockwashers (27) and nuts (28). Connect two leads (29) to rear wiring harness (30).



R Install five indicator lights (30) on panel (17) with twelve screws (31). Install five packings (32) and lamp lenses (33) on indicator lights (30). Connect five electrical leads (34) to indicator lights (30).

S Install high beam indicator light (35), two screws (36), packing (37), painted lamp lens (38), and connector (39) on panel (17).

INSTALLATION

A Install brackets (1) and (2) on driver's compartment wall with four washers (3), new lockwashers (4), and screws (5).

A.1 Install bracket (14) on fan motor (15) with new lockwasher (16) and screw (17).

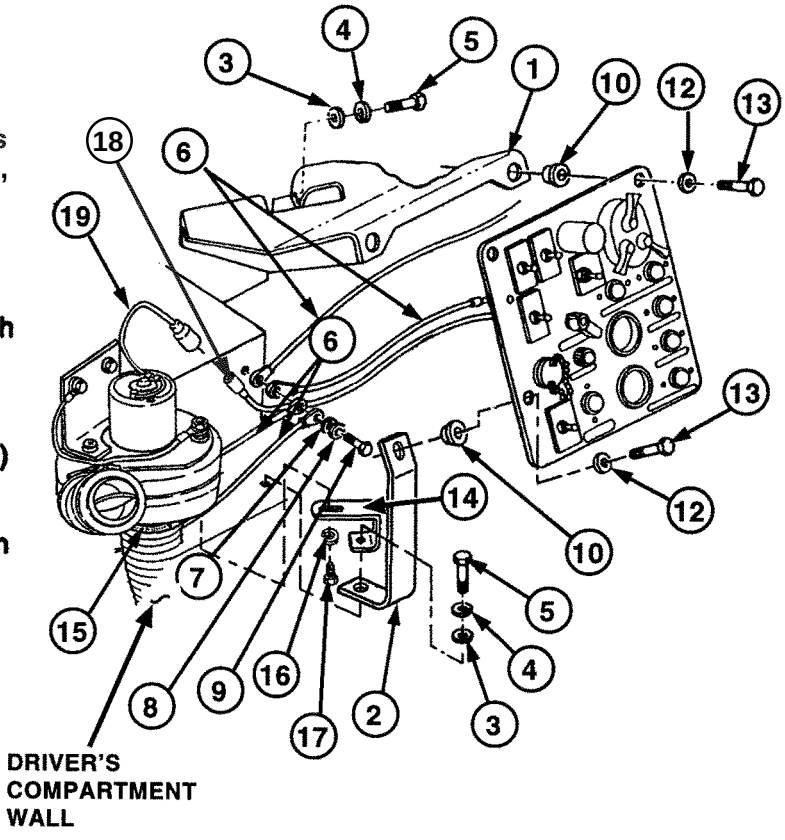
B Install four ground leads (6) on hull with washer (7), lockwasher (8), and screw (9).

B.1 Connect electrical leads (18) and (19).

C Install three sleeve nuts (10) on brackets (1) and (2), if removed.

D Install panel (11) on brackets (1) and (2) with three washers (12) and screws (13).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).



GAUGE AND PANEL ASSEMBLY REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Repair
d. Assembly
e. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Emery Cloth	Item 8 Appendix D
Silicone Compound	Item 16 Appendix D

Parts:

Locknut
Lockwasher (6)

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TB SIG 222

Troubleshooting Reference:

Page 3-297	Panel Lights Do Not Operate
Page 3-306	Transmission Oil Temperature Gauge Does Not Indicate Transmission Oil Temperature After Engine Warm-Up
Page 3-308	HYDRAULIC OIL Temperature Gauge Does Not Indicate Hydraulic Oil Temperature After Engine Warm-up
Page 3-310	Engine Oil Pressure Gauge Does Not Indicate Engine Oil Pressure
Page 3-312	Water Temperature Gauge Does Not Indicate Water Temperature After Engine Warm-Up

Equipment Condition:

Reference	Condition Description
Page 4-38	Trailer Brake Valve Removed
Page 4-84	Negative Battery Cables Disconnected

REMOVAL

CAUTION

Gauge and panel assembly components can be damaged if gauge and panel assembly is pulled too far out of bracket.

A Remove four screws (1) and washers (2) from gauge and panel assembly (3). Slowly pull gauge and panel assembly (3) away from bracket (4) just far enough to gain access to components on back side of bracket (4).

Note

Tag electrical leads prior to removal for installation.

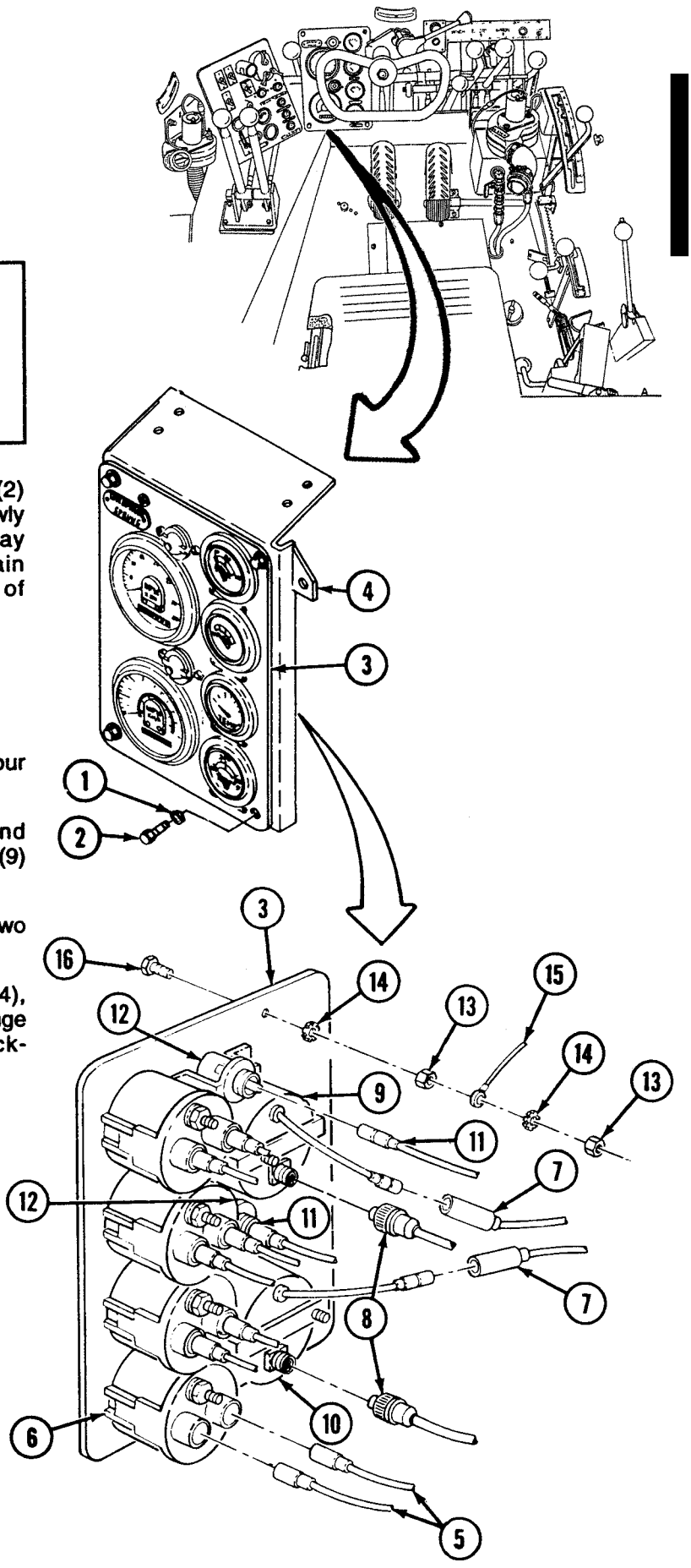
B Remove eight electrical leads (5) from four gauges (6).

C Disconnect two electrical leads (7) and electrical connectors (8) from tachometer (9) and speedometer (10).

D Disconnect two electrical leads (11) from two lamp assemblies (12).

E Remove two nuts (13), lockwashers (14), ground lead (15), and screw (16) from gauge and panel assembly (3). Discard lockwashers (14).

F Remove gauge and panel assembly (3).

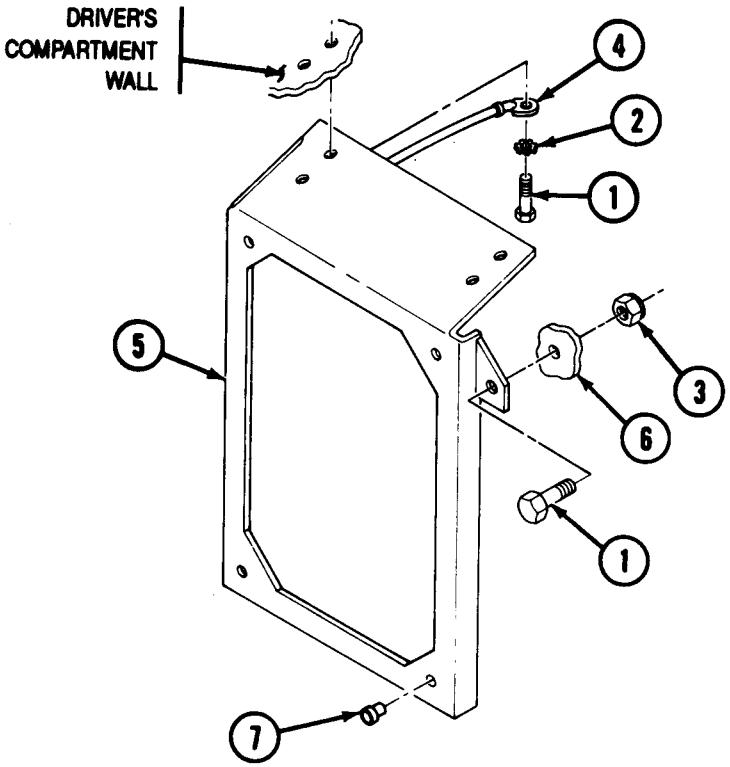


G Remove five screws (1), four lockwashers (2), locknut (3), ground lead (4), and bracket (5) from driver's compartment wall and steering column bracket (6). Discard lockwashers (2) and locknut (3).

Note

Remove sleeve nuts only if damaged.

H Remove four sleeve nuts (7) from bracket (5).



DISASSEMBLY

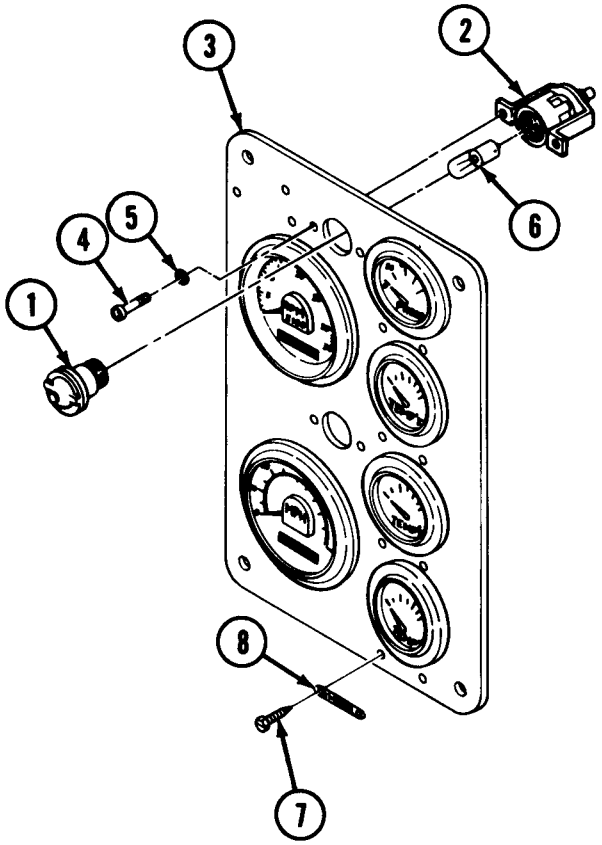
A Turn two lenses (1) of lamp assemblies (2) counterclockwise, and remove two lenses (1) from front side of gauge and panel assembly (3).

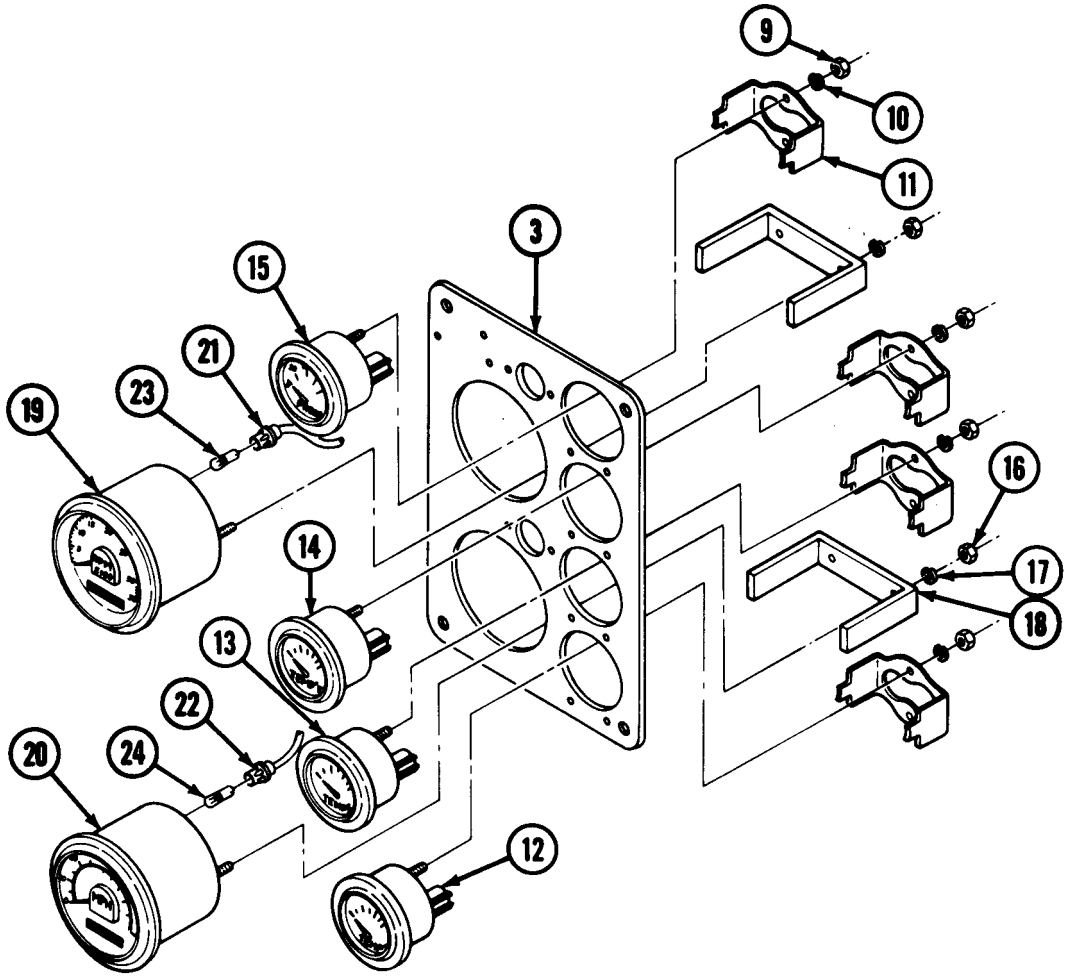
B Remove four screws (4), washers (5), and two lamp assemblies (2) from rear of gauge and panel assembly (3). Remove two bulbs (6) from lamp assemblies (2).

Note

Note location of identification plates prior to removal.

C Remove ten screws (7) and five identification plates (8) from gauge and panel assembly (3).





D Remove eight nuts (9), washers (10), and four mounting brackets (11) from rear of gauge and panel assembly (3).

E Remove transmission oil temperature gauge (12), hydraulic oil temperature gauge (13), water temperature gauge (14), and engine oil pressure gauge (15) from front of gauge and panel assembly (3).

F Remove four nuts (16), washers (17), and two mounting brackets (18) from rear of gauge and panel assembly (3).

G Remove tachometer (19) and speedometer (20) from front of gauge and panel assembly (3).

H Remove connector (21) from tachometer (19) and connector (22) from speedometer (20).

I Remove bulb (23) from connector (21) and bulb (24) from connector (22).

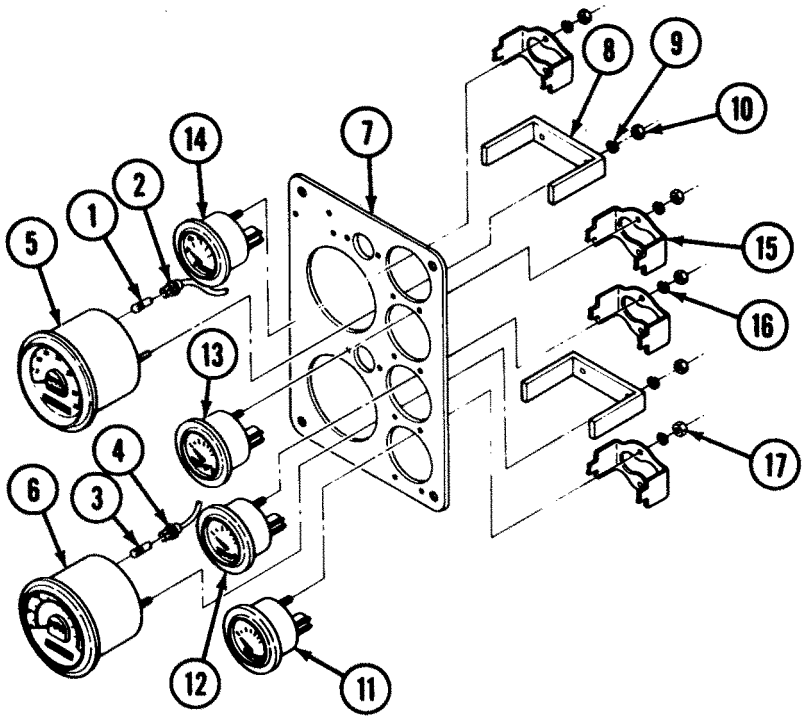
REPAIR

A Refer to page 3-1 to repair electrical components.

B Replace any unserviceable components of the gauge and panel assembly.

C Repair gauge and panel assembly and bracket by straightening or welding (TB SIG 222).

ASSEMBLY



A Install bulb (1) on connector (2) and bulb (3) on connector (4).

B Install connector (2) on tachometer (5) and connector (3) on speedometer (6).

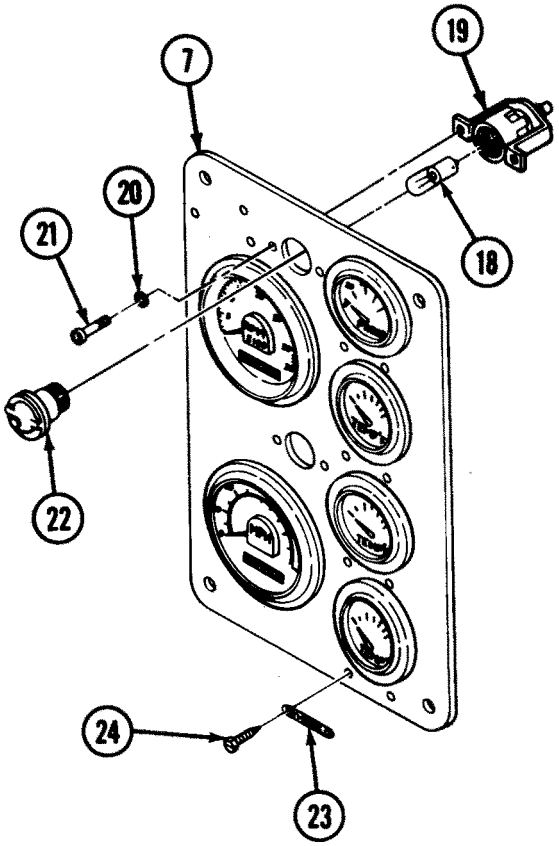
C Install tachometer (5) and speedometer (6) in gauge and panel assembly (7) with two mounting brackets (8), four washers (9), and nuts (10).

D Install transmission oil temperature gauge (11), hydraulic oil temperature gauge (12), water temperature gauge (13), and engine oil pressure gauge (14) on gauge and panel assembly (7) and secure with four mounting brackets (15), eight washers (16), and nuts (17).

E Install two bulbs (18) on lamp assemblies (19), and install two lamp assemblies (19) on back of gauge and panel assembly (7) with four washers (20) and screws (21).

F Install two lenses (22) on lamp assemblies (19).

G Install five identification plates (23) on gauge and panel assembly (7) with ten screws (24).



INSTALLATION

A Clean mounting surface and ground lead (1) with emery cloth until metal is clean and free of paint and dirt.

B Secure bracket (2) to steering column bracket (3) with screw (4) and locknut (5). Do not tighten locknut (5).

C Install bracket (2) and ground lead (1) to driver's compartment wall with four lockwashers (6) and screws (7). Tighten locknut (5).

D Install four nut sleeves (8) in bracket (2).

E Apply a thin coat of silicone compound to shells of electrical leads (9) and (10).

F Place gauge and panel assembly (11) close enough to bracket (2) so electrical leads (9) and (10), and connectors (12) and (13), will reach components on back side of gauge and panel assembly (11).

Note

If identification tags are not legible, refer to vehicle electrical system schematic diagram (p FP-3).

G Connect four electrical leads (9) to two lamp assemblies (14), tachometer (15), and speedometer (16).

H Connect electrical connector (12) to tachometer (15), and electrical connector (13) to speedometer (16).

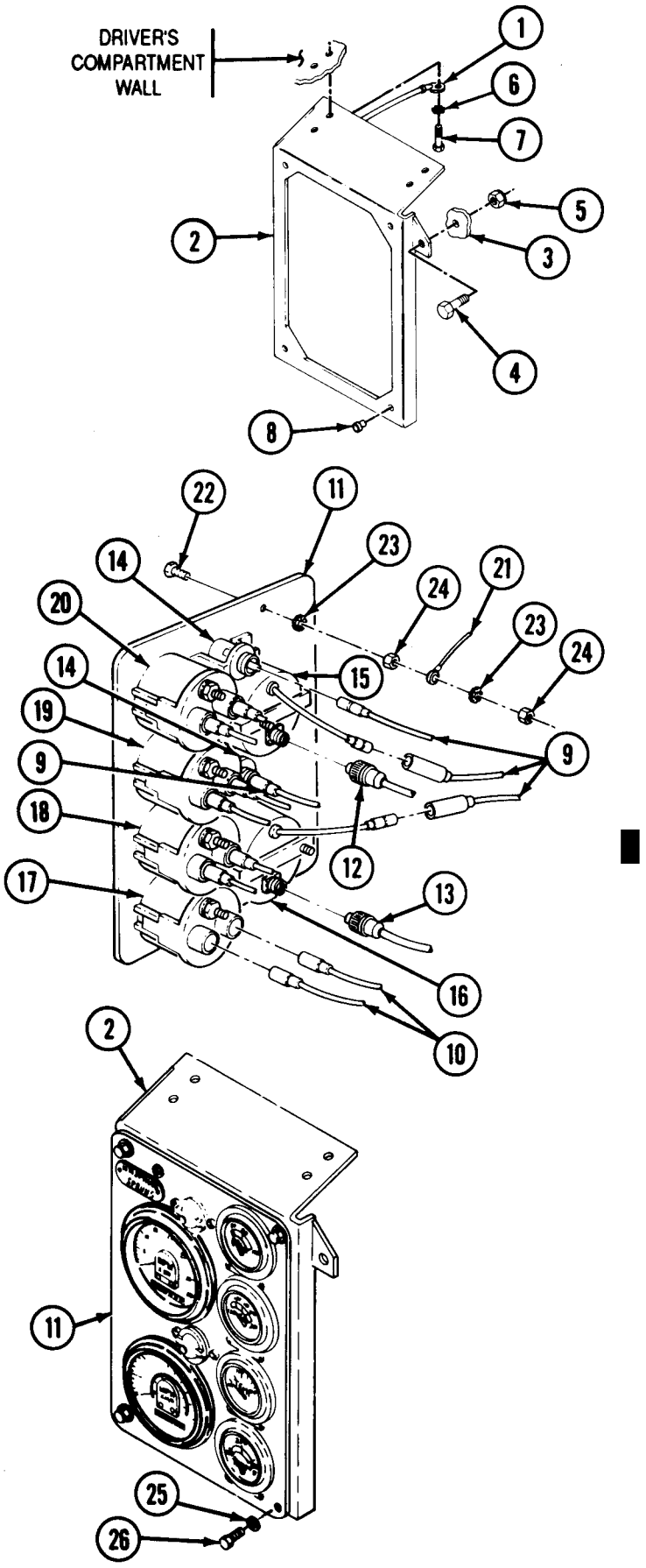
I Connect eight electrical leads (10) to transmission oil temperature gauge (17), hydraulic oil temperature gauge (18), water temperature gauge (19), and engine oil pressure gauge (20).

J Install ground lead (21) to gauge and panel assembly (11) with screw (22), two lockwashers (23), and nuts (24).

K Install gauge and panel assembly (11) to bracket (2) with four washers (25) and screws (26).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Install trailer brake valve (p 4-38).



START-AID CONTROL SWITCH REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound	Item 16 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

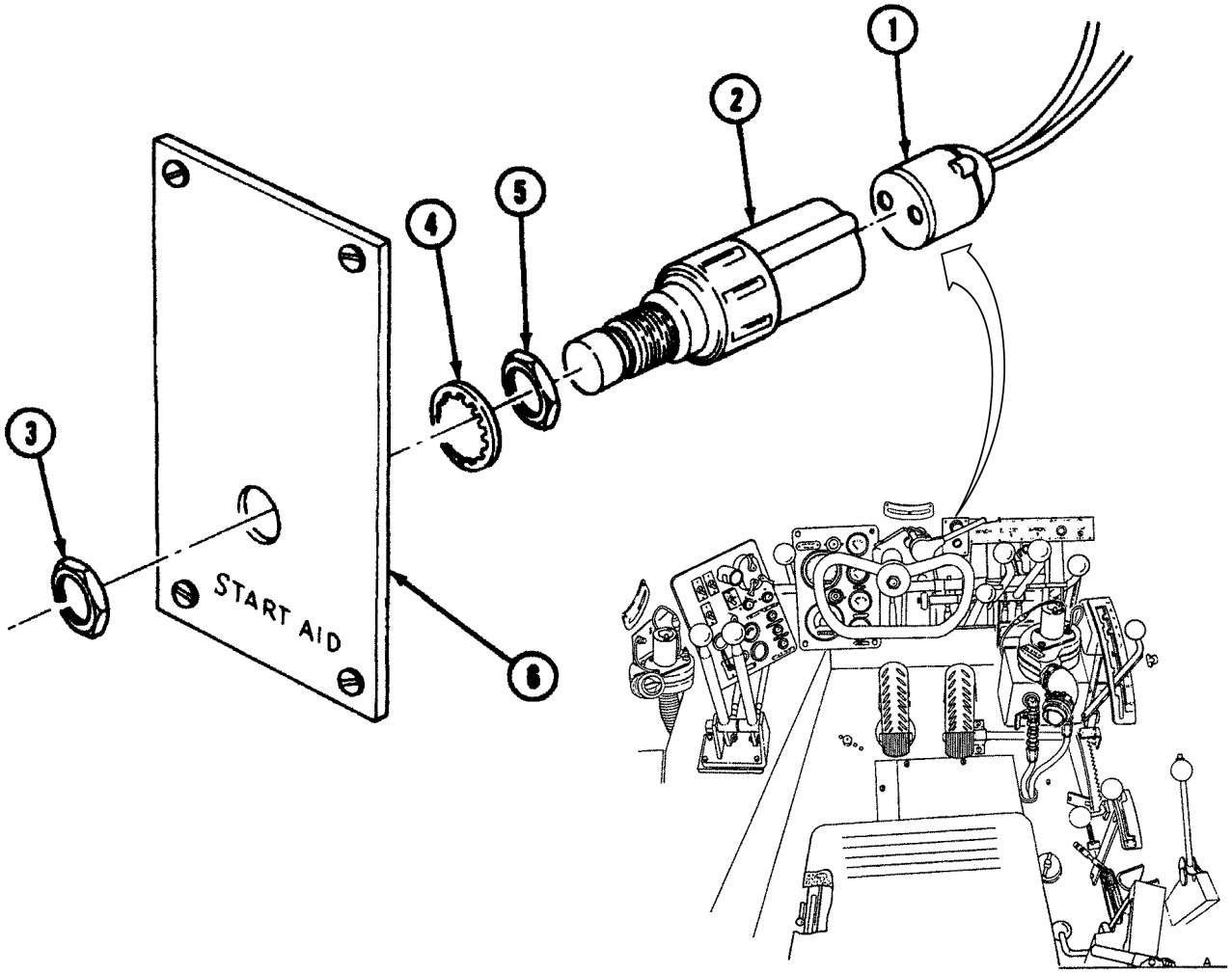
Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-155	Start-Aid Does Not Operate

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

A Disconnect electrical connector (1) from start-aid control switch (2).

B Remove nut (3) and switch (2), with washer (4) and nut (5) attached, from rear of panel (6).

INSTALLATION

A Install start-aid control switch (2) on panel (6), with nut (5), washer (4), and nut (3).

Note

Ensure alignment marks on switch and connector meet.

B Apply silicone compound to electrical connector (1), and connect electrical connector (1) to switch (2).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

CIRCUIT BREAKERS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound	Item 16 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

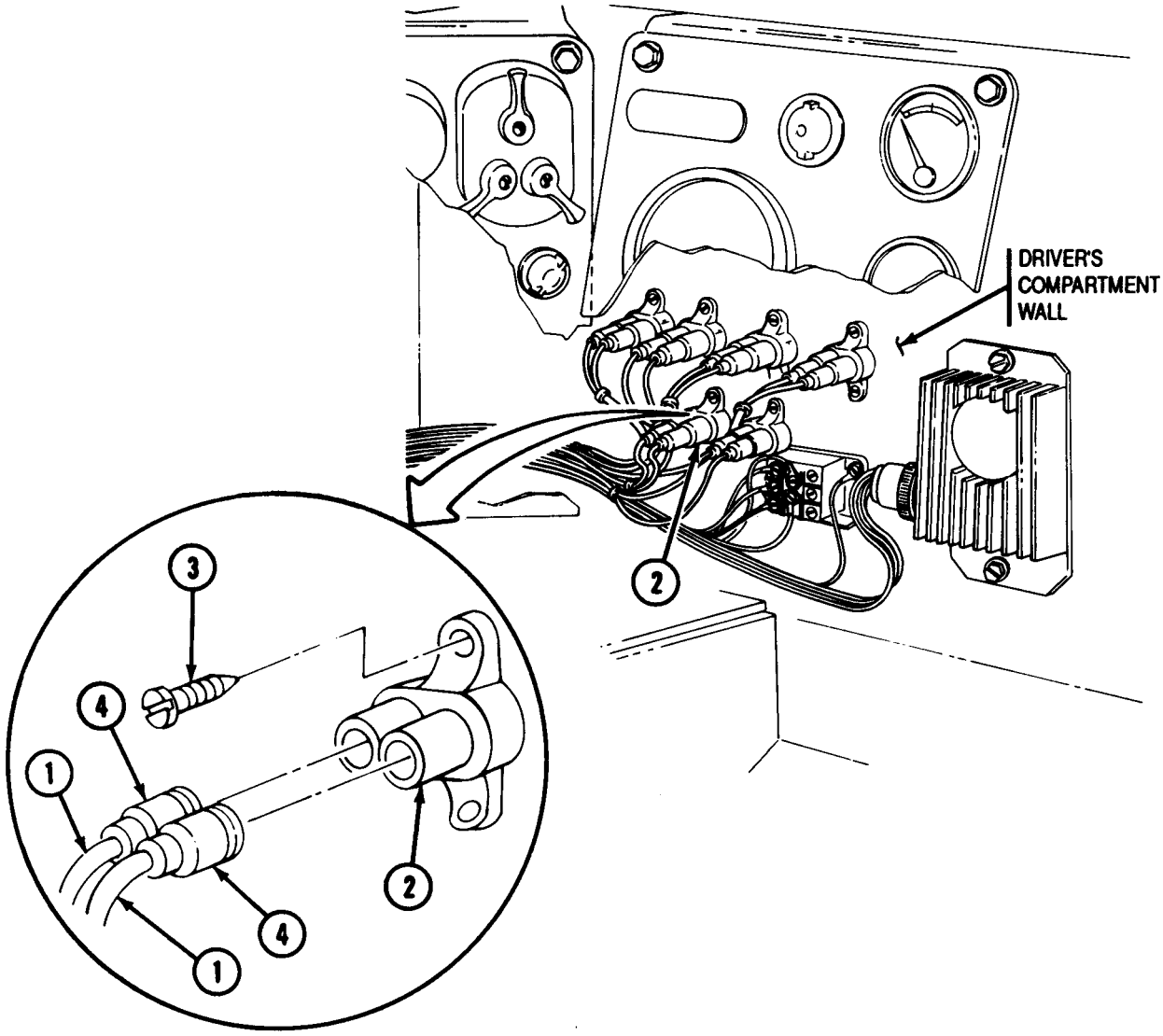
Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-281	Electrical Systems Malfunctions
Page 3-299	Gauges and Indicators Malfunctions

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

Note

- Refer to vehicle electrical system wiring diagram (p FP-3) for circuit identification.
- All circuit breakers are replaced the same way.

A Disconnect two electrical leads (1) from circuit breaker (2).

B Remove two screws (3) and circuit breaker (2) from driver's compartment wall.

INSTALLATION

A Install circuit breaker (2) on driver's compartment wall with two screws (3).

B Lightly coat shells (4) of electrical leads (1) with silicone compound, and connect two electrical leads (1) to circuit breaker (2).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

BILGE PUMP "ON" LAMP RECEPTACLE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Deleted

Parts Reference:

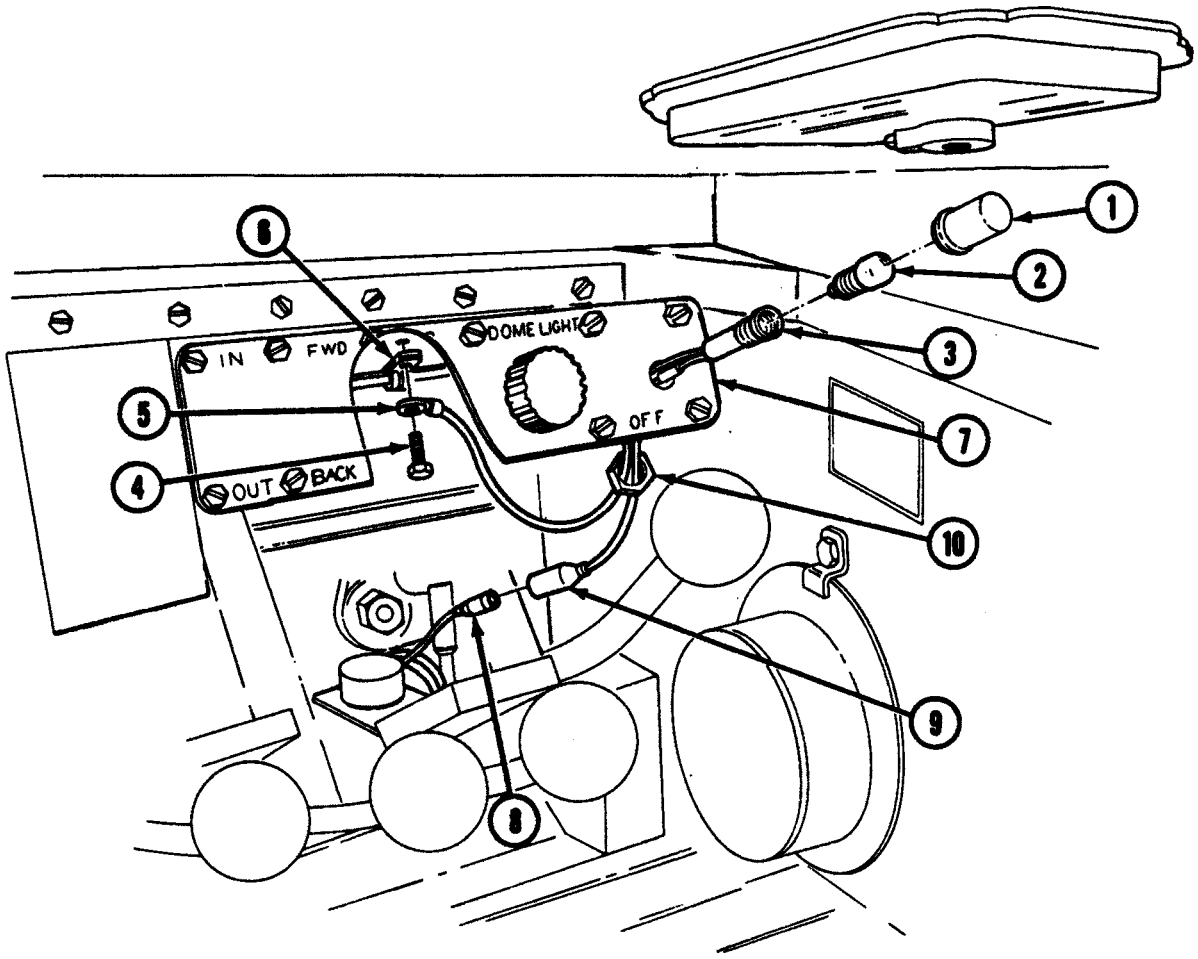
Deleted

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

Note

Although the Bilge Pump is considered Not Mission Essential and will no longer be supported with spare and repair parts, this task contains maintenance procedures For Your Information Only. See TB 43-0001-62-7 (dated Oct 98) for Instructions to Isolate and Disconnect a Non-Functional Bilge Pump.

A Remove lamp lens (1) and bulb (2) from bilge pump “ON” lap receptacle (3).

B Remove screw (4), and ground lead (5) from clamp (6) and rear of panel (7). Disconnect Power lead (8) from connector (9).

C Remove nut (10) and receptacle (3) from panel (7).

INSTALLATION

A Install bilge pump “ON” lamp receptacle (3) on panel (7) with nut (10).

B Coat connector (9) with silicone compound, and connect connector (9) to power lead (8). Connect ground lead (5) to clamp (6) and rear of panel (7) with screw (4).

C Install bulb (2) and lamp lens (1) on receptacle (3).

FOLLOW-ON TASK:

Connect negative battery cables (p 4-84).

BILGE PUMP "ON" SWITCH REPLACEMENT

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Deleted

Parts:

Deleted

Parts Reference:

Deleted

Reference:

TM 5-2350-262-10

Personnel Required:

Construction Equipment Repairer 62B10

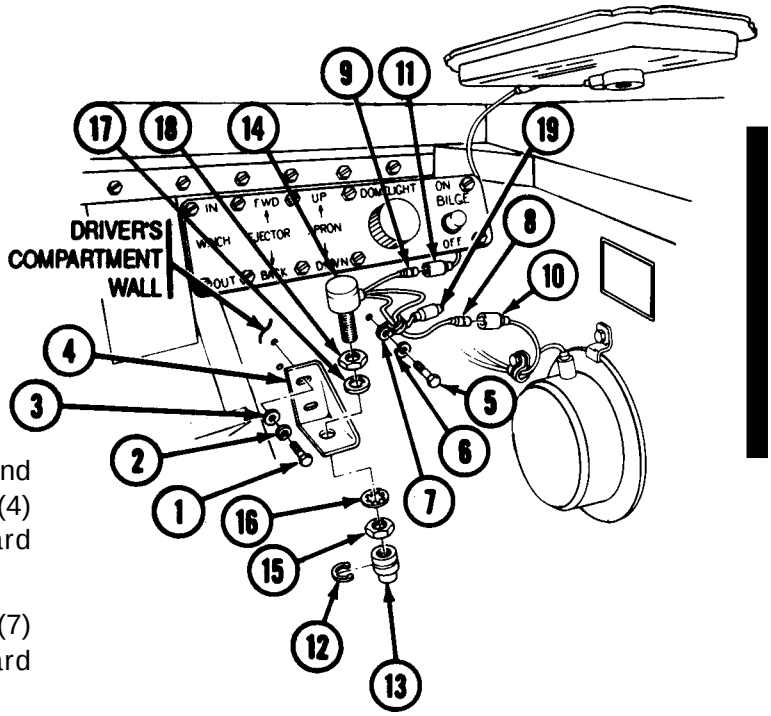
Equipment Condition:

Reference	Condition Description
TM 5-5320-262-10	Bilge Pump Control Lever in "ON" position
Page 4-84	Negative Battery Cables Disconnected

REMOVAL

Note

Although the Bilge Pump is considered Not Mission Essential and will no longer be supported with spare and repair parts, this task contains maintenance procedures For Your Information Only. See TB 43-0001-62-7 (dated Oct 98) for Instructions to Isolate and Disconnect a Non-Functional Bilge Pump.



A Remove two scews (1), lockwashers (2), and washers (3) from bracket (4). Remove bracket (4) from driver's compartment wall. Discard lockwashers (2).

B Remove screw (5), lockwasher (6), and clamp (7) from driver's compartment wall. Discard lockwasher (6).

C Disconnect leads (8) and (9) from leads (10) and (11).

DISASSEMBLY

A Remove clip (12) and roller guide (13) from switch (14).

B Remove nut (15), washer (16), switch (14), keyed washer (17), and nut (18) from bracket (4).

C If switch (14) is not to be reused, remove electrical connectors from circuit leads (8), (9), and (19).

ASSEMBLY

Note

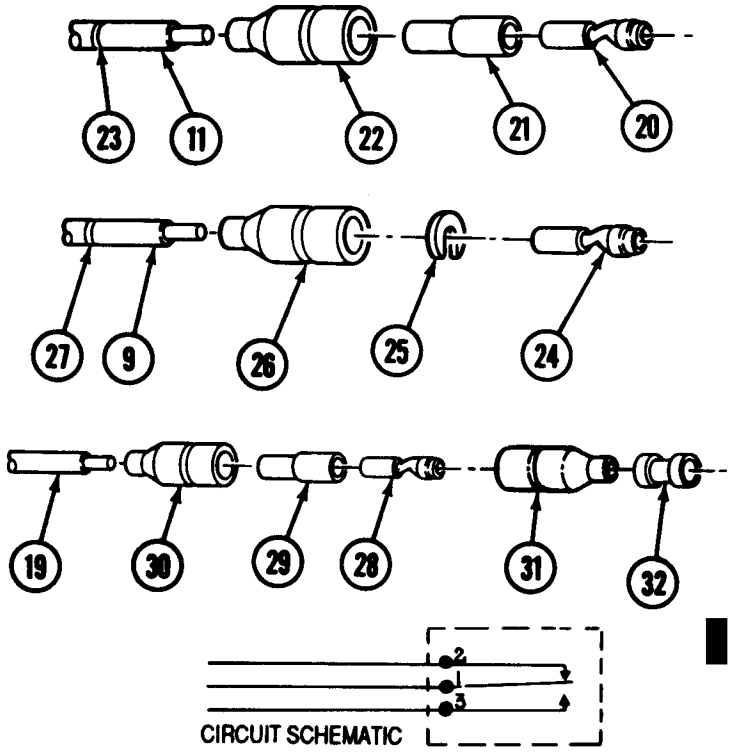
- If installing new bilge pump "ON" switch, perform steps A through F.
- Refer to wiring diagram (p FP-3) to install electrical connectors and marker bands.

A Install terminal assembly (20), sleeve bushing (21), and connector shell (22) on 1 circuit lead (11).

B Install 450 marker band (23) on 1 circuit lead (11).

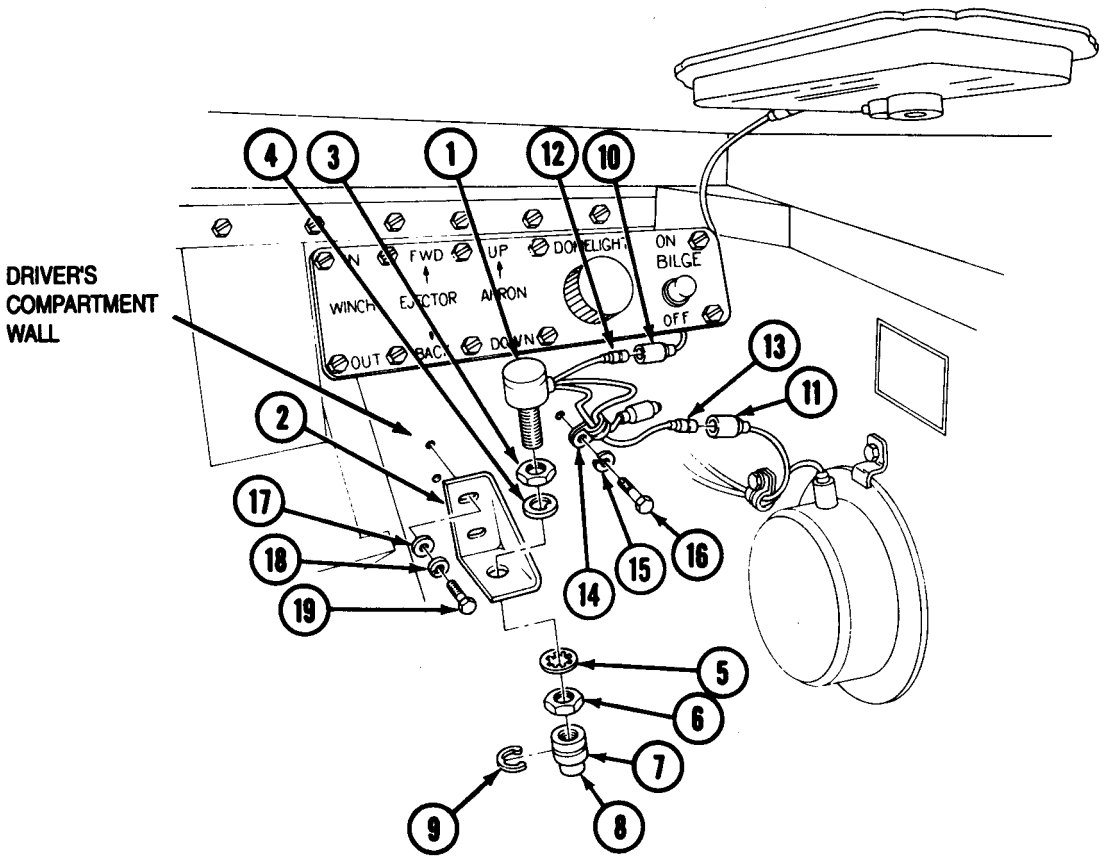
C Install electrical contact (24), slotted washer (25), and connector shell (26) on 3 circuit lead (9).

D Install 450 marker band (27) on 3 circuit lead (9).



E Install terminal assembly (28), sleeve bushing (29), and connector shell (30) on 2 circuit lead (19)

F Install connector shell (31) and end seal plug (32) on 2 circuit lead (19).



Note

Ensure slot on switch pin is facing away from bracket.

G Install bilge pump "ON" switch (1) on bracket (2) with nut (3), keyed washer (4), washer (5), and nut (6).

Note

Ensure pin on the inside of clip is aligned with hole in roller guide and the keyway of the switch shaft.

H Install roller guide (7) on switch (1). Tighten roller guide (7) until at least half of roller (8) is exposed. Adjust so roller (8) is upright to mounting surface of bracket (2), and install clip (9).

I Measure the distance from the bottom of roller (8) to bracket (2). Distance should measure 1.4-in. (3.6-cm). If measurement is not 1.4-in. (3.6-cm), adjust switch (1) in bracket (2) to obtain the correct measurement.

INSTALLATION

A Connect leads (10) and (11) to leads (12) and (13).

B Secure lead (13) to driver's compartment wall with clamp (14), lockwasher (15), and screw (16).

C Install bracket (2) on driver's compartment wall with two washers (17), lockwashers (18), and screws (19).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

UNSPRUNG/REVERSE WARNING LIGHT FLASHER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts Reference:

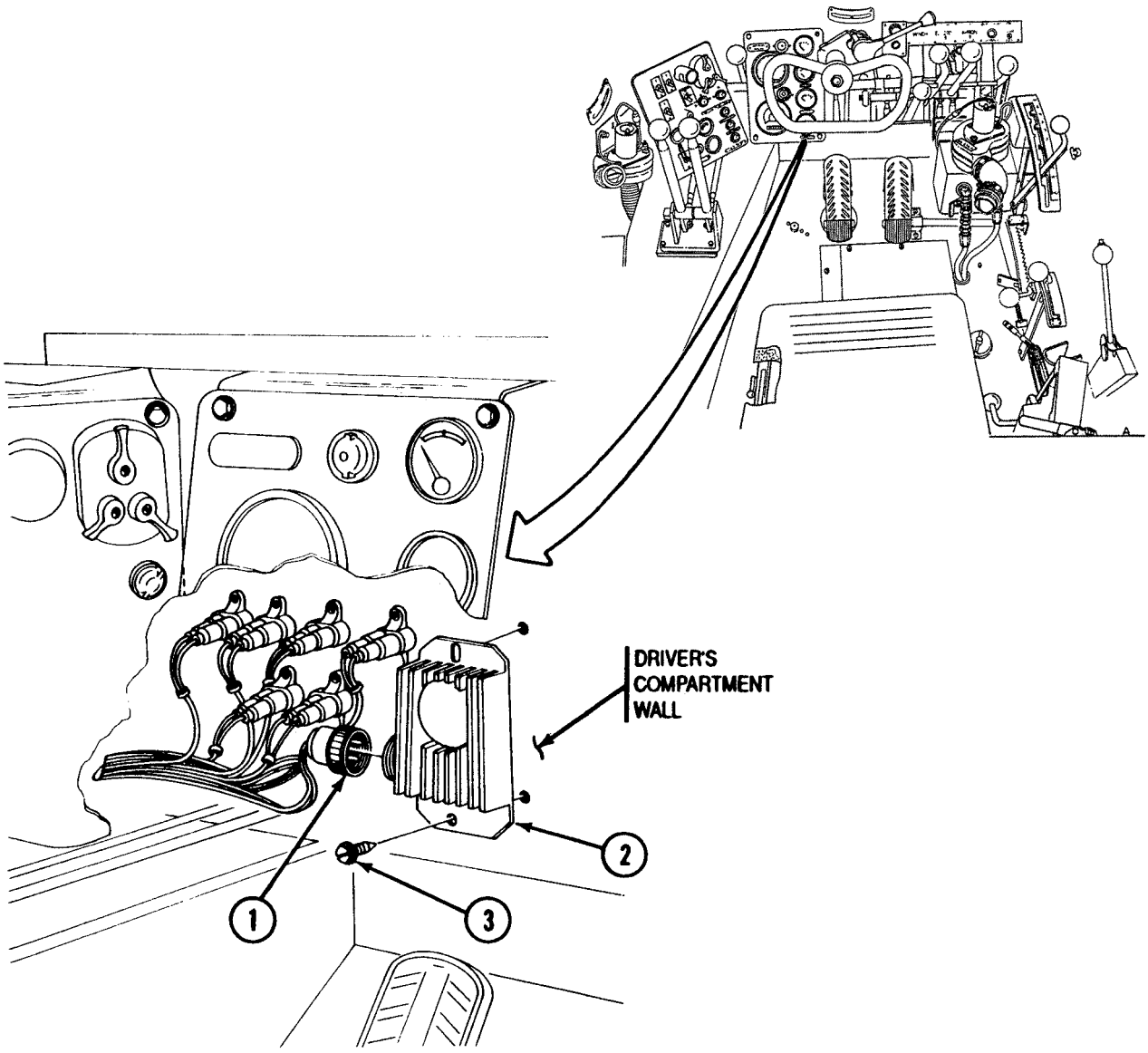
TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

A Disconnect electrical connector (1) from UNSPRUNG warning light flasher (2).

B Remove two screws (3) and flasher (2) from driver's compartment wall.

INSTALLATION

A Install UNSPRUNG warning light flasher (2) on driver's compartment wall with two screws (3).

B Connect electrical connector (1) to flasher (2).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

PARKING BRAKE RELAY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (8)

Parts Reference:

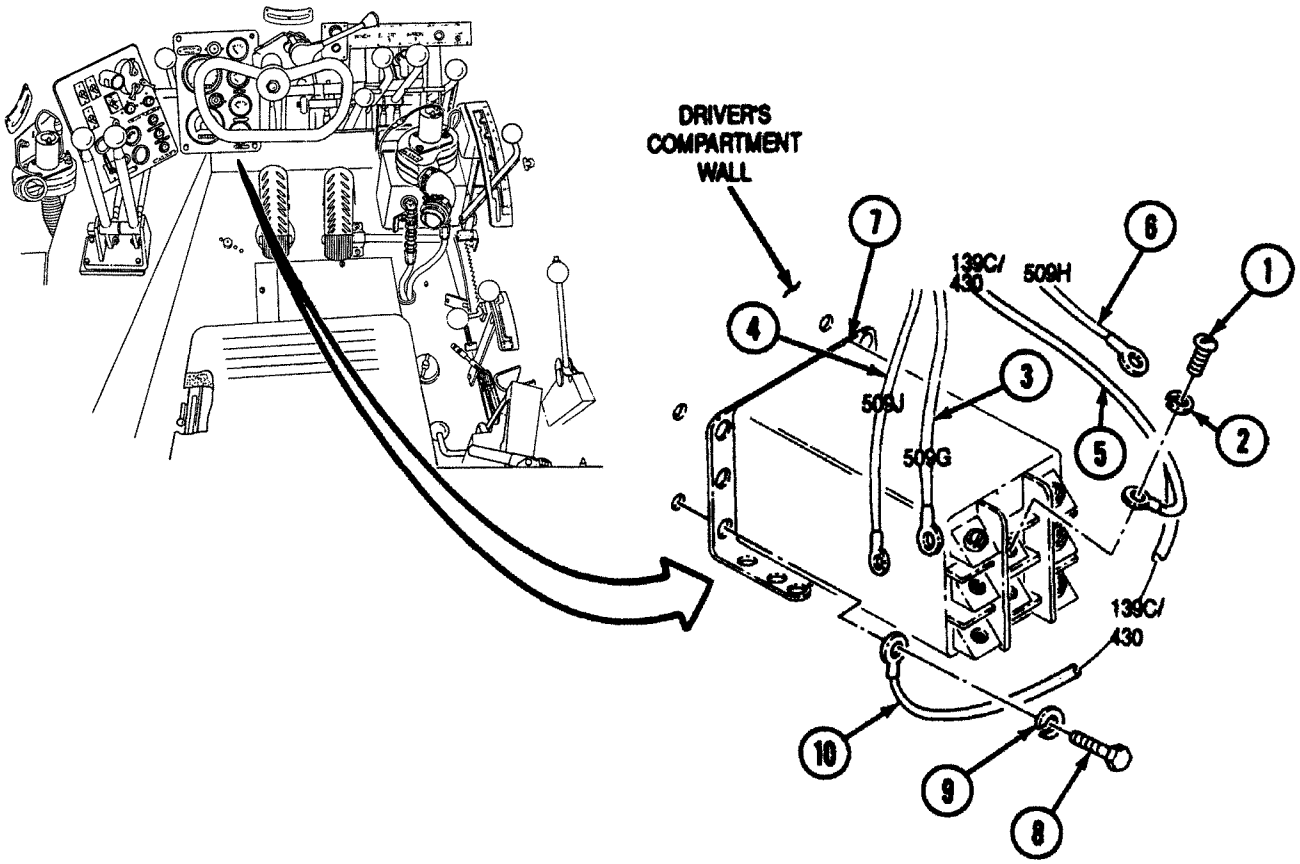
TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected



RELAY CONTACT — WIRE NUMBERS

X1 ← 509H
X2 ← 139C-430
A3 ← 509G
A2 ← 509J

MOUNT SCREW

CIRCUIT SCHEMATIC

REMOVAL

Note

Tag electrical leads prior to removal for installation.

A Remove four screws (1), lockwashers (2), and leads (3), (4), (5), and (6) from parking brake relay (7). Discard lockwashers (2).

B Remove four screws (8), lockwashers (9), lead (10), and parking brake relay (7) from driver's compartment wall. Discard lockwashers (9).

INSTALLATION

Note

Refer to wiring diagram (p FP-3) to install leads.

A Install parking brake relay (7) and 139C/430 lead (10) on driver's compartment wall with four lockwashers (9) and screws (8).

B Connect 509H lead (6) to X1 terminal on relay (7) with lockwasher (2) and screw (1).

C Connect 139C/430 lead (5) to X2 terminal on relay (7) with lockwasher (2) and screw (1).

D Connect 509J lead (4) to A2 terminal on relay (7) with lockwasher (2) and screw (1).

E Connect 509G lead (3) to A3 terminal on relay (7) with lockwasher (2) and screw (1).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

PARKING BRAKE WARNING SWITCH REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound	Item 16 Appendix D

Parts:

Tiedown Strap (2)

Lockwasher

Parts Reference:

TM 5-2350-262-24P	Group AJ

Reference:

TM 5-2350-262-10

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting References:

Page 3-314	Parking Brake Indicator Light Stays On
Page 3-315	Parking Brake Indicator Light Stays Off

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Access Covers Opened
TM 5-2350-262-10	Parking Brake Released
Page 2-28	Roadwheels Blocked
Page 4-84	Negative Battery Cables Disconnected
Page 4-361	Rear Floor Plates Removed

General Safety Instructions:

WARNING

Vehicle can move if parking brake is not set. Block roadwheels or track before working on vehicle when parking brake is not set.

WARNING

Block track or roadwheels when parking brake is released. Failure to comply may result in severe injury or death to personnel.

REMOVAL

A Remove screw (1), lockwasher (2), and washer (3) from bracket (4), loosen screw (5), and raise bracket (4) far enough out of parking brake lever (6) to gain access to parking brake warning switch (7). Discard lockwasher (2).

B Remove nut (8), washer (9), switch (7), keyed washer (10), and nut (11) from bracket (4).

C Remove two tiedown straps (12) from switch cable (13) and parking brake cable housing (14). Discard tiedown straps (12).

D Disconnect switch cable (13) from wiring harness (15), and remove switch (7) from vehicle.

E If damaged, refer to p 3-1 and replace connector (16) or pins (17).

INSTALLATION

Note

- If installing new parking brake warning switch, perform steps A through C.
- Leads are numbered at 3-inch intervals.
- Leads 2 and 5 are not used in this installation.

A Cut 2 lead (18) and 5 lead (19) of switch (7) to 3-in. (7.6-cm) lengths, and cover wire ends with insulation sleeving.

B Cut remaining four leads (21) from switch (7) to 24-in. (61-cm) lengths, and install pins (17) on leads (21) and (19) with insulation sleeving (20).

C Install new pins (17) on connector (16).

D Install parking brake warning switch (7) on bracket (4) with nut (11), keyed washer (10), washer (9), and nut (8). Tighten nuts (8) and (11) on both sides of bracket (4).

E Secure bracket (4) on parking brake lever (6) with washer (3), lockwasher (2), and screw (1). Tighten screw (5).

F Coat connector (16) with silicone compound, and connect switch cable (13) to wiring harness (15).

G Secure switch cable (13) to parking brake cable housing (14) with two tiedown straps (12).

H Connect negative battery cables (p 4-84).

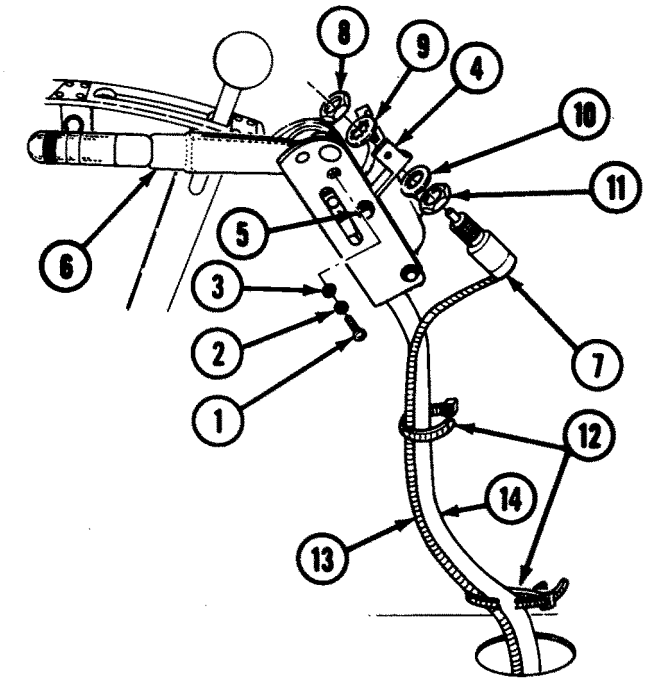
I Check operation of parking brake warning switch (7). Apply parking brake lever (6) and ensure plunger of switch (7) is depressed. With MASTER switch ON, and brake lever (6) applied, parking brake warning lamp should be lit.

J If warning lamp does not light when parking brake lever (6) is applied and MASTER switch is ON, repeat removal, step a, loosen nuts (8) and (11), and adjust switch (7). Tighten nuts (8) and (11).

K Repeat steps E and I.

FOLLOW-ON TASKS:

- Close engine access covers (TM 5-2350-262-10).
- Unblock roadwheels (p 2-28).
- Install rear floor plates (4-361).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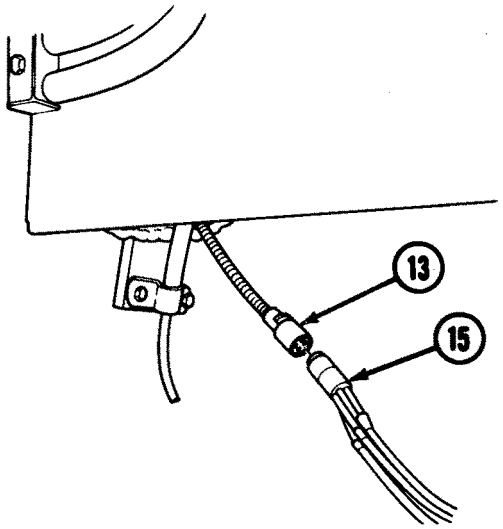
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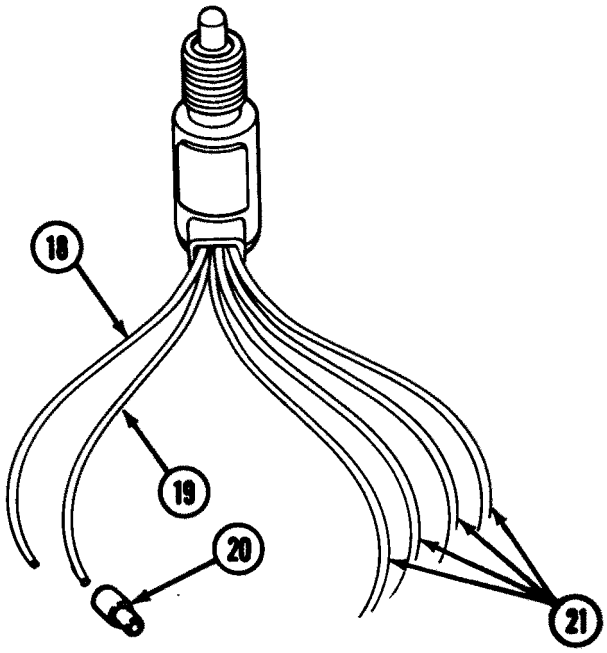
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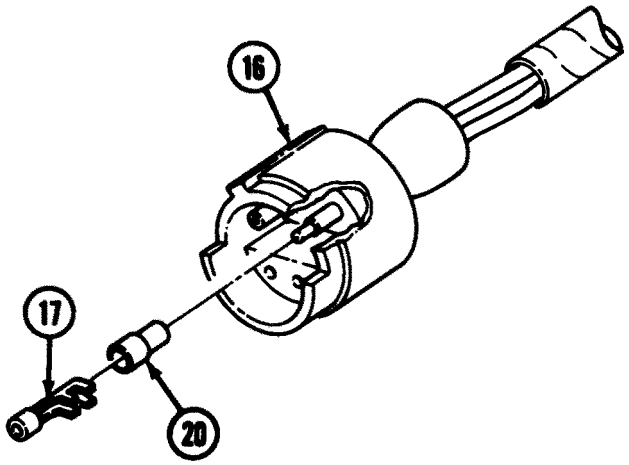

16
17
20

WARNING BUZZER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (3)

Parts Reference:

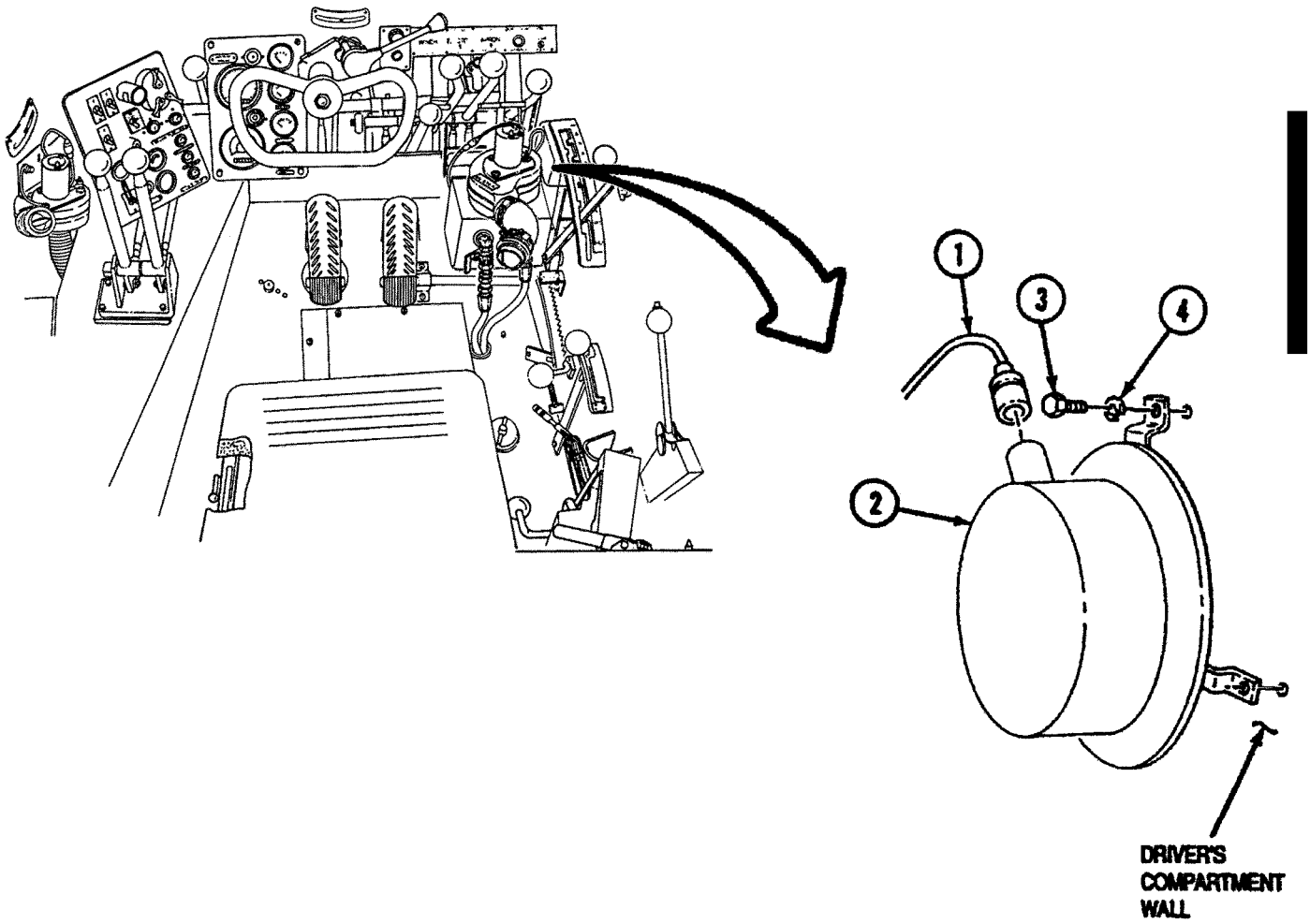
TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

Note

There are two configurations of the warning buzzer with the same part number. Square and round buzzers are replaced the same way.

A Disconnect electrical connector (1) from warning buzzer (2).

B Remove three screws (3), lockwashers (4), and warning buzzer (2) from driver's compartment wall. Discard lockwashers (4).

INSTALLATION

A Install warning buzzer (2) on driver's compartment wall with three lockwashers (4) and screws (3).

B Connect electrical connector (1) to warning buzzer (2).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

UNSPRUNG PRESSURE SWITCH REPLACEMENT (OLD PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound	Item 16 Appendix D

Parts:

Lockwasher (2)

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

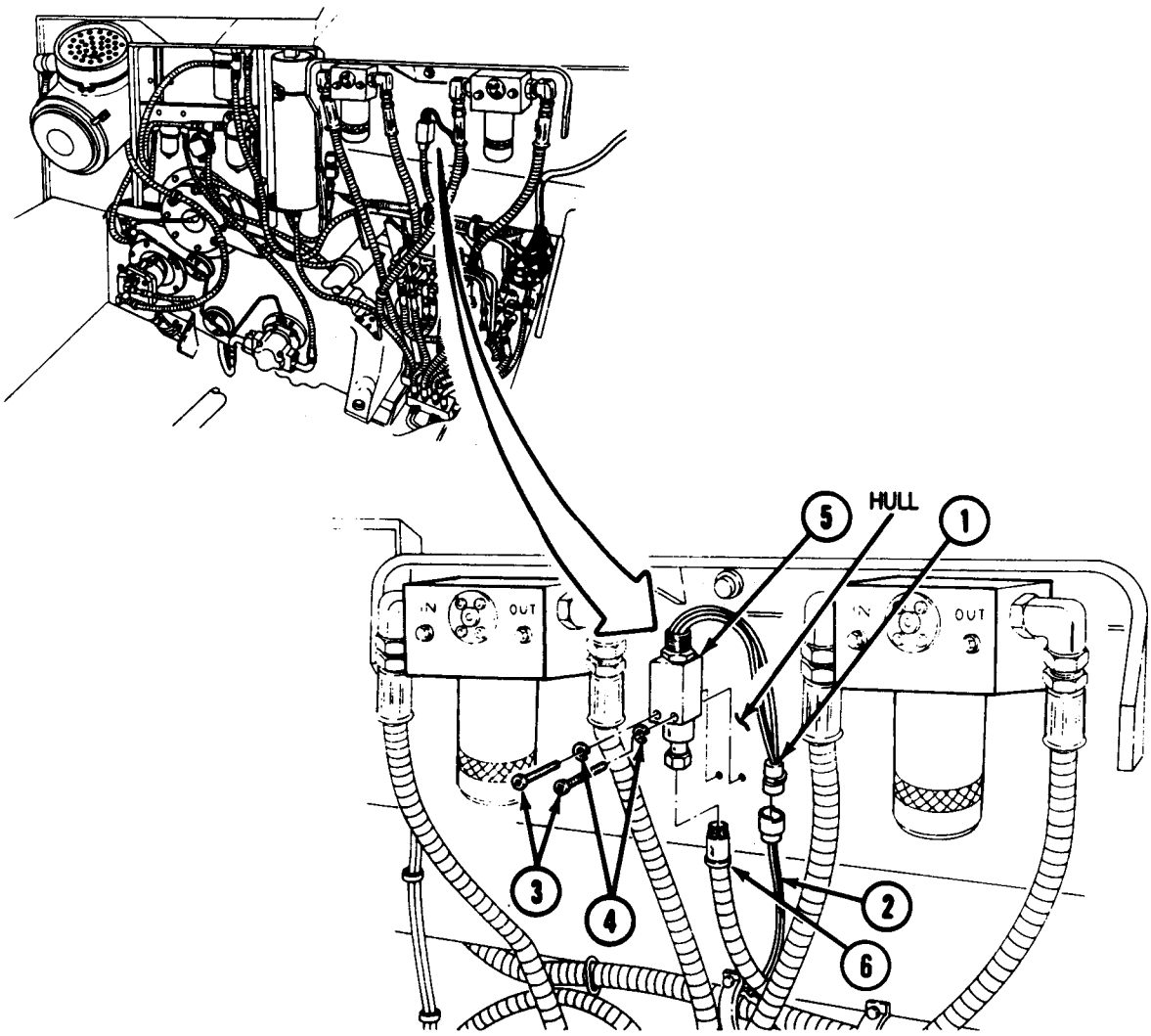
Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 2-27	Hydraulic Pressure Relieved
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

A Disconnect electrical connector (1) from wiring harness (2).

B Remove two screws (3), lockwashers (4), and UNSPRUNG pressure switch (5), with hose (6) attached, from hull. Discard lockwashers (4).

C Remove UNSPRUNG pressure switch (5) from hose (6).

INSTALLATION

A Connect UNSPRUNG pressure switch (5) to hose (6).

B Install UNSPRUNG pressure switch (5) on hull with two lockwashers (4) and screws (3).

C Coat shell of electrical connector (1) with silicone compound, and connect electrical connector (1) to wiring harness (2).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Retract ejector (TM 5-2350-262-10).

UNSPRUNG PRESSURE SWITCH REPLACEMENT (NEW PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound	Item 16 Appendix D

Parts:

Lockwasher (2)

Parts Reference:

TM 5-2350-262-24P

Personnel Required:

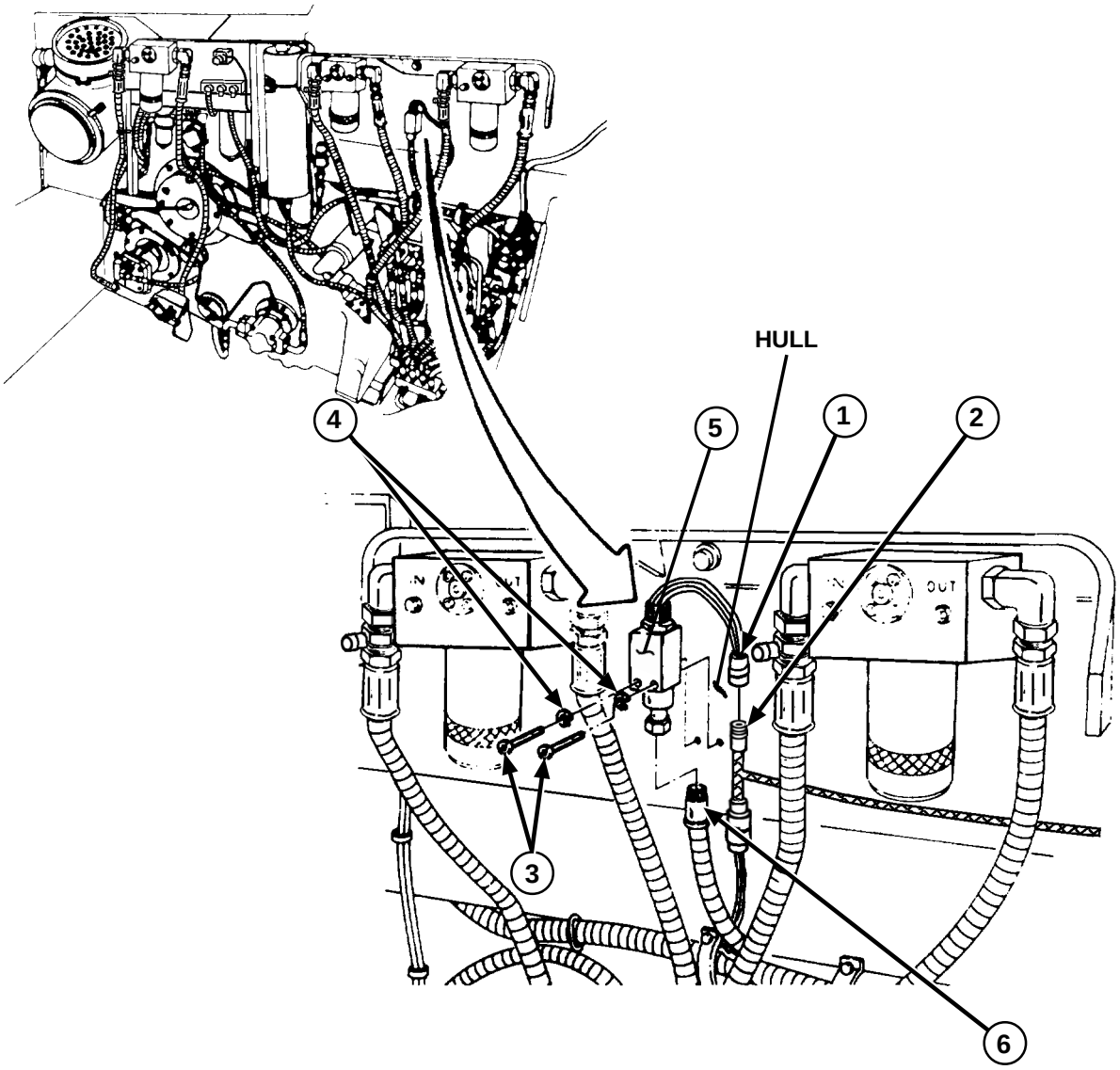
Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 2-27	Hydraulic Pressure Relieved
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

A Disconnect UNSPRUNG pressure switch electrical connector (1) from SPRUNG/UNSPRUNG wiring harness (2).

B Remove two screws (3), lockwashers (4), and UNSPRUNG pressure switch (5), with hose (6) attached, from hull. Discard lockwashers (4).

C Remove hose (6) from UNSPRUNG pressure switch (5).

INSTALLATION

A Connect hose (6) to UNSPRUNG pressure switch (5).

B Install UNSPRUNG pressure switch (5) on hull with two new lockwashers (4) and two screws (3). Coat shell of electrical connector (2) with silicone compound and connect UNSPRUNG pressure switch electrical connector (1) to SPRUNG/ UNSPRUNG wiring harness (2).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Retract ejector (TM 5-2350-262-10).

REVERSE ALARM PRESSURE SWITCH REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

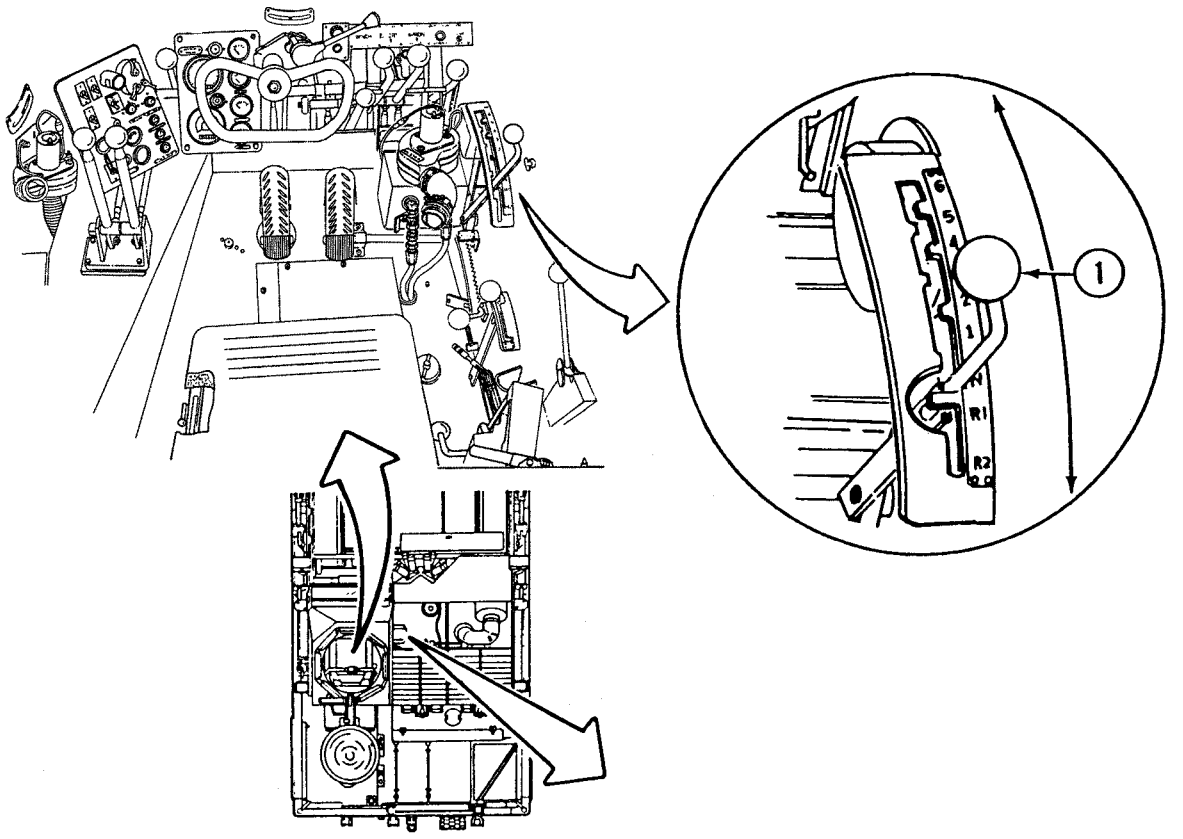
Equipment Condition:

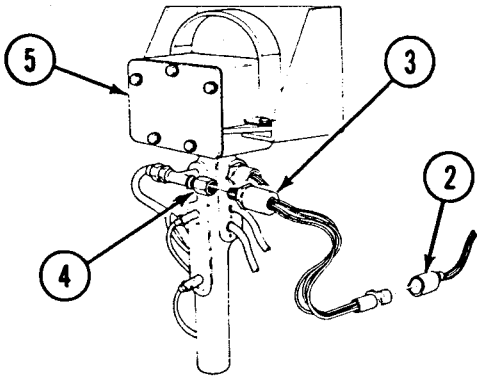
Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Access Covers Opened
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Transmission shifting lines are pressurized. Do not disconnect lines, fittings, or accumulator unless transmission shift control valve pressure has been relieved. Discharge transmission shift accumulator by moving shift control lever through all forward and reverse ranges several times, with engine off.





WARNING

Transmission shifting lines are pressurized. Do not disconnect lines, fittings, or accumulator unless transmission shift control valve pressure has been relieved. Discharge transmission shift accumulator by moving shift control lever through all forward and reverse ranges several times, with engine off. Failure to comply may result in severe injury to personnel.

REMOVAL

A Relieve shift control valve hydraulic pressure by moving transmission shift control lever (1) through all forward and reverse shift ranges several times after engine has been shut off.

B Disconnect electrical connector (2) from reverse alarm pressure switch (3).

C Remove reverse alarm pressure switch (3) from reducer (4) on shift control valve (5).

INSTALLATION

A Install reverse alarm pressure switch (3) on reducer (4) on shift control valve (5).

B Connect electrical connector (2) to switch (3).

FOLLOW-ON TASKS:

- Connect negative battery cables **(p 4-84).**
- Charge transmission shift accumulator **(p 4-675).**
- Close engine intake grilles and access covers **(TM 5-2350-262-10).**

HYDRAULIC OIL TEMPERATURE TRANSMITTER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound	Item 16 **Appendix D**

Parts Reference:

TM 5-2350-262-10	Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

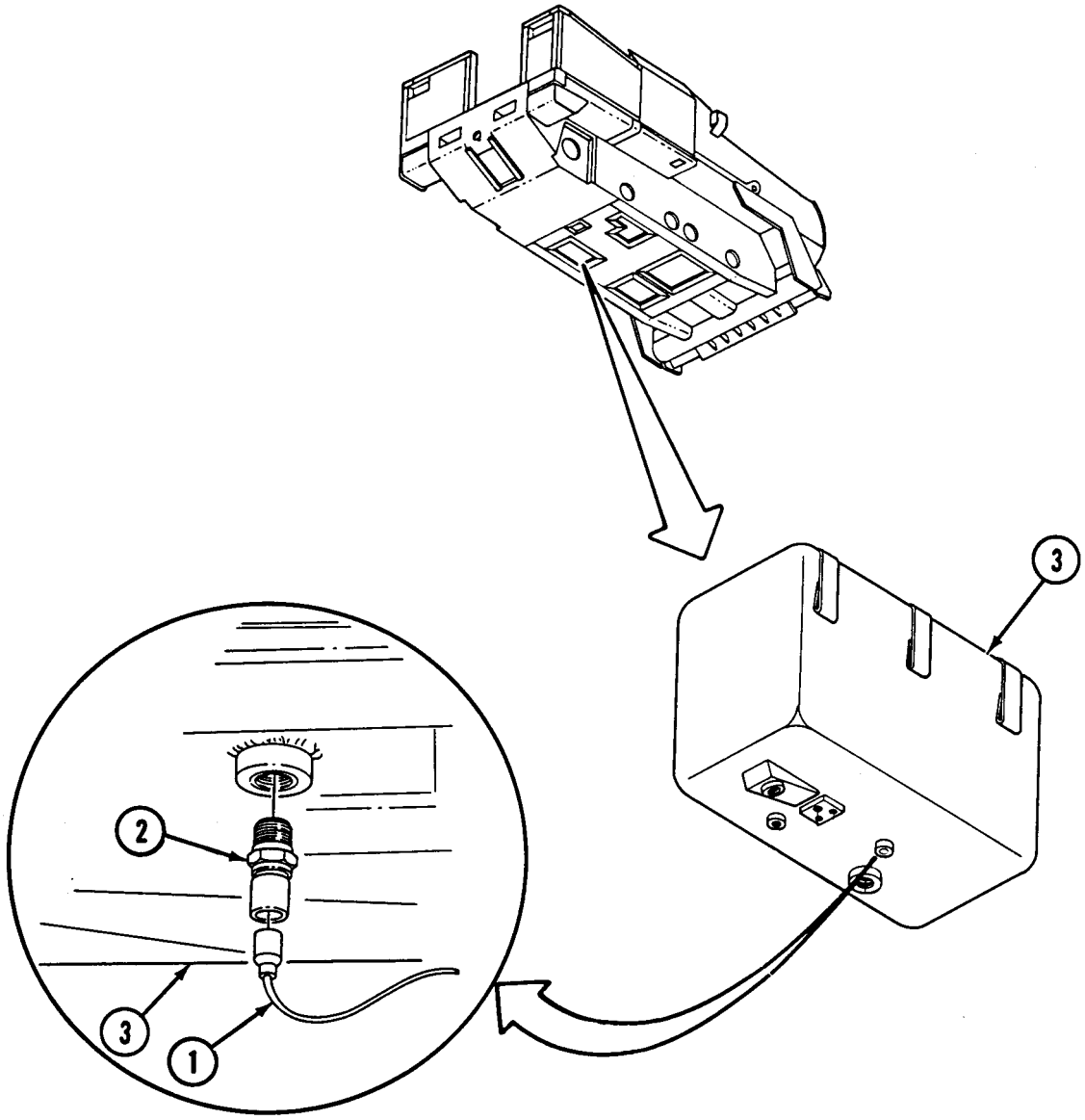
TM 5-2350-262-10

Troubleshooting Reference:

Page 3-308	HYDRAULIC OIL Temperature Gauge Does Not Indicate Hydraulic Oil Temperature After Engine Warm-up

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Hydraulic Tank Drained
Page 4-83	Negative Battery Cables Disconnected
Page 4-84	Left Rear Hull Access Cover Removed



REMOVAL

A Disconnect electrical lead (1) from hydraulic oil temperature transmitter (2).

B Remove temperature transmitter (2) from hydraulic tank (3).

INSTALLATION

A Install hydraulic oil temperature transmitter (2) in hydraulic tank (3).

B Apply a thin coat of silicone compound to shell of electrical lead (1), and connect electrical lead (1) to temperature transmitter (2).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Fill hydraulic tank (TM 5-2350-262-10).
- Install left rear access cover (p 4-375).

LOW AIR PRESSURE WARNING SWITCH REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound	Item 16 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-303	LOW AIR Pressure Warning Light Does Not Illuminate When MASTER Switch is Turned ON

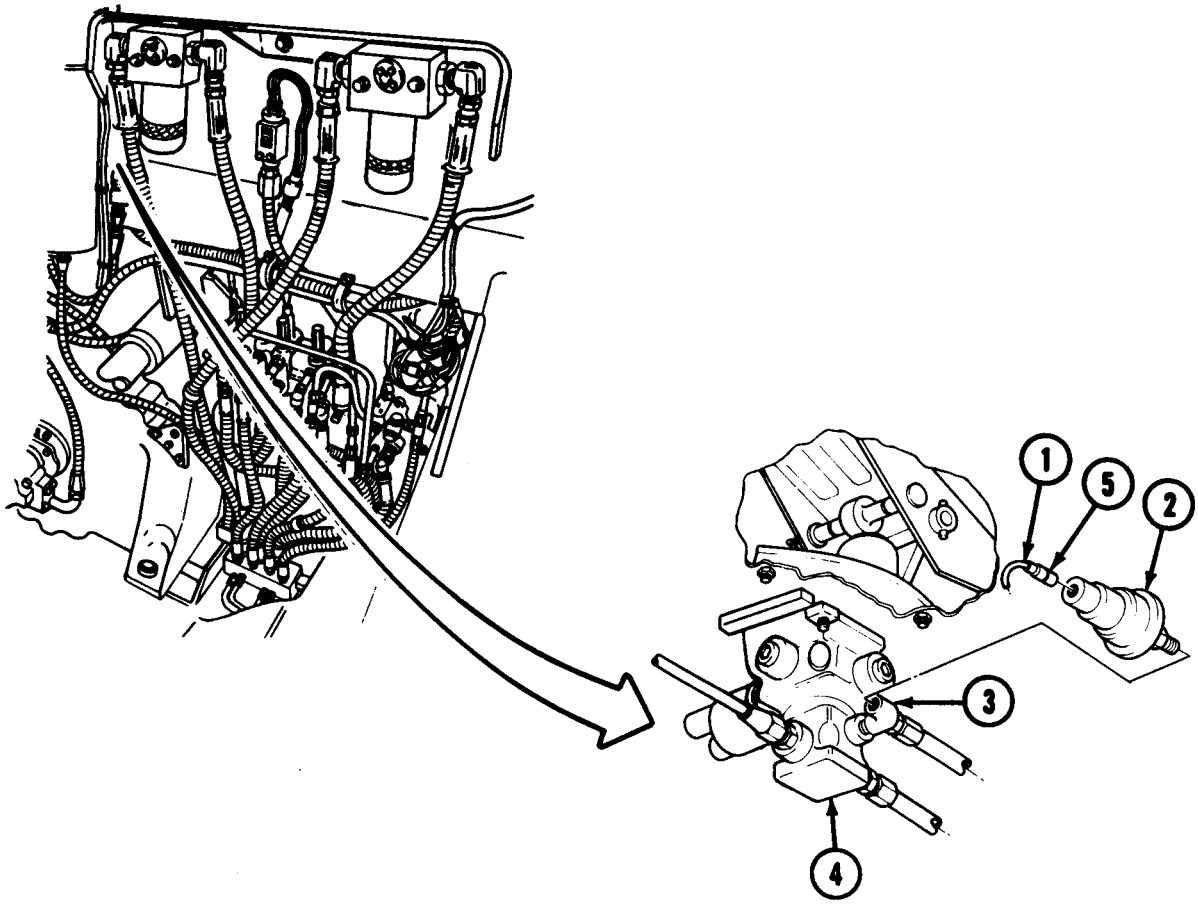
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 2-27	Air Pressure Relieved
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved.



WARNING

Air system contains high pressure. Do not disconnect any air system hose, tube, or fitting unless air pressure has been relieved. Failure to comply may result in severe injury to personnel.

REMOVAL

A Disconnect electrical lead (1) from low air pressure warning switch (2).

B Remove low air pressure warning switch (2) from elbow (3) of service brake valve (4).

INSTALLATION

A Install low air pressure warning switch (2) on elbow (3) of service brake valve (4).

B Apply thin coat of silicone compound to shell of connector (5), and connect electrical lead (1) to low air pressure warning switch (2).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Retract ejector (TM 5-2350-262-10).

TRANSMISSION OIL TEMPERATURE TRANSMITTER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-306	Transmission Oil Temperature Gauge Does Not Indicate Transmission Oil Temperature After Engine Warm-up

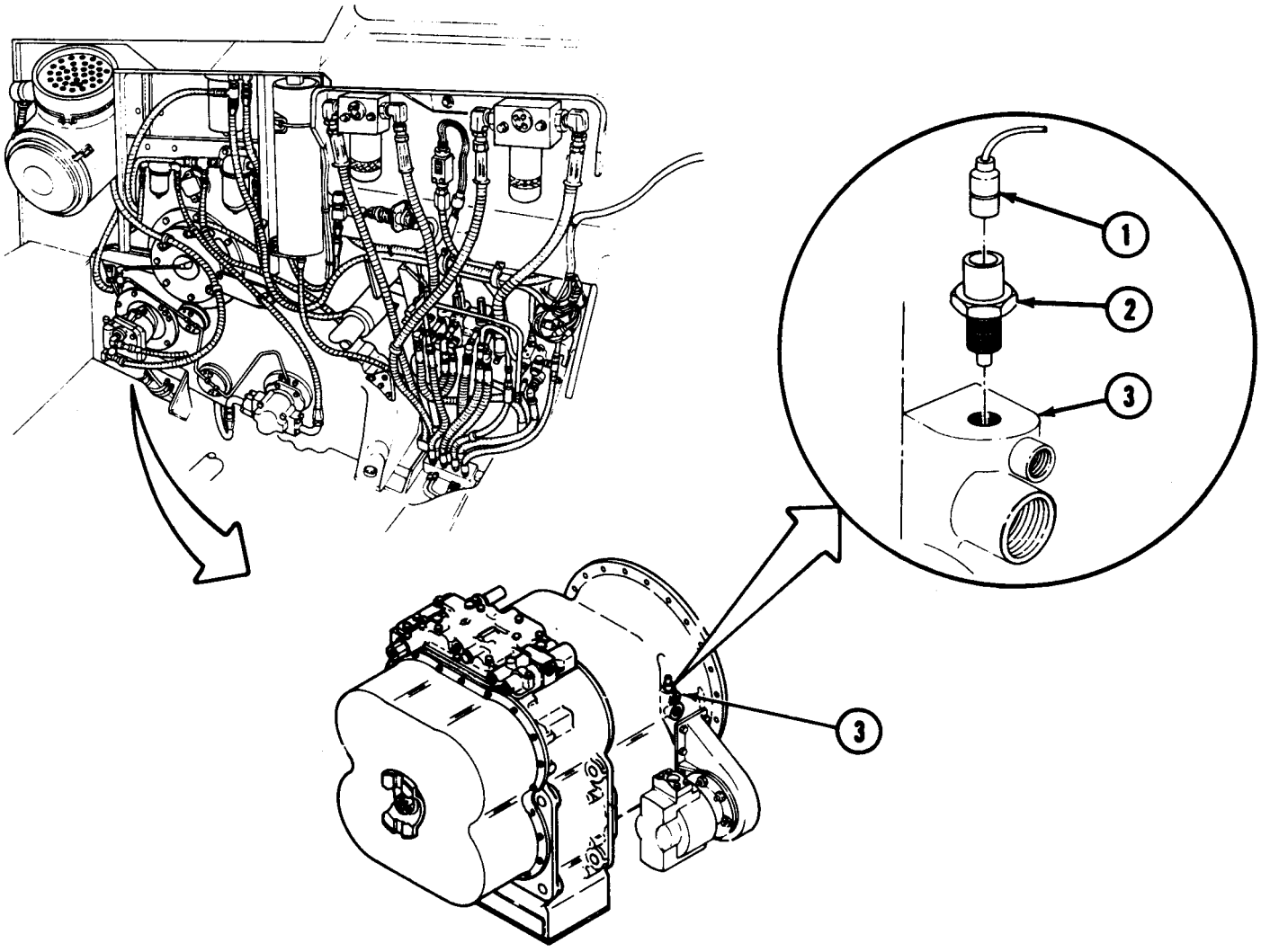
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool.



WARNING

Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in severe injury to personnel.

REMOVAL

A Disconnect electrical lead (1) from transmission oil temperature transmitter (2).

B Remove transmission oil temperature transmitter (2) from transmission (3).

INSTALLATION

A Install transmission oil temperature transmitter (2) on transmission (3).

B Connect electrical lead (1) to transmission oil temperature transmitter (2).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Retract ejector (TM 5-2350-262-10).

LOW TRANSMISSION OIL PRESSURE WARNING TRANSMITTER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound	Item 16 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-320	LOW Transmission Pressure Indicator Stays Lit When Vehicle is Running

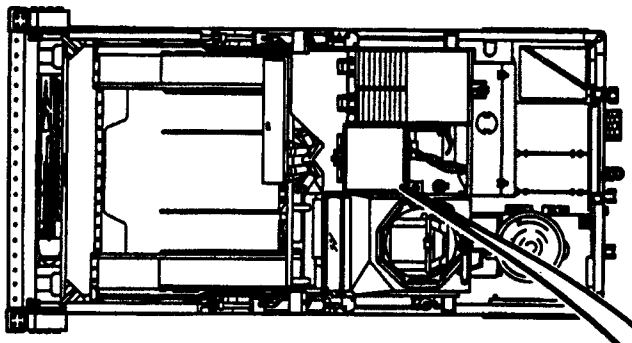
Equipment Condition:

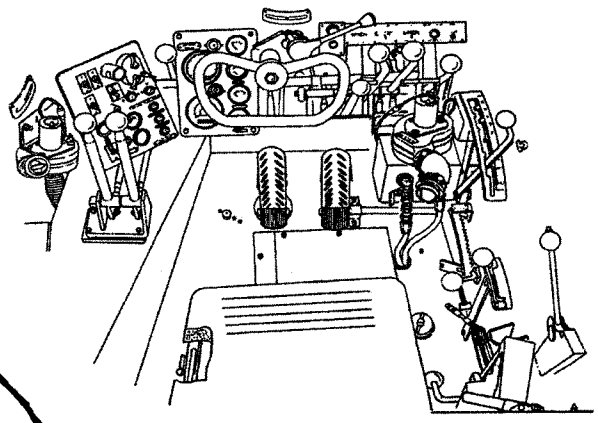
Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles Opened
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool.
- Transmission shifting lines are pressurized. Do not disconnect lines, fittings, or accumulator unless transmission shift control valve pressure has been relieved. Discharge transmission shift accumulator by moving shift control lever through all forward and reverse ranges several times, with engine off.





REMOVAL

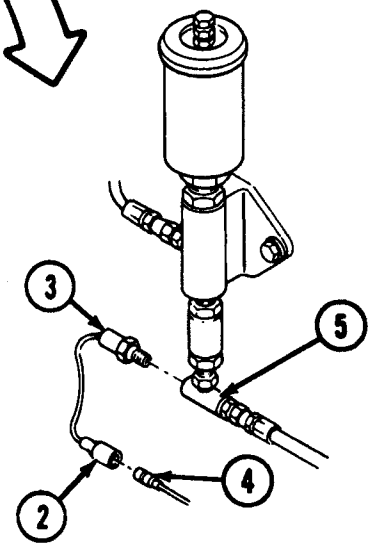
WARNING

- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in severe injury to personnel.
- Transmission shifting lines are pressurized. Do not disconnect lines, fittings, or accumulator unless transmission shift control valve pressure has been relieved. Discharge transmission shift accumulator by moving shift control lever through all forward and reverse ranges several times, with engine off. Failure to comply may result in severe injury to personnel.

A Relieve shift control valve hydraulic pressure by moving transmission shift control lever in through all forward and reverse shift ranges several times after engine has been shut off.

B Disconnect lead (2) of low transmission oil pressure warning transmitter (3) from wiring harness (4).

C Remove warning transmitter (3) from manifold tee fitting (5).



INSTALLATION

A Install low transmission oil pressure warning transmitter (3) on manifold tee fitting (5).

B Coat 72 lead (2) with silicone compound, and connect 72 lead (2) to wiring harness (4).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Charge transmission shift accumulator (p 4-675).
- Close engine intake grilles (TM 5-2350-262-10).

ENGINE OIL PRESSURE SWITCH AND TRANSMITTER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound	Item 16 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-158	HIGH Oil Pressure
Page 3-310	Engine Oil Pressure Gauge Does Not Indicate Engine Oil Pressure

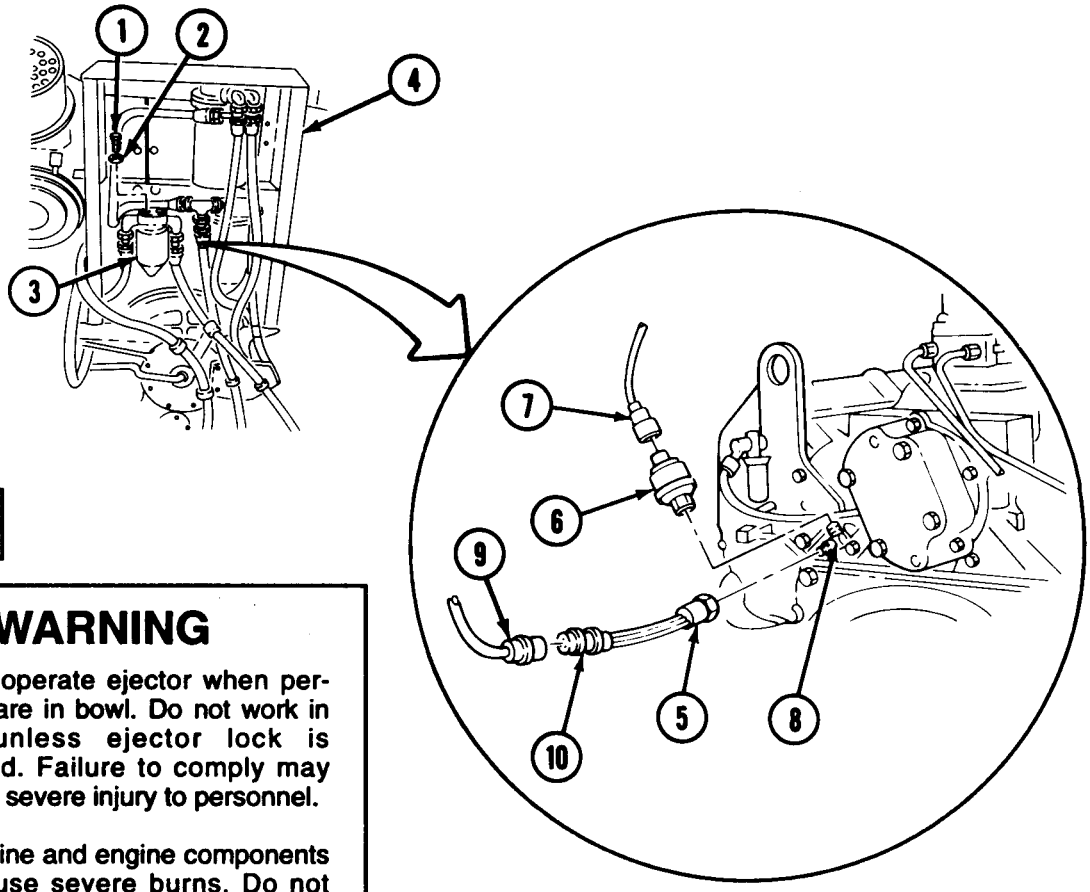
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Foward
TM 5-2350-262-10	Engine Intake Grilles Opened
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

- Do not operate ejector with personnel in bowl. Do not work in bowl, unless ejector lock is engaged.
- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool.



REMOVAL

WARNING

- Do not operate ejector when personnel are in bowl. Do not work in bowl unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.
- Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in severe injury to personnel.

Note

Tag electrical leads prior to removal for installation.

A Remove two screws (1) and washers (2) securing scavenger pump filter (3) to filter support (4). Move filter (3) forward for access to engine oil pressure switch (5) and transmitter (6).

B Disconnect lead (7) from transmitter (6).

C Remove transmitter (6) from tee (8).

D Disconnect lead (9) from connector (10) of engine oil pressure switch (5).

Note

Tee may have to be turned for easier access to engine oil pressure switch.

E Remove engine oil pressure switch (5) from tee (8).

INSTALLATION

A Install engine oil pressure switch (5) on tee (8).

B Coat 34 lead (9) with silicone compound, and connect 34 lead (9) to connector (10) of engine oil pressure switch (5).

C Install transmitter (6) on tee (8).

D Coat 36 lead (7) with silicone compound, and connect 36 lead (7) to transmitter (6).

E Install scavenger pump filter (3) on filter support (4) with two washers (2) and screws (1).

FOLLOW-ON TASKS:
- Connect negative battery cables (p 4-84).
- Close engine intake grilles (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

ENGINE WATER TEMPERATURE TRANSMITTER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound	Item 16 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-312	Water Temperature Gauge Does Not Indicate Water Temperature After Warm-up

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Access Covers Opened
Page 4-84	Negative Battery Cables Disconnected
Page 4-647	Radiator Drained

General Safety Instructions:

WARNING

Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool.

REMOVAL

WARNING

Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in severe injury to personnel.

A Disconnect lead (1) from engine water temperature transmitter (2).

B Remove engine water temperature transmitter (2) from water pump (3).

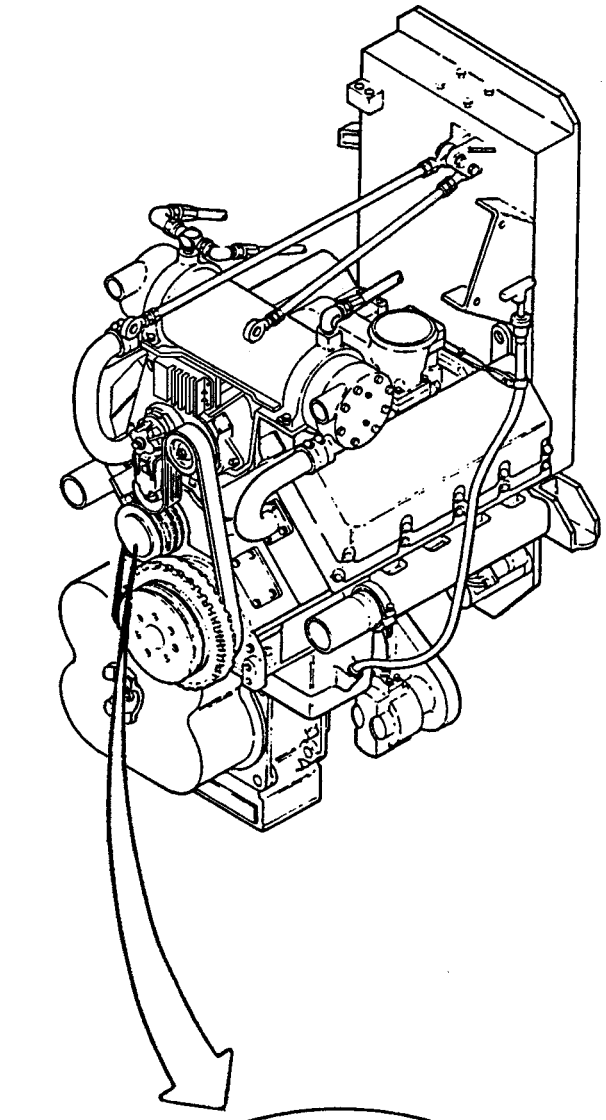
INSTALLATION

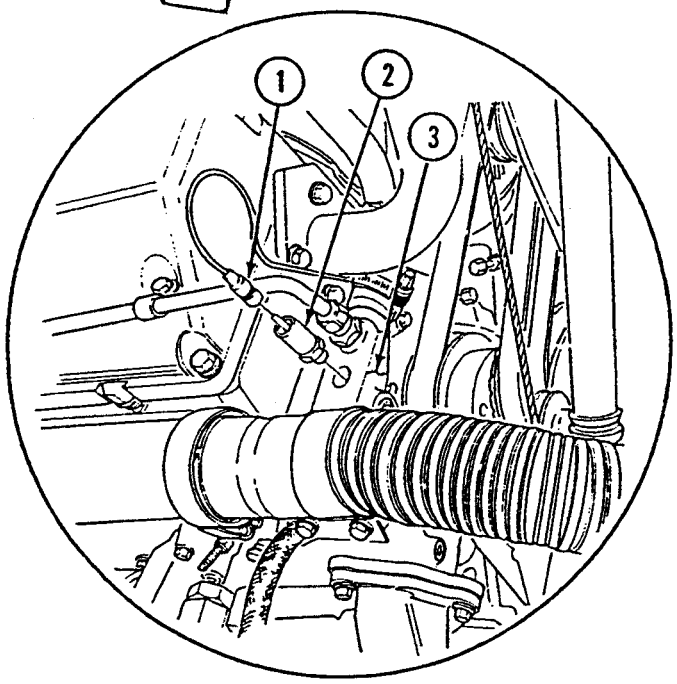
A Install engine water temperature transmitter (2) on water pump (3).

B Coat 33 lead (1) with silicone compound, and connect 33 lead (1) to engine water temperature transmitter (2).

FOLLOW-ON TASKS:

- Fill cooling system (p 4-648).
- Connect negative battery cables (p 4-84).
- Close engine access covers (TM 5-2350-262-10).





SPEEDOMETER SENDER AND ADAPTER REPLACEMENT

This task covers:

a. Removal
b. Inspection
c. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Grease	Item 19 **Appendix D**

Parts:

Gasket

Locknut

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

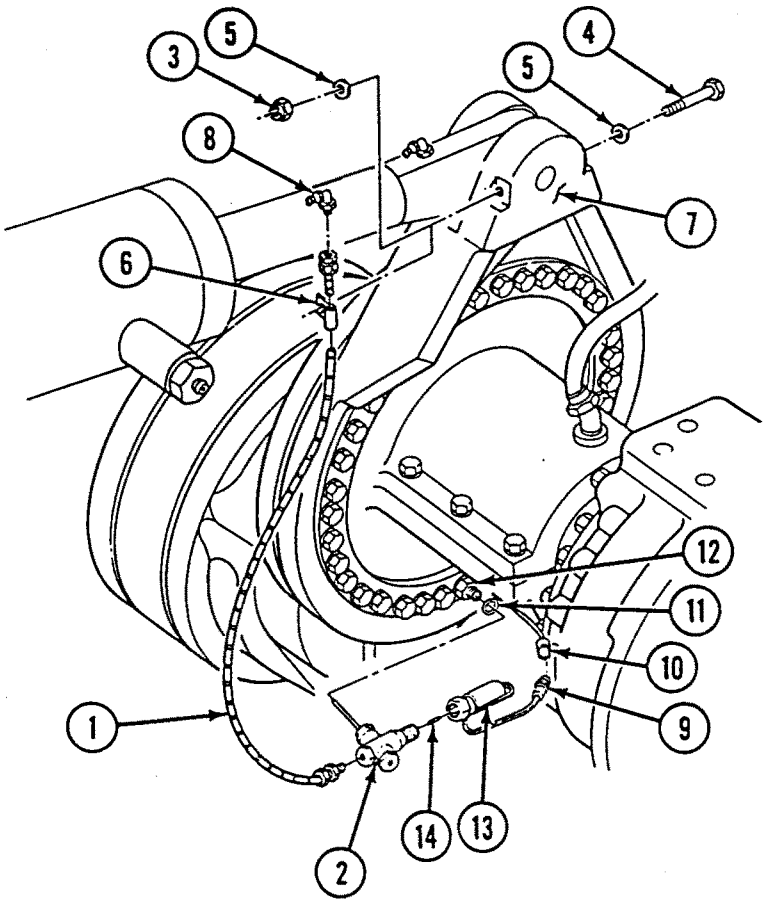
Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Final Drive Oil Drained
Page 4-84	Negative Battery Cables Disconnected
Page 4-361	Rear Floor Plates Removed



REMOVAL

A Disconnect hose (1) from adapter (2), and remove locknut (3), screw (4), two washers (5), clamp (6), and hose (1) from left final drive adjusting flange (7). Discard locknut (3).

B Remove lubrication fitting (8) from hose (1).

C Disconnect sender lead (9) from rear wiring harness lead (10), and remove adapter (2) and gasket (11) from adapter connector (12) on left final drive adjusting flange (7). Discard gasket (11).

D Remove sender (13) and driveshaft (14) from adapter (2).

INSPECTION

Inspect driveshaft (14) for signs of damage or wear, and replace driveshaft (14) if damaged or worn.

INSTALLATION

A Install sender (13) and driveshaft (14) on adapter (2).

B Install gasket (11) and adapter (2) on adapter connector (12) on left final drive adjusting flange (7), and connect sender lead (9) to rear wiring harness lead (10).

C Install lubrication fitting (8) on hose (1), and connect hose (1) to adapter (2).

D Secure hose (1) to left final drive adjusting flange (7) with clamp (6), two washers (5), screw (4), and locknut (3). Tighten locknut (3) to 29-31 lb-ft (39-42 N•m).

E Lubricate adapter (2) with grease.

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Fill final drives (TM 5-2350-262-10).
- Install rear floor plates (p 4-361).

FUEL PRESSURE TRANSDUCER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 15 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

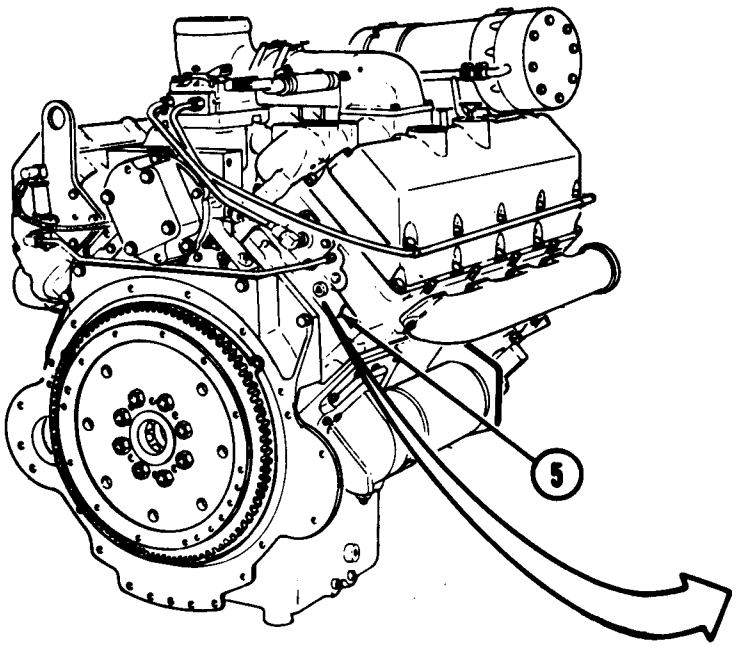
Equipment Condition:

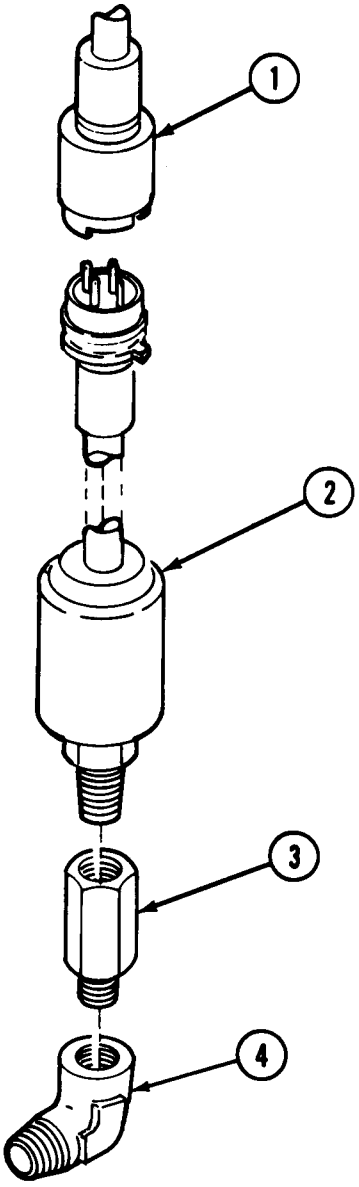
Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles Opened
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool.





WARNING

Hot engine and engine components can cause severe burns. Do not work on engine or engine components unless engine is cool. Failure to comply may result in severe injury to personnel.

REMOVAL

A Disconnect lead (1) from fuel pressure transducer (2).

B Remove reducer (3) from elbow (4) at engine (5), and remove transducer (2) from reducer (3).

INSTALLATION

A Coat threads of fuel pressure transducer (2) and reducer (3) with sealing compound, and install reducer (3) and transducer (2) on elbow (4) at engine (5).

B Connect lead (1) to fuel pressure transducer (2).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Close engine intake grilles (TM 5-2350-262-10).

STARTER RELAY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwashers (6), OLD PRODUCTION
Lockwashers (4), NEW PRODUCTION
Nut, Self-locking (2), NEW PRODUCTION

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-128	Engine Will Not Crank

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 4-84	Negative Battery Cables Disconnected

REMOVAL

Note

Tag electrical leads prior to removal for installation.

NEW PRODUCTION Starter Relays are mounted adjacent to original location, on newly installed bracket next to compensating pump filter and relocated AOAP sampling valves. Install with two screws, two flatwashers, and two self-locking nuts.

A Remove four nuts (1), lockwashers (2), washers (3), leads (4), (5), (6), and ground lead (7) from terminals (8), (9), (10), and (11) of starter relay (12). Discard lockwashers (2).

B Remove two screws (13), lockwashers (14), ground lead (15), and relay (12) from filter support (16). Discard lockwashers (14).

INSTALLATION

A Install relay (12) and ground lead (15) on filter support (16) with two lockwashers (14) and screws (13).

B Connect 14B electrical lead (4) on terminal (8).

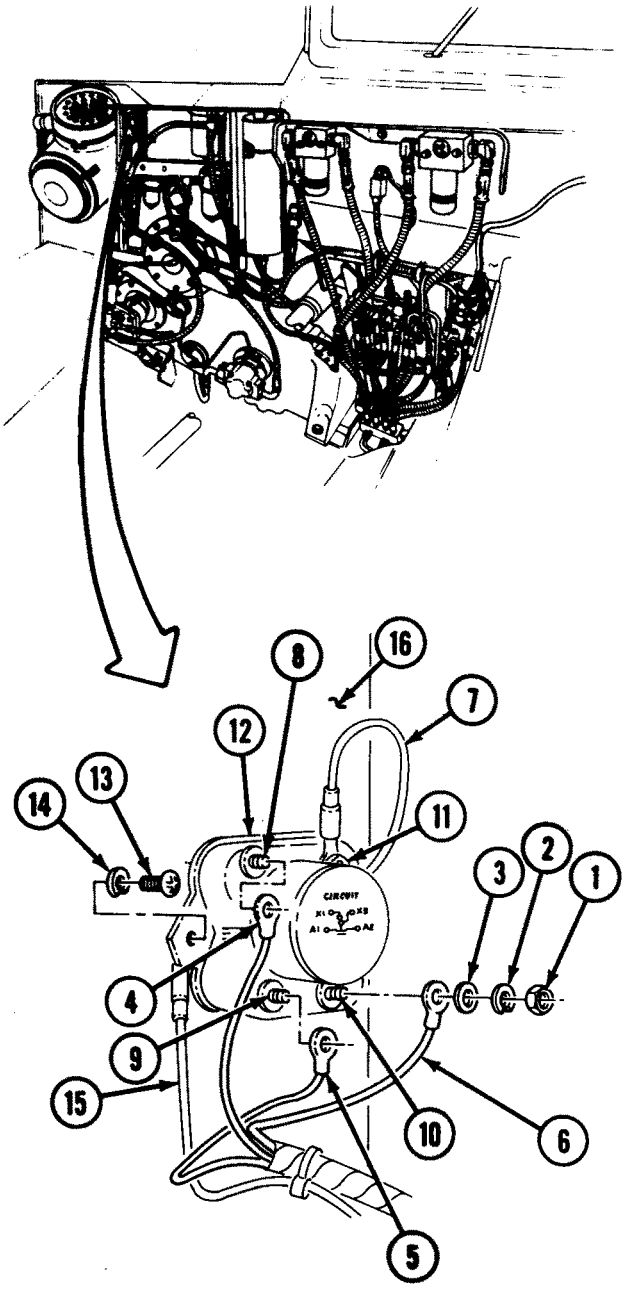
C Connect 14D electrical lead (5) on terminal (9).

D Connect 14E electrical lead (6) on terminal (10).

E Secure leads (4), (5), and (6) on terminals (8), (9), and (10) and ground lead (7) on terminal (11) with four washers (3), lockwashers (2), and nuts (1).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Retract ejector (TM 5-2350-262-10).



For NEW PRODUCTION, rotate view 90° for clarity.

SMOKE GRENADE DISCHARGERS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Self-locking Screw (6)

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

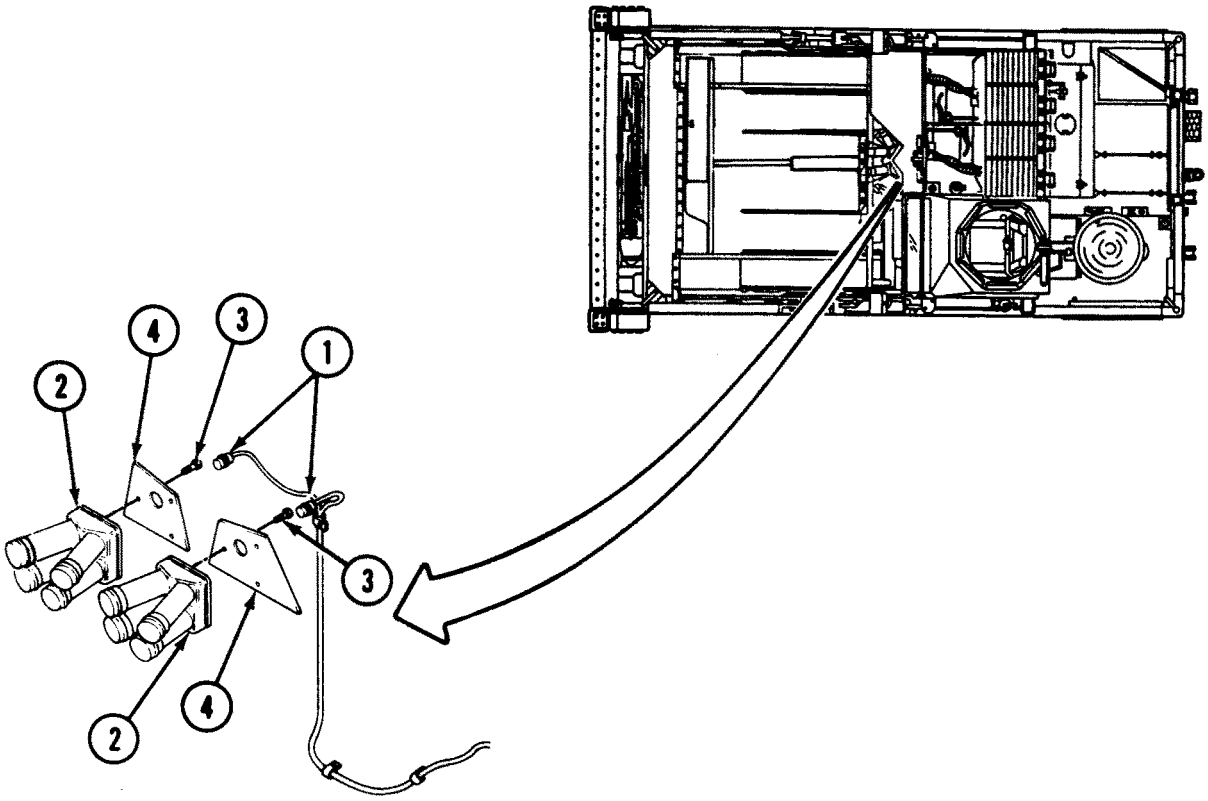
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Engine Intake Grilles Opened
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Do not work on smoke grenade launcher system unless smoke grenades are removed from dischargers (TM 5-2350-262-10) and negative battery cables have been disconnected.



WARNING

Do not work on smoke grenade launcher system unless smoke grenades are removed from dischargers (TM 5-2350-262-10) and negative battery cables have been disconnected. Failure to comply may result in severe injury to personnel.

REMOVAL

Note

Tag electrical leads prior to removal for installation.

A Disconnect two electrical connectors (1) from smoke grenade dischargers (2).

B Remove six self-locking screws (3) and two smoke grenade dischargers (2) from armor plates (4). Discard self-locking screws (3).

INSTALLATION

A Install two smoke grenade dischargers (2) on armor plates (4) with six self-locking screws (3).

B Connect two electrical connectors (1) to smoke grenade launchers (2).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Retract ejector (TM 5-2350-262-10).
- Close engine intake grilles (TM 5-2350-262-10).

SMOKE GRENADE ARMING-FIRING UNIT REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (4)

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-344	Smoke Grenade Dischargers Inoperative

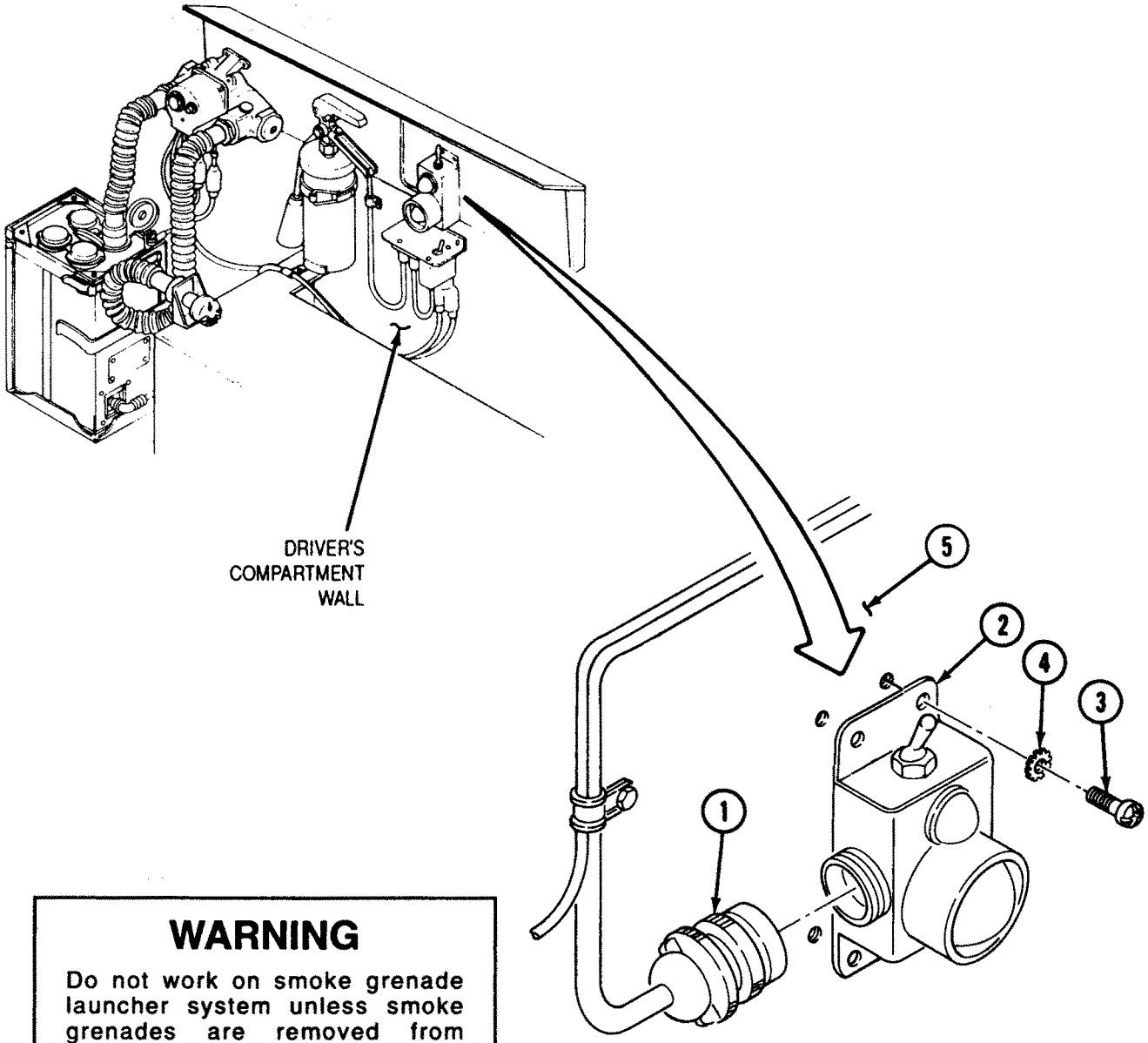
Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Do not work on smoke grenade launcher system unless smoke grenades are removed from dischargers (TM 5-2350-262-10) and negative battery cables have been disconnected.



WARNING

Do not work on smoke grenade launcher system unless smoke grenades are removed from dischargers (TM 5-2350-262-10) and negative battery cables have been disconnected. Failure to comply may result in severe injury to personnel.

REMOVAL

A Disconnect electrical connector (1) from smoke grenade arming-firing unit (2).

B Remove four screws (3), lockwashers (4), and smoke grenade arming-firing unit (2) from mounting bracket (5). Discard lockwashers (4).

INSTALLATION

A Install smoke grenade arming-firing unit (2) on mounting bracket (5) with four lockwashers (4) and screws (3).

B Connect electrical connector (1) to smoke grenade arming-firing unit (2).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

DISCHARGER WIRING HARNESS REPLACEMENT AND REPAIR

This task covers:

a. Removal

b. Repair

c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Electrical Tape — Item 34 Appendix D

Parts:

Self-locking Screw (2)

Parts Reference:

TM 5-2350-262-24P — Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TB SIG 222

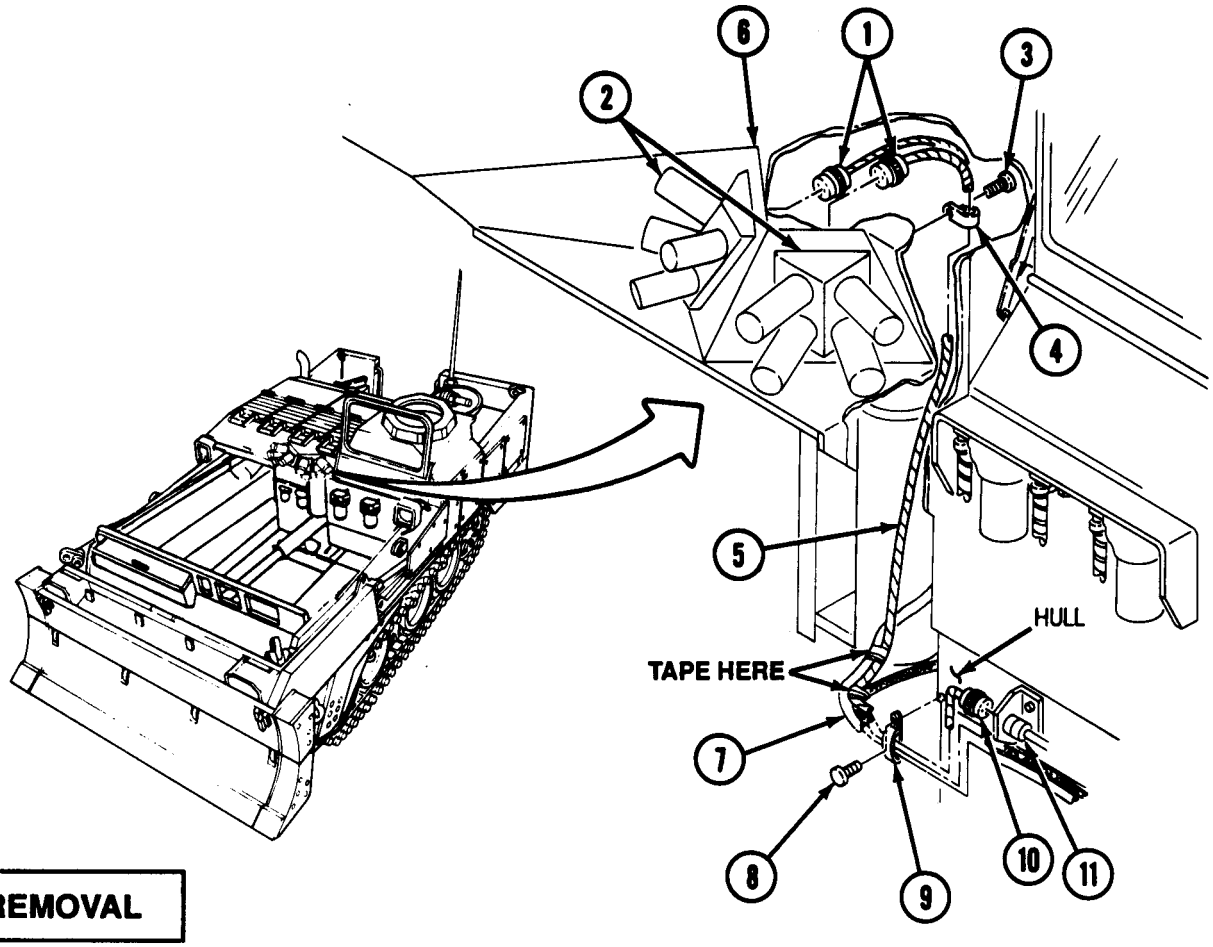
TM 5-2350-262-10

Troubleshooting Reference:

Page 3-344 — Smoke Grenade Dischargers Inoperative

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

A Disconnect two connectors (1) from rear of smoke grenade dischargers (2).

B Remove self-locking screw (3) and clamp (4) from wiring harness (5) and cowling (6). Discard self-locking screw (3).

C Remove tape securing wiring harness (5) to air lines (7).

D Remove self-locking screw (8) and clamp (9) from wiring harness (5), air lines (7), and hull. Discard self-locking screw (8).

E Disconnect connector (10) from connector (11), and remove wiring harness (5) from vehicle.

REPAIR

Refer to p 3-1 to repair the discharger wiring harness.

INSTALLATION

A Route wiring harness (5) and connect connector (10) to connector (11).

B Connect two connectors (1) to smoke grenade dischargers (2).

C Secure air lines (7) and wiring harness (5) to hull with clamp (9) and self-locking screw (8).

D Secure wiring harness (5) to air lines (7) with electrical tape in two places.

E Secure wiring harness (5) to cowling (6) with clamp (4) and self-locking screw (3).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Retract ejector (TM 5-2350-262-10).

ARMING-FIRING UNIT WIRING HARNESS REPLACEMENT AND REPAIR

This task covers:

a. Removal

b. Repair

c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Emery Cloth	Item 8 Appendix D
Silicone Compound	Item 16 Appendix D

Parts:

Self-locking Screw (3)

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

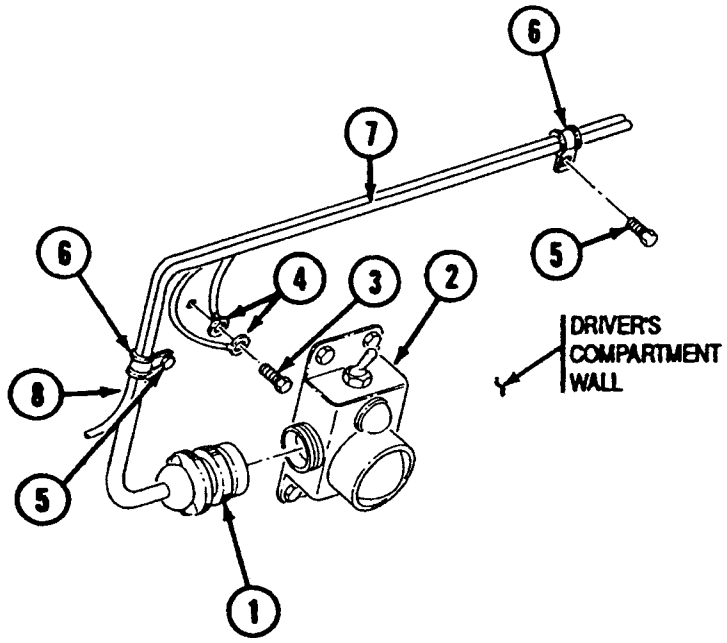
Construction Equipment Repairer 62B10

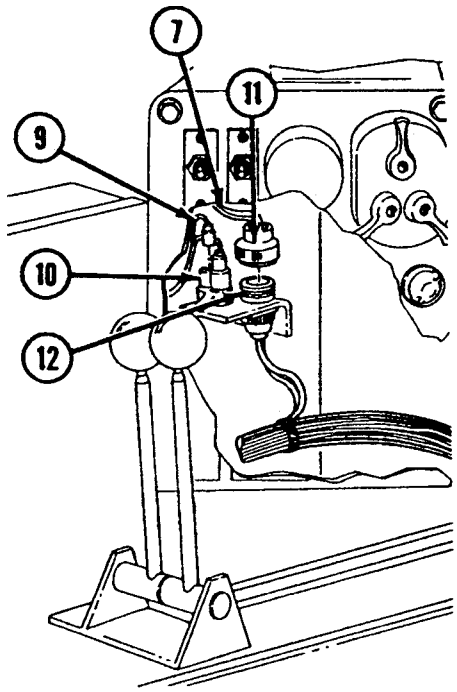
Troubleshooting Reference:

Page 3-344	Smoke Grenade Dischargers Inoperative

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected





REMOVAL

A Disconnect connector (1) from arming-firing unit (2).

B Remove self-locking screw (3) and two ground leads (4) from driver's compartment wall. Discard self-locking screw (3).

C Remove two self-locking screws (5) and clamps (6) securing arming-firing unit wiring harness (7) and NBC air purifier lead (8). Discard self-locking screws (5).

D Pull arming-firing unit wiring harness (7) free from clamps (6).

E Disconnect lead (9) from circuit breaker (10).

F Disconnect connector (11) from connector (12).

G Remove arming-firing unit wiring harness (7) from vehicle.

REPAIR

Refer to p 3-1 to repair the arming-firing unit wiring harness.

INSTALLATION

A Connect connector (11) to connector (12).

B Coat shell of 115 lead (9) with silicone compound and connect to circuit breaker (10).

C Route arming-firing unit wiring harness (7) and position two clamps (6) on NBC air purifier lead (8) and arming-firing unit wiring harness (7).

D Clean two ground leads (4) and mounting surface with emery cloth until metal is clean and free of paint, and secure two ground leads (4) to driver's compartment wall with self-locking screw (3).

E Connect connector (1) to arming-firing unit (2).

F Install arming-firing unit wiring harness (7) and NBC air purifier lead (8) on driver's compartment wall with two clamps (6) and self-locking screws (5).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

HEADLIGHT SEALED BEAM AND INCANDESCENT LAMP REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (4)

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

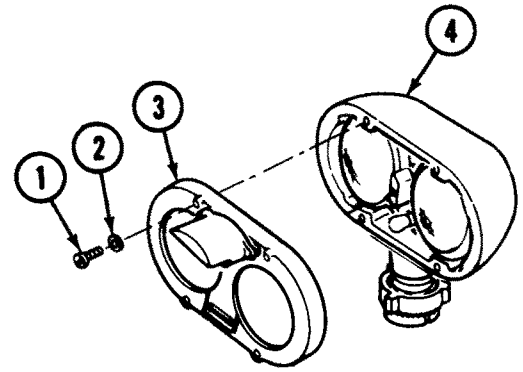
Reference	Condition Description
Page 2-27	Hydraulic Pressure Relieved
Page 2-27	Front of Vehicle Blocked
Page 4-84	Negative Battery Cables Disconnected

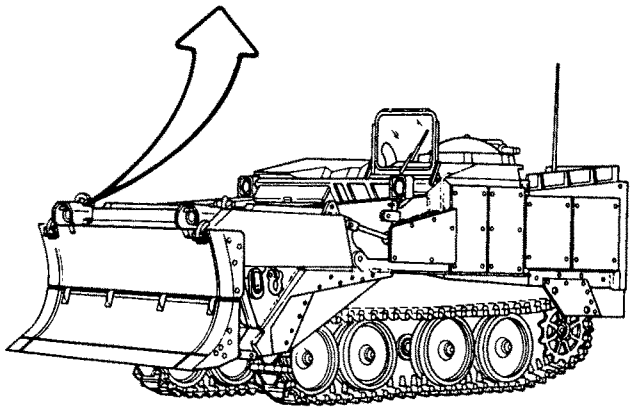
General Safety Instructions:

WARNING

Do not stand or work under raised apron and dozer assembly unless apron lockpins are installed.

REMOVAL





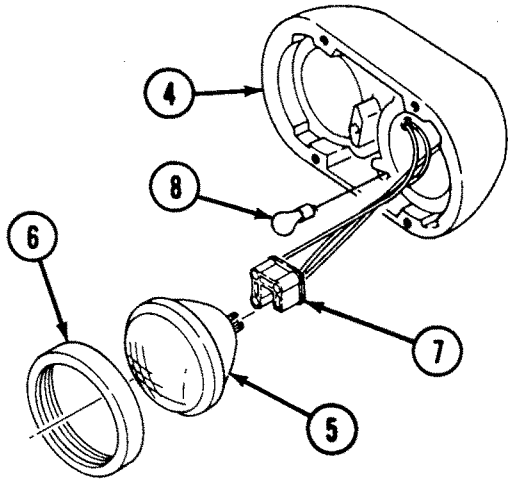
WARNING

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.

Note

- All three lamps are removed in the same manner. This procedure covers the sealed beam lamp.
- There is a lug slot on the headlamp body for each sealed beam lamp.

A Remove four screws (1), lockwashers (2), and light cover (3) from headlamp body (4). Discard lockwashers (2).

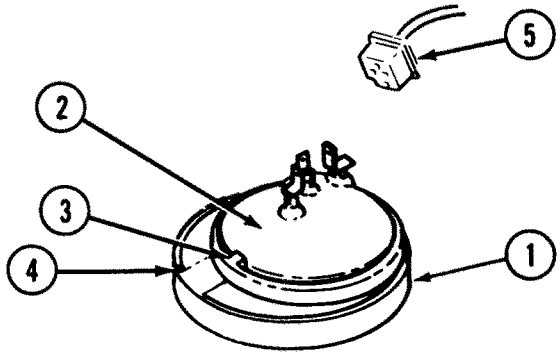


B Remove sealed beam lamp (5) and cushion gasket (6) from headlamp body (4).

C Disconnect electrical insert (7) from sealed beam lamp (5), and remove lamp (5) from gasket (6).

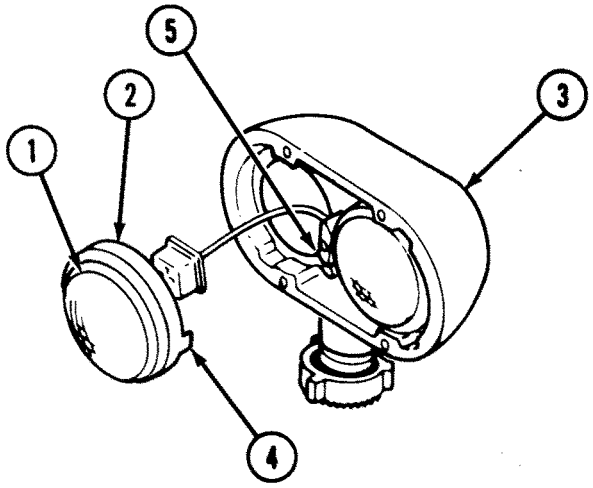
D Remove incandescent lamp (8) by pushing lamp (8) in and turning counterclockwise.

INSTALLATION



A Install cushion gasket (1) on lamp (2) and align lug (3) on lamp (2) with cutout (4) in cushion gasket (1).

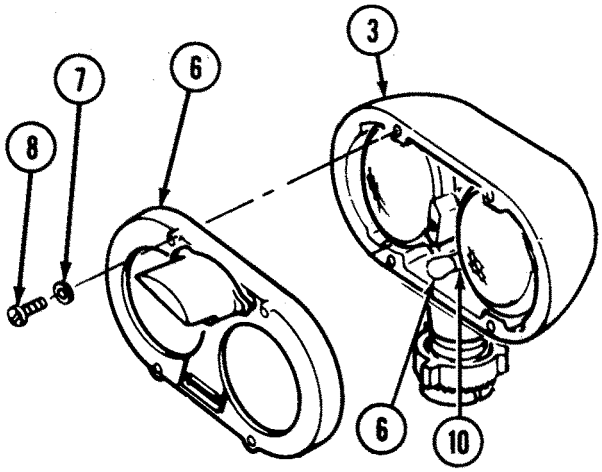
B Attach electrical connector (5) to lamp (2).



Note

There is a lug slot on the headlamp body for each sealed beam lamp.

C Install lamp (1) and cushion gasket (2) on headlamp body (3) with lug (4) aligned with slot (5) of headlamp body (3).



D Install incandescent lamp (9) on socket (10) by pushing incandescent lamp (9) in and turning clockwise.

E Install light cover (6) on headlamp body (3) with four lockwashers (7) and screws (8).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Unblock front of vehicle (p 2-27).

STOPLIGHT/TAILLIGHT LAMP REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Packing

Parts Reference:

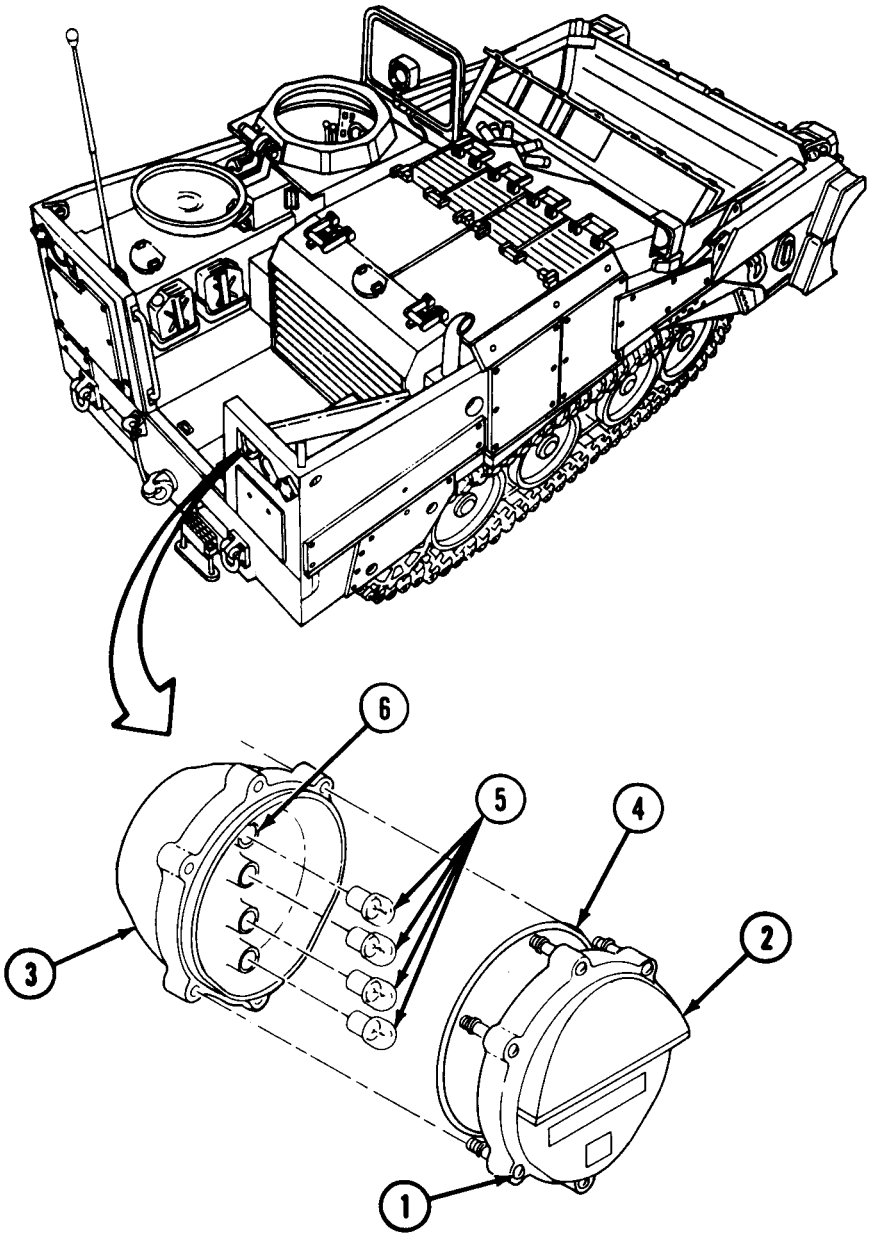
TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

A Loosen six screws (1) and remove door assembly (2) from body assembly (3).

B Remove and discard packing (4) from body assembly (3).

C Gently push in four lamps (5) while turning counterclockwise, and remove lamps (5) from sockets (6).

INSTALLATION

A Install four lamps (5) on sockets (6) by pushing in gently and turning lamps (5) clockwise.

B Install packing (4) on body assembly (3).

C Install door assembly (2) on body assembly (3) and tighten six screws (1).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

FLOODLIGHT REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Repair
d. Assembly
e. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound	Item 16 Appendix D

Parts:

Lockwasher

Locknut

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

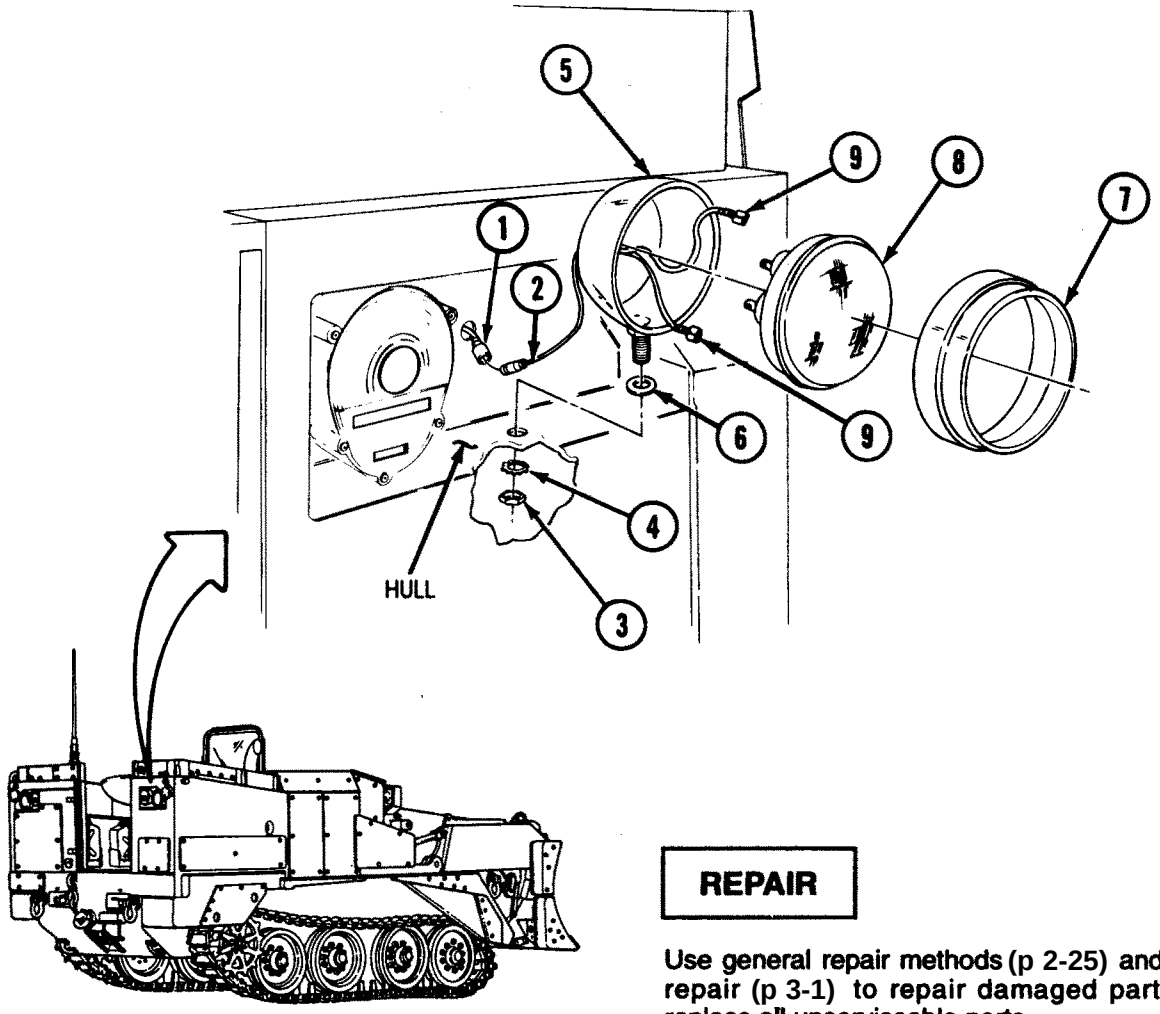
Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-295	Front Floodlights Do Not Operate
Page 3-296	Rear Floodlights Do Not Operate

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected



Note

Front and rear floodlights are different but removed and installed the same way. This task covers the replacement of a rear floodlight.

REMOVAL

A Disconnect electrical lead (1) from housing lead (2).

B Remove locknut (3), lockwasher (4), housing (5), and washer (6) from hull. Discard locknut (3) and lockwasher (4).

DISASSEMBLY

A Loosen retainer (7), and pull lamp (8) from housing (5).

B Disconnect two electrical leads (9) from lamp (8).

REPAIR

Use general repair methods (p 2-25) and wiring repair (p 3-1) to repair damaged parts, and replace all unserviceable parts.

ASSEMBLY

A Connect two electrical leads (9) to lamp (8).

B Install lamp (8) on housing (5) with retainer (7).

INSTALLATION

A Install housing (5) on hull with washer (6), lockwasher (4), and locknut (3).

B Coat housing lead (2) with silicone compound.

C Connect electrical lead (1) to housing lead (2).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

HEADLIGHT ASSEMBLY REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Repair
d. Assembly
e. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Adhesive	Item 2
Epoxy Resin	Appendix D

Parts:

Gasket (2)

Lockwasher (28)

Seal (6)

Parts Reference:

TM 5-2350-262-24P	Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM SIG 222

Equipment Condition:

Reference	Condition Description
Page 2-27	Hydraulic Pressure Relieved
Page 2-27	Front of Vehicle Blocked
Page 4-84	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Do not stand or work under apron and dozer assembly unless apron lockpins have been installed.

REMOVAL

WARNING

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

CAUTION

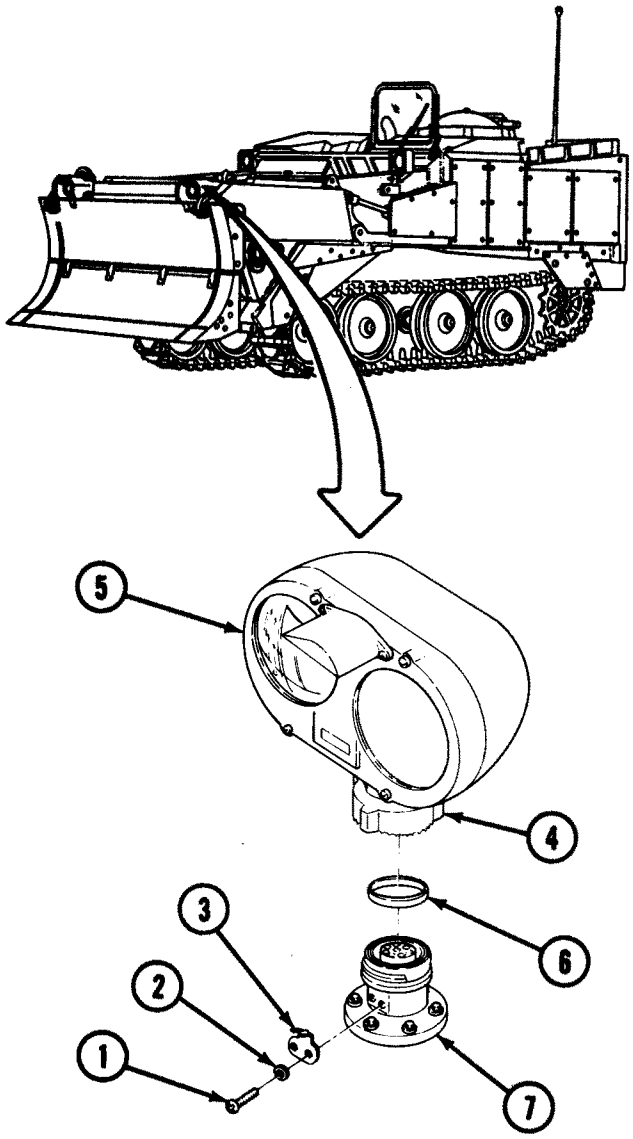
Do not turn or twist headlight during removal. Turning or twisting the headlight can damage the headlight wiring harness.

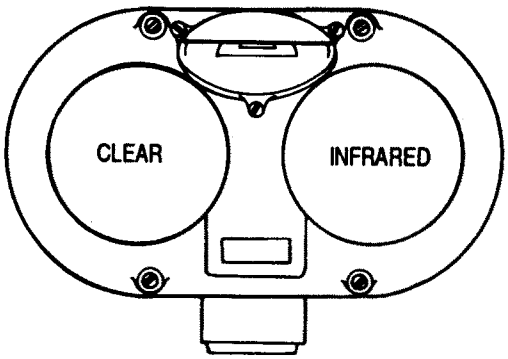
Note

The infrared headlight is a nonoperational item.

A Remove two screws (1), lockwashers (2), and headlight alignment stop (3). Discard lockwashers (2).

B Loosen nut (4) and lift headlight assembly (5), with seal (6) attached, off base (7). Remove and discard seal (6).





HEADLIGHT SCHEMATIC

DISASSEMBLY

A Remove three screws (1), lockwashers (2), and headlamp blackout shield (3) from headlamp cover (4). Discard lockwashers (2).

B Remove seal (5) from blackout shield (3). Discard seal (5).

C Remove two screws (6), lockwashers (7), retainer (8), gasket (9), lens (10), and gasket (11) from blackout shield (3). Discard lockwashers (7).

D Remove four screws (12), lockwashers (13), and headlamp cover (4) from body (14). Discard lockwashers (13).

E Remove six screws (15), lockwashers (16), and two lens retainers (17) from cover (4). Discard lockwashers (16).

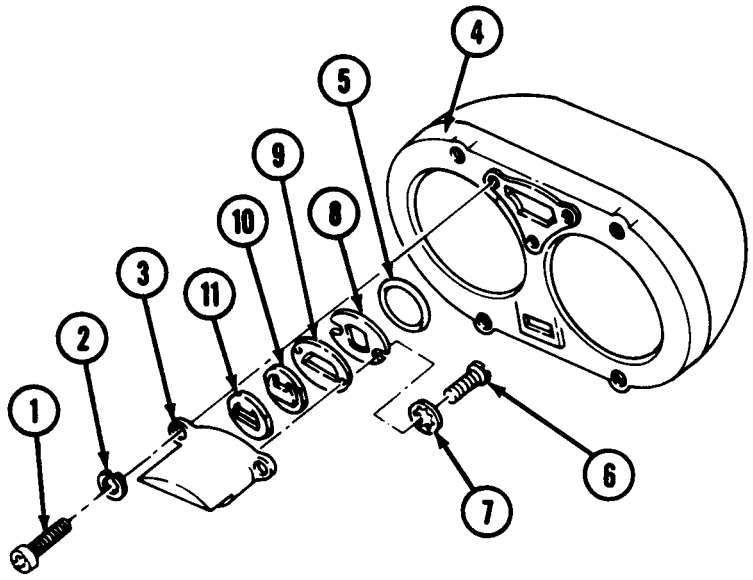
F Remove gasket (18) and clear lens (19) as an assembly from cover (4).

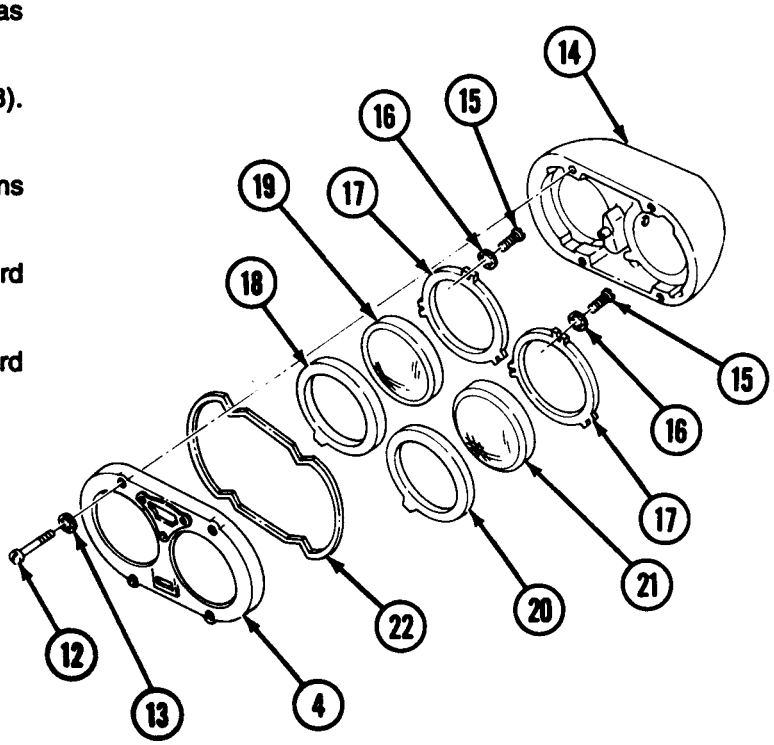
G Separate clear lens (19) from gasket (18). Discard gasket (18).

H Remove gasket (20) and infrared filter lens (21) as an assembly from cover (4).

I Separate lens (21) from gasket (20). Discard gasket (20).

J Remove seal (22) from cover (4). Discard seal (22).



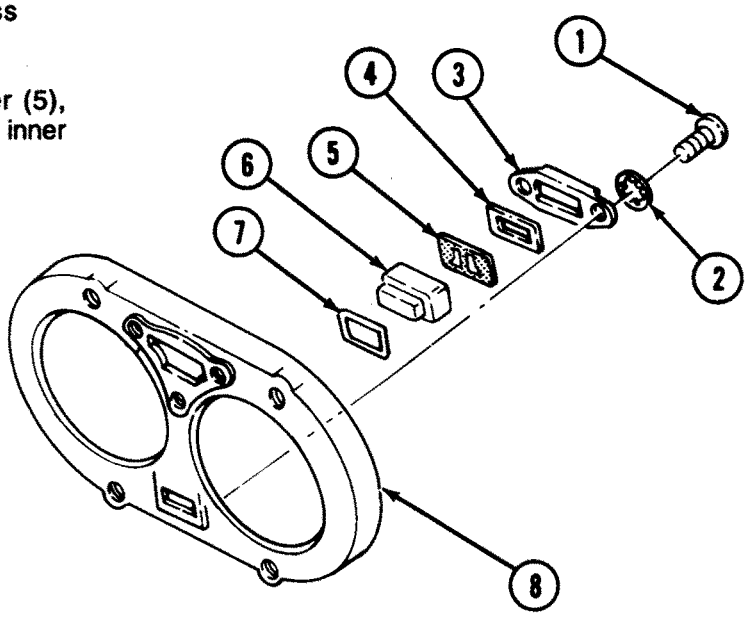


K Remove two screws (1) and lockwashers (2) from cover (8). Discard lockwashers (2).

Note

Do not separate filter and lens unless damaged.

L Remove retainer (3), inner seal (4), filter (5), lens (6), and seal (7) from cover (8). Discard inner seal (4) and seal (7).



M Pull service drive lamp (9) and cushion gasket (10) from body (11). Disconnect lamp (9) from connector body (12).

N Remove cushion gasket (10) from lamp (9).

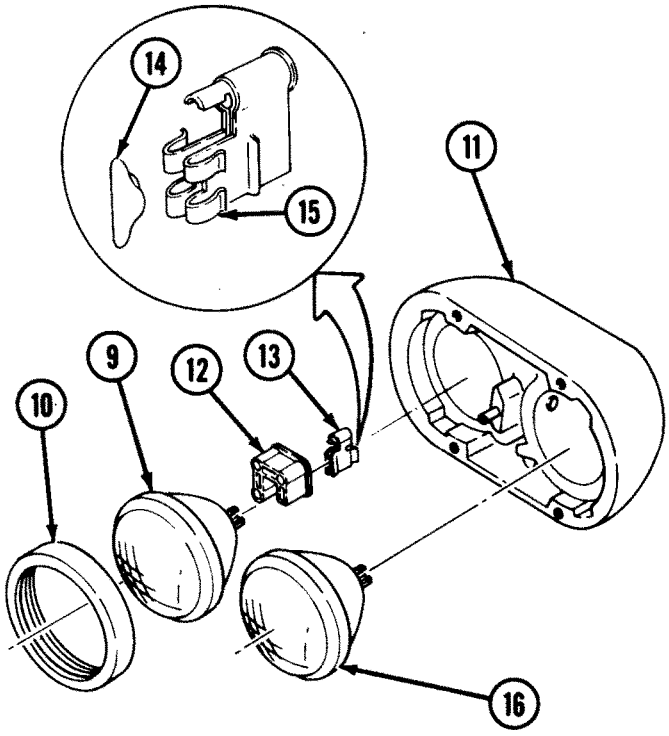
Note

- Two different configurations of connectors are used. The two are not interchangeable.
- Tag leads prior to disassembly for assembly.

O For first configuration, pinch contact (13) and pull out from rear of connector body (12). If necessary, cut electrical lead to remove contact (13).

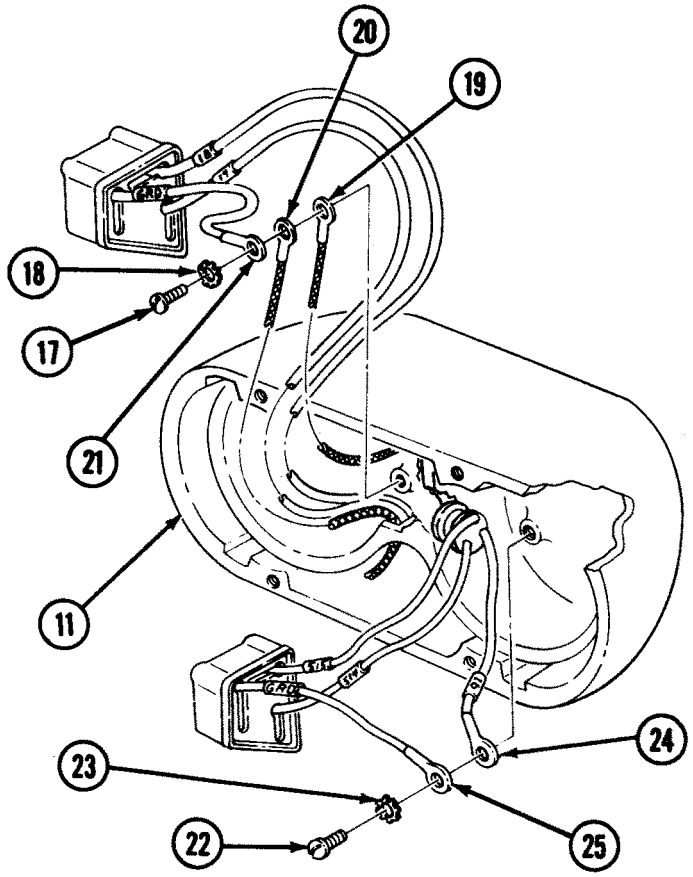
P For second configuration, remove three springs (14) and connectors (15) from connector body (12). Disconnect electrical leads and remove connector body (12).

Q Repeat steps M through P to remove infrared lamp (16).



R Remove screw (17) and lockwasher (18), and disconnect blackout headlamp ground lead (19), blackout marker ground lead (20), and remove service drive headlamp ground cable (21) from body (11). Discard lockwasher (18).

S Remove screw (22) and lockwasher (23), and disconnect wiring harness 91 lead (24) and infrared headlamp ground cable (25) from body (11). Discard lockwasher (23).



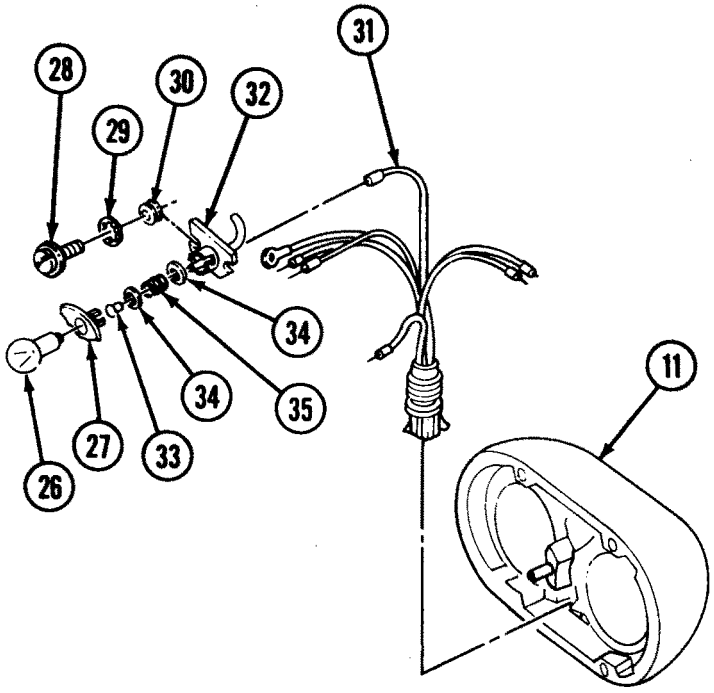
T Remove blackout headlamp (26) from reflector assembly (27) by pressing in and turning counterclockwise.

U Remove reflector assembly (27) from body (11).

V Remove two screw-assembled washers (28), lockwashers (29), and grommet assemblies (30) from body (11). Discard lockwashers (29).

W Pull electrical 19 lead (31) from rear of socket assembly (32), and cut lead (31) close to socket.

X Remove rivet (33), two nonmetallic washers (34), spring (35), and socket assembly (32) from body (11).

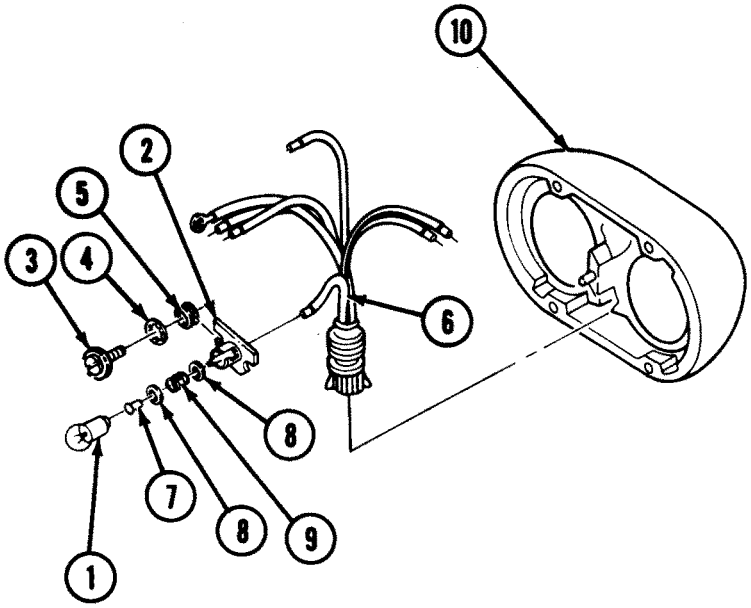


Y Remove blackout marker lamp (1) from socket assembly (2) by pressing in and turning counterclockwise.

Z Remove two screw-assembled washers (3), lockwashers (4), and grommet assemblies (5) from socket assembly (2). Discard lockwashers (4).

AA Pull electrical 20 lead (6) from rear of socket assembly (2), and cut lead (6) close to socket (2).

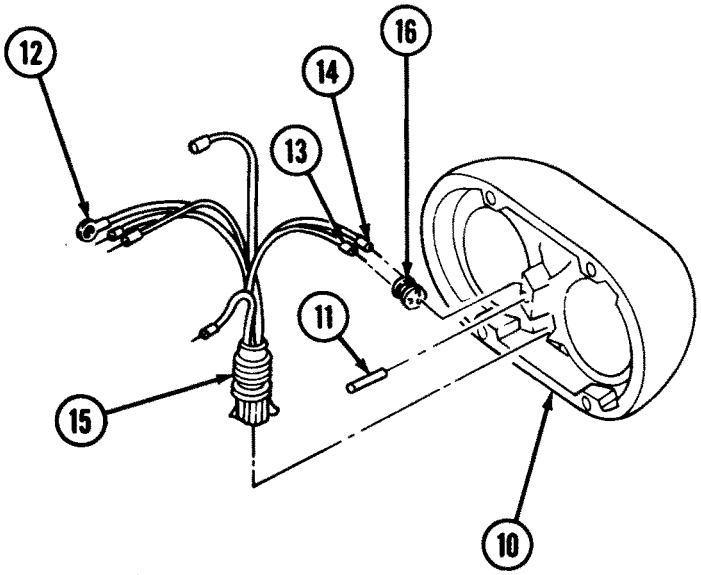
AB Remove rivet (7), two nonmetallic washers (8), spring (9), and socket assembly (2) from body (10).



AC If damaged, remove guide spring pin (11) from body (10).

AD Pull leads (12), (13), and (14) of wiring harness assembly (15) from grommet (16).

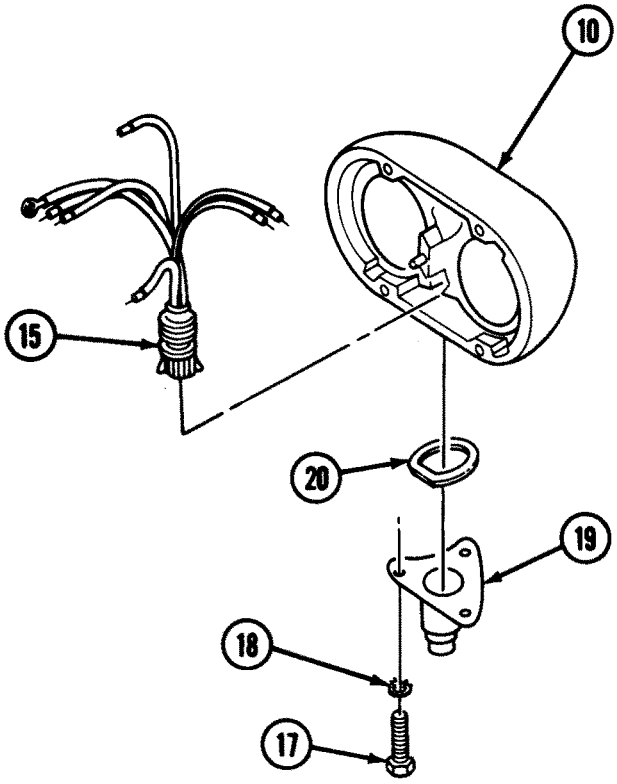
AE Remove grommet (16) from body (10).



AF Remove three screws (17) and lockwashers (18) from body (10). Discard lockwashers (18).

AG Remove holder (19) by pulling wiring harness assembly (15) leads through opening in body (10).

AH Remove and discard seal (20) from holder (19).

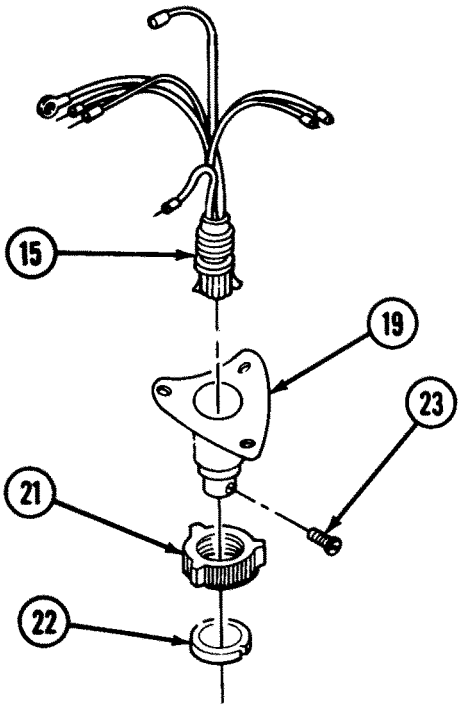


AI Position holder (19) upright, with bottom resting on a block of wood.

AJ Using soft-nosed hammer, tap nut (21) and remove ring (22) and nut (21).

AK Remove position guide rivet (23) only if damaged.

AL Remove wiring harness assembly (15) from bottom of holder (19).



REPAIR

Use general repair methods (p 2-25) and wiring repair (p 3-1) to repair damaged parts, and replace all unserviceable parts.

ASSEMBLY

A If removed, install position guide rivet (1).

B Align slot in wiring harness assembly (2) with guide rivet (1) inside holder (3).

C Push harness assembly (2) into holder (3) until it seats against inner flange.

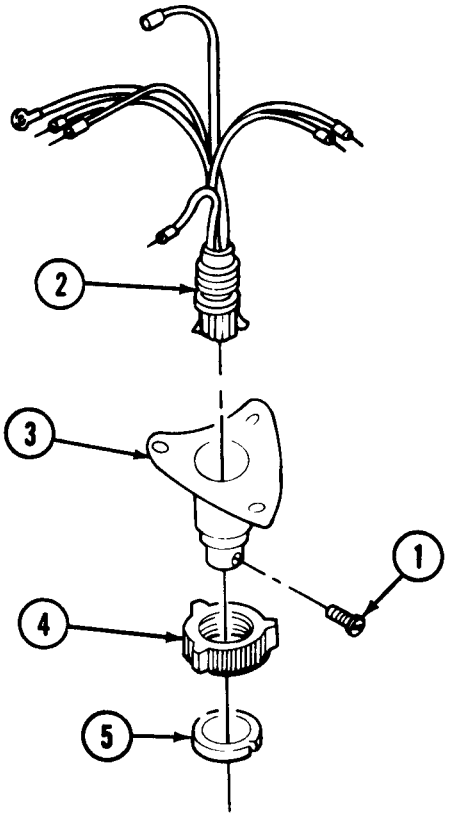
D Install nut (4) and ring (5) on bottom of holder (3).

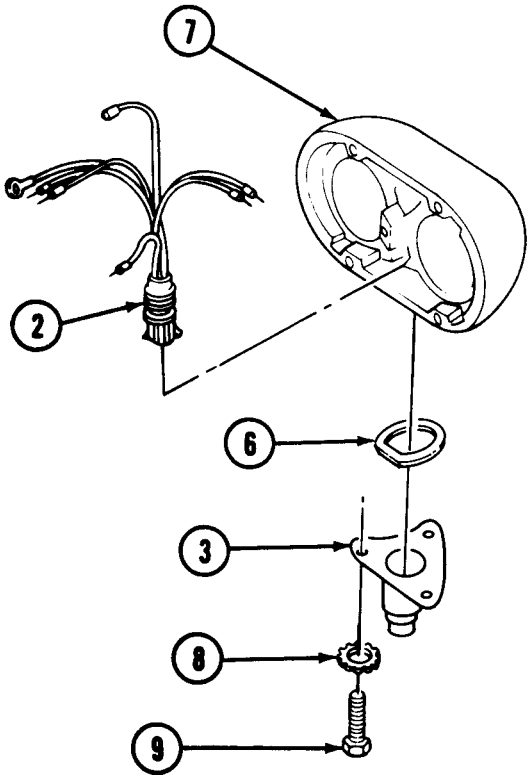
E Stake ring (5) in three places. Do not use existing holes.

F Bond seal (6) to holder (3) using adhesive.

G Position body (7) on holder (3), and pull harness assembly (2) leads through opening of body (7).

H Install three lockwashers (8) and screws (9) on body (7).





I Install grommet (10) on body (7).

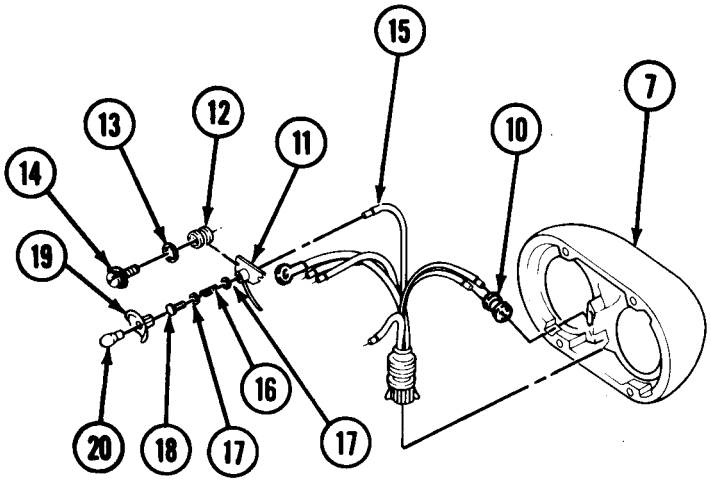
J Install socket assembly (11), two grommet assemblies (12), lockwashers (13), and screw-assembled washers (14) on body (7).

K Insert electrical 19 lead (15) through socket assembly (11), and install spring (16), two nonmetallic washers (17), and rivet (18) on electrical lead (15).

L Crimp rivet (18) to 19 lead (15) and pull lead (15) back into socket (11).

M Install reflector assembly (19) on socket assembly (11).

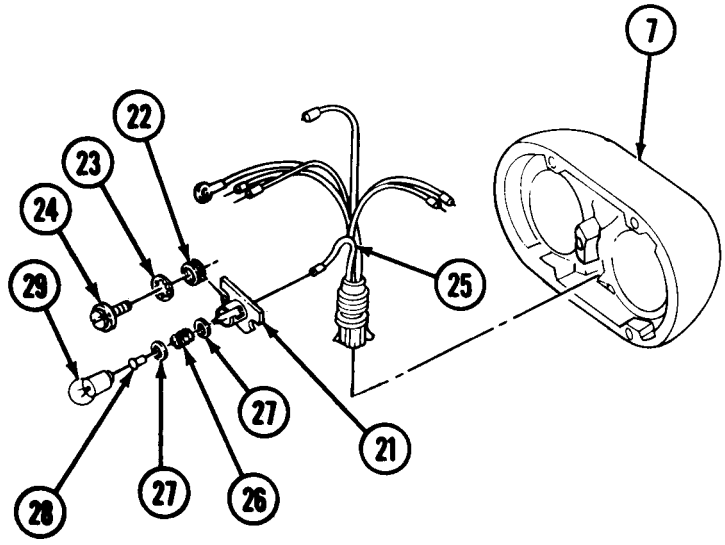
N Install blackout headlamp (20) on socket assembly (11) by pressing and turning blackout headlamp (20) clockwise.



O Install blackout marker lamp socket assembly (21), two grommet assemblies (22), lockwashers (23), and screw-assembled washers (24) on body (7).

P Insert electrical 20 lead (25) through socket (21), and install spring (26), two nonmetallic washers (27), and rivet (28) on electrical lead (25).

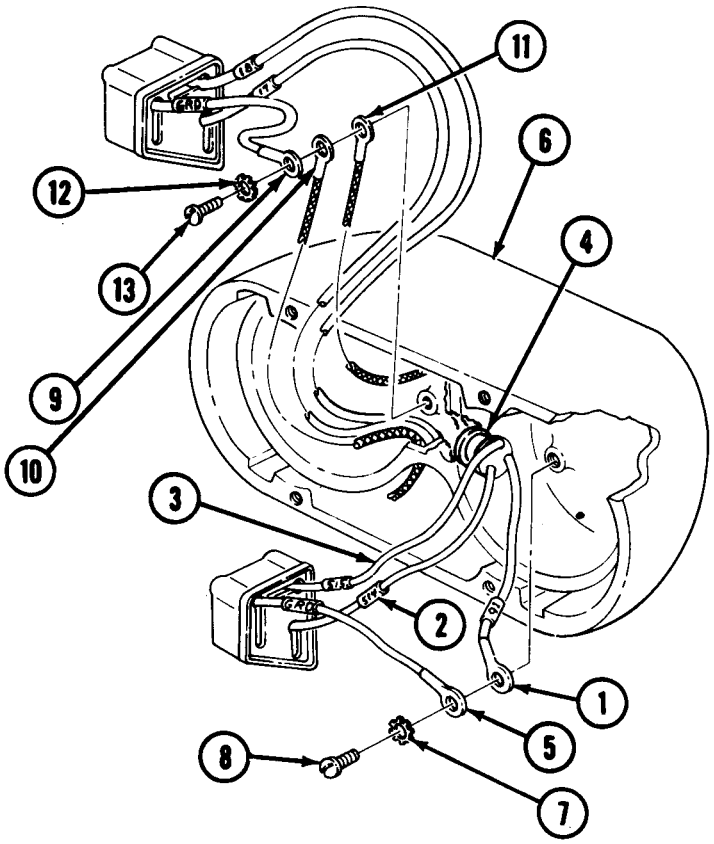
Q Crimp rivet (28) to 20 lead (25) and pull lead (25) back into socket (21). Install marker lamp (29) on socket assembly (21) by pressing in and turning marker lamp (29) clockwise.



R Insert electrical 91 lead (1), 514 lead (2), and 515 lead (3) through grommet (4).

S Connect infrared headlamp ground cable (5) and 91 lead (1) to body (6) with lockwasher (7) and screw (8).

T Connect service drive ground cable (9) and leads (10) and (11) to body (6) with lockwasher (12) and screw (13).



Note

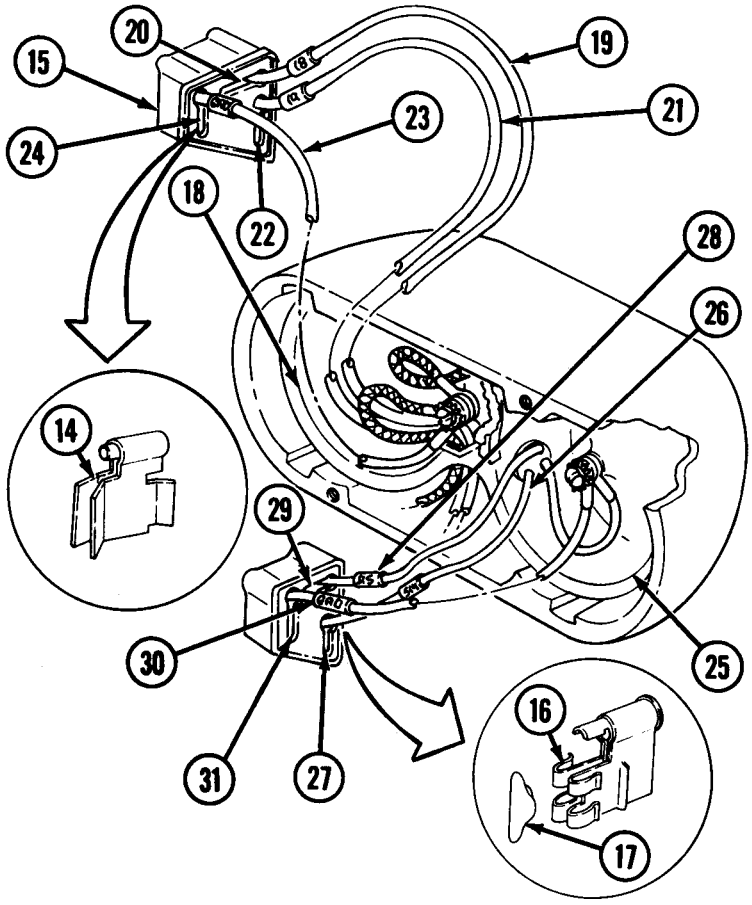
Two different configurations of connector bodies are used. The two are not interchangeable.

U For first configuration, if removed, solder contacts (14) (TM 9-237) to electrical leads (step W and X). Insert contacts (14) into connector body (15).

V For second configuration, if removed, connect electrical leads (step W and X) by inserting three connectors (16) into headlamp connector body (15). Secure with three springs (17).

W For service drive headlamp socket (18), connect 18 lead (19) to socket (20), 19 lead (21) to socket (22), and ground lead (23) to socket (24).

X For infrared headlamp socket (25), connect 514 lead (26) to socket (27), 515 lead (28) to socket (29), and ground lead (30) to socket (31).

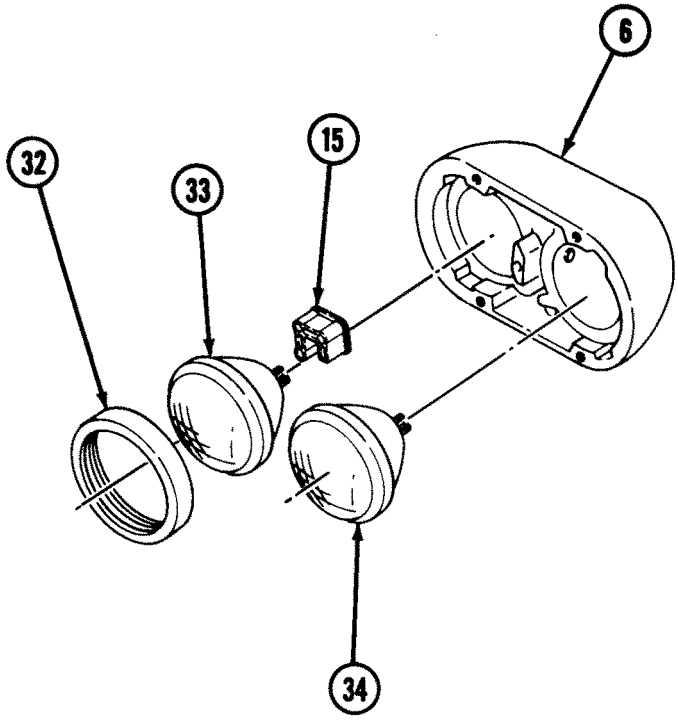


Y Install cushion gasket (32) on service drive lamp (33) ensuring cutout of gasket (32) is over lug on lamp (33).

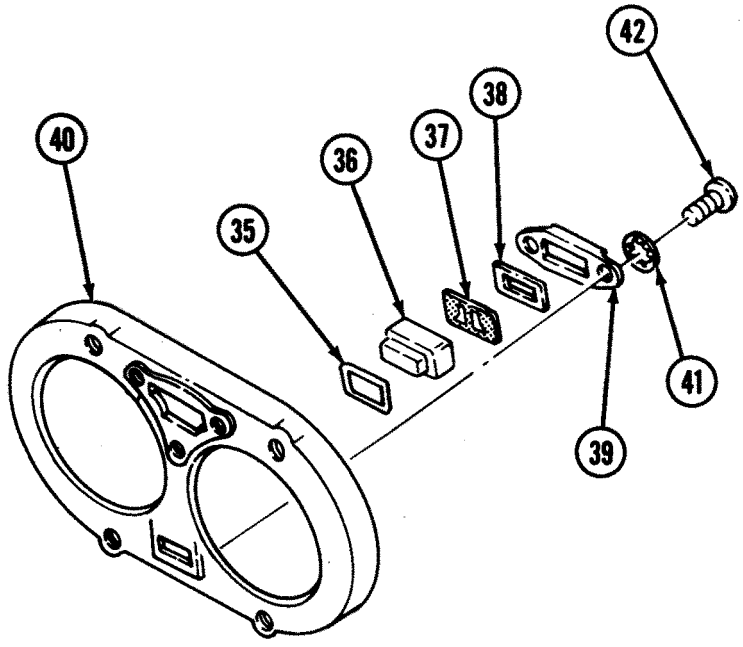
Z Connect connector body (15) to lamp (33).

AA Install lamp (33) and gasket (32) on body (6).

AB Repeat steps Y through AA for infrared lamp (34).



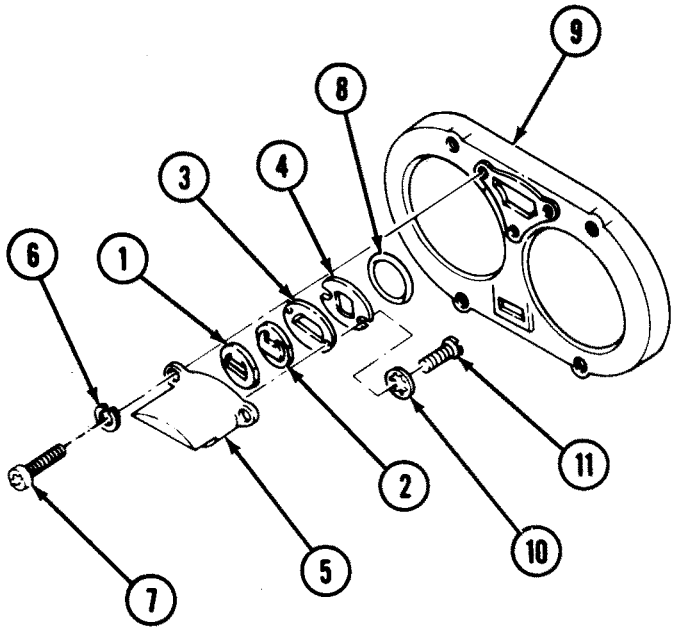
AC Install seal (35), lens (36), filter (37), inner seal (38), and retainer (39) on headlamp cover (40) with two lockwashers (41) and screws (42).



AD Install gasket (1), lens (2), gasket (3), and retainer (4) on headlamp blackout shield (5) with two lockwashers (6) and screws (7).

AE Bond seal (8) to blackout shield (5) groove using adhesive.

AF Install shield (5) on cover (9) with three lockwashers (10) and screws (11).



AG Bond seal (12) to cover (9) groove using adhesive.

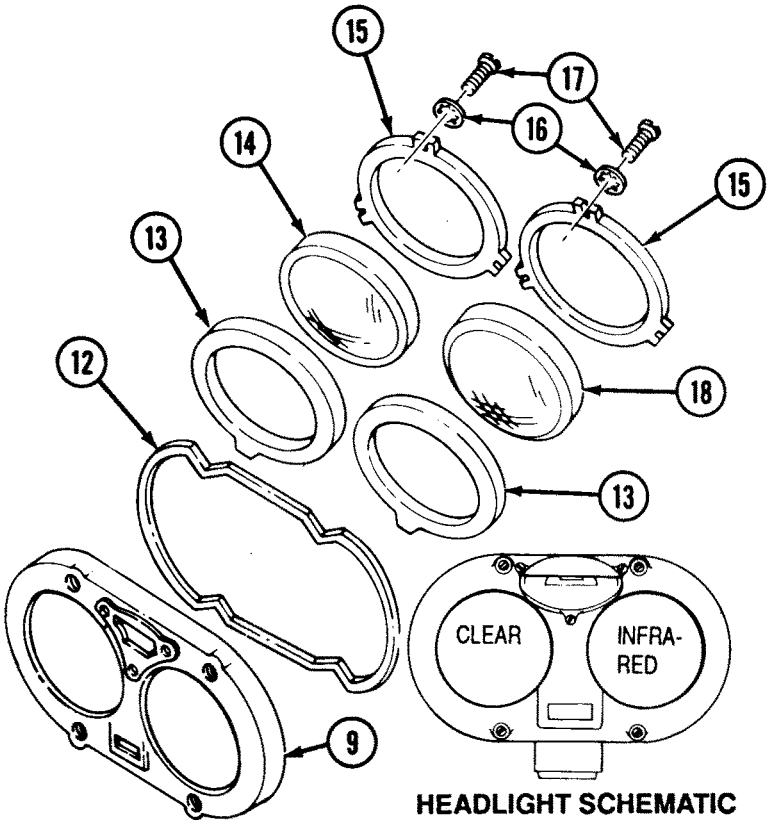
Note

- Install gasket with notch toward inside of lens.
- Install clear and infrared filter lens as shown in schematic.

AH Install gasket (13) on clear lens (14).

AI Install gasket (13), clear lens (14), and lens retainer (15) on cover (9) with three lockwashers (16) and screws (17).

AJ Repeat steps AH and AI for infrared filter lens (18).

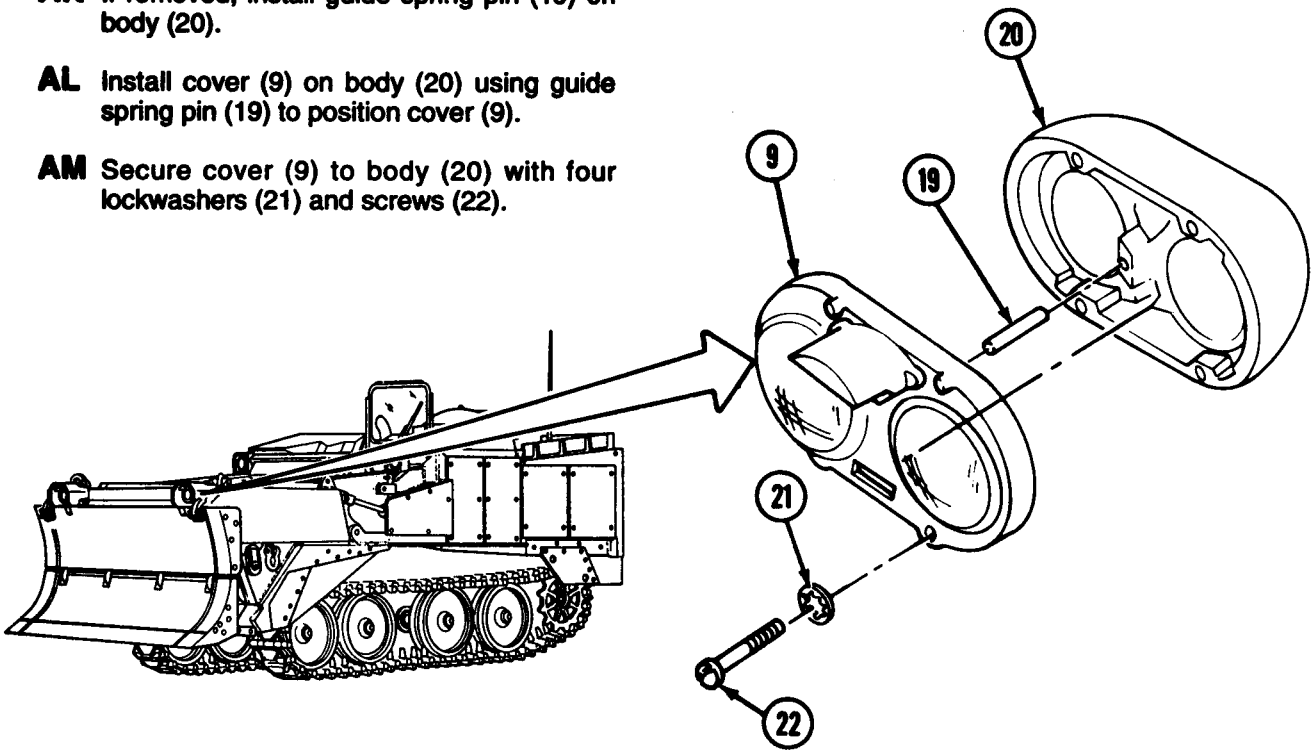


HEADLIGHT SCHEMATIC

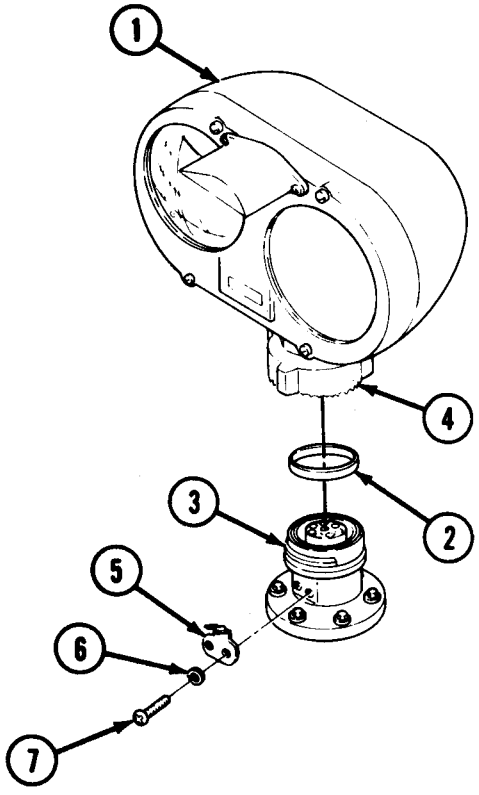
AK If removed, install guide spring pin (19) on body (20).

AL Install cover (9) on body (20) using guide spring pin (19) to position cover (9).

AM Secure cover (9) to body (20) with four lockwashers (21) and screws (22).



INSTALLATION



A Install headlight (1) and retainer (2) on base (3), and tighten nut (4).

B Install headlight alignment stop (5) on base (3) with two lockwashers (6) and screws (7).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Unblock front of vehicle (p 2-28).

STOPLIGHT/TAILLIGHT ASSEMBLY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound	Item 16 Appendix D

Parts:

Lockwasher (2)

Parts Reference:

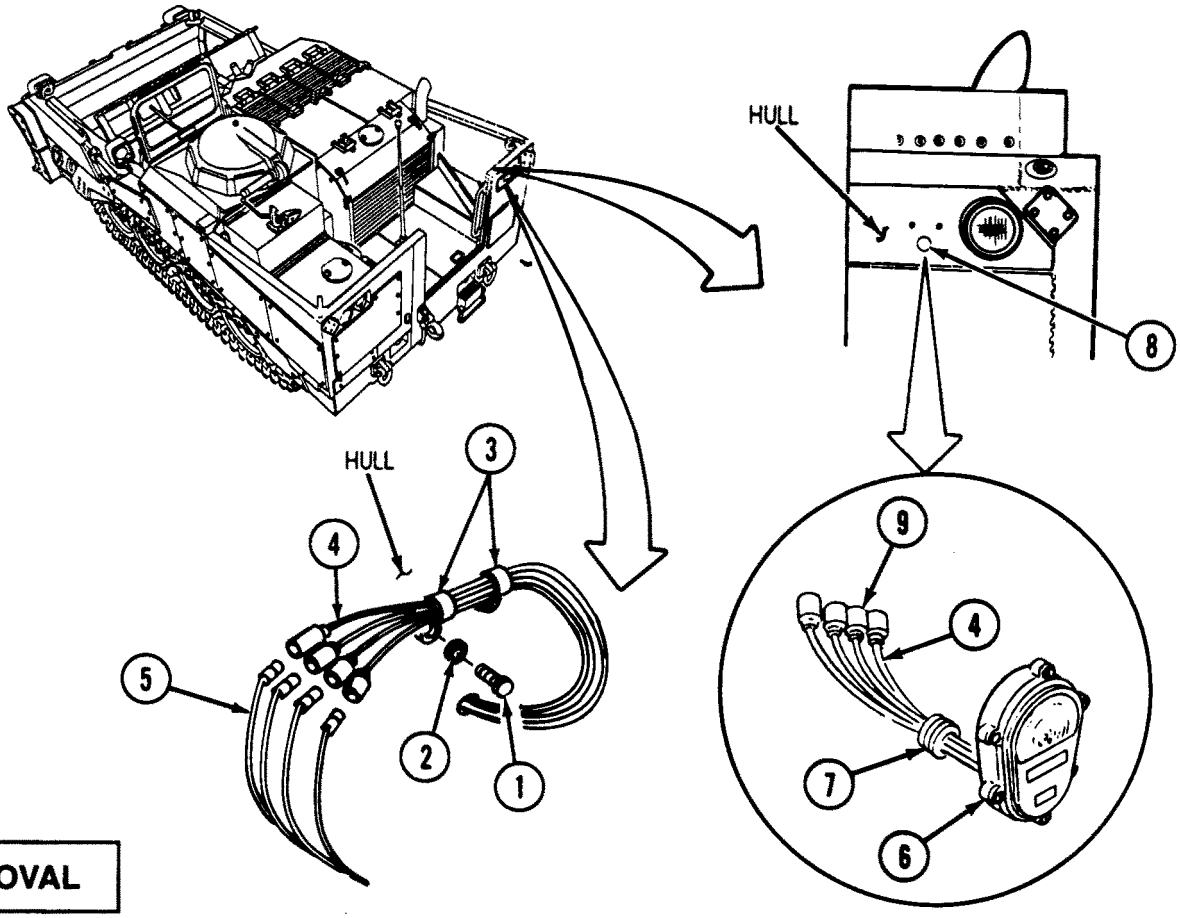
TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

CAUTION

Stoplight/taillight assembly can be damaged if dropped. Support light assembly while removing screws and clamps.

Note

- Both left and right stoplight/taillight assemblies are replaced the same. This procedure covers the right side.
- Tag all electrical leads prior to removal for installation.

A Remove two screws (1), lockwashers (2), and clamps (3) from hull. Discard lockwashers (2).

B Disconnect four electrical leads (4) from wiring harness leads (5).

C Remove stoplight/taillight assembly (6) and grommet (7) from rear of vehicle.

INSTALLATION

A Insert four electrical leads (4) and grommet (7) in hole (8) of hull.

B Coat connector shells (9) of four electrical leads (4) with silicone compound, and thread leads (4) through two clamps (3).

C Connect four electrical leads (4) to wiring harness leads (5).

D Install stoplight/taillight assembly (6) and two clamps (3) on hull with two lockwashers (2) and screws (1).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).

DOMELIGHT REPLACEMENT AND REPAIR

This task covers:

a. Removal

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b. Disassembly

c. Assembly

Deleted

d. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound	Item 16 Appendix D

Parts:

Deleted

Seal

Lockwasher (5)

Deleted

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

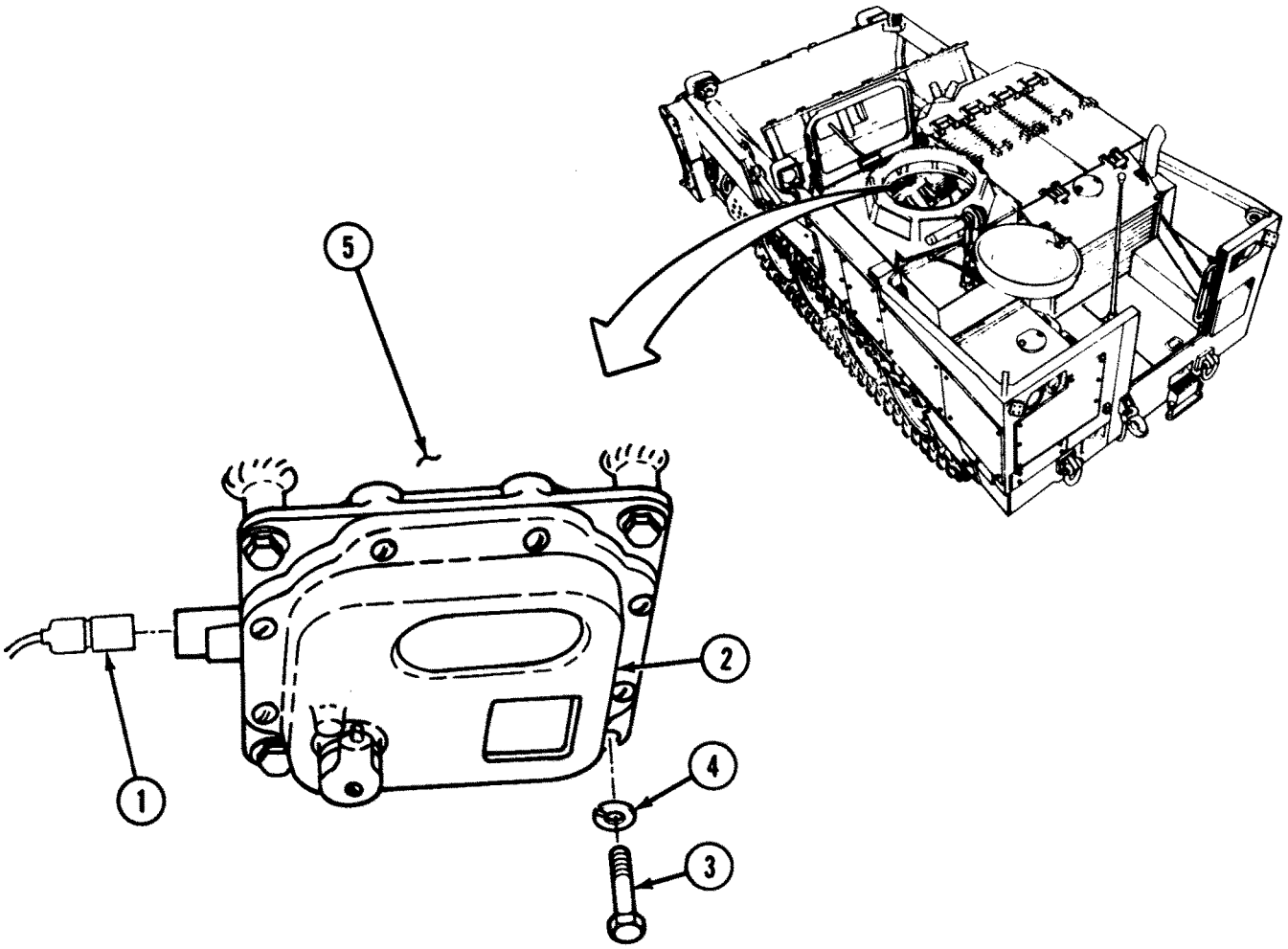
Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-287	Domelight Does Not Operate

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected

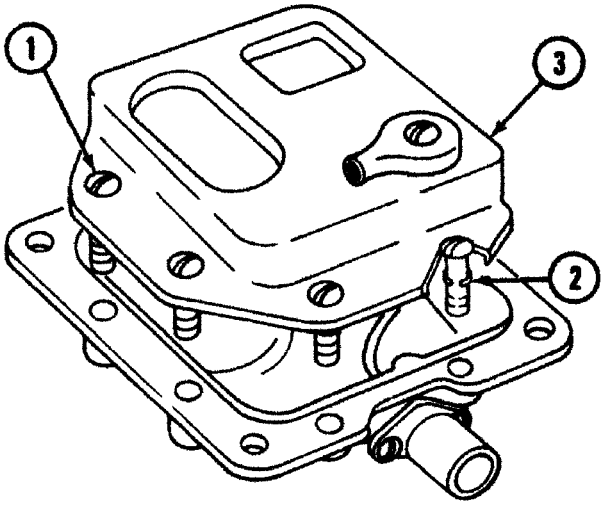


REMOVAL

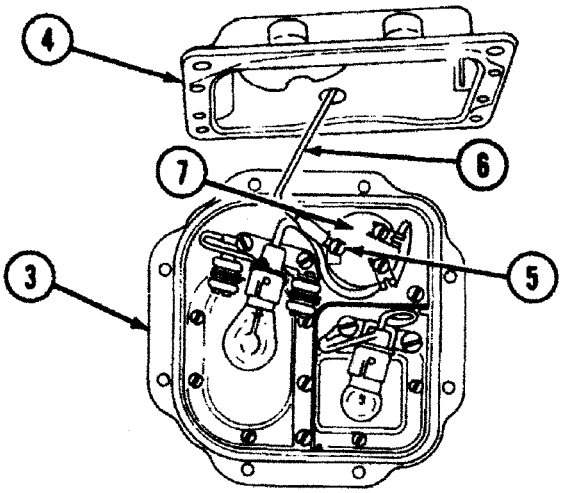
A Disconnect electrical lead (1) from dome-light (2) in driver's compartment.

B Remove four screws (3), lockwashers (4), and domelight (2) from driver's hatch (5). Discard lockwashers (4).

DISASSEMBLY



A Loosen eight screws (1). If damaged, remove retaining rings (2) from screws (1), and remove screws (1) from retainer (3).



B Separate retainer (3) from body (4), loosen terminal screw (5), and disconnect lead (6) from rotary switch (7).

C Remove body (4) from retainer (3).

D Remove seal (8) from body (4). Discard seal (8).

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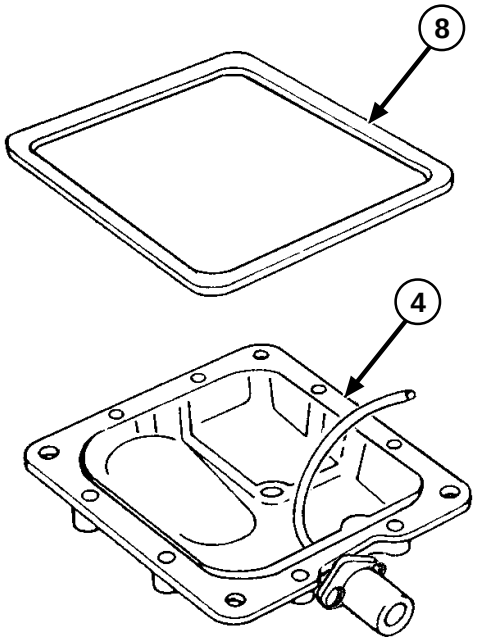

F Press lamp (9) in lampholder (10). Turn lamp (9) counterclockwise and remove.

G Press lamp (11) in socket assembly (12). Turn lamp (11) counterclockwise and remove.

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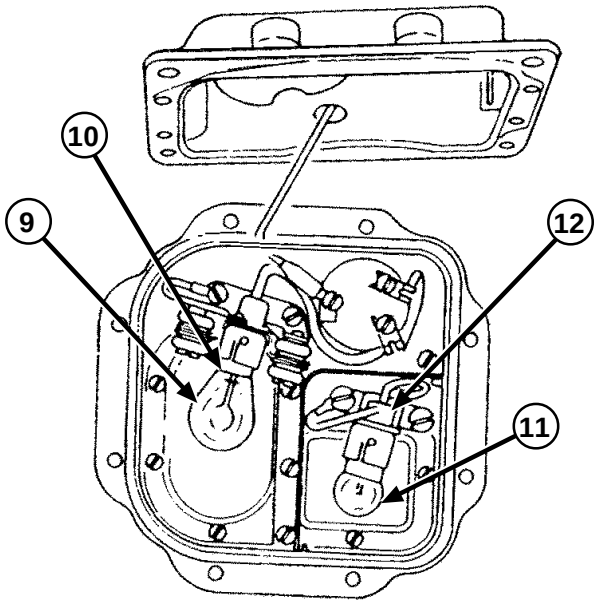

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M **Remove screw (1), lockwasher (2), and knob (3) from retainer (4). Discard lockwasher (2).**

N Remove set screw (5), plunger (6), and spring (7) from knob (3).

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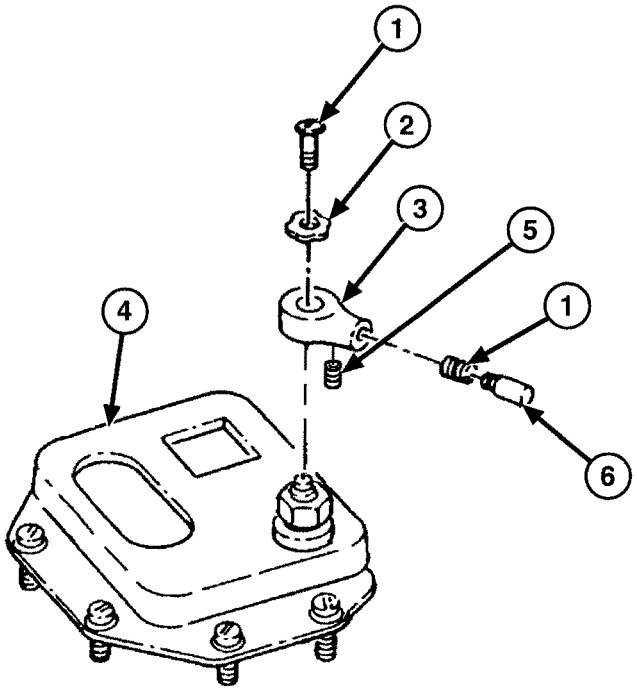

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ASSEMBLY

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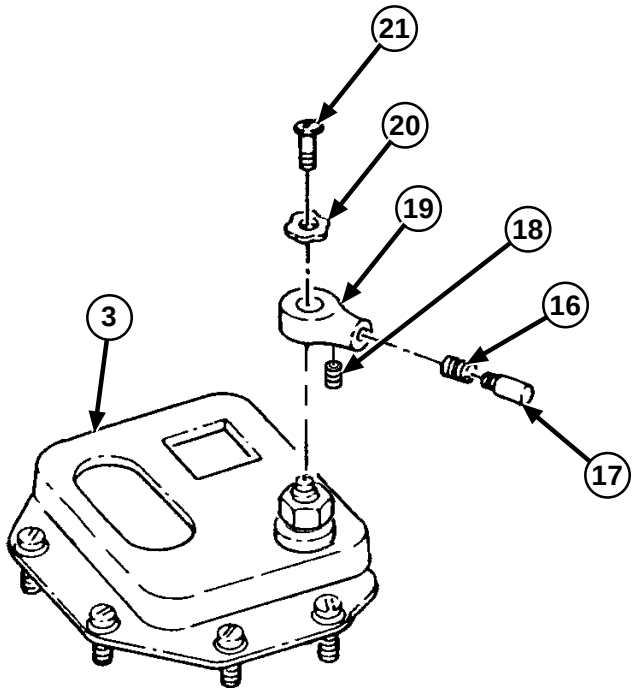
F Install spring (16), plunger (17), and setscrew (18) on knob (19).

G Install knob (19) with lockwasher (20) and screw (21).



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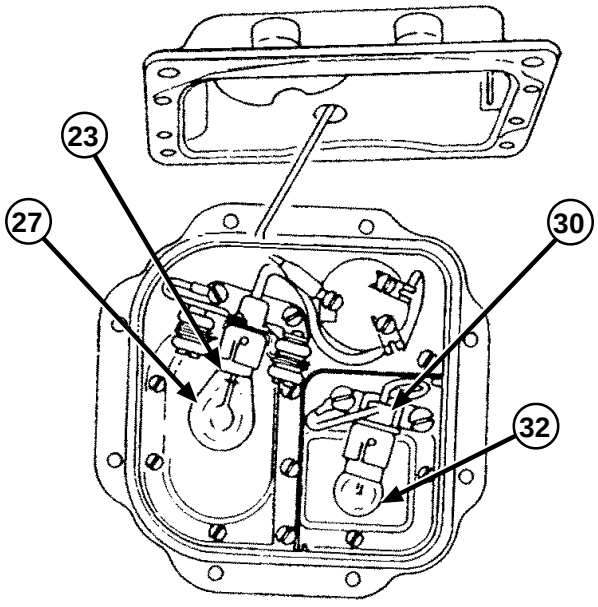
M Install lamp (27) on socket assembly (23) by pushing lamp (27) in and turning clockwise.

N Install lamp (32) on lampholder (30) by pushing lamp (32) in and turning clockwise.



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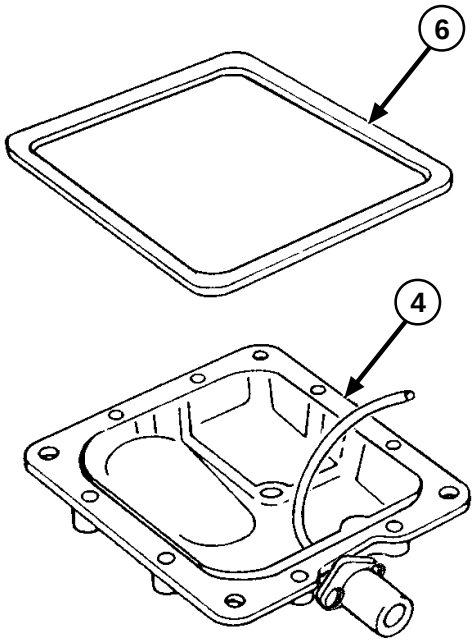
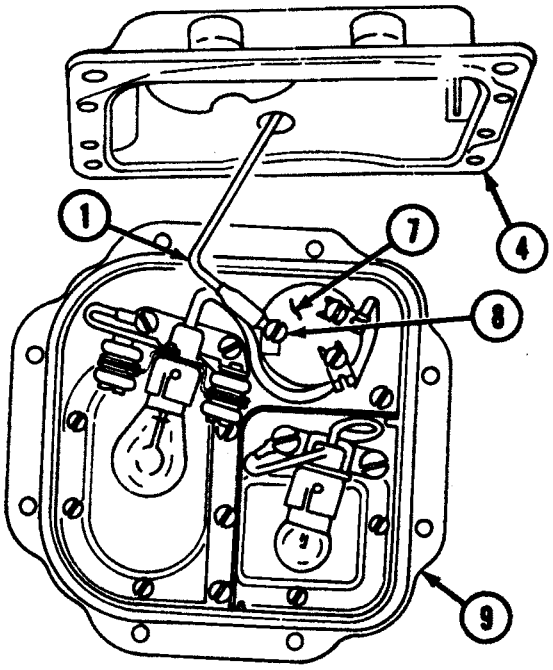
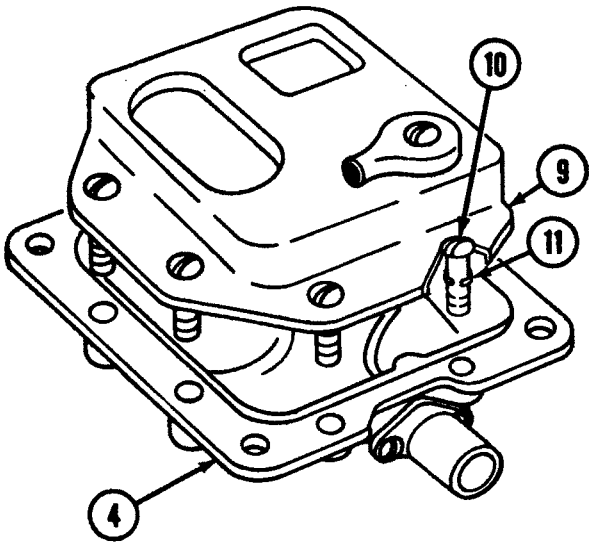
P Install seal (6) on body (4).





Q Connect lead (1) to rotary switch (7) with B terminal screw (8).

R Install body (4) on retainer (9).



S If removed, install eight screws (10) and retaining rings (11) on retainer (9).

T Secure body (4) to retainer (9) by tightening eight screws (10).

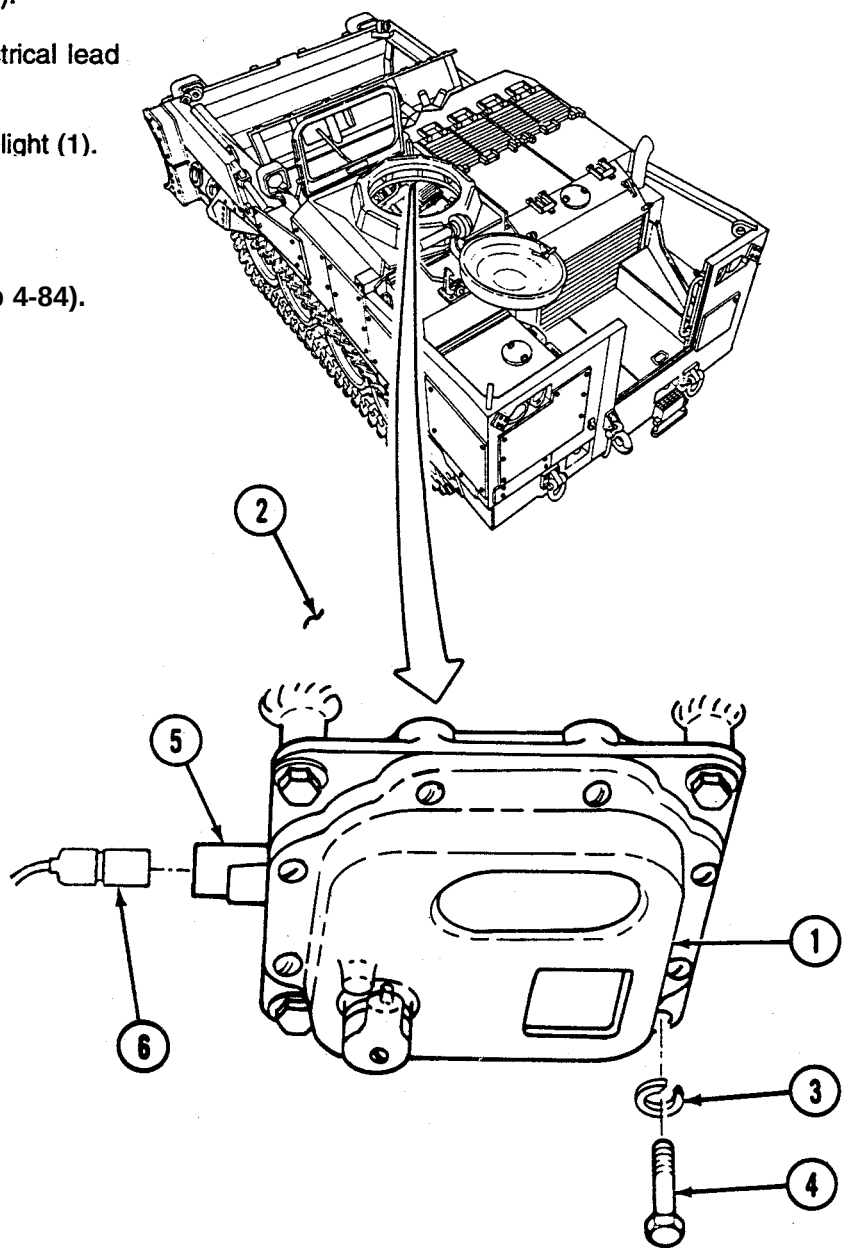
INSTALLATION

A Install domelight (1) on driver's hatch (2) with four lockwashers (3) and screws (4).

B Coat shell of connector (5) of electrical lead (6) with silicone compound.

C Connect electrical lead (6) to domelight (1).

FOLLOW-ON TASK:
Connect negative battery cables (p 4-84).



SEMI-AUTOMATIC TRACK ADJUSTER SUSPENSION CONTROL ELECTRICAL BOX REPLACEMENT (NEW PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10 Page 4-84	Battery Box Open Negative Battery Cables Disconnected

REMOVAL

A Remove track control wiring harness connector (1) from suspension control electrical box (2).

B Remove track adjuster main wiring harness connector (3) from suspension control electrical box (2).

C Remove two screws (4) and two washers (5) from instrument panel (6).

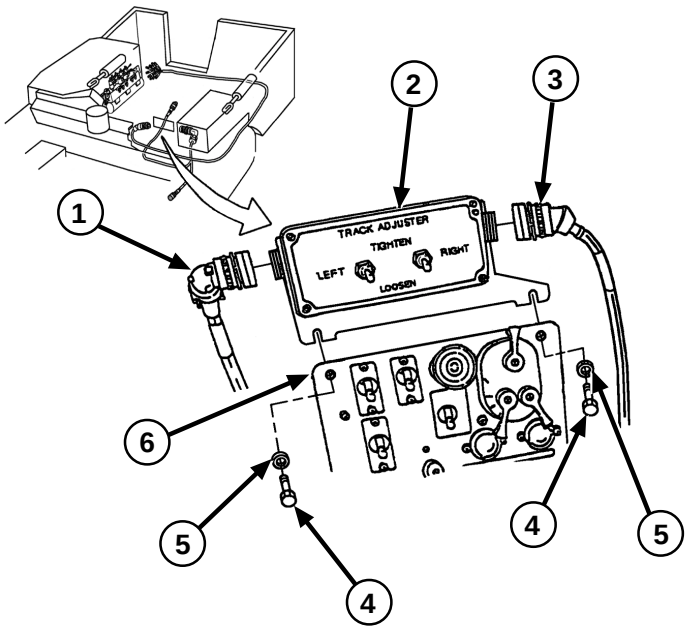
D Slide suspension control electrical box (2) upward from behind instrument panel (6).

INSTALLATION

A Slide suspension control electrical box (2) behind instrument panel (6) and install two washers (5) and two screws (4).

B Install track adjuster main wiring harness connector (3) on suspension control electrical box (2).

C Install track control wiring harness connector (1) on suspension control electrical box (2).



FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Close battery box (TM 5-2350-262-10).

SEMI-AUTOMATIC TRACK ADJUSTER MAIN WIRING HARNESS REPLACEMENT (NEW PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Electrical Tiedown Straps (V)

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Battery Box Open
Page 4-84	Negative Battery Cables Disconnected
Page 4-361	Rear Floor Plates Removed

REMOVAL

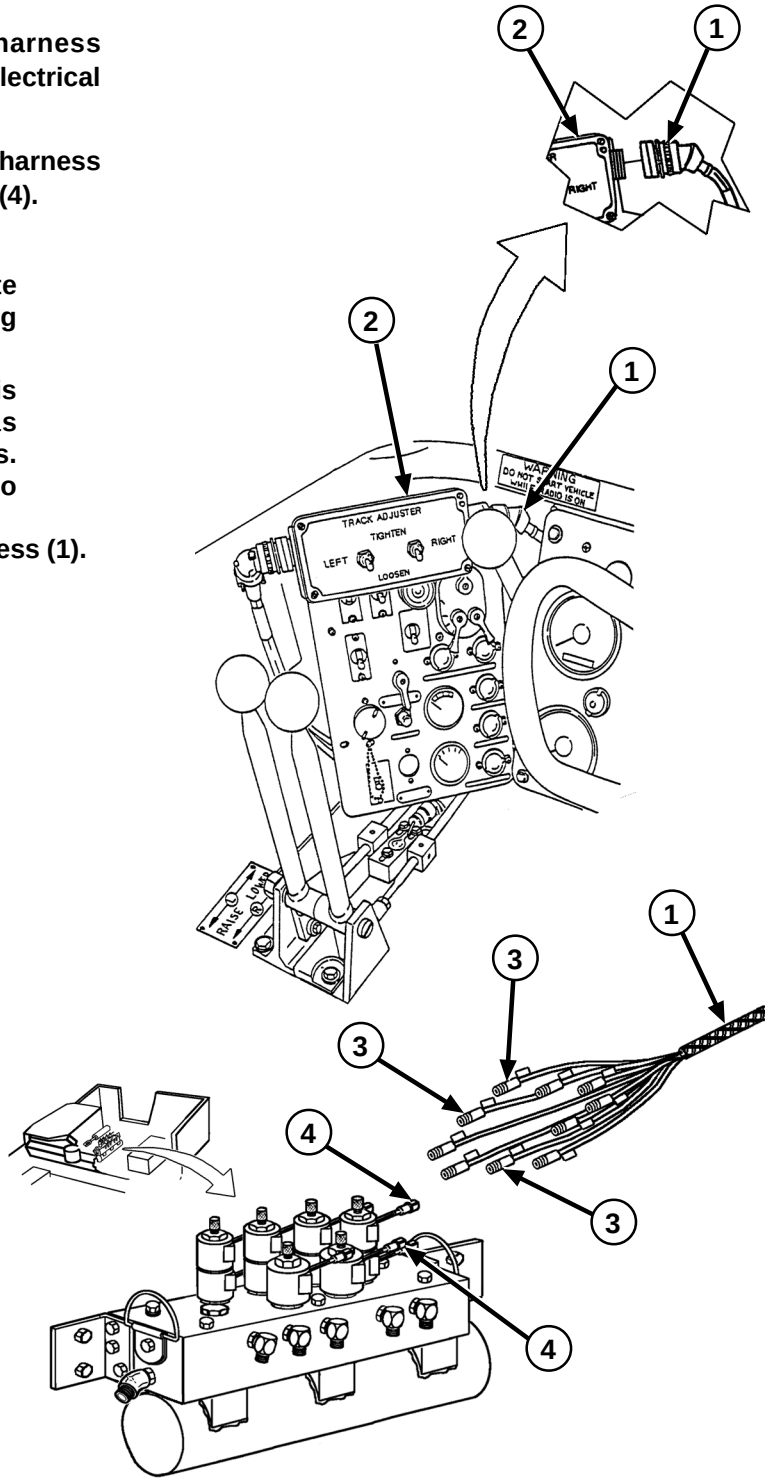
A **Remove track adjuster main wiring harness connector (1) from suspension control electrical box (2).**

B **Remove ten track adjuster main wiring harness connectors (3) from ten coil connectors (4).**

Note

- **To ensure correct installation note routing of track adjuster main wiring harness during removal.**
- **Track adjuster main wiring harness is secured to other components as needed by electrical tiedown straps. Cut/remove as required prior to removal.**

C **Remove track adjuster main wiring harness (1).**



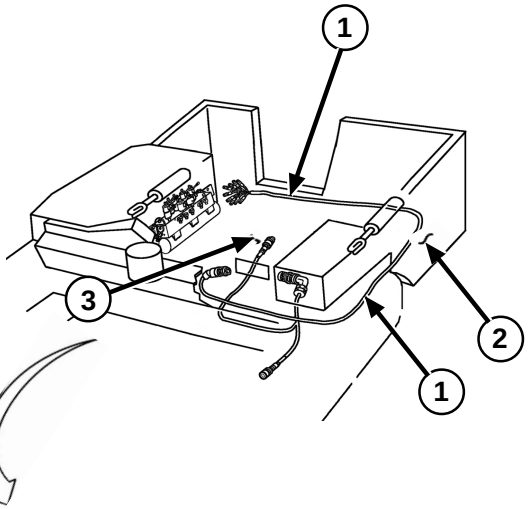
INSTALLATION

A Install track adjuster main wiring harness (1) by routing through hull (2) into drivers compartment (3).

B Install new electrical tiedown straps as required to secure track adjuster main wiring harness (1).

Note

- The track adjuster main wiring harness connectors are tagged to indicate to which coil each connector is attached.
- Use Table 1 to identify matching wiring harness connectors and coil connectors.



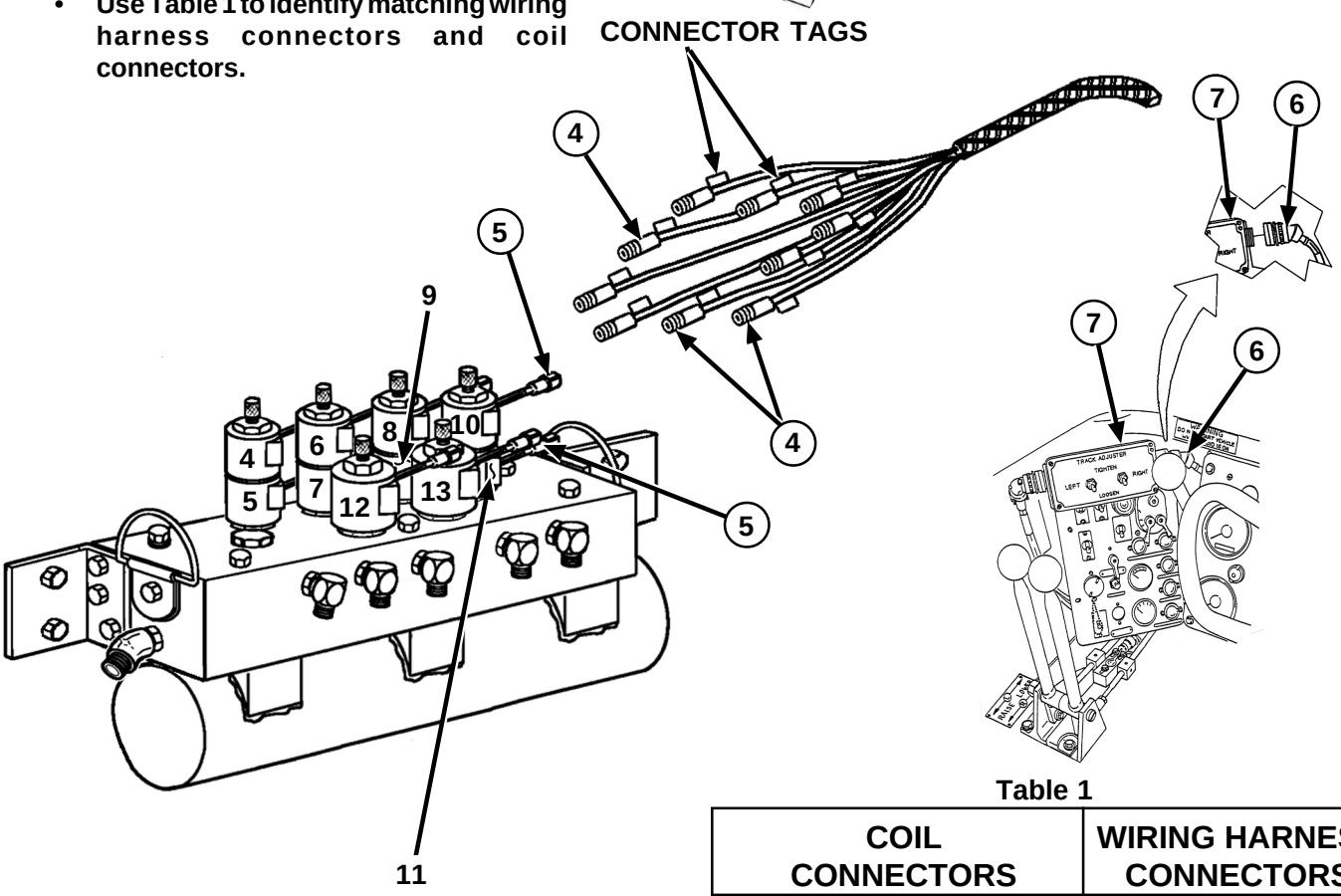


Table 1

COIL CONNECTORS		WIRING HARNESS CONNECTORS
Z1	UPPER (4)	Z1U
Z1	LOWER (5)	Z1L
Z2	UPPER (6)	Z2U
Z2	LOWER (7)	Z2L
Z3	UPPER (8)	Z3U
Z3	LOWER (9)	Z3L
Z4	UPPER (10)	Z4U
Z4	LOWER (11)	Z4L
X1	(12)	X1
X2	(13)	X2

C Install ten track adjuster main wiring harness connectors (4) on ten coil connectors (5).

D Install track adjuster main wiring harness connector (6) on suspension control electrical box (7).

FOLLOW-ON TASKS:

- Install rear floor plates (p 4-361).
- Connect negative battery cables (p 4-84).
- Battery box closed (TM 9-2350-262-10).

SEMI-AUTOMATIC TRACK ADJUSTER CONTROL WIRING HARNESS REPLACEMENT (NEW PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Electrical Tiedown Straps (V)

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Battery Box Open
Page 4-84	Negative Battery Cables Disconnected
Page 4-361	Rear Floor Plates Removed

REMOVAL

A Remove track control wiring harness connector (1) from suspension control electrical box (2).

B Remove screw (3), washer (4), and track control wiring harness ground terminal (5) from hydraulic control lever bracket (6).

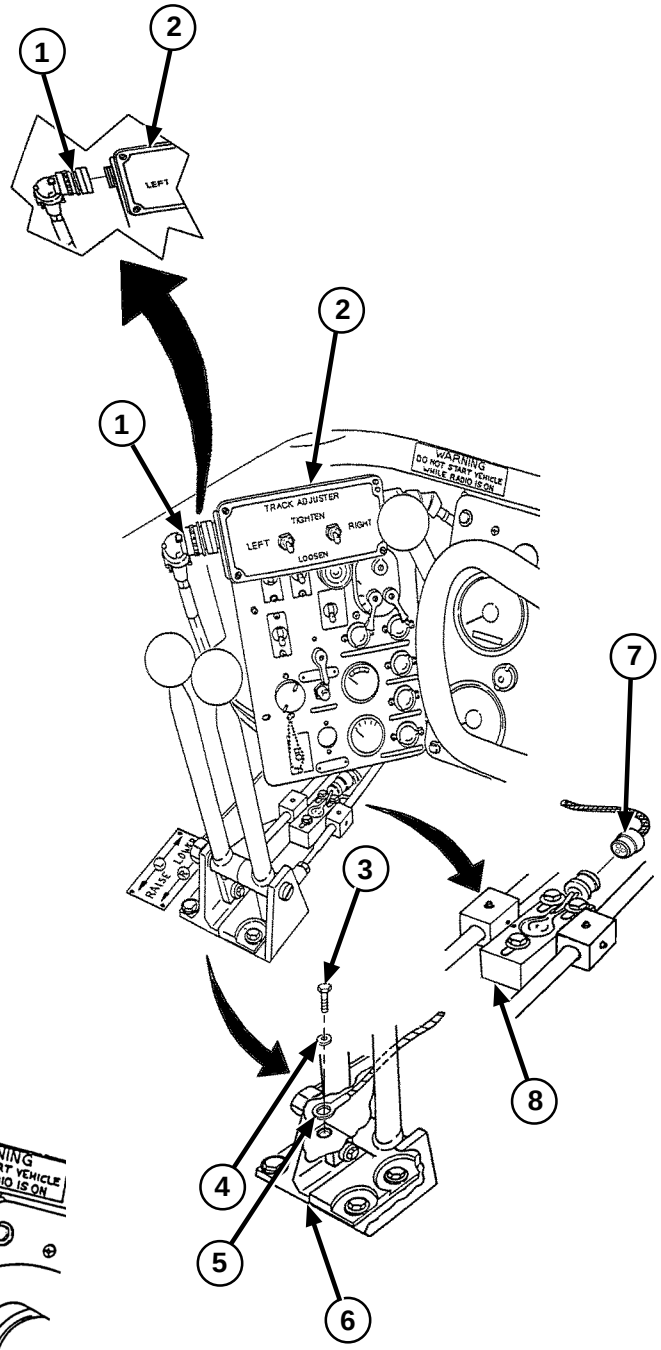
C Remove track control wiring harness connector (7) from track control switch (8).

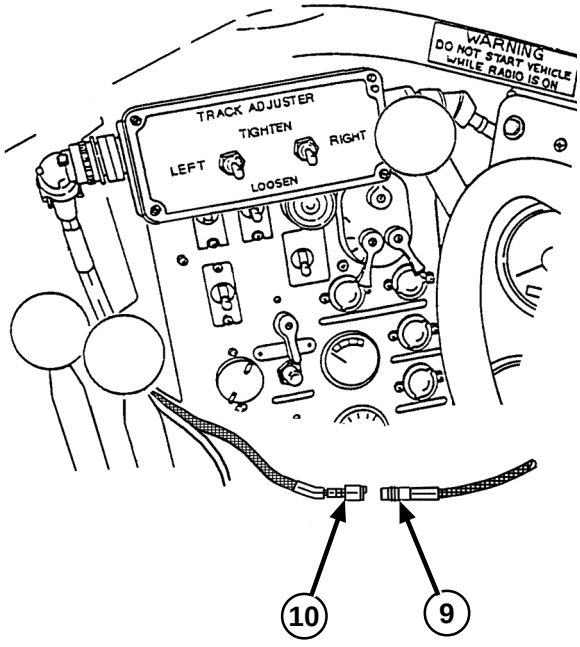
D Remove SPRUNG/UNSPRUNG switch tap harness connector (9) from track control wiring harness connector (10).

Note

- To ensure correct installation note routing of track control wiring harness during removal
- Track control wiring harness is secured to other components as needed by electrical tiedown straps. Cut/remove as required prior to removal.

E Remove track control wiring harness (1).





INSTALLATION

A Install track control wiring harness (1), in drivers compartment (2).

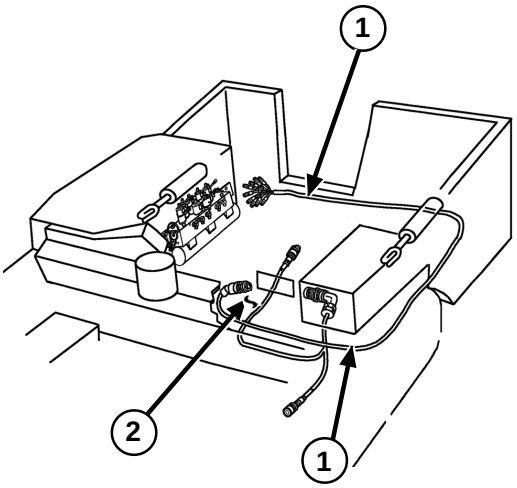
B Install new electrical tiedown straps as required to secure track control wiring harness (1).

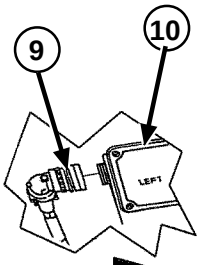
C Install track control wiring harness connector (3) on track control switch (4).

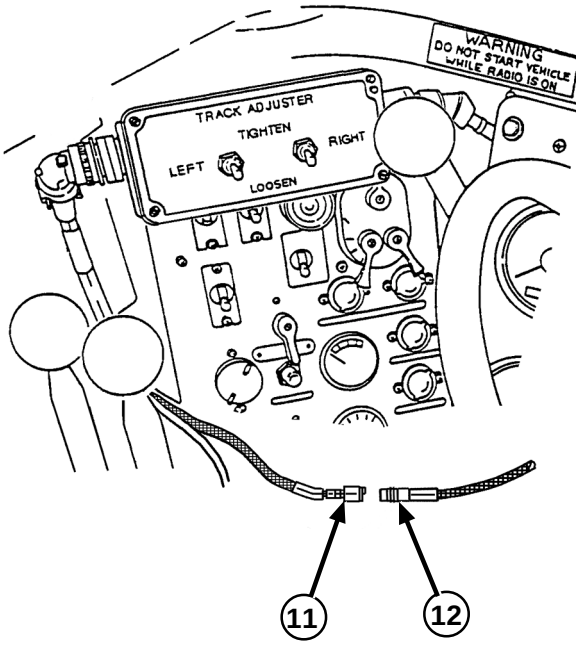
D Install track control wiring harness ground terminal (5) on hydraulic control lever bracket (6) using washer (7) and screw (8). Tighten screw (8).

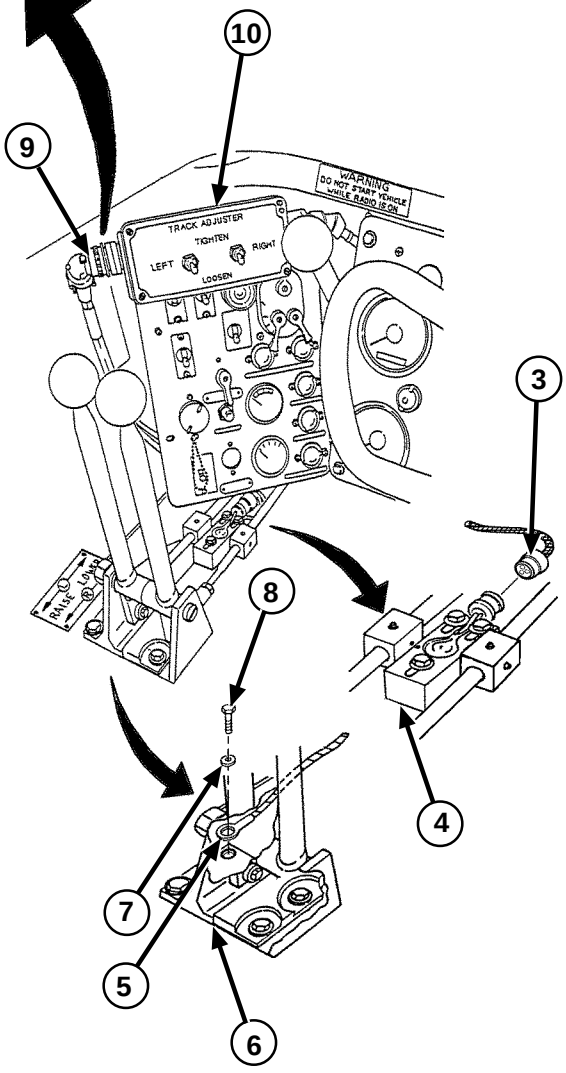
E Install track control wiring harness connector (9) on suspension control electrical box (10).

F Install track control wiring harness connector (11) on SPRUNG/UNSPRUNG switch tap harness connector (12).









FOLLOW-ON TASKS:

- Install rear floor plates (p 4-361).
- Connect negative battery cables (p 4-84).
- Battery box closed (TM 9-2350-262-10).

SEMI-AUTOMATIC TRACK ADJUSTER SPRUNG/UNSPRUNG TAP WIRING HARNESS REPLACEMENT (NEW PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Electrical Tiedown Straps	(V)
Silicone Compound	Item 16 Appendix D

Parts Reference:

TM 5-2350-262-24P Group AJ

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Battery Box Open
TM 5-2350-262-10	Ejector Forward
Page 4-84	Negative Battery Cables Disconnected
Page 4-361	Rear Floor Plates Removed

REMOVAL

A Remove SPRUNG/UNSPRUNG switch tap wiring harness connector (1) from track control wiring harness connector (2).

Note

- To ensure correct installation note routing of SPRUNG/UNSPRUNG switch tap wiring harness during removal.
- SPRUNG/UNSPRUNG tap switch wiring harness is secured to other components as needed be electrical tiedown straps. Cut/remove as required prior to removal.

B Remove SPRUNG/UNSPRUNG switch tap wiring harness connectors (3) and (4) from SPRUNG/UNSPRUNG switch connector (5) and wiring harness connector (6).

C Remove SPRUNG/UNSPRUNG switch tap wiring harness (1), by routing through hull (7) from driver's compartment (8) to SPRUNG/UNSPRUNG switch connector (5).

INSTALLATION

A Install SPRUNG/UNSPRUNG switch tap wiring harness (1) by routing through hull (7) from SPRUNG/UNSPRUNG switch connector (5) to driver's compartment (8).

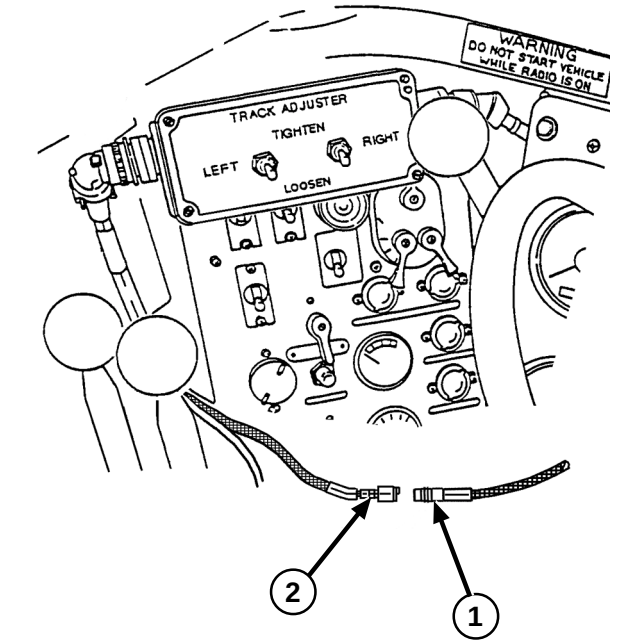
B Coat shells of SPRUNG/UNSPRUNG switch tap wiring harness electrical connectors (3) and (4) with silicone compound. Install on SPRUNG/UNSPRUNG switch connector (5) and wiring harness connector (6).

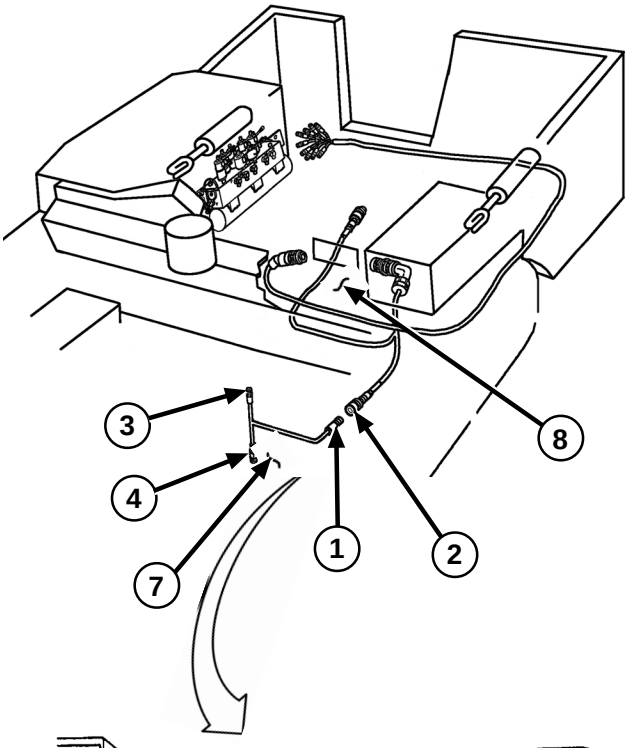
C Install SPRUNG/UNSPRUNG switch tap wiring harness connector (1) on track control wiring harness connector (2).

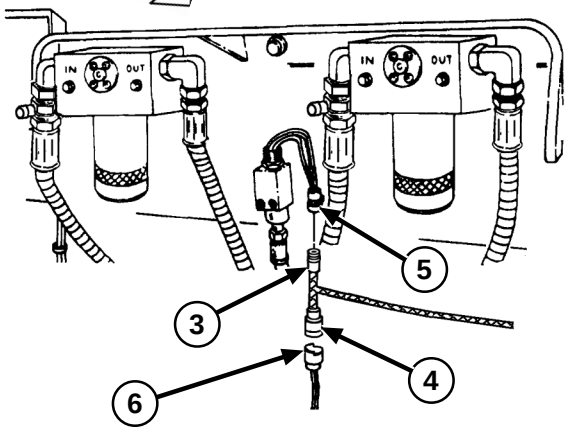
D Install electrical tiedown straps as required to secure SPRUNG/UNSPRUNG tap switch wiring harness (1).

FOLLOW-ON TASKS:

- Install rear floor plates (p 4-361).
- Connect negative battery cables (p 4-84).
- Battery box closed (TM 9-2350-262-10).
- Retract ejector (TM 9-2350-262-10).







Section VII. GROUP AL, FIRE EXTINGUISHER INSTALLATION

TASK	PAGE
Fixed Halon Fire Extinguisher Canister and Clamps Replacement (OLD PRODUCTION)	4-211
Fixed Dry Powder Fire Extinguisher Cylinder and Clamps Replacement (NEW PRODUCTION)	4-212.1
Fixed Halon Fire Extinguisher Control Valve and Cable Replacement (OLD PRODUCTION)	4-206
Fixed Dry Powder Fire Extinguisher Control Valve and Cable Replacement (NEW PRODUCTION)	4-210.1
Fixed Halon Fire Extinguisher Tubes, Hose, and Fittings Replacement (OLD PRODUCTION)	4-201
Fixed Dry Powder Fire Extinguisher Hoses and Fittings Replacement (NEW PRODUCTION)	4-205.1
Portable Dry Powder Fire Extinguisher Bracket Replacement	4-213

FIXED HALON FIRE EXTINGUISHER TUBES, HOSE, AND FITTINGS REPLACEMENT (OLD PRODUCTION)

This task covers:

a. Removal
b. Disassembly (Left Side)
c. Disassembly (Right Side)
d. Assembly (Left Side)
e. Assembly (Right Side)
f. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Packing (2)

Self-locking Screw (7)

Locknut

Parts Reference:

TM 5-2350-262-24P Group AL

Reference:

TM 5-2350-262-10

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Access Covers Opened

General Safety Instructions:

WARNING

Do not breathe fire extinguisher vapors.

REMOVAL

WARNING

Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.

A Disconnect elbow (1) from elbow (2) on left side fire extinguisher canister (3). Remove elbow (2) from canister (3).

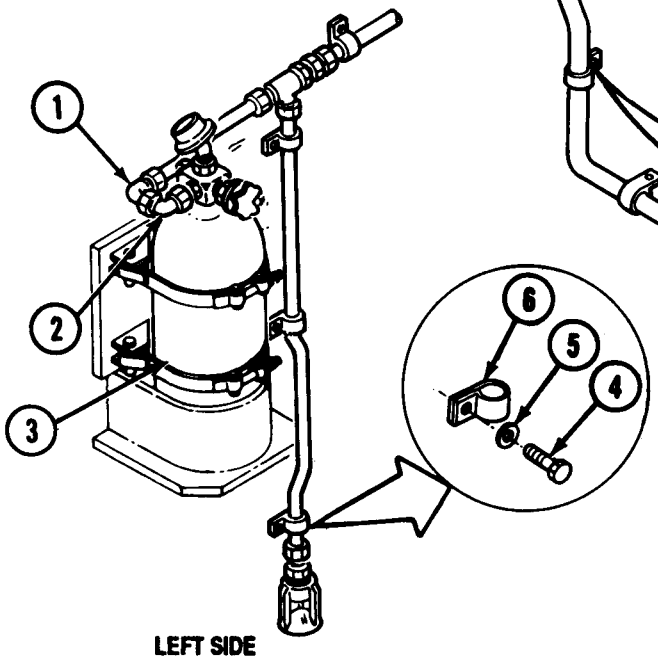
Note

It is necessary to remove an additional clamp with left side fire extinguisher component clamps on vehicles having serial nos. 383 and above.

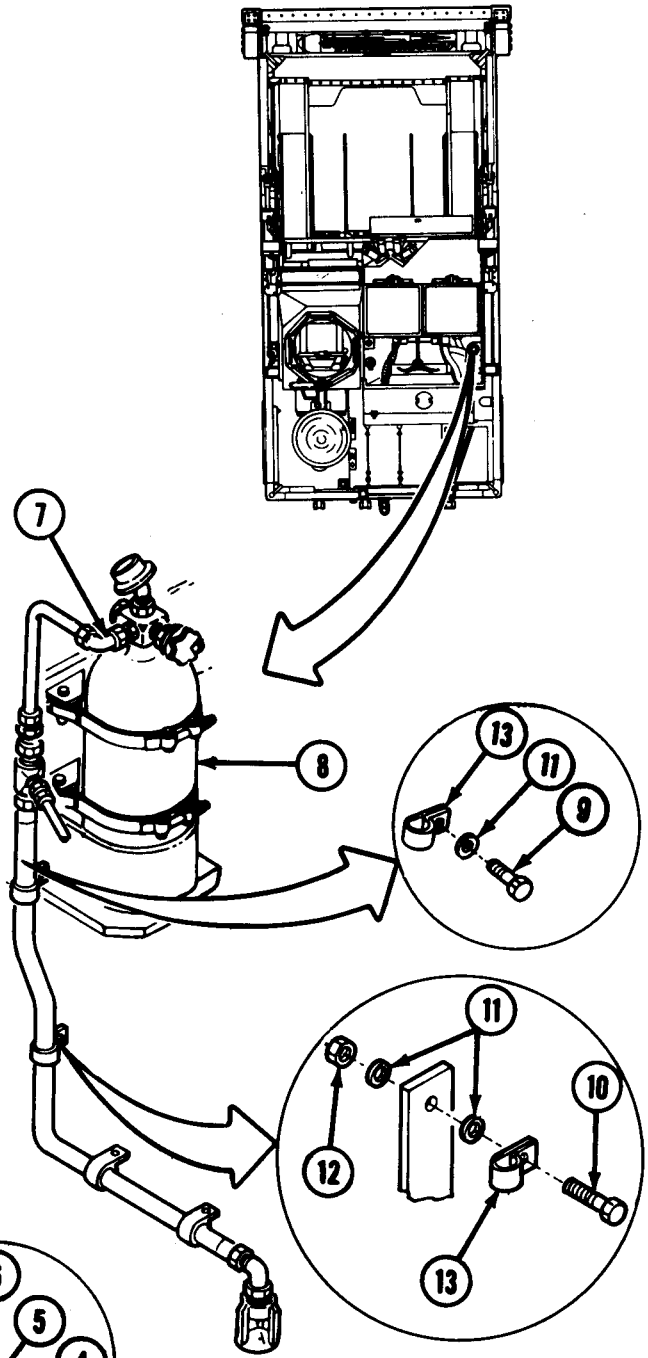
B To remove left side fire extinguisher components, remove four self-locking screws (4) and washers (5) from clamps (6). Discard self-locking screws (4).

C Disconnect elbow (7) from right side fire extinguisher canister (8).

D To remove right side fire extinguisher components, remove three self-locking screws (9), screw (10), five washers (11), and locknut (12) from four clamps (13). Discard self-locking screws (9) and locknut (12).



LEFT SIDE



RIGHT SIDE

DISASSEMBLY (LEFT SIDE)

Note

- This procedure covers left side components only.
- Perform step A on vehicles with serial nos. 1 to 317, and perform step B on vehicles with serial nos. 318 and above.

A Remove elbow (1) from tube (2), and remove tube (2) from tee (3).

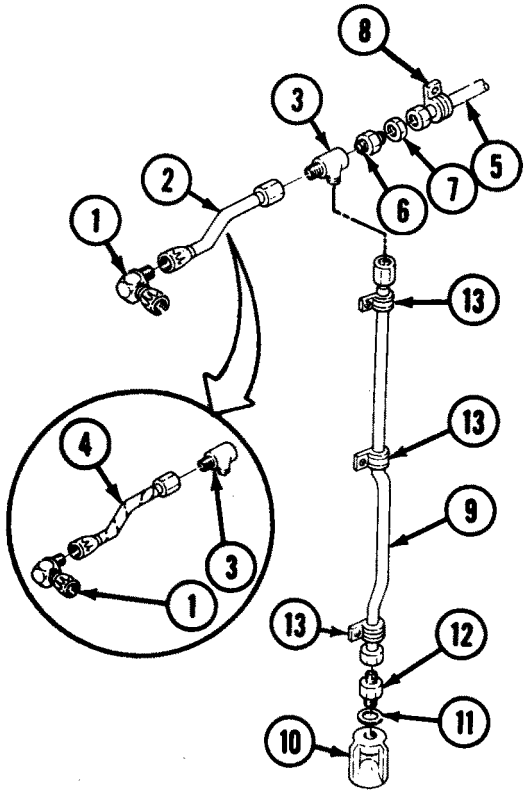
B Remove elbow (1) from hose (4), and remove hose (4) from tee (3).

C Remove tube (5) from reducer (6).

D Remove tube coupling (7) and clamp (8) from tube (5). Remove reducer (6) from tee (3).

E Remove tee (3) from tube (9).

F Remove nozzle (10), packing (11), adapter (12), and three clamps (13) from tube (9). Discard packing (11).



LEFT SIDE

DISASSEMBLY (RIGHT SIDE)

Note

This procedure covers right side components only.

A Remove elbow (1) from tube (2).

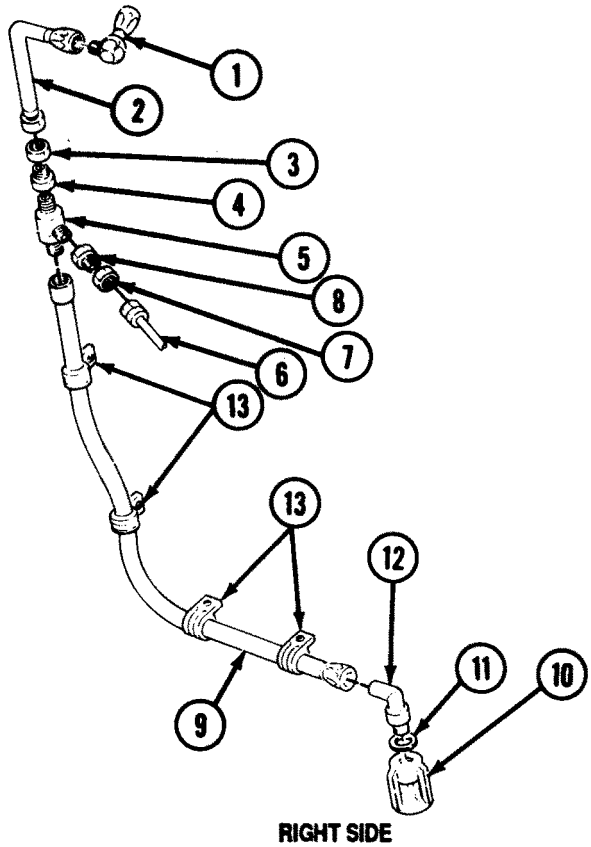
B Remove tube (2), tube coupling (3), and reducer (4) from tee (5).

C Remove tube (6) from tube coupling (7).

D Remove tube coupling (7) and reducer (8) from tee (5).

E Remove hose (9) from tee (5).

F Remove nozzle (10), packing (11), elbow (12), and four clamps (13) from hose (9). Discard packing (11).



RIGHT SIDE

ASSEMBLY (LEFT SIDE)

Note

- This procedure covers left side components only.
- Tighten elbows and fittings only finger tight to aid in installation.

A Install adapter (1), packing (2), nozzle (3), and three clamps (4) on tube (5).

B Install tee (6) on tube (5).

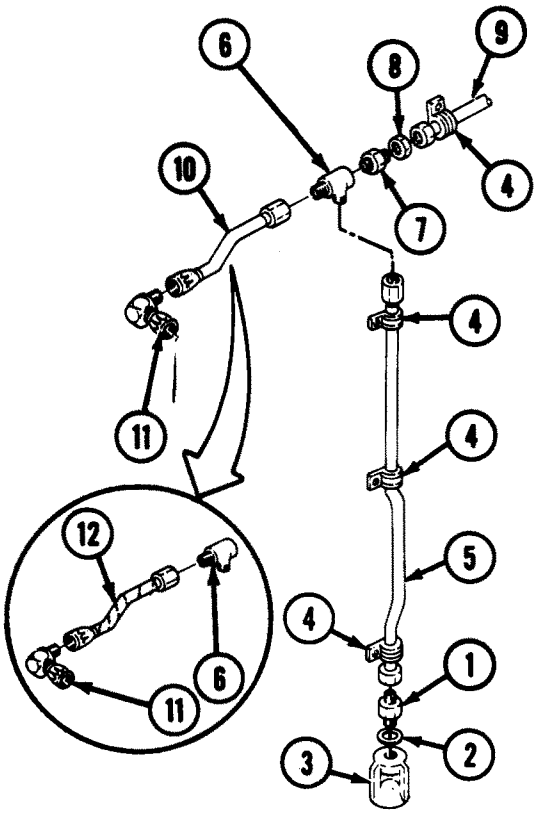
C Install reducer (7), tube coupling (8), and clamp (4) on tube (9). Connect tube (9) to tee (6).

Note

Perform step D on vehicles with serial nos. 1 to 317, and perform step E on vehicles with serial nos. 318 and above.

D Install tube (10) on tee (6), and install elbow (11) on tube (10).

E Install hose (12) on tee (6), and install elbow (11) on hose (12).



LEFT SIDE

ASSEMBLY (RIGHT SIDE)

Note

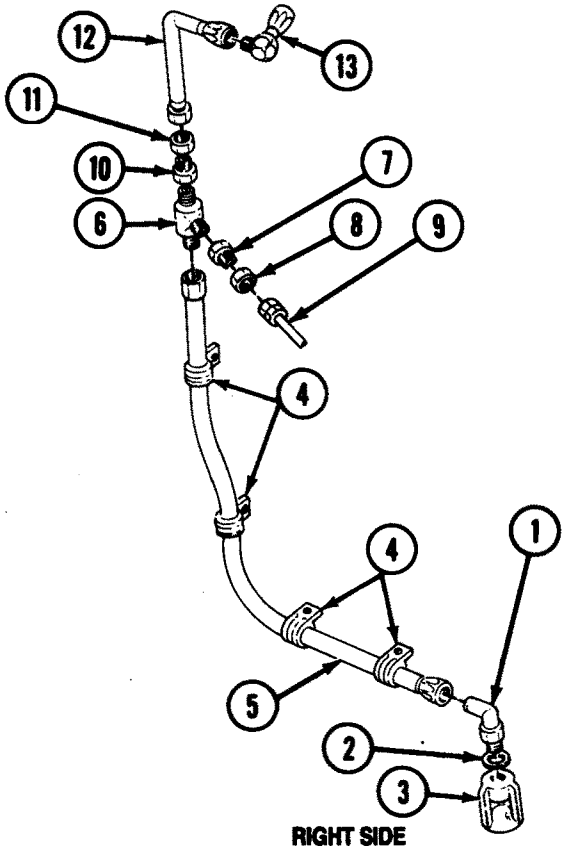
- This procedure covers right side components only.
- Tighten elbows and fittings only finger tight to aid in installation.

A Install elbow (1), packing (2), nozzle (3), and four clamps (4) on hose (5).

B Install tee (6) on hose (5). Install reducer (7), tube coupling (8), and tube (9) to tee (6).

C Install reducer (10), tube coupling (11), and tube (12) on tee (6).

D Install elbow (13) on tube (12).



RIGHT SIDE

INSTALLATION

Note

It is necessary to install an additional clamp with left side fire extinguisher component clamps on vehicles having serial nos. 383 and above.

A Install assembled left side components on engine compartment with four clamps (1), washers (2), and self-locking screws (3).

B Connect elbow (4) to left side fire extinguisher canister (5). Connect elbow (6) to elbow (4).

C Install assembled right side components on engine compartment with four clamps (7), five washers (8), three self-locking screws (9), screw (10), and locknut (11).

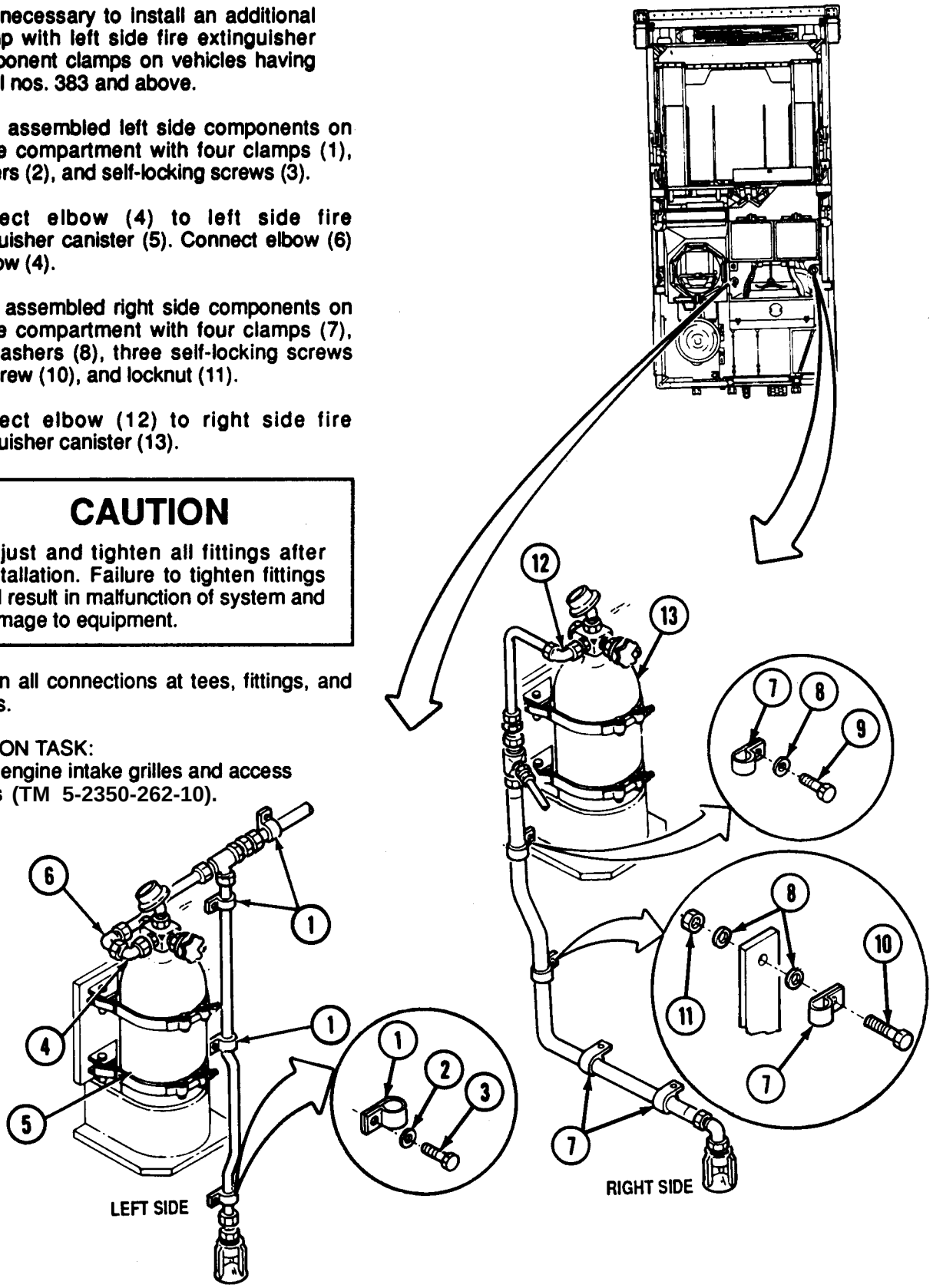
D Connect elbow (12) to right side fire extinguisher canister (13).

CAUTION

Adjust and tighten all fittings after installation. Failure to tighten fittings will result in malfunction of system and damage to equipment.

E Tighten all connections at tees, fittings, and elbows.

FOLLOW-ON TASK:
Close engine intake grilles and access covers (TM 5-2350-262-10).



FIXED DRY POWDER FIRE EXTINGUISHER HOSES AND FITTINGS REPLACEMENT (NEW PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's Automotive

Parts Reference:

TM 5-2350-262-24&P Group AL

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

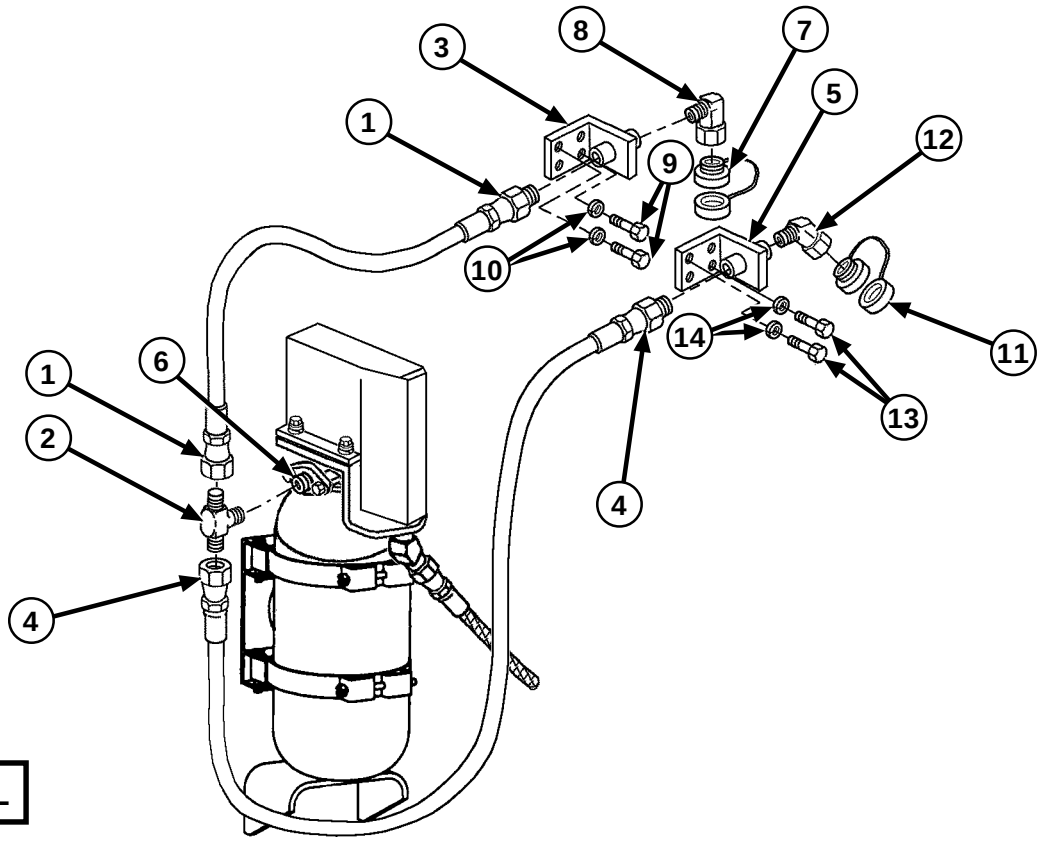
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Access Covers Opened

General Safety Instructions:

WARNING

Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.



REMOVAL

WARNING

Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.

Note

Both left and right sides are removed the same, the left side is shown for clarity.

A Remove hose assembly (1) from tube tee (2) and fire extinguisher bracket (3).

B Remove hose assembly (4) from tube tee (2) and fire extinguisher bracket (5).

C Remove tube tee (2) from adapter (6).

D Remove discharge nozzle (7) from elbow (8).

E Remove elbow (8) from fire extinguisher bracket (3).

F Remove two screws (9) and washers (10) from fire extinguisher bracket (3).

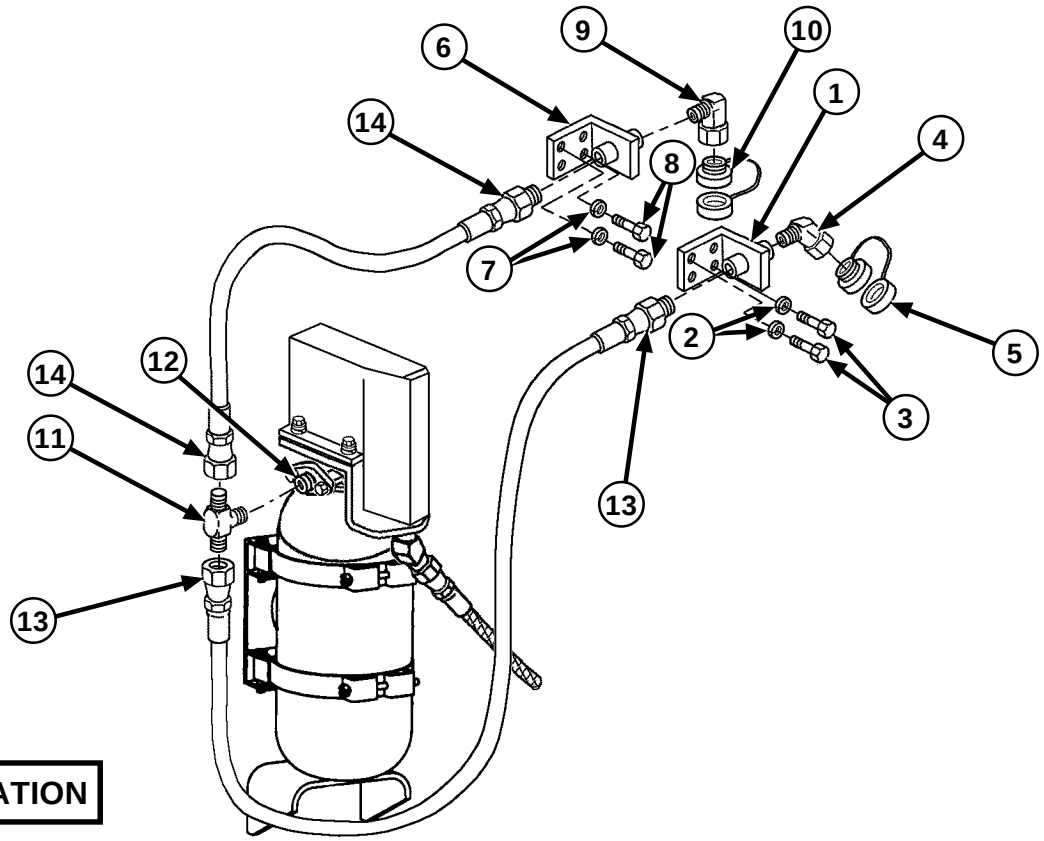
Note

Elbow (12) is a 45 degree type on the left (driver's) side of the vehicle and a 90 degree type on the right side of the vehicle.

G Remove discharge nozzle (11) from elbow (12).

H Remove elbow (12) from fire extinguisher bracket (5).

I Remove two screws (13) and washers (14) from fire extinguisher bracket (5).



INSTALLATION

WARNING

Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.

Note

Both left and right sides are installed the same, the left side is shown for clarity.

A Install fire extinguisher bracket (1) with two washers (2) and screws (3).

Note

Elbow (4) is a 45 degree type on the left (driver's) side of the vehicle and a 90 degree type on the right side of the vehicle.

B Install elbow (4) on fire extinguisher bracket (1).

C Install discharge nozzle (5) on elbow (4).

D Install fire extinguisher bracket (6) with two washers (7) and screws (8).

E Install elbow (9) on fire extinguisher bracket (6).

F Install discharge nozzle (10) on elbow (9).

G Install tube tee (11) on adapter (12).

H Install hose assembly (13) on tube tee (11) and fire extinguisher bracket (1).

I Install hose assembly (14) on tube tee (11) and fire extinguisher bracket (6).

FOLLOW-ON TASKS:

Close engine intake grills and access covers (TM 5-2350-262-10).

FIXED HALON FIRE EXTINGUISHER CONTROL VALVE AND CABLE REPLACEMENT (OLD PRODUCTION)

This task covers:

a. Removal (Left Side)
b. Installation (Left Side)
c. Removal (Right Side)
d. Installation (Right Side)

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Seal (4)

Self-locking Screw (4)

Gasket

Parts Reference:

TM 5-2350-262-24P Group AL

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

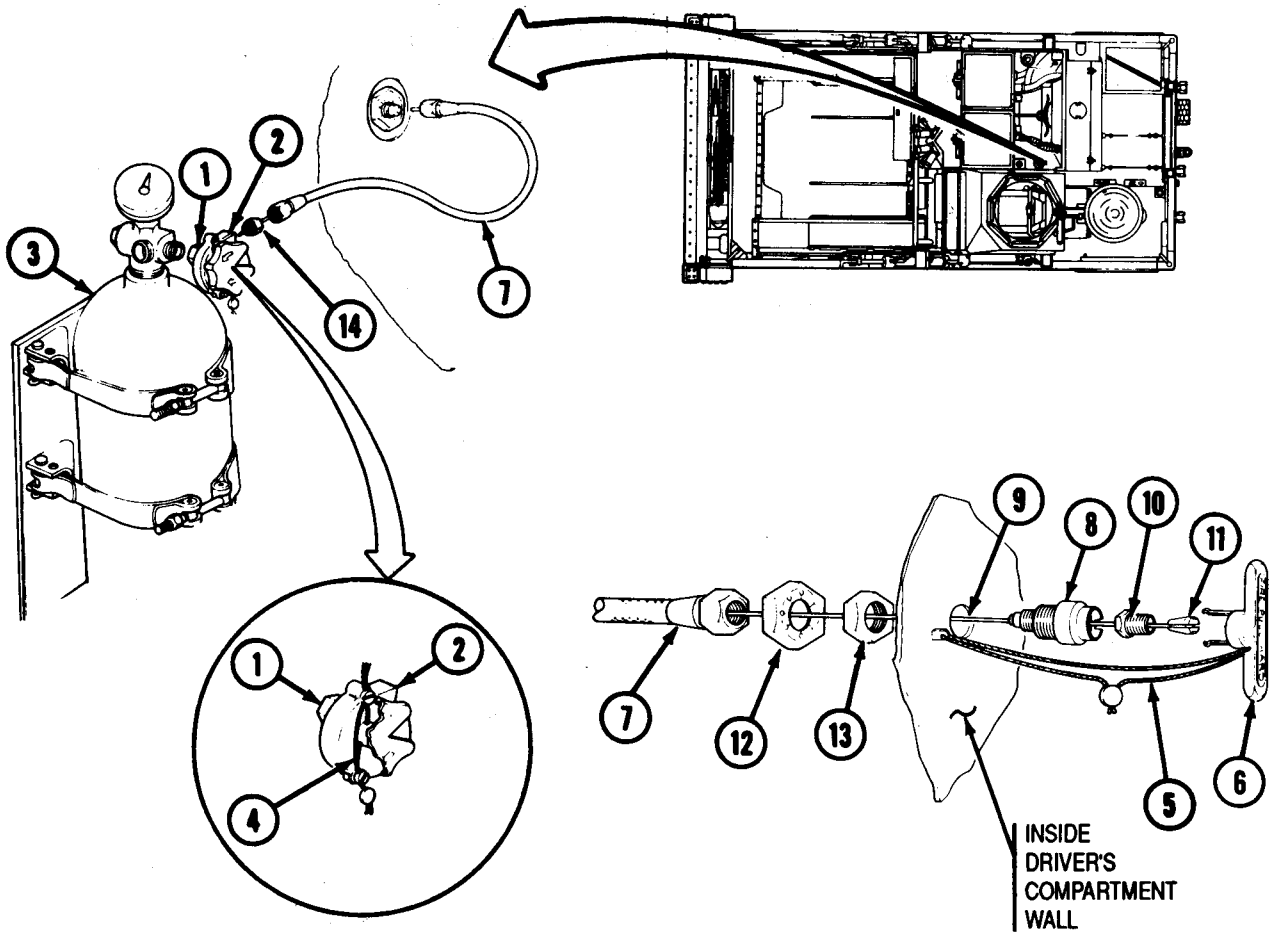
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Access Covers Opened
Page 4-607	Muffler Shields Removed (Right Side Only)

General Safety Instructions:

WARNING

Do not breathe fire extinguisher vapors.



REMOVAL (LEFT SIDE)

WARNING

Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.

CAUTION

Ensure control valve remains in reset position to avoid triggering fire extinguisher. Failure to comply may result in damage to equipment.

A **Loosen captive nut (1) attaching control valve (2) to canister (3). Remove control valve (2).**

B Cut seal (4) on control valve (2). Remove and discard seal (4) from control valve (2).

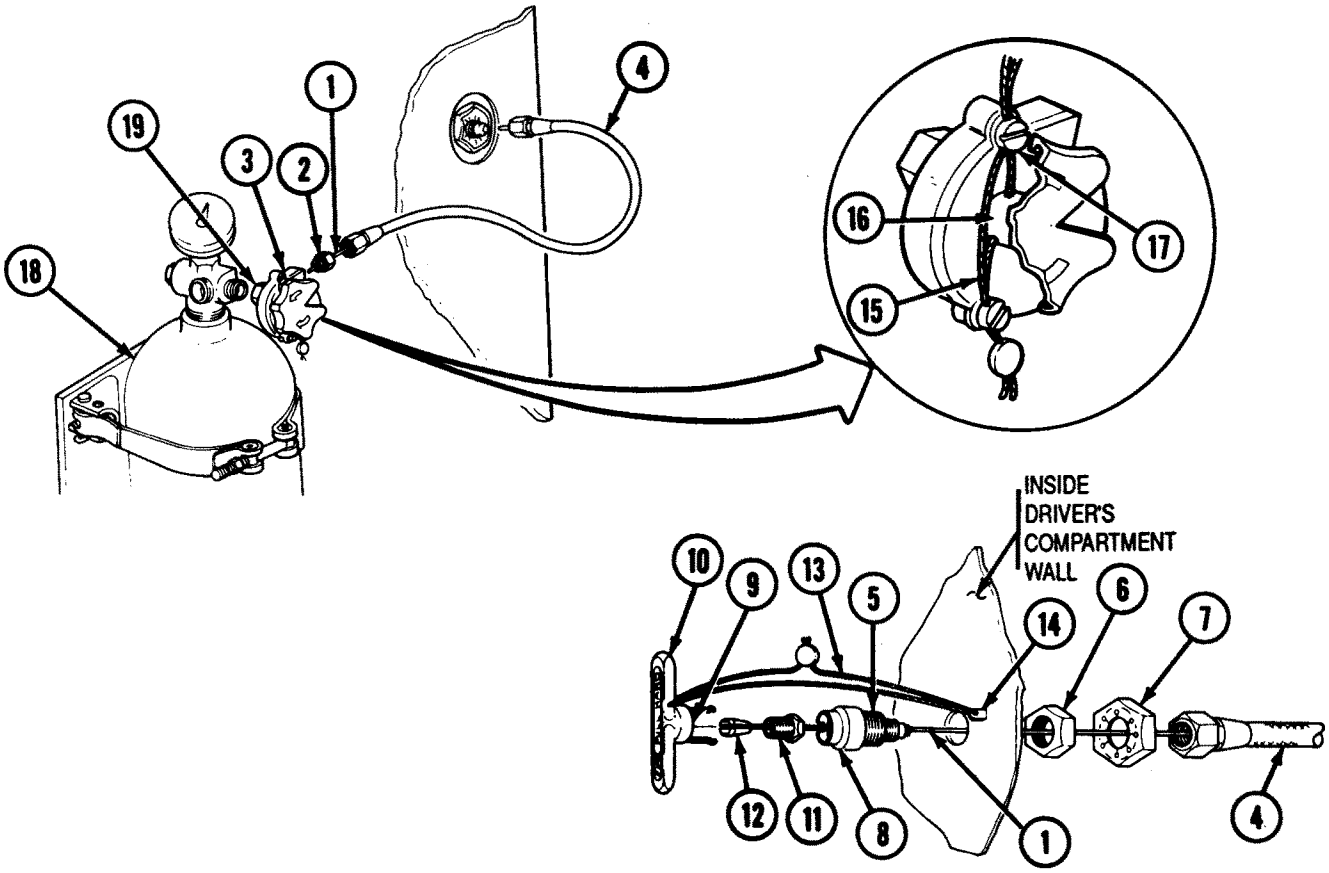
C In driver's compartment, cut seal (5) securing handle (6) to driver's compartment wall. Remove and discard seal (5). Disconnect flexible cable guide (7) from adapter (8). Pull handle (6) outward to aid in removal of handle (6) from cable (9).

D Remove nut (10) from handle (6). Pull wedge (11) from nut (10) to release cable (9). Pull cable (9) through nut (10) and adapter (8).

E Remove jamnut (12), nut (13), and adapter (8) from inside driver's compartment wall.

F Disconnect flexible cable guide (7) from control valve adapter (14). Remove flexible cable guide (7) from control valve (2).

G Remove control valve adapter (14) from control valve (2).



INSTALLATION (LEFT SIDE)

A Route cable (1) through control valve adapter (2) and into control valve (3). Install control valve adapter (2) on control valve (3).

B Route cable (1) from control valve (3) through flexible cable guide (4). Install flexible cable guide (4) on control valve adapter (2).

C Install adapter (5) on inside driver's compartment wall with nut (6) and jamnut (7).

D Turn control valve (3) clockwise to the open position.

E Install control valve (3) with cable (1) by routing cable (1) through adapter (5). Connect flexible cable guide (4) to adapter (5).

F Pull and measure distance of cable (1) from mating surface (8) of adapter (5) to mating surface (9) of handle (10). Measurement should not exceed 4-in. (10-cm).

G Route cable (1) through nut (11). Connect cable (1) to wedge (12) and insert wedge (12) into nut (11). Secure nut (11) inside handle (10) and attach handle (10) to adapter (5).

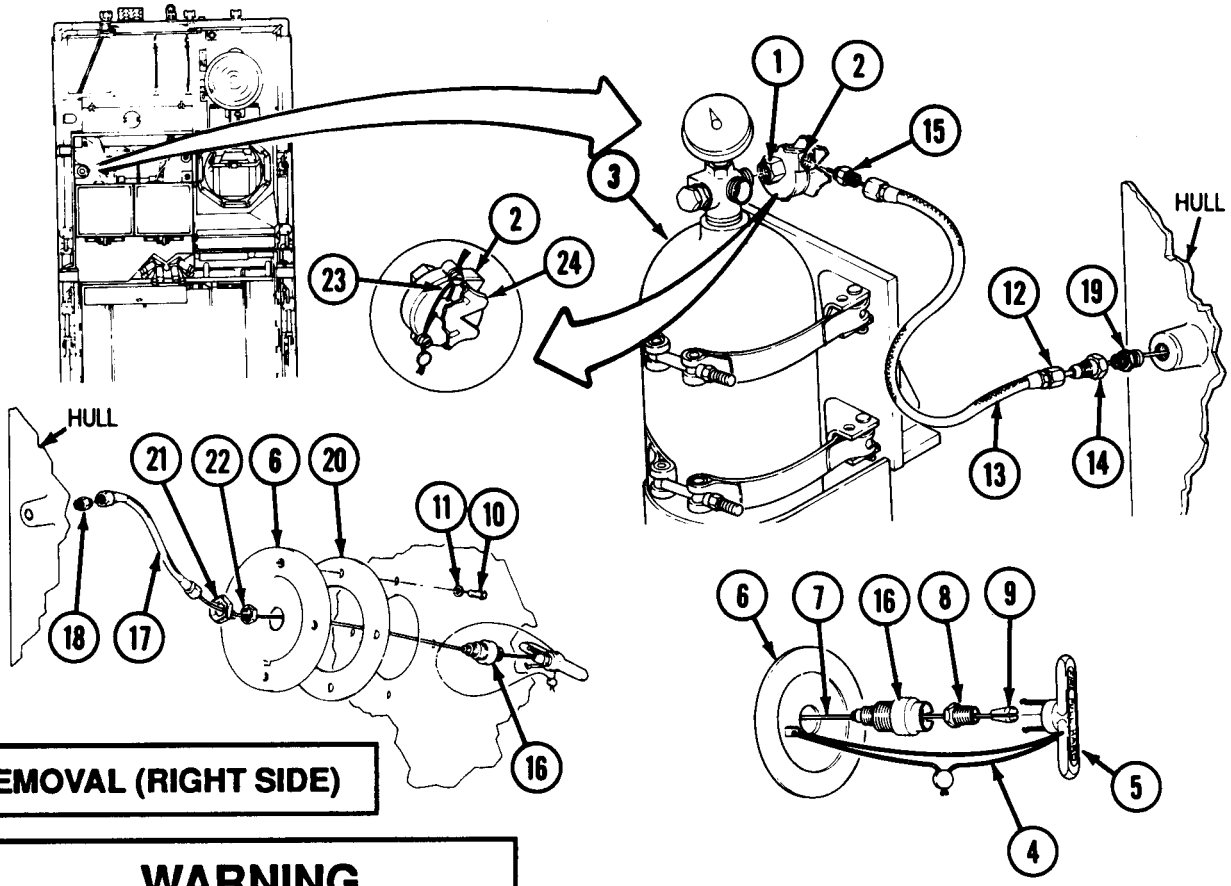
CAUTION

Ensure control valve remains in reset position to avoid triggering fire extinguisher. Failure to comply may result in damage to equipment.

H Turn valve (3) clockwise to reset position. Route seal (13) through handle (10) and tab (14) on vehicle hull and secure ends of seal (13).

I Route seal (15) through control valve (3), handle (16), and two control valve plate screws (17). Secure ends of seals (15).

J Install control valve (3) on canister (18) with captive nut (19).



REMOVAL (RIGHT SIDE)

WARNING

Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.

CAUTION

Ensure control valve remains in reset position to avoid triggering fire extinguisher. Failure to comply may result in damage to equipment.

A Loosen captive nut (1) attaching control valve (2) to canister (3). Remove control valve (2).

B From outside vehicle, cut seal (4) securing handle (5) to access cover (6). Discard seal (4). Pull handle (5) outward to aid in removal of handle (5) from cable (7).

C Remove nut (8) from handle (5). Pull wedge (9) from nut (8) to release cable (7).

D Remove four self-locking screws (10) and washers (11) from access cover (6). Discard self-locking screws (10).

E Loosen tube coupling nut (12) and remove flexible cable guide (13) from reducer (14). Remove flexible cable guide (13) from adapter (15).

F Pull cable (7) free of adapter (16), flexible cable guide (17), adapters (18) and (19), reducer (14), tube coupling nut (12), and cable guide (13).

G Remove tube coupling nut (12), reducer (14), and adapter (19) from hull.

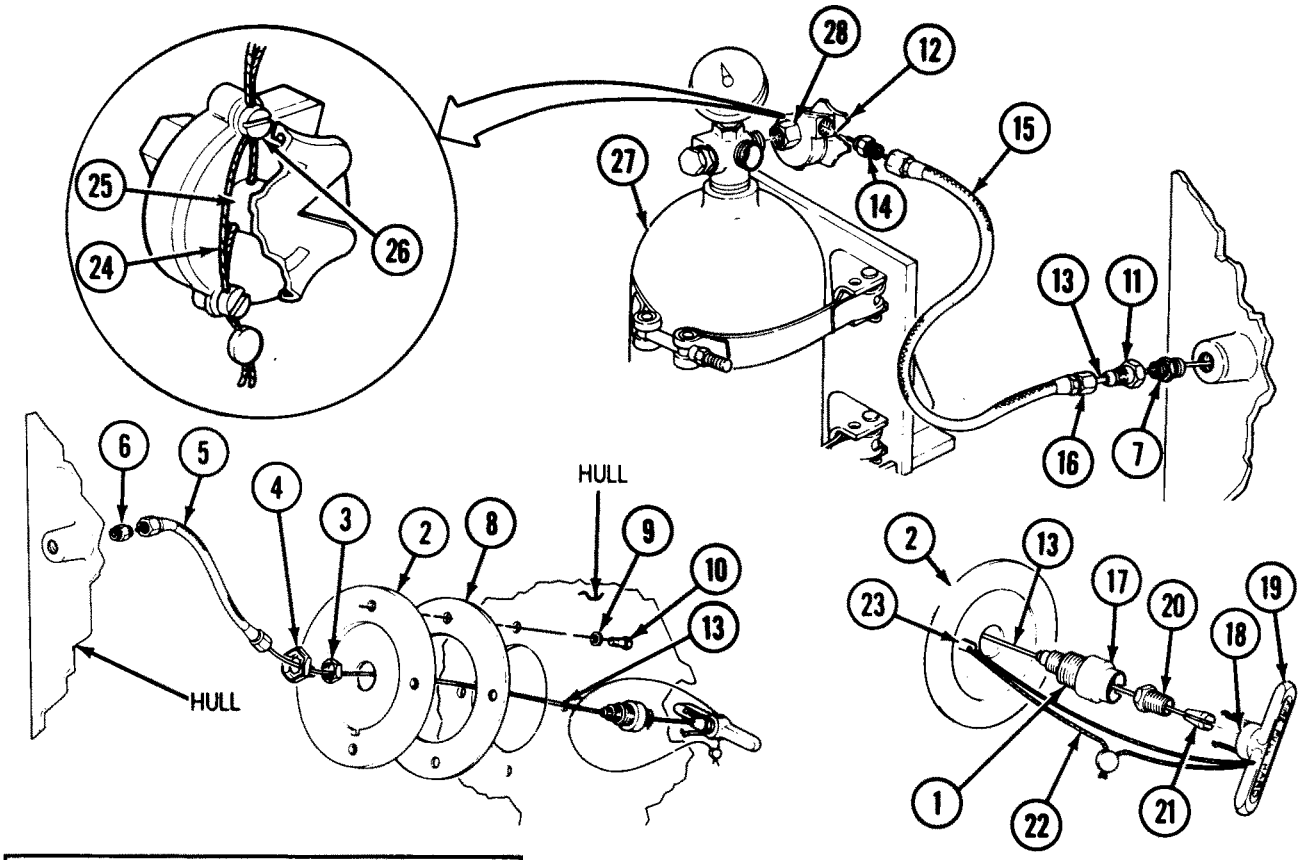
H Remove adapter (15) from control valve (2).

I Remove access cover (6) and gasket (20) from hull. Discard gasket (20).

J Remove flexible cable guide (17) from adapters (16) and (18).

K Remove jam nut (21) and nut (22) securing adapter (16) to access cover (6). Remove adapter (16) from access cover (6). Remove adapter (18) from hull.

L Cut seal (23) on control valve handle (24). Remove and discard seal (23) from control valve (2).



INSTALLATION (RIGHT SIDE)

A Install adapter (1) on access cover (2) with nut (3) and jam nut (4).

B Install flexible cable guide (5) on adapter (1).

C Install adapters (6) and (7) on hull. Connect flexible cable guide (5) to adapter (6).

D Install gasket (8) and access cover (2) on hull with four washers (9) and self-locking screws (10).

E Install reducer (11) on adapter (7).

F Turn control valve (12) clockwise to the open position. Route cable (13) of control valve (12) through adapter (14). Install adapter (14) on control valve (12).

G Install control valve (12), with cable (13) attached, by routing cable (13) through flexible cable guide (15), reducer (11), adapter (7), flexible cable guide (5), and adapter (1). Install flexible cable guide (15) on adapter (14). Install flexible cable guide (15) on reducer (11) with tube coupling nut (16).

H Pull and measure distance of cable (13) from mating surface (17) of adapter (1) to mating surface (18) of handle (19). Measurement should not exceed 4-in. (10-cm).

I Route cable (13) through nut (20). Connect cable (13) to wedge (21) and install wedge (21) on nut (20). Secure nut (20) inside handle (19) and connect handle (19) to adapter (1).

CAUTION

Ensure control valve remains in reset position to avoid triggering fire extinguisher. Failure to comply may result in damage to equipment.

J Turn control valve (12) clockwise to the reset position.

K Route seal (22) through handle (19) and tab (23) on access cover (2) and secure ends of seal (22).

L Route seal (24) through control valve handle (25) and two control valve plate screws (26). Secure ends of seal (24).

M Install control valve (12) on canister (27) with captive nut (28).

FOLLOW-ON TASKS:

- Install muffler shields (right side only) (p 4-607).
- Close engine intake grilles and access covers (TM 5-2350-262-10).

FIXED DRY POWDER FIRE EXTINGUISHER CONTROL VALVE AND CABLE REPLACEMENT (NEW PRODUCTION)

This task covers:

a. Removal (Left Side)

b. Installation (Left Sdie)

c. Removal (Right Side)

d. Installation (Right Side)

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's Automotive

Parts:

Antipilferage Seal (2)
Gasket (1)
Self-locking screws (4)

Parts Reference:

TM 5-2350-262-24&P Group AL

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

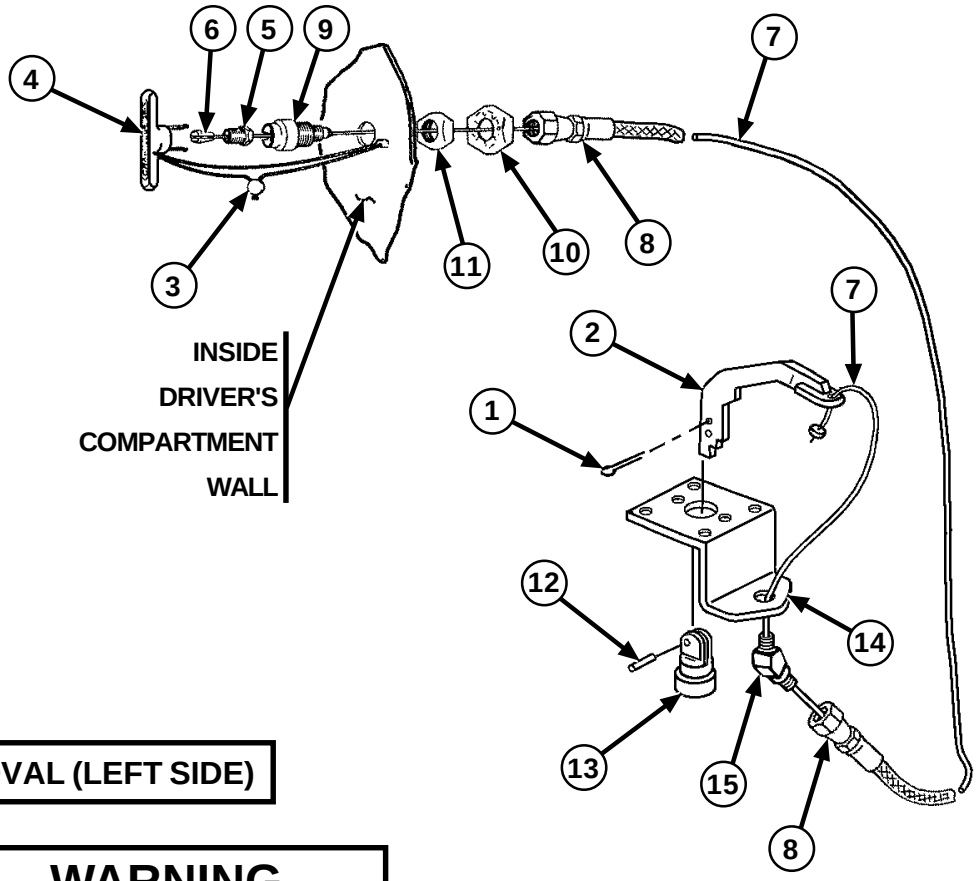
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Access Covers Opened
Page 4-212.1	Actuator Assembly and Base Plate Removed from Fire Extinguisher Cylinder.
Page 4-607	Muffler Shields Removed (Right Side Only)

General Safety Instructions:

WARNING

Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.



REMOVAL (LEFT SIDE)

WARNING

Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.

A Remove cotter pin (1) from actuator arm (2).

Note

To remove wire rope it is necessary to remove the fire extinguisher handle nut and wedge.

B Cut and remove antipilferage seal (3) and pull fire extinguisher handle (4) outward from hull. Discard antipilferage seal (3).

C Remove nut (5) from fire extinguisher handle (4) and pull wedge (6) and wire rope (7) free of nut (5).

D Remove wedge (6) from wire rope (7).

E Remove cable sheath (8) from reducer (9).

F Remove stamped nut (10) and nut (11) from reducer (9).

G Remove roll pin (12) from pivot (13) and remove actuator arm (2) from pivot (13) and base plate (14).

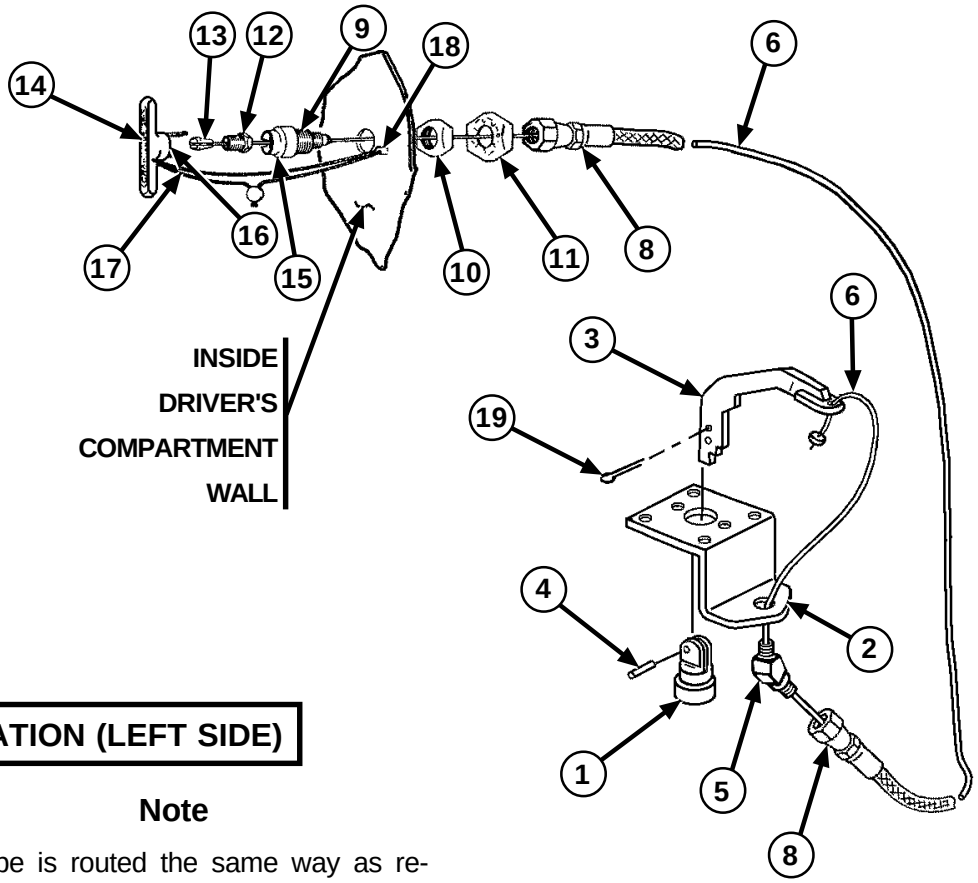
H Remove cable sheath (8) from elbow (15).

I Remove elbow (15) from base plate (14).

Note

Notice the routing of the wire rope to facilitate reassembly.

J Pull wire rope (7) though nut (5), reducer (9), nut (11), stamped nut (10), cable sheath (8), elbow (15), base plate (14), and actuator arm (2).



INSTALLATION (LEFT SIDE)

Note

Wire rope is routed the same way as removed.

A Install pivot (1) through base plate (2).

B Install actuator arm (3) on pivot (1) with roll pin (4).

C Install elbow (5) on base plate (2), ensure proper orientation to assembly as shown.

D Route wire rope (6) through end of actuator arm (3), base plate (2), elbow (5), and cable sheath (8).

E Install reducer (9) through hull with nut (10) and stamped nut (11).

F Route wire rope (6) through reducer (9) and nut (12).

G Install both ends of cable sheath (8) to elbow (5) and reducer (9), respectively.

H Pull and measure distance of wire rope (6) from mating surface (15) of reducer (9) to mating surface (16) of fire extiniguisher handle (14). Measurement should not exceed 4 inches (10 cm).

I Connect wire rope (6) to wedge (13) and insert wedge (13) into nut (12).

J Secure nut (12) inside fire extinguisher handle (14).

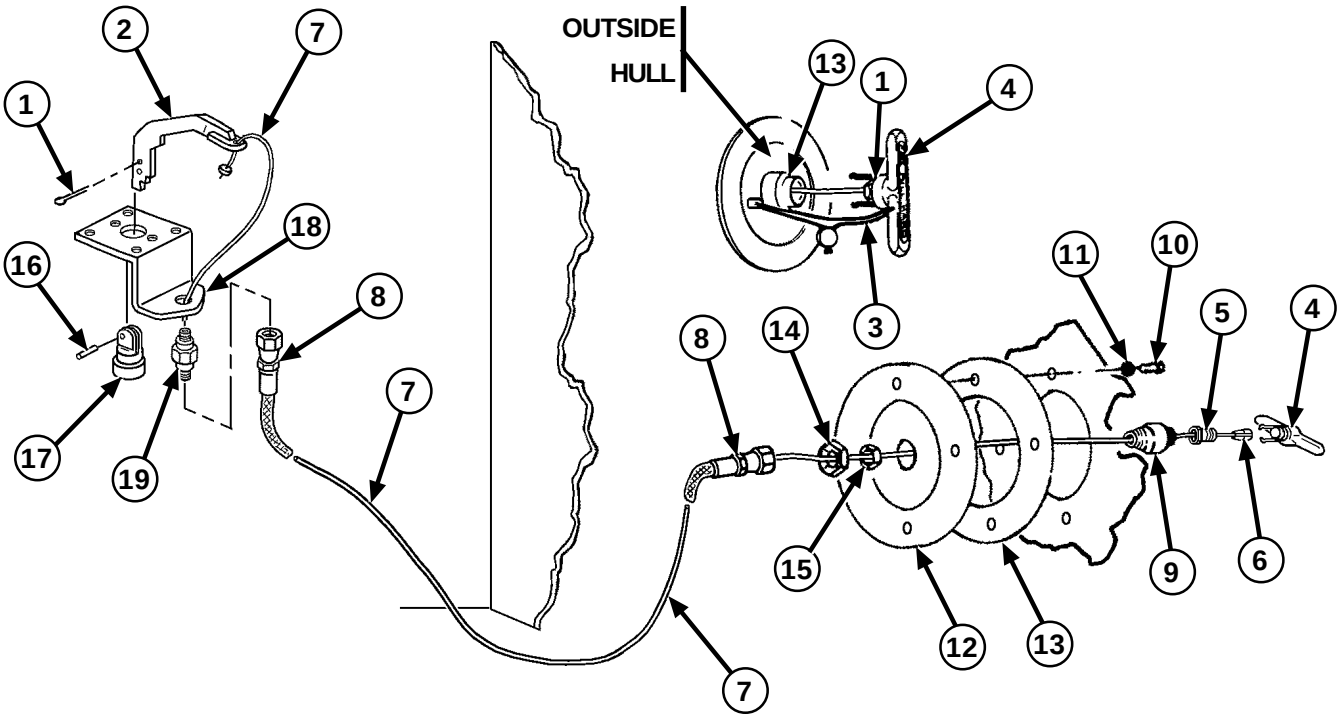
K Route antipilferage seal (17) through fire extinguisher handle (14) and tab (18) on vehicle hull and secure ends of antipilferage seal (17).

L Install cotter pin (19) through actuator arm (3) to prevent accidental discharge of fire extinguisher cylinder during installation.

FOLLOW-ON TASKS:

Install actuator assembly and base plate on fire extinguisher cylinder (Page 4-212.1).

Close engine grills and access covers (TM 5-2350-262-10).



REMOVAL (RIGHT SIDE)

WARNING

Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.

A Remove cotter pin (1) from actuator arm (2).

Note

To remove wire rope it is necessary to remove the fire extinguisher handle nut and wedge.

B Cut and remove antipilferage seal (3) and pull fire extinguisher handle (4) outward from hull. Discard antipilferage seal (3).

C Remove nut (5) from fire extinguisher handle (4) and pull wedge (6) and wire rope (7) free of nut (5).

D Remove wedge (6) from wire rope (7).

E Remove cable sheath (8) from reducer (9).

F Remove four self-locking screws (10) and washers (11) from access cover (12) and gasket (13). Discard self-locking screws (10).

G Remove stamped nut (14) and nut (15) from reducer (9).

H Remove roll pin (16) from pivot (17) and remove actuator arm (2) from pivot (17) and base plate (18).

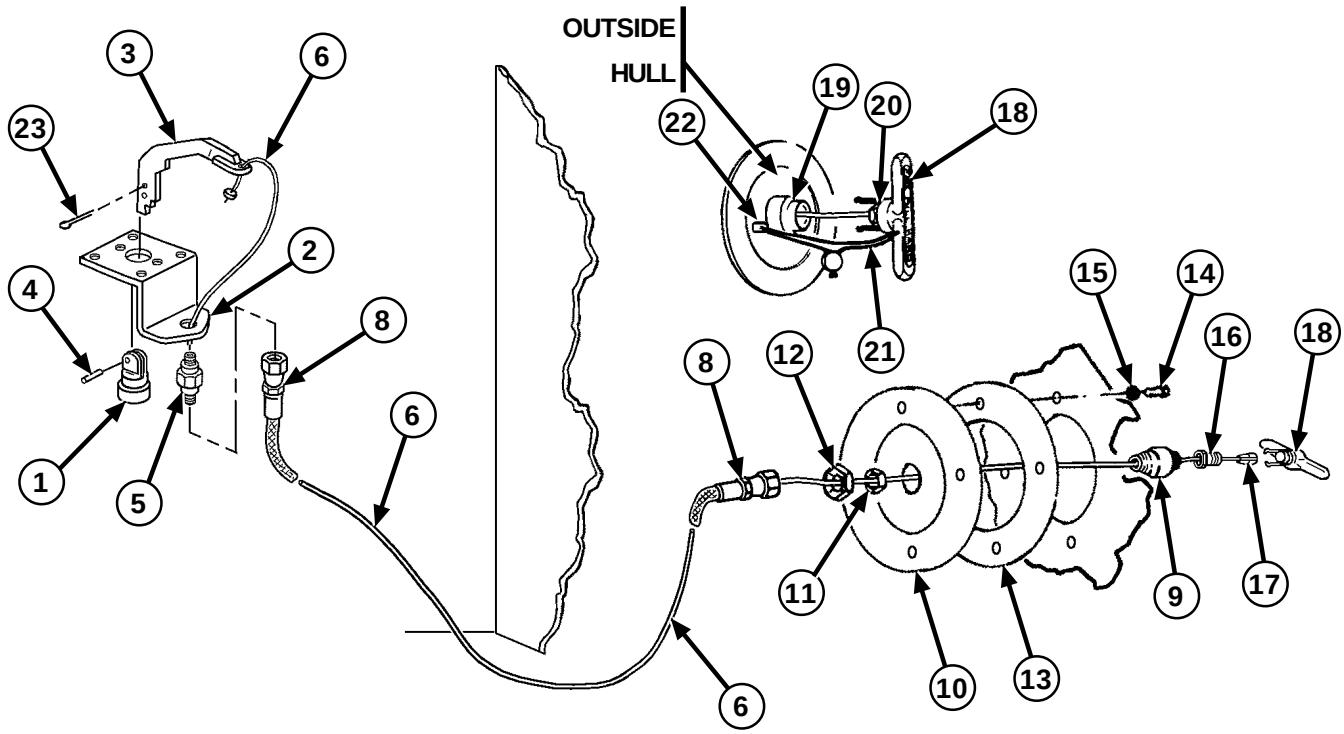
I Remove cable sheath (8) from straight adapter (19).

J Remove straight adapter (19) from base plate (18).

Note

Notice the routing of the wire rope to facilitate reassembly.

K Pull wire rope (7) through nut (5), reducer (9), gasket (13), access cover(12), nut (15), stamped nut (14), cable sheath (8), straight adapter (19), base plate (18), and actuator arm (2). Discard gasket (13).



INSTALLATION (RIGHT SIDE)

Note

Wire rope is routed the same way as removed.

A Install pivot (1) through base plate (2).

B Install actuator arm (3) on pivot (1) with roll pin (4).

C Install straight adapter (5) on base plate (2).

D Route wire rope (6) through end of actuator arm (3), base plate (2), straight adapter (5), and cable sheath (8).

E Install reducer (9) on access cover (10) with nut (11) and stamped nut (12).

F Install access cover (10) and new gasket (13) on hull with four new self-locking screws (14) and washers (15).

G Route wire rope (6) through reducer (9) and nut (16).

H Install both ends of cable sheath (8) to straight adapter (5) and reducer (9), respectively.

I Pull and measure distance of wire rope (6) from mating surface (19) of reducer (9) to mating surface (20) of fire extiniguisher handle (18). Measurement should not exceed 4 inches (10 cm).

J Connect wire rope (6) to wedge (17) and insert wedge (17) into nut (16).

K Secure nut (16) inside fire extinguisher handle (18).

L Route antipilferage seal (21) through fire extinguisher handle (18) and tab (22) on vehicle hull and secure ends of antipilferage seal (21).

M Install cotter pin (23) through actuator arm (3) to prevent accidental discharge of fire extinguisher cylinder during installation.

FOLLOW-ON TASKS:

Install actuator assembly and base plate on fire extinguisher cylinder (Page 4-212.1).

Install muffler shields (Page 4-607).

Close engine intake grills and access covers (TM 5-2350-262-10).

FIXED HALON EXTINGUISHER CANISTER AND CLAMPS REPLACEMENT (OLD PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Cotter Pin (4)

Parts Reference:

TM 5-2350-262-24P Group AL

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

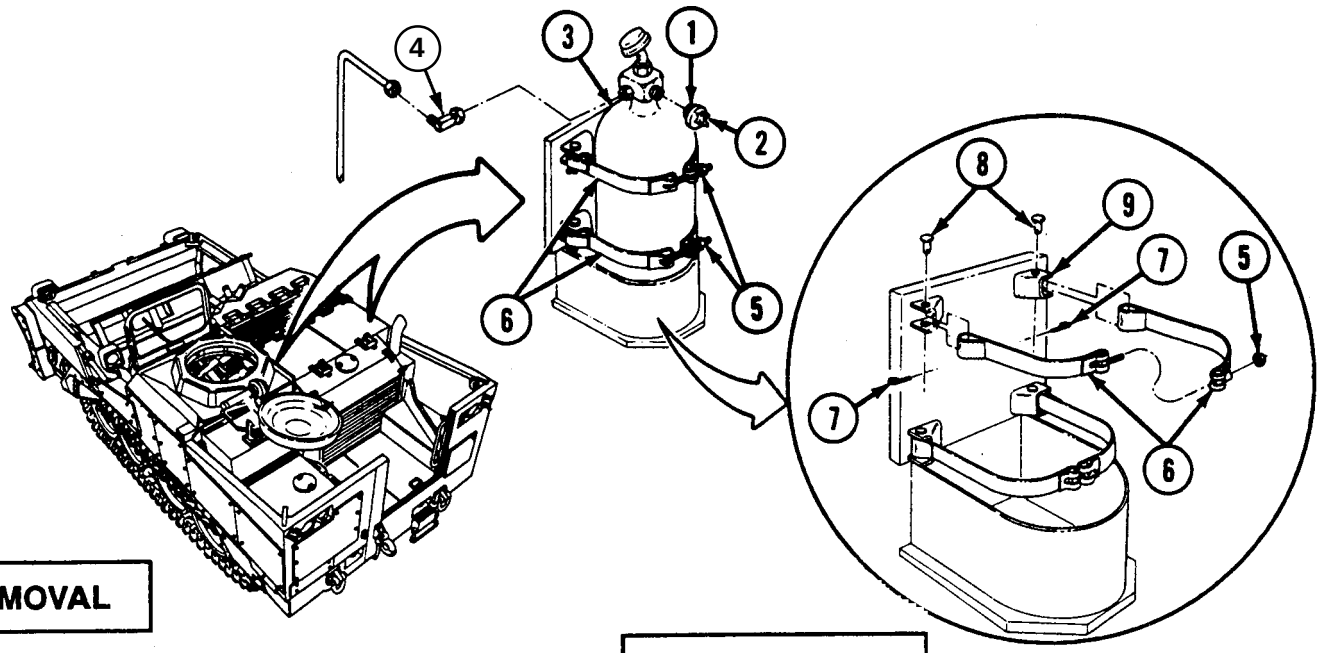
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Access Covers Opened

General Safety Instructions:

WARNING

Do not breathe fire extinguisher vapors.



REMOVAL

WARNING

Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.

CAUTION

Do not turn handle of control valve when control valve is attached to canister. Turning handle will discharge the canister, causing damage to equipment.

Note

Left side and right side fixed fire extinguisher canisters and clamps are replaced the same way.

A Loosen captive nut (1) and remove control valve (2) from canister (3).

B Disconnect elbow (4) from canister (3).

C Loosen two nuts (5) on clamps (6), and remove canister (3) from clamps (6).

D Remove four cotter pins (7), straight pins (8), and two clamps (6) from brackets (9). Discard cotter pins (7).

E Remove two nuts (5) from clamps (6).

Note

Refer to TM 5-4210-218-13&P for refilling halon fixed fire extinguisher.

INSTALLATION

Note

Do not tighten nuts on clamps until elbow and control valve are installed on canister.

A Install two clamps (6) on brackets (9) with four straight pins (8) and cotter pins (7).

B Connect two clamps (6) with nuts (5). Do not tighten nuts (5).

C Place canister (3) in clamps (6).

D Install elbow (4) on canister (3).

CAUTION

Ensure control valve remains in reset position to avoid triggering fire extinguisher. Failure to comply may result in damage to equipment.

E Install control valve (2) on canister (3) with captive nut (1).

F Tighten two nuts (5) on clamps (6).

FOLLOW-ON TASK:
Close engine intake grilles and access covers (TM 5-2350-262-10).

FIXED DRY POWDER FIRE EXTINGUISHER CYLINDER AND CLAMPS REPLACEMENT (NEW PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's Automotive

Parts:

Cotter Pin (4)
Lockwashers (4)
Self-locking nuts (4)

Parts Reference:

TM 5-2350-262-24&P Group AL

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

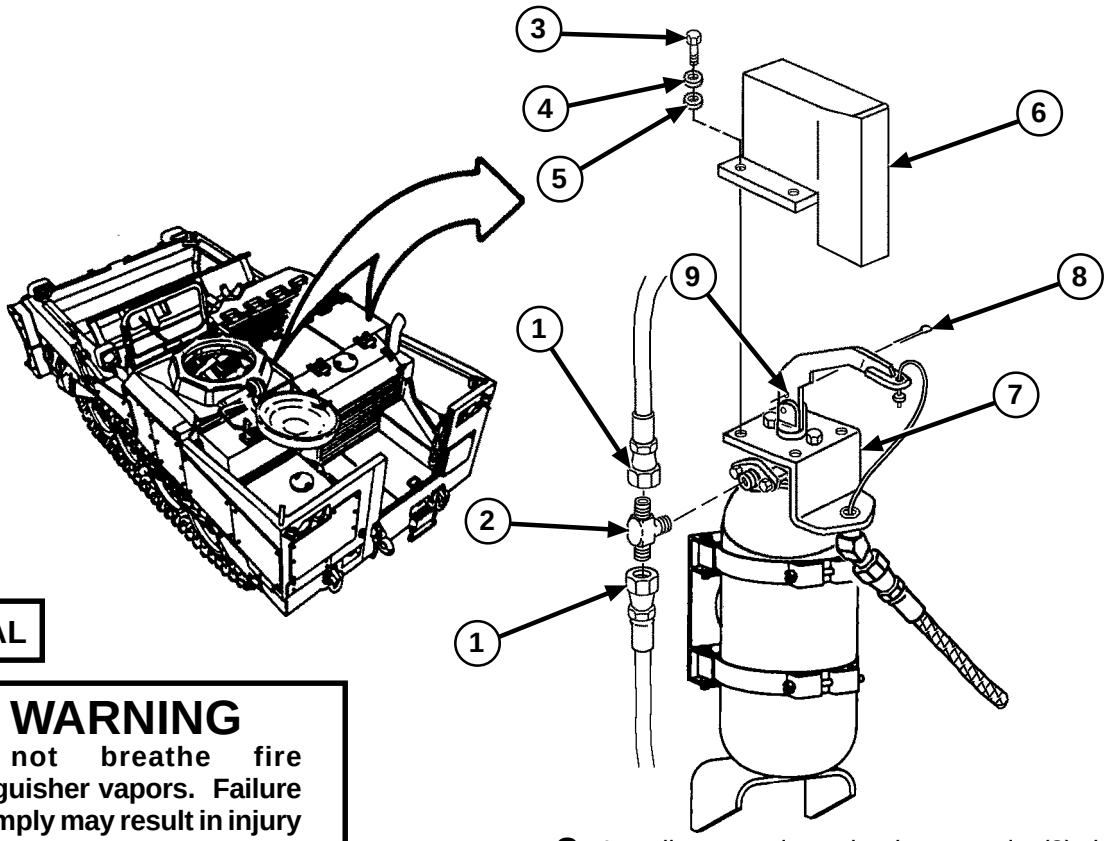
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Intake Grilles and Access Covers Opened

General Safety Instructions:

WARNING

Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.



REMOVAL

WARNING

Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.

CAUTION

Ensure cotter pin is installed in fire extinguisher actuator assembly to avoid accidental discharge. Failure to comply may result in iinjury to personnel.

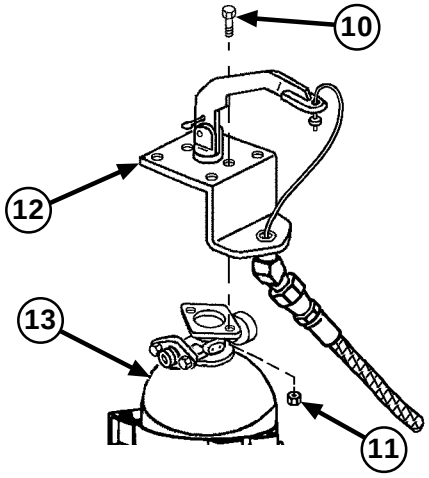
Note

Both Left and Right side fire extinguisher cylinders are removed the same way. The driver's side is shown for clarity.

A Remove two hose assemblies (1) from tube tee (2).

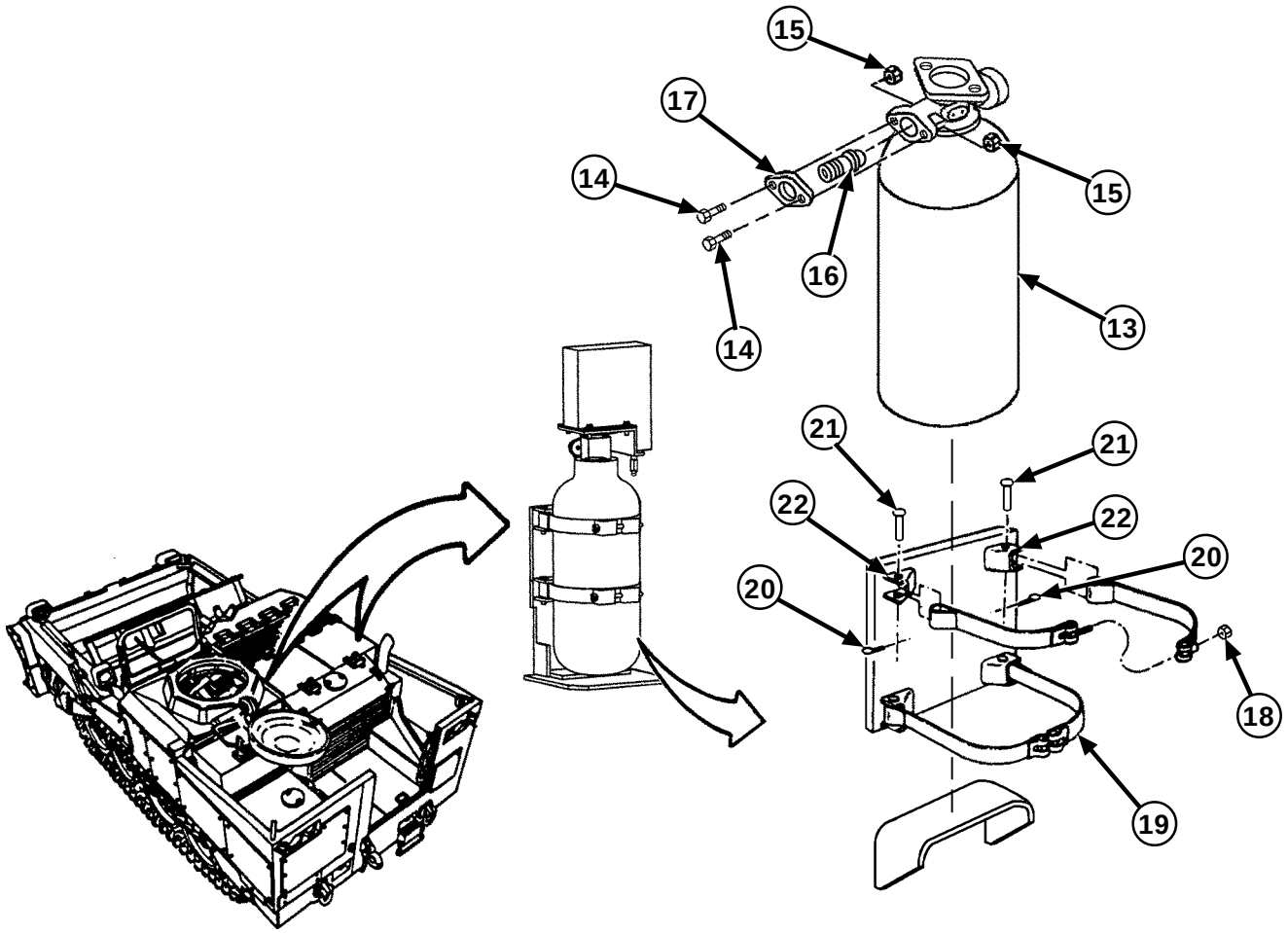
B Remove four screws (3), washers (4) and lockwashers (5) and remove actuator cover (6) from actuator assembly (7). Discard lockwashers (5).

C Install appropriate sized cotter pin (8) through hole in actuator assembly (9) to secure actuator lever to prevent accidental discharge of fire extinguisher.



D Remove two screws (10) and self-locking nuts (11) from actuator bracket (12). Discard self-locking nuts (11).

E Remove actuator and bracket assembly (12) from fire extinguisher cylinder (13).



F Loosen two nuts (18) on clamps (19) and remove fire extinguisher cylinder (13) from clamps.

G Remove two screws (14), self-locking nuts (15), fire bottle adapter (16) and flange (17) from fire extinguisher cylinder (13). Discard self-locking nuts (15).

H Remove four cotter pins (20), straight pins (21), and two clamps (19) from brackets (22). Discard cotter pins (20).

I Remove two nuts (18) from clamps (19).

INSTALLATION

Note

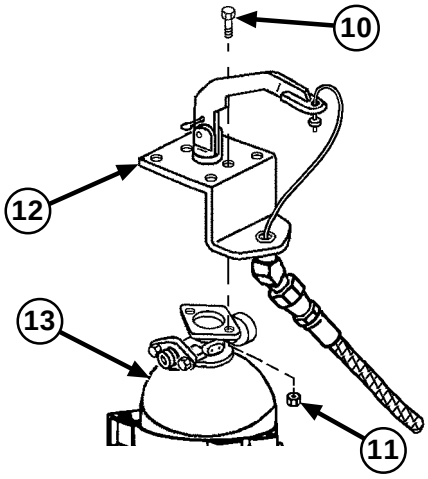
Do not tighten nuts on clamps until fire extinguisher cylinder is positioned.

A Install two clamps (19) on brackets (22) with four straight pins (21) and new cotter pins (20).

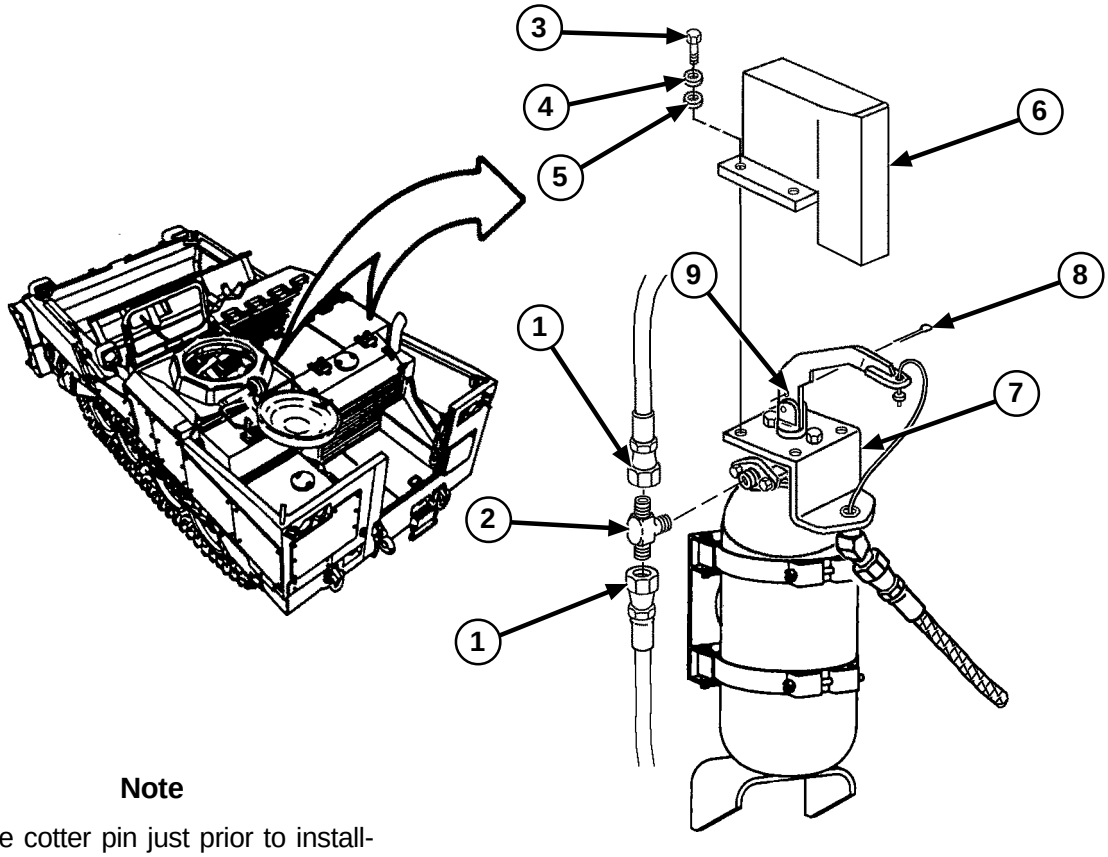
B Connect clamps (19) with two nuts (18). Do not tighten nuts (18).

C Install fire bottle adapter (16) and flange (17) with two screws (14) and new self-locking nuts (15).

D Position fire extinguisher cylinder (13) between clamps (19) and tighten with two nuts (18).



E Install actuator and bracket assembly (12) on fire extinguisher cylinder (13) with two screws (10) and new self-locking nuts (11).



Note

Remove cotter pin just prior to installing actuator cover to avoid accidental discharge of fire extinguisher.

F Remove cotter pin (8) and install actuator cover (6) on actuator assembly (7) with four screws (3), washers (4), and new lockwashers (5).

G Install two hose assemblies (1) on tube tee (2).

FOLLOW-ON TASKS:

Close engine intake grilles and access covers (TM 5-2350-262-10).

PORTABLE DRY POWDER FIRE EXTINGUISHER BRACKET REPLACMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts Reference:

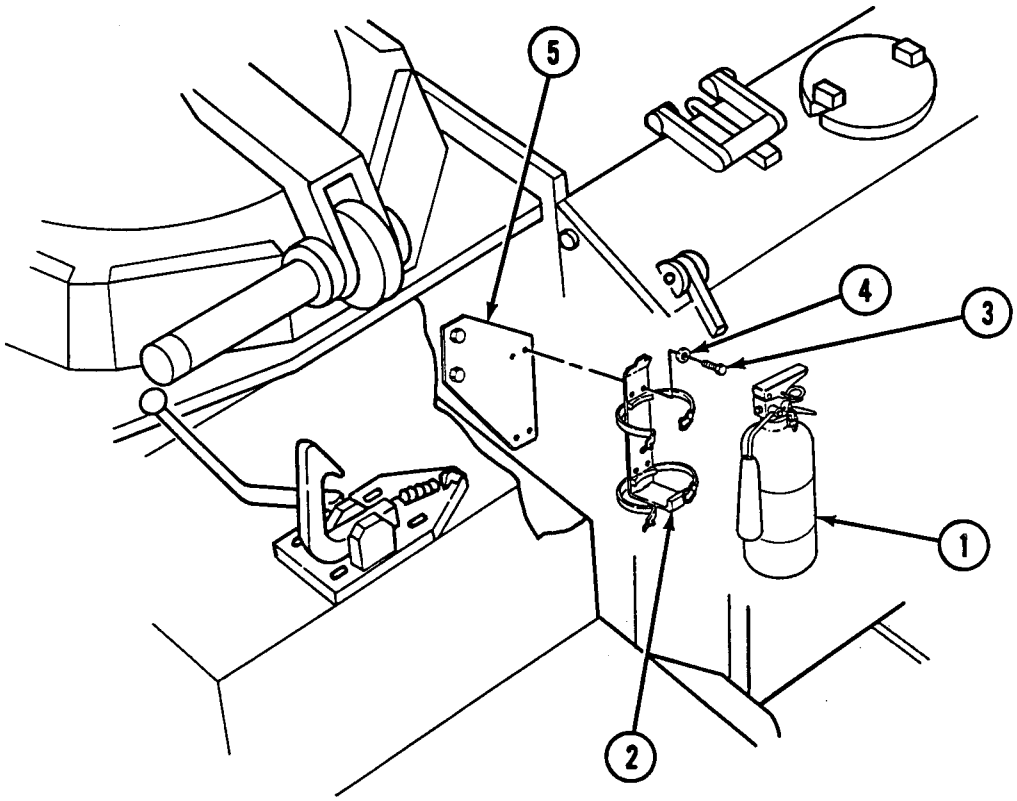
TM 5-2350-262-24P Group AL

Reference:

TM 5-2350-262-10

Personnel Required:

Construction Equipment Repairer 62B10



REMOVAL

A Remove portable fire extinguisher (1) from bracket (2) (TM 5-2350-262-10).

B Remove four capscrews (3), washers (4), and bracket (2) from bracket (5).

Note

Follow local standard operating procedures when re-filling dry powder fire extinguishers.

INSTALLATION

A Install bracket (2) on bracket (5) with four washers (4) and capscrews (3).

B Install portable fire extinguisher (1) on bracket (2) (TM 5-2350-262-10).

Section VIII. GROUP AM, FUEL SYSTEM INSTALLATION

TASK	PAGE
Fuel Filler Neck and Strainer Replacement	4-232
Fuel Inlet Hose Replacement	4-221
Fuel Return Hose Replacement	4-218
Fuel Tank Draining	4-216
Fuel Tank Replacement	4-234
Fuel Tank-to-Filter and Drain Hoses Replacement	4-225
Fuel/Water Separator Assembly and Element Replacement and Service	4-228

FUEL TANK DRAINING

This task covers:

Draining

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-361	Rear Floor Plates Removed

General Safety Instructions:

WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present.

DRAINING

WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Failure to comply may result in severe injury or death to personnel.

A Shut off fuel drain valve (1).

Note

Have suitable container ready to catch spilled fuel as hose is disconnected.

B Disconnect hose (2) from fuel/water separator (3).

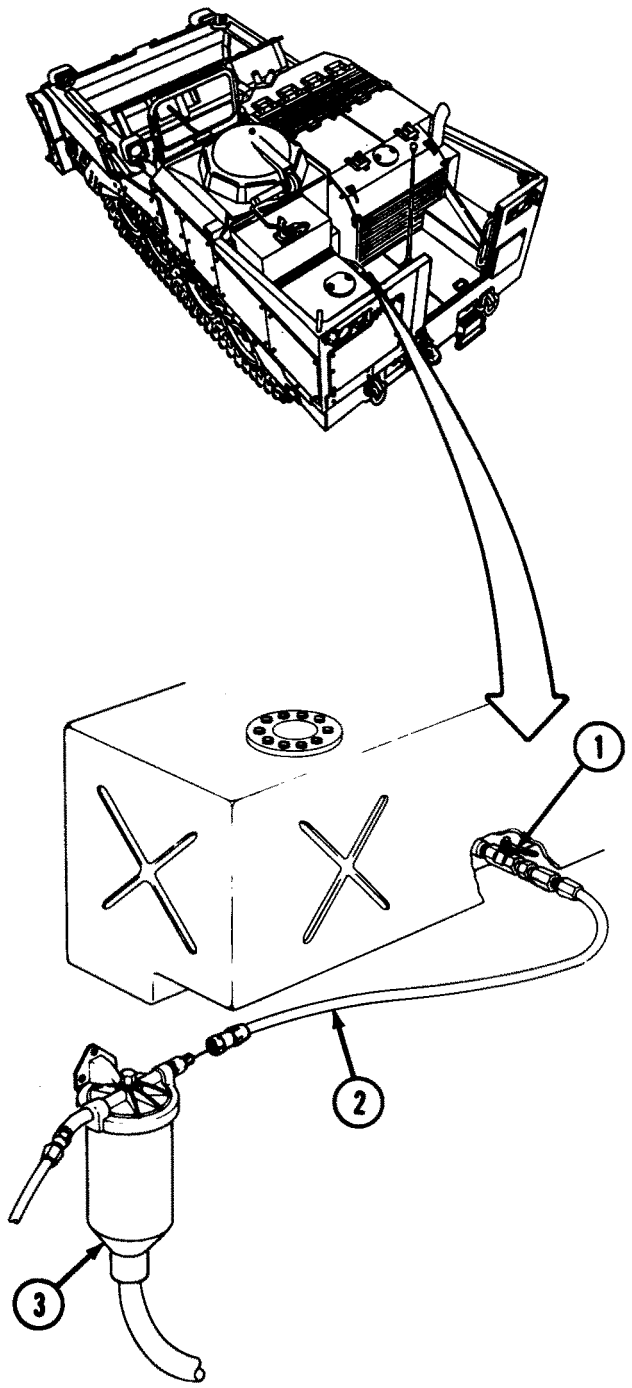
C Place large container in bottom of hull, under drain valve (1), and place end of hose (2) in container.

D Open drain valve (1), and drain fuel into container. As container fills, shut off drain valve (1), and transfer drained fuel to another container outside the vehicle.

E Open drain valve (1) and continue draining tank, and transferring drained fuel, until fuel tank is empty.

F Connect hose (2) to fuel/water separator (3).

FOLLOW-ON TASK:
Install rear floor plates (p 4-361).



FUEL RETURN HOSE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D

Parts:

Lockwasher (5)

Parts Reference:

TM 5-2350-262-24P	Group AM

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-136	Engine Cranks, but Fails to Start

Equipment Condition:

Reference	Condition Description
Page 4-217	Fuel Tank Drained
Page 4-327	Radiator and Engine Compartment Armor Shroud Removed
Page 4-324	Fuel Tank Armor Removed
Page 4-340	Engine Intake and Exhaust Grilles and Access Covers Removed

General Safety Instructions:

WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present.

REMOVAL

WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Failure to comply may result in severe injury or death to personnel.

CAUTION

- Drain fuel from lines into appropriate container. Spilled fuel may damage electrical components.
- Plug all ports and hose ends to avoid contaminating fuel system. Failure to comply may result in damage to equipment.

Note

Use two wrenches to disconnect fuel system hoses.

A Disconnect fuel return hose (1) from check valve (2) on engine (3).

B Aline arrows on collar of quick-disconnect (4). Disconnect hose (1) at quick-disconnect (4).

C Disconnect connector (5) from bottom of STE/ICE-R interface resistor box (6).

Note

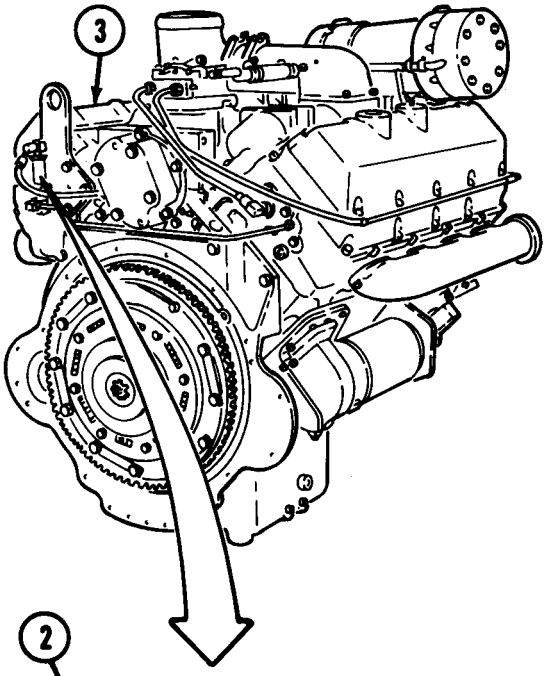
Transmission and air lines are also held by clamps. Tag hoses for proper routing during installation.

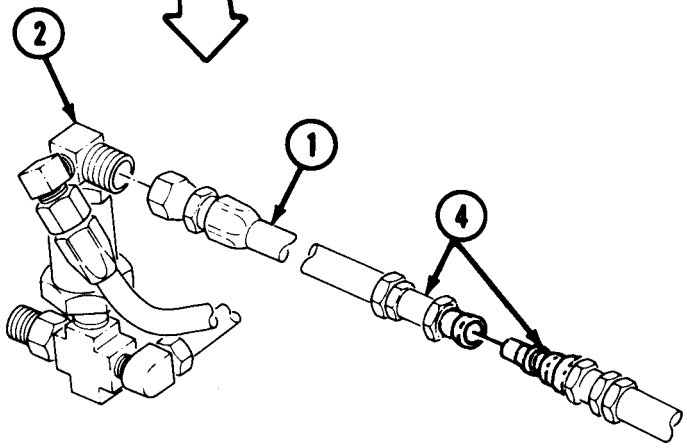
D Remove five screws (7), lockwashers (8), and three clamp halves (9) securing fuel return hose (1). Discard lockwashers (8).

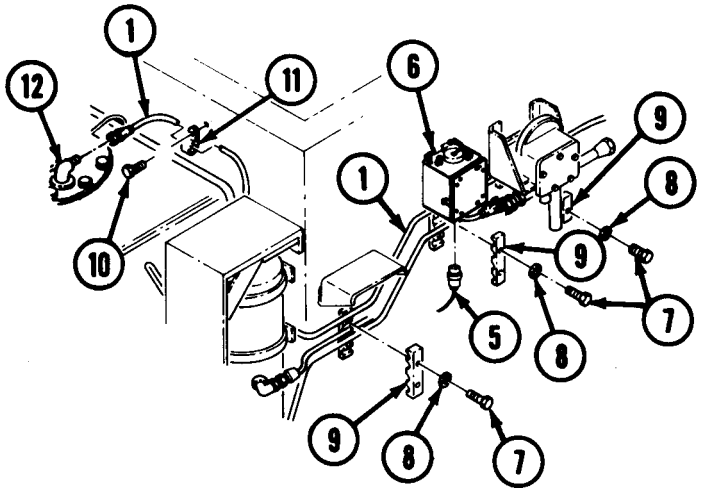
E Remove screw (10) and clamp (11).

F Disconnect fuel return hose (1) from elbow (12).

G Remove elbow (12) if damaged.







INSTALLATION

A Install elbow (1) if removed.

Note

Use two wrenches to connect fuel system hoses.

B Connect fuel return hose (2) to elbow (1).

C Secure fuel return hose (2) to wall with screw (3) and clamp (4).

Note

Transmission and air system lines are also routed through clamps.

D Route fuel return hose (2) through top slot of three clamp halves (5) and secure with three clamp halves (6), five lockwashers (7), and screws (8).

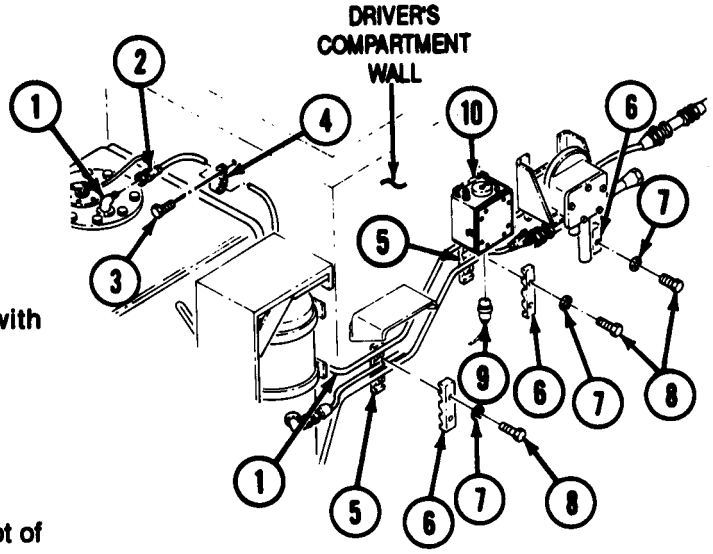
E Connect connector (9) to STE/ICE-R interface resistor box (10).

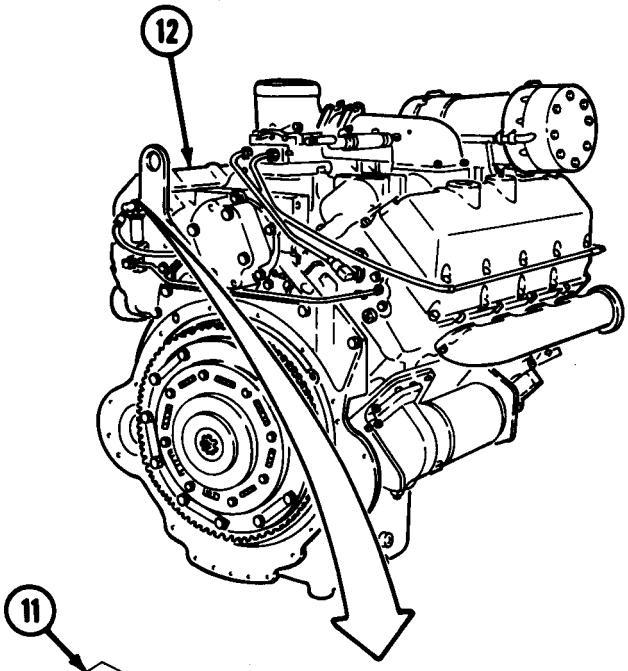
F Connect fuel return hose (2) to check valve (11) on engine (12).

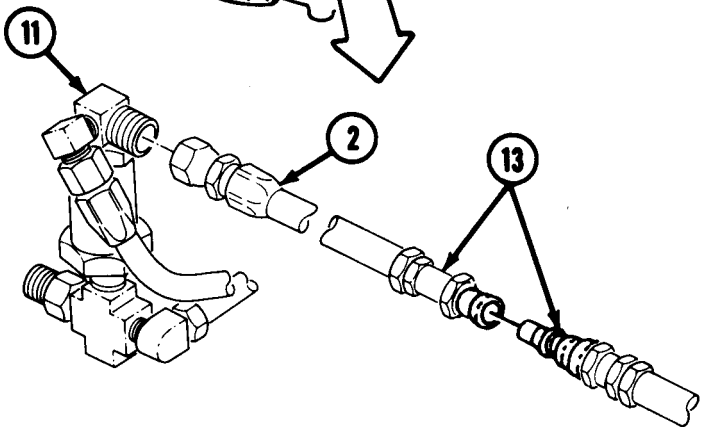
G Aline arrows on quick-disconnect (13) and connect fuel return hose (2).

FOLLOW-ON TASKS:

- Install fuel tank armor (p 4-325).
- Install radiator and engine compartment armor shroud (p 4-332).
- Install engine access covers and intake and exhaust grilles (p 4-344).
- Service fuel tank (TM 5-2350-262-10).







FUEL INLET HOSE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs — Item 7, Appendix D

Parts:

Lockwasher (7)

Parts Reference:

TM 5-2350-262-24P — Group AM

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-136 — Engine Cranks, but Fails to Start

Equipment Condition:

Reference	Condition Description
Page 4-201 or Page 4-205.1	Left Side Fixed Fire Extinguisher Hoses and Fittings Removed
Page 4-211 or Page 4-212.1	Left Side Fixed Fire Extinguisher Canister Removed
Page 4-217	Fuel Tank Drained
Page 4-324	Fuel Tank Armor Removed
Page 4-340	Engine Intake and Exhaust Grilles and Access Covers Removed
Page 4-358	Rear Floor Plates Supports Removed

General Safety Instructions:

WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present.

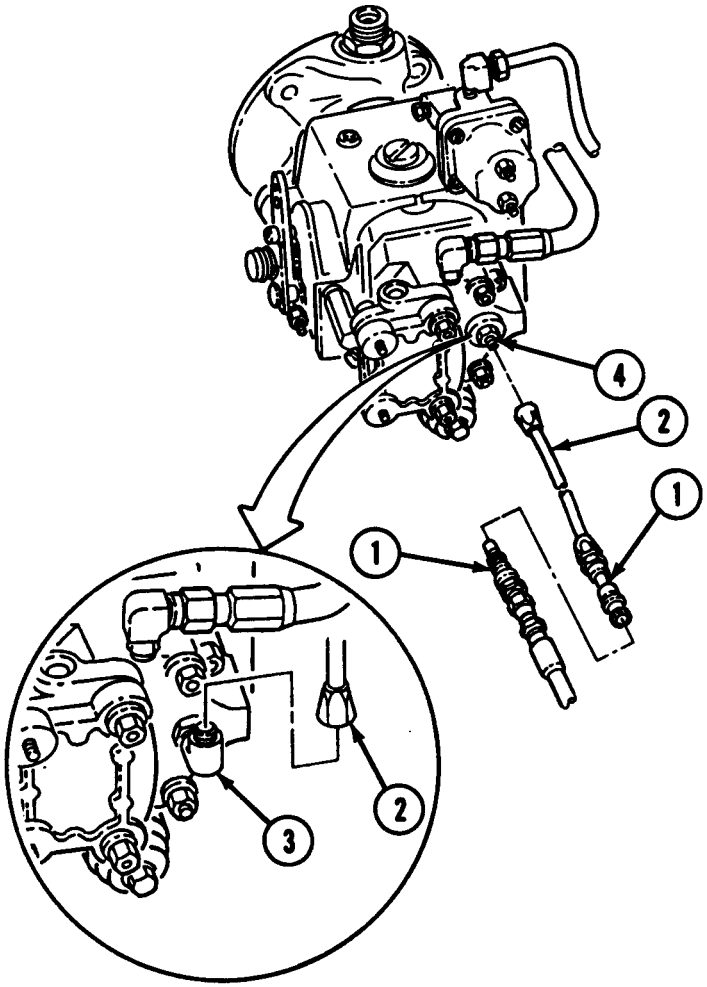
REMOVAL

WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Failure to comply may result in severe injury or death to personnel.

CAUTION

- Drain fuel from hoses into appropriate container. Spilled fuel can damage electrical components.
- Plug all ports and hose ends to avoid contaminating fuel system. Failure to comply may result in damage to equipment.



A Align arrows on collar of quick-disconnect (1), and disconnect fuel inlet hose (2) at quick disconnect (1).

Note

- Use two wrenches to remove fuel inlet hose.
- Perform step B if vehicle is MCS prepped.

B Remove fuel inlet hose (2) from elbow (3).

C Remove fuel inlet hose (2) from adapter (4).

Note

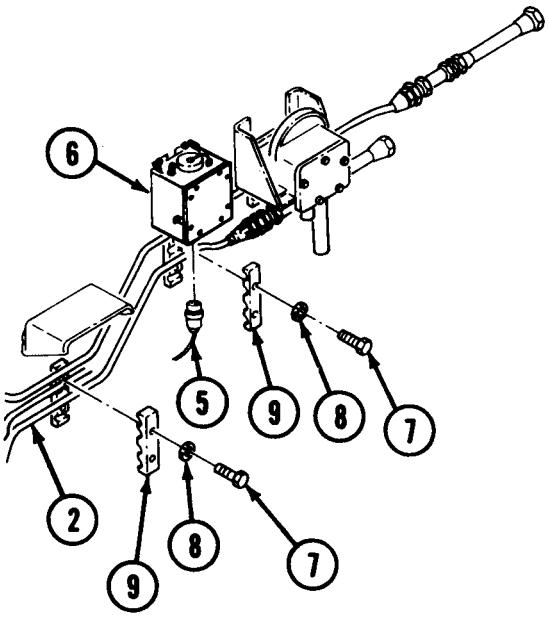
If quick-disconnect is not operating properly, refer to p 2-34 for general repair methods.

D Disconnect connector (5) from bottom of STE/ICE-R interface resistor box (6).

Note

Transmission and air system lines are also routed through clamps. Tag hoses for proper routing during installation.

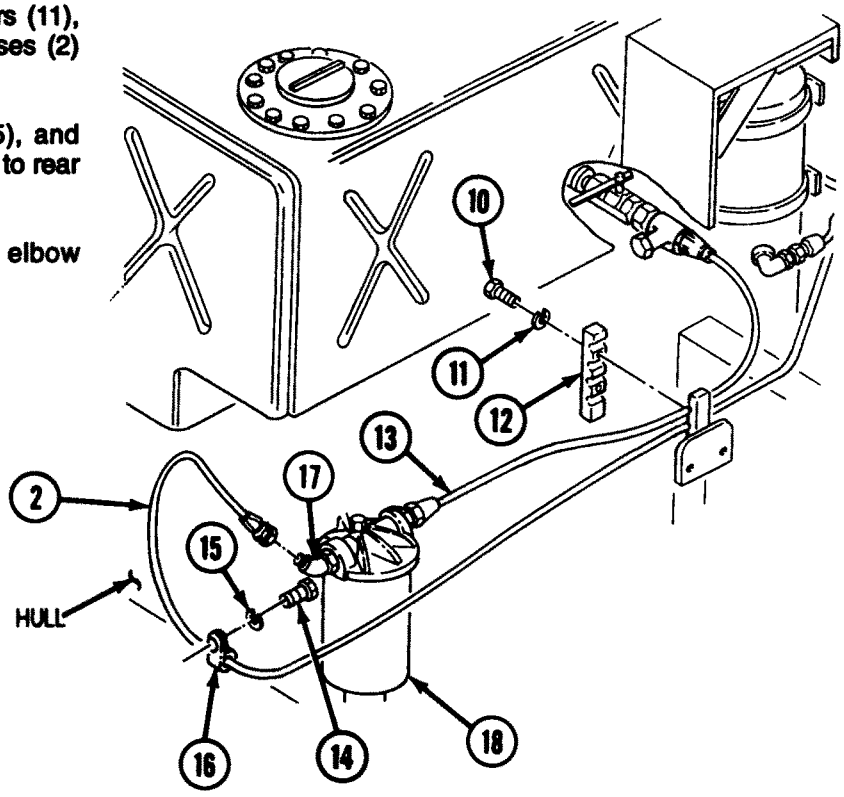
E Remove four screws (7), lockwashers (8), and two clamp halves (9) securing fuel inlet hose (2). Discard lockwashers (8).



F Remove two screws (10), lockwashers (11), and clamp half (12) securing fuel hoses (2) and (13). Discard lockwashers (11).

G Remove screw (14), lockwasher (15), and clamp (16) securing fuel inlet hose (2) to rear of hull. Discard lockwasher (15).

H Disconnect fuel inlet hose (2) from elbow (17) on fuel/water separator (18).



INSTALLATION

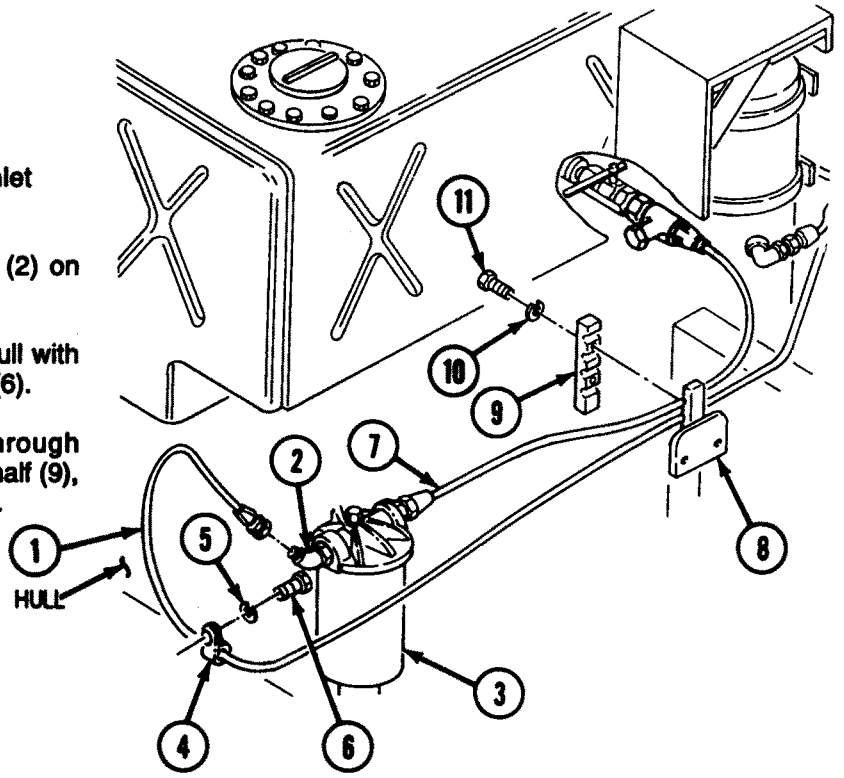
Note

Use two wrenches to install fuel inlet hose.

A Connect fuel inlet hose (1) to elbow (2) on fuel/water separator (3).

B Secure fuel inlet hose (1) to rear of hull with clamp (4), lockwasher (5), and screw (6).

C Route two fuel lines (1) and (7) through clamp half (8) and secure with clamp half (9), two lockwashers (10), and screws (11).



D Route fuel inlet hose (1) through third of four slots in clamp halves (2). Secure with two clamp halves (3), four lockwashers (4), and screws (5).

E Connect connector (6) to bottom of STE/ICE-R interface resistor box (7).

Note

Perform step F if vehicle is MCS prepped.

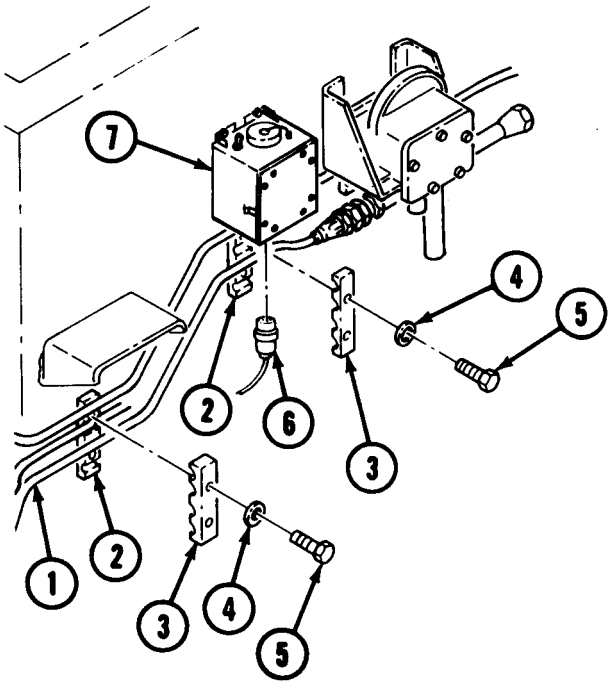
F Install fuel inlet hose (1) on elbow (8).

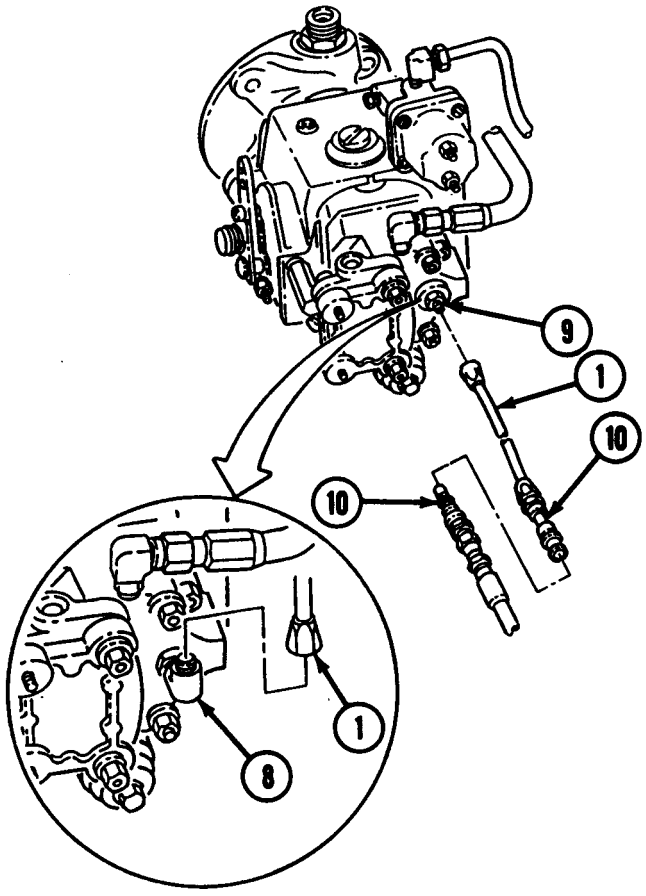
G Install fuel inlet hose (1) on adapter (9).

H Align arrows on collar of quick-disconnect (10), and connect fuel inlet hose (1) at quick-disconnect (10).

FOLLOW-ON TASKS:

- Install rear floor plates supports (p 4-358).
- Install fuel tank armor (p 4-324).
- Install left side fixed fire extinguisher canister (p 4-211 or p 4-212.1).
- Install left side fixed fire extinguisher hoses and fittings (p 4-201 or 4-205.1).
- Engine intake and exhaust grilles and access covers installed (p 3-340).
- Service fuel tank (TM 5-2350-262-10).





FUEL TANK-TO-FILTER AND DRAIN HOSES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs — Item 7 Appendix D

Parts:

Lockwasher (6)

Parts Reference:

TM 5-2350-262-24P Group AM

Personnel Required:

Construction Equipment Repairer 62B10

Troubleshooting Reference:

Page 3-136	Engine Cranks, but Fails to Start

Equipment Condition:

Reference	Condition Description
Page 4-324	Fuel Tank Armor Removed
Page 4-354	Driver's Compartment Step Removed
Page 5-358	Rear Floor Plates Supports Removed

General Safety Instructions:

WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present.

REMOVAL

WARNING

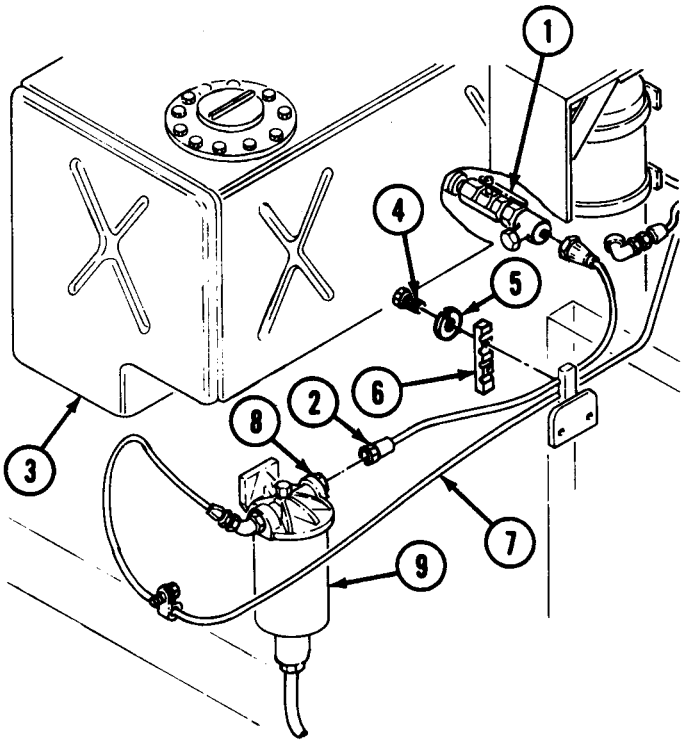
Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Failure to comply may result in severe injury or death to personnel.

CAUTION

Plug all ports and hose ends to avoid contaminating fuel system. Failure to comply may result in damage to equipment.

Note

Use two wrenches to remove fuel system hoses.



A Close fuel drain valve (1).

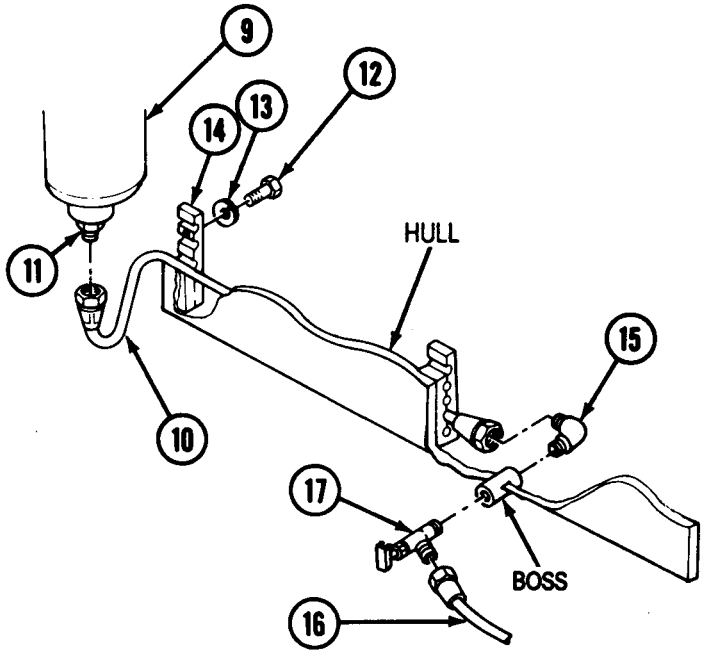
B Disconnect fuel tank-to-filter hose (2) from valve (1) on fuel tank (3).

C Remove two screws (4), lockwashers (5), and clamp half (6) securing fuel hoses (2) and (7). Discard lockwashers (5).

D Disconnect hose (2) from adapter (8) on fuel/water separator (9) and remove hose (2) from vehicle.

CAUTION

Drain fuel into a suitable container. Spilled fuel may damage equipment or present fire hazard.



E Disconnect drain hose (10) from adapter (11) on bottom of fuel/water separator (9).

F Remove four screws (12), lockwashers (13), and two clamp halves (14) securing drain hose (10) to hull. Discard lockwashers (13).

G Disconnect hose (10) from elbow (15). Remove elbow (15) from boss, inside vehicle.

H Outside vehicle, disconnect hose (16) from drain valve (17). Remove drain valve (17) from boss.

INSTALLATION

Note

Use two wrenches to install fuel system hoses.

A Install drain valve (1) on boss.

B Connect hose (2) to drain valve (1).

C Install elbow (3) on boss, inside vehicle. Connect drain hose (4) to elbow (3).

D Secure drain hose (4) to two clamp halves (5) with two clamp halves (6), four lockwashers (7), and screws (8).

E Connect drain hose (4) to adapter (9) on fuel/water separator (10).

F Connect fuel tank-to-filter hose (11) to adapter (12) on fuel/water separator (10).

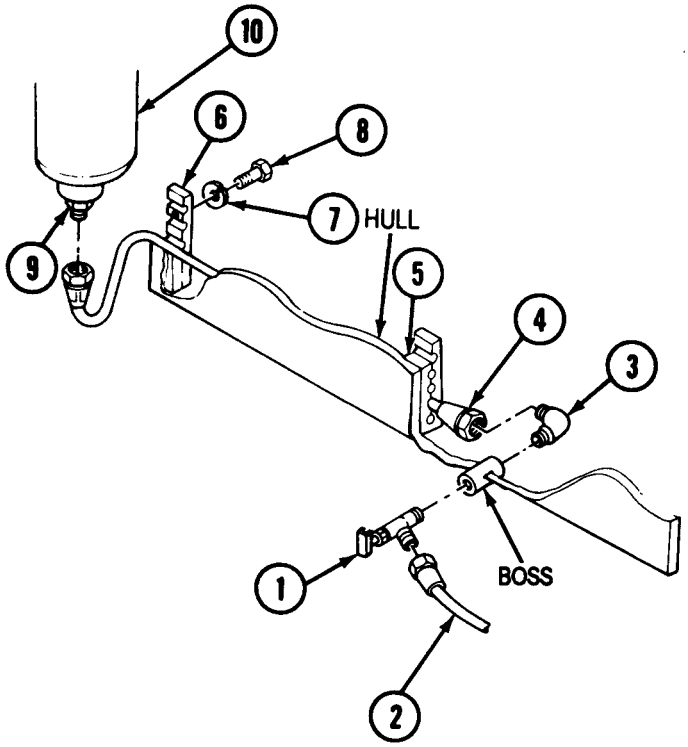
G Secure fuel hoses (11) and (13) to clamp half (14) with clamp half (15), two lockwashers (16), and screws (17).

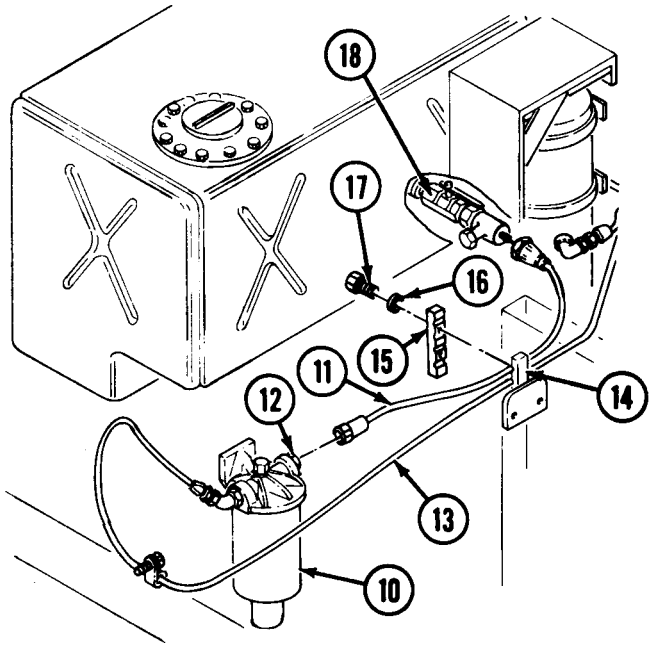
H Connect fuel tank-to-filter hose (11) to fuel shutoff valve (18).

I Open fuel drain valve (18).

FOLLOW-ON TASKS:

- Install fuel tank armor (p 4-324).
- Install driver's compartment step (p 4-354).
- Install rear floor plate supports (p 4-356).





FUEL/WATER SEPARATOR ASSEMBLY AND ELEMENT REPLACEMENT AND SERVICE

This task covers:

a. Removal
b. Disassembly
c. Cleaning
d. Assembly
e. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D
Drycleaning Solvent	Item 31 Appendix D

Parts:

Packing (2)

Parts Kit	2910-00-152-2033

Parts Reference:

TM 5-2350-262-24P	Group AM

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-356	Left Rear Floor Plate Supports Removed

General Safety Instructions:

WARNING

- Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present.
- Drycleaning solvent is flammable and will not be used near an open flames. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.

REMOVAL

Note

To replace filter element only, refer to disassembly, cleaning, and assembly.

A Close fuel drain valve (1) on fuel tank (2).

WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Failure to comply may result in severe injury or death to personnel.

CAUTION

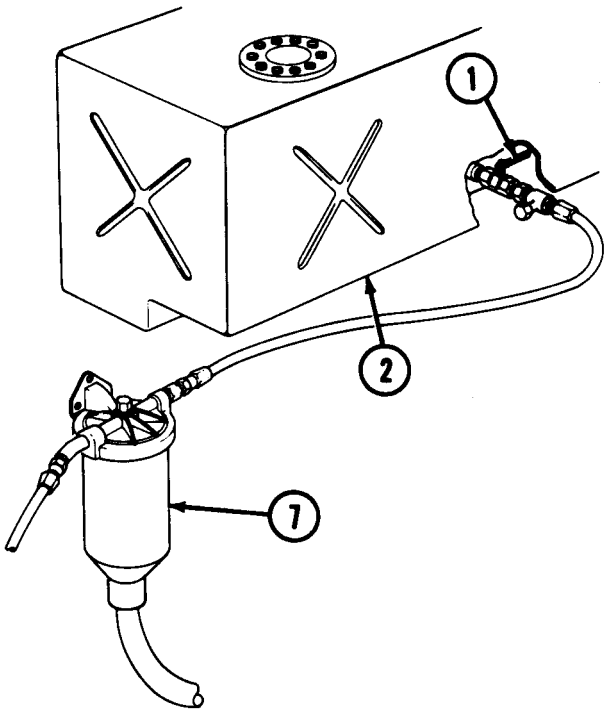
Cover ports and hose ends to avoid contaminating fuel system. Failure to comply may result in damage to equipment.

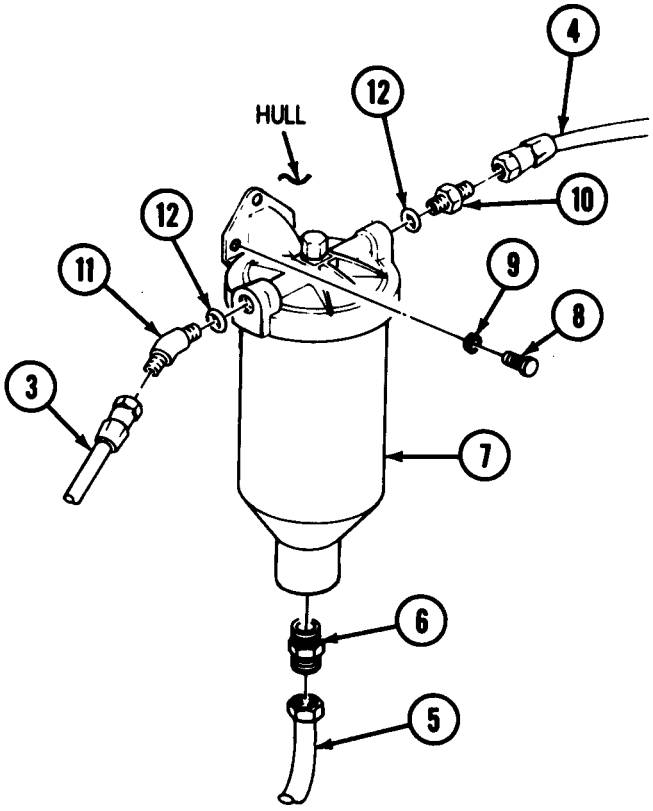
B Disconnect hoses (3) and (4), and drain fuel from hoses (3) and (4) into suitable container.

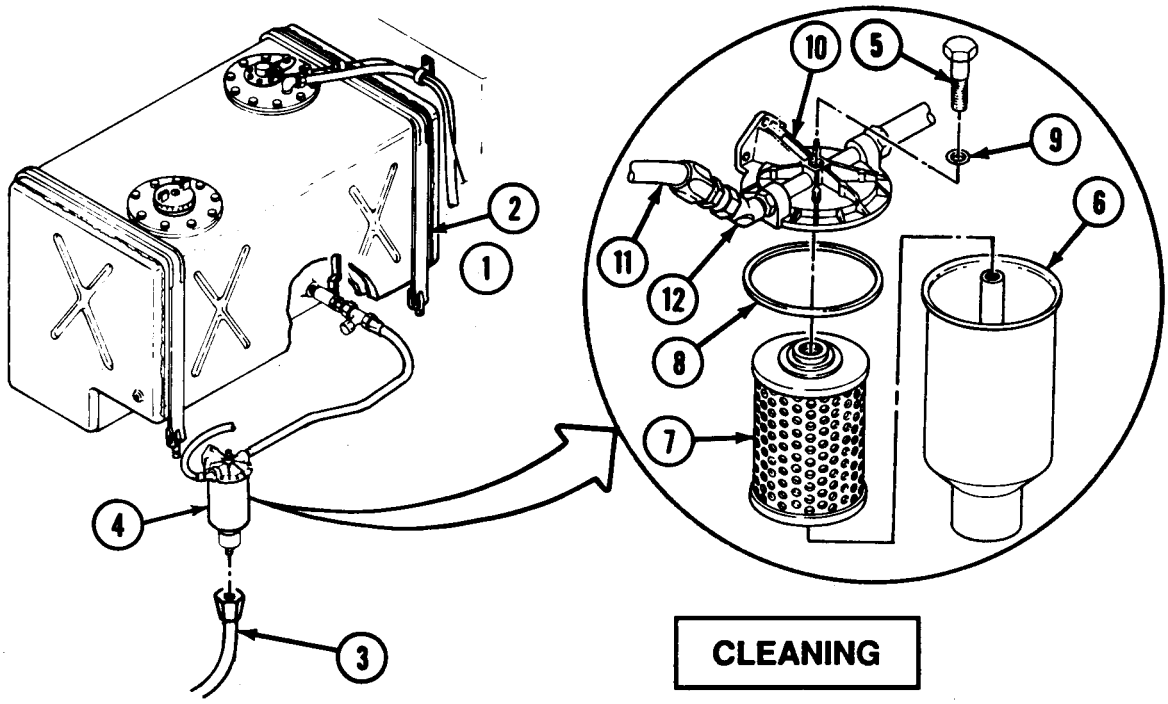
C Disconnect hose (5) from adapter (6) on bottom of fuel/water separator (7). Drain fuel/water separator (7) into suitable container.

D Remove three screws (8), washers (9), and fuel/water separator (7) from hull.

E Remove adapters (6) and (10), elbow (11), and two packings (12) from fuel/water separator (7). Discard packings (12).







WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Failure to comply may result in severe injury or death to personnel.

DISASSEMBLY

Note

To replace filter element, refer to disassembly, cleaning, and assembly.

A Close fuel drain valve (1) on fuel tank (2).

B Disconnect hose (3) from bottom of fuel/water separator (4) and drain bowl of fuel/water separator (4) into a suitable container.

C Loosen screw (5) and remove bowl (6), filter element (7), and gasket (8). Discard filter element (7) and gasket (8).

D Remove screw (5) and packing (9) from cover (10). Discard packing (9).

CLEANING

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or injury to personnel.

Clean bowl (6) and cover (10) with drycleaning solvent and wipe dry with clean, lint-free cloth.

ASSEMBLY

A Install gasket (8) on cover (10).

B Install filter element (7) on bowl (6). Secure bowl (6) to cover (10) with packing (9) and screw (5).

C Connect hose (3) to fuel/water separator (4) and open fuel drain valve (1) on fuel tank (2).

Note

Perform step D only if fuel/water separator assembly is not removed.

D Loosen hose (11) at elbow (12). When bowl (6) is filled with fuel, tighten hose (11).

INSTALLATION

WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Failure to comply may result in severe injury or death to personnel.

A Install adapter (1) on fuel/water separator (2).

B Position fuel/water separator (2) under fuel tank (3).

C Install fuel/water separator (2) on hull with three washers (4) and screws (5).

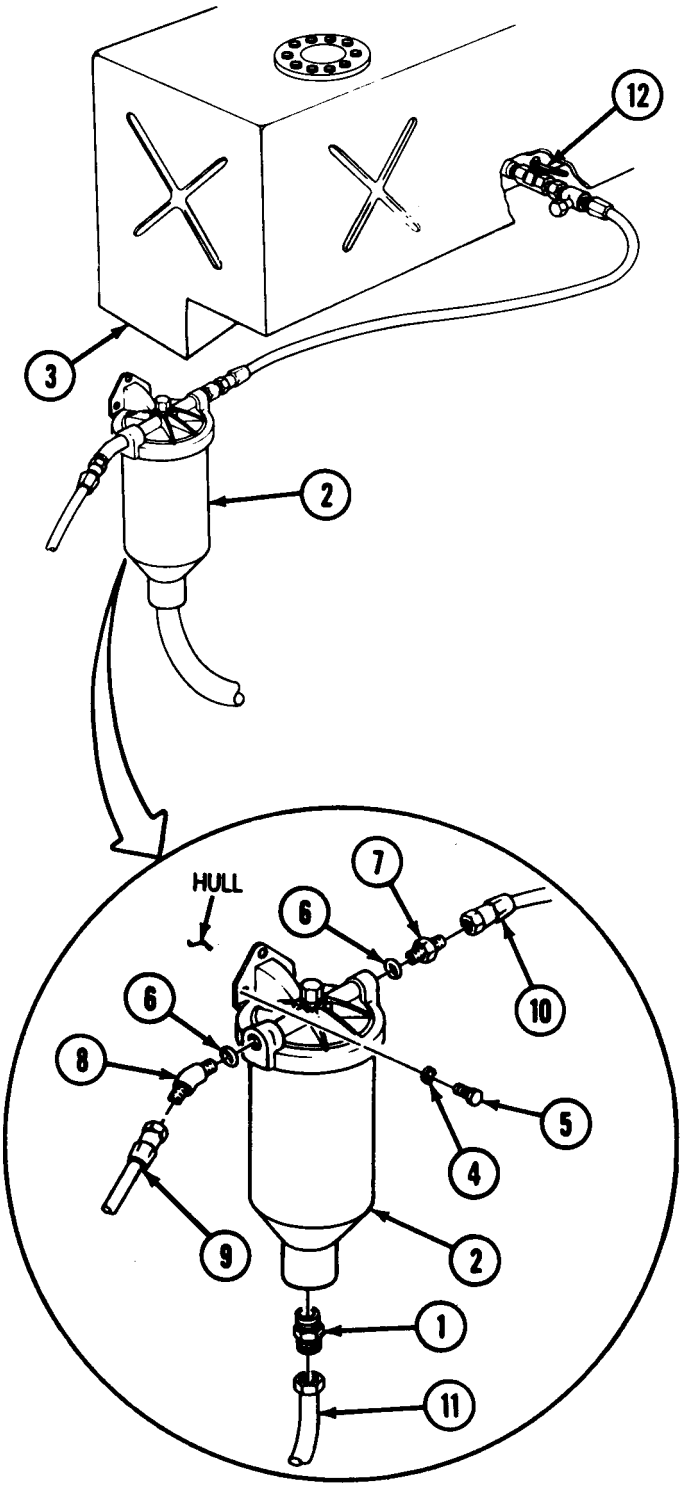
D Install two packings (6), adapter (7), and elbow (8) on fuel/water separator (2).

E Connect hose (9) to elbow (8), hose (10) to adapter (7), and hose (11) to adapter (1).

F Open fuel drain valve (12) on fuel tank (3).

G Loosen hose (9) at elbow (8). When fuel/water separator (2) is filled, tighten hose (9).

FOLLOW-ON TASK:
Install left rear floor plates support (p 4-357).



FUEL FILLER NECK AND STRAINER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Gasket

Parts Reference:

TM 5-2350-262-24P Group AM

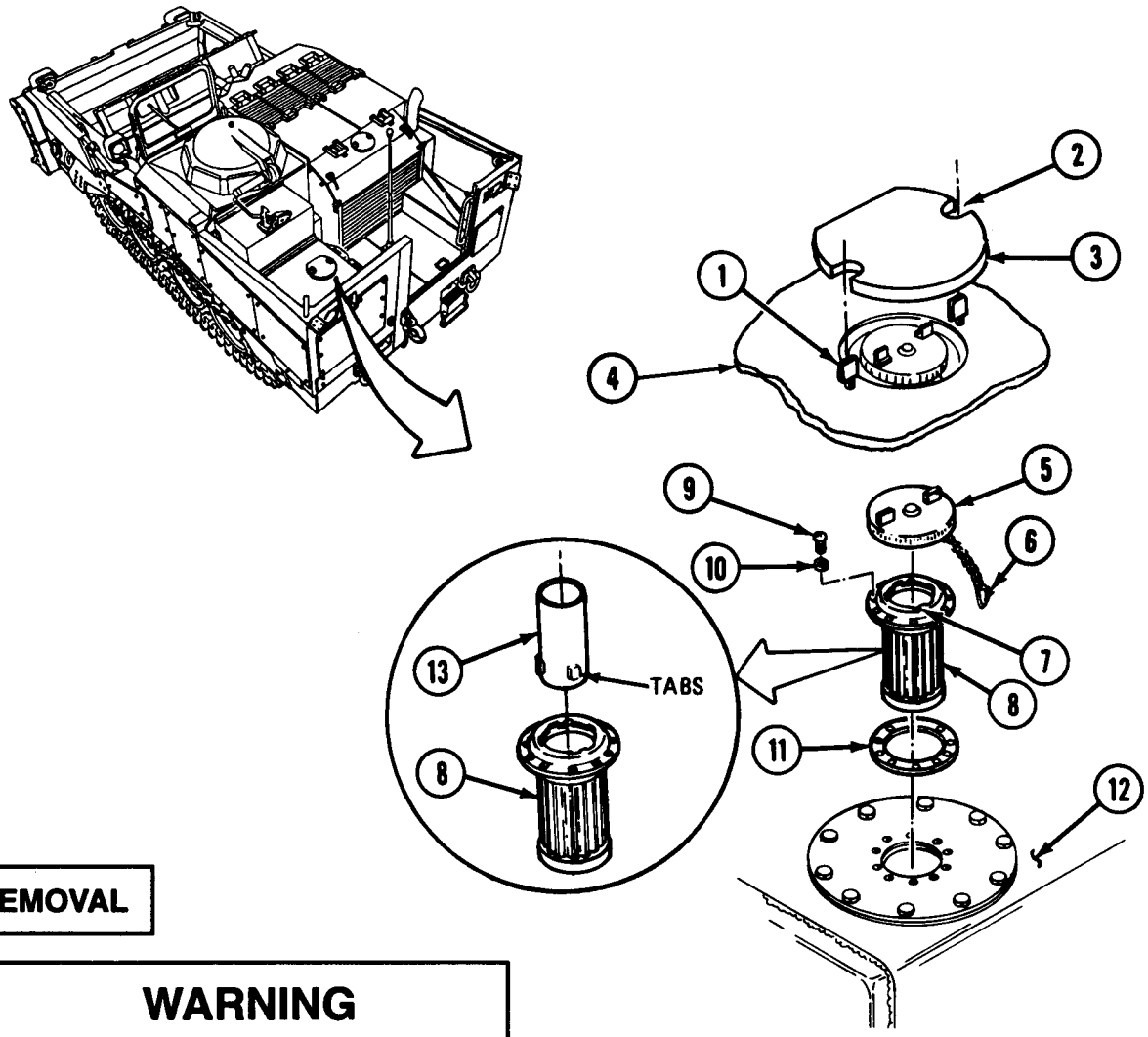
Personnel Required:

Construction Equipment Repairer 62B10

General Safety Instructions:

WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present.



REMOVAL

WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Failure to comply may result in severe injury or death to personnel.

A Align wingnuts (1) with slots (2) on cover (3) and remove cover (3) from fuel tank armor (4).

B Remove filler cap (5), open chain hook (6), and remove chain clip (7) from filler neck (8).

C Remove ten screws (9), washers (10), filler neck (8), and gasket (11) from fuel tank (12). Discard gasket (11).

D Turn strainer (13) until tabs align with guides in filler neck (8), and remove strainer (13) from filler neck (8).

INSTALLATION

A Place strainer (13) in filler neck (8), and lock in place by rotating strainer (13) until tabs are locked in flange of filler neck (8).

B Install gasket (11) and filler neck (8) on fuel tank (12) with ten washers (10) and screws (9).

C Connect chain hook (6) to chain clip (7) on filler neck (8), and install filler cap (5) on filler neck (8).

D Align wingnuts (1) with slots (2) of cover (3), and install cover (3) on fuel tank armor (4). Tighten wingnuts (1) fingertight.

FUEL TANK REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Special Tools:

Socket Wrench Socket Set	5120-01-195-0640
Lifting straps	3940-01-095-1131

Materials:

Adhesive, Epoxy Resin	Item 2 Appendix D
Caps and Plugs	Item 7 Appendix D
Sealing Compound	Item 15 Appendix D

Parts:

Gasket (2)

Lockwasher (2)

Locknut (2)

Parts Reference:

TM 5-2350-262-24P Group AM

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Equipment Condition:

Note

Remove fuel level transmitter and fuel filler neck and strainer only if a new fuel tank is to be installed on vehicle.

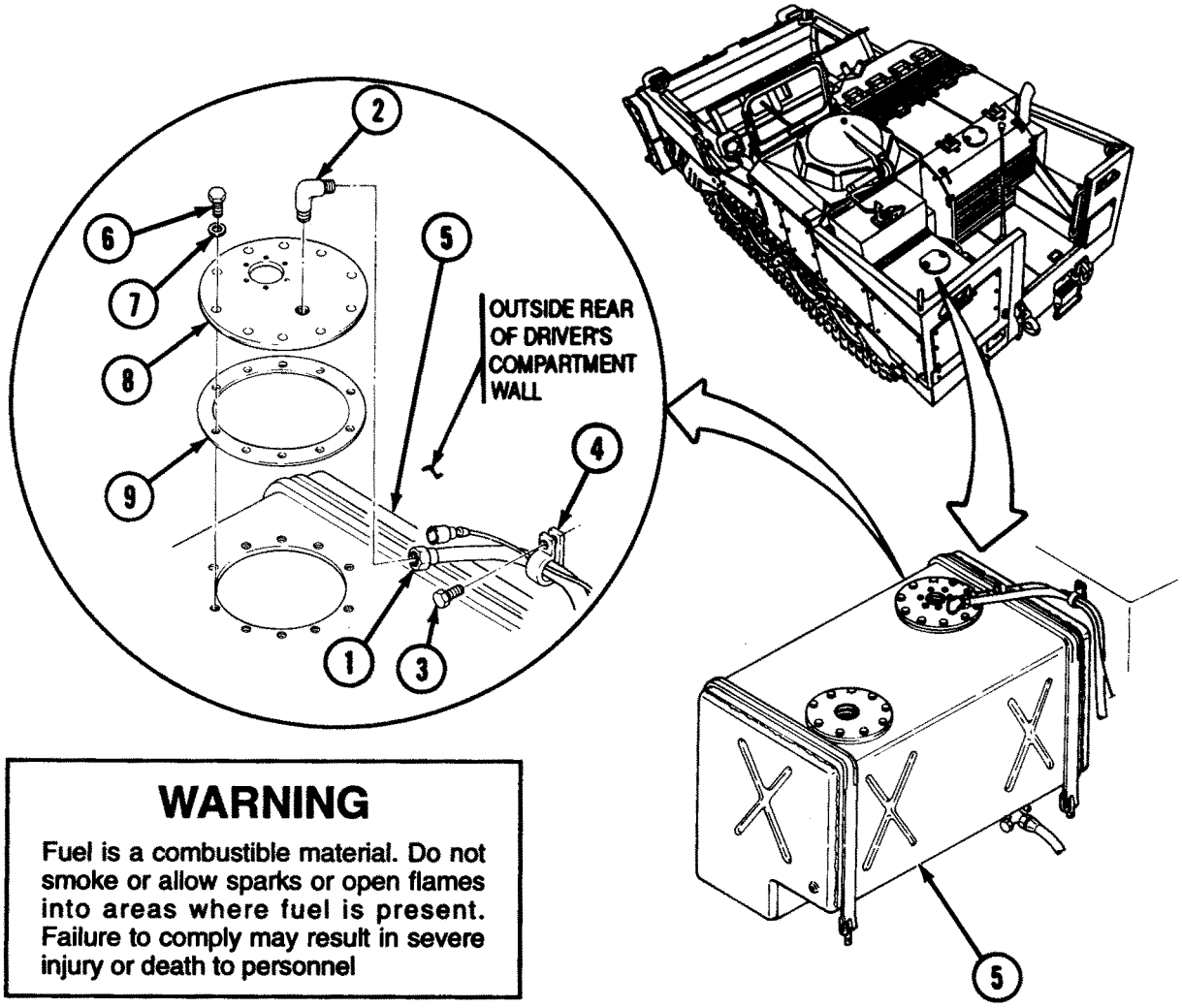
Reference	Condition Description
Page 4-98	Fuel Level Transmitter Removed
Page 4-217	Fuel Tank Drained
Page 4-233	Fuel Filler Neck and Strainer Removed
Page 4-301	Driver's Hatch Assembly Removed
Page 4-324	Fuel Tank Armor Removed

General Safety Instructions:

WARNING

- Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present.
- Lifting device must have a weight capacity greater than 200 lb (91 kg).
- Personnel must stand clear during lifting operations.

REMOVAL



WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Failure to comply may result in severe injury or death to personnel

CAUTION

Cover ports and hose ends to avoid contaminating fuel system. Failure to comply may result in damage to equipment.

A Disconnect hose (1) from elbow (2).

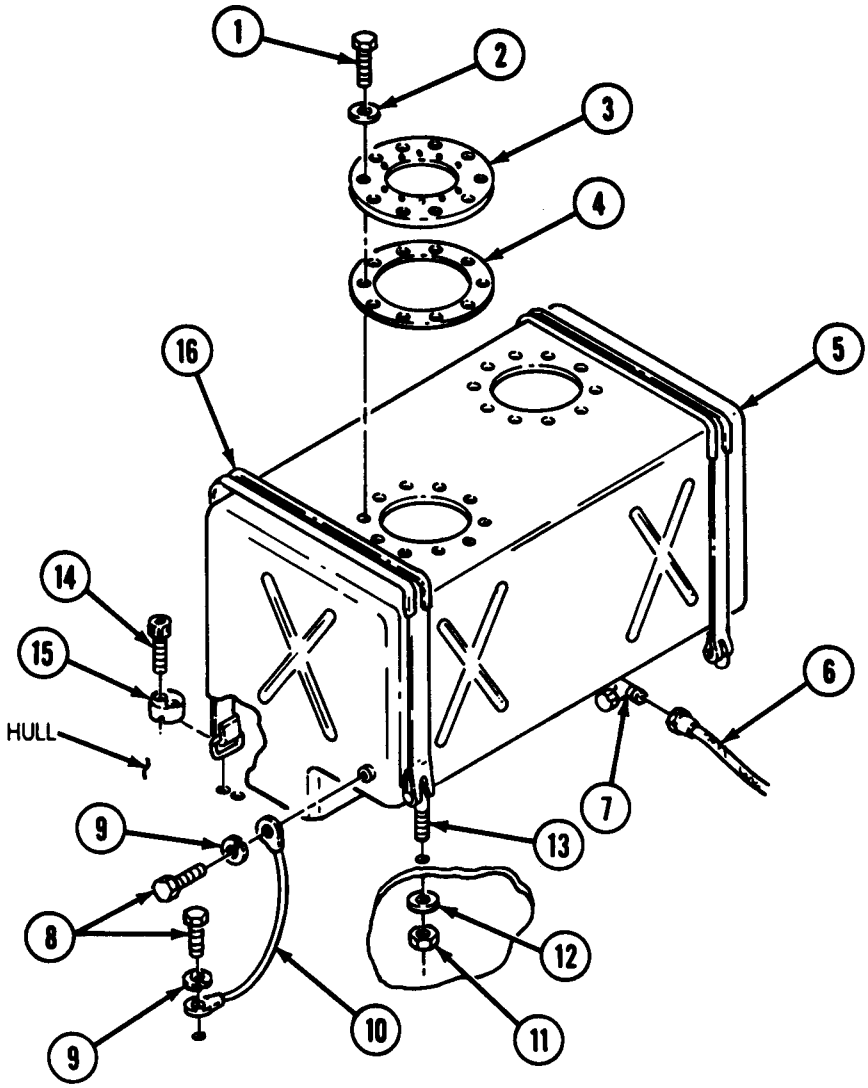
Note

Drain fuel from hoses into suitable container.

B Remove screw (3) and clamp (4) from outside rear wall of driver's compartment. Drain fuel from hose (1) into a container with a capacity of at least 1 gal. (3.8 L). Stow hose (1) away from fuel tank (5).

C Remove ten screws (6), washers (7), cover (8), and gasket (9) from fuel tank (5). Discard gasket (9).

D Remove elbow (2) from cover (8).



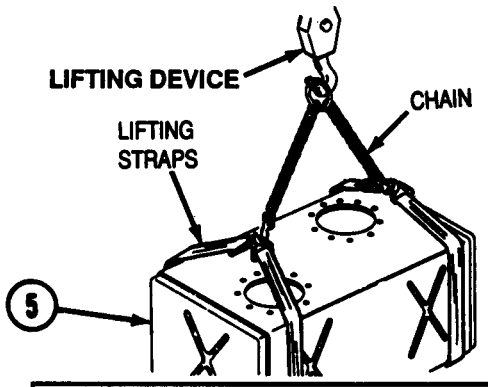
E Remove ten screws (1), washers (2), plate (3), and gasket (4) from fuel tank (5). Discard gasket (4).

F Disconnect hose (6) from tee (7). Drain fuel from hose (6) into a container with a capacity of 1 gal. (3.8 L).

G Remove two screws (8), lockwashers (9), and ground cable (10) from fuel tank (5) and hull. Discard lockwashers (9).

H Remove two locknuts (11) and washers (12) from tee screws (13). Discard locknuts (11).

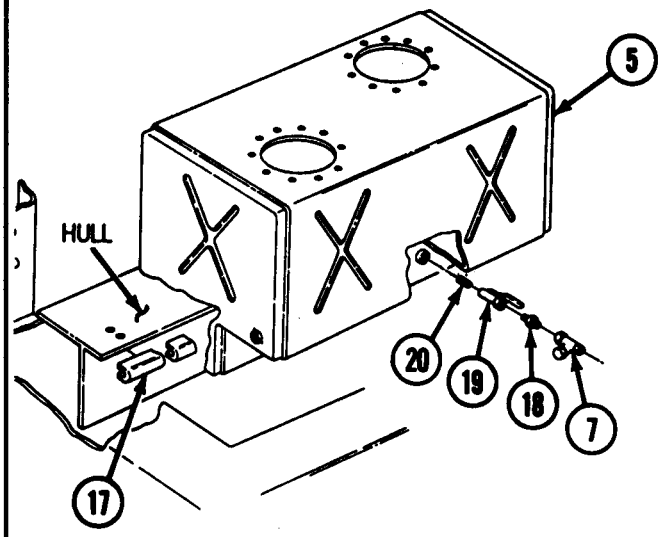
I Remove four screws (14), two pads (15), and straps (16) securing fuel tank (5) to hull.



WARNING

- Lifting device must have a weight capacity greater than 200 lb (91 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

J Using lifting straps, chain, and lifting device, lift fuel tank (5) out of vehicle. Remove lifting device, chain, and lifting straps.



K If damaged, remove seal (17) from hull.

L Remove tee (7), adapter (18), valve (19), and nipple (20) from fuel tank (5).

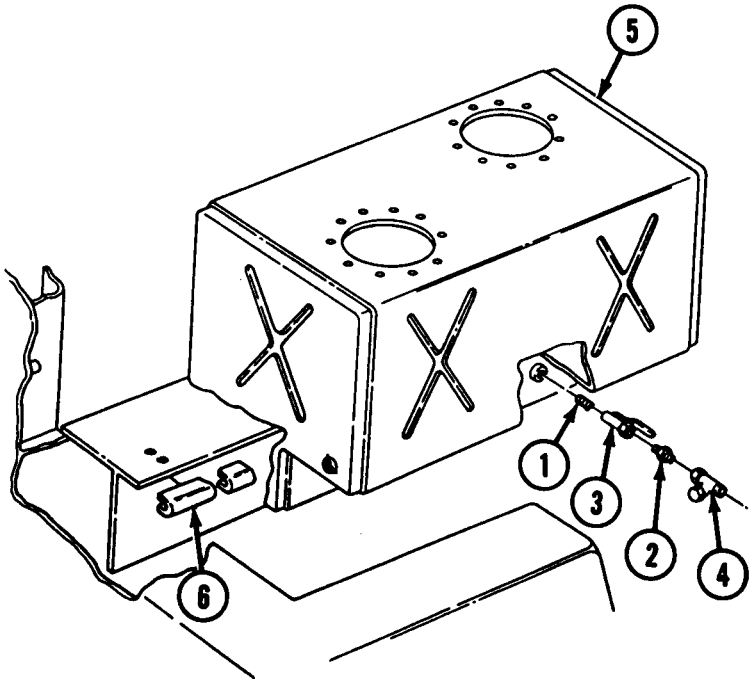
INSTALLATION

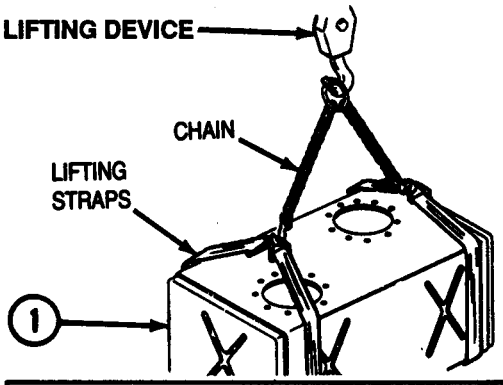
WARNING

Fuel is a combustible material. Do not smoke or allow sparks or open flames into areas where fuel is present. Failure to comply may result in severe injury or death to personnel

A Coat threads of nipple (1) and adapter (2) with sealing compound, and install nipple (1), valve (3), adapter (2), and tee (4) on fuel tank (5).

B If removed, apply adhesive to seal (6), and install seal (6) on hull.

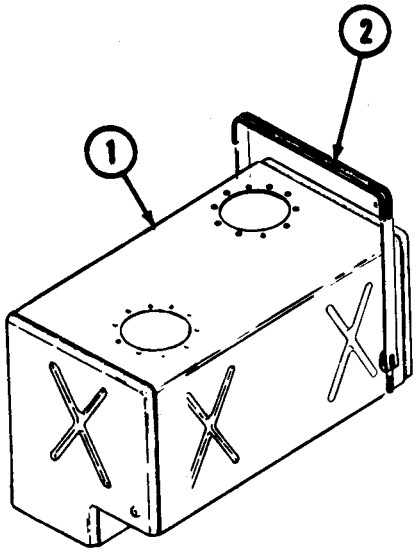




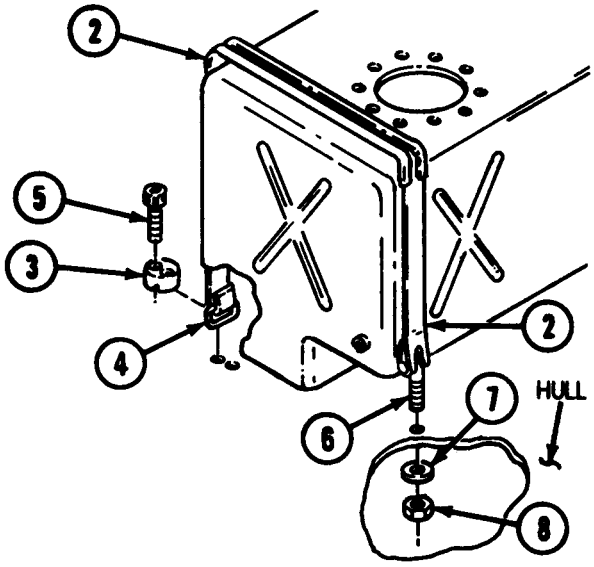
WARNING

- Lifting device must have a weight capacity greater than 200 lb (91 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

C Using lifting straps, chain, and lifting device, lower fuel tank (1) into vehicle. Remove lifting straps, chain, and lifting device.

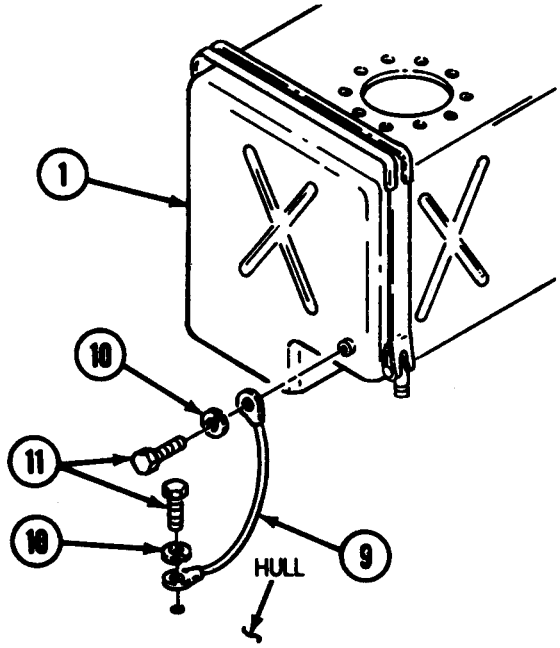


D Install two straps (2) on fuel tank (1).

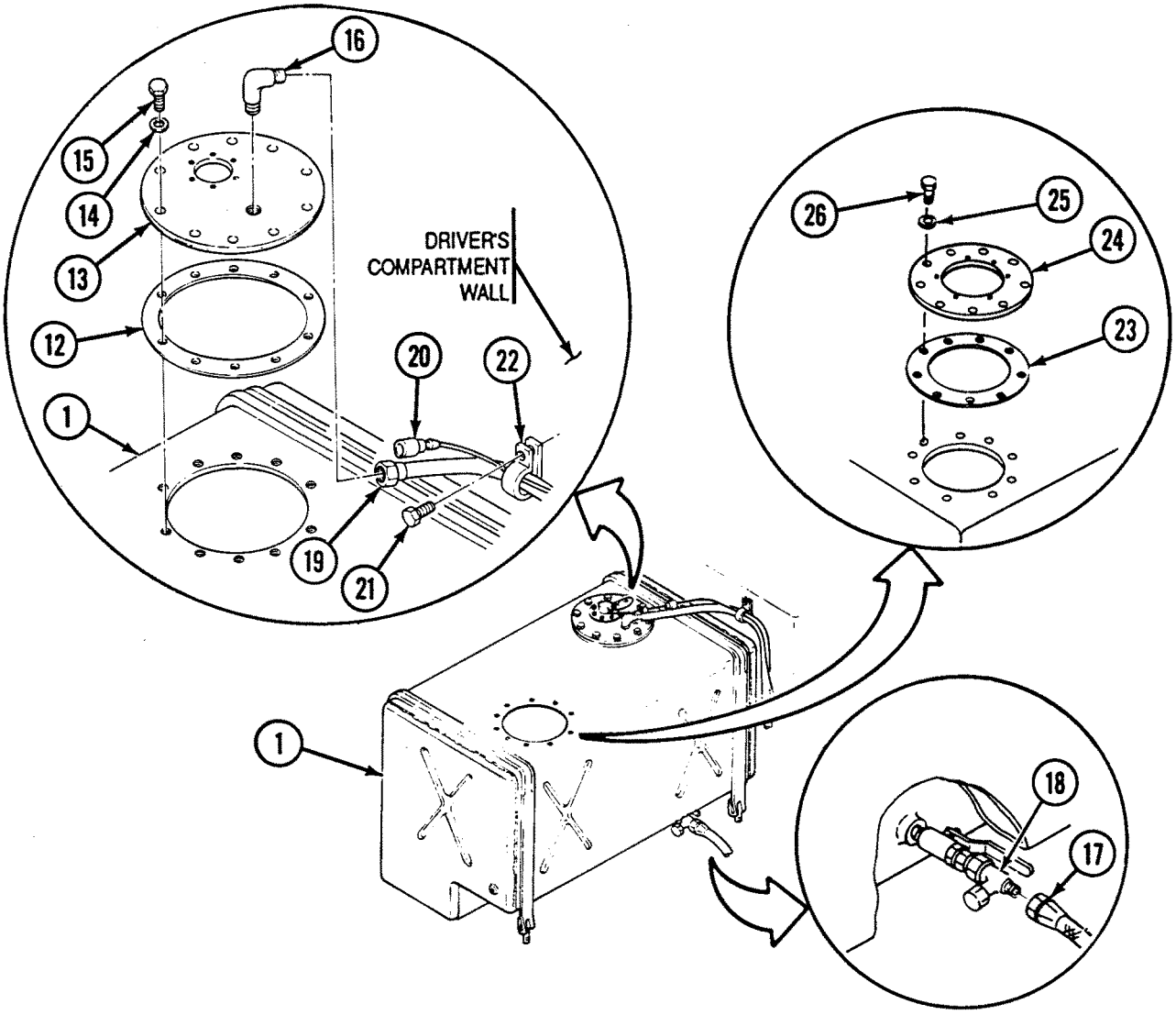


E Place two pads (3) over rings (4) of straps (2). Install two pads (3) and straps (2) on hull with four screws (5).

F Install two tee screws (6) on hull with two washers (7) and locknuts (8).



G Install ground cable (9) on fuel tank (1) and hull with two lockwashers (10) and screws (11).



H Install gasket (12) and cover (13) on fuel tank (1) with ten washers (14) and screws (15).

Note

Install elbow pointing toward driver's compartment wall.

I Install elbow (16) on cover (13).

J Connect hose (17) to tee (18), and hose (19) to elbow (16).

K Connect hose (19) and electrical lead (20) to driver's compartment wall with screw (21) and clamp (22).

L Install gasket (23) and plate (24) on fuel tank (1) with ten washers (25) and screws (26).

FOLLOW-ON TASKS:

- Install driver's hatch assembly (p4-312).
- Install fuel level transmitter (p 4-98).
- Install fuel filler neck and strainer (p 4-233).
- Install fuel tank armor (p 4-325).
- Fill fuel tank (TM 5-2350-262-10).

Section IX. GROUP AN, HEATER AND VENTILATION INSTALLATION

TASK	PAGE
Driver's Ventilation Fan Replacement	4-244.2
Driver's Ventilation Fan Motor Blower Assembly Replacement	4-244.4
Driver's Ventilation Fan Filter and Lower Duct Replacement	4-246
Deleted	
Heater Assembly, Hoses, and Fittings Replacement	4-242.2
Heater Blower Motor Housing, Resistor, and Fittings Replacement	4-244
Deleted	
Heater Motor Blower Assembly Replacement	4-242.4

HEATER ASSEMBLY, HOSES, AND FITTINGS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (3)

Parts Reference:

TM 5-2350-262-24P Group AN

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Troubleshooting References:

Page 3-332	Heater Does Not Provide Enough Heat
Deleted	

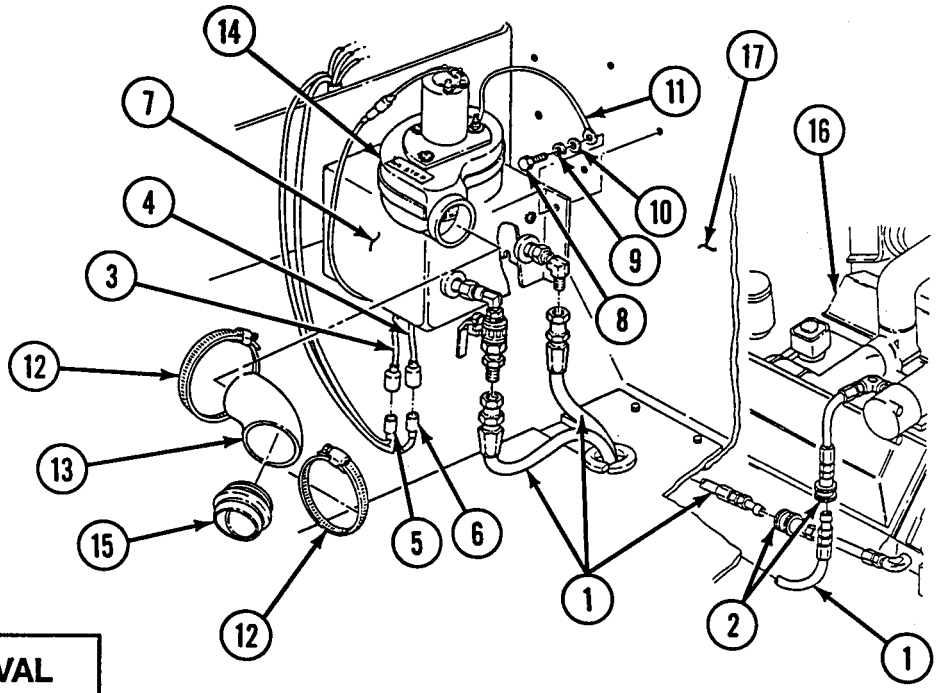
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Access Covers Opened
Page 4-83	Negative Battery Cables Disconnected

General Safety Instructions:

WARNING

Do not work on heater system unless engine coolant is cool.



REMOVAL

WARNING

Do not work on heater system unless engine coolant is cool. Hot engine coolant can cause serious burns.

A Disconnect two hoses (1) from quick disconnects (2) in engine compartment (16).

Note

- If quick-disconnects are not operating properly, refer to p 2-34 for general repair methods.
- Have suitable container ready to catch engine coolant.

B Loosen two clamps (12) and remove louver (15) and vent hose (13) from fan housing (14). Remove clamps (12) and louver (15) from vent hose (13).

C Disconnect heater leads 56 (3) and 57 (4) from leads 409A (5) and 409B (6).

Note

Tag hoses prior to disconnecting and hold elbows securely to prevent damage to copper tubing.

D Disconnect two hoses (1) from heater (7).

E Remove three capscrews (8), lockwashers (9), washers (10), ground lead (11), and heater (7) from driver's compartment wall (17). Discard lockwashers (9).

INSTALLATION

A Install heater (7) on driver's compartment wall (17) with three washers (10), lockwashers (9), ground lead (11), and capscrews (8).

Note

Hold elbows securely to prevent damage to copper tubing.

B Connect two hoses (1) to heater (7).

C Connect heater lead 56 (3) to lead 409A (5) and heater lead 57 (4) to lead 409B (6).

D Position louver (15) and two clamps (12) on vent hose (13) and install vent hose (13) on fan housing (14), ensuring angle of hose (13) is toward driver, and tighten clamps (12).

E Connect hoses (1) to quick-disconnects (2) in engine compartment.

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-83).
- Check and fill engine coolant to proper level (p 4-648).
- Check operation of heater (TM 5-2350-262-10).
- Close engine access covers (TM 5-2350-262-10).

HEATER MOTOR BLOWER ASSEMBLY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Self-locking Screw (2)

Lockwasher (2)

Parts Reference:

TM 5-2350-262-24P Group AN

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

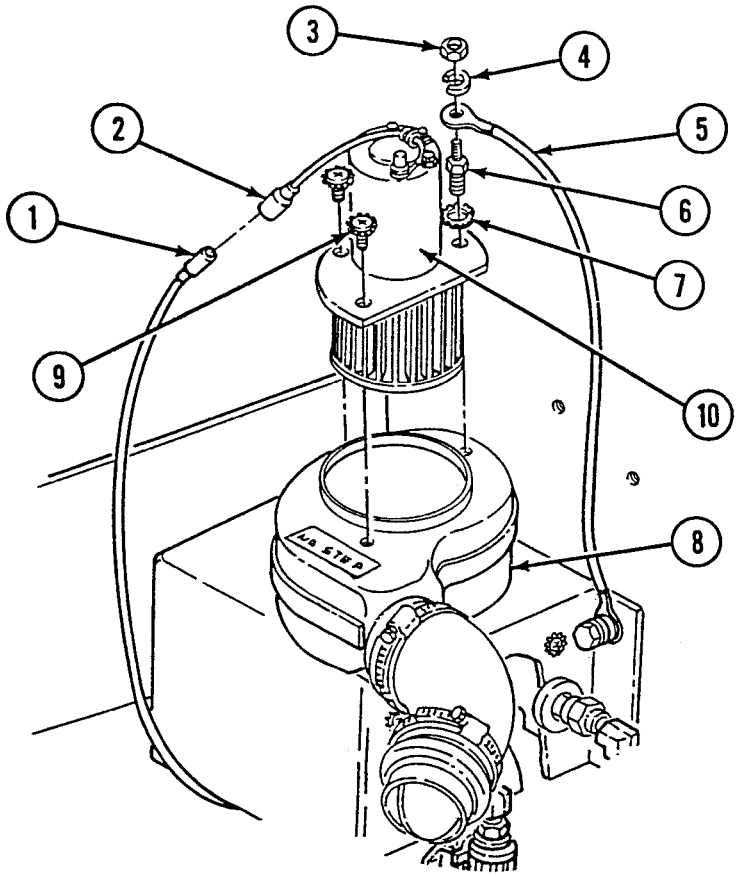
Troubleshooting References:

Deleted

Page 3-336	Heater Motor Inoperative

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Engine Access Covers Opened
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

A Disconnect lead (1) from connector (2).

B Remove nut (3), lockwasher (4), ground lead (5), ground lug (6), and lockwasher (7) from fan housing (8). Discard lockwashers.

C Remove two self-locking screws (9) and motor blower assembly (10) from fan housing (8). Discard self-locking screws (9).

INSTALLATION

Note

Ensure flat side of motor blower assembly is aligned with air exhaust opening of fan housing.

A Install motor blower assembly (10) on fan housing (8) with two self-locking screws (9).

B Install lockwasher (7), ground lug (6), ground lead (5), lockwasher (4), and nut (3) on fan housing (8).

C Connect lead (1) to connector (2).

FOLLOW-ON TASKS:

- **Connect negative battery cables (p 4-84).**
- Check operation of motor blower assembly **(TM 5-2350-262-10).**
- Close engine access covers **(TM 5-2350-262-10).**

HEATER BLOWER MOTOR HOUSING, RESISTOR, AND FITTINGS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanics: Automotive

Parts:

Lockwashers (7)

Parts Reference:

TM 5-2350-262-24P Group AN

Personnel Required:

Construction Vehicle Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Troubleshooting References:

Page 3-336 Heater Motor Inoperative

Equipment Condition:

Reference	Condition Description
TM 5-23550-262-10	Engine Access Covers Opened
Page 4-84	Negative Battery Cables Disconnected
Page 4-242.2	Heater Assembly Removed
Page 4-242.4	Heater Motor Blower Assembly Removed

REMOVAL

Note

If replacing the resistor only perform step D. If replacing blower motor housing perform steps A through I.

A Remove straight adapter (1) from valve (2).

B Remove valve (2) from elbow (3).

C Remove two elbows (3) from heater core (4).

D Remove two screws (5), nuts (6), lockwashers (7), and resistor (8) from heater case (9). Discard lockwashers (7).

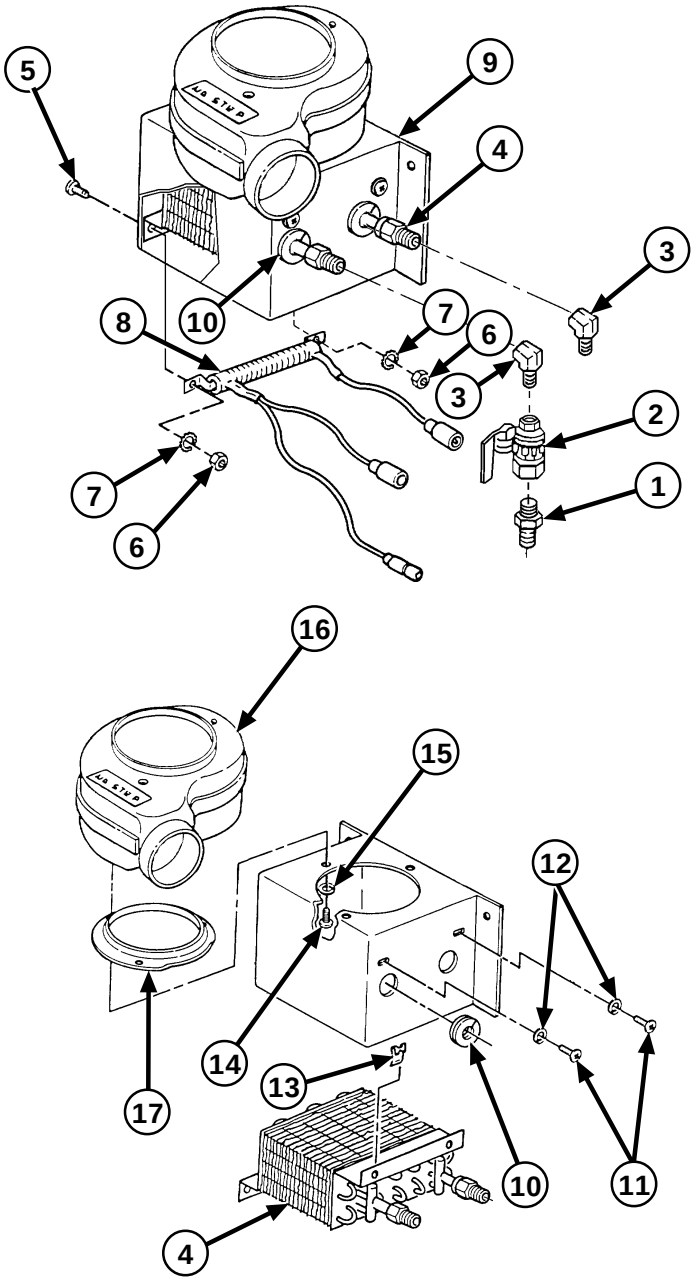
E Remove two grommets (10) from heater core (4).

F Remove two screws (11) and lockwashers (12) from clips (13). Discard lockwashers (12).

G Remove heater core (4) from heater case (9).

H Remove three screws (14) and lockwashers (15) from heater blower motor housing (16). Discard lockwashers (15).

I Remove heater blower motor housing (16) and inlet ring (17) from heater case (9).



INSTALLATION

Note

If replacing the resistor only perform step D. If replacing blower motor housing perform steps A through G.

A Install inlet ring (17) and heater blower motor housing (16) on heater case (9) with three new lockwashers (15) and screws (14).

B Install heater core (4) in heater case (9) with two clips (13), new lockwashers (12), and screws (11).

C Install two grommets (10) in heater case (9) and heater core (4).

D Install resistor (8) in heater case (9) with two new lockwashers (7), screws (5), and nuts (6).

E Install two elbows (3) on heater core (4).

F Install valve (2) on left hand side elbow (3).

G Install straight adapter (1) on valve (2).

FOLLOW-ON TASKS:

Heater motor blower assembly installed (p 4-242.4)

Heater assembly installed (p 4-242.2)

Connect negative battery cables (p 4-84)

Close engine access covers (TM 5-2350-262-10)

Check operation of heater (TM 5-2350-262-10)

DRIVER'S VENTILATION FAN REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Locknut

Lockwasher (3)

Parts Reference:

TM 5-2350-262-24P	Group AN Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

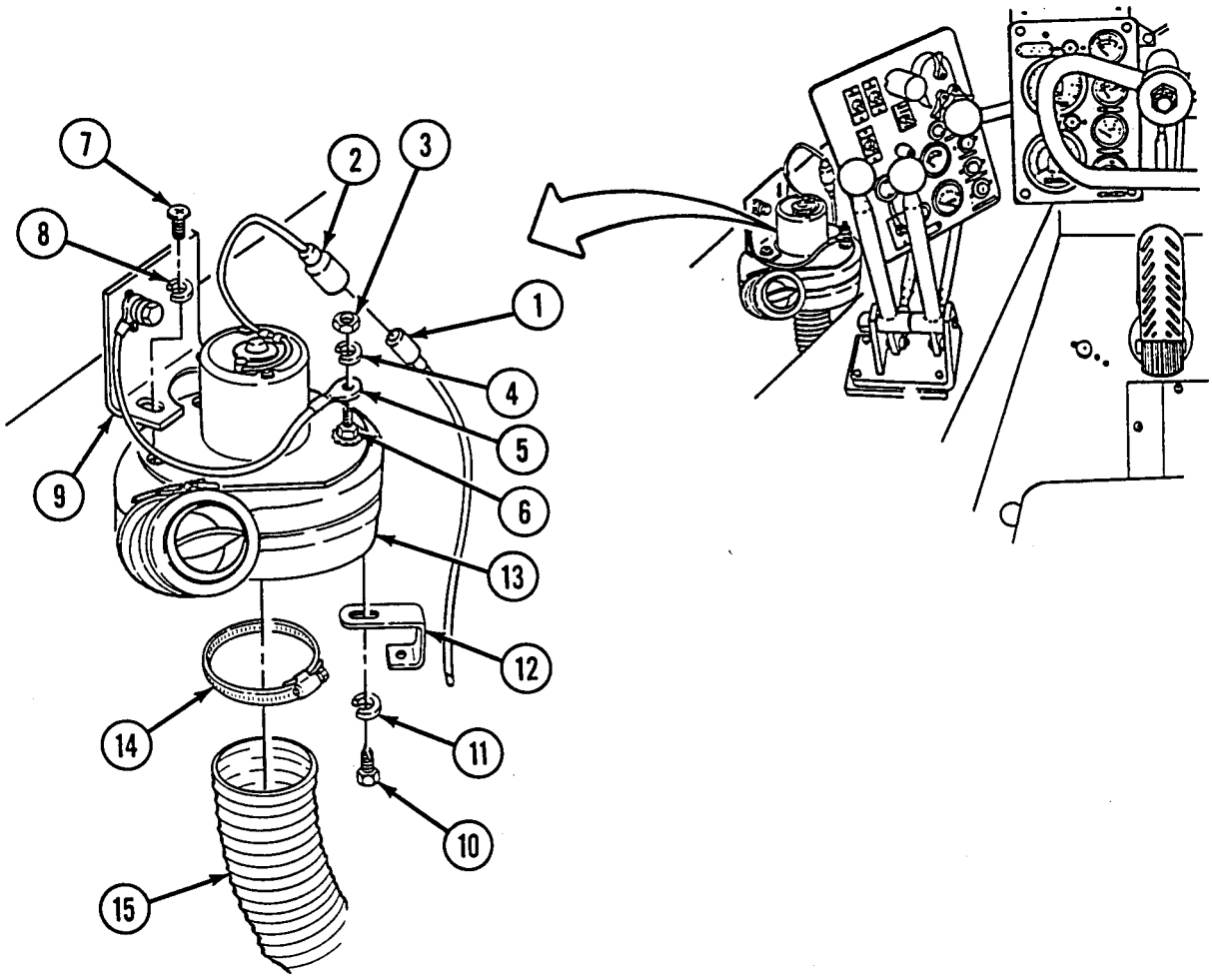
TM 5-2350-262-10

Troubleshooting Reference:

Page 3-338	Driver's Ventilation Fan Malfunctions

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

A Disconnect lead (1) from connector (2).

B Remove nut (3), lockwasher (4), and ground lead (5) from ground lug (6). Discard lockwasher (4).

C Remove two screws (7) and lockwashers (8) from bracket (9) and capscrew (10) and lockwasher (11) from bracket (12).Discard lockwashers (8) and (11).

D Remove vent fan (13) from brackets (9) and (12).

E Loosen clamp (14) and remove hose (15) from bottom of vent fan (13).

INSTALLATION

A Install hose (15) on bottom of vent fan (13) with clamp (14). Tighten clamp (14).

B Install vent fan (13) on bracket (9) with two lockwashers (8) and screws (7) and on bracket (12) with lockwasher (11) and capscrew (10).

C Install ground lead (5) on ground lug (6) with lockwasher (4) and nut (3).

D Connect lead (1) to connector (2).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Check operation of vent fan (TM 5-2350-262-10).

DRIVER'S VENTILATION FAN MOTOR BLOWER ASSEMBLY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (4)

Parts Reference:

TM 5-2350-262-24P Group AN

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

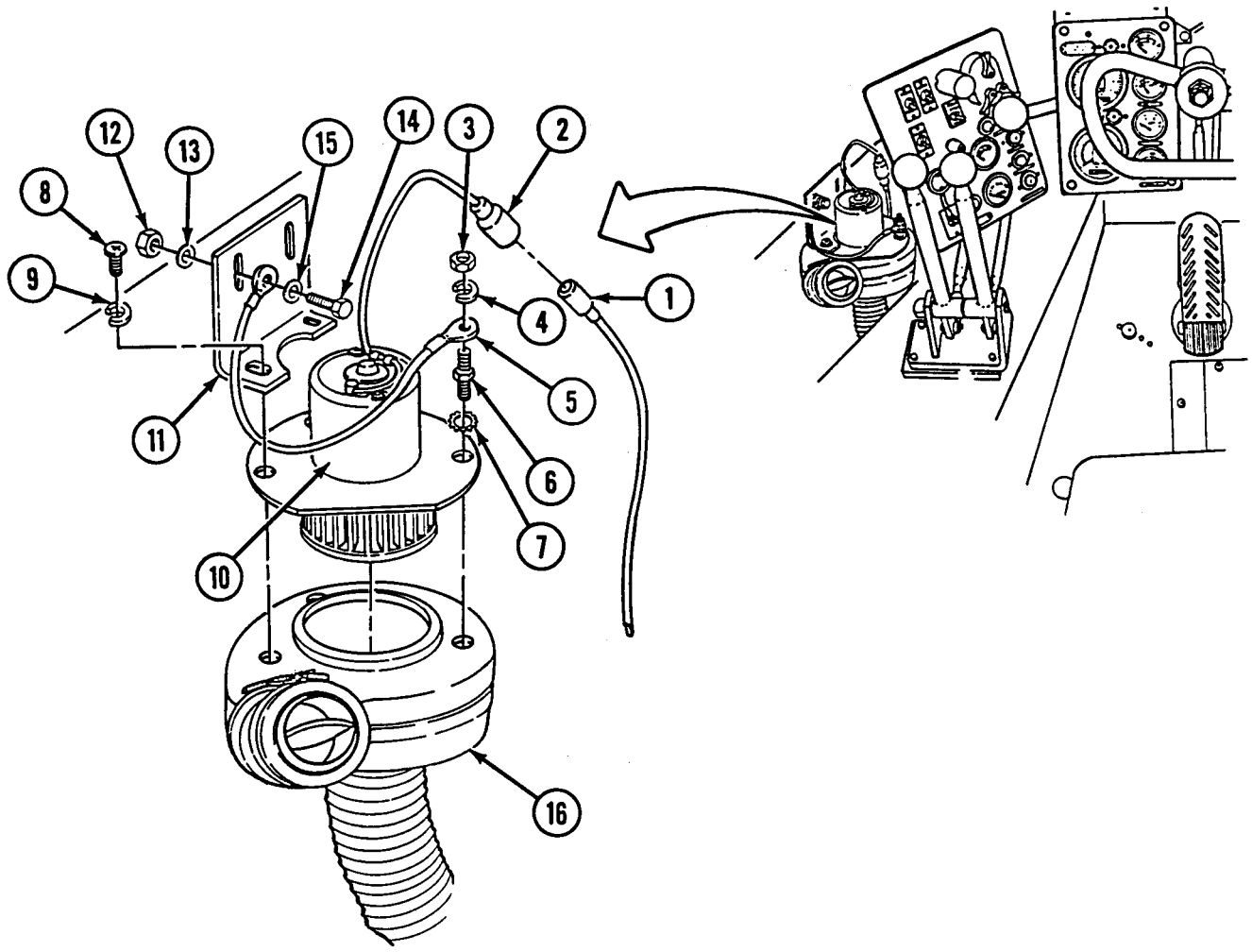
TM 5-2350-262-10

Troubleshooting Reference:

Page 3-338	Driver's Ventilation Fan Malfunctions

Equipment Condition:

Reference	Condition Description
Page 4-84	Negative Battery Cables Disconnected



REMOVAL

A Disconnect lead (1) from connector (2).

B Remove nut (3), lockwasher (4), ground lead (5), ground lug (6), lockwasher (7), two screws (8), and lockwashers (9) securing blower motor (10) to bracket (11). Discard lockwashers (4), (7) and (9).

C Remove two nuts (12), washers (13), capscrews (14), washers (15), and ground lead (5) from bracket (11).

D Move bracket (11) to allow clearance for motor blower (10) and remove motor blower (10) from fan housing (16).

INSTALLATION

A Position motor blower (10) on fan housing (16).

B Align bracket (11) and install ground lead (5), two washers (15), capscrews (14), washers (13), and nuts (12) on bracket (11).

C Install two lockwashers (9), screws (8), lockwasher (7), ground lug (6), ground lead (5), lockwasher (4), and nut (3) to secure blower motor (10) to bracket (11).

D Connect lead (1) to connector (2).

FOLLOW-ON TASKS:

- Connect negative battery cables (p 4-84).
- Check operation of vent fan (TM 5-2350-262-10).

DRIVER'S VENTILATION FAN FILTER AND LOWER DUCT REPLACEMENT

This task covers:

a. Removal

b. Inspection

c. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Filter

Parts Reference:

TM 5-2350-262-24P Group AN

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-338 Driver's Ventilation Fan Malfunctions

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward

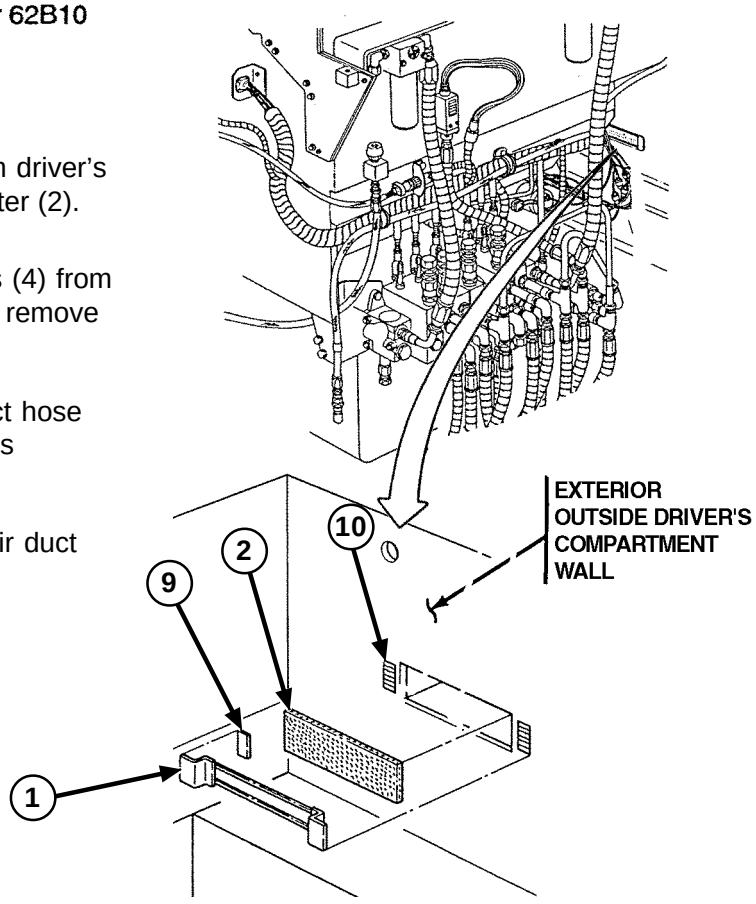
REMOVAL

A Remove bracket (1) and filter (2) from driver's compartment exterior wall. Discard filter (2).

B Remove four screws (3) and washers (4) from driver's compartment interior wall and remove intake duct (5).

C Remove upper clamp (6) from air duct hose (7) and remove duct assembly driver's compartment wall.

D Remove remaining clamps (6) from air duct hose (7) and cap (8).



INSPECTION

A Inspect bracket (1) for bends, broken welds, and corrosion. Repair (p 2-26) or replace bracket (1) if damaged.

B Inspect pile tape (9) and hook tape (10) for damage. Replace if damaged.

C Inspect air duct hose (7) for holes, dry rot, and damage. Replace if damaged.

D Inspect cap (8) for holes, dry rot and damage. Replace if damaged.

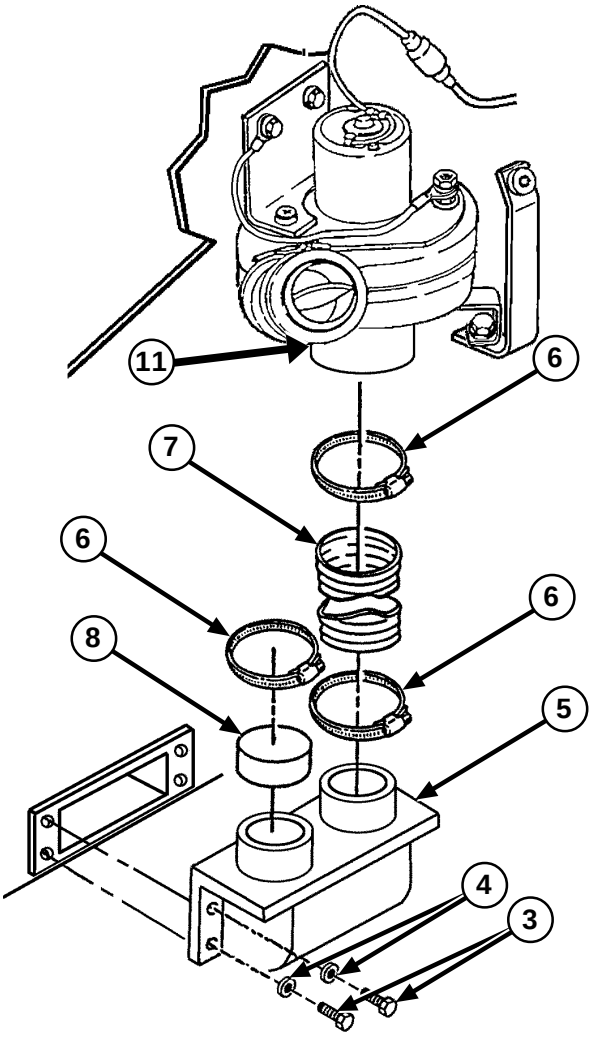
INSTALLATION

A Install new filter (2) and bracket (1) on driver's compartment wall.

B Pre-assemble cap (8), and air duct hose (7) on duct (5) with two clamps (6).

C Install duct (5) on driver's compartment wall using four washer (4) and screws (3) .

D Install air duct hose (7) on driver's ventilation fan adapter (11) with remaining clamp (6) .



FOLLOW-ON TASKS:

Retract ejector (TM 5-2350-262-10)

Section X. GROUP AP, BOLTED HULL ASSEMBLY INSTALLATION

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Apron and Dozer Assembly Replacement and Repair	4-249
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Apron Wear Plates Replacement	4-262
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Cowling Replacement	4-334
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Deleted	
Deleted	
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APRON AND DOZER ASSEMBLY REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Repair
d. Assembly
e. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair; Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Materials:

Adhesive, Epoxy Resin	Item 2 Appendix D
Sealing Compound	Item 11 Appendix D
Grease	Item 19 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Locknut (6)
Lockwasher (4)
Self-locking Screw (6)

Parts Reference:

TM 5-2350-262-24P	Group AP Group AR

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

TM 9-237

Troubleshooting Reference:

Page 3-189	Apron Does Not Raise or Lower

Equipment Condition:

Reference	Condition Description
Page 4-41	Apron Cylinder Armor Removed

General Safety Instructions:

WARNING

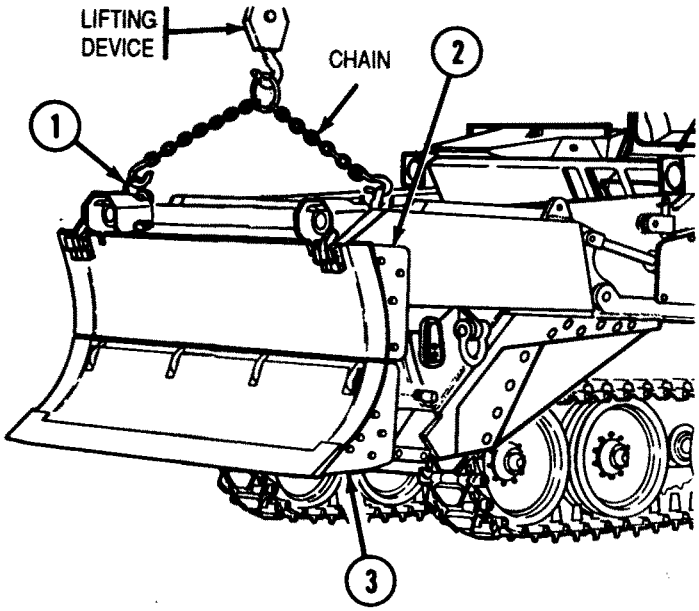
- Do not stand or work under apron and dozer assembly unless apron lockpins are installed.
- Do not lift apron and dozer assembly with dozer blade installed unless dozer lockpins are installed.
- Lifting device must have a weight capacity greater than 2,944 lb (1,337 kg).
- Personnel must stand clear during lifting operations.

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.

A Connect 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).



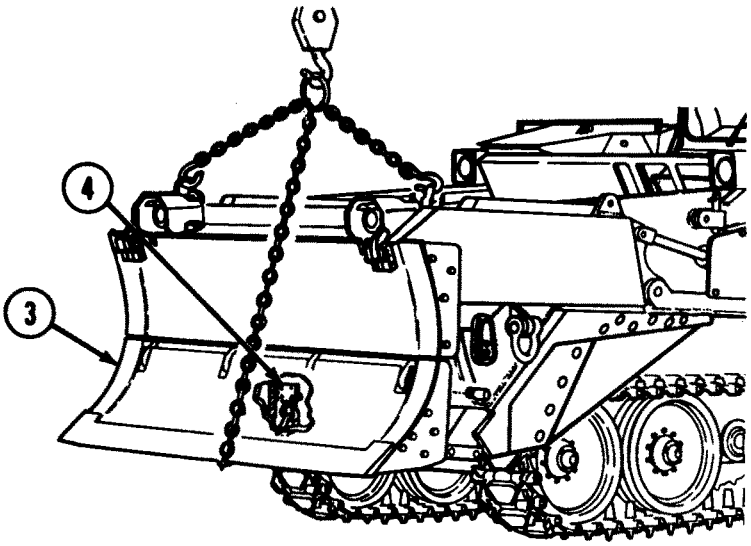
WARNING

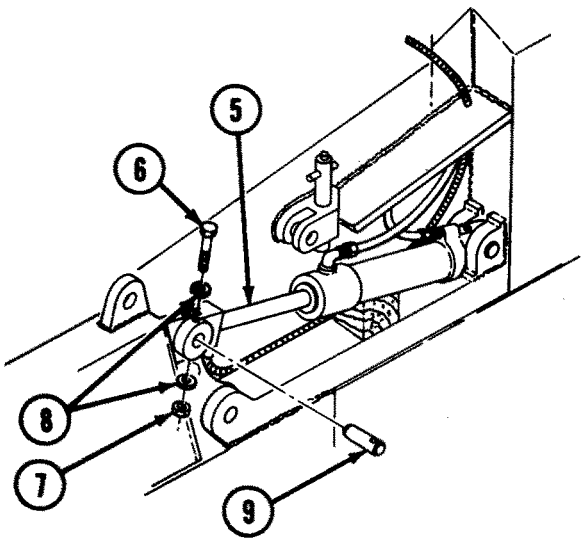
Do not lift apron and dozer assembly with dozer blade installed unless dozer lockpins are installed. Failure to comply may result in severe injury or death to personnel.

Note

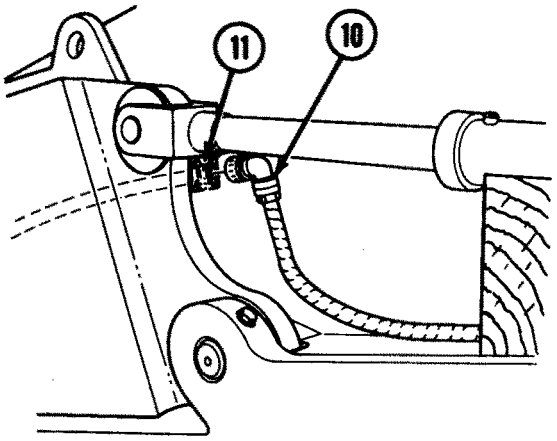
Ensure lower apron lockpins are in the stowed position.

B 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.

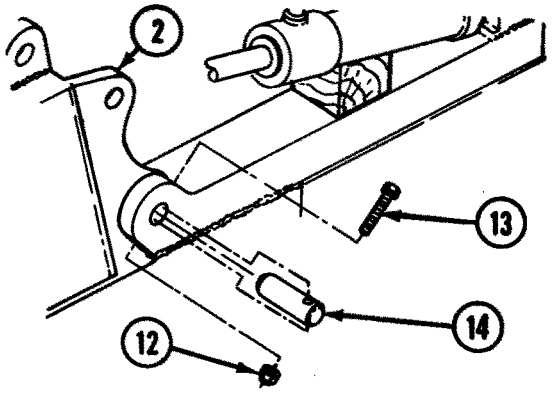




C Support apron hydraulic cylinders (5) with blocks, and remove screw (6), nut (7), two washers (8), and pin (9) from each side of vehicle.



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



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

WARNING

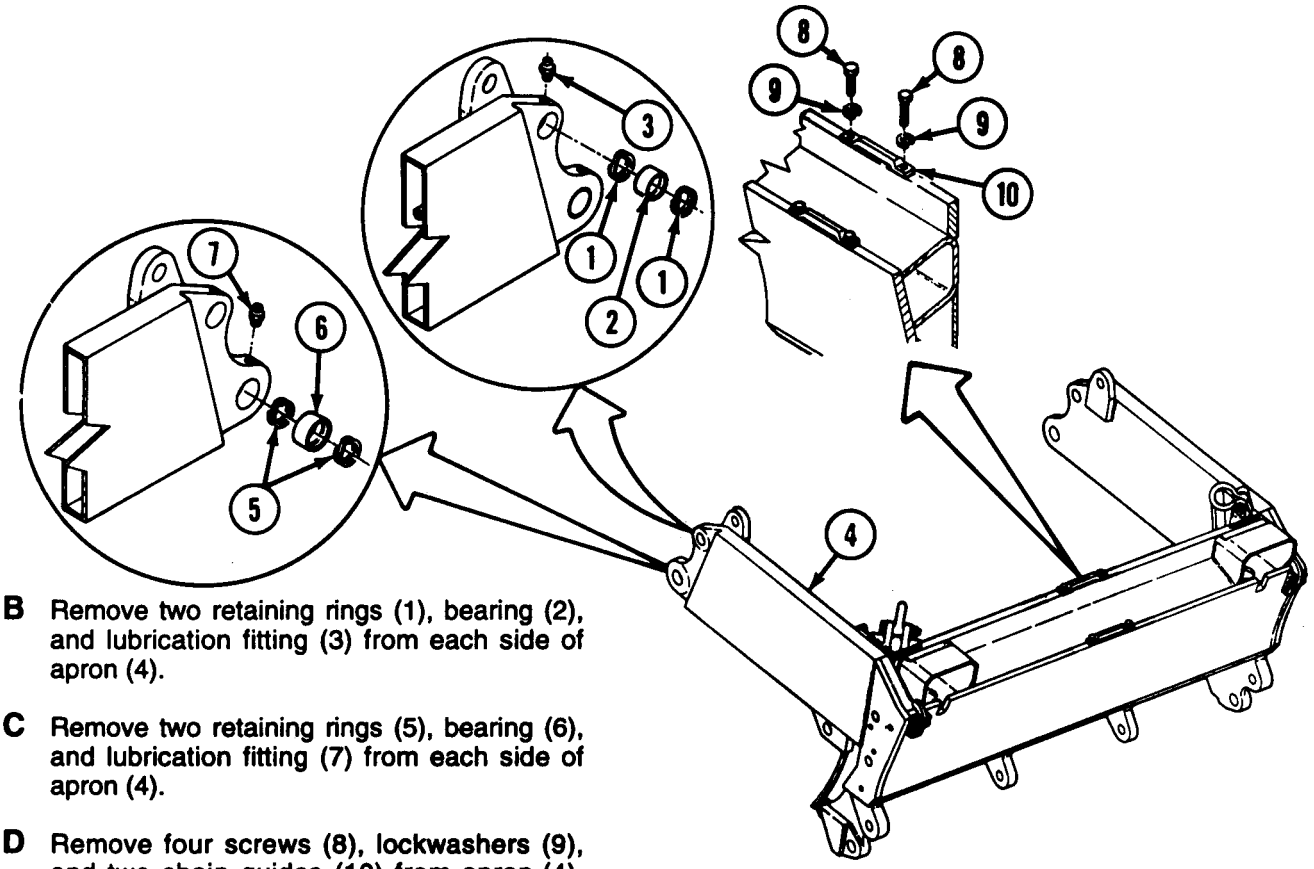
Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

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

DISASSEMBLY

A If complete disassembly of the apron and dozer assembly is necessary, refer to the list below, remove the components and assemblies, and perform steps B through H.

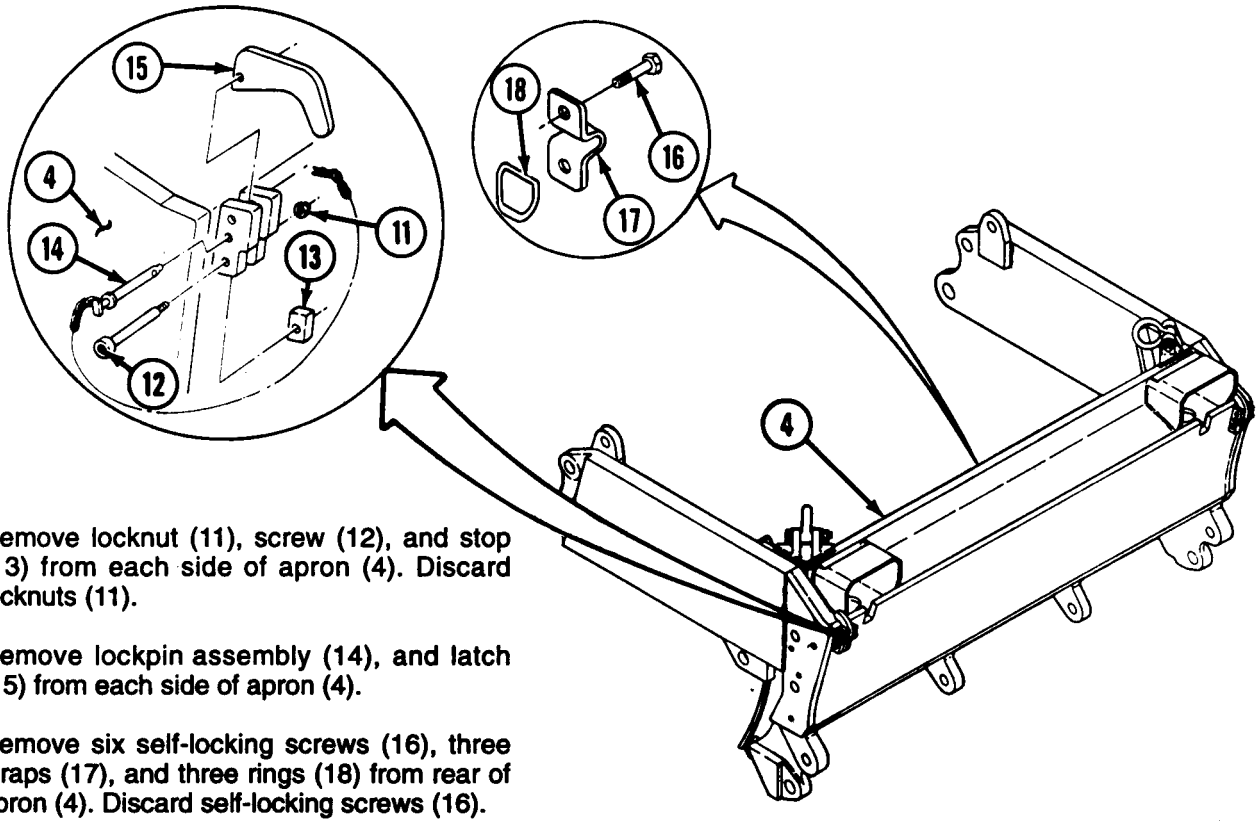
Page 4-176	Headlight Assemblies
Page 4-258	Cutting Edges
Page 4-261	Extensions
Page 4-263	Apron Wear Plates and Side Seals
Page 4-265	Apron Strips
Page 4-267	Dozer Blade



B Remove two retaining rings (1), bearing (2), and lubrication fitting (3) from each side of apron (4).

C Remove two retaining rings (5), bearing (6), and lubrication fitting (7) from each side of apron (4).

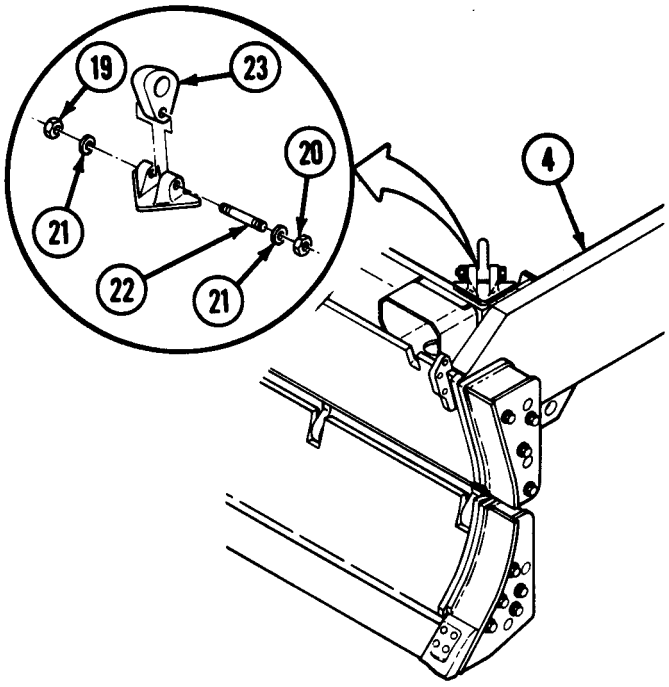
D Remove four screws (8), lockwashers (9), and two chain guides (10) from apron (4). Discard lockwashers (9).



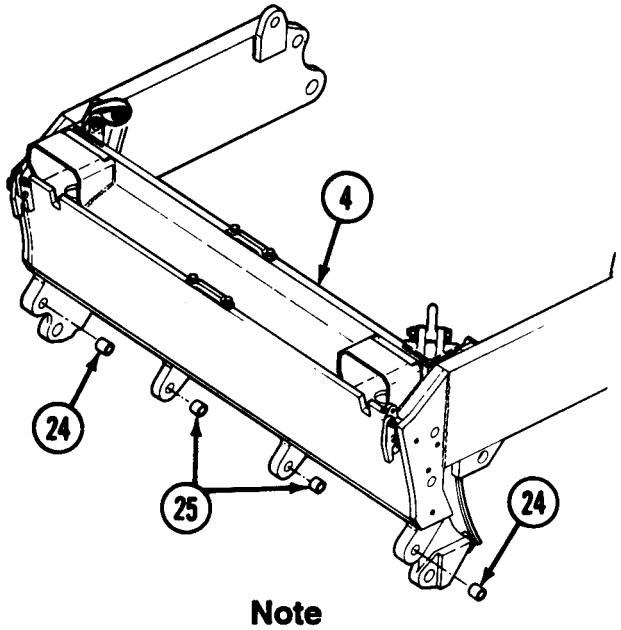
E Remove locknut (11), screw (12), and stop (13) from each side of apron (4). Discard locknuts (11).

F Remove lockpin assembly (14), and latch (15) from each side of apron (4).

G Remove six self-locking screws (16), three straps (17), and three rings (18) from rear of apron (4). Discard self-locking screws (16).



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

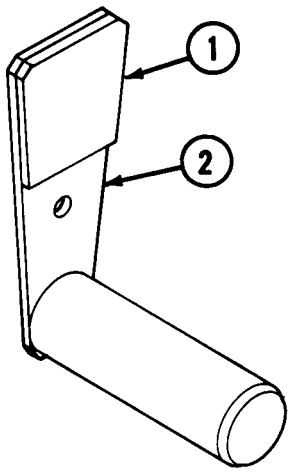


Note

Dozer blade must be removed from apron (p 4-267) before replacing bushings.

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

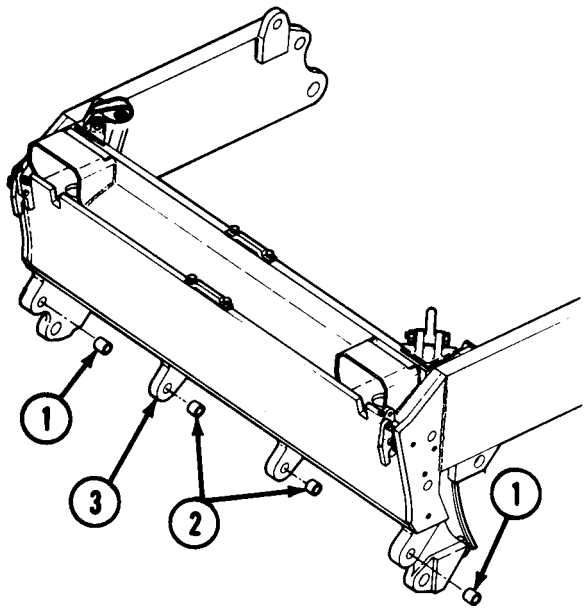
REPAIR



A Repair apron and dozer assembly by replacing damaged or worn parts and by using general repair methods (p 2-26). If authorized, weld (TM 9-237) and straighten.

B Bond rubber pad (1) to plate (2) with adhesive.

ASSEMBLY



A 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.

B Install two bearings (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

Step C should be performed only if plugs are missing.

C 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 D.
- If ripper blade is unfolded, perform step E.

D Install latch (6) on each side of apron (4) with pin assembly (7) and lockpin (8).

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

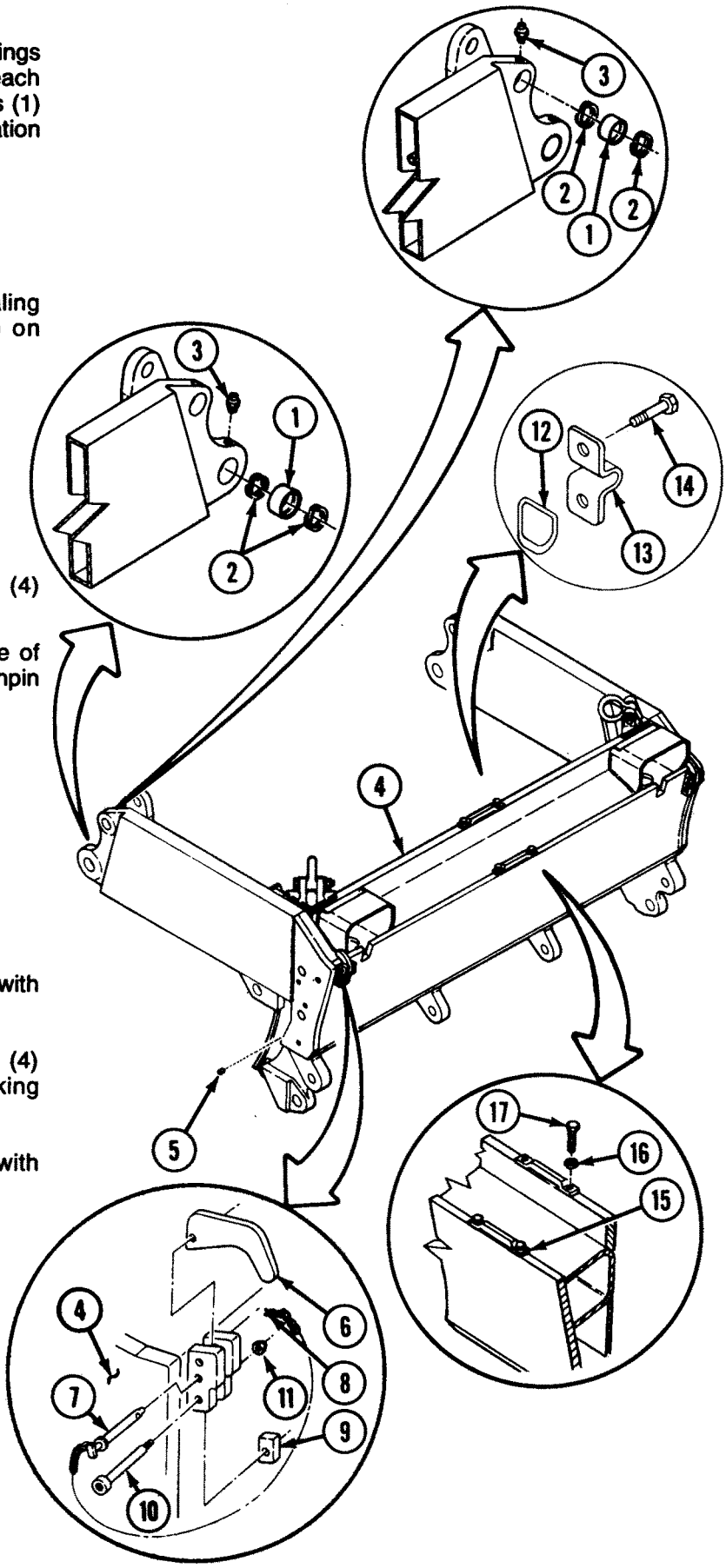
Note

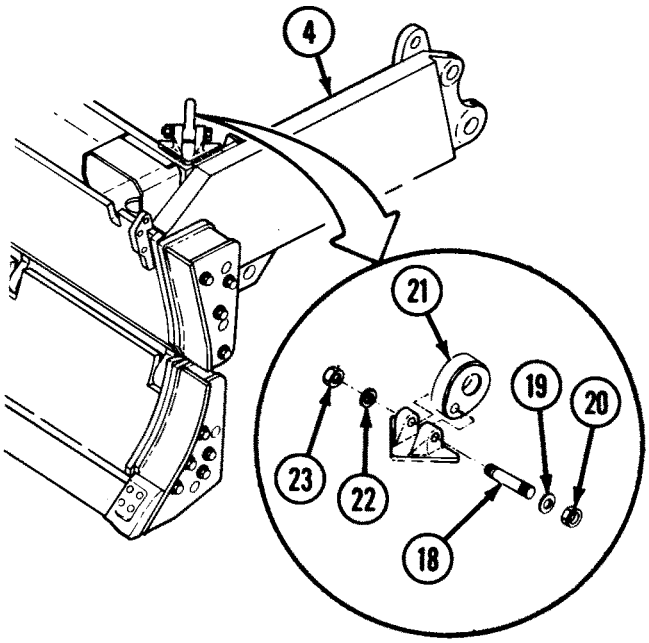
- For ripper blade application, install stop with words "ripper blade" facing out.
- For cutting edge application, install stop with words "standard blade" facing out.

F Install stop (9) on each side of apron (4) with screw (10) and locknut (11).

G Install three rings (12) on rear of apron (4) with three straps (13) and six self-locking screws (14).

H Install chain guides (15) on apron (4) with four lockwashers (16) and screws (17).





I Coat short threaded end of two studs (18) with sealing compound, and install washer (19) and nut (20) on each stud (18).

J Install lift eye shackle (21) on each side of apron (4) with studs (18) from outboard side of bracket.

K 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).

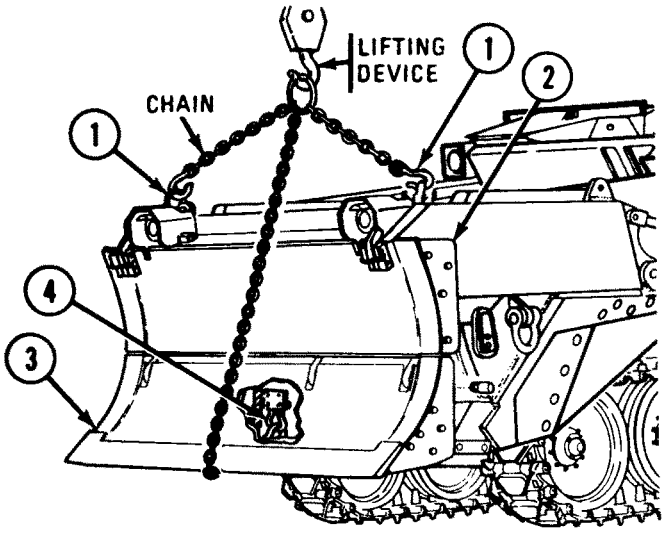
L Refer to the following pages, and install the following components and assemblies on the apron and dozer assembly.

Page 4-187	Headlight Assembly
Page 4-259	Cutting Edges
Page 4-261	Extensions
Page 4-263	Apron Wear Plates and Side Seals
Page 4-265	Apron Strips
Page 4-269	Dozer Blade

INSTALLATION

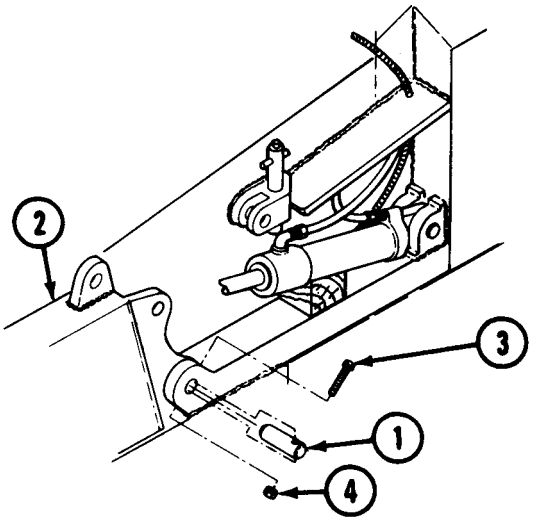
WARNING

- 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.



A 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 slack.

B Lift apron and dozer assembly (2) and position on vehicle.

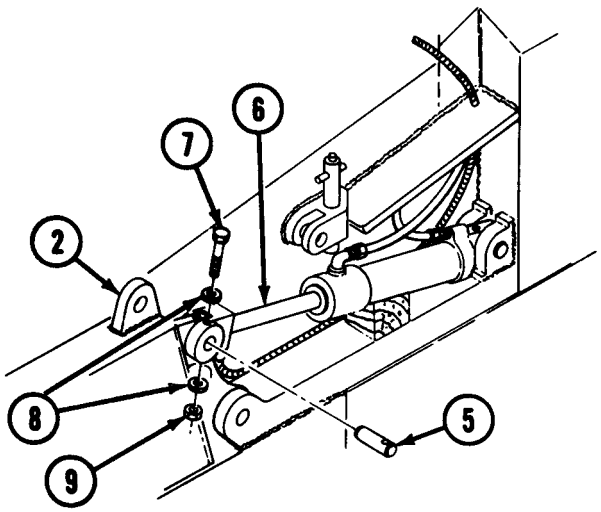


C Coat two pivot pins (1) with grease, and install apron (2) on hull with two pivot pins (1).

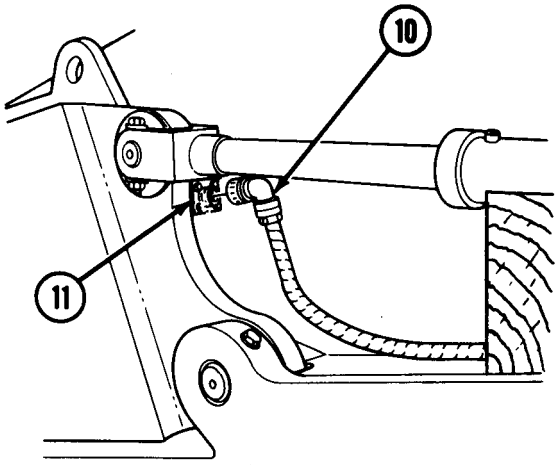
Note

Apply lubricating oil to threads of screws prior to installation.

D 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).



E 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.



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

FOLLOW-ON TASKS:

- Install apron cylinder armor (p 4-42).
- Install dozer lockpins (TM 5-2350-262-10).

DOZER BLADE CUTTING EDGE AND DOZER EXTENSION END BITS REVERSAL AND REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair; Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil	Item 26 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Dozer Blade Folded
Page 2-27	Front of Vehicle Raised and Blocked

General Safety Instructions:

WARNING

Do not work under vehicle unless hull is blocked and apron lockpins are installed.

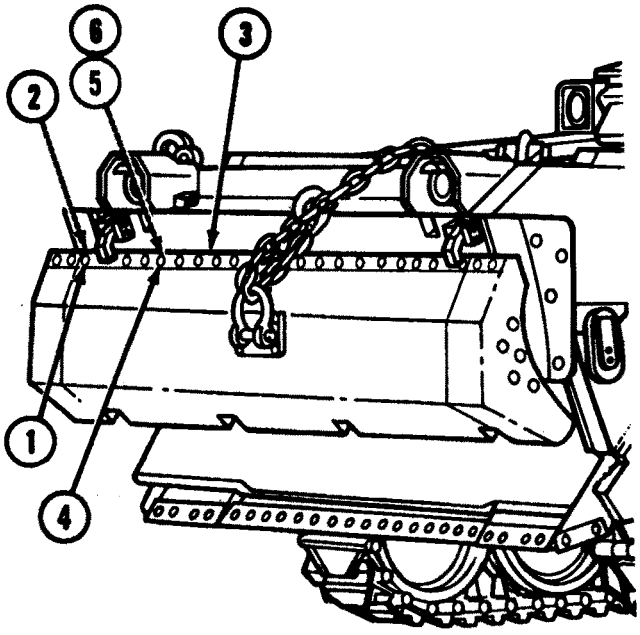
REMOVAL

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.

CAUTION

Dozer blade and extensions can be damaged if cutting edges and end bits are worn to less than 1/4 in. (6.4 mm) clearance between cutting edge and moldboard.



Note

- Center cutting edge may be reversed (end to end) once, before replacement.
- Dozer extension end bits are replaced the same way. This task covers replacement of the left-hand end bit.
- New production vehicles are equipped with a steel dozer blade and dozer blade extensions. End bits for each are replaced the same way.

A Loosen two nuts (1) on screws (2) at dozer cutting edge (3).

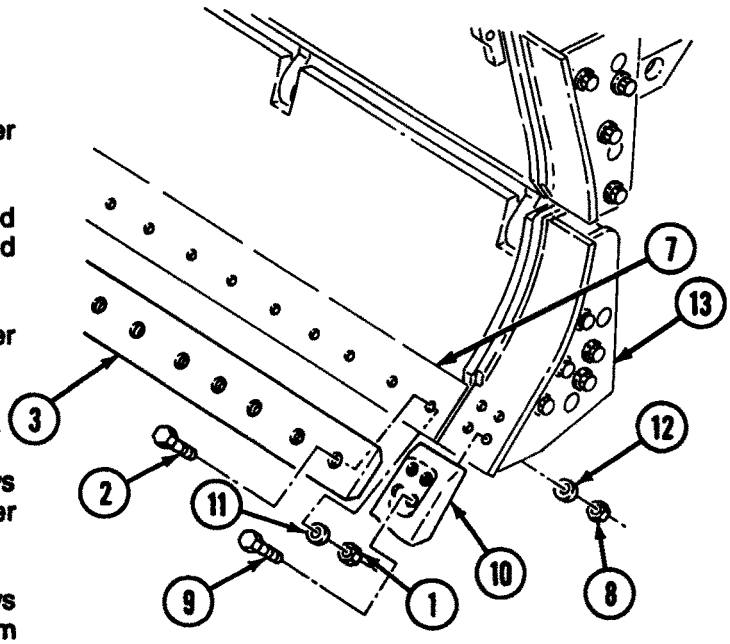
B Remove sixteen nuts (4), washers (5), and screws (6) from dozer cutting edge (3) and dozer blade (7).

C Loosen four nuts (8) on screws (9) at dozer extension end bit (10).

D Unfold dozer blade (7) (TM 5-2350-262-10).

E Remove two nuts (1), washers (11), screws (2), and dozer cutting edge (3) from dozer blade (7).

F Remove four nuts (8), washers (12), screws (9), and dozer extension end bit (10) from dozer extension (13).



INSTALLATION

Note

Coat threads of screws with lubricating oil prior to installation.

A Install dozer extension end bit (1) on dozer extension (2) with four screws (3), washers (4), and nuts (5).

B Install dozer cutting edge (6) on dozer blade (7) with screw (8), washer (9), and nut (10) on each end.

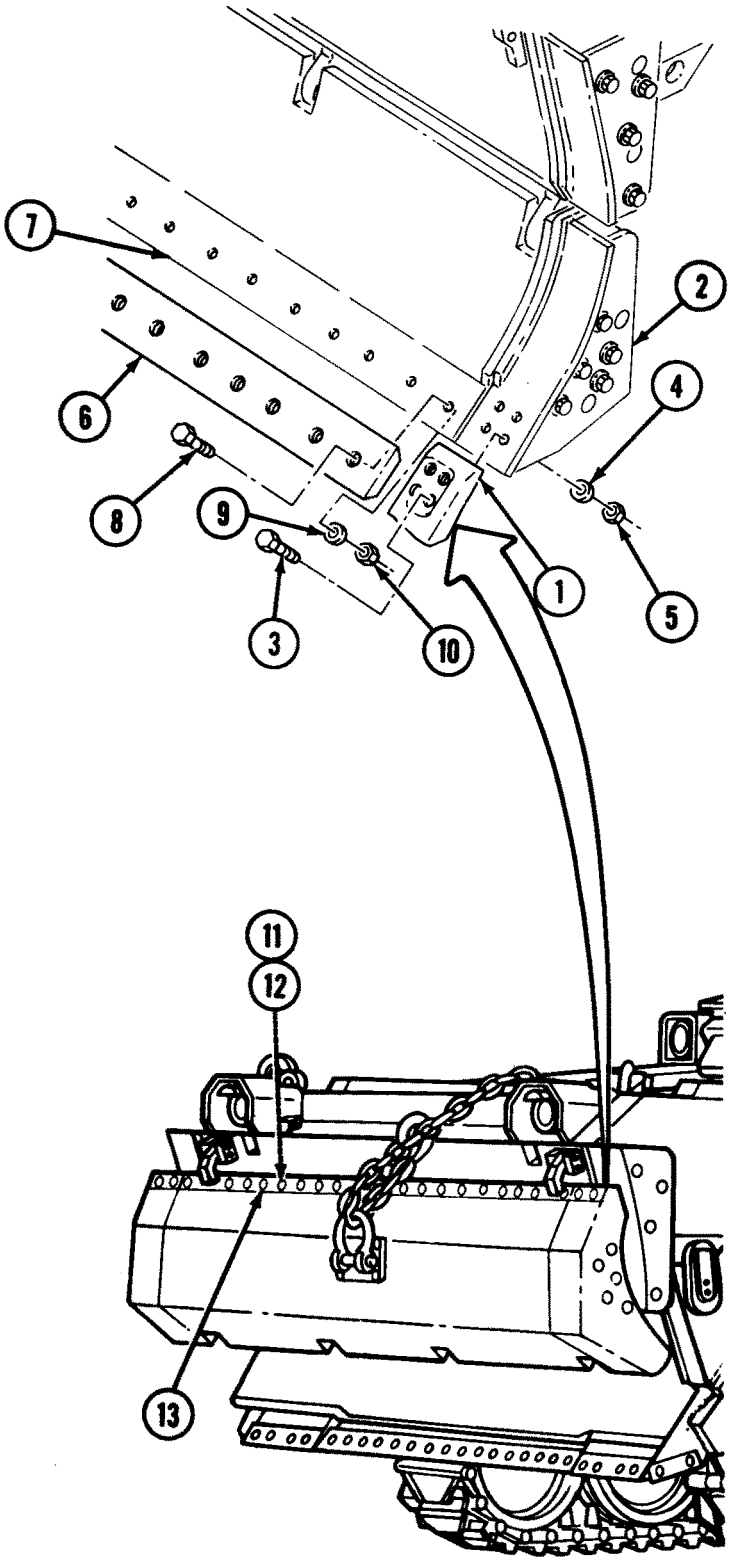
C Fold dozer blade (7) (TM 5-2350-262-10).

D Install sixteen screws (11), washers (12), and nuts (13) on dozer cutting edge (6) and dozer blade (7).

E Tighten nuts (5), (10), and (13) to 226-294 lb-ft (306-399 N·m).

FOLLOW-ON TASKS:

- Unblock and lower front of vehicle (p 2-27).
- Unfold dozer blade (TM 5-2350-262-10).



APRON AND DOZER EXTENSIONS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair; Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil — Item 26 Appendix D

Parts:

Lockwasher (6)
(NEW PRODUCTION only)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Equipment Condition:

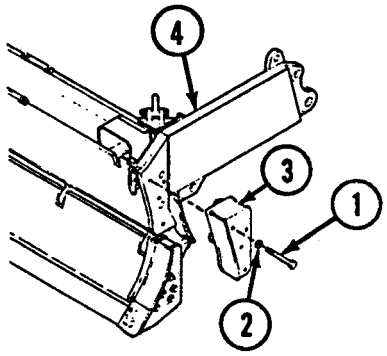
Reference	Condition Description
Page 2-27	Hydraulic Pressure Relieved
Page 2-27	Front of Vehicle Raised and Blocked

General Safety Instructions:

WARNING

Do not stand or work under raised apron and dozer assembly unless apron lockpins are installed.

REMOVAL



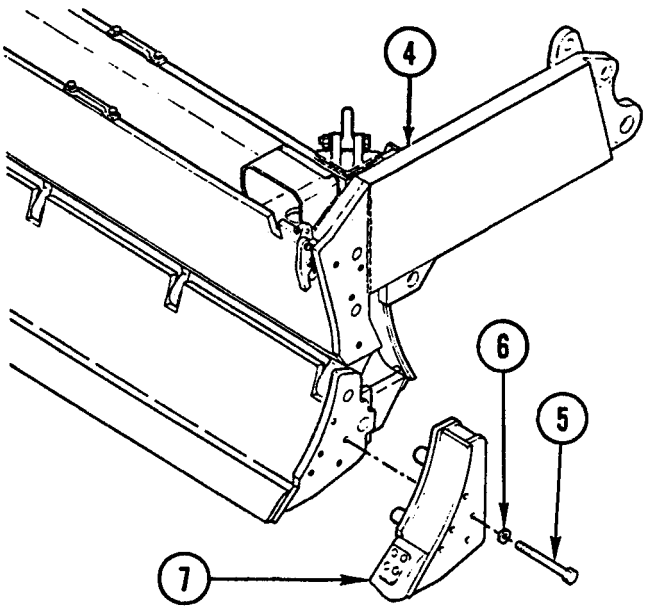
WARNING

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.

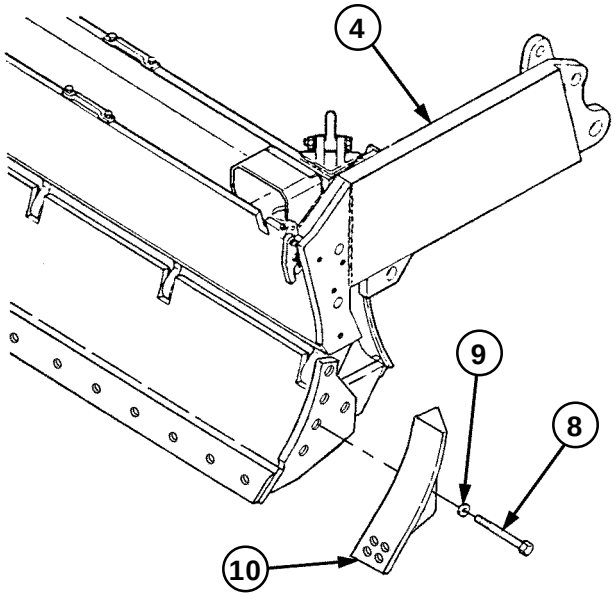
Note

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

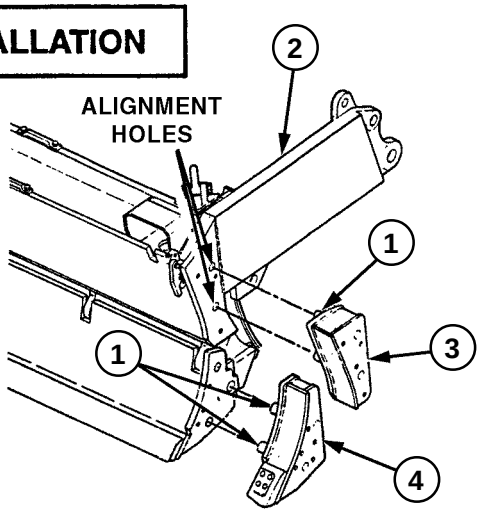


B Remove five screws (5), washers (6), and dozer extension (7) from each side of apron and dozer assembly (4). Pry or hammer to loosen extension (7) from each side of apron and dozer assembly (4).



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).

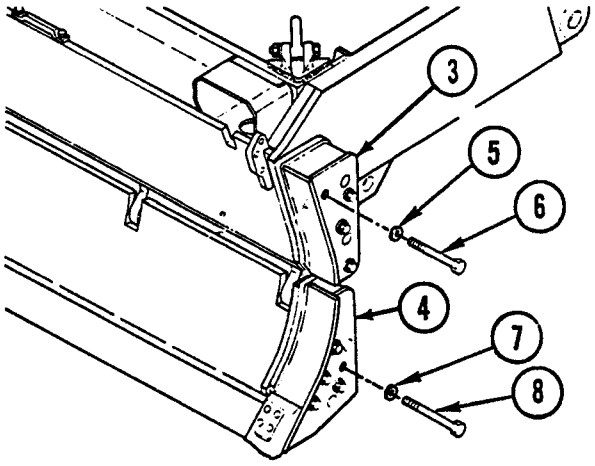
INSTALLATION



Note

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

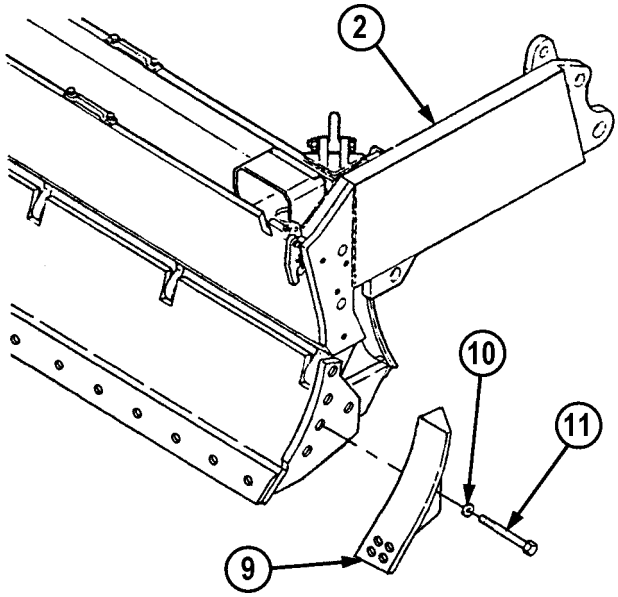
A Align dowels (1) with holes in each side of apron and dozer assembly (2). Seat apron extensions (3) and dozer extensions (4) with hammer and wood block.



Note

Apply lubricating oil to threads of screws prior to installation.

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 220-240 lb-ft (298-325 N·m).



Note

Apply lubricating oil to threads of screws prior to installation

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 760-920 lb-ft (1026-1242 N·m).

FOLLOW-ON TASK:

Unblock front of vehicle (p 2-27).

APRON WEAR PLATES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair; Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Socket Wrench Socket Set	5120-01-195-0640

Materials:

Lubricating Oil	Item 26 **Appendix D**

Parts Reference:

TM 5-2350-262-24P	Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

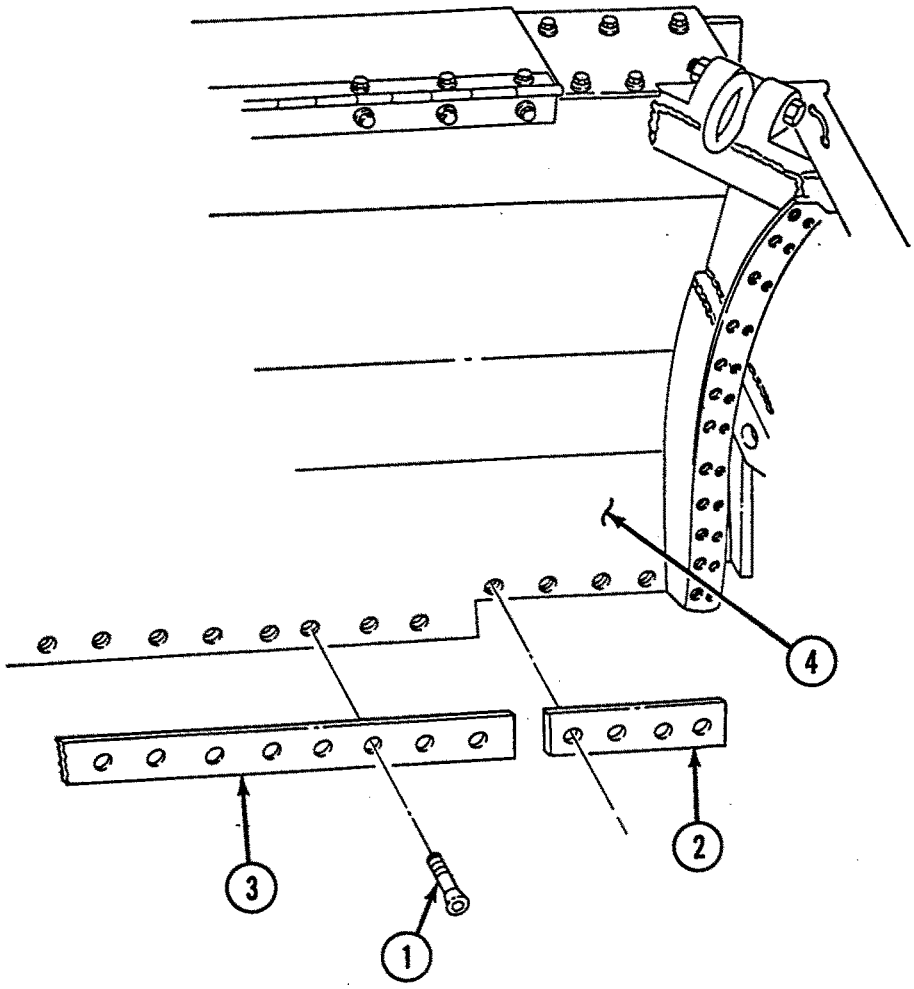
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Apron Raised and Locked

General Safety Instructions:

WARNING

- Do not stand or work under raised apron and dozer assembly unless apron lockpins are installed.
- Do not stand or work in bowl area unless ejector lock is engaged.



WARNING

- Do not stand or work under raised apron and dozer assembly unless apron lockpins are installed. Failure to comply may result in severe injury or death to personnel.
- Do not stand or work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

REMOVAL

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

INSTALLATION

Note

Apply lubricating oil to threads of screws prior to installation.

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

FOLLOW-ON TASK:
Unlock and lower apron (TM 5-2350-262-10).

APRON STRIP REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair; Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil — Item 26, **Appendix D**

Parts:

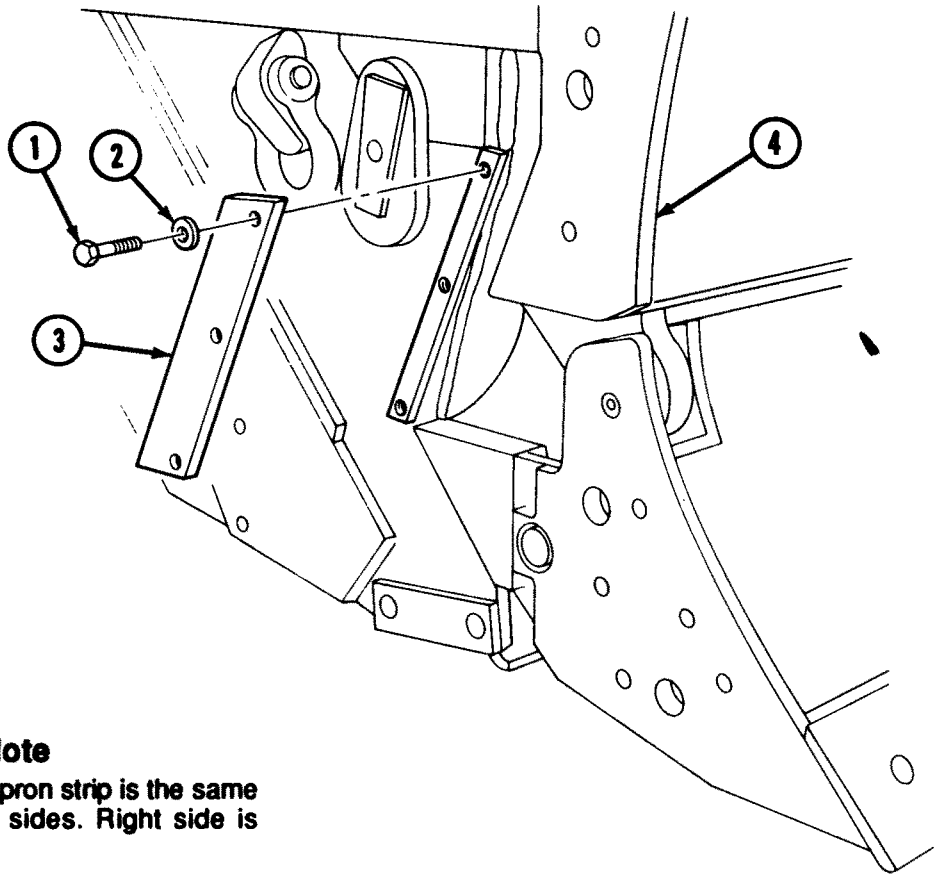
Self-locking Screw (3)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10



REMOVAL

Note

Replacement of apron strip is the same for left and right sides. Right side is shown here.

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

INSTALLATION

Note

Apply lubricating oil to threads of screws prior to installation.

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).

DOZER BLADE REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Special Tools:

Eyebolt 5306-00-050-0347

Materials:

Grease Item 19 Appendix D

Parts:

Bushing (8)

Lockwasher (4)

Locknuts (2) (NEW PRODUCTION only)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Dozer Blade Folded
Page 2-27	Vehicle Blocked
Page 4-258	Dozer Cutting Edge Removed
	OR
Page 4-261	Dozer Blade Extensions Removed

General Safety Instructions:

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.
- Personnel must stand clear during lifting operations.

REMOVAL

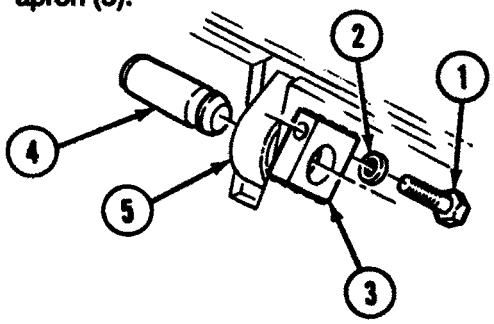
Note

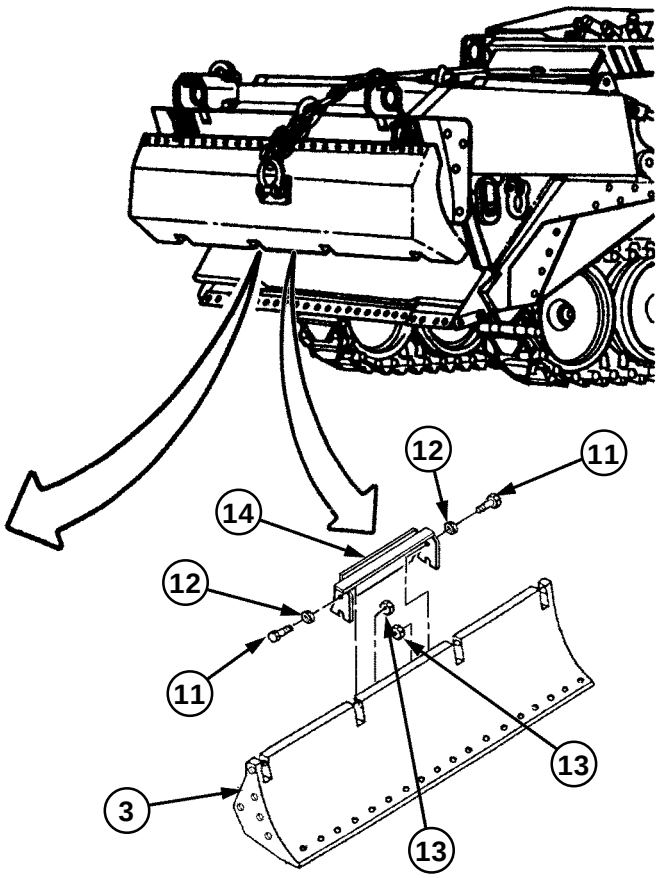
New Production vehicles are equipped with a steel dozer blade which includes a cut-out and cover at top rear of dozer blade. Perform step A if removing cover.

A Remove two screws (11), washers (12), locknuts (13), and cover (14) from dozer blade (3). Discard locknuts (13).

A.1 Remove screw (1) and washer (2) from dozer blade (3) and two inner pivot pins (4).

B Using hammer and brass drift, remove two inner pivot pins (4) from dozer blade (3) and apron (5).





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.

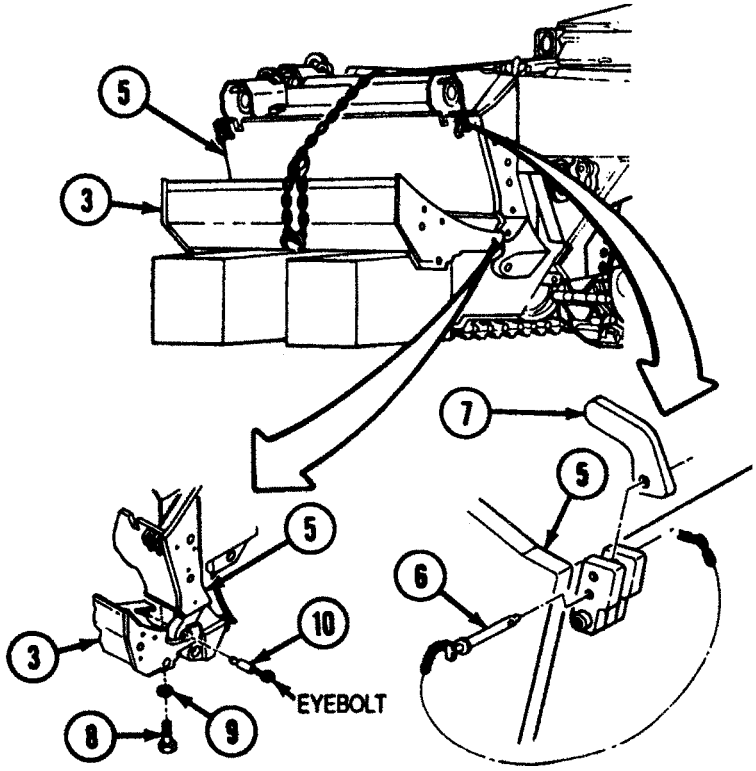
C Remove pin assembly (6) and latch (7) from each side of apron (5).

Note

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

D Remove screw (8) and washer (9) from both outer pivot pins (10). Remove hull support blocks (p 2-28) and lower dozer blade (3) on support.

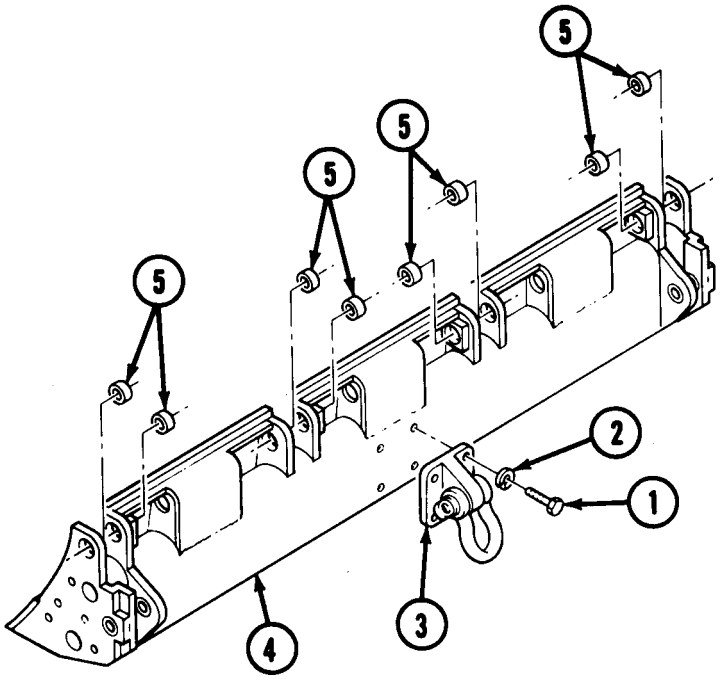
E Use eyebolt to pull both outer pivot pins (10). Remove dozer blade (3) from apron (5).



DISASSEMBLY

A Remove four screws (1), lockwashers (2), and shackle (3) from dozer blade (4). Discard lockwashers (2).

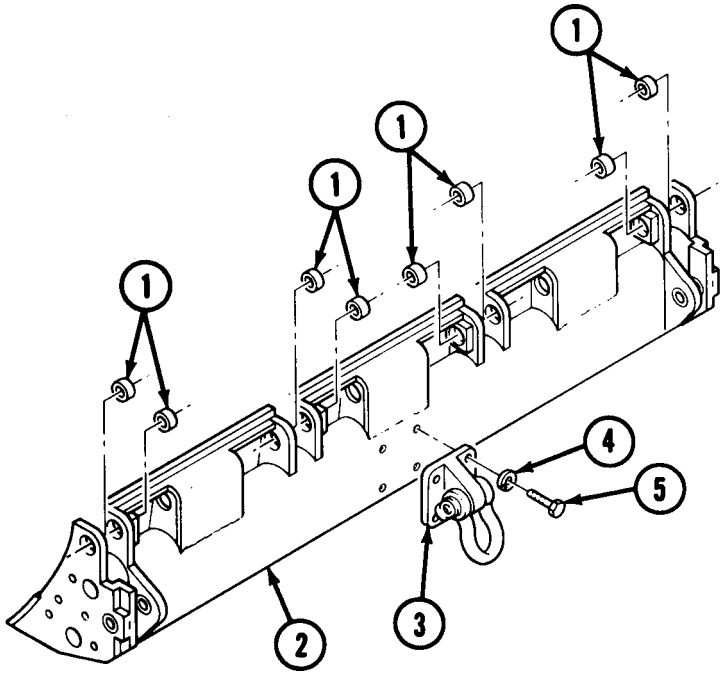
B Using hammer and soft drift, drive out eight bushings (5) from inner and outer pivot points of dozer blade (4). Discard bushings (5).



ASSEMBLY

A Install eight bushings (1) on inner and outer pivot points of dozer blade (2).

B Install shackle (3) on dozer blade (2) with four lockwashers (4) and screws (5).



INSTALLATION

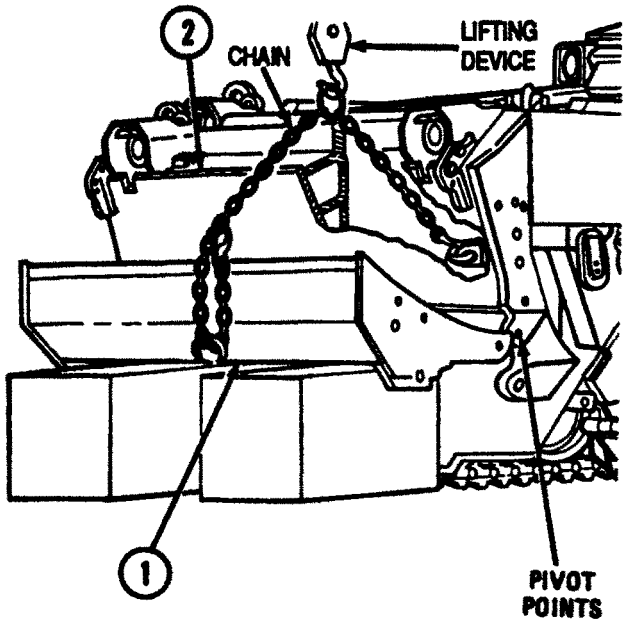
Note

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

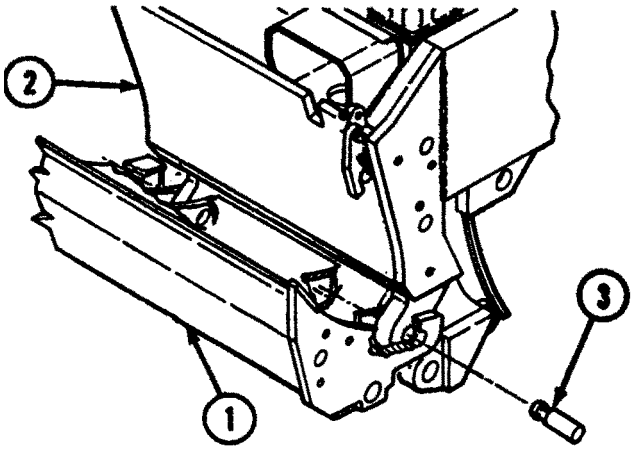
A Connect chain to dozer blade (1). Connect lifting device to chain and take up slack.

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.

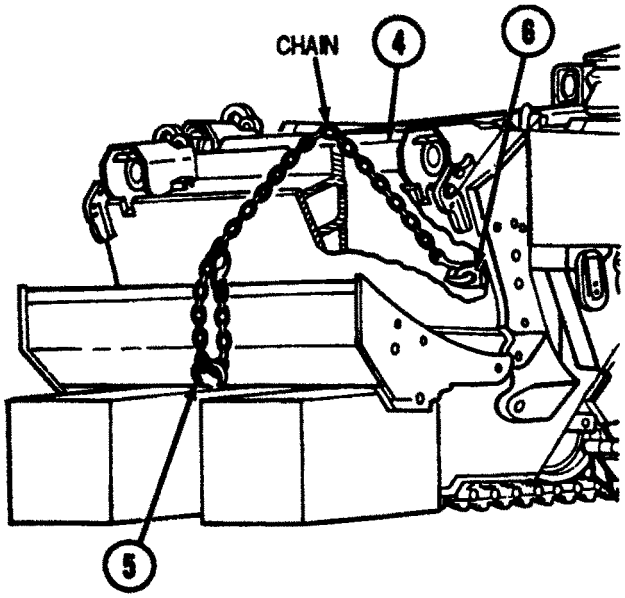


B Place dozer blade (1) on supports in front of vehicle, and align pivot points of apron (2) and dozer blade (1).

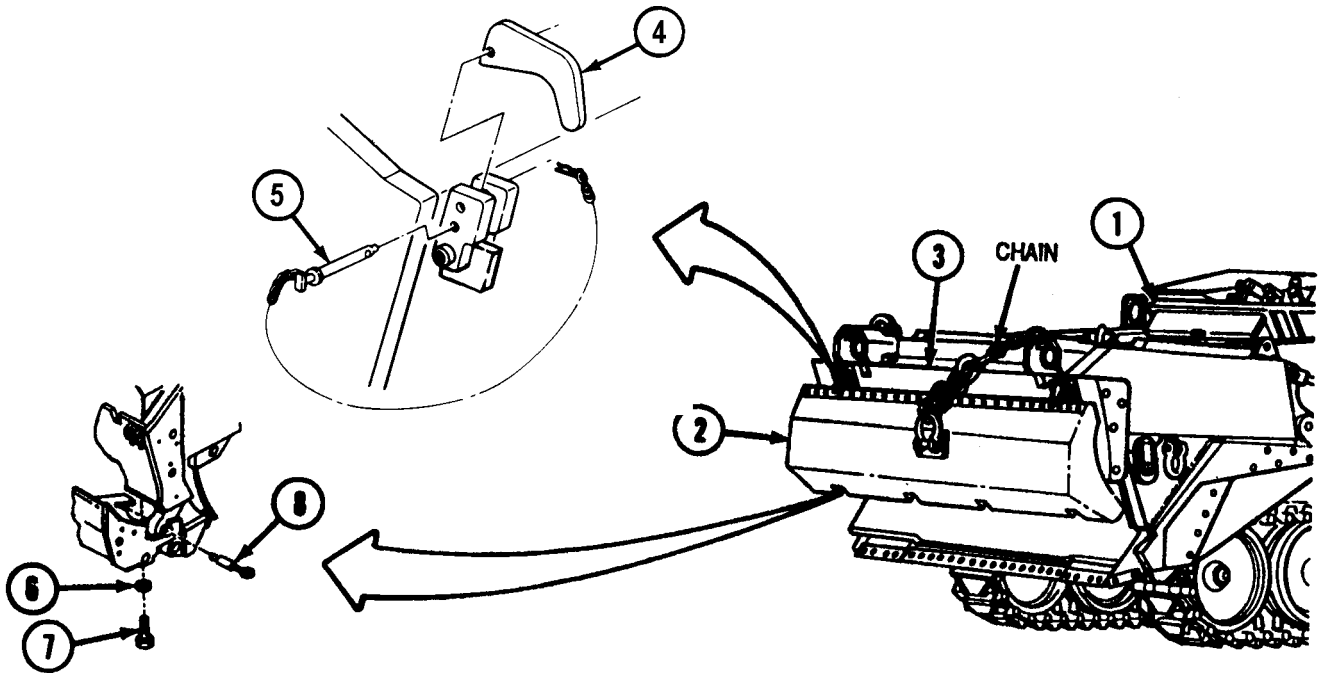


C Coat two outer pivot pins (3) with grease and install dozer blade (1) on apron (2) with outer pivot pins (3).

D Remove lifting device and chain.

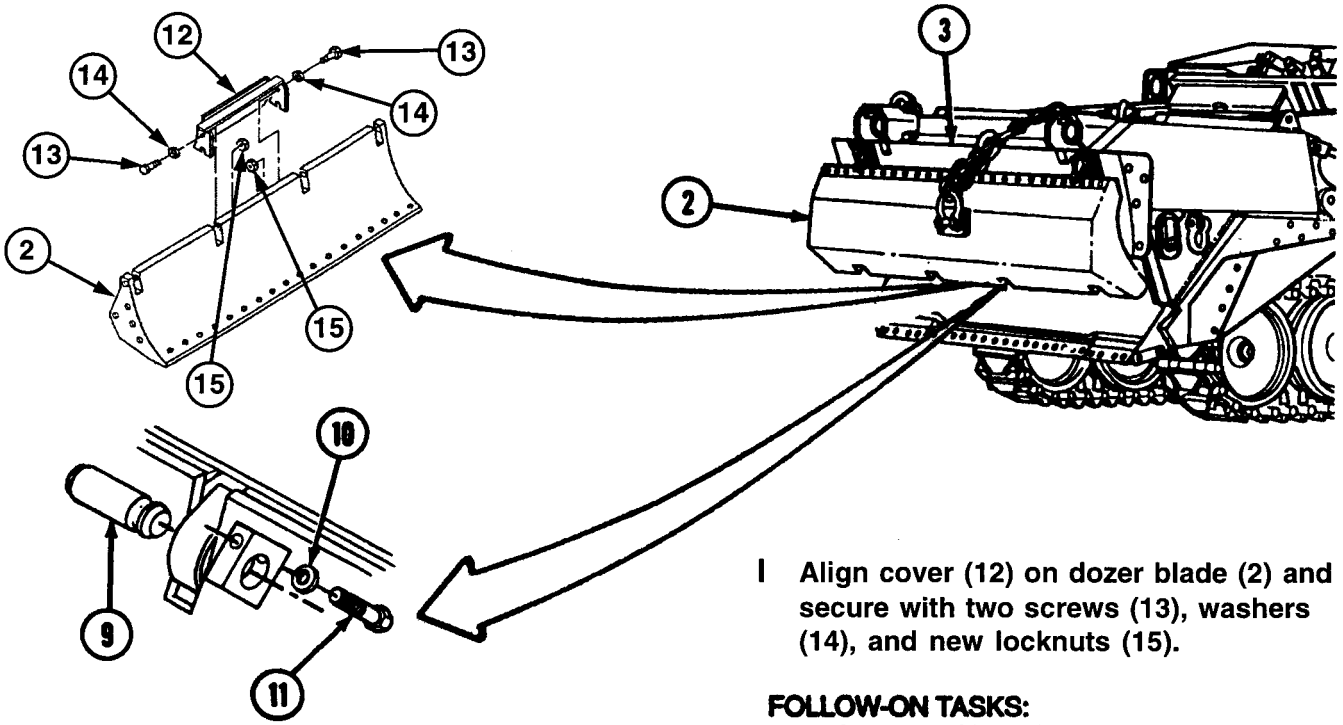


E Move ejector (4) forward, and connect chain between shackle (5) and eye (6) on ejector (4).



F Retract ejector (1) until dozer blade (2) is folded against apron (3). Install dozer blade latch (4) on each side of apron (3) with pin assembly (5).

G Install two washers (6) and screws (7) on dozer blade (2) and outer pivot pins (8).



H 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).

I Align cover (12) on dozer blade (2) and secure with two screws (13), washers (14), and new locknuts (15).

FOLLOW-ON TASKS:

- **Lower and lock dozer blade** TM 5-2350-262-10
- **Install dozer blade extensions** (p 4-261).
- **Install dozer cutting edge** (p 4-259).
- **Unblock vehicle** (p 2-27).

EJECTOR REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Parts:

Locknut

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Troubleshooting Reference:

Page 3-212 Ejector Malfunctions

Equipment Condition:

Note

Empty ejector stowage box prior to performing this task.

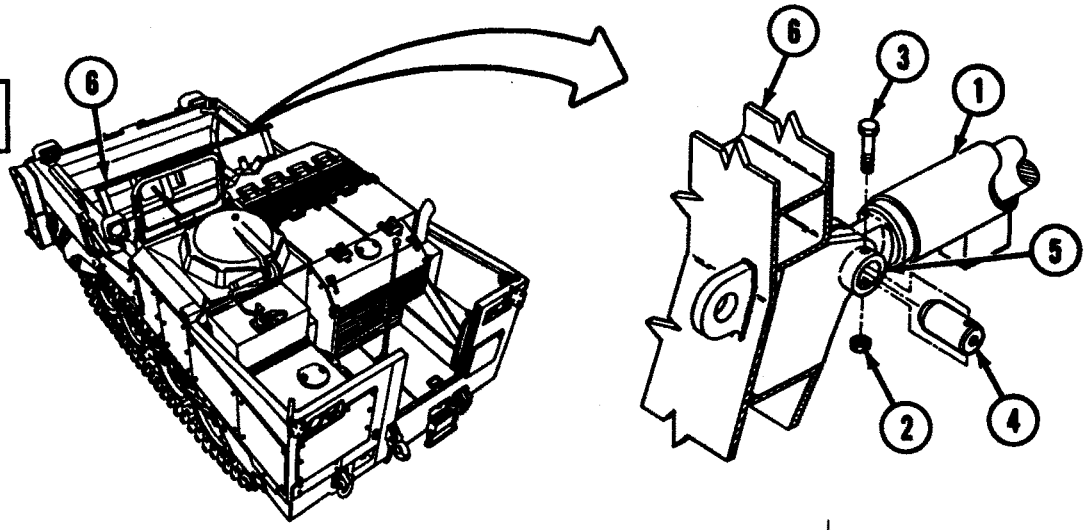
Reference	Condition Description
TM 5-2350-262-10	Dozer Blade Folded
TM 5-2350-262-10	Apron Raised and Locked
TM 5-2350-262-10	Ejector Forward

General Safety Instructions:

WARNING

- Lifting device must have a weight capacity greater than 928 lb (421 kg).
- Personnel must stand clear during lifting operations.

REMOVAL



A Support ejector cylinder (1) with jack stand and remove locknut (2). DIsconnect cylinder (1) from bracket (5) on rear of ejector (6).

B Start engine (TM 5-2350-262-10), and run at idle (750 to 850 rpm). Slowly retract ejector cylinder (1) (TM 5-2350-262-10) about 1 ft (.3 m).

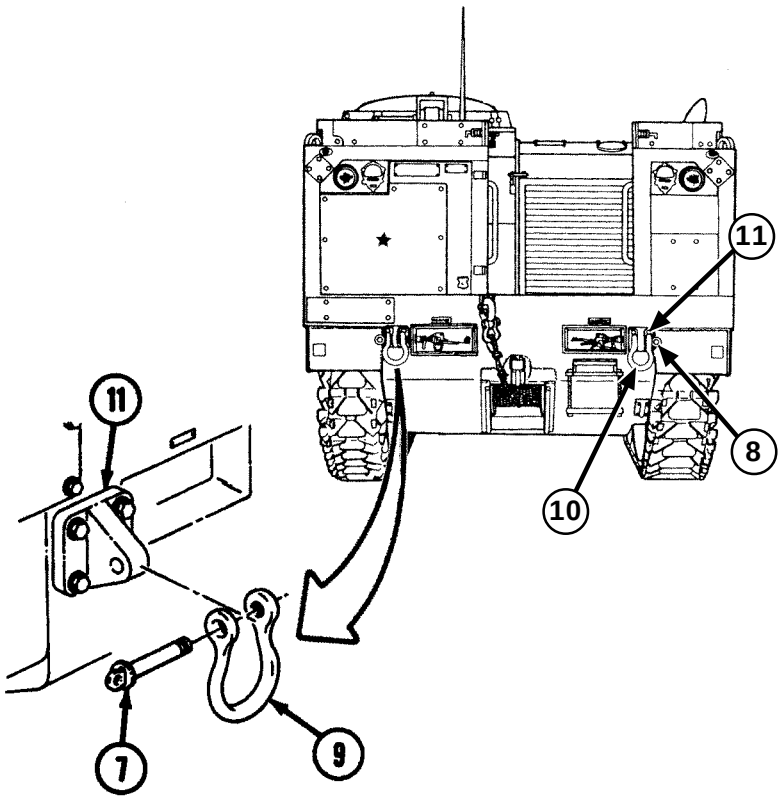
C At rear of vehicle, remove pins (7) and (8) and tiedown shackles (9) and (10) from brackets (11).

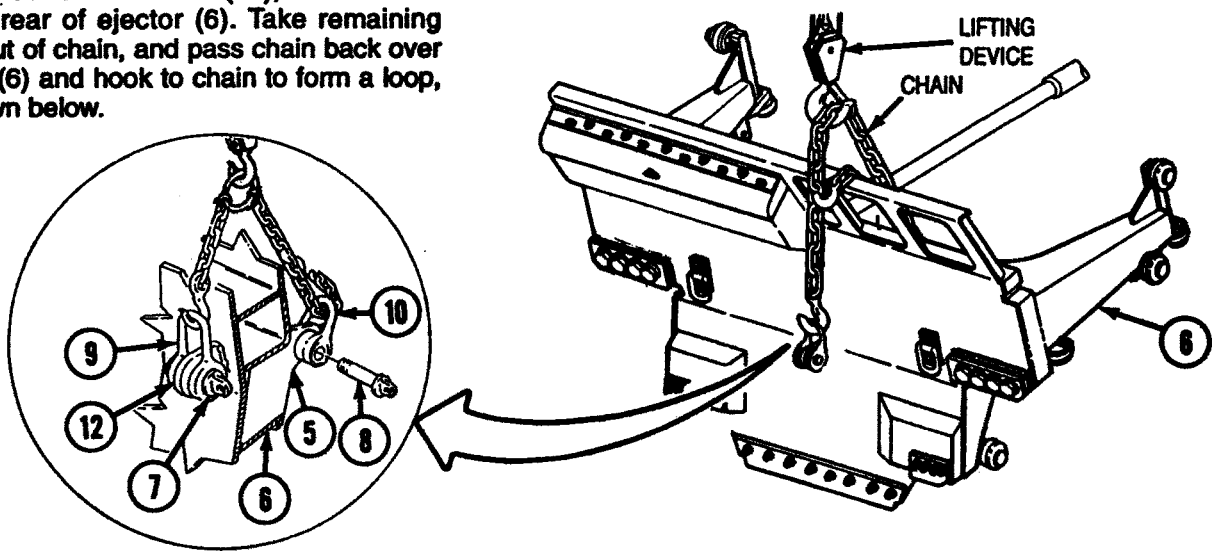
D Install tiedown shackle (9) and pin (7) (from rear of vehicle) on eye (12) at front of ejector (6).

E Install tiedown shackle (10) and pin (8) (from rear of vehicle) on bracket (5) at rear of ejector (6).

F Hook chain to tiedown shackle (9) on front of ejector (6).

G Pull chain through lifting device. Pass chain through tiedown shackle (10), from bottom up, on rear of ejector (6). Take remaining slack out of chain, and pass chain back over ejector (6) and hook to chain to form a loop, as shown below.





WARNING

- Lifting device must have a weight capacity greater than 928 lb (421 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

CAUTION

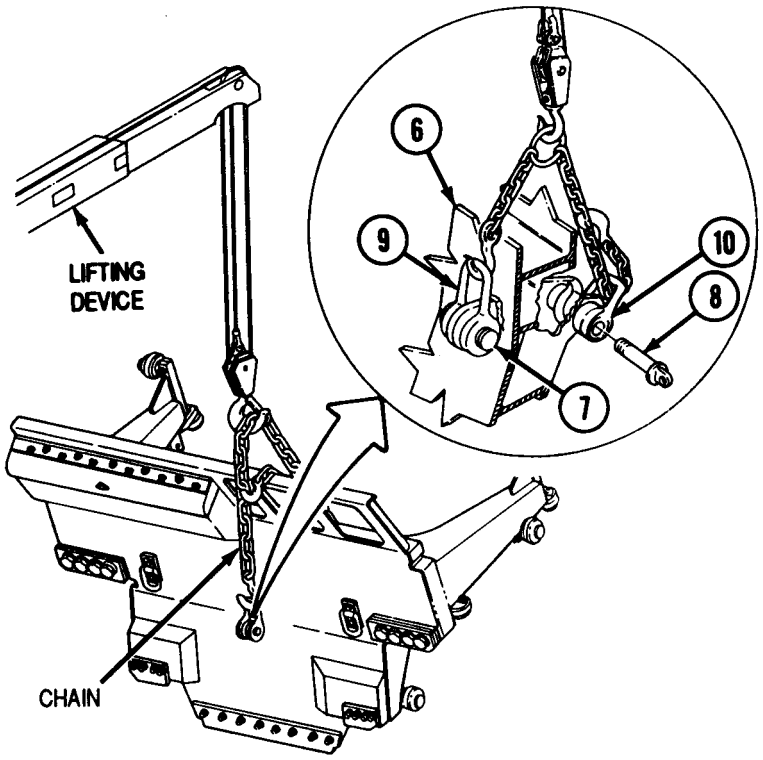
Ejector rollers can bind and become damaged. Use extreme care when removing ejector. Failure to comply may result in damage to equipment.

Note

During lifting operations, a guide rope should be used to prevent the ejector from swinging.

H Slowly retract lifting device to remove ejector (6) from bowl. Place ejector (6) on ground.

I Remove lifting device, chain, pin (7), and tiedown shackle (9) from ejector (6).



J Remove pin (8) and tiedown shackle (10) from ejector (6).

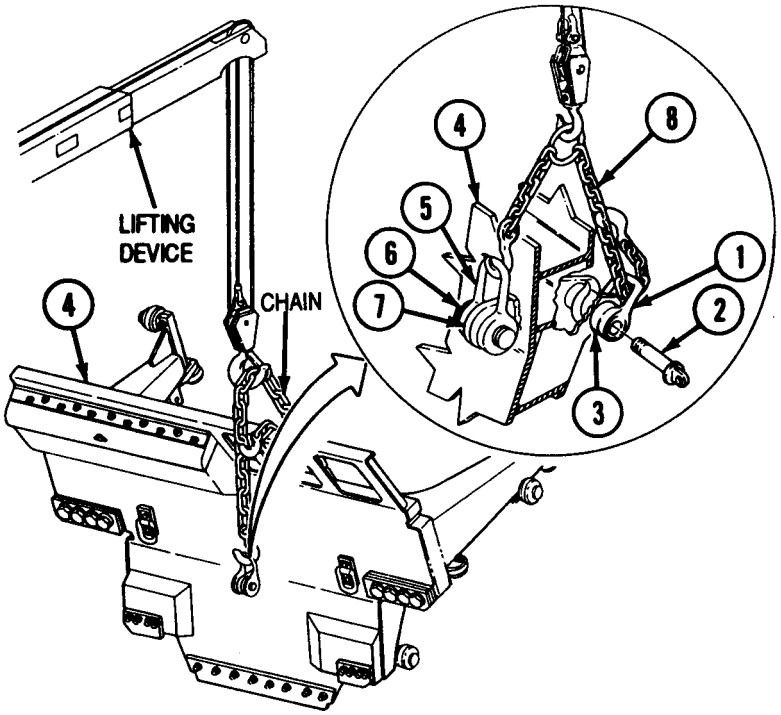
INSTALLATION

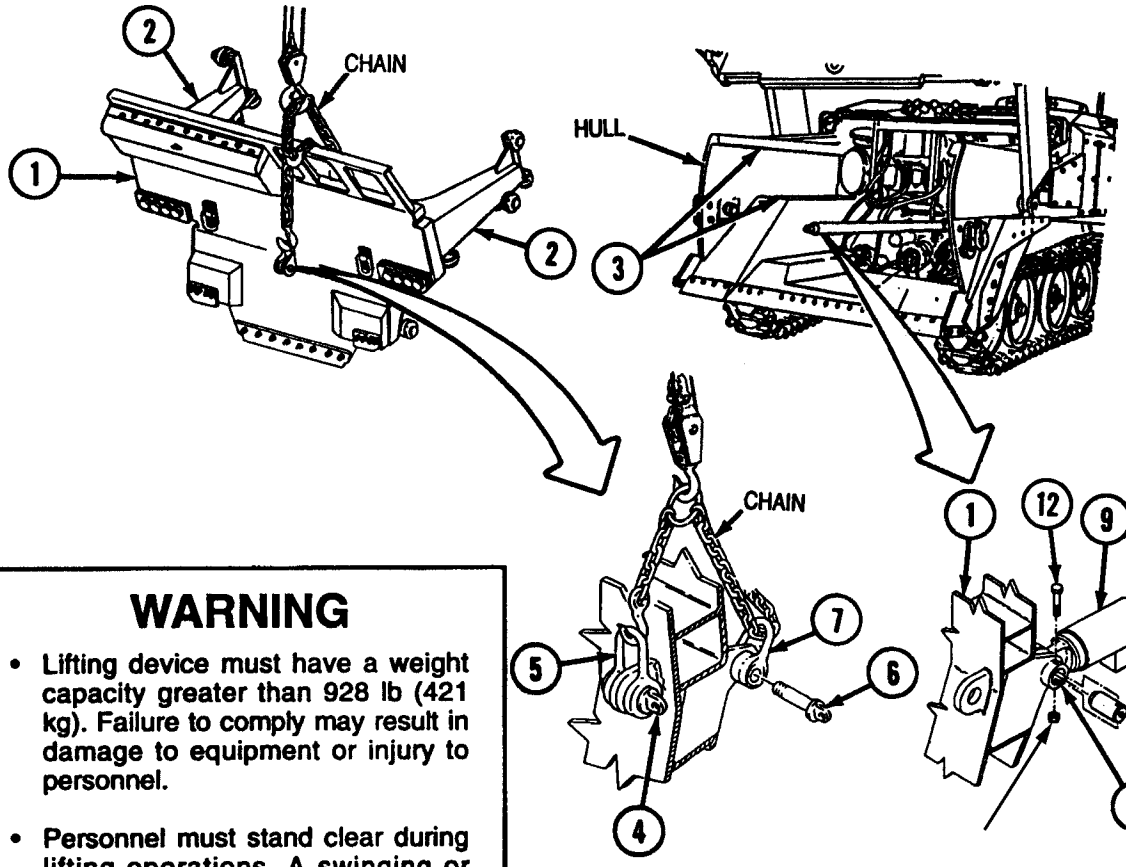
A Install tiedown shackle (1) and pin (2) (from rear of vehicle) on bracket (3) at rear of ejector (4).

B Install tiedown shackle (5) and pin (6) (from rear of vehicle) on eye (7) at front of ejector (4).

C Hook chain to tiedown shackle (5) at front of ejector (4).

D Pull chain through lifting device. Pass chain through tiedown shackle (1), from bottom up, on rear of ejector (4). Take remaining slack out of chain and pass chain back over ejector (4) and hook to chain to form a loop.





WARNING

- Lifting device must have a weight capacity greater than 928 lb (421 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

CAUTION

Ejector rollers can bind up and become damaged. Use extreme care when installing ejector. Failure to comply may result in damage to equipment.

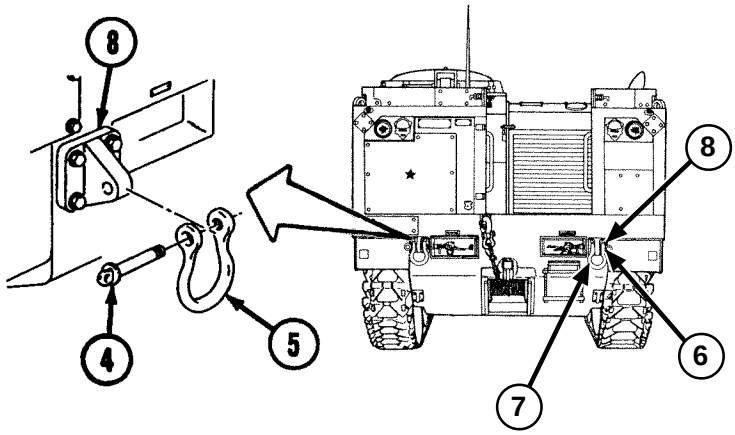
Note

During lifting operations, a guide rope should be used to prevent the ejector from swinging.

E Using lifting device, slowly lift ejector (1) and align arms (2) with ejector guides (3) of hull.

F Slide ejector (1) on ejector guides (3) of hull, and remove lifting device from chain.

G Manually push ejector (1) into bowl, and remove chain, pin (4), tiedown shackle (5), pin (6), and tiedown shackle (7) from ejector (1).



H Install tiedown shackles (5) and (7) and pins (4) and (6) on two brackets (8).

I Align ejector cylinder (9) and bracket (10), and connect ejector cylinder (9) to ejector (1) with pin (11), screw (12), and locknut (13).

FOLLOW-ON TASKS:

- Retract ejector (TM 5-2350-262-10).
- Unlock and lower apron (TM 5-2350-262-10).
- Unfold dozer blade (TM 5-2350-262-10).
- Adjust ejector rollers (p 4-279).

EJECTOR STOWAGE BOX REPAIR

This task covers:

a. Removal

b. Repair

c. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil — Item 26 Appendix D

Parts:

Locknut (23)

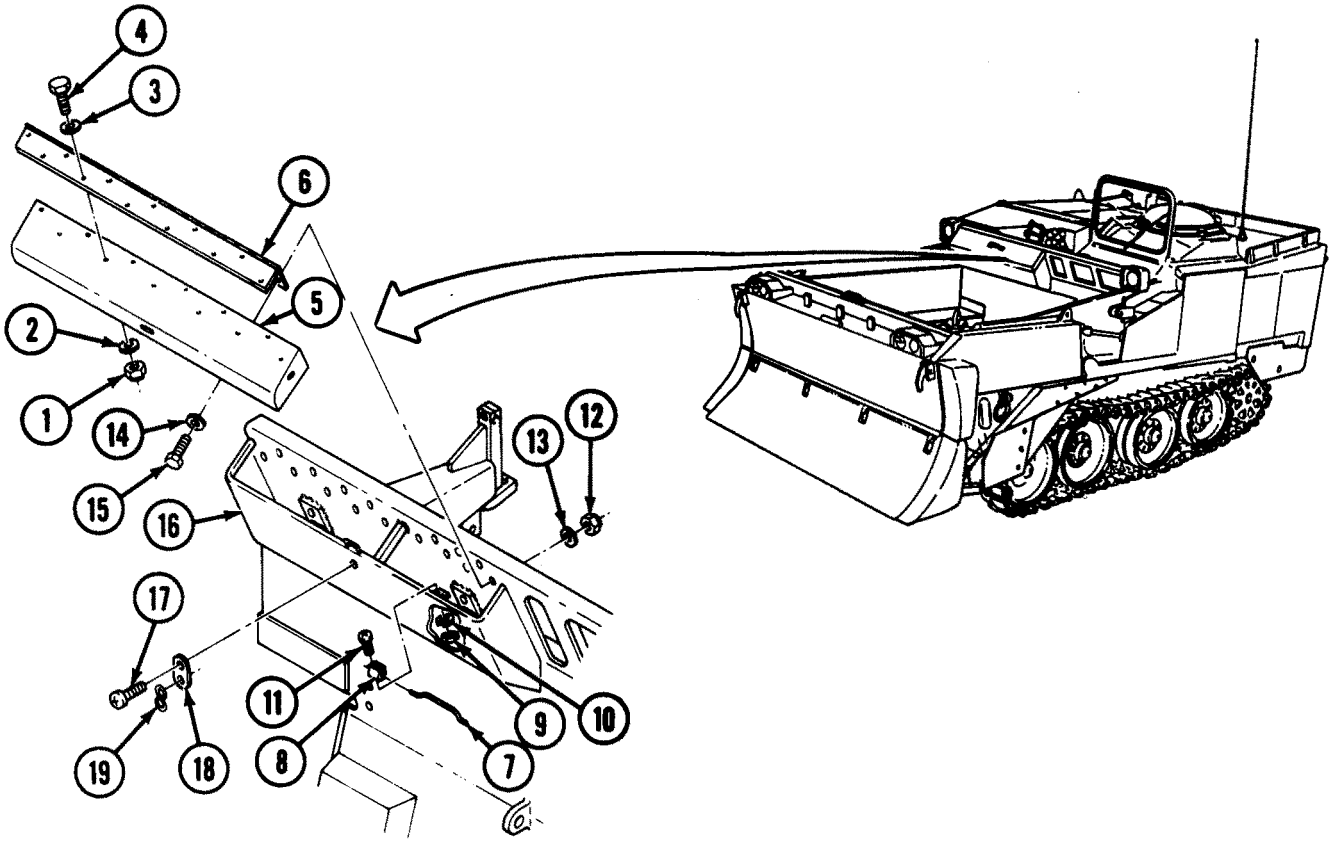
Lockwasher (2)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10



REMOVAL

A Remove eleven locknuts (1), washers (2) and (3), screws (4), and cover (5) from hinge (6). Discard locknuts (1).

B Remove connecting link (7) from clip (8), and remove two nuts (9), lockwashers (10), and screws (11) from clip (8). Discard lockwashers (10).

C Remove twelve locknuts (12), washers (13) and (14), screws (15), and hinge (6) from ejector (16). Discard locknuts (12).

D Remove screw (17), tab (18), and hook (19) from ejector (16).

REPAIR

Repair ejector stowage box by replacing unserviceable parts.

INSTALLATION

A Install hook (19) and tab (18) on ejector (16) with screw (17).

Note

- Apply lubricating oil to threads of screws prior to installation.
- Ensure hinge is in correct position to allow proper operation of stowage box.

B Install hinge (6) on ejector (16) with twelve screws (15), washers (14) and (13), and locknuts (12). Tighten locknuts (12) to 83-86 lb-ft (113-117 N·m).

C Secure connecting link (7) to ejector (16) by installing clip (8), two screws (11), lockwashers (10), and nuts (9).

D Install cover (5) on hinge (6) with eleven screws (4), washers (3) and (2), and locknuts (1). Tighten locknuts (1) to 83-86 lb-ft (113-117 N·m).

EJECTOR ROLLERS REPLACEMENT AND ADJUSTMENT

This task covers:

a. Removal

b. Installation

c. Adjustment

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Grease — Item 19 Appendix D

Parts:

Locknut (10)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Troubleshooting Reference:

Page 3-212 Ejector Malfunctions

General Safety Instructions:

WARNING

Do not stand or work in the bowl unless ejector lock is engaged. Do not stand in bowl to observe roller guide travel.

REMOVAL

WARNING

Do not stand or work in the bowl unless ejector lock is engaged. Do not stand in bowl to observe roller guide travel. Failure to comply may result in severe injury to personnel.

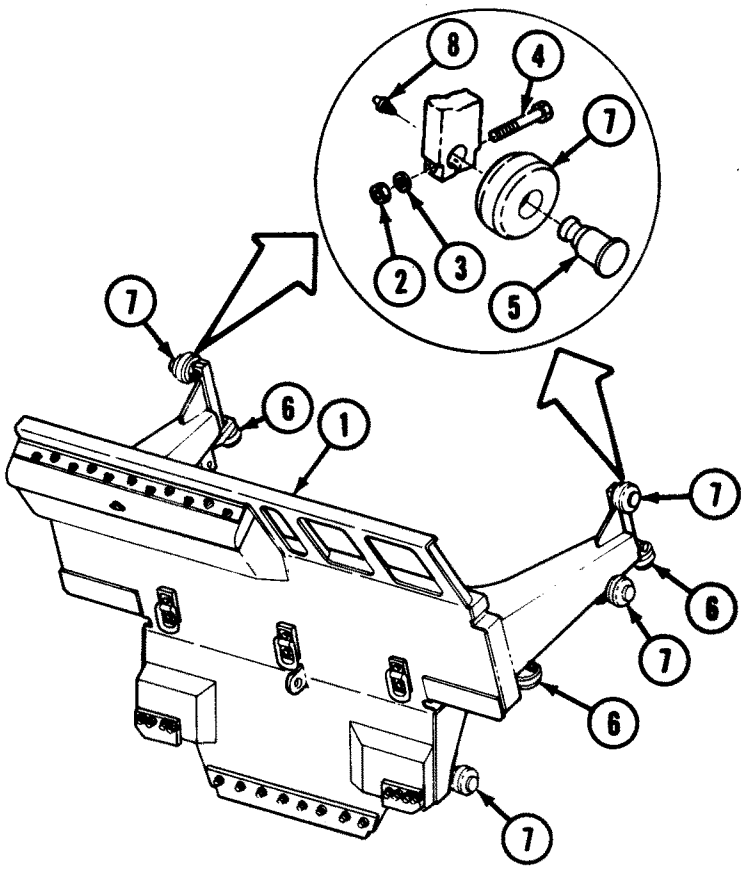
Note

- Horizontal rollers can be replaced without removing ejector from vehicle. Perform step A to replace vertical rollers.
- Roller replacement is similar for all ten rollers. Tag shafts as removed for identification at time of installation.

A Remove ejector (1) from vehicle (p 4-272).

B Remove ten locknuts (2), washers (3), screws (4), shafts (5), and four horizontal rollers (6) and six vertical rollers (7) from ejector (1). Discard locknuts (2).

C Remove ten lubrication fittings (8) from shafts (5).



INSTALLATION

WARNING

Do not stand or work in the bowl unless ejector lock is engaged. Do not stand in bowl to observe roller guide travel. Failure to comply may result in severe injury to personnel.

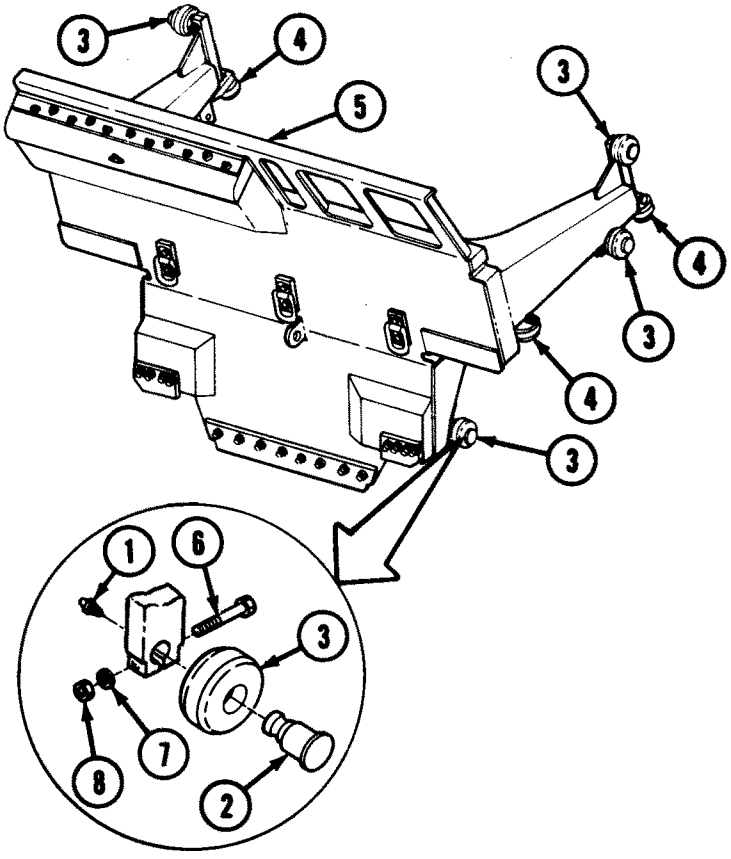
A Install ten lubrication fittings (1) on shafts (2).

Note

Ensure inside diameter of each roller is free of paint and dirt prior to installation.

B Install six vertical rollers (3) and four horizontal rollers (4) on ejector (5) with ten shafts (2), screws (6), washers (7), and locknuts (8). Tighten locknuts (8) to 60-70 lb-ft (81-95 N·m).

C Apply grease to ten lubrication fittings (1).



ADJUSTMENT

WARNING

Do not stand or work in the bowl unless ejector lock is engaged. Do not stand in bowl to observe roller guide travel. Failure to comply may result in severe injury to personnel.

Note

- Only rollers (2), (3), and (7) on each side of ejector are adjustable. No other rollers can be adjusted.
- Ensure bowl is clean of all debris.

A Fully extend and retract ejector (1) (TM 5-2350-262-10) and note where roller travel is tightest against hull.

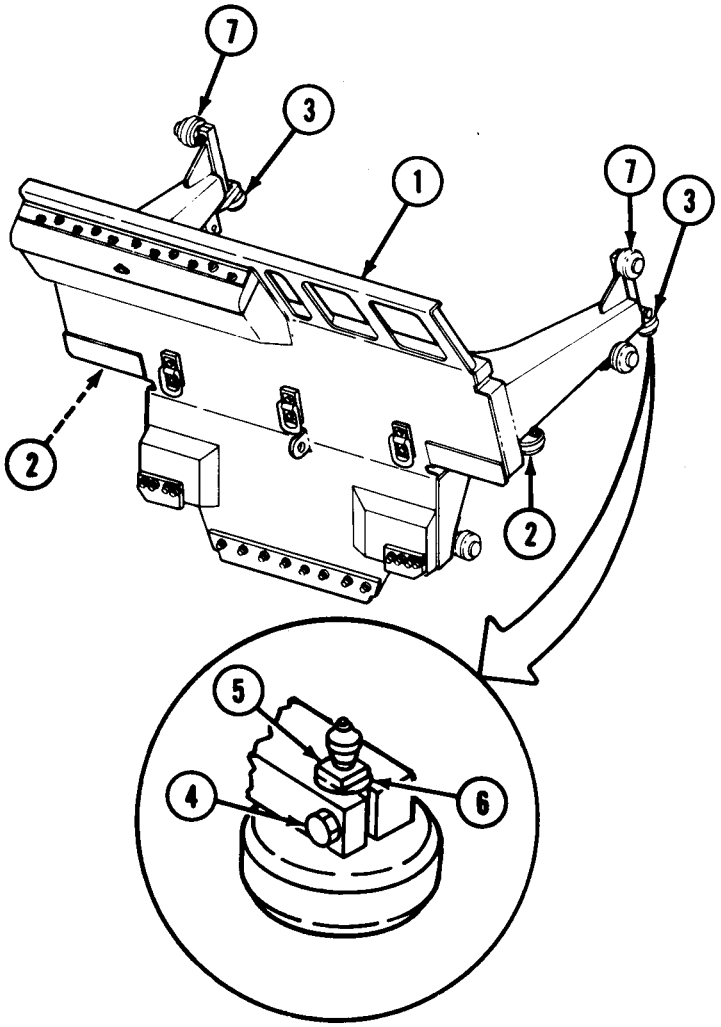
B Using crowbar, pry between arm of ejector (1) and hull to push one side of ejector (1) against hull. Use horizontal rollers (2) and (3) to center ejector (1) in bowl.

C Loosen two locknuts (4), and turn square wrenching surface (5) of shafts (6) until rollers (2) and (3) lightly touch hull. Tighten locknuts (4) to 60-70 lb-ft (81-95 N·m).

D Perform steps B and C on rollers (2) and (3) at opposite side of ejector (1).

E Perform step C for rollers (7) until rollers (7) lightly touch hull at tightest point of travel on both sides of ejector.

F Start vehicle (TM 5-2350-262-10) and operate ejector to ensure rollers are properly adjusted.



FOLLOW-ON TASK:
Adjust ejector wear plates (p 4-282).

EJECTOR WEAR PLATES REPLACEMENT AND ADJUSTMENT

This task covers:

a. Removal

b. Installation

c. Adjustment

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair; Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Reference:

TM 5-2350-262-10

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

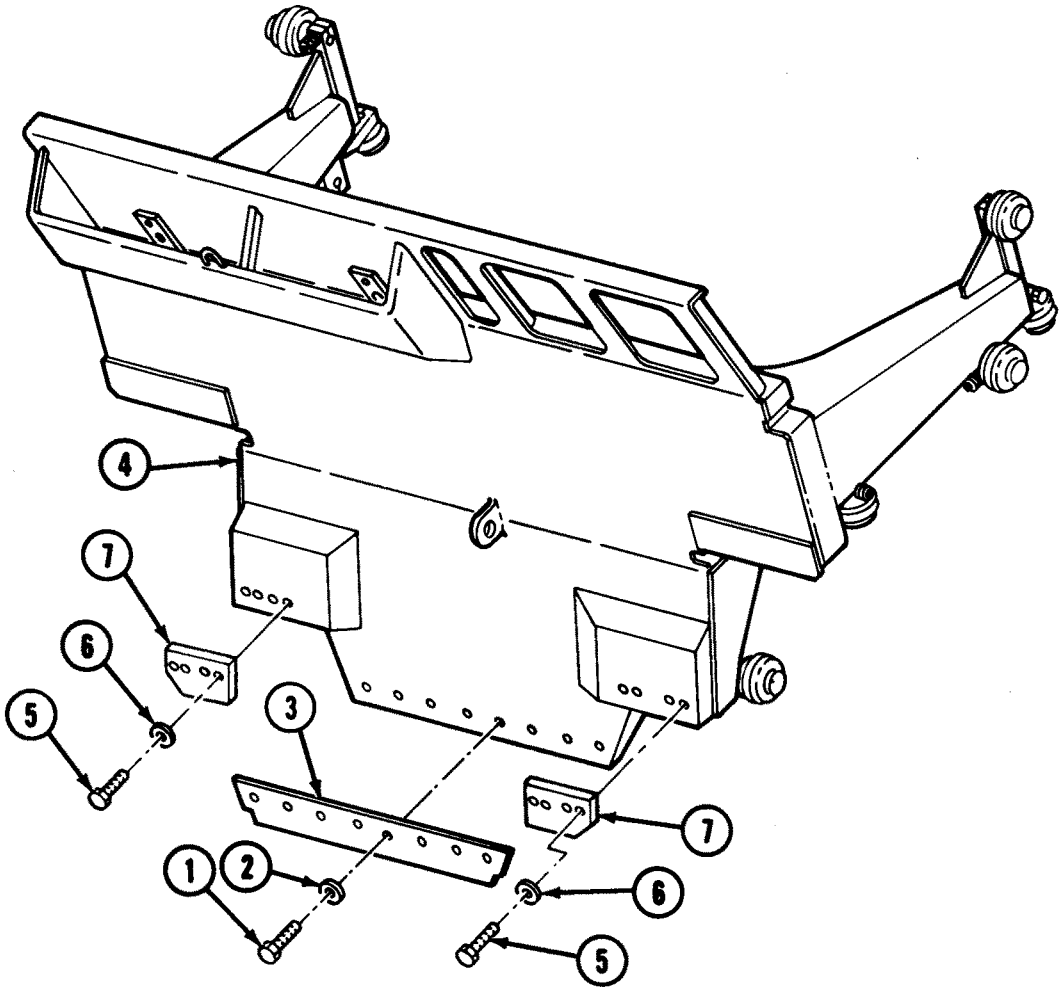
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Apron Raised and Locked
Page 2-27	Front of Vehicle Blocked

General Safety Instructions:

WARNING

Do not stand or work under raised apron and dozer assembly unless apron lockpins are installed.



REMOVAL

WARNING

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

A Remove eight screws (1), washers (2), and center wear plate (3) from ejector (4).

B Remove eight screws (5), washers (6), and two side wear plates (7) from ejector (4).

INSTALLATION

WARNING

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

Note

Use old wear plates as spacers between new wear plates and hull. Space between new wear plates and hull should be approximately 1/4 in. (6.3 mm).

A Install center wear plate (3) on ejector (4) with eight washers (2) and screws (1).

B Install two side wear plates (7) on ejector (4) with eight washers (6) and screws (5).

ADJUSTMENT

WARNING

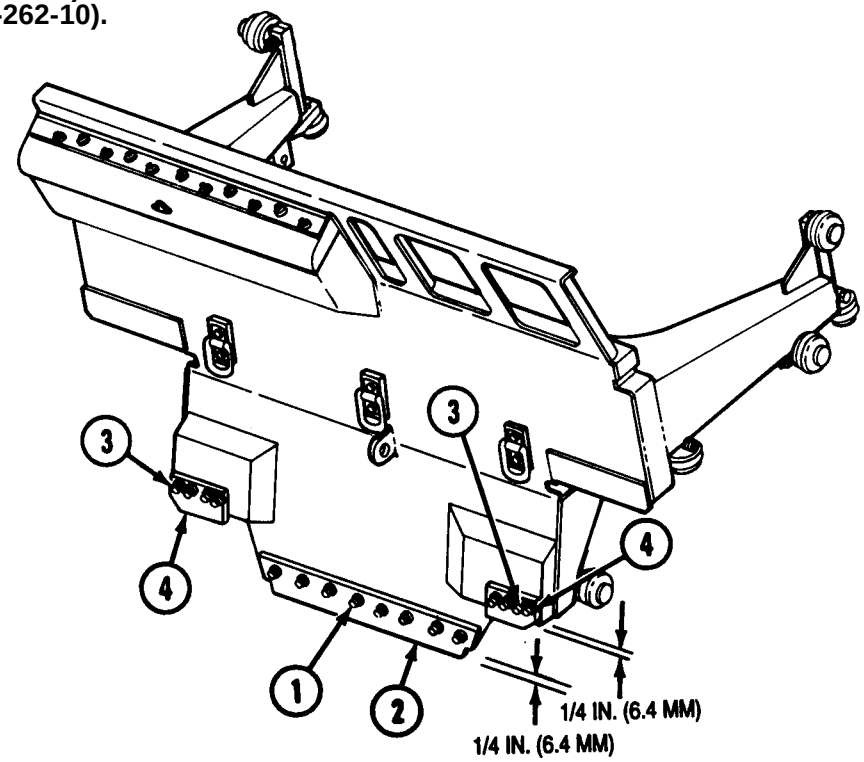
Do not stand or work under raised apron and dozer assembly unless apron lockpins are installed. Failure to comply may result in severe injury or death to personnel.

A Loosen eight screws (1) on center wear plate (2), and four screws (3) on each of two outer wear plates (4).

B Adjust wear plates (2) and (4) until wear plates (2) and (4) clear highest part of bowl floor by 1/4 in. (6.4 mm), and tighten screws (1) and (3).

FOLLOW-ON TASKS:

- Unblock front of vehicle (p 2-27).
- Lower apron (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).



SCRAPER CUTTING EDGES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair; Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil	Item 26 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Apron Raised and Locked
Page 2-27	Hull Raised and Blocked

General Safety Instructions:

WARNING

Do not stand or work under raised apron and dozer assembly unless apron lockpins are installed.

REMOVAL

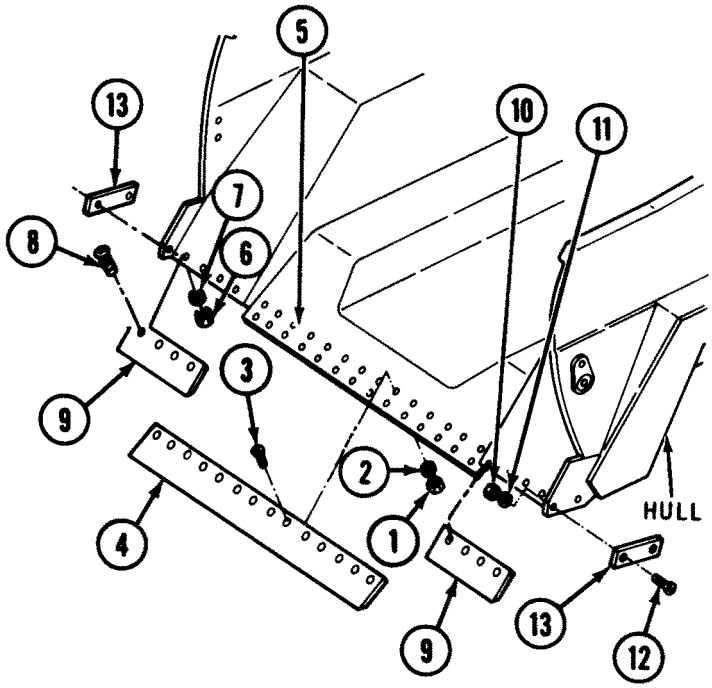
WARNING

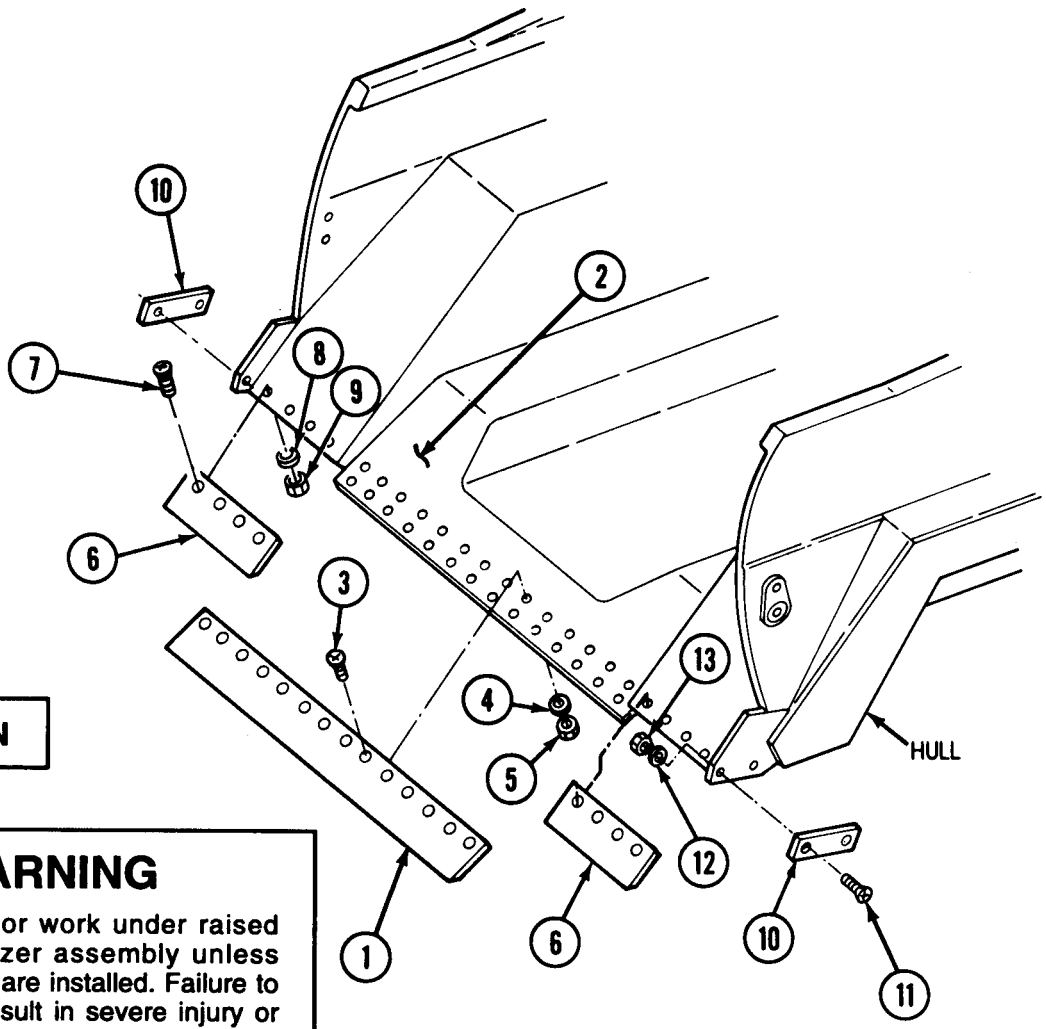
Do not stand or work under raised apron and dozer assembly unless apron lockpins are installed. Failure to comply may result in severe injury or death to personnel.

A Remove fourteen nuts (1), washers (2), screws (3), and center cutting edge (4) from scraper (5).

B Remove eight nuts (6), washers (7), screws (8), and left and right ramp cutting edges (9) from scraper.

C Remove four nuts (10), washers (11), screws (12), and left and right side cutters (13) from hull.





INSTALLATION

WARNING

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

CAUTION

If center cutting edge is not installed properly, the cutting edge or hull moldboard may be damaged.

Note

Use upper set of moldboard holes when installing a new center cutting edge. When cutting edge becomes worn, move it to the lower set of moldboard holes. When cutting edge is within 1/4 in. (6.4 mm) of moldboard, move to lower holes. If cutting edge is installed in lower set of moldboard holes, and is worn to within 1/4 in. (6.4 mm) of moldboard, replace the cutting edge. Always replace left and right cutting edges when they are worn to within 1/4 in. (6.4 mm) of hull.

Note

Apply lubricating oil to threads of screws prior to installation.

A Install center cutting edge (1) on scraper (2) with fourteen screws (3), washers (4), and nuts (5).

B Install ramp cutting edges (6) on scraper (2) with eight screws (7), washers (8), and nuts (9).

C Install side cutters (10) on hull with four screws (11), washers (12), and nuts (13).

D Tighten nuts (5), (9), and (13) to 266-294 lb-ft (361-399 N·m).

FOLLOW-ON TASKS:

- Lower and unblock hull (p 2-27).
- Unlock and lower apron (TM 5-2350-262-10).

APRON HYDRAULIC CYLINDER REPLACEMENT

This task covers:

a. Removal
b. Inspection
c. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1.

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D
Grease	Item 19 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Locknut

Packing (2)

Self-locking Screw

Parts Reference:

TM 5-2350-262-24P	Group AP Group AQ

Personnel Required:

Two Construction Equipment Repairers 62B10

Troubleshooting Reference:

Page 3-189	Apron Does Not Raise or Lower
Page 3-276	Apron Drifts Downward with Control Levers in Neutral Position

Equipment Condition:

Reference	Condition Description
Page 2-27	Hydraulic Pressure Relieved
Page 4-41	Apron Armor Plate 1R or 1L Removed

General Safety Instructions:

WARNING

Support cylinder while removing or installing. Cylinder weighs 85 lb (39 kg).

REMOVAL

CAUTION

Cover hose ends and ports to prevent contamination of hydraulic oil. Failure to comply may result in damage to equipment.

Note

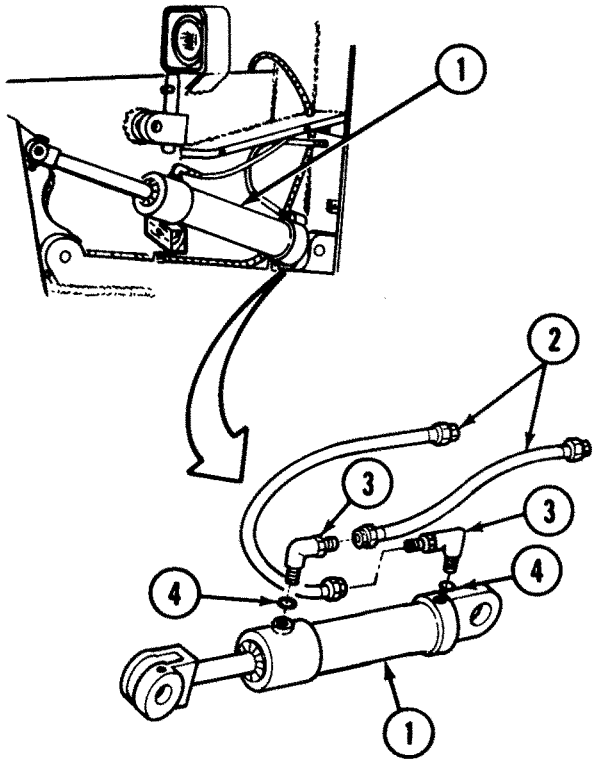
Replacement procedures for the apron hydraulic cylinder are the same for both sides of vehicle. Left side is shown.

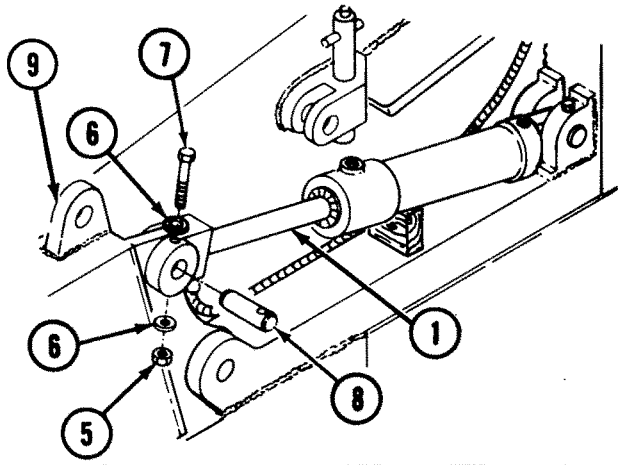
A Support apron hydraulic cylinder (1) with wood block.

Note

- Tag hydraulic lines and fitting prior to removal for installation.
- Have clean suitable container ready to catch hydraulic oil.

B Disconnect two hoses (2) from elbows (3), and remove elbows (3) and packings (4) from cylinder (1). Discard packings (4).

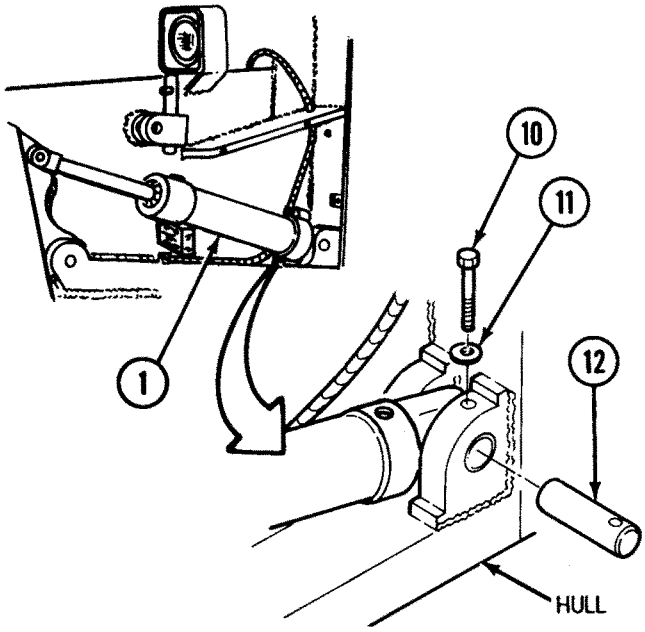




WARNING

Support cylinder while removing. Cylinder weighs 85 lb (39 kg) and can cause serious injury if dropped on hands or feet.

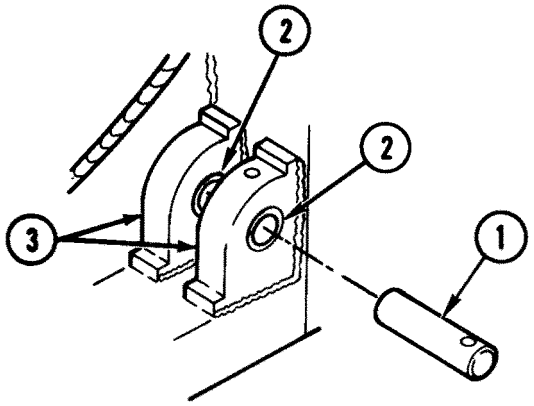
C Remove locknut (5), two washers (6), screw (7), and pin (8) from cylinder (1) and apron (9). Discard locknut (5).



D Remove self-locking screw (10), washer (11), pin (12), and cylinder (1) from hull. Discard self-locking screw (10).

INSPECTION

Inspect pin (1) and bushings (2) for signs of pitting or other damage. Remove bushings (2) from hull brackets (3), and replace if damaged. Replace pin (1) if damaged.



INSTALLATION

Note

Improperly installed hydraulic lines and fittings can cause severe (Class III) oil leaks. Refer to page 2-29 for proper methods to install and tighten lines and fittings.

A Coat pin (1) and inside surface of two bushings (2) with grease.

B Support cylinder (3) with wood block.

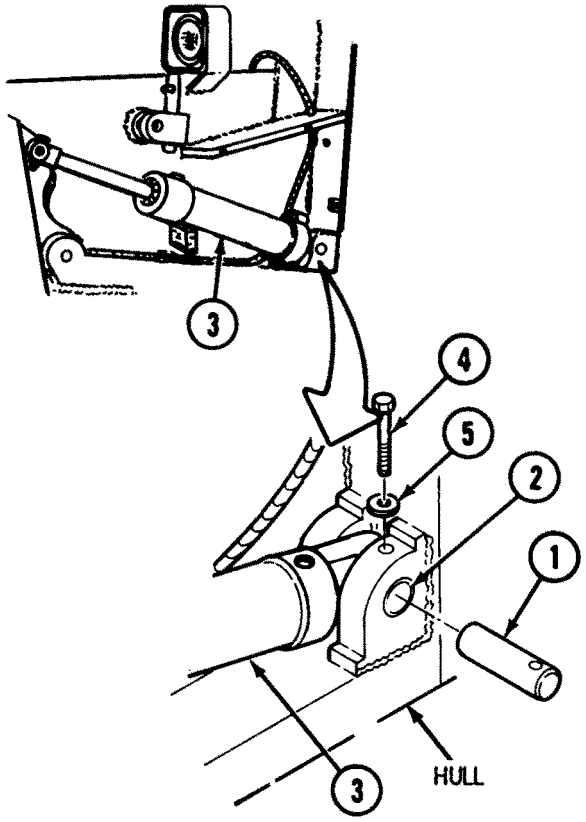
WARNING

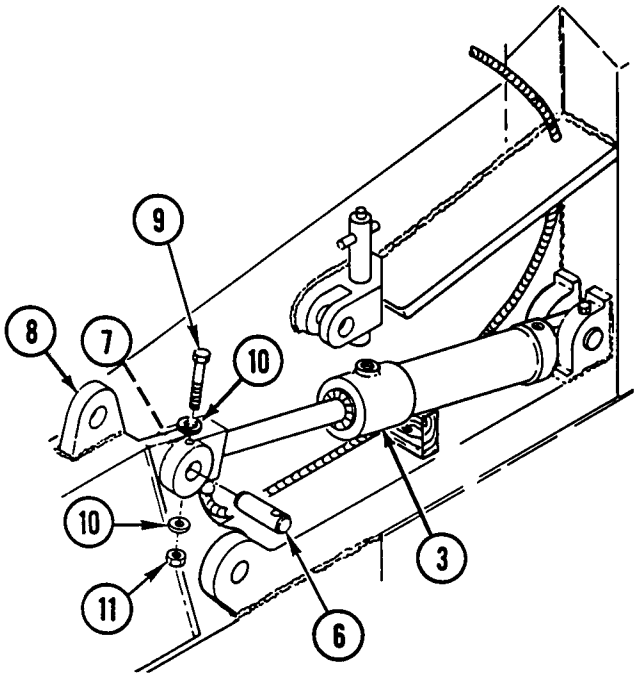
Support cylinder while installing. Cylinder weighs 85 lb (39 kg) and can cause serious injury if dropped on hands or feet.

Note

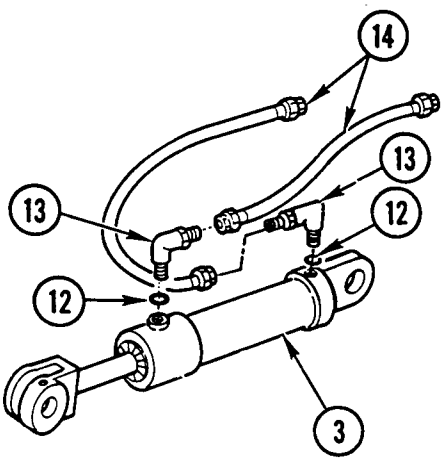
Apply lubricating oil to threads of screws prior to installation.

C Install cylinder (3) on hull with pin (1), washer (5), and self-locking screw (4). Tighten self-locking screw (4) to 24-26 lb-ft (33-35 N·m).





D Coat pin (6) and inside surface of two bearings (7) with grease, and install cylinder (3) on apron (8) with pin (6), screw (9), two washers (10), and locknut (11). Remove wood block.



E Install two packings (12) and elbows (13) on cylinder (3), and connect two hoses (14) to elbows (13).

FOLLOW-ON TASK:
Install apron armor plate 1R or 1L (p 4-42).

EJECTOR HYDRAULIC CYLINDER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Lifting Straps 3940-01-095-1131

Parts:

Locknut (2)

Packing (2)

Parts Reference:

TM 5-2350-262-24P Group AP
Group AQ

Personnel Required:

Two Construction Equipment Repairers 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

TM 5-2350-262-20-3

Troubleshooting Reference:

TM 5-2350-262-20-3 Ejector Creeps

TM 5-2350-262-20-3 Ejector Does Not Extend or Retract

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
Page 4-339	Engine Intake and Exhaust Grilles and Access Covers Removed
Page 4-360	Rear Floor Plates Removed

General Safety Instructions:

WARNING

- Lifting device must have a weight capacity greater than 325 lb (148 kg).
- Ejector cylinder weighs 325 lb (148 kg). Support ejector cylinder before disconnecting or removing.
- High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved.
- Personnel must stand clear during lifting operations.
- Keep hands from ejector cylinder when hydraulically moving cylinder to align eye of cylinder for installation.

REMOVAL

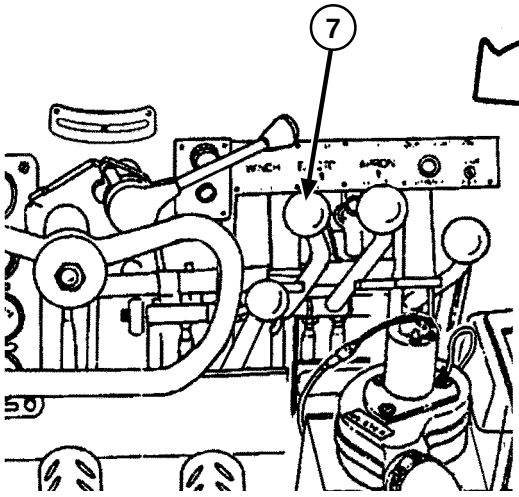
WARNING

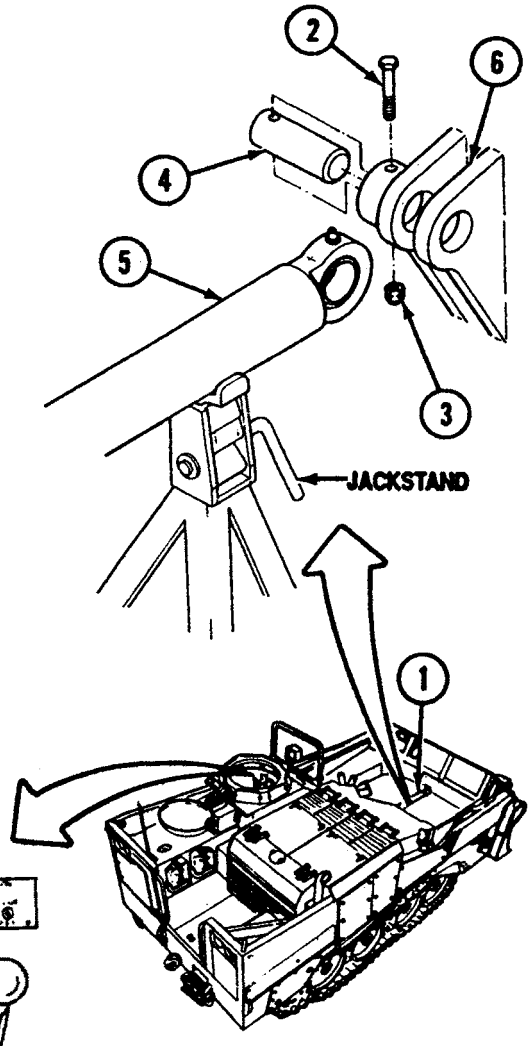
Ejector cylinder weighs 325 lb (148 kg). Support ejector cylinder before disconnecting or removing. Failure to comply may result in severe injury to personnel.

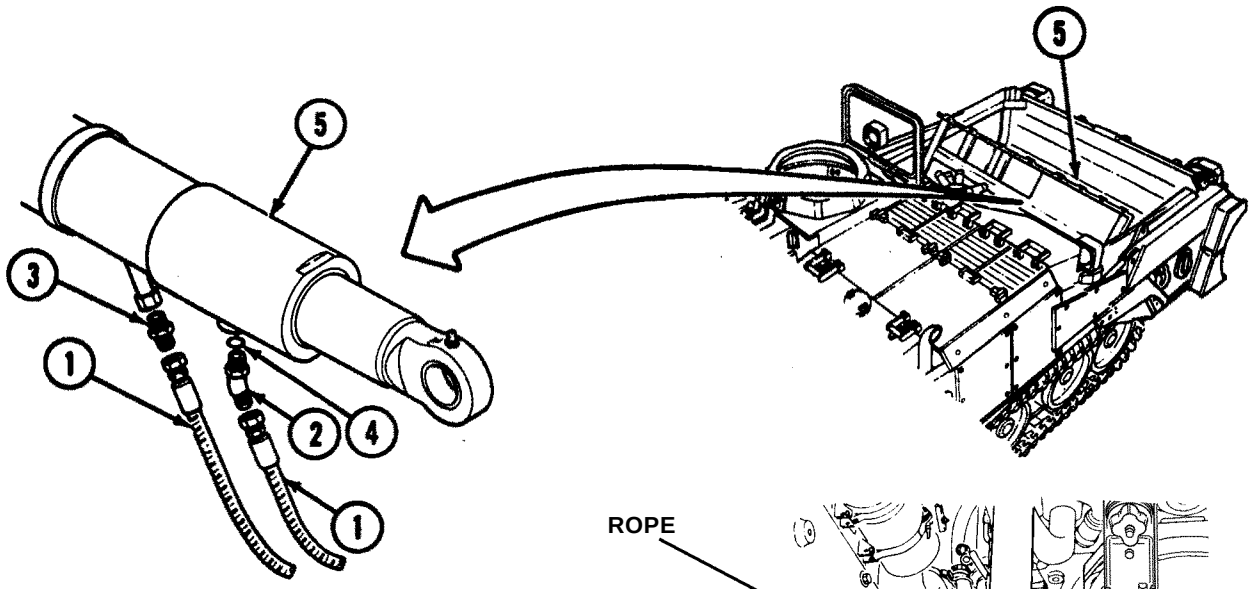
A Support cylinder (1) with jackstand, and remove screw (2), locknut (3), and pin (4) from cylinder rod (5) and cylinder bracket (6). Discard locknut (3).

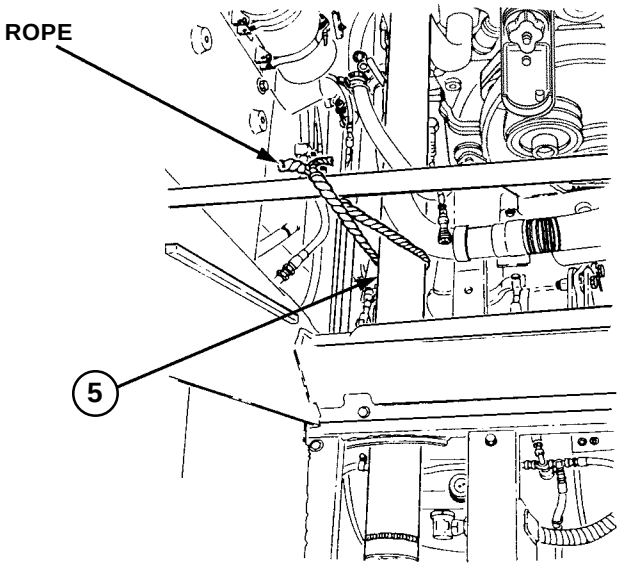
B Start and warm up vehicle engine (TM 5-2350-161-10). Move ejector control lever (7) slowly, to BACK, and retract cylinder rod (5) from cylinder bracket (6).

C Shut off vehicle engine (TM 5-2350-262-10) and relieve hydraulic pressure (p 2-28).









WARNING

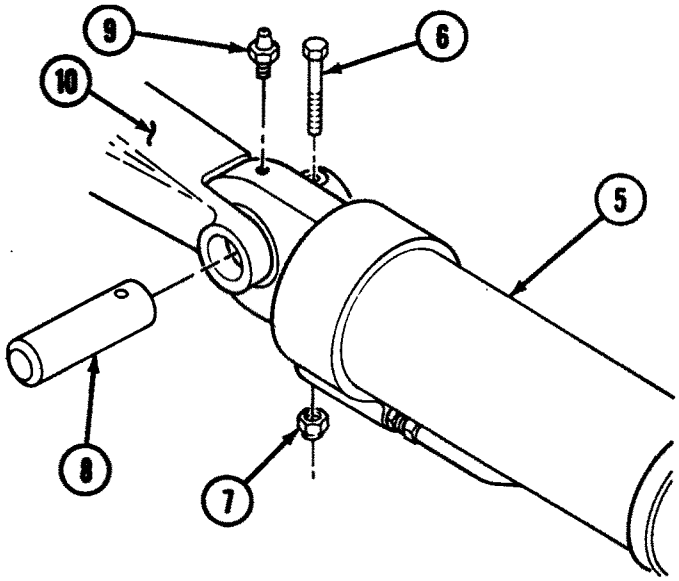
High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hydraulic hose or fitting. Failure to comply may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

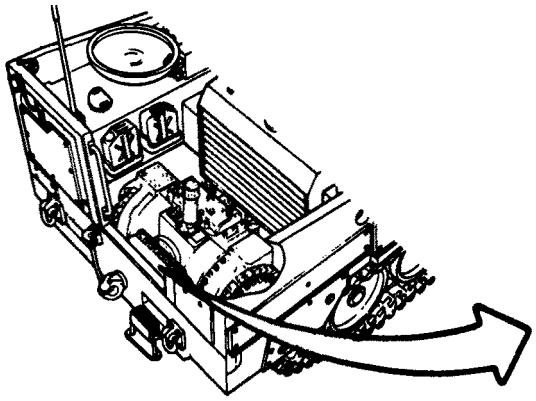
D Disconnect two hoses (1) from elbow (2) and nipple (3), and remove elbow (2), packing (4), and nipple (3) from cylinder (5). Drain oil from two hoses (1) into suitable container, and cover hose ends and cylinder ports to prevent contamination. Discard packing (4).

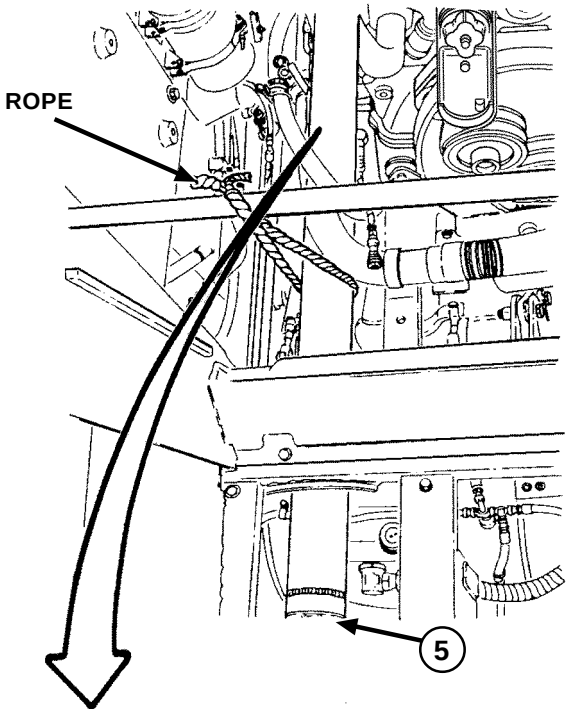
CAUTION

Ejector cylinder can damage engine and transmission hoses if allowed to move up or down. Keep ejector cylinder steady while removing. Failure to comply may result in damage to equipment.

E Support center of cylinder (5) with rope through engine compartment, and remove screw (6), locknut (7), pin (8), and lubrication fitting (9) from cylinder (5) and bracket (10). Discard locknut (7).





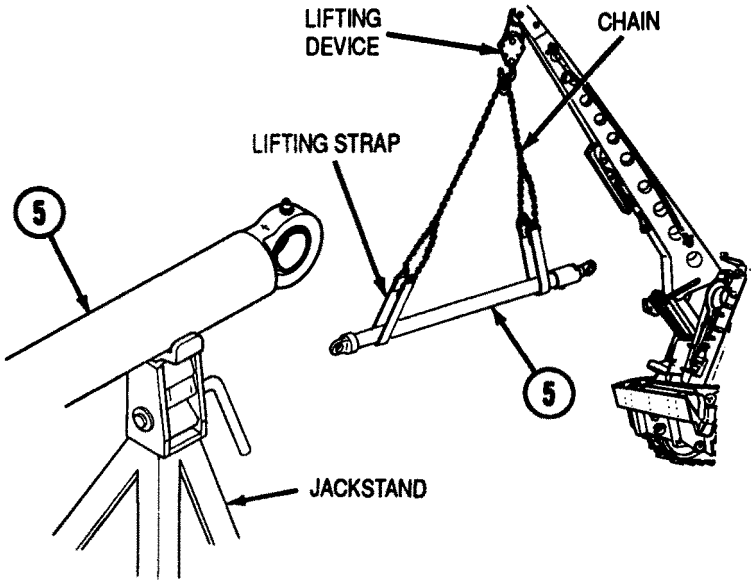


CAUTION

Ejector cylinder must be supported in at least two places at all times while being removed from vehicle. If ejector cylinder is allowed to move up or down, it can damage engine and transmission hoses. Failure to comply may result in damage to equipment.

F Move cylinder (5) toward front of vehicle. Slowly guide cylinder (5) to keep from swinging into engine and other vehicle components.

G Continue moving cylinder (5) forward, using jackstand for support. Manuever cylinder until all of cylinder (5) is in bowl of vehicle.



WARNING

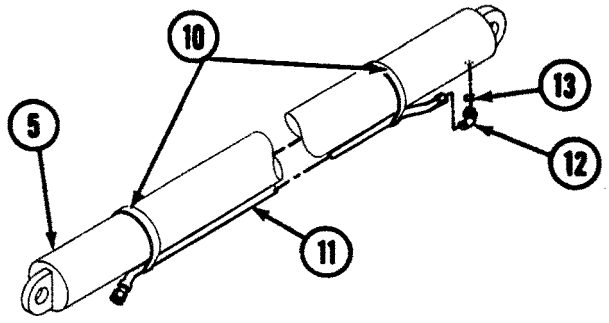
- Lifting device must have a weight capacity greater than 325 lb (148 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

H Connect lifting straps and chain around cylinder (5), and using lifting device, remove cylinder (5) from bowl.

Note

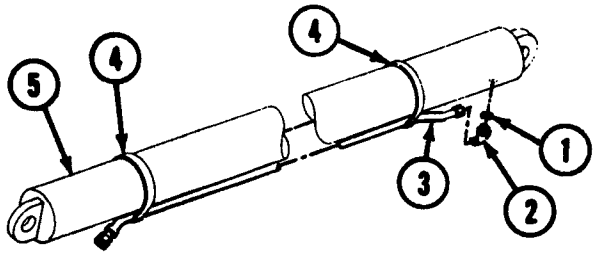
- Perform step I if ejector cylinder will be repaired.
- If performing step I, have clean suitable container ready to catch hydraulic oil.

I Remove two clamps (10), metal hose (11), elbow (12), and packing (13) from cylinder (5), and drain hydraulic oil from cylinder (5). Discard packing (13).



INSTALLATION

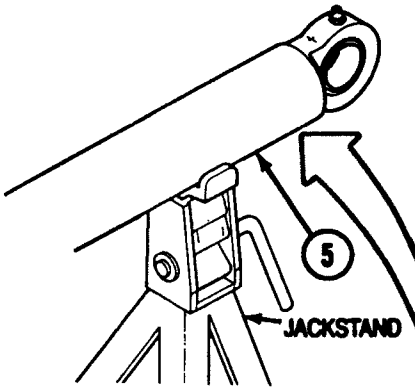
A If removed, install packing (1), elbow (2), metal hose (3), and two clamps (4) on cylinder (5).



WARNING

Lifting device must have a weight capacity greater than 325 lb (148 kg). Failure to comply may result in damage to equipment or injury to personnel.

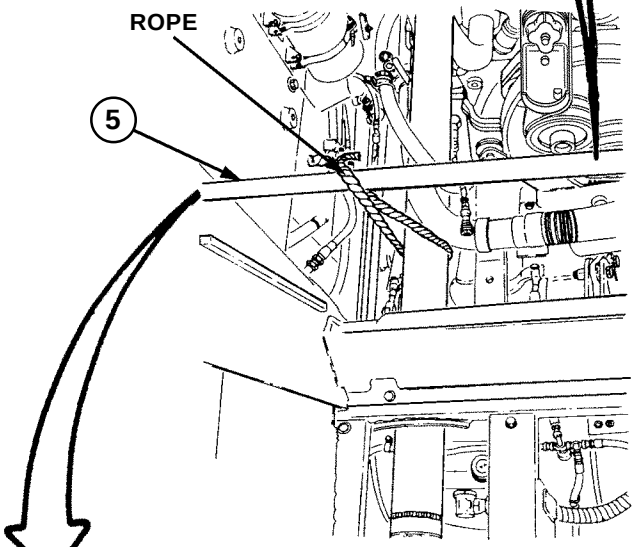
B Using straps and lifting device, lower cylinder (5) in bowl of vehicle. Rest front of cylinder (5) on jackstand.



C Support cylinder (5) with rope, and position rear of cylinder (5) in line with cylinder bracket (6) at rear of vehicle.

CAUTION

Ejector cylinder must be supported in at least two places at all times during installation. If ejector cylinder is allowed to move up and down, it can damage engine and transmission hoses. Failure to comply may result in damage to equipment.

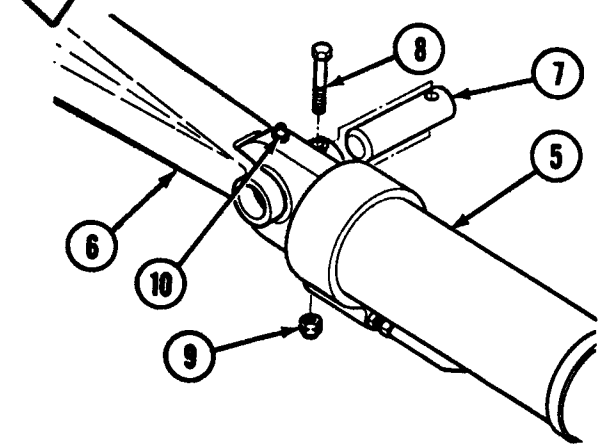


Note

It may be necessary to connect guide rope to eye at rear of ejector cylinder to lift cylinder through open area.

D Push cylinder (5) through open area under vehicle engine while supported with rope and jackstand in bowl area. Guide cylinder (5) through engine compartment with rope, and move as necessary to keep cylinder (5) in line with cylinder bracket (6).

E Secure cylinder (5) to cylinder bracket (6) with pin (7), screw (8), and locknut (9). Tighten screw (8) to 20-22 lb-ft (27-30 N·m). Install grease fitting (10) on cylinder (5).



Note

Improperly installed hydraulic lines and fittings can cause Class III oil leaks. Refer to page 2-30 for proper methods to install and tighten lines and fittings.

F Install packing (11) and elbow (12) on housing of cylinder (5). Connect hose (13) (EJ CYL-22) to elbow (12).

G Install nipple (14) on tube attached to cylinder (5). Connect hose (15) (EJ CYL-21) to nipple (14).

H Start and warm up vehicle engine **(TM 5-2350-262-10).**

WARNING

Keep hands from ejector cylinder when hydraulically moving cylinder to align eye of cylinder for installation. Failure to comply may result in severe injury to personnel.

CAUTION

Ejector cylinder must be supported while extended. If ejector cylinder is allowed to move up or down, engine and transmission hoses may be damaged. Failure to comply may result in damage to equipment.

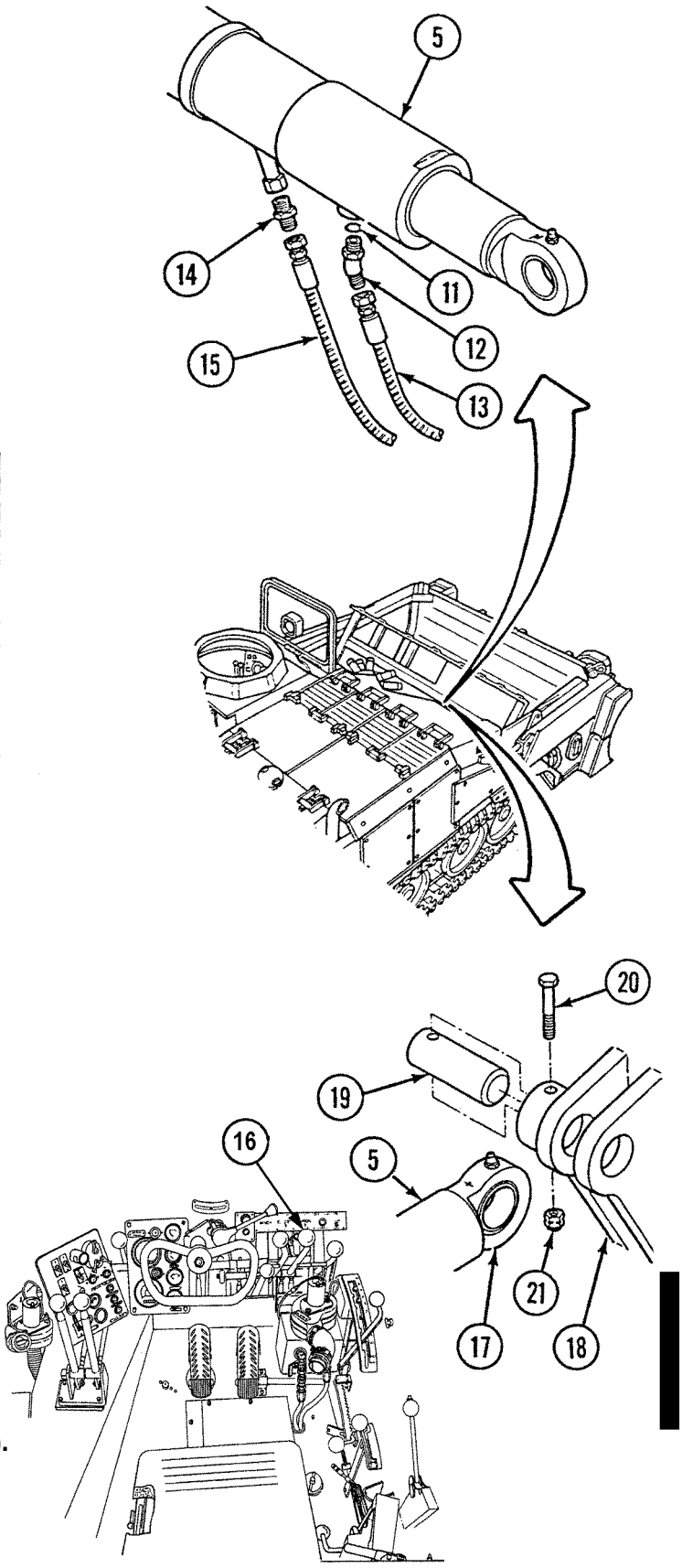
I Slowly move ejector control lever (16) to FWD, and hold in this position until eye (17) of cylinder (5) aligns with cylinder bracket (18). Shut off vehicle engine **(TM 5-2350-262-10).**

J Secure cylinder (5) to cylinder bracket (18) with pin (19), screw (20), and locknut (21). Tighten screw (20) to 14-16 lb-ft (19-22 N·m).

K Inspect engine and transmission hoses for damage.

FOLLOW-ON TASKS:

- Install engine intake and exhaust grilles and access covers **(p 4-339).**
- Install rear floor plates **(p 4-360).**
- Service hydraulic tank **(TM 5-2350-262-10).**



EJECTOR CYLINDER BRACKET REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair; Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil — Item 26 **Appendix D**

Parts:

Locknut

Self-locking Screw (4)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

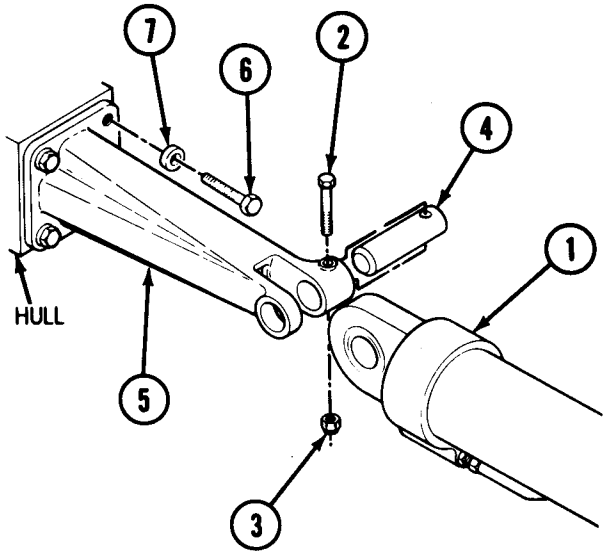
Equipment Condition:

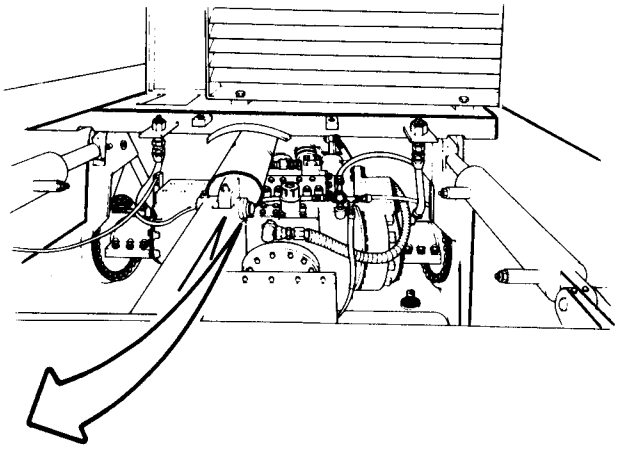
Reference	Condition Description
Page 2-27	Hydraulic Pressure Relieved
Page 4-361	Rear Floor Plates Removed

General Safety Instructions:

WARNING

Ejector cylinder weighs 325 lb (148 kg). Support ejector cylinder before disconnecting.





WARNING

Ejector cylinder weighs 325 lb (148 kg). Support ejector cylinder before disconnecting. Failure to comply may result in severe injury to personnel.

CAUTION

Ensure ejector cylinder end is securely supported when replacing bracket to avoid damaging engine and transmission hoses and fittings.

REMOVAL

A Support rear ejector cylinder end (1) and remove screw (2), locknut (3), and pin (4) from ejector cylinder (1) and bracket (5). Discard locknut (3).

B Remove four self-locking screws (6), washers (7), and bracket (5) from hull. Discard self-locking screws (6).

INSTALLATION

Note

Apply lubricating oil to threads of screws prior to installation.

A Install bracket (5) on hull with four washers (7) and self-locking screws (6). Tighten four self-locking screws (6) to 123-135 lb-ft (167-183 N·m).

B Install rear ejector cylinder end (1) on bracket (5) with pin (4), screw (2), and locknut (3). Tighten screw (2) to 20-22 lb-ft (27-30 N·m).

FOLLOW-ON TASK:
Install rear floor plates (p 4-361).

DEBRIS SHIELD REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Locknuts (6)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

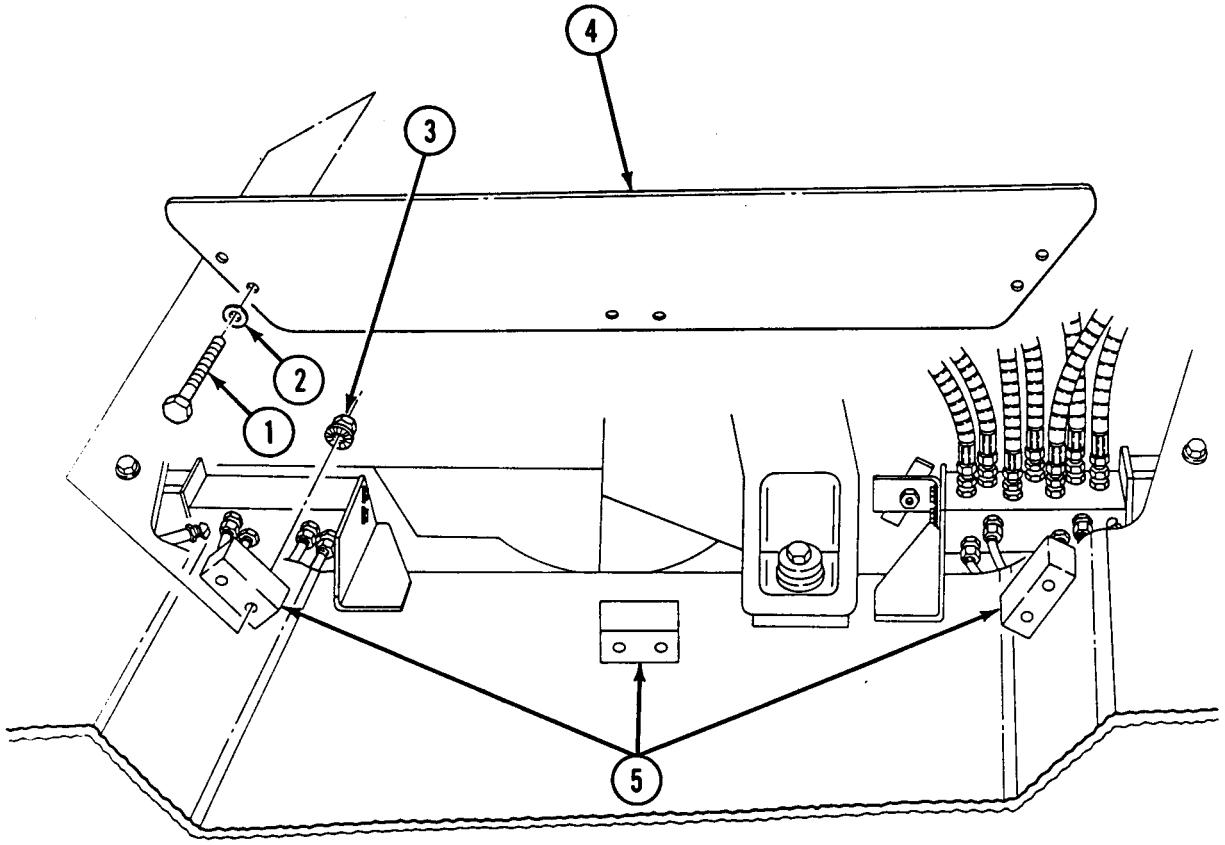
Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward

General Safety Instructions:

WARNING

- Do not stand or work in bowl area unless ejector lock is engaged.
- Debris shield must be removed prior to swimming operations.



REMOVAL

WARNING

- Do not stand or work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

Remove six screws (1), washers (2), locknuts (3), and debris shield (4) from three hull brackets (5). Discard locknuts (3).

INSTALLATION

WARNING

Do not stand or work in bowl area unless ejector lock is engaged. Failure to comply may result in severe injury to personnel.

Install debris shield (4) on three brackets (5) with six washers (2), screws (1), and locknuts (3). Tighten screws (1) to 22-26 lb-ft (30-35 N·m).

FOLLOW-ON TASK:
Retract ejector (TM 5-2350-262-10).

DRIVER'S HATCH ASSEMBLY REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Cleaning
d. Repair
e. Assembly
f. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Special Tools:

Shackle (2)	4030-00-678-1342
Socket Wrench Socket Set	5120-01-195-0640
Eyebolt (2)	5306-00-050-0347
Eyebolt	5306-00-017-6143
Crowfoot and Adapter	

Materials:

Adhesive, Epoxy Resin	Item 2 **Appendix D**
Adhesive, Sealant	Item 5 **Appendix D**
Sealing Compound	Item 11 **Appendix D**
Sealing Compound	Item 12 **Appendix D**
Grease, Molybdenum Disulfide	Item 21 **Appendix D**
Lubricant, Cleaner and Preservative	Item 23 **Appendix D**
Lubricating Oil	Item 26 **Appendix D**
Lubricating Oil, PL-medium	Item 27 **Appendix D**

Parts:

Cotter Pin (4)
Lockwasher (46)
Self-locking Screw (32)
Bearing

Parts Reference:

TM 5-2350-262-24P Group AP

Reference:

TM 5-2350-262-10

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Equipment Condition:

Reference	Condition Description
Page 4-190	Domelight Removed
Page 4-339	Engine Intake and Exhaust Grilles and Access Covers Removed
Page 4-894.13	Winch Shift Lever Removed
Page 4-313	Inclinometer Removed

General Safety Instructions:

WARNING

- Lifting device must have a weight capacity greater than 900 lb (409 kg).
- Support hatch cover while removing springs. Hatch cover weighs 200 lb (91 kg), and can cause serious injury if dropped on hands, arms, or feet.
- Personnel must stand clear during lifting operations.

REMOVAL

Note

Communications equipment installation must be removed before performing procedure. Exact steps cannot be defined here because installation varies from unit to unit.

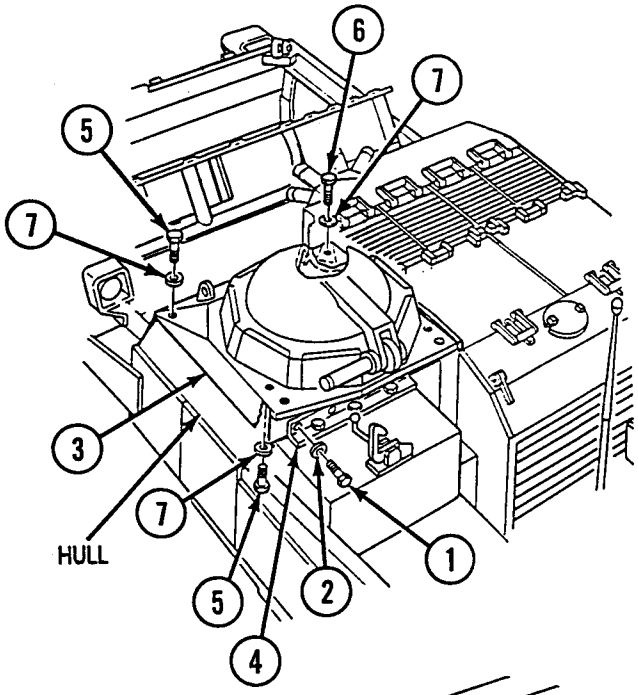
A Remove four self-locking screws (1) and washers (2) from rear of hatch assembly (3) and bracket (4). Discard self-locking screws (1).

B Remove three self-locking screws (5), self-locking screw (6), and four washers (7) from front of hatch assembly (3) and hull. Discard self-locking screws (5) and (6).

C Close and latch hatch cover (8).

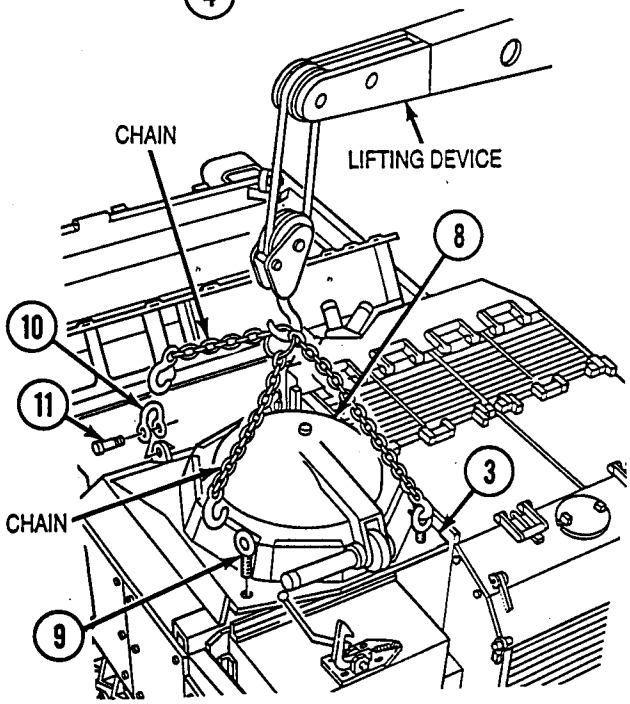
D Install two eyebolts (9) at rear corners of hatch assembly (3). Install two tiedown shackles (10) and pins (11) on front of hatch assembly (3).

E Connect two chains to four lifting points, and connect lifting device to chains.



WARNING

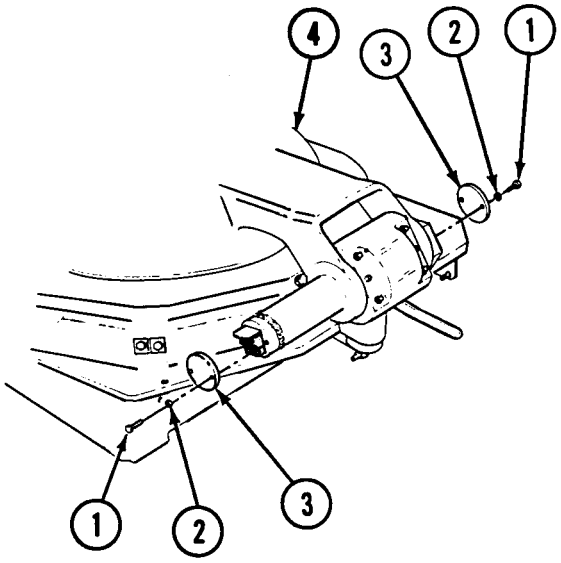
- Lifting device must have a weight capacity greater than 900 lb (409 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.



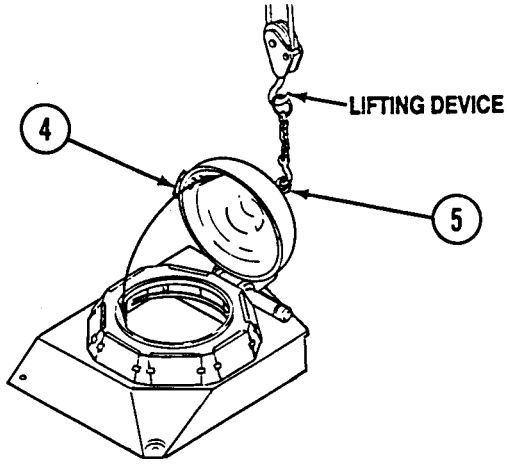
F Lift hatch assembly (3) off vehicle and place on flat work surface.

G Remove two chains, eyebolts (9), pins (11), and two tiedown shackles (10) from hatch assembly (3).

DISASSEMBLY



A Remove four screws (1), lockwashers (2), and two covers (3) from hatch cover (4). Discard lockwashers (2).



WARNING

Support hatch cover while removing springs. Hatch cover weighs 200 lb (91 kg) and can cause serious injury if dropped on hands, arms, or feet. Failure to comply may result in severe injury to personnel.

B Install eyebolt (5) in hatch cover (4) and attach lifting device to eyebolt (5). Unlatch and raise hatch cover (4) to 90° to relieve spring tension.

C Remove three screws (6), lockwashers (7), anchor (8), shim (9), and twenty-two springs (10) from hatch cover (4) and hinge base (11). Discard lockwashers (7).

WARNING

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

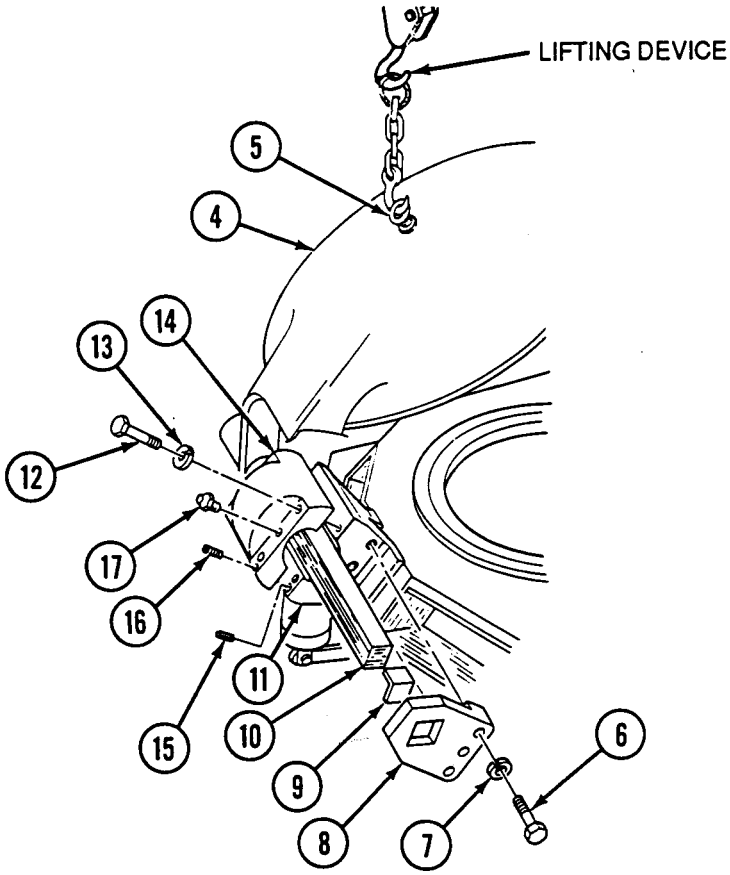
D Using lifting device, lower hatch cover (4) to closed position.

E Remove four screws (12), lockwashers (13), cap (14), and hatch cover (4) from hinge base (11). Discard lockwashers (13).

F Place hatch cover (4) on blocks or other suitable support and remove lifting device.

G If damaged, remove two pins (15) from hinge base (11).

H Remove two setscrews (16) and lubrication fittings (17) from cap (14).



WARNING

Hatch cover weighs 200 lb (91 kg) and can cause serious injuries if dropped on hands, arms, or feet.

Note

Assistant will help with step I.

I Turn hatch cover (4) over.

Note

Perform step J on vehicles with serial nos. 1 to 317, and perform step K on vehicles with serial nos. 318 and above.

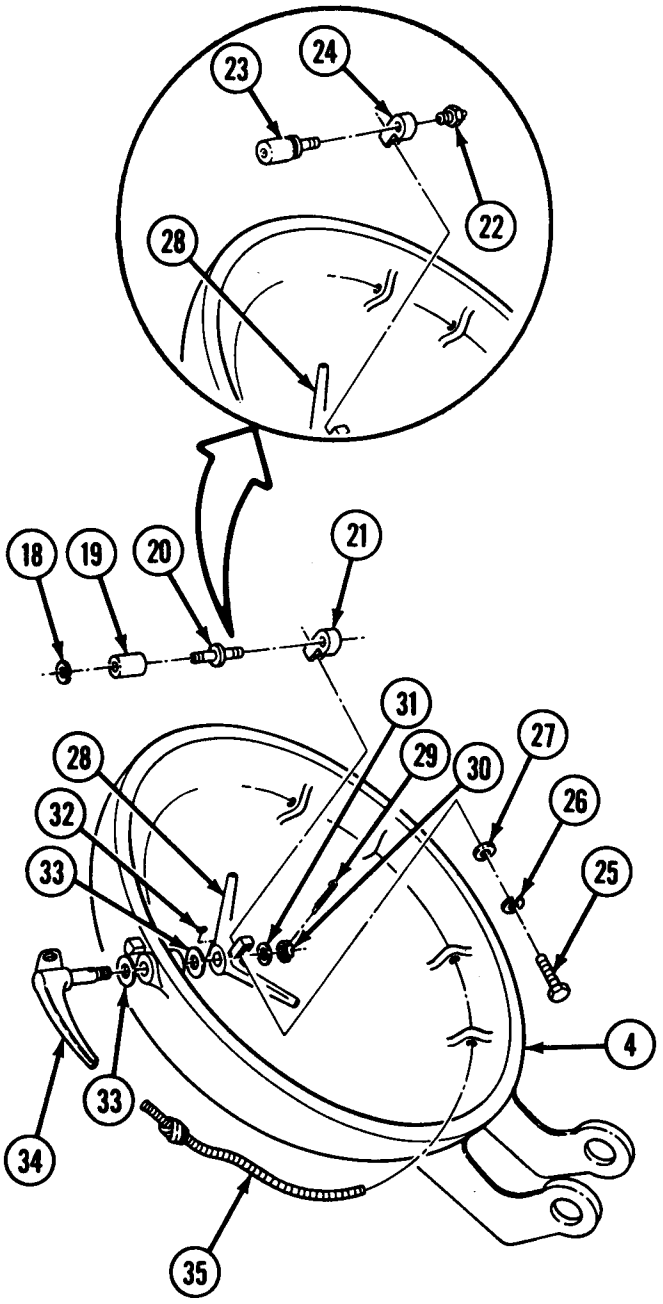
J Remove retaining ring (18) and bearing sleeve (19) from shouldered pin (20), and remove shouldered pin (20) from handle (21).

K Remove lubrication fitting (22) and roller cam (23) from block (24).

L Remove two screws (25), lockwashers (26), washers (27), and handle (21) or block (24) from inside door handle (28). Discard lockwashers (26).

M Remove cotter pin (29), slotted nut (30), washer (31), inside door handle (28), key (32), two spring washers (33), and outside door handle (34) from hatch cover (4). Discard cotter pin (29).

N If frayed or damaged, remove rope (35) from hatch cover (4).

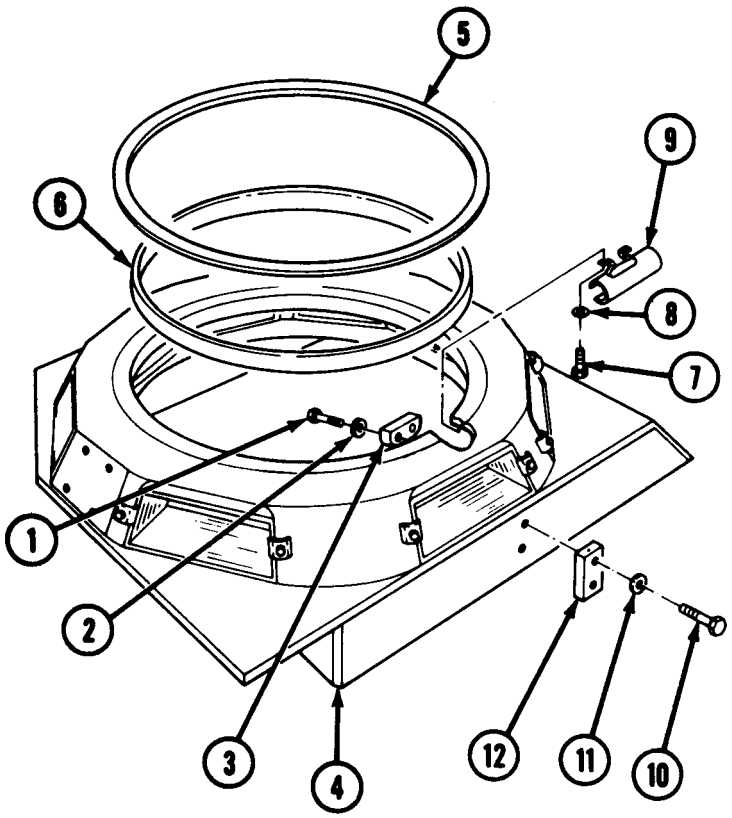


O Remove two screws (1), lockwashers (2), and strike (3) from inside of hatch base (4). Discard lockwashers (2).

P If damaged, remove pad (5) and seal (6).

Q Remove two screws (7), washers (8), and flashlight holder (9) from hatch base (4).

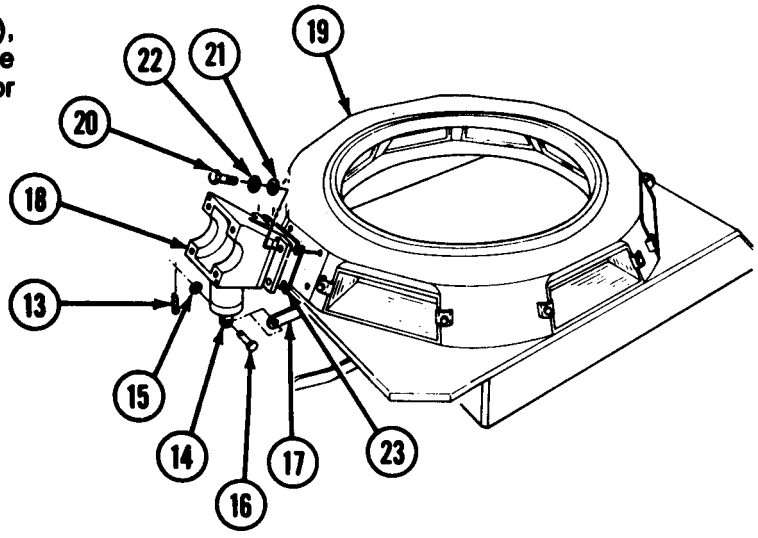
R Remove two self-locking screws (10), washers (11), and angle supports (12) from hull and hatch base (4). Discard self-locking screws (10).

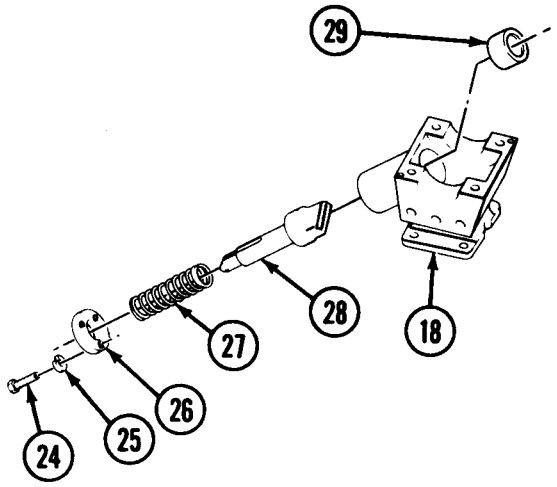


S Remove cotter pin (13), pin (14), washer (15), and pin (16) from linkage (17). Discard cotter pin (13).

T Scribe location of hinge base (18) on hatch ring (19) before removal.

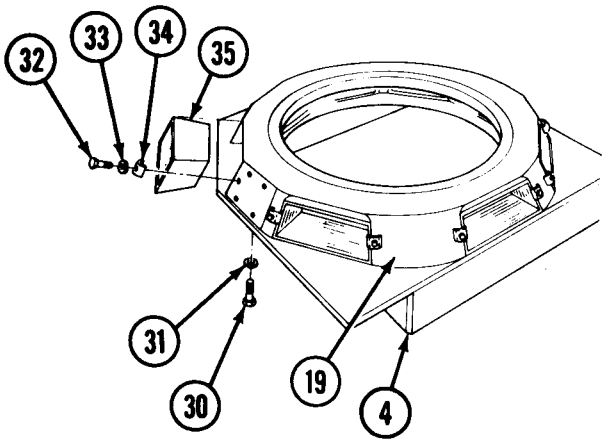
U Remove four screws (20), washers (21), lockwashers (22), shims (23), and hinge base (18) from ring (19). Save shims (23) for installation. Discard lockwashers (22).





V Remove three screws (24), lockwashers (25), and cap (26) from hinge base (18). Discard lockwashers (25).

W Remove spring (27) and pin (28) from hinge base (18). Remove and discard bearing (29) only if damaged.



X Remove eight self-locking screws (30), flat washers (31), and ring (19) from hatch base (4). Discard self-locking screws (30).

Y Remove sixteen self-locking screws (32), lockwashers (33), retainers (34), and eight vision blocks (35) from ring (19). Discard self-locking screws (32) and lockwashers (33).

Z Remove cotter pin (36), pin (37), two washers (38), and clevis (39) from linkage (17). Discard cotter pin (36).

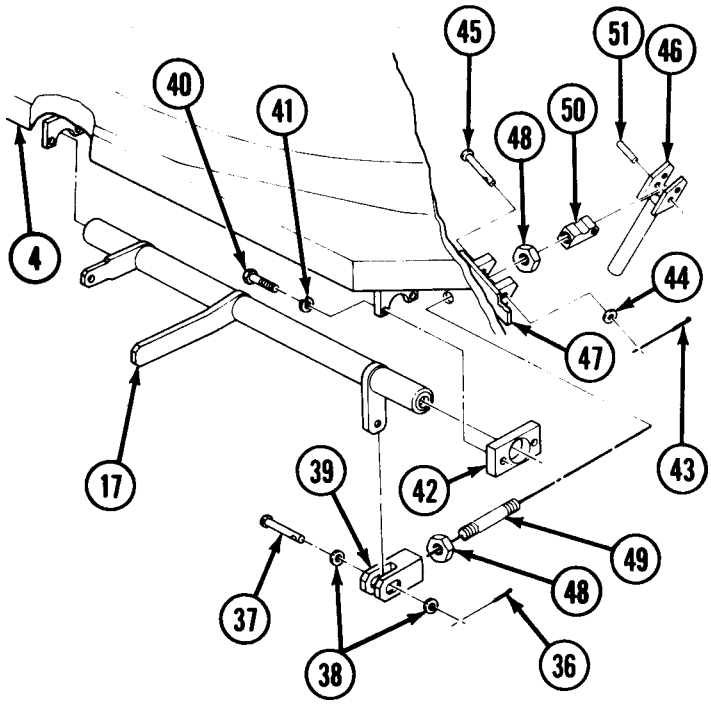
AA Remove four screws (40), lockwashers (41), two retainers (42), and linkage (17) from hatch base (4). Discard lockwashers (41).

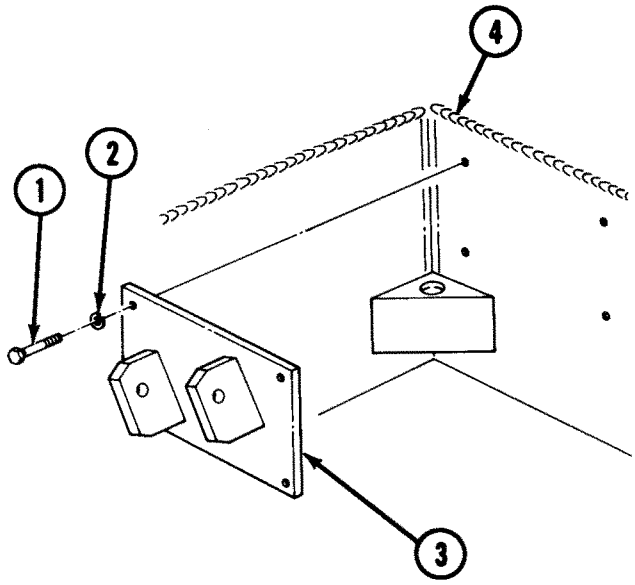
AB Remove cotter pin (43), washer (44), and pin (45), and disconnect handle (46) from base (47). Discard cotter pin (43).

AC Loosen two jamnuts (48), remove clevis (39) from rod (49), and remove rod (49) from block (50).

AD Remove two jamnuts (48) from rod (49), and remove rod (49) from base (47) and hatch base (4).

AE Using hammer and soft drift, drive pin (51) from handle (46), and remove block (50) from handle (46).

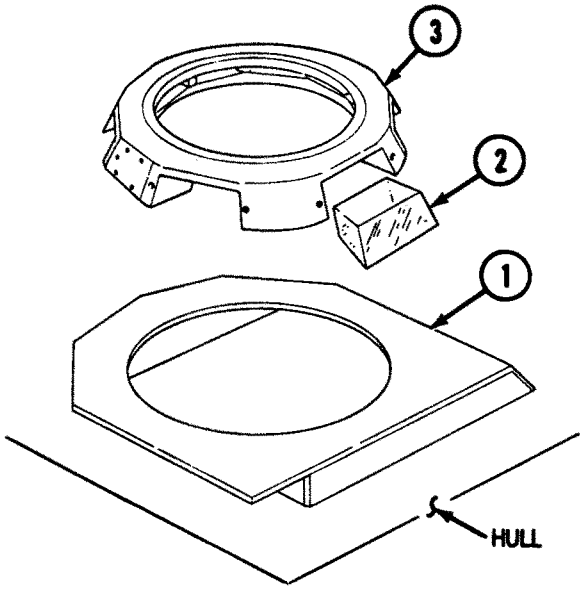




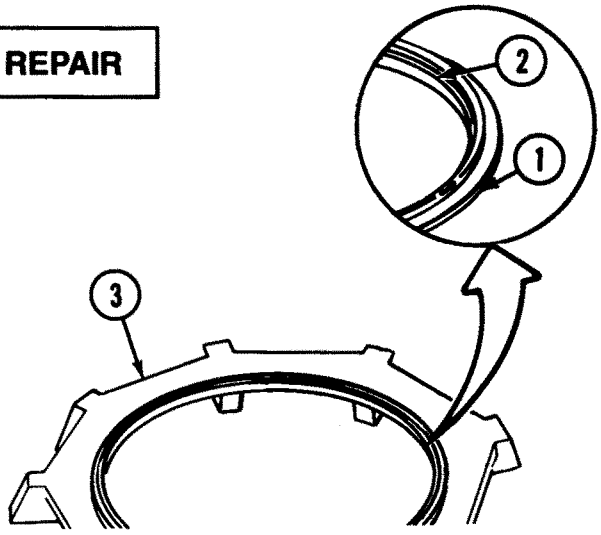
AF Remove four screws (1), lockwashers (2), and base (3) from hatch base (4). Discard lockwashers (2).

CLEANING

Use general cleaning methods (p 2-25) to clean all mating surfaces of hull, hatch base (1), eight vision blocks (2), and ring (3).



REPAIR

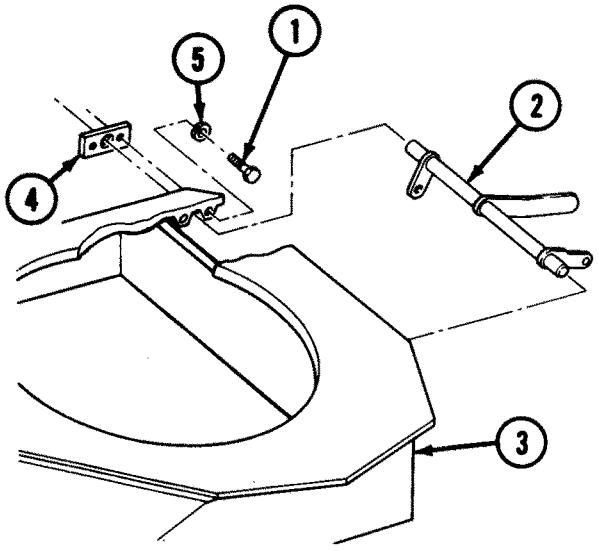


A Use general repair methods (p 2-25) to repair driver's hatch assembly.

B To bond seal (1) and pad (2) to ring (3), roughen and degrease bonding surfaces. Attach seal (1) and pad (2) to ring (3) with adhesive epoxy resin.

C Replace unserviceable parts.

ASSEMBLY



A Coat threads of screws (1) with sealing compound, grade K. Install linkage (2) to hatch base (3) with two retainers (4), four lockwashers (5), and screws (1).

B Apply adhesive sealant to mating surfaces of ring (6) and hatch base (3), 3/8 in. to 5/8 in. (10 mm to 16 mm) from exterior edges.

C Place ring (6) on hatch base (3) with hinge base mounting holes facing to the rear of hatch base (3).

D Secure ring (6) on hatch base (3) with eight flat washers (7) and self-locking screws (8).

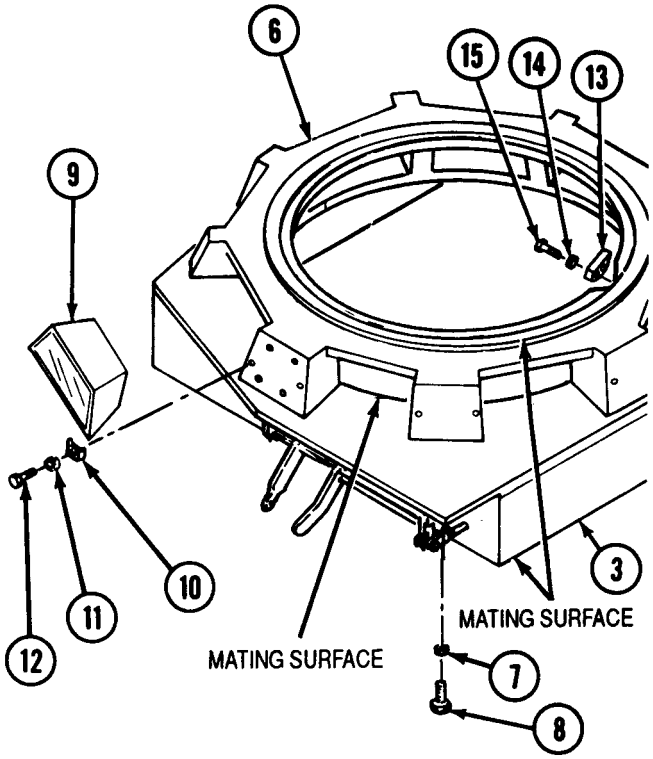
Note

- Position retainers on metal casings of vision blocks so retainers do not touch glass.
- Apply lubricating oil to threads of screws prior to installation.

E Apply adhesive sealant to mating surfaces of eight vision blocks (9), 3/8 in. to 5/8 in. (10 mm to 16 mm) from exterior edges.

F Install eight vision blocks (9) on ring (6) with sixteen retainers (10), lockwashers (11), and self-locking screws (12). Tighten screws (9) to 8-10 lb-ft (11-14 N·m).

G Install strike (13) on inside of ring (6) with two lockwashers (14) and screws (15).



CAUTION

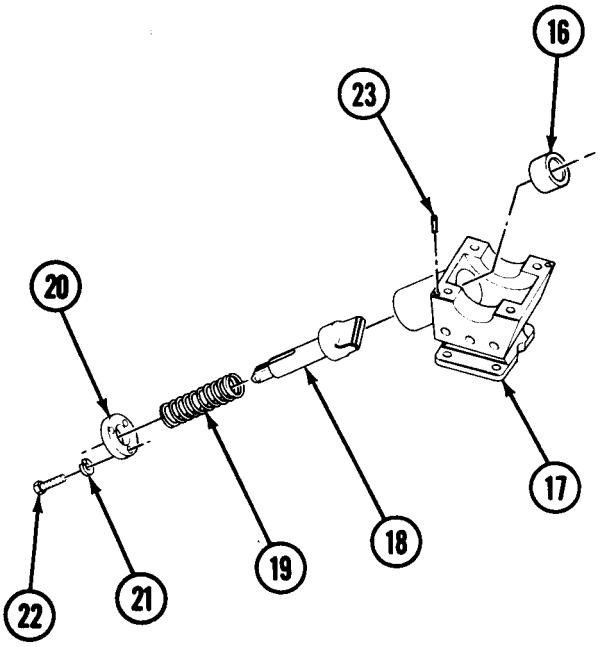
Ensure bearing is flush with inside surface of hinge base. Failure to comply may result in damage to bearing.

H If removed, use arbor press or hammer and wood block to install bearing (16) on hinge base (17).

I Lubricate pin (18) on inside bore of hinge base (17), and coat all bare metal surfaces with grease. Install spring (19) and pin (18) on hinge base (17).

J Install cap (20) on hinge base (17) with three lockwashers (21) and screws (22). Tighten screws (22) to 110-120 lb-in. (12-14 N·m).

K If removed, install two pins (23) on hinge base (17).



CAUTION

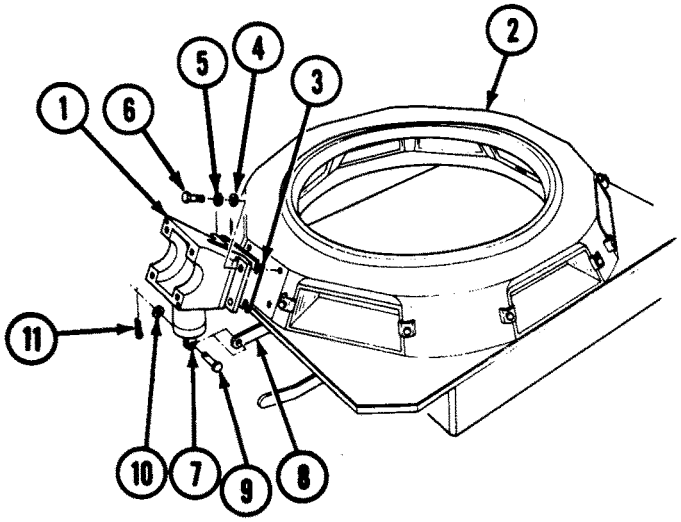
Ensure hinge base surfaces are free of paint. Any paint on these surfaces will cause damage to equipment.

Note

- Apply lubricating oil to threads of screws prior to installation.
- Hinge base screws may have to be loosened for adjustment.
- Hatch hinge base and cap are to be replaced as a serialized matched set.

L Align hinge base (1) with scribe marks on ring (2), and install hinge base (1) and up to five shims (3) on ring (2) with four washers (4), lockwashers (5), and screws (6).

M Connect pin (7) to linkage (8) with pin (9), washer (10), and cotter pin (11).



N If removed, install rope (12) on hatch cover (13).

O Apply lubricating oil, PL-medium, to shaft (14) of outside door handle (15), and install outside door handle (15) and inside door handle (16) on hatch cover (13) with two spring washers (17), key (18), washer (19), slotted nut (20), and cotter pin (21).

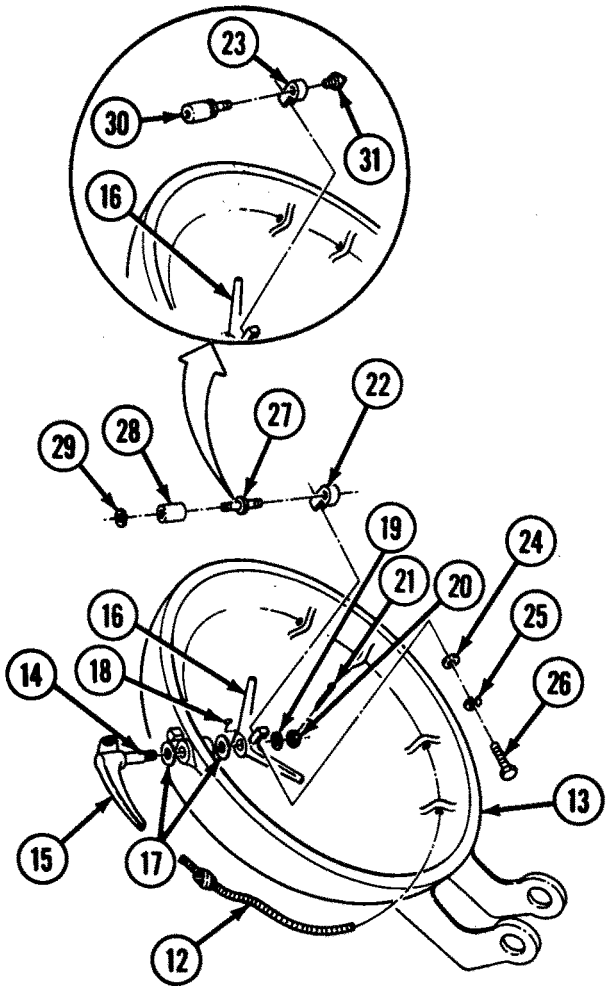
P Install handle (22) or block (23) on inside door handle (16) with two washers (24), lockwashers (25), and screws (26).

Note

Perform step R on vehicles with serial nos. 1 to 317, and perform step S on vehicles with seial nos. 318 and above.

Q Coat threads of shouldered pin (27) with sealing compound, grade C or CV, install shouldered pin (27) on handle (22), and install bearing sleeve (28) on shouldered pin (27) with retaining ring (29).

R Coat threads of cam roller (30) with sealing compound, and install cam roller (30) and lubrication fitting (31) on block (23). Grease cam roller (30).



WARNING

Support hatch cover while installing springs. Hatch cover weighs 200 lb (91 kg), and can cause serious injury if dropped on hands, arms, or feet. Failure to comply may result in severe injury to personnel.

Note

Assistant will help with step S.

S Turn hatch cover (13) over, install eyebolt on hatch cover (13), and attach lifting device to eyebolt.

WARNING

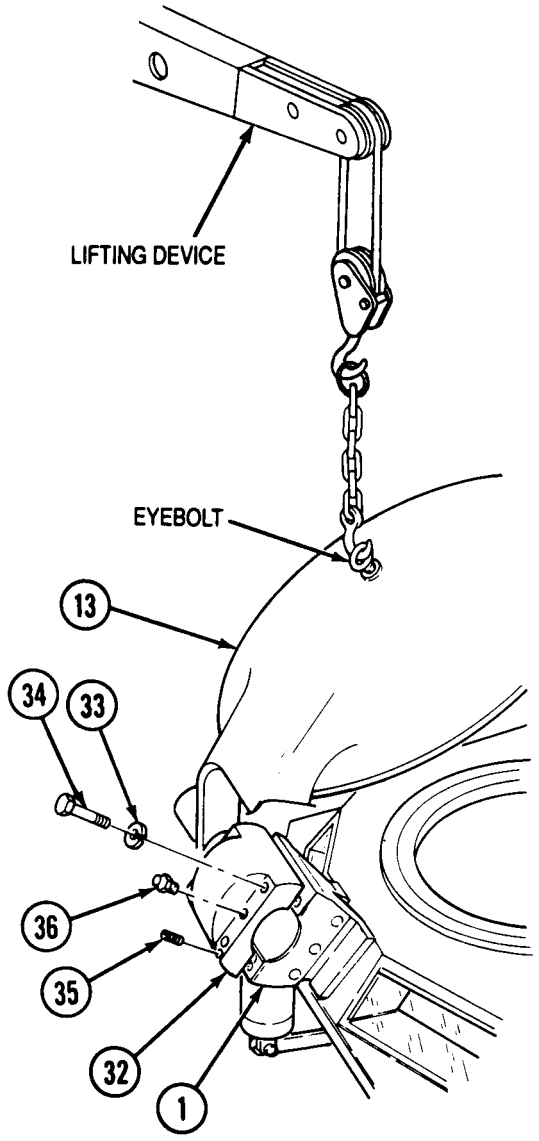
Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

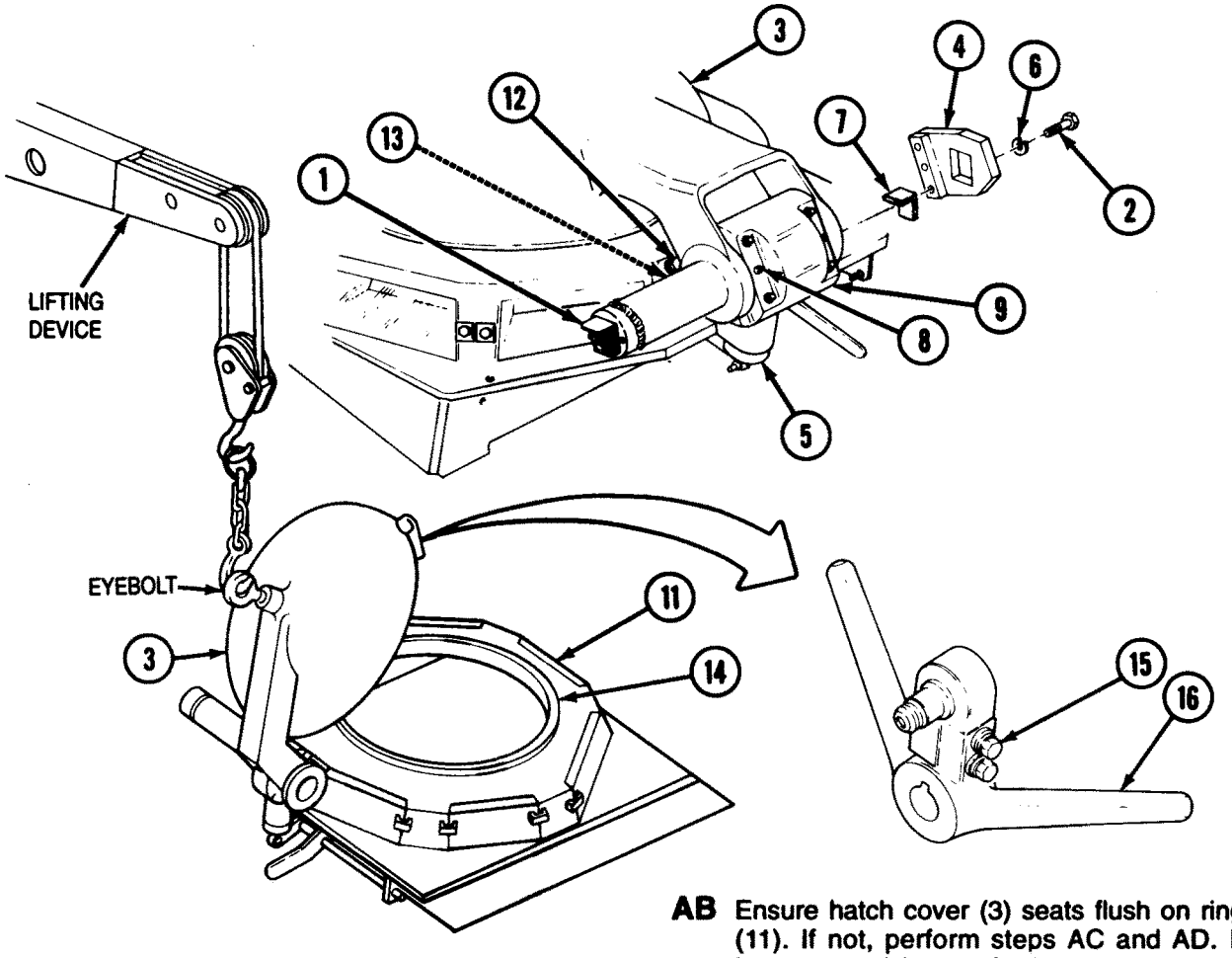
CAUTION

Ensure hatch cover is free of paint where hatch cover meets hinge base. Failure to comply may result in damage to equipment.

T Position hatch cover (13) on hinge base (1) and secure with cap (32), four lockwashers (33), and screws (34).

U Install two setscrews (35) and grease fittings (36) on cap (32).





V Coat twenty-two springs (1) with lubricant, cleaner, and preservative.

Note

Apply lubricating oil to threads of screws prior to installation.

W Using lifting device to hold hatch cover (3) at 90 degrees, install twenty-two springs (1) and anchor (4) on hinge base (5).

X Install anchor (4) with three lockwashers (6) and screws (2). Tighten screws (2) to 120-130 lb-ft (163-176 N·m).

Y Measure clearance between square hole in anchor (4) and twenty-two springs (1). Select shim (7) which best fits clearance, and install appropriate shim (7).

Z Apply grease at fittings (8) in cap (9).

AA Close hatch cover (3) and remove lifting device and eyebolt from hatch cover (3).

AB Ensure hatch cover (3) seats flush on ring (11). If not, perform steps AC and AD. If hatch cover (3) seats flush, proceed to step AE.

AC Loosen four screws (12) on hinge base (5). Using crowbar, pry hinge base (5) up or down until cover (3) seats flush against ring (11). If necessary, add or remove shims (13).

AD Tighten four screws (12) to 90-93 lb-ft (122-126 N·m).

AE Close and latch hatch cover (3). Ensure cover (3) fits tightly against seal (14) on ring (11). If hatch cover (3) fits tightly, proceed to step AH. If hatch cover (3) does not fit tightly, open cover (3) and perform steps AF and AG.

AF Loosen two screws (15). Shorten or lengthen inside door handle (16) as necessary to achieve tight fit of hatch cover (3) against seal (14) on ring (11).

AG Tighten two screws (15).

Note

Apply lubricating oil to threads of screws prior to installation.

AH Install two covers (17) with four lockwashers (18) and screws (19).

AI Install base (20) on hatch base (21) with four lockwashers (22) and screws (23). Tighten four screws (23) to 8-10 lb-ft (11-14 N·m).

AJ Install jamnut (24) on longer set of threads of rod (25), and advance jamnut (24) to end of threads.

AK Install rod (25) on block (26).

AL Install handle (27) on block (26) with pin (28).

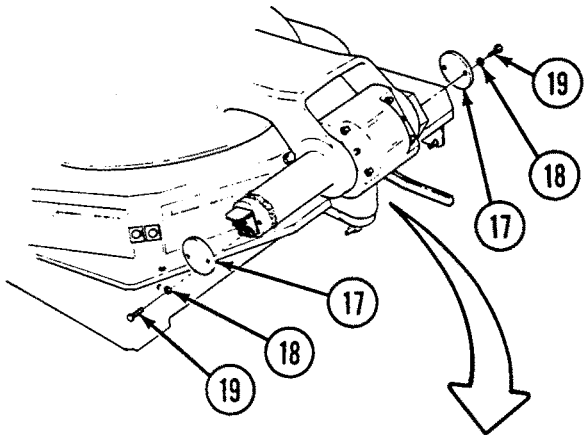
AM Install handle (27) on base (20) and hatch base (21). Connect handle (27) to base (20) with pin (29), washer (30), and cotter pin (31).

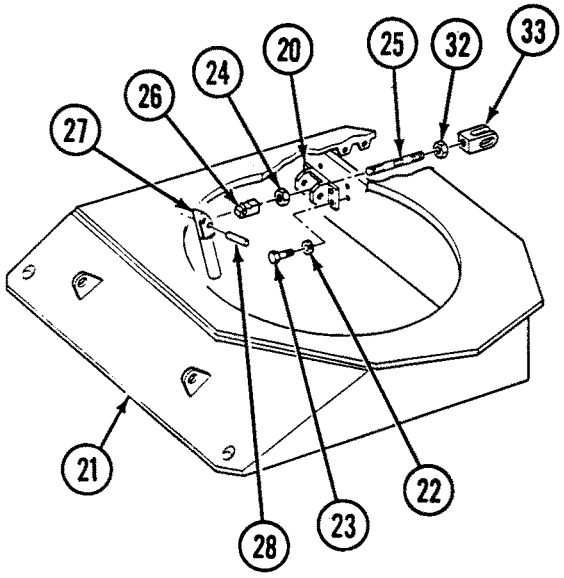
AN Install jamnut (32) and clevis (33) on rod (25). Advance jamnut (32) and clevis (33) to end of threads.

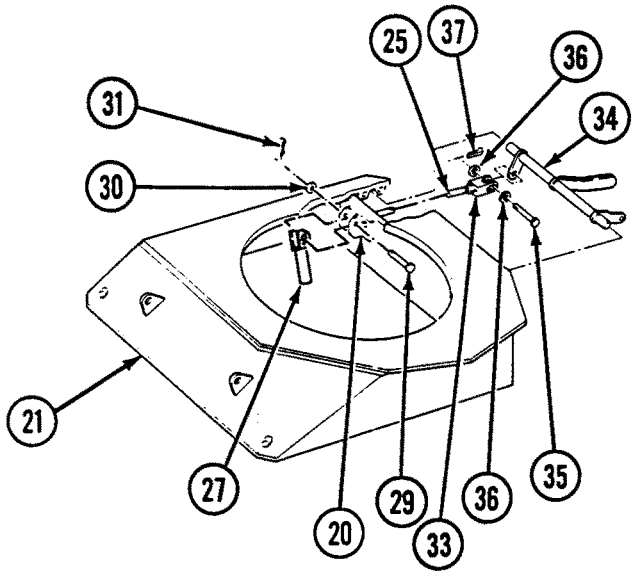
AO Tighten nut (24) against block (26).

AP Close and latch hatch cover.

AQ Holding end of handle (27) flat against inside of hatch base (21), move clevis (33) in or out on rod (25) until clevis (33) aligns with linkage (34). Connect clevis (33) to linkage (34) with pin (35), two washers (36), and cotter pin (37), and tighten jamnut (32) against clevis (33).







INSTALLATION

A Install two eyebolts (1) on threaded holes at rear of hatch assembly (2). Install two tiedown shackles (3) and pins (4) on lugs in front of hatch assembly (2).

B Apply adhesive sealant to mating surface of hatch assembly (2) and hull mounting surface (5), 3/8 in. to 5/8 in. (9 mm to 16 mm) from exterior edges.

C Connect two chains to four lifting points and lifting device.

WARNING

- Lifting device must have a weight capacity greater than 900 lb (409 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may cause injury to personnel.

D Lift hatch assembly (2) and position on vehicle.

E Coat threads of self-locking screw (6), three self-locking screws (7), and four self-locking screws (8) with lubricating oil.

F Secure front of hatch assembly (2) to hull with two washers (9), self-locking screw (6), and self-locking screw (7).

G From inside of cab, secure rear of hatch assembly (2) to hull with two washers (10) and self-locking screws (7).

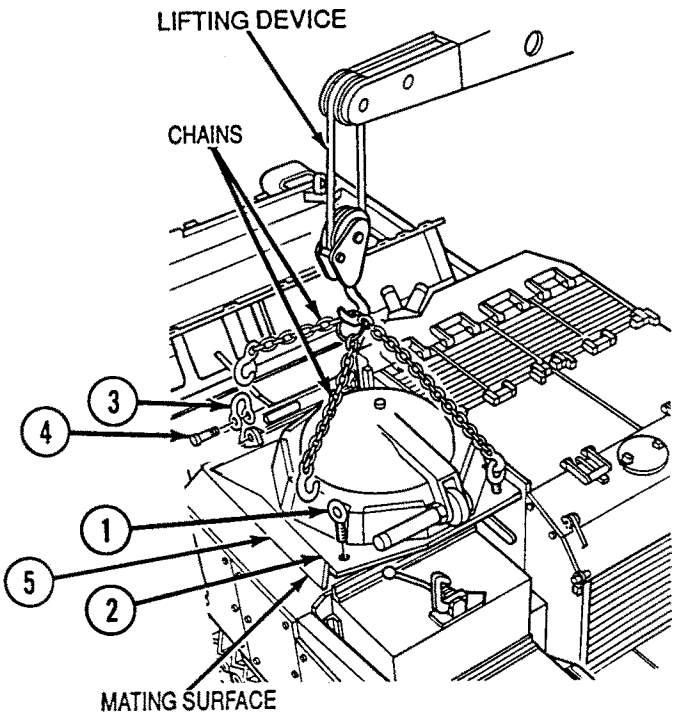
H Install four washers (11) and self-locking screws (8) on bracket (12) and rear of hatch assembly (2).

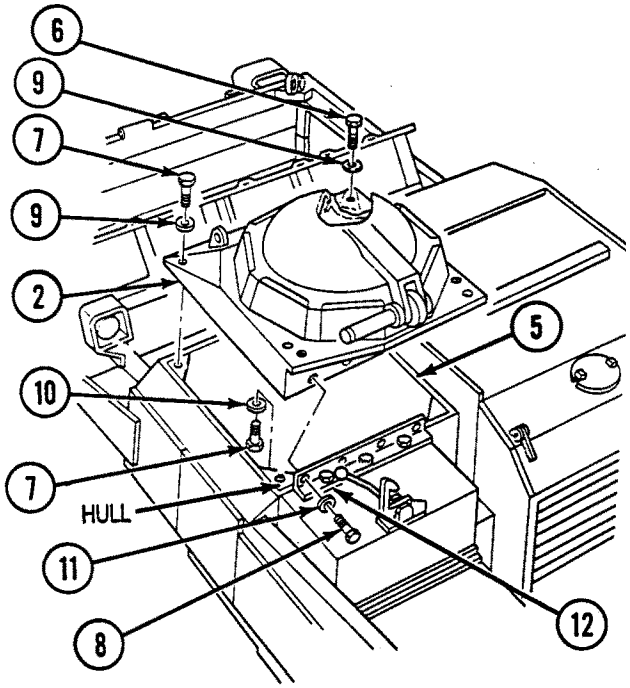
Note

Remove winch speed selector lever before tightening screws.

I Tighten self-locking screws (6) and (7) to 57-63 lb-ft (77-85 N·m).

J Remove two chains, eyebolts (1), pins (4), and two tiedown shackles (3).





FOLLOW-ON TASKS:

- Install engine intake and exhaust grilles and access covers (p 4-339).
- Install domelight assembly (p 4-190).
- Adjust interior driver's hatch release (p 4-315).
- Install winch shift lever (p 4-894.13).
- Install inclinometer (p 4-313).

INCLINOMETER REPLACEMENT

This task covers:

a. Removal

b. Installation

c. Adjustment

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Lockwasher (4)

Parts Reference:

TM 5-2350-262-24P Group AP

Reference:

TM 5-2350-262-10

Personnel Required:

Construction Equipment Repairer 62B10

General Safety Instructions:

WARNING

Do not use inclinometer as a step.

REMOVAL

WARNING

Do not use inclinometer as a step. Failure to comply may result in damage to equipment and injury to personnel

A Remove two nuts (1), lockwashers (2), screws (3), and inclinometer (4) from bracket (5). Discard lockwashers (3).

B Remove two screws (6), washers (7), and bracket (5) from hatch assembly (8).

C Remove two nuts (9), lockwashers (10), screws (11), and inclinometer (12) from bracket (13). Discard lockwashers (10).

D Remove two screws (14), washers (15), and bracket (13) from driver's compartment wall.

INSTALLATION

A Install bracket (13) on driver's compartment wall with two washers (15) and screws (14).

B Install inclinometer (12) on bracket (13) with two screws (11), lockwashers (10), and nuts (9).

C Install bracket (5) on hatch assembly (8) with two washers (7) and screws (6).

D Install inclinometer (4) on bracket (5) with two screws (3), lockwashers (2), and nuts (1).

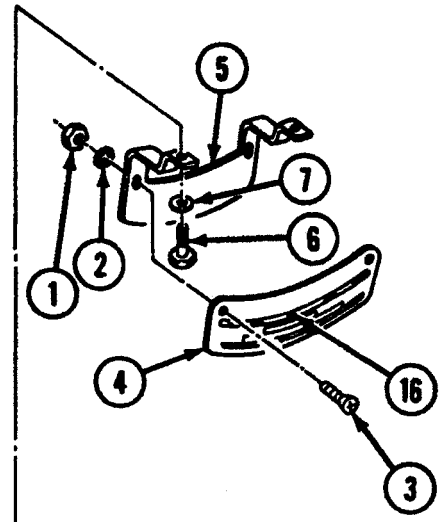
ADJUSTMENT

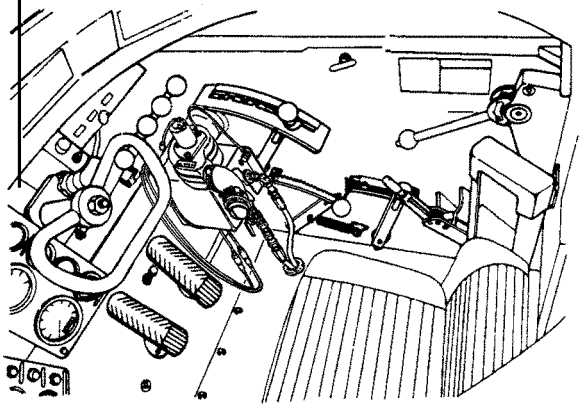
A Start engine (TM 5-2350-262-10), place vehicle in sprung, and drive on to a level surface.

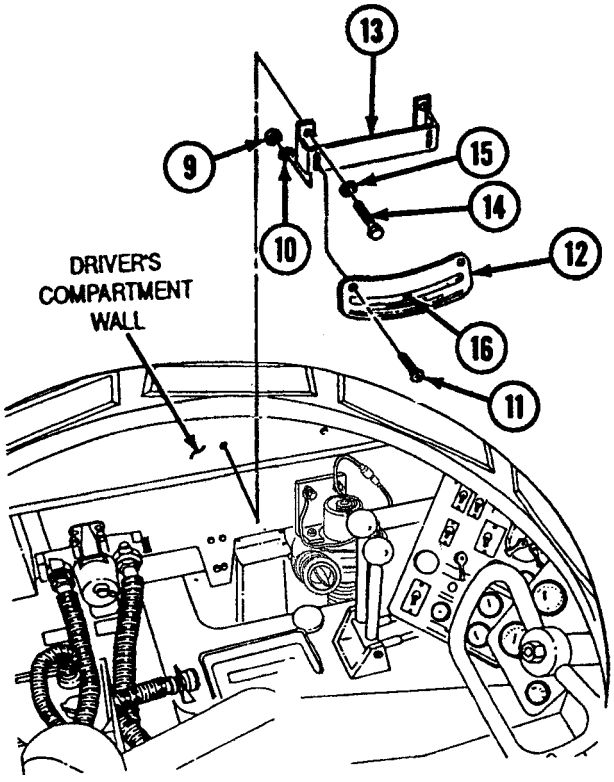
B With engine running, adjust inclinometers (4) and (12) by loosening two nuts (1) and (9).

C Position inclinometers (4) and (12) until dials (16) read zero. Tighten two nuts (1) and (9).

D Shut off engine (TM 5-2350-262-10).







INTERIOR DRIVER'S HATCH RELEASE ADJUSTMENT

This task covers:

Adjustment

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Parts:

Cotter Pin (2)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Hatch Cover Locked in Open Position

General Safety Instructions:

WARNING

Support hatch cover while removing springs.

ADJUSTMENT

WARNING

Support hatch cover while removing springs. Hatch cover weighs 200 lb (91 kg) and can cause serious injury if dropped on hands, arms, or feet.

Note

Measure distance between handle and kevlar panel on driver's compartment rear wall prior to adjustment.

A Remove cotter pin (1), pin (2), and two washers (3) from clevis (4) and linkage (5). Discard cotter pin (1).

B Hold handle (6) 3 to 3.5 inches (8 to 9 cm) from kevlar panel (7). Note position of clevis (4) and linkage (5).

C Remove cotter pin (8), pin (9), and washer (10) from handle (6) and bracket (11). Discard cotter pin (8).

D Push clevis (4) and handle (6) inward until free of linkage (5). Loosen jamnut (12) on rod (13), and rotate clevis (4) until pin (2) can be inserted through linkage (5) and rear of slot on clevis (4). Position bottom of handle (6)3 to 3.5 inches (8 to 9 cm) from kevlar panel (7).

Note

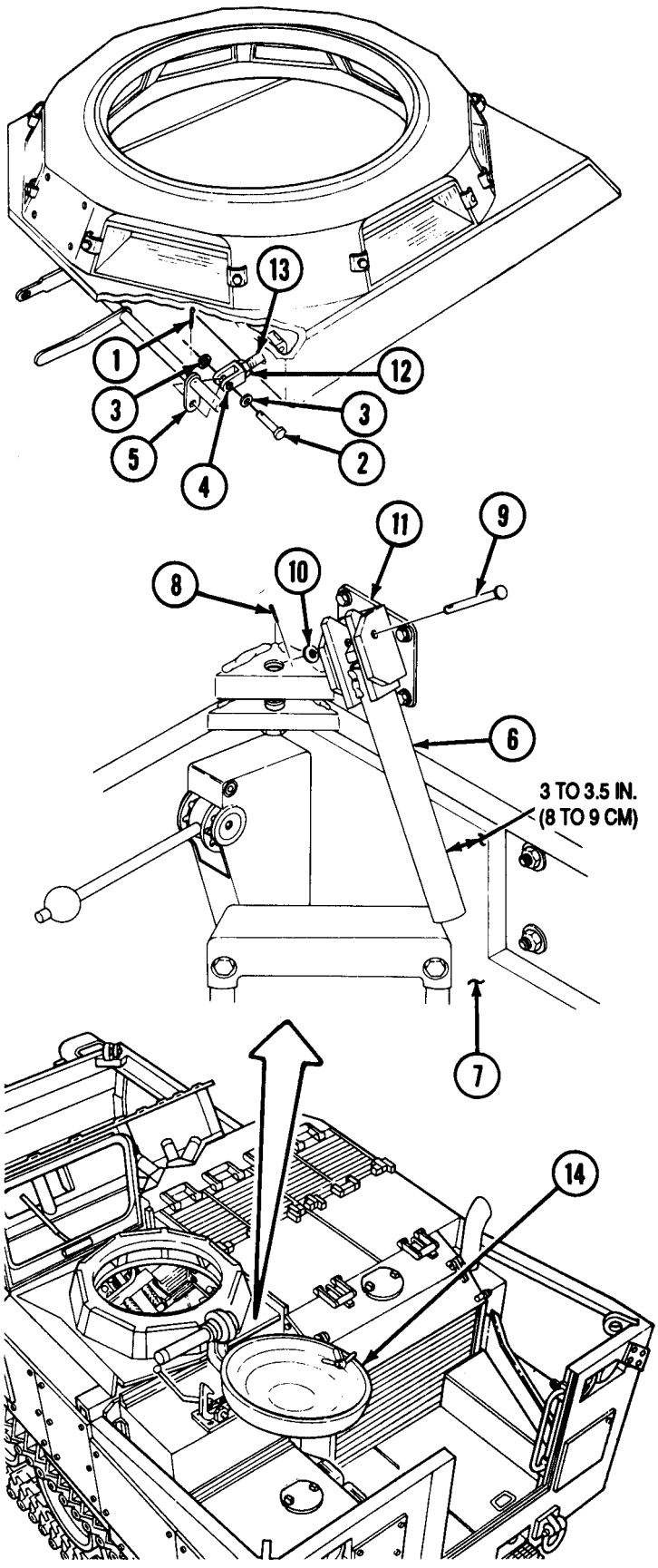
- Steps E and F must be performed prior to final measurement.
- Do not open cotter pins until completing necessary adjustment.

E Install pin (9), washer (10), and cotter pin (8) on handle (6) and bracket (11).

F Connect clevis (4) to linkage (5) with pin (2), two washers (3), and cotter pin (1).

G Close hatch cover (14) (TM 5-2350-262-10). Operate handle (6) to ensure hatch cover (14) opens and closes. If it does not, repeat steps A through F until proper adjustment is attained. Once proper adjustment is attained, open cotter pins (1) and (8).

H Tighten jamnut (12) on rod (13).



HATCH COVER HOLDDOWN LATCH REPAIR

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 10 **Appendix D**
Sealing Compound, Primer	Item 13 **Appendix D**

Parts:

Cotter Pin

Lockwasher (4)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

REMOVAL

Remove four screws (1), lockwashers (2), flat washers (3), and hatch cover holddown latch assembly (4) from radio box (5). Discard lockwashers (2).

DISASSEMBLY

A Remove spring (6) from base (7) and hook (8).

B Remove cotter pin (9), handle (10), hook (8), and key (11) from base (7). Discard cotter pin (9).

C Remove knob (12) from handle (10).

D Remove two bearings (13) from base (7).

ASSEMBLY

A Install two bearings (13) on base (7).

B Coat threads on handle (10) with sealing compound primer and sealing compound, and install knob (12) on handle (10).

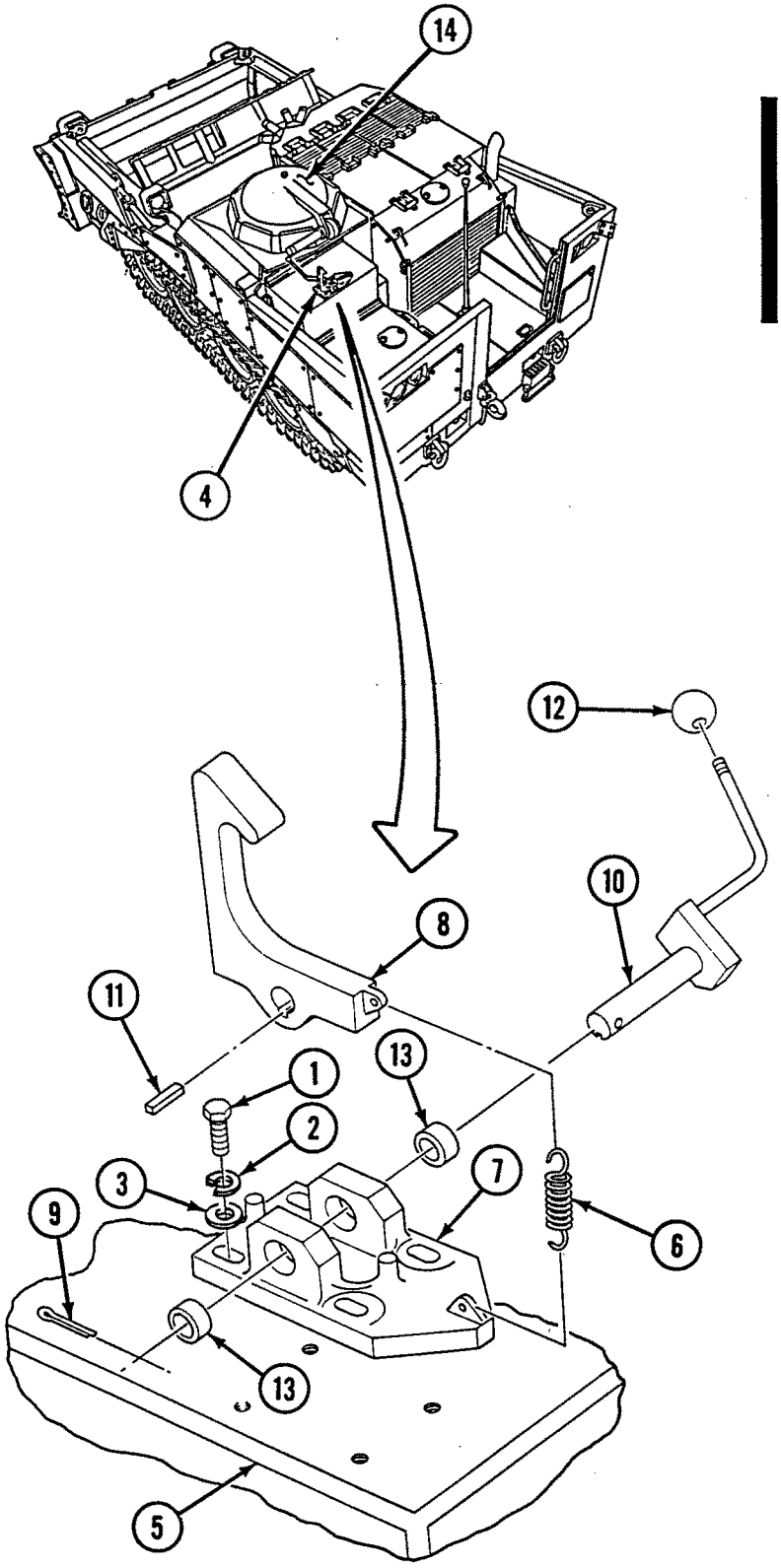
C Install hook (8), handle (10), and key (11) on base (7), and secure with cotter pin (9).

D Install spring (6) on base (7) and hook (8).

INSTALLATION

A Install hatch cover holddown latch assembly (4) on radio box (5) with four flat washers (3), lockwashers (2), and screws (1). Do not tighten screws (1).

B Open hatch cover (14) (TM 5-2350-262-10) and position hatch cover holddown latch assembly (4) to hold hatch cover (14) open. Tighten four screws (1).



FUEL TANK ARMOR REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Nut, .50-13UNC-2B (2)

Special Tools:

Eyebolt (2)	5306-00-050-0347

Materials:

Lubricating Oil	Item 26 **Appendix D**

Parts:

Lockwasher (4)

Self-locking Screw (12)

Parts Reference:

TM 5-2350-262-24P	Group AD Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Equipment Condition:

Reference	Condition Description
Page 4-44	Liquid Container Brackets Removed
Page 4-213	**Portable Dry Powder Fire Extinguisher Bracket Removed**
Page 4-816	Radio Equipment Box Removed
Page 4-912	MCS Unit Removed (if equipped)

General Safety Instructions:

WARNING

- Lifting device must have a weight capacity greater than 120 lb (54 kg).
- Personnel must stand clear during lifting operations.

REMOVAL

A Remove four screws (1), lockwashers (2), washers (3), and plate (4) from plate (11). Discard lockwashers (2).

B Remove two self-locking screws (5), washers (6), and plate (7) from plate (11). Discard self-locking screws (5).

Note

Perform steps C through E if vehicle is MCS prepped.

C Remove two self-locking screws (8), washers (9), baffle plate (10), and plate (11) from two blocks (12). Discard self-locking screws (8).

D Remove two self-locking screws (13) and washers (14) securing support bracket (15) to hull. Discard self-locking screws (13).

E Remove two self-locking screws (16), washers (17), and support bracket (15) from armor plate (18) and bracket (19). Discard self-locking screws (16).

F Remove two self-locking screws (8), washers (9), and plate (11) from two blocks (12). Discard self-locking screws (8).

G Remove two self-locking screws (20) and washers (21) securing armor plate (18) to bracket (19). Discard self-locking screws (16).

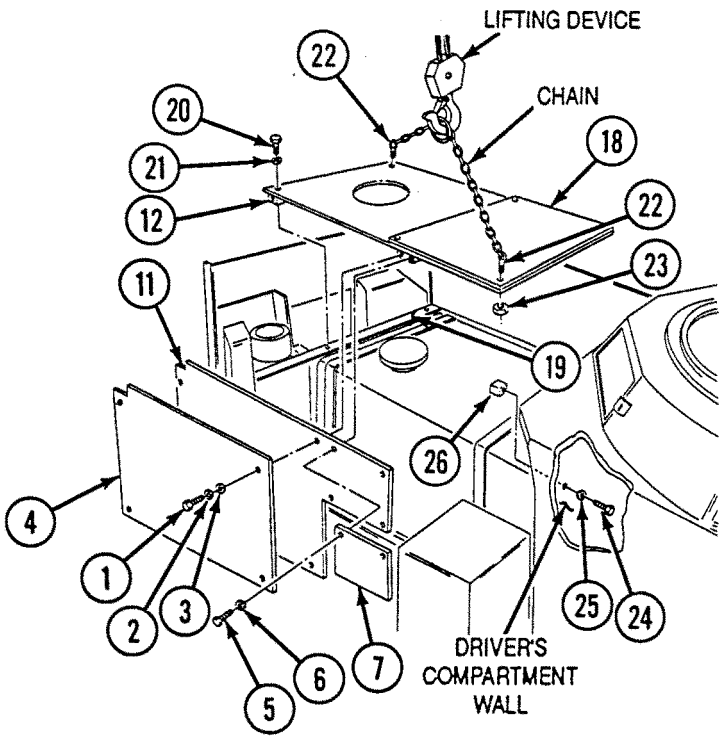
WARNING

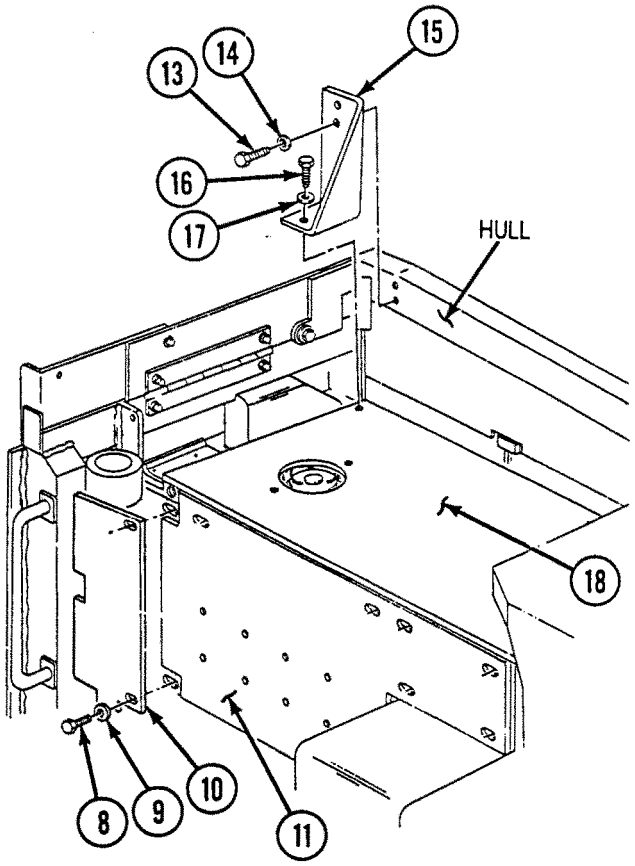
- Lifting device must have a weight capacity greater than 120 lb (54 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

H Install two eyebolts (22) on armor plate (18) and secure with jamnuts (23). Connect chain to eyebolts (22) and lifting device.

I Raise lifting device to take up slack. Remove armor plate (18). Remove lifting device, chain, jamnuts (23), and eyebolts (22).

J Remove two self-locking screws (24), washers (25), and blocks (26) from driver's compartment wall. Discard self-locking screws (24).





INSTALLATION

Note

Apply lubricating oil to threads of screws prior to installation.

A Install two blocks (1) on driver's compartment wall with two washers (2) and self-locking screws (3). Tighten self-locking screws (3) to 78-86 lb-ft (106-117 N·m).

WARNING

- Lifting device must have a weight capacity greater than 120 lb (54 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

B Install two eyebolts (4) on armor plate (5), and secure eyebolts (4) with two jamnuts (6). Connect chain to eyebolts (4) and lifting device. Raise lifting device to take up slack.

C Install armor plate (5) on vehicle. Remove lifting device, chain, two jamnuts (6), and eyebolts (4).

Note

Perform steps D through F on vehicles equipped with MCS unit.

D Secure armor plate (5) and support bracket (7) to bracket (8) with two washers (9) and self-locking screws (10). Do not tighten self-locking screws (10).

E Secure support bracket (7) to hull with two washers (11) and self-locking screws (12).

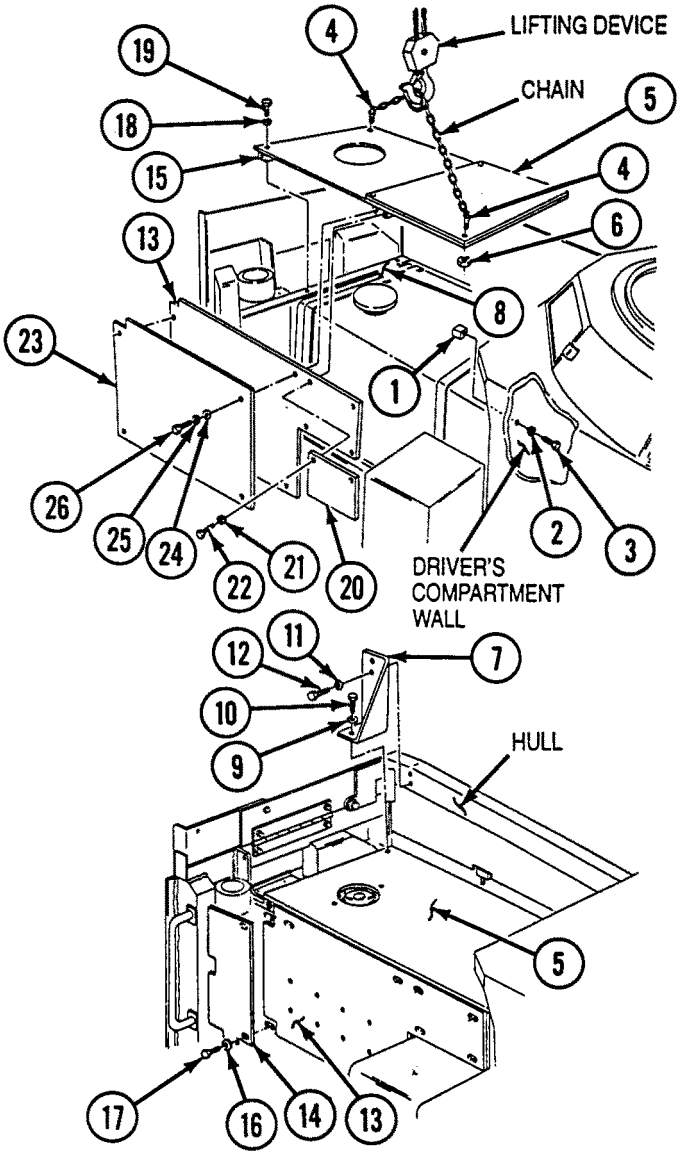
F Install plate (13) and baffle plate (14) on two blocks (15) with washers (16) and self-locking screws (17). Do not tighten self-locking screws (17).

G Secure armor plate (5) to bracket (8) with two washers (18) and self-locking screws (19). Do not tighten self-locking screws (19).

H Install plate (13) on two blocks (15) with two washers (16) and self-locking screws (17).

I Install plate (20) on plate (13) with two washers (21) and self-locking screws (22).

J Adjust plates (5), (13), and (20) forward for a minimum gap at driver's compartment.



K Secure plate (5) to two blocks (1) with two washers (18) and self-locking screws (19). Tighten self-locking screws (19) and (17) to 70-78 lb-ft (95-106 N·m).

L Tighten self-locking screws (22) to 47-53 lb-ft (64-72 N·m).

M Install plate (23) on plate (13) with four washers (24), lockwashers (25), and screws (26). Adjust plate (23) for a minimum gap at plate (13). Tighten screws (26) to 70-78 lb-ft (95-106 N·m).

FOLLOW-ON TASKS:

- Install MCS unit **(p 4-912).**
- Install radio equipment box **(p 4-817).**
- Install liquid container brackets **(p 4-44).**
- Install portable **dry powder fire extinguisher bracket (p 4-213).**

RADIATOR AND ENGINE COMPARTMENT ARMOR SHROUD REPLACEMENT

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Special Tools:

Eyebolt (2)	5306-00-050-0347

Materials:

Sealing Compound	Item 17 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Cotter Pin (2)

Self-locking Screw (30)

Locknut (12)

Seal

Parts Reference:

TM 5-2350-262-24P	Group AP

Personnel Required:

Two Construction Equipment Repairers 62B10

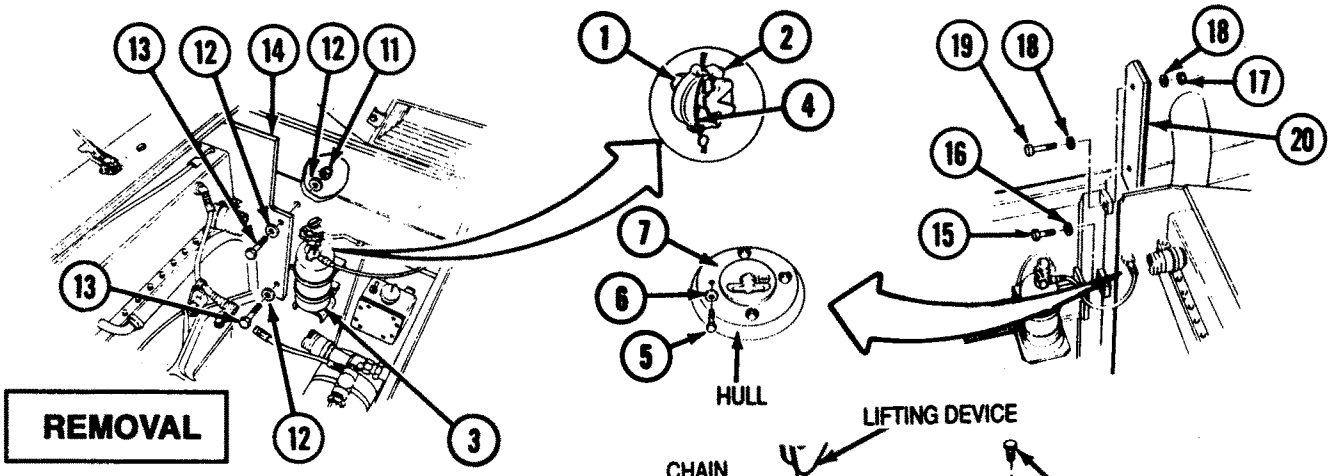
Equipment Condition:

Reference	Condition Description
Page 4-340	Engine Intake and Exhaust Grilles and Access Covers Removed
Page 4-361	Rear Floor Plates Removed
Page 4-607	Muffler Shield Removed
Page 4-655	Radiator Side Seals Removed

General Safety Instructions:

WARNING

- Do not breathe fire extinguisher vapors.
- Personnel must stand clear during lifting operations.
- Lifting device must have a weight capacity greater than 221 lb (100 kg).



REMOVAL

WARNING

Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.

CAUTION

Ensure control valve remains in reset position to avoid triggering fire extinguisher. Failure to comply may result in damage to equipment.

A Loosen captive nut (1) attaching control valve (2) to canister (3). Remove control valve (2) and cut seal (4). Discard seal (4).

Note

Fire extinquisher control valve and handle remain installed on radiator and engine compartment shroud.

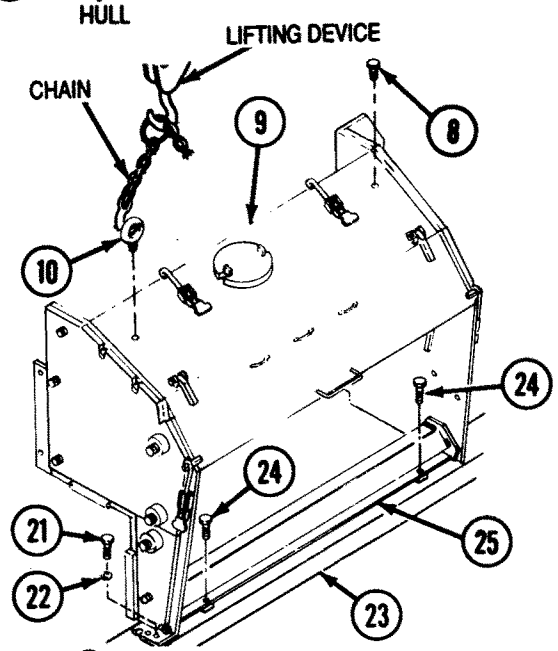
B Remove four self-locking screws (5), washers (6), and access cover (7) from hull. Discard self-locking screws (5).

C Remove two screws (8) from radiator shroud (9) and install two eyebolts (10).

D Connect chain to eyebolts (10) and lifting device, and take up slack.

E In engine compartment, remove two locknuts (11), four washers (12), and two screws (13), securing plate (14) to hull. Discard locknuts (11).

F On outboard side of engine compartment, remove self-locking screw (15), washer (16), locknut (17), two washers (18), and screw (19) securing plate (20) to hull. Discard self-locking screw (15) and locknut (17).



G Remove two self-locking screws (21) and washers (22) securing left side of radiator shroud (9) to support (23). Discard self-locking screws (21).

WARNING

- Lifting device must have a weight capacity greater than 221 lb (100 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to

H Remove two self-locking screws (24) from bottom grille (25) and support (23). Lift and remove radiator shroud (9) from vehicle. Discard self-locking screws (24).

I Remove lifting device, chain, and eyebolts (10).

DISASSEMBLY

A Release two latches (1).

B Remove two cotter pins (2), pins (3), washers (4), and lid (5). Discard cotter pins (2).

C Remove two protective plastic balls (6) from pins (7) at lower corners of lid (5), if damaged.

D Remove four self-locking screws (8), washers (9), and cover (10). Discard self-locking screws (8).

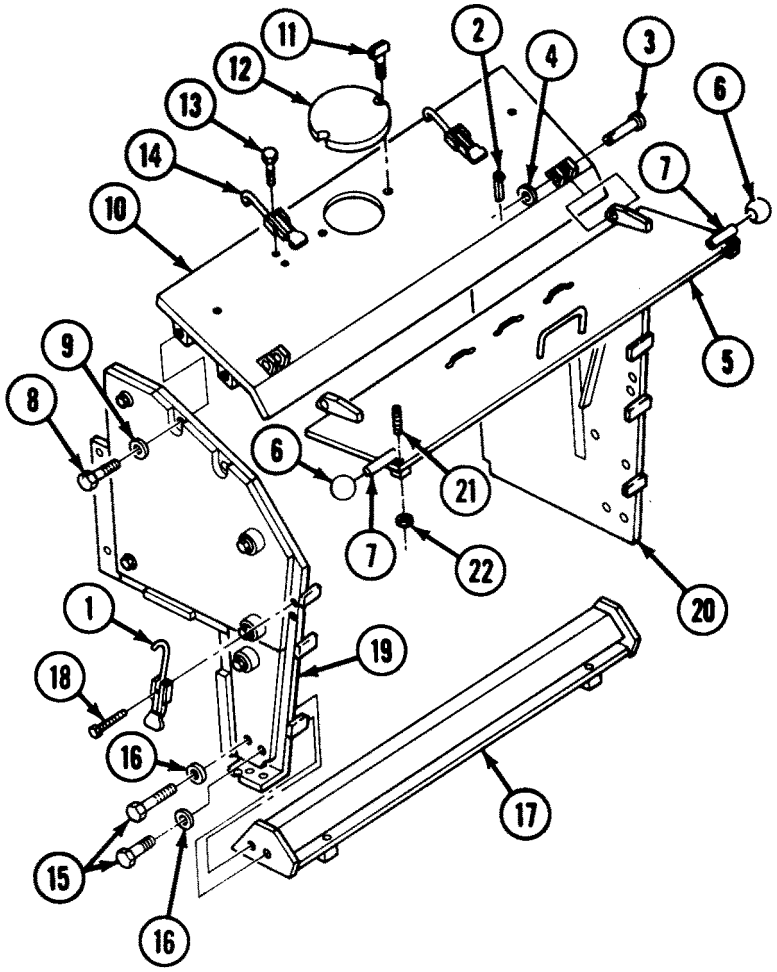
E Remove two thumb screws (11) and radiator cap cover (12) from cover (10).

F Remove four self-locking screws (13) and two latches (14) from cover (10). Discard self-locking screws (13).

G Remove four self-locking screws (15), washers (16), and bottom grille (17). Discard self-locking screws (15).

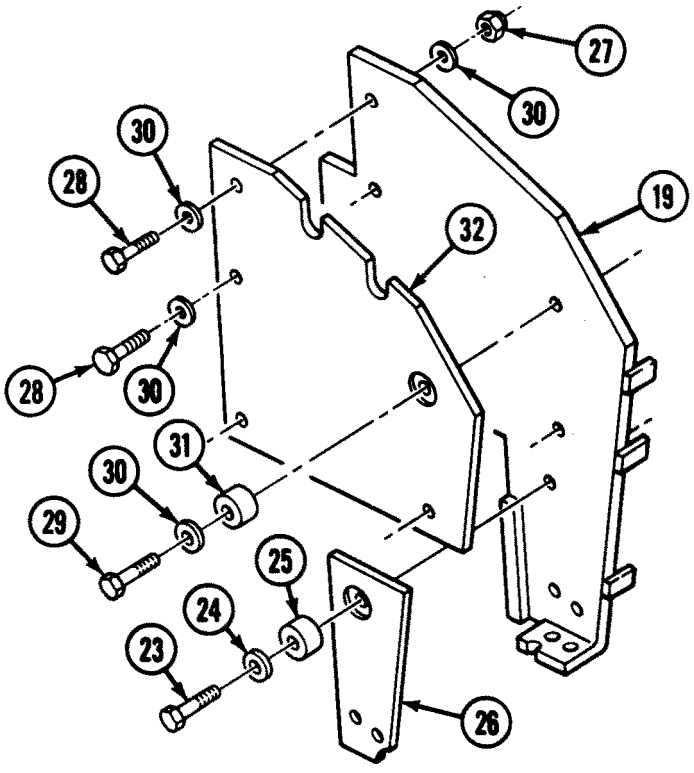
H Remove two self-locking screws (18) and latch (1) from each side plate (19) and (20). Discard self-locking screws (18).

I Remove two setscrews (21) and jamnuts (22) from lid (5).



J Remove self-locking screw (23), washer (24), spacer (25), and lower armor plate (26) from left side plate (19). Discard self-locking screw (23).

K Remove locknut (27), four self-locking screws (28), screw (29), five flat washers (30), two spacers (31), and upper armor plate (32) to left side plate (19). Discard self-locking screws (28) and locknut (27).

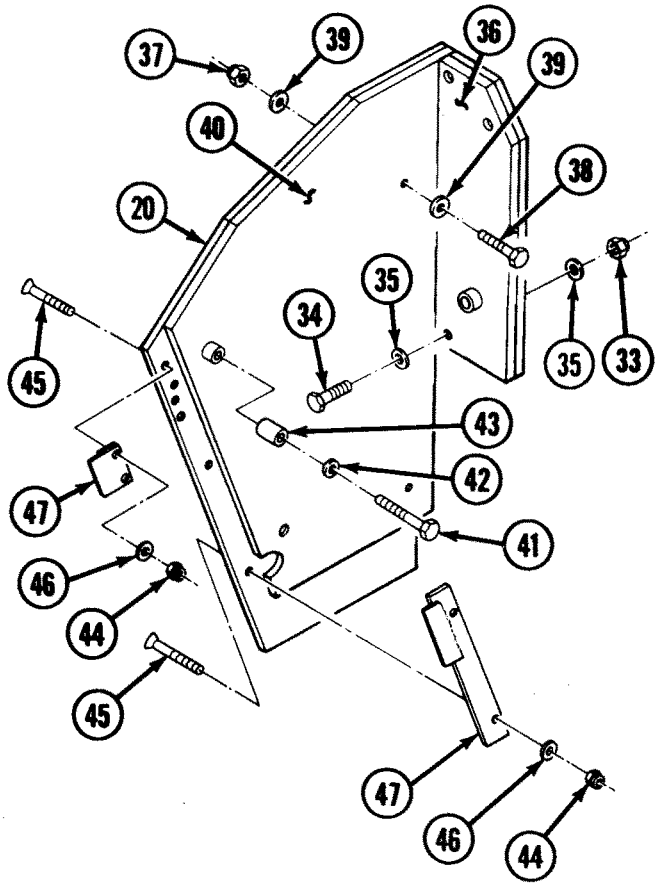


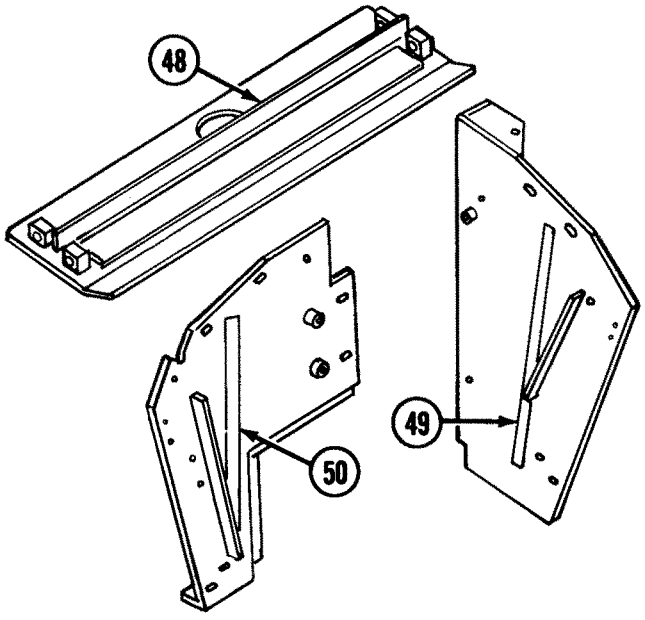
L Remove two locknuts (33), screws (34), four washers (35), and small armor plate (36) from right side plate (20). Discard locknuts (33).

M Remove two locknuts (37), screws (38), four washers (39), and armor plate (40) from right side plate (20). Discard locknuts (37).

N Remove screw (41), washer (42), and spacer (43).

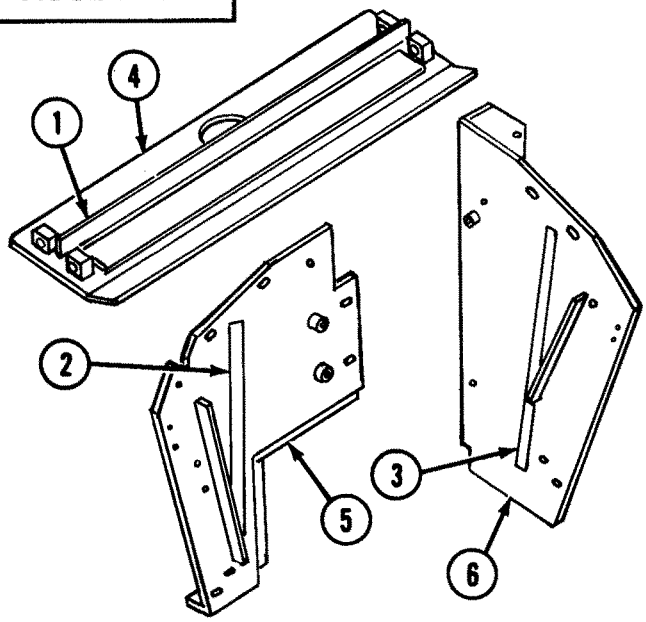
O Remove four locknuts (44), screws (45), washers (46), and two retainers (47) from right side plate (20). Discard locknuts (44).





P Remove tape and pile strips (Velcro) (48), (49), and (50) only if damaged or if plates are being replaced.

ASSEMBLY



A If removed, attach tape and pile strips (Velcro) (1), (2), and (3) to cover (4), left side plate (5), and right side plate (6).

Note

Apply lubricating oil to threads of screws prior to installation.

B Position armor plate (1) on right side plate (2).

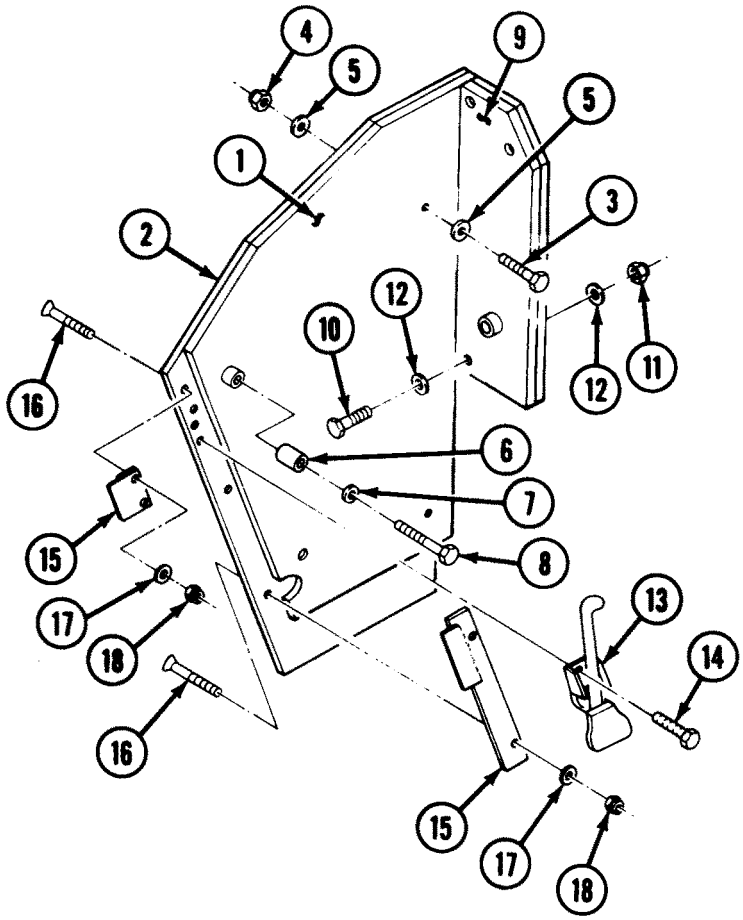
C Install two screws (3), locknuts (4), and four washers (5). Tighten screws (3) to 63-69 lb-ft (85-94 N·m).

D Install spacer (6), washer (7), and screw (8) in right side plate (2). Tighten screw (8) to 45-55 lb-ft (61-75 N·m).

E Install small armor plate (9) on right side plate (2) with two screws (10), locknuts (11), and four washers (12). Tighten screws (10) to 63-69 lb-ft (85-94 N·m).

F Install latch (13) on right side plate (2) with two self-locking screws (14). Tighten self-locking screws (14) to 6-8 lb-ft (8-11 N·m).

G Install two retainers (15) on right side plate (2) with four screws (16), washers (17), and locknuts (18).



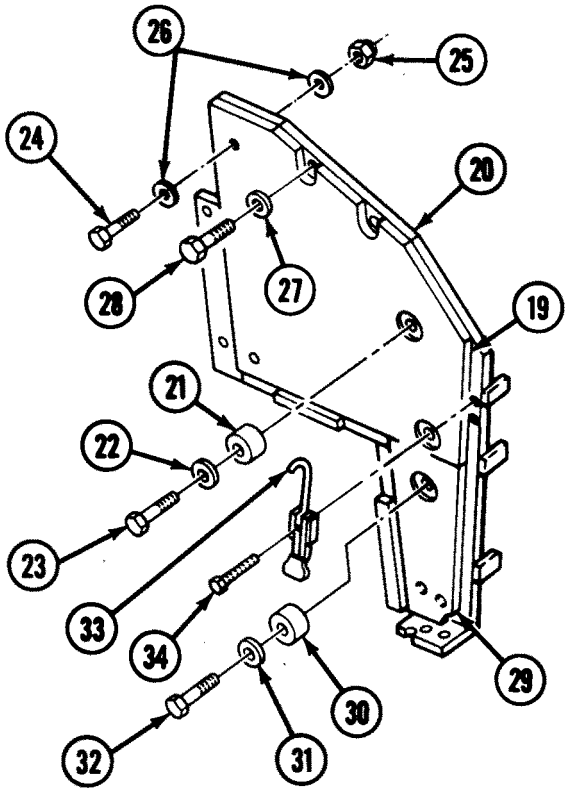
H Install armor plate (19) on left side plate (20) with two spacers (21), washers (22), and self-locking screws (23). Tighten self-locking screws (23) to 73-81 lb-ft (99-110 N·m).

I Install screw (24), locknut (25), and two washers (26) on armor plate (19) and left side plate (20). Tighten screw (24) to 40-46 lb-ft (54-62 N·m).

J Install two washers (27) and self-locking screws (28) on plate (19) and left side plate (20). Tighten self-locking screws (28) to 81-89 lb-ft (110-121 N·m).

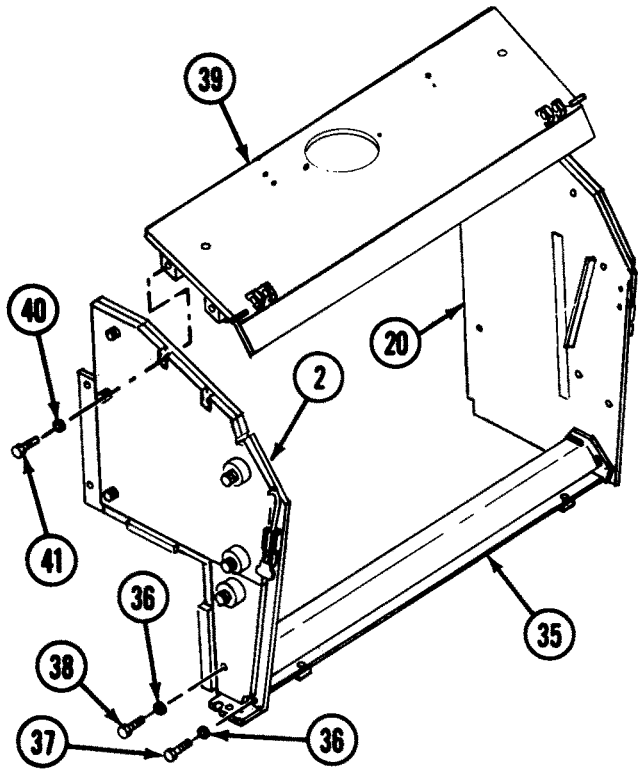
K Install small armor plate (29) on left side plate (20) with spacer (30), washer (31), and self-locking screw (32). Tighten self-locking screw (32) to 45-55 lb-ft (61-75 N·m).

L Install latch (33) on left side plate (20) with two self-locking screws (34). Tighten self-locking screws (34) to 6-8 lb-ft (8-11 N·m).



M Install side plates (2) and (20) on bottom grille (35) with four washers (36) and two self-locking screws (37) and (38). Tighten self-locking screws (37) and (38) to 78-86 lb-ft (106-117 N·m).

N Install side plates (2) and (20) on cover (39) with four washers (40) and self-locking screws (41). Tighten self-locking screws (41) to 81-89 lb-ft (110-121 N·m).



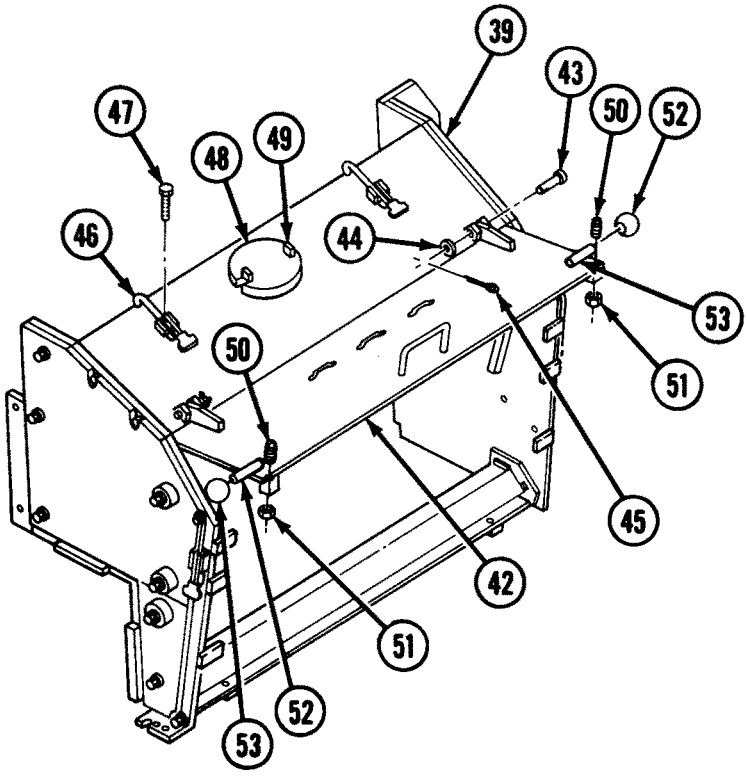
O Install lid (42) on cover (39) with two pins (43), washers (44), and cotter pins (45).

P Install two latches (46) on cover (39) with four self-locking screws (47). Tighten self-locking screws (47) to 6-8 lb-ft (8-11 N·m).

Q Install radiator cap cover (48) on cover (39) with two thumb screws (49).

R If removed, install two setscrews (50) and jamnuts (51) on lid (42).

S If removed, coat threads of pins (52) with sealing compound, and install two protective plastic balls (53) on pins (52) at lower corners of lid (42).



INSTALLATION

Note

Apply lubricating oil to threads of screws prior to installation.

A Install two eyebolts (1) on cover (2).

B Connect chain to eyebolts (1) and lifting device.

WARNING

- Lifting device must have a weight capacity greater than 221 lb (100 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

C Lift radiator shroud (3) and position over radiator (4).

D Secure bottom grille (5) of radiator shroud (3) to support (6) with two self-locking screws (7). Do not tighten self-locking screws (7)

E Install two washers (8) and self-locking screws (9) on shroud (3) and radiator (4). Do not tighten self-locking screws (9).

F In right side of engine compartment, secure lower end of plate (10) to hull with washer (11) and self-locking screw (12). Do not tighten self-locking screw (12).

G Secure upper end of plate (10) to hull with screw (13), two washers (14), and locknut (15). Do not tighten locknut (15).

H In engine compartment, secure plate (16) to hull with two screws (17), four washers (18), and two locknuts (19).

I Install access cover (20) to hull with four washers (21) and self-locking screws (22).

J Tighten self-locking screws (7) to 50-55 lb-ft (68-75 N·m), self-locking screws (9) to 24-26 lb-ft (33-35 N·m), self-locking screw (12) to 72-80 lb-ft (98-108 N·m), and locknut (15) to 43-46 lb-ft (58-62 N·m).

K Remove lifting device and chain. Remove two eyebolts (1) and replace with screws (23).

L Route seal (24) through two screws (25) and handle (26) of control valve (27).

WARNING

Do not breathe fire extinguisher vapors. Failure to comply may result in injury to personnel.

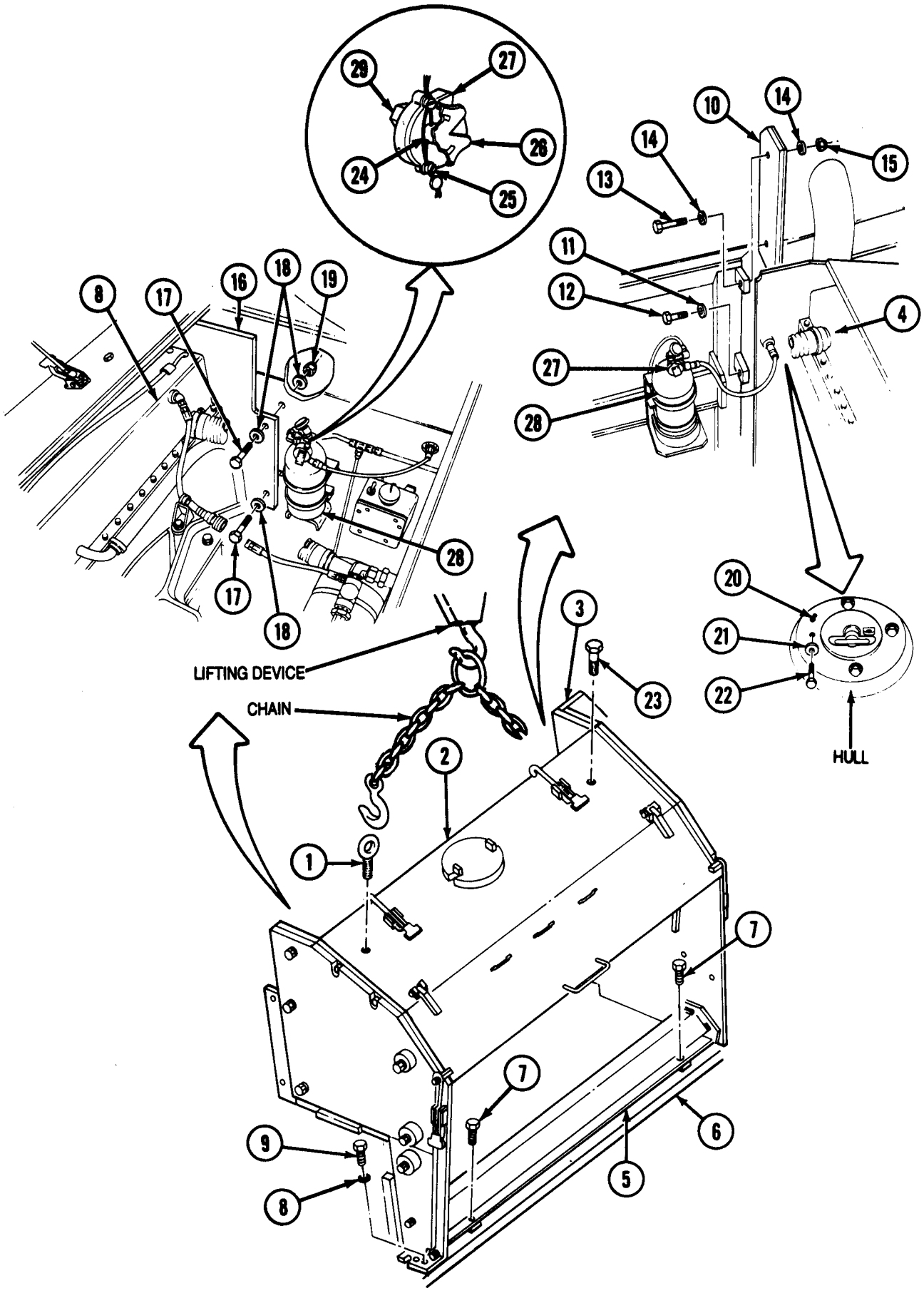
CAUTION

Ensure control valve remains in reset position to avoid triggering fire extinguisher. Failure to comply may result in damage to equipment.

M Install control valve (27) on canister (28) with captive nut (29).

FOLLOW-ON TASKS:

- Install rear floor plates (p 4-361).
- Install muffler shield (p 4-607).
- Install engine intake and exhaust grilles and access covers (4-344).
- Install radiator side seals (p 4-655).
- Adjust latches (p 4-346).


LIFTING DEVICE
CHAIN
HULL

COWLING REPLACEMENT

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Special Tools:

Eyebolt (2)	5306-00-050-0347

Materials:

Lubricating Oil	Item.26 Appendix D

Parts:

Self-locking Screw (9)

Locknut (14)

Lockwasher (4)

Parts Reference:

TM 5-2350-262-24P	Group AP

Personnel Required:

Two Construction Equipment Repairers 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward
TM 5-2350-262-10	Engine Intake and Exhaust Grilles Opened
Page 4-161	Smoke Grenade Dischargers Removed

General Safety Instructions:

WARNING

- Lifting device must have a weight capacity greater than 125 lb (57 kg).
- Personnel must stand clear during lifting operations.

REMOVAL

A Remove screw (1), clamp (2), and smoke grenade discharger wiring harness (3) from back side of cowling (4).

B Remove two screws (5) from cowling (4), and install eyebolts (6). Tighten eyebolts (6) by hand only.

C Connect chain and lifting device to two eyebolts (6) and take up slack.

WARNING

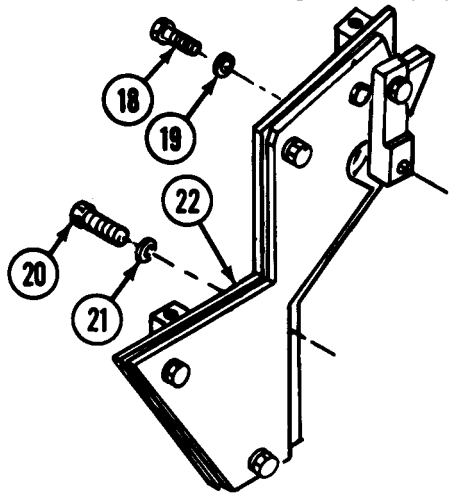
- Lifting device must have a weight capacity greater than 125 lb (57 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

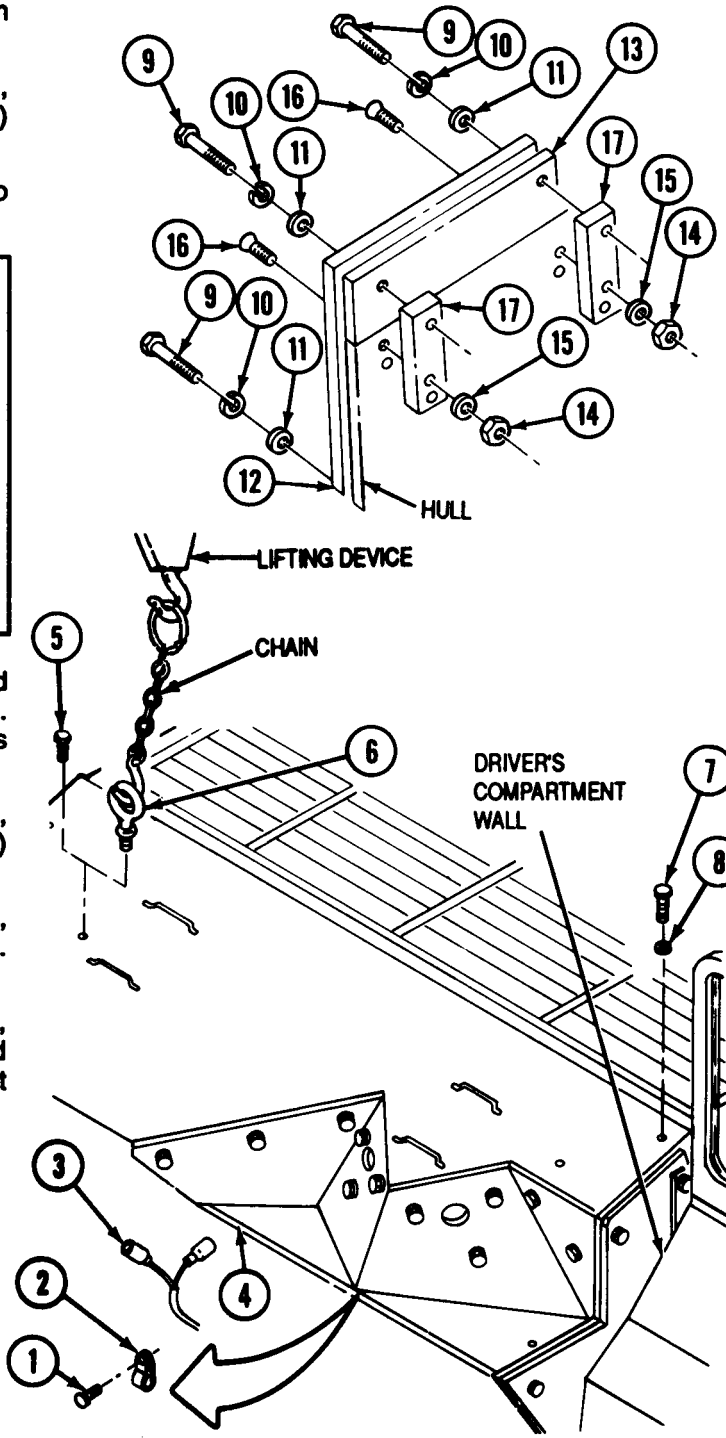
D Remove four self-locking screws (7) and washers (8) and lift cowling (4) off vehicle. Remove lifting device, chain, and eyebolts (6). Discard self-locking screws (7).

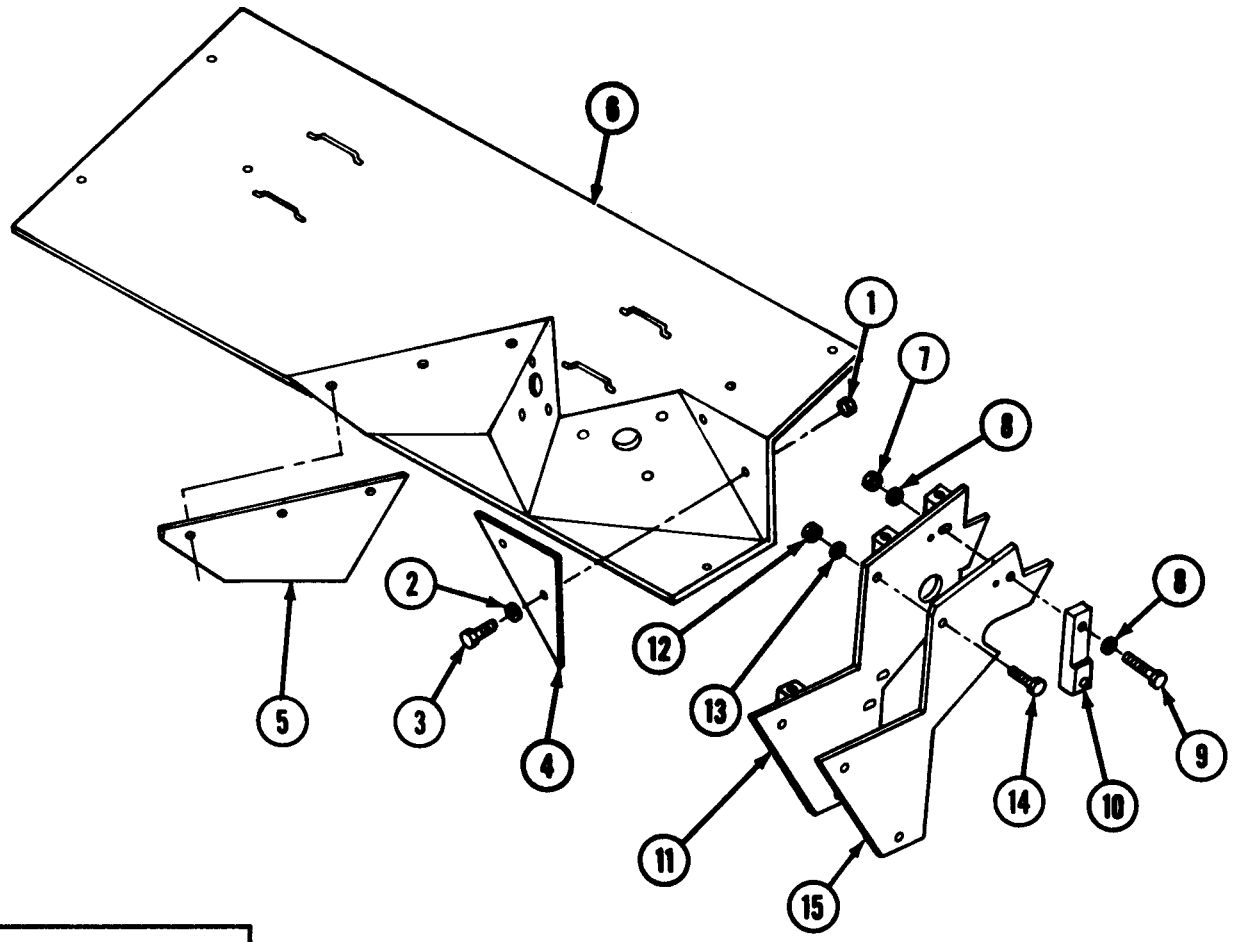
E Remove four screws (9), lockwashers (10), washers (11), plate (12), and filler plate (13) from hull. Discard lockwashers (10).

F Remove four locknuts (14), washers (15), screws (16), and two brackets (17) from hull. Discard locknuts (14).

G Remove five self-locking screws (18), washers (19), screw (20), washer (21), and body panel (22) from driver's compartment wall. Discard self-locking screws (18).





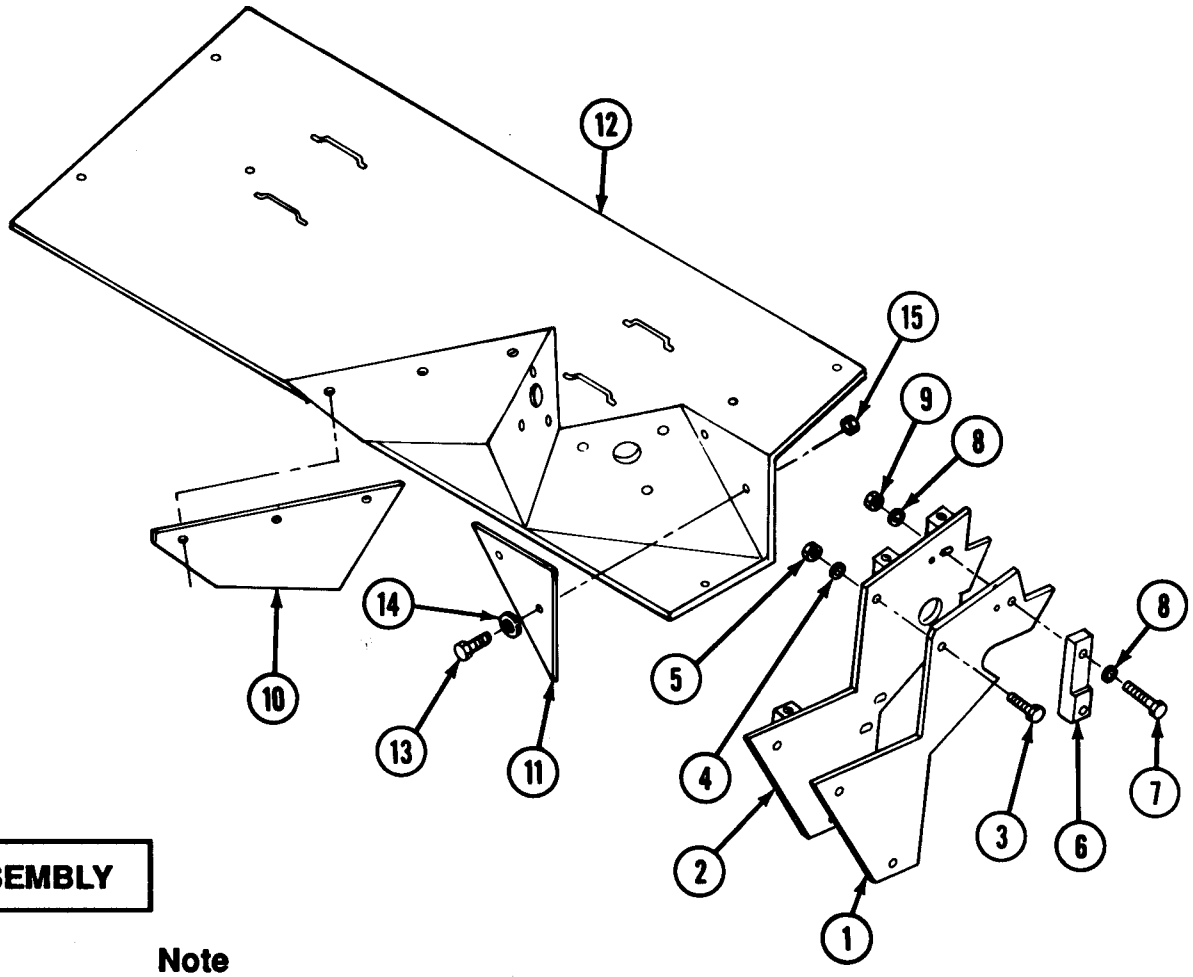


DISASSEMBLY

A Remove five locknuts (1), washers (2), screws (3), and armor plates (4) and (5) from cowling (6). Discard locknuts (1).

B Remove locknut (7), two washers (8), screw (9), and spacer (10) from body panel (11). Discard locknut (7).

C Remove four locknuts (12), washers (13), screws (14), and armor plate (15) from body panel (11). Discard locknuts (12).



ASSEMBLY

Note

Apply lubricating oil to threads of screws prior to installation.

A Install armor plate (1) on body panel (2) with four screws (3), washers (4), and locknuts (5). Tighten locknuts (5) to 27-29 lb-ft (37-39 N·m).

B Install spacer (6) on body panel (2) with screw (7), two washers (8), and locknut (9). Do not tighten locknut (9).

C Install armor plates (10) and (11) on cowling (12) with five screws (13), washers (14), and locknuts (15). Tighten locknuts (15) to 27-29 lb-ft (37-39 N·m).

INSTALLATION

Note

Apply lubricating oil to threads of screws prior to installation.

A Install body panel (1) on driver's compartment wall with five washers (2), self-locking screws (3), washer (2), and screw (4). Tighten self-locking screws (3) to 32-38 lb-ft (43-52 N·m). Tighten self-locking screw (4) to 31-35 lb-ft (42-47 N·m).

B Tighten screw (5) to 27-29 lb-ft (37-39 N·m).

C Install two brackets (6) on hull with four screws (7), washers (8), and locknuts (9).

D Install filler plate (10) and plate (11) on hull and brackets (6) with four washers (12), lockwashers (13), and screws (14). Do not tighten screws (14).

E Install two eyebolts (15) on cowling (16). Tighten eyebolts (15) by hand only.

WARNING

- Lifting device must have a weight capacity greater than 125 lb (57 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may cause injury to personnel.

F Connect lifting device and chain to eyebolts (15) and position cowling (16) on vehicle.

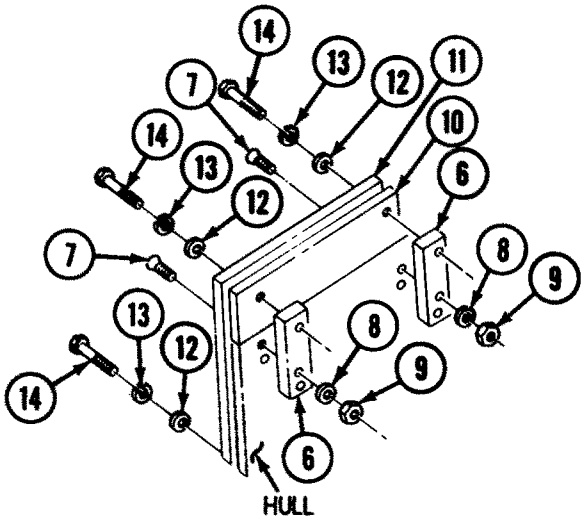
G Tighten four screws (14) to 27-29 lb-ft (37-39 N·m).

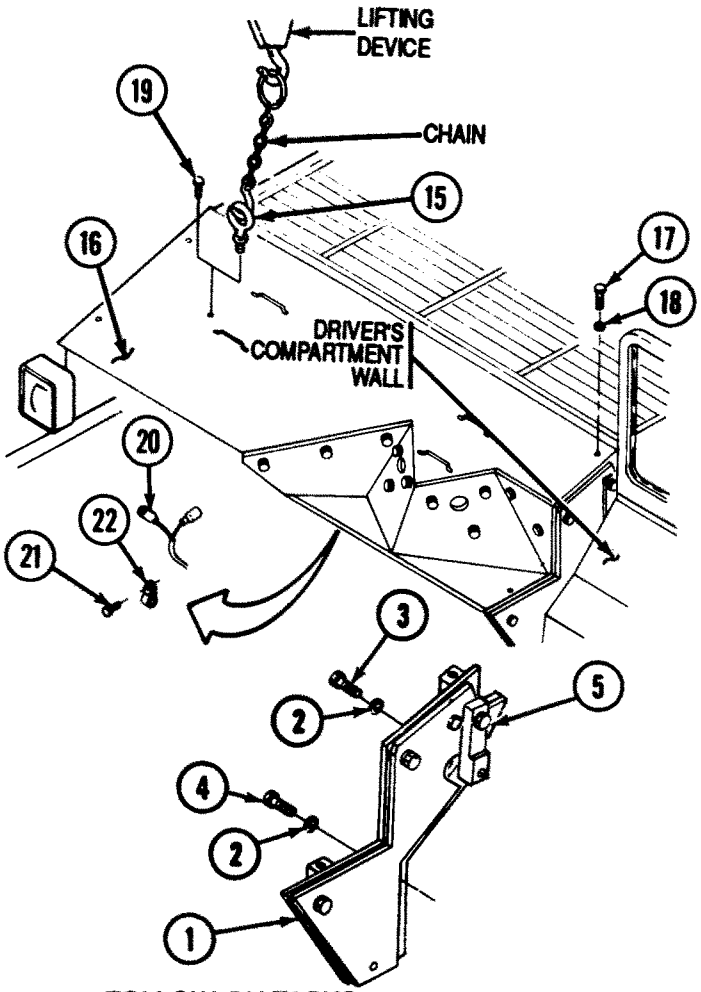
H Secure cowling (16) with four self-locking screws (17) and washers (18). Tighten screws (17) to 72-80 lb-ft (98-109 N·m).

I Remove lifting device and chain.

J Remove two eyebolts (15), and install two screws (19) on cowling (16). Do not tighten screws (19).

K Install smoke grenade discharger wiring harness (20) on back side of cowling (16) with screw (21) and clamp (22).





FOLLOW-ON TASKS:

- Install smoke grenade dischargers (p 4-161).
- Close engine intake and exhaust grilles (TM 5-2350-262-10).
- Retract ejector (TM 5-2350-262-10).

ENGINE INTAKE AND EXHAUST GRILLES AND ACCESS COVERS REPLACEMENT

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Lifting Device

Materials:

Lubricating Oil — Item 26 Appendix D

Parts:

Cotter Pin (12)

Self-locking Screw (26)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Two Construction Equipment Repairers 62B10

General Safety Instructions:

WARNING

- Lifting device must have a weight capacity greater than 350 lb (159 kg).
- Personnel must stand clear during lifting operations.

REMOVAL

Note

Replacement of individual grilles or covers can be done without removing the assembly. This task covers removal of the assembly as one unit.

A Release two latches (1) securing access covers (2) and (3).

B Remove two self-locking screws (4) and washers (5) from angle supports (6). Discard self-locking screws (4).

C Loop chain through handle (7) on left rear access cover (2). Continue to loop chain through handle (8) on left corner intake grille (9) and handle (10) on right corner intake grille (11).

Note

- Position lifting device directly over center of grille and cover assembly prior to removal.
- Cover and grilles must be folded and secured in upright position prior to removal.

D Fold cover (2) and grilles (9) and (11) in upright position and hook chain together.

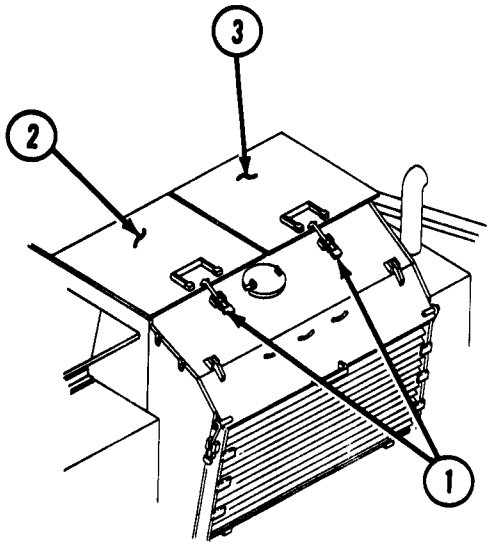
WARNING

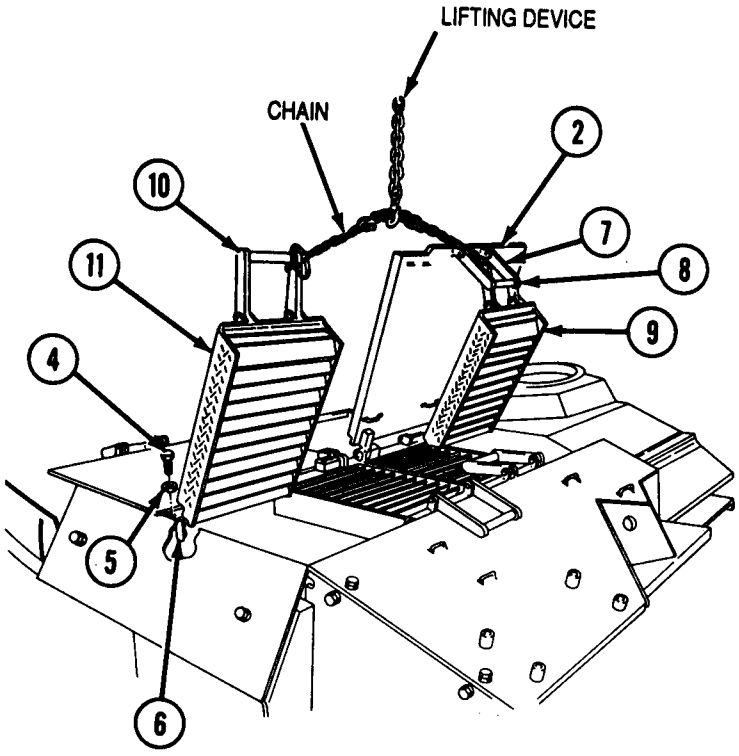
- Lifting device must have a weight capacity greater than 350 lb (159 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to personnel.

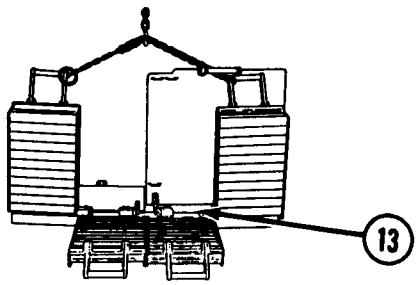
Note

Assistant will help with step E.

E Connect chain to lifting device and slowly remove grille and cover assembly (13) from vehicle. Remove lifting device and chain.







DISASSEMBLY

A Remove two self-locking screws (1), washers (2), and hinge (3) from right access cover (4). Discard self-locking screws (1).

B Lift access cover (4) and slide remaining hinge (3) and cover (4) off fixed hinge (5).

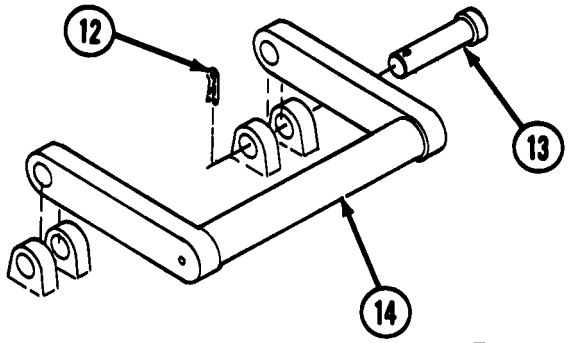
C Remove two self-locking screws (1), washers (2), and remaining hinge (3) from cover (4). Discard self-locking screws (1).

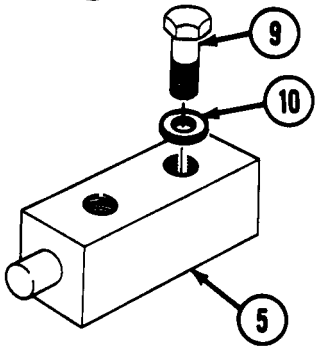
D Repeat steps A through C for left access cover (6).

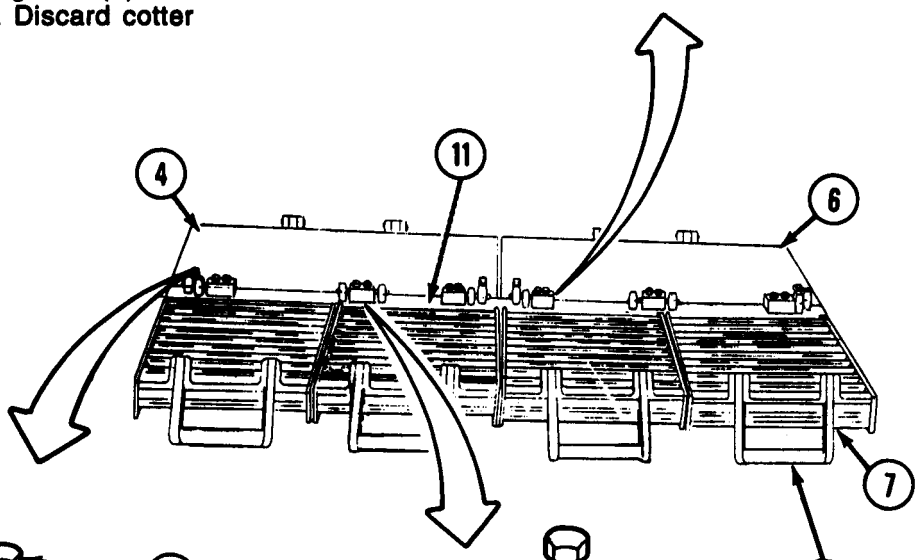
E Remove four grilles (7) by lifting each up and sliding off hinges (5) and (8).

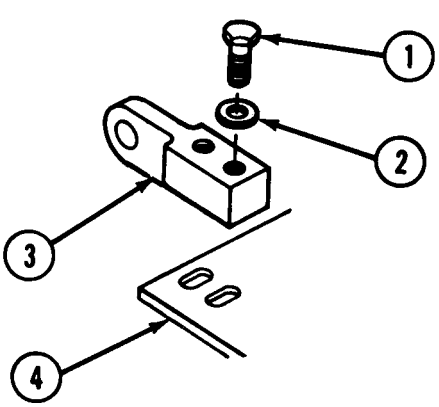
F Remove twelve self-locking screws (9), washers (10), two hinges (8), and four hinges (5) from angle frame (11). Discard self-locking screws (9).

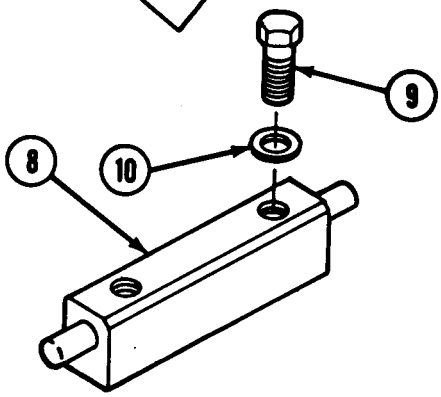
G Remove twelve cotter pins (12), pins (13), and six handles (14) from grilles (7) and access covers (4) and (6). Discard cotter pins (12).

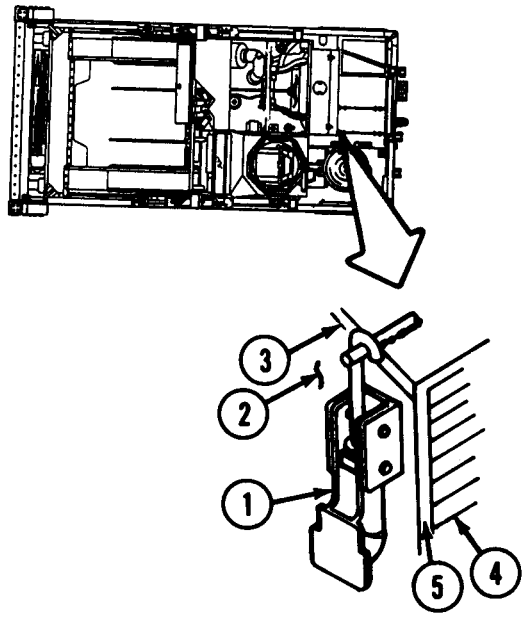






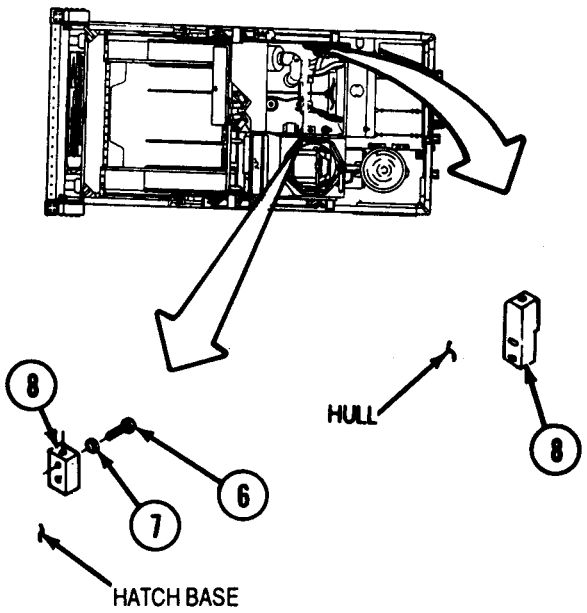






H Release two latches (1) from both sides of radiator and engine compartment armor shroud (2), and lift up lid (3).

I Lift four exhaust grilles (4) from radiator and engine compartment armor shroud (2) and brackets (5).



J Remove four self-locking screws (6), washers (7), and two angle supports (8) from hull and hatch base. Discard self-locking screws (6).

ASSEMBLY

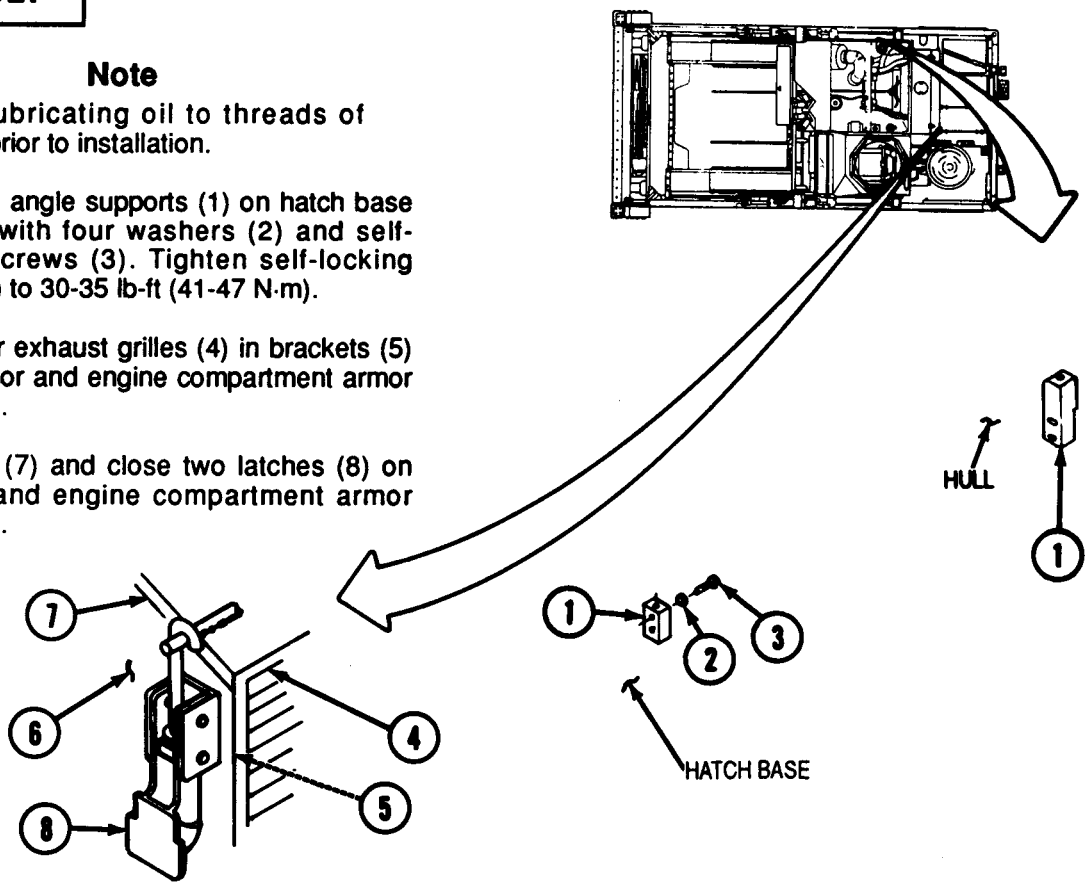
Note

Apply lubricating oil to threads of screws prior to installation.

A Install two angle supports (1) on hatch base and hull with four washers (2) and self-locking screws (3). Tighten self-locking screws (3) to 30-35 lb-ft (41-47 N·m).

B Install four exhaust grilles (4) in brackets (5) and radiator and engine compartment armor shroud (6).

C Lower lid (7) and close two latches (8) on radiator and engine compartment armor shroud (6).



D Install six handles (9) on four intake grilles (10) and access covers (11) and (12) with twelve pins (13) and cotter pins (14).

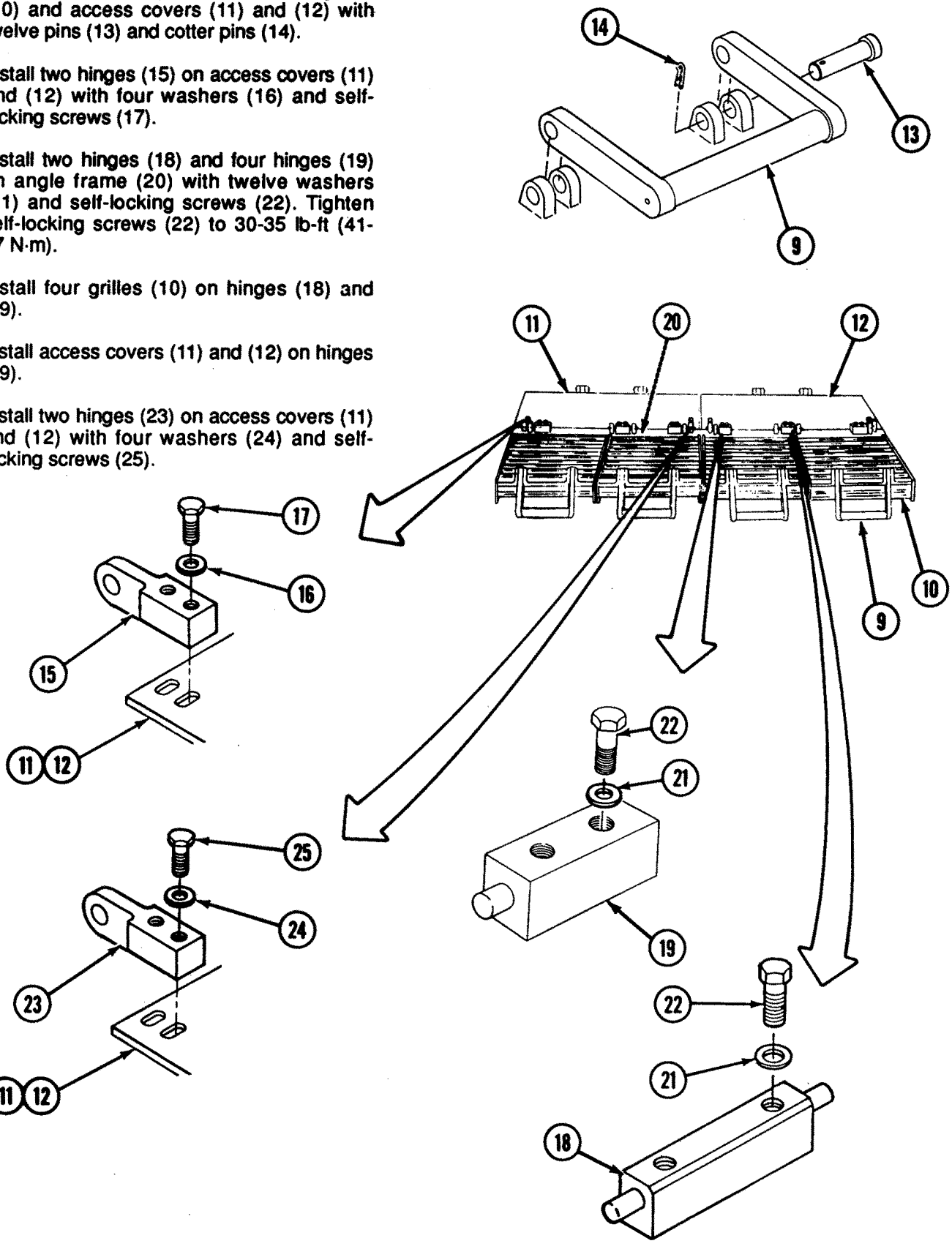
E Install two hinges (15) on access covers (11) and (12) with four washers (16) and self-locking screws (17).

F Install two hinges (18) and four hinges (19) on angle frame (20) with twelve washers (21) and self-locking screws (22). Tighten self-locking screws (22) to 30-35 lb-ft (41-47 N·m).

G Install four grilles (10) on hinges (18) and (19).

H Install access covers (11) and (12) on hinges (19).

I Install two hinges (23) on access covers (11) and (12) with four washers (24) and self-locking screws (25).



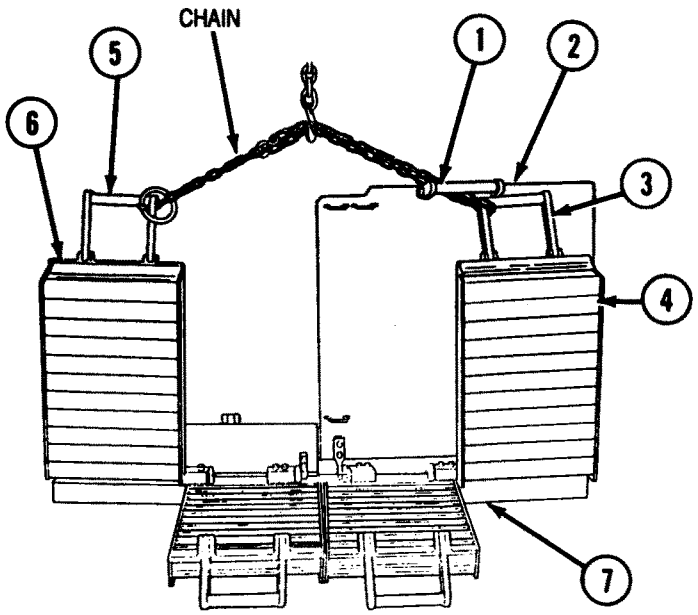
INSTALLATION

WARNING

- Lifting device must have a weight capacity greater than 350 lbs (159 kg). Failure to comply may result in damage to equipment or injury to personnel.
- Personnel must stand clear during lifting operations. A swinging or shifting load may result in injury to

Note

It may be necessary to hook chain together at different lifting points in order to keep grille and cover assembly level during lifting operations.

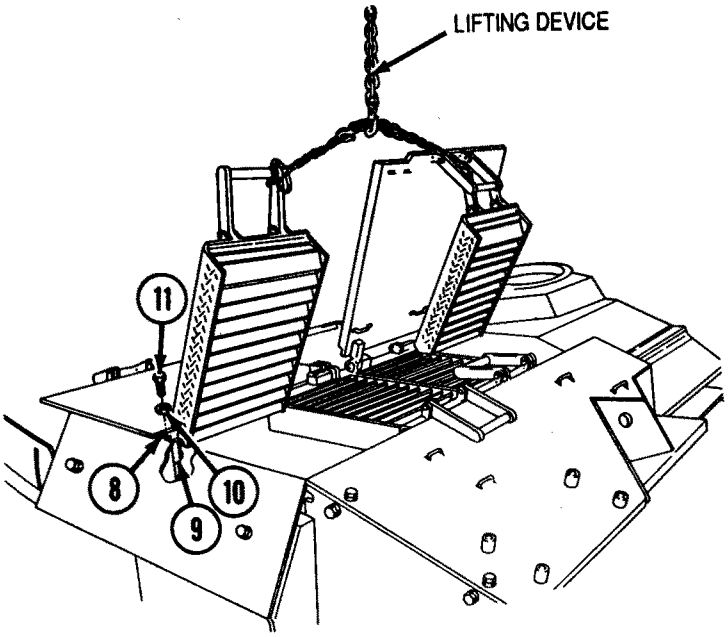


A Loop chain through handle (1) on left access cover (2). Continue to loop chain through handle (3) on left corner intake grille (4) and handle (5) on right corner intake grille (6).

Note

Assistant will help with step B.

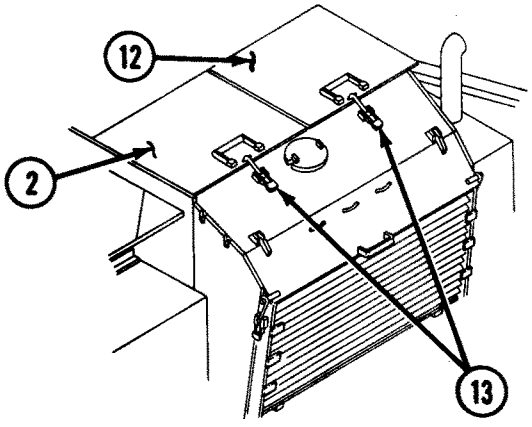
B Connect lifting device to chain, and slowly lift grille and cover assembly (7) into place on vehicle. Align holes on angle frame (8) with holes on angle supports (9).



C Install two washers (10) and self-locking screws (11) on angle supports (9). Do not tighten screws (11).

D Before removing chain, it may be necessary to lift and adjust grille and cover assembly (7) so that grilles (4) and (6) and covers (2) and (12) open and close without binding. Tighten self-locking screws (11) to 26-29 lb-ft (35-39 N·m).

E Remove lifting device from chain, and remove chain from grille and cover assembly (7).



F Secure access covers (2) and (12) with two latches (13).

LATCH ADJUSTMENT

This task covers:

Adjustment

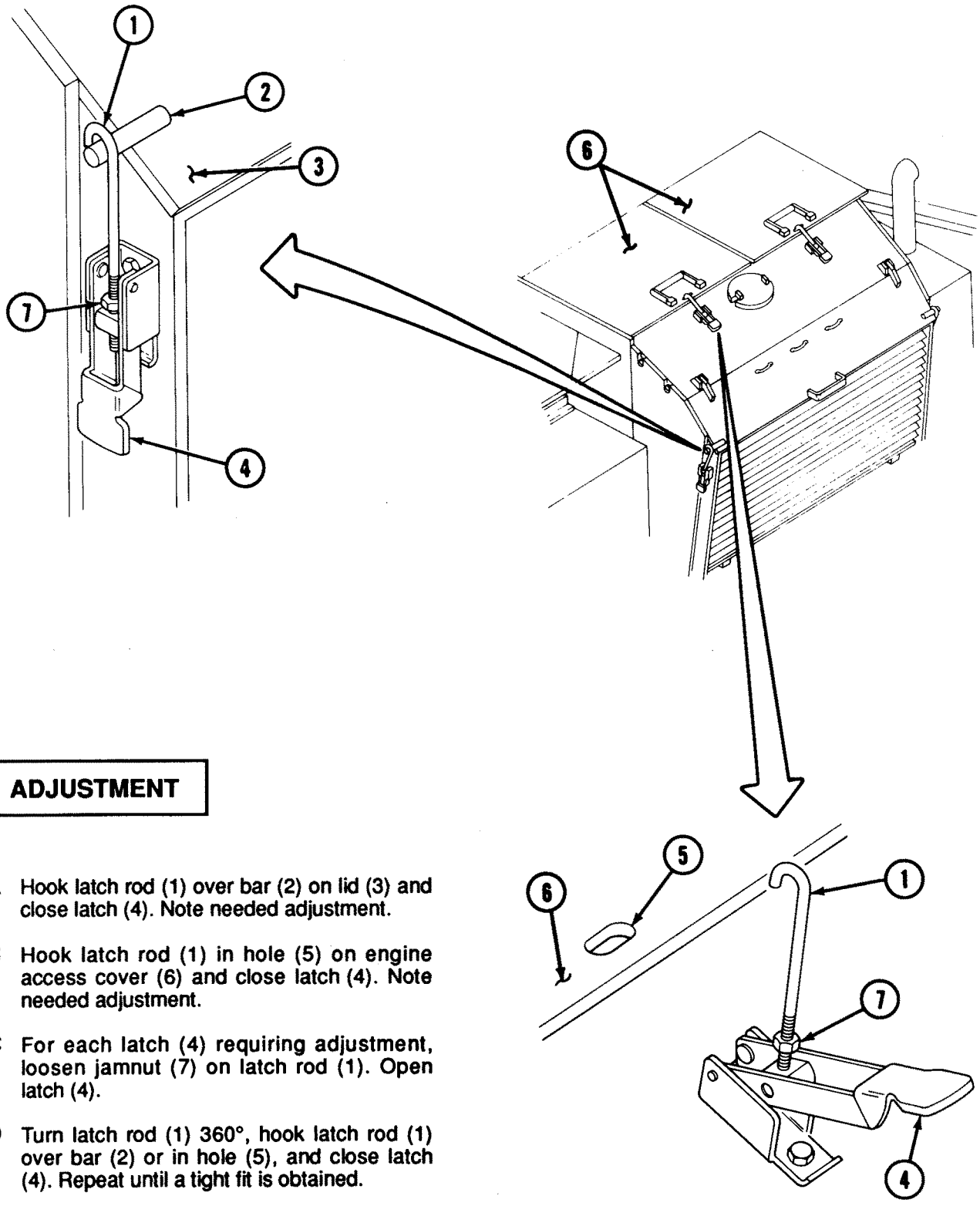
INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Personnel Required:

Construction Equipment Repairer 62B10



ADJUSTMENT

A Hook latch rod (1) over bar (2) on lid (3) and close latch (4). Note needed adjustment.

B Hook latch rod (1) in hole (5) on engine access cover (6) and close latch (4). Note needed adjustment.

C For each latch (4) requiring adjustment, loosen jamnut (7) on latch rod (1). Open latch (4).

D Turn latch rod (1) 360°, hook latch rod (1) over bar (2) or in hole (5), and close latch (4). Repeat until a tight fit is obtained.

E Tighten jamnut (7) to secure adjustment.

REAR GRAB RAILS REPLACEMENT AND REPAIR

This task covers:

a. Removal

b. Repair

c. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Crowfoot Set	5120-01-302-4387

Materials:

Lubricating Oil	Item 26 Appendix D

Parts:

Self-locking Screw (8)

Parts Reference:

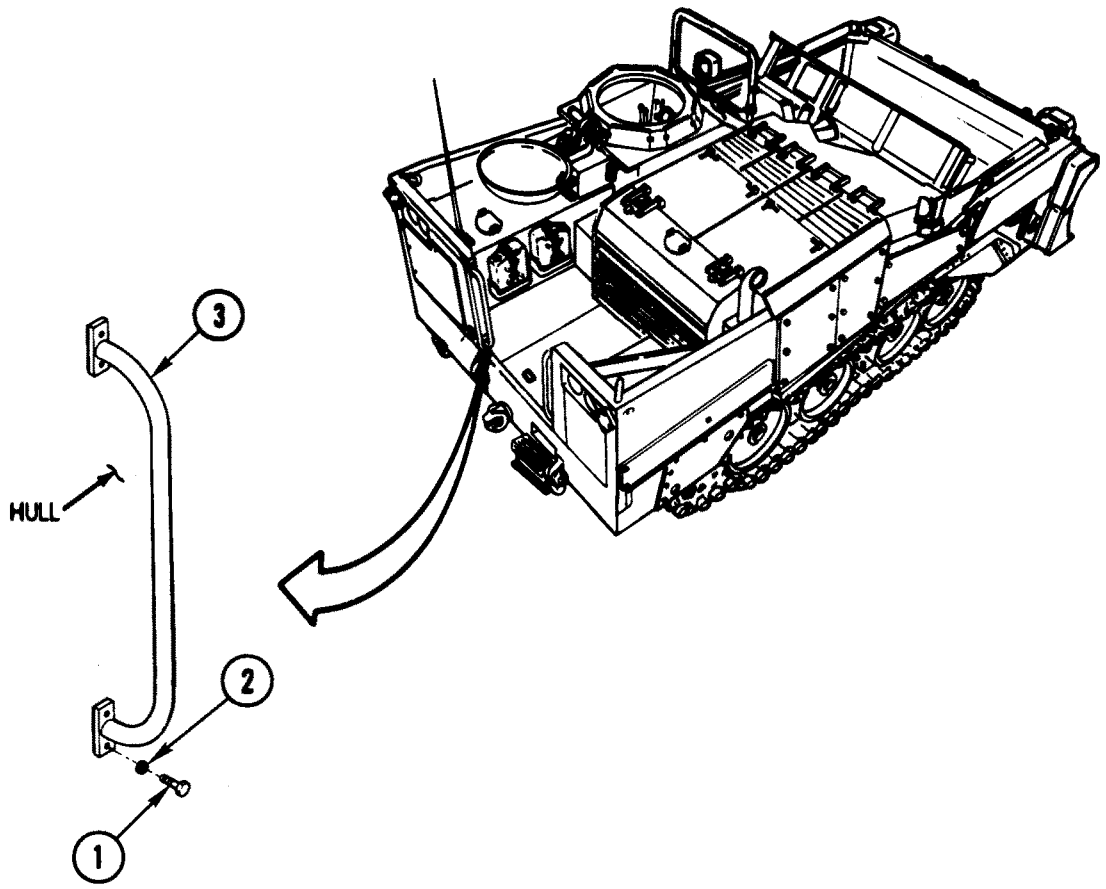
TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 9-237



REMOVAL

Remove eight self-locking screws (1), washers (2), and two grab rails (3) from hull. Discard self-locking screws (1).

REPAIR

Use general repair methods (p 2-25) and welding (TM 9-237) to repair grab rails (3).

INSTALLATION

Note

Apply lubricating oil to threads of screws prior to installation.

Install two grab rails (3) on hull with eight washers (2) and self-locking screws (1). Tighten self-locking screws (1) to 24-26 lb-ft (33-35 N-m).

REAR STEP REPLACEMENT AND DISASSEMBLY

This task covers:

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil — Item 26 Appendix D

Parts:

Self-locking Screw (8)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

REMOVAL

Remove four self-locking screws (1), washers (2), and rear step assembly (3) from rear of vehicle. Discard self-locking screws (1).

DISASSEMBLY

A Remove four self-locking screws (4), washers (5), and two clamps (6) from step (7). Discard self-locking screws (4).

B Remove two wire ropes (8) from rung (9).

ASSEMBLY

A Install two wire ropes (8) on rung (9).

B Install two wire ropes (8) on step (7) with two clamps (6), four washers (5), and self-locking screws (4).

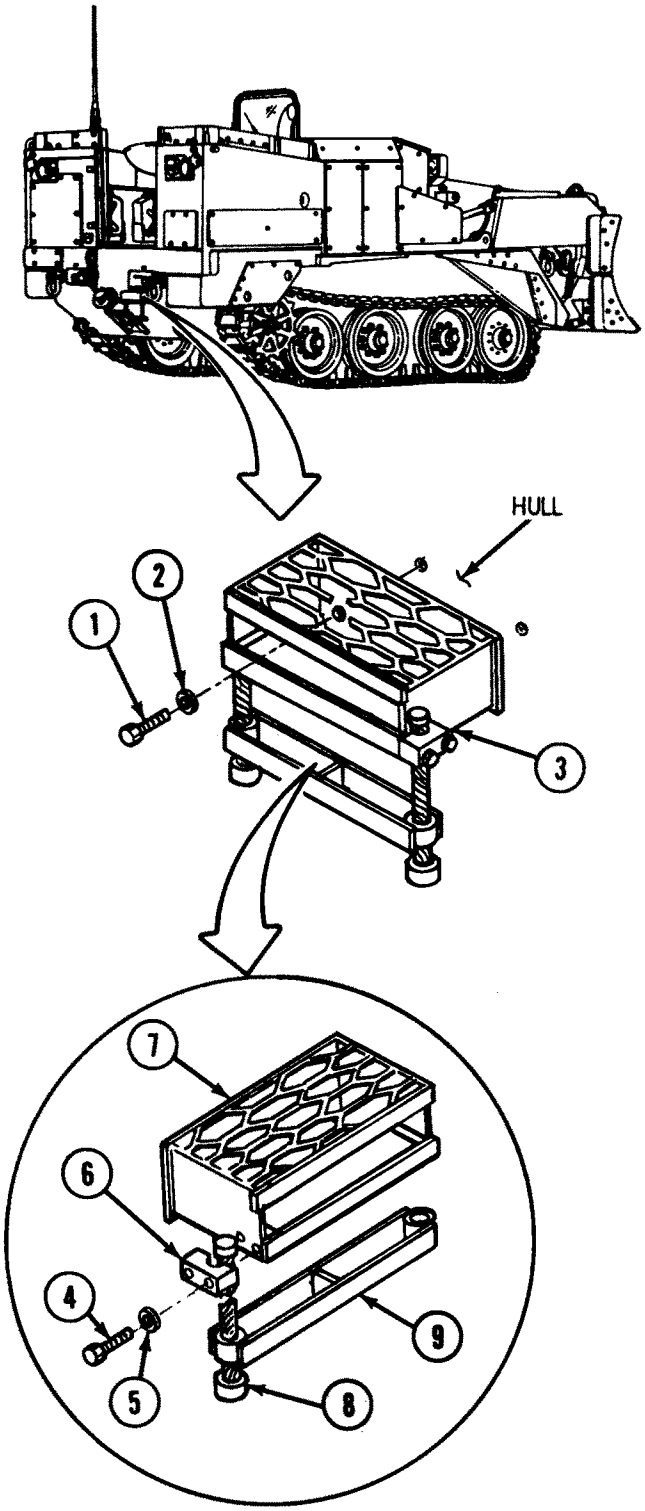
INSTALLATION

Note

Apply lubricating oil to threads of screws prior to installation.

A Install step assembly (3) on hull with four washers (2) and self-locking screws (1).

B Tighten self-locking screws (1) to 24-26 lb-ft (33-35 N·m).



TIEDOWN BRACKETS REPLACEMENT AND REPAIR

This task covers:

a. Removal

b. Repair

c. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil	Item 26 Appendix D

Parts:

Self-locking Screw (8)

Parts Reference:

TM 5-2350-262-24P	Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 9-237

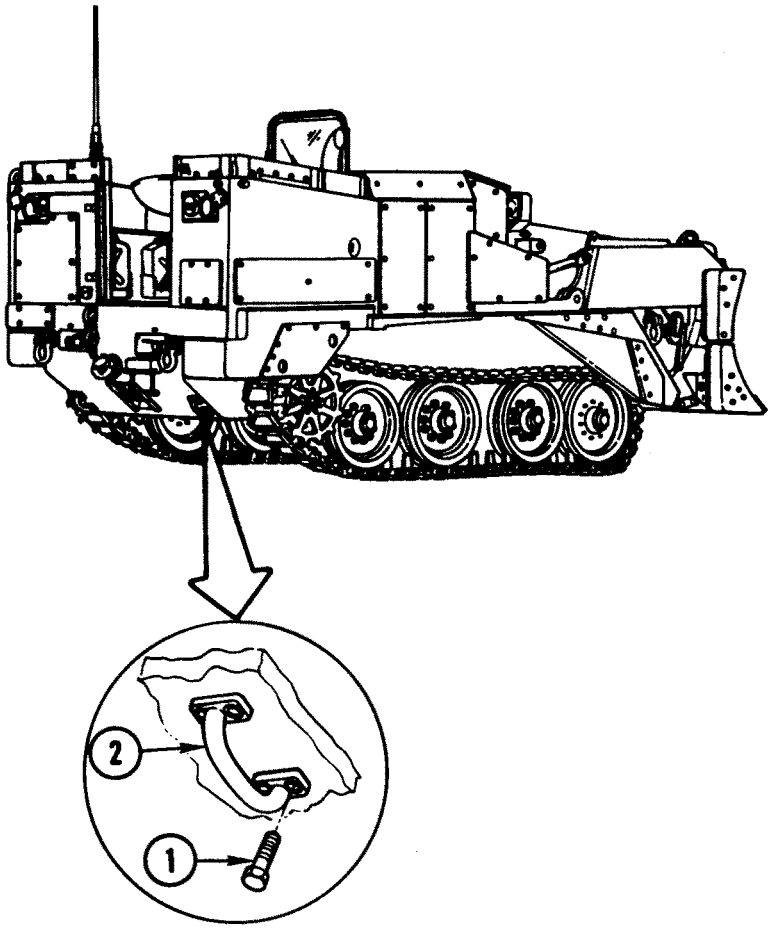
Equipment Condition:

Reference	Condition Description
Page 2-27	Hull Blocked

General Safety Instructions:

WARNING

Do not work under vehicle unless hull is blocked and apron lockpins are installed.



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.

REMOVAL

Remove eight self-locking screws (1) and two tiedown brackets (2) from underside of vehicle. Discard self-locking screws (1).

REPAIR

Use welding (TM 9-237) and straightening to repair tiedown brackets (2).

INSTALLATION

Note

Apply lubricating oil to threads of screws prior to installation.

Install two tiedown brackets (2) on underside of vehicle with eight self-locking screws (1). Tighten self-locking screws (1) to 72-82 lb-ft (98-111 N·m).

FOLLOW-ON TASK
Unblock hull (p 2-27).

DRIVER'S COMPARTMENT STEP REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil — Item 26 **Appendix D**

Parts:

Lockwasher (4)

Packing

Self-locking Screw (4)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-213	**Portable Dry Powder Fire Extinguisher Bracket Removed**
Page 4-326	**Radiator and Engine Compartment Armor Shroud Removed**

REMOVAL

A Remove four screws (1), lockwashers (2), washers (3), and armor plate (4) from driver's compartment step (5). Discard lockwashers (2).

B Remove two self-locking screws (6) and (7) and washers (8) and (9) from step (5). Discard self-locking screws (6) and (7).

C Lift step (5) out far enough to gain access to hose (10).

D Disconnect hose (10) from adapter (11), and remove adapter (11) and packing (12) from step (5). Discard packing (12).

E Remove step (5) from vehicle.

INSTALLATION

A Install packing (12) and adapter (11) on step (5).

B Connect hose (10) (HYDR TANK FILLER) to adapter (11).

Note

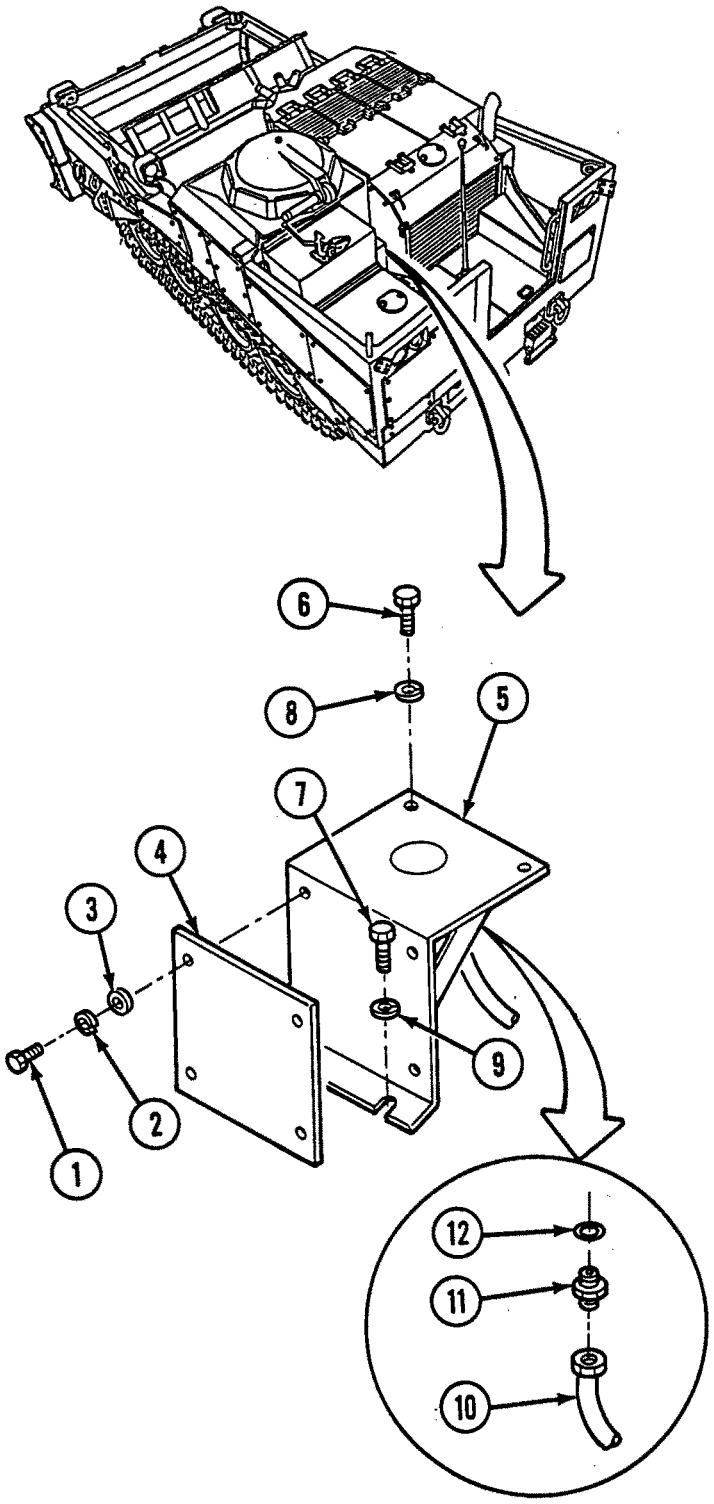
- Two sizes of self-locking screws are used to attach step. The shorter self-locking screws are installed at top, and the longer self-locking screws are installed at bottom.
- Apply lubricating oil to threads of screws prior to installation.

C Install step (5) on vehicle with two washers (8) and (9) and self-locking screws (6) and (7). Tighten self-locking screws (6) and (7) to 24-26 lb-ft (33-35 N·m).

D Install armor plate (4) to step (5) with four washers (3), lockwashers (2), and screws (1). Tighten screws (1) to 10-12 lb-ft (14-16 N·m).

FOLLOW-ON TASKS:

- Install radiator and engine compartment armor shroud (p 4-326).
- **Install portable dry powder fire extinguisher bracket (p 4-213).**



REAR FLOOR PLATES SUPPORTS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Cap and Plugs	Item 7 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Self-locking Screw (14)

Locknut (2)

Parts Reference:

TM 5-2350-262-24P	Group AJ Group AP Group AU

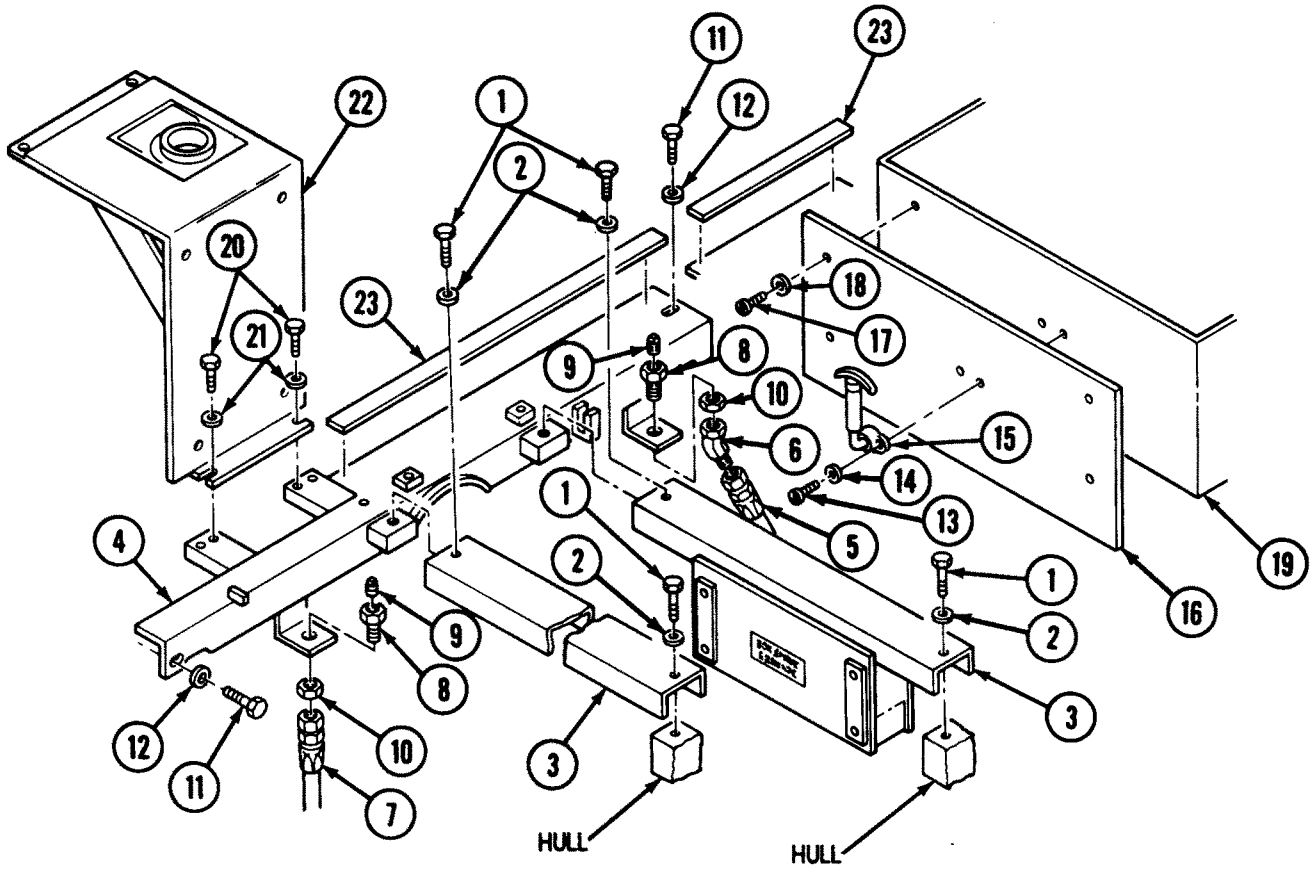
Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-327	Radiator and Engine Compartment Armor Shroud Removed

REMOVAL



A Remove four self-locking screws (1), washers (2), and two floor supports (3) from rear support (4) and hull. Discard self-locking screws (1).

B Disconnect and cap final drive fill hose (5) from elbow (6), and disconnect fill hose (7) from connector (8).

C Remove elbow (6), two plugs (9), connectors (8), and locknuts (10) from rear support (4). Discard locknuts (10).

D Remove two self-locking screws (11) and washers (12) from rear support (4). Discard self-locking screws (11).

E Remove two self-locking screws (13), washers (14), and catch (15) from battery box armor plate (16). Discard self-locking screws (13).

F Remove four self-locking screws (17), washers (18), and battery box armor plate (16) from battery box (19). Discard self-locking screws (17).

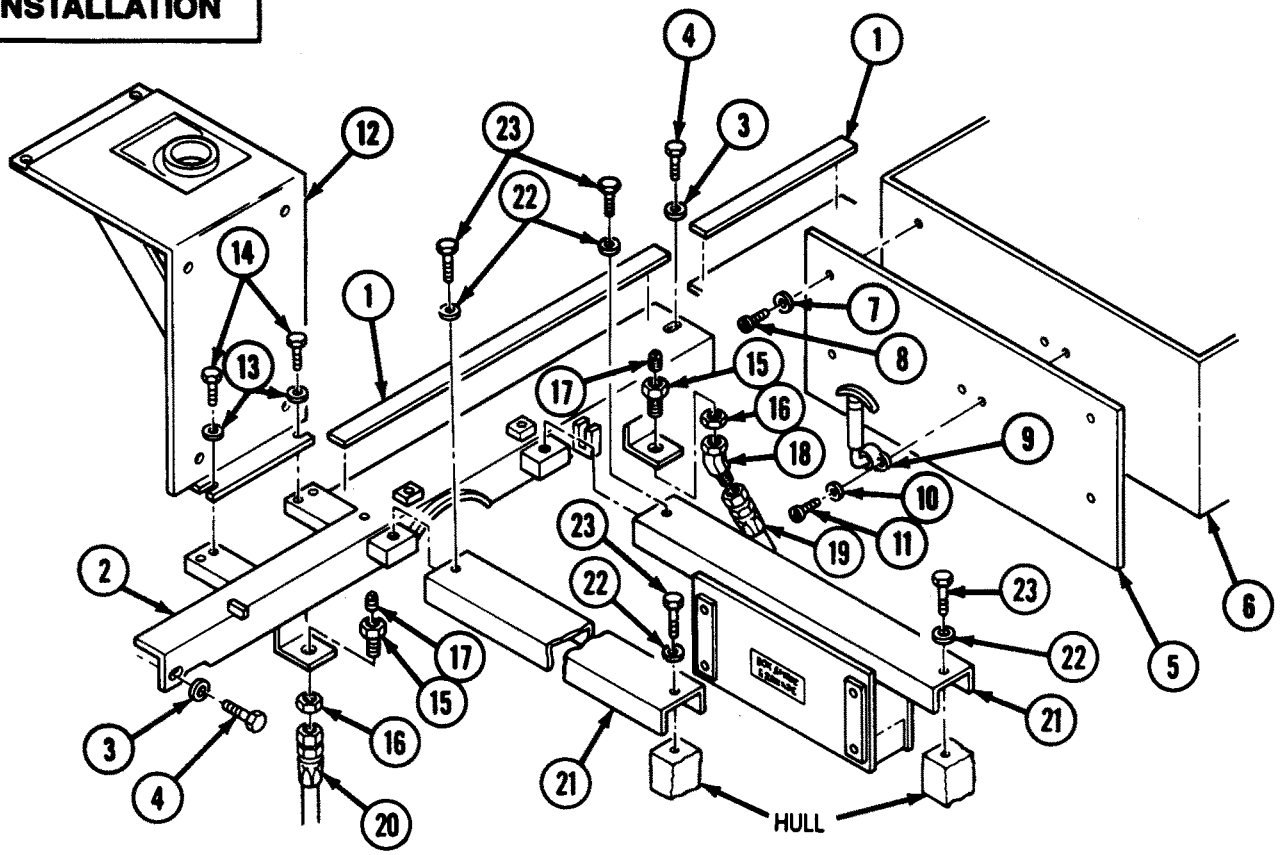
G Remove two self-locking screws (20), washers (21), driver's step (22), and support (4) from vehicle. Discard self-locking screws (20).

Note

Perform step H if replacing support.

H Remove tape and pile strips (Velcro) (23) from support (4) by scraping and brushing.

INSTALLATION



Note

Perform step A if tape and pile strips (Velcro) were removed.

A Cut pile strips (Velcro) (1) to length, peel backing, and install on rear support (2).

Note

Apply lubricating oil to threads of screws prior to installation.

B Install rear support (2) on vehicle with two washers (3) and self-locking screws (4). Do not tighten self-locking screws (4).

C Install battery box armor plate (5) on battery box (6) with four washers (7) and self-locking screws (8).

D Install catch (9) on battery box armor plate (5) with two washers (10) and self-locking screws (11).

E Install driver's step (12) on rear support (2) with two washers (13) and self-locking screws (14). Do not tighten self-locking screws (14).

F Install two connectors (15) on rear support (2) with locknuts (16).

G Install two plugs (17) and elbow (18) on connectors (15).

H Connect (RH FINAL DR FILLER-8S) hose (19) to elbow (18), and connect (LH FINAL DR FILLER-4S) hose (20) to connector (15).

I Install two floor supports (21) on rear support (2) and hull with four washers (22) and self-locking screws (23). Do not tighten self-locking screws (23).

J Tighten self-locking screws (23) and (4) to 50-55 lb-ft (68-75 N·m). Tighten self-locking screws (14) to 24-26 lb-ft (33-35 N·m).

FOLLOW-ON TASK:
Install radiator and engine compartment armor shroud (p 4-332).

DRIVER'S COMPARTMENT FLOOR PLATE REPLACEMENT AND REPAIR

This task covers:

a. Removal

b. Repair

c. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Adhesive, Epoxy Resin	Item 2 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Insulation

Self-locking Screw (16)

Parts Reference:

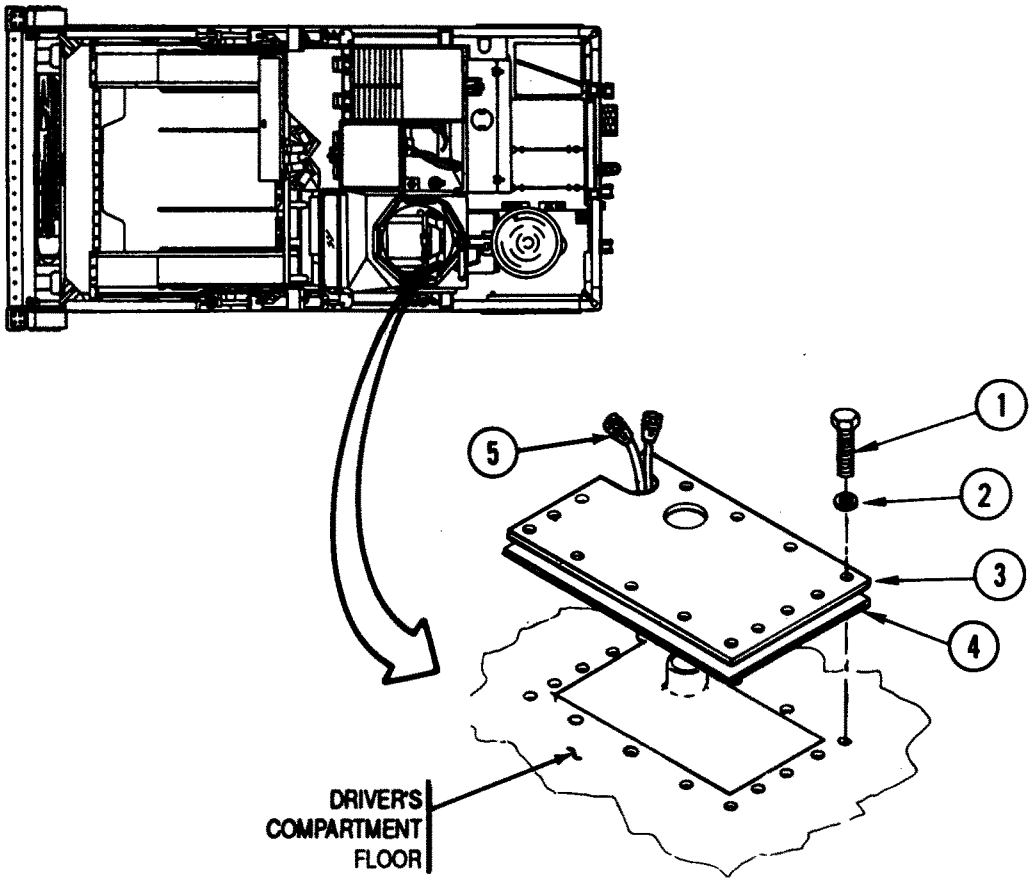
TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-823	Seat Assembly Removed



REMOVAL

A Remove sixteen self-locking screws (1), washers (2), driver's compartment floor plate (3), and insulation (4) from driver's compartment floor. Discard insulation (4) and self-locking screws (1).

B Tie or tape heater hoses (5) for easy access when floor plate (3) is installed.

REPAIR

Bond new insulation (4) to floor plate (3) with epoxy resin adhesive.

INSTALLATION

A Place driver's compartment floor plate (3) in driver's compartment, making sure heater hoses (5) are routed through forward hole of floor plate (3).

Note

Apply lubricating oil to threads of screws prior to installation.

B Secure floor plate (3) to driver's compartment floor with sixteen washers (2) and self-locking screws (1). Tighten self-locking screws (1) to 24-26 lb-ft (33-35 N·m).

FOLLOW-ON TASK:
Install seat assembly (p 4-831).

REAR FLOOR PLATES REPLACEMENT

This task covers:

a. Removal

b. Installation

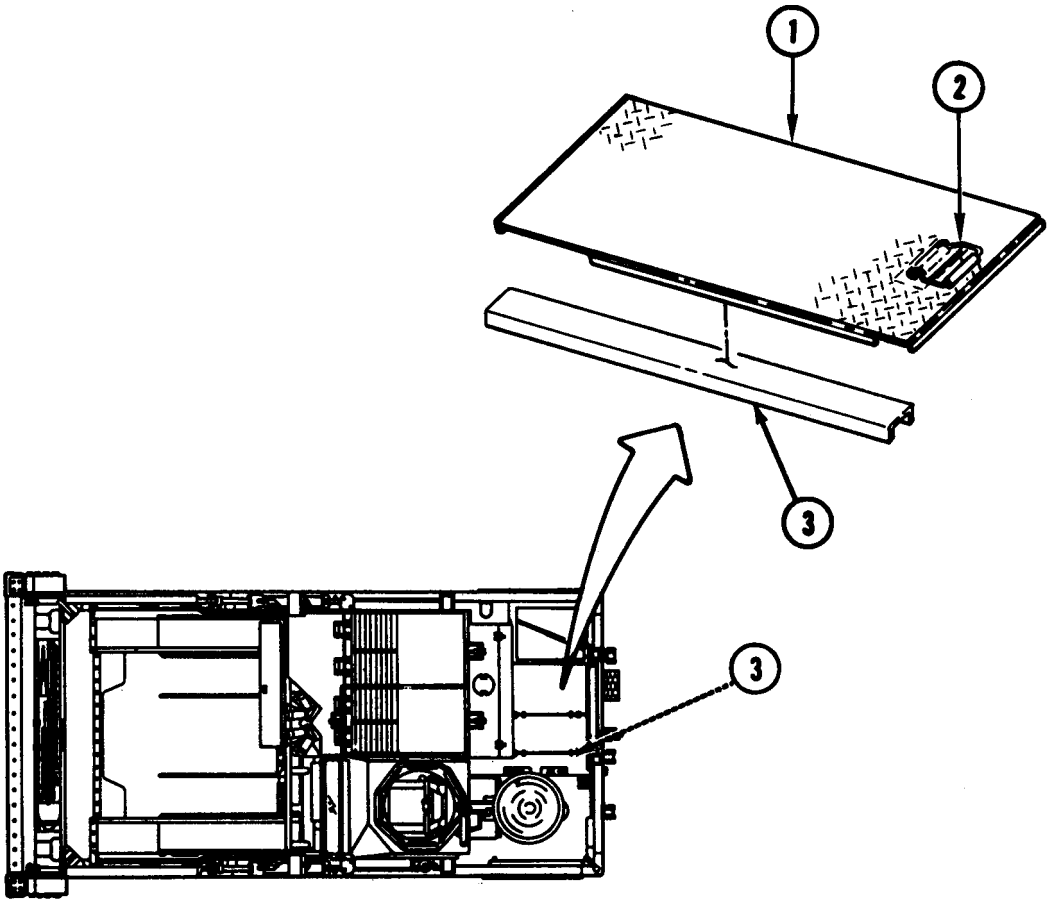
INITIAL SETUP

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10



REMOVAL

Lift plate (1) by handle (2), and remove plate (1) from supports (3).

INSTALLATION

Install plate (1) on supports (3) with handle (2) toward rear of vehicle.

TRACK RETAINER REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 11 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts Reference:

TM 5-2350-262-24P	Group AP

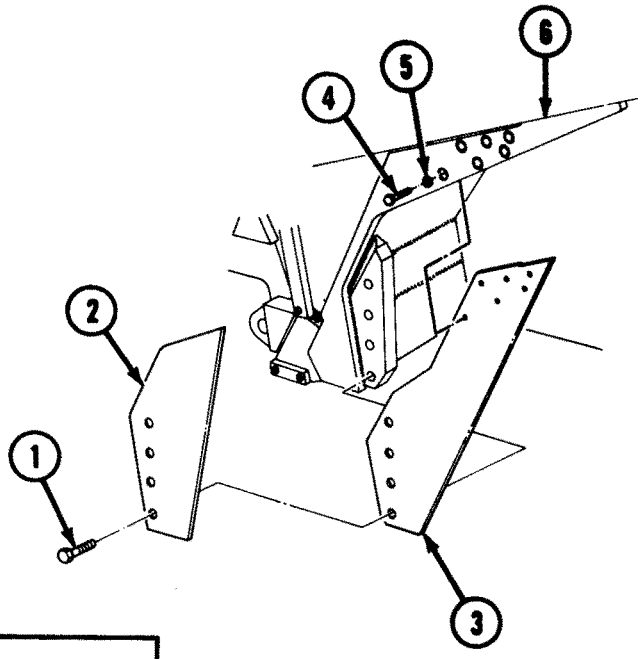
Personnel Required:

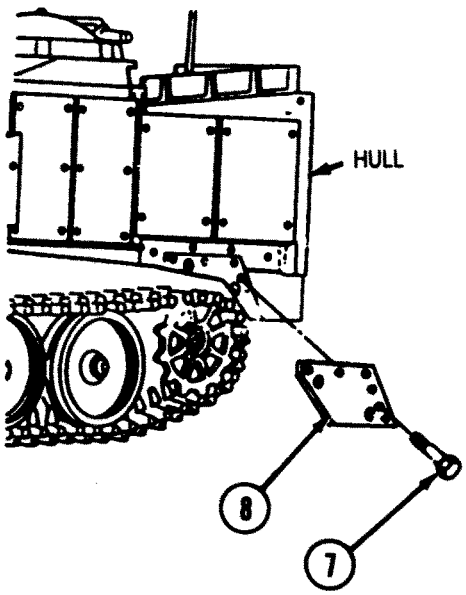
Two Construction Equipment Repairers 62B10

General Safety Instructions:

WARNING

- Do not work under vehicle or on track retainers unless hull is blocked or vehicle has settled on bump stops.
- Ensure feet are firmly planted on level surface and use a helper when removing track retainers. Track retainers weigh 60 lb (27 kg).





REMOVAL

WARNING

- Do not work under vehicle or on track retainers unless hull is blocked or vehicle has settled on bump stops. Failure to comply may result in severe injury or death to personnel
- Ensure feet are firmly planted on level surface and use a helper when removing track retainers. Track retainers weigh 60 lb (27 kg). Failure to comply may result in injury to personnel.

Note

Track retainers are replaced the same way for both sides of vehicle. This task covers replacement of the left side track retainers.

A Remove four screws (1) and stiffener (2) from track retainer (3).

B Remove six screws (4), washers (5), and track retainer (3) from track retainer support (6).

C Remove six screws (7) and rear track retainer (8) from hull.

INSTALLATION

A Coat threads of screws (4) with sealing compound, and install track retainer (3) on track retainer support (6) with six washers (5) and screws (4). Do not tighten screws.

B Install stiffener (2) on track retainer (3) with four screws (1). Tighten screws (1) to 300-320 lb-ft (407-434 N-m). Tighten screws (4) to 86-94 lb-ft (117-127 N-m).

Note

Apply lubricating oil to threads of screws prior to installation.

C Install rear track retainer (8) on hull with six screws (7). Tighten screws (7) to 205-227 lb-ft (278-308 N-m).

TRACK WEAR SHIELDS AND WEAR PLATES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Socket Wrench Socket Set	5120-01-195-0640

Materials:

Sealing Compound	Item 12 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Self-locking Screw (30)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-363	Track Retainers Removed
Page 4-783	Track Disconnected

General Safety Instructions:

WARNING

Vehicle brakes will not hold vehicle when track is disconnected. Block roadwheels before working on vehicle when track is disconnected.

REMOVAL

WARNING

Vehicle brakes will not hold vehicle when track is disconnected. Block roadwheels before working on vehicle when track is disconnected. Failure to comply may result in damage to equipment, severe injury to personnel, or death.

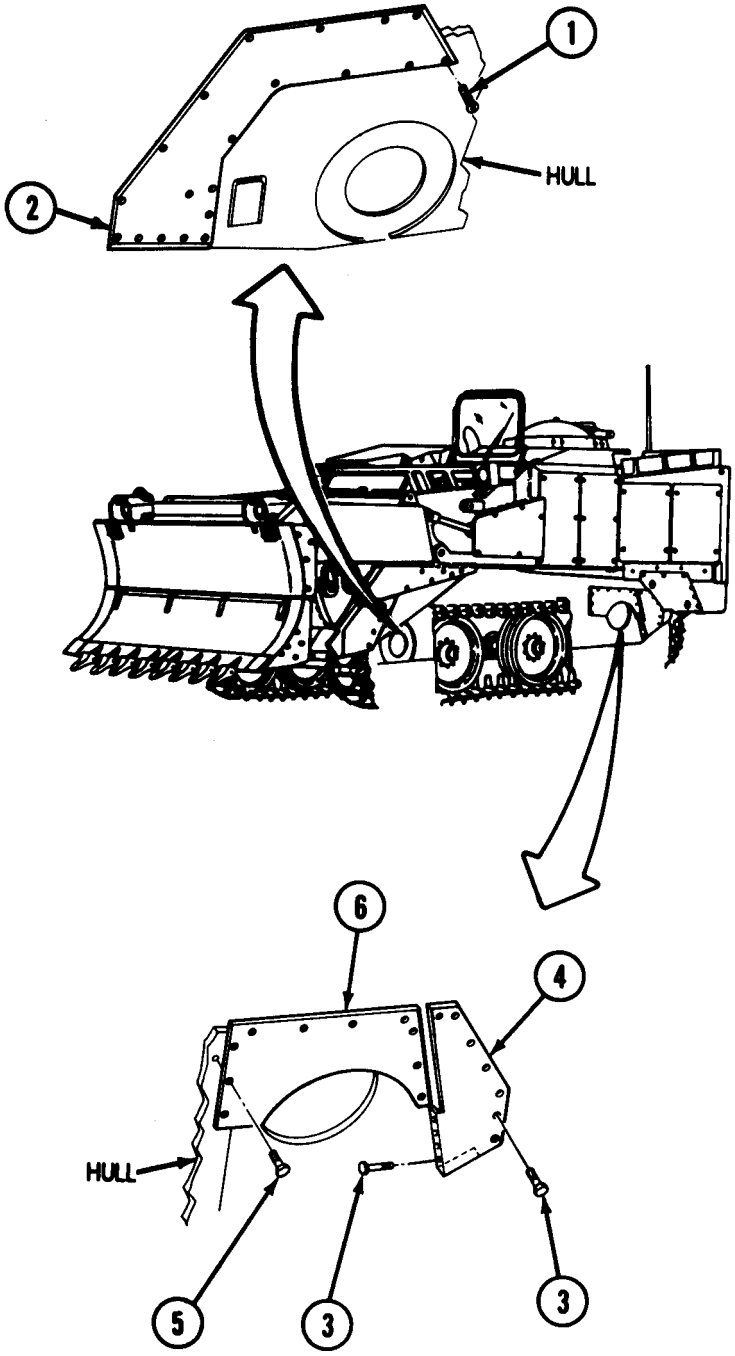
Note

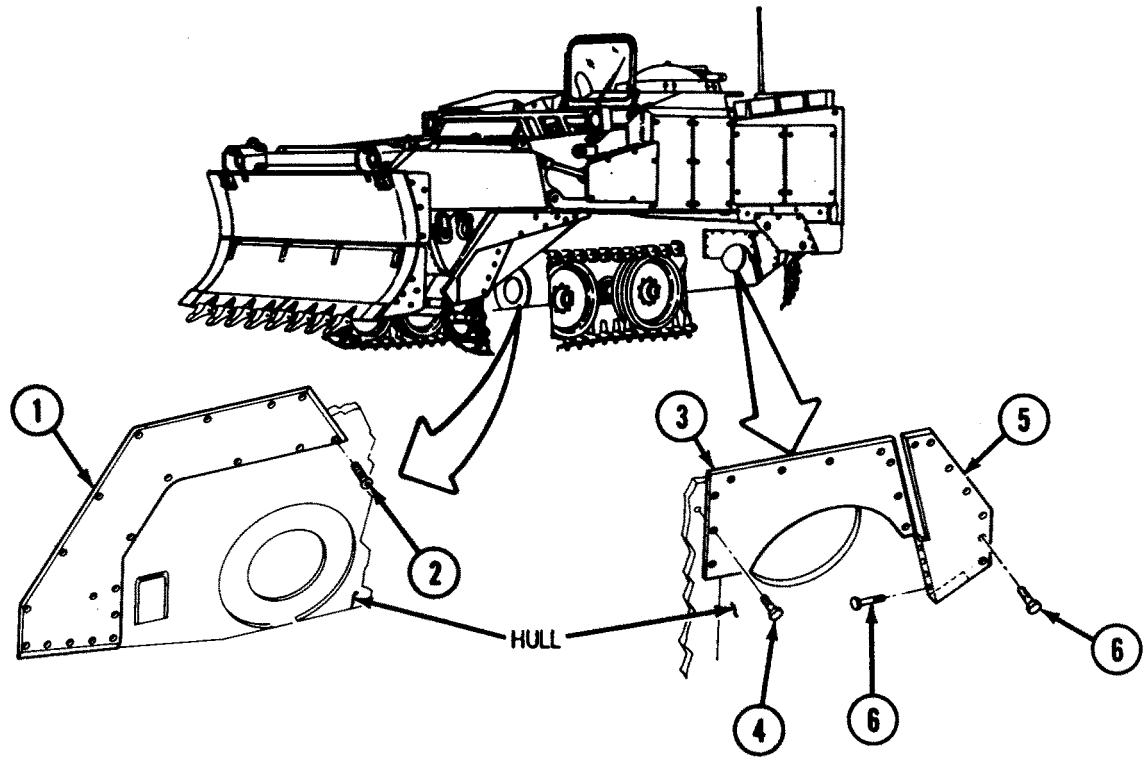
- Wear shields and wear plates are replaced the same way for both sides of vehicle. This task covers replacement of left side.
- Heat may be required to break screws loose.

A Remove twenty self-locking screws (1) and wear plate (2) from hull. Discard self-locking screws (1).

B Remove eleven screws (3) and wear shield (4) from hull.

C Remove ten self-locking screws (5) and final drive plate (6) from hull. Discard self-locking screws (5).





INSTALLATION

WARNING

Vehicle brakes will not hold vehicle when track is disconnected. Block roadwheels before working on vehicle when track is disconnected. Failure to comply may result in damage to equipment and severe injury or death to personnel.

Note

- Aluminum hull may be distorted where the old bar and shield left a gap or were deformed. Level off any raised portion.
- Apply lubricating oil to threads of screws prior to installation.

A Install wear plate (1) on hull with twenty self-locking screws (2). Tighten self-locking screws (2) to 34-38 lb-ft (46-52 N·m).

B Install final drive plate (3) on hull with ten self-locking screws (4). Tighten self-locking screws (3) to 30-36 lb-ft (41-49 N·m).

Note

Clean dirt and debris from mounting surfaces prior to wear shield installation.

C Install wear shield (5) on hull with three screws (6).

D Position hydraulic jack under wear shield (5), and raise corner of wear shield (5) up until tight against hull.

E Coat threads of screws (6) with sealing compound, and install wear shield (5) on hull with eight screws (6). Tighten screws (6) to 28-32 lb-ft (38-43 N·m).

F Remove hydraulic jack.

FOLLOW-ON TASKS:

- Connect track (p 4-784).
- Install track retainers (p 4-363).

REAR LIFT EYE SHACKLE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 12 Appendix D

Parts:

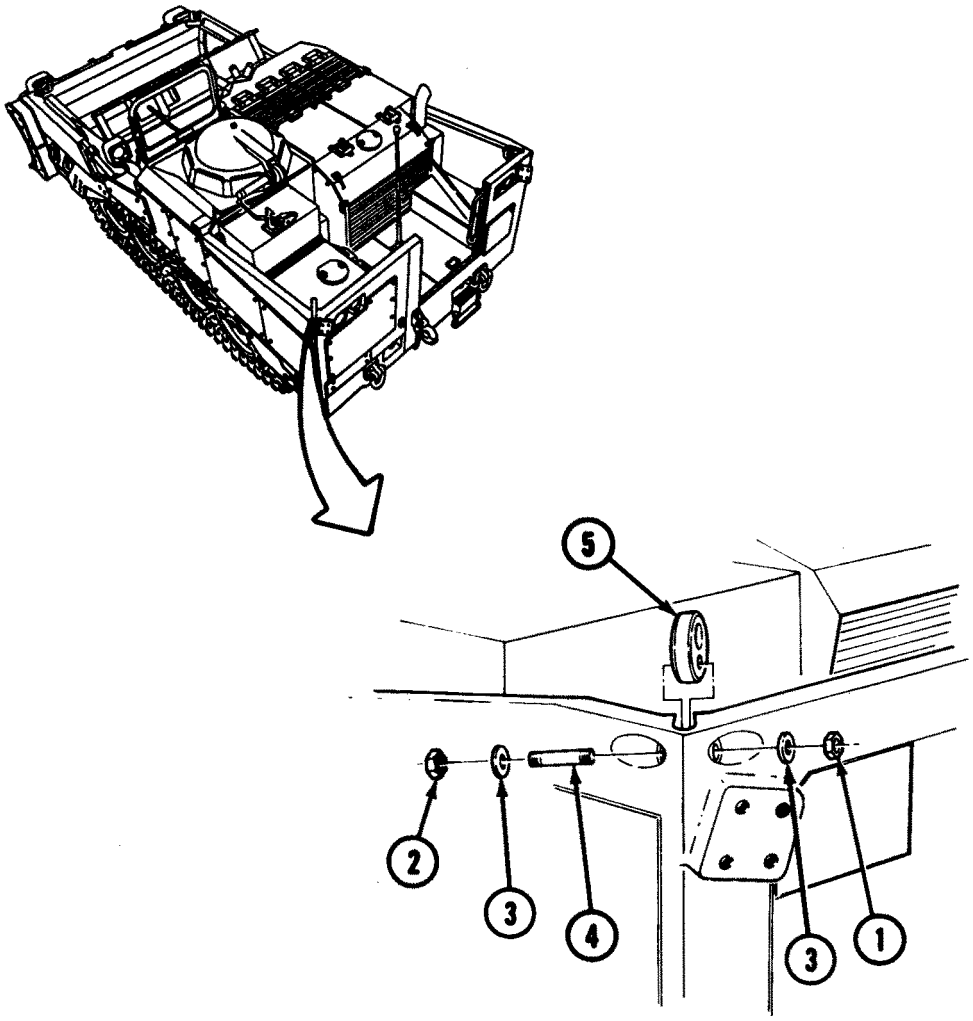
Locknut (2)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10



REMOVAL

Remove nut (1), locknut (2), two washers (3), stud (4), and lift eye shackle (5) from each side of rear of vehicle. Discard locknut (2).

INSTALLATION

A Coat short threaded end of stud (4) with sealing compound, and install nut (1) on each stud (4).

B Install lift eye shackle (5) on each side of rear of vehicle with stud (4), two washers (3), and locknut (2). Tighten locknut (4) to 83-91 lb-ft (113-123 N·m).

SHACKLES AND BRACKETS REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

4940-00-294-9518 Shop Equipment, Contact Maintenance, Truck Mounted

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil — Item 26 Appendix D

Parts:

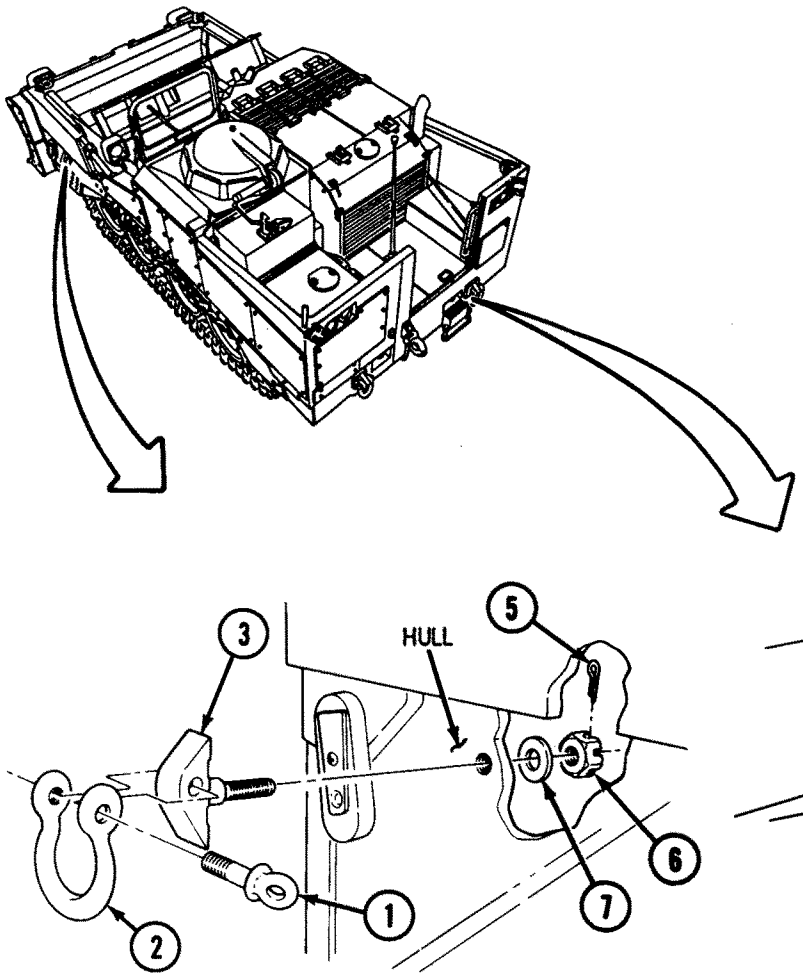
Cotter Pin

Parts Reference:

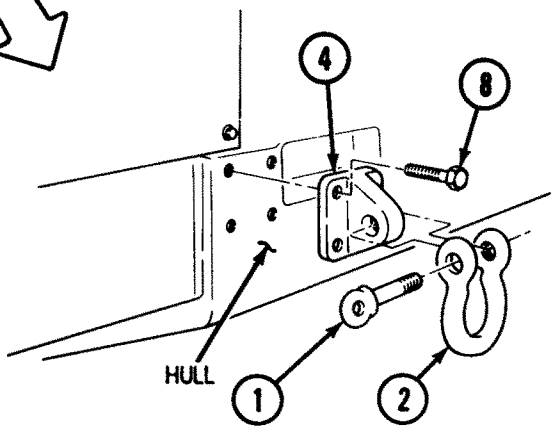
TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10



LEFT SIDE SHOWN



LEFT SIDE SHOWN

Note

Left side and right side brackets, shackles, and tee bolts are replaced the same way.

REMOVAL

A Remove shackle screw (1) and shackle (2) from tee screw (3) or towing bracket (4).

B Remove cotter pin (5), castle nut (6), washer (7), and tee screw (3) from hull. Discard cotter pin (5).

C Remove four screws (8) and towing bracket (4) from hull.

INSTALLATION

A Install tee screw (3) on hull with washer (7) and castle nut (6). Tighten castle nut (6) just enough so tee screw (3) can be turned by hand.

B Install cotter pin (5) on tee screw (3) and castle nut (6).

Note

Apply lubricating oil to threads of screws prior to installation.

C Install towing bracket (4) on hull with four screws (8). Tighten screws (8) to 617-683 lb-ft (837-926 N·m).

D Install shackle (2) on towing bracket (4) or tee screw (3) with shackle screw (1).

PINTLE HOOK REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Disassembly
c. Repair
d. Assembly
e. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Grease — Item 19 Appendix D

Parts:

Cotter Pin (3)

Drive Screw

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

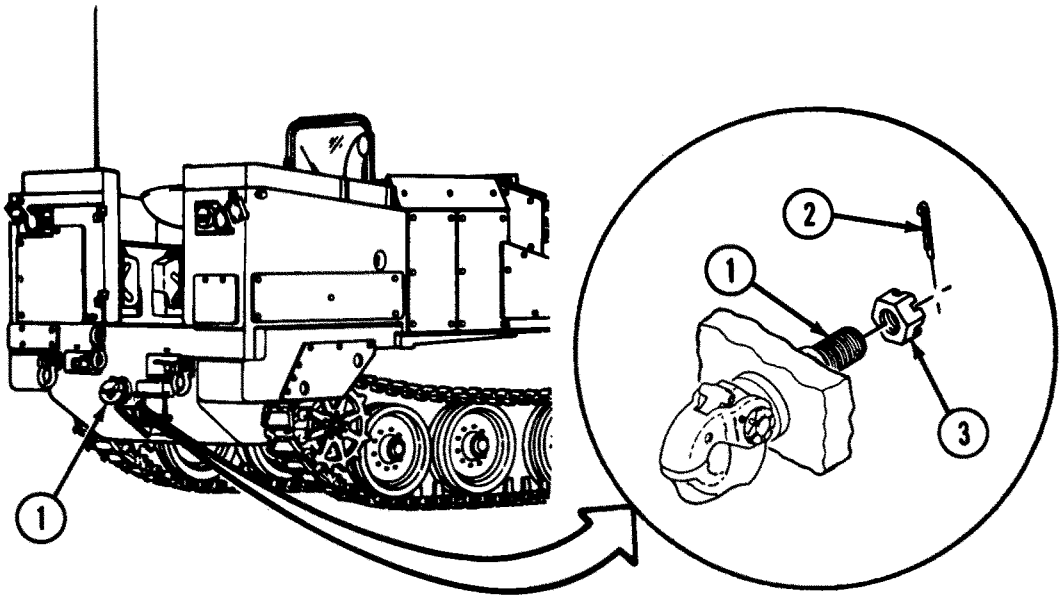
Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

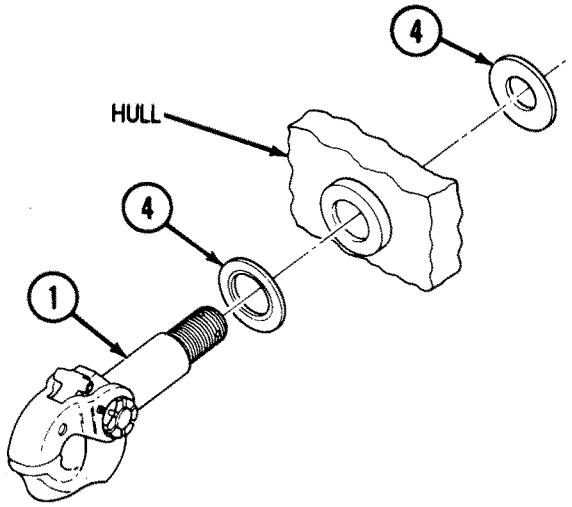
Equipment Condition:

Reference	Condition Description
Page 4-356	Rear Floor Plates Supports Removed

REMOVAL



A Using crowbar to keep pintle hook assembly (1) from turning, remove cotter pin (2) and nut (3) from pintle hook assembly (1). Discard cotter pin (2).

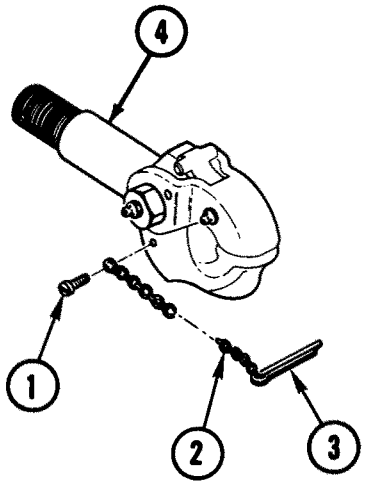


Note

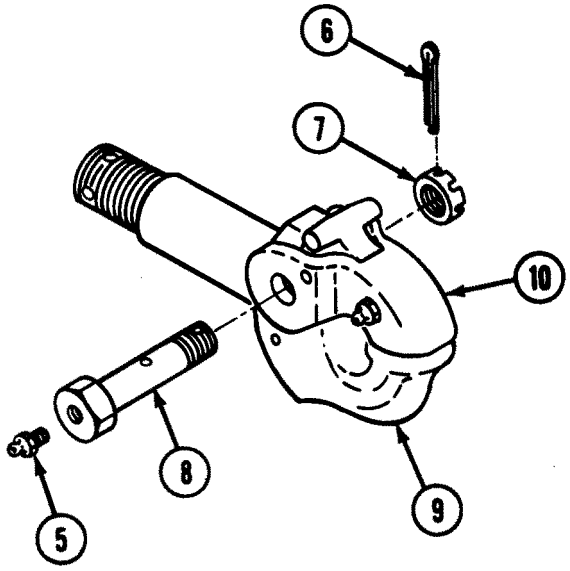
Inspect bushings for damage. If damaged, notify direct support maintenance.

B Remove pintle hook assembly (1) and two washers (4) from hull.

DISASSEMBLY

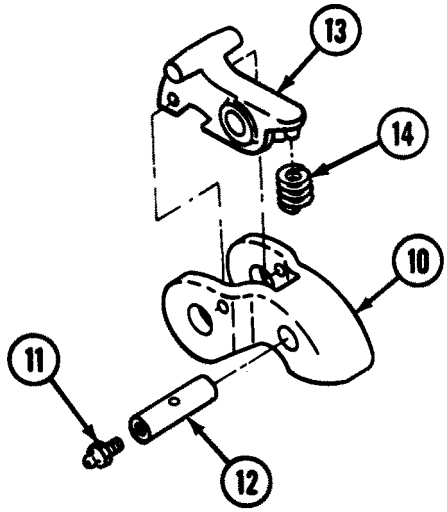


A Remove drive screw (1), chain (2), and cotter pin (3) from pintle hook assembly (4). Discard drive screw (1) and cotter pin (3).



B Remove lubrication fitting (5), cotter pin (6), nut (7), and screw (8) from hook (9). Discard cotter pin (6).

C Remove lock (10) from hook (9).



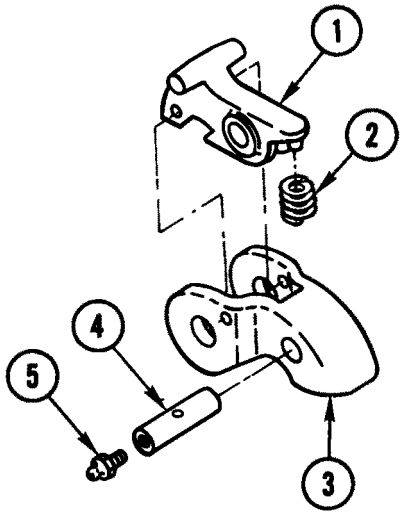
D Remove lubrication fitting (11) from lock (10) and drive pin (12) from lock (10).

E Remove latch (13) and spring (14) from lock (10).

REPAIR

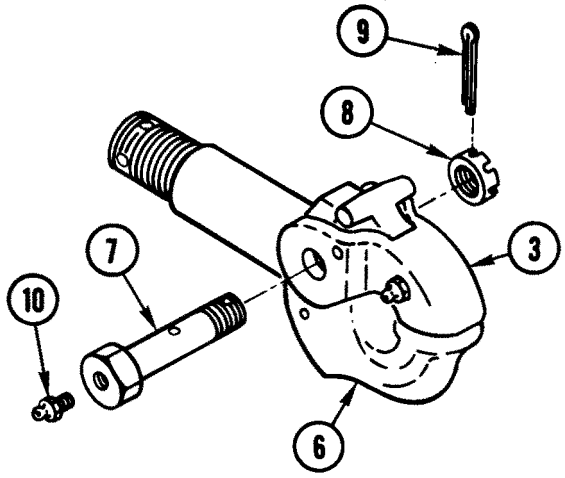
Replace damaged or otherwise unserviceable parts.

ASSEMBLY



A Install latch (1) and spring (2) on lock (3) with pin (4). Stake pin (4) on both sides of lock (3).

B Install lubrication fitting (5) on pin (4).

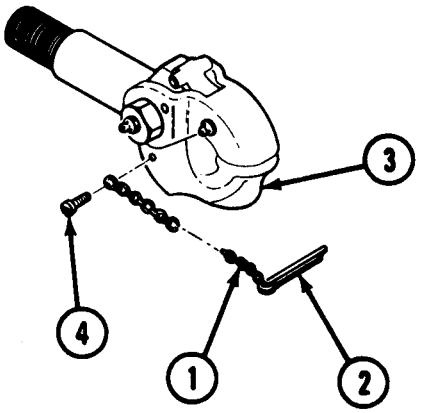


Note

Lock must move up and down freely. Do not overtighten nut.

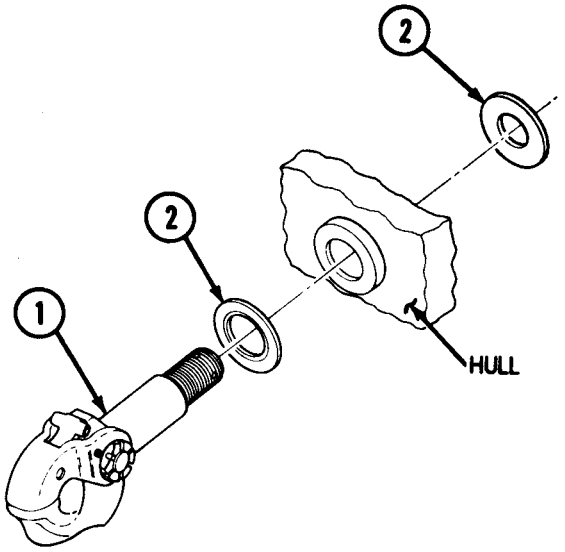
C Install lock (3) on hook (6) with screw (7) and nut (8). Install cotter pin (9) on screw (7) and nut (8).

D Install lubrication fitting (10) on screw (7).

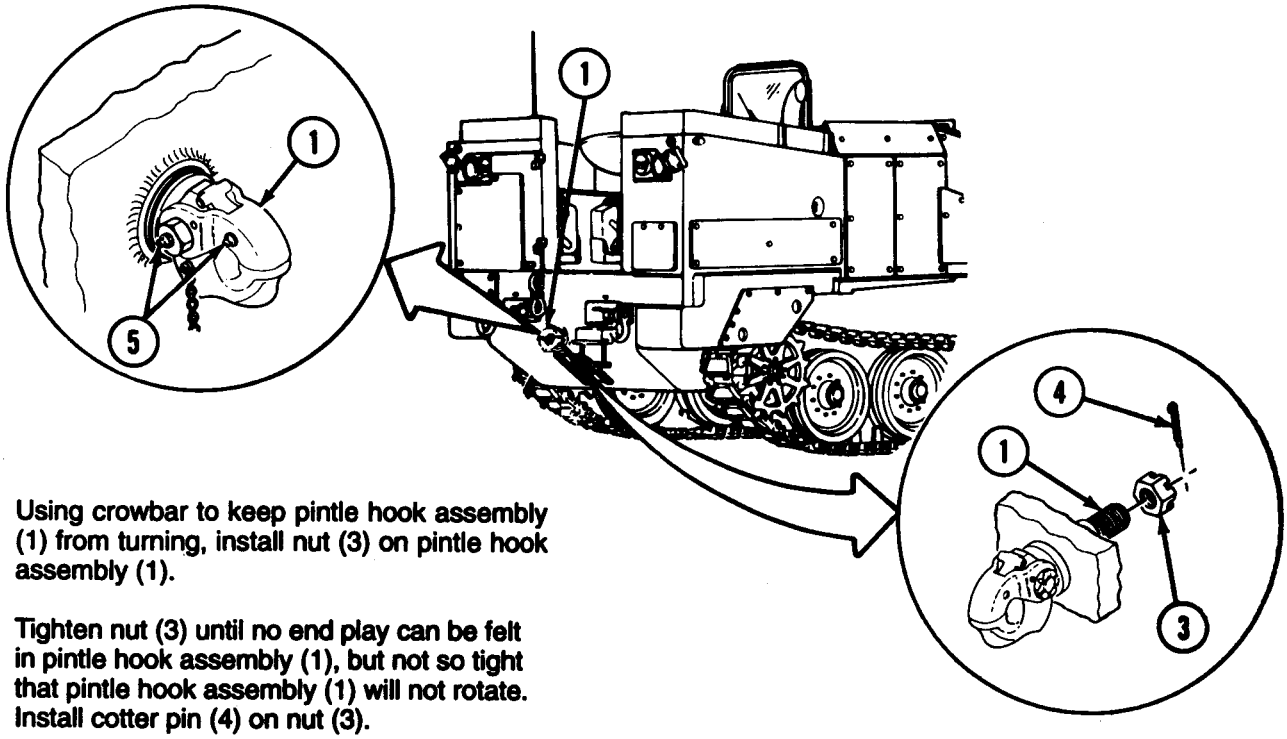


E Install chain (1) and cotter pin (2) on hook (3) with drive screw (4).

INSTALLATION



A Coat shaft of pintle hook assembly (1) with grease, and install two washers (2) and pintle hook assembly (1) on hull.



B Using crowbar to keep pintle hook assembly (1) from turning, install nut (3) on pintle hook assembly (1).

C Tighten nut (3) until no end play can be felt in pintle hook assembly (1), but not so tight that pintle hook assembly (1) will not rotate. Install cotter pin (4) on nut (3).

D Apply grease through both lubrication fittings (5).

FOLLOW-ON TASK:
Install rear floor plates supports (p 4-357).

HULL ACCESS COVERS AND PLUG REPLACEMENT AND REPAIR

This task covers:

a. Removal
b. Inspection
c. Repair
d. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Square Plug Socket	5120-01-227-8480
Support Stand (4)	2590-01-228-5802
Socket Wrench Socket Set	5120-01-195-0640

Materials:

Adhesive, Epoxy Resin	Item 2 Appendix D
Lubricating Oil	Item 26 Appendix D
Drycleaning Solvent	Item 31 Appendix D

Parts:

Lockwasher (78)

Self-locking Screw (15)

Pad (6)

Gasket (4)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

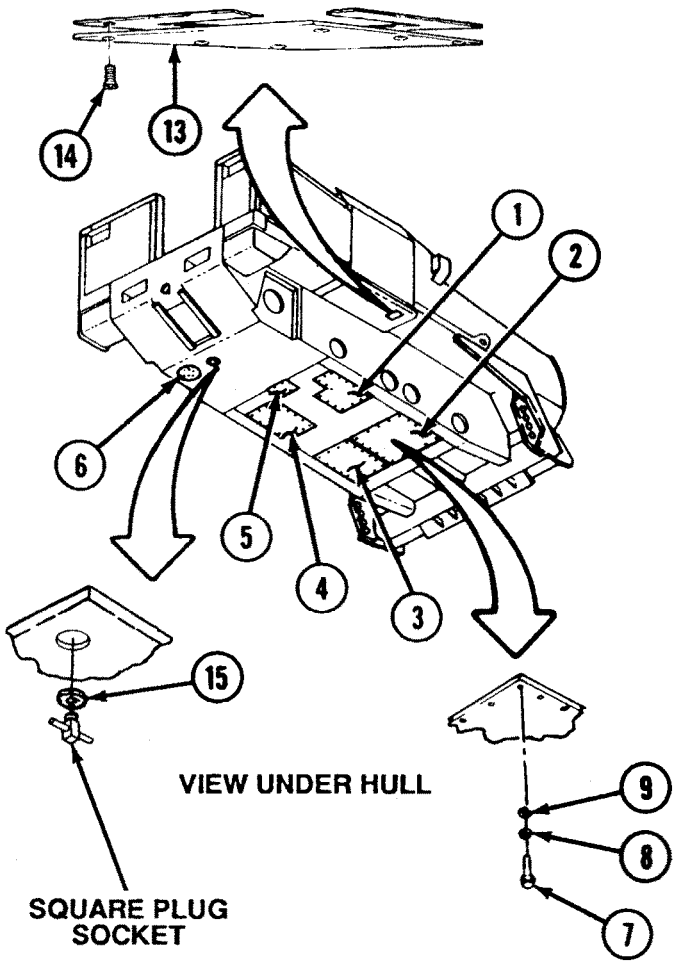
Equipment Condition:

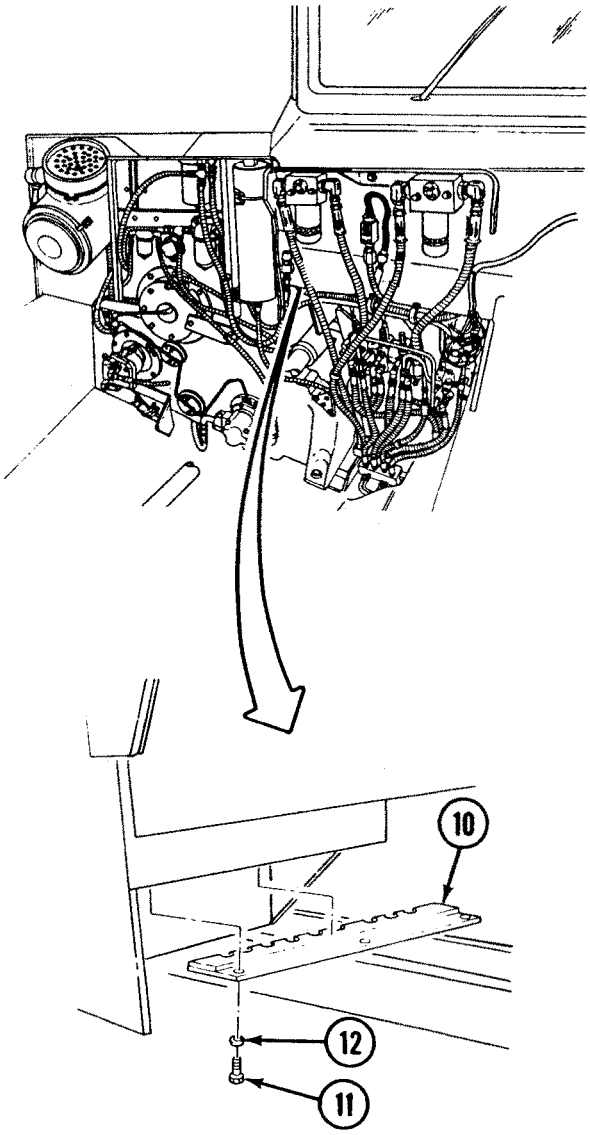
Reference	Condition Description
Page 2-27	Hull Raised and Blocked
Page 4-380	Protective Plates Removed

General Safety Instructions:

WARNING

- Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.
- Hull access covers may be heavier than they appear due to accumulation of fluid and dirt. Take extra precautions when removing access covers.





REMOVAL

WARNING

Hull access covers may be heavier than they appear due to accumulation of fluid and dirt. Take extra precautions when removing access covers. Failure to comply may result in severe injury to personnel.

Note

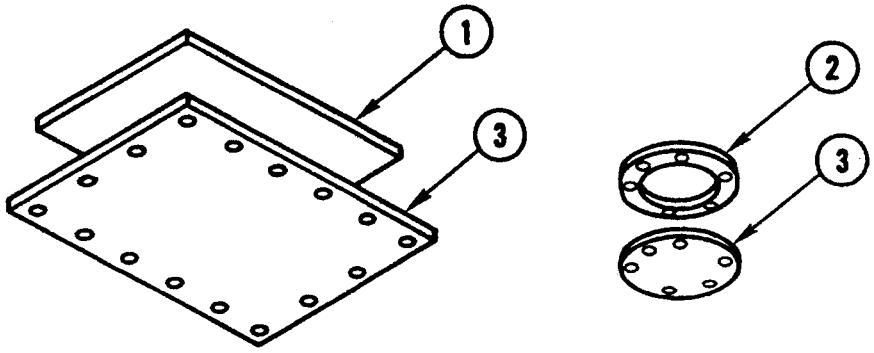
- All access covers are replaced the same way. The number of screws, lockwashers, and washers varies.
- NEW PRODUCTION vehicles are equipped with thicker hull bottom access covers and do not include pads or seals.

A Remove access covers (1), (2), (3), (4), (5), and (6), by removing seventy-eight screws (7), lockwashers (8), and washers (9). Discard lockwashers (8).

B Remove access cover (10) by removing three self-locking screws (11) and washers (12). Discard self-locking screws (11).

C Remove access covers (13) (one on each sponson) by removing twelve self-locking screws (14). Discard self-locking screws (14).

D Using square plug socket, remove plug (15) from hull.



INSPECTION

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Inspect hull access cover seals andgaskets for cracks, tears, and deterioration before installing access covers. If seals or gaskets are not serviceable, remove and replace (page 4-383).

REPAIR

Note

- Repair procedures for the hull access are the same for all covers, except some covers have pads and gaskets, while others only have a pad or a gasket.
- NEW PRODUCTION vehicles are equipped with thicker hull bottom access covers and do not include pads or seals.

A Remove pad (1) or gasket (2) from plates (3) with knife, putty knife, or stiff brush. Discard pad (1) or gasket (2).

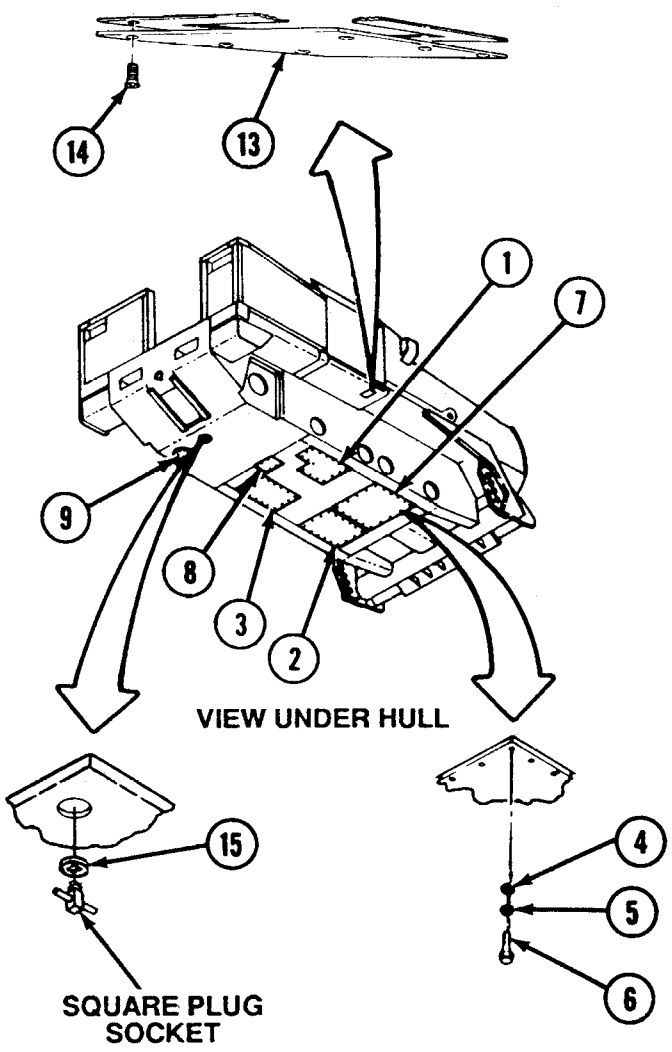
WARNING

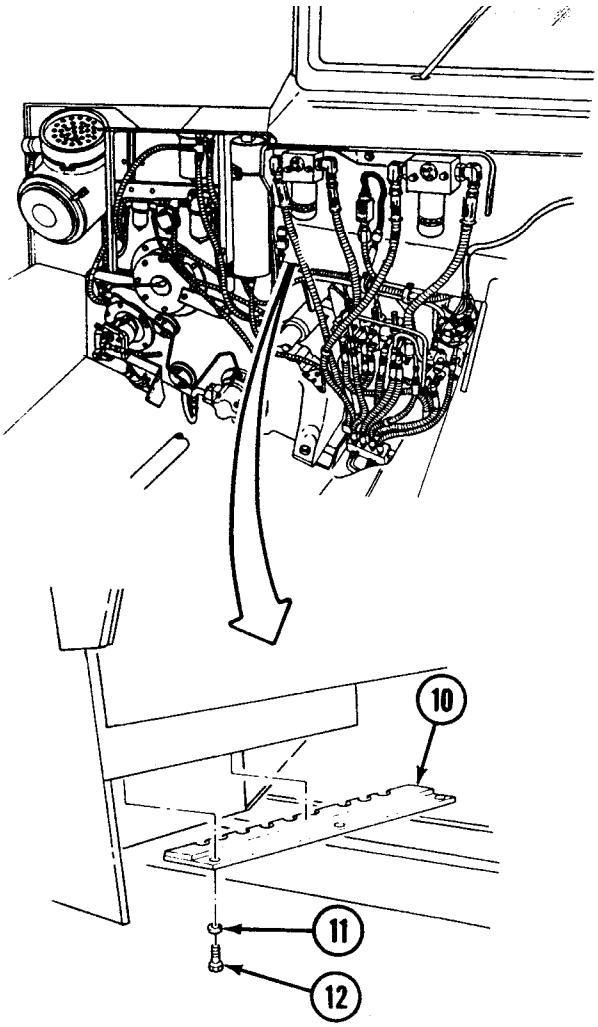
Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or injury to personnel.

B Clean pad or gasket mounting surface of plates (3) with drycleaning solvent. Allow surface to dry.

C Follow general repair instructions (p 2-43).

D Install pad (1) or gasket (2) on plates (3) with epoxy resin adhesive.





INSTALLATION

Note

- Apply lubricating oil to threads of screws prior to installation.
- NEW PRODUCTION vehicles are equipped with thicker hull bottom access covers and do not include pads or seals.

A Install hull access covers (1), (2), and (3) on hull with forty-eight washers (4), lockwashers (5), and screws (6). Do not tighten screws (6).

B Install hull access cover (7) on hull with twenty washers (4), lockwashers (5), and screws (6). Do not tighten screws (6).

C Install hull access cover (8) on hull with four washers (4), lockwashers (5), and screws (6). Do not tighten screws (6).

D Tighten screws (6) on hull access covers (1), (2), (3), (7), and (8) to 22-26 lb-ft (30-35 N·m).

E Install hull access cover (9) on hull with six washers (4), lockwashers (5), and screws (6). Tighten screws (6) to 19-21 lb-ft (26-28 N·m).

F Install hull access cover (10) on hull with three washers (11) and self-locking screws (12). Tighten self-locking screws (12) to 24-26 lb-ft (33-35 N·m).

G Install two access covers (13) on hull sponsons, and secure with twelve self-locking screws (14). Tighten self-locking screws (14) to 9-11 lb-ft (12-15 N·m).

H Use square plug socket to install plug (15) on hull.

FOLLOW-ON TASKS:
- Unblock hull (p 2-27).
- Install protective plates (p 4-380).

PROTECTIVE PLATES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Special Tools:

Support Stand (4)	2590-01-228-5802

Materials:

Lubricating Oil	Item 26 Appendix D

Parts:

Lockwasher (20)

Parts Reference:

TM 5-2350-262-24P	Group AP

Personnel Required:

Two Construction Equipment Repairers 62B10

Equipment Condition:

Reference	Condition Description
Page 2-27	Hull Raised and Blocked

General Safety Instructions:

WARNING

Protective plates may be heavier then they appear due to accumulation of fluid and dirt.

WARNING

Protective plates may be heavier than they appear due to accumulation of fluid and dirt. Do not attempt to remove without assistance. Failure to comply may result in severe injury to personnel.

REMOVAL

A Remove four screws (1), lockwashers (2), and washers (3) from protective plate (4) and access cover (5). Discard lockwashers (2).

B Remove two screws (6), lockwashers (7), washers (8), and plate (4) from access cover (5) and hull. Discard lockwashers (7).

C Remove four screws (9), lockwashers (10), washers (11), and protective plate (12) from access cover (13) and hull. Discard lockwashers (10).

D Remove four screws (14), lockwashers (15), washers (16), and protective plate (17) from access cover (18) and hull. Discard lockwashers (15).

E Remove two screws (19), lockwashers (20), and washers (21) from protective plate (22) and access cover (23). Discard lockwashers (20).

F Remove screw (24), lockwasher (25), and washer (26) from plate (22) and access cover (27). Discard lockwasher (25).

G Remove three screws (28), lockwashers (29), washers (30), plate (22), and spacer (31) from access cover (23) and hull. Discard lockwashers (29).

INSTALLATION

Note

Apply lubricating oil to threads of screws prior to installation.

A Install plate (22) on access covers (23) and (27) and hull with three washers (30), lockwashers (29), and screws (28). Tighten screws (28) finger tight. Reposition plate (22) to fully expose threaded hole in access cover (27).

B Install washer (26), lockwasher (25), screw (24), and spacer (31) on plate (22) and access cover (27). Do not tighten screw (24).

C Install two washers (21), lockwashers (20), and screws (19) on plate (22) and access cover (23). Tighten screws (19), (24), and (28) to 24-28 lb-ft (33-38 N·m).

D Install plate (17) on access cover (18) and hull with four washers (16), lockwashers (15), and screws (14). Do not tighten screws (14).

CAUTION

Ensure plate with hole offset and stencil "CENTER OF VEHICLE" is installed facing in. Failure to comply may result in damage to equipment.

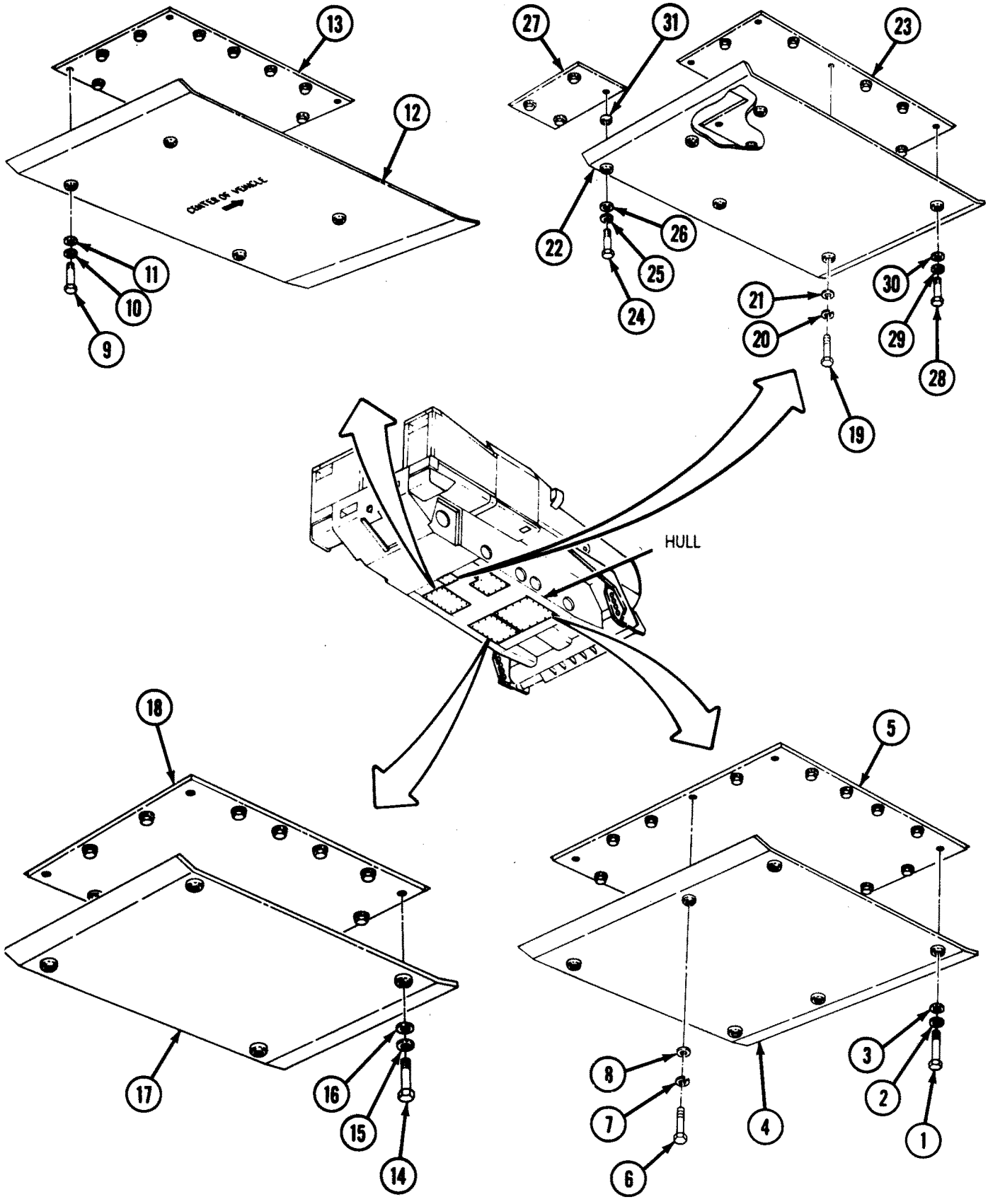
E Install plate (12) on access cover (13) and hull with four washers (11), lockwashers (10), and screws (9). Do not tighten screws (9).

F Install plate (4) on access cover (5) and hull with four washers (3), lockwashers (2), and screws (1). Do not tighten screws (1).

G Install two washers (8), lockwashers (7), and screws (6) on plate (4). Do not tighten screws (6).

H Tighten screws (1), (6), (9), and (14) to 24-28 lb-ft (33-38 N·m).

FOLLOW-ON TASK:
Unblock hull (p 2-27).


13
12
CENTER OF VEHICLE
11
10
9
27
31
23
22
26
25
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28
19
HULL
18
17
16
15
14
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7
6
4
3
2
1

HULL ACCESS COVER SEAL REPLACEMENT (OLD PRODUCTION)

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Sealing Compound	Item 14 Appendix D
Drycleaning Solvent	Item 31 Appendix D

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
Page 4-376	Hull Access Covers Removed

General Safety Instructions:

WARNING

- Wear face shield or goggles for eye protection when removing, cleaning, or installing seal.
- Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.

REMOVAL

WARNING

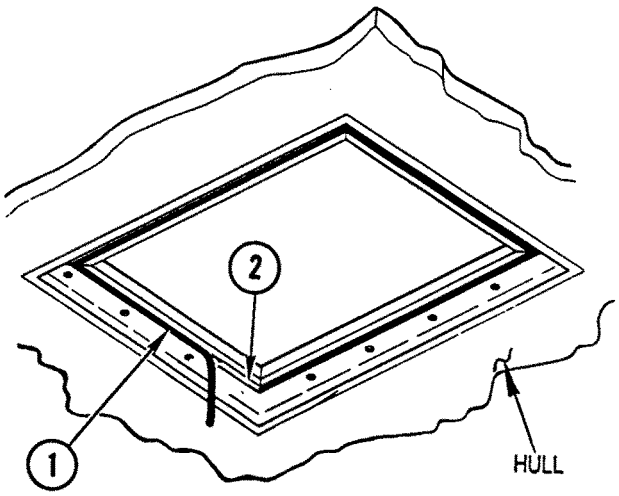
Wear face shield or goggles for eye protection when removing, cleaning, or installing seal. Failure to comply may result in injury to personnel.

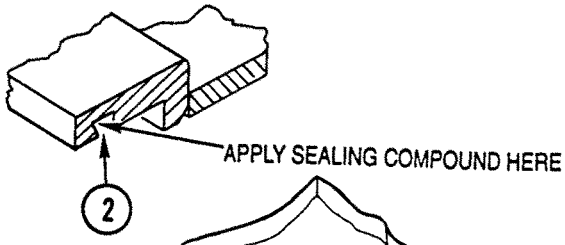
A Remove hull access cover seal (1) by starting at corner of seat groove (2). Pull hull access cover seal (1) out, using tip of flat tip screwdriver to loosen seal from hull.

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or injury to personnel.

B Clean seal seat groove (2) with drycleaning solvent, stiff bristle brush, and rags. Allow surface to dry thoroughly before installing seal.



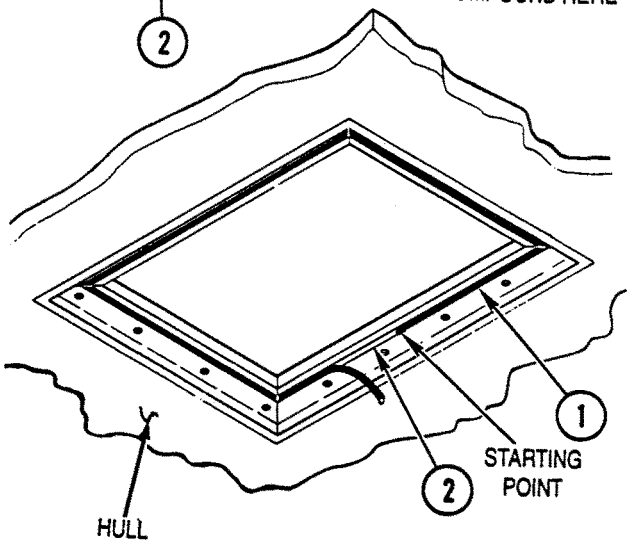


INSTALLATION

A Coat only top surface of seal seat groove (2) with sealing compound.

B Start installing hull access cover seal (1), about midway, along one side of seal seat groove (2).

C Make a 45° cut in hull access cover seal (1) at each corner, and continue installing seal (1). Apply sealing compound to all joints of hull access cover seal (1).



FOLLOW-ON TASK:
Install hull access covers (p 4-378).

ACTUATOR ACCESS PLATES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Silicone Compound	Item 16 **Appendix D**
Drycleaning Solvent	Item 28 **Appendix D**

Parts Reference:

TM 5-2350-262-24P	Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Equipment Condition:

Reference	Condition Description
TM 5-2350-262-10	Ejector Forward

General Safety Instructions:

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas.

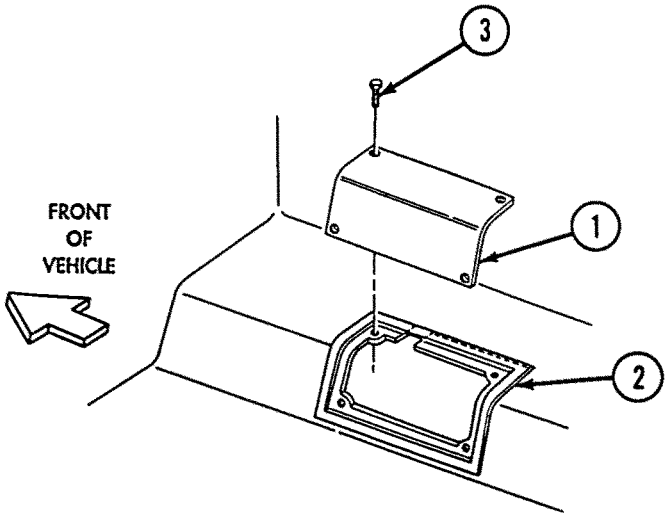
REMOVAL

Note

Procedures for the right and left actuators are the same. This procedure covers the right No. 1 actuator.

A Remove silicone compound from access plate (1) and frame (2).

B Remove four screws (3) and access plate (1) from frame (2).



INSTALLATION

WARNING

Drycleaning solvent is flammable and will not be used near an open flame. A fire extinguisher will be kept nearby when the solvent is used. Use only in well-ventilated areas. Failure to comply may result in damage to equipment or injury to personnel.

A Clean access plate (1) and frame (2) with drycleaning solvent.

B Install access plate (1) on frame (2) with four screws (3).

C Apply silicone compound in seam between access plate (1) and frame (2).

REAR BUMP STOP REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0650 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 2, Less Power

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil — Item 26 Appendix D

Parts:

Self-locking Screw (4)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

Reference:

TM 5-2350-262-10

Equipment Condition:

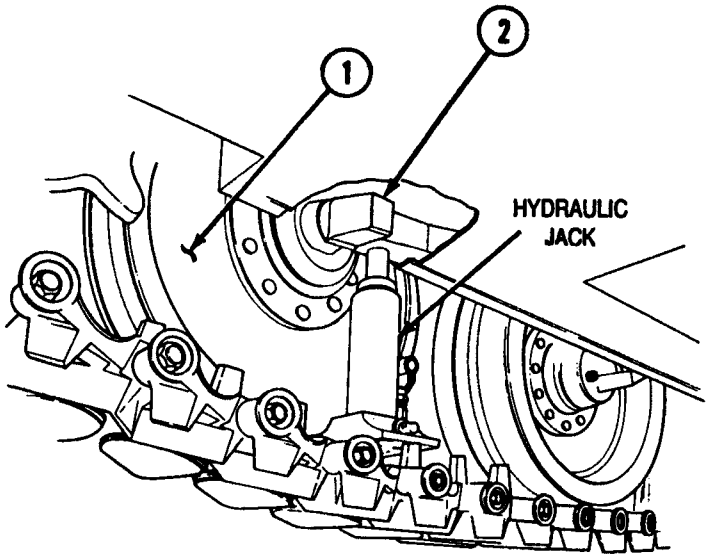
Reference	Condition Description
TM 5-2350-262-10	Suspension in Sprung Mode
TM 5-2350-262-10	Track Tension Relieved
Page 2-27	Hull Blocked
Page 2-27	Hydraulic Pressure Relieved

REMOVAL

Note

Left and right rear bump stops are replaced the same way. This task covers replacement of the left rear bump stop.

A Position hydraulic jack behind inner roadwheel No. 4 (1) and under roadwheel arm (2).



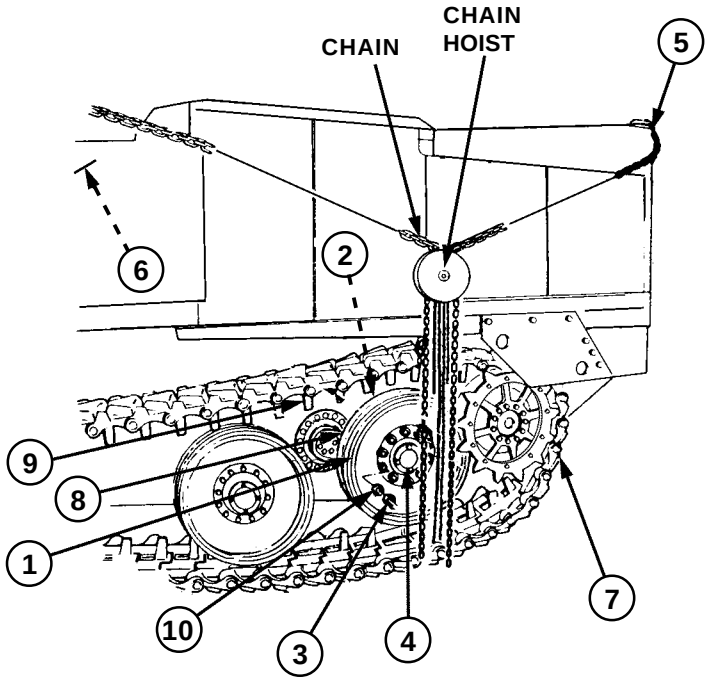
B Loosen ten nuts (3) on roadwheel arm hub (4).

C Use hydraulic jack to raise roadwheel arm (2).

D Connect chain and chain hoist to LAPES bracket (5) and top of ejector (6) or suitable location.

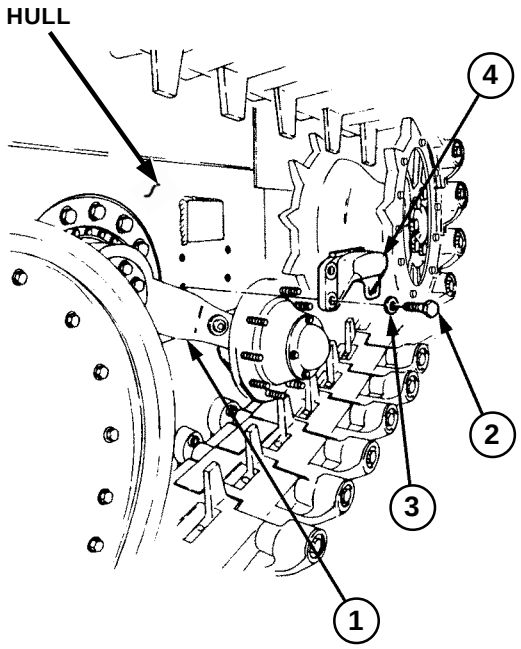
E Spread track (7) so inner and outer No. 4 roadwheels (1) and (8) clear center guides (9), and remove ten nuts (3), washers (10), and inner and outer No. 4 roadwheels (1) and (8).

F Lower hydraulic jack (1).

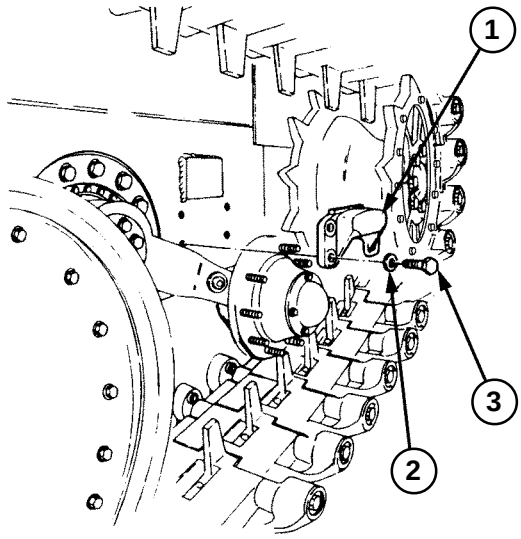


G Push roadwheel arm (1) down.

H Remove four self-locking screws (2), washers (3), and rear bump stop (4) from hull. Discard self-locking screws (2).



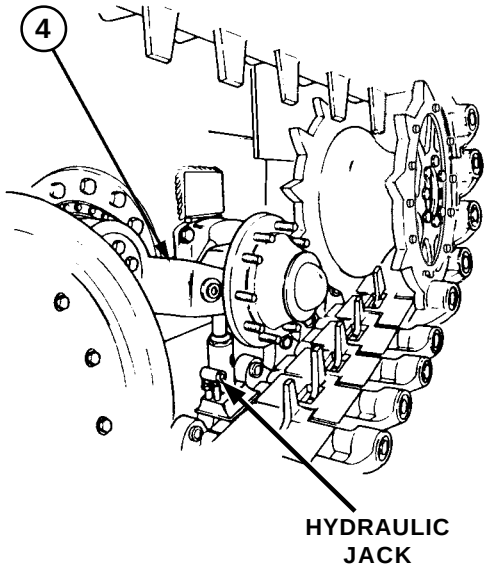
INSTALLATION



Note

Apply lubricating oil to threads of screws prior to installation.

A Install rear bump stop (1) on hull with four washers (2) and self-locking screws (3). Tighten four screws (3) to 160-180 lb-ft (217-244 N-m).



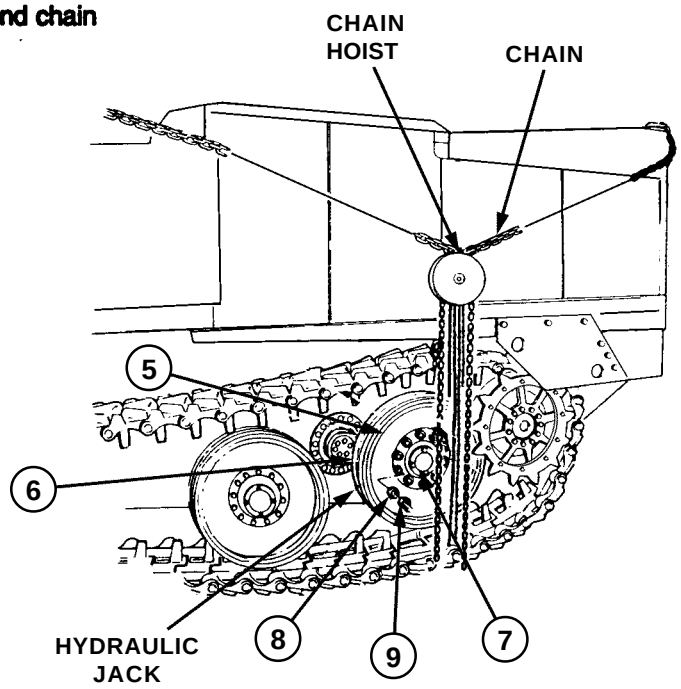
Note

It may be necessary to place SPRUNG/UNSPRUNG lever in a neutral position to raise roadwheel arm.

B Pry roadwheel arm (4) up with crowbar. Use hydraulic jack to raise roadwheel arm (4).

C Install inner and outer No. 4 roadwheels (5) and (6) on roadwheel hub (7) with ten washers (8) and nuts (9).

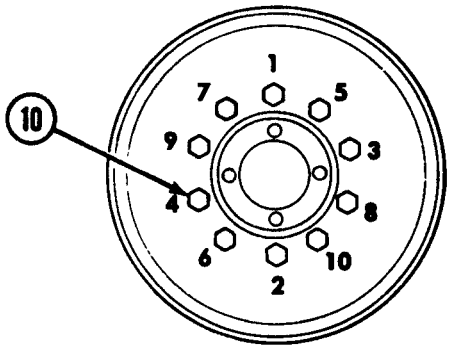
D Remove hydraulic jack, chain hoist, and chain from vehicle.



E Refer to torque sequence illustration, and tighten ten nuts (10) to 190 lb-ft (258 N-m).

FOLLOW-ON TASKS:

- Unblock hull (p 2-27).
- Adjust track tension (TM 5-2350-262-10).



TORQUE SEQUENCE FOR ROADWHEELS

HULL DRAIN VALVE REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Lubricating Oil	Item 26 Appendix D

Parts:

Gasket

Self-locking Screw (4)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

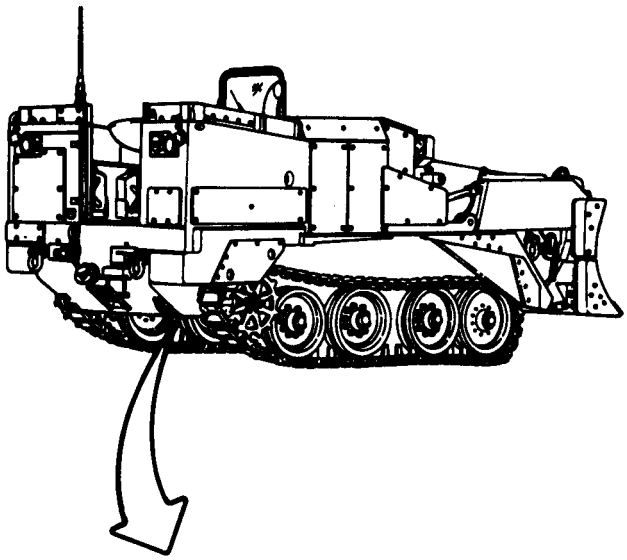
Equipment Condition:

Reference	Condition Description
Page 2-27	Hull Blocked

REMOVAL

A From underneath hull, remove four self-locking screws (1), washers (2), and hull drain valve (3). Discard self-locking screws (1).

B Remove and discard gasket (4) from hull.



INSTALLATION

CAUTION

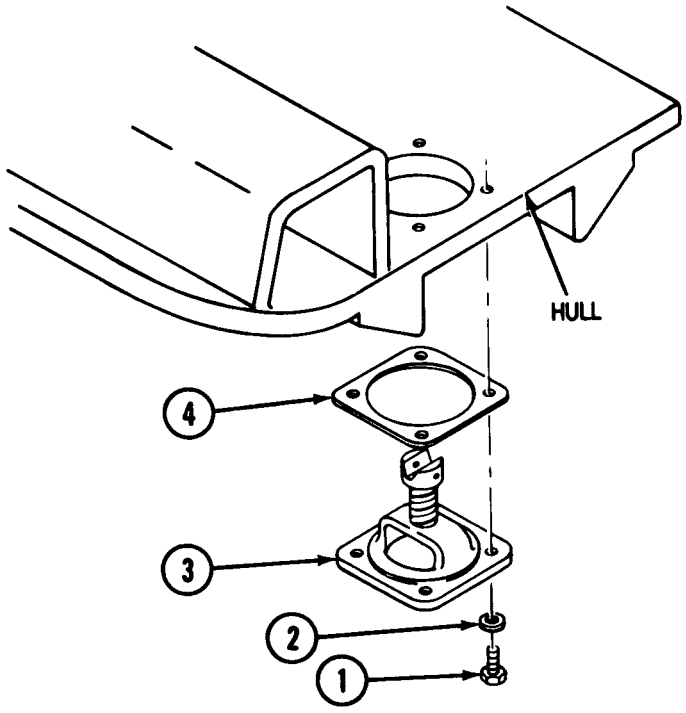
Water can leak into hull during amphibious (swimming) operations if hull drain valve gasket is not properly seated. Damage to equipment may result. Clean gasket mating surfaces of hull and drain valve before installing gasket.

Note

Apply lubricating oil to threads of screws prior to installation.

Install hull drain valve (3) and gasket (4) with four washers (2) and self-locking screws (1). Tighten self-locking screws (1) to 24-26 lb-ft (33-35 N·m).

FOLLOW-ON TASK:
Unblock hull (p 2-27).



BILGE PUMP ASSEMBLY REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

4910-00-754-0654 Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Caps and Plugs	Item 7 Appendix D
Sealing Compound	Item 12 Appendix D
Lubricating Oil	Item 26 Appendix D

Parts:

Deleted

Parts Reference:

Deleted

Personnel Required:

Construction Equipment Repairer 62B10

Engineer Tracked Vehicle Crewman 12F10

Troubleshooting Reference:

Deleted

Equipment Condition:

Reference	Condition Description
Page 2-27	Hydraulic Pressure Relieved
Page 4-356	Left Rear Floor Plate Support Removed
Page 4-359	Driver's Compartment Floor Plate Removed
Page 4-376	Hull Access Plug Removed

General Safety Instructions:

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.

REMOVAL

WARNING

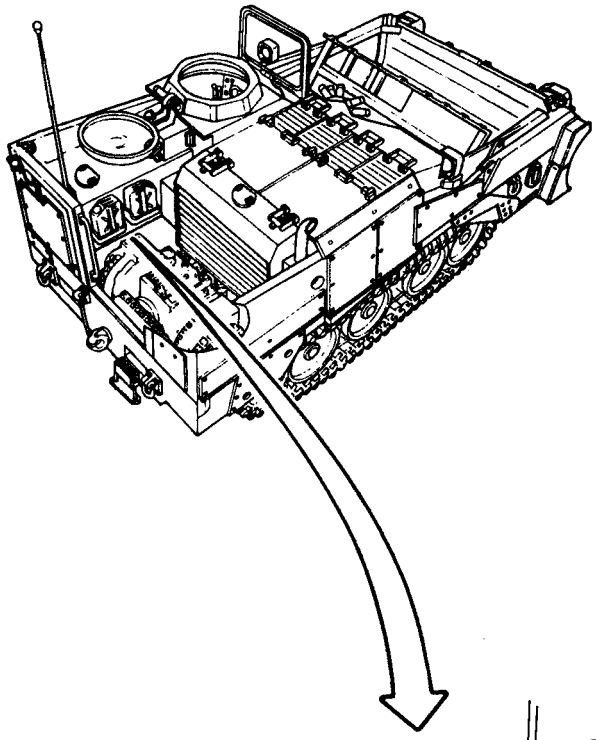
High pressure is present in the M9 hydraulic system. Do not disconnect any hydraulic system component unless hydraulic system pressure has been relieved. After hydraulic system pressure has been relieved, wait at least 4 minutes before disconnecting any hose or fitting. Failure to comply may result in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

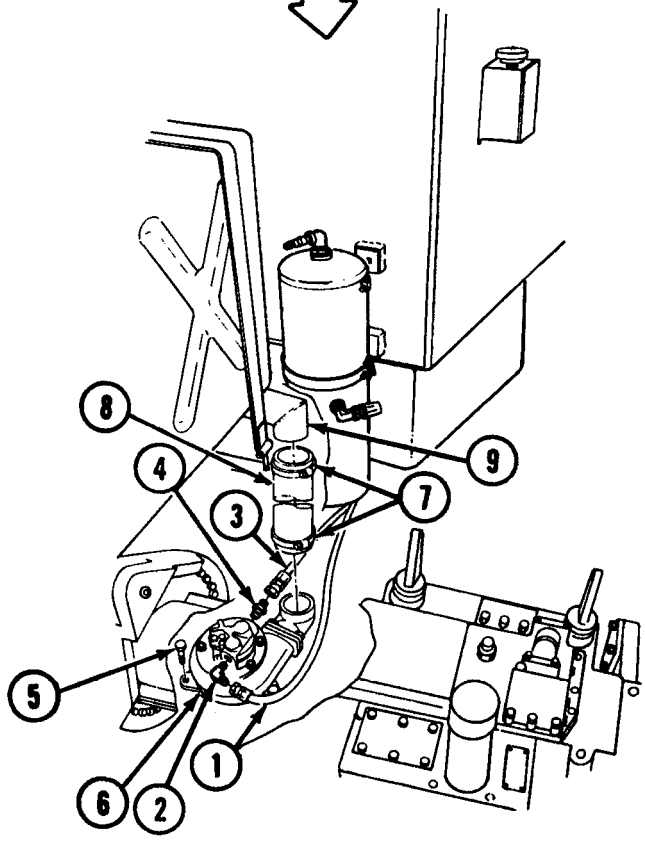
CAUTION

Cover hose ends and open ports to avoid contaminating hydraulic oil.

Note

- Although the Bilge Pump is considered Not Mission Essential and will no longer be supported with spare and repair parts, this task is provided For Your Information Only. See TB 43-0001-62-7 (dated Oct 98) for Instructions to Isolate and Disconnect a Non-Functional Bilge Pump.
- Tag hoses prior to removal for installation.
- Have a suitable clean container ready to catch hydraulic oil.





A Disconnect hose (1) from elbow (2), and disconnect hose (3) from adapter (4).

B Drain hydraulic oil from hoses (1) and (3), and plug hoses (1) and (3).

C Working through hull access, driver's compartment, and rear of vehicle, remove three self-locking screws (5) from bilge pump (6). Discard self-locking screws (5).

D Loosen clamps (7), and remove discharge hose (8) from bilge pump (6) and discharge pipe (9). Remove bilge pump (6) from vehicle through driver's compartment. Remove clamps (7) from discharge hose (8).

E Remove elbow (2) and adapter (4) from bilge pump (6).

INSTALLATION

A Coat threads of elbow (1) and adapter (2) with sealing compound, and install elbow (1) and adapter (2) on bilge pump (3).

B Working through driver's compartment, position bilge pump (3) in vehicle.

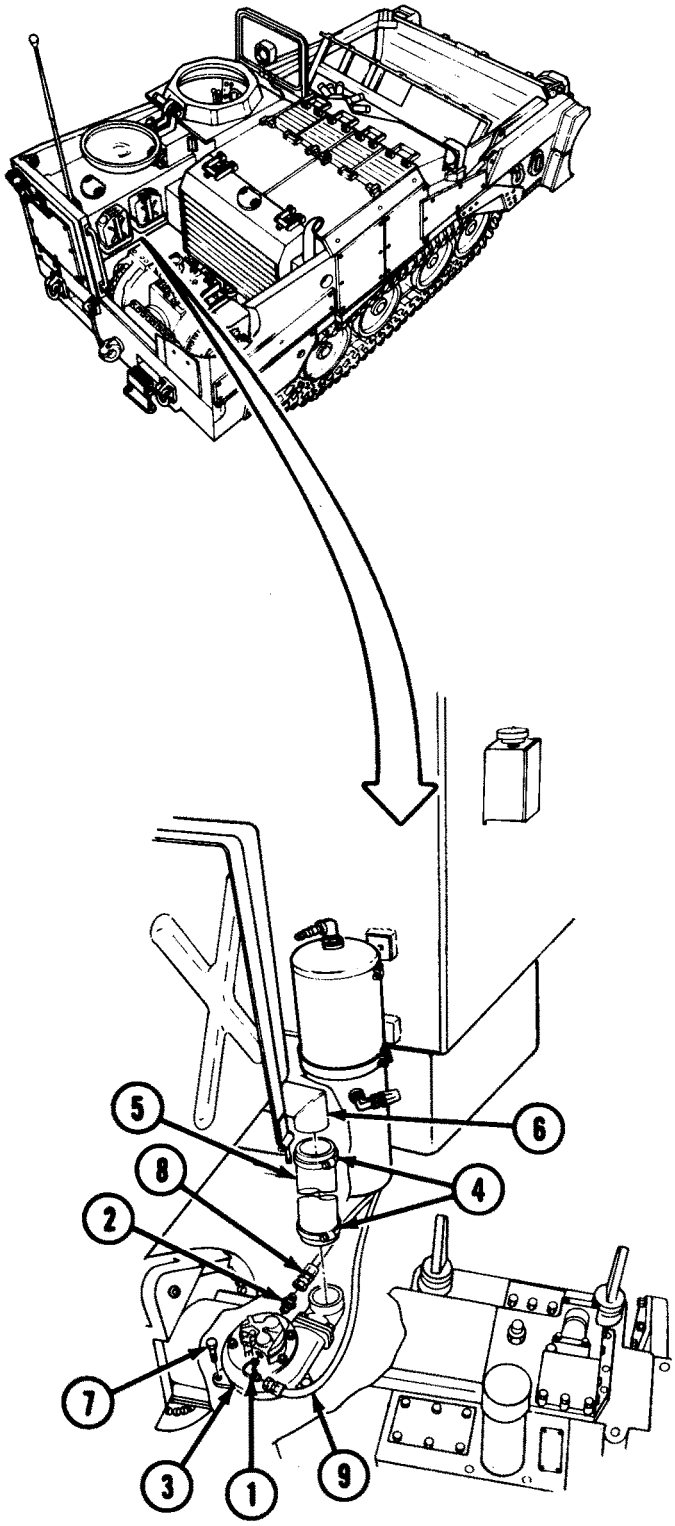
C Install two clamps (4) on discharge hose (5) and install discharge hose (5) on discharge pipe (6) and bilge pump (3). Tighten clamps (4).

Note

Apply lubricating oil to threads of screws prior to installation.

D Secure bilge pump (3) with three self-locking screws (7). Tighten self-locking screws (7) to 32-36 lb-ft (43-49 N·m).

E Remove plugs and connect hoses (8) and (9) to adapter (2) and elbow (1).



FOLLOW-ON TASKS:

- Install hull access plug (p 4-378).
- Install left rear floor plate support (p 4-357).
- Install driver's compartment floor plate (p 4-359).

DATA PLATES REPLACEMENT

This task covers:

a. Removal

b. Installation

INITIAL SETUP

Tools:

5180-00-177-7033 Tool Kit, General Mechanic's: Automotive

Materials:

Adhesive, Epoxy Plastic	Item 1 Appendix D

Parts:

Drive Screw (As Req.)

Parts Reference:

TM 5-2350-262-24P Group AP

Personnel Required:

Construction Equipment Repairer 62B10

DRIVER'S COMPARTMENT DATA PLATES

1 FRONT FLOOD plate
2 REAR FLOOD plate
3 FAN OFF/HIGH/LOW plate
4 LOW TRANS PRESS/LOW AIR plate
5 HIGH BEAM plate
6 UNSPRUNG plate
7 LOW OIL PRESS plate
8 PARKING BRAKE plate
9 HEATER fan plate
10 START plate
11 IGNITION ON/OFF plate
12 MASTER SWITCH plate
13 SPRUNG/UNSPRUNG plate
14 ENG OIL plate
15 WATER plate
16 HYD OIL plate
17 XMSN OIL plate
18 START-AID plate
19 Hydraulic control levers plate
20 WARNING plate
21 Transmission shift plate
22 CAUTION plate
23 GS plate
24 CB plate
25 Winch shift plate
26 FULL plate
27 IDLE plate
28 Air heater plate
29 WARNING plate
30 RAISE/LOWER plate
31 Case, goggles
32 Semi-automatic track adjuster control panel plate (NEW PRODUCTION)

CALLOUT NO.	DATA PLATE	GROUP CODE	RPSTL FIGURE NO.
1-12	Driver's Instrument Panel Data Plates	AJ	21
32	Semi-Automatic Track Adjuster Panel Data Plate	AJ	42
13-17	Gauge Panel Data Plate	AJ	24
18-19, 30	Hydraulic Control Levers and Linkages	AQ	80
20	Warning Buzzer	AJ	26
21	Shifting Lever and Linkage	AU	173
22, 31	Hull Data Plates	AP	79
23-24	Steering Selector Data Plates	AU	172
25	Winch Shift Control Assembly	A5	205
26-27	Accelerator Linkage	AA	1
28	Air Purifier Heater	AU	183
29	Radio Equipment Installation	AW	185

REMOVAL

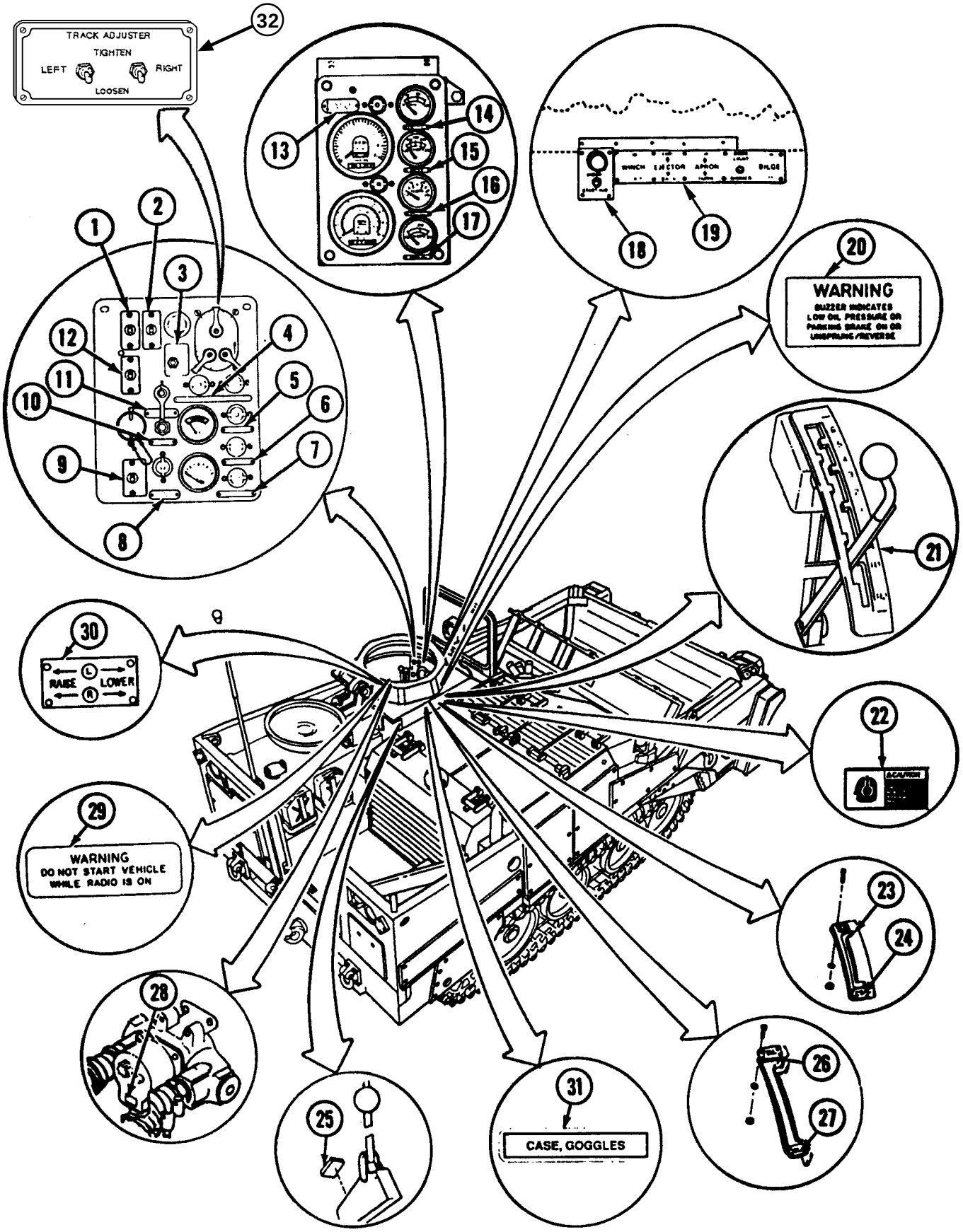
A Remove drive screws or screws and nuts, and remove data plate. Discard drive screws.

B Use a putty knife to remove bonded plates.

INSTALLATION

A Install data plates with drive screws or screws and nuts.

B Bond screwless data plates to vehicle with epoxy plastic adhesive, or follow instructions on back side of plate.


TRACK ADJUSTER
TIGHTEN
LEFT
RIGHT
LOOSEN
WARNING
BUZZER INDICATES
LOW OIL PRESSURE OR
PARKING BRAKE ON OR
UNSPRUNG/REVERSE
RAISE
LOWER
WARNING
DO NOT START VEHICLE
WHILE RADIO IS ON
CASE, GOGGLES

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By Order of the Secretary of the Army:

DENNIS J. REIMER
General, United States Army
Chief of Staff

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JOEL B. HUDSON
Administrative Assistant to the
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3-193		2	
3-227			

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Step No. 1 says to connect LH 4 SPNSN Unit-8 hose from where to what? It is also not identified.

Procedure is continued from another page, but cap is not removed - add step to procedure.

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE
1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1,000 Millimeters = 39.37 Inches
1 Kilometer = 1,000 Meters = 0.621 Miles

WEIGHTS
1 Gram = 0.001 Kilograms = 1,000 Milligrams = 0.035 Ounces
1 Kilogram = 1,000 Grams = 2.2 Lb
1 Metric Ton = 1,000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE
1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Lilter = 1,000 Millimeters = 33.82 Fluid Ounces

SQUARE MEASURE
1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

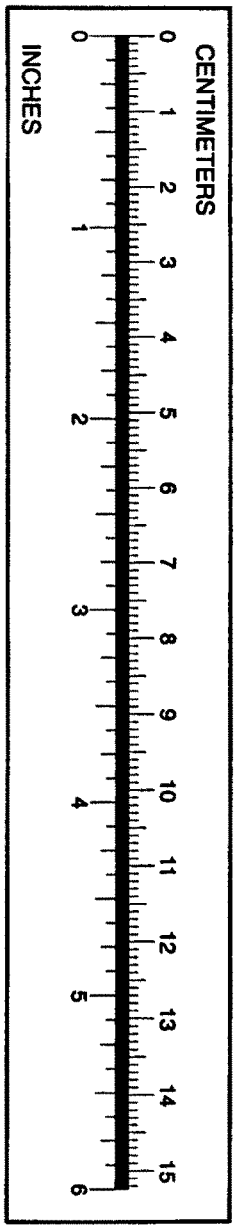
CUBIC MEASURE
1 Cu Centimeter = 1,000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

TEMPERATURE
5/9 (°F - 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5 °C + 32 = °F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton•Meters	1.356
Pounds Per Square Inch	Kilopascals	6.895
Miles Per Gallon	Kilometers Per Liter	0.425
Miles Per Hour	Kilometers Per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
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



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