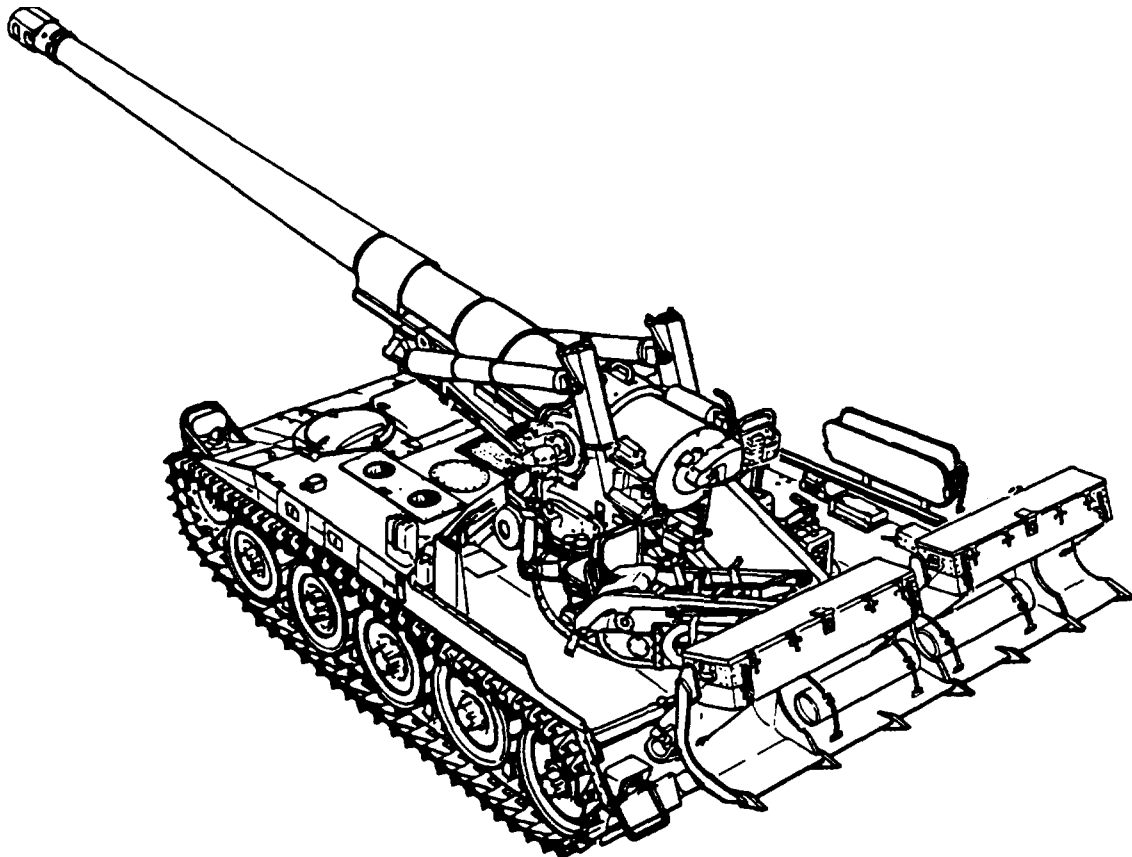


TECHNICAL MANUAL

**UNIT MAINTENANCE
MANUAL**

**HULL AND
RELATED COMPONENTS
HOWITZER, HEAVY,
SELF-PROPELLED:
8-INCH, M110A2
(2350-01-041-4590)
(EIC:3E320-1)
(EIC:3E3)**

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Distribution: Statement A: Approved for public release; distribution is unlimited

**This Manual supersedes hull and related components portions of
TM 9-2350-304-20, dated 23 November 1979**

HEADQUARTERS, DEPARTMENT OF THE ARMY

MARCH 1994

WARNING**RADIATION HAZARD****Rules and Regulations**

Copies of the following rules and regulations are maintained at HQ, AMCCOM, Rock Island, IL 61299-6000. Copies may be requested or information obtained by contacting the AMCCOM Radiological Protection Officer (RPO), AUTOVON 793-2964, Commercial (309) 782-2964.

10CFR Part 19--Notices, Instructions, and Reports to Workers; Inspections.

10CFR Part 20--Standards for Protection Against Radiation.

NRC license, license condition, and license application.

Safety Precautions

The radioactive material used in these instruments is tritium gas (H_3) sealed in pyrex tubes. It poses no significant hazard to the repair person when intact. These sources illuminate the instrumentation for night operations. Tampering with or removal of the sources in the field is prohibited by Federal law. In the event there is no illumination, notify the local RPO. Do not attempt to repair or replace the instrument in the field! If skin contact is made with any area contaminated with tritium, immediately wash with nonabrasive soap and water.

Identification

Radioactive self-luminous sources are identified by means of radioactive warning labels (as above). These labels should not be defaced or removed and should be replaced immediately when necessary. Refer to the local RPO or the AMCCOM RPO for instructions on handling, storage, or disposal.

Storage and Shipping

All radioactively illuminated instruments or modules which are defective will be evacuated to a depot maintenance activity. These items must be placed in a plastic bag and packaged in the shipping container from which the replacement was taken before evacuation to a higher echelon is made. Spare equipment must be stored in the shipping container, as received, until installed on the weapon. Storage of these items is recommended to be in an outdoor shed-type storage or unoccupied building.

Radioactive material is used in the M140 alinement device. Radiation leakage may occur if M140 alinement device is broken or damaged. If exposed to a broken or damaged M140 alinement device, see medical personnel.

Radioactive material is used in M1A1 collimator. Radiation leakage may occur if M1A1 collimator is broken or damaged. If exposed to a broken or damaged M1A1 collimator, flush with water and see medical personnel.

WARNING (CONT)

Radioactive material is used in M1A2 gunner's quadrant. Radiation leakage may occur if level vial is broken or damaged. If exposed to a broken or damaged vial on the M1A2 quadrant, flush with water and see medical personnel.

Do not purge and charge any instrument containing tritium gas (H_3) if there is no illumination in the assembly. The local RPO must be notified, and the defective unit will be replaced by a serviceable one.

GENERAL

Dry cleaning solvent (SD2) is toxic and flammable. Wear protective goggles and gloves and use only in well ventilated areas.

High-pressure nitrogen gas is used in this equipment. Keep face and body clear of release valves, filling plugs, and bleed valves. Failure to observe safety precautions may result in injury or death.

Handle assembly contains parts under spring tension. Use caution in removal to prevent injury.

Grip assembly contains parts under spring tension. Use care when removing to prevent injury.

Parts of headlink assembly are under spring tension. Use caution in removal to prevent injury.

Unusable CARC mixtures are considered hazardous waste and will require disposal in accordance with Federal, state, DOD, DA, and local installation waste regulations. Consult the installation environment office for proper disposal guidance. Mixed CARC is extremely flammable - use only in well ventilated areas and keep away from open flames, heat, sparks, and other ignition sources.

CARC paint contains isocyanate, a constituent that can cause respiratory effects during and after the application of the material. During the application of CARC paint, coughing, shortness of breath, pain on respiration, increased sputum, and chest tightness may occur. CARC paint also produces itching and reddening of the skin, a burning sensation of the throat and nose, and watering of the eyes. An allergic reaction may occur after initial exposure (ranging from a few days to a few months later), producing asthmatic symptoms including coughing, wheezing, tightness in the chest, or shortness of breath. The following precautions must be observed to ensure the safety of personnel when CARC paint is applied.

- For brush/roller painting in confined spaces, an airline respirator is required, unless an air sampling shows exposure to be below standards. If the air sampling is below standards, either chemical cartridge or airline respirators are required.
- Spot painters applying CARC paint by brush or roller must wear clothing and gloves affording full coverage.

- Do not use water, alcohol, or amine based solvents to thin or remove CARC paints. Use of these solvents with CARC paints can produce chemical reactions resulting in nausea, disease, burns, or severe illness to personnel.
- Do not use paint solvents to remove paint/coating from your skin.
- Mix paint/coating in a well-ventilated mixing room or spraying area away from open flames. Personnel mixing paint/coating should wear eye protection.
- Use paint/coating with adequate ventilation.
- Personnel grinding or sanding on painted equipment should use high efficiency air purifying respirators.
- Do not weld or cut CARC-coated metal. Substances causing skin or respiratory irritation may be released. Before applying heat, sand or grind paint down to bare metal on area four inches to either side of the area you plan to weld or cut.

Vehicle has no brakes when powerplant is disconnected. Failure to securely block front and rear vehicle tracks could cause injury to personnel or damage to vehicle or other equipment if vehicle is free to roll out of control.

Ensure that vehicle cannot roll out of control. Block vehicle with 12 x 24-in. (30 x 61-cm) wood blocks placed under front and rear of each track.

Brake foot pedal is spring-loaded. Before working in forward area of driver's compartment, ensure vehicle tracks are blocked and parking brake is released.

Electrical engine starter weighs 80.0 lb (36.3 kg). Carefully remove and install electrical engine starter.

Block vehicle tracks and release parking brake before working in driver's compartment. Disconnect battery ground leads from battery before working at rear of instrument panel.

Brake foot pedal is spring-loaded. Block tracks and release parking brake before working on instrument (switch) panel. Disconnect battery ground leads from battery before working at rear of instrument panel.

Road wheel arms rotate in an arc when raised or lowered. Ensure that jack is properly located and positioned under arm to allow for rotation and to provide a stable support for arm.

Before relieving hydraulic pressure, be sure travel lock is engaged and vehicle is on as level ground as possible. This will stop the cannon from sliding out of battery.

WARNING (CONT)**CARBON MONOXIDE POISONING IS 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, 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.

- Do not operate heater or engine of vehicle in an enclosed area unless it is adequately ventilated.
- Do not idle engine for long periods without maintaining adequate ventilation in personnel compartments.
- Do not drive any vehicle with inspection plates, cover plates, or engine compartment doors removed unless necessary for maintenance purposes.
- 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. (Refer to FM 21-11).

**THE BEST DEFENSE AGAINST CARBON MONOXIDE
POISONING IS ADEQUATE VENTILATION****ELECTRICAL COMPONENTS**

Make sure MASTER switch is OFF before repairing electrical components or circuits. Failure to observe this warning could result in injury to personnel.

Failure to remove or disconnect the batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

To avoid battery blow-up, do not connect battery cables before activating batteries with electrolyte.

HYDRAULICS

Hydraulic system is under high pressure. Make sure all hydraulic pressure is relieved before removal of any tubes or fittings. Follow safety procedures to prevent injury. Wipe up spilled hydraulic fluid.

Keep hands and body behind valve opener on air filling tube assembly. Failure to do so may result in injury to personnel.

Before relieving hydraulic pressure, be sure travel lock is engaged and vehicle is on as level ground as possible. This will stop the cannon from sliding out of battery.

Gun tube must be in low travel lock position. Failure to observe this warning may result in injury to personnel.

FIRST AID

Refer to FM 21-11, First Aid for Soldiers.

Serious injury may occur at any time. Read FM 21-11 for information on first aid before an accident happens.

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**UNIT MAINTENANCE MANUAL
HULL AND RELATED COMPONENTS
HOWITZER, HEAVY,
SELF-PROPELLED: 8-INCH, M110A2
(2350-01-041-4590) (EIC:3E3)**

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

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to Commander, US Army Tank-Automotive Command, Attn: AMSTA-MB, Warren, MI 48397-5000. A reply will be furnished to you.

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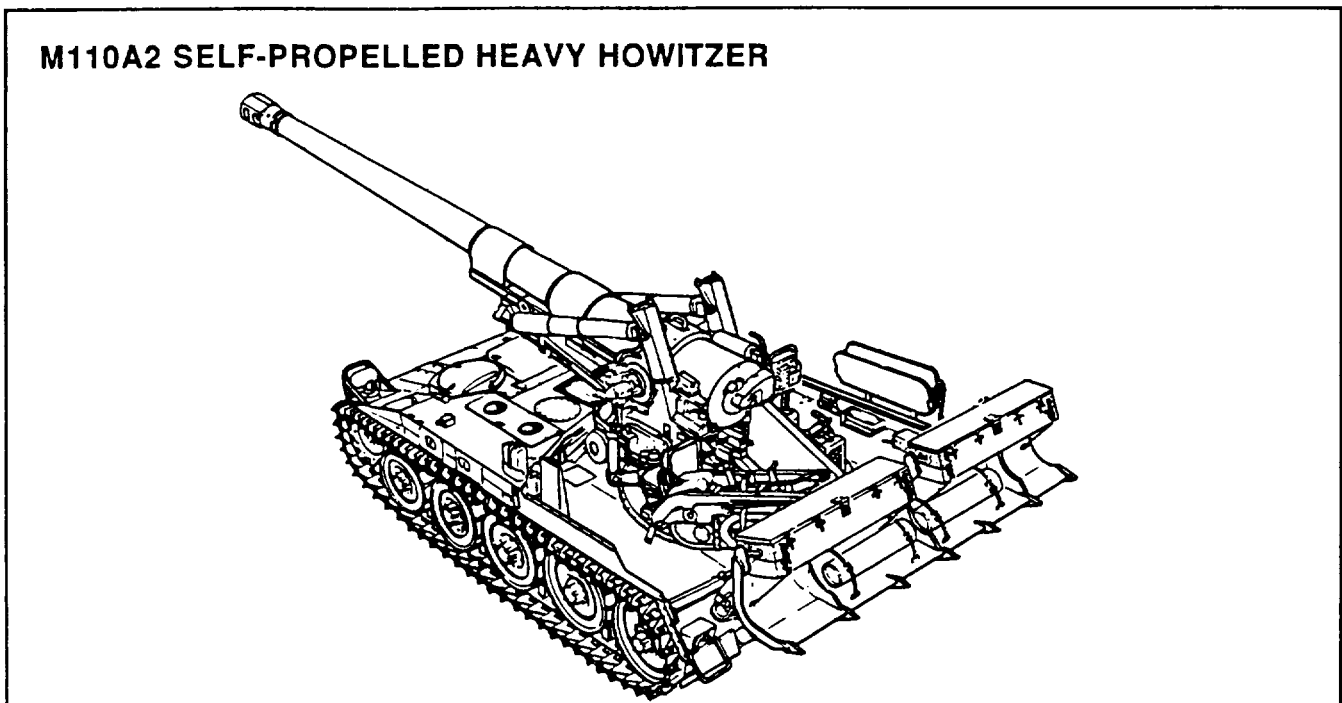
*This manual supersedes hull and related components portions of TM 9-2350-304-20, 23 November 1979, including all changes.

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 HOW TO USE THIS MANUAL	

This manual (TM 9-2350-304-20-1) contains unit level maintenance procedures for the hull and related components of the M11 OA2 Self-Propelled Heavy Howitzer. This manual is to be used in conjunction with TM 9-2350-304-10 and TM 9-2350-304-24P-1. Chapter 1 contains general information; equipment description and data; and principles of operation. Chapter 2 contains information concerning repair parts, special tools, TMDE, and support equipment; and unit level troubleshooting and maintenance procedures.

Be sure to read and understand maintenance instructions before beginning any maintenance task. Also, read and understand information in Chapter 1 and general maintenance procedures on page



CHAPTER 1
INTRODUCTION

CHAPTER INDEX

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Section I. GENERAL INFORMATION

1-1. SCOPE.

- a. *Type of Manual.* Unit level maintenance.
- b. *Model Number and Equipment Name.* M110A2, 8-inch, heavy, self-propelled howitzer.
- c. *Purpose of Equipment.* Transports a long-barrel howitzer and its crew. Travels at convoy speed for artillery support in offensive and defensive combat operations.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS).

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.

a. *Tactical Situations.* Situations may arise in which it is necessary to abandon equipment in the combat zone. All abandoned equipment must be destroyed to prevent its use by the enemy. The destruction of equipment subject to capture or abandonment in the combat zone will be undertaken only upon authority delegated by a division or higher commander.

b. *Plans.*

- (1) Plans for destruction of equipment must be adequate, uniform, and easily carried out in the field.

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE (CONT).

(2) Destruction must be as complete as the available time, equipment, and personnel will permit. Since complete destruction requires considerable time, priorities must be established so the more essential parts are destroyed first.

(3) The same essential parts must be destroyed on all like units to prevent the enemy from constructing a complete unit from undamaged parts.

(4) Spare parts and accessories must be given the same priority as parts installed on the equipment.

c. *Methods.* To destroy equipment adequately and uniformly, all personnel of the unit must know the plan and priority of destruction and be trained in the methods of destruction.

d. *References.* Read TM 750-244-6 for information on destruction of mechanical equipment. Read TM 750-244-5-1 for information on destruction of ammunition.

1-4. PREPARATION FOR STORAGE OR SHIPMENT. Administrative storage is restricted to 90 days and must not be extended. Refer to page 2-1133 for detailed instructions on administrative storage.

1-5. OFFICIAL NOMENCLATURE, NAMES, AND DESIGNATIONS.

<i>Common Name</i>	<i>Official Nomenclature</i>
Access cover	Radiator drain access cover
Arctic traction kit	Track parts kit
Battery/generator voltmeter	Battery/generator special scale meter
Bearing cone	Hub bearing inner cone and rollers
Bearing unit drive shaft	Mag clutch to bearing unit propeller shaft
Bellcrank	Throttle linkage bellcrank
Brake lever shaft	Straight control shaft
Cable	Wire rope assembly
Diode assembly	Master light switch lead and diode assembly
Drain valve handle	Engine compartment drain valve door handle
Engine oil dipstick	Liquid level
Flame detector switch	Thermostatic switch
Fluid filter hose assembly	Fuel pump to driver's heater hose assembly

<i>Common Name</i>	<i>Official Nomenclature</i>
Fuel filler latch pin	Fuel filler cover latch radiator filler pin
Fuel level transmitter	Fuel sending unit liquid quantity transmitter
Fuel pump connecting hose assembly	Fuel pump to driver's heater hose assembly
Governor control lever	Transmission throttle control lever
Ground strap	Electrical lead
Insulation sleeving	Sleeve insulation or sleeving insulation
Left discharge tube	Elbow to cylinder metal tube assembly
Lever	Throttle pedal lever
Lockout isolation manifold	Shutoff valve manifold
Lockout control valve to spade control metal tube assembly	Metal tube assembly
Manual control lever	Manual control engine shutdown lever
Nonmetallic hose assembly	Surge tank-to-engine manifold nonmetallic hose assembly
Nut lockwasher	Lock bearing nut
Overheat switch	Thermostatic switch
Power plant lifting sling	Beam type sling
Power takeoff drive shaft	To P.T.O. propeller shaft
Pressure equalizing tube	Radiator pressure equalizing metallic tube
Radiator	Engine coolant radiator tank
Reducer to tee lockout system pressure line metal tube assembly	Metal tube assembly
Remover and replacer handle	Hexagon head capscrew
Retainer	Shouldered washer
Right discharge tube	Right cylinder metal tube assembly

1-5. OFFICIAL NOMENCLATURE, NAMES, AND DESIGNATIONS (CONT).

<i>Common Name</i>	<i>Official Nomenclature</i>
Right front fender extension	Right headlamp mud guard front plate assembly
Ring spacer	Vehicular light switch ring spacer
Road wheel	Solid rubber tire and wheel
Stud	Bolt, ribbed neck
Surge tank tube	Radiator-to-surge tank tube assembly
Tee to union lockout system pressure line metal tube assembly	Metal tube assembly
Throttle rod	Rigid connecting link, bellcrank-to-governor throttle
Track shoe link pin	Threaded-end rod
Tube	Nonmetallic hose
Tube	Bent metallic tube
Union to union lockout system pressure line metal tube assembly	Metal tube assembly
Washer	Ring spacer
Warning light	Engine and transmission warning light
Warning light	Generator charge indicator light

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR). If your M110A2 Howitzer 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 Form 368 (Product Quality Deficiency Report). Mail it to us at Commander, US Army Tank-Automotive Command, ATTN: AMSTA-Q, Warren, MI 48397-5000. We will send you a reply.

1-7. CORROSION PREVENTION AND CONTROL (CPC).

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

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

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

d. The form should be submitted to: Commander, US Army Tank-Automotive Command, ATTN: AMSTA-Q/Customer Feedback Center, Warren, MI 48397-5000.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-8. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

- a. *Purpose.* The M110A2 Howitzer is a weapon that defends against close-in or long-range ground targets.
- b. *Capabilities and Features.*



Do not ford water which exceeds 42.0 in. (106.7 cm) in depth. Check for soft mud or sandy bottoms.

(1) The M110A2 Howitzer is an unarmored, full-tracked, heavy, self-propelled, 8-in. (203-mm) howitzer. This diesel-powered artillery piece is highly mobile, maneuverable, and may be air transported. The vehicle is capable of long-range, high-speed operation on improved roads. It can traverse rough terrain, muddy or marshy ground, sand, and snow or ice. The M11 0A2 Howitzer can ford streams up to 42.0 in. (106.7 cm) deep.

(2) A hydraulic suspension lockout system and spade assembly help provide a stable platform for firing the cannon. The cannon elevating and traversing mechanisms and the projectile loader and rammer are also hydraulically powered. However, they may be manually operated in case of a power failure.

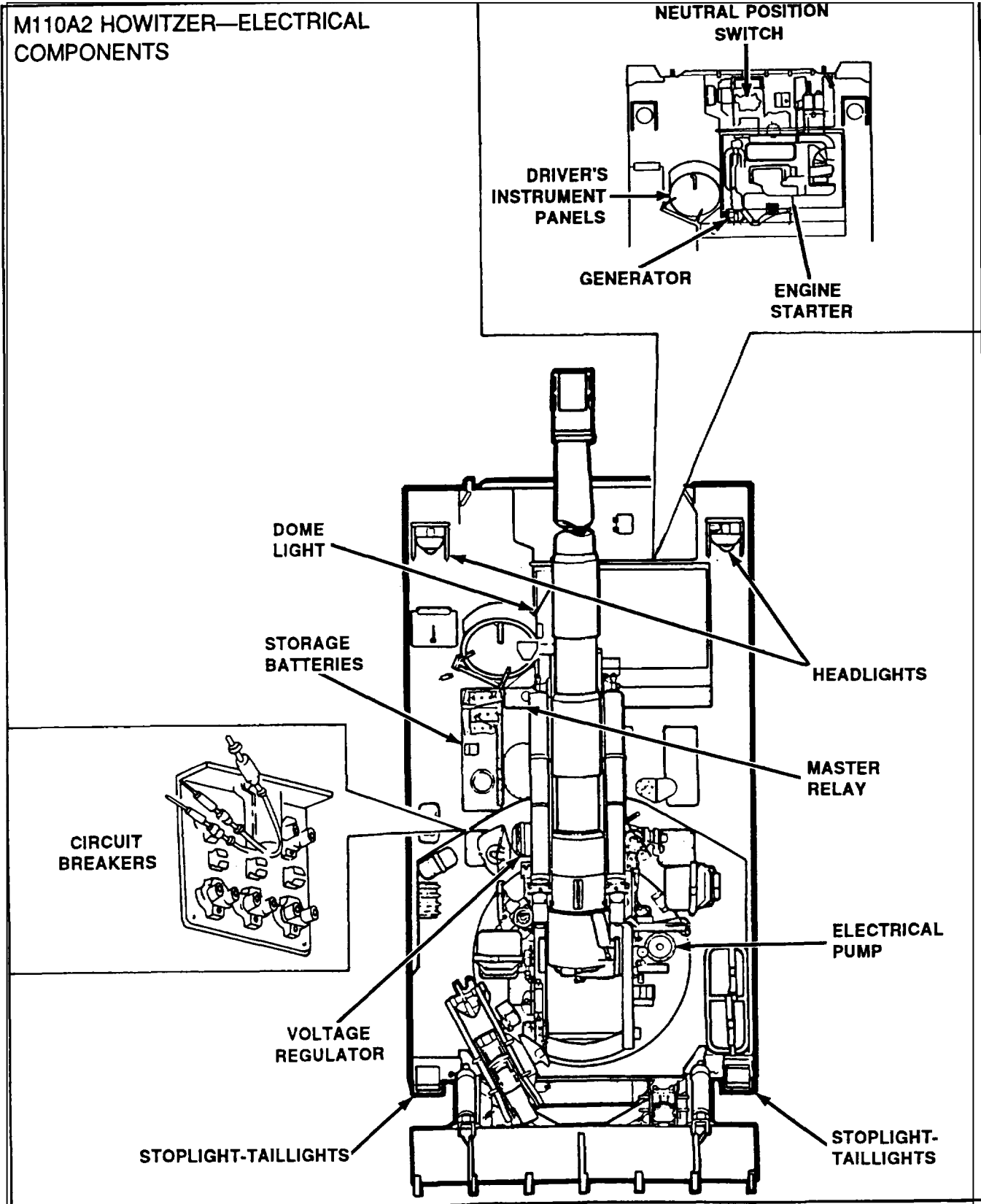
(3) The turret can traverse 30 degrees (533 mils) right or left of vehicle centerline and the cannon can elevate to 65 degrees (1156 mils) above horizontal position.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS. Refer to TM 9-2350-304-10 or TM 9-2350-304-20-2 for location and description of major components not listed below.

ELECTRICAL COMPONENTS

Electrical power is provided by a 24-volt, 300-ampere generator and four storage batteries. Output of the generator is controlled by a solid state voltage regulator. A master relay regulates battery power. An electric pump powers the hydraulic system. Electrical components are controlled by switches located in the driver's compartment. Leads and wiring harnesses distribute current to all electrical components. A slave receptacle allows connection of the vehicle electrical system to another power source. Electrical components are connected by wiring harnesses, electrical leads, and circuit breakers.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (CONT).



- a. *Generator.* The 300-ampere, 24-volt dc generator operates whenever the engine is running. It provides electrical power to recharge the batteries and operate the vehicle.
- b. *Batteries.* Four 12-volt batteries are connected in series-parallel to produce 24 volts, and to provide electrical power to start and operate the vehicle.
- c. *Master relay.* The batteries transmit power through contacts in the master relay. When the master switch is on, the master relay is energized and power is available to all circuits in the vehicle.
- d. *Voltage regulator.* The voltage regulator controls the output voltage and current of the generator. It is a solid state unit and is not adjustable. Circuit breakers protect the generator from electrical overload.
- e. *Electric pump.* Hydraulic pressure is provided by an electric pump.
- f. *Starter and solenoid.* The starter is a direct cranking, nonreversible, 24-volt unit. It is actuated by a two-coil starter motor solenoid mounted on the starter.
- g. *Neutral position switch and starter control relay.* The neutral position switch closes when the transmission shift lever is in neutral position. This completes the circuit for the starter control relay to supply battery power to the two starter windings when the start switch is pressed.
- h. *Driver's instrument and switch panels.* The instrument and switch panels contain the switches, indicator lights, and gages required for operation of the vehicle. Refer to TM 9-2350-304-10 for description of the separate items on each panel.
- i. *Vehicle lighting.* The service and infrared headlights are set for high or low beam by the dimmer switch. The two headlights are combination units. Each headlight consists of an incandescent driving lamp, infrared driving lamp, blackout driving lamp, and blackout marker lamp. The taillights are combination units. The right taillight consists of a blackout stoplight and marker light. The left taillight consists of a service taillight, service stoplight, and blackout marker light. The dome light is a standard combination blackout and service light.
- j. *Warning switches and transmitters.* When the brake foot pedal is depressed, the brake warning sensitive switch roller guide is released, causing the switch contacts to close. Closing the switch contacts causes the service stoplight or blackout stoplight to light.
- (1) The engine low oil pressure warning switch opens at 9 to 13 psi (62 to 90 kPa) on increasing pressure. When the switch is closed, a circuit is completed to light the warning light and cause the warning horn to sound.
- (2) The engine oil pressure transmitter is a variable resistance unit. It gives a reading on the engine oil pressure indicator.
- (3) The engine oil temperature warning switch closes at 300 °F to 310 °F (149 °C to 155 °C) on increasing temperature. When the switch is closed, a circuit is completed that causes the warning light to light and the warning horn to sound.
- (4) The transmission oil temperature transmitter is a variable resistance unit. It gives a reading on the transmission oil temperature indicator.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (CONT).

(5) The transmission oil pressure transmitter is a variable resistance unit. It gives a reading on the transmission oil pressure indicator.

(6) The fuel level transmitter is a sparkproof, float-operated variable resistance unit. It gives a reading on the fuel level indicator.

NOTE

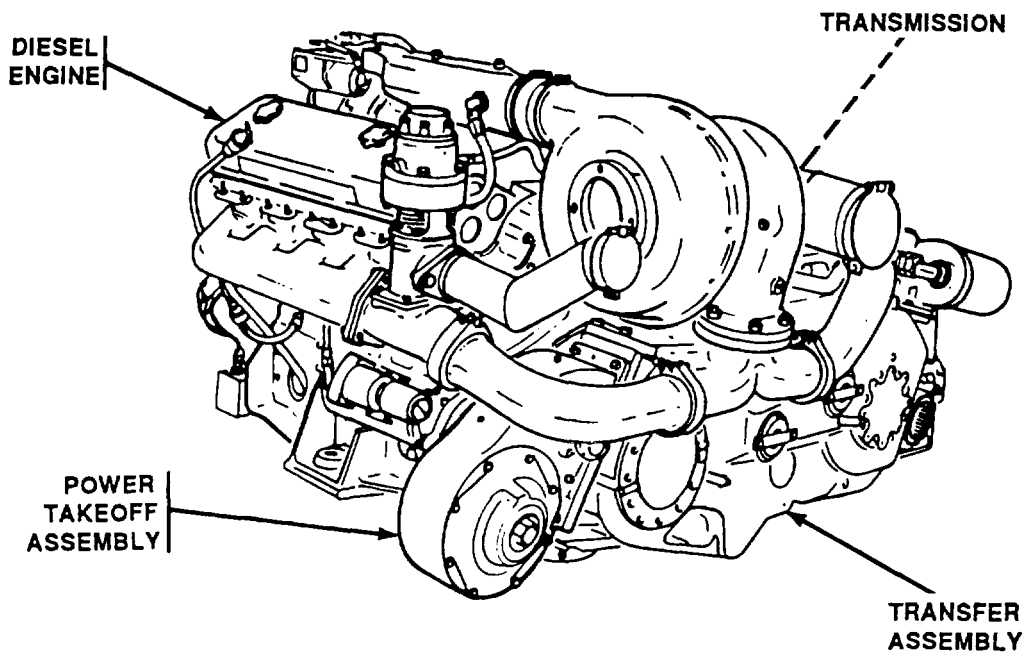
This illustration cannot show all wiring, electrical leads, and circuit breakers on the M110A2 Howitzer. For complete vehicle schematic diagrams, refer to FO-1 and FO-2.

k. *Wiring.* Vehicle components are connected with single wire leads or multiple lead wiring harnesses. All wiring is standard ordnance waterproof cable. Connections are made by waterproof, rubber, single wire quick-disconnect connectors, plug-receptacle connectors, or solderless waterproof terminals.

l. *Leads.* All leads are identified by a marker band attached to the wire and stamped with a circuit number. The socket and pin contacts of the connectors are identified by upper case letters of the alphabet, stamped on the connector insert.

m. *Circuit breakers.* Thermal break, automatic reset, 15A and 20A circuit breakers protect the vehicle components and circuits.

EXHAUST SYSTEM



a. *Engine Model 7083-7395.* Engine exhaust gas is routed through two exhaust manifolds and two exhaust ducts to the turbocharger. The exhaust gas passes through the turbocharger (driving it) and out through the exhaust elbow.

b. *Engine Model 7083-7398.* Exhaust gases are discharged through two exhaust manifolds and ducts to the turbocharger. Gases from the right manifold discharge into the turbocharger turbine. Gases from the left manifold discharge through the turbocharger regulator in the turbocharger.

(1) Turbocharger regulator. The regulator is controlled by the pressure difference between intake and outlet air of the turbocharger blower section. When the outlet pressure is greater than the inlet pressure, the regulator vents part of the exhaust gases through its exhaust pipe to bypass the turbocharger. This reduces the turbocharger speed and output of air, thus preventing turbocharger overspeed.

(2) Exhaust elbow. Exhaust gases are expelled from the turbocharger through an exhaust elbow.

FIRE EXTINGUISHER SYSTEM

The fixed fire extinguisher system is a carbon dioxide gas system with two release handles. When either release handle is pulled, two cylinders discharge carbon dioxide gas through nozzles over the engine and into the powerplant compartment.

FUEL SYSTEM

The engine takes fuel from the cell to the low-pressure fuel filter on the engine. Fuel flows from the low-pressure fuel filter to the engine fuel pump. The fuel pump delivers fuel through a high-pressure fuel filter to the injectors at high pressure. Excess fuel is used to cool the injectors and is returned to the fuel cell through a return line. Fuel that leaks past moving parts in the engine is collected in the powerplant reservoir.

a. *Fuel cells.* A steel fuel cell is part of the hull. It is lined with a two-piece fabric fuel cell filled with foam filler blocks. The fabric fuel cell prevents fuel leakage. The foam filler blocks prevent sloshing of fuel in the cell.

b. *Air box pump and fuel prime solenoid.* The air box pump and fuel prime solenoid valve, when energized, allows the pump to draw fuel from the low-pressure filter and force it through the high-pressure filter to the injectors. This prime and purge system forces out any air trapped in the high-pressure fuel filter and lines.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (CONT).

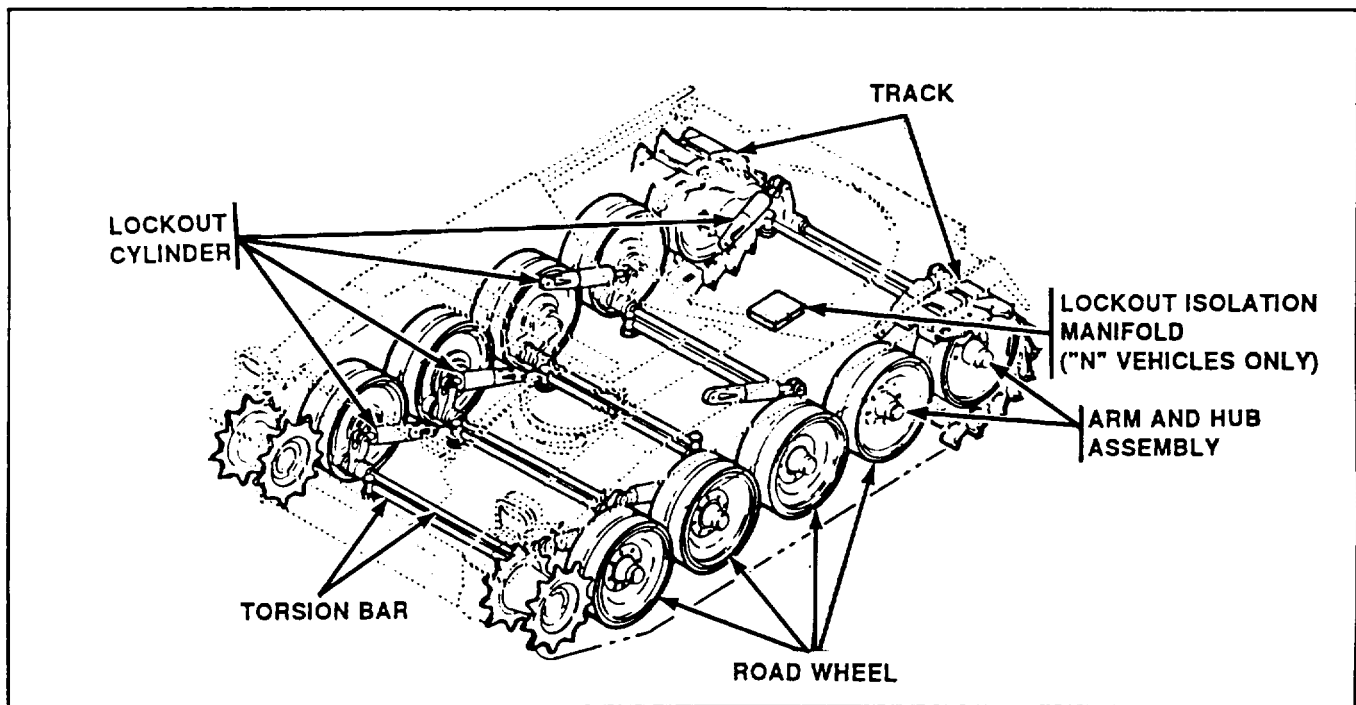
HYDRAULIC SYSTEM

The hydraulic system consists of nine basic subsystems:

- The hydraulic power, suspension lockout, and spade subsystems in the hull.
- The cannon recoil, turret traversing, cannon elevating, loader and rammer traversing, loading and ramming subsystems in the turret.

The function of each subsystem is shown and described in Appendix F. Hydraulic pressure is provided by a rotary pump connected to a drive shaft from the magnetic clutch. A reservoir in the turret supplies hydraulic fluid to the pump. When the engine is running and the magnetic clutch is energized, pressurized hydraulic fluid is provided through a filter to the hull and turret components. Hydraulic pressure can also be provided by an electric pump or a handpump on the turret.

SUSPENSION SYSTEM



The suspension system is a torsion bar, flat-tracked, front-drive type. Ten pairs of road wheels support the vehicle and guide the two track assemblies. Each pair of road wheels is mounted to an arm and hub assembly that is linked to a torsion bar and lockout cylinder (some vehicles only use eight lockout cylinders).

a. *Tracks.* Each track consists of shoes with a steel body, built in grousers and center guide, and removable rubber pad. The offset of the road wheel arms and torsion bars requires 76 track shoes on the right and 75 track shoes on the left.

b. *Road wheels.* Rubber-tired, solid disk road wheels support the vehicle. Each pair of wheels is secured to the hub by 10 hub studs and self-locking nuts. The wheels roll on the tracks, one on either side of the track center guide. The tracks are driven by the final drive sprockets.

c. *Arm and hub assemblies.* Road wheel arm and hub assemblies are sprung by torsion bars and lockout cylinders. The right and left rear arms (trailing idler arms) have an eccentric spindle that permits moving the arm lengthwise to adjust track tension.

d. *Lockout cylinders.* Lockout cylinders serve as shock absorbers and bump stops. They can be locked in position with hydraulic pressure to make a stable platform for firing.

e. *Torsion bars.* Torsion bars absorb road shocks and provide vehicle spring support. Each torsion bar is connected to a road wheel arm at one end and an anchor at the other end.

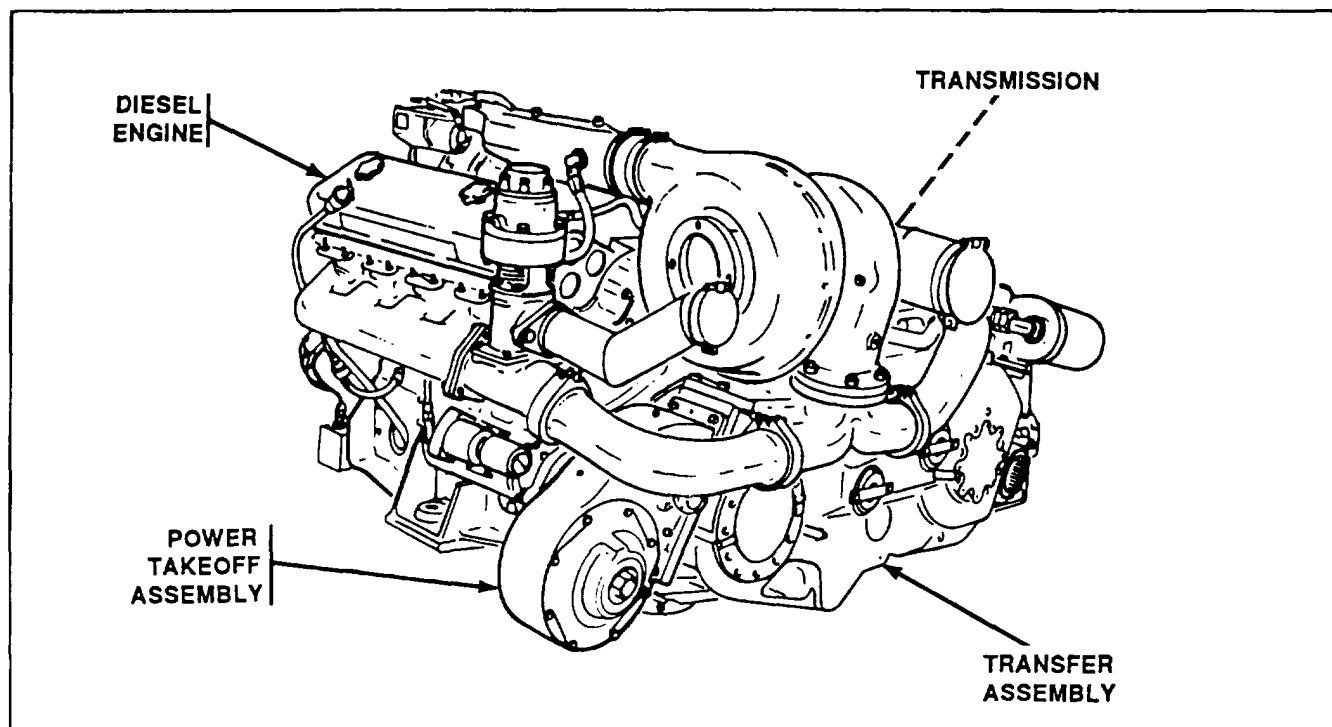
NOTE

"N" vehicles have an improved suspension lockout system. The improved system consists of the same basic components that the "O" vehicles have plus the addition of a lockout isolation manifold and individual hydraulic lines to each lockout cylinder.

f. *Lockout isolation manifold.* The lockout isolation manifold has a shutoff valve for each lockout cylinder. This enables the hydraulic fluid flow to a malfunctioning lockout cylinder to be blocked off.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (CONT).

POWERPLANT



The powerplant consists of a diesel engine, transmission and transfer assembly, and power takeoff assembly. The powerplant is removed and installed as a unit. It must be removed before the engine, transmission, transfer unit, and power takeoff can be separated. Engine power is transferred to the transmission and power takeoff of the transfer assembly. Refer to TM 9-2520-234-35 for a detailed description of the transmission and transfer assembly. Refer to TM 9-2815-202-24P for engine breakdown and repair parts.

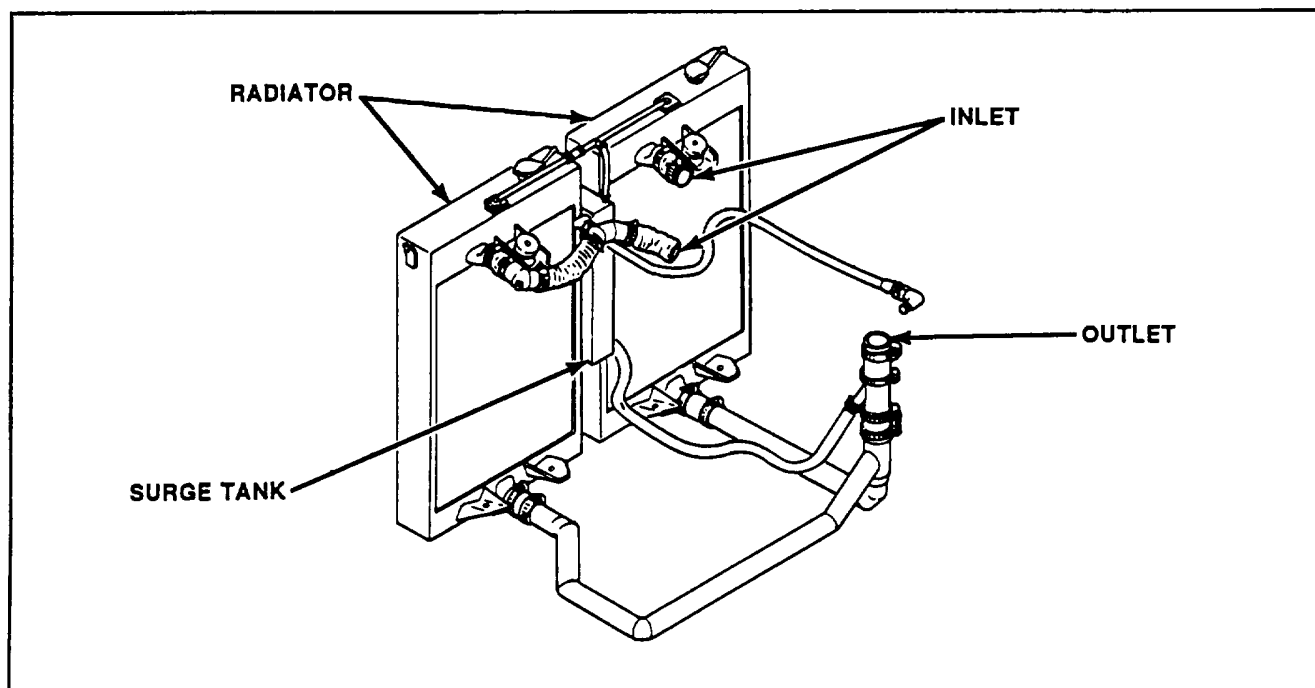
a. Transfer assembly. The transfer assembly transfers engine power to the transmission and power takeoff. The transmission transfers power through the final drives to the tracks. The power takeoff transfers power through the auxiliary drive to the generator, fan, and hydraulic pump.

b. Diesel engine. The engine is a General Motors 8V71T turbocharged 8-cylinder, V-type, 2-cycle diesel. Refer to TM 9-2815-202-34 for a detailed description of the engine.

c. Transmission. The transmission is an Allison XTG-411-2A crossdrive that combines transmission, steering, and braking. Steering is controlled by linkage from the steering bar that moves hydraulic controls in the transmission. Braking is controlled by the service brake pedal and linkage that moves disks in the transmission.

d. Power takeoff assembly. The power takeoff transfers power from the transfer assembly to the auxiliary drive. An idler gear mates with the transfer gear and drives the output gear. The output gear is connected to a drive shaft connected to the auxiliary drive.

COOLING SYSTEM



The engine is liquid cooled by a cooling system with two radiators. The engine and powerplant components are also cooled by exhaust air from the radiator vaneaxial fan. The generator is cooled by an air intake assembly. Drawing air from the driver's compartment, the fan forces air through the generator into the powerplant compartment.

a. Coolant water pump. The coolant water pump takes coolant from the bottom of both radiators and the surge tank and forces it around the oil cooler core into the engine water jackets. At normal operating temperatures, the coolant passes through the thermostats to the radiators and surge tank. Below normal operating temperature, the thermostats close, causing coolant to flow through the bypass tube back to the water pump intake.

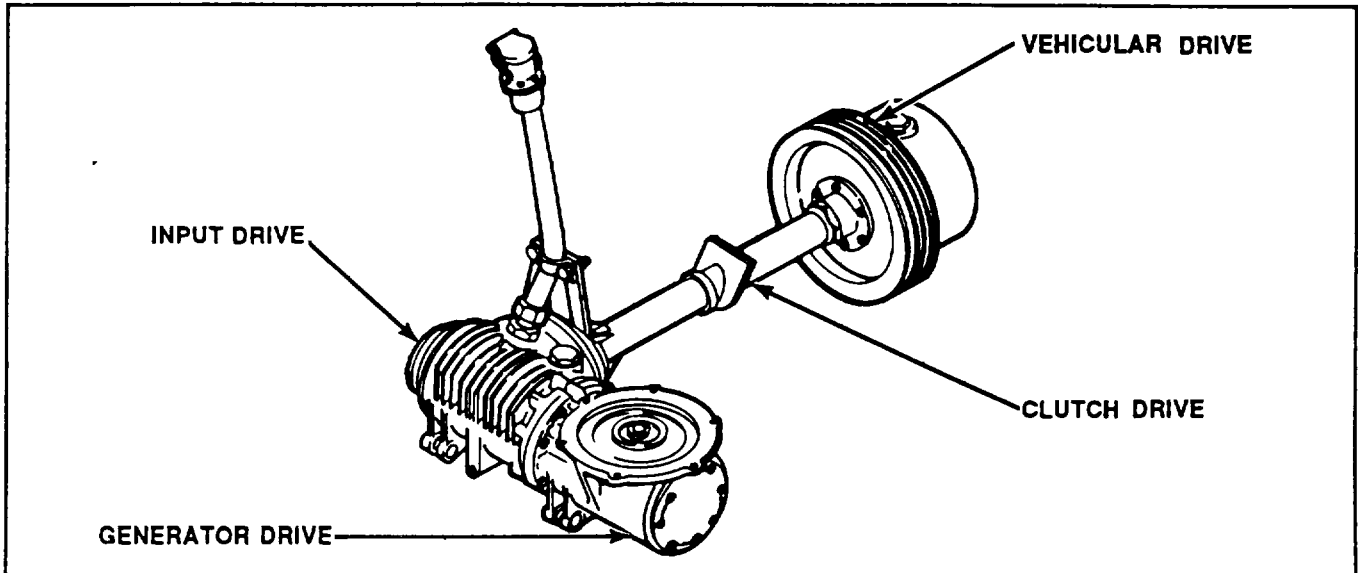
b. Surge tank. Air is collected in the surge tank from the radiators and engine water pump elbow. Air is vented through the surge tank cap at 14 psi (97 kPa). Air is vented through the radiator caps at 20 psi (138 kPa).

c. Aeration detector. An aeration detector, by means of a float-operated switch, senses low coolant level in the cooling system. It lights a warning light in the driver's compartment and sounds the warning horn to alert the driver.

d. Radiator vaneaxial fan. Cooling air is drawn through the fan well cover and forced through two radiators into the powerplant compartment by the radiator vaneaxial fan. Air flows around the powerplant and is exhausted through grilles on the right side of the vehicle.

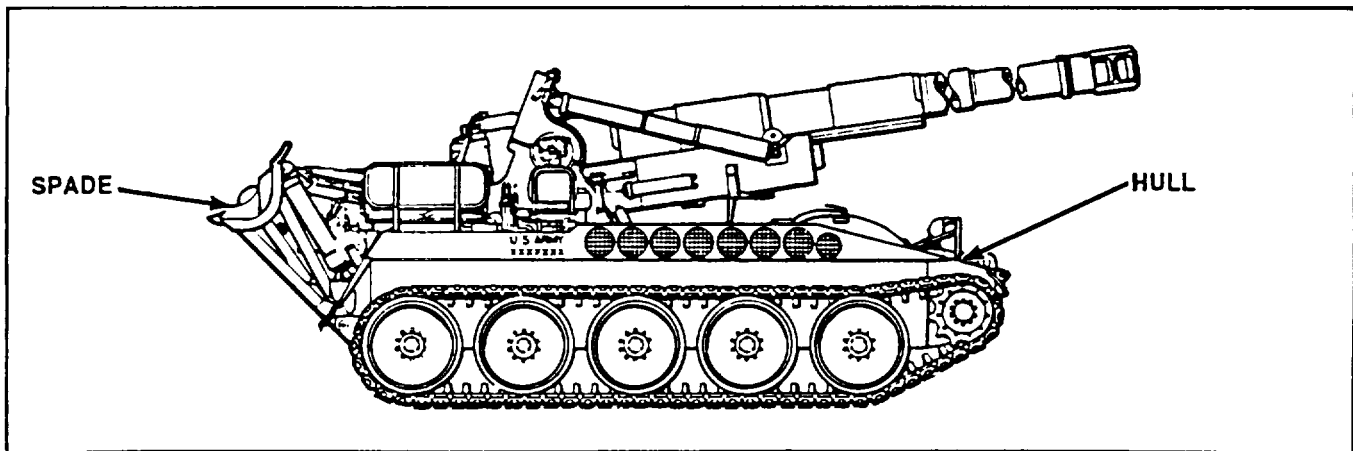
1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (CONT).

AUXILIARY DRIVE ASSEMBLY



The auxiliary drive assembly is a vehicular drive (magnetic clutch), clutch drive, and differential-type gearbox consisting of an input drive and a generator drive. It transfers engine power to the generator, cooling fan, and hydraulic rotary pump. Power is transferred to the generator and fan through the auxiliary drive whenever the engine is running. Power is applied to the hydraulic pump when the magnetic drive clutch is energized.

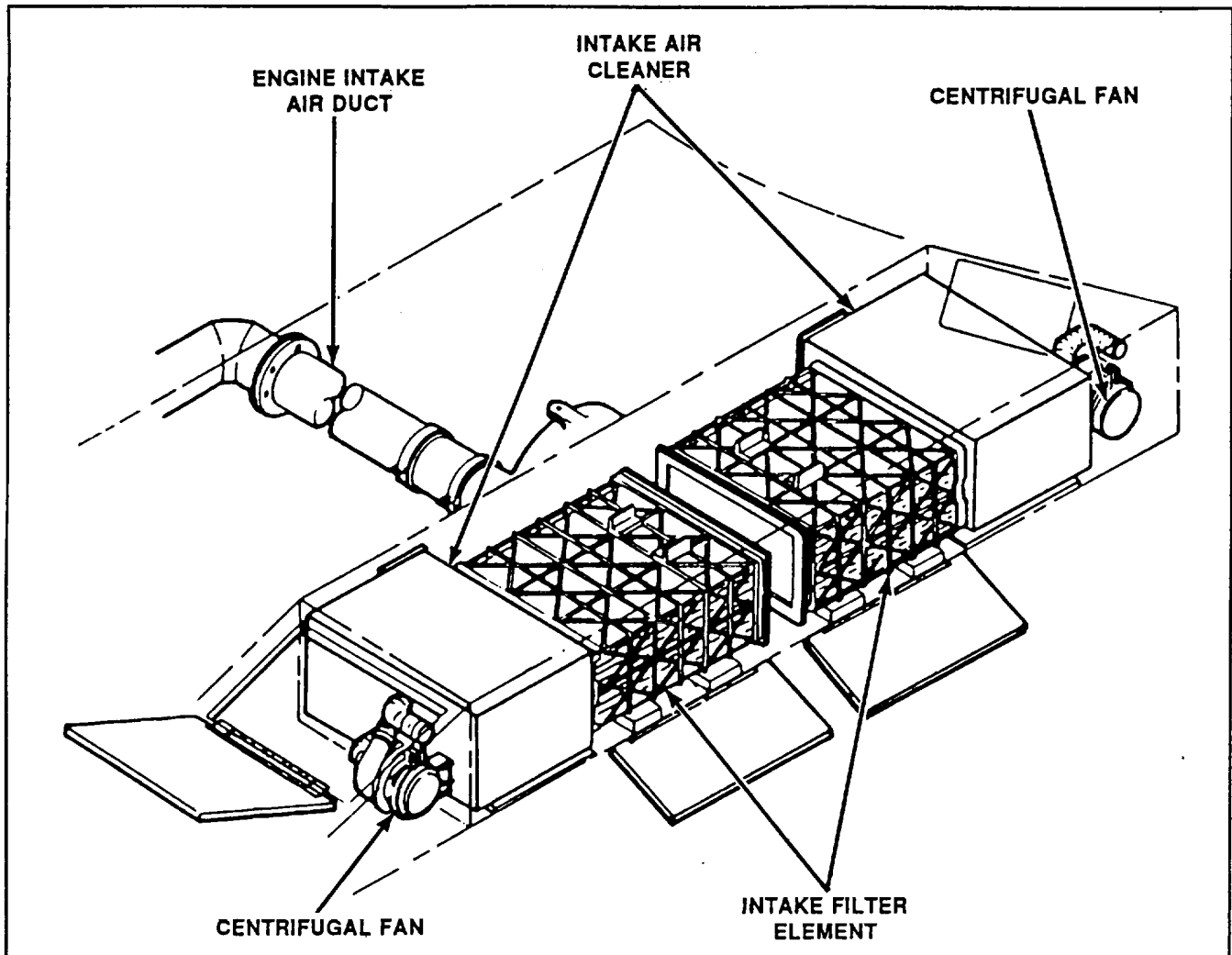
HULL AND SPADE



The hull and spade are welded steel assemblies. Most covers and access plates on the hull are steel. The cupola cover is armored steel plate. The engine deck, transmission deck, and battery compartment cover are aluminum alloy.

The spade is a welded steel structure used to transfer recoil shock to the ground. It is raised and lowered by two double-acting hydraulic cylinders.

AIR INTAKE SYSTEM



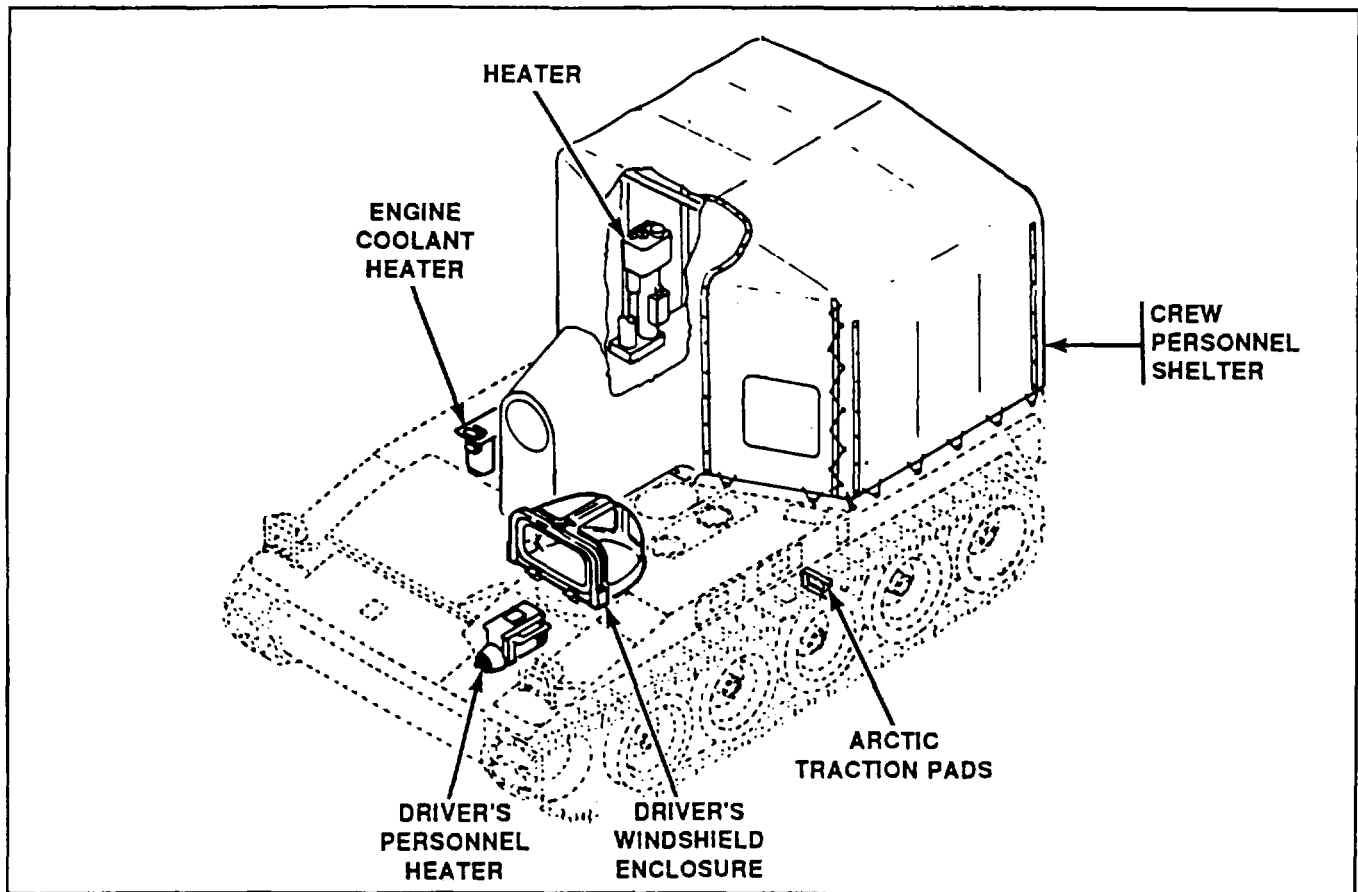
Engine air is filtered by a two-stage process that takes outside air through the battery access door grilles into two intake air cleaners, and then through two filter elements.

a. Intake air cleaners. The intake air cleaners are a system of tubes and deflector vanes that give a swirling motion to the incoming air. This swirling action forces large dust particles against the walls of the tubes. The dust falls into the dust chamber. Centrifugal fans exhaust the dust to the outside air through ports on the left side of the vehicle.

b. Intake filter elements. The intake air then passes through fabric filters that collect the remaining dust. The clean air is routed through engine intake air ducts and the turbocharger to the engine blower and combustion chambers.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (CONT).

SPECIAL PURPOSE KITS



a. *Arctic traction kit.* The arctic traction kit consists of insert pads and nuts that replace the track shoe pads. These arctic traction pads provide improved traction of the vehicle for operation on ice or snow.

b. *Winterization kit.* The winterization kit consists of the heater installation kit, crew personnel shelter kit, personnel vehicular heater, and driver's windshield enclosure kit. These kits protect the vehicle and crew in cold weather to -65°F (-54°C).

(1) The heater installation kit consists of the following components: engine coolant heater to keep the engine and batteries warm; driver's personnel heater to keep the driver's compartment warm; and canvas covers to keep snow and ice out of the hull.

(2) The crew personnel shelter kit consists of a frame and canvas cover to protect the crew.

(3) The personnel vehicular heater kit consists of a heater and ducts to keep the crew personnel shelter warm.

(4) The driver's windshield enclosure kit consists of a cover and windshield to enclose the driver's compartment.

1-10. EQUIPMENT DATA (CONT).

d. Air Intake System.

- (1) Filtering system
 - (a) Type Dry
 - (b) Number of blowers 2
 - (c) Number of filter bags 2

e. Exhaust System.

- (1) Engine model 7083-7398 Dual manifold routed through turbocharger with turbocharger regulator bypass
- (2) Engine model 7083-7395 Dual manifold routed through turbocharger
- (3) Turbocharger regulator (on model 7083-7398 only)
 - (a) Location On engine
 - (b) Controlled by Differential air pressure

f. Cooling System.

- (1) Radiators 2
- (2) Capacity 24.0 US gal. (90.8 l)
- (3) Thermostats 2
- (4) Cooling fan 1

g. Oil Pumps.

- (1) Number 2 pumps
- (2) Type Spur gear, positive displacement

h. Final Drives.

- (1) Manufacturer Allison Division of GMC
- (2) Type Front drive sprocket
- (3) Final drive ratio 5.35:1
- (4) Weight, dry
 - (a) Left 718.0 lb (325.7 kg)
 - (b) Right 633.0 lb (287.1 kg)

i. Auxiliary Drive System.

- (1) Drive shafts 2
- (2) Universal joints
 - (a) Number 4
 - (b) Type Cross
- (3) Clutch Magnetic

j. *Tracks and Suspension.*

- (1) Tracks Steel grouser type
- (2) Number of shoes
 - (a) Left track75
 - (b) Right track76
- (3) Road and trailing idler wheels
 - (a) Number 10 pairs
 - (b) Type Solid-disk rubber-tired
- (4) Suspension..... Torsion bar with shock absorber

k. *Vehicle Hydraulic System.*

- (1) System pressure 1600 - 2400 psi (11,032 - 16,548 kPa)
- (2) Rotary pump
 - (a) Type Gear
 - (b) Maximum operating rpm2,500
 - (c) Output 23.5 gpm at 2000 psi (88 l/min at 13,790 kPa)
 - (d) Displacement3.02 cu in./rev (49.50 cm³/rev)
- (3) Suspension lockout cylinders
 - (a) Number8
 - (b) Type Double-acting dual-purpose
- (4) Spade cylinders
 - (a) Number2
 - (b) Type Double-acting

l. *Driver's Controls and Linkages.*

- (1) Steering control Steering bar and pushrod linkage
- (2) Shifting control..... Hand lever and pushrod linkage
- (3) Throttle control Foot pedal and pushrod linkage, hand throttle and flexible cable to foot pedal
- (4) Brake control Foot pedal and splined shaft hand brake lever
- (5) Suspension lockout cylinder Manually operated hydraulic valve
- (6) Spade control Manually operated hydraulic valve

Section III. PRINCIPLES OF OPERATION

1-11. GENERAL.

a. *M110A2 Howitzer.* The M110A2 Howitzer is a fully-tracked, self-propelled artillery weapon consisting of a low, all welded steel hull and an independently operated turret and cannon. The turret and cannon are mounted on the hull, making them mobile. Power is supplied to the vehicle by a V-8 diesel engine and a gear-steer type transmission. The vehicle can be transported in a large cargo aircraft.

1-11. GENERAL (CONT).

b. *Hydraulic Power.* Separate power and manual elevating and traversing systems work with a hydraulic power subsystem to position the cannon vertically and horizontally. A loader and rammer assembly loads a projectile into the cannon. The manual traversing and elevating systems consist of only mechanical components, while the power systems include mechanical, hydraulic, and electrical components.

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

2-1. COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

2-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

Tools, special tools, and test equipment necessary to maintain the M110A2 self-propelled howitzer are listed in TM 9-2350-304-24P-1, TM 9-2815-202-24P, and the Maintenance Allocation Chart (MAC), appendix B of this manual. For an illustrated list of special tools and equipment, refer to appendix G of this manual.

2-3. REPAIR PARTS.

Repair parts are listed and illustrated in TM 9-2350-304-24P-1 and TM 9-2815-202-24P covering unit maintenance for this equipment.

Section II. SERVICE UPON RECEIPT

2-4. SERVICE UPON RECEIPT OF MATERIEL.

- a. When you receive a vehicle, you must determine if the supplying agency has properly prepared it for service and if it is in condition to perform any mission.
- b. Perform a run-in road test of at least 5 mi (8 km) on all vehicles to completely check their operation.

WARNING

Dry cleaning solvent (SD2) is toxic and flammable. Wear protective goggles and gloves and use only in well-ventilated areas.

- c. Most armament parts received from storage are coated with rust-preventive compound. Clean these parts thoroughly with shop rags or a brush that is saturated with dry cleaning solvent (item 15, appx C). Then lubricate the parts as specified in TM 9-2350-304-10.

NOTE

Component parts of each vehicle should be cleaned separately whenever possible. Although like parts are interchangeable, the parts originally assembled work best together.

- d. Whenever possible, the vehicle crew will help do these services.
- e. Follow all precautions to tag DD Form 1397 (Processing and Deprocessing Record for Shipment, Storage, and Issue of Vehicle and Spare Engines). This tag is in the driver's compartment attached to the steering bar, shift lever, or MASTER switch. For vehicles from administrative storage, check DA forms in vehicle log book to determine vehicle readiness. Fill fuel cell and radiators. Lubricate vehicles as specified in TM 9-2350-304-10.

NOTE

Engine, transmission, and final drives will not be drained unless expected temperatures require different viscosity oil. New engine and transmissions contain lubricant preservative cleaner (item 8, appx C). This lubricant preservative cleaner will be used until the next regularly scheduled oil change. Refer to TM 9-2350-304-10.

- f. Vehicles prepared for shipment by the manufacturer require additional services. Refer to Table 2-1.

2-4. SERVICE UPON RECEIPT OF MATERIEL (CONT).

Table 2-1. SERVICE UPON RECEIPT--M110A2 SELF-PROPELLED HOWITZER (CONT)

LOCATION	ITEM	ACTION	REMARKS
Fan Well	Fan Belts	<ul style="list-style-type: none"> a. Remove fan well deck. b. Adjust tension of fan belts. 	
Engine Compartment	Engine	<ul style="list-style-type: none"> a. Remove engine cover. b. Remove plastic caps from engine crankcase breathers. c. Remove tape from turbocharger regulator exhaust pipe valve and engine exhaust manifold elbow valve. d. Remove plug or tape from engine aspiration air duct opening. e. Connect hose to opening and secure with clamp. f. Remove tape from engine oil filler cap and auxiliary drive fill and level caps. g. Check lubricant level in engine, transmission, and auxiliary drive. h. Check DD Form 1397 for oil viscosity used. i. Install engine cover. 	
Turret	Cannon	<ul style="list-style-type: none"> a. Remove tape from elevating handcrank release lever. b. Remove tape from both traversing handcrank release levers. c. Remove bag and tape from muzzle of cannon and remove cover from muzzle. d. Remove tape from breech mechanism. 	

Table 2-1. SERVICE UPON RECEIPT--M110A2 SELF-PROPELLED HOWITZER (CONT)

LOCATION	ITEM	ACTION	REMARKS
Gun Mount	Travel Lock	<ul style="list-style-type: none"> e. Open breech and remove preservative plug from breech and tube. f. Remove wood block from breech. g. Clean preservative grease from breech and install obturator pad, rings, and disks. h. Loosen cable clamps on cable securing cannon tube to lifting eyes at front of vehicle and remove cable. i. Elevate howitzer with manual elevating handle and remove block under carriage. <p>Lower travel lock on mount and secure lock in hull.</p>	
Turret Mechanism	Recoil	<ul style="list-style-type: none"> a. Remove wire securing recoil retracting valve handle. b. Remove tape and barrier material from recoil, counter recoil, and variable orifice rods. 	
Turret	Loader/Rammer	<ul style="list-style-type: none"> a. Remove tape and barrier material from loader and rammer cylinder piston rod. b. Remove strap securing loader and rammer in stowed position. 	

2-5. CHECKING UNPACKED 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 (IAW) the instructions of DA PAM 738-750.

c. Check to see if the equipment has been modified.

**Section III. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES
(PMCS) AND LUBRICATION INSTRUCTIONS**

2-6. SCOPE. This section details the preventive maintenance checks and services (PMCS) and the lubrication instructions for the hull at the unit level. Preventive maintenance is the care, inspection, and service of the M110A2 Self-Propelled Howitzer to keep it operating and to find troubles before repairs or replacements are needed. Preventive maintenance is performed at crew and unit levels.

a. Crew. All crew PMCS and lubrication tasks must be completed before unit PMCS is begun, refer to TM 9-2350-304-10.

b. Unit. This section tells what preventive maintenance tasks are done by unit maintenance mechanics. Always start at the front and follow it in order to the back.

2-7. INTERVALS.

a. Unit Preventive Maintenance Tasks. PMCS tasks will normally be done semiannually; every 6 months, 2400 kilometers (1500 miles), or 150 hours of operation, whichever comes first.

(1) Annually. Once a year, as specified.

(2) Eighteen (18) months. As specified.

b. Column 1. The "Item No." column contains the item number which shall be used as a source of item numbers for the TM Number Column on the DA Form 2404, Equipment Inspections and Maintenance Worksheet, in recording results of PMCS.

c. Column 2. The "Interval" column lists the specific interval at which the PMCS will be performed. They are as follows:

S - Semiannually

A - Annually

18 - 18 Month

OC - On Condition

d. Column 3. The "Item to Check/Service" column identifies the item to be checked, serviced, or lubricated.

e. Column 4. The "Procedure" column describes the check, service, or lubrication to be performed.

f. Column 5. The "Not Fully Mission Capable If" column contains the criteria which will render the system incapable of performing its primary mission.

NOTE

- All semiannual preventive maintenance tasks are also done during annual maintenance.
- High temperature is more than 100 °F (38 °C). Low temperature is less than 0 °F (-18 °C).
- Salt water is present during fording, sea spray, and morning mist in coastal areas.
- Dust conditions are high when oil level in hubcaps cannot be seen.

Operating the M110A2 Self-Propelled Howitzer in very high or very low temperatures, in dust, mud, or salt water may require additional preventive maintenance.

2-8. GENERAL PROCEDURES

a. General Cleaning Instructions.

WARNING

Dry cleaning solvent (SD2) (item 15, appx C) is toxic and flammable. Wear protective goggles and gloves and use only in well-ventilated areas.

(1) Use dry cleaning solvent (item 15, appx C) to clean grease, oil, or dirt from all metal parts. If a water hose is available, it may be used to take off heavy dirt. If a steam cleaner is available, it may be used to take off any remaining dirt. Make sure steam or water does not enter roadwheel bearings, shock absorbers, optics, hatches, and powerpack openings. After water or steam cleaning, lubricate howitzer. Check all lubricant reservoirs for water droplets. If water is found, drain and refill. Clean grease oil, or dirt from all metal parts with dry cleaning solvent, cleaning compound, or equivalent.

(2) Use mild soap and water to clean or wash parts not made of metal. Rinse thoroughly after cleaning with water and then dry.

(3) Remove rust or dirt from fine-machined surfaces with dry cleaning solvent (item 15, appx C)

and crocus cloth (item 10, appx C), if necessary. Do not use any other material. Be careful not to change the dimensions of parts when rubbing off rust. Coat bare metal surfaces, after cleaning, with CLP (item 8, appx C).

(4) Nameplates, caution plates, and instruction plates may rust quickly. When they are rusty, clean parts and coat them with CLP (item 8, appx C).

b. Precautions. The following precautions will help prevent personal injury or damage to equipment.

(1) Do not spill solvent, fuel, or lubricants on rubber parts. Solvent, fuel, and lubricants may damage rubber parts.

(2) Do not use turbine fuel, diesel fuel, gasoline, paint thinner, or benzene (benzol) for cleaning. These liquids may cause personal injury.

(3) Always wear protective clothing when using solvent. Solvent may dry skin.

CAUTION

Improper use of high pressure water hose or steam cleaner can damage seals and electrical components resulting in equipment failure. Use high pressure water only on suspension system.

(4) Do not clean inside hull with high pressure steam or air. Some parts inside hull may rust or be damaged.

(5) When washing outside of howitzer, close and lock all hatches. Cover fire control with plastic sheets, and cap main gun with muzzle cover to prevent water from getting in cannon tube. Remove covers after washing.

(6) Do not use polishing cloths, liquids, pastes, or other rough cleaners to clean instrument lenses or periscope lenses. Use lens paper (item 29, appx C) to clean lenses. Take off fingerprints, oil, and dirt with lens cleaning compound and lens paper.

2-8. GENERAL PROCEDURES (CONT).

(7) If anything looks wrong and cannot be fixed, report it on DA Form 2404. If something looks dangerous or may cause equipment damage, report it to the maintenance supervisor right away.

c. *Services.* Services performed by the unit maintenance mechanic consist of the following tasks:

(1) *Adjusting.* Make all necessary adjustments and alinements.

(2) *Servicing.* This usually means draining and refilling units with oil and changing or cleaning oil filters, fuel filters, and air cleaners.

(3) *Tightening.* Tighten nuts, bolts, screws, and other types of fasteners with a torque wrench to the value listed in the maintenance manual. Do not over tighten; this may strip threads and break off the part being tightened.

(4) *Repairing.* Repair includes inspecting, cleaning, preserving, adjusting, replacing, welding, riveting, strengthening, and other tasks associated with putting parts in working condition.

(a) Inspect for burrs, cracks, gouges, or nicks.

(b) Replace bent, broken, or stripped bolts, nuts, screws, and washers. Bolts, screws, and nuts may be loose if rust, chipped paint, or bare metal is around them. Tighten loose screws, bolts, and nuts. Replace missing parts.

(c) Look for bad welds where chipped paint, rust, or gaps are present. Have bad welds repaired.

(d) Look at electric wires for cracked, frayed, loose, discolored, or broken insulation.

Replace bad parts and tighten loose clamps and connectors.

NOTE

When tightening fittings, always hold fitting adapter with one wrench and tighten nut with another wrench until snug. Tighten nut around 1/6-turn to 1/3-turn. If fitting leaks, unscrew nut a full turn and retighten it. If still leaking, replace leaking parts.

(e) Look at hose, fluid lines, and tubes for bends, wear, cracks, or leaks. Replace bad parts. Make sure all clamps and fittings are tight. If a fitting leaks, tighten it.

CAUTION

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

NOTE

Fluid leaks affect howitzer status. Learn the following classes of fluid leaks for unit PMCS.

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

Class II - Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked.

Class III - Leakage of fluid great enough to form drops that fall from the item being checked. Class III leaks should be reported to your supervisor or direct support maintenance.

(5) Corrosion. Check for signs of deterioration, rust, unusual cracking, softening, swelling, or breaking on entire M 110A2 Howitzer. Become familiar with the four stages of corrosion listed below, and take the appropriate required maintenance action outlined below.

Stage 1 - Red, black, or white corrosion deposits on surface with etching or pitting. However, base metal is sound.

Stage 2 - Powdered granular or scaled condition. Base metal is sound.

Stage 3 - Surface condition is similar to stage 2 except that metal in the corroded area is unsound and pin holes may be present.

Stage 4 - No metal remaining at point of severest corrosion. Corrosion holes in the area or metal completely worn away.

Stage 1 & 2 - Areas are to be cleaned, primed, and painted IAW TB 43-0213.

Stage 3 & 4 - Try to repair metal. If not economical or repairable, replace with new parts.

d. Modification Work Order (MWO) Application. Check the list of current MWOs in DA PAM 25-30. Do not make any modifications except as ordered by official Army directive.

2-9. SPECIAL PROCEDURES FOR SEMIANNUAL (2400 KILOMETER) PREVENTIVE MAINTENANCE.

Semiannual preventive maintenance includes complete inspection to make sure adjustment, securing, and assembly of all parts of howitzer are right. All cleaning, replacement, lubrication, and protection of parts and/or assemblies must be done as stated for trouble-free operation until the next preventive maintenance is performed.

a. Maintenance Forms and Records. Refer to DA PAM 738-750.

b. Publications. Be sure all needed publications are on hand before starting task.

c. Special Tools. Be sure all special tools are on hand.

d. Supplies. Be sure all parts and supplies are on hand.

e. Tools. Be sure all common tools are on hand.

2-10. TOOLS AND SUPPLIES. The following list identifies special tools and supplies needed to perform PMCS on the M110A2 Self-Propelled Howitzer.

a. Tools:

- General Mechanic's Tool Kit, Automotive (SC 5180-90-CL-N26)
- Sprocket Wear Gage (item 25, appx B)

b. Supplies:

- Baking soda (item 7, appx C)
- Cleaner, lubricant, and preservative (CLP) (item 8, appx C)
- Cloth, crocus (item 10, appx C)
- Dry cleaning solvent (SD2) (item 15, appx C)
- Grease, automotive and artillery (GAA) (item 19, appx C)
- Oil, lubricating (OE/HDO) (item 27, appx C)
- Oil, lubricating (OEA) (item 28, appx C)
- Paper, lens (item 29, appx C)
- Rag, wiping (item 32, appx C)
- Sealant, corrosion preventive (item 34, appx C)

2-10. TOOLS AND SUPPLIES (CONT).

c. Mandatory Replacement Parts. The following table reflects the mandatory replacement parts that must

be replaced during PMCS whether they have failed or not:

Mandatory Replacement Parts

Item No.	Part Number	National Stock Number	Nomenclature	Qty
			Semiannually	
1	5571024	5330-00-290-7860	Filter adapter non-metallic washer	2
2	MS35802-3	2940-00-580-6283	Fluid pressure filter element	2
3	7374386	5330-00-599-2180	Preformed packing	1
4	5703114	2940-00-740-3108	Transmission oil filter element (Part of Fluid Pressure Parts Kit)	1

d. Lubrication. The lubrication procedures identified in the PMCS table are for unit maintenance. Lubrication intervals (on-condition or hard time) are based on normal operation. Lubricate more often during constant use or in severe conditions.

(1) Use only authorized lubricants identified in the lubricant table.

(2) Hydraulic samples must be taken annually by all units. All samples are sent to Army Oil Analysis Program (AOAP) laboratory as prescribed by TB 43-0210 and DA PAM 738750. No other systems are subject to AOAP.

(3) Dispose of used lubricants in accordance with local Standing Operating Procedures (SOP).

(4) For arctic operation, see FM 9-207.

(5) For desert operation, see FM 90-3.

(6) Clean all grease fittings before attaching grease gun.

(7) When using grease gun, operate until grease appears around seals or out of relief

valve and check escaping grease for contamination. If contamination is found, replace the grease.

NOTE

- If no other treatment is directed, coat unprotected metal surfaces with CLP (item 8, appx C) after cleaning.
- Clean around filler necks/drain plugs/openings before servicing to keep dirt from entering system.

(8) Perform a semiannual lubrication as soon as possible after water fording operation.

(9) Type of lubricants used at each point are identified by arrow as follows:



- (10)** Observe the following:
- Never use wrong type of grease.
 - Never use too much lubrication.
 - Always clean grease fittings before lubrication.
 - Always use the Lubrication Instructions.

WARNING

Dry cleaning solvent (SD2) (item 15, appx C) is toxic and flammable. To avoid injury, wear protective goggles and gloves and use only in well-ventilated area. Avoid contact with skin or eyes and do not breathe vapors. Do not use near open fire or excessive heat. The flash point for Type I dry cleaning solvent 100 °F (38 °C), and for Type II is 140 °F (60 °C). If you feel dizzy while using dry cleaning solvent, get fresh air immediately and get medical aid. If contact with eye is made, wash your eyes with water and get medical aid immediately.

(11) *Cleaning.* Use clean rag (item 32, appx C) and dry cleaning solvent (item 15, appx C) to clean grease or oil from all metal surfaces except those exposed to powder fouling. For powder fouled surfaces, use CLP (item 8, appx C).

LUBRICANT TABLE

LUBRICANT/COMPONENTS		REFILL CAPACITY (APPROX)	EXPECTED TEMPERATURE	INTERVALS
Oil, Lubricating, OE/HDO (item 27, appx C)	Engine Crankcase (Add 3 qt (2.8 l) for filters)	Refill 28 qt (26.5 l) Dry 38 qt (35.9 l)	Above 0°F (Above -18°C)	On Condition
Oil, Lubricating, OE/HDO (item 27, appx C)	Auxiliary Drive	Refill 4 qt (3.8 l) Dry 4.5 qt (4.2 l)	Above 0°F (Above -18°C)	Semiannually, Annually
Oil, Lubricating, OE/HDO (item 27, appx C)	Auxiliary Drive Clutch Housing	Refill 0.75 qt (0.35 l) Dry 0.875 qt (0.40 l)	Above 0°F (Above -18°C)	Semiannually

2-10. TOOLS AND SUPPLIES (CONT).

LUBRICANT TABLE (CONT)

LUBRICANT/COMPONENTS		REFILL CAPACITY (APPROX)	EXPECTED TEMPERATURE	INTERVALS
Oil, Lubricating, OE/HDO (item 27, appx C)	Transmission	Refill 12 gal. (45.4 l) Dry 19 gal. (72 l)	Above 0°F (Above -18°C)	On Condition
Oil, Lubricating, OE/HDO (item 27, appx C)	Transmission	Refill 12 gal. (45.4 l) Dry 19 gal. (72 l)	Below +40°F (Below +4°C)	On Condition
Oil, Lubricating, OE/HDO (item 27, appx C)	Final Drive (Left)	13 qt (12.35 l)	Above 0°F (Above -18°C)	Semiannually
Oil, Lubricating, OE/HDO (item 27, appx C)	Final Drive (Right)	7 qt (6.65 l)	Above 0°F (Above -18°C)	Semiannually
Oil, Lubricating, OE/HDO (item 27, appx C)	Road Wheel Hub Bearing and Trailing Idler Hub Bearing ("O" Vehicles)	NA	Above 0°F (Above -18°C)	Semiannually
Oil, Lubricating, OEA (item 28, appx C)	Engine Crankcase (Add 3 qt (2.8 l) for filters)	Refill 28 qt (26.5 l) Dry 38 qt (35.9 l)	Below +40°F (Below +4°C)	

LUBRICANT TABLE (CONT)

LUBRICANT/COMPONENTS		REFILL CAPACITY (APPROX)	EXPECTED TEMPERATURE	INTERVALS
Oil, Lubricating, OEA (item 28, appx C)	Auxiliary Drive	Refill 4 qt (3.8 l) Dry 4.5 qt (4.2 l)	Below +40°F (Below +4°C)	Semiannually, Annually
Oil, Lubricating, OEA (item 28, appx C)	Auxiliary Drive Clutch Housing	Refill 0.75 pt (0.35 l) Dry 0.875 pt (0.40 l)	Below +40°F (Below +4°C)	Semiannually
Oil, Lubricating, OEA (item 28, appx C)	Transmission	Refill 12 gal. (45.4 l) Dry 19 gal. (72 l)	0°F to +40°F (-18°C to +4°C)	On Condition
Oil, Lubricating, OEA (item 28, appx C)	Final Drive (Left)	13 qt (12.35 l)	Below +40°F (Below +40C)	Semiannually
Oil, Lubricating, OEA (item 28, appx C)	Final Drive (Right)	7 qt (6.65 l)	Below +40°F (Below +4°C)	Semiannually
Oil, Lubricating, OEA (item 28, appx C)	Road Wheel Hub Bearing and Trailing Idler Hub Bearing ("O" Vehicles)	NA	Below +40°F (Below +4°C)	Semiannually
Grease Automotive and Artillery (GAA) (item 19, appx C)	Road Wheel Hub Bearing and Trailing Idler Hub Bearing ("N" Vehicle)	NA	0°F to +40°F (-18°C to +4°C)	Semiannually

2-10. TOOLS AND SUPPLIES (CONT).

LUBRICANT TABLE (CONT)

LUBRICANT/COMPONENTS		REFILL CAPACITY (APPROX)	EXPECTED TEMPERATURE	INTERVALS
Grease, Automotive and Artillery (GAA) (item 19, appx C)		NA	All Temperatures	Semiannually, Annually
Dry Cleaning Solvent (item 15, appx C)		NA	All Temperatures	Semiannually, Annually, On Condition

FOR ARCTIC OPERATIONS, REFER TO FM 9-207

(9) *Total Man-Hour Requirements.* Total man-hour requirements required to perform lubrication requirements:

Total Man-Hours	
Interval	Man-Hours
Semiannually	12
Annually	5
18 Month	50
On Condition	2

Table 2-2. Preventive Maintenance Checks and Services with Lubrication Instructions for M110A2 Self-Propelled Howitzer

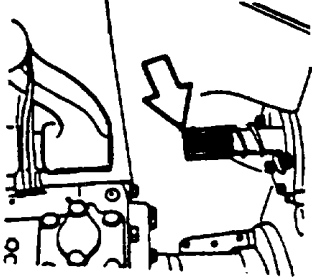
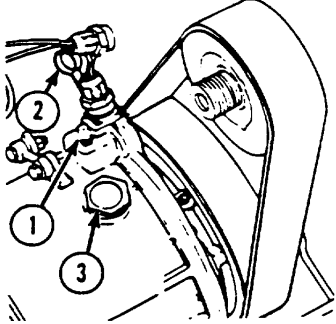
Item No.	Interval	Item To Check/ Service	Procedure	Not Fully Mission Capable If:
1	S	Brake Control Shaft	 <ol style="list-style-type: none"> a. Service at time of powerplant removal. b. Clean with CLP (item 8, appx C) and coat splines with grease (item 19, appx C). 	
2	S	Auxiliary Drive Clutch Housing Breather, Oil Level, and Fill	 <p>Clean breather and check oil level as follows:</p> <div style="border: 1px solid black; padding: 5px; text-align: center; width: fit-content; margin: 10px auto;">WARNING</div> <p>Dry cleaning solvent (SD2) (item 15, appx C) is toxic and flammable. Wear protective goggles and gloves and use only in well-ventilated area.</p> <ol style="list-style-type: none"> a. Remove breather (1), clean with dry cleaning solvent (item 15, appx C) and install. b. Check that oil level is at FULL mark on gage (2). c. Remove fill plug (3) and fill with OE/HDO or OEA (item 27 or 28, appx C) as necessary. d. Clean fill plug (3) with dry cleaning solvent (item 15, appx C) and install. 	

Table 2-2. Preventive Maintenance Checks and Services with Lubrication Instructions for M110A2 Self-Propelled Howitzer (Cont)

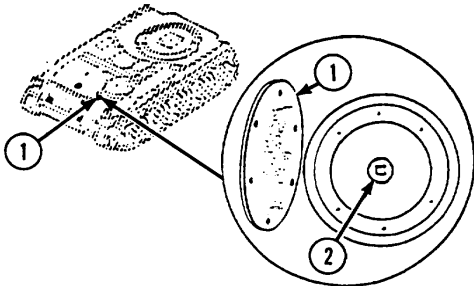
Item No.	Interval	Item To Check/ Service	Procedure	Not Fully Mission Capable If:
3	S	Engine Oil Filters and Crankcase Drain	 <p style="text-align: center;">WARNING</p> <p style="text-align: center;">Oil will be hot after operation.</p> <p style="text-align: center;">NOTE</p> <ul style="list-style-type: none"> • Drain only after operation. • Drain when notified by the Army Oil Analysis Program (AOAP) laboratory. • If AOAP laboratory support is not available, drain every 1500 mi (2414 km), 150 hr, or semiannually, whichever occurs first. <ol style="list-style-type: none"> a. Move vehicle to level ground. b. Remove crankcase drain cover (1) from bottom of hull and remove drain plug (2) from engine. c. Drain oil into a suitable container. <p style="text-align: center;">WARNING</p> <p>Dry cleaning solvent (SD2) (item 15, appx C) is toxic and flammable. Wear protective goggles and gloves and use only in well-ventilated area.</p> <ol style="list-style-type: none"> d. Clean crankcase drain plug (2) with dry cleaning solvent (item 15, appx C) and install drain plug and cover (1). e. Replace both engine oil filter elements semi-annually, every 1500 mi (2414 km), every 150 hr, or when engine oil is drained. 	Class III leaks

Table 2-2. Preventive Maintenance Checks and Services with Lubrication Instructions for M110A2 Self-Propelled Howitzer (Cont)

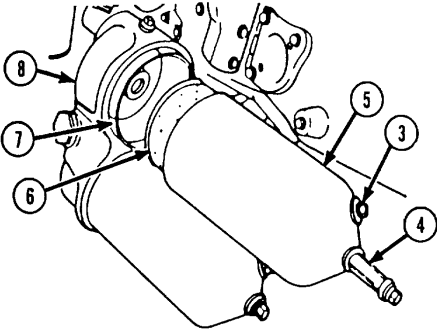
Item No.	Interval	Item To Check/ Service	Procedure	Not Fully Mission Capable If:
3 (cont)		Engine Oil Filters and Crankcase Drain (cont)	<p style="text-align: center;">NOTE</p> <p>The following steps are written for one engine oil filter but apply to both.</p>  <ol style="list-style-type: none"> (1) Remove oil filter drain plug (3) and drain oil into a suitable container. (2) Loosen shoulder bolt (4) and remove shell(5), filter element (6), and non-metallic washer (7). (3) Discard filter element and nonmetallic washer. (4) Clean drain plug (3) and shell (5) with dry cleaning solvent (item 15, appx C). Dry thoroughly and install drain plug in shell. (5) Place new nonmetallic washer (7) in adapter (8) and press into place. (6) Place new filter element in shell (5) and install shell on adapter (8) with drain plug (3) down. (7) Refill engine crankcase. Refer to TM 9-2350-304-10. (8) Tighten shoulder bolt (4) securely and run engine for a few minutes. (9) Shut off engine and check oil level. Add oil as necessary. <p style="text-align: center;">2-23</p>	Class III leaks

Table 2-2. Preventive Maintenance Checks and Services with Lubrication Instructions for M110A2 Self-Propelled Howitzer (Cont)

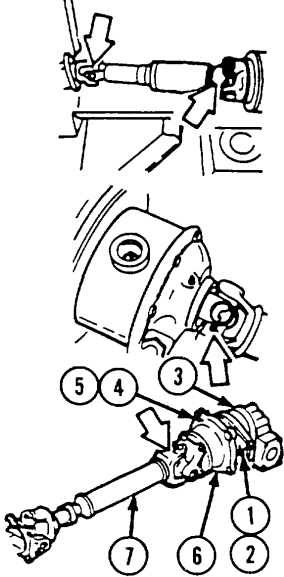
Item No.	Interval	Item To Check/ Service	Procedure	Not Fully Mission Capable If:
4	S	Universal Joints	 <p>NOTE Power plant does not need to be removed to lubricate universal joints.</p> <p>Lubricate four fittings with grease (item 19, appx C). Wipe off extra lubricant.</p> <p>To lube carrier bearing universal joint:</p> <ol style="list-style-type: none"> Remove lockwire (1), two screws (2), and rotary pump (3). Remove lockwire (4) and four screws (5) securing carrier bearing (6). Pull carrier bearing (6) and drive shaft (7) just far enough into turret well to lube fitting with grease (item 19, appx C). Push carrier bearing (6) and rotary pump (3) together. Install four screws (5) and lockwire (4) to carrier bearing (6) and two screws (2) and lockwire (1) to rotary pump (3). 	

Table 2-2. Preventive Maintenance Checks and Services with Lubrication Instructions for M110A2 Self-Propelled Howitzer (Cont)

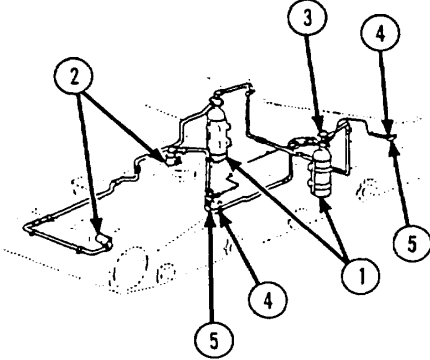
Item No.	Interval	Item To Check/ Service	Procedure	Not Fully Mission Capable If:
5	S	Fixed Fire Extinguisher System	<div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 10px;">WARNING</div> <p>High pressure CO₂ gas is used in this equipment. Keep face and body clear of release valves. Failure to observe safety precautions may result in injury or death.</p> <p>a. Inspect fire extinguisher cylinder data plate to ensure that a hydrostatic test has been performed within the past 12 years. Faulty extinguishers or those beyond the test time limit (12 years) shall be declared unserviceable and replaced.</p> <div style="text-align: center; margin: 10px 0;">  </div> <p>b. Remove CO₂ cylinders (1).</p> <p>c. Weigh cylinders. Replace cylinders if they have lost more than 1 lb (0.45 kg) from their fully charged weight as recorded on inspection tag. If charged weight is within allowable limits, record date and weight on inspection tag.</p> <p>d. Clean and check discharge nozzles (2) and control valve (3).</p> <p>e. Pull discharge handles (4) to ensure that cables and controls operate smoothly.</p> <p>f. Install wire seals (5).</p> <p>g. Install CO₂ cylinders (1).</p> <p style="text-align: center; margin-top: 20px;">2-25</p>	<p>Any cylinders are missing or have lost 1 lb (0.45 kg) or more of their weight.</p> <p>Cable damaged or inoperable.</p> <p>Lead seal is not properly sealed.</p>

Table 2-2. Preventive Maintenance Checks and Services with Lubrication Instructions for M110A2 Self-Propelled Howitzer (Cont)

Item No.	Interval	Item To Check/ Service	Procedure	Not Fully Mission Capable If:
6	S	Fuel System	<p>a. Check all fuel lines and tighten connections if loose or leaking. Replace damaged lines and fittings.</p> <p>b. Replace elements in low-pressure and high-pressure fuel filters. Refer to pages 2-463 and 2-467. Replace fuel filter for driver's personnel heater. Refer to page 2-1013. Replace fuel filter for coolant heater assembly. Refer to page 2-1018.</p>	<p>Any fuel leaks, loose lines or fittings. Any damaged lines.</p> <p>Any damaged or clogged fuel filter.</p>
7	S	Air intake System	<div> </div> <p>a. Check air cleaner door seals (1) for damage. If seals are damaged, notify direct support maintenance.</p> <p>b. Check operation of forward and aft air cleaner blowers. If not operating, troubleshoot air cleaner blower circuit. Refer to page 2-90.</p>	<p>Any door seals are damaged or missing.</p> <p>Either fan is inoperative.</p>

Table 2-2. Preventive Maintenance Checks and Services with Lubrication Instructions for M110A2 Self-Propelled Howitzer (Cont)

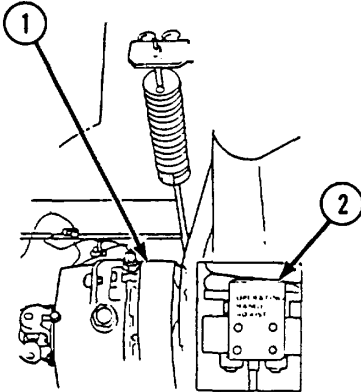
Item No.	Interval	Item To Check/ Service	Procedure	Not Fully Mission Capable If:
8	S	Cooling System	 <p>a. Inspect condition of fan belt (1). Replace fan belt if damaged. Refer to page 2-532.</p> <p>b. Check for proper fan belt tension (2). Adjust fan belt tension if indicator is at or near ADJUST mark. Refer to page 2-532.</p> <p>c. Check and tighten hose clamps, lines, and fittings if loose or leaking. Replace damaged parts.</p> <p>d. Check radiator and surge tank for leaks. Replace if damaged. Refer to pages 2-506 and 2-516.</p> <p>e. Check generator cooling fan for operation. If not operating, troubleshoot generator cooling fan circuit. Refer to page 2-90.</p> <p style="text-align: center;">NOTE</p> <p>When antifreeze tests green, it should not be drained and replaced with new coolant. Add antifreeze extender to the cooling system, 1.0 pt (0.5 l) per 17.0 qt (16.1 l).</p> <p>f. Test coolant for proper antifreeze protection. Refer to TB 750-651.</p>	<p>Fan belt is frayed, missing, or too tight.</p> <p>Fan belt tension is out of adjustment.</p> <p>Any coolant leaks.</p> <p>Generator cooling fan is inoperable.</p> <p>System is not protected to -20°F (-7°C), any coolant leaks, or alkalinity color is not proper.</p>

Table 2-2. Preventive Maintenance Checks and Services with Lubrication Instructions for M110A2 Self-Propelled Howitzer (Cont)

Item No.	Interval	Item To Check/ Service	Procedure	Not Fully Mission Capable If:
9	S	Engine Oil Lines and Fittings	Check and tighten connections if loose or leaking. Replace damaged lines and fittings.	Any lines or connections are loose, or any lines are frayed or broken.
10	S	Exhaust System	Inspect exhaust pipes and elbows for damage. Replace damaged parts. Refer to pages 2-502 and 2-505.	Any exhaust leaks.
11	S	Lockout Cylinders	<div> </div> <p>NOTE</p> <p>Some vehicles do not have lockout cylinders installed on middle roadwheel.</p> <p>Drive vehicle over 4 x 4 x 24-in. (10 x 10 x 61 cm) wood block with suspension locked. Lockout cylinder is damaged if roadwheel arm moves upward as road wheel rides over block. Replace damaged lockout cylinders. Refer to page 2-839.</p> <p>2-28</p>	Class III leaks. Lockout cylinder is damaged or moves upward as wheel rides over block.

Table 2-2. Preventive Maintenance Checks and Services with Lubrication Instructions for M110A2 Self-Propelled Howitzer (Cont)

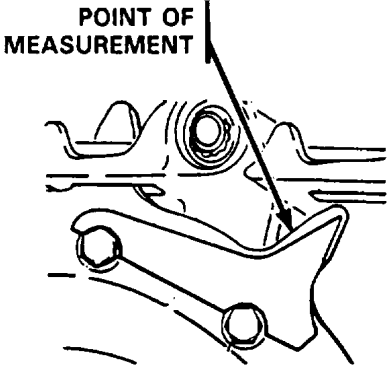
Item No.	Interval	Item To Check/ Service	Procedure	Not Fully Mission Capable If:
12	S	Sprockets	 <p>Using sprocket wear gage, check sprocket wear. If worn past gage limit, reverse or replace sprockets. Refer to page 2-824.</p>	Sprocket worn past limit on both sides.
13	S	Wheels, Arms, and Hubs	Inspect for leaks or damage. Replace leaking seals or gaskets. Replace worn or damaged wheels. Refer to page 2-802. Tighten wheel attaching nuts to 325 ft-lb (440 N•m) dry.	Class III leaks. Any loose attaching wheel nuts or damaged wheels.
14	S	Electrical Wiring	Inspect, tighten, or connect wiring terminals and connections. Tape cables or harnesses that are frayed or have broken insulation. Repair damaged connectors. Refer to page 2-364.	Any broken wiring terminals or frayed wires and broken connector.
15	S	Starting System	Start engine and listen for unusual noise, such as clicking or laboring. If unusual noises are heard, troubleshoot starter motor circuit. Refer to page 2-90.	Engine starter will not engage, or makes any unusual noises.
16	S	Generator or Voltage Control System	Check generator voltage and amperage output. If generator warning light on instrument panel lights, troubleshoot generator charging circuit. Refer to page 2-90.	Generator voltage and amperage output exceeds limits, or generator warning light comes on.

Table 2-2. Preventive Maintenance Checks and Services with Lubrication Instructions for M110A2 Self-Propelled Howitzer (Cont)

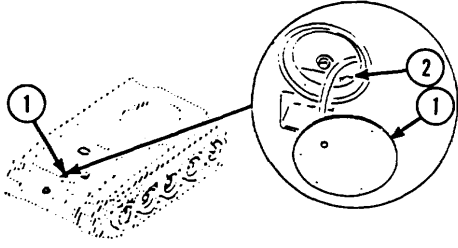
Item No.	Interval	Item To Check/ Service	Procedure	Not Fully Mission Capable If:
17	S	Hydraulic System	<p>FINAL (SEMIANNUAL) ROAD TEST</p> <div style="border: 1px solid black; padding: 2px; text-align: center; margin: 10px 0;">WARNING</div> <p>Hydraulic system is under high pressure. Follow safety precautions to prevent injury. Wipe up any spilled hydraulic fluid.</p> <ol style="list-style-type: none"> a. Clean hydraulic reservoir filter and strainer assembly. b. Start engine and operate hydraulic pumps to pressurize hydraulic system. Check filters, lines, and fittings for leaks. Tighten connections if loose or leaking. Stop engine. c. Check hydraulic hand pump for proper operation. If hand pump will not operate, notify direct support maintenance. 	Any loose lines, fittings, and pump mount bolts. Any leaks or pump will not pressurize hydraulic system.
18	S	Auxiliary Drive Drain and Fill	<div style="text-align: center;">  </div> <div style="border: 1px solid black; padding: 2px; text-align: center; margin: 10px 0;">WARNING</div> <p style="text-align: center;">Oil will be hot after operation.</p> <div style="text-align: center; margin: 10px 0;">NOTE</div> <p style="text-align: center;">Drain only after operation.</p> <ol style="list-style-type: none"> a. Remove engine crankcase drain cover (1) from bottom of hull. b. Remove auxiliary drive drain cap (2) and drain oil into a suitable container. <p style="text-align: center; margin-top: 20px;">2-30</p>	Class III leaks

Table 2-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES WITH LUBRICATION INSTRUCTIONS FOR MI 10A2 SELF-PROPELLED HOWITZER (CONT)

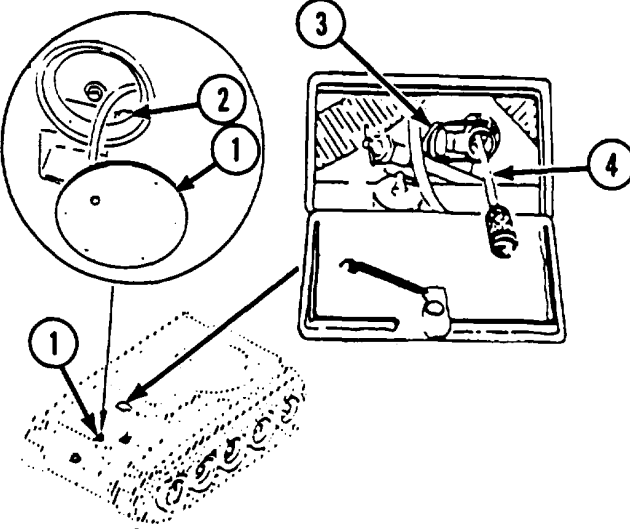
Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
18 (cont)		Auxiliary Drive Drain and Fill (cont)	 <p style="text-align: center;">WARNING</p> <p>Dry cleaning solvent (SD2) (item 15, appx C) is toxic and flammable. Wear protective goggles and gloves and use only in well-ventilated area.</p> <ol style="list-style-type: none"> c. Clean auxiliary drive drain cap (2) using dry cleaning solvent (item 15, appx C) and install drain cap and engine crankcase drain cover (1). d. Open fill cap (3). Fill with OE/HDO or OEA (item 27 or 28, appx C) until oil level is within FULL and ADD marks on gage (4). e. Clean and close fill cap (3). 	

Table 2-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES WITH LUBRICATION INSTRUCTIONS FOR MI 10A2 SELF-PROPELLED HOWITZER (CONT)

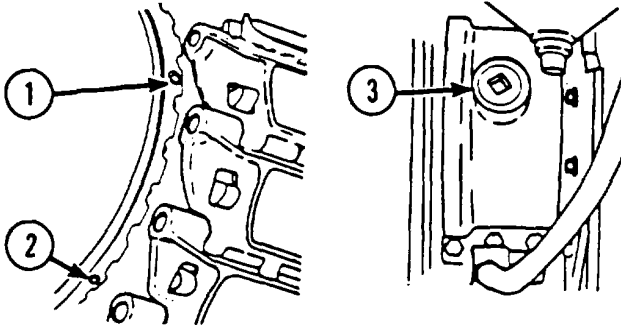
Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
19	S	Final Drive Drain and Fill	 <p style="text-align: center;">WARNING</p> <p style="text-align: center;">Oil will be hot after operation.</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Drain only after operation.</p> <p>a. Remove level plug (1) and drain plug (2) and drain oil into a suitable container.</p> <p style="text-align: center;">WARNING</p> <p>Dry cleaning solvent (SD2) (item 15, appx C) is toxic and flammable. Wear protective goggles and gloves and use only in well-ventilated area.</p> <p>b. Clean drain plug (2) with dry cleaning solvent (item 15, appx C) and install.</p> <p>c. Remove fill plug (3) in final drive saddle (left and right side).</p> <p>d. Slowly add OE/HDO or OEA (item 27 or 28, appx C) through fill plug (3) hole until oil flows from level plug (1) hole.</p> <p>e. Clean level plug (1) and fill plug (3) with dry cleaning solvent (item 15, appx C).</p> <p>f. Install level plug and saddle fill plug and repeat steps for other side.</p>	Class III leaks

Table 2-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES WITH LUBRICATION INSTRUCTIONS FOR MI 10A2 SELF-PROPELLED HOWITZER (CONT)

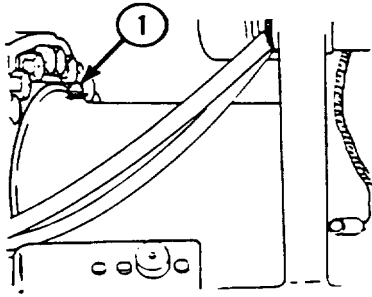
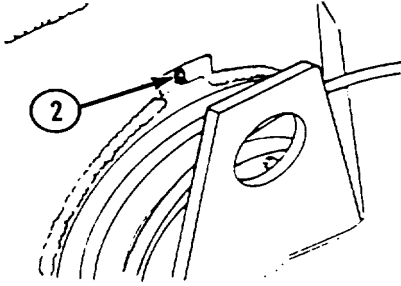
Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
20	S	Final Drive Breathers	<div style="text-align: center;">  <p>LH FINAL DRIVE BREATHER</p>  <p>RH FINAL DRIVE BREATHER</p> <div style="border: 2px solid black; padding: 5px; width: fit-content; margin: 10px auto;">WARNING</div> <ul style="list-style-type: none"> • Brake pedal is spring-loaded. Before working in driver's compartment, block vehicle tracks and release parking brake. • Dry cleaning solvent (SD2) (item 15, appx C) is toxic and flammable. Wear protective goggles and gloves and use only in well-ventilated area. <p style="text-align: center;">NOTE</p> <p>Access to left-hand (LH) final drive breather (1) is through driver's compartment. Access to right-hand (RH) final drive breather (2) is through transmission deck.</p> <ol style="list-style-type: none"> a. Remove breathers (1) and (2) and clean with dry cleaning solvent (item 15, appx C). b. Dip In OE/HDO or OEA (item 27 or 28, appx C) and install. </div>	

Table 2-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES WITH LUBRICATION INSTRUCTIONS FOR MI 10A2 SELF-PROPELLED HOWITZER (CONT)

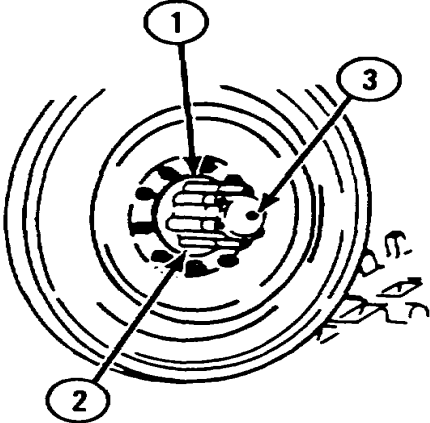
Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
21	S	Road Wheel and Idler Wheel Hub Bearings Drain and Fill	 <p>NOTE Drain every 1500 mi (2414 km) or semiannually, whichever occurs first.</p> <ol style="list-style-type: none"> Rotate wheel until fill plug (1) and drain plug (2) are about vertical. Remove check plug (3) and drain plug (2) and drain oil into a suitable container. <p>WARNING Dry cleaning solvent (SD2) (item 15, appx C) is toxic and flammable. Wear protective goggles and gloves and use only in well-ventilated area.</p> <ol style="list-style-type: none"> Clean drain plug (2) with dry cleaning solvent (item 15, appx c) and install. Clean area and remove fill plug (1). Fill to bottom of level hole with OE/HDO or OEA (item 27 or 28, appx C). Allow time for oil to reach oil cavities. Clean check plug (3) and fill plug (1) with dry cleaning solvent (item 15, appx C) and install. 	Class III leaks or any plugs are missing.

Table 2-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES WITH LUBRICATION INSTRUCTIONS FOR MI 10A2 SELF-PROPELLED HOWITZER (CONT)

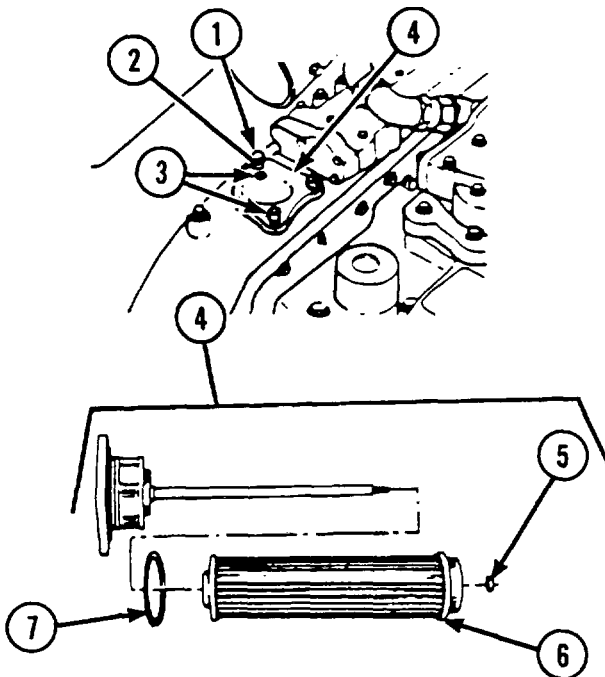
Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
			 <p style="text-align: center;">NOTE</p> <ul style="list-style-type: none"> • Drain when notified by Army Oil Analysis Program (AOAP) laboratory. • If AOAP support is not available, drain every 1500 mi (2414 km), 150 hr, or semiannually, whichever occurs first. If OEA is used, drain every 750 mi (1207 km), 75 hr, or semiannually, whichever occurs first. Drain only after operation. • Replace filter element every 1500 mi (2414 km), 1 50 hr, or semiannually, whichever occurs first, and each time the transmission oil is drained. <ol style="list-style-type: none"> a. Remove three screws (1) and three washers (2). b. Install two screws (1) in jack screw holes (3). c. Tighten screws (1) until filter assembly (4) is loose and remove filter and screws (1). d. Remove nut (5), element (6), and preformed packing (7). Discard element and preformed packing. 	

Table 2-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES WITH LUBRICATION INSTRUCTIONS FOR MI 10A2 SELF-PROPELLED HOWITZER (CONT)

Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
22 (cont)		Transmission Oil Filter (cont)	<p style="text-align: center;">WARNING</p> <p>Dry cleaning solvent (SD2) (item 15, appx C) is toxic and flammable. Wear protective goggles and gloves and use only in well-ventilated area.</p> <p>e. Clean parts with dry cleaning solvent (item 15, appx C) and allow to dry thoroughly.</p> <p>f. Install new preformed packing (7), new element (6), and nut (5).</p> <p>g. Install filter assembly (4), using three washers (2) and three screws (1).</p> <p>h. Run engine and shift transmission several times to check for leaks.</p>	
23	S	Battery Electrical System	<p style="text-align: center;">WARNING</p> <ul style="list-style-type: none"> • Do not smoke, have open flames, or make sparks around the batteries, especially if the caps are off. Batteries can explode and cause injury or death. • Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact battery terminal, a direct short may occur resulting in instant heating, damage to equipment, and injury to personnel. <p style="text-align: center;">NOTE</p> <p>Refer to TM 9-6140-200-14 for more specific details on battery maintenance.</p> <p>a. Inspect battery box for corrosion and debris.</p> <p>b. Clean slave receptacle and coat with corrosion preventive sealant (item 34, appx C).</p> <p>c. Check and record specific gravity of each cell.</p>	<p>Corrosion has made holes in metal battery box.</p> <p>Terminals corroded.</p> <p>If cell is below 1.225 specific gravity.</p>

Table 2-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES WITH LUBRICATION INSTRUCTIONS FOR MI 10A2 SELF-PROPELLED HOWITZER (CONT)

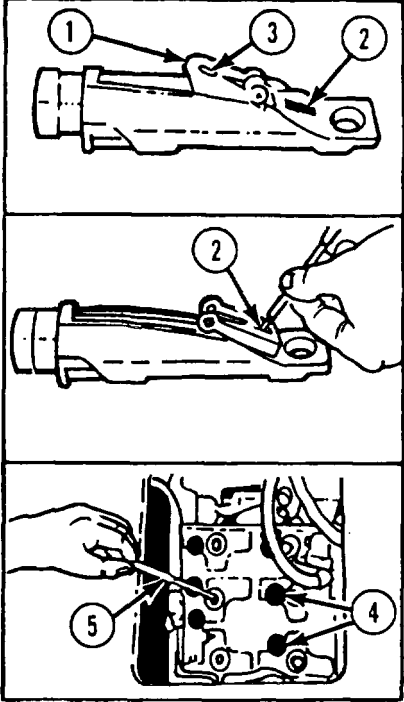
Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
23 (cont)	Battery Electrical System (cont)		<p>a. Inspect battery box for corrosion and debris.</p> <p>b. Clean slave receptacle and coat with corrosion preventive sealant (item 34, appx C).</p> <p>c. Check and record specific gravity of each cell.</p>  <p>(1) Swing plastic cover (1) back on duo-check coolant and battery to clean the measuring surface (2) and the bottom cover (3) with a clean soft cloth. Close cover plate.</p> <p>(2) Remove battery caps (4) from all cells. Repeat steps (3) through (5) for each cell.</p> <p>(3) Use dipstick (5) to obtain a small sample of battery acid.</p> <p>(4) Place a few drops of acid onto measuring surface (2) through opening in cover plate.</p>	<p>Corrosion has made holes in metal battery box.</p> <p>Terminals corroded.</p> <p>If cell is below</p>

Table 2-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES WITH LUBRICATION INSTRUCTIONS FOR MI 10A2 SELF-PROPELLED HOWITZER (CONT)

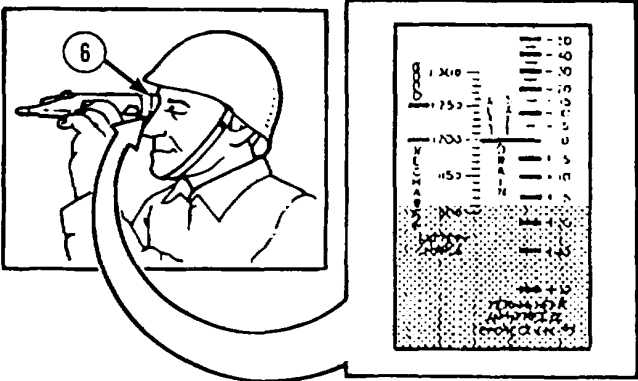
Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
23 (cont)		Battery Electrical System (cont)	 <p>(5) Point the instrument toward any light source (headlight) and look into eyepiece (6) The battery charge is at a point on the left part of the scale where the dividing line between light and dark (shadow) crosses the scale. The illustration shows a reading of 1.120 specific gravity points, which indicates that the battery requires recharging.</p> <p style="text-align: center;">NOTE</p> <p>A little experience will enable you to quickly obtain the best contrast between light and dark portions of the field of view. Tilt the instrument toward the light source until the best results are obtained. If the edge of the shadow is not sharp, the measuring surface was not sufficiently cleaned or dried.</p> <p>d. Inspect battery cables for frays, splits, and looseness.</p>	Cables frayed, split, or loose.

Table 2-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES WITH LUBRICATION INSTRUCTIONS FOR MI 10A2 SELF-PROPELLED HOWITZER (CONT)


Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
24	S	Steering Controls	Drive vehicle at 15 to 20 mph (24 to 32 km/h), holding steering crossbar horizontal. Vehicle should not wander or pull to either side. Turn steering crossbar full right, full left, then back to horizontal position. Steering response should be smooth and positive throughout entire range. Troubleshoot if required. Refer to page 2-43.	Vehicle pulls to one side, wanders, or does not respond when crossbar is in either direction.
25	S	Transmission and Shifting Controls	Drive vehicle, shifting through all forward and reverse ranges. Transmission should shift from one range to another without vibrating, jerking, or sticking. Troubleshoot if required. Refer to page 2-43.	Shifter controls do not respond in any range.
26	S	Brakes	Drive vehicle at 15 to 20 mph (24 to 32 km/h), release accelerator pedal and apply brakes. Vehicle should stop smoothly without pulling to either side. Stop vehicle on a steep downgrade of solid ground or pavement. Set parking brake and shift transmission to neutral. Brake must hold vehicle in place. Repeat with vehicle stopped on a steep upgrade. Troubleshoot if required. Refer to page 2-43.	Brake will not stop the vehicle, brake pedal goes to the floor, or brake will not hold vehicle.
27	S	Acceleration and Top Speed	<div style="text-align: center;">  <p>CAUTION</p> </div> <p>Do not allow engine to exceed 2450 rpm for more than 2 or 3 seconds. Allowing engine to exceed 2450 rpm for more than 2 or 3 seconds may damage engine.</p> <p>Accelerate with full throttle through all forward ranges to top speed (34.0 mph (54.7 km/h)). Engine governed speed under load should reach, but not exceed, 2450 rpm. Listen for unusual noises that could be from loose or damaged parts. If necessary, tighten or repair parts.</p>	

Table 2-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES WITH LUBRICATION INSTRUCTIONS FOR MI 10A2 SELF-PROPELLED HOWITZER (CONT)

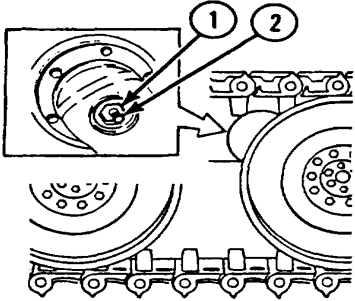
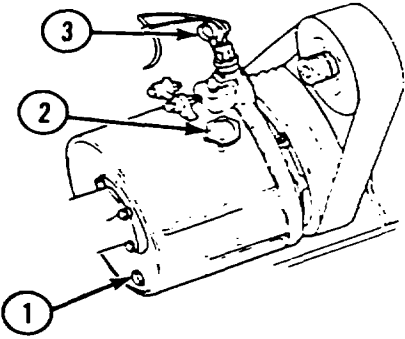
Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
28	A	Torsion Bar Plugs	 <p>Check if torsion bar plugs (1) are fully seated and retaining screws (2) are in place. If necessary, tighten plugs and screws.</p>	
29	A	Tracks	<p>Inspect for damaged or worn track shoes, track pads, or retaining pins. Replace damaged or worn parts. Tighten retaining pin nuts to 180 ft-lb (244 N-m) dry.</p>	
30	A	Driver's and	<p>Repair or replace torn or damaged seat cushion.</p>	
31	A	Auxiliary Drive Clutch Housing Drain and Fill	 <p>NOTE Drain oil from clutch housing</p> <p>a. Remove drain plug (1) and drain into a suitable container.</p> <p>2-40</p>	<p>Class III leaks</p>

Table 2-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES WITH LUBRICATION INSTRUCTIONS FOR MI 10A2 SELF-PROPELLED HOWITZER (CONT)

Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
(31) (cont)		Auxiliary Drive Clutch Housing Drain and Fill (cont)	<p style="text-align: center;">WARNING</p> <p>Dry cleaning solvent (SD2) (item 15, appx C) is toxic and flammable. Wear protective goggles and gloves and use only in well-ventilated area.</p> <p>b. Clean drain plug (1) with dry cleaning solvent (item 15, appx C) and install.</p> <p>c. Remove fill plug (2) and add OE/HDO or OEA (item 27 or 28, appx C) to full mark on gage (3).</p> <p>d. Clean fill plug (2) with dry cleaning solvent (item 15, appx C) and install.</p> <p style="text-align: center;">WARNING</p> <p style="text-align: center;">Oil will be hot after operation.</p> <p style="text-align: center;">NOTE</p> <ul style="list-style-type: none"> • Drain when notified by the Army Oil Analysis Program (AOAP) laboratory. • If AOAP laboratory support is not available, drain every 1500 mi (2414 km), 150 hr, or semiannually, whichever occurs first. If OEA is used, drain every 750 mi (1207 km), 75 hr, or semiannually, whichever occurs first. Drain only after operation. <p>a. Move vehicle to level ground.</p> <p>b. Remove transmission drain access cover (1) from bottom of hull, remove transmission drain plug (2) from transmission, and drain oil into a suitable container.</p> <p style="text-align: center;">2-41</p>	

Table 2-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES WITH LUBRICATION INSTRUCTIONS FOR MI 10A2 SELF-PROPELLED HOWITZER (CONT)

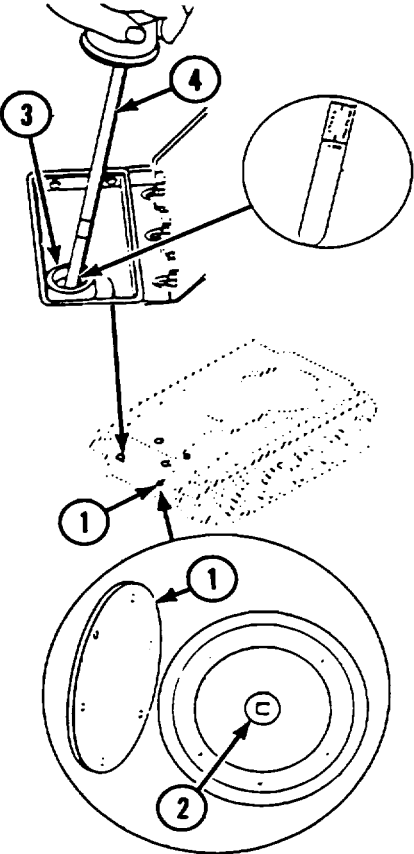

Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
32 (cont)		Transmission Drain and Fill (cont)	 <p>Dry cleaning solvent (SD2) (item 15, appx C) is toxic and flammable. Wear protective goggles and gloves and use only in well-ventilated area.</p> <ul style="list-style-type: none"> c. Clean transmission drain plug (2) with dry cleaning solvent (item 15, appx C) and install drain plug and access cover (1). d. Replace transmission oil filter, refer to item 38. e. Add OEA or OE/HDO (item 27 or 28, appx C) at transmission fill (3) until oil level is within OPERATING RANGE on gage (4). 	

Table 2-2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES WITH LUBRICATION INSTRUCTIONS FOR MI 10A2 SELF-PROPELLED HOWITZER (CONT)

Item No.	Interval	Item to Check/ Service	Procedure	Not Fully Mission Capable If:
32 (cont)		Transmission Drain and Fill (cont)	<p>f. After filling, run engine at 1600 to 1900 rpm with brakes applied and transmission in fourth gear to warm oil.</p> <p>g. Run until oil temperature gage reads 180 °F (82 °C), then run engine at 1200 to 1600 rpm for 1 to 3 minutes with transmission In neutral to stabilize oil temperature between 180 °F (82 °C) and 200 °F (93 °C).</p> <div style="text-align: center;">  <p>CAUTION</p> </div> <p>Do not check oil with engine running. Do not overfill.</p> <p>h. Stop engine and wait 3 to 5 minutes. Check that oil level is within OPERATING RANGE on gage (4). Do not add or drain oil if in this range. Add oil only when below ADD mark.</p>	

Section IV. UNIT TROUBLESHOOTING

2-11. TROUBLESHOOTING INFORMATION.

a. The symptom index can be used as a quick guide to troubleshooting. Common malfunctions are listed in alphabetical order under each major assembly, which occur in MAC order, with a page number reference to the troubleshooting table where a test or inspection and corrective action are provided.

b. The unit troubleshooting table lists the malfunction, the test or inspection indicating the malfunction, and the necessary corrective action.

c. If the malfunction still exists after all listed unit maintenance corrective actions have been performed, notify direct support maintenance.

d. The electrical circuit troubleshooting table lists the procedures necessary to inspect/repair the applicable electrical circuits.

e. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

2-11. TROUBLESHOOTING INFORMATION (CONT).

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Both service blackout (infrared) high beam headlamps are off, or both service blackout (infrared) low beam headlamps are off	2-66
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Table 2-3. UNIT TROUBLESHOOTING (cont)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
ENGINE		
1. ENGINE DOES NOT CRANK.		
Step 1	BATTERY-GENERATOR indicator is in red. Electrical circuits are not operating.	
	a.	Check batteries with tester. Charge batteries, refer to TM 9-6140-200-14; or replace batteries, refer to page 2-624.
	b.	Troubleshoot battery power circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
2-48		

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 2	MASTER IND light is off. Electrical circuits are not operating.	Troubleshoot master switch circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
Step 3	MASTER IND light is on. Electrical circuits are not operating.	<p style="text-align: center;">NOTE</p> <p>Screws holding master relay on bulkhead also ground relay.</p> <ul style="list-style-type: none"> a. Check master relay ground for bad connections. b. Troubleshoot master relay circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
Step 4	MASTER IND light is on. Vehicle lights are not operating and instruments are not operating.	Troubleshoot instrument circuit switch. Refer to Electrical Circuit Symptom Index, page 2-80.
Step 5	Vehicle lights are operating.	<ul style="list-style-type: none"> a. Check neutral position switch on transmission for proper adjustment. Adjust switch if required. Refer to page 2-552. b. Check starter lead for bad connections. c. Troubleshoot starter circuits. Refer to Electrical Circuit Symptom Index, page 2-80.
2. ENGINE CRANKS SLOWLY, AND LIGHTS DIM WHILE CRANKING.		
Step 1	Check batteries with tester. Charge batteries, refer to TM 9-6140-200-14; or replace batteries, refer to page 2-624.	
Step 2	Check BATTERY-GENERATOR indicator. If reading is in red (0- to 22-volt range), troubleshoot battery power circuit. Refer to Electrical Circuit Symptom Index, page 2-80.	
Step 3	Check starter leads for bad connections.	

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
2. ENGINE CRANKS SLOWLY, AND LIGHTS DIM WHILE CRANKING (CONT).	<p>Step 4 Troubleshoot starter circuits for bad wiring and/or damaged components. Refer to Electrical Circuit Symptom Index, page 2-80.</p>	
3. ENGINE CRANKS BUT DOES NOT START, AND ELECTRICAL CIRCUITS ARE OPERATING.	<p>Step 1 Check fuel cell drain plugs and fuel cells for leaks. If leaks exist, notify direct support maintenance.</p> <p>Step 2 Check fuel cap for open vent valve. If closed, set vent valve to OPEN.</p> <p>Step 3 Check fuel lines, quick-disconnects, and fittings for leaks. Tighten loose connections and fittings. Replace damaged parts. Refer to page 2-433, page 2-454, and page 2-457.</p> <p>Step 4 Check for plugged secondary fuel filter Refer to page 2-467.</p> <p>Step 5 Check for plugged primary fuel filter. Refer to page 2-463.</p> <p>Step 6 Check for damaged engine fuel pump and plugged fuel lines. Perform fuel</p>	

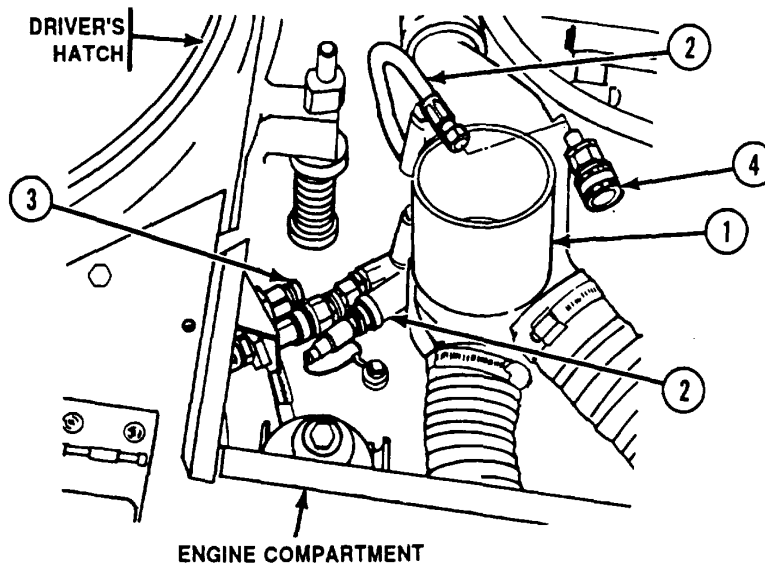


Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
		<ul style="list-style-type: none"> a. Use 1-gal. (4-1) container (1) to catch fuel. b. Remove engine deck assembly for access to engine. Refer to page 2-887. Disconnect fuel return line (2) at quick-disconnect (3). Remove quick-disconnect (check valve) (4) from fuel return line (2) in container (1). c. Start engine and run for 1 minute at 650 rpm. Submerge fuel return line (2) in container (1). Check for air bubbles. If bubbles are present, check for air leaks in low pressure system. Stop engine.
		<p>NOTE</p> <p>Amount of fuel collected should be 0.5 to 0.8 gal. (1.9 to 3.0 l).</p>
		<ul style="list-style-type: none"> d. If fuel collected is less than 0.5 gal. (1.9 l), inspect engine fuel pump and check for plugged fuel lines. e. Connect quick-disconnect (check valve) (4) to fuel return line (2). Connect fuel return line (2) at quick-disconnect (3).
Step 7	Check for damaged fuel pump or plugged fuel lines. Repair as required. Refer to page 2-430, 2-433, 2-454, or 2-457.	
Step 8	For cold weather starts, check purge and prime solenoid valve for operation. If valve does not click, replace valve. Refer to page 2-471.	
Step 9	Check for damaged intake air cleaner and filter element. If damaged, repair as required. Refer to page 2-439.	
Step 10	Check air cleaner centrifugal fans (both forward and aft) for operation. If not operating, check air cleaner blower ground leads for bad connection. If air cleaner blowers still do not operate, troubleshoot air cleaner blower circuit. Refer to Electrical Circuit Symptom Index, page 2-80.	
Step 11	Check for plugged engine intake air duct. Clean, repair, or replace as required. Refer to page 2-449.	
Step 12	Check for plugged turbocharger air intake duct and screen. Clean, repair, or replace as required. Refer to page 2-451 or page 2-452.	

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
4. ENGINE DOES NOT DEVELOP FULL POWER, RUNS UNEVENLY, STALLS, OR LABORS.		
	Step 1 Check brakes for proper adjustment.	Adjust as required. Refer to page 2-775.
	Step 2 Check throttle controls and linkage for proper adjustment.	Adjust as required. Refer to page 2-488 and page 2-491.
	Step 3 Check fuel cap for OPEN vent valve.	If vent valve is CLOSED, open it.
	Step 4 Check for leakage from fuel lines, quick-disconnects, and fittings.	Tighten loose disconnects and fittings. Replace damaged parts. Refer to page 2-433, page 2-454, and page 2-457.
	Step 5 Check for plugged secondary fuel filter or damaged gaskets.	If plugged or damaged, refer to page 2-467.
	Step 6 Check for plugged primary fuel filter or damaged gaskets.	If plugged or damaged, refer to page 2-463.
	Step 7 Check for plugged fuel lines.	Clean or replace as required. Refer to page 2-433, page 2-454, and page 2-457.
	Step 8 Check for damaged intake air cleaner and filter element.	If damaged, repair as required. Refer to page 2-439.

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 9	Check air cleaner centrifugal fans (both forward and aft) for operation.	<ul style="list-style-type: none"> a. If not operating, check air cleaner blower ground leads for bad connection. b. If still not operating, troubleshoot air cleaner blower circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
Step 10	Check for plugged engine intake air duct.	Clean, repair, or replace as required. Refer to page 2-449.
Step 11.	Check for plugged turbocharger air intake duct and screen.	Clean, repair, or replace as required. Refer to page 2-451 or page 2-452.
Step 12	If problem still exists, notify direct support maintenance.	
5	ENGINE OVERHEATS.	
Step 1	Check cooling system for leaks. Check drain cocks, hoses, tubes, manifolds, and fittings for loose connections and damage.	Tighten connections or replace damaged parts as required. Refer to page 2-518.
Step 2	Check radiator exterior for air blockage.	Clean radiators. Refer to page 2-506.
Step 3	Check fan power source (magnetic clutch sheave) for operation.	If magnetic clutch sheave is not rotating when engine is running, notify direct support maintenance.
Step 4	Check fan belts and fan assembly for damage.	Replace fan belts or fan assembly as required. Refer to page 2-532.
Step 5	Check fan belt tensioner for adjustment.	Adjust tensioner as required. Refer to page 2-532.

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
5. ENGINE OVERHEATS (CONT).	Step 6 Check coolant (water) pump for leaks and noise. If problem exists, notify direct support maintenance.	
	Step 7 Remove, inspect, and test thermostats. Refer to page 2-523. Replace thermostats as required. Refer to page 2-523.	
	Step 8 Check exterior of radiators for damage. Replace radiators as required. Refer to page 2-506.	
	Step 9 Flush cooling system. Refer to TM 750-254. Check for faulty engine coolant temperature indicator and transmitter. Troubleshoot engine water (coolant) temperature indicator circuit. Refer to Electrical Circuit Symptom Index, page 2-80.	
	Step 10 If problem still exists, notify direct support maintenance.	
6. EXCESSIVE EXHAUST SMOKE (BLACK SMOKE) AFTER ENGINE WARMUP.	Step 1 Check for plugged engine intake air duct. Clean, repair, or replace as required. Refer to page 2-449.	
	Step 2 Check for plugged turbocharger air intake duct and screen. Clean, repair, or replace as required. Refer to page 2-451 or page 2-452.	
	Step 3 Check for damaged intake air cleaner and filter element. If damaged, repair as required. Refer to page 2-439.	

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 4	Check air cleaner centrifugal fans (both forward and aft) for operation.	<ul style="list-style-type: none"> a. If not operating, check air cleaner blower ground leads for bad connection. b. If still not operating, troubleshoot air cleaner blower circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
Step 5	If problem still exists, notify direct support maintenance.	
7. ENGINE HAS LOW OIL PRESSURE.		
Step 1	Check engine oil hoses and fittings for leaks.	Tighten loose connections and replace hoses or fittings as required. Refer to page 2-454 and page 2-457.
Step 2	Check for plugged or damaged oil filter.	Replace oil filter. Refer to page 2-413.
Step 3	Check for damaged oil gage or transmitter.	Troubleshoot engine oil pressure indicator circuit; refer to Electrical Circuit Symptom Index, page 2-80.
Step 4	If problem still exists, notify direct support maintenance.	
B. ENGINE HAS HIGH OIL PRESSURE.		
Step 1	Check for plugged oil reservoir breather.	Clean or replace breather as required. Refer to page 2-421.
Step 2	Check for bad oil gage or transmitter.	Troubleshoot engine oil pressure indicator circuit. Refer to Electrical Circuit Troubleshooting Index, page 2-80.
Step 3	If problem still exists, notify direct support maintenance.	

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
9. ENGINE CONSUMES TOO MUCH OIL.	Step 1	Check engine oil hoses and fittings for leaks. Tighten loose connections and replace hoses or fittings as required. Refer to page 2-413 and page 2-421.
	Step 2	Check for oil leaks. Check for oil in engine coolant or for blue exhaust smoke after engine warmup. If oil leaks are found, notify direct support maintenance.
	Step 3	If problem still exists, notify direct support maintenance.
10. ENGINE CONSUMES TOO MUCH FUEL.	Step 1	Check for leakage from fuel lines, quick-disconnects, and fittings. Tighten loose disconnects and fittings. Replace damaged parts. Refer to page 2-433, page 2-454, and page 2-457.
	Step 2	Check for dirty intake air cleaner filter elements. Replace intake air cleaner filter element. Refer to page 2-499.
	Step 3	If problem still exists, notify direct support maintenance.
ELECTRICAL-BATTERY POWER		
11. MASTER IND LIGHT IS ON AND ELECTRICAL CIRCUITS ARE NOT OPERATING.	NOTE	
	Screws attach master relay to bulkhead ground relay.	
	Check master relay ground for bad connection.	
	Troubleshoot master relay circuit. Refer to Electrical Circuit Symptom Index, page 2-80.	
2-56		

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
12 ELECTRICAL CIRCUITS ARE NOT OPERATING OR BATTERY-GENERATOR INDICATOR IS IN RED (0- TO 22-VOLT RANGE).	Step 1 If BATTERY-GENERATOR indicator light is in red, troubleshoot BATTERY-GENERATOR Indicator circuit. Refer to Electrical Circuit Symptom Index, page 2-80.	Step 2 Check batteries with tester. Charge batteries, refer to TM 9-6140-200-14; or replace batteries, refer to page 2-624. <ul style="list-style-type: none"> a. Troubleshoot battery power circuit. Refer to Electrical Circuit Symptom Index, page 2-80. b. Troubleshoot master switch circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
ELECTRICAL-GENERATOR		
13. GENERATOR COOLING FAN DOES NOT OPERATE.	<p style="text-align: center;">NOTE</p> <p>To access generator ground lead 3 to check for bad connection, open fuel filter access door in driver's compartment.</p> <p>Check generator cooling ground lead GND for bad connection on bulkhead near fan.</p> <p style="text-align: center;">Troubleshoot generator cooling fan circuit. Refer to Electrical Circuit Symptom Index, page 2-80.</p>	
14. GEN WARNING LIGHT IS OFF WHILE STARTING ENGINE AND BATTERIES DO NOT CHARGE.	<p style="text-align: center;">NOTE</p> <p>To access generator ground lead 3 to check for bad connection, open fuel filter access door in driver's compartment.</p> <p style="text-align: center;">Troubleshoot generator output circuit; refer to Electrical Circuit Symptom Index, page 2-80.</p>	

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>15. GEN WARNING LIGHT IS ON WHILE ENGINE IS RUNNING, OR SYSTEM FAILS GENERATOR-REGULATOR CHARGING CIRCUIT TEST.</p>	<p>NOTE</p>	<p>To access generator ground lead 3 to check for bad connection, open fuel filter access door in driver's compartment.</p>
	<p>Step 1. Check generator voltage regulator ground strap for bad connection.</p>	
	<p>Step 2. Remove aft air cleaner blower access cover for access. Refer to page 2-875. Check slave receptacle ground lead 50 for bad connection.</p>	
	<p>a. Perform generator-regulator charging circuit test. Refer to Electrical Circuit Symptom Index, page 2-80.</p>	
	<p>b. Troubleshoot generator charging circuit. Refer to Electrical Circuit Symptom Index, page 2-80.</p>	
<p>16. BATTERY-GENERATOR INDICATOR IS IN RED AND GENERATOR IS OVERCHARGING.</p>	<p>NOTE</p>	<p>To access generator ground lead 3 to check for bad connection, open fuel filter access door in driver's compartment.</p>
	<p>Step 1. Remove left CO₂ cylinder access cover for access to voltage regulator. Refer to page 2-875.</p>	
	<p>Step 2. Check voltage regulator ground strap for bad connection.</p>	
	<p>a. Replace voltage regulator. Refer to page 2-546.</p>	
	<p>b. Perform generator-regulator charging circuit test. Refer to Electrical Circuit Symptom Index, page 2-80.</p>	

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
ELECTRICAL-INDICATORS		
17. BATTERY-GENERATOR INDICATOR NEEDLE DOES NOT MOVE, IS NOT STEADY, OR DOES NOT READ CORRECTLY.		<p>Check instrument panel ground strap for bad connection near FUEL LEVEL indicator.</p> <p>Troubleshoot battery-generator indicator circuit. Refer to Electrical Circuit Symptom Index, page 2-80.</p>
18. ENGINE OIL PRESS INDICATOR NEEDLE DOES NOT MOVE, IS NOT STEADY, OR DOES NOT READ CORRECTLY.		<p>Troubleshoot engine oil pressure indicator circuit. Refer to Electrical Circuit Symptom Index, page 2-80.</p>
19. ENGINE WATER (COOLANT) TEMP INDICATOR DOES NOT MOVE, IS NOT STEADY, OR DOES NOT READ CORRECTLY.		<p>If needle does not move, open radiator filler cap and feel top of radiator for heat. If radiator is cool, check thermostats. Refer to page 2-523.</p> <p>Troubleshoot engine coolant temperature indicator circuit. Refer to Electrical Circuit Symptom Index, page 2-80.</p>
20. XMSN OIL PRESS INDICATOR NEEDLE DOES NOT MOVE, IS NOT STEADY, OR DOES NOT READ CORRECTLY.		<p>Troubleshoot transmission oil pressure indicator circuit. Refer to Electrical Circuit Symptom Index, page 2-80.</p>
21. XMSN OIL TEMP INDICATOR NEEDLE DOES NOT MOVE, IS NOT STEADY, OR DOES NOT READ CORRECTLY.		<p>Troubleshoot transmission oil temperature indicator circuit. Refer to Electrical Circuit Symptom Index, page 2-80.</p>
22. FUEL LEVEL INDICATOR DOES NOT MOVE, IS NOT STEADY, OR DOES NOT READ CORRECTLY.		<p>Troubleshoot fuel level indicator circuit. Refer to Electrical Circuit Symptom Index, page 2-80.</p>

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
23. SPEEDOMETER OR TACHOMETER NEEDLE DOES NOT MOVE, IS NOT STEADY, OR DOES NOT READ CORRECTLY.	Step 1 Disconnect shaft assembly at speedometer or tachometer. Check shaft core for rotation with engine running.	<ul style="list-style-type: none"> a. If core is rotating, replace speedometer or tachometer. Refer to page 2-1108. b. If core is not rotating, go to step 2 or 3. Connect shaft assembly to speedometer or tachometer.
NOTE		
To access shaft assemblies, remove engine deck assembly, refer to page 2-887; and transmission deck lid assembly, refer to page 2-893.		
	Step 2 Disconnect speedometer shaft assembly from adapter at transmission. Check rotation in adapter with engine running.	<ul style="list-style-type: none"> a. If rotation exists in adapter, go to step 4. b. If no rotation exists in adapter, replace damaged parts. Refer to page 2-1108. Connect speedometer shaft assembly to adapter.
	Step 3 Disconnect tachometer shaft assembly from adapter at engine. Check rotation in adapter with engine running.	If no rotation exists in adapter, notify direct support maintenance.
	Step 4 On engine side of driver's compartment bulkhead, disconnect speedometer shaft assembly or tachometer shaft assembly at adapter. Check shaft core rotation with engine running.	<ul style="list-style-type: none"> a. If core is rotating, go to step 5. b. If core is not rotating, replace tachometer shaft assembly or speedometer shaft assembly between adapter and engine or transmission. Refer to page 2-1108. Connect shaft assembly to adapter.
2-60		

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 5.	On driver's side of driver's compartment bulkhead, disconnect speedometer shaft assembly or tachometer shaft assembly from adapter. Check rotation in adapter with engine running.	<ul style="list-style-type: none"> a. If rotation exists in adapter, replace speedometer shaft assembly or tachometer shaft assembly between adapter and speedometer and tachometer. Refer to page 2-1108. b. If no rotation exists in adapter, replace adapter. Refer to page 2-1108. Connect shaft assembly at adapter.
ELECTRICAL-WARNING LIGHTS AND HORN		
24. MASTER IND WARNING LIGHT IS OFF AND ELECTRICAL CIRCUITS ARE OPERATING.	<p>Check ground at left headlight disconnect for bad connection.</p> <p>Troubleshoot master indicator warning light circuit. Refer to Electrical Circuit Symptom Index, page 2-80.</p>	
25. SUSP LOCKED WARNING LIGHT IS OFF AND SUSPENSION IS IN LOCKED POSITION.	<p>Check warning light ground lead for bad connection.</p> <p>Troubleshoot SUSPENSION LOCKED warning light circuit. Refer to Electrical Circuit Symptom Index, page 2-80.</p>	
26. SUSPENSION LOCKOUT INDICATOR LIGHT IS OFF AND SUSPENSION IS IN LOCKED POSITION.	<p>Check indicator light lead for bad connection.</p> <p>Troubleshoot suspension lockout indicator light circuit. Refer to Electrical Circuit Symptom Index, page 2-80.</p>	
27. SUSP LOCKED WARNING LIGHT AND SUSPENSION LOCKOUT INDICATOR LIGHT DO NOT OPERATE.	<p>Check warning and indicator light ground leads for bad connection.</p> <p>Troubleshoot suspension locked warning light and suspension lockout indicator light circuits. Refer to Electrical Circuit Symptom Index, page 2-80.</p>	

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
28. PRESSURE LINE FILTER INDICATOR LIGHT CIRCUIT DOES NOT OPERATE.	Check pressure line filter indicator light ground for bad connection.	Troubleshoot pressure line filter indicator light circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
29. GEN WARNING LIGHT IS OFF WHILE STARTING ENGINE AND GENERATOR COOLING FAN OPERATES.	Troubleshoot generator warning light circuit. Refer to Electrical Circuit Symptom Index, page 2-80.	
30. WARNING HORN SOUNDS CONTINUOUSLY WHEN ENGINE-XMSN TEMP-PRESS LIGHT IS OFF DURING NORMAL OPERATION.	Troubleshoot warning horn relay. Refer to Electrical Circuit Symptom Index, page 2-80.	
31. WARNING HORN FAILS TO SOUND WHEN ENGINE-XMSN TEMP-PRESS WARNING LIGHT IS ON DURING NORMAL OPERATION.	WARNING	Brake foot pedal is spring-loaded. Block tracks and release parking brake before working on warning horn.
	Step 1. Remove driver's seat. Refer to page 2-911. Check warning horn ground lead for bad connection.	
	Step 2. Troubleshoot warning horn circuit. Refer to Electrical Circuit Symptom Index, page 2-80.	
32. WARNING HORN AND ENGINE-XMSN TEMP-PRESS LIGHT ARE OFF DURING STARTING OPERATION WHILE MASTER AND INST SWITCHES ARE ON.	Troubleshoot warning switch circuit. Refer to Electrical Circuit Symptom Index, page 2-80.	

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
33. ENGINE-XMSN TEMP-PRESS WARNING LIGHT IS OFF WHEN HORN SOUNDS DURING NORMAL OPERATION.		Troubleshoot ENGINE-XMSN TEMP-PRESS warning light circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
34. EXTERNAL ENGINE-XMSN TEMP-PRESS WARNING LIGHT IS OFF AND INTERNAL ENGINE-XMSN TEMP-PRESS WARNING LIGHT IS ON WHEN HORN SOUNDS DURING NORMAL OPERATION OF VEHICLE.		Troubleshoot external ENGINE-XMSN TEMP-PRESS warning light circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
35. WARNING HORN AND ENGINE-XMSN TEMP-PRESS WARNING LIGHT ARE ON CONTINUOUSLY DURING NORMAL OPERATION.		Troubleshoot warning horn and ENGINE-XMSN TEMP-PRESS warning light circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
ELECTRICAL-WARNING HORN AND AERATION DETECTOR		
36. WARNING HORN SOUNDS AND AERATION DETECTOR WARNING LIGHT IS OFF WHILE ALL OTHER CIRCUITS OPERATE.		<p>Step 1. Fill radiators to capacity.</p> <p>Step 2. Troubleshoot aeration detector circuit. Refer to Electrical Circuit Symptom Index, page 2-80.</p>
ELECTRICAL-SERVICE HEADLAMP, TAILLIGHT, AND STOPLIGHT		
37. TAILLIGHT AND BOTH SERVICE HEADLAMPS ARE OFF WHEN VEHICULAR LIGHT SWITCH IS TURNED TO SER DRIVE AND MASTER SWITCH IS ON.		Troubleshoot service headlamp, taillight, and stoplight circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
38. BOTH HIGH BEAM SERVICE HEADLAMPS OPERATE WHILE BOTH LOW BEAM SERVICE HEADLAMPS ARE INOPERATIVE.		Troubleshoot service headlamp circuit (low beam). Refer to Electrical Circuit Symptom Index, page 2-80.

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
39. BOTH LOW BEAM SERVICE HEADLAMPS OPERATE WHILE BOTH HIGH BEAM SERVICE HEADLAMPS ARE INOPERATIVE.		Troubleshoot service headlamp circuit (hi beam). Refer to Electrical Circuit Symptom Index, page 2-80.
40. EITHER LEFT OR RIGHT HIGH BEAM SERVICE HEADLAMP IS INOPERATIVE.		Troubleshoot service headlamp circuit (lead 17). Refer to Electrical Circuit Symptom Index, page 2-80.
41. EITHER LEFT OR RIGHT LOW BEAM SERVICE HEADLAMP IS INOPERATIVE.		Troubleshoot service headlamp circuit (lead 18). Refer to Electrical Circuit Symptom Index, page 2-80.
42. HIGH BEAM INDICATOR LIGHT IS INOPERATIVE.		Troubleshoot HI BEAM IND light circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
43. STOPLIGHT IS OFF WHEN BRAKES ARE APPLIED.		<p>Step 1. Check adjustment of brake warning sensitive switch. Refer to page 2-612.</p> <p>Step 2. Troubleshoot left stoplight-taillight circuit. Refer to Electrical Circuit Symptom Index, page 2-80.</p>
ELECTRICAL-TRAILER RECEPTACLE		
44. TRAILER RECEPTACLE DOES NOT PROVIDE POWER FOR AUXILIARY VEHICLE SERVICE LIGHTS AND STOPLIGHT-TAILLIGHT ASSEMBLIES OPERATE NORMALLY.		Troubleshoot trailer receptacle circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
ELECTRICAL-BLACKOUT MARKER		
45. HEADLAMP AND TAILLIGHT BLACKOUT MARKERS ARE OFF WHEN MASTER SWITCH IS ON AND VEHICULAR LIGHT SWITCH IS TURNED TO BO MARKER.		Troubleshoot blackout marker circuit. Refer to Electrical Circuit Symptom Index, page , 2-80.

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
46. TAILLIGHT BLACKOUT MARKER IS OFF AND HEADLAMP BLACKOUT MARKER IS ON.		Troubleshoot taillight blackout marker circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
47. HEADLAMP BLACKOUT MARKER IS OFF AND TAILLIGHT BLACKOUT MARKER IS ON.		Troubleshoot headlamp blackout marker circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
48. BOTH BLACKOUT HEADLIGHT DRIVE LAMPS ARE OFF WHEN MASTER SWITCH IS ON, VEHICULAR LIGHT SWITCH IS TURNED TO BO-DRIVE, AND BO-IR SWITCH IS SET TO BO.		Troubleshoot blackout drive headlamp circuit (vehicular light switch). Refer to Electrical Circuit Symptom Index, page 2-80.
49. EITHER LEFT OR RIGHT BLACKOUT DRIVE HEADLAMP IS INOPERATIVE.		Troubleshoot blackout drive headlamp circuit (headlamp assembly). Refer to Electrical Circuit Symptom Index, page 2-80.
50. BLACKOUT STOPLIGHT IS OFF WHEN BRAKES ARE APPLIED.		<p>Step 1. Check adjustment of brake warning sensitive switch. Refer to page 2-612.</p> <p>Step 2. Troubleshoot blackout stoplight circuit. Refer to Electrical Circuit Symptom Index, page 2-80.</p>
51. TRAILER RECEPTACLE DOES NOT PROVIDE POWER FOR AUXILIARY VEHICLE BLACKOUT LIGHTS.		Troubleshoot trailer receptacle blackout circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
52. HIGH BEAM AND LOW BEAM BLACKOUT (INFRARED) HEADLAMPS AND HI BEAM IND LIGHT ARE OFF WHEN MASTER SWITCH IS ON, VEHICULAR LIGHT SWITCH IS TURNED TO BO-DRIVE, AND BO-IR SWITCH IS SET TO IR.		Troubleshoot service blackout (infrared) headlamp circuit (BO-IR and vehicular light switches). Refer to Electrical Circuit Symptom Index, page 2-80.

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
53. BOTH SERVICE BLACKOUT (INFRARED) HIGH BEAM HEADLAMPS ARE OFF, OR BOTH SERVICE BLACKOUT (INFRARED) LOW BEAM HEADLAMPS ARE OFF.		Troubleshoot service blackout (infrared) headlamp circuit (headlamp dimmer switch). Refer to Electrical Circuit Symptom Index, page 2-80.
54. EITHER LEFT OR RIGHT LOW BEAM SERVICE BLACKOUT (INFRARED) HEADLAMP IS OFF.		Troubleshoot service blackout (infrared) headlamp circuit (lead 515). Refer to Electrical Circuit Symptom Index, page 2-80.
55. EITHER LEFT OR RIGHT HIGH BEAM SERVICE BLACKOUT (INFRARED) HEADLAMP IS OFF.		Troubleshoot service blackout (infrared) headlamp circuit (lead 514). Refer to Electrical Circuit Symptom Index, page 2-80.
ELECTRICAL-LIGHTS		
56. HI BEAM IND LIGHT IS OFF AND SERVICE BLACKOUT (INFRARED) HIGH BEAM HEADLAMPS ARE ON.		Troubleshoot HI BEAM IND light circuit (blackout). Refer to Electrical Circuit Symptom Index, page 2-80.
57. INSTRUMENT (SWITCH) PANEL LIGHT IS OFF AND ALL OTHER LIGHTING SYSTEMS OPERATE NORMALLY.		Troubleshoot instrument (switch) panel light circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
ELECTRICAL-DRIVER'S COMPARTMENT DOME LIGHT		
58. BOTH RED AND WHITE LAMPS ARE NOT OPERATING NORMALLY, OR EITHER RED OR WHITE LAMP IS NOT OPERATING NORMALLY.		Troubleshoot driver's compartment dome light circuit. Refer to Electrical Circuit Symptom Index, page 2-80.

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
ELECTRICAL-UTILITY OUTLET		
59. UTILITY OUTLET DOES NOT PROVIDE POWER FOR AUXILIARY EQUIPMENT.		Troubleshoot utility outlet circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
ELECTRICAL-HYDRAULIC PUMP/PTO CLUTCH CIRCUIT		
60. HULL ROTARY PUMP DOES NOT OPERATE WHEN SYSTEM IS BELOW 1600 PSI (11,032 kPa), TELESCOPE AND ELEVATION QUADRANT LAMPS ARE ON, ENGINE IS RUNNING, AND HYD PUMP/PTO CLUTCH SWITCH IS ON.		Troubleshoot HYD PUMP/PTO CLUTCH switch circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
ELECTRICAL-OIL PUMP MOTOR CIRCUIT		
61. OIL PUMP MOTOR CIRCUIT DOES NOT OPERATE WHEN OIL PUMP MOTOR SWITCH IS ON OR HELD IN OVERRIDE.		Troubleshoot oil pump motor circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
ELECTRICAL-AIR BOX HEATER		
62. AIR BOX HEATER PUMP MOTOR DOES NOT OPERATE WHEN MASTER SWITCH IS ON AND PUMP AND HEATER IGNITER SWITCH IS ON.		Troubleshoot air box heater circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
63. AIR BOX HEATER DOES NOT BECOME WARM.		Troubleshoot air box heater. Refer to Electrical Circuit Symptom Index, page 2-80.
TRANSMISSION		
64. TRANSMISSION CONSUMES TOO MUCH OIL.		Step 1. Check transmission oil level. Add or drain oil to proper level. Refer to the PMCS/lubrication table, page 2-12.

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
64. TRANSMISSION CONSUMES TOO MUCH OIL (CONT).	Step 2. Check all gaskets, joints, and plugs for signs of leakage.	Tighten all plugs and screws as required. Refer to page 2-719 and page 2-721.
	Step 3. Check for blowby on or around powerplant reservoir, indicating excessive vent line pressure.	Notify direct support maintenance if there is excessive vent line pressure.
	Step 4. If problem still exists, notify direct support maintenance.	
65. OIL PRESSURE IS TOO LOW.	Step 1. Check all gaskets, joints, and plugs for signs of leakage.	Tighten all plugs and screws as required. Refer to page 2-719 and page 2-721.
	Step 2. Check for damaged gage and sending unit.	Troubleshoot transmission oil pressure indicator circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
	Step 3. If problem still exists, notify direct support maintenance.	
66. OIL PRESSURE IS TOO HIGH.	Step 1. Check for clogged oil lines.	Clean or replace oil lines as required. Refer to page 2-413 and page 2-421.
	Step 2. Check for damaged gage and sending unit.	Troubleshoot transmission oil pressure indicator circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
	Step 3. If problem still exists, notify direct support maintenance.	

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
67. OIL TEMPERATURE IS TOO HIGH.	Step 1. Check transmission oil level. Add or drain oil to proper level. Refer to the PMCS/lubrication table, page 2-12.	
	Step 2. Check for clogged oil lines.	Clean or replace oil lines as required. Refer to page 2-413 and page 2-421.
	Step 3. Check for damaged gage and sending unit.	Troubleshoot transmission oil temperature circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
	Step 4. If problem still exists, notify direct support maintenance.	
68. VEHICLE DOES NOT STOP PROPERLY.	Step 1. Check for faulty brake adjustment.	Adjust brakes. Refer to page 2-775.
	Step 2. Check for damaged brake components.	Repair or replace damaged brake controls and linkages. Refer to page 2-775.
	Step 3. If problem still exists, notify direct support maintenance.	
69. VEHICLE DOES NOT STEER PROPERLY.	Step 1. Check transmission oil level. Add or drain oil to proper level. Refer to the PMCS/lubrication table, page 2-12.	
	Step 2. Check for unequal track tension.	Adjust track tension. Refer to TM 9-2350-304-10.

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
69. VEHICLE DOES NOT STEER PROPERLY (CONT).	Step 3. Check for damaged suspension components.	<ul style="list-style-type: none"> a. Repair or replace damaged suspension components as required. Refer to page 2-781. b. Adjust, repair, or replace steering controls and linkage. Refer to page 2-834.
	Step 4. If problem still exists, notify direct support maintenance.	
70. VEHICLE DOES NOT SHIFT PROPERLY.	Step 1. Check transmission oil level. Add or drain oil to proper level. Refer to the PMCS/lubrication table, page 2-12.	
	Step 2. Check shift controls and linkage for damaged components.	Adjust, repair, or replace shift controls and linkage as required. Refer to page 2-834.
	Step 3. If problem still exists, notify direct support maintenance.	
TRACKS AND SUSPENSION		
71. VEHICLE DOES NOT STEER PROPERLY OR PULLS TO ONE SIDE.		
	NOTE	
	Avoid driving on a crowned road. Drive close to center of road if possible.	
	Step 1. Check for unequal track tension.	Adjust track tension as required. Refer to TM 9-2350-304-10.
	Step 2. Check for worn drive hub sprocket teeth.	Replace or repair parts as required. Refer to page 2-824.

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	Step 3. Check for damaged final drive. Disconnect track, transmission, and final drive. Turn drive hub sprocket.	If drive hub sprocket is difficult to turn, inspect final drive. Refer to page 2-824.
	Step 4. Check brake adjustment.	Adjust brakes. Refer to page 2-770.
	Step 5. If problem still exists, notify direct support maintenance.	
72.	VEHICLE THROWS TRACK, OR TRACK JUMPS SPROCKET TEETH.	
	Step 1. Inspect drive hub sprocket teeth.	<ul style="list-style-type: none"> a. Adjust tension. Refer to TM 9-2350-304-10. b. Replace worn or damaged parts. Refer to page 2-824.
	Step 2. Check that vehicle is operated properly. Refer to TM 9-2350-304-10 and TM 21-301.	
73.	TRACKS REQUIRE REPEATED ADJUSTMENT.	
	Step 1. Check for proper adjustment of tracks.	Idler wheel eccentric spindle nuts must be torqued to 575 to 600 ft-lb (780 to 814 N-m). Refer to TM 9-2350-304-10.
	Step 2. Inspect tracks, drive hub sprockets, and idler wheel arm and hub.	Replace worn or damaged parts as required. Refer to page 2-818, page 2-824, and page 2-829.
74.	VEHICLE LEANS TO ONE SIDE, OR VEHICLE PITCHES.	<p>Check for broken torsion bar. Refer to TM 9-2350-304-10.</p> <p>Replace broken torsion bars. Refer to page 2-781.</p>
75.	TRACK CENTER GUIDES RIDE ON TOP OF ROADWHEEL.	
	Step 1. Check track tension.	Adjust track tension. Refer to TM 9-2350-304-10.

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
75. TRACK CENTER GUIDES RIDE ON TOP OF ROADWHEEL (CONT).	Step 2. Check for bent roadwheels and arms.	Replace roadwheels and arms as required. Refer to page 2-790 and page 2-796.
76. LOCKOUT CYLINDERS DO NOT LOCK WHEN SUSP LOCKED/UNLOCKED VALVE IS TURNED TO LOCKED.	Step 1. Check lockout cylinder lines and fittings for leaks.	<ul style="list-style-type: none"> a. Tighten loose plugs and fittings. b. Replace worn or damaged parts as required. Refer to page 2-851 and page 2-860.
	Step 2. Check for damaged lockout cylinder.	Replace as required. Refer to page 2-839.
	Step 3. Check for air in lockout system. Cycle SUSP LOCKED/UNLOCKED valve several times to force out air.	If problem still exists, bleed suspension hydraulic system. Refer to TM 9-2350-304-10.
	Step 4. Check for worn or damaged pressure reducer and relief valve assembly.	Replace reducer and/or relief valve assembly as required. Refer to page 2-843.
	Step 5. Check for restriction in hydraulic line or SUSP LOCKED/UNLOCKED valve.	Remove restriction or replace hydraulic line or SUSP LOCKED/UNLOCKED valve. Refer to page 2-843.
	Step 6. Check for low hydraulic pressure in lockout cylinder. Refer to page 2-839.	If hydraulic pressure is low, notify direct support maintenance.

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
		<p>Step 7. On "N" vehicles, check lockout isolation manifold.</p> <ul style="list-style-type: none"> a. If any of the shutoff valves are closed, open them. b. Replace damaged lockout isolation manifold. Refer to page 2-858.
77.	LOCKOUT CYLINDERS DO NOT RELEASE WHEN SUSP LOCKED/UNLOCKED VALVE IS TURNED TO UNLOCKED.	<p>Step 1. Check for damaged lockout cylinder.</p> <p style="padding-left: 40px;">Replace lockout cylinder as required. Refer to page 2-839.</p> <p>Step 2. Check hydraulic return lines and SUSP LOCKED/UNLOCKED valve for damage.</p> <p style="padding-left: 40px;">Replace damaged hydraulic line. Refer to page 2-851 and page 2-860.</p> <p style="padding-left: 40px;">Replace damaged SUSP LOCKED/UNLOCKED valve. Refer to page 2-843.</p>
DRIVER'S CONTROLS AND LINKAGES		
78.	VEHICLE DOES NOT STEER PROPERLY.	<p>Step 1. Check adjustment of steering control rod.</p> <p style="padding-left: 40px;">Adjust steering control rod. Refer to page 2-834.</p> <p>Step 2. Check for damaged steering control rods.</p> <p style="padding-left: 40px;">Repair or replace bent or damaged steering control rods. Refer to page 2-834.</p> <p>Step 3. If problem still exists, notify direct support maintenance.</p>
79.	VEHICLE DOES NOT SHIFT PROPERLY.	<p>Step 1. Check adjustment of shifting control.</p> <p style="padding-left: 40px;">Adjust shifting control linkage. Refer to page 2-749.</p>

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
79. VEHICLE DOES NOT SHIFT PROPERLY (CONT).	Step 2. Check for damaged shifting control linkage components.	Repair or replace bent or damaged shifting control linkage. Refer to page 2-749.
	Step 3. If problem still exists, notify direct support maintenance.	
80. VEHICLE DOES NOT STOP PROPERLY.	Step 1. Check brake adjustment.	Adjust brakes. Refer to page 2-770.
	Step 2. If problem still exists, notify direct support maintenance.	
81. PARKING BRAKE DOES NOT HOLD.	Step 1. Check adjustment of parking brake.	Adjust parking brake linkage. Refer to page 2-768.
	Step 2. If problem still exists, notify direct support maintenance.	
82. HAND THROTTLE DOES NOT MAINTAIN CONSTANT SPEED.	Step 1. Check throttle adjustment.	Adjust throttle linkage. Refer to page 2-491.
	Step 2. If problem still exists, notify direct support maintenance.	
83. ENGINE DOES NOT REACT PROPERLY TO ACCELERATOR PEDAL OR HAND THROTTLE.	Step 1. Check accelerator and hand throttle adjustment.	Adjust accelerator and hand throttle linkages. Refer to page 2-491.
	Step 2. If problem still exists, notify direct support maintenance.	

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
84. ENGINE DOES NOT SHUT DOWN.	Check engine shutdown adjustment.	Adjust or tighten engine shutdown linkage. Refer to page 2-491.
HYDRAULIC SYSTEM		
85. HYDRAULIC SYSTEM PRESSURE IS TOO LOW.	Step 1. Check HYD PUMP/PTO CLUTCH switch.	Set HYD PUMP/PTO CLUTCH switch ON with engine at idle speed.
	Step 2. Check hydraulic system accumulator drain valve.	Close valve if open.
	Step 3. Check hydraulic fluid level.	Fill hydraulic system with proper fluid. Refer to TM 9-2350-304-20-2.
	Step 4. Check for any hydraulic leaks.	Repair hydraulic leaks. Refer to page 2-851, page 2-858, and page 2-860.
	Step 5. Check accumulator and gas bottle for correct charge. Refer to TM 9-2350-304-20-2.	Purge and charge accumulator. Refer to TM 9-2350-304-20-2.
	Step 6. If problem still exists, notify direct support maintenance.	
86. HYDRAULIC PUMP OPERATES MORE THAN NORMAL DURING NO-LOAD CONDITION.	Step 1. Check accumulator and gas bottle for correct charge. Refer to TM 9-2350-304-20-2.	Purge and charge accumulator. Refer to TM 9-2350-304-20-2.
	Step 2. If problem still exists, notify direct support maintenance.	

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
SPADE		
87. SPADE DOES NOT RAISE OR LOWER.	Step 1. With engine running, check that spade cylinder locks are unlocked, HYD PUMP/PTO CLUTCH switch is set ON, and spade hydraulic system shutoff valve is open.	Unlock spade cylinder locks, set HYD PUMP/PTO CLUTCH switch to ON, and open spade hydraulic system shutoff valve.
	Step 2. Check for damaged relief valve.	Replace relief valve. Refer to page 2-947.
	Step 3. Check spade lifting cylinder assembly, lines, and fittings for leaks.	Tighten hydraulic lines and fittings, refer to page 2-941; or replace spade lifting cylinder assembly, refer to page 2-944.
	Step 4. If problem still exists, notify direct support maintenance.	
88. SPADE RAISES OR LOWERS UNEVENLY.	Step 1. Check for damaged relief valve.	Replace relief valve. Refer to page 2-947.
	Step 2. Check spade lifting cylinder assembly for leaks.	If leaking, replace spade lifting cylinder assembly. Refer to page 2-944.
	Step 3. If problem still exists, notify direct support maintenance.	
HEATER INSTALLATION KIT		
89. FUEL FILTER HEATERS DO NOT HEAT.	Check fuel filter heater ground leads for bad connection.	Troubleshoot fuel filter heater circuit. Refer to Electrical Circuit Symptom Index, page 2-80.

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
90. HULL HEATER DOES NOT OPERATE.	Check ground leads on fan and solenoid for bad connection.	Troubleshoot air intake fan and solenoid circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
91. COOLANT HEATER CONTROL BOX LIGHT DOES NOT OPERATE.	Troubleshoot coolant heater control box light circuit. Refer to Electrical Circuit Symptom Index, page 2-80	
92. COOLANT HEATER CONTROL BOX LIGHT DOES NOT LIGHT WHEN PRESS-TESTED.	Check coolant heater ground lead for bad connection.	Troubleshoot coolant heater circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
93. DRIVER'S HEATER CONTROL BOX LIGHT DOES NOT LIGHT WHEN PRESS-TESTED.	Troubleshoot driver's heater control box light circuit. Refer to Electrical Circuit Symptom Index, page 2-80	
94. FUEL PUMP DOES NOT OPERATE AND DRIVER'S HEATER CONTROL BOX LIGHT IS ON.	Troubleshoot driver's heater fuel pump circuit. Refer to Electrical Circuit Symptom Index, page 2-80.	
95. DRIVER'S HEATER DOES NOT OPERATE AND DRIVER'S HEATER CONTROL BOX LIGHT IS ON.	Check driver's heater ground for bad connection.	Troubleshoot driver's heater circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
96. PYROMETER INDICATES NO TEMPERATURE GAIN AND AIR BOX HEATER OPERATES NORMALLY.	Troubleshoot pyrometer circuit. Refer to Electrical Circuit Symptom Index, page 2-80.	

2-11. TROUBLESHOOTING INFORMATION (CONT).

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
DRIVER'S WINDSHIELD ENCLOSURE KIT		
97. WINDSHIELD WIPER MOTOR DOES NOT OPERATE AND WINDSHIELD WIPER SWITCH IS ON.	Check windshield wiper motor ground lead for bad connection.	Troubleshoot windshield wiper circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
98. WINDSHIELD DEFROSTER DOES NOT OPERATE AND WINDSHIELD DEFROSTER SWITCH IS ON.	Check windshield defroster ground lead for bad connection.	Troubleshoot windshield defroster circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
COOLANT VEHICULAR HEATER		
99. CREW PERSONNEL HEATER CONTROL BOX LIGHT DOES NOT LIGHT WHEN PRESSTESTED.	Troubleshoot crew personnel heater control box light circuit. Refer to Electrical Circuit Symptom Index, page 2-80.	
100. CREW PERSONNEL HEATER DOES NOT OPERATE AND CREW PERSONNEL HEATER CONTROL BOX LIGHT IS ON.	Step 1. Check fuel tank fuel' level.	Fill fuel tank. Refer to TM 9-2350-304-10.
	Step 2. Check crew personnel heater ground lead for bad connection.	Troubleshoot crew personnel heater circuit. Refer to Electrical Circuit Symptom Index, page 2-80.

Table 2-3. UNIT TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
CREW PERSONNEL SHELTER KIT		
101. ANY DOME LIGHT DOES NOT OPERATE.		Troubleshoot crew personnel shelter kit dome light circuit. Refer to Electrical Circuit Symptom Index, page 2-80.
FIXED FIRE EXTINGUISHER		
102. SYSTEM DOES NOT DISCHARGE.		Step 1. Check weight of fire extinguisher. If needed, charge fire extinguisher. Refer to page 2-114.
		Step 2. Check CO ₂ cylinder control valve.
		a. Remove left and right CO ₂ access covers. Refer to page 2-875.
		b. Hold CO ₂ cylinder control valve (1) and remove safety pin (2).
		c. Pull release harness (3). Check for internal binding. If binding, replace CO ₂ cylinder control valve. Refer to page 2-875. Firing pin (4) should extend about 5/32 in. (4 mm). If not, notify direct support maintenance.
		d. Reset CO ₂ cylinder control valve (1) by rotating control handle (5) in direction of reset arrow on cover (6). Rotate control handle (5) until safety pin hole aligns with safety pin hole in cylinder control valve (1). Install safety pin (2).

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING.

- a. The electrical circuit troubleshooting table lists the procedures necessary to inspect/repair applicable electrical circuits.
- b. If you have a problem with an electrical circuit which is not covered in the steps below, notify your supervisor.

ELECTRICAL CIRCUIT SYMPTOM INDEX

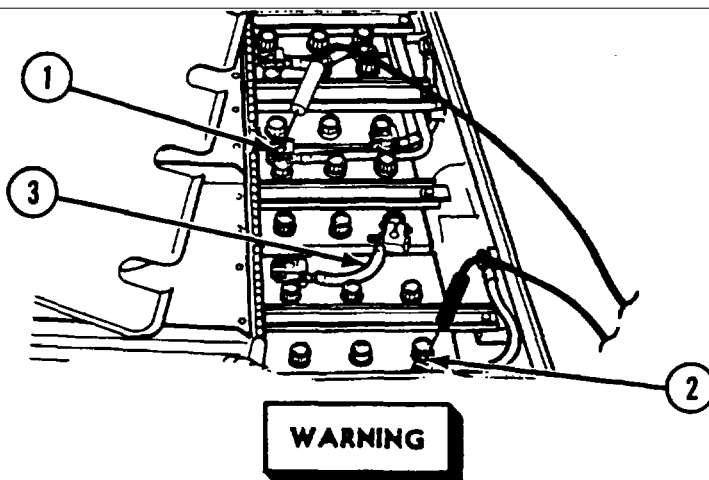
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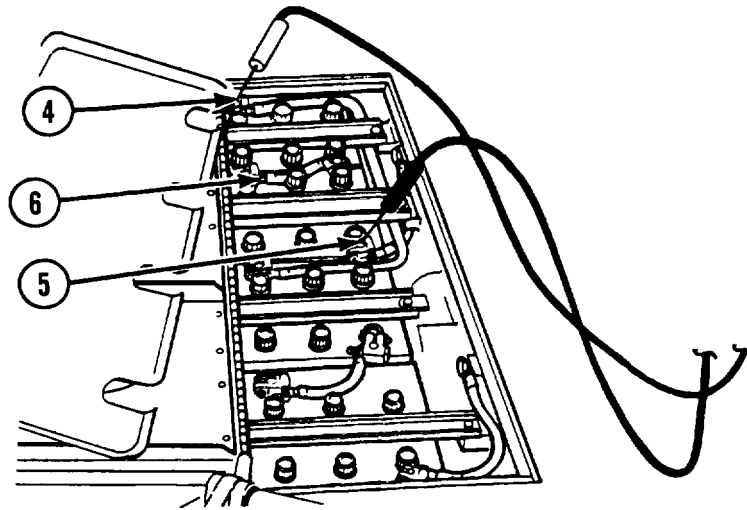
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

A. BATTERY POWER CIRCUIT.

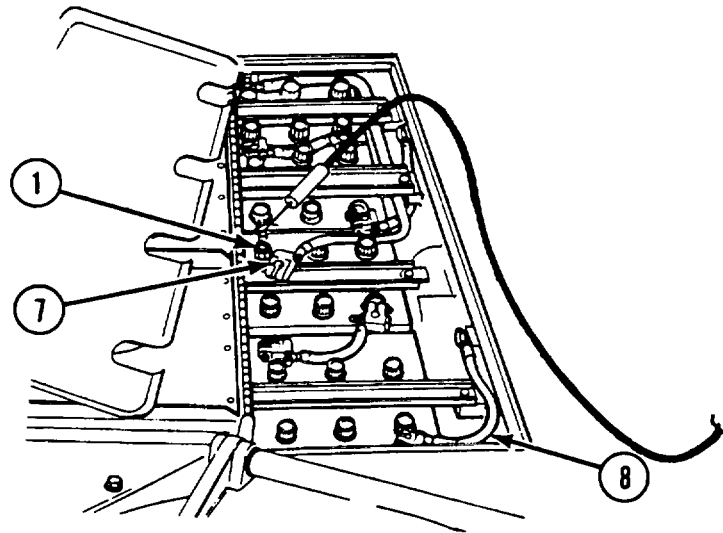


Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 1. To access batteries, open battery compartment access door and remove Protection cover. Place red probe on battery post (1). Place black probe on Battery post (2). If multimeter indicates less than about 24 volts, replace Cable (3). Refer to page 2-624. If multimeter indicates about 24 volts, go to Step 2.

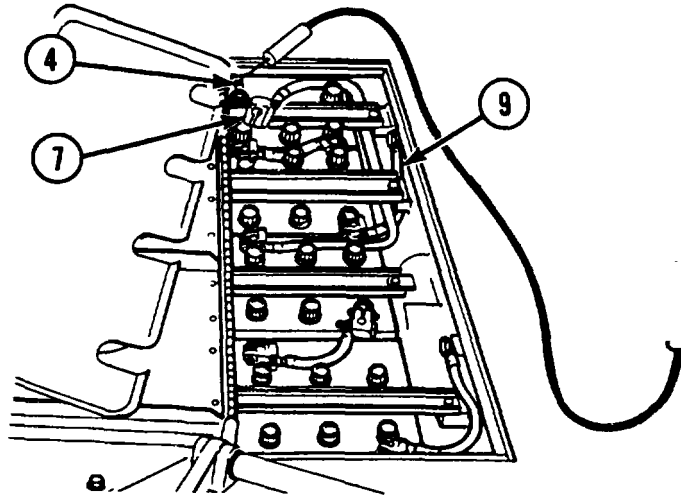


Step 2. Place red probe on battery post (4). Place black probe on battery post (5). If multimeter indicates less than about 24 volts, replace cable (6). Refer to page 2-624. If multimeter indicates about 24 volts, go to step 3.

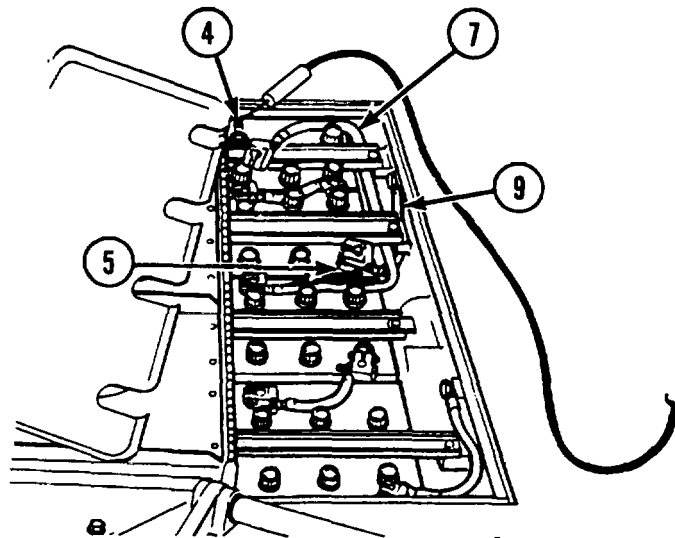


Step 3. Disconnect cable (7) from battery post (1). Place red probe on battery post (1). Ground black probe. If multimeter indicates less than about 24 volts, replace cable (8). Refer to page 2-624. If multimeter indicates about 24 volts, go to step 4. Connect cable (7) to battery post (1).

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

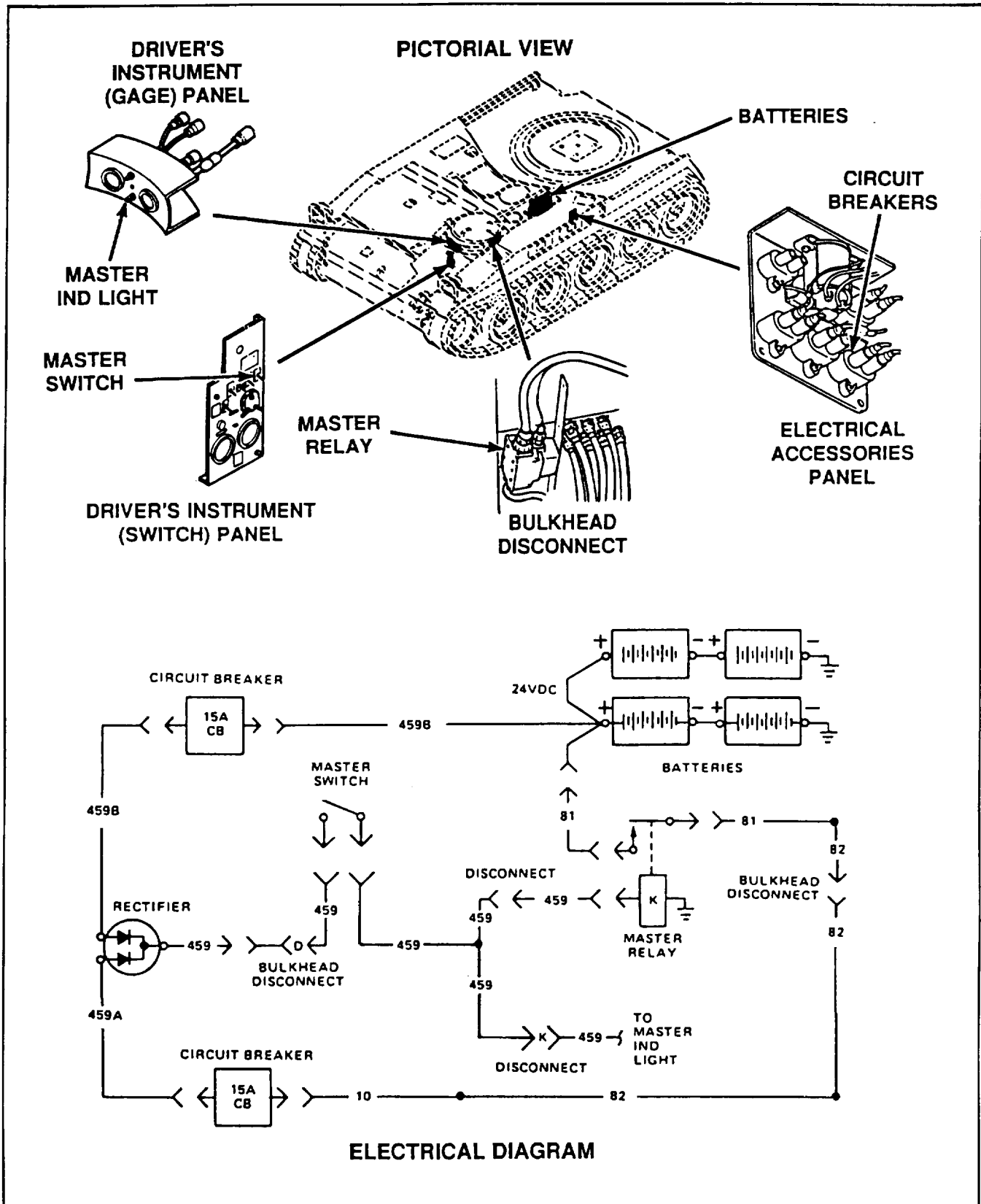


Step 4. Disconnect cable (7) from battery post (4). Place red probe on battery post (4). Ground black probe. If multimeter indicates less than about 24 volts, replace cable (9). Refer to page 2-624. If multimeter indicates about 24 volts, go to step 5. Connect cable (7) to battery post (4).

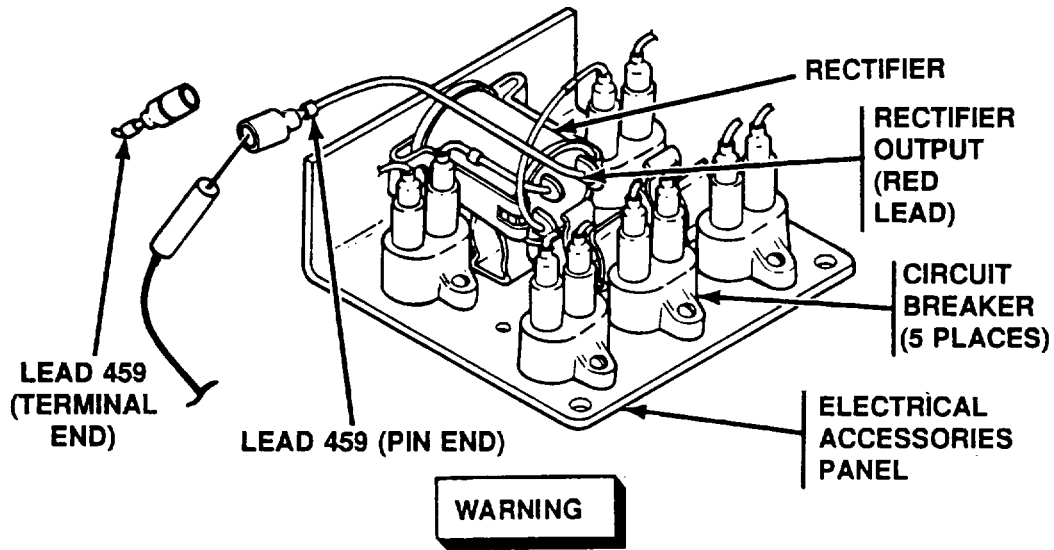


Step 5. Disconnect cable (9) from battery post (5). Place red probe on battery post (4). Ground black probe. If multimeter indicates less than about 24 volts, replace cable (7). Refer to page 2-624. If multimeter indicates about 24 volts and problem still exists, troubleshoot master switch circuit. Refer to page 2-85. Connect cable (9) to battery post (5).

B. MASTER SWITCH CIRCUIT.

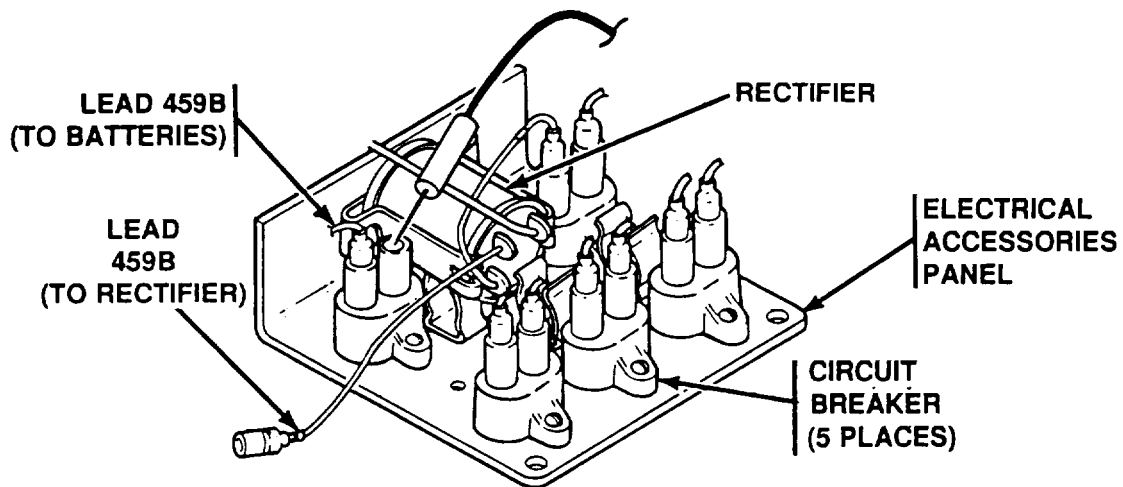


2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

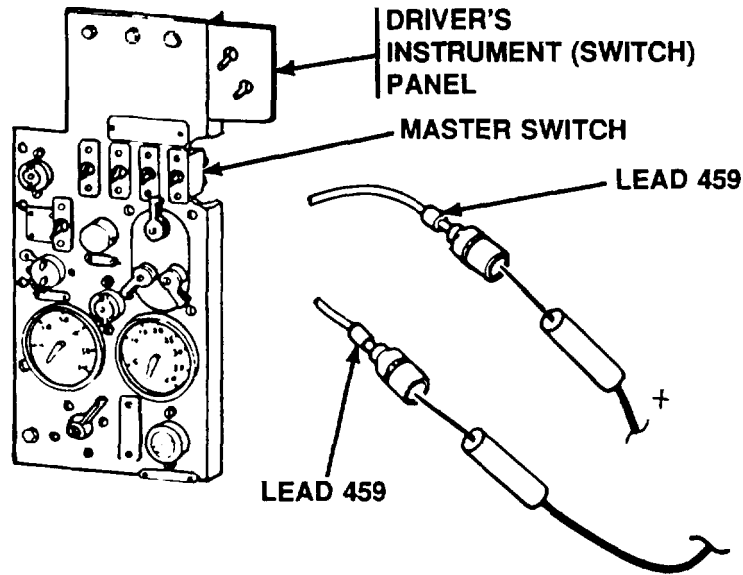


Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

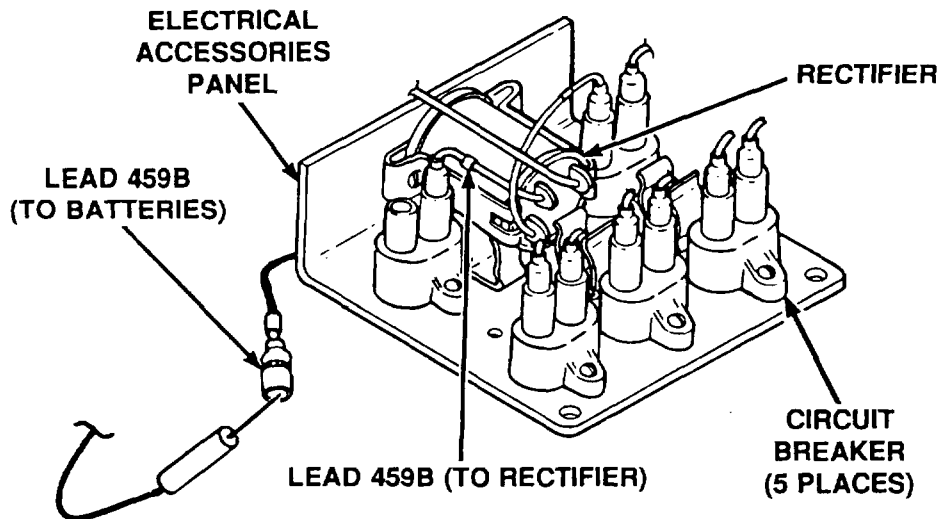
Step 1. To access electrical accessories panel, remove left CO₂ cylinder access cover. Refer to page 2-875. Disconnect lead 459 from rectifier output (red lead) at disconnect. Place red probe in lead 459 (pin end) and ground black probe. If multimeter indicates no voltage, go to step 2. If multimeter indicates about 24 volts, go to step 3. Connect lead 459.



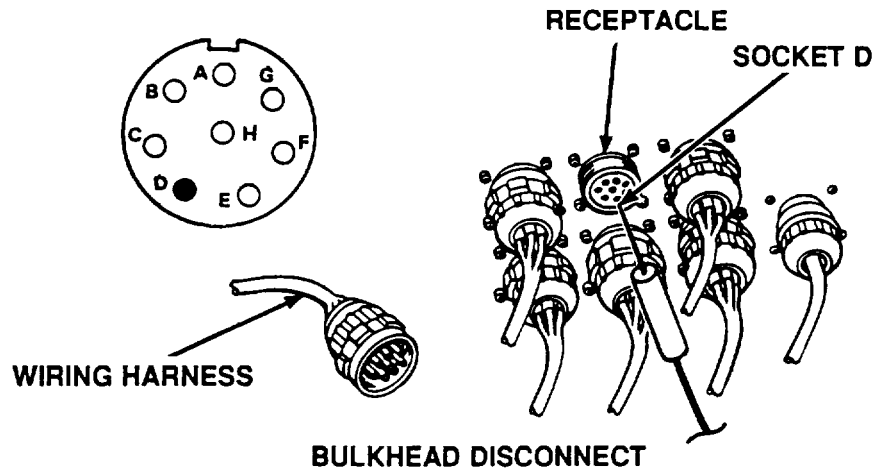
Step 2. Disconnect lead 459B (to rectifier) from circuit breaker. Place red probe in circuit breaker and ground black probe. If multimeter indicates no voltage, go to step 4. If multimeter indicates about 24 volts, replace rectifier. Refer to page 2-578. Connect lead 459B to circuit breaker.



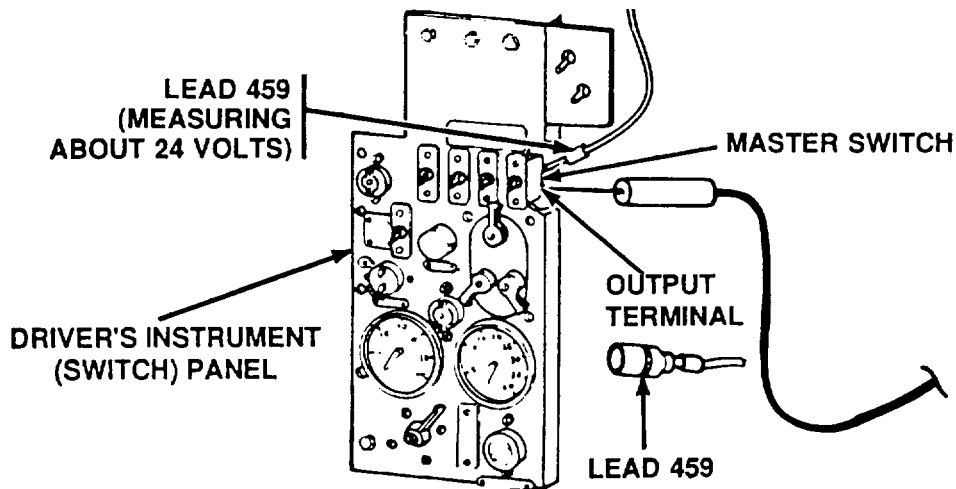
Step 3. Disconnect both leads 459 from MASTER switch. Place red probe in lead 459 and ground black probe. Check voltage in both 459 leads. If multimeter indicates no voltage in either lead, connect leads 459 to MASTER switch and go to step 5. If multimeter indicates about 24 volts in one lead, connect the lead 459 that measures about 24 volts to MASTER switch and go to step 6.



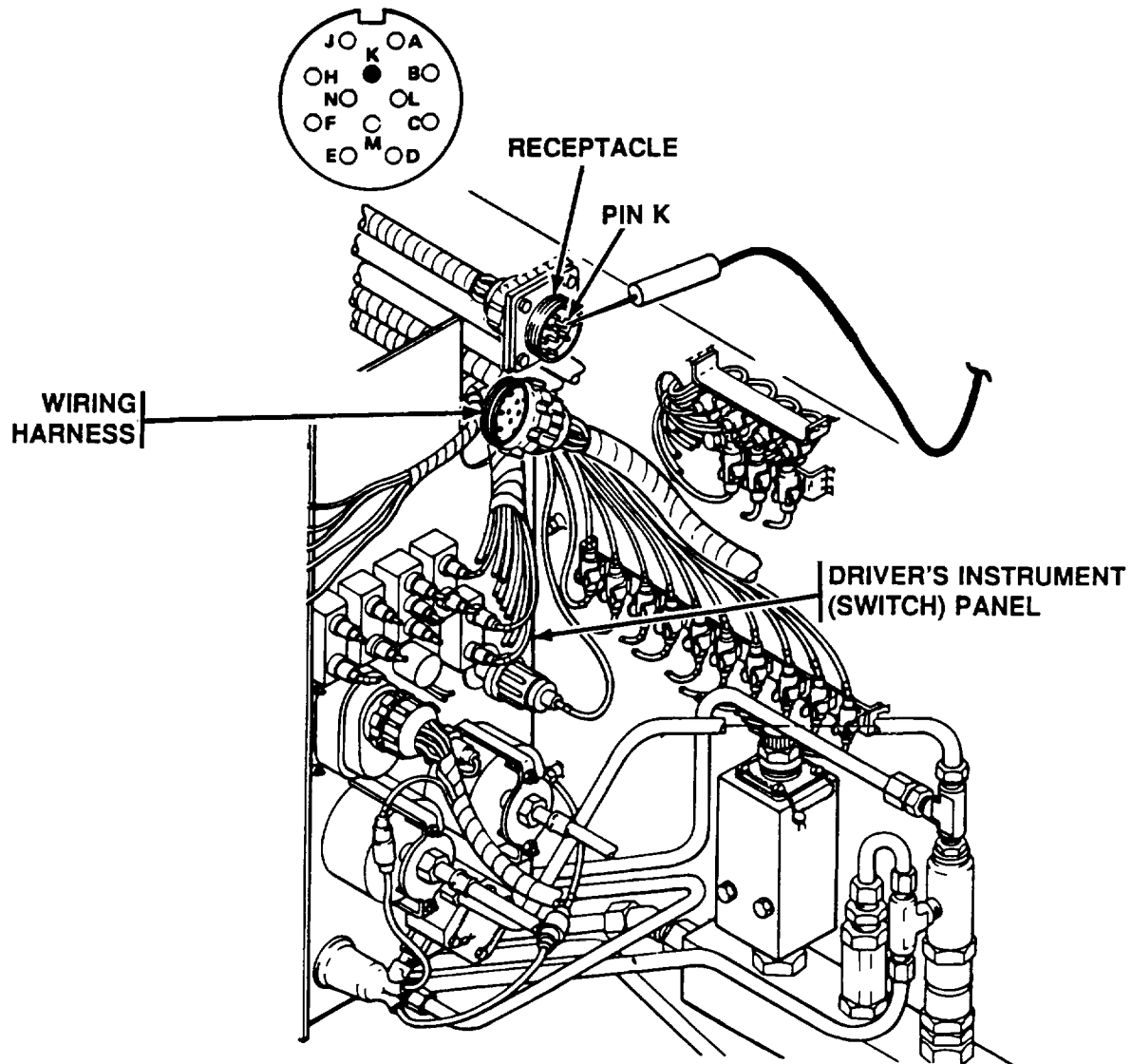
Step 4. Disconnect lead 459B (to batteries) from circuit breaker. Place red probe in input lead 459B and ground black probe. If multimeter indicates no voltage, repair input lead 459B from circuit breaker to batteries. If multimeter indicates about 24 volts, replace circuit breaker. Refer to page 2-578. Connect lead 459B to circuit breaker.



Step 5. To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness at bulkhead disconnect. Place red probe in socket D (lead 459) of receptacle and ground black probe. If multimeter indicates no voltage, repair lead 459 from bulkhead disconnect to rectifier. Refer to page 2-364. If multimeter indicates about 24 volts, repair lead 459 from MASTER switch to bulkhead disconnect. Refer to page 2-364. Connect wiring harness at bulkhead disconnect.



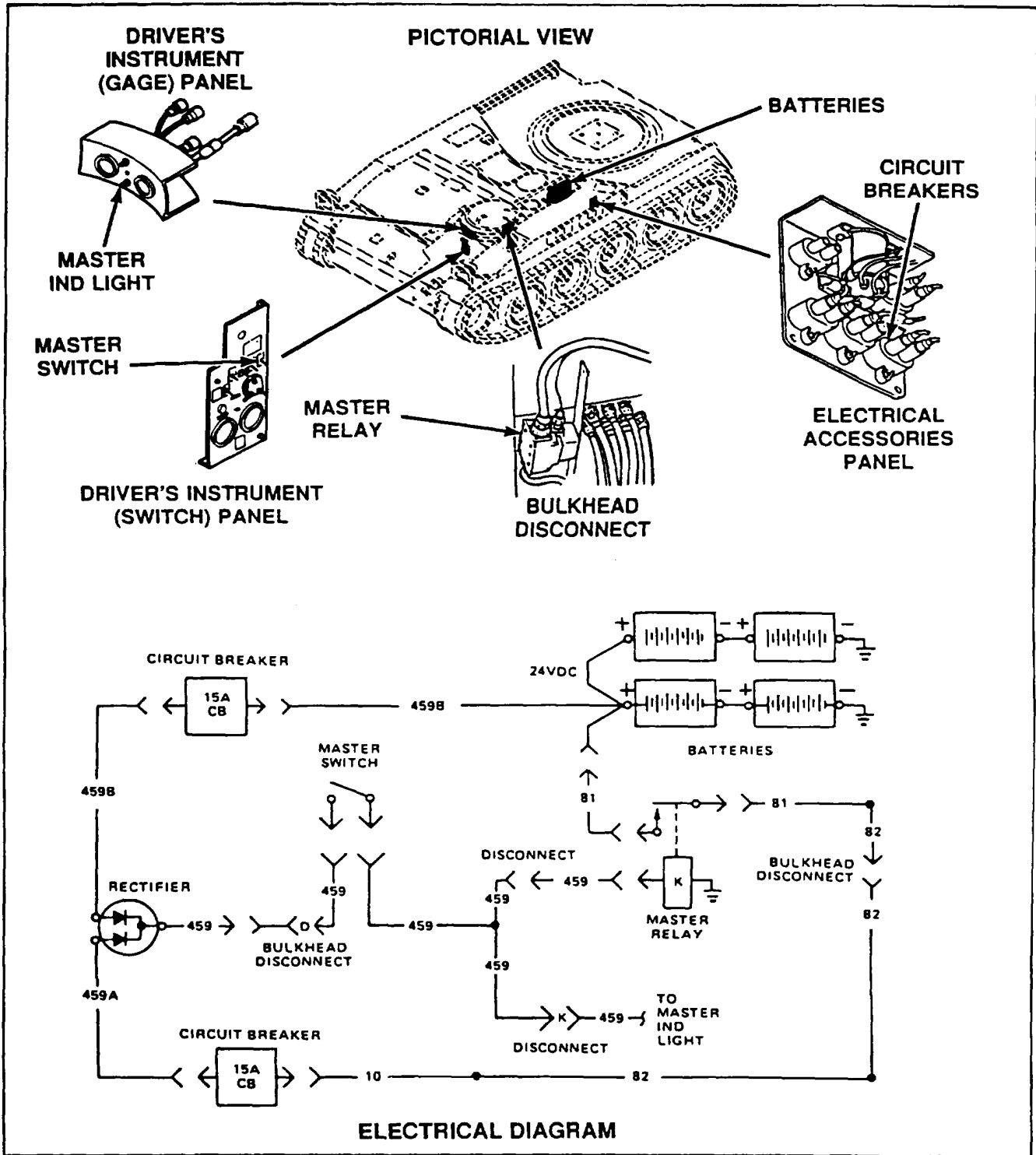
Step 6. Place red probe on MASTER switch output terminal and ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, replace MASTER switch. Refer to page 2-555. If multimeter indicates about 24 volts, go to step 7. Connect remaining lead 459 to MASTER switch. Set MASTER switch OFF.

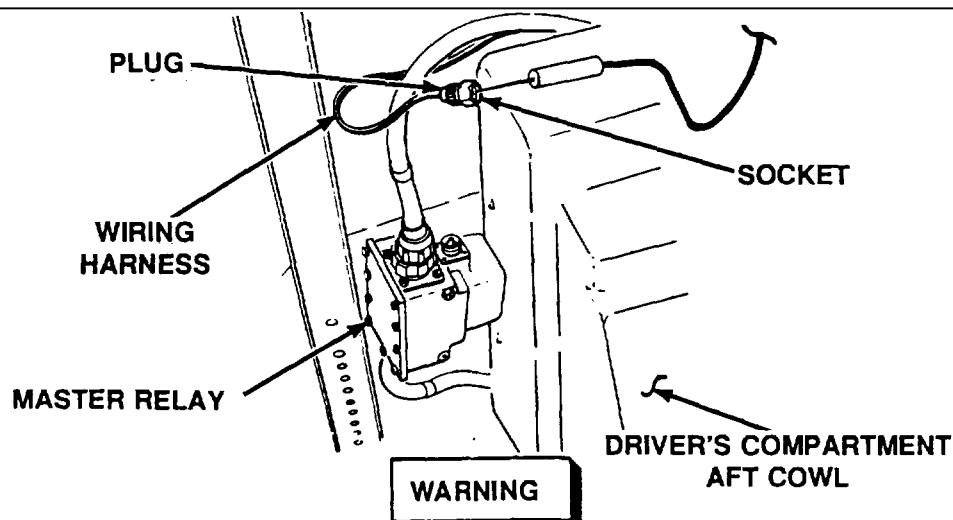


- Step 7. Disconnect wiring harness. Place red probe on pin K (lead 459) of receptacle and ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, repair lead 459 from MASTER switch to receptacle. Refer to page 2-364. If multimeter indicates about 24 volts and problem still exists, trouble- shoot master relay circuit, refer to page 2-90; and troubleshoot MASTER indicator warning light circuit, refer to page 2-157. Set MASTER switch OFF. Connect wiring harness to receptacle.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

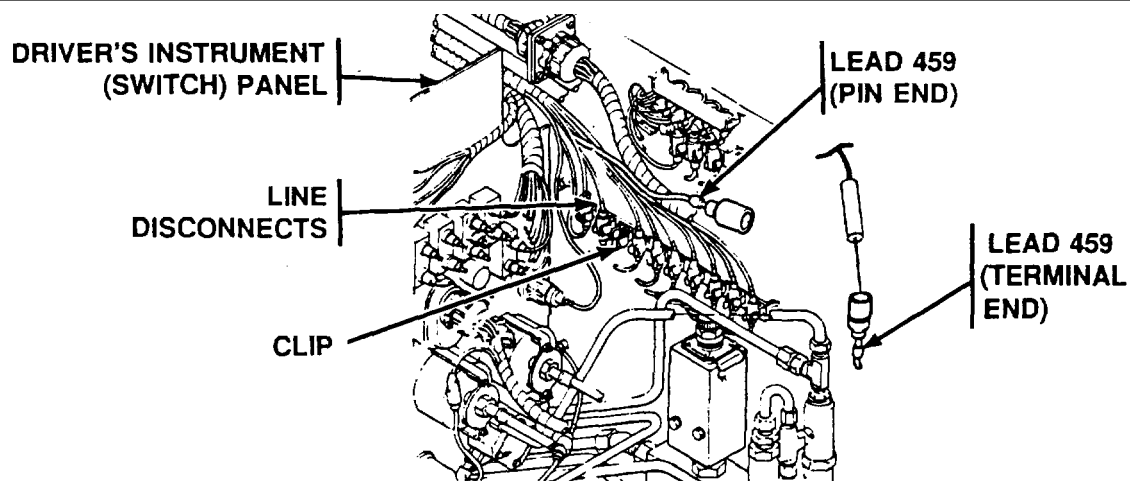
C. MASTER RELAY CIRCUIT.





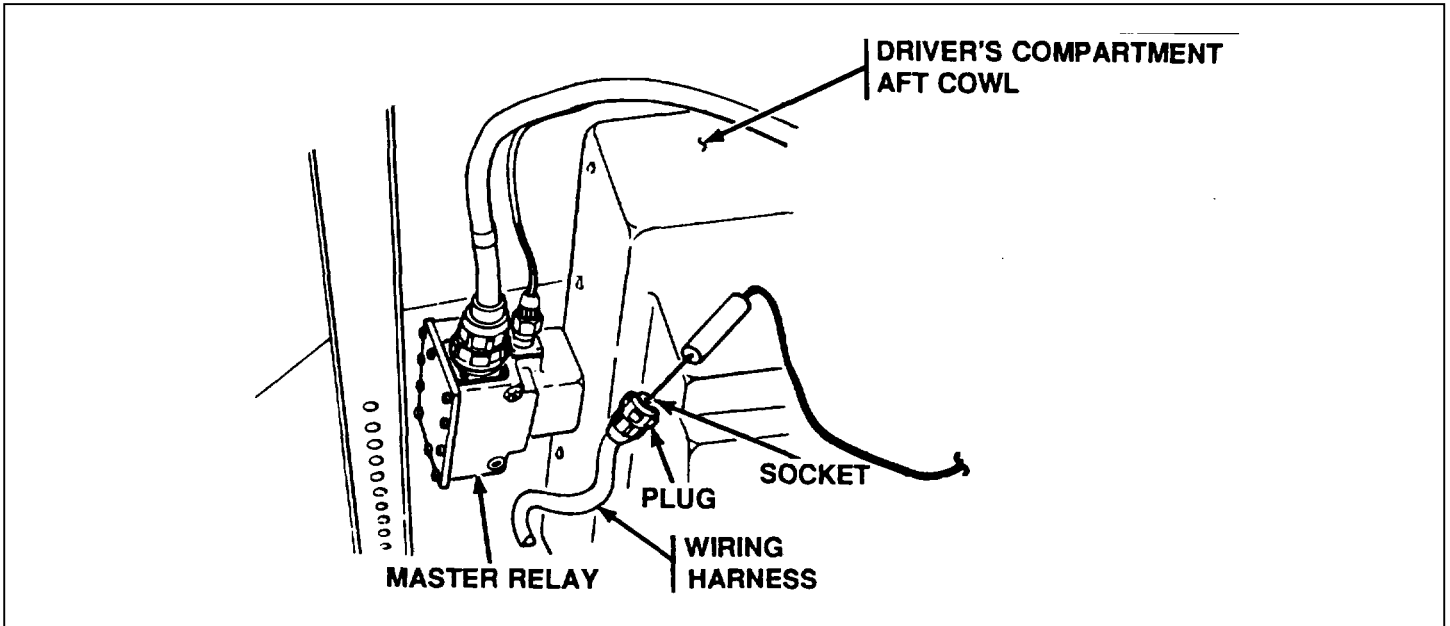
Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

- Step 1. Disconnect wiring harness from master relay. Place red probe in plug socket (lead 459) and ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, go to step 2. If multimeter indicates about 24 volts, go to step 3. Set MASTER switch OFF. Connect wiring harness to master relay.

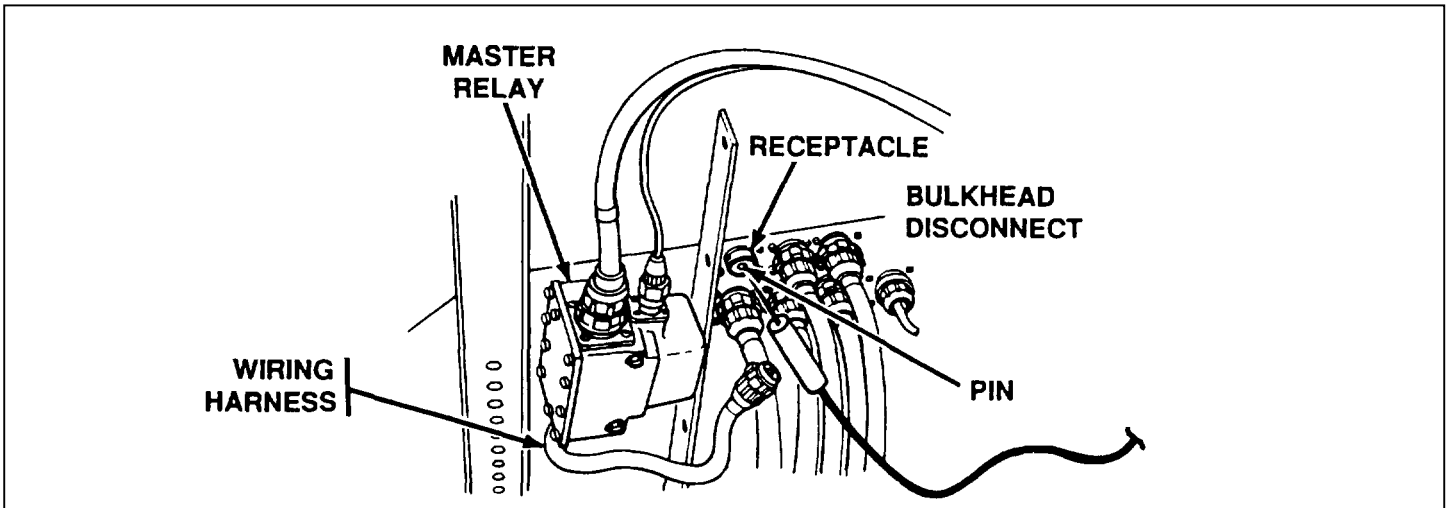


- Step 2. Disconnect leads 459 at disconnect behind driver's instrument (switch) panel. Place red probe in lead 459 (terminal end) and ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, repair lead 459 (terminal end) from MASTER switch to disconnect. Refer to page 2-364. Set MASTER switch OFF. Connect lead 459 at disconnect behind drivers instrument (switch) panel.

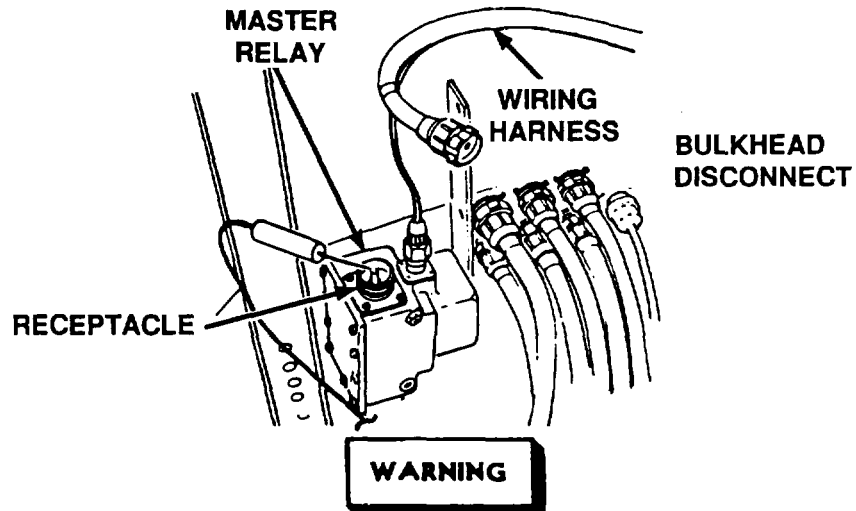
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



Step 3. Disconnect wiring harness from master relay. Place red probe in plug socket (lead 81) and ground black probe. If multimeter indicates no voltage, go to step 4. If multimeter indicates about 24 volts, go to step 5. Connect wiring harness to master relay.

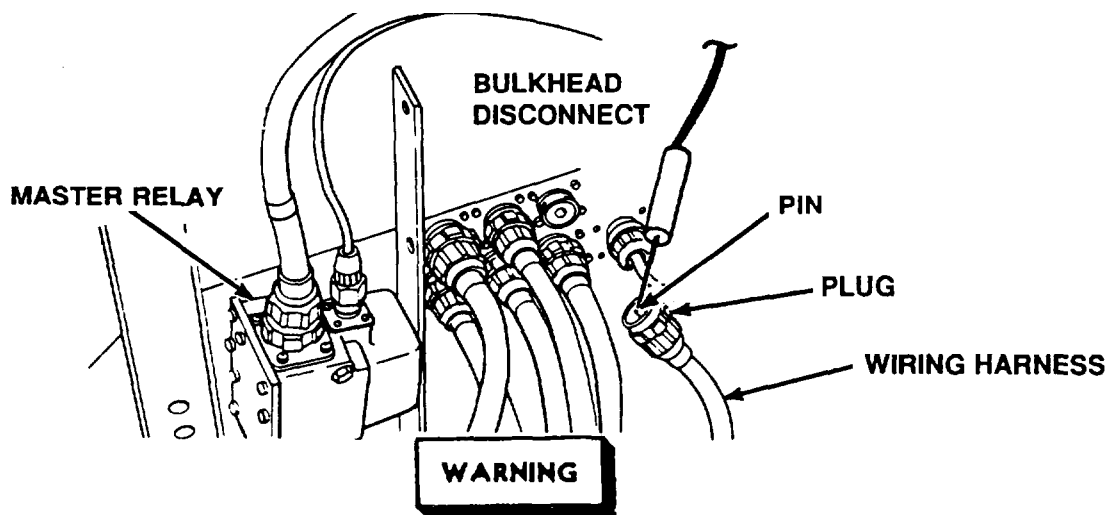


Step 4. To access bulkhead disconnect, remove driver' and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness (lead 81) at bulkhead disconnect. Place red probe on receptacle pin and ground black probe. If multimeter indicates no voltage, repair lead 81 from bulkhead disconnect to battery. Refer to page 2-364. If multimeter indicates about 24 volts, repair lead 81 from bulkhead disconnect to master relay. Refer to page 2-364. Connect wiring harness at bulkhead disconnect.



Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

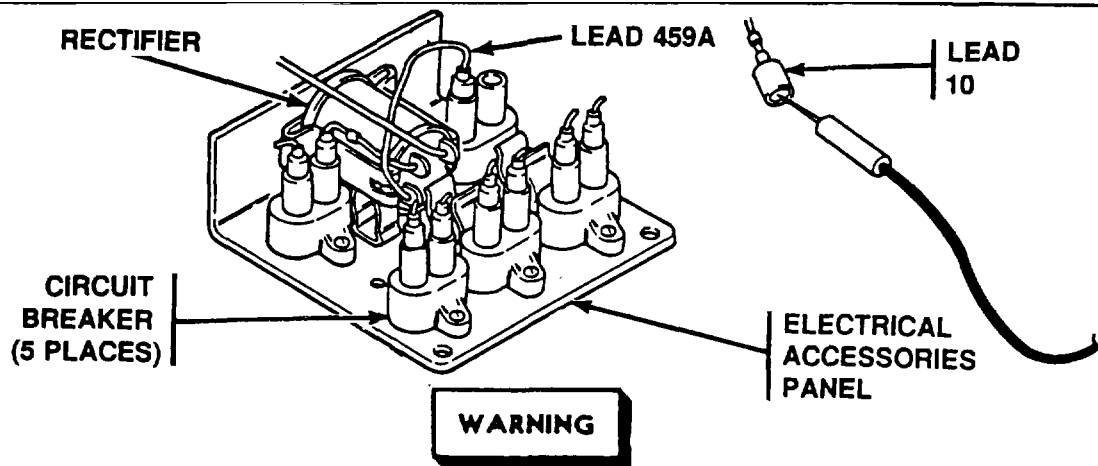
- Step 5. Disconnect wiring harness from master relay. Place red probe on master relay receptacle pin (lead 81) and ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, replace master relay. Refer to page 2-572. If multimeter indicates about 24 volts, go to step 6. Set MASTER switch OFF. Connect wiring harness to master relay.



Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

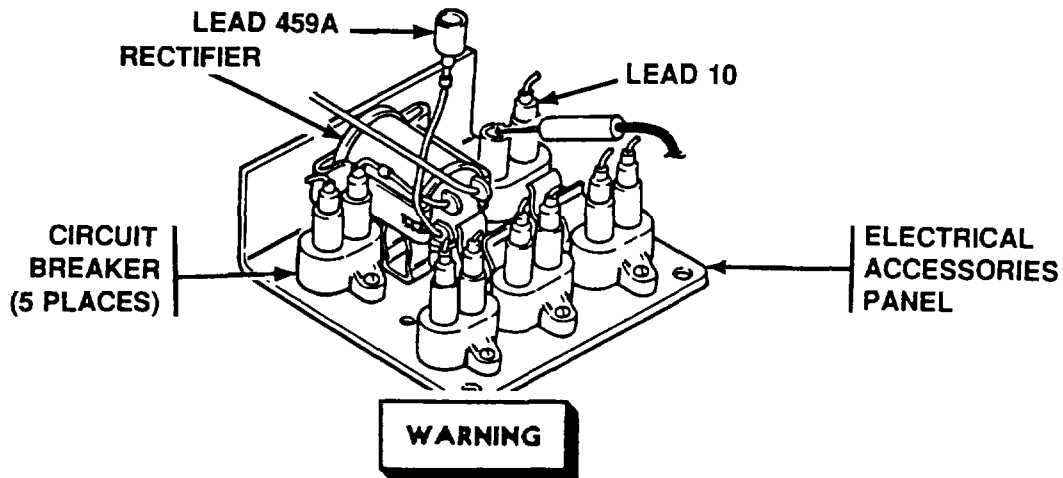
- Step 6. Disconnect wiring harness at bulkhead disconnect. Place red probe on plug pin (lead 82) and ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, repair lead 82 between bulkhead disconnect and master relay. Refer to page 2-364. If multimeter indicates about 24 volts, go to step 7. Set MASTER switch OFF. Connect wiring harness at bulkhead disconnect.

2-12 ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



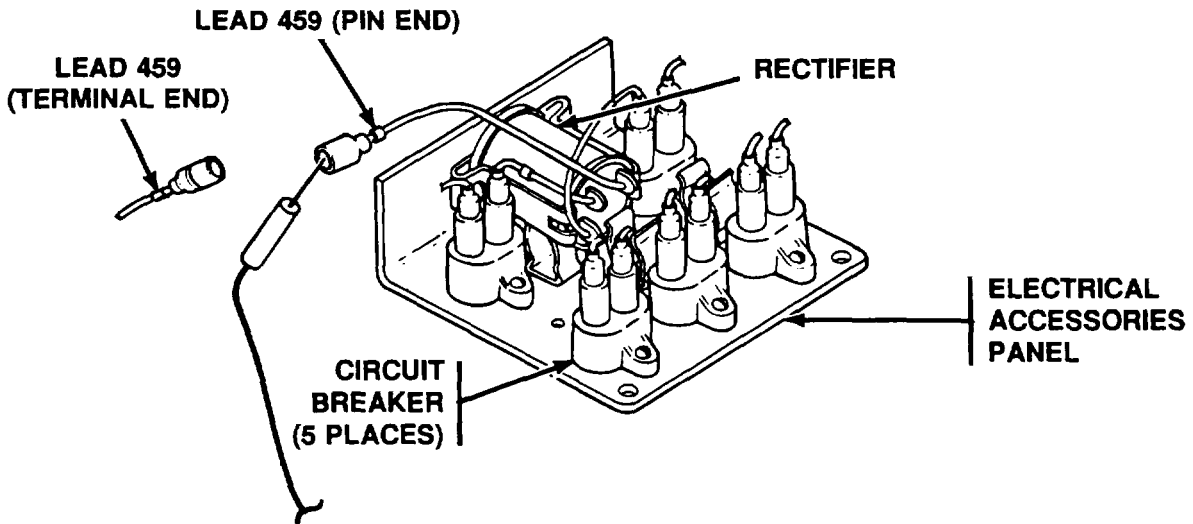
Make sure MASTER switch is OFF before repairing electrical circuits
Failure to observe this warning could result in injury to personnel.

- Step 7. To access electrical accessories panel, remove left CO2 cylinder access cover. Refer to page 2-875. Disconnect lead 10 from circuit breaker. Place red probe in lead 10 and ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, repair lead 10 between circuit breaker and bulkhead disconnect. Refer to page 2-364. If multimeter indicates about 24 volts, go to step 8. Set MASTER switch OFF. Connect lead 10 to circuit breaker.

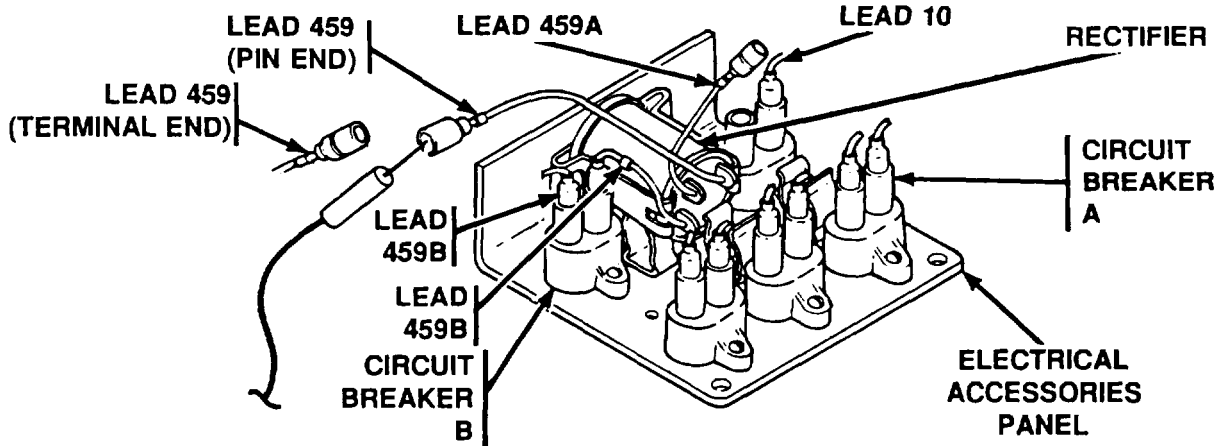


Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

- Step 8. Disconnect lead 459A from circuit breaker. Place red probe in circuit breaker terminal and ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, replace circuit breaker. Refer to page 2-578. If multimeter indicates about 24 volts, go to step 9. Set MASTER switch OFF. Connect lead 459A to circuit breaker.



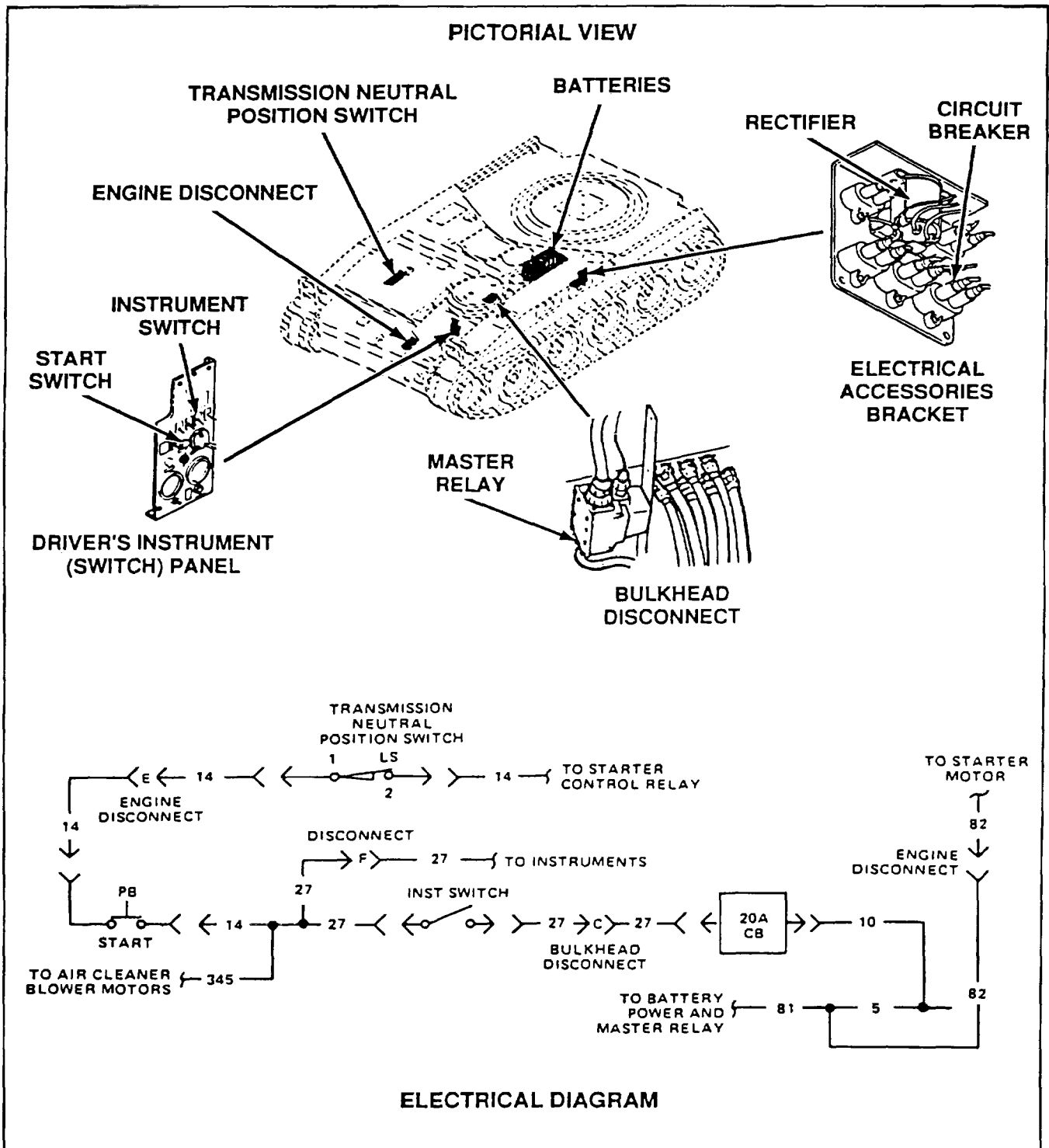
Step 9. Disconnect leads 459 at rectifier. Place red probe in lead 459 (pin end) and ground black probe. If multimeter indicates no voltage, replace rectifier. Refer to page 2-578. If multimeter indicates about 24 volts, go to step 10. Do not connect leads 459 (at this time.)

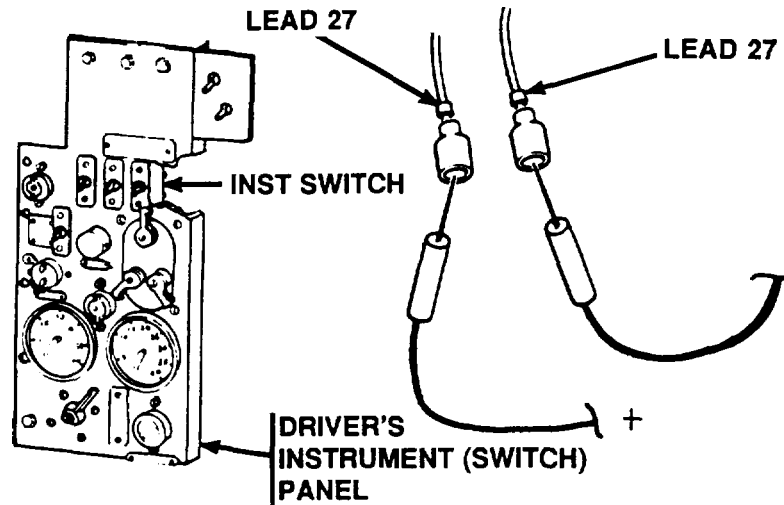


Step 10. Disconnect lead 459A from circuit breaker A. Disconnect lead 459B from circuit breaker B. Connect lead 459A to circuit breaker B. Place red probe in lead 459 (pin end) and ground black probe. If multimeter indicates no voltage, replace rectifier. Refer to page 2-578. Disconnect lead 459A from circuit breaker B and connect to circuit breaker A. Connect lead 459B to circuit breaker B. Connect leads 459 at rectifier. If problem still exists, troubleshoot instrument switch circuit. Refer to page 2-96.

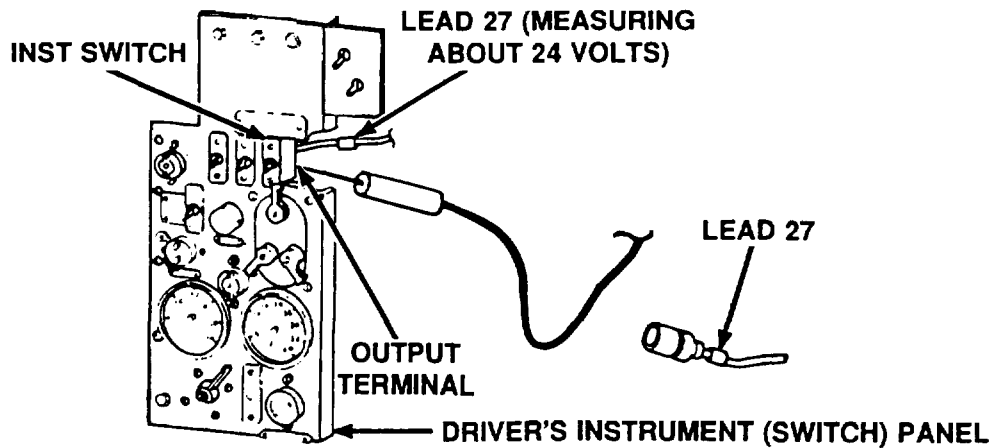
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

D. INSTRUMENT SWITCH CIRCUIT.



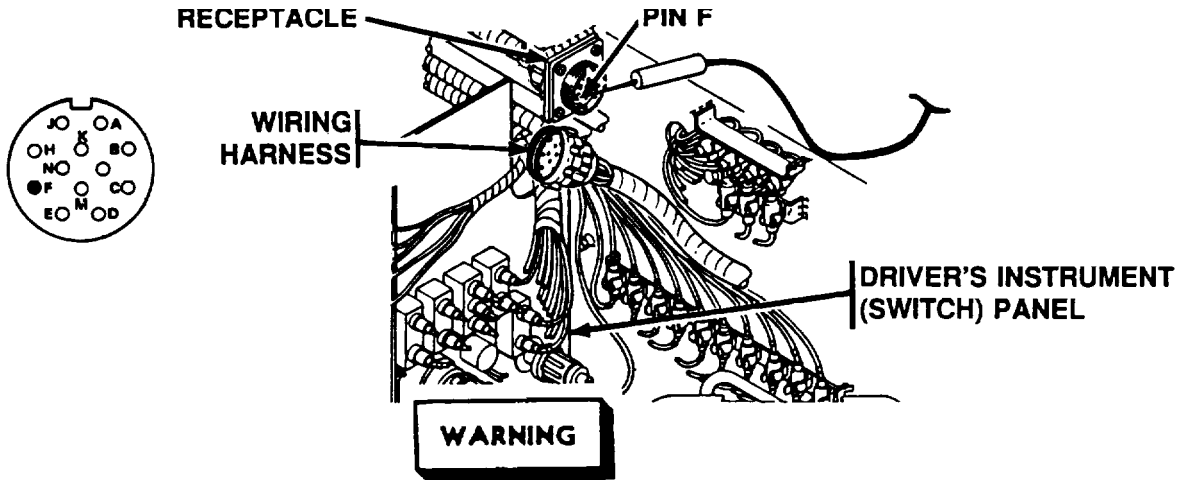


Step 1. Disconnect both leads 27 from INST switch. Place red probe in lead 27 and ground black probe. Set MASTER switch ON. Check voltage in both leads 27. If multimeter indicates no voltage in both leads 27, go to step 4 and connect leads 27 to INST switch. If multimeter indicates about 24 volts in one lead, connect lead 27 measuring about 24 volts to INST switch and go to step 2. Set MASTER switch OFF.



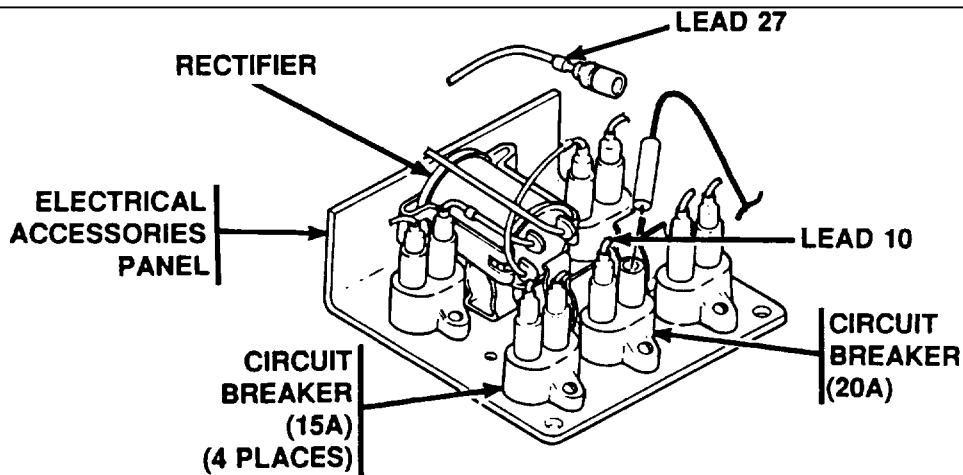
Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

Step 2. Place red probe on INST switch output terminal. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, replace INST switch. Refer to page 2-555. If multimeter indicates about 24 volts, go to step 3. Set MASTER and INST switches OFF. Connect remaining lead 27 to INST switch.

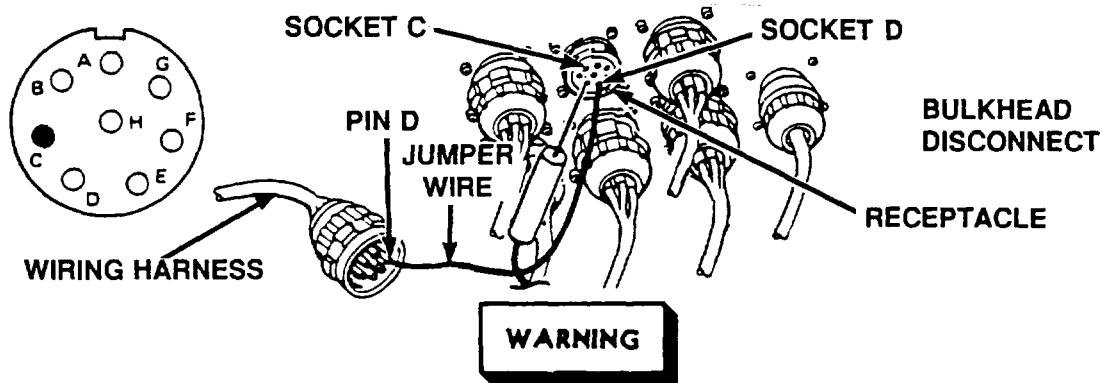


Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 3. Disconnect instrument (gage) panel wiring harness. Place red probe on pin F (lead.27) of receptacle. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, repair lead 27 from INST switch to receptacle. Refer to page 2-364. If multimeter indicates about 24 volts, repair lead 27 from disconnect to instruments. Refer to page 2-364. Set MASTER and INST switches OFF. Connect wiring harness.

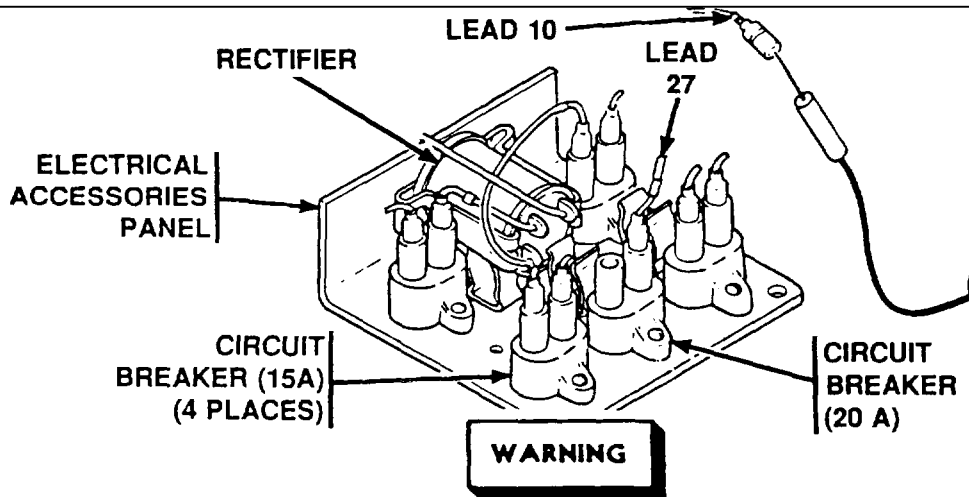


- Step 4. To access electrical accessories panel, remove left CO2 cylinder access cover. Refer to page 2-875. Disconnect lead 27 from 20A circuit breaker on electrical accessories panel. Place red probe in circuit breaker terminal, Ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, go to step 6. If multimeter indicates about 24 volts, go to step 5. Set MASTER switch OFF. Connect lead 27 to circuit breaker 20A on electrical accessories panel.



Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 5. To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness at bulkhead disconnect. Place jumper wire to pin D and socket D (lead 459). Place red probe in socket C (lead 27) of receptacle. Ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, repair lead 27 from circuit breaker to bulkhead disconnect. Refer to page 2-364. If multimeter indicates about 24 volts, repair lead 27 from bulkhead disconnect to INST switch. Refer to page 2-364. Set MASTER switch OFF. Connect wiring harness at bulkhead disconnect.

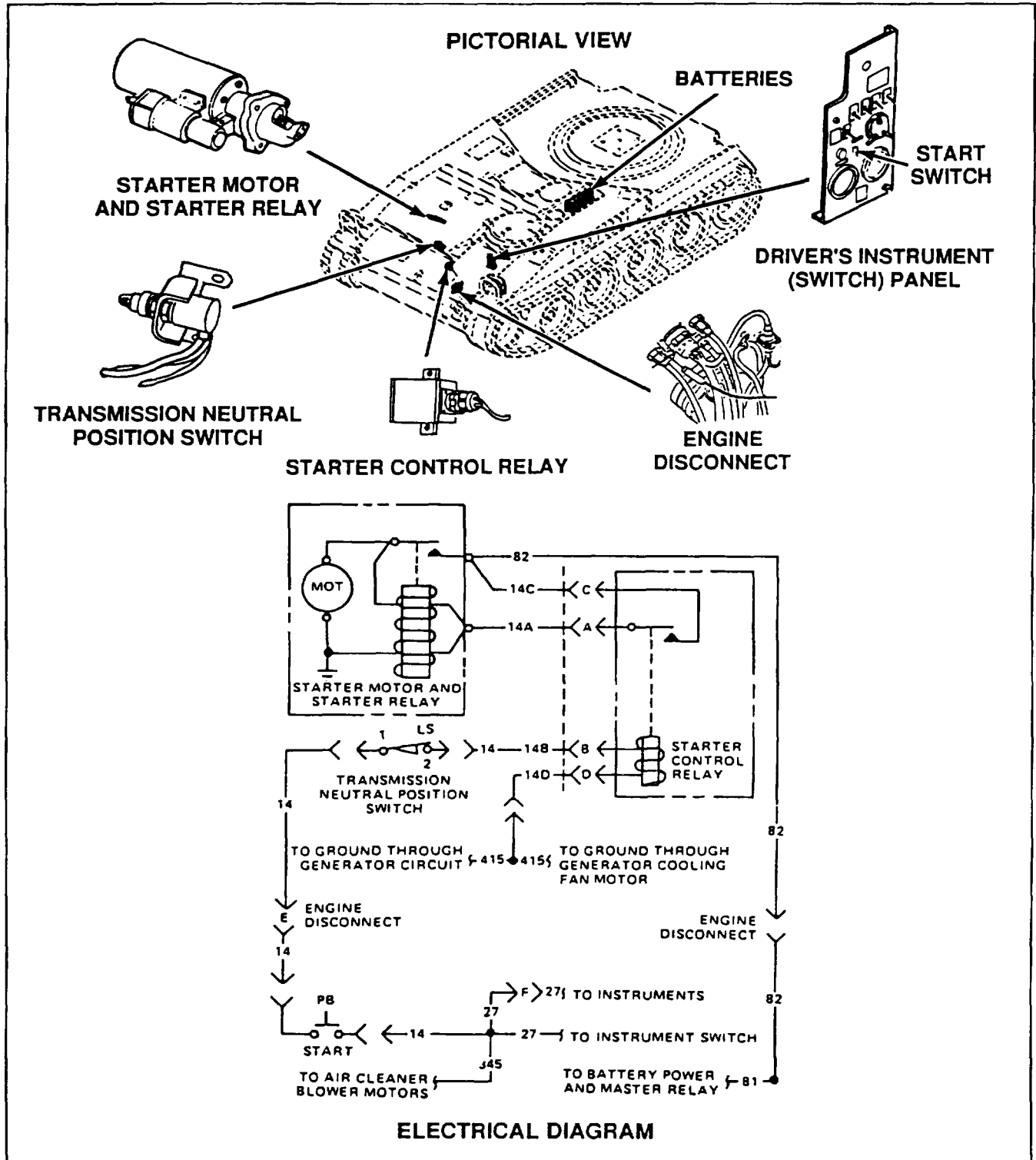


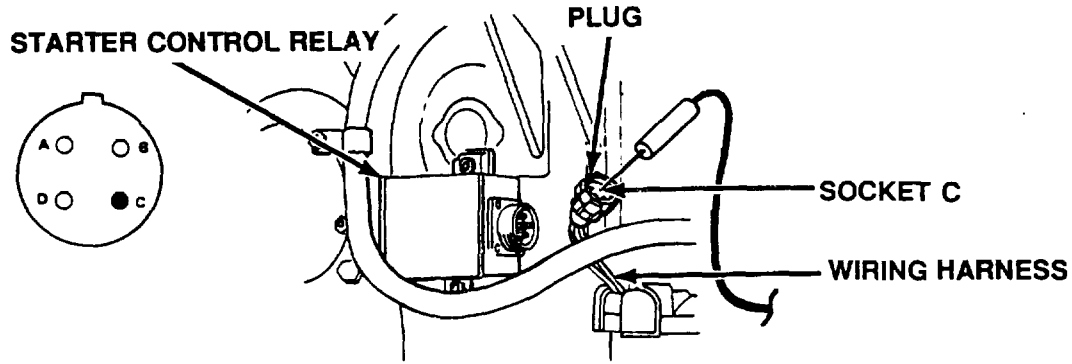
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 6. Disconnect lead 10 from circuit breaker 20A on electrical accessories panel. Place red probe in lead 10. Ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, repair lead 10. Refer to page 2-364. If multimeter indicates about 24 volts, replace circuit breaker. Refer to page 2-578. Set MASTER switch OFF. Connect lead 10 to circuit breaker 20A on electrical accessories panel.

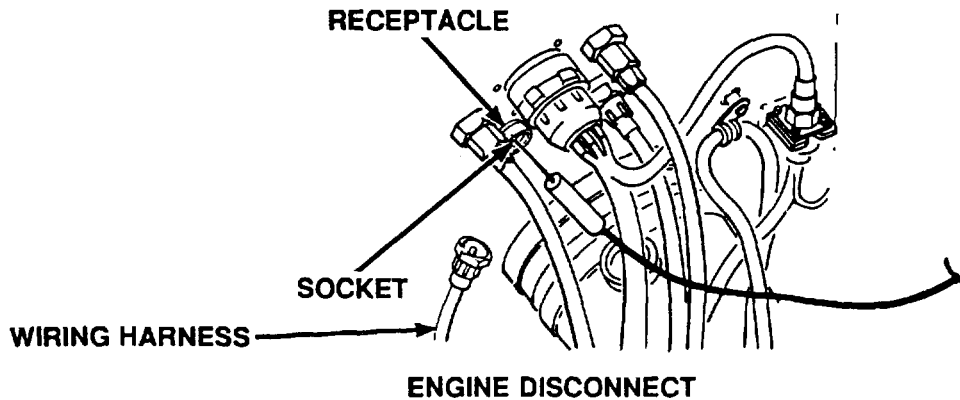
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

E. STARTER CIRCUITS.





Step 1. To access engine, remove engine deck assembly. Refer to page 2-887. Disconnect wiring harness from starter control relay. Place red probe in socket C (lead 14C) of plug. Ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, connect wiring harness to starter control relay and go to step 2. If multimeter indicates about 24 volts, go to step 3. Set MASTER switch OFF.

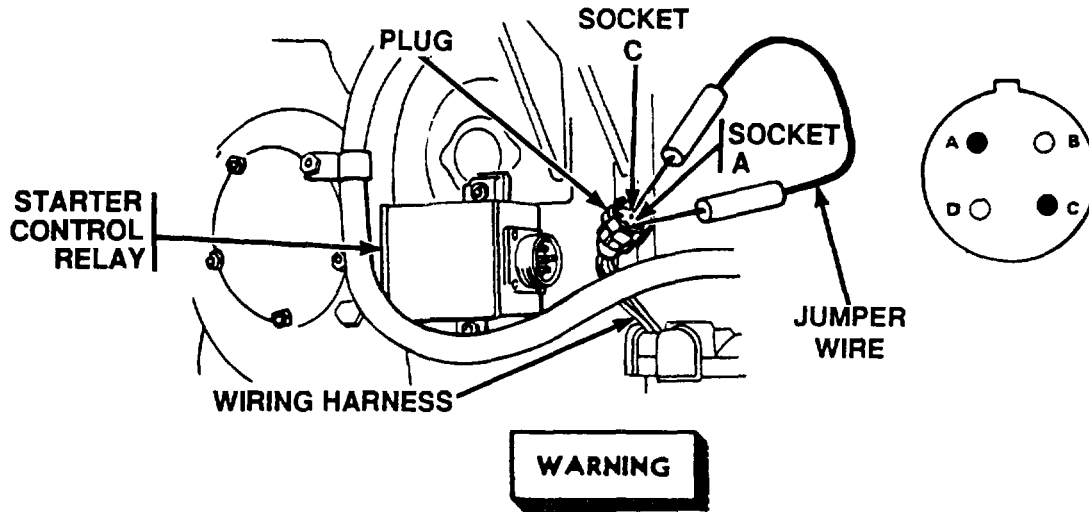


WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 2. To access engine disconnect and transmission, remove transmission deck lid assembly. Refer to page 2-898. Disconnect wiring harness at engine disconnect. Place red probe in receptacle socket (lead 82). Ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, repair lead 82 from master relay to engine disconnect. Refer to page 2-364. If multimeter indicates about 24 volts, repair lead 82 or 14C from engine disconnect to starter control relay. Refer to page 2-364. Set MASTER switch OFF. Connect wiring harness at engine disconnect.

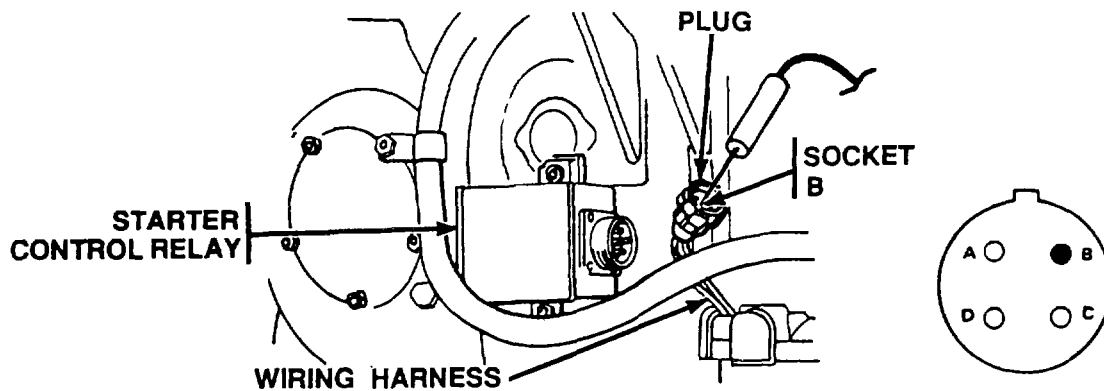
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



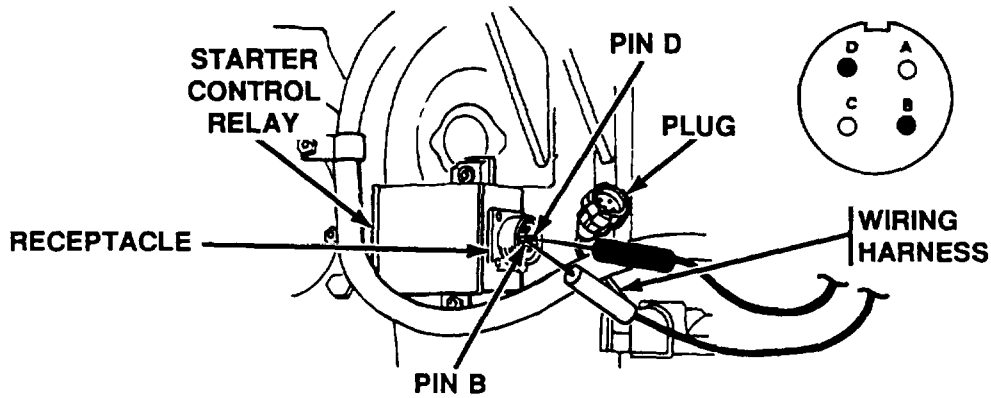
WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

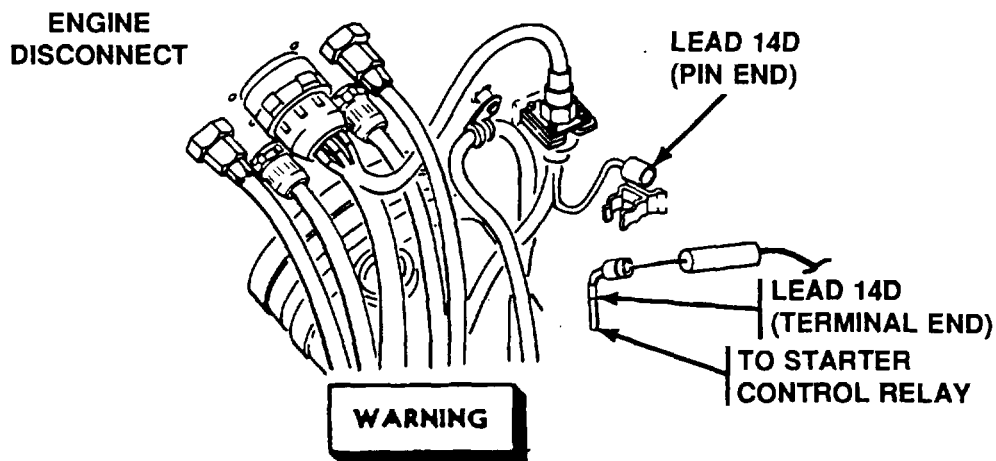
Step 3. Place jumper wire between sockets A (lead 14A) and C (lead 14C) of plug. Set MASTER switch ON. Engine should crank. If engine does not crank, replace starter and/or starter control relay, refer to page 2-548; or repair lead 14A from starter control relay to starter, refer to page 2-364. If engine cranks, go to step 4. Remove jumper wire. Set MASTER switch OFF. Connect wiring harness to starter control relay if engine does not crank.



Step 4. Place red probe in socket B (lead 14B-14) of plug. Ground black probe. Set MASTER and INST switches ON. Press START switch. If multimeter indicates no voltage, go to step 8. If multimeter indicates about 24 volts, go to step 5. Set MASTER and INST switches OFF.



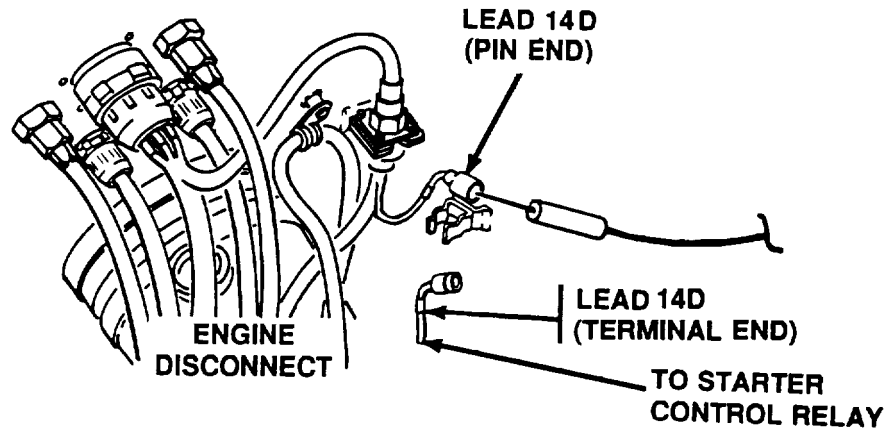
Step 5. Check resistance between pins B and D of receptacle on starter control relay. If no resistance exists, replace starter control relay. Refer to page 2-550. If resistance exists, go to step 6. Connect wiring harness to starter control relay.



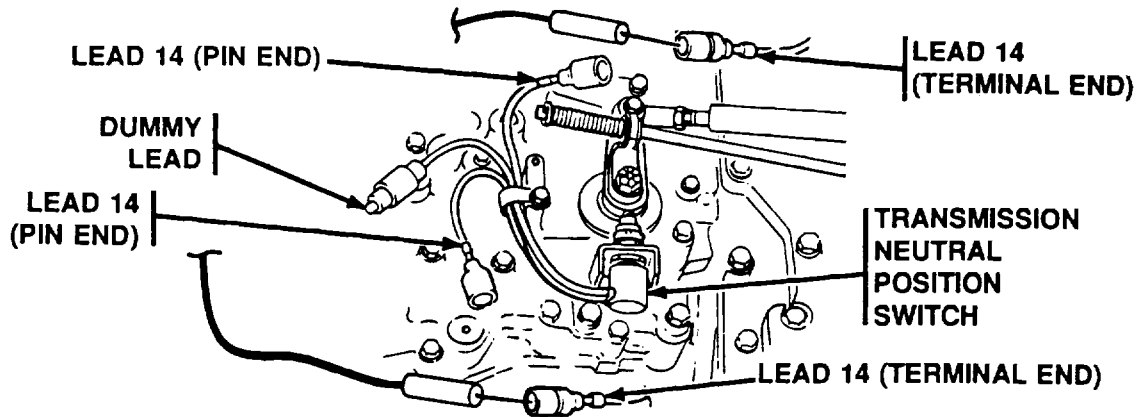
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 6. Disconnect leads 14D near engine disconnect. Place red probe in lead 14D (terminal end) and ground black probe. Set MASTER and INST switches ON. Press START switch. If multimeter indicates no voltage, repair lead 14D between disconnect and starter control relay. Refer to page 2-364. Connect leads 14D. If multimeter indicates about 24 volts, go to step 7. Set MASTER and INST switches OFF.

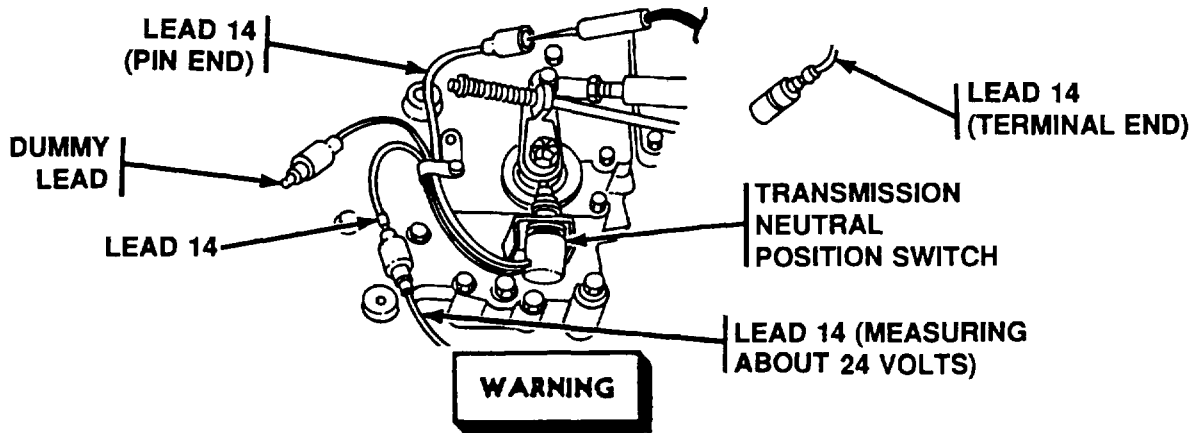
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



Step 7. Check resistance between lead 14D (pin end) and ground. If multimeter indicates more than 4 ohms, repair lead 14D between disconnect and generator ground. Refer to page 2-364. If multimeter indicates 0 to 4 ohms, troubleshoot generator output circuit. Refer to page 2-117. Connect leads 14D to disconnect.

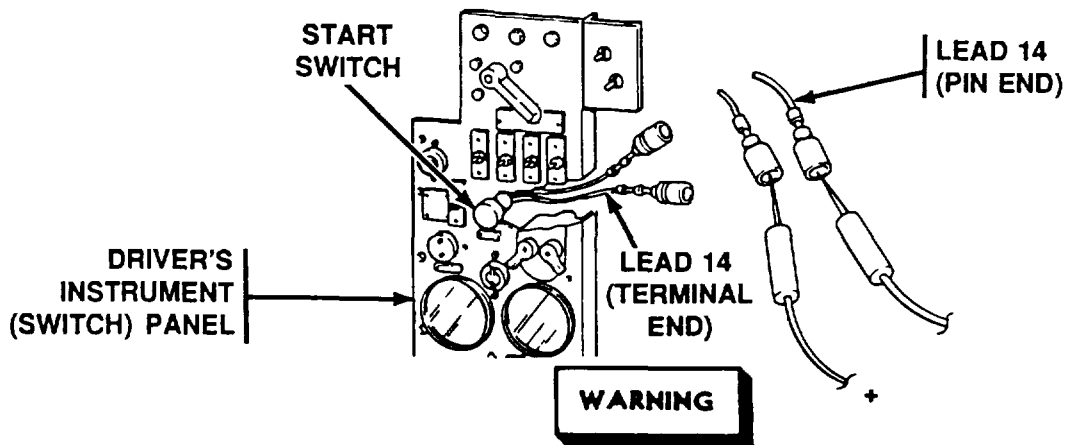


Step 8. Disconnect leads 14 from neutral position switch. Place red probe in lead 14 (terminal end). Ground black probe. Check voltage in both 14 leads (terminal ends). Set MASTER and INST switches ON. Press START switch. If multimeter indicates no voltage in both leads 14, connect leads 14 to neutral-A. position switch and go to step 10. If multimeter indicates about 24 volts in one lead 14, connect the lead 14 that measures about 24 volts to neutral position switch and go to step 9. Set MASTER and INST switches OFF.



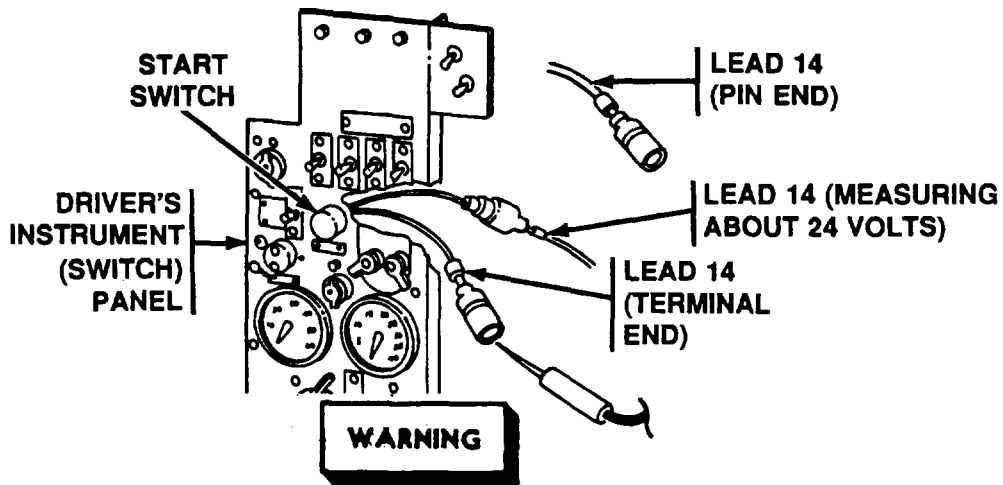
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 9. Place red probe in lead 14 (pin end) of neutral position switch. Ground black probe. Set MASTER and INST switches ON. Press START switch. If multimeter indicates no voltage, replace neutral position switch. Refer to page 2-552. If multimeter indicates about 24 volts, repair lead 14-14B between neutral position switch and starter control relay. Refer to page 2-364. Set MASTER and INST switches OFF. Connect leads 14 at neutral position switch.



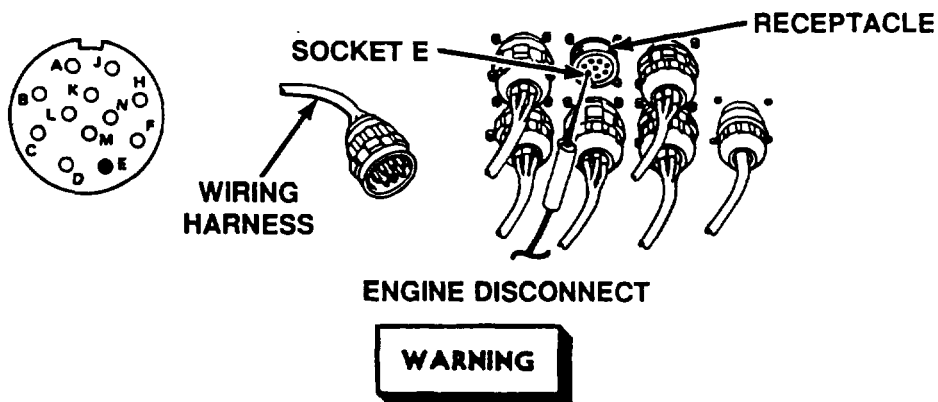
Step 10. Disconnect leads 14 from START switch. Place red probe in lead 14 (pin end). Ground black probe. Check voltage in both leads 14 (pin end). Set MASTER and INST switches ON. If multimeter indicates no voltage in both leads 14, repair lead 14-27 from INST switch to START switch. Refer to page 2-364. If multimeter indicates about 24 volts in one lead 14, connect lead 14 measuring about 24 volts to INST switch and go to step 11. Set MASTER and INST switches OFF.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

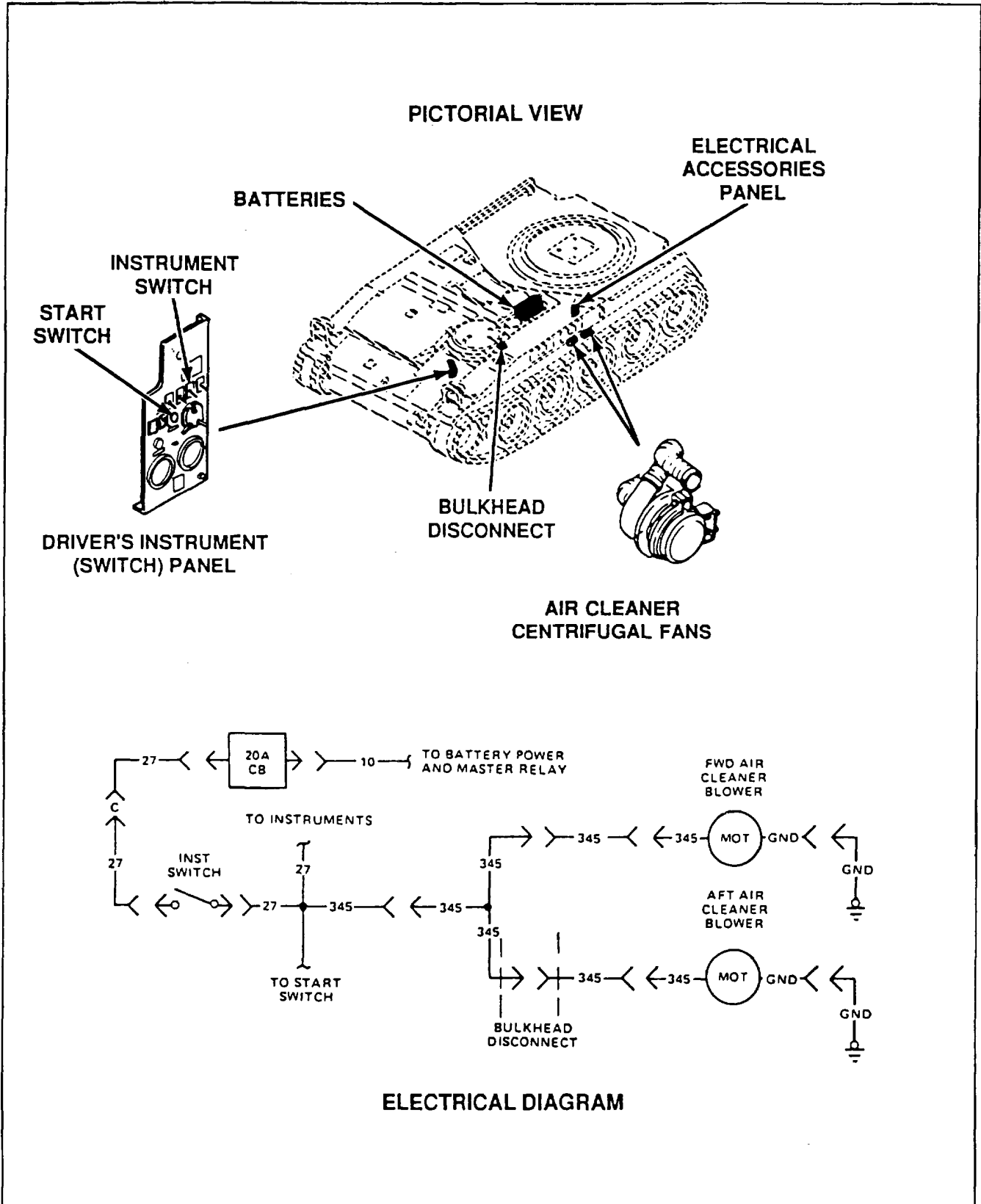
- Step 11. Place red probe in lead 14 (terminal end) of START switch. Ground black probe. Set MASTER and INST switches ON. Press START switch. If multimeter indicates no voltage, replace START switch. Refer to page 2-555. If multimeter indicates about 24 volts, go to step 12. Set MASTER and INST switches OFF. Connect lead 14 to START switch.



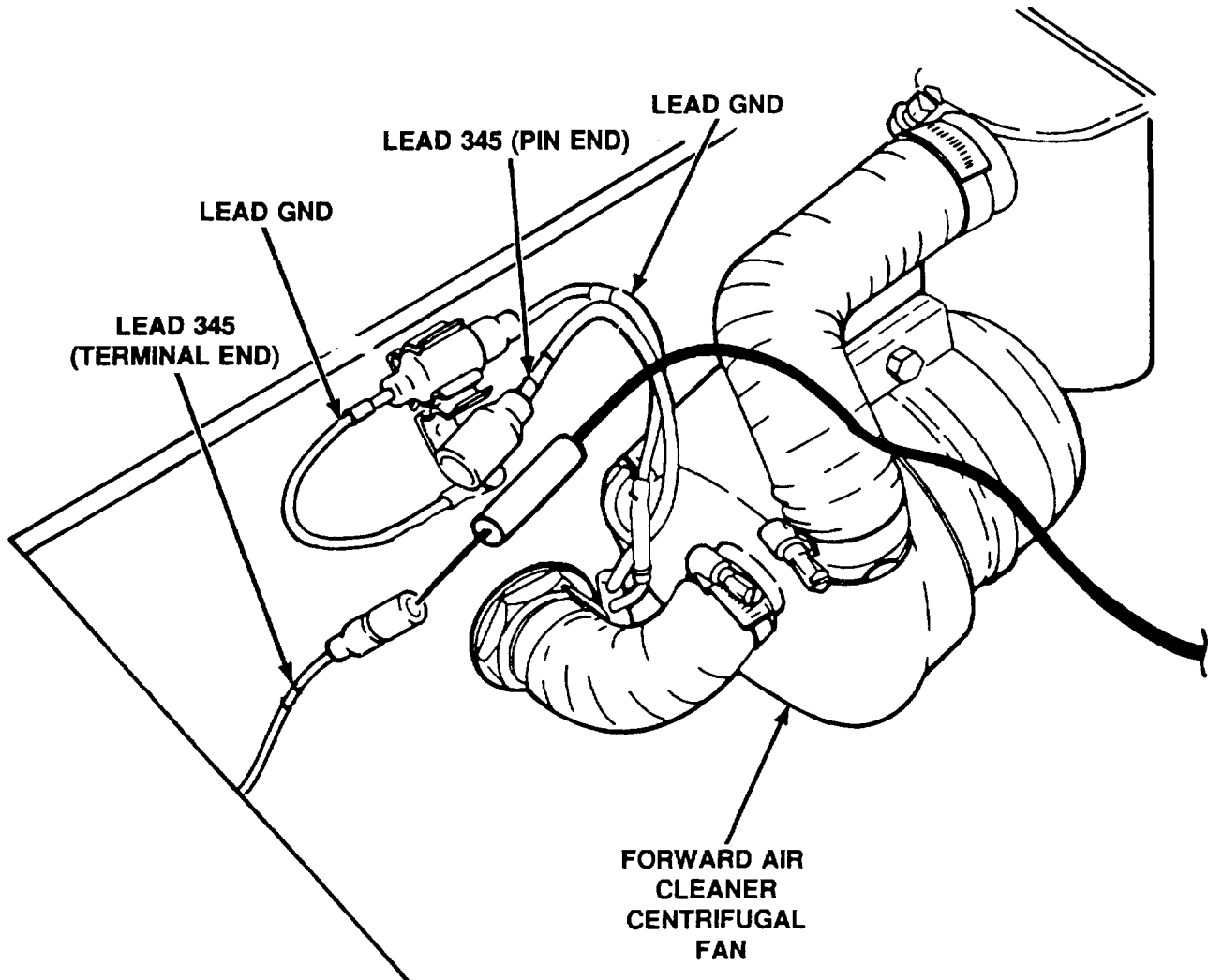
Make sure MASTER switch is OFF before repairing electrical circuits
Failure to observe this warning could result in injury to personnel.

- Step 12. Disconnect wiring harness at engine disconnect. Place red probe in socket E (lead 14) of receptacle. Ground black probe. Set MASTER and INST switches ON. Push START switch. If multimeter indicates no voltage, -, | repair lead 14 from engine disconnect to START switch. Refer to page 2-364. If multimeter indicates about 24 volts, repair lead 14 from engine disconnect to neutral position switch. Refer to page 2-364. Set MASTER and INST switches OFF. Connect wiring harness at engine disconnect.

F. AIR CLEANER BLOWER CIRCUIT.

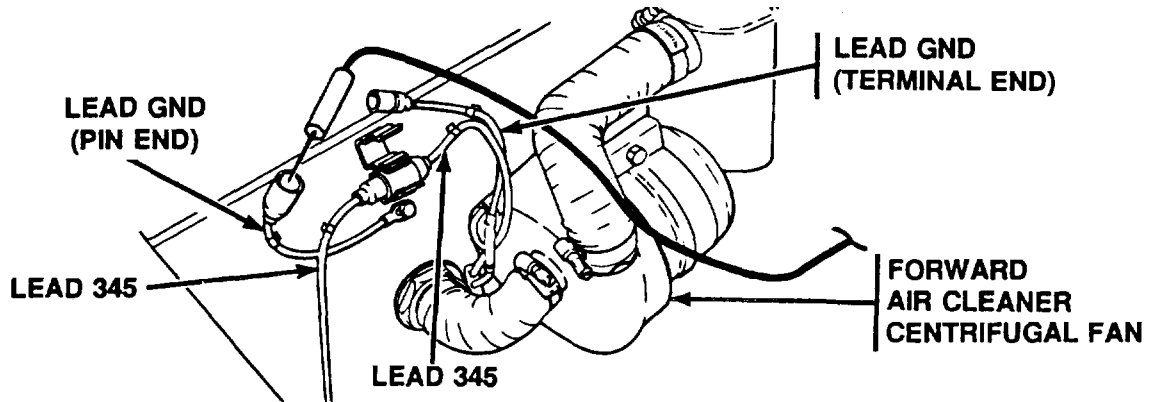


2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

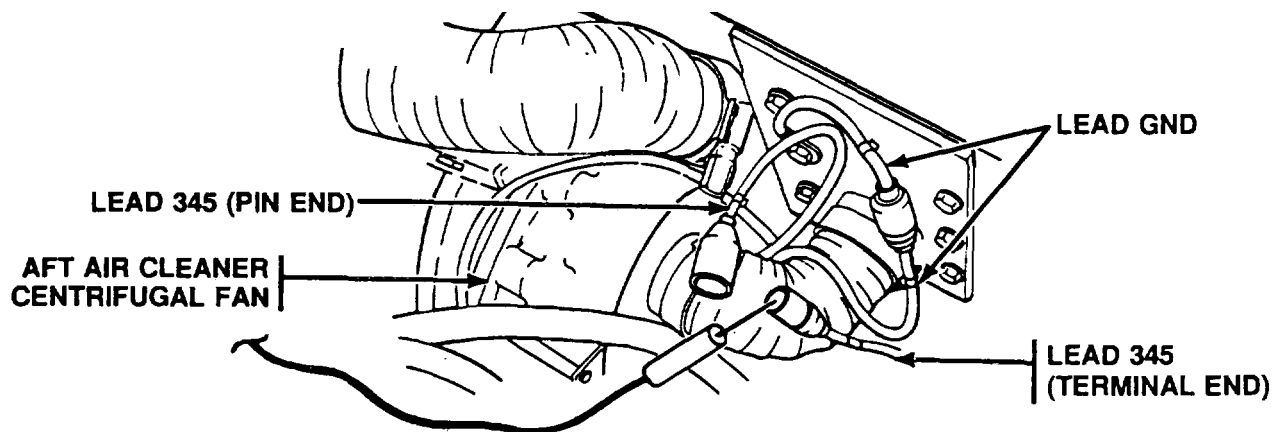

WARNING

Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

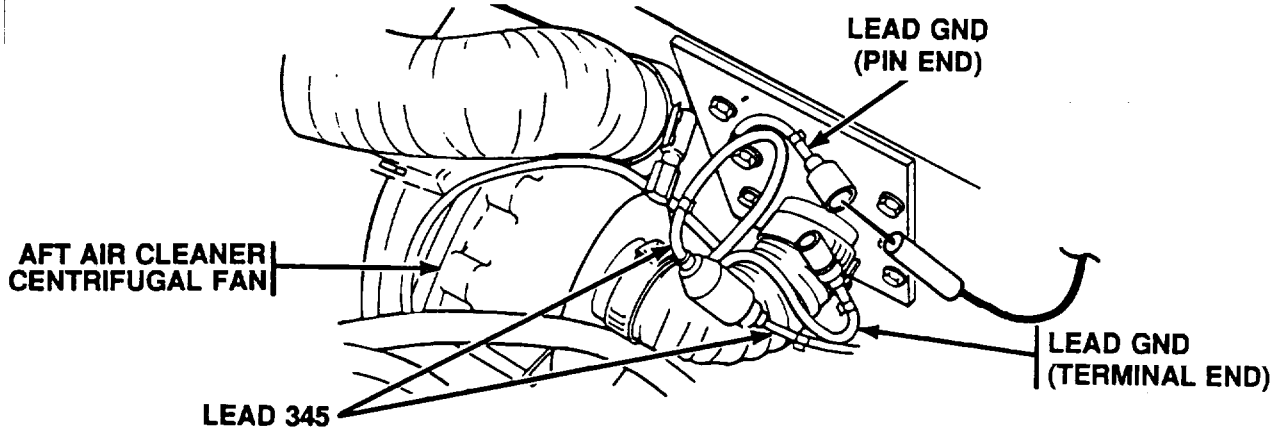
- Step 1. To access electrical leads, remove forward air cleaner blower access cover. Refer to page 2-875. Disconnect lead 345 from forward air cleaner centrifugal fan. Place red probe in lead 345 (terminal end). Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, repair lead 345 from centrifugal fan to INST switch. Refer to page 2-364. If multimeter indicates about 24 volts, go to step 2. Set MASTER and INST switches OFF. Connect lead 345 to forward air cleaner centrifugal fan.



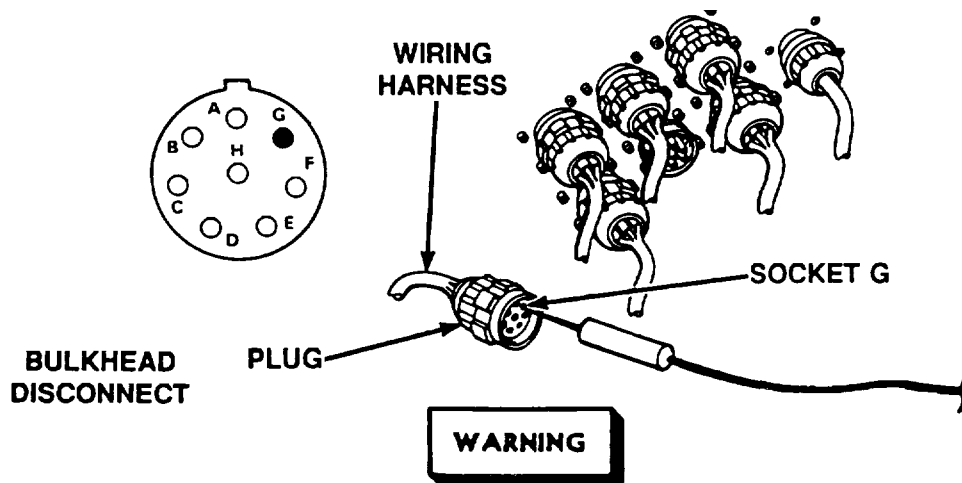
Step 2. Disconnect lead GND from forward air cleaner centrifugal fan. Check continuity between lead GND (pin end) and chassis ground. If no continuity exists, repair lead GND. Refer to page 2-364. If continuity exists, repair or replace forward air cleaner centrifugal fan. Refer to page 2-439. Connect lead GND to forward air cleaner centrifugal fan GND.



Step 3. To access electrical leads, open aft air cleaner blower door assembly. Disconnect lead 345 from aft air cleaner centrifugal fan. Place red probe in lead 345 (terminal end). Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, go to step 5. If multimeter indicates about 24 volts, go to step 4. Set MASTER and INST switches OFF. Connect lead 345 to aft air cleaner centrifugal fan.



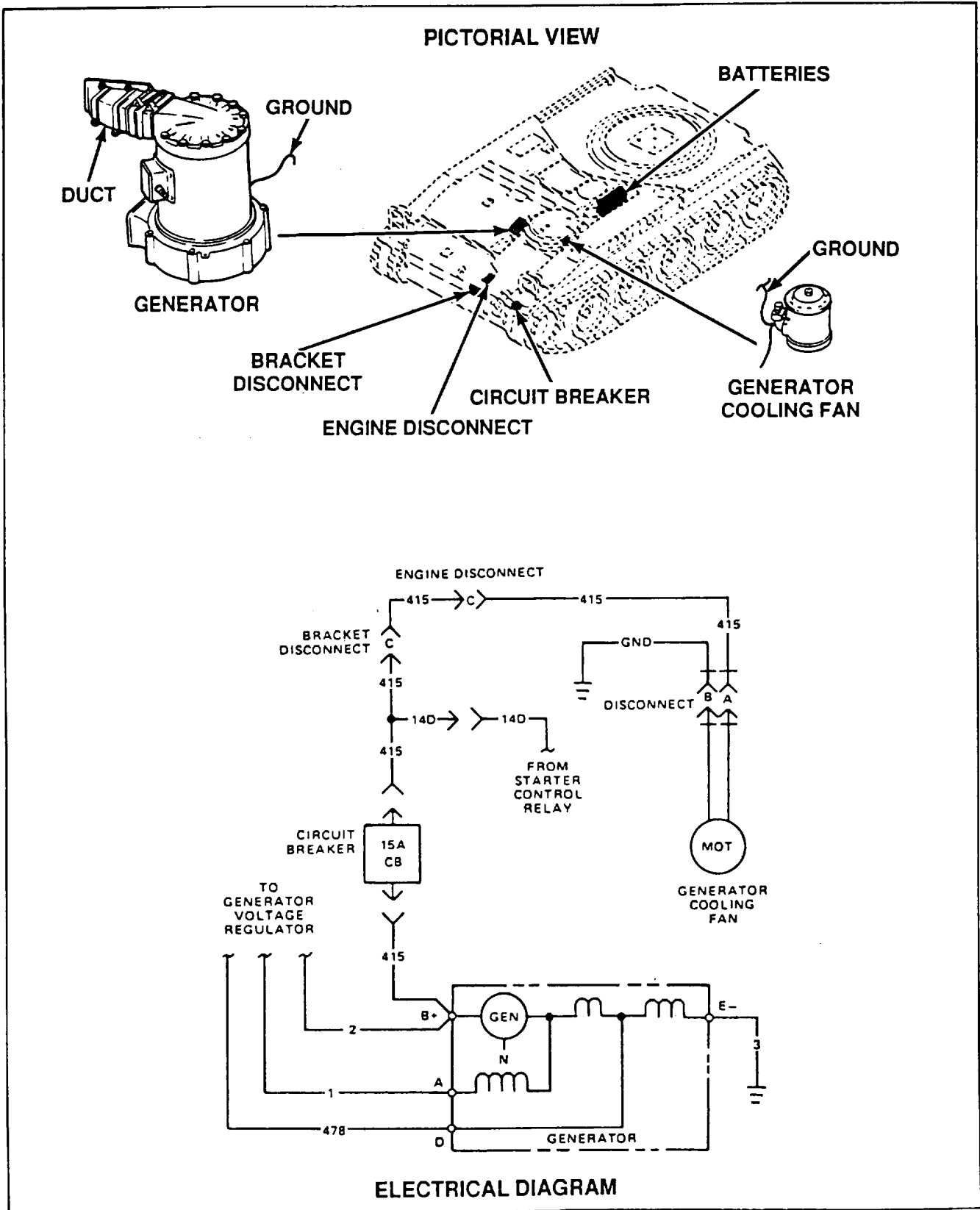
Step 4. Disconnect lead GND from aft air cleaner centrifugal fan. Check continuity between lead GND (pin end) and chassis ground. If no continuity exists, repair ground lead. Refer to page 2-364. If continuity exists, repair or replace aft air cleaner centrifugal fan. Refer to page 2-439. Connect lead GND to aft air cleaner centrifugal fan.



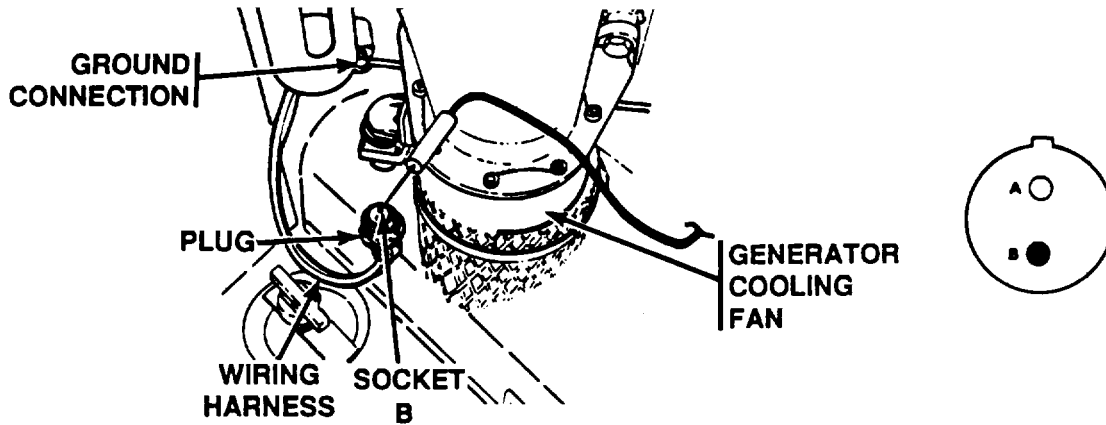
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 5. To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness at bulkhead disconnect. Place red probe in socket G (lead 345) of plug. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, repair lead 345 from bulkhead disconnect to INST switch. Refer to page 2-364. If multimeter indicates about 24 volts, repair lead 345 from bulkhead disconnect to aft air cleaner blower. Refer to page 2-364. Set MASTER and INST switches OFF. Connect wiring harness at bulkhead disconnect.

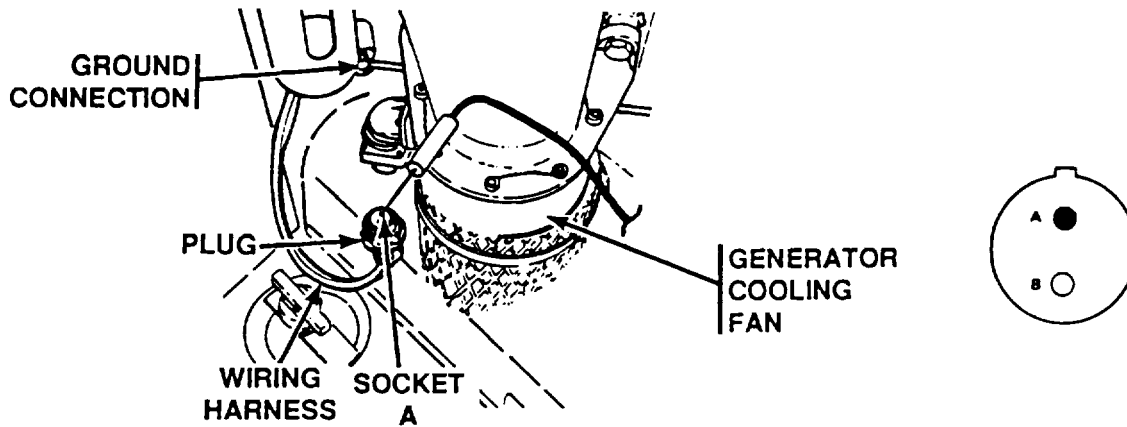
G. GENERATOR COOLING FAN CIRCUIT.



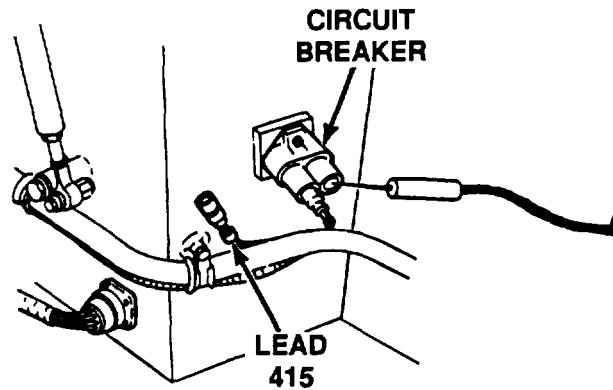
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



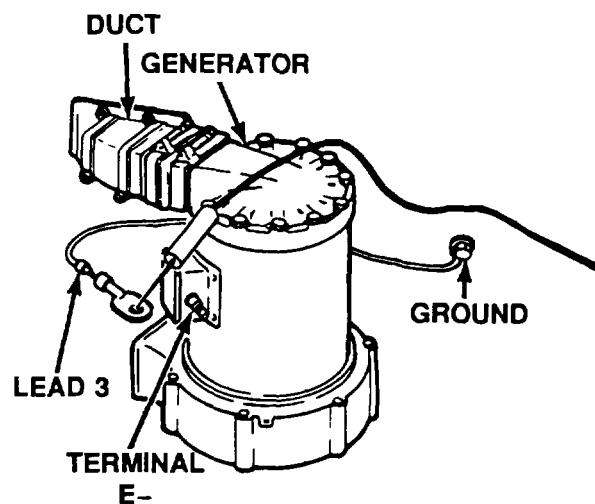
Step 1. Disconnect wiring harness from generator cooling fan. Check continuity between plug socket B (lead GND) and ground. If no continuity exists, repair lead GND between plug and ground. Refer to page 2-364. If continuity exists, go to step 2. Connect wiring harness to generator cooling fan.



Step 2. Disconnect wiring harness from generator cooling fan. Place red probe in plug socket A (lead 415). Ground black probe. Start engine and run at 650 rpm. Check voltage and stop engine. If multimeter indicates about 24 volts, replace generator cooling fan. Refer to page 2-541. If multimeter does not indicate about 24 volts, go to step 3. Connect wiring harness to generator cooling fan.

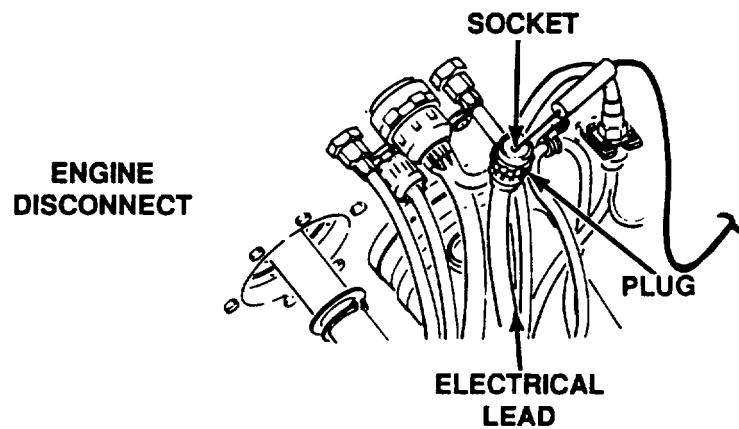


Step3. To access circuit breaker, remove transmission deck lid assembly. Refer to page 2-893. Disconnect leads 415 from circuit breaker (near engine disconnect). Start engine and run at 650 rpm. Check voltage and stop engine. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 415 from generator to circuit breaker. Refer to page 2-364.

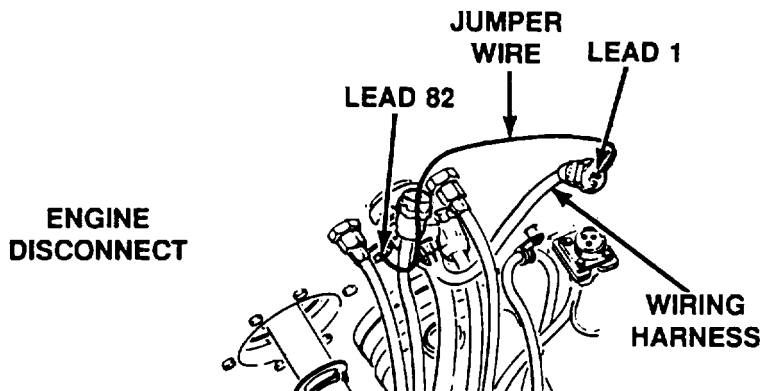


Step 4. To access generator, remove engine deck assembly, refer to page 2-887; and remove radiator support beam, refer to page 2-514. Disconnect lead 3 from generator terminal E-. Check continuity between lead 3 and ground. If continuity exists, go to step 5. If no continuity exists, repair or replace lead 3 between generator and ground. Refer to page 2-364. Connect lead 3 to generator terminal E-.

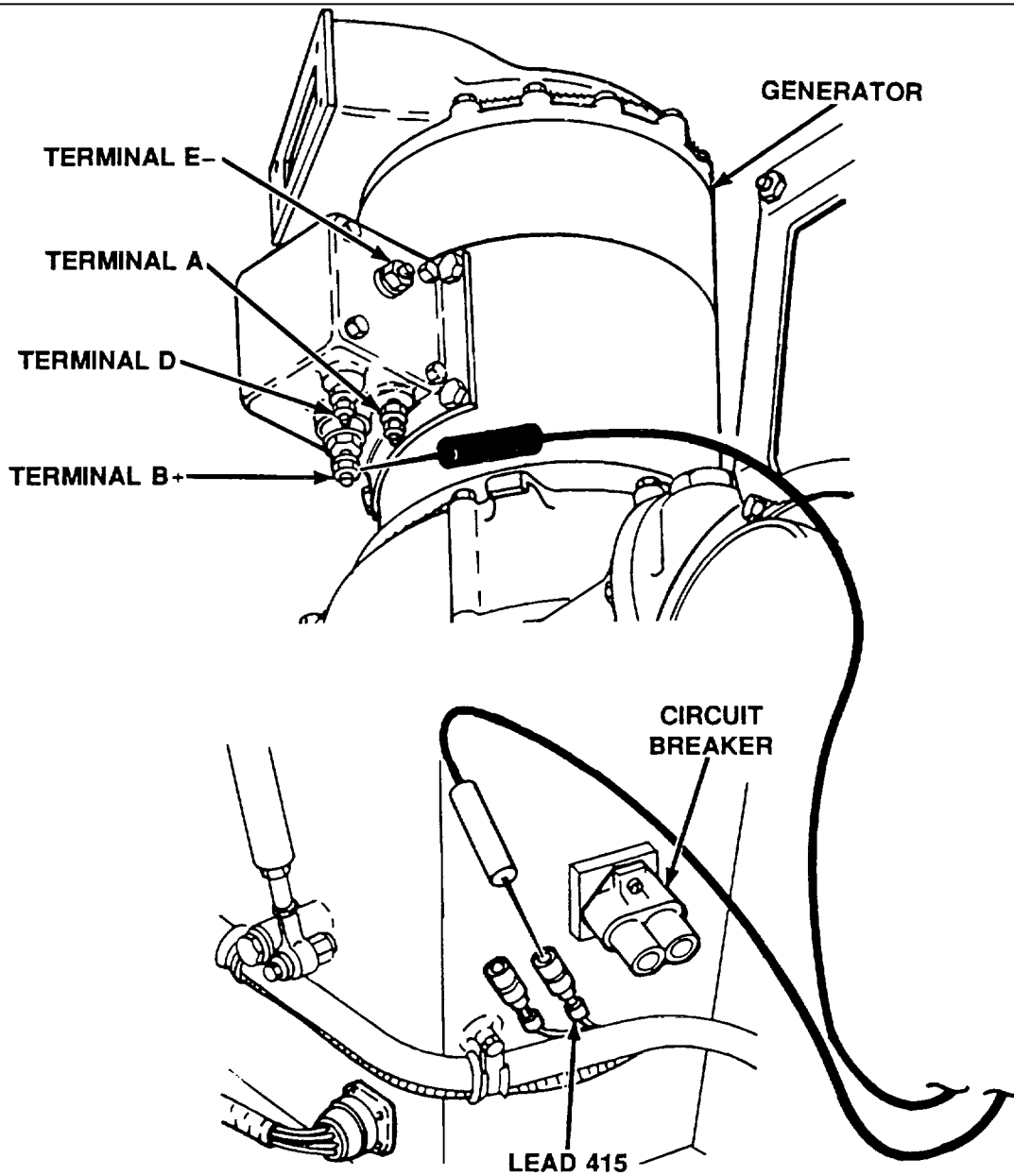
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



Step 5. Disconnect electrical lead at engine disconnect. Place red probe in socket. Ground black probe. Start engine and run at 650 rpm. Check voltage and stop engine. If multimeter indicates 24 to 29 volts, go to step 7. If multimeter indicates no or low voltage, go to step 6. Connect lead.

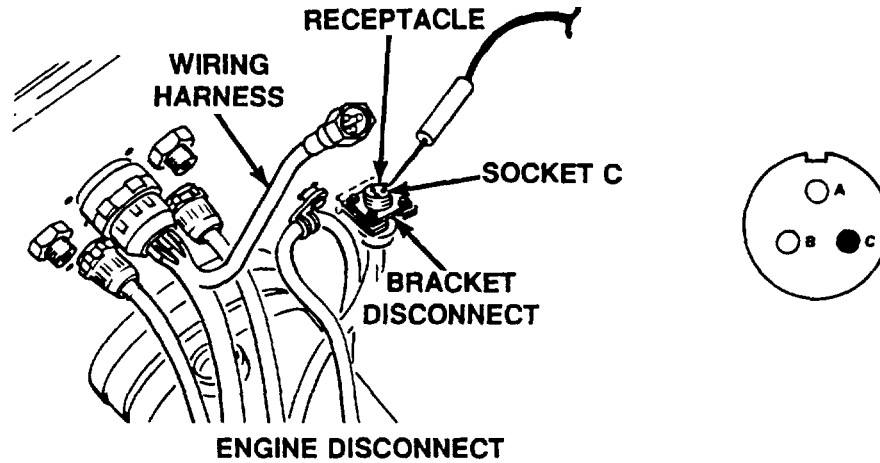


Step 6. Disconnect electrical lead (lead 82) and wiring harness at engine disconnect. Place Insulated jumper wire to pin B (lead 1). Set MASTER switch ON. Strike jumper wire to socket (lead 82). Connect leads and go to step 5. Set MASTER switch OFF.

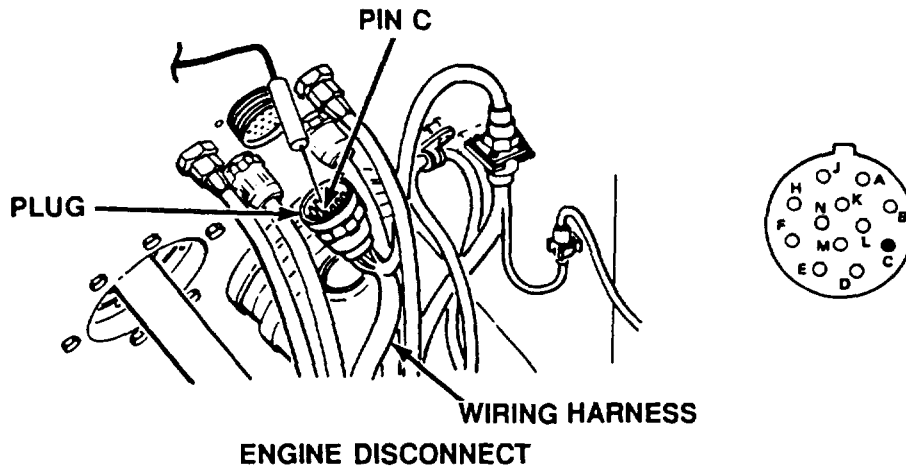


Step 7. Disconnect leads 415 from circuit breaker (near engine disconnect). Check continuity between generator terminal B+ and each lead 415. If continuity exists in one lead 415, go to step 8. If no continuity exists in one lead 415, repair lead 415 between circuit breaker and generator. Refer to page 2-364. Connect leads 415 to circuit breaker (near engine disconnect).

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

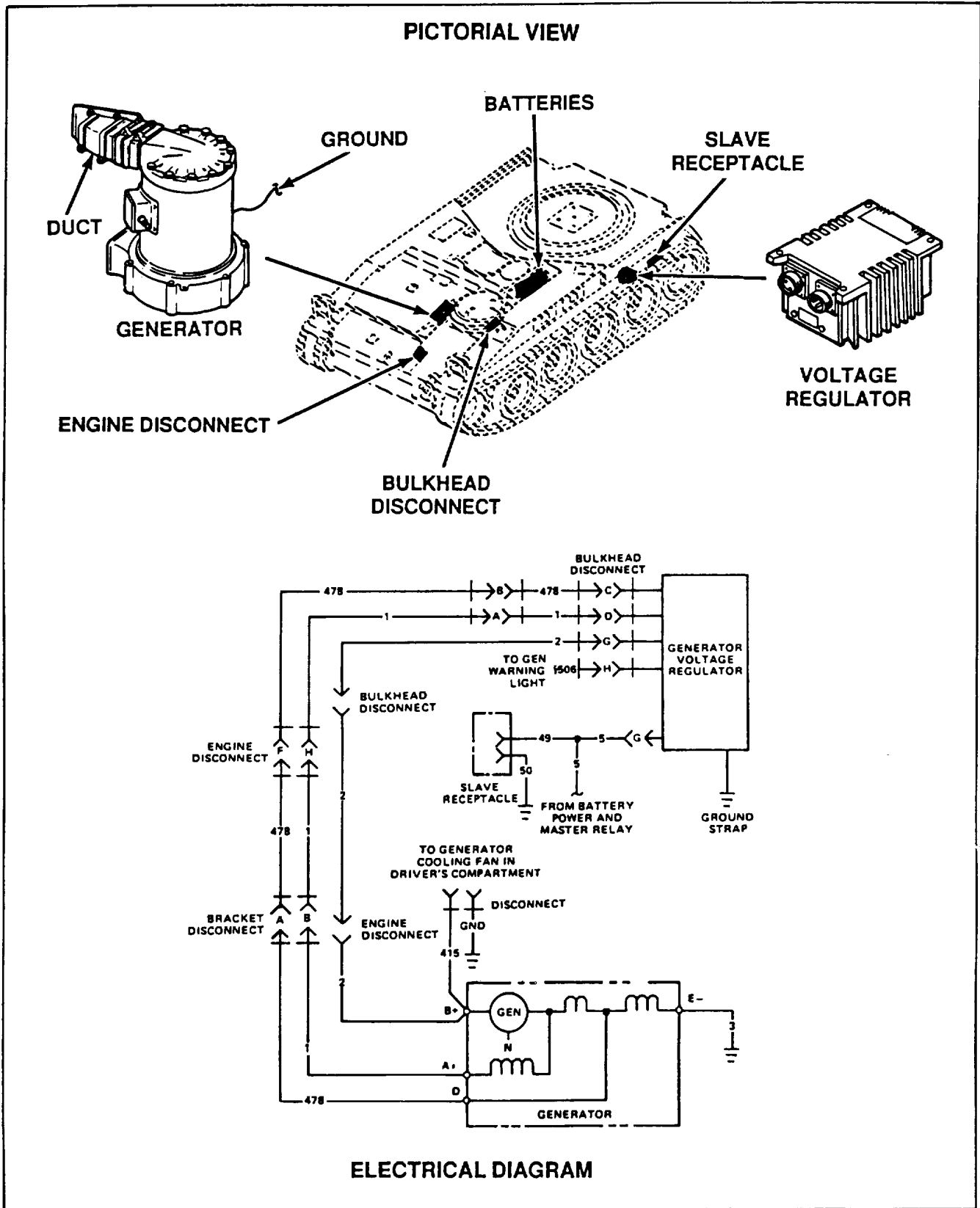


Step 8. Disconnect wiring harness at bracket disconnect (near engine disconnect). Check resistance between receptacle socket C (lead 415) and ground. If multimeter indicates 0 to 4 ohms, go to step 9. If multimeter indicates more than 4 ohms, repair lead 415 between circuit breaker and bracket disconnect, refer to page 2-364; or replace generator cooling fan, refer to page 2-541. Connect wiring harness at bracket disconnect (near engine disconnect).

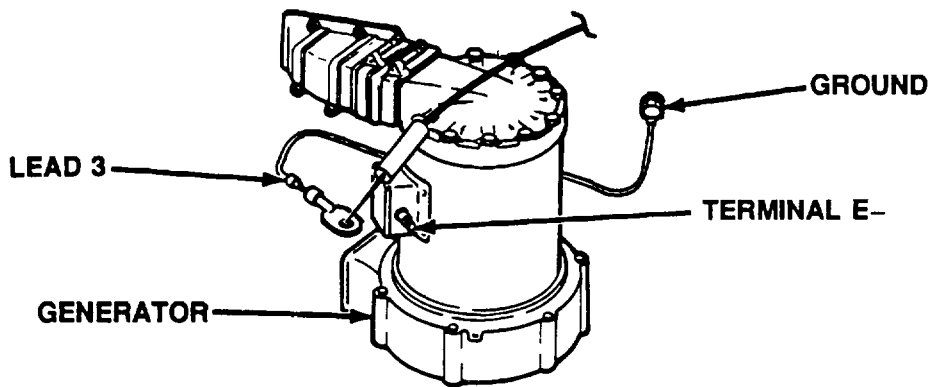


Step 9. Disconnect wiring harness at engine disconnect. Check resistance between plug pin C (lead 415) and ground. If multimeter indicates 0 to 4 ohms, repair lead 415 between engine disconnect and generator cooling fan. Refer to page 2-364. If multimeter indicates more than 4 ohms, repair lead 415 between engine disconnect and bracket disconnect, refer to page 2-364; or replace generator cooling fan, refer to page 2-541. Connect wiring harness at engine disconnect.

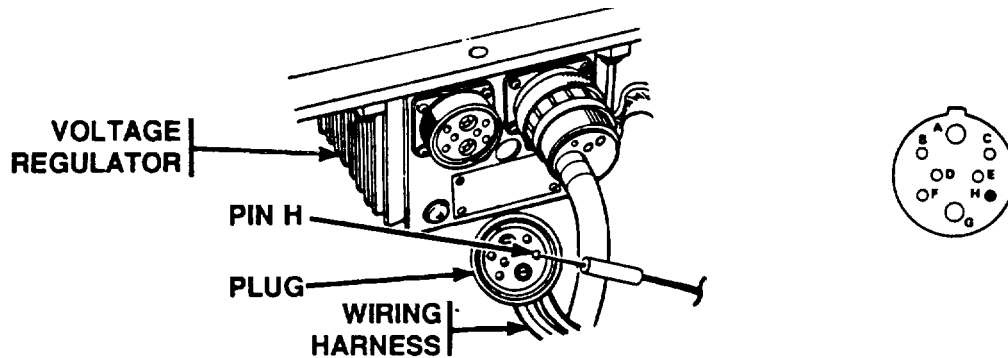
H. GENERATOR OUTPUT CIRCUIT.



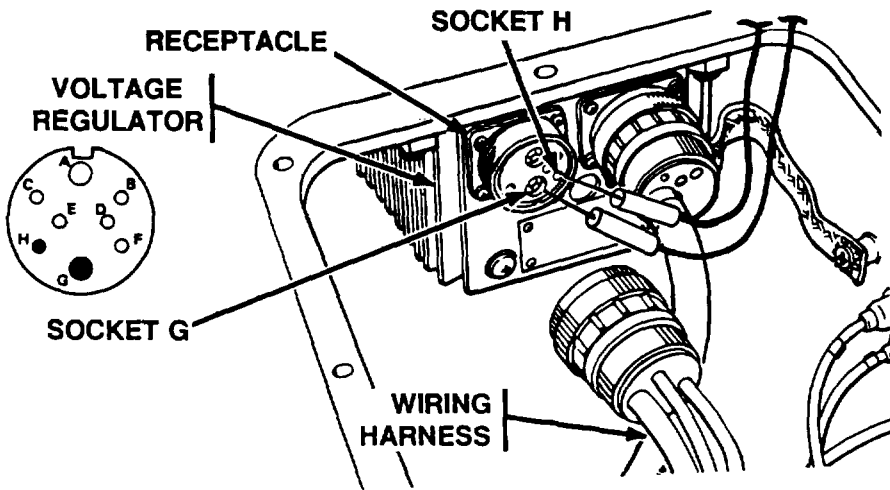
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



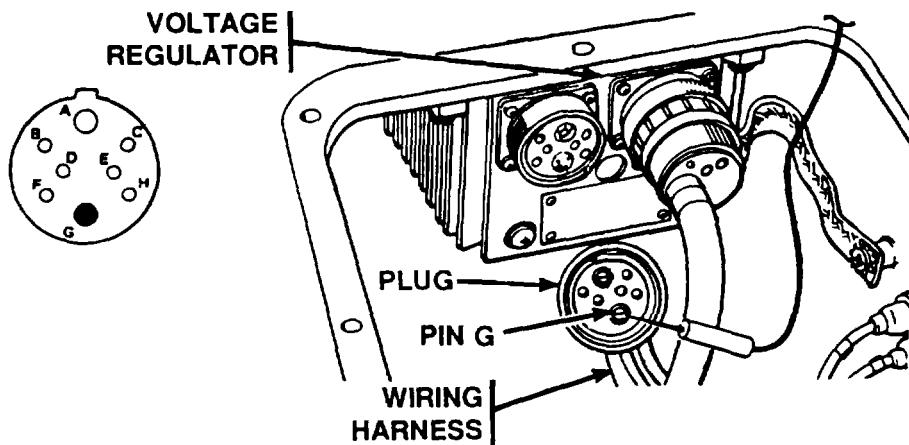
Step 1. To access generator, remove engine deck assembly, refer to page 2-887; and remove radiator support beam, refer to page 2-514. Disconnect lead 3 from generator terminal E-. Check continuity between lead 3 and ground. If continuity exists, go to step 2. If no continuity exists, repair lead 3 between generator and ground. Connect lead 3 to generator terminal E-.



Step 2. To access voltage regulator, remove left CO2 cylinder access cover. Refer to page 2-875. Disconnect wiring harness from voltage regulator. Place red probe on plug pin H (lead 506). Ground black probe. Set MASTER and INST switches ON. If multimeter indicates about 24 volts, go to step 3. If multimeter indicates no voltage, troubleshoot generator warning light circuit. Refer to page 2-177. Connect wiring harness to voltage regulator. Set MASTER and INST switches OFF.

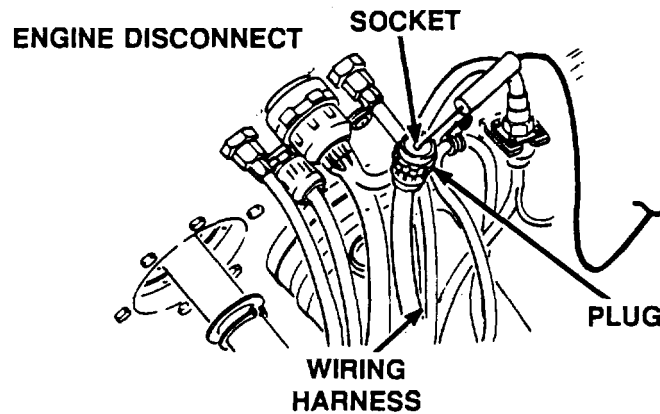


Step 3. Check continuity between receptacle sockets G (lead 2) and H (lead 506) on voltage regulator. If continuity exists, go to step 4. If no continuity exists, replace voltage regulator. Refer to page 2-546.

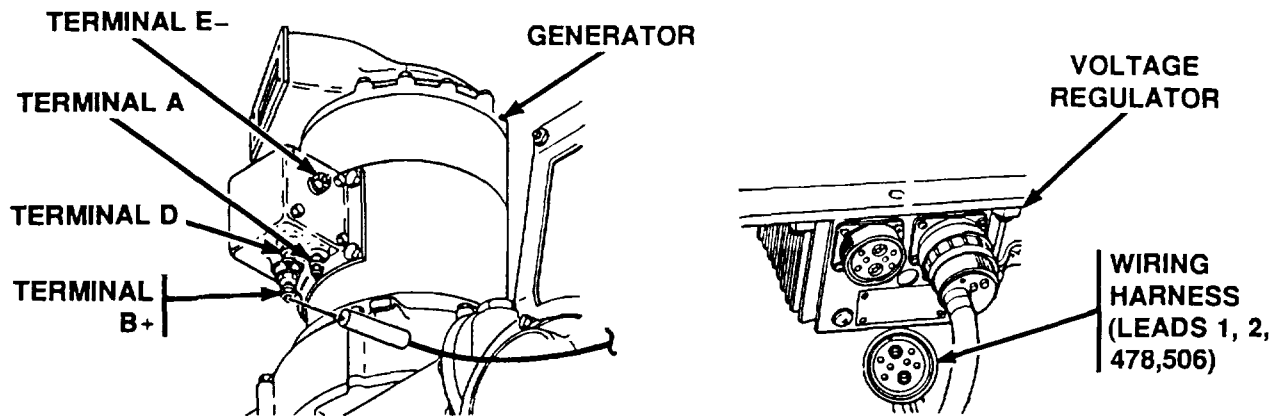


Step 4. Check resistance between plug pin G (lead 2) and ground. If multimeter indicates 0 to 4 ohms, go to step 8. If multimeter indicates more than 4 ohms, go to step 5. Connect wiring harness to voltage regulator.

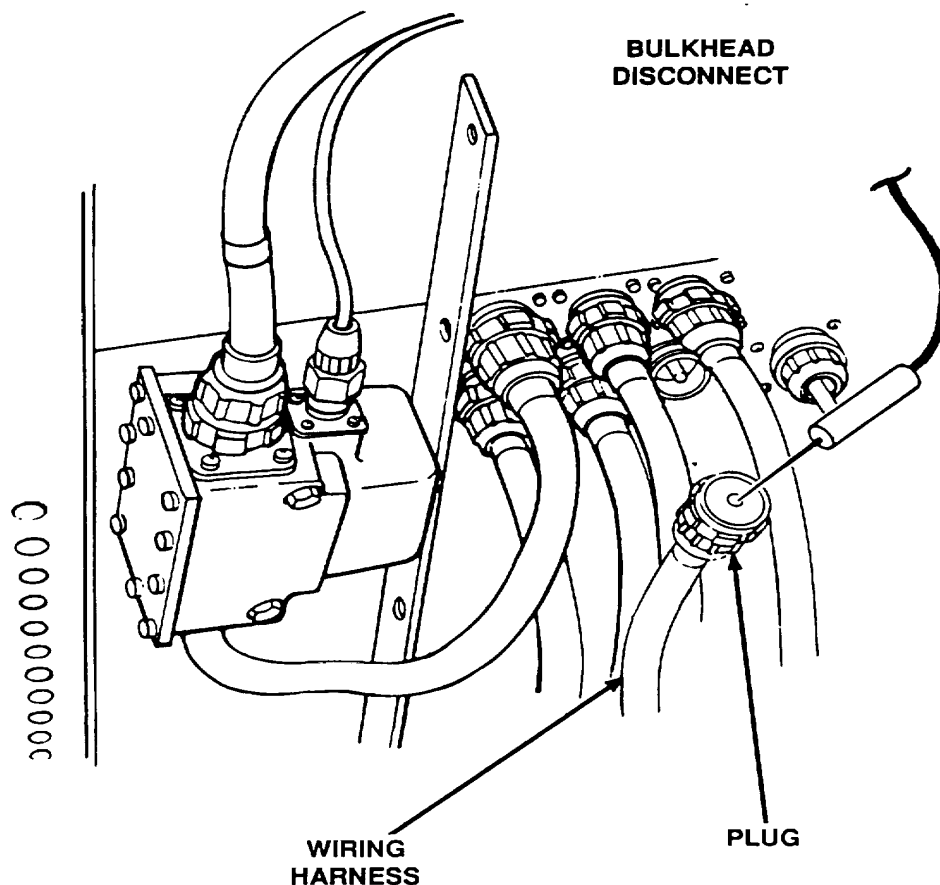
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



Step 5. To access engine disconnect, remove transmission deck lid assembly. Refer to page 2-893. Disconnect wiring harness at engine disconnect. Check resistance between plug socket (lead 2) and ground. If multimeter indicates 0 to 4 ohms, go to step 6. If multimeter indicates more than 4 ohms, go to step 7. Connect wiring harness at engine disconnect.

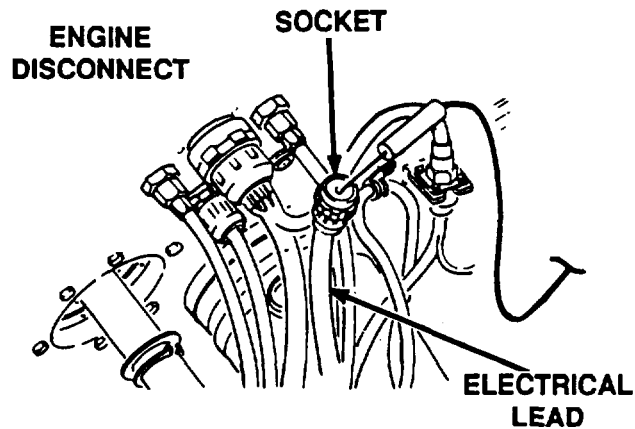


Step 6. Disconnect wiring harness (leads 1,2,478, and 506) from voltage regulator. Disconnect leads 415 and GND from generator cooling fan at disconnect in driver's compartment. Check resistance between generator terminal B+ and ground. If multimeter indicates 0 to 4 ohms, go to step 8. If multimeter indicates more than 4 ohms, replace generator. Refer to page 2-541. Connect leads 415 and GND to generator cooling fan at disconnect in driver's compartment. Connect wiring harness to voltage regulator.

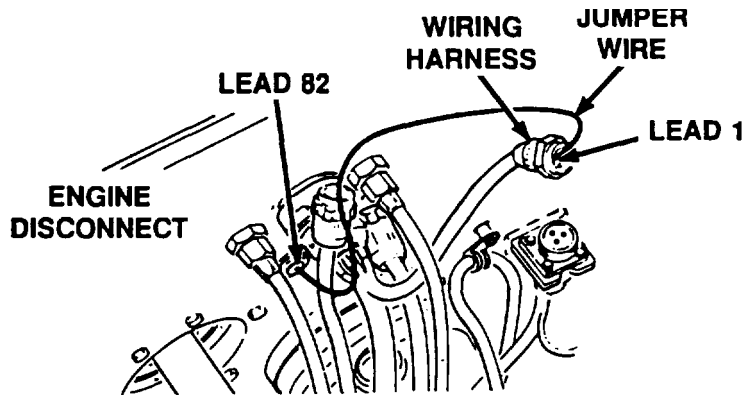


- Step 7. To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness at bulkhead disconnect. Check resistance between plug socket (lead 2) and ground. If multimeter indicates 0 to 4 ohms, repair lead 2 between bulkhead disconnect and voltage regulator. Refer to page 2-364. If multimeter indicates more than 4 ohms, repair lead 2 between bulkhead disconnect and engine disconnect. Refer to page 2-364. Connect wiring harness at bulkhead disconnect.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

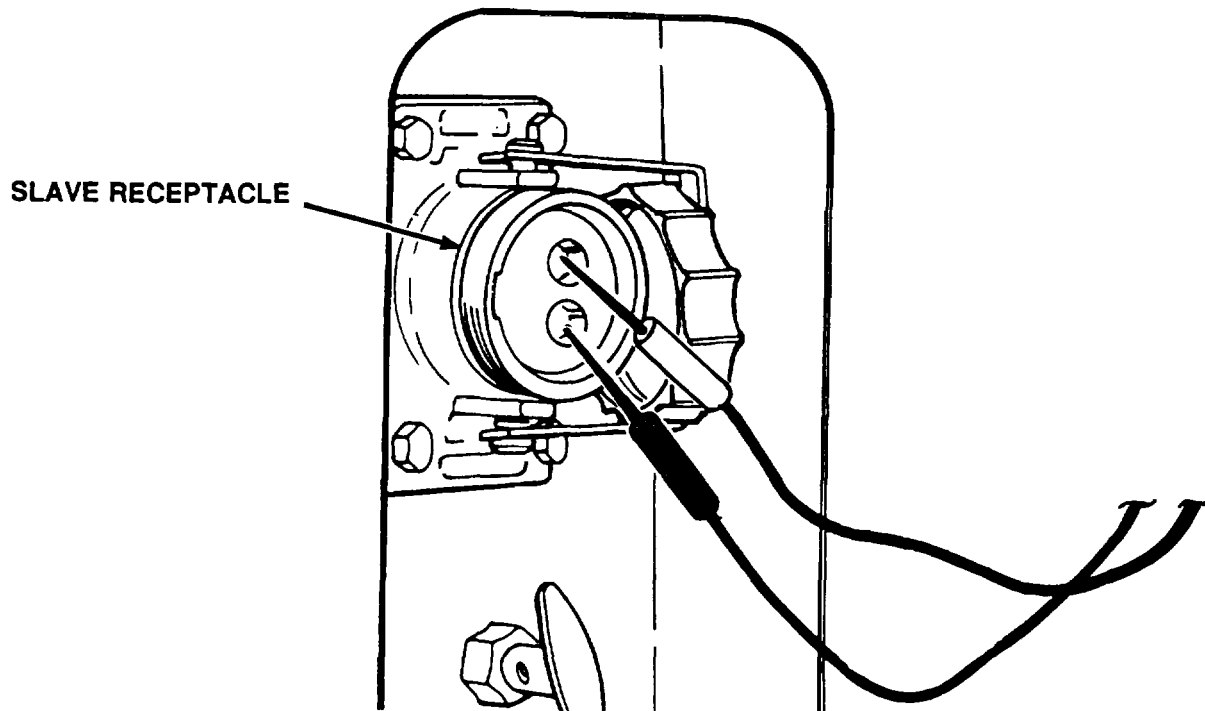


Step 8. Disconnect electrical lead at engine disconnect. Place red probe in socket. Ground black probe. Start engine and run at 650 rpm. Check voltage and stop engine. If multimeter indicates 24 to 29 volts, go back to step 2. If multimeter indicates no or low voltage, go to step 9. Connect lead.



Step 9. Disconnect electrical lead (lead 82) and wiring harness at engine disconnect. Place insulated jumper wire to pin B (lead 1). Set MASTER switch ON. Strike jumper wire to socket (lead 82). Connect leads and go back to step 8. Set MASTER switch OFF.

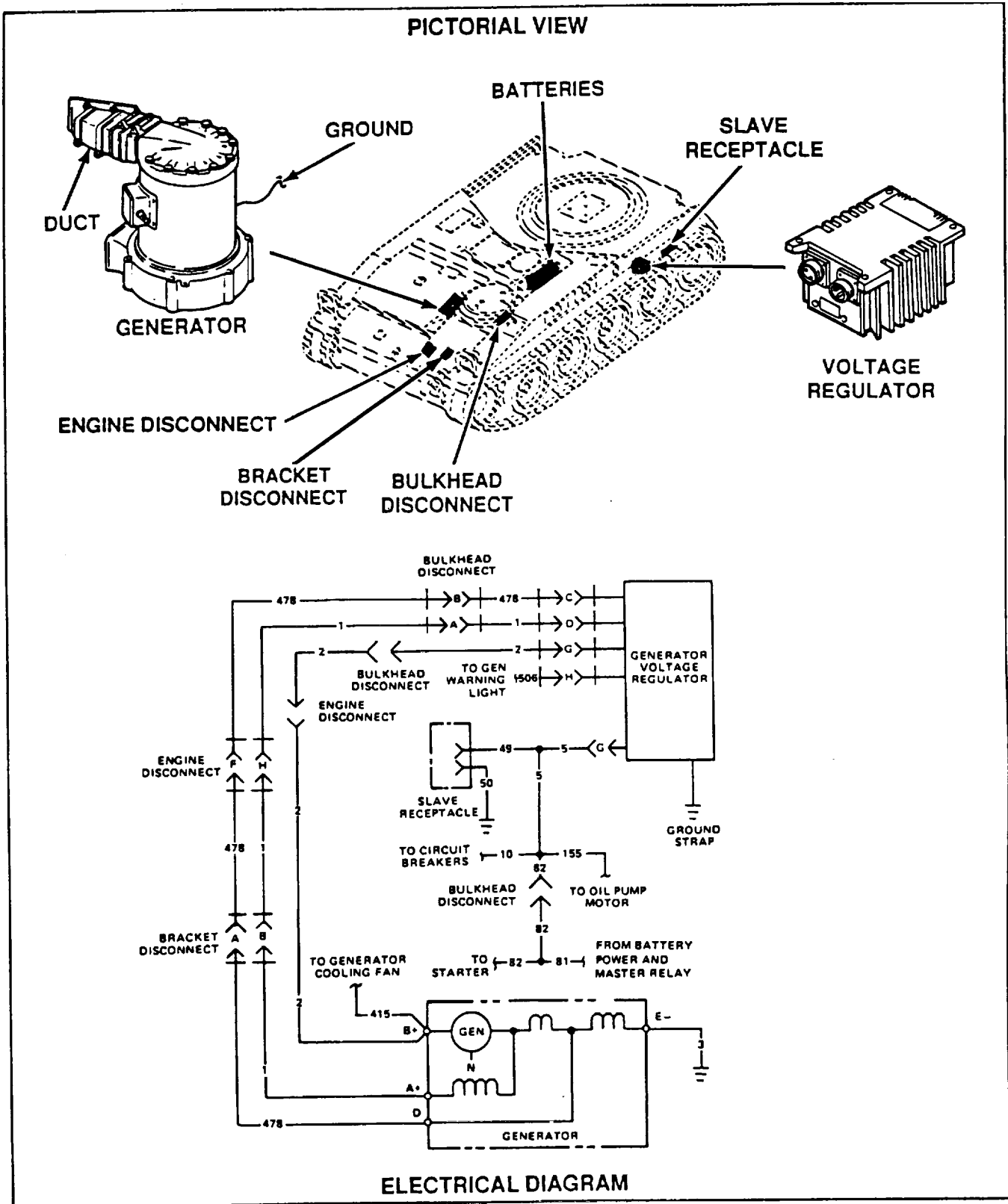
I. GENERATOR-REGULATOR CHARGING CIRCUIT TEST

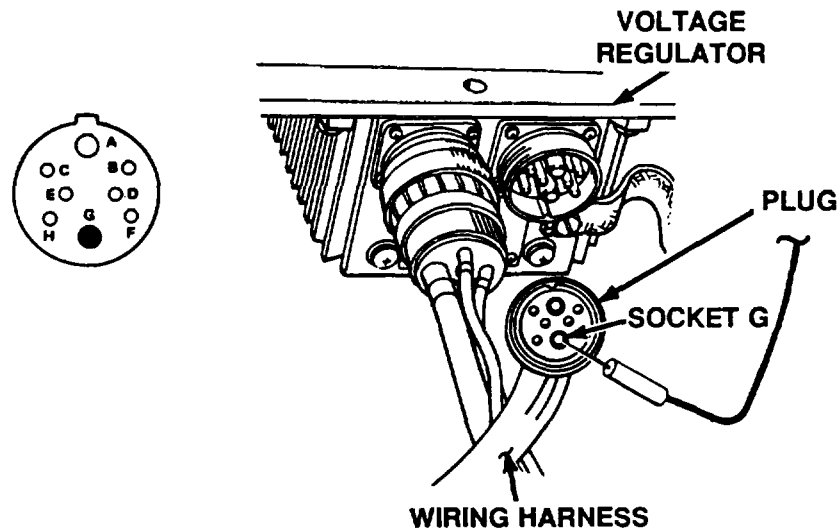


- Step 1. Check voltage at slave receptacle terminals with engine running. Multimeter should indicate about 27 volts. If multimeter indicates less than 22 volts, stop engine. Troubleshoot battery power circuit. Refer to page 2-82.
- Step 2. With engine running at 1000 to 1200 rpm, set vehicular light switch to SER DRIVE. Press headlight dimmer switch until HI BEAM IND light is on.
- Step 3. Check voltage at slave receptacle with engine running. Multimeter reading should increase 1 to 3 volts above reading in step 1. If voltage increases above 29 volts, stop engine and troubleshoot generator output circuit for overcharging. Refer to page 2-117.
- Step 4. If voltage increases momentarily and then drops back to first reading, generator-regulator charging circuit is not operating properly. Stop engine, turn vehicular light switch OFF, and troubleshoot generator charging circuit. Refer to page 2-124.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.)

J. GENERATOR CHARGING CIRCUIT

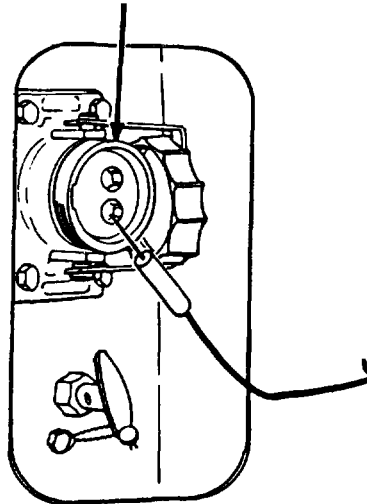




Step 1.

To access voltage regulator, remove left CO2 cylinder access cover. Refer to page 2-875. Disconnect wiring harness from voltage regulator. Place red probe in plug socket G (lead 5). Ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, go to step 2. If multimeter indicates about 24 volts, go to step 5. Set MASTER switch OFF. Connect wiring harness to voltage regulator.

SLAVE RECEPTACLE

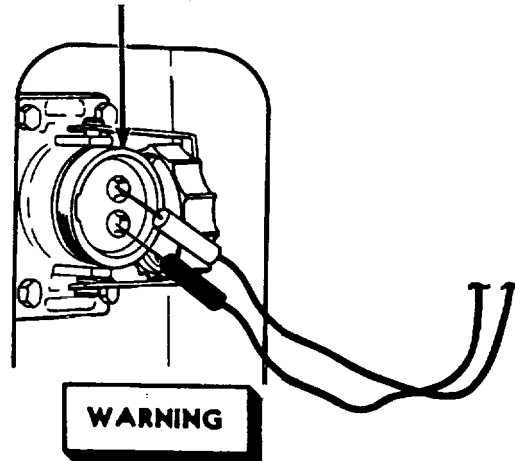


Step 2.

Place red probe in socket (-) of slave receptacle. Ground black probe. If multimeter indicates continuity, go to step 3. If multimeter indicates no continuity, repair lead 50 between slave receptacle and ground (located above aft air cleaner blower). Refer to page 2-364.

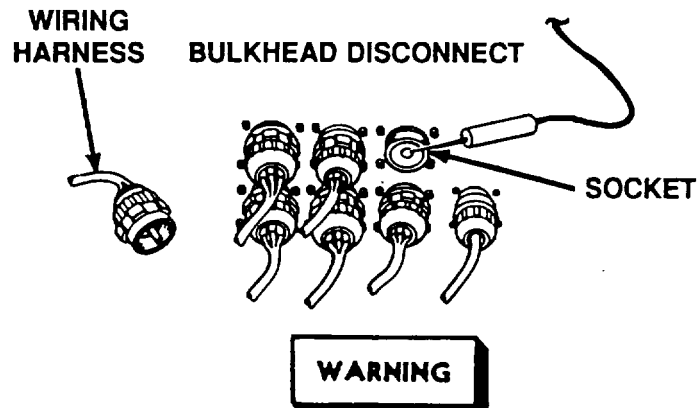
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

SLAVE RECEPTACLE

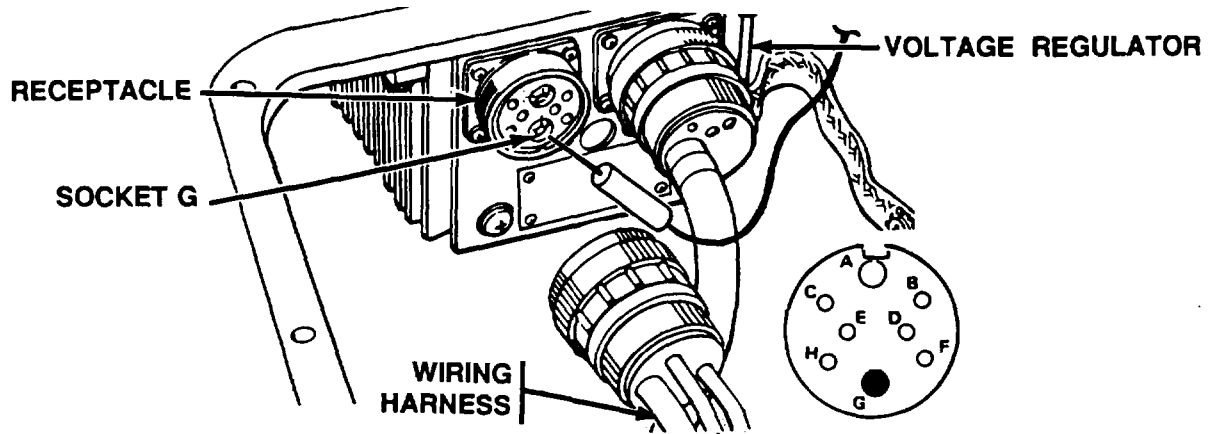


Make sure MASTER switch is off before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 3. Place red probe in socket (+) of slave receptacle. Place black probe in socket (-) of slave receptacle. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 49 between slave receptacle and generator voltage regulator. Refer to page 2-364. Set MASTER switch OFF. Failure to observe this warning could result in injury to personnel.



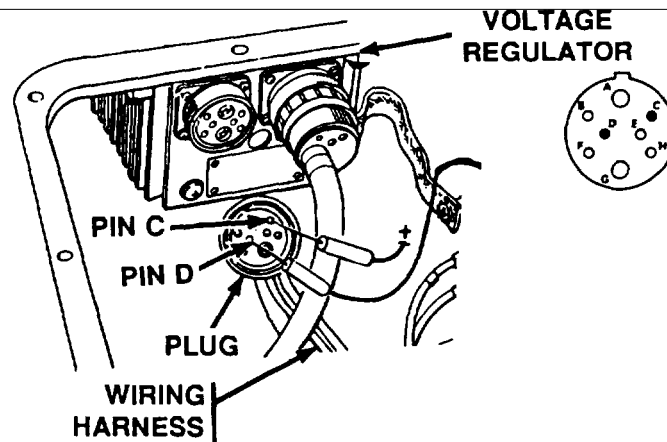
- Step 4. To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness at bulkhead disconnect. Place red probe in socket (lead 2). Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 5. If multimeter indicates no voltage, repair lead 2 between bulkhead disconnect and generator-regulator. Refer to page 2-364. Set MASTER switch OFF. Connect wiring harness at bulkhead disconnect.



Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

Step 5.

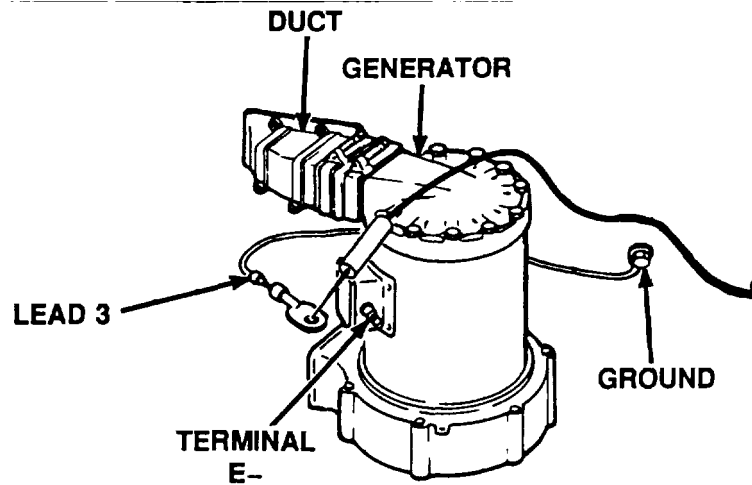
Disconnect wiring harness from voltage regulator. Place red probe in receptacle socket G (lead 2) of voltage regulator and ground black probe. Set MASTER switch ON. If multimeter indicates 0 to 2 volts, go to step 6. If multimeter indicates 3 or more volts, replace voltage regulator. Refer to page 2-546. Set MASTER switch OFF. If voltage regulator is replaced, connect wiring harness to voltage regulator and perform generator-regulator charging circuit test. Refer to page 2-123.



Step 6.

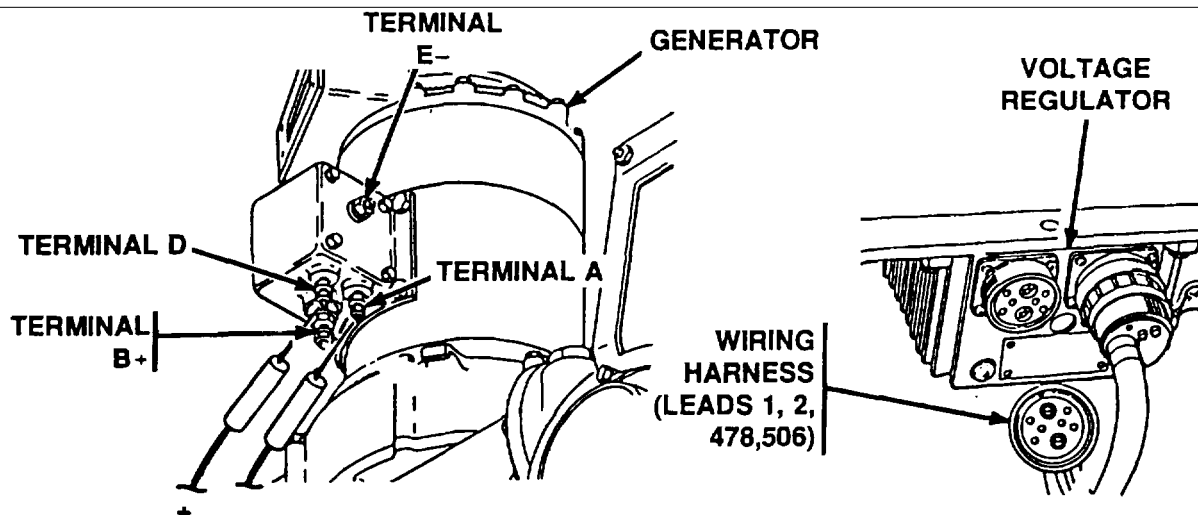
Check resistance between plug pin C (lead 478) and ground. Check resistance between plug pin D (lead 1) and ground. If multimeter indicates 0 to 4 ohms on each pin, go to step 12. If multimeter indicates more than 4 ohms on one or both pins, go to step 7. Connect wiring harness to voltage regulator.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



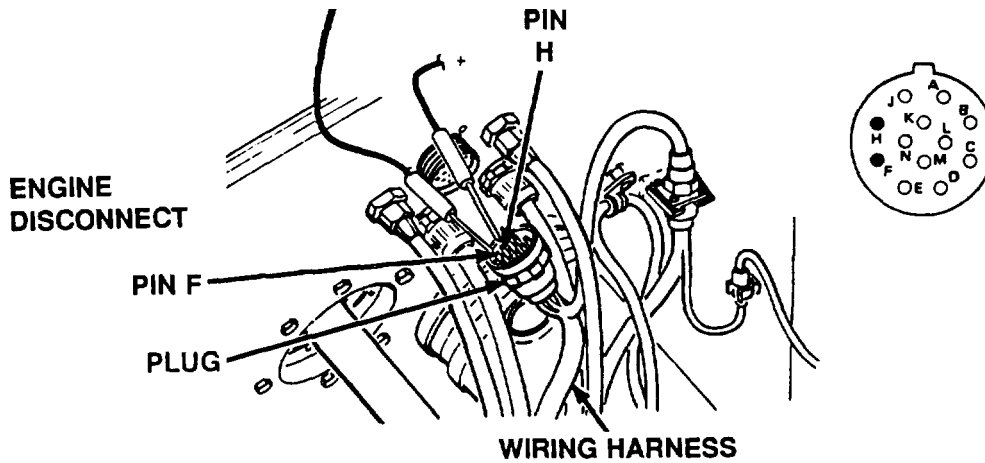
Step 7.

To access generator, remove engine deck assembly, refer to page 2-887; and remove radiator support beam, refer to page 2-514. Disconnect lead 3 from generator terminal E-. Check continuity between lead 3 and ground. If continuity exists, go to step 8. If no continuity exists, repair lead 3 between generator and ground. Refer to page 2-364. Connect lead 3 to generator terminal E-.



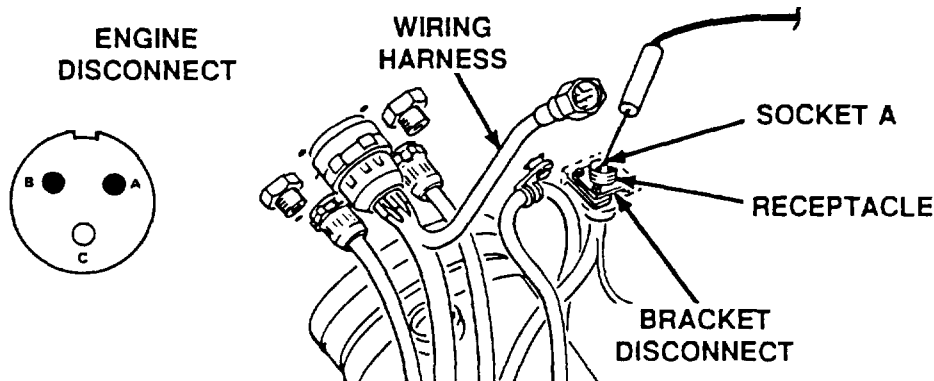
Step 8

Disconnect wiring harness (leads 1, 2, 478, and 506) from voltage regulator. Check resistance between generator terminal A and ground, and between generator terminal D and ground. If multimeter indicates 0 to 4 ohms on both terminals, go to step 1. If multimeter indicates more than 4 ohms on one or both terminals, replace generator. Refer to page 2-541. Connect wiring harness to voltage regulator.



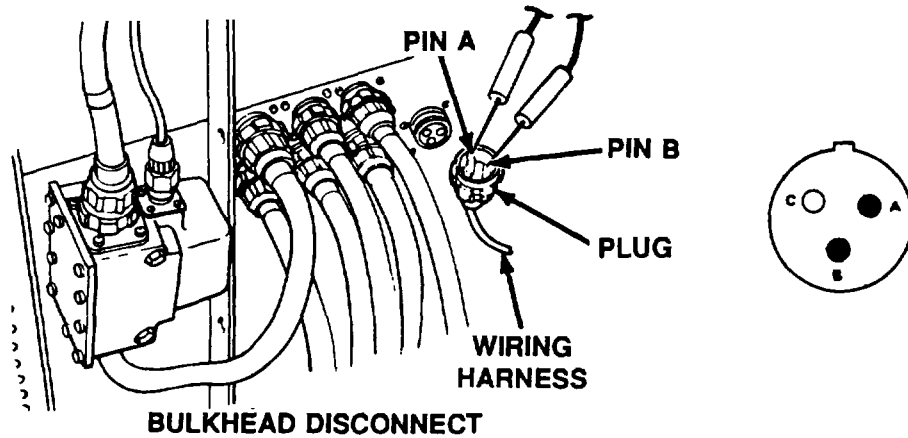
Step 9.

To access engine disconnect, remove transmission deck lid assembly. Refer to page 2-893. Disconnect wiring harness at engine disconnect. Check resistance between plug pin F (lead 478) and ground. Check resistance between plug pin H (lead 1) and ground. If multimeter indicates 0 to 4 ohms on both pins, go to step 11. If multimeter indicates more than 4 ohms on one or both pins, go to step 10. Connect wiring harness at engine disconnect.



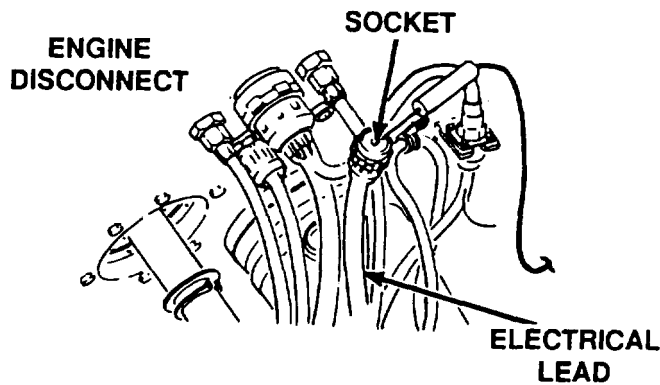
Step 10.

Disconnect wiring harness at bracket disconnect (near engine disconnect). Check resistance between receptacle socket A (lead 478) and ground. Check resistance between receptacle socket B (lead 1) and ground. If multimeter indicates 0 to 4 ohms on pin A, repair lead 478 between bracket disconnect and engine disconnect. Refer to page 2-364. If multimeter indicates 0 to 4 ohms on pin B, repair lead 1 between bracket disconnect and engine disconnect. If multimeter indicates more than 4 ohms on pin A, repair lead 478 between bracket disconnect and generator. Refer to page 2-364. If multimeter indicates more than 4 ohms on pin B, repair lead 1 between bracket disconnect and generator. Refer to page 2-364. Connect wiring harness at bracket disconnect (near engine disconnect).



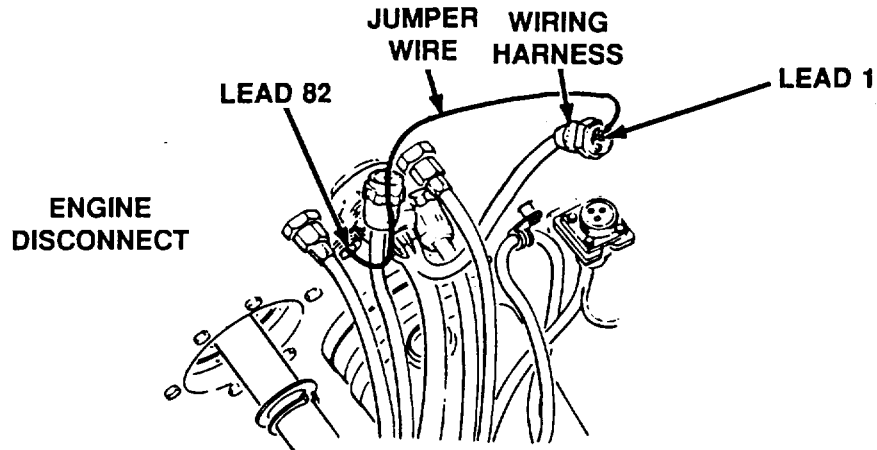
Step 11.

Disconnect wiring harness at bulkhead disconnect. Check resistance between plug pin A (lead 1) and ground. Check resistance between plug pin B (lead 478) and ground. If multimeter indicates 0 to 4 ohms on pin A, repair lead 1 between bulkhead disconnect and voltage regulator. Refer to page 2-364. If multimeter indicates 0 to 4 ohms on pin B, repair lead 478 between bulkhead disconnect and voltage regulator. Refer to page 2-364. If multimeter indicates more than 4 ohms on pin A, repair lead 1 between bulkhead disconnect and engine disconnect. Refer to page 2-364. If multimeter indicates more than 4 ohms on pin B, repair lead 478 between bulkhead disconnect and engine disconnect. Refer to page 2-364. Connect wiring harness at bulkhead disconnect.

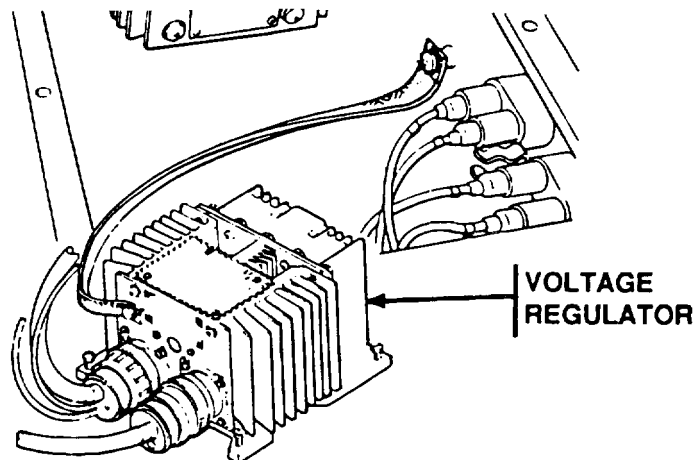


Step 12.

Disconnect electrical lead at engine disconnect. Place red probe in socket. Ground black probe. Start engine and run at 650 rpm. Check voltage and stop engine. If multimeter indicates 24 to 29 volts, go to step 7. If multimeter indicates no or low voltage, go to step 13. Connect lead.



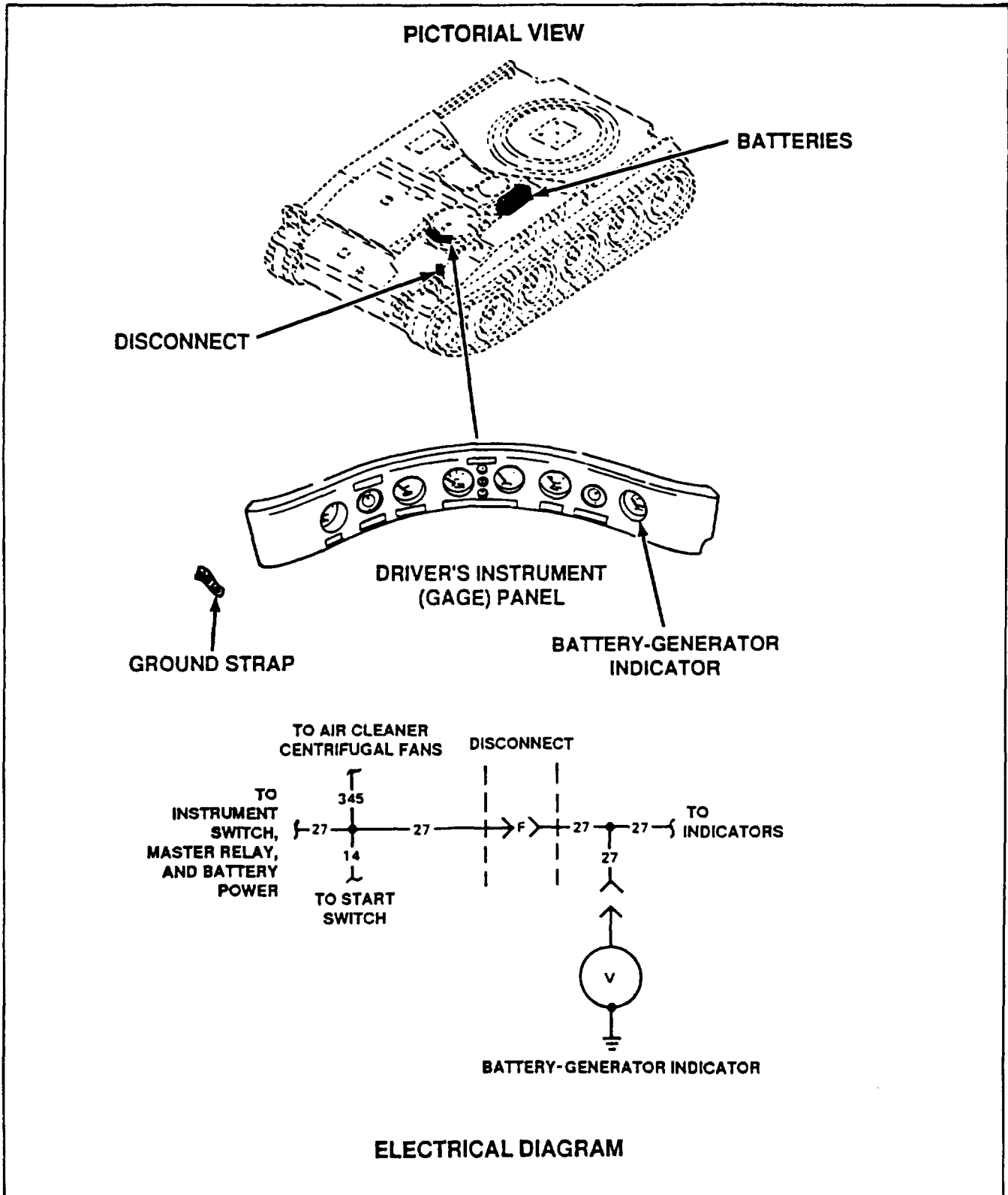
Step 13. Disconnect electrical lead (lead 82) and wiring harness at engine disconnect. Place insulated jumper wire to pin B (lead 1). Set MASTER switch ON. Strike jumper wire to socket (lead 82). Connect leads and go to step 12.

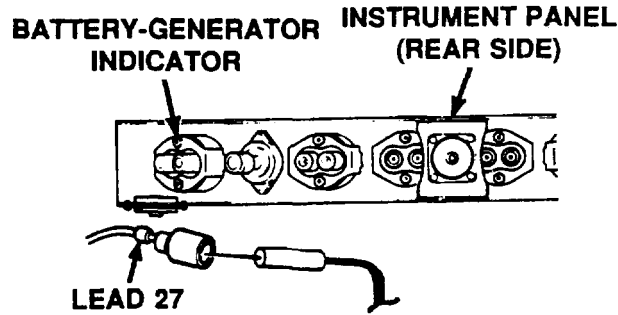


Step 14. Temporarily replace voltage regulator. Refer to page 2-546. Perform generator-regulator charging circuit test. Refer to page 2-123. If generator-regulator charging circuit operates properly, permanently replace voltage regulator. Refer to page 2-546. If generator-regulator charging circuit does not operate properly, remove temporary voltage regulator and replace generator. Refer to page 2-541. After replacing generator, perform generator-regulator charging circuit test. Refer to page 2-123.

2-12 ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

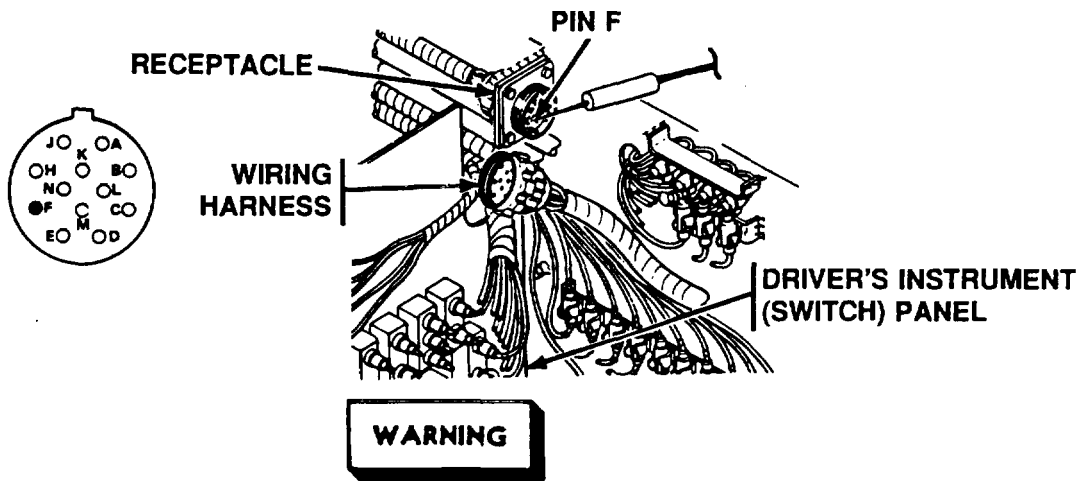
K. BATTERY GENERATOR INDICATOR CIRCUIT





Step 1

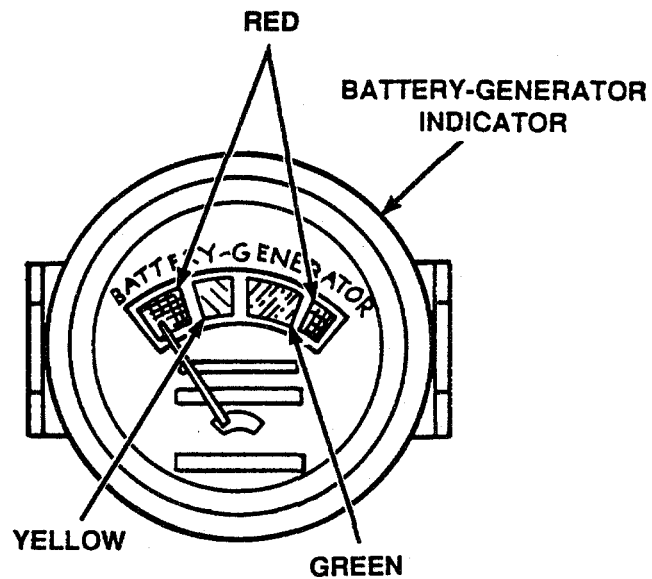
To access indicators, remove driver's instrument (gage) panel. Refer to page 2-560. Disconnect lead 27 from BATTERY-GENERATOR indicator. Place red probe in lead 27. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, go to step 2 and connect lead 27 to BATTERY-GENERATOR indicator. If multimeter indicates about 24 volts, go to step 3. Set MASTER and INST switches OFF.



Step 2.

Disconnect instrument (gage) panel wiring harness. Place red probe on pin F (lead 27) of receptacle. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, repair lead 27 from INST switch to plug. Refer to page 2-364. If multimeter indicates about 24 volts, repair lead 27 from receptacle to instruments. Refer to page 2-364. Set MASTER and INST switches OFF. Connect wiring harness.

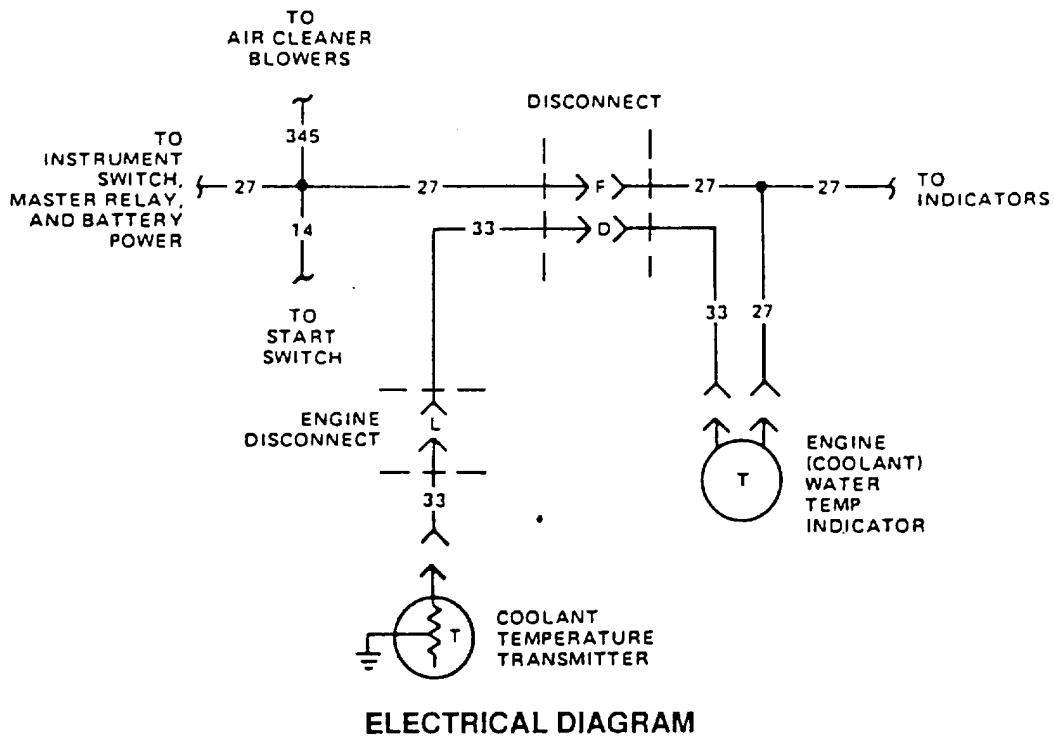
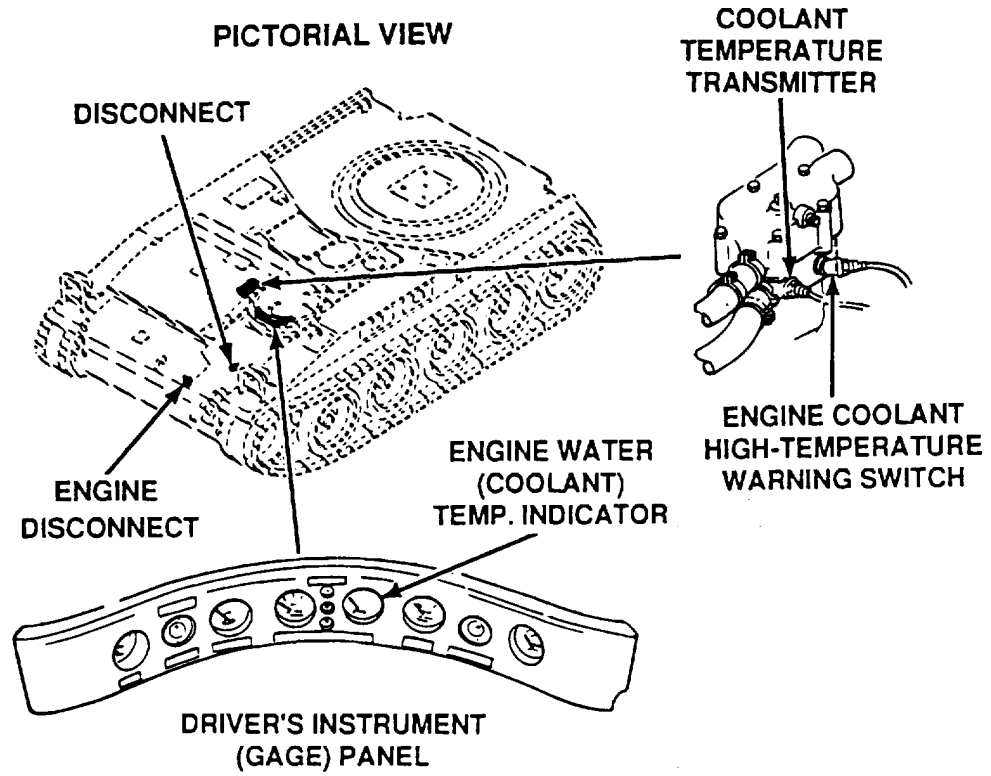
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

**WARNING**

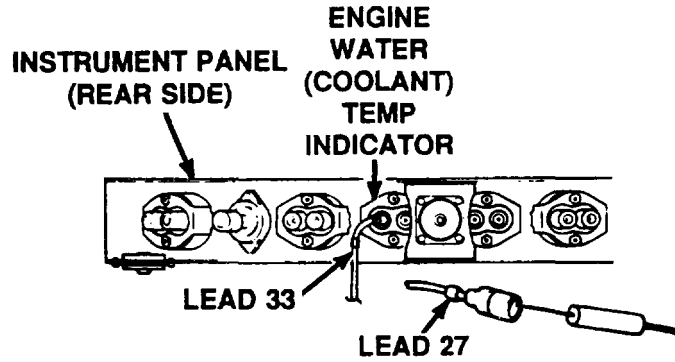
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 3. Connect lead 27 to BATTERY-GENERATOR indicator. Set MASTER and INST switches ON. If BATTERY-GENERATOR indicator needle is in yellow or green, BATTERY-GENERATOR indicator is reading correctly. If BATTERY-BENERATOR indicator needle is in red, replace BATTERY-BENERATOR indicator. Refer to page 2-560. Set MASTER and INST switches OFF.

L. ENGINE OIL PRESSURE INDICATOR CIRCUIT

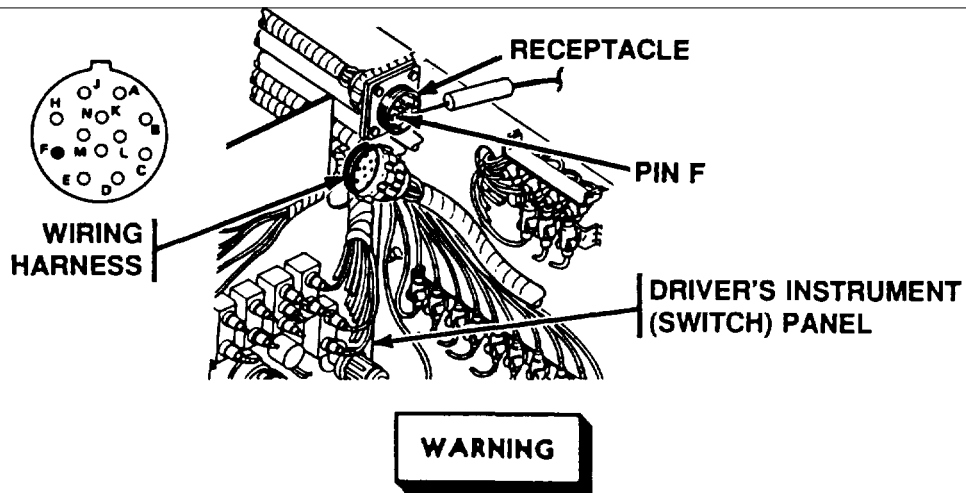


2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT)



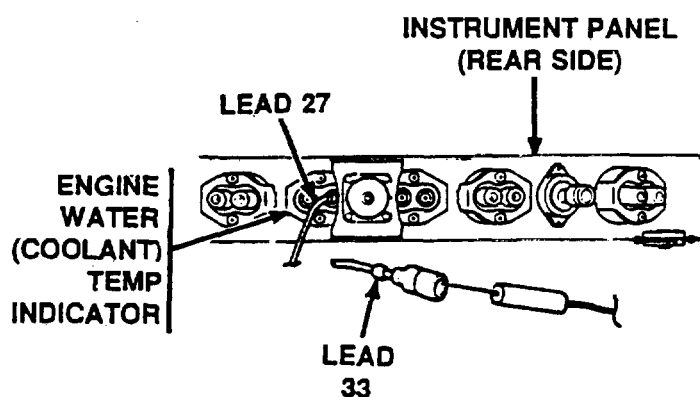
Step 1.

To access indicator, remove driver's instrument (gage) panel. Refer to page 2-560. Disconnect lead 27 from ENGINE OIL PRESS indicator. Place red probe in lead 27. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, go to step 2. If multimeter indicates about 24 volts, go to step 3. Set MASTER and INST switches OFF. Connect lead 27 to ENGINE OIL PRESS indicator. Failure to observe this warning could result in injury to personnel.



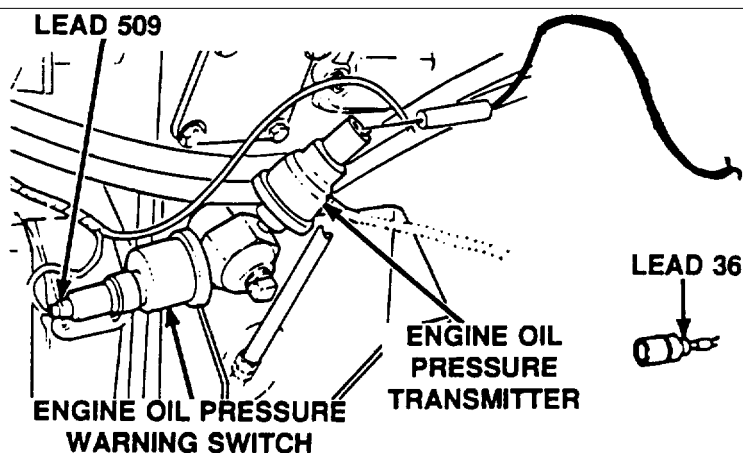
Step 2

Disconnect instrument (gage) panel wiring harness. Place red probe on pin F (lead 27) of receptacle. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, repair lead 27 from INST switch to plug. Refer to page 2-364. If multimeter indicates about 24 volts, repair lead 27 from receptacle to instruments. Refer to page 2-364. Set MASTER and INST switches OFF. Connect wiring harness.



Step 3.

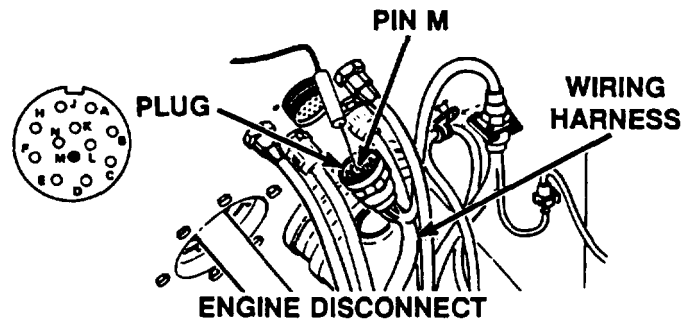
Disconnect lead 36 from ENGINE OIL PRESS indicator. Place red probe in lead 36. Ground black probe. Start engine and run at 1000 to 1200 rpm. Check resistance and stop engine. If multimeter indicates about 0 ohms and then increases 10 to 16 ohms, replace ENGINE OIL PRESS indicator. Refer to page 2-560. If multimeter indicates 0 ohms, or increases to less than 10 ohms, go to step 4. Connect lead 36 to ENGINE OIL PRESS indicator.



Step 4.

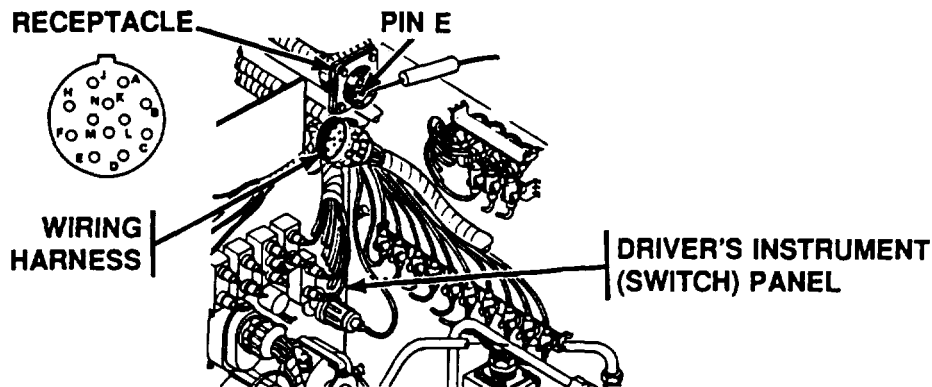
To access engine oil pressure transmitter, open engine filter access door. Disconnect lead 36 from engine oil pressure transmitter. Place red probe in input terminal of engine oil pressure transmitter. Ground black probe. Start engine and run at 1000 to 1200 rpm. Check resistance and stop engine. If multimeter indicates 10 to 16 ohms, go to step 5. If multimeter indicates less than 10 ohms or more than 16 ohms, replace engine oil pressure transmitter. Refer to page 2-612. Connect lead 36 to engine oil pressure transmitter.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



Step 5

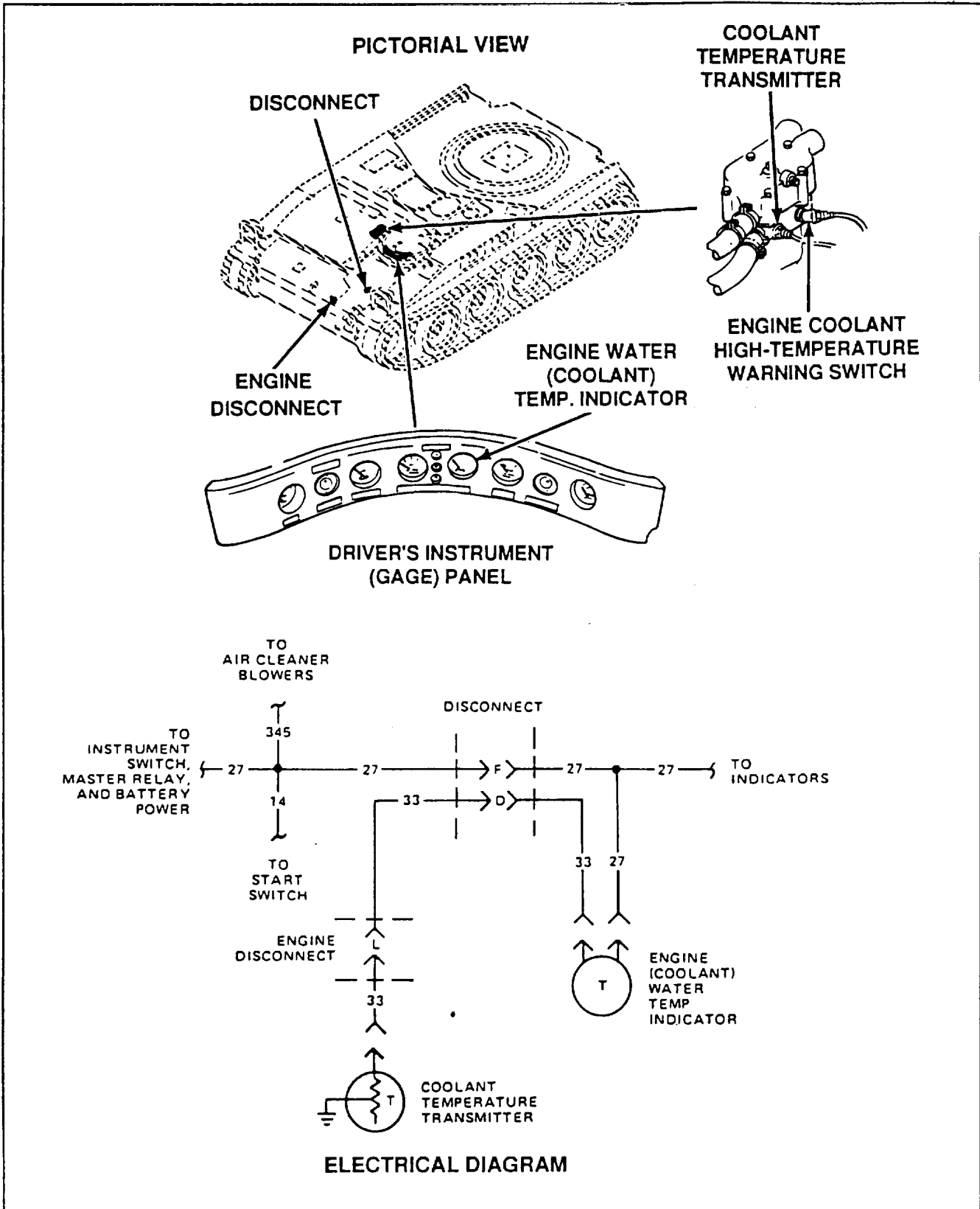
To access engine disconnect, remove transmission deck lid assembly. Refer to page 2-893. Disconnect wiring harness at engine disconnect. Place red probe on pin M (lead 36) of plug. Ground black probe. Start engine and run at 1000 to 1200 rpm. Check resistance and stop engine. If multimeter indicates less than 10 or more than 16 ohms, repair lead 36 between engine disconnect and engine oil pressure transmitter. Refer to page 2-364. If multimeter indicates 10 to 16 ohms, go to step 6. Connect wiring harness at engine disconnect.



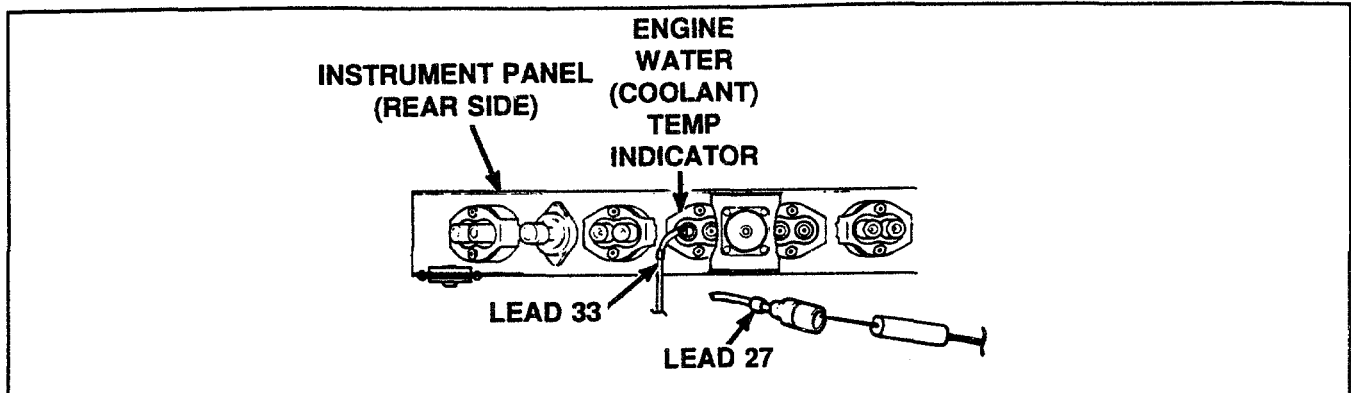
Step 6.

Disconnect instrument (gage) panel wiring harness. Place red probe on pin E (lead 36) of receptacle. Ground black probe. Start engine and run at 1000 to 1200 rpm. Check resistance and stop engine. If multimeter indicates 10 to 16 ohms, repair lead 36 from receptacle to ENGINE OIL PRESS indicator. Refer to page 2-364. If multimeter indicates less than 10 ohms or more than 16 ohms, repair lead 36 from plug to engine disconnect. Refer to page 2-364. Connect wiring harness.

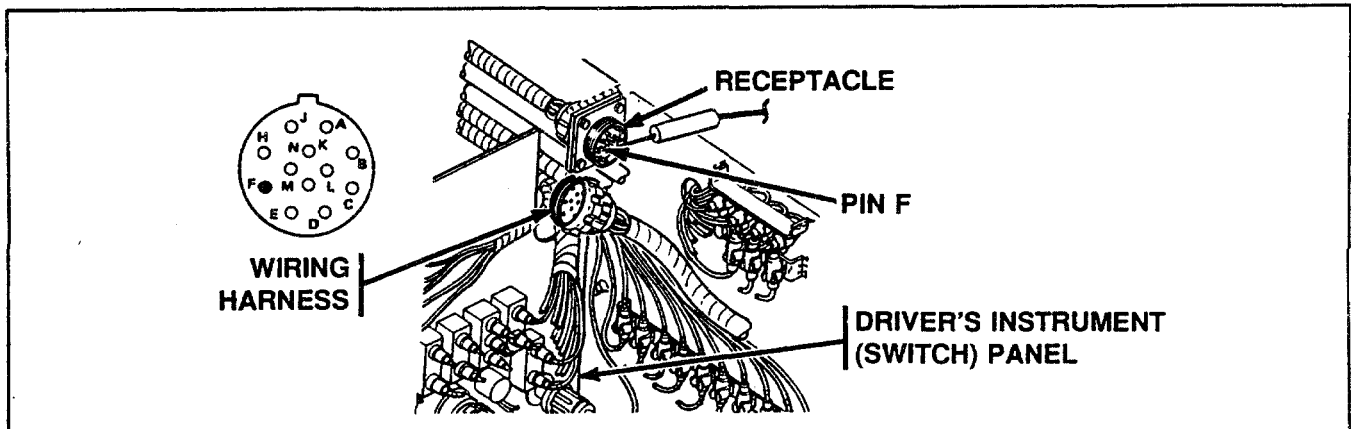
M. ENGINE COOLANT TEMPERATURE INDICATOR CIRCUIT.



2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



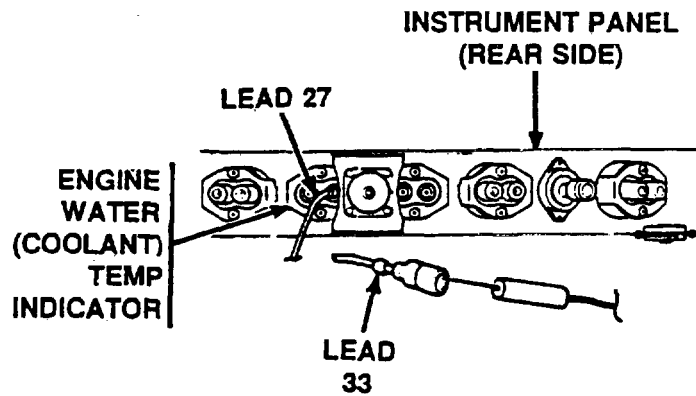
Step 1. To access indicators, remove driver's instrument (gage) panel. Refer to page 2-560. Disconnect lead 27 from ENGINE WATER (COOLANT) TEMP indicator. Place red probe in lead 27. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, go to step 2. If multimeter indicates about 24 volts, go to step 3. Set MASTER and INST switches OFF. Connect lead 27 to ENGINE WATER (COOLANT) TEMP indicator.



WARNING

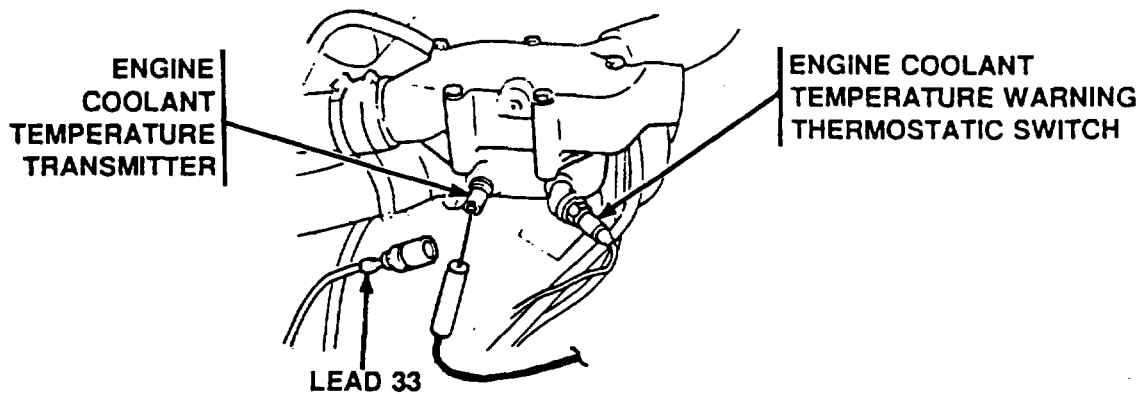
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 2. Disconnect instrument (gage) panel wiring harness. Place red probe on pin F (lead 27) of receptacle. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, repair lead 27 from INST switch to receptacle. Refer to page 2-364. If multimeter indicates about 24 volts, repair lead 27 from plug to instruments. Refer to page 2-364. Set MASTER and INST switches OFF. Connect wiring harness.



Step 3.

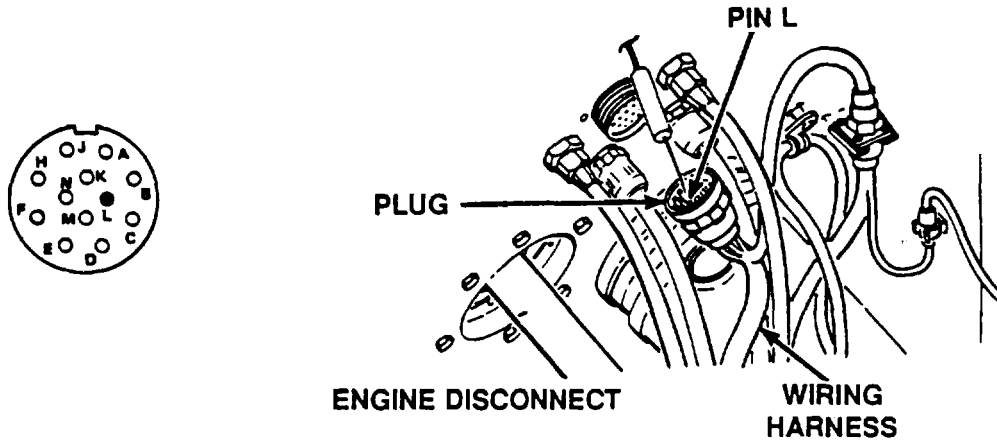
Start engine and run at 1000 to 1200 rpm for 15 minutes or until engine reaches operating temperature. Stop engine. Disconnect lead 33 from ENGINE WATER (COOLANT) TEMP indicator. Place red probe in lead 33. Ground black probe. If multimeter indicates between 900 and 1000 ohms, replace ENGINE WATER (COOLANT) TEMP indicator. Refer to page 2-560. If multimeter indicates less than 900 ohms or more than 1000 ohms, go to step 4. Connect lead 33 to ENGINE WATER (COOLANT) TEMP indicator.



Step 4.

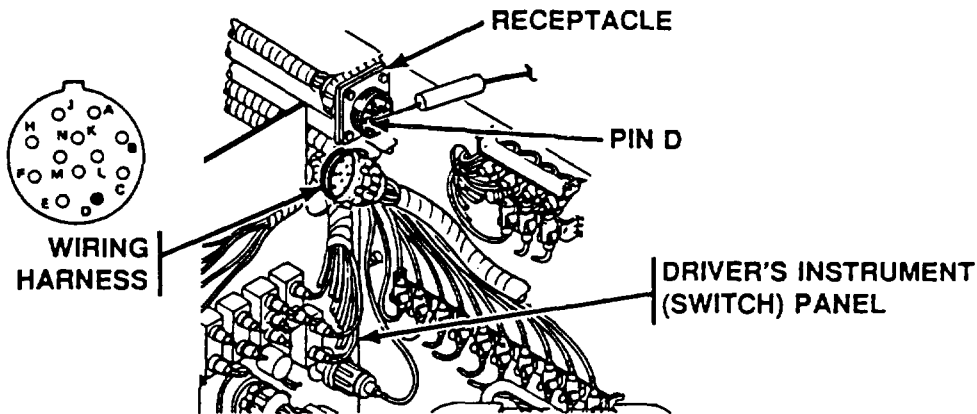
To access engine, remove engine deck assembly. Refer to page 2-887. Disconnect lead 33 from engine coolant temperature transmitter. Engine must be at operating temperature. Place red probe in input terminal of engine coolant temperature transmitter. Ground black probe. If multimeter indicates between 900 and 1000 ohms, go to step 5. If multimeter indicates less than 900 ohms or more than 1000 ohms, replace engine coolant temperature transmitter. Refer to page 2-612. Connect lead 33 to engine coolant temperature transmitter.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



Step 5

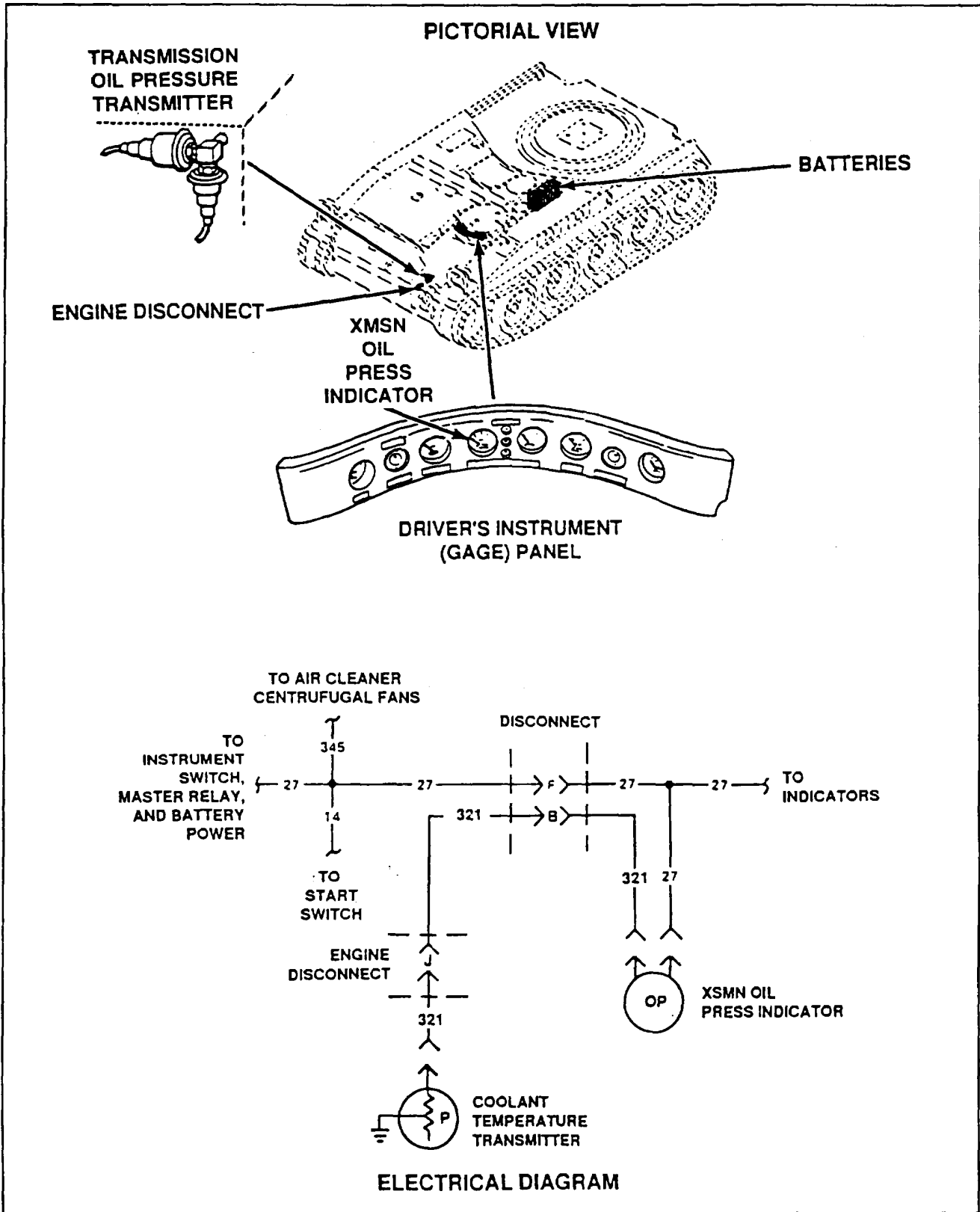
To access engine disconnect, remove transmission deck lid assembly. Refer to page 2-893. Disconnect wiring harness at engine disconnect. Engine must be at operating temperature. Place red probe on pin L (lead 33) of plug. Ground black probe. If multimeter indicates between 900 and 1000 ohms, go to step 6. If multimeter indicates less than 900 ohms or more than 1000 ohms, repair lead 33 between engine disconnect and engine coolant temperature transmitter. Refer to page 2-364. Connect wiring harness at engine disconnect.



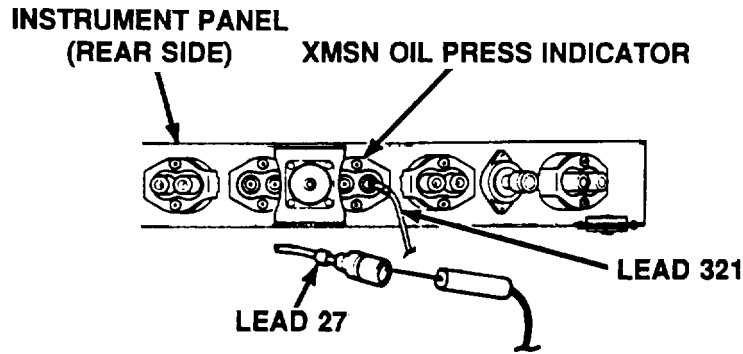
Step 6.

Disconnect wiring harness from instrument (gage) panel. Engine must be at operating temperature. Place red probe on pin D (lead 33) of receptacle. Ground black probe. If multimeter indicates between 900 and 1000 ohms, repair lead 33 between plug and ENGINE WATER (COOLANT) TEMP indicator. Refer to page 2-364. If multimeter indicates less than 900 ohms or more than 1000 ohms, repair lead 33 between engine disconnect and receptacle. Refer to page 2-364. Connect wiring harness at disconnect to instrument (gage) panel.

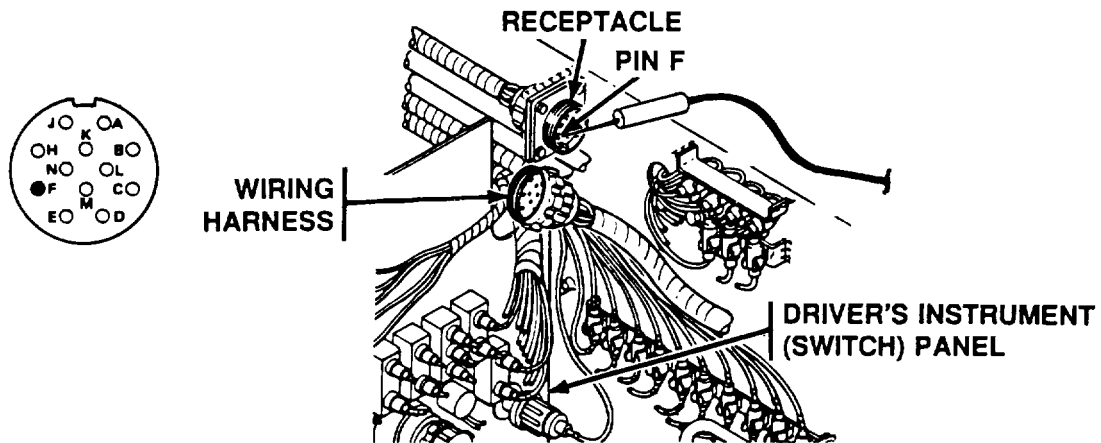
N. TRANSMISSION OIL PRESSURE INDICATOR CIRCUIT.



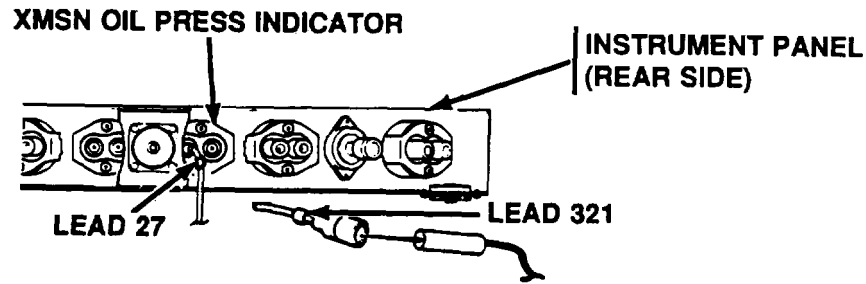
2-12. ELECTRICAL CIRCUIT TROUBLESHOOT (CONT.)



Step 1. To access indicators, remove driver's instrument (gage) panel. Refer to page 2-560. Disconnect lead 27 from XMSN OIL PRESS indicator. Place red probe in lead 27. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, go to step 2. If multimeter indicates about 24 volts, go to step 3. Set MASTER and INST switches OFF. Connect lead 27 to XMSN OIL PRESS indicator.

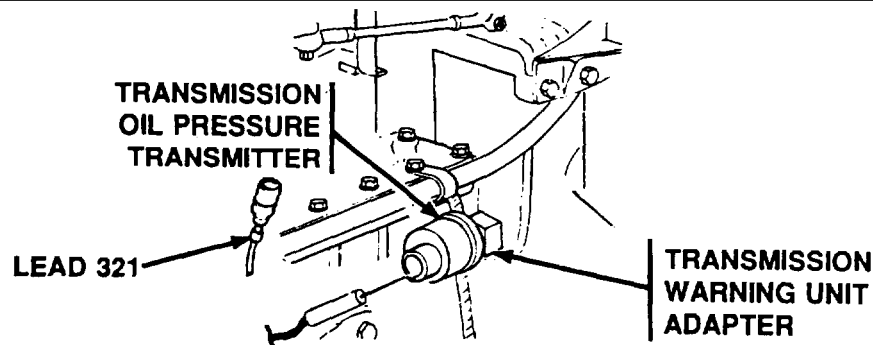


Step 2. Disconnect wiring harness from instrument (gage) panel. Place red probe on pin F (lead 27) of receptacle. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, repair lead 27 from INST switch to plug. Refer to page 2-364. If multimeter indicates about 24 volts, repair lead 27 from receptacle to instruments. Refer to page 2-364. Set MASTER and INST switches OFF. Connect wiring harness to instrument (gage) panel.



Step 3.

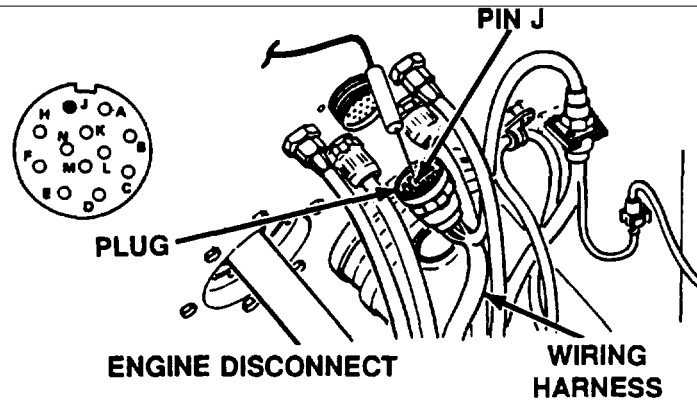
Disconnect lead 321 from XMSN OIL PRESS indicator. Place red probe in lead 321. Ground black probe. Start engine and run at 1000 to 1200 rpm. If multimeter indicates 0 ohms and does not increase, or increases to more than 9 ohms, stop engine and go to step 4. If multimeter indicates 0 ohms and then increases 4 to 9 ohms, increase engine rpm to 1800. Check resistance and stop engine. If multimeter indicates 9 to 22 ohms, replace XMSN OIL PRESS indicator. Refer to page 2-560. If multimeter indicates less than 9 ohms or more than 22 ohms, go to step 4. Connect lead 321 to XMSN OIL PRESS indicator.



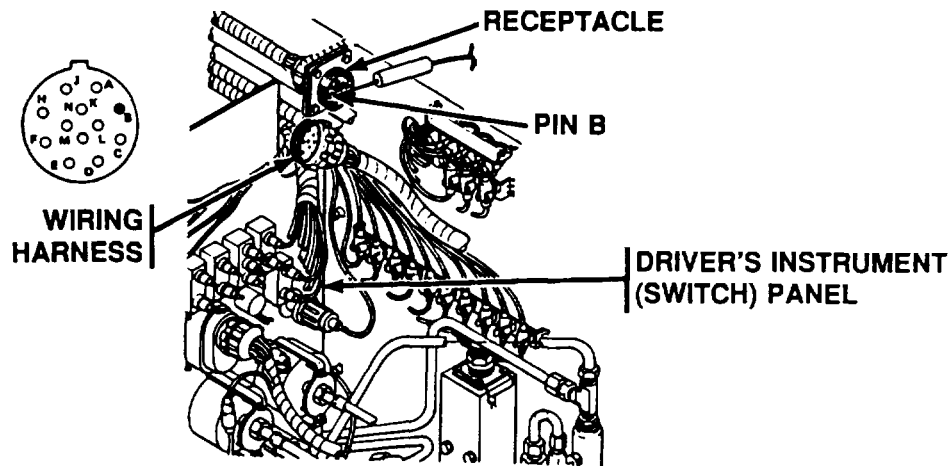
Step 4.

To access transmission and engine disconnect, remove transmission deck lid assembly. Refer to page 2-893. Disconnect lead 321 from transmission oil pressure transmitter. Place red probe in input terminal of transmission oil pressure transmitter. Ground black probe. Start engine and run at 1000 to 1200 rpm. If multimeter indicates 0 ohms and does not increase, or increases to more than 9 ohms, stop engine and replace transmission oil pressure transmitter. Refer to page 2-612. If multimeter indicates 0 ohms and then increases 4 to 9 ohms, increase engine rpm to 1800. Check resistance and stop engine. If multimeter indicates 9 to 22 ohms, go to step 5. If multimeter indicates less than 9 ohms or more than 22 ohms, replace transmission oil pressure transmitter. Refer to page 2-612. Connect lead 321 to transmission oil pressure transmitter.

2-12. ELECTRICCAL CIRCUIT TROUBLESHOOTING(CONT.)

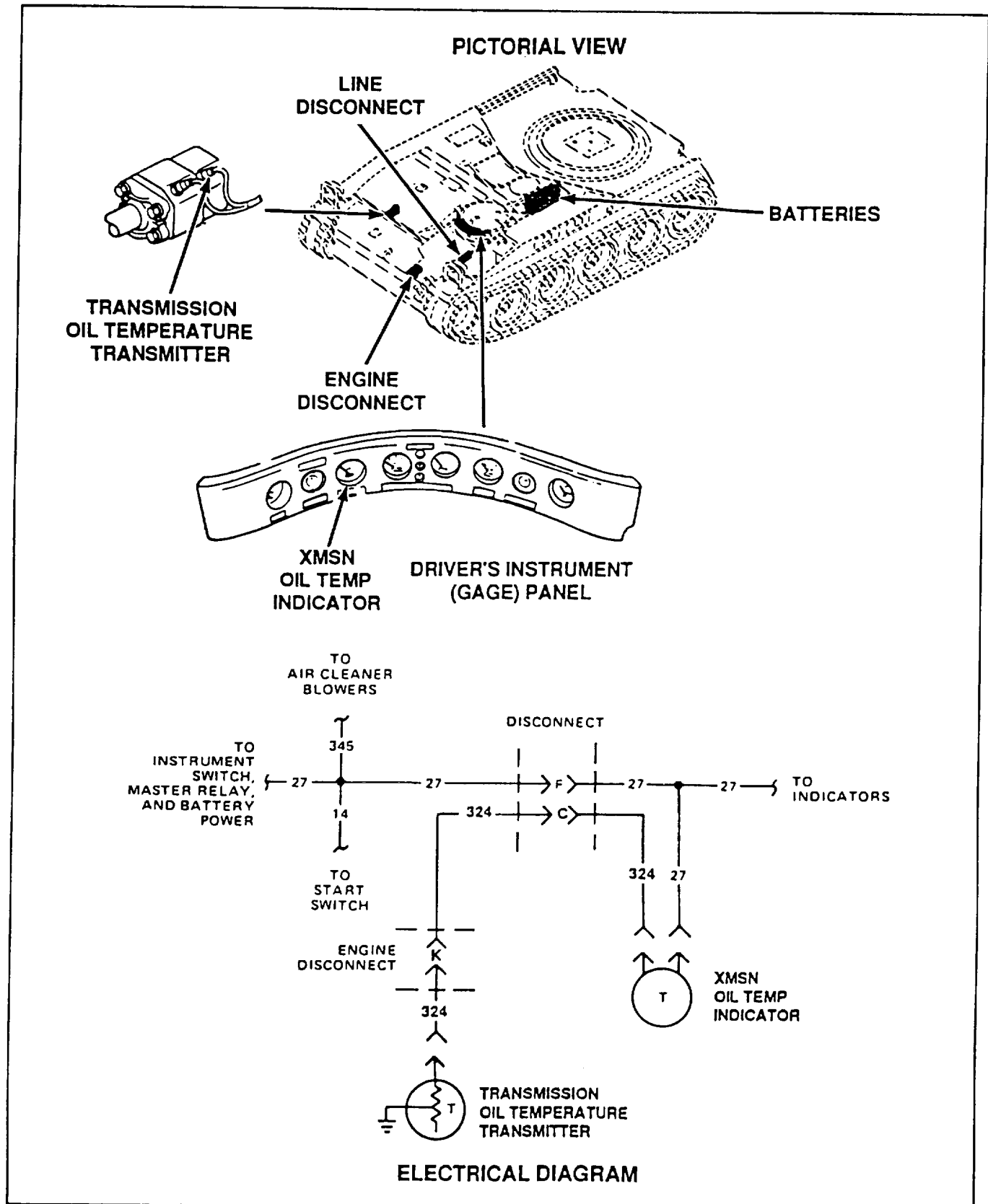


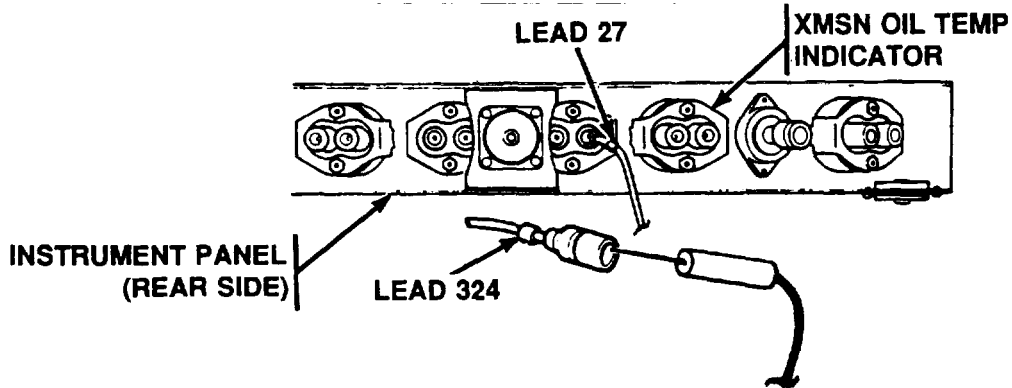
Step 5. Disconnect wiring harness at engine disconnect. place red probe on pin J (lead 321) of plug. Ground black probe. Start engine and run at 1000 to 1200 rpm. Check resistance and stop engine. If multimeter indicates 4 to 9 ohms, go to step 6. If multimeter indicates less than 4 ohms or more than 9 ohms, repair lead 321 between engine disconnect and transmission oil pressure transmitter. Refer to page 2-364. Connect wiring harness at engine disconnect.



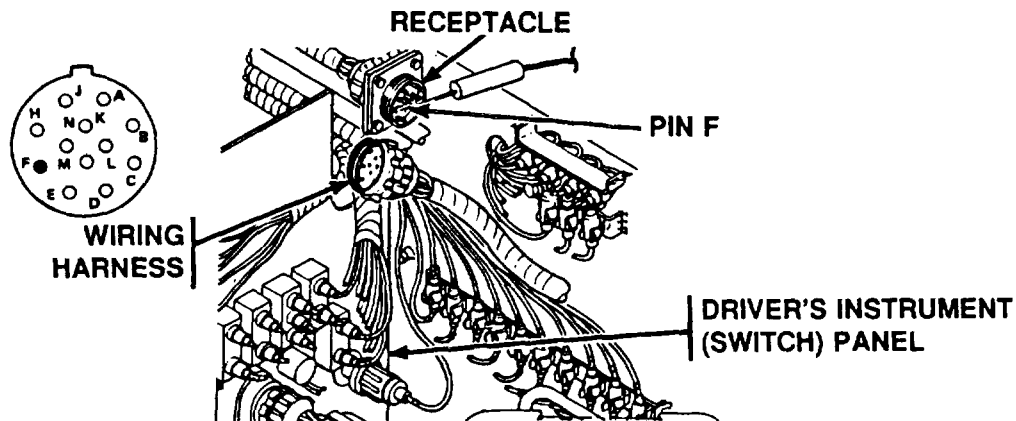
Step 6. Disconnect wiring harness from instrument (gage) panel. Place red probe on pin B (lead 321) of receptacle. Ground black probe. Start engine and run at 1000 to 1200 rpm. Check resistance and stop engine. If multimeter indicates 4 to 9 ohms, repair lead 321 between plug and XMSN OIL PRESS indicator. Refer to page 2-364. If multimeter indicates less than 4 ohms or more than 9 ohms, repair lead 321 between receptacle and engine disconnect. Refer to page 2-364. Connect wiring harness to instrument (gage) panel.

O. TRANSMISSION OIL TEMPERATURE INDICATOR CIRCUIT.



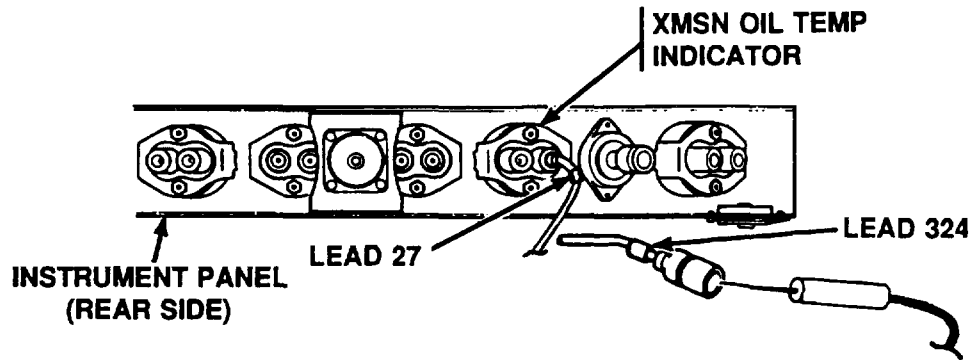


Step 1. To access indicators, remove driver's instrument (gage) panel. Refer to page 2-560. Disconnect lead 27 from XMSN OIL TEMP indicator. Place red probe in lead 27. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, go to step 2. If multimeter indicates about 24 volts, go to step 3. Set MASTER and INST switches OFF. Connect lead 27 to XMSN OIL TEMP indicator.



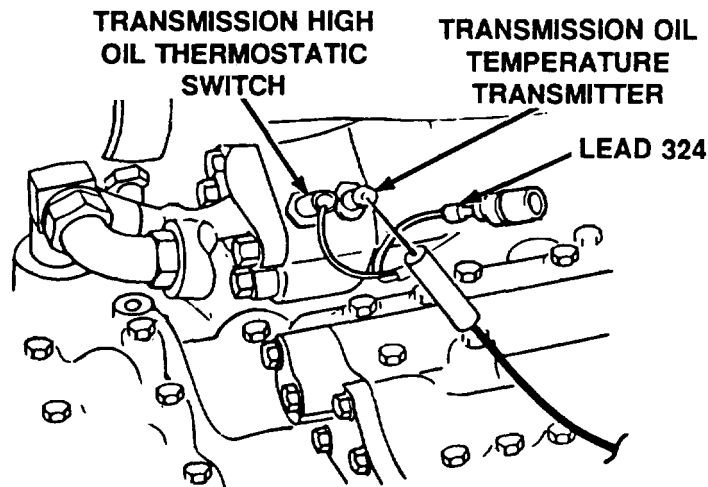
Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

Step 2. Disconnect wiring harness from instrument (gage) panel. Place red probe on pin F (lead 27) of receptacle. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, repair lead 27 from INST switch to receptacle. Refer to page 2-364. If multimeter indicates about 24 volts, repair lead 27 from plug to instruments. Refer to page 2-364. Set MASTER and INST switches OFF. Connect wiring harness to instrument (gage) panel.



Step 3.

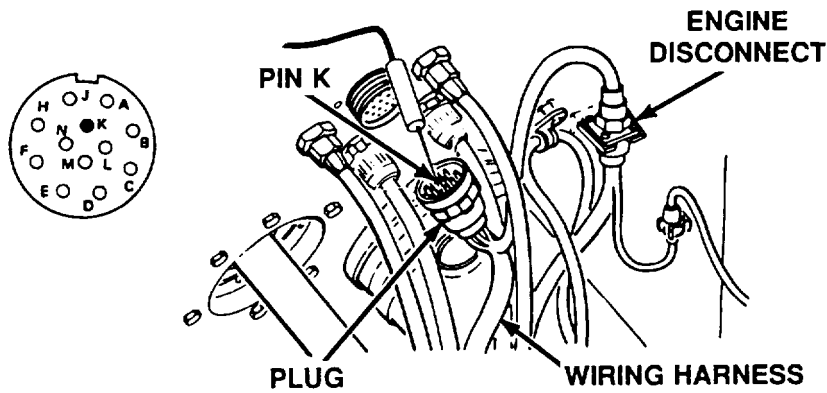
Start engine and run at 1000 to 1200 rpm for 15 minutes or until engine reaches operating temperature. Stop engine. Disconnect lead 324 from XMSN OIL TEMP indicator. Place red probe in lead 324. Ground black probe. If multimeter indicates 600 to 900 ohms, replace XMSN OIL TEMP indicator. Refer to page 2-560. If multimeter indicates less than 600 ohms or more than 900 ohms, go to step 4. Connect lead 324 to XMSN OIL TEMP indicator.



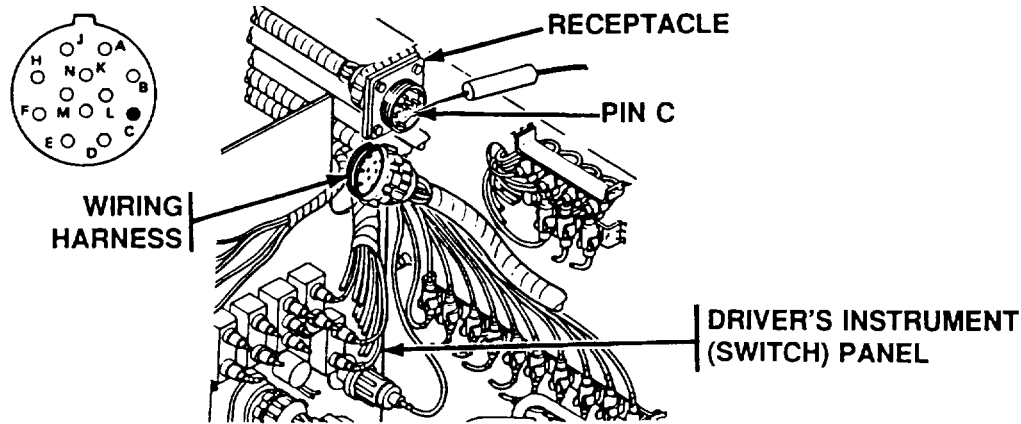
Step 4.

To access transmission and engine disconnect, remove transmission deck lid assembly. Refer to page 2-893. Disconnect lead 324 from transmission oil temperature transmitter. Engine must be at operating temperature. Place red probe in input terminal of transmission oil temperature transmitter. Ground black probe. If multimeter indicates 600 to 900 ohms, go to step 5. If multimeter indicates less than 600 or more than 900 ohms, replace transmission oil temperature transmitter. Refer to page 2-612. Connect lead 324 to transmission oil temperature transmitter.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.)

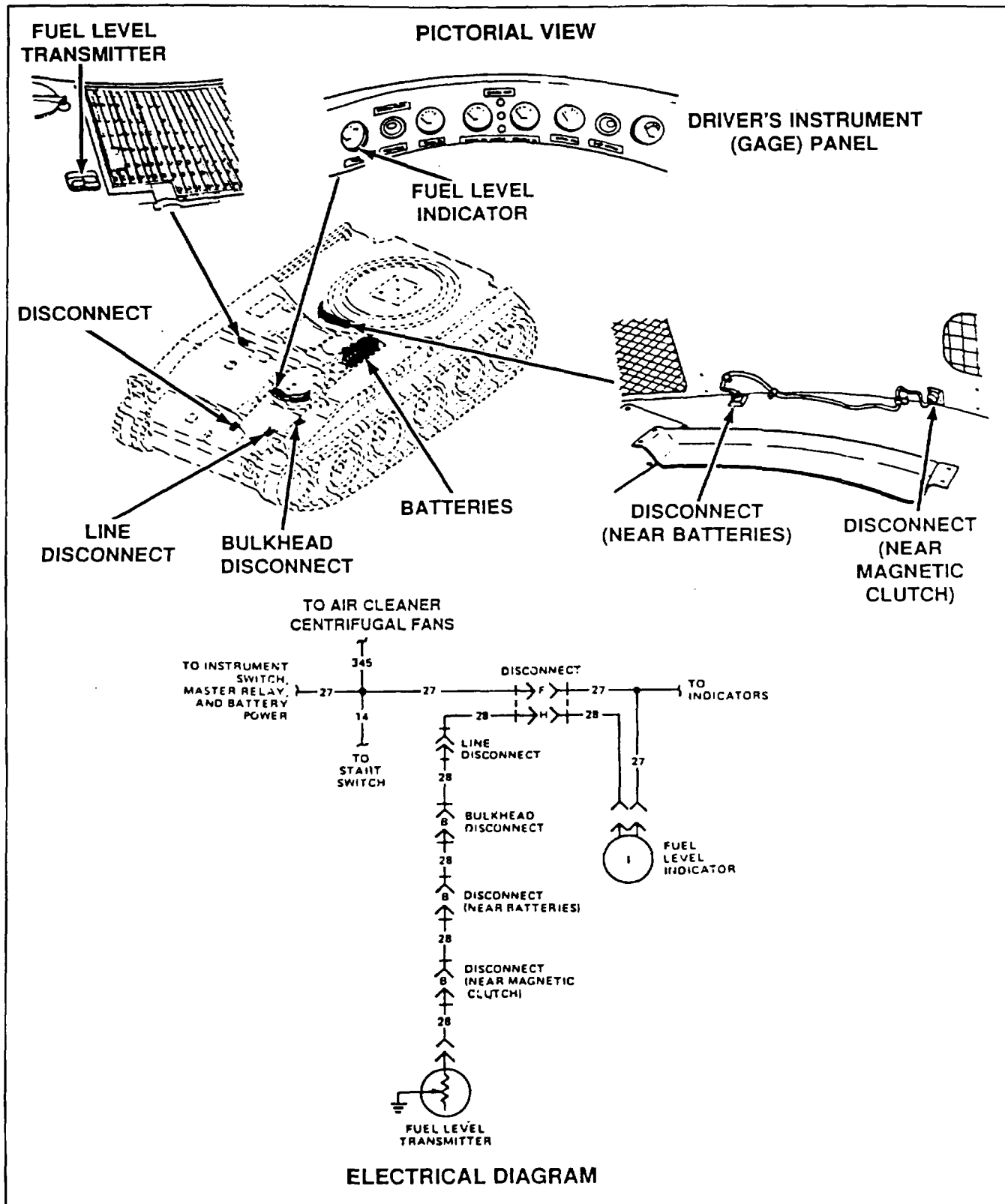


Step 5. Disconnect wiring harness at engine disconnect. Engine must be at operating temperature. Place red probe on pin K (lead 324) of plug. Ground black probe. If multimeter indicates 600 to 900 ohms, go to step 6. If multimeter indicates less than 600 ohms or more than 900 ohms, repair lead 324 between engine disconnect and transmission oil temperature transmitter. Refer to page 2-364. Connect wiring harness at engine disconnect.

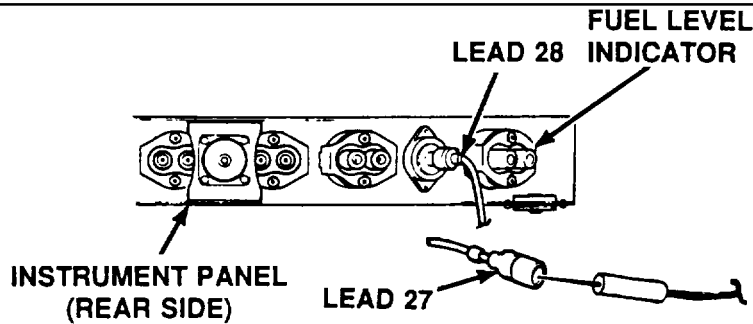


Step 6. Disconnect wiring harness from instrument (gage) panel. Engine must be at operating temperature. Place red probe on pin C (lead 324) of receptacle. Ground black probe. If multimeter indicates 600 to 900 ohms, repair lead 324 between receptacle and XMSN OIL TEMP indicator. Refer to page 2-364. If multimeter indicates less than 600 ohms or more than 900 ohms, repair lead 324 between plug and engine disconnect. Refer to page 2-364. Connect wiring harness to instrument (gage) panel.

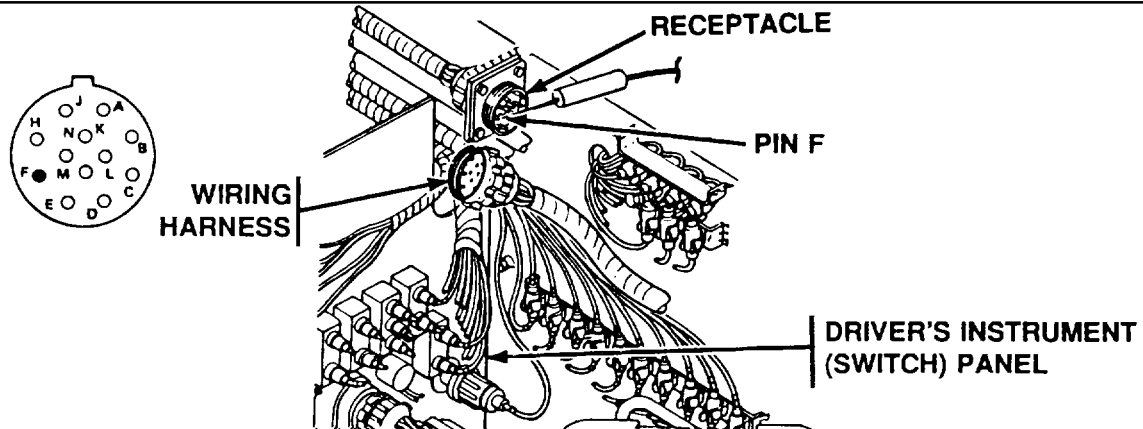
P. FUEL LEVEL INDICATOR CIRCUIT.



2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



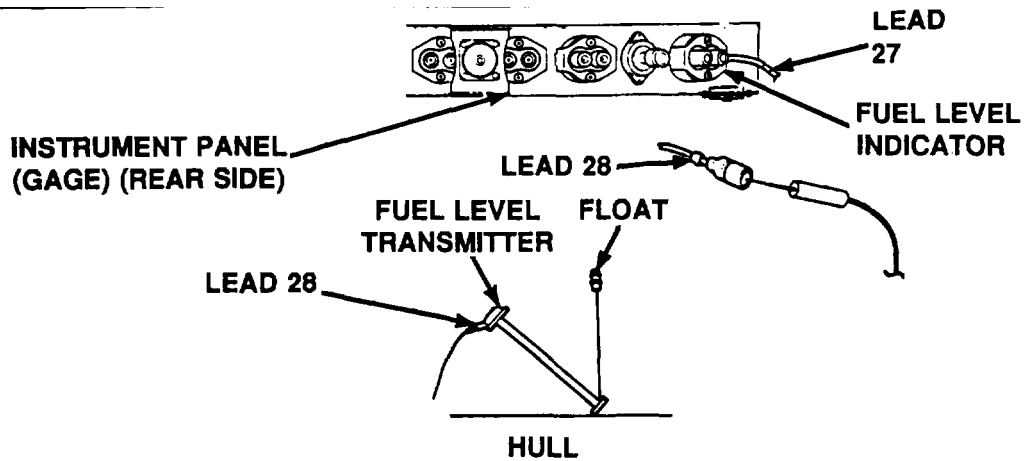
Step 1. To access indicators, remove driver's instrument (gage) panel. Refer to page 2-560. Disconnect lead 27 from FUEL LEVEL indicator. Place red probe in lead 27. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, go to step 2. If multimeter indicates about 24 volts, go to step 3. Set MASTER and INST switches OFF. Connect lead 27 to FUEL LEVEL indicator.



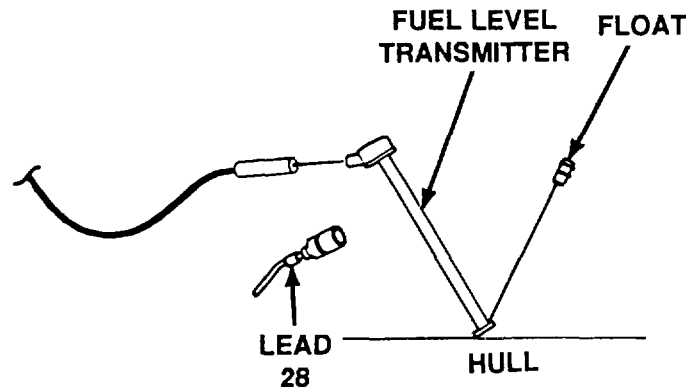
WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 2. Disconnect wiring harness from instrument (gage) panel. Place red probe on pin F (lead 27) of receptacle. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, repair lead 27 from INST switch to receptacle. Refer to page 2-364. If multimeter indicates about 24 volts, repair lead 27 from plug to instruments. Refer to page 2-364. Set MASTER and INST switches OFF. Connect wiring harness to instrument (gage) panel.



Step 3. Remove fuel level transmitter. Refer to page 2-612. Connect lead 28 to fuel level transmitter. Ground fuel level transmitter to hull. Rotate fuel level transmitter float to full position (close to top of fuel level transmitter). Disconnect lead 28 from FUEL LEVEL indicator. Place red probe in lead 28. Ground black probe. If multimeter indicates about 30 ohms, replace FUEL LEVEL indicator, refer to page 2-560; and install fuel level transmitter, refer to page 2-612. If multimeter indicates less than 25 ohms, connect lead 28 to FUEL LEVEL indicator and go to step 4.



Step 4. Disconnect lead 28 from fuel level transmitter. Place red probe in input terminal of fuel level transmitter. Ground black probe. Fuel level transmitter must be in filled position. If multimeter indicates less than 25 ohms, replace fuel level transmitter. Refer to page 2-612. Connect lead 28 to fuel level transmitter.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

BULKHEAD DISCONNECT

WIRING HARNESS

PLUG

RECEPTACLE

PIN B

Step 5. To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness at bulkhead disconnect. Place red probe on pin B (lead 28) of receptacle. Ground black probe. If multimeter does not indicate about 30 ohms, go to step 6. If multimeter indicates about 30 ohms, go to step 8. Connect wiring harness at bulkhead disconnect.

DISCONNECT (NEAR MAGNETIC CLUTCH)

RECEPTACLE

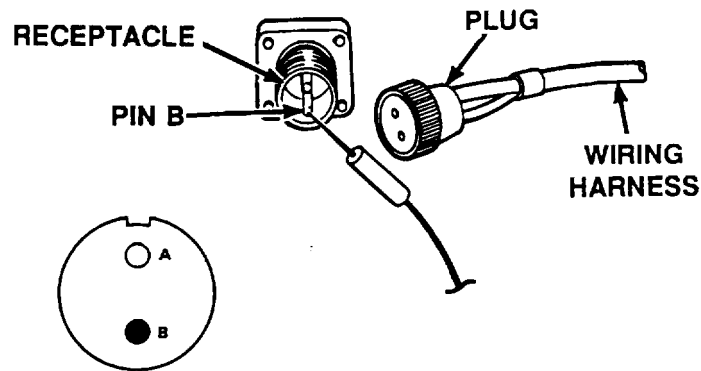
PLUG

PIN B

WIRING HARNESS

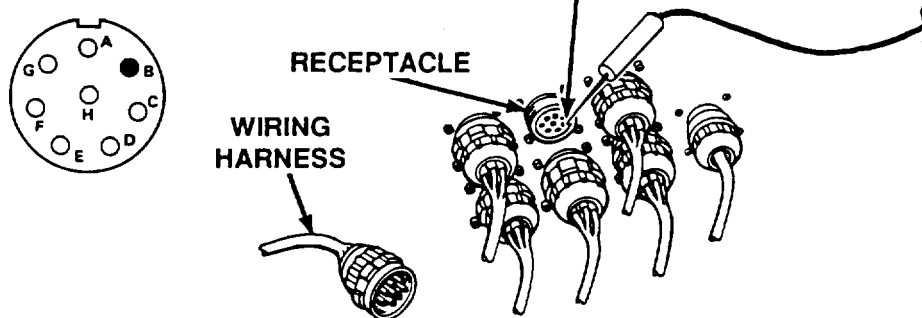
Step 6. To access disconnect near magnetic clutch, remove fanwell deck grille. Refer to page 2-879. Disconnect wiring harness at disconnect near magnetic clutch. Place red probe on pin B (lead 28) of plug. Ground black probe. If multimeter indicates about 30 ohms, go to step 7. If multimeter does not indicate about 30 ohms, repair lead 28 between disconnect and fuel level transmitter, refer to page 2-364; and install fuel level transmitter, refer to page 2-612. Connect wiring harness at disconnect.

DISCONNECT (NEAR BATTERIES)



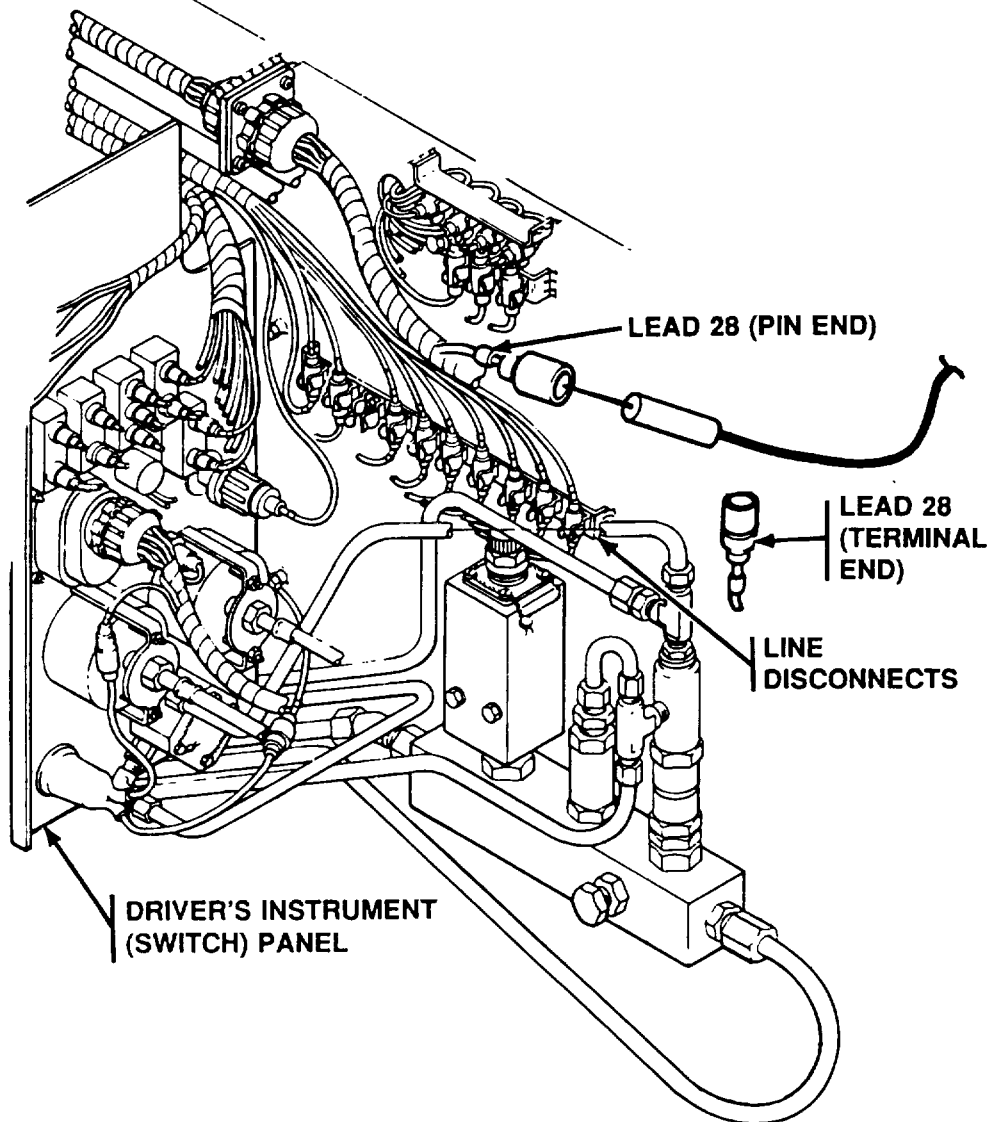
Step 7. Disconnect wiring harness from instrument (gauge) panel. Place red probe on pin B (lead 28) of receptacle. Ground black probe. If multimeter indicates about 30 ohms, repair lead 28 between plug and FUEL LEVEL indicator, refer to page 2-364; and install fuel level transmitter, refer to page 2-612. If multimeter does not indicate about 30 ohms, go to step 9. Connect wiring harness to instrument (gauge) panel.

BULKHEAD DISCONNECT **SOCKET B**



Step 8. To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness at bulkhead disconnect. Place red probe in socket B (lead 28) of receptacle. Ground black probe. If multimeter indicates about 30 ohms, repair lead 28 between disconnect and bulkhead disconnect. Refer to page 2-364. If multimeter does not indicate about 30 ohms, repair lead 28 between bulkhead disconnect and disconnect near magnetic clutch. Refer to page 2-364. Connect wiring harness. Install fuel level transmitter. Refer to page 2-612.

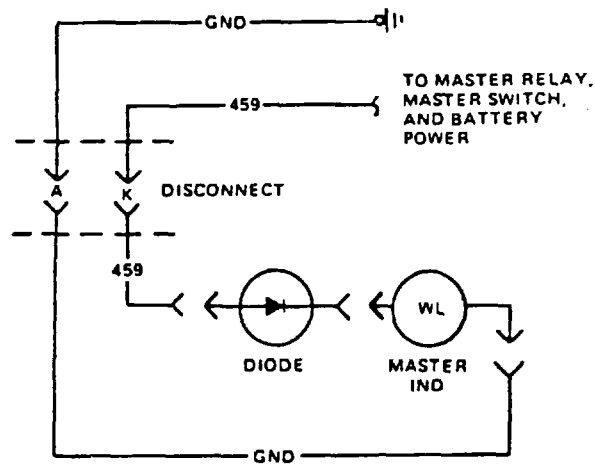
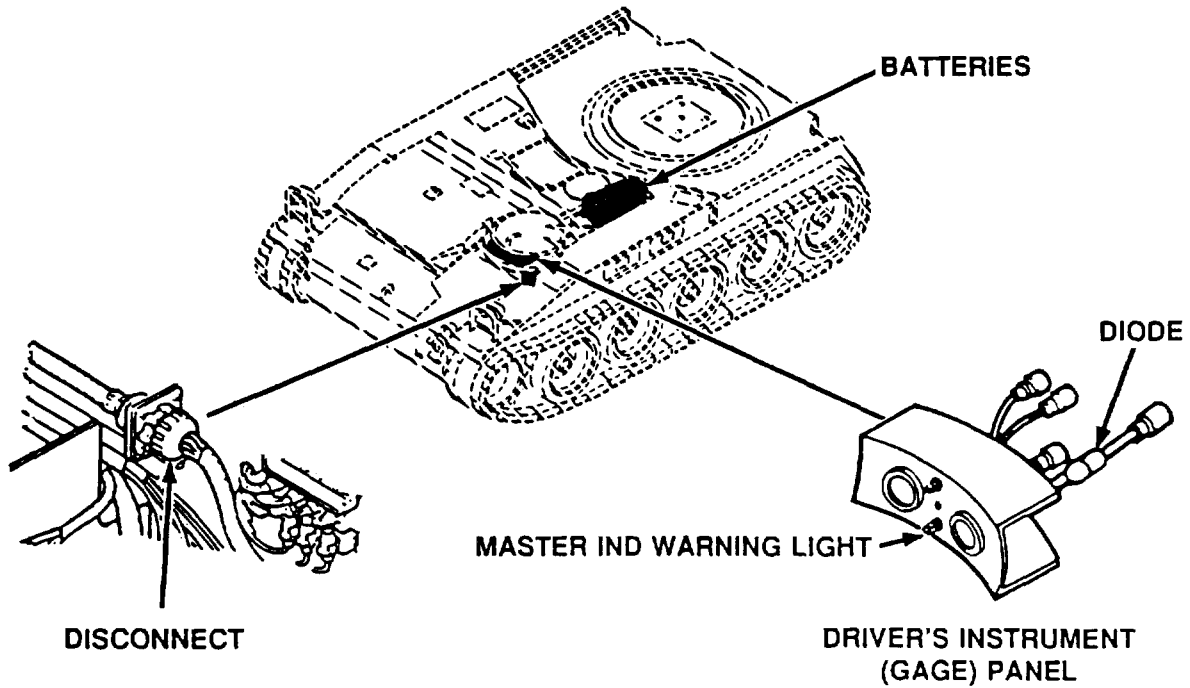
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



Step 9. Disconnect lead 28 at line disconnect behind driver's instrument (switch) panel. Place red probe in lead 28 (pin end). Ground black probe. Fuel cell must be full. If multimeter indicates about 30 ohms, repair lead 28 between line disconnect and disconnect to instruments. Refer to page 2-364. If multimeter does not indicate about 30 ohms, repair lead 28 between line disconnect and bulkhead disconnect. Refer to page 2-364. Connect lead 28 at line disconnect. Install fuel level transmitter. Refer to page 2-612.

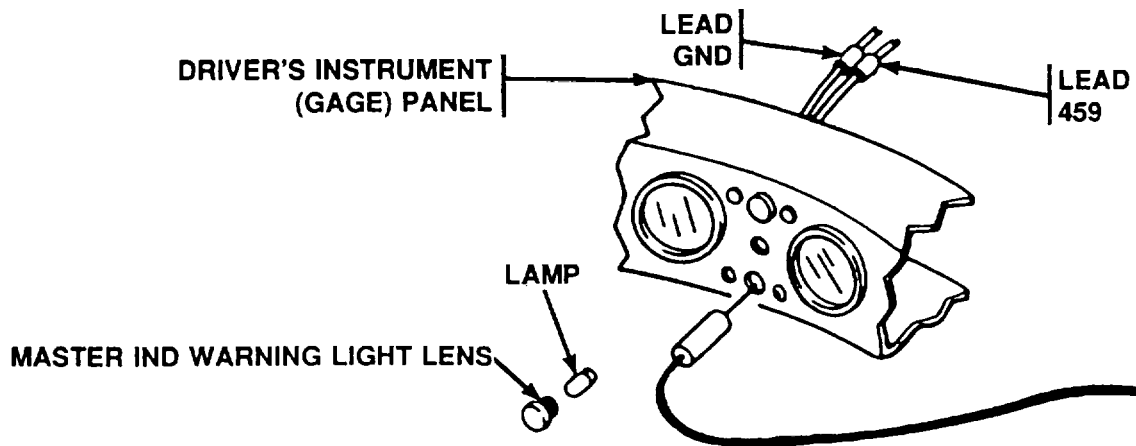
Q. MASTER INDICATOR WARNING LIGHT CIRCUIT.

PICTORIAL VIEW

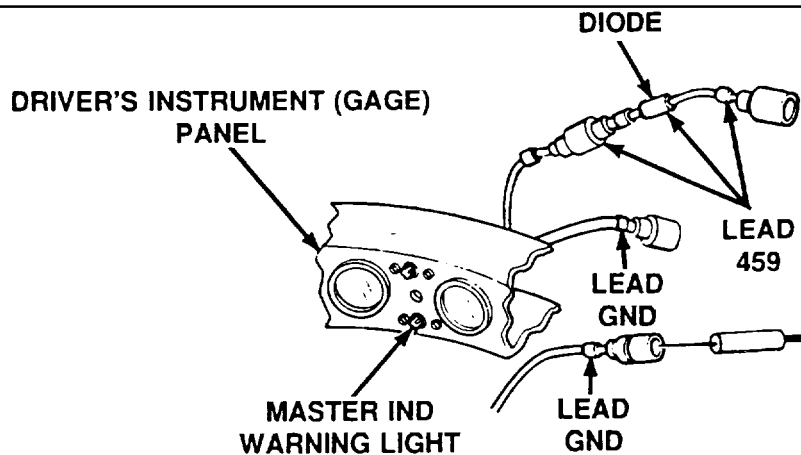


ELECTRICAL DIAGRAM

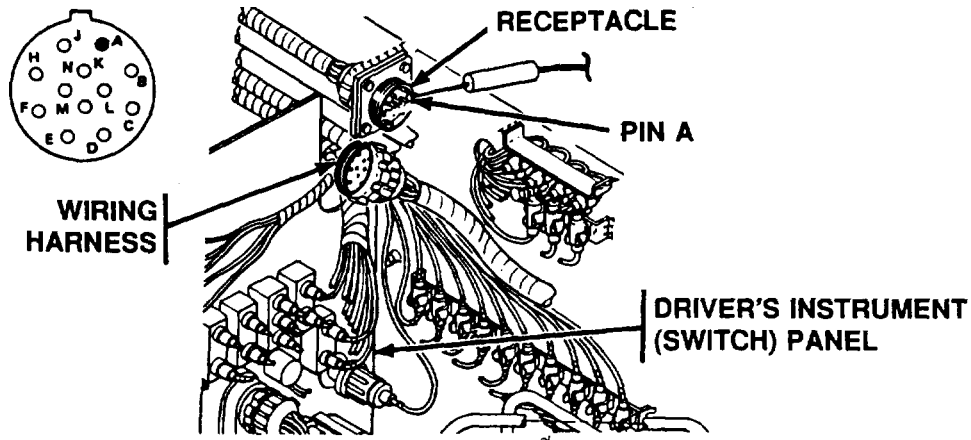
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



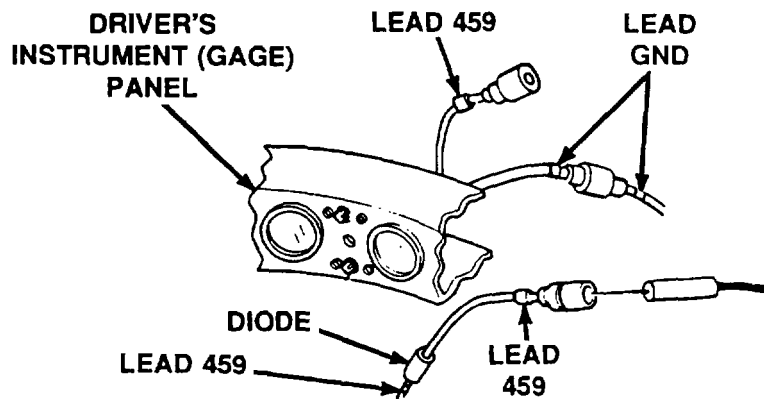
Step 1. To access indicators and lights, remove driver's instrument (gauge) panel. Refer to page 2-560. Remove lamp from MASTER IND warning light. Set MASTER switch ON. Place BO infrared selector switch in infrared position and infrared receiver switch in ON position. Place instrument switch in ON position. Place red probe in socket. Ground black probe. If multimeter indicates about 24 volts, replace lamp. If multimeter indicates no voltage, set MASTER switch OFF, install lamp and go to step 2.



Step 2. Disconnect lead GND from MASTER IND warning light. Connect multimeter between lead GND and ground. If multimeter indicates continuity, go to step 4. If multimeter indicates no continuity, go to step 3. If multimeter indicates 0 ohms, replace lamp. Refer to page 2-560.

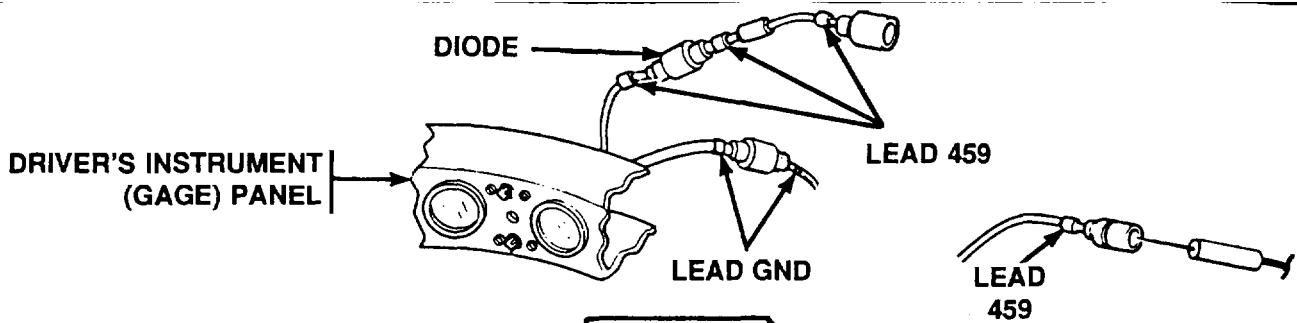


Step 3. Disconnect wiring harness from instrument (gauge) panel. Connect multimeter between pin A (lead GND) of receptacle and ground. If multimeter indicates continuity, repair lead GND between plug and MASTER IND warning light. Refer to page 2-364. If multimeter does not indicate continuity, repair lead GND between receptacle and ground. Refer to page 2-364. Connect wiring harness to instrument (gauge) panel.



Step 4. Disconnect lead 459 from MASTER IND warning light. Place red probe in lead 459. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, replace MASTER IND warning light. Refer to page 2-560. If multimeter does not indicate about 24 volts, go to step 5. Set MASTER switch OFF. Connect lead 459 to MASTER IND warning light.

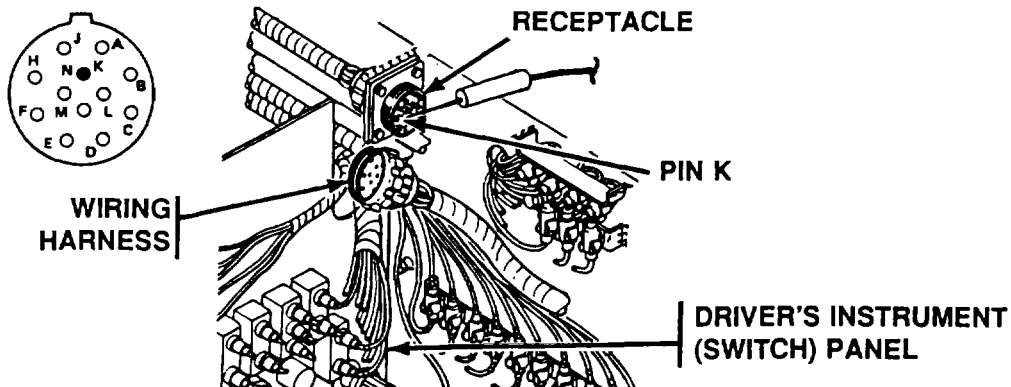
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 5. Disconnect lead 459 to diode. Place red probe in lead 459. Ground black probe. Set MASTER switch ON. If multimeter indicates no voltage, go to step 6 and connect lead 459 to diode. If multimeter indicates about 24 volts, remove diode from circuit and connect lead 459 directly to MASTER IND warning light. If MASTER IND warning light is on, replace diode. Refer to page 2-364. If MASTER IND warning light is off, replace MASTER IND warning light. Refer to page 2-560. Set MASTER switch OFF. Connect diode to MASTER IND warning light. Connect lead 459 to diode.

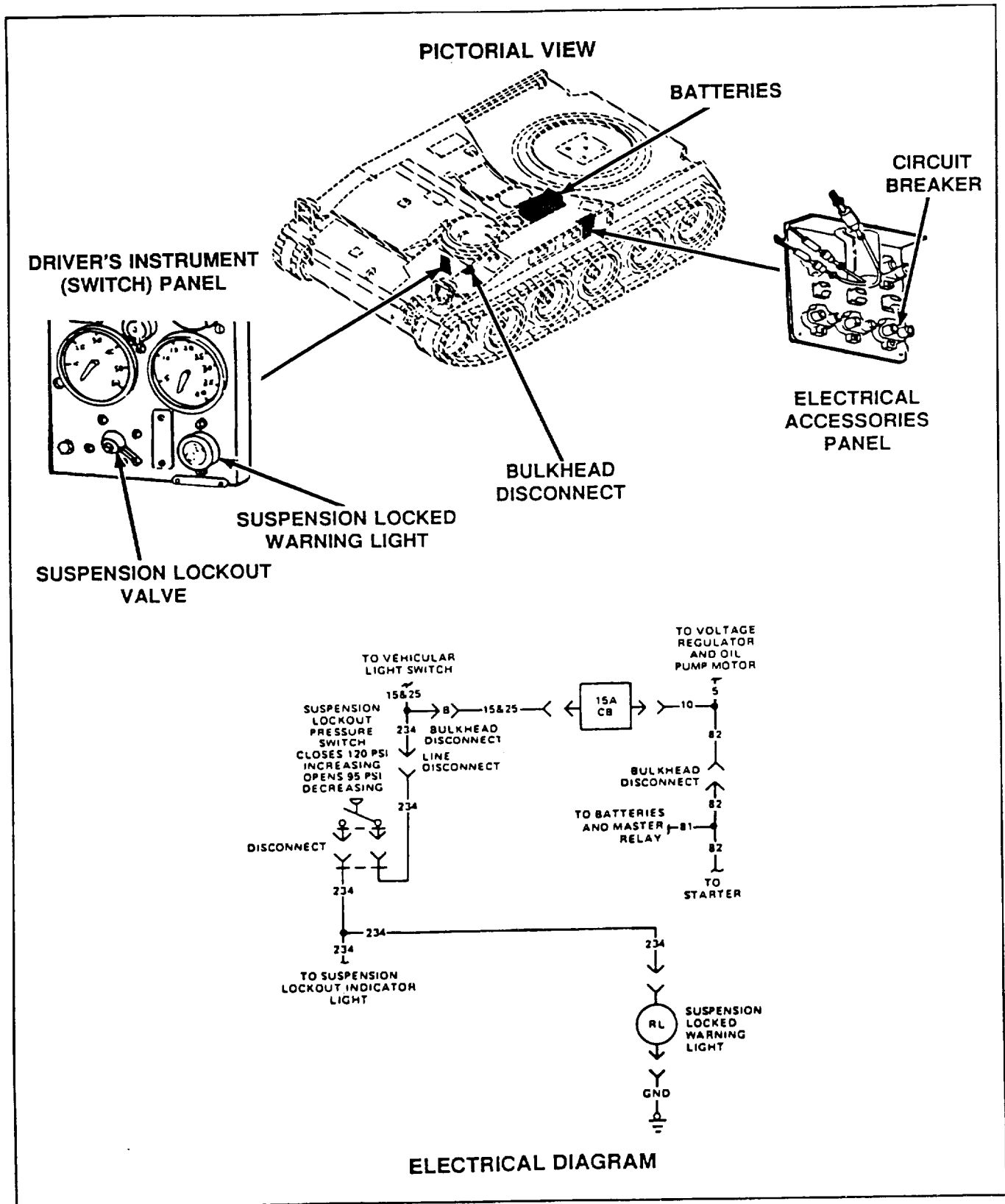


WARNING

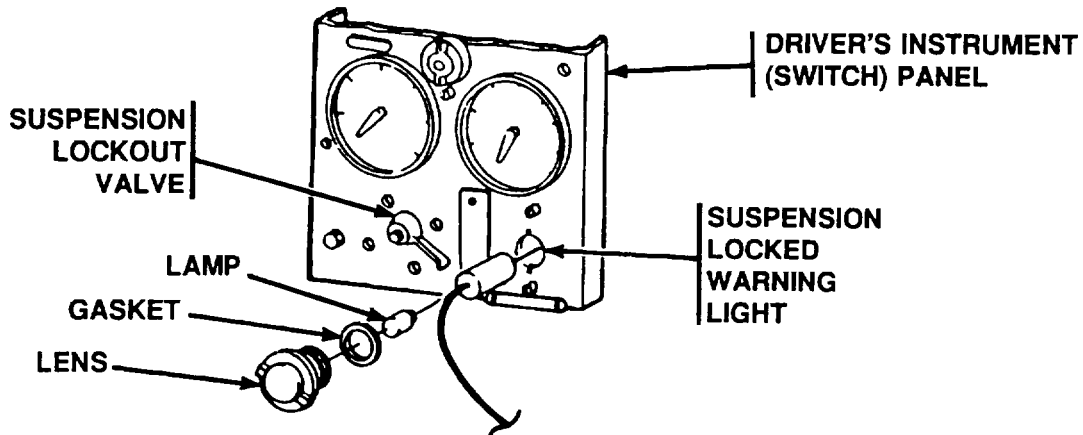
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 6. Disconnect wiring harness from instrument (gauge) panel. Place red probe on pin K (lead 459) of receptacle. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, repair lead 459 between plug and diode. Refer to page 2-364. If multimeter indicates no voltage, repair lead 459 between receptacle and MASTER switch. Refer to page 2-364. Set MASTER switch OFF. Connect wiring harness to instrument (gauge) panel.

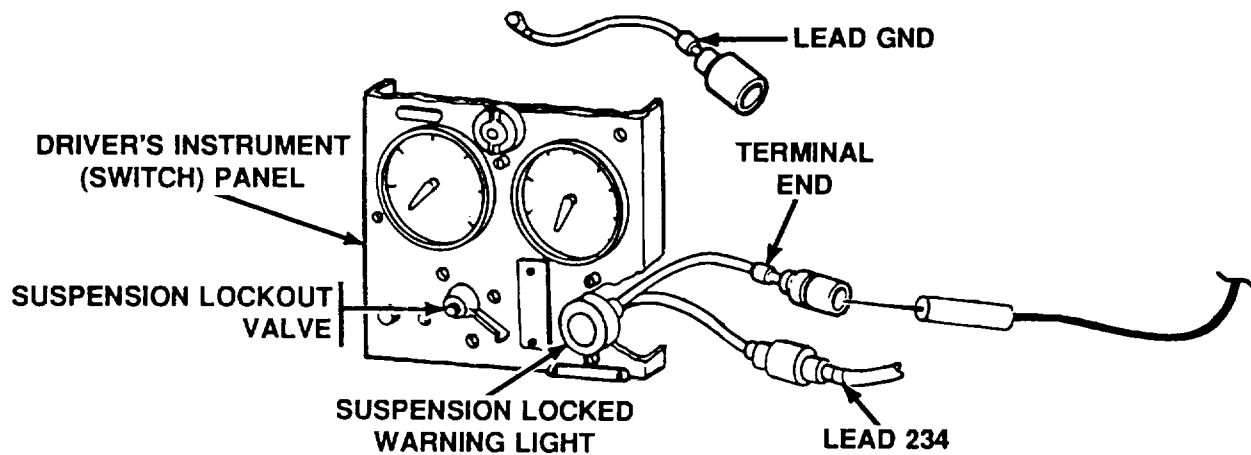
R. SUSPENSION LOCKED WARNING LIGHT CIRCUIT.



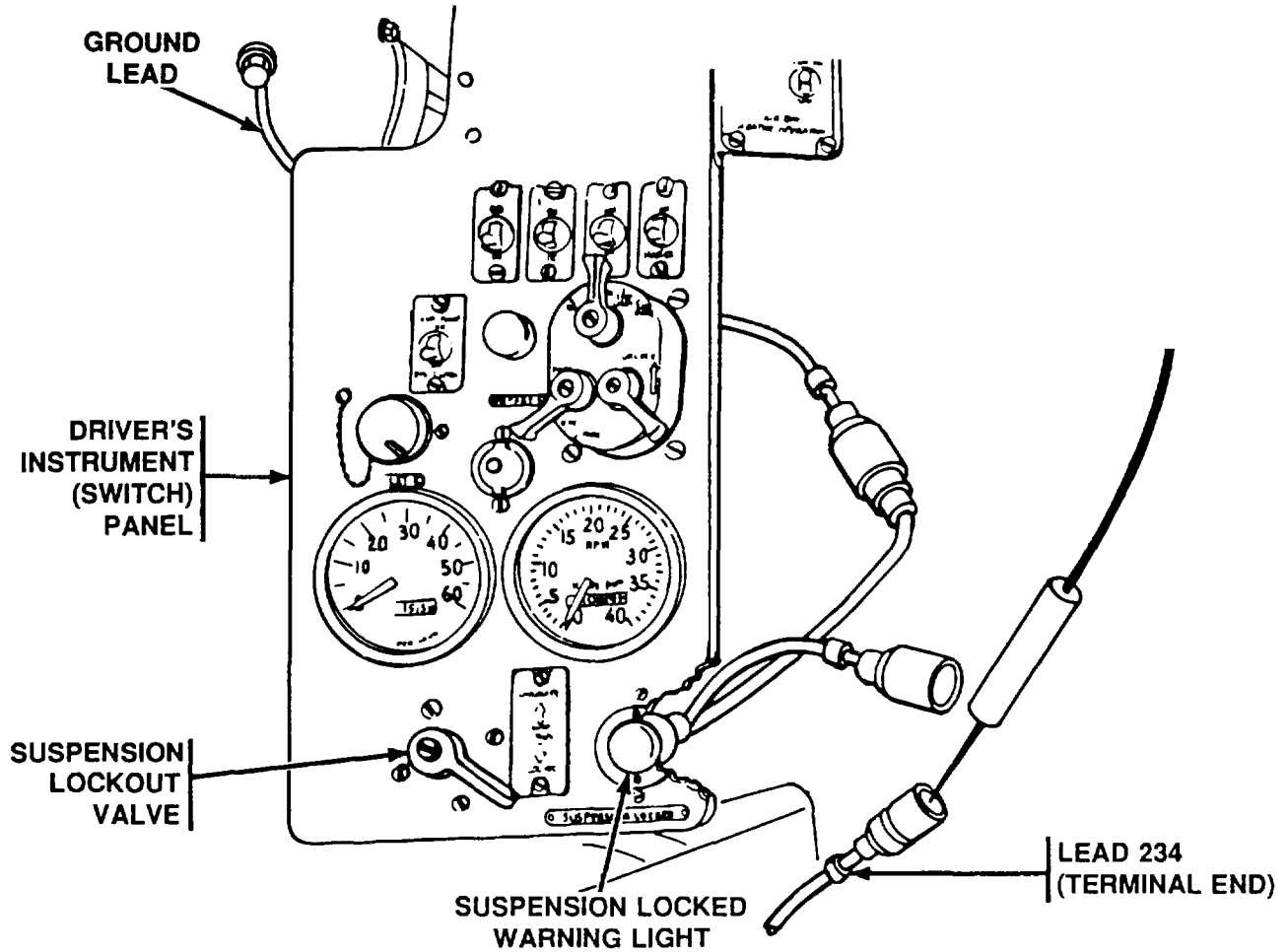
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



Step 1. Remove lamp from SUSPENSION LOCKED warning light. Refer to page 2-567. Set MASTER switch ON. Place suspension lockout control valve handle in locked position. Place oil pump motor switch in ON position. Place red probe in socket. Ground black probe. If multimeter indicates about 24 volts, replace lamp. If multimeter indicates no voltage, set MASTER switch OFF, install lamp and go to step 2.



Step 2. Disconnect lead GND from SUSPENSION LOCKED warning light. Connect multimeter between lead GND (terminal end) and ground. If multimeter indicates continuity, go to step 3. If multimeter indicates no continuity, repair lead GND. Refer to page 2-364. Connect lead GND to SUSPENSION LOCKED warning light.



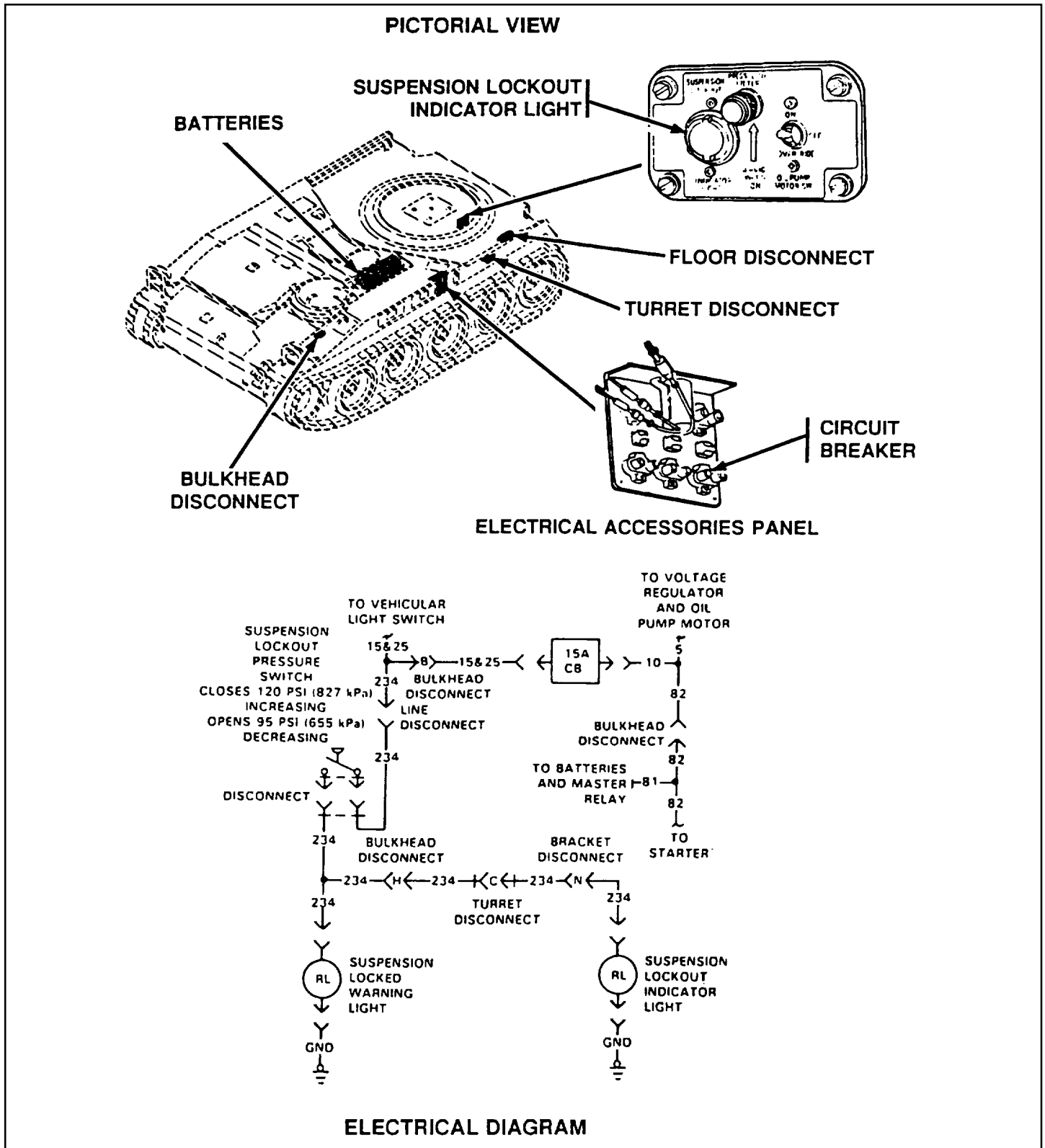
WARNING

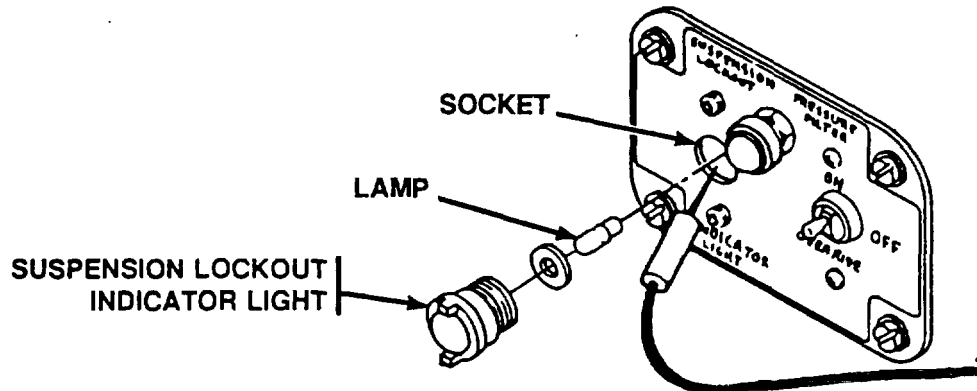
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 3. Disconnect lead 234 from SUSPENSION LOCKED warning light. Place red probe in lead 234 (terminal end) and ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, replace SUSPENSION LOCKED warning light assembly. Refer to page 2-560. If multimeter indicates no voltage, repair lead 234 between SUSPENSION LOCKED warning light and suspension lockout pressure switch. Refer to page 2-364. Set MASTER switch OFF. Connect lead 234 to SUSPENSION LOCKED warning light.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

S. SUSPENSION LOCKOUT INDICATOR LIGHT CIRCUIT.

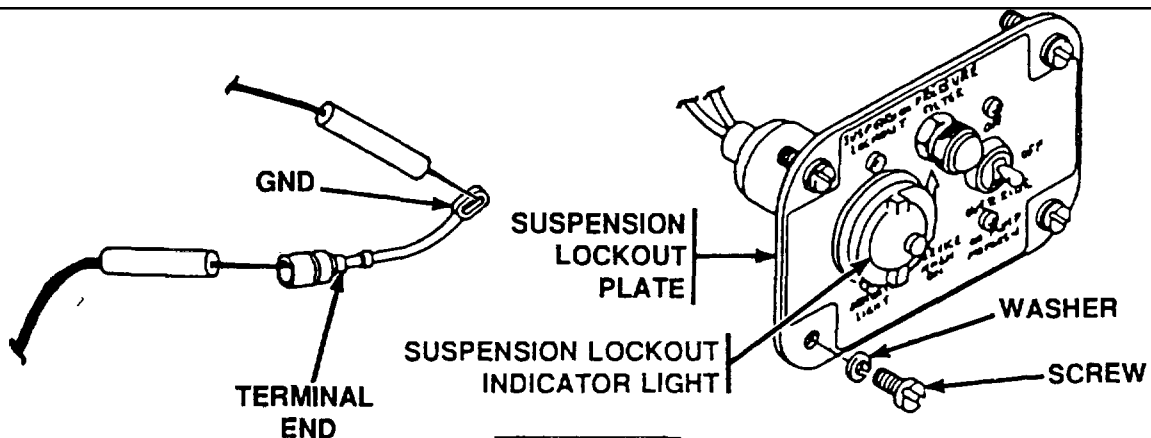




WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 1. Remove lamp from SUSPENSION LOCKOUT INDICATOR LIGHT. Refer to TM 9-2350-304-20-2. Set MASTER switch ON. Place suspension lockout control valve handle in locked position. Place oil pump motor switch in ON position. Place red probe in socket. Ground black probe. If multimeter indicates about 24 V, replace lamp. If multimeter indicates no voltage, set MASTER switch OFF, install lamp, and go to step 2.

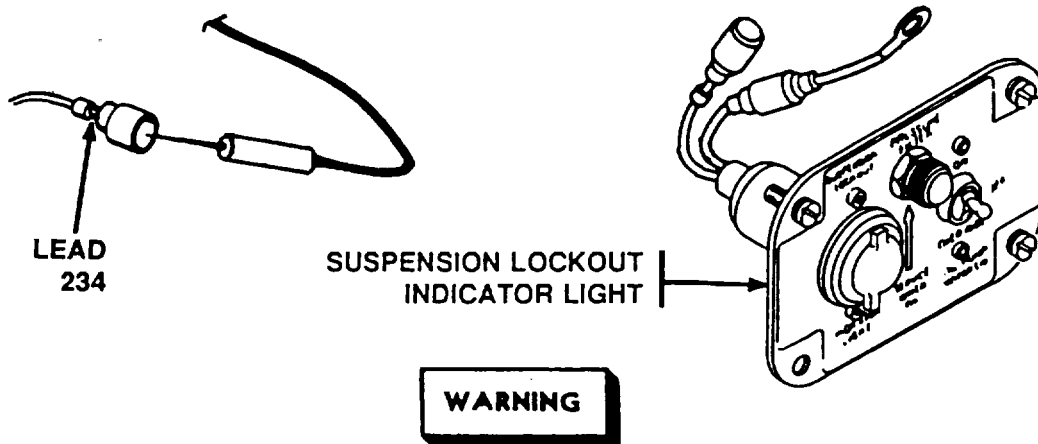


WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

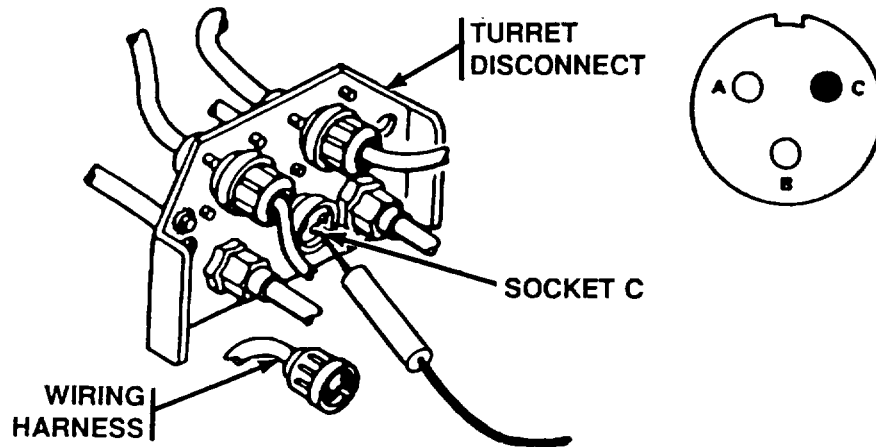
- Step 2. Remove four screws, four washers, and suspension lockout plate for access to electrical leads. Disconnect lead GND from SUSPENSION LOCKOUT INDICATOR LIGHT. Connect multimeter between terminal end of lead GND and ground. If multimeter indicates continuity, go to step 3. If multimeter does not indicate continuity, repair lead GND. Refer to page 2-364. Connect lead GND to SUSPENSION LOCKOUT INDICATOR LIGHT.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

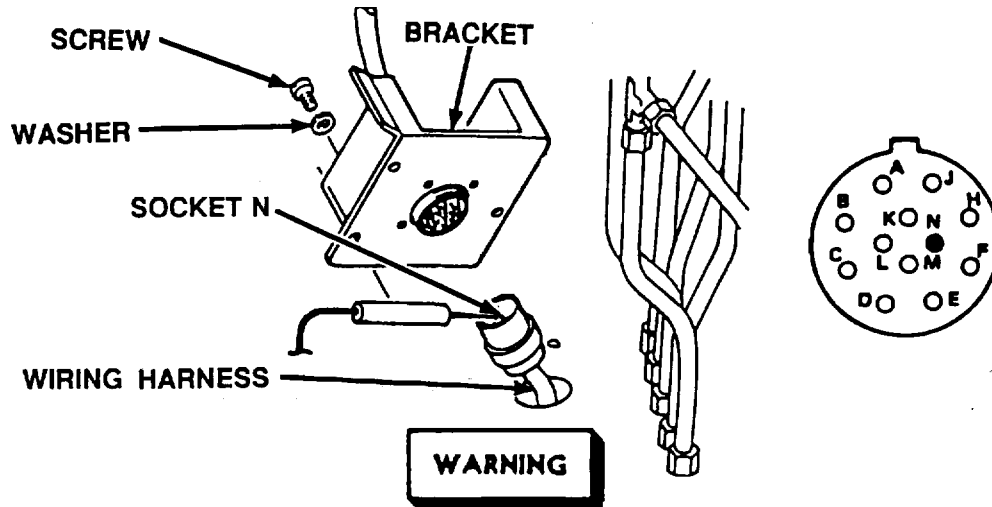


Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 3. Disconnect lead 234 from SUSPENSION LOCKOUT INDICATOR LIGHT. Place red probe in lead 234 and ground black probe. Set MASTER switch ON. If multimeter indicates about 24 V, replace SUSPENSION LOCKOUT INDICATOR LIGHT. Refer to TM 9-2350-304-20-2. If multimeter indicates no voltage, go to step 4. Set MASTER switch OFF. Connect lead 234 to SUSPENSION LOCKOUT INDICATOR LIGHT.

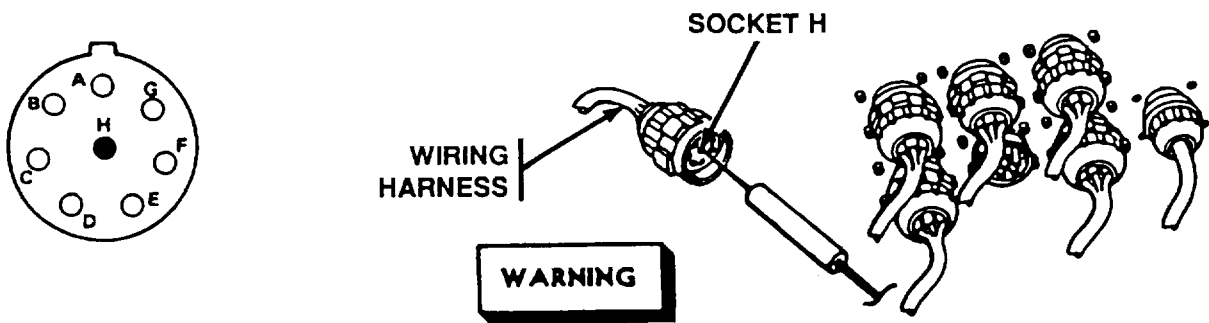


- Step 4. Position cannon in battery position for access to turret disconnect. Disconnect wiring harness at turret disconnect. Place red probe in socket C (lead 234). Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 V, go to step 5. If multimeter indicates no voltage, go to step 6. Set MASTER switch OFF. Connect wiring harness at turret disconnect.



Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 5. Remove three screws and three washers attaching bracket to deck. Raise bracket to provide access to wiring harness. Disconnect wiring harness at disconnect. Place red probe in plug socket N (lead 234). Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 V, repair lead 234 from disconnect to SUSPENSION LOCKOUT INDICATOR LIGHT. Refer to page 2-364. If multimeter indicates no voltage, repair lead 234 from disconnect to turret disconnect. Refer to page 2-364. Set MASTER switch OFF. Connect wiring harness at disconnect. Install bracket using three washers, and three screws.

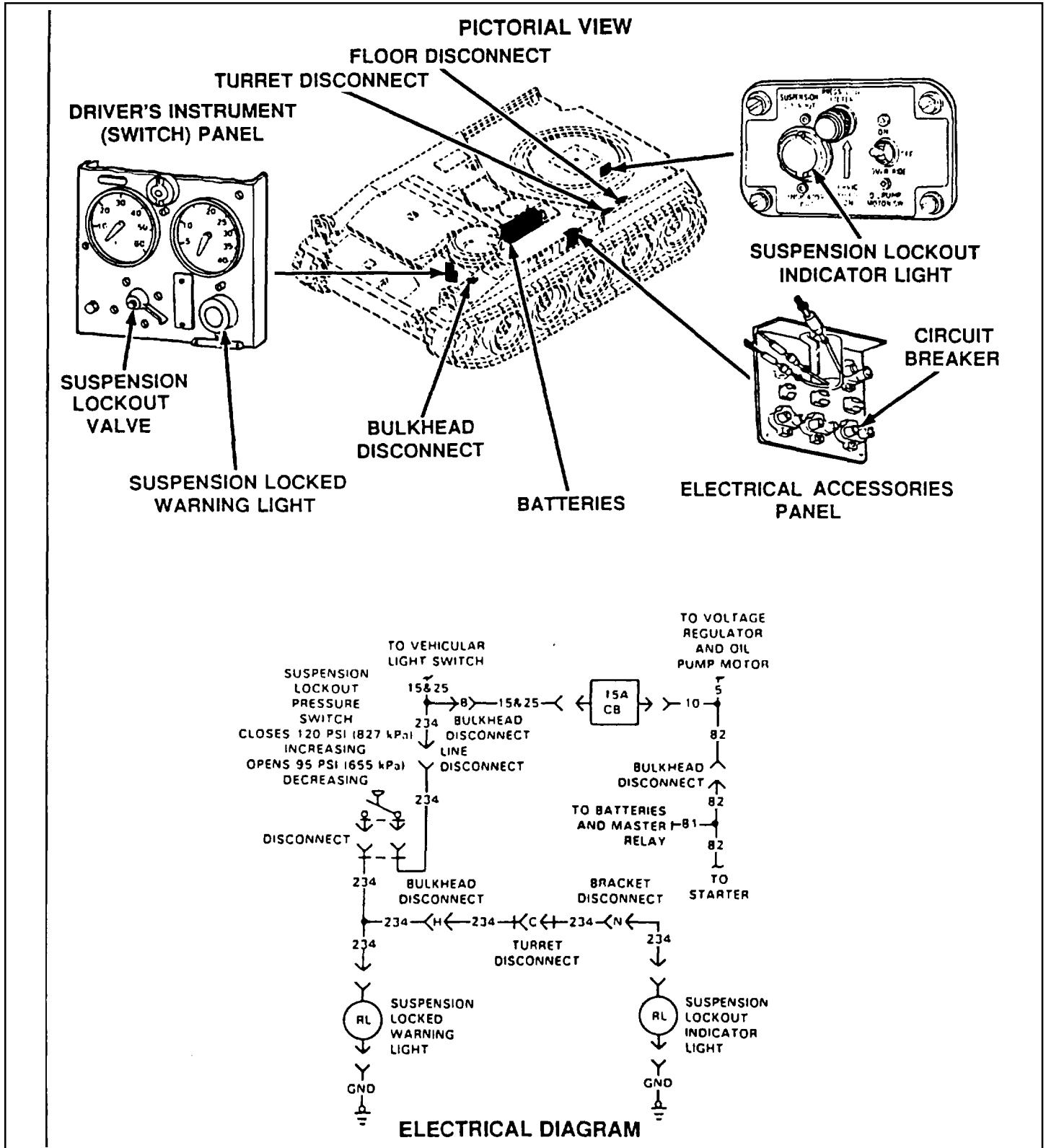


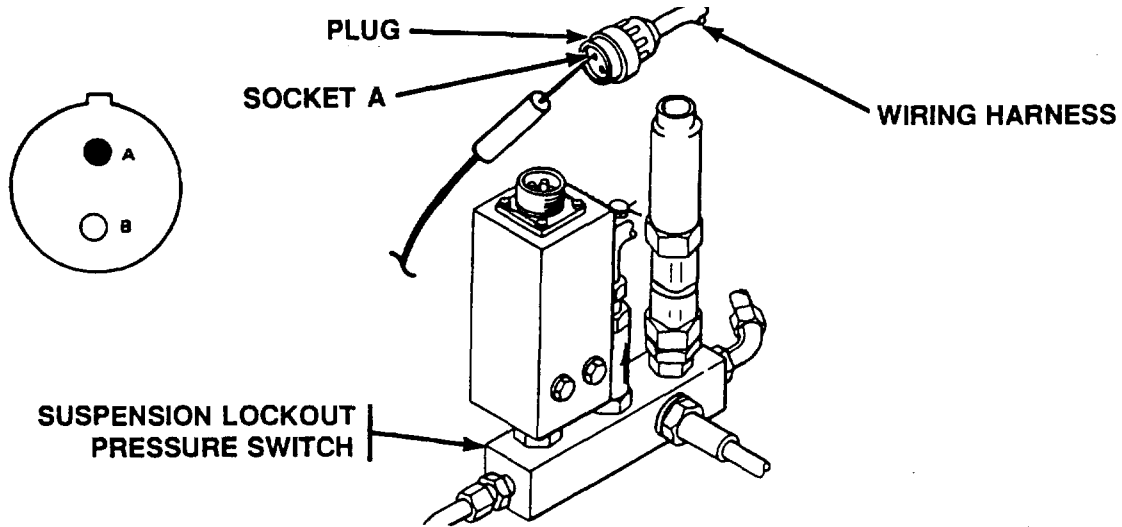
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 6. Remove driver's seat and driver's compartment aft cowl for access to bulkhead disconnect. Refer to page 2-911 and 2-879. Disconnect wiring harness at bulkhead disconnect. Place red probe in plug socket H (lead 234). Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 V, repair lead 234 from bulkhead disconnect to turret disconnect. Refer to page 2-364. If multimeter indicates no voltage, repair lead 234 from bulkhead disconnect to suspension lockout pressure switch. Refer to page 2-364. Set MASTER switch OFF. Connect wiring harness at bulkhead disconnect.

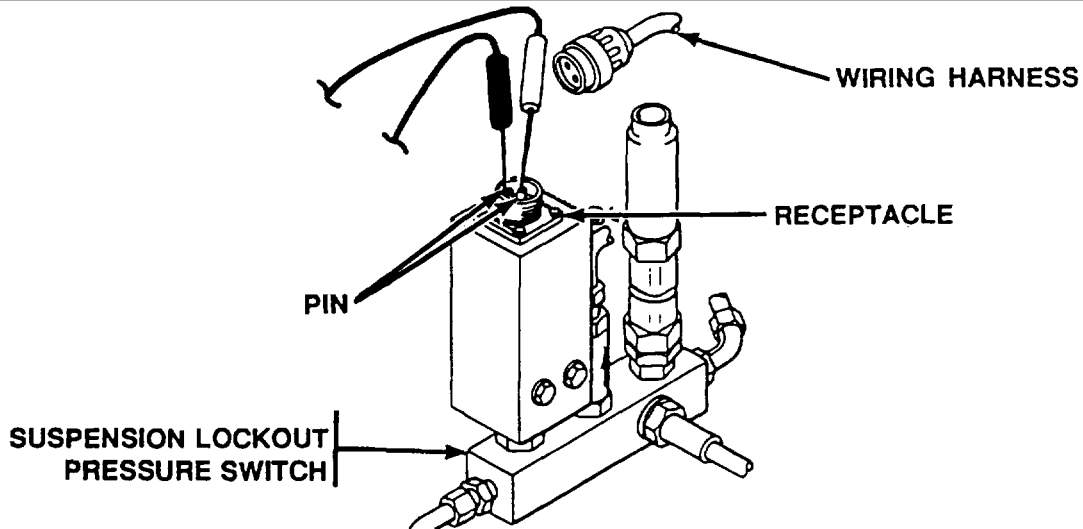
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

T. SUSPENSION LOCKED WARNING LIGHT AND SUSPENSION LOCKOUT INDICATOR LIGHT CIRCUITS.



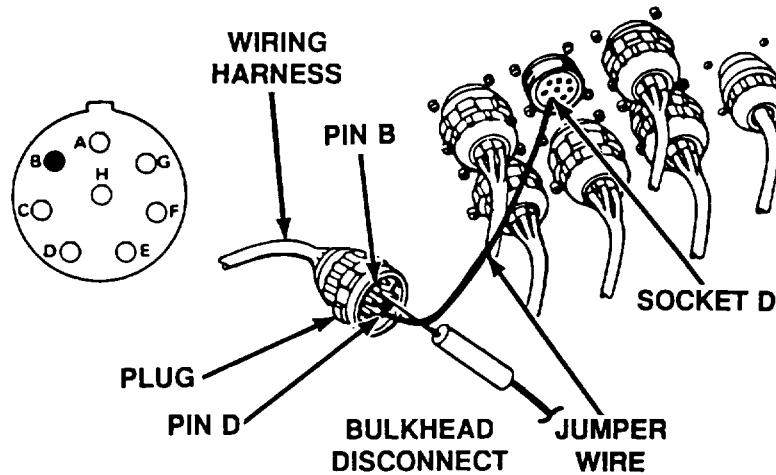


Step 1. Disconnect wiring harness at suspension lockout pressure switch behind driver's instrument (switch) panel. Place red probe in plug socket A (lead 234). Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 2. If multimeter indicates no voltage, go to step 2 and connect wiring harness at suspension lockout pressure switch. Set MASTER switch OFF.

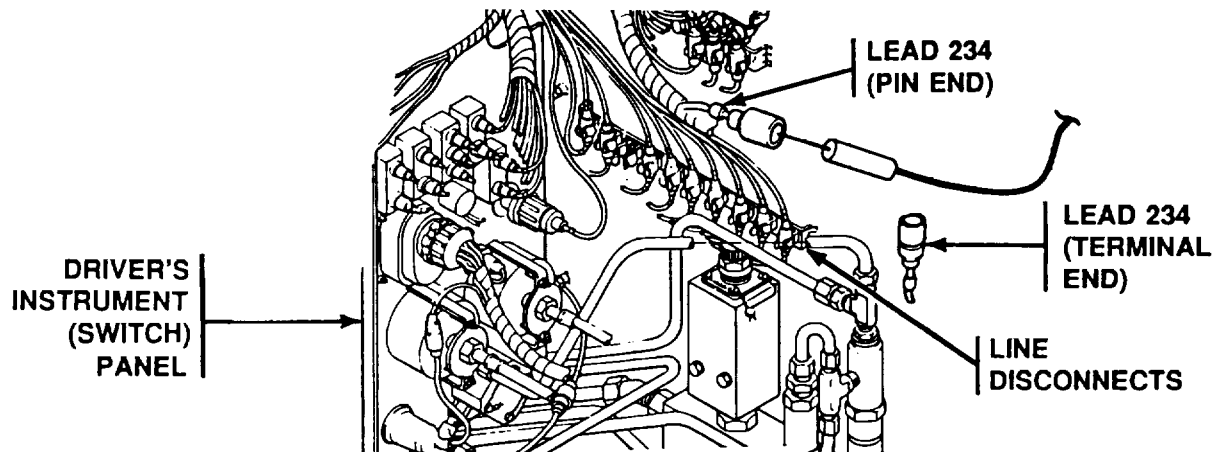


Step 2. Connect multimeter to receptacle pins on suspension lockout pressure switch. If multimeter indicates continuity, repair lead 234 between suspension lockout pressure switch and both SUSPENSION LOCKED warning light and SUSPENSION LOCKOUT INDICATOR LIGHT. Refer to page 2-364. If multimeter does not indicate continuity, notify direct support maintenance. Connect wiring harness to suspension lockout pressure switch.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



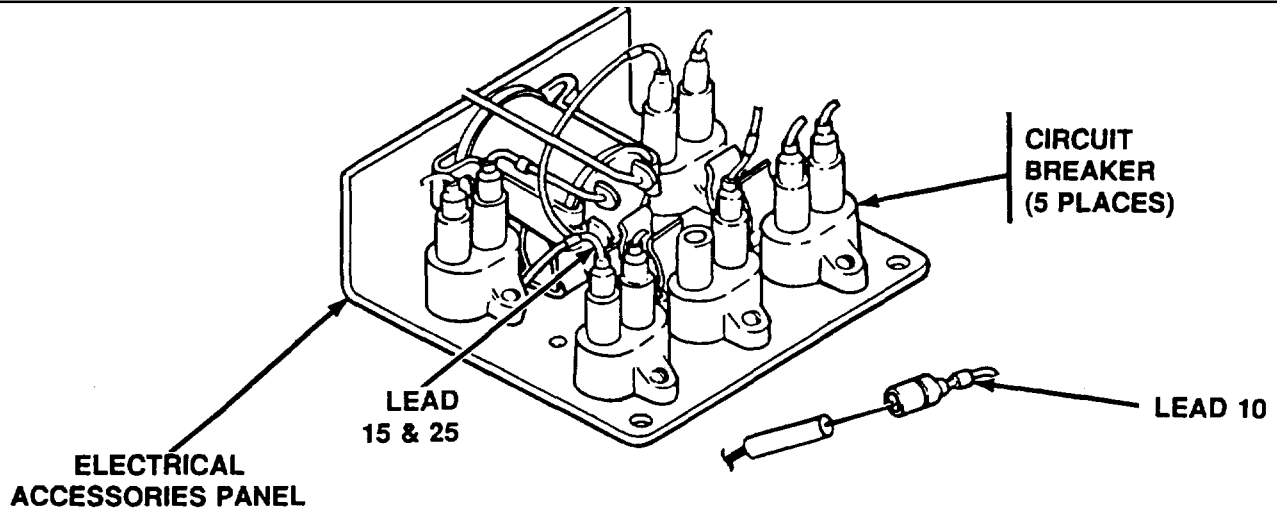
Step 3. Disconnect wiring harness at bulkhead disconnect. Place jumper wire to pin D and socket D (lead 459). Place red probe on pin B (lead 15 & 25) of plug. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, go to step 5. Set MASTER switch OFF. Connect wiring harness at bulkhead disconnect.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

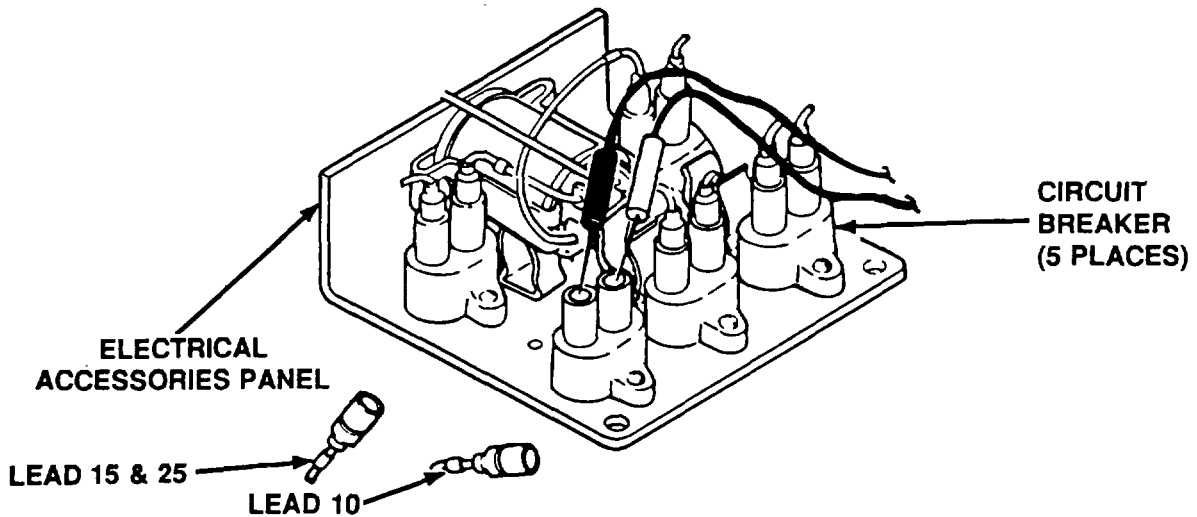
Step 4. Disconnect leads 234 behind driver's instrument (switch) panel at line disconnect. Place red probe in lead 234 (pin end). Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, repair lead 234 between line disconnect and suspension lockout pressure switch. Refer to page 2-364. If multimeter indicates no voltage, repair lead 234 between line disconnect and bulkhead disconnect. Refer to page 2-364. Set MASTER switch OFF. Connect leads 234 at line disconnect.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

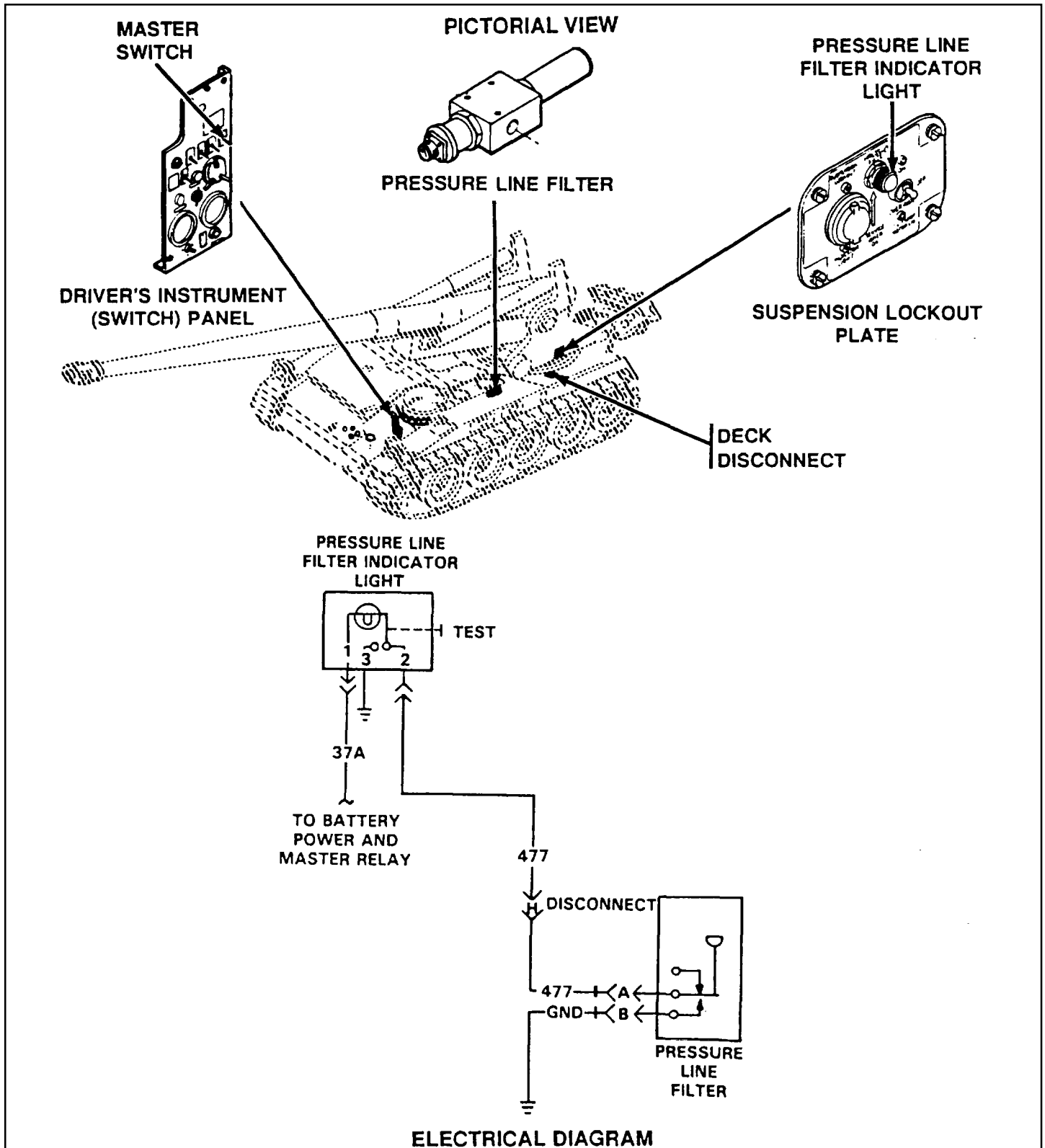
Step 5. To access electrical accessories panel, remove left CO2 cylinder access cover. Refer to page 2-875. Disconnect lead 10 from circuit breaker. Place red probe in lead 10. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 6. If multimeter indicates no voltage, repair lead 10. Refer to page 2-364. Set MASTER switch OFF. Connect lead 10 to circuit breaker.

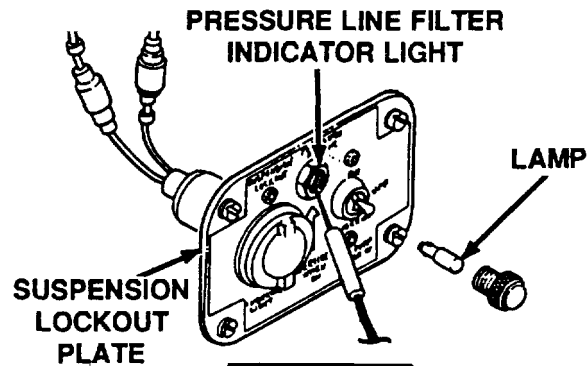


Step 6. Disconnect lead 15 & 25 and lead 10 from circuit breaker. Check continuity between circuit breaker terminals. If multimeter indicates continuity, repair lead 15 & 25 between bulkhead disconnect and circuit breaker. Refer to page 2-364. If multimeter does not indicate continuity, replace circuit breaker. Refer to page 2-578. Connect lead 15 & 25 and lead 10 to circuit breaker.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

U. PRESSURE LINE FILTER INDICATOR LIGHT CIRCUIT.

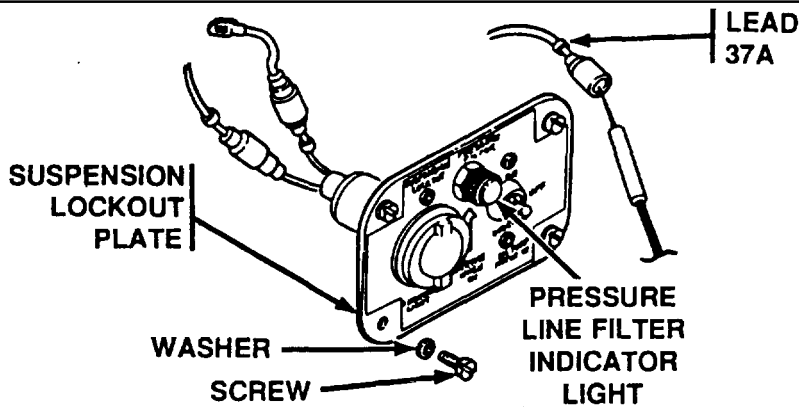




WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 1. Set MASTER switch OFF. Remove lamp from pressure line filter indicator light. Refer to TM 9-2350-304-20-2. Place blackout infrared selector switch in infrared position and infrared receiver switch in ON position. Place instrument switch in ON position. Set MASTER switch ON. Place red probe in socket. Ground black probe. If multimeter indicates about 24 volts, replace lamp. If multimeter indicates no voltage, set MASTER switch OFF, install lamp and go to step 2.

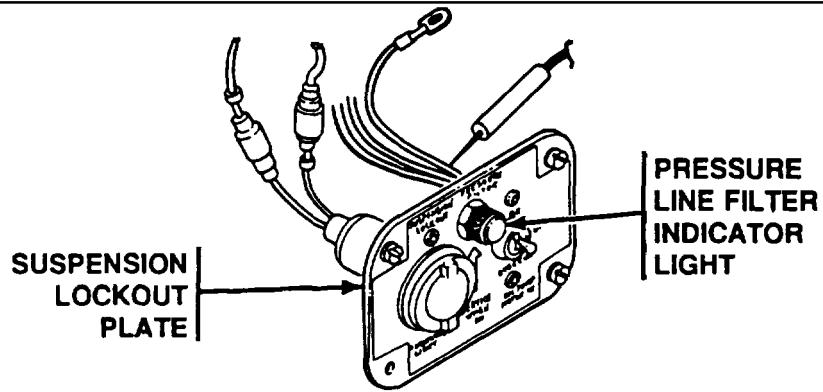


WARNING

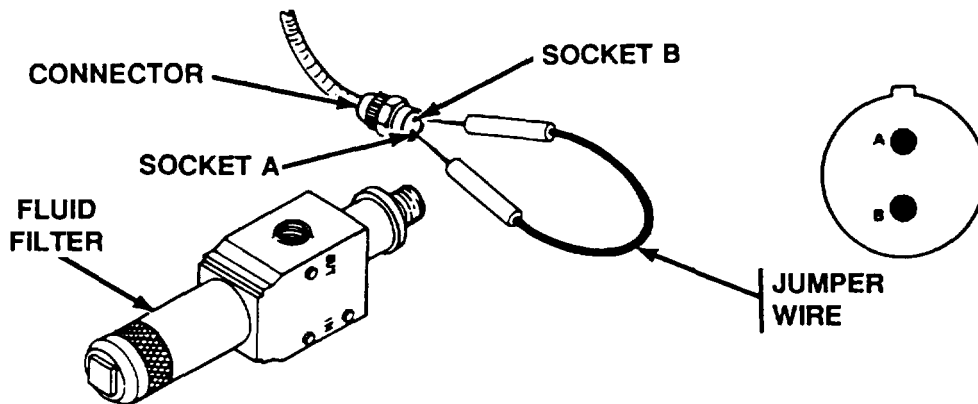
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 2. Remove four screws, four washers, and suspension lockout plate for access to pressure line filter indicator light. Disconnect lead 37A from pressure line filter indicator light. Place red probe in lead 37A. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 3. If multimeter indicates no voltage, repair lead 37A. Refer to page 2-364. Set MASTER switch OFF. Connect lead.

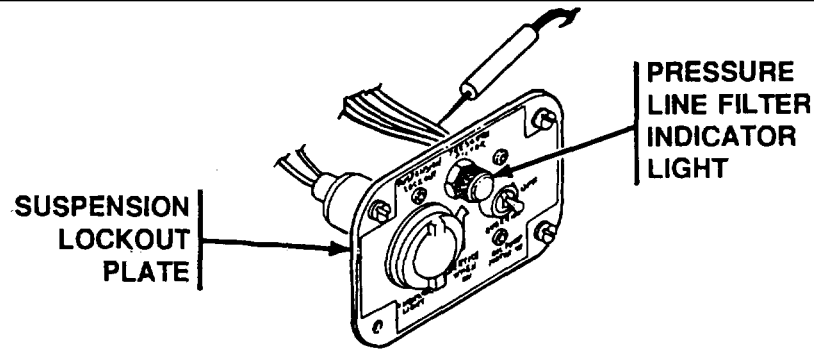
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



Step 3. Place red probe on ground contact of pressure line filter indicator light. Ground black probe. If multimeter indicates continuity, lamp is operating properly. If multimeter indicates infinity, repair pressure line filter indicator light ground lead. Refer to page 2-364.



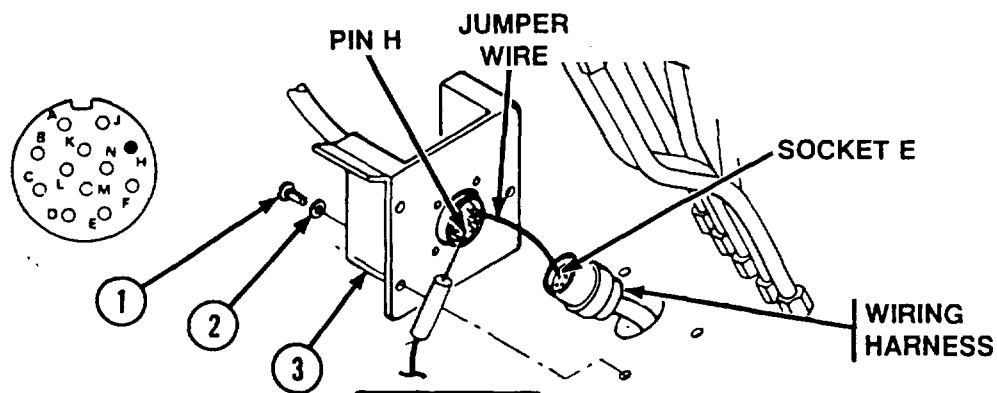
Step 4. Disconnect connector from fluid filter. Install a jumper wire to sockets A and B. If pressure line filter indicator light operates, circuit is operating properly. If pressure line filter indicator light does not operate, go to step 5. Connect connector to fluid filter.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 5. Disconnect lead 477 from pressure line filter indicator light. Place red probe in lead from light. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 6. If multimeter indicates no voltage, repair lead to pressure line filter indicator light. Refer to page 2-364. Set MASTER switch OFF. Connect lead. Install suspension lockout plate.

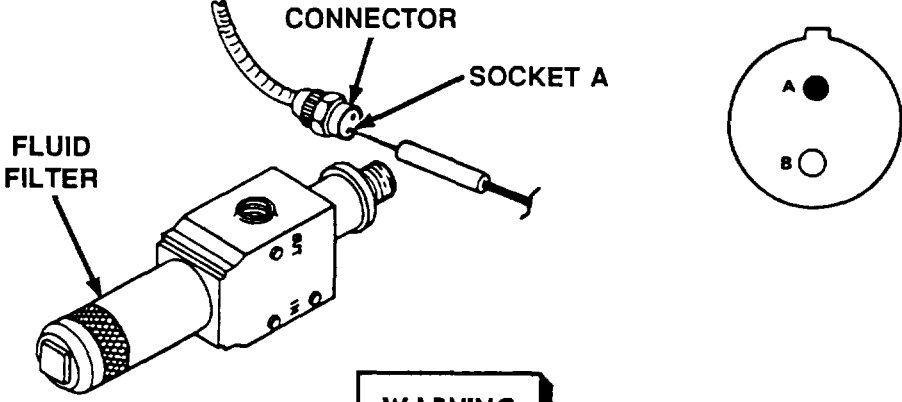


WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 6. Remove three screws (1) and three washers (2) attaching turret disconnect bracket (3) to deck. Raise bracket to provide access to wiring harness. Disconnect wiring harness at disconnect. Install jumper wire to pin E and socket E (lead 37A). Place red probe on pin H (lead 477). Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 7. If multimeter indicates no voltage, repair lead 477 between pressure line filter indicator light and disconnect. Refer to page 2-364. Set MASTER switch OFF. Remove jumper wire. Connect wiring harness at disconnect. Install turret disconnect bracket (3), three screws (1), and three washers (2).

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

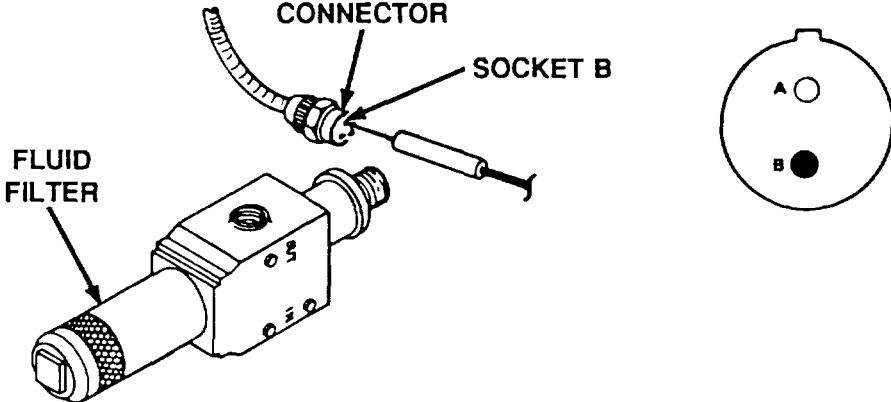


The diagram shows a fluid filter connected to a connector. A probe is inserted into socket A. To the right, a circular terminal plate is shown with terminal A filled with a black dot and terminal B empty.

WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

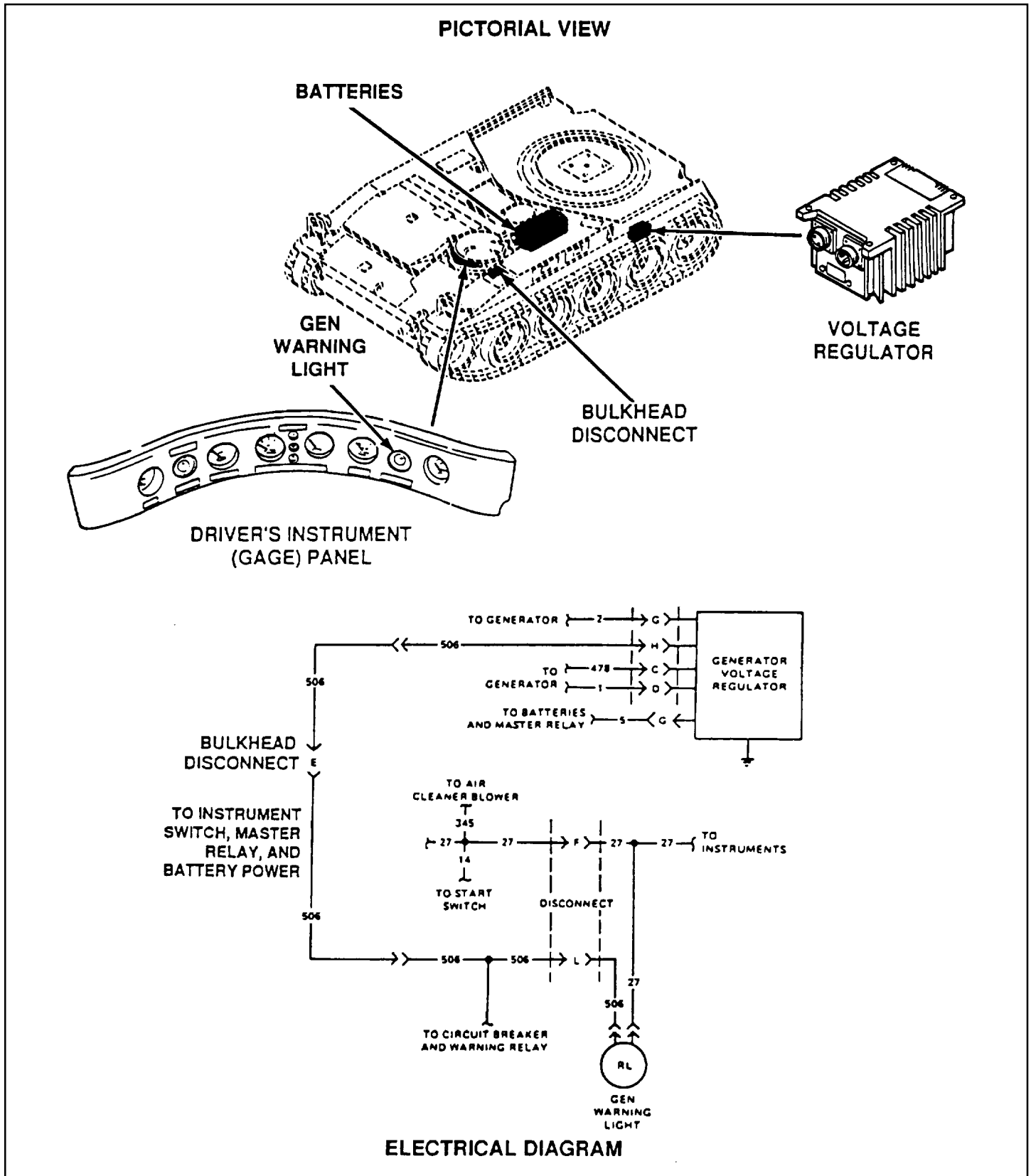
Step 7. Disconnect connector from fluid filter. Place red probe in socket A (lead 477). Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 8. If multimeter indicates no voltage, repair lead 477 between deck disconnect and fluid filter connector. Refer to page 2-364. Set MASTER switch OFF. Connect connector to fluid filter.



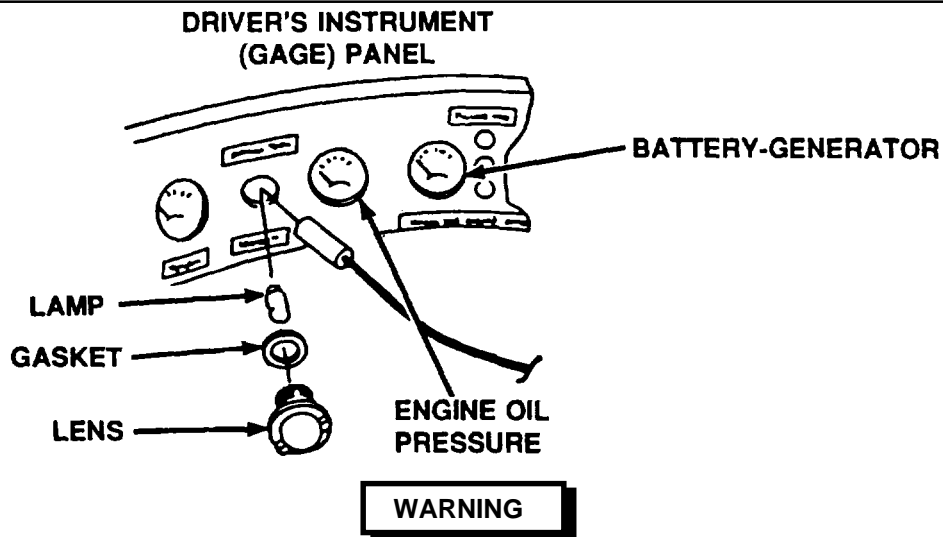
The diagram shows the same fluid filter and connector setup. A probe is inserted into socket B. To the right, a circular terminal plate is shown with terminal A empty and terminal B filled with a black dot.

Step 8. Connect red probe to socket B (GND). Ground black probe. If multimeter indicates continuity, replace fluid filter. Refer to page 2-709. If multimeter indicates infinity, repair GND lead. Refer to page 2-364. Connect connector to fluid filter.

V. GENERATOR WARNING LIGHT CIRCUIT.

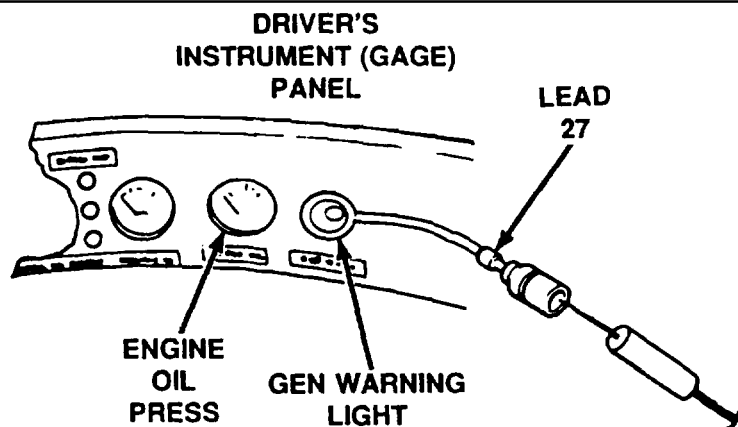


2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

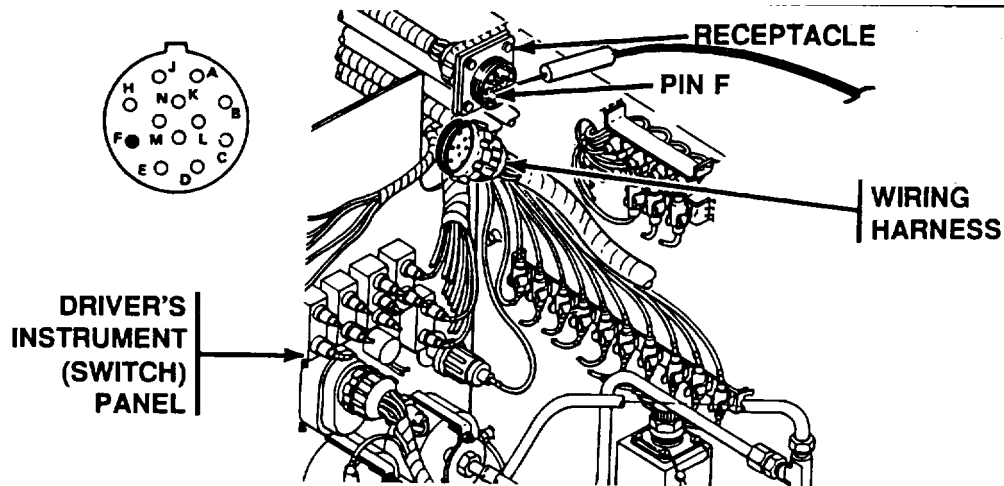


Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 1. Remove lamp from GEN WARNING light. Refer to page 2-567. Set MASTER switch ON. Place BO infrared selector switch in infrared position and infrared receiver switch in ON position. Place instrument switch in ON position. Place red probe in socket. Ground black probe. If multimeter VT indicates about 24 volts, replace lamp. If multimeter indicates no voltage, set MASTER switch OFF, install lamp assembly and go to step 2.



- Step 2. To access electrical leads, remove driver's instrument (gage) panel. Refer to page 2-560. Disconnect lead 27 from GEN WARNING light. Place red probe in lead 27. Ground black probe. Set MASTER and INST switches ON. If multimeter indicates no voltage, connect lead 27 to GEN WARNING light and go to step 3. If multimeter indicates about 24 volts, set MASTER and INST switches OFF and go to step 4.

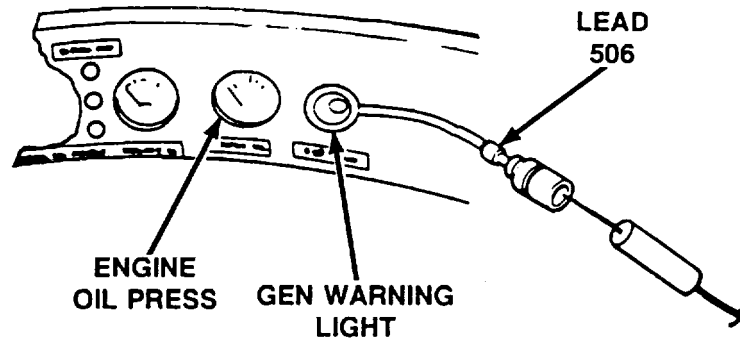


WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

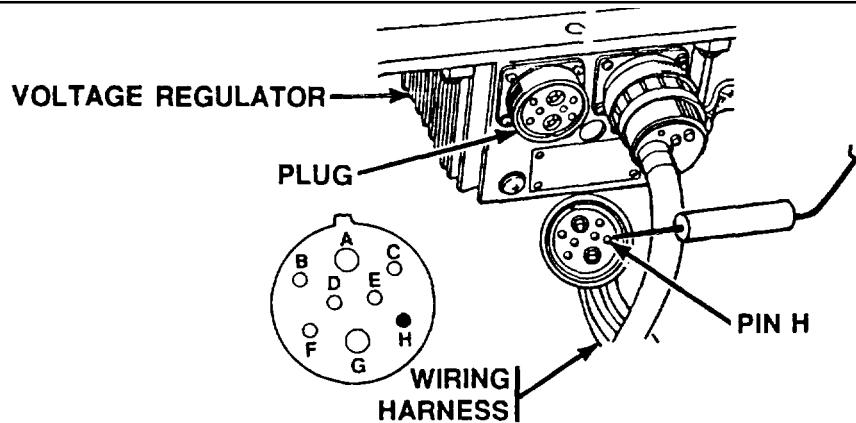
- Step 3. Disconnect instrument (gage) panel wiring harness. Place red probe on receptacle pin F (lead 27). Ground black probe. Set MASTER and INST switches ON. If multimeter indicates about 24 volts, repair lead 27 between plug and GEN WARNING light. Refer to page 2-364. If multimeter indicates no voltage, repair lead 27 between receptacle and INST switch. Refer to page 2-364. Set MASTER and INST switches OFF. Connect wiring harness.

DRIVER'S INSTRUMENT (GAGE) PANEL

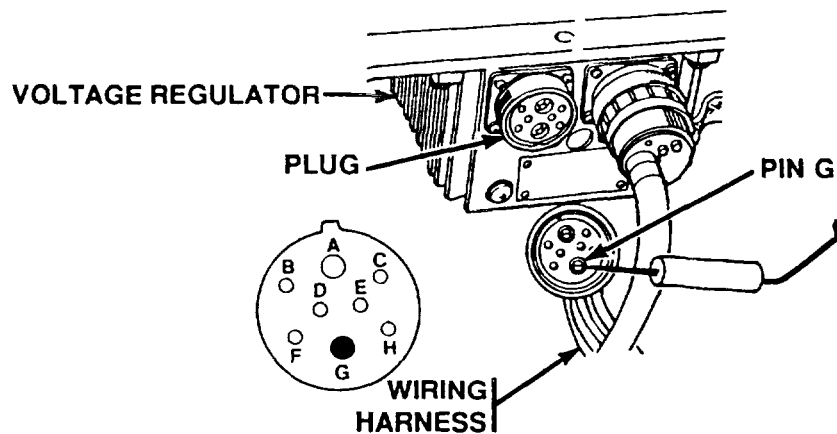


- Step 4. Disconnect lead 506 from GEN WARNING light. Place red probe on lead 506 (pin end). Ground black probe. Start engine and run at 1000 to 1200 rpm. Check voltage and stop engine. If multimeter indicates about 24 volts, replace GEN WARNING light assembly. Refer to page 2-560. If multimeter indicates no voltage, connect lead 506 to GEN WARNING light and go to step 5.

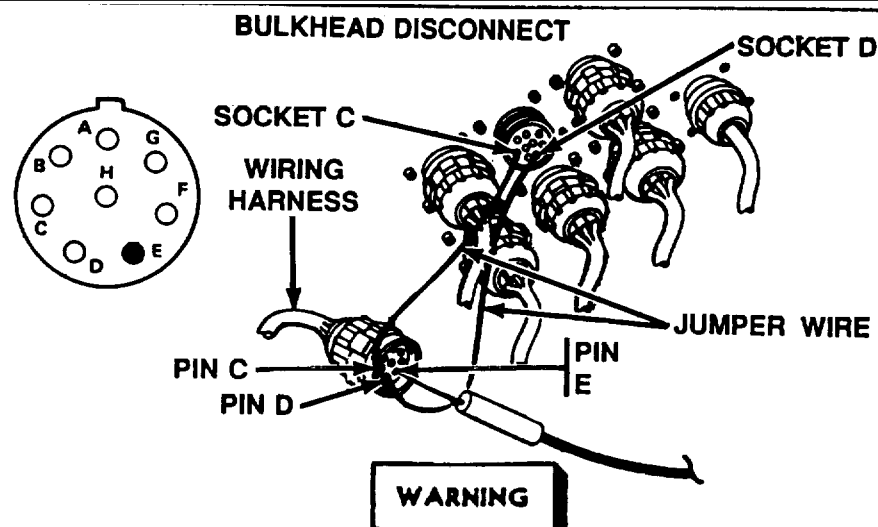
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



Step 5. To access voltage regulator, remove left CO2 cylinder access cover. Refer to page 2-875. Disconnect wiring harness from voltage regulator. Place red probe on plug pin H (lead 506). Ground black probe. Set MAST and INST switches ON. Start engine. If multimeter indicates about 24 volts, go to step 6. If multimeter indicates no voltage, connect wiring harness to voltage regulator and go to step 7. Stop engine. Set MASTER and INST switches OFF.

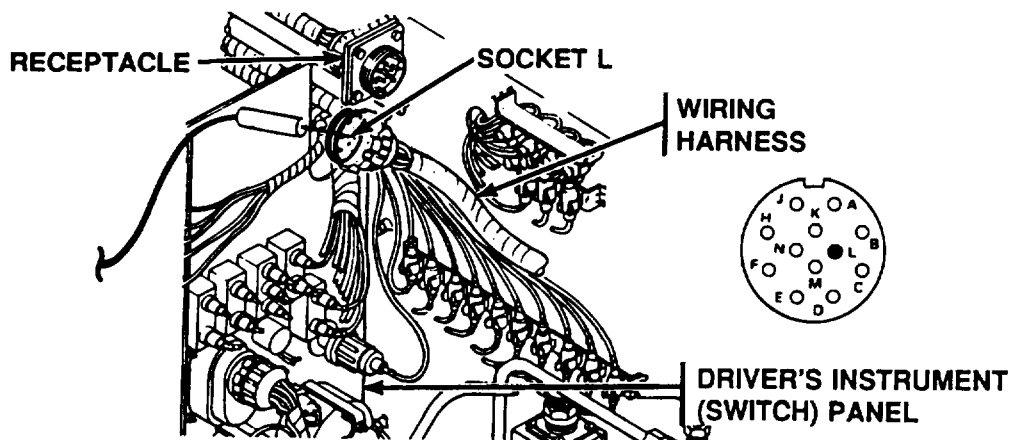


Step 6. Place red probe in plug pin G (lead 2). Ground black probe. Start engine and run at 1000 to 1200 rpm. Check voltage and stop engine. If multimeter indicates about 24 volts, replace voltage regulator. Refer to page 2-546. If multimeter indicates no voltage, connect wiring harness to voltage regulator and troubleshoot generator. Refer to page 2-57.



Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 7.* To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove drivers compartment aft cowl, refer to page 2-879. Disconnect wiring harness at bulkhead disconnect. Place jumper wire to pin D and socket D (lead 459). Place jumper wire to pin C and socket C (lead 27). Place red probe on pin E (lead 506). Ground black probe. Set MASTER and INST switches ON. If multimeter indicates about 24 volts, go to step 8. If multimeter indicates no voltage, remove jumper wire (lead 459) and connect wiring harness to bulkhead disconnect and go to step 9. Set MASTER and INST switches OFF



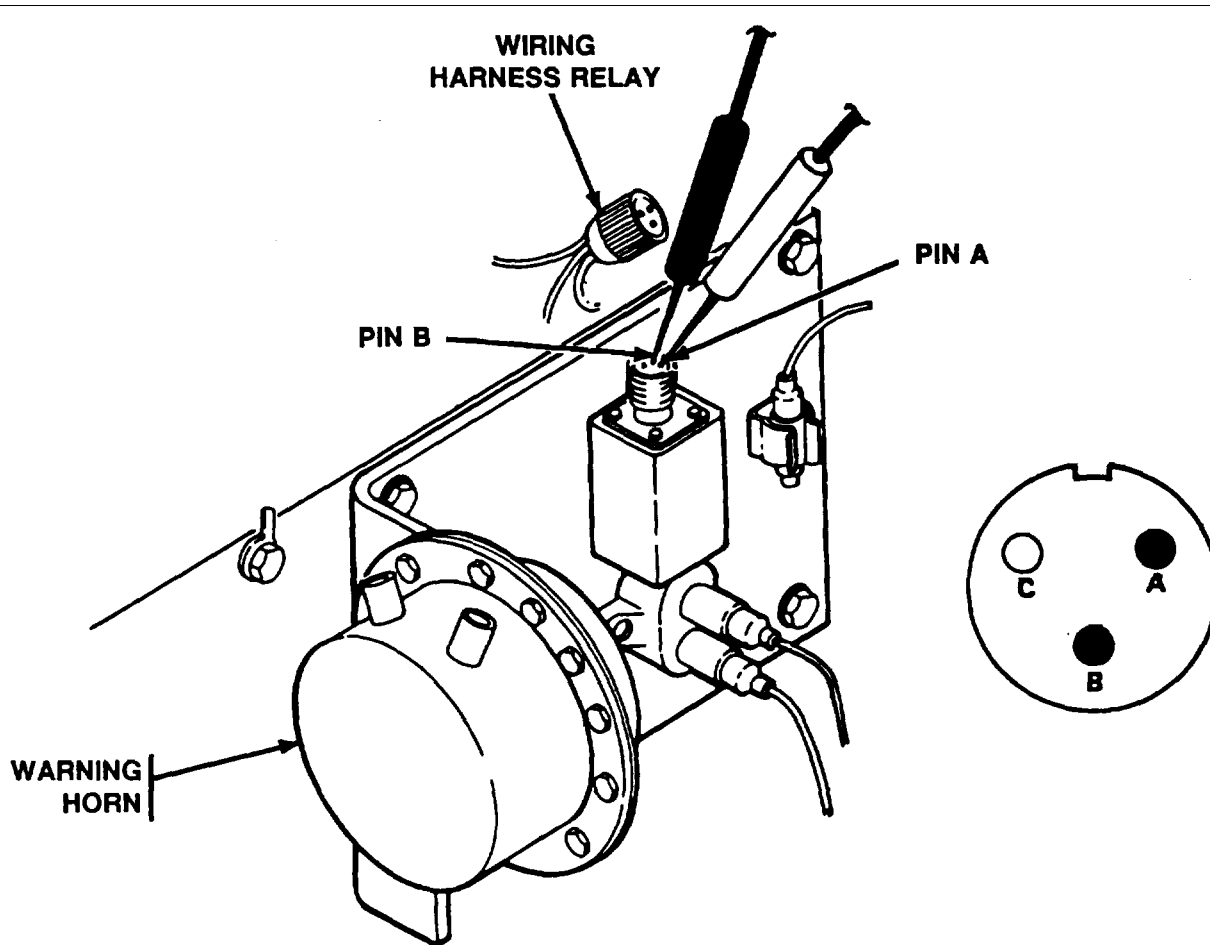
- Step 8.* Disconnect wiring harness. Place red probe in plug socket L (lead 506). Ground black probe. Set MASTER and INST switches ON. If multimeter indicates about 24 volts, repair lead 506 between receptacle and line disconnect behind driver's instrument (switch) panel. Refer to page 2-364. If multimeter indicates no voltage, go to step 9. Connect wiring harness. Set MASTER and INST switches OFF.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

Step 9. To access electrical leads, open battery compartment access door. Remove batteries and battery tray. Refer to page 2-624. Disconnect wiring harness at bulkhead disconnect. Place jumper wire to pin E (lead 506) and ground. Disconnect lead 506 at line disconnect near bulkhead disconnect (aft side). Place red probe in lead 506. Ground black probe. If multimeter indicates continuity, go to step 10. If multimeter indicates infinity, repair lead 506 between bulkhead disconnect and line disconnect. Refer to page 2-364. Remove jumper wire. Connect wiring harness. Connect line disconnect.

Step 10. Disconnect wiring harness. Place jumper wire to pin E (lead 506) and ground. Disconnect lead 506 at line disconnect. Place red probe in lead 506. Ground black probe. If multimeter indicates continuity, circuit is operating normally. If multimeter indicates infinity, repair lead 506 between receptacle and line disconnect. Refer to page 2-364. Remove jumper wire. Connect wiring harness. Connect line disconnect.

W. WARNING HORN RELAY.

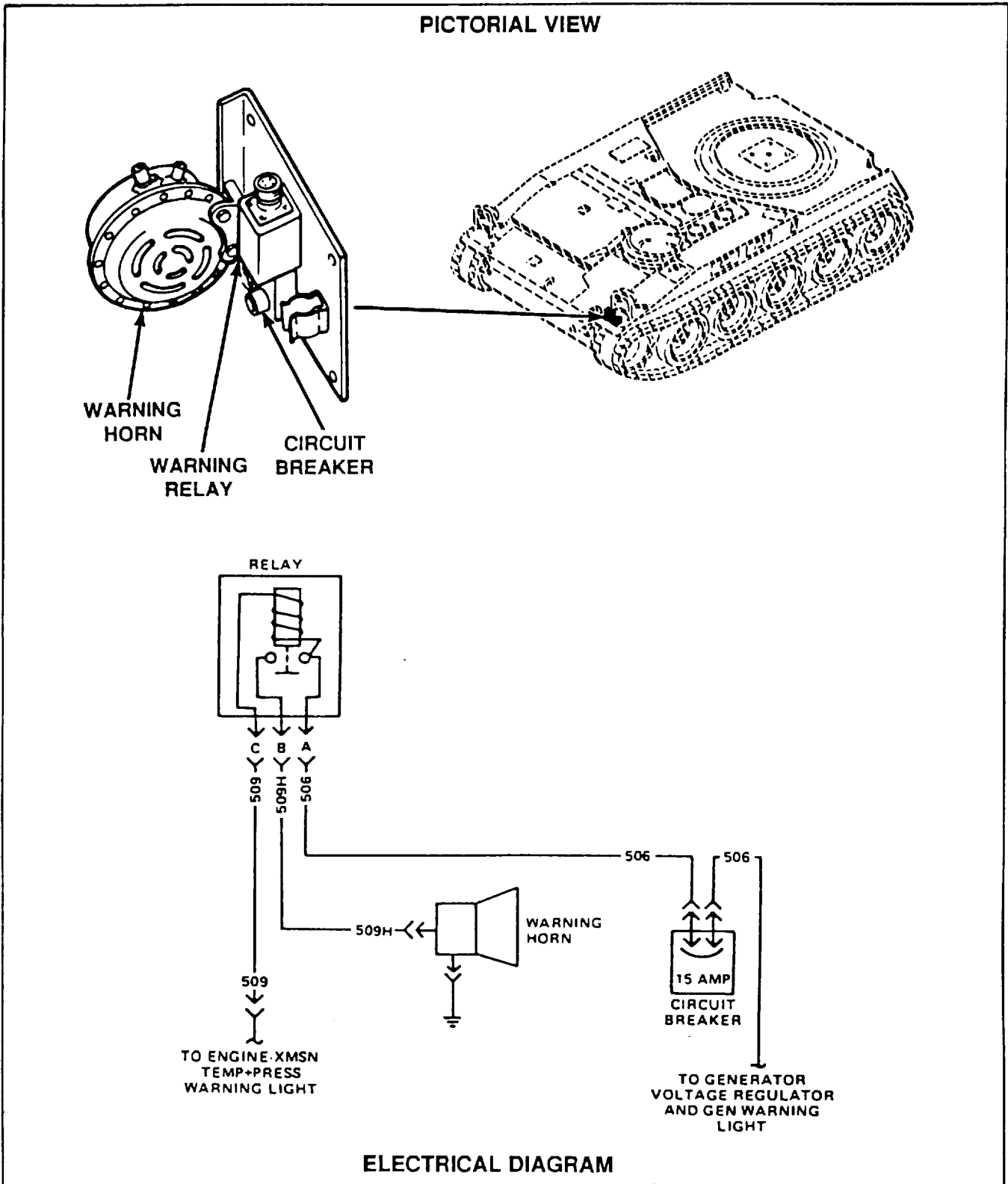
**WARNING**

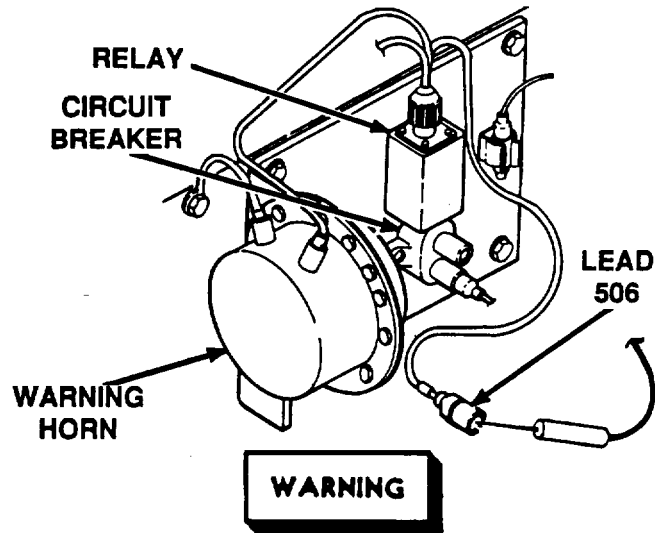
Brake foot pedal is spring loaded. Block tracks and release parking brake before working on warning horn.

Remove driver's seat. Refer to page 2-911. To access warning horn relay, remove transmission deck lid assembly. Refer to page 2-893. Disconnect wiring harness from warning horn relay. Place red probe on receptacle pin A. Place black probe on receptacle pin B. If multimeter indicates 0 ohms, replace warning horn relay. Refer to page 2-621. Connect wiring harness.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

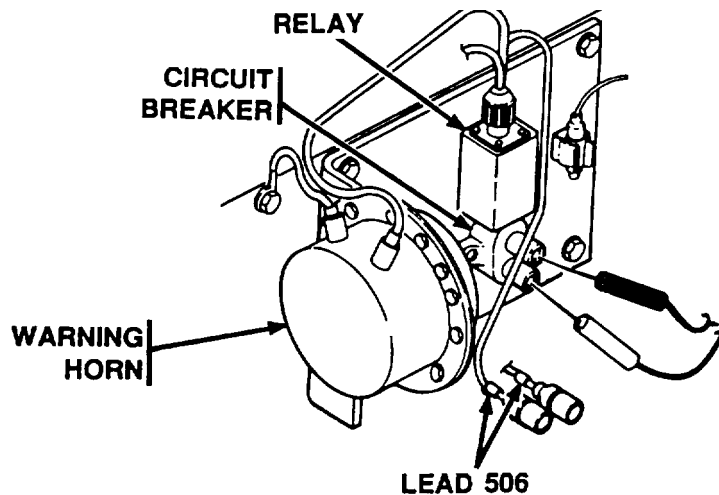
X. WARNING HORN CIRCUIT.





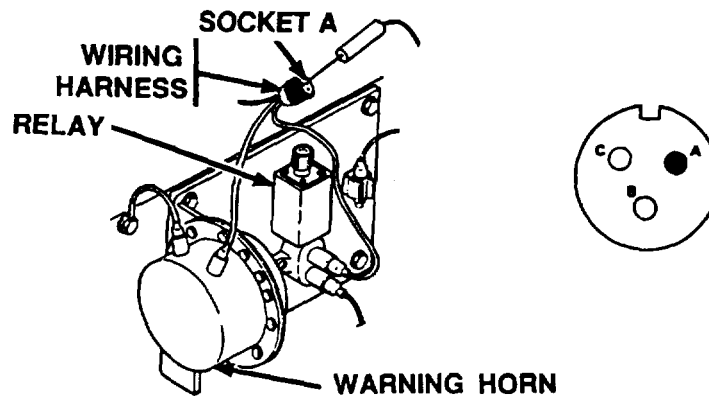
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 1.* To access warning horn and circuit breaker, remove driver's seat. Refer to page 2-911. Disconnect lead 506 from circuit breaker input. Place red probe in lead 506. Ground black probe. Set MASTER switch ON. Set INST switch ON. Start engine and run at 1000 to 1200 rpm, check voltage, and stop engine. If multimeter indicates about 24 volts, go to step 2. If multimeter indicates no voltage, repair lead 506 between GEN WARNING light and circuit breaker. Refer to page 2-364. Set MASTER switch OFF. Set INST switch OFF.



- Step 2.* Disconnect lead 506 from circuit breaker output. Place red probe in input side of circuit breaker. Place black probe in output side of circuit breaker. If multimeter indicates 0 ohms, connect leads 506 to circuit breaker and go to step 3. If multimeter does not indicate 0 ohms, replace circuit breaker. Refer to page 2-621.

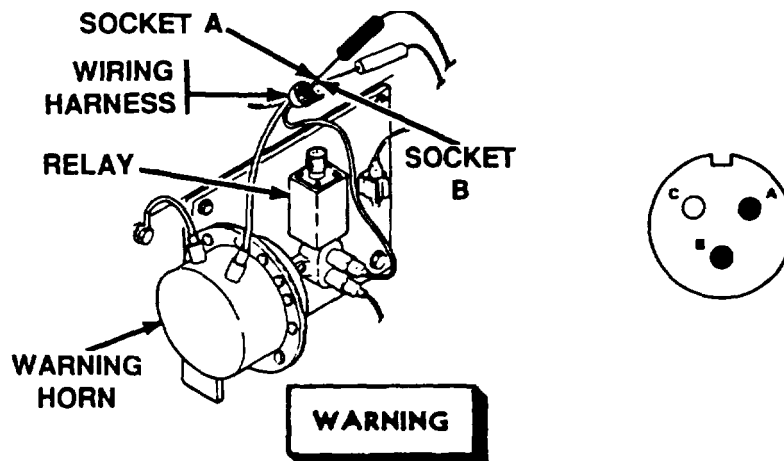
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

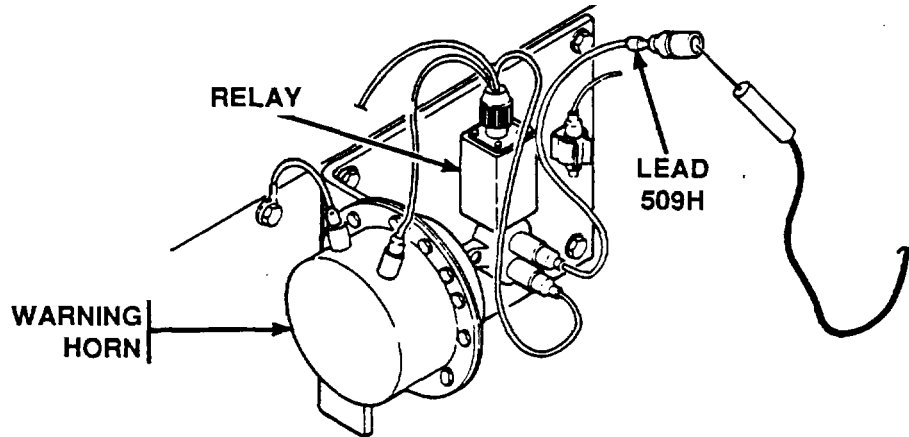
- Step 3.* Disconnect wiring harness from warning horn relay. Place red probe in plug socket A. Ground black probe. Set MASTER switch ON. Set INST switch ON. Start engine and run at 1000 to 1200 rpm, check voltage, and stop engine. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 506 between plug socket A and circuit breaker. Refer to page 2-364. Connect wiring harness. Set MASTER switch OFF. Set INST switch OFF.



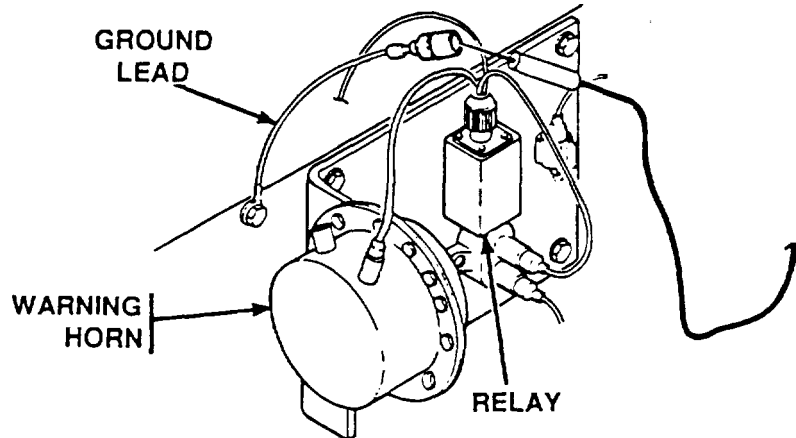
WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 4.* Place red probe in plug socket A. Place black probe in plug socket B. Set MASTER switch ON. Set INST switch ON. If multimeter indicates about 24 volts, go to step 5. If multimeter indicates no voltage, replace warning horn relay. Refer to page 2-621. Connect wiring harness. Set MASTER switch OFF. Set INST switch OFF.



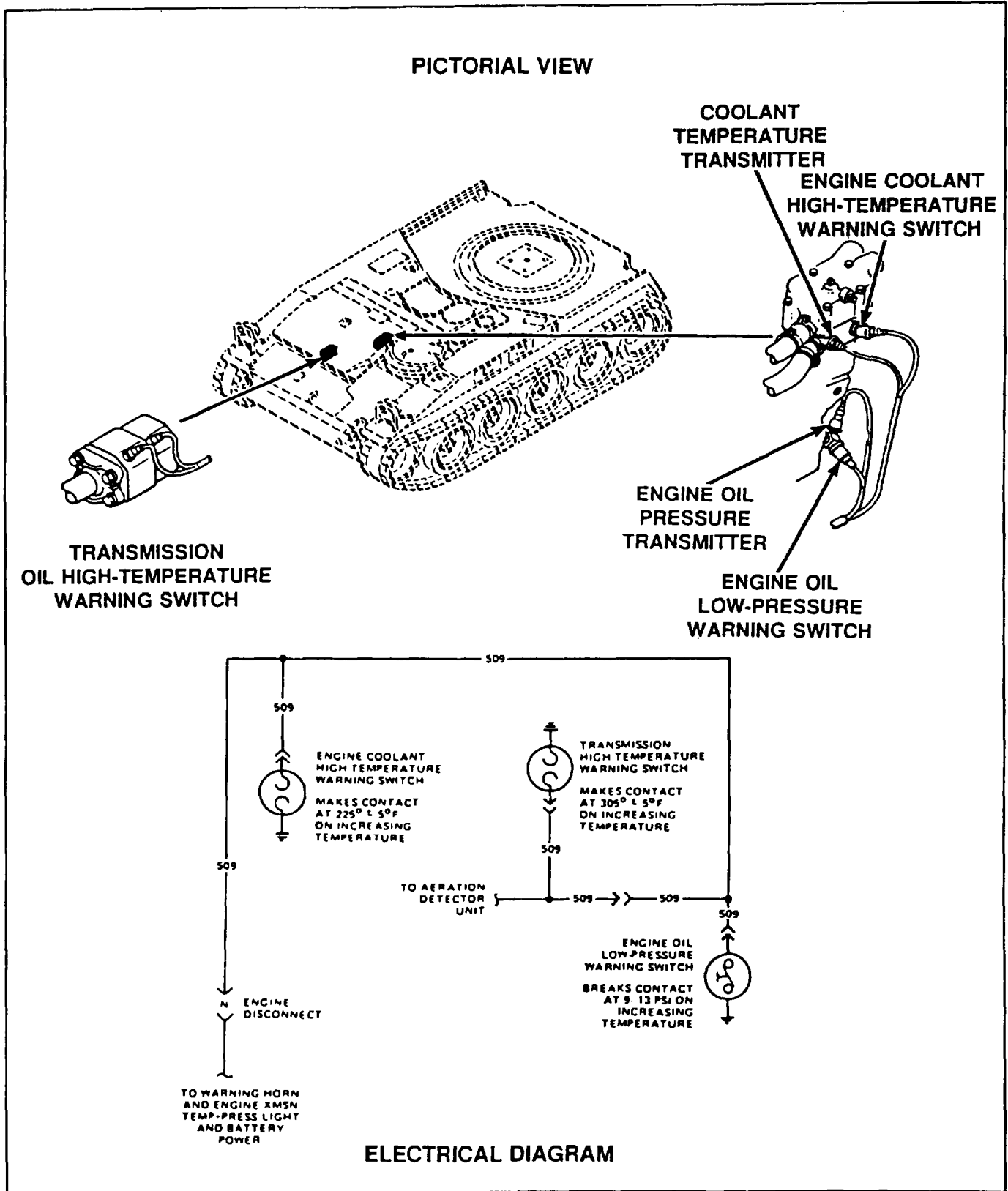
Step 5. Disconnect lead 509H from warning horn. Place red probe in lead 509H. Ground black probe. Start engine and run at 1000 to 1200 rpm. Check voltage and stop engine. If multimeter indicates about 24 volts, connect lead 509H to warning horn and go to step 6. If multimeter indicates no voltage, repair lead 509H between warning horn and relay. Refer to page 2-364.



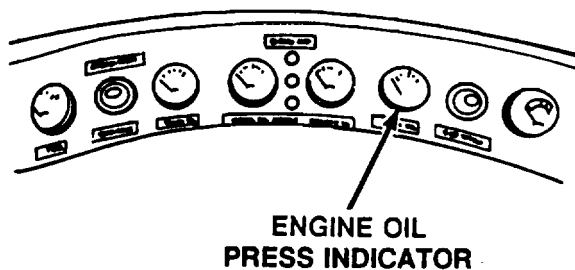
Step 6. Disconnect warning horn ground lead. Place red probe in ground lead. Ground black probe. If multimeter indicates 0 ohms, replace warning horn. Refer to page 2-621. If multimeter does not indicate 0 ohms, repair ground lead. Refer to page 2-364.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

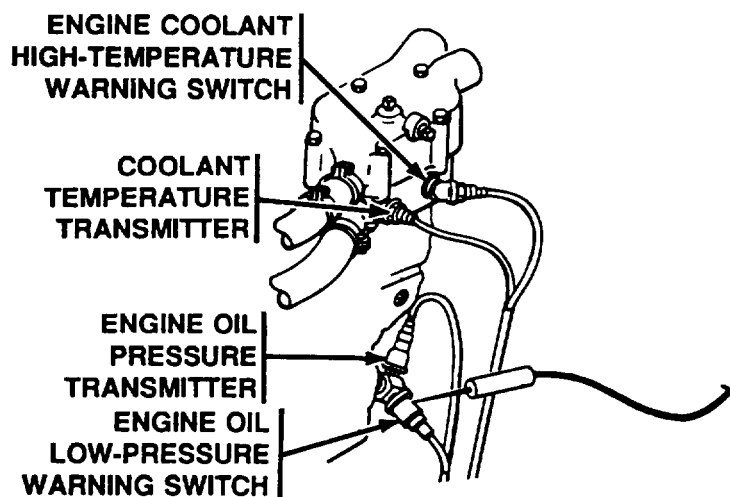
Y. WARNING SWITCH CIRCUIT



**DRIVER'S INSTRUMENT
(GAGE) PANEL**

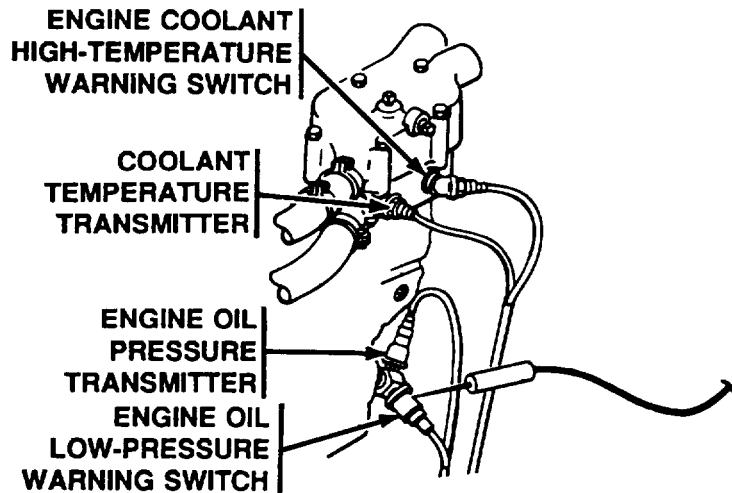


- Step 1.* Start engine and run at 1000 to 1200 rpm. Note pressure reading on ENGINE OIL PRESS indicator and stop engine. If ENGINE OIL PRESS indicator reads at or near 0 psi (0 kPa), go to step 2. If ENGINE OIL PRESS indicator reads about 40 psi (276 kPa), go to step 5.



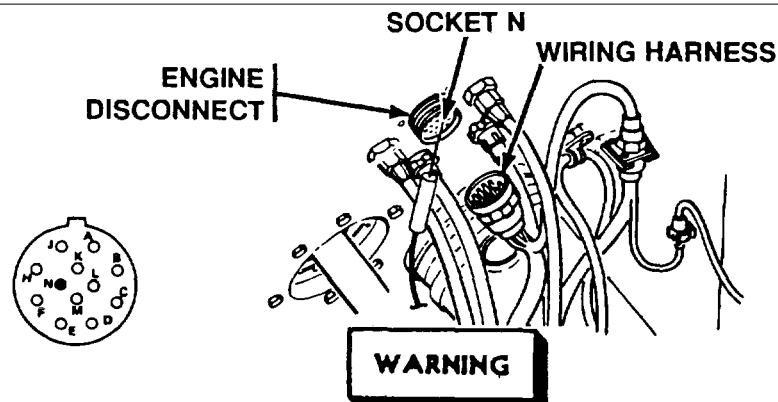
- Step 2.* To access engine oil low-pressure warning switch, open fuel filter access door. Set MASTER switch OFF. Place red probe on engine oil low-pressure warning switch metal case. Ground black probe. If multimeter indicates resistance, go to step 3. If multimeter indicates infinity, clean surface area between engine oil low-pressure warning switch and engine for a good metal-to-metal contact.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

**WARNING**

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

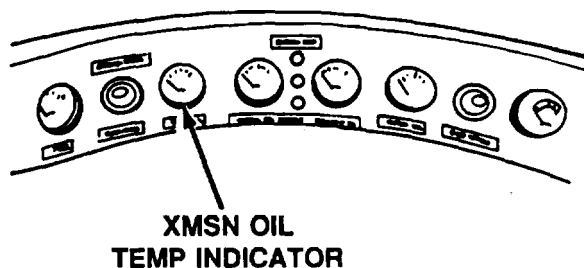
- Step 3.* Disconnect lead 509 from engine oil low-pressure warning switch. Place red probe in lead 509. Ground black probe. Set MASTER switch ON. Set INST switch ON. If multimeter indicates about 24 volts, replace engine oil low-pressure warning switch. Refer to page 2-612. If multimeter indicates no voltage, go to step 4. Set MASTER switch OFF. Set INST switch OFF.



Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

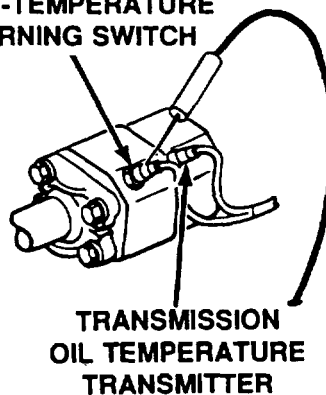
- Step 4.* To access engine disconnect, remove transmission deck lid assembly. Refer to page 2-893. Disconnect wiring harness at engine disconnect. Place red probe in plug socket N. Ground black probe. Set MASTER switch ON. Set INST switch ON. If multimeter indicates about 24 volts, repair lead 509 between engine disconnect and engine oil low-pressure warning switch. Refer to page 2-364. If multimeter indicates no voltage, repair lead 509 from engine disconnect to driver's instrument (switch) panel disconnect. Refer to page 2-364. Set MASTER switch OFF. Set INST switch OFF.

**DRIVER'S INSTRUMENT
(GAGE) PANEL**



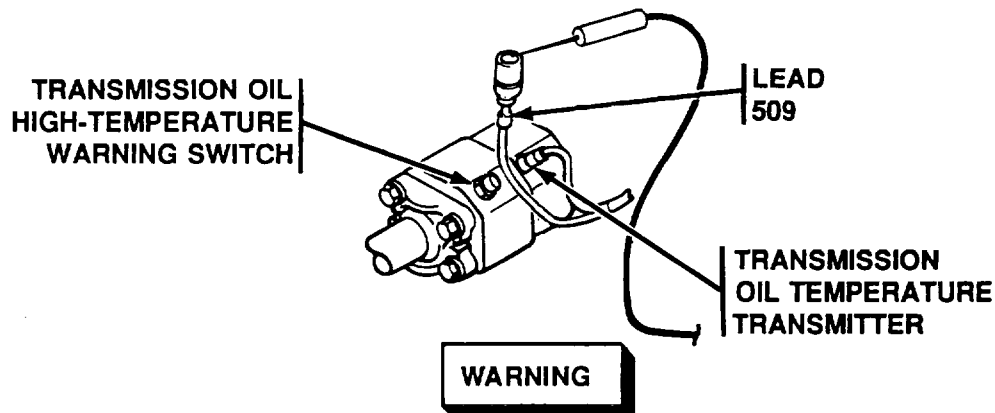
- Step 5.* Start engine and run at 1000 to 1200 rpm for 15 minutes and stop engine. If XMSN OIL TEMP indicator reads about 320 °F (160 °C), go to step 6. If XMSN OIL TEMP indicator reads about 180 °F (82 °C), go to step 8.

**TRANSMISSION OIL
HIGH-TEMPERATURE
WARNING SWITCH**



- Step 6.* Set MASTER switch OFF. Set INST switch OFF. Place red probe on transmission oil high-temperature warning switch metal case. Ground black probe. If multimeter indicates resistance, go to step 7. If multimeter indicates infinity, clean surface area between transmission oil high-temperature warning switch and oil cooler inlet for good metal-to-metal contact.

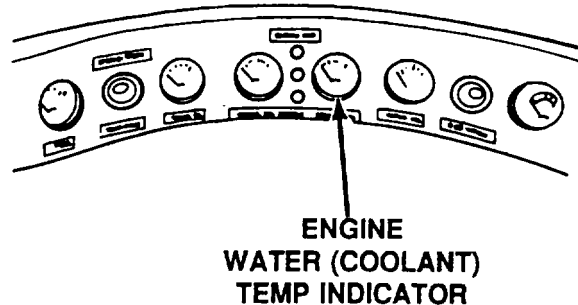
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



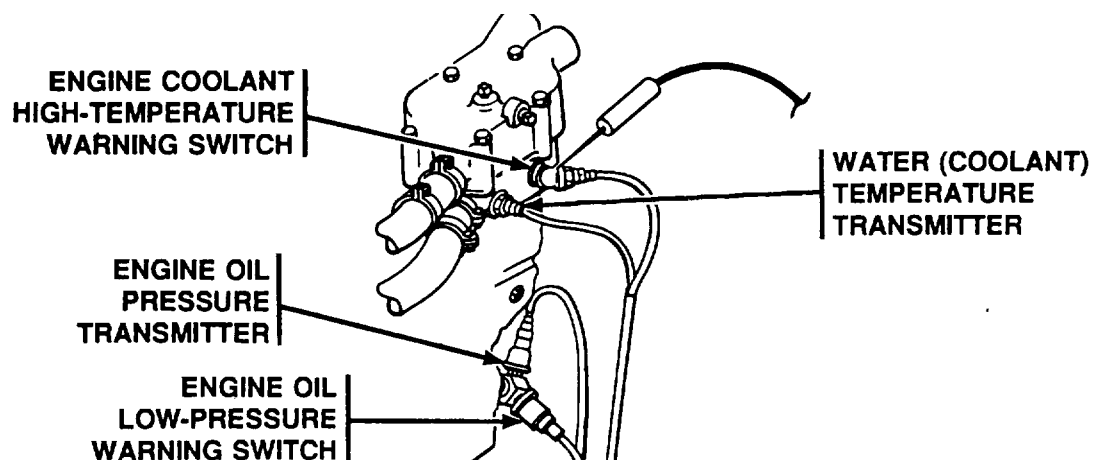
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 7.* Disconnect lead 509 from transmission oil high-temperature warning switch. Place red probe in lead 509. Ground black probe. Set MASTER switch ON. Set INST switch ON. If multimeter indicates about 24 volts, replace transmission oil high-temperature warning switch. Refer to page 2-612. If multimeter indicates no voltage, repair lead 509. Refer to page 2-364. Set MASTER switch OFF. Set INST switch OFF.

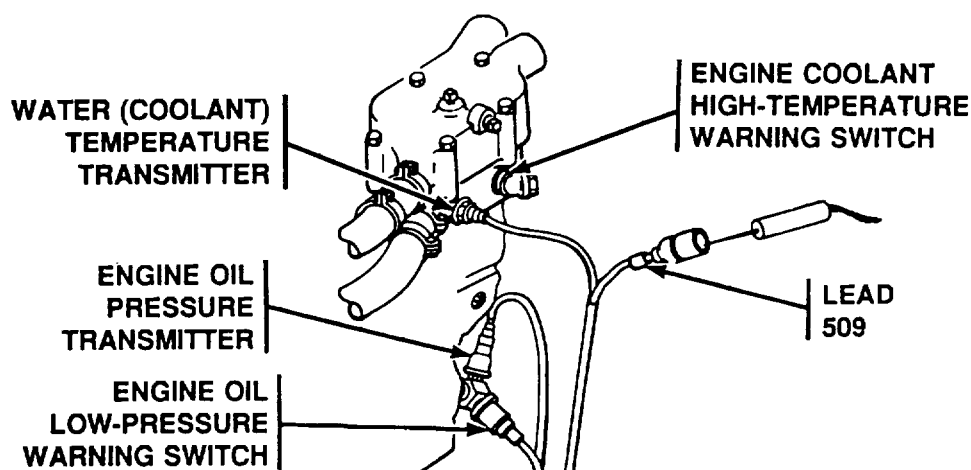
**DRIVER'S INSTRUMENT
(GAGE) PANEL**



- Step 8.* Set MASTER switch ON. Set INST switch ON. If ENGINE WATER (COOLANT) TEMP indicator reads about 240 °F (116 °C), go to step 9. If ENGINE WATER (COOLANT) TEMP indicator does not read about 240 °F (116 °C), start engine and run at 1000 to 1200 rpm for 15 minutes or until ENGINE WATER (COOLANT) TEMP indicator reads about 240 °F (116 °C). Stop engine and go to step 9.



Step 9. Set MASTER switch OFF. Set INST switch OFF. Place red probe on engine coolant high-temperature warning switch metal case. Ground black probe. If multimeter indicates resistance, go to step 10. If multimeter indicates infinity, clean surface area between engine coolant high-temperature warning switch and thermostat housing for good metal-to-metal contact.



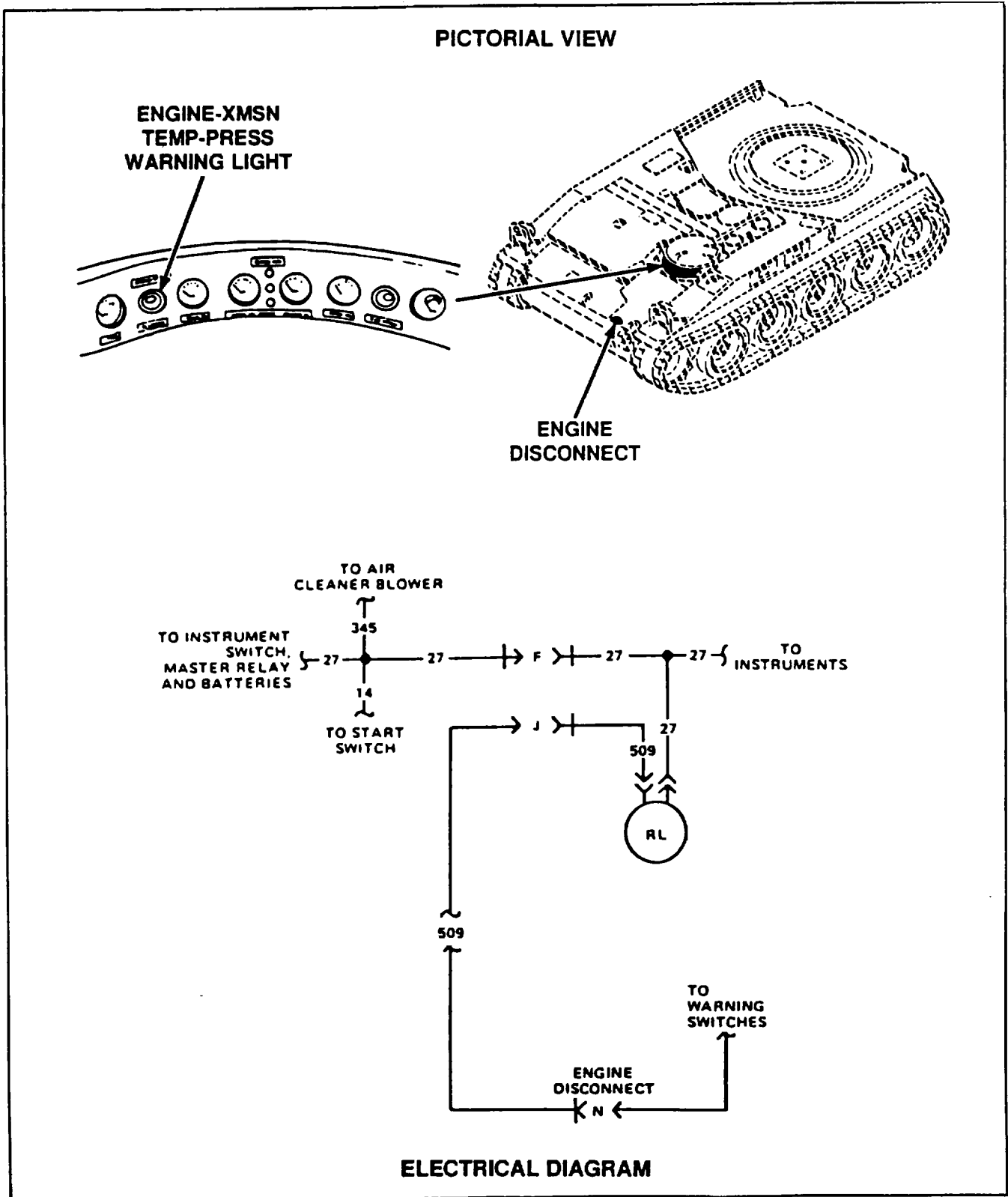
WARNING

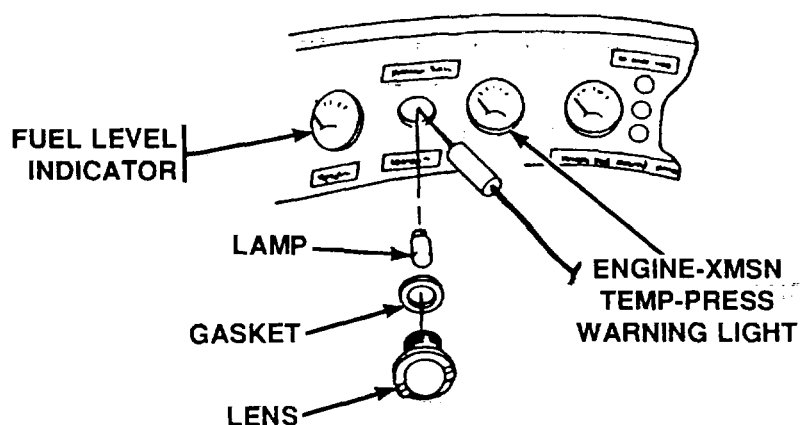
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 10. Disconnect lead 509 from engine coolant high-temperature warning switch. Place red probe in lead 509. Ground black probe. Set MASTER switch ON. Set INST switch ON. If multimeter indicates about 24 volts, replace engine coolant high-temperature warning switch. Refer to page 2-612. If multimeter indicates no voltage, repair lead 509. Refer to page 2-364. Set MASTER switch OFF. Set INST switch OFF.

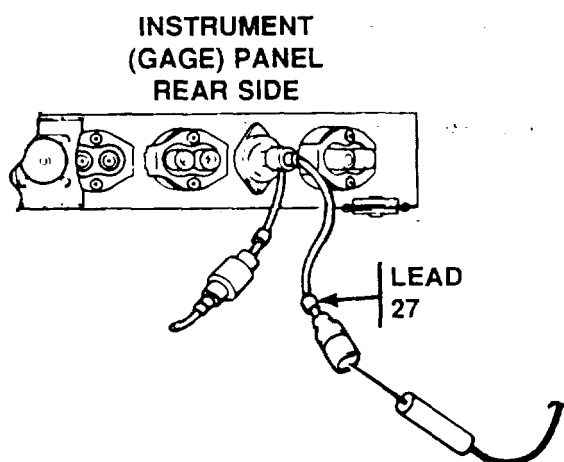
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

Z. ENGINE-XMSN TEMP-PRESS WARNING LIGHT CIRCUIT.





- Step 1.* Remove lamp from pressure line filter indicator light. Refer to page 2-560. Set MASTER switch ON. Place oil pump motor switch in ON position. Place red probe in socket. Ground black probe. If multimeter indicates about 24 volts, replace lamp. If multimeter indicates no voltage, set MASTER switch OFF, install lamp and go to step 2.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 2.* Disconnect lead 27 from ENGINE-XMSN TEMP-PRESS warning light. Place red probe in lead 27. Ground black probe. Set MASTER switch ON. Set INST switch ON. If multimeter indicates about 24 volts, connect lead 27 and go to step 3. If multimeter indicates no voltage, repair lead 27. Refer to page 2-364. Set MASTER switch OFF. Set INST switch OFF.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

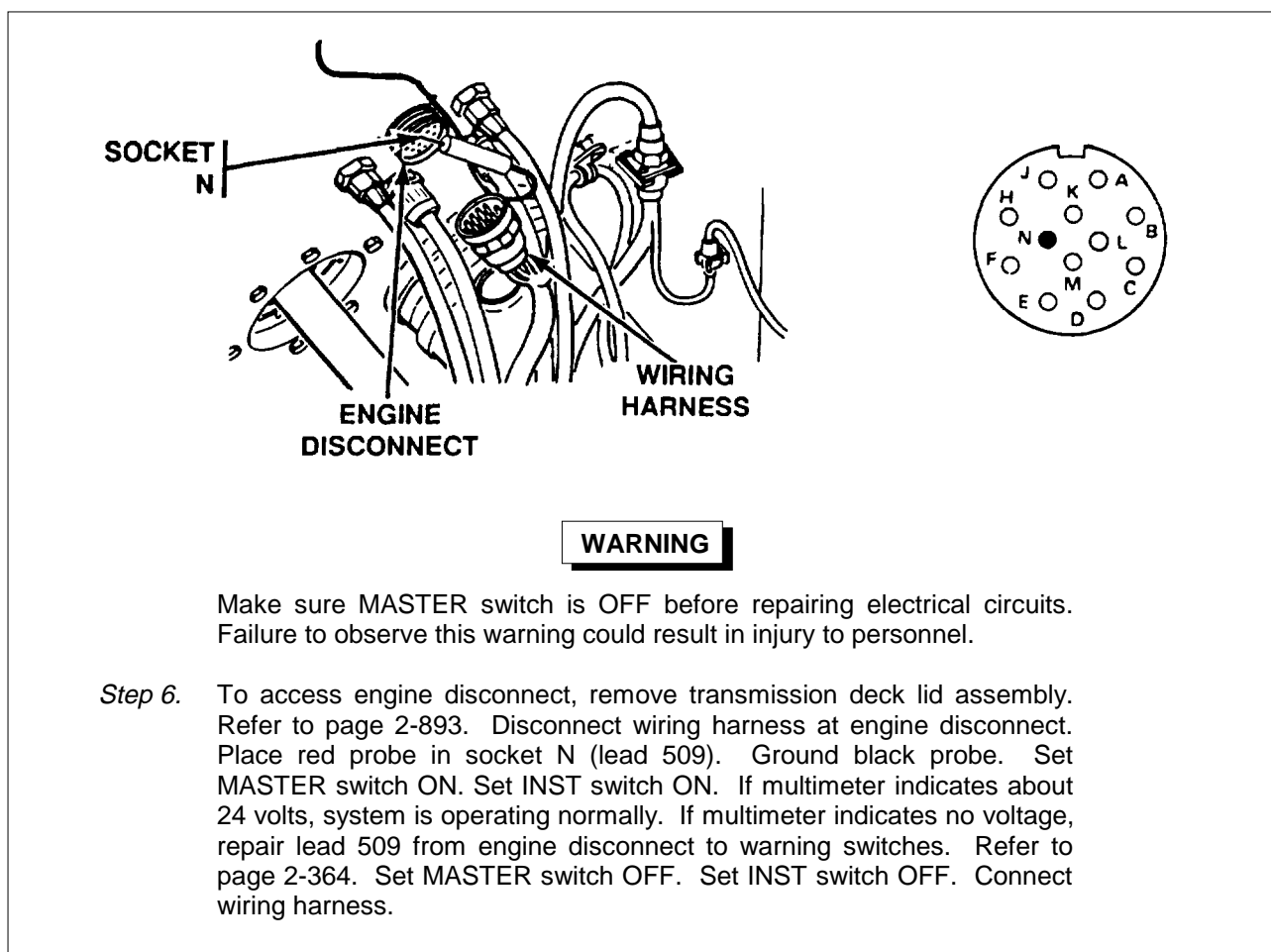
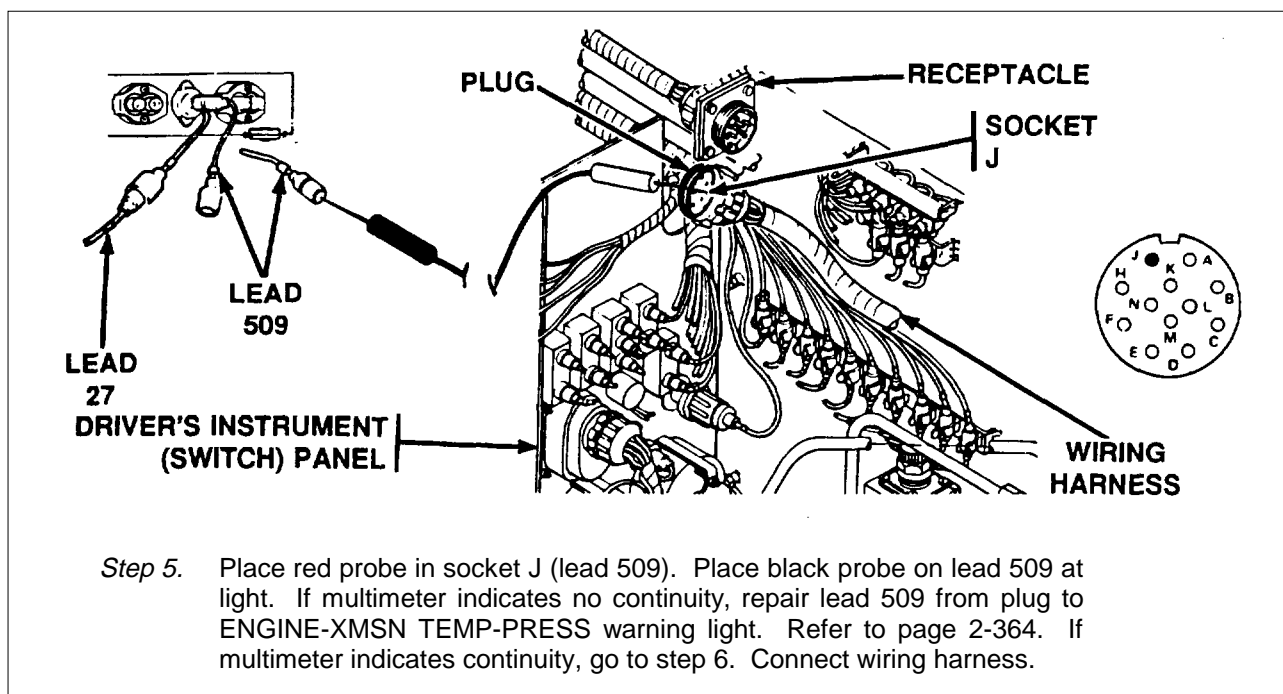
**INSTRUMENT
(GAGE) PANEL
REAR SIDE**

Step 3. Disconnect lead 509 from ENGINE-XMSN TEMP-PRESS warning light. Connect a jumper lead between ENGINE-XMSN TEMP-PRESS connector pin and ground. If ENGINE-XMSN TEMP-PRESS warning light comes on, go to step 4. If ENGINE-XMSN TEMP-PRESS warning light does not come on, replace ENGINE-XMSN TEMP-PRESS warning light assembly. Refer to page 2-560.

WARNING

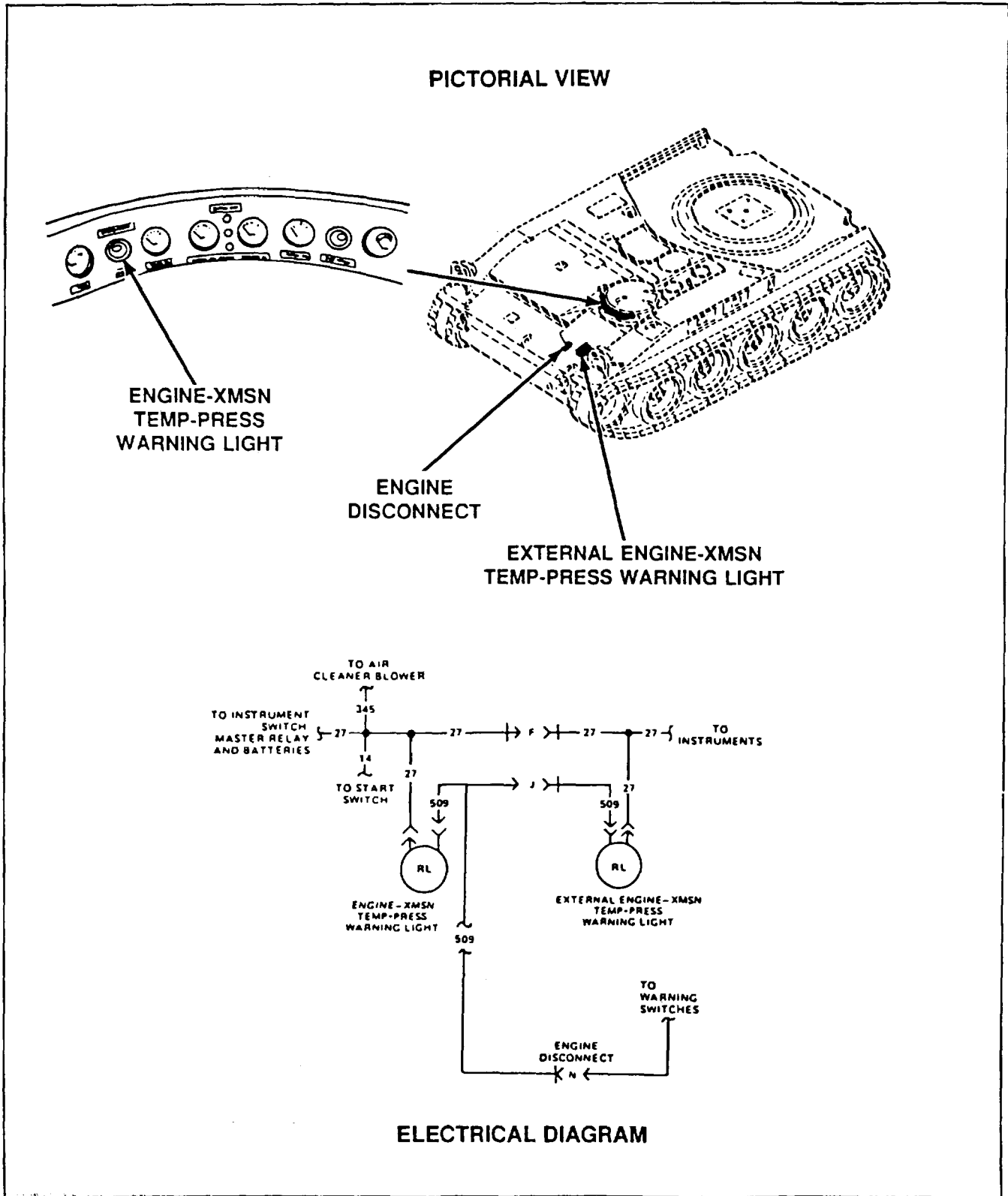
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

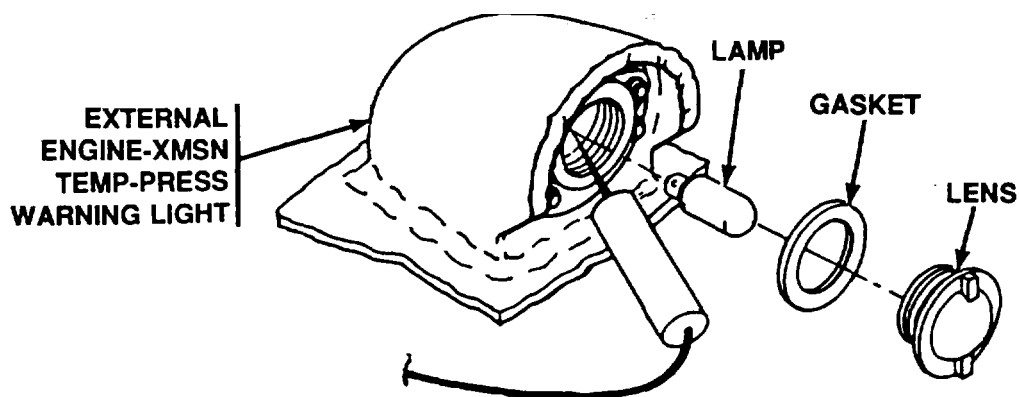
Step 4. Disconnect instrument (gauge) panel wiring harness. Place red probe on pin F (lead 27). Ground black lead. Set MASTER switch ON. Set INST switch ON. If multimeter indicates about 24 volts, repair lead 27 between receptacle and ENGINE-XMSN TEMP-PRESS warning light. Refer to page 2-364. If multimeter indicates no voltage, go to step 5. Set MASTER switch OFF. Set INST switch OFF.



2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

AA. EXTERNAL ENGINE-XMSN TEMP-PRESS WARNING LIGHT CIRCUIT.

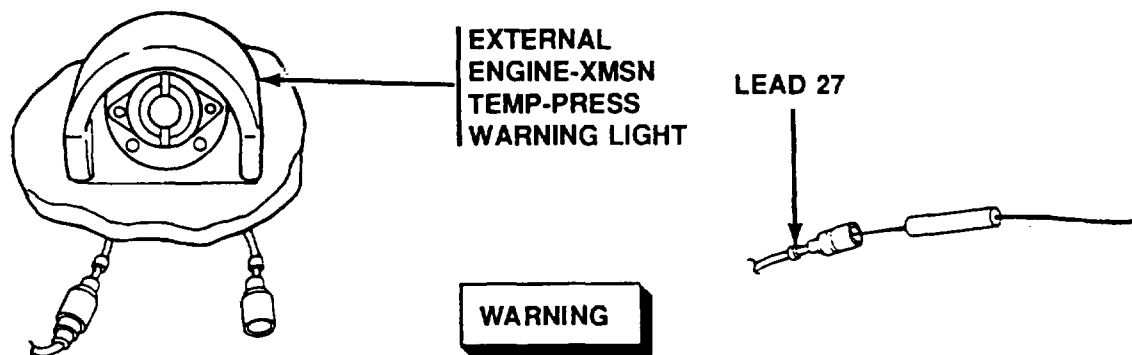




WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 1.* Remove lamp from external ENGINE-XMSN TEMP-PRESS warning light. Refer to page 2-364. Set MASTER switch ON. Place blackout infrared switch in infrared position and infrared receiver switch in ON position. Place red probe in socket. Ground black probe. If multimeter indicates about 24 volts, replace lamp. If multimeter indicates no voltage, set MASTER switch OFF, install lamp assembly and go to step 2.



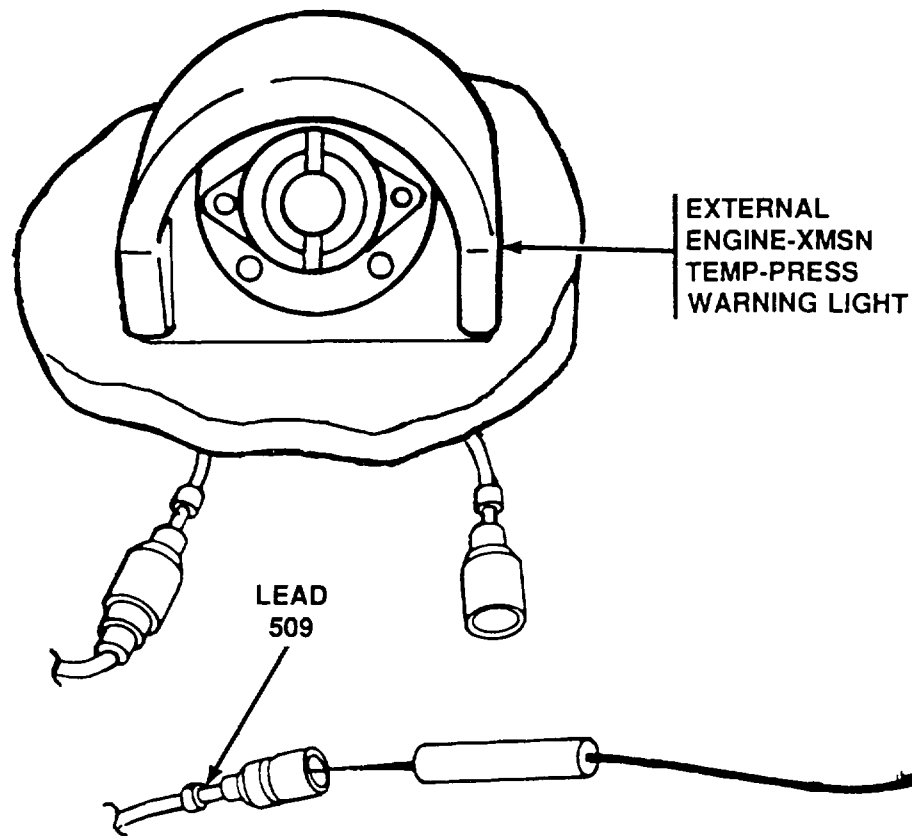
WARNING

Brake foot pedal is spring-loaded. Block tracks and release parking brake before working on external ENGINE-XMSN TEMP-PRESS warning light circuit.

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 2.* Remove driver's seat. Refer to page 2-911. Disconnect lead 27 from external ENGINE-XMSN TEMP-PRESS warning light. Place red probe in lead 27. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 3. If multimeter indicates no voltage, repair lead 27. Refer to page 2-364. Set MASTER switch OFF. Set INST switch OFF. Connect lead.

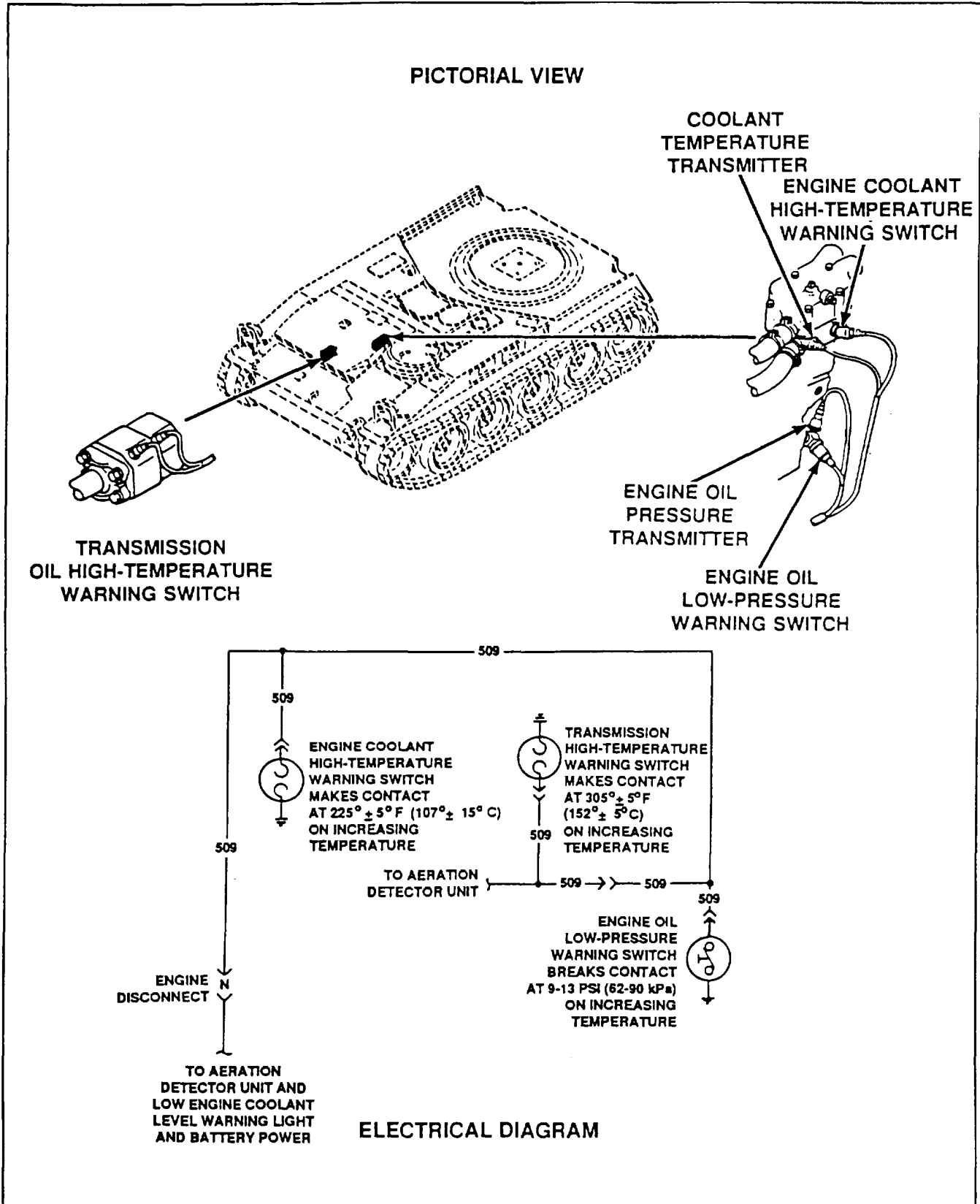
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

**WARNING**

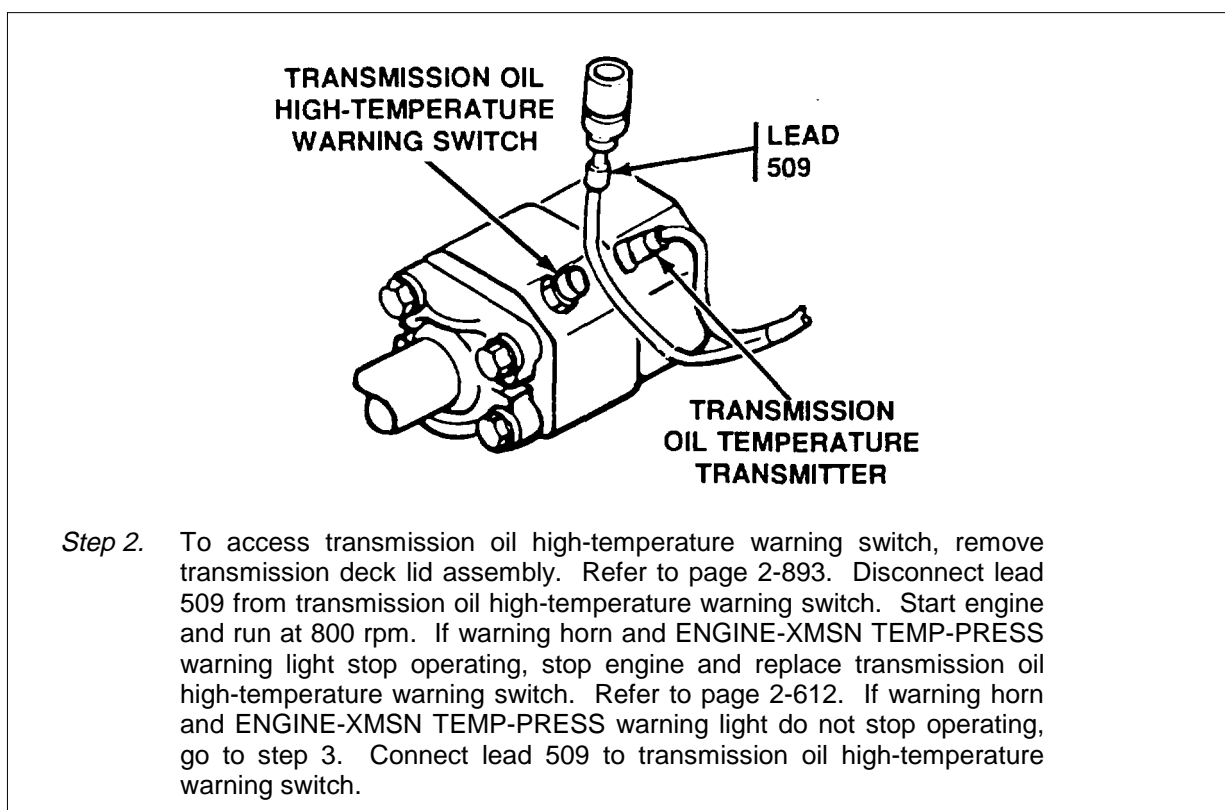
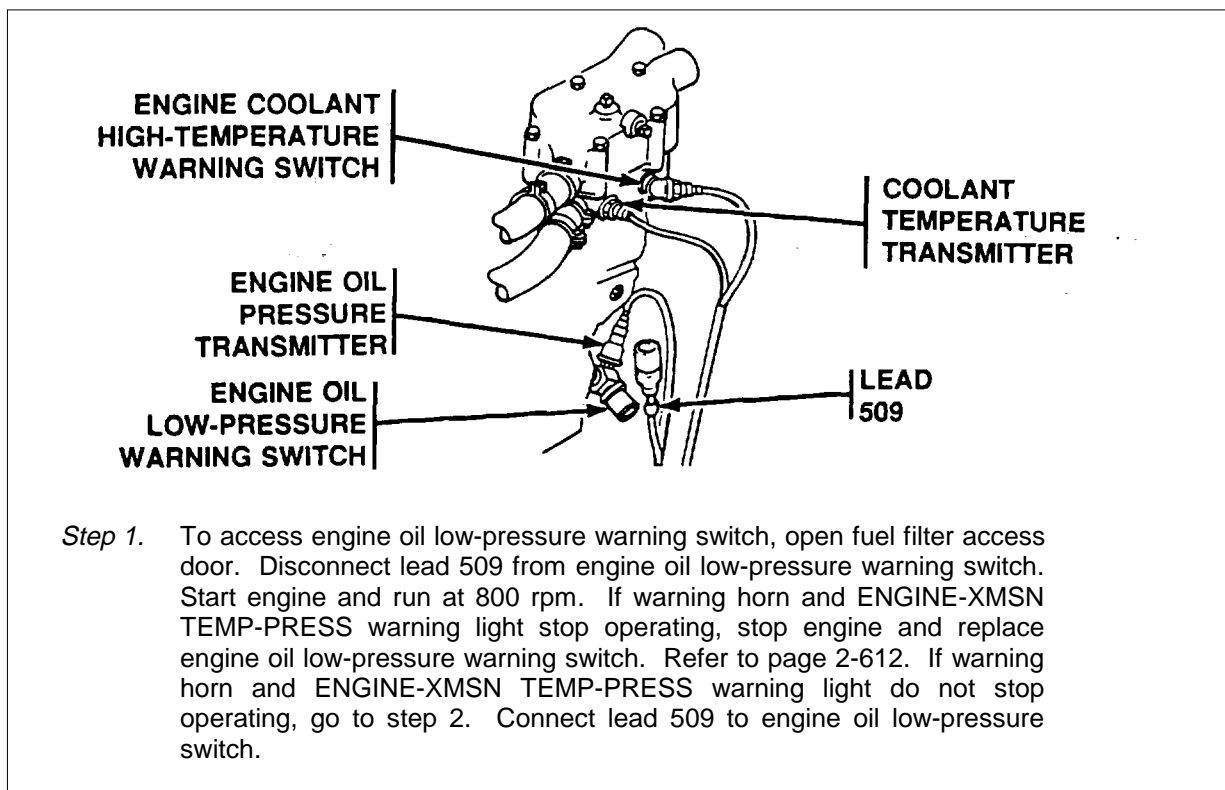
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

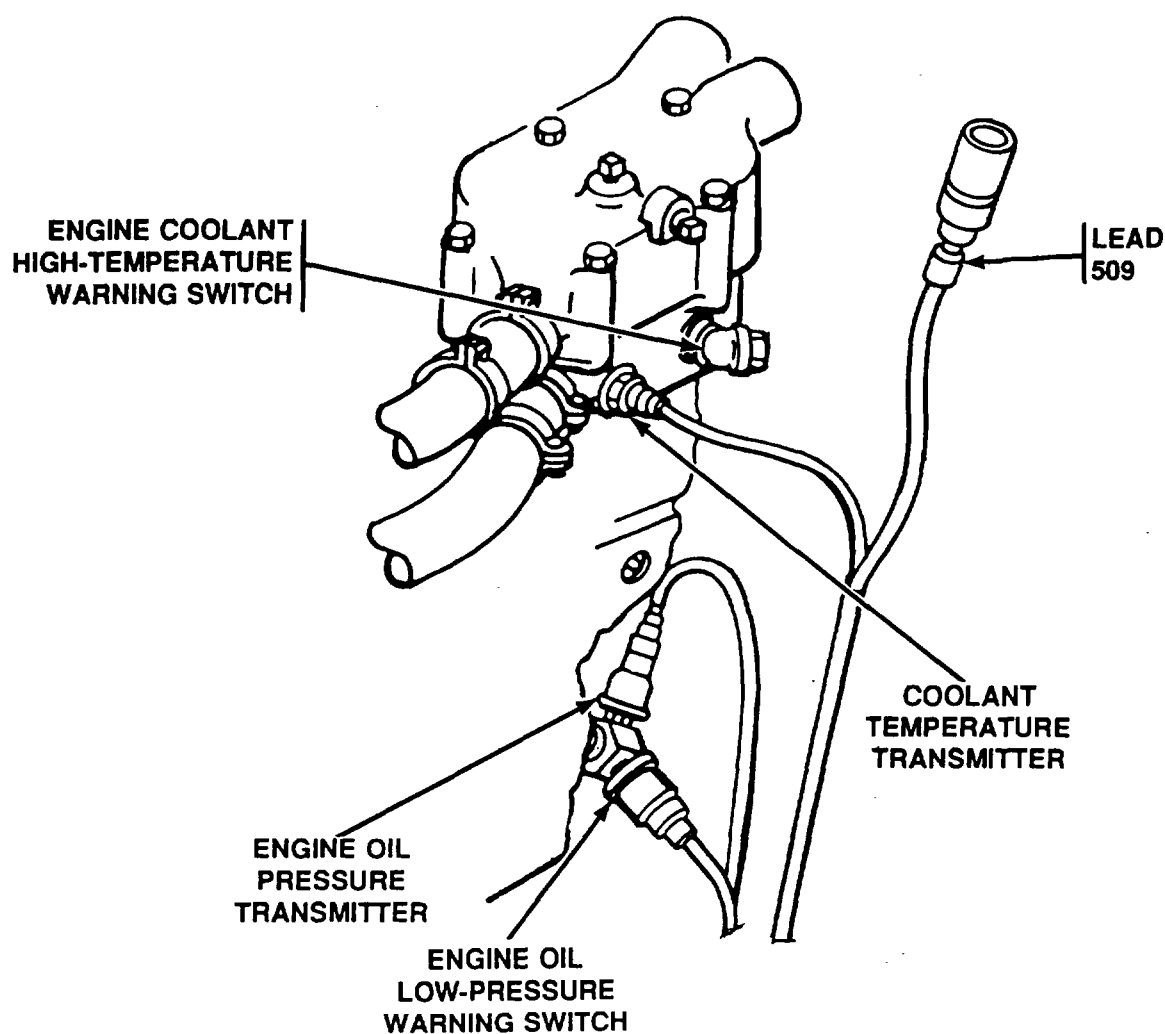
- Step 3.* Disconnect lead 509 from external ENGINE-XMSN TEMP-PRESS warning light. Connect red probe to ENGINE-XMSN TEMP-PRESS warning light. Ground black probe. Set MASTER switch ON. Set INST switch ON. If multimeter indicates about 24 volts, repair lead 509. Refer to page 2-364. If multimeter indicates no voltage, replace ENGINE-XMSN TEMP-PRESS warning light. Refer to page 2-581. Set MASTER switch OFF. Set INST switch OFF. Connect lead. Install driver's seat. Refer to page 2-911.

AB. WARNING HORN AND ENGINE-XMSN TEMP-PRESS WARNING LIGHT CIRCUIT.



2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

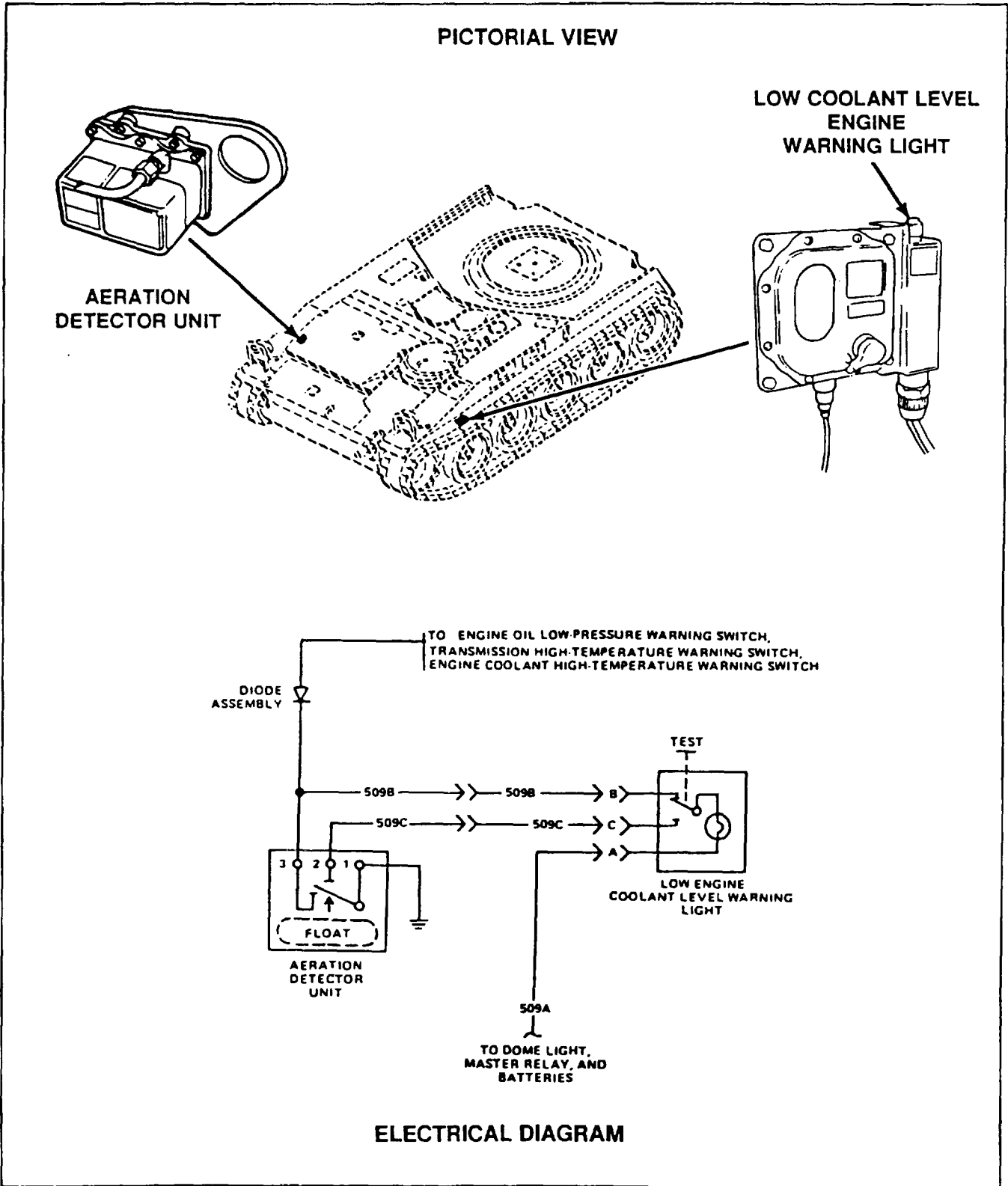


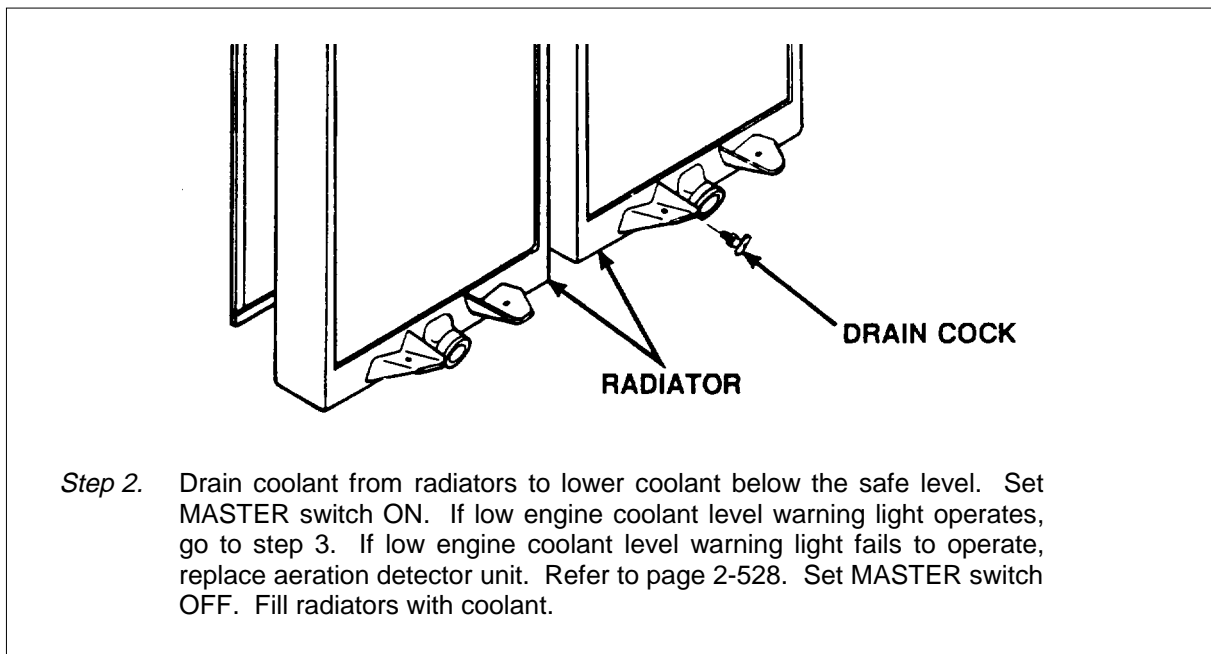
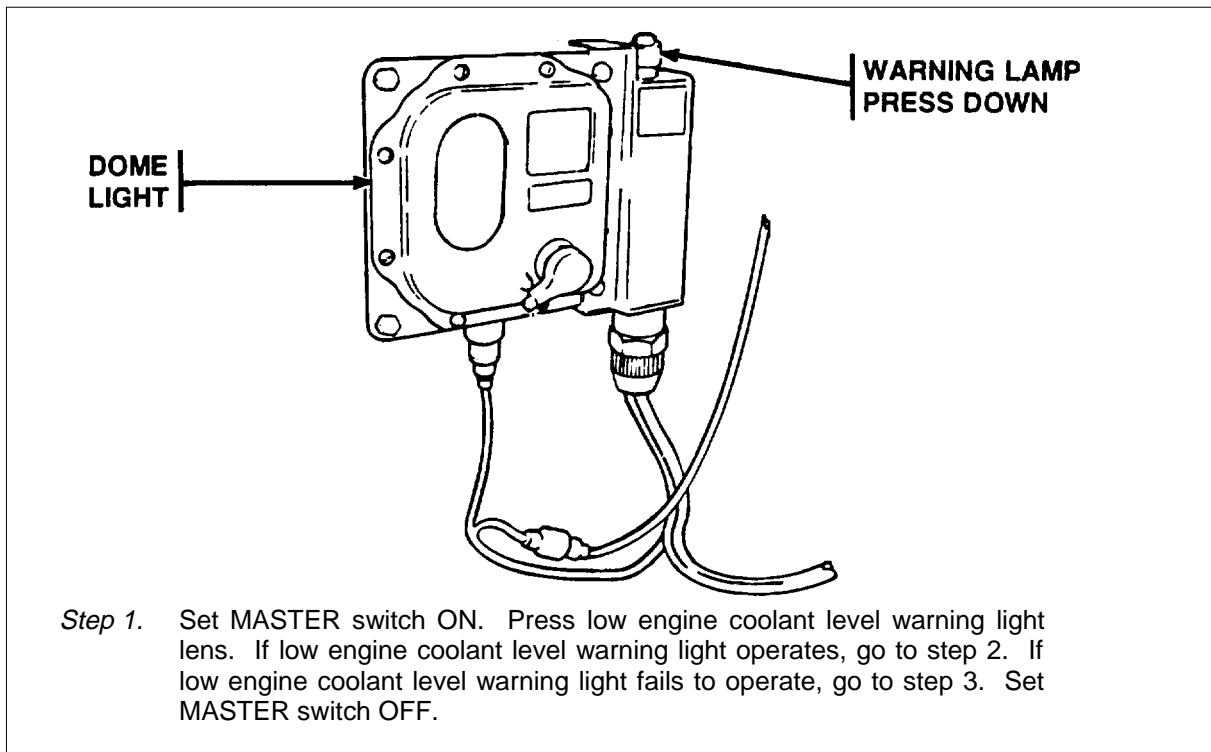


- Step 3.* Disconnect lead 509 from engine coolant high-temperature warning switch. Start engine and run at 800 rpm. If warning horn and ENGINE-XMSN TEMP-PRESS warning light stop operating, stop engine and replace engine coolant high-temperature warning switch. Refer to page 2-612. If warning horn and ENGINE-XMSN TEMP-PRESS warning light do not stop operating, repair lead 509. Refer to page 2-364. Connect lead 509 to engine coolant high-temperature warning switch.

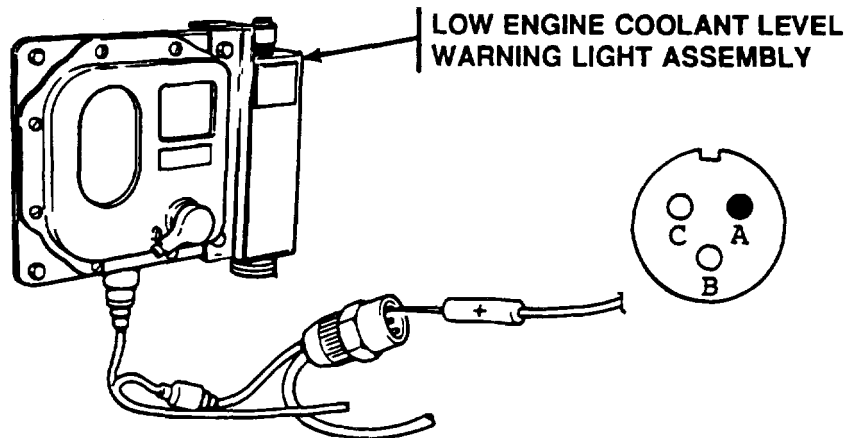
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

AC. AERATION DETECTOR CIRCUIT.



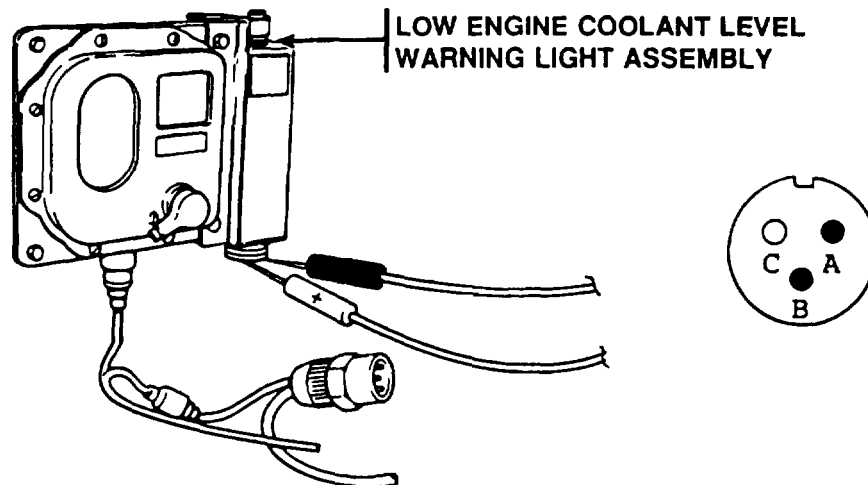


2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

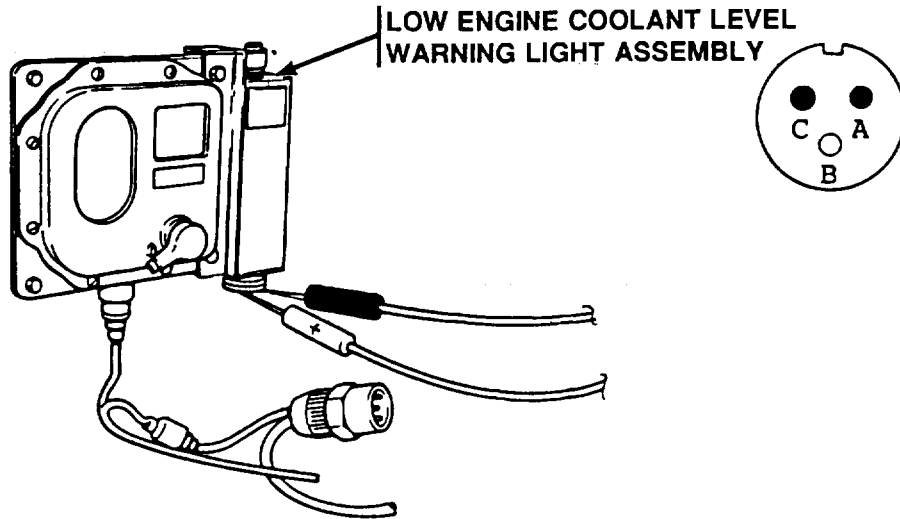
**WARNING**

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

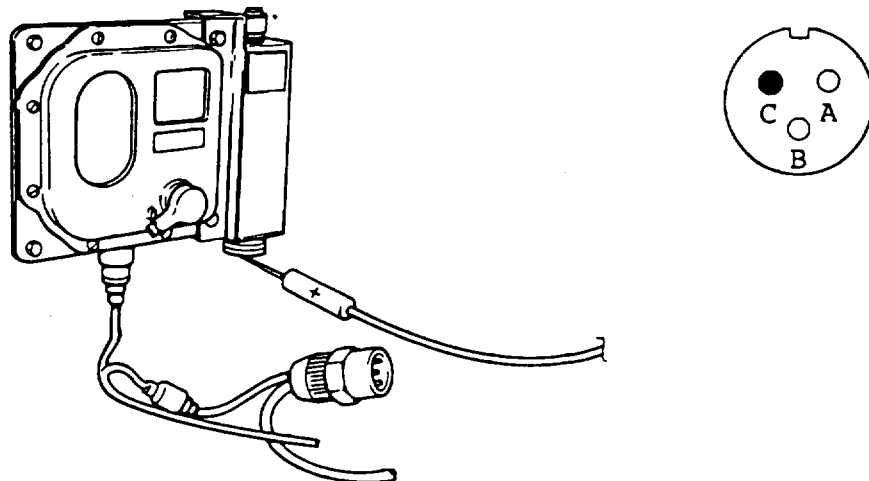
- Step 3.* Disconnect electrical lead from low engine coolant level warning light. Place red probe on pin A. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 509A. Refer to page 2-364. Set MASTER switch OFF.



- Step 4.* Place red probe in socket A. Place black probe in socket B. If multimeter indicates about 20 ohms, go to step 5. If multimeter does not indicate about 20 ohms, replace low engine coolant level warning light assembly. Refer to page 2-612.

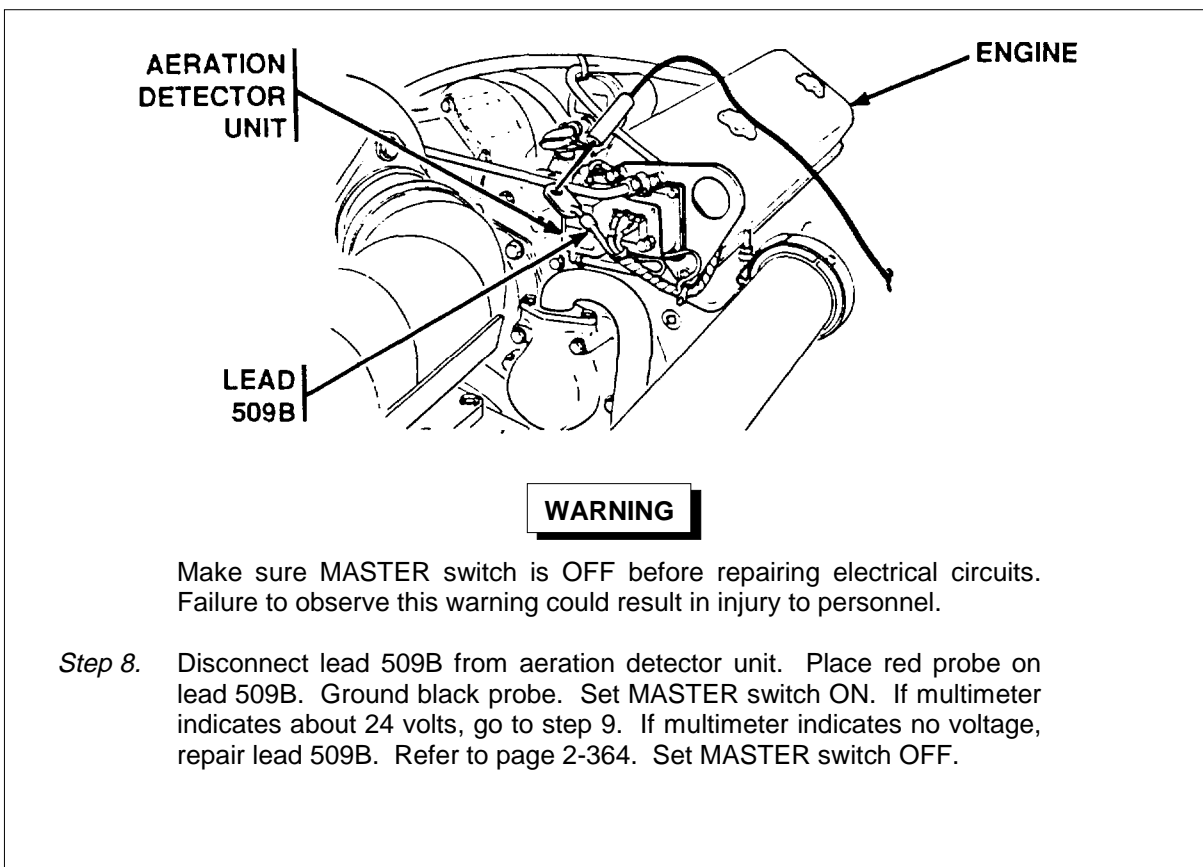
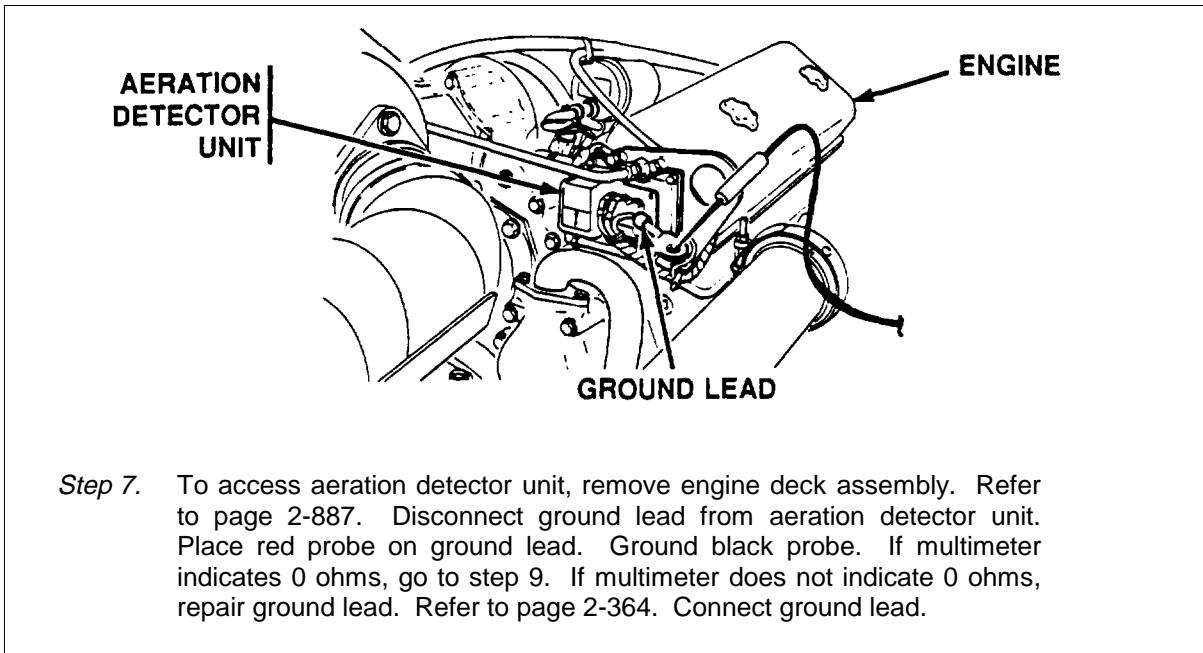


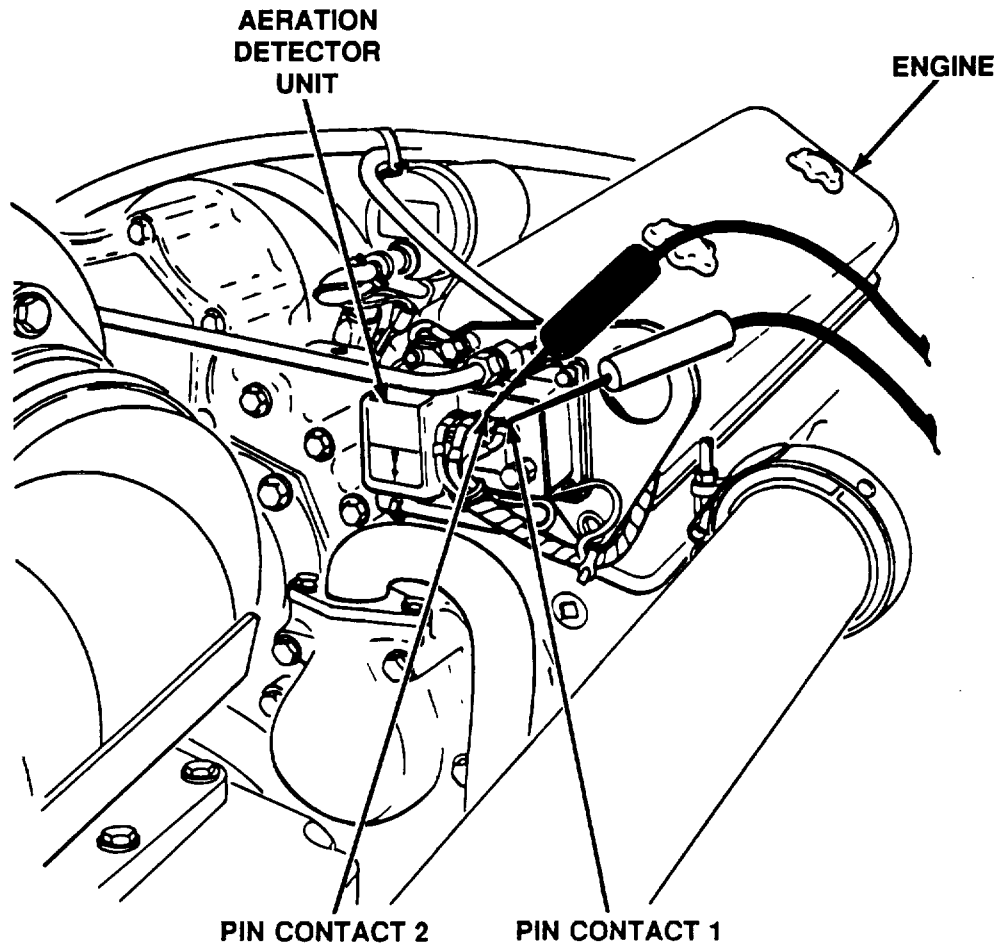
Step 5. Place red probe in pin socket A. Place black probe in pin socket C. Press down on low engine coolant level warning light. If multimeter indicates about 20 ohms, go to step 6. If multimeter does not indicate about 20 ohms, replace low engine coolant level warning light assembly. Refer to page 2-612.



Step 6. Place red probe in pin socket C. Ground black probe. If multimeter indicates 0 ohms, connect electrical lead to low engine coolant level warning light and go to step 7. If multimeter does not indicate 0 ohms, low engine coolant level warning switch is operating properly.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

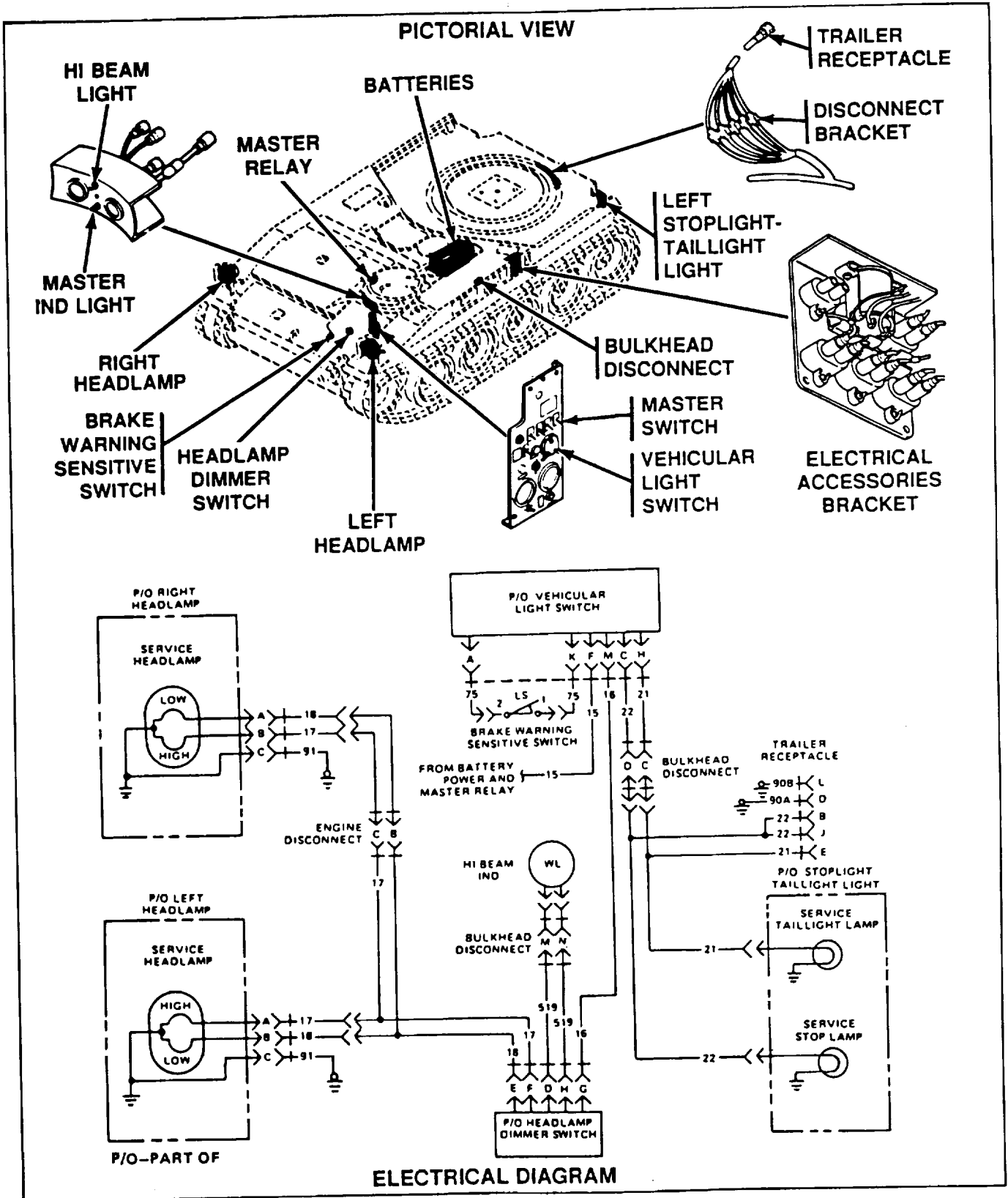




Step 9. Place red probe on aeration detector unit switch contact 1. Place black probe on aeration detector unit switch contact 2. Coolant in radiators must be at full level. If multimeter indicates 0 ohms, replace aeration detector unit. Refer to page 2-528. If multimeter indicates infinity, repair lead 509C between aeration detector unit and low engine coolant level warning light. Refer to page 2-364.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

AD. SERVICE HEADLAMP, TAILLIGHT, AND STOPLIGHT CIRCUIT.

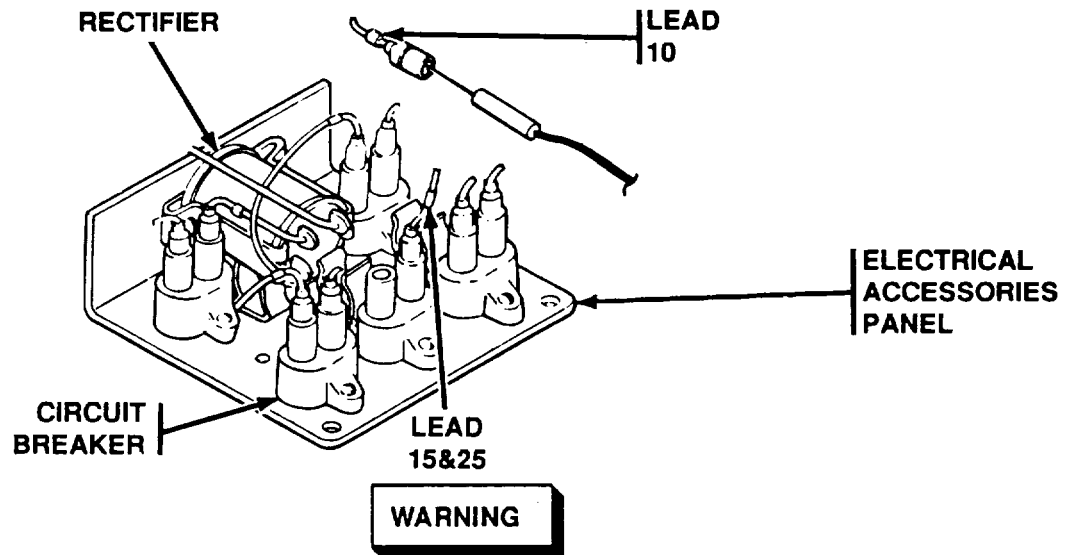


The diagram shows a control panel with four toggle switches at the top. From left to right, they are labeled: HL (with ON/OFF positions), IR, IIR, and MASTER (with ON/OFF positions). Below these is a central rotary switch labeled 'VEHICULAR LIGHT SWITCH' with positions for 'SERVE', 'SERV', and 'SERV'. Below the rotary switch is a 'START' button and an 'INSTRUMENT (SWITCH) PANEL' containing two gauges. Labels with leader lines point to the MASTER SWITCH, VEHICULAR LIGHT SWITCH, and INSTRUMENT (SWITCH) PANEL.

Step 1. Set MASTER switch ON. Turn vehicular light switch to SER DRIVE. If both taillight and service headlamps are off, go to step 2. If both service headlamps are on and taillight is off, go to step 6. If taillight is on and both service headlamps are off, go to step 10.

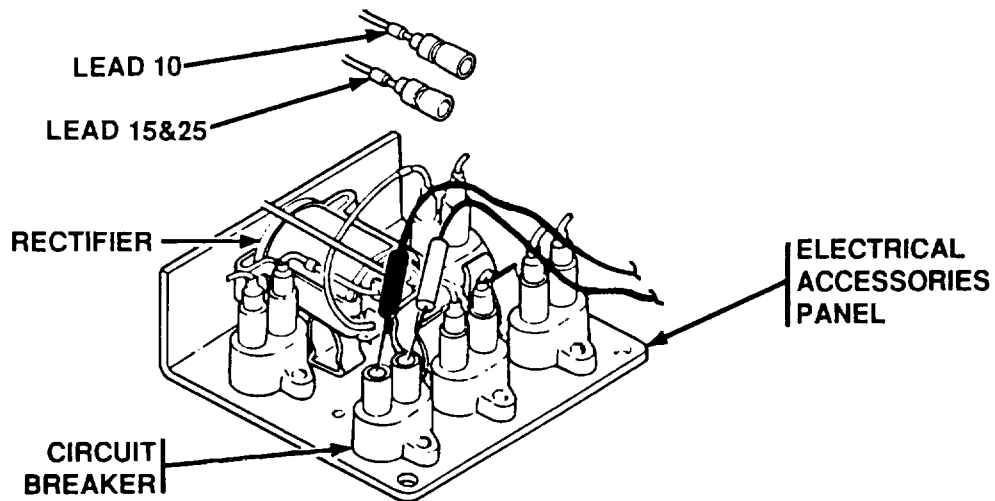
The diagram shows the internal wiring of the control panel. A connector is shown being disconnected from the vehicular light switch. A probe is inserted into a circular 'SOCKET F' which has terminals labeled A through O. A label 'VEHICULAR LIGHT SWITCH' points to the internal switch mechanism. A label 'INSTRUMENT (SWITCH) PANEL' points to the gauge area.

Step 2. Set MASTER switch OFF. Disconnect connector from vehicular light switch. Place red probe in socket F of receptacle. Ground black probe. If multimeter indicates about 24 volts, replace vehicular light switch. Refer to page 2-555. If multimeter indicates no voltage, go to step 3. Connect connector to vehicular light switch.

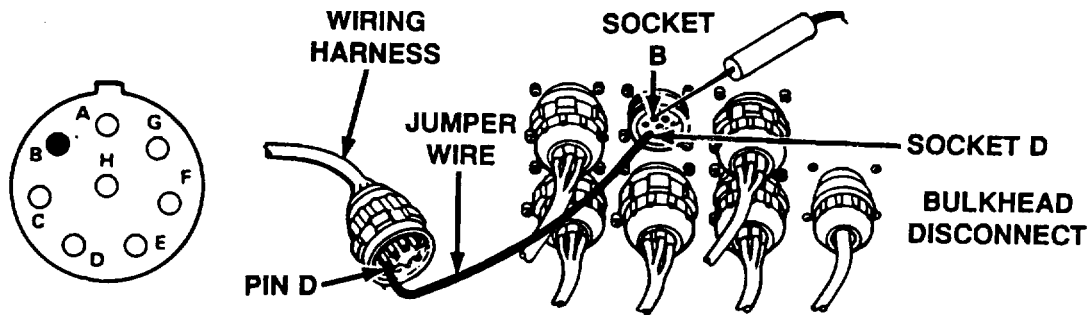


Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

Step 3. To access electrical accessories panel, remove left CO₂ cylinder access cover. Refer to page 2-875. Disconnect lead 10 from circuit breaker. Place red probe in lead 10. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 10. Refer to page 2-364. Set MASTER switch OFF and connect lead.



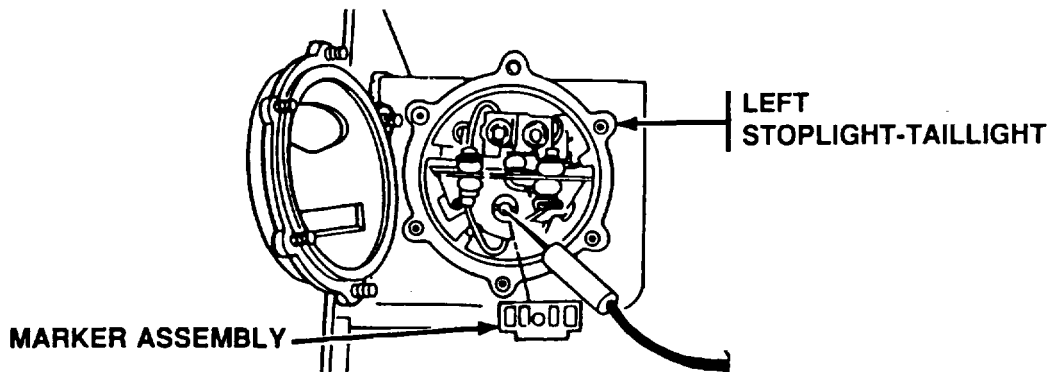
Step 4. Disconnect leads 15&25 and 10 from circuit breaker. Check continuity between circuit breaker terminals. If multimeter indicates continuity, repair lead 15&25. Refer to page 2-364. If multimeter does not indicate continuity, replace circuit breaker. Refer to page 2-578. Connect leads.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

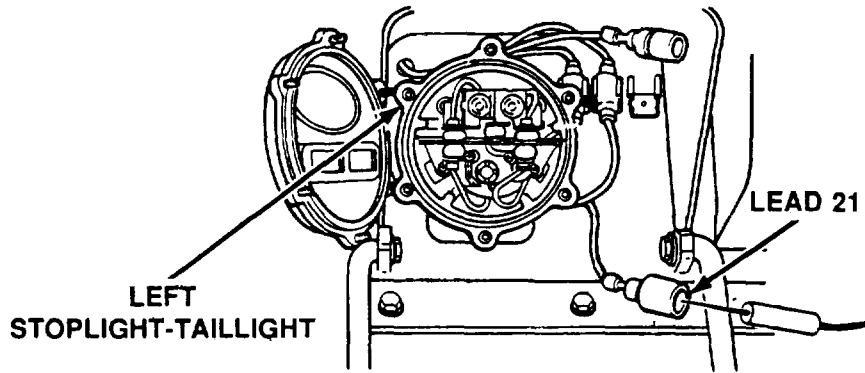
- Step 5. To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness at bulkhead disconnect. Place jumper wire on pin D of wiring harness and socket D. Place red probe in socket B of lead 15&25. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, repair lead 15&25 between vehicular light switch and bulkhead disconnect. Refer to page 2-364. If multimeter indicates no voltage, repair lead 15&25 between bulkhead disconnect and circuit breaker. Refer to page 2-364. Remove jumper wire. Set MASTER switch OFF and connect lead.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

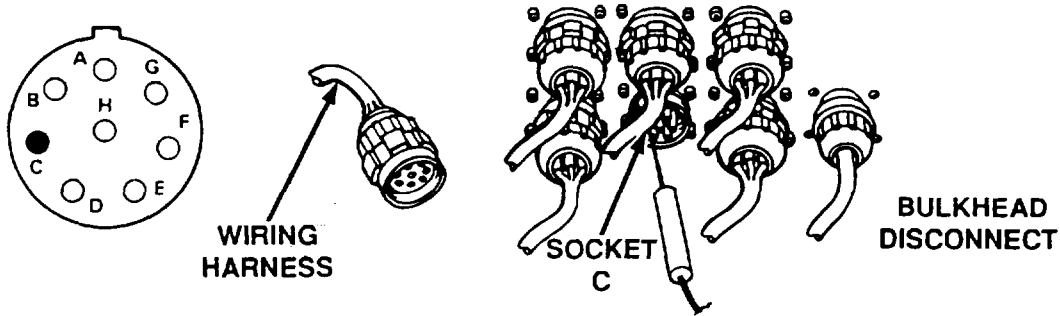
- Step 6. Remove marker assembly from left stoplight-tailight. Refer to page 2-600. Set MASTER switch ON. Place panel light switch in ON position. Unlock main light switch and place in blackout drive position. Place blackout infrared selection switch in blackout drive position. Place red probe in socket. Ground black probe. If multimeter indicates about 24 volts, replace marker assembly. If multimeter indicates no voltage, set MASTER switch OFF, install marker assembly and go to step 7.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

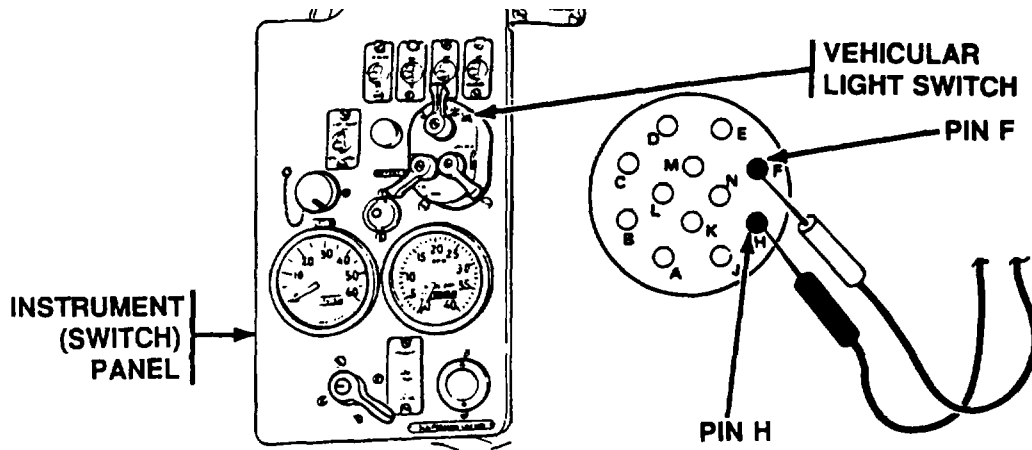
- Step 7. Disconnect lead 21 from left stoplight-taillight. Place red probe in lead 21. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, repair left stoplight-taillight. Refer to page 2-600. If multimeter indicates no voltage, go to step 8. Set MASTER switch OFF and connect lead.



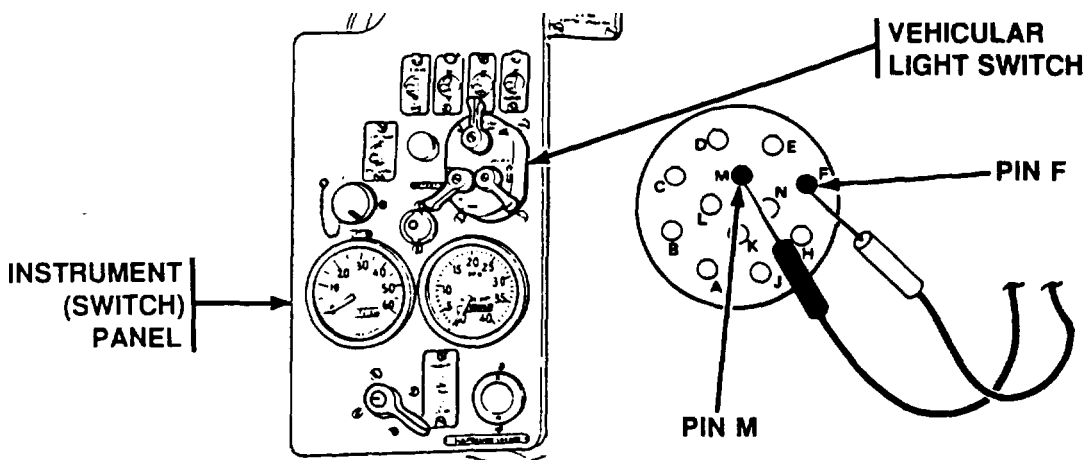
WARNING

Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

- Step 8. To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness. Place red probe in socket C. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 9. If multimeter indicates no voltage, repair lead 21 between bulkhead disconnect and left stoplight-taillight. Refer to page 2-364. Set MASTER switch OFF and connect wiring harness.

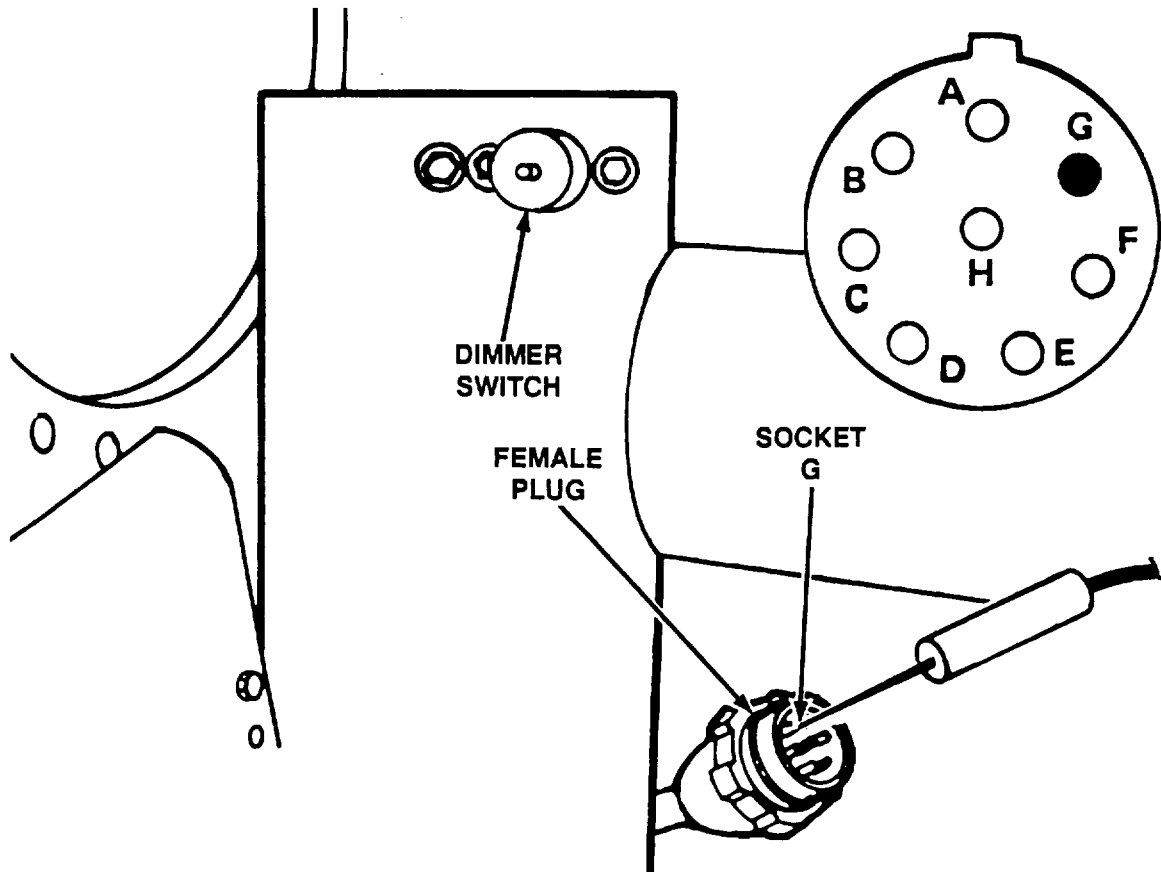


Step 9. Disconnect connector from vehicular light switch. Place red probe on pin F. Place black probe on pin H. If multimeter indicates 0 ohms, repair lead 21 between vehicular light switch and bulkhead disconnect. Refer to page 2-364. If multimeter does not indicate 0 ohms, replace vehicular light switch. Refer to page 2-555. Connect connector to vehicular light switch.



Step 10. Set MASTER switch OFF. Disconnect connector from vehicular light switch. Place red probe on pin F. Place black probe on pin M. If multimeter indicates 0 ohms, go to step 11. If multimeter does not indicate 0 ohms, replace vehicular light switch. Refer to page 2-555. Connect connector to vehicular light switch.

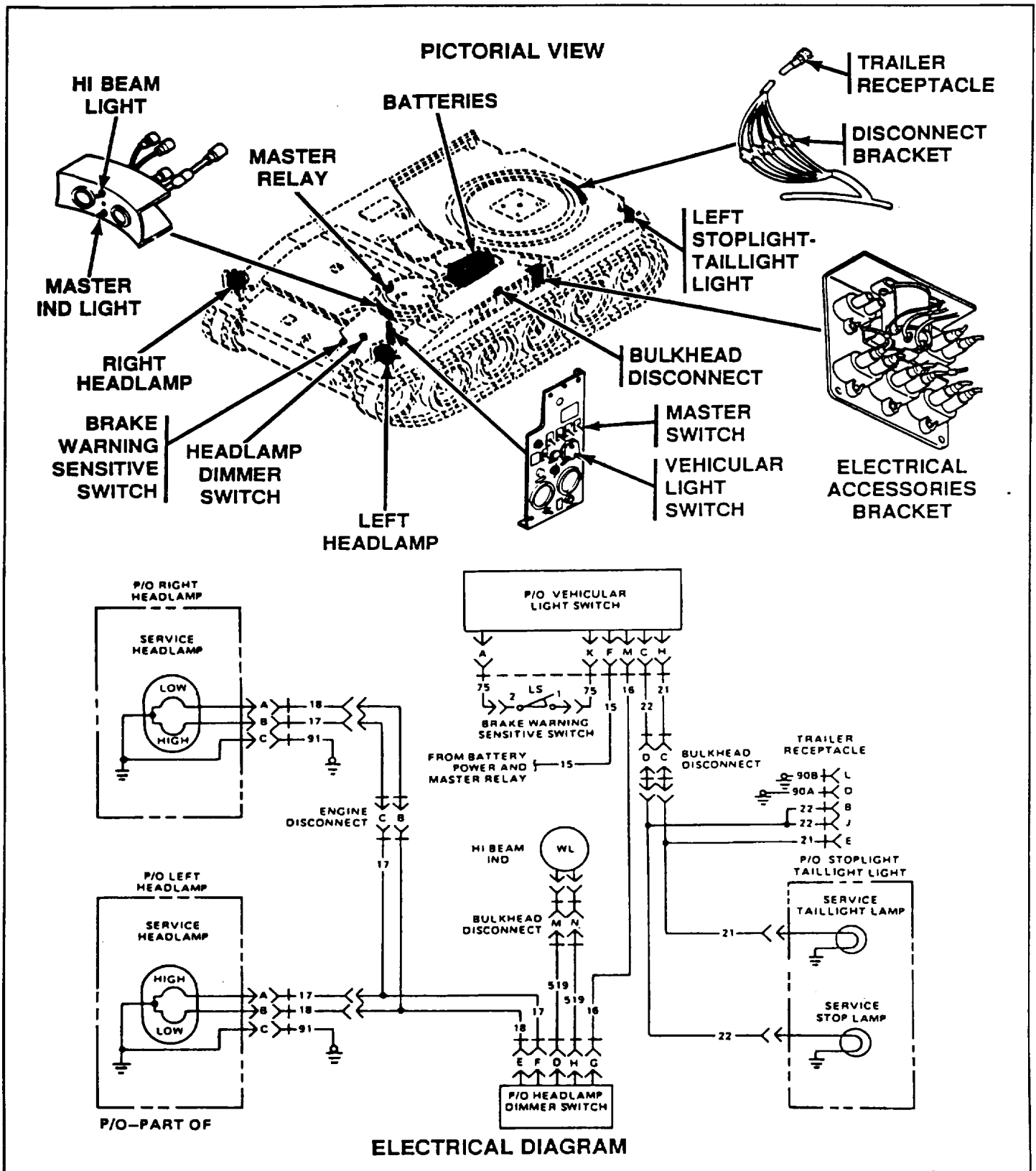
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



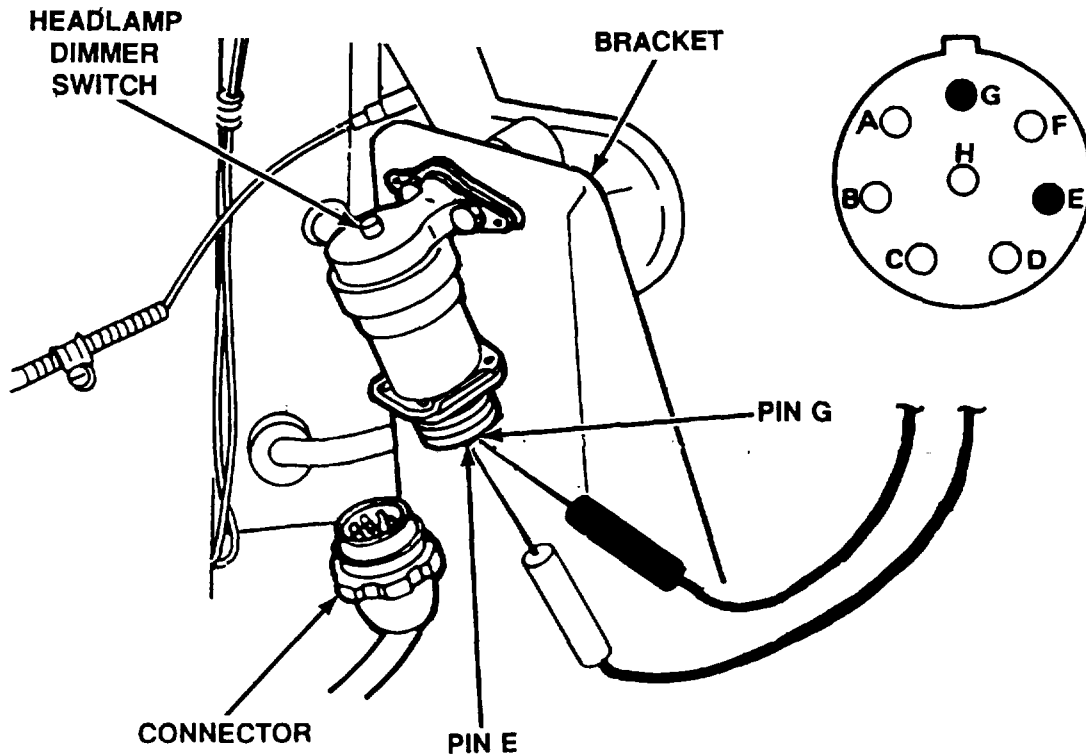
- Brake foot pedal is spring-loaded. Block tracks and release parking brake before working on headlamp dimmer switch.
- Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 11. Disconnect connector from headlamp dimmer switch. Place red probe in socket G. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, replace headlamp dimmer switch. Refer to page 2-572. If multimeter indicates no voltage, repair lead 16 from vehicular light switch. Refer to page 2-364. Set MASTER switch OFF. Connect connector. to headlamp dimmer switch.

AE. SERVICE HEADLAMP CIRCUIT (LOW BEAM)

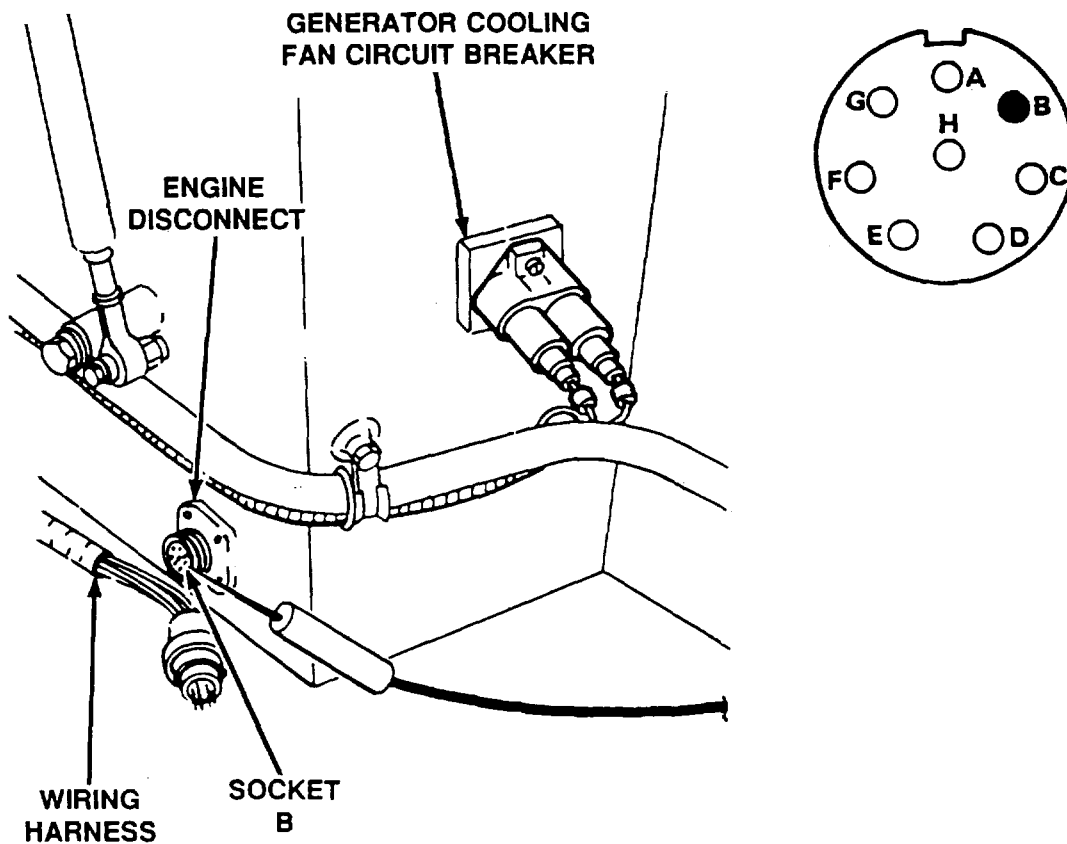


2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

**WARNING**

Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

Step 1. Press headlamp dimmer switch for low beam operation. Set MASTER switch OFF. Disconnect connector from headlamp dimmer switch. Place red probe on pin E. Place black probe on pin G. If multimeter indicates 0 ohms, go to step 2. If multimeter does not indicate 0 ohms, replace headlamp dimmer switch. Refer to page 2-572. Connect connector to headlamp dimmer switch.



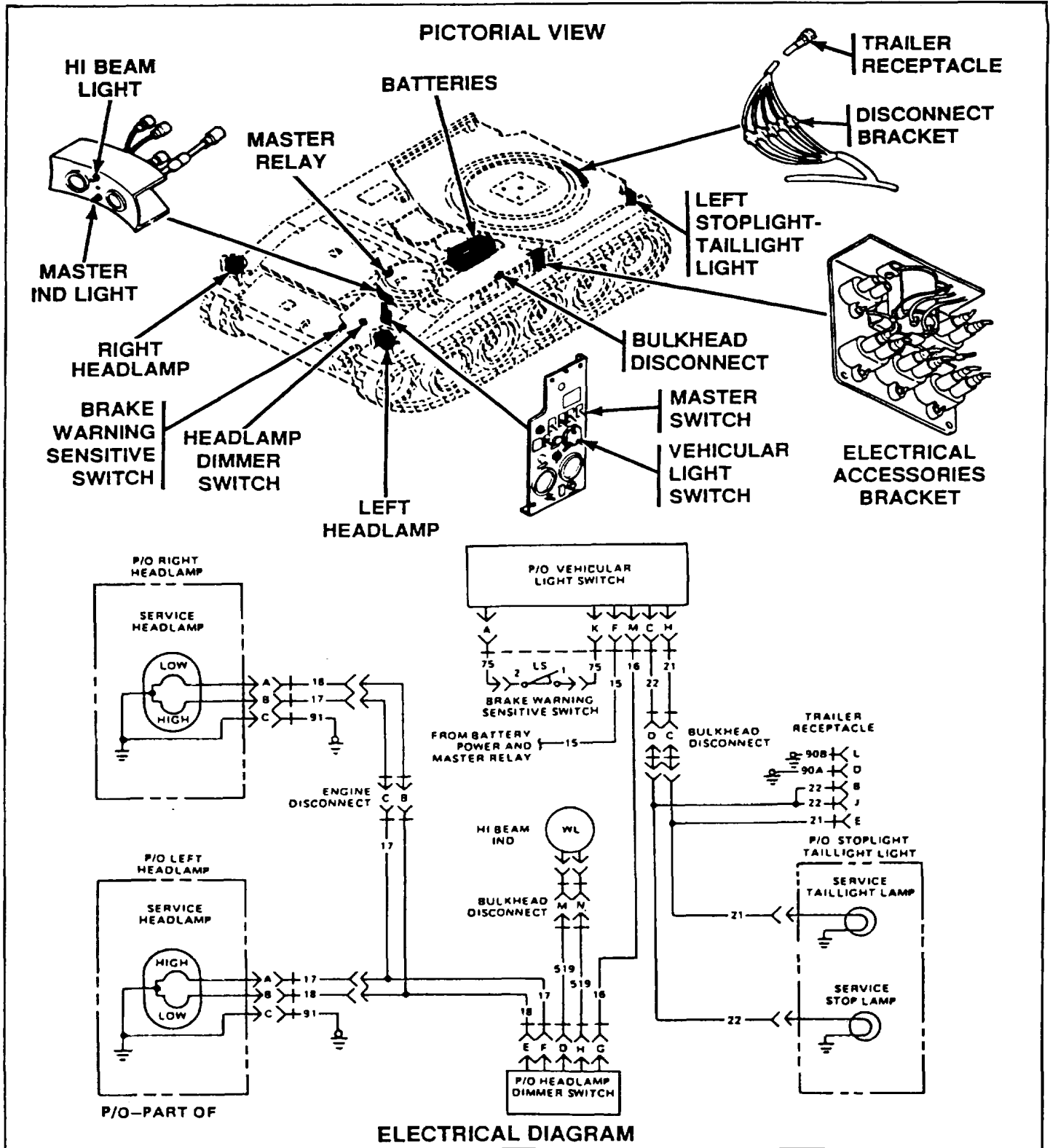
WARNING

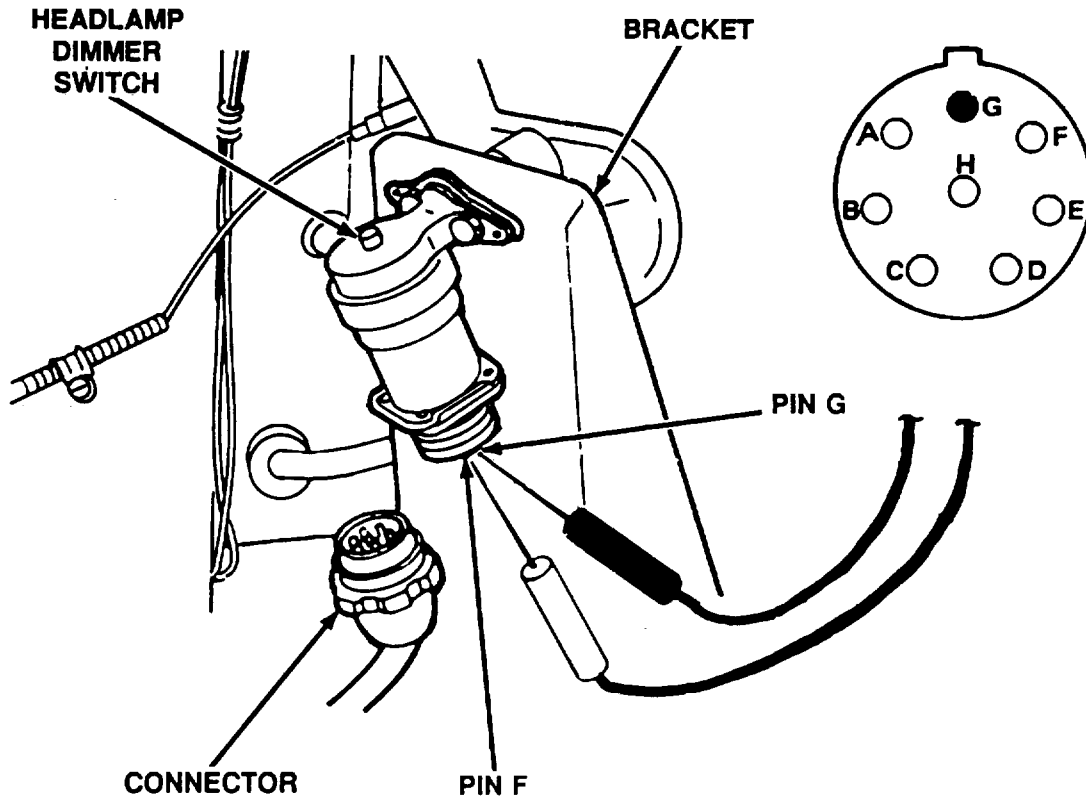
Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

- Step 2. To access engine disconnect, remove transmission deck lid assembly. Refer to page 2-893. Disconnect wiring harness from engine disconnect. Place red probe in pin socket B. Ground black probe. Press headlamp dimmer switch for low beam operation. Set MASTER switch ON. Turn vehicular light switch to SER DRIVE. If multimeter indicates about 24 volts, repair lead 18 between service headlamp and engine disconnect. Refer to page 2-364. If multimeter indicates no voltage, repair lead 18 between engine disconnect and headlamp dimmer switch. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF. Connect wiring harness.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

AF. SERVICE HEADLAMP CIRCUIT (HI BEAM)



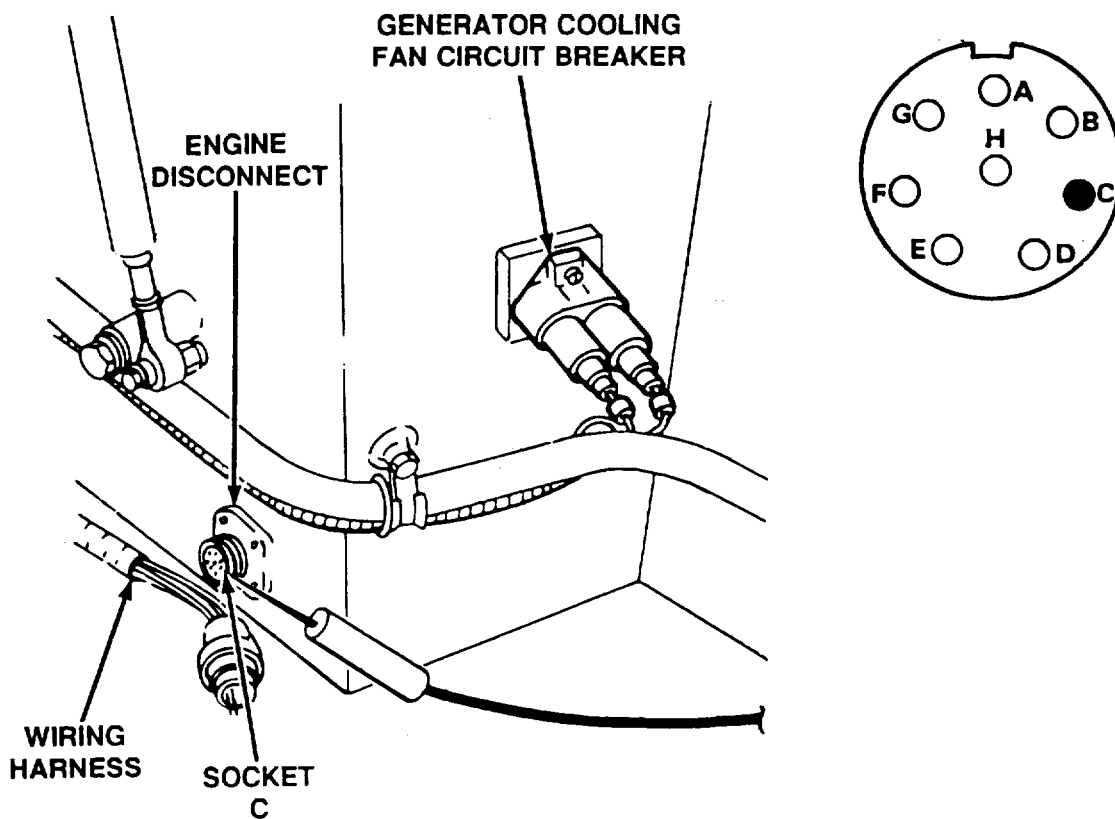


WARNING

- Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.
- Brake foot pedal is spring-loaded. Block tracks and release parking brake before working on headlamp dimmer switch.

Step 1. Press headlamp dimmer switch for high beam operation. Set MASTER switch OFF. Disconnect connector from headlamp dimmer switch. Place red probe in pin socket F. Place black probe in pin socket G. If multimeter indicates 0 ohms, go to step 2. If multimeter indicates infinity, replace headlamp dimmer switch. Refer to page 2-572. Connect connector to headlamp dimmer switch.

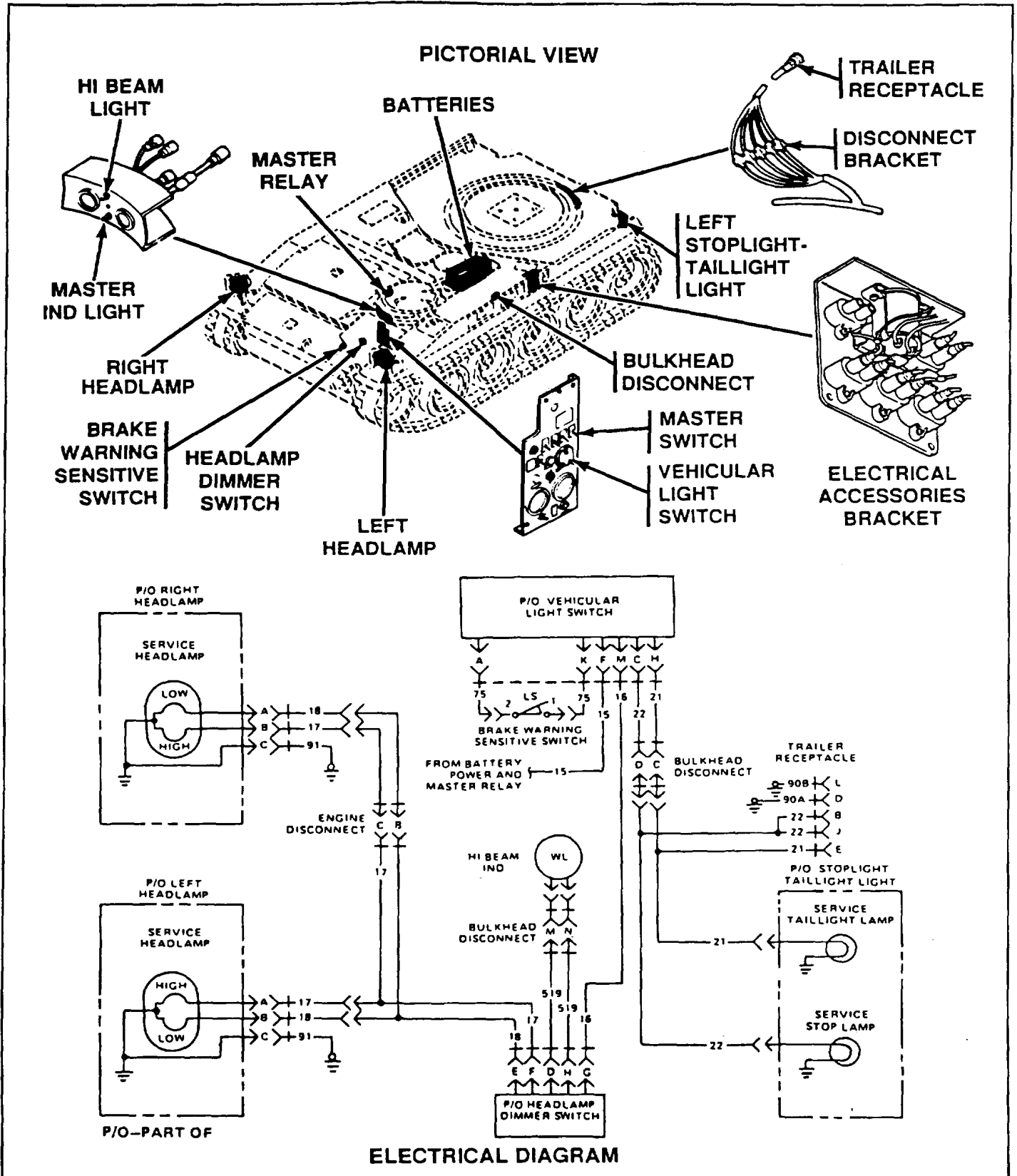
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

**WARNING**

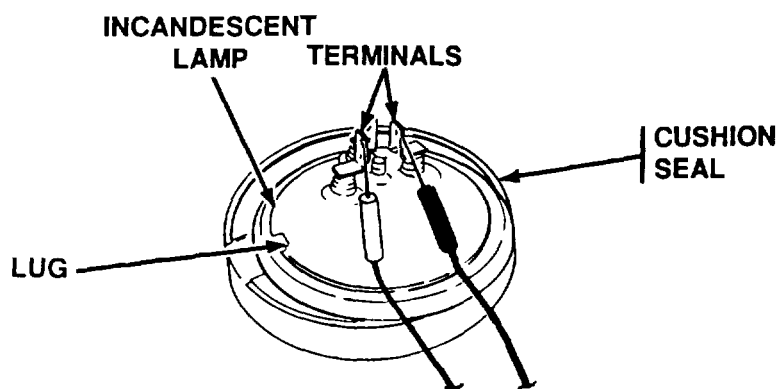
Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

Step 2. To access engine disconnect, remove transmission deck lid assembly. Refer to page 2-893. Disconnect wiring harness from engine disconnect. Place red probe in pin socket C. Ground black probe. Press headlamp dimmer switch for high beam operation. Set MASTER switch ON. Turn vehicular light switch to SER DRIVE. If multimeter indicates about 24 volts, repair lead 17 between service headlamp and engine disconnect. Refer to page 2-364. If multimeter indicates no voltage, repair lead 17 between engine disconnect and headlamp dimmer switch. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF. Connect wiring harness.

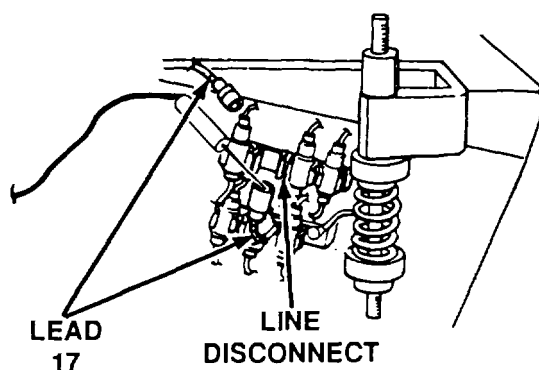
AG. SERVICE HEADLAMP CIRCUIT (LEAD 17).



2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



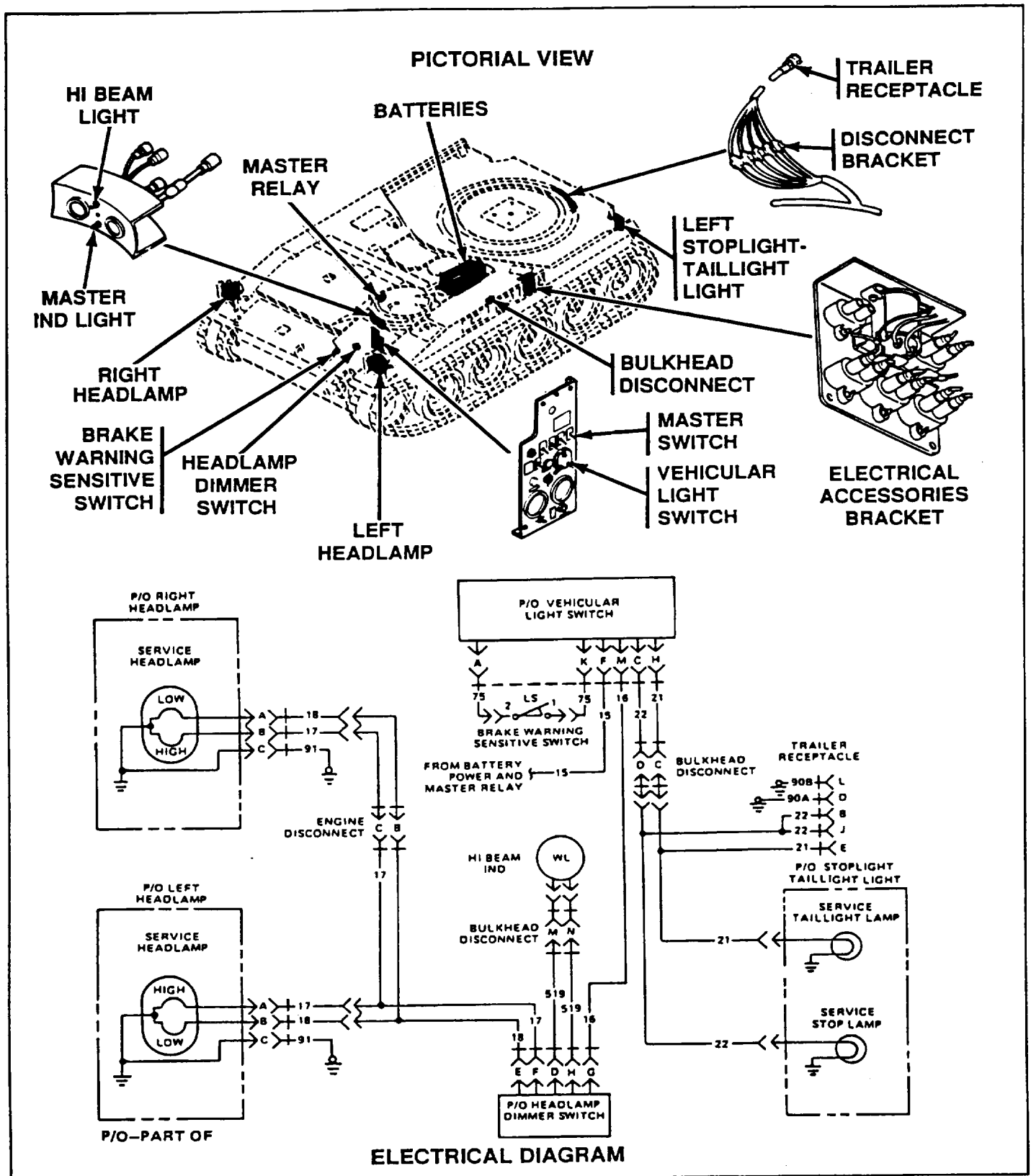
Step 1. Set MASTER switch OFF. Remove lamp from inoperative service headlamp. Refer to page 2-589. Connect multimeter to the parallel lamp terminals. If multimeter indicates about 1 ohm, install lamp in service headlamp and go to step 2. If multimeter indicates infinity, replace lamp. Refer to page 2-589.

**WARNING**

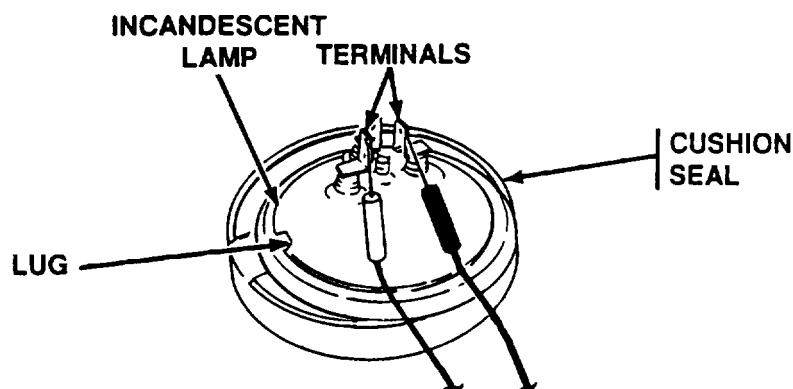
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 2. To access line disconnect, remove transmission deck lid assembly. Refer to page 2-893. Disconnect lead 17. Place red probe in lead 17. Ground black probe. Press headlamp dimmer switch for high beam operation. Set MASTER switch ON. Turn vehicular light switch to SER DRIVE. If multimeter indicates about 24 volts, repair service headlamp assembly. Refer to page 2-589. If multimeter indicates no voltage, repair lead 17 from line disconnect to service headlamp. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF.

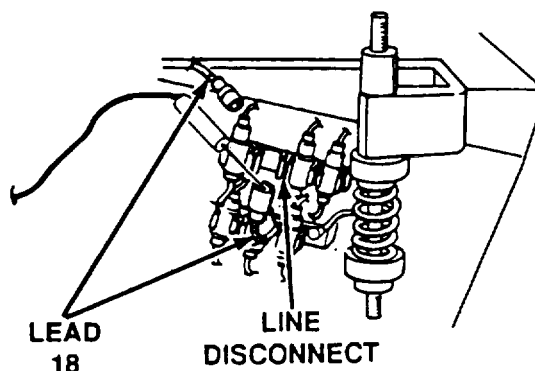
AH. SERVICE HEADLAMP CIRCUIT (LEAD 18).



2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



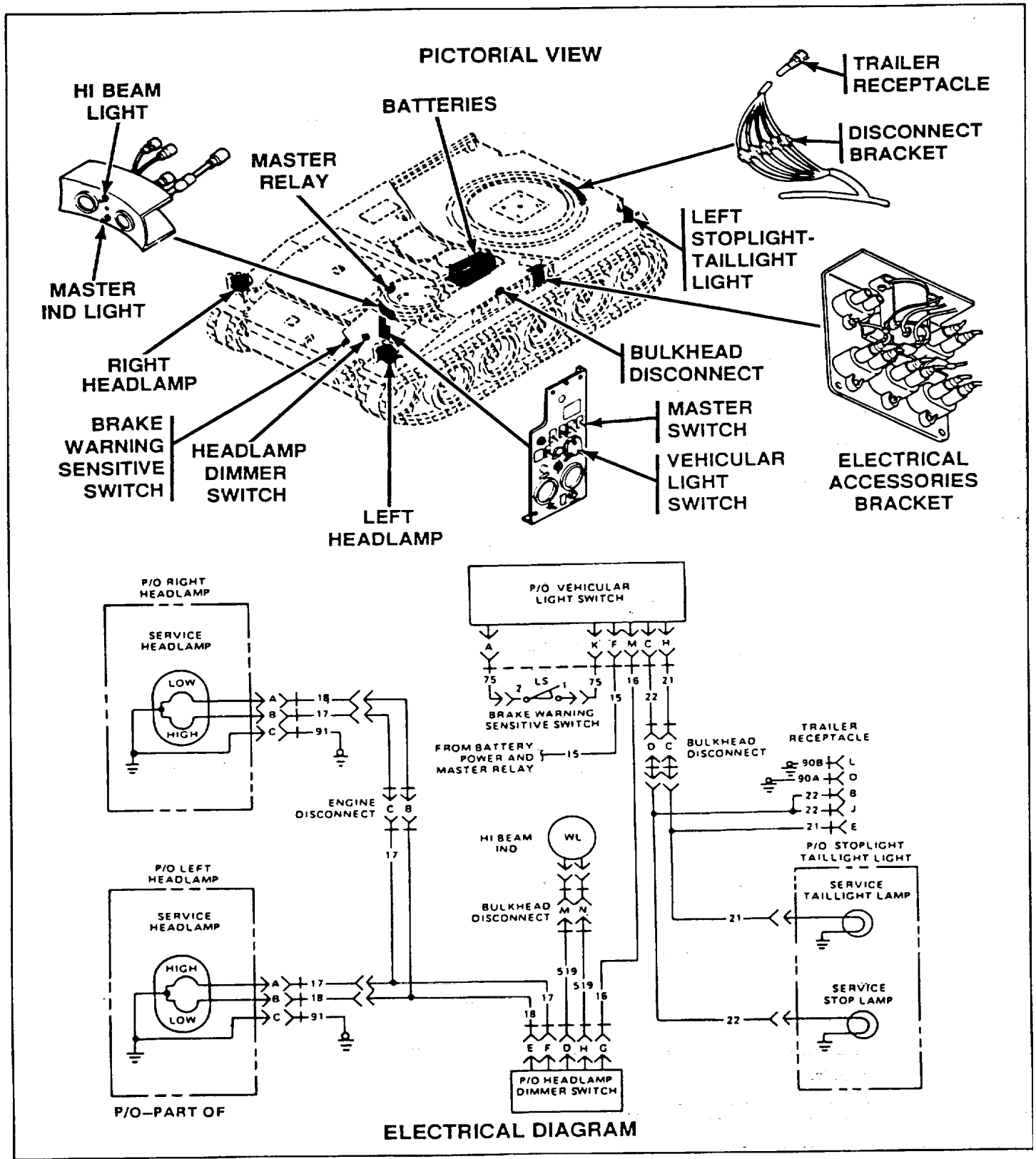
- Step 1. Set MASTER switch OFF. Remove lamp from inoperative service headlamp. Refer to page 2-589. Connect multimeter to the parallel lamp terminals. If multimeter indicates about 2 ohms, go to step 2. If multimeter indicates infinity, replace lamp. Refer to page 2-589.

**WARNING**

Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

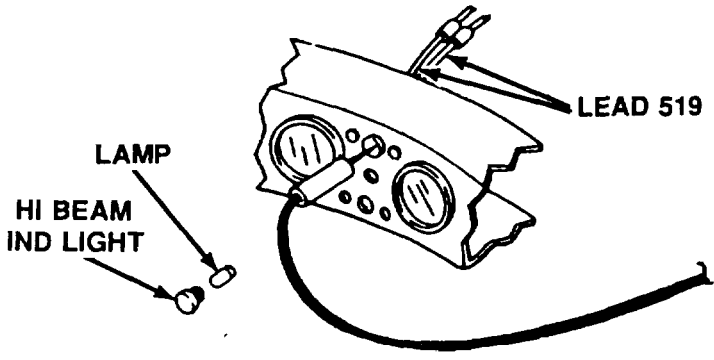
- Step 2. To access line disconnect, remove transmission deck lid assembly. Refer to page 2-893. Disconnect lead 18. Place red probe in lead 18. Ground black probe. Press headlamp dimmer switch for high beam operation. Set MASTER switch ON. Turn vehicular light switch to SER DRIVE. If multimeter indicates about 24 volts, repair service headlamp assembly. Refer to page 2-589. If multimeter indicates no voltage, repair lead 18 from line disconnect to service headlamp. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF. Connect lead.

AI. HI BEAM IND LIGHT CIRCUIT.



2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

DRIVER'S INSTRUMENT (GAGE) PANEL

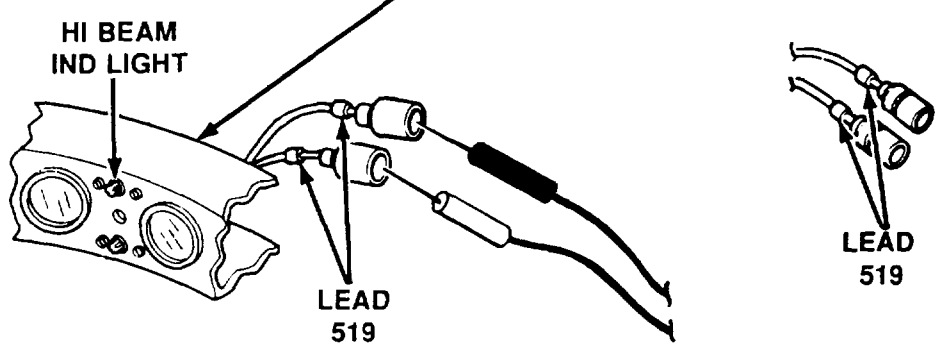


WARNING

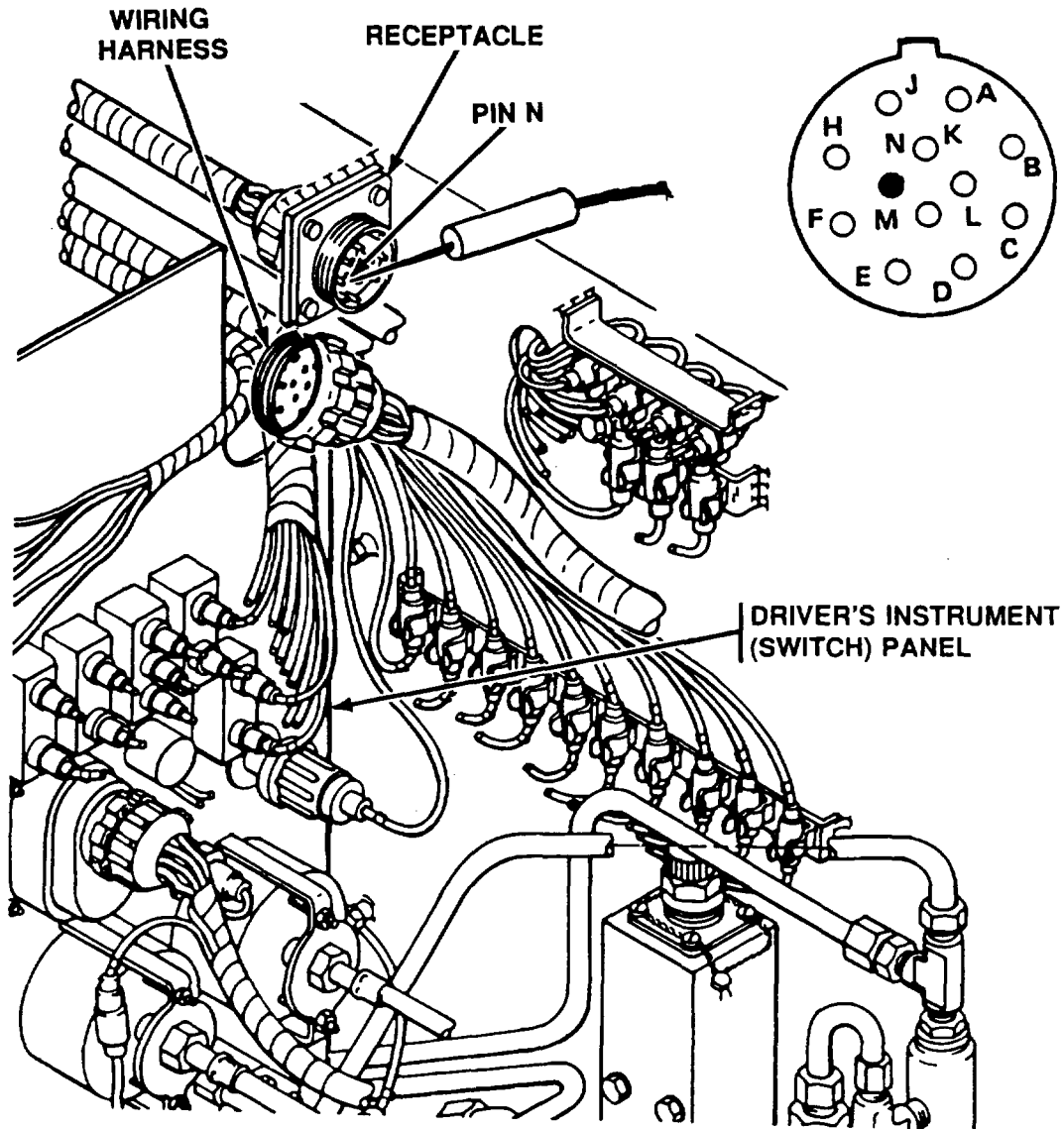
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 1. Remove lamp from HI BEAM IND. Refer to page 2-560. Set MASTER switch ON. Place blackout infrared selector switch in infrared position and infrared receiver switch in ON position. Press dimmer switch on floor. Place instrument switch in ON position. Place red probe in socket. Ground black probe. If multimeter indicates about 24 volts, replace lamp. If multimeter indicates no voltage, set MASTER switch OFF, install LED and go to step 2.

DRIVER'S INSTRUMENT (GAGE) PANEL



Step 2. To access electrical leads, remove driver's instrument (gage) panel. Refer to page 2-560. Disconnect leads 519 from HI BEAM IND light. Place multimeter probes in leads 519 at light. If multimeter indicates 100 ohms, go to step 3. If multimeter indicates infinity, replace HI BEAM IND lamp assembly. Refer to page 2-560.

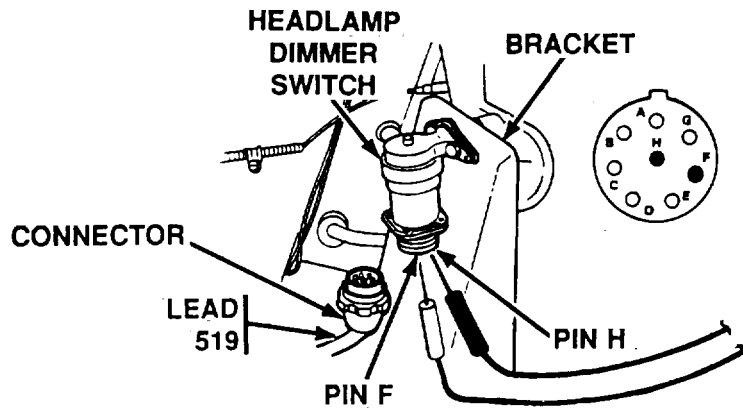


WARNING

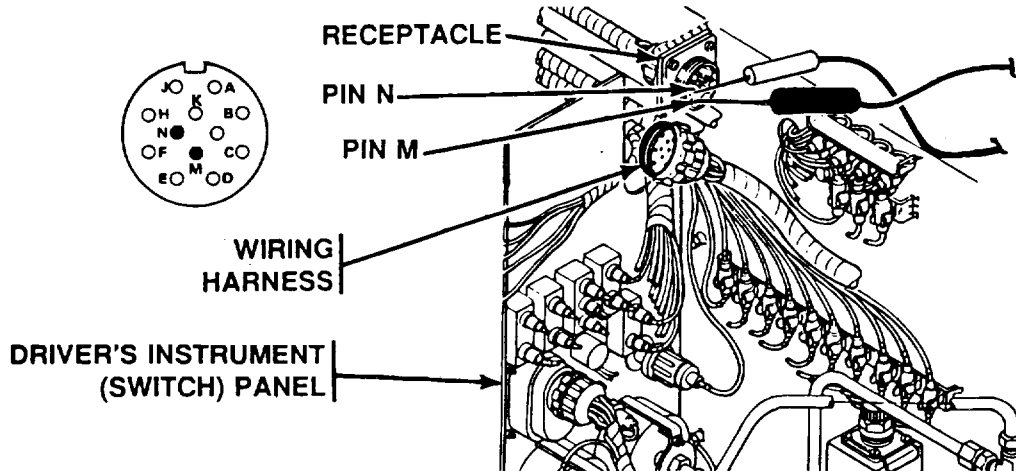
Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

- Step 3. Disconnect instrument (gage) panel wiring harness. Place red probe on pin N (lead 519). Ground black probe. Set MASTER switch ON. Turn vehicular light switch to SER DRIVE. Press headlamp dimmer switch for high beam operation. If multimeter indicates about 24 volts, go to step 5. If multimeter indicates no voltage, connect wiring harness and go to step 4. Set MASTER switch OFF. Turn vehicular light switch OFF.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

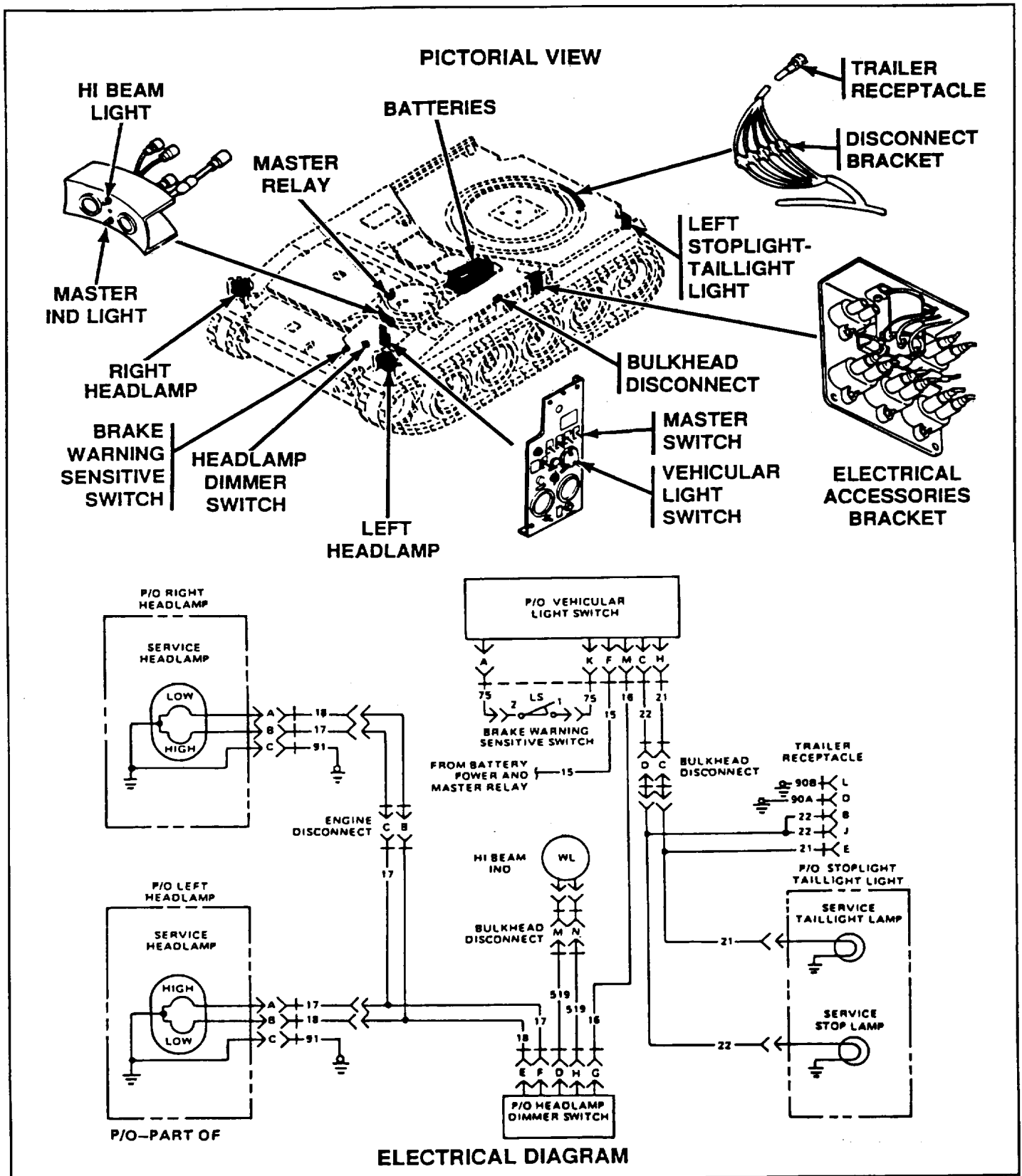


Step 4. Disconnect connector from headlamp dimmer switch. Place red probe on pin F. Place black probe on pin H. If multimeter indicates 0 ohms, repair lead 519 from headlamp dimmer switch to HI BEAM IND light. Refer to page 2-364. If multimeter indicates infinity, replace headlamp dimmer switch. Refer to page 2-572.

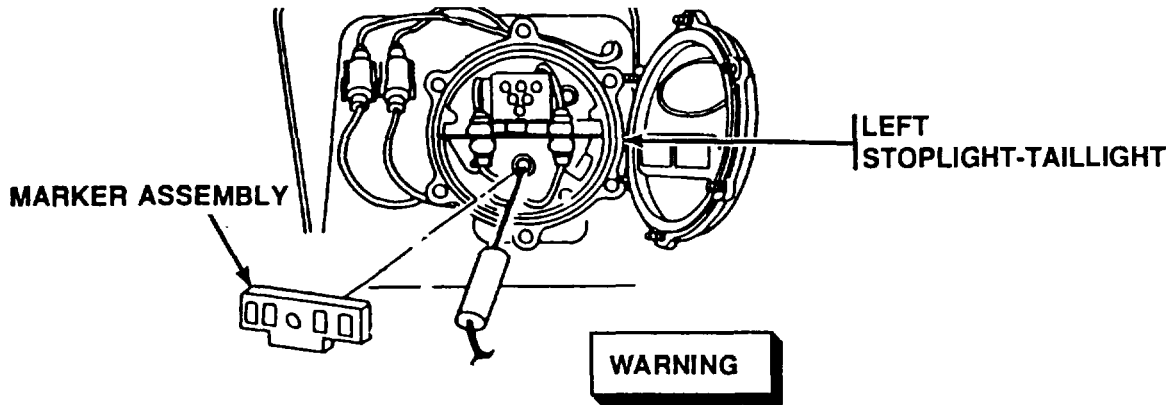


Step 5. Place red probe on pin N (lead 519). Place black probe on pin M (lead 519). If multimeter indicates infinity, repair lead 519 from disconnect plug to HI BEAM IND light. Refer to page 2-364. If multimeter indicates 100 ohms, replace headlamp dimmer switch. Refer to page 2-572. Connect wiring harness.

AJ. LEFT STOPLIGHT-TAILLIGHT CIRCUIT.

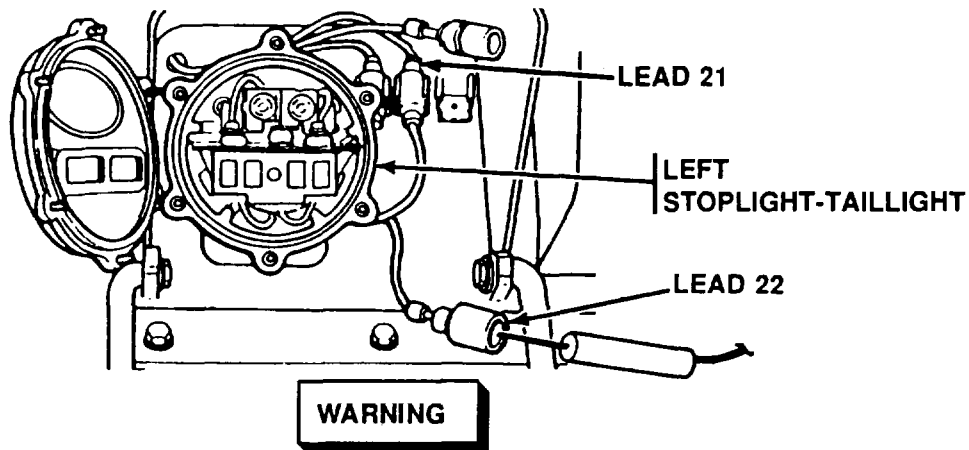


2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



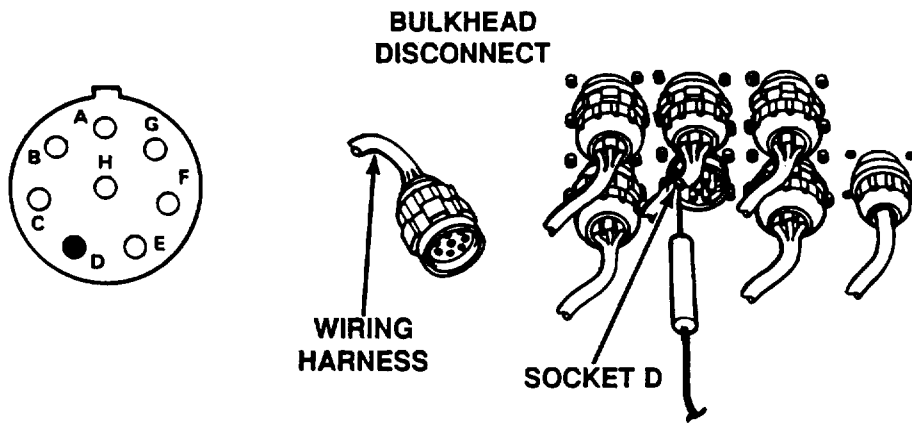
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 1. Remove marker assembly from left stoplight-tailight. Refer to page 2-600. Set MASTER switch ON. Set panel light switch ON. Unlock main light switch and place in blackout drive position. Place blackout-infrared selection switch in blackout position. Place red probe in socket. Ground black probe. If multimeter indicates about 24 volts, replace marker assembly. If multimeter indicates no voltage, set MASTER switch OFF, install marker assembly and go to step 2.



Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

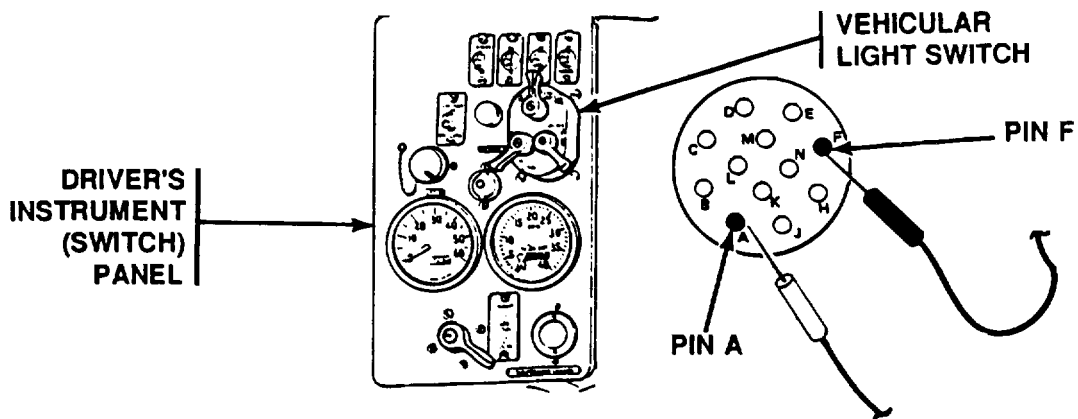
- Step 2. Disconnect lead 22 from left stoplight-tailight. Place red probe in lead 22. Ground black probe. Set MASTER switch ON. Turn vehicular light switch to STOPLIGHT. Apply brakes. If multimeter indicates about 24 volts, repair left stoplight-tailight. Refer to page 2-600. If multimeter indicates no voltage, connect lead 22 and go to step 3. Set MASTER switch OFF. Turn vehicular light switch OFF.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

- Step 3. To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness. Place red probe in socket D. Ground black probe. Set MASTER switch ON. Turn vehicular light switch to STOPLIGHT. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 22 between bulkhead disconnect and left stoplight-taillight. Refer to page 2-364. Set MASTER switch OFF and connect wiring harness. Turn vehicular light switch OFF.



- Step 4. Disconnect connector from vehicular light switch. Place red probe on pin A. Place black probe on pin F on vehicular light switch. Turn vehicular light switch to STOPLIGHT. If multimeter indicates 0 ohms, go to step 5. If multimeter indicates infinity, replace vehicular light switch. Refer to page 2-555. Connect connector to vehicular light switch. Turn vehicular light switch OFF.

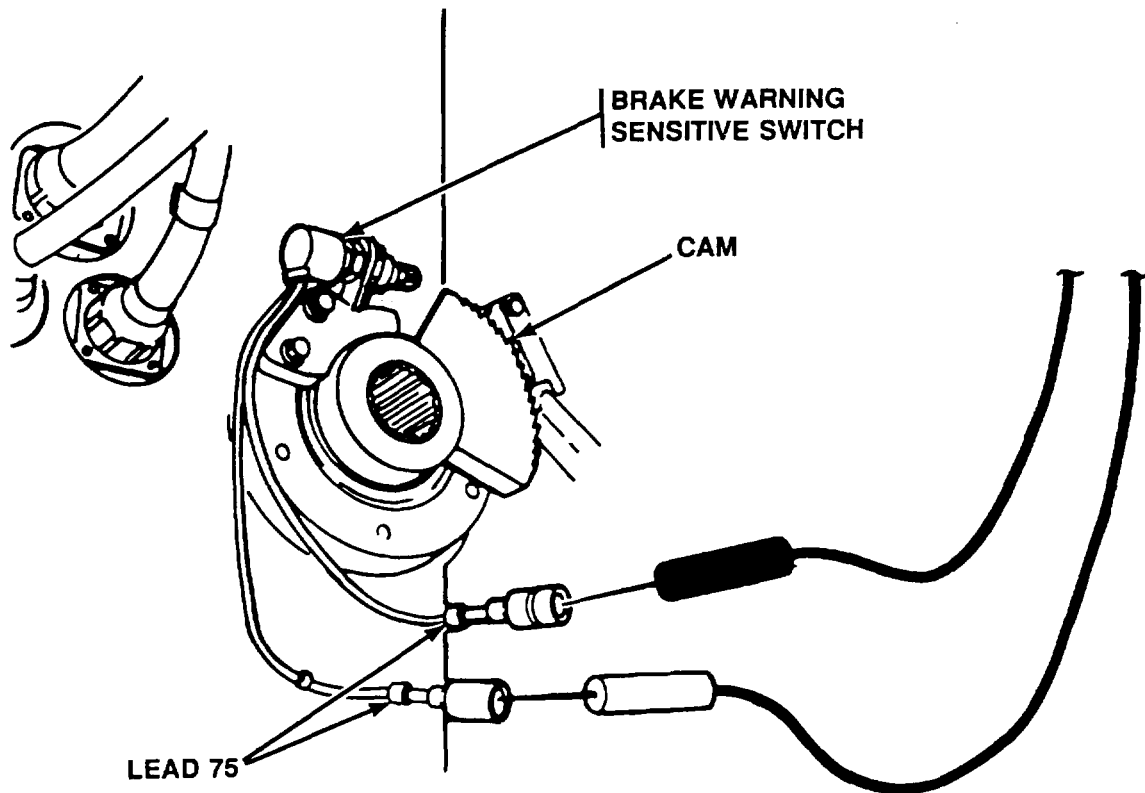
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

The diagram shows an instrument panel on the left with two gauges and various controls. An arrow points from the text 'INSTRUMENT (SWITCH) PANEL' to the panel. On the right is a circular connector with pins labeled A through N. A red probe is connected to pin C and a black probe to pin K. Wires extend from the connector.

Step 5. Place red probe on pin C on vehicular light switch. Place black probe on pin K. If multimeter indicates 0 ohms, go to step 6. If multimeter indicates infinity, replace vehicular light switch. Refer to page 2-555. Connect connector to vehicular light switch.

The diagram shows a control panel with four switches at the top. Arrows point from labels to specific components: 'INST SWITCH' points to the rightmost switch, 'MASTER SWITCH' points to the second switch from the right, 'VEHICULAR LIGHT SWITCH' points to a large rotary switch in the center, and 'DRIVER'S INSTRUMENT (SWITCH) PANEL' points to a panel at the bottom with two gauges.

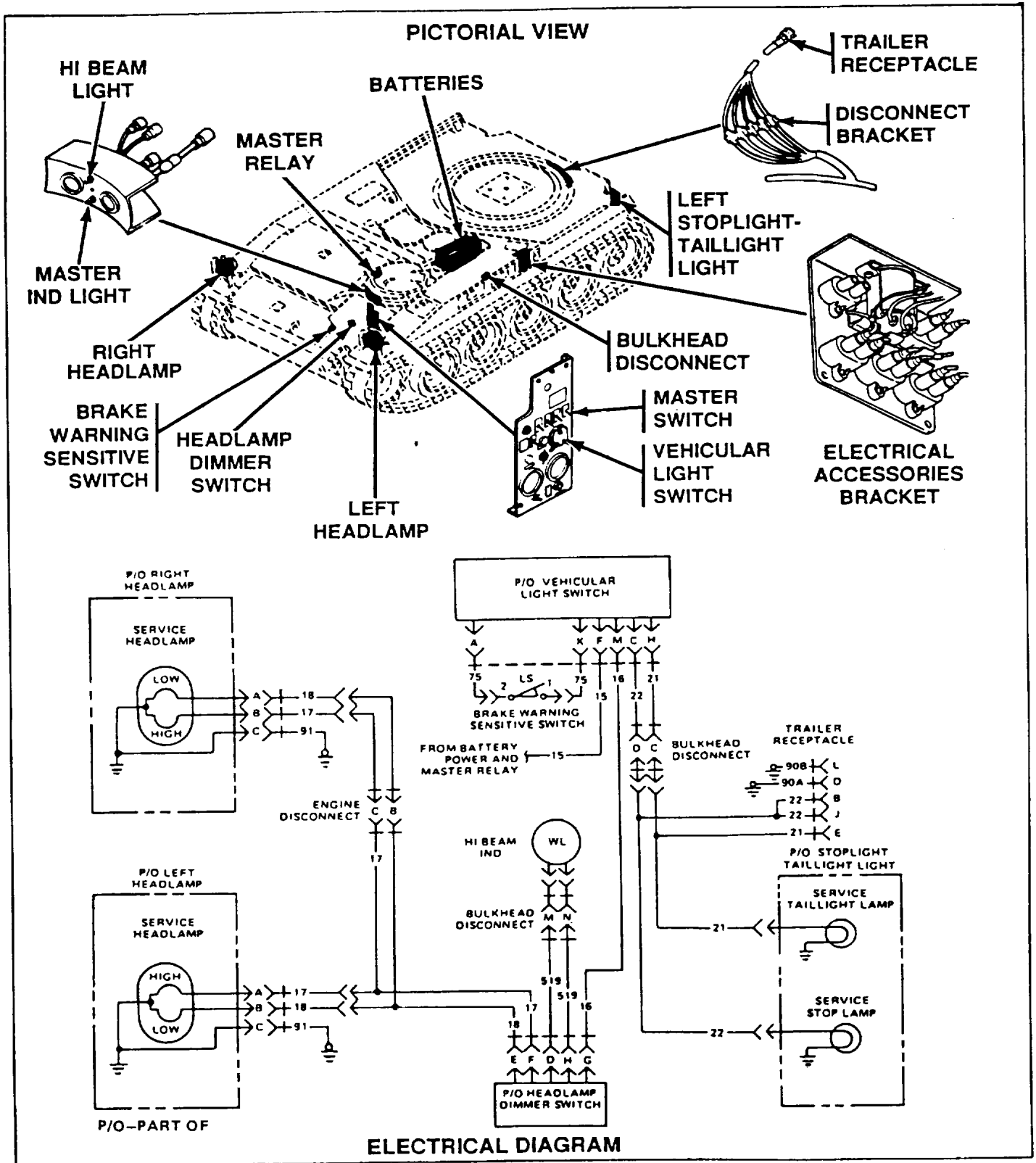
Step 6. Set MASTER switch ON. Turn vehicular light switch to STOPLIGHT. Apply brakes. If stoplight does not operate, go to step 7. If stoplight is operating, repair lead 22 from bulkhead disconnect to vehicular light switch. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF.

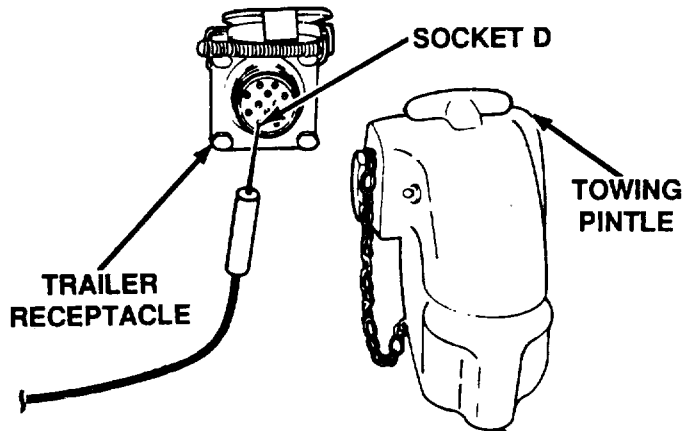
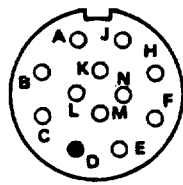


Step 7. Disconnect both leads 75 from brake warning sensitive switch. Connect multimeter to brake warning sensitive switch leads. Apply brakes. If multimeter indicates 0 ohms, repair lead 75 between brake warning sensitive switch and vehicular light switch. Refer to page 2-364. If multimeter indicates infinity, replace brake warning sensitive switch. Refer to page 2-612. Connect leads to brake warning sensitive switch.

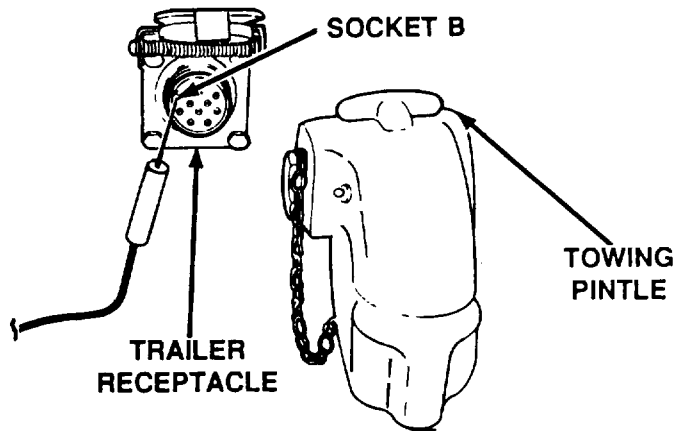
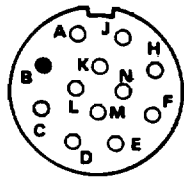
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

AK. TRAILER RECEPTACLE CIRCUIT.





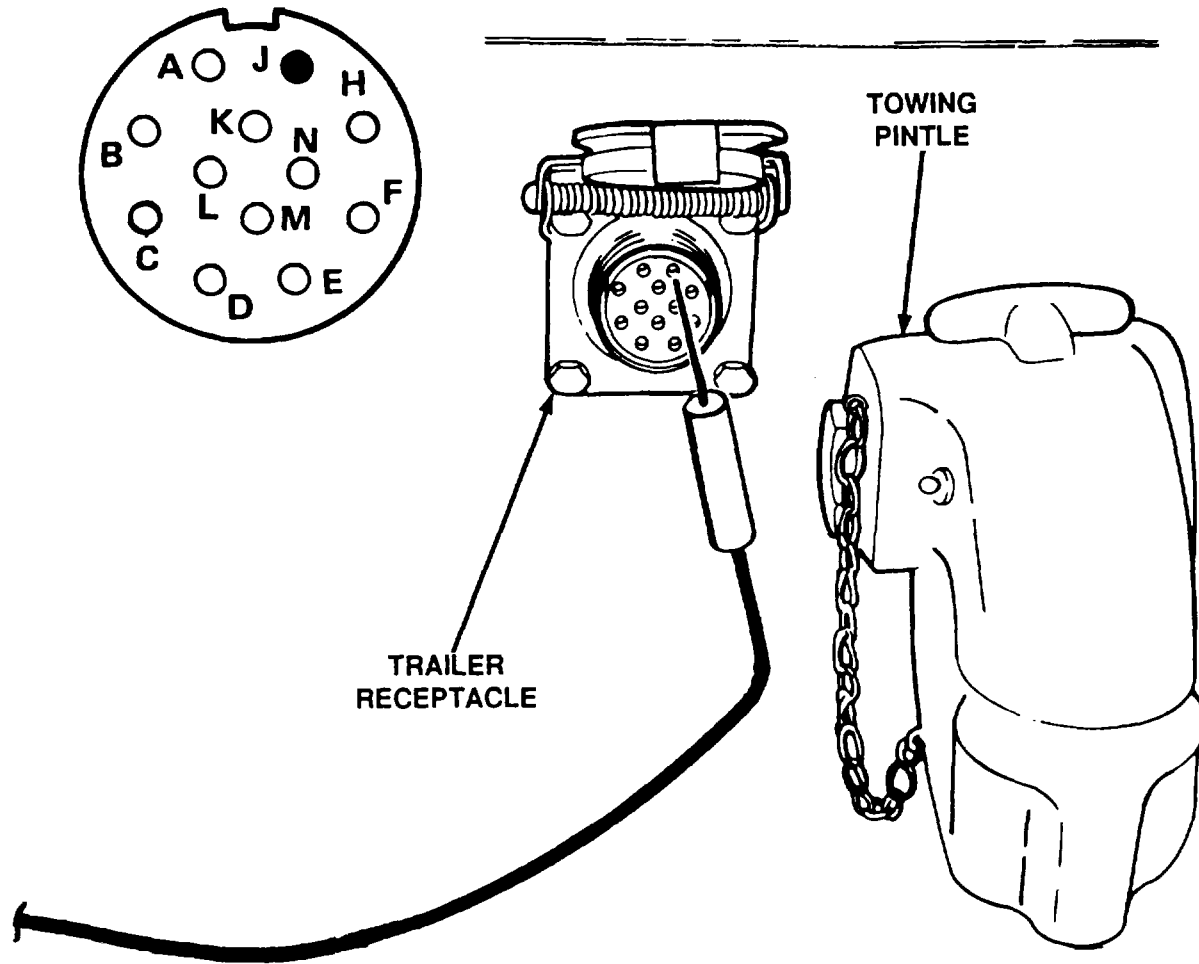
Step 1. Set MASTER switch OFF. Place red probe in socket D of trailer receptacle (lead 90A). Ground black probe. If multimeter indicates 0 ohms, go to step 2. If multimeter does not indicate 0 ohms, repair lead 90A. Refer to page 2-364.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

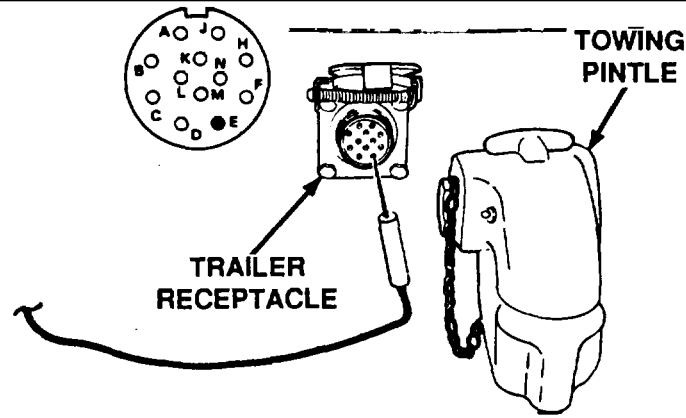
Step 2. Place red probe in socket B (lead 22). Ground black probe. Set MASTER switch ON. Turn vehicular light switch to STOPLIGHT. Apply brakes. If multimeter indicates about 24 volts, go to step 3. If multimeter indicates no voltage, repair lead 22. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

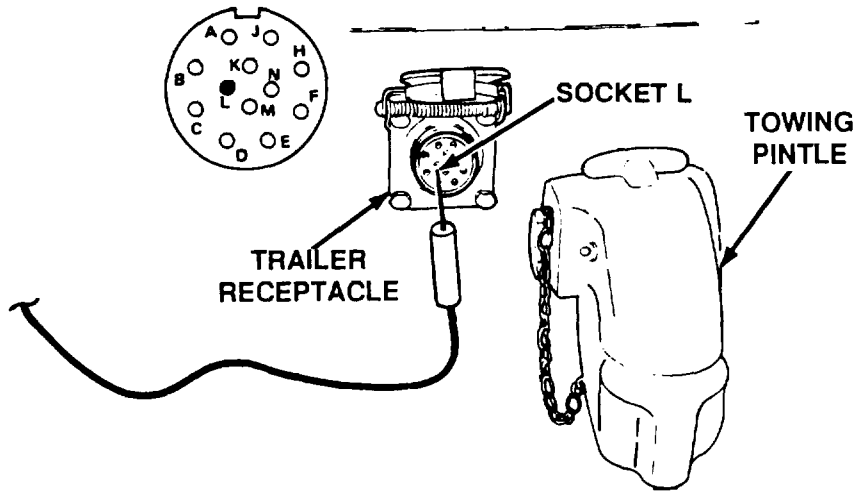
Step 3. Place red probe in socket J (lead 22). Ground black probe. Set MASTER switch ON. Turn vehicular light switch to STOPLIGHT. Apply brakes. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 22. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

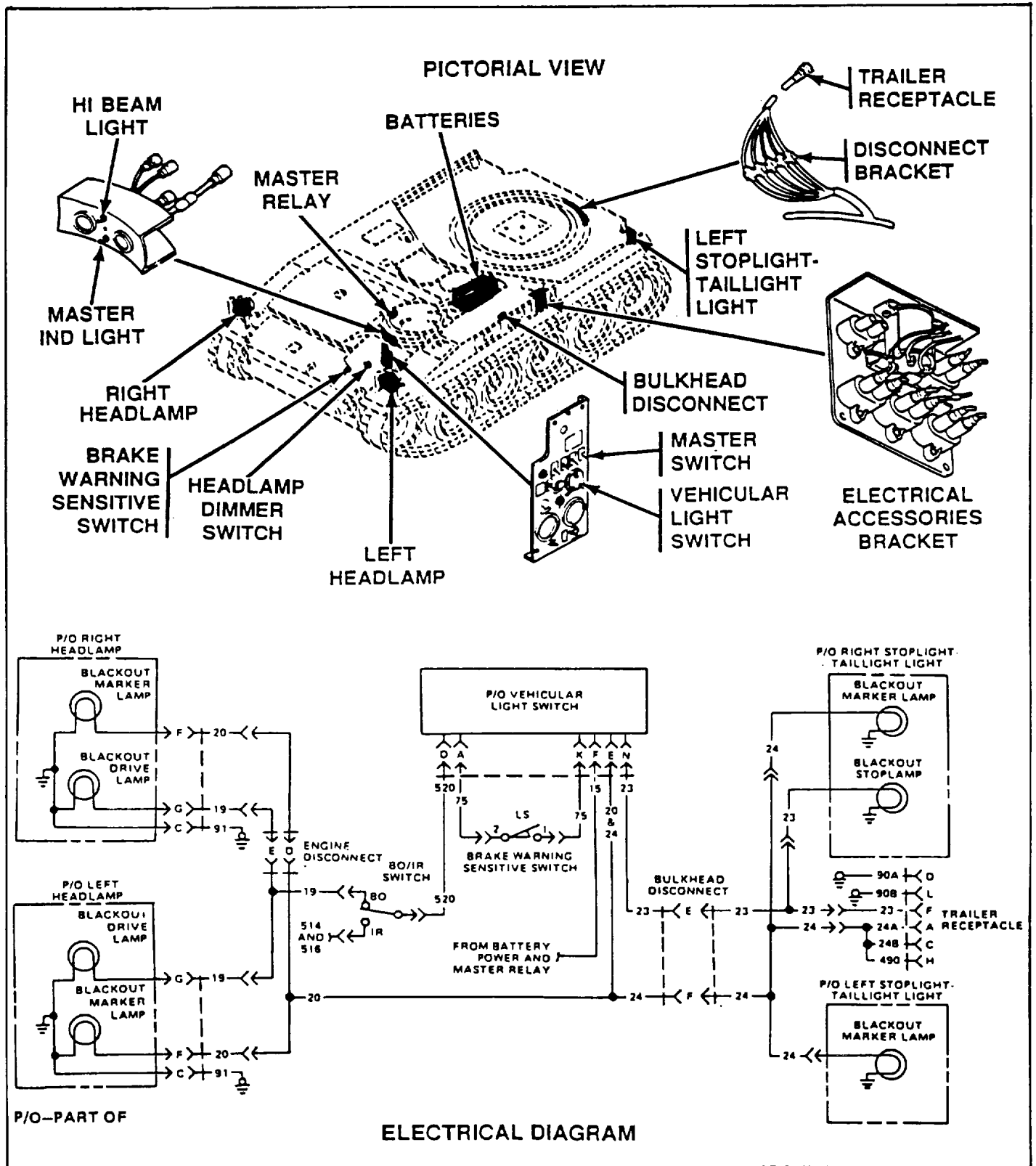
Step 4. Place red probe in socket E (lead 21). Ground black probe. Set MASTER switch ON. Turn vehicular light switch to SER DRIVE. If multimeter indicates about 24 volts, go to step 5. If multimeter indicates no voltage, repair lead 21. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF.

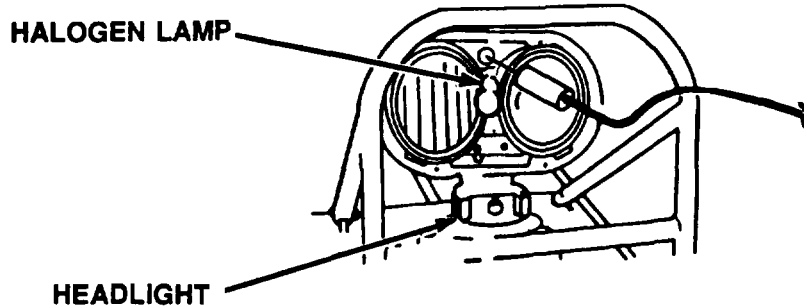


Step 5. Place red probe in socket L (lead 90B). Ground black probe. If multimeter indicates 0 ohms, trailer receptacle is operating normally. If multimeter does not indicate 0 ohms, repair lead 90B. Refer to page 2-364.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

AL. BLACKOUT MARKER CIRCUIT.

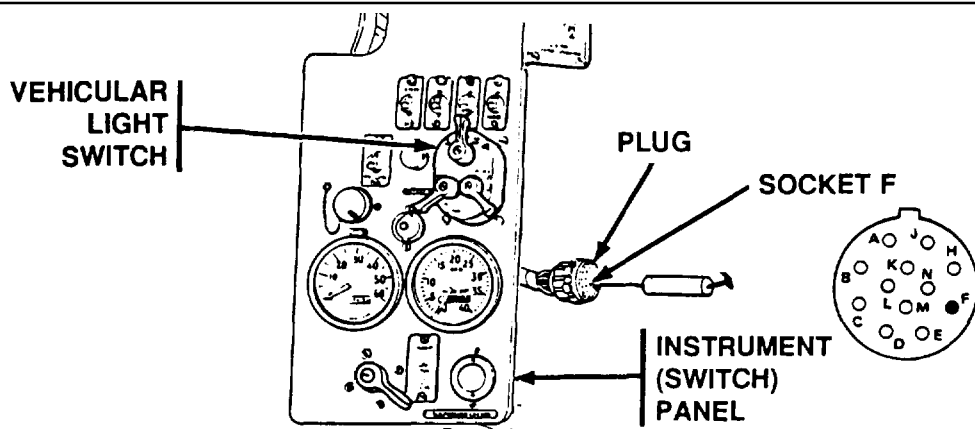




WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 1.* Remove inoperative halogen lamp. Refer to page 2-589. Set MASTER switch ON. Set panel light switch ON. Unlock main light switch and place in blackout drive position. Place blackout infrared selection switch in blackout position. Place red probe in socket. Ground black probe. If multimeter indicates about 24 volts, replace halogen lamp. If multimeter indicates no voltage, set MASTER switch OFF, install halogen lamp and go to step 2.

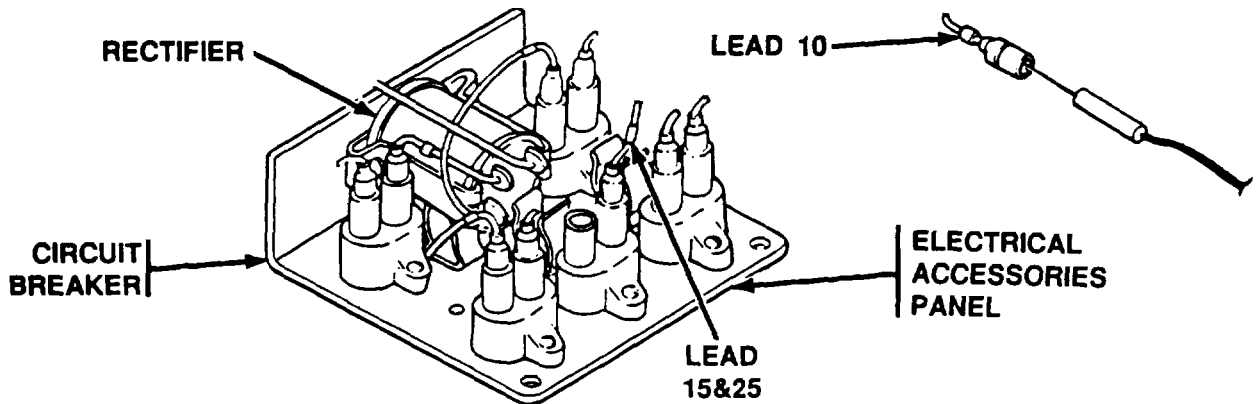


WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 2.* Disconnect connector from vehicular light switch. Place red probe in pin socket F (lead 15) of plug. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, replace vehicular light switch. Refer to page 2-555. If multimeter indicates no voltage, go to step 3. Set MASTER switch OFF. Connect connector to vehicular light switch.

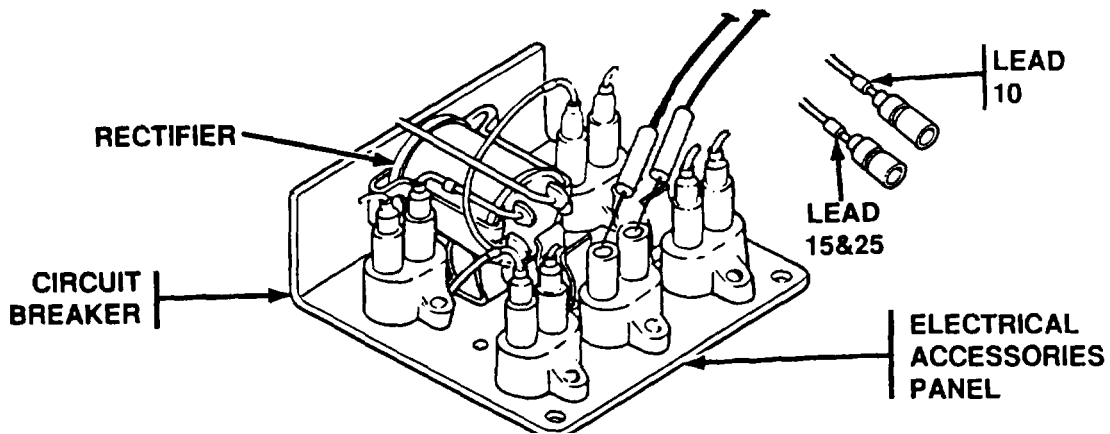
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).



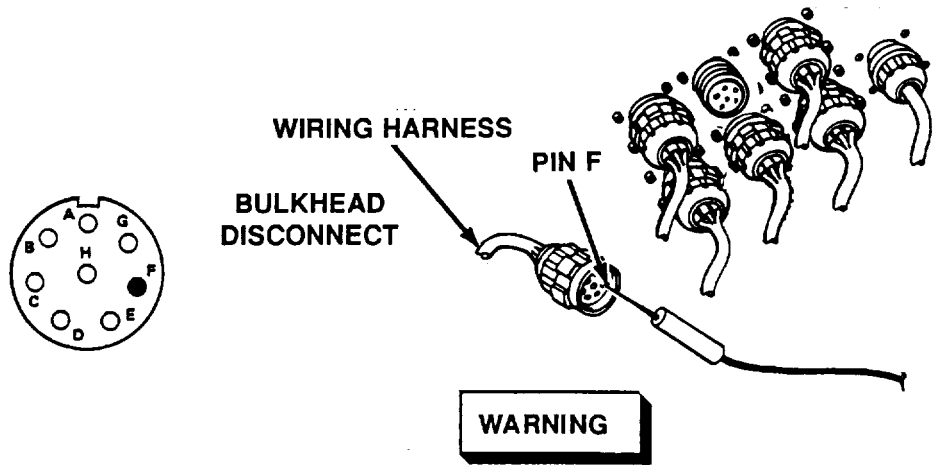
WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 3. To access electrical accessories panel, remove left CO₂ cylinder access cover. Refer to page 2-875. Disconnect lead 10 from circuit breaker. Place red probe in lead 10. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 10. Refer to page 2-364. Set MASTER switch OFF and connect lead.

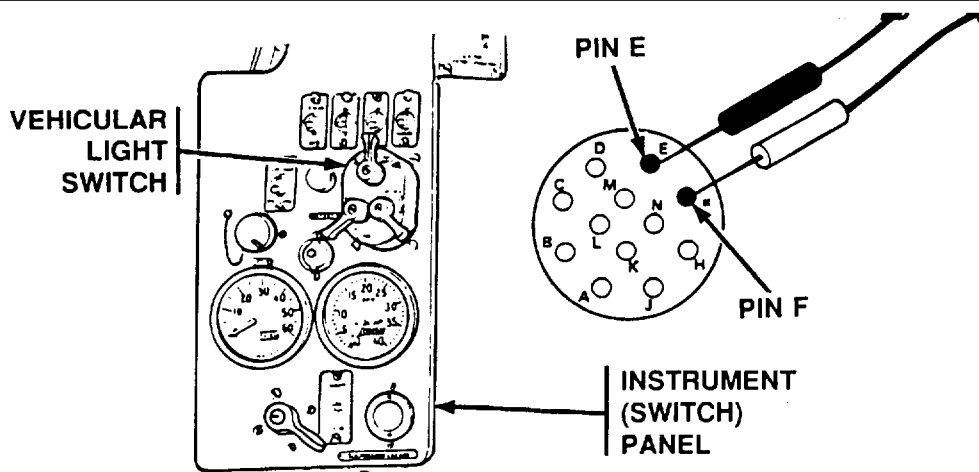


Step 4. Disconnect leads 15&25 and 10 from circuit breaker. Check continuity between circuit breaker terminals. If multimeter indicates continuity, repair lead 15&25. Refer to page 2-364. If multimeter does not indicate continuity, replace circuit breaker. Refer to page 2-578. Connect leads.



Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

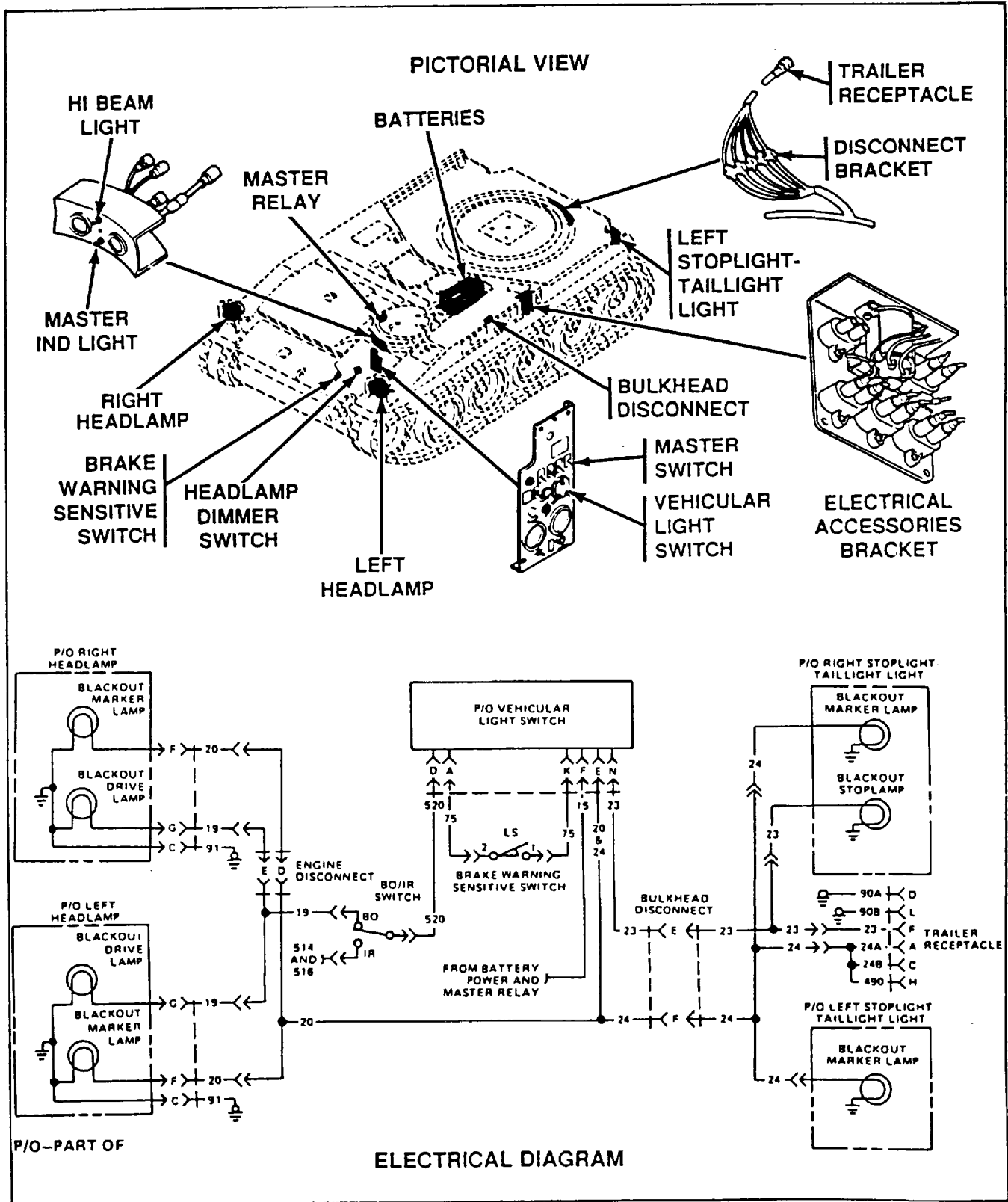
Step 5. To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness at bulkhead disconnect. Place red probe on pin F (lead 24). Ground black probe. Set MASTER switch ON. Turn vehicular light switch to BO MARKER. If multimeter indicates about 24 volts, go to step 6. If multimeter indicates no voltage, repair lead 24 between bulkhead disconnect and light switch. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF. Connect lead.

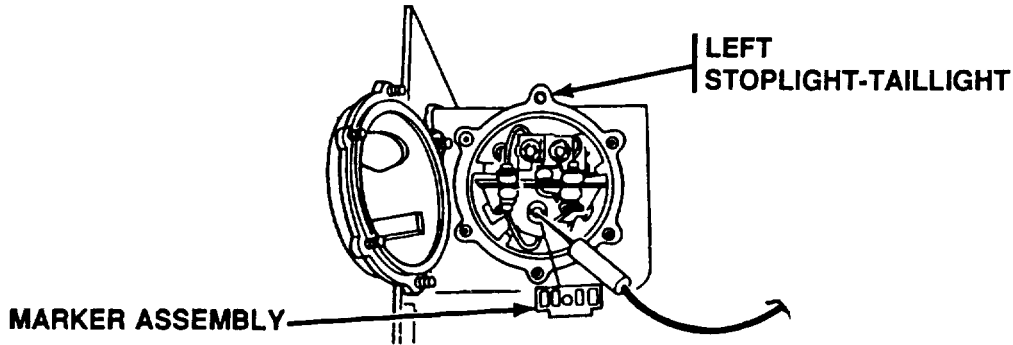


Step 6. Disconnect connector from vehicular light switch. Place red probe on pin E of vehicular light switch. Place black probe on pin F. Turn vehicular light switch to BO MARKER. If multimeter indicates 0 ohms, repair lead 20&24. Refer to page 2-364. If multimeter indicates infinity, replace vehicular light switch. Refer to page 2-555. Connect connector to vehicular light switch. Turn vehicular light switch OFF.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

AM. TAILLIGHT BLACKOUT MARKER CIRCUIT

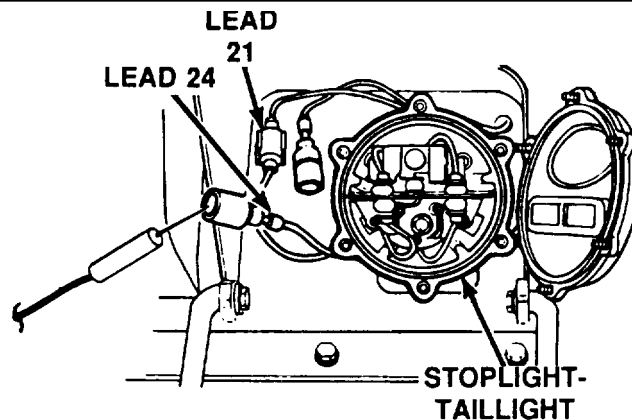




WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 1.* Remove marker assembly from left stoplight-tailight. Refer to page 2-600. Set MASTER switch ON. Set panel light switch ON. Unlock main light switch and place in blackout drive position. Place blackout-infrared selection switch in blackout position. Place red probe in socket. Ground black probe. If multimeter indicates about 24 volts, replace marker assembly. If multimeter indicates no voltage, set MASTER switch OFF, install marker assembly and go to step 2.

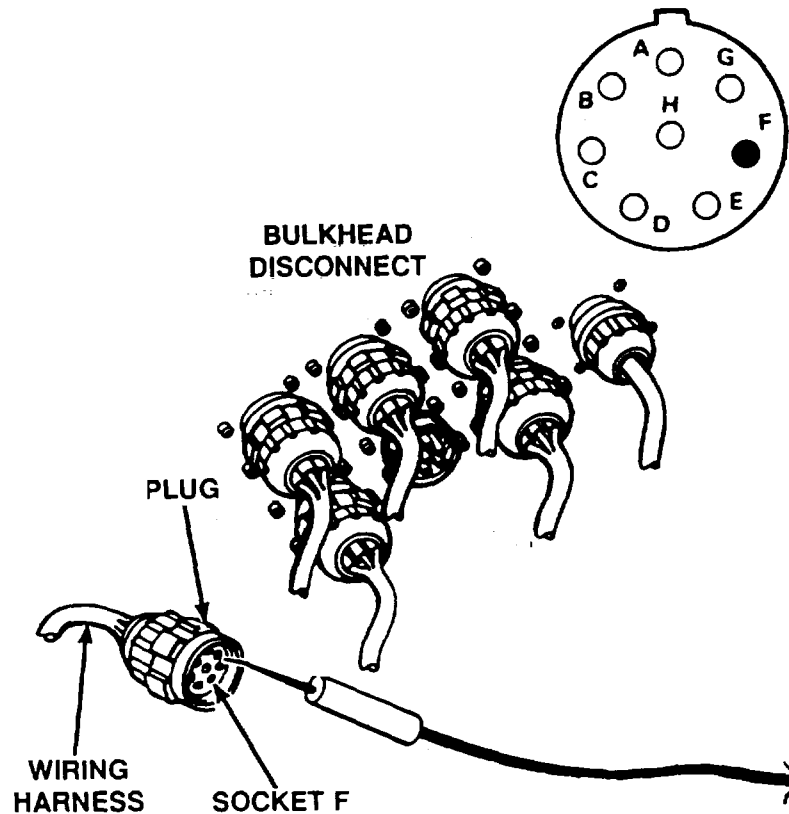


WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 2.* Disconnect lead 24 from stoplight-tailight. Place red probe in lead 24. Ground black probe. Set MASTER switch ON. Turn vehicular light switch to BO MARKER. If multimeter indicates about 24 volts, repair stoplight-tailight. Refer to page 2-600. If multimeter indicates no voltage, go to step 3. Set MASTER switch OFF. Turn vehicular light switch OFF.

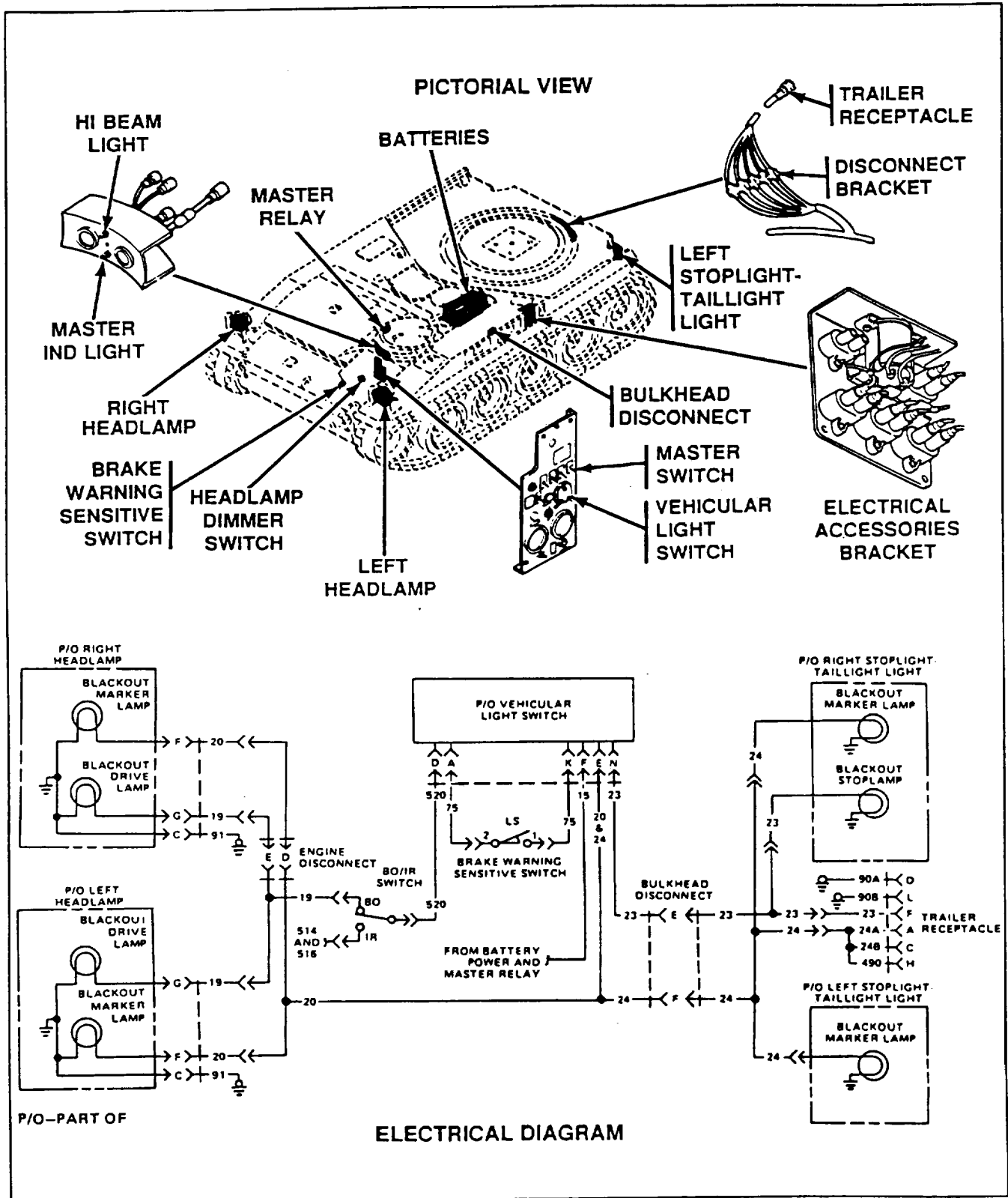
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

**WARNING**

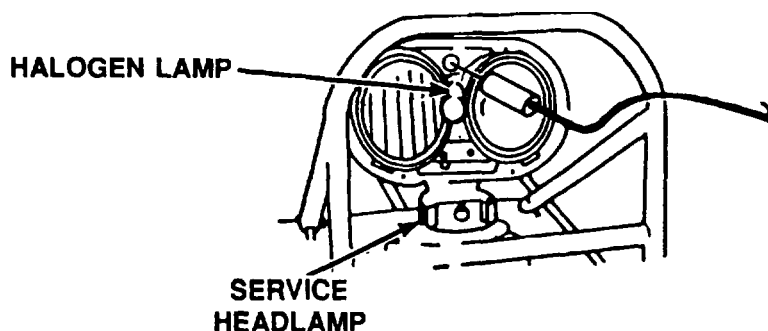
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 3.* To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness. Place red probe in socket F (lead 24). Ground black probe. Set MASTER switch ON. Turn vehicular light switch to BO MARKER. If multimeter indicates about 24 volts, repair lead 24 between bulkhead disconnect and stoplight-taillight. Refer to page 2-364. If multimeter indicates no voltage, repair lead 24 between bulkhead disconnect and vehicular light switch. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF. Connect wiring harness.

AN. HEADLAMP BLACKOUT MARKER CIRCUIT.



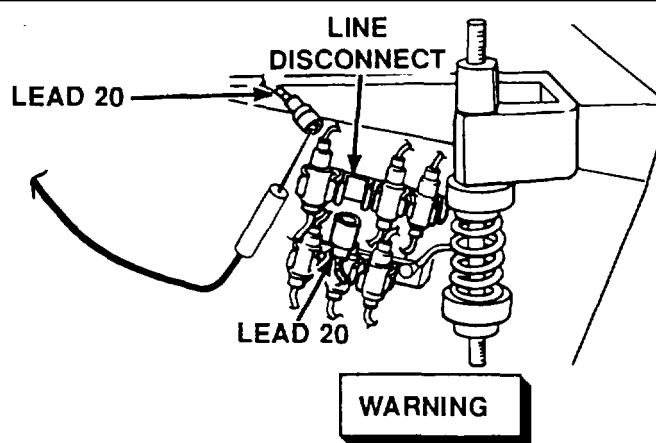
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

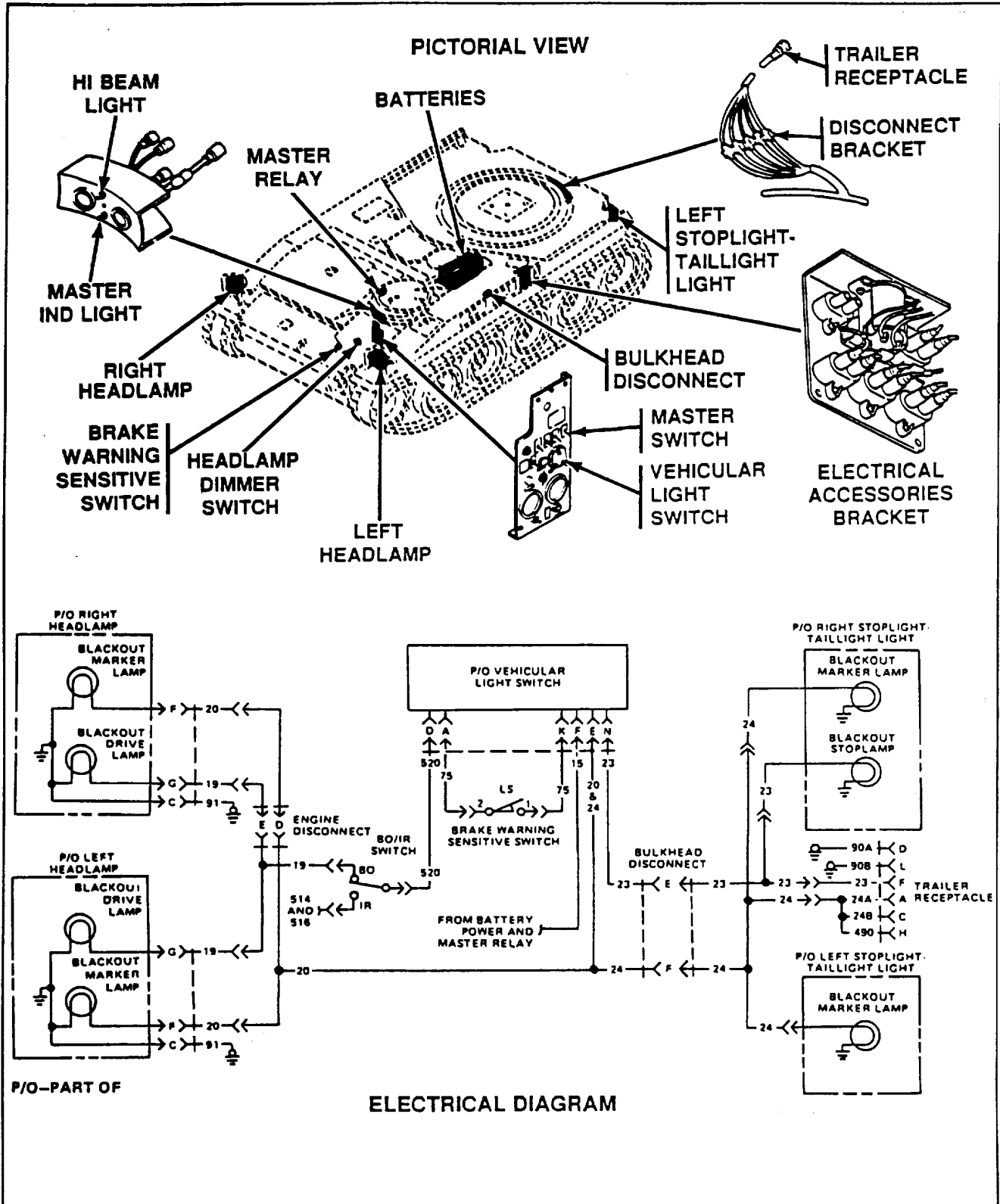
- Step 1.* Remove inoperative halogen lamp. Refer to page 2-589. Set MASTER switch ON. Set panel light switch ON. Unlock main light switch and place in blackout drive position. Place blackout infrared selection switch in blackout position. Place red probe in socket. Ground black probe. If multimeter indicates about 24 volts, replace halogen lamp. If multimeter indicates no voltage, set MASTER switch OFF, install halogen lamp and go to step 2.



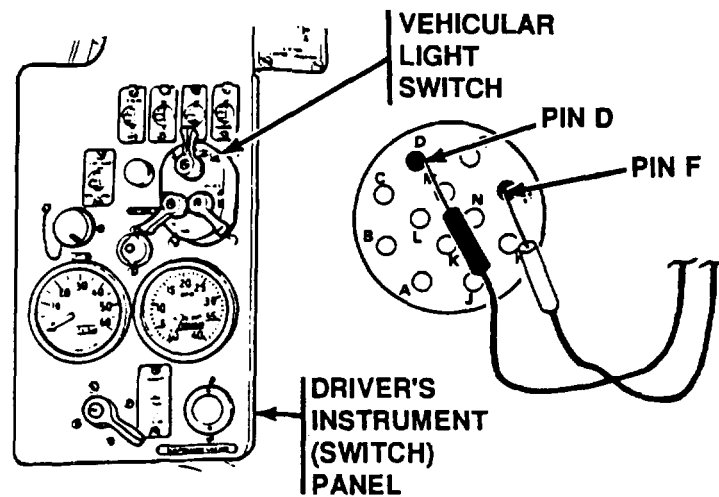
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 2.* To access line disconnect, remove transmission deck lid assembly. Refer to page 2-893. Disconnect lead 20. Place red probe in lead 20. Ground black probe. Set MASTER switch ON. Turn vehicular light switch to BO MARKER. If multimeter indicates about 24 volts, repair service headlamp assembly. Refer to page 2-589. If multimeter indicates no voltage, repair lead 20 between line disconnect and vehicular light switch. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF. Connect lead.

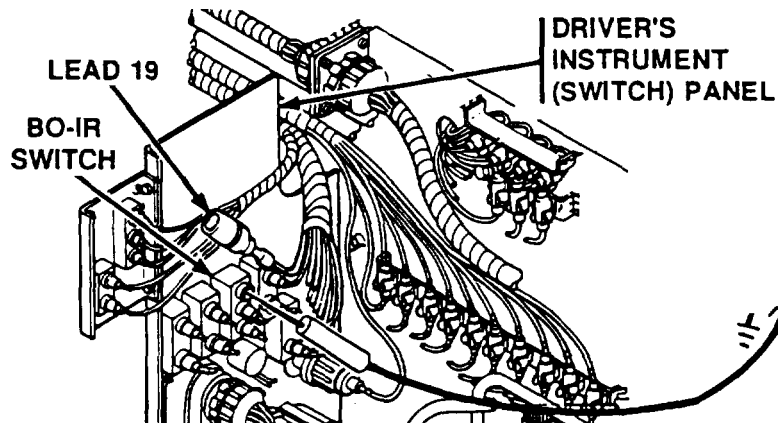
AO. BLACKOUT DRIVE HEADLAMP CIRCUIT (VEHICULAR LIGHT SWITCH).



2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

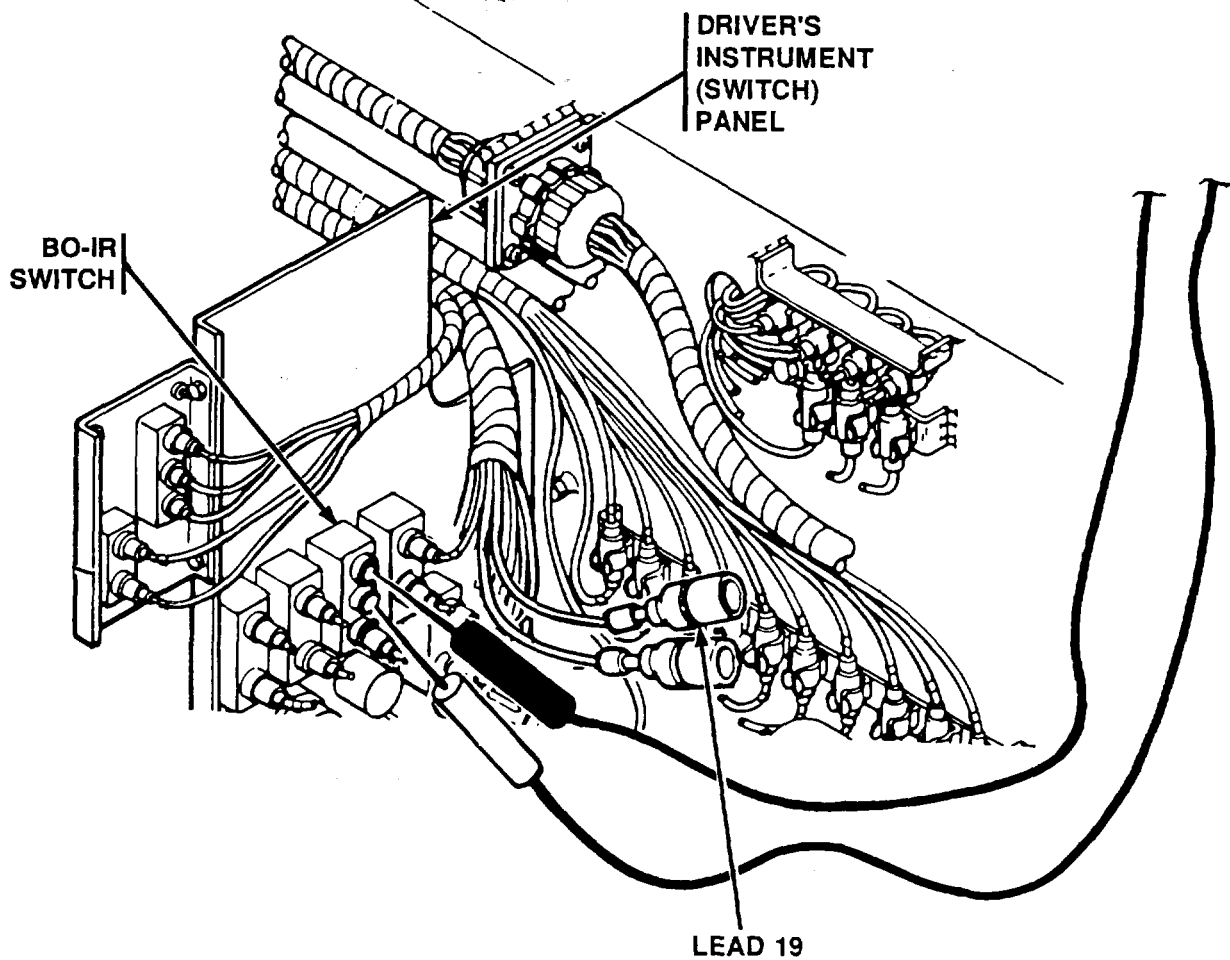


Step 1. Set MASTER switch OFF. Disconnect connector from vehicular light switch. Place red probe on pin F of vehicular light switch. Place black probe on pin D. If multimeter indicates 0 ohms, go to step 2. If multimeter indicates infinity, replace vehicular light switch. Refer to page 2-555. Connect connector to vehicular light switch.

**WARNING**

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

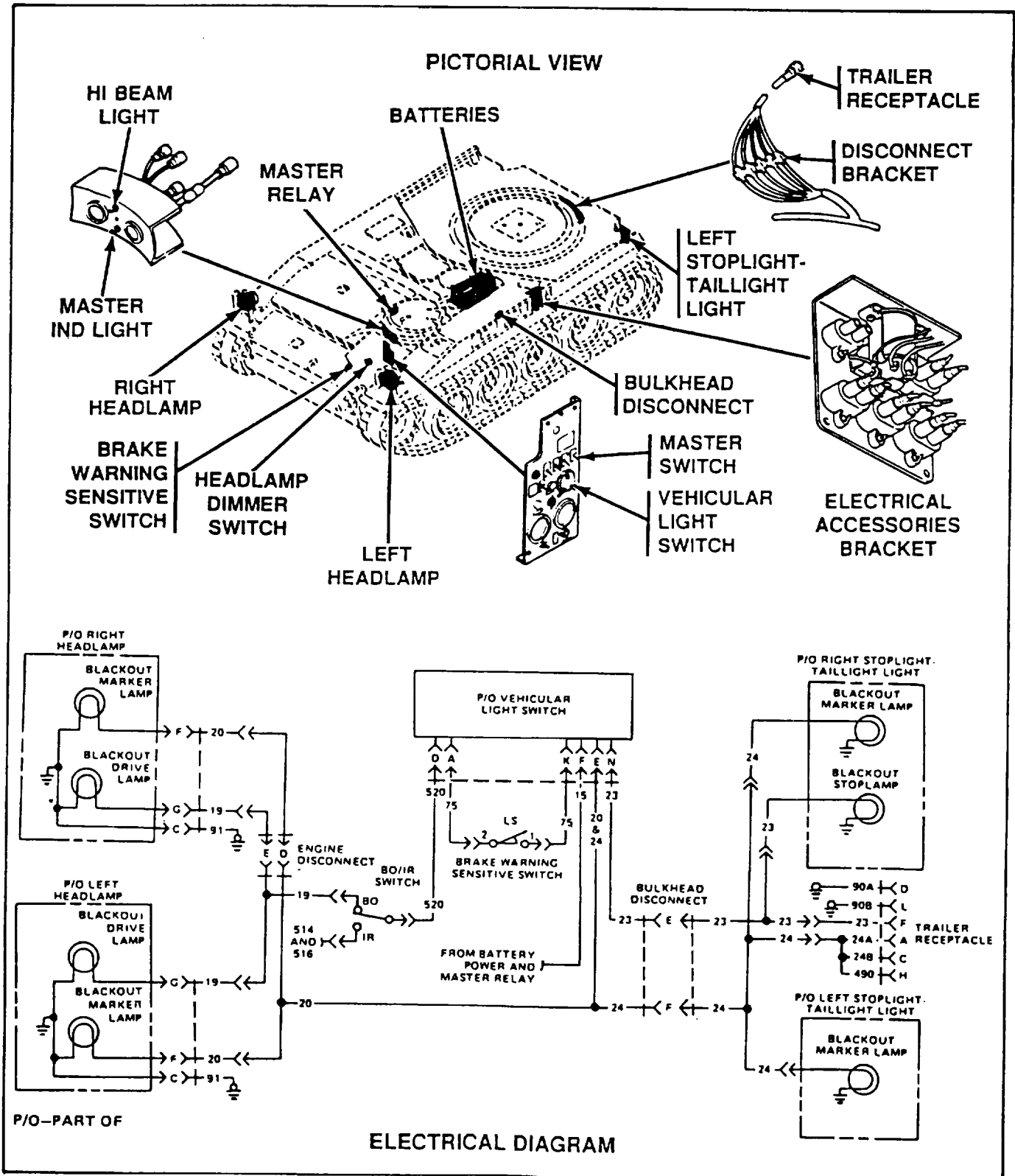
Step 2. Disconnect lead 19 from BO-IR switch. Place red probe in BO-IR switch connector. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, repair lead 19. Refer to page 2-364. If multimeter indicates no voltage, go to step 3. Set MASTER switch OFF. Connect lead.

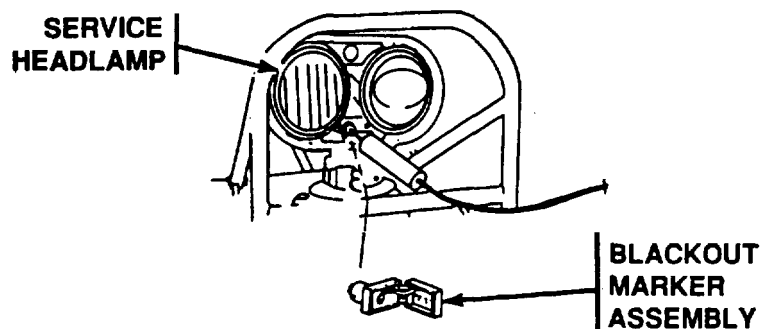


Step 3. Disconnect lead 19 and lead 520 from BO-IR switch. Connect multimeter between connector 19 and 520 on switch. If multimeter indicates 0 ohms, repair lead 520 between BO-IR switch and vehicular light switch. Refer to page 2-364. If multimeter indicates infinity, replace BO-IR switch. Refer to page 2-555. Connect leads.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

AP. BLACKOUT DRIVE HEADLAMP CIRCUIT (HEADLAMP ASSEMBLY).

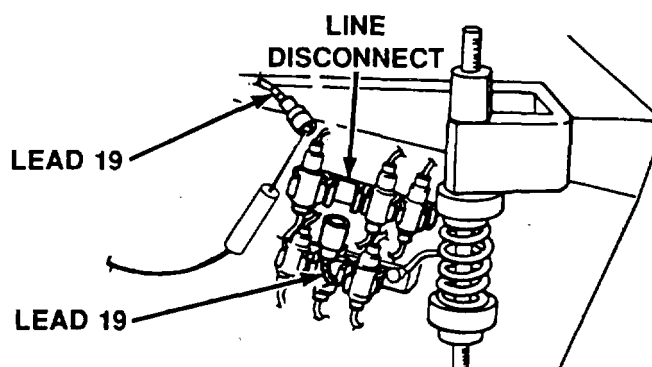




WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 1.* Remove blackout marker assembly from service headlamp. Refer to page 2-589. Set MASTER switch ON. Set panel light switch ON. Unlock main light switch and place in blackout drive position. Place blackout infrared selection switch in blackout position. Place red probe in socket. Ground black probe. If multimeter indicates about 24 volts, replace blackout marker assembly. If multimeter indicates no voltage, set MASTER switch OFF, install blackout marker assembly and go to step 2.



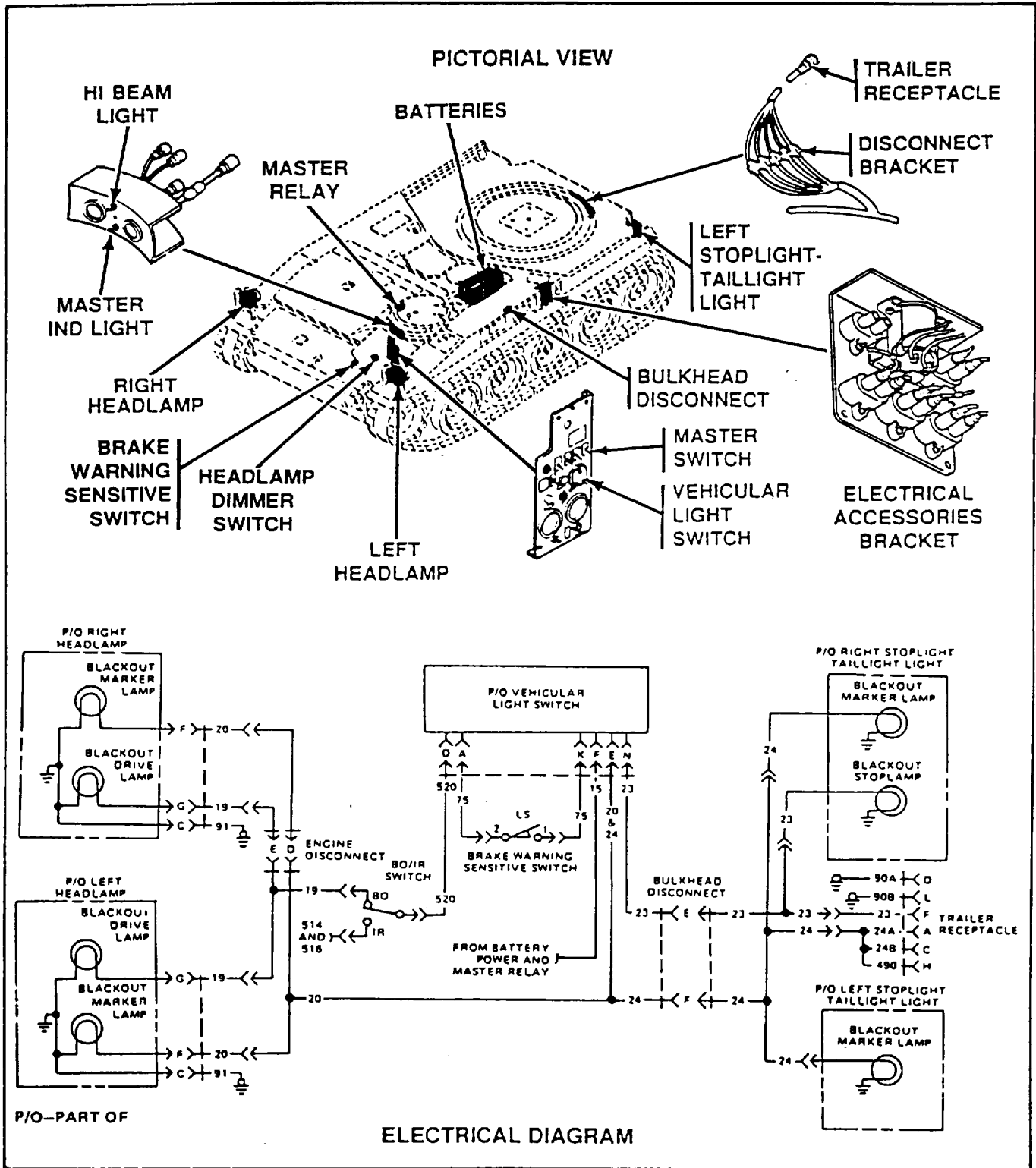
WARNING

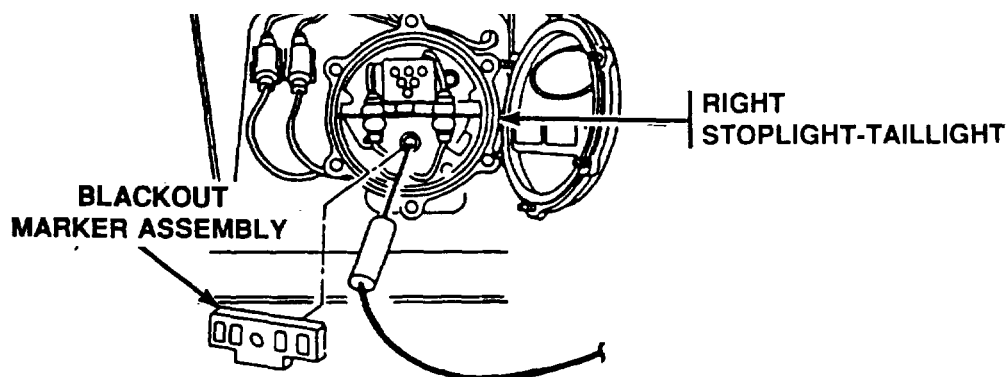
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 2.* To access line disconnect, remove transmission deck lid assembly. Refer to page 2-893. Disconnect lead 19. Place red probe in lead 19. Ground black probe. Set MASTER switch ON. Turn vehicular light switch to BO DRIVE. Set BO-IR switch to BO. If multimeter indicates about 24 volts, repair service headlamp assembly. Refer to page 2-589. If multimeter indicates no voltage, repair lead 19 between line disconnect and vehicular light switch. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF. Connect lead.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

AQ. BLACKOUT STOPLIGHT CIRCUIT

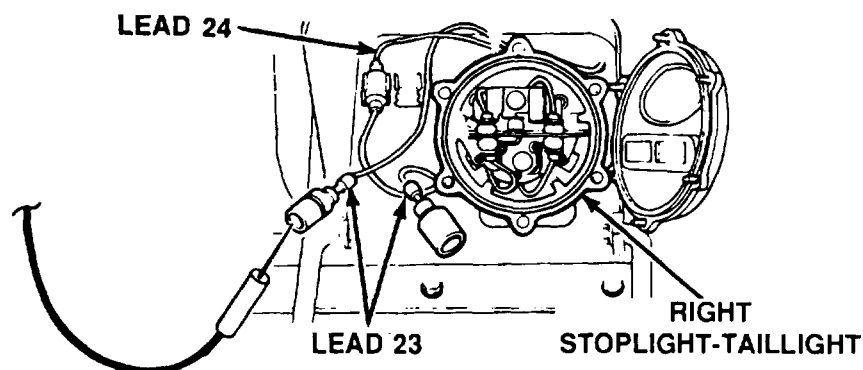




WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 1.* Remove blackout marker assembly from right stoplight-taillight. Refer to page 2-603. Set MASTER switch ON. Set panel light switch ON. Unlock main light switch and place in blackout drive position. Place blackout infrared selection switch in blackout position. Place red probe in socket. Ground black probe. If multimeter indicates about 24 volts, replace blackout marker assembly. If multimeter indicates no voltage, set MASTER switch OFF, install marker assembly and go to step 2.

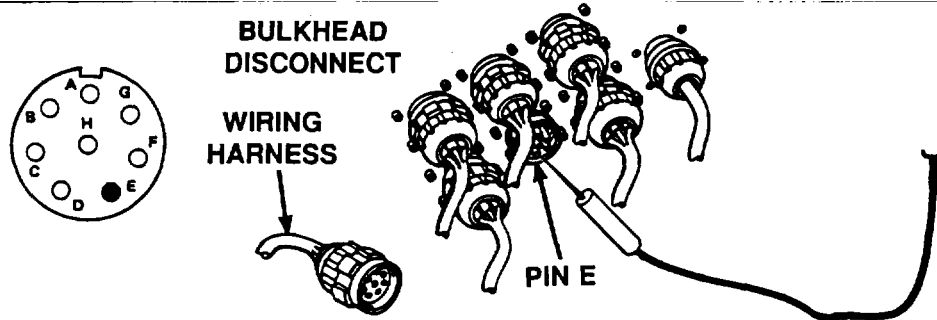


WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 2.* Disconnect lead 23 from right stoplight-taillight. Place red probe in lead 23. Ground black probe. Set MASTER switch ON. Turn vehicular light switch to BO STOP. Apply brakes. If multimeter indicates about 24 volts, repair right stoplight-taillight. Refer to page 2-603. If multimeter indicates no voltage, go to step 3. Set MASTER switch OFF. Turn vehicular light switch OFF. Connect lead.

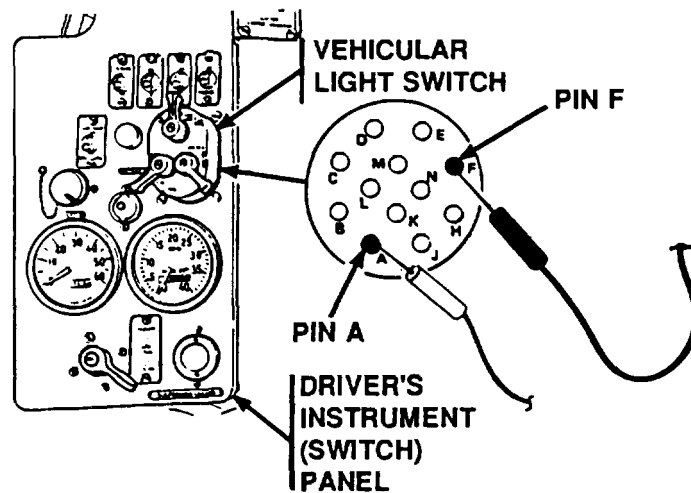
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).



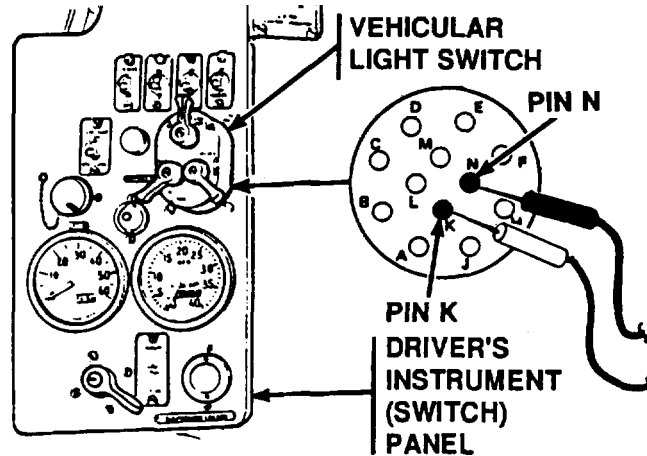
WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

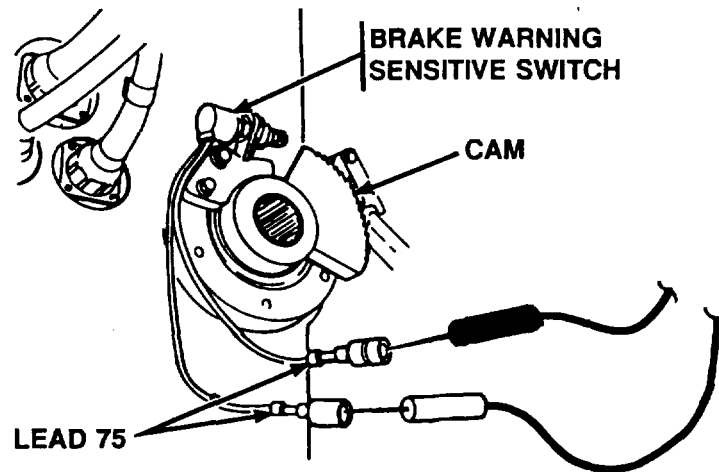
Step 3. To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness. Place red probe in pin E. Ground black probe. Set MASTER switch ON. Turn vehicular light switch to BO STOP. Apply brakes. If multimeter indicates about 24 volts, repair lead 23 between bulkhead disconnect and right stoplight-taillight. Refer to page 2-364. If multimeter indicates no voltage, go to step 4. Set MASTER switch OFF. Turn vehicular light switch OFF. Connect wiring harness.



Step 4. Place red probe on pin A. Place black probe on pin F. Turn vehicular light switch to BO STOP. If multimeter indicates 0 ohms, go to step 5. If multimeter indicates infinity, replace vehicular light switch. Refer to page 2-555. Connect connector to vehicular light switch.



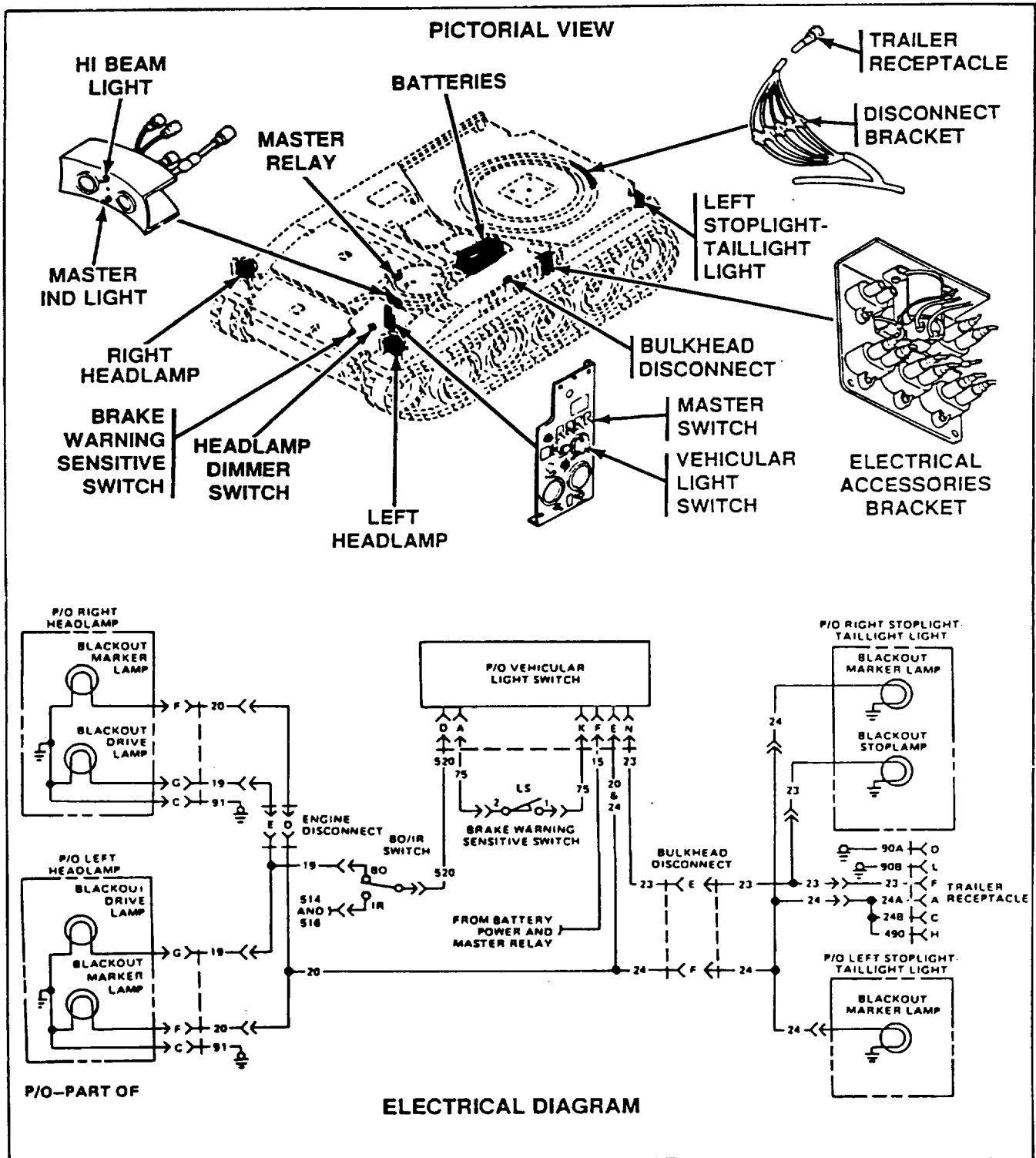
Step 5. Place red probe on pin K. Place black probe on pin N. If multimeter indicates 0 ohms, go to step 6. If multimeter indicates infinity, replace vehicular light switch. Refer to page 2-555. Connect connector to vehicular light switch.

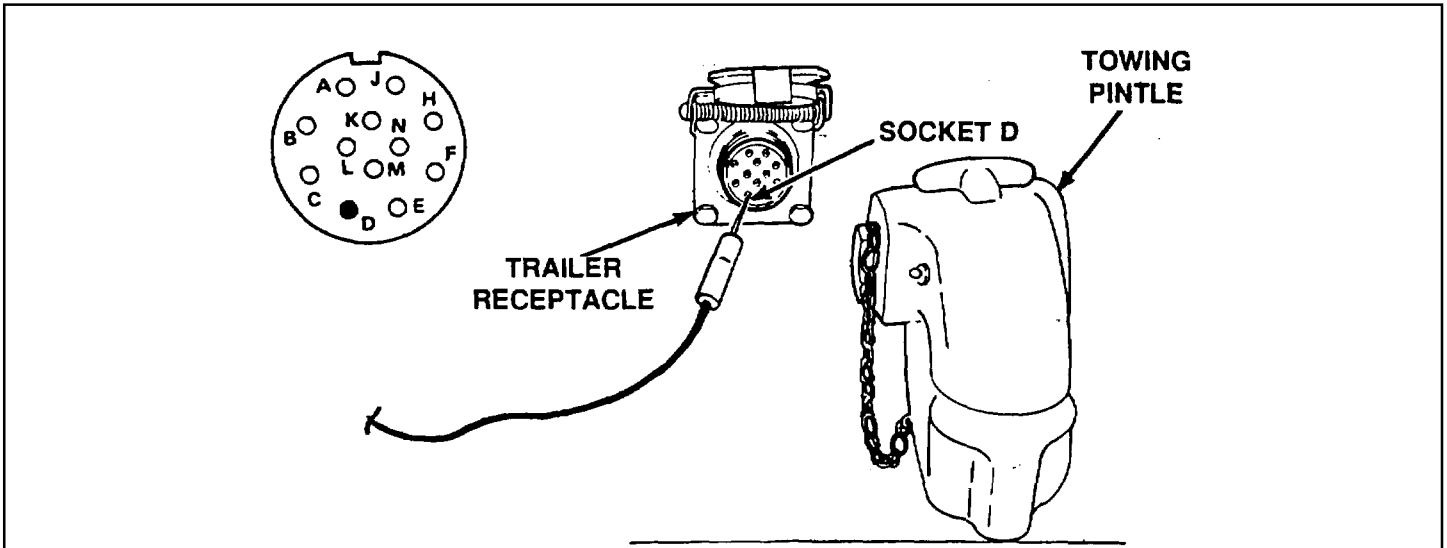


Step 6. Disconnect both leads 75 from brake warning sensitive switch. Connect multimeter to brake warning sensitive switch leads. Apply brakes. If multimeter indicates 0 ohms, repair lead 75 between brake warning sensitive switch and vehicular light switch. If multimeter indicates infinity, replace brake warning sensitive switch. Refer to page 2-612. Connect leads to brake warning sensitive switch.

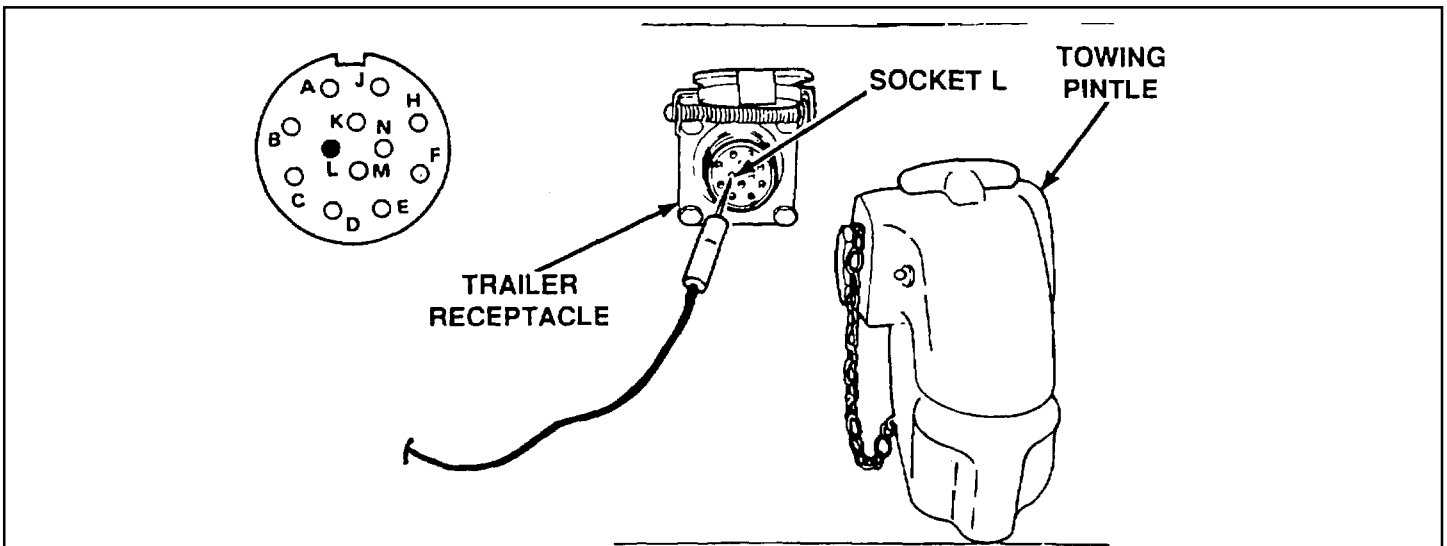
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

AR. TRAILER RECEPTACLE BLACKOUT CIRCUIT.



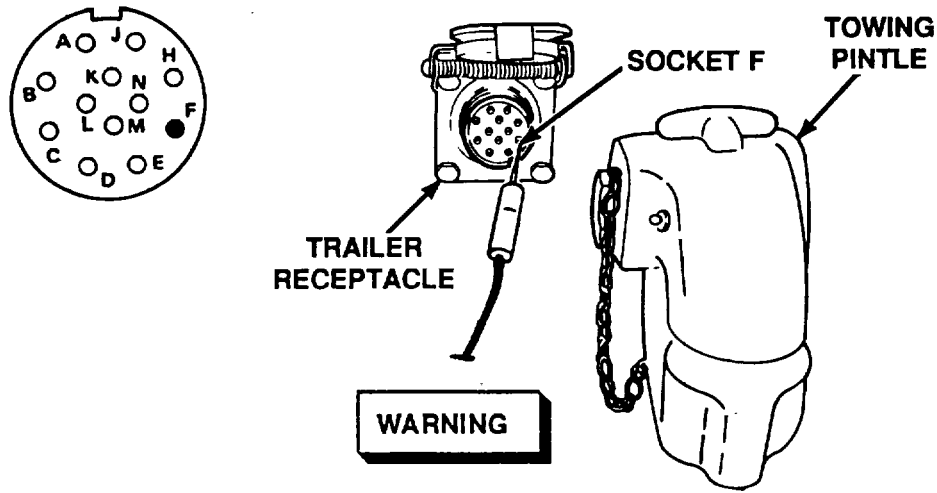


Step 1. Set MASTER switch OFF. Place red probe in socket D (lead 90A) of trailer receptacle. Ground black probe. If multimeter indicates 0 ohms, go to step 2. If multimeter indicates infinity, repair lead 90A. Refer to page 2-364.



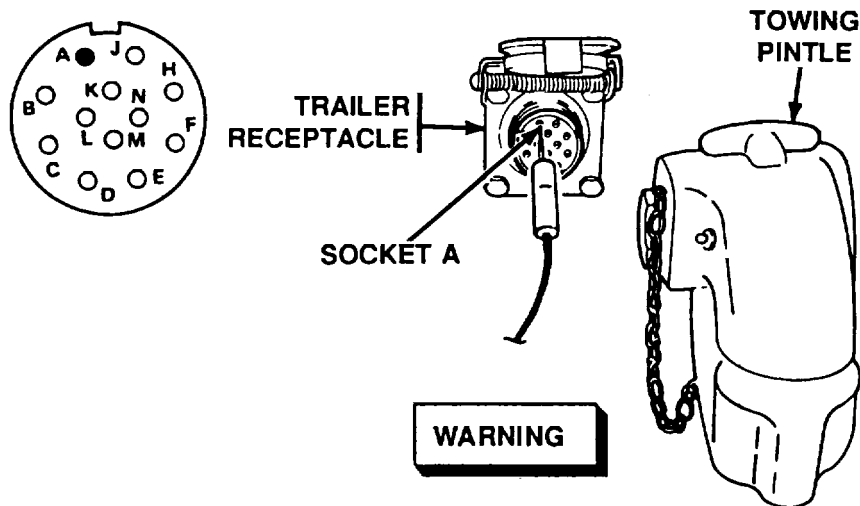
Step 2. Place red probe in socket L (lead 90B). Ground black probe. If multimeter indicates 0 ohms, go to step 3. If multimeter indicates infinity, repair lead 90B. Refer to page 2-364.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).



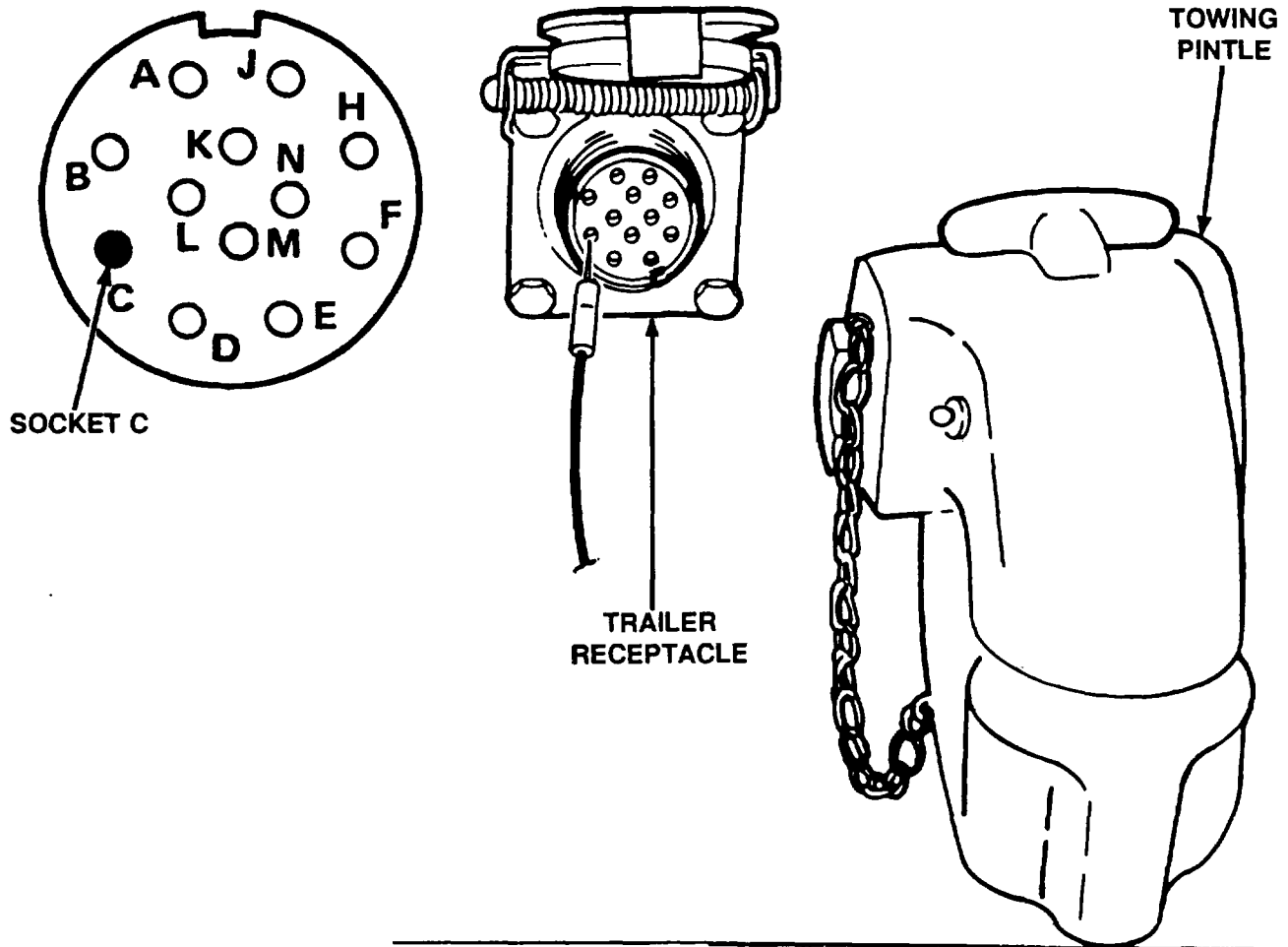
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 3. Place red probe in socket F (lead 23). Ground black probe. Set MASTER switch ON. Turn vehicular light switch to BO DRIVE. Apply brakes. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 23. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF.



Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 4. Place red probe in socket A (lead 24A). Ground black probe. Set MASTER switch ON. Turn vehicular light switch to BO MARKER. If multimeter indicates about 24 volts, go to step 5. If multimeter indicates no voltage, repair lead 24A. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF.



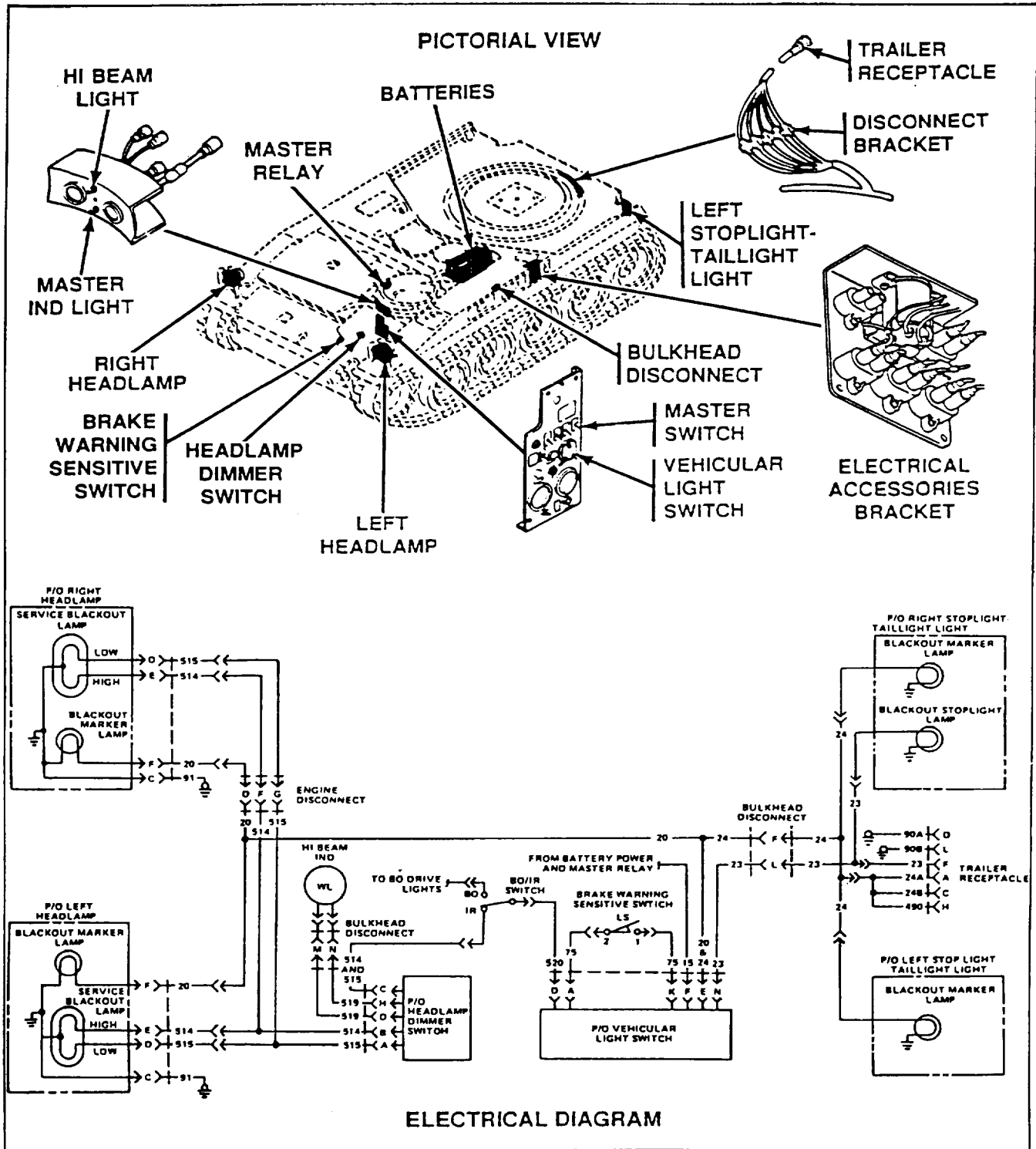
WARNING

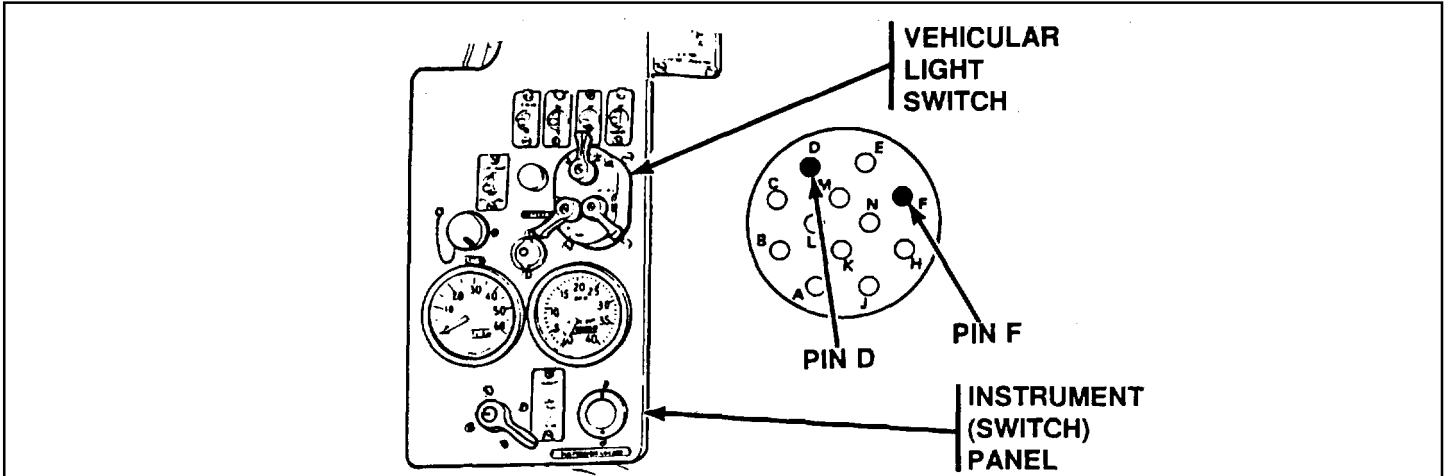
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 5. Place red probe in socket C (lead 24B). Ground black probe. Set MASTER switch ON. Turn vehicular light switch to BO MARKER. If multimeter indicates about 24 volts, trailer receptacle is operating normally. If multimeter indicates no voltage, repair lead 24B. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF.

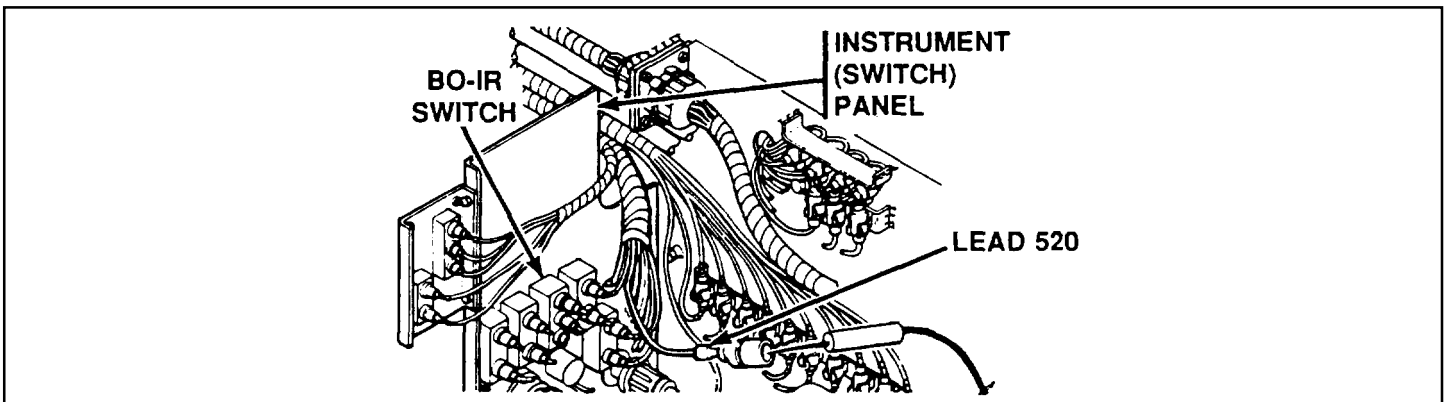
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

AS. SERVICE BLACKOUT (INFRARED) HEADLAMP CIRCUIT (BO-IR AND VEHICULAR LIGHT SWITCHES).





Step 1. Set MASTER switch OFF. Disconnect connector from vehicular light switch. Place red probe on pin D. Place black probe on pin F. Turn vehicular light switch to BO DRIVE. If multimeter indicates 0 ohms, go to step 2. If multimeter indicates infinity, replace vehicular light switch. Refer to page 2-555. Turn vehicular light switch OFF. Connect connector to vehicular light switch.

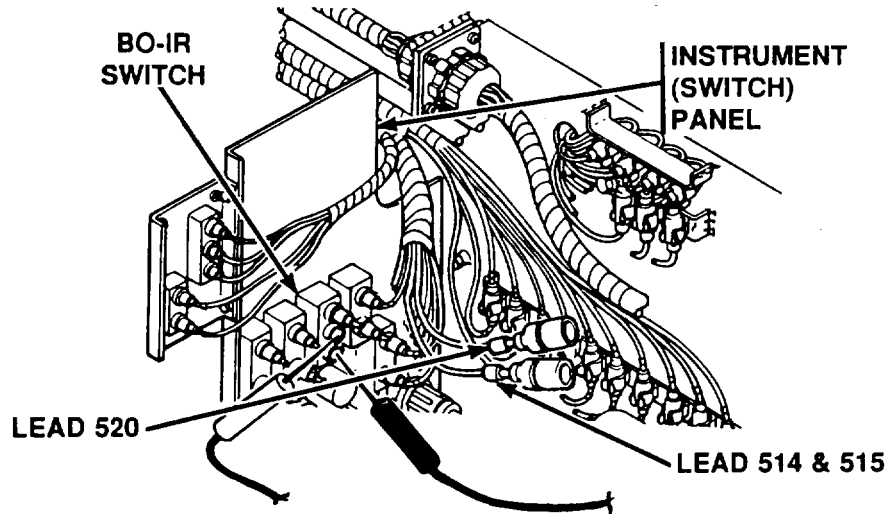


WARNING

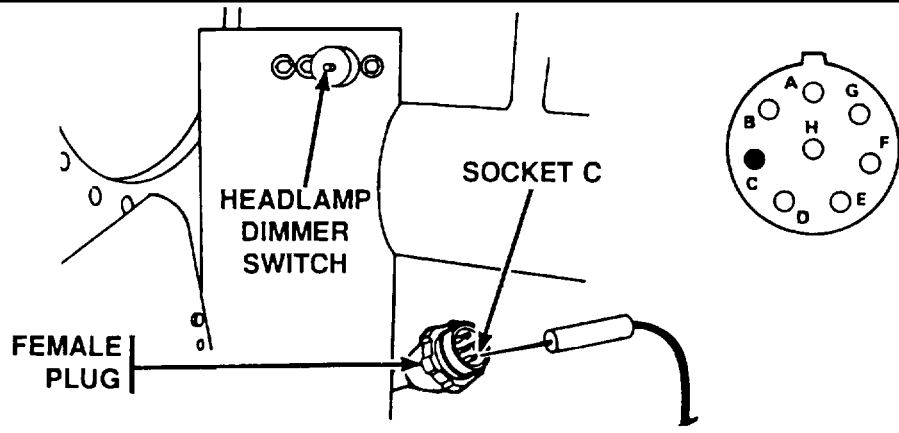
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 2. Disconnect lead 520 from BO-IR switch. Place red probe in lead 520. Ground black probe. Set MASTER switch ON. Turn vehicular light switch to BO DRIVE. Set BO-IR switch to IR. If multimeter indicates about 24 volts, connect lead and go to step 3. If multimeter indicates no voltage, repair lead 520 between BO-IR switch and vehicular light switch. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).



Step 3. Disconnect lead 514&515 and 520 from BO-IR switch. Place both probes in switch. If multimeter indicates 0 ohms, go to step 4. If multimeter indicates infinity, replace BO-IR switch. Refer to page 2-555. Connect leads.

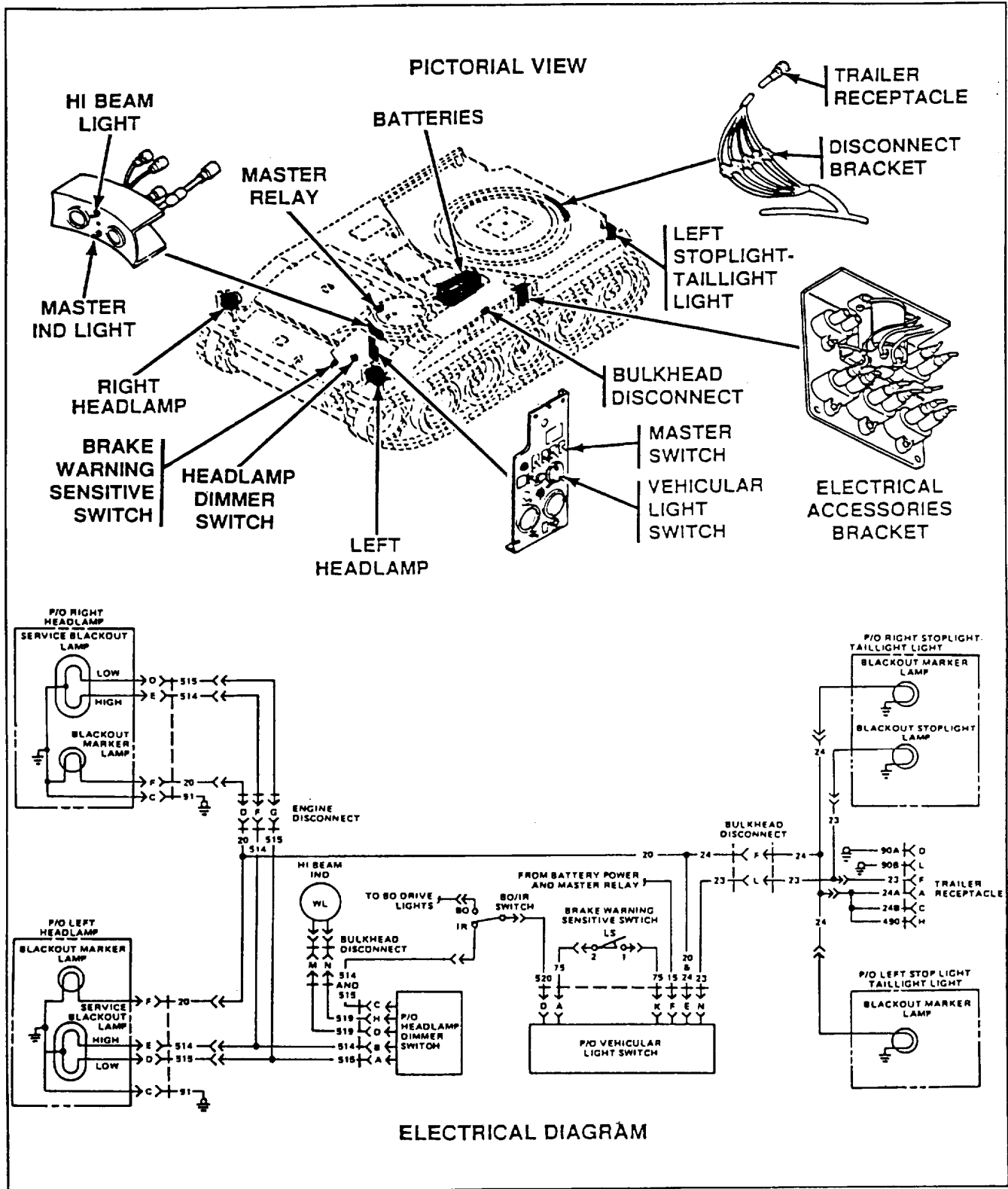


WARNING

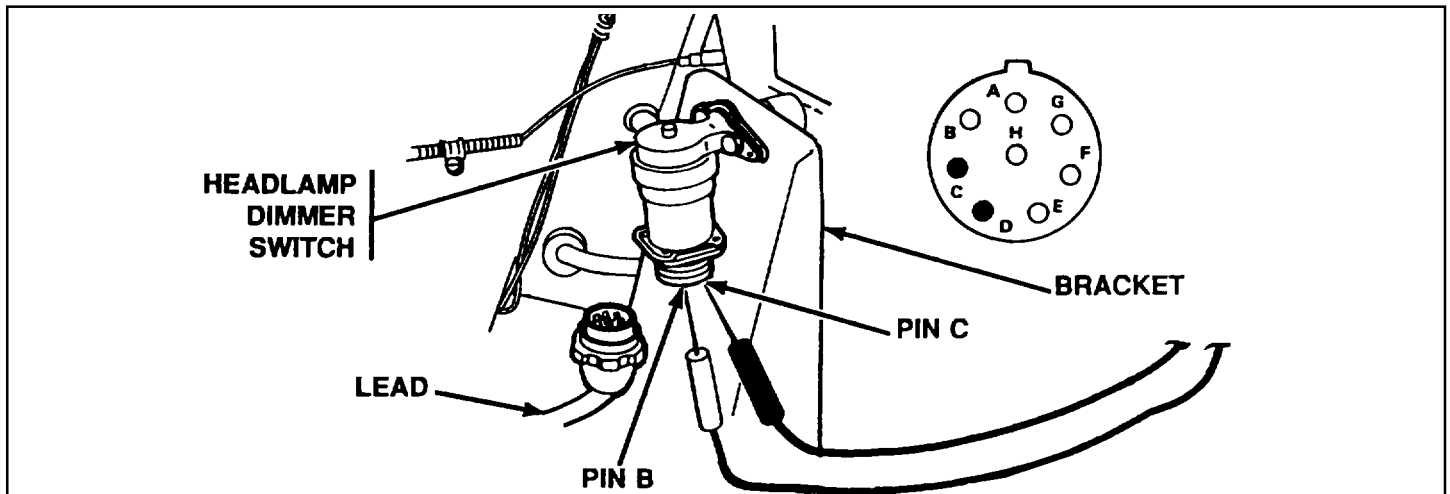
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 4. Disconnect connector to headlamp dimmer switch. Place red probe in pin socket C (lead 514&515). Ground black probe. Set MASTER switch ON. Turn vehicular light switch to BO DRIVE. If multimeter indicates about 24 volts, replace headlamp dimmer switch. Refer to page 2-572. If multimeter indicates no voltage, repair lead 514&515 between BO-IR switch and headlamp dimmer switch. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF. Connect connector to headlamp dimmer switch.

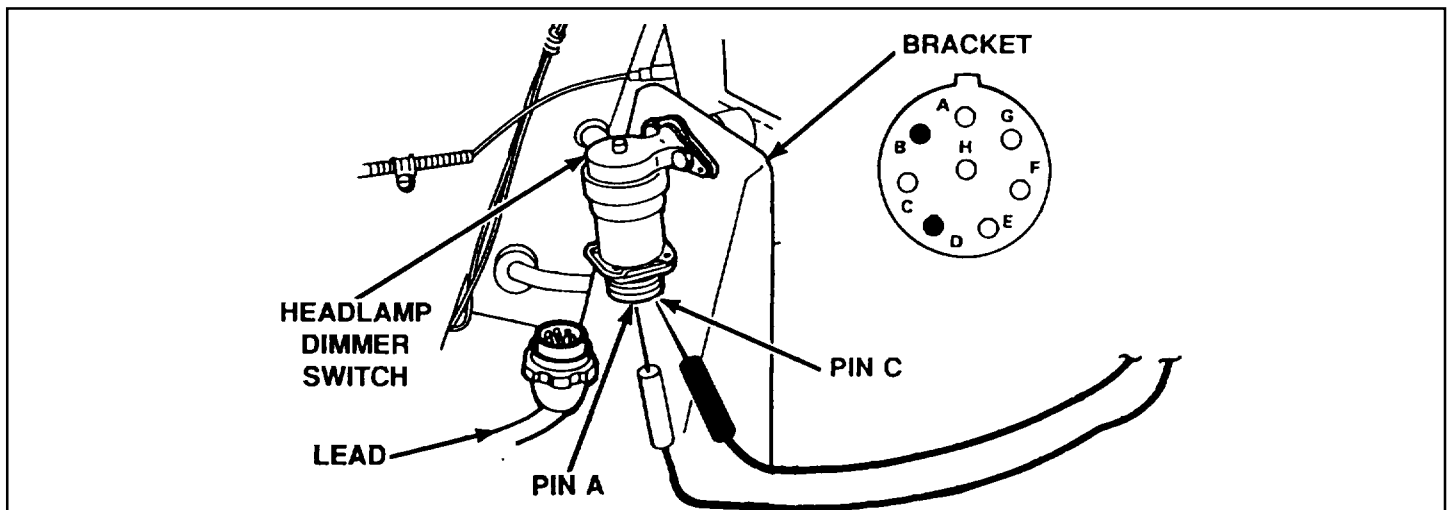
AT. SERVICE BLACK OUT (INFRARED) HEADLAMP CIRCUIT (HEADLAMP DIMMER SWITCH).



2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

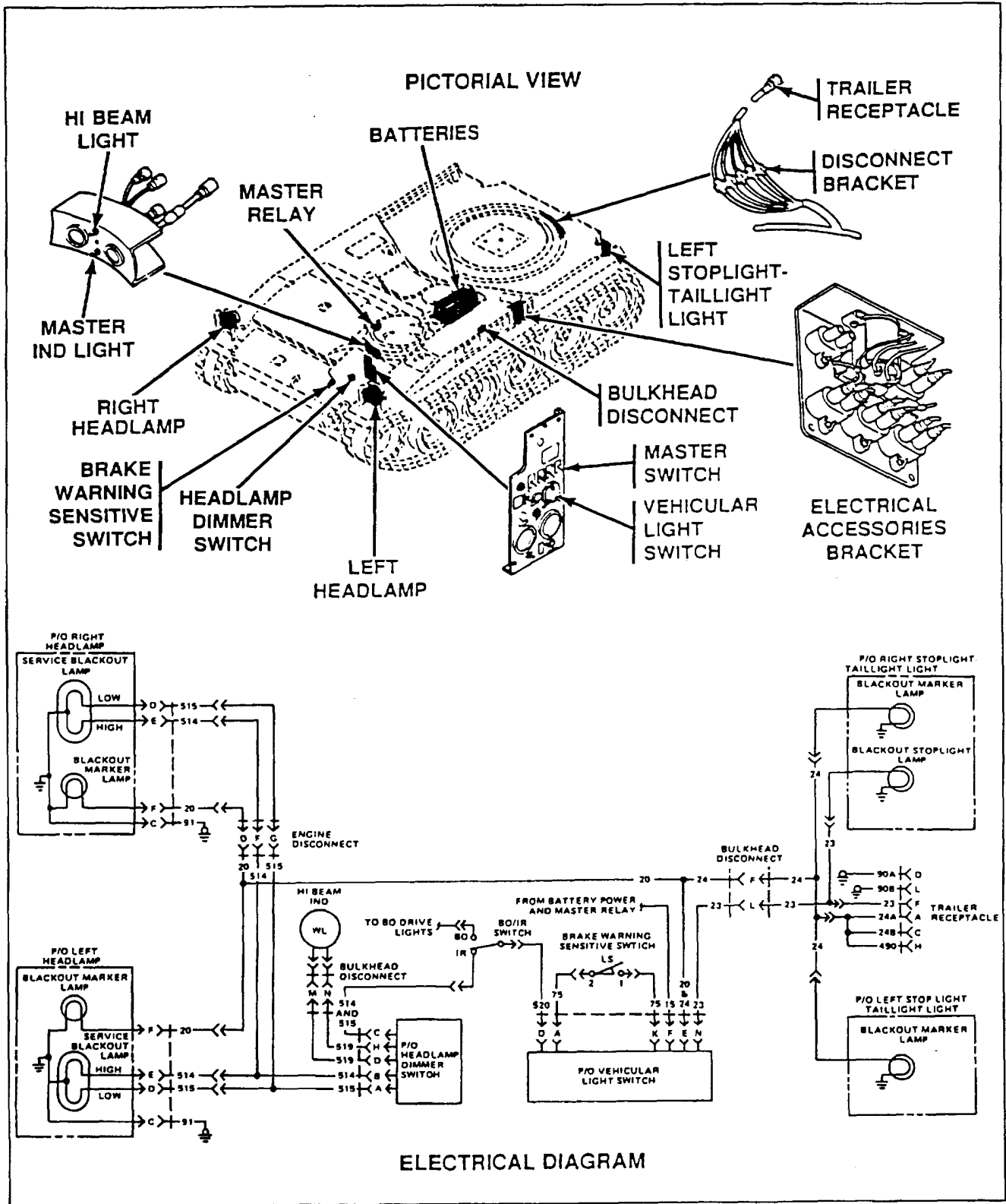


Step 1. Set MASTER switch OFF. Set headlamp dimmer switch for high beam operation. Disconnect connector from headlamp dimmer switch. Place red probe on pin B. Place black probe on pin C. If multimeter indicates 0 ohms, repair lead 514 between headlamp line disconnect and headlamp dimmer switch. Refer to page 2-364. If multimeter indicates infinity, replace headlamp dimmer switch. Refer to page 2-572. Connect connector to headlamp dimmer switch.

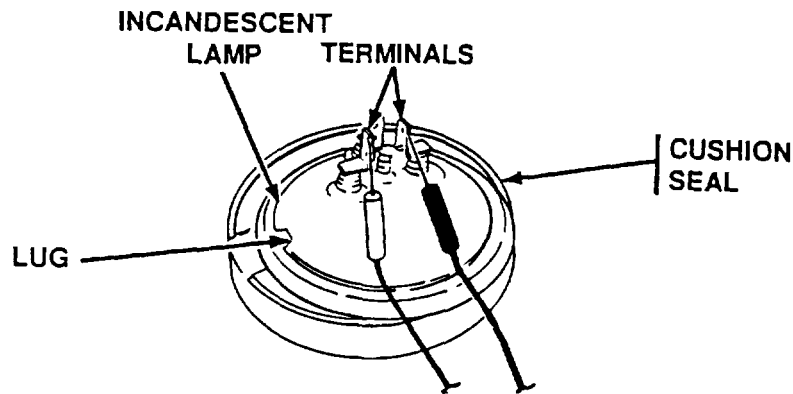


Step 2. Set MASTER switch OFF. Set headlamp dimmer switch for low beam operation. Disconnect connector from headlamp dimmer switch. Place red probe on pin A. Place black probe on pin C. If multimeter indicates 0 ohms, repair lead 515 between headlamp line disconnect and headlamp dimmer switch. Refer to page 2-364. If multimeter indicates infinity, replace headlamp dimmer switch. Refer to page 2-572. Connect connector to headlamp dimmer switch.

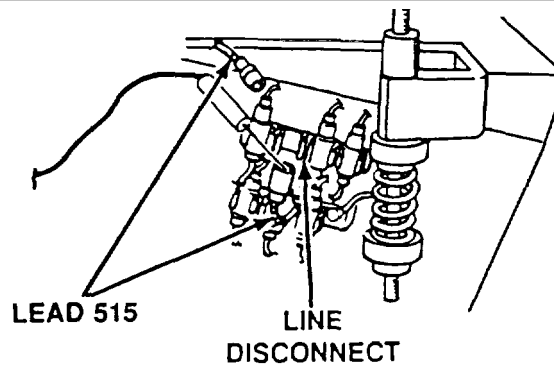
AU. SERVICE BLACKOUT (INFRARED) HEADLAMP CIRCUIT (LEAD 515).



2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).



Step 1. Set MASTER switch OFF. Remove inoperative lamp from service headlamp. Refer to page 2-589. Connect multimeter to the parallel lamp terminals. If multimeter indicates about 2 ohms, go to step 2. If multimeter indicates infinity, replace lamp. Refer to page 2-589.

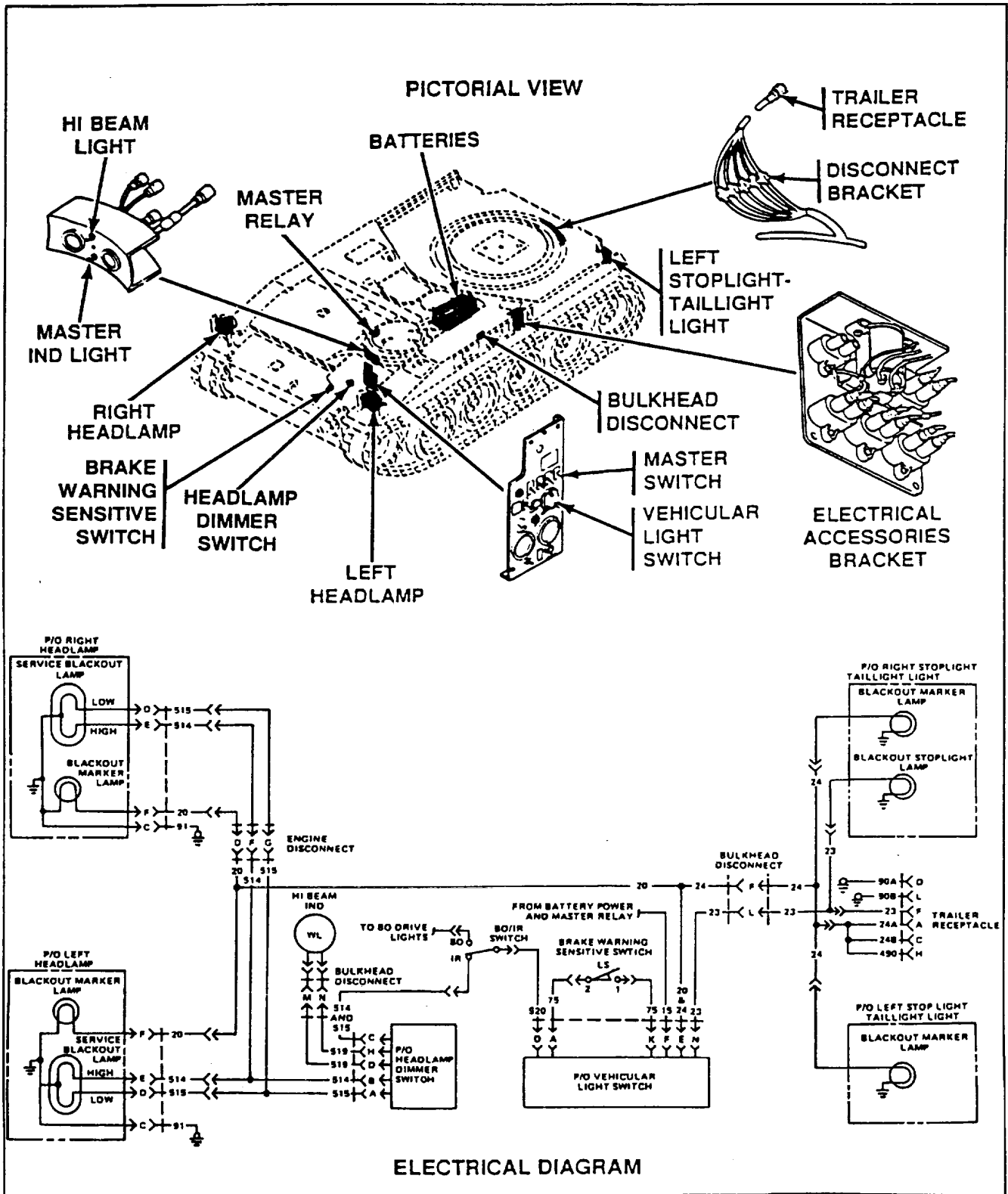


WARNING

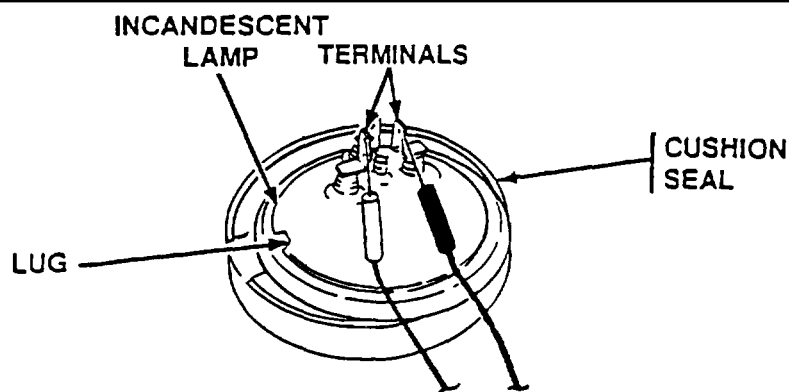
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 2. To access line disconnect, remove transmission deck lid assembly. Refer to page 2-911. Disconnect lead 515. Place red probe in lead 515. Ground black probe. Press headlamp dimmer switch for low beam operation. Set MASTER switch ON. Turn vehicular light switch to BO DRIVE. Set BO-IR switch to IR. If multimeter indicates about 24 volts, repair service headlamp assembly. Refer to page 2-589. If multimeter indicates no voltage, repair lead 515 from line disconnect to headlamp dimmer switch. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF.

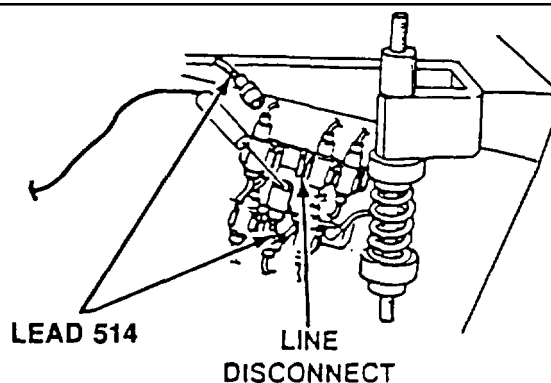
AV. SERVICE BLACKOUT (INFRARED) HEADLAMP CIRCUIT (LEAD 514).



2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).



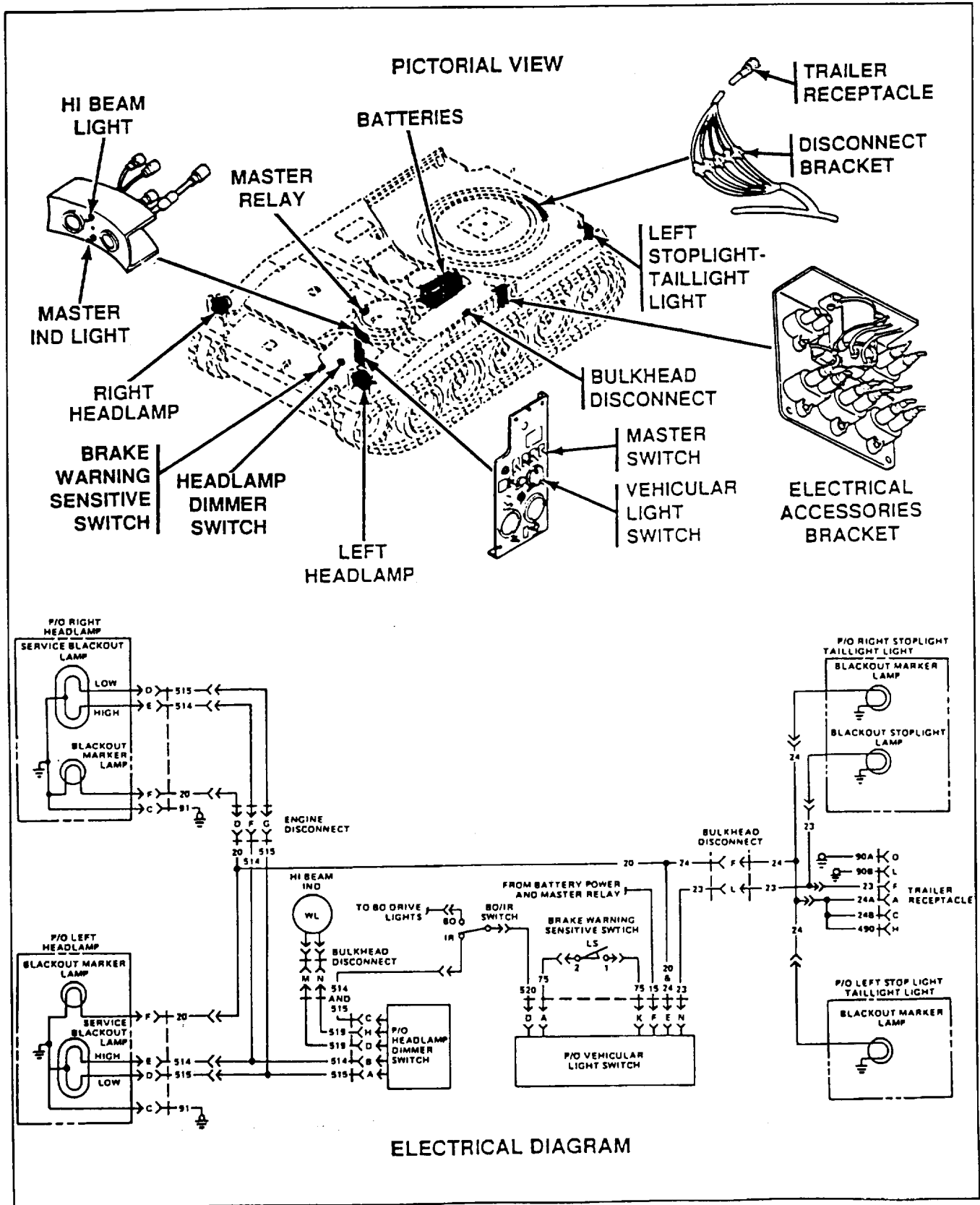
Step 1. Set MASTER switch OFF. Remove inoperative lamp from service headlamp. Refer to page 2-589. Connect multimeter to the parallel lamp terminals. If multimeter indicates about 1 ohm, go to step 2. If multimeter indicates infinity, replace lamp. Refer to page 2-589.

**WARNING**

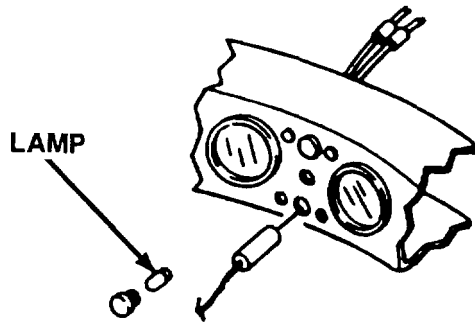
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 2. To access line disconnect, remove transmission deck lid assembly. Refer to page 2-911. Disconnect lead 514. Place red probe in lead 514. Ground black probe. Press headlamp dimmer switch for high beam operation. Set MASTER switch ON. Turn vehicular light switch to BO DRIVE. Set BO-IR switch to IR. If multimeter indicates about 24 volts, repair service headlamp assembly. Refer to page 2-589. If multimeter indicates no voltage, repair lead 514 from line disconnect to headlamp dimmer switch. Refer to page 2-364. Set MASTER switch OFF. Turn vehicular light switch OFF. Connect lead.

AW. HI BEAM IND LIGHT CIRCUIT (BLACKOUT).



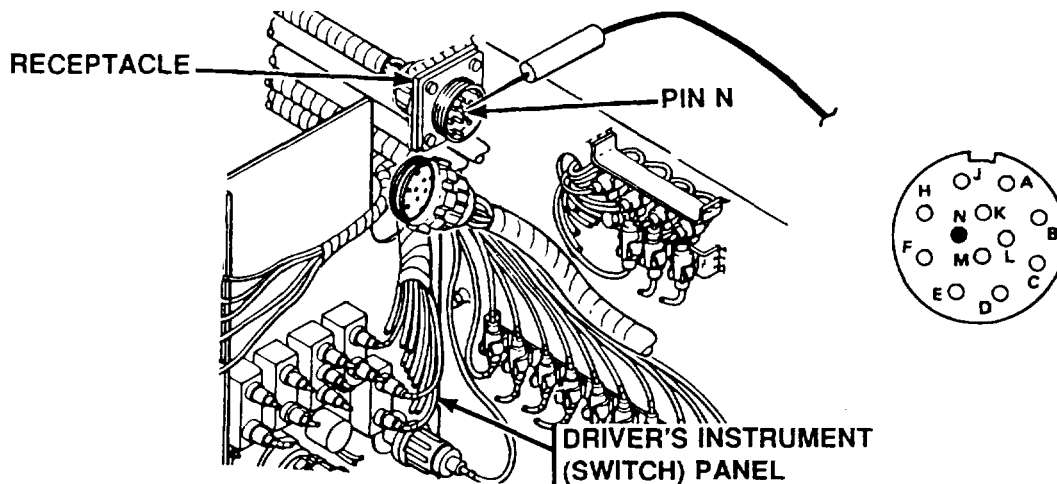
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



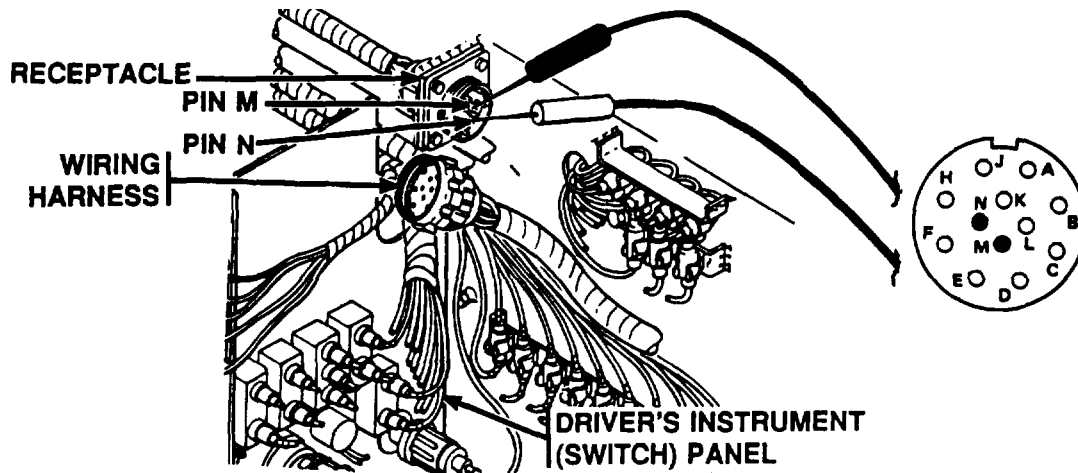
WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

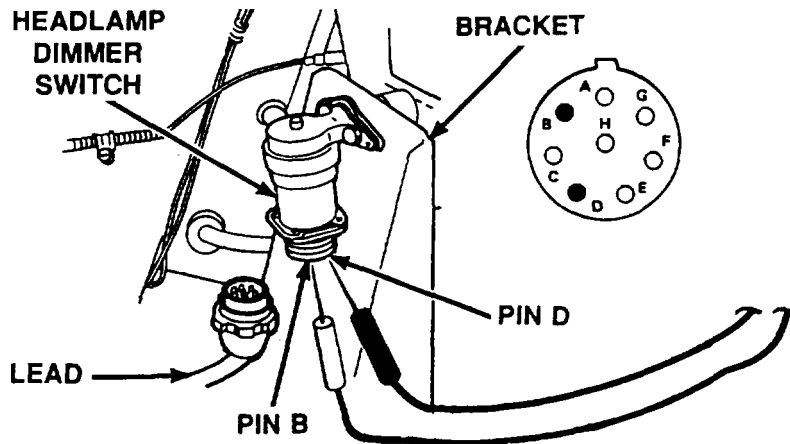
- Step 1. Remove lamp from HI BEAM IND. Refer to page 2-560. Set MASTER switch ON. Place blackout infrared selector switch in infrared position and infrared receiver switch in ON position. Press dimmer switch on floor. Place instrument switch in ON position. Place red probe in socket. Ground black probe. If multimeter indicates about 24 volts, replace LED. If multimeter indicates no voltage, set MASTER switch OFF, install lamp and go to step 2.



- Step 2. Disconnect instrument (gage) panel wiring harness. Place red probe on receptacle pin N (lead 519). Ground black probe. Set MASTER switch ON. Turn vehicular light switch to SER DRIVE. Press headlamp dimmer switch I for high beam operation. If multimeter indicates about 24 volts, connect wiring harness and go to step 4. If multimeter indicates no voltage, go to step 3.



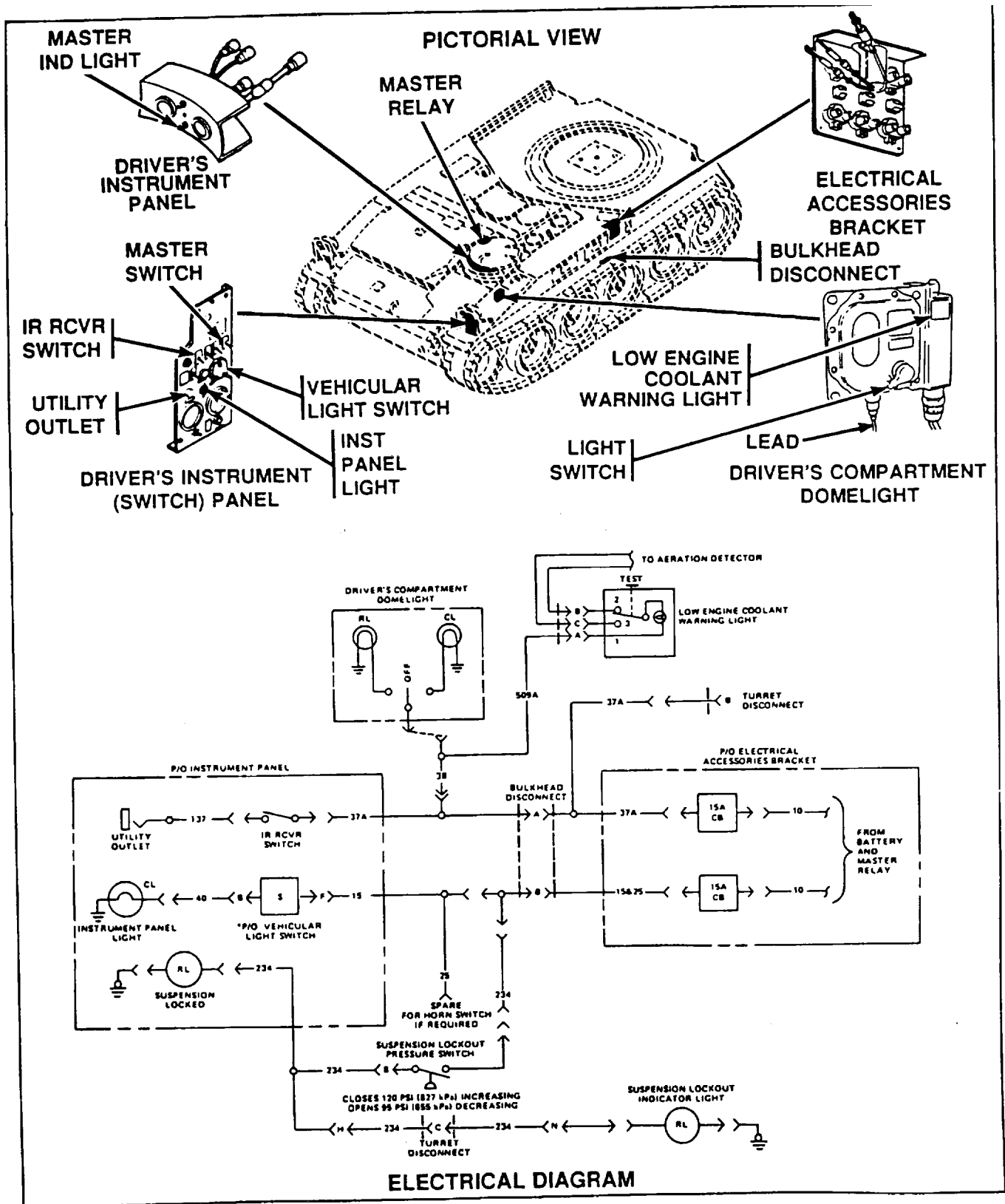
Step 3. Place red probe on receptacle pin N (lead 519). Place black probe on receptacle pin M (lead 519). If multimeter indicates about 100 ohms, replace headlamp dimmer switch. Refer to page 2-572. If multimeter does not indicate about 100 ohms, repair HI BEAM IND light. Refer to page 2-560. Connect wiring harness.

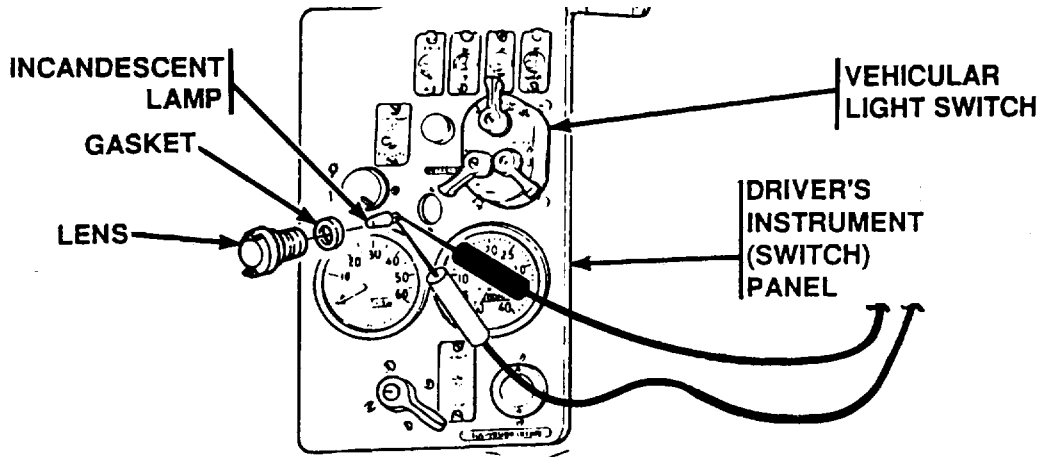


Step 4. Disconnect connector from headlamp dimmer switch. Place red probe on pin B. Place black probe on pin D. If multimeter indicates 0 ohms, repair lead 519 between headlamp dimmer switch and instrument (gage) panel wiring harness receptacle. Refer to page 2-364. If multimeter indicates infinity, replace headlamp dimmer switch. Refer to page 2-572. Connect connector to headlamp dimmer switch.

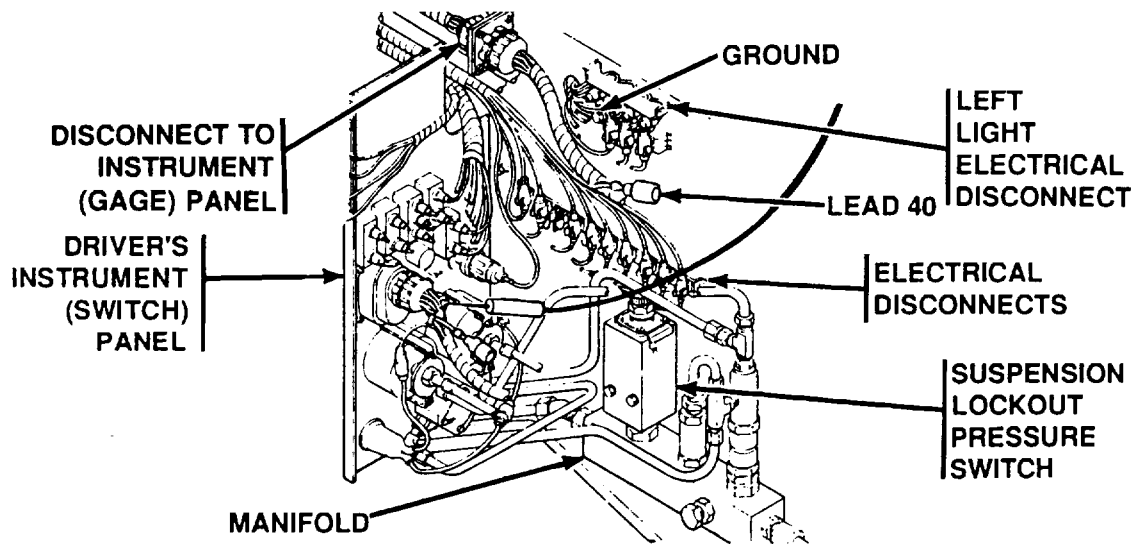
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

AX. INSTRUMENT (SWITCH) PANEL LIGHT CIRCUIT.





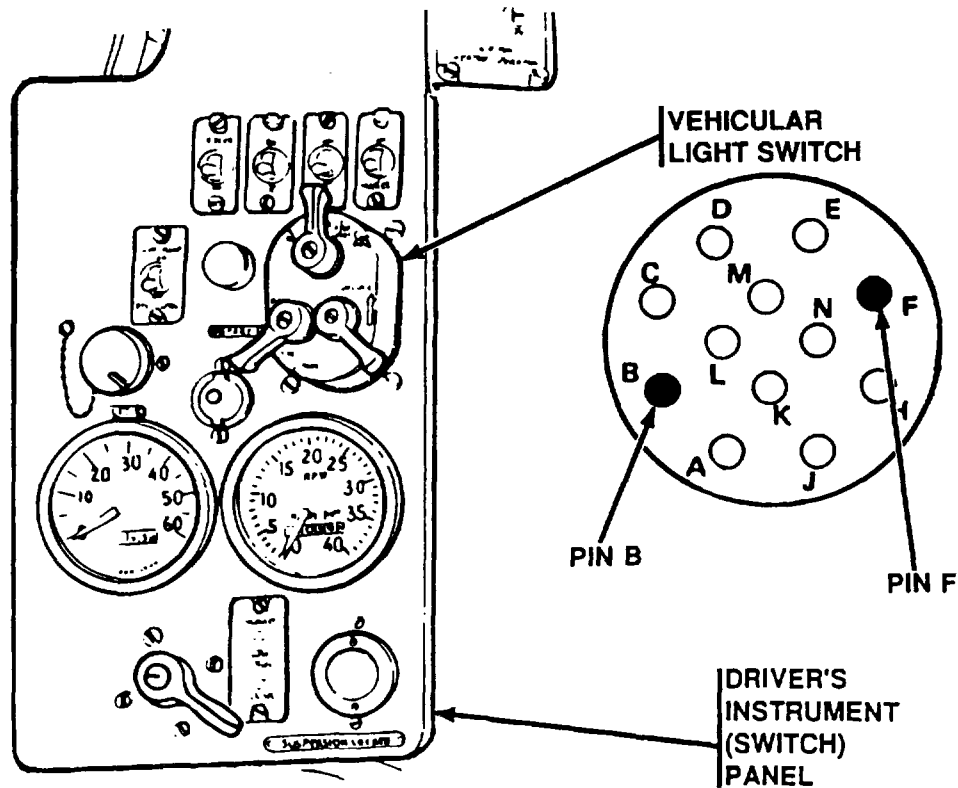
Step 1. Set MASTER switch OFF. Remove lamp from instrument (switch) panel light. Refer to page 2-568. Connect multimeter to contacts of lamp. If multimeter indicates about 70 ohms, go to step 2. If multimeter indicates infinity, replace lamp. Refer to page 2-568. Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.



WARNING

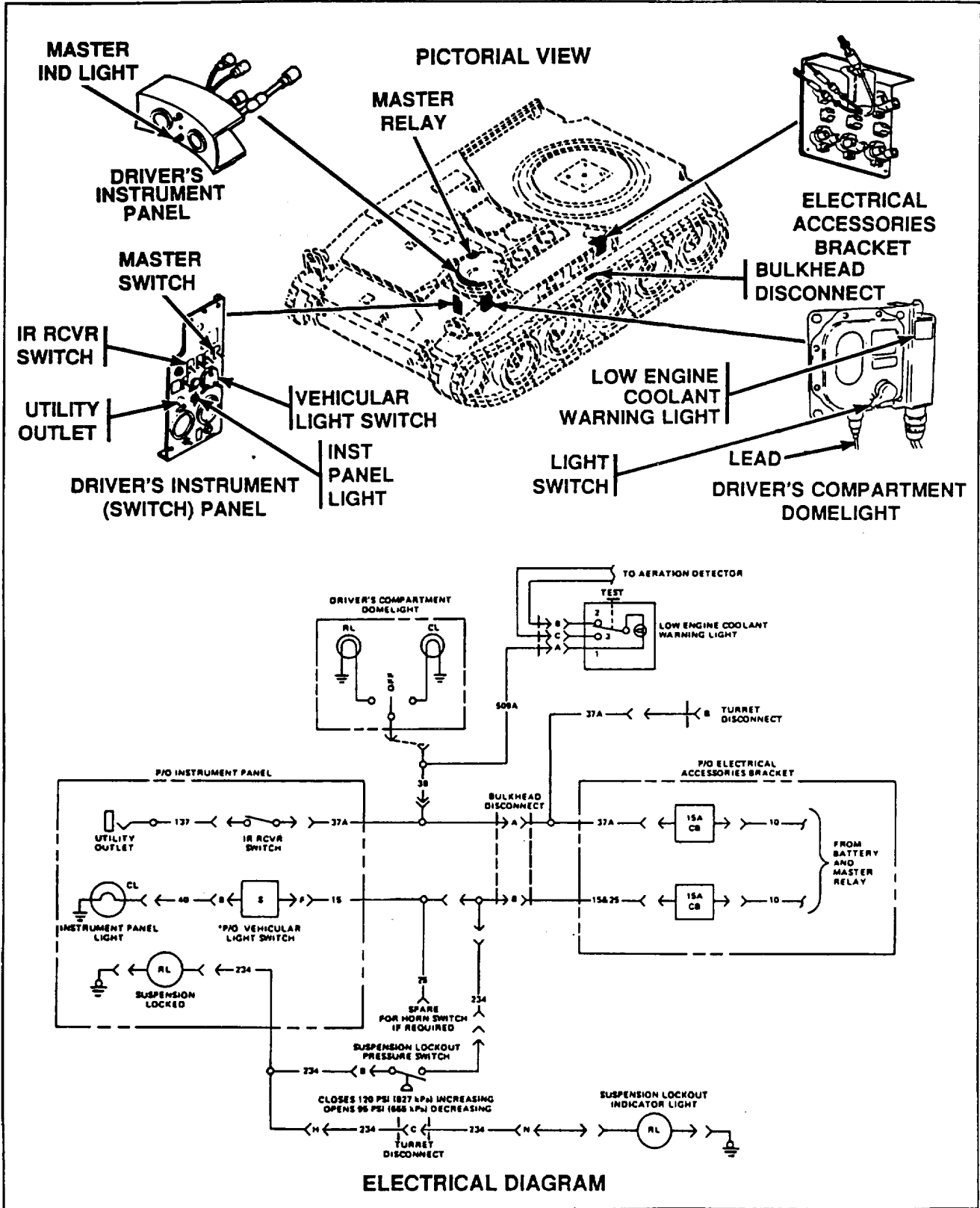
Step 2. Disconnect lead 40 from instrument (switch) panel light. Place red probe in lead 40. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, repair instrument (switch) panel light assembly. Refer to page 2-555. If multimeter indicates no voltage, go to step 3. Set MASTER switch OFF. Connect lead.

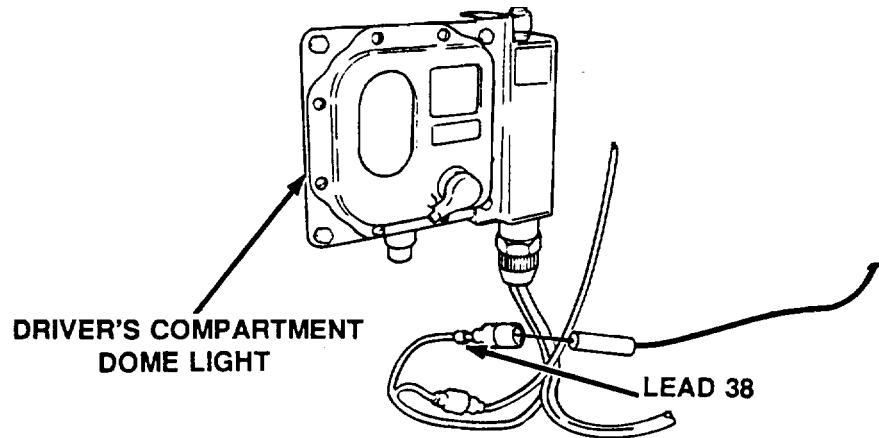
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



Step 3. Disconnect connector from vehicular light switch. Place red probe on pin B. Place black probe on pin F. Turn vehicular light switch to SER DRIVE, STOP LIGHT, BO MARKER, and BO DRIVE. If multimeter indicates 0 ohms at each position of the vehicular light switch, repair lead 40 between vehicular light switch and instrument (switch) panel light. Refer to page 2-364. If multimeter indicates infinity in one of the positions, replace vehicular light switch. Refer to page 2-555.

AY. DRIVER'S COMPARTMENT DOME LIGHT CIRCUIT.

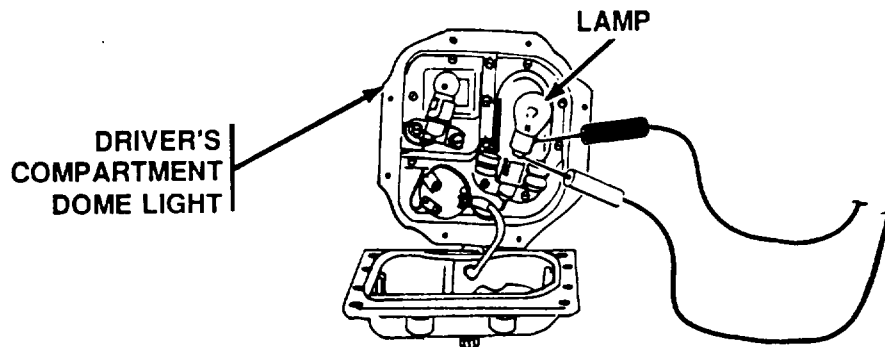




WARNING

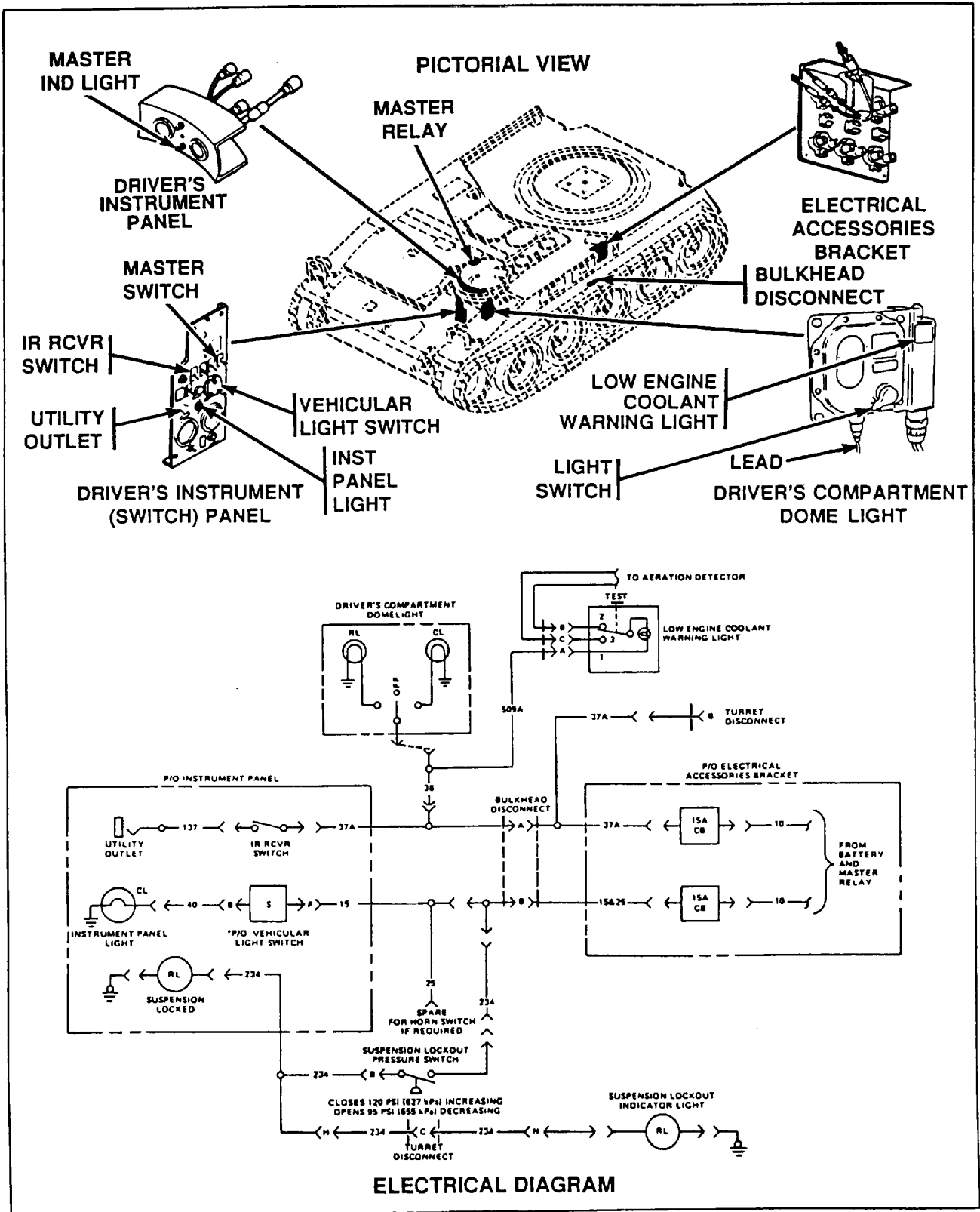
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 1. Disconnect lead 38 from driver's compartment dome light. Place red probe in lead 38. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, repair driver's compartment dome light. Refer to page 2-606. If multimeter indicates no voltage, repair lead 38. Refer to page 2-364. Set MASTER switch OFF. Connect lead.

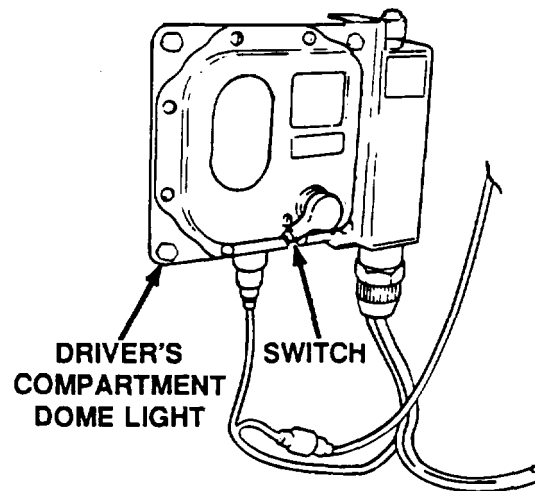


- Step 2. remove inoperative lamp from driver's compartment dome light. Refer to page 2-606. Connect multimeter to contacts of lamp. If multimeter indicates about 3 ohms for red lamp or about 10 ohms for white lamp, repair driver's compartment dome light. Refer to page 2-606. If multimeter indicates infinity, replace lamp. Refer to page 2-606.

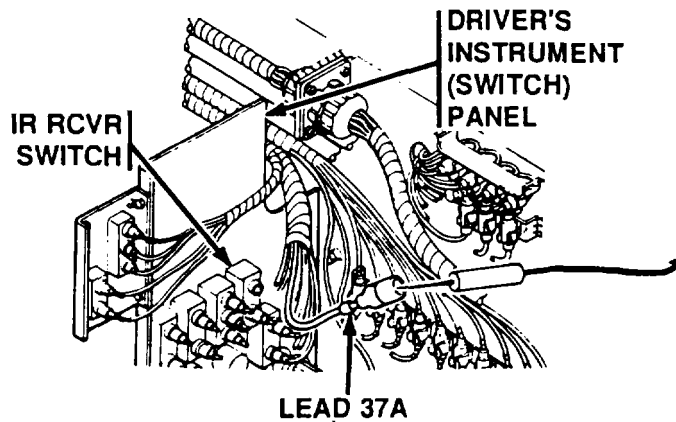
AZ. UTILITY OUTLET CIRCUIT.



2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



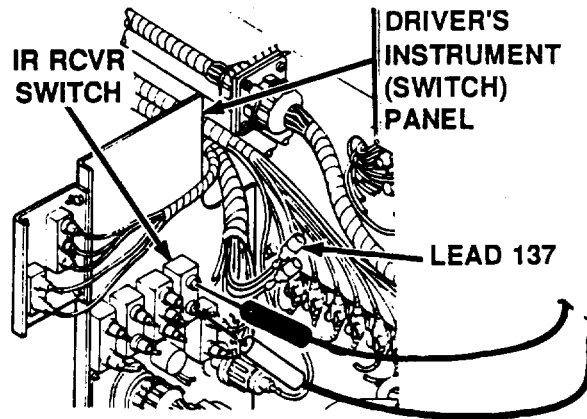
Step 1. Set MASTER switch ON Turn driver's compartment dome light switch to either red or white ON position. If driver's compartment dome light operates, go to step 2. If driver's compartment dome light does not operate, go to step 4. Turn driver's compartment dome light switch OFF. Set MASTER switch OFF.



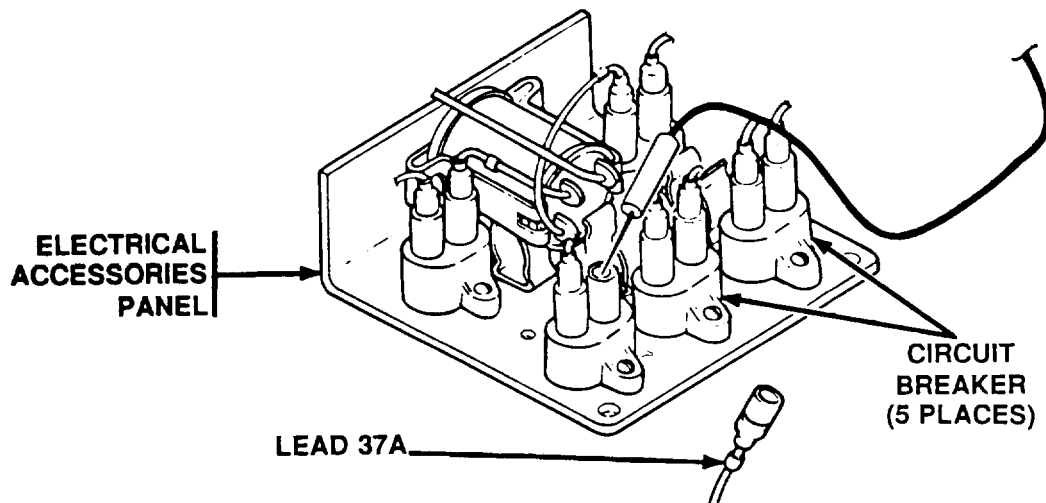
WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 2. Disconnect lead 37A from IR RCVR switch. Place red probe in lead 37A. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, connect lead and go to step 3. If multimeter indicates no voltage, repair lead 37A between driver's compartment dome light and IR RCVR switch. Refer to page 2-364. Set MASTER switch OFF.



Step 3. Disconnect lead 137 from IR RCVR switch. Connect multimeter to IR RCVR switch connector pins. If multimeter indicates 0 ohms, repair lead 137 between IR RCVR switch and utility outlet. Refer to page 2-364. If multimeter indicates infinity, replace IR RCVR switch. Refer to page 2-555. Connect leads (137 and 37A).

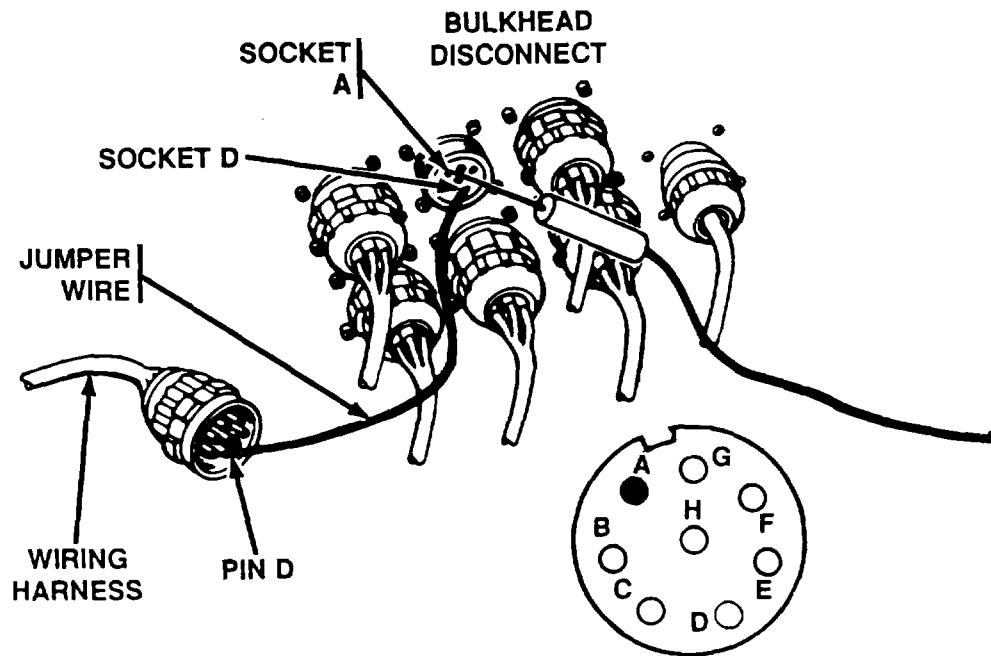


WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

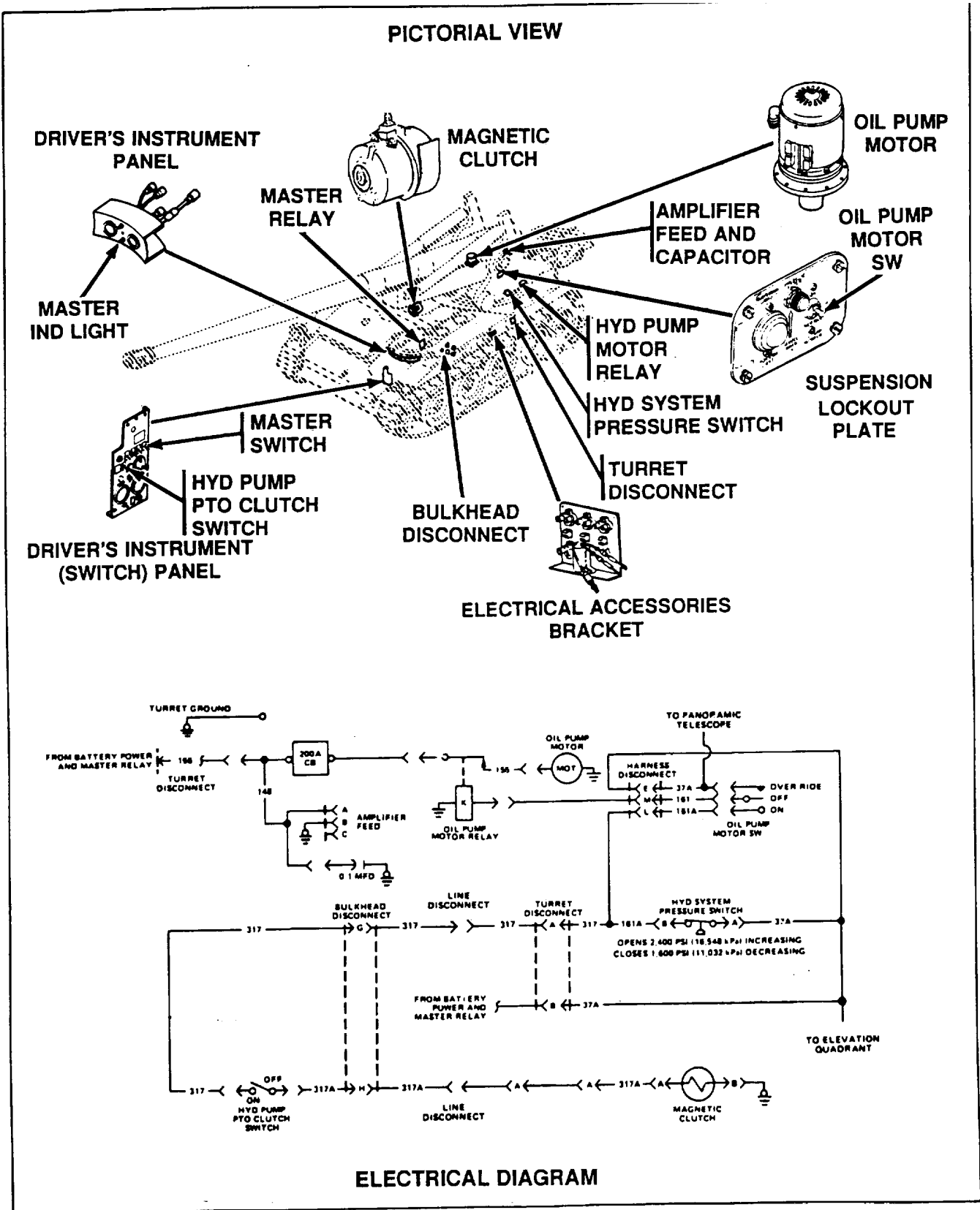
Step 4. To access electrical accessories panel, remove left CO2 cylinder access cover. Refer to page 2-875. Disconnect lead 37A from circuit breaker. Place red probe in circuit breaker receptacle. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 5. If multimeter indicates no voltage, replace circuit breaker. Refer to page 2-578. Set MASTER switch OFF. Connect lead.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

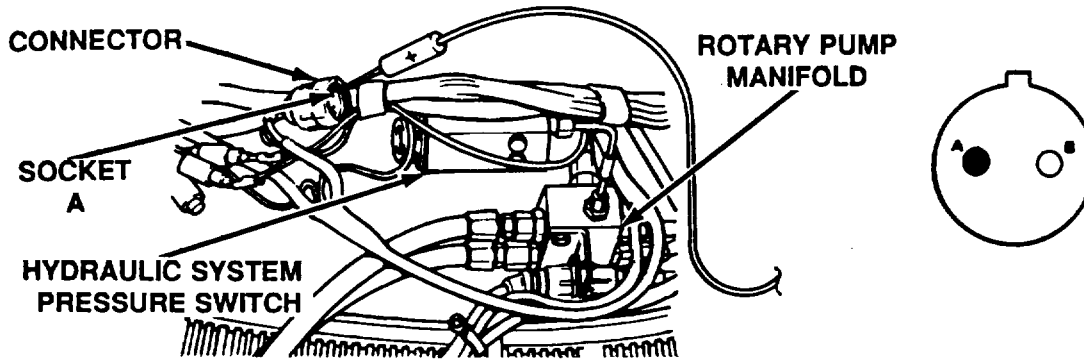
**WARNING**

Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

- Step 5. To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Disconnect wiring harness at bulkhead disconnect. Place jumper wire to pin D and socket D (lead 459). Place red probe in plug socket A (lead 37A). Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, repair lead 37A between IR RCVR switch and bulkhead disconnect. Refer to page 2-364. If multimeter indicates no voltage, repair lead 37A between bulkhead disconnect and circuit breaker. Refer to page 2-364. Set MASTER switch OFF. Remove jumper wire (lead 459). Connect wiring harness.



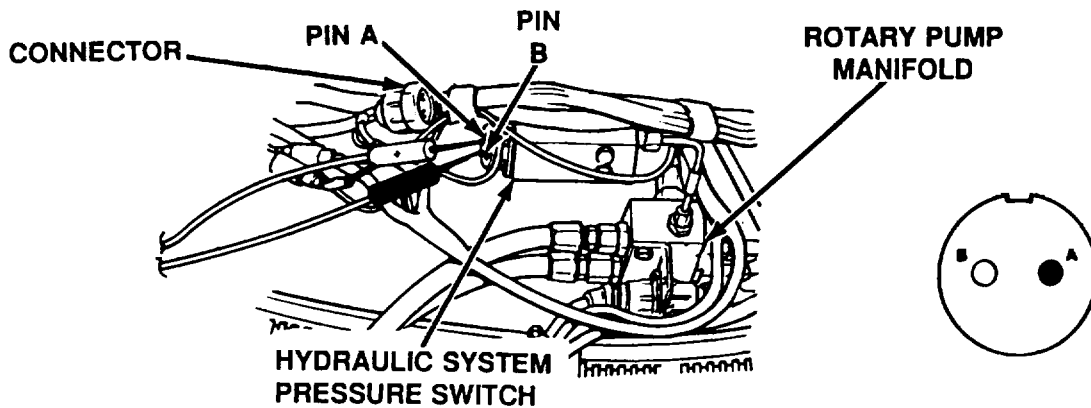
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

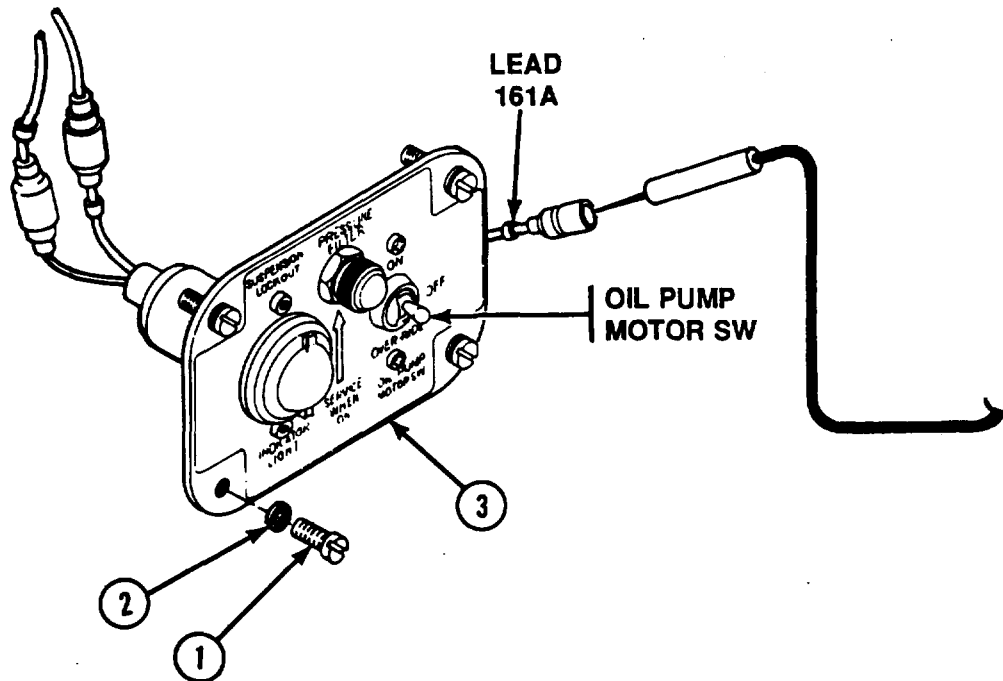
- Step 1. Stop engine. Set MASTER switch OFF. Disconnect connector from hydraulic system pressure switch. Place red probe in socket A (lead 37A). Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 2. If multimeter indicates no voltage, repair lead 37A between turret disconnect and hydraulic system pressure switch. Refer to page 2-364. Set MASTER switch OFF. Connect connector to hydraulic system pressure switch.



NOTE

Be sure hydraulic pressure is below 1600 psi (11,032 kPa) before performing steps 2 thru 8.

- Step 2. Place red probe on pin A. Place black probe on pin B. If multimeter indicates 0 ohms, go to step 3. If multimeter indicates infinity, notify direct support maintenance. Connect connector to hydraulic system pressure switch.

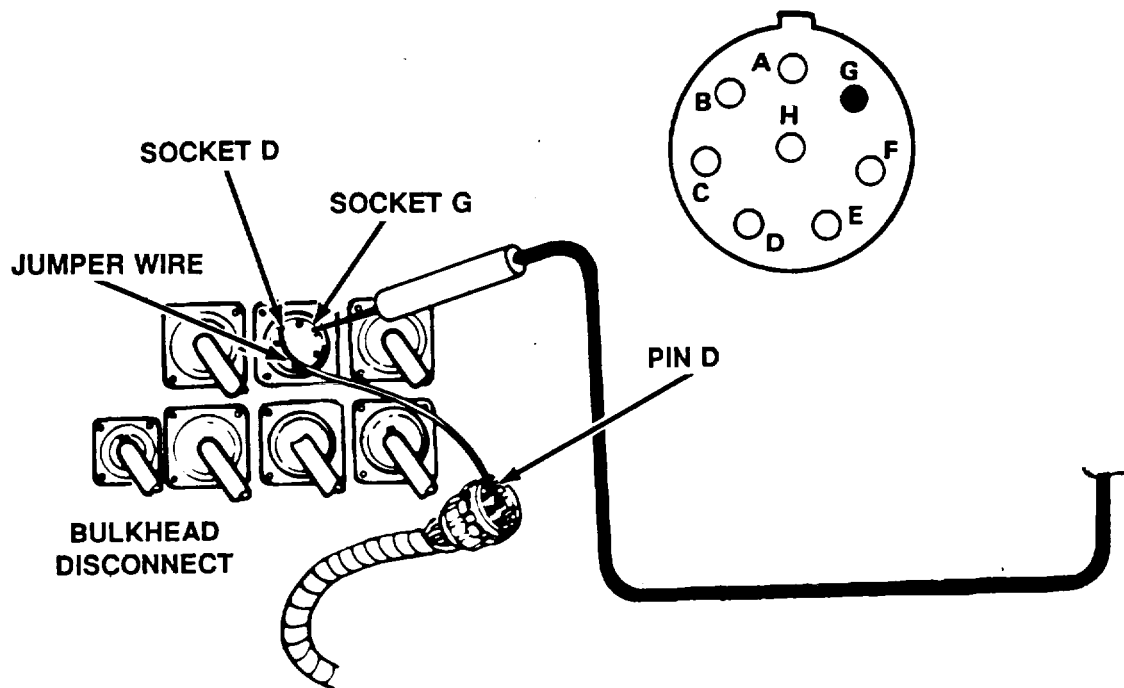


WARNING

Make sure MASTER switch is OFF before repairing electrical circuits.
Failure to observe this warning could result in injury to personnel.

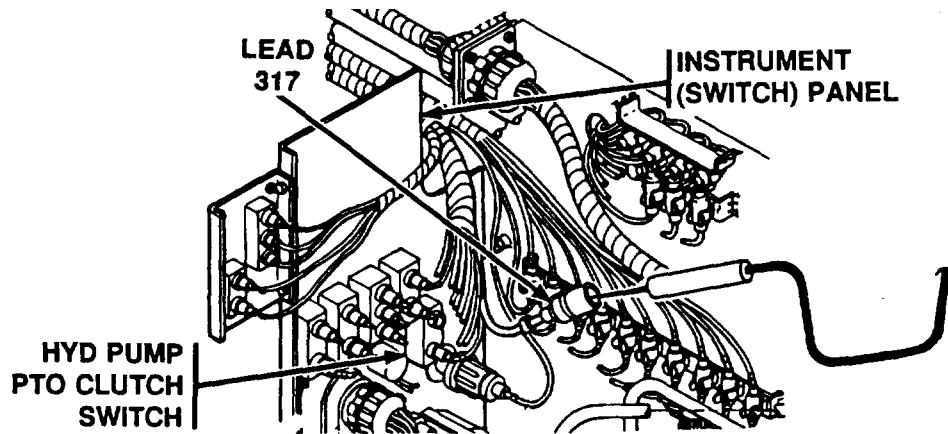
- Step 3. Remove four screws (1), four washers (2), and suspension lockout plate (3) for access to OIL PUMP MOTOR SW. Disconnect lead 161A from OIL PUMP MOTOR SW. Place red probe in lead 161A. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 161A between OIL PUMP MOTOR SW and harness disconnect. Refer to page 2-364. Set MASTER switch OFF. Connect lead.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

**WARNING**

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

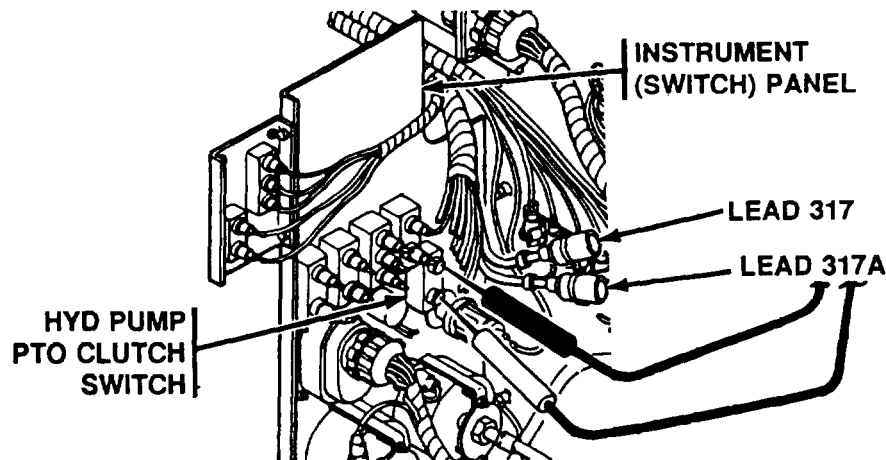
- Step 4. To access bulkhead disconnect, remove driver's seat, refer to page 2-911; and remove driver's compartment aft cowl, refer to page 2-879. Install master relay. Disconnect wiring harness. Install jumper wire from pin D of cable to socket D of bulkhead connector. Place red probe in socket G (lead 317) of bulkhead connector. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 5. If multimeter indicates no voltage, repair lead 317 from bulkhead disconnect to turret disconnect. Refer to page 2-364. Set MASTER switch OFF.



WARNING

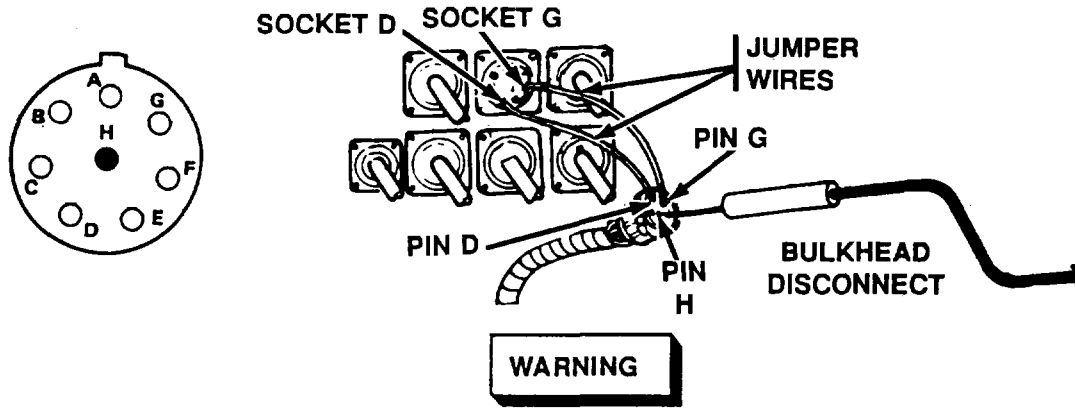
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 5. Add jumper wire from pin G to socket G. Disconnect lead 317 from HYD PUMP/PTO CLUTCH switch. Place red probe in lead 317. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to



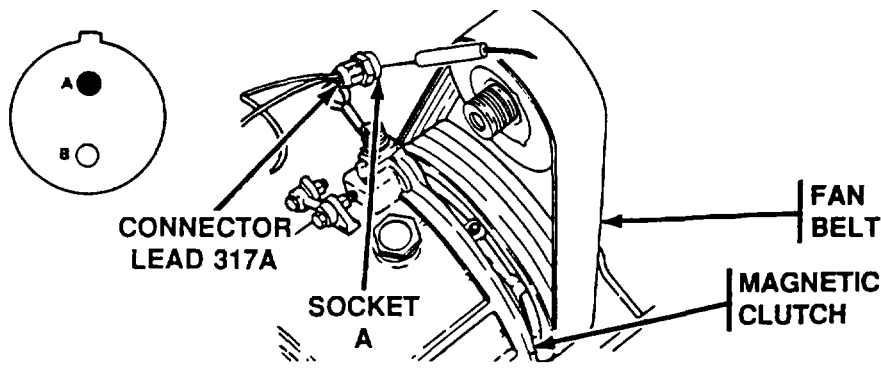
- step 6. If multimeter indicates no voltage, repair lead 317 between bulkhead disconnect. Refer to page 2-364. Set MASTER switch OFF. Connect lead. Step 6. Disconnect lead 317A from HYD PUMP/PTO CLUTCH switch. Connect multimeter HYD PUMP/PTO CLUTCH switch pins. If multimeter indicates 0 ohms, go to step 7. If multimeter indicates infinity, replace HYD PUMP/PTO CLUTCH switch. Refer to page 2-555. Connect leads 317 and 317A to HYD PUMP/PTO CLUTCH switch.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 7. Disconnect wiring harness. Place a jumper wire from socket D to pin D. Place red probe in pin socket H (lead 317A). Ground black probe. Set MASTER and HYD PUMP/PTO CLUTCH switches ON. If multimeter indicates about 24 volts, go to step 8. If multimeter indicates no voltage, repair lead 317A between HYD PUMP/PTO CLUTCH switch and bulkhead disconnect. Refer to page 2-364. Set MASTER and HYD PUMP/PTO CLUTCH switches OFF. Connect wiring harness.

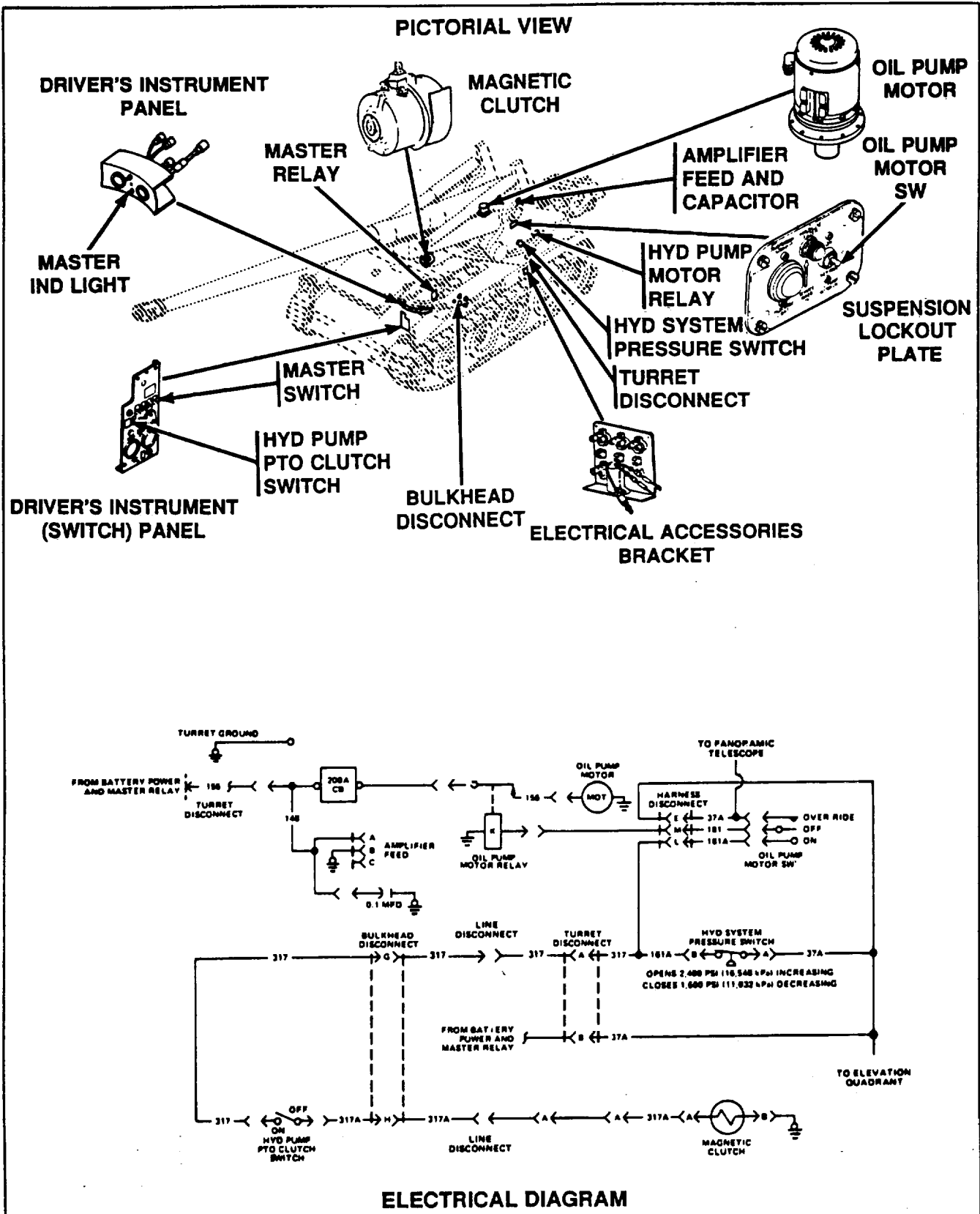


WARNING

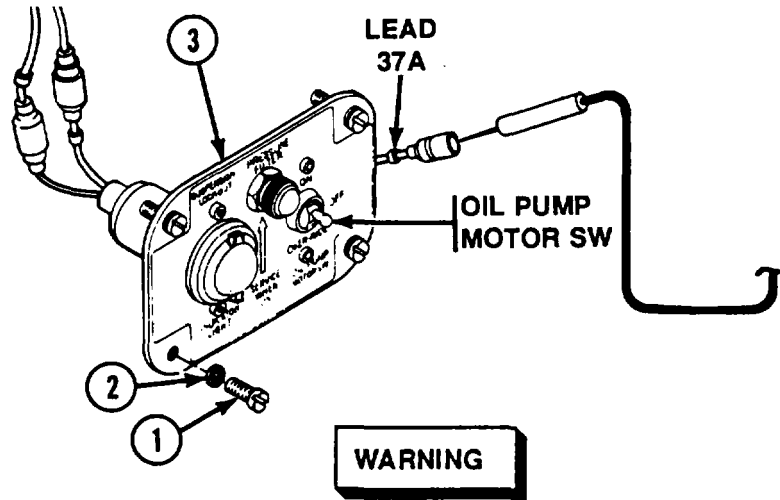
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 8. To access magnetic clutch, remove fanwell deck grille. Refer to page 2-879. Disconnect connector from magnetic clutch. Place red probe in plug socket A (lead 317A). Ground black probe. Set MASTER and HYD PUMP/PTO CLUTCH switches ON. If multimeter indicates about 24 volts, notify direct support maintenance. If multimeter indicates no voltage, repair lead 317A between bulkhead disconnect and magnetic clutch. Refer to page 2-364. Set MASTER and HYD PUMP/PTO CLUTCH switches OFF. Connect lead.

BB. OIL PUMP MOTOR CIRCUIT.

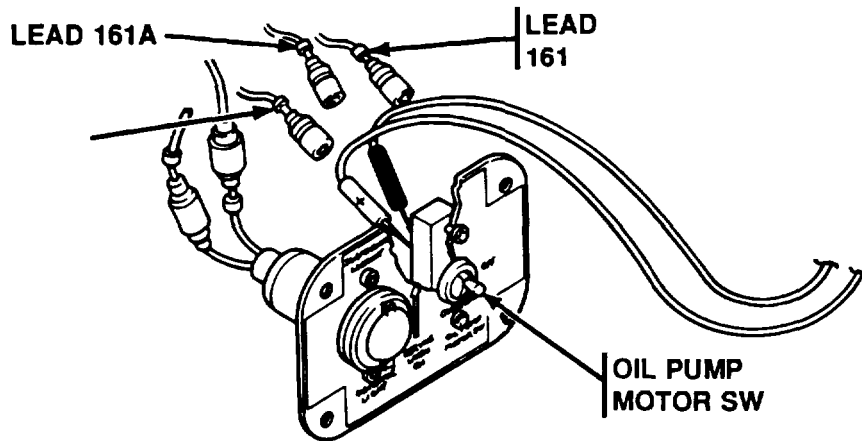


2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

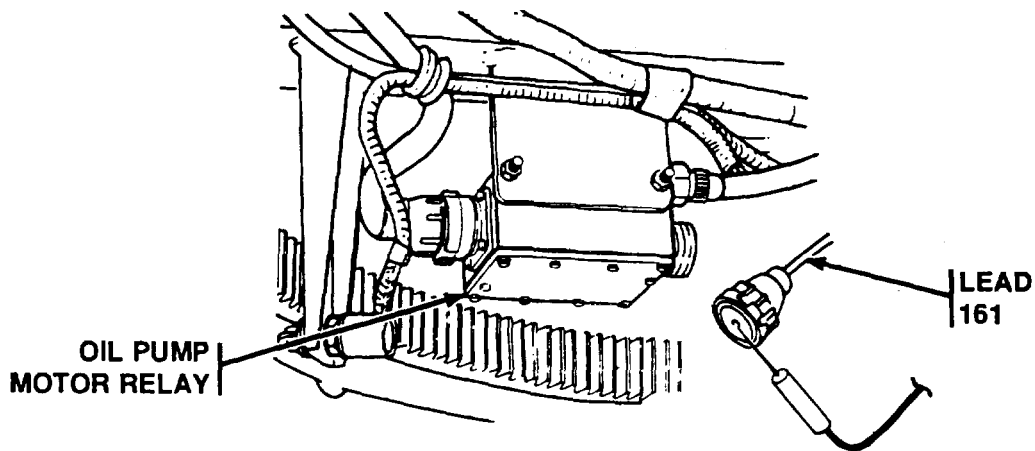


Make sure MASTER switch is OFF before repairing electrical circuits..
Failure to observe this warning could result in injury to personnel.

- Step 1. Set MASTER switch OFF. Remove screws (1), washers (2), and suspension lockout plate (3) for access to OIL PUMP MOTOR SW. Disconnect lead 37A from OIL PUMP MOTOR SW. Place red probe in lead 37A. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 2. If multimeter indicates no voltage, repair lead 37A. Refer to page 2-364. Set MASTER switch OFF. Connect lead.



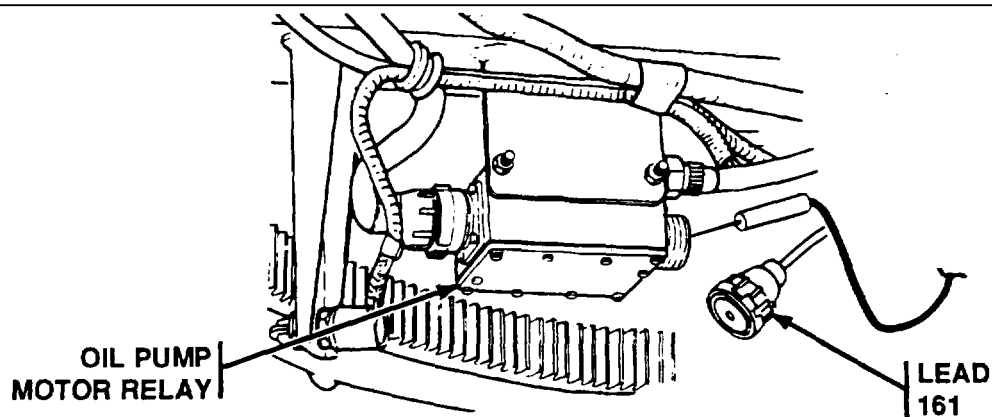
- Step 2. Disconnect leads 161 and 161A from OIL PUMP MOTOR SW. Place red probe in OIL PUMP MOTOR SW pin 3. Place black probe in OIL PUMP MOTOR SW pin 2. Set OIL PUMP MOTOR SW ON. Record reading. Place black probe in OIL PUMP MOTOR SW pin 1. Set OIL PUMP MOTOR SW to OVER-RIDE. If multimeter indicates less than one ohm, go to step 3. If multimeter indicates more than one ohm, notify direct support maintenance. Set OIL PUMP MOTOR SW OFF. Connect leads.



WARNING

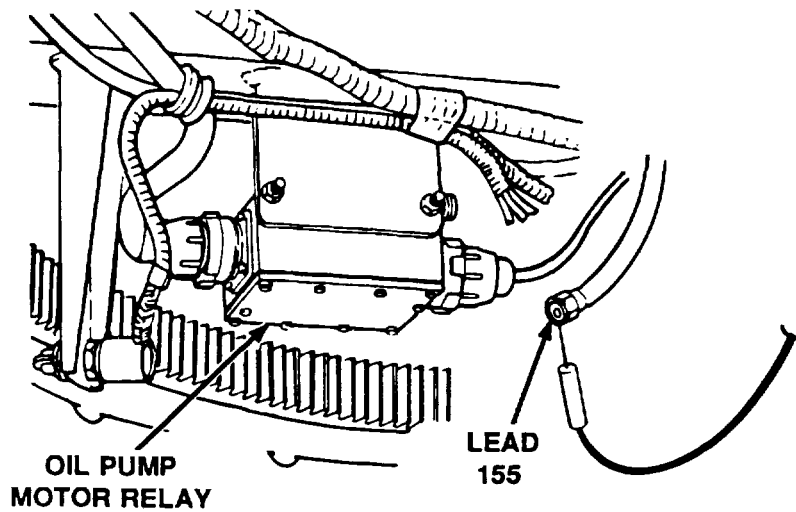
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 3. Disconnect lead 161 from oil pump motor relay. Place red probe in lead 161. Ground black probe. Set MASTER switch ON. Hold OIL PUMP MOTOR SW in OVER-RIDE. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 161 between harness disconnect and oil pump motor relay. Refer to page 2-364. Release OIL PUMP MOTOR SW. Set MASTER switch OFF. Connect lead.

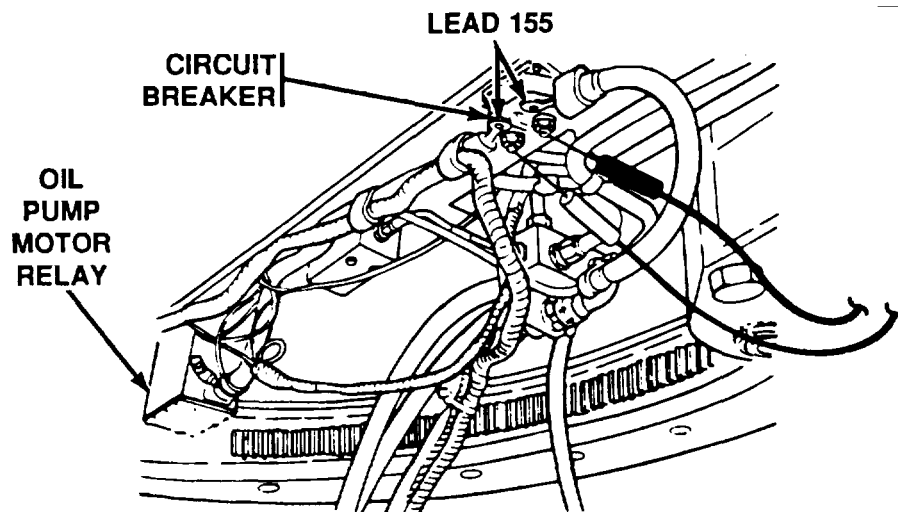


- Step 4. Place red probe on oil pump motor relay pin (lead 161). Ground black probe. If multimeter indicates 35 j 10 ohms, go to step 5. If multimeter does not indicate about 65 ohms, replace oil pump motor relay. Refer to page 2-572. Connect lead.

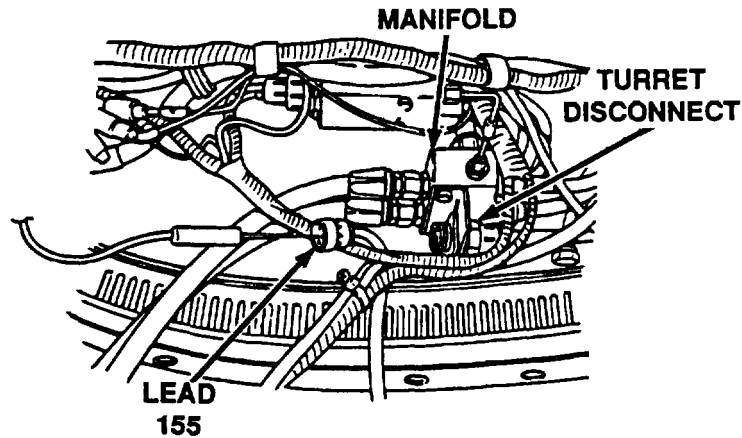
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



Step 5. Disconnect lead 155 from oil pump motor relay. Place red probe in lead 155. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 8. If multimeter indicates no voltage, go to step 6. Set MASTER switch OFF. Connect lead.



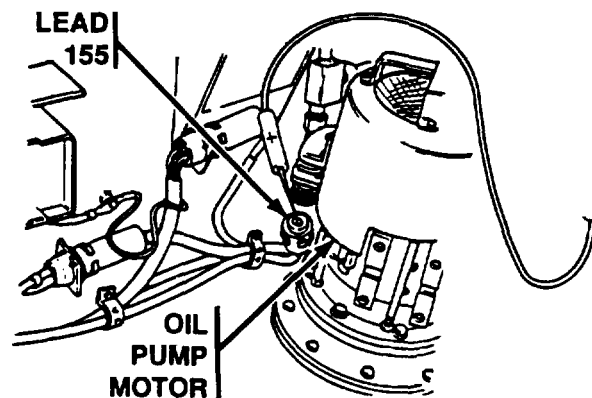
Step 6. Disconnect leads 155 from 200A circuit breaker. Connect multimeter to receptacles of 200A circuit breaker. If multimeter indicates 0 ohms, go to step 7. If multimeter indicates infinity, replace 200A circuit breaker. Refer to TM 9-2350-304-20-2. Connect leads.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 7. Disconnect lead 155 from turret disconnect. Place red probe in receptacle (lead 155). Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, repair lead 155 between turret disconnect and circuit breaker. Refer to page 2-364. If multimeter indicates no voltage, notify direct support maintenance. Set MASTER switch OFF. Connect leads.



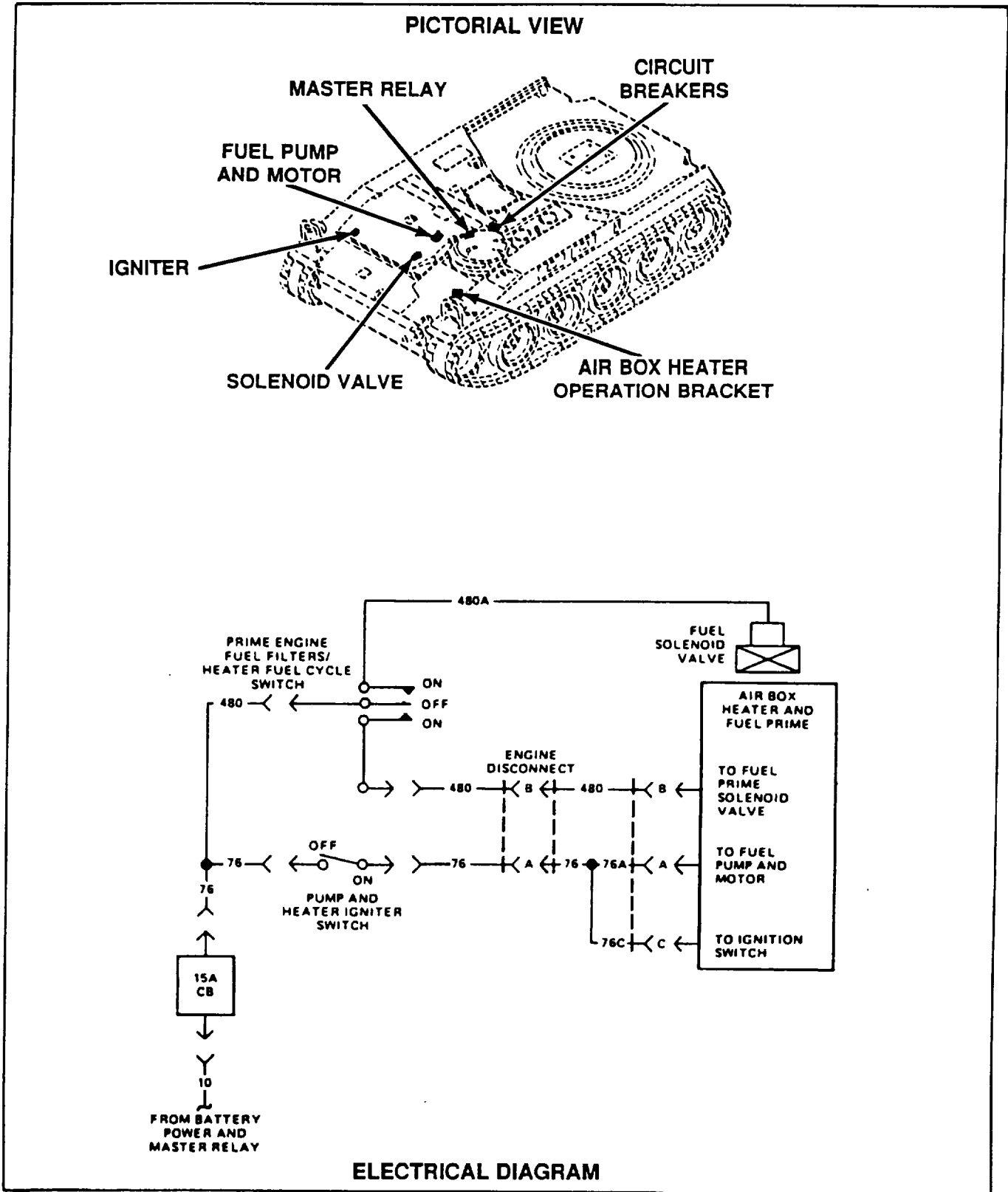
WARNING

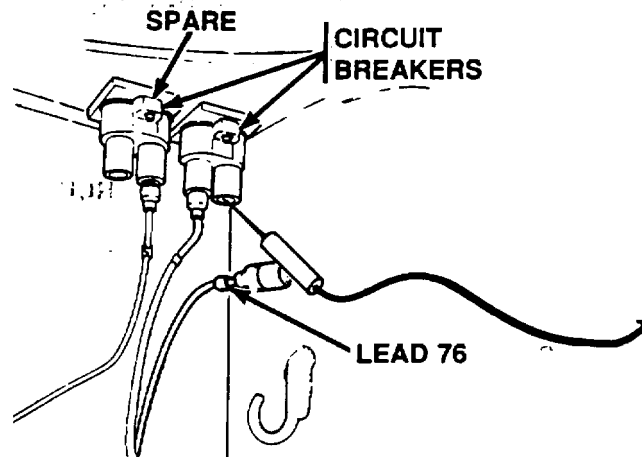
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 8. Disconnect lead 155 from oil pump motor. Place red probe in lead 155. Ground black probe. Set MASTER switch ON. Hold OIL PUMP MOTOR SW in OVER-RIDE. If multimeter indicates about 24 volts, notify direct support maintenance. If multimeter indicates no voltage, repair lead 155 between oil pump motor relay and oil pump motor. Refer to page 2-364. Release OIL PUMP MOTOR SW. Set MASTER switch OFF. Connect lead.

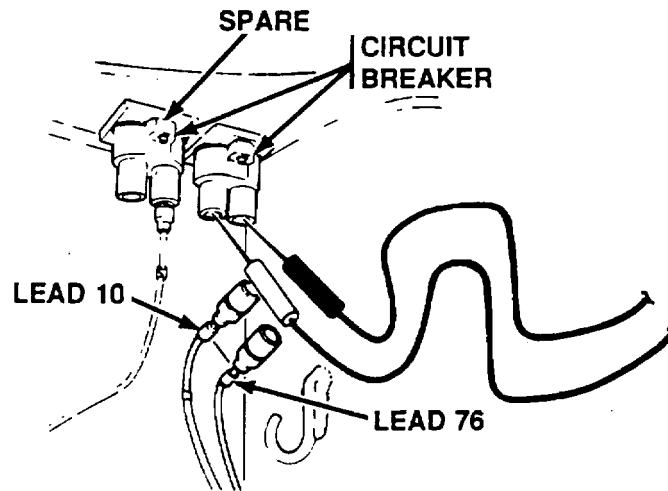
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

BC. AIR BOX HEATER CIRCUIT.



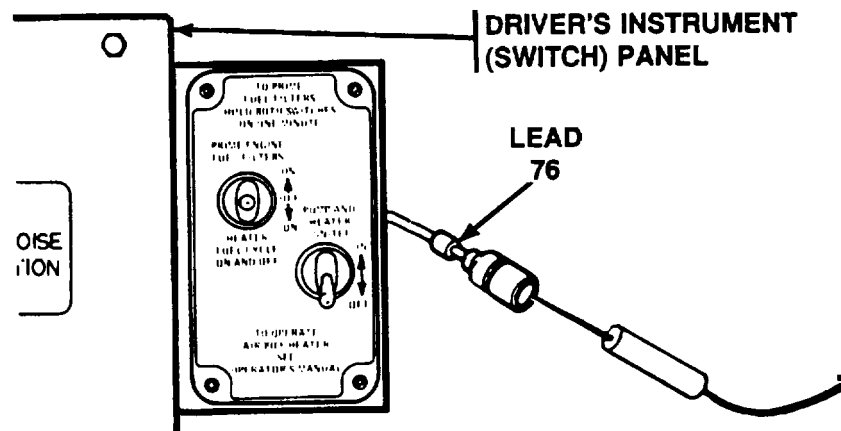


Step 1. Set PUMP AND HEATER IGNITER and MASTER switches OFF. Disconnect lead 76 from 15A circuit breaker near driver's seat. Place red probe in circuit breaker receptacle. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, connect lead and go to step 3. If multimeter indicates no voltage, go to step 2. Set MASTER switch OFF.



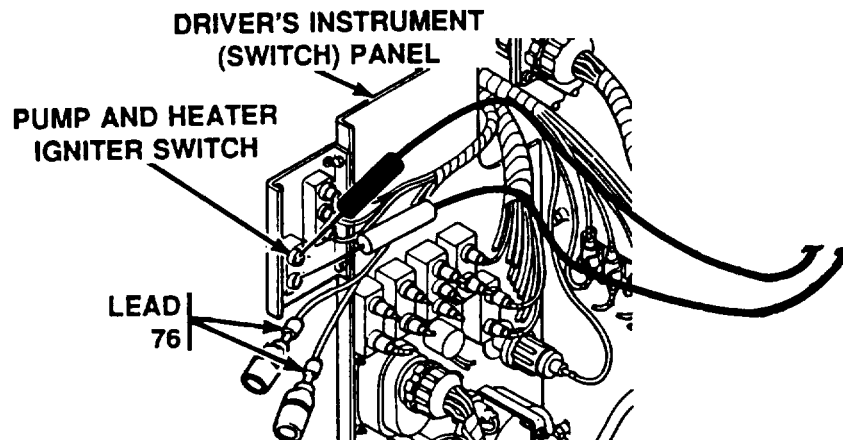
Step 2. Disconnect lead 10 from 15A circuit breaker near driver's seat. Connect multimeter to receptacles of 15A circuit breaker. If multimeter indicates 0 ohms, go to step 3. If multimeter indicates infinity, replace 15A circuit breaker. Refer to page 2-572. Connect leads 76 and 10 to 15A circuit breaker.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

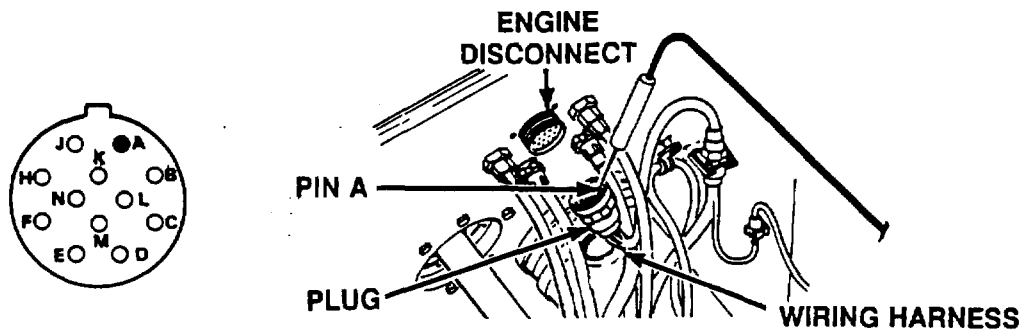
**WARNING**

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 3. Disconnect lead 76 from PUMP AND HEATER IGNITER switch. Place red probe in lead 76. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 76 between PUMP AND HEATER IGNITER switch and 15A circuit breaker. Refer to page 2-364. Set MASTER switch OFF. Connect lead.



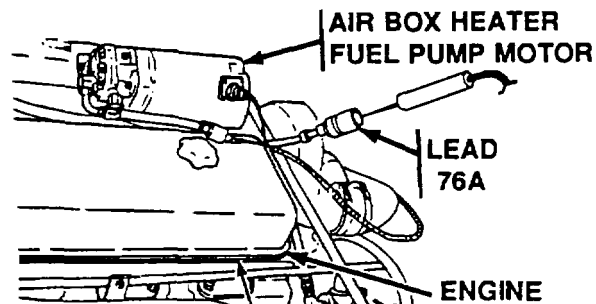
- Step 4. Disconnect the other lead 76 from PUMP AND HEATER IGNITER switch. Connect multimeter to PUMP AND HEATER IGNITER switch pins. Hold PUMP AND HEATER IGNITER switch ON. If multimeter indicates 0 ohms, go to step 5. If multimeter indicates infinity, replace PUMP AND HEATER IGNITER switch. Refer to page 2-570. Release PUMP AND HEATER IGNITER switch. Connect leads.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 5. To access engine disconnect, remove transmission deck lid assembly. Refer to page 2-893. Disconnect wiring harness at engine disconnect. Place red probe on plug pin A (lead 76A). Ground black probe. Set MASTER switch ON. Hold PUMP AND HEATER IGNITER switch ON. If multimeter indicates about 24 volts, go to step 6. If multimeter indicates no voltage, repair lead 76A between PUMP AND HEATER IGNITER switch and engine disconnect. Refer to page 2-364. Release PUMP AND HEATER IGNITER switch. Set MASTER switch OFF. Connect wiring harness.



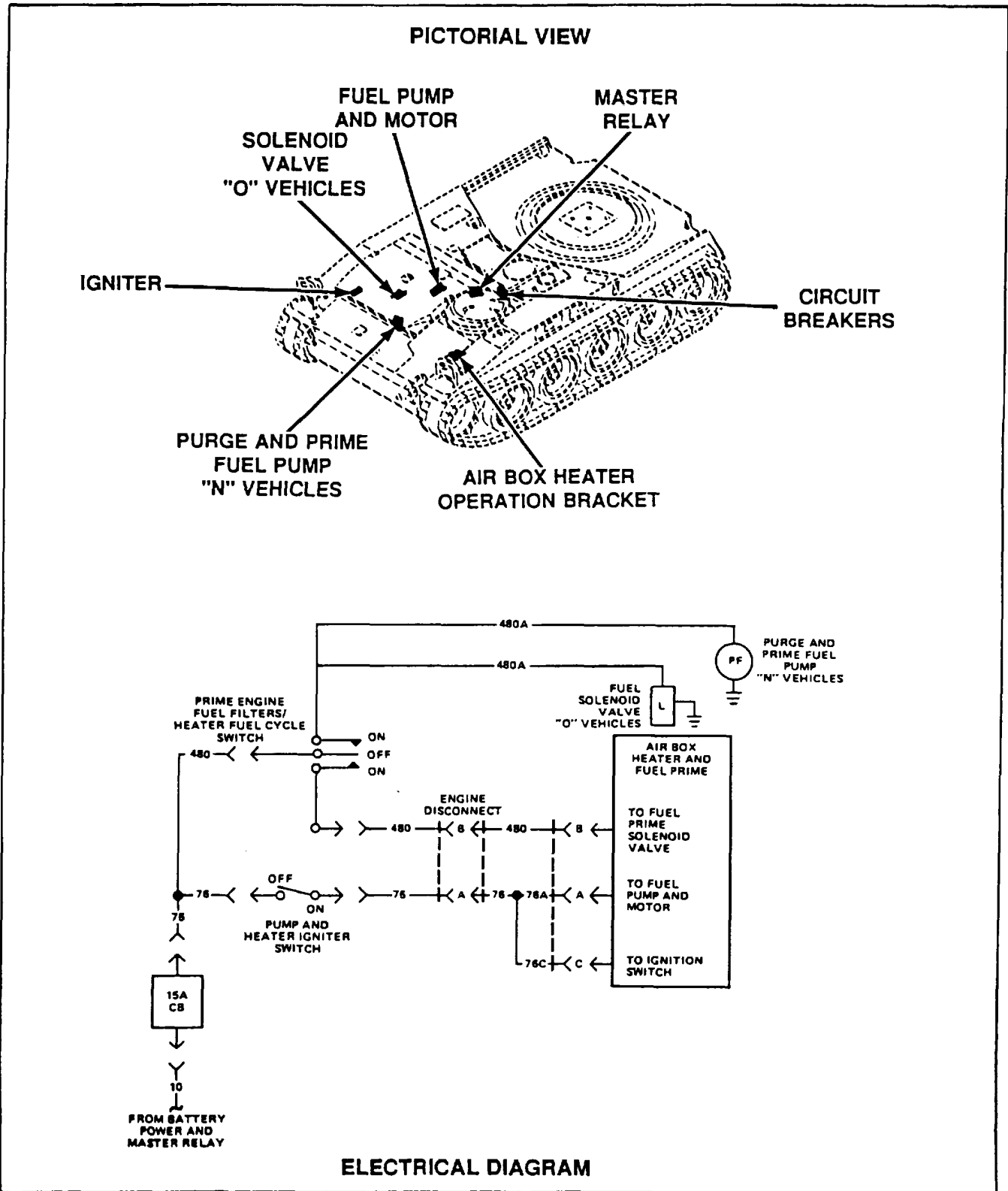
WARNING

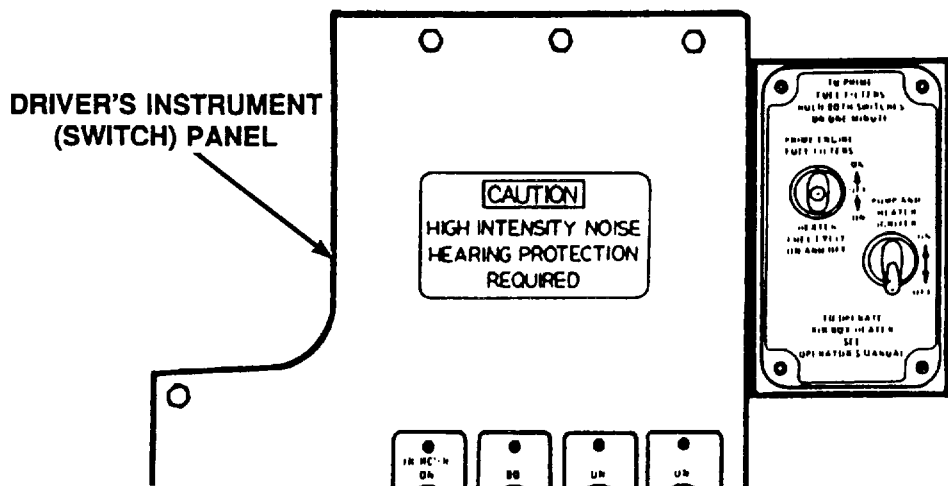
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 6. To access air box heater fuel pump motor, remove engine deck assembly. Refer to page 2-887. Disconnect lead 76A from air box heater fuel pump motor. Place red probe in lead 76A. Ground black probe. Set MASTER switch ON. Hold PUMP AND HEATER IGNITER switch ON. If multimeter indicates about 24 volts, notify direct support maintenance. If multimeter indicates no voltage, repair lead 76A between air box heater fuel pump motor and engine disconnect. Refer to page 2-364. Release PUMP AND HEATER IGNITER switch. Set MASTER switch OFF. Connect lead.

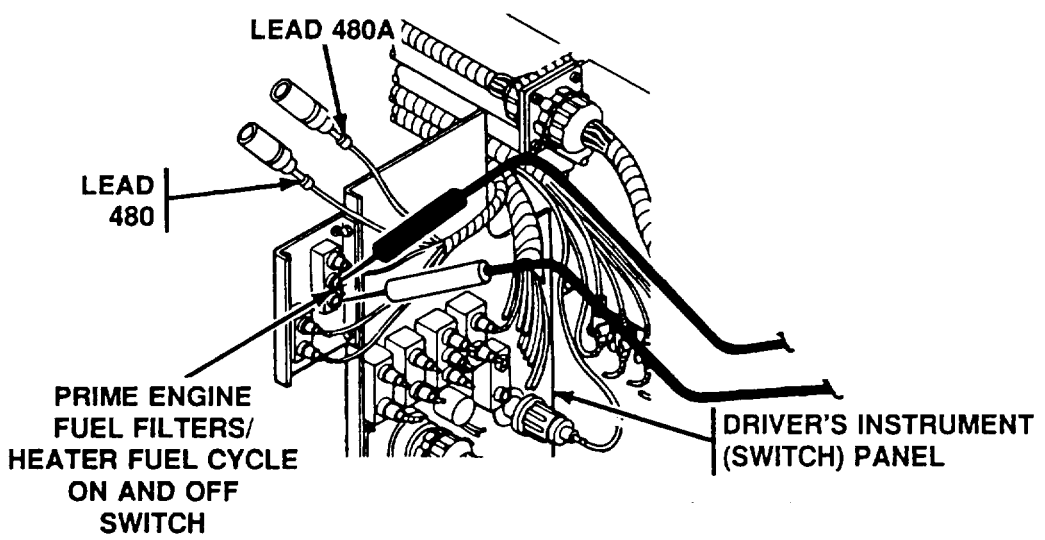
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

BD. AIR BOX HEATER.

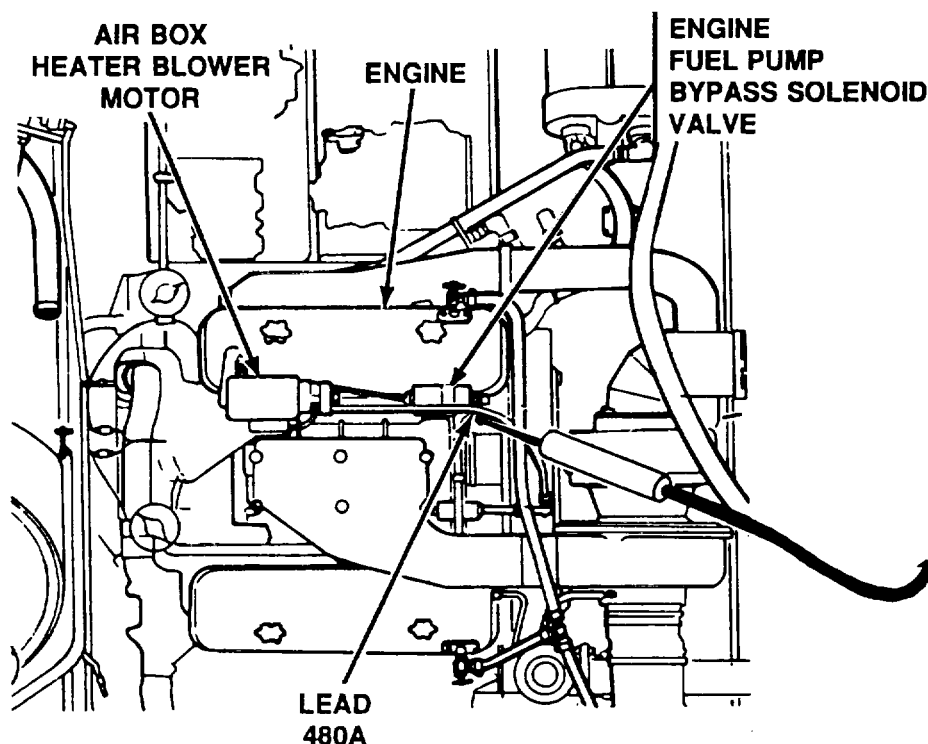




Step 1. Set MASTER switch ON Hold PUMP AND HEATER IGNITER switch ON while cycling PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch ON and OFF for 10 seconds. If fuel pump bypass solenoid valve does not become energized, go to step 2. If air box heater fuel supply solenoid valve does not become energized, go to step 4. If air box heater fuel supply solenoid becomes energized, go to step 7. Set MASTER switch OFF. Release PUMP AND HEATER IGNITER switch. Release PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch.



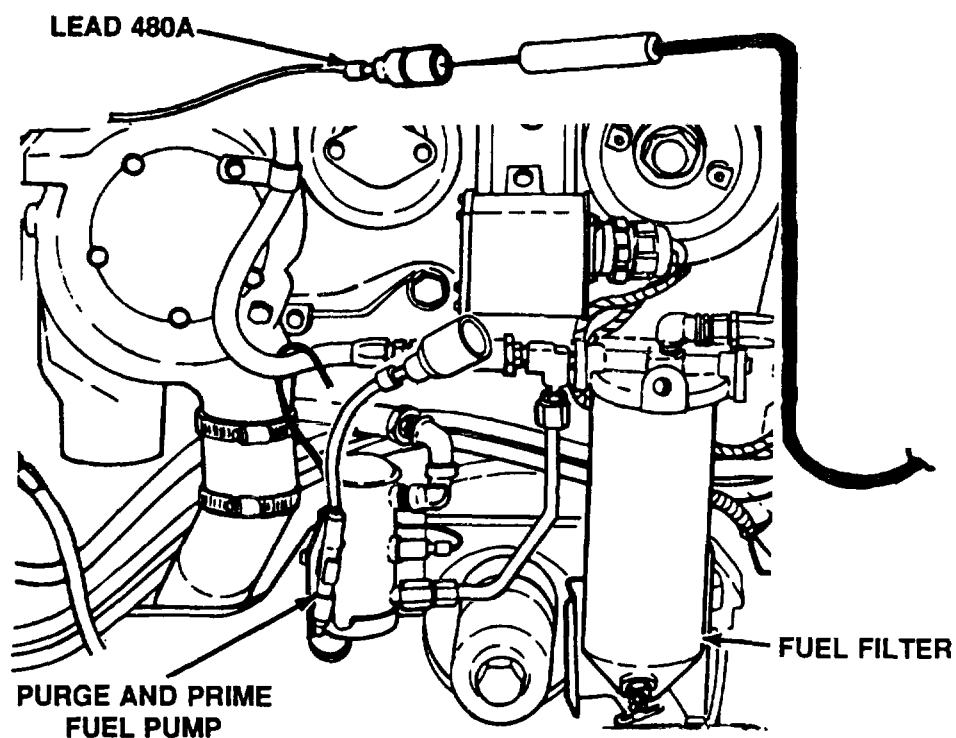
Step 2. Disconnect leads 480 and 480A from PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch. Connect multimeter to connector pins 1 and 3. Hold PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch ON. If multimeter indicates 0 ohms, go to step 3. If multimeter indicates infinity, replace PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch. Refer to page 2-570. Release PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch. Connect leads.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 3. On "O" vehicles, disconnect lead 480A from fuel pump bypass solenoid valve. Place red probe in lead 480A. Ground black probe. Set MASTER switch ON. Hold PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch ON. If multimeter indicates about 24 volts, notify direct support maintenance. If multimeter indicates no voltage, repair lead 480A between PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch and solenoid. Refer to page 2-364. Set MASTER switch OFF. Release PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch. Connect lead.

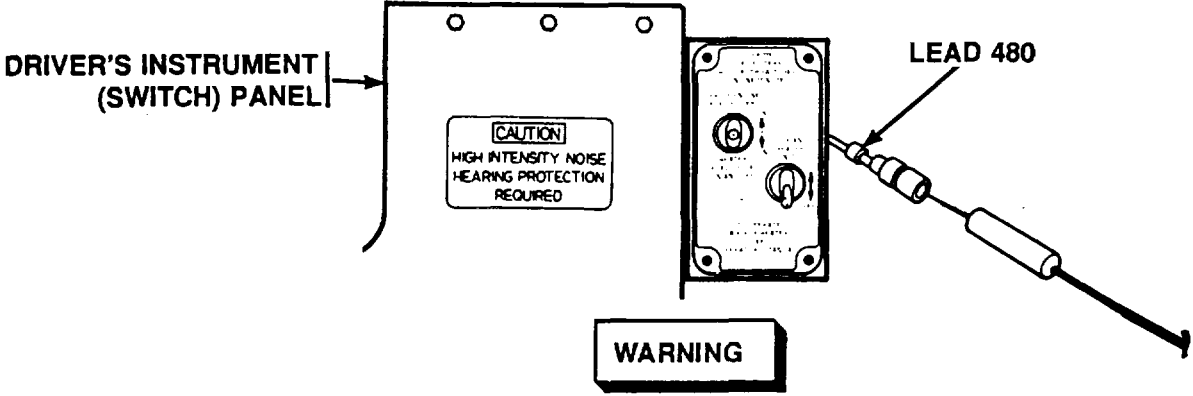


WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 4. On "N" vehicles, disconnect lead 480A from purge and prime fuel pump. Place red probe in lead 480A. Ground black probe. Set MASTER switch ON. Hold PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch ON. If multimeter indicates about 24 volts, replace fuel pump. Notify direct support maintenance. If multimeter indicates no voltage, repair lead 480A between PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch and fuel pump. Refer to page 2-364. Set MASTER switch OFF. Release PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch. Connect lead.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



DRIVER'S INSTRUMENT (SWITCH) PANEL

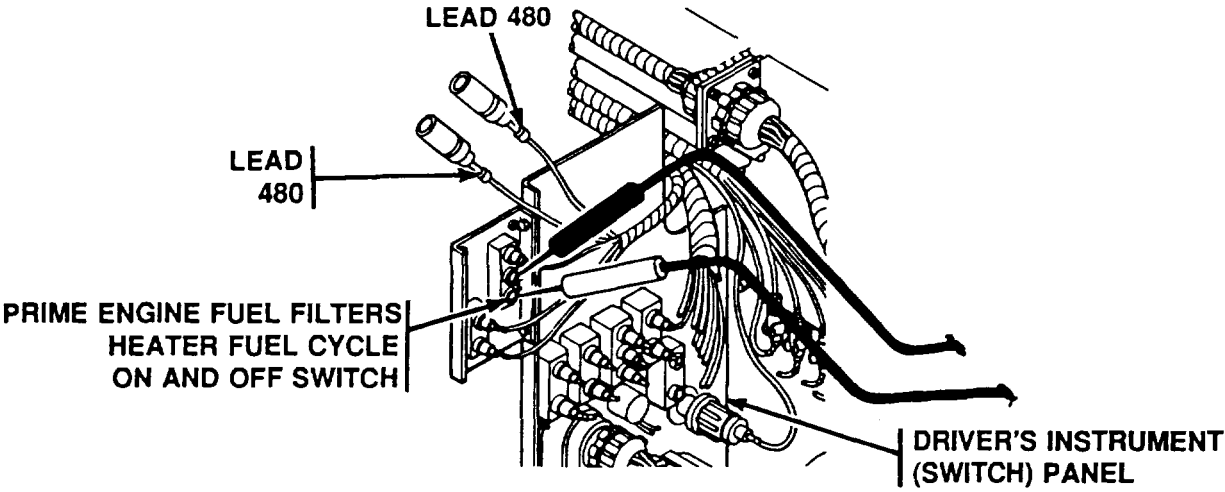
CAUTION
HIGH INTENSITY NOISE
HEARING PROTECTION
REQUIRED

LEAD 480

WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 5. Disconnect lead 480 from PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch. Place red probe in lead 480. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 6. If multimeter indicates no voltage, repair lead 480 between circuit breaker and PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch. Refer to page 2-364. Set MASTER switch OFF. Connect lead.



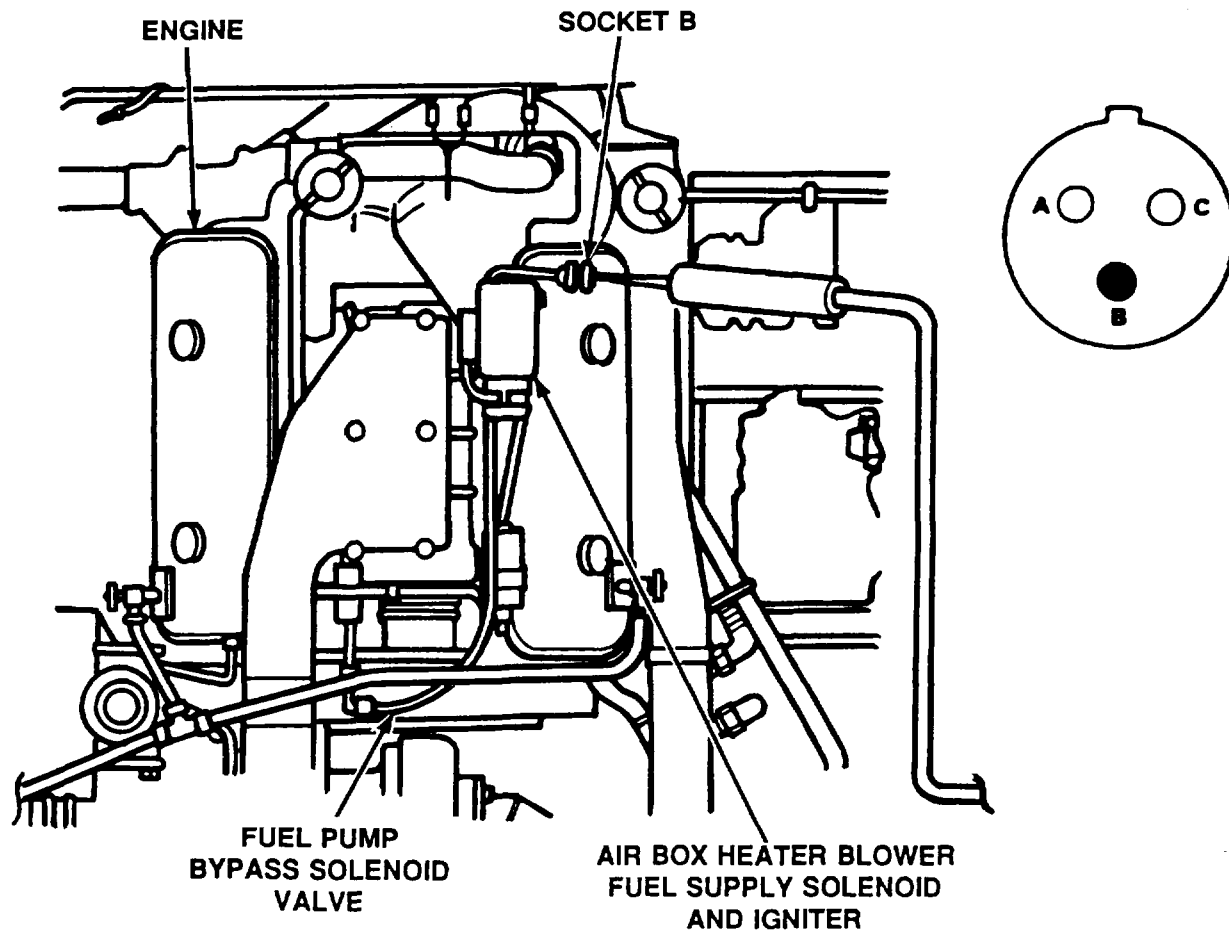
LEAD 480

LEAD 480

PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF SWITCH

DRIVER'S INSTRUMENT (SWITCH) PANEL

Step 6. Disconnect the other lead 480 from PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch. Connect multimeter to switch pins 2 and 3. Hold PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch ON. If multimeter indicates 0 ohms, go to step 7. If multimeter indicates infinity, replace PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch. Refer to page 2-570. Release PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch. Connect leads.

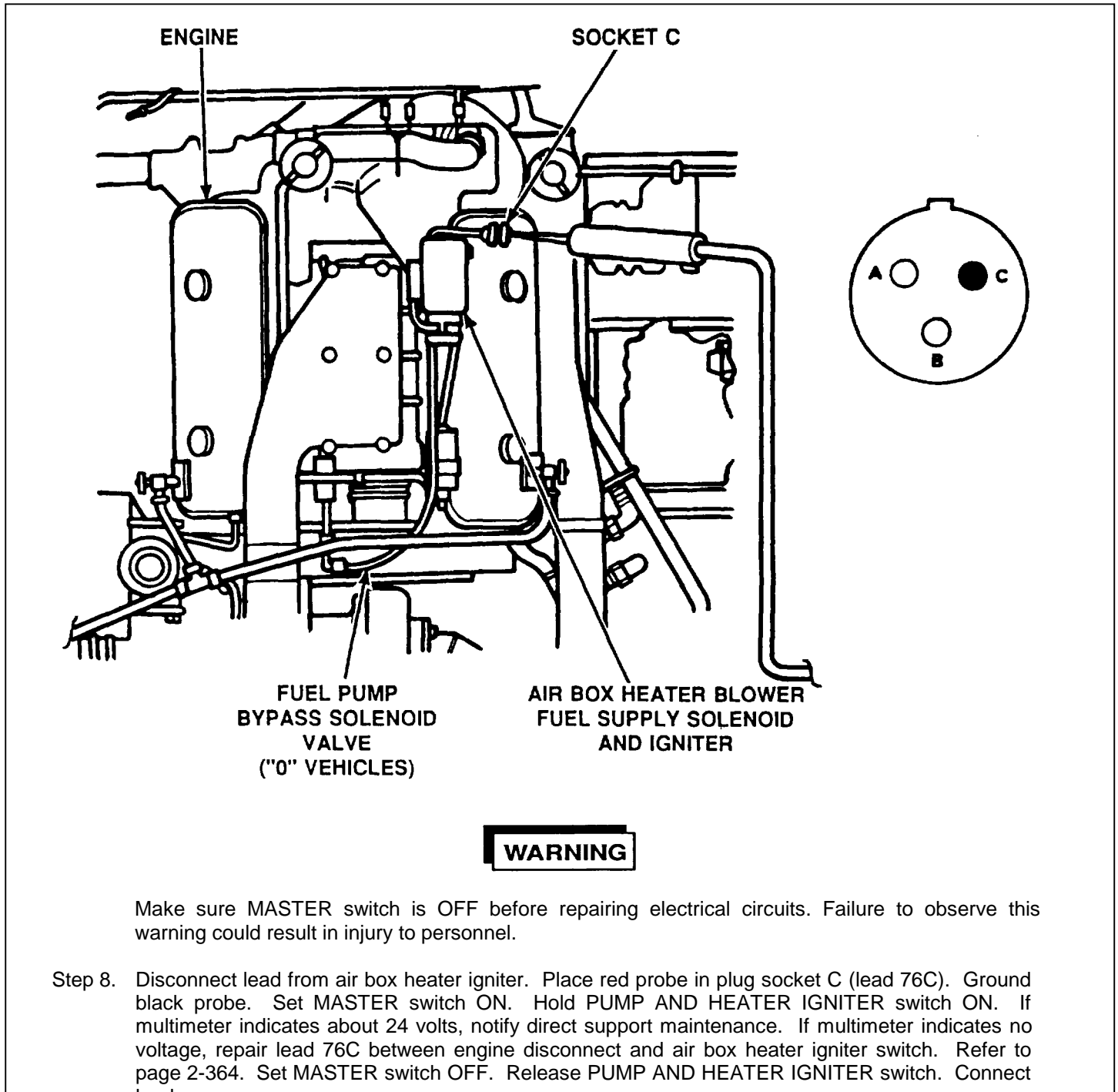


WARNING

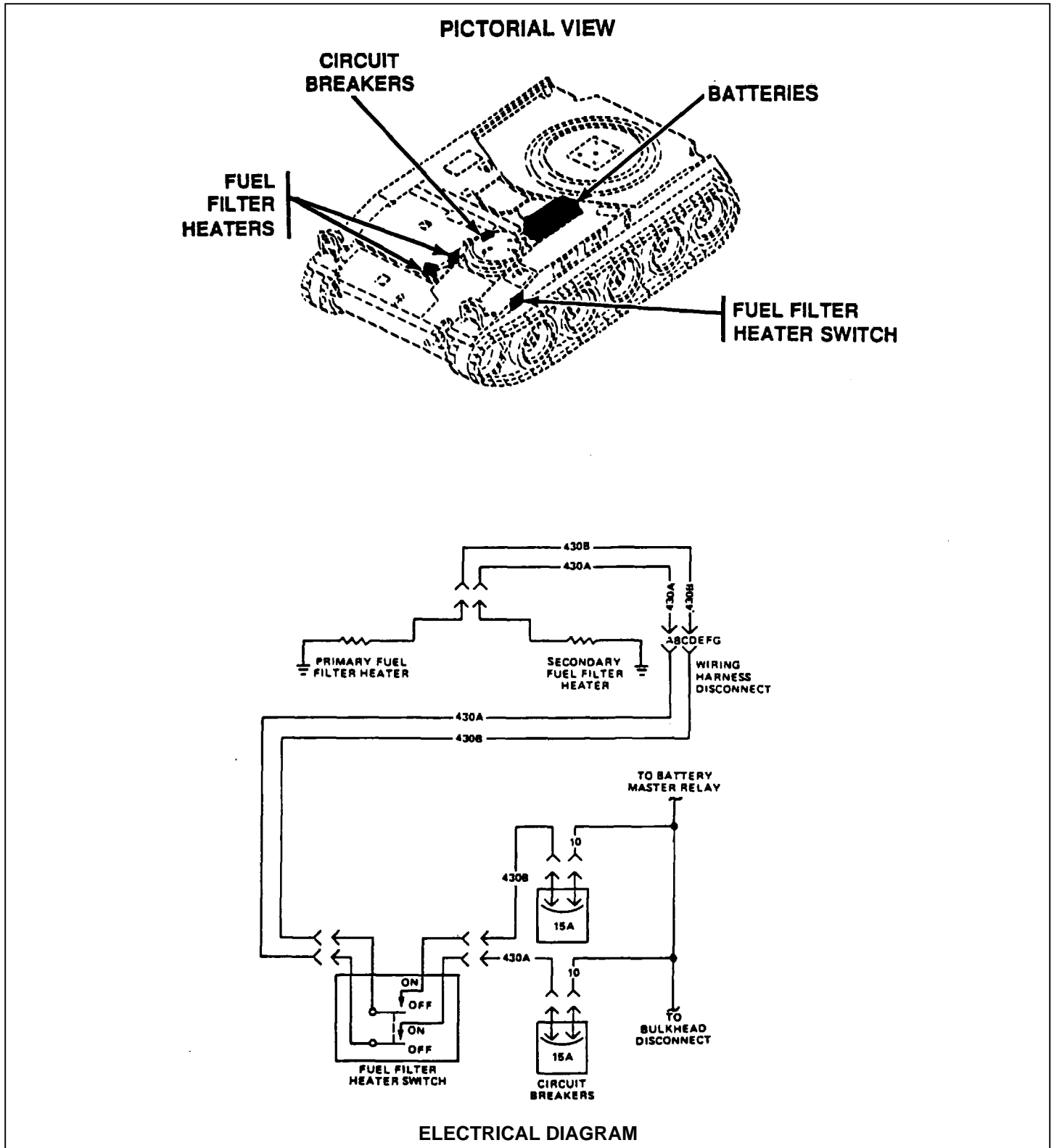
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 7. Disconnect lead from air box heater fuel supply solenoid valve. Place red probe in plug socket B (lead 480). Ground black probe. Set MASTER switch ON. Hold PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch ON. If multimeter indicates about 24 volts, notify direct support maintenance. If multimeter indicates no voltage, repair lead 480 between PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch and solenoid. Refer to page 2-364. Set MASTER switch OFF. Release PRIME ENGINE FUEL FILTERS/HEATER FUEL CYCLE ON AND OFF switch. Connect lead.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



BE. FUEL FILTER HEATER CIRCUIT.



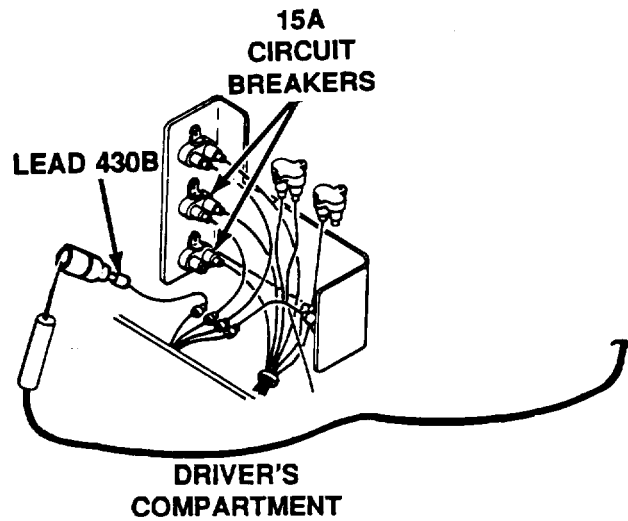
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

The diagram shows a top-down view of the fuel filter heater switch assembly. It is a rectangular metal box with various electrical terminals and connectors. Labels with leader lines point to the following components: DRIVER'S DOME LIGHT (top left), AERATION DETECTOR (top right), HULL HEATER CONTROL (middle right), and FUEL FILTER HEATER SWITCH (bottom center).

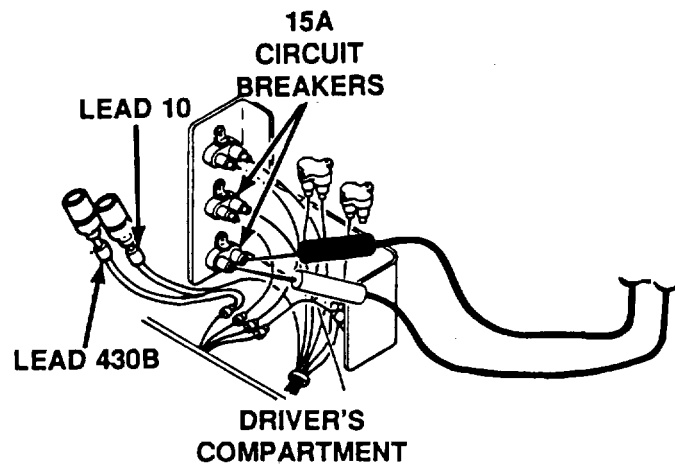
Step 1. Set MASTER switch ON. Set fuel filter heater switch ON. If both primary fuel filter heater and secondary fuel filter heater do not get warm, go to step 2. If primary fuel filter heater does not get warm, go to step 3. If secondary fuel filter does not get warm, go to step 10. Set MASTER switch OFF. Set fuel filter heater switch OFF.

This diagram shows the same fuel filter heater switch assembly as in the previous diagram, but with two leads, LEAD 430A and LEAD 430B, disconnected from the switch. A multimeter is connected across the terminals of the fuel filter heater switch. The multimeter is represented by a rectangle with a circle inside, connected to the switch terminals by wires.

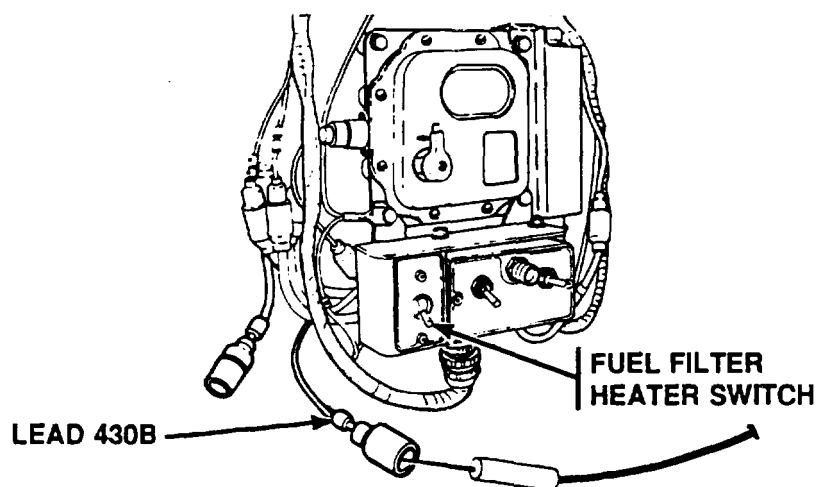
Step 2. Disconnect leads 430A and 430B from fuel filter heater switch. Connect multimeter to fuel filter heater switch leads. Set fuel filter heater switch ON. If multimeter indicates 0 ohms, troubleshoot battery power circuit and master relay circuit. Refer to page 2-82 and page 2-90. If multimeter indicates infinity, replace fuel filter heater switch. Refer to page 2-991. Set fuel filter heater switch OFF. Connect leads.



Step 3. Disconnect lead 430B from 15A circuit breaker (near driver's seat). Place red probe in 15A circuit breaker receptacle. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 5. If multimeter indicates no voltage, go to step 4. Set MASTER switch OFF.



Step 4. Remove lead 10 from 15A circuit breaker. Connect multimeter to 15A circuit breaker receptacles. If multimeter indicates 0 ohms, repair lead 10. Refer to page 2-364. If multimeter indicates infinity, replace 15A circuit breaker. Refer to page 2-991. Connect leads.



WARNING

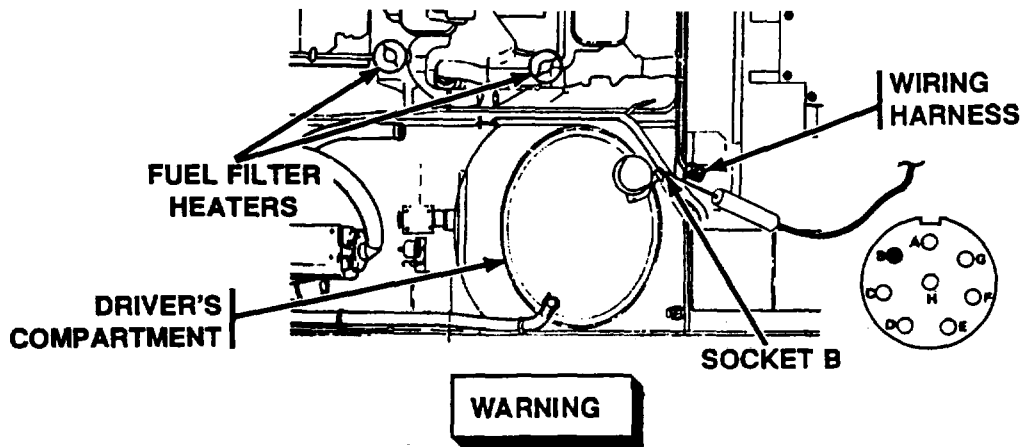
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 5. Disconnect lead 430B from fuel filter heater switch. Place red probe in lead 430B. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 6. If multimeter indicates no voltage, repair lead 430B between fuel filter heater switch and 1 5A circuit breaker. Refer to page 2-364. Set MASTER switch OFF. Connect lead.

WARNING

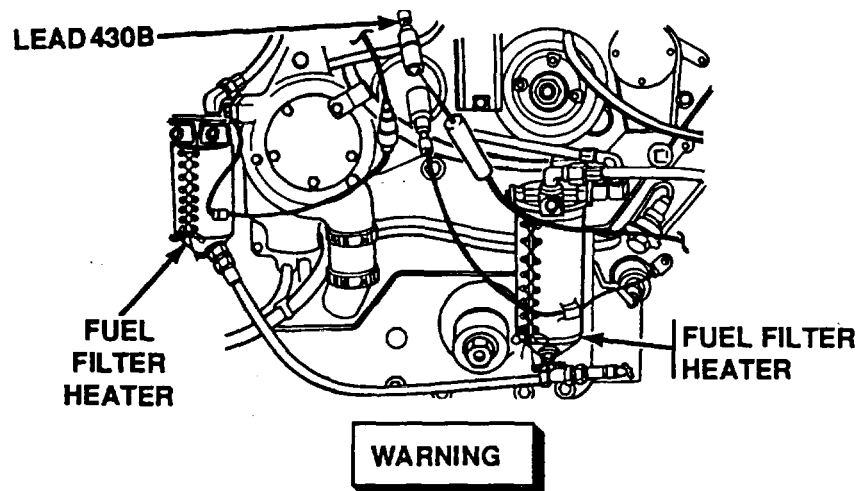
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 6. Disconnect lead 430B from fuel filter heater switch. Place red probe in lead 430B. Ground black probe. Set MASTER switch ON. Set fuel filter heater switch ON. If multimeter indicates about 24 volts, go to step 7. If multimeter indicates no voltage, replace fuel filter heater switch. Refer to page 2-991. Set MASTER switch OFF. Set fuel filter heater switch OFF. Connect lead.



Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

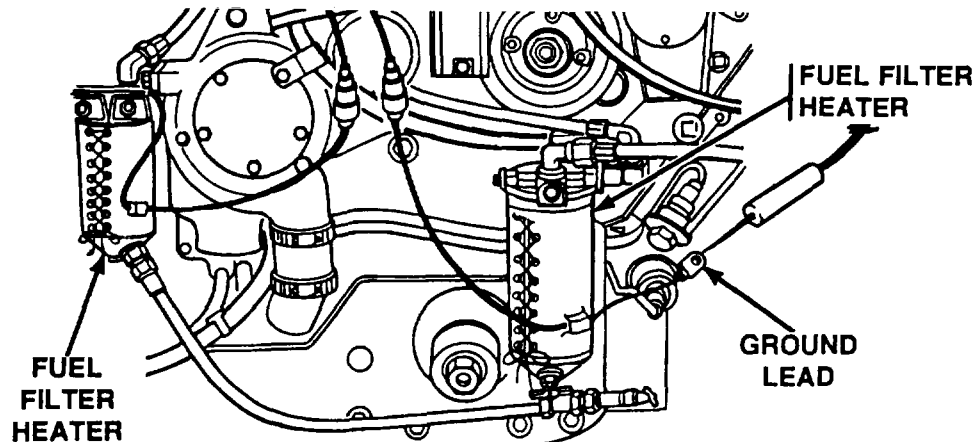
- Step 7. To access wiring harness, remove engine deck assembly. Refer to page 2-887. Disconnect wiring harness. Place red probe in socket B (lead 430B). Ground black probe. Set MASTER switch ON. Set fuel filter heater switch ON. If multimeter indicates about 24 volts, go to step 8. If multimeter indicates no voltage, repair lead 430B between wiring harness disconnect and fuel filter heater switch. Refer to page 2-364. Set MASTER switch OFF. Set fuel filter heater switch OFF. Connect wiring harness.



Make sure MASTER switch if OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

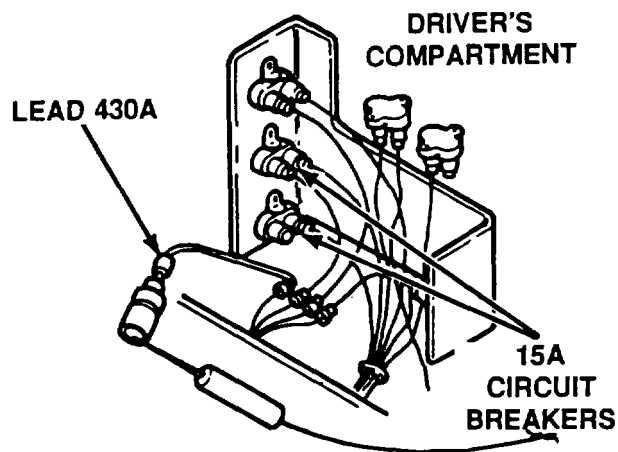
- Step 8. Disconnect lead 430B from fuel filter heater. Place red probe in lead 430B. Ground black probe. Set MASTER switch ON. Set fuel filter heater switch ON. If multimeter indicates about 24 volts, go to step 9. If multimeter indicates no voltage, repair lead 430B between wiring harness and fuel filter heater. Refer to page 2-364. Set MASTER switch OFF. Set fuel filter heater switch OFF. Connect lead.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

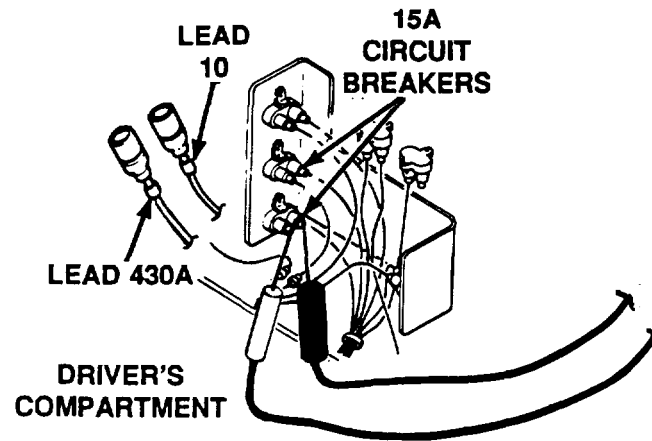
**WARNING**

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

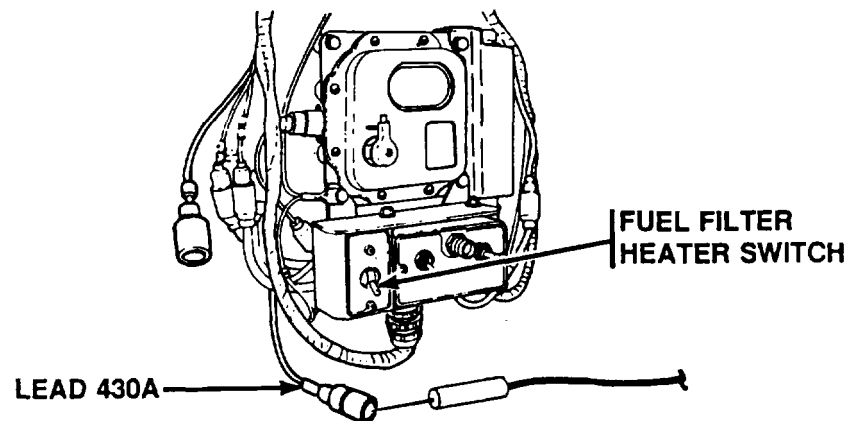
- Step 9. Disconnect fuel filter heater ground lead. Place red probe in ground lead terminal. Ground black probe. Set MASTER switch ON. Set fuel filter heater switch ON. If multimeter indicates about 24 volts, repair ground lead. Refer to page 2-364. If multimeter indicates no voltage, repair fuel filter heater. Refer to page 2-987. Set MASTER switch OFF. Set fuel filter heater switch OFF. Connect lead.



- Step 10. Disconnect lead 430A from 15A circuit breaker (near driver's seat.). Place red probe in 15A circuit breaker receptacle. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 12. If multimeter indicates no voltage, go to step 11. Set MASTER switch OFF.



Step 11. Disconnect lead 10 from 15A circuit breaker. Connect multimeter to 15A circuit breaker receptacles. If multimeter indicates 0 ohms, repair lead 10. Refer to page 2-364. If multimeter indicates infinity, replace 15A circuit breaker. Refer to page 2-991. Connect leads.

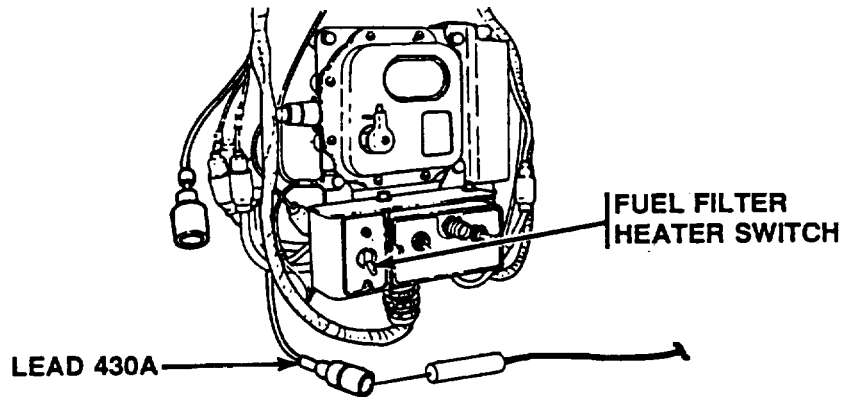


WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 12. Disconnect lead 430A from fuel filter heater switch. Place red probe in lead 430A. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 13. If multimeter indicates no voltage, repair lead 430A between fuel filter heater switch and 15A circuit breaker. Refer to page 2-364. Set MASTER switch OFF. Connect lead.

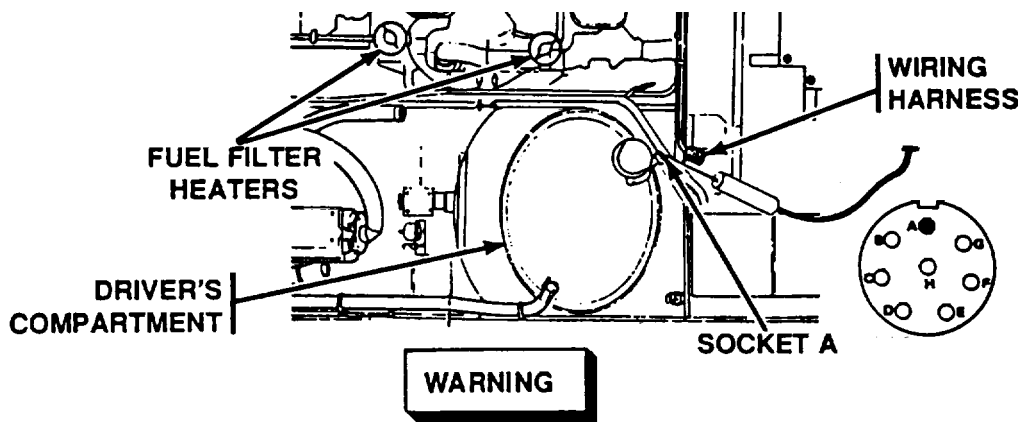
2-12. ELECTRICAL CIRCUIT TROUBESHOOTING (CONT).



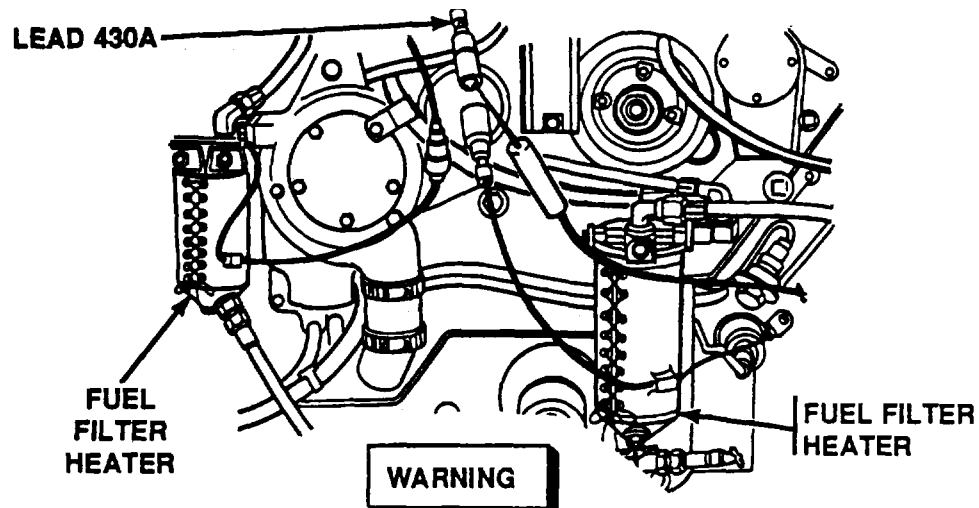
WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 13. Disconnect lead 430A from fuel filter heater switch. Place red probe in lead 430A. Ground black probe. Set MASTER switch ON. Set fuel filter heater switch ON. If multimeter indicates about 24 volts, go to step 14. If multimeter indicates no voltage, replace fuel filter heater switch. Refer to page 2-991. Set MASTER switch OFF. Set fuel filter heater switch OFF. Connect lead.

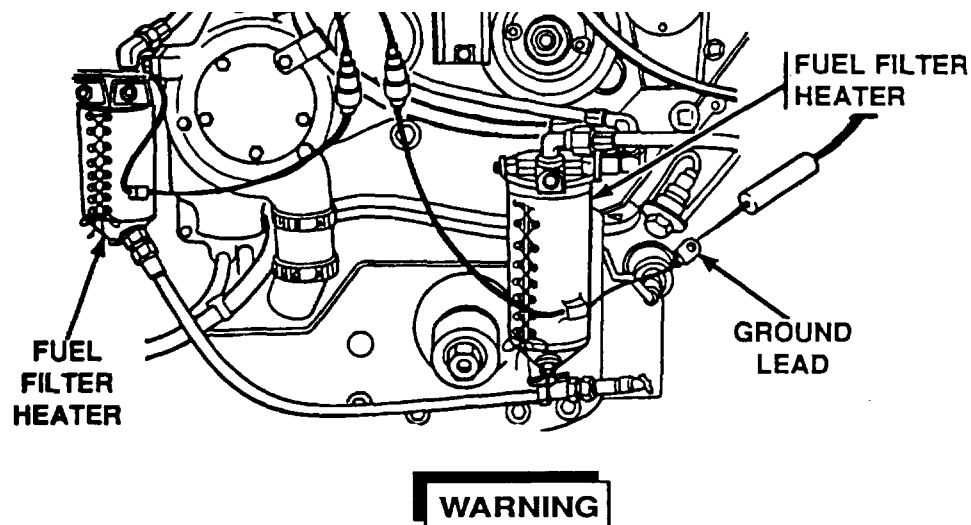


Step 14. Disconnect wiring harness. Place red probe in socket A (lead 430A). Ground black probe. Set MASTER switch ON. Set fuel filter heater switch ON. If multimeter indicates about 24 volts, go to step 15. If multimeter indicates no voltage, repair lead 430A between wiring harness disconnect and fuel filter heater. Refer to page 2-364. Set MASTER switch OFF. Set fuel filter heater switch OFF. Connect wiring harness.



Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 15. Disconnect lead 430A from fuel filter heater. Place red probe in lead 430A. Ground black probe. Set MASTER switch ON. Set fuel filter heater switch ON. If multimeter indicates about 24 volts, go to step 16. If multimeter indicates no voltage, repair lead 430A between wiring harness disconnect and fuel filter heater. Refer to page 2-364. Set MASTER switch OFF. Set fuel filter heater switch OFF. Connect lead.

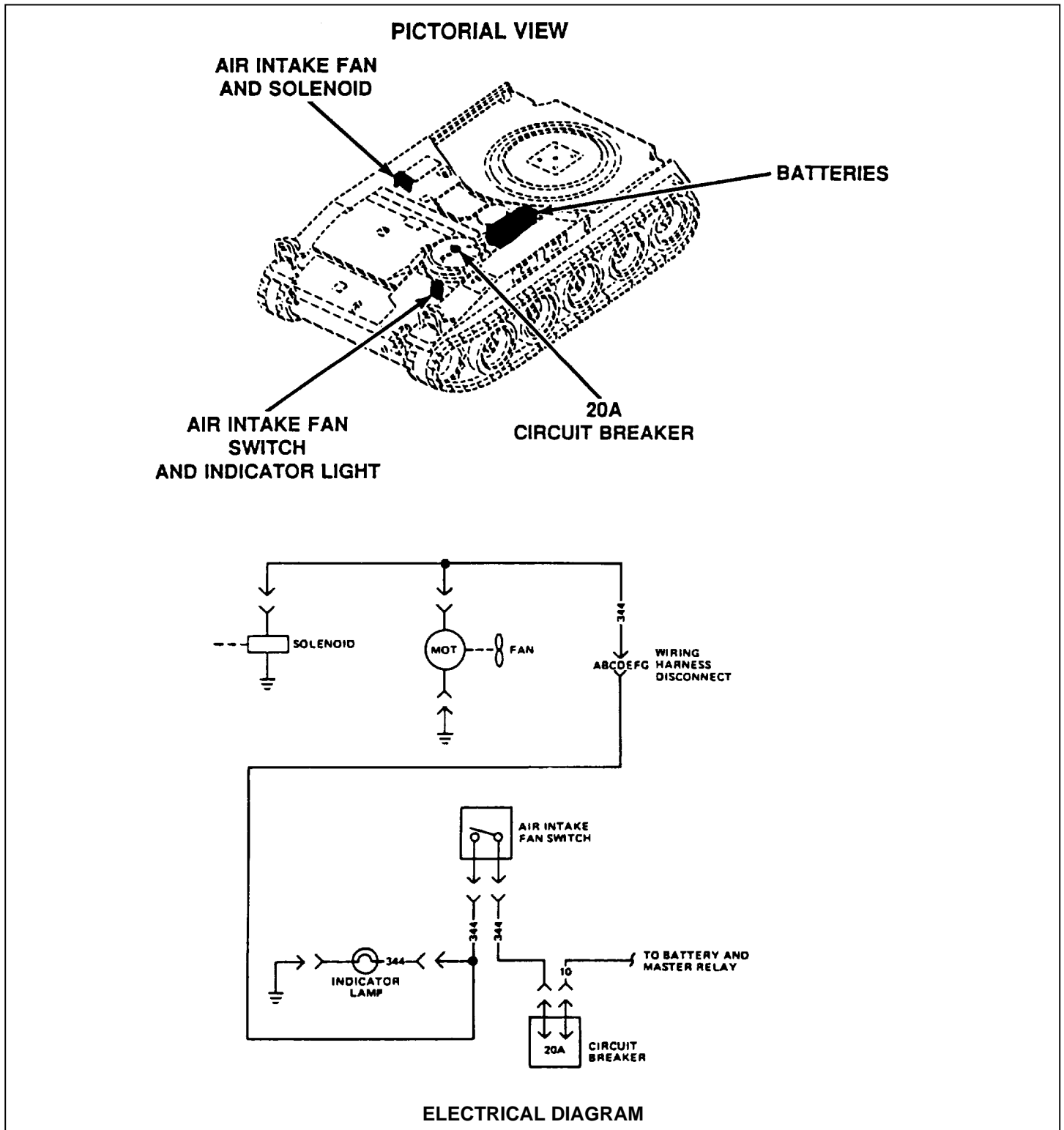


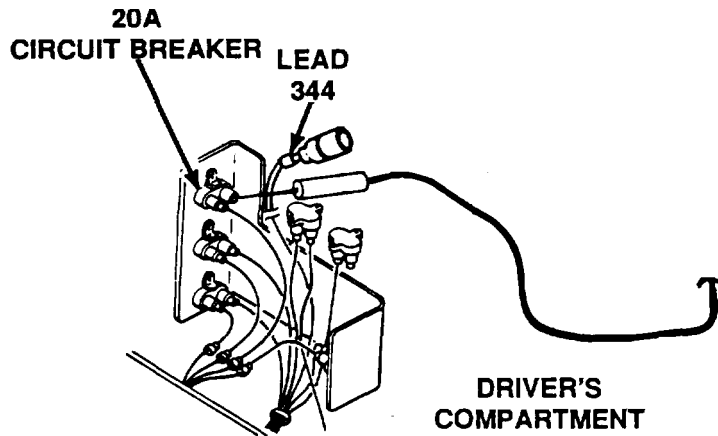
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 16. Disconnect ground lead. Place red probe in ground lead terminal. Group black probe. Set MASTER switch ON. Set fuel filter heater switch ON. multimeter indicates about 24 volts, repair ground lead. Refer to page 2 If multimeter indicates no voltage, replace fuel filter heater. Refer to page 2-987. Set MASTER switch OFF. Set fuel filter heater switch OFF. Connect lead.

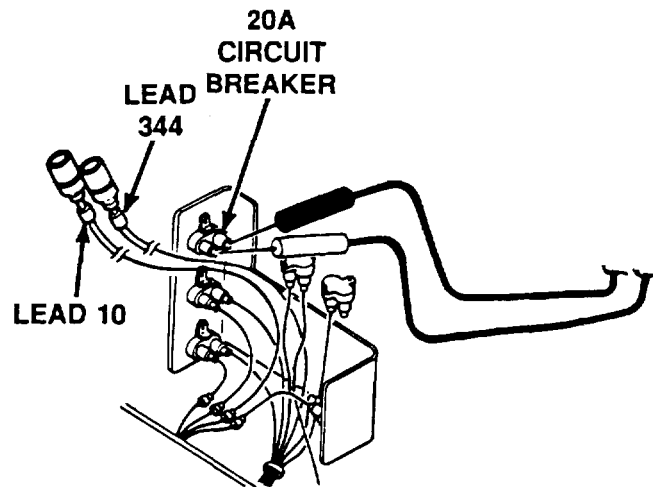
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

BF. AIR INTAKE FAN AND SOLENOID CIRCUIT.



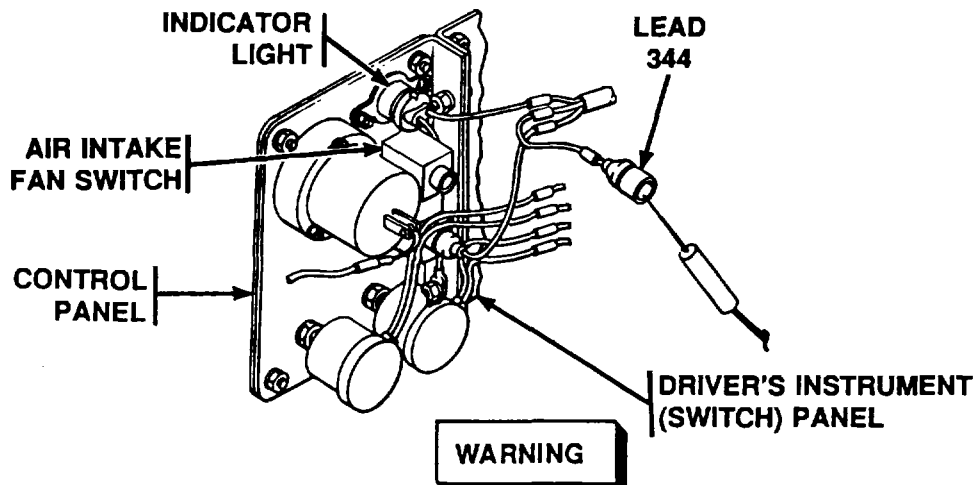


Step 1. Remove lead 344 from 20A circuit breaker (near driver's seat). Place red probe in circuit breaker receptacle. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 3. If multimeter indicates no voltage, go to step 2. Set MASTER switch OFF.



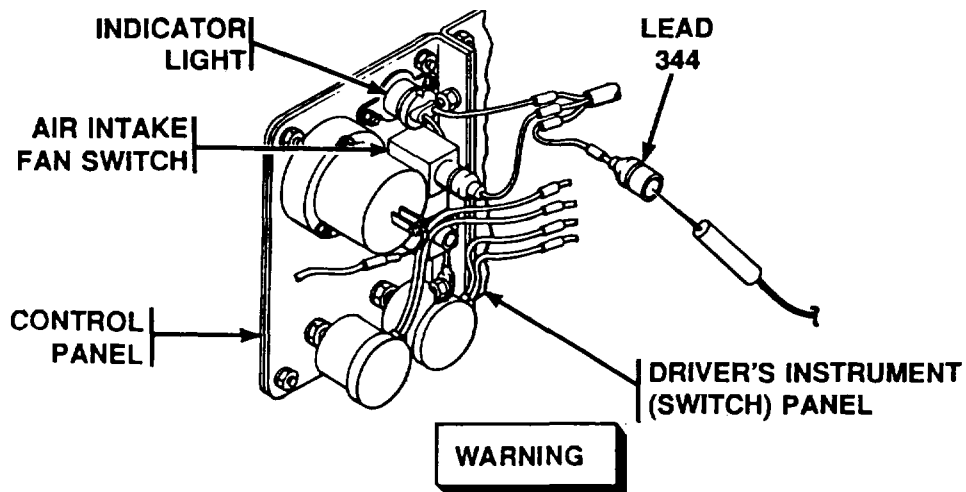
Step 2. Remove lead 10 from 20A circuit breaker. Connect multimeter to 20A circuit breaker receptacles. If multimeter indicates 0 ohms, repair lead 10. Refer to page 2-364. If multimeter indicates infinity, replace 20A circuit breaker. Refer to page 2-991. Connect leads.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



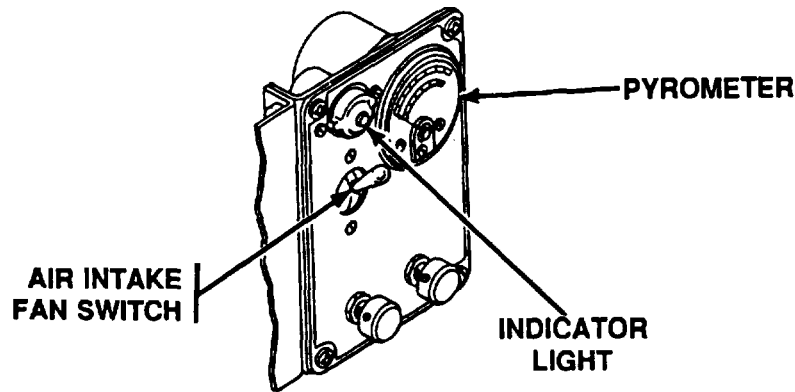
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 3. Disconnect lead 344 from AIR INTAKE FAN switch. Place red probe in lead 344. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 344 between AIR INTAKE FAN switch and 20A circuit breaker. Refer to page 2-364. Connect lead.

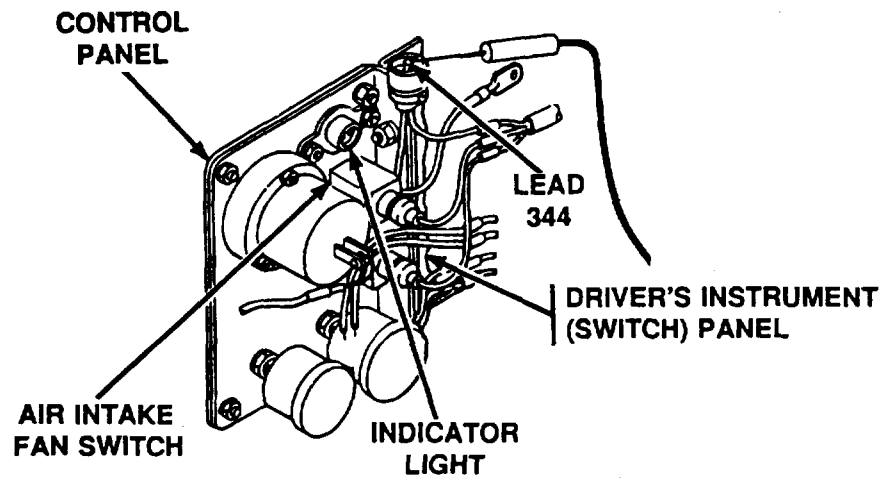


Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 4. Disconnect the other lead 344 from AIR INTAKE FAN switch. Place red probe in lead 344. Ground black probe. Set MASTER switch ON. Set AIR INTAKE FAN switch ON. If multimeter indicates about 24 volts, go to step 5. If multimeter indicates no voltage, replace AIR INTAKE FAN switch. Refer to page 2-1015. Set MASTER switch OFF. Set AIR INTAKE FAN switch OFF. Connect lead.



Step 5. Set MASTER switch ON. Set AIR INTAKE FAN switch ON. If indicator light operates, go to step 9. If indicator light does not operate, go to step 6. Set MASTER switch OFF. Set AIR INTAKE FAN switch OFF.

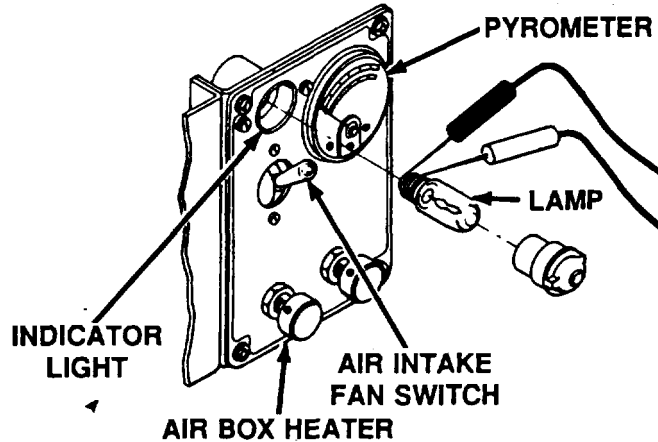


WARNING

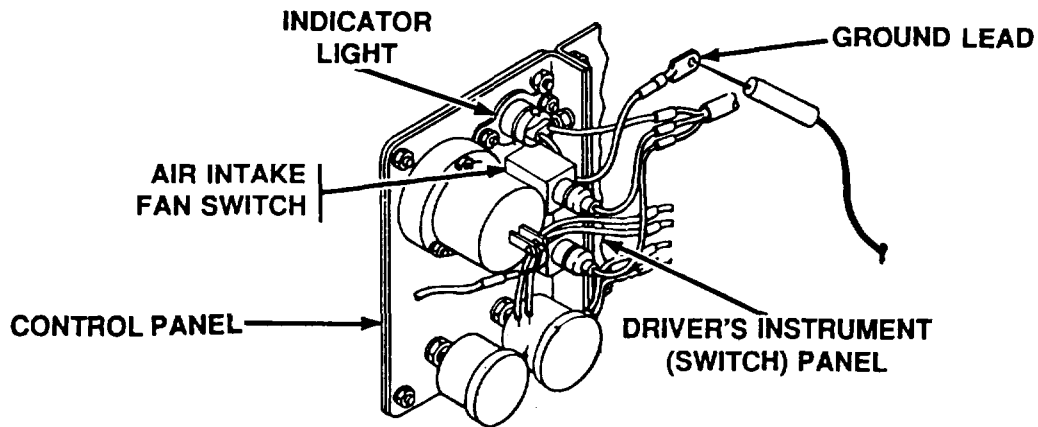
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 6. Remove lead 344 from indicator light. Place red probe in lead 344. Ground black probe. Set MASTER switch ON. Set AIR INTAKE FAN switch ON. If multimeter indicates about 24 volts, go to step 7. If multimeter indicates no voltage, repair lead 344 between indicator light and AIR INTAKE FAN switch. Refer to page 2-364. Set MASTER switch OFF. Set AIR INTAKE FAN switch OFF. Connect lead.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



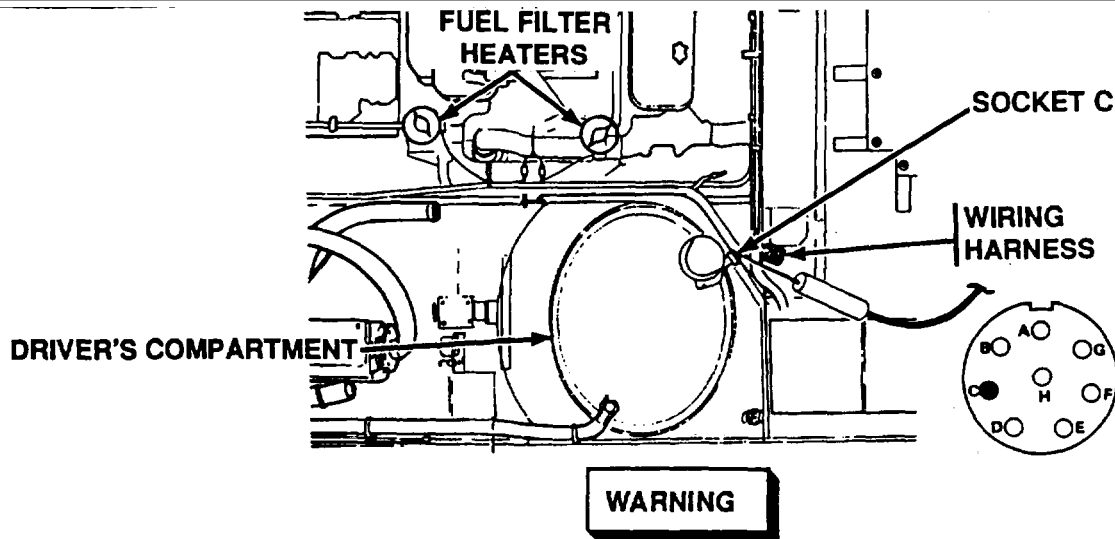
Step 7. Remove lamp from indicator light. Refer to page 2-1015. Connect multimeter to contacts of lamp. If multimeter indicates about 26 ohms, go to step 8. If multimeter indicates infinity, replace lamp. Refer to page 2-1015.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

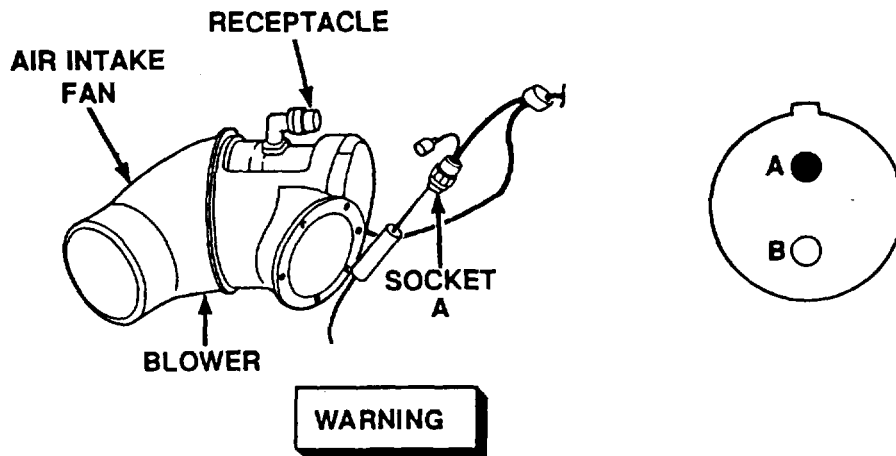
Step 8. Disconnect indicator light ground lead. Place red probe in indicator light ground lead terminal. Ground black probe. Set MASTER switch ON. Set AIR INTAKE FAN switch ON. If multimeter indicates about 24 volts, repair indicator light ground lead. Refer to page 2-364. If multimeter indicates no voltage, replace indicator light. Refer to page 2-1015. Set MASTER switch OFF. Set AIR INTAKE FAN switch OFF. Connect ground lead.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

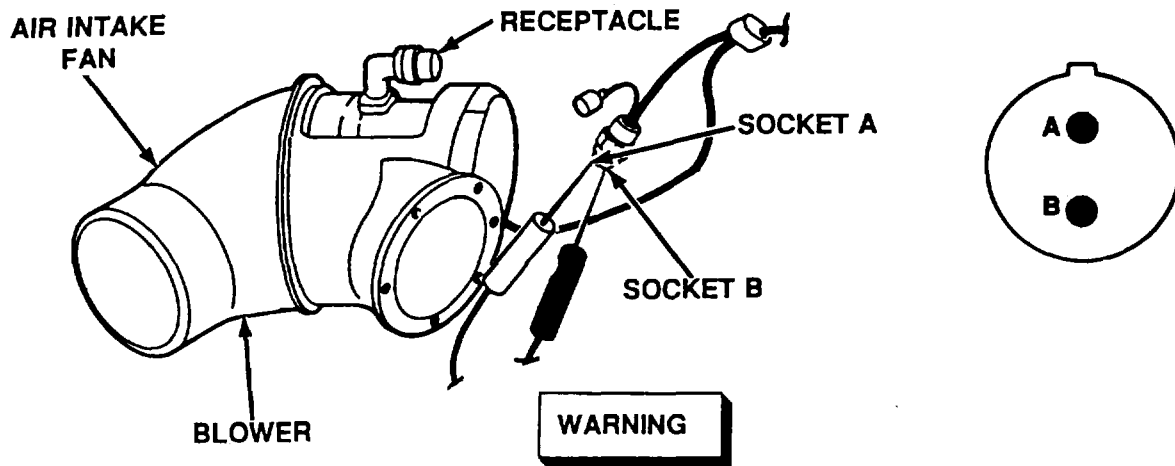
Step 9. To access wiring harness, remove engine deck assembly. Refer to page 2-887. Disconnect wiring harness. Place red probe in socket C (lead 344). Ground black probe. Set MASTER switch ON. Set AIR INTAKE FAN switch ON. If multimeter indicates about 24 volts, go to step 10. If multimeter indicates no voltage, repair lead 344 between AIR INTAKE FAN switch and wiring harness disconnect. Refer to page 2-364. Set MASTER switch OFF. Set AIR INTAKE FAN switch OFF. Connect wiring harness.



WARNING

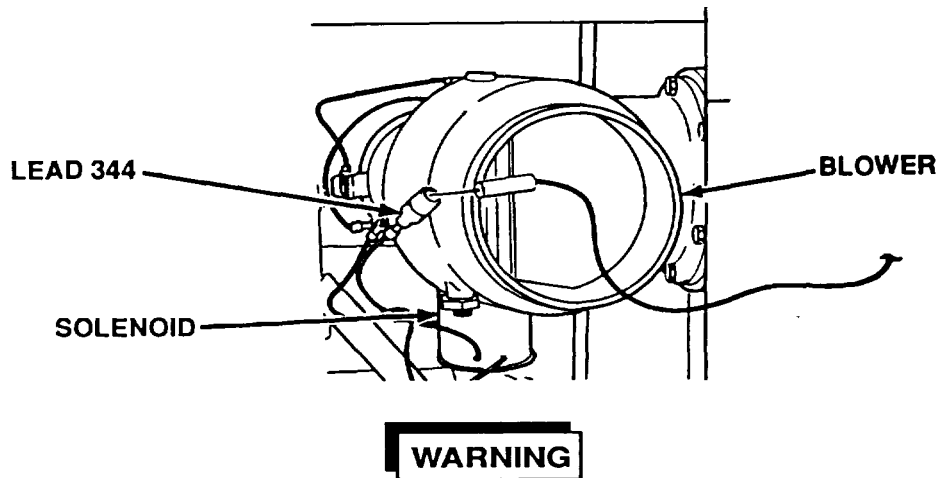
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 10. Disconnect connector from air intake fan. Place red probe in socket A (lead 344). Ground black probe. Set MASTER switch ON. Set AIR INTAKE FAN switch ON. If multimeter indicates about 24 volts, go to step 11. If multimeter indicates no voltage, repair lead 344 between wiring harness disconnect and air intake fan. Refer to page 2-364. Set MASTER switch OFF. Set AIR INTAKE FAN switch OFF. Connect connector to air intake fan.



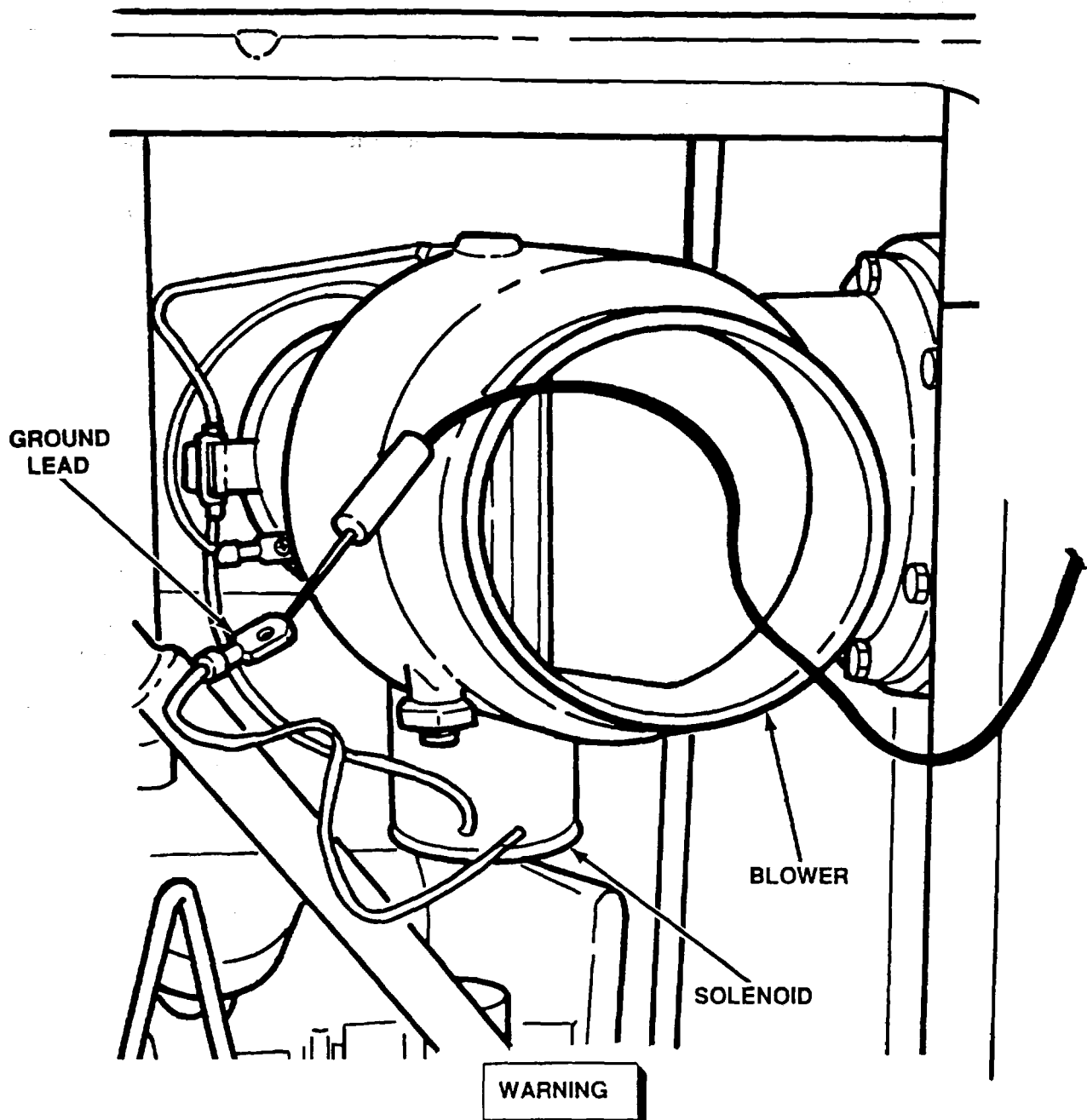
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 11. Place red probe in socket A (lead 314). Place black probe in socket B (ground) of air intake fan. Set MASTER switch ON. Set AIR INTAKE FAN switch ON. If multimeter indicates about 24 volts, notify direct support maintenance. If multimeter indicates no voltage, repair air intake fan ground lead. Refer to page 2-364. Set MASTER switch OFF. Set AIR INTAKE FAN switch OFF. Connect connector to air intake fan.



Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 12. Disconnect lead 344 from blower solenoid. Place red probe in lead 344, Ground black probe. Set MASTER switch ON. Set AIR INTAKE FAN switch ON. If multimeter indicates about 24 volts, go to step 13. If multimeter indicates no voltage, repair lead 344 between air intake fan and blower solenoid. Refer to page 2-364. Set MASTER switch OFF. Set AIR INTAKE FAN switch OFF. Connect lead.

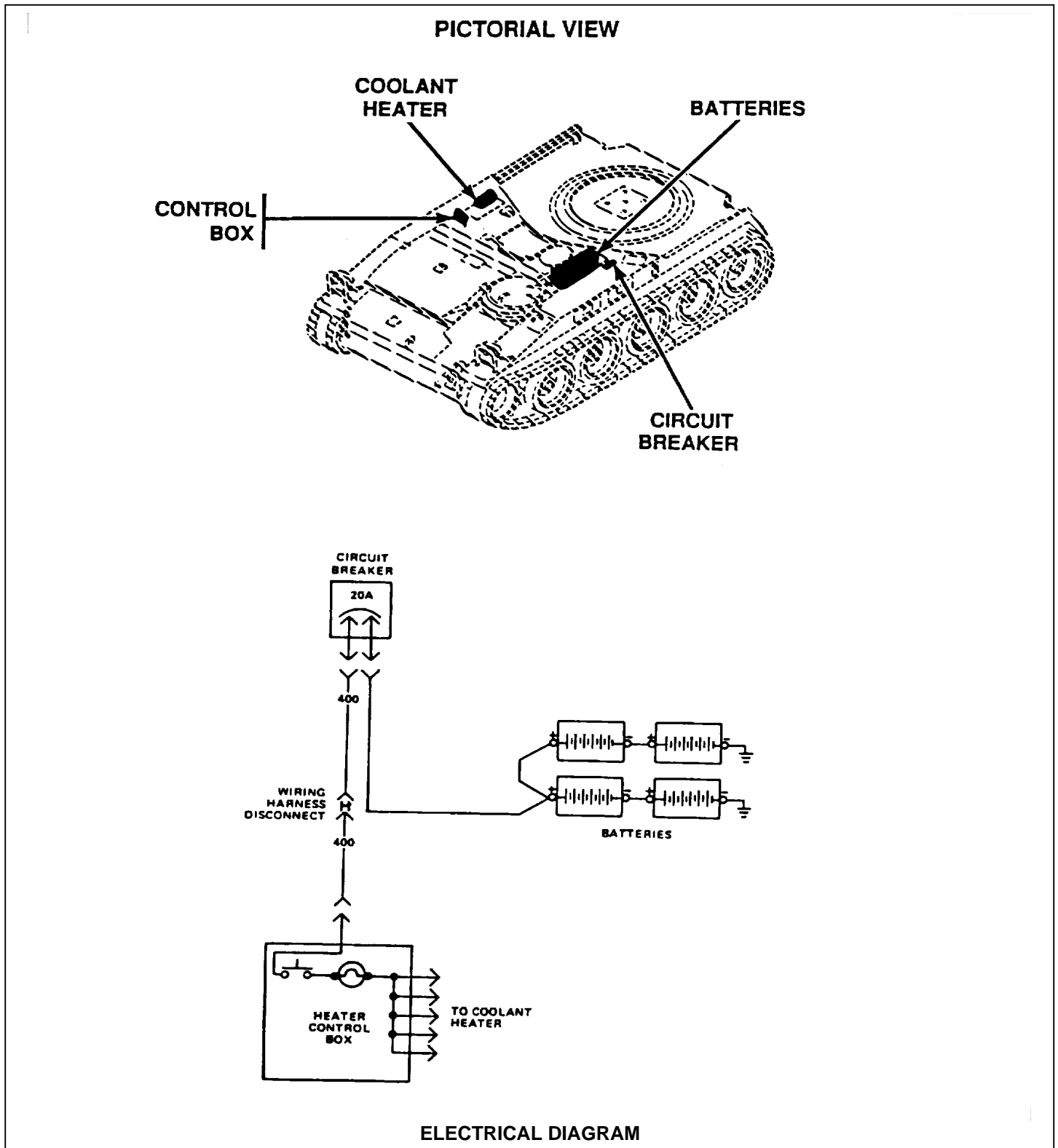


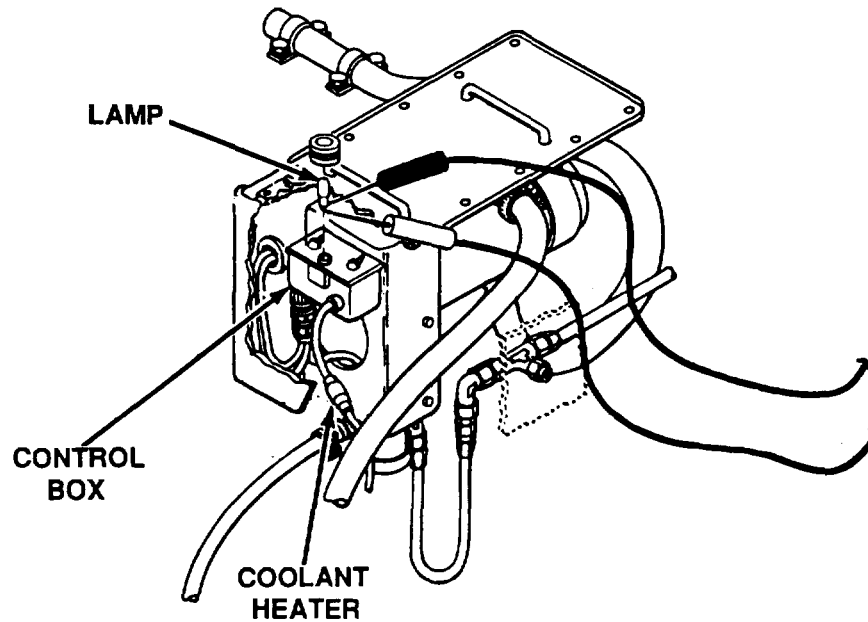
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 13. Disconnect blower solenoid ground lead. Place red probe in blower solenoid ground lead terminal. Ground black probe. Set MASTER switch ON. Set AIR INTAKE FAN switch ON. If multimeter indicates about 24 volts, repair blower solenoid ground lead. Refer to page 2-364. If multimeter indicates no voltage, notify direct support maintenance. Set MASTER switch OFF. Set AIR INTAKE FAN switch OFF. Connect blower solenoid ground lead.

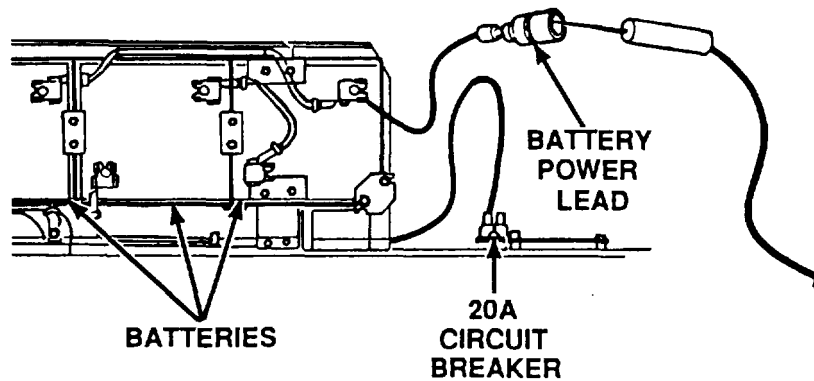
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

BG. COOLANT HEATER CONTROL BOX LIGHT CIRCUIT.





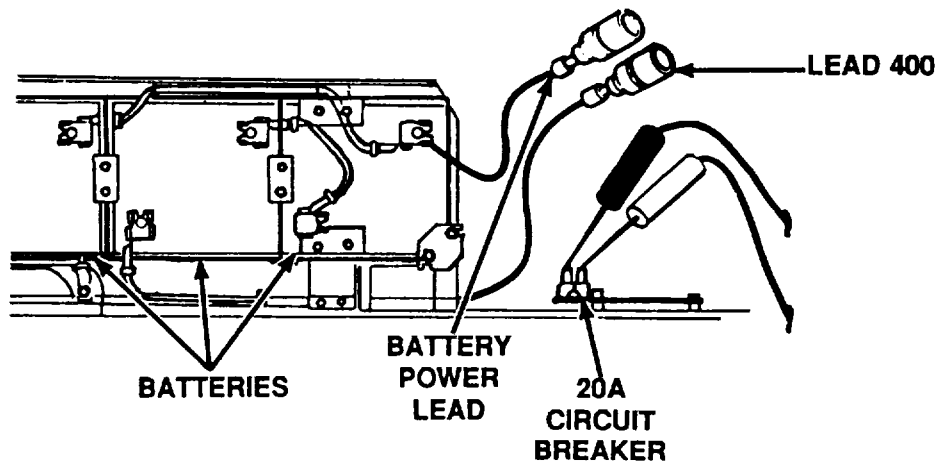
Step 1. Remove lamp from coolant control box. Refer to page 2-1017. Connect multimeter to contacts of lamp. If multimeter indicates about 75 ohms, go to step 2. If multimeter indicates 0 ohms, replace lamp. Refer to page 2-1017.



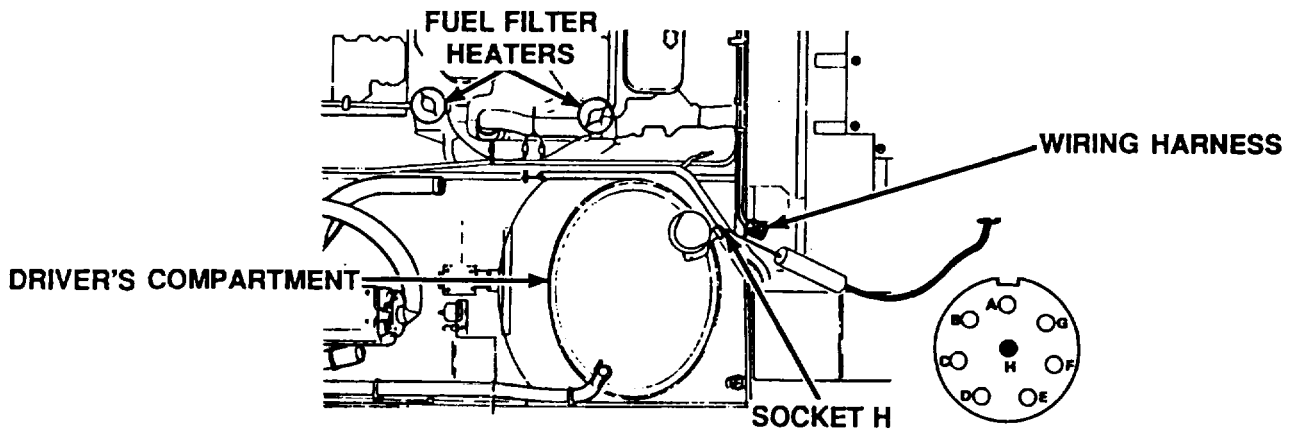
WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 2. To access coolant heater circuit breaker, remove right CO2 cylinder access cover. Refer to page 2-875. Disconnect battery power lead from 20A battery breaker. Place red probe in battery power lead. Ground black probe. If multimeter indicates about 24 volts, go to step 3. If multimeter indicates no voltage, repair battery power lead. Refer to page 2-364. If problem still exists, troubleshoot battery power circuit. Refer to page 2-82. Connect lead.



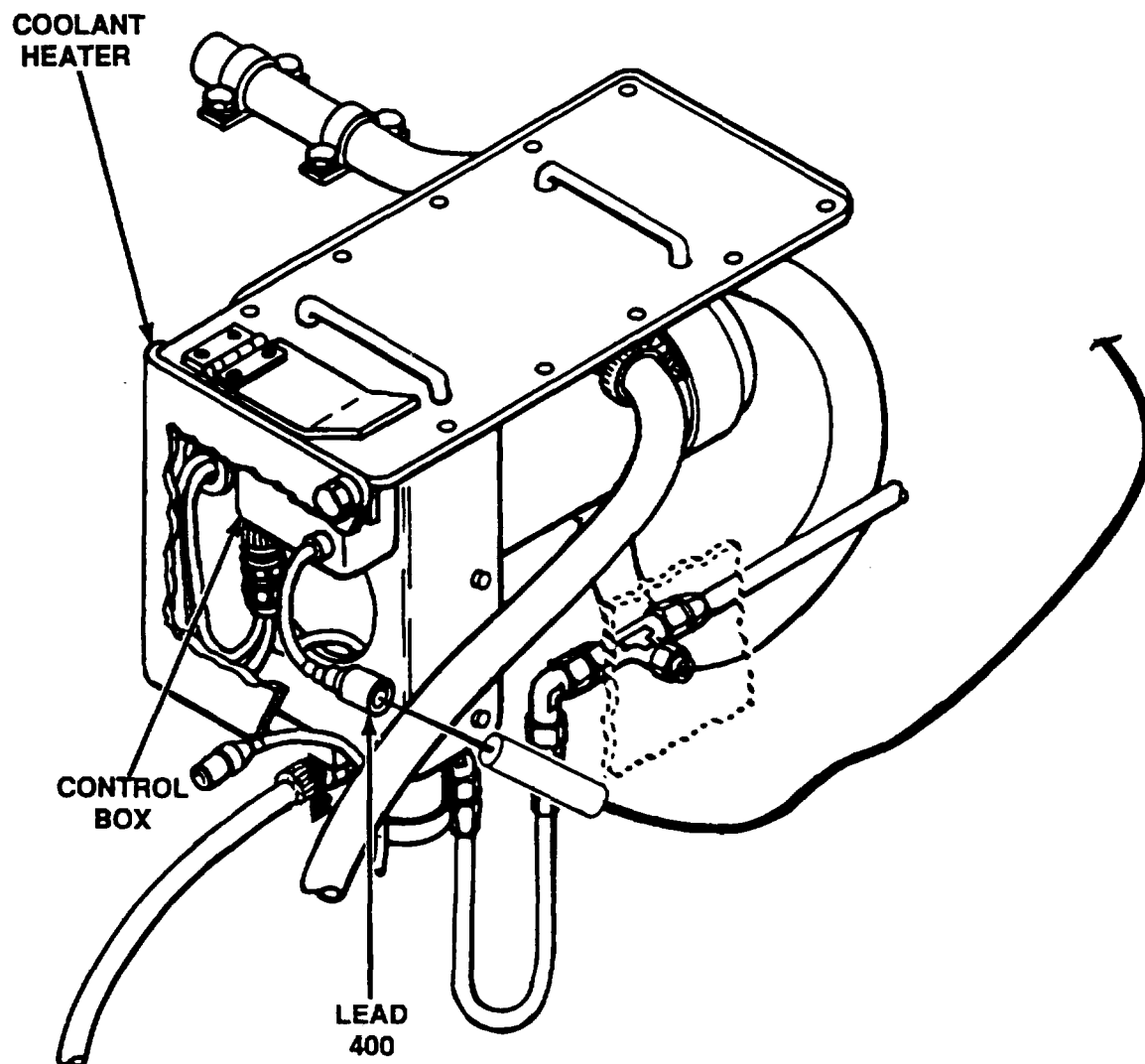
Step 3. Disconnect lead 400 from 20A circuit breaker. Connect multimeter to 20A circuit breaker receptacles. If multimeter indicates 0 ohms, go to step 4. If multimeter indicates infinity, replace 20A circuit breaker. Refer to page 2-991. Connect leads.



WARNING

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 4. To access wiring harness, remove engine deck assembly. Refer to page 2-887. Disconnect wiring harness. Place red probe in socket H (lead 400). Ground black probe. If multimeter indicates about 24 volts, go to step 5. If multimeter indicates no voltage, repair lead 400 between 20A circuit breaker and wiring harness disconnect. Refer to page 2-364. Connect wiring harness.

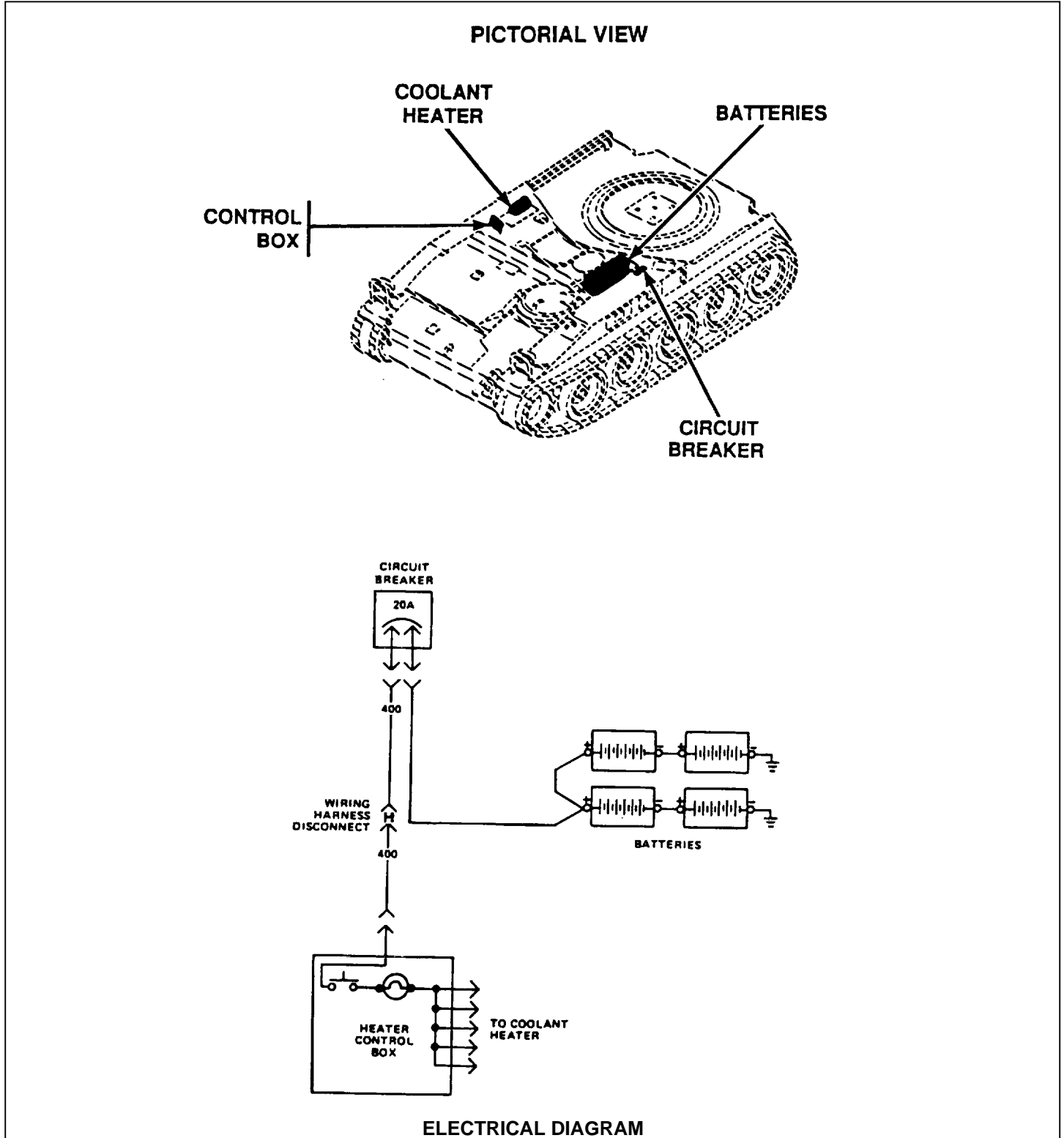
**WARNING**

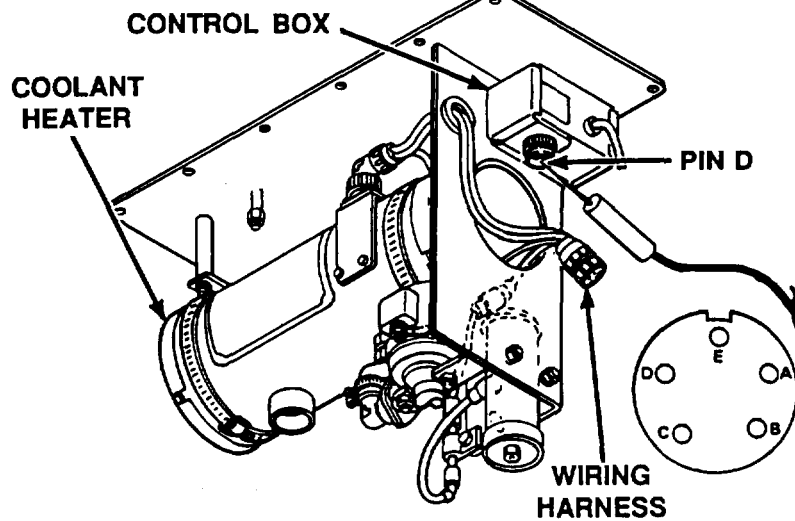
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 5. Disconnect lead 400 from coolant heater control box. Place red probe in lead 400. Ground black probe. If multimeter indicates about 24 volts, replace coolant heater control box. Refer to page 2-1018. If multimeter indicates no voltage, repair lead 400 between wiring harness disconnect and coolant heater control box. Refer to page 2-364. Connect lead.

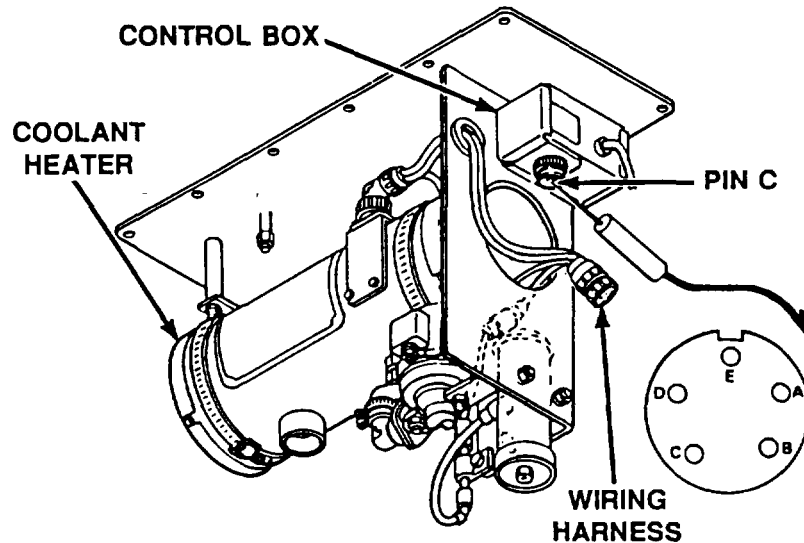
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

BH. COOLANT HEATER CIRCUIT.



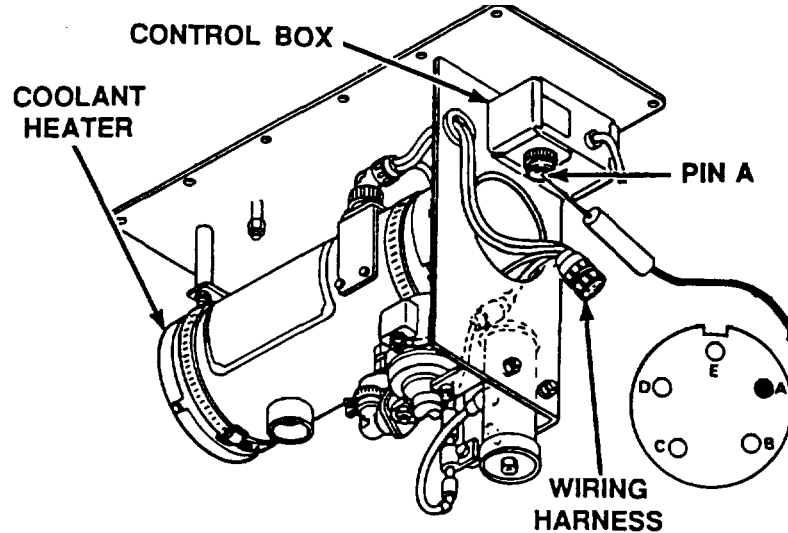


Step 1. Disconnect wiring harness from coolant heater control box. Place red probe on pin D (lead 411). Ground black probe. Set START-OFF-RUN switch to START. If multimeter indicates about 24 volts, go to step 2. If multimeter indicates no voltage, replace coolant heater control box. Refer to page 2-1018. Set START-OFF-RUN switch OFF. Connect wiring harness.

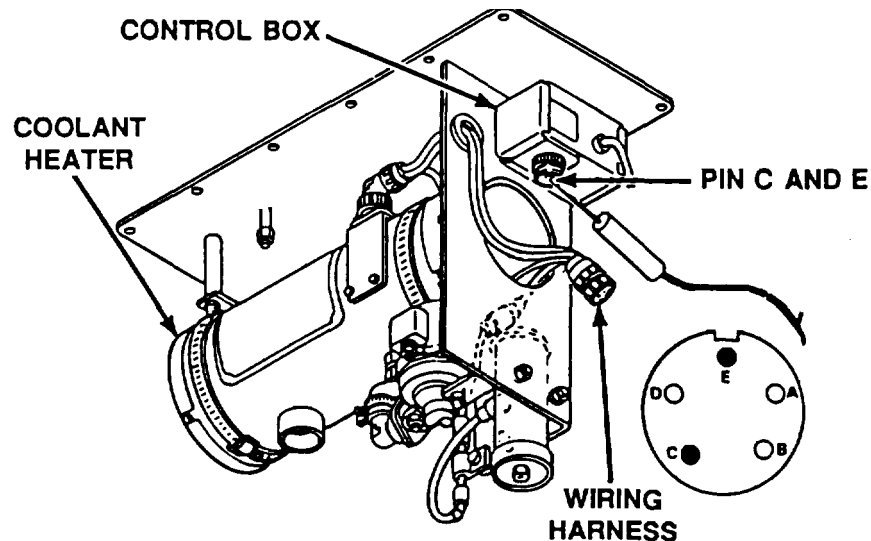


Step 2. Place red probe on pin C (lead 401). Ground black probe. Set START-OFF-RUN switch to START. If multimeter indicates about 24 volts, go to step 3. If multimeter indicates no voltage, replace coolant heater control box. Refer to page 2-1018. Set START-OFF-RUN switch OFF. Connect wiring harness.

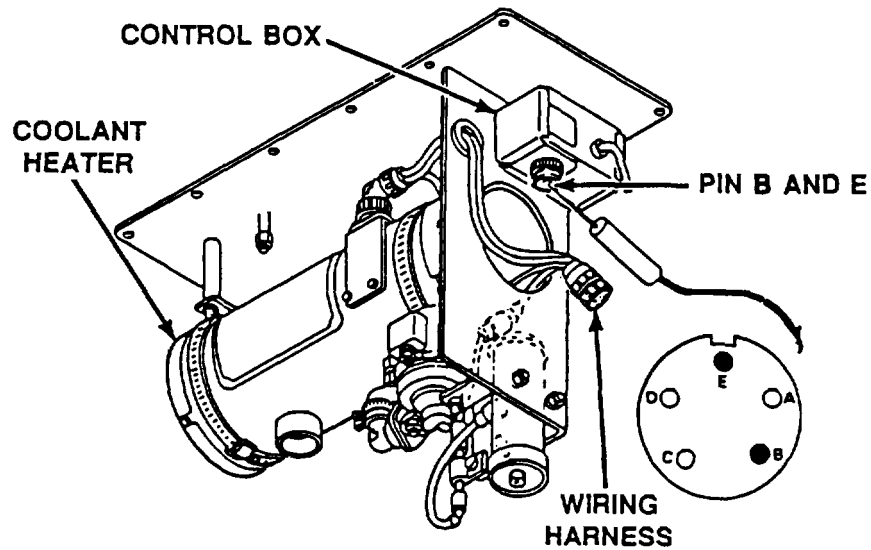
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).



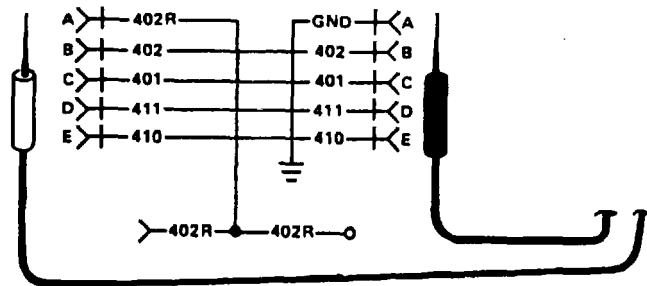
Step 3. Place red probe on pin A (lead 402R). Ground black probe. Set START-OFF-RUN switch to START, then to RUN. If multimeter indicates about 24 volts in both switch settings, go to step 4. If multimeter indicates no voltage in both switch settings, replace coolant heater control box. Refer to page 2-1018. Set START-OFF-RUN switch OFF. Connect wiring harness.



Step 4. Place red probe on pin E (lead 410). Place black probe on pin C (lead 401). Set START-OFF-RUN switch to RUN. If multimeter indicates 0 ohms, go to step 5. If multimeter indicates infinity, replace coolant heater control box. Refer to page 2-1018. Set START-OFF-RUN switch OFF. Connect wiring harness.



Step 5. Place red probe on pin E (lead 410). Place black probe on pin B (lead 402). Set HI-LO switch to HI. If multimeter indicates 0 ohms, go to step 6. If multimeter indicates infinity, replace coolant heater control box. Refer to page 2-1018. Connect wiring harness.

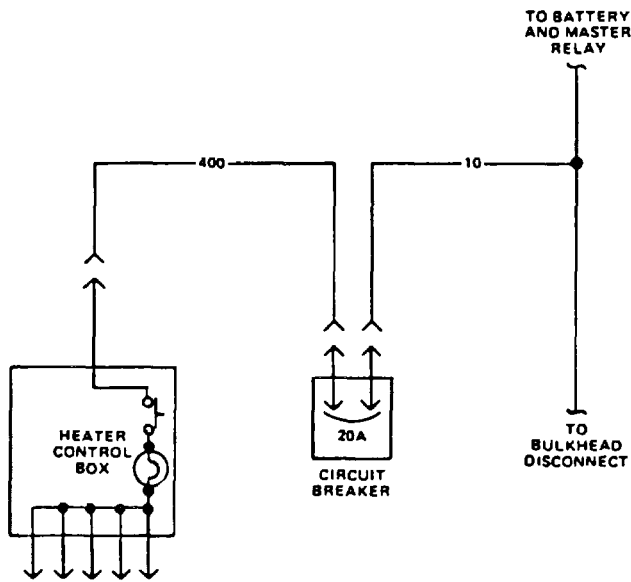
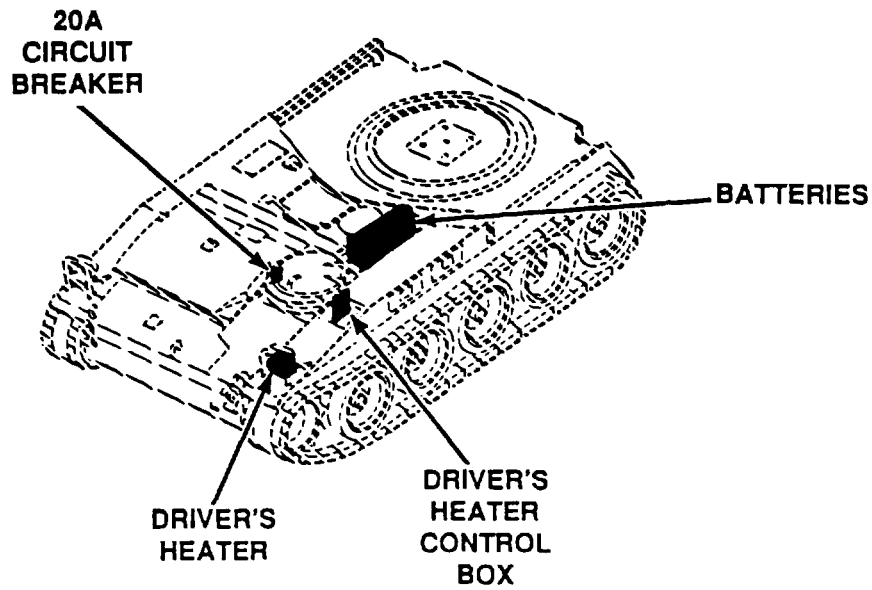


Step 6. Disconnect wiring harness from coolant heater assembly. Check continuity on each lead in wiring harness. If multimeter indicates 0 ohms at each lead in wiring harness, replace coolant heater assembly. Refer to page 2-1018. If multimeter indicates infinity at each lead in wiring harness, repair wiring harness. Refer to page 2-364. Connect wiring harness.

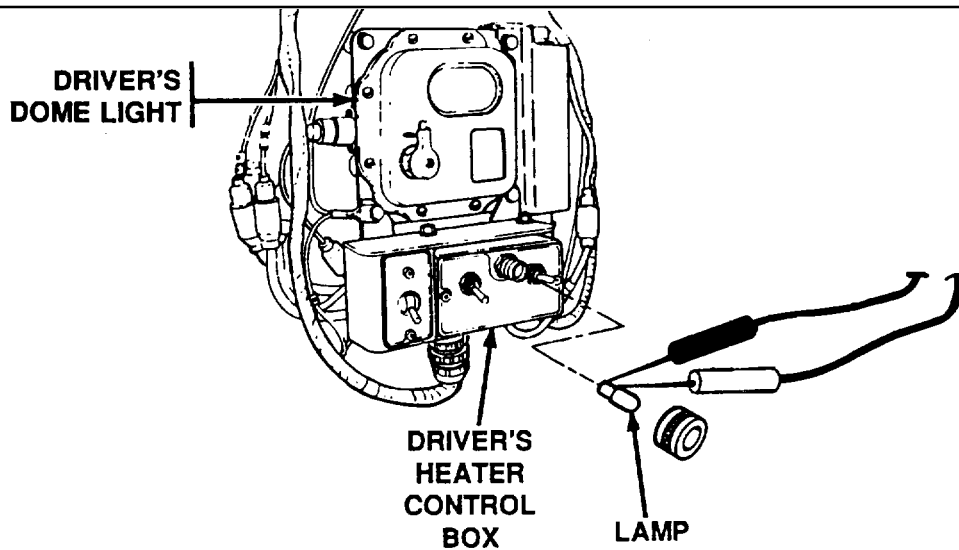
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT).

BI. DRIVER'S HEATER CONTROL BOX LIGHT CIRCUIT.

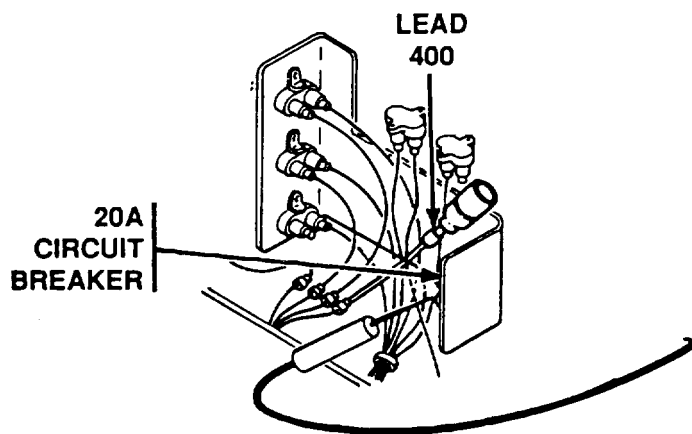
PICTORIAL VIEW



ELECTRICAL DIAGRAM

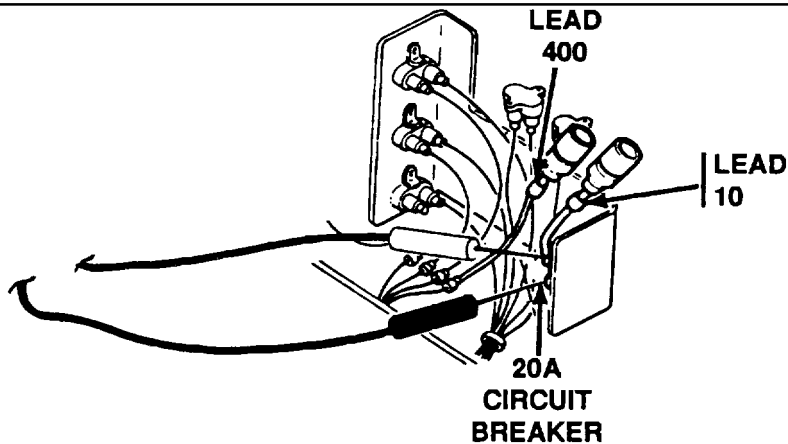


Step 1. Remove lamp from driver's heater control box. Refer to page 2-1017. Connect multimeter to contacts of lamp. If multimeter indicates about 75 ohms, go to step 2. If multimeter indicates infinity, replace lamp. Refer t(page 2-1017.

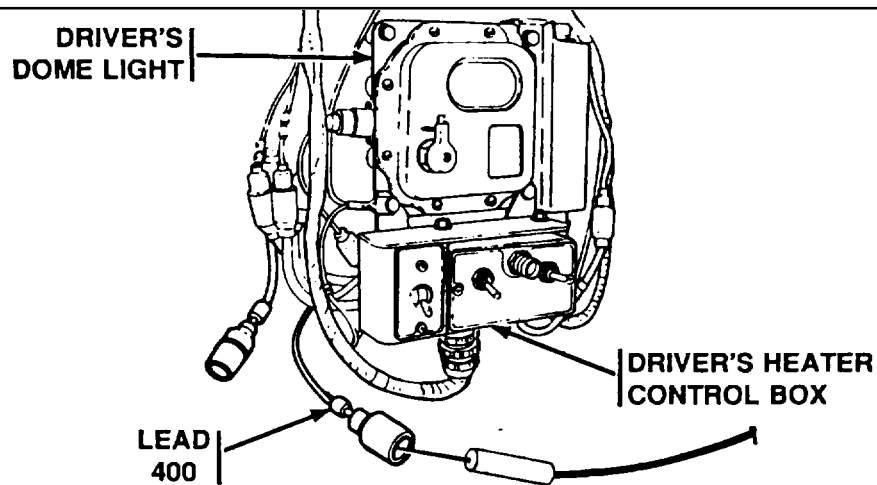


Step 2. Disconnect lead 400 from 20A circuit breaker (near driver's seat). Place red probe in 20A circuit breaker receptacle. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, go to step 3. Set MASTER switch OFF.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).



Step 3. Disconnect lead 10 from 20A circuit breaker. Connect multimeter to 20A circuit breaker receptacles. If multimeter indicates 0 ohms, repair lead 10. Refer to page 2-364. If multimeter indicates infinity, replace 20A circuit breaker. Refer to page 2-991. Connect leads.



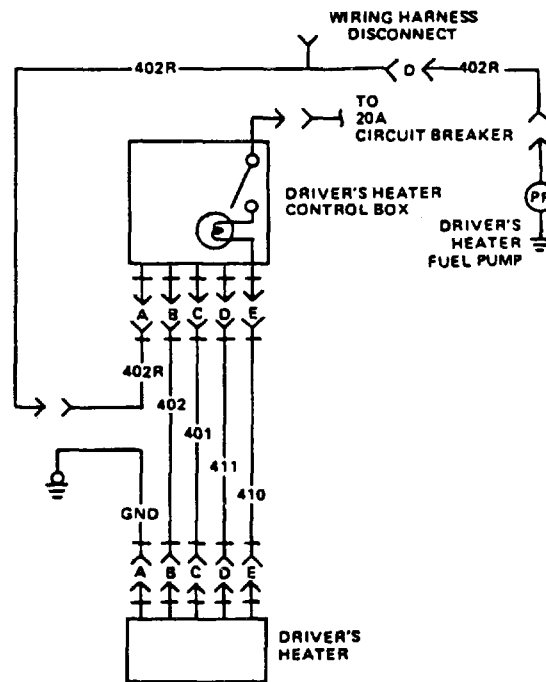
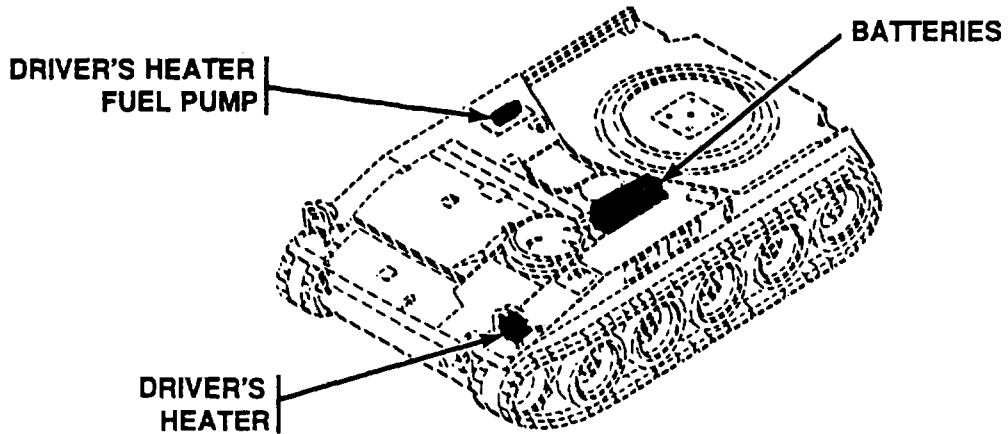
WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 4. Disconnect lead 400 from driver's heater control box. Place red probe in lead 400. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, replace driver's heater control box. Refer to page 2-991. If multimeter indicates no voltage, repair lead 400 between 20A circuit breaker and driver's heater control box. Refer to page 2-364. Set MASTER switch. OFF. Connect lead.

BJ. DRIVER'S HEATER FUEL PUMP CIRCUIT.

PICTORIAL VIEW



ELECTRICAL DIAGRAM

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

DRIVER'S DOME LIGHT

DRIVER'S HEATER CONTROL BOX

WIRING HARNESS

PIN A

WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 1. Disconnect wiring harness from driver's heater control box. Place red probe on pin A (lead 402R). Ground black probe. Set MASTER switch ON. Set START-OFF-RUN switch to START. If multimeter indicates about 24 volts, go to step 2. If multimeter indicates no voltage, replace driver's heater control box. Refer to page 2-991. Set MASTER switch OFF. Set START-OFF-RUN switch OFF. Connect wiring harness.

DRIVER'S DOME LIGHT

DRIVER'S HEATER CONTROL BOX

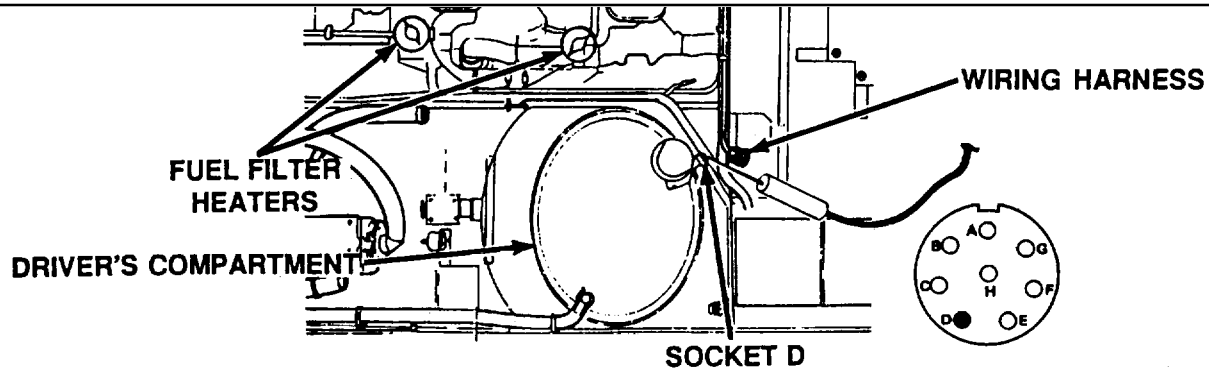
WIRING HARNESS

LEAD 402R

WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

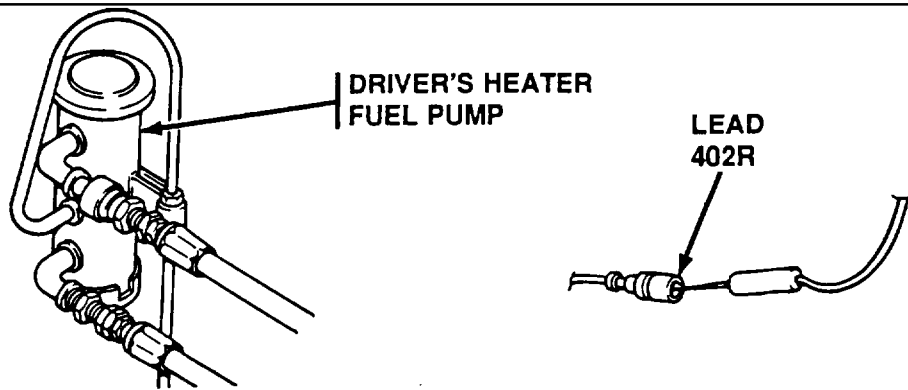
Step 2. Disconnect lead 402R from driver's heater control box wiring harness. Place red probe in lead 402R. Ground black probe. Set MASTER switch ON. Set START-OFF-RUN switch to START. If multimeter indicates about 24 volts, go to step 3. If multimeter indicates no voltage, repair lead 402R between disconnect and driver's heater control box wiring harness. Refer to page 2-364. Set MASTER switch OFF. Set START-OFF-RUN switch OFF. Connect lead.



WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 3. To access wiring harness, remove engine deck assembly. Refer to page 2-887. Disconnect wiring harness. Place red probe in socket D (lead 402R). Ground black probe. Set MASTER switch ON. Set START-OFF-RUN switch to START. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 402R between disconnect and wiring harness disconnect. Refer to page 2-364. Set MASTER switch OFF. Set START-OFF-RUN switch OFF. Connect wiring harness.



WARNING

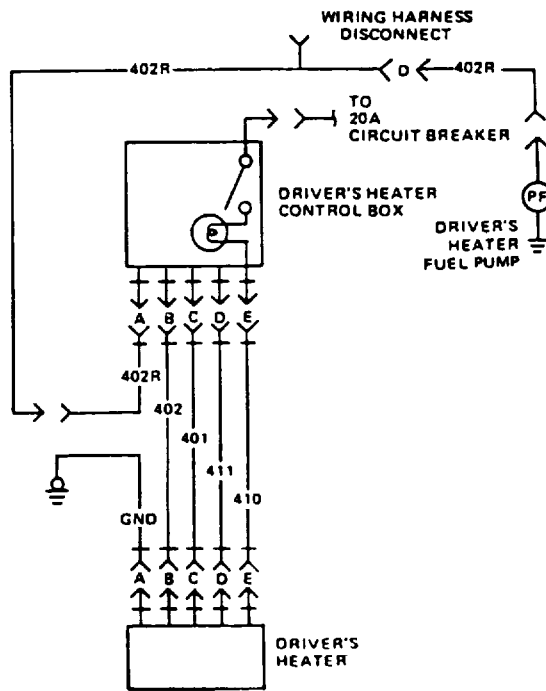
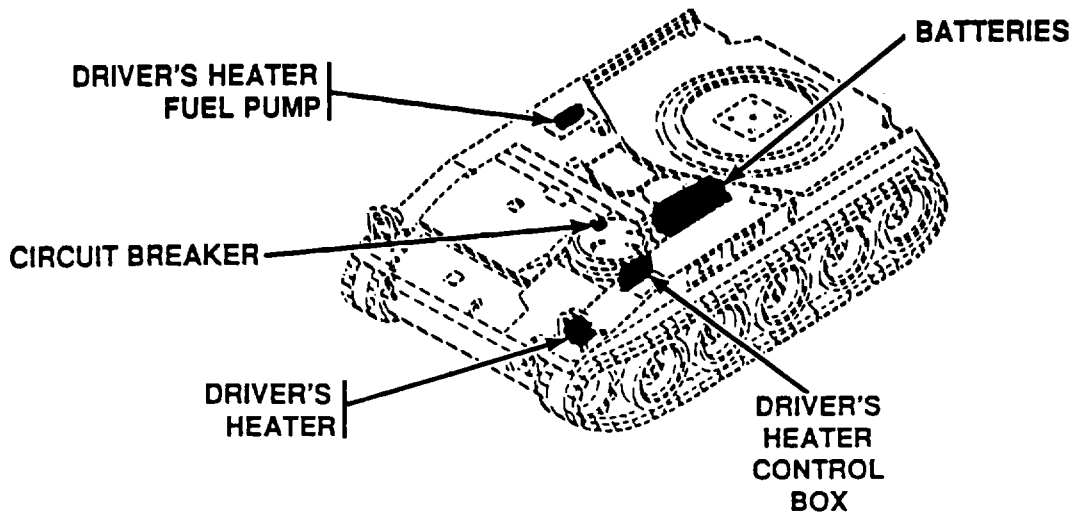
Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 4. Disconnect lead 402R from driver's heater fuel pump. Place red probe in lead 402R. Ground black probe. Set MASTER switch ON. Set START-OFFRUN switch to START. If multimeter indicates about 24 volts, replace driver's heater fuel pump. Refer to page 2-978. If multimeter indicates no voltage, repair lead 402R between wiring harness disconnect and driver's heater fuel pump disconnect. Refer to page 2-364. Set MASTER switch OFF. Set START-OFF-RUN switch OFF. Connect lead.

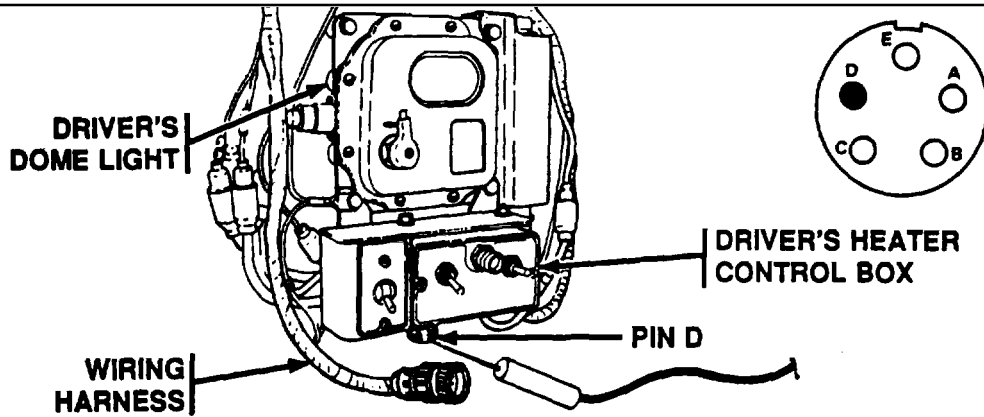
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

BK. DRIVER'S HEATER CIRCUIT.

PICTORIAL VIEW



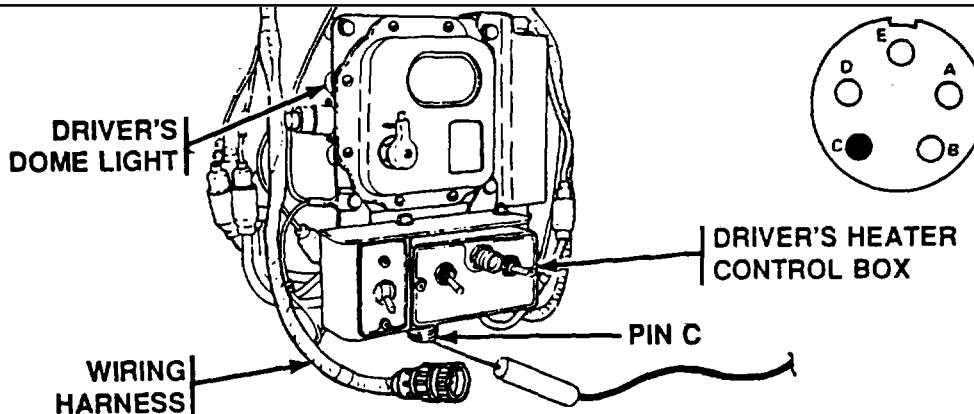
ELECTRICAL DIAGRAM



WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 1.* Disconnect wiring harness from driver's heater control box. Place red probe on pin D (lead 411). Ground black probe. Set MASTER switch ON. Set START-OFF-RUN switch to START. If multimeter indicates about 24 volts, go to step 2. If multimeter indicates no voltage, replace driver's heater control box. Refer to page 2-991. Set MASTER switch OFF. Set START-OFF-RUN switch OFF. Connect wiring harness.



WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 2.* Place red probe on pin C (lead 401). Ground black probe. Set MASTER switch ON. Set START-OFF-RUN switch to START. If multimeter indicates about 24 volts, go to step 3. If multimeter indicates no voltage, replace driver's heater control box. Refer to page 2-991. Set MASTER switch OFF. Set START-OFF-RUN switch OFF. Connect wiring harness.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

DRIVER'S DOME LIGHT

DRIVER'S HEATER CONTROL BOX

WIRING HARNESS

PIN A

WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 3. Place red probe on pin A (lead 402R). Ground black probe. Set MASTER switch ON. Set START-OFF-RUN switch to START, then to RUN. If multimeter indicates about 24 volts in both switch settings, go to step 4. If multimeter indicates no voltage in both switch settings, replace driver's heater control box. Refer to page 2-991. Set MASTER switch OFF. Set STARTOFF-RUN switch OFF. Connect wiring harness.

DRIVER'S DOME LIGHT

DRIVER'S HEATER CONTROL BOX

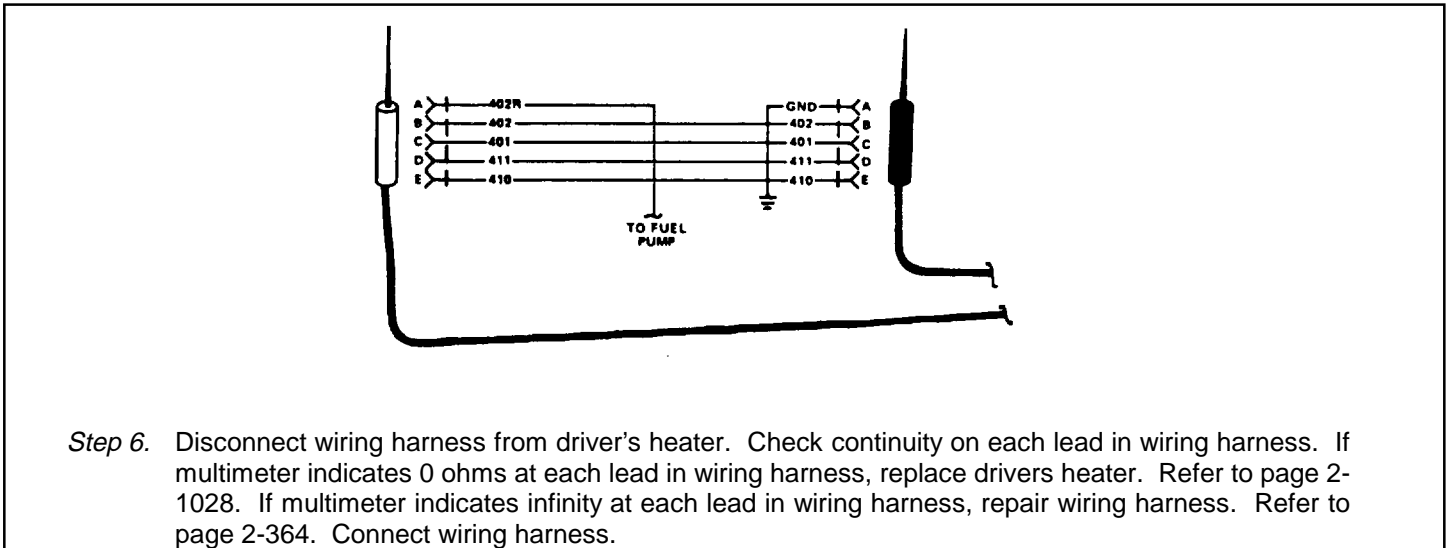
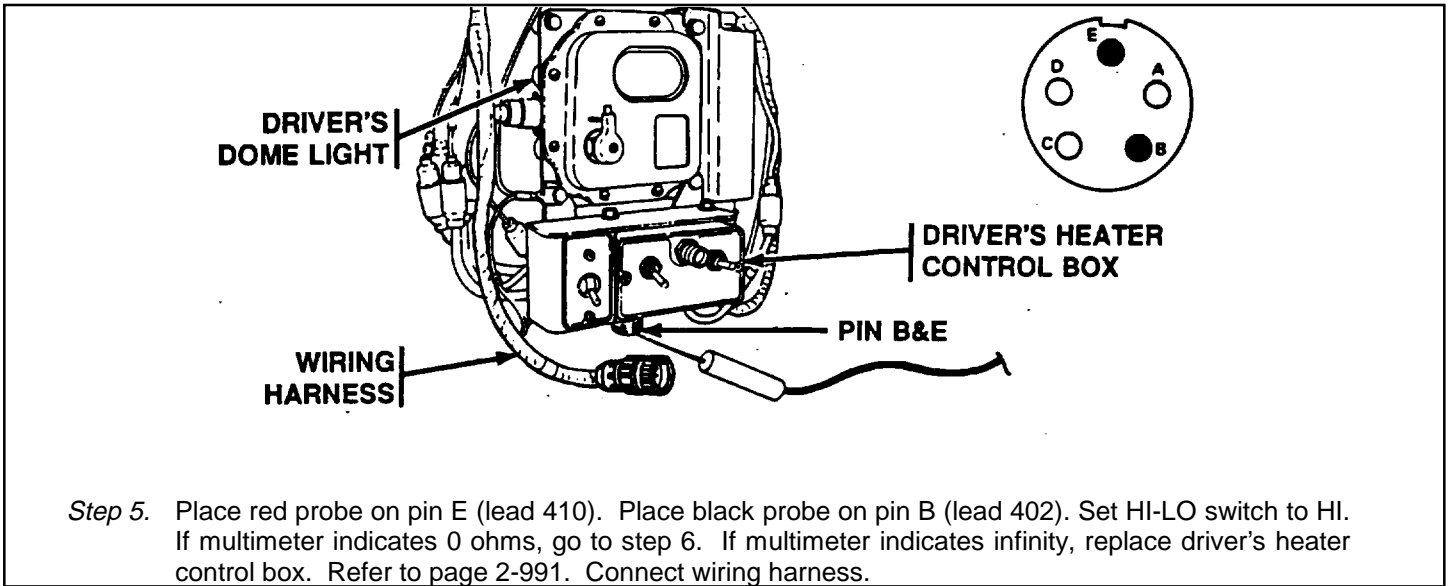
WIRING HARNESS

PIN C&E

WARNING

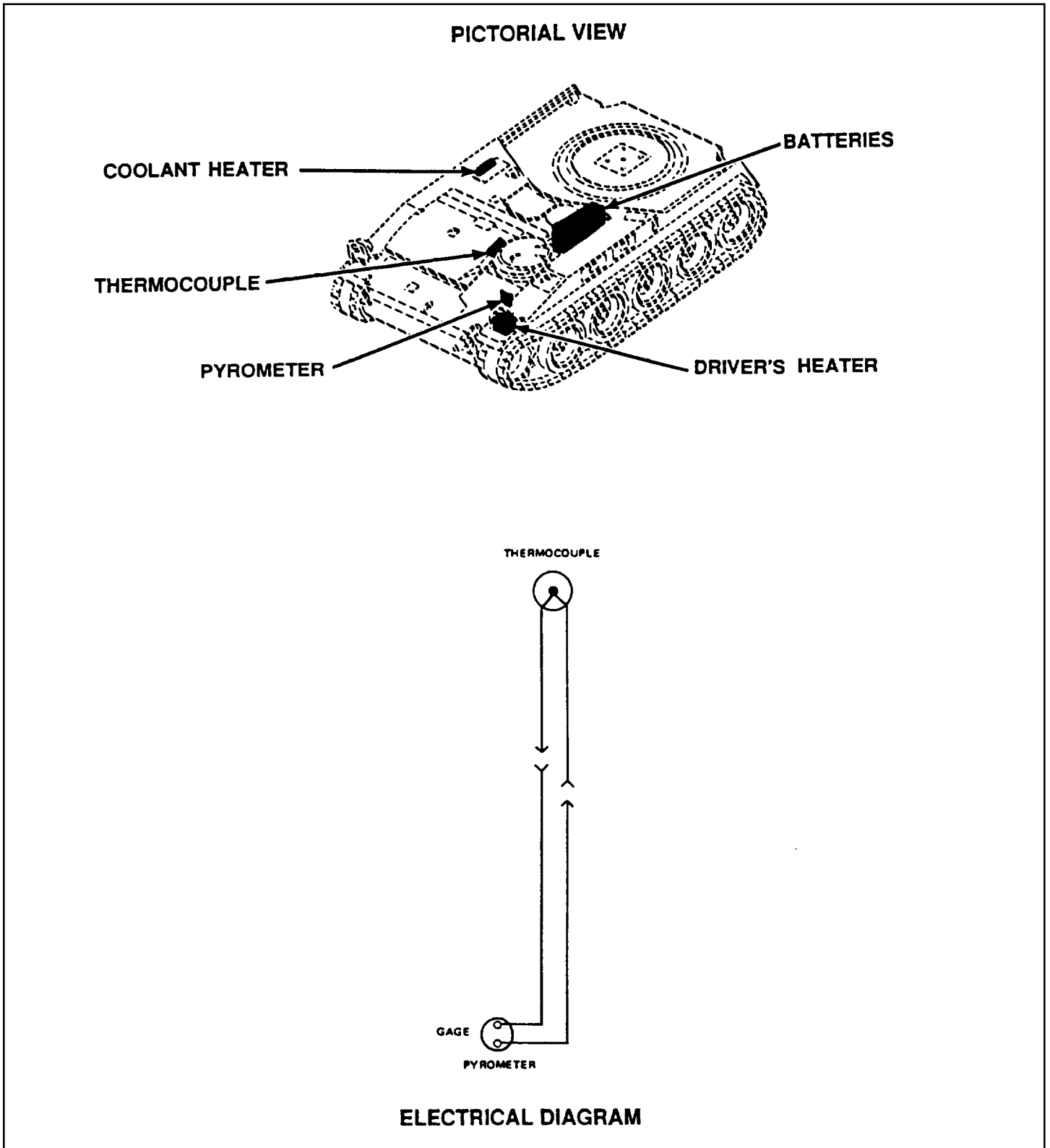
Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

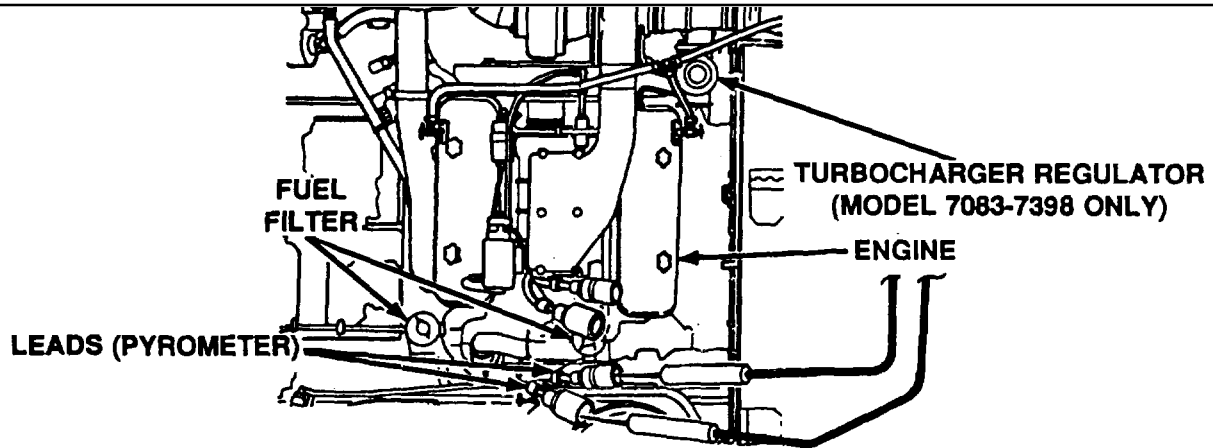
Step 4. Place red probe on pin E (lead 410). Place black probe on pin C (lead 401). Set MASTER switch ON. Set START-OFF-RUN switch to RUN. If multimeter indicates 0 ohms, go to step 5. If multimeter indicates infinity, replace driver's heater control box. Refer to page 2-991. Set MASTER switch OFF. Set START-OFF-RUN switch OFF. Connect wiring harness.



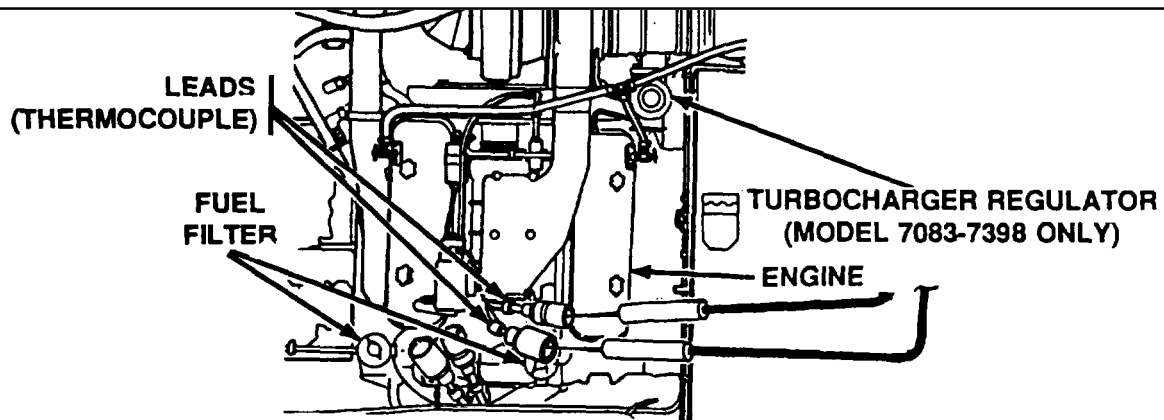
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

BL. PYROMETER CIRCUIT.





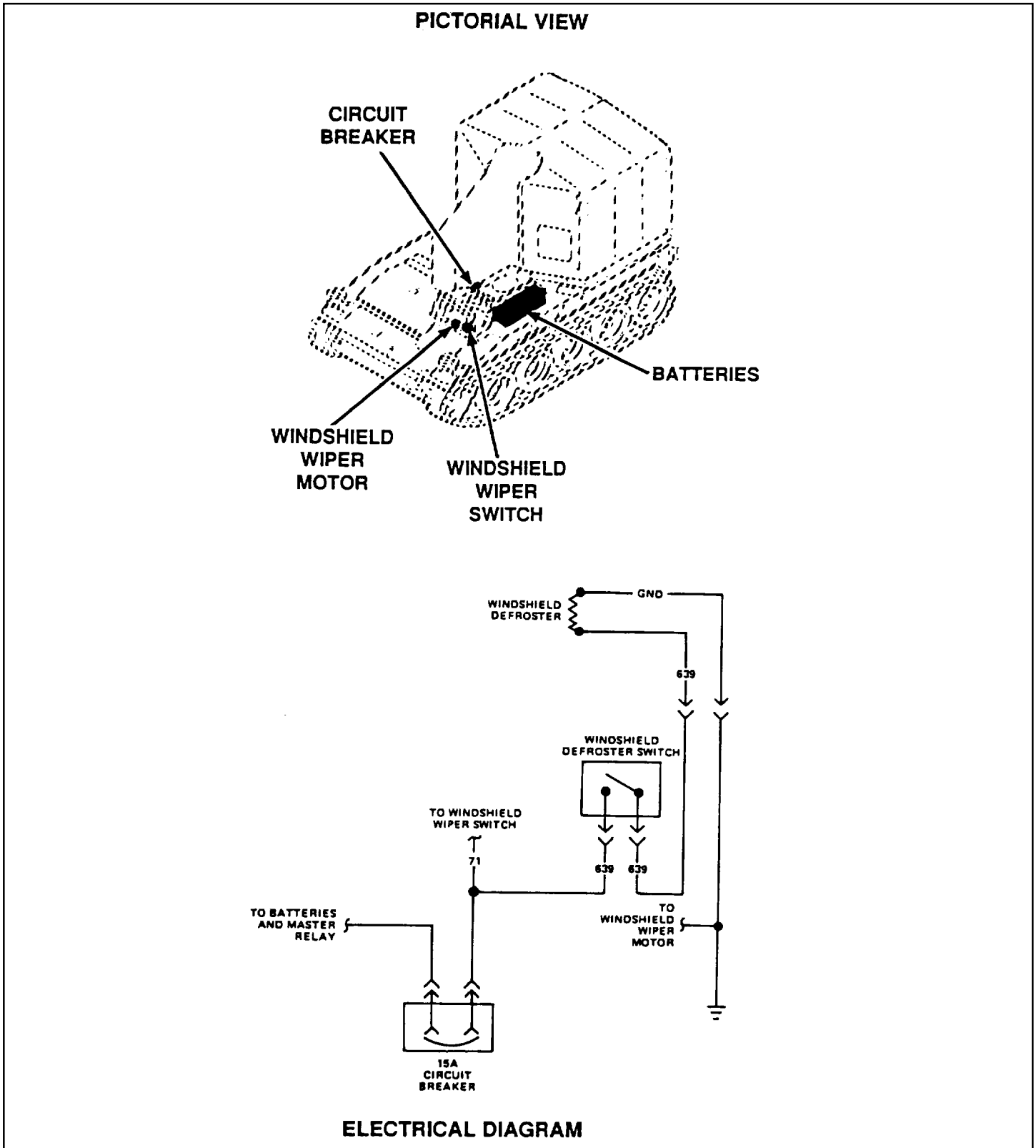
Step 1. Disconnect leads from pyrometer and thermocouple. Connect multimeter to pyrometer leads. If multimeter indicates 0 ohms, go to step 2. If multimeter indicates infinity, replace pyrometer. Refer to page 2-1015. Connect leads.

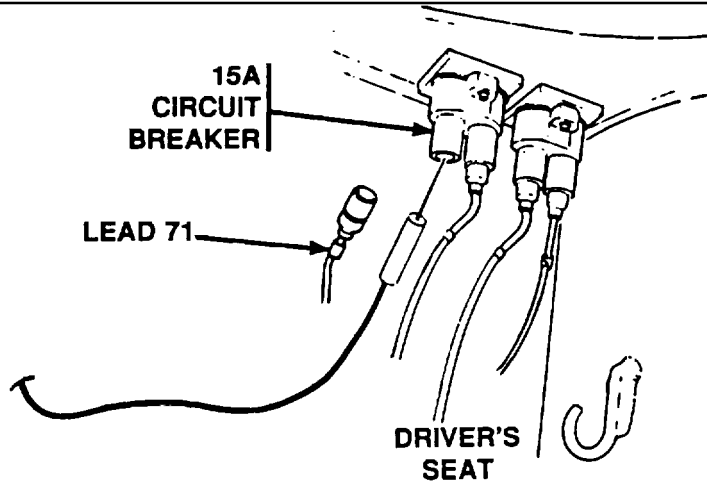


Step 2. Connect multimeter to thermocouple leads. If multimeter indicates 0 ohms, the pyrometer circuit is operating normally. If multimeter indicates infinity, replace thermocouple. Refer to page 2-991. Connect leads.

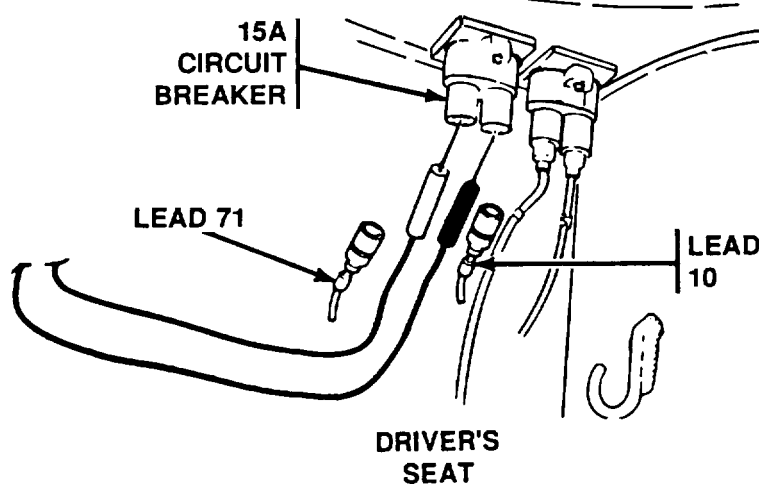
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

BM. WINDSHIELD WIPER CIRCUIT.



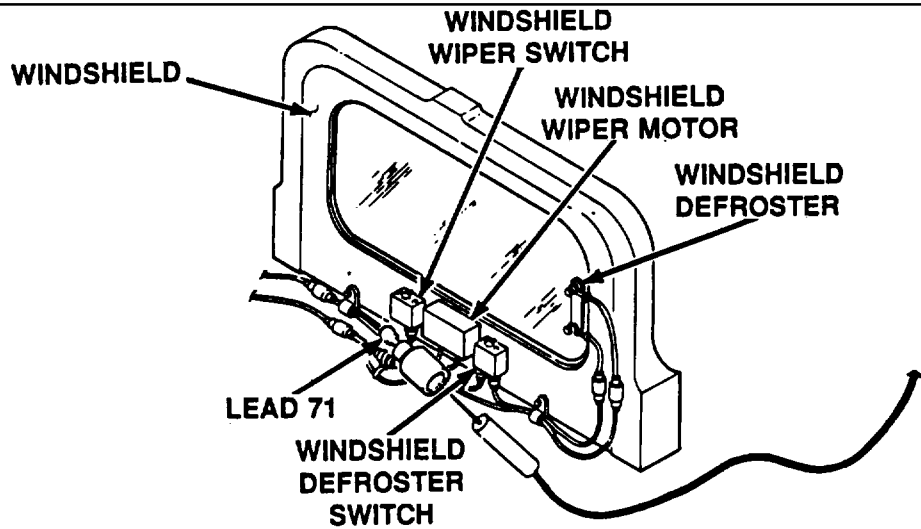


Step 1. Remove lead 71 from circuit breaker (near driver's seat). Place red probe in circuit breaker receptacle. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 3. If multimeter indicates no voltage, go to step 2. Set MASTER switch OFF. Connect lead.



Step 2. Remove lead 10 from circuit breaker. Connect multimeter to circuit breaker receptacles. If multimeter indicates 0 ohms, go to step 3. If multimeter indicates infinity, replace circuit breaker. Refer to page 2-572. Connect leads.

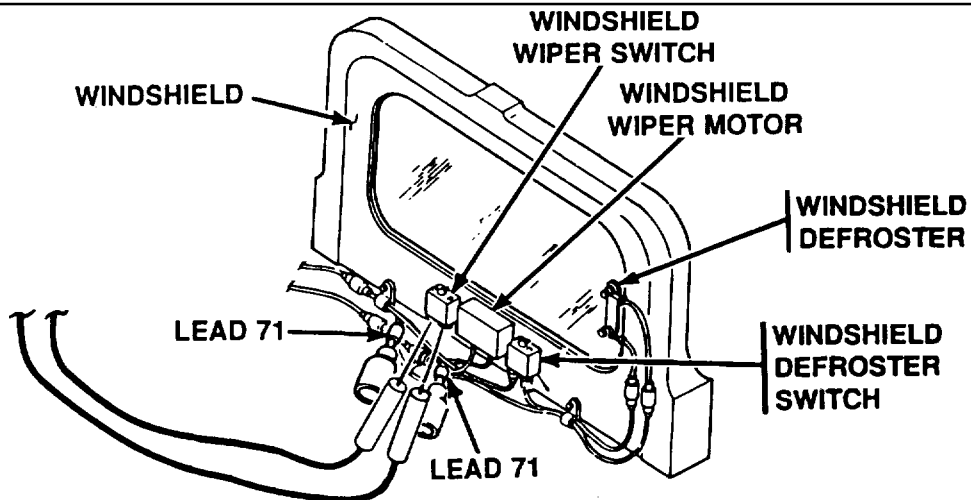
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).



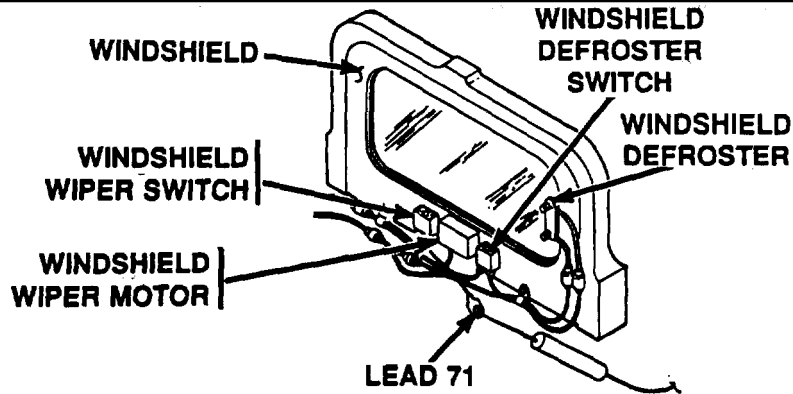
WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 3. Disconnect lead 71 from windshield wiper switch. Place red probe in lead 71. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 71 between 15A circuit breaker and windshield wiper switch. Refer to page 2-364. Set MASTER switch OFF. Connect lead.



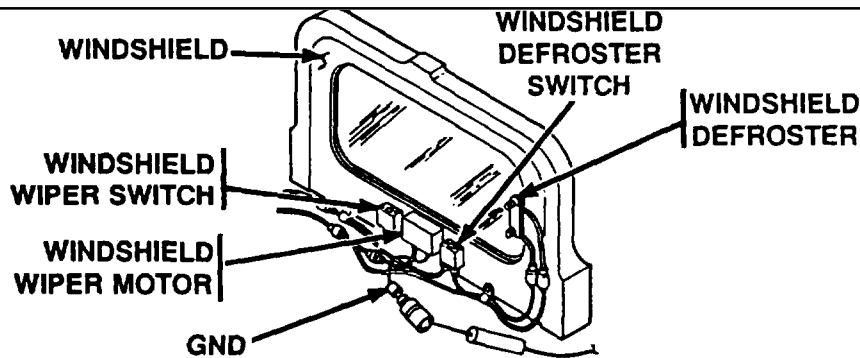
Step 4. Disconnect other lead 71 from windshield wiper switch. Connect multimeter indicates 0 ohms, go to step 5. If multimeter indicates infinity, replace windshield wiper switch. Refer to page 2-1030. Set windshield wiper switch OFF. Connect leads.



WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 5.* Disconnect lead 71 from windshield wiper motor. Place red probe in windshield wiper motor lead. Ground black probe. Set MASTER switch ON. Set windshield wiper switch ON. If multimeter indicates about 24 volts, go to step 6. If multimeter indicates no voltage, repair lead 71 between windshield wiper motor and windshield wiper switch. Refer to page 2-364. Set MASTER switch OFF. Set windshield wiper switch OFF. Connect lead.



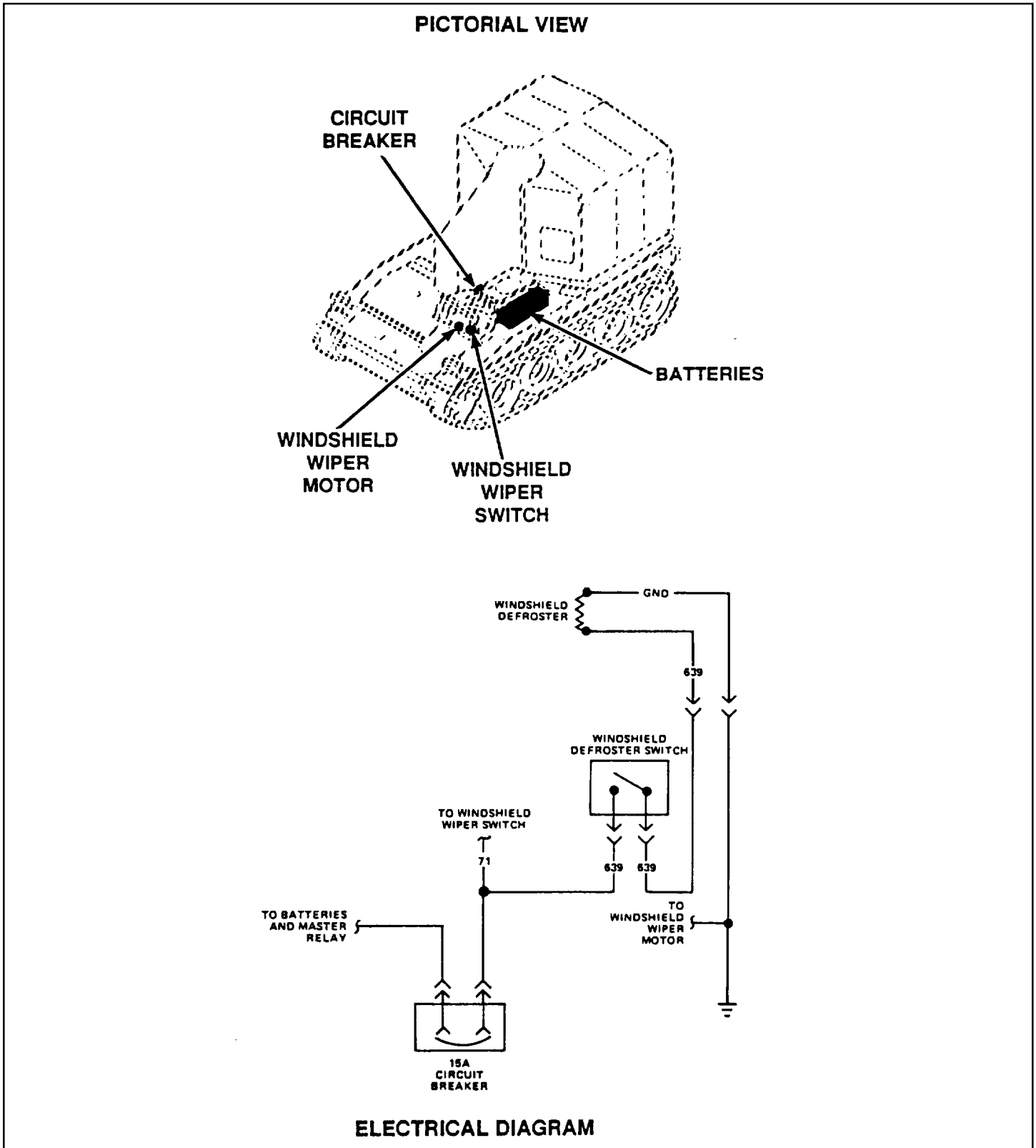
WARNING

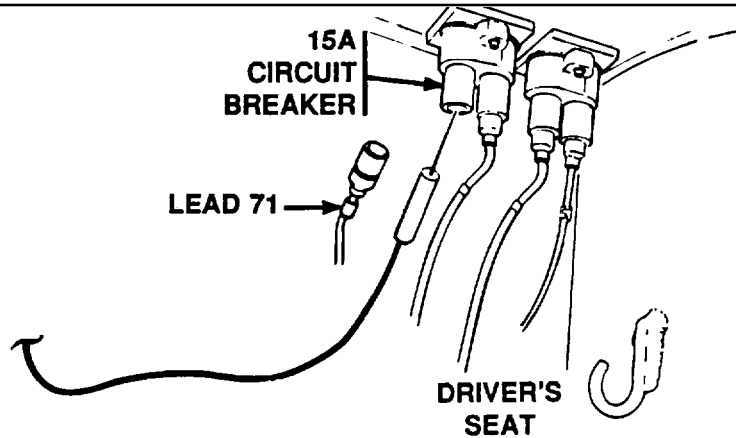
Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 6.* Disconnect windshield wiper motor ground lead (GND) from windshield wiper motor plug. Place red probe on windshield motor ground connection. Ground black probe. Set MASTER switch ON. Set windshield wiper switch ON. If multimeter indicates about 24 volts, replace windshield wiper motor. Refer to page 2-1030. If multimeter indicates no voltage, repair windshield motor ground lead. Refer to page 2-364. Set MASTER switch OFF. Set windshield wiper switch OFF. Connect lead.

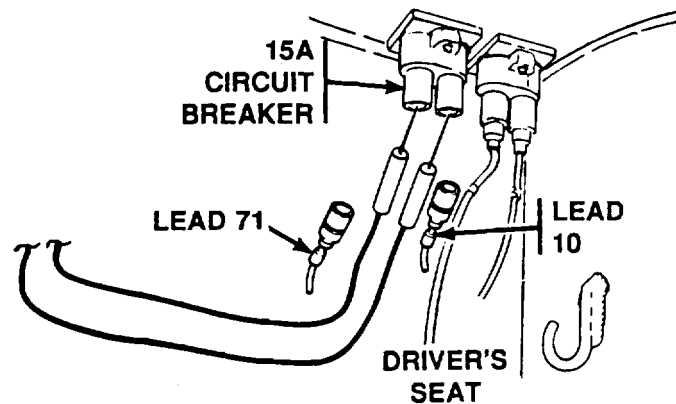
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

BN. WINDSHIELD DEFROSTER CIRCUIT.



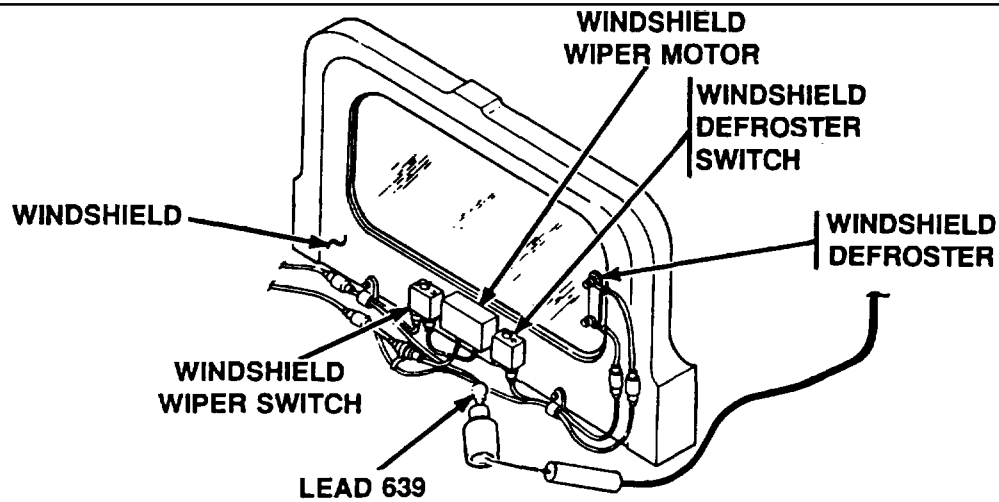


Step 1. Remove lead 71 from 15A circuit breaker (near driver's seat). Place red probe in 15A circuit breaker receptacle. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 3. If multimeter indicates no voltage, go to step 2. Set MASTER switch OFF. Connect lead.



Step 2. Remove lead 10 from 15A circuit breaker. Connect multimeter to 15A circuit breaker receptacles. If multimeter indicates 0 ohms, go to step 3. If multimeter indicates infinity, replace 15A circuit breaker. Refer to page 2-572. Connect leads.

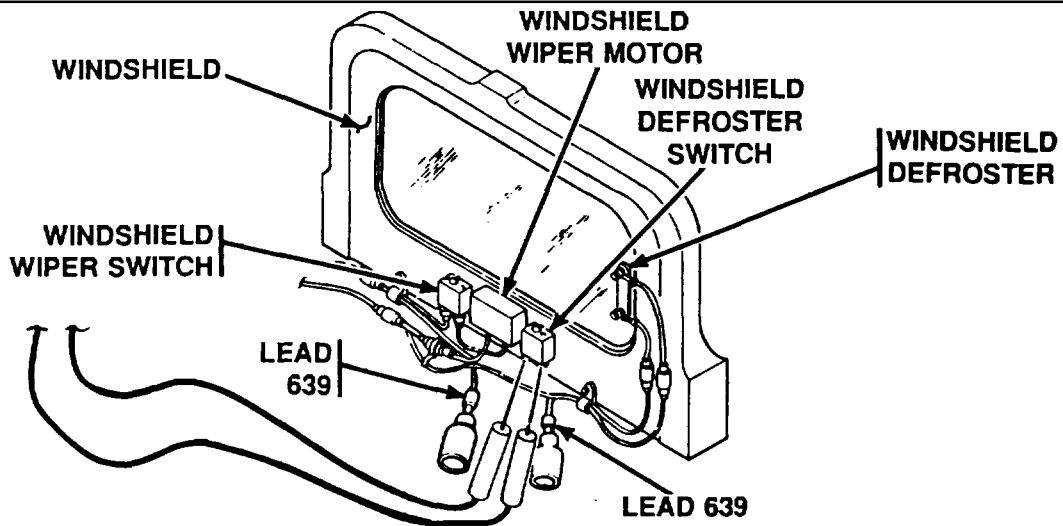
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).



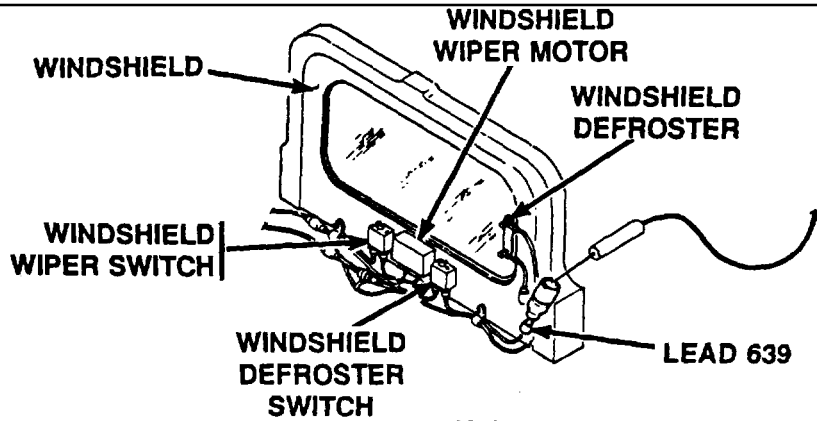
WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 3. Disconnect lead 639 from windshield defroster switch. Place red probe in lead 639. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 4. If multimeter indicates no voltage, repair lead 639 between 15A circuit breaker and windshield defroster switch. Refer to page 2-364. Set MASTER switch OFF. Connect lead.



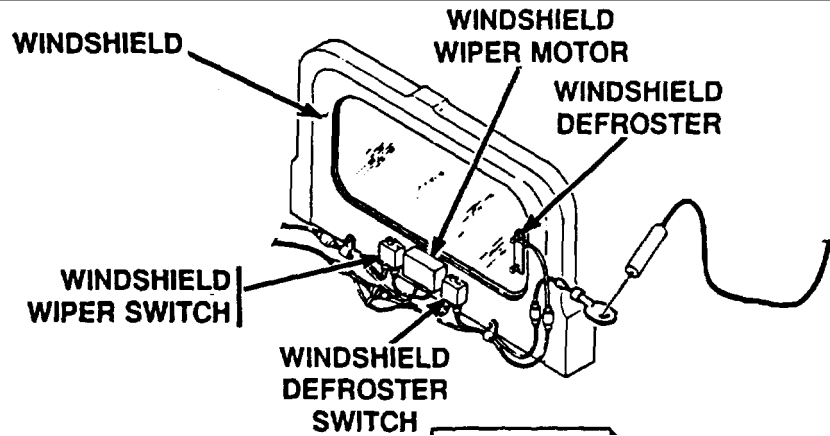
Step 4. Disconnect other lead 639 from windshield defroster switch. Connect multimeter to windshield defroster switch. Set windshield defroster switch ON. If multimeter indicates 0 ohms, go to step 5. If multimeter indicates infinity, replace windshield defroster switch. Refer to page 2-1030. Set windshield defroster switch OFF. Connect leads.



WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 5. Disconnect lead 639 from windshield defroster disconnect. Place red probe in lead 639. Ground black probe. Set MASTER switch ON. Set windshield defroster switch ON. If multimeter indicates about 24 volts, go to step 6. If multimeter indicates no voltage, repair lead 639 between windshield defroster switch and windshield defroster disconnect. Refer to page 2-364. Set MASTER switch OFF. Set windshield defroster switch OFF. Connect lead.

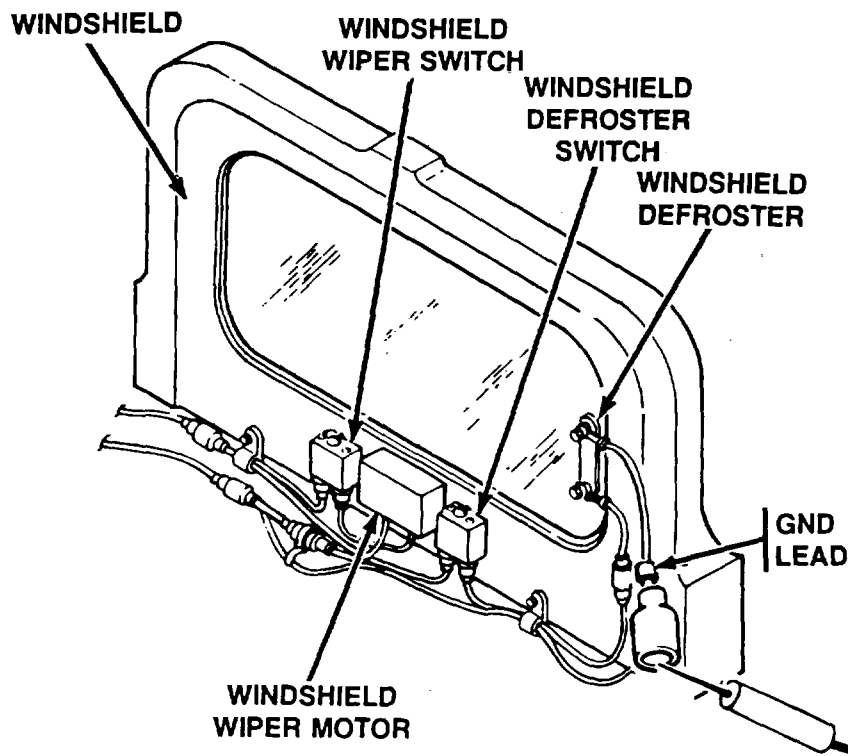


WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

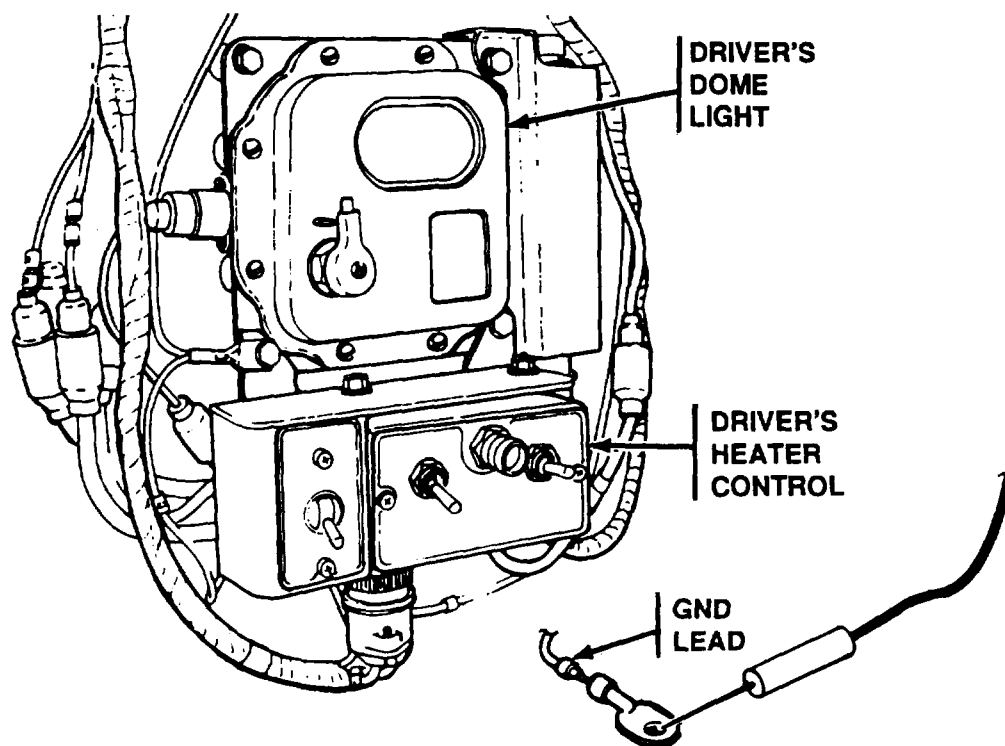
Step 6. Disconnect lead 639 from windshield defroster. Place red probe in lead 639. Ground black probe. Set MASTER switch ON. Set windshield defroster switch ON. If multimeter indicates about 24 volts, go to step 7. If multimeter indicates no voltage, repair lead 639 between windshield defroster switch and windshield defroster disconnect. Refer to page 2-364. Set MASTER switch OFF. Set windshield defroster switch OFF. Connect lead.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

**WARNING**

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 7. Disconnect GND lead from windshield defroster disconnect. Place red probe in GND lead. Ground black probe. Set MASTER switch ON. Set windshield defroster switch ON. If multimeter indicates about 24 volts, go to step 8. If multimeter indicates no voltage, repair GND lead between windshield defroster and windshield defroster disconnect. Refer to page 2-364. If multimeter still indicates no voltage, replace windshield. Refer to page 2-1030. Set MASTER switch OFF. Set windshield defroster switch OFF. , Connect lead.

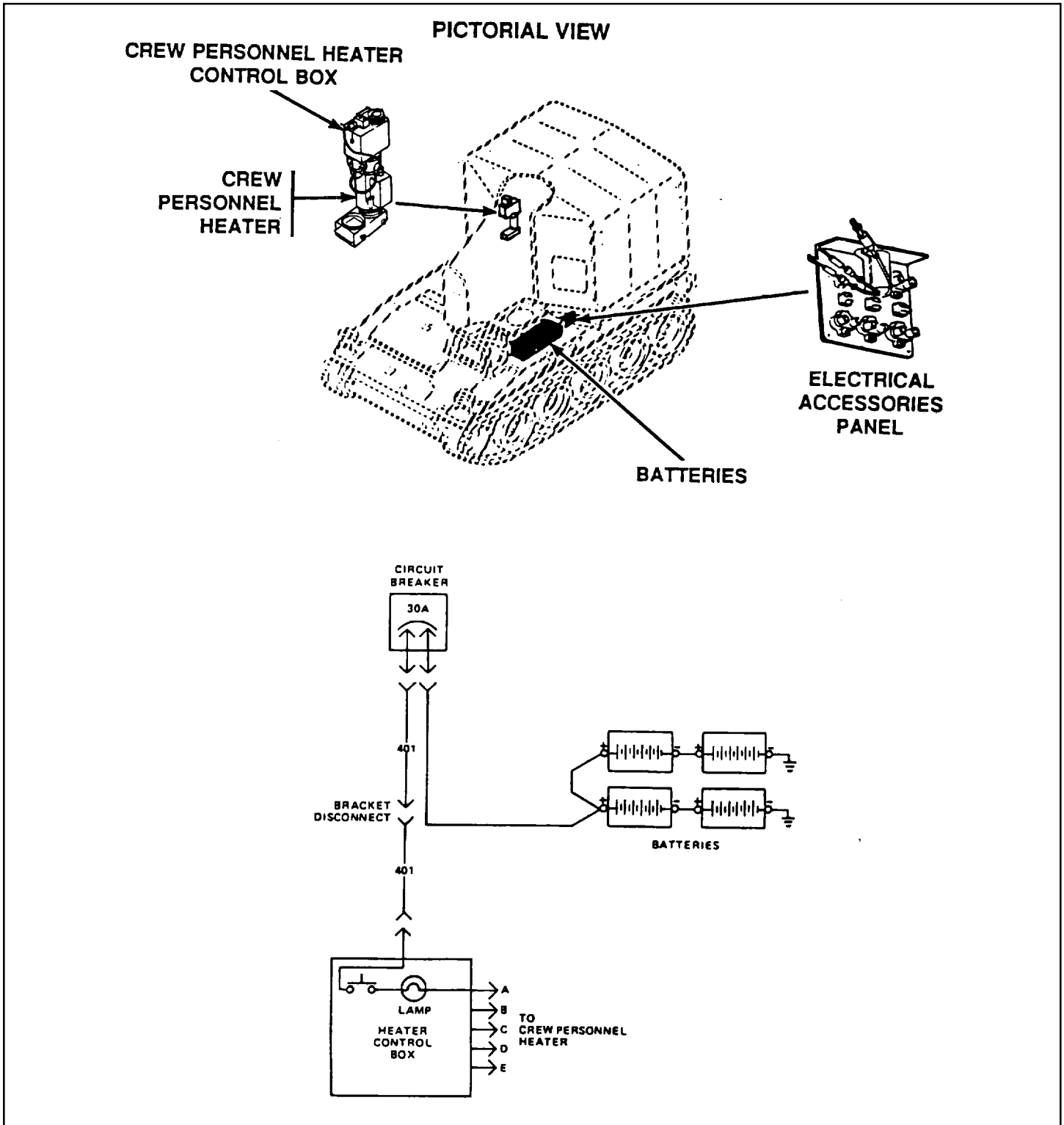
**WARNING**

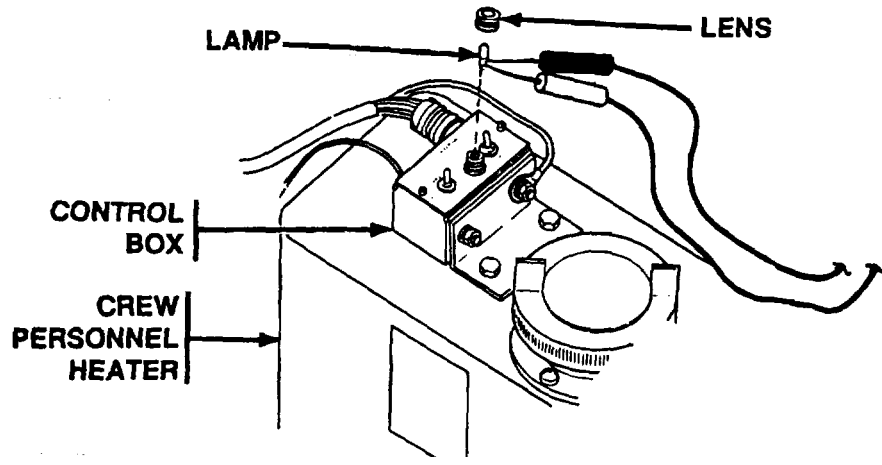
Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 8. Disconnect GND lead from driver's dome light. Place red probe in GND lead. Ground black probe. Set MASTER switch ON. Set windshield defroster switch ON. If multimeter indicates about 24 volts, windshield defroster circuit is operating normally. If multimeter indicates no voltage, repair GND lead between windshield defroster disconnect and driver's dome light. Refer to page 2-364. Set MASTER switch OFF. Set windshield defroster switch OFF. Connect lead.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

BO. CREW PERSONNEL HEATER CONTROL BOX LIGHT CIRCUIT.

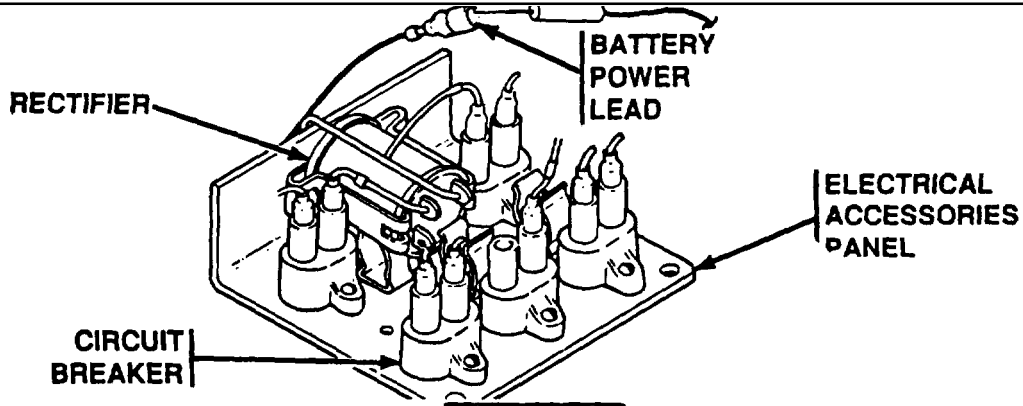




WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 1. Remove lamp from crew personnel heater control box. Refer to page 2-1017. Connect multimeter to contacts of lamp. If multimeter indicates about 75 ohms, go to step 2. If multimeter indicates 0 ohms, replace lamp. Refer to page 2-1017.



WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

Step 2. To access crew personnel heater circuit breaker, remove left CO₂ cylinder cover. Refer to page 2-875. Disconnect battery power lead from circuit breaker. Place red probe in battery power lead. Ground black probe. If multimeter indicates about 24 volts, go to step 3. If multimeter indicates no voltage, repair battery power lead. Refer to page 2-364. If problem still exists, troubleshoot battery power circuit. Refer to page 2-82. Connect lead.

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

The diagram shows a top-down view of an electrical accessories panel. A battery power lead is connected to the top left. A 30A circuit breaker is located in the lower left quadrant. A rectifier is positioned in the upper left. Lead 401 is connected to the 30A circuit breaker. The entire assembly is mounted on an electrical accessories panel.

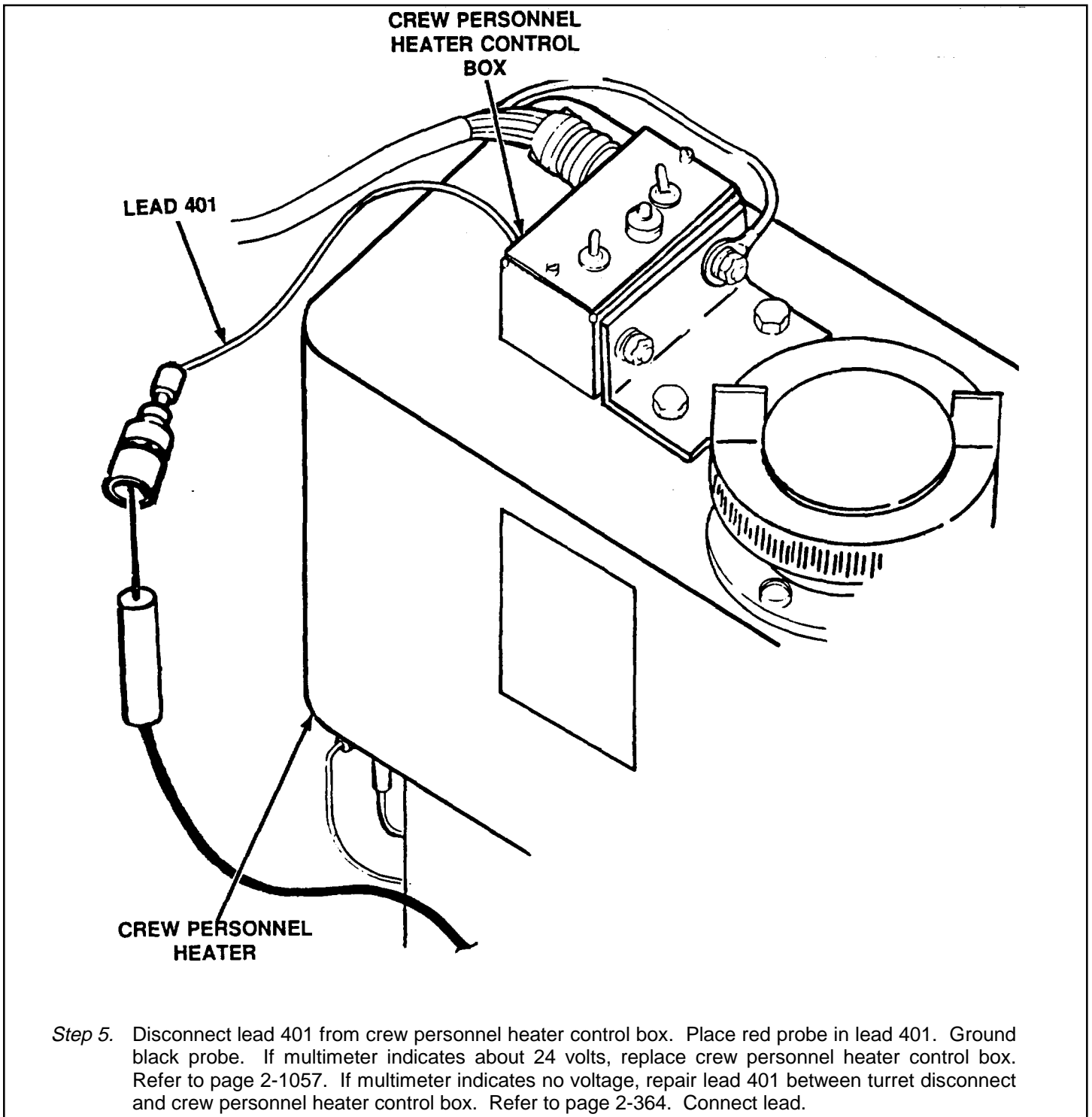
Step 3. Disconnect lead 401 from 30A circuit breaker. Connect multimeter to 30A circuit breaker receptacles. If multimeter indicates 0 ohms, go to step 4. If multimeter indicates infinity, replace 30A circuit breaker. Refer to page 2-578. Connect leads.

The diagram shows a turret disconnect component. Lead 401 is shown being disconnected from the turret disconnect. The turret disconnect is a cylindrical component with a handle and a locking mechanism.

WARNING

Make sure Master switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

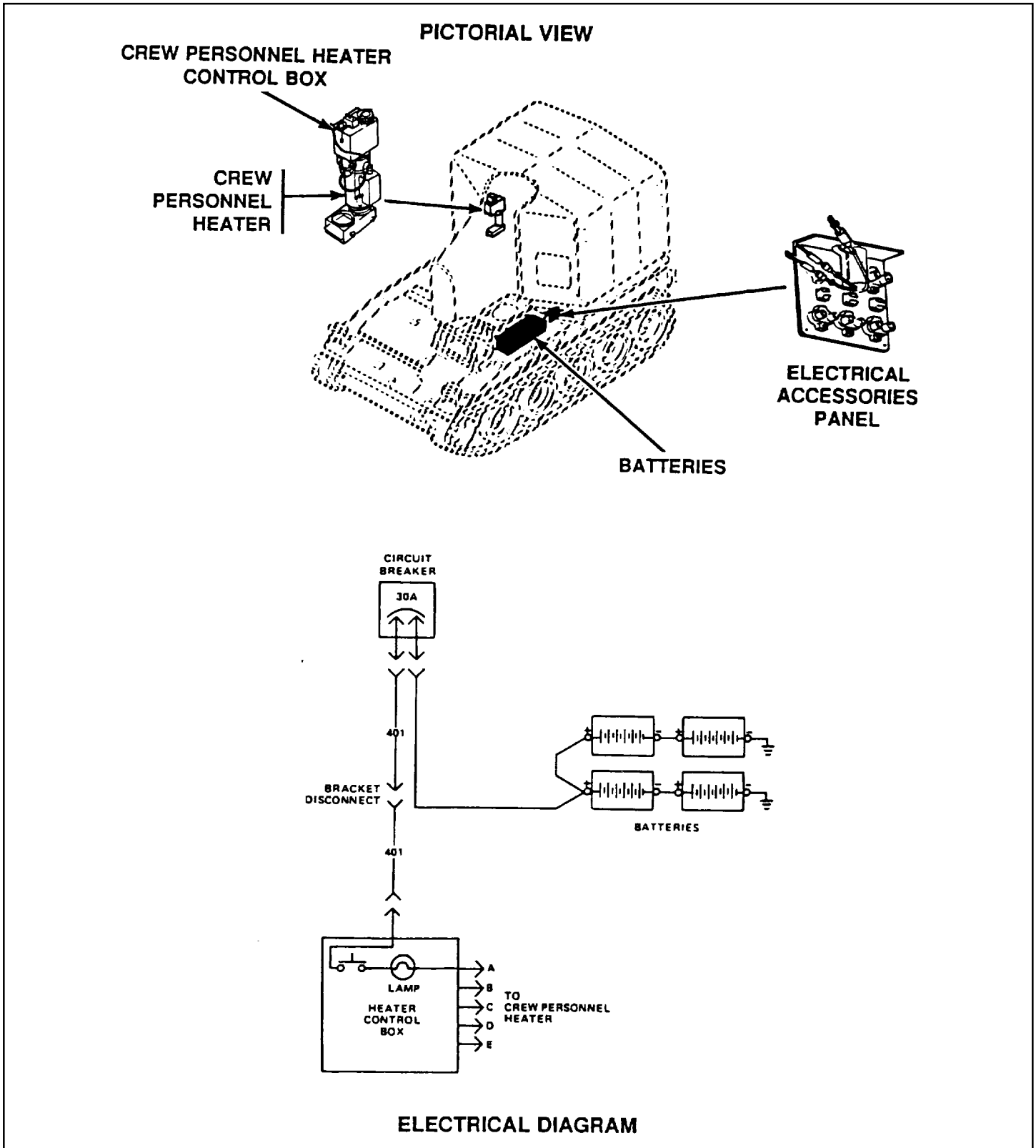
Step 4. Disconnect lead 401 at turret disconnect. Place red probe in lead 401. Ground black probe. If multimeter indicates about 24 volts, go to step 5. If multimeter indicates no voltage, repair lead 401 between 30A circuit breaker, and turret disconnect. Refer to page 2-364. Connect lead.

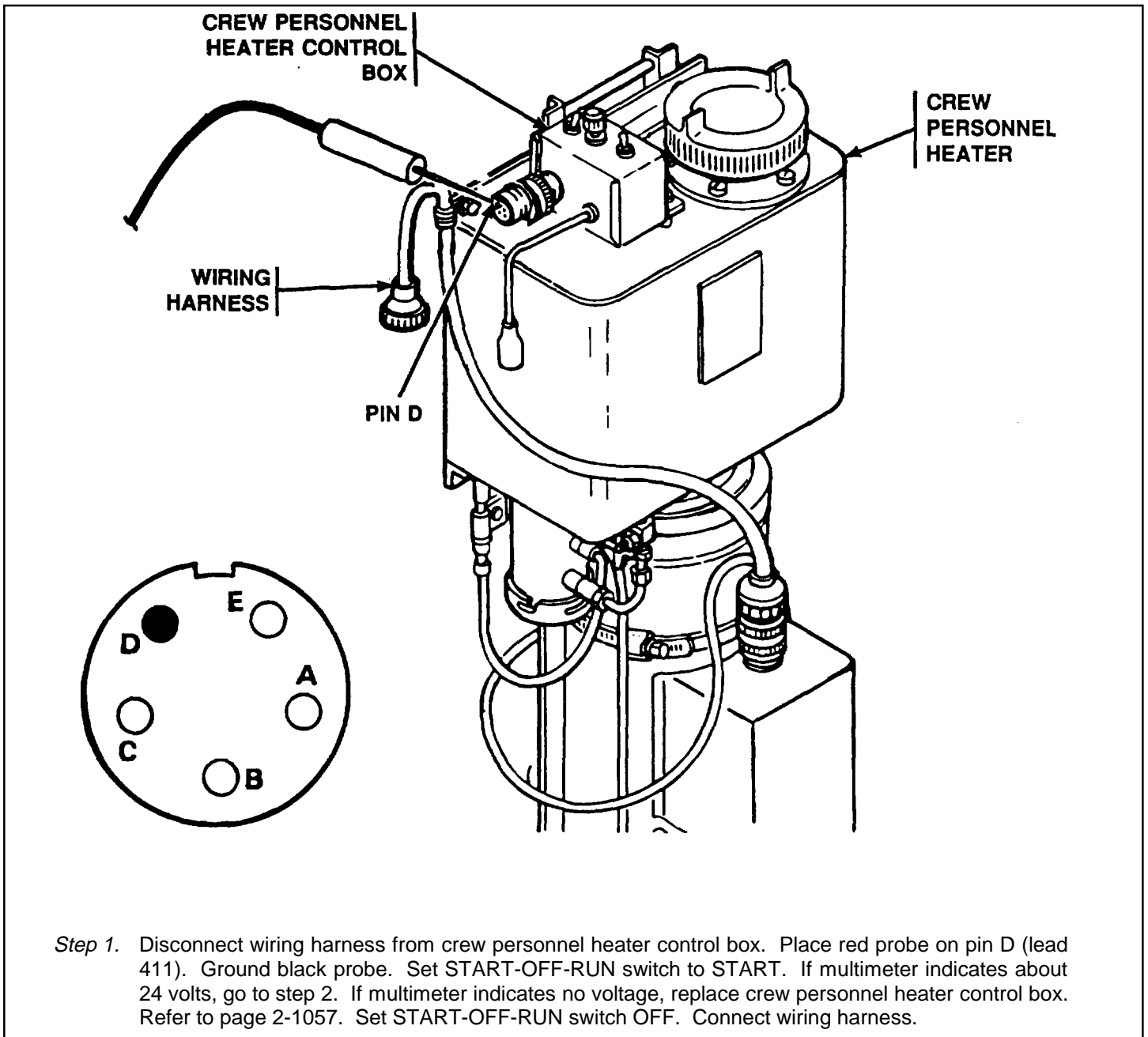


Step 5. Disconnect lead 401 from crew personnel heater control box. Place red probe in lead 401. Ground black probe. If multimeter indicates about 24 volts, replace crew personnel heater control box. Refer to page 2-1057. If multimeter indicates no voltage, repair lead 401 between turret disconnect and crew personnel heater control box. Refer to page 2-364. Connect lead.

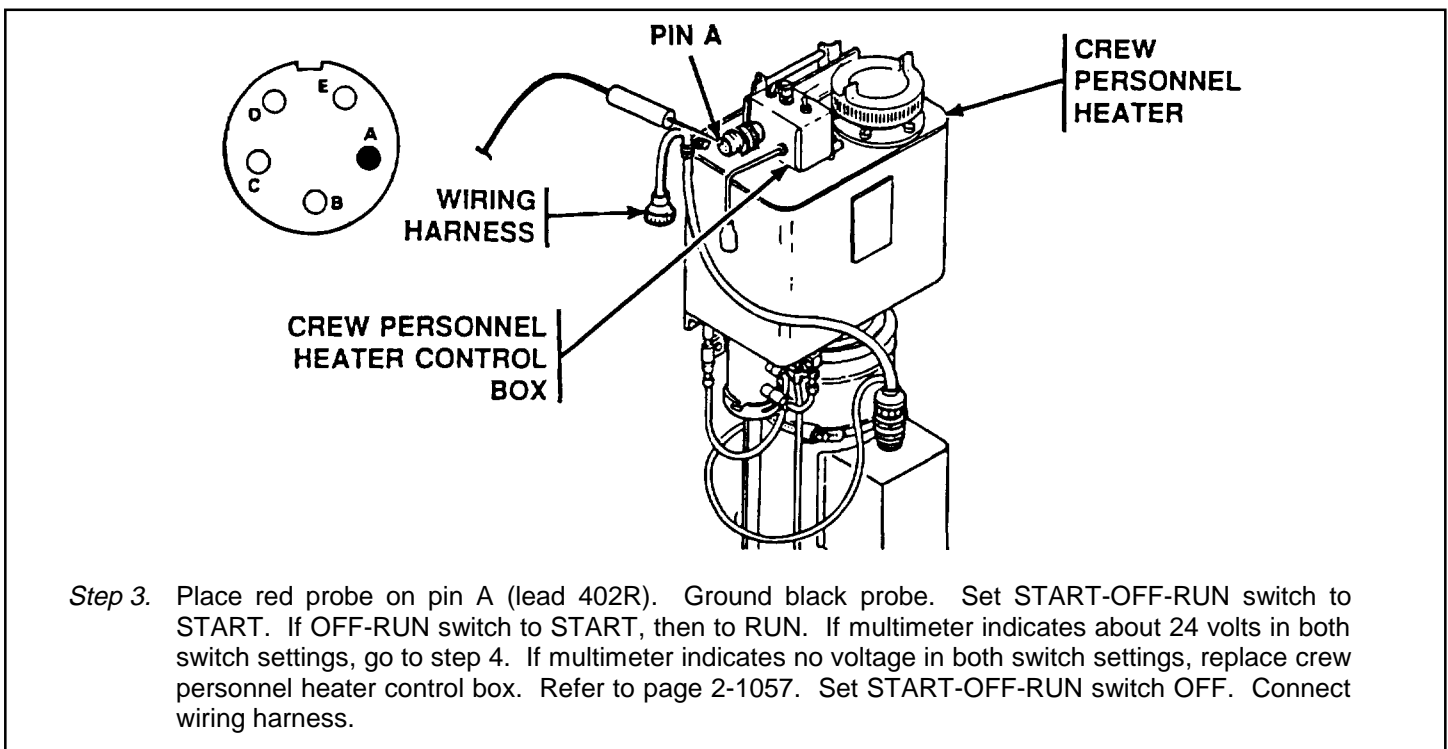
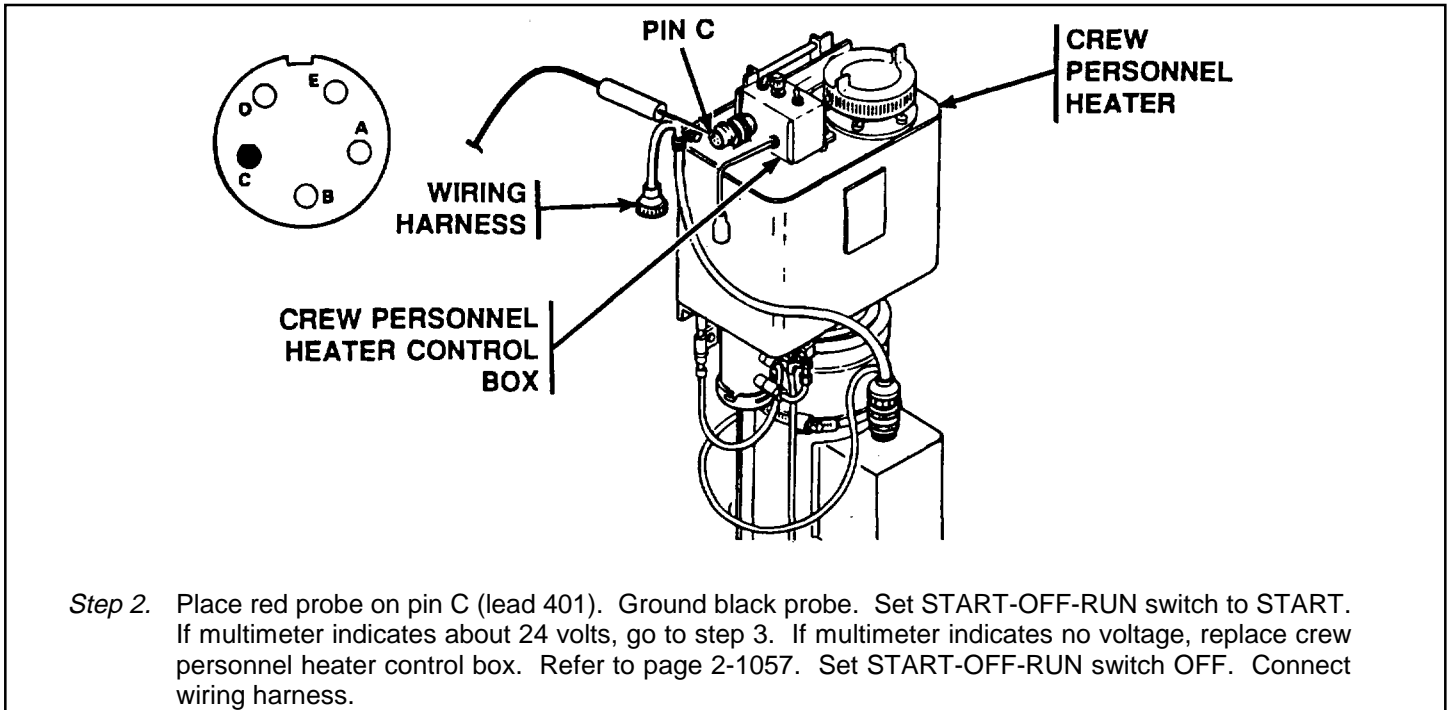
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

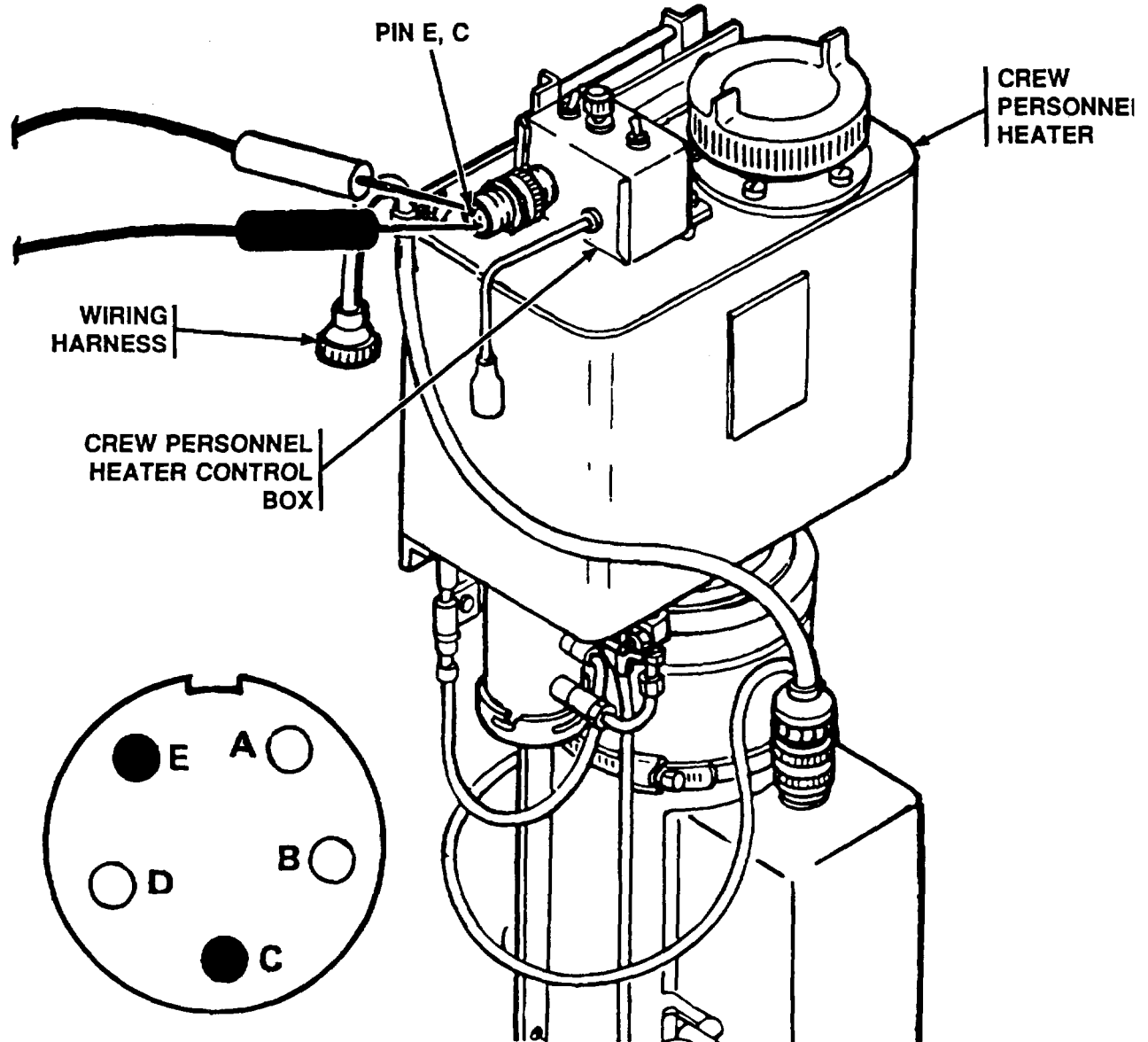
BP. CREW PERSONNEL HEATER CIRCUIT.





2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).





Step 4. Place red probe on pin E (lead 410). Place black probe on pin C (lead 401). Set START-OFF-RUN switch to RUN. If multimeter indicates 0 ohms, go to step 5. If multimeter indicates infinity, replace crew personnel heater control box. Refer to page 2-1057. Set START-OFF-RUN switch OFF. Connect wiring harness.

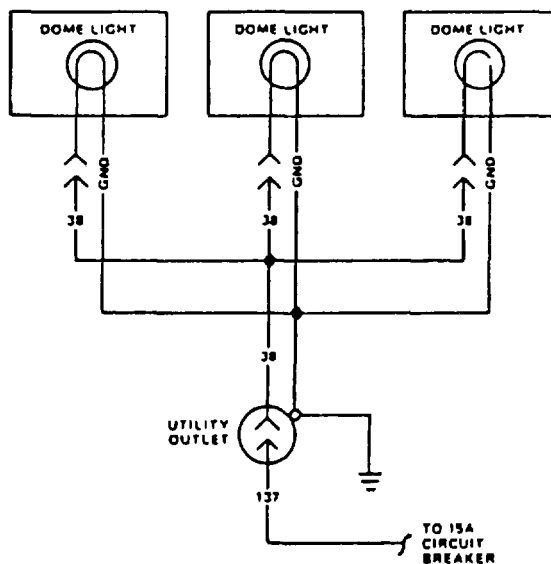
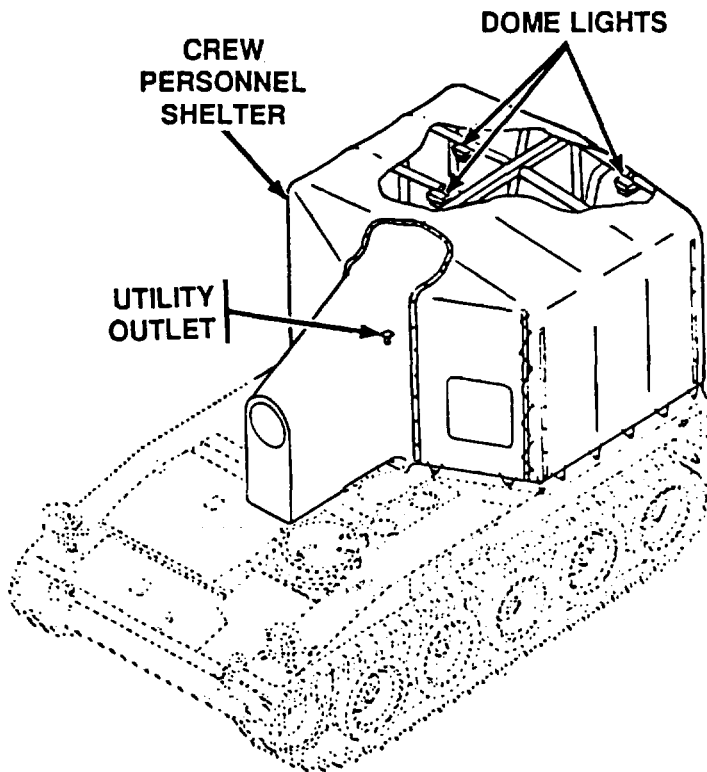
2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT.).

Step 5. Place red probe on pin E (lead 410). Place black probe on pin B (lead 402). Set HI-LO switch to HI. If multimeter indicates 0 ohms, go to step 6. If multimeter indicates infinity, replace crew personnel heater control box. Refer to page 2-1057. Connect wiring harness.

Step 6. Disconnect wiring harness from crew personnel heater. Check continuity on each lead in wiring harness. If multimeter indicates 0 ohms at each lead in wiring harness, replace crew personnel heater. Refer to page 2-1057. If multimeter indicates infinity at each lead in wiring harness, repair wiring harness. Refer to page 2-364. Connect wiring harness.

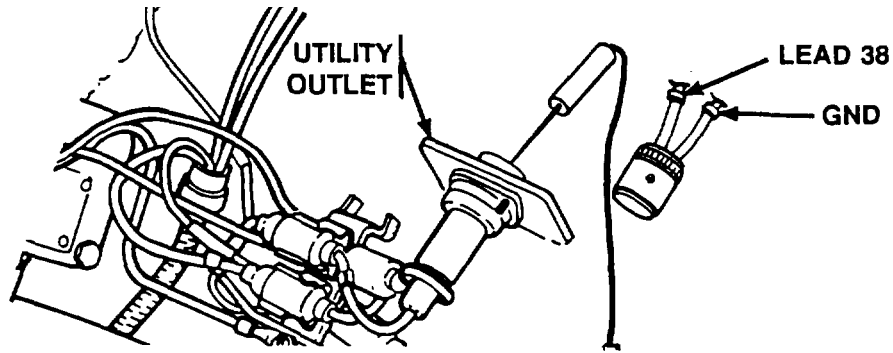
BQ. CREW PERSONNEL SHELTER KIT DOME LIGHT CIRCUIT.

PICTORIAL VIEW



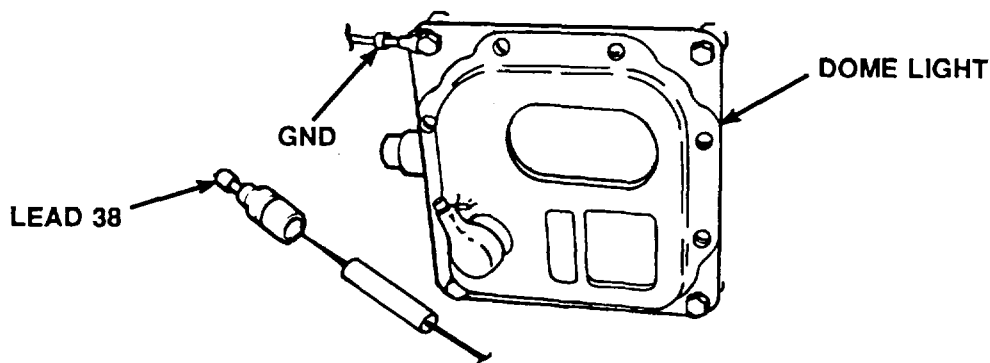
ELECTRICAL DIAGRAM

2-12. ELECTRICAL CIRCUIT TROUBLESHOOTING (CONT)

**WARNING**

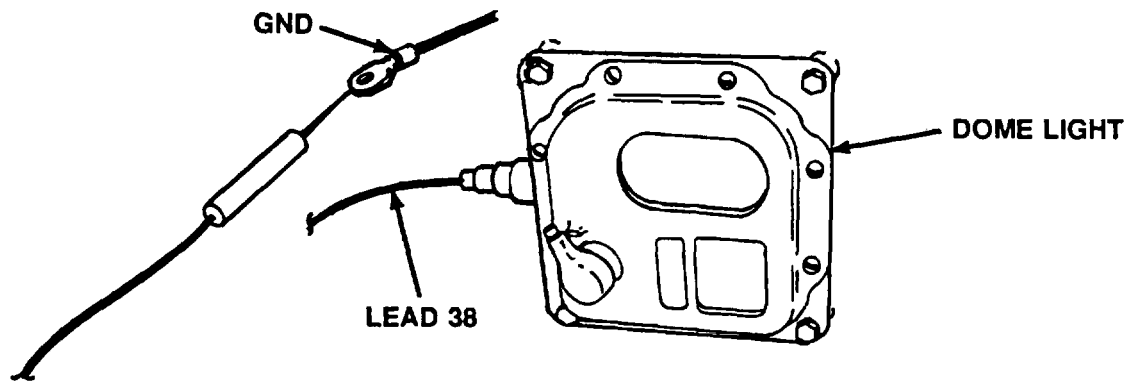
Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 1.* Disconnect leads 38 and GND from utility outlet. Place red probe in utility outlet. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, repair lead 38 or GND between utility outlet and dome lights. Refer to page 2-364. If multimeter indicates no voltage, troubleshoot sighting, fire control, utility outlet, and collimator circuit. Refer to page 2-279. Set MASTER switch OFF. Connect leads.

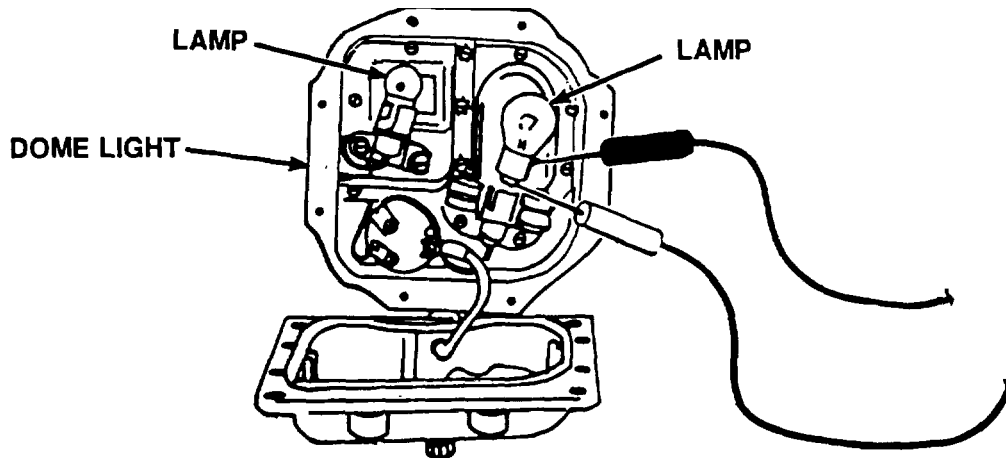
**WARNING**

Make sure MASTER switch is OFF before repairing electrical circuits. Failure to observe this warning could result in injury to personnel.

- Step 2.* Disconnect lead 38 from inoperative dome light. Place red probe in lead 38. Ground black probe. Set MASTER switch ON. If multimeter indicates about 24 volts, go to step 3. If multimeter indicates no voltage, repair lead 38 between dome light and utility outlet. Refer to page 2-364. Set MASTER switch OFF. Connect lead.



Step 3. Disconnect GND lead from inoperative dome light. Place red probe in GND lead terminal. Ground black probe. If multimeter indicates continuity, go to step 4. If multimeter indicates no continuity, repair GND lead between dome light and utility outlet. Refer to page 2-364. Connect lead.



Step 4. Remove inoperative lamp from dome light. Refer to page 2-1102. Connect multimeter to contacts of lamp. If multimeter indicates about 3 ohms for red lamp or about 10 ohms for white lamp, notify direct support maintenance. If multimeter indicates 0 ohms, replace lamp. Refer to page 2-1102.

Section V. WIRING HARNESS AND CABLE REPAIR

2-13. GENERAL. 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 2-364 thru 2-370 show exploded views of typical harness and cable connectors used on the vehicle, and give procedures for disassembly and reassembly of connectors. When soldering is required, procedures in TB SIG-222 must be followed.

INITIAL SETUP:

Tools and Special Tools

Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)

- Electrical connector repair tool kit
- Hand wire stripper
- Soldering gun

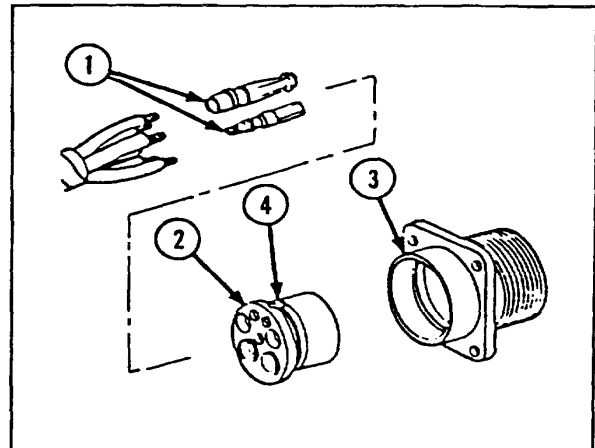
Materials /Parts

Solder (item 42, appx C)

2-14. TYPICAL FEMALE-TYPE PANEL MOUNTING RECEPTACLE CONNECTOR.

DISASSEMBLY

- 1 Drive socket contacts (1) out through rear of insert (2) with pin extractor.
- 2 Unsolder cable leads from solder wells or socket contacts (1).
- 3 Slide insert out through rear of shell assembly (3).



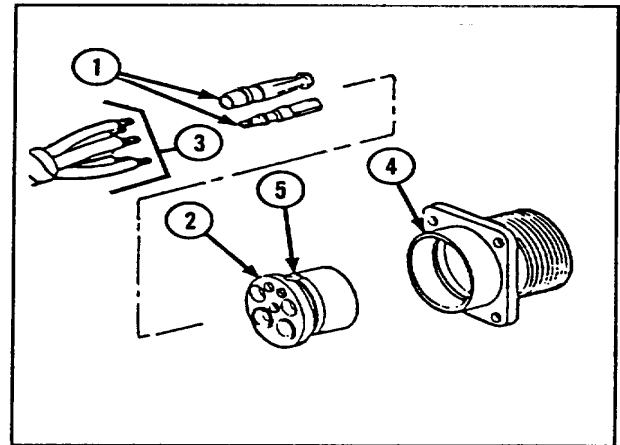
REASSEMBLY

- 1 Strip cable insulation equal to depth of solder wells of socket contacts (1).
- 2 Insert cable leads into solder wells of socket contacts (1) and solder.
- 3 Push insert (2) into shell assembly (3) from rear until seated. Groove (4) in insert must be aligned with guide in shell assembly (3) to ensure proper fit.
- 4 Push socket contacts (1) into insert (2) from rear until seated.

2-15. TYPICAL MALE-TYPE PANEL MOUNTING RECEPTACLE CONNECTOR.

DISASSEMBLY

- 1 Drive pin contacts (1) out through rear of insert (2) with pin extractor.
- 2 Unsolder cable leads (3) from solder wells on pin contacts (1).
- 3 Slide insert (2) out through rear of shell assembly (4).



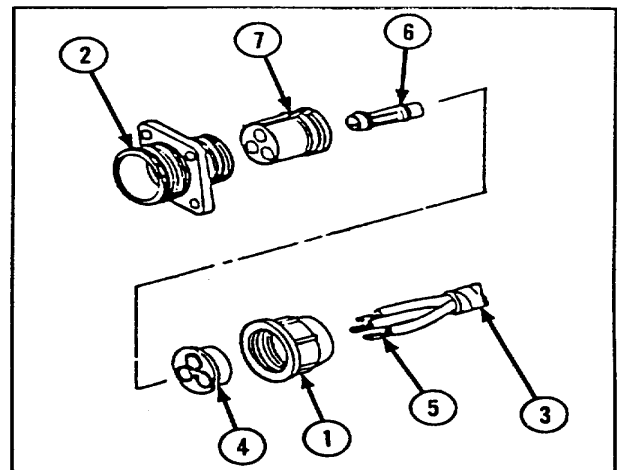
REASSEMBLY

- 1 Strip cable insulation equal to depth of solder wells of pin contacts (1).
- 2 Insert cable leads (3) into solder wells of pin contacts (1) and solder.
- 3 Push insert (2) into shell assembly (4) from rear until seated. Groove (5) in insert must be aligned with guide in shell assembly (4) to ensure proper fit.
- 4 Push pin contacts (1) into insert (2) from rear until seated.

2-16. TYPICAL FEMALE-TYPE PANEL MOUNTING RECEPTACLE CONNECTOR.

DISASSEMBLY

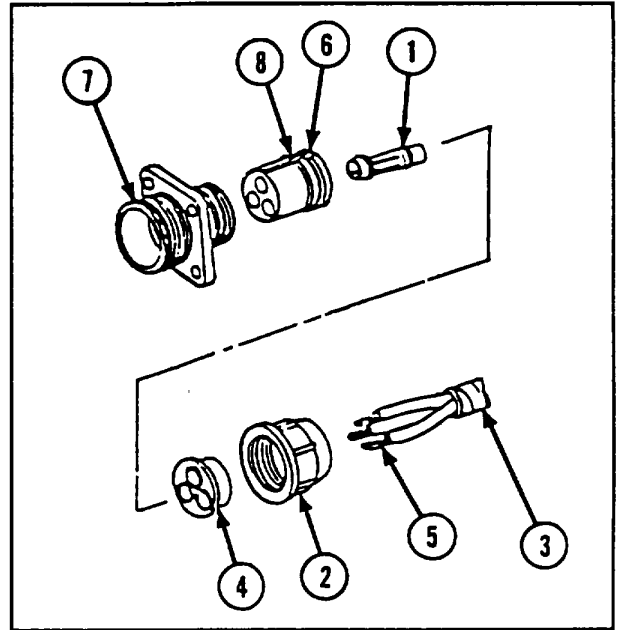
- 1 Unscrew nut (1) from shell assembly (2) and slide back on cable (3).
- 2 Slide grommet (4) back on cable leads (5).
- 3 Drive socket contacts (6) out through front of insert (7) with pin extractor.
- 4 Unsolder lead from socket contacts (6).
- 5 Push insert (7) out through rear of shell assembly (2).



2-16. TYPICAL FEMALE-TYPE PANEL (CONT).

REASSEMBLY

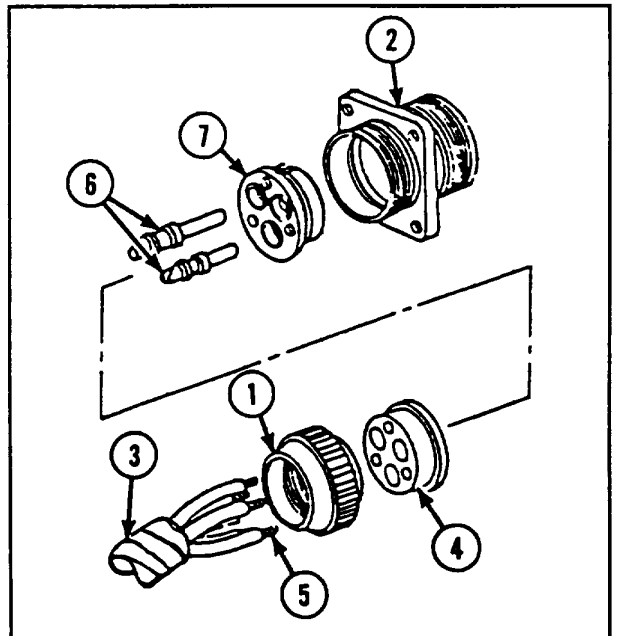
- 1 Strip cable insulation to depth of solder wells of socket contacts (1).
- 2 Slide nut (2) over cable (3).
- 3 Slide grommet (4) over cable leads (5).
- 4 Insert cable leads (5) into solder wells of socket contacts (1) and solder.
- 5 Push insert (6) into shell assembly (7) from rear until seated. Groove (8) in insert (6) must be aligned with guide in shell assembly (7) to ensure proper fit.
- 6 Push socket contacts (1) into insert (6) from rear until seated.
- 7 Push grommet (4) down cable leads (5) and over solder wells of socket contacts (1).
- 8 Screw nut (2) onto shell assembly (7).



2-17. TYPICAL MALE-TYPE PANEL MOUNTING RECEPTACLE CONNECTOR.

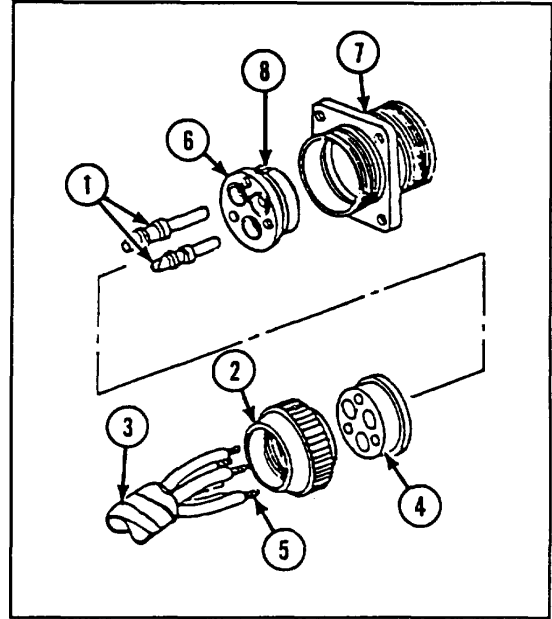
DISASSEMBLY

- 1 Unscrew nut (1) from shell assembly (2) and slide back on cable (3).
- 2 Push grommet (4) back on cable lead (5).
- 3 Drive pin contacts (6) out through rear insert (7) with pin extractor.
- 4 Push insert (7) out through rear of the assembly (2).
- 5 Unsolder cable leads (5) from pin contacts (6).



REASSEMBLY

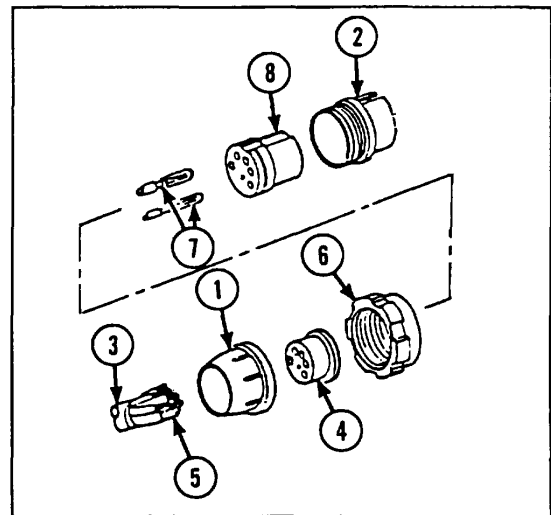
- 1 Strip cable insulation equal to depth of solder wells of pin contacts (1).
- 2 Slide nut (7) onto cable (3).
- 3 Slide grommet (4) over cable leads (5).
- 4 Insert cable leads (5) into solder wells pin contacts (1) and solder.
- 5 Push insert (6) into shell assembly (7) from rear until seated. Groove (8) in insert (6) must be aligned with guide in shell assembly (7) to ensure proper fit.
- 6 Push pin contacts (1) into insert (6) from rear until seated.
- 7 Push grommet (4) down cable leads (5) and over solder wells of pin contacts (1).
- 8 Screw nut (2) onto shell assembly (7).



2-18. TYPICAL FEMALE-TYPE PLUG CONNECTOR.

DISASSEMBLY

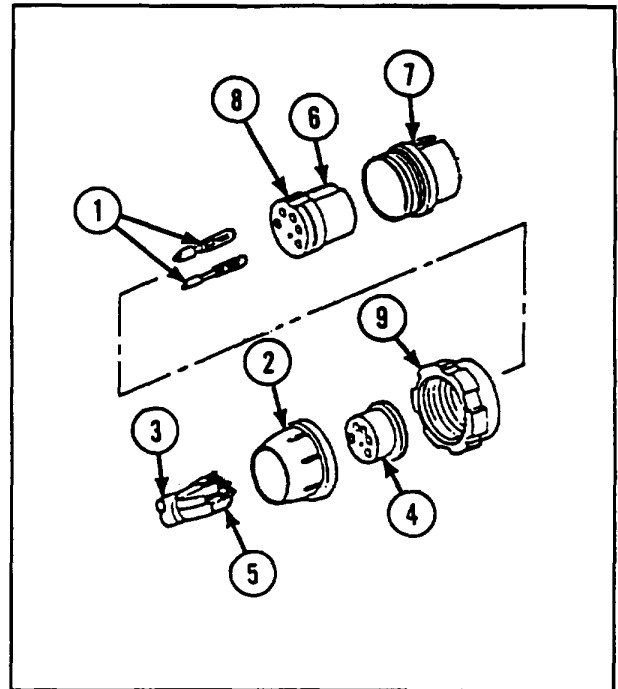
- 1 Unscrew nut (1) from shell assembly (2) and slide back on cable (3).
- 2 Slide grommet (4) back on cable leads
- 3 Slide coupling (6) off shell assembly (2)
- 4 Drive socket contacts (7) out through rear of insert (8) with pin extractor.
- 5 Push insert (8) out through rear of shell assembly (2).
- 6 Unsolder cable leads (5) from socket contacts (7).



2-18. TYPICAL FEMALE-TYPE PLUG CONNECTOR (CONT).

REASSEMBLY

- 1 Strip cable insulation equal to depth of solder wells of socket contacts (1).
- 2 Slide nut (2) over cable (3).
- 3 Slide grommet (4) over cable leads (5).
- 4 Insert cable leads (5) into solder wells of socket contacts (1) and solder.
- 5 Push insert (6) into shell assembly (7) from rear until seated. Groove (8) in insert (6) must be aligned with guide in shell assembly (7) to ensure proper fit.
- 6 Push socket contacts (1) into insert (6) from rear until seated.
- 7 Slide coupling (9) onto shell assembly (7)

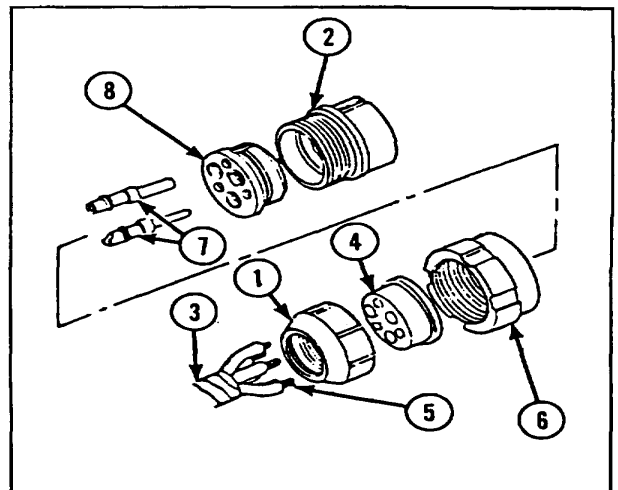


- 8 Push grommet (4) down cable leads (5); and over solder wells of sprocket contacts (1).
- 9 Screw nut (2) onto shell assembly (7).

2-19. TYPICAL MALE-TYPE PLUG CONNECTOR

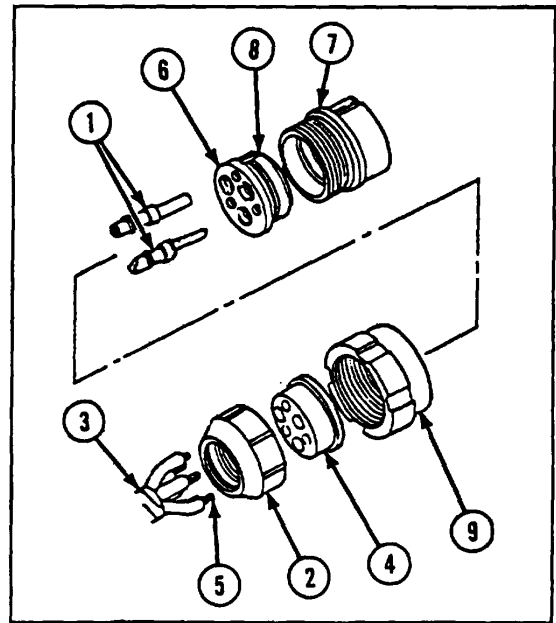
DISASSEMBLY

- 1 Unscrew nut (1) from shell assembly (2) and slide back on cable (3).
- 2 Slide grommet (4) back on cable leads (5)
- 3 Slide coupling (6) off shell assembly (2).
- 4 Drive pin contacts (7) out through rear of insert (8) with pin extractor.
- 5 Push insert (8) out through rear of shell assembly (2).
- 6 Unsolder cable leads (5) from pin contact (7).



REASSEMBLY

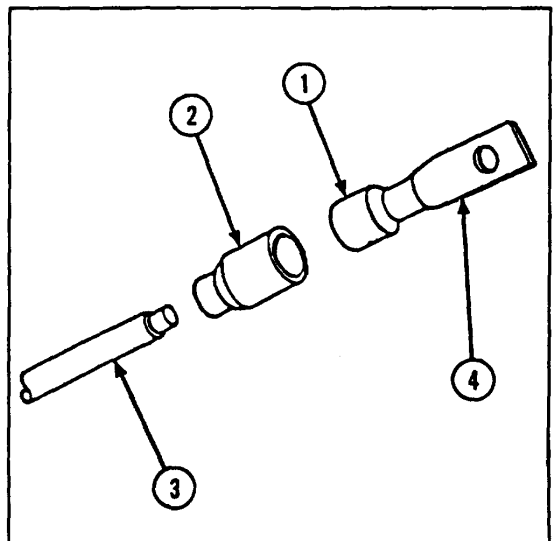
- 1 Strip cable of insulation equal to depth solder wells of pin contacts (1).
- 2 Slide nut (2) over cable (3).
- 3 Slide grommet (4) over cable leads (5)
- 4 Insert cable leads (5) into solder wells pin contacts (1) and solder.
- 5 Push insert (6) into shell assembly (7) from rear until seated. Groove (8) in insert (6) must be aligned with guide in shell assembly (7) to ensure proper fit.
- 6 Push pin contacts (1) into insert (6) from rear until seated.
- 7 Slide coupling (9) onto shell assembly
- 8 Push grommet (4) down cable leads (and over solder wells of pin contacts)
- 9 Screw nut (2) onto shell assembly (7).



2-20. REPLACING CABLE TERMINAL AND SHELL CONNECTORS.

CABLE TERMINALS

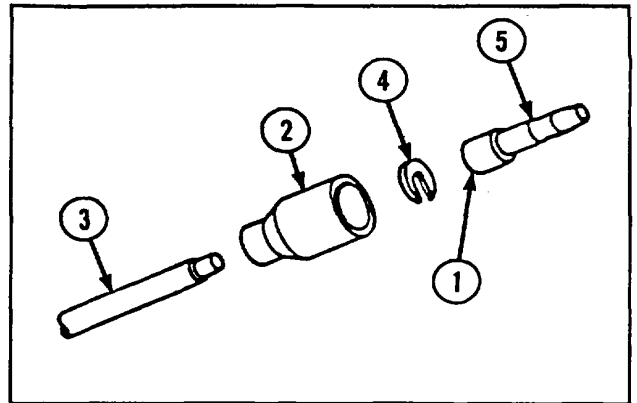
- 1 Strip cable insulation equal to depth of terminal well (1).
- 2 Slide insulator (2) over cable (3).
- 3 Insert cable (3) into terminal well (1) al crimp.
- 4 Slide insulator (2) over crimped end of terminal (4).



2-20. REPLACING CABLE TERMINAL AND SHELL CONNECTORS (CONT).

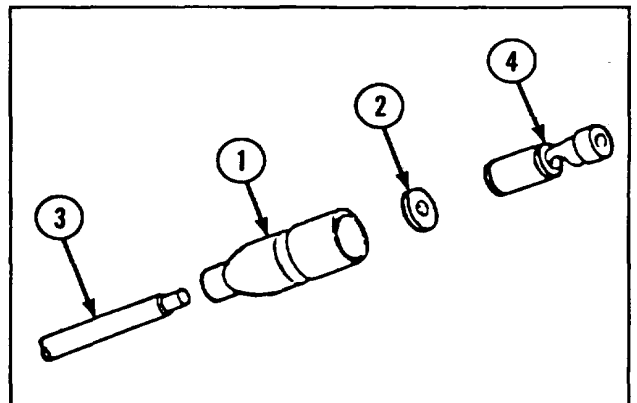
MALE CABLE SHELL CONNECTOR

- 1 Strip cable insulation equal to depth of ferrule well (1).
- 2 Slide shell assembly (2) over cable (3).
- 3 Insert cable (3) into ferrule well (1) and crimp.
- 4 Place C-washer (4) over cable (3) at crimped junction and slide shell assemble (2) over C-washer (4) and ferrule (5).



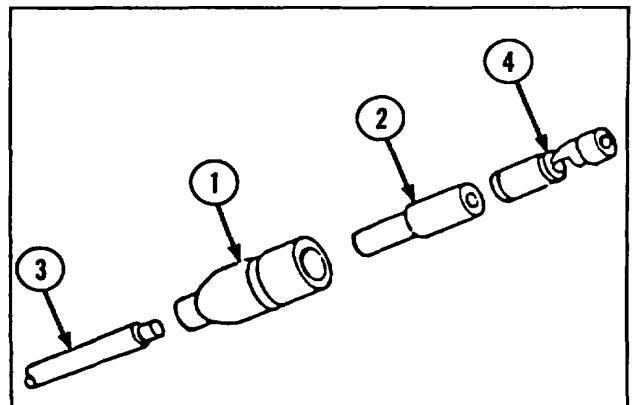
FEMALE CABLE SHELL CONNECTOR (WITH WASHER)

- 1 Strip cable insulation approximately 1/8 i (0.318 cm).
- 2 Slide shell assembly (1) and washer (2) over cable (3).
- 3 Place cable (3) in cylindrical end of terminal (4) and crimp.
- 4 Slide shell assembly (1) and washer (2) over terminal (4).



FEMALE CABLE SHELL CONNECTOR (WITH SLEEVE)

- 1 Strip cable insulation approximately 1/8 (0.318 cm).
- 2 Slide shell assembly (1) and sleeve (2) over cable (3).
- 3 Place cable (3) in cylindrical end of terminal (4) and crimp.
- 4 Slide shell assembly (1) and sleeve (2) over terminal (4).



Section VI. MAINTENANCE OF HYDRAULIC LINES AND FITTINGS

2-21. GENERAL.

a. This section contains instructions on repair of hydraulic lines and fittings. Repair of hydraulic lines and fittings consists of replacement of performed packings, tube fitting locknuts, lockwashers, loop clamps, tube clamps, and defective sleeve spacers and washers. Pages 2-371 thru 2-373 show exploded views of typical hydraulic lines and fittings used on the vehicle, and give procedures for disassembly and reassembly of fittings. For complete inspection procedures, refer to b. below. Refer to TM 9-2350-304-24P-1 for ordering of authorized parts. Ensure hydraulic pressure is relieved before performing any disassembly of hydraulic lines and fittings.

b. Inspect all unions, nipples, tees, reducers, plugs, elbows, loop clamps, tube clamps, and parts on which end fittings are used for thread damage, fractures, corrosion, distortion, slivers, restrictions, sealing surface scratches, or mutilation. Hex comers shall not be rounded. Repair is by replacement of authorized parts (TM 9-2350-304-24P-1) which do not meet above criteria.

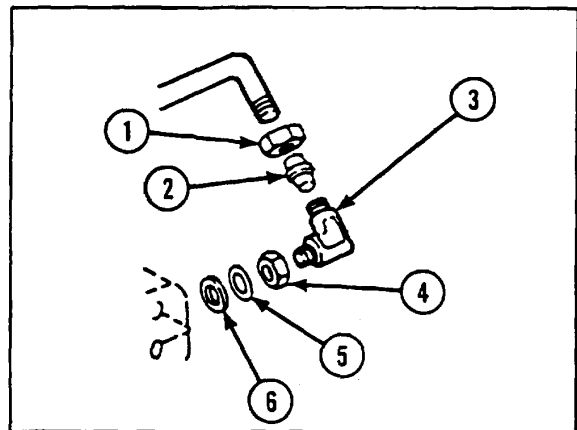
2-22. TUBE ELBOW TO TUBE FITTING.

DISASSEMBLY

Remove tube fitting locknut (1), sleeve spacer (2), tube elbow (3), tube fitting locknut (4), flat washer (5), and performed packing (6).

REASSEMBLY

Install new performed packing (6), flat washer (5), new tube fitting locknut (4), tube elbow (sleeve spacer (2), and new tube fitting locknut (1).



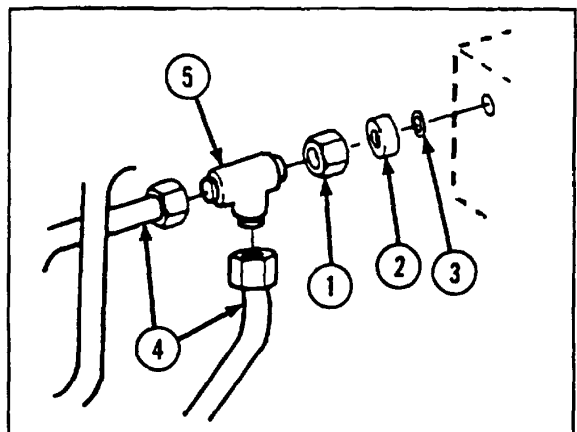
2-23. TUBE TEE TO TUBE FITTING.

DISASSEMBLY

- 1 Remove tube fitting locknut (1), flat washer (2), and performed packing (3).
- 2 Disconnect tube assemblies (4) from tube tee (5) and remove tube tee.

REASSEMBLY

Install tube tee (5) in tube assembly (4) before installing new performed packing (3), flat washer (2), and new tube fitting locknut (1).



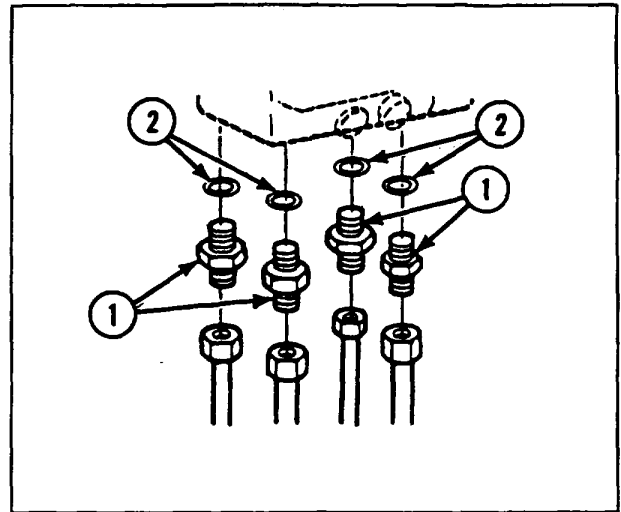
2-24. TUBE REDUCER TO TUBE FITTING.

DISASSEMBLY

Disconnect tube assembly and remove tube reducer (1) and performed packing (2).

REASSEMBLY

Install new performed packing (2) and tube reducer (1), and connect tube assembly.



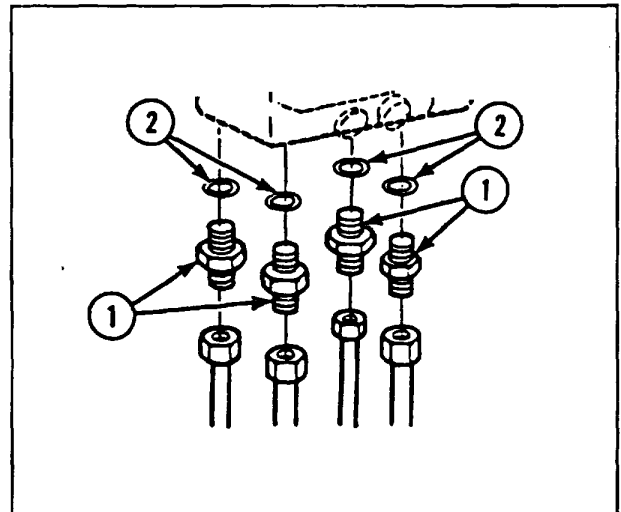
2-25. TUBE NIPPLE TO TUBE FITTING

DISASSEMBLY

Disconnect tube fitting, and remove tube nipple (1) and performed packing (2).

REASSEMBLY

Install new performed packing (2) and tube nipple (1) and connect tube fitting.

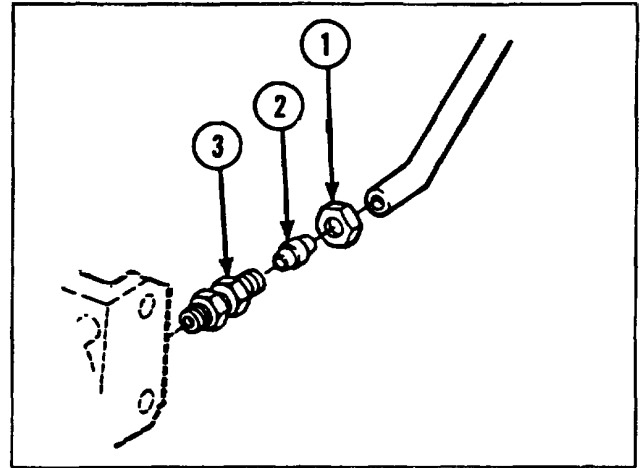


2-26. STRAIGHT ADAPTER TO TUBE F**DISASSEMBLY**

Remove tube fitting locknut (1), sleeve spacer (2), and straight adapter (3).

REASSEMBLY

Install straight adapter (3), sleeve spacer (2), and new tube fitting locknut (1).

**Section VII. UNIT MAINTENANCE INSTRUCTIONS**

2-27. GENERAL. This section provides general repair methods and cleaning procedures. Special repair and cleaning procedures are provided, as required, in the individual maintenance instructions.

2-28. REPAIR METHODS.

- 1 Complete disassembly is not always necessary to make a repair. Exercise good judgment to keep disassembly and reassembly to a minimum.
- 2 Repair or replace unserviceable parts and hardware. Always replace packings, gaskets, and seals with new parts.
- 3 Remove burrs with a stone or file. Remove burrs on closely fitted mating surfaces by lapping the surfaces with abrasive compound (item 1, appx C).
- 4 Remove corrosion or rust with crocus cloth (item 10, appx C) or emery cloth (item 11, appx C). Use the method that will not damage the surface being cleaned. Crocus cloth (item 10, appx C) should be used to remove corrosion and rust from polished surfaces. Make sure that critical dimensions are not altered when using crocus cloth.
- 5 Repair damaged threads with a thread chaser or die.
- 6 When welding is authorized, procedures in TM 9-237 must be followed. Welds must be inspected for cracks.
- 7 Bearings should be inspected and maintained following procedures in TM 9-214.
- 8 Clean electrical ground contacts with crocus cloth (item 10, appx C) or emery cloth (item 11, appx C). Make sure ground connections are tight.

2-28. REPAIR METHODS (CONT).

- 9 Repair chafed, broken, or damaged electrical wiring with insulation tape (item 44, appx C). When soldering is required, procedures in TB SIG-222 must be followed.
- 10 After locating the malfunction and repairing the component, test it for proper function.

2-29. CLEANING.

- 1 Wire brush metal parts to remove rust and corrosion.

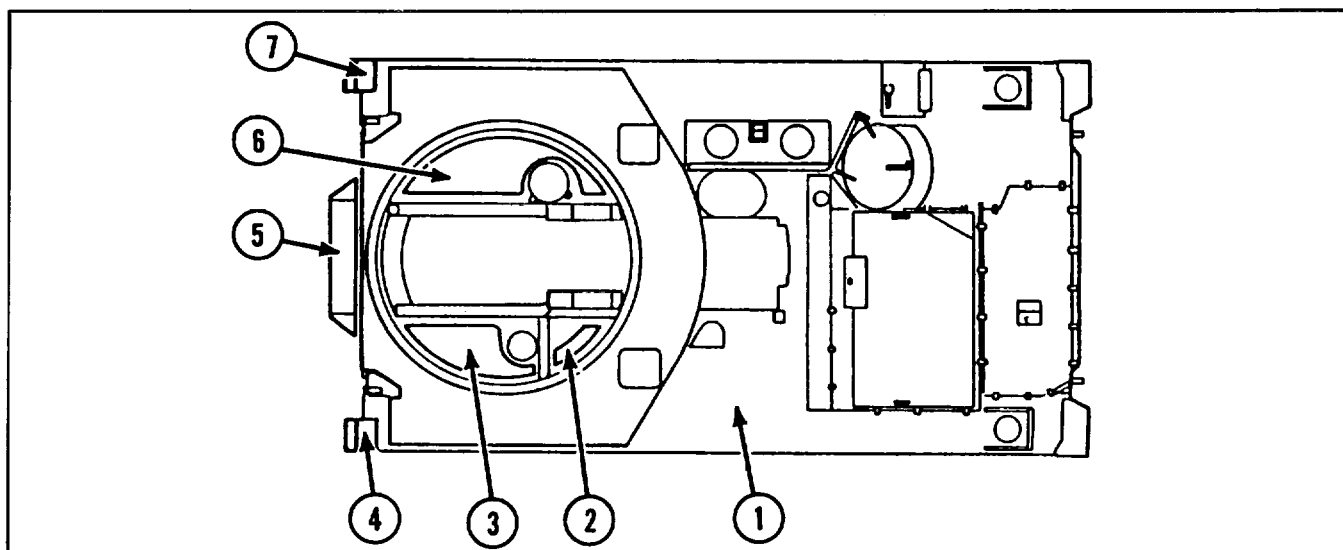
WARNING

Dry cleaning solvent (SD2) is toxic and flammable. Wear protective goggles and gloves and use only in well-ventilated area.

- 2 Clean metal parts with dry cleaning solvent (SD2) (item 15, appx C). Metal or fiber brushes may be used to apply cleaning solvent and to remove softened or dissolved material. Hand scraping with metal scrapers may be used to remove soft coatings or deposits.
- 3 Soak oily or greasy metal parts in a tank containing dry cleaning solvent (SD2) (item 15, appx C). The time parts must be in solvent varies with the type and amount of material to be removed.
- 4 Do not use 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 (item 2, appx C) and dust thoroughly after cleaning.
- 5 Do not use solvent to clean rubber parts. Clean rubber parts by washing with mild solution of soap and water.
- 6 Dry parts by blowing with low-pressure compressed air or wiping with clean, lint-free cloths (item 12, appx C).
- 7 Bearings should be cleaned by procedures in TM 9-214.
- 8 Spot paint metal surfaces after repairs, as required. Sand damaged areas, clean with solvent, and rinse with water. Surface must be clean and dry. Paint with CARC to match existing color, refer to TM 43-0139.

2-30. LUBRICATION. Keep a light coat of preservative lubricant cleaner (CLP) (item 8, appx C) on parts during repair procedures to prevent rusting. Lubricate parts during repair and assembly as required by the PMCS/lubrication table, page 2-12.

2-31. PAINTING INSTRUCTIONS. Complete painting is authorized for and done by general support maintenance personnel or higher. Spot painting and restenciling vehicle markings is done by unit maintenance personnel. Instructions for materiel preparation, priming, and finish are given in TM 43-0139.



2-32. NONSKID AREAS

Walkway compound (item 45, appx C) will be used to coat deck areas where personnel walk. The seven areas to be coated with nonslip paint are shown in the above illustration.

2-33. TOUCHUP AND RECOATING.

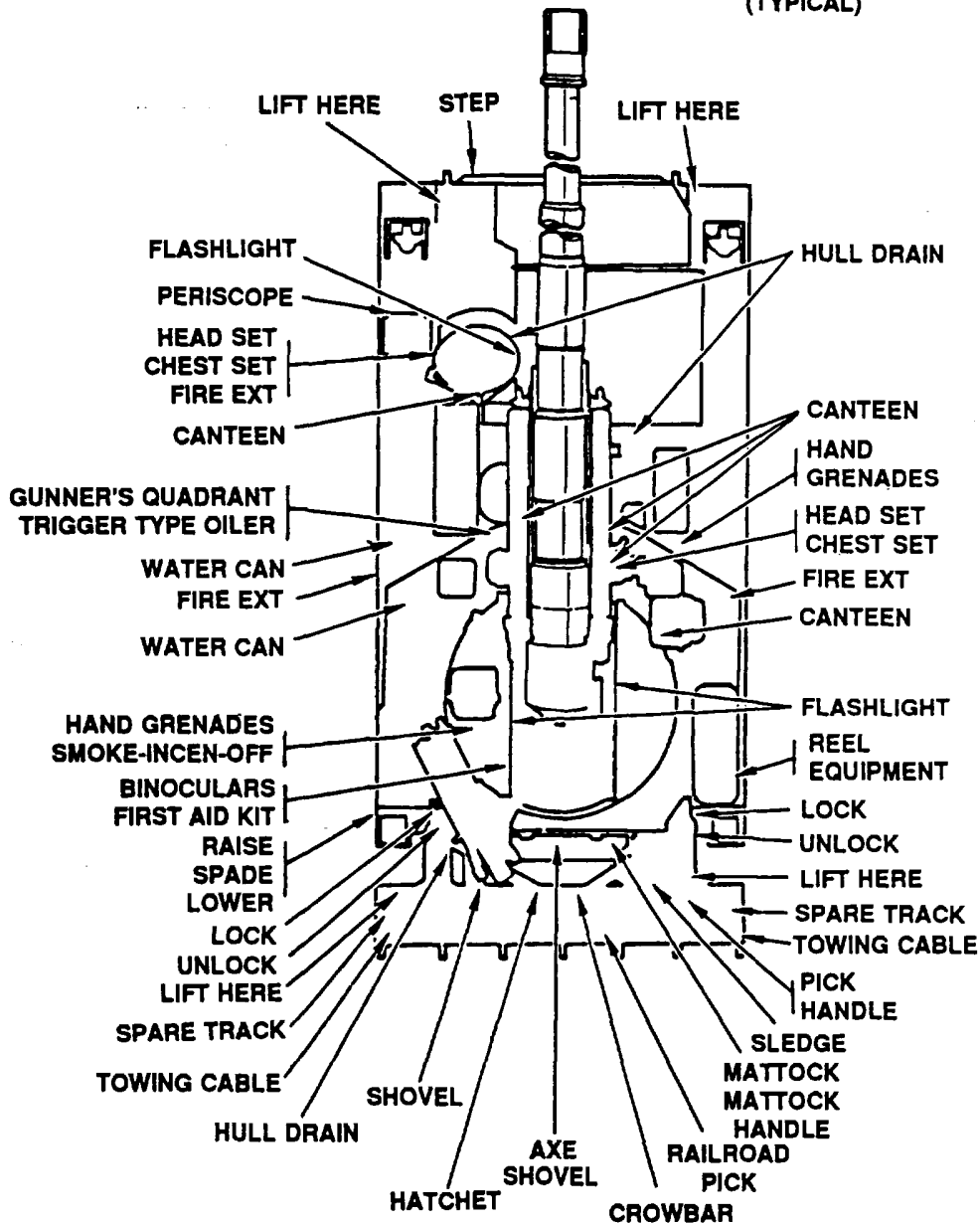
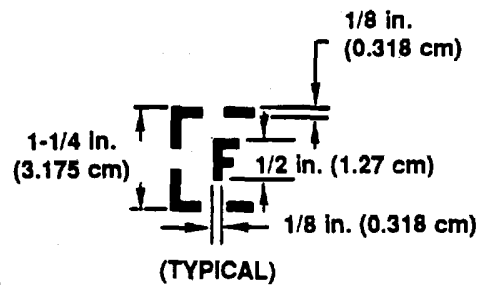
WARNING

- Chemical Agent Resistant Coating (CARC) Paint: CARC paint contains isocyanate, a constituent that can cause respiratory effects during and after the application of the material. During the application of CARC paint, coughing, shortness of breath, pain on respiration, increased sputum, and chest tightness may occur. CARC paint also produces itching and reddening of the skin, a burning sensation of the throat and nose, and watering of the eyes.
- An allergic reaction may occur after initial exposure (ranging from a few days to a few months later), producing asthmatic symptoms including coughing, wheezing, tightness in the chest, or shortness of breath.
- The following precautions must be observed to ensure the safety of personnel when CARC paint is applied.
- For brush/roller painting in confined spaces, an airline respirator is required, unless an air sampling shows exposure to be below standards. If the air sampling is below standards, either chemical cartridge or airline respirators are required.

- Spot painters applying CARC paint by brush or roller must wear clothing and gloves affording full coverage.
- Do not use water, alcohol, or amine based solvents to thin or remove CARC paints. Use of these solvents with CARC paints can produce chemical reactions resulting in nausea, disease, burns, or severe illness to personnel.
- Do not use paint solvents to remove paint/coating from your skin.
- Mix paint/coating in a well-ventilated mixing room or spraying area away from open flames. Personnel mixing paint/coating should wear eye protection.
- Use paint/coating with adequate ventilation.
- Unusable CARC mixtures may be considered hazardous waste and will require disposal IAWV Federal, state, DOD, and DA and local installation waste regulations. Consult the installation environmental office for proper disposal guidance. Mixed CARC is extremely flammable-use only in well-ventilated areas and keep away from open flames, heat, sparks and other ignition sources.
- Personnel grinding or sanding on painted equipment should use high efficiency air purifying respirators.
- Do not weld or cut CARC-coated metal. Substances causing skin or respiratory irritation may be released. Before applying heat, sand or grind paint down to bare metal on area four inches to either side of the area to be painted or welded.

When touching up damaged areas, the procedure should be as similar to the original method of finishing as possible; a clean surface is imperative. Where general disintegration of the surface is evident, or the under surface is corroded, the coating must be stripped clean from the part. Corrosion must be removed or neutralized by mechanical or chemical treatment, or both, and the surface metal must be pre-treated, primed, and then topcoated.

Apply stencils to clean, painted surfaces only. Use black enamel (item 16, appx C). When possible, position the stencil so that it is covered by the item named when the item is stowed in its proper place. Stencil dimensions and locations are shown below and to the right.

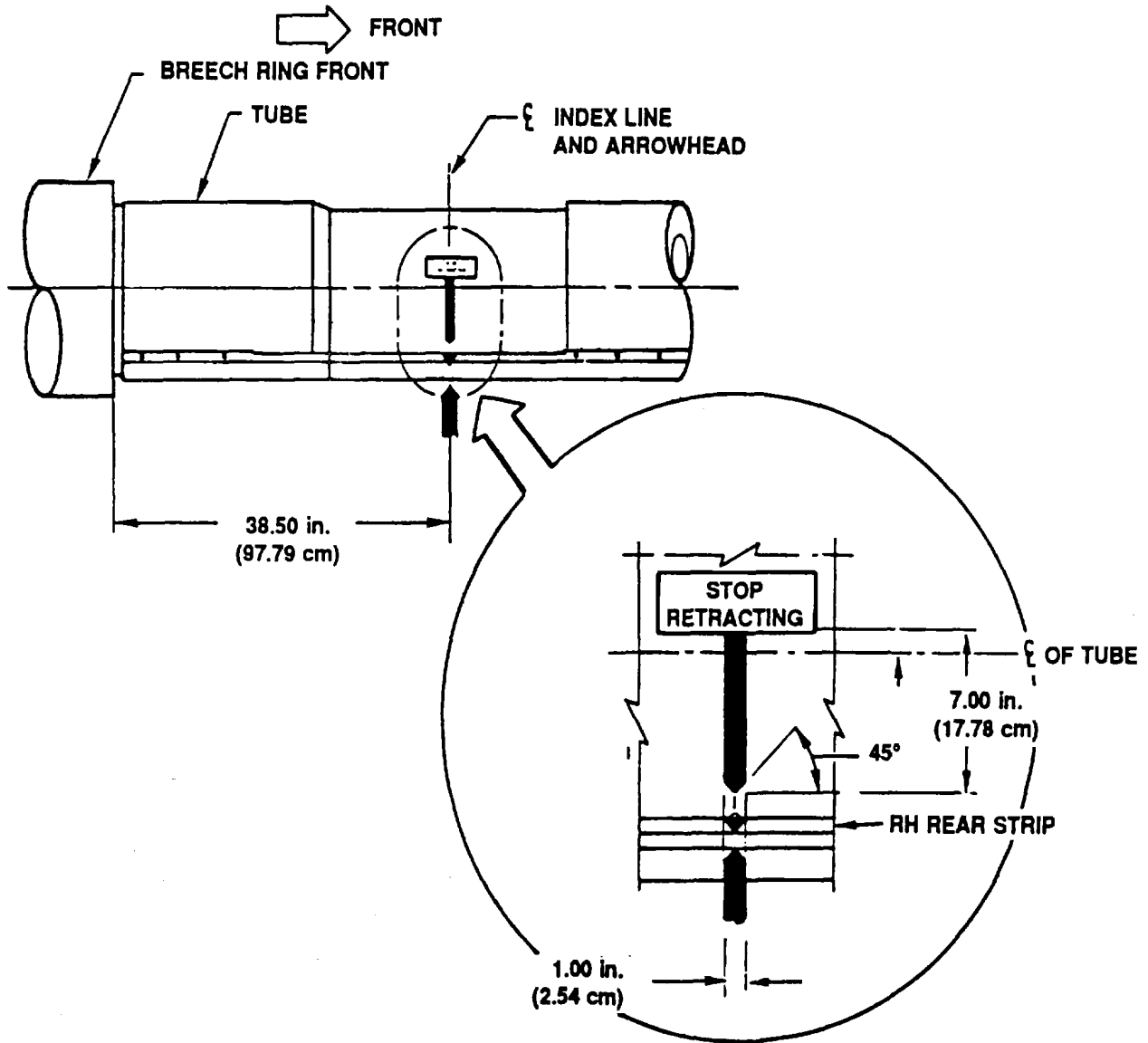


2-35. PAINTING RETRACT MARK.

Locate and apply stencil, index line, and arrowhead as shown. Use black enamel (item 16, appx C).

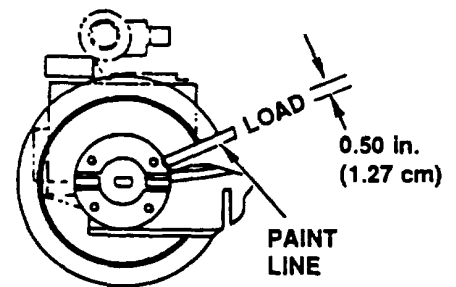
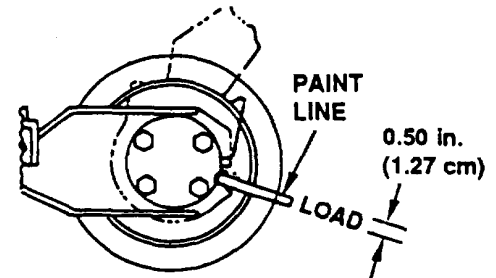
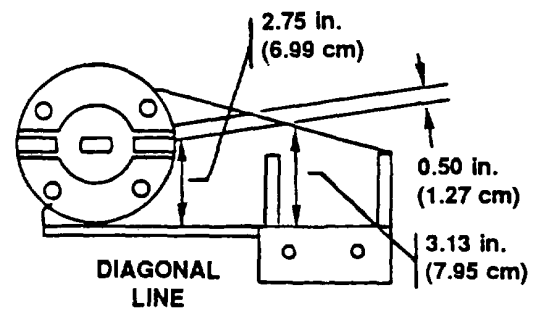
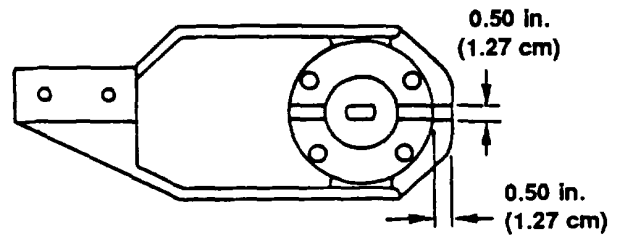
NOTE

Dimensions are in inches with centimeters in parentheses.



2-36. PAINTING LOAD MARKS.

- a. Remove telescope mount M137 and M140 mount (TM 9-2350-304-20-2).
- b. Remove elevation fire control quadrant M15 and M140 mount (TM 9-2350-304-20-2).
- c. Paint index lines on M140 mounts.
- d. Install mounts (TM 9-2350-304-20-2).
- e. Open breech and place loader-rammer assembly in ramming position with trough retracted.
- f. Elevate the gun tube until trough can slide into breech. Measure elevating angle on breech pads with gunners quadrant (approximately 145 mils).
- g. Paint index lines on trunnion bearing cap (right side) and trunnion (left side) to align with paint lines on mounts. Stencil "LOAD" at ends of lines.



2-37. MAINTENANCE OF POWERPLANT.

This task covers:

a. Removal

c. Inspection/Repair

f. Installation

INITIAL SETUP:*Tools and Special Tools*

Automotive maintenance and repair shop equipment: organizational maintenance, common no. 2 (less power) (item 84, appx B)

- Breaking bar (3/4 in. square drive)
- Socket (1-1/2 in.)
- Torque wrench (O to 600 ft-lb)
- Wrecking bar

Beam type sling (item 26, appx G)

Plier wire twister (item 29, appx G)

5-ton hoist

Materials/Parts

Cotter pin (2)

Dry cleaning solvent (item 15, appx C)

Gasket (3)

Lockwasher (12)

Lockwasher

Lockwasher (3)

Lockwasher (18)

Lockwasher (4)

Lockwire (item 23, appx C)

Lockwire (item 25, appx C)

Performed packing (4)

Seal (2)

Self-locking nut

Personnel Required

Three

References

TM 9-2350-304-24P-1

Equipment Conditions

Prepare a safe, solid stand of heavy wooden blocks or a suitable metal stand on which to set the powerplant after removal. Place the stand on a level 8 x 10-ft (2 x 3-m) area near the vehicle. Ensure there is enough head and side room around the vehicle to work the hoisting equipment. The hoisting equipment must have at least a 5.0-ton (4.5-metric ton) rating, a 9.0-ft (2.7-m) reach, and a 10.0-ft (3.0-m) lift.

*General Safety Instructions***WARNING**

- Vehicle has no brakes when powerplant is disconnected. Failure to securely block front and rear vehicle tracks could cause injury to personnel or damage to vehicle or other equipment if vehicle is free to roll out of control.
- Dry cleaning solvent (SD2) is toxic and flammable. Wear protective goggles and gloves, and use only in a well-ventilated area.

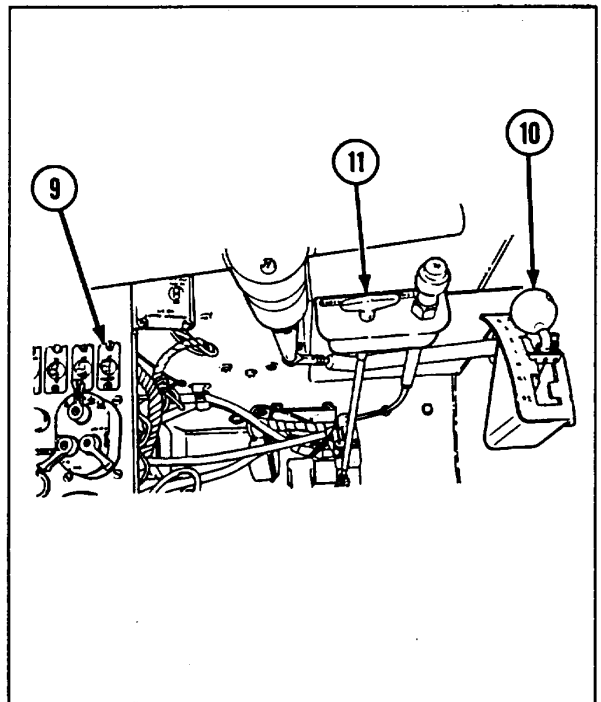
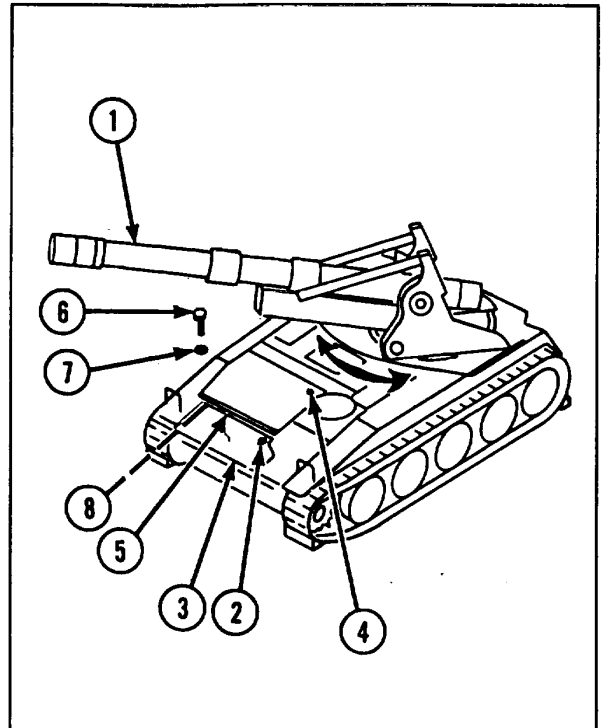
REMOVAL

- 1 Traverse cannon (1) as far as it will go, either left or right. Remove four plain cap nuts (2) and transmission deck lid assembly (3). Remove four plain cap nut (4) and engine deck lid assembly (5). Remove two hexagon head capscrews (6) two lockwashers (7), and deck cover beam (8) from hull of vehicle.

WARNING

Vehicle has no brakes when power-plant is disconnected. Failure to securely block front and rear vehicle tracks could cause injury to personnel or damage to vehicle or other equipment if vehicle is free to roll out of control.

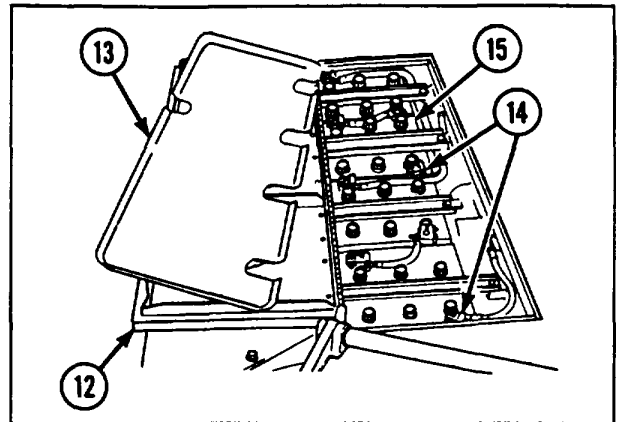
- 2 Ensure that vehicle cannot roll out of control. Block vehicle with 12 x 24 in. (3C x 61 cm) wood blocks placed under front and rear of each track.
- 3 Set MASTER switch (9) to OFF position. Place driver shift control latch (10) in N (neutral), and pull parking brake handle (11) to release parking brake.



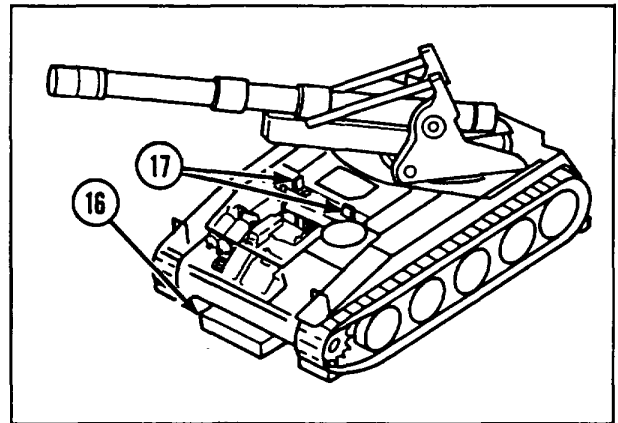
2-37. MAINTENANCE OF POWERPLANT (CONT).

REMOVAL (CONT)

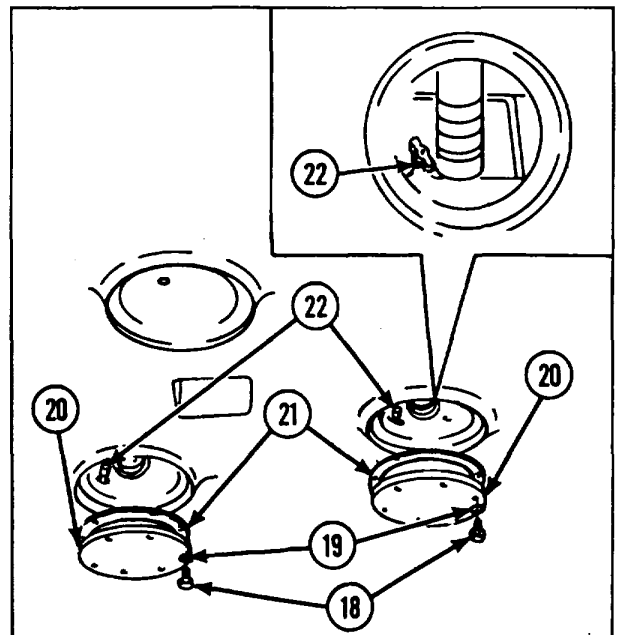
4 Open battery access cover (12) and remove battery protection liner (13). Disconnect two electrical ground leads (14) from storage batteries (15).



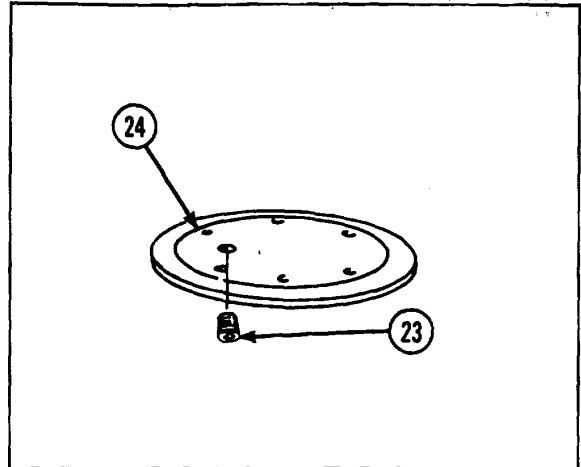
5 Place 30-gal. (119-1) container (16) unde front of vehicle. Loosen both radiator caps (17).



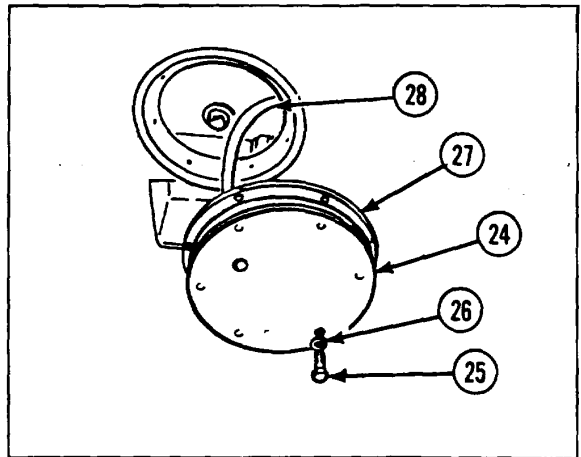
6 Remove 12 hexagon head capscrews (18), 12 lockwashers (19), 2 access covers (20), and 2 gaskets (21) from underside of hull. Open both radiator drain cocks (22), and drain coolant into container.



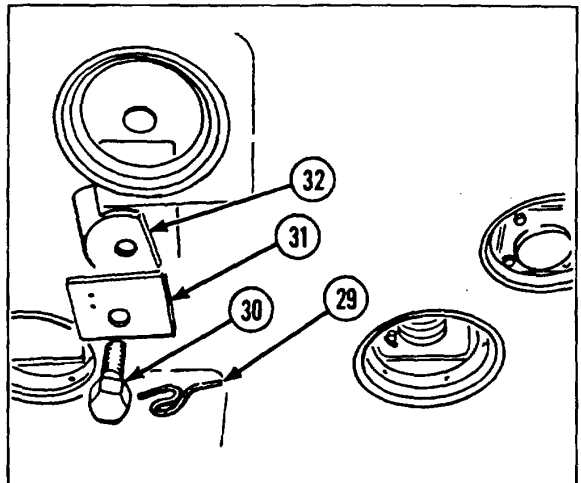
7 Remove pipe plug (23) from powerplant reservoir drain access cover (24), and drain fluid into container.



8 Remove six hexagon head capscrews (25), six lockwashers (26), and gasket (27) from powerplant reservoir drain access cover (24). Remove powerplant reservoir drain access cover. Disconnect reservoir drain hose (28) from powerplant reservoir drain access cover.



9 Remove lockwire (29) from hexagon head cap screw (30). Remove hexagon head cap screw, engine mount washer (31), and cushioning pad (32) from underside of hull.



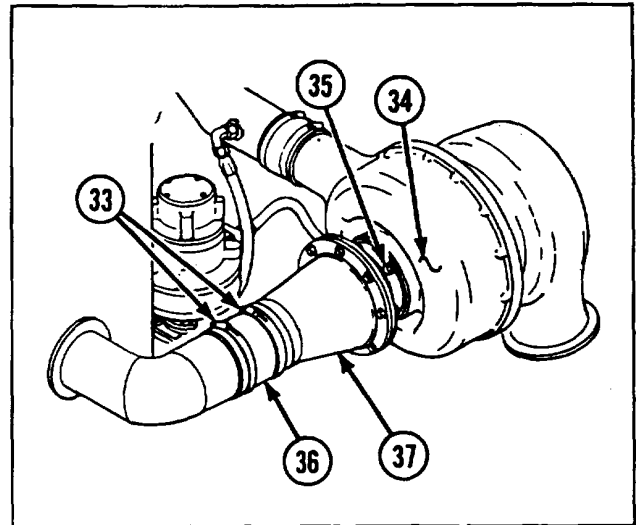
2-37. MAINTENANCE OF POWERPLAN (CONT)

REMOVAL (CONT)

NOTE

Steps 10 and 11 apply to engine model 7083-7398.

- 10 Loosen two hose clamps (33), and remove lockwire (34) and four hexagon head capscrews (35). Remove air duct hose (36) and filter screen (37).

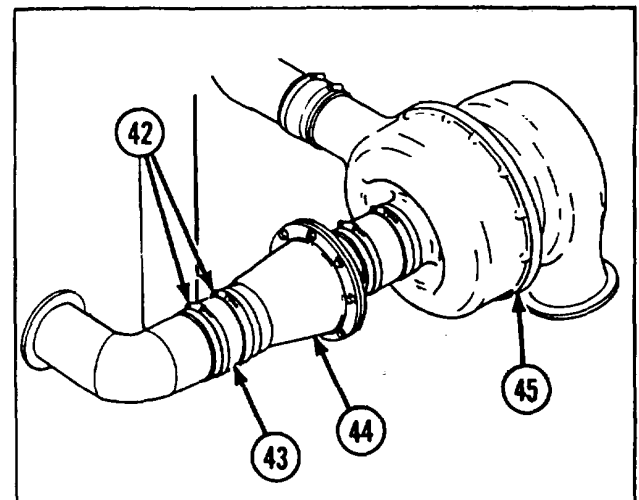
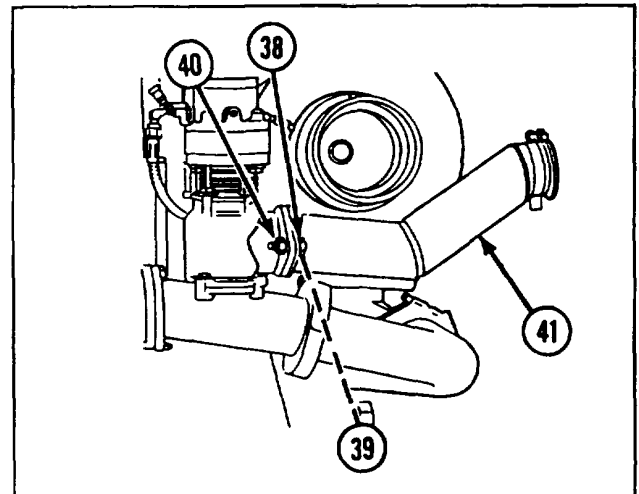


- 11 Remove two hexagon head capscrews (38), two lockwashers (39), two hexagon plain nuts (40), and exhaust pipe (41).

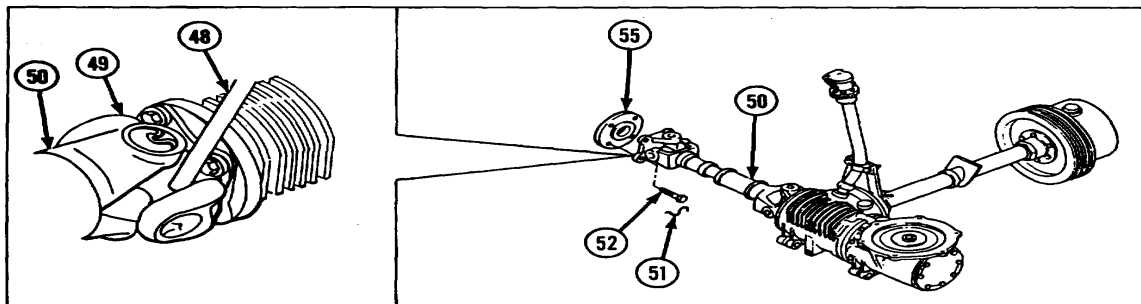
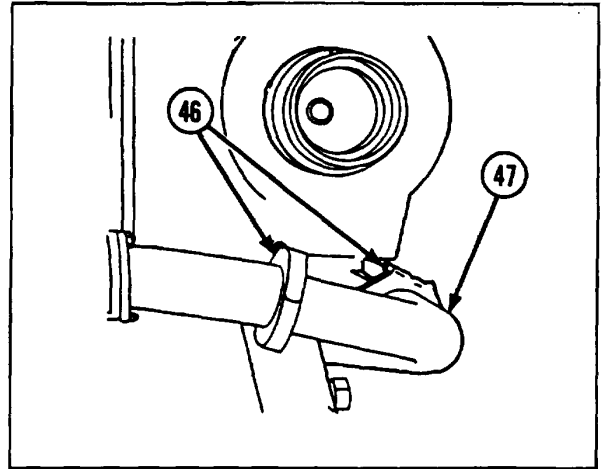
NOTE

Steps 12 and 13 apply to engine model 7083-7395.

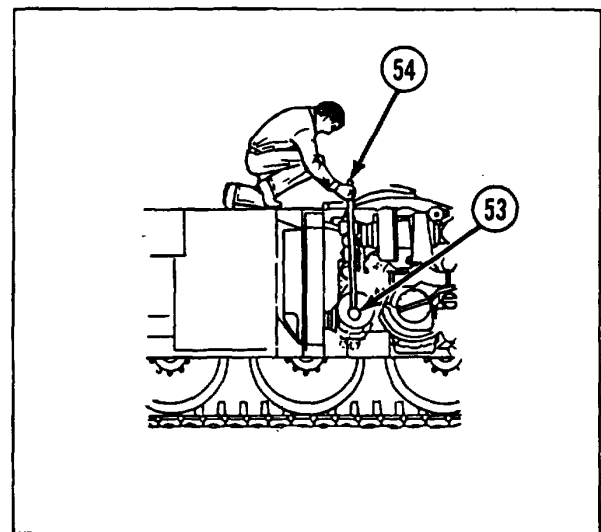
- 12 Loosen two hose clamps (42), and remove air duct hose (43) from elbow. Remove two hose clamps (42), air duct hose (43), and air screen assembly (44) from turbocharger (45).



- 13 Remove two coupling clamps (46) and engine exhaust elbow (47). power takeoff drive shaft (50) to prevent power takeoff drive shaft from turning.

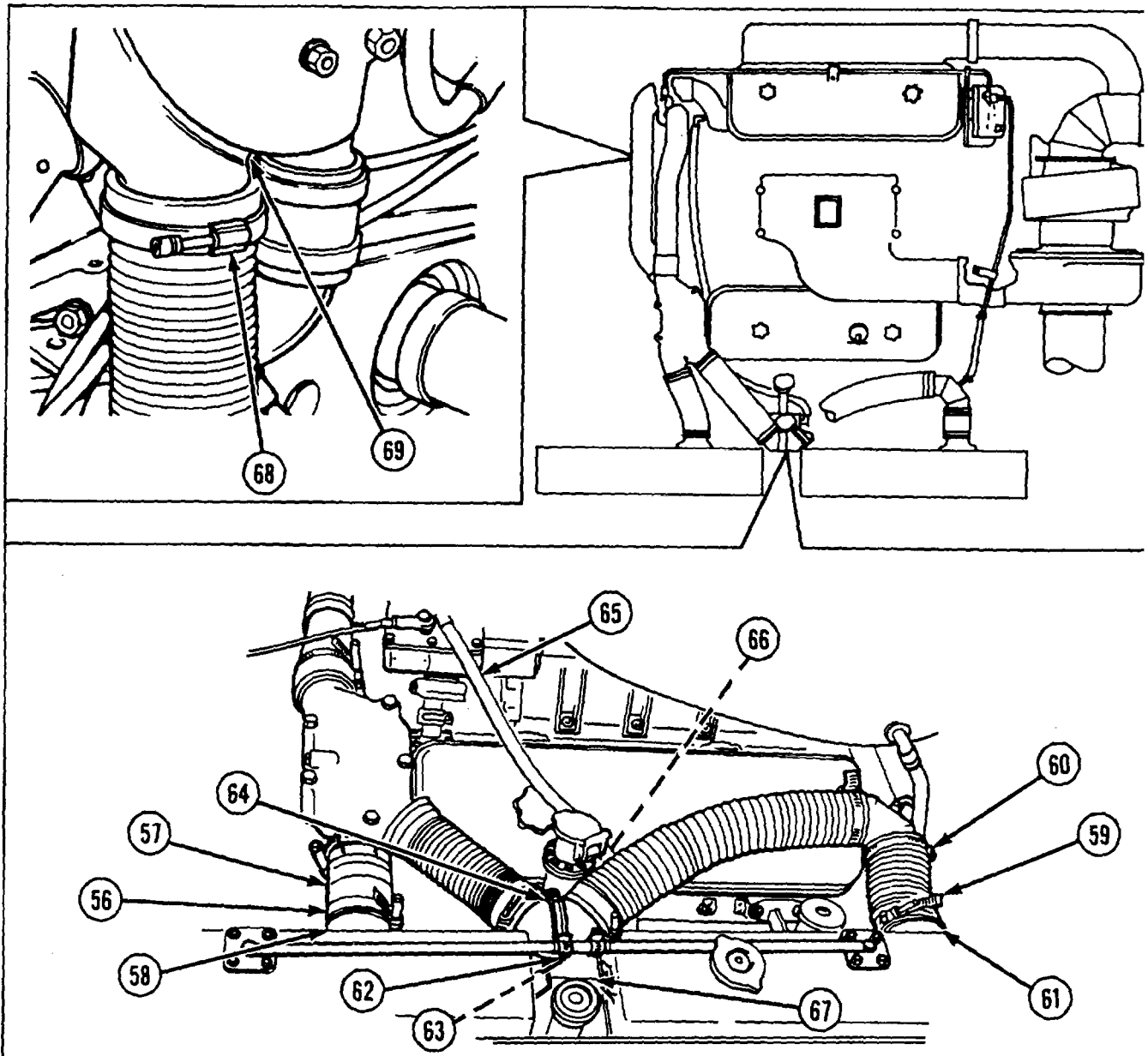


- 14 Insert end of bar (48) in U-joint (49) of power takeoff drive shaft (50) to prevent power takeoff drive shaft from turning.
- 15 Remove lockwire (51) and four hexagon head capscrews (52) from power takeoff drive shaft (50).
- 16 Enter through access hole in hull and loosen externally released bolt (53), using long breaking bar (54). Externally released bolt is tightened to 450 to 500 ft- lb (610 to 678 N-m). Remove bar from U- Joint of power takeoff drive shaft (50). Pull internal gear shaft coupling (55) from power takeoff assembly and lower power takeoff drive shaft (50) to hull bottom.



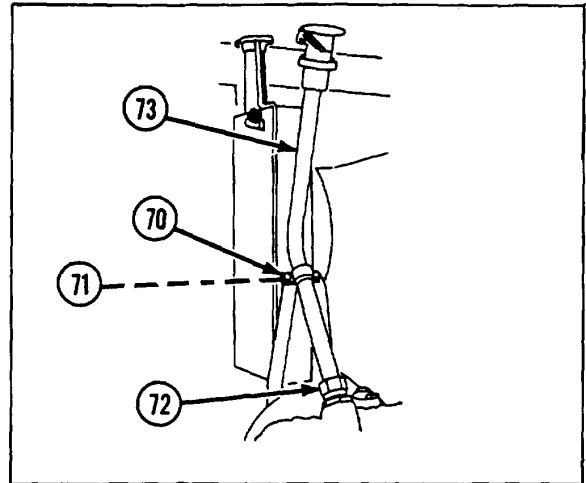
2-37. MAINTENANCE OF POWERPLANT (CONT).

REMOVAL /CONT)

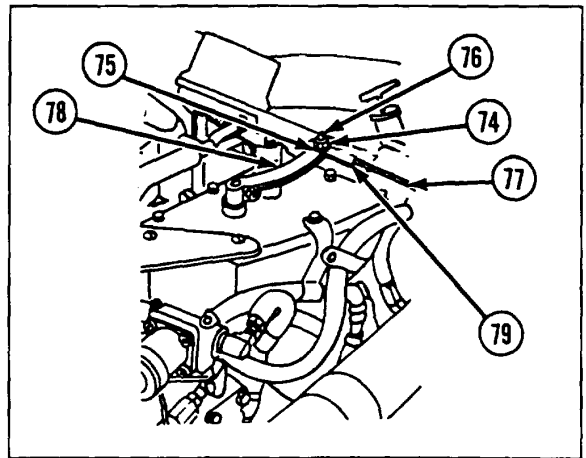


17. Loosen hose clamp (59) and disconnect nonmetallic hose (60) from right radiator inlet (61). Remove machine screw (62), lockwasher (63), and cushioned loop clamp (64). Disconnect nonmetallic hose (65) from pipe to tube elbow (66) at surge tank (67). Loosen hose clamp (68) from coolant (water) pump (69) inlet.

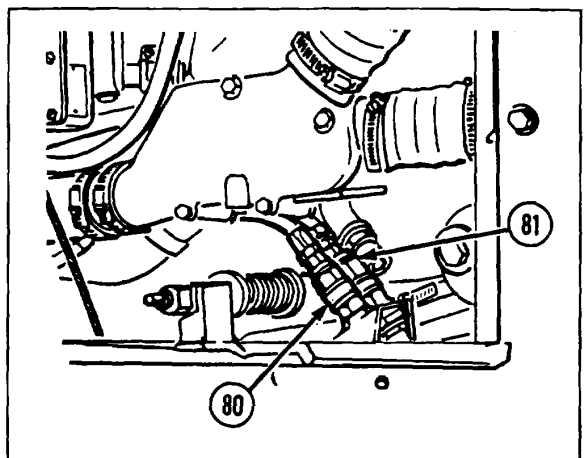
18 Loosen hexagon head capscrew (70) and self-locking nut (71). Loosen nut (72) at base of oil filler neck (73). Turn oil filler neck 90 degrees counterclockwise.



19 Remove hexagon plain nut (74), lock-washer (75), and hexagon head capscrew (76) securing engine shutdown wire rope assembly (77) to engine shutdown manual control lever (78). Assemble hexagon head capscrew (76), lockwasher (75), and hexagon plain nut (74) on plain rod end bearing (79) of engine shutdown wire rope assembly to prevent loss. Lay engine shutdown wire rope assembly over hull with plain rod end bearing in driver's compartment.

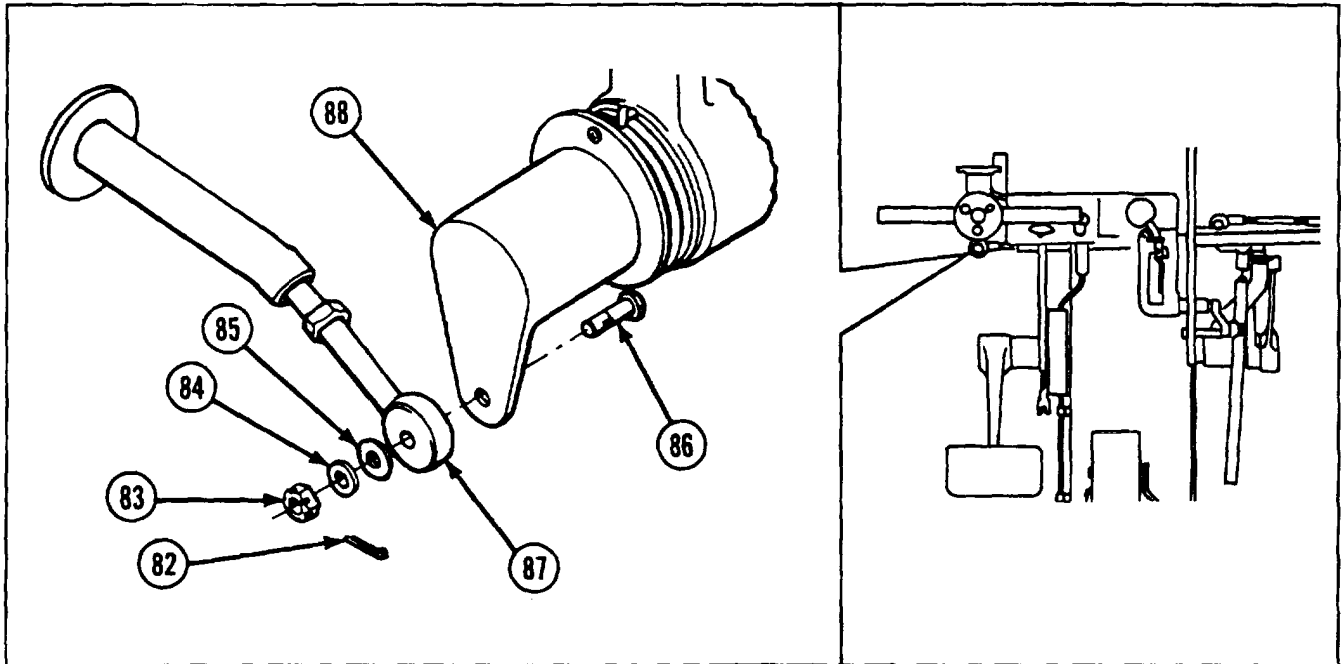


20 Disconnect fuel return hose (80) and fuel supply hose (81) at quick disconnects located in right rear engine compartment near driver's compartment. Place fuel hoses on engine to prevent damage.



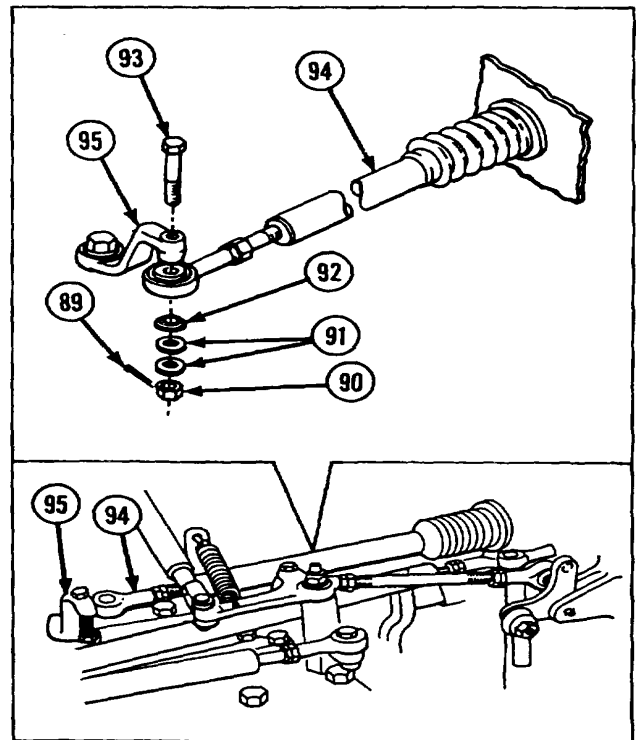
2-37. MAINTENANCE OF POWERPLANT (CONT).

REMOVAL (CONT)



21 Remove cotter pin (82), plain slotted nut (83), flat washer (84), beveled washer (85), and hexagon head capscrew (86) securing steering rod assembly (87) to pivoting wheel control linkage arm (88). Assemble hexagon head capscrew, beveled washer, flat washer, plain slotted, nut, and cotter pin on steering rod assembly to prevent loss.

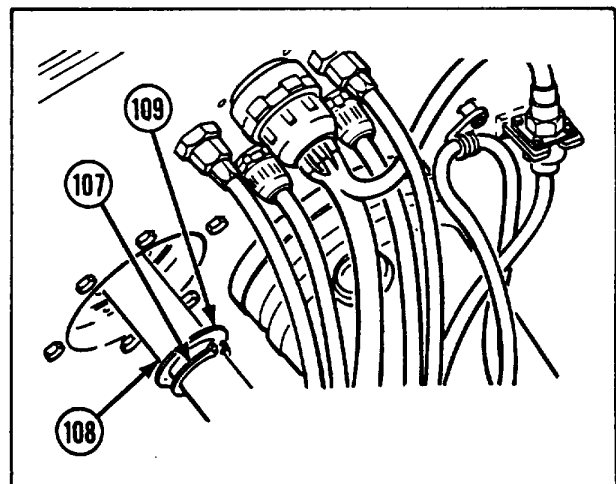
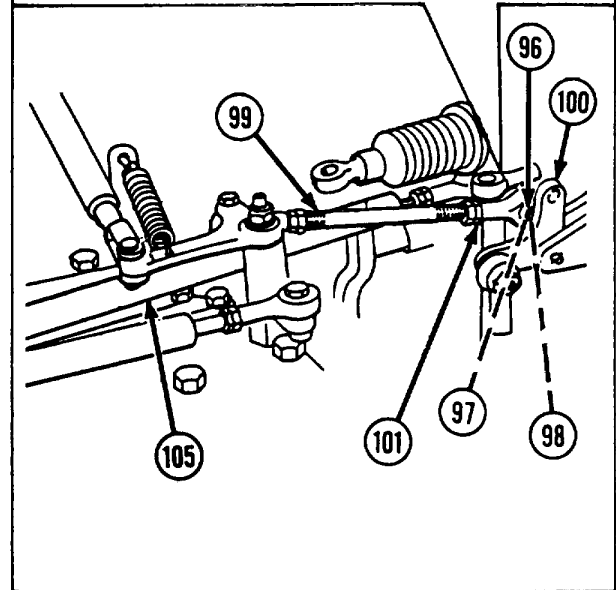
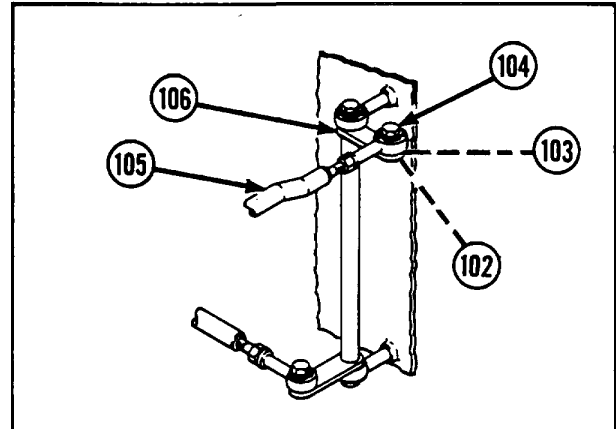
22 Remove cotter pin (89), plain slotted nut (90), two flat washers (91), beveled washer (92), and hexagon head capscrew (93) securing steering rod assembly (9a) to steering gear arm (95). Assemble hexagon head capscrew, beveled wash two flat washers, plain slotted nut, and cotter pin on steering gear arm to prevent loss. Push steering rod assembly into driver's compartment.



23 Remove hexagon plain nut (96), lock-washer (97), and hexagon head capscrew (98) securing plain throttle linkage stud (99) to throttle linkage bell crank (100). Assemble hexagon head capscrew, lock. washer, and hexagon plain nut to plain r end bearing (101) to prevent loss.

24 Remove hexagon plain nut (102), lock-washer (103), and hexagon head cap-screw (104) securing shift control rod (105) to shift control linkage bell crank (106). Assemble hexagon head capscrew lockwasher, and hexagon plain nut on shift control rod to prevent loss.

25 Disengage retaining ring (107) from groove in brake control shaft (108). Remove retaining ring and ring spacer (109), and slide brake control shaft into driver's compartment.



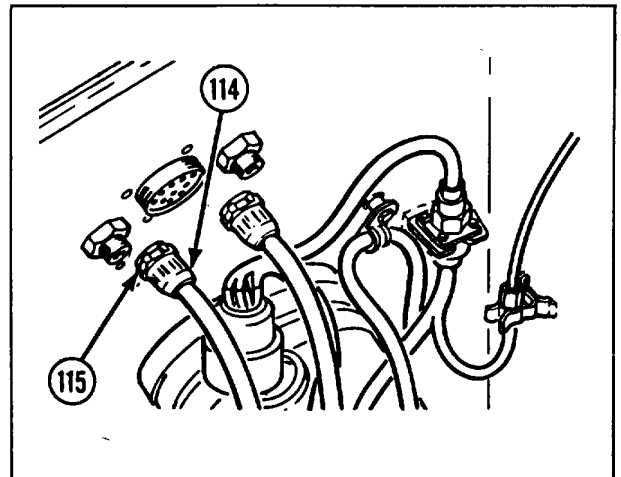
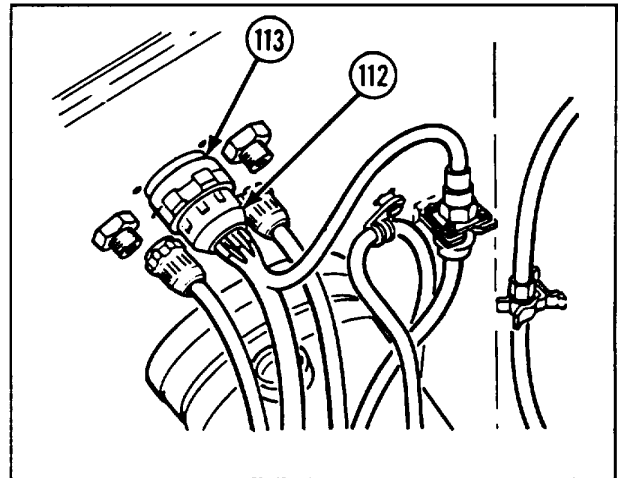
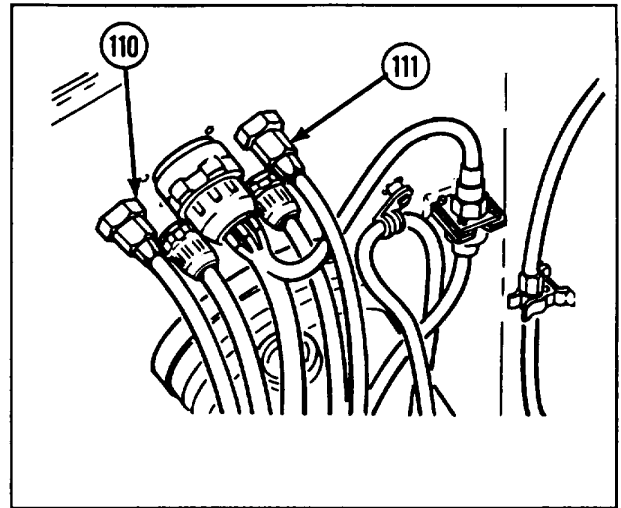
2-37. MAINTENANCE OF POWERPLAF

REMOVAL (CONT)

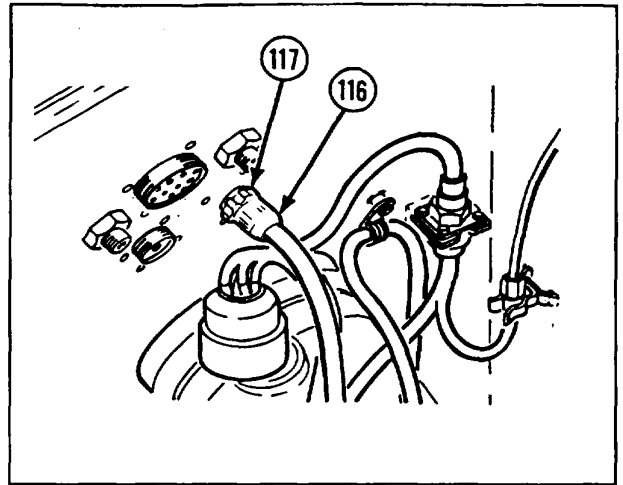
26 Disconnect tachometer drive shaft assembly (110) and speedometer drive shaft assembly (111) from adapters on bulkhead.

27 Disconnect engine electrical harness plug (112) from receptacle (113) on bulkhead

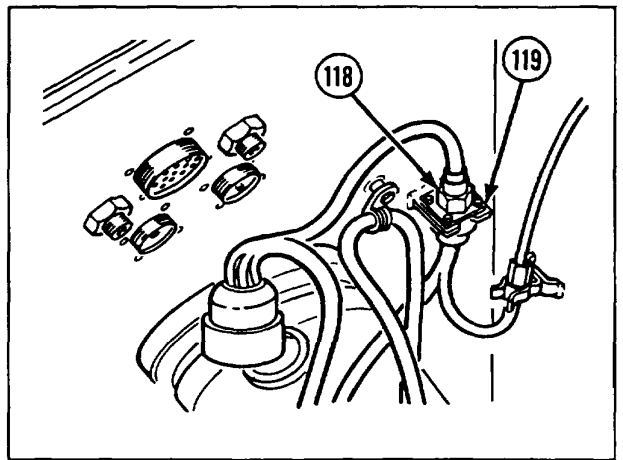
28 Disconnect starter lead plug (114) from receptacle (115) on bulkhead.



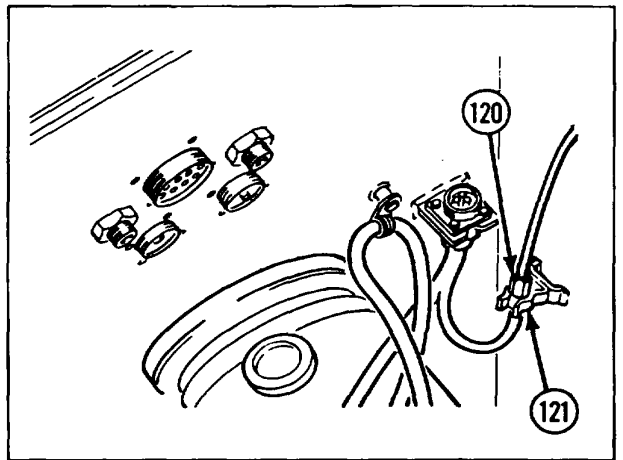
- 29 Disconnect generator lead plug (116) from receptacle (117) on bulkhead.



- 30 Disconnect generator control harness plug (118) from receptacle (119) on bulkhead.



- 31 Disconnect neutral position switch lead (120) at connector (121) on left front of powerplant compartment.



2-37. MAINTENANCE OF POWERPLANT (CONT).

REMOVAL (CONT)

NOTE

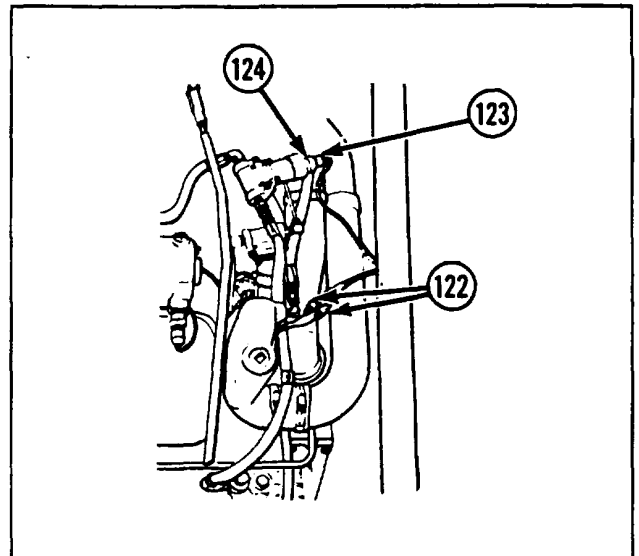
Step 32 applies to engine model 7083-7398.

- 32** Disconnect two low coolant warning light leads from connectors (122) on engine. Disconnect lead (123) from purge and prime solenoid valve receptacle (124).

NOTE

Step 33 applies to engine model 7083-7395.

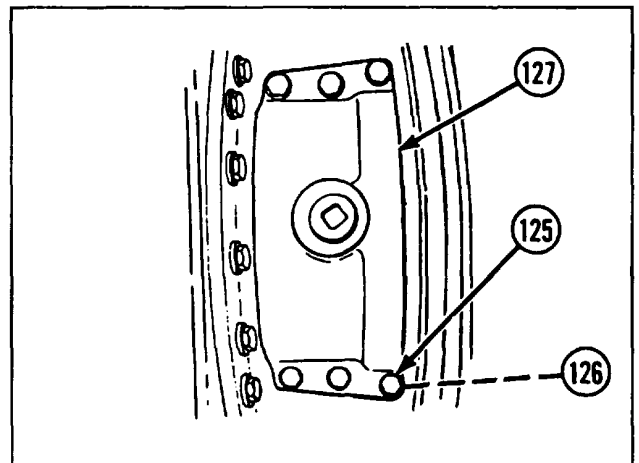
- 33** Disconnect two low coolant warning light leads from connectors (122) on engine.



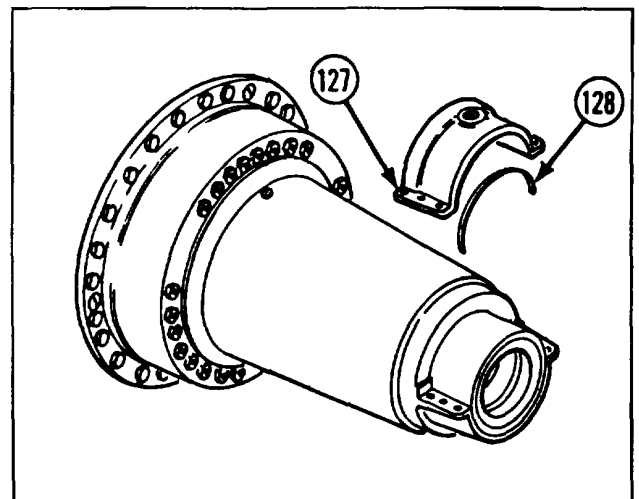
NOTE

Steps 34 thru 37 are written for left-hand final drive removal, but also apply to right-hand final drive removal.

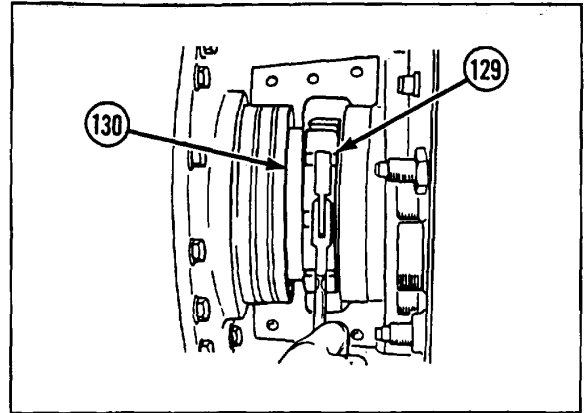
- 34** Remove six screws (125) and six lock-washers (126) from left output drive cap (127).



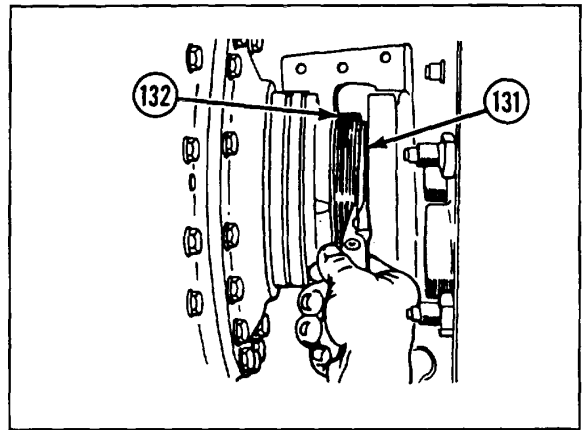
- 35** Lift off left output drive cap (127) and remove seal (128).



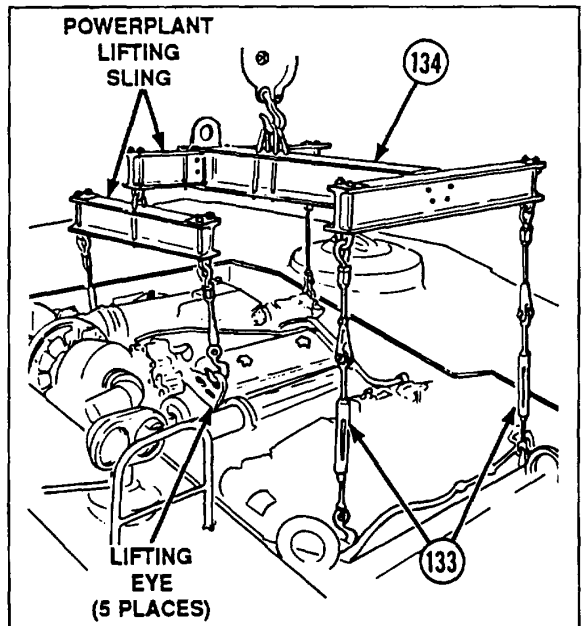
- 36 Unscrew final drive coupling nut (129) from transmission shaft (130), using drift and hammer or spanner wrench. Push final drive coupling nut (129) into final drive housing.



- 37 Remove output shaft retaining ring (131) from final drive pinion shaft (132). Push final drive pinion shaft into final drive housing until clear of transmission.



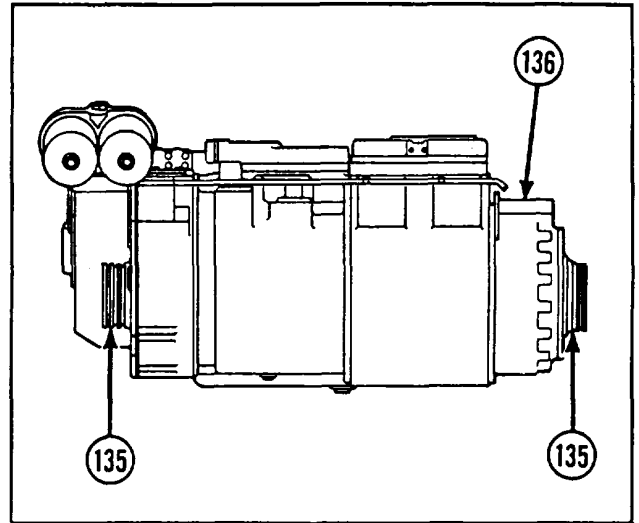
- 38 Attach powerplant lifting sling to hoist. Hoist powerplant sling over powerplant, and position two longest cables (133) toward front of vehicle. Attach powerplant lifting sling to powerplant at five lifting eyes. Slowly lift powerplant sling and adjust turnbuckles until all cables are taut and carrying about equal weight. Keep top beam (134) level. Continue lifting while watching all sides of powerplant to ensure that it clears all components and hull structure. Lower powerplant and place on stand or blocks.



2-37. MAINTENANCE OF POWERPLANT (CONT).

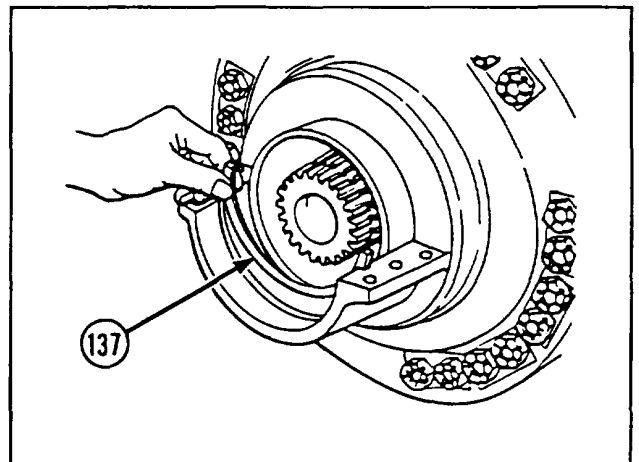
REMOVAL (CONT)

- 39** Remove four preformed packings (135) from powerplant (136).

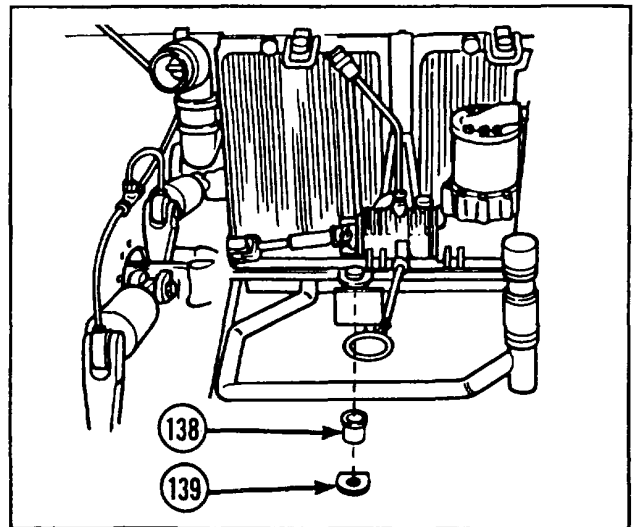


NOTE

- Step 40 is written for removal of left alignment ring, but also applies to removal of right alignment ring.
 - Alignment rings may release and be removed when powerplant is removed from vehicle.
- 40** Remove alignment ring (137) from left-hand final drive housing.



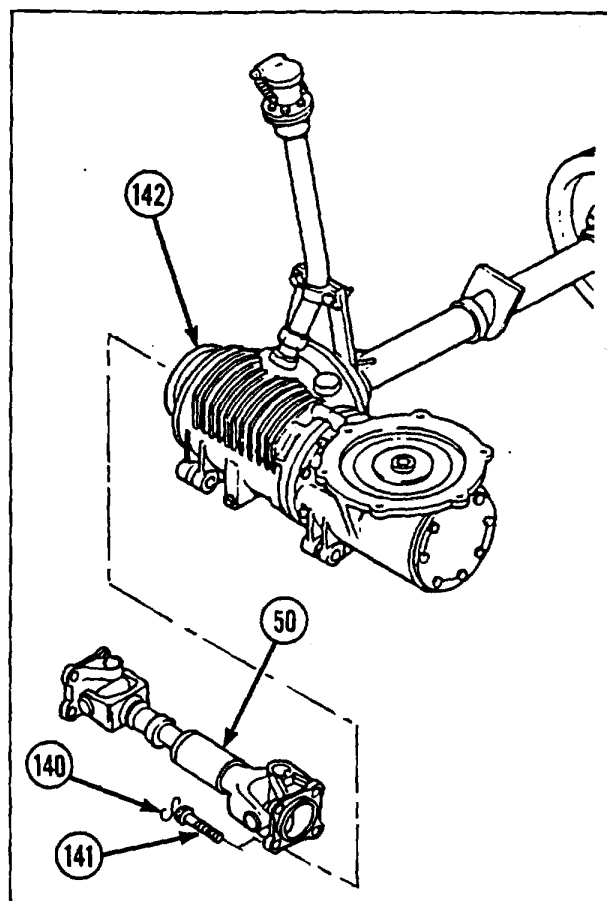
- 41** Remove spacer tube (138) and cushioning pad (139) from hull bottom.



NOTE

Step 42 applies to the removal of the power takeoff drive shaft. Perform step 42 only if necessary to repair the power takeoff drive shaft.

- 42** Remove lockwire (140), four hexagon head capscrews (141), and power takeoff drive shaft (50) from auxiliary drive assembly (142).

**INSPECTION/REPAIR****POWERPLANT INSPECTION**

- 1** Inspect warning switches and transmitters, electrical wiring, connectors, and fittings for deterioration and damage. Replace damaged or unserviceable components.
- 2** Inspect oil, fuel, and coolant hoses, tubes, and fittings for leaks, damage, and secure mounting. Replace damaged or unserviceable components.

2-37. MAINTENANCE OF POWERPLANT (CONT).*POWERPLANT INSPECTION (CONT)*

- 3 Inspect oil and fuel filters for leaks and secure mounting hardware.
- 4 Check that tachometer and speedometer drive shaft connections are secure.
- 5 Inspect engine mount for cracks, hardening, and deterioration.
- 6 Powerplant components that are authorized for replacement by unit maintenance personnel are as follows:

Starter relay (p 2-550)	Aeration detector (p 2-528)
Starter (p 2-548)	Thermostats (p 2-523)
Neutral position switch (p 2-552)	Purge and prime solenoid valve and lines (p 2-471 and p 2-474)
Low oil pressure warning switch (p 2-612)	Secondary fuel filter (p 2-467)
Engine oil pressure transmitter (p 2-612)	Primary fuel filter (p 2-463)
Engine coolant temperature warning thermostatic switch (p 2-612)	Fuel filter-to-fuel pump hose (p 2-433)
Engine coolant temperature transmitter (p 2-612)	Airbox heater pump inlet hose (p 2-478)
Transmission oil thermostatic switch (p 2-612)	Fuel return hose (p 2-454)
Transmission oil pressure transmitter (p 2-612)	Fuel supply to filter hose (p 2-454)
Transmission oil temperature transmitter (p 2-612)	Fuel pump to reservoir drain hose (p 2-454)
Powerplant reservoir breather (p 2-421)	Fuel filter drain hose (p 2-454)
Engine condensation hose (p 2-421)	Fuel filter to solenoid valve hose (p 2-433)
Transmission drain hose (p 2-413)	Turbocharger air intake duct and screen (p 2-451 and p 2-452)
Engine block drain hose (p 2-421)	Engine exhaust system (p 2-502 and p 2-505)
Reservoir drain hose (p 2-421)	Oil sampling drain cock (p 2-413 and p 2-731)
Powerplant reservoir (p 2-421)	Brakes (p 2-775)
Engine oil filter (p 2-413)	Engine mount (p 2-412)
Engine oil filter hoses (p 2-413)	Fuel pump (p 2-430)
	Transmission oil filter (p 2-731)

- 7 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1) which do not meet inspection criteria.

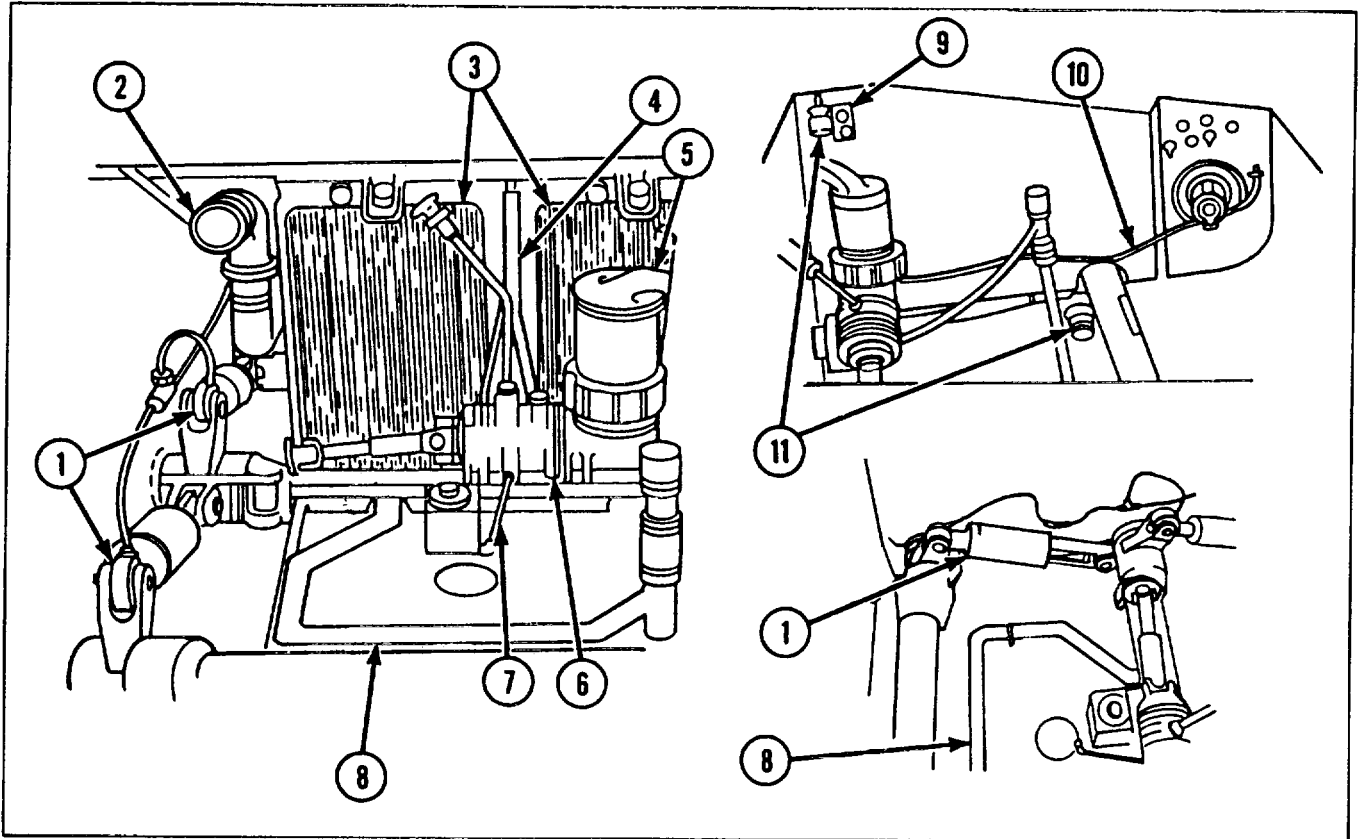
POWERPLANT COMPARTMENT INSPECTION

- 1 Inspect electrical wiring, connectors, and fittings for damage. Replace damaged components.
- 2 Inspect hydraulic hoses, tubes, and fittings for damage. Replace damaged components.
- 3 Inspect cooling system hoses, tubes, and fittings for damage. Replace damaged components.
- 4 Inspect fire extinguisher discharge nozzles for damage. Repair or replace damaged nozzles.

WARNING

Dry cleaning solvent (SD2) is toxic and flammable. Wear protective goggles and gloves, and use only in well-ventilated areas.

- 5 Clean inside of powerplant compartment using rags and soft-bristled brush dipped in dry cleaning solvent (SD2).



- 6 Unit maintenance shall replace only the following powerplant compartment components:

Lockout cylinders (1) (p 2-839)
 Engine air outlet duct (2) (p 2-440)
 Radiators (3) (p 2-506)
 Surge tank (4) (p 2-516)
 Generator (5) (p 2-541)
 Auxiliary drive (6) (p 2-740)
 Auxiliary drive oil drain tube assembly (7)
 (p 2-747)

Radiator coolant tube assembly (8) (p 2-518)
 Fuel line quick-disconnect couplings (9)
 (p 2-457)
 Electrical wiring (10) (p 2-673)
 Fire extinguisher discharge nozzles (11)
 (p 2-1127 and p 2-1130)

- 7 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1) which do not meet inspection criteria.

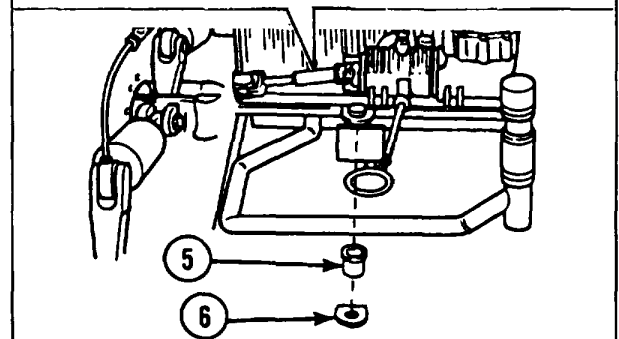
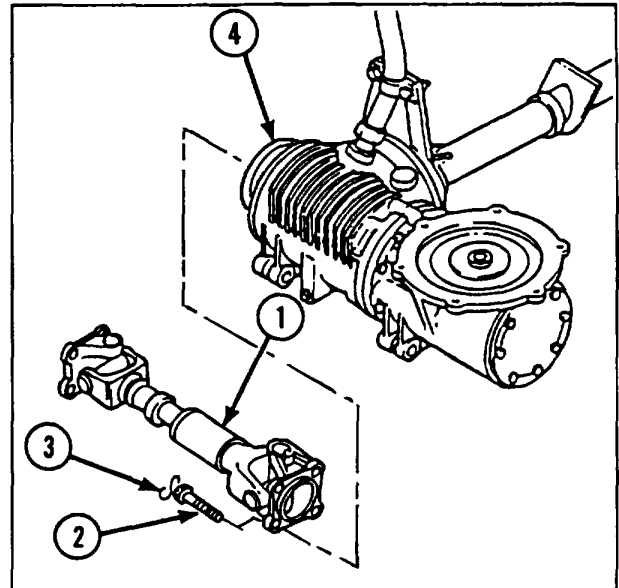
2-37. MAINTENANCE OF POWERPLANT (CONT).

INSTALLATION

NOTE

Step 1 applies to the installation of the power takeoff drive shaft. Perform step 1 only if necessary to repair the power takeoff drive shaft.

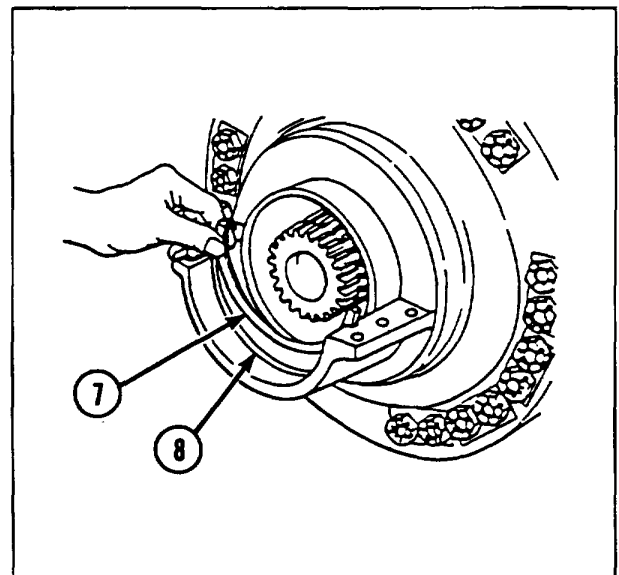
- 1 Install power takeoff drive shaft (1), four hexagon head capscrews (2), and new lockwire (3) (item 25, appx C) on auxiliary drive assembly (4).
- 2 Install cushioning pad (5) and spacer tube (6) to hull bottom.



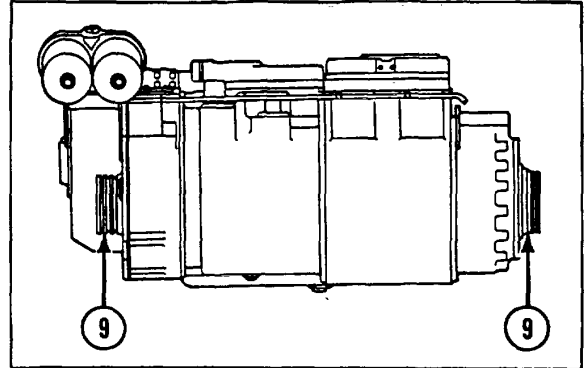
NOTE

Step 3 is written for installation of left alignment ring, but also applies to right alignment ring.

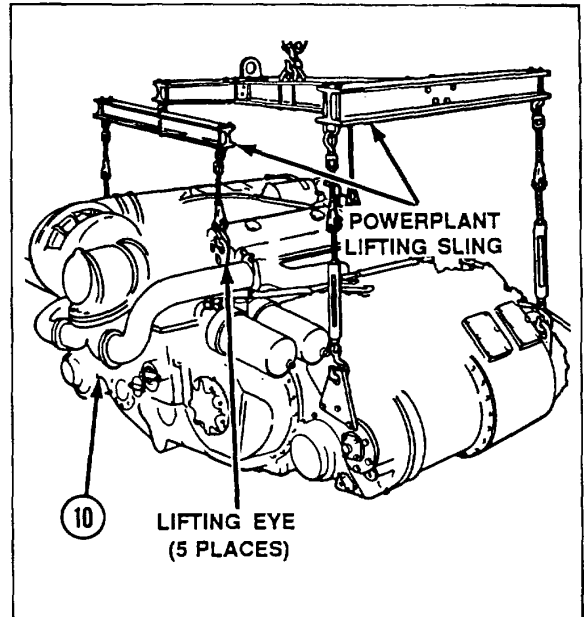
- 3 Install left alignment ring (7) in slot (8) in final drive housing.



- 4 Install four new preformed packings (9).



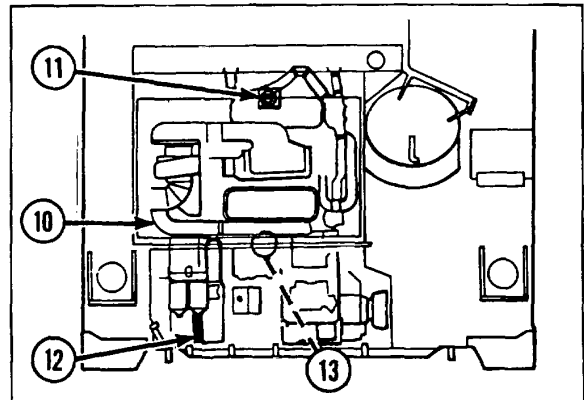
- 5 Install powerplant lifting sling to five lifting eyes on powerplant (10).



CAUTION

Do not let powerplant hit hull or other parts during installation to the vehicle.

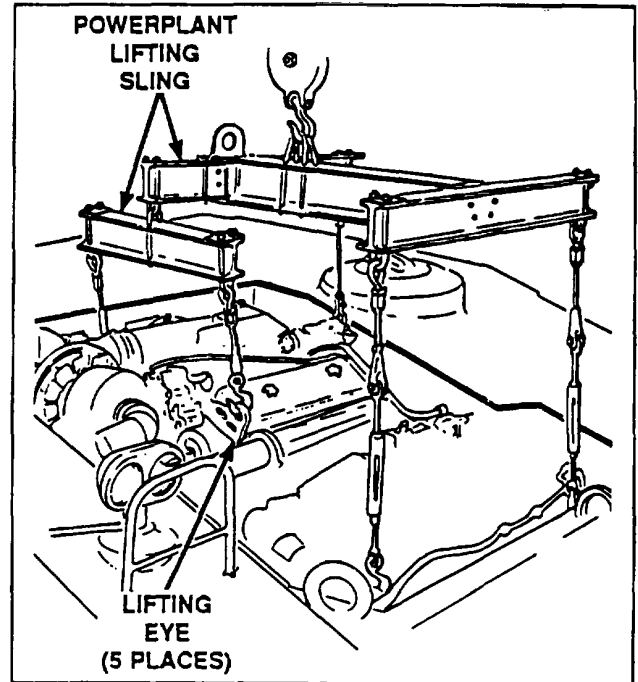
- 6 Lower powerplant (10) into hull. Ensure that engine mount hole aligns with hole (11) in hull bottom, that transmission engages alignment ring (12), and that reservoir drain hose sticks out of access hole (13) in hull bottom.



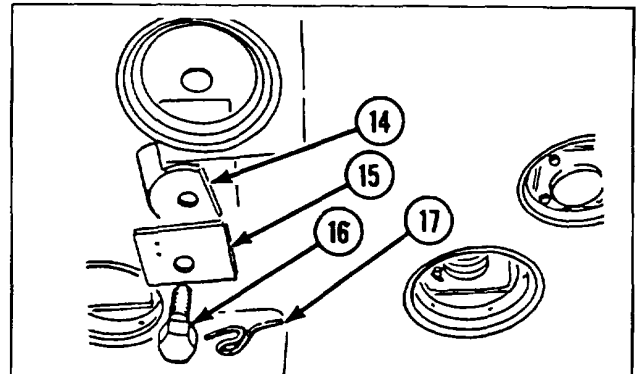
2-37. MAINTENANCE OF POWERPLANT (CONT).

INSTALLATION (CONT)

- 7 Remove powerplant lifting sling from lifting eyes on powerplant.



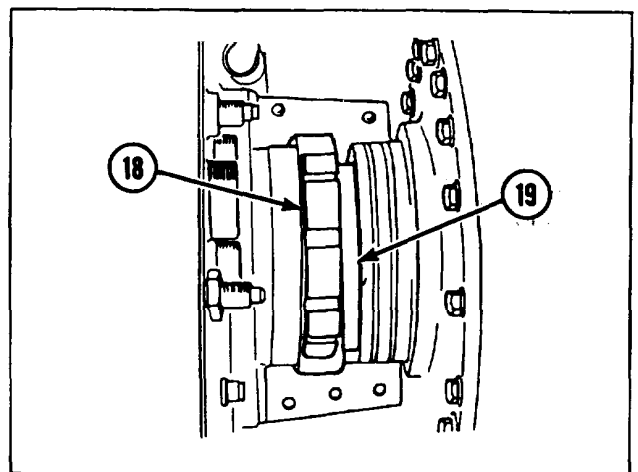
- 8 Install cushioning pad (14), engine mount washer (15), and hexagon head capscrew (16) to underside of hull. Secure hexagon head capscrew with new lockwire (17) (item 23, appx C).



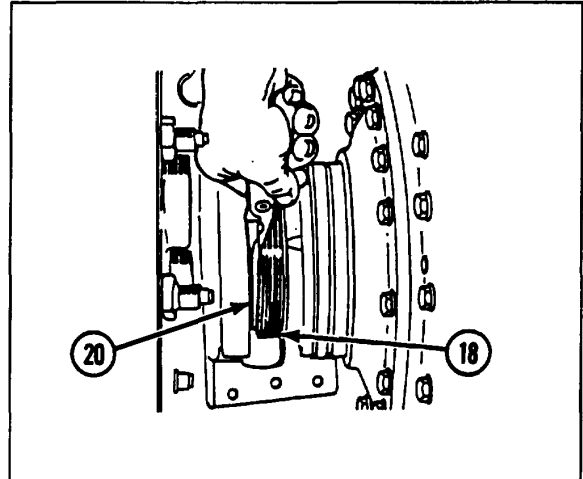
NOTE

Steps 9 thru 14 are written for right final drive installation, but also apply to left final drive installation.

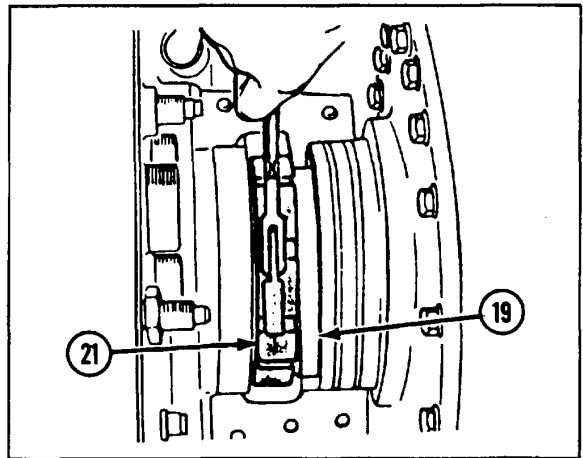
- 9 Slide final drive pinion shaft (18) from inside of right final drive and engage with transmission shaft (19).



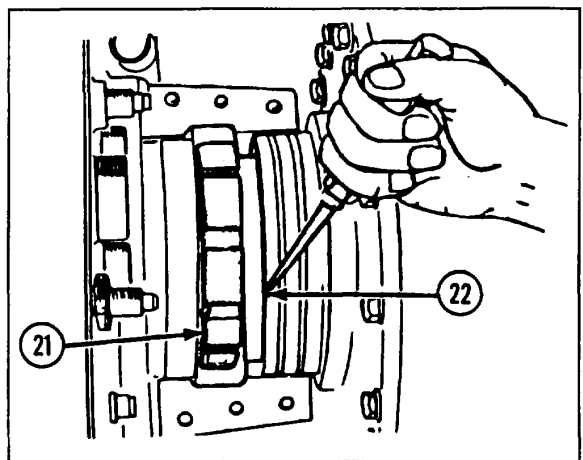
- 10 Install output shaft retaining ring (20) to final drive pinion shaft (18).



- 11 Slide final drive coupling nut (21) onto transmission shaft (19). Tighten coupling nut, using drift and hammer or spanner wrench.



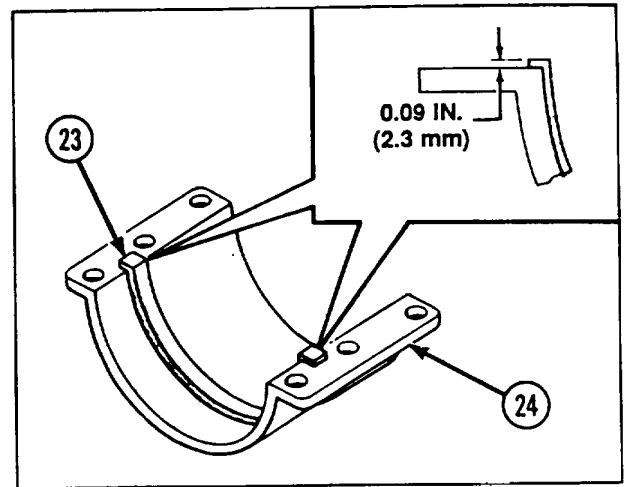
- 12 Punch a dent in edge of final drive coupling nut (21) about 1/32 in. (0.8 mm) into two of four notches (22), using small punch. Replace final drive coupling nut dents cannot be punched in undented surface.



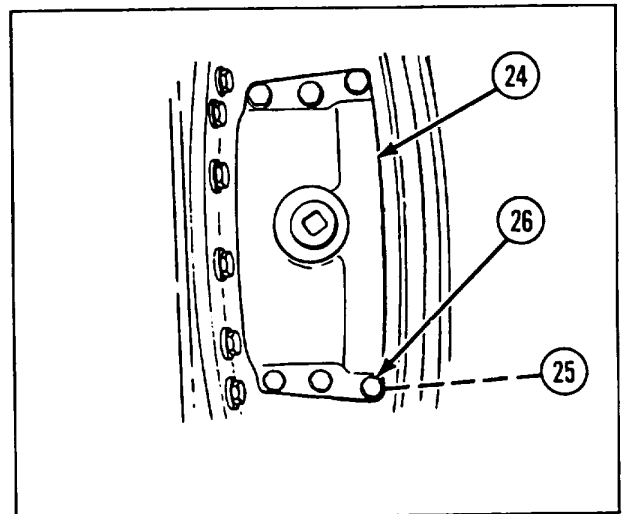
2-37. MAINTENANCE OF POWERPLANT (CONT).

INSTALLATION (CONT)

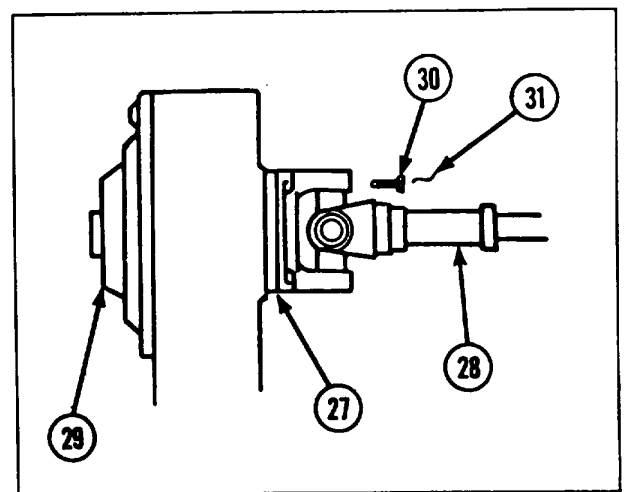
- 13** Install new seal (23) in groove in right output drive cap (24). Trim seal (23) to extend 0.09 in. (2.30 mm) past mating surface of right output drive cap (24).



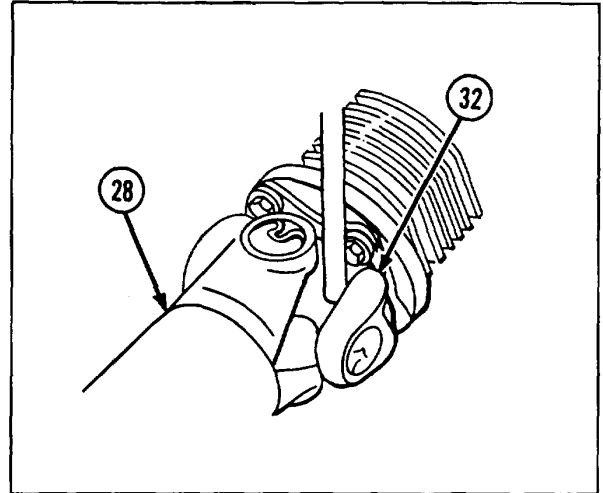
- 14** Install right output drive cap (24), six new lockwashers (25) and six screws (26). Tighten six screws (26) to 36 ft-lb. (49 N-m).



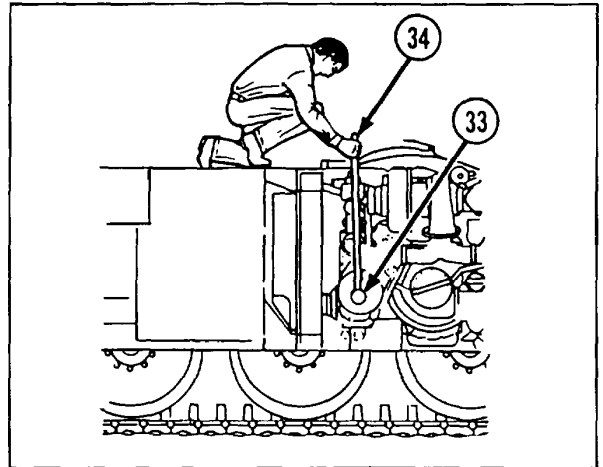
- 15** Mate internal gear shaft coupling (27) and power takeoff drive shaft (28) with power takeoff assembly (29). Install four hexagon head capscrews (30) and new lockwire (31) (item 23, appx C).



- 16 Insert end of bar in U-joint (32) of power takeoff drive shaft (28) to prevent power takeoff drive shaft (28) from turning.



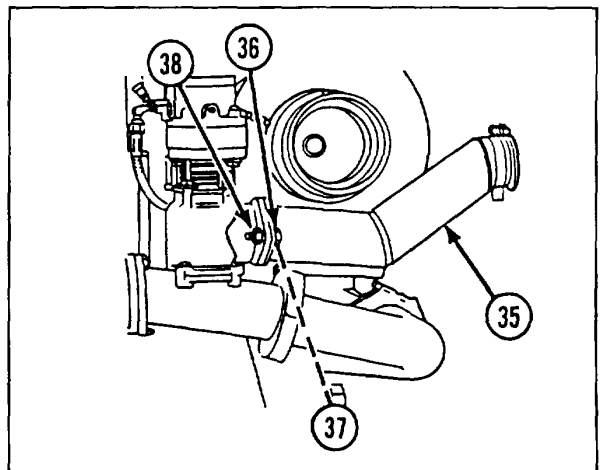
- 17 Tighten externally released bolt (33) to 475 ft-lb. (641 N-m) using breaking bar (34). Remove bar from U-joint.



NOTE

Steps 18 and 19 apply to engine model 7083-7398.

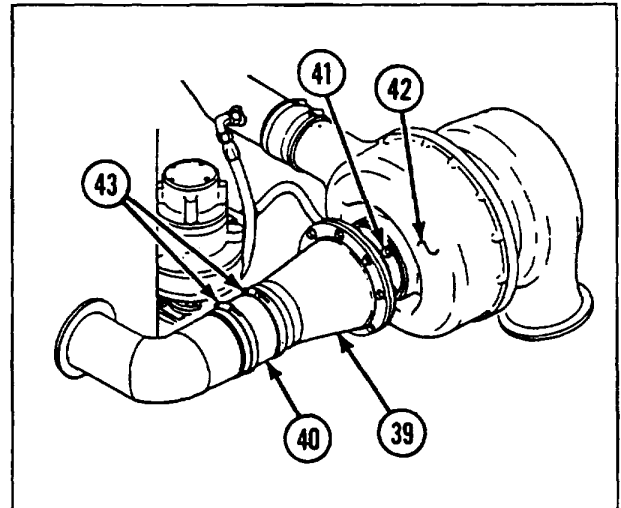
- 18 Install exhaust pipe (35) and secure with two hexagon head capscrews (36), two new lockwashers (37), and two hexagon plain nuts (38).



2-37. MAINTENANCE OF POWERPLANT (CONT).

INSTALLATION (CONT)

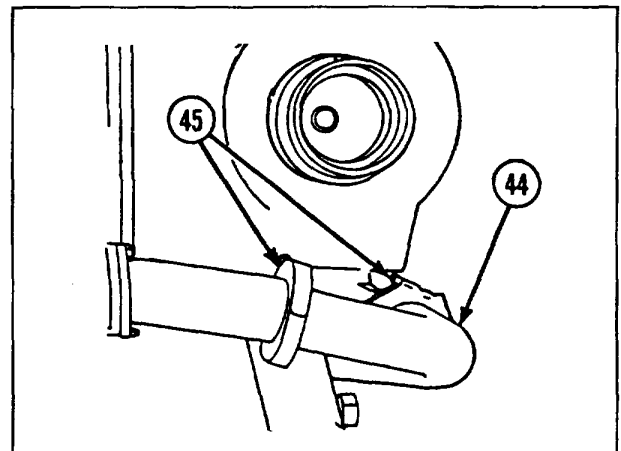
- 19** Install filter screen (39) and air duct hose (40). Secure filter screen (39) with four hexagon head capscrews (41) and new lockwire (42) (item 25, appx C). Position and tighten two hose clamps (43).



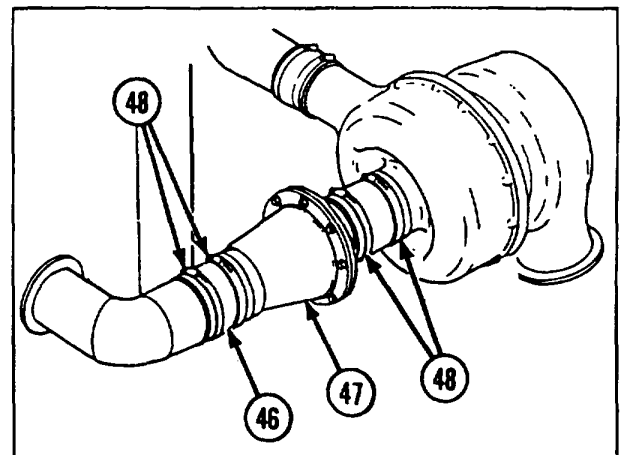
NOTE

Steps 20 and 21 apply to engine model 7083-7395.

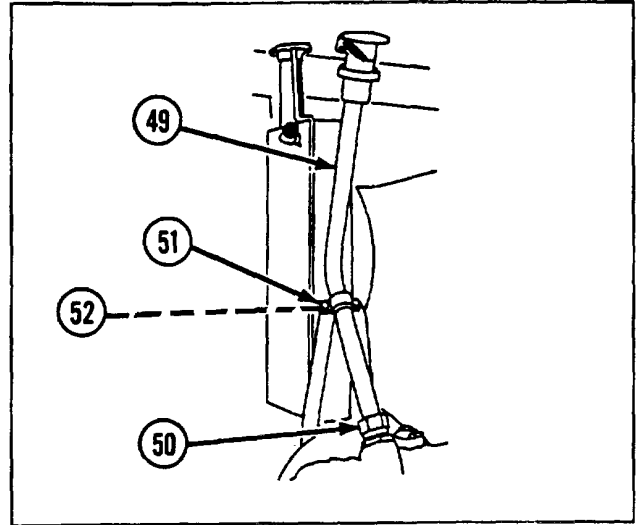
- 20** Install engine exhaust elbow (44) and secure with two coupling clamps (45).



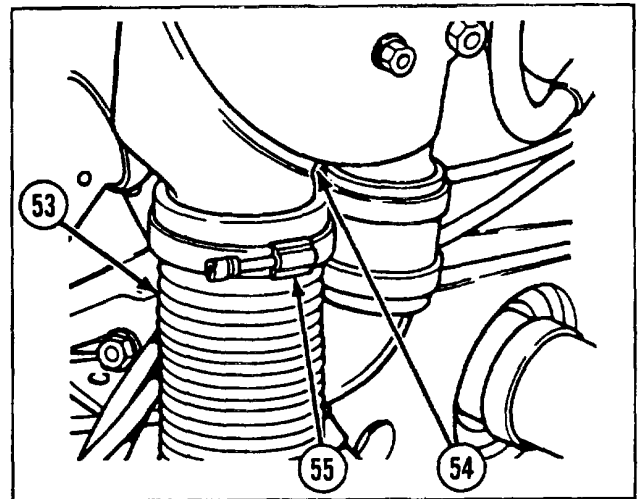
- 21** Install air duct hose (46) and air screen assembly (47). Position and tighten four hose clamps (48).



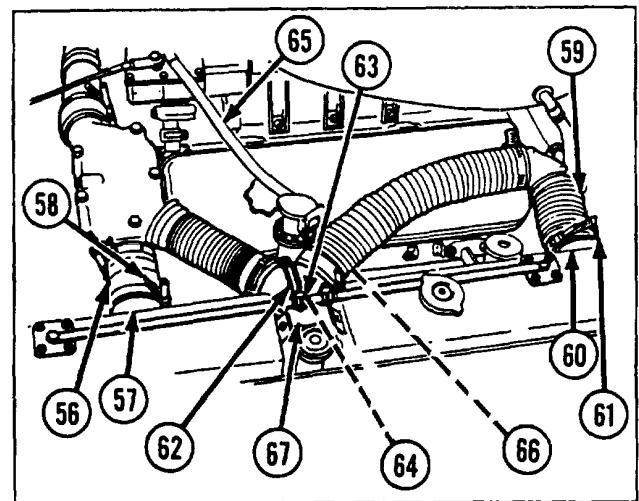
- 22 Turn oil filler neck (49) 90 degrees clock wise. Tighten nut (50) at base of oil filler neck. Tighten hexagon head capscrew (51) and new self-locking nut (52).



- 23 Install nonmetallic hose (53) onto coolant (water) pump (54) inlet. Tighten hose clamp (55).



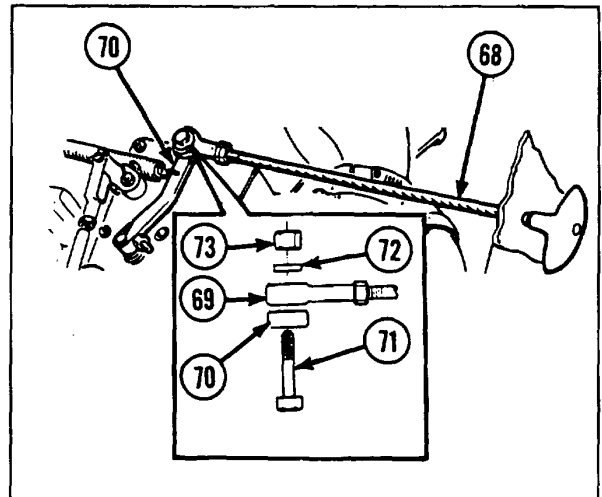
- 24 Install nonmetallic hose (56) on left radiator inlet (57) and tighten hose clamp (58). Install nonmetallic hose (59) on right radiator inlet (60) and tighten hose clamp (61). Install cushioned loop clamp (62) and secure with machine screw (63) and new lockwasher (64). Connect nonmetallic hose (65) to pipe to tube elbow (66) at surge tank (67).



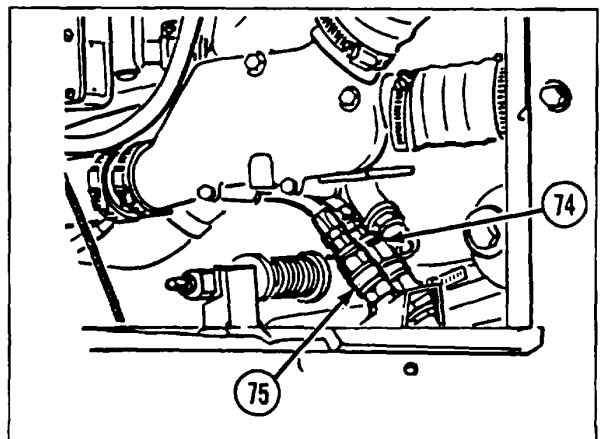
2-37. MAINTENANCE OF POWERPLANT (CONT).

INSTALLATION (CONT)

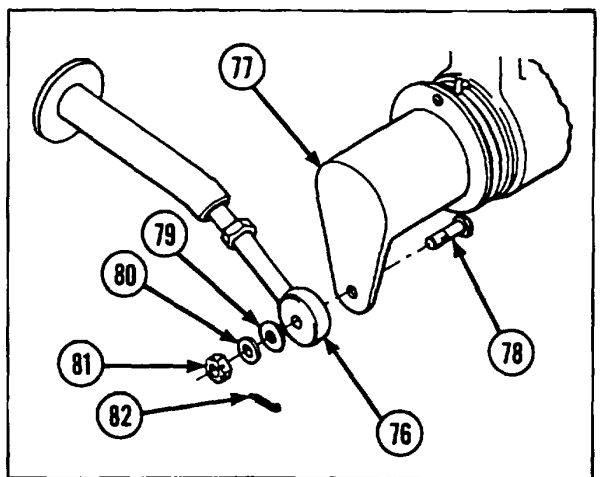
- 25** Pull engine shutdown wire rope assembly (68) from driver's compartment and align plain rod end bearing (69) hole with hole in engine shutdown manual control lever (70). Secure with hexagon head capscrew (71), new lockwasher (72), and hexagon plain nut (73).



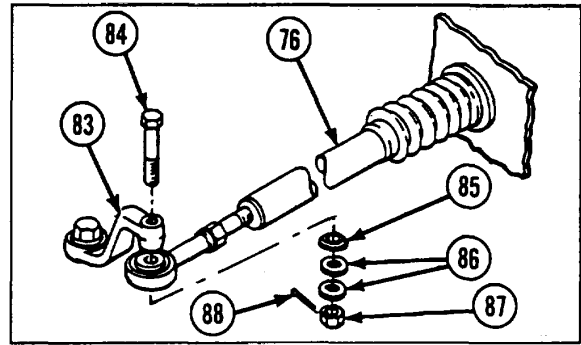
- 26** Install fuel supply hose (74) and fuel return hose (75) at quick disconnects located in right rear engine compartment near driver's compartment.



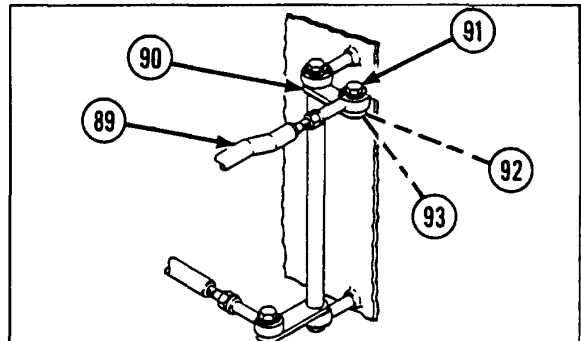
- 27** Position and install steering rod assembly (76) to pivoting wheel control linkage arm (77), and secure with hexagon head capscrew (78), beveled washer (79), flat washer (80), plain slotted nut (81), and new cotter pin (82).



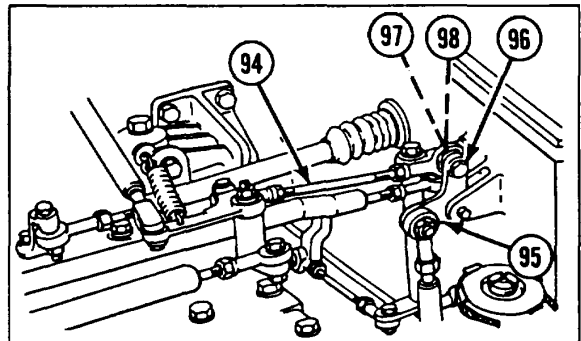
- 28 Install steering rod assembly (76) to steering gear arm (83) and secure with hexagon head capscrew (84), beveled washer (85), two flat washers (86), plain slotted nut (87), and new cotter pin (88).



- 29 Install shift control rod (89) to shift control linkage bell crank (90), and secure with hexagon head capscrew (91), new lockwasher (92), and hexagon plain nut (93).



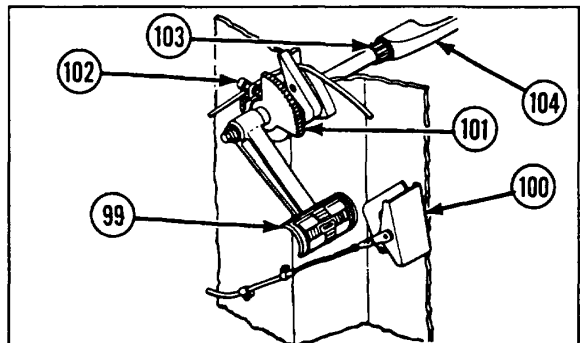
- 30 Install plain throttle linkage stud (94) to throttle linkage bell crank (95), and secure with hexagon head capscrew (96), new lockwasher (97), and hexagon plain nut (98).



NOTE

Raise lower brake pedal to engage splines

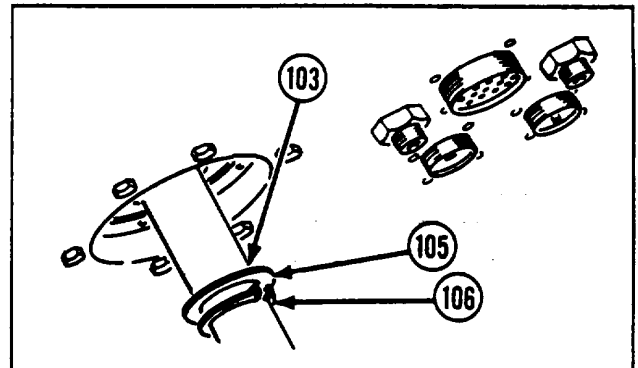
- 31 Lift brake pedal (99) until about level with foot throttle control pedal (100). Hold parking brake ratchet (101) against brake warning sensitive switch (102), and slide straight control shaft (103) until engaged with manual control lever (104).



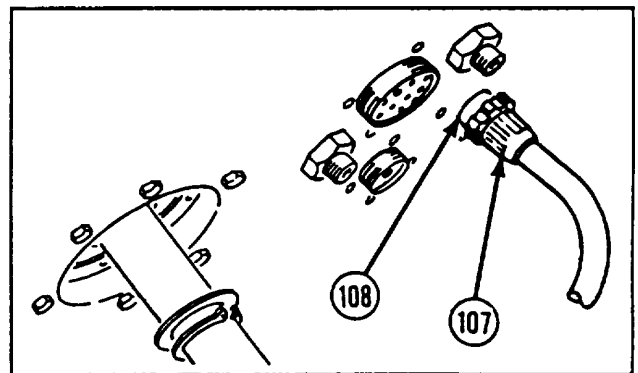
2-37. MAINTENANCE OF POWERPLANT (CONT).

INSTALLATION (CONT)

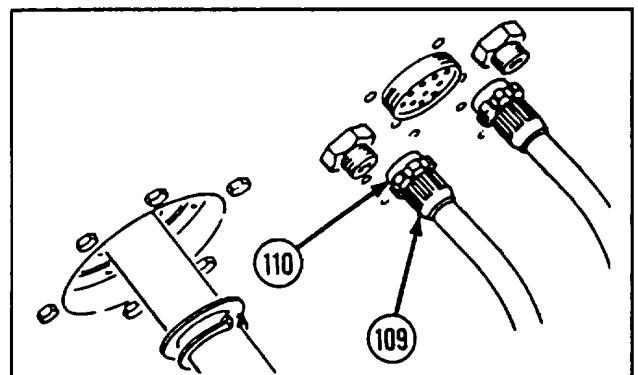
- 32** Install ring spacer (105) and retaining ring (106) on straight control shaft (103). Install retaining ring in groove in straight control shaft.



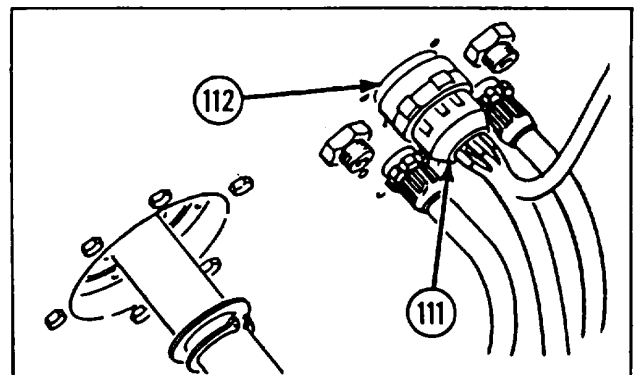
- 33** Connect generator lead plug (107) to receptacle (108) on bulkhead.



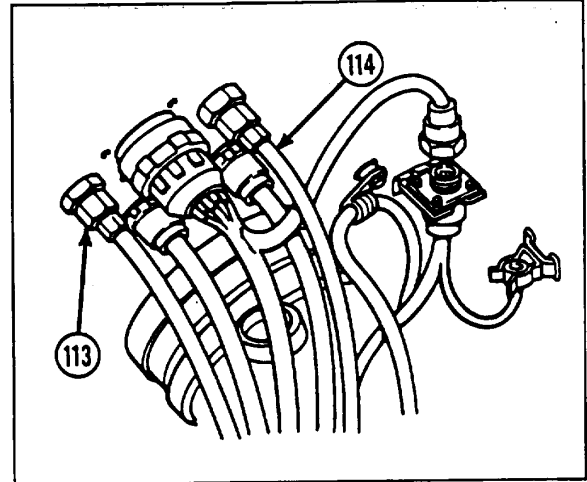
- 34** Connect stator lead plug (109) to receptacle (110) on bulkhead.



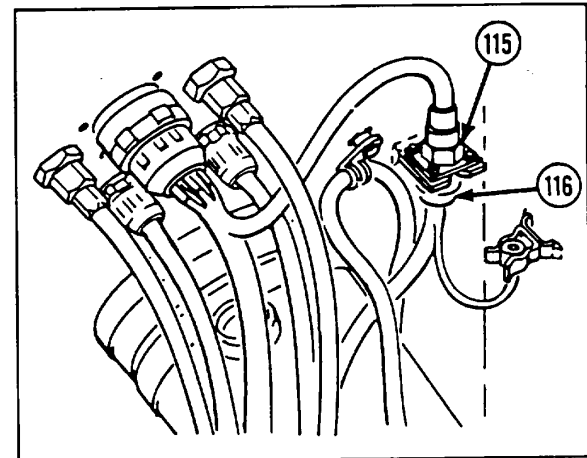
- 35** Connect engine electrical harness plug (111) to receptacle (112) on bulkhead.



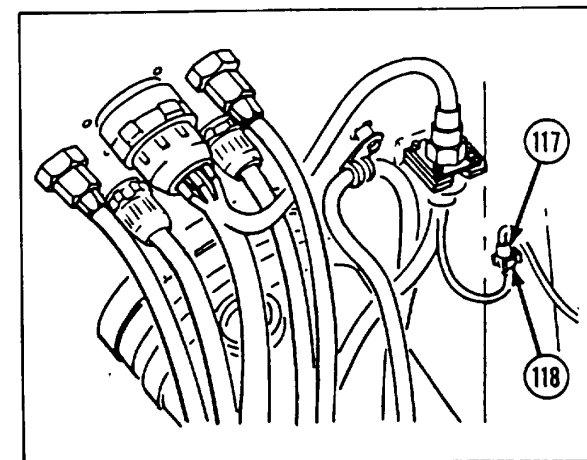
- 36** Connect tachometer drive shaft assembly (113) and speedometer drive shaft assembly (114) to adapters on bulkhead.



- 37** Connect generator control harness plug (115) to receptacle (116) on left front of powerplant compartment.



- 38** Connect neutral position switch lead (117) to connector (118) on left front of powerplant compartment.



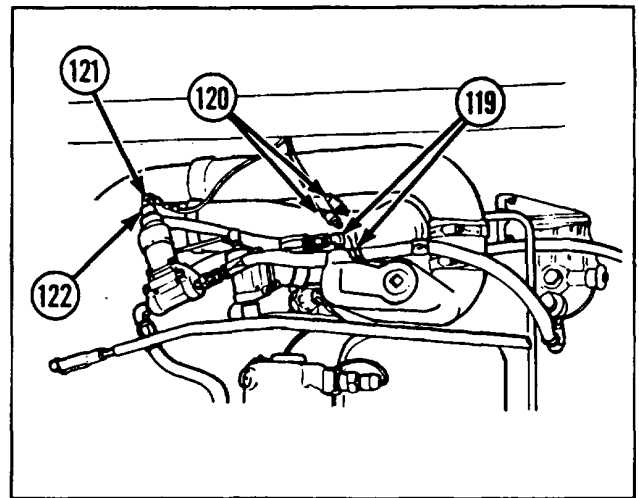
2-37. MAINTENANCE OF POWERPLANT (CONT).

INSTALLATION (CONT)

NOTE

Step 39 applies to engine model 7083-7398.

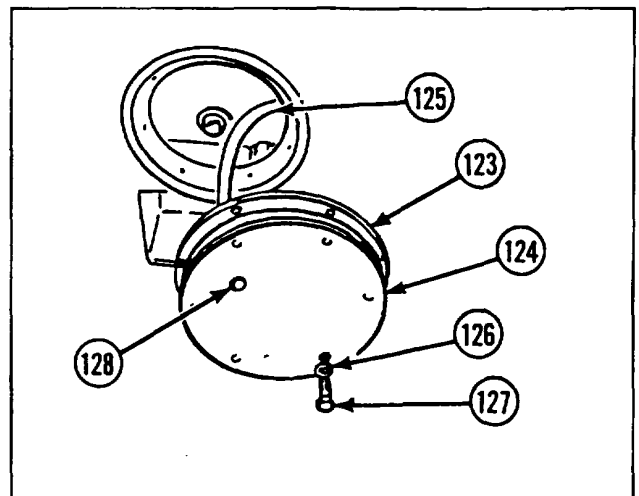
- 39** Connect two low coolant warning light leads (119) to connectors (120) on engine. Connect lead (121) to purge and prime solenoid valve receptacle (122).



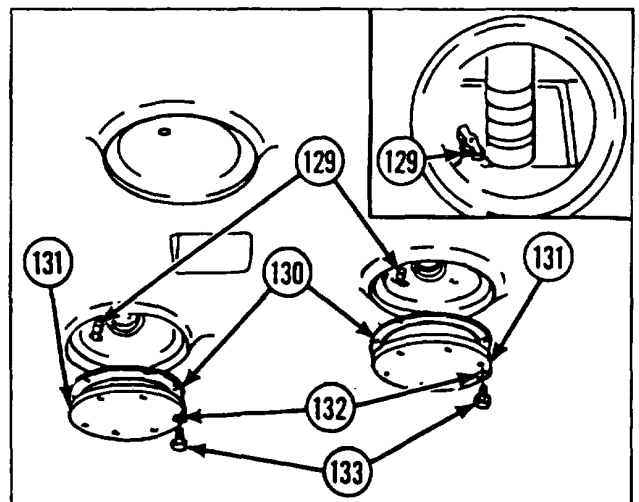
NOTE

Step 40 applies to engine model 7083-7395.

- 40** Connect two low coolant warning light leads (119) to connectors (120) on engine
- 41** Install new gasket (123) on powerplant reservoir drain access cover (124). Connect reservoir drain hose (125) to fitting on powerplant reservoir drain access cover (124). Install powerplant reservoir drain access cover to underside of hull, and secure with six new lockwashers (126) and six hexagon head capscrews (127). Install pipe plug (128) in powerplant reservoir drain access cover (124).

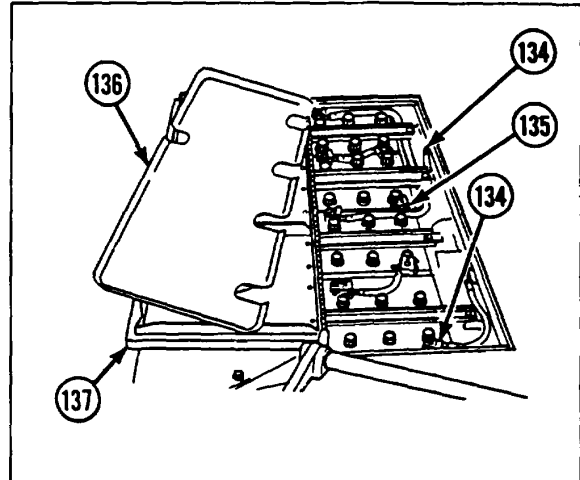


- 42** Close 2 radiator drain cocks (129) on underside of hull. Install 2 new gaskets (130), 2 access covers (131), 12 new lockwashers (132), and 12 hexagon head capscrews (133).



43 Connect two electrical ground leads (134) to storage battery terminals (135). Install battery protection liner (136). Close battery access cover (137).

44 Fill cooling system with water. Refer to TM 9-2350-304-10.



46 Check engine shutdown cable adjustment. Refer to page 2-491.

47 Check shift linkage adjustment. Refer to page 2-749.

48 Check brake adjustment. Refer to page 2-775.

49 Check throttle linkage adjustment. Refer to pages 2-488 and 2-491.

50 Check that electrical connections are secure and tight.

51 Purge and prime fuel system. Refer to TM 9-2350-304-10.

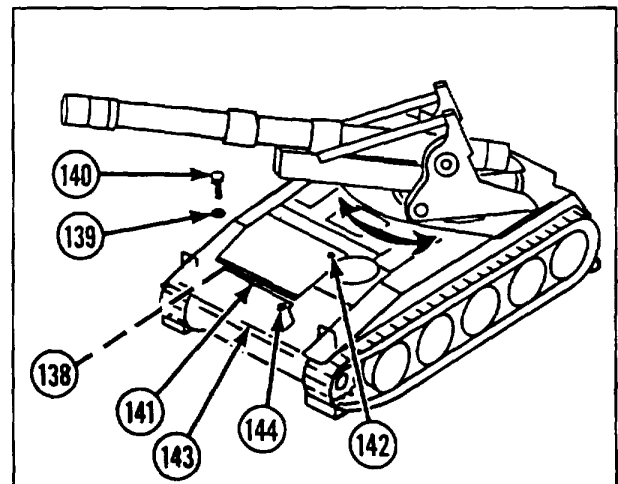
52 Check for leaks.

53 Repair all leaks that are found.

54 Run engine until operating temperature is reached. Refer to TM 9-2350-304-10. Check engine for proper operation.

55 Install deck cover beam (138) on hull, and secure with two new lockwashers (139) and two hexagon head capscrews (140).

56 Install engine deck lid assembly (141) on hull and secure with four plain cap nuts (142). Torque plain cap nuts to 50 ft-lb. (67.5 N-m). Install transmission deck lid assembly (143) on hull and secure with four plain cap nuts (144). Torque plain cap nuts to 50 ft-lb. (67.5 N-m).

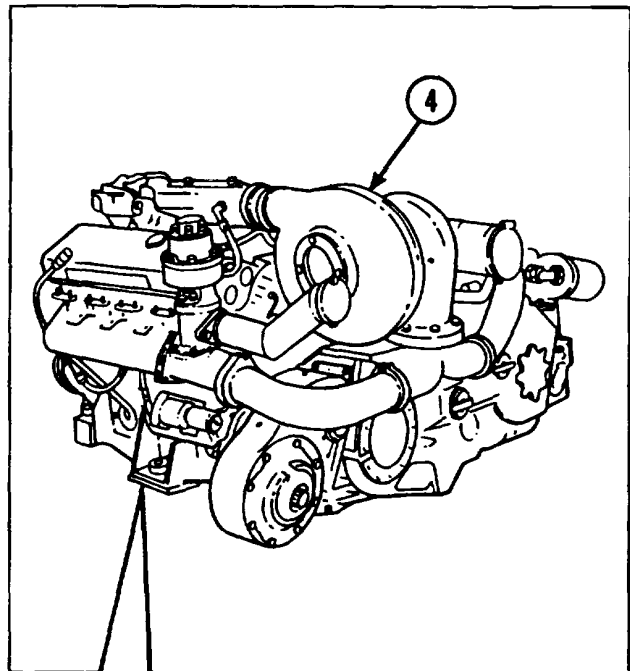


2-38. MAINTENANCE OF ENGINE MOUNT.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Materials/Parts</i>	<i>Equipment Conditions</i>		
Lockwasher (12)	2-380	Powerplant removed	
<i>References</i>	2-426	Engine oil dipstick removed	
TM 9-2350-304-24P-1			

REMOVAL

- 1 Remove 12 hexagon head capscrews (1), 12 lockwashers (2), and mounting bracket (3) from powerplant (4).
- 2 Remove mount tube spacer (5) and cushioning pad (6) from frame of vehicle.

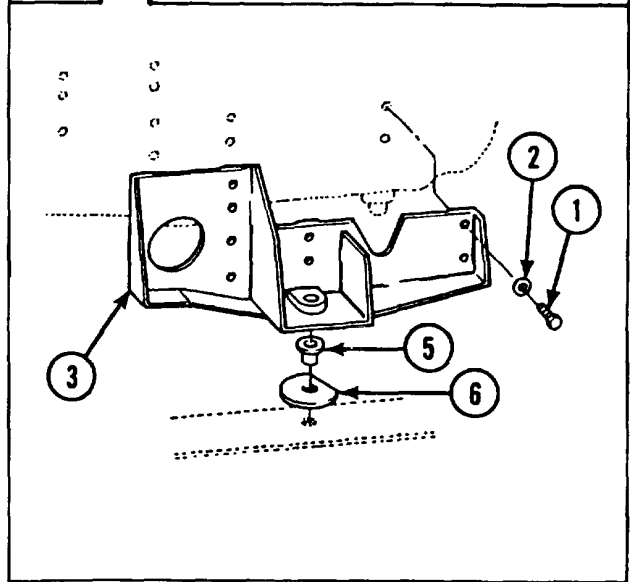


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install cushioning pad (6) and mount tube spacer (5) on frame of vehicle.
- 2 Install mounting bracket (3) on powerplant (4) and secure with 12 new lockwashers (2) and 12 hexagon head capscrews (1).



2-39. MAINTENANCE OF EXTERNAL OIL LINES AND FITTINGS (UPPER ENGINE).

This task covers: a. Removal b. Inspection/Repair c. Installation

INITIAL SETUP

Materials/Parts

- Filter element (2)
- Lockwasher (4)
- Lockwasher (3)
- Lockwasher (8)
- Lockwasher (4)
- Preformed packing (2)
- Preformed packing (3)
- Self-locking nut (4)

Equipment Conditions

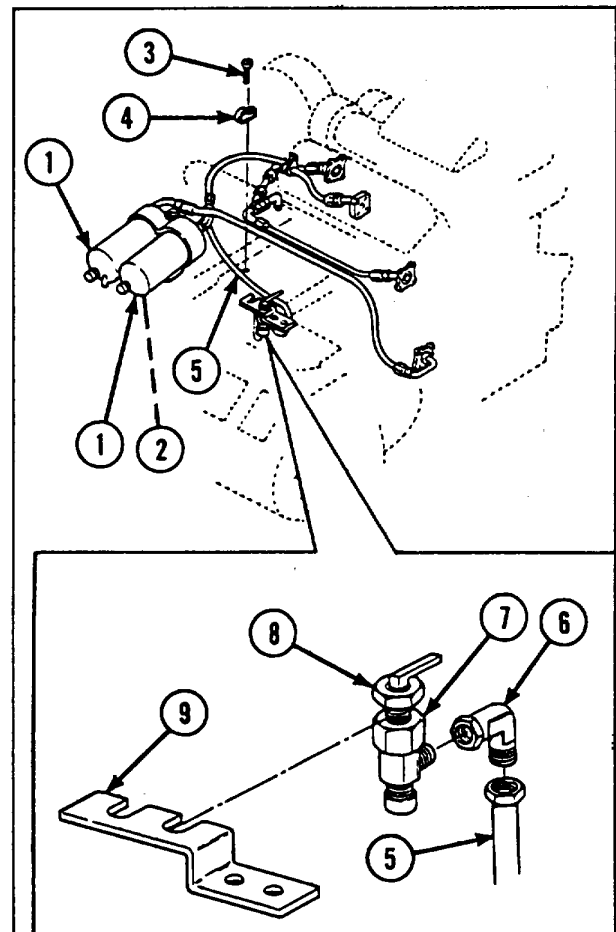
- 2-380 Powerplant removed
- 2-893 Transmission deck lid assembly removed
- 2-887 Engine deck lid assembly removed

References

- TM 9-2350-304-10
- TM 9-2350-304-24P-1
- TM 9-2815-202-24P

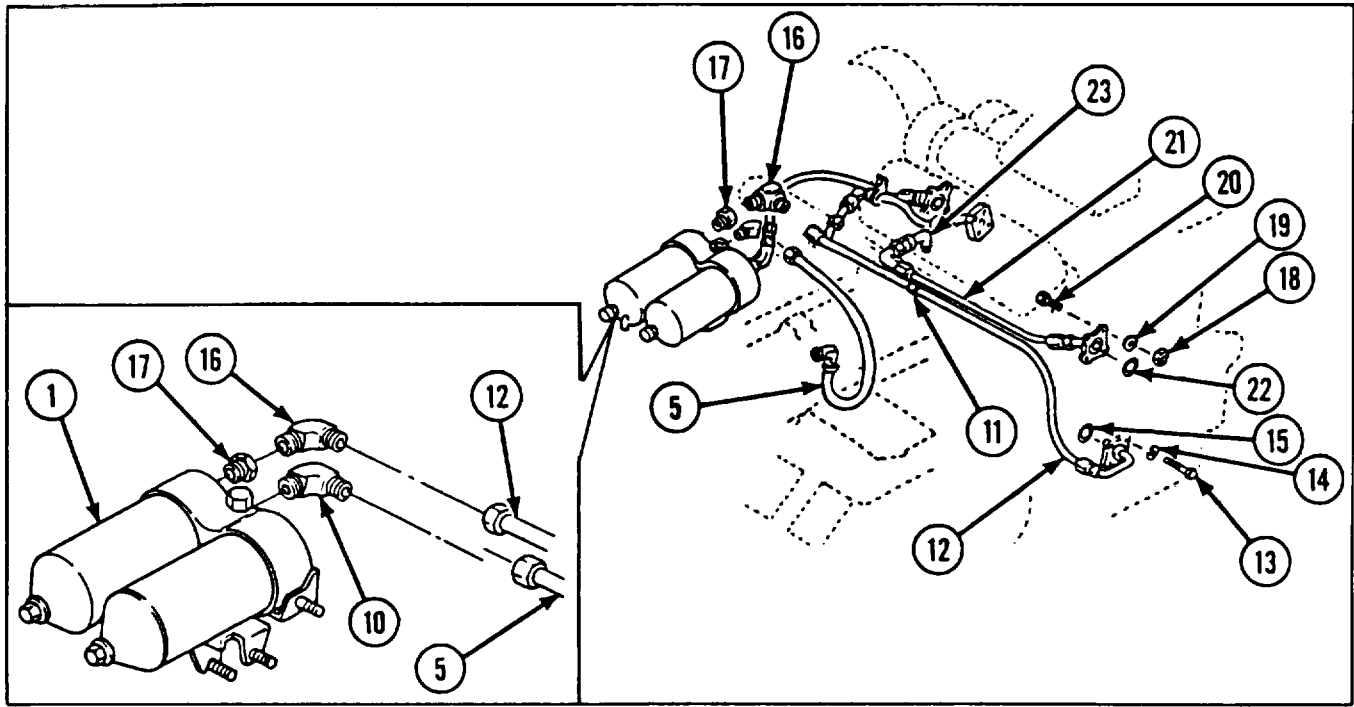
REMOVAL

- 1 Place suitable container under fluid filter (1).
- 2 Remove two drain plugs (2) and drain oil into container.
- 3 Remove capscrew (3) from loop clamp (4) and remove loop clamp from nonmetallic hose assembly (5).
- 4 Disconnect nonmetallic hose assembly (5) from pipe to tube elbow (6).
- 5 Remove pipe to tube elbow (6) from drain cock (7).
- 6 Loosen nut (8) on drain cock (7), and remove drain cock from angle bracket (9)

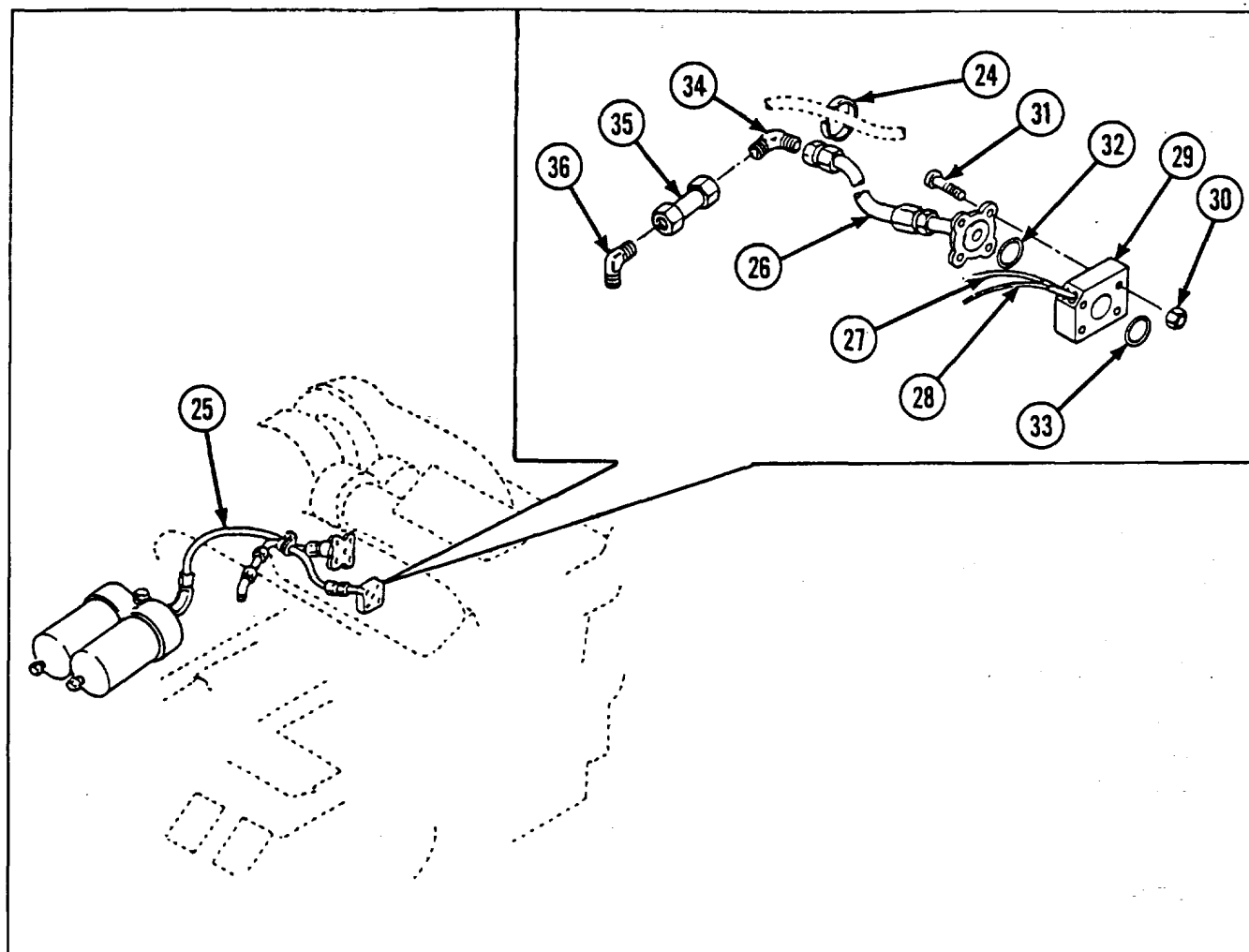


**2-39. MAINTENANCE OF EXTERNAL OIL LINES AND FITTINGS (UPPER ENGINE)
(CONT).**

REMOVAL (CONT)



- 7 Remove nonmetallic hose assembly (5) from pipe to tube elbow (10). Remove pipe to tube elbow (10) from fluid filter (1).
- 8 Remove marker band (11) from engine oil filter rubber nonmetallic hose assembly (12).
- 9 Remove four hexagon head capscrews (13) and four lockwashers (14) from engine oil filter rubber nonmetallic hose assembly (12).
- 10 Remove engine oil filter rubber nonmetallic hose assembly (12) and preformed packing (15) from engine.
- 11 Remove engine oil filter rubber nonmetallic hose assembly (12) from pipe to tube elbow (16).
- 12 Remove pipe to tube elbow (16) and pipe reducer (17) from fluid filter (1).
- 13 Remove four plain hexagon nuts (18), four lockwashers (19), and four hexagon head capscrews (20) from transmission to oil cooler nonmetallic hose assembly (21). Remove transmission to oil cooler nonmetallic hose assembly (21) and preformed packing (22) from engine.
- 14 Remove transmission to oil cooler nonmetallic hose assembly (21) from pipe to tube elbow (23).
- 15 Remove pipe to tube elbow (23) from engine.

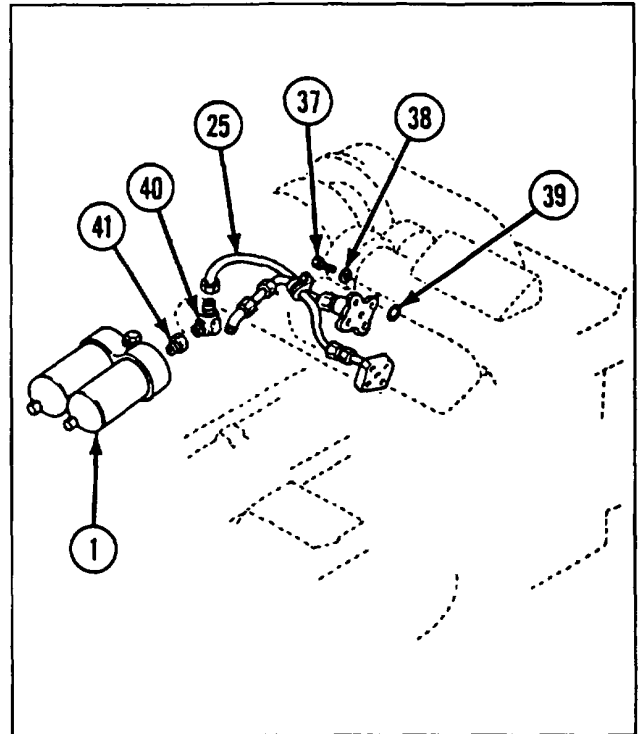


- 16 Remove marker band (24) from oil filter cooler nonmetallic hose assembly (25) and transmission to oil cooler rubber hose assembly (26).
- 17 Disconnect switch (27) and transmitter (28) electrical leads from manifold (29).
- 18 Remove four self-locking nuts (30) and four hexagon head capscrews (31) from manifold (29).
- 19 Remove transmission oil to cooler rubber hose assembly (26), preformed packing (32), manifold (29), and preformed packing (33) from engine.
- 20 Remove transmission oil to cooler rubber hose assembly (26) from tube elbow (34).
- 21 Remove tube elbow (34) from transmission oil to cooler preformed metal tube assembly (35).
- 22 Remove transmission oil to cooler preformed metal tube assembly (35) from pipe to tube elbow (36).
- 23 Remove pipe to tube elbow (36) from engine.

**2-39. MAINTENANCE OF EXTERNAL OIL LINES AND FITTINGS (UPPER ENGINE)
(CONT).**

REMOVAL (CONT)

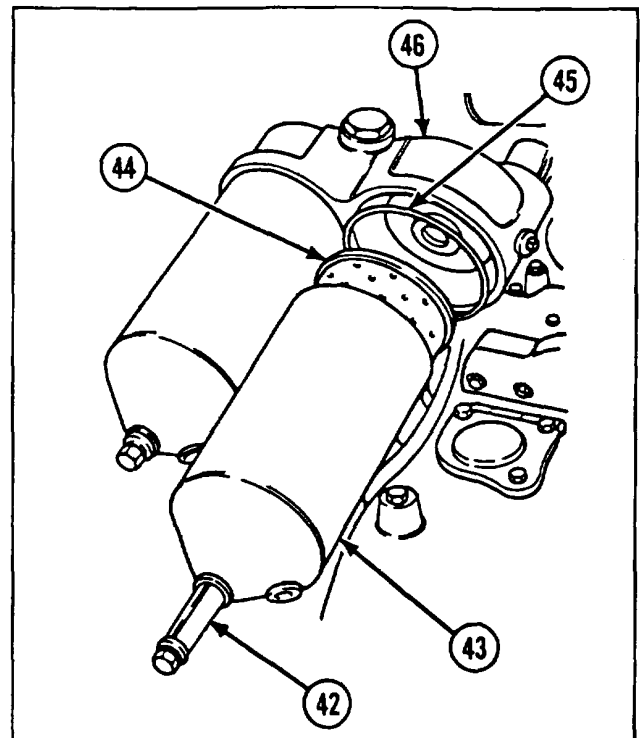
- 24 Remove four hexagon head capscrews (37) and four lockwashers (38) from oil filter cooler nonmetallic hose assembly (25).
- 25 Remove oil filter cooler nonmetallic hose assembly (25) and preformed packing (39) from engine.
- 26 Remove oil filter cooler nonmetallic hose assembly (25) from oil filter cooler hose pipe to tube elbow (40).
- 27 Remove oil filter cooler hose pipe to tube elbow (40) from pipe reducer (41).
- 28 Remove pipe reducer (41) from fluid filter (1).



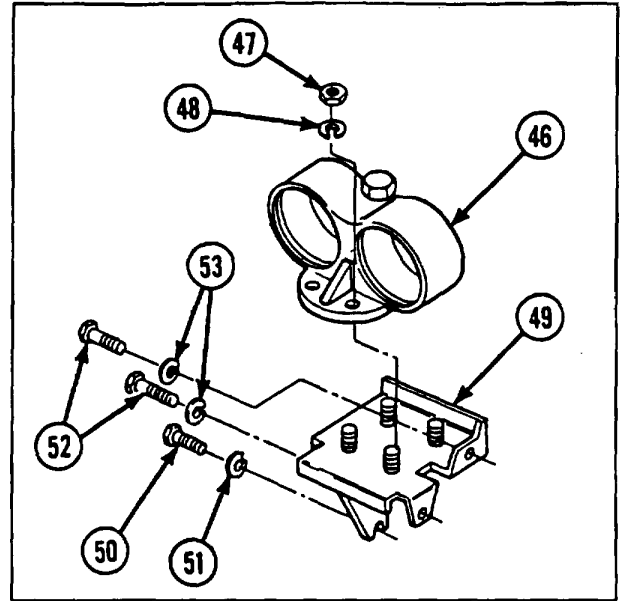
NOTE

There are two filter elements housed in the fluid filter. The following procedure is written for the removal of one, but applies to both.

- 29 Loosen and remove shoulder bolt (42). Remove shell (43), filter element (44), and washer (45) from oil filter adapter (46).
- 30 Remove filter element (44) from shell (43).



- 31 Remove four plain hexagon nuts (47), four lockwashers (48), and oil filter adapter from oil filter bracket (49).
- 32 Remove hexagon head capscrew (50) and lockwasher (51) from oil filter bracket (49).
- 33 Remove two hexagon head capscrews (52) and two lockwashers (53) from oil filter bracket (49).
- 34 Remove oil filter bracket (49) from transmission.

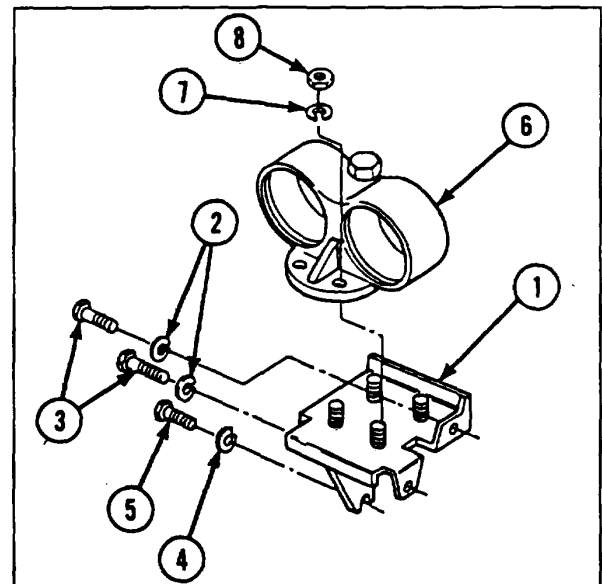


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1 and TM 9-2815-202-24P).

INSTALLATION

- 1 Install oil filter bracket (1) on transmission and secure with two new lockwashers (2) and two hexagon head capscrews (3).
- 2 Install new lockwasher (4) and hexagon head capscrew (5) on oil filter bracket (1).
- 3 Install oil filter adapter (6) on oil filter bracket (1), and secure with four new lockwashers (7) and four plain hexagon nuts (8).



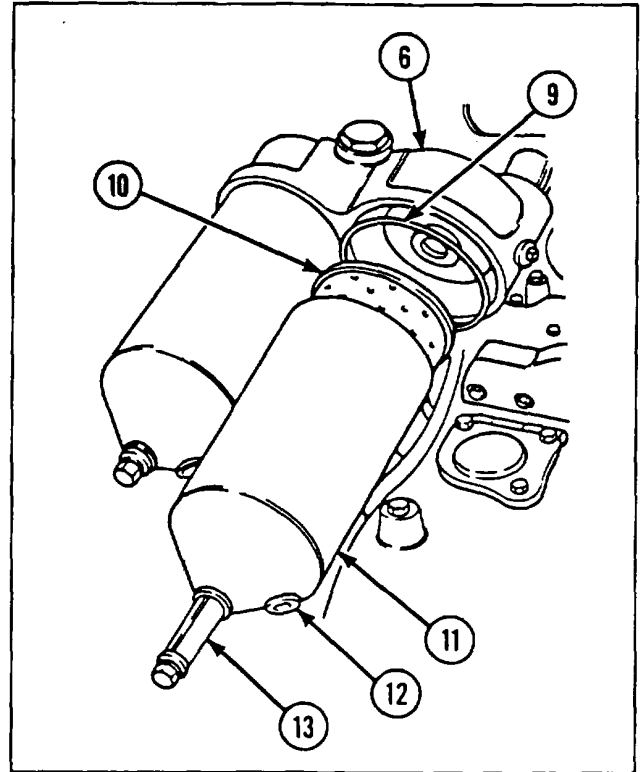
**2-39. MAINTENANCE OF EXTERNAL OIL LINES AND FITTINGS (UPPER ENGINE)
(CONT).**

INSTALLATION (CONT)

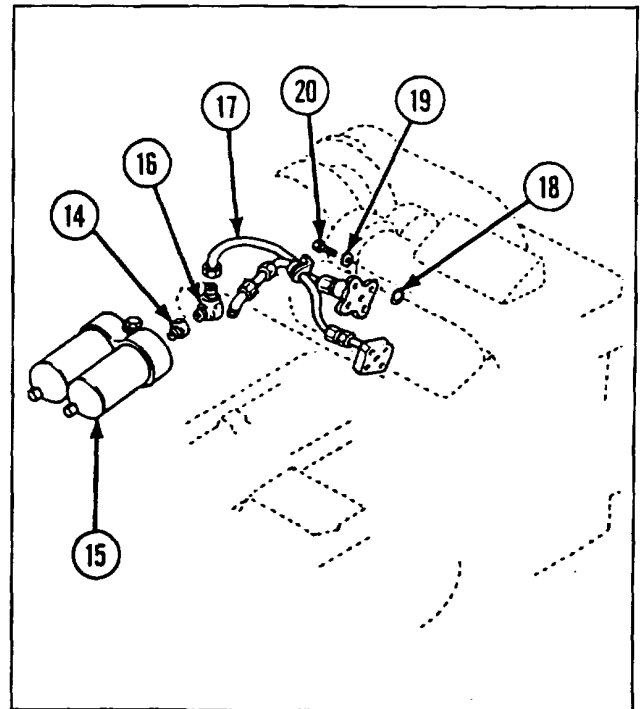
NOTE

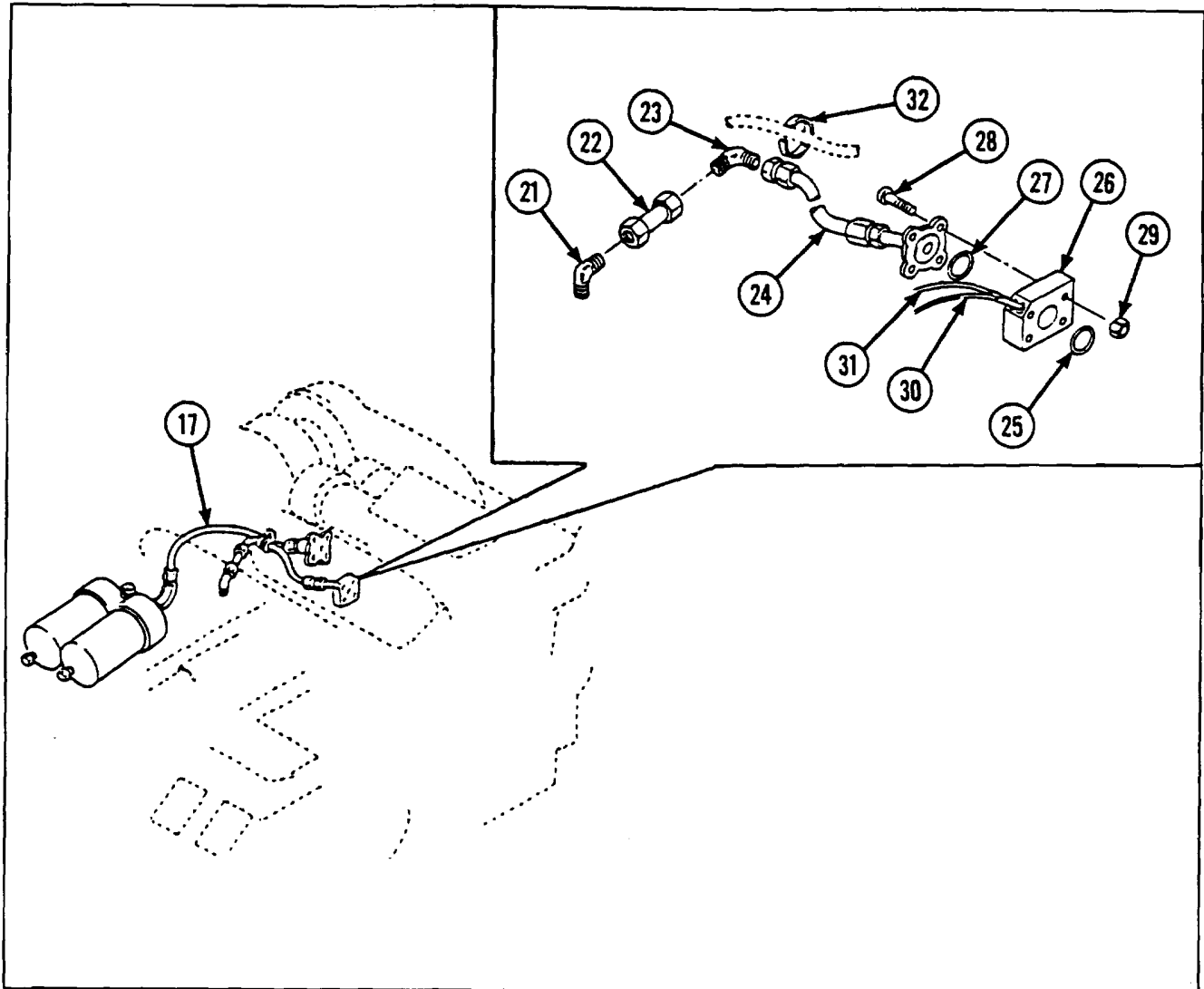
There are two filter elements housed in the fluid filter. The following procedure is written for the installation of one, but applies to both.

- 4 Install washer (9) in oil filter adapter (6).
- 5 Install new filter element (10) in shell (11)
- 6 Install shell (11) on oil filter adapter (6) with drain plug hole (12) at lowest point, and tighten shoulder bolt (13).



- 7 Install pipe reducer (14) on fluid filter (15)
- 8 Install oil filter cooler hose pipe to tube elbow (16) on pipe reducer (14).
- 9 Install oil filter cooler nonmetallic hose assembly (17) on oil filter cooler hose pipe to tube elbow (16).
- 10 Install new preformed packing (18) and oil filter cooler nonmetallic hose assembly (17) on engine, and secure with four new lockwashers (19) and four hexagon head capscrews (20).

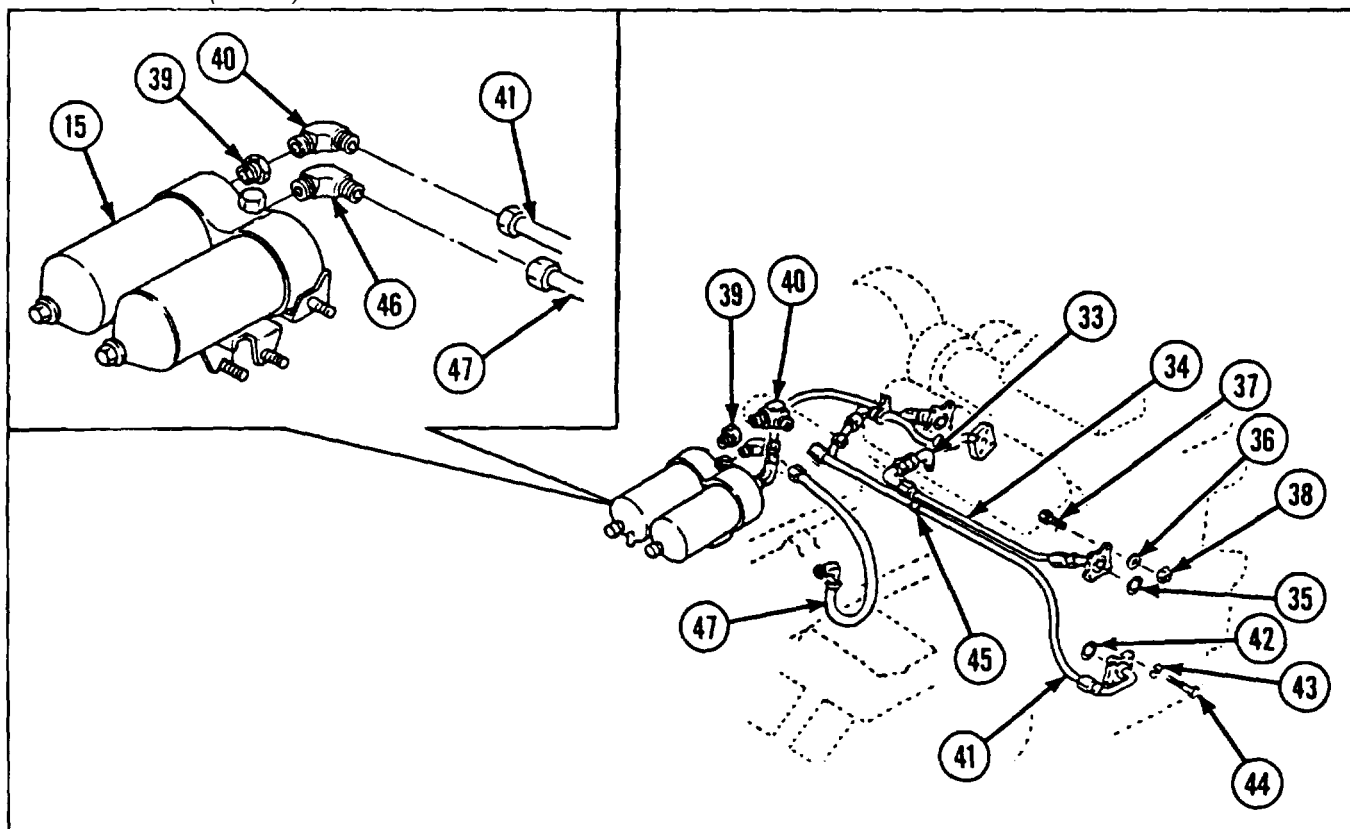




- 11 Install pipe to tube elbow (21) on engine.
- 12 Install transmission oil to cooler preformed metal tube assembly (22) on pipe to tube elbow (21).
- 13 Install tube elbow (23) on transmission oil to cooler preformed metal tube assembly (22).
- 14 Install transmission oil to cooler rubber hose assembly (24) on tube elbow (23).
- 15 Install new preformed packing (25), manifold (26), new preformed packing (27), and transmission oil to cooler rubber hose assembly (24) on engine, and secure with four hexagon head capscrews (28) and four new self-locking nuts (29).
- 16 Connect transmitter (30) and switch (31) electrical leads to manifold (26).
- 17 Install marker band (32) on oil filter cooler nonmetallic hose assembly (17) and transmission oil to cooler rubber hose assembly (24).

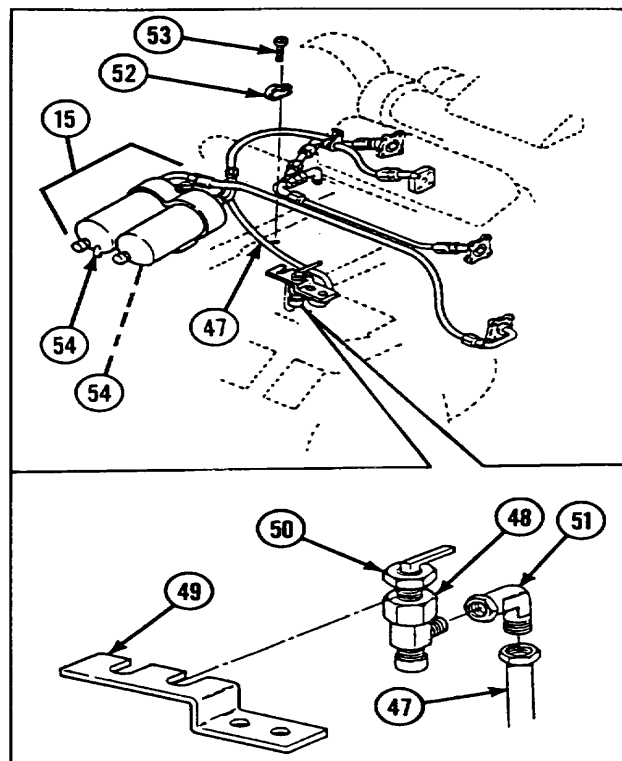
2-39. MAINTENANCE OF EXTERNAL OIL LINES AND FITTINGS (UPPER ENGINE) (CONT).

INSTALLATION (CONT)



- 18 Install pipe to tube elbow (33) on engine.
- 19 Install transmission oil to cooler nonmetallic hose assembly (28) on pipe to tube elbow (33).
- 20 Install new preformed packing (35) and transmission oil to cooler nonmetallic hose assembly (34) on engine. Install four new lockwashers (36), four hexagon head capscrews (37), and four plain hexagon nuts (38) on transmission oil to cooler nonmetallic hose assembly (34).
- 21 Install pipe reducer (39) and pipe to tube elbow (40) on fluid filter (15).
- 22 Install engine oil filter rubber nonmetallic hose assembly (41) on pipe to tube elbow (40).
- 23 Install new preformed packing (42) and engine oil filter rubber nonmetallic hose assembly (46) on engine, and secure with four new lockwashers (43) and four hexagon head capscrews (44).
- 24 Install marker band (45) on engine oil filter rubber nonmetallic hose assembly (41).
- 25 Install pipe to tube elbow (46) on fluid filter (15).
- 26 Install nonmetallic hose assembly (47) on pipe to tube elbow (46).

- 27 Install drain cock (48) on bracket (49).
Tighten nut (50) on drain cock.
- 28 Install pipe to tube elbow (51) on drain cock (48).
- 29 Connect nonmetallic hose assembly (47) to pipe to tube elbow (51).
- 30 Install loop clamp (52) on nonmetallic hose assembly (47). Install capscrew (53) on loop clamp.
- 31 Install two drain plugs (54) in fluid filter (15).
- 32 Run engine until operating temperature is reached. Refer to TM 9-2350-304-10. Check for oil leaks.
- 33 Repair all leaks.
- 34 Check engine oil level.
- 35 Add engine oil as required. Refer to TM 9-2350-304-10.

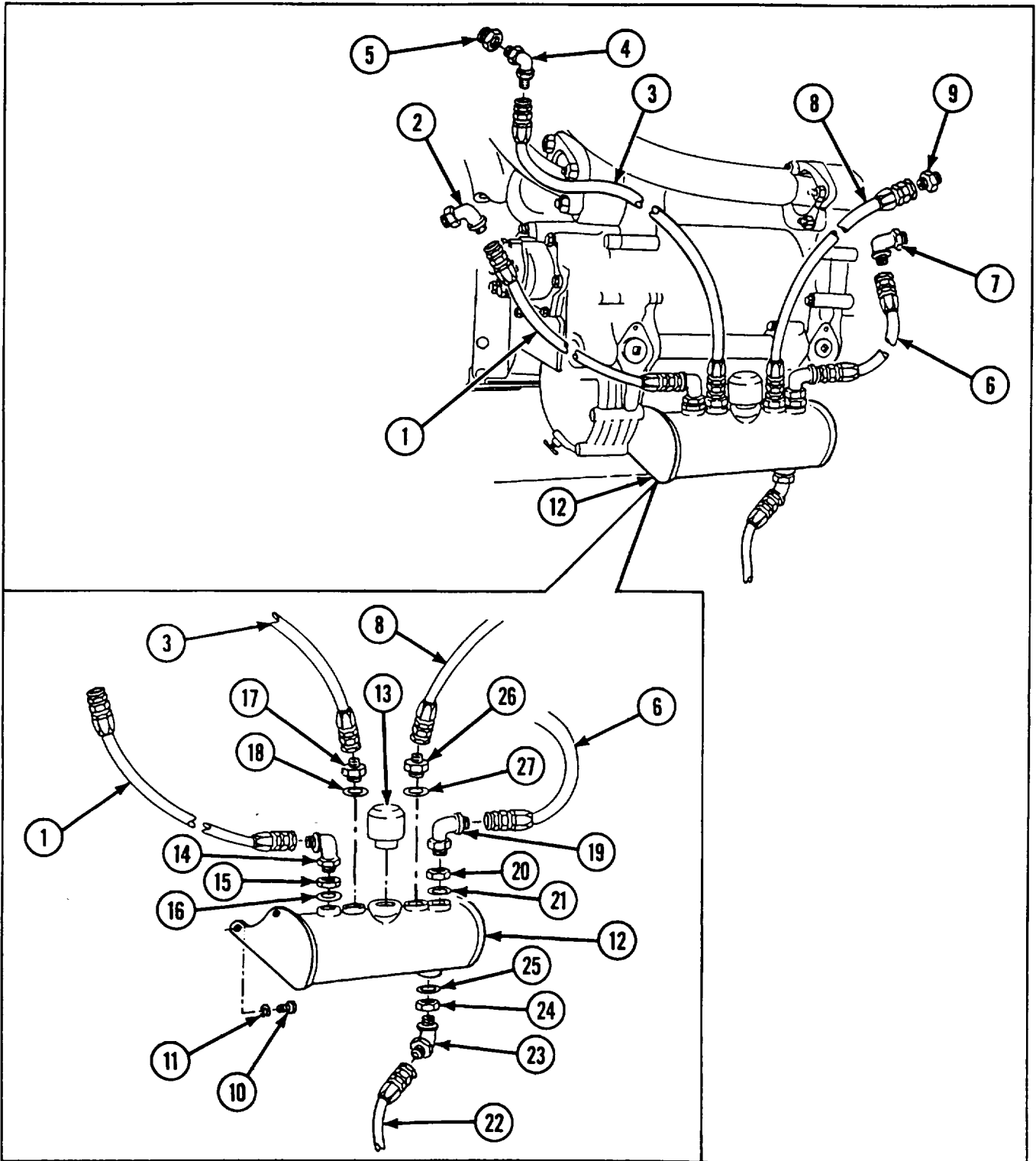


2-40. MAINTENANCE OF EXTERNAL OIL LINES AND FITTINGS (SCAVENGER RESERVOIR).

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP:			
Materials/Parts Lockwasher (4) Preformed packing (5) Tube fitting locknut (3)	Equipment Conditions 2-380 Powerplant removed		
References TM 9-2350-304-24P-1			

2-40. MAINTENANCE OF EXTERNAL OIL LINES AND FITTINGS (SCAVENGER RESERVOIR) (CONT).

REMOVAL



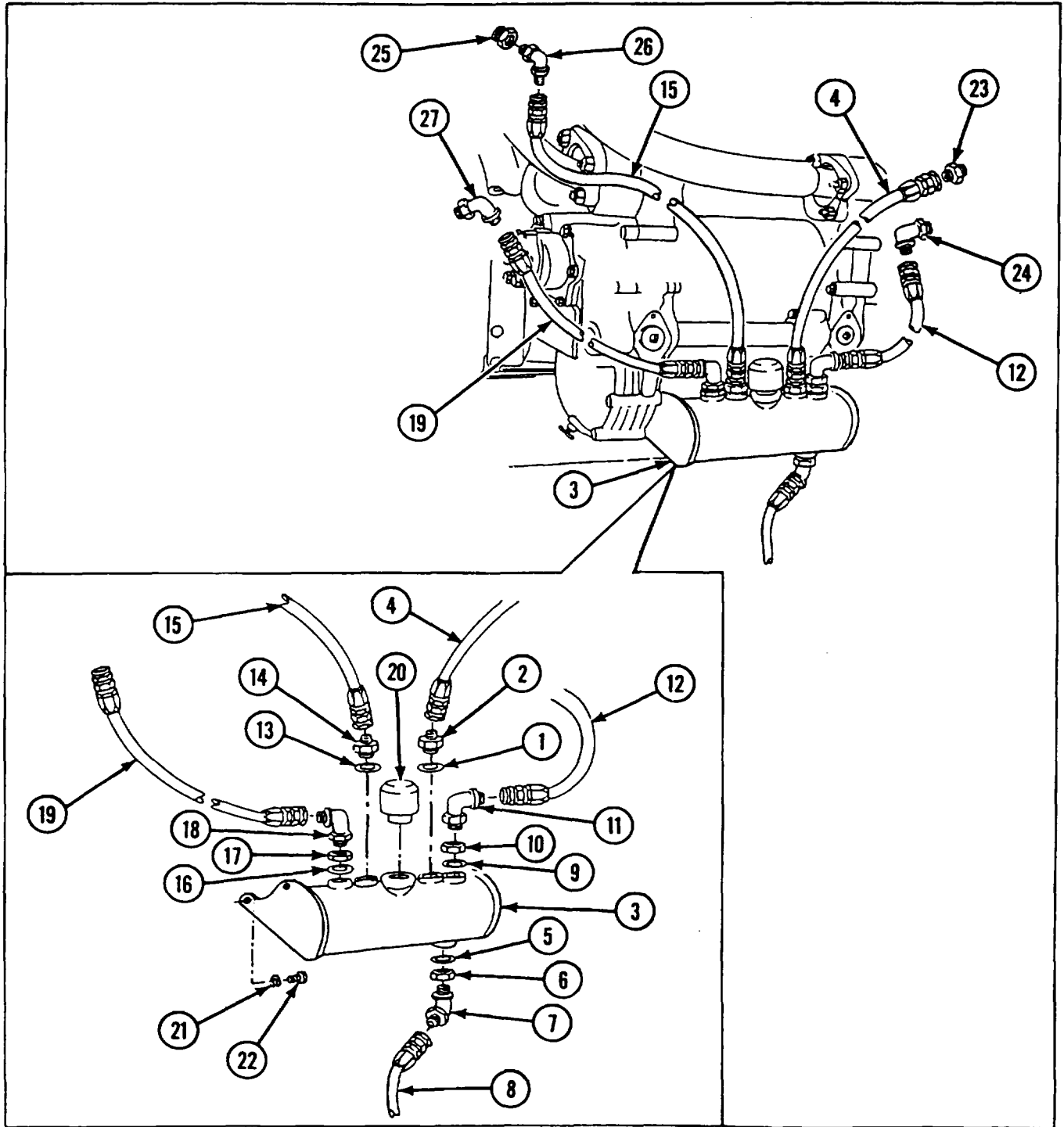
- 1 Disconnect engine condensation hose assembly (1) from pipe to hose elbow (2).
- 2 Remove pipe to hose elbow (2) from engine.
- 3 Disconnect transfer case drain hose assembly (3) from pipe to tube elbow (4).
- 4 Remove pipe to tube elbow (4) from pipe bushing (5).
- 5 Remove pipe bushing (5) from transmission.
- 6 Disconnect engine block drain hose (6) from pipe to tube elbow (7).
- 7 Remove pipe to tube elbow (7) from engine.
- 8 Remove fuel pump drain hose (8) from straight pipe adapter (9).
- 9 Remove four capscrews (10) and four lockwashers (11) from powerplant reservoir (12).
- 10 Remove powerplant reservoir (12) and attached drain lines from engine.
- 11 Remove breather (13) from powerplant reservoir (12).
- 12 Remove engine condensation hose assembly (1) from tube elbow (14).
- 13 Remove tube elbow (14), tube fitting locknut (15), and preformed packing (16) from powerplant reservoir (12).
- 14 Remove transfer case drain hose assembly (3) from tube nipple (17).
- 15 Remove tube nipple (17) and preformed packing (18) from powerplant reservoir (12).
- 16 Remove engine block drain hose (6) from tube elbow (19).
- 17 Remove tube elbow (19), tube fitting locknut (20), and preformed packing (21) from powerplant reservoir (12).
- 18 Remove reservoir drain hose (22) from tube elbow (23).
- 19 Remove tube elbow (23), tube fitting locknut (24), and preformed packing (25) from powerplant reservoir (12).
- 20 Remove fuel pump drain hose (8) from tube nipple (26).
- 21 Remove tube nipple (26) and preformed packing (27) from powerplant reservoir (12).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-40. MAINTENANCE OF EXTERNAL OIL LINES AND FITTINGS (SCAVENGER RESERVOIR) (CONT)

INSTALLATION



- 1 Install new preformed packing (1) and tube nipple (2) in powerplant reservoir (3).
- 2 Install fuel pump drain hose (4) on tube nipple (2).
- 3 Install new preformed packing (5), new tube fitting locknut (6), and tube elbow (7) on powerplant reservoir (3).
- 4 Install reservoir drain hose (8) on tube elbow (7).
- 5 Install new preformed packing (9), new tube fitting locknut (10), and tube elbow (11) on powerplant reservoir (3).
- 6 Install engine block drain hose (12) on tube elbow (11).
- 7 Install new preformed packing (13) and tube nipple (14) on powerplant reservoir (3).
- 8 Install transfer case drain hose assembly (15) on tube nipple (14).
- 9 Install new preformed packing (16), new tube fitting locknut (17), and tube elbow (18) on powerplant reservoir (3).
- 10 Install engine condensation hose assembly (19) on elbow (18).
- 11 Install breather (20) on powerplant reservoir (3).
- 12 Install powerplant reservoir (3) to engine.
- 13 Install four new lockwashers (21) and four capscrews (22) to powerplant reservoir (3).
- 14 Install fuel pump drain hose (4) to straight pipe adapter (23).
- 15 Install pipe to tube elbow (24) to engine.
- 16 Connect engine block drain hose (12) to pipe to tube elbow (24).
- 17 Install pipe bushing (25) to transmission.
- 18 Install pipe to tube elbow (26) to pipe bushing (25).
- 19 Connect transfer case drain hose assembly (15) to pipe to tube elbow (26).
- 20 Install pipe to hose elbow (27) to engine.
- 21 Connect engine condensation drain hose assembly (19) on pipe to hose elbow (27).

2-41. MAINTENANCE OF ENGINE OIL DIPSTICK.

This task covers:	a.	Removal	b.	Inspection/Repair	c.	Installation
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INITIAL SETUP

References
TM 9-2815-202-24P

Equipment Conditions
2-380 Powerplant removed

REMOVAL

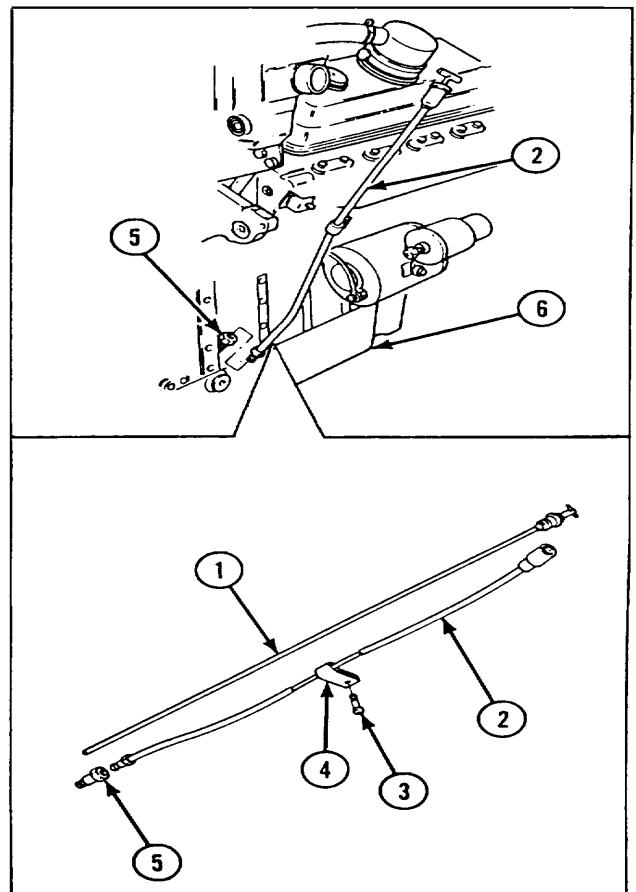
- 1 Remove liquid level gage rod (1) from filler neck (2).
- 2 Remove capscrew (3) from loop clamp (4)
- 3 Remove filler neck (2) with loop clamp (4) from straight adapter (5).
- 4 Remove loop clamp (4) from filler neck (2).
- 5 Remove straight adapter (5) from engine (6).

INSPECTION/REPAIR

- 1 Check for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2815-202-24P).

INSTALLATION

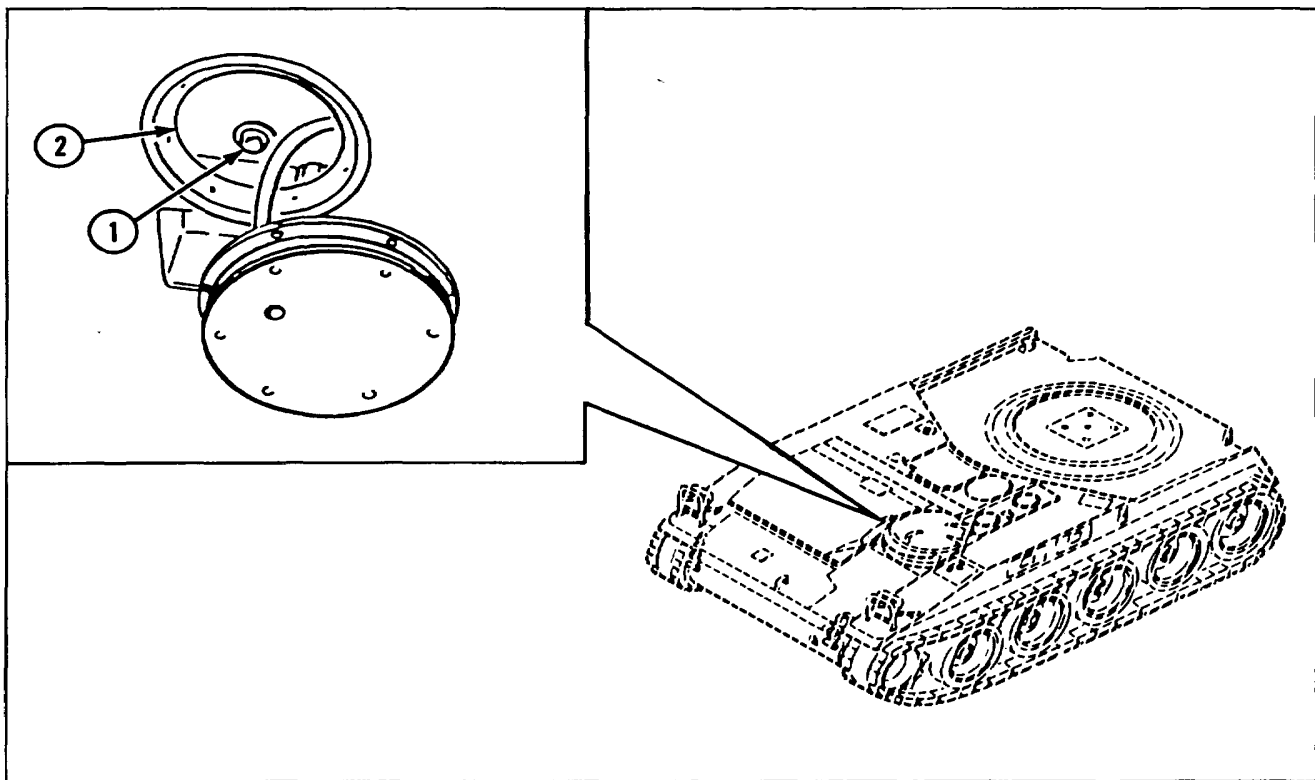
- 1 Install straight adapter (5) on engine (6).
- 2 Install loop clamp (4) on filler neck (2).
- 3 Install filler neck (2) with loop clamp (4) on straight adapter (5).
- 4 Secure loop clamp (4) with capscrew (3).
- 5 Install liquid level gage rod (1) in filler neck (2).



2-42. MAINTENANCE OF OIL PAN.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
<p>INITIAL SETUP:</p> <p>References TM 9-2815-202-24P</p> <p>Equipment Conditions 2-380 Powerplant reservoir drain access cover removed</p>			

REMOVAL



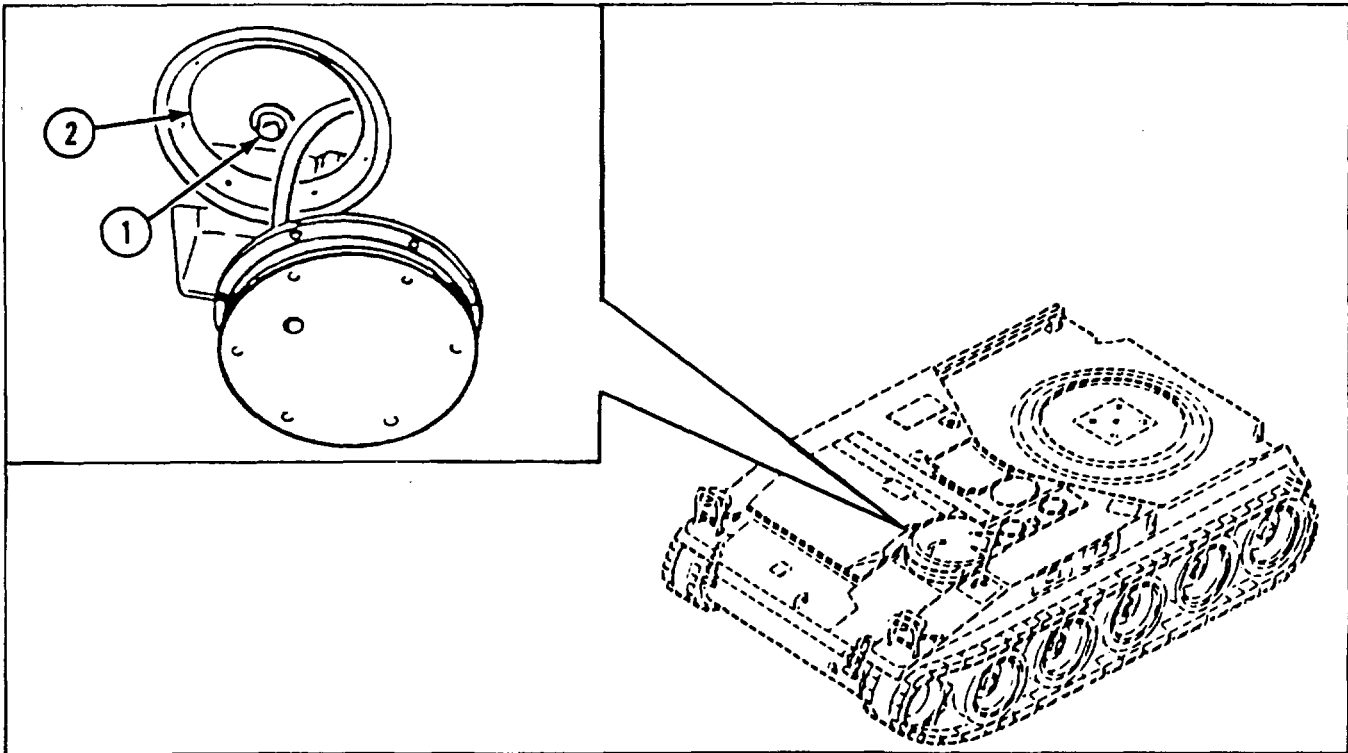
If damaged, removed magnetic pipe plug (1) from oil pan (2). Drain engine oil into suitable container. Refer to the PMCS/lubrication table, page 2-12.

2-42. MAINTENANCE OF OIL PAN (CONT).

INSPECTION/REPAIR

- 1 Check for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2815-202-24P).

INSTALLATION



If removed, install new magnetic pipe plug (1) in oil pan (2). Fill crankcase with engine oil. Refer to the PMCS/lubrication table, page 2-12.

2-43. MAINTENANCE OF CRANKCASE BREATHER TUBES (ENGINE MODEL 7083-7395).

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP:			
References TM 9-2815-202-24P			
Equipment Conditions 2-887 Engine deck assembly removed			

REMOVAL

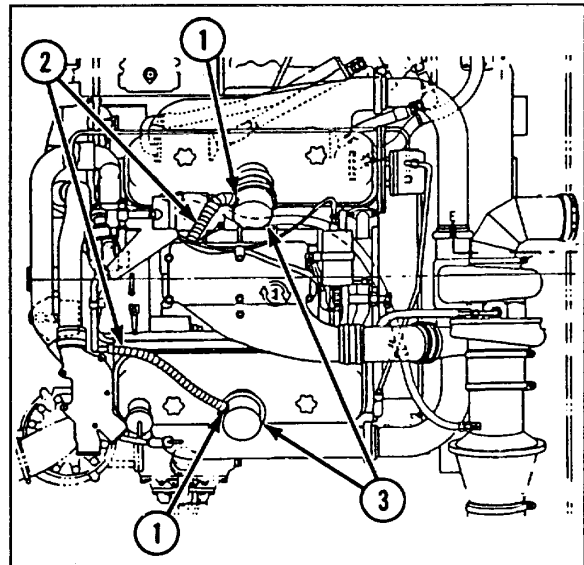
NOTE

Procedure is written for one breather assembly, but applies to both.

- 1 Loosen hose clamp (1) on air duct hose (2).
- 2 Remove air duct hose (2) and hose clamp (1) from breather assembly cover (3).

INSPECTION/REPAIR

- 1 Check for broken, damaged, or missing parts.
 - 2 Repair is by replacement of authorized parts (TM 9-2815-202-24P).
- 1 INSTALLATION** Install hose clamp (1) and air duct hose (2) on breather assembly cover (3).
- 2 Tighten hose clamp (1) on air duct hose (2).

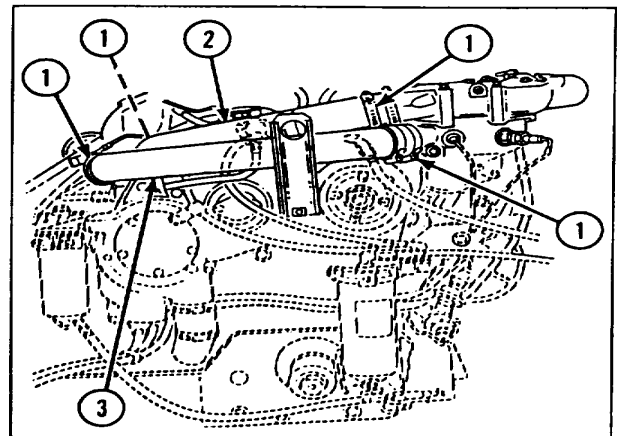


2-44. MAINTENANCE OF FUEL PUMP.

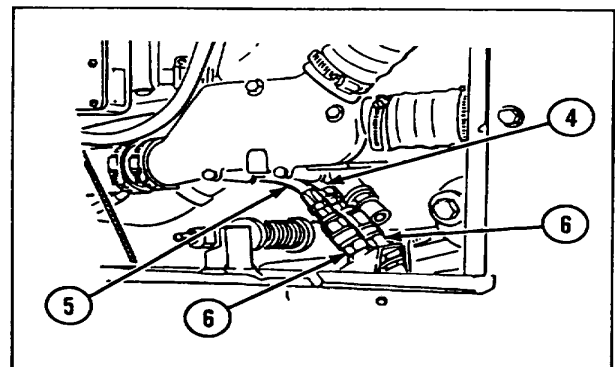
This task covers:	a. Removal	b. Inspection/Repair	c. Installation
<p>INITIAL SETUP:</p> <p>Materials/Parts Gasket</p> <p>References TM 9-2350-304-10 TM 9-2815-202-24P</p> <p>Equipment Conditions 2-887 Engine deck assembly removed Cooling system drained (TM 9-2350-304-10)</p>			

REMOVAL

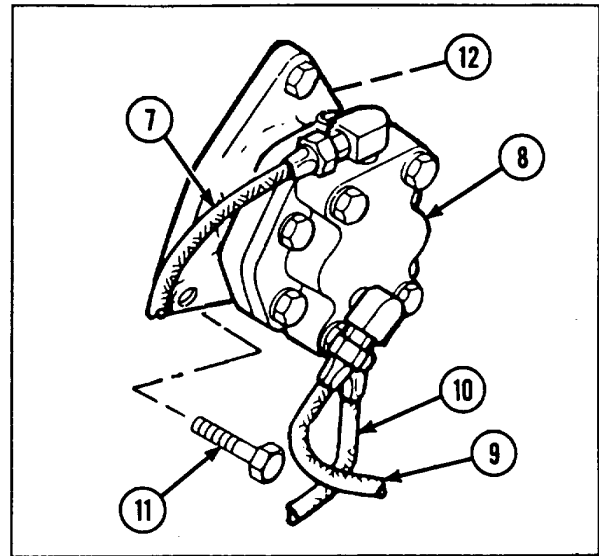
1 Loosen four hose clamps (1). Remove water by-pass tube (2) and crossover tube (3).



2 Disconnect fuel supply metal tube assembly (4) to fuel return metal tube assembly (5) at quick-disconnect couplings (6) to prevent siphoning fuel from fuel cell.



- 3 Disconnect nonmetallic hose assembly from fuel pump (8).
- 4 Disconnect nonmetallic hose assembly from fuel pump (8).
- 5 Disconnect fuel pump to reservoir drain nonmetallic hose assembly (10) from fuel pump (8).
- 6 Remove three machine bolts (11), fuel pump (8), and gasket (12).

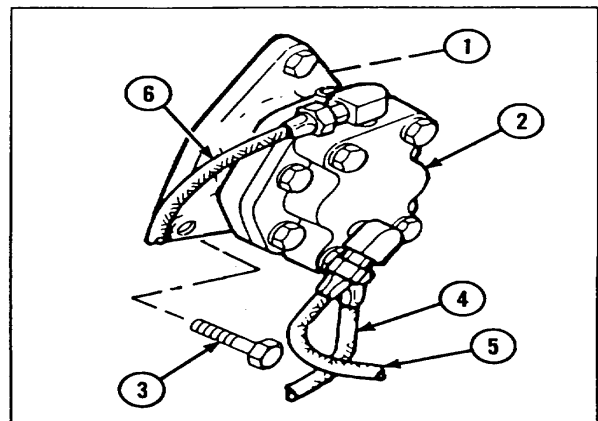


INSPECTION/REPAIR

- 1 Check for broken, damaged, or missing parts.
- 2 Fuel pump is a repairable assembly. Notify direct support maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2815-202-24P).

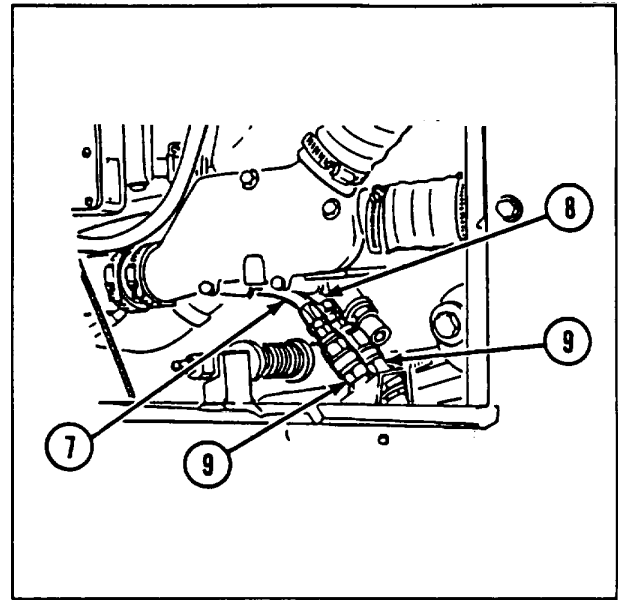
INSTALLATION

- 1 Install new gasket (1), fuel pump (2), three machine bolts (3).
- 2 Connect fuel pump to reservoir drain nonmetallic hose assembly (4) to fuel pump (2).
- 3 Connect nonmetallic hose assembly fuel pump (2).
- 4 Connect nonmetallic hose assembly (1 fuel pump (2).

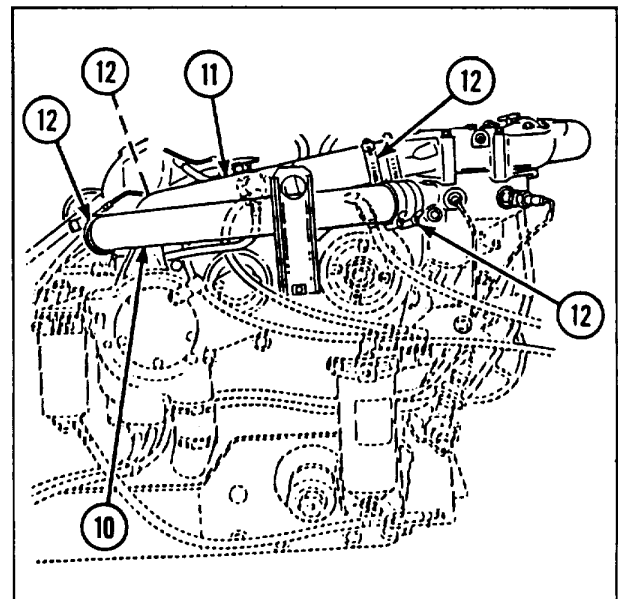


2-44. MAINTENANCE OF FUEL PUMP (CONT).

- 5 Connect fuel return metal tube assembly (7) and fuel supply metal tube assembly (8) to quick-disconnect couplings (9).



- 6 Install crossover tube (10) and water by-pass tube (11). Tighten four hose clams (12).
- 7 Fill cooling system. Refer to TM 9-2350 304-10.
- 8 Purge and prime fuel system. Refer to TM 9-2350-304-10.
- 9 Check for and repair any leaks.
- 10 Run engine until operating temperature reached. Refer to TM 9-2350-304-10. Check for proper operation.



2-45. MAINTENANCE OF ENGINE FUEL LINES.

This task covers:

a. Removal

b. Inspection/Repair

c. Installation

INITIAL SETUP:

References

TM 9-2350-304-10

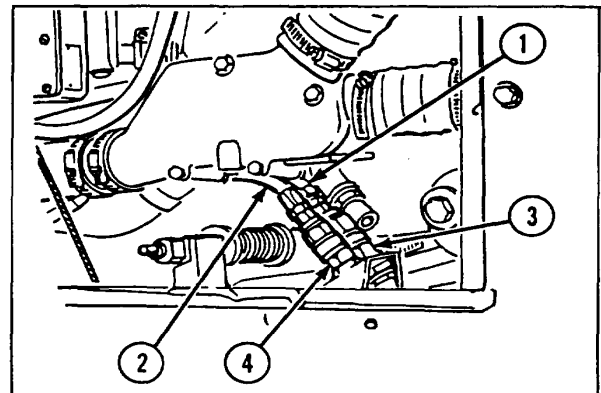
TM 9-2815-202-24P

Equipment Conditions

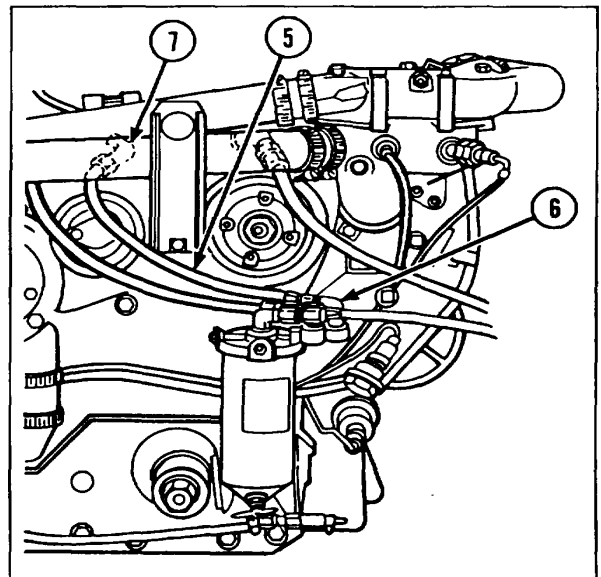
2-887 Engine deck assembly removed

REMOVAL

- 1 Disconnect fuel supply metal tube assembly (1) and fuel return metal tube assembly (2) at quick-disconnect couplings (3 and 4) to prevent siphoning fuel from fuel cell.



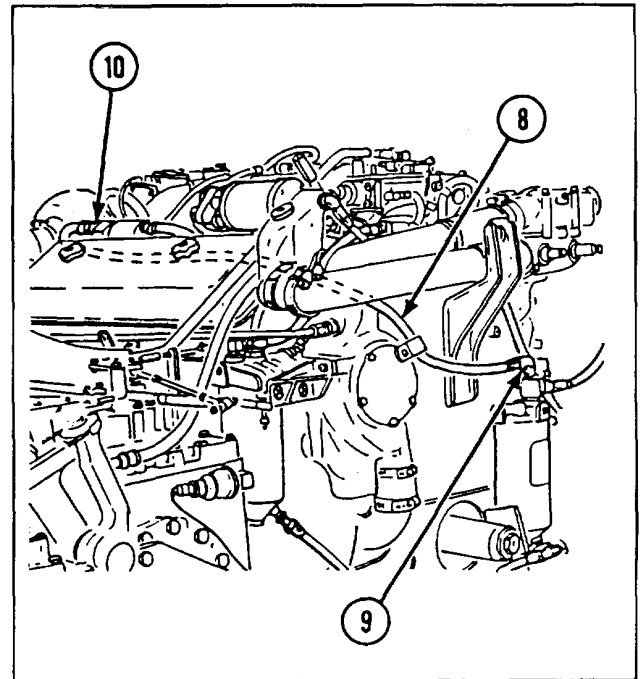
- 2 Disconnect end of nonmetallic hose assembly (5) from hose elbow (6).
- 3 Disconnect end of nonmetallic hose assembly (5) from hose elbow (7).
- 4 Remove nonmetallic hose assembly (5).
- 5 Cover hose elbows (6 and 7) to keep dirt out.



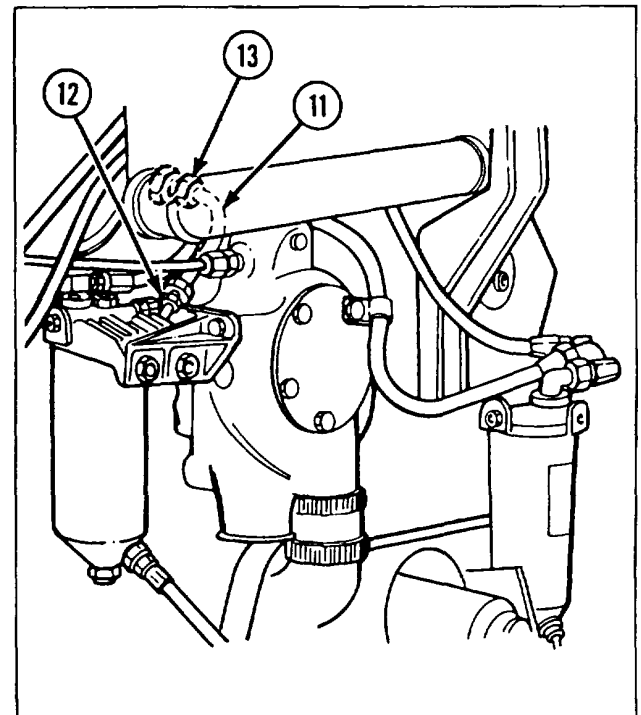
2-45. MAINTENANCE OF ENGINE FUEL LINES (CONT)

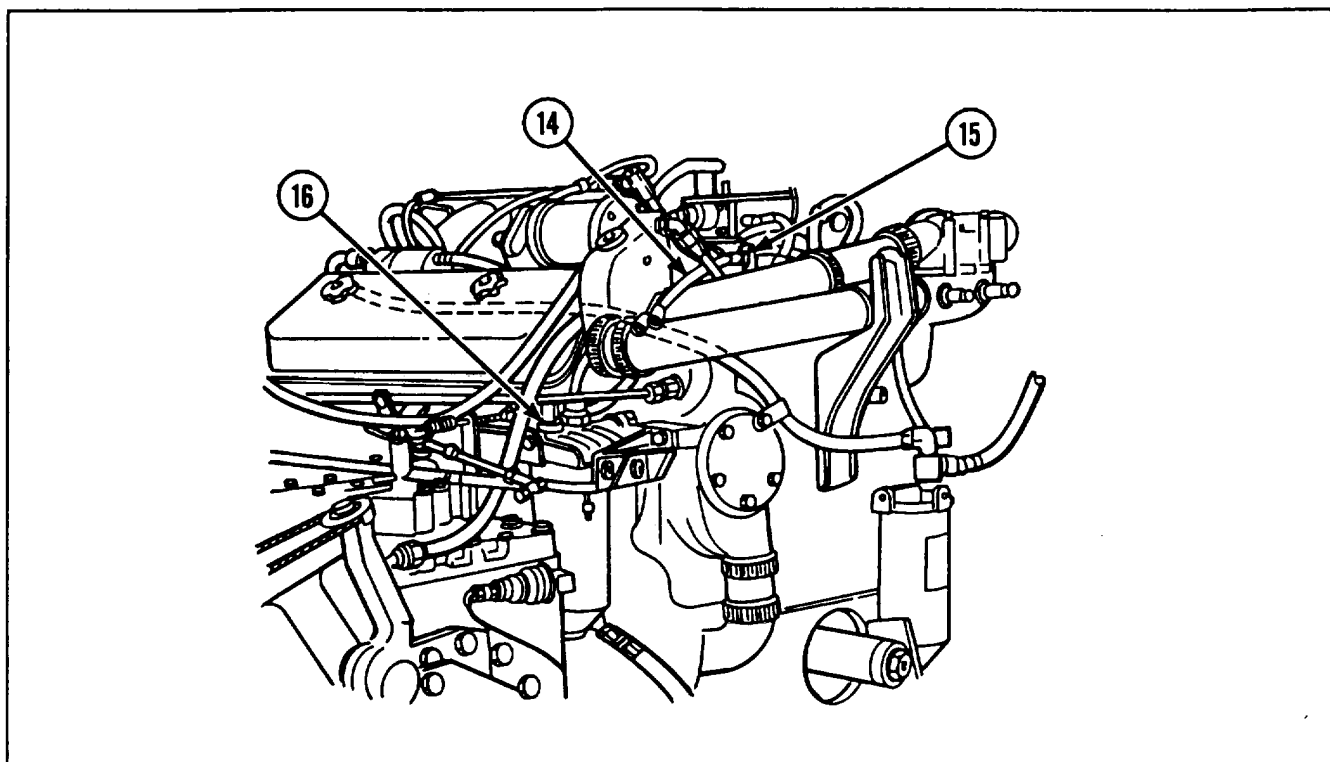
REMOVAL (CONT)

- 6 Disconnect end of nonmetallic hose assembly (8) from pipe tee (9).
- 7 Disconnect end of nonmetallic hose assembly (8) from hose elbow (10).
- 8 Remove nonmetallic hose assembly (E
- 9 Cover pipe tee (9) and hose elbow (1 C keep dirt out.



- 10 Disconnect end of nonmetallic hose assembly (11) from hose elbow (12).
- 11 Disconnect end of nonmetallic hose assembly (11) from pipe elbow (13).
- 12 Remove nonmetallic hose assembly (1
- 13 **Cover hose elbow (12) and pipe elbow (13) to keep dirt out.**





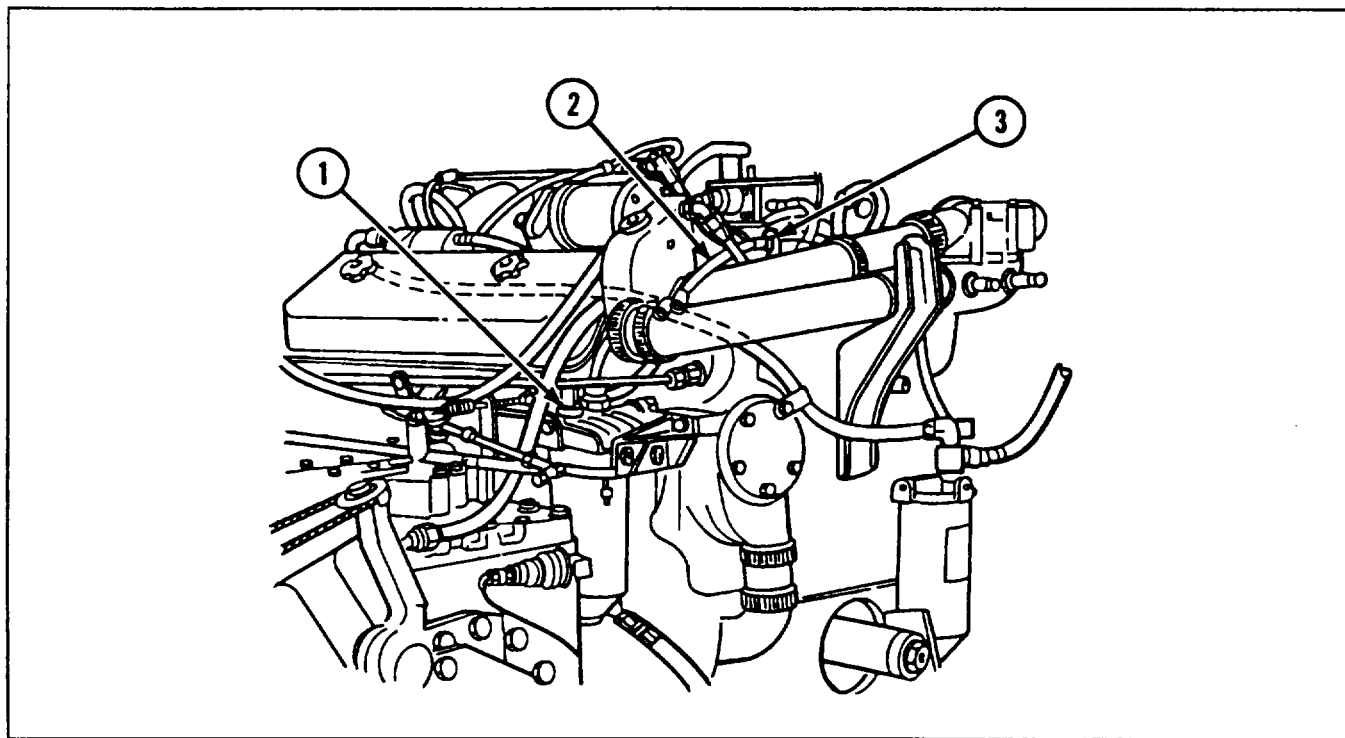
- 14 Disconnect end of nonmetallic hose assembly (14) from hose elbow (15).
- 15 Disconnect end of nonmetallic hose assembly (14) from hose elbow (16).
- 16 Remove nonmetallic hose assembly (14).
- 17 Cover hose elbows (15 and 16) to keep dirt out.

INSPECTION/REPAIR

- 1 Check for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2815-202-24P).

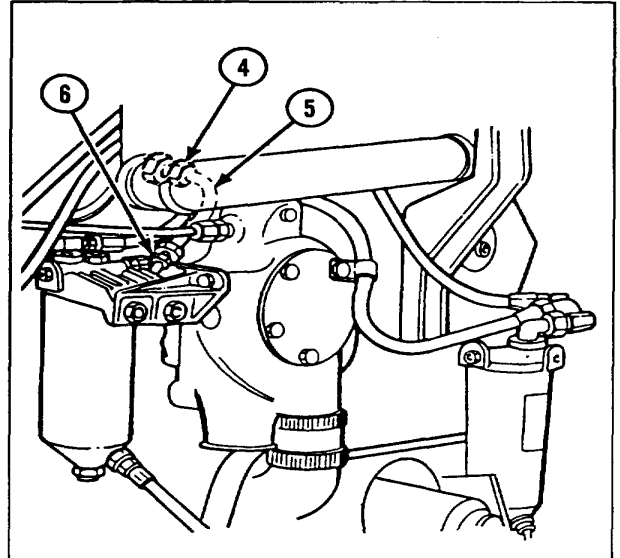
2-45. MAINTENANCE OF ENGINE FUEL LINES (CONT).

INSTALLATION

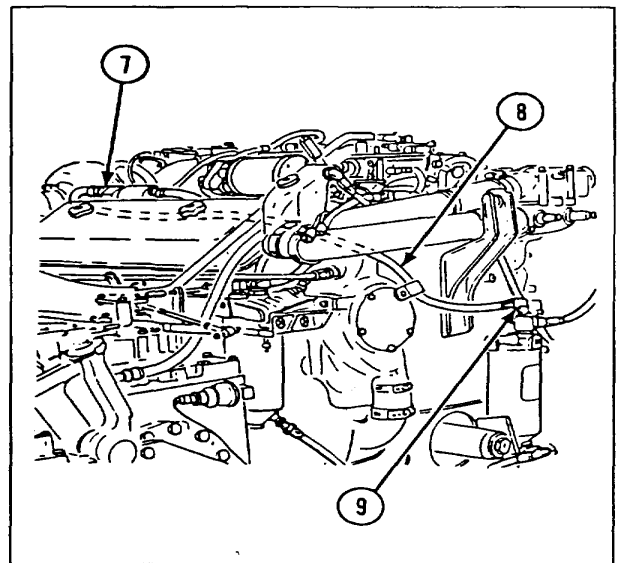


- 1 Remove cover from hose elbow (1).
- 2 Install and connect nonmetallic hose assembly (2) to hose elbow (1).
- 3 Remove cover from hose elbow (3).
- 4 Connect end of nonmetallic hose assembly (2) to hose elbow (3).

- 5 Remove cover from pipe elbow (4).
- 6 Install and connect nonmetallic hose assembly (5) to pipe elbow (4).
- 7 Remove cover from hose elbow (6).
- 8 Connect nonmetallic hose assembly (5) to hose elbow (6).



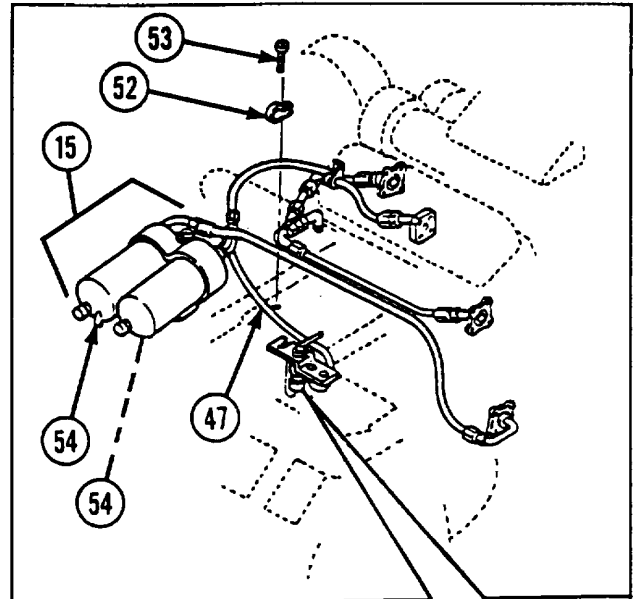
- 9 Remove cover from hose elbow (7).
- 10 Install and connect nonmetallic hose assembly (8) to hose elbow (7).
- 11 Remove cover from pipe tee (9).
- 12 Connect nonmetallic hose assembly (8) to pipe tee (9).



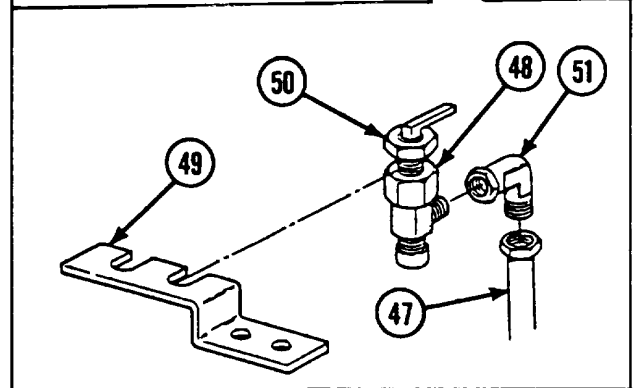
2-45. MAINTENANCE OF ENGINE FUEL LINES (CONT)

INSTALLATION (CONT)

- 13 Remove cover from hose elbow (10).
- 14 Install and connect nonmetallic hose assembly (11) to hose elbow (10).
- 15 Remove cover from hose elbow (12).
- 16 Connect nonmetallic hose assembly (11) to hose elbow (12).



- 17 Connect fuel supply metal tube assemble (13) and fuel return metal tube assemble (14) at quick-disconnect couplings (15 and 16).
- 18 Purge and prime fuel system. Refer to TM 9-2350-304-10.
- 19 Check for and repair any leaks.
- 20 Run engine until operating temperature is reached. Refer to TM 9-2350-304-10. Check for proper operation.



2-46. MAINTENANCE OF ENGINE AIR CLEANER SYSTEM.

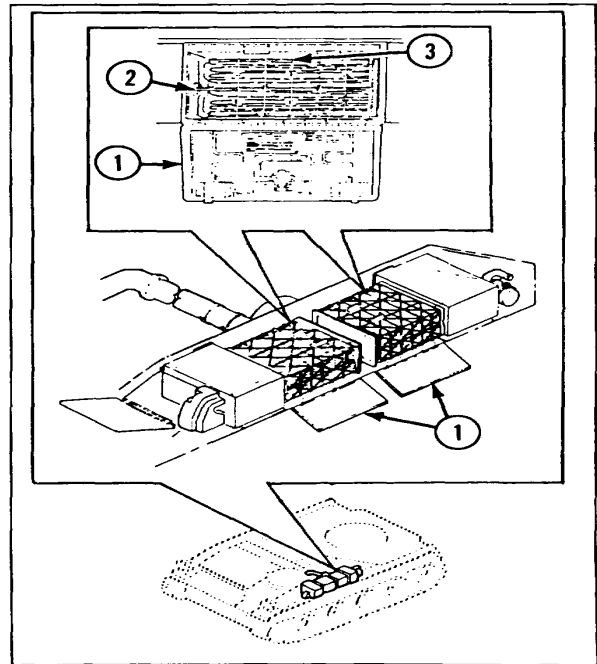
This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP:			
<p>Materials/Parts</p> <ul style="list-style-type: none"> Air outlet seal assembly (2) Blower inlet air duct hose (figure D-25, appx D) Blower outlet air duct hose (figure D-25, appx D) 	<p>References</p> <ul style="list-style-type: none"> FM 21-40 TM 9-2350-304-24P-1 <p>General Safety Instructions</p>		
<ul style="list-style-type: none"> Duct gasket (2) Forward separator adapter outlet gasket Gasket Gasket Lockwasher (16) Lockwasher (30) Self-locking nut (2) 	<div style="border: 2px solid black; padding: 5px; display: inline-block;">WARNING</div> <p>Contaminated intake filter elements must be handled using adequate precautions (refer to FM 21-40) and must be disposed of by authorized personnel.</p>		

REMOVAL

WARNING

Contaminated intake filter elements must be handled using adequate precautions (refer to FM 21-40) and must be disposed of by authorized personnel.

- 1 Open two air cleaner access doors (1).
- 2 Set retainer assembly levers (2) to vertical position.
- 3 Pull two intake filter elements (3) from compartments.



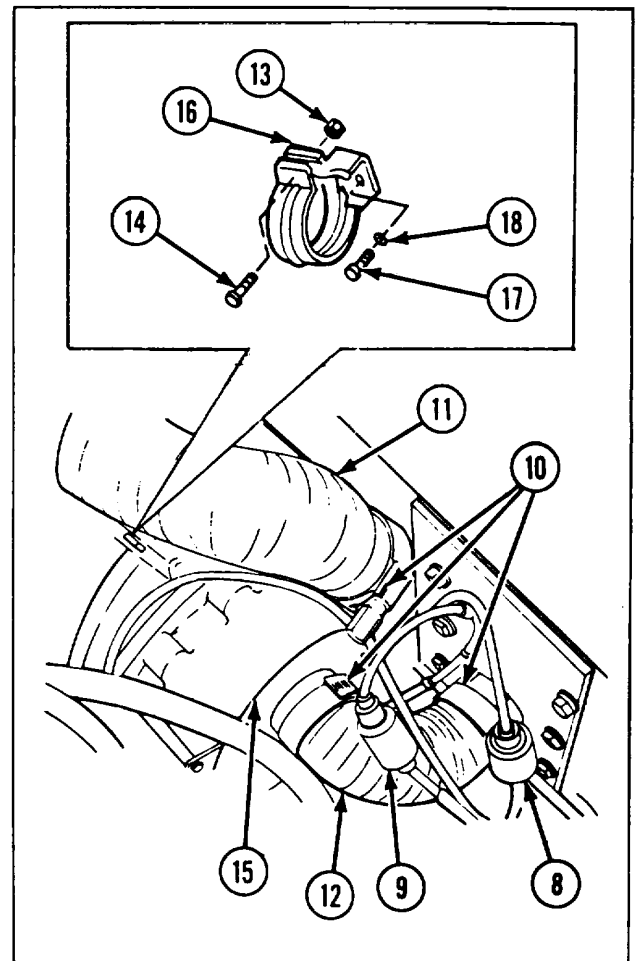
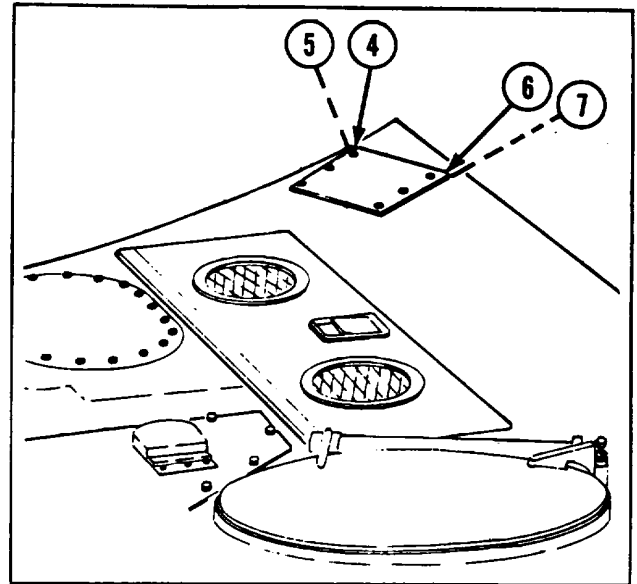
2-46. MAINTENANCE OF ENGINE AIR CLEANER SYSTEM (CONT)

REMOVAL (CONT)

NOTE

Steps 4 thru 13 apply to the aft air cleaner centrifugal fan.

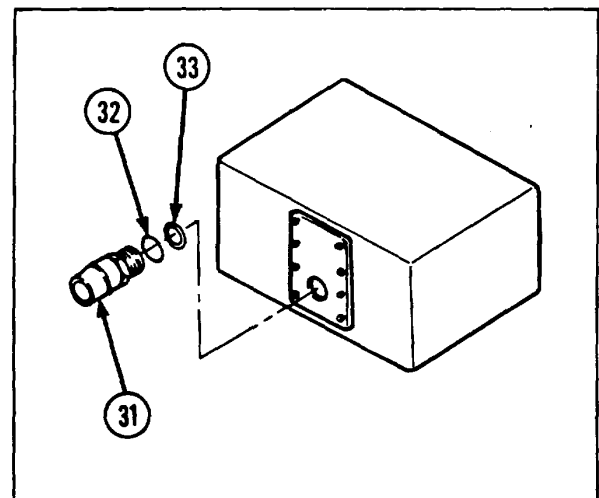
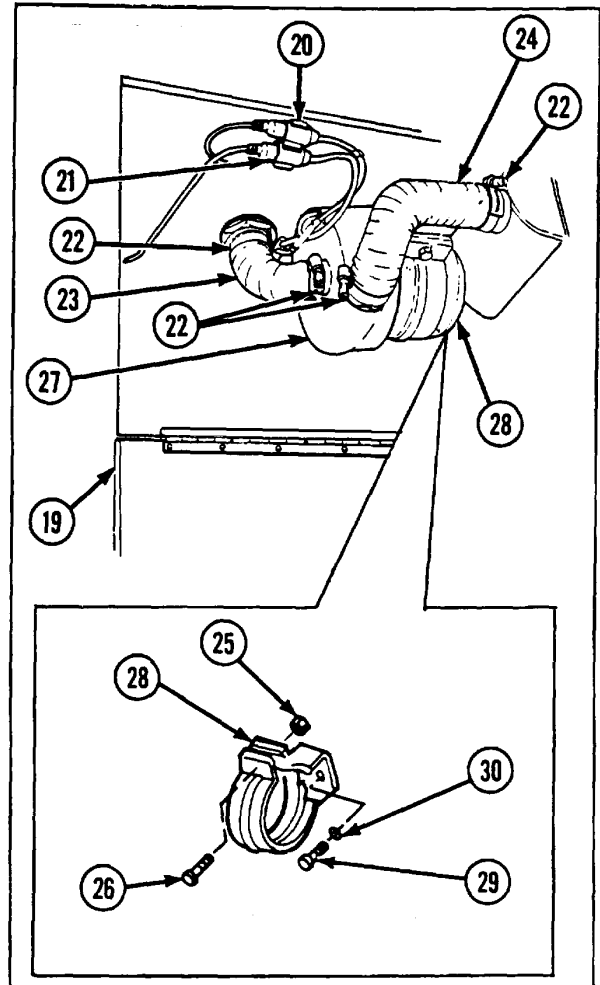
- 4 Set MASTER and INST switches to OFF.
- 5 Remove water can bracket. Refer to page 2-936.
- 6 Remove six hexagon head capscrews (4) and six lockwashers (5).
- 7 Remove access cover (6) and gasket (7).
- 8 Disconnect connectors (8 and 9).
- 9 Loosen four hose clamps (10).
- 10 Remove blower inlet air duct hose (11) and blower outlet air duct hose (12).
- 11 Loosen self-locking nut (13) and hexagon head capscrew (14) until aft air cleaner centrifugal fan (15) can be removed.
- 12 Remove aft air cleaner centrifugal fan (15), self-locking nut (13), and hexagon head capscrew (14) from air cleaner blower clamp bracket (16).
- 13 Remove two hexagon head capscrews (17), two lockwashers (18), and air cleaner blower clamp bracket (16).



NOTE

Steps 14 thru 21 apply to the forward air cleaner centrifugal fan.

- 14 Open blower access door (19).
- 15 Disconnect connectors (20 and 21).
- 16 Loosen four hose clamps (22).
- 17 Remove blower inlet air duct hose (23) and blower outlet air duct hose (24).
- 18 Loosen self-locking nut (25) and hexagon head capscrew (26) until forward air cleaner centrifugal fan (27) can be removed.
- 19 Remove forward air cleaner centrifugal fan (27), self-locking nut (25), and hexagon head capscrew (26) from air cleaner blower clamp bracket (28).
- 20 Remove two hexagon head capscrews (29), two lockwashers (30), and air cleans blower clamp bracket (28).
- 21 Remove hose to boss straight adapter (31), forward air separator outlet adapter gasket (32), and flat washer (33) from hull



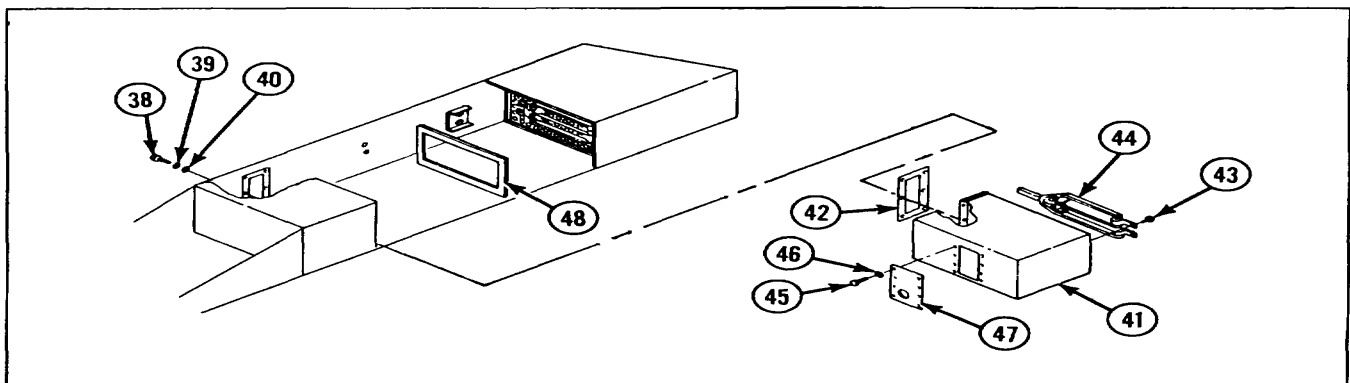
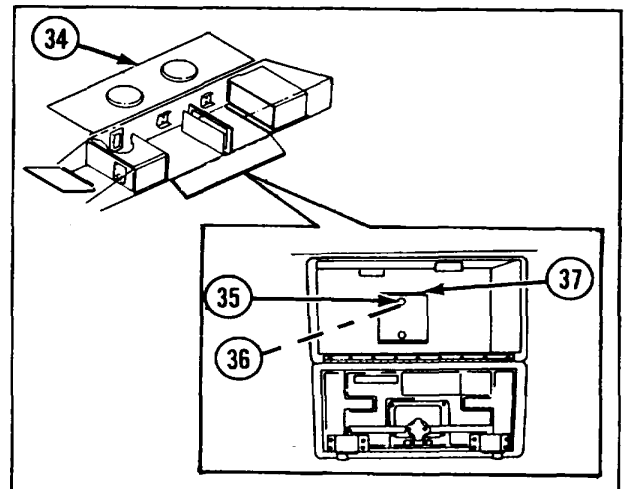
2-46. MAINTENANCE OF ENGINE AIR C

REMOVAL (CONT)

NOTE

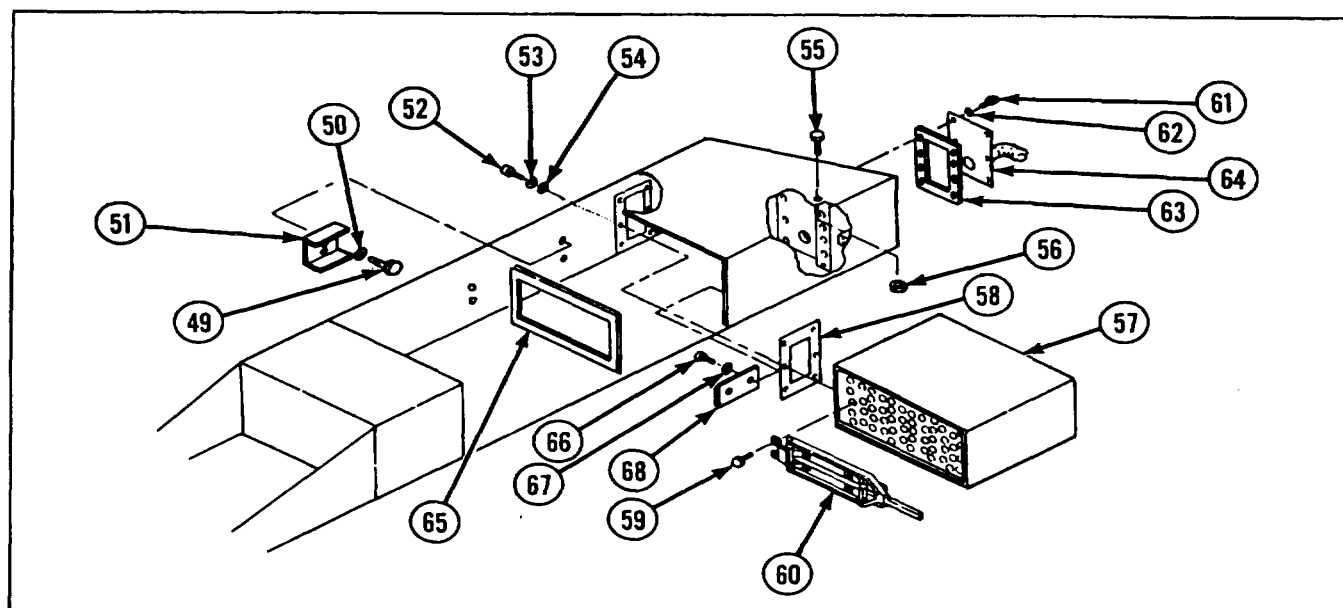
Steps 22 thru 33 apply to the forward intake air cleaner.

- 22 Open battery access door (34).
- 23 Remove batteries. Refer to page 2-624.
- 24 Remove battery tray. Refer to page 2-624.
- 25 Remove two hexagon head capscrews (35), two lockwashers (36), and cleaner basket mounting bracket (37) from hull.



- 26 Remove six hexagon head capscrews (38) , six lockwashers (39), and six flat washers (40) from hull.
- 27 Pull forward intake air cleaner (41) outward until there is 0.25 in. (0.64 cm) clearance between forward intake air cleaner (41) and hull.
- 28 Slide forward intake air cleaner (41) into space normally occupied by intake filter element (3).
- 29 Remove forward intake air cleaner (41) and duct gasket (42)
- 30 Remove eight assembled washer bolts (43) and retainer assembly (44) from forward intake air cleaner (41)
- 31 Remove duct gasket (42) from forward intake air cleaner (41).

- 32 If necessary, remove eight hexagon head capscrews (45), eight lockwashers (46), and blower adapter access cover (47) from forward intake air cleaner (41).
- 33 If damaged, removed seal assembly (48).



NOTE

Steps 34 thru 44 apply to the aft intake air cleaner.

- 34 Remove two hexagon head capscrew (49), two lockwashers (50) and cleaner basket mounting bracket (51) from hull
- 35 Remove six hexagon head capscrews (52), six lockwashers (53), and six flat washers (54) from hull.
- 36 Loosen hexagon head capscrew (55) and plain slotted nut (56).
- 37 Pull aft intake air cleaner (57) outward until there is 0.25 in. (0.64 cm) clearance between aft intake air cleaner (57) and hull.
- 38 Slide aft intake air cleaner (57) into Space normally occupied by intake filter element (3).
- 39 Remove aft intake air cleaner (57) with duct gasket (58).
- 40 Remove eight assembled washer bolts (59) and retainer assembly (60) from aft intake air cleaner (57).
- 41 Remove duct gasket (58) from aft intake air cleaner (57).
- 42 If necessary, remove eight screws (61), eight lockwashers (62), gasket (63), and blower adapter air cleaner door (64) from aft intake air cleaner (57).
- 43 If damaged, remove seal assembly (65).
- 44 If damaged, remove four hexagon head capscrews (66), four lockwashers (67), and two placement guide mounting brackets (68) from hull.

2-46. MAINTENANCE OF ENGINE AIR CLEANER SYSTEM (CONT).

INSPECTION/REPAIR

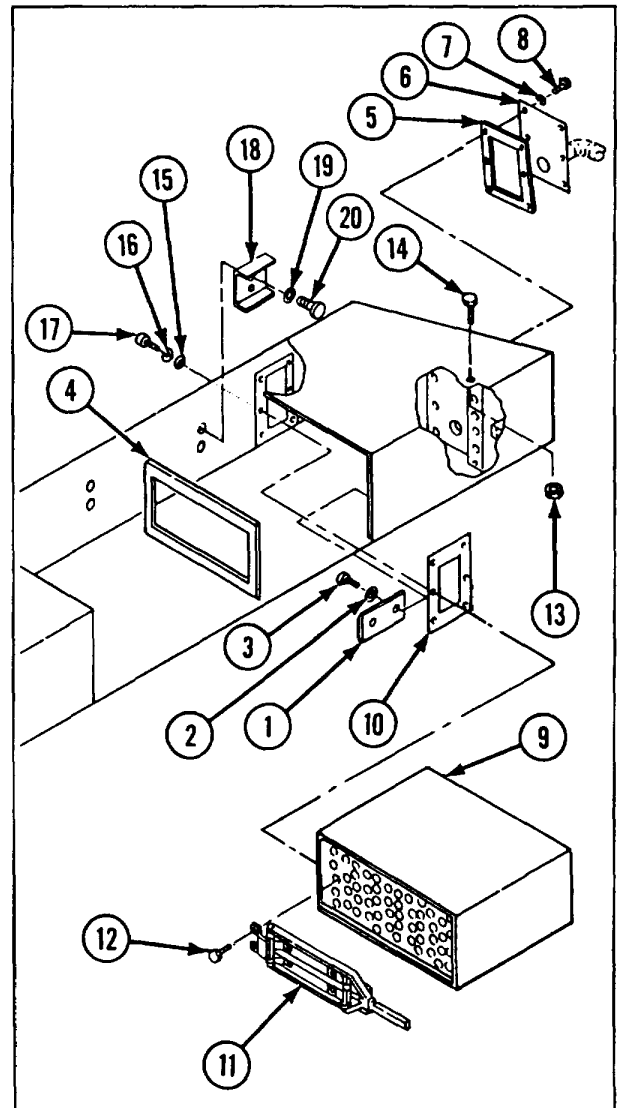
- 1 Inspect for broken, damaged, or missing parts.
- 2 Air cleaner centrifugal fans are repairable assemblies. Notify direct support maintenance.
- 3 Blower outlet air duct hose and blower inlet air duct hose are manufactured items, refer to appendix D.
- 4 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

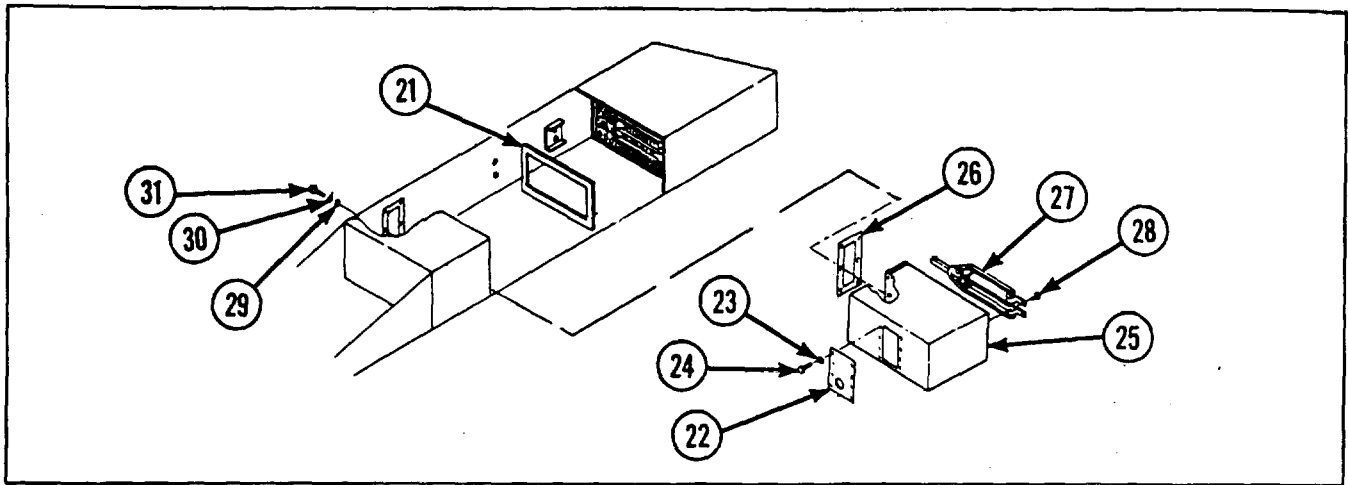
INSTALLATION

NOTE

Steps 1 thru 9 apply to the aft intake air cleaner.

- 1 If removed, install two placement guide mounting brackets (1), four new lockwashers (2), and four hexagon head capscrew: (3) in hull.
- 2 If removed, install new seal assembly (4).
- 3 If removed, install new gasket (5), blower adapter air cleaner door (6), eight new lockwashers (7), and eight screws (8) on aft air intake air cleaner (9).
- 4 Install new duct gasket (10) on aft intake air cleaner (9).
- 5 Install retainer assembly (11) and eight assembled washer bolts (12) on aft intake air cleaner (9).
- 6 Install aft intake air cleaner (9).
- 7 Install plain slotted nut (13) and hexagon head capscrew (14).
- 8 Install six flat washers (15), six new lockwashers (16), and six hexagon head capscrews (17) on hull.
- 9 Install cleaner basket mounting bracket (18), two new lockwashers (19), and two hexagon head capscrews (20) on hull.





NOTE

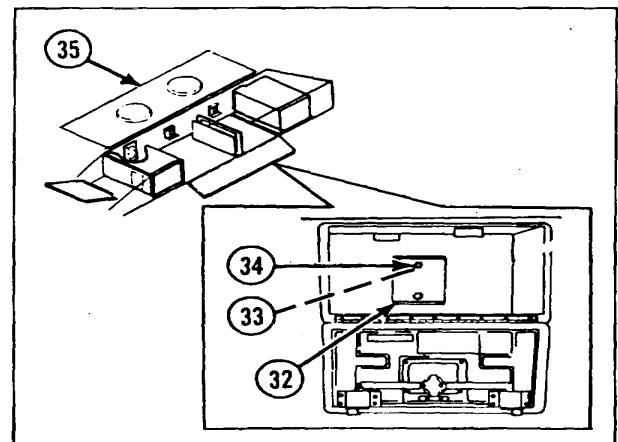
Step 10 thru 19 apply to the forward intake air cleaner.

- 10 If removed, install new air outlet seal assembly (21).
- 11 If removed, install blower adapter access cover (22), eight new lockwashers (23), and eight hexagon head capscrews (24) on forward intake air cleaner (25).
- 12 Install new duct gasket (26) on forward intake air cleaner (25).
- 13 Install retainer assembly (27) and eight assembled washer bolts (28) on forward intake air cleaner (25).
- 14 Install forward intake air cleaner (25).
- 15 Install six flat washers (29), six new lockwashers (30), and six hexagon head capscrews (31) on hull.

NOTE

Steps 20 thru 28 apply to the forward air cleaner centrifugal fan.

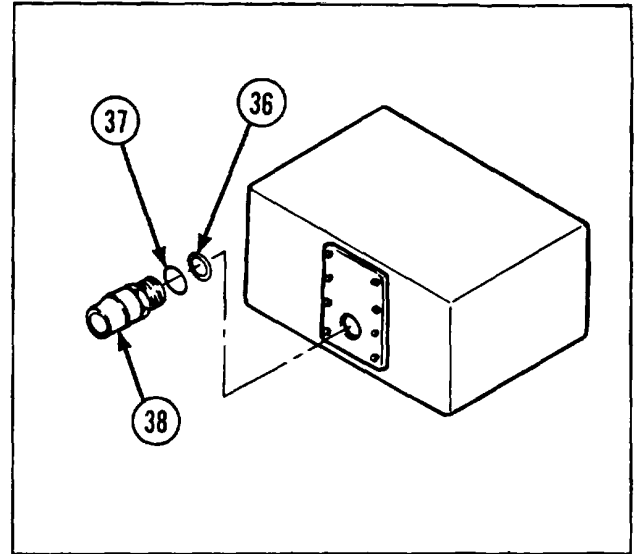
- 16 Install cleaner basket mounting bracket (32), two new lockwashers (33), and two hexagon head capscrews (34) on hull.
- 17 Install battery tray. Refer to page 2-624.
- 18 Install batteries. Refer to page 2-624.
- 19 Close battery access door (35).



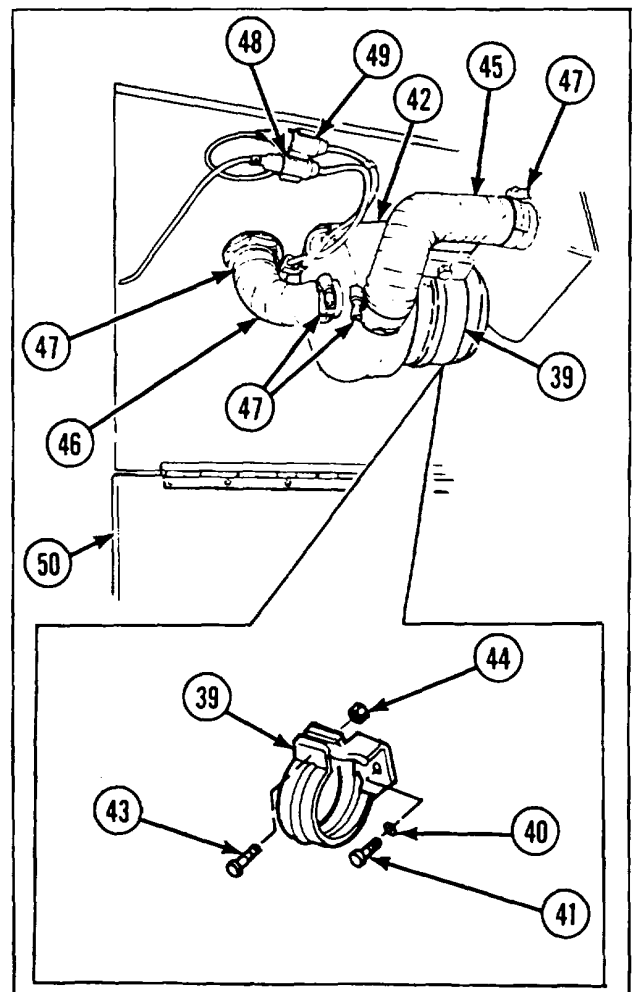
2-46. MAINTENANCE OF ENGINE AIR CLEANER SYSTEM (CONT).

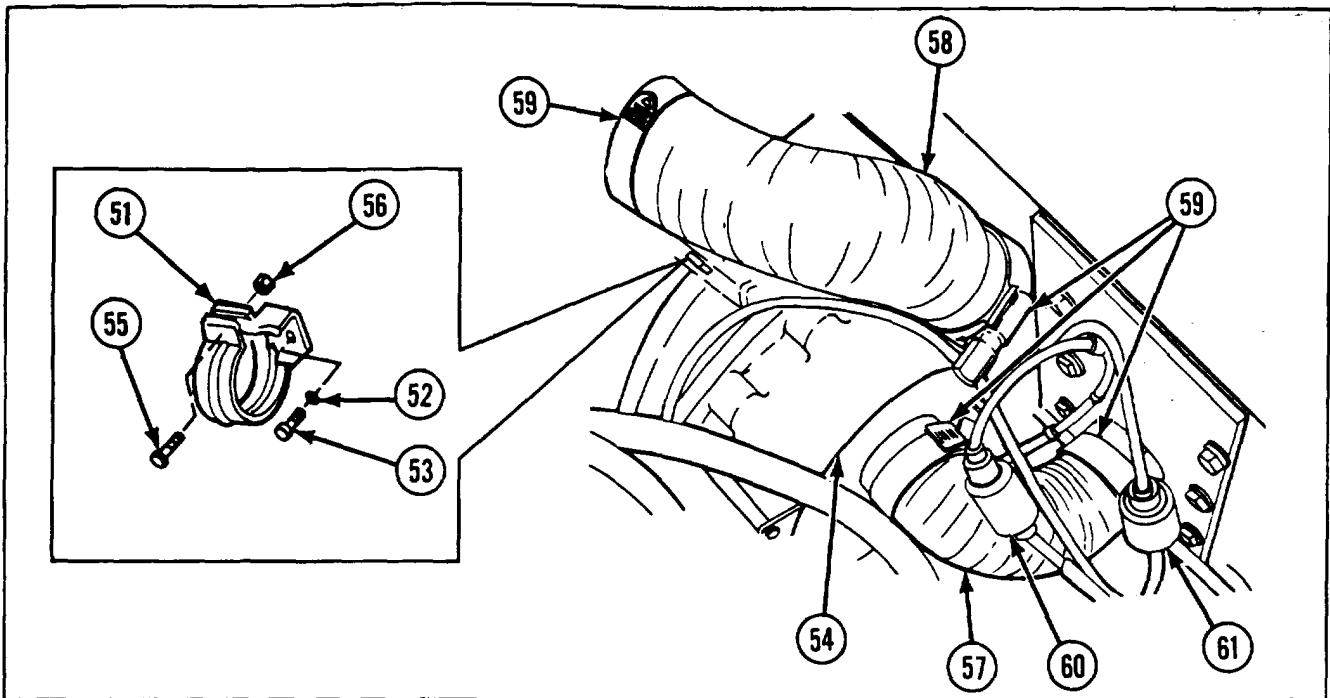
INSTALLATION (CONT)

- 20 Install flat washer (36), new forward air separator outlet adapter gasket (37), and hose to boss straight adapter (38).



- 21 Install air cleaner blower clamp bracket (39), two new lockwashers (40), and two hexagon head capscrews (41).
- 22 Install forward air cleaner centrifugal fan (42) in air cleaner blower clamp bracket (39).
- 23 Tighten hexagon head capscrew (43) and new self-locking nut (44) until forward air cleaner centrifugal fan (42) is secure.
- 24 Install blower outlet air duct hose (45) and blower inlet air duct (46).
- 25 Tighten four hose clamps (47).
- 26 Connect connectors (48 and 49).
- 27 Close blower access door (50).

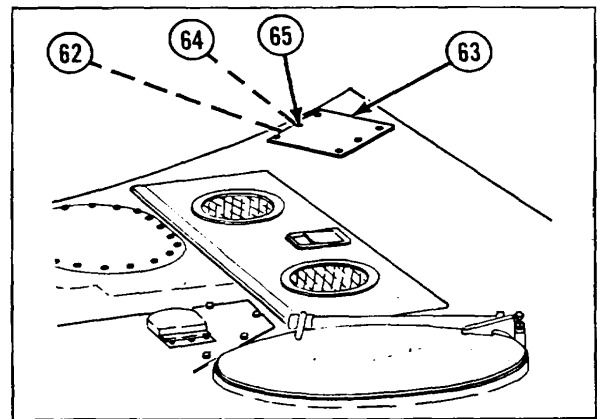




NOTE

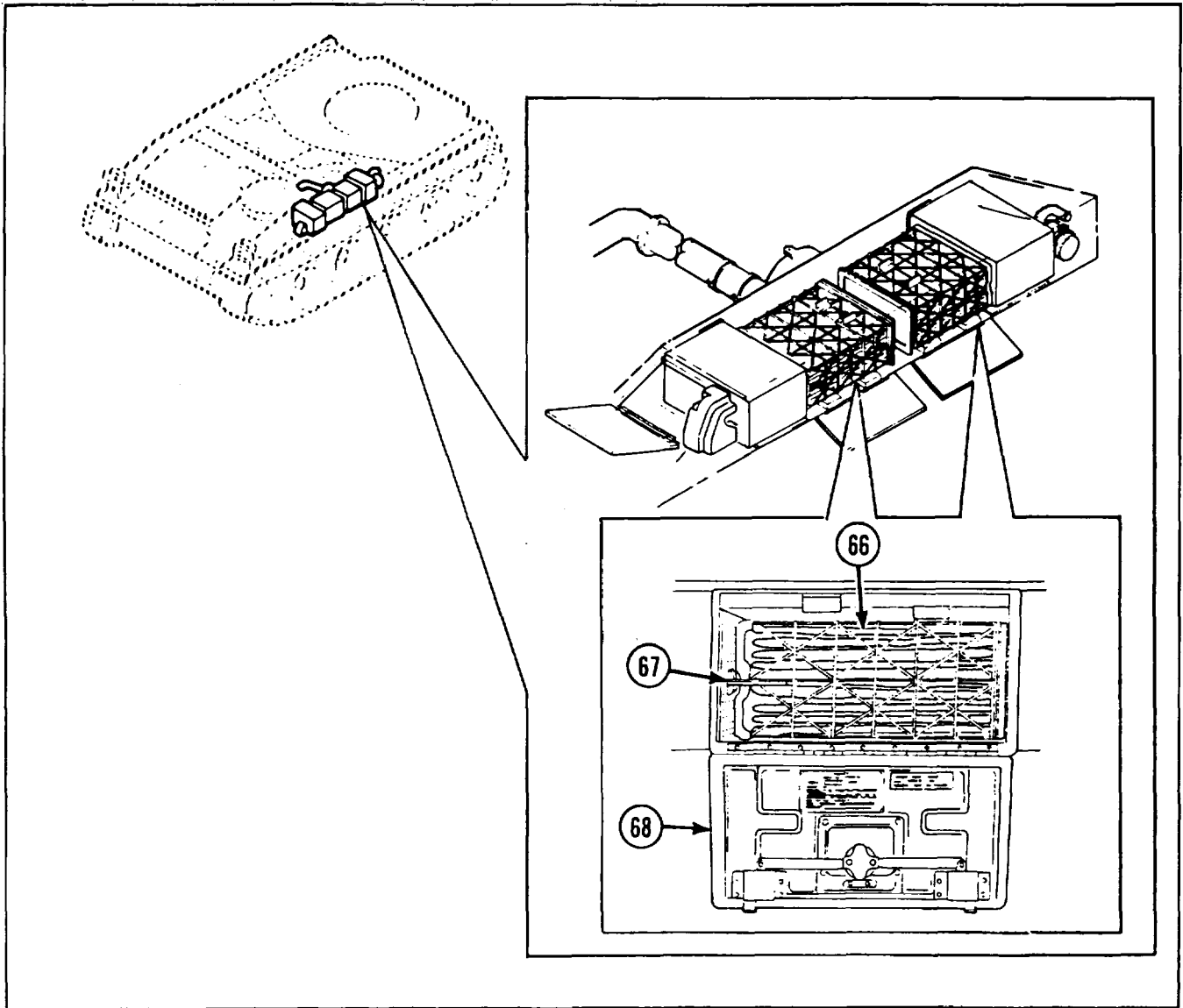
Steps 28 thru 37 apply to the aft air cleaner centrifugal fan.

- 28 Install air cleaner blower clamp bracket (51), two new lockwashers (52), and two hexagon head capscrews (53).
- 29 Install aft air cleaner centrifugal fan (54) in air cleaner blower clamp bracket (51).
- 30 Tighten hexagon head capscrew (55) and new self-locking nut (56) until aft air cleaner centrifugal fan (54) is secure.
- 31 Install blower outlet air duct hose (57) and blower inlet air dust hose (58).
- 32 Tighten four hose clamps (59).
- 33 Connect connectors (60 and 61).
- 34 Install new gasket (62) and access cow (63).
- 35 Install six new lockwashers (64) and six hexagon head capscrews (65).



2-46. MAINTENANCE OF ENGINE AIR CLEANER SYSTEM (CONT).

INSTALLATION (CONT)



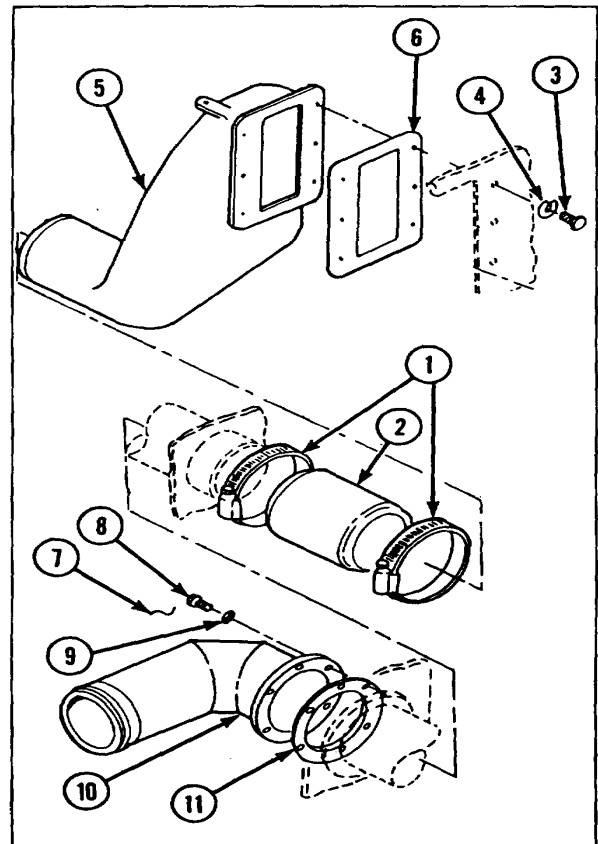
- 37 Set MASTER and INST switch to ON.
- 38 Install two intake filter elements (66) to compartments.
- 39 Set retainer assembly levers (67) to horizontal position.
- 40 Close two air cleaner access doors (68).

2-47. MAINTENANCE OF ENGINE INTAKE AIR DUCTS.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP:			
Tools and Special Tools Plier wire twister (item 29, appx G)		References TM 9-2350-304-24P-1	
Materials/Parts Air separator inlet gasket Elbow duct gasket Lockwasher (6) Lockwire (item 22, appx C)		Equipment Conditions 2-624 Batteries and battery tray removed 2-887 Engine deck assembly removed 2-430 Air cleaner baskets removed	

REMOVAL

- 1 Remove two hose clamps (1) and air d hose (2).
- 2 Remove six hexagon head capscrews and six lockwashers (4).
- 3 Remove air intake duct (5) and air separator inlet gasket (6).
- 4 Remove lockwire (7), six hexagon head capscrews (8), and six flat washers (9)
- 5 Remove duct elbow (10) and duct elbow gasket (11).

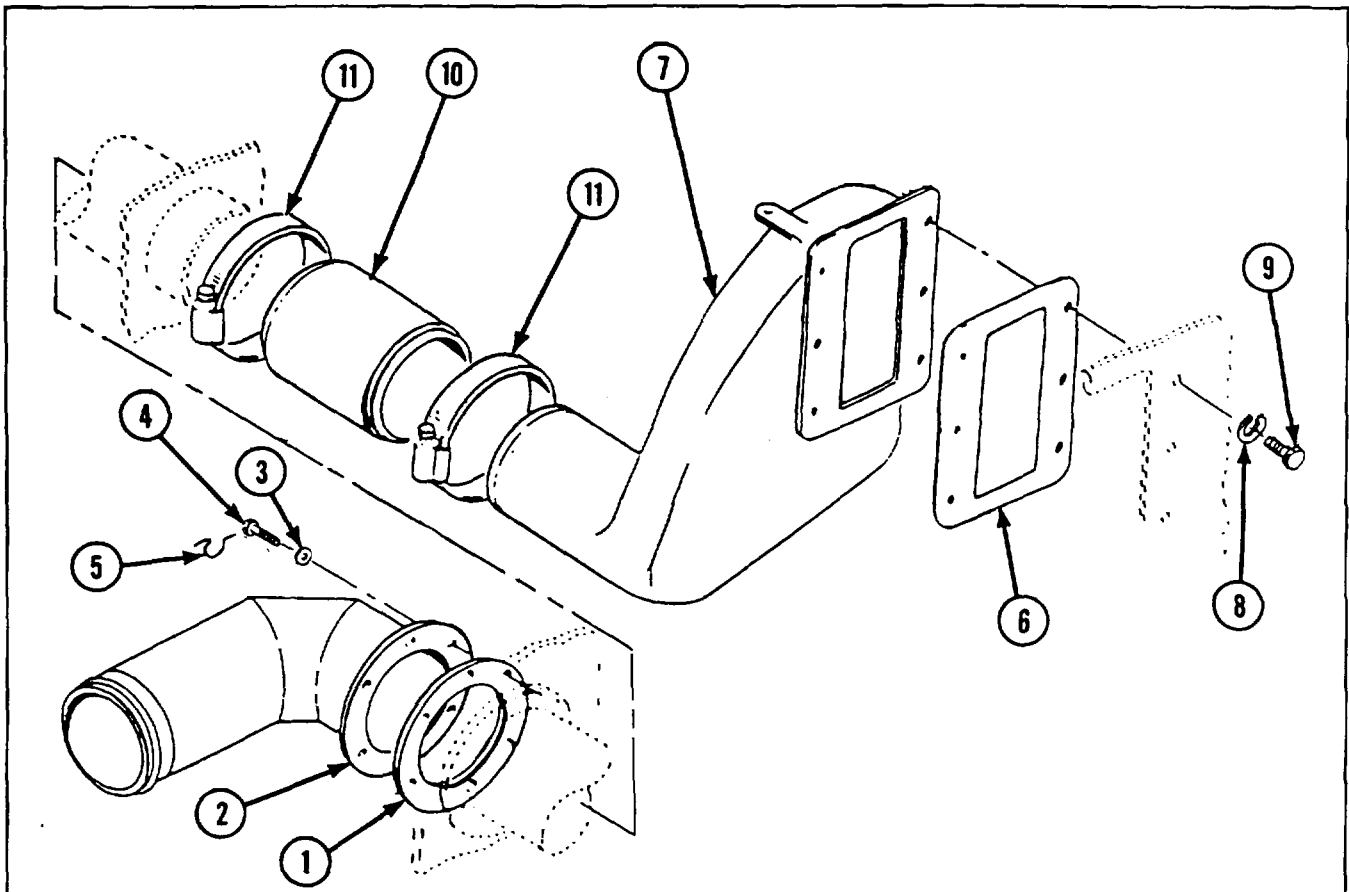


2-47. MAINTENANCE OF ENGINE INTAKE AIR DUCTS (CONT).

INSPECTION/REPAIR I

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION



- 1 Install new duct elbow gasket (1) and duct elbow (2).
- 2 Install six flat washers (3), six hexagon head capscrews (4), and new lockwire (5).
- 3 Install new air separator inlet gasket (6) and air intake duct (7).
- 4 Install six new lockwashers (8) and six hexagon head capscrews (9).
- 5 Install air duct hose (10) and two hose clamps (11).

2-48. MAINTENANCE OF TURBOCHARGER AIR INTAKE FILTER AND RELATED ITEMS (ENGINE MODEL 7083-7398).

This task covers: a. *Removal* b. *Inspection/Repair* c. *Installation*

INITIAL SETUP

Tools and Special Tools

Plier wire twister (item 29, appx G)

References

TM 9-2350-304-24P-1

Materials/Parts

Air inlet adapter gasket
Lockwire (item 25, appx C)

Equipment Conditions

2-887 Engine deck lid assembly removed

REMOVAL

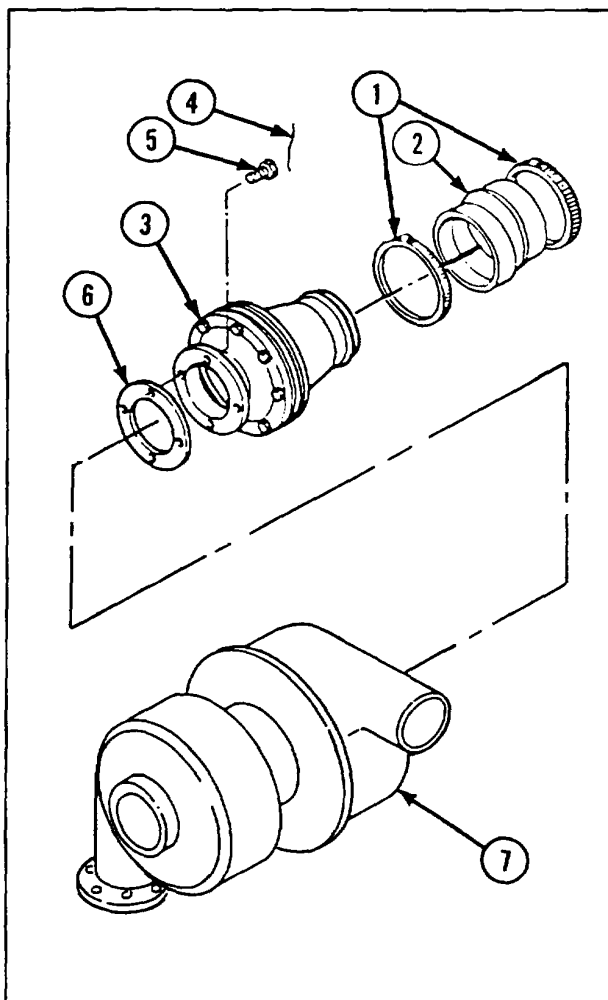
- 1 Loosen two hose clamps (1) on air duct hose (2). Remove air duct hose and two hose clamps from intake filter element (3).
- 2 Remove lockwire (4) and four hexagon head capscrews (5).
- 3 Remove intake filter element (3) and air inlet adapter gasket (6) from turbocharger (7).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized part (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install new air inlet adapter gasket (6) and intake filter element (3) on turbocharger (7).
- 2 Install four hexagon head capscrews (5) and new lockwire (4).
- 3 Install two hose clamps (1) and air duct hose (2) on intake filter element (3). Tighten hose clamps (1) on air duct hose



2-49. MAINTENANCE OF TURBOCHARGER AIR INTAKE SCREEN AND RELATED ITEMS (ENGINE MODEL 7083-7395).

This task covers:	a. <i>Removal</i>	d. <i>Reassembly</i>
	b. <i>Disassembly</i>	e. <i>Installation</i>
	c. <i>Inspection/Repair</i>	

INITIAL SETUP

Tools and Special Tools

Automotive maintenance and repair shop equipment: organizational maintenance, common no. 2 (less power) (item 84, appx B)
Torque wrench (0 to 170 ft-lb)

References

TM 9-2350-30424P-1

Equipment Conditions

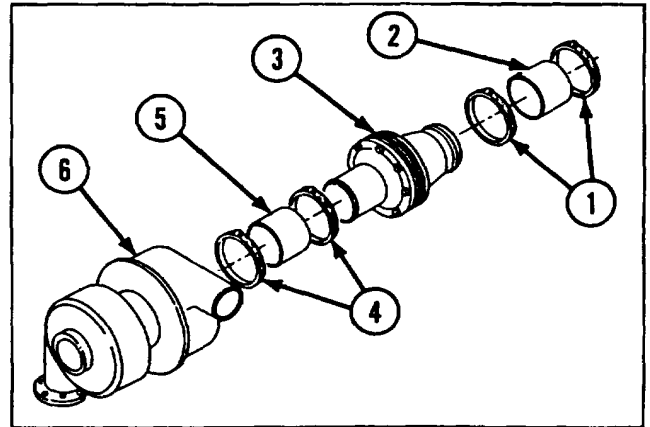
2-887 Engine deck assembly removed

Materials/Parts

Gasket (2)
Lockwasher (8)
Turbocharger air intake screen

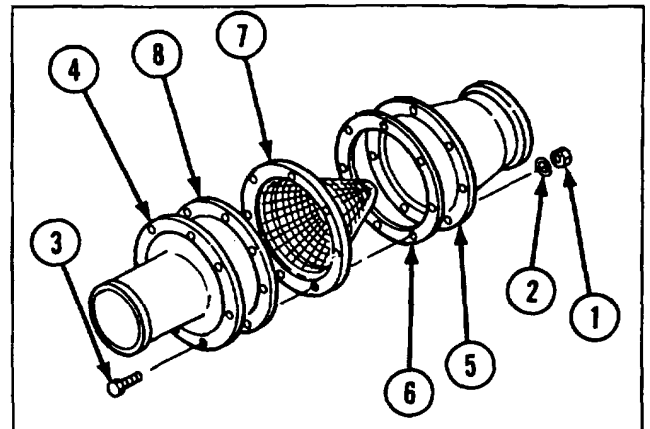
REMOVAL

- 1 Loosen two hose clamps (1) on air duct inlet hose (2). Remove air duct inlet hose (2) and two hose clamps (1) from air screen assembly (3).
- 2 Loosen two hose clamps (4) and slide back air duct inlet hose (5).
- 3 Remove air screen assembly (3), air duct inlet hose (5), and two hose clamps (4) from turbocharger (6).



DISASSEMBLY

- 1 Remove eight hexagon plain nuts (1), eight lockwashers (2), and eight hexagon head capscrews (3). Separate screw ca, (4) from hose connection case (5).
- 2 Remove hose connection case (5), gasket (6), and turbocharger air intake screen (7)
- 3 Remove gasket (8) and screw case (4).

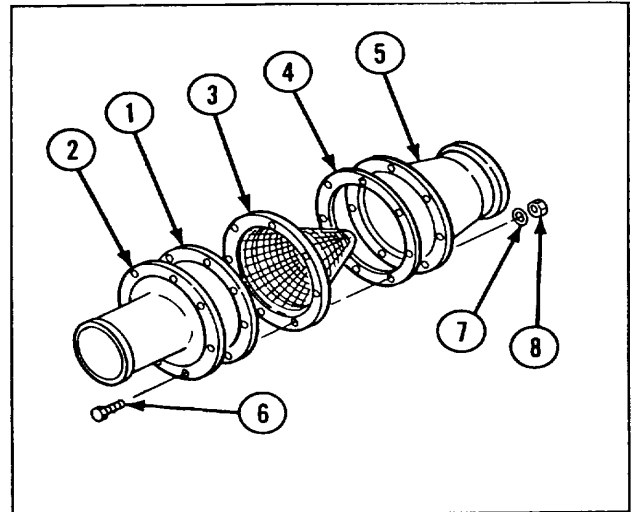


INSPECTION/REPAIR

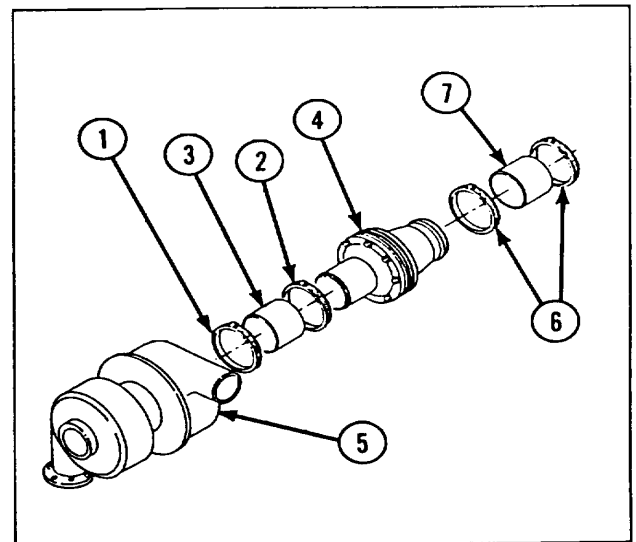
- 1 Inspect for broken, damaged, or missing parts.
- 2 If hose connection case is broken, damaged, or missing, repair is by replacement of next higher assembly.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

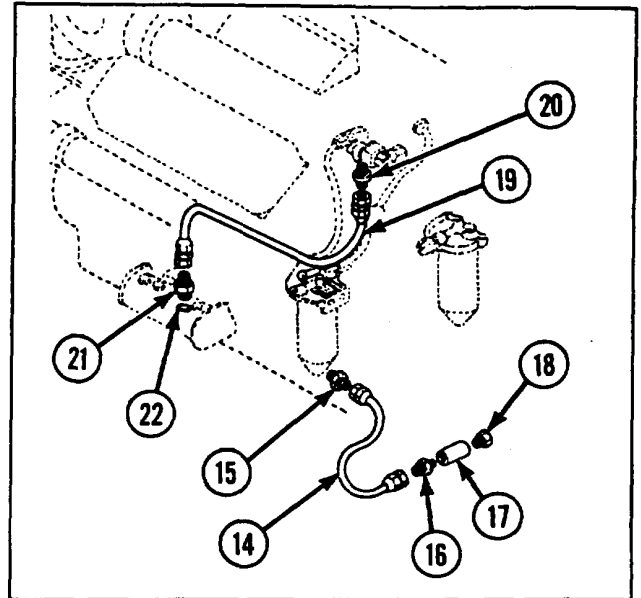
- 1 Install new gasket (1) to screw case (2).
- 2 Install new turbocharger air intake screen (3), new gasket (4), and hose connection case (5).
- 3 Install screw case (2) and hose connection case (5) together. Install eight hexagon head capscrews (6), eight new lockwashers (7), and eight hexagon plain nuts (8).
- 4 Torque hexagon plain nuts (8) to 9.0 to 10.0 ft-lb (12.2 to 13.6 N-m) (dry) or 6.2 to 7.2 ft-lb (8.4 to 9.8 N-m) (lubed).

**INSTALLATION**

- 1 Install two hose clamps (1 and 2) on air duct inlet hose (3). Install air duct inlet hose (3) and tighten one hose clamp (1).
- 2 Install air screen assembly (4) on turbocharger (5) and tighten hose clamp (2).
- 3 Install two hose clamps (6) and air duct inlet hose (7) on air screen assembly (3). Tighten two hose clamps (6) on air duct inlet hose (7).



- 8 Disconnect and remove hose assembly (14).
- 9 Remove two straight adapters (15 and 1 and assembled parts).
- 10 Remove straight adapter (16) from pipe coupling (17).
- 11 Remove drain cock (18) from pipe coupling (17).
- 12 Disconnect hose assembly (19) at both ends and remove.
- 13 Remove straight adapter (20), tube nipple (21), and preformed packing (22).

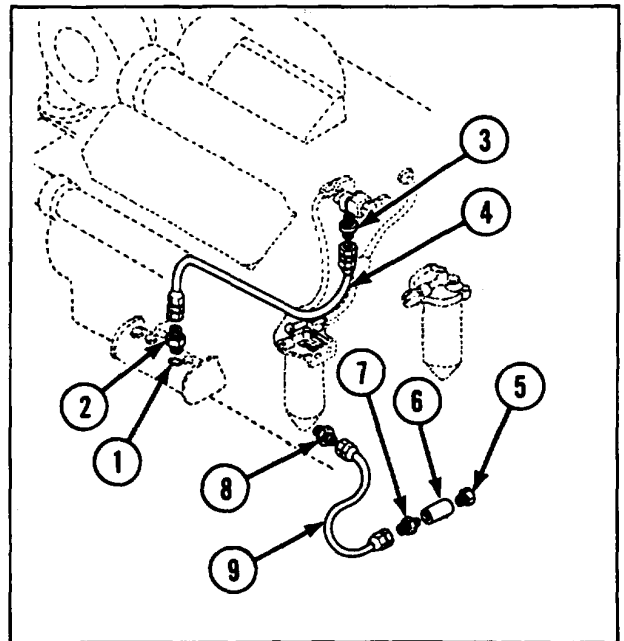


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

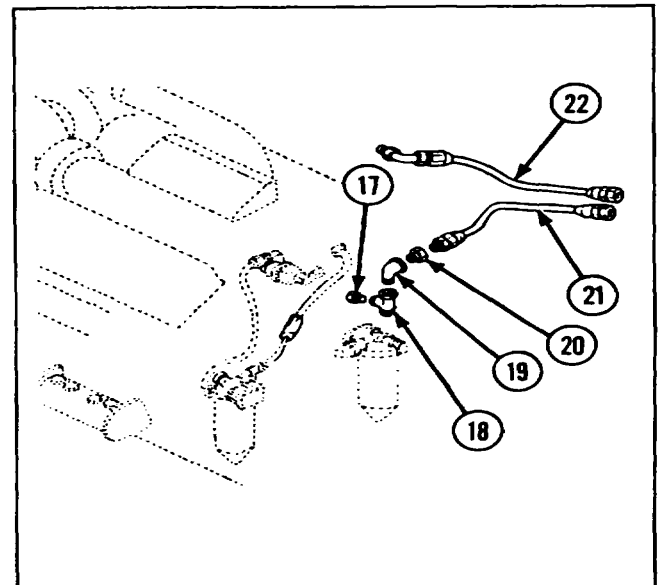
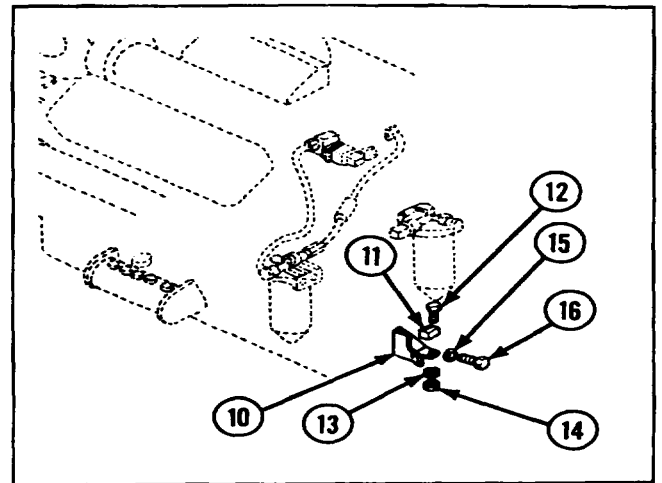
- 1 Install new preformed packing (1), tube nipple (2), and straight adapter (3).
- 2 Install fuel pump to reservoir drain hose assembly (4) and connect at both ends.
- 3 Install drain cock (5) in pipe coupling (6).
- 4 Install straight adapter (7) in pipe coupling (6).
- 5 Install two straight adapters (7 and 8) and assembled parts.
- 6 Install and connect fuel filter drain hose assembly (9).



2-50. MAINTENANCE OF FUEL LINES AND FITTINGS (LOW PRESSURE) COUPLINGS TO ENGINE (CONT).

INSTALLATION (CONT)

- 7 Install fuel filter bracket (10). Install spring tension clip (11), hexagon head capscrew (12), new lockwasher (13), and hexagon plain nut (14).
- 8 Install two new lockwashers (15) and two hexagon head capscrews (16) in fuel filter bracket (10).
- 9 If removed, install pipe plug (17). Install pipe tee (18).
- 10 Install pipe elbow (19) in pipe tee (18).
- 11 Install straight adapter (20) in pipe elbow (19).
- 12 Install fuel supply to filter hose assembly (21) and connect at both ends.
- 13 Install fuel return hose assembly (22) and connect at both ends.



2-51. MAINTENANCE OF FUEL LINES AND FITTINGS (LOW PRESSURE) COUPLINGS TO FUEL CELLS.

This task covers:

a. *Removal*

b. *Inspection/Repair*

c. *Installation*

INITIAL SETUP

Materials/Parts

- Fuel filler neck gasket
- Gasket
- Lockwasher (6)
- Lockwasher (8)
- Preformed packing
- Preformed packing
- Tube fitting locknut
- Tube fitting locknut

References

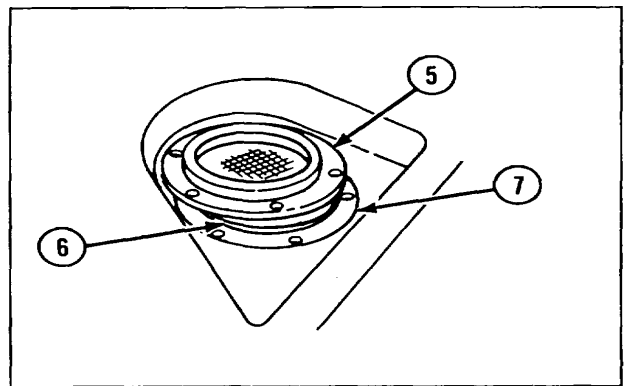
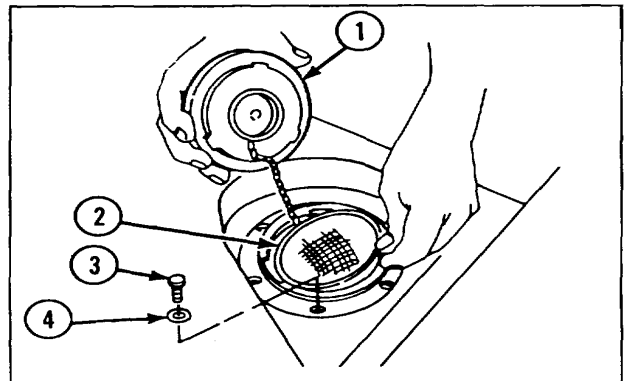
- TM 9-2350-304-10
- TM 9-2350-304-24P-1

Equipment Conditions

- 2-380 Powerplant removed

REMOVAL

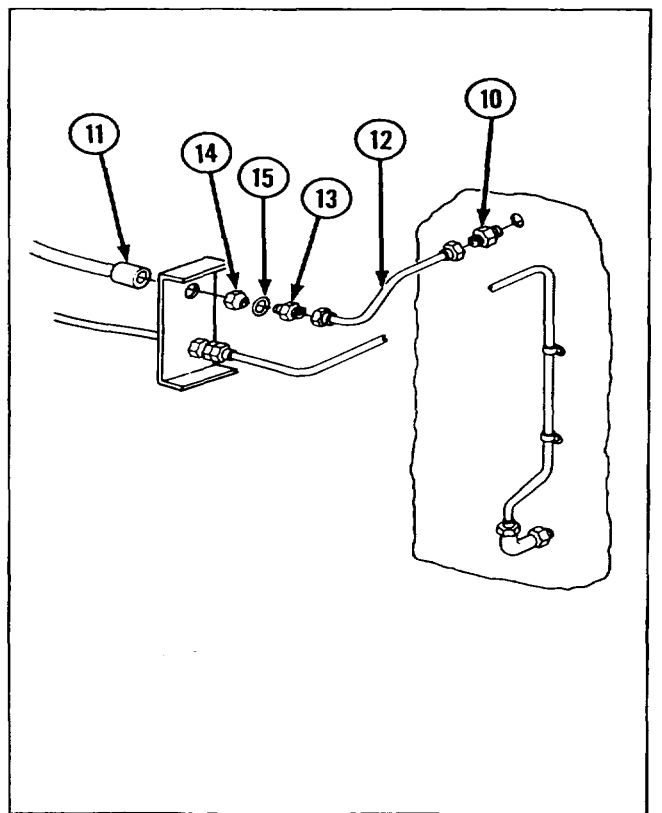
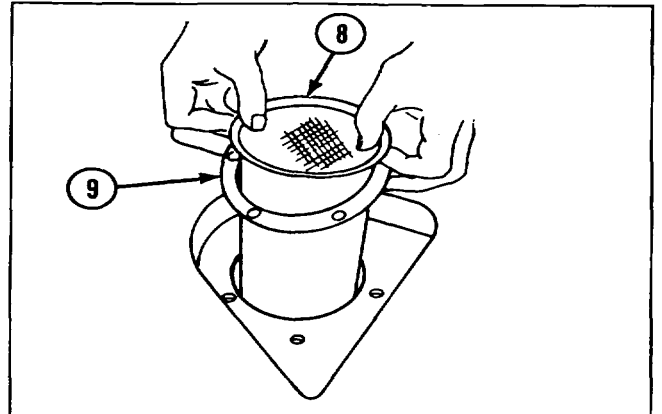
- 1 Remove fuel filler neck cap and chain I and fuel filler neck ring (2).
- 2 Remove six machine screws (3) and six lockwashers (4).
- 3 Remove fuel tank filler ring (5), fuel filler neck gasket (6), and gasket (7).

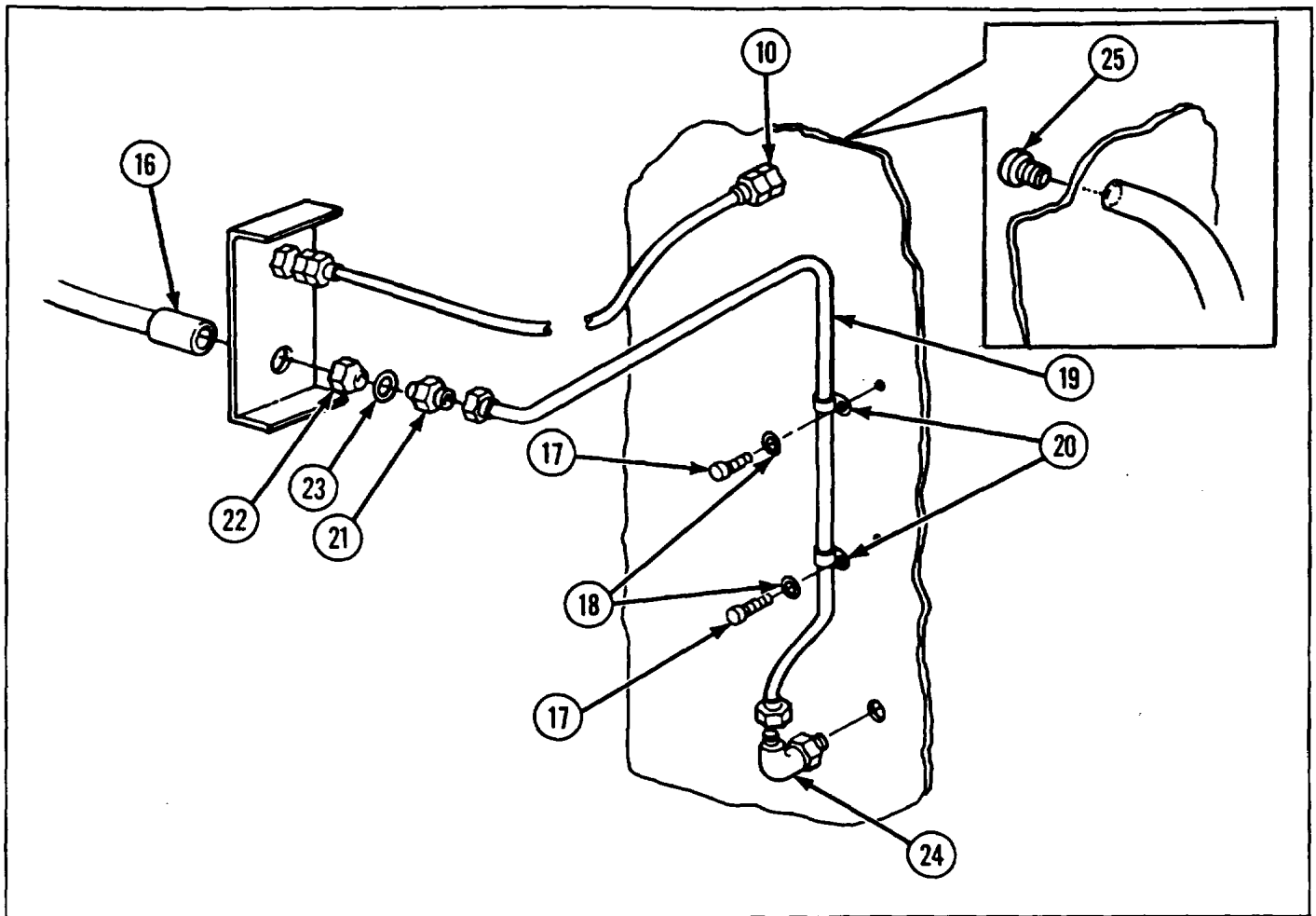


2-51. MAINTENANCE OF FUEL LINES AND LINES AND FITTINGS (LOW PRESSURE) COUPLINGS TO FUEL CELLS (CONT).

REMOVAL (CONT)

- 4 Remove strainer element (8) and gasket (9).
- 5 Drain fuel cells to level below pipe straight adapter (10).
- 6 Disconnect coupling assembly (11).
- 7 Disconnect fuel return metal tube assembly (12) at both ends and remove.
- 8 Remove tube nipple (13), tube fitting locknut (14), preformed packing (15), and pipe straight adapter (10).





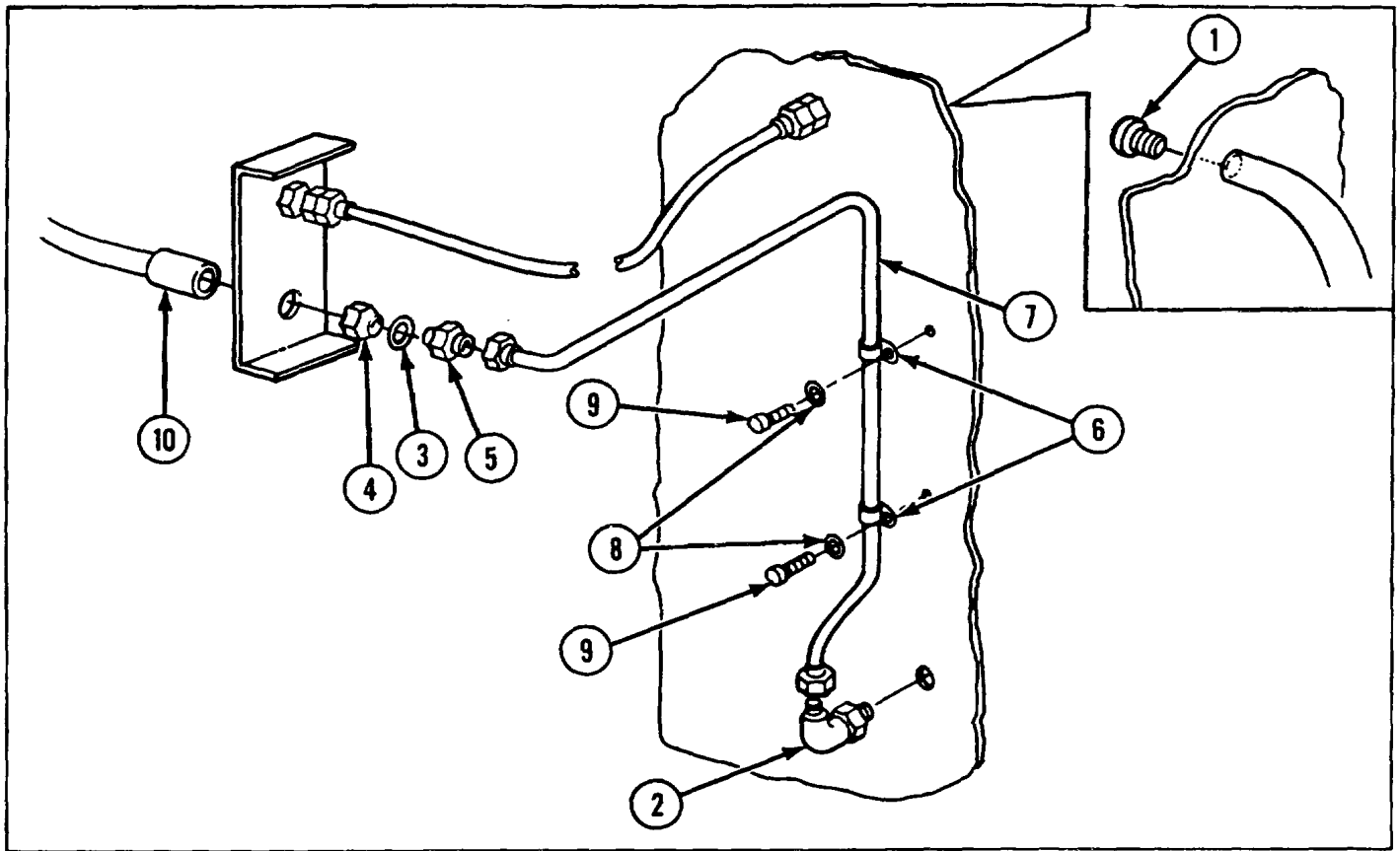
- 9 Drain fuel cells to level below pipe straight adapter (10).
- 10 Disconnect coupling assembly (16).
- 11 Remove two hexagon head capscrews (17) and two lockwashers (18).
- 12 Disconnect and remove fuel supply metal tube assembly (19) and two loop clamps (20).
- 13 Remove tube nipple (21), tube fitting locknut (22), preformed packing (23), and pipe to tube elbow (24).
- 14 If damaged, remove pipe plug (25).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

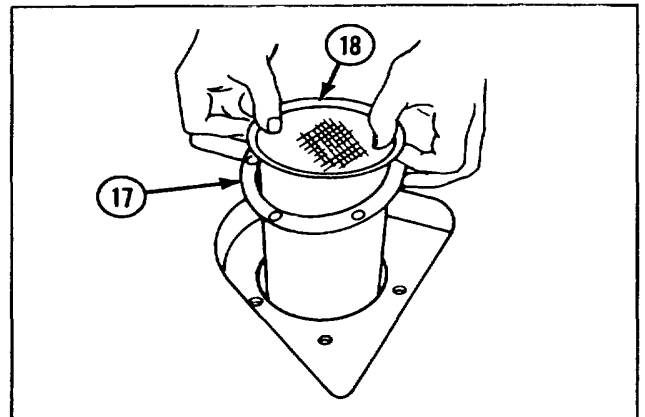
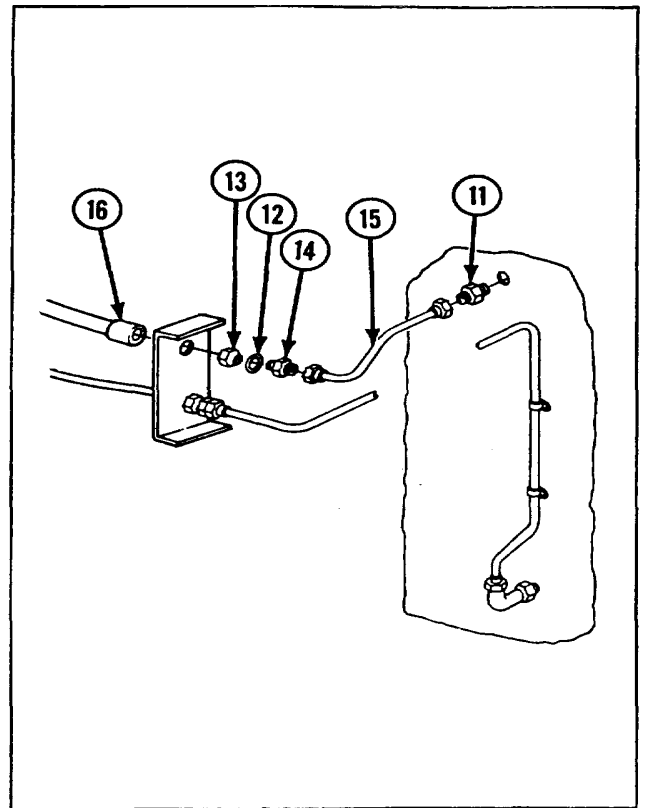
2-51. MAINTENANCE OF FUEL LINES AND FITTINGS (LOW PRESSURE) COUPLINGS TO FUEL CELLS (CONT).

INSTALLATION



- 1 If removed, install pipe plug (1).
- 2 Install pipe to tube elbow (2), new preformed packing (3), new tube fitting locknut (4), and tube nipple (5).
- 3 Install two loop clamps (6) on fuel supply metal tube assembly (7). Install and connect fuel supply metal tube assembly.
- 4 Install two new lockwashers (8) and two hexagon head capscrews (9).
- 5 Connect coupling assembly (10).

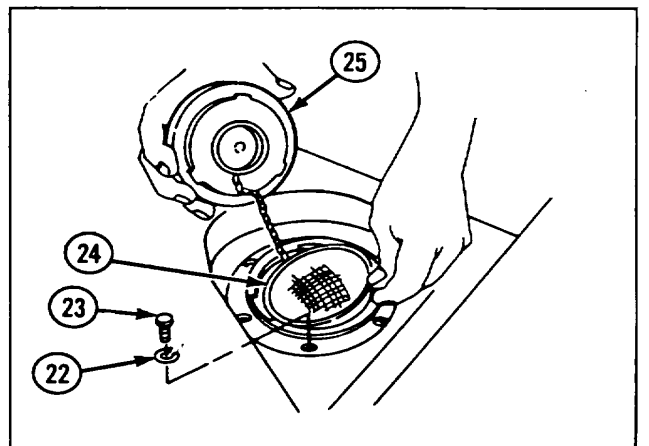
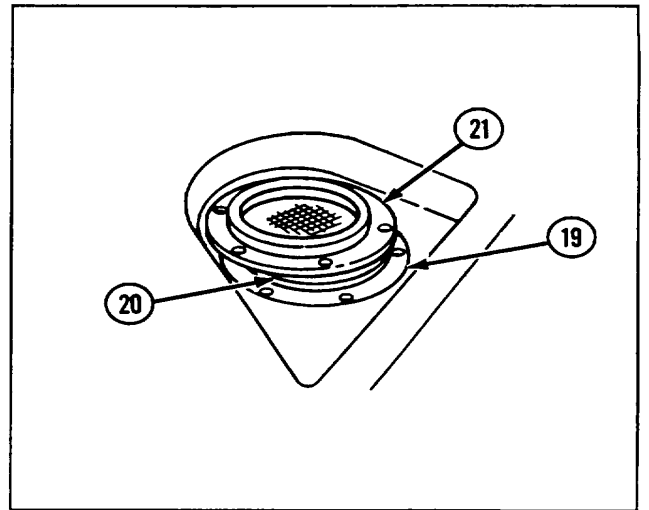
- 6 Install straight pipe adapter (11), new preformed packing (12), new tube fitting locknut (13), and tube nipple (14).
- 7 Install fuel return metal tube assembly (15), and connect fuel return metal tube assembly (15) at both ends.
- 8 Connect coupling assembly (16).
- 9 Fill fuel cells, and purge and prime fuel system. Refer to TM 9-2350-304-10.
- 10 Check for leaks. If leaks exist, ensure all parts have been installed correctly. If leaks still exist, inspect for defective parts.
- 11 Install new gasket (17) and strainer element (18).



2-51. MAINTENANCE OF FUEL LINES AND FITTINGS (LOW PRESSURE) COUPLINGS TO FUEL CELLS (CONT).

INSTALLATION (CONT)

- 12 Install new gasket (19), new fuel filler neck gasket (20), and fuel tank filler ring (21).
- 13 Install six new lockwashers (22) and six machine screws (23).
- 14 Install fuel filler neck ring (24).
- 15 Install fuel filler neck cap and chain (25).



2-52. MAINTENANCE OF PRIMARY FUEL FILTER.

This task covers:

- | | |
|-----------------------------|------------------------|
| a. <i>Removal</i> | d. <i>Reassembly</i> |
| b. <i>Disassembly</i> | e. <i>Installation</i> |
| c. <i>Inspection/Repair</i> | |

INITIAL SETUP

Materials/Parts

- Container
- Dry cleaning solvent (item 15, appx C)
- Filter element

- Gasket
- Gasket
- Lockwasher (4)

References

- TM 9-2350-304-10
- TM 9-2815-202-24P

Equipment Conditions

- 2-887 Engine deck assembly removed
- 2-875 Fuel filter access door in driver's compartment removed

General Safety Instructions

WARNING

Do not drain water and fuel from primary fuel filter into engine compartment. A fire hazard may result and cause serious injury to personnel.

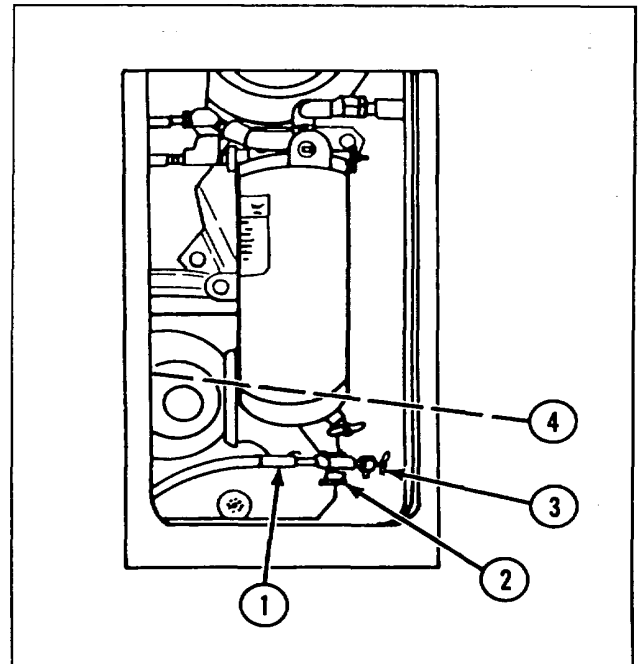
REMOVAL

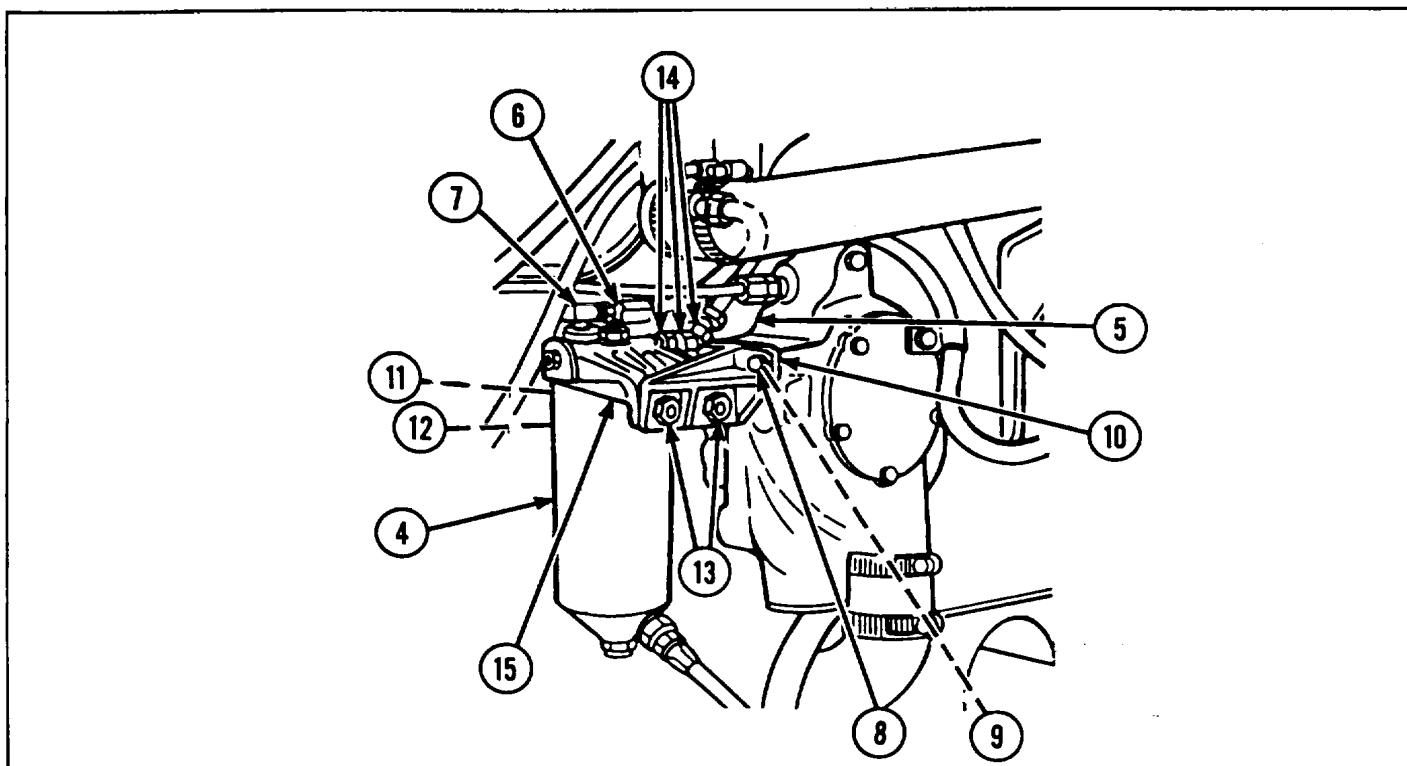
- 1 Remove fuel filter drain nonmetallic hose assembly (1) from spring tension clip (2).

WARNING

Do not drain water and fuel from primary fuel filter into engine compartment. A fire hazard may result and cause serious injury to personnel.

- 2 Place end of fuel filter drain nonmetallic hose assembly (1) over suitable container.
- 3 Open drain cock (3) and drain fluid filter (4). Close drain cock.

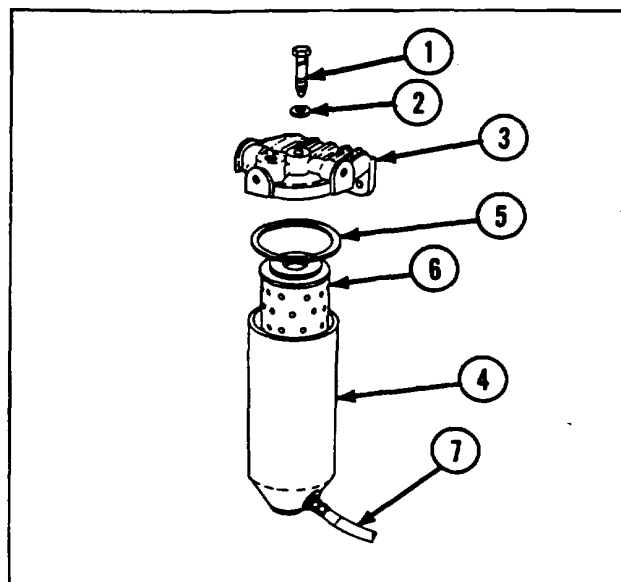




- 4 Disconnect fuel filter to cylinder head nonmetallic hose assembly (5).
- 5 Disconnect fuel pump to fuel filter nonmetallic hose assembly (6).
- 6 Disconnect fuel filter to solenoid valve nonmetallic hose assembly (7).
- 7 Remove two hexagon head capscrews (8) and two lockwashers (9) from filter mounting bracket (10).
- 8 Remove filter mounting bracket (10) with fluid filter (4), and fuel filter drain nonmetallic hose assembly (1).
- 9 Remove fluid filter (4) from filter mounting bracket (10) by removing two hexagon plain nuts (11), two lockwashers (12), and two hexagon head capscrews (13).
- 10 Remove three hose elbows (14) from fuel filter head (15).

DISASSEMBLY

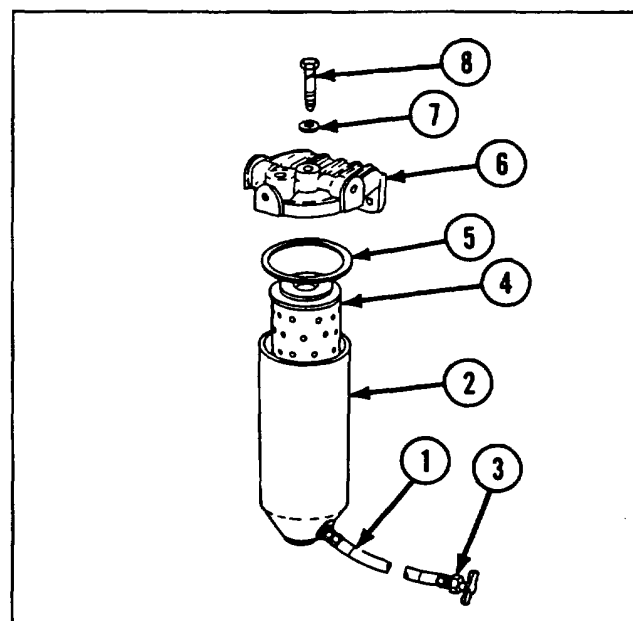
- 1 Remove shoulder bolt (1) and gasket (2) from fuel filter head (3).
- 2 Remove fluid filter body (4).
- 3 Remove and discard gasket (5) and filter element (6) from fluid filter body (4).
- 4 Remove fluid filter drain non-metallic host assembly (7) from fluid filter body (4).

**INSPECTION/REPAIR**

- 1 Check for broken, damaged, or missing parts.
- 2 Clean fluid filter body and fluid filter head with dry cleaning solvent.
- 3 Dry parts with low-pressure compressed air.
- 4 Repair is by replacement of authorized parts (TM 9-2815-202-24P).

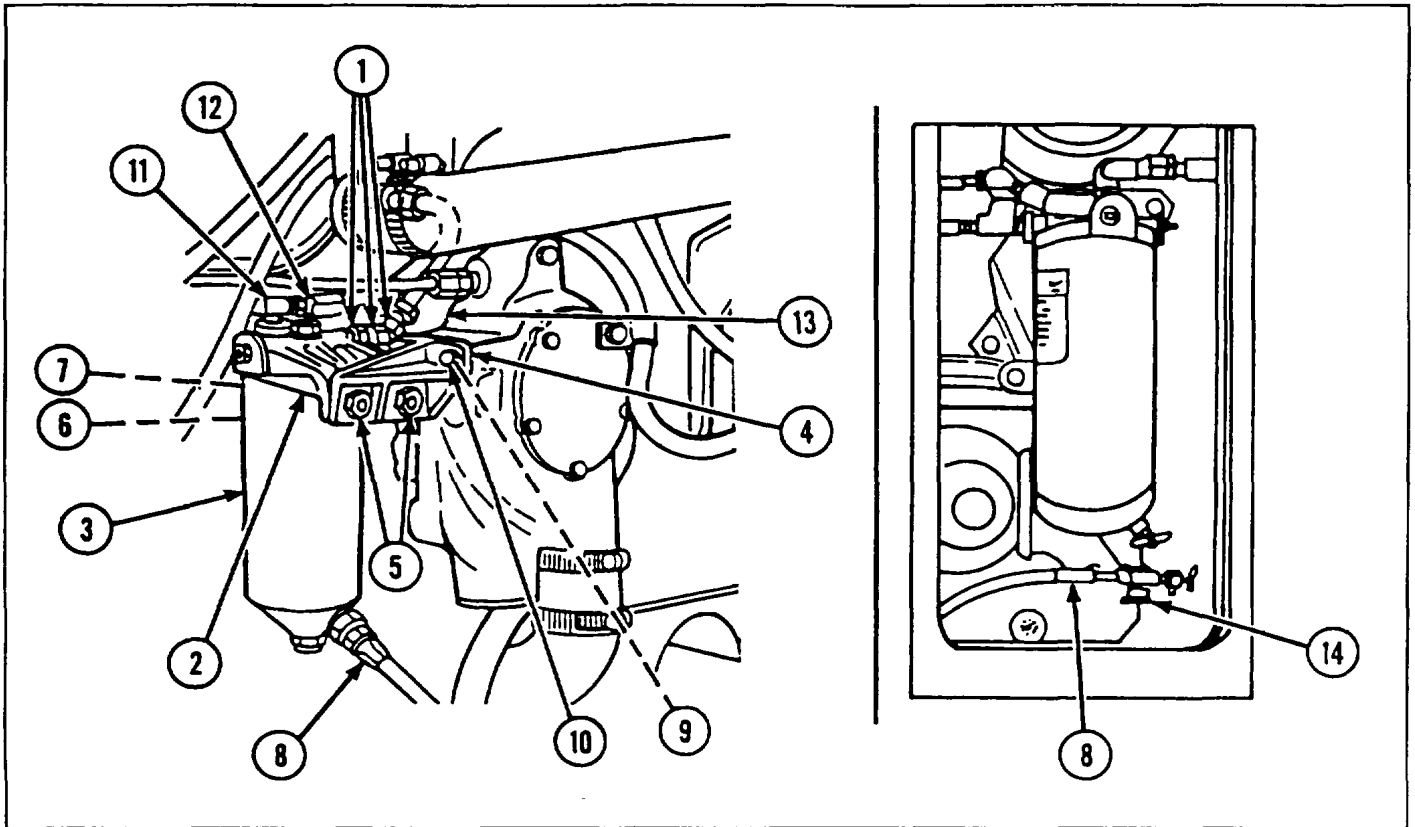
REASSEMBLY

- 1 Install fuel filter drain nonmetallic hose assembly (1) on fluid filter body (2).
- 2 Close drain cock (3).
- 3 Fill fluid filter body (2) with fuel to within approximately 1 inch from top.
- 4 Install new filter element (4) in fluid filter body (2).
- 5 Install new gasket (5) in fluid filter head (6).
- 6 Install fluid filter body (2) on fluid filter head (6) using new gasket (7) and shoulder bolt (8).



2-52. MAINTENANCE OF PRIMARY FUEL FILTER (CONT).

INSTALLATION



- 1 Install three hose elbows (1) on fluid head (2).
- 2 Install fluid filter (3) on filter mounting bracket (4) and secure with two hexagon head capscrews (5), two new lockwashers (6), and two hexagon plain nuts (7).
- 3 Install filter mounting bracket (4) with fluid filter (3) and fuel filter drain, nonmetallic hose assembly (8) and secure with two new lockwashers (9) and two hexagon head capscrews (10).
- 4 Connect fuel filter to solenoid valve nonmetallic hose assembly (11).
- 5 Connect fuel pump to fuel filter nonmetallic hose assembly (12).
- 6 Connect fuel filter to cylinder head nonmetallic hose assembly (13).
- 7 Install fuel filter drain nonmetallic hose assembly (8) to spring tension clip (14).
- 8 Purge and prime fuel system. Refer to TM 9-2350-304-10.
- 9 Check for and repair any leaks.

2-53. MAINTENANCE OF SECONDARY FUEL FILTER.

This task covers:

- | | |
|-----------------------------|------------------------|
| a. <i>Removal</i> | d. <i>Reassembly</i> |
| b. <i>Disassembly</i> | e. <i>Installation</i> |
| c. <i>Inspection/Repair</i> | |

INITIAL SETUP

Materials/Parts

- Container
- Dry cleaning solvent (item 15, appx C)
- Filter element

- Gasket
- Gasket
- Lockwasher (2)
- Lockwasher (2)

References

- TM 9-2350-304-10
- TM 9-2815-202-24P

Equipment Conditions

- 2-887 Engine deck assembly removed
- 2-875 Fuel filter access door in driver's compartment removed

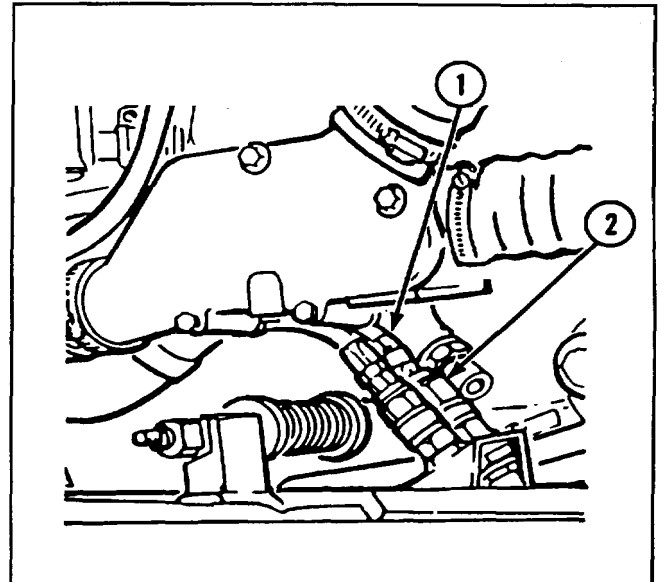
General Safety Instructions

WARNING

Do not drain water and fuel from secondary fuel filter into engine compartment. A fire hazard may result and cause serious injury to personnel.

REMOVAL

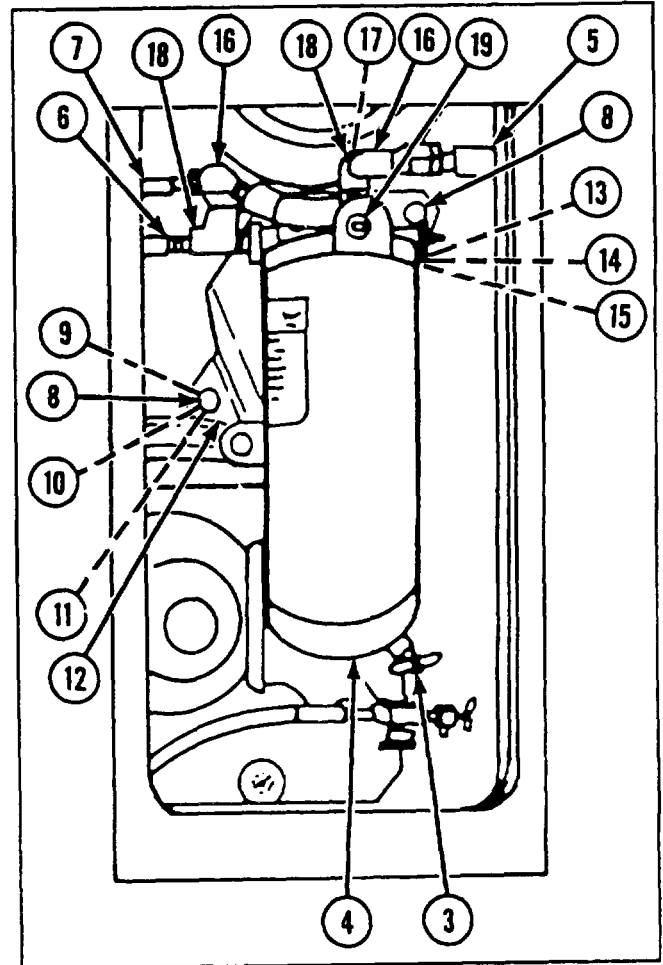
- 1 Disconnect fuel supply to filter hose assembly (1) at quick-disconnect coupling (2) to prevent siphoning fuel from fuel cell.



2-53. MAINTENANCE OF SECONDARY FUEL FILTER (CONT).*REMOVAL (CONT)***WARNING**

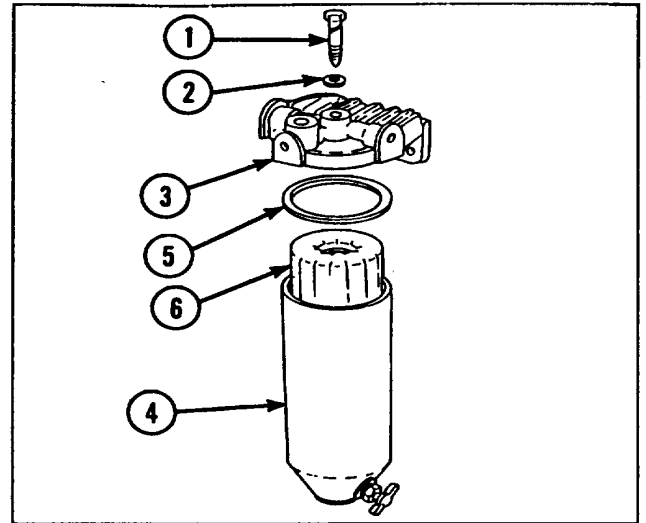
Do not drain water and fuel from secondary fuel filter into engine compartment. A fire hazard may result and cause serious injury to personnel.

- 2 Place suitable container under drain cock (3).
- 3 Open drain cock (3) and drain fluid filter (4). Close drain cock.
- 4 Disconnect fuel supply to filter nonmetall hose assembly (5).
- 5 Disconnect fuel filter to fuel pump nonmetallic hose assembly (6).
- 6 Disconnect air heater pump nonmetallic hose assembly (7).
- 7 Remove three hexagon head capscrews (8), two lockwashers (9), one flat washer (10), and one ring spacer (11) from mounting bracket (12).
- 8 Remove mounting bracket (12) with fluid filter (4).
- 9 Remove fluid filter (4) from mounting bracket (12) by removing two hexagon plain nuts (13), two lockwashers (14), and two hexagon head capscrews (15).
- 10 Remove two hose elbows (16), plug (17) and two tube tees (18) from filter cover (19).



DISASSEMBLY

- 1 Remove fuel filter cover bolt (1) and gasket (2) from filter cover (3).
- 2 Remove filter shell assembly (4).
- 3 Remove and discard gasket (5) and filter element (6) from filter shell assembly (4).



INSPECTION/REPAIR

- 1 Check for broken, damaged, or missing parts.
- 2 Clean filter shell assembly and filter cover with dry cleaning solvent.
- 3 Dry parts with low-pressure compressed air.
- 4 Repair is by replacement of authorized parts (TM 9-2815-202-24P).

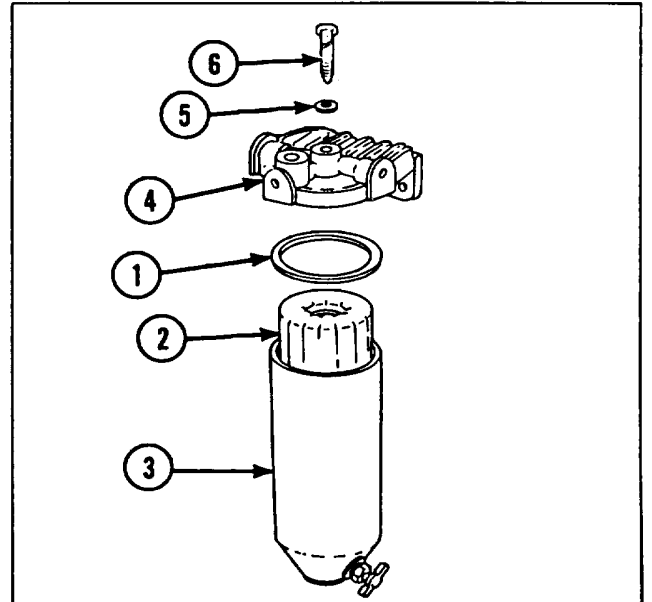
REASSEMBLY

- 1 Install new gasket (1) and new filter element (2) in filter shell assembly (3).

NOTE

Ensure that drain cock is closed.

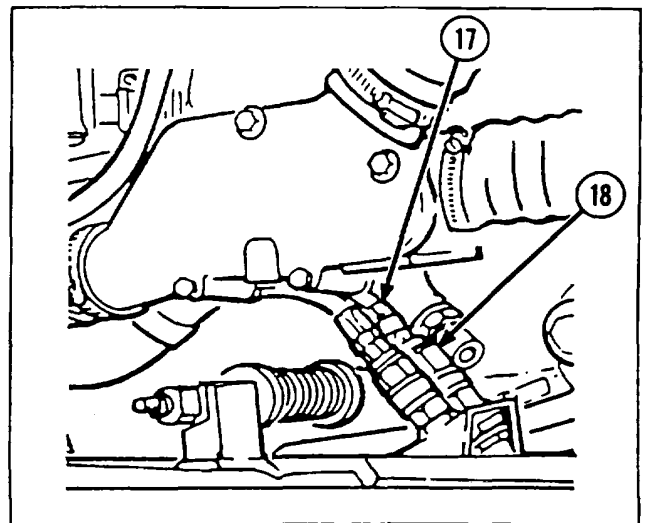
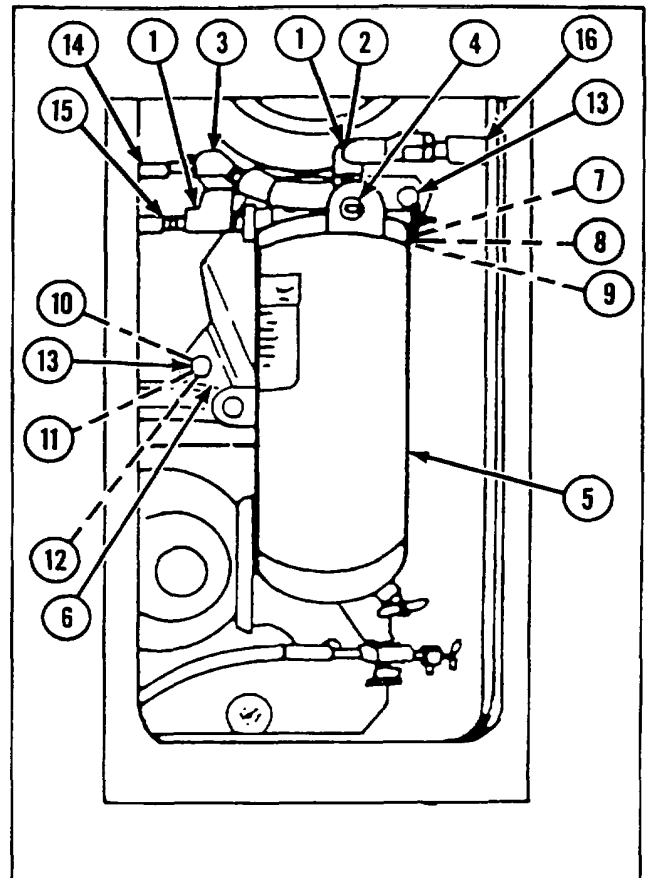
- 2 Fill filter shell assembly (3) approximate 1 inch from top with fuel.
- 3 Install filter shell assembly (3) on filter cover (4) using new gasket (5) and fuel filter cover bolt (6).



2-53. MAINTENANCE OF SECONDARY FUEL FILTER (CONT).

INSTALLATION

- 1 Install two tube tees (1), plug (2), and two hose elbows (3) on filter cover (4).
- 2 Install fluid filter (5) on mounting bracket (6) and secure with two hexagon head capscrews (7), two new lockwashers (8), and two hexagon plain nuts (9).
- 3 Install mounting bracket (6) with fluid filter (5) and secure with one ring spacer (10), one flat washer (11), two new lockwashers (12), and three hexagon head capscrews (13).
- 4 Connect air heater pump nonmetallic hose assembly (14).
- 5 Connect fuel filter to fuel pump nonmetallic hose assembly (15).
- 6 Connect fuel supply to filter nonmetallic hose assembly (16).
- 7 Connect fuel supply to filter hose assembly (17) at quick-disconnect coupling (18).
- 8 Purge and prime fuel system. Refer to TM 9-2350-238-10.
- 9 Check for and repair any leaks.



2-54. MAINTENANCE OF FUEL AND PURGE-AND-PRIME LINES AND FITTINGS (ENGINE MODEL 7083-7398).

This task covers:

- | | |
|-----------------------------|------------------------|
| a. <i>Removal</i> | c. <i>Installation</i> |
| b. <i>Inspection/Repair</i> | d. <i>Testing</i> |

INITIAL SETUP

Materials/Parts

- Lockwasher (2)
- Preformed packing (4)

References

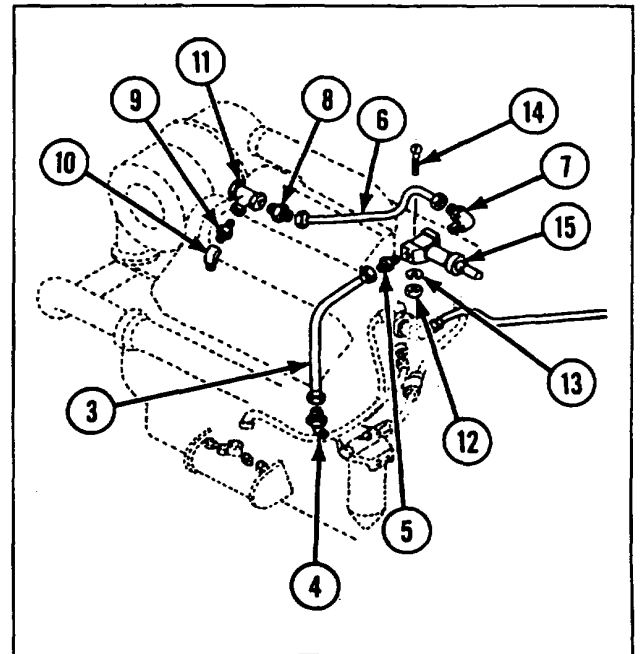
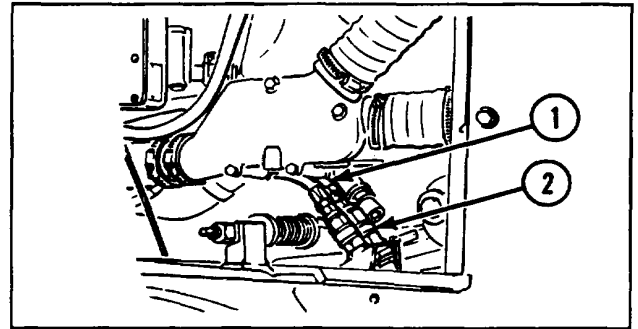
- TM 9-2350-304-10
- TM 9-2350-304-24P-1

Equipment Conditions

2-887 Engine deck assembly removed

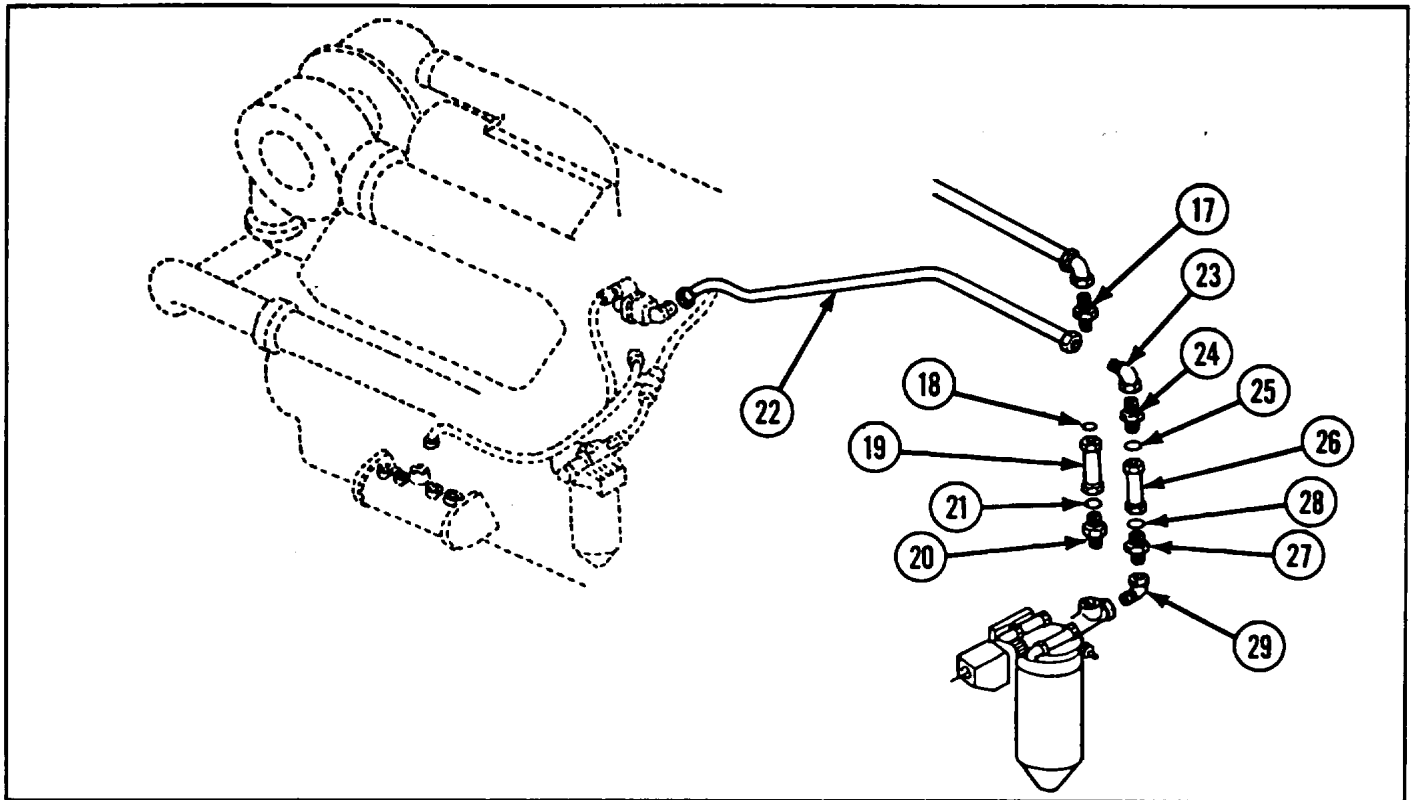
REMOVAL

- 1 Disconnect fuel supply to filter hose (1) quick-disconnect coupling (2).
- 2 Disconnect hose assembly (3) end fitting, from pipe elbow (4).
- 3 Disconnect hose assembly (3) end fitting from straight adapter (5), and remove hose assembly (3).
- 4 Remove pipe elbow (4) and straight adapter (5).
- 5 Disconnect hose assembly (6) fitting from pipe elbow (7).
- 6 Disconnect hose assembly (6) fitting from straight adapter (8), and remove hose assembly (6).
- 7 Remove straight adapter (8), pipe nipple (9), pipe elbow (10), pipe tee (11), and pipe elbow (7).
- 8 Remove two hexagon plain nuts (12), two lockwashers (13), and two machine screws (14) from solenoid valve (15). Remove solenoid valve (15).



2-54. MAINTENANCE OF FUEL AND PURGE-AND-PRIME LINES AND FITTINGS (ENGINE MODEL 7083-7398)
(CONT).

REMOVAL (CONT)

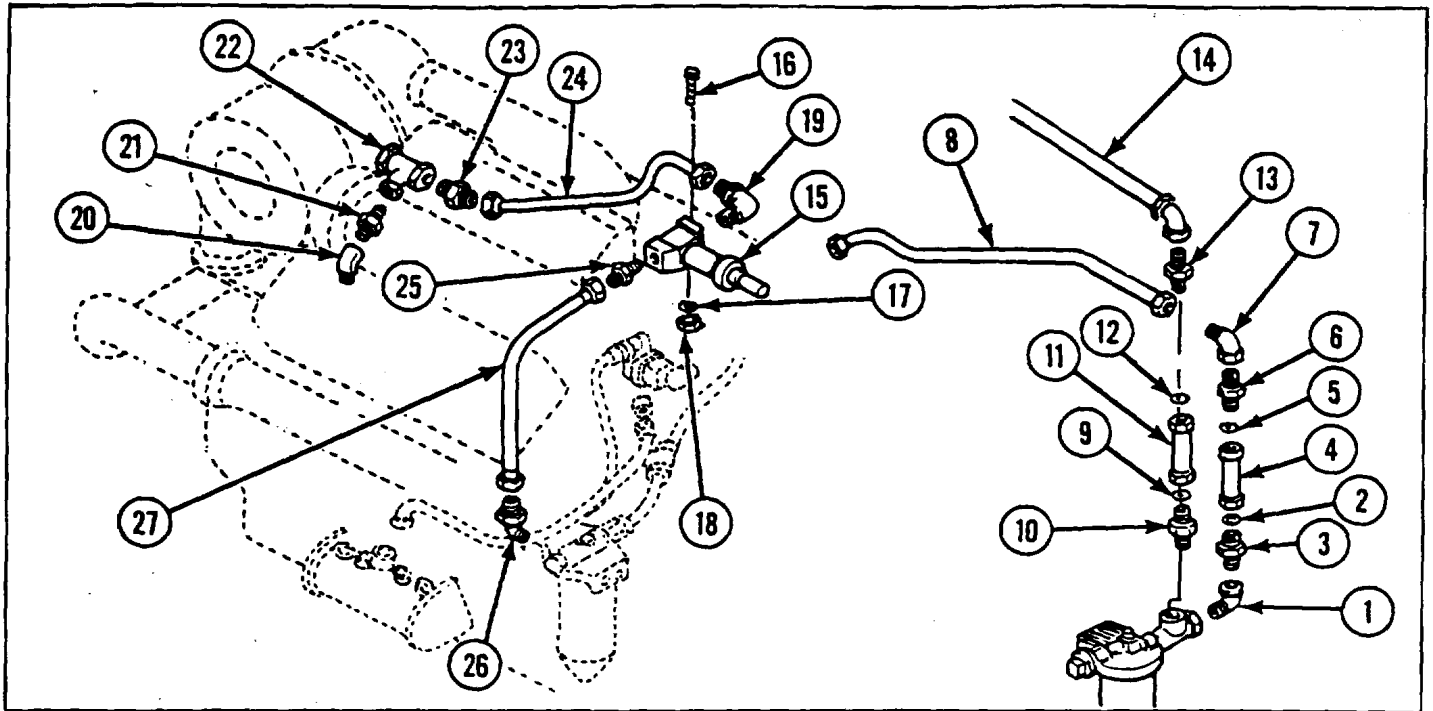


- 9 Disconnect hose assembly (16) fitting from straight adapter (17).
- 10 Remove straight adapter (17), preformed packing (18), check valve (19), straight adapter (20), and preformed packing (21).
- 11 Disconnect hose assembly (22) fitting from pipe elbow (23).
- 12 Remove pipe elbow (23), straight adapter (24), preformed packing (25), check valve (26), straight adapter (27), preformed packing (28), and pipe elbow (29).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

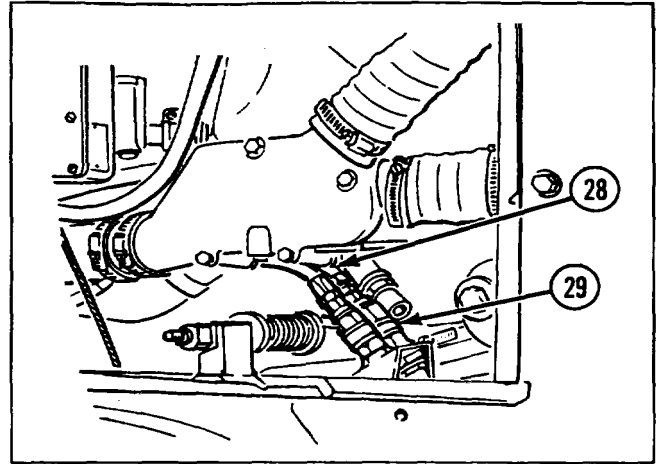


- 1 Install pipe elbow (1), new preformed packing (2), straight adapter (3), check valve (4), new preformed packing (5), straight adapter (6), and pipe elbow (7).
- 2 Connect hose assembly (8) fitting to pipe elbow (7).
- 3 Install new preformed packing (9), straight adapter (10), check valve (11), new preformed packing (12), and straight adapter (13).
- 4 Connect hose assembly (14) fitting to straight adapter (13).
- 5 Install solenoid valve (15). Install two machine screws (16), two new lockwashers (17), and two hexagon plain nuts (18).
- 6 Install pipe elbow (19) on solenoid valve (15). Install pipe elbow (20), pipe nipple (21), pipe tee (22), and straight adapter (23).
- 7 Install hose assembly (24), and connect hose assembly (24) fitting to straight adapter (23).
- 8 Connect hose assembly (24) fitting to pipe elbow (19).
- 9 Install straight adapter (25) and pipe elbow (26).
- 10 Install hose assembly (27), and connect hose assembly (27) end fitting to adapter (25).
- 11 Connect hose assembly (27) end fitting to pipe elbow (26).

2-54. MAINTENANCE OF FUEL AND PURGE-AND-PRIME LINES AND FITTINGS (ENGINE MODEL 7083-7398) (CONT).

INSTALLATION (CONT)

- 12 Connect fuel supply-to-filter hose (28) at quick-disconnect coupling (29).



TESTING

- 1 Purge and prime fuel system. Refer to TM 9-2350-304-10.
- 2 Check for leaks.
- 3 Operate engine until operating temperature is reached. Refer to TM 9-2350-304-10. Check for proper operation.

2-55. MAINTENANCE OF FUEL AND PURGE-AND-PRIME LINES AND FITTINGS (ENGINE MODEL 7083-7395).

This task covers:

- a. *Removal*
- b. *Inspection/Repair*
- c. *Installation*
- d. *Testing*

INITIAL SETUP

Materials/Parts

- Gasket
- Lockwasher (4)
- Preformed packing (4)
- Self-locking nut (2)

Equipment Conditions

2-887 Engine deck assembly removed

References

- TM 9-2350-304-10
- TM 9-2350-304-24P-1

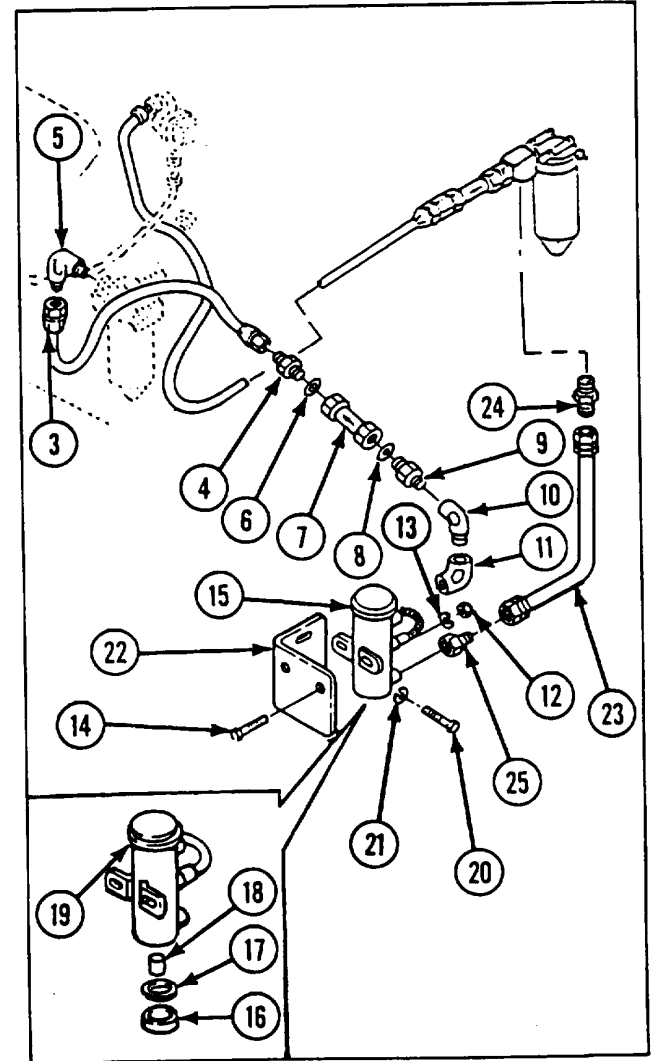
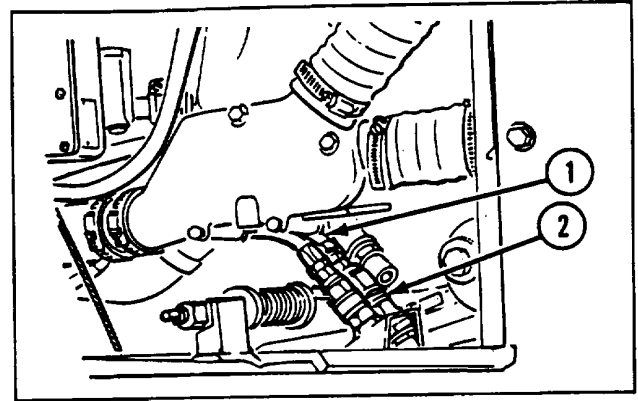
REMOVAL

- 1 Disconnect fuel supply-to-filter hose (1) at quick-disconnect coupling (2).
- 2 Disconnect hose assembly (3) end fitting from tube reducer (4).
- 3 Disconnect hose assembly (3) end fitting from pipe elbow (5), and remove hose assembly (3).
- 4 Remove tube reducer (4), preformed packing (6), check valve (7), preformed packing (8), straight adapter (9), pipe elbow (10), and pipe elbow (11).
- 5 Remove two self-locking nuts (12), two lockwashers (13), and two hexagon head capscrews (14). Remove electrical fuel pump (15).

NOTE

If fuel pump housing or fuel pump cover is damaged, replace electrical fuel pump.

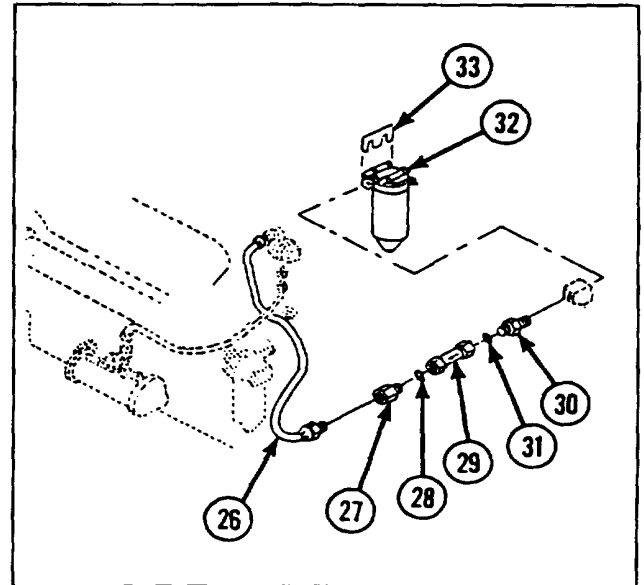
- 6 Remove fuel pump cover (16), gasket (17), and fuel filter screen (18) from fuel pump housing (19).
- 7 Remove two hexagon head capscrews (20) and two lockwashers (21). Remove fuel pump bracket (22).
- 8 Disconnect hose assembly (23) fitting from straight adapter (24).
- 9 Disconnect tube assembly (23) fitting from straight adapter (25). Remove tube assembly (23).
- 10 Remove straight adapters (24 and 25).



2-55. MAINTENANCE OF FUEL AND PURGE-AND-PRIME LINES AND FITTINGS (ENGINE MODEL 7083-7395) (CONT).

REMOVAL (CONT)

- 11 Remove hose assembly (26) fitting from straight adapter (27).
- 12 Remove straight adapter (27), preformed packing (28), check valve (29), straight adapter (30), and preformed packing (31).
- 13 Loosen retaining bolts on fuel filter (32) and remove fuel strainer spacer (33).

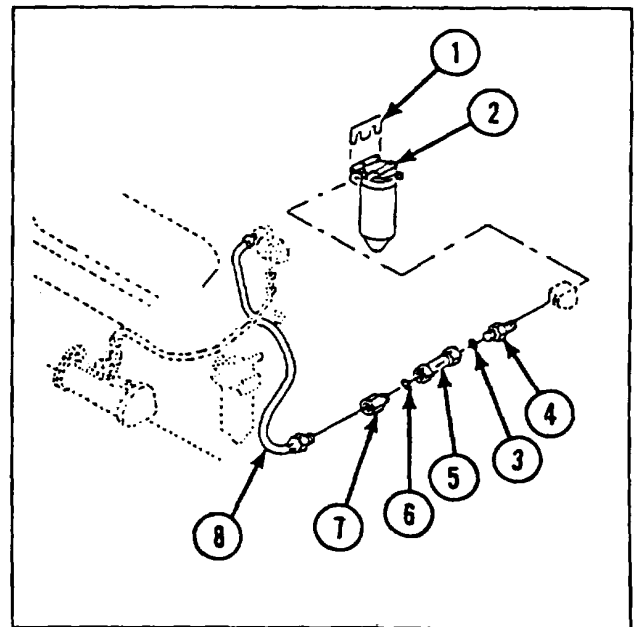


INSPECTION/REPAIR

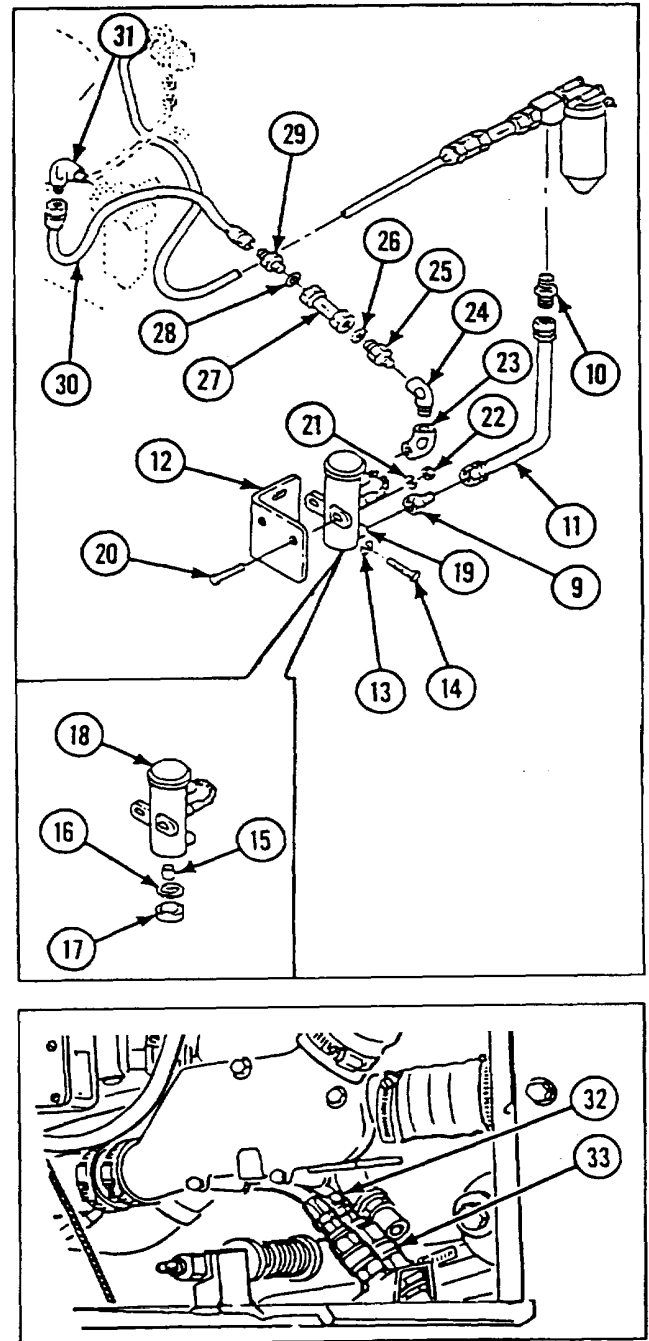
- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install fuel strainer spacer (1) and tighten retaining bolts on fuel filter (2).
- 2 Install new preformed packing (3), straight adapter (4), check valve (5), new preformed packing (6), and straight adapter (7).
- 3 Install hose assembly (8) fitting on straight adapter (7).



- 4 Install straight adapters (9 and 10).
- 5 Install tube assembly (11). Connect tube assembly (11) fitting to straight adapter (9).
- 6 Connect tube assembly (11) fitting to straight adapter (10).
- 7 Install fuel pump bracket (12). Install two new lockwashers (13) and two hexagon head capscrews (14).
- 8 Install fuel filter screen (15), new gasket (16), and fuel pump cover (17) in fuel pump housing (18).
- 9 Install fuel pump (19). Install two capscrews (20), two new lockwashers (21), and two self-locking nuts (22).
- 10 Install pipe elbow (23), pipe elbow (24), straight adapter (25), preformed packing (26), check valve (27), preformed packing (28), and tube reducer (29).
- 11 Install hose assembly (30) and connect hose assembly end fitting to pipe elbow (31).
- 12 Connect hose assembly (30) end fitting to tube reducer (29).
- 13 Connect fuel supply-to-filter hose (32) at quick disconnect coupling (33).



2-55. MAINTENANCE OF FUEL AND PURGE-AND-PRIME LINES AND FITTINGS (ENGINE MODEL 7083-7395) (CONT).

TESTING

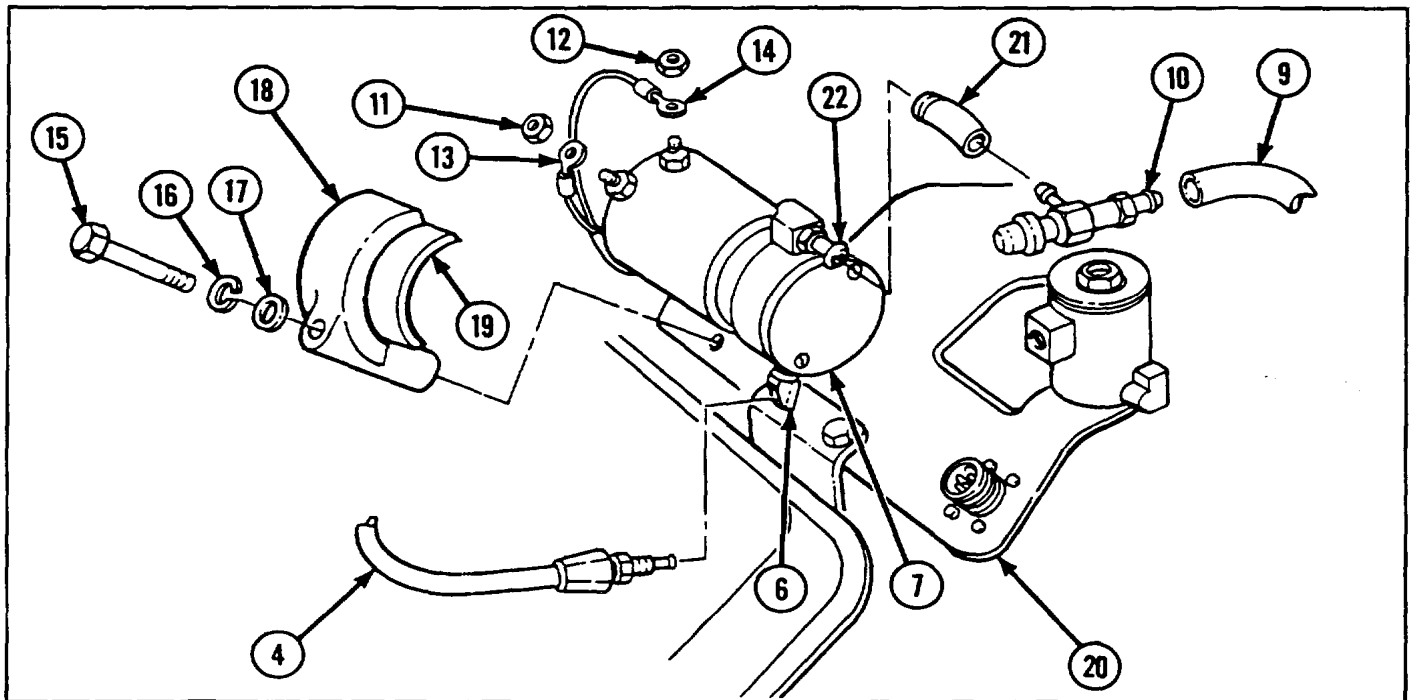
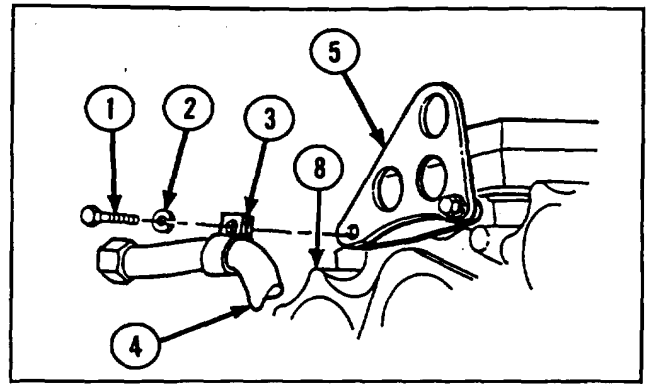
- 1 Purge and prime fuel system. Refer to TM 9-2350-304-10.
- 2 Check for and repair any leaks.
- 3 Operate engine until operating temperature is reached. Refer to TM 9-2350-304-10. Check for proper operation.

2-56. MAINTENANCE OF AIR BOX HEATER INSTALLATION AND AIR BOX HEATER ASSEMBLY.

This task covers:	a. <i>Removal</i>	d. <i>Reassembly</i>
	b. <i>Disassembly</i>	e. <i>Installation</i>
	c. <i>Inspection/Repair</i>	
INITIAL SETUP		
<i>Tools and Special Tools</i>		<i>References</i>
Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)		TM 9-2815-202-24P
Torque wrench (0 to 170 ft-lb)		<i>Equipment Conditions</i>
		2-525 Water by-pass and crossover tubes removed
<i>Materials/Parts</i>		
Dry cleaning solvent (item 15, appx C)		
Gasket		
Gasket		
Lockwasher		
Lockwasher		
Lockwasher		
Lockwasher (2)		
Lockwasher (4)		
Lockwasher (4)		
Lockwasher (2)		
Lockwasher (2)		

REMOVAL

- 1 Remove bolt (1), lockwasher (2), and hot clamp (3) with attached hose (4) from left rear engine lifting bracket (5).

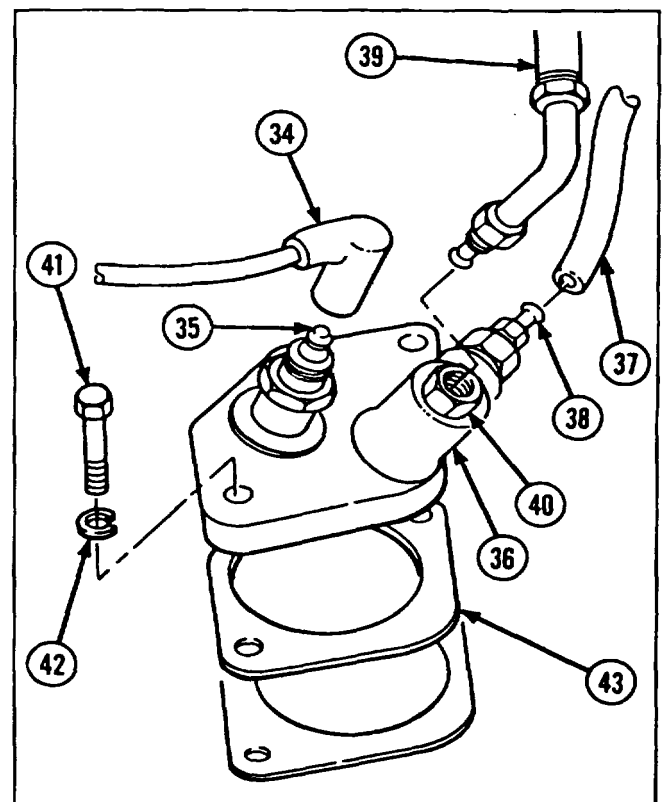
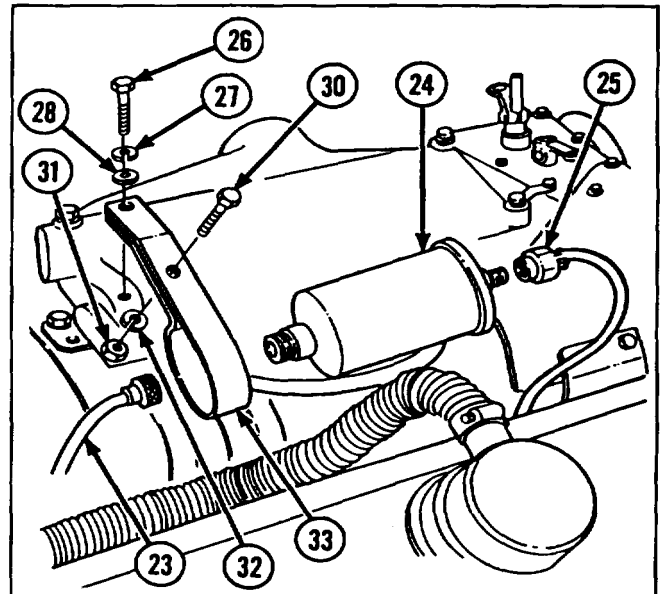


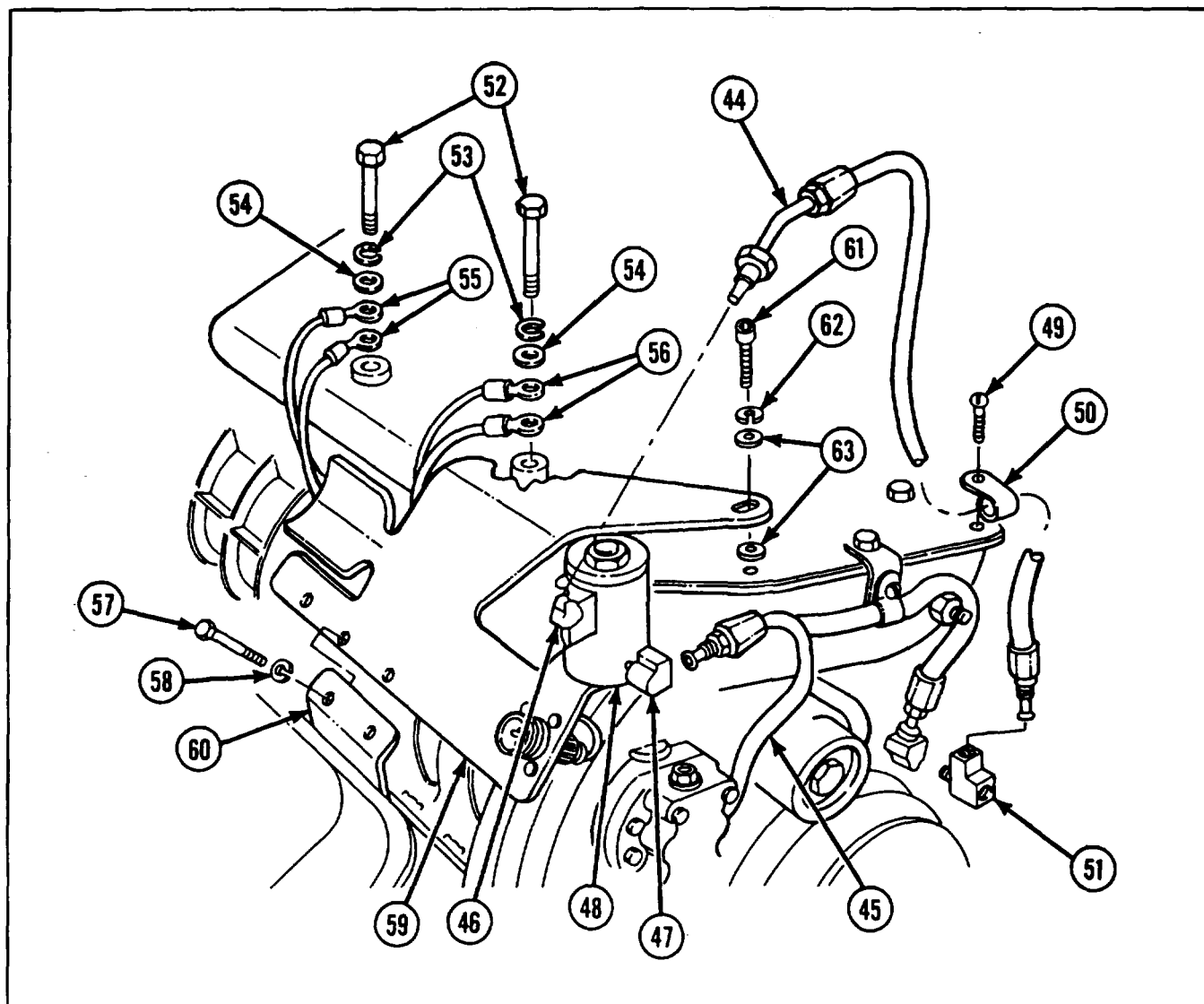
- 2 Disconnect hose (4) from elbow (6) on air pump (7) and pipe to tube tee on left cylinder head (8) of engine block.
- 3 Remove hose clamp (3) from hose (4).
- 4 Disconnect hose (9) from check valve (10).
- 5 Remove nuts (11 and 12) and disconnect wiring harness leads (13 and 14) from terminals on air pump (7).
- 6 Remove bolt (15), lockwasher (16), flat washer (17), air pump clamp (18), cushion (19), and air pump (7) from bracket (20).
- 7 Remove hose (21) and check valve (10) from adapter (22) on air pump (7). Remove hose from check valve.

2-56. MAINTENANCE OF AIR BOX HEATER INSTALLATION AND AIR BOX HEATER ASSEMBLY (CONT).

REMOVAL (CONT)

- 8 Disconnect high tension lead (23) from ignition coil (24). Remove lead.
- 9 Disconnect wiring harness connector (2) from ignition coil (24).
- 10 Remove bolt (26), lockwasher (27), and flat washer (28) securing bracket (29) and ignition coil (24) to air inlet housing. Remove coil with attached bracket.
- 11 Remove bolt (30), nut (31), and lockwasher (32) from bracket (33). Remove ignition coil (24) from bracket.
- 12 Remove high tension lead (34) from fuel spark igniter (35) on air heater assembly (36).
- 13 Disconnect nonmetallic hose (37) from adapter (38) on air heater assembly (36). Remove nonmetallic hose.
- 14 Disconnect nonmetallic hose assembly (39) from pipe straight adapter (40) on a heater assembly (36).
- 15 Remove two machine bolts (41), two lockwashers (42), air heater assembly (36), and gasket (43) from engine block.



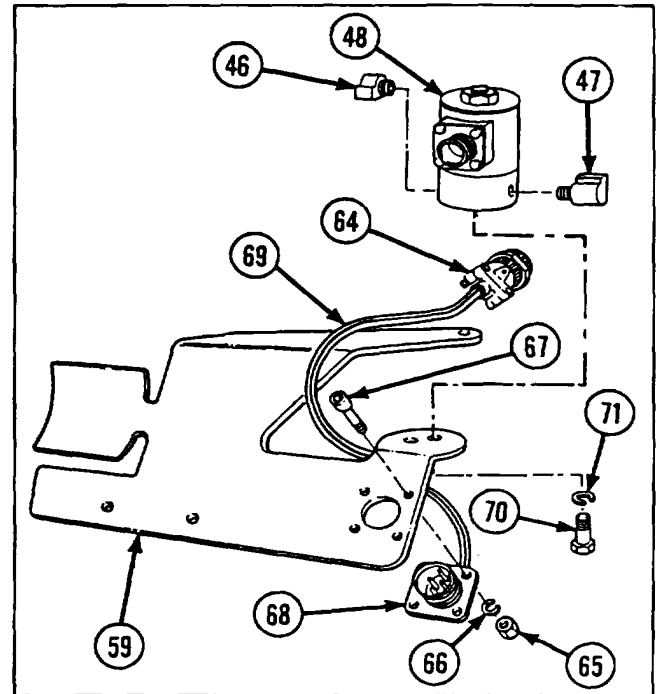


- 16 Disconnect fuel hoses (44 and 45) from elbows (46 and 47) on solenoid valve (48). Remove screw assembly (49) and loop clamp (50) from governor cover. Reinstall screw assembly.
- 17 Disconnect fuel hose (44) from tee (51) on left cylinder head. If necessary, remove clamp loop (50) from fuel hose. Remove fuel hose.
- 18 Remove tee (51) from left cylinder head.
- 19 Remove two hexagon head capscrews (52), two lockwashers (53), and two flat washers (54) securing wiring harness leads (55 and 56) to air inlet housing. Remove leads.
- 20 Remove two hexagon head capscrews (57) and two lockwashers (58) securing angle bracket (59) to fuel pump support (60).
- 21 Remove two machine screws (61), two lockwashers (62), and four flat washers (63) and angle bracket (59) from governor housing.

2-56. MAINTENANCE OF AIR BOX HEATER INSTALLATION AND AIR BOX HEATER ASSEMBLY (CONT).

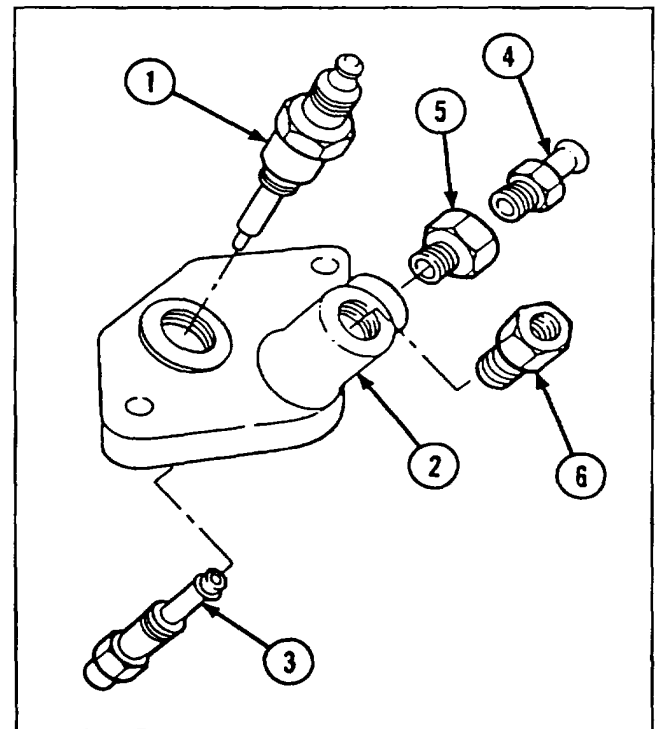
REMOVAL (CONT)

- 22 Disconnect wiring harness plug connector (64) from solenoid valve (48).
- 23 Remove four hexagon plain nuts (65), four lockwashers (66), four machine screws (67), and wiring harness receptacle connector (68) from angle bracket (59). Remove wiring harness (69).
- 24 Remove two machine screws (70) and two lockwashers (71) securing solenoid valve (48) to angle bracket (59). Remove solenoid valve.
- 25 Remove elbows (46 and 47) from solenoid valve (48).



DISASSEMBLY

- 1 Unscrew fuel spark igniter (1) from air heater body (2).
- 2 Remove fuel injection nozzle (3) from air heater body (2).
- 3 Remove adapter (4) from pipe straight adapter (5).
- 4 Remove two pipe straight adapters (5 and 6) from air heater body (2).



INSPECTION/REPAIR

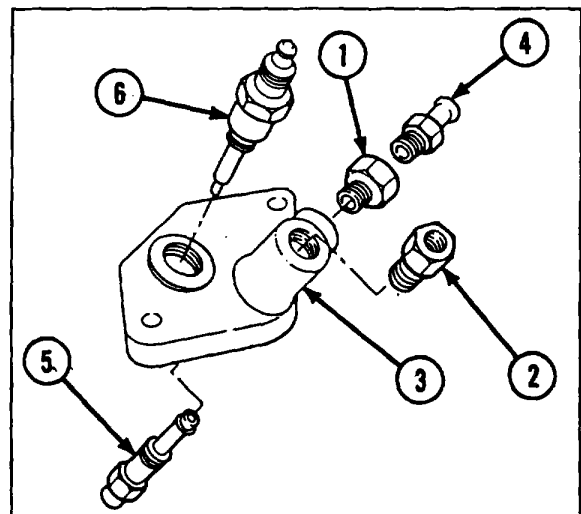
- 1 Check for broken, damaged, or missing parts.

WARNING

- Dry cleaning solvent (SD2) is toxic and flammable. Wear protective goggles and gloves and use only in well-ventilated areas. Avoid contact with skin, eyes, and clothes. Don't breathe vapors. Do not use near open flames or excessive heat. If you become dizzy while using dry cleaning solvent, get medical aid. If contact is made with eyes, wash your eyes with water and get medical aid immediately.
 - Compressed air used for cleaning purposes will not exceed 30 psi. Use only with effective chip guarding and personal protective equipment (goggles or shield, gloves,
- 2 Clean outside surface of pump with dry cleaning solvent. Dry with compressed air.
 - 3 Clean air heater body and fuel injector nozzle with dry cleaning solvent. Dry with compressed air.
 - 4 Clean outside surface of ignition coil with dry cleaning solvent. Dry with compressed air.
 - 5 Clean solenoid valve and angle bracket with dry cleaning solvent. Dry with compressed air.
 - 6 For further repair, test, or adjustment, notify direct support maintenance.
 - 7 Repair is by replacement of authorized parts (TM 9-2815-202-24P) which do not meet REASSEMBLY I 1 Install two pipe straight adapters (1 and 2) into air heater body (3).

REASSEMBLY

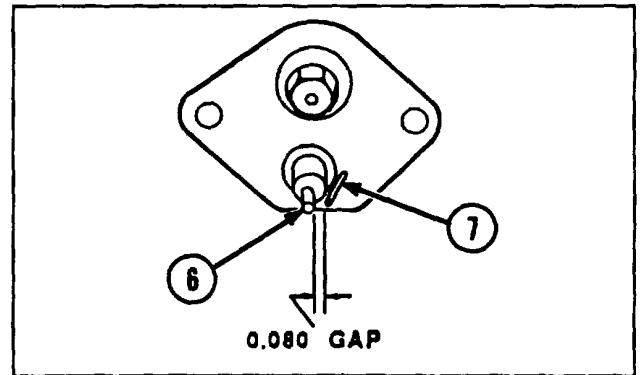
- 1 Install two pipe straight adapters (1 and 2) into air heater body (3).
- 2 Install adapter (4) into pipe straight adapter (1).
- 3 Install fuel injection nozzle (5) into air heater body (3).
- 4 Screw fuel spark igniter (6) into air heater body (3).



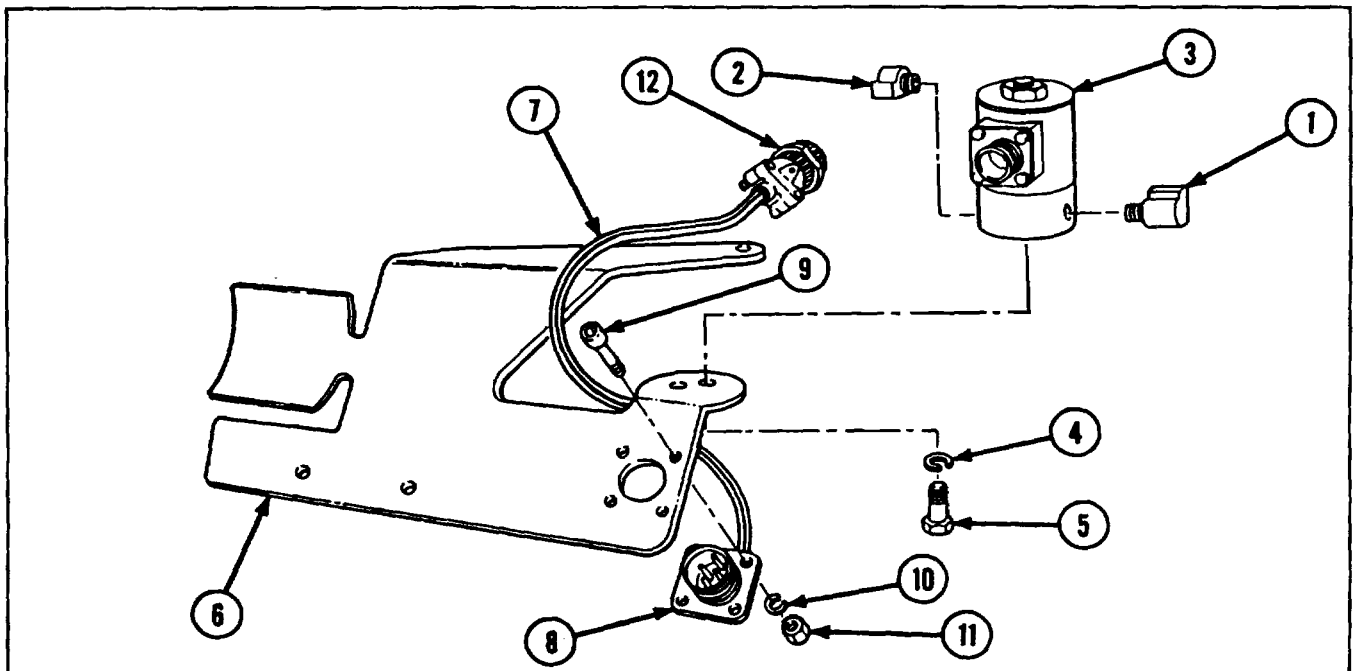
2-56. MAINTENANCE OF AIR BOX HEATER INSTALLATION AND AIR BOX HEATER ASSEMBLY (CONT).

REASSEMBLY (CONT)

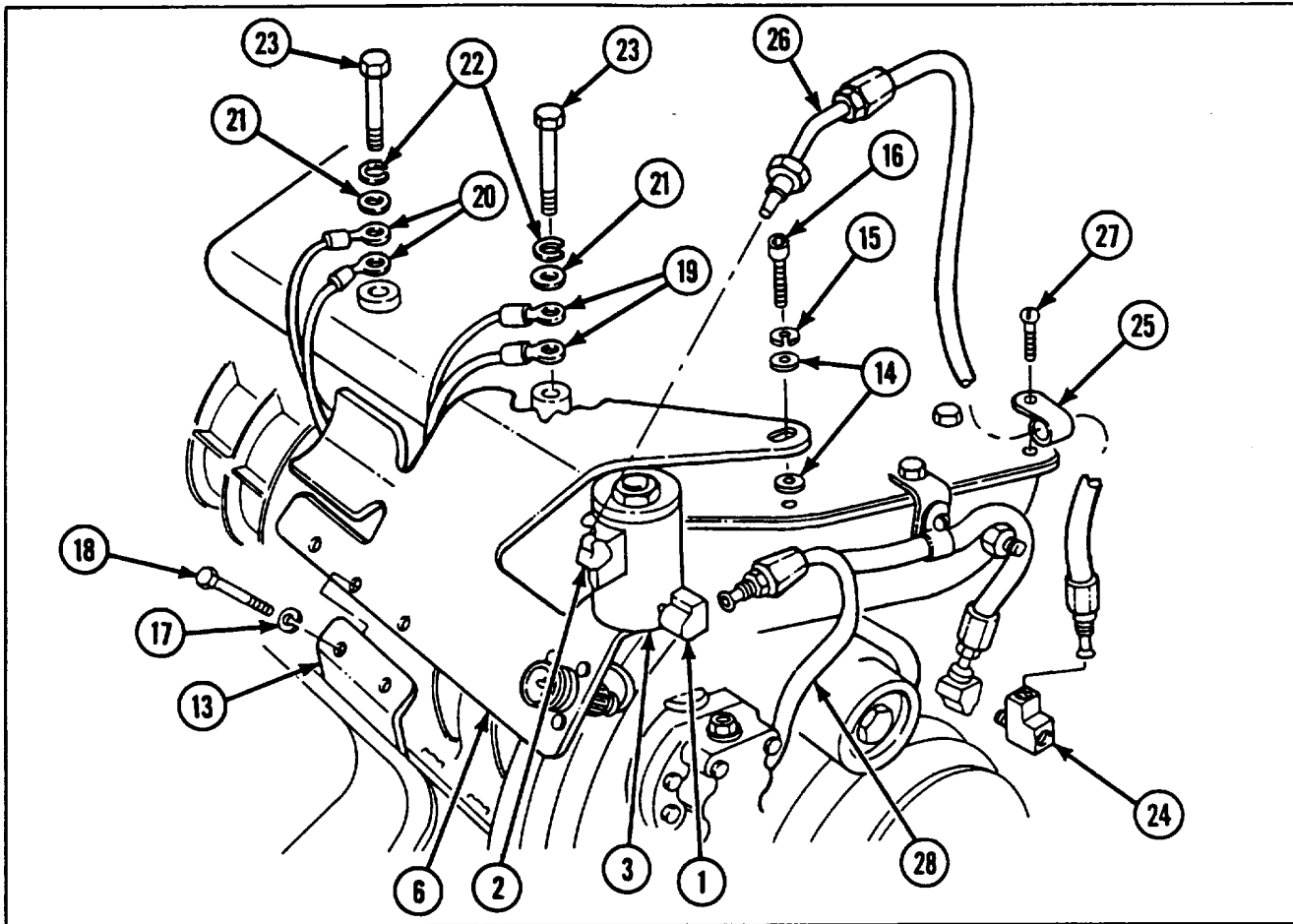
- 5 Using gap gages, adjust wire (7) to fuel spark igniter (6) to obtain air gap of 0.080 in. (0.203 cm).



INSTALLATION



- 1 Install elbows (1 and 2) on solenoid valve (3). Tighten securely.
- 2 Install solenoid valve (3), two new lockwashers (4), and two machine screws (5) to angle bracket (6). Tighten securely.
- 3 Install wiring harness (7).
- 4 Install wiring harness receptacle connector (8), four machine screws (9), four new lockwashers (10), and four hexagon plain nuts (11) on angle bracket (6).
- 5 Connect wiring harness plug connector (12) to solenoid valve (3).

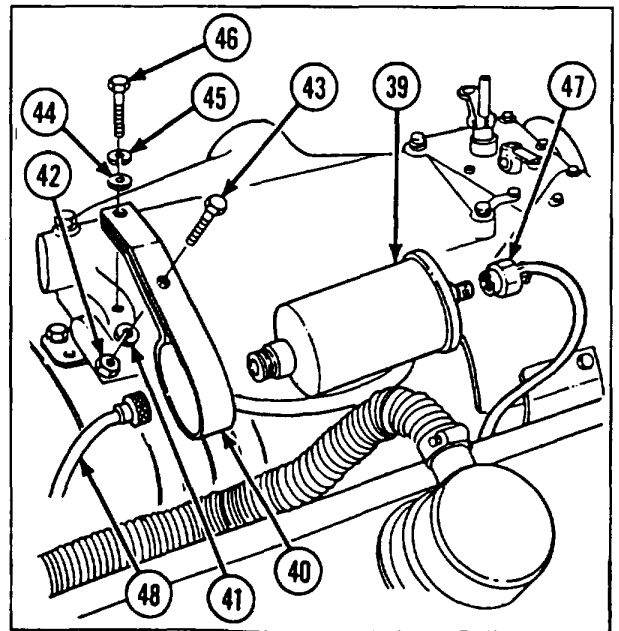
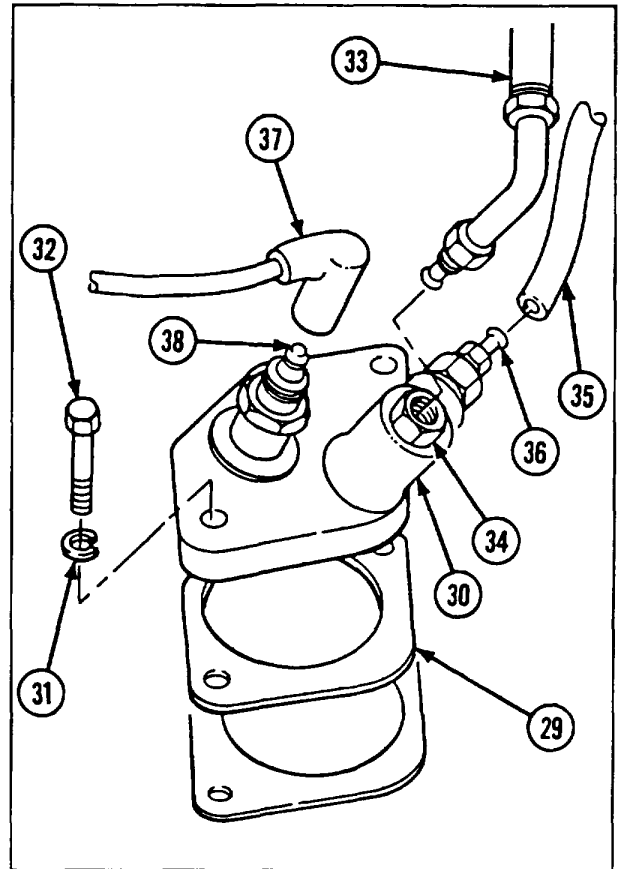


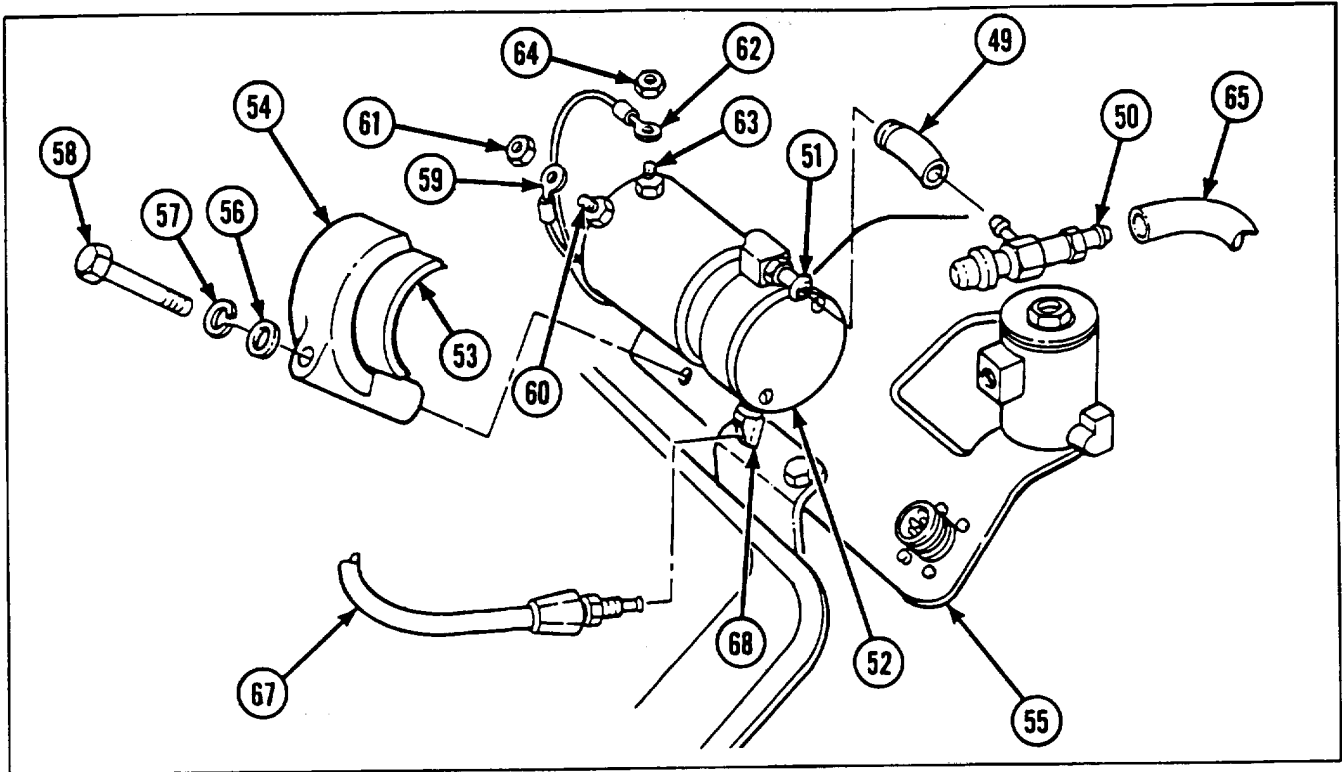
- 6 Position angle bracket (6) on governor housing and inboard of fuel pump support (13). Route wiring harness to prevent cuts, chafing, burns, and interference with components. Loosely secure angle bracket to governor housing with four flat washers (14), two new lockwashers (15), and two machine screws (16).
- 7 Secure angle bracket (6) to fuel pump support (13) with two new lockwashers (17) and two hexagon head capscrews (18). Torque hexagon head capscrews to 30 to 35 ft-lb (41 to 47 N-m). Tighten two machine screws (16).
- 8 Secure wiring harness leads (19 and 20) to air inlet housing with two flat washers (21), two new lockwashers (22), and two hexagon head capscrews (23). Torque hexagon head capscrews to 16 to 20 ft-lb (22 to 27 N-m).
- 9 Install tee (24) on left cylinder head.
- 10 If removed, install loop clamp (25) on fuel hose (26) and secure to governor cover using screw assembly (27). Install fuel hose in tee (24).
- 11 Install fuel hose (28) on elbow (1) on solenoid valve (3).
- 12 Install fuel hose (26) on elbow (2) on solenoid valve (3).

2-56. MAINTENANCE OF AIR BOX HEATER INSTALLATION AND AIR BOX HEATER ASSEMBLY (CONT).

INSTALLATION (CONT)

- 13 Install new gasket (29), air heater assembly (30), two new lockwashers (31) and two machine bolts (32) on engine block. Torque machine bolts to 13 to 17 ft-lb (18 to 23 N-m).
- 14 Connect nonmetallic hose (33) to pipe straight adapter (34) on air heater assembly (30).
- 15 Connect nonmetallic hose (35) to adapter (36) on air heater assembly (30).
- 16 Connect high tension lead (37) to fuel spark igniter (38) on air heater assembly (30).
- 17 Insert ignition coil (39) into bracket (40). Secure with new lockwasher (41), nut (42), and bolt (43). Torque bolt to 7 to 9 ft-lb (9 to 12 N-m).
- 18 Position ignition coil (39) and attached bracket (40) on air inlet housing. Secure with flat washer (44), new lockwasher (45), and bolt (46). Torque bolt to 16 to 20 ft-lb (22 to 27 N-m).
- 19 Connect wiring harness connector (47) to ignition coil (39).
- 20 Connect high tension lead (48) to ignition coil (39).

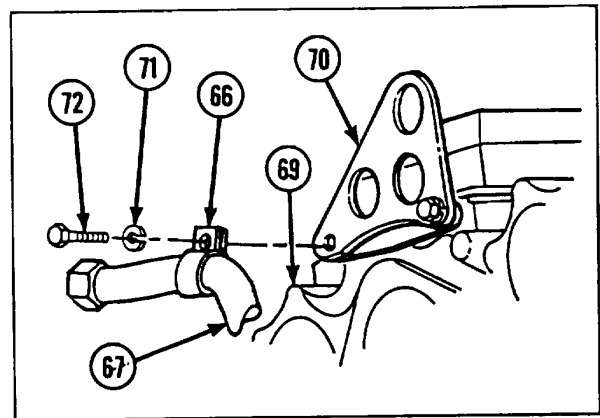




- 21 Install hose (49) and check valve (50) onto adapter (51) on air pump (52).
- 22 Position air pump (52), cushion (53), and air pump clamp (54) on bracket (55). Install flat washer (56), new lockwasher (57), and bolt (58). Torque bolt to 35 to 39 ft-lb (47 to 53 N-m).
- 23 Connect large wiring harness lead (59) to terminal (60) marked (+) on air pump (52) and secure with nut (61). Connect wiring harness lead (62) to terminal (63) on air pump and secure with nut (64).
- 24 Connect hose (65) to check valve (50).

26 Connect hose (67) to elbow (68) on air pump (52) and pipe to tube tee on left cylinder head (69) of engine block.

27 Install hose clamp (66) with attached hog (67) on left rear engine lifting bracket (7C) and secure with new lockwasher (71) and bolt (72).



2-57. MAINTENANCE OF THROTTLE AND ACCELERATOR CONTROLS AND LINKAGE (DRIVER'S COMPARTMENT).

This task covers:		a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP				
<i>Materials/Parts</i>		<i>Equipment Conditions</i>		
Cotter pin		2-893 Transmission deck lid assembly removed		
Lockwasher		2-887 Engine deck assembly removed		
Lockwasher (5)				
Lockwasher (2)				
Self-locking nut				
<i>References</i>				
TM 9-2350-304-24P-1				

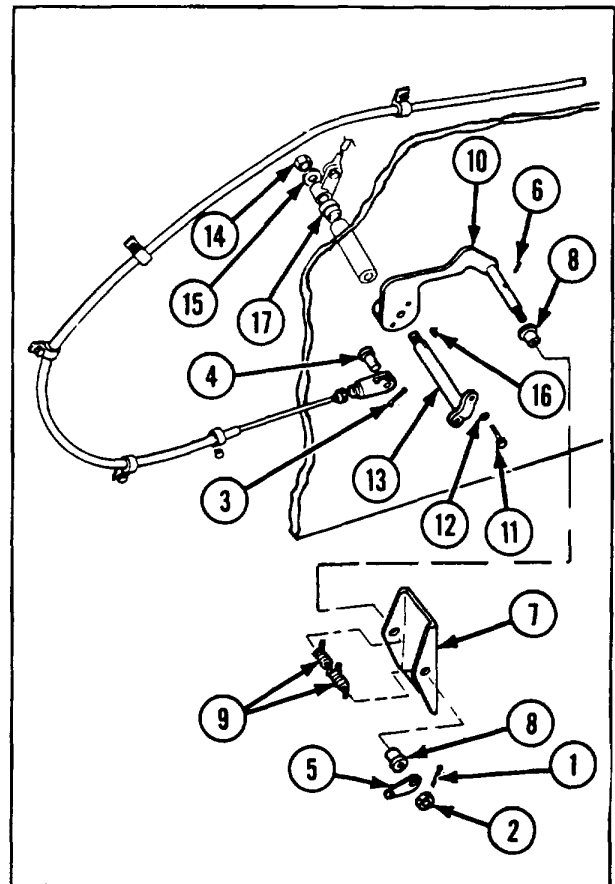
REMOVAL

- 1 Remove cotter pin (1) and slotted plain nut (2).

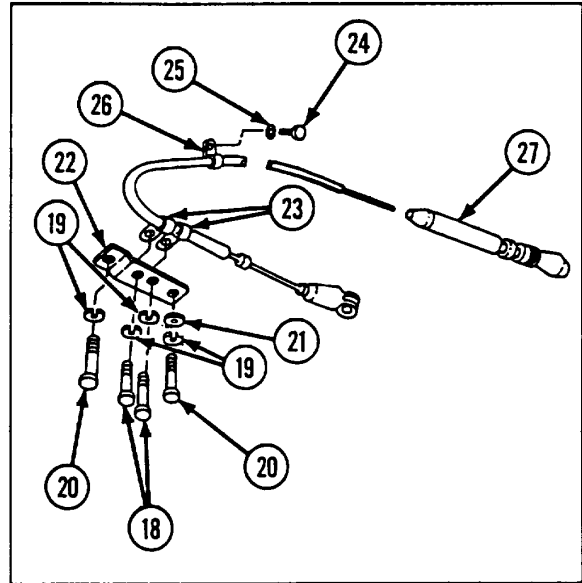
NOTE

Use care not to lose or damage cotter pin or pin.

- 2 Remove cotter pin (3), pin (4), and plate (5).
- 3 Remove spring pin (6), control pedal (7), two sleeve bearings (8), and two helical springs (9) from manual control lever (10).
- 4 Remove two hexagon head capscrews (11) and two lockwashers (12) from accelerator shaft (13).
- 5 Remove self-locking nut (14) and flat washer (15).
- 6 Remove machine key (16), accelerator shaft (13), and sleeve bearing (17).
- 7 Remove manual control lever (10).



- 8 Remove two hexagon head capscrew. (18), two lockwashers (19), two hexagon head capscrews (20), two lockwasher (19), flat washer (21), and bracket (22) Remove two loop clamps (23).
- 9 Remove hexagon head capscrew (24) lockwasher (25), and loop clamp (26).
- 10 Remove control assembly (27).

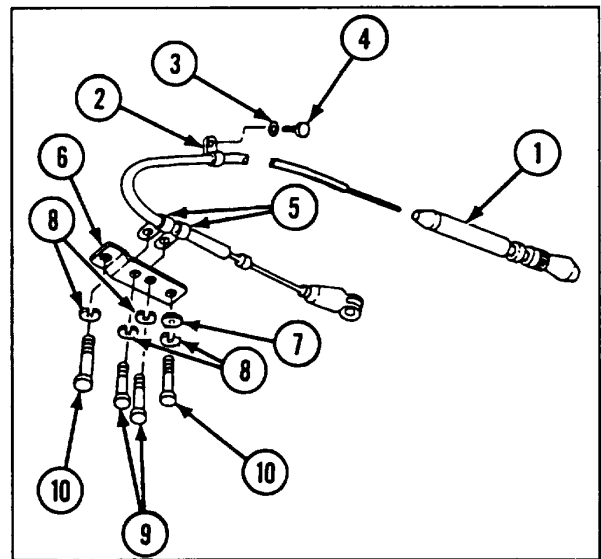


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

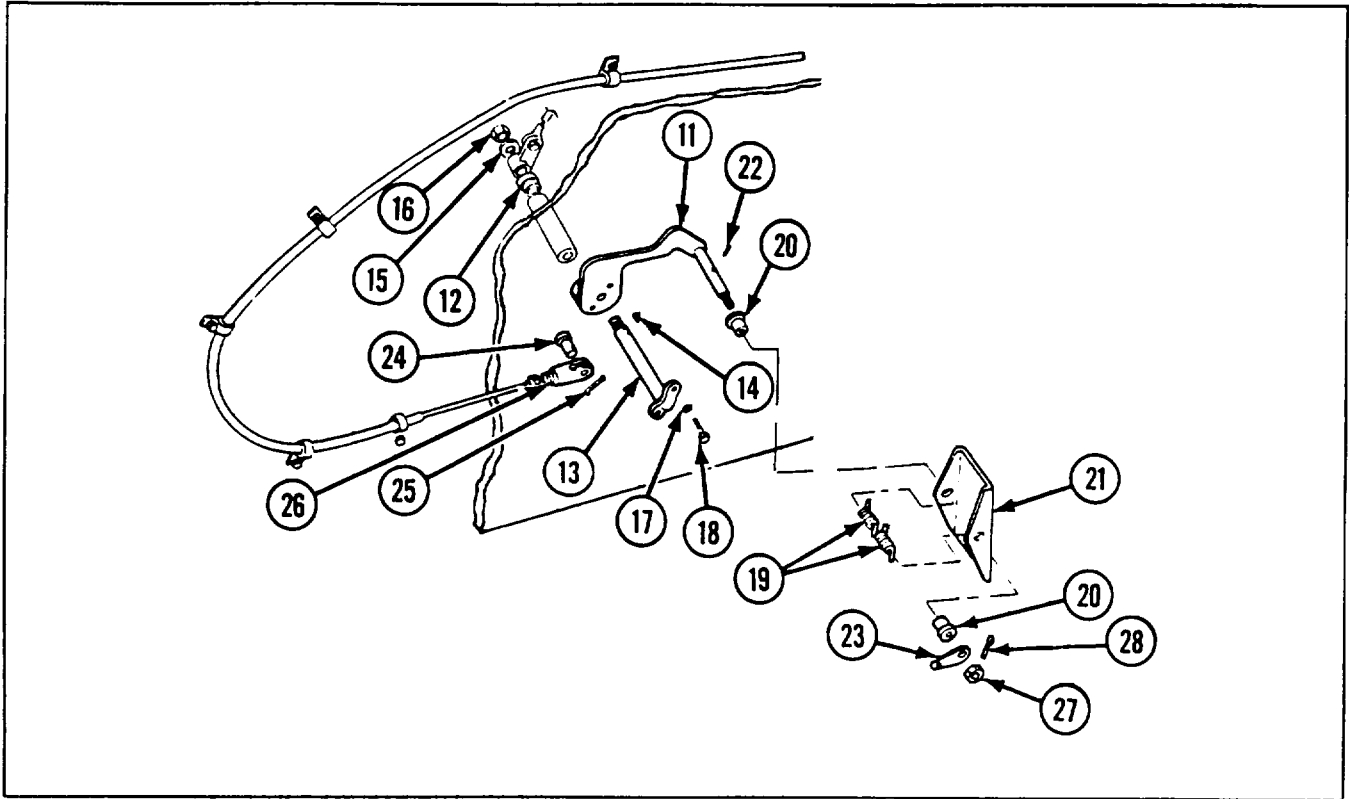
INSTALLATION

- 1 Install control assembly (1).
- 2 Install loop clamp (2), new lockwasher (a and hexagon head capscrew (4).
- 3 Install two loop clamps (5). Install bracket (6), flat washer (7), four new lockwasher (8), two hexagon head capscrews (9), and two hexagon head capscrews (10).



2-57. MAINTENANCE OF THROTTLE AND ACCELERATOR CONTROLS AND LINKAGE (DRIVER'S COMPARTMENT).

INSTALLATION (CONT.)



- 4 Install manual control lever (11).
- 5 Install sleeve bearing (12), accelerator shaft (13), and machine key (14).
- 6 Install flat washer (15) and self-locking nut (16).
- 7 Install two new lockwashers (17) and two hexagon head capscrews (18) on accelerator shaft (13).
- 8 Install two helical springs (19), two sleeve bearings (20), control pedal (21), and spring pin (22) on lever (11). Allow 0.005 in. (0.013 cm) minimum play.

NOTE

If cotter pin or pin are damaged or missing, a new clevis assembly must be ordered.

- 9 Install throttle plate (23), pin (24), and cotter pin (25) on clevis assembly (26).
- 10 Install throttle plate (23), slotted plain nut (27), and new cotter pin (28) on manual control lever (11).

2-58. MAINTENANCE OF THROTTLE AND ACCELERATOR CONTROLS AND LINKAGE (ENGINE COMPARTMENT).

This task covers:

- a. *Removal*
- b. *Inspection/Repair*

- c. *Installation*
- d. *Adjustment*

INITIAL SETUP*Materials/Parts*

- Cotter pin (2)
- Cotter pin (4)
- Lockwasher (8)
- Lockwasher
- Self-locking nut
- Spring pin

References

TM 9-2350-304-24P-1

Equipment Conditions

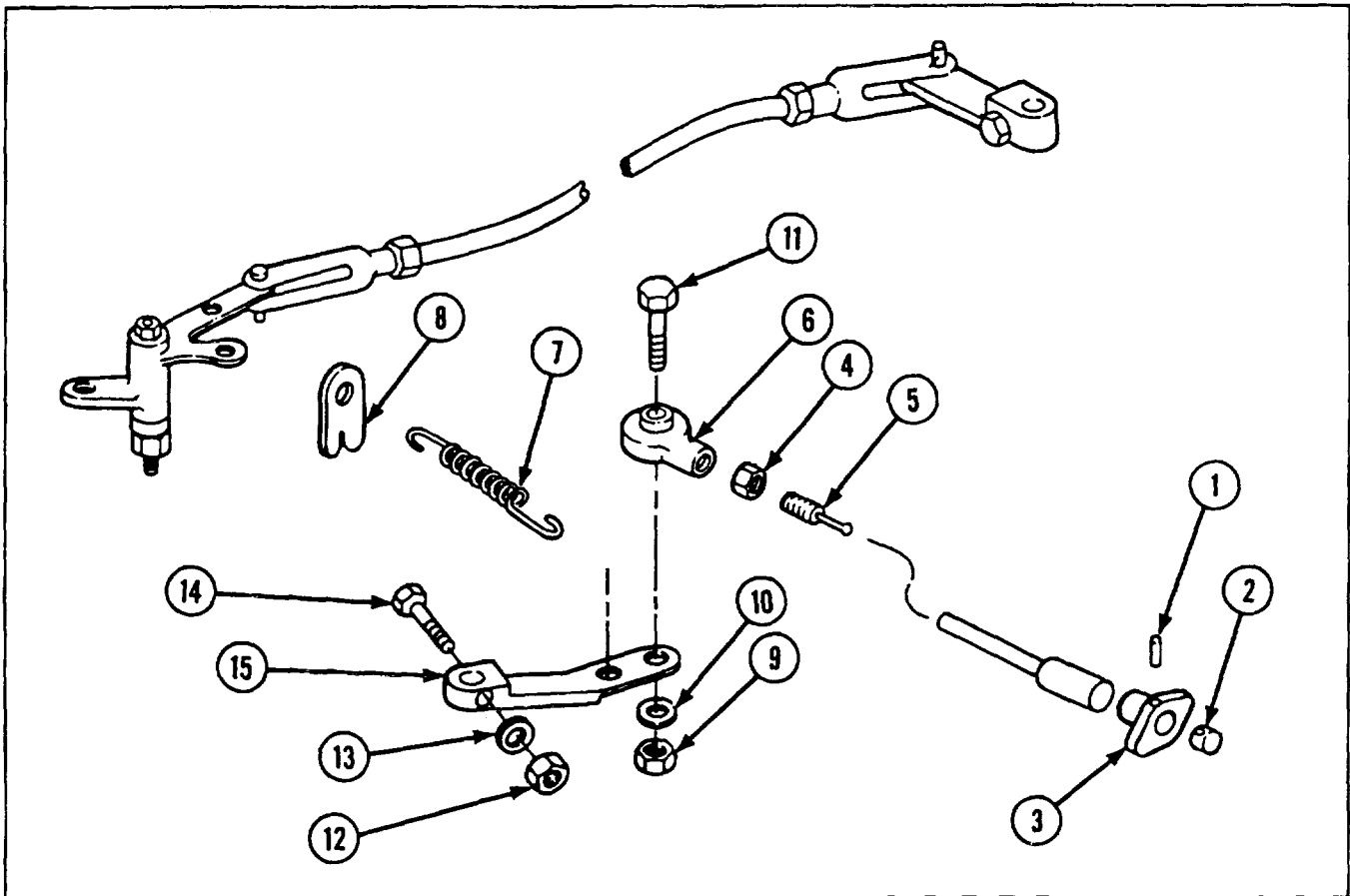
- 2-893 Transmission deck lid assembly removed
- 2-887 Engine deck assembly removed

*General Safety Instructions***WARNING**

Brake foot pedal is spring-loaded. Before working in forward area of driver's compartment, ensure vehicle tracks are blocked and parking brake is released.

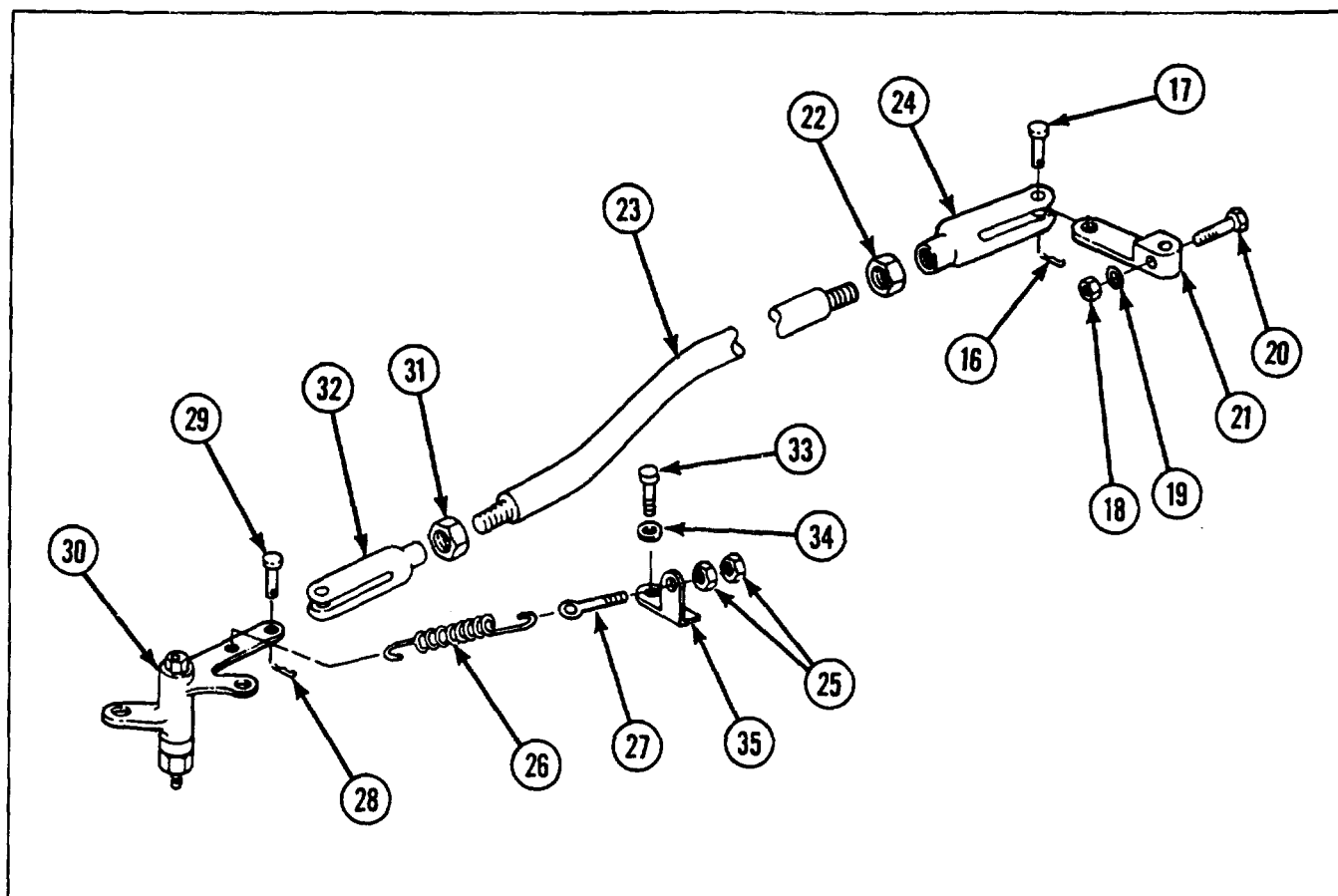
2-58. MAINTENANCE OF THROTTLE AND ACCELERATOR CONTROLS AND LINKAGE (ENGINE COMPARTMENT) (CONT).

REMOVAL

**NOTE**

Measure distance from center to center of rod ends on transmission control rod, stud, and foot throttle control rod before removal to aid installation.

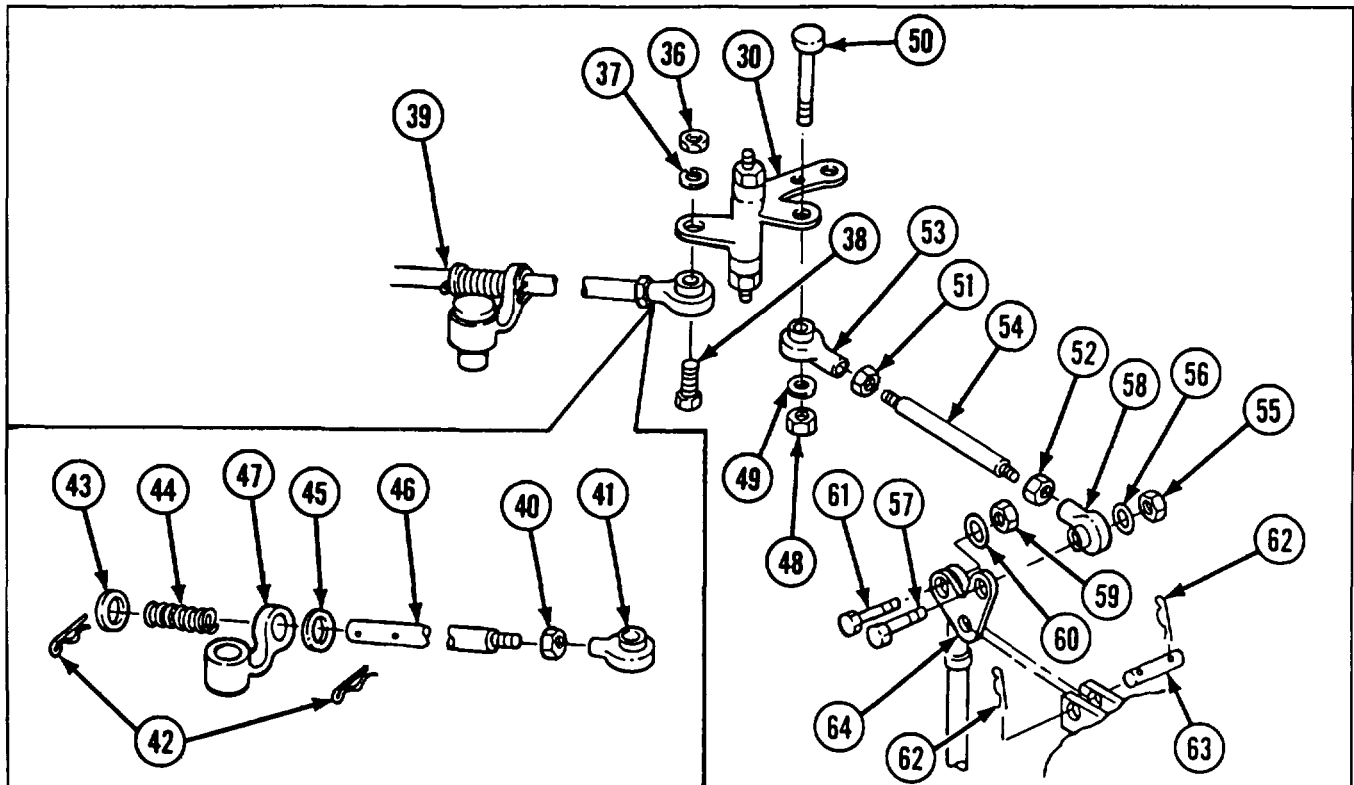
- 1 Remove spring pin (1), cable end (2), and starting handle (3).
- 2 Loosen hexagon plain nut (4) and remove wire rope assembly (5) from rod end ball bearing (6). Remove hexagon plain nut from wire rope assembly.
- 3 Remove helical spring (7) and detent plate (8).
- 4 Remove hexagon plain nut (9), lockwasher (10), and hexagon head capscrew (11). Remove rod end ball bearing (6).
- 5 Remove hexagon plain nut (12), lockwasher (13), and hexagon head capscrew (14). Remove manual control engine shutdown lever (15).



- 6 Remove center cotter pin (16) and headed straight pin (17).
- 7 Remove hexagon plain nut (18), lockwasher (19), and hexagon head capscrew (20). Remove governor throttle control lever (21).
- 8 Loosen hexagon plain nut (22) at end of governor control rod (23). Remove rod end clevis (24) and hexagon plain nut (22).
- 9 Remove two hexagon plain nuts (25), helical spring (26), and eye bolt (27).
- 10 Remove cotter pin (28) and headed straight pin (29), and disconnect transmission and governor linkage bell crank (30).
- 11 Loosen hexagon plain nut (31), and remove rod end clevis (32) and hexagon plain nut from governor control rod (23).
- 12 Remove hexagon head capscrew (33), lockwasher (34), and angle bracket (35).

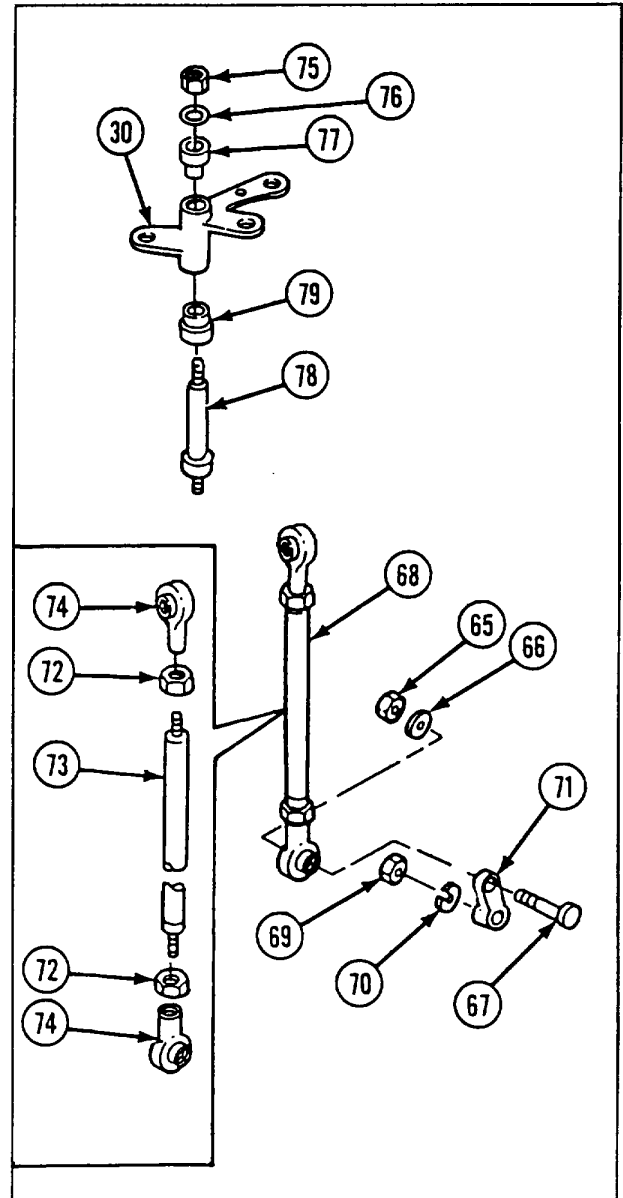
2-58. MAINTENANCE OF THROTTLE AND ACCELERATOR CONTROLS AND LINKAGE (ENGINE COMPARTMENT) (CONT.).

REMOVAL (CONT.)



- 13 Remove hexagon plain nut (36), lockwasher (37), and hexagon head capscrew (38). Disconnect rod assembly (39) from transmission and governor linkage bell crank (30).
- 14 Loosen hexagon plain nut (40). Remove rod end ball bearing (41).
- 15 Remove two cotter pins (42). Remove flat washer (43), helical spring (44), flat washer (45), and threaded end rod (46) from transmission throttle control lever (47).
- 16 Remove transmission throttle control lever (47).
- 17 Remove hexagon plain nut (48), lockwasher (49), and hexagon head capscrew (50).
- 18 Loosen two hexagon plain nuts (51 and 52). Remove rod end ball bearing (53) and hexagon plain nut (51) from throttle linkage plain stud (54).
- 19 Remove hexagon plain nut (55), lockwasher (56), and hexagon head capscrew (57).
- 20 Remove rod end ball bearing (58), hexagon plain nut (52), and throttle linkage plain stud (54).
- 21 Remove hexagon plain nut (59), lockwasher (60), and hexagon head capscrew (61).
- 22 Remove two cotter pins (62) from headless straight pin (63). Remove headless straight pin and throttle linkage bell crank (64).

- 23 Remove hexagon plain nut (65), lockwasher (66), and hexagon head capscrew (67), and disconnect rigid connecting link (68).
- 24 Remove hexagon plain nut (69), flat washer (70), and throttle pedal remote control lever (71).
- 25 Loosen two hexagon plain nuts (72) at ends of tube rod (73).
- 26 Remove two hexagon plain nuts (72) and two rod end plain bearings (74) from end of tube rod (73).
- 27 Remove self-locking nut (75), flat washer (76), and sleeve bearing (77).
- 28 Remove shouldered stud (78) and sleeve bearing (79) from transmission and governor linkage bell crank (30).

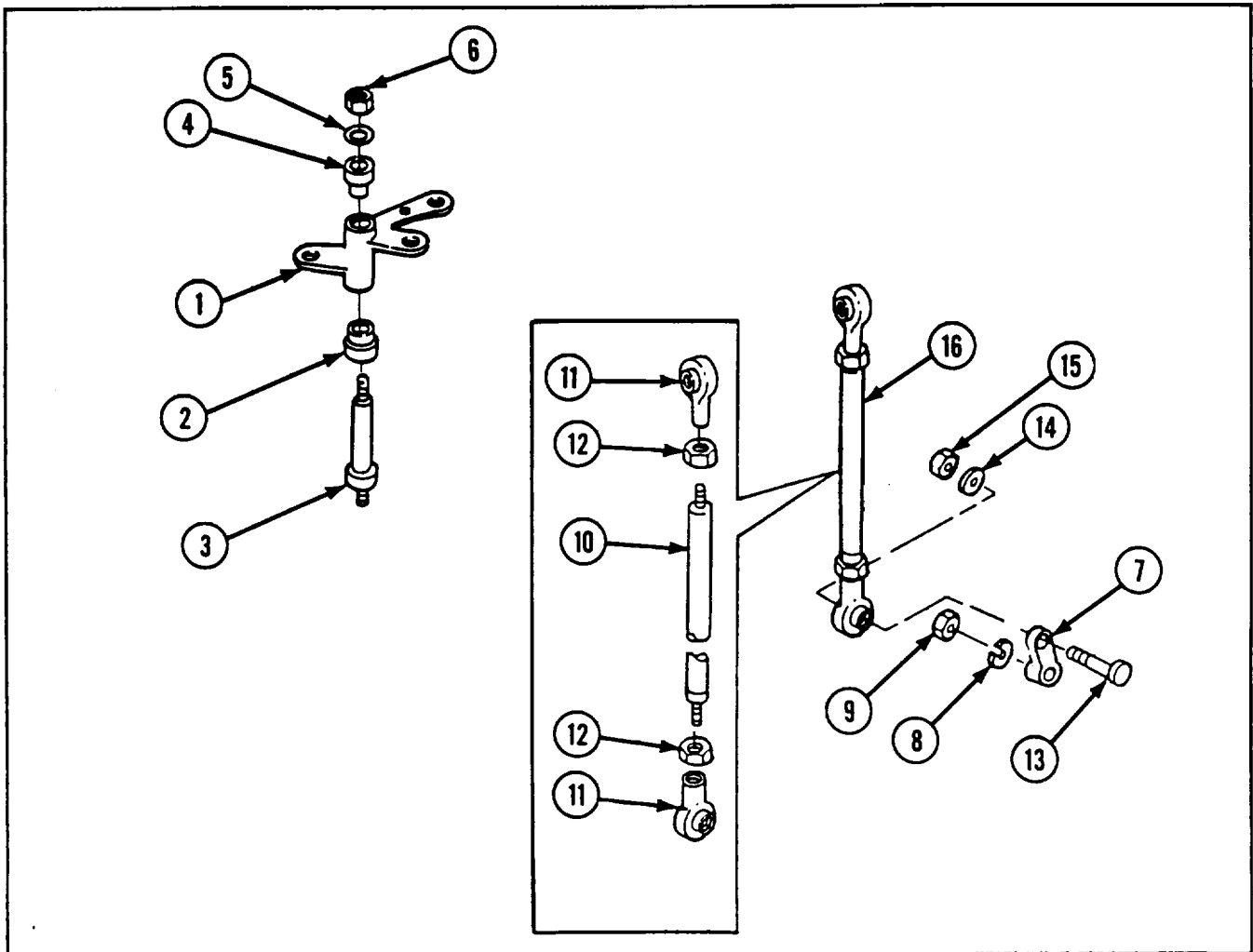


INSPECTION/REPAIR

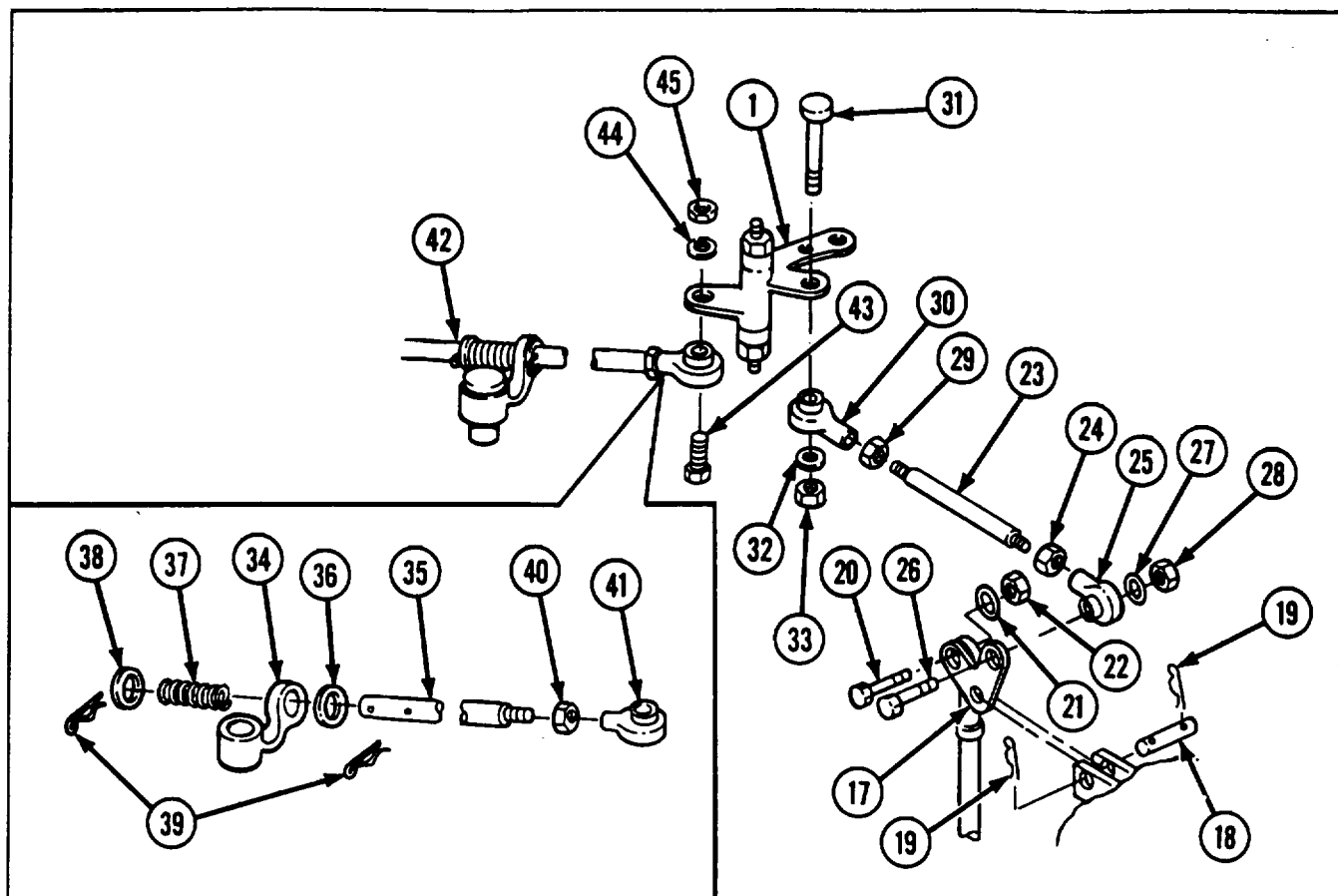
- 1 Inspect for broken, damaged, or missing parts.
- 2 If governor control rod is broken, damaged, or missing, repair is by replacement of next higher assembly.
- 3 If tube rod is broken, damaged, or missing, repair is by replacement of next higher assembly
- 4 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-58. MAINTENANCE OF THROTTLE AND ACCELERATOR CONTROLS AND LINKAGE (ENGINE COMPARTMENT) (CONT.).

INSTALLATION



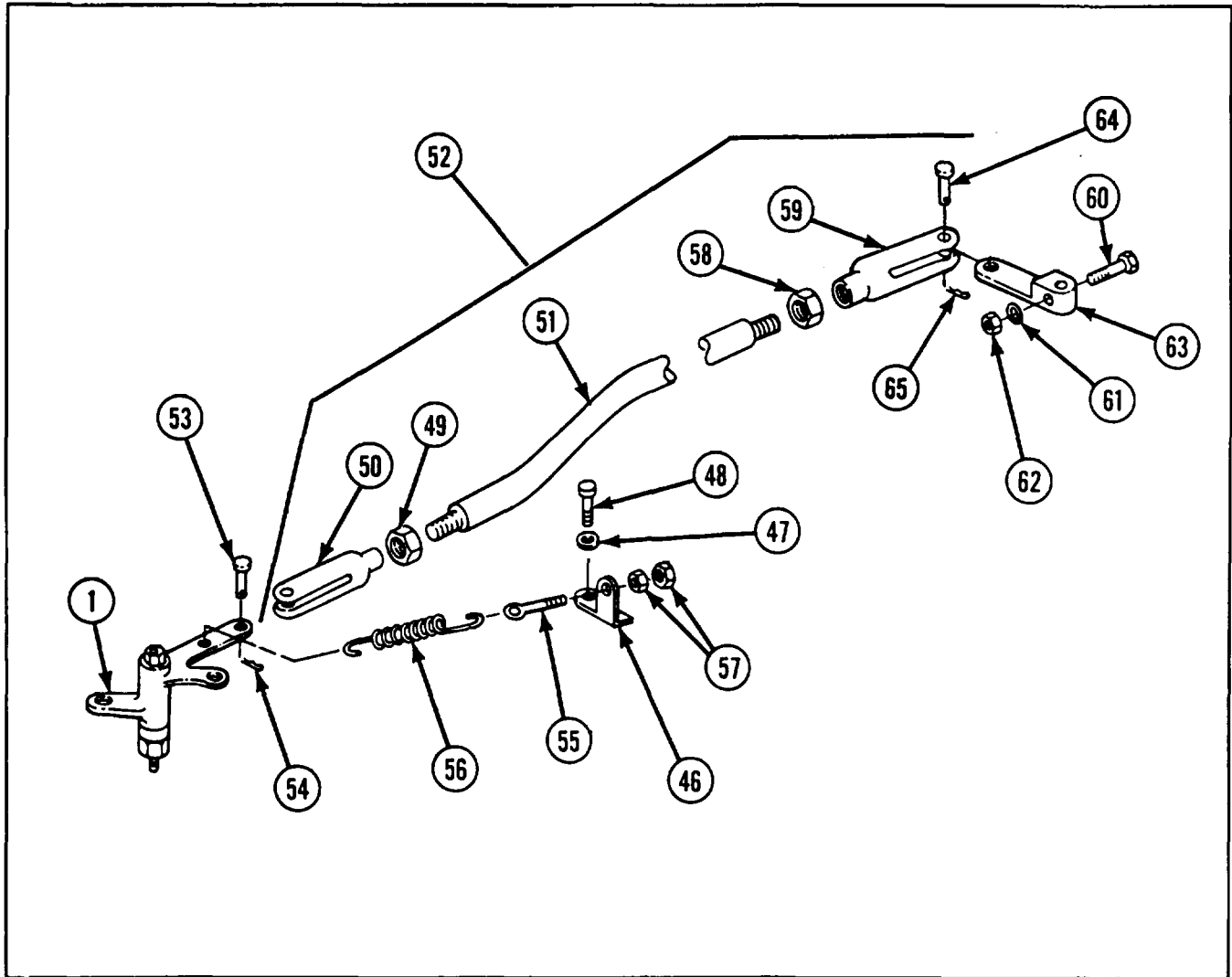
- 1 Install transmission and governor linkage bell crank (1), sleeve bearing (2), and shouldered stud (3).
- 2 Install sleeve bearing (4), flat washer (5), and new self-locking nut (6).
- 3 Install throttle pedal remote control lever (7), flat washer (8), and hexagon plain nut (9).
- 4 Install tube rod (10). Install two rod end plain bearings (11) and two hexagon plain nuts (12) to ends of tube rod.
- 5 Tighten two hexagon plain nuts (12) on ends of tube rod (10).
- 6 Install hexagon head capscrew (13), new lockwasher (14), and hexagon plain nut (15) on rigid connecting link (16).



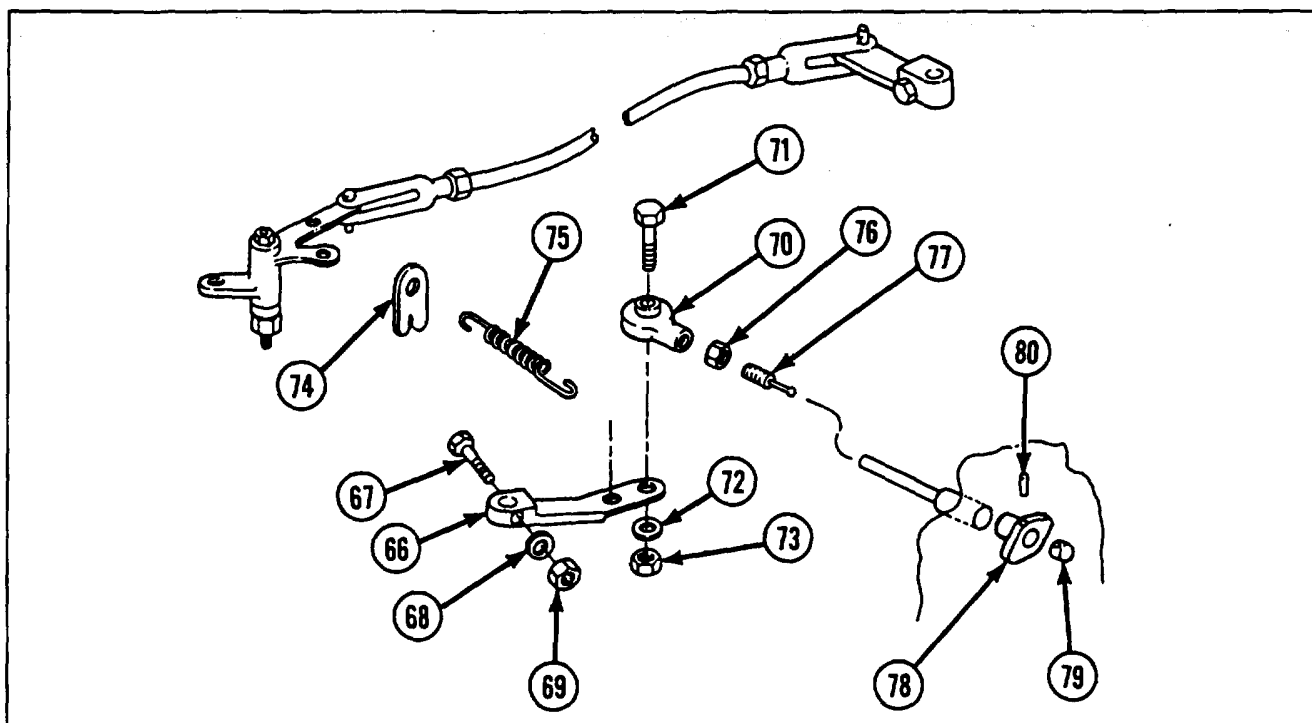
- 7 Install throttle linkage bell crank (17) and headless straight pin (18). Install two new cotter pins (19) in headless straight pin.
- 8 Install hexagon head capscrew (20), new lockwasher (21), and hexagon plain nut (22).
- 9 Install throttle linkage plain stud (23), hexagon plain nut (24), and rod end ball bearing (25).
- 10 Install hexagon head capscrew (26), new lockwasher (27), and hexagon plain nut (28).
- 11 Install hexagon plain nut (29) and rod end ball bearing (30) on throttle linkage plain stud (23).
- 12 Install hexagon head capscrew (31), new lockwasher (32), and hexagon plain nut (33).
- 13 Install transmission throttle control lever (34).
- 14 Install threaded end rod (35), flat washer (36), helical spring (37), and flat washer (38) on transmission throttle control lever (34).
- 15 Install two new cotter pins (39) in threaded end rod (35).
- 16 Install hexagon plain nut (40) and rod end ball bearing (41). Tighten hexagon plain nut.
- 17 Install rod assembly (42). Install hexagon head capscrew (43), new lockwasher (44), and hexagon plain nut (45) on transmission and governor linkage bell crank (1).

2-58. MAINTENANCE OF THROTTLE AND ACCELERATOR CONTROLS AND LINKAGE (ENGINE COMPARTMENT) (CONT).

INSTALLATION (CONT)



- 18** Install angle bracket (46), new lockwasher (47), and hexagon head capscrew (48).
- 19** Install hexagon plain nut (49) and rod end clevis (50) on governor control rod (51).
- 20** Install rigid connecting link (52), headed straight pin (53), and new cotter pin (54) on transmission and governor linkage bell crank (1).
- 21** Install eye bolt (55), helical spring (56), and two hexagon plain nuts (57). (49 and 58) at both ends of governor control rod (51).
- 23** Install hexagon head capscrew (60), new lockwasher (61), and hexagon plain nut (62). Install governor throttle control lever (63).
- 24** Install headed straight pin (64) and new cotter pin (65).



- 25 Install engine shutdown control lever (66). Install hexagon head capscrew (67), new lockwasher (68), and hexagon plain nut (69).
- 26 Install rod end ball bearing (70). Install hexagon head capscrew (71), new lockwasher (72), and hexagon plain nut (73).
- 27 Install detent plate (74) and helical spring (75).
- 28 Install hexagon plain nut (76) on wire rope assembly (77). Install cable on rod end ball bearing (70) and tighten nut.
- 29 Install starting handle (78), cable end (79), and new spring pin (80).
- 30 Adjust rod end ball bearing (70) on wire rope assembly (77) until hole in rod end ball bearing aligns with hole in engine shutdown control lever (66) when starting handle (78) is in position against bulkhead.

ADJUSTMENT

- 1 Turn off engine.
- 2 Block tracks.

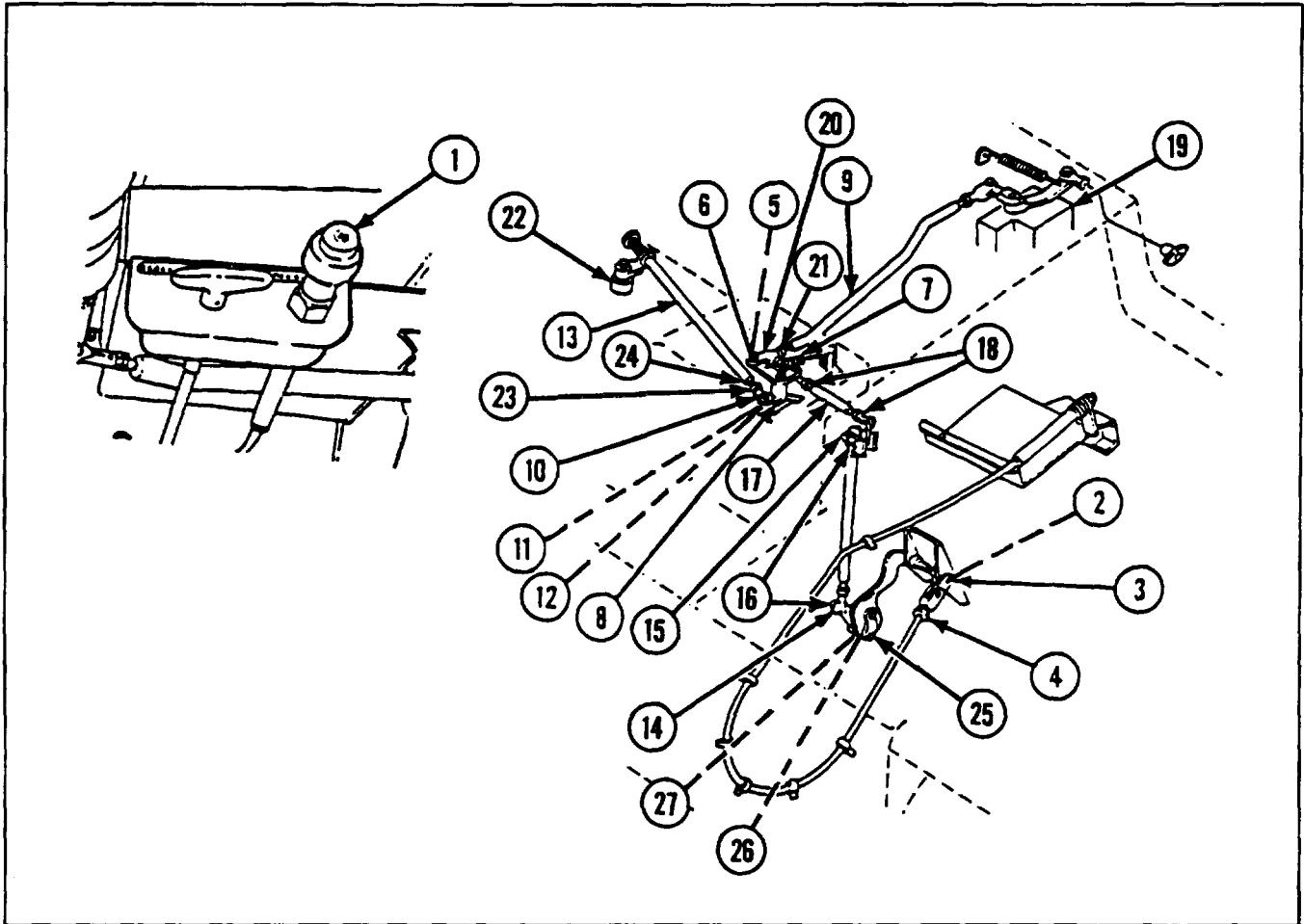
WARNING

Brake foot pedal is spring-loaded. Before working in forward area of driver's compartment, ensure vehicle tracks are blocked and parking brake is released.

- 3 Release foot pedal.

2-58. MAINTENANCE OF THROTTLE AND ACCELERATOR CONTROLS AND LINKAGE (ENGINE COMPARTMENT) (CONT).

ADJUSTMENT (CONT)



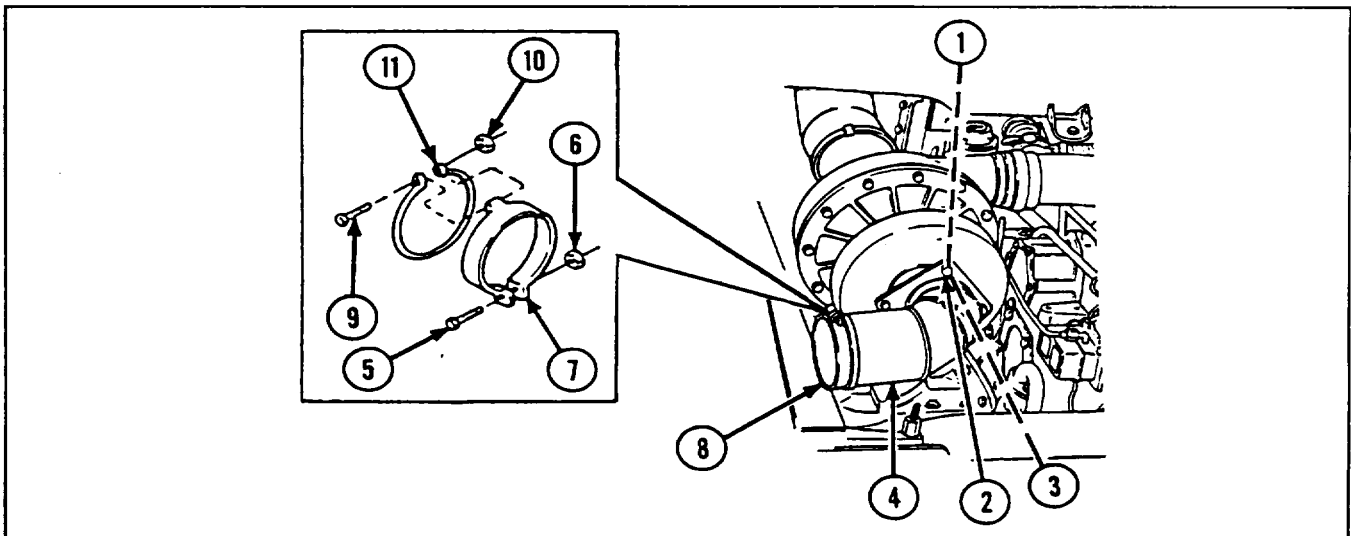
- 4 Push throttle control (1) in.
- 5 Remove cotter pin (2) and pin (3).
- 6 Remove clevis (4).
- 7 Remove cotter pin (5) and headed straight pin (6).
- 8 Disconnect helical spring (7) from transmission and governor linkage bellcrank (8).
- 9 Position rigid connecting link (9) away from transmission and governor linkage bellcrank (8).
- 10 Remove hexagon plain nut (10), lockwasher (11), and hexagon head capscrew (12) from rod assembly (13) and transmission and governor linkage bell crank (8).
- 11 Position rod assembly (13) away from transmission and governor linkage bell crank (8).

- 12 Adjust foot rigid connecting link rod ends (14) to position vertical arm of throttle linkage bell crank (15) parallel to bulkhead.
- 13 Tighten hexagon plain nuts (16).
- 14 Position transmission and governor linkage bell crank (8) at right angles to throttle linkage plain stud (17) by holding throttle linkage bell crank (15) in position and adjust throttle linkage stud rod ends.
- 15 Tighten hexagon plain nuts (18).
- 16 Position rigid connecting link (9) toward governor (19) (idle position).
- 17 Adjust clevis (20) until hole aligns with hole in transmission and governor linkage bell crank (8).
- 18 Unscrew rod end clevis (20) one more turn.
- 19 Tighten hexagon plain nut (21).
- 20 Attach rod end clevis (20) to transmission and governor linkage bell crank (8).
- 21 Install clevis pin (22) and cotter pin (23) to rod end clevis.
- 22 Rotate and hold throttle control lever (24) fully clockwise.
- 23 Position rigid connecting link (9) away from governor (20) (full-throttle position).
- 24 Adjust rod end ball bearing (25) until hole aligns with hole in transmission and governor linkage bell crank (8).
- 25 Tighten nut (26).
- 26 Install capscrew (27), lockwasher (28), and nut (29).
- 27 Adjust clevis (6) until hole aligns with hole in brake foot pedal.
- 28 Unscrew clevis (6) two more turns.
- 29 Install pin (30) and cotter pin (31).
- 30 Connect helical spring (7) to transmission and governor linkage bell crank (8).
- 31 Road test vehicle.

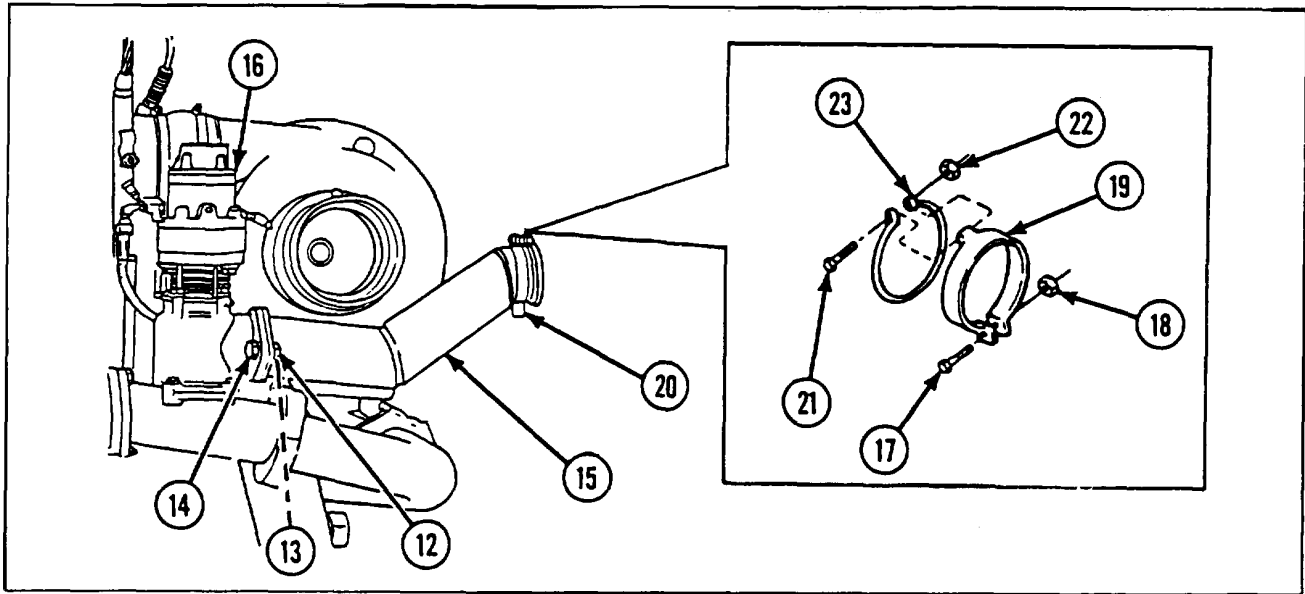
2-59. MAINTENANCE OF EXHAUST SYSTEM (ENGINE MODEL 7083-7398).

This task covers:	a. <i>Removal/Disassembly</i> b. <i>Inspection/Repair</i>	c. <i>Reassembly/Installation</i>
INITIAL SETUP		
<i>Tools and Special Tools</i>	<i>References</i>	
Plier wire twister (item 29, appx G)	TM 9-2350-304-24P-1	
<i>Materials/Parts</i>	<i>Equipment Conditions</i>	
Lockwasher (2)	2-887 Engine deck assembly removed	
Lockwire (item 22, appx C)		
Self-locking nut (4)		

REMOVAL/DISSASSEMBLY



- 1 Remove lockwire (1).
- 2 Remove four hexagon head capscrews (2) and four flat washers (3).
- 3 Remove engine exhaust flange to tube elbow (4).
- 4 Remove hexagon head capscrew (5) and self-locking nut (6) from clamp (7). Remove engine exhaust protective cap assembly (8) from engine exhaust flange to tube elbow (4).
- 5 Remove hexagon head capscrew (9) and self-locking nut (10) from swing check valve disk (11). Remove swing check valve disk (11) and clamp (7).



- 6 Remove two hexagon plain nuts (12), two lockwashers (13) and two hexagon head cap screws (14) from exhaust pipe (15). Remove exhaust pipe from turbocharger regulator (16).
- 7 Remove hexagon head capscrew (17) and self-locking nut (18) from swing check valve clamp (19). Remove exhaust system protective cap assembly (20) from exhaust pipe (15).
- 8 Remove hexagon head capscrew (21) and self-locking nut (22) from swing check valve disk (23). Remove swing check valve disk (23) and swing check valve clamp (19).

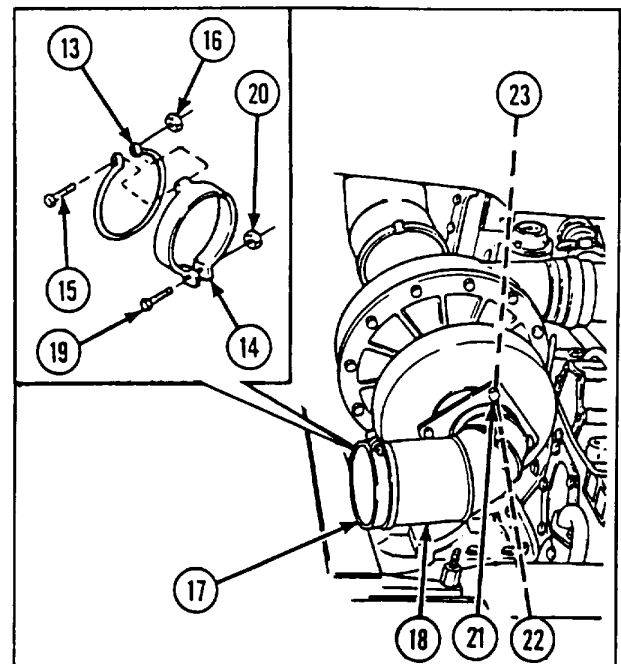
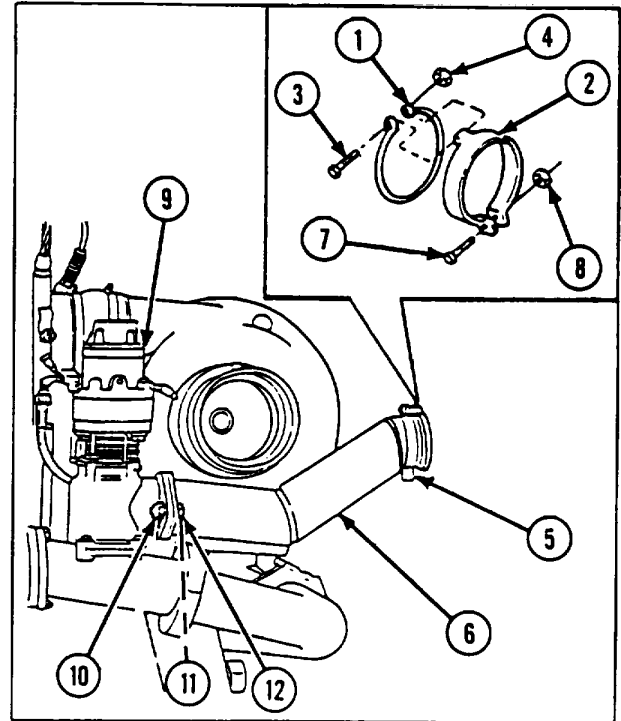
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-59. MAINTENANCE OF EXHAUST SYSTEM (ENGINE MODEL 7083-7398) (CONT.).

REASSEMBLY/INSTALLATION

- 1 Install swing check valve disk (1) and swing check valve clamp (2). Install hexagon head capscrew (3) and new self-locking nut (4) in swing check valve disk (1).
- 2 Install exhaust system protective cap assembly (5) on exhaust pipe (6). Install hexagon head capscrew (7) and new self-locking nut (8) in swing check valve clamp (2).
- 3 Install exhaust pipe (6) on turbocharger regulator (9). Install two hexagon head capscrews (10), two new lockwashers (11), and two hexagon plain nuts (12).
- 4 Install swing check valve disk (13) on clamp (14). Install hexagon head capscrew (15) and new self-locking nut (16) in swing check valve disk (13).
- 5 Install engine exhaust protective cap assembly (17) on engine exhaust flange tube elbow (18). Install hexagon head capscrew (19) and new self-locking nut (20) in clamp (14).
- 6 Install engine exhaust flange to tube elbow (18).
- 7 Install four flat washers (21) and four hexagon head capscrews (22).
- 8 Install new lockwire (23).



2-60. MAINTENANCE OF EXHAUST SYSTEM (ENGINE MODEL 7083-7395).

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP			
<i>References</i>	<i>Equipment Conditions</i>		
TM 9-2350-304-24P-1	2-887 Engine deck assembly removed		

REMOVAL

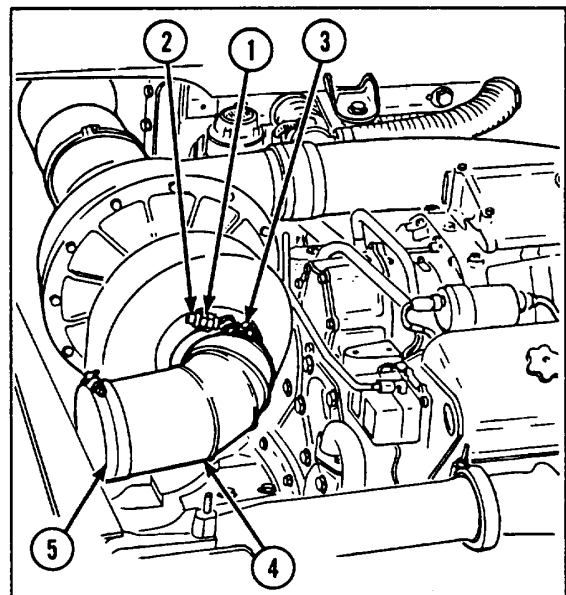
- 1 Loosen nut (1) on coupling clamp T-bolt (2).
- 2 Unhook coupling clamp T-bolt (2) and remove coupling clamp (3), exhaust elbow (4), and swing check valve (5).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install exhaust elbow (4), swing check valve (5), and coupling clamp (3).
- 2 Connect coupling clamp T-bolt (2) to coupling clamp (3).
- 3 Tighten nut (1) on coupling clamp T-bolt (2).

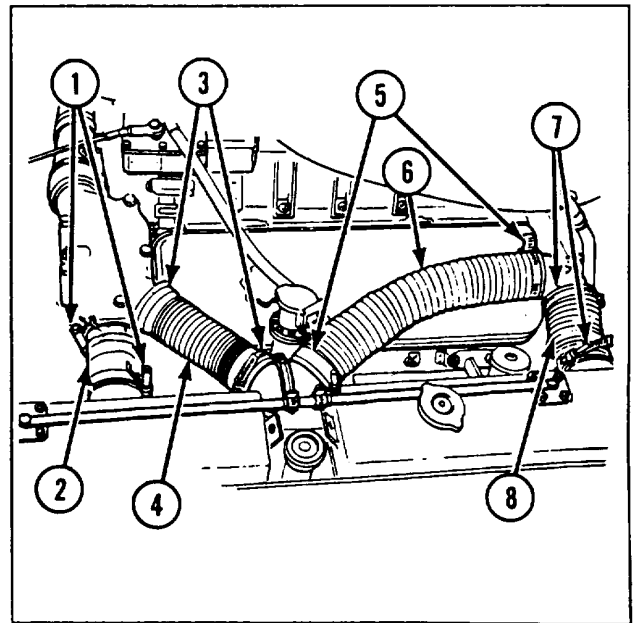


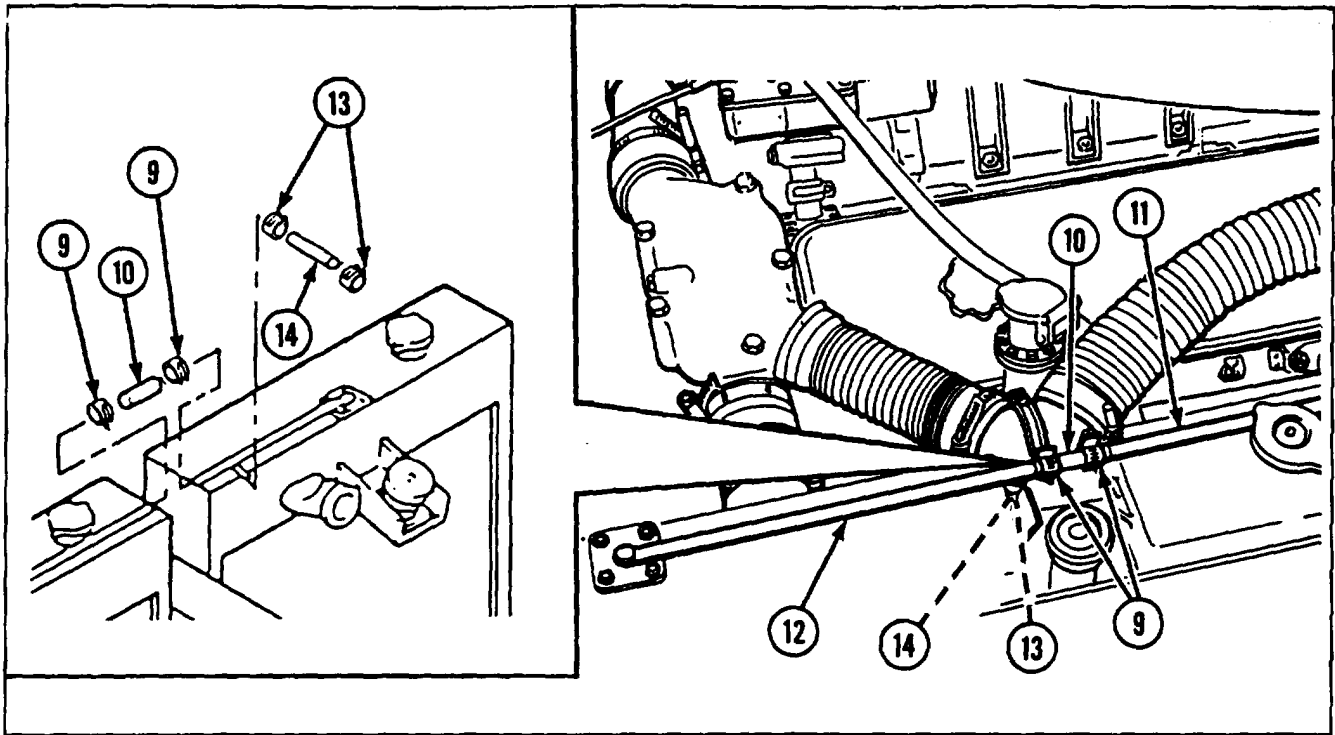
2-61. MAINTENANCE OF RADIATOR AND RELATED PARTS.

This task covers:	a. <i>Removal</i> b. <i>Inspection/Repair</i>	c. <i>Cleaning</i> d. <i>Installation</i>
INITIAL SETUP		
<i>Tools and Special Tools</i>		
Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)		
<ul style="list-style-type: none"> • Torque wrench (0 to 170 ft-lb) • Wire brush 		
Hoist		
Sling		
<i>Materials/Parts</i>		
Adhesive (item 4, appx C)		
Dry cleaning solvent (item 15, appx C)		
Emery cloth (item 11, appx C)		
Gasket (2)		
Gasket (2)		
Hose (2) (figure D-8, appx D)2-514		
Liquid soap (item 41, appx C)		
Lockwasher (18)		
Lockwasher (12)		
Nonmetallic hose (2) (figure D-10, appx D)		
Nonmetallic hose (2) (figure D-9, appx D)		
Packings with retainer (8)		
Rubber strip (4)		
Seal (4)		
<i>References</i>		
TB 750-651		
TM 9-2350-304-10		
TM 9-2350-304-24P-1		
<i>Equipment Conditions</i>		
Cooling system drained		
(TM 9-2350-304-10)		
Radiator support beam removed		

REMOVAL

- 1 Loosen two hose clamps (1), and remove with nonmetallic hose (2).
- 2 Loosen two hose clamps (3) and remove with preformed hose (4).
- 3 Loosen two hose clamps (5) and remove with preformed hose (6).
- 4 Loosen two hose clamps (7) and remove with preformed hose (8).



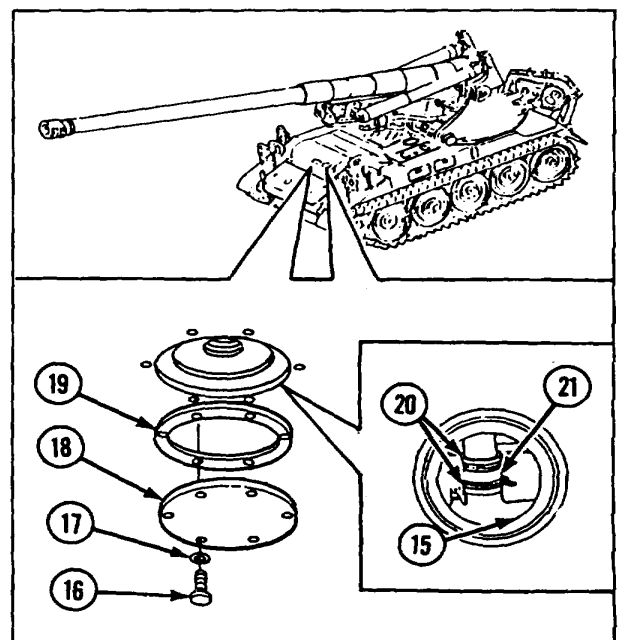


- 5 Loosen two hose clamps (9) and remove with hose (10) from pressure equalizing tube (11) and sure tank tube (12).
- 6 Loosen two clamps (13) and remove with

NOTE

- Gain access to radiator drain access covers from underside of hull.
- Work through radiator drain access holes (15) for steps 7 thru 10.
- Steps 7 thru 13 are written for removal of the right-hand radiator, but also apply to removal of the left-hand radiator.

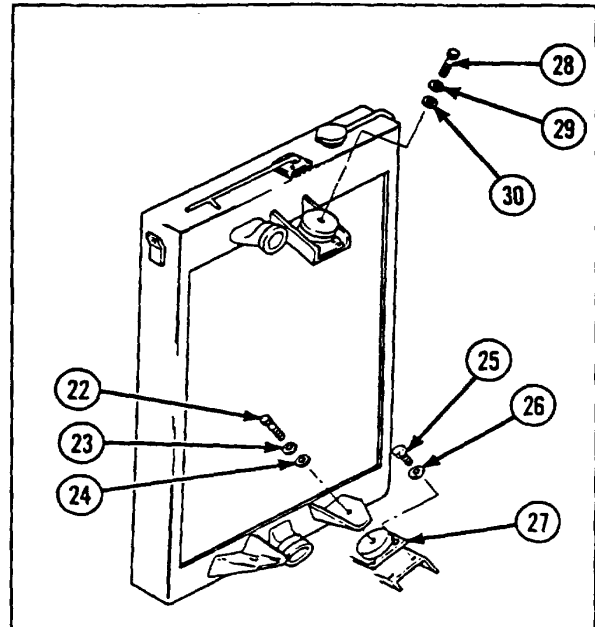
- 7 Remove six hexagon head capscrews (16), six lockwashers (17), radiator drain access cover (18), and radiator drain gasket (19).
- 8 Loosen two hose clamps (20) and remove with nonmetallic hose (21).



2-61. MAINTENANCE OF RADIATOR AND RELATED PARTS (CONT.).

REMOVAL (CONT)

- 9 Remove two hexagon head capscrews (22), two lockwashers (23), and two flat washers (24).
- 10 Remove six machine bolts (25), six lockwashers (26), and two radiator base resilient mounts (27).
- 11 Remove hexagon head capscrew (28), lockwasher (29), and flat washer (30).

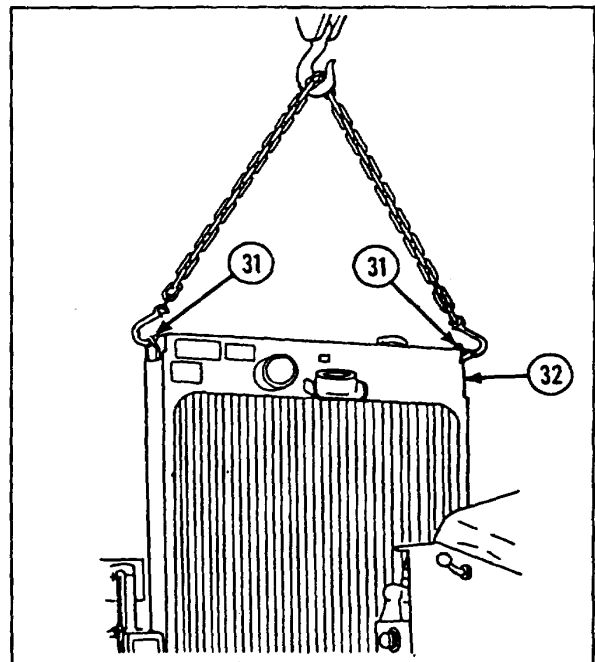


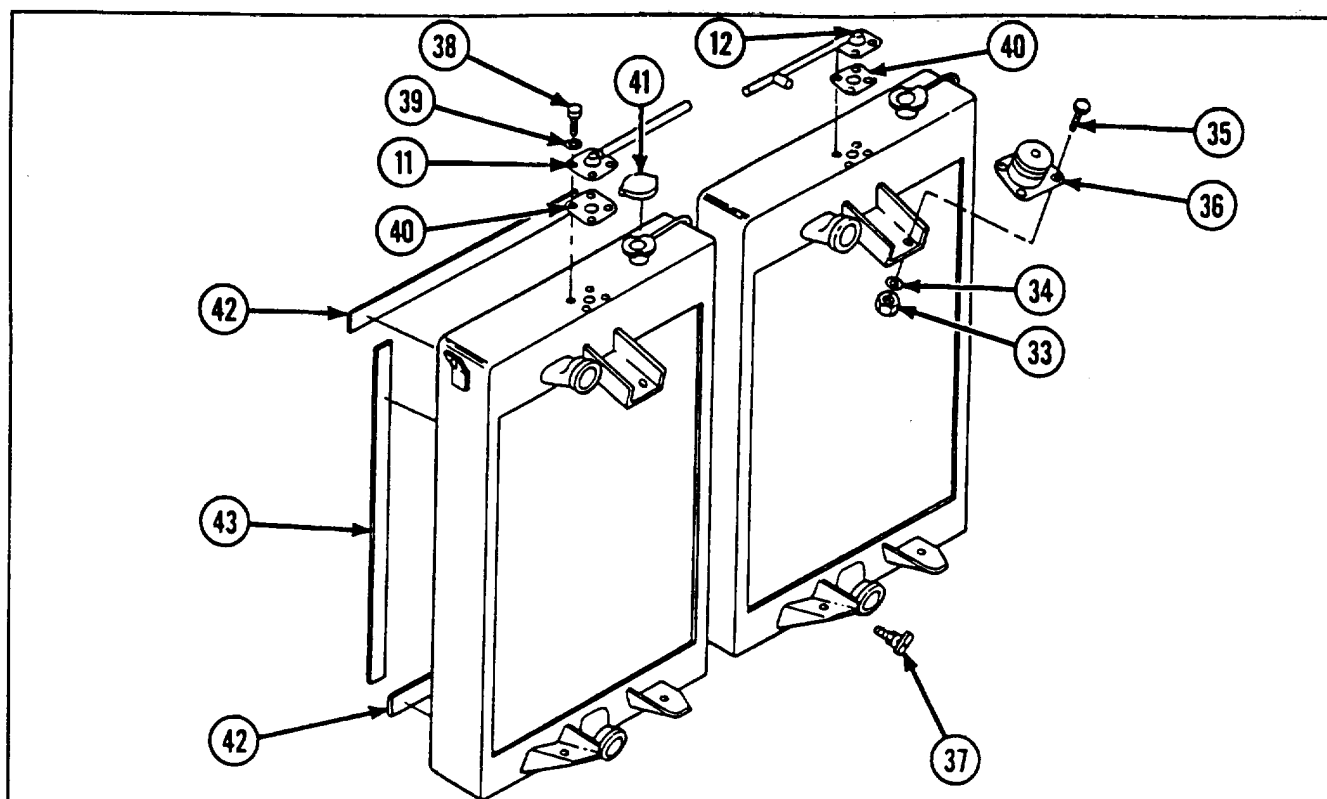
- 12 Connect a hoist and sling to lifting eyes (31) on each side of engine coolant radiator (32).

CAUTION

Use extreme caution when lifting left hand engine coolant radiator to prevent damage to core and generator air ducting.

- 13 Lift engine coolant radiator (32) carefully out of engine compartment.





- 14 Remove six hexagon plain nuts (33), six lockwashers (34), six machine bolts (35), and two radiator base resilient mounts (36).
- 15 Remove two drain cocks (37).
- 16 Remove eight hexagon head capscrews (38) and eight packings with retainers (39).
- 17 Remove pressure equalizing tube (11), surge tank tube (12), and two radiator tube assembly gaskets (40).
- 18 Remove two filler opening caps (41).
- 19 Remove four radiator bulkhead rubber strips (42) and four radiator bulkhead seals (43) only if damaged.

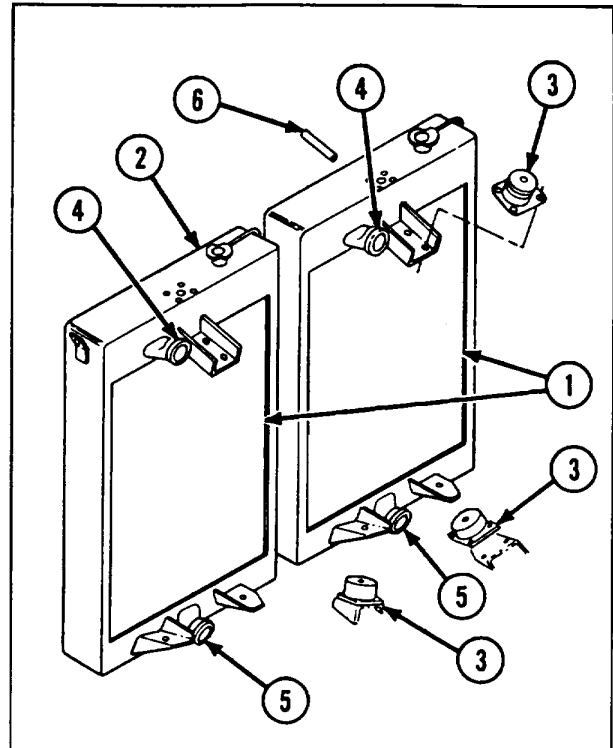
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Hoses are manufactured items; refer to appendix D.
- 3 Nonmetallic hoses are manufactured items; refer to appendix D.
- 4 If engine coolant radiator is damaged, notify direct support maintenance.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

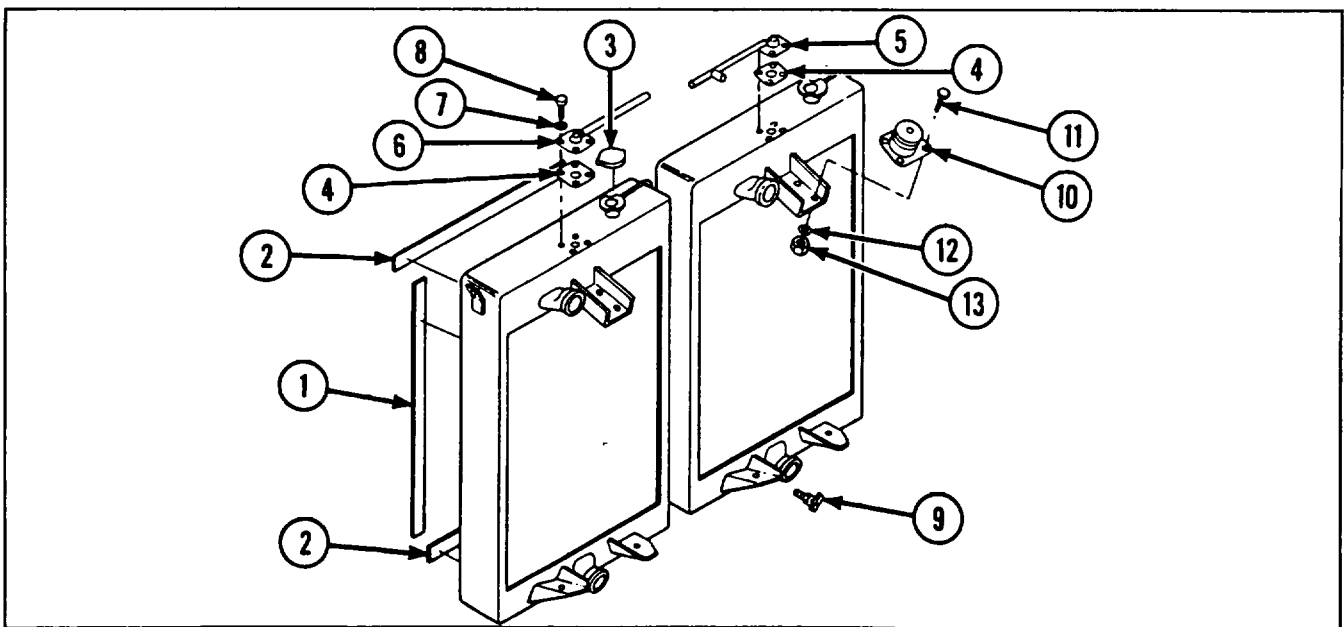
2-61. MAINTENANCE OF RADIATOR AND RELATED PARTS (CONTS).

CLEANING

- 1 Remove dirt from radiator cores (1) with low-pressure compressed air.
- 2 Clean outside of engine coolant radiator (2), six radiator base resilient mounts (3), and all metal parts with dry cleaning solvent.
- 3 Dry with low-pressure compressed air.
- 4 Clean inlet and outlet radiator pipes (4 and 5) with wire brush or emery cloth.
- 5 Clean inside and outside of overflow hose (6) with liquid soap and water.
- 6 Flush with clean water and allow to dry.
- 7 Flush inside of engine coolant radiator (2) with clean, fresh water. If clogged, notify direct support maintenance.
- 8 Refer to TB 750-651 for general cleaning p



INSTALLATION

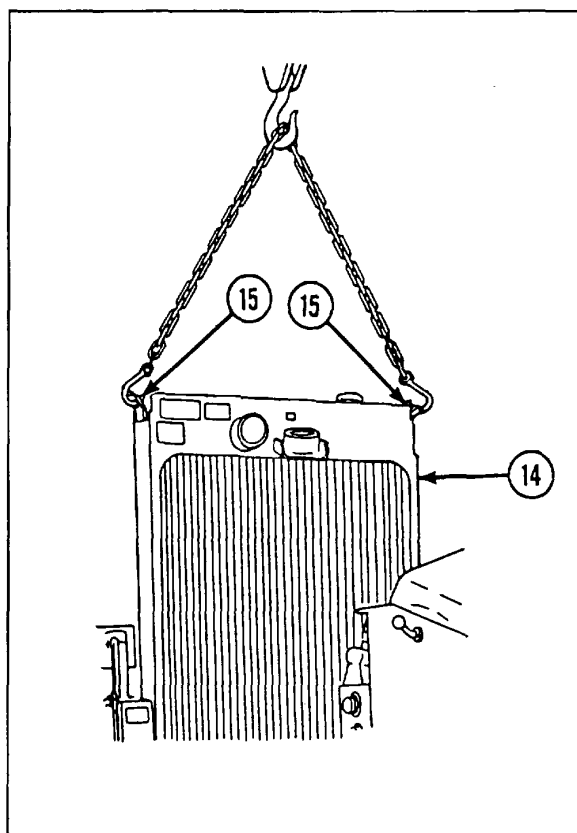


- 1 If removed, apply adhesive to four radiator bulkhead seals (1) and four radiator bulkhead rubber strips (2) and install.
- 2 Install two filler opening caps (3).
- 3 Install two new radiator tube assembly gaskets (4), surge tank tube (5), and pressure equalizing tube (6), and secure with eight new packings with retainers (7) and eight hexagon head capscrews (8). Torque hexagon head capscrews to 1.2 to 1.5 ft-lb (1.6 to 2.0 N•m).
- 4 Install two drain cocks (9).
- 5 Install two radiator base resilient mounts (10) and secure with six machine bolts (11), six new lockwashers (12), and six hexagon plain nuts (13). Torque hexagon plain nuts to 17 to 19 ft-lb (23 to 26 N•m).

NOTE

Steps 6 thru 12 are written for installation of the right-hand engine coolant radiator, but also apply to installation of left-hand engine coolant radiator.

- 6 Using hoist and sling, lower engine coolant radiator (14) carefully into engine compartment.
- 7 Disconnect hoist and sling from lifting eyes (15) on each side of engine coolant radiator (14).



2-61. MAINTENANCE OF RADIATOR AND RELATED PARTS (CONT).

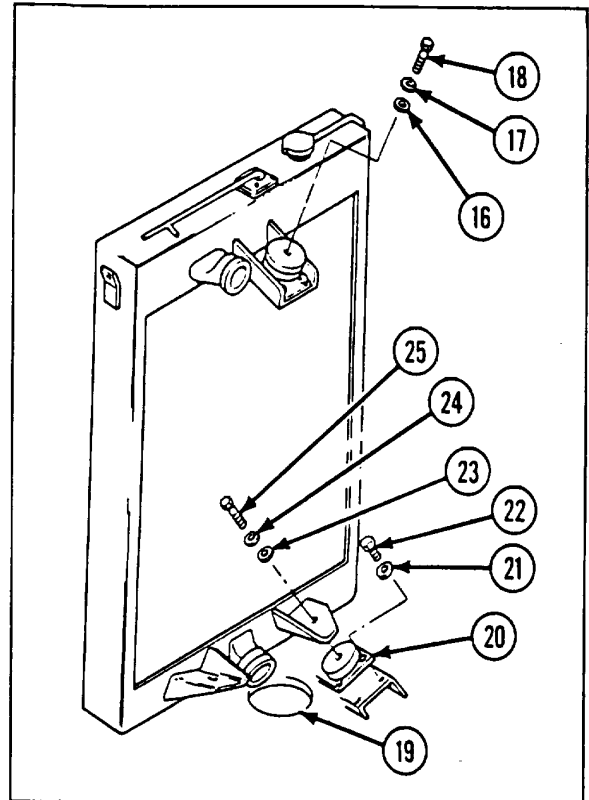
INSTALLATION (CONT)

- 8** Install flat washer (16), new lockwasher (17), and hexagon head capscrew (18).

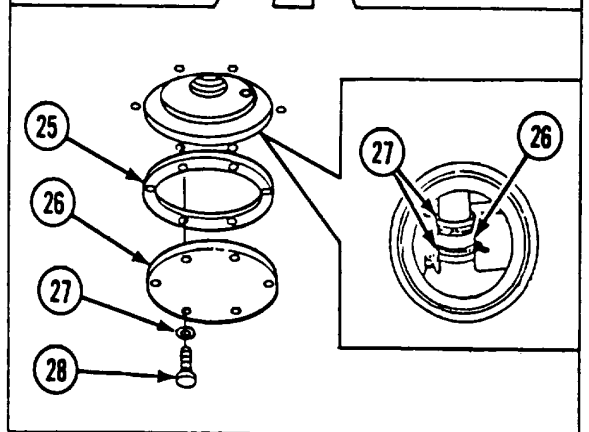
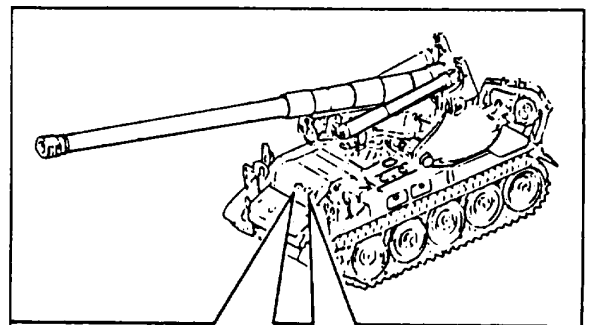
NOTE

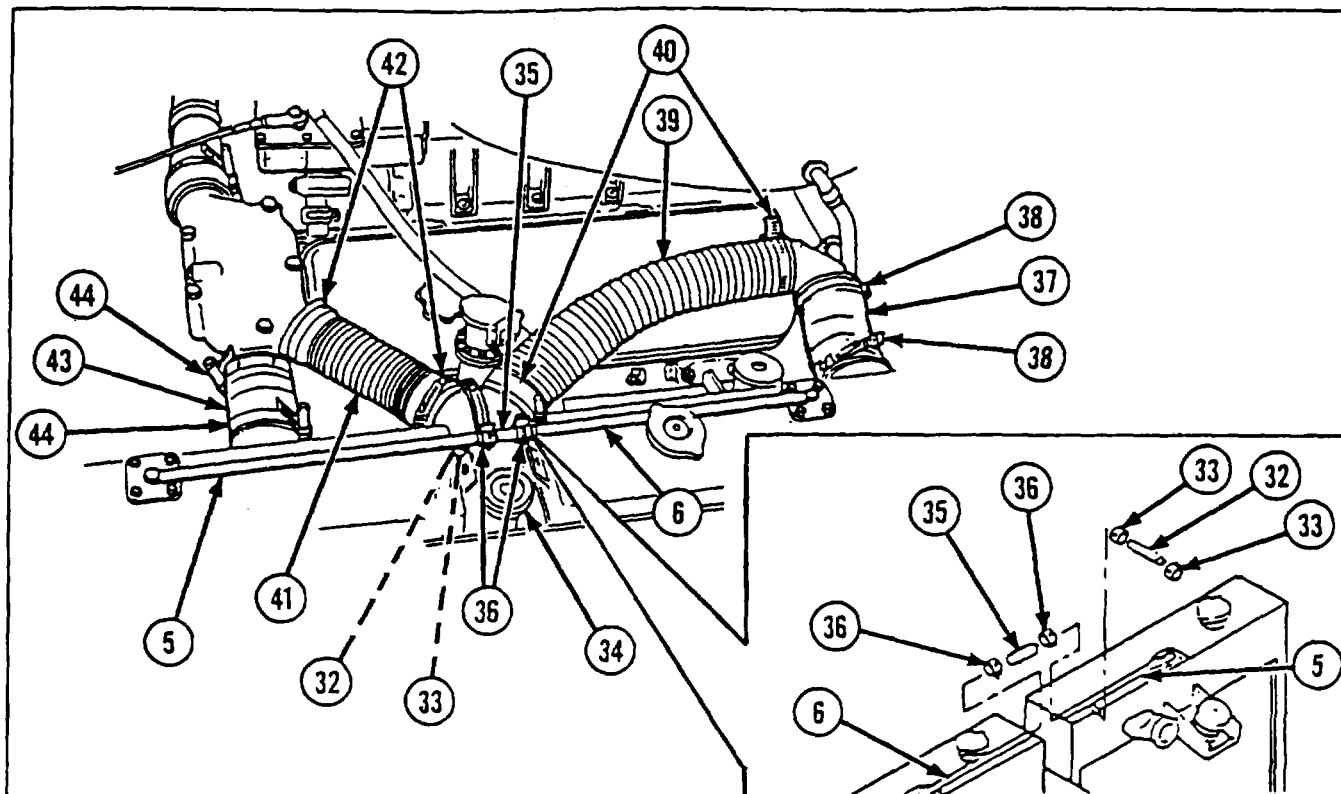
Work through radiator drain access hole (19) on underside of hull for steps 9 thru 12.

- 9** Install two radiator base resilient mounts (20) and secure with six new lockwashers (21) and six machine bolts (22). Torque machine bolts to 10 to 12 ft-lb (13 to 16 N•m).
- 10** Install two flat washers (23), two new lockwashers (24), and two hexagon head capscrews (25).



- 11** Install nonmetallic hose (26) with two hose clamps (27) and tighten hose clamps.
- 12** Install new radiator drain gasket (28), radiator drain access cover (29), six new lockwashers (30), and six screws (31).





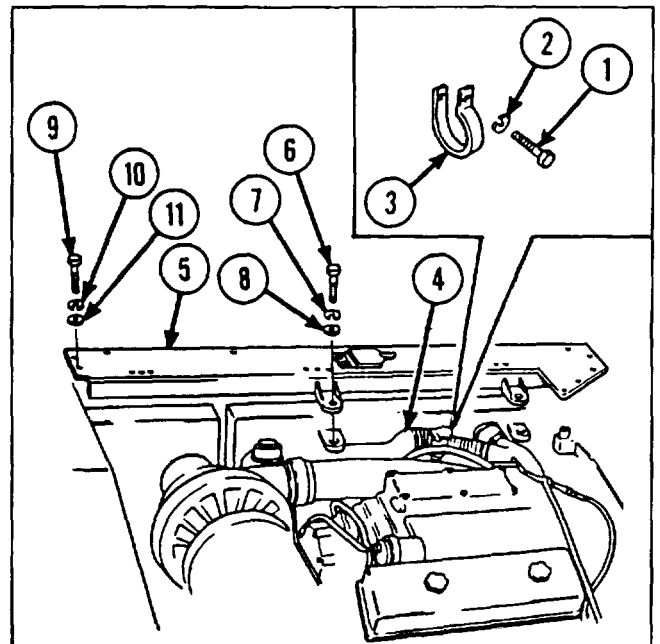
- 13 Connect hose (32) with two hose clamps (33) to surge tank tube (5) and surge tank assembly (34). Tighten hose clamps.
- 14 Slide hose (35) with two clamps (36) on surge tank tube (5) between surge tank tube and pressure equalizing tube (6).
- 15 Slide hose (35) with two hose clamps (36) onto pressure equalizing tube (6) so that hose is evenly positioned on the surge tank tube (5) and pressure equalizing tube. Tighten hose clamps.
- 16 Install preformed hose (37) with two hose clamps (38) and tighten hose clamps.
- 17 Install preformed hose (39) with two hose clamps (40) and tighten hose clamps.
- 18 Install preformed hose (41) with two hose clamps (42) and tighten hose clamps.
- 19 Install nonmetallic hose (43) with two hose clamps (44) and tighten hose clamps.
- 20 Install radiator support beam. Refer to page 2-514.
- 21 Fill cooling system. Refer to TM 9-2350-304-10.
- 22 Run engine until operating temperature is reached. Refer to TM 9-2350-304-10. Check for leaks. If leaks exist, check that all parts are correctly installed. If leaks still exist, inspect for defective parts.

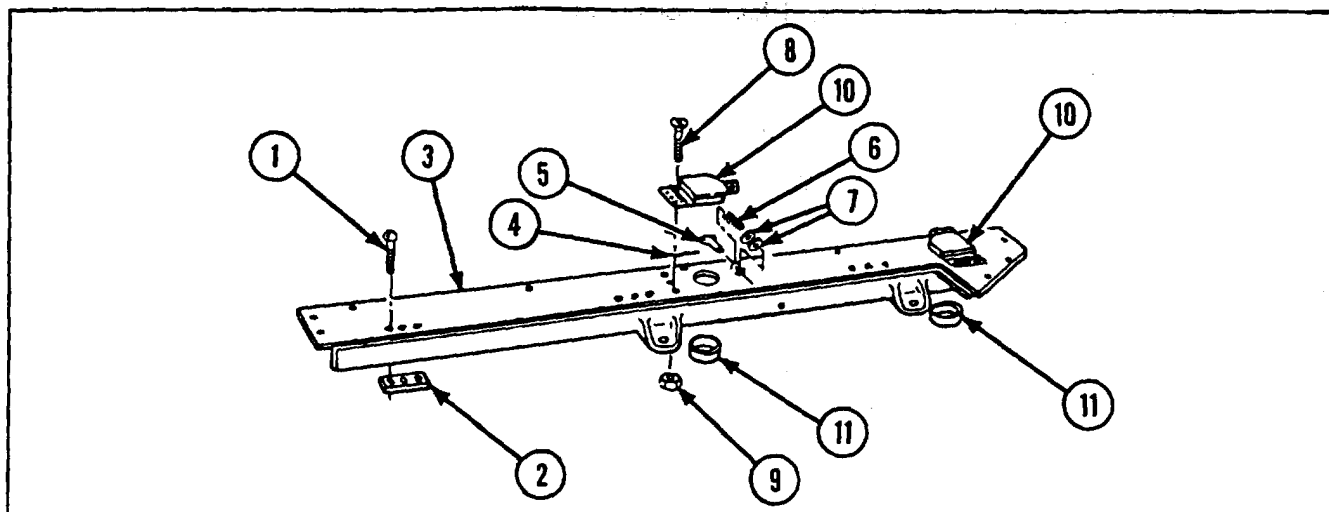
2-62. MAINTENANCE OF RADIATOR SUPPORT BEAM AND RELATED PARTS.

<p>This task covers:</p>	<p>a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i></p>	<p>d. <i>Reassembly</i> e. <i>Installation</i></p>
<p>INITIAL SETUP</p> <p><i>Tools and Special Tools</i> Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)</p> <ul style="list-style-type: none"> • Torque wrench (0 to 170 ft-lb) <p><i>Materials/Parts</i> Adhesive (item 4, appx C) Lockwasher Lockwasher (10) Nonmetallic seal (2) Self-locking nut (6) Spring pin (2)</p> <p><i>References</i> TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i> 2-887 Engine deck assembly removed</p>		

REMOVAL

- 1 Remove machine screw (1), lockwasher (2), and cushioned loop clamp (3) securing engine coolant elbow (4) to radiator beam assembly (5).
- 2 Remove two screws (6), two lockwashers (7), and two washers (8).
- 3 Remove ten hexagon head capscrews (9), ten lockwashers (10), and ten flat washers (11).
- 4 Remove radiator beam assembly (5).





DISASSEMBLY

- 1 Remove six machine screws (1) and three retaining plates (2) from hull deck support beam (3).
- 2 Remove two spring pins (4), two radiator filler cover pins (5), two springs (6), and four flat washers (7).
- 3 Remove six machine screws (8), six self-locking nuts (9), two radiator filler cap covers (10) from hull deck support beam (3).
- 4 Remove two nonmetallic seals (11) from hull deck support beam (3).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

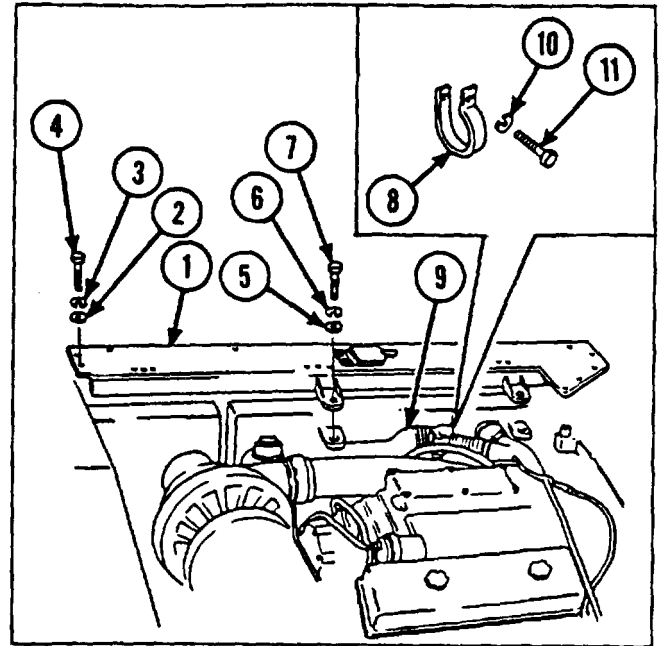
REASSEMBLY

- 1 Apply adhesive to two new nonmetallic seals (11). Install seals to hull deck support beam (3).
- 2 Install two radiator filler cap covers (10) to hull deck support beam (3), and secure with six machine screws (8) and six new self-locking nuts (9).
- 3 Install four flat washers (7), two springs (6), two radiator filler cover pins (5), and two new spring pins (4).
- 4 Install three retaining plates (2) to underside of hull deck support beam (3), and secure with six machine screws (1).

2-62. MAINTENANCE OF RADIATOR SUPPORT BEAM AND RELATED PARTS (CONT).

INSTALLATION

- 1 Install radiator beam assembly (1).
- 2 Install ten flat washers (2), ten new lockwashers (3), and ten hexagon head capscrews (4). Torque hexagon head capscrews to 21 to 23 ft-lb (28 to 31 N•m).
- 3 Install two flat washers (5), two new lockwashers (6), and two machine screws (7).
- 4 Install cushioned loop clamp (8) around engine coolant elbow (9). Secure to radiator beam assembly (1) with new lockwasher (10) and machine screw (11).

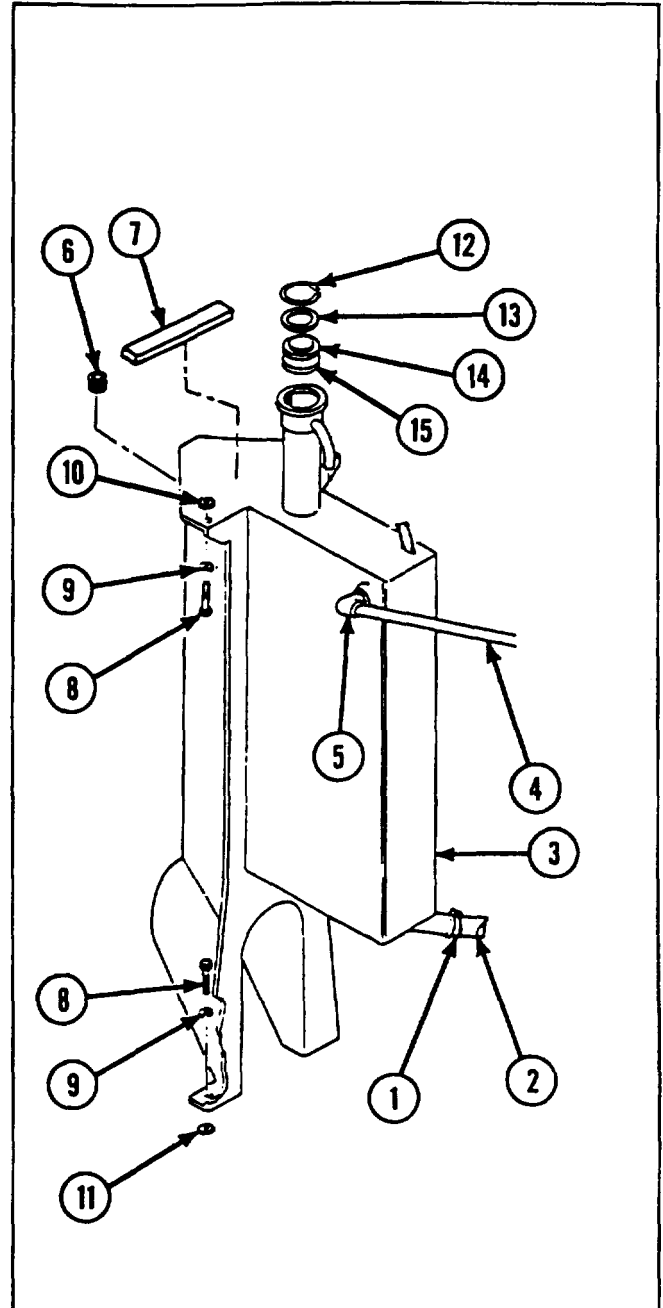


2-63. MAINTENANCE OF SURGE TANK AND RELATED PARTS.

This task covers:	a. <i>Removal/Disassembly</i>	c. <i>Reassembly/Installation</i>
	b. <i>Inspection/Repair</i>	
INITIAL SETUP		
<i>Tools and Special Tools</i>		
Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)		
• Torque wrench (0 to 170 ft-lb)		
<i>Materials/Parts</i>		
Adhesive (item 4, appx C)		
Lockwasher (4)		
Rubber strip		
Shim		
Surge tank parts kit		
<i>References</i>		
TM 9-2350-304-10		
TM 9-2350-304-24P-1		
<i>Equipment Conditions</i>		
2-506 Radiator removed		
Cooling system drained (TM 9-2350-304-10)		

REMOVAL/DISASSEMBLY

- 1 Remove hose clamp (1).
- 2 Disconnect nonmetallic hose (2) from surge tank assembly (3).
- 3 Disconnect nonmetallic hose assembly (4) from pipe to tube elbow (5).
- 4 Remove pipe to tube elbow (5) from surge tank assembly (3).
- 5 Remove pipe plug (6).
- 6 If damaged, remove support beam rubber strip (7).
- 7 Remove four hexagon head capscrews (8), four lockwashers (9), and two pads (10).
- 8 Remove surge tank assembly (3) and two remaining pads (11).
- 9 Remove retaining ring (12), gasket (13), valve assembly (14), and filler cap (15).



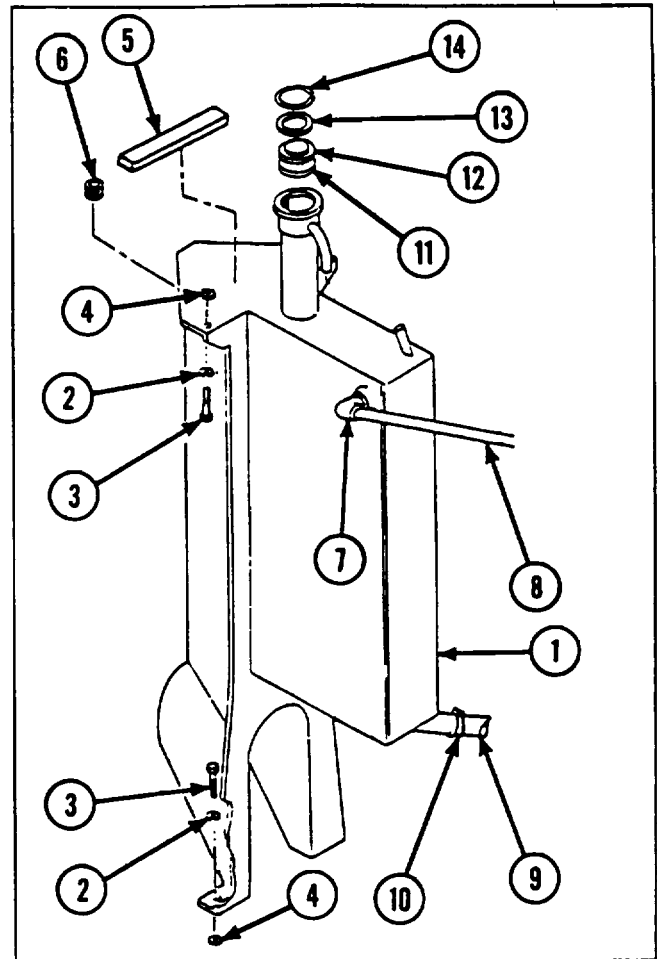
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-63. MAINTENANCE OF SURGE TANK AND RELATED PARTS (CONT).

REASSEMBLY/INSTALLATION

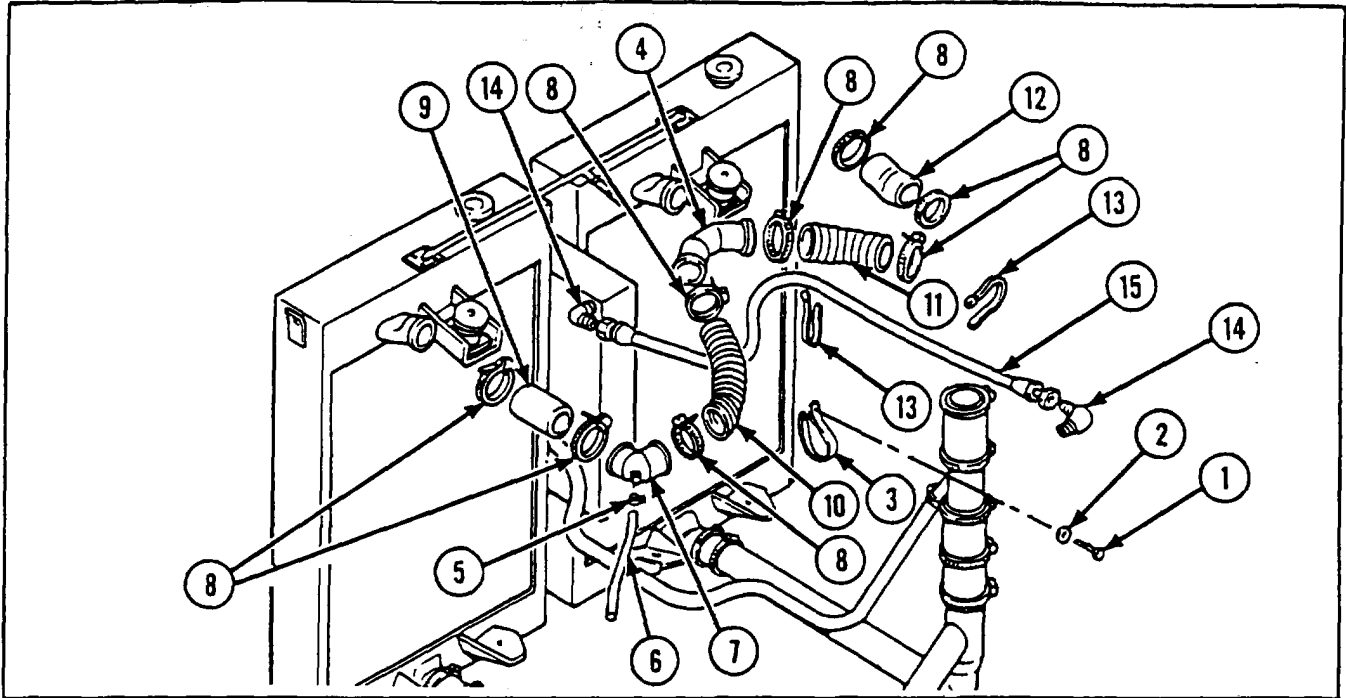
- 1 Install surge tank assembly (1) and secure with four new lockwashers (2), four hexagon head capscrews (3), and four pads (4). Torque hexagon head capscrews to 20 to 23 ft-lb (27 to 31 N•m).
- 2 If removed, apply adhesive to new support beam rubber strip (5) and install.
- 3 Install pipe plug (6) and tighten.
- 4 Install pipe to tube elbow (7) to surge tank assembly (1).
- 5 Connect nonmetallic hose assembly (8) to pipe to tube elbow (7) on surge tank assembly (1).
- 6 Connect nonmetallic hose (9) to surge tank assembly (1) and install hose clamp (10).
- 7 Install filler cap (11), new valve assembly (12), new gasket (13), and new retaining ring (14).



2-64. MAINTENANCE OF COOLING SYSTEM HOSES, PIPES, AND RELATED PARTS.

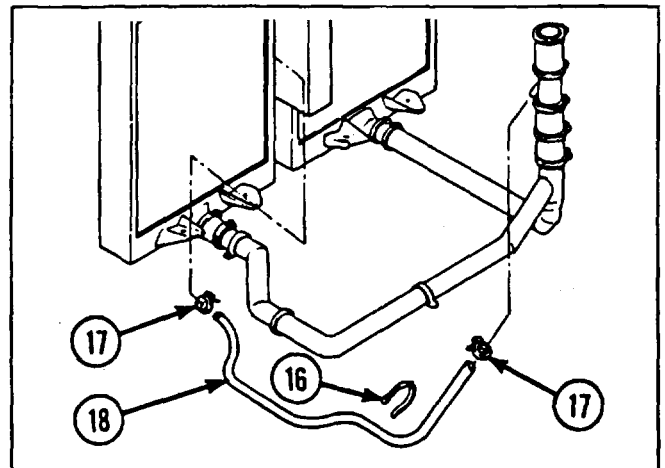
<i>This task covers:</i>	<i>a. Removal</i>	<i>b. Inspection/Repair</i>	<i>c. Installation</i>
INITIAL SETUP			
<i>Materials/Parts</i>		<i>References</i>	
Adhesive (item 3, appx C)		TM 9-2350-304-10	
Hose (figure D-8, appx D)		TM 9-2350-304-24P-1	
Lockwasher			
Lockwasher (8)			
Nonmetallic hose (figure D-9, appx D)		<i>Equipment Conditions</i>	
Nonmetallic hose (figure D-10, appx D)		Cooling system drained	
Sealing compound (item 36, appx C)		(TM 9-2350-304-10)	

REMOVAL



- 1 Remove machine screw (1), lockwasher (2), and cushioned loop clamp (3) from engine coolant elbow (4).
- 2 Remove hose clamp (5) and hose (6) from engine coolant detector take-off elbow (7).
- 3 Loosen and remove eight hose clamps (8), preformed hose (9), engine coolant detector take-off elbow (7), preformed hose (10), engine coolant elbow (4), preformed hose (11), and nonmetallic hose (12).
- 4 Cut and discard two marker bands (13).
- 5 Remove two pipe to tube elbows (14) and surge tank to engine manifold nonmetallic hose assembly (15).

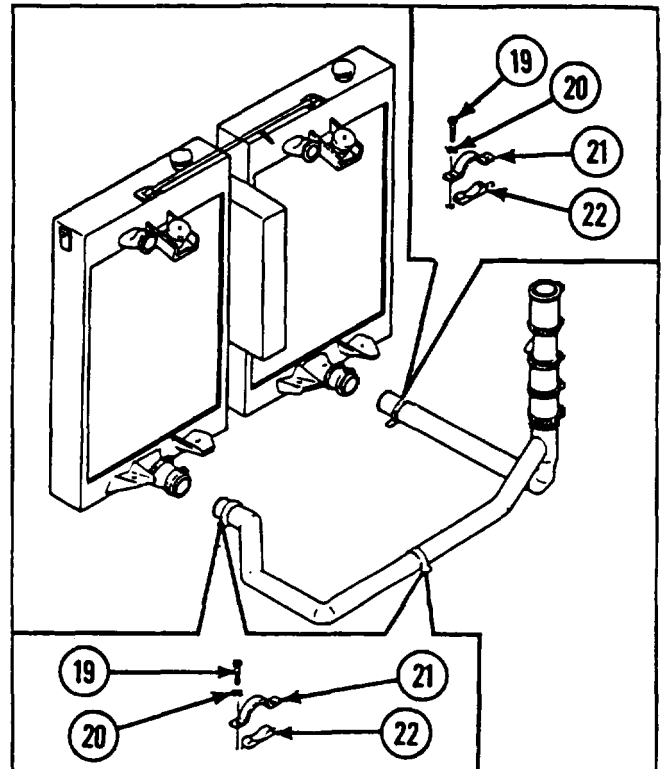
- 6 Cut and discard marker band (16).
- 7 Loosen and remove two hose clamps (17) and nonmetallic hose (18).



2-64. MAINTENANCE OF COOLING SYSTEM HOSES, PIPES, AND RELATED PARTS (CONT).

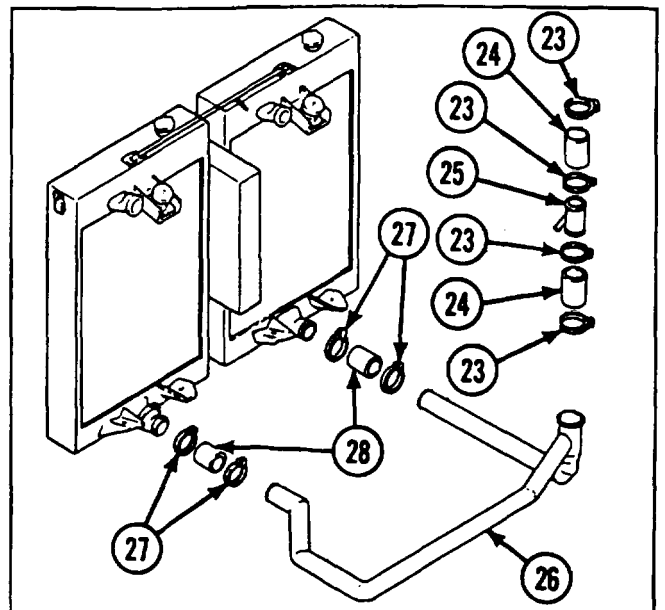
REMOVAL (CONT)

- 8 Remove eight hexagon head capscrews (19), eight lockwashers (20), four manifold retaining straps (21), and four rubber strips (22).



- 9 Loosen and remove four hose clamps (23), two nonmetallic hoses (24), and radiator manifold hose connector (25) from radiator coolant manifold (26).

- 10 Loosen and remove four hose clamps (27), two nonmetallic hoses (28), and radiator coolant manifold (26).



INSPECTION/REPAIR

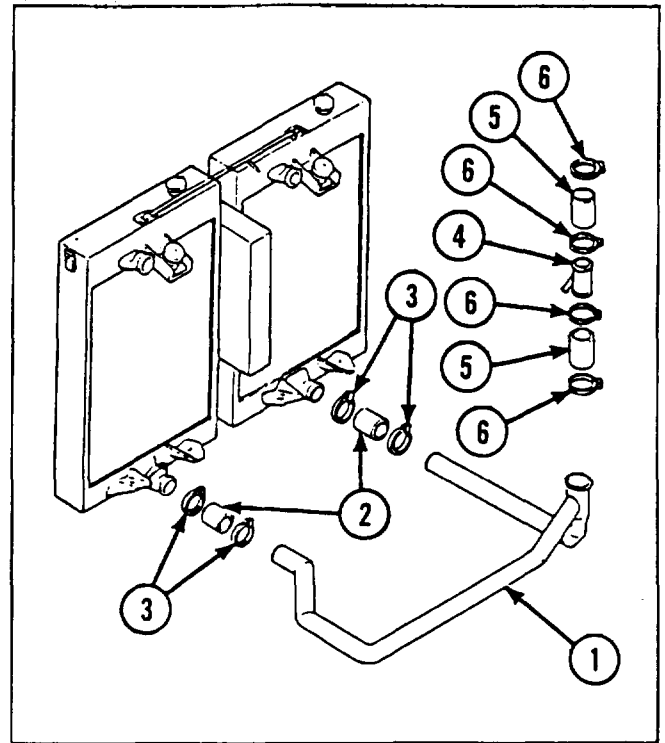
- 1 Inspect for broken, damaged, or missing parts.
- 2 Hose is a manufactured item, refer to appendix D.
- 3 Nonmetallic hoses are manufactured items, refer to appendix D.
- 4 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

NOTE

Apply sealing compound to hose connections before installing hoses.

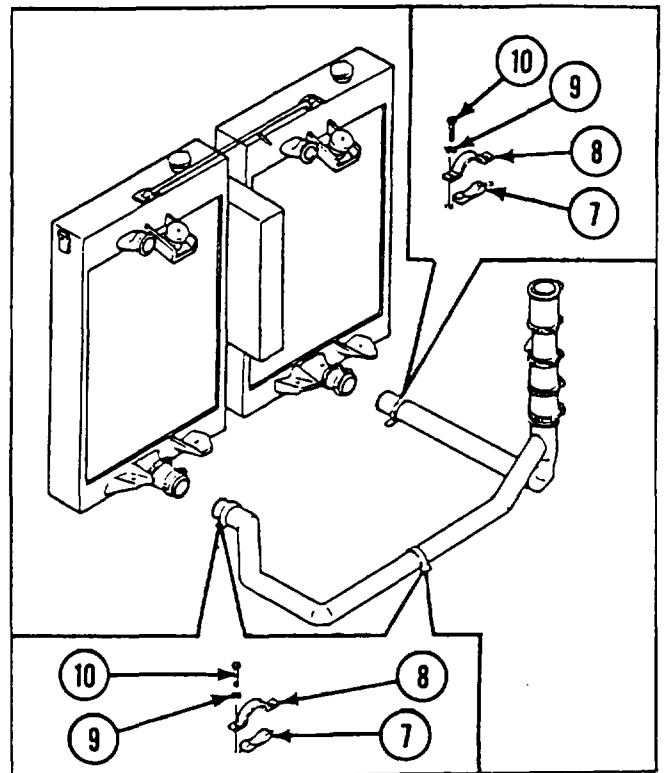
- 1 Install radiator coolant manifold (1), two nonmetallic hoses (2), and four hose clamps (3). Tighten hose clamps (3).
- 2 Install radiator manifold hose connector (4), two nonmetallic hoses (5), and four hose clamps (6) on radiator coolant manifold (1). Tighten hose clamps (6).



NOTE

Apply adhesive to rubber strip and position on floor between pads.

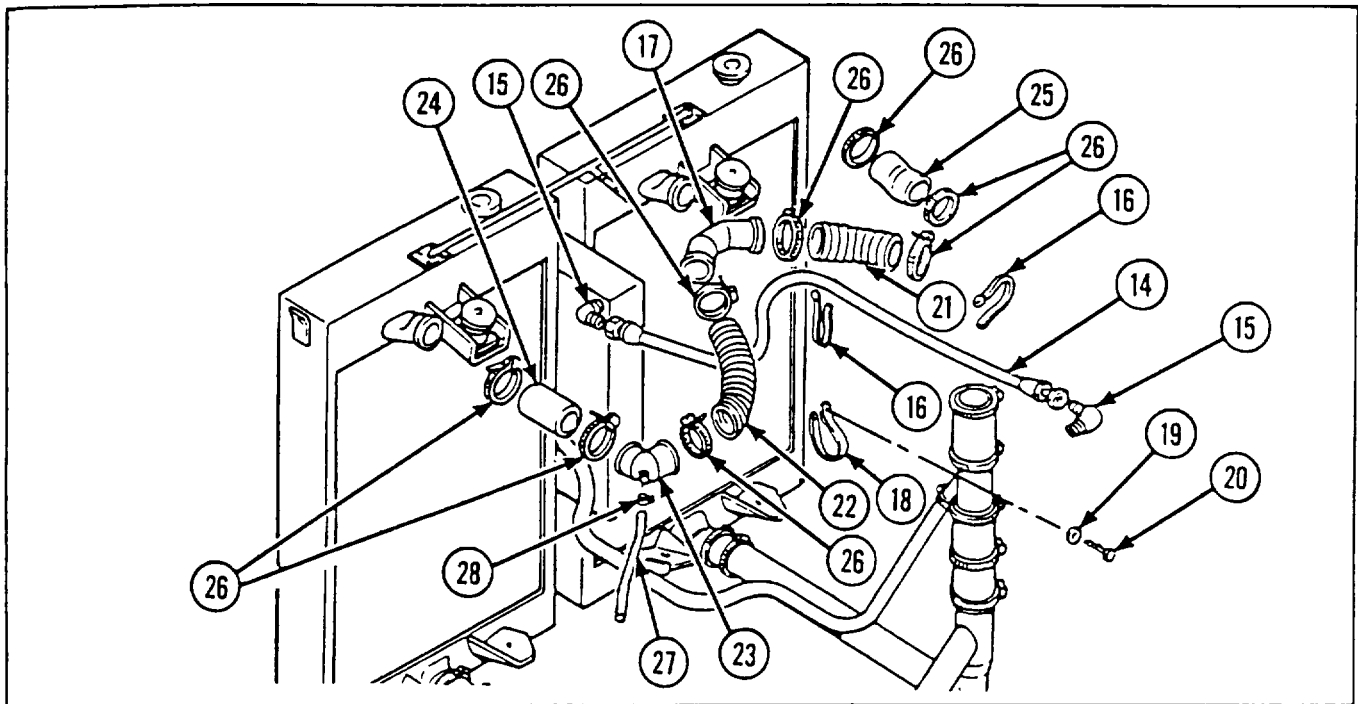
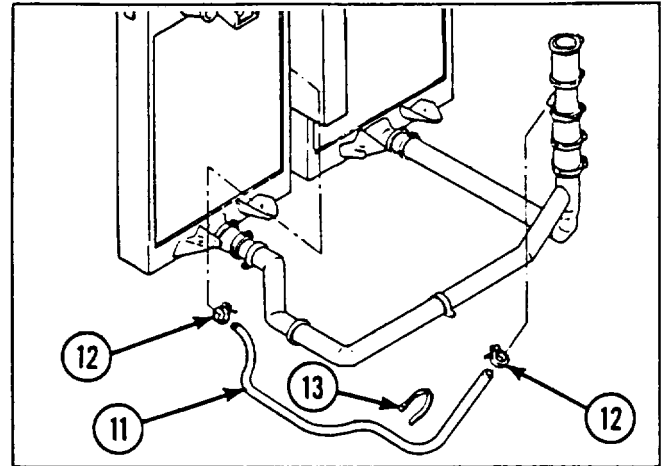
- 3 Install four rubber strips (7), four manifold retaining straps (8), eight new lockwashers (9), and eight hexagon head capscrews (10).



2-64. MAINTENANCE OF COOLING SYSTEM HOSES, PIPES, AND RELATED PARTS (CONT).

INSTALLATION (CONT)

- 4 Install nonmetallic hose (11) and two hose clamps (12).
- 5 Install new marker band (13).



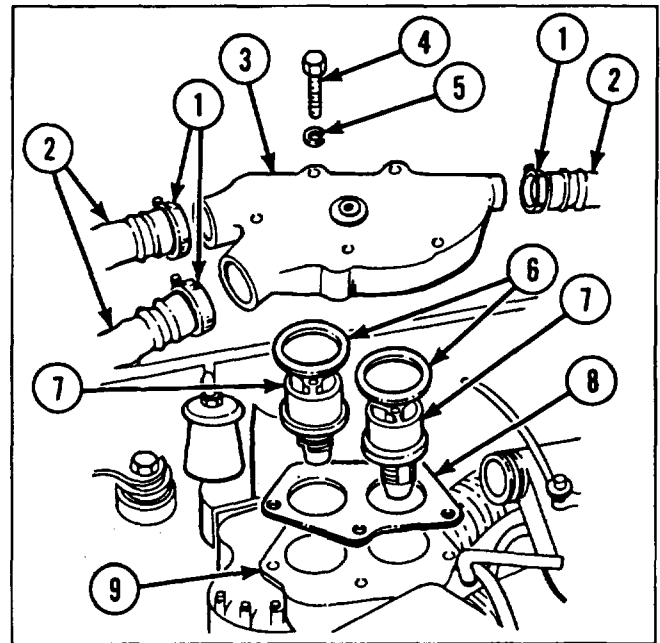
- 6 Install surge tank to engine manifold nonmetallic hose assembly (14) and two pipe to tube elbows (1t).
- 7 Install two new marker bands (16).
- 8 Install engine coolant elbow (17), cushioned loop clamps (18), lockwasher (19), and machine screw (20).
- 9 Install preformed hose (21), preformed hose (22), engine coolant detector take-off elbow (23), preformed hose (24), nonmetallic hose (25), and eight hose clamps (26). Tighten hose clamps (26).
- 10 Install hose (27) and hose clamp (28) on engine coolant detector take-off elbow (23).

2-65. MAINTENANCE OF THERMOSTATS.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<p><i>Tools and Special Tools</i></p> <p>Automotive maintenance and repair shop equipment: common no. 1 (less power) (item 83, appx B)</p> <ul style="list-style-type: none"> • Torque wrench (0 to 170 ft-lb) <p>Driver handle (item 27, appx B)</p> <p>Thermostat seal installer (item 42, appx B)</p>		<p><i>References</i></p> <p>TM 9-2350-304-10</p> <p>TM 9-2815-202-24P</p>	
<p><i>Materials/Parts</i></p> <p>Gasket</p> <p>Lockwasher (5)</p> <p>Plain seal (2)</p>		<p><i>Equipment Conditions</i></p> <p>2-887 Engine deck assembly removed</p> <p>Cooling system drained (TM 9-2350-304-10)</p>	

REMOVAL

- 1 Loosen three hose clamps (1).
- 2 Disconnect hoses (2) from thermostat cover (3).
- 3 Remove five hexagon head capscrews (4) and lockwashers (5).
- 4 Remove thermostat cover (3), two plain seals (6), two thermostats (7), and gasket (8) from engine water outlet (9).



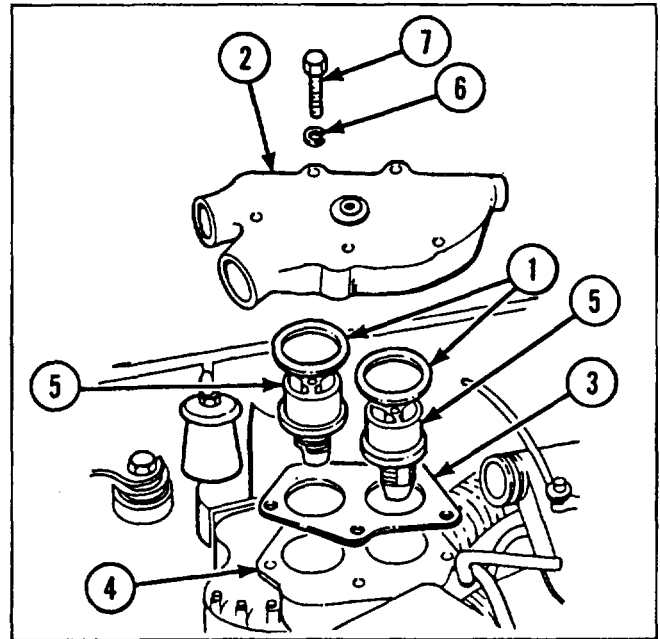
INSPECTION/REPAIR

- 1 Check for broken, damaged, or missing parts.
- 2 Check thermostat for corrosion and freedom of spring movement.
- 3 Repair is by replacement of authorized parts (TM 9-2815-202-24P).

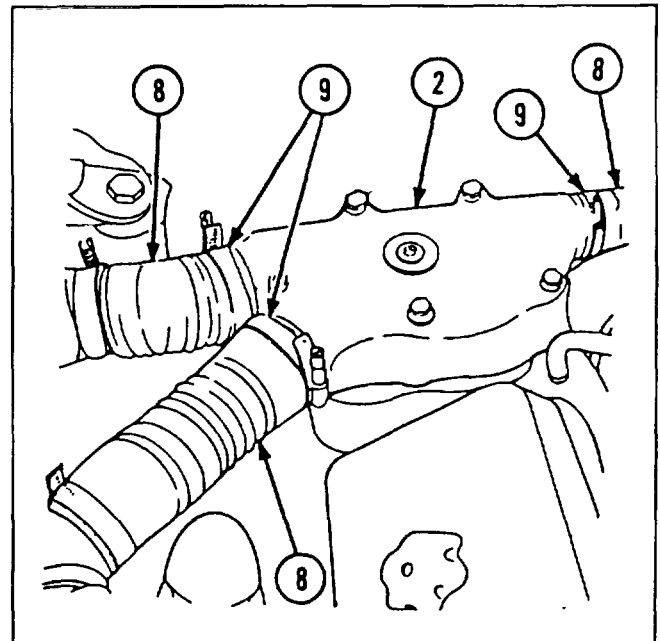
2-65. MAINTENANCE OF THERMOSTATS (CONT).

INSTALLATION

- 1 Install two new plain seals (1) in thermostat cover (2) using thermostat seal Installer and driver handle. Position seals so lip of seal faces toward top of thermostat cover.
- 2 Place new gasket (3) on engine water outlet (4).
- 3 Install two thermostats (5) in engine water outlet (4).
- 4 Install thermostat cover (2) using five new lockwashers (6) and hexagon head capscrews (7). Torque capscrews to 30 to 35 ft-lb (41 to 47 N•m).

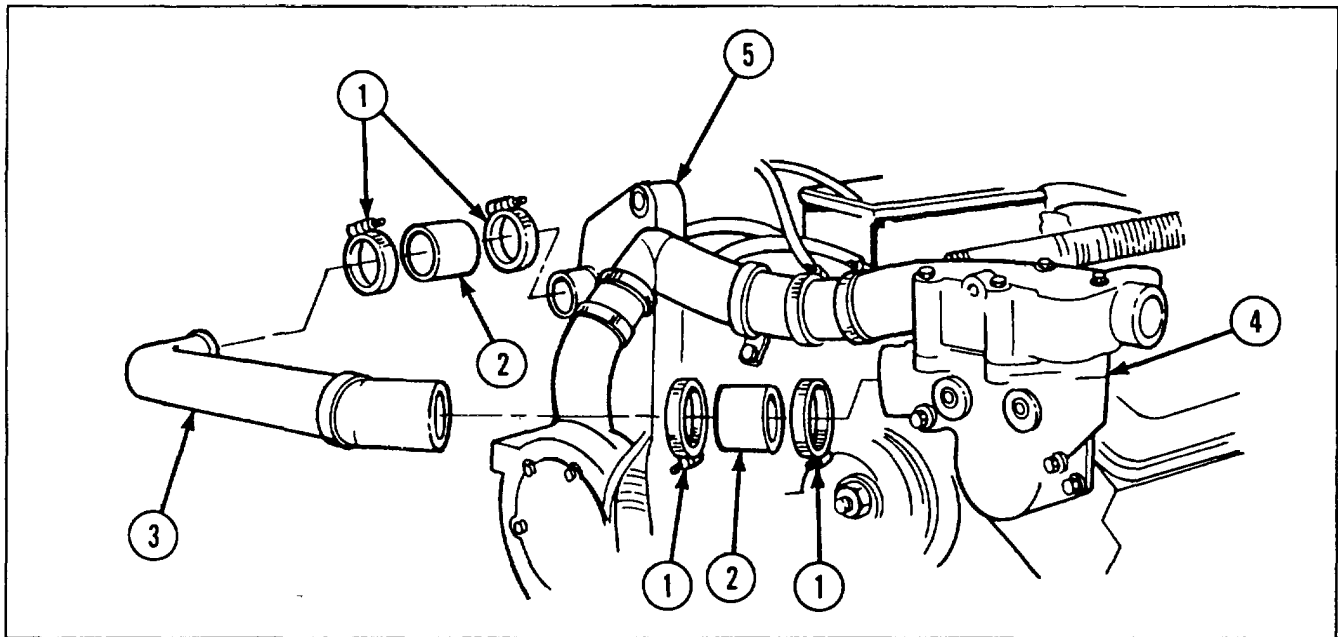


- 5 Connect three hoses (8) to thermostat cover (2).
- 6 Tighten three hose clamps (9).
- 7 Fill cooling system. Refer to TM 9-2350304-10.
- 8 Run engine until operating temperature is reached. Refer to TM 9-2350-304-10. Check for leaks and proper operation of thermostats.
- 9 Repair all leaks.

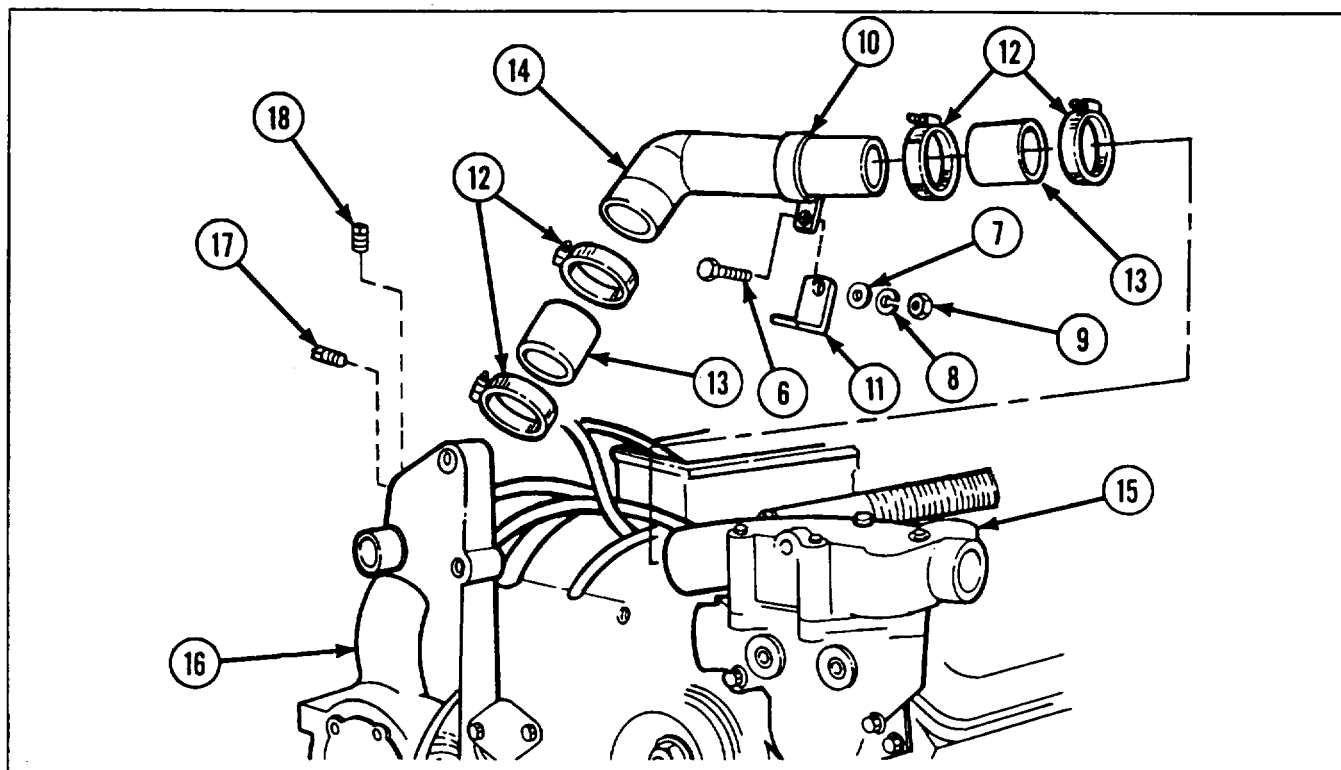


2-66. MAINTENANCE OF WATER BY-PASS AND CROSSOVER TUBES.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Materials/Parts</i>			
Crossover tube parts kit			
Lockwasher			
Nonmetallic hose (4)			
<i>References</i>			
TM 9-2815-202-24P			
<i>Equipment Conditions</i>			
2-887 Engine deck assembly removed			

REMOVAL

- 1 Loosen four hose clamps (1) and two nonmetallic hoses (2) securing water crossover tube (3) to engine water outlet (4) and flange to tube elbow (5).
- 2 Slide hose clamps (1) and nonmetallic hoses (2) onto water crossover tube (3). Remove water crossover tube.
- 3 Remove hose clamps (1) and nonmetallic hoses (2) from water crossover tube (3).

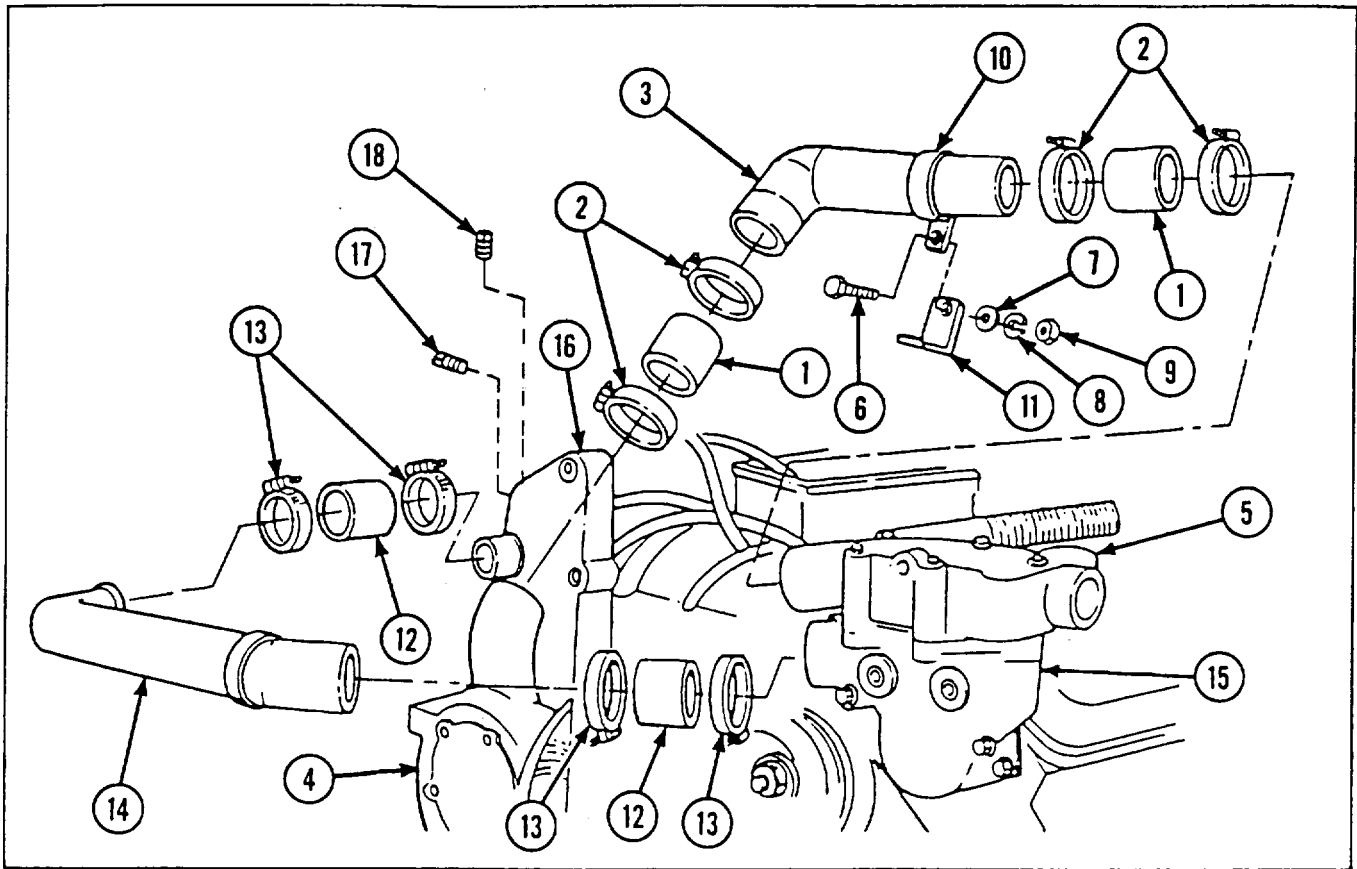
2-66. MAINTENANCE OF WATER BY-PASS AND CROSSOVER TUBES (CONT).*REMOVAL (CONT)*

- 4 Remove machine bolt (6), flat washer (7), lockwasher (8), and hexagon plain nut (9) securing loop clamp (10) to angle bracket (11).
- 5 Loosen four hose clamps (12) and two nonmetallic hoses (13) securing water by-pass loop (14) to thermostat cover (15) and water pump (16).
- 6 Slide hose clamps (12) and nonmetallic hoses (13) onto water by-pass tube (14). Remove water by-pass tube.
- 7 Remove hose clamps (12) and nonmetallic hoses (13) from water by-pass tube (14).
- 8 Remove pipe plug (17) and pipe plug (18).

INSPECTION/REPAIR

- 1 Check for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2815-202-24P).

INSTALLATION



- 1 Slide two nonmetallic hoses (1) and four hose clamps (2) onto ends of water by-pass tube (3).
- 2 Install water by-pass tube (3) between water pump (4) and thermostat cover (5). Slide nonmetallic hoses (1) onto water pump and thermostat cover and secure with hose clamps (2).
- 3 Install machine bolt (6), flat washer (7), new lockwasher (8), and hexagon plain nut (9) securing loop clamp (10) to angle bracket (11).
- 4 Slide two nonmetallic hoses (12) and four hose clamps (13) onto ends of water crossover tube (14).
- 5 Install water crossover tube (14) between engine water outlet (15) and flange to tube elbow (16) and secure with hose clamps (13).
- 6 Install pipe plug (17) and pipe plug (18).

2-67. MAINTENANCE OF AERATION DETECTOR.

This task covers:			
a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>	d. <i>Testing</i>
INITIAL SETUP			
<i>Materials/Parts</i>		<i>Equipment Conditions</i>	
Lockwasher (6)		2-887 Engine deck assembly removed	
Lockwasher		Cooling system drained (TM 9-2350-304-10)	
<i>References</i>			
TM 9-2350-304-10			
TM 9-2350-304-24P-1			

REMOVAL

NOTE

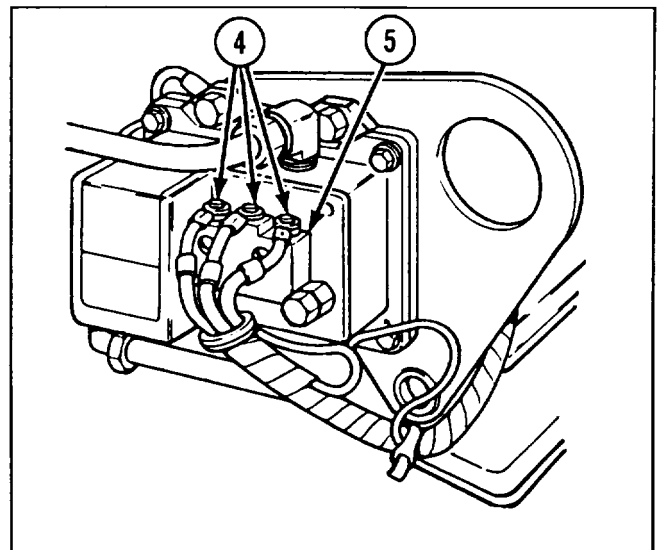
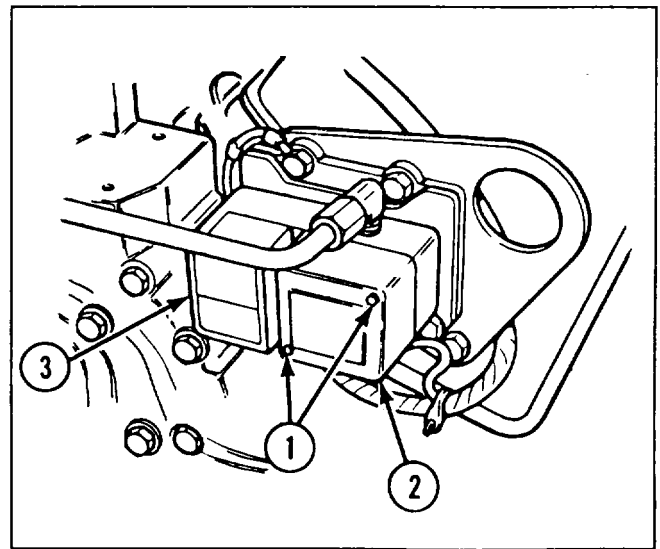
Retain screws removed from cover.

- 1 Remove two existing screws (1) and access cover (2) from aeration detector control (3).

NOTE

Tag all electrical leads to aid in identification.

- 2 Disconnect three electrical leads (4) from terminal (5).

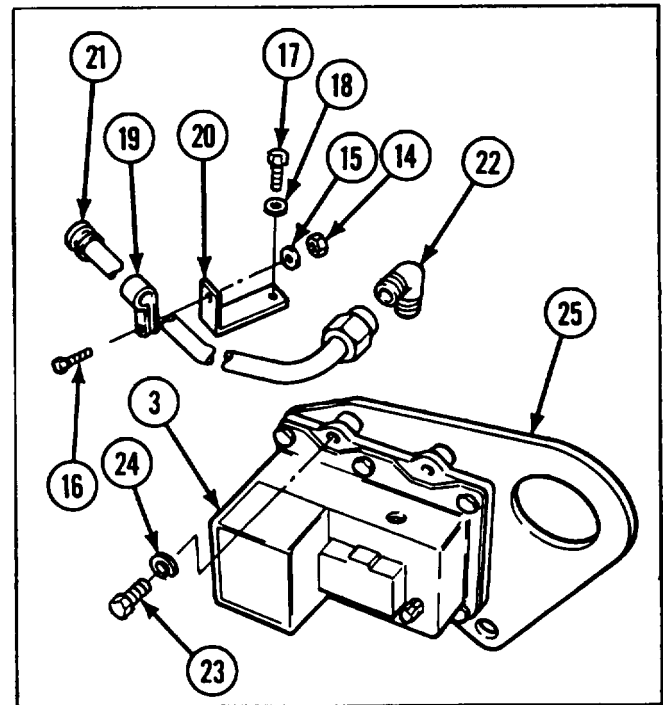
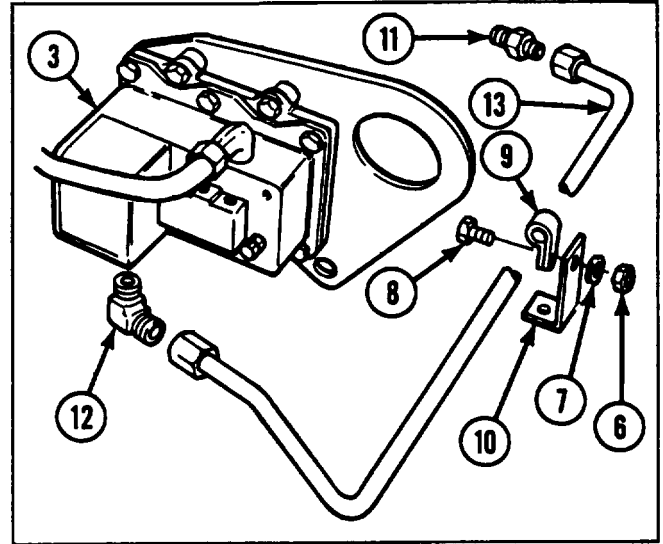


REMOVAL (CONT)

- 3 Remove plain hexagon nut (6), lockwasher (7), hexagon head capscrew (8), and loop clamp (9) from tube support angle bracket (10).
- 4 Disconnect straight pipe adapter (11) and pipe to tube elbow (12). Remove metal tube assembly (13) from aeration detector control (3).
- 5 Remove straight pipe adapter (11) and pipe to tube elbow (12).
- 6 Remove plain hexagon nut (14), lockwasher (15), hexagon head capscrew (16), hexagon head capscrew (17), lockwasher (18), loop clamp (19), and tube support angle bracket (20) from aeration detector control (3).
- 7 Disconnect tube assembly (21) from pipe to tube elbow (22).
- 8 Remove pipe to tube elbow (22) from aeration detector control (3).
- 9 Remove three hexagon head capscrews (23), three lockwashers (24), and aeration detector control (3) from detector mounting and engine lifting plate (25).

NOTE

Retain screws removed from detector mounting and engine lifting plate.



- 10 Remove detector mounting and engine lifting plate (25) and existing screws from engine.

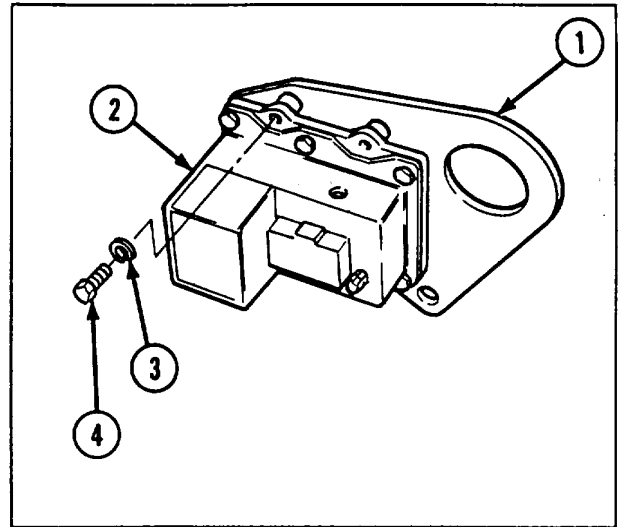
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-3-4-24P-1).

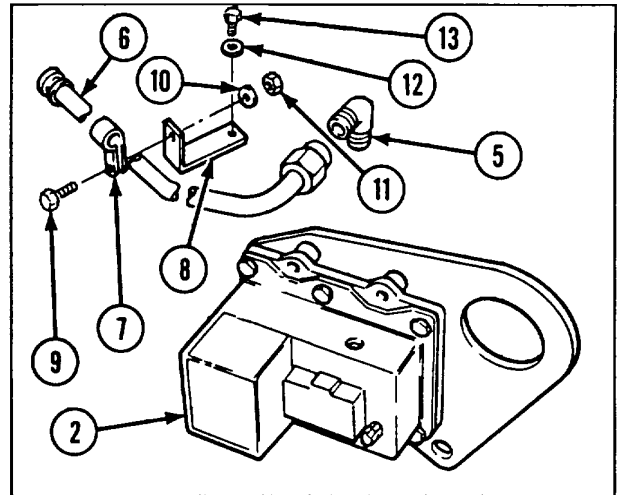
2-67. MAINTENANCE OF AERATION DETECTOR (CONT).

INSTALLATION

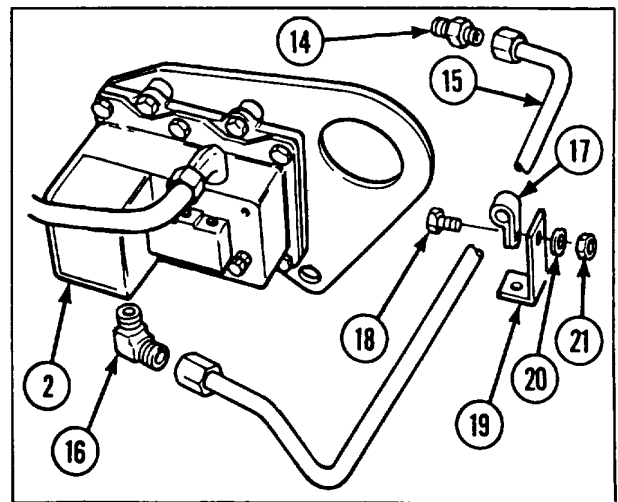
- 1 Install detector mounting and engine lifting plate (1) on engine, and secure with retained screws. Torque screws, refer to appendix E.
- 2 Position aeration detector control (2) on detector mounting and engine lifting plate (1) .Secure with three new lockwashers (3) and three hexagon head capscrews (4).



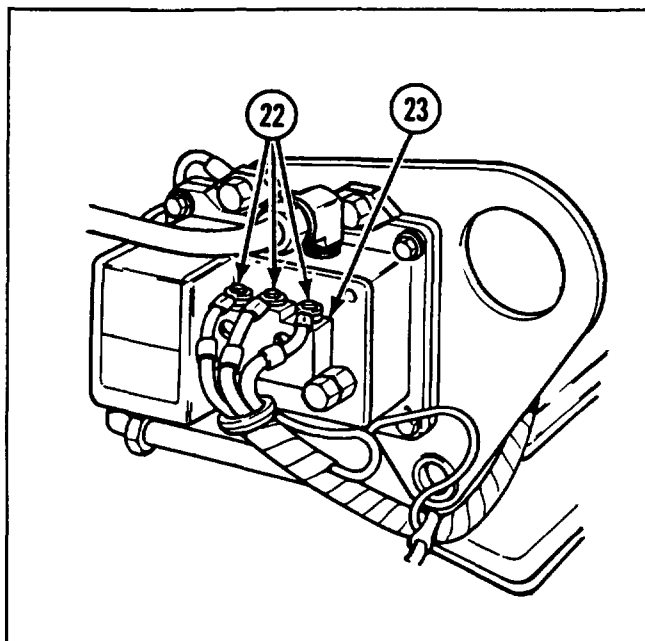
- 3 Install pipe to tube elbow (5) to aeration detector control (2).
- 4 Connect tube assembly (6) to pipe to tube elbow (5).
- 5 Install loop clamp (7) to metal tube assembly (6).
- 6 Install tube support angle bracket (8). Secure with hexagon head capscrew (9), new lockwasher (10), plain hexagon nut (11), new lockwasher (12), and hexagon head capscrew (13).



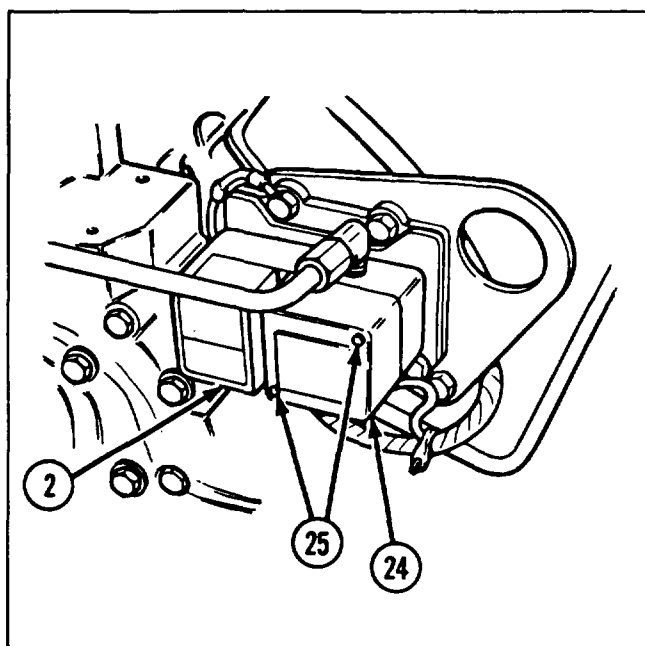
- 7 Install straight pipe adapter (14) to metal tube assembly (15).
- 8 Install pipe to tube elbow (16) to aeration detector control (2).
- 9 Install metal tube assembly (15), loop clamp (17), hexagon head capscrew (18), tube support angle bracket (19), new lockwasher (20), and plain hexagon nut (21).



- 10 Connect three electrical leads (22) to terminal (23).



- 11 Install access cover (24) on aeration detector control (2). Secure with two retained screws (25).



TESTING

- 1 Fill cooling system. Refer to TM 9-2350-304-10.
- 2 Run engine until operating temperature is reached. Refer to TM 9-2350-304-10. Check for leaks.
- 3 Repair all leaks.

2-68. MAINTENANCE OF COOLING SYSTEM FAN TENSIONER AND RELATED PARTS.

This task covers:	a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i>	d. <i>Reassembly</i> e. <i>Installation/Alinement</i> f. <i>Adjustment</i>
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INITIAL SETUP

Tools and Special Tools

Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)
 Torque wrench (0 to 170 ft-lb)
 Sling (item 85, appx B)
 Soft-face mallet

Equipment Conditions

2-879 Fanwell deck grille removed
 2-893 Transmission deck lid assembly removed
 2-506 Radiator removed
 Cooling system drained
 (TM 9-2350-304-10)

Materials/Parts

Cooling fan mounting gasket
 Cotter pin
 Fan belt
 Hydraulic fluid (item 20, appx C)
 Lockwasher (2)
 Lockwasher (10)
 Lockwasher (12)
 Masking tape (item 43, appx C)
 Self-locking nut

General Safety Instructions

WARNING

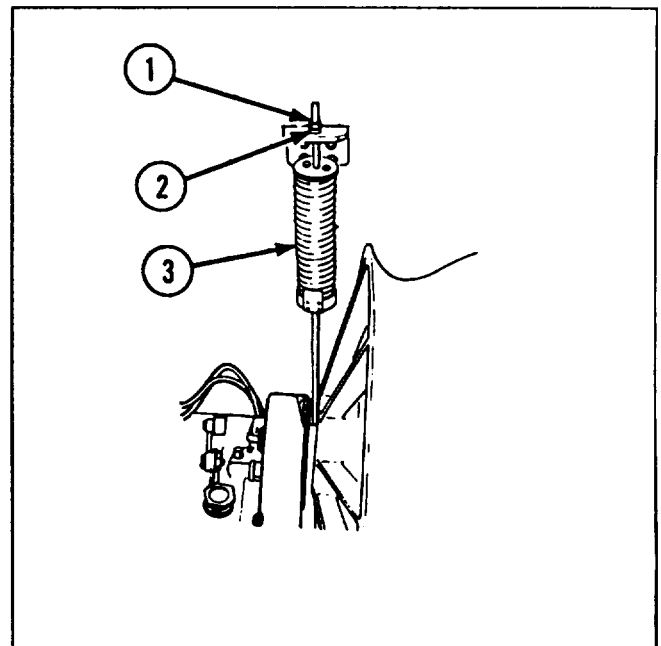
Fan belt tensioner is under tension. When removing nuts, care should be taken to ensure safety of personnel.

References

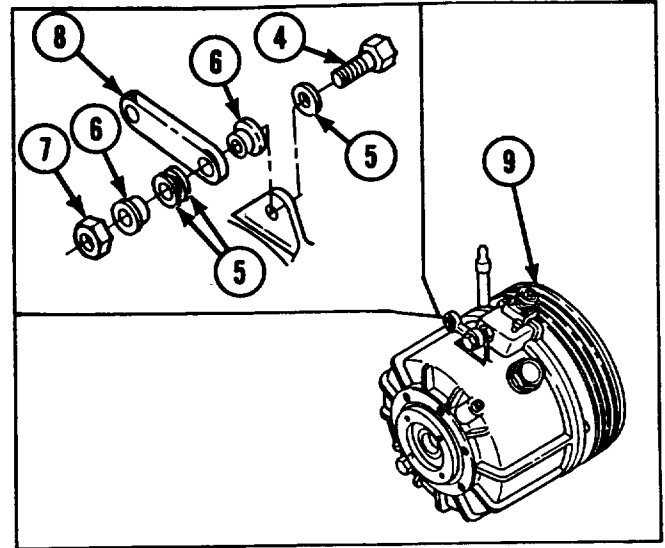
TM 9-2350-304-10
 TM 9-2350-304-24P-1

REMOVAL

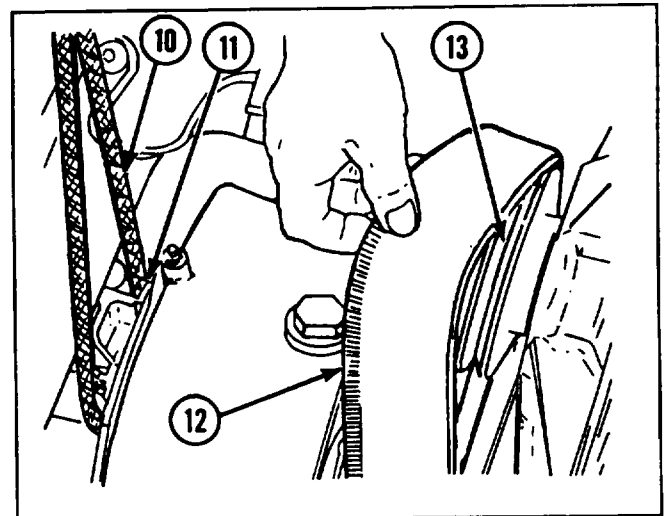
- 1 Loosen hexagon plain nut (1).
- 2 Loosen self-locking nut (2) to release fan belt tensioner (3).



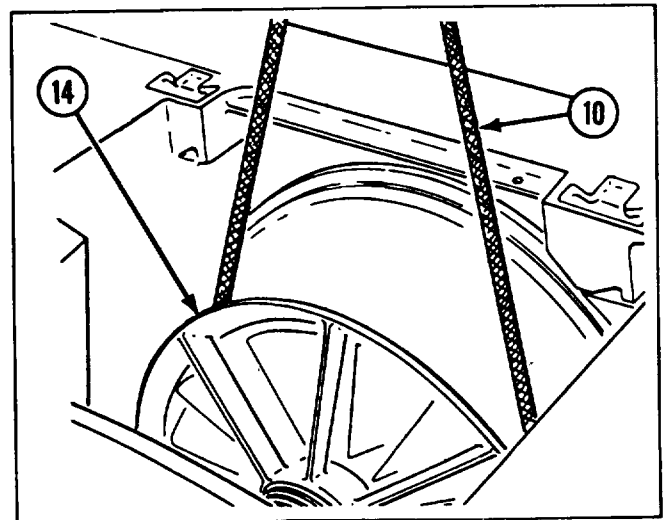
- 3 Remove two screws (4), four spacers (5), two grommets (6), and two nuts (7) securing link (8) to vehicular drive (9).



- 4 Place sling (10) under bearing unit propeller shaft (11).
 5 Lift bearing unit propeller shaft (11) just enough to allow slack in fan belt (12).
 6 Slide fan belt (12) off groove pulley (13). Remove sling (10).



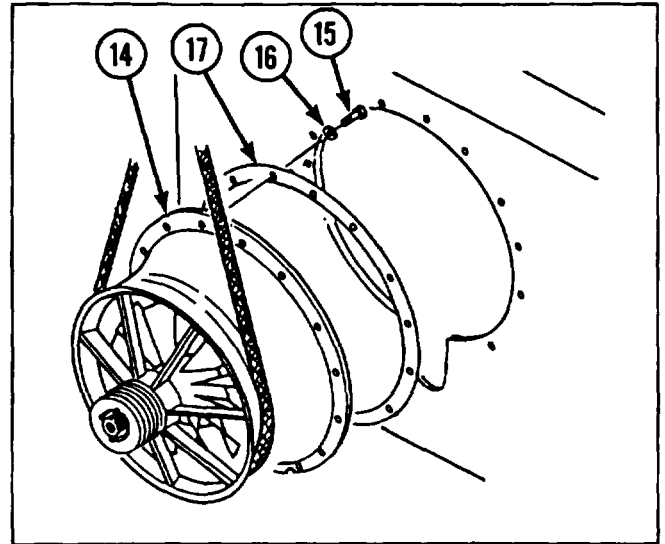
- 7 Place sling (10) around radiator cooling vane-axial fan (14).



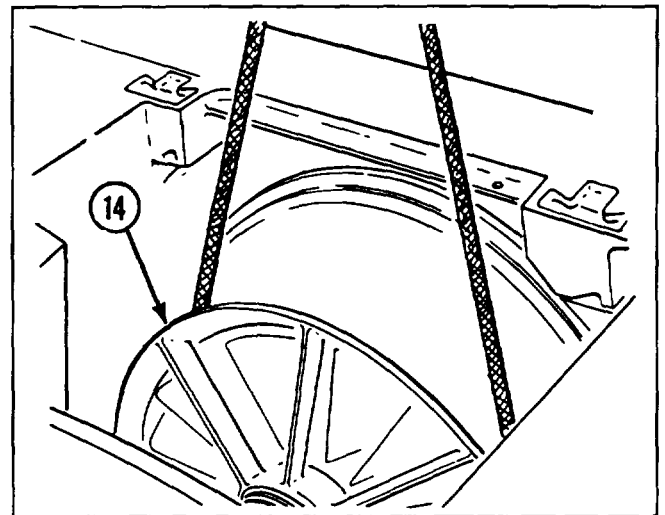
2-68. MAINTENANCE OF COOLING SYSTEM FAN TENSIONER AND RELATED PARTS (CONT).*REMOVAL (CONT)***NOTE**

Tighten sling to support radiator cooling vaneaxial fan when removing attaching hardware.

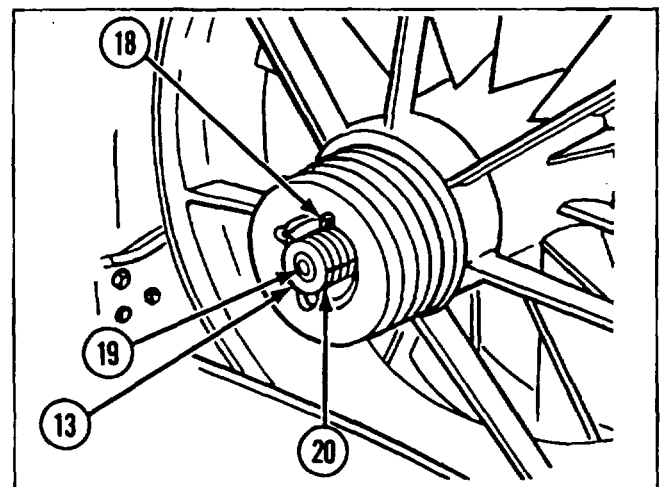
- 8 Remove 12 hexagon head capscrews (15) and 12 lockwashers (16) from radiator cooling vaneaxial fan (14).
- 9 Remove cooling fan mounting gasket (17).



- 10 Remove radiator cooling vaneaxial fan (14) from vehicle.



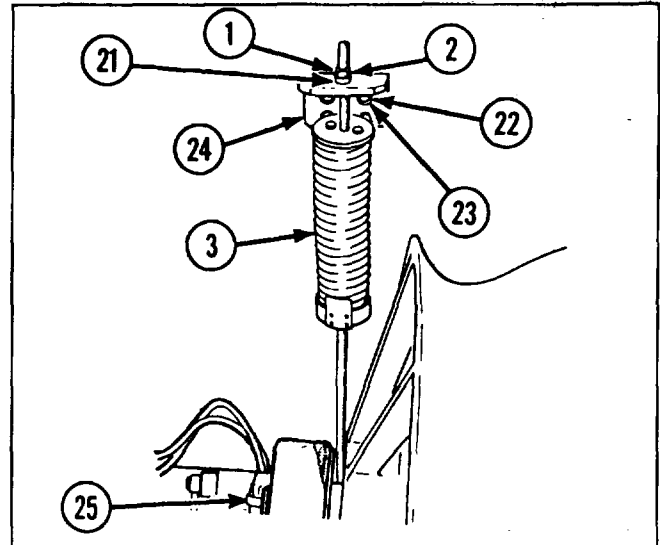
- 11 Remove two socket head capscrews (18), groove pulley (13), cooling fan pulley tapered bushing (19), and machine key (20) from key shaft.



WARNING

Fan belt tensioner is under tension. When removing nuts care should be taken to ensure safety of personnel.

- 12 Remove hexagon plain nut (1), self-locking nut (2), self-aligning concave washers (21), fan belt tensioner (3), four hexagon head capscrews (22), four lockwashers (23), and angle bracket (24).
- 13 Disconnect electrical connector (25).

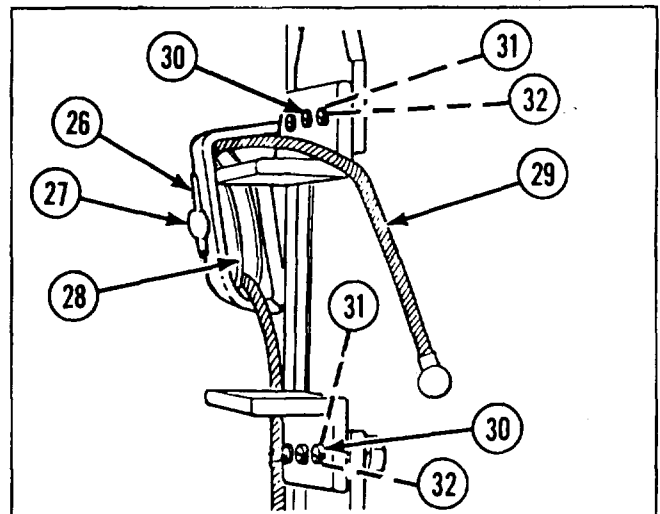


- 14 Remove cotter pin (26), headed straight pin (27), fan cable pulley (28), and control assembly (29).

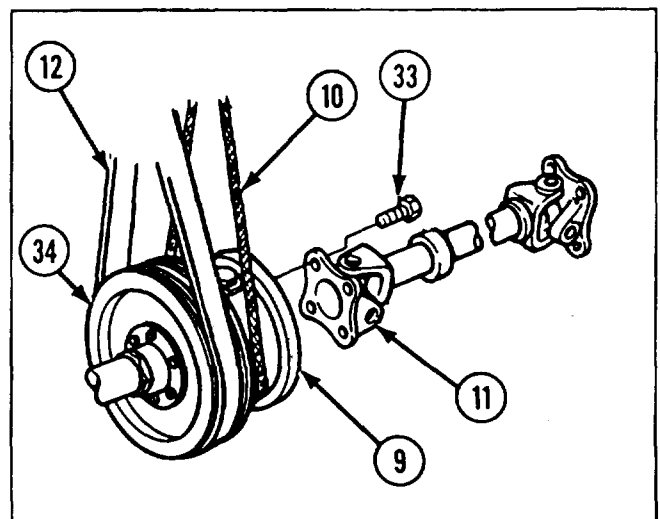
NOTE

Do not remove two angle brackets. If angle brackets are damaged or missing, notify direct support maintenance.

- 15 If damaged, remove six setscrews (30), six lockwashers (31), and six flat washers (32).



- 16 Remove four screws (33) from bearing unit drive shaft (11).
- 17 Lower bearing unit drive shaft (11) out of way.
- 18 Place sling (10) under vehicular drive (9) and lift.
- 19 Remove fan belt (12) from clutch groove pulley (34).



2-68. MAINTENANCE OF COOLING SYSTEM FAN TENSIONER AND RELATED PARTS (CONT).**DISASSEMBLY**

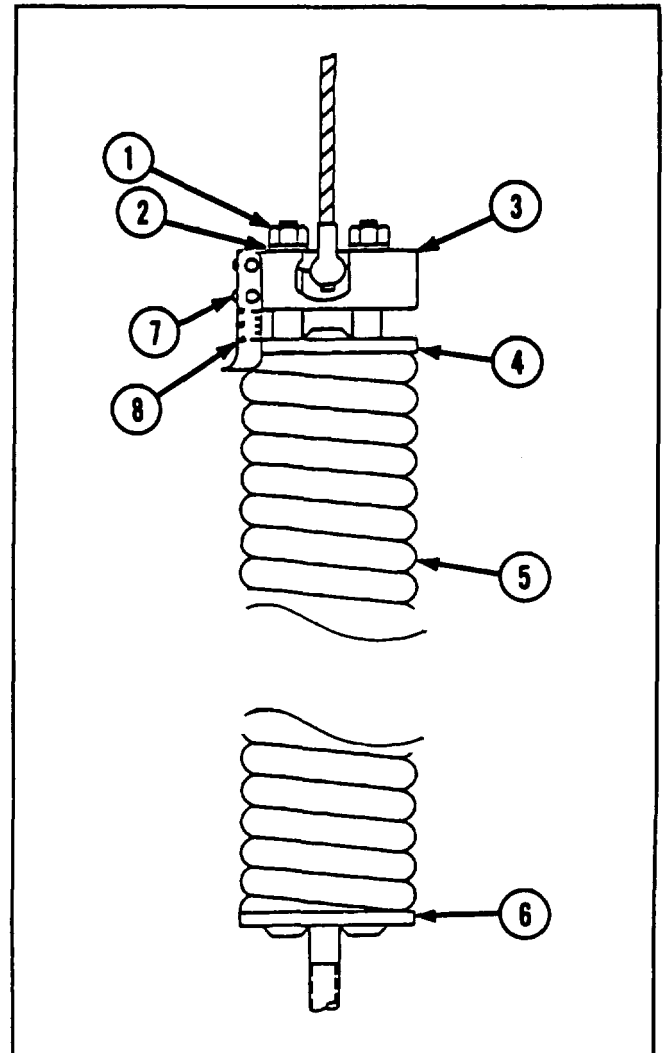
- 1 Remove two hexagon plain nuts (1), two lockwashers (2), fan tensioner coupling plate (3), spring retainer (4), and helical compression spring (5) from spring retainer (6).
- 2 Remove four drive screws (7) and instruction plate (8) from fan tensioner coupling plate (3).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Radiator cooling vaneaxial fan is a repairable assembly. For repair, notify direct support maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

- 1 Install helical compression spring (5), spring retainer (4), and fan tensioner coupling plate (3) on spring retainer (6), and secure with two new lockwashers (2), and two hexagon plain nuts (1).
- 2 Install instruction plate (8) on fan tensioner coupling plate (3), and secure with four drive screws (7).



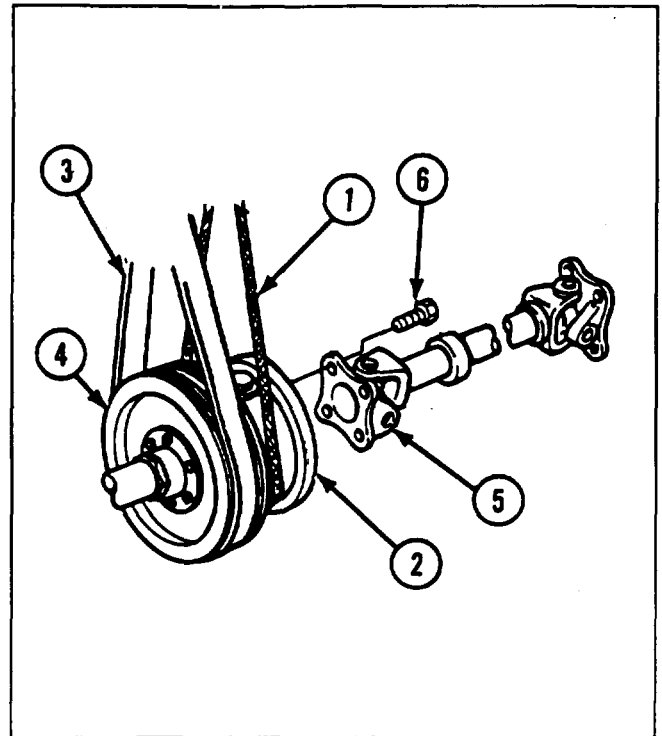
INSTALLATION/ALINEMENT

- 1 Place sling (1) under vehicular drive (2).
- 2 Lift vehicular drive (2) and install new fan belt (3) on clutch groove pulley (4).
- 3 Connect bearing unit drive shaft (5) to vehicular drive (2).
- 4 Install four screws (6) in bearing unit drive shaft (5).

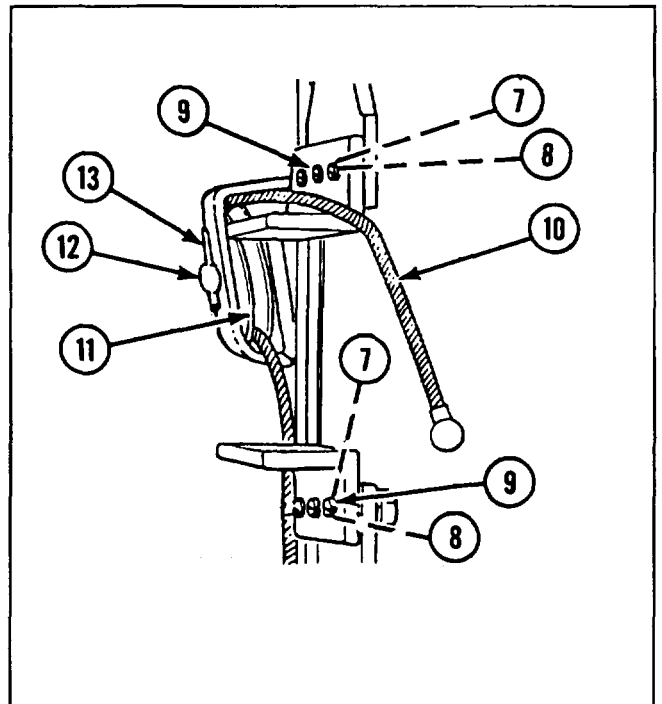
NOTE

Secure bearing unit drive shaft with crowbar when torqueing screws.

- 5 Torque screws (6) to 78 ft-lb (105 N•m).



- 6 If removed, install six flat washers (7), six new lockwashers (8), and six setscrews (9).
- 7 Install control assembly (10), and fan cable pulley (11), and secure with headed straight pin (12) and new cotter pin (13).



2-68. MAINTENANCE OF COOLING SYSTEM FAN TENSIONER AND RELATED PARTS (CONT).

INSTALLATION/ALINEMENT (CONT)

- 8 Install angle bracket (14) on vehicle and secure with four new lockwashers (15) and four hexagon head capscrews (16).

WARNING

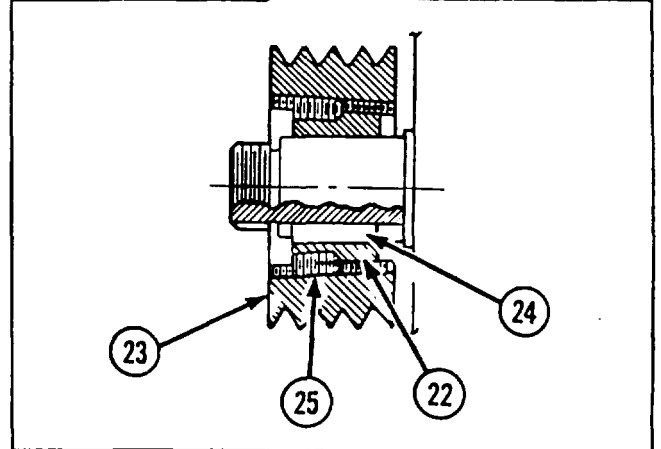
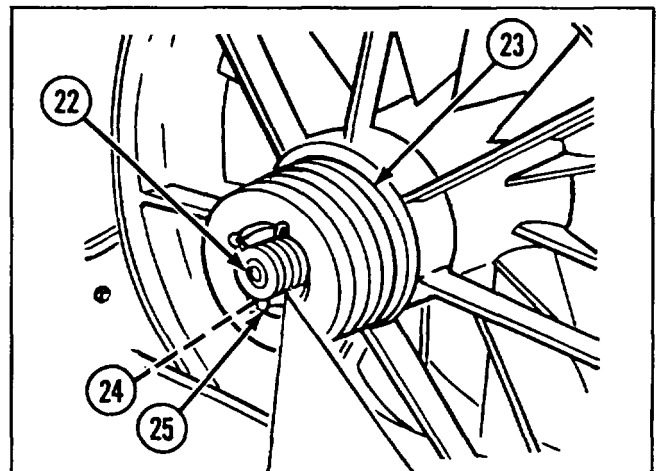
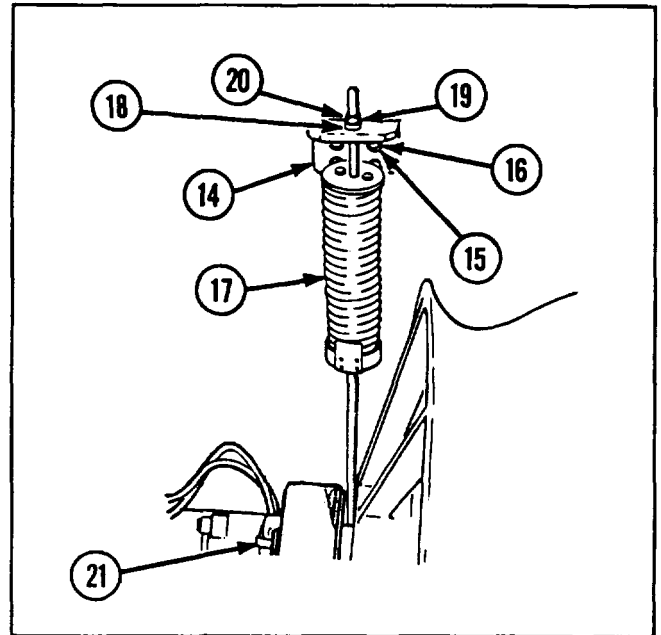
Fan belt tensioner is under tension. When installing the nuts, use care to ensure safety of personnel.

- 9 Install fan belt tensioner (17), and secure with self-aligning concave washer (18), new self-locking nut (19) and hexagon plain nut (20).
- 10 Connect electrical connector (21).
- 11 Lubricate cooling fan pulley tapered bushing (22) with hydraulic fluid.

CAUTION

Do not pound bushing onto shaft. Fan bearings may be damaged.

- 12 Install cooling fan pulley tapered bushing (22) in groove pulley (23).
- 13 Install groove pulley (23), cooling fan pulley tapered bushing (22), and machine key (24) on fan shaft.
- 14 Secure groove pulley (23) in place with two socket head capscrews (25). Do not tighten socket head capscrews.



- 15 Place sling (1) around radiator cooling vaneaxial fan (26).
- 16 Install enough hexagon head capscrews (27) and new lockwashers (28) in fan mounting holes to hold new cooling fan mounting gasket (29) in place.

NOTE

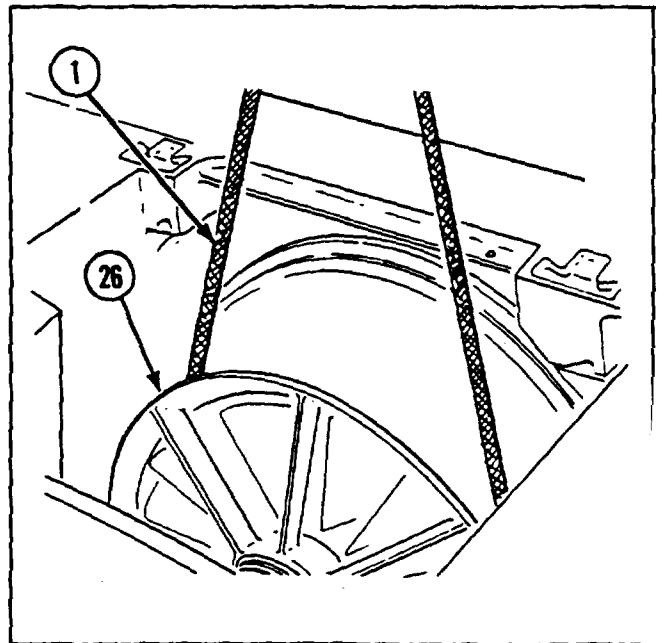
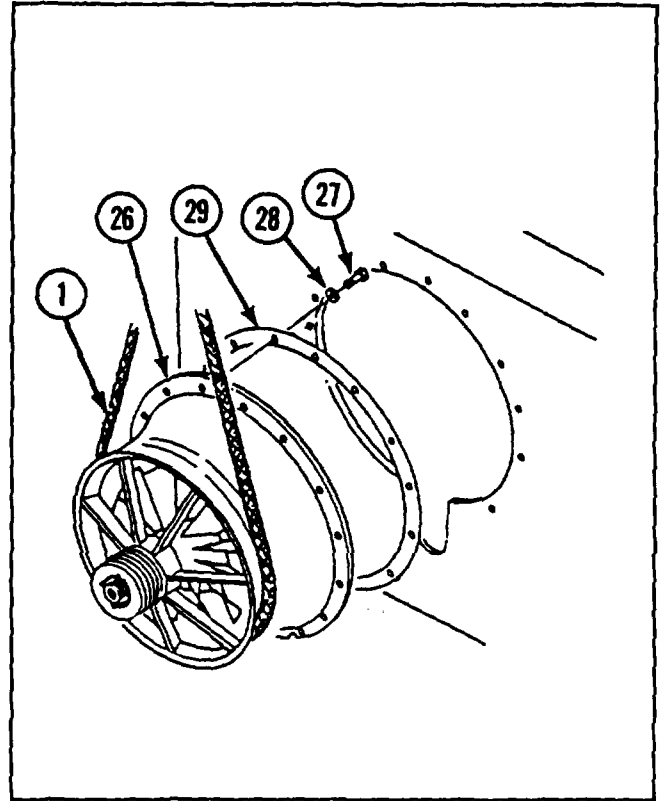
It may be necessary to secure gasket to radiator cooling vaneaxial fan with masking tape.

- 17 Place new cooling fan mounting gasket (29) over hexagon head capscrews (27).
- 18 Use sling (1) to lower radiator cooling vaneaxial fan (26) through fan well deck opening.

NOTE

Ensure that identification plate is at top of radiator cooling vaneaxial fan.

- 19 Aline mounting holes in radiator cooling vaneaxial fan (26) with hexagon head capscrews (27) installed in step 17.
- 20 Install the remaining hexagon head capscrews and new lockwashers (28). Tighten hexagon head capscrews (27).
- 21 Remove sling (1) from radiator cooling vaneaxial fan (26).



2-68. MAINTENANCE OF COOLING SYSTEM FAN TENSIONER AND RELATED PARTS (CONT).

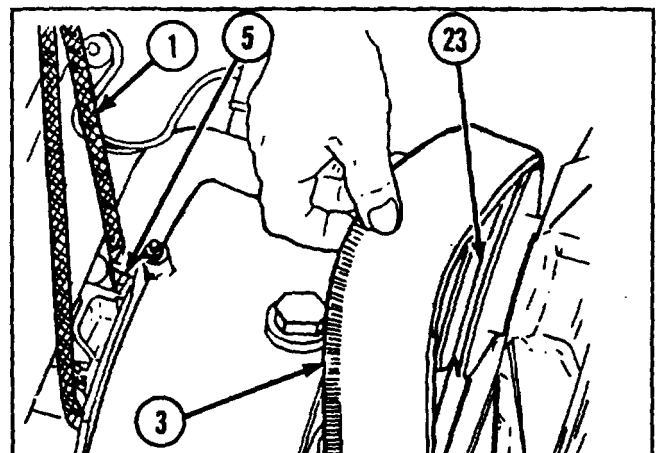
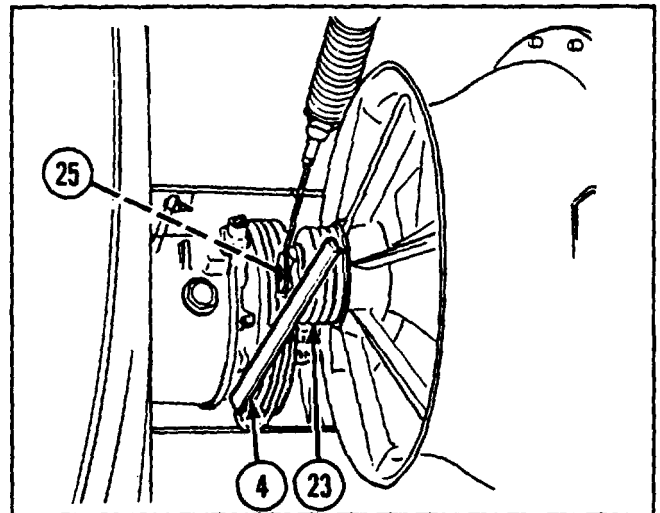
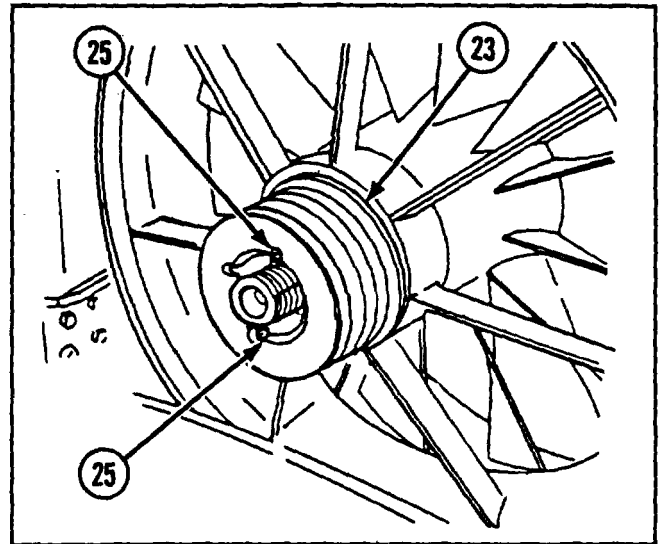
INSTALLATION/ALINEMENT (CONT)

- 22 Loosen two socket head capscrews (25) until groove pulley (23) can be moved on shaft by tapping face of groove pulley (23) with soft-faced mallet.
- 23 Place straight edge between outside face of groove pulley (23) and outside face of clutch groove pulley (4).
- 24 Tap groove pulley (23) lightly toward radiator cooling vaneaxial fan with soft-face mallet.
- 25 Position groove pulley (23) about 1/16 in. (1.59 mm) forward of clutch groove pulley (4).
- 26 Tighten two socket head capscrews (25) to 20 ft-lb (27 N•m) evenly in 5 ft-lb (7 N•m) increments.

NOTE

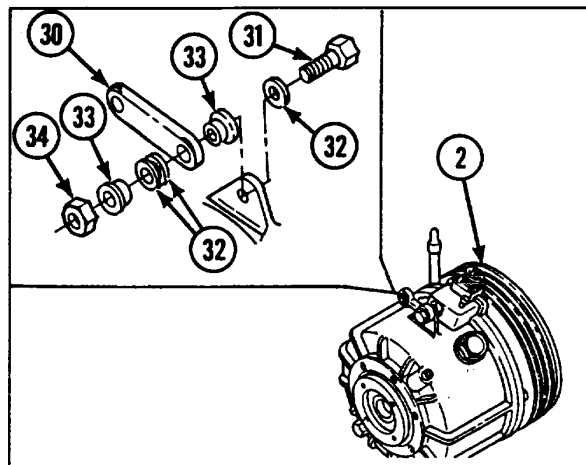
- Faces of groove pulley and clutch groove pulley should be parallel and in same plane.
- It may be necessary to loosen two socket head capscrews in groove pulley and readjust as in steps 24 thru 26. Repeat as required to achieve proper alinement.

- 27 Recheck alinement of groove pulley (23) and clutch groove pulley (4) with straight-edge.
- 28 Place sling (1) under bearing unit propeller shaft (5).
- 29 Lift bearing unit propeller shaft (5) enough to slide fan belt (3) on groove pulley (23).



30 Secure link (30) to vehicular drive (2), and secure with two screws (31), four spacers (32), two grommets (33), and two nuts (34).

31 Remove sling (1).



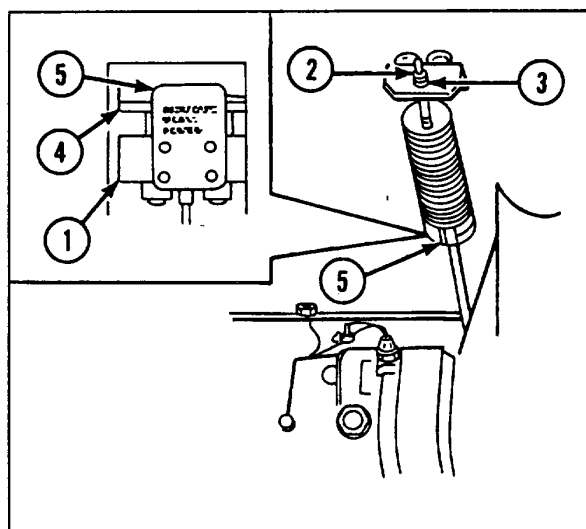
ADJUSTMENT

NOTE

There must be a distance of 0.50 in. (1.27 cm) between bottom of spring retainer and top of fan tensioner coupling plate (1).

1 Loosen hexagon plain nut (2), then tighten self-locking nut (3) to bring bottom of spring retainer (4) to top line on instruction plate (5).

2 Tighten hexagon plain nut (2).

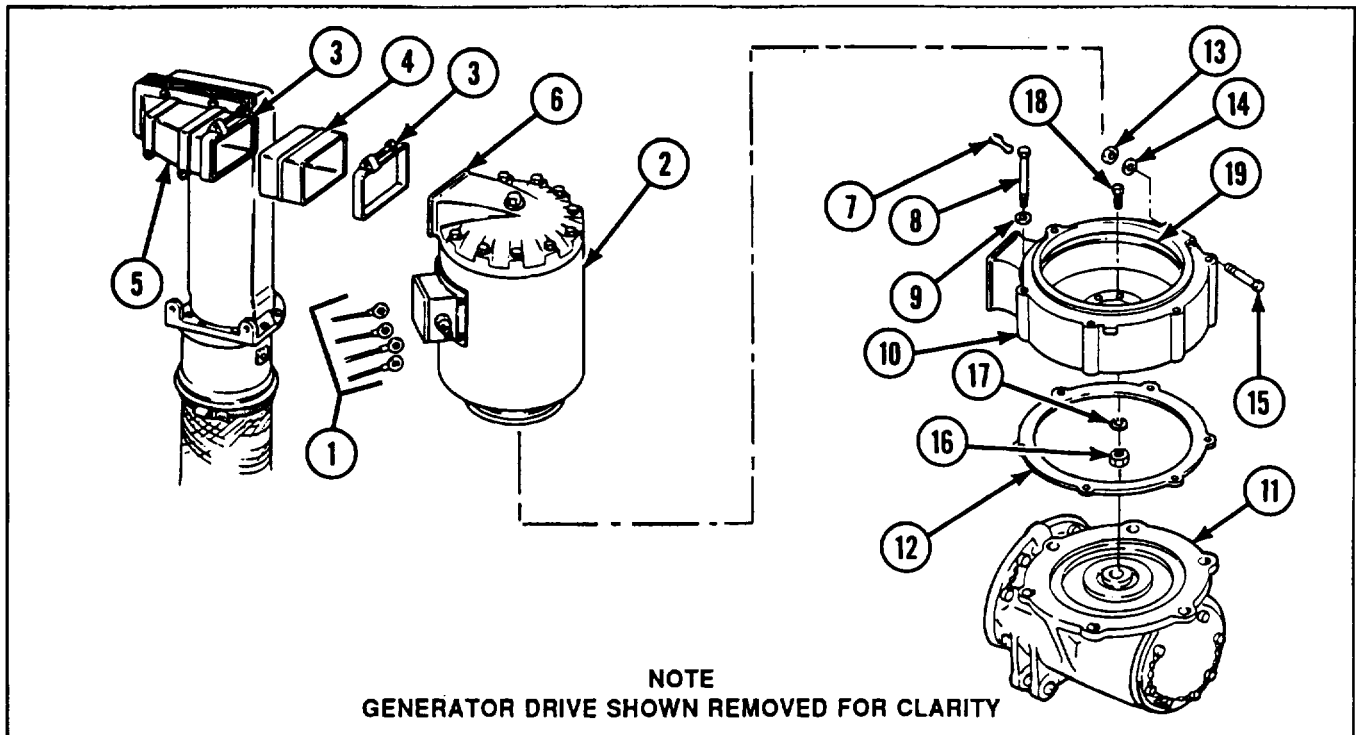


2-69. MAINTENANCE OF GENERATOR AND COOLING AIR INTAKE SYSTEM.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP			
<p><i>Tools and Special Tools</i></p> <p>Plier wire twister (item 29, appx G)</p> <p><i>Materials/Parts</i></p> <p>Gasket</p> <p>Gasket</p> <p>Gasket (2)</p> <p>Lockwire (item 24, appx C)</p> <p>Lockwire (item 25, appx C)</p>	<p>Preformed packing</p> <p>Self-locking nut</p> <p>Self-locking nut (6)</p> <p><i>References</i></p> <p>TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i></p> <p>2-380 Powerplant removed</p>		

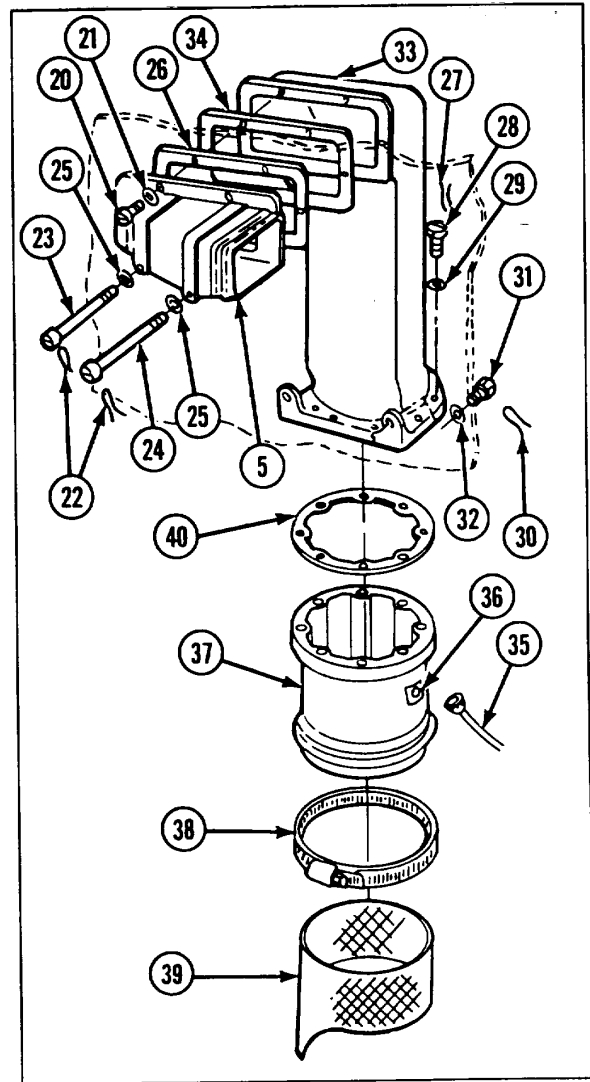
2-69. MAINTENANCE OF GENERATOR AND COOLING AIR INTAKE SYSTEM (CONT).

REMOVAL



- 1 Tag and disconnect four electrical leads (1) from generator (2).
- 2 Remove two hose clamps (3) and preformed hose (4) from generator intake duct elbow (5) and air intake (6) of generator (2).
- 3 Remove lockwire (7), six hexagon head capscrews (8), and six flat washers (9) securing mechanical housing (10) to generator drive (11).
- 4 Lift generator (2) and mechanical housing (10) straight up from generator drive (11).
- 5 Remove gasket (12).
- 6 Loosen self-locking nut (13).
- 7 If damaged, remove self-locking nut (13), flat washer (14), and screw (15) from mechanical
- 8 Separate generator (2) and mechanical housing (10).
- 9 Remove six self-locking nuts (16), six flat washers (17), six key head bolts (18), and preformed packing (19).

- 10 Remove four socket head capscrews (20) and four flat washers (21).
- 11 Remove lockwire (22), two machine screws (23 and 24) and two flat washers (25).
- 12 Remove generator intake duct elbow (5) and gasket (26).
- 13 Remove lockwire (27), eight socket head capscrews (28), and eight flat washers (29).
- 14 Remove lockwire (30), two hexagon head capscrews (31), and two flat washers (32).
- 15 Remove generator air intake duct (33) and gasket (34).
- 16 Disconnect electrical connector (35) from elbow (36) on tube axial fan (37).
- 17 Remove hose clamp (38), tube axial fan (37), and generator fan guard (39).
- 18 Remove gasket (40).



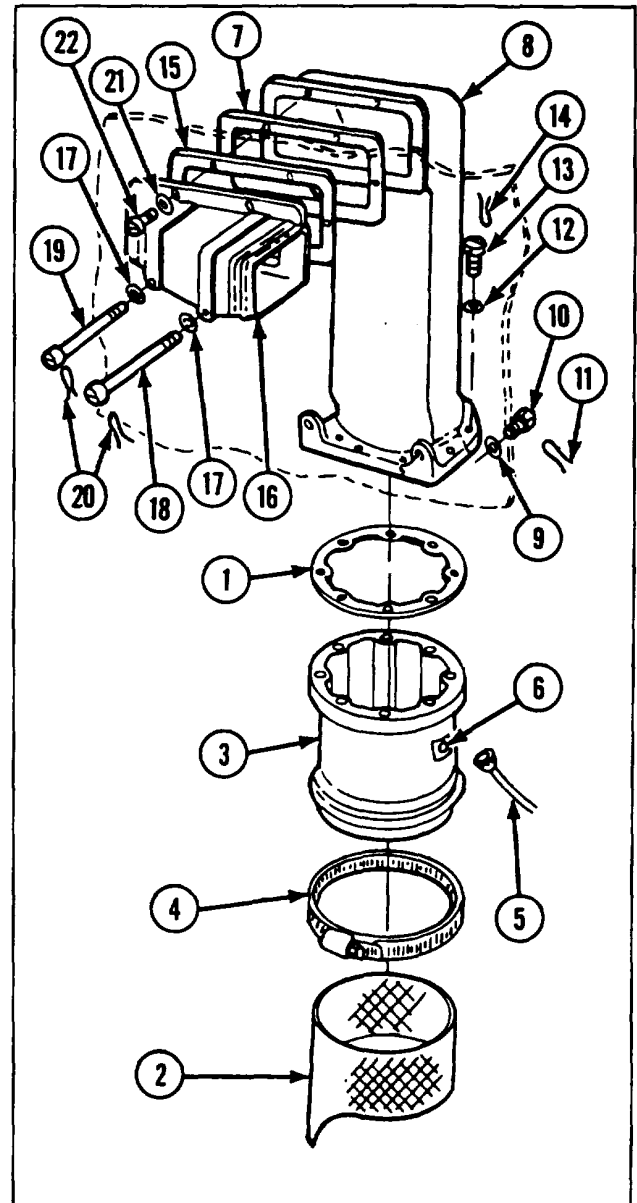
INSPECTION/REPAIR

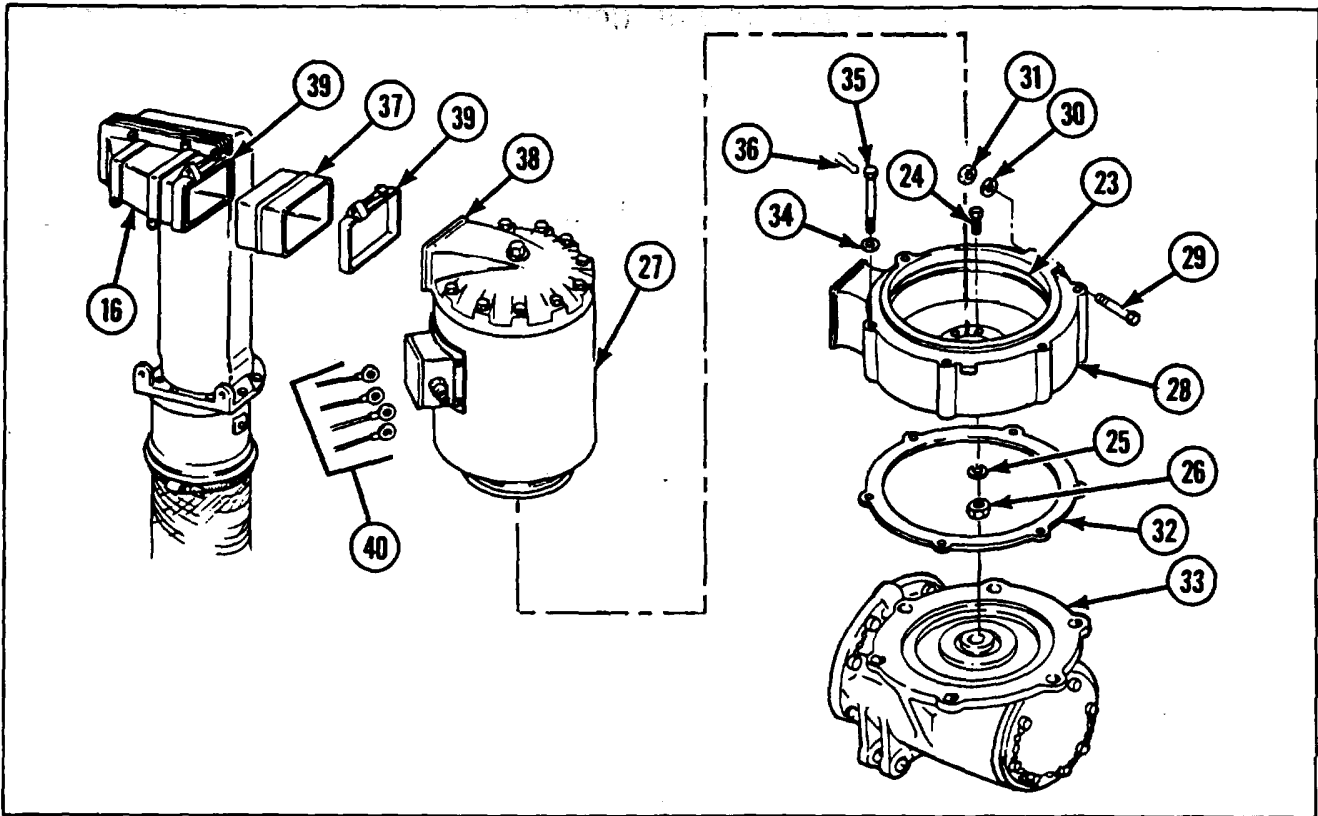
- 1 Inspect for broken, damaged, or missing parts.
- 2 Generator is a repairable assembly. Notify direct support maintenance.
- 3 Tube axial fan is a repairable assembly. Notify direct support maintenance.
- 4 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-69. MAINTENANCE OF GENERATOR AND COOLING AIR INTAKE SYSTEM (CONT).

INSTALLATION

- 1 Install new gasket (1), generator fan guard (2), tube axial fan (3), and hose clamp (4). Adjust generator fan guard (2) until it contacts cover. Place open side of guard inboard.
- 2 Connect electrical connector (5) to elbow (6) on tube axial fan (3).
- 3 Install new gasket (7) and generator air intake duct (8).
- 4 Install two flat washers (9), two hexagon head capscrews (10), and new lockwire (11) (item 25, appx C).
- 5 Install eight flat washers (12), eight socket head capscrews (13), and new lockwire (14) (item 24, appx C).
- 6 Install new gasket (15) and generator intake duct elbow (16).
- 7 Install two flat washers (17), two machine screws (18 and 19), and new lockwire (20) (item 24, appx C).
- 8 Install four flat washers (21) and four socket head capscrews (22).





- 9 Install new preformed packing (23). Install six key head bolts (24), six flat washers (25), and six new self-locking nuts (26).
- 10 Attach generator (27) and mechanical housing (28).

NOTE

If the hardware in step 11 was not removed during disassembly/removal procedure, tighten self-locking nut (31).

- 11 If removed, install screw (29), flat washer (30), and new self-locking nut (31) to mechanical housing (28).
- 12 Install new gasket (32).
- 13 Lower generator (27) and mechanical housing (28) straight down onto generator drive (33) to engage shaft.
- 14 Install six flat washers (34), six hexagon head capscrews (35), and new lockwire (36) (item 25, appx C).
- 15 Install preformed hose (37) on air intake (38) of generator (27) and generator intake duct elbow (16) and secure with two hose clamps (39).
- 16 Install four electrical leads (40) to generator (27).

2-70. MAINTENANCE OF VOLTAGE REGULATOR AND RELATED PARTS.

This task covers:

- a. Removal/Disassembly
- b. Inspection/Repair

c. Reassembly/Installation

INITIAL SETUP

Materials/Parts

- Lockwasher (2)
- Lockwasher (2)

References

TM 9-2350-304-24P-1

Equipment Conditions

- 2-875 CO₂ cylinder access cover removed
- 2-624 Batteries disconnected

General Safety Instructions

WARNING

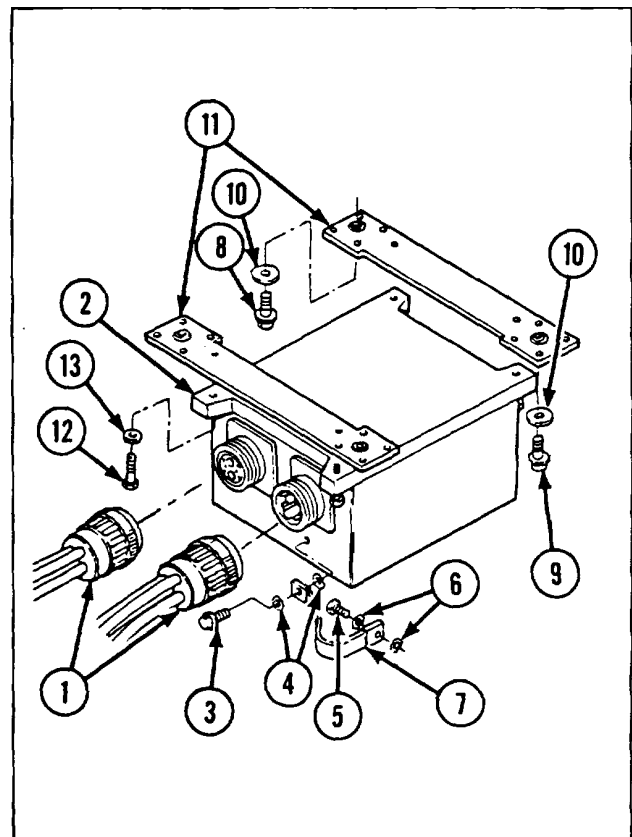
Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

REMOVAL/DISASSEMBLY

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

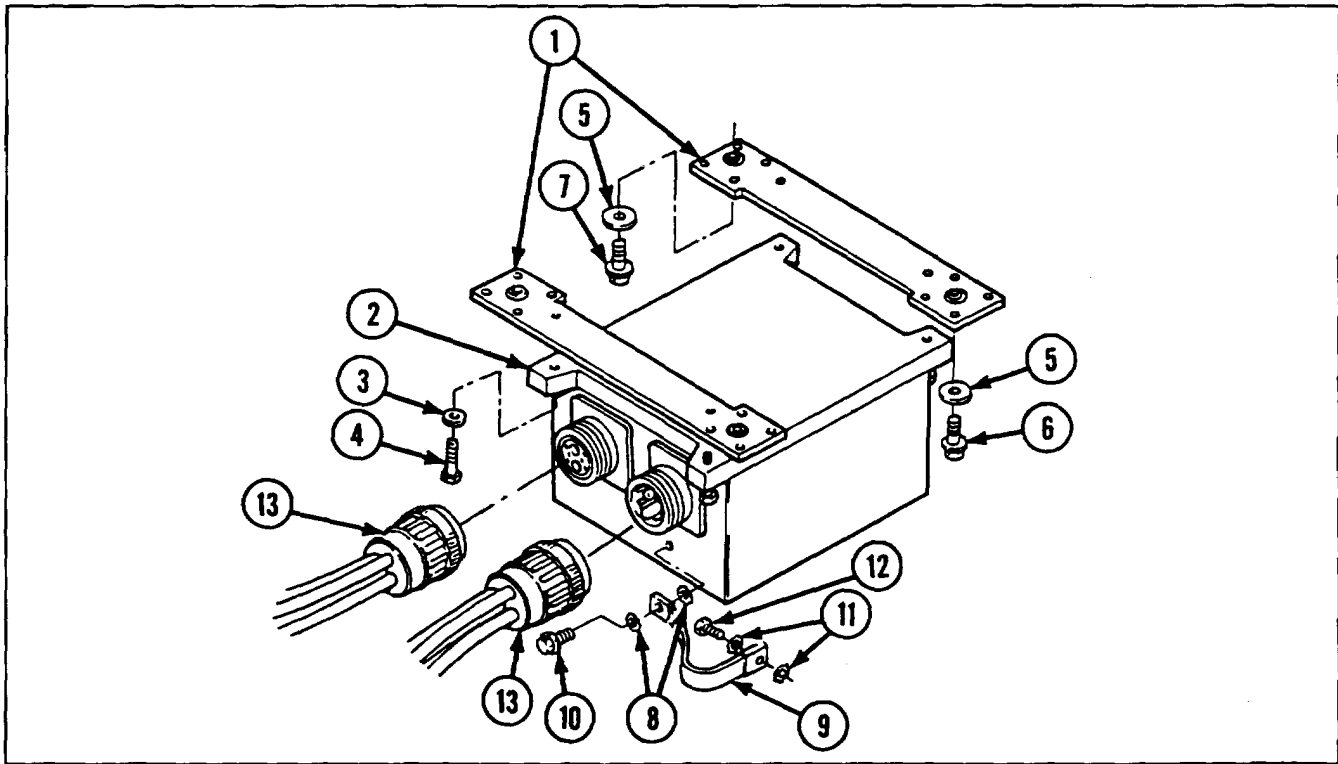
- 1 Disconnect two electrical connectors (1) from voltage regulator (2).
- 2 Remove assembled washer screw (3), two lockwashers (4), hexagon head capscrew (5), two lockwashers (6), and electrical grounding lead (7).
- 3 Remove three assembled washer bolts (8), assembled washer bolt (9), and four flat washers (10) from two regulator



- 4 Remove voltage regulator (2) with attached mounting brackets.
- 5 Remove four screws (12), four washers (13), and two regulator mounting brackets (11) from voltage regulator (2).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If voltage regulator is broken, damaged, or missing, repair is by replacement of next higher
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY/INSTALLATION

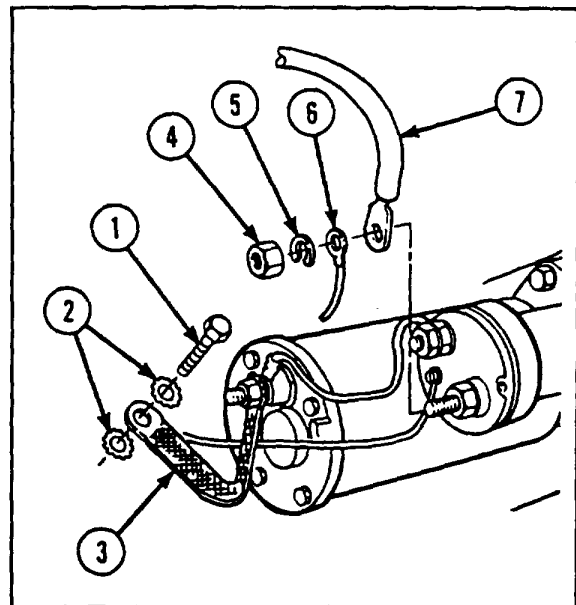
- 1 Install two regulator mounting brackets (1) on voltage regulator (2) and secure with four washers (3) and four screws (4).
- 2 Install voltage regulator (2) with attached brackets, and secure with four flat washers (5), assembled washer screw (6), and three assembled washer screws (7).
- 3 Install new lockwasher (8), electrical grounding lead (9), new lockwasher (8) and assembled washer screw (10) on voltage regulator (2). Secure new lockwasher (11), electrical grounding lead (9), new lockwasher (11), and hexagon head capscrew (12) to ground.
- 4 Connect electrical connectors (13) to voltage regulator (2).

2-71. MAINTENANCE OF STARTER AND MOUNTING HARDWARE.

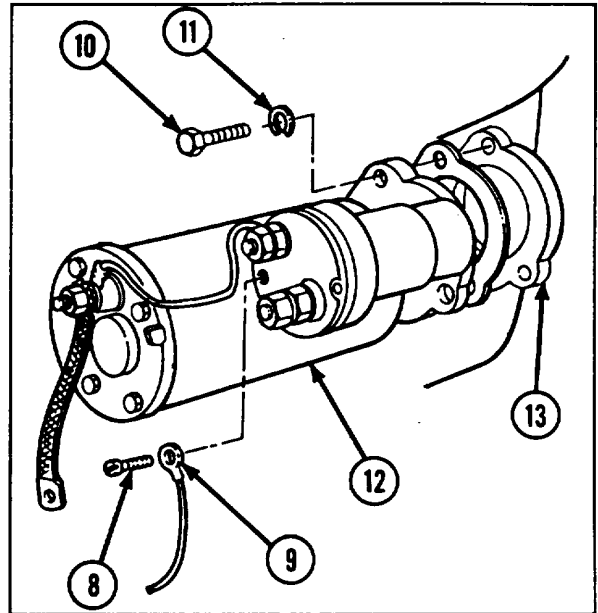
This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Materials/Parts</i>			
Gasket			
Lockwasher			
Lockwasher (2)			
Lockwasher (3)			
<i>References</i>			
TM 9-2815-202-24P			
<i>Equipment Conditions</i>			
2-380 Powerplant removed			
<i>General Safety Instructions</i>			
WARNING			
Starter weighs 80.0 lb. (36.3 kg). Be careful when removing or installing it.			

REMOVAL

- 1 Remove hexagon head capscrew (1) and two lockwashers (2) securing starter ground lead (3) to engine block.
- 2 Remove nut (4) and lockwasher (5), electrical lead (6), and starter cable (7). Reinstall lockwasher and nut.



- 3 Remove screw (8) and electrical lead at solenoid relay.
- 4 Remove three machine bolts (10) and lockwashers (11).
- 5 Carefully pull engine starter (12) from flywheel housing.
- 6 Remove gasket (13).

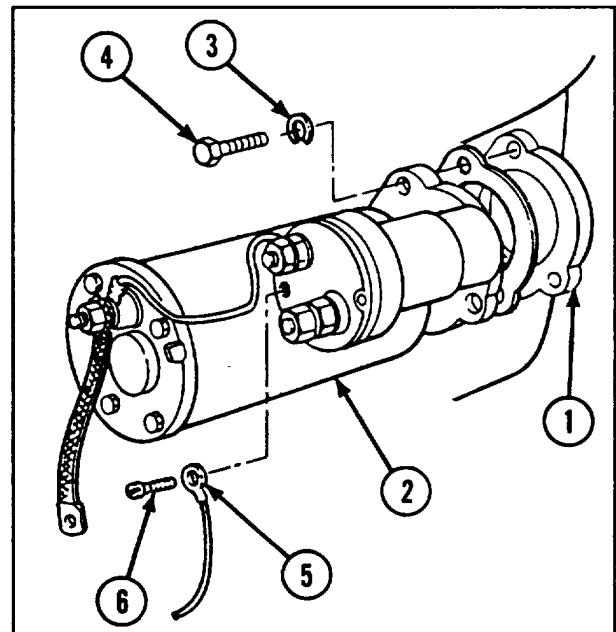


INSPECTION/REPAIR

- 1 Check for broken, damaged, or missing parts.
- 2 Engine starter is a repairable assembly. Notify direct support maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2815-202-24P).

INSTALLATION

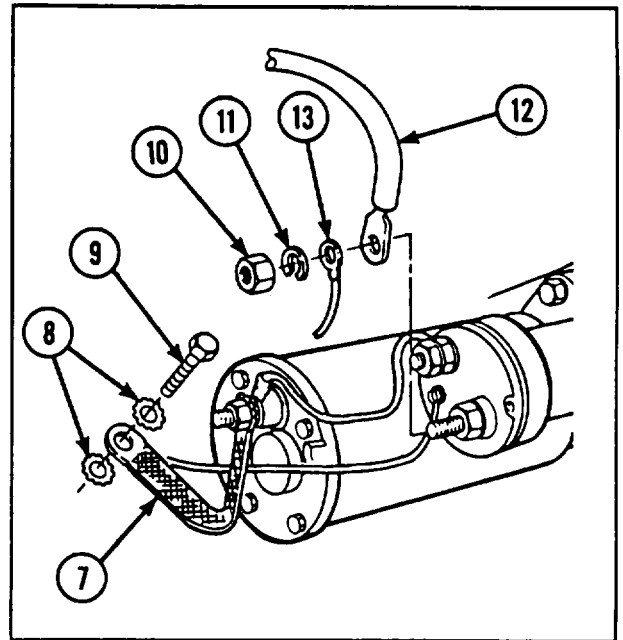
- 1 Install new gasket (1) on starter mounting flange.
- 2 Install engine starter (2) using three new lockwashers (3) and three machine bolts (4).
- 3 Install electrical lead (5) and screw (6) on solenoid relay.



2-71. MAINTENANCE OF STARTER AND MOUNTING HARDWARE (CONT).

INSTALLATION (CONT)

- 4 Install starter ground lead (7) using two new lockwashers (8) and hexagon head capscrew (9).
- 5 Remove nut (10) and lockwasher (11) and install starter cable (12) and electrical lead (13). Secure with new lockwasher and nut.



2-72. MAINTENANCE OF STARTER RELAY AND RELATED ITEMS.

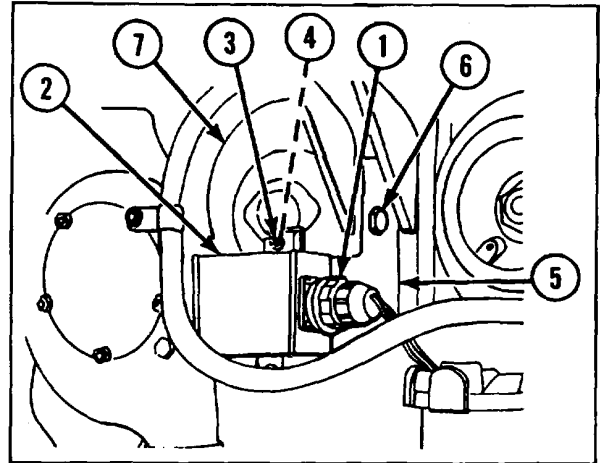
This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP			
<i>Materials/Parts</i> Lockwasher (2)			
<i>References</i> TM 9-2350-304-24P-1			
<i>Equipment Conditions</i> MASTER switch in OFF position 2-875 Fuel filter access door removed			

REMOVAL

NOTE

Instructions are written for removal of electromagnetic relay which is mounted on engine. The second electromagnetic relay is attached to the hull, near the audible warning horn, without use of starter relay mounting bracket.

- 1 Disconnect electrical lead (1) from electromagnetic relay (2).



- 2 Remove two hexagon head capscrews (3), two lockwashers (4), and electromagnetic relay (2) from starter relay mounting bracket (5).
- 3 Remove two hexagon head capscrews (6) and starter relay mounting bracket (5) from engine (7).

INSPECTION/REPAIR

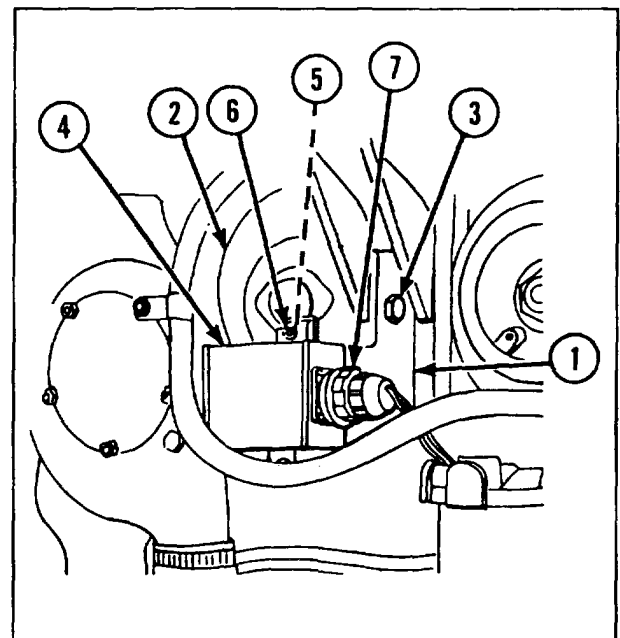
- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

NOTE

Instructions are written for installation of electromagnetic relay which is mounted on engine. The second electromagnetic relay is attached to the hull, near the audible warning horn, without use of starter relay mounting bracket.

- 1 Install starter relay mounting bracket (5) to engine (7), and secure with two hexagon head capscrews (6).
- 2 Install electromagnetic relay (4) on starter relay mounting bracket (1), and secure with two new lockwashers (5) and two hexagon head capscrews (6).



- 3 Connect electrical lead (7) to electromagnetic relay (4).

2-73. MAINTENANCE OF NEUTRAL POSITION SWITCH AND RELATED PARTS.

This task covers:

- a. Removal
- b. Inspection/Repair

c. Installation/Adjustment

INITIAL SETUP

Tools and Special Tools

Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)

- Multimeter

Materials/Parts

Lockwasher

References

TM 9-2350-304-24P-1

Equipment Conditions

MASTER switch in OFF position
2-893 Transmission deck lid assembly removed

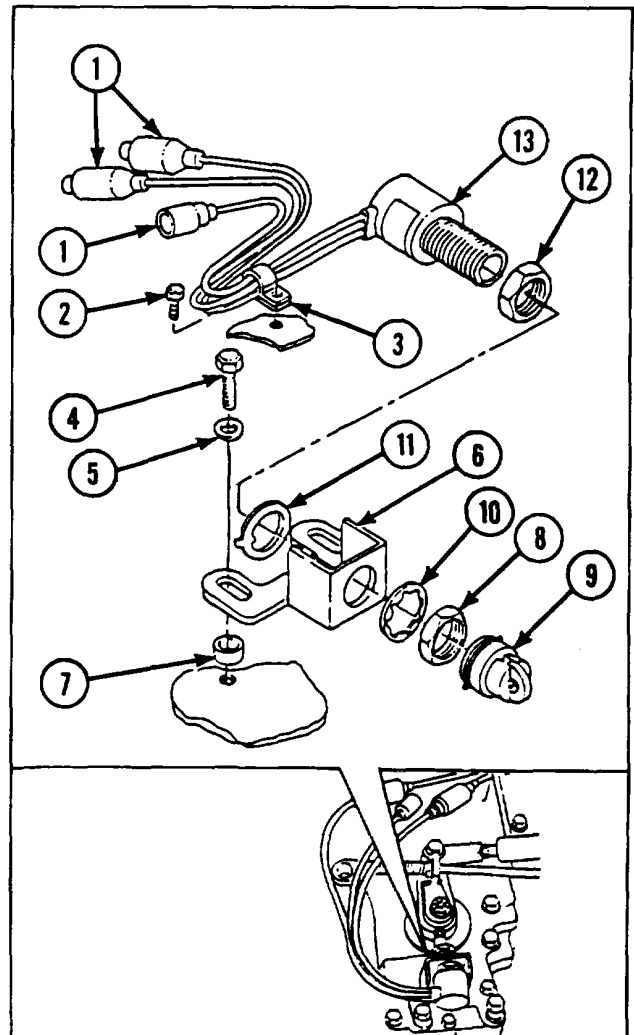
REMOVAL

- 1 Tag and disconnect three shell connectors (1) at line connections.
- 2 Remove assembled washer bolt (2) and loop clamp (3).
- 3 Remove two hexagon head capscrews (4), two flat washers (5), and bracket (6) from mounting surface. Remove two sleeve spacers (7).

NOTE

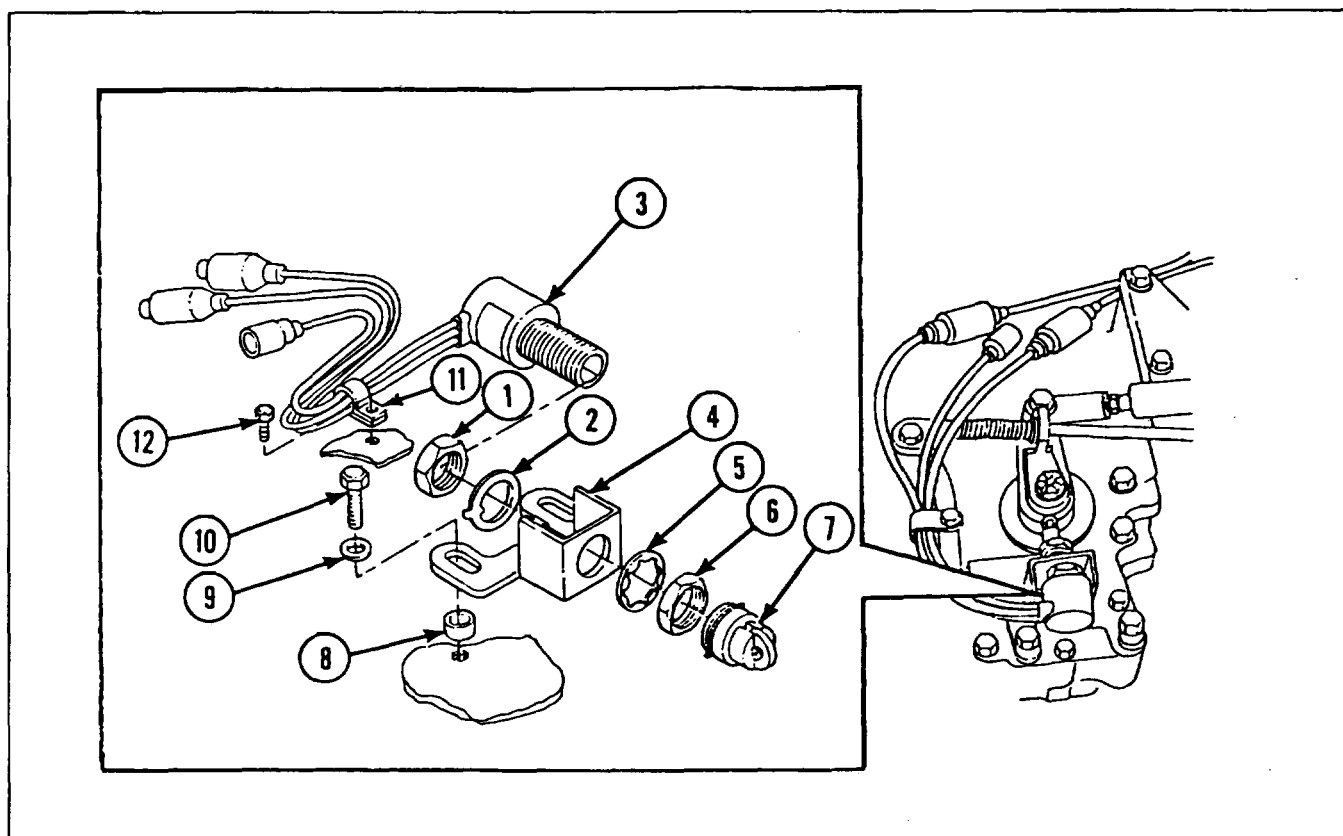
Adjusting nut (8), roller guide (9), lockwasher (10), key washer (11), and mounting nut (12) are supplied with neutral position sensitive switch (13); use care not to lose them. If lost or damaged, order a new neutral position sensitive switch.

- 4 Back off adjusting nut (8) until roller guide (9) can be removed, and remove roller guide.
- 5 Remove adjusting nut (8) and lockwasher (10) from neutral position sensitive switch (13), allowing neutral position sensitive switch to be removed from bracket (6). Remove key washer (11) and mounting nut (12) from neutral position sensitive switch.



INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 For repair of electrical shell connectors, refer to general maintenance, page 2-364.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION/ADJUSTMENT

- 1 Install mounting nut (1) and key washer (2) on neutral position sensitive switch (3).
- 2 Insert neutral position sensitive switch (3) through mounting hole in bracket (4).
- 3 Install new lockwasher (5), adjusting nut (6), and roller guide (7) on neutral position sensitive switch (3).
- 4 Install two sleeve spacers (8) and bracket (4) to mounting surface. Secure with two flat washers (9) and two hexagon capscrews (10).
- 5 Install loop clamp (11) and assembled washer bolt (12).

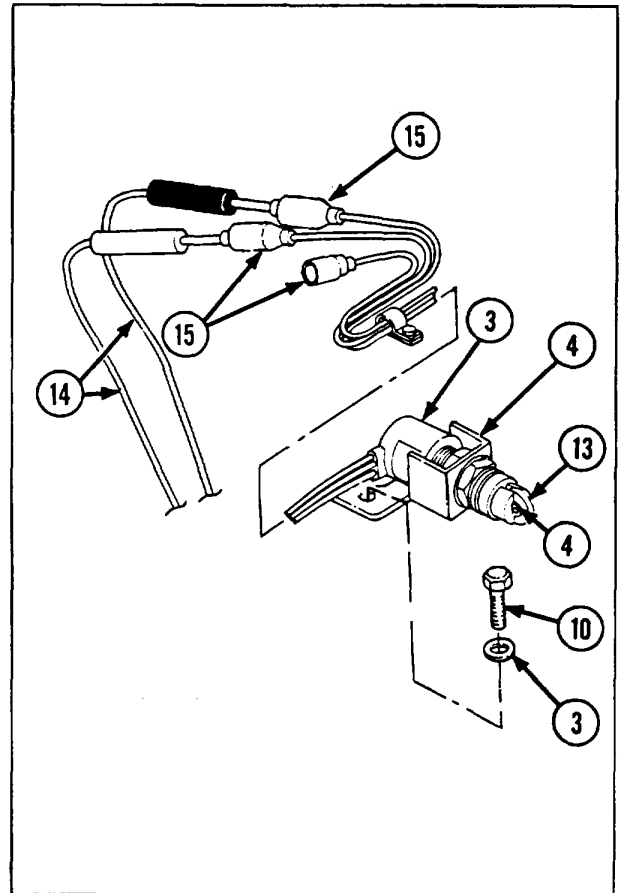
2-73. MAINTENANCE OF NEUTRAL POSITION SWITCH AND RELATED PARTS (CONT).

INSTALLATION/ADJUSTMENT (CONT)

NOTE

Steps 6 thru 13 pertain to adjustment of neutral position switch.

- 6 Set transmission shift control lever to N.
- 7 Loosen hexagon head capscrews (10) and move bracket (4) to position roller guide (7) in shift rod lever detent (13) with roller guide just touching lever.
- 8 Set multimeter to OHMS-RX1 scale and zero the multimeter. Connect multimeter leads (14) to two neutral position sensitive switch shell connectors (15).
- 9 Multimeter must indicate 0 ohms with neutral position sensitive switch (3) closed. If not, move bracket (4) until multimeter indicates 0 ohms. Tighten hexagon head capscrews (10).
- 10 Set transmission shift control lever to 1. Multimeter must indicate infinity with neutral position sensitive switch (3) open. If not, loosen hexagon head capscrews (10) and move bracket (4) until multimeter indicates infinity. Tighten hexagon head capscrews.
- 11 Set transmission shift control lever to N. Multimeter must indicate 0 ohms. If not, repeat steps 9 and 10.
- 12 Set transmission shift control lever to every shift position. Check multimeter indication at each position. Multimeter must indicate infinity at positions 1, 2, 3, 4, R1, and R2, and must indicate 0 ohms at N. If not, repeat steps 9 thru 11.
- 13 Remove multimeter leads (14) and connect three shell connectors (15) at line connections.



2-74. MAINTENANCE OF DRIVER'S INSTRUMENT PANEL (SWITCH).

This task covers:	a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i>	d. <i>Reassembly</i> e. <i>Installation</i>
INITIAL SETUP		
<i>Materials/Parts</i> Lockwasher (12) Lockwasher (4) Lockwasher (8) Lockwasher (5) Setscrew (2)	<i>General Safety Instructions</i> <div style="border: 1px solid black; padding: 2px; display: inline-block;">WARNING</div> Brake foot pedal is spring-loaded. Block tracks and release parking brake before working on driver's instrument panel. Disconnect battery ground leads from battery before working at rear of instrument panel.	
<i>References</i> TM 9-2350-304-24P-1		
<i>Equipment Conditions</i> MASTER switch in OFF position		

REMOVAL

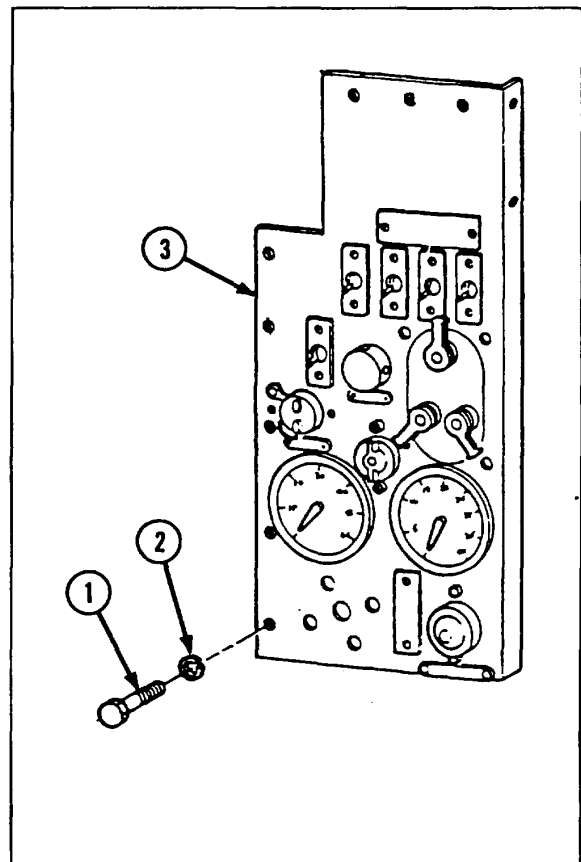
WARNING

Brake foot pedal is spring-loaded. Block tracks and release parking brake before working on driver's instrument panel. Disconnect battery ground leads from battery before working at rear of instrument panel.

NOTE

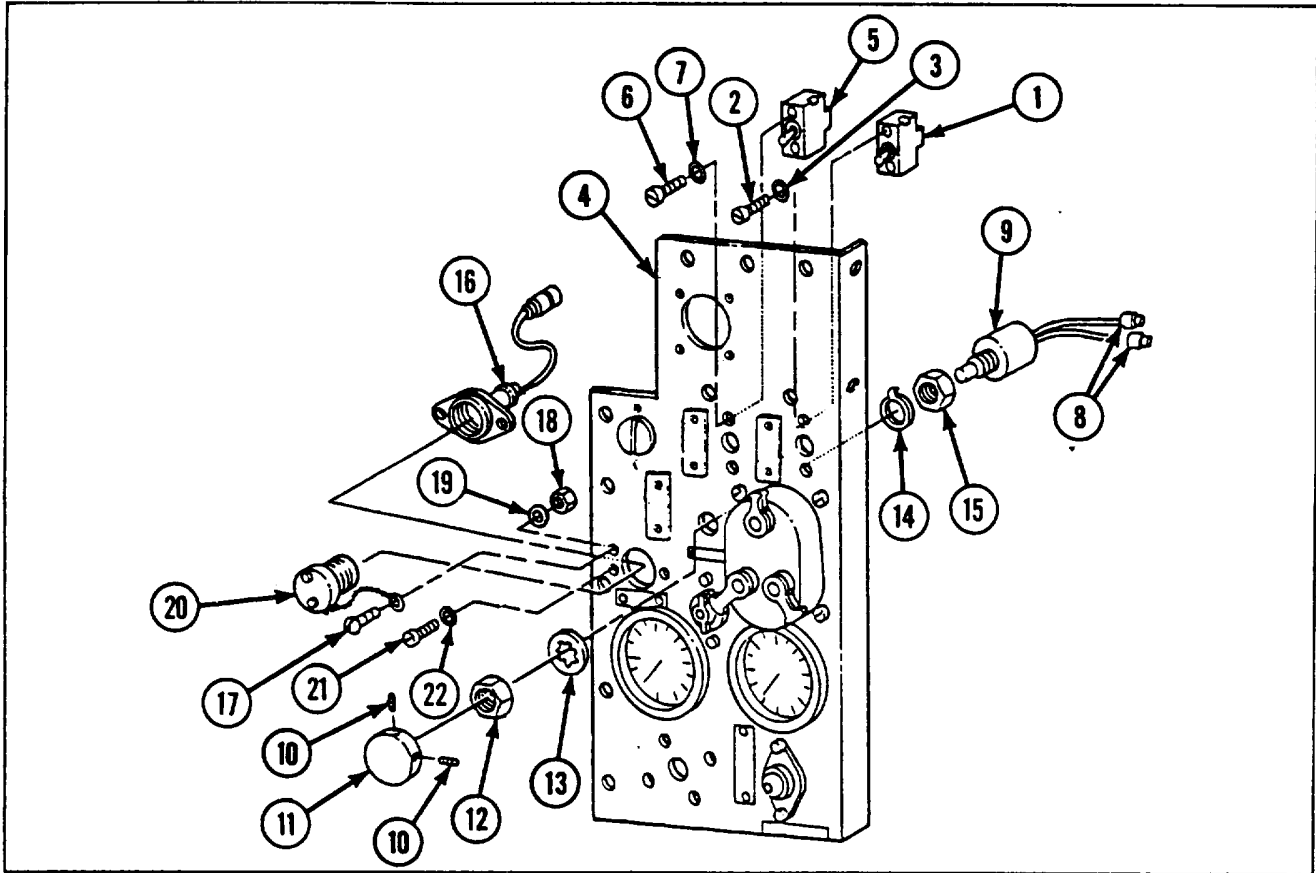
Electrical leads are labeled with circuit numbers for identification.

Remove eight hexagon head capscrews (1) and eight lockwashers (2). Remove driver's instrument panel (3).

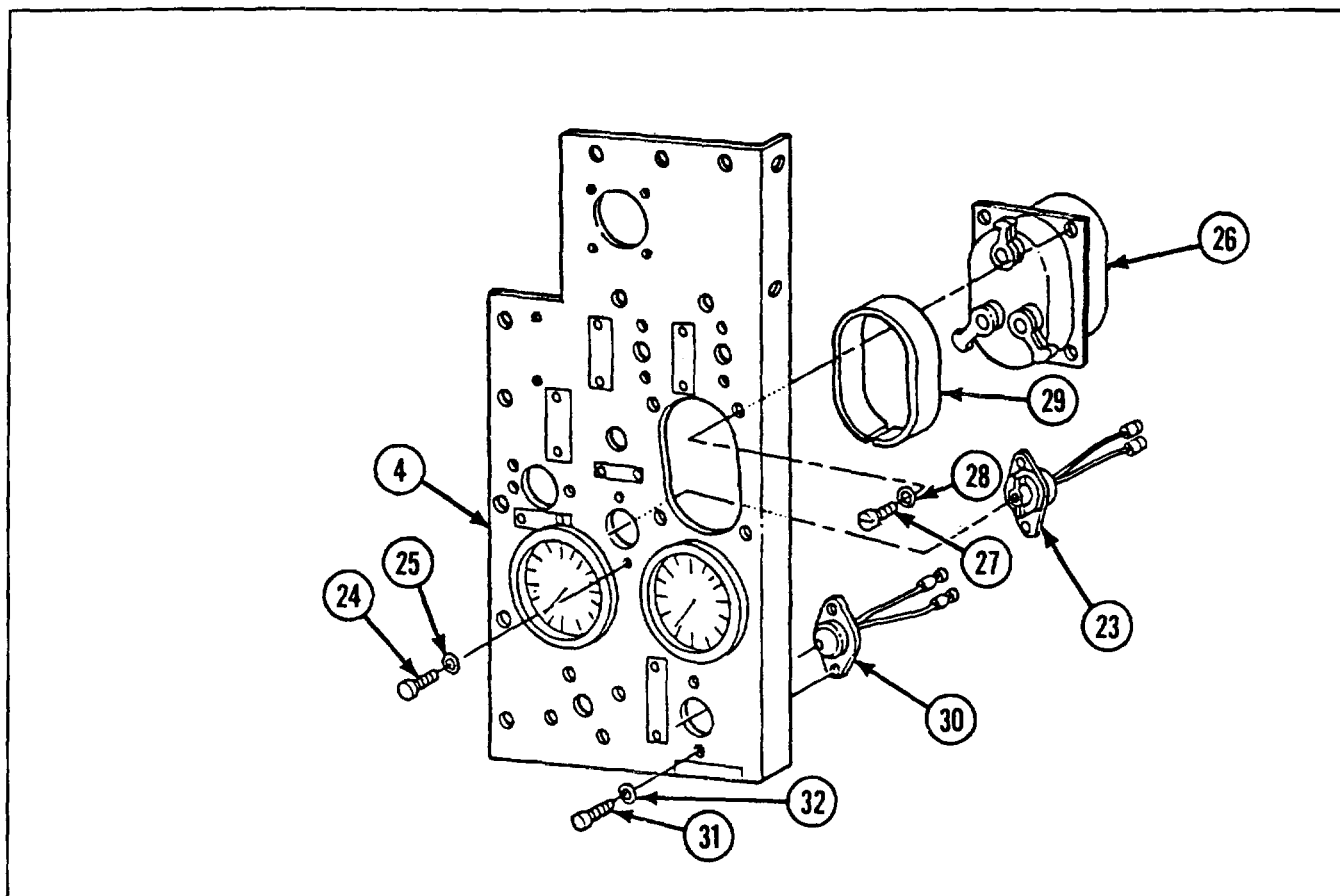


2-74. MAINTENANCE OF DRIVER'S INSTRUMENT PANEL (SWITCH) (CONT).

DISASSEMBLY



- 1 Disconnect electrical leads from four toggle switches (1). Remove eight machine screws (2) and eight lockwashers (3). Remove four toggle switches from instrument panel (4).
- 2 Disconnect electrical leads from toggle switch (5). Remove two machine screws (6) and two lockwashers (7). Remove toggle switch from instrument panel (4).
- 3 Disconnect electrical leads at shell connectors (8) of START push switch (9). Remove two setscrews (10) and START switch knob (11). Remove nut (12), lockwasher (13), and START push switch from instrument panel (4). Remove key washer (14) and nut (15) from START push switch.
- 4 Disconnect shell connector of utility electrical lead (16). Remove machine screw (17), hexagon plain nut (18), lockwasher (19), and plug and chain assembly (20).
- 5 Remove two machine screws (21), two lockwashers (22), and utility electrical lead (16) from instrument panel (4).



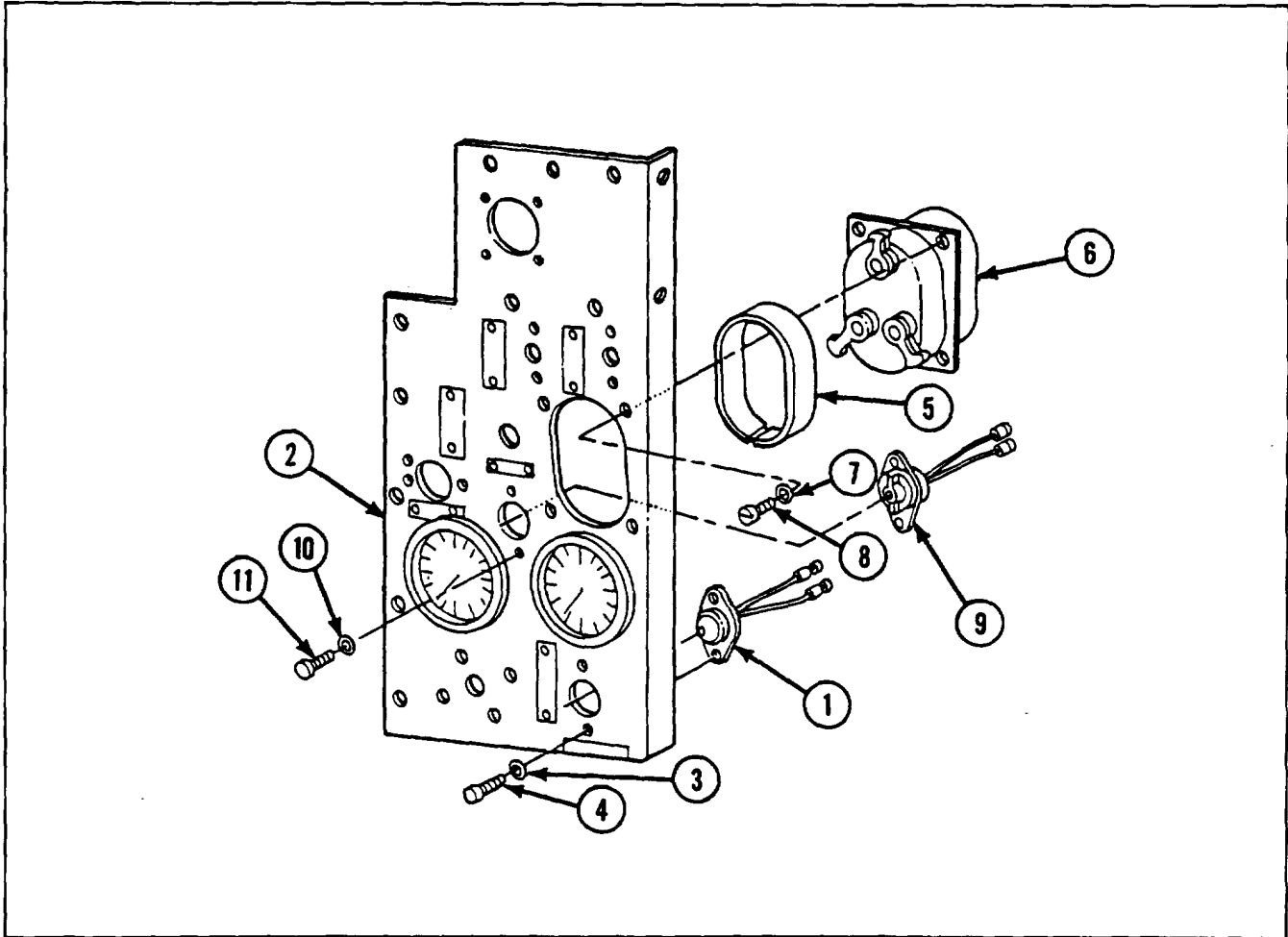
- 6 Disconnect shell connectors of indicator light (23). Remove two machine screws (24), two lockwashers (25), and indicator light from instrument panel (4).
- 7 Disconnect electrical lead from vehicular light switch (26). Remove four machine screws (27), four lockwashers (28), vehicular light switch, and ring spacer (29) from instrument panel (4).
- 8 Disconnect shell connectors of lamp assembly (30). Remove two machine screws (31), two lockwashers (32), and lamp assembly from instrument panel (4).

INSPECTION/REPAIR

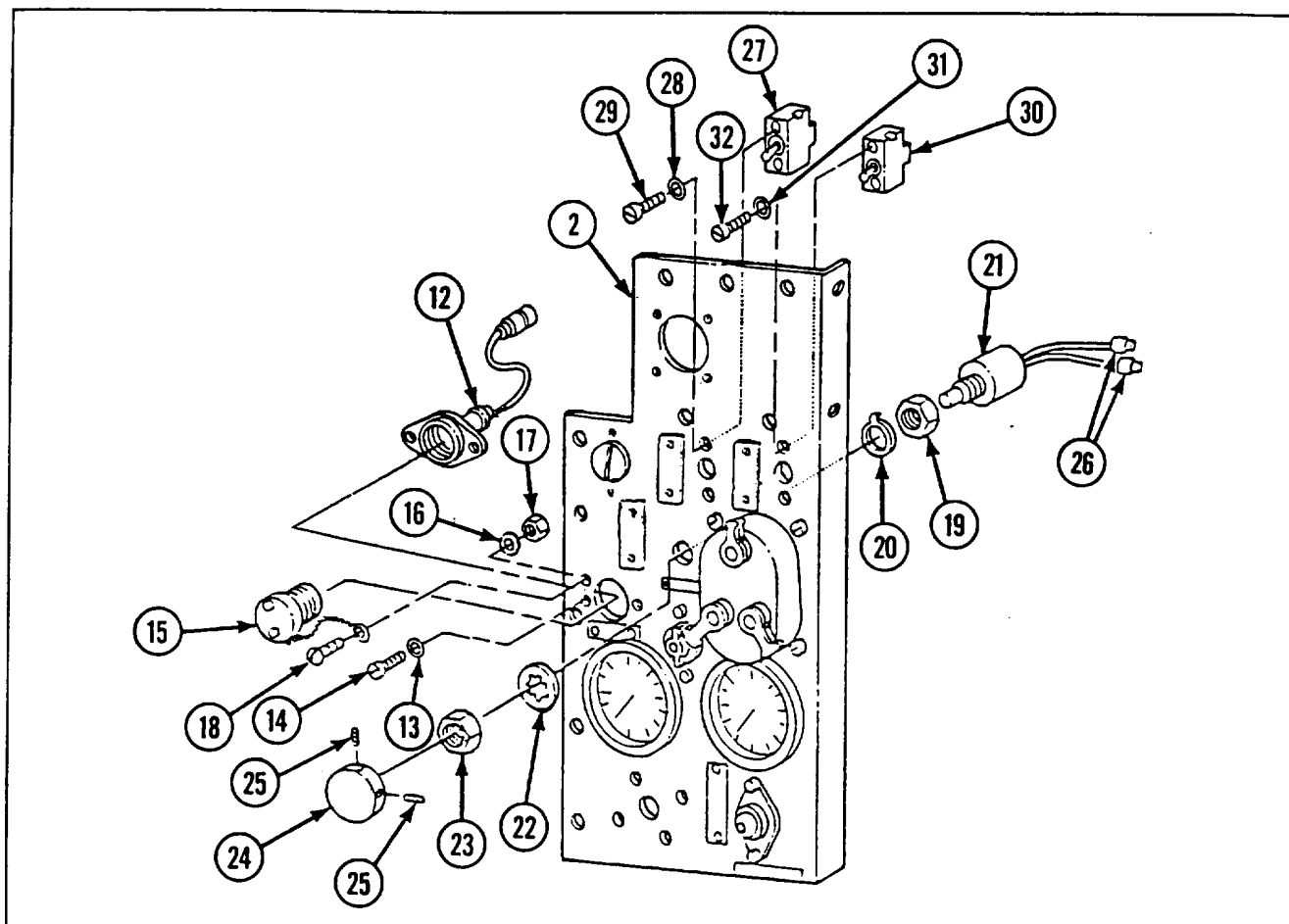
- 1 Inspect for broken, damaged, or missing parts.
- 2 Indicator light is a repairable assembly; refer to page 2-568.
- 3 Warning light is a repairable assembly; refer to page 2-567.
- 4 For repair of electrical shell connectors, refer to general maintenance, page 2-364.
- 5 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 6 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1) which do not meet inspection criteria.

2-74. MAINTENANCE OF DRIVER'S INSTRUMENT PANEL (SWITCH) (CONT).

REASSEMBLY



- 1 Install lamp assembly (1) in instrument panel (2) and secure with two new lockwashers (3) and two machine screws (4). Connect electrical leads to lamp assembly.
- 2 Install ring spacer (5) and vehicular light switch (6) on instrument panel (2) and secure with four new lockwashers (7) and four machine screws (8). Connect electrical leads to vehicular light switch.
- 3 Install indicator light (9) on instrument panel (2) and secure with two new lockwashers (10) and two machine screws (11). Connect electrical lead to indicator light.

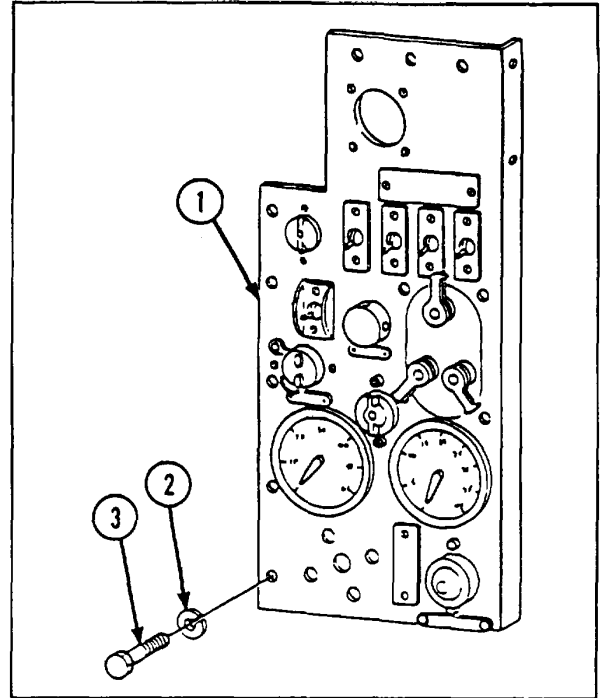


- 4 Install utility electrical lead (12) on instrument panel (2) and secure with two new lockwashers (13) and two machine screws (14).
- 5 Install plug and chain assembly (15) on instrument panel (2) and secure with new lockwasher (16), hexagon plain nut (17), and machine screw (18). Connect electrical lead to utility electrical lead (12).
- 6 Install nut (19) and key washer (20) on START push switch (21). Install START push switch in instrument panel (2) and secure with new lockwasher (22) and nut (23). Install START switch knob (24) on START push switch and secure with two new setscrews (25). Connect electrical leads to shell connectors (26) of START push switch.
- 7 Install toggle switch (27) on instrument panel (2) and secure with two new lockwashers (28) and two machine screws (29). Connect electrical leads to toggle switch.
- 8 Install four toggle switches (30) on instrument panel (2) and secure with eight new lockwashers (31) and eight machine screws (32). Connect electrical leads to four toggle switches.

2-74. MAINTENANCE OF DRIVER'S INSTRUMENT PANEL (SWITCH) (CONT).

INSTALLATION

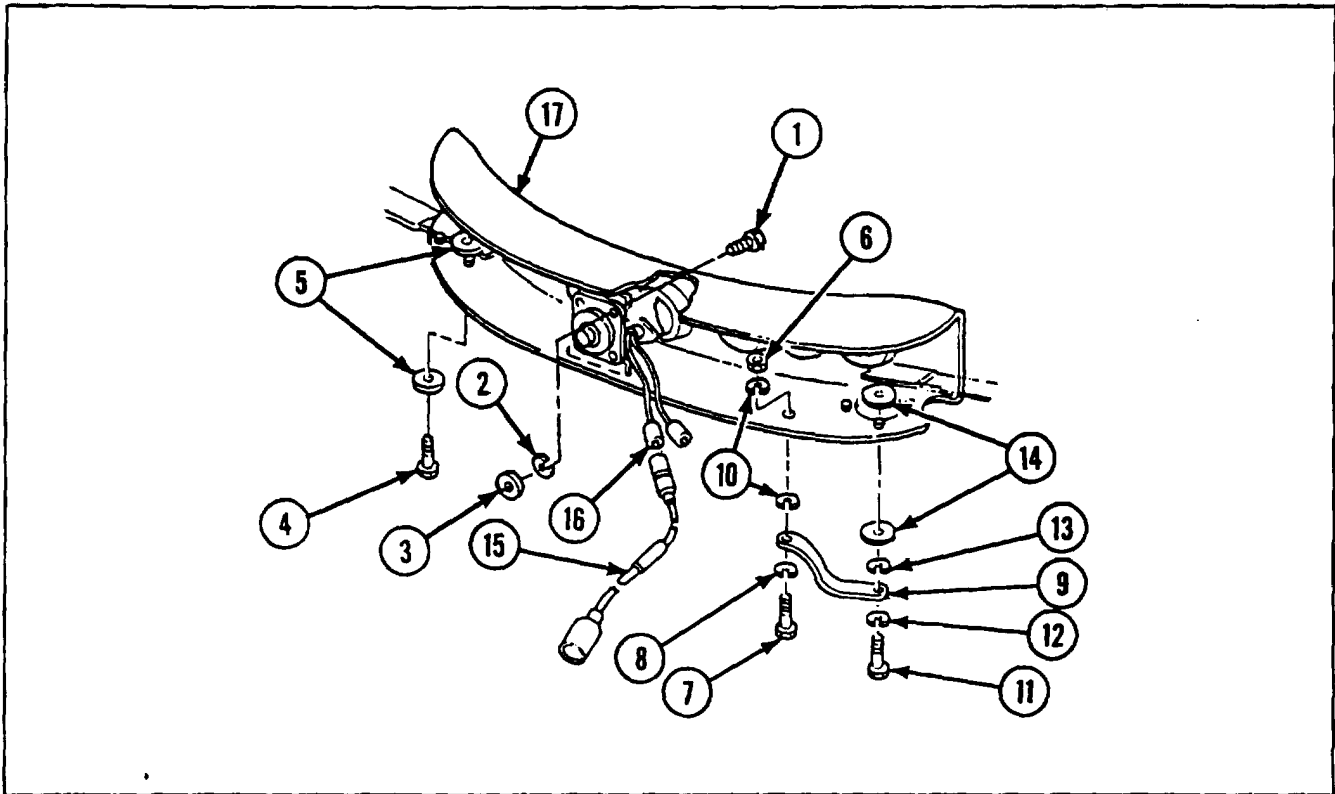
Install driver's Instrument panel (1) and secure with eight new lockwashers (2) and eight hexagon head capscrews (3).



2-75. MAINTENANCE OF DRIVER'S INSTRUMENT PANEL (GAGE).

This task covers:	a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i>	d. <i>Reassembly</i> e. <i>Installation</i>
INITIAL SETUP		
Materials/Parts Electrical wire (figure D-1, appx D) Lockwasher (6) Lockwasher (8) Silicone compound (item 39, appx C)	General Safety Instructions <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 5px 0;">WARNING</div> Block vehicle tracks and release parking brake before working in driver's compartment. Disconnect battery ground leads from battery before working at rear of instrument panel.	
References TM 9-2350-304-24P-1		
Equipment Conditions MASTER switch set to OFF position		

REMOVAL

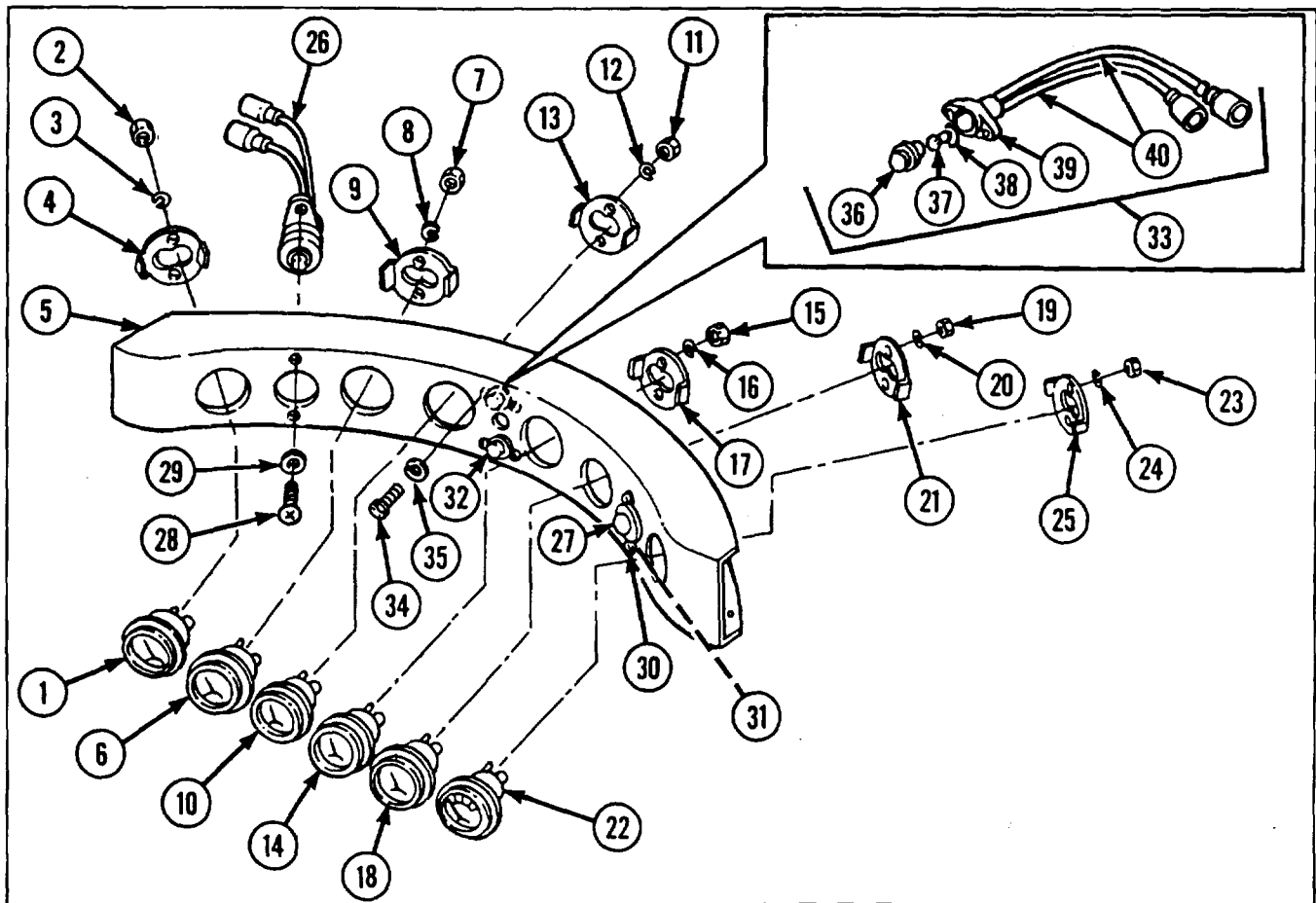
**WARNING**

Block vehicle tracks and release parking brake before working in driver's compartment.
Disconnect battery ground leads from battery before working at rear of instrument panel.

- 1 Remove machine screw (1), flat washer (2), and lockwasher (3).
- 2 Remove machine screw (4) and two flat washers (5).
- 3 Remove hexagon plain nut (6), machine screw (7), lockwasher (8), one end of instrument panel ground electrical lead (9), and two lockwashers (10).
- 4 Remove machine screw (11), lockwasher (12), other end of instrument panel ground electrical lead (9), lockwasher (13), and two flat washers (14).
- 5 Disconnect master light switch lead and diode assembly (15) at panel light connector (16). Remove driver's instrument panel (17) as far as connecting electrical leads will allow.

2-75. MAINTENANCE OF DRIVER'S INSTRUMENT PANEL (CAGE) (CONT).

DISASSEMBLY



- 1 Disconnect two electrical leads from connectors on back side of fuel level indicator (1).

NOTE

Hexagon plain nuts, lockwashers, and mounting clamps are supplied with each of the indicators; use care not to lose them. If lost or damaged, order a new indicator assembly.

- 2 Remove two hexagon plain nuts (2), two lockwashers (3), mounting clamp (4), and fuel level indicator (1) from instrument panel (5).
- 3 Disconnect two electrical leads from connectors on back side of transmission oil temperature indicator (6).
- 4 Remove two hexagon plain nuts (7), two lockwashers (8), mounting clamp (9), and transmission oil temperature indicator (6) from instrument panel (5).

- 5 Disconnect two electrical leads from connectors on back side of transmission oil pressure indicator (10).
- 6 Remove two hexagon plain nuts (11), two lockwashers (12), mounting clamp (13), and transmission oil pressure indicator (10) from instrument panel (5).
- 7 Disconnect two electrical leads from connectors on back side of engine coolant temperature indicator (14).
- 8 Remove two hexagon plain nuts (15), two lockwashers (16), mounting clamp (17), and engine coolant temperature Indicator (14) from instrument panel (5).
- 9 Disconnect two electrical leads from connectors on backside of engine oil pressure gage (18).
- 10 Remove two hexagon plain nuts (19), two lockwashers (20), mounting clamp (21), and engine oil pressure gage (18) from instrument panel (5).
- 11 Disconnect electrical lead from connector on back side of battery/generator voltmeter (22).
- 12 Remove two hexagon plain nuts (23), two lockwashers (24), mounting clamp (25), and battery/generator voltmeter (22) from instrument panel (5).
- 13 Disconnect electrical leads from connectors of engine and transmission warning light (26).
- 14 Disconnect electrical leads from connectors of generator charge indicator light (27).
- 15 Remove two machine screws (28), two lockwashers (29), and engine and transmission warning light (26) from instrument panel (5).
- 16 Remove two machine screws (30), two lockwashers (31), and generator charge indicator light (27) from instrument panel (5).

NOTE

Steps 17 thru 20 are written for one panel light, but apply to both panel lights.

- 17 Disconnect electrical leads at connectors (32) of panel light (33).
- 18 Remove two screws (34), two lockwashers (35), and panel light assembly (33) from instrument panel (5).
- 19 Remove cap (36), light emitting diode (LED) (37), and flat washer (38) from socket housing (39).
- 20 If damaged, remove electrical wires (40).

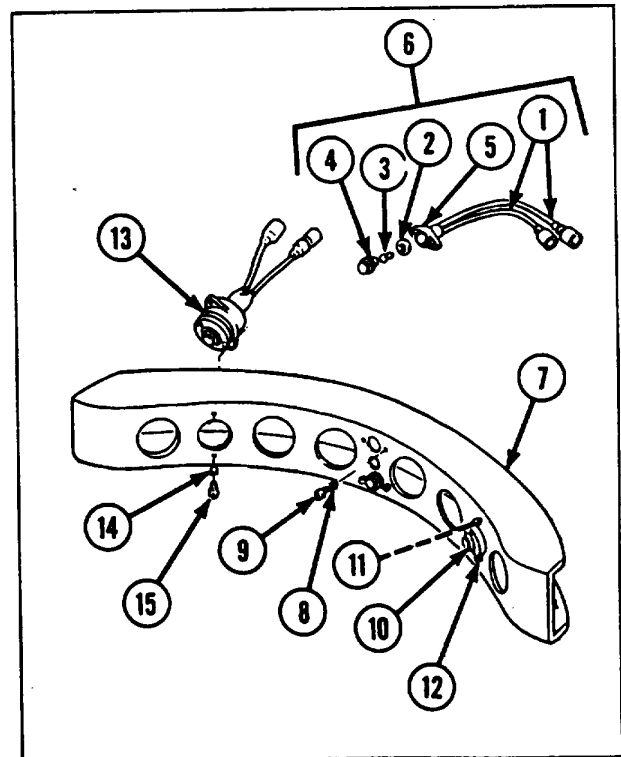
2-75. MAINTENANCE OF DRIVER'S INSTRUMENT PANEL (GAGE) (CONT).**INSPECTION/REPAIR**

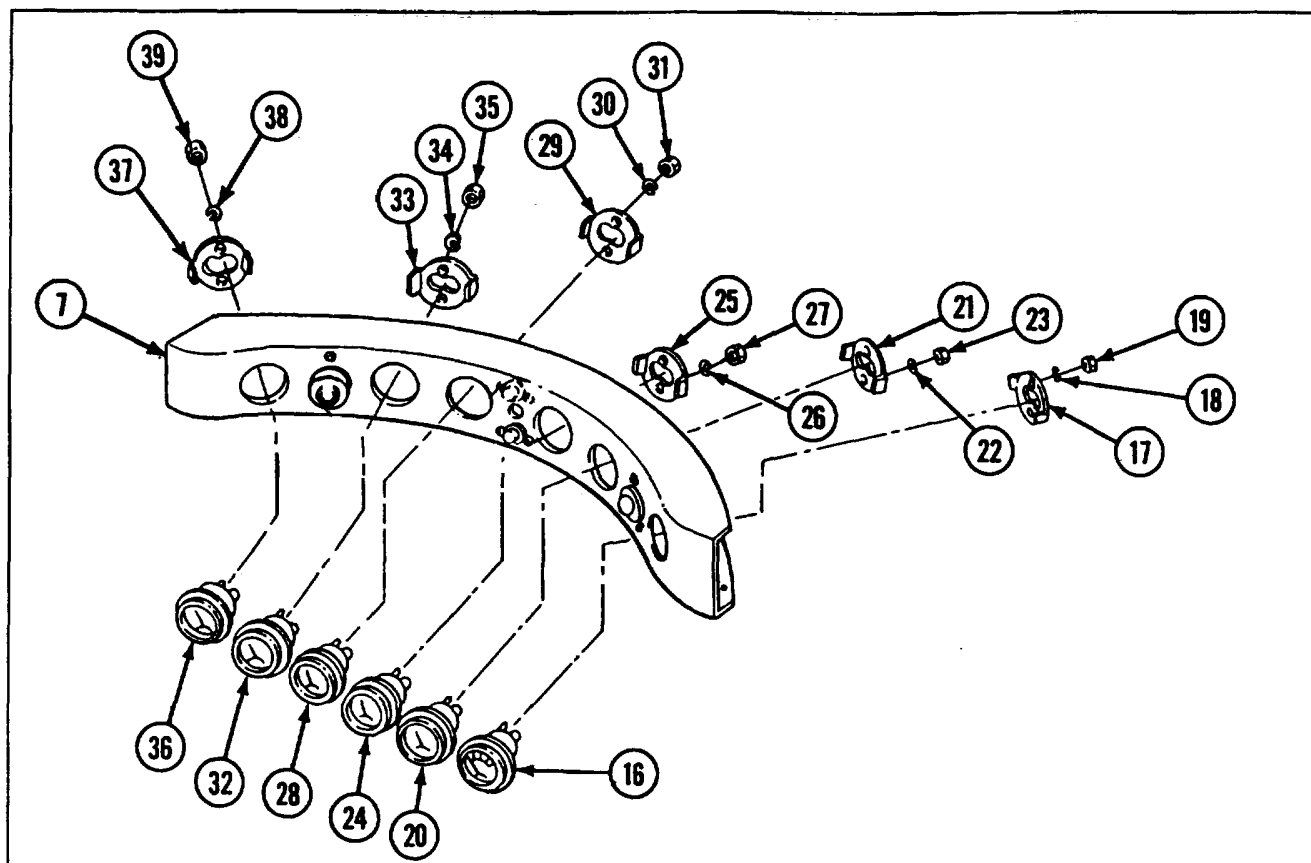
- 1 Inspect for broken, damaged, or missing parts.
- 2 Warning lights are repairable assemblies. Refer to page 2-567.
- 3 For repair of electrical shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical wire is a manufactured item, refer to appendix D.
- 5 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 6 For further disassembly, notify direct support maintenance.
- 7 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1) which do not meet inspection criteria.

REASSEMBLY**NOTE**

Steps 1 thru 3 are written for one panel light, but apply to both.

- 1 If removed, install new electrical wires (1).
- 2 Install flat washer (2), LED (3), and cap (4) in socket housing (5).
- 3 Install panel light (6) in instrument panel (7), and secure with two new lockwashers (8) and two machine screws (9).
- 4 Install generator charge indicator light (10) in instrument panel (7), and secure with two new lockwashers (11) and two machine screws (12). Connect electrical lead to connector of generator charge indicator light.
- 5 Install engine and transmission warning light (13) in instrument panel (7), and secure with two new lockwashers (14) and two machine screws (15). Connect electrical lead to connector of engine and transmission warning light.

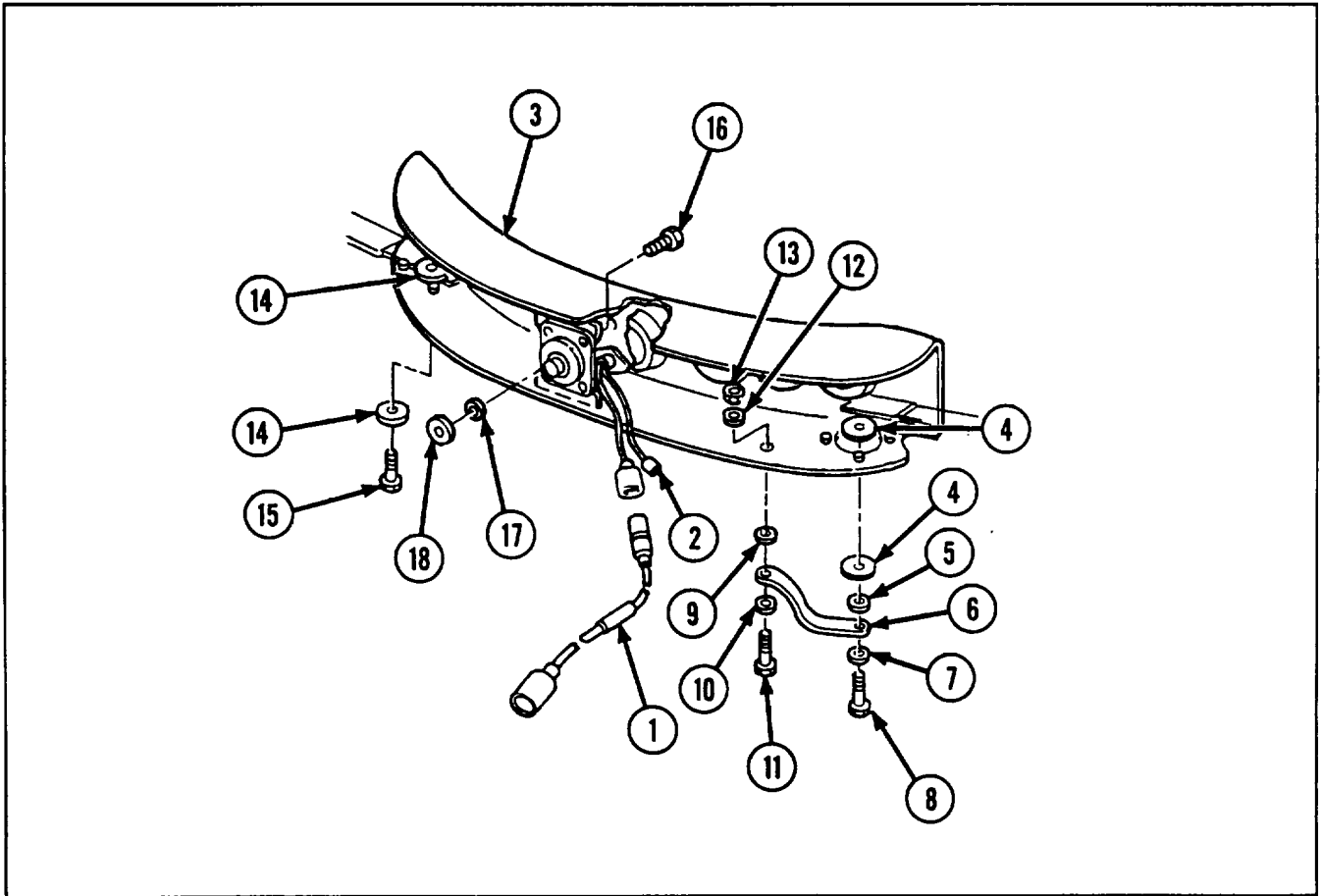




- 6 Install battery/generator voltmeter (16) in instrument panel (7), and secure with mounting clamp (17), two lockwashers (18), and two hexagon plain nuts (19). Connect electrical lead to connector on back side of battery/generator voltmeter.
- 7 Install engine oil pressure gage (20) in instrument panel (7), and secure with mounting clamp (21), two lockwashers (22), and two hexagon plain nuts (23). Connect two electrical leads to connectors on back side of engine oil pressure gage.
- 8 Install engine coolant temperature indicator (24) in instrument panel (7) and secure with mounting clamp (25), two new lockwashers (26), and two hexagon plain nuts (27). Connect two electrical leads to connectors on back side of engine coolant temperature indicator.
- 9 Install transmission oil pressure indicator (28) in instrument panel (7) and secure with mounting clamp (29), two lockwashers (30), and two hexagon plain nuts (31). Connect two electrical leads to connectors on back side of transmission oil pressure indicator.
- 10 Install transmission oil temperature indicator (32) in instrument panel (7), and secure with mounting clamp (33), two lockwashers (34), and two hexagon plain nuts (35). Connect two electrical leads to connectors on back side of transmission oil temperature indicator.
- 11 Install fuel level indicator (36) in instrument panel (7), and secure with mounting clamp (37), two new lockwashers (38), and two hexagon plain nuts (39). Connect two electrical leads to connectors on back side of fuel level indicator.

2-75. MAINTENANCE OF DRIVER'S INSTRUMENT PANEL (CAGE) (CONT).

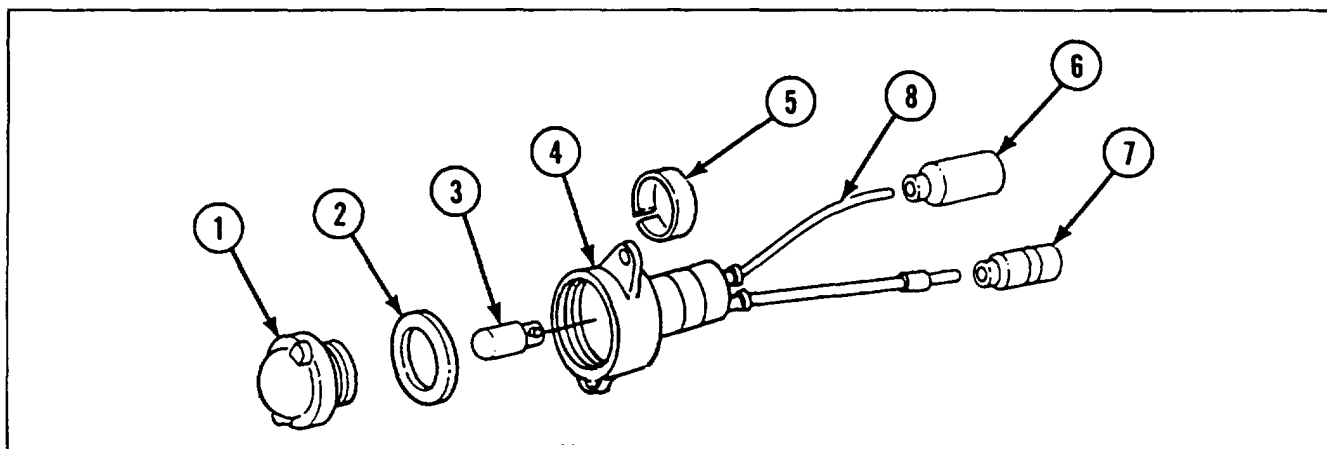
INSTALLATION



- 1 Connect master light switch lead and diode assembly (1) at panel light connector (2).
- 2 Install driver's instrument panel (3). Install two flat washers (4), new lockwasher (5), one end of instrument panel ground electrical lead (6), new lockwasher (7), and machine screw (8).
- 3 Install new lockwasher (9), other end of instrument panel ground electrical lead (6), new lockwasher (10), machine screw (11), new lockwasher (12), and hexagon plain nut (13).
- 4 Install two flat washers (14) and machine screw (15).
- 5 Install machine screw (16), new lockwasher (17), and flat washer (18).

2-76. MAINTENANCE OF WARNING LIGHT.

This task covers:	a. <i>Disassembly</i>	b. <i>Inspection/Repair</i>	c. <i>Reassembly</i>
INITIAL SETUP			
<i>Materials/Parts</i>	<i>Equipment Conditions</i>		
Electrical wire (figure D-1, appx D)	2-555	Warning light removed	
LED	2-560	Warning light removed	
	2-581	Warning light removed	
<i>References</i>			
TM 9-2350-304-24P-1			

**DISASSEMBLY**

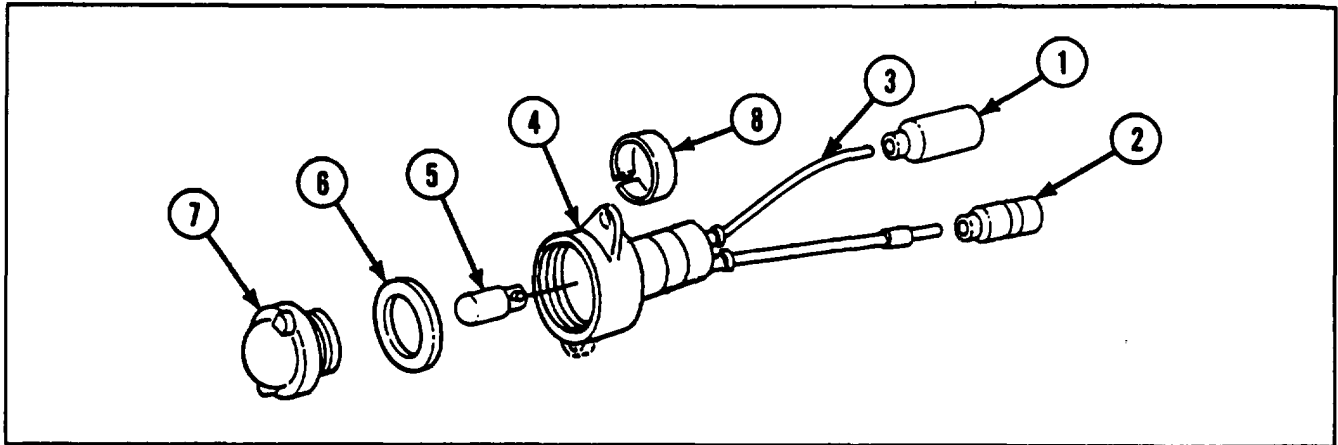
- 1 Remove light lens (1), flat washer (2), and light emitting diode (LED) (3) from light socket (4).
- 2 If damaged, remove band (5) from light socket (4).
- 3 If damaged, remove two connectors (6 and 7) and electrical wire (8) from light socket (4).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If light socket is damaged, repair is by replacement of next higher assembly.
- 3 Electrical wire is a manufactured item, refer to appendix D.
- 4 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-76. MAINTENANCE OF WARNING LIGHT (CONT).

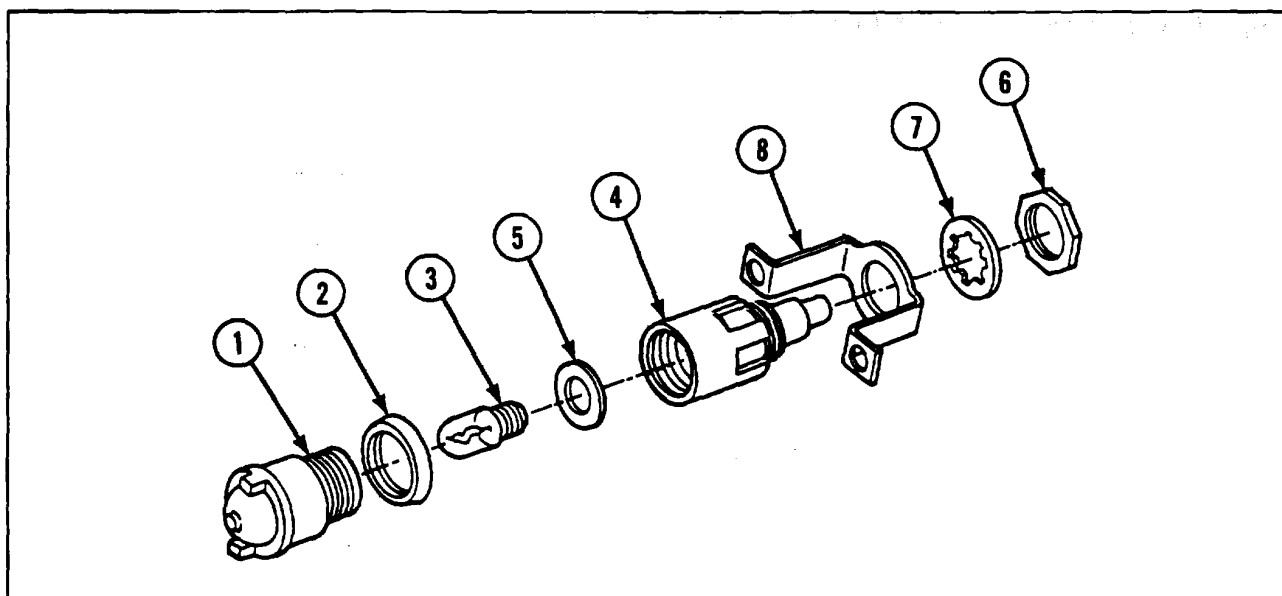
REASSEMBLY



- 1 If removed, install two new connectors (1 and 2) and electrical wire (3) on light socket (4).
- 2 Install new LED (5), flat washer (6), and light lens (7) in light socket (4).
- 3 If removed, install new band (8) on light socket (4).

2-77. MAINTENANCE OF INDICATOR LIGHT.

This task covers:	a. <i>Disassembly</i>	b. <i>Inspection/Repair</i>	c. <i>Reassembly</i>
INITIAL SETUP			
<i>Materials/Parts</i>			
Gasket			
Lockwasher			
Preformed packing			
<i>References</i>			
TM 9-2350-304-24P-1			
<i>Equipment Conditions</i>			
2-555 Indicator light assembly removed			

**DISASSEMBLY**

- 1 Remove light lens (1), preformed packing (2), and incandescent lamp (3) from light socket (4).
- 2 Remove gasket (5) from light socket (4).
- 3 Remove electrical bondnut (6), lockwasher (7), and retaining strap (8) from light socket (4).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If light socket is damaged, repair is by replacement of next higher assembly.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

- 1 Install retaining strap (8), new lockwasher (7), and electrical bondnut (6) on light socket (4).
- 2 Install new gasket (5) in light socket (4).
- 3 Install incandescent lamp (3), new preformed packing (2), and light lens (1) in light socket (4).

2-78. MAINTENANCE OF AIR BOX HEATER CONTROLS BRACKET ASSEMBLY.

This task covers: a. *Removal* b. *Inspection/Repair* c. *Installation*

INITIAL SETUP*Materials/Parts*

Lockwasher (2)

References

TM 9-2350-304-24P-1

Equipment Conditions

Master switch set to OFF

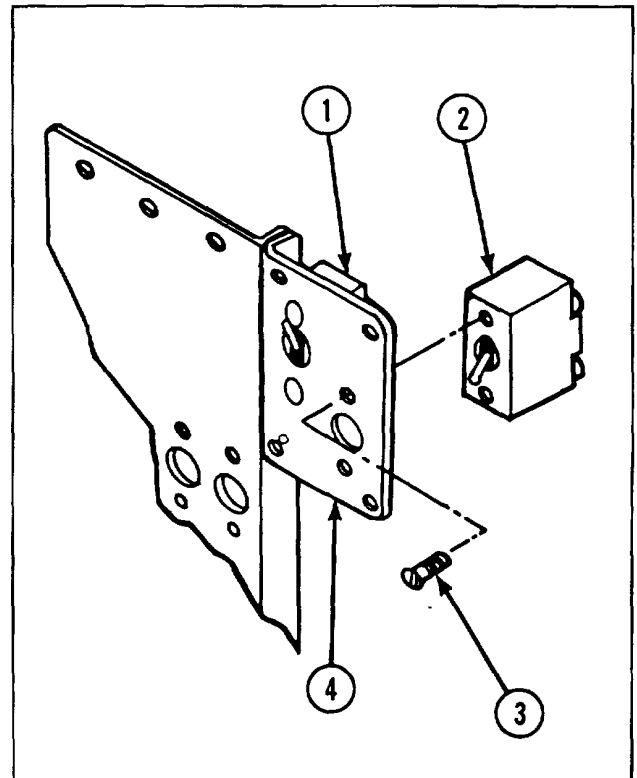
*General Safety Instructions***WARNING**

Brake foot pedal is spring-loaded. Block tracks and release parking brake before working on driver's instrument panel. Disconnect battery ground leads from battery before working at rear of panel.

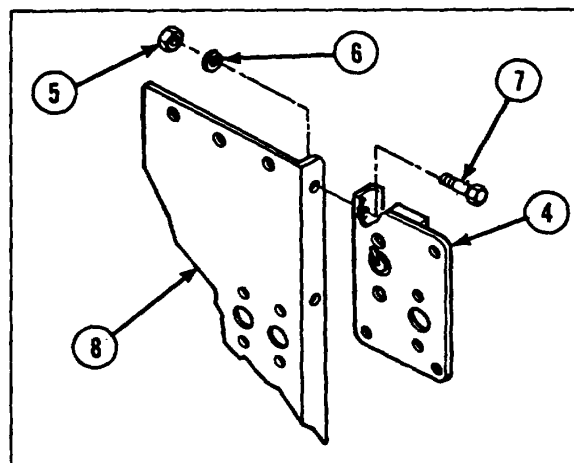
REMOVAL**WARNING**

Brake foot pedal is spring-loaded. Block tracks and release parking brake before working on driver's instrument panel. Disconnect battery ground leads from battery before working at rear of panel.

- 1 Tag and disconnect all electrical leads from air box heater toggle switch (1) and pump and igniter toggle switch (2).
- 2 Remove four machine screws (3), air box heater toggle switch (1), and pump and igniter toggle switch (2) from angle bracket (4).



- 3 Remove two nuts (5), two lockwashers two hexagon head capscrews (7), and angle bracket (4) from driver's instrume panel (8).

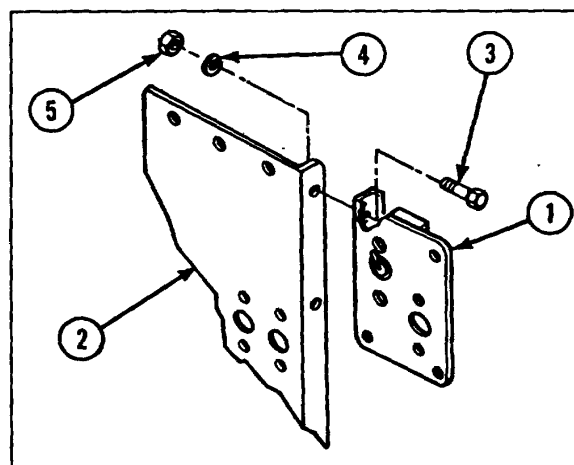


INSPECTION/REPAIR

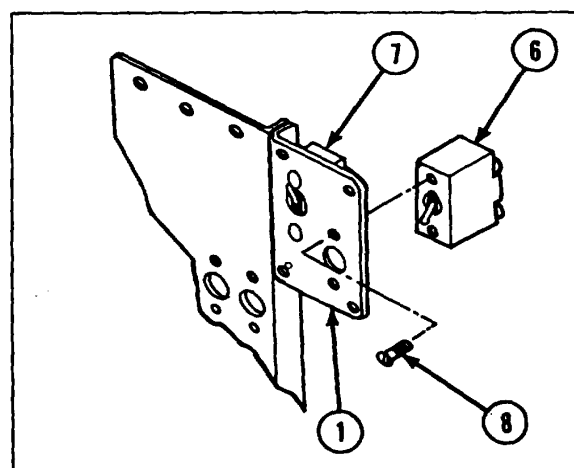
- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Position angle bracket (1) on driver's instrument panel (2) and secure with two hexagon head capscrews (3), two lockwashers (4), and two nuts (5).



- 2 Position pump and igniter toggle switch and air box heater toggle switch (7) on angle bracket (1) and secure with four machine screws (8).
- 3 Untag and connect all electrical leads.

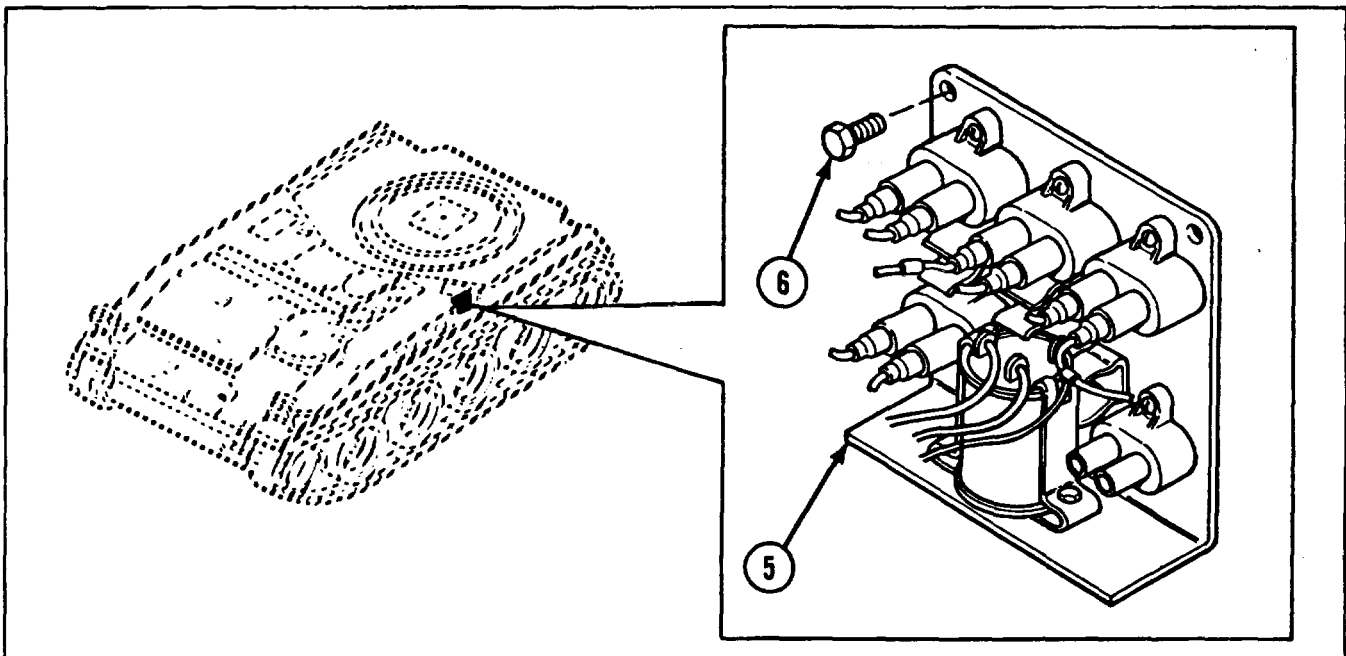
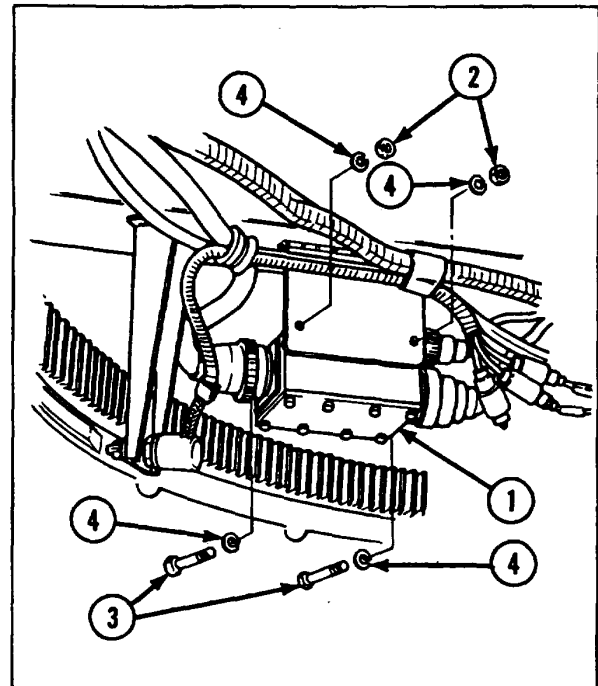


REMOVAL

WARNING

- Make sure MASTER switch is OFF before repairing electrical components. Failure to observe this warning could result in injury to personnel.
- Failure to remove or disconnect the batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Tag and disconnect all electrical leads from oil pump motor relay (1).
- 2 Remove two self-locking nuts (2), two machine bolts (3), four lockwashers (4), and oil pump motor relay (1) from vehicle.

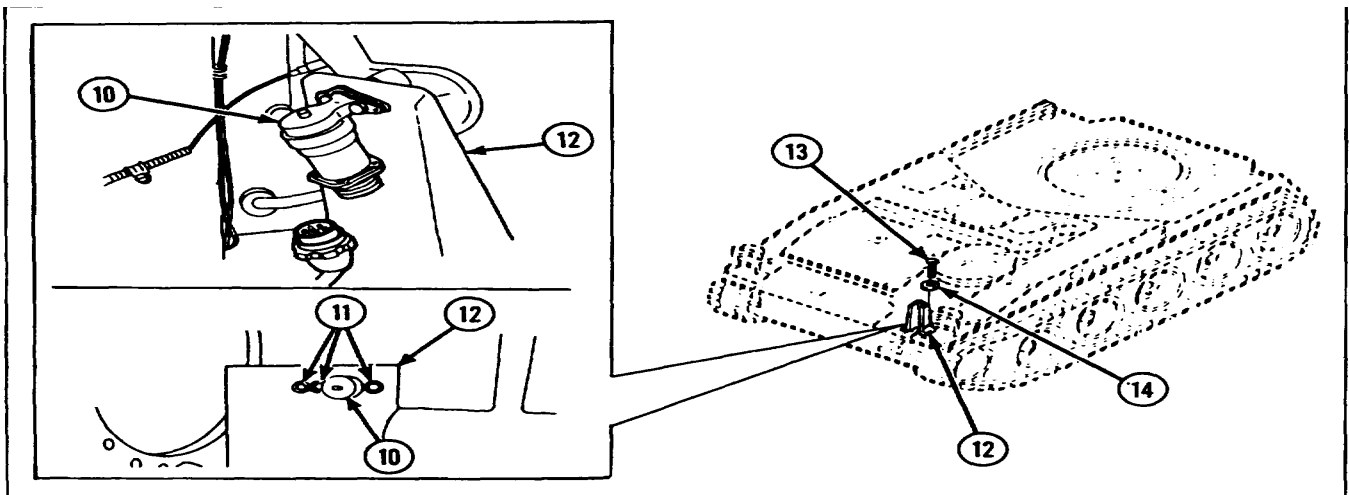
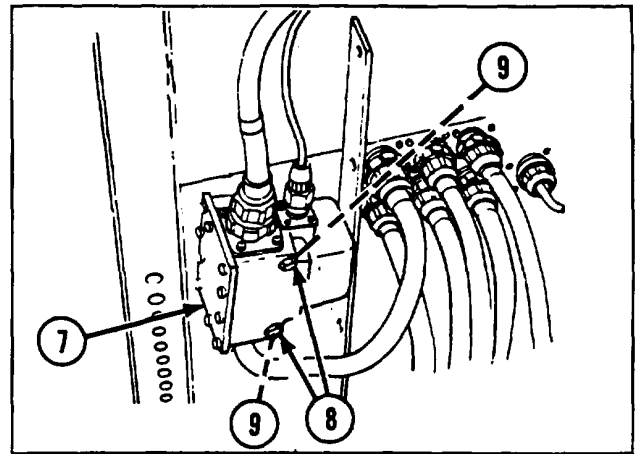


- 3 Tag and disconnect all electrical leads from electrical accessories power bus panel (5).
- 4 Remove four assembled bolts (6) and electrical accessories power bus panel (5) from vehicle.

2-79. MAINTENANCE OF MISCELLANEOUS ELECTRICAL COMPONENTS (CONTS)

REMOVAL (CONT)

- 5 Tag and disconnect all electrical leads from battery relay (7).
- 6 Remove two hexagon head capscrews two lockwashers (9), and battery relay (from driver's compartment).



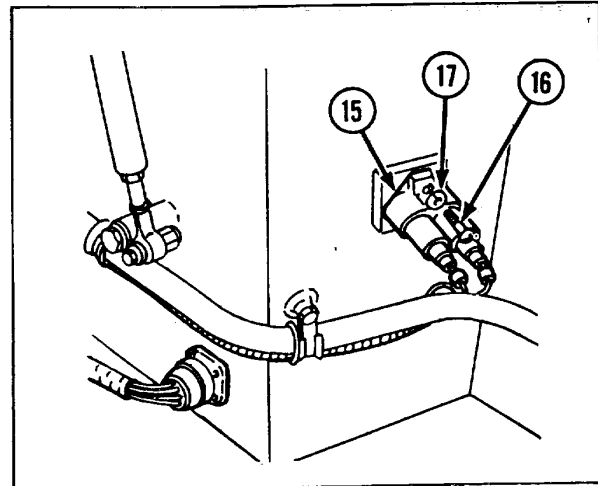
WARNING

Brake foot pedal is spring-loaded. Block tracks and release parking brake before working on headlight beam selection switch.

- 7 Tag and disconnect all electrical leads from headlight beam selection switch (10).
- 8 Remove three assembled washer bolts (11) and headlight beam selection switch (10) from electrical dimmer switch bracket (12).
- 9 Remove four hexagon head capscrews (13), four lockwashers (14), and electrical dimmer switch bracket (12) from vehicle.

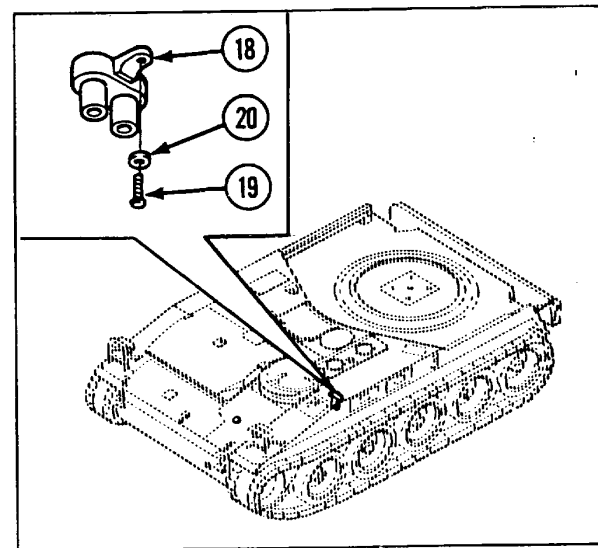
10 Tag and disconnect all electrical leads from generator cooling fan circuit breaker (15).

11 Remove two socket head capscrews (16 two lockwashers (17), and generator cooling fan circuit breaker (15) from left front engine compartment/driver's bulkhead side.



12 Tag and disconnect all electrical leads from two air box heater circuit breakers (18).

13 Remove four socket head capscrews (19 four lockwashers (20), and two air box heater circuit breakers (18) from top side of driver's compartment.



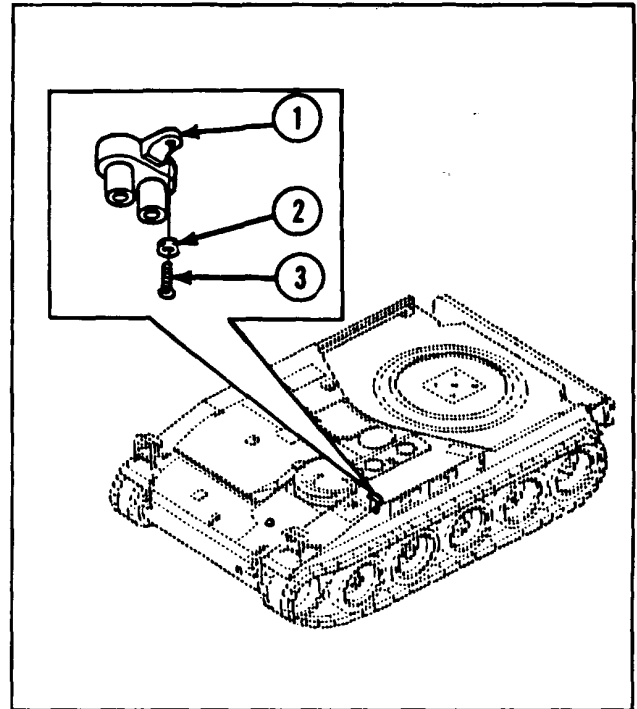
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Electrical accessories power bus panel is a repairable assembly, refer to page 2-578.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

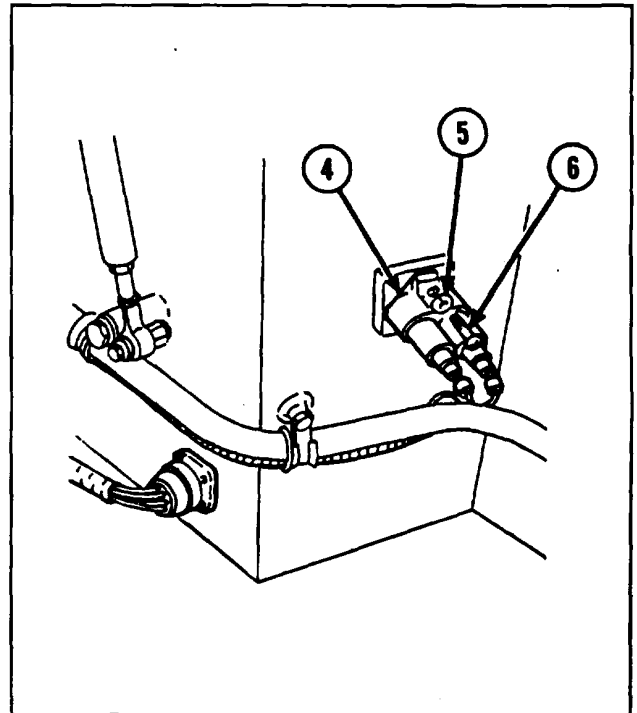
2-79. MAINTENANCE OF MISCELLANEOUS ELECTRICAL COMPONENTS (CONTS)

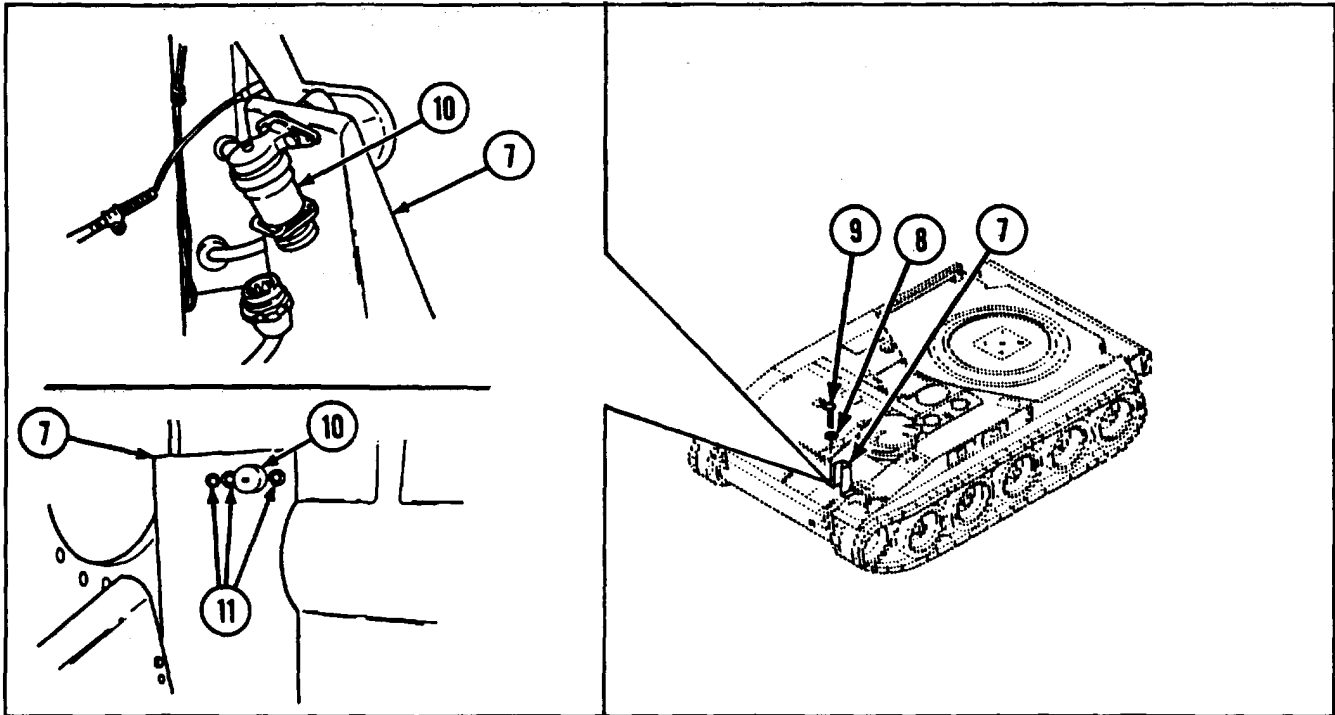
INSTALLATION

- 1 Position two air box heater circuit breakers (1) in top side of driver's compartment, and secure with four new lockwashers (2) and four socket head capscrews (3).
- 2 Untag and connect all applicable electrical leads to two air box heater circuit breakers (1).



- 3 Position generator cooling fan circuit breaker (4) in left front engine compartment/driver's bulkhead side, and secure with two new lockwashers (5) and two socket head capscrews (6).
- 4 Untag and connect all applicable electrical leads to generator cooling fan circuit breaker (4).

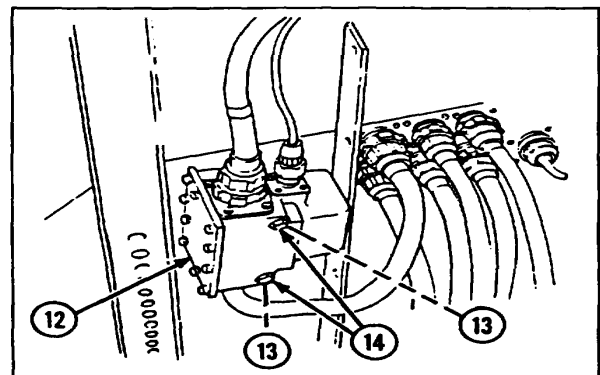




WARNING

Brake foot pedal is spring-loaded. Block tracks and release parking brake before working on headlight beam selection switch.

- 5 Position electrical dimmer switch bracket (7) on vehicle, and secure with four new lockwashers (8) and four hexagon head capscrews (9).
- 6 Position headlight beam selection switch (10) on electrical dimmer switch bracket (7), and secure with three new assembled washer bolts (11).
- 7 Untag and connect all applicable electrical leads to headlight beam selection switch (10).
- 8 Position battery relay (12) on vehicle, and secure with two new lockwashers (13) two hexagon head capscrews (14).
- 9 Untag and connect all applicable electrical leads to battery relay (12).



2-79. MAINTENANCE OF MISCELLANEOUS ELECTRICAL COMPONENTS (CONTS)

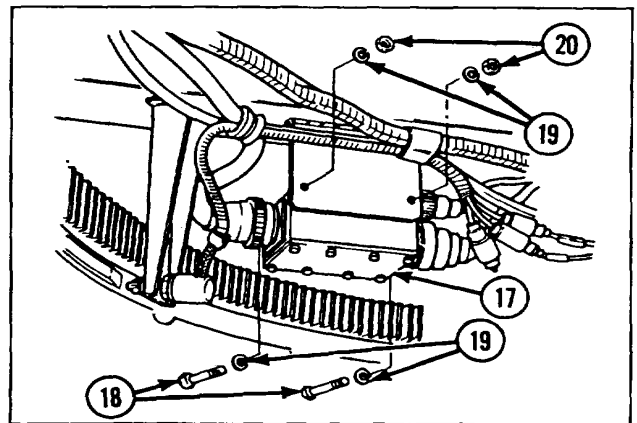
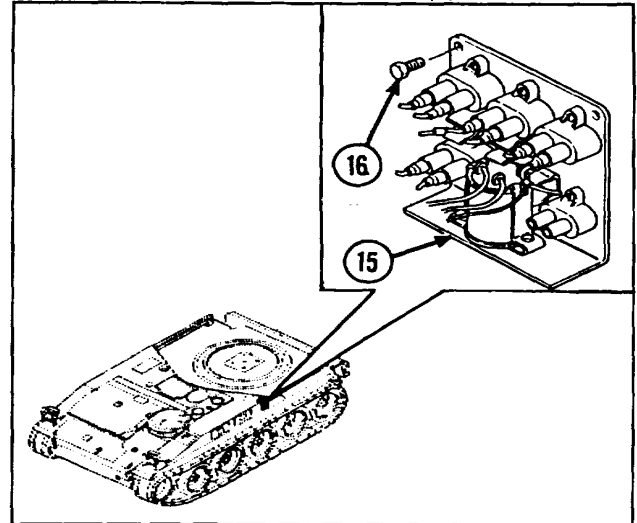
INSTALLATION (CONT)

10 Position electrical accessories panel assembly (15) on vehicle, and secure with four assembled washer bolts (16).

11 Untag and connect all applicable electric leads to electrical accessories panel assembly (15).

12 Position oil pump motor relay (17) on vehicle, and secure with two machine bolts (18), four new lockwashers (19), and two new self-locking nuts (20).

13 Untag and connect all applicable electric leads to oil pump motor relay (17).



This task covers:

a. Disassembly

b. Inspection

c. Reassembly

INITIAL SETUP:

Materials/Parts

- Corrosion preventive sealant (item 34, appx C)
- Lockwasher (10)
- Sealant (item 35, appx C)

Equipment Conditions

- 2-578 Electrical accessories power bus panel removed

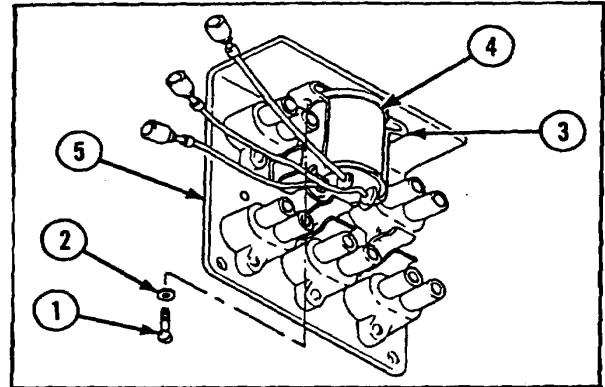
References

TM 9-2350-304-24P-1

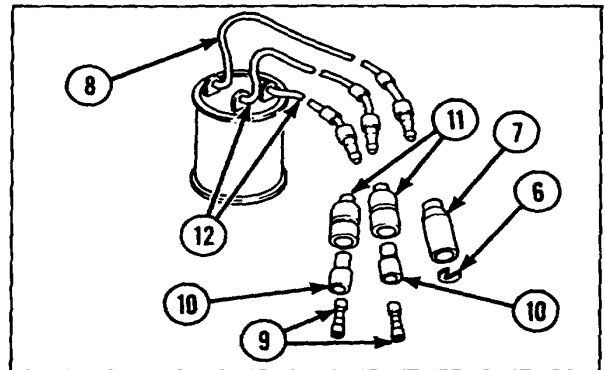
DISASSEMBLY**NOTE**

Tag all electrical leads and cables during disassembly to aid in reassembly.

- 1 Remove two machine screws (1), two flat washers (2), two rectifier mounting brackets (3), and rectifier and lead (4) from angle bracket (5).

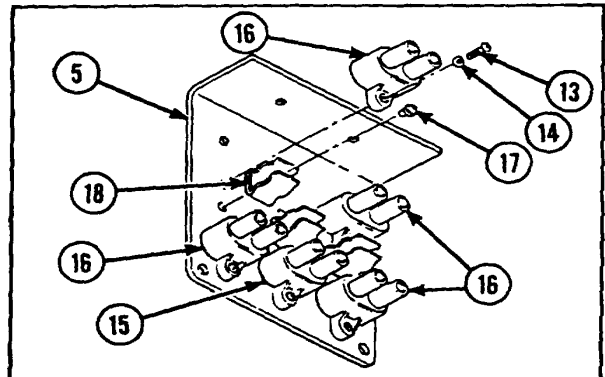


- 2 Remove slotted washer (6) and electrical shell (7) from attached electrical cable (8).



- 3 Remove two terminal assemblies (9), two bushing insulators (10), and two shells (11) from two attached electrical cables (12).

- 4 Remove ten machine screws (13), ten lockwashers (14), 20-amp circuit breaker (15), and four 15-amp circuit breakers (16) from angle bracket (5).



- 5 Remove three assembled washer screws (17) and three spring tension clips (18) from angle bracket (5).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Inspect rectifier for signs of overheating.
- 3 Inspect contact pin for corrosion.
- 4 Repair is by placement of authorized parts (TM 9-2350-304-24P-1) which do not meet inspection criteria.

2-80. MAINTENANCE.OF ELECTRICALACCESSORIES POWER BUS PANEL (CONT)

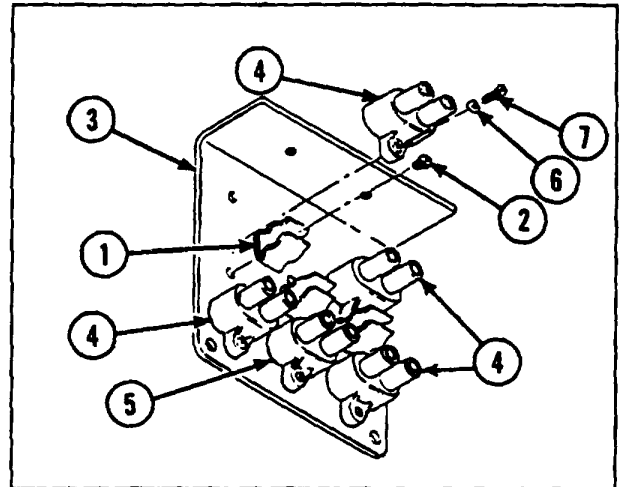
REASSEMBLY

- 1 Install three spring tension clips (1) and three assembled washer screws (2) on angle bracket (3).

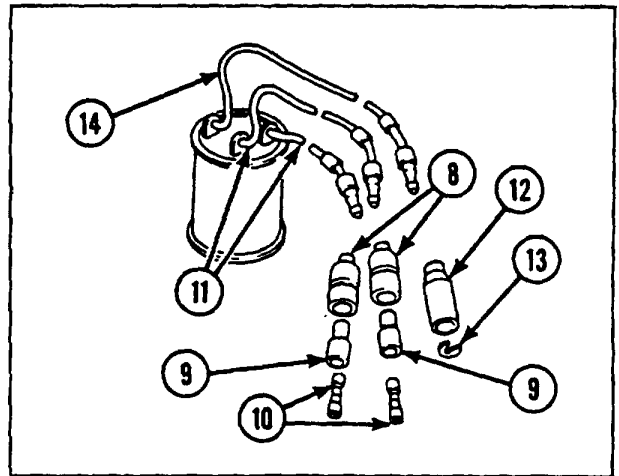
CAUTION

Ensure circuit breaker is installed in correct position.

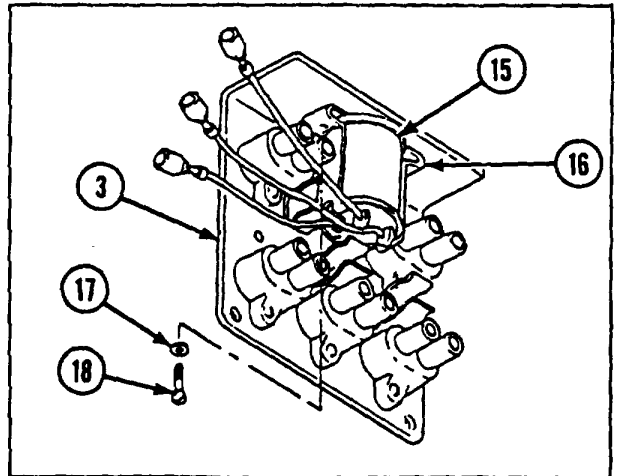
- 2 Install four 15-amp circuit breakers (4), 20-amp circuit breaker (5), ten new lockwashers (6), and ten machine screws (7) on angle bracket (3).



- 3 Install two shells (8), two bushing insulators (9), and two terminal assemble (10) on two attached electrical cables (11)
- 4 Install electrical shell (12) and slotted washer (13) on attached electrical cable (14).



- 5 Install rectifier and lead (15), two rectifier mounting brackets (16), two fiat washers (17), and two machine screws (18) on angle bracket (3).
- 6 Apply corrosion-preventive sealant to soldered terminals of rectifier. Fill recess in top of rectifier with sealant, rounding of surface so moisture cannot accumulate.



2-81. MAINTENANCE OF HEADLIGHT, DOME LIGHT, WARNING LIGHT, AND STOPLIGHT-TAILLIGHT INSTALLATION.

This task covers:	a. Removal	d. Alinement check
	b. Inspection/Repair	e. Alinement
	c. Installation	

INITIAL SETUP:

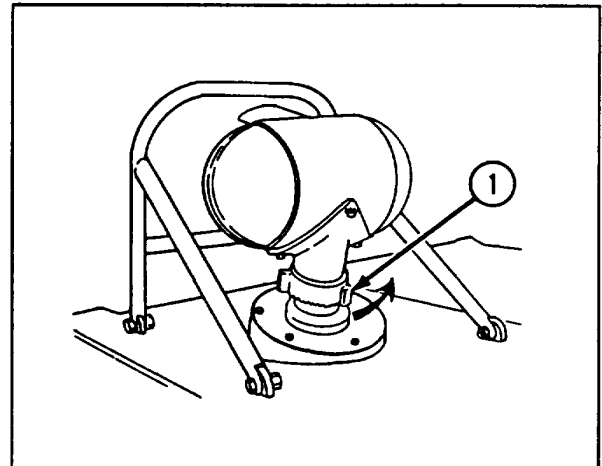
<p><i>Materials/Parts</i></p> <ul style="list-style-type: none"> Assembled washer bolt (2) Lockwasher (2) Lockwasher (8) Lockwasher (2) Lockwasher (4) Sealant (item 35, appx C) Silicone compound (item 39, appx C) 	<p><i>References</i></p> <ul style="list-style-type: none"> TM 9-2350-30424P-1
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REMOVAL

NOTE

Steps 1 and 2 are written for one headlight assembly, but apply to both headlight assemblies.

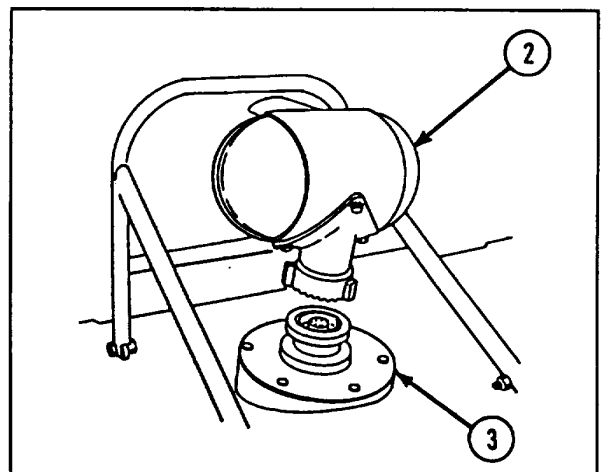
- 1 Loosen headlamp mounting adjusting nut (1).



CAUTION

Twisting headlight assembly can damage headlight-to-base electrical connector.

- 2 Lift straight up on headlight assembly (2 and remove from base (3).



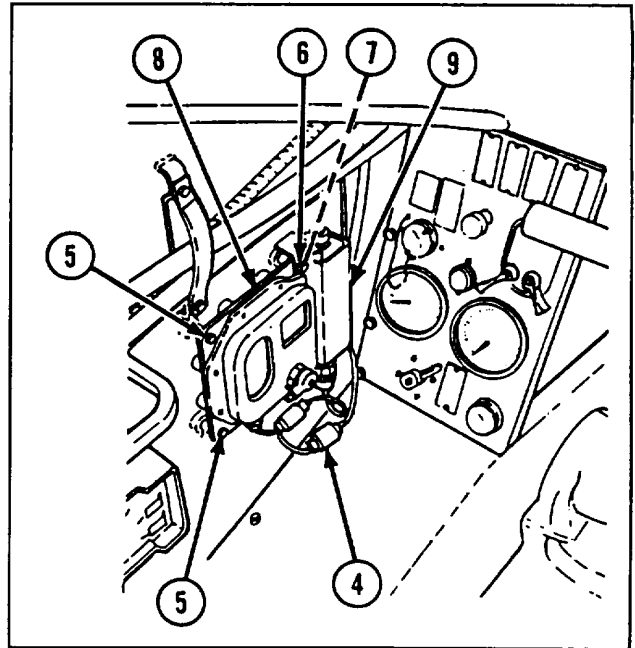
2-81. MAINTENANCE OF HEADLIGHT, DOME LIGHT, WARNING LIGHT, AND STOPLIGHT-TAILLIGHT INSTALLATION.

- 3 Disconnect electrical connector (4).
- 4 Remove two assembled washer bolts (5)

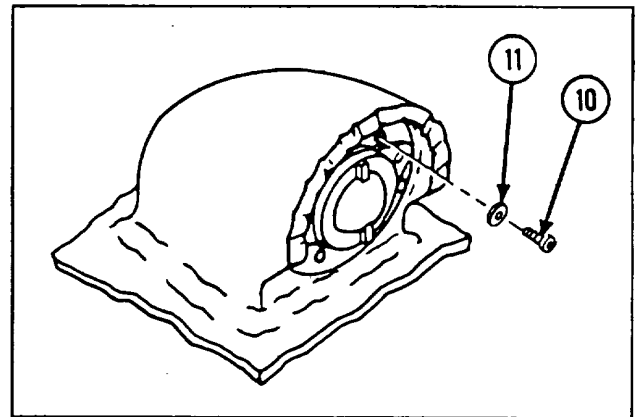
NOTE

Hexagon head capscrews and lockwashers removed in step 5 are also used to secure LOW ENGINE COOLANT indicator warning light to panel on forward side of driver's compartment dome light.

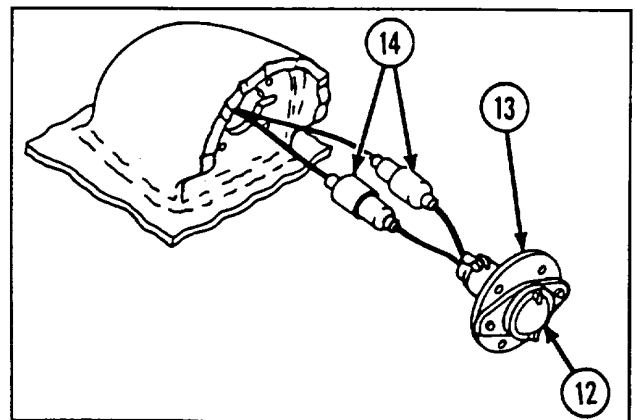
- 5 Remove two hexagon head capscrews (6 and two lockwashers (7). Remove driver compartment dome light (8) and allow LOW ENGINE COOLANT indicator warning light (9) to hang on its electrical lead.



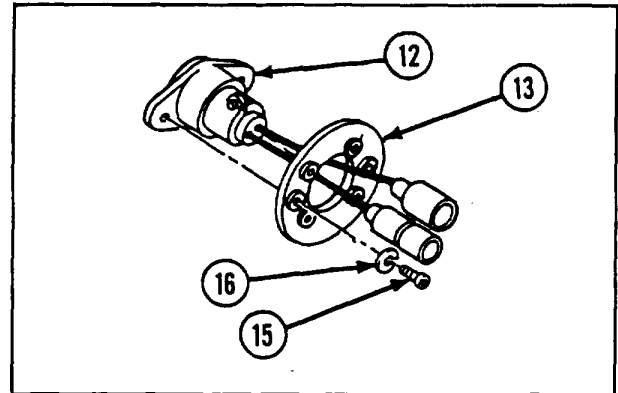
- 6 Remove four socket head capscrews (10 and four lockwashers (11).



- 7 Pull out warning light (12) and warning light resilient mount (13). Disconnect two electrical connectors (14).



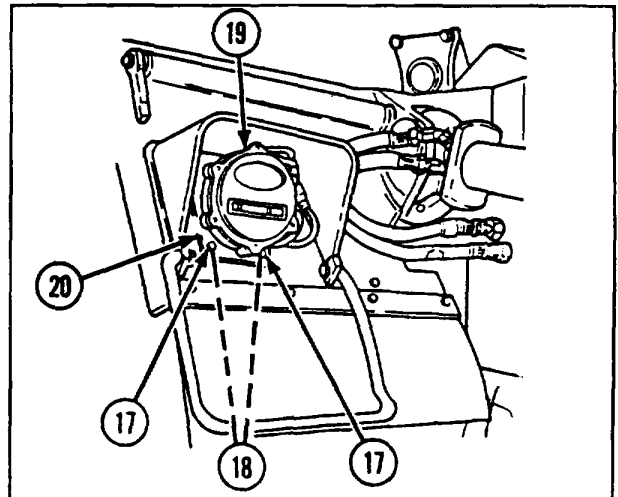
- 8 Remove two socket head capscrews (15), two lockwashers (16), and warning light (12) from warning light resilient mount (13).



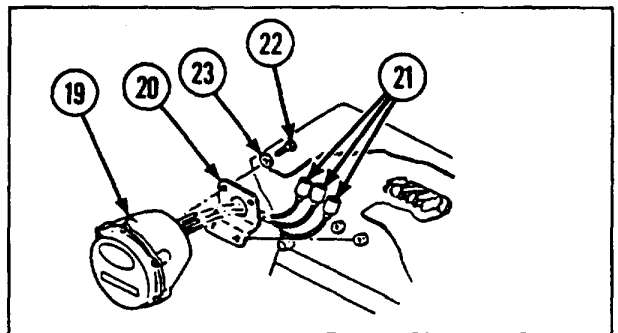
NOTE

Steps 9 and 10 are written and illustrated for the left stoplight-taillight, but also apply to the right stoplight-taillight.

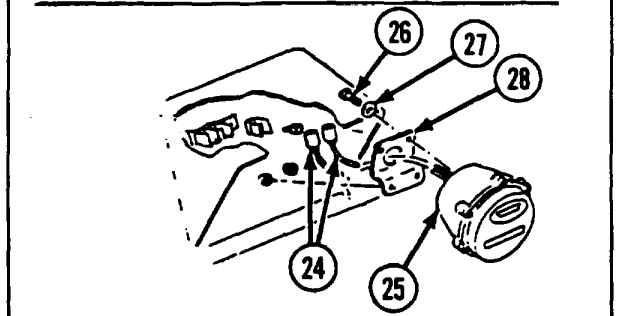
- 9 Remove two hexagon head capscrews (17) and two lockwashers (18).
- 10 Pull left stoplight-taillight (19) and taillight double angle bracket (20) away from vehicle.



- 11 Disconnect three electrical connectors (21) and remove left stoplight-taillight (19).
- 12 Remove two hexagon head capscrews (22), two lockwashers (23), and left stoplight-taillight (19) from taillight double angle bracket (20).



- 13 Disconnect two electrical connectors (24) and remove right stoplight-taillight (25).
- 14 Remove two hexagon head capscrews (26), two lockwashers (27), and right stoplight-taillight (25) from taillight double angle bracket (28).

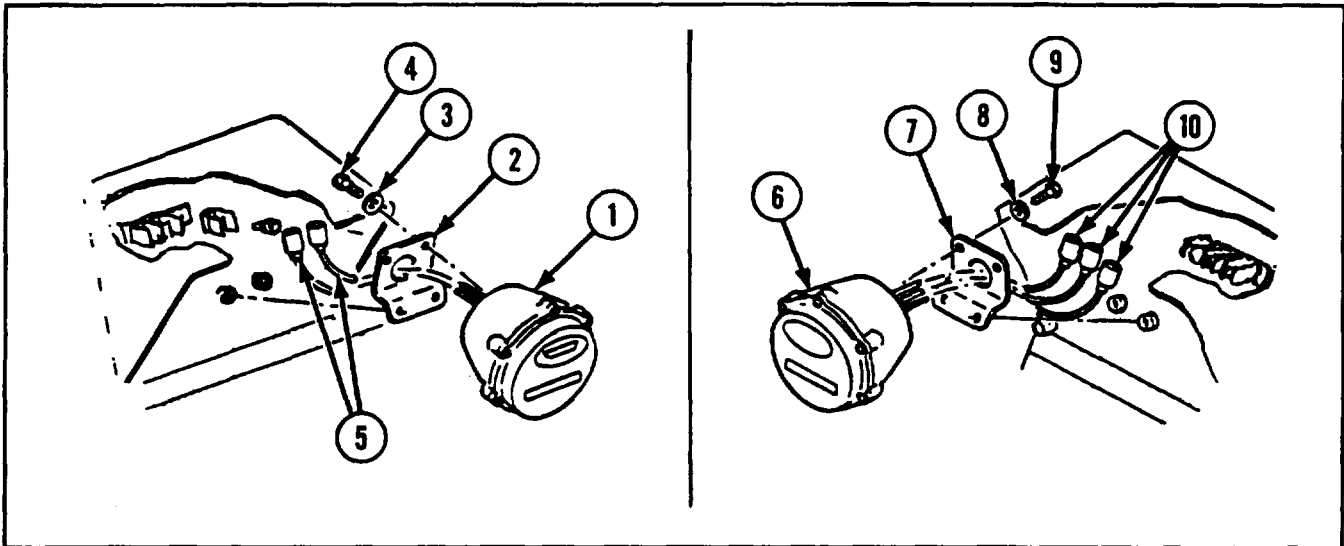


2-81. MAINTENANCE OF HEADLIGHT, DOME LIGHT, WARNING LIGHT, AND STOPLIGHT-TAILLIGHT INSTALLATION (CONT).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Headlight assembly is a repairable assembly. Refer to page 2-589.
- 3 Driver's compartment dome light is a repairable assembly. Refer to page 2-606.
- 4 Warning light is a repairable assembly. Refer to page 2-567.
- 5 Left stoplight-taillight is a repairable assembly. Refer to page 2-600.
- 6 Right stoplight-taillight is a repairable assembly. Refer to page 2-603.
- 7 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

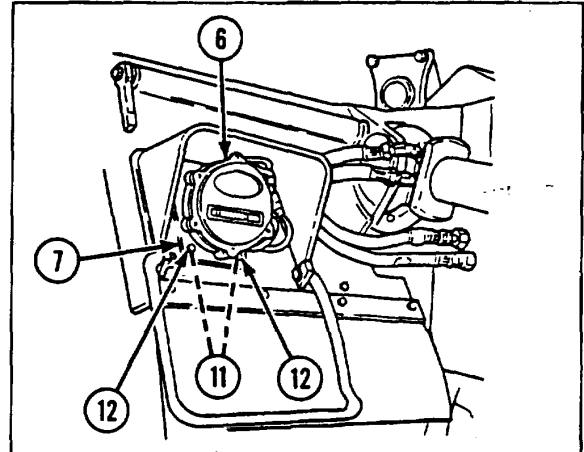


1. Position right stoplight-taillight (1) on tailight double angle bracket (2) and secure with two new lockwashers (3) and two hexagon head capscrews (4).
2. Connect two electrical connectors (5) of right stoplight-taillight (1) to line connections.
3. Position left stoplight-taillight (6) on tailight double angle bracket (7), and secure with two new lockwashers (8) and two hexagon head capscrews (9).
4. Connect three electrical connectors (10) of left stoplight-taillight (6) to line connections.

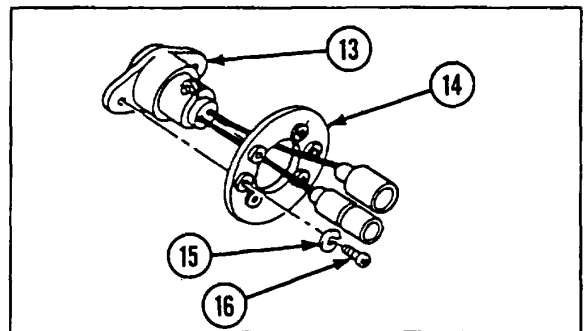
NOTE

Step 5 is written and illustrated for the left stoplight-tailight, but also applies to the right stoplight-tailight.

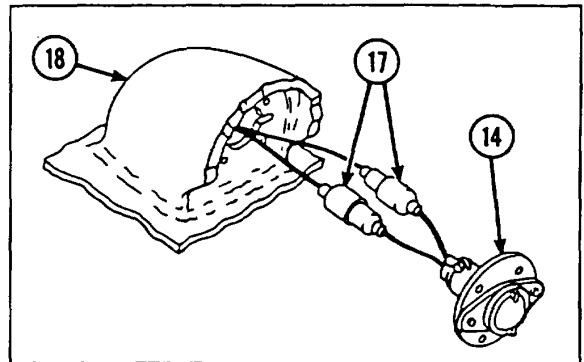
- 5 Position taillight double angle bracket (7 and left stoplight-tailight (6) on vehicle, and secure with two new lockwashers (11) and two hexagon head capscrews (12).



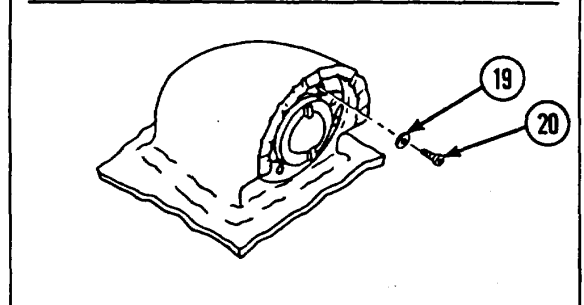
- 6 Position warning light (13) on warning light resilient mount (14), and secure with two new lockwashers (15) and two socket head capscrews (16).



- 7 Connect two electrical connectors (17).



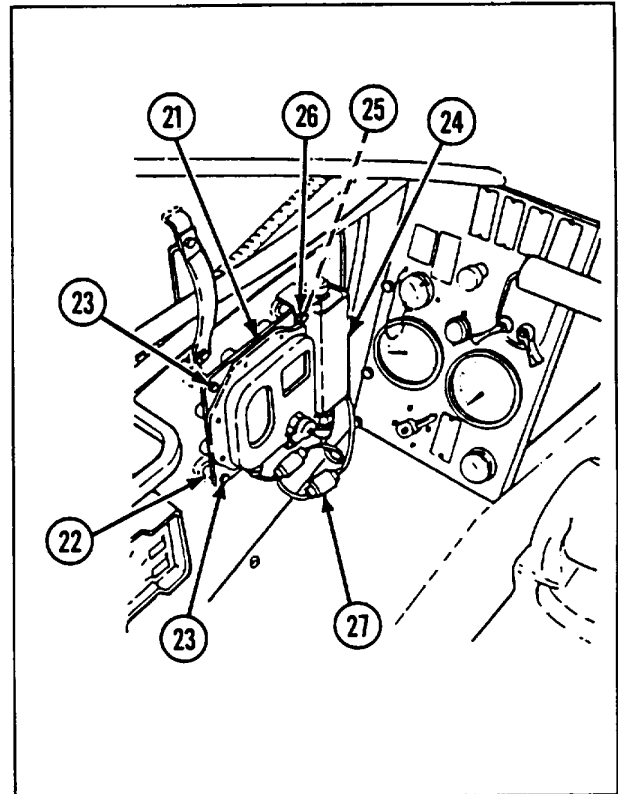
- 8 Apply sealant to back of warning light resilient mount (14), attach warning light resilient mount to housing (18), and secure with four new lockwashers (19) and four socket head capscrews (20).



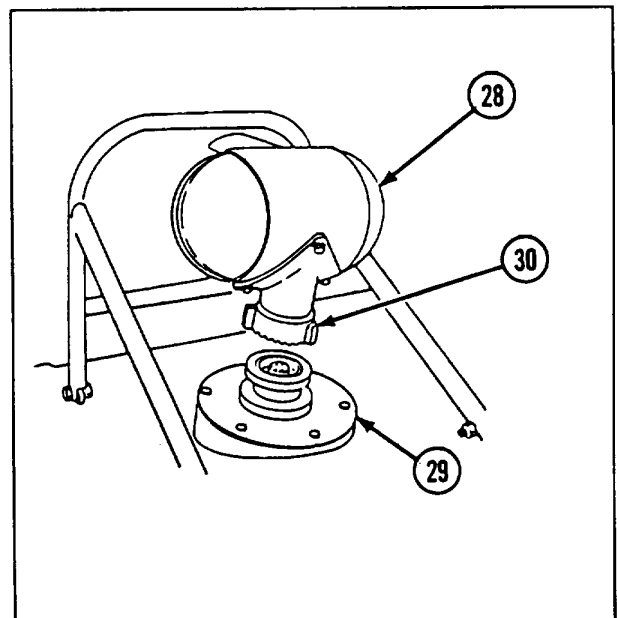
2-81. MAINTENANCE OF HEADLIGHT, STOPLIGHT-TAILLIGHT INSTALLATION (CONT)

INSTALLATION (CONT)

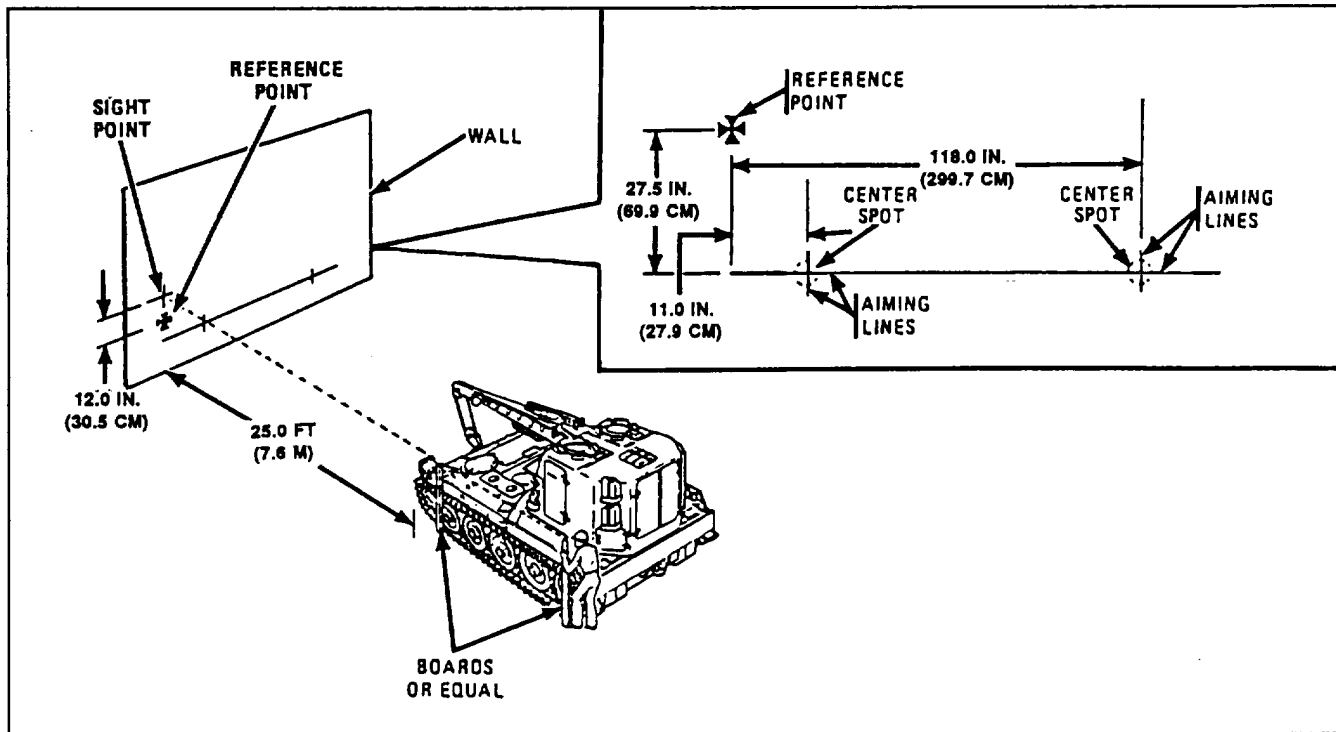
- 9 Position driver's compartment dome light (21) on lugs (22), and secure with two new assembled washer bolts (23).
- 10 Position LOW ENGINE COOLANT warning indicator light (24) on forward side of driver's compartment dome light (21), and secure with two new lockwashers (2) and two hexagon head capscrews (26).
- 11 Connect electrical connector (27).



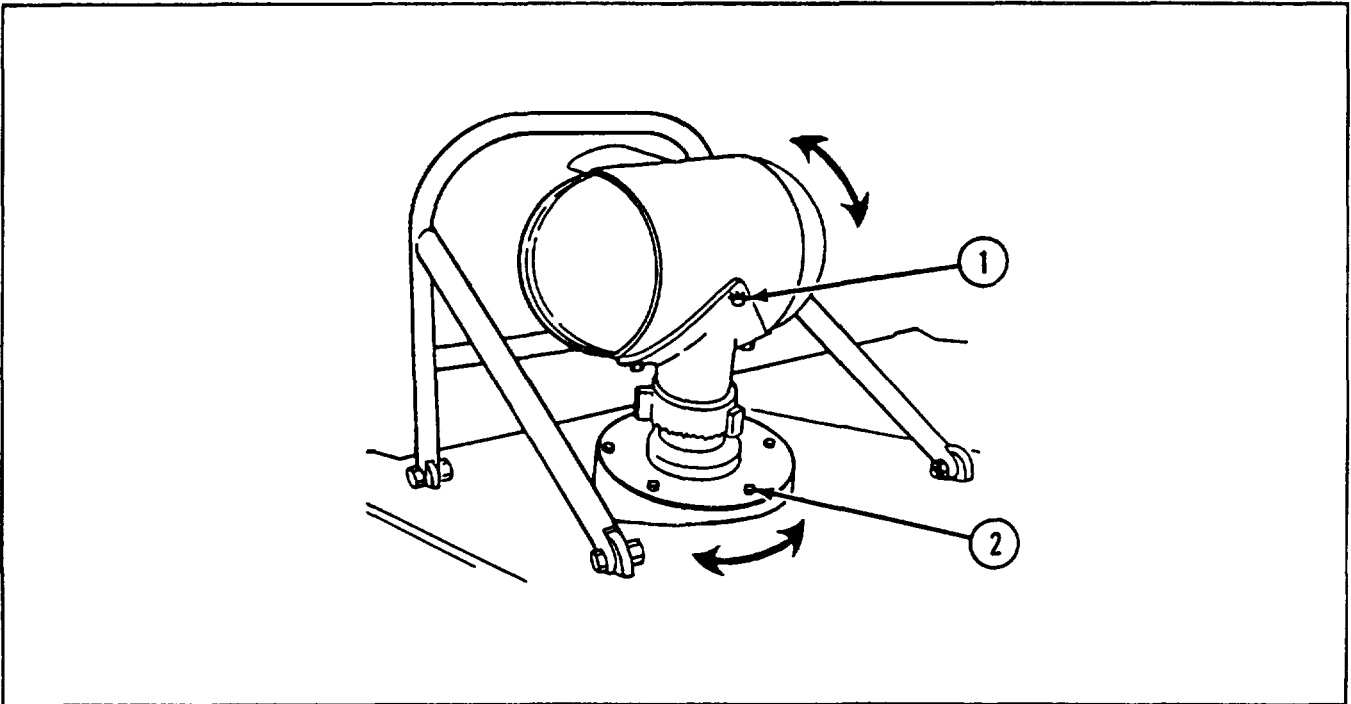
- 12 Apply a light coat of silicone compound connector pins of headlight assembly (21). Position headlight assembly on base (29) and secure by tightening headlamp mounting adjusting nut (30).
- 13 Perform alignment check.



ALINEMENT CHECK



- 1 Park vehicle on level ground or pavement facing wall or screen 25.0 feet (7.6 meters) away.
- 2 Measure distance between center of headlight and ground.
- 3 Cut two 2-in. x 2-in. (5-cm x 5-cm) boards to same length as distance between center of headlight and ground.
- 4 Hold or tape boards upright against side of vehicle.
- 5 Sight along upper inner edge of boards and mark wall or screen at point in alinement with boards. This is the reference point, which represents left-hand edge of vehicle at same height above ground as center of headlight.
- 6 Draw horizontal line approximately 125 in. (318 cm) long, 27-1/2 in. (70 cm) below and extending to the right of reference point.
- 7 Draw two vertical lines crossing horizontal line: one at 11 in. (28 cm) and the other at 118 in. (300 cm) to the right of reference point.
- 8 Turn on service drive headlights and dim to low beam.
- 9 Check that center spot (brightest light) of each low beam is centered on aiming lines.
- 10 Aline headlights as required.
- 11 If headlight alinement is correct, turn off service drive headlights.



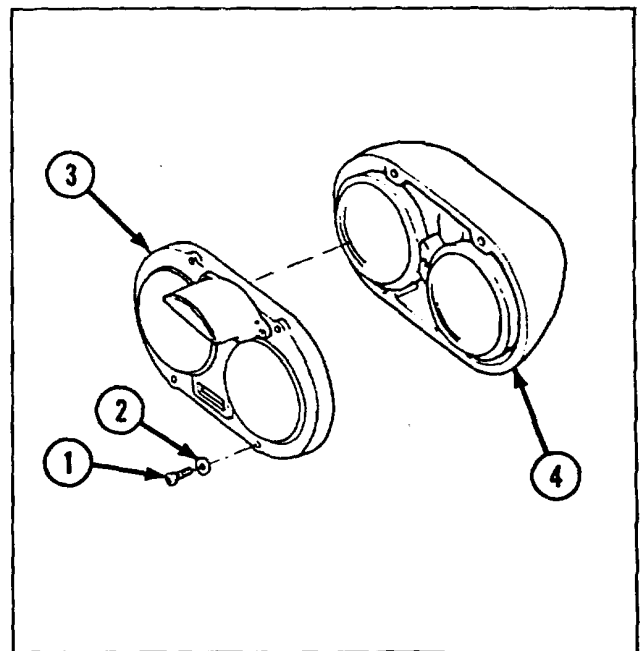
- 1 Perform vertical (up and down) alignment as follows:
 - a. Loosen three screws (1).
 - b. Adjust headlight upward or downward until center spot of low beam is centered on aiming line.
 - c. Hold headlight in adjustment and tighten three screws (1).
- 2 Perform horizontal (side-to-side) alignment as follows:
 - a. Loosen six screws (2).
 - b. Adjust headlight from side to side until center spot of low beam is centered on aiming line.
 - c. Hold headlight in adjustment and tighten six screws (2).

2-82. MAINTENANCE OF HEADLIGHT ASSEMBLY.

This task covers:	a. Disassembly	b. Inspection/Repair	c. Reassembly
INITIAL SETUP:			
<p>Tools and Special Tools Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B) •Soldering gun</p> <p>Materials/Parts Aircraft grease (item 18, appx C) Antiseize compound (item 6, appx C) Gasket Gasket Gasket Gasket (2) Gasket (2) Gasket Gasket Gasket Lockwasher (4) Lockwasher (2)</p>	<p>Lockwasher (2) Lockwasher (3) Lockwasher (3) Nonmetallic seal Nonmetallic washer (4) Rivet (2) Rivet Sealant (item 35, appx C) Sealing compound (item 37, appx C) Silicone compound (item 39, appx C) Solder (item 42, appx C) Spring pin</p> <p>References TB SIG-222 TM 9-2350-304-24P-1</p> <p>Equipment Conditions 2-581 Headlight assembly removed</p>		

DISASSEMBLY

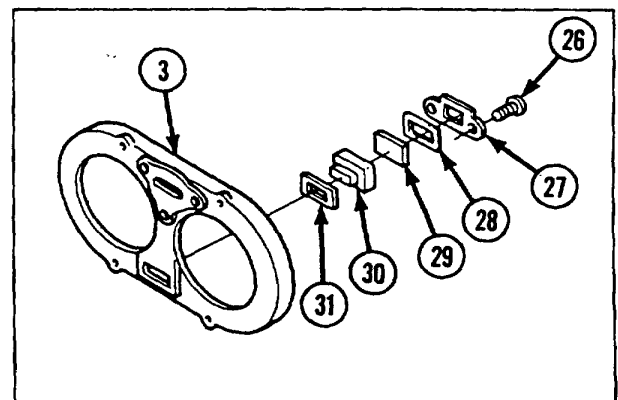
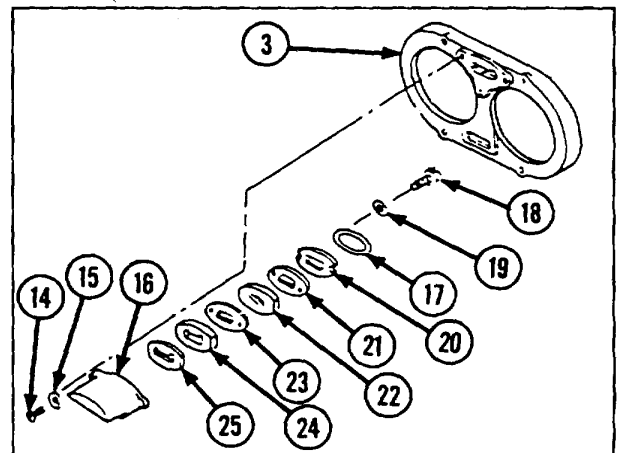
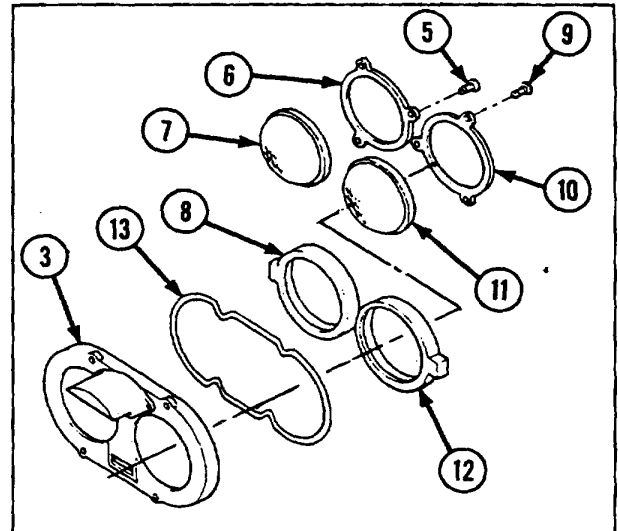
- 1 Remove four filter head screws (1) and four lockwashers (2) from headlamp cover (3).
- 2 Remove headlamp cover (3) from body (4).



2-82. MAINTENANCE OF HEADLIGHT ASSEMBLY

DISASSEMBLY (CONT)

- 3 Remove three machine screws (5), lens retainer (6), and clear lens (7) with attached gasket (8) from headlamp cover (3).
- 4 Remove gasket (8) from clear lens (7).
- 5 Remove three machine screws (9), lens retainer (10), and infrared filter lens (11) with attached gasket (12) from headlamp cover (3).
- 6 Remove gasket (12) from infrared filter lens (11).
- 7 Remove headlamp cover gasket (13) from headlamp cover (3).
- 8 Remove three machine screws (14), three lockwashers (15), and blackout shield (16) from headlamp cover (3).
- 9 Remove blackout shield gasket (17) from blackout shield (16).
- 10 Remove two machine screws (18), two lockwashers (19), blackout lens retainer (20), gasket (21), light filter (22), gasket (23), blackout lens (24), and gasket (25) from blackout shield (16).
- 11 Remove two assembled washer screws (26), blackout marker light retainer (27), inner gasket (28), filter (29), blackout marker clearance lens (30), and gasket (31) from headlamp cover (3).



12 Pull two incandescent lamps (32) with shock cushion gaskets (33) from body. Disconnect each incandescent lamp (3) from each lamp connector body (34).

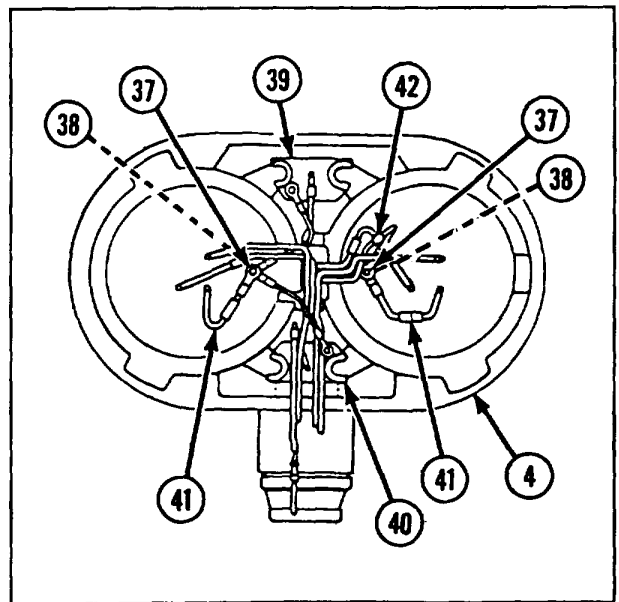
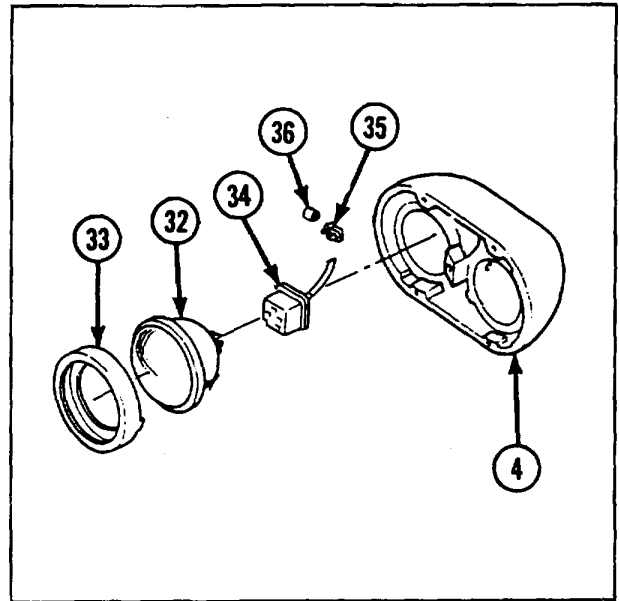
13 Remove two shock cushion gaskets (3) from two incandescent lamps (32).

NOTE

- Before disconnecting electrical leads, ensure that they are adequately identified for reassembly.
- Step 14 is written for one lamp connector body, but applies to both lamp connector bodies.

14 Disconnect electrical leads from three connectors (35). Remove three connectors (35) and three terminal springs (36) from lamp connector body (34). Remove lamp connector body.

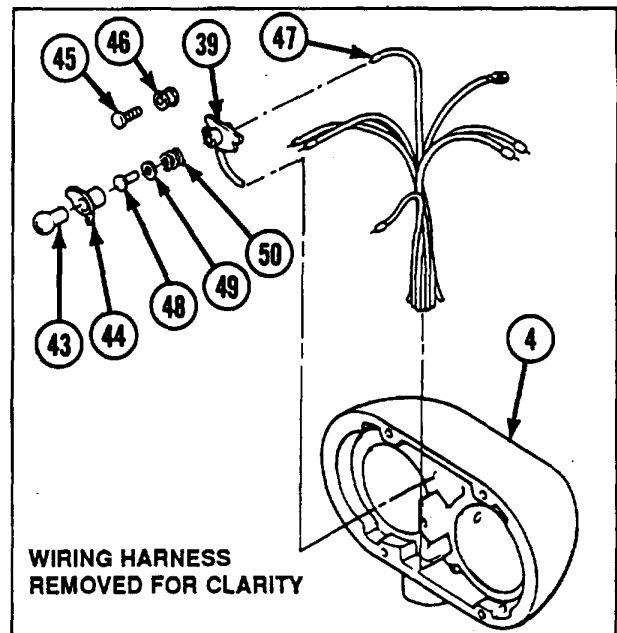
15 Remove two machine screws (37) and lockwashers (38) connecting ground leads of two lamp socket assemblies (39 and 40), two cable assemblies (41), and electrical lead 91 (42) to body (4). Remove two cable assemblies.



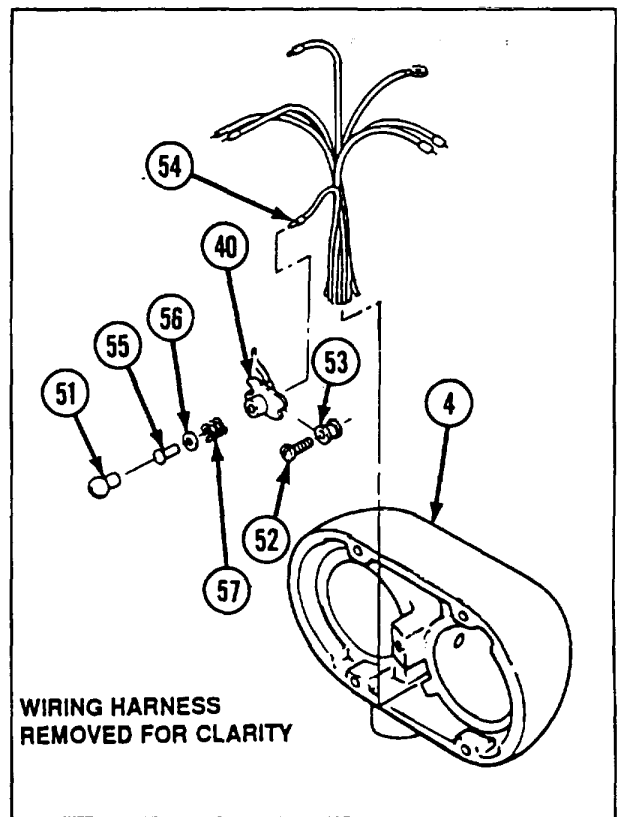
2-82. MAINTENANCE OF HEADLIGHT ASSEMBLY (CONT).

DISASSEMBLY (CONT)

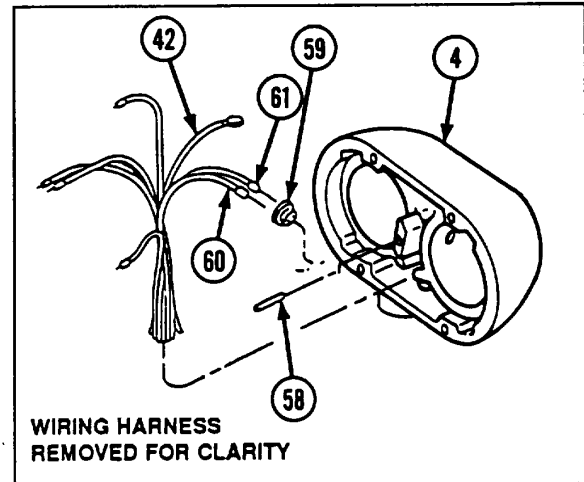
- 16 Remove incandescent lamp (43) from lamp socket assembly (39) by pressing in and turning counterclockwise.
- 17 Remove reflector (44) from lamp socket assembly (39).
- 18 Remove two assembled washer screws (45) and two eyelet and grommet assemblies (46) from body (4).
- 19 Pull electrical lead 19 (47) to rear of lamp socket assembly (39) and cut lead close to socket. Tag electrical lead 19. Remove lamp socket assembly from body (4).
- 20 Remove pan head rivet (48), two nonmetallic washers (49), and spring (50) from lamp socket assembly (39).



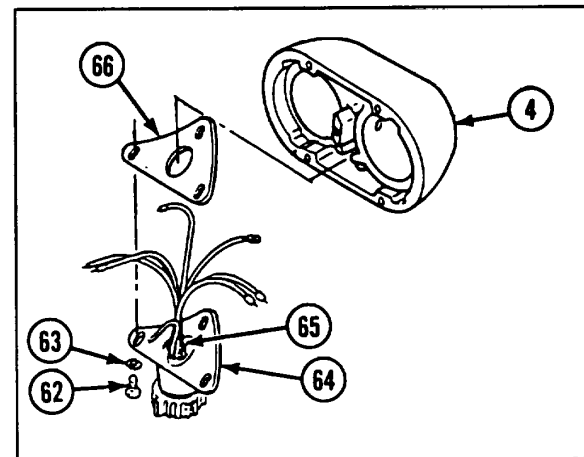
- 21 Remove marker light (51) from lamp socket assembly (40) by pressing in and turning counterclockwise.
- 22 Remove two assembled washer screws (52) and two eyelet and grommet assemblies (53) from body (4).
- 23 Pull electrical lead 20 (54) to rear of lamp socket assembly (40) and cut lead close to socket. Tag electrical lead 20. Remove lamp socket assembly (40) from body (4).
- 24 Remove pan head rivet (55), two nonmetallic washers (56), and spring (57) from lamp socket assembly (40).



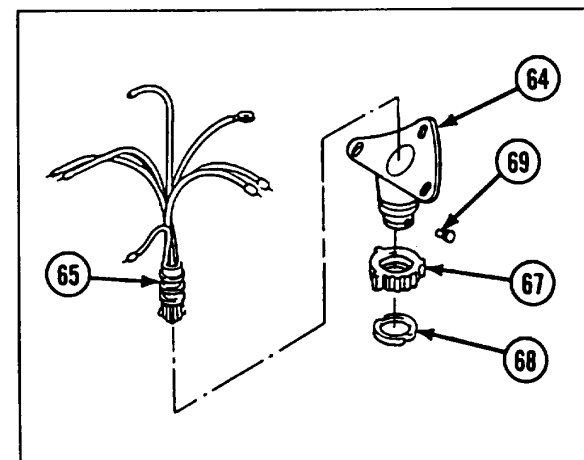
- 25 Remove spring pin (58).
- 26 Remove grommet (59) from body (4).
- 27 Pull electrical lead 91 (42), electrical lead 514 (60), and electrical lead 515 (61) from slits in grommet (59).



- 28 Remove three hexagon head capscrews (62), three lockwashers (63), and holder (64) from body (4), pulling harness assembly (65) leads through opening in body (4).
- 29 Remove nonmetallic seal (66) from holder (64).



- 30 Position holder (64) upright, with bottom resting on wood block.
- 31 Using soft-faced hammer, tap headlamp mounting adjustment nut (67), and remove headlamp mounting lens retainer (68) and adjustment nut.
- 32 Remove rivet (69) and harness assembly (65) from holder (64).



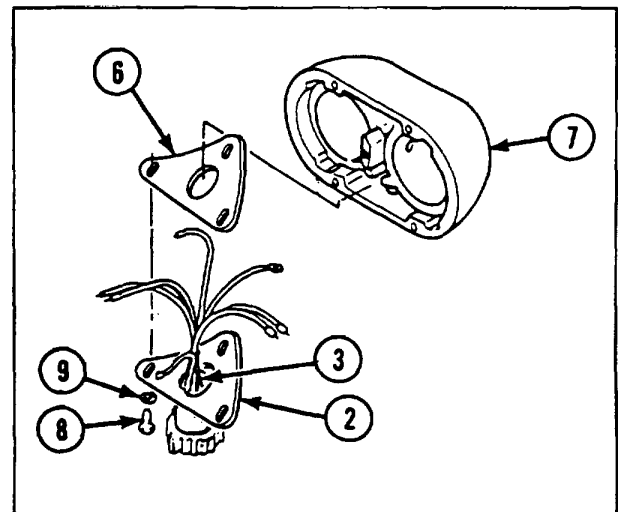
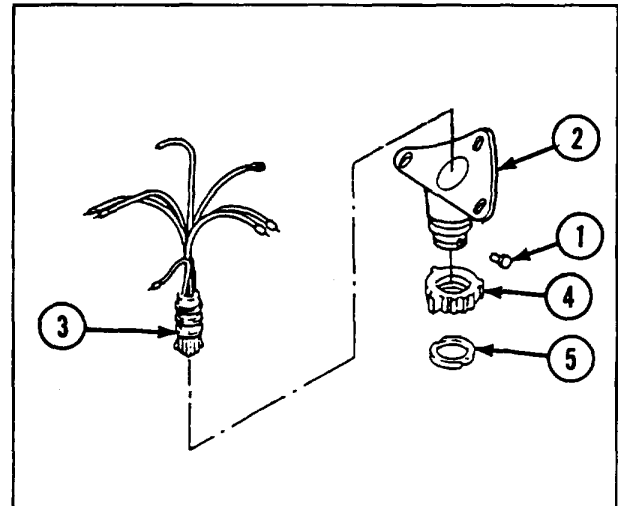
2-82. MAINTENANCE OF HEADLIGHT ASSEMBLY (CONT).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Inspect harness assembly for damaged insulation, and inspect cable assemblies and electrical leads for corroded terminals and damaged insulation.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1) which do not meet inspection criteria.

REASSEMBLY

- 1 Install new rivet (1) in holder (2).
- 2 Aline slot in harness assembly (3) with rivet (1) inside holder (2), and push harness assembly into holder until it seats against inner flange.
- 3 Apply sealing compound to headlamp mounting adjustment nut (4) and headlamp mounting lens retainer (5). Install headlamp mounting adjustment nut and headlamp mounting lens retainer on holder (2).
- 4 Stake lens. retainer (5) in three places. Do not use existing holes.
- 5 Bond new nonmetallic seal (6) to holder (2), using sealant.
- 6 Position body (7) on holder (2), pulling harness assembly (3) leads into body.
- 7 Apply antiseize compound to threads of three capscrews (8). Secure holder (2) to body (7) with three new lockwashers (9) and three capscrews (8).

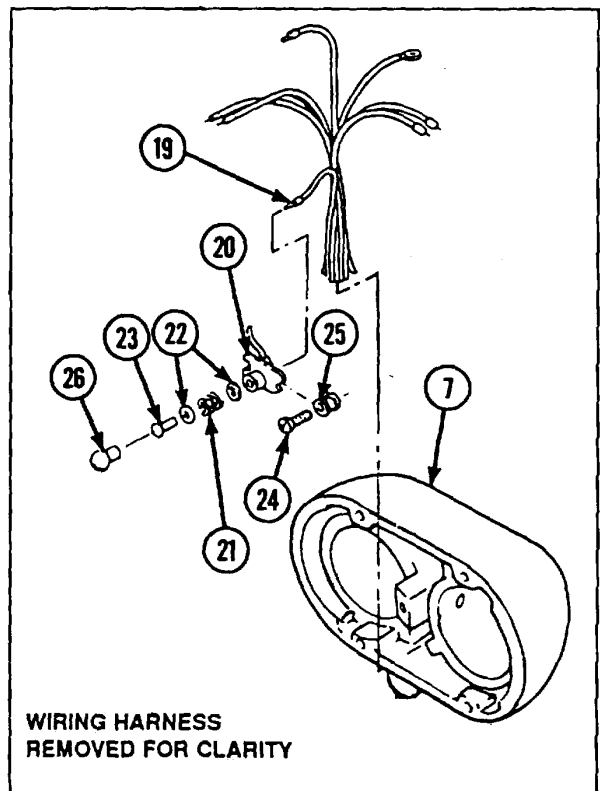
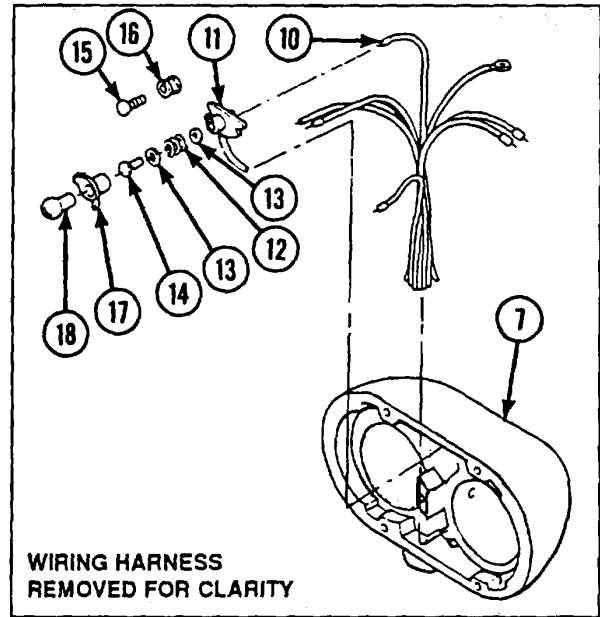


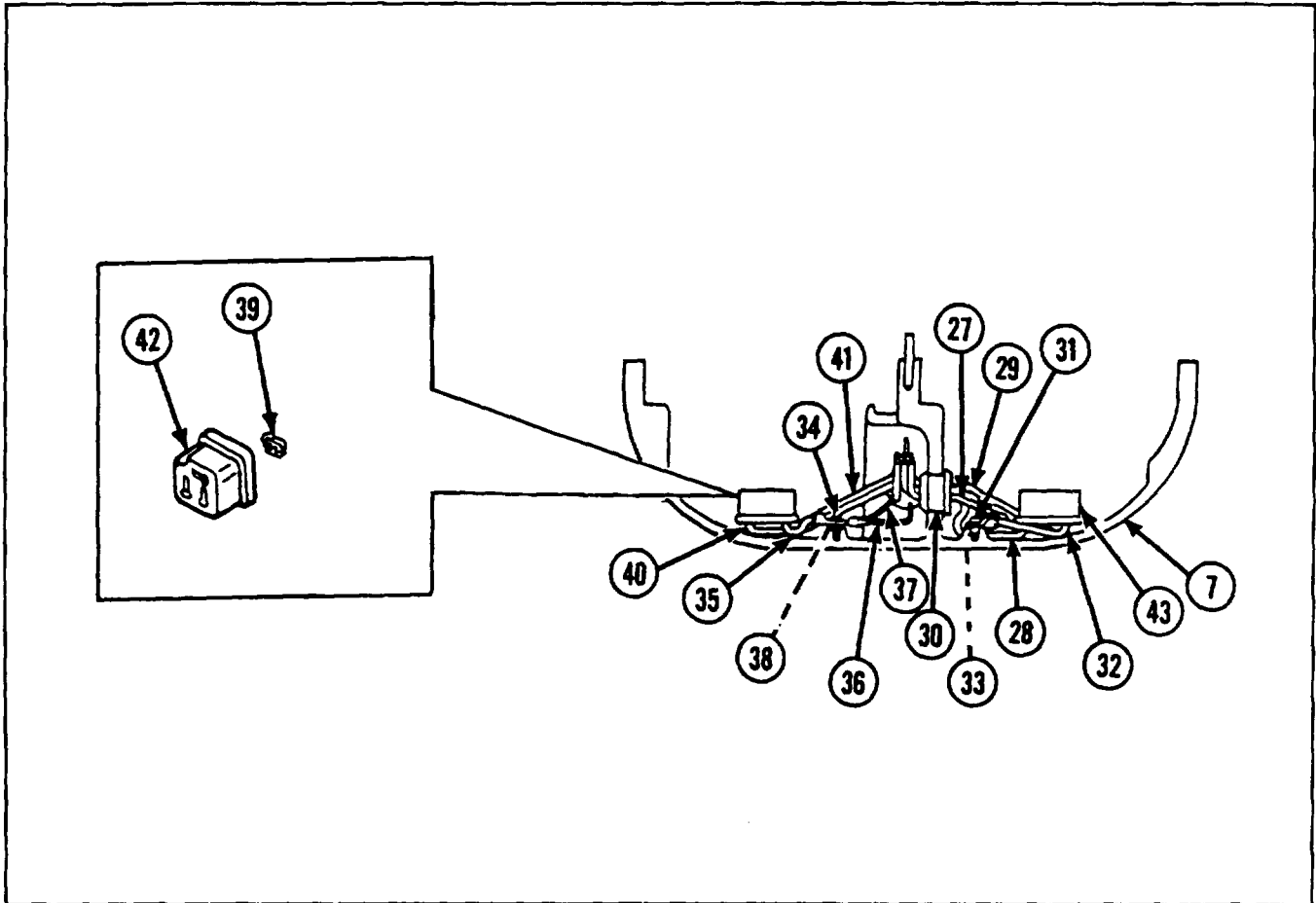
- 8 Insert electrical lead 19 (10) through lamp socket assembly (11), and install spring (12) and two new nonmetallic washers (13).
- 9 Insert electrical lead 19 (10) into new pan head rivet (14) and crimp pan head rivet on lead. Pull pan head rivet back into lamp socket assembly (11).
- 10 Apply antiseize compound to threads of two assembled washer screws (15). Install lamp socket assembly (11) in body (7), and secure with two eyelet and grommet assemblies (16), and two assembled washer screws.
- 11 Install reflector (17) on lamp socket assembly (11).

NOTE

Keep incandescent lamp free of all foreign material, such as dirt, oil, grease, fingerprints, etc.

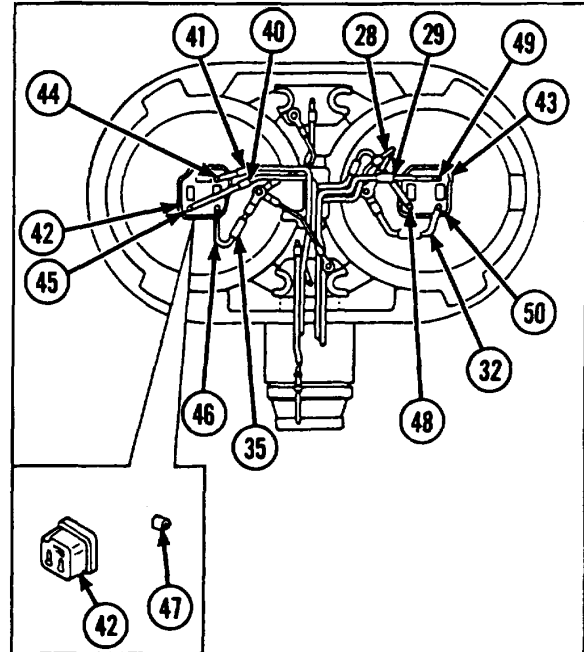
- 12 Apply a light coat of silicone compound to socket, and install incandescent lamp (18) by pressing into lamp socket assembly (11) and turning clockwise.
- 13 Insert electrical lead 20 (19) through lamp socket assembly (20), and install spring (21) and two new nonmetallic washers (22).
- 14 Insert electrical lead 20 (19) into new pan head rivet (23), and crimp pan head rivet on lead. Pull pan head rivet back into lamp socket assembly (20).
- 15 Apply antiseize compound to threads of two assembled washer screws (24). Install lamp socket assembly (20) in body (7), and secure with two eyelet and grommet assemblies (25) and two assembled washer screws.
- 16 Apply a light coat of silicone compound to socket, and install marker light (26) by pressing into lamp socket assembly (20) and turning clockwise.



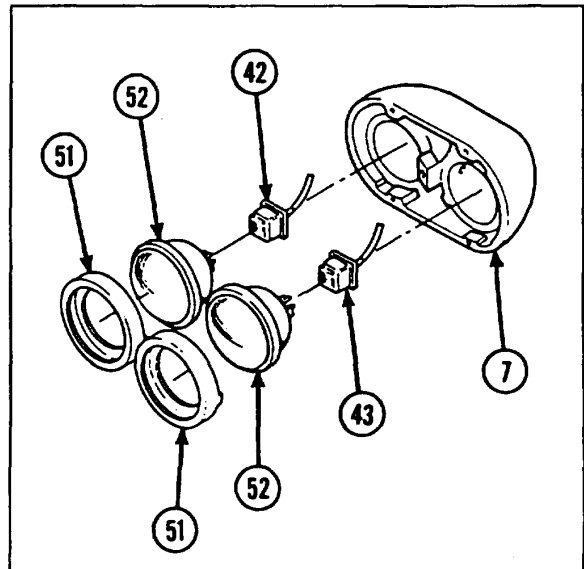
2-82. MAINTENANCE OF HEADLIGHT ASSEMBLY (CONT).**REASSEMBLY (CONT)**

- 17** Insert electrical lead 91 (27), electrical lead 514 (28), and electrical 515 (29) through slits in grommet.
- 18** Install grommet (30) in body (7).
- 19** Apply antiseize compound to threads of machine screw (31). Connect cable assembly (32) and electrical lead 91 (27) to body (7), using new lockwasher (33) and machine screw.
- 20** Apply antiseize compound to threads of machine screw (34). Connect cable assembly (35) and ground leads (36 and 37) of lamp socket assemblies to body (7), using new lockwasher (38) and machine screw.
- 21** Install six connectors (39) on two cable assemblies (32 and 35), electrical lead 514 (28), electrical lead 515 (29), electrical lead 17 (40), and electrical lead 18 (41). Connect electrical leads to two connector bodies (42 and 43) as follows:

- a. Install electrical lead 18 (41) into socket 2 (44), electrical lead 17 (40) into socket 1 (45), and cable assembly (35) into socket 3 (46) of connector body (42). Secure each electrical lead with a terminal spring (47). Solder connectors to connector body per TB SIG-222.
- b. Install electrical lead 514 (28) into socket 1 (48), electrical lead 515 (29) into socket 2 (49), and cable assembly (32) into socket 3 (50) of connector body (43). Secure each electrical lead with a terminal spring (47). Solder connectors to connector body per TB SIG-222.



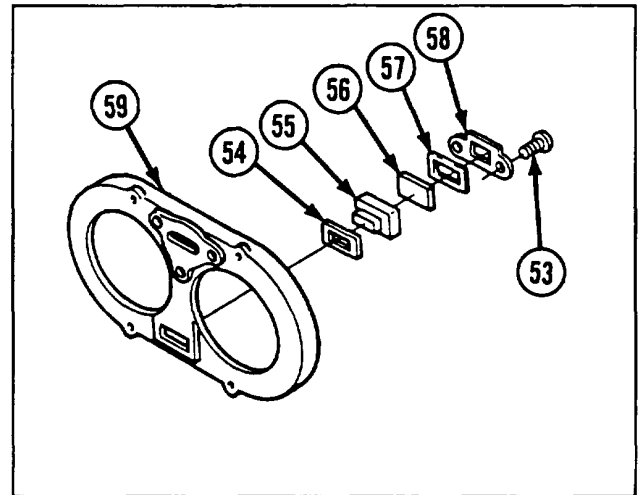
- 22 Install two new shock cushion gaskets (51) on two incandescent lamps (52), ensuring that cutout in each gasket is over the lug on each incandescent lamp.
- 23 Connect two incandescent lamps (52) and two connector bodies (42 and 43), and install lamps with attached shock cushion gaskets to body (7).



2-82. MAINTENANCE OF HEADLIGHT ASSEMBLY (CONT)

REASSEMBLY (CONT)

- 24** Apply antiseize compound to threads of two assembled washer screws (53). Apply a coat of sealing compound to mounting surface of new gasket (54), and install new gasket, blackout marker clearance lens (55), filter (56), new inner gasket (57), blackout marker light retainer (58), and two assembled washer screws (53) on headlamp cover (59).

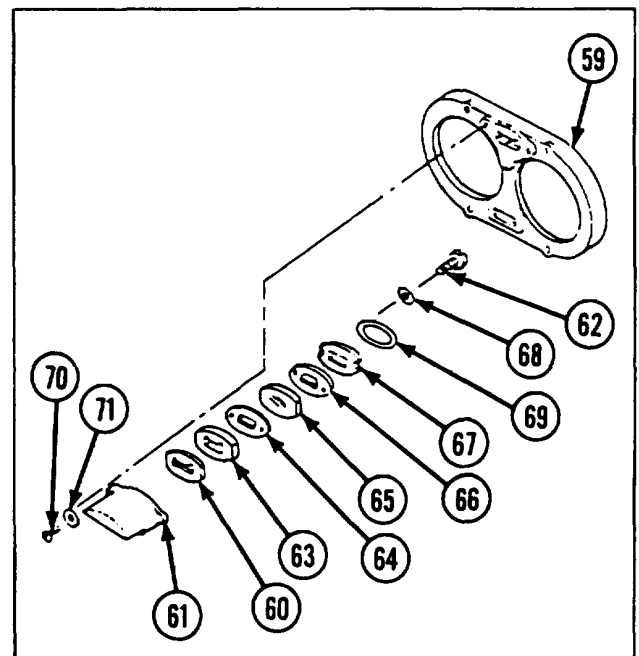


- 25** Apply a coat of sealing compound to mounting surface of new gasket (60), and install gasket on blackout shield (61).

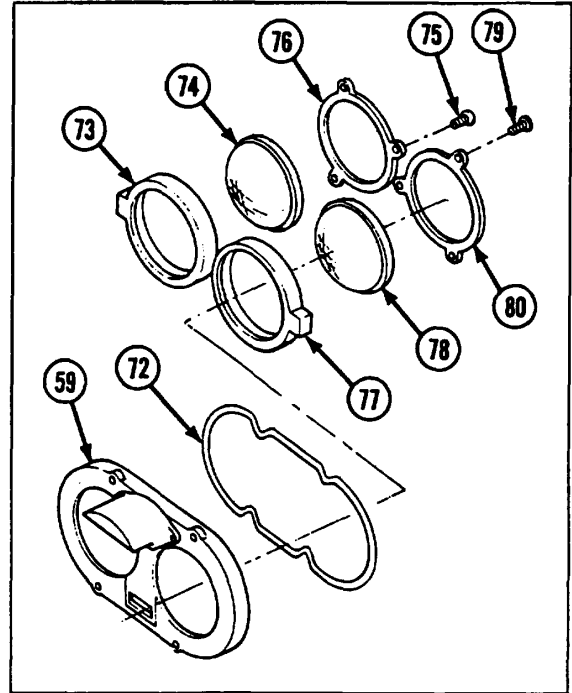
NOTE

Carefully position gaskets to prevent light leakage around blackout lens.

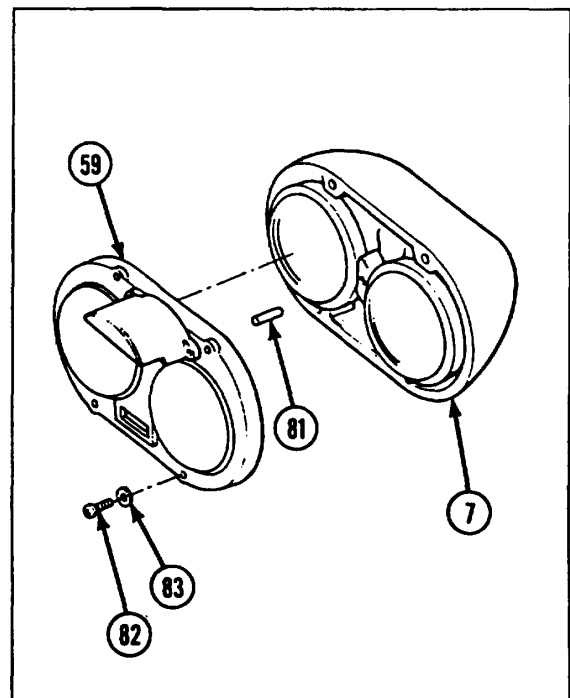
- 26** Apply antiseize compound to threads of two machine screws (62). Install blackout lens (63), new gasket (64), filter (65), new gasket (66), blackout lens retainer (67), two new lockwashers (68), and two machine screws on blackout shield (61).
- 27** Bond new blackout shield gasket (69) in blackout shield (61) groove, using sealant.
- 28** Apply antiseize compound to threads of three machine screws (70). Apply a light coat of aircraft grease to mounting surface of blackout shield (61), and install blackout screws on headlamp cover (59).



- 29 Bond new headlamp cover gasket (72) in headlamp cover (59) groove, using sealant.
- 30 Install new gasket (73) on clear lens (74)
- 31 Apply antiseize compound to threads of three machine screws (75). Install clear lens (74) with attached gasket, lens retainer (76), and three machine screws in headlamp cover (59).
- 32 Install new gasket (77) on infrared filter lens (78).



- 33 Apply antiseize compound to threads of three machine screws (79). Install infrared filter lens (78) with attached gasket, lens retainer (80), and three machine screws headlamp cover (59).
- 34 Install new spring pin (81) to body (7).
- 35 Apply a light coat of aircraft grease to mounting surface of headlamp cover (59). and install headlamp cover on headlamp body (7), using spring pin (81) as a guide
- 36 Apply antiseize compound to threads of four filter head screws (82). Install four new lockwashers (83) and four filter head screws.



2-83. MAINTENANCE OF LEFT STOPLIGHT-TAILLIGHT.

This task covers:

a. Disassembly

b. Inspection/Repair

c. Reassembly

INITIAL SETUP:*Materials/Parts*

Antiseize 'compound (item 6, appx C)
 Lockwasher (2)
 Nonmetallic seal
 Nonmetallic seal
 Performed packing
 Screw retaining ring (6)
 Silicone compound (item 39, appx C)
 Upper lens gasket

References

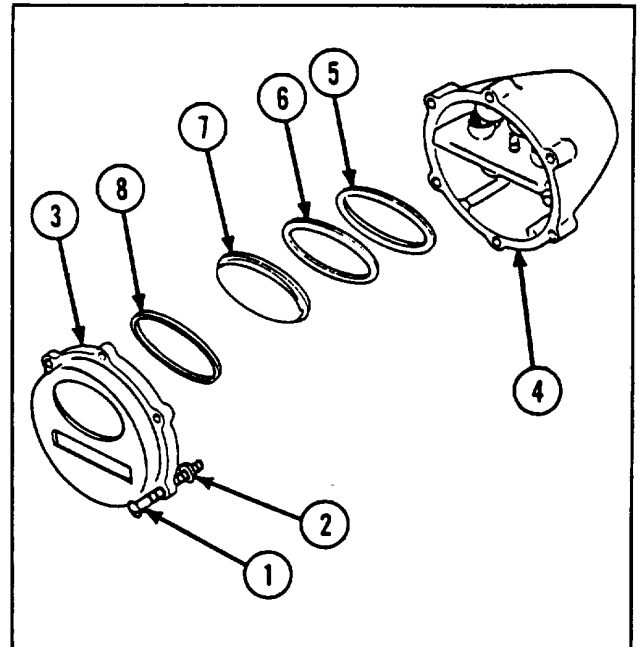
TM 9-2350-304-24P-1

Equipment Conditions

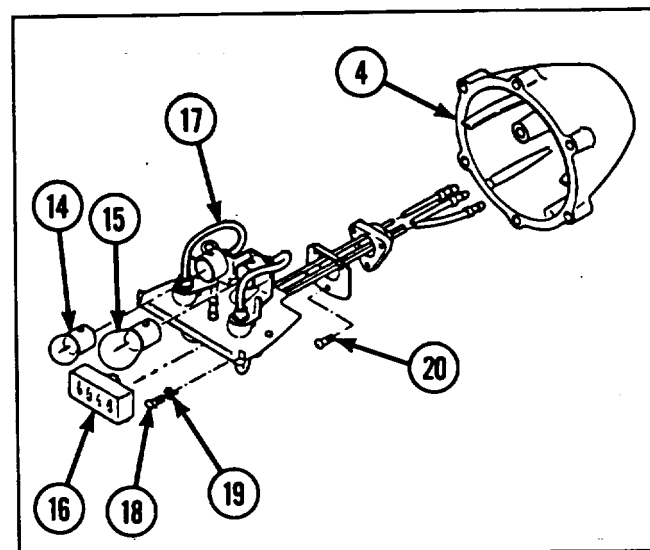
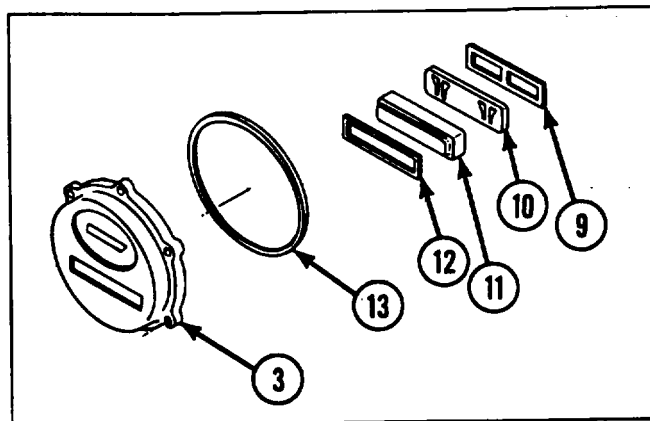
2-581 Left stoplight-tailight removed

DISASSEMBLY

- 1 Loosen six machine screws (1). Do not separate retaining rings (2) from machine screws or remove machine screws from door (3), unless damaged.
- 2 Remove door (3) from parking light (4).
- 3 Remove lens retainer (5) from door (3).
- 4 Remove upper lens gasket (6), upper light lens (7), and nonmetallic seal (8) from door (3).



- 5 Remove lower lens plate (9) from door (3).
- 6 Remove lower light lens (10), light lens (11), and nonmetallic seal (12) from door (3).
- 7 Remove preformed packing (13) from door (3).
- 8 Remove two incandescent lamps (14 and 15) and marker assembly (16) from wiring harness (17).
- 9 Remove two machine screws (18) and two lockwashers (19).
- 10 Remove three machine screws (20) securing wiring harness (17) to parking light (4). Remove wiring harness (17).



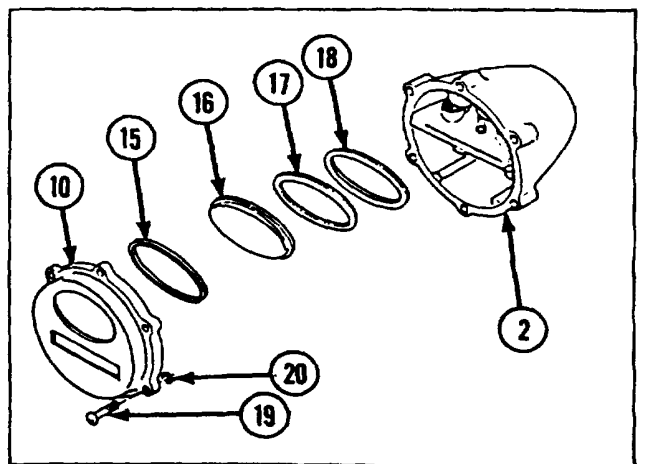
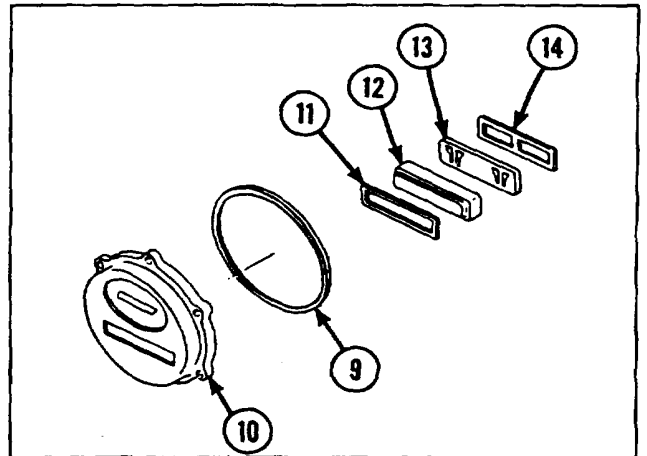
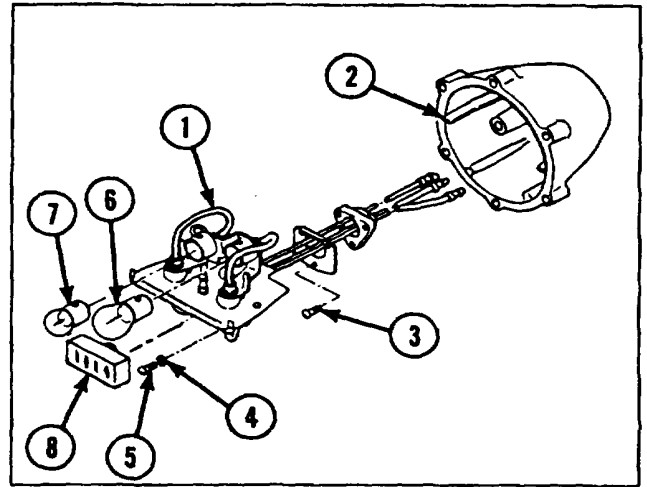
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Inspect sockets for corrosion.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-83. MAINTENANCE OF LEFT STOPLIGHT-TAILLIGHT (CONT)

REASSEMBLY

- 1 Apply a light coat of silicone compound to two lamp sockets of wiring harness (1).
- 2 Install wiring harness (1) in parking light (2) and secure with three machine screw (3).
- 3 Install two new lockwashers (4) and two machine screws (5).
- 4 Install two incandescent lamps (6 and 7) and marker assembly (8) on wiring harness (1).
- 5 Install new preformed packing (9) on door (10).
- 6 Install new nonmetallic seal (11), light lens (12), and lower light lens (13) on door (10).
- 7 Press lower lens plate (14) into door (10)
- 8 Install new nonmetallic seal (15), upper light lens (16), and new upper lens gasket (17) on door (10).
- 9 Press lens retainer (18) into door (10).
- 10 Apply antiseize compound to threads of six machine screws (19).
- 11 If removed, install six new screw retaining rings (20) and six machine screws (19) on door (10).
- 12 Install door (10) on parking light (2). Tighten six machine screws (19).



2-84. MAINTENANCE OF RIGHT STOPLIGHT-TAILLIGHT.

This task covers:

a. *Disassembly*b. *Inspection/Repair*c. *Reassembly***INITIAL SETUP***Materials/Parts*

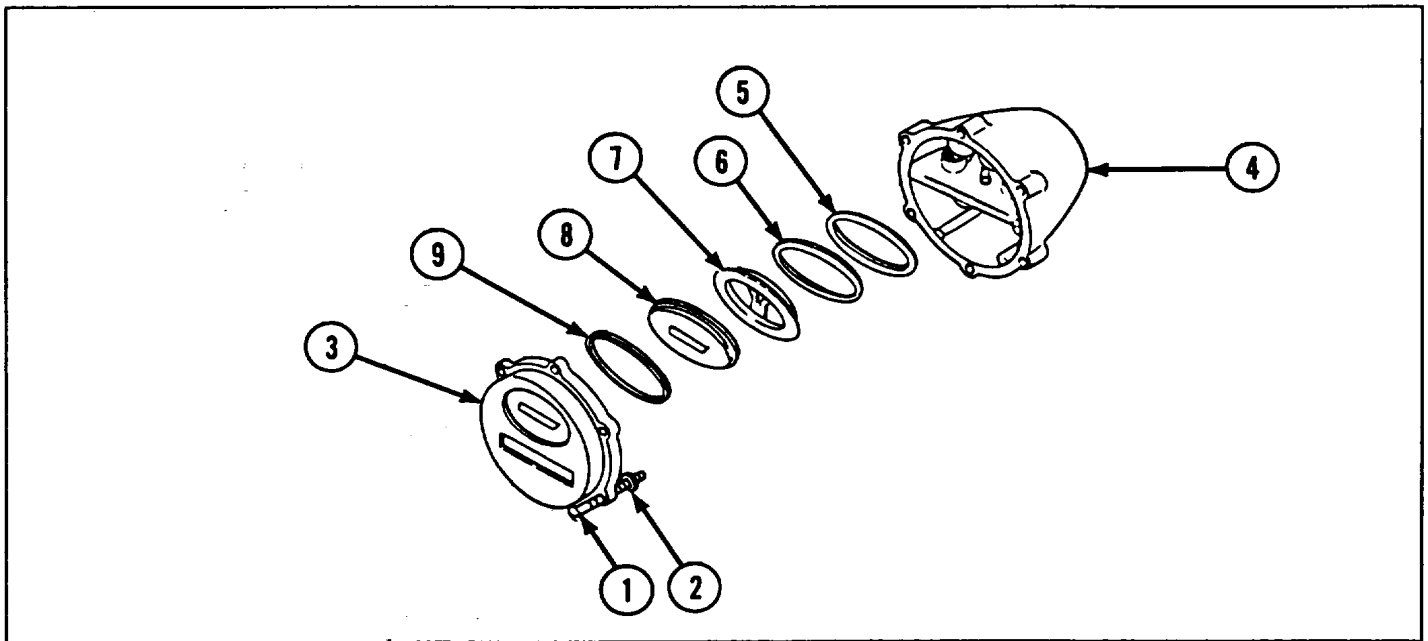
Antiseize-compound (item 6, appx C)
 Lockwasher (2)
 Nonmetallic seal
 Nonmetallic seal
 Preformed packing
 Screw retaining ring (6)
 Silicone compound (item 39, appx C)
 Upper lens gasket

References

TM 9-2350-304-24P-1

Equipment Conditions

2-581 Right stoplight-tailight removed

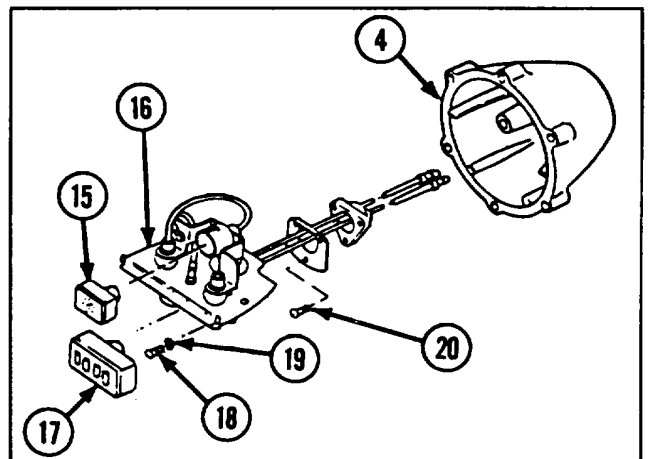
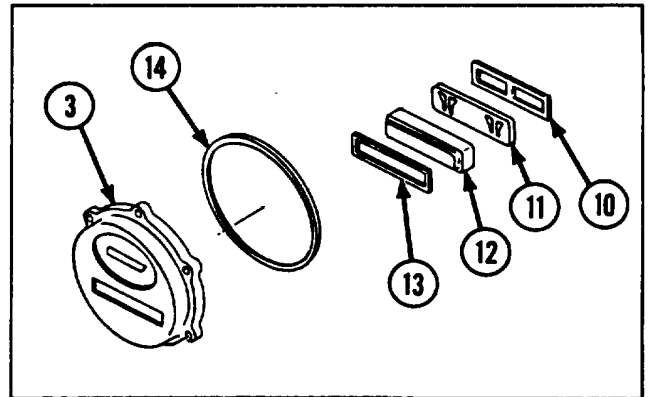
DISASSEMBLY

- 1 Loosen six machine screws (1). Do not separate screw retaining rings (2) from machine screws or remove machine screws from door (3), unless damaged.
- 2 Remove door (3) from parking light (4).
- 3 Remove lens retainer (5) from door (3).
- 4 Remove upper lens gasket (6), blackout filter (7), light lens (8), and nonmetallic seal (9) from door (3).

2-84. MAINTENANCE OF RIGHT STOPLIGHT-TAILLIGHT (CONT).

DISASSEMBLY (CONT)

- 5 Remove lower lens plate (10) from door (3).
- 6 Remove lower light lens (11), lower light lens (12), and nonmetallic seal (13) from door (3).
- 7 Remove preformed packing (14) from door (3).
- 8 To remove stop lamp assembly (15) from lampholder assembly (16), snap open cover of stop lamp assembly (15), insert screwdriver into center slot, push in, and turn counterclockwise.
- 9 To remove marker assembly (17) from lampholder assembly (16), insert screw-driver into center slot of marker assembly push in, and turn counterclockwise.
- 10 Remove two machine screws (18) and two lockwashers (19).
- 11 Remove three machine screws (20) securing lampholder assembly (16) to parking light (4). Remove lampholder assembly (16).

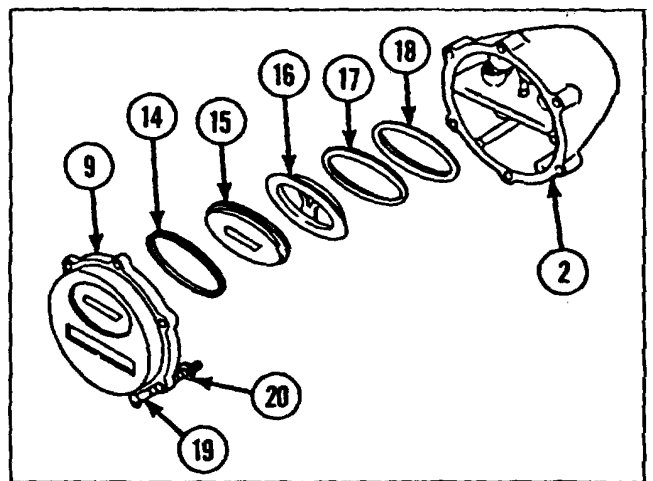
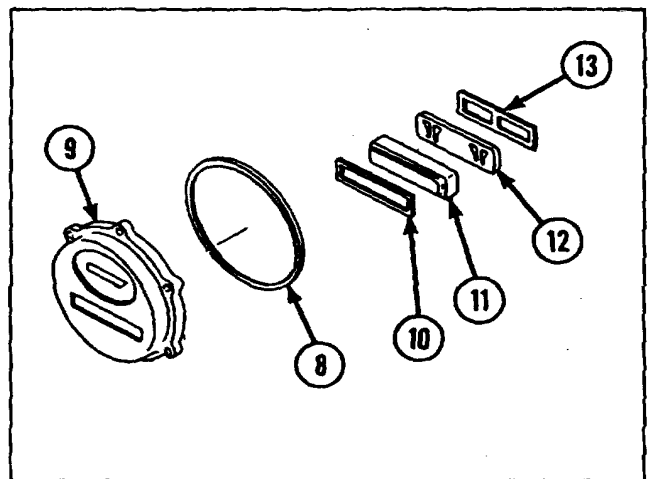
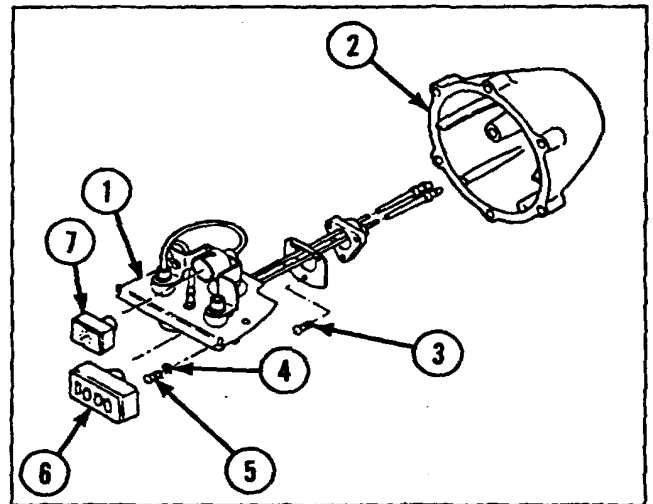


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Inspect sockets for corrosion.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

- 1 Apply a light coat of silicone compound to two sockets of lampholder assembly (1).
- 2 Install lampholder assembly (1) in parking light (2) and secure using three machine screws (3).
- 3 Install two new lockwashers (4) and two machine screws (5).
- 4 Install marker assembly (6) on lampholder assembly (1). Insert screwdriver into center slot of marker assembly (6), push in, and turn clockwise to secure.
- 5 Install stop lamp assembly (7) on lampholder assembly (1). Open cover of stop lamp assembly, push in, and turn clockwise to secure. Close cover.
- 6 Install new preformed packing (8) to door (9).
- 7 Install new nonmetallic seal (10), lower light lens (11), and lower light lens (12) to door (9).
- 8 Press lower lens plate (13) into door (9).
- 9 Install new nonmetallic seal (14), light lens (15), blackout filter (16), and new upper lens gasket (17) to door (9).
- 10 Press lens retainer (18) into door (9).
- 11 Apply antiseize compound to threads of six machine screws (19).
- 12 If removed, install six new screw retaining rings (20) and six machine screws (19) to door (9).
- 13 Install door (9) on parking light (2). Tighten six machine screws (19).



2-85. MAINTENANCE OF DRIVER'S COMPARTMENT DOME LIGHT.

This task covers: a. *Disassembly* b. *Inspection/Repair* c. *Reassembly*

INITIAL SETUP*Materials/Parts*

Gasket
 Gasket
 Gasket
 Lockwasher (5)
 Lockwasher (4)
 Lockwasher (2)
 Nonmetallic seal
 Nonmetallic seal
 Preformed packing

References

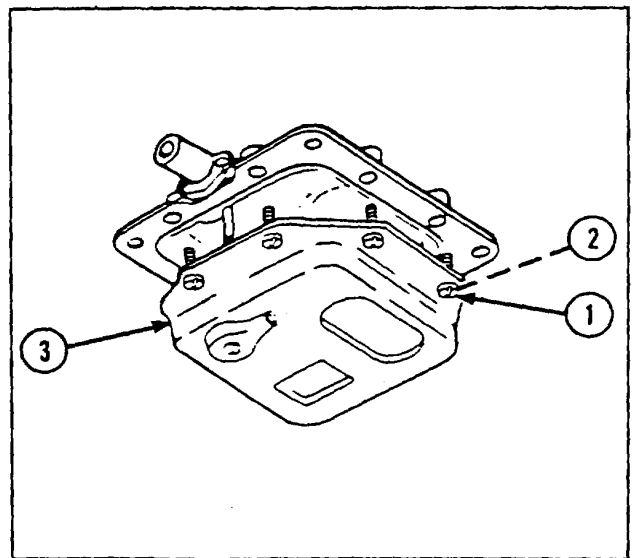
TM 9-2350-304-24P-1

Equipment Conditions

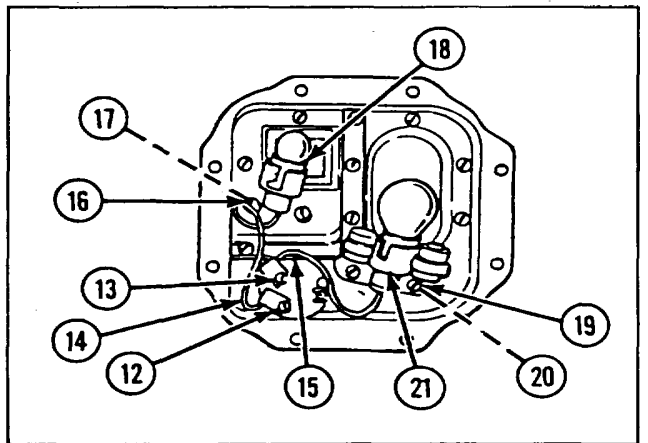
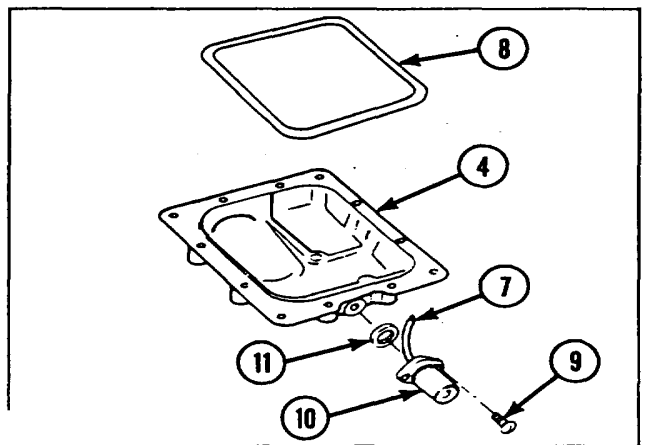
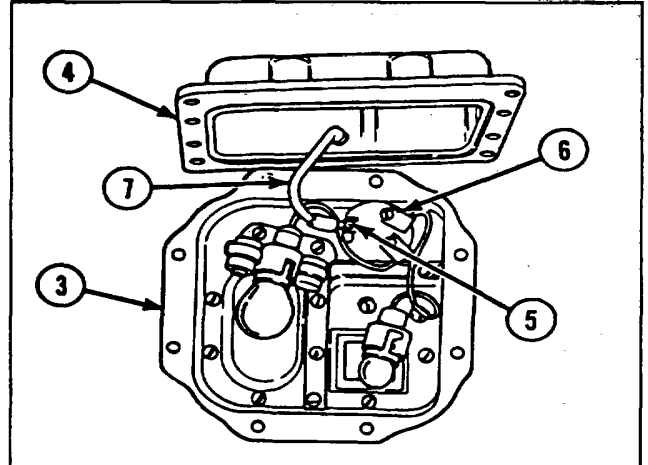
2-581 Drivers compartment dome light removed

DISASSEMBLY

- 1 Loosen eight machine screws (1). Do separate eight retaining rings (2) from eight machine screws, or remove eight machine screws from lens retainer (3) unless damaged.



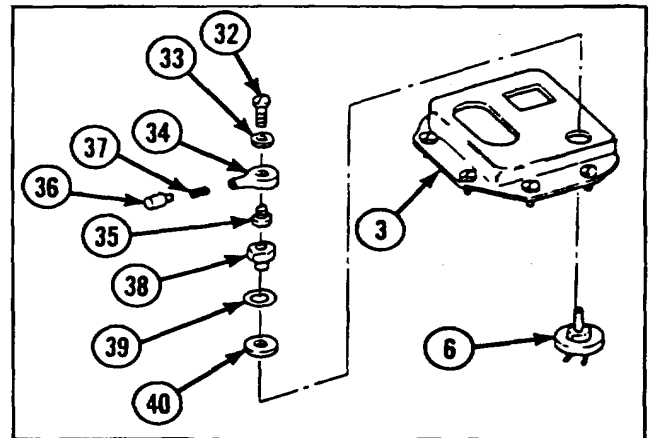
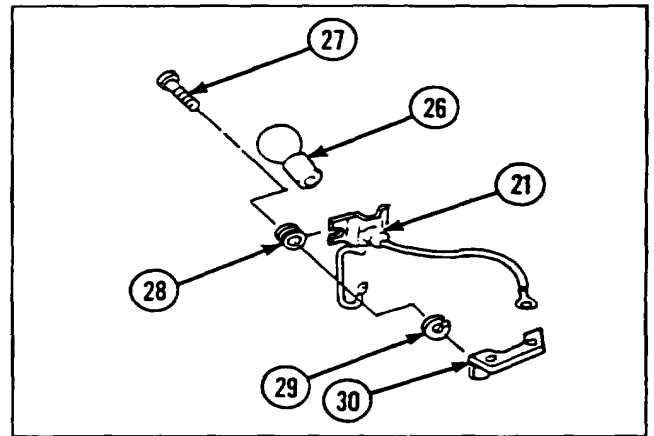
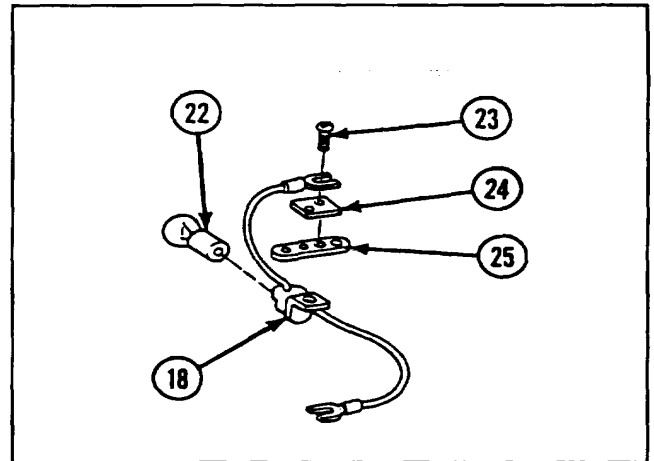
- 2 Separate lens retainer (3) from access cover (4). Loosen terminal screw B (5) from rotary switch (6). Disconnect electrical lead (7) and remove lens retainer from access cover.
- 3 Remove nonmetallic seal (8) from access cover (4).
- 4 Remove two machine screws (9), receptacle connector (10), preformed packing (11), and electrical lead (7) from access cover (4).
- 5 Loosen terminal screws R and W (12 and 13) and disconnect electrical leads (14 and 15). Do not remove terminal screws R and W.
- 6 Remove two machine screws (16), two flat washers (17), and lampholder (18).
- 7 Remove two machine screws (19), two lockwashers (20), and lampholder (21).



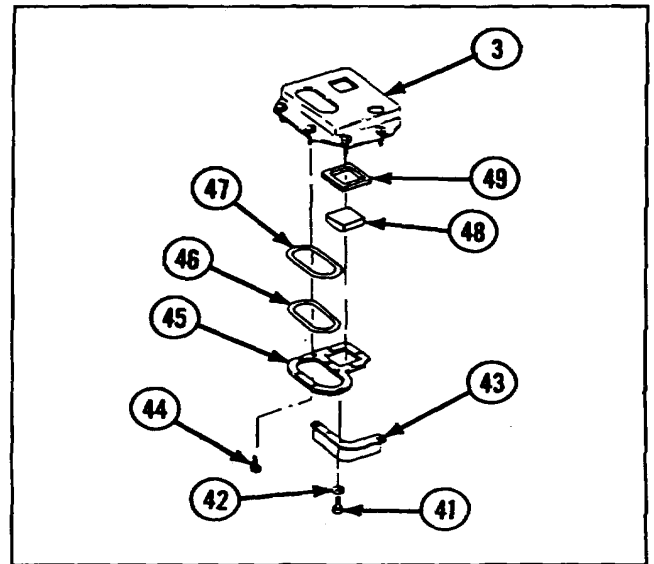
2-85. MAINTENANCE OF DRIVER'S COMPARTMENT DOME LIGHT (CONT).

DISASSEMBLY (CONT)

- 8 Remove incandescent lamp (22), two shoulder screws (23), lamp mounting plate (24), and gasket (25) from lampholder (18).
- 9 Remove incandescent lamp (26), two shoulder screws (27), two rubber grommets (28), two lockwashers (29), an mounting plate (30) from lampholder (21).
- 10 Remove machine screw (32), lockwasher (33), and knob (34).
- 11 Remove setscrew (35), switch stop knob push button (36), and helical compression spring (37) from knob (34).
- 12 Remove mounting nut assembly (38), switch knob gasket (39), flat washer (40) and rotary switch (6) from lens retainer (3).



- 13 Remove four machine screws (41), four lockwashers (42), and partition (43).
- 14 Remove seven machine screws (44) retaining plate (45).
- 15 Remove light lens (46) and nonmetal seal (47).
- 16 Remove light lens (48) and red lens gasket (49) from lens retainer (3).

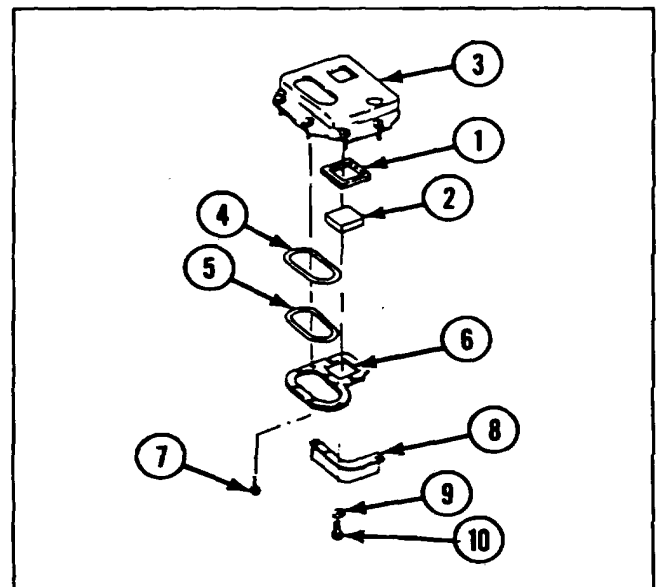


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If body is broken, damaged, or missing, repair is by replacement of next higher assembly.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

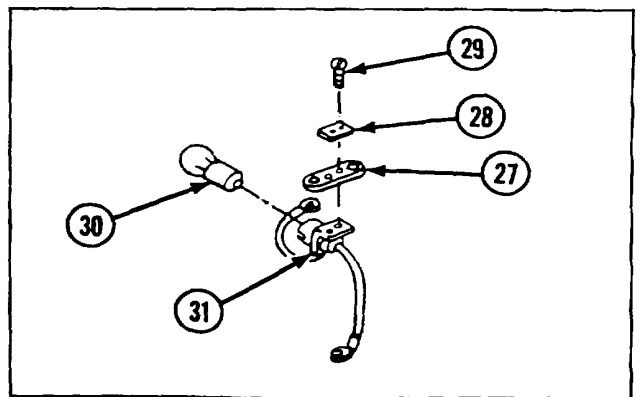
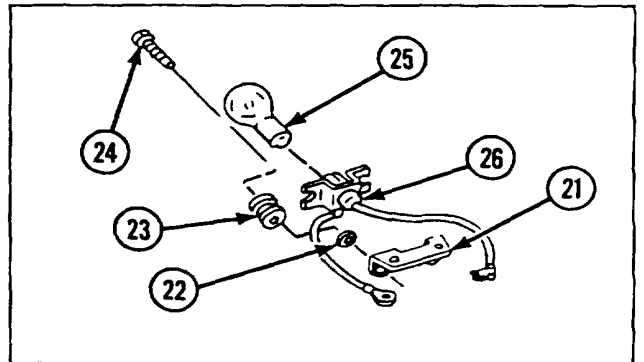
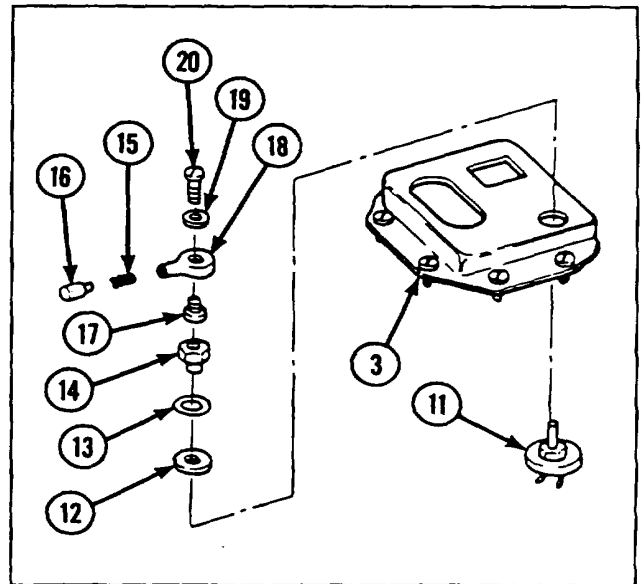
- 1 Install new red lens gasket (1) and light lens (2) on lens retainer (3).
- 2 Install new nonmetallic seal (4) and light lens (5).
- 3 Install retaining plate (6) and seven machine screws (7).
- 4 Install partition (8), four new lockwasher (9), and four machine screws (10).



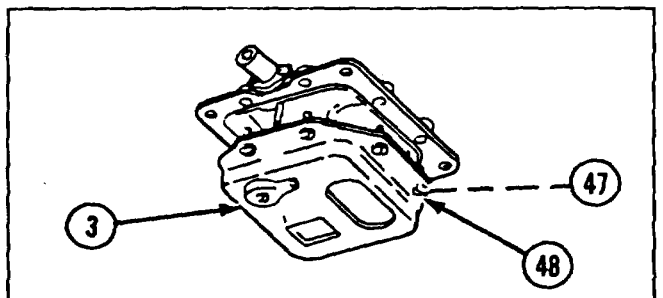
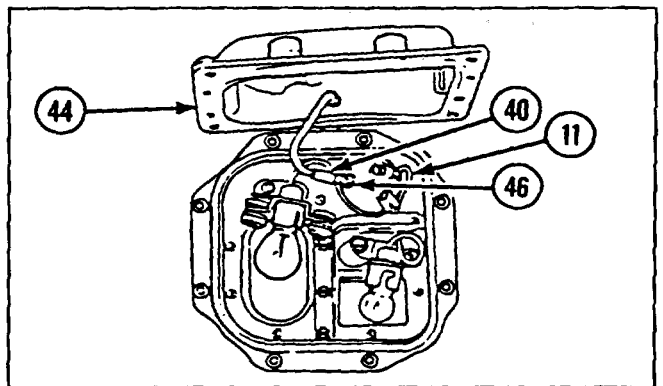
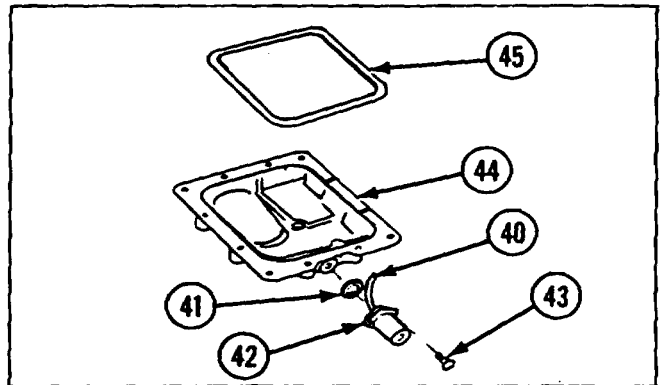
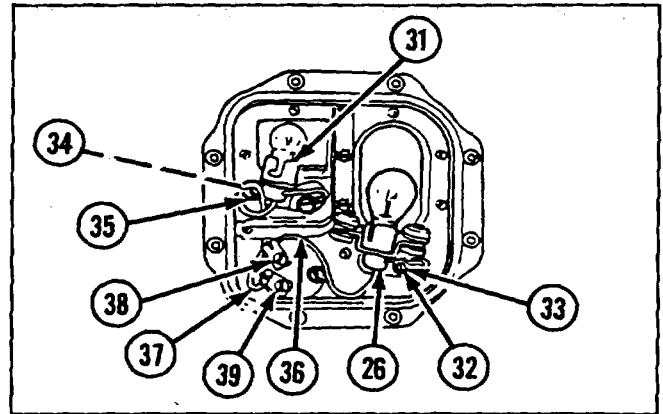
2-85. MAINTENANCE OF DRIVER'S COMPARTMENT DOME LIGHT (CONT).

REASSEMBLY (CONT)

- 5 Install rotary switch (11), flat washer (12) new switch knob gasket (13), and mounting nut assembly (14) on lens retainer (3).
- 6 Install helical compression spring (15), switch stop knob push button (16), and setscrew (17) to knob (18).
- 7 Install knob (18), new lockwasher (19), and machine screw (20).
- 8 Install mounting plate (21), two new lockwashers (22), two rubber grommets (23), two shoulder screws (24), and incandescent lamp (25) to lampholder (26).
- 9 Install new gasket (27), lamp mounting plate (28), two shoulder screws (29), an Incandescent lamp (30) to lampholder (31).



- 10 Install lampholder (26), two new lock-washers (32), and two machine screws (33).
- 11 Install lampholder (31), two flat washers (34), and two machine screws (35).
- 12 Connect electrical leads (36 and 37) to terminal screws W and R (38 and 39). Tighten terminal screws.
- 13 Install electrical lead (40), new preformed packing (41), receptacle connector (42), and two machine screws (43) to access cover (44).
- 14 Install new nonmetallic seal (45) to access cover (44).
- 15 Install access cover (44). Connect electrical lead (40) to rotary switch (11) and tighten terminal screw B (46).
- 16 Tighten eight retaining rings (47) and eight machine screws (48) to lens retainer (3).



2-86. MAINTENANCE OF SENDING UNITS, WARNING SWITCHES, AND INDICATOR LIGHT.

This task covers:

- | | |
|-----------------------------|------------------------|
| a. <i>Removal</i> | c. <i>Installation</i> |
| b. <i>Inspection/Repair</i> | d. <i>Adjustment</i> |

INITIAL SETUP

Materials/Parts

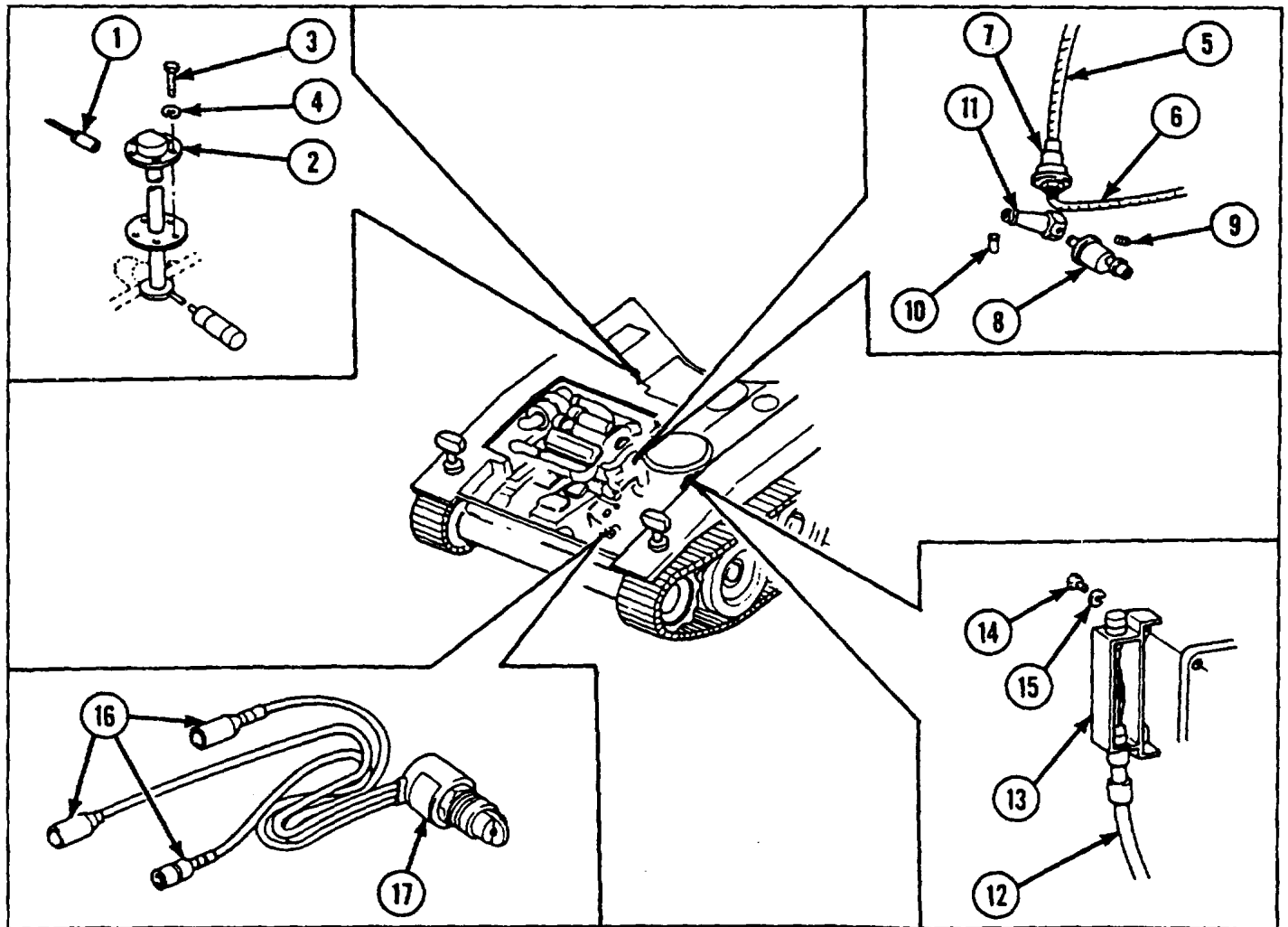
- Lockwasher (2)
- Lockwasher (5)
- Sealing compound (item 37, appx C)

Equipment Conditions

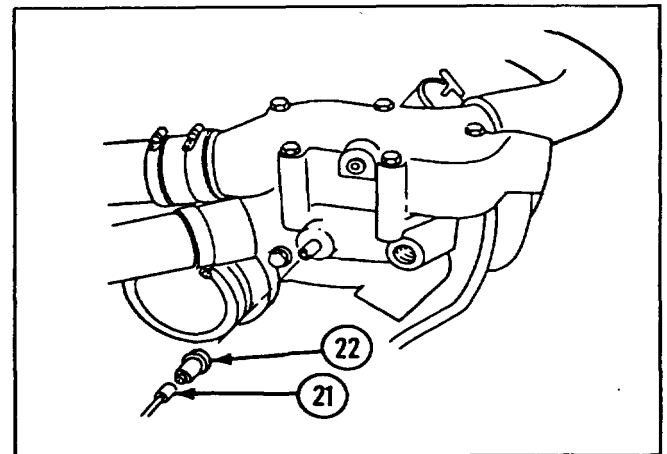
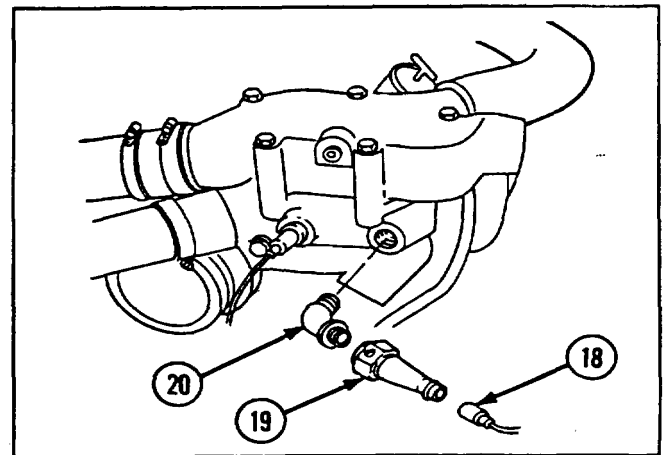
- Low pressure fuel filter element removed
- 2-893 Transmission deck lid assembly removed

References

TM 9-2350-304-24P-1

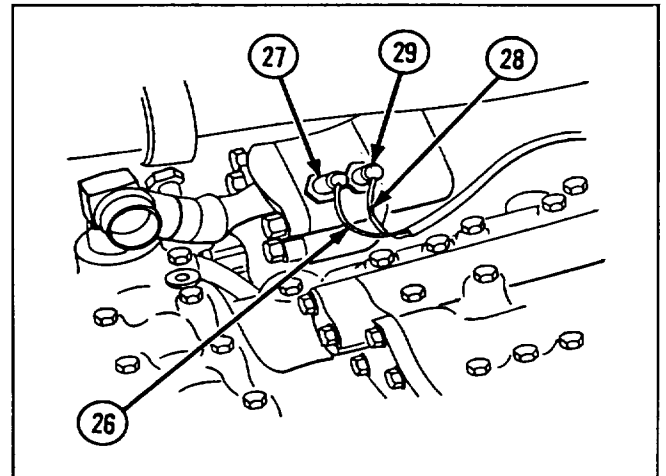
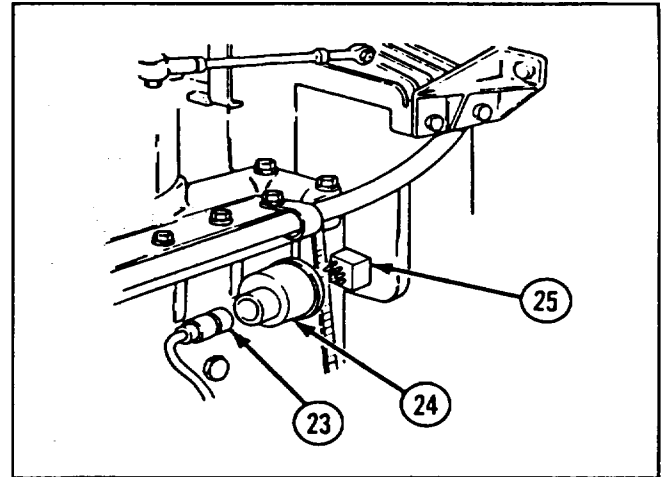


- 1 Disconnect electrical leads (1) from fuel sending unit liquid transmitter (2).
- 2 Remove five machine screws (3), five lockwashers (4), and fuel sending unit liquid transmitter (2).
- 3 Disconnect two electrical leads (5 and 6) from engine oil pressure transmitter (7).
- 4 Remove engine oil pressure transmitter (7), pressure switch (8), and two pipe plugs (9 and 10) from engine warning unit pipe adapter (11).
- 5 Disconnect wiring harness (12) from low engine coolant warning indicator light (13).
- 6 Remove two hexagon head capscrews (14) and two lockwashers (15). Remove low engine coolant warning indicator light (13).
- 7 Disconnect shell connectors (16) and remove brake warning sensitive switch (17).
- 8 Disconnect electrical lead (18) and remove engine coolant temperature warning thermostatic switch (19) from pipe elbow (20).
- 9 Remove pipe elbow (20).
- 10 Disconnect electrical lead (21) and remove engine coolant temperature transmitter (22).



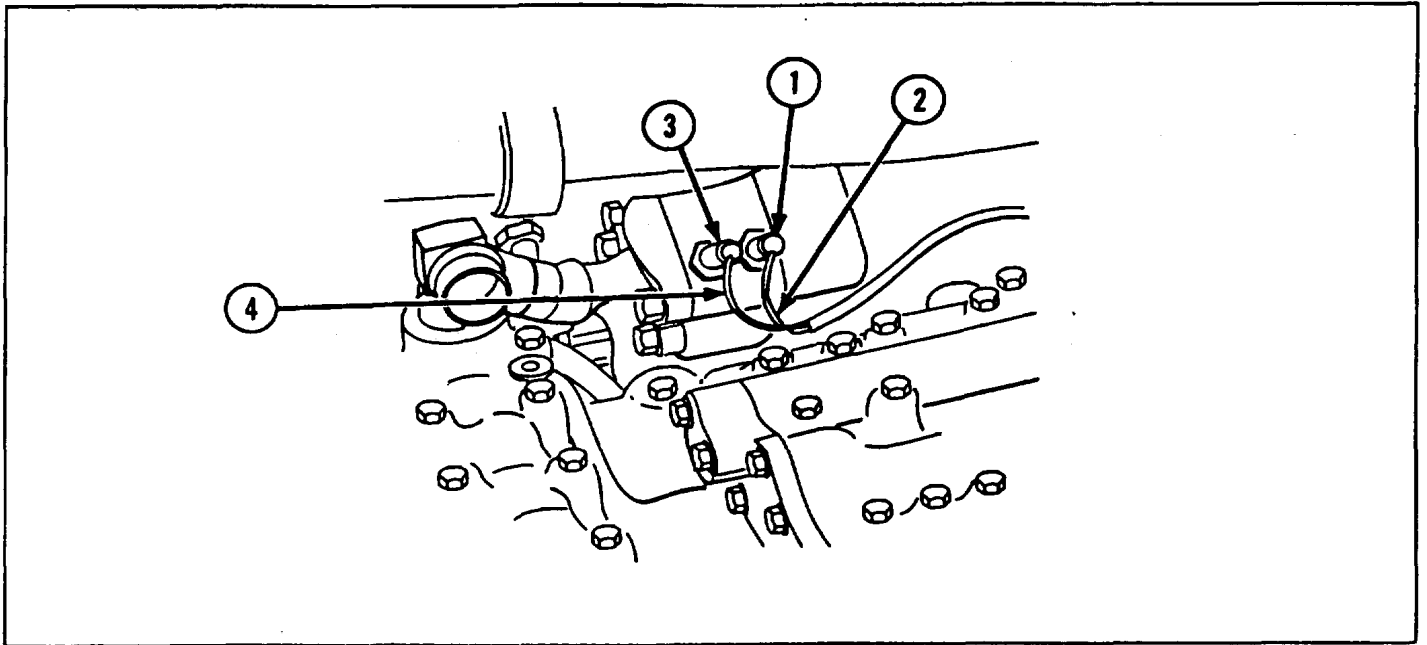
2-86. MAINTENANCE OF SENDING UNIT, WARNING SWITCHES, AND INDICATOR LIGHT (CONT).*REMOVAL (CONT)*

- 11 Disconnect electrical lead (23) and remove transmission oil pressure transmitter (24) from transmission warning unit adapter (25).
- 12 Remove transmission warning unit adapter (25).
- 13 Disconnect electrical lead (26) and remove transmission oil thermostatic switch (27).
- 14 Disconnect electrical lead (28) and remove transmission oil temperature transmitter (29).

**INSPECTION/REPAIR**

- 1 Inspect for broken, damaged, or missing parts.
- 2 For repair of shell connectors, refer to general maintenance, page 2-364.
- 3 The low engine coolant warning indicator light is a repairable assembly. Refer to page 2-618.
- 4 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

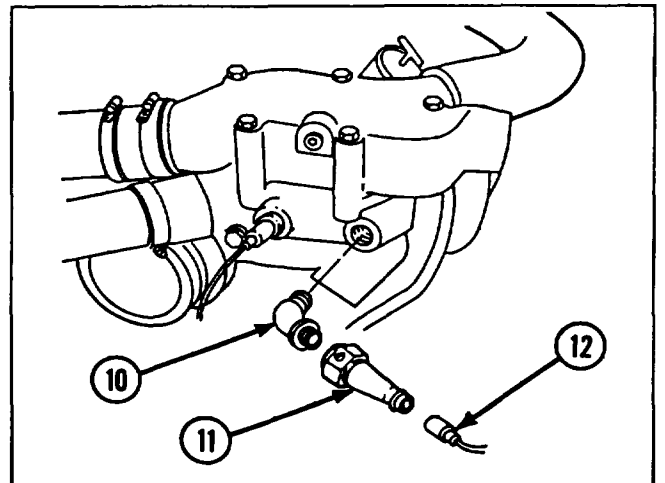
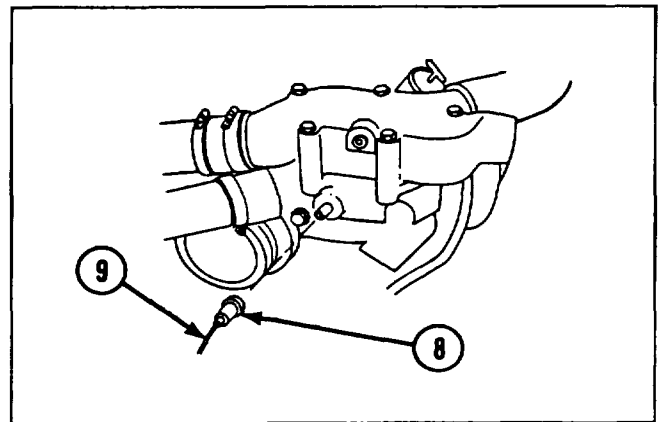
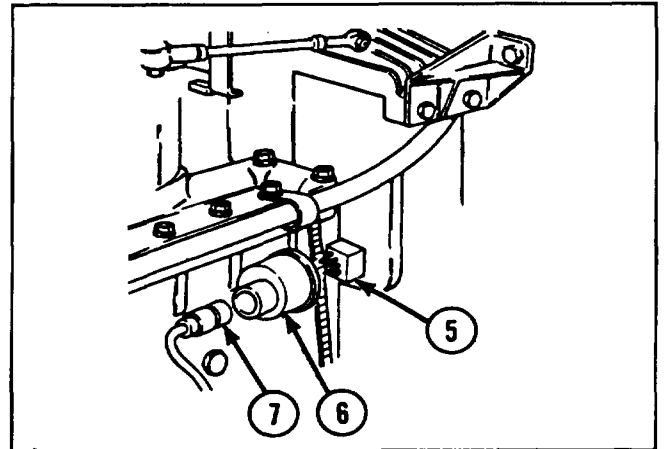


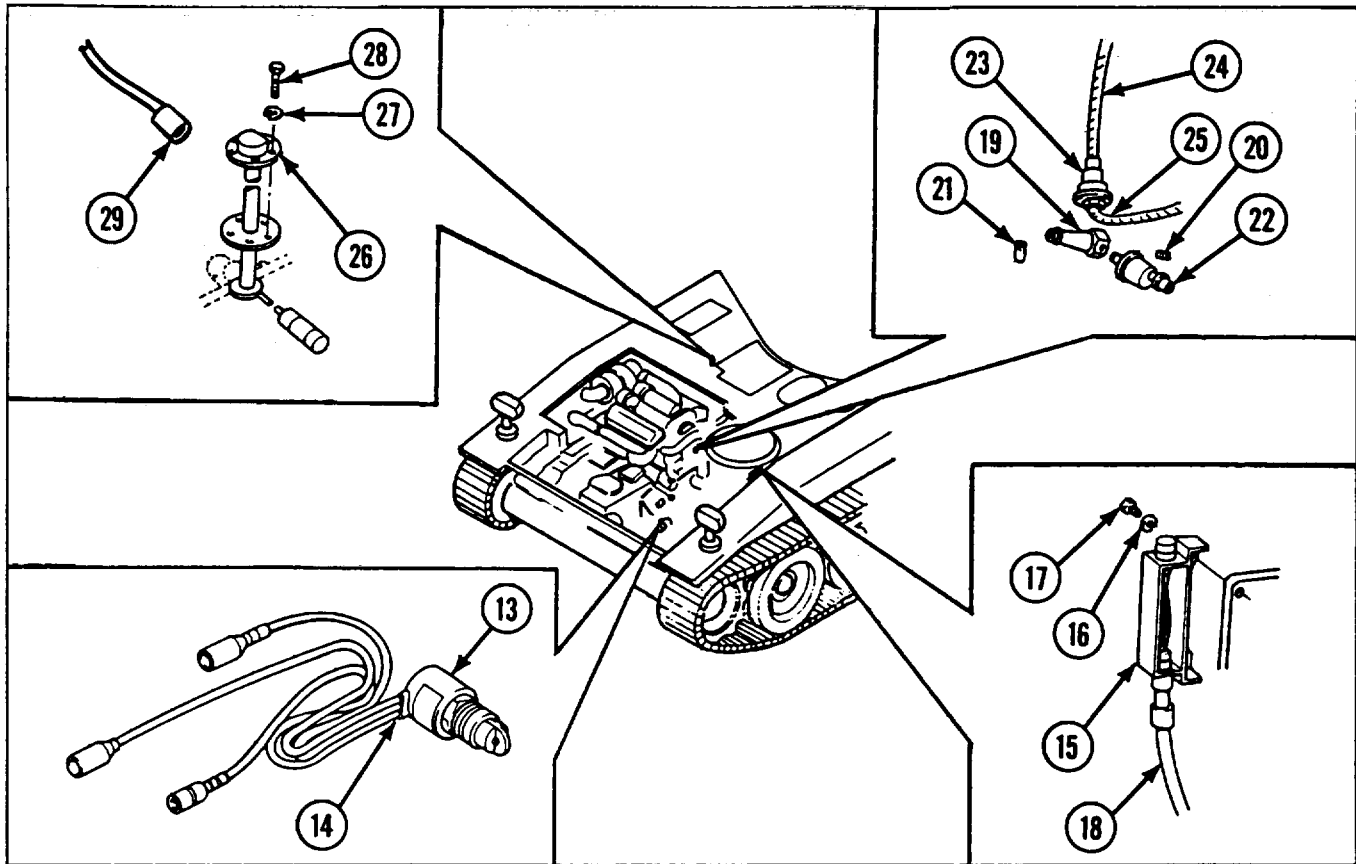
- 1 Apply sealing compound to transmission oil temperature transmitter threads.
- 2 Install transmission oil temperature transmitter (1).
- 3 Install electrical lead (2).
- 4 Run engine long enough to ensure transmission oil temperature transmitter (1) operates properly and does not leak.
- 5 If leaks exist, ensure all parts have been installed correctly. If leaks still exist, inspect for
- 6 Apply sealing compound to transmission oil thermostatic switch threads.
- 7 Install transmission oil thermostatic switch (3) and connect electrical lead (4).
- 8 Run engine long enough to ensure transmission oil thermostatic switch-(3) operates properly and does not leak.
- 9 If leaks exist, ensure all parts have been installed correctly. If leaks still exist, inspect for defective parts.

2-86. MAINTENANCE OF SENDING UNIT, WARNING SWITCHES, AND INDICATOR LIGHT (CONT).

INSTALLATION (CONT)

- 10 Apply sealing compound to transmission oil pressure transmitter threads.
- 11 Install transmission warning unit adapter (5).
- 12 Install transmission oil pressure transmitter (6) to transmission warning unit adapter (5) and connect electrical lead (7).
- 13 Run engine long enough to ensure transmission oil pressure transmitter (6) operates properly and does not leak.
- 14 If leaks exist, ensure all parts have been installed correctly. If leaks still exist, inspect for defective parts.
- 15 Apply sealing compound to engine coolant temperature transmitter threads.
- 16 Install engine coolant temperature transmitter (8) and connect electrical lead (9).
- 17 Run engine long enough to ensure engine coolant temperature transmitter (8) operates properly and does not leak.
- 18 If leaks exist, ensure all parts have been installed correctly. If leaks still exist, inspect for defective parts.
- 19 Apply sealing compound to engine coolant temperature warning thermostatic switch threads.
- 20 Install pipe elbow (10).
- 21 Install engine coolant temperature warning thermostatic switch (11) and connect electrical lead (12).
- 22 Run engine long enough to ensure engine coolant temperature warning thermostatic switch (11) operates properly and does not leak.



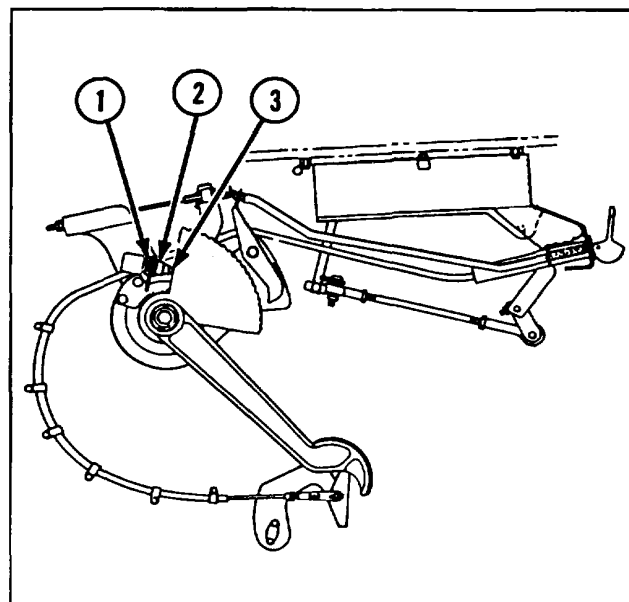


- 23 If leaks exist, ensure all parts have been installed correctly. If leaks still exist, inspect for defective parts.
- 24 Install brake warning sensitive switch (13) and connect shell connectors (14) to line connections.
- 25 Install low engine coolant warning indicator light (15), two new lockwashers (16), and two machine screws (17). Connect wiring harness (18).
- 26 Install engine warning unit pipe adapter (19).
- 27 Install two pipe plugs (20 and 21), pressure switch (22), and engine oil pressure transmitter (23). Connect two electrical leads (24 and 25).
- 28 Install fuel sending unit liquid transmitter (26), five new lockwashers (27), and five machine screws (28). Connect electrical leads (29).

2-86. MAINTENANCE OF SENDING UNIT, WARNING SWITCHES, AND INDICATOR LIGHT (CONT).

ADJUSTMENT

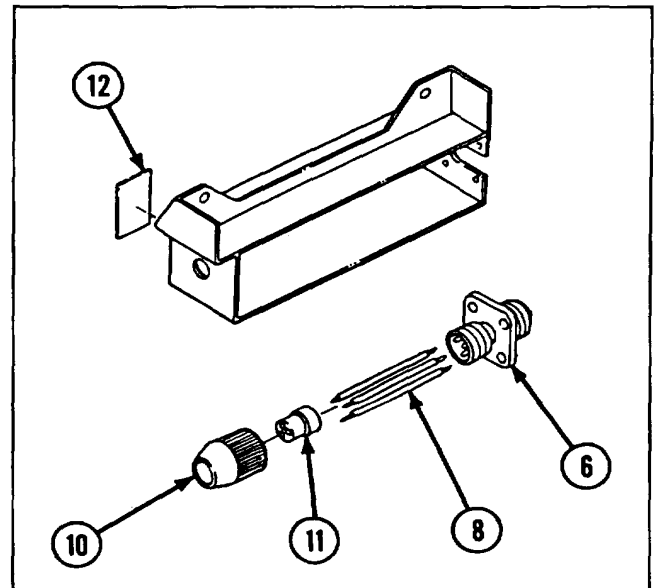
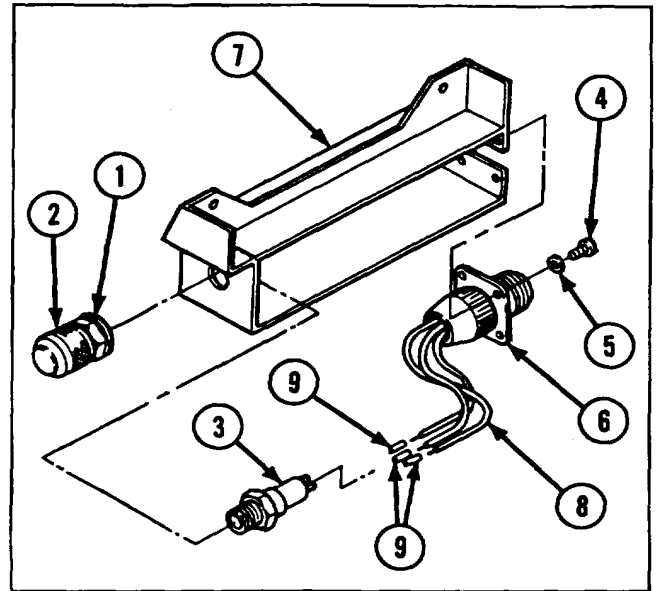
- 1 Release parking brake.
- 2 Loosen nut (1).
- 3 Adjust nut (2) until roller (3) is fully depressed.
- 4 Hold nut (2) from turning and tighten nut (1).
- 5 Set MASTER switch ON.
- 6 Apply brakes. Stoplight will light.
- 7 Release brakes. Stoplight will go out.



This task covers:	a Disassembly	b Inspection/Repair	c Reassembly
INITIAL SETUP			
<p><i>Tools and Special Tools</i></p> <p>Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)</p> <ul style="list-style-type: none"> •Soldering gun 		<p><i>References</i></p> <p>TB SIG-222 TM 9-2350-304-24P-1</p>	
<p><i>Materials/Parts</i></p> <p>Electrical wire (figure D-1, appx D)</p> <p>Insulation sleeving (figure D-18, appx D)</p> <p>Lockwasher (2)</p> <p>Lockwasher (4)</p> <p>Solder (item 42, appx C)</p>		<p><i>Equipment Conditions</i></p> <p>2-612 Low engine coolant indicator light removed</p>	

DISASSEMBLY

- 1 Loosen nut (1) and remove indicator (2) from indicator light socket (3).
- 2 Remove four machine screws (4) and lockwashers (5).
- 3 Remove receptacle connector (6) with attached parts from enclosure (7).
- 4 Unsolder and remove electrical wires from indicator light socket (3). Remove insulation sleeving (9) from electrical (8).
- 5 Remove bushing retainer nut (10) from receptacle connector (6).
- 6 Remove electrical insert (11) from receptacle connector (6) and electrical wires (8).
- 7 If damaged, unsolder and remove electrical wires (8) from receptacle connector (6).
- 8 If damaged, remove sign (12).



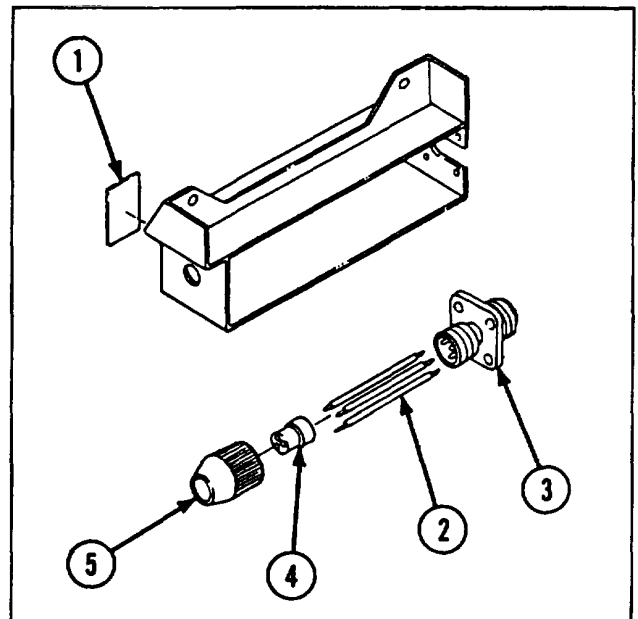
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If enclosure is damaged, repair is by replacement of next higher assembly.
- 3 Electrical wire and insulation sleeving are manufactured items, refer to appendix D.
- 4 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

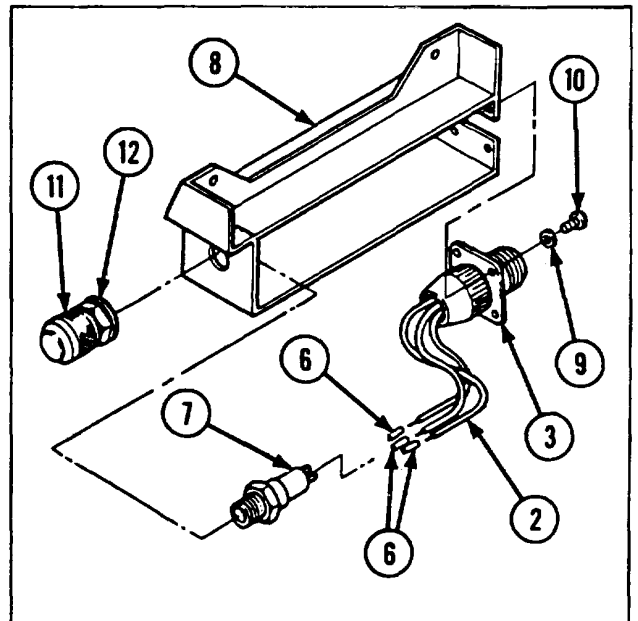
2-87. MAINTENANCE OF LOW ENGINE COOLANT WARNING INDICATOR LIGHT (CONT).

REASSEMBLY

- 1 If removed, install sign (1).
- 2 Solder electrical wires (2) to receptacle connector (3) per TB SIG-222.
- 3 Install electrical insert (4) on wires (2).
- 4 Install bushing retainer nut (5) on receptacle connector (3).



- 5 Install insulation sleeving (6) on electrical wires (2). Solder electrical wires (2) to indicator light socket (7).
- 6 Install receptacle connector (3) with attached parts in enclosure (8).
- 7 Install four new lockwashers (9) and four machine screws (10).
- 8 Install indicator light (11) on indicator light socket (7), and tighten nut (12).



2-88. MAINTENANCE OF AUDIBLE WARNING HORN AND RELATED PARTS.

This task covers: a Removal b Inspection/Repair c Installation

INITIAL SETUP

Materials/Parts
 Lockwasher (2)
 Lockwasher (4)

References
 TM 9-2350-304-24P-1

Equipment Conditions
 2-911 Driver's seat removed
 2-555 Driver's instrument panel (switch) removed
 MASTER switch in OFF position

General Safety Instructions

WARNING

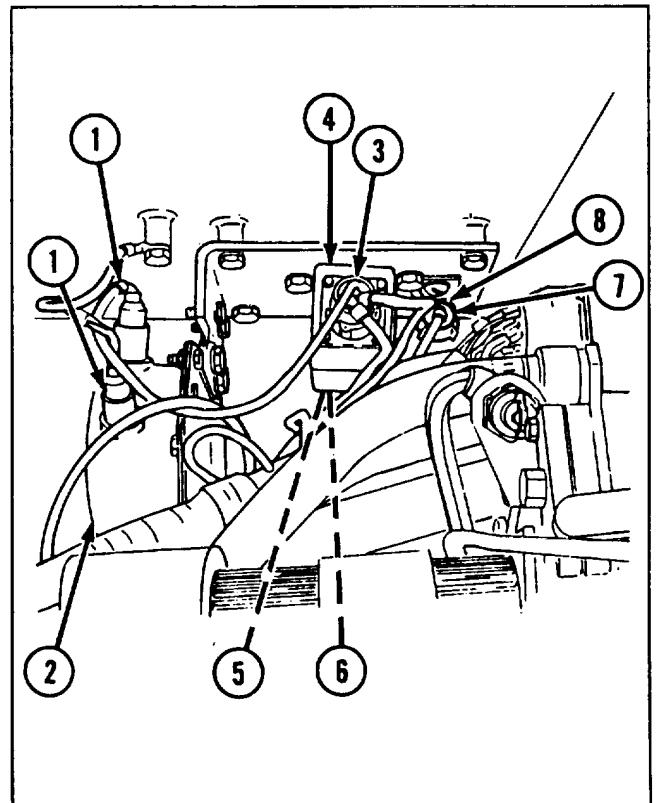
Brake foot pedal is spring-loaded. Block tracks and release parking brake before working on audible warning horn.

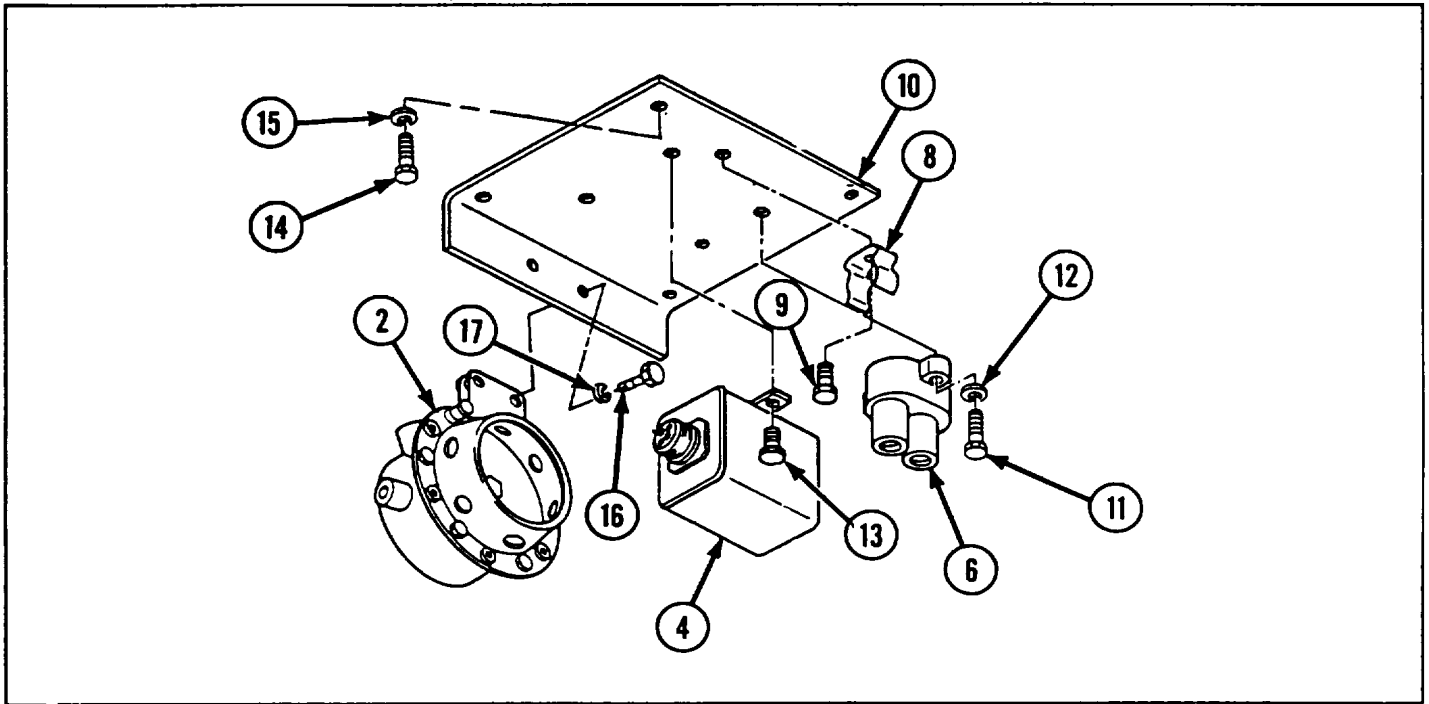
REMOVAL

NOTE

Tag electrical leads before removing them to aid in installation.

- 1 Disconnect two electrical leads (1) from electrical horn (2).
- 2 Disconnect electrical connector (3) from audible warning system relay (4).
- 3 Disconnect two electrical leads (5) from circuit breaker (6).
- 4 Disconnect electrical connector (7).
- 5 Remove electrical connector (7) from spring clip (8).



2-88. MAINTENANCE OF AUDIBLE WARNING HORN AND RELATED PARTS (CONT).*REMOVAL (CONT)*

- 6 Remove assembled washer screw (9) and spring clip (8) from angle bracket (10).
- 7 Remove two machine screws (11), two lockwashers (12), and circuit breaker (6).
- 8 Remove two assembled washer bolts (13) and audible warning system relay (4).
- 9 Remove four capscrews (14) and four lockwashers (15). Remove angle bracket (10) with electrical horn (2).

NOTE

Two screws and washers are supplied with electrical horn. Use care not to lose them. If lost or damaged, replace electrical horn.

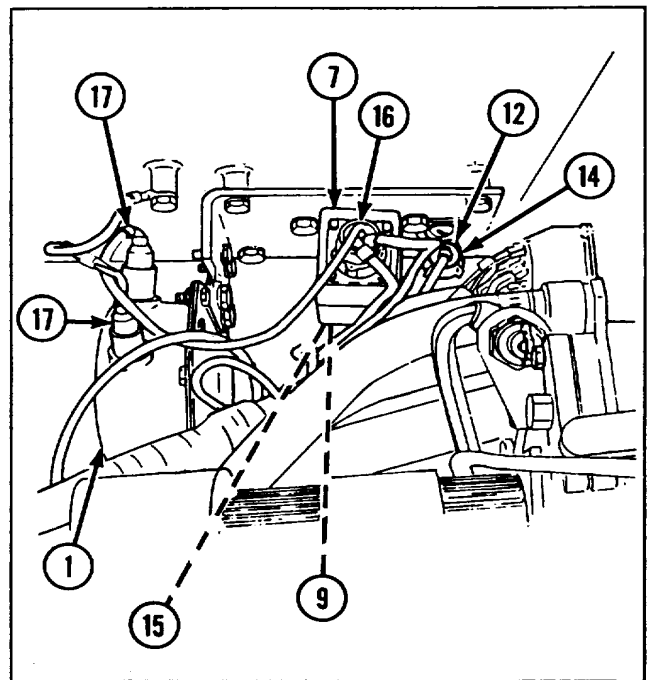
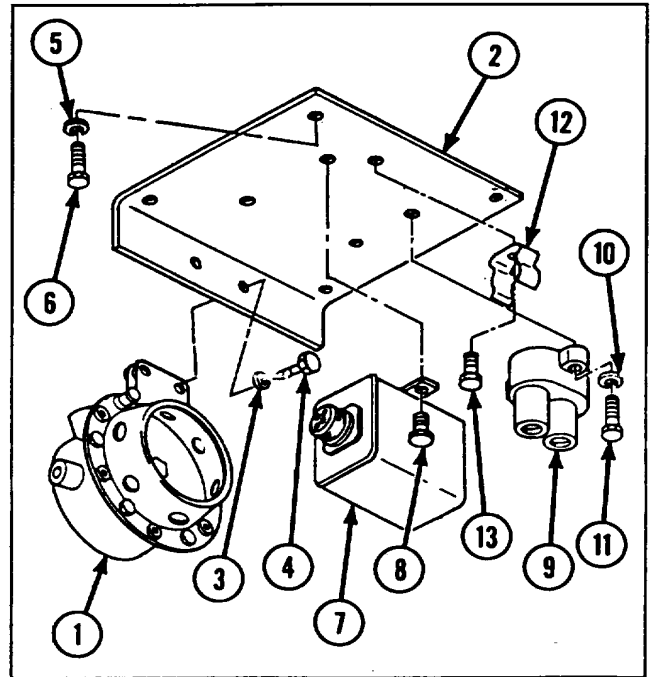
- 10 Remove two screws (16), two lockwashers (17), and electrical horn (2) from angle bracket (10).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install electrical horn (1) on angle bracket (2) and secure with two washers (3) and two screws (4).
- 2 Install electrical horn (1) and angle bracket (2) and secure with four new lockwasher c (5) and four capscrews (6).
- 3 Install audible warning system relay (7) and two assembled washer bolts (8) on angle bracket (2).
- 4 Install circuit breaker (9), two new lockwashers (10), and two machine screws (11).
- 5 Install spring clip (12). Install assembled washer screw (13).
- 6 Connect electrical connector (14).
- 7 Install electrical connector (14) in spring clip (12).
- 8 Connect two electrical leads (15) to circuit breaker (9).
- 9 Connect electrical connector (16) to audible warning system relay (7).
- 10 Connect two electrical leads (17) to electrical horn (1).



2-89. MAINTENANCE OF BATTERIES, ELECTRICAL LEADS, AND RELATED PARTS.

This task covers: a Removal b Inspection/Repair c Installation

INITIAL SETUP

Materials/Parts
Lockwasher (4)

Equipment Conditions
Battery access door open

References
TM 9-2350-304-24P-1

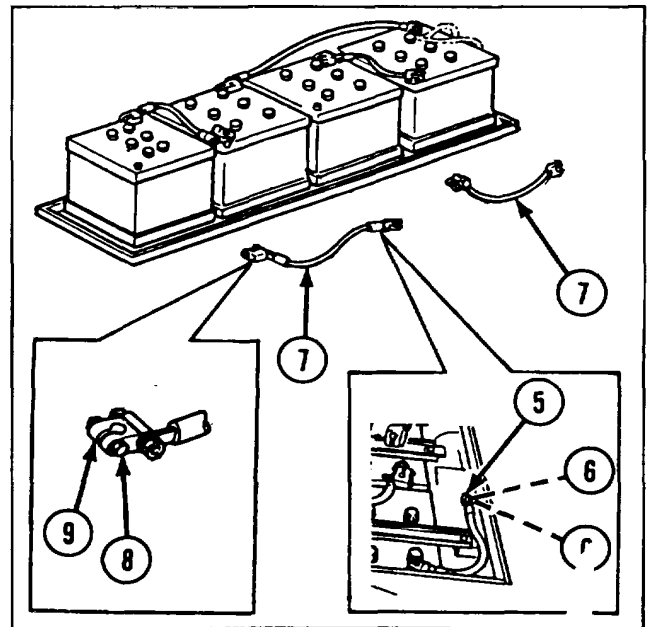
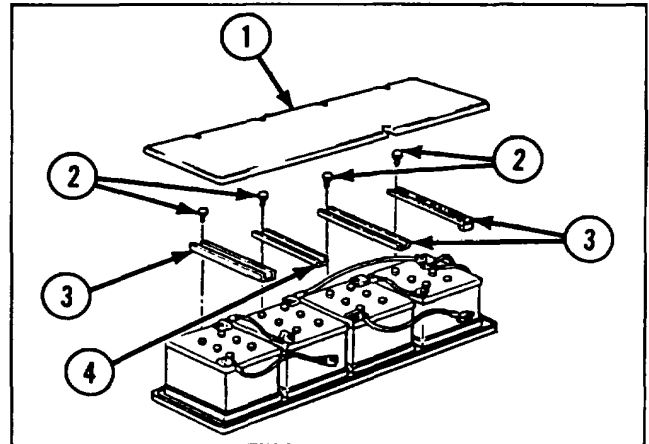
REMOVAL

- 1 Remove battery protection liner (1).
- 2 Remove eight capscrews (2) from three battery hold-down channels (3) and one battery hold-down channel (4).

NOTE

- There may be more leads attached to a lug terminal than those illustrated. Ensure all leads are properly identified.
- Tag all electrical leads to aid in identification during installation.

- 3 Remove two capscrews (5), four lockwashers (6), and two battery cables (7).
- 4 Loosen screws (8) and remove two lug terminals (9) from negative battery terminals. Remove two battery cables (7)



5 Loosen screws (10) and remove two lug terminals (11) from positive battery terminals. Remove battery cable (12).

6 Loosen screws (10) and remove four lug terminals (13) from battery terminals. Remove two battery cables (14).

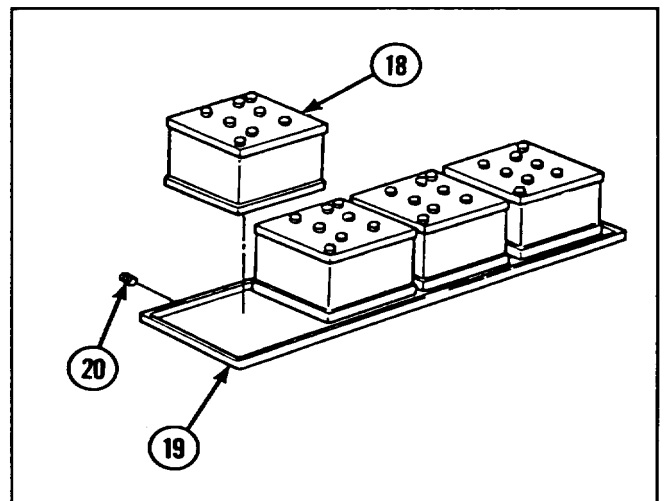
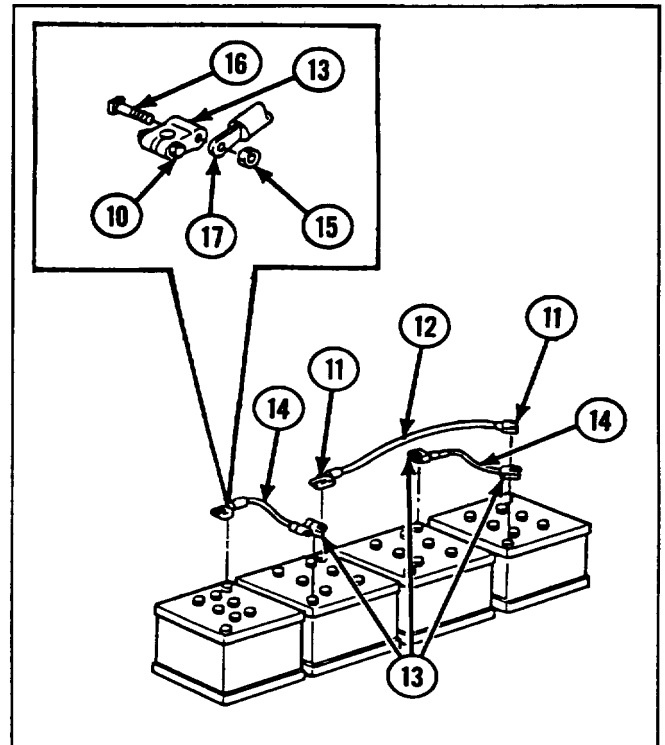
NOTE

- Screws and nuts are supplied with lug terminals. Use care not to lose them. If lost or damaged, replace lug terminal.
- Step 7 is written and illustrated for one lug terminal and electrical lead, but applies to all lug terminals and electrical leads.

7 Remove nut (15), screw (16), and electrical lead (17) from lug terminal (13)

8 Remove four storage batteries (18).

9 Remove battery tray (19) and two dust protective plugs (20).

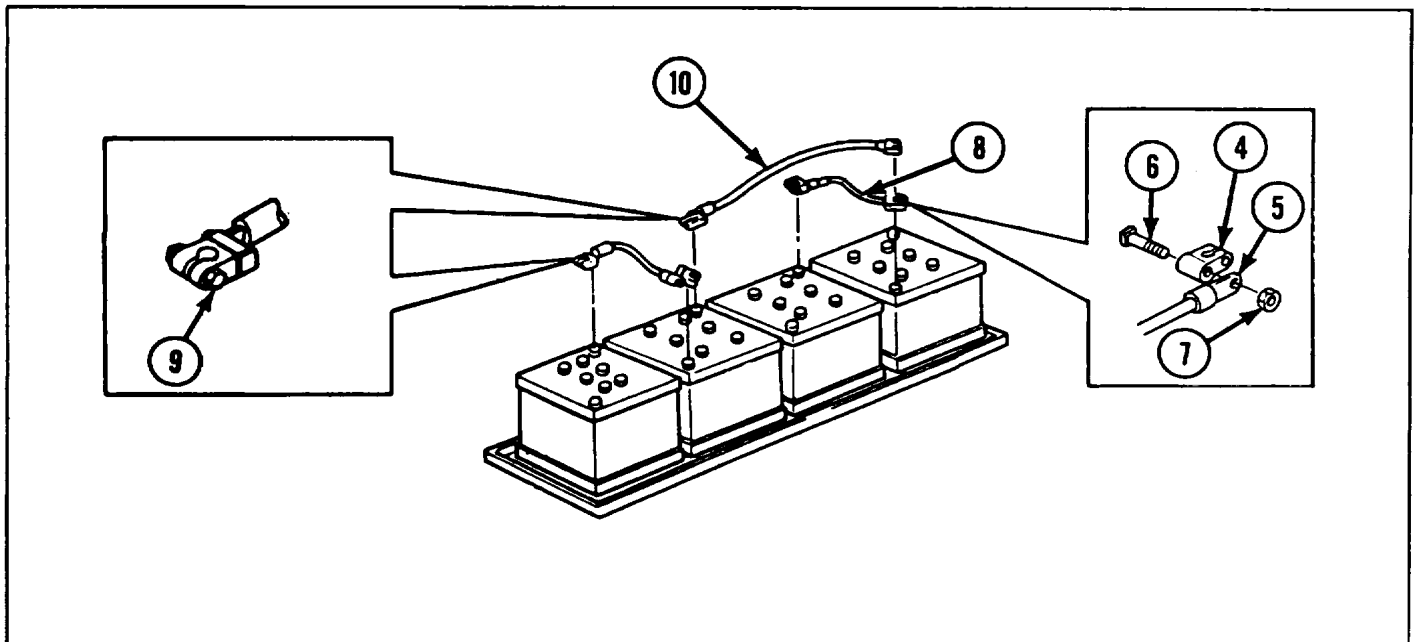
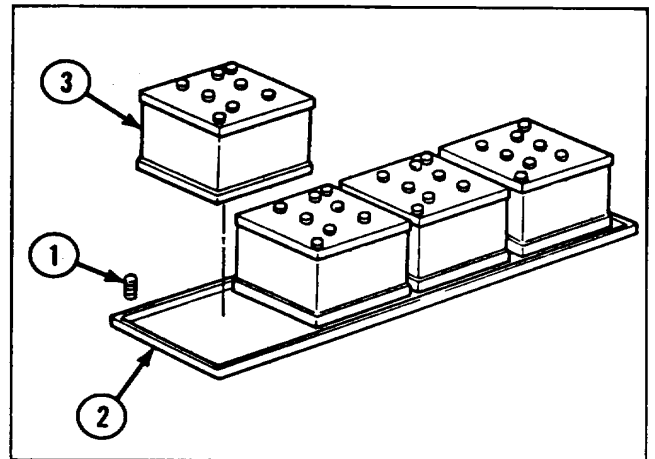


- 1 Inspect for broken, damaged, or missing parts.
- 2 For repair and disposition of storage batteries, notify direct support maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-89. MAINTENANCE OF BATTERIES, ELECTRICAL LEADS, AND RELATED PARTS (CONT).

INSTALLATION

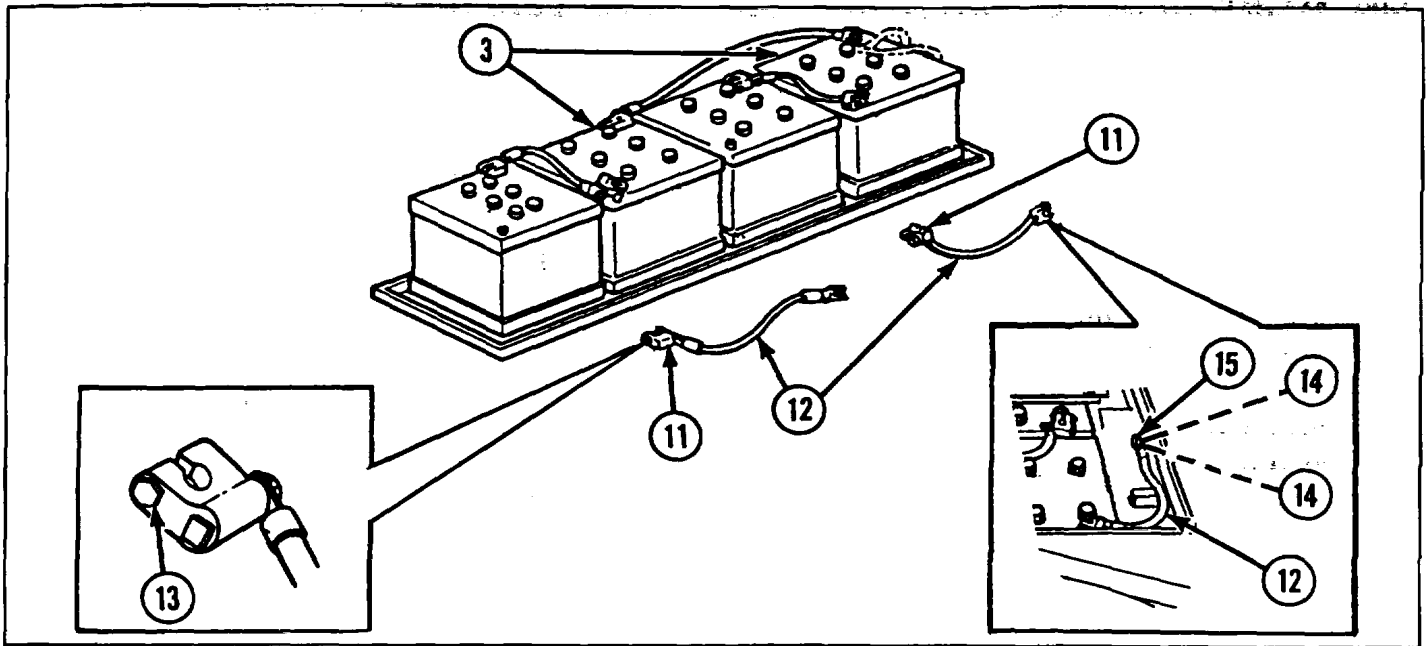
- 1 Install two dust protective plugs (1) and battery tray (2).
- 2 Install four storage batteries (3) in batteries tray (2).



NOTE

Step 3 is written and illustrated for one lug terminal and electrical lead but applies to all lug terminals and electrical leads.

- 3 Install lug terminal (4) on electrical lead (5) and secure with screw (6) and nut (7).
- 4 Install lug terminals of two battery cables (8) on battery terminals. Tighten screws (9) to secure lug terminals to battery terminals.
- 5 Install lug terminals of battery cable (10) on positive battery terminals. Tighten screws (9) to secure lug terminals to battery terminals.

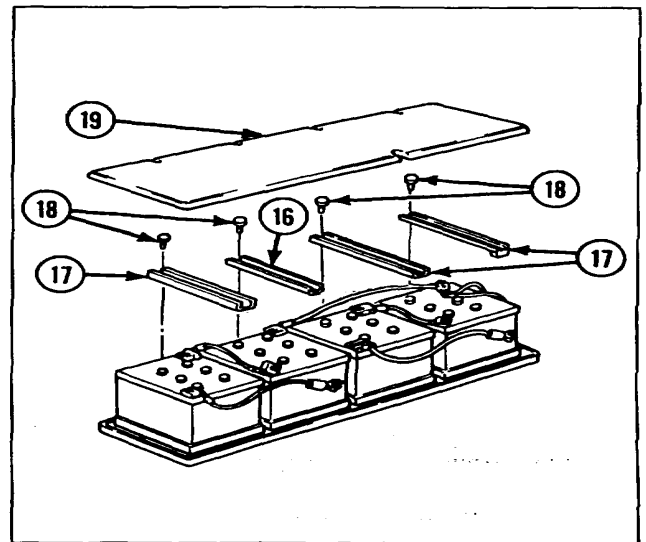


6 Install lug terminals (11) of two battery cables (12) on negative battery terminals. Tighten screws (13) to secure lug terminals to battery terminals.

7 Connect two battery cables (12) to batteries (3) with four new lockwashers (14) and two capscrews (15).

8 Install battery hold-down channel (16), three battery hold-down channels (17), and eight capscrews (18).

9 Install battery protection liner (19).



2-90. MAINTENANCE OF GENERATOR TO GROUND ENGINE IGNITION LEAD.

This task covers:

a. Removal

b. Inspection/Repair

c. Installation

INITIAL SETUP

Materials/Parts

Electrical wire (figure D-1, appx D)

General Safety Instructions

WARNING

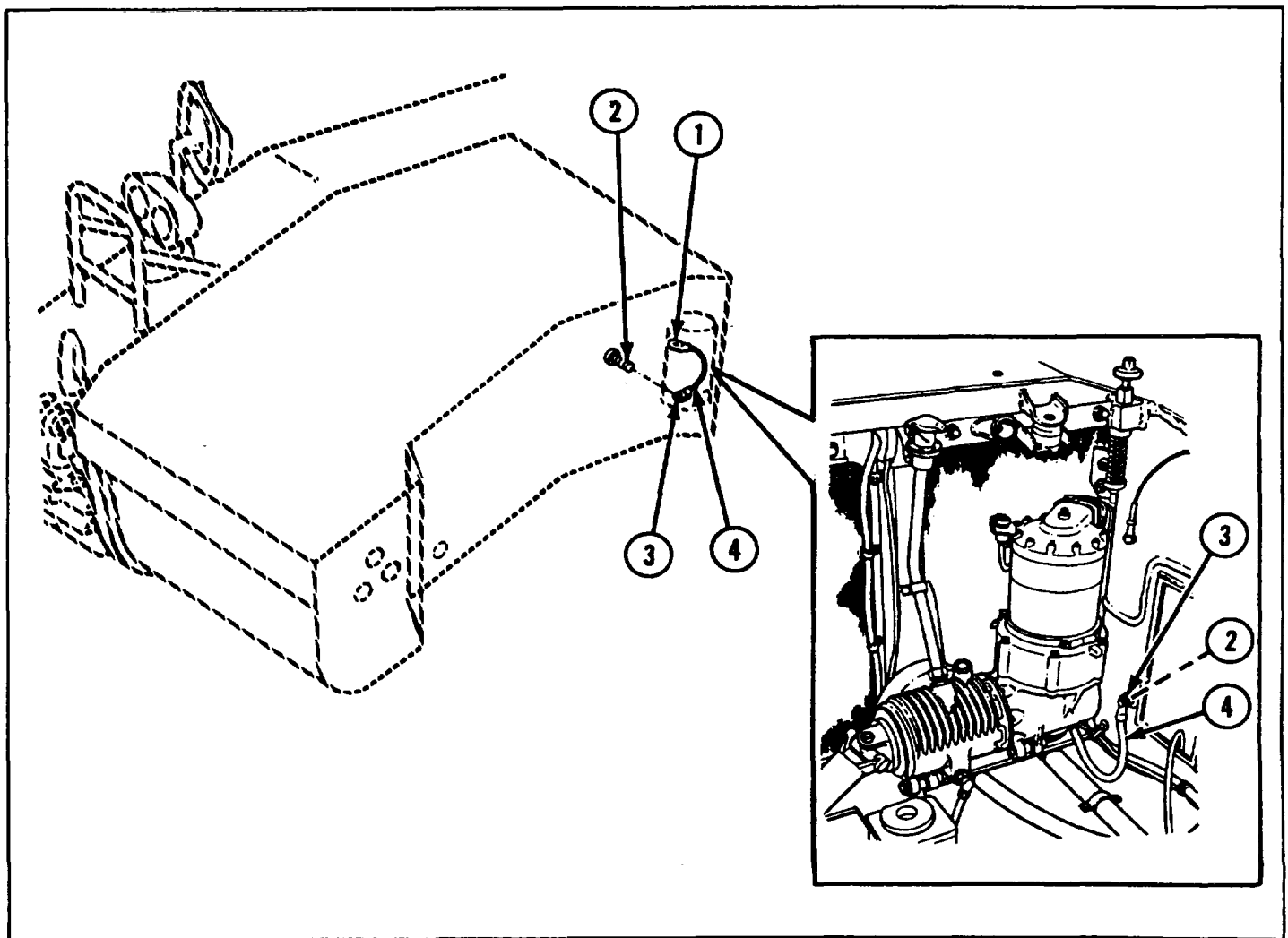
Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

References

TM 9-2350-304-24P-1

Equipment Conditions

2-624 Batteries disconnected
2-380 Power plant



REMOVAL**WARNING**

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Tag and disconnect cable terminal (1) from generator terminal E.
- 3 Loosen screw (2) and disconnect cable terminal (3) from hull.
- 4 Remove generator to ground engine ignition lead (4) from generator.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of cable terminals, refer to general maintenance, page 2-364.
- 4 Electrical wire is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install generator to ground engine ignition lead (4) to generator.
- 2 Connect cable terminal (3) to ground and tighten screw (2).
- 3 Untag and connect cable terminal (1) to generator terminal E.
- 4 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During Installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-91. MAINTENANCE OF STARTER TO GROUND ELECTRICAL LEAD.

This task covers: a. Removal b. Inspection/Repair c. Installation

INITIAL SETUP

Materials/Parts

Electrical wire (figure D-1, appx D)

General Safety Instructions

WARNING

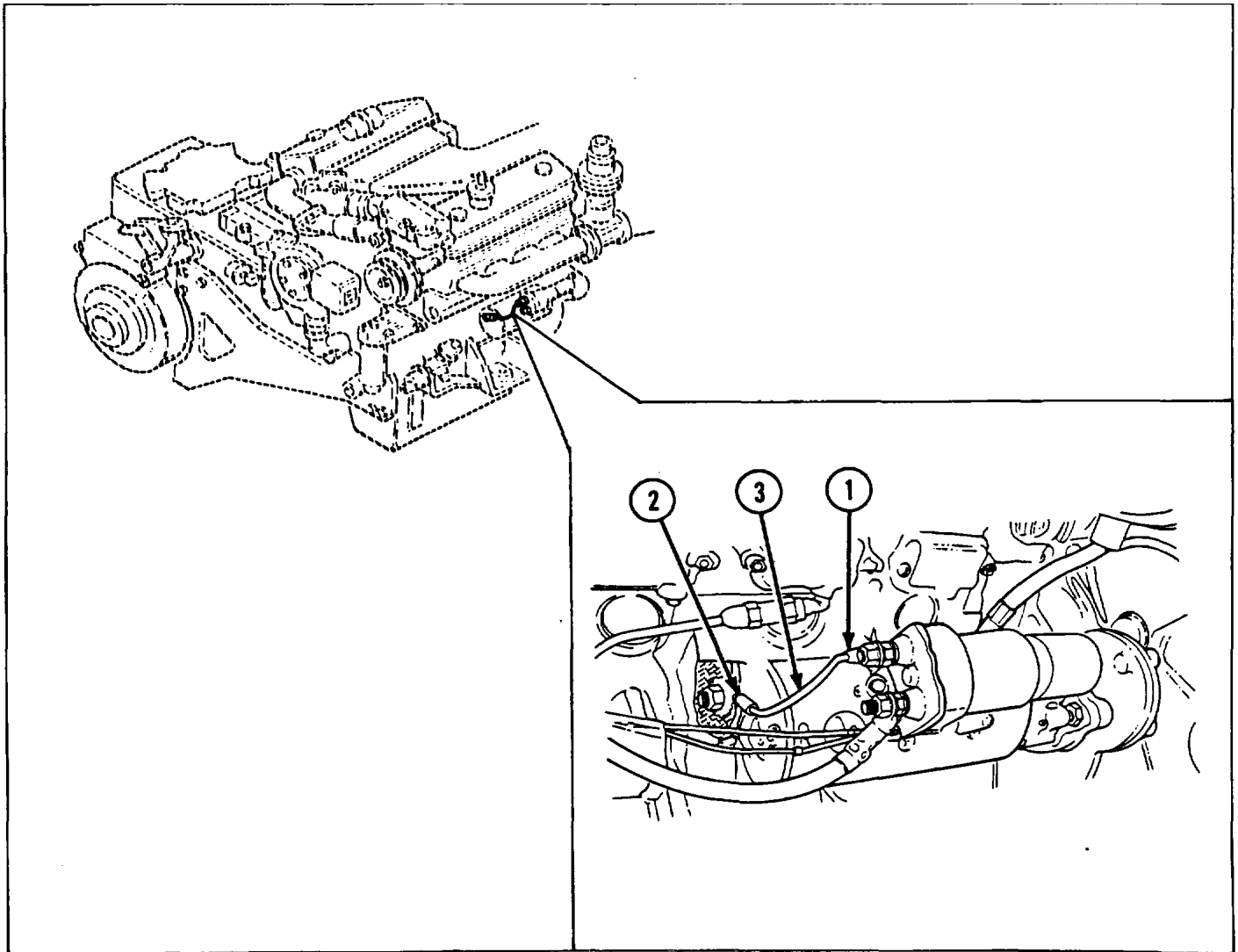
Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment

References

TM 9-2350-304-24P-1

Equipment Conditions

2-624 Batteries disconnected
2-380 Powerplant removed



REMOVAL**WARNING**

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the engine with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Tag and disconnect cable terminal (1) from starter.
- 3 Tag and disconnect cable terminal (2) from starter ground.
- 4 Remove starter to ground electrical lead (3) from engine.

INSPECTION/REPAIR

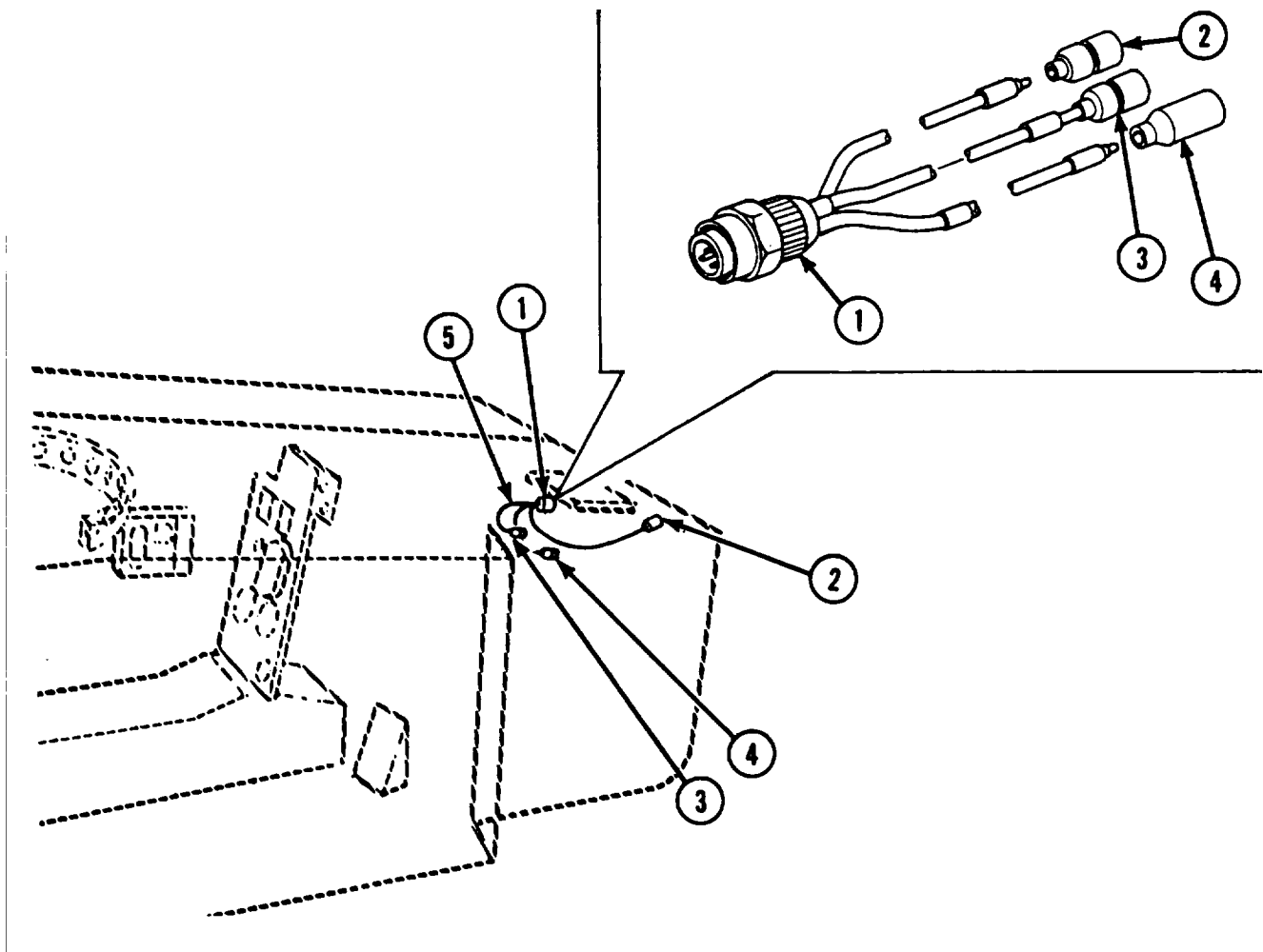
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands.
- 3 For repair of cable terminals, refer to general maintenance, page 2-364.
- 4 Electrical wire is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install starter to ground electrical lead (3) to engine.
- 2 Untag and connect cable terminal (2) to starter ground.
- 3 Untag and connect cable terminal (1) to starter.
- 4 Wiring harnesses and leads are secured to the engine with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-92. MAINTENANCE OF HORN TO WARNING RELAY WIRING HARNESS.

This task covers:	a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i>	d. <i>Reassembly</i> e. <i>Installation</i>
INITIAL SETUP		
<i>Materials/Parts</i>	<i>General Safety Instructions</i>	
Electrical wire (figure D-1, appx D)	WARNING	
<i>References</i>	Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.	
TM 9-2350-304-24P-1		
<i>Equipment Conditions</i>		
2-624 Batteries disconnected		
2-911 Driver's seat removed		



REMOVAL

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Tag and disconnect plug connector (1) from warning relay.
- 3 Tag and disconnect shell connector (2) from circuit breaker.
- 4 Tag and disconnect shell connector (3) from electrical horn.
- 5 Tag and disconnect shell connector (4) from line connection disconnect.
- 6 Remove horn to warning relay wiring harness (5) from hull through driver's compartment.

DISASSEMBLY

For disassembly of wiring harness plug connector, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.

- 3 For repair of shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical wire is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

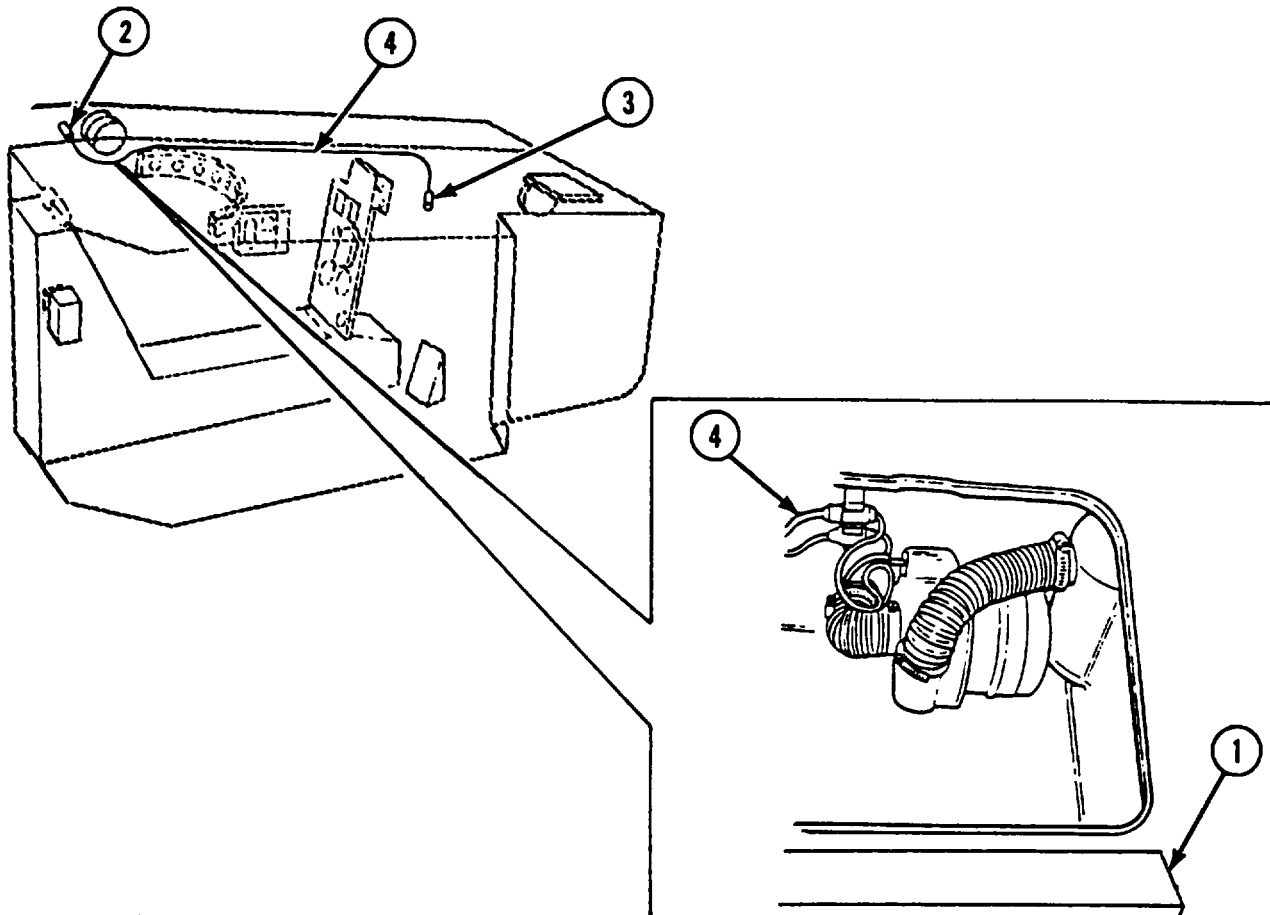
For reassembly of wiring harness plug connector, refer to general maintenance, page 2-364.

INSTALLATION

- 1 Install horn to warning relay wiring harness (5) to hull through driver's compartment.
- 2 Untag and connect shell connector (4) to line connection disconnect.
- 3 Untag and connect shell connector (3) to electrical horn.
- 4 Untag and connect shell connector (2) to circuit breaker.
- 5 Untag and connect plug connector (1) to warning relay.
- 6 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-93. MAINTENANCE OF DISCONNECT TO FORWARD AIR CLEANER BLOWER MOTOR ELECTRICAL LEAD.

This task covers:			
a. Removal	b. Inspection/Repair	c. Installation	
INITIAL SETUP			
<i>Materials/Parts</i> Electrical cable (figure D-1, appx D)		<i>General Safety Instructions</i>	
<i>References</i> TM 9-2350-304-24P-1		WARNING I Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.	
<i>Equipment Conditions</i> 2-624 Batteries disconnected 2-911 Driver's seat removed			



2-634

REMOVAL**WARNING**

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Open front air cleaner blower access door (1).
- 3 Tag and disconnect shell connector (2) from forward air cleaner blower motor.
- 4 Tag and disconnect shell connector (3) from line connection disconnect.
- 5 Remove disconnect to forward air cleaner blower motor electrical lead (4) from hull through driver's compartment.

INSPECTION/REPAIR

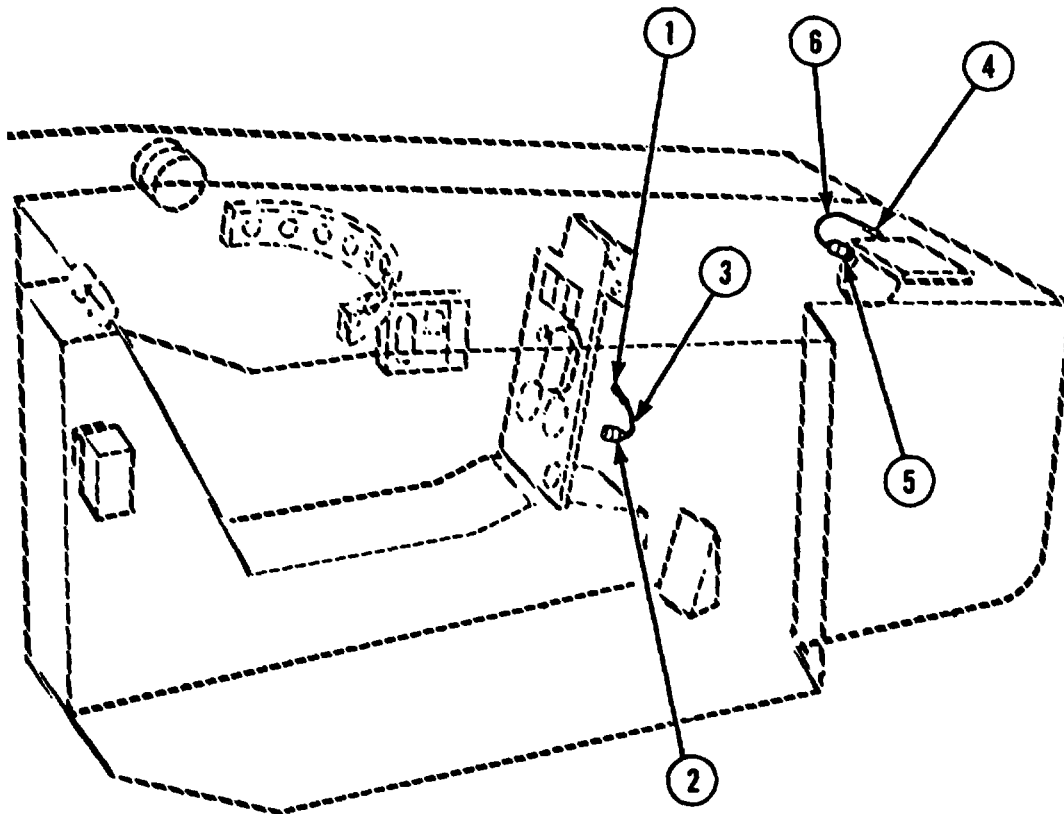
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical cable is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install disconnect to forward air cleaner blower motor electrical lead (4) to hull through driver's compartment.
- 2 Untag and connect shell connector (3) to line connection disconnect.
- 3 Untag and connect shell connector (2) to forward air cleaner blower motor.
- 4 Close front air cleaner blower access door (1).
- 5 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-94. MAINTENANCE OF SUSPENSION LOCKOUT SYSTEM WARNING LIGHT GROUND AND HORN GROUND ELECTRICAL LEADS.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP			
<p><i>Materials/Parts</i> Electrical wire (figure D-1, appx D)</p> <p><i>References</i> TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i> 2-624 Batteries disconnected 2-911 Driver's seat removed</p>		<p><i>General Safety Instructions</i></p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">WARNING</div> <p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p>	



REMOVAL**WARNING**

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Disconnect cable terminal (1) from driver's control panel ground.
- 3 Tag and disconnect shell connector (2) from suspension lockout system warning light.
- 4 Remove suspension lockout system warning light ground electrical lead (3) from hull through driver's compartment.
- 5 Disconnect cable terminal (4) from horn ground.
- 6 Tag and disconnect shell connector (5) from horn.
- 7 Remove horn ground electrical lead (6) from hull through driver's compartment.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.

- 3 For repair of cable terminals and shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical wire is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-30424P-1).

INSTALLATION

- 1 Install horn ground electrical lead (6) to hull through driver's compartment.
- 2 Untag and connect shell connector (5) to horn.
- 3 Connect cable terminal (4) to horn ground.
- 4 Install suspension lockout system warning light ground electrical lead (3) in hull through driver's compartment.
- 5 Untag and connect shell connector (2) to suspension lockout system warning light.
- 6 Connect cable terminal (1) to driver's control panel ground.
- 7 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-95. MAINTENANCE OF LINE CONNECTION TO RIGHT HEADLAMP DISCONNECT BRANCHED WIRING HARNESS.

This task covers:

a. <i>Removal</i>	d. <i>Reassembly</i>
b. <i>Disassembly</i>	e. <i>Installation</i>
c. <i>Inspection/Repair</i>	

INITIAL SETUP

Materials/Parts

- Electrical cable (figure D-1, appx D)
- Gasket
- Nonmetallic rod (figure D-29, appx D) m

References

TM 9-2350-304-24P-1

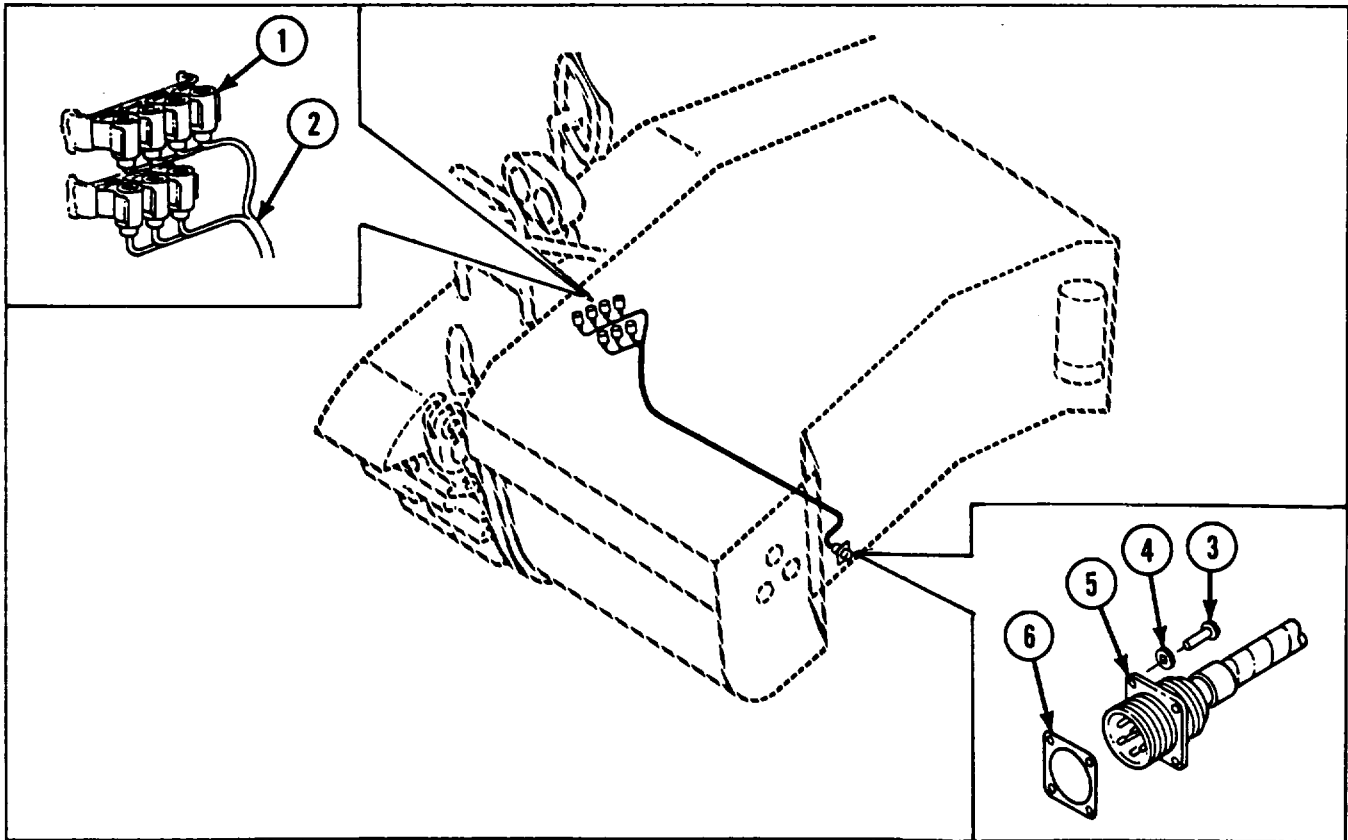
Equipment Conditions

- 2-624 Batteries disconnected
- 2-380 Powerplant removed

General Safety Instructions

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.



REMOVAL

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Tag and disconnect seven shell connectors (1) from line connection to right headlamp disconnect branched wiring harness (2).
- 3 Remove four screws (3) and four washers (4) and disconnect receptacle connector (5) from light harness receptacle.
- 4 If damaged, remove gasket (6) from disconnect receptacle connector (5).
- 5 Remove line connection to right headlamp disconnect branched wiring harness (2) from hull.

DISASSEMBLY

For disassembly of wiring harness receptacle connector, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.

- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of shell connectors, refer to general maintenance, page 2-364.
- 4 Nonmetallic rod and electrical cable are manufactured items, refer to appendix D.
- 5 Repair by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness receptacle connector, refer to general maintenance, page 2-364.

INSTALLATION

- 1 Install line connection to right headlamp disconnect branched wiring harness (2) in hull.
- 2 If removed, install new gasket (6) to receptacle connector (5).
- 3 Connect receptacle connector (5) to light harness receptacle and install four washers (4) and four screws (3).
- 4 Untag and connect seven shell connectors (1) to line connection to right headlamp disconnect branched wiring harness.
- 5 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-96. MAINTENANCE OF TRAILER RECEPTACLE ASSEMBLY TO DISCONNECT BRANCHED WIRING HARNESS.

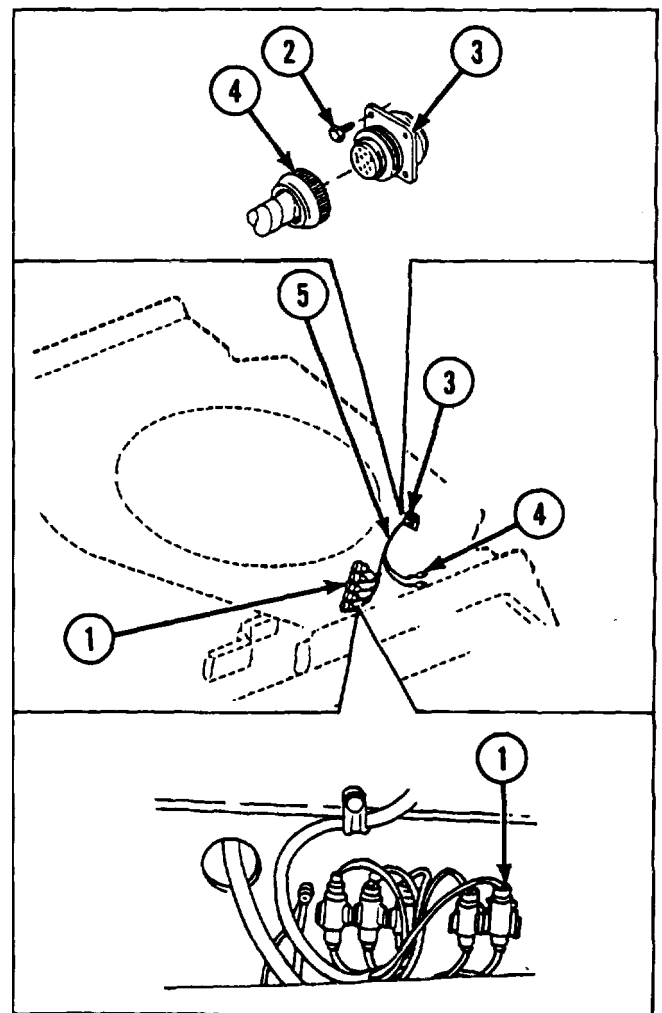
This task covers:	a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i>	d. <i>Reassembly</i> e. <i>Installation</i>
INITIAL SETUP		
<i>Materials/Parts</i> Electrical cable (figure D-1, appx D) Nonmetallic rod (figure D-23, appx D)	<i>General Safety Instructions</i> <div style="border: 1px solid black; padding: 2px; display: inline-block;">WARNING</div> Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.	
<i>References</i> TM 9-2350-304-24P-1		
<i>Equipment Conditions</i> 2-624 Batteries disconnected		

REMOVAL

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Enter rear hull well and disconnect five shell connectors (1) from bulkhead disconnect to trailer receptacle disconnect and taillights branched wiring harness.
- 3 Remove four screws (2) and disconnect receptacle connector (3) from trailer receptacle.



- 4 Disconnect two cable terminals (4) from ground.
- 5 Remove trailer receptacle assembly to disconnect branched wiring harness (5) from hull through rear hull well.

DISASSEMBLY

For disassembly of wiring harness receptacle connector, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
 - 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
 - 3 For repair of shell connectors and cable terminals, refer to general maintenance, page 2-364.
 - 4 Electrical cable and nonmetallic rod are manufactured items, refer to appendix D.
 - 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness receptacle connector, refer to general maintenance, page 2-364.

INSTALLATION

- 1 Enter rear hull well and install trailer receptacle assembly to disconnect branched wiring harness (5) in hull.
- 2 Connect two cable terminals (4) to ground.
- 3 Connect receptacle connector (3) to trailer receptacle and install four screws (2).
- 4 Connect five shell connectors (1) to bulkhead disconnect to trailer receptacle disconnect and taillights branched wiring harness.
- 5 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-97. MAINTENANCE OF BATTERY TO CIRCUIT BREAKER ELECTRICAL LEAD.

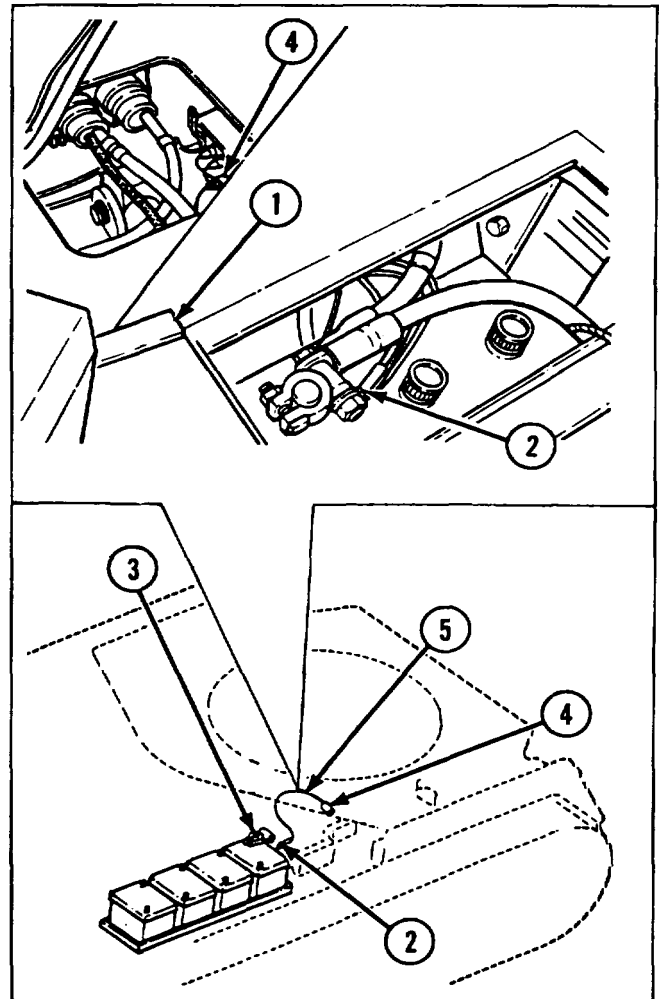
This task covers:		a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP				
Materials/Parts		General Safety Instructions		
Electrical cable (figure D-1, appx D) Insulation sleeving (figure D-19, appx D)		<div style="border: 1px solid black; padding: 2px; display: inline-block;">WARNING</div> Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.		
References				
TM 9-2350-304-24P-1				
Equipment Conditions				
2-624 Batteries disconnected 2-875 Hull access cover removed				

REMOVAL

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Open battery access cover (1).
- 3 Disconnect cable terminal (2) from battery terminal (3).
- 4 Disconnect shell connector (4) from circuit breaker.
- 5 Remove battery to circuit breaker electrical lead (5) from hull.

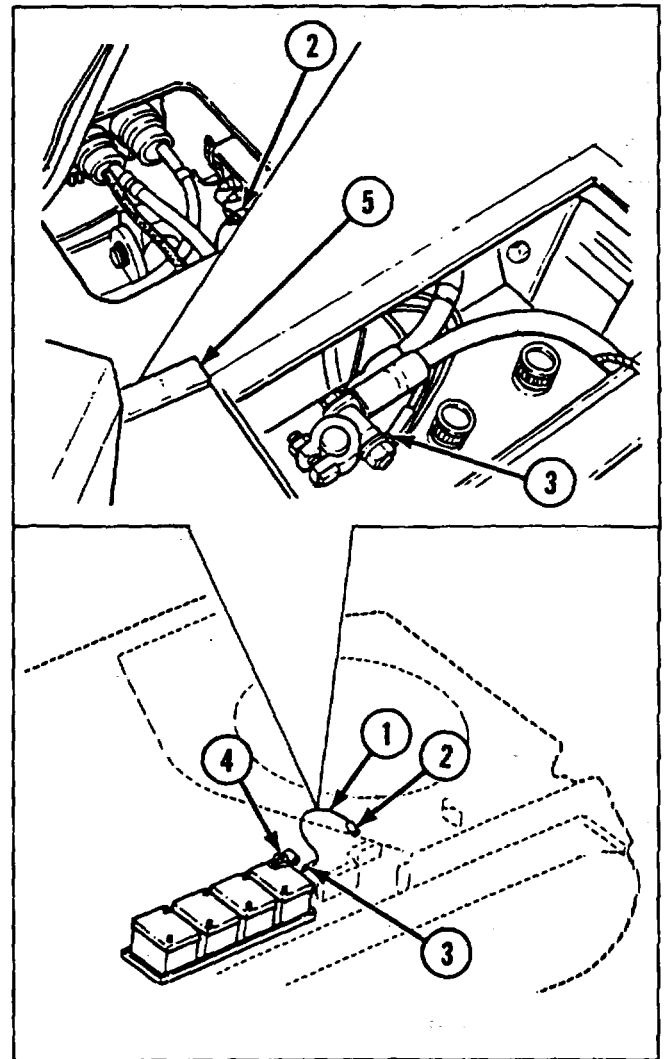


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of cable terminal and shell connector, refer to general maintenance, page 2-364.
- 4 Electrical cable and insulation sleeving are manufactured items, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

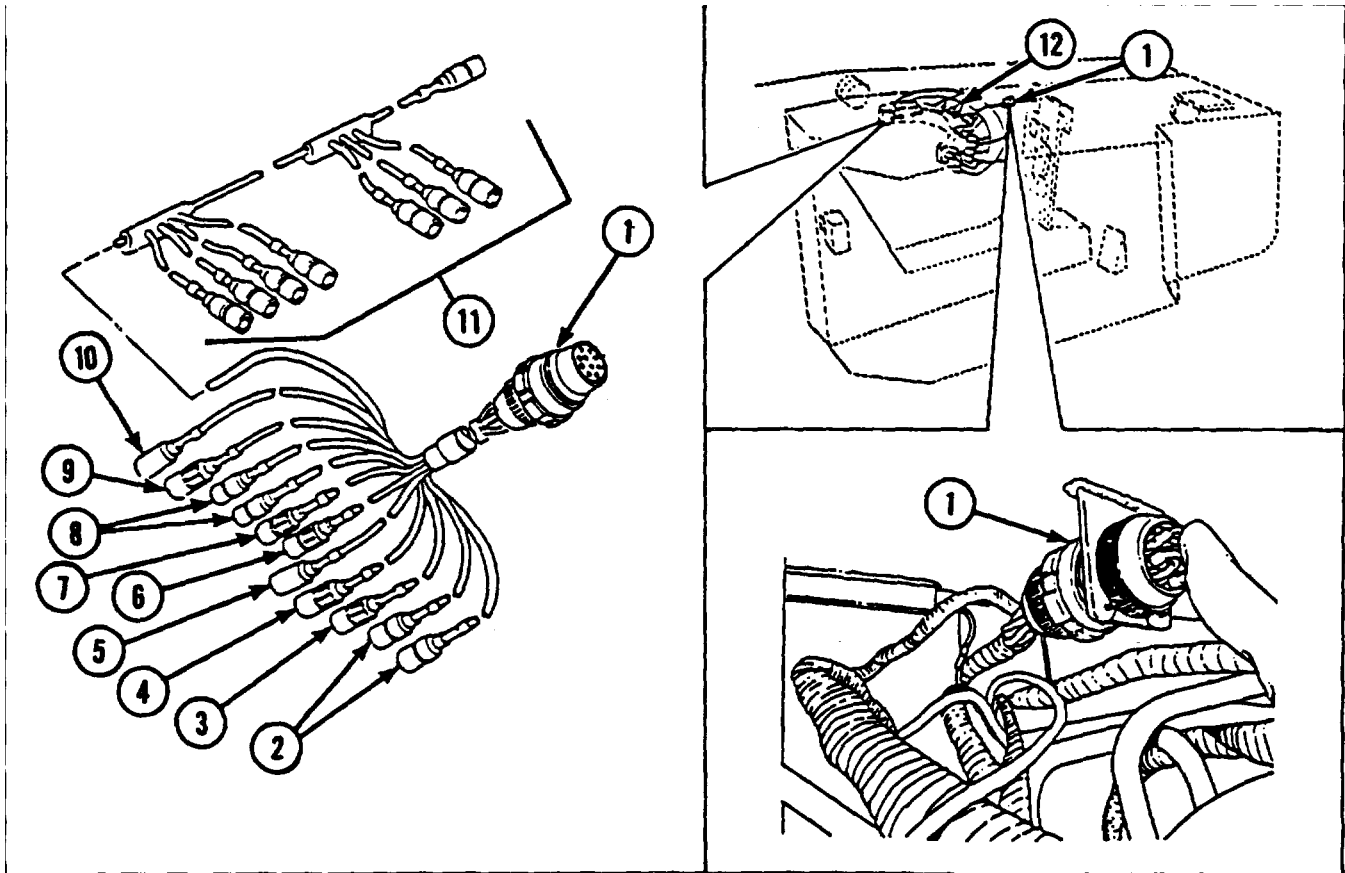
- 1 Install battery to circuit breaker electrical lead (1) to hull.
- 2 Connect shell connector (2) to circuit breaker.
- 3 Connect cable terminal (3) to battery terminal (4).
- 4 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.
- 5 Close battery access cover (5).



2-98. MAINTENANCE OF GAGES AND LIGHTS DISCONNECT TO INSTRUMENT PANEL BRANCHED WIRING HARNESS.

This task covers:	a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i>	d. <i>Reassembly</i> e. <i>Installation</i>
<p>INITIAL SETUP</p> <p><i>Materials/Parts</i> Electrical cable (figure D-1, appx D)</p> <p><i>References</i> TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i> 2-624 Batteries disconnected 2-911 Driver's seat removed 2-560 Instrument panel dropped from hull</p>		
<p style="text-align: center;"><i>General Safety Instructions</i></p> <div style="border: 1px solid black; padding: 2px; text-align: center; margin: 5px auto; width: fit-content;">WARNING</div> <p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p>		

REMOVAL



WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Tag and disconnect plug connector (1) from engine sending units connector.
- 3 Disconnect 19 shell connectors from instrument panel at the following points:
 - a. Tag and disconnect two shell connectors (2) from master switch indicator light.
 - b. Tag and disconnect shell connector (3) from engine oil pressure gage.
 - c. Tag and disconnect shell connector (4) from engine water temperature gage.
 - d. Tag and disconnect shell connector (5) from generator charge indicator light.
 - e. Tag and disconnect shell connector (6) from transmission oil pressure gage.
 - f. Tag and disconnect shell connector (7) from transmission oil temperature gage.
 - g. Tag and disconnect two shell connectors (8) from high beam indicator light.
 - h. Tag and disconnect shell connector (9) from fuel level gage.
 - i. Tag and disconnect shell connector (10) from engine and transmission warning light.
 - j. Tag and disconnect eight shell connectors (11) from 24-volt feed.
- 4 Remove gages and lights disconnect to instrument panel branched wiring harness (12) from hull through driver's compartment.

DISASSEMBLY

For disassembly of wiring harness plug connector, refer to general maintenance, page 2-364.

2-98. MAINTENANCE OF GAGES AND LIGHTS DISCONNECT TO INSTRUMENT PANEL BRANCHED WIRING HARNESS (CONT).

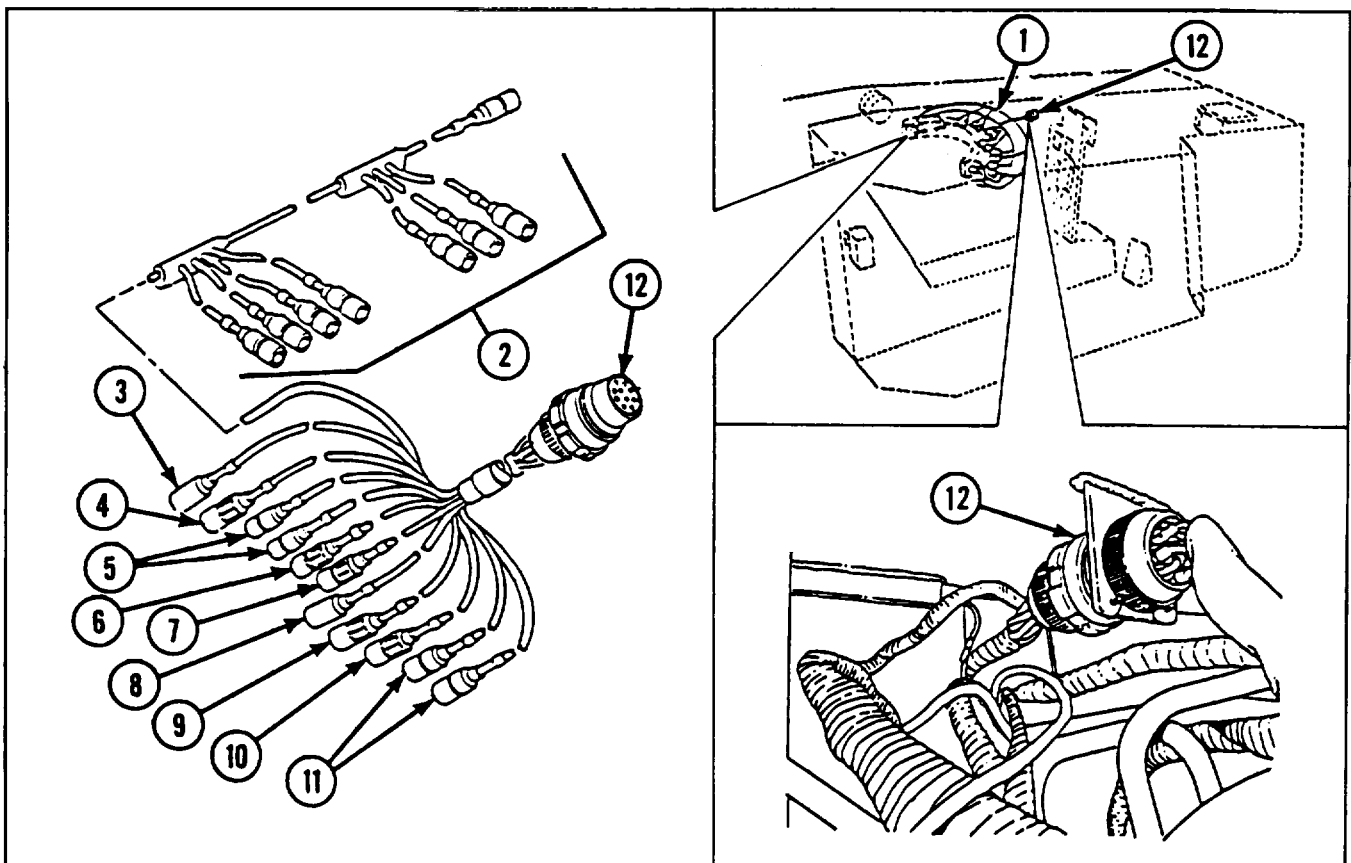
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical cable is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness plug connector, refer to general maintenance, page 2-364.

INSTALLATION



- 1 Install gages and lights disconnect to instrument panel branched wiring harness (1) to hull through driver's compartment.
- 2 Connect 19 shell connectors to instrument panel at the following points:
 - a. Untag and connect eight shell connectors (2) to 24-volt feed.
 - b. Untag and connect shell connector (3) to engine and transmission warning light.
 - c. Untag and connect shell connector (4) to fuel level gage.
 - d. Untag and connect two shell connectors (5) to high beam indicator light.
 - e. Untag and connect shell connector (6) to transmission oil temperature gage.
 - f. Untag and connect shell connector (7) to transmission oil pressure gage.
 - g. Untag and connect shell disconnect (8) to generator charge indicator light.
 - h. Untag and connect shell connector (9) to engine water temperature gage.
 - i. Untag and connect shell connector (10) to engine oil pressure gage.
 - J. Untag and connect two shell connectors (11) to master switch indicator light.
- 3 Untag and connect plug connector (12) to engine sending units connector.
- 4 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-99. MAINTENANCE OF BULKHEAD DISCONNECT TO GENERATOR ARMATURE ELECTRICAL LEAD.

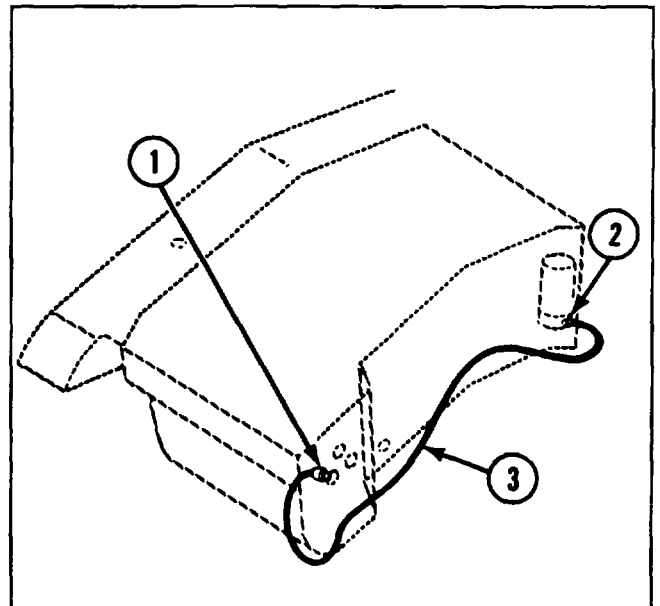
This task covers:	a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i>	d. <i>Reassembly</i> e. <i>Installation</i>
INITIAL SETUP		
<i>Materials/Parts</i>	<i>General Safety Instructions</i>	
Electrical wire (figure D-1, appx D) Insulation sleeving (figure D-20, appx D)	<div style="border: 2px solid black; padding: 2px; display: inline-block;">WARNING</div>	
<i>References</i>	Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.	
TM 9-2350-304-24P-1		
<i>Equipment Conditions</i>		
2-624 Batteries disconnected 2-380 Powerplant removed 2-740 Auxiliary drive removed		

REMOVAL

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Tag and disconnect plug connector (1) from voltage regulator.
- 3 Tag and disconnect terminal (2) from generator armature, terminal B.
- 4 Remove bulkhead disconnect to generator armature electrical lead (3) from hull.



DISASSEMBLY

For disassembly of wiring harness plug connector, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

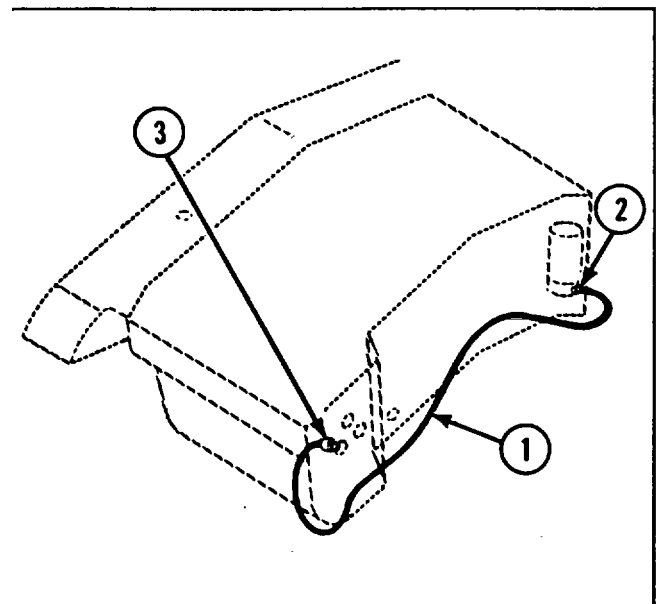
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of cable terminal, refer to general maintenance, page 2-364.
- 4 Electrical wire and insulation sleeving are manufactured items, refer to appendix D.
- 5 Repair by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness plug connector, refer to general maintenance, page 2-364.

INSTALLATION

- 1 Install bulkhead disconnect to generator armature electrical lead (1) to hull.
- 2 Untag and connect terminal (2) to generator armature, terminal B.
- 3 Connect plug connector (3) to voltage regulator.
- 4 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.



2-100. MAINTENANCE OF BULKHEAD DISCONNECT TO STARTER ELECTRICAL LEAD.

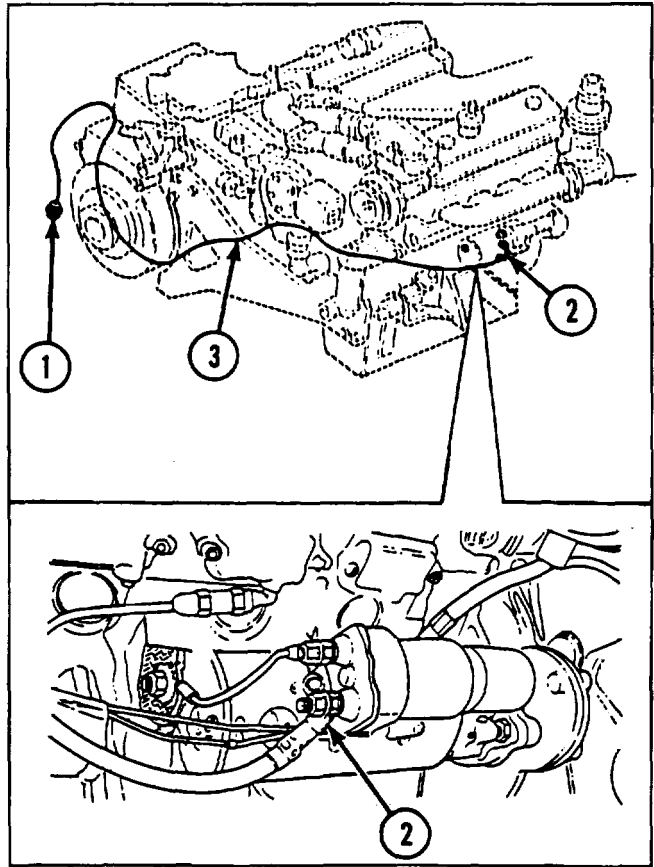
This task covers:	a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i>	d. <i>Reassembly</i> e. <i>Installation</i>
INITIAL SETUP		
<i>Materials/Parts</i> Electrical wire (figure D-1, appx D) Insulation sleeving (figure D-19, appx D)	<i>General Safety Instructions</i>	
<i>References</i> TM 9-2350-304-24P-1	<div style="border: 2px solid black; padding: 2px; display: inline-block;">WARNING</div>	
<i>Equipment Conditions</i> 2-624 Batteries disconnected 2-380 Powerplant removed	Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.	

REMOVAL

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the engine with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Tag and disconnect bulkhead shell assembly (1) from bulkhead disconnect.
- 3 Tag and disconnect terminal (2) from starter.
- 4 Remove bulkhead disconnect to starter electrical lead (3) from engine.



DISASSEMBLY

For disassembly of wiring harness plug connector, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

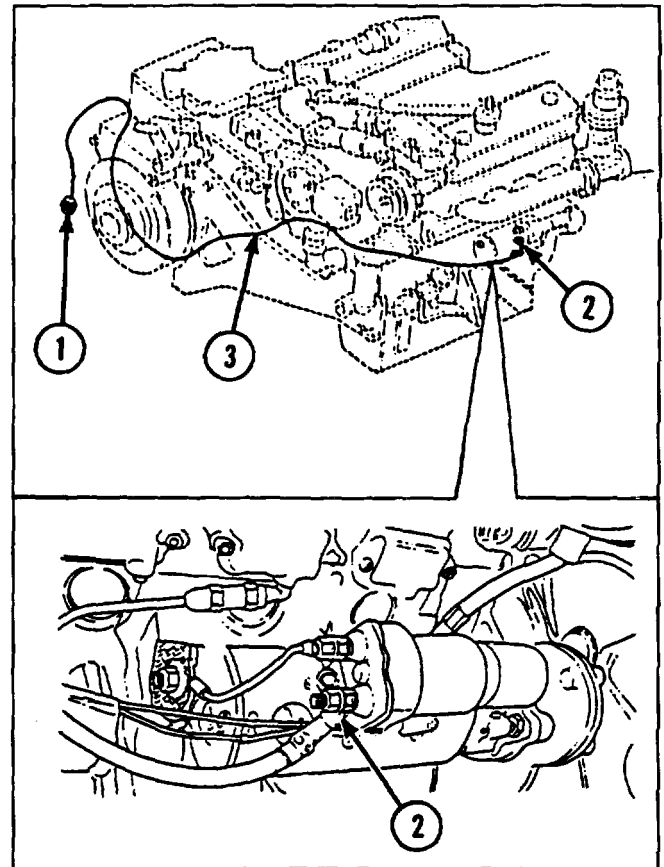
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of cable terminal, refer to general maintenance, page 2-364.
- 4 Electrical wire and insulation sleeving are manufactured items, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness plug connector, refer to general maintenance, page 2-364.

INSTALLATION

- 1 Install bulkhead disconnect to starter electrical lead (3) on engine.
- 2 Connect terminal (2) to starter.
- 3 Connect bulkhead shell assembly (1) to bulkhead disconnect.
- 4 Wiring harnesses and leads are secured to the engine with loop clamps, straps, ground screws, etc. During installation make sure the wiring harness or lead is secure and all hardware is tight.



2-101. MAINTENANCE OF BULKHEAD TO BULKHEAD GENERATOR CIRCUIT ELECTRICAL LEAD.

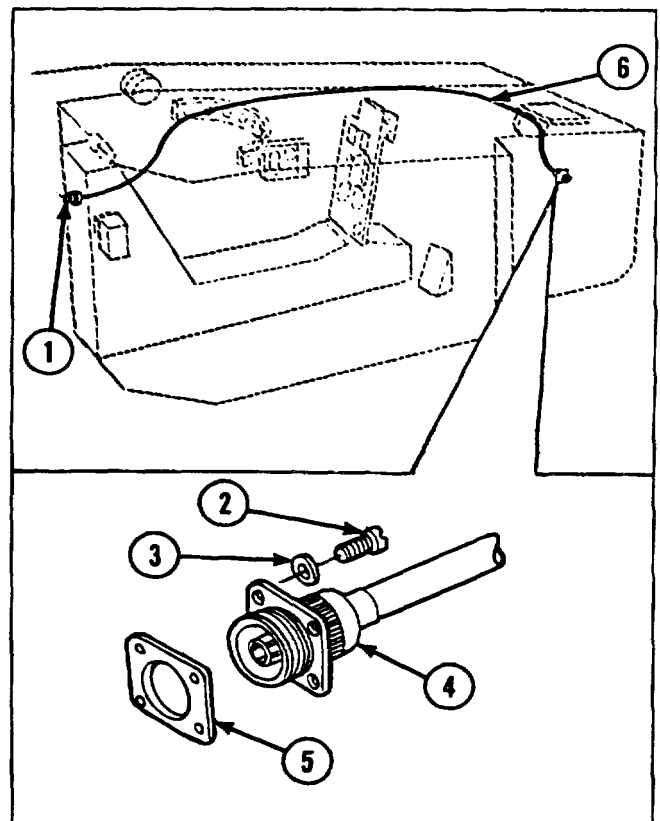
<p>This task covers:</p>	<p>a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i></p>	<p>d. <i>Reassembly</i> e. <i>Installation</i></p>
<p>INITIAL SETUP</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><i>Materials/Parts</i> Electrical wire (figure D-1, appx D) Gasket</p> <p><i>References</i> TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i></p> <ul style="list-style-type: none"> 2-624 Batteries disconnected 2-911 Driver's seat removed 2-879 Driver's compartment forward cowl removed 2-879 Driver's compartment aft cowl removed </div> <div style="width: 45%;"> <p><i>General Safety Instructions</i></p> <div style="border: 2px solid black; padding: 5px; text-align: center; margin-bottom: 10px;">WARNING</div> <p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p> </div> </div>		

REMOVAL

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Tag and disconnect plug connector (1) from voltage regulator.
- 3 Remove four screws (2) and four washers (3), and tag and disconnect receptacle connector (4) from front bulkhead receptacle.



- 4 If damaged, remove gasket (5) from receptacle connector (4).
- 5 Remove bulkhead to bulkhead generator circuit electrical lead (6) from hull through driver's compartment.

DISASSEMBLY

For disassembly of wiring harness receptacle connector and plug connector, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

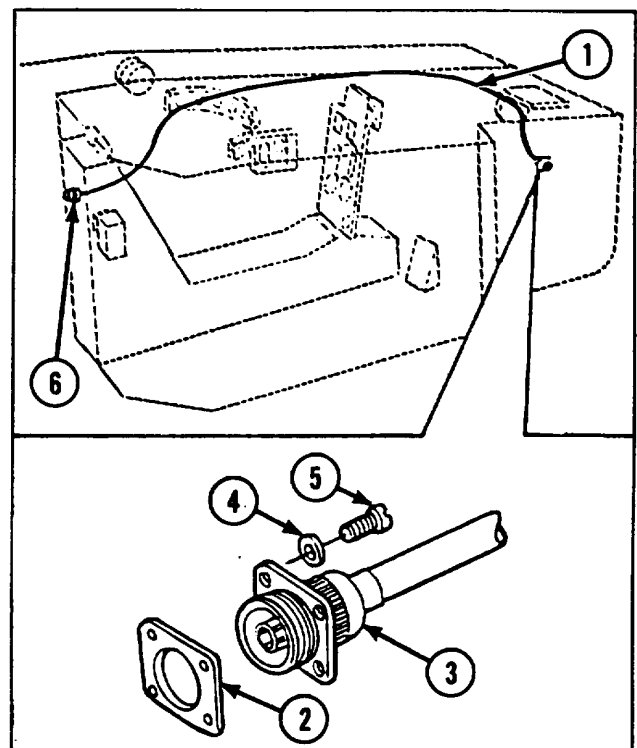
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 Electrical wire is a manufactured item, refer to appendix D.
- 4 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness receptacle connector and plug connector, refer to general maintenance, page 2-364.

INSTALLATION

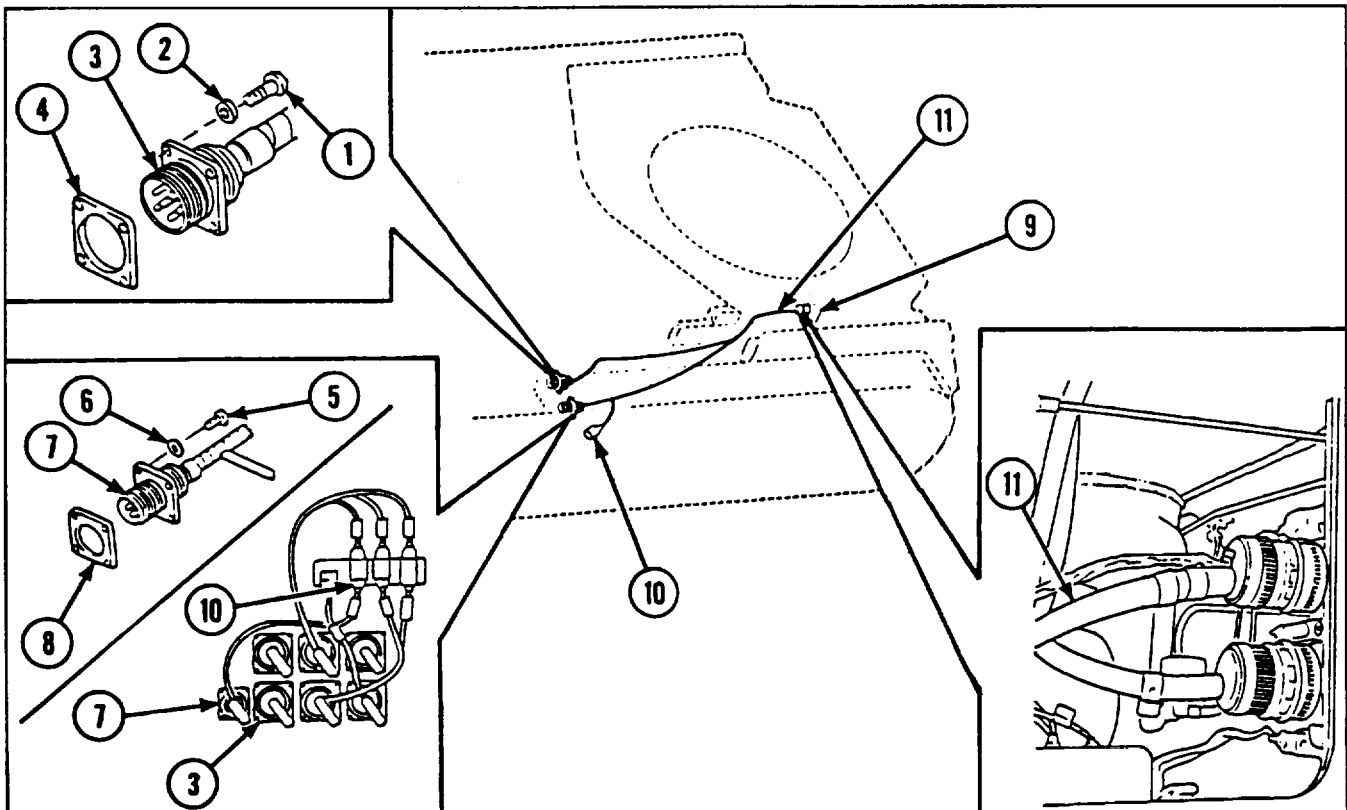
- 1 Install bulkhead to bulkhead generator circuit electrical lead (1) in hull through driver's compartment.
- 2 If removed, install new gasket (2) on receptacle connector (3).
- 3 Untag and connect receptacle connector (3) to front bulkhead receptacle, and install four washers (4) and four screws (5).
- 4 Untag and connect plug connector (6) to voltage regulator.
- 5 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.



2-102. MAINTENANCE OF BULKHEAD DISCONNECT TO VOLTAGE REGULATOR ASSEMBLY WIRING HARNESS.

<p>This task covers:</p>	<p>a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i></p>	<p>d. <i>Reassembly</i> e. <i>Installation</i></p>
<p>INITIAL SETUP</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><i>Materials/Parts</i></p> <ul style="list-style-type: none"> Electrical wire (figure D-1, appx D) Electrical wire (figure D-1, appx D) Gasket (2) Nonmetallic rod (figure D-23, appx D) Nonmetallic rod (figure D-24, appx D) <p><i>References</i></p> <p>TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i></p> <ul style="list-style-type: none"> 2-624 Batteries removed 2-875 Hull access cover removed </div> <div style="width: 45%;"> <p><i>General Safety Instructions</i></p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 10px;">WARNING</div> <p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p> </div> </div>		

REMOVAL



WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Remove four screws (1) and four washers (2), and tag and disconnect bulkhead receptacle connector (3) from bulkhead disconnect to generator armature.
- 3 If damaged, remove gasket (4) from bulkhead receptacle connector (3).
- 4 Remove four screws (5) and four washers (6), and tag and disconnect bulkhead receptacle connector (7) from bulkhead disconnect to generator field.
- 5 If damaged, remove gasket (8) from bulkhead receptacle connector (7).
- 6 Tag and disconnect plug connector (9) from voltage regulator.
- 7 Tag and disconnect shell connector (10) from generator charge indicator light line connection.
- 8 Remove bulkhead disconnect to voltage regulator assembly wiring harness (11) from hull through battery compartment.

DISASSEMBLY

For disassembly of wiring harness receptacle connectors and plug connectors, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

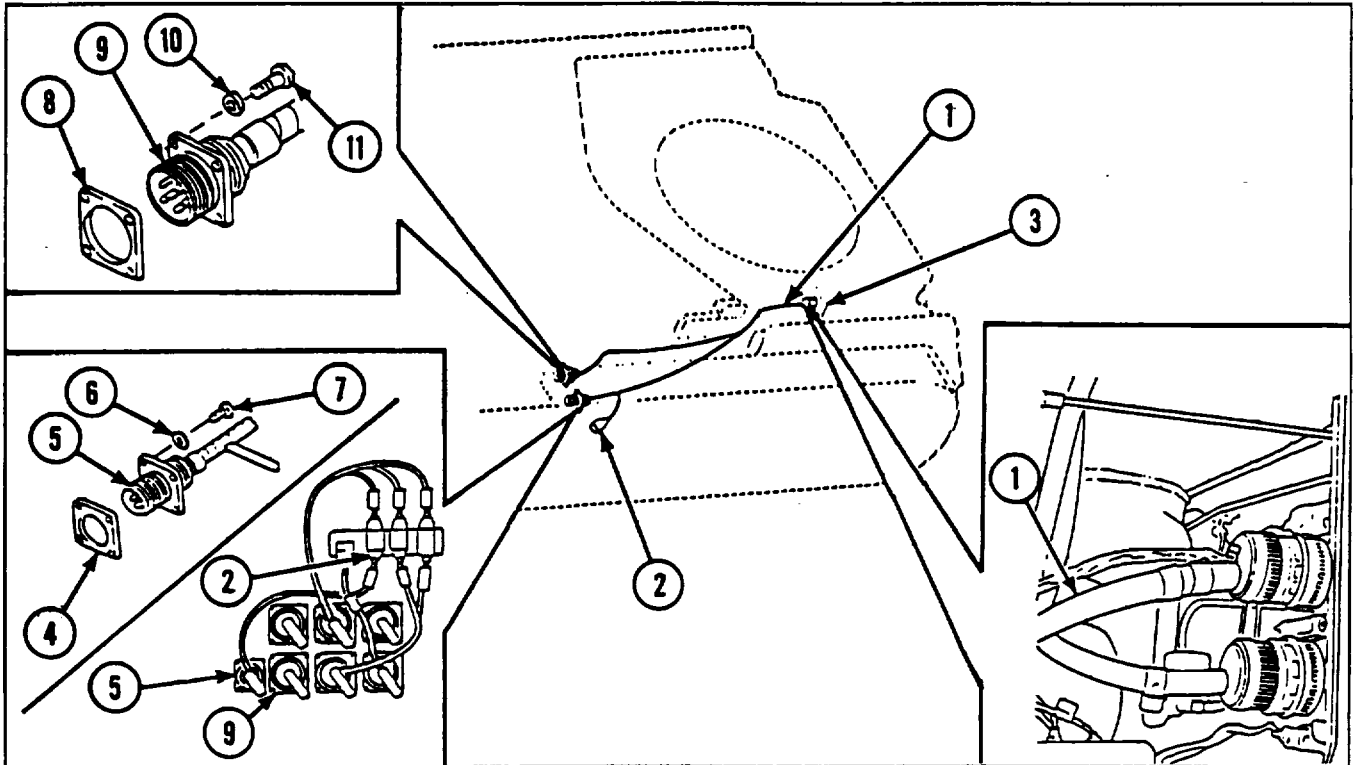
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of shell connector, refer to general maintenance, page 2-364.
- 4 Electrical wires and nonmetallic rods are manufactured items, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness receptacle connectors and plug connector, refer to general maintenance, page 2-364.

2-102. MAINTENANCE OF BULKHEAD DISCONNECT TO VOLTAGE REGULATOR ASSEMBLY WIRING HARNESS (CONT).

INSTALLATION



- 1 Install bulkhead disconnect to voltage regulator assembly wiring harness (1) in hull through battery compartment.
- 2 Untag and connect shell connector (2) to generator charge indicator light line connection.
- 3 Untag and connect plug connector (3) to voltage regulator.
- 4 If removed, install new gasket (4) on bulkhead receptacle connector (5).
- 5 Untag and connect bulkhead receptacle connector (5) to bulkhead disconnect to generator field, and install four washers (6) and four screws (7).
- 6 If removed, install new gasket (8) on bulkhead receptacle connector (9).
- 7 Untag and connect bulkhead receptacle connector (9) to bulkhead disconnect to generator armature, and install four washers (10) and four screws (11).
- 8 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-103. MAINTENANCE OF CIRCUIT BREAKER TO BULKHEAD DISCONNECT BRANCHED WIRING HARNESS.

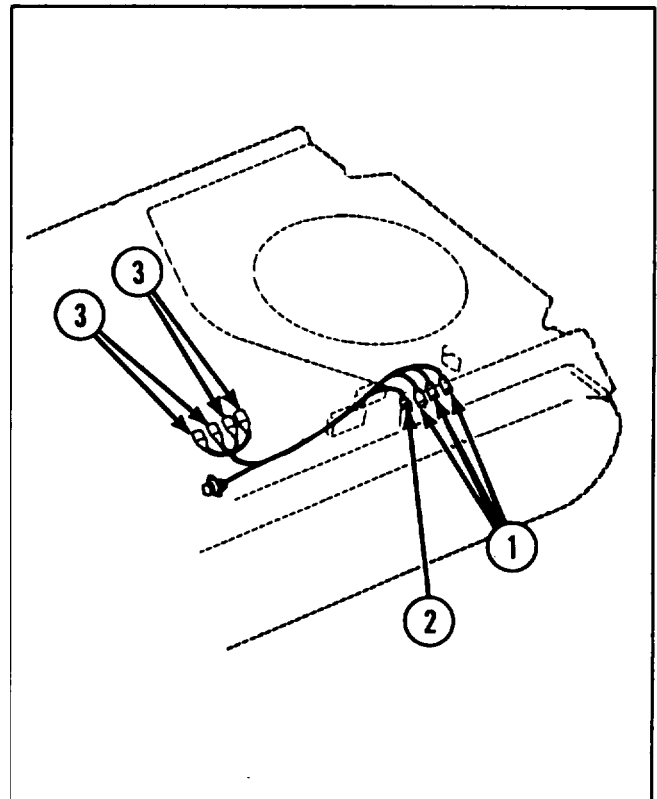
<p>This task covers:</p>	<p>a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i></p>	<p>d. <i>Reassembly</i> e. <i>Installation</i></p>
<p>INITIAL SETUP</p>		
<p><i>Materials/Parts</i> Electrical wire (figure D-1, appx D) Gasket</p> <p><i>References</i> TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i> 2-624 Batteries removed 2-875 Hull access cover removed</p>	<p><i>General Safety Instructions</i></p> <div style="border: 2px solid black; padding: 5px; text-align: center; margin-bottom: 10px;">WARNING</div> <p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p>	

REMOVAL

WARNING

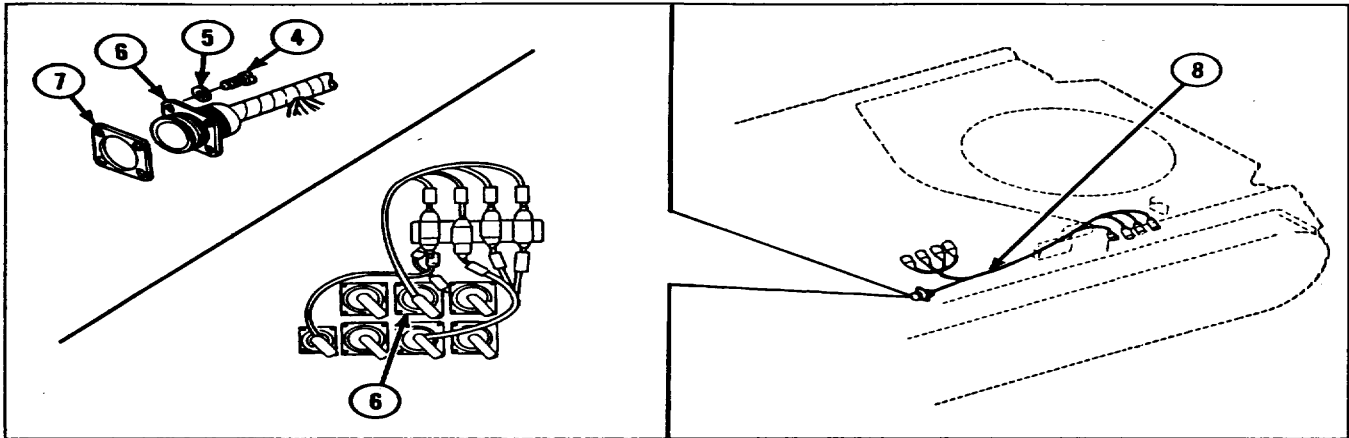
Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Tag and disconnect three shell connectors (1) from circuit breakers.
- 3 Tag and disconnect shell connector (2) from rectifier assembly.
- 4 Tag and disconnect four shell connectors (3) from line connections.



2-103. MAINTENANCE OF CIRCUIT BREAKER TO BULKHEAD DISCONNECT BRANCHED WIRING HARNESS (CONT).

REMOVAL (CONT)



5. Remove four screw (4) and four washers (5), and disconnect bulkhead receptacle connector (6) from bulkhead disconnect to instrument panel.
6. If damaged, remove gasket (7) from bulkhead receptacle connector (6).
7. Remove circuit breaker to bulkhead disconnect branched wiring harness (8) from hull through battery compartment.

DISASSEMBLY

For disassembly of wiring harness receptacle connector, refer to general maintenance, page 2-364.

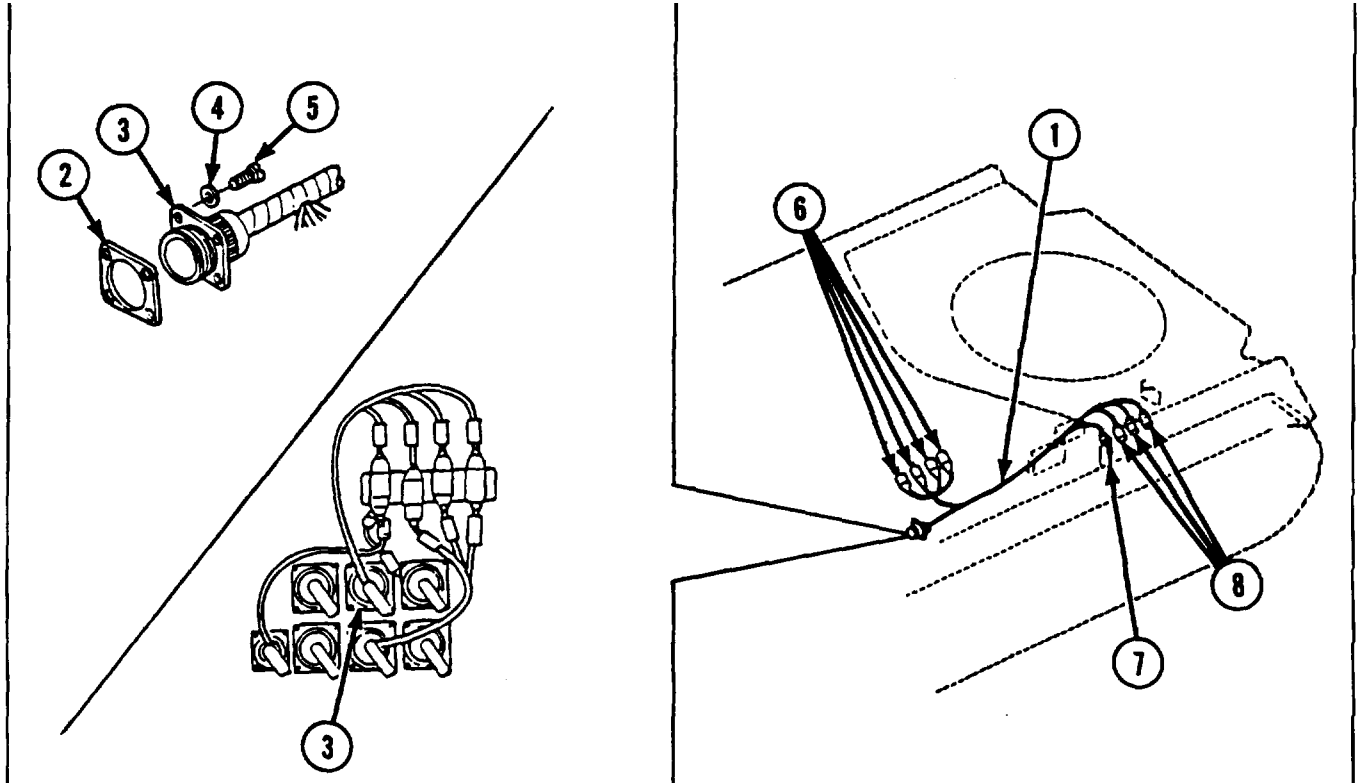
INSPECTION/REPAIR

1. Inspect for broken, damaged, or missing parts.
2. If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
3. For repair of shell connectors, refer to general maintenance, page 2-364.
4. Electrical wire is a manufactured item, refer to appendix D.
5. Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness receptacle connector, refer to general maintenance, page 2-364.

INSTALLATION

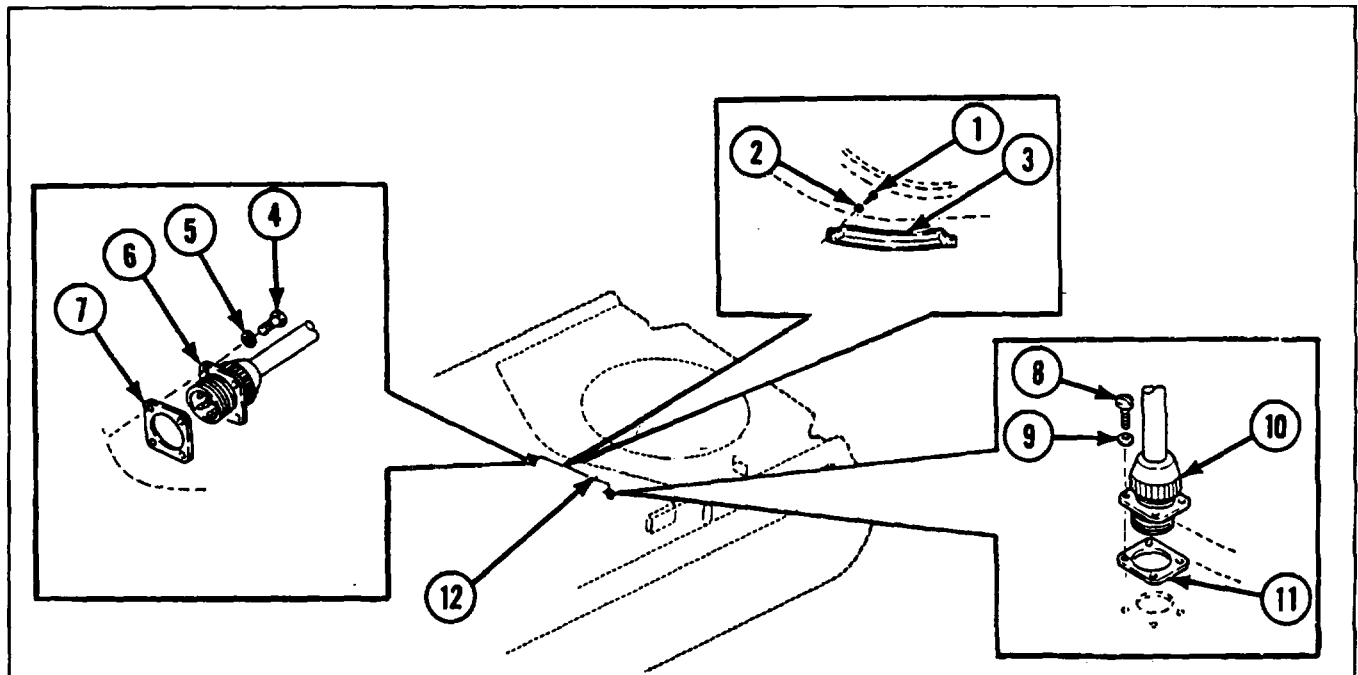


- 1 Install circuit breaker to bulkhead disconnect branched wiring harness (1) in hull through battery compartment.
- 2 If removed, install new gasket (2) on bulkhead receptacle connector (3).
- 3 Connect bulkhead receptacle connector (3) to bulkhead disconnect to instrument panel, and install four washers (4) and four screws (5).
- 4 Untag and connect four shell connectors (6) to line connections.
- 5 Untag and connect shell connector (7) to rectifier assembly.
- 6 Untag and connect three shell connectors (8) to circuit breakers.
- 7 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-104. MAINTENANCE OF FLOOR DISCONNECT TO BULKHEAD DISCONNECT WIRING HARNESS.

<p>This task covers:</p>	<p>a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i></p>	<p>d. <i>Reassembly</i> e. <i>Installation</i></p>
<p>INITIAL SETUP</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><i>Materials/Parts</i></p> <ul style="list-style-type: none"> Electrical wire (figure D-1, appx D) Gasket (2) Lockwasher (4) <p><i>References</i></p> <p>TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i></p> <p>2-624 Batteries disconnected</p> </div> <div style="width: 45%;"> <p><i>General Safety Instructions</i></p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 10px;">WARNING</div> <p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p> </div> </div>		

REMOVAL



WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Remove four capscrews (1), four lockwashers (2), and access cover (3) from hull.
- 3 Remove four screws (4) and four washers (5), and tag and disconnect receptacle connector (6) from bulkhead receptacle.
- 4 If damaged, remove gasket (7) from receptacle connector (6).
- 5 Remove four screws (8) and four washers (9), and tag and disconnect receptacle connector (10) from floor disconnect receptacle.
- 6 If damaged, remove gasket (11) from receptacle connector (10).
- 7 Remove floor disconnect to bulkhead disconnect wiring harness (12) from hull.

DISASSEMBLY

For disassembly of wiring harness receptacle connectors, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

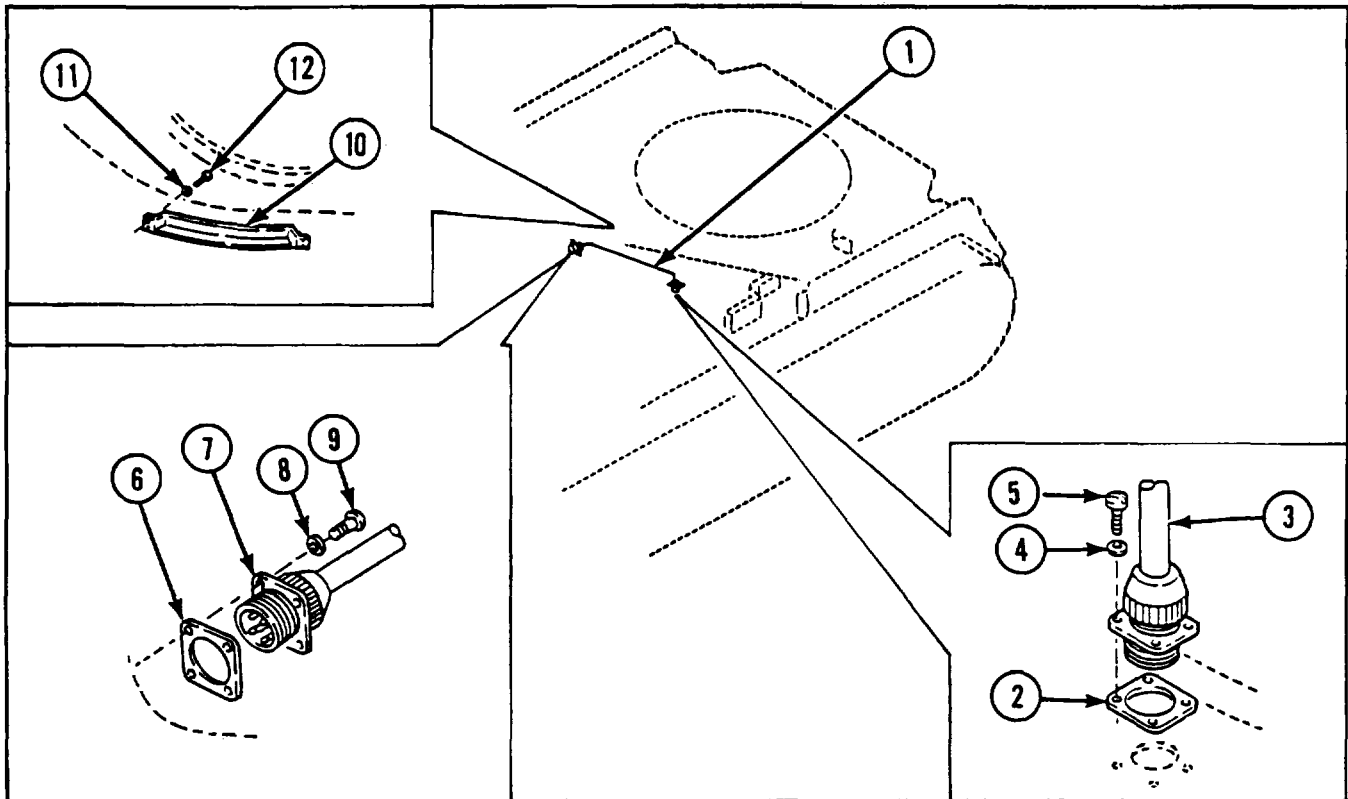
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 Electrical wire is a manufactured item, refer to appendix D.
- 4 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness receptacle connectors, refer to general maintenance, page 2-364.

2-104. MAINTENANCE OF FLOOR DISCONNECT TO BULKHEAD DISCONNECT WIRING HARNESS (CONT).

INSTALLATION



- 1 Install floor disconnect to bulkhead disconnect wiring harness (1) in hull.
- 2 If removed, install new gasket (2) on receptacle connector (3).
- 3 Untag and connect receptacle connector (3) to floor disconnect receptacle, and install four washers (4) and four screws (5).
- 4 If removed, install new gasket (6) on receptacle connector (7).
- 5 Untag and connect receptacle connector (7) to bulkhead receptacle, and install four washers (8)
- 6 Install access cover (10), four new lockwashers (11), and four cap screws (12) on hull.
- 7 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-105. MAINTENANCE OF BULKHEAD DISCONNECT TO MAGNETIC CLUTCH BRANCHED WIRING HARNESS.

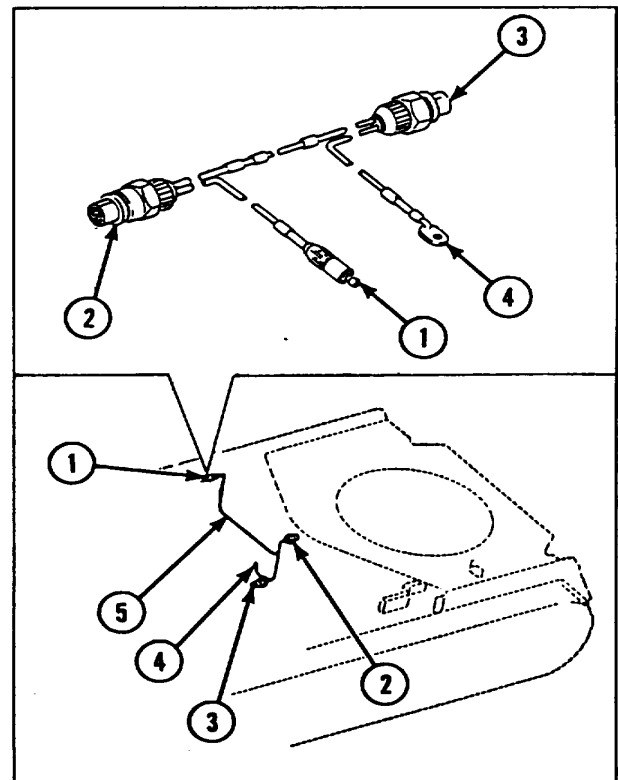
This task covers:	<p>a. Removal</p> <p>b. Disassembly</p> <p>c. Inspection/Repair</p>	<p>d. Reassembly</p> <p>e. Installation</p>
INITIAL SETUP:		
General Safety Instructions		
WARNING		
<p>Materials/Parts Electrical wire (figure D-1, appx D)</p> <p>References TM 9-2350-304-24P-1</p> <p>Equipment Conditions 2-624 Batteries disconnected 2-879 Hull fanwell deck grille removed</p>	<p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p>	

REMOVAL

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Disconnect shell connector (1) from fuel level sending unit.
- 3 Disconnect plug connector (2) from bulkhead disconnect.
- 4 Disconnect magnetic clutch connector from plug connector (3).
- 5 Disconnect cable terminal (4) from ground.



2-105. MAINTENANCE OF BULKHEAD DISCONNECT TO MAGNETIC CLUTCH BRANCHED WIRING HARNESS (CONT).

DISASSEMBLY

For disassembly of wiring harness plug connectors, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

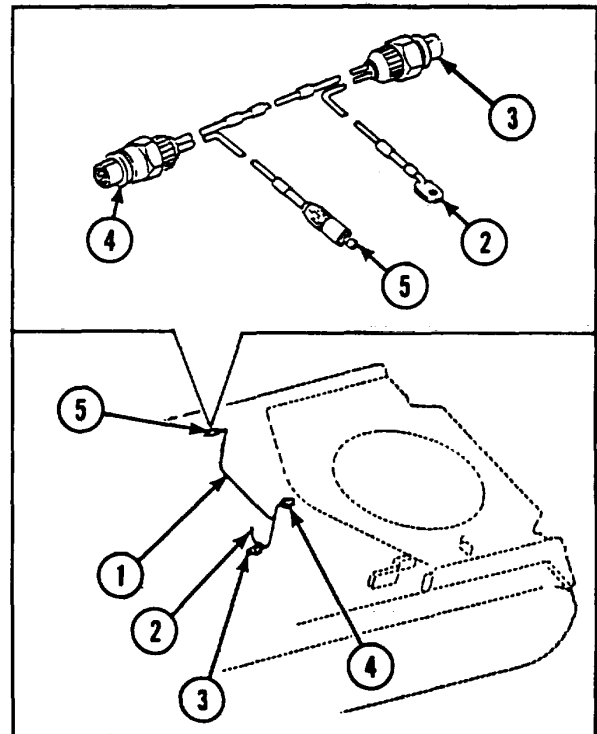
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of shell connector and cable terminal, refer to general maintenance, page 2-364.
- 4 Electrical wire is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1). For reassembly of wiring harness plug conned

REASSEMBLY

For reassembly of wiring harness plug connectors, refer to general maintenance, page 2-364.

INSTALLATION

- 1 Install bulkhead disconnect to magnetic clutch branched wiring harness (1) in hull well.
- 2 Connect cable terminal (2) to ground.
- 3 Connect magnetic clutch connector to plug connector (3).
- 4 Connect plug connector (4) to bulkhead disconnect.
- 5 Connect shell connector (5) to fuel level sending unit.
- 6 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.



2-106. MAINTENANCE OF HULL DISCONNECT, INTERPHONE AMPLIFIER TO BULK-HEAD DISCONNECT AND DRIVER'S CONTROL BOX BRANCHED WIRING HARNESS.

This task covers:	a. Removal	d. Reassembly
	b. Disassembly	e. Installation
	c. Inspection/Repair	

INITIAL SETUP:

Materials/Parts

Electrical wire (figure D-1, appx D)
 Electrical wire (figure D-, appx D)NG
 Electrical wire (figure D-2, appx D)
 Gasket (2)

References

TM 9-2350-304-24P-1

Equipment Conditions

2-624 Batteries removed
 2-875 Hull access cover removed

General Safety Instructions

WARNING

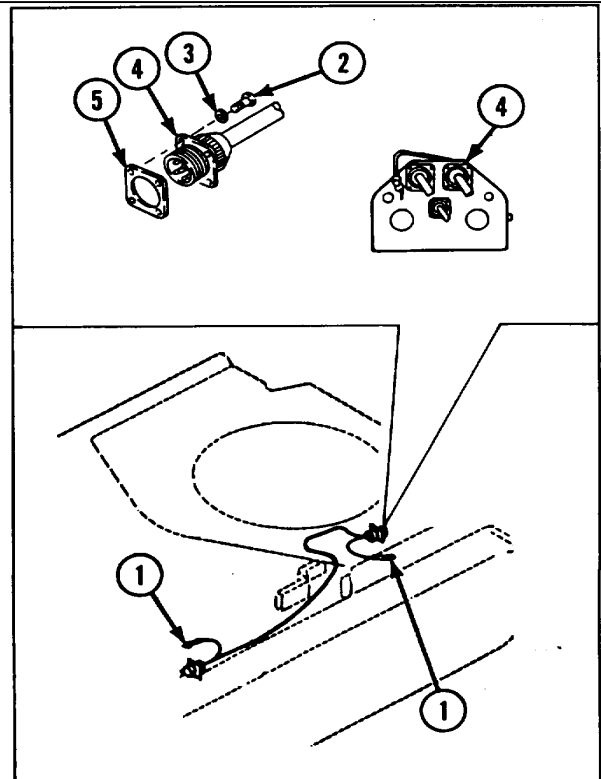
Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

REMOVAL

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being remove
- 2 Disconnect two cable terminals (1).
- 3 Remove four screws (2) and four washers (3), and tag and disconnect hull receptacle connector (4) from hull disconnect to interphone amplifier.
- 4 If damaged, remove gasket (5) from hull receptacle connector (4).



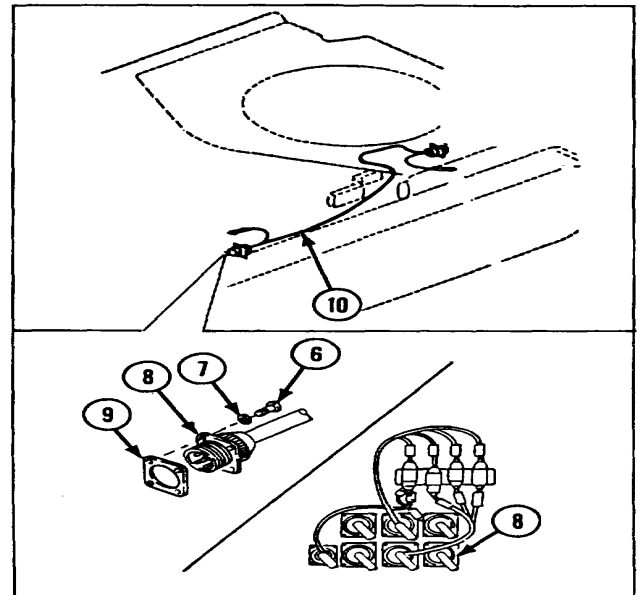
2-106. MAINTENANCE OF HULL DISCONNECT, INTERPHONE AMPLIFIER TO BULKHEAD DISCONNECT AND DRIVER'S CONTROL BOX BRANCHED WIRING HARNESS (CONT).

REMOVAL (CONT)

- 5 Remove four screws (6) and four washers (7), and disconnect bulkhead receptacle connector (8) from bulkhead disconnect to driver's control box.
- 6 If damaged, remove gasket (9) from bulkhead receptacle connector (8).
- 7 Remove hull disconnect, interphone amplifier to bulkhead disconnect and driver's control box branched wiring harness (10) from hull.

DISASSEMBLY

For disassembly of wiring harness receptacle connectors, refer to general maintenance, page 2-364.



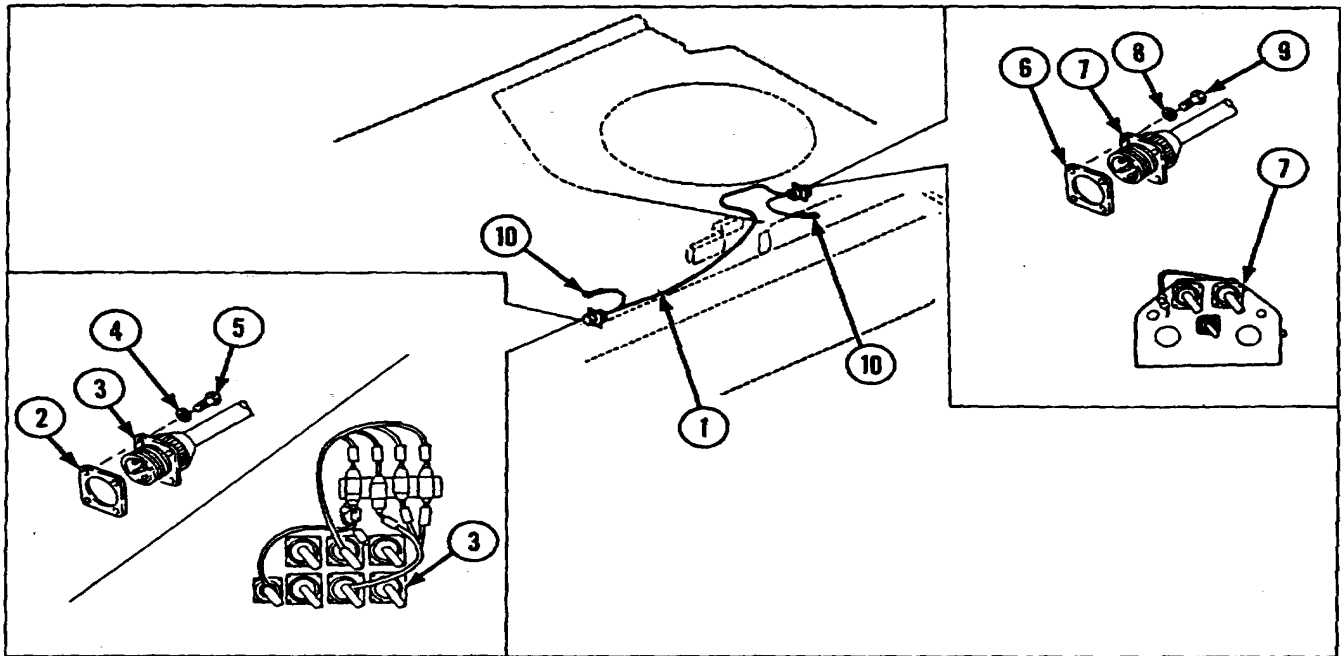
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing p
- 2 If damaged or missing, replace marker band. Etch or stamp lead number on new band.
- 3 For repair of cable terminals, refer to general maintenance, page 2-364.
- 4 Electrical wires are manufactured items, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness receptacle connectors, refer to general maintenance page 2-364.

INSTALLATION

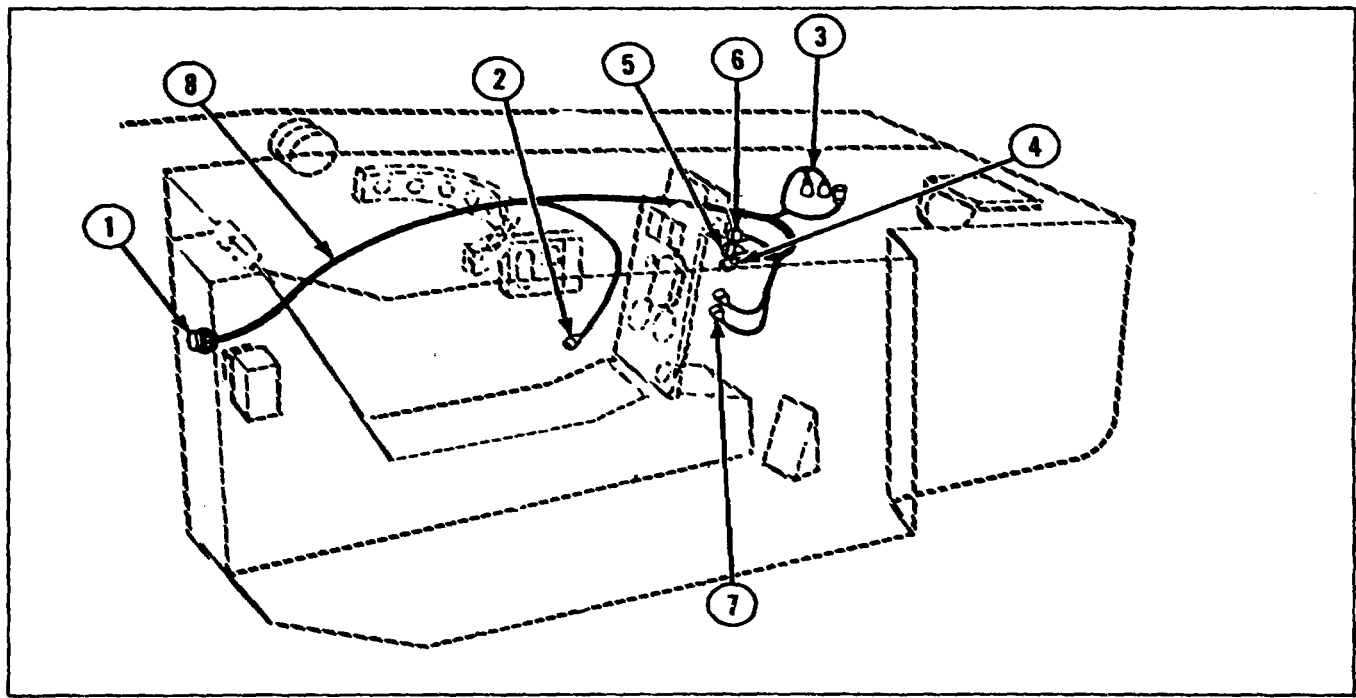


- 1 Install hull disconnect, interphone amplifier to bulkhead disconnect and driver's control box branched wiring harness (1) in hull.
- 2 If removed, install new gasket (2) on bulkhead receptacle connector (3).
- 3 Connect bulkhead receptacle connector (3) to bulkhead disconnect to driver's control box, and install four washers (4) and four screws (5).
- 4 If removed, install new gasket (6) on hull receptacle connector (7).
- 5 Connect hull receptacle connector (7) to hull disconnect to interphone amplifier, and install four washers (8) and four screws (9).
- 6 Connect two cable terminals (10).
- 7 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-107. MAINTENANCE OF DRIVER'S CONTROLS BRANCHED WIRING HARNESS.

This task covers:	a. Removal b. Disassembly c. Inspection/Repair	d. Reassembly e. Installation
INITIAL SETUP:		
Materials/Parts Electrical wire (figure D-1, appx D)	General Safety Instructions	
Nonmetallic rod (figure D-23, appx D)	<div style="border: 1px solid black; padding: 2px; display: inline-block;">WARNING</div>	
References TM 9-2350-304-24P-1	Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged Driver's seat removed equipment.	
Equipment Conditions 2-624 Batteries disconnected 2-911 2-879 Driver's compartment forward cowl removed 2-879 Driver's compartment aft cowl removed		

REMOVAL



WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Disconnect plug connector (1) from bulkhead.
- 3 Disconnect nine shell connectors from driver's control panel at the following points:
 - a. Tag and disconnect shell connector (2) from dome light.
 - b. Tag and disconnect three shell connectors (3) from line connections.
 - c. Tag and disconnect shell connector (4) from infrared receiver switch.
 - d. Tag and disconnect shell connector (5) from instrument switch.
 - e. Tag and disconnect shell connector (6) from master switch.
 - f. Tag and disconnect two shell connectors (7) from hydraulic pump switch.
- 4 Remove driver's controls branched wiring harness (8) from hull through driver's compartment.

DISASSEMBLY

For disassembly of wiring harness plug connector, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

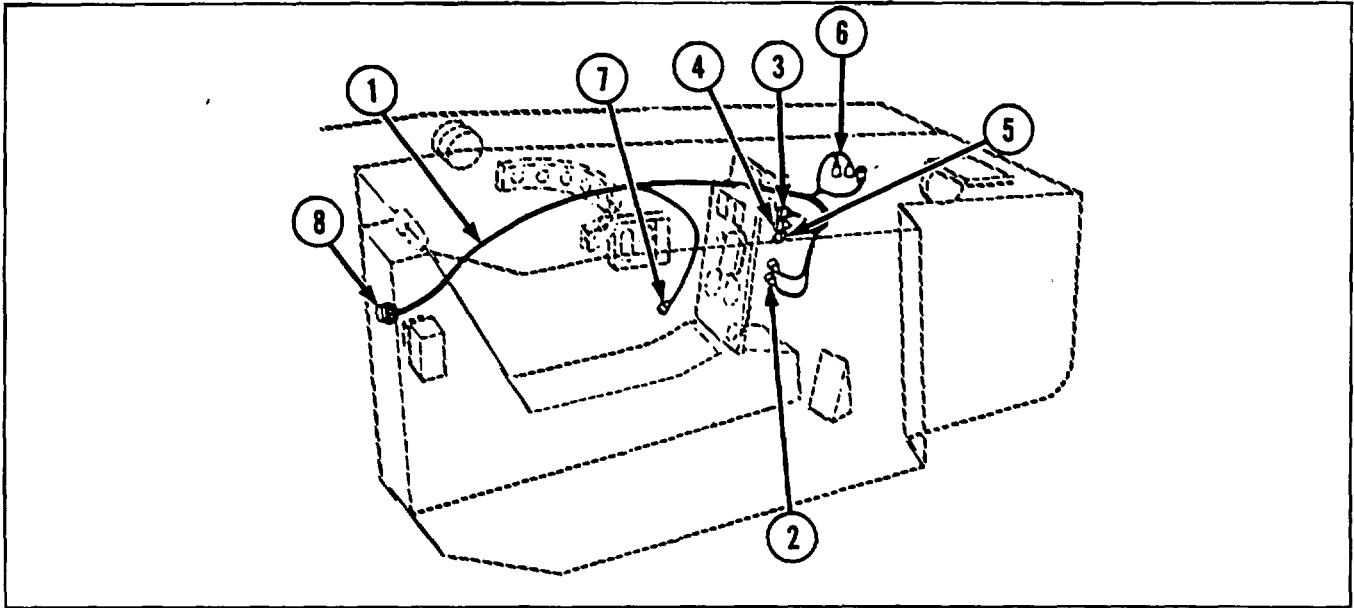
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead numbers on new bands.
- 3 For repair of shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical wire and nonmetallic rod are manufactured items, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-107. MAINTENANCE OF DRIVER'S CONTROLS BRANCHED WIRING HARNESS (CONT).

REASSEMBLY

For reassembly of wiring harness plug connector, refer to general maintenance, page 2-364.

INSTALLATION



- 1 Install driver's control branched wiring harness (1) in hull through driver's compartment.
- 2 Connect nine shell connectors to driver's control panel at the following points:
 - a. Untag and connect two shell connectors (2) to hydraulic pump switch (clutch operation).
 - b. Untag and connect shell connector (3) to master switch.
 - c. Untag and connect shell connector (4) to instrument switch.
 - d. Untag and connect shell connector (5) to infrared receiver switch.
 - e. Untag and connect three shell connectors (6) to line connectors.
 - f. Untag and connect shell connector (7) to dome light.
- 3 Connect plug connector (8) to bulkhead.
- 4 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-108. MAINTENANCE OF BLOWER TO GROUND ELECTRICAL LEAD.

This task covers:	a. Removal b. Disassembly c. Inspection/Repair	d. Reassembly e. Installation
INITIAL SETUP:		
Materials/Parts		
Electrical wire (figure D-1, appx D) References TM 9-2350-304-24P-1		
Equipment Conditions		
2-624 Batteries disconnected		

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment

REMOVAL

WARNING

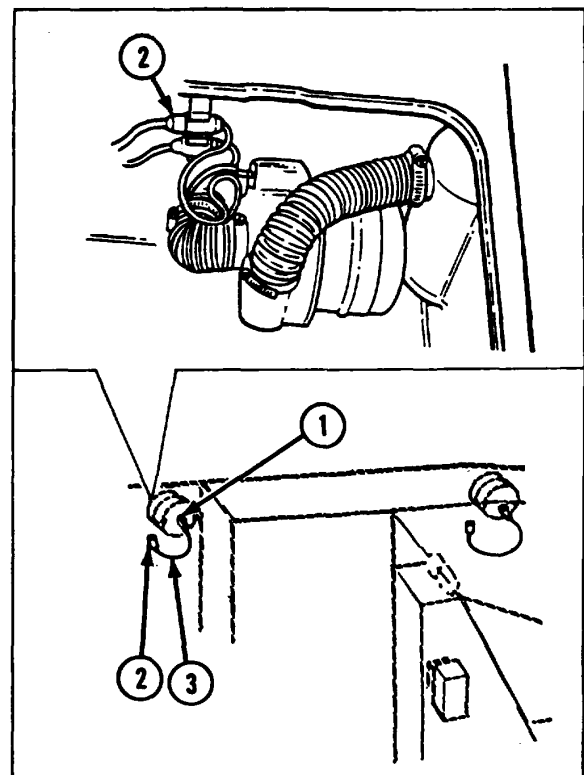
Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

NOTE

- There are two blower to ground electrical leads. The following steps are written for one electrical lead, but apply to both.
- To remove the forward blower to ground electrical lead, the forward air cleaner blower access door must be open.
- To remove the aft blower to ground electrical lead, the air cleaner blower access cover assembly must be removed (p 2-875).

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Disconnect ground terminal (1) from air cleaner blower.
- 3 Disconnect shell disconnect (2) from air cleaner blower.

- 4 Remove blower to ground electrical lead (3) from hull.



2-108. MAINTENANCE OF BLOWER TO GROUND ELECTRICAL LEAD -CONT).

INSPECTION/REPAIR

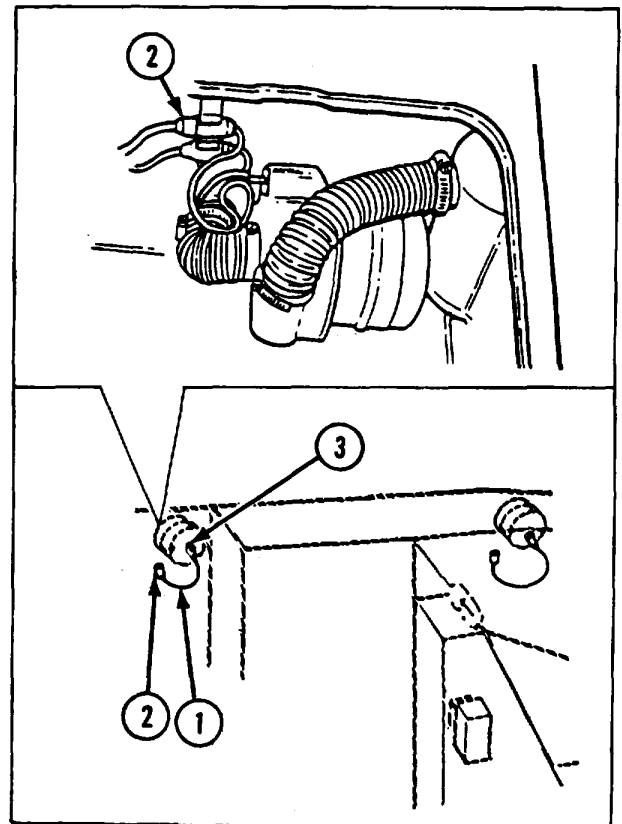
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of cable terminal and shell connector, refer to general maintenance, page 2-364.
- 4 Electrical wire is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

NOTE

There are two blower to ground electrical leads. The following steps are written for one electrical lead, but apply to both.

- 1 Install blower to ground electrical lead (1) in hull.
- 2 Connect shell connector (2) to air cleaner blower.
- 3 Connect ground terminal (3) to air cleaner blower.
- 4 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.



2-109. MAINTENANCE OF GENERATOR CONTROL CIRCUITS TO BRACKET DISCONNECT BRANCHED WIRING HARNESS.

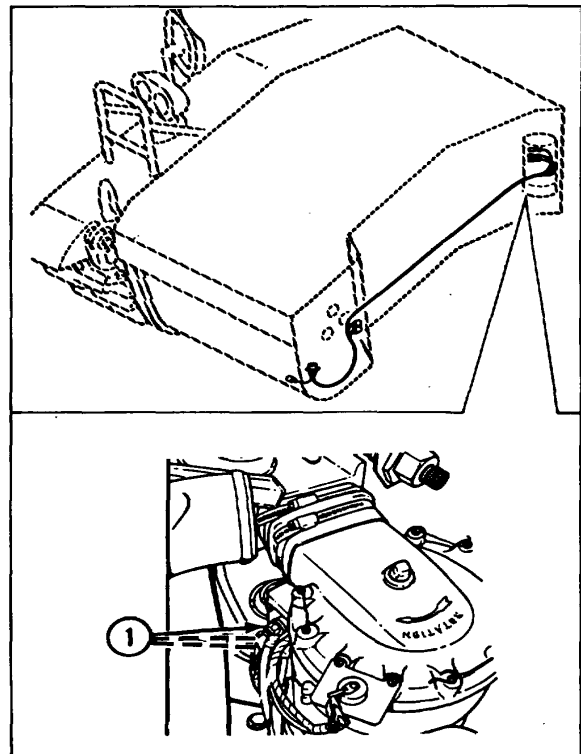
<p>This task covers:</p>	<p>a. Removal b. Disassembly c. Inspection/Repair</p>	<p>d. Reassembly e. Installation</p>
<p>INITIAL SETUP:</p>		
<p>Materials/Parts</p> <p>Electrical wire (figure D-1, appx D) Insulation sleeving (figure D-19, appx D)</p> <p>References TM 9-2350-304-24P-1</p> <p>Equipment Conditions 2-624 Batteries disconnected 2-380 Powerplant removed 2-740 Auxiliary drive removed</p>	<p>General Safety Instructions</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px 0;">WARNING</div> <p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p>	

REMOVAL

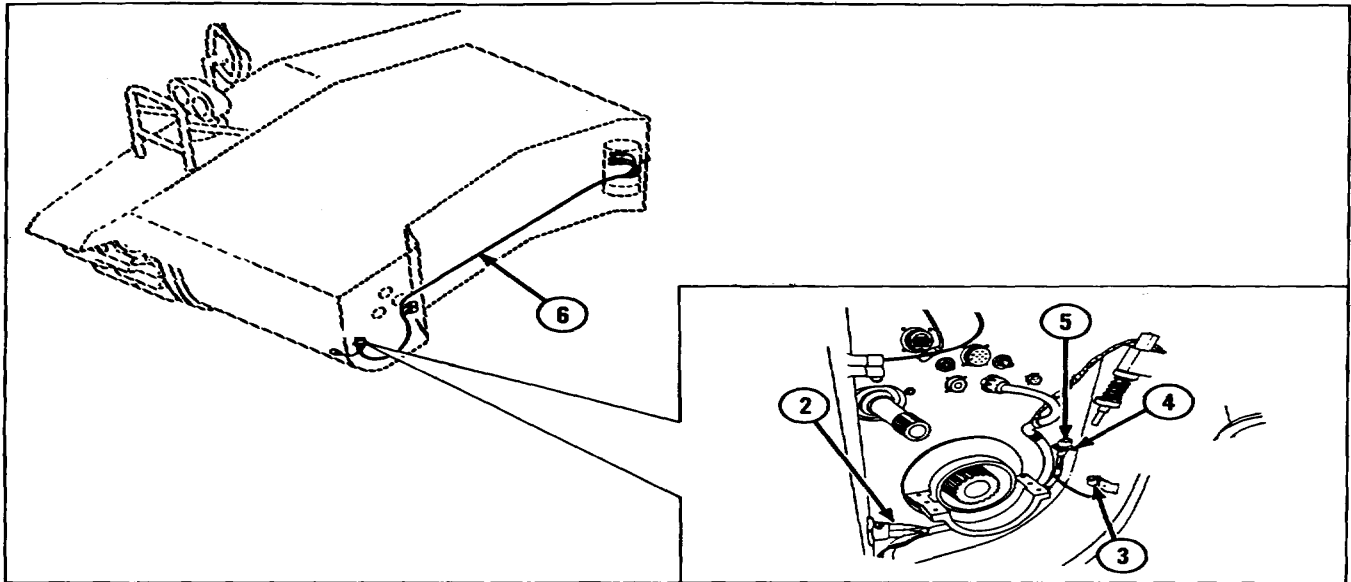
WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secure the wiring harness or lead being removed
- 2 Tag and disconnect three cable terminals (1) from three generator control circuits, terminals A, B, and D.



2-109. MAINTENANCE OF GENERATOR CONTROL CIRCUITS TO BRACKET DISCONNECT BRANCHED WIRING HARNESS (CONT).



- 3 Tag and disconnect two shell connectors (2) from circuit breaker.
- 4 Tag and disconnect shell connector (3) from line connection.
- 5 Remove four screws (4) and disconnect receptacle connector (5) from bracket receptacle.
- 6 Remove generator control circuits to bracket disconnect branched wiring harness (6) from hull.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of cable terminals and shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical wire and insulation sleeving are manufactured items, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

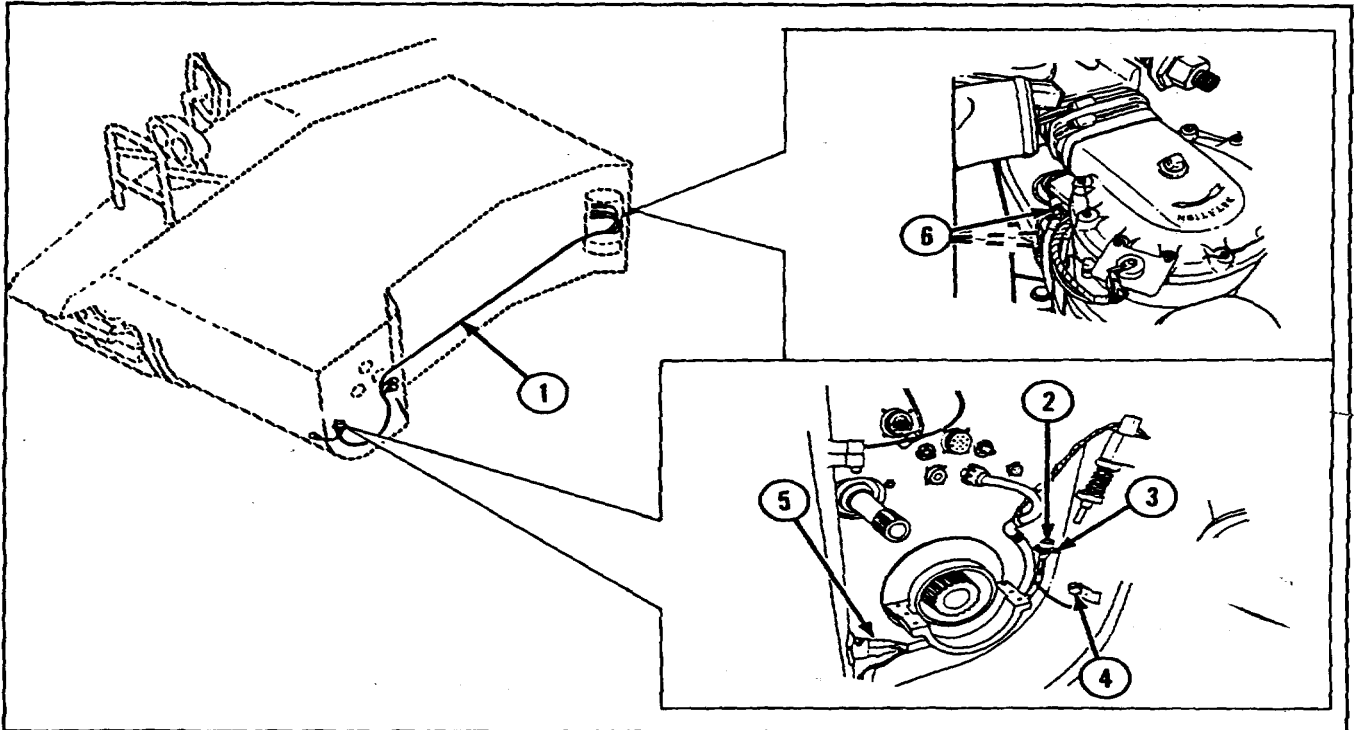
DISASSEMBLY

For disassembly of wiring harness receptacle connector, refer to general maintenance, page 2-364.

REASSEMBLY

For reassembly of wiring harness receptacle connector, refer to general maintenance, page 2-364.

INSTALLATION



- 1 Install generator control circuits to bracket disconnect branched wiring harness (1) in hull.
- 2 Connect receptacle connector (2) to bracket receptacle and install four screws (3).
- 3 Untag and connect shell connector (4) to line connection.
- 4 Untag and connect two shell connectors (5) to circuit breaker.
- 5 Untag and connect three cable terminals (6) to three generator control circuits, terminals A, 8,
- 6 Wiring harness and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-110. MAINTENANCE OF BULKHEAD DISCONNECT TO DRIVER'S CONTROL BRANCHED WIRING HARNESS.

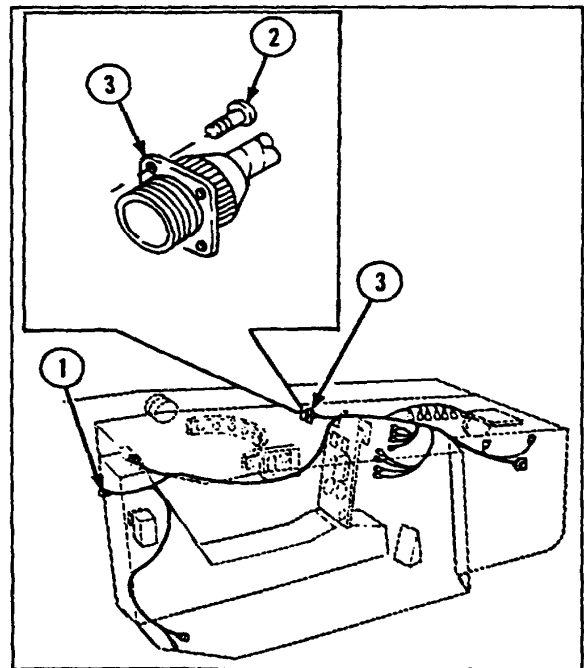
This task covers:	a. Removal b. Disassembly c. Inspection/Repair	d. Reassembly e. Installation
INITIAL SETUP:		
Materials/Parts	General Safety Instructions	
Electrical wire (figure D-1, appx D) Nonmetallic rod (figure D-23, appx D)	WARNING	
References TM 9-2350-304-24P-1	Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.	
Equipment Conditions 2-624 Batteries disconnected 2-911 Driver's seat removed 2-879 Driver's compartment forward and aft cowls removed		

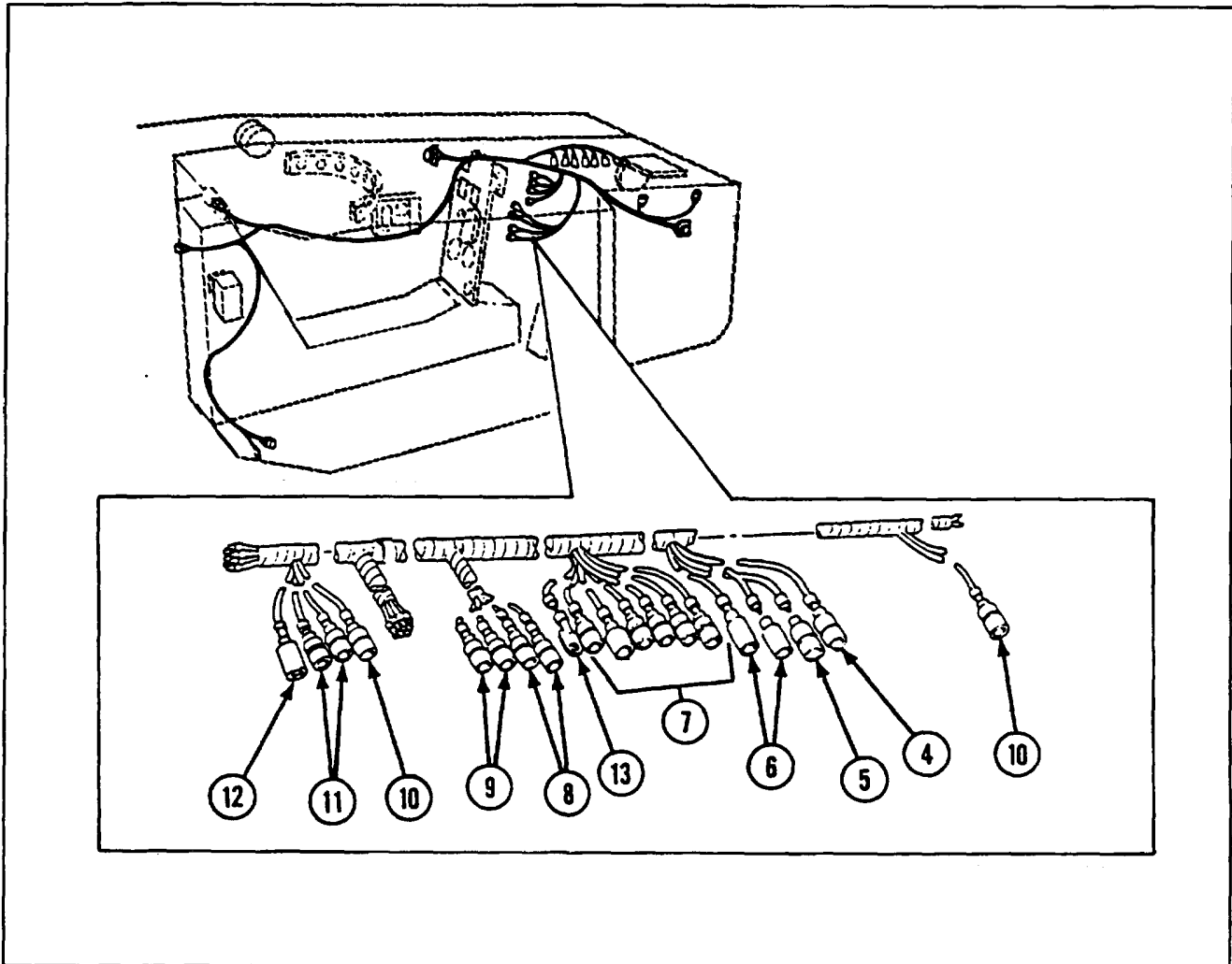
REMOVAL

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secure the wiring harness or lead being remove
- 2 Tag and disconnect plug connector (1) from rear hull bulkhead receptacle.
- 3 Remove four screws (2) and tag and disconnect receptacle connector (3) from gages and lights receptacle.



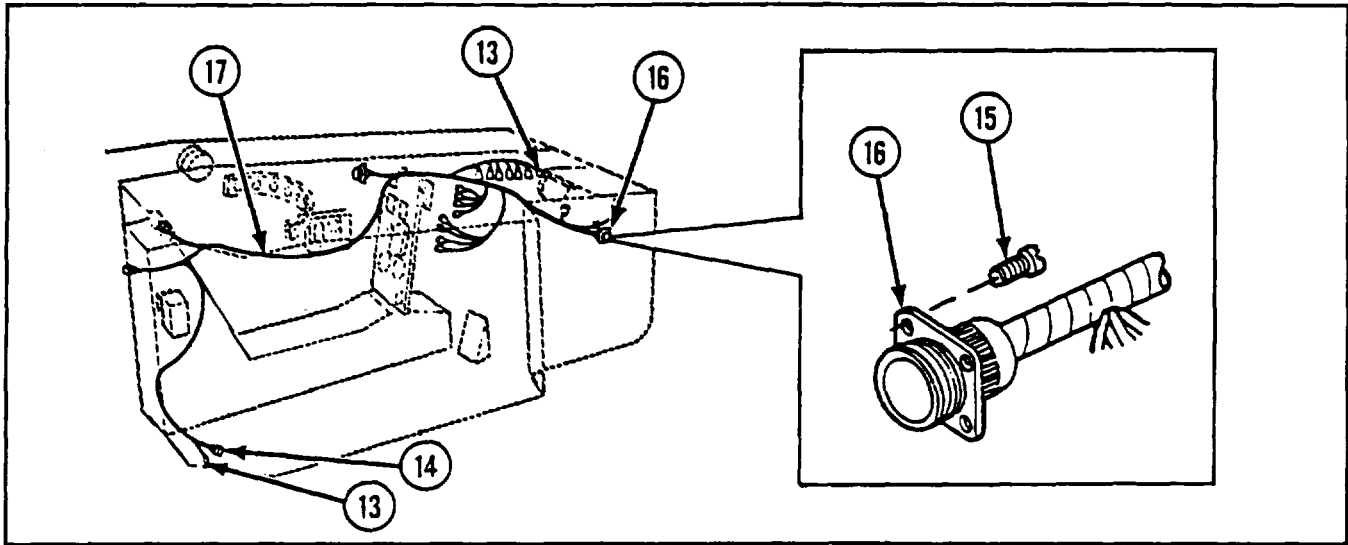


4 Disconnect 19 shell connectors from driver's control panel and driver's compartment hull at the following points:

- a. Tag and disconnect shell connector (4) from master switch.
- b. Tag and disconnect shell connector (5) from instrument switch.
- c. Tag and disconnect two shell connectors (6) from start switch.
- d. Tag and disconnect six shell connectors (7) from line connections.
- e. Tag and disconnect two shell connectors (8) from fuel valve switch.
- f. Tag and disconnect two shell connectors (9) from pump and igniter switch.
- g. Tag and disconnect two shell connectors (10) from circuit breaker.
- h. Tag and disconnect two shell connectors (11) from line connections.
- i. Tag and disconnect shell connector (12) and auxiliary warning light.

2-110. MAINTENANCE OF BULKHEAD DISCONNECT TO DRIVER'S CONTROL BRANCHED WIRING HARNESS (CONT).

REMOVAL (CONT)



- 5 Tag and disconnect two cable terminals (13) from ground.
- 6 Tag and disconnect plug connector (14) from generator cooling fan.
- 7 Remove four screws (15) and tag and disconnect receptacle connector (16) from front engine
- 8 Remove bulkhead disconnect to driver's control branched wiring harness (17) from hull through driver's compartment.

DISASSEMBLY

For disassembly of wiring harness receptacle connectors and plug connectors, refer to general maintenance, page 2-364.

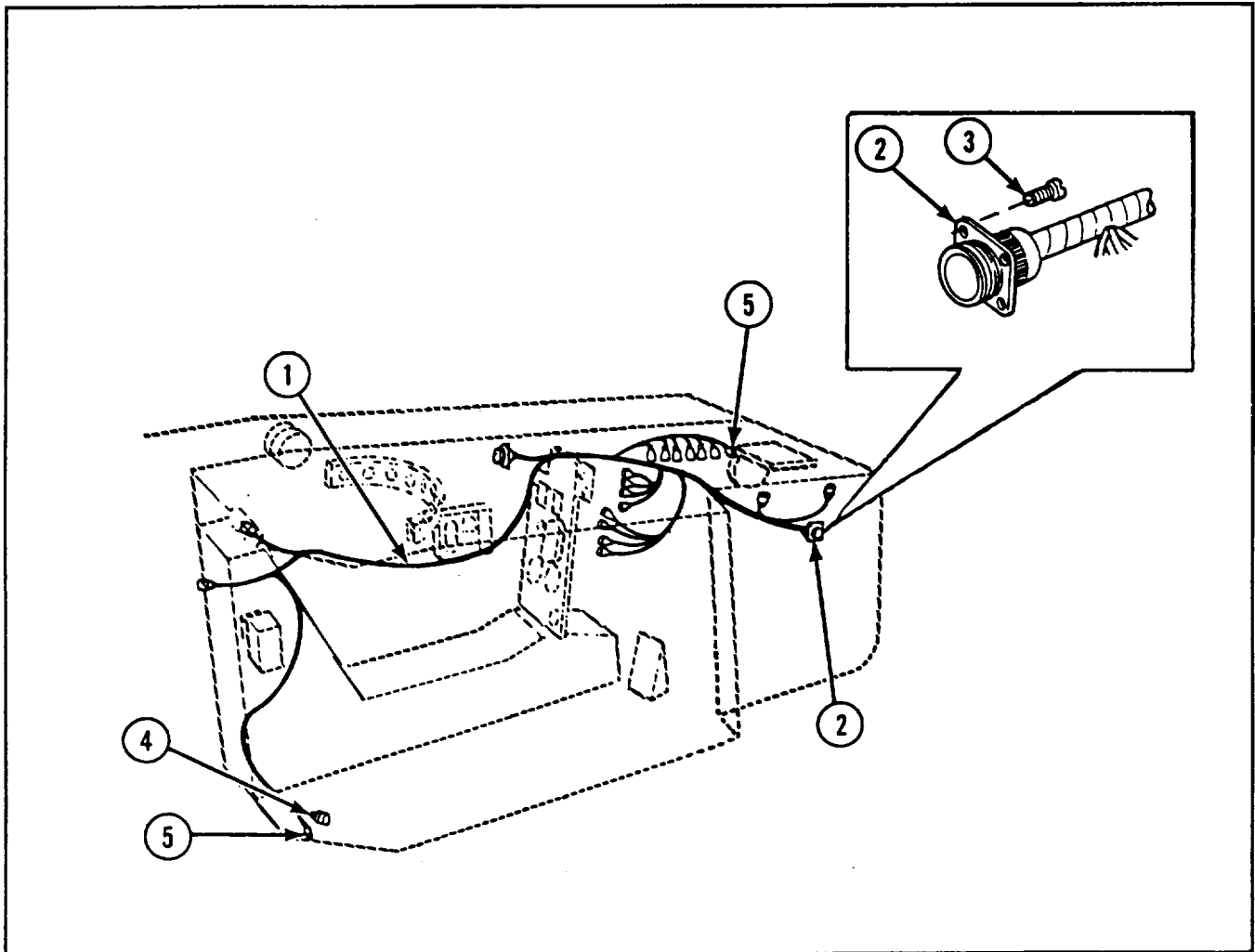
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of shell connectors and cable terminals, refer to general maintenance, page 2-364.
- 4 Electrical wire and nonmetallic rod are manufactured items, refer to appendix C.
- 5 Repair is by replacement of authorized parts (TM 9-2350-3064-24P-1).

REASSEMBLY

For reassembly of wiring harness receptacle connectors and plug connectors, refer to general maintenance, page 2-364.

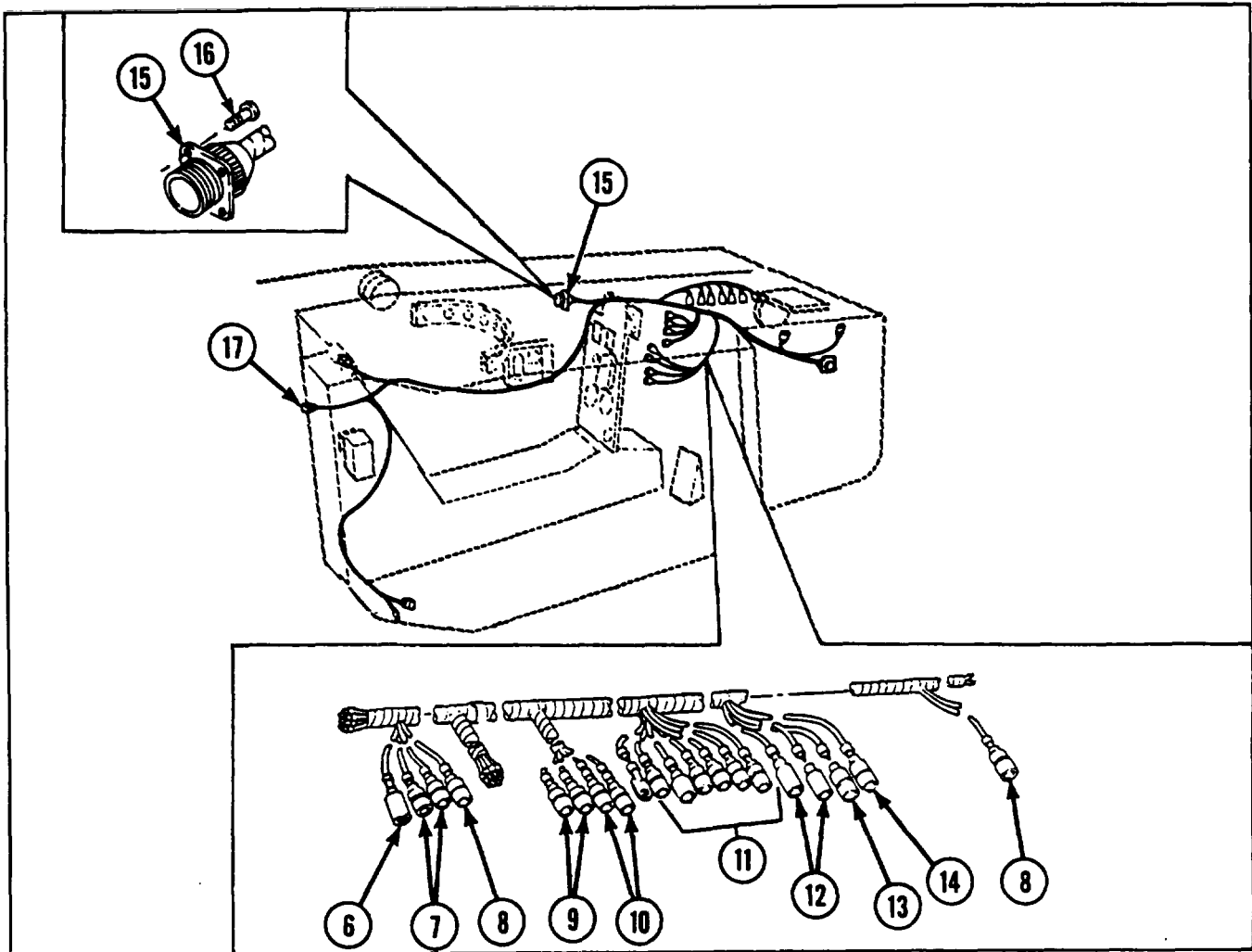
INSTALLATION



- 1 Install bulkhead disconnect to driver's control branched wiring harness (1) in hull through driver's compartment.
- 2 Untag and connect receptacle connector (2) to front engine bulkhead receptacle, and install four screws (3).
- 3 Untag and connect plug connector (4) to generator cooling fan.
- 4 Untag and connect two cable terminals (5) to ground.

2-110. MAINTENANCE OF BULKHEAD DISCONNECT TO DRIVER'S CONTROL BRANCHED WIRING HARNESS (CONT).

INSTALLATION (CONT)



5 Connect 19 shell connectors to driver's control panel and driver's compartment hull at the following points:

- a. Untag and connect shell connector (6) to auxiliary warning light.
- b. Untag and connect two shell connectors (7) to line connections.
- c. Untag and connect two shell connectors (8) to circuit breaker.
- d. Untag and connect two shell connectors (9) to pump and igniter switch.
- e. Untag and connect two shell connectors (10) to fuel valve switch.

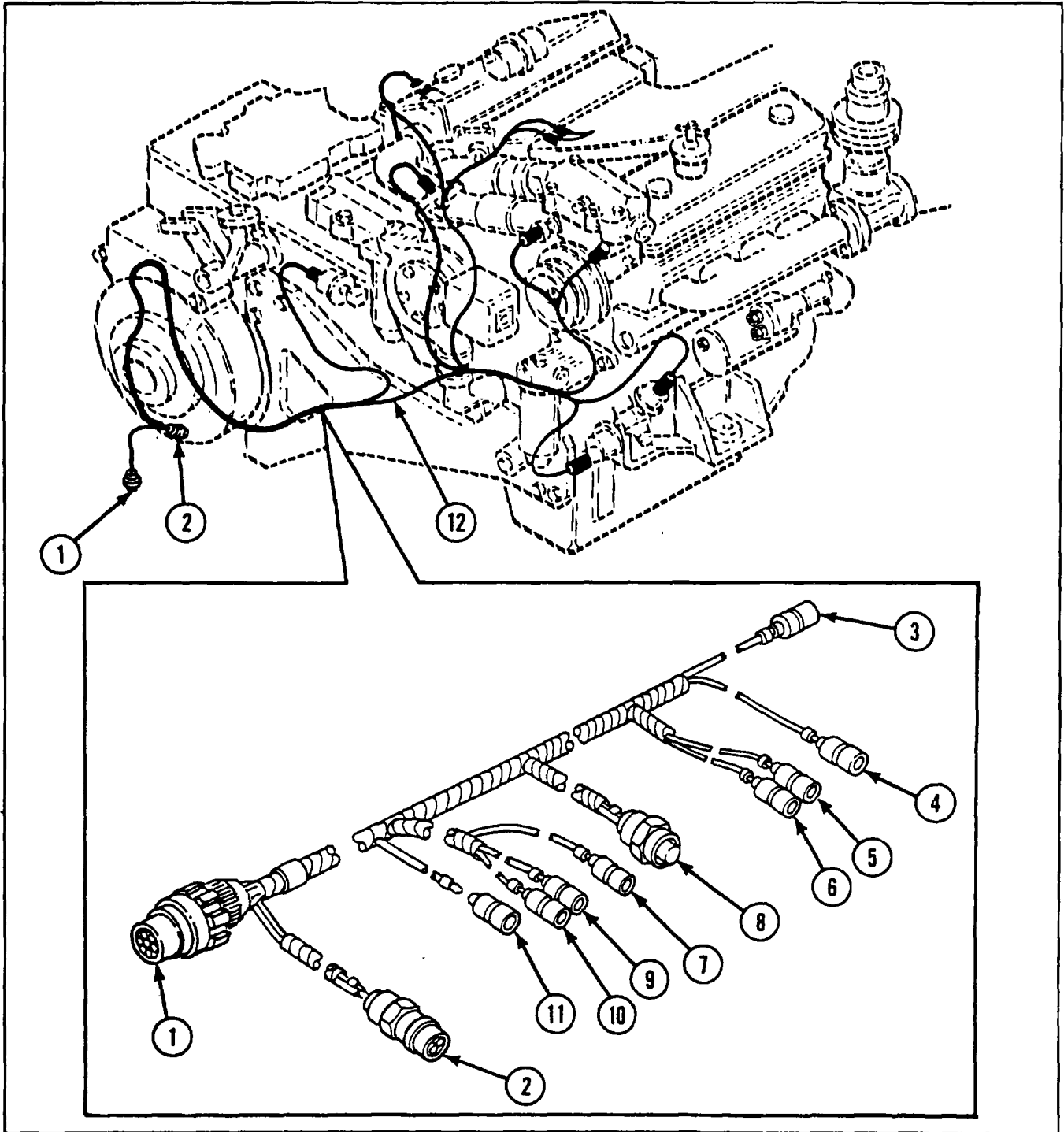
- f. Untag and connect six shell connectors (11) to line connections.
 - g. Untag and connect two shell connectors (12) to start switch.
 - h. Untag and connect shell connector (13) to instrument switch.
 - i. Untag and connect shell connector (14) to master switch.
- 6 Untag and connect receptacle connector (15), and install four screws (16) to gages and lights receptacle.
- 7 Untag and connect receptacle connector (17) to rear hull bulkhead receptacle.
- 8 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-111. MAINTENANCE OF FIXED FIRE EXTINGUISHER CONNECTING LINES AND FITTINGS.

This task covers:	<ul style="list-style-type: none"> a. Removal b. Disassembly c. Inspection/Repair 	<ul style="list-style-type: none"> d. Reassembly e. Installation
INITIAL SETUP:		
Materials/Parts	General Safety Instructions	
<ul style="list-style-type: none"> Electrical cable (figure D-1, appx D) Nonmetallic rod (figure D-23, appx D) 	<div style="border: 2px solid black; padding: 5px; display: inline-block;">WARNING</div>	
References TM 9-2350-304-24P-1	Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.	
Equipment Conditions 2-624 Batteries disconnected 2-380 Powerplant removed		

2-111. MAINTENANCE OF ENGINE WARNING LIGHTS CIRCUITS TO BULKHEAD DISCONNECT BRANCHED WIRING HARNESS (CONT).

REMOVAL



WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured the powerplant with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Tag and disconnect plug connector (1) from bulkhead disconnect.
- 3 Tag and disconnect plug connector (2) from bracket disconnect.
- 4 Tag and disconnect shell connector (3) from engine oil pressure sending unit.
- 5 Tag and disconnect shell connector (4) from low oil pressure warning switch.
- 6 Tag and disconnect shell connector (5) from engine water temperature warning switch.
- 7 Tag and disconnect shell connector (6) from engine water temperature sending unit.
- 8 Tag and disconnect plug connector (7) from air box heater bracket disconnect.
- 9 Tag and disconnect shell connector (8) from neutral position switch.
- 10 Tag and disconnect shell connector (9) from transmission hot oil temperature warning switch.

- 11 Tag and disconnect shell connector (10) from transmission oil temperature sending unit.
- 12 Tag and disconnect shell connector (11) from transmission oil pressure sending unit.
- 13 Remove engine warning lights circuits to bulkhead disconnect branched wiring harness (12) from powerplant.

DISASSEMBLY

For disassembly of wiring harness plug connectors, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

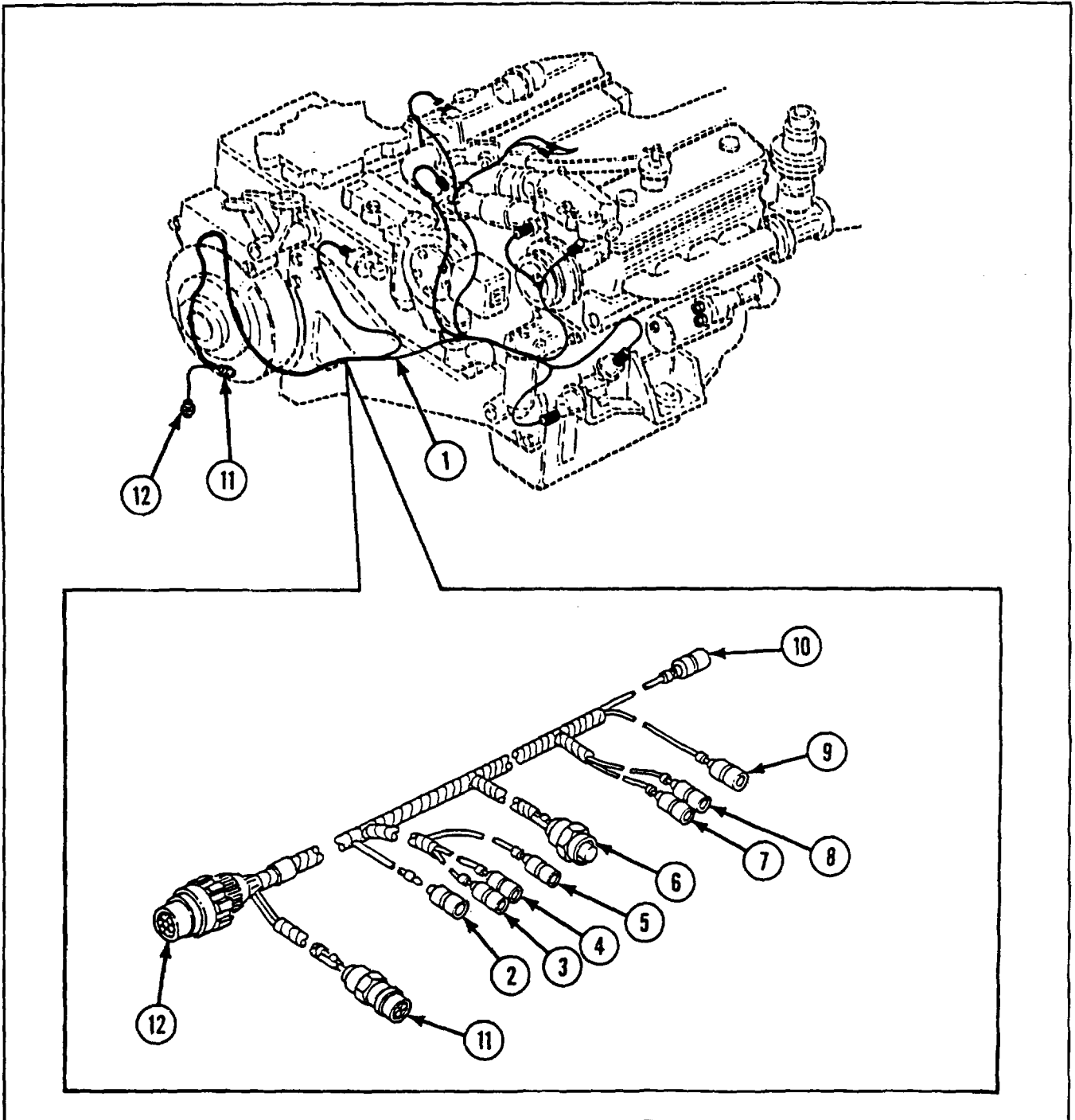
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical cable and nonmetallic rod are manufactured items, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness plug connectors, refer to general maintenance, page 2-364.

2-111. MAINTENANCE OF ENGINE WARNING LIGHTS CIRCUITS TO BULKHEAD DISCONNECT BRANCHED WIRING HARNESS (CONT).

INSTALLATION



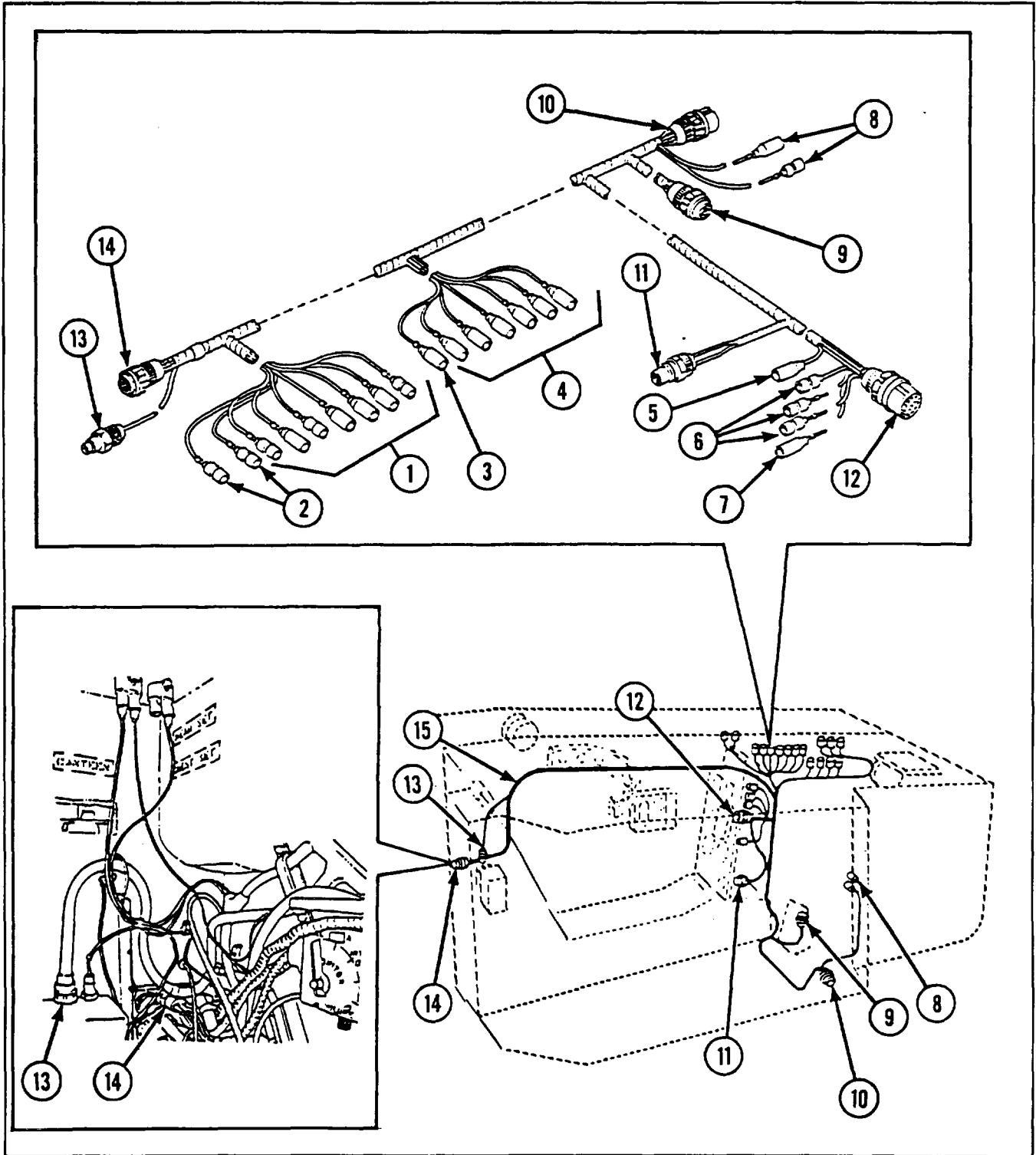
- 1 Install engine warning lights circuits to bulkhead disconnect branched wiring harness (1) to powerplant.
- 2 Untag and connect shell connector (2) to transmission oil pressure sending unit.
- 3 Untag and connect shell connector (3) to transmission oil temperature sending unit.
- 4 Untag and connect shell connector (4) to transmission hot oil temperature warning switch.
- 5 Untag and connect shell connector (5) to neutral position switch.
- 6 Untag and connect plug connector (6) to air box heater bracket disconnect.
- 7 Untag and connect shell connector (7) to engine water temperature sending unit.
- 8 Untag and connect shell connector (8) to engine water temperature warning switch.
- 9 Untag and connect shell connector (9) to low oil pressure warning switch.
- 10 Untag and connect shell connector (10) from engine oil pressure sending unit.
- 11 Untag and connect plug connector (11) to bracket disconnect.
- 12 Untag and connect plug connector (12) to bulkhead disconnect.
- 13 Wiring harnesses and leads are secured to the powerplant with loop clamps, straps, ground screws, etc. During installation make sure the wiring harness or lead is secure and all hardware is tight.

2-112. MAINTENANCE OF LIGHTING SWITCH TO VEHICLE ACCESSORIES AND DISCONNECT BRANCHED WIRING HARNESS.

This task covers:	<ol style="list-style-type: none"> a. Removal b. Disassembly c. Inspection/Repair 	<ol style="list-style-type: none"> d. Reassembly e. Installation
INITIAL SETUP:		
Materials/Parts	General Safety Instructions	
<p>Electrical wire (figure D-1, appx D)</p> <p>Nonmetallic rod (figure D-23, appx D)</p>	<div style="border: 2px solid black; padding: 5px; display: inline-block;">WARNING</div>	
<p>References</p> <p>TM 9-2350-304-24P-1</p>	<p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p>	
<p>Equipment Conditions</p> <p>2-624 Batteries disconnected</p> <p>2-911 Drivers seat removed</p> <p>2-879 Driver's compartment forward and aft cowls removed</p>		

2-112. MAINTENANCE OF LIGHTING SWITCH TO VEHICLE ACCESSORIES AND DISCONNECT BRANCHED WIRING HARNESS (CONT).

REMOVAL



WARNING

Failure to remove or disconnect the batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Disconnect 23 shell connectors at the following points:
 - a. Tag and disconnect seven shell connectors (1) from line connections
 - b. Tag and disconnect two shell connectors (2) from horn switch.
 - c. Tag and disconnect shell connector from forward air cleaner.
 - d. Tag and disconnect six shell connectors (4) from left headlight.
 - e. Tag and disconnect shell connector from panel light.
 - f. Tag and disconnect three shell connectors (6) from infrared and blackout drive selector switch.
 - g. Tag and disconnect shell connector from suspension lockout system indicator light.
 - h. Tag and disconnect two shell connectors (8) from stoplight switch.
- 3 Tag and disconnect plug connector (9) from dimmer switch.
- 4 Tag and disconnect plug connector (10) from right headlight.

- 5 Tag and disconnect plug connector (11) from pressure switch.
- 6 Tag and disconnect plug connector (12) from lighting switch.
- 7 Tag and disconnect plug connector (13) from master relay.
- 3 Tag and disconnect plug connector (14) from taillights.
- 9 Remove lighting switch to vehicle accessories and disconnect branched wiring harness (15) from hull through driver's compartment.

DISASSEMBLY

For disassembly of wiring harness plug connectors, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

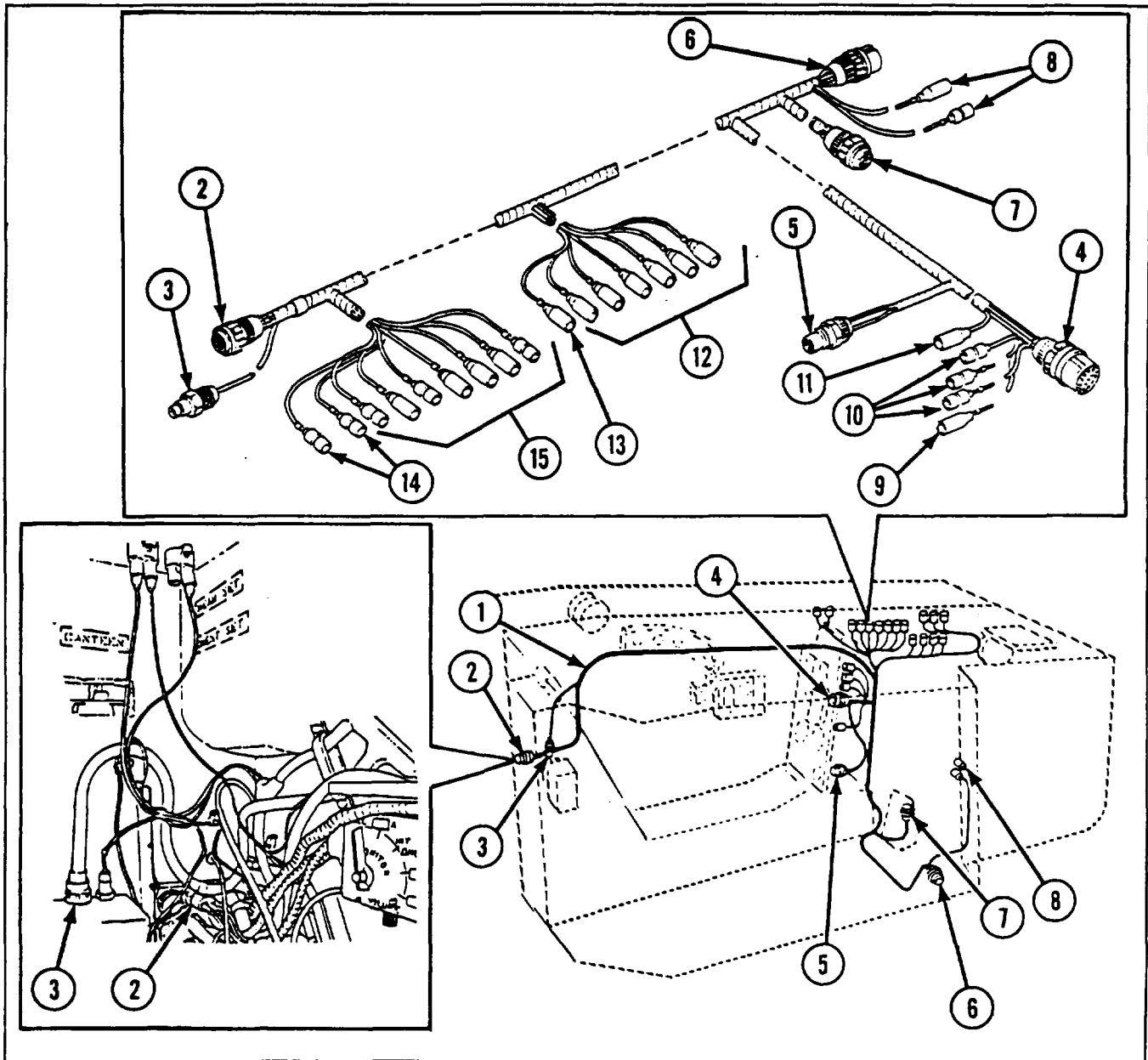
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical wire and nonmetallic rod are manufactured items, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness plug connectors, refer to general maintenance, page 2-364.

2-112. MAINTENANCE OF LIGHTING SWITCH TO VEHICLE ACCESSORIES AND DISCONNECT BRANCHED WIRING HARNESS (CONT).

INSTALLATION



1 Install lighting switch to vehicle accessories and disconnect wiring harness (1) in hull through driver's compartment.

2 Untag and connect plug connector (2) to taillights.

3 Untag and connect plug connector (3) to master relay.

4 Untag and connect plug connector (4) to lighting switch.

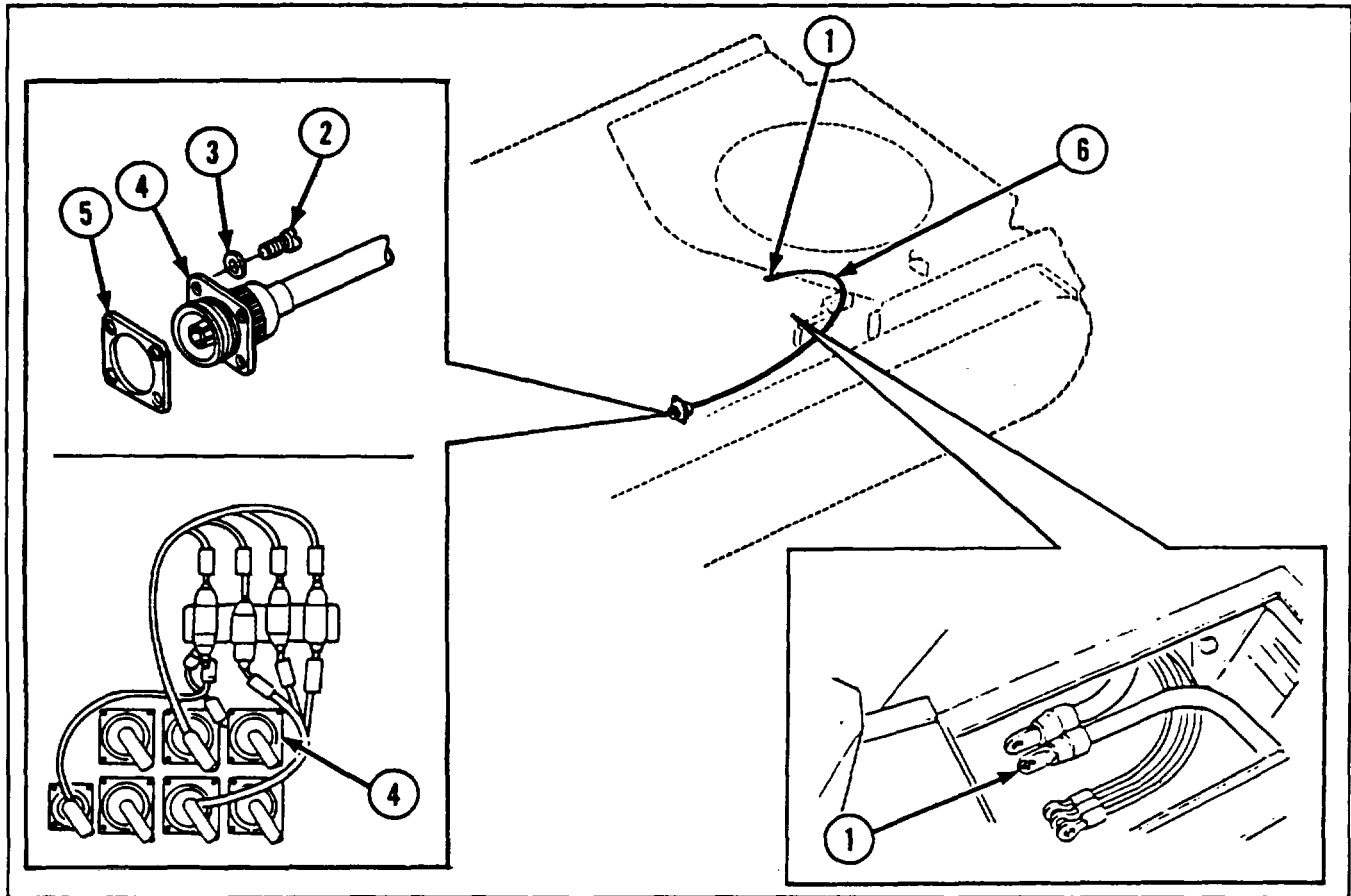
- 5 Untag and connect plug connector (5) to pressure switch.
- 6 Untag and connect plug connector (6) to right headlight.
- 7 Untag and connect plug connector (7) to dimmer switch.
- 8 Connect 23 shell connectors at the following points:
 - a. Untag and connect two shell connectors (8) to stoplight switch.
 - b. Untag and connect shell connector (9) to suspension lockout system indicator light.
 - c. Untag and connect three shell connectors (10) to infrared and blackout drive selector switch.
 - d. Untag and connect shell connector (11) to panel light.
 - e. Untag and connect six shell connectors (12) to left headlight.
 - f. Untag and connect shell connector (13) to forward air cleaner.
 - g. Untag and connect two shell connectors (14) to horn switch.
 - h. Untag and connect seven shell connectors (15) to line connection.
- 9 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-113. MAINTENANCE OF BATTERY TO BULKHEAD DISCONNECT CABLE ASSEMBLY.

This task covers:	<ul style="list-style-type: none"> a. Removal b. Disassembly c. Inspection/Repair 	<ul style="list-style-type: none"> d. Reassembly e. Installation
INITIAL SETUP:		
<p>Materials/Parts</p> <p>Electrical wire (figure D-1, appx D) Gasket</p> <p>References TM 9-2350-304-24P-1</p> <p>Equipment Conditions 2-871 Hull access cover removed 2,624 Battery access cover open and all batteries removed</p>	<p>General Safety Instructions</p> <div style="text-align: center; border: 2px solid black; padding: 5px; width: fit-content; margin: 10px auto;">WARNING</div> <p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p>	

2-113. MAINTENANCE OF BATTERY TO BULKHEAD DISCONNECT CABLE ASSEMBLY (CONT).

REMOVAL



WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in Injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Disconnect cable terminal (1) from battery terminal lug.

- 3 Remove four screws (2) and four washers (3), and disconnect bulkhead receptacle connector (4) from bulkhead disconnect to master relay.
- 4 If necessary, remove gasket (5) from bulkhead receptacle connector (4).
- 5 Remove battery to bulkhead disconnect cable assembly (6) from hull through battery compartment.

DISASSEMBLY

For disassembly of wiring harness receptacle connector, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

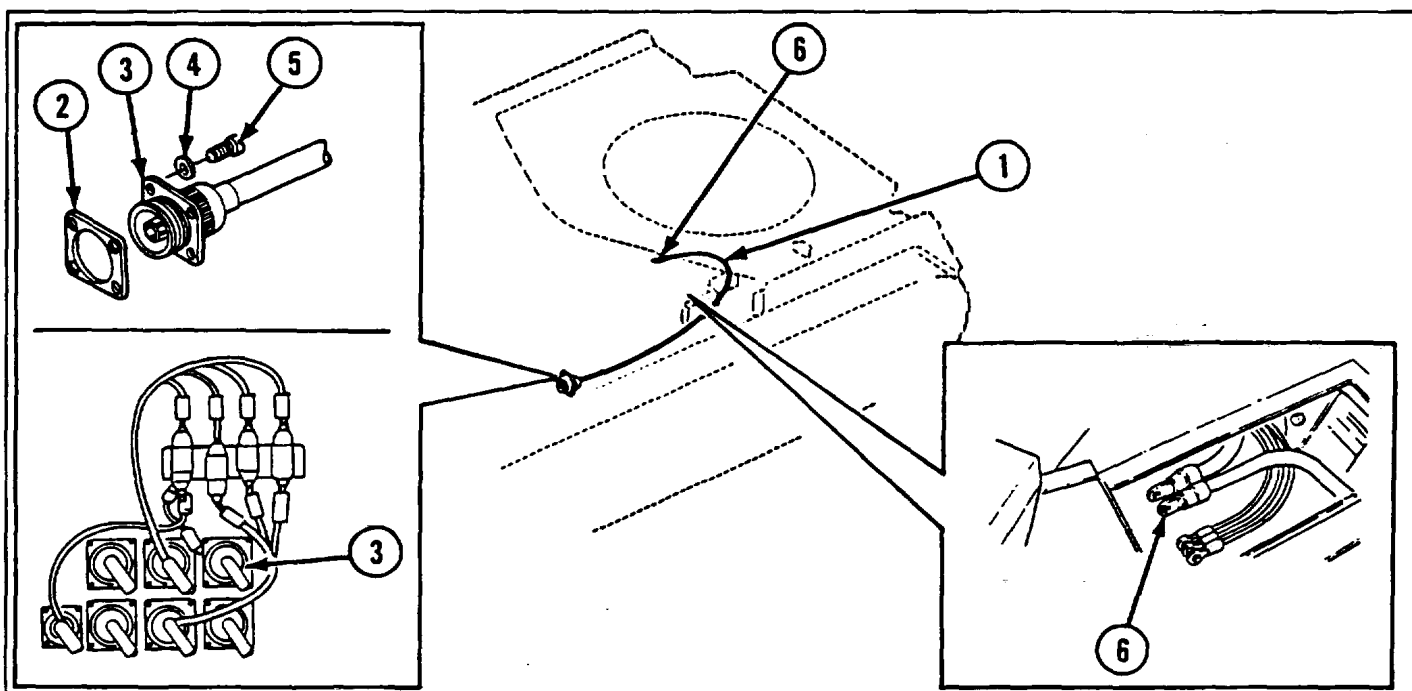
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.

INSTALLATION

REASSEMBLY

For reassembly of wiring harness receptacle connector, refer to general maintenance, page 2-364.

- 3 For repair of cable terminal, refer to general maintenance, page 2-364.
- 4 Electrical wire is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

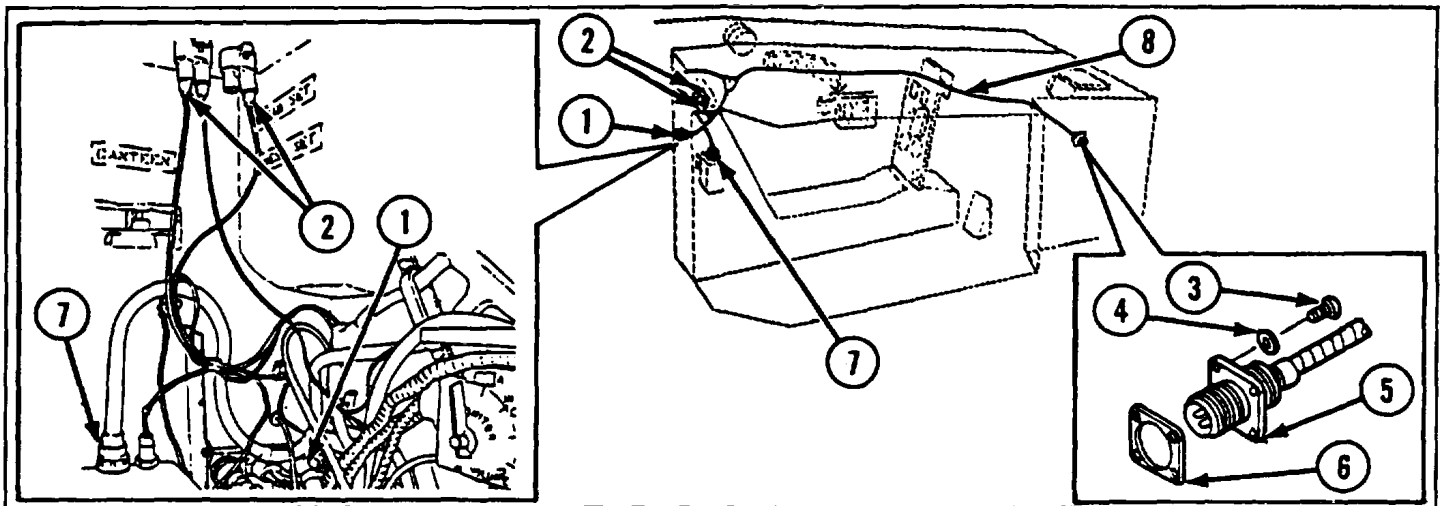


- 1 Install battery to bulkhead disconnect cable assembly (1) in hull through battery compartment.
- 2 If removed, install new gasket (2) on bulkhead receptacle (3).
- 3 Connect bulkhead receptacle connector (3) to bulkhead disconnect to master relay, and install four washers (4) and four screws (5).
- 4 Connect cable terminal (6) to battery terminal lug.
- 5 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-114. MAINTENANCE OF BULKHEAD TO BULKHEAD STARTER CIRCUIT BRANCHED WIRING HARNESS.

<p>This task covers:</p>	<p>a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i></p>	<p>d. <i>Reassembly</i> e. <i>Installation</i></p>
<p>INITIAL SETUP</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><i>Materials/Parts</i></p> <ul style="list-style-type: none"> Electrical wire (figure D-1, appx D) Electrical wire (figure D-1, appx D) Gasket <p><i>References</i></p> <ul style="list-style-type: none"> TM 9-2350-30424P-1 <p><i>Equipment Conditions</i></p> <ul style="list-style-type: none"> 2-624 Batteries disconnected 2-911 Driver's seat removed 2-878 Driver's compartment forward and aft cowls removed </div> <div style="width: 50%;"> <p><i>General Safety Instructions</i></p> <p style="text-align: center;">WARNING</p> <p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p> </div> </div>		

REMOVAL



WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.

- | | |
|--|---|
| <p>2 Tag and disconnect plug connector (1) from rear bulkhead.</p> <p>3 Tag and disconnect two shell connectors (2) from circuit breakers.</p> <p>4 Remove four screws (3), four washers (4), and receptacle connector (5) from front bulkhead disconnect to starter.</p> | <p>5 If damaged, remove gasket (6) from receptacle connector (5).</p> <p>6 Tag and disconnect plug connector (7) from master relay.</p> <p>7 Remove bulkhead to bulkhead starter circuit branched wiring harness (8) from hull through driver's compartment.</p> |
|--|---|

DISASSEMBLY

For disassembly of wiring harness receptacle connector and plug connectors, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

- | | |
|--|---|
| <p>1 Inspect for broken, damaged, or missing parts.</p> <p>2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.</p> <p>3 For repair of shell connectors, refer to general maintenance, page 2-364.</p> | <p>4 Electrical wires are manufactured items, refer to appendix D.</p> <p>5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).</p> |
|--|---|

REASSEMBLY

For reassembly of wiring harness receptacle connector and plug connectors, refer to general maintenance, page 2-364.

INSTALLATION

- | | |
|--|--|
| <p>1 Install bulkhead to bulkhead starter circuit branched wiring harness (8) to hull through driver's compartment.</p> <p>2 Untag and connect plug connector (7) to master relay.</p> <p>3 If removed, install new gasket (6) to receptacle connector (5).</p> <p>4 Connect receptacle connector (5) to front bulkhead disconnect to starter, and install four washers (4) and four screws (3).</p> | <p>5 Untag and connect two shell connectors (2) to circuit breakers.</p> <p>6 Untag and connect plug connector (1) to rear bulkhead.</p> <p>7 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.</p> |
|--|--|

2-115. MAINTENANCE OF BULKHEAD DISCONNECT TO TRAILER RECEPTACLE DISCONNECT AND TAIL-LIGHTS BRANCHED WIRING HARNESS.

This task covers:

- a. *Removal*
- b. *Disassembly*
- c. *Inspection/Repair*
- d. *Reassembly*
- e. *Installation*

INITIAL SETUP

Materials/Parts

- Electrical wire (figure D-1, appx D)
- Gasket
- Nonmetallic rod (figure D-23, appx D)

2-875 Aft air cleaner blower access cover removed

General Safety Instructions

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

References

TM 9-2350-304-24P-1

Equipment Conditions

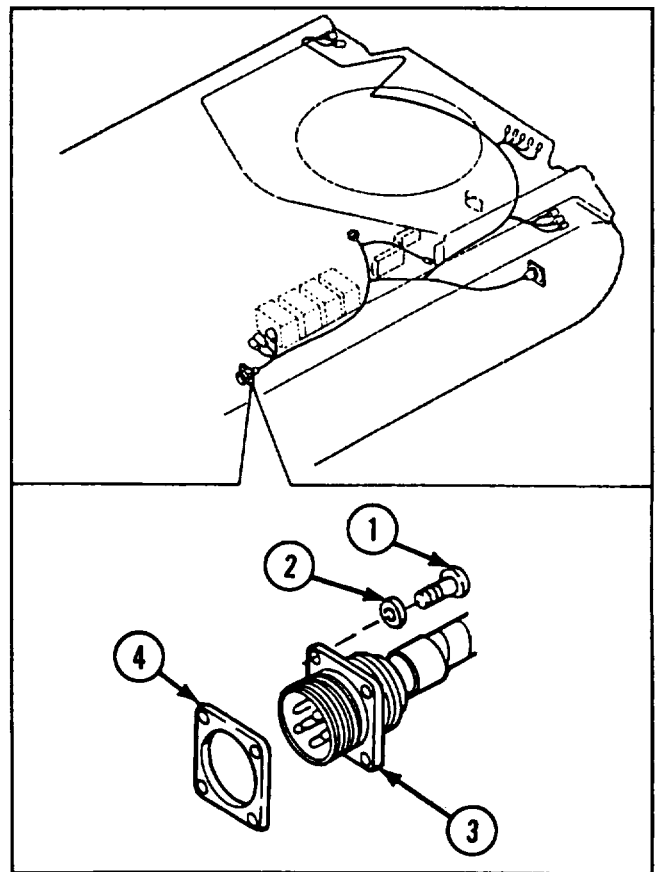
- 2-875 Hull access cover removed
- 2-624 Battery access cover open and all batteries removed

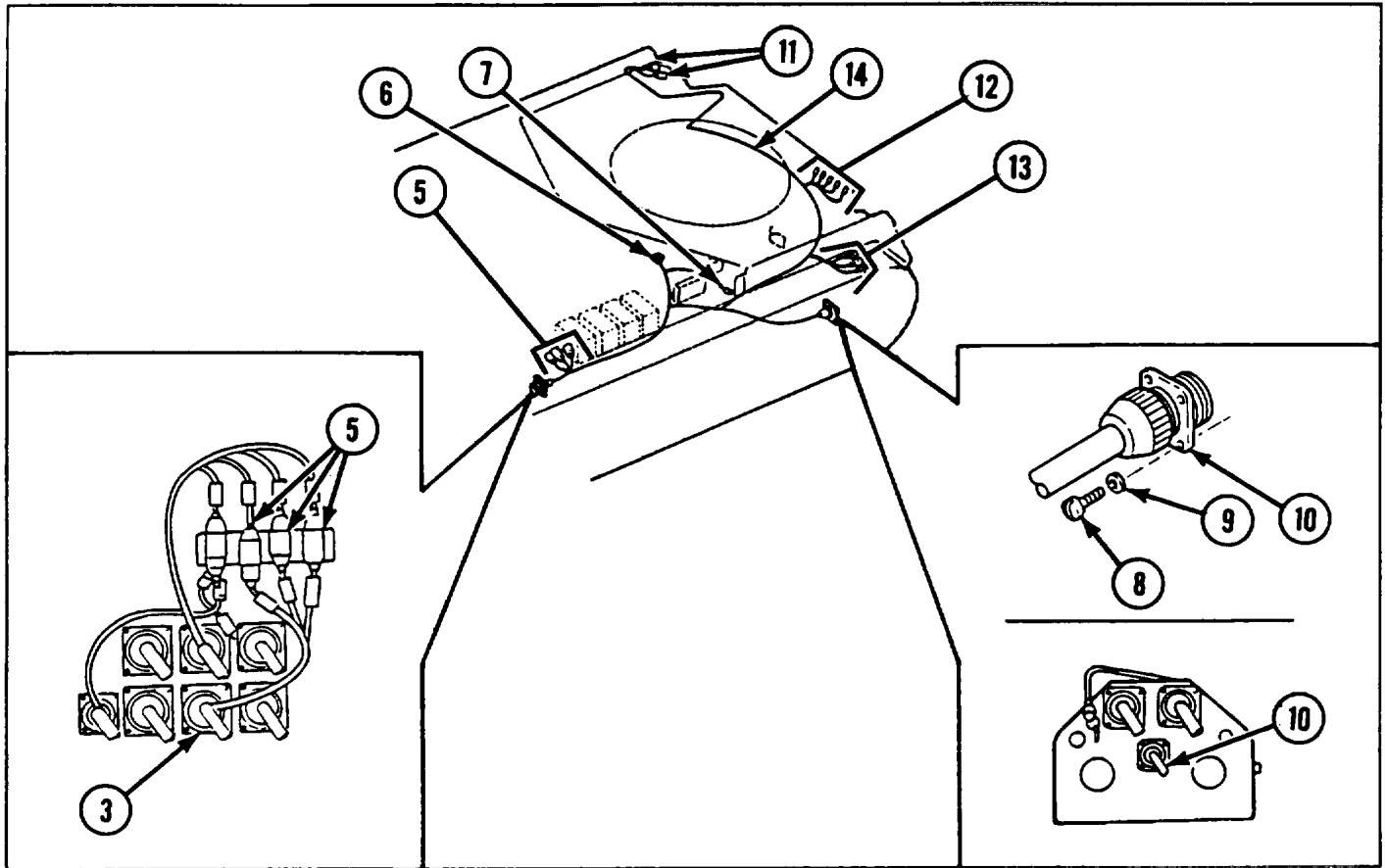
REMOVAL

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Remove four screws (1) and four washers (2), and tag and disconnect bulkhead receptacle connector (3) from bulkhead disconnect.
- 3 If damaged, remove gasket (4) from bulkhead receptacle connector (3).





- 4 Tag and disconnect three shell connectors (5) from line connections.
- 5 Disconnect plug connector (6) from disconnect.
- 6 Tag and disconnect shell connector (7) from aft air cleaner blower motor.
- 7 Remove four screws (8) and four washers (9), and tag and disconnect floor receptacle connector (10) from floor disconnect.
- 8 Enter rear hull well and tag and disconnect two shell connectors (11) from right taillight.
- 9 Tag and disconnect five shell connectors (12) from trailer receptacle assembly to disconnect branched wiring harness.
- 10 Tag and disconnect three shell connectors (13) from left taillight.
- 11 Remove bulkhead disconnect to trailer receptacle disconnect and taillights branched wiring harness (14) from hull through rear hull well.

DISASSEMBLY

For disassembly of wiring harness receptacle connectors and plug connector, refer to general maintenance, page 2-364.

2-115. MAINTENANCE OF BULKHEAD DISCONNECT TO TRAILER RECEPTACLE DISCONNECT AND TAIL-LIGHTS BRANCHED WIRING HARNESS (CONT).

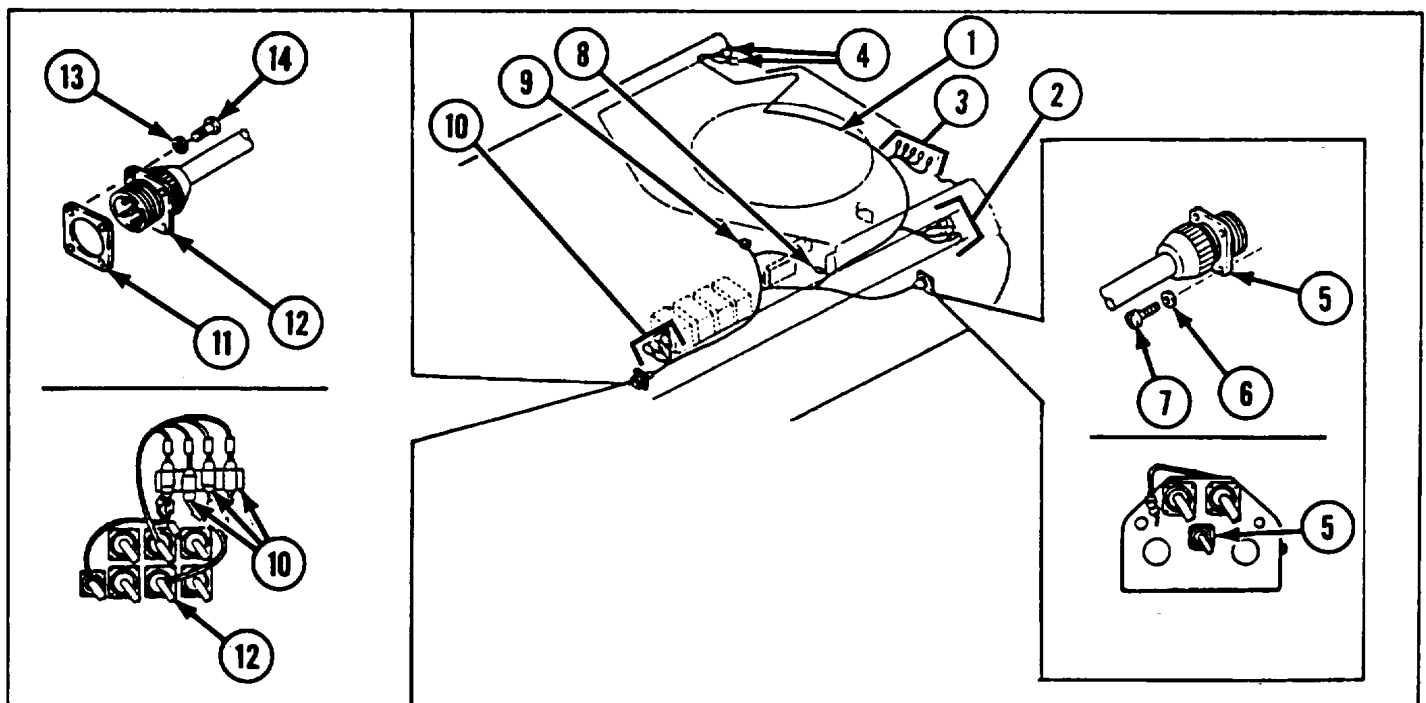
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical wire and nonmetallic rod are manufactured items, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness receptacle connectors and plug connector, refer to general maintenance, page 2-364.

INSTALLATION



- 1 Enter rear hull well and install bulkhead disconnect to trailer receptacle disconnect and taillights branched wiring harness (1) in hull.
- 2 Untag and connect three shell connectors (2) to left taillight.

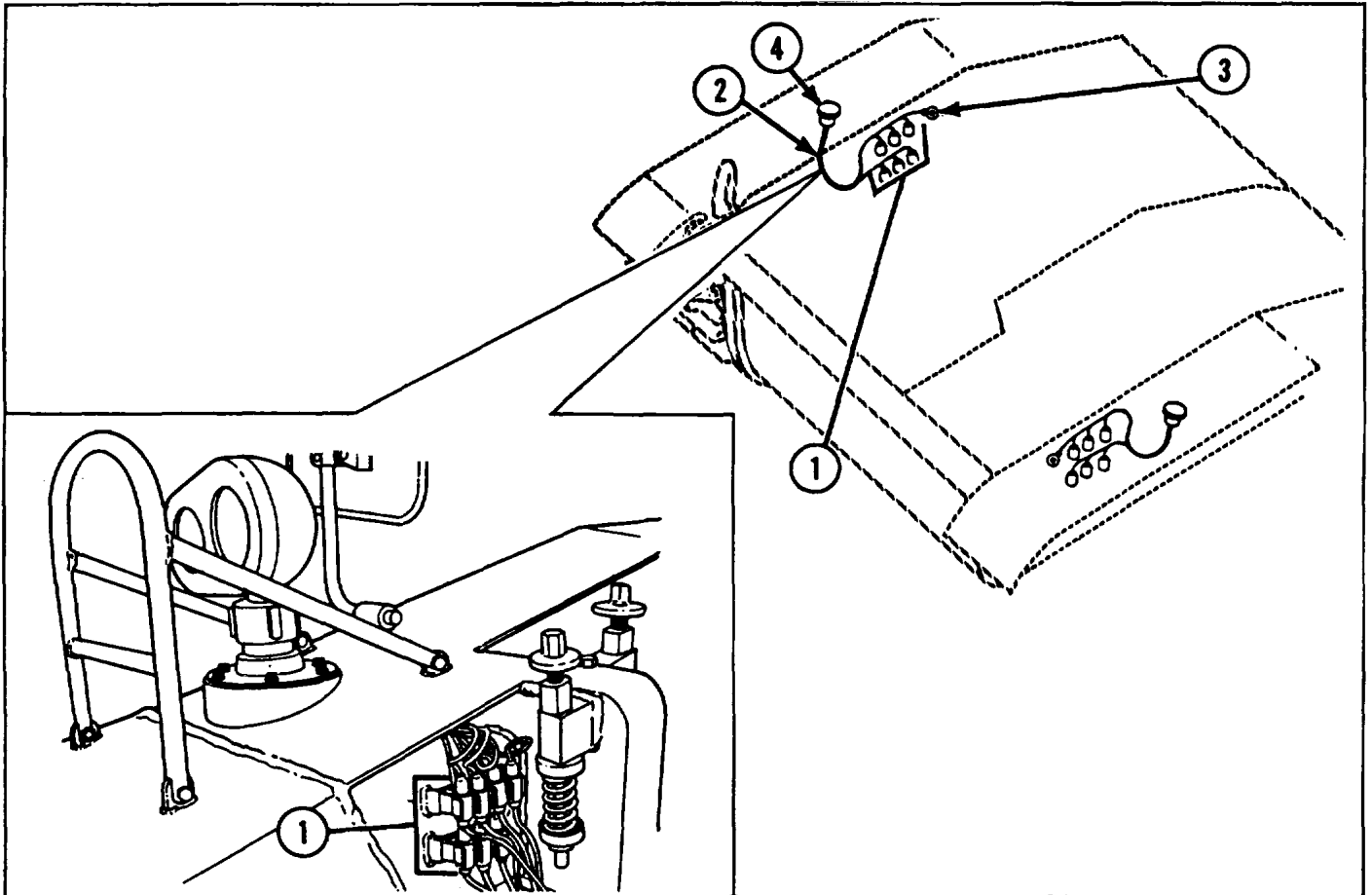
- 3 Untag and connect five shell connectors (3) to trailer receptacle assembly to disconnect branched wiring harness.
- 4 Untag and connect two shell connectors (4) to right taillight and exit rear hull well.
- 5 Untag and connect receptacle connector (5) to floor disconnect, and install four washers (6) and four screws (7).
- 6 Untag and connect shell connector (8) to aft air cleaner blower motor.
- 7 Connect plug connector (9) to disconnect.
- 8 Untag and connect three shell connectors (10) to line connections.
- 9 If removed, install new gasket (11) to bulkhead receptacle connector (12).
- 10 Untag and connect bulkhead receptacle connector (12) to bulkhead disconnect, and install four washers (13) and four screws (14).
- 11 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-116. MAINTENANCE OF RIGHT AND LEFT DISCONNECT TO HEADLAMP WIRING HARNESS.

This task covers:	<ul style="list-style-type: none"> a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i> 	<ul style="list-style-type: none"> d. <i>Reassembly</i> e. <i>Installation</i>
INITIAL SETUP		
<p><i>Tools and Special Tools</i></p> <p>Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)</p> <p><i>Materials/Parts</i></p> <p>Electrical wire (figure D-1, appx D)</p> <p>Insulation tape (item 44, appx C)</p> <p>Lockwasher (2)</p> <p>Nonmetallic seal</p> <p>Rod (figure D-22, appx D)</p> <p>Solder (item 42, appx C)</p> <p><i>References</i></p> <p>MIL-STO-202</p> <p>TB SIG-222</p> <p>TM 9-2350-304-24P-1</p>	<p><i>Equipment Conditions</i></p> <p>2-624 Batteries disconnected</p> <p>2-581 Right and left headlamps removed</p> <p><i>General Safety Instructions</i></p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px 0;">WARNING</div> <p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p>	

2-116. MAINTENANCE OF RIGHT AND LEFT DISCONNECT TO HEADLAMP WIRING HARNESS (CONT).

REMOVAL



WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

NOTE

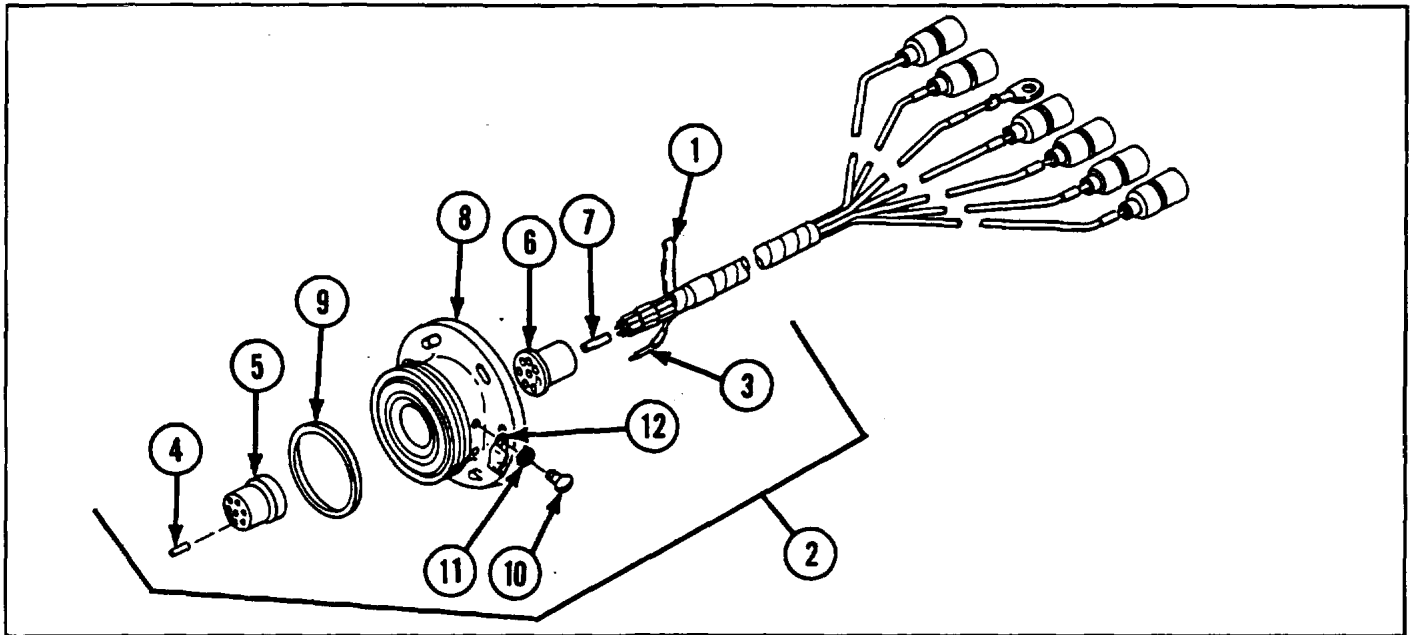
Procedures to remove disconnect to headlamp wiring harness are written for the right side, but apply to both the right and left sides.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the

hardware which secures the wiring harness or lead being removed.

- 2 Tag and disconnect six shell disconnects (1) from line connection disconnects on right disconnect to headlamp wiring harness (2).
- 3 Disconnect ground terminal (3) from ground on right disconnect to headlamp wiring harness (2).
- 4 Remove headlamp base assembly (4) from hull.
- 5 Remove right disconnect to headlamp wiring harness (2) from hull.

DISASSEMBLY



- 1 Strip insulation (1) back from headlamp base assembly (2).

NOTE

The following steps are written for the removal of one electrical lead, but apply to all electrical leads.

- 2 Remove electrical wire (3) and electrical contact (4) from nonmetallic bushing (5) and electrical insert (6).
- 3 Remove electrical contact (4) from electrical wire (3).

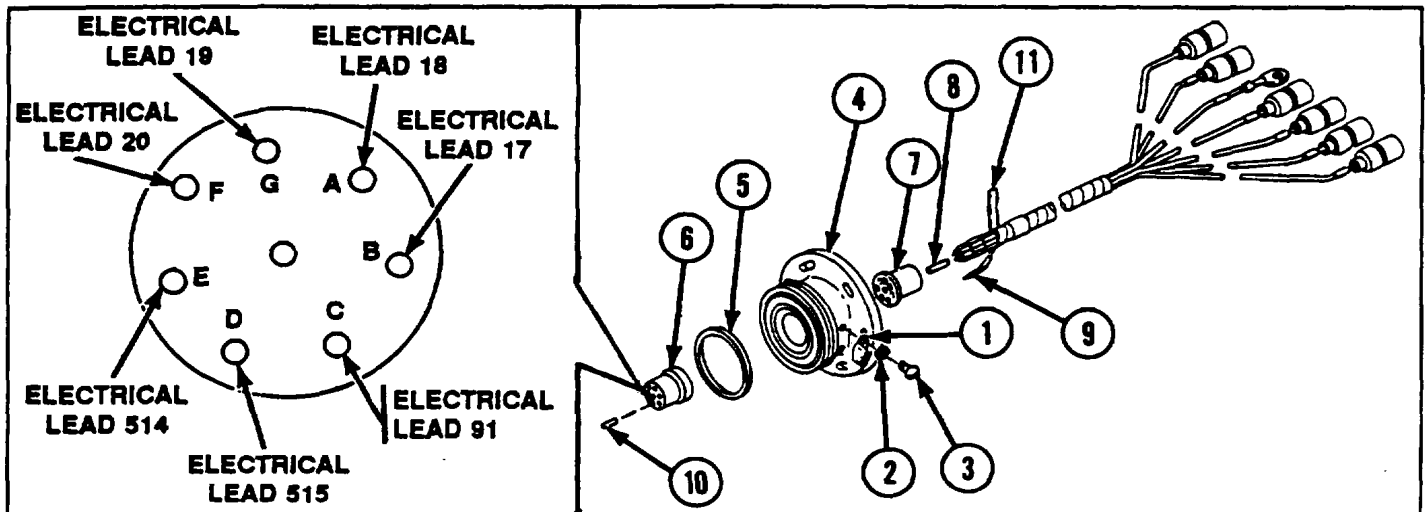
- 4 Remove rod (7) from electrical insert (6).
- 5 Remove electrical insert (6) from threaded base (8).
- 6 Remove nonmetallic bushing (5) from threaded base (8).
- 7 Remove nonmetallic seal (9) from threaded base (8).
- 8 Remove two machine screws (10), two lockwashers (11), and spring tension clip (12) from threaded base (8).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of cable terminals and shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical wire and rod are manufactured items, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

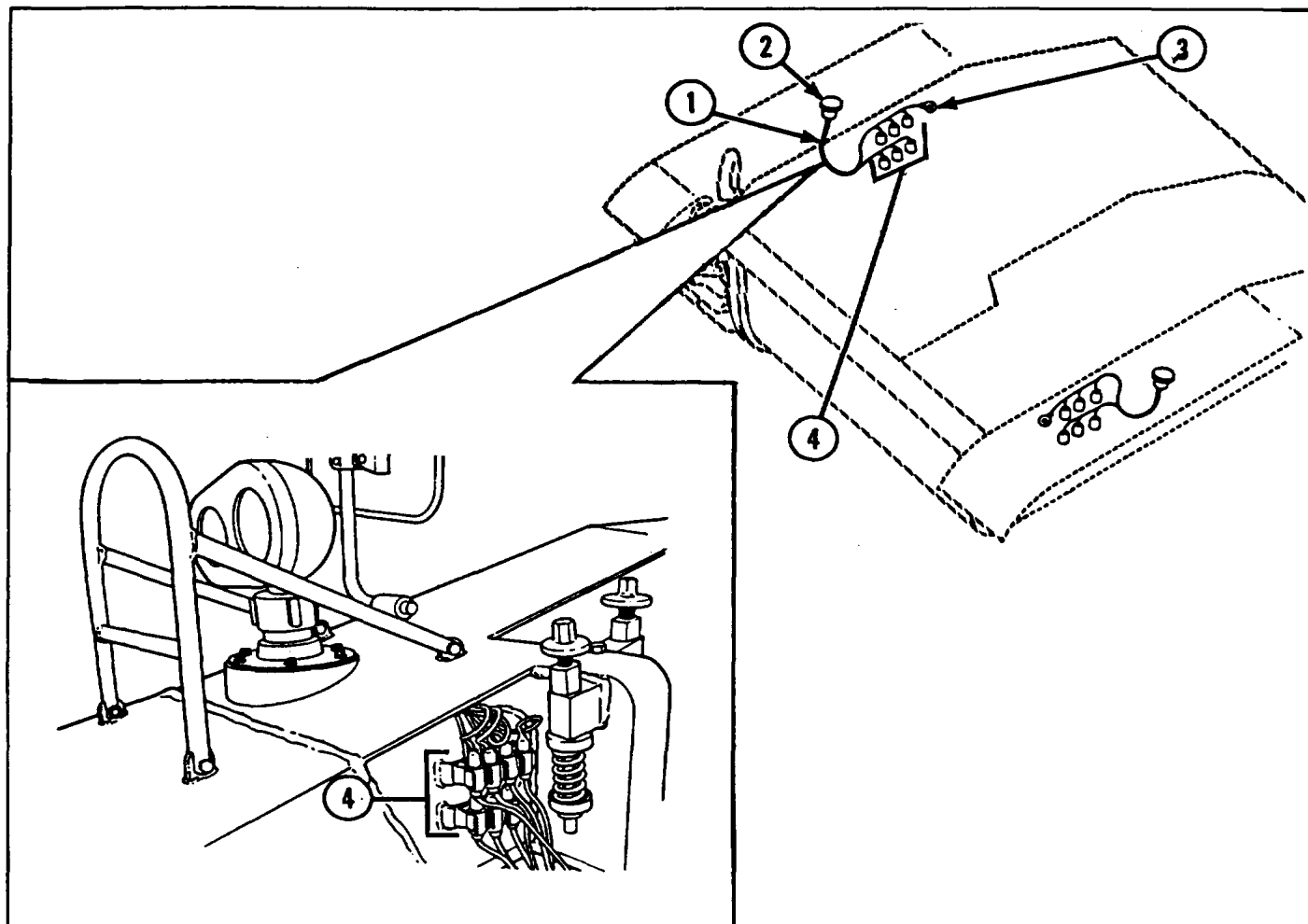
2-116. MAINTENANCE OF RIGHT AND LEFT DISCONNECT TO HEADLAMP WIRING HARNESS (CONT).

REASSEMBLY



- 1 Install spring tension clip (1), two new lockwashers (2), and two machine screws (3) on threaded base (4).
- 2 Install new nonmetallic seal (5) on threaded base (4).
- 3 Align nonmetallic bushing (6) with keyway in threaded base (4), and install nonmetallic bushing in threaded base.
- 4 Install electrical insert (7) in threaded base (4).
Install rod (8) in electrical insert.
- 5 Solder electrical wire (9) to electrical contacts (10) with solder per TB SIG-222.
- 6 Install electrical lead 19 through pin hole G in electrical insert (7) and nonmetallic bushing (6).
- 7 Install electrical lead 18 through pin hole A in electrical insert (7) and nonmetallic bushing (6).
- 8 Install electrical lead 17 through pin hole B in electrical insert (7) and nonmetallic bushing (6).
- 9 Install electrical lead 91 through pin hole C in electrical insert (7) and nonmetallic bushing (6).
- 10 Install electrical lead 515 through pin hole D in electrical insert (7) and nonmetallic bushing (6).
- 11 Install electrical lead 514 through pin hole E in electrical insert (7) and nonmetallic bushing (6).
- 12 Install electrical lead 20 through pin hole F in electrical insert (7) and nonmetallic bushing (6).
- 13 Check continuity of each electrical lead in disconnect to headlamp wiring harness per MIL-STD-202, method 303.
- 14 Install black electrical tape (11) on electrical wires (9) where insulation was stripped back. Make 0.5 in. (1.27 cm) overlapping turns to ensure that leads are adequately covered.

INSTALLATION

**NOTE**

Procedures to install disconnect to headlamp wiring harness are written for the right side, but apply to both the right and left sides.

- 1 Install right disconnect to headlamp wiring harness (1) to hull.
- 2 Slide headlamp base assembly (2) into hull.
- 3 Connect ground terminal (3) to ground on right disconnect to headlamp wiring harness (1).
- 4 Untag and connect six shell connectors to line connections on right disconnect to headlamp wiring harness (1).
- 5 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Install hardware which secures the wiring harness or lead. Ensure the wiring harness or lead is secure and all hardware is tight.

2-117. MAINTENANCE OF RELAY TO STARTER AND NEUTRAL POSITION SWITCH IN BRANCHED WIRING HARNESS.

This task covers:

- | | |
|-----------------------------|------------------------|
| a. <i>Removal</i> | d. <i>Reassembly</i> |
| b. <i>Disassembly</i> | e. <i>Installation</i> |
| c. <i>Inspection/Repair</i> | |

INITIAL SETUP

Materials/Parts

Electrical wire (figure D-1, appx D)
Sleeving insulation (figure D-19, appx D)

References

TM 9-2350-304-24P-1

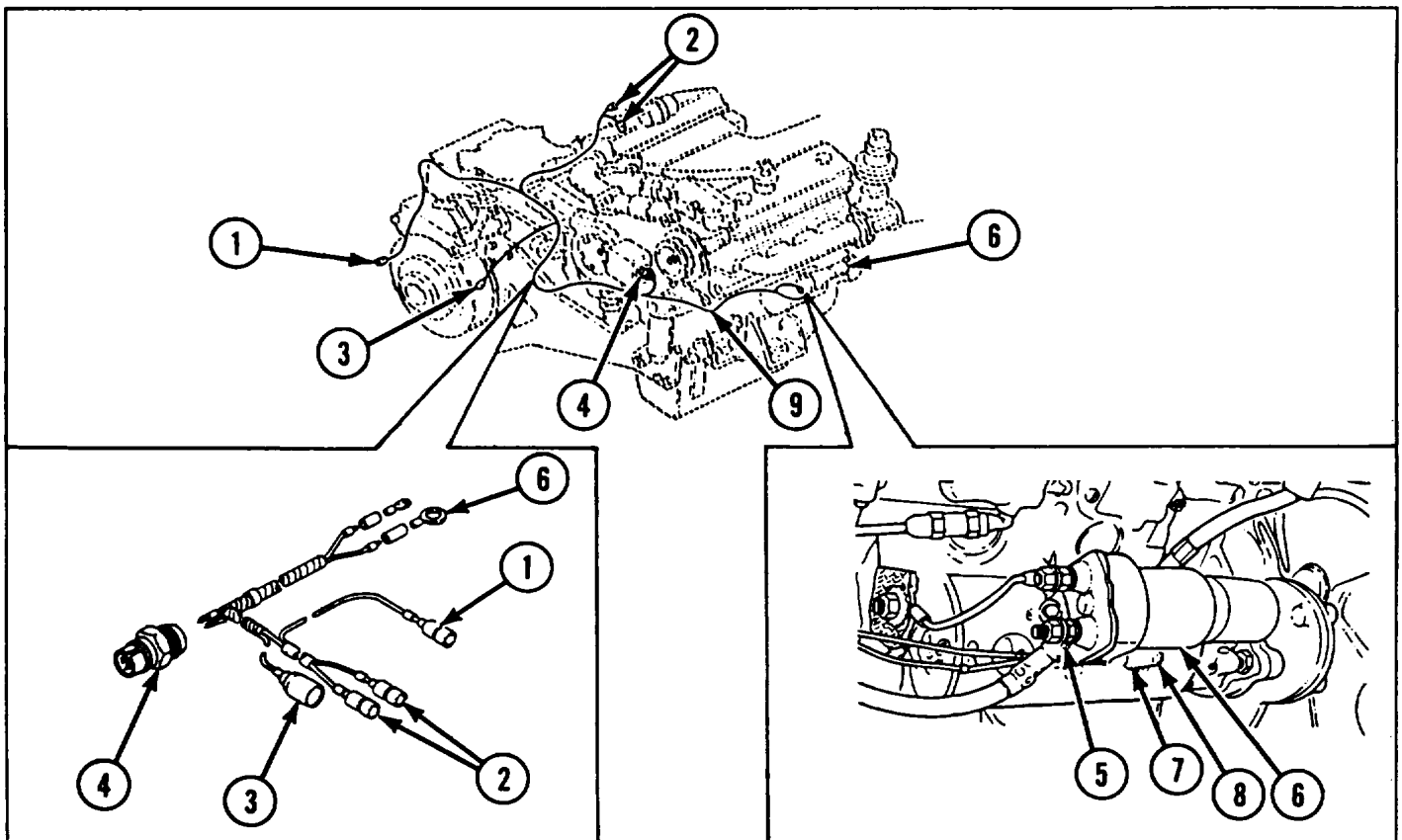
Equipment Conditions

2-624 Batteries disconnected
2-380 Powerplant removed.

General Safety Instructions

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.



REMOVAL**WARNING**

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the powerplant with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Tag and disconnect shell connector (1) from line connection.
- 3 Tag and disconnect two shell connectors (2) from neutral position switch.
- 4 Tag and disconnect shell connector (3) from line connection.
- 5 Disconnect plug connector (4) from relay.
- 6 Tag and disconnect cable terminal (5) from starter coil (6).
- 7 Tag and disconnect cable terminal (7) from 24-volt starter terminal (8).
- 8 Remove relay to starter and neutral position switch branched wiring harness (9) from powerplant.

DISASSEMBLY

For disassembly of wiring harness plug connector, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.

- 3 For repair of cable terminals and shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical wire and sleeving insulation are manufactured items, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness plug connector, refer to general maintenance, page 2-364.

INSTALLATION

- 1 Install relay to starter and neutral position switch branched wiring harness (9) to powerplant.
- 2 Untag and connect cable terminal (7) to 24-volt starter terminal (8).
- 3 Untag and connect cable terminal (5) to starter coil (6).
- 4 Connect plug connector (4) to relay.
- 5 Untag and connect shell connector (3) to line connection.
- 6 Untag and connect two shell connectors (2) to neutral position switch.
- 7 Untag and connect shell connector (1) to line connection.
- 8 Wiring harnesses and leads are secured to the powerplant with loop clamps, straps, ground screws, etc. During installation make sure the wiring harness or lead is secure and all hardware is tight.

2-118. MAINTENANCE OF FUEL PURGE-AND-PRIME SWITCH TO SOLENOID ELECTRICAL LEAD (ENGINE MODEL 7083-7398) AND FUEL PURGE-AND-PRIME SWITCH TO SOLENOID ELECTRICAL LEAD (ENGINE MODEL 7083-7395)

This task covers: a. *Removal* b. *Inspection/Repair* c. *Installation*

INITIAL SETUP

Materials/Parts

Electrical wire (figure D-1, appx D)

References

TM 9-2350-304-24P-1

Equipment Conditions

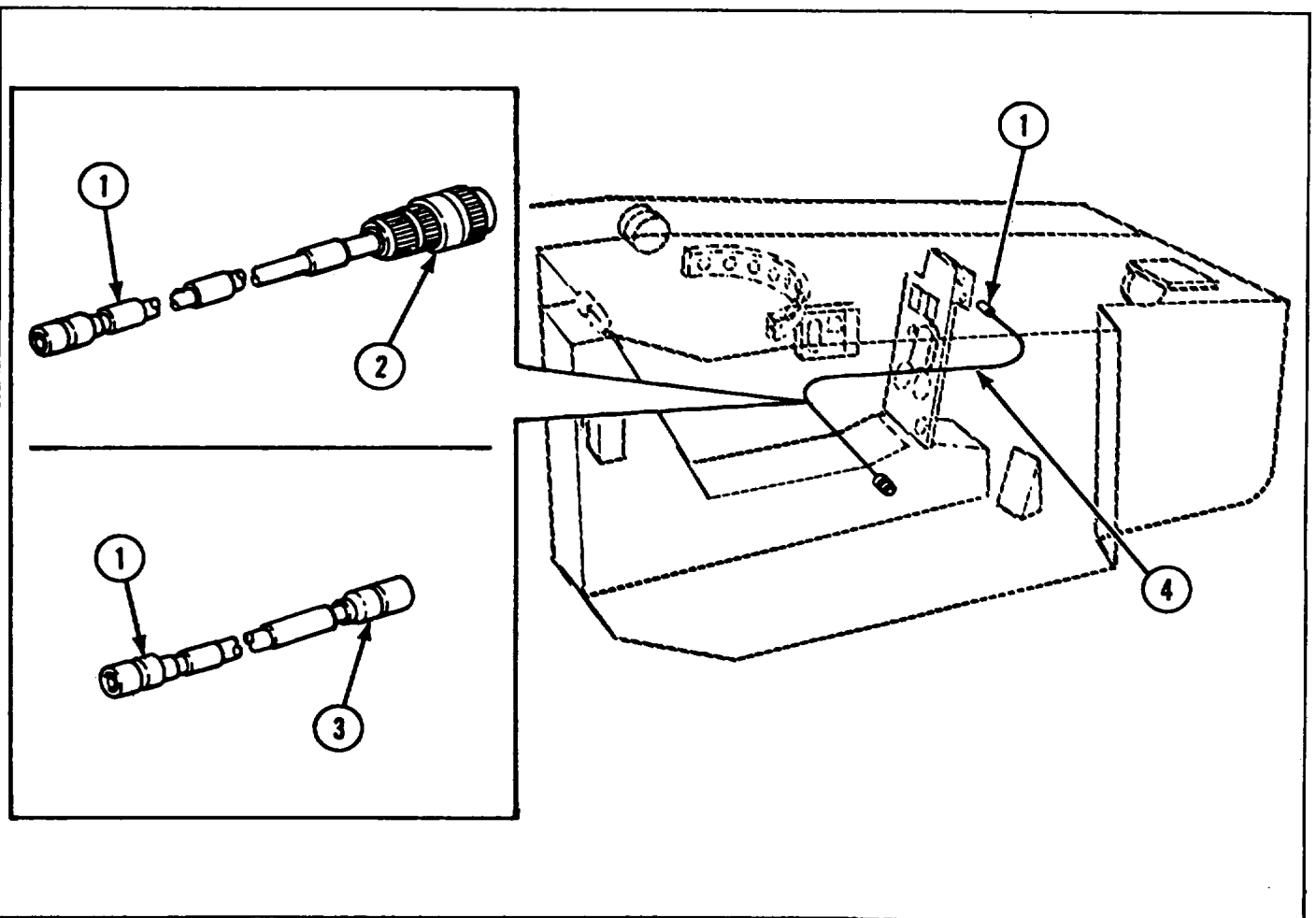
- 2-624 Batteries disconnected
- 2-911 Driver's seat removed

General Safety Instructions

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

REMOVAL



WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Disconnect shell connector (1) from prime switch.

NOTE

Step 3 applies to engine model 7083-7398 only.

- 3 Disconnect plug connector (2) from solenoid valve.

NOTE

Step 4 applies to engine model 7083-7395 only.

- 4 Disconnect shell connector (3) from pump.
- 5 Remove fuel purge-and-prime switch-to-solenoid electrical lead (4) from hull through driver's compartment.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical wire is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-118. MAINTENANCE OF FUEL PURGE-AND PRIME SWITCH TO SOLENOID ELECTRICAL LEAD (ENGINE MODEL 7083-7398) AND FUEL PURGE-AND-PRIME SWITCH TO SOLENOID ELECTRICAL LEAD (ENGINE MODEL 7083-7395) (CONT).

INSTALLATION

- 1 Install fuel purge-and-prime switch-to-solenoid electrical lead (1) in hull through driver's compartment.

NOTE

Step 2 applies to engine model 70837395 only.

- 2 Connect shell connector (2) to pump.

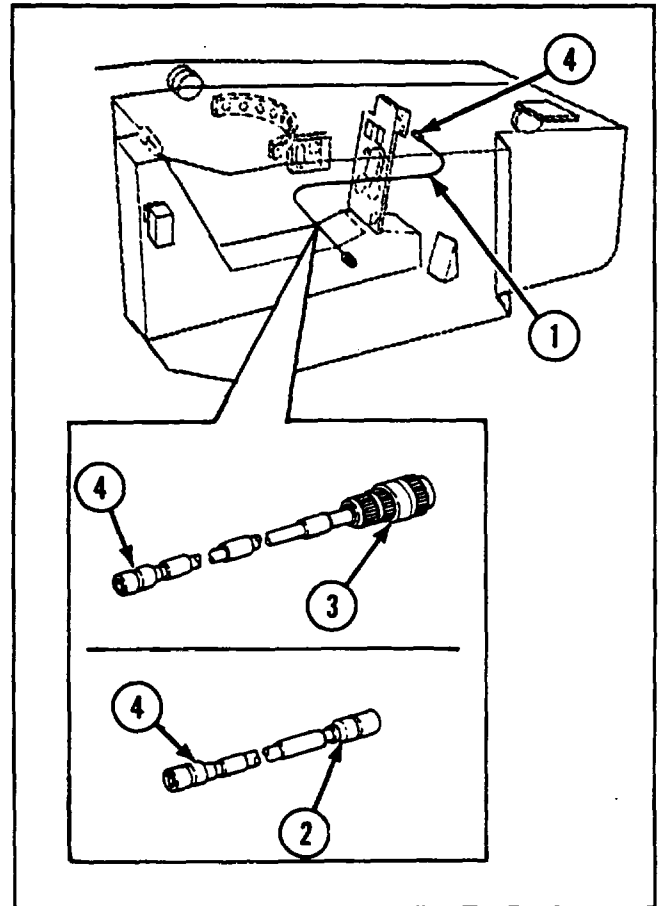
NOTE

Step 3 applies to engine model 70837398 only.

- 3 Connect plug connector (3) to solenoid valve.

- 4 Connect shell connector (4) to prime switch.

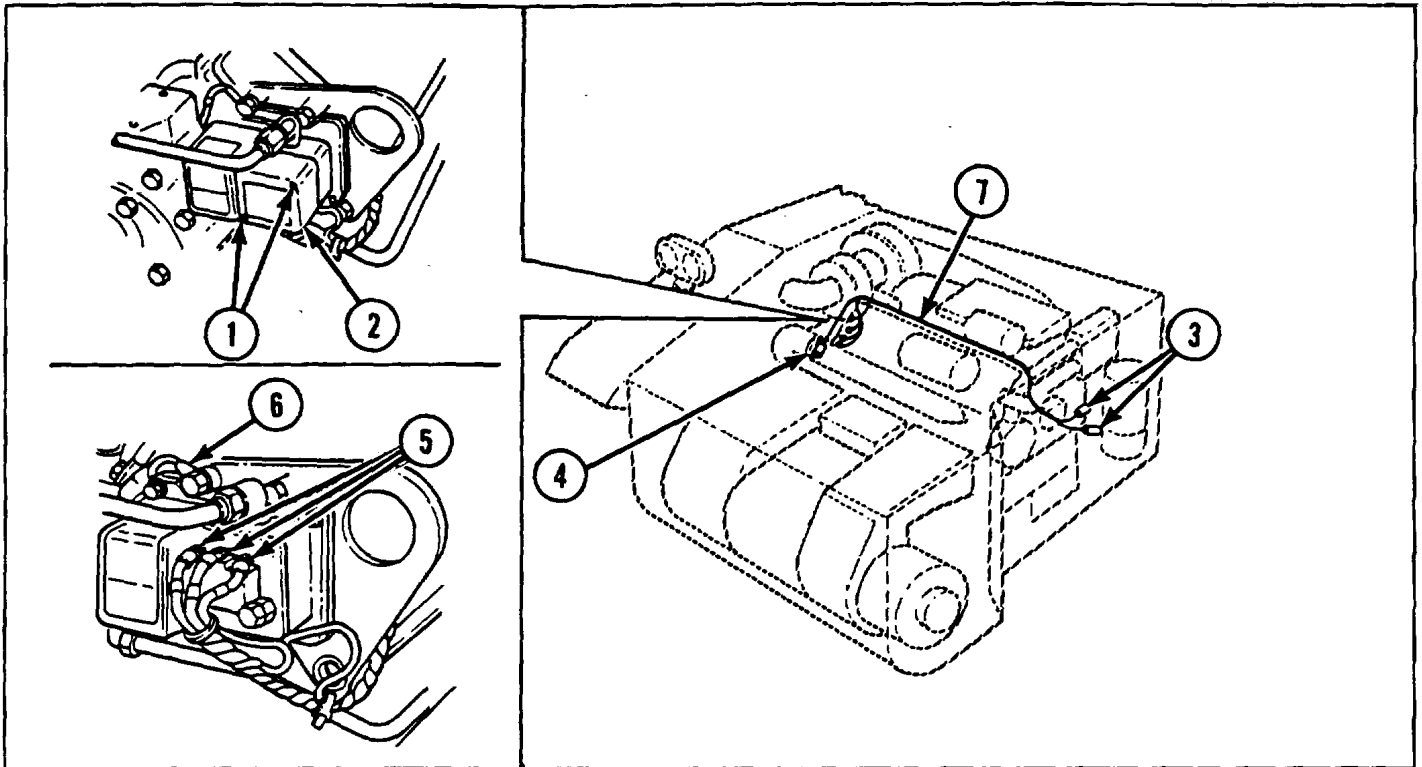
- 5 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.



2-119. MAINTENANCE OF WARNING LIGHT LOW COOLANT DETECTOR TO BULKHEAD DISCONNECT BRANCHED WIRING HARNESS.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<p><i>Materials/Parts</i> Electrical wire (figure D-1, appx D)</p> <p><i>References</i> TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i> 2-624 Batteries disconnected</p>		<p><i>General Safety Instructions</i></p> <div style="border: 1px solid black; padding: 5px; text-align: center;">WARNING</div> <p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p>	

REMOVAL



WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

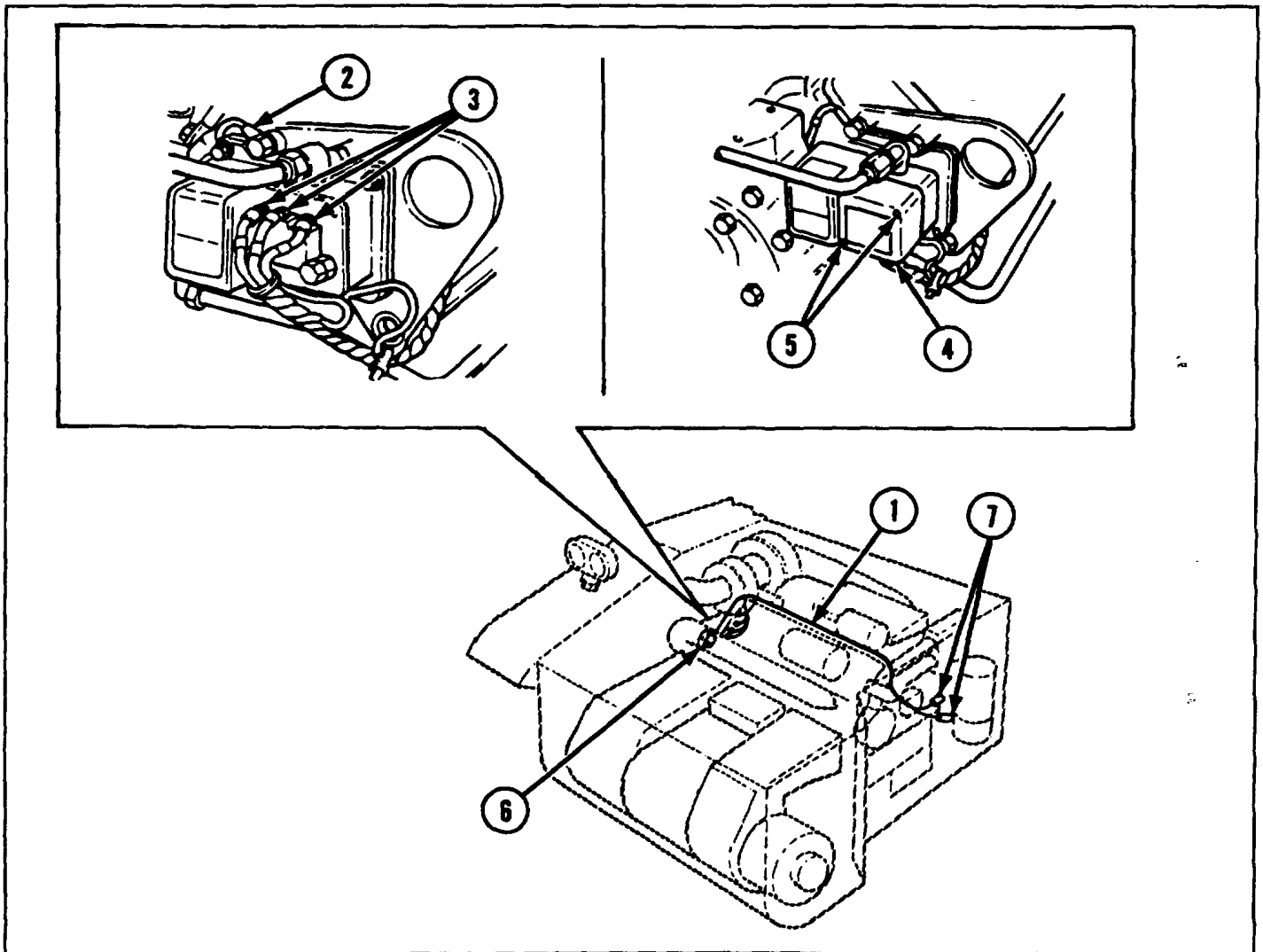
- 1 Wiring harnesses and leads are secured to the engine with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Remove two screws (1) and aeration detection cover (2).
- 3 Tag and disconnect two shell connectors (3) from line disconnects to warning light.
- 4 Tag and disconnect shell connector (4) from diode assembly and transmission temperature warning switch.
- 5 Tag and disconnect three cable terminals (5) from aeration detector.
- 6 Tag and disconnect cable terminal (6) from ground.
- 7 Remove warning light low coolant detector to bulkhead disconnect branched wiring harness (7) from powerplant.

2-119. MAINTENANCE OF WARNING LIGHT LOW COOLANT DETECTOR TO BULKHEAD DISCONNECT BRANCHED WIRING HARNESS (CONT).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of shell connectors and cable terminals, refer to page 2-364.
- 4 Electrical wire is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION



- 1 Install warning light low coolant detector to bulkhead disconnect branched wiring harness (1) from powerplant.
- 2 Untag and connect cable terminal (2) to ground.
- 3 Untag and connect three cable terminals (3) to aeration detector.
- 4 Install aeration detector cover (4) and two screws (5).
- 5 Untag and connect shell connector (6) to diode assembly and transmission temperature warning switch.
- 6 Untag and connect two shell connectors (7) to line disconnects to warning light.
- 7 Wiring harnesses and leads are secured to the engine with loop clamps, straps, ground screws, etc. During installation make sure the wiring harness or lead is secure and all hardware is tight.

2-120. MAINTENANCE OF AERATION DETECTOR BRANCHED WIRING HARNESS.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
<p>INITIAL SETUP</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><i>Materials/Parts</i> Electrical wire (figure D-1, appx D)</p> <p><i>References</i> TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i> 2-624 Batteries disconnected 2-380 Powerplant removed</p> </div> <div style="width: 45%; text-align: center;"> <p><i>General Safety Instructions</i></p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">WARNING</div> <p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p> </div> </div>			

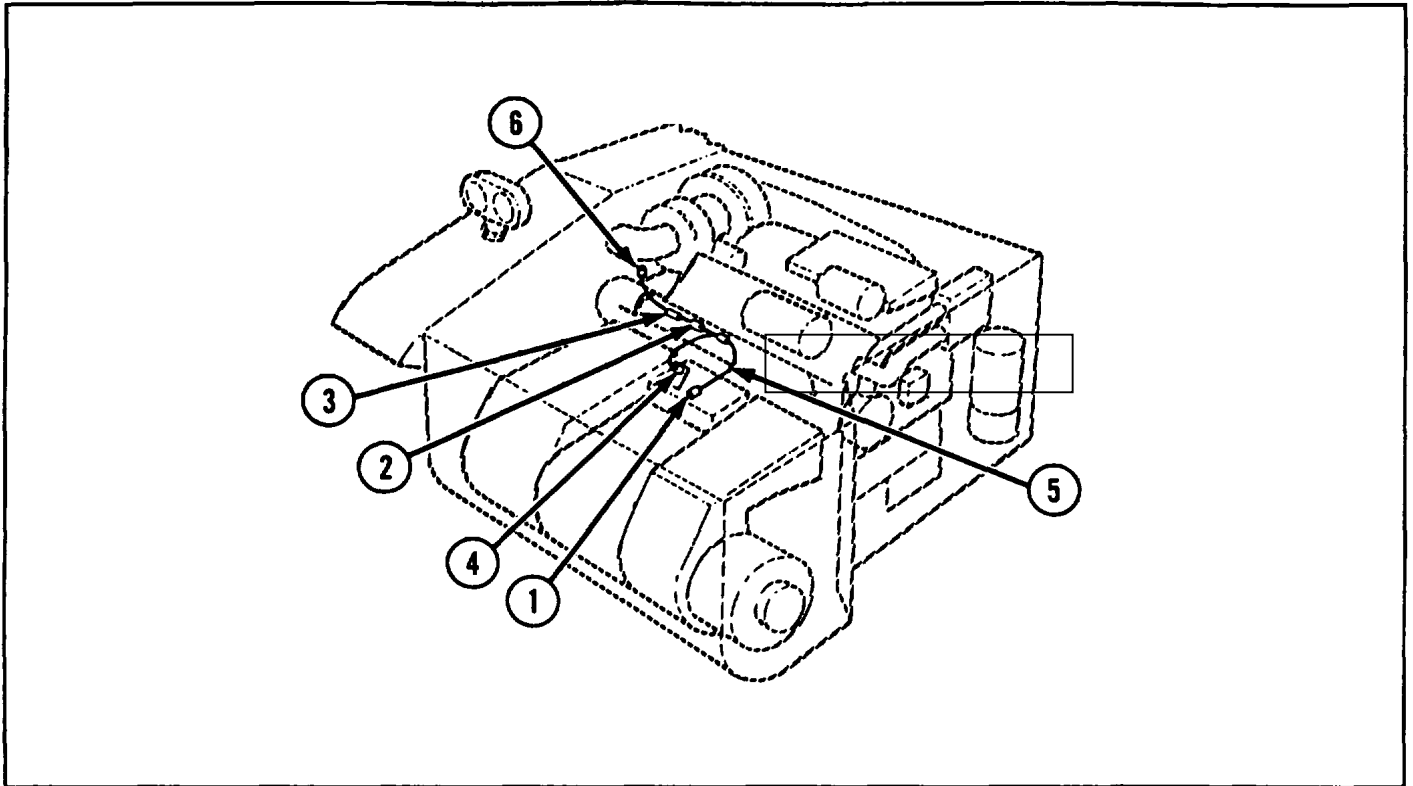
REMOVAL

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the powerplant with loop clamps, straps, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.

2-120. MAINTENANCE OF AERATION DETECTOR BRANCHED WIRING HARNESS (CONT).



- 2 Disconnect shell connector (1) from horn relay.
- 3 Disconnect shell connector (2) from aeration detector lead and diode assembly (3).
- 4 Disconnect shell connector (4) from transmission oil temperature warning switch.
- 5 Remove aeration detector branched wiring harness (5) from powerplant.
- 6 Disconnect shell connector (6) from line connection.
- 7 Remove aeration detector lead and diode assembly (3) from powerplant.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical wire is a manufactured item, refer to appendix D.
- 5 Repair by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install aeration detector lead and diode assembly (3) in powerplant.
- 2 Connect shell connector (6) to line connection disconnect.
- 3 Install aeration detector wiring harness (5) to powerplant.
- 4 Connect shell connector (4) to transmission oil temperature warning switch.
- 5 Connect shell connector (2) to aeration detector lead and diode assembly (3).
- 6 Connect shell connector (1) to horn relay.
- 7 Wiring harnesses and leads are secured to the powerplant with loop clamps, straps, ground screws, etc. During installation make sure the wiring harness or lead is secure and all hardware is tight.

2-121. MAINTENANCE OF LOW COOLANT WARNING LIGHT TO BULKHEAD DISCONNECT BRANCHED WIRING HARNESS.

This task covers:	a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i>	d. <i>Reassembly</i> e. <i>Installation</i>
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INITIAL SETUP

Materials/Parts

Electrical wire (figure D-3, appx D)

References

TM 9-2350-304-24P-1

Equipment Conditions

2-624 Batteries disconnected
 2-911 Driver's seat removed

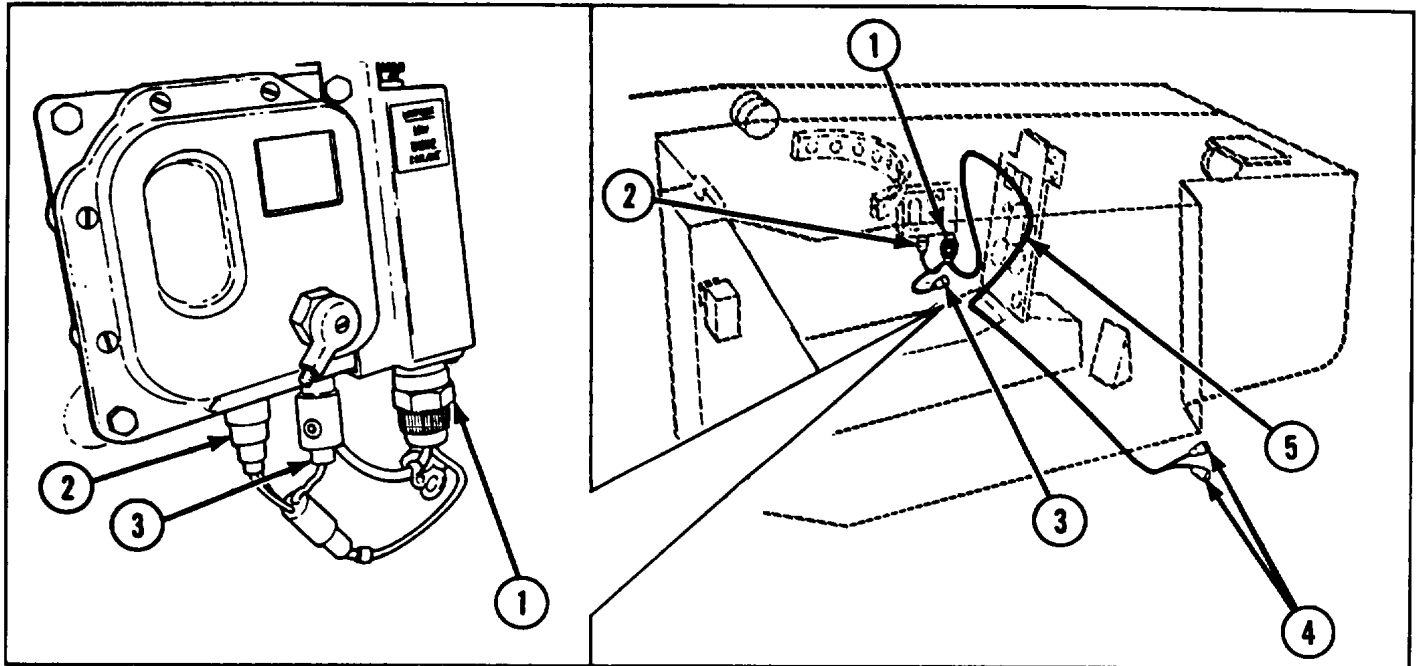
General Safety Instructions

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

2-121. MAINTENANCE OF LOW COOLANT WARNING LIGHT TO BULKHEAD DISCONNECT BRANCHED WIRING HARNESS (CONT).

REMOVAL



WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Disconnect plug connector (1) from aeration detector warning light.
- 3 Disconnect shell connector (2) from driver's dome light.
- 4 Disconnect shell connector (3) from line disconnect to circuit breaker.
- 5 Disconnect two shell connectors (4) from aeration detector.
- 6 Remove low coolant warning light to bulkhead disconnect branched wiring harness (5) from hull through driver's compartment.

DISASSEMBLY

For disassembly of wiring harness plug connector, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of shell connectors, refer to general maintenance, page 2-364.
- 4 Electrical wire is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness plug connector, refer to general maintenance, page 2-364.

INSTALLATION

- 1 Install low coolant warning light to bulkhead disconnect branched wiring harness (5) in hull through driver's compartment.
- 2 Connect two shell connectors (4) to aeration detector.
- 3 Connect shell connector (3) to line disconnect to circuit breaker.
- 4 Connect shell connector (2) to driver's dome light.
- 5 Connect plug connector (1) to aeration detector warning light.
- 6 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-122. MAINTENANCE OF MASTER RELAY TO BULKHEAD DISCONNECT CABLE ASSEMBLY.

This task covers:

- | | |
|-----------------------------|------------------------|
| a. <i>Removal</i> | d. <i>Reassembly</i> |
| b. <i>Disassembly</i> | e. <i>Installation</i> |
| c. <i>Inspection/Repair</i> | |

INITIAL SETUP

Materials/Parts

Electrical wire (figure D-1, appx D)

References

TM 9-2350-304-24P-1

Equipment Conditions

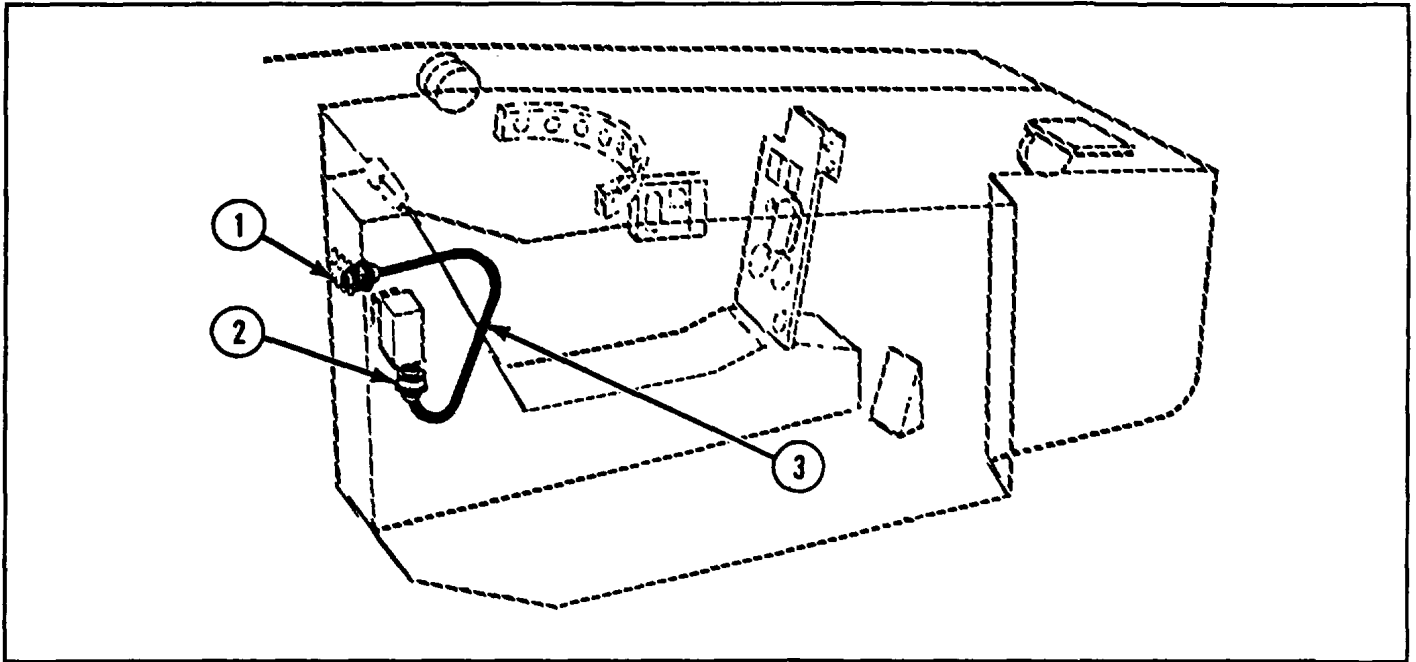
- 2-624 Batteries disconnected
- 2-911 Driver's seat removed
- 2-879 Driver's compartment forward cowl removed
- 2-879 Driver's compartment aft cowl removed

General Safety Instructions

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

2-122. MAINTENANCE OF MASTER RELAY TO BULKHEAD DISCONNECT CABLE ASSEMBLY (CONT).

**REMOVAL****WARNING**

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Tag and disconnect plug connector (1) from bulkhead disconnect to batteries.
- 3 Tag and disconnect plug connector (2) from master relay.
- 4 Remove master relay to bulkhead disconnect cable assembly (3) from hull through driver's compartment.

DISASSEMBLY

For disassembly of wiring harness plug connectors, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 Electrical wire is a manufactured item, refer to appendix D.
- 4 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness plug connectors, refer to general maintenance, page 2-364.

INSTALLATION

- 1 Install master relay to bulkhead disconnect cable assembly (3) to hull through driver's compartment.
- 2 Untag and connect plug connector (2) to master relay.
- 3 Untag and connect plug connector (1) to bulkhead disconnect to batteries.
- 4 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-123. MAINTENANCE OF VOLTAGE REGULATOR TO BULKHEAD DISCONNECT, SLAVE RECEPTACLE, AND ACCESSORIES PANEL CABLE ASSEMBLY; AND SLAVE RECEPTACLE AND GROUND ELECTRICAL LEAD.

This task covers:

- | | |
|-----------------------------|------------------------|
| a. <i>Removal</i> | d. <i>Reassembly</i> |
| b. <i>Disassembly</i> | e. <i>Installation</i> |
| c. <i>Inspection/Repair</i> | |

INITIAL SETUP

Materials/Parts

- Electrical wire (figure D-1, appx D)
- Nonmetallic rod (figure D-23, appx D)

References

TM 9-2350-304-24P-1

Equipment Conditions

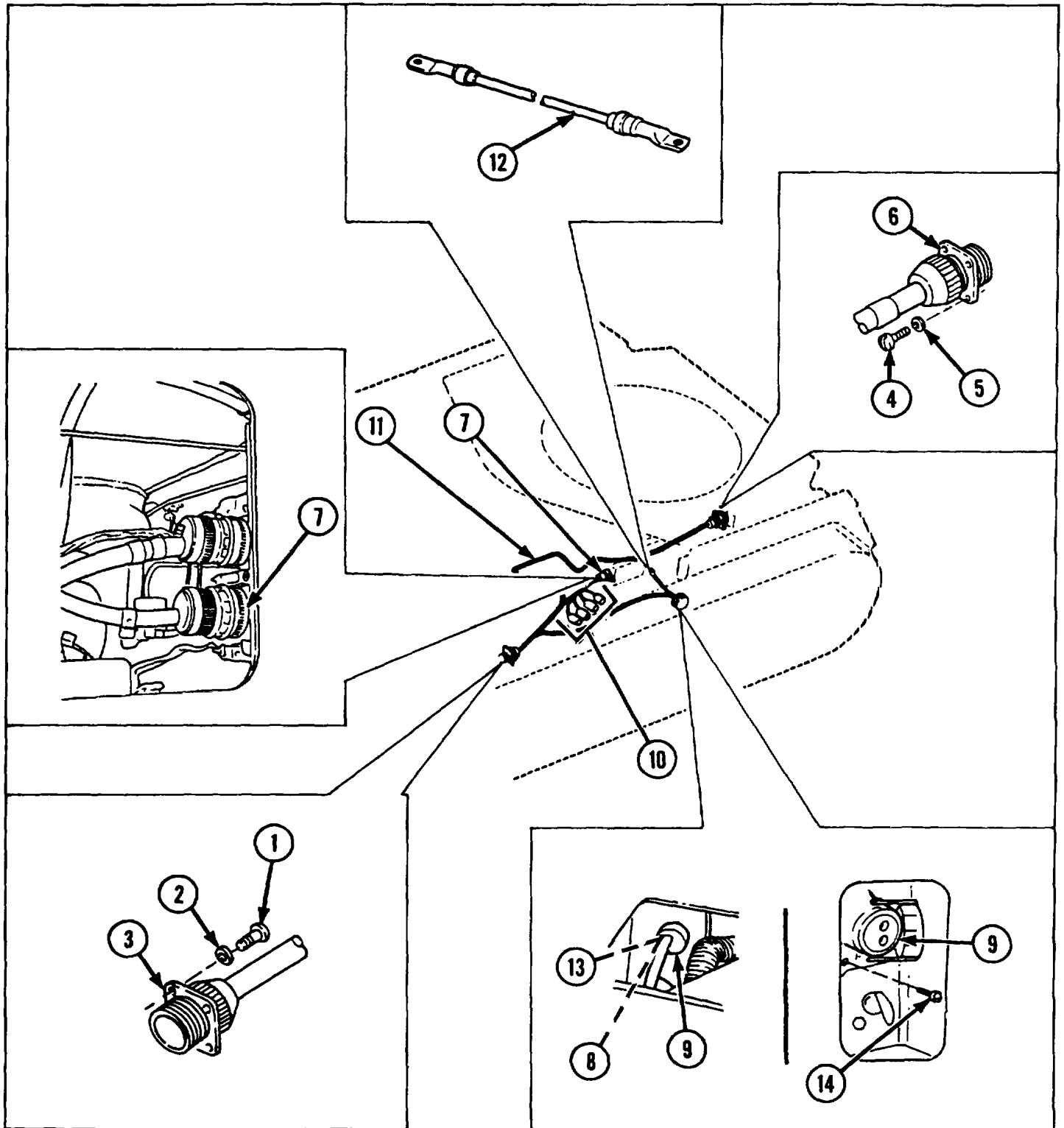
- 2-875 Hull access cover removed
- 2-624 Battery access cover open and all batteries removed

General Safety Instructions

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

2-123. MAINTENANCE OF VOLTAGE REGULATOR TO BULKHEAD DISCONNECT, SLAVE RECEPTACLE, AND ACCESSORIES PANEL CABLE ASSEMBLY; AND SLAVE RECEPTACLE AND GROUND ELECTRICAL LEAD (CONT).



WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.
- 2 Remove four screws (1) and four washers (2), and tag and disconnect receptacle connector (3) from bulkhead disconnect.
- 3 Remove four screws (4) and four washers (5), and tag and disconnect receptacle connector (6) from hull disconnect.
- 4 Disconnect plug connector (7) from voltage regulator.
- 5 Disconnect cable terminal (8) of voltage regulator to bulkhead disconnect, slave receptacle, and accessories panel cable assembly from slave receptacle connector (9).
- 6 Tag and disconnect four shell connectors (10) from circuit breakers.
- 7 Remove voltage regulator to bulkhead disconnect, slave receptacle, and accessories panel cable assembly (11) from hull.
- 8 Tag and disconnect slave receptacle (NATO) and ground electrical lead (12) from hull.
- 9 Tag and disconnect slave receptacle (NATO) and ground electrical lead cable terminal (13) from slave receptacle connector (9).

10 Remove slave receptacle (NATO) and ground electrical lead (12) from hull.

11 Remove four screws (14) and slave receptacle connector (9) from hull.

DISASSEMBLY

For disassembly of wiring harness plug connector and receptacle connectors, refer to general maintenance, page 2-364.

INSPECTION/REPAIR

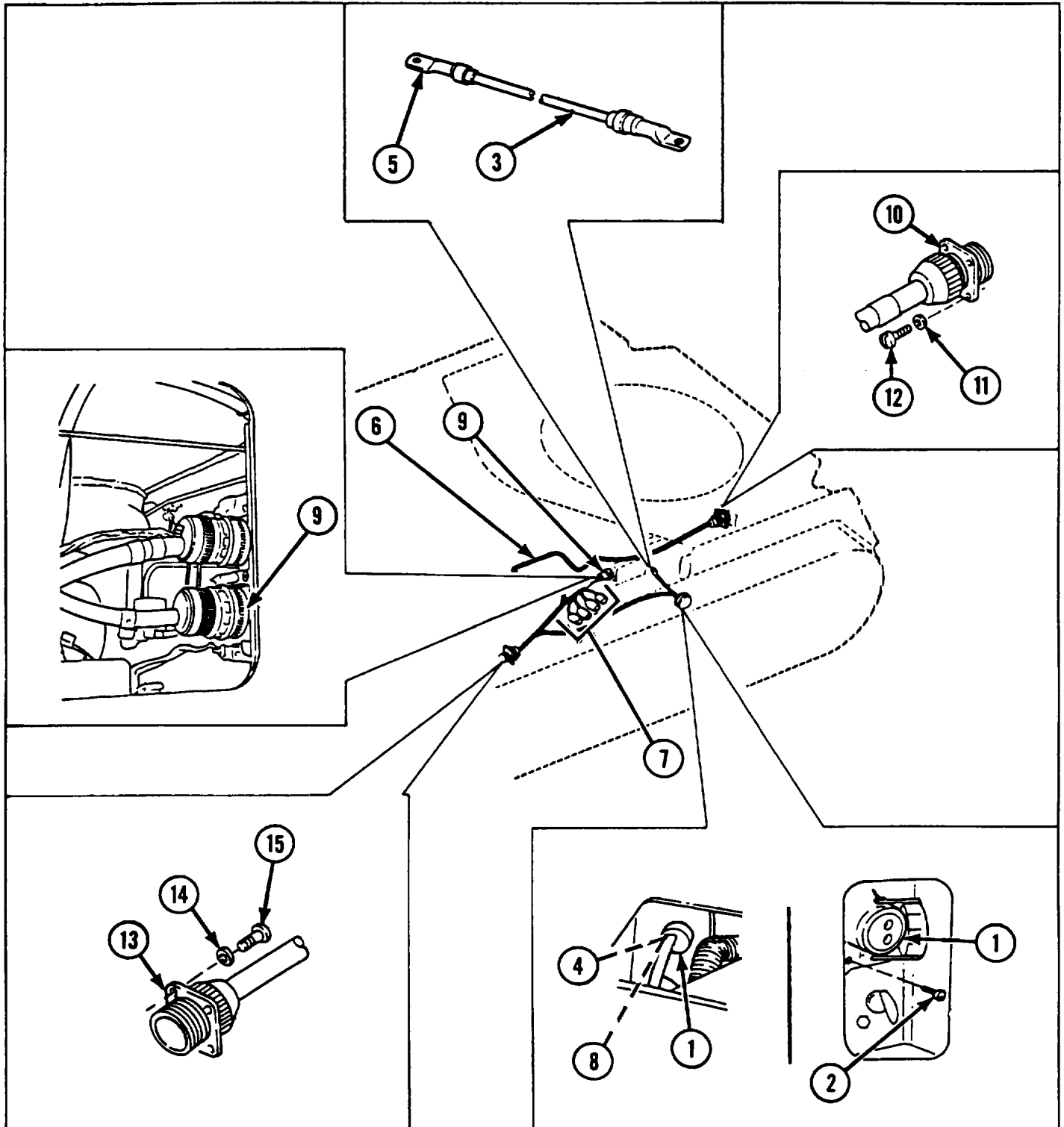
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 3 For repair of shell connectors and cable terminals, refer to general maintenance, page 2-364.
- 4 Electrical wires and nonmetallic rods are manufactured items, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness plug connector and receptacle connectors, refer to general maintenance page 2-364.

2-123. MAINTENANCE OF VOLTAGE REGULATOR TO BULKHEAD DISCONNECT, SLAVE RECEPTACLE, AND ACCESSORIES PANEL CABLE ASSEMBLY; AND SLAVE RECEPTACLE AND GROUND ELECTRICAL LEAD (CONT).

INSTALLATION

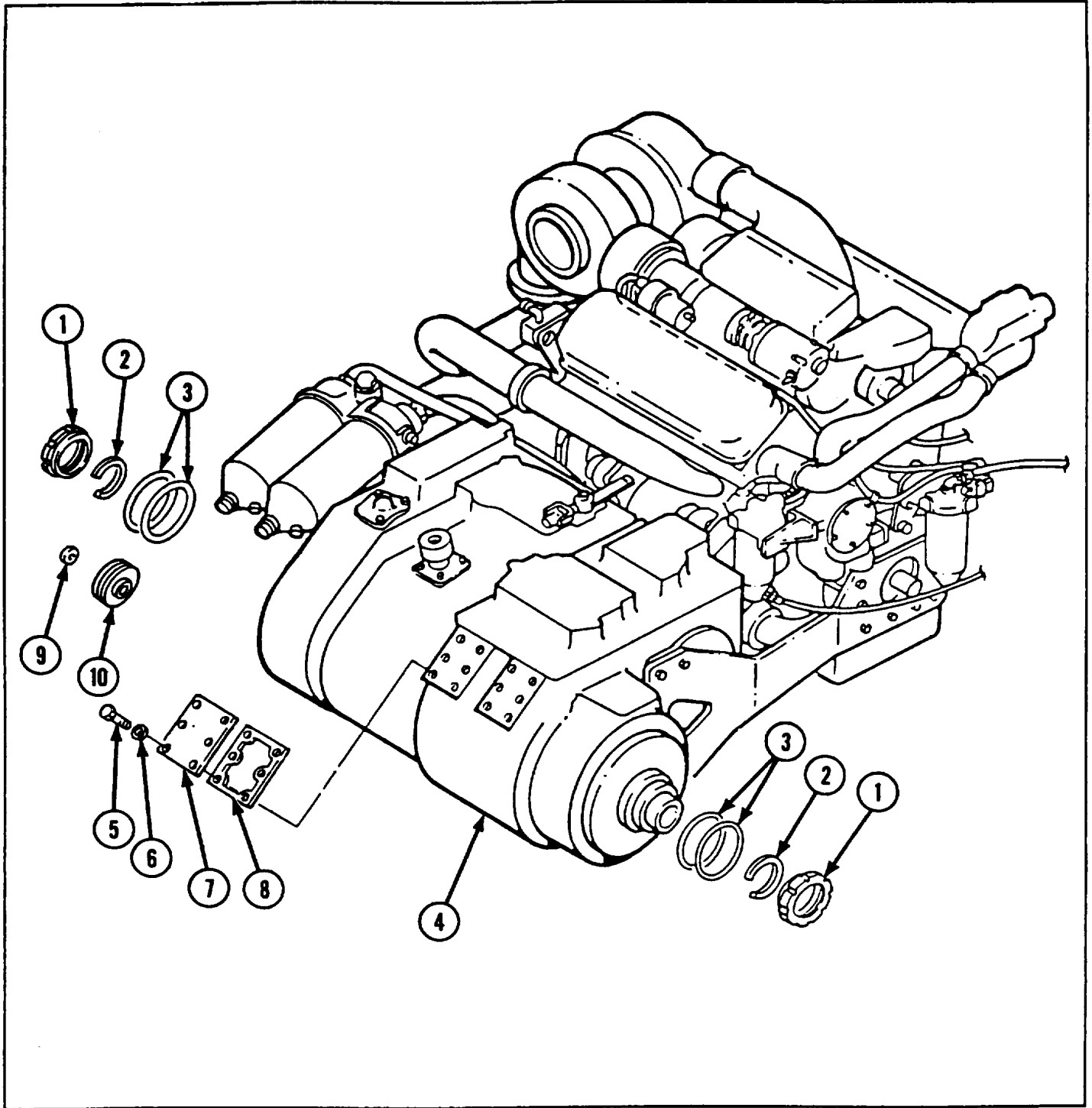


- 1 Install slave receptacle connector (1) and four screws (2) in hull.
- 2 Install slave receptacle (NATO) and ground electrical lead (3) in hull.
- 3 Untag and connect slave receptacle (NATO) and ground electrical lead cable terminal (4) to slave receptacle connector (1).
- 4 Untag and connect slave receptacle (NATO) and ground electrical lead cable terminal (5) to hull.
- 5 Install voltage regulator to bulkhead disconnect, slave receptacle, and accessories panel cable assembly (6) in hull.
- 6 Untag and connect four shell connectors (7) to circuit breakers.
- 7 Connect cable terminal (8) of voltage regulator to bulkhead disconnect, slave receptacle and accessories panel cable assembly to slave receptacle (1).
- 8 Connect plug connector (9) to voltage regulator.
- 9 Untag and connect receptacle connector (10) and install four washers (11), and four screws (12).
- 10 Untag and connect receptacle connector (13) and install four washers (14), and four screws (15).
- 11 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-124. MAINTENANCE OF TRANSMISSION COMPONENTS.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Materials/Parts</i>		<i>References</i>	
Gasket (2)		TM 9-2350-304-24P-1	
Lockwasher (4)			
Preformed packing		<i>Equipment Conditions</i>	
Preformed packing (4)		2-380 Powerplant removed	

2-124. MAINTENANCE OF TRANSMISSION COMPONENTS (CONT).



REMOVAL

1. Remove two plain nuts (1), two output shaft retainers (2), and four performed packings (3) from transmission (4).
2. Remove 12 hexagon head capscrews (5) and 4 lockwashers (6) from 2 brake adjustment covers (7).
3. Remove two brake adjustment covers (7) and two gaskets (8) from transmission (4).
4. Remove performed packing (9) from speedometer adapter (10).

INSPECTION/REPAIR

1. Inspect for broken, damaged, or missing parts.
2. Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

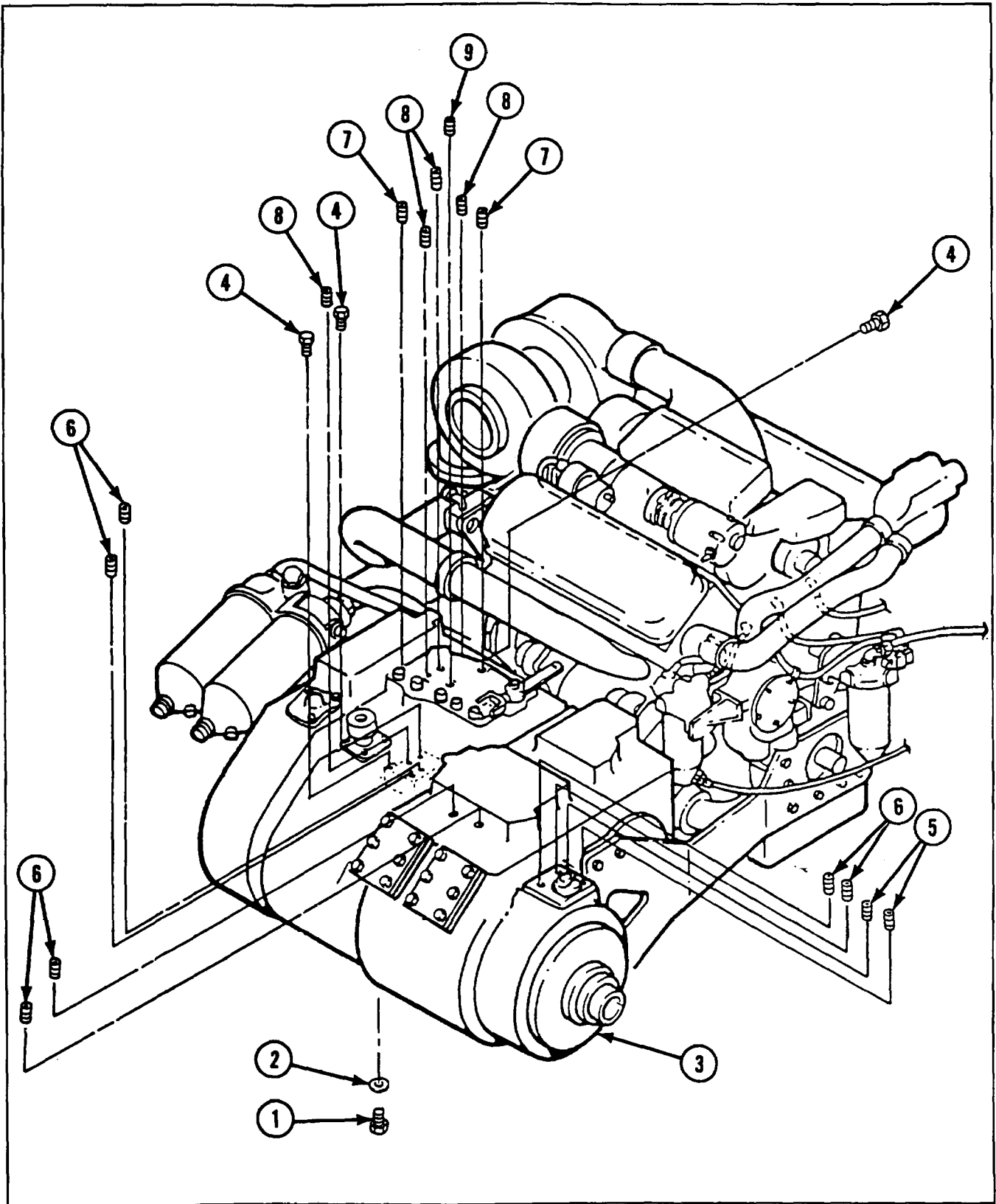
INSTALLATION

1. Install new performed packing (9) in speedometer adapter (10).
2. Install two new gaskets (8) and two brake adjustment covers (7) to transmission (4).
3. Secure 2 brake adjustment covers (7) to transmission (4) with 4 new lockwashers (6) and 12 hexagon head capscrews (5).
4. Install four new performed packings (3), two output shaft retainers (2), and two plain nuts (1) to transmission (4).

2-125. MAINTENANCE OF TRANSMISSION AND TRANSMISSION PLUGS.

This task covers:	a. Disassembly	c. Installation
	b. Inspection/Repair	d. Test
INITIAL SETUP:		
Tools and Special Tools Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B) Pressure gage tester (item 27, appx G)		Materials/Parts Metallic-encased gasket References TM 9-2350-304-24P-1

2-125. MAINTENANCE OF TRANSMISSION AND TRANSMISSION PLUGS (CONT).



REMOVAL

- 1 Perform transmission pressure test. Refer to page 2-724.
- 2 Remove powerplant. Refer to page 2-380.
- 3 Remove oil drain machine plug (1) and metallic-encased gasket (2) from transmission (3).
- 4 Remove three pipe plugs (4) from transmission (3).
- 5 Remove two hexagon socket pipe plugs (5) from transmission (3).
- 6 Remove six pipe plugs (6) from transmission (3).
- 7 Remove two hexagon socket pipe plugs (7) from transmission (3).
- 8 Remove four pipe plugs (8) from transmission (3).
- 9 Remove pipe plug (9) from transmission (3).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install pipe plug (9) to transmission (3).
- 2 Install four pipe plugs (8) to transmission (3).
- 3 Install two hexagon socket pipe plugs (7) to transmission (3).
- 4 Install six pipe plugs (6) to transmission (3).
- 5 Install two hexagon socket pipe plugs (5) to transmission (3).
- 6 Install three pipe plugs (4) to transmission (3).
- 7 Install metallic-encased gasket (2) and oil drain machine plug (1) to transmission (3).
- 8 Install powerplant. Refer to page 2-380.

2-125. MAINTENANCE OF TRANSMISSION AND TRANSMISSION PLUGS (CONT).

TEST

WARNING

Vehicle has no brakes when final drives are disconnected. Failure to securely block vehicle tracks could injure personnel or damage vehicle or other equipment if vehicle rolls out of control.

1. Park vehicle on level ground Place 12.0 x 12.0x24.0-in. (30.5 x x61.0-cm) wood block (or equivalent) under front and rear of each track.
2. Remove transmission deck assembly. Refer to page 2-893.

CAUTION

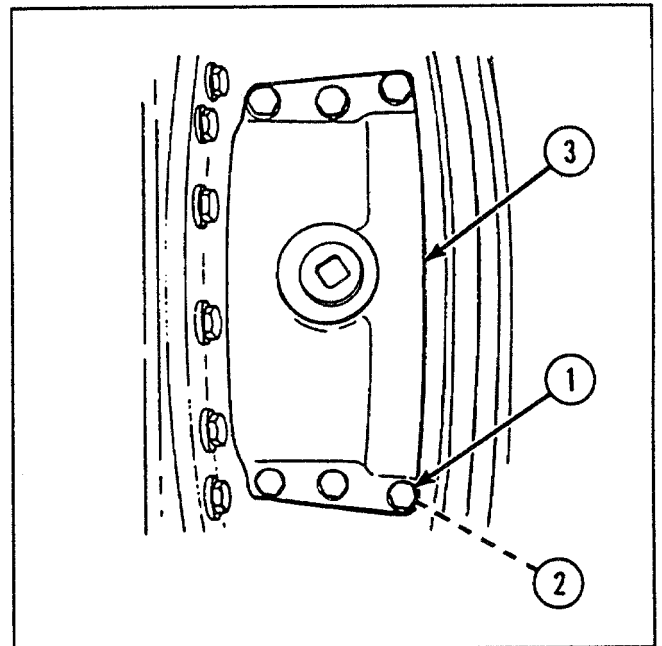
Do not over fill transmission

3. Check transmission oil level. Oil level must be between ADD and FULL marks on dipstick. Add or drain oil as necessary. Refer to the PMCS/lubrication table, page 2-12.

NOTE

Steps 4 thru 6 are written for one final drive but apply to both final drives. Disconnect both the right and left final drives before performing the transmission pressure test.

4. Remove six screws (1), six lockwashers (2), and output drive cap (3).

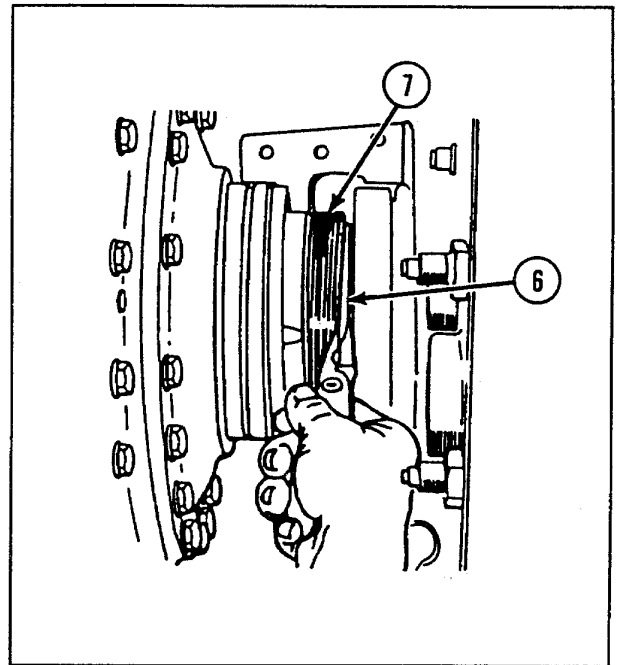
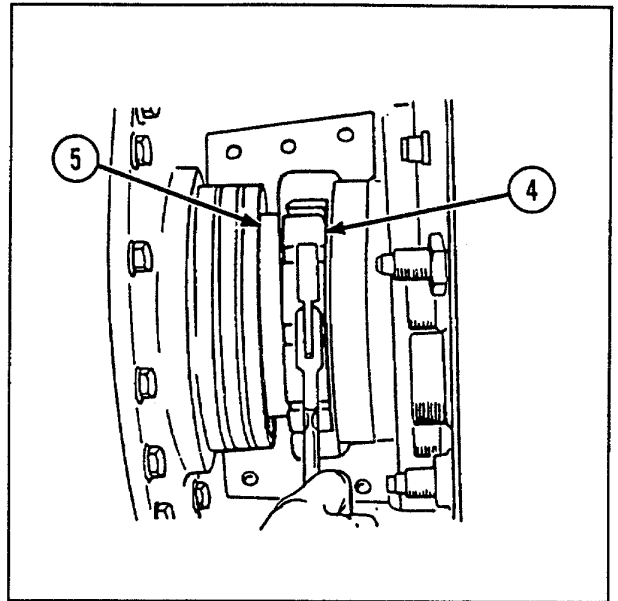


5. Unscrew final drive coupling nut (4) from transmission shaft (5), using drift and hammer or spanner wrench, Push final drive coupling nut into final drive housing.

6. Remove output shaft retaining ring (6) from final drive pinion shaft into final drive housing until clear of transmission.

7. Apply brakes and apply parking brake.

8. Start engine and shift transmission into 4th gear.



2-125. MAINTENANCE OF TRANSMISSION AND TRANSMISSION PLUGS (CONT).**TEST (CONT)****CAUTION**

If transmission oil temperature gets over 300 °F (149 °C) during any test, stop engine and troubleshoot transmission.

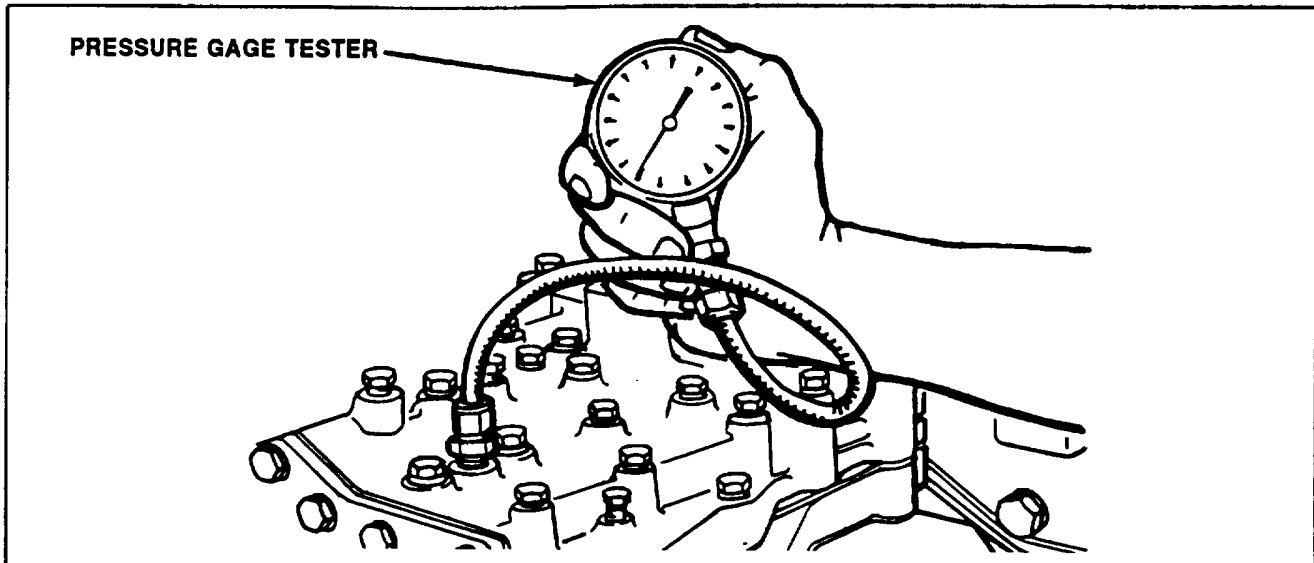
- 9 Run engine at 1600 to 1900 rpm for 3 to 8 minutes, or until transmission reaches about 220 °F (104 °C).
- 10 Shift transmission through all ranges several times.
- 11 Shift transmission to neutral (N). Increase engine speed to 1350 (1200 to 1500) rpm.
- 12 During warmup period, check transmission for leaks. Tighten loose bolts, plugs, and hose fittings. Replace damaged or missing parts. Refer to page 2-720 and page 2-721. If leakage cannot be stopped, notify direct support maintenance and stop pressure tests.
- 13 Check transmission oil level. Oil level must be at FULL mark on dipstick. Add or drain oil as necessary. Refer to the PMCS/lubrication table, page 2-12.

WARNING

Transmission contains hot oil under high pressure. Stop engine before removing or installing pipe plugs or pressure gage tester in pressure test points. Install pipe plugs as soon as pressure gage tester is removed. Remove only pipe plug at test point.

NOTE

- Steps 14 thru 17 apply to all transmission test points except as noted.
- When making steer clutch pressure tests, move steering bar slowly from horizontal to full steer in desired direction while watching pressure gage. Note pressure rise to maximum as steering bar moves to full steer.
- When making lockup engagement tests, increase engine speed slowly until lockup apply pressure is indicated on pressure gage. Record pressure and engine speed. Record governor pressure at lockup engagement.
- When making lockup release tests, first increase engine speed higher than lockup engagement speed, then slowly reduce engine speed while watching pressure gage. When pressure drops quickly, record governor pressure and engine speed.

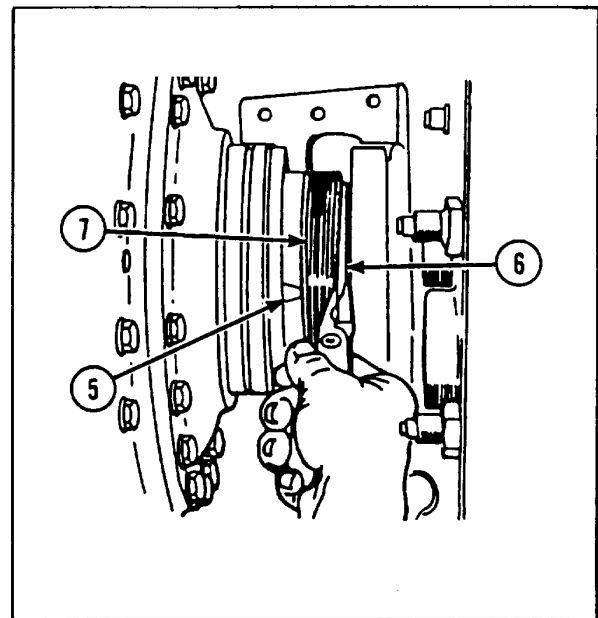


14. Stop engine. Remove plug from test point to be pressure-tested (see fig. 2-1).
15. Install pressure gage tester and start engine.
16. Reduce engine speed to idle. Shift transmission to desired range (see fig. 2-1).
17. Slowly increase engine speed to desired rpm (see fig. 2-2). Record readings for each test point.
18. If transmission test readings are not within normal range (see fig. 2-2), notify direct support maintenance

NOTE

Steps 19 thru 22 are written for one final drive but apply to both final drives.

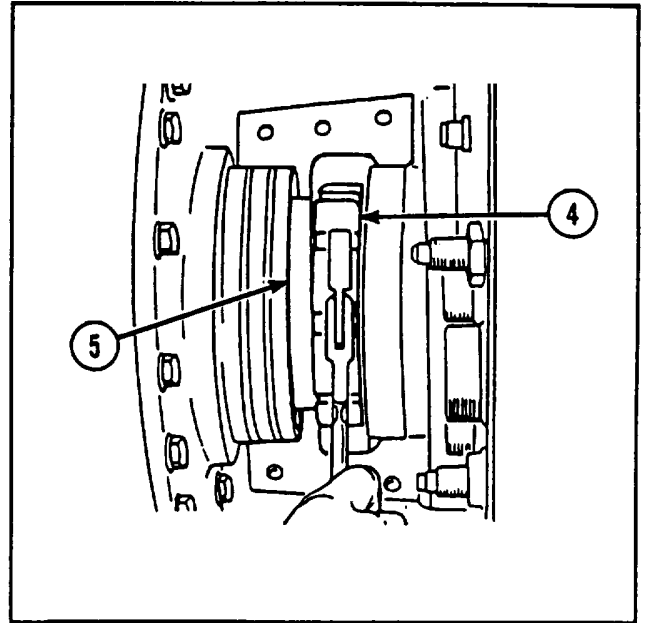
19. Slide final drive pinion shaft (7) from inside of final drive and engage with transmission shaft (5).
20. Install output shaft retaining ring (6) on final drive pinion shaft (7).



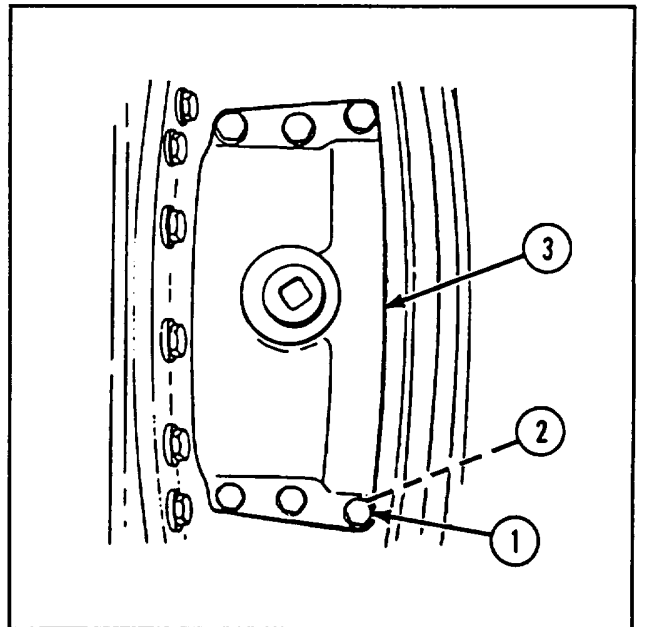
2-125. MAINTENANCE OF TRANSMISSION

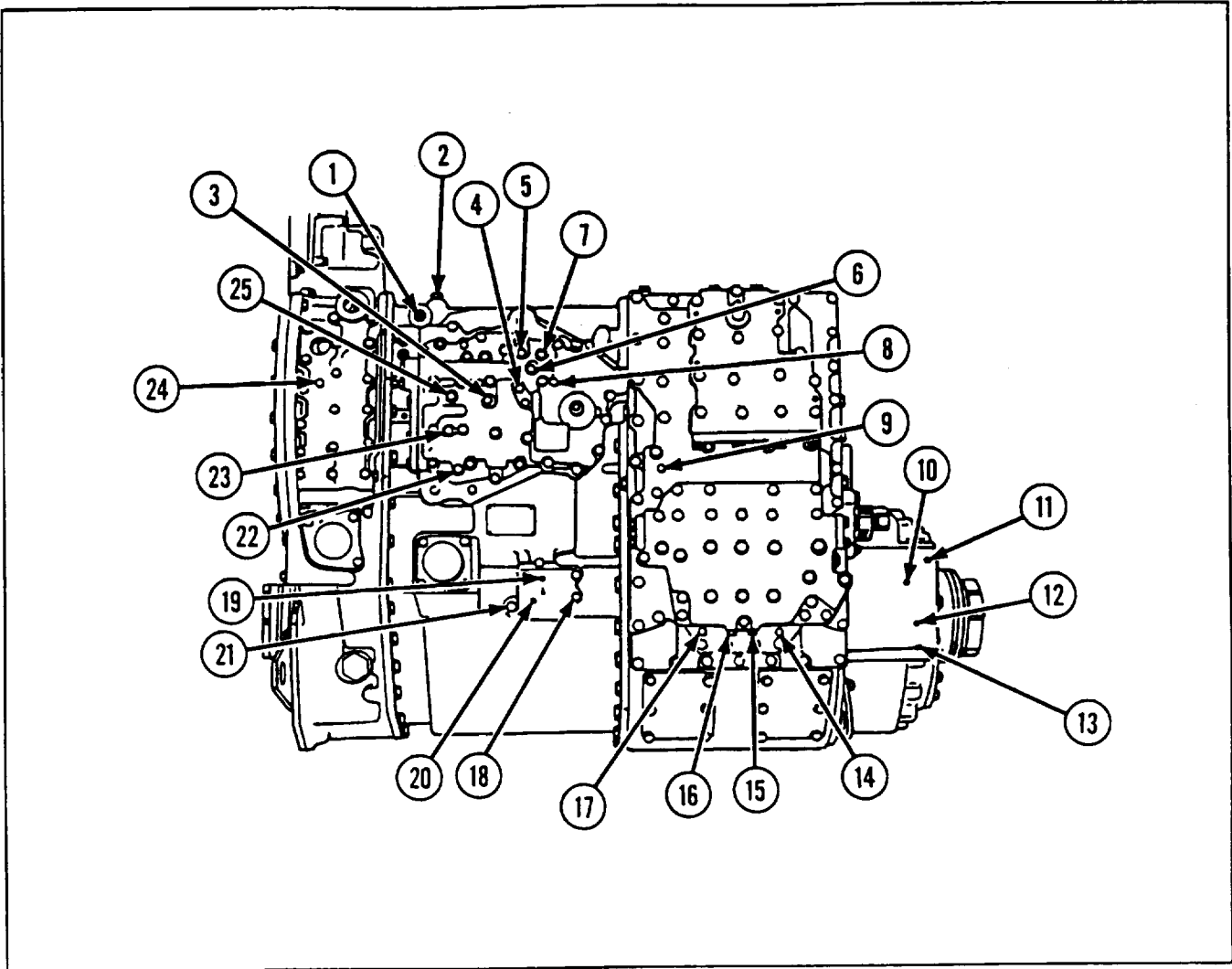
TEST (CONT)

- 21 Slide final drive coupling nut (4) onto transmission shaft (5). Tighten coupling nut using drift and hammer, or spanner wrench.



- 22 Install output drive cap (3), six new lockwashers (2), and six screws (1). Tighten screws to 36 ft-lb (49 N-m).





- | | | | |
|----|---|----|--------------------------|
| 1 | Transmission lubrication | 14 | Brake coolant |
| 2 | Transmission lubrication | 15 | Brake |
| 3 | Main | 16 | Brake |
| 4 | Third gear | 17 | Brake coolant |
| 5 | Fourth gear | 18 | Geared steer clutch |
| 6 | First and second gear | 19 | Geared steer coolant |
| 7 | First, neutral, and reverse 1 signal pressure | 20 | Transmission lubrication |
| 8 | Reverse | 21 | Output clutch |
| 9 | Reverse 2, third, and fourth signal pressure | 22 | Throttle |
| 10 | Geared steer clutch | 23 | Throttle valve |
| 11 | Transmission lubrication | 24 | Lockup |
| 12 | Geared steer coolant | 25 | Governor (pitot) |
| 13 | Output clutch | | |

Figure 2-1. Transmission Pressure Test Points.

Test	Test Point No.	RPM	Reading lb/in ² (kPa)	Neutral	1st Gear	2nd Gear	3rd Gear	4th Gear	Reverse 1	Reverse 2	Right steer	Left steer	
Main pressure in converter	3	1000 to 1500	Normal	210 - 230 (1448 - 1586)	210 - 230 (1448 - 1586)	210 - 230 (1448 - 1586)	210 - 230 (1448 - 1586)	118 - 160 (814 - 1103)	300 - 320 (2069 - 2206)	300 - 320 (2069 - 2206)	Same as gear reading		
			Actual										
Main pressure in lockup	3	1000 to 1500	Normal	118 - 160 (814 - 1103)	118 - 160 (814 - 1103)	118 - 160 (814 - 1103)	118 - 160 (814 - 1103)	160 - 190 (1103 - 1310)	160 - 190 (1103 - 1310)	160 - 190 (1103 - 1310)	Same as Gear reading		
			Actual										
Lockup and range clutch apply pressure	24	1000 to 1500	Normal	Same as main pressure for applicable gear.									
			Actual										
1st, neutral, and reverse 1 signal pressure	7	1000 to 1500	Normal	Same as main pressure for applicable gear.									
			Actual										
3rd, 4th, and reverse 2 signal pressure	9	1000 to 1500	Normal	Same as main pressure for applicable gear.									
			Actual										
Geared steer apply pressure (no steer)	10, 18	1000 to 1500	Normal	210 (1448)	210 (1448)	0	0	0	0	210 (1448)	0	0	0
			Actual										
Geared steer apply pressure (during steer)	10, 18	1000 to 1500	Normal	0	0	0	0	0	0	0	0	74 - 127 (510 - 876)	74 - 127 (510 - 876)
			Actual										
Brake apply pressure	15, 16	1000 to 1500	Normal	0	0	0	0	0	0	0	0	74 - 127 (510 - 876)	74 - 127 (510 - 876)
			Actual										
Geared steer and brake coolant pressure	12, 19, 14, 17, 9	1000 to 1500	Normal	0	0	0	0	0	0	0	0	8 - 12	8 - 12
			Actual										
Output clutch pressure	21	1000 to 1500	Normal	0	0	210 (1448)	210 (1448)	118 - 160 (814 - 1103)	0	210 (1448)	0*	0*	
			Actual										
Governor pressure (pilot) at lockup engagement	25	Full throttle	Normal	82 - 88 (565 - 607)	82 - 88 (565 - 607)	82 - 88 (565 - 607)	82 - 88 (565 - 607)	82 - 88 (565 - 607)	82 - 88 (565 - 607)	82 - 88 (565 - 607)	82 - 88 (565 - 607)	82 - 88 (565 - 607)	
			Actual										
Lubrication pressure	1, 2, 11, 20	1835 to 1900	Normal	18 - 45 (124 - 310)	18 - 45 (124 - 310)	18 - 45 (124 - 310)	18 - 45 (124 - 310)	18 - 45 (124 - 310)	18 - 45 (124 - 310)	18 - 45 (124 - 310)	18 - 45 (124 - 310)	18 - 45 (124 - 310)	
			Actual										
Throttle (T) pressure	22	Full throttle	Normal	32 - 40 (221 - 276)	32 - 40 (221 - 276)	32 - 40 (221 - 276)	32 - 40 (221 - 276)	32 - 40 (221 - 276)	32 - 40 (221 - 276)	32 - 40 (221 - 276)	32 - 40 (221 - 276)	32 - 40 (221 - 276)	
			Actual										
Throttle valve (TV) pressure	23	Full throttle	Normal	32 - 40 (221 - 276)	32 - 40 (221 - 276)	32 - 40 (221 - 276)	32 - 40 (221 - 276)	32 - 40 (221 - 276)	32 - 40 (221 - 276)	32 - 40 (221 - 276)	32 - 40 (221 - 276)	32 - 40 (221 - 276)	
			Actual										

Figure 2-2. Transmission Pressure Test Reading.

2-126. MAINTENANCE OF OIL SAMPLING DRAIN COCK AND RELATED PARTS.

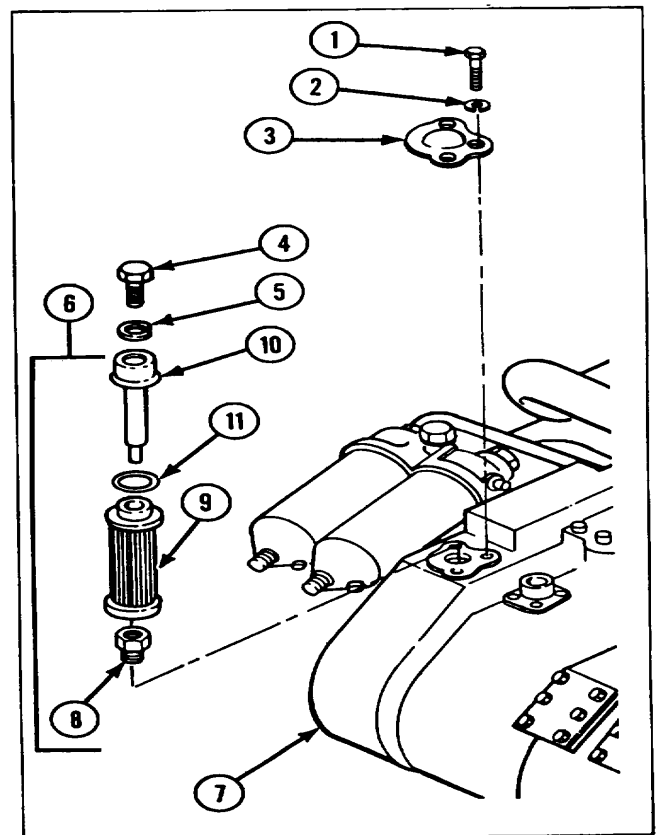
This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP:			
<p><i>Materials/Parts</i></p> <ul style="list-style-type: none"> Nonmetallic seal Performed packing Seal Transmission oil fluid filter parts kit <p><i>References</i></p> <ul style="list-style-type: none"> TM 9-2350-304-24P-1 TM 9-2350-304-24P-1 	<p><i>Equipment Conditions</i></p> <ul style="list-style-type: none"> 2- 893 Hull transmission compartment assembly access cover removed Engine oil filter sampling line, drain cock, and related hardware and fittings removed (TM 9-2815-202-34) 		

REMOVAL

NOTE

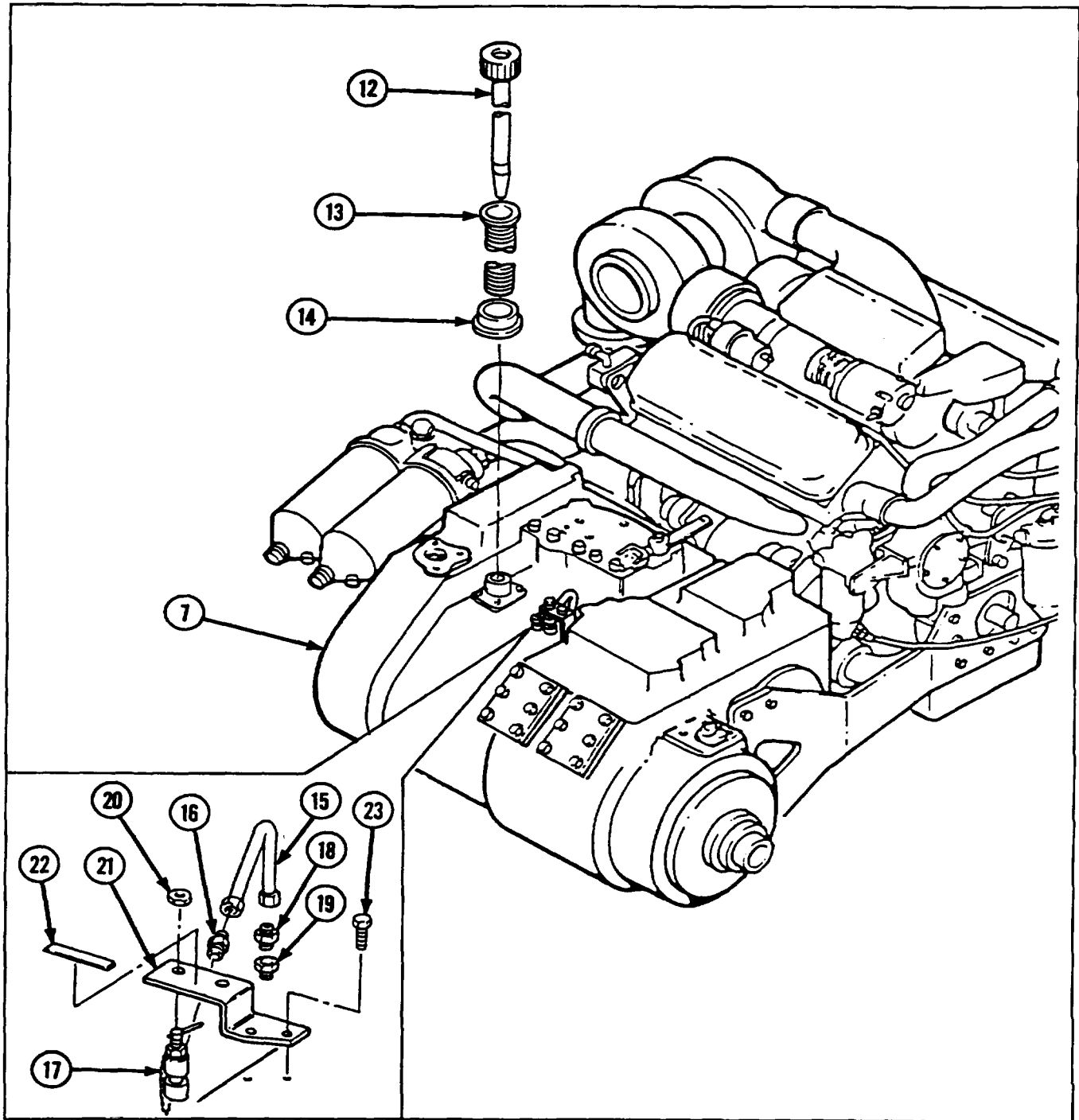
Cover is not an authorized repair part. Use care not to lose or damage it.

- 1 Remove three hexagon head capscrews (1), three lockwashers (2), and cover (3).
- 2 Remove hexagon head capscrew (4), lockwasher (5), and transmission oil fluid filter (6) from transmission (7).
- 3 Remove self-locking nut (8) and filter element (9) from transmission filter cap (10).
- 4 Remove performed packing (11) from filter element (9).



2-126. MAINTENANCE OF OIL SAMPLING DRAIN COCK AND RELATED PARTS (CONT).

REMOVAL (CONT)



- 5 Remove oil filler gage rod cap (12), oil filler strainer element (13), and nonmetallic seal (14) from transmission (7).
- 6 Disconnect metal tube assembly (15) from adapter (16) in drain cock (17).
- 7 Disconnect metal tube assembly (15) from adapter (18) and remove metal tube assembly.
- 8 Remove adapter (16) from drain cock (17).
- 9 Remove adapter (18) from bushing (19).
- 10 Remove bushing (19) from transmission (7).

NOTE

Hexagon plain nut is supplied with drain cock. Use care not to lose or damage hexagon plain nut. If lost or damaged, replace drain cock.

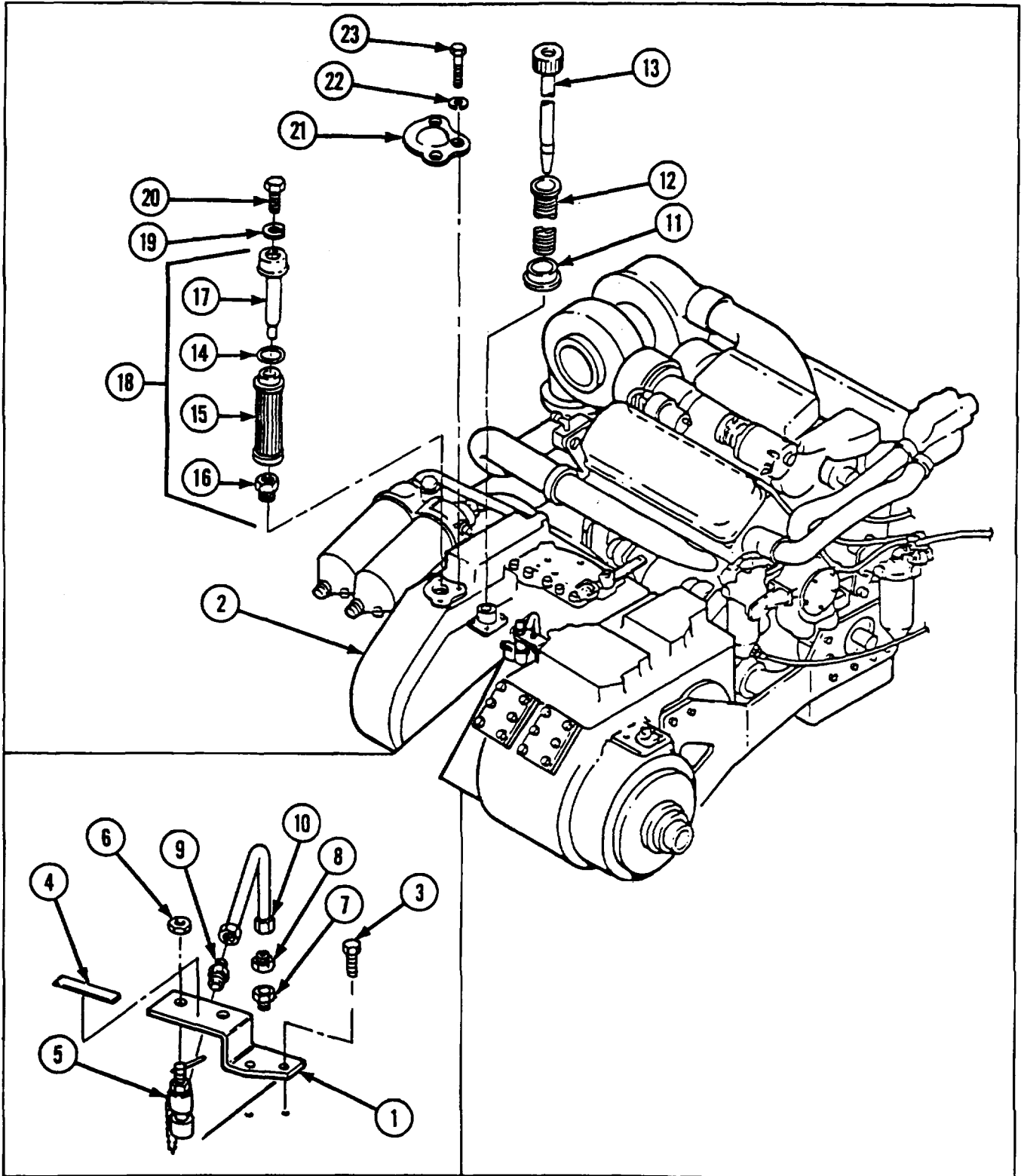
- 11 Loosen hexagon plain nut (20) on drain cock (17), and remove drain cock and locknut from double angle bracket (21).
- 12 If damaged, remove identification marker (22) from double angle bracket (21).
- 13 Remove two capscrews (23) and double angle bracket (21) from transmission (7).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-126. MAINTENANCE OF OIL SAMPLING DRAIN COCK AND RELATED PARTS (CONT).

INSTALLATION



- 1 Install double angle bracket (1) on transmission (2) and secure with two capscrews (3).
- 2 If removed, install new identification marker (4) on double angle bracket (1).
- 3 Install drain cock (5) and plain hex nut (6) on double angle bracket (1). Tighten nut.
- 4 Install bushing (7) in transmission (2).
- 5 Install adapter (8) in bushing (7).
- 6 Install adapter (9) in drain cock (5).
- 7 Install transmission oil sampling line (10). Connect transmission oil sampling line to adapter (8).
- 8 Connect transmission oil sampling line (10) to adapter (9) in drain cock (5). TM 9-2350-304-20-1
- 9 Install new nonmetallic seal (11), oil filler strainer element (12), and oil filler gage rod cap (13) in transmission (2).
- 10 If removed, install new preformed packing (14) on new filter element (15).
- 11 If removed, install filter element (15) and new self-locking nut (16) on transmission filter cap (17).
- 12 Install transmission oil pressure fluid filter (18), three new lockwashers (19), and three hexagon head capscrews (20) in transmission (2).
- 13 Install cover (21), three lockwashers (22), and three hexagon head capscrews (23).

2-127. MAINTENANCE OF FINAL DRIVE ASSEMBLY.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP:			
<p><i>Tools and Special Tools</i></p> <p>Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)</p> <ul style="list-style-type: none"> • Socket (3/4 drive, 1 in.) • Torque wrench (0 to 600 ft-lb) • wire brush <p>Final drive lifting sling (item 24, appx G)</p> <p>Headless shoulder pin (2) (item 16, appx G)</p> <p>Hexagon head capscrew (3) (item 23, appx G)</p> <p>Hoist</p> <p>Sling (item 85, appx B)</p>		<p><i>Materials/Parts</i></p> <p>Compressed air</p> <p>Dry cleaning solvent (item 15, appx C)</p> <p>Sealing compound (item 37, appx C)</p> <p>Self-locking bolt (24)</p> <p><i>References</i></p> <p>TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i></p> <p>2-829 Tracks removed</p> <p>2-380 Powerplant removed</p>	

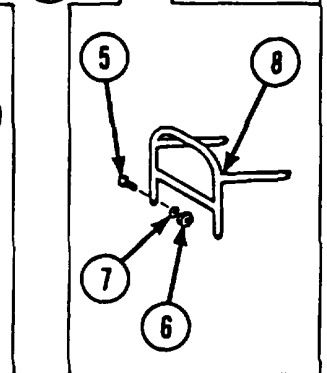
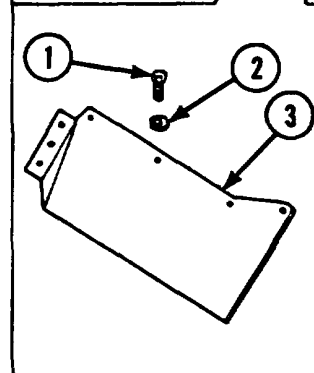
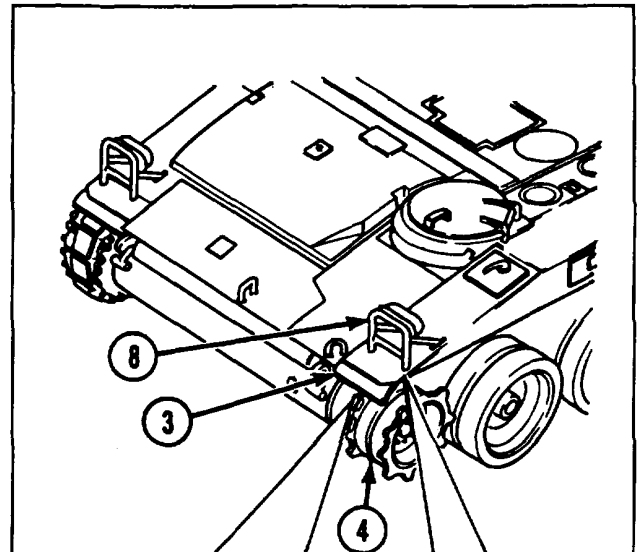
2-127. MAINTENANCE OF FINAL DRIVE ASSEMBLY (CONT).

REMOVAL/DISASSEMBLY

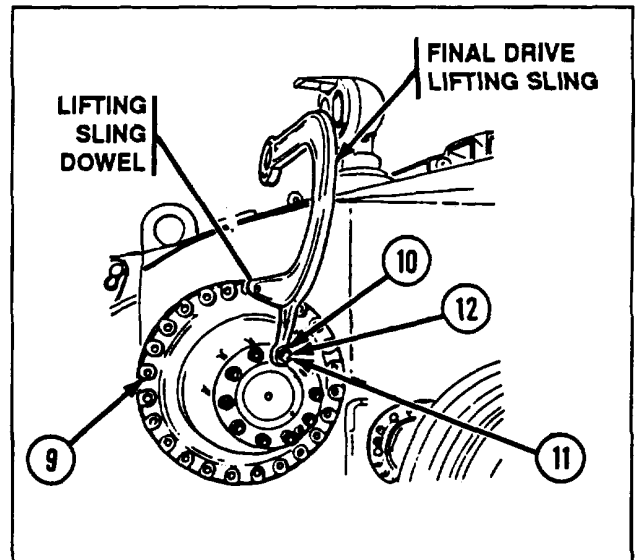
NOTE

The following steps are written and illustrated for the left hand final drive assembly, but apply to both the left and right final drive assemblies.

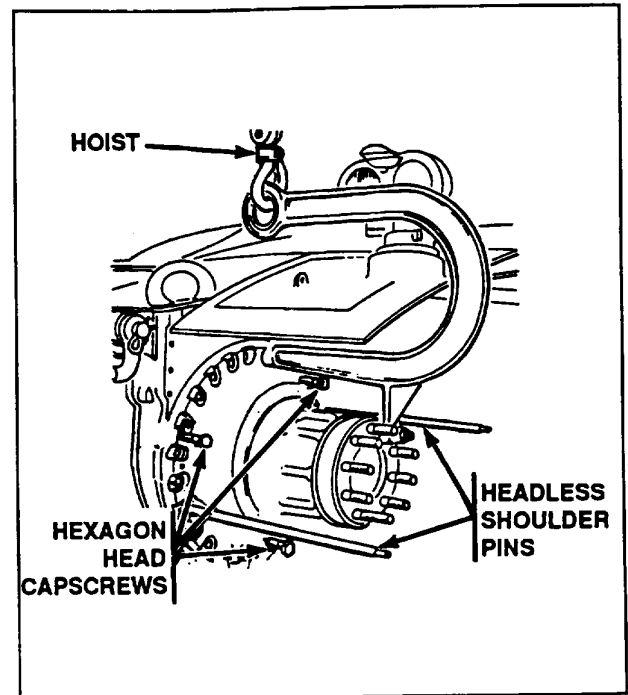
- 1 Remove seven screws (1), seven washers (2), and fender extension (3).
- 2 Remove drive sprocket hub assembly (4), refer to page 2-824.
- 3 Remove four screws (6), four nuts (6), four washers (7), and headlamp guard (8).



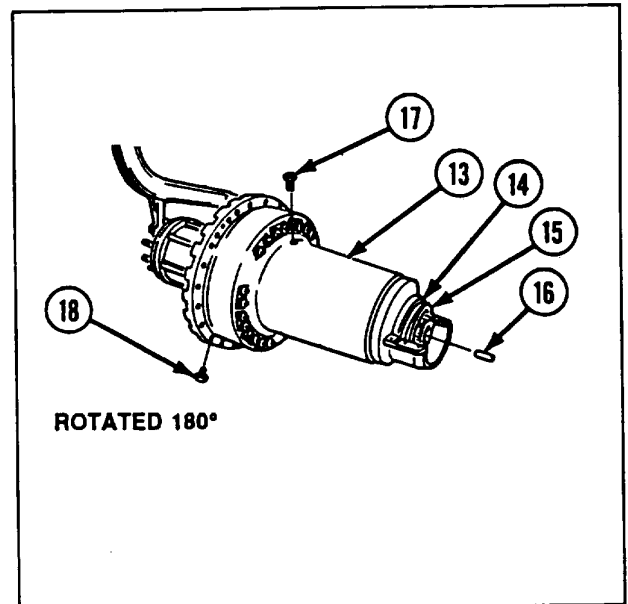
- 4 Remove 24 self-locking bolts (9).
- 5 Install final drive lifting sling by inserting lifting sling dowel into bolt mounting hole and placing lifting eye (10) over stud (11).
- 6 Install nut (12) on stud (11).



- 7 Attach hoist to final drive lifting sling.
- 8 Take up slack in hoist.
- 9 Install two headless shoulder pins into holes located 180 degrees apart.
- 10 Install three hexagon head capscrews into jacking holes.
- 11 Tighten three hexagon head capscrews evenly until final drive breaks loose.

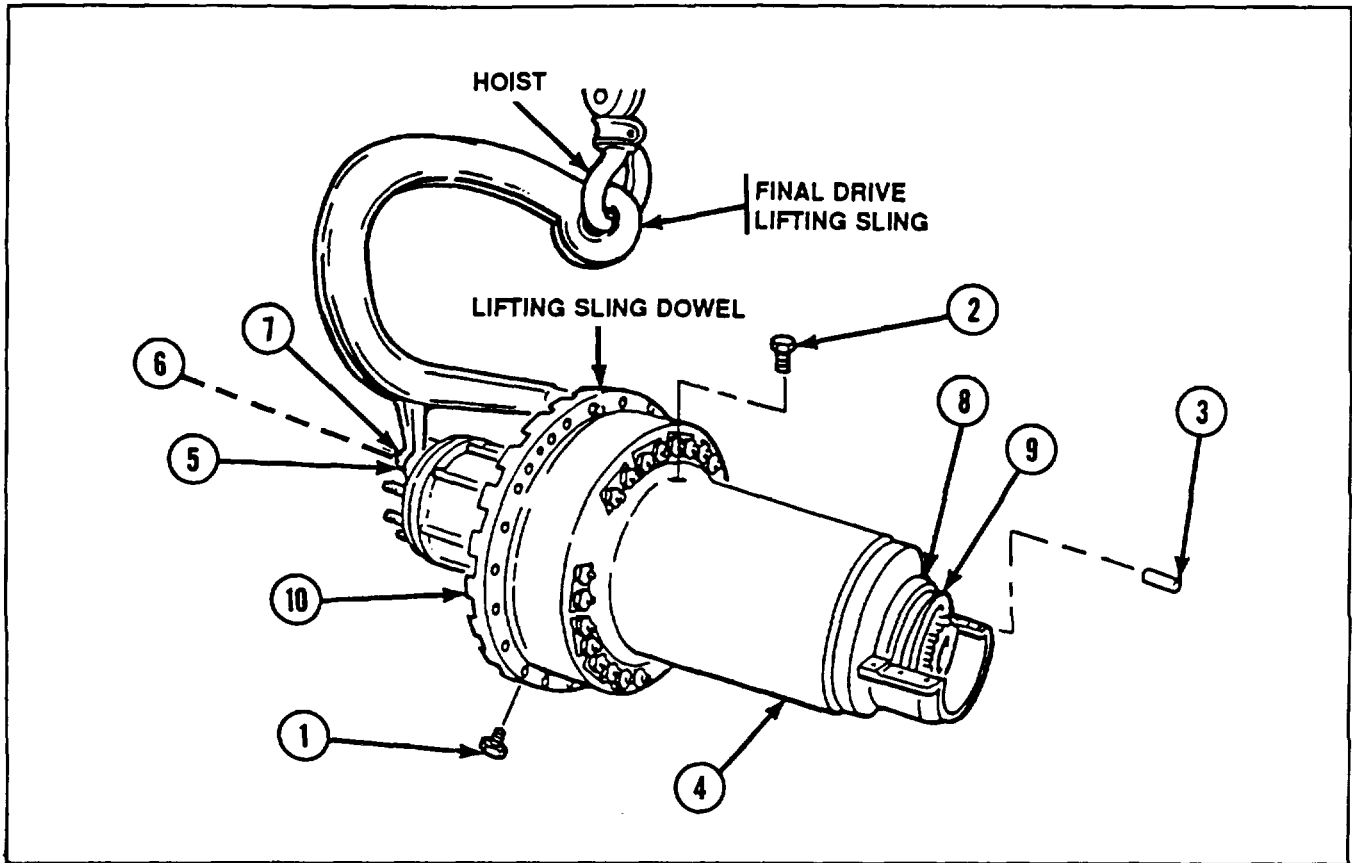


- 12 Hoist final drive (13) and remove from hull
- 13 Remove shaft nut (14) and lock ring (15) from final drive (13).
- 14 Remove three hexagon head capscrews.
- 15 Remove two headless shoulder pins.
- 16 Disconnect hoist and final drive lifting sling.
- 17 Remove pin (16), bolt (17), and two plugs (18).



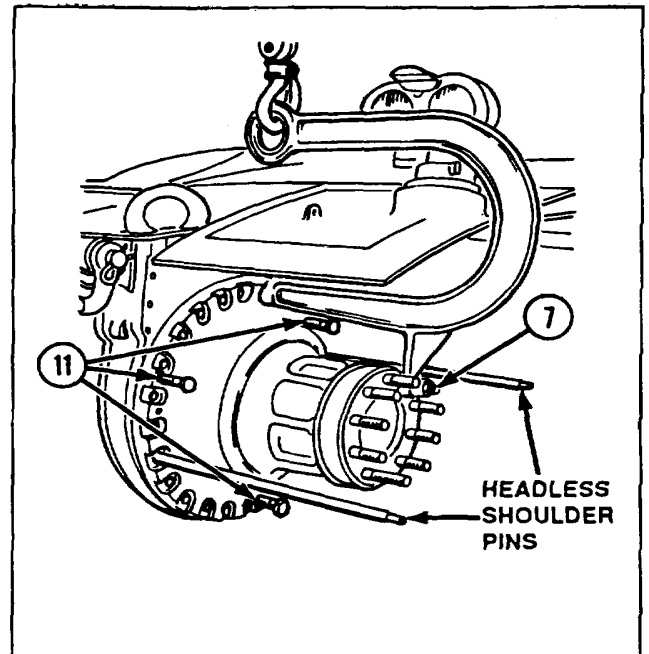
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts
- 2 Repair by replacement of authorized parts (TM 9-2350-304-24P-1).

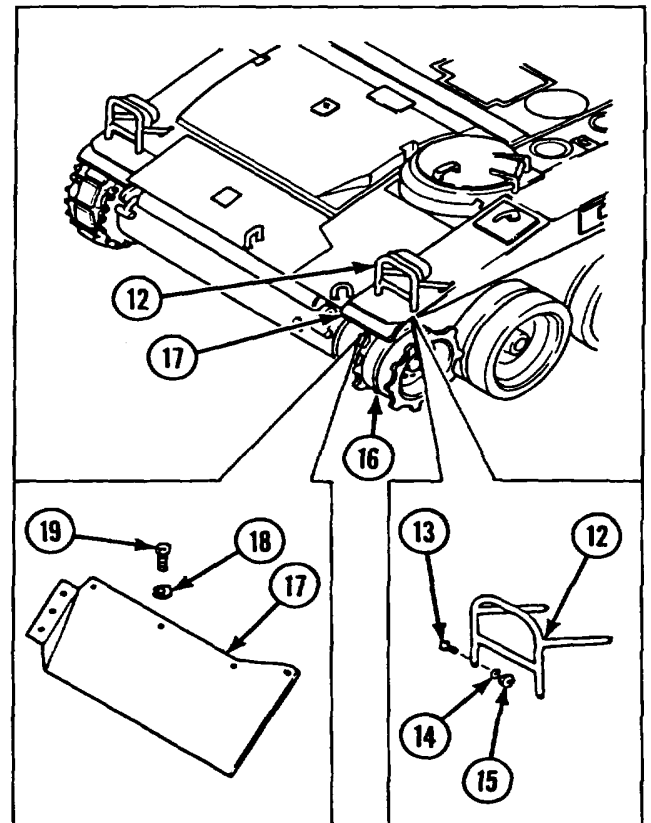


- 1 Install two plugs (1), bolt (2), and pin (3) in final drive assembly (4).
- 2 Install two headless shoulder pins into holes located 180 degrees apart.
- 3 Install final drive lifting sling by inserting sling dowel into bolt mounting hole and placing lifting eye (5) over stud (6). Install nut (7) on stud (6).
- 4 Install shaft nut (8) and lock ring (9).
- 5 Clean hull-to-final drive mating surfaces (10) with dry cleaning solvent and wire brush. Dry with low-pressure compressed air.
- 6 Coat mating surfaces (10) with sealing compound.
- 7 Attach hoist to final drive lifting sling.
- 8 Install final drive (4) using hoist. Guide into position on hull using headless shoulder pins.

- 9 Install 21 new self-locking bolts (11).
- 10 Remove nut (7), final drive lifting sling, and hoist.
- 11 Remove two headless shoulder pins.
- 12 Install three new self-locking bolts (11).
- 13 Tighten 24 self-locking bolts (11) to 305 1 lb (423 N-m) in cross pattern sequence.,



- 14 Position headlamp guard (12), and install four screws (13), four washers (14), and four nuts (15).
- 15 Install drive sprocket hub assembly (16), refer to page 2-824.
- 16 Position fender extension (17) and install seven washers (18) and seven screws (19).



This task covers:

a. Removal

b. Inspection/Repair

c. Installation

INITIAL SETUP:

Tools and Special Tools

- Hoist
- Plier wire twister (item 29, appx G)
- Sling (item 85, appx B)

Materials/Parts

- Boot
- Hydraulic fluid (item 20, appx C)
- Lockwasher
- Lockwire (item 25, appx C)
- Self-locking nut
- Self-locking nut (2)

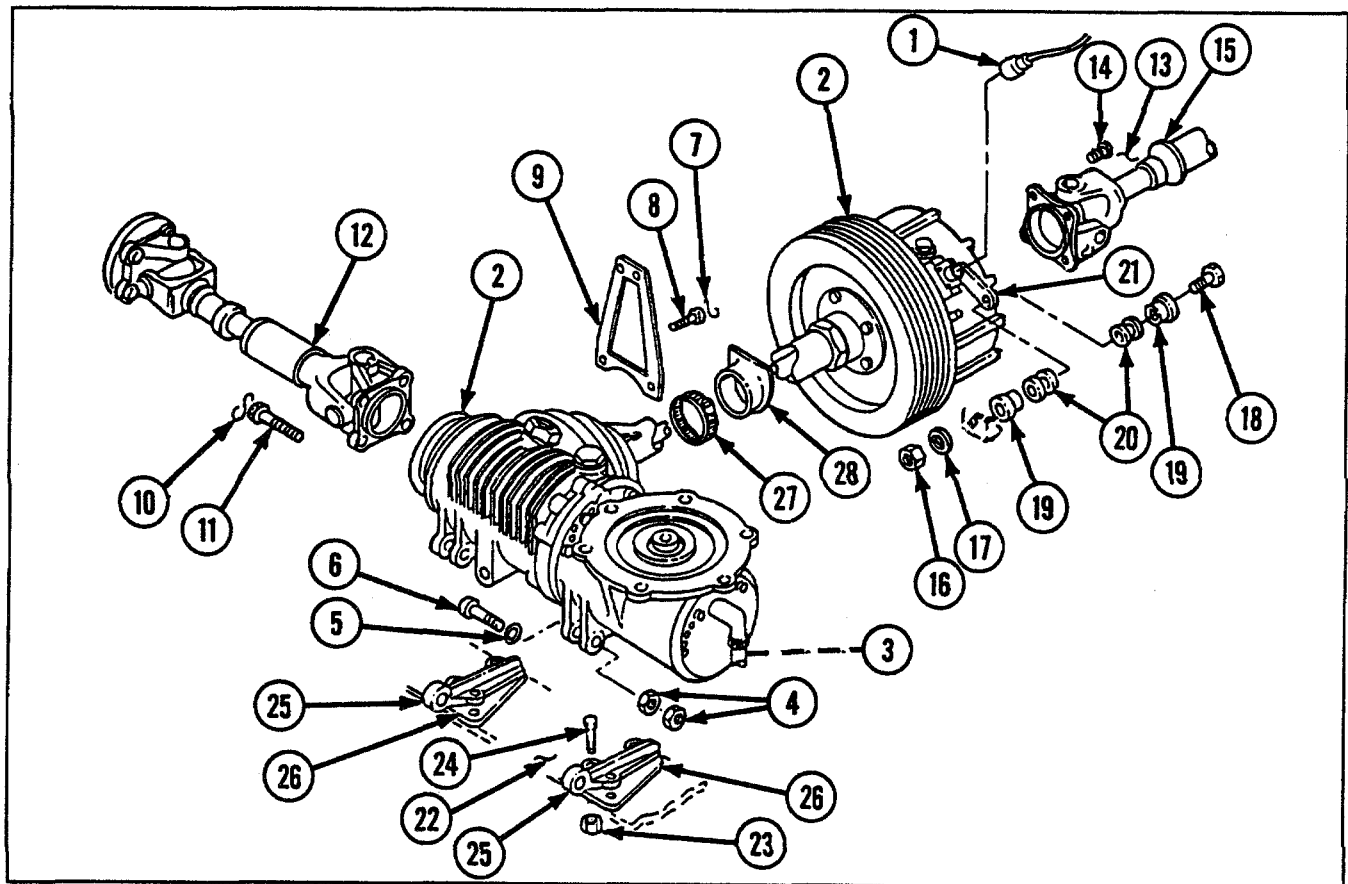
References

TM 9-2350-304-20-1

Equipment Conditions

- 2-380 Powerplant removed
- 2-745 Oil filler neck removed
- 2-747 Oil drain tube assembly removed
- 2-506 Radiator removed
- 2-516 Surge tank removed
- 2-541 Generator removed
- 2-532 Fan tensioner V-belt and radiator cooling vaneaxial fan removed

REMOVAL

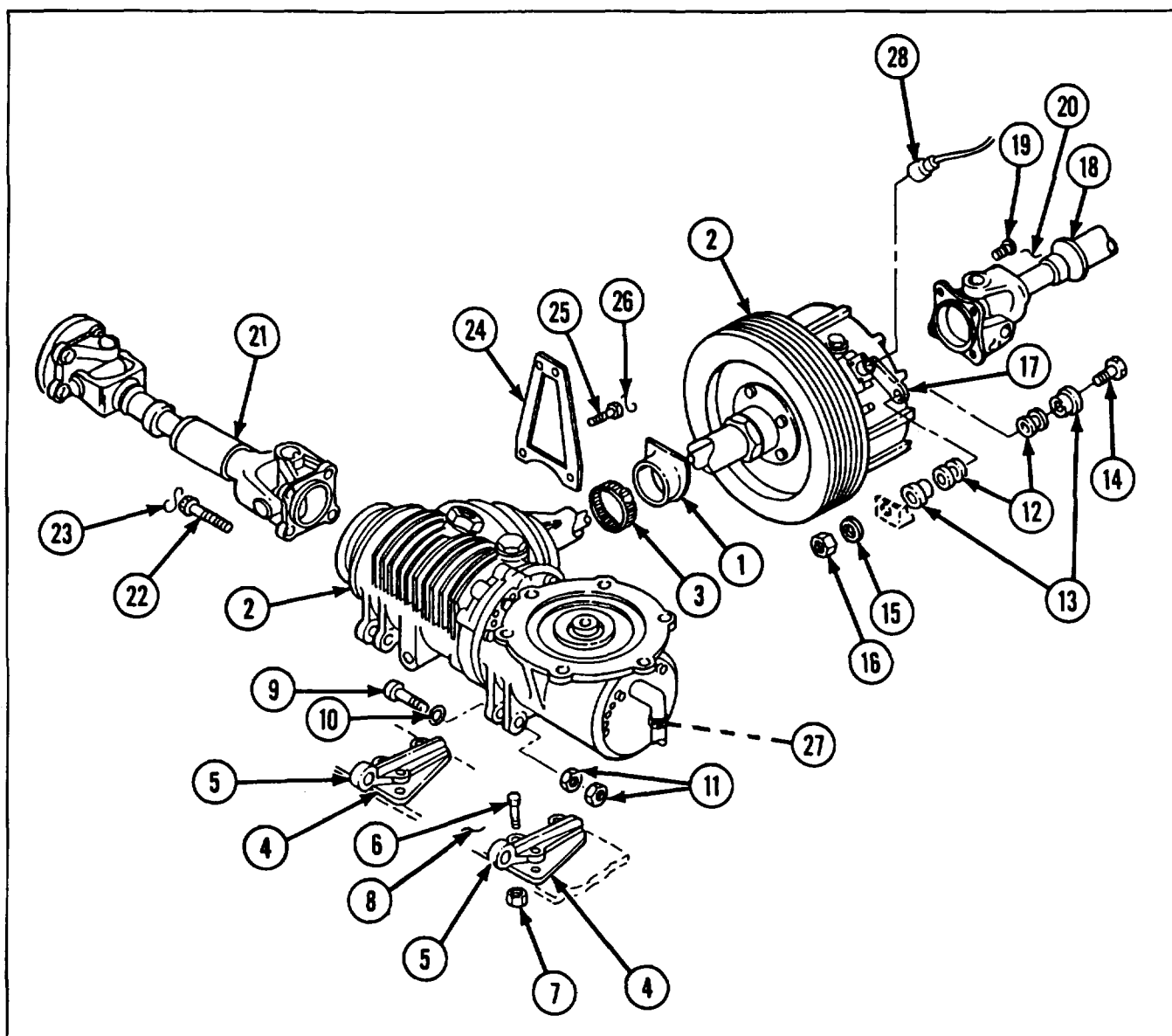


- 1 Disconnect electrical connector (1) from auxiliary drive assembly (2).
- 2 Tag and disconnect four electrical leads (3).
- 3 Remove four hexagon plain nuts (4), two flat washers (5), and two shoulder screws (6).
- 4 Remove lockwire (7), four hexagon head capscrews (8), and angle control bracket (9).
- 5 Remove lockwire (10) and four hexagon head capscrews (11). Disconnect power take off drive shaft (12) from auxiliary drive assembly (2).
- 6 Remove lockwire (13) and four hexagon head capscrews (14). Disconnect magnetic clutch to bearing unit drive shaft (15) from auxiliary drive assembly (2).
- 7 Remove self-locking nut (16), flat washer (17), capscrew (18), two sleeve spacers (19), and two rubber grommets (20) from connecting link (21).
- 8 Attach sling and carefully remove auxiliary drive assembly (2) and attached parts from hull using hoist.
- 9 If damaged, remove lockwire (22), six hexagon plain nuts (23), six capscrews (24), two mounting brackets (25), and two mounting plates (26).
- 10 Loosen screw and remove flat hose clamp (27). If damaged, remove boot (28).

<i>INSPECTION/REPAIR</i>

- 1 Inspect for broken, damaged, or missing parts.
- 2 Auxiliary drive assembly is a repairable assembly. Refer to Page 2-743
- 3 For further disassembly, notify direct support maintenance.
- 4 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-128. MAINTENANCE OF AUXILIARY DRIVE INSTALLATION (CONT).

INSTALLATION

- 1 If removed, split new boot (1) and install over drive shaft housing of auxiliary drive assembly (2) Install flat nose clamp (3), and tighten screw to secure boot.
- 2 If removed, install two mounting plates (4), two mounting brackets (5), six capscrews (6), six hexagon plain nuts (7), and new lockwire (8).
- 3 Attach sling and carefully install auxiliary drive assembly (2), using hoist.
- 4 Install two shoulder screws (9), two flat washers (10), and four hexagon plain nuts (11).

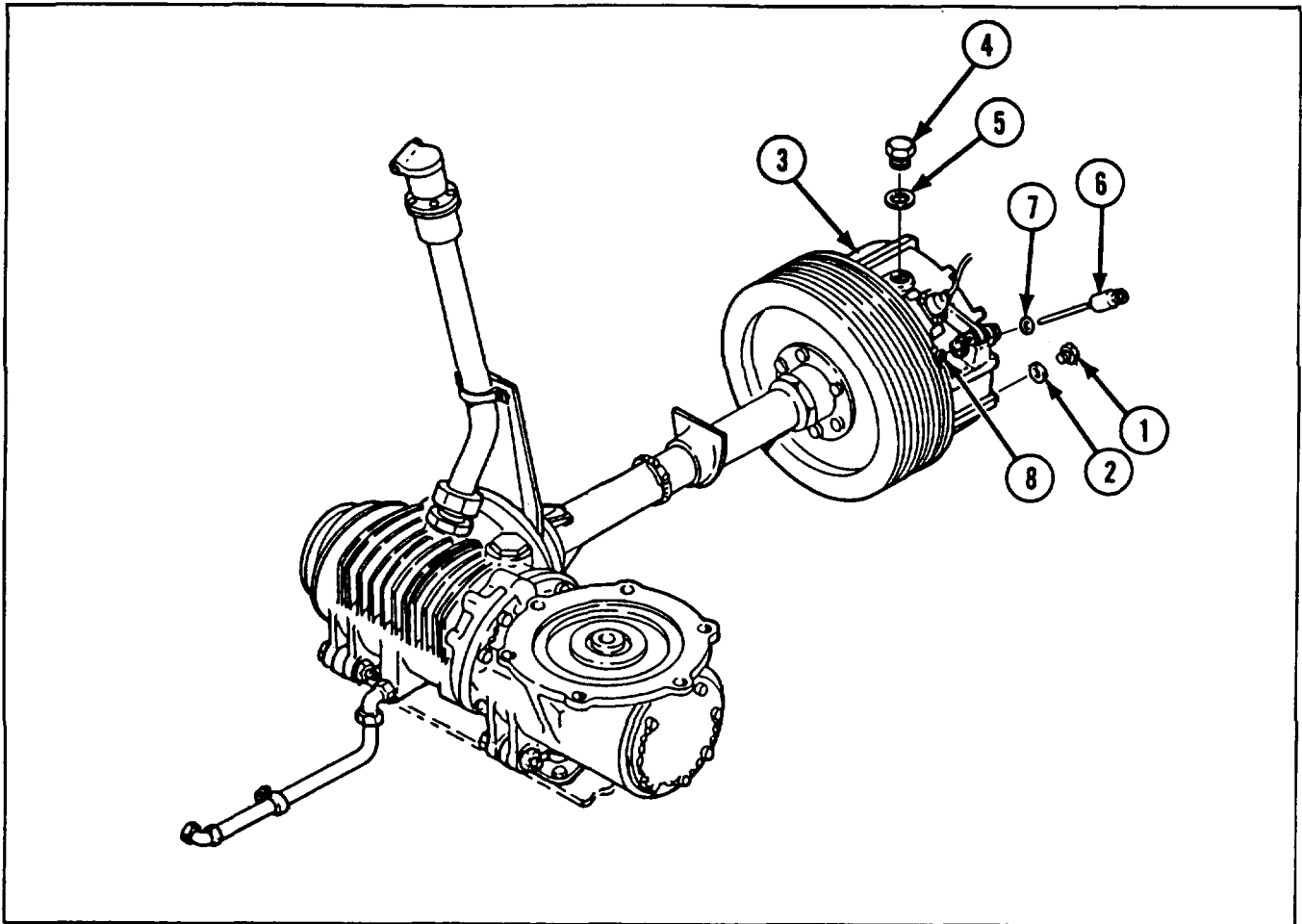
- 5 Install two rubber grommets (12), two sleeve spacers (13), capscrew (14), flat washer (15), and new self-locking nut (16) to connecting link (17).
- 6 Connect magnetic clutch to bearing unit drive shaft (18) to auxiliary drive assembly (2) by installing four hexagon head capscrews (19) and new lockwire (20).
- 7 Connect power takeoff drive shaft (21) to auxiliary drive assembly (2) with four hexagon head capscrews (22) and new lockwire (23).
- 8 Install angle control bracket (24), four hexagon head capscrews (25), and new lockwire (26).
- 9 Connect four electrical leads (27).
- 10 Connect electrical connector (28) to auxiliary drive assembly (2).
- 11 Fill auxiliary drive gearcase with hydraulic fluid. Refer to PMCS/lubrication table, page 2-12.

2-129. MAINTENANCE OF AUXILIARY DRIVE ASSEMBLY (VEHICULAR DRIVE).

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP:			
<p><i>Tools and Special Tools</i> Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)</p> <ul style="list-style-type: none"> • Drain pan 			
<p><i>Materials/Parts</i> Hydraulic fluid (item 20, appx C) Performed packing Performed packing Performed packing</p>			
<p><i>References</i> TM 9-2350-304-24P-1</p>			

2-129. MAINTENANCE OF AUXILIARY DRIVE ASSEMBLY (VEHICULAR DRIVE) (CONT).

DISASSEMBLY

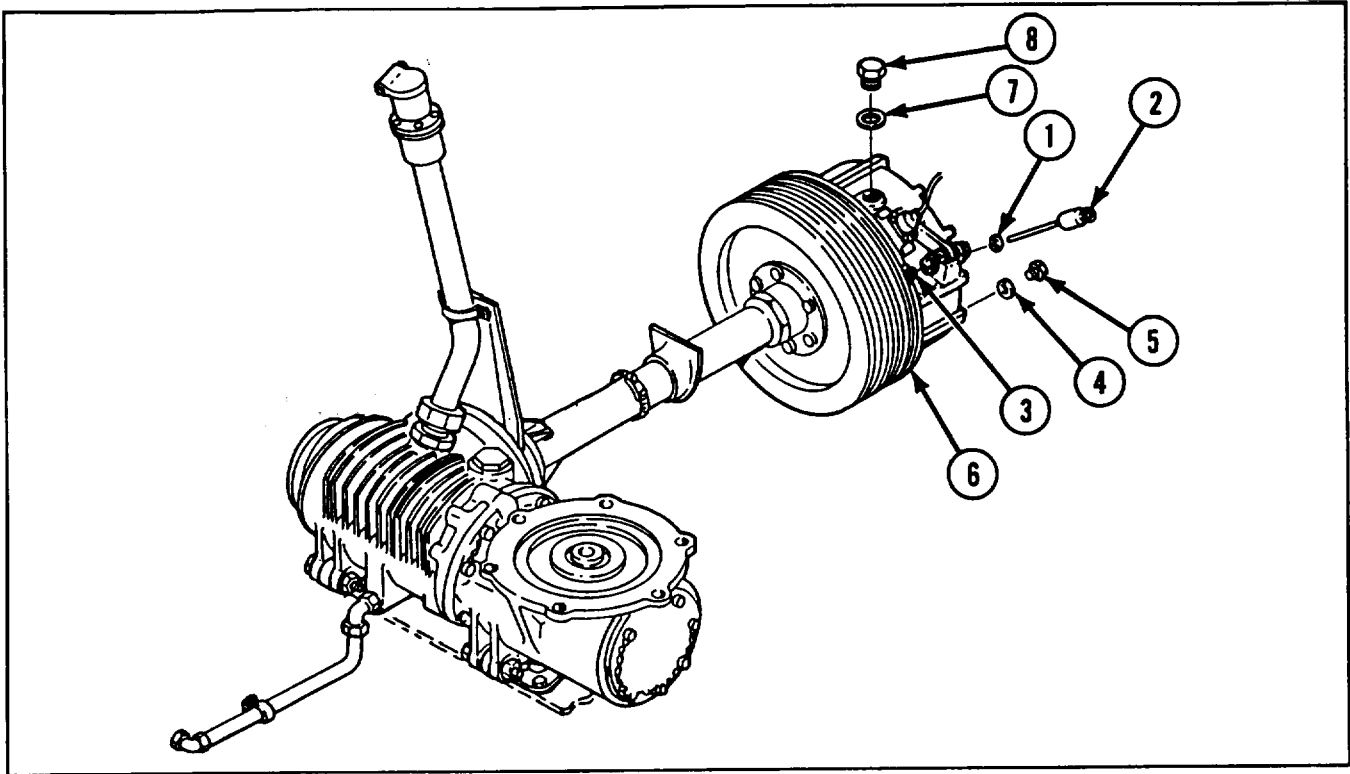


- 1 If damaged, remove machine thread plug (1) and performed packing (2) from vehicular drive (3) Drain hydraulic fluid from clutch into drain pan.
- 2 Remove machine plug (4) and performed packing (5) from vehicular drive (3).
- 3 Remove liquid gage rod-cap (6) and performed packing (7) from attached gage rod clutch tube (8).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 For further disassembly, notify direct support maintenance.
- 3 Repair by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

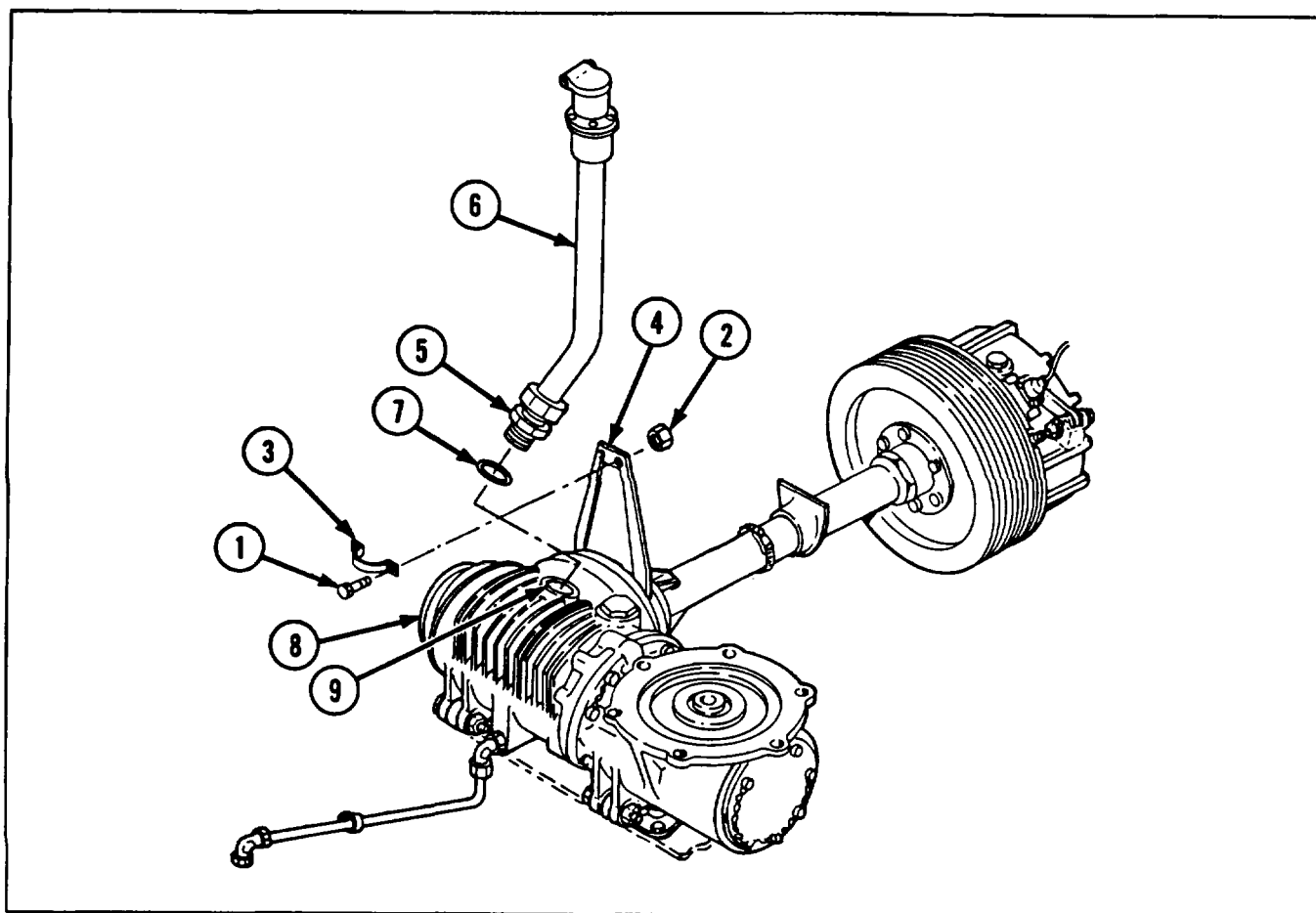


- 1 Install new performed packing (1) and liquid gage rod cap (2) into attached gage rod clutch tube (3).
- 2 Install new performed packing (4) and machine thread plug (5) in vehicular drive (6).
- 3 Fill clutch housing with hydraulic fluid. Refer to the PMCS/lubrication table, page 2-12. Install new performed packing (7) and machine thread plug (8) in vehicular drive (6).

2-130. MAINTENANCE OF OIL FILLER NECK.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP:			
<p><i>Materials/Parts</i></p> <ul style="list-style-type: none"> Performed packing Self-locking nut (2) <p><i>References</i></p> <ul style="list-style-type: none"> TM 9-2350-304-24P-1 	<p><i>Equipment Conditions</i></p> <ul style="list-style-type: none"> 2-380 Powerplant removed 		

2-130. MAINTENANCE OF OIL FILLER NECK (CONT).

**REMOVAL/DISASSEMBLY**

- 1 Remove two hexagon head capscrews (1), two self-locking nuts (2), and cover assembly (3) from angle bracket (4).
- 2 Loosen tube nipple (5) of oil filler neck (6).
- 3 Remove oil filler neck (6) and performed packing (7) from auxiliary drive assembly (8).
- 4 Plug or cover port (9) to keep dirt out.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 For further disassembly, notify direct support maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

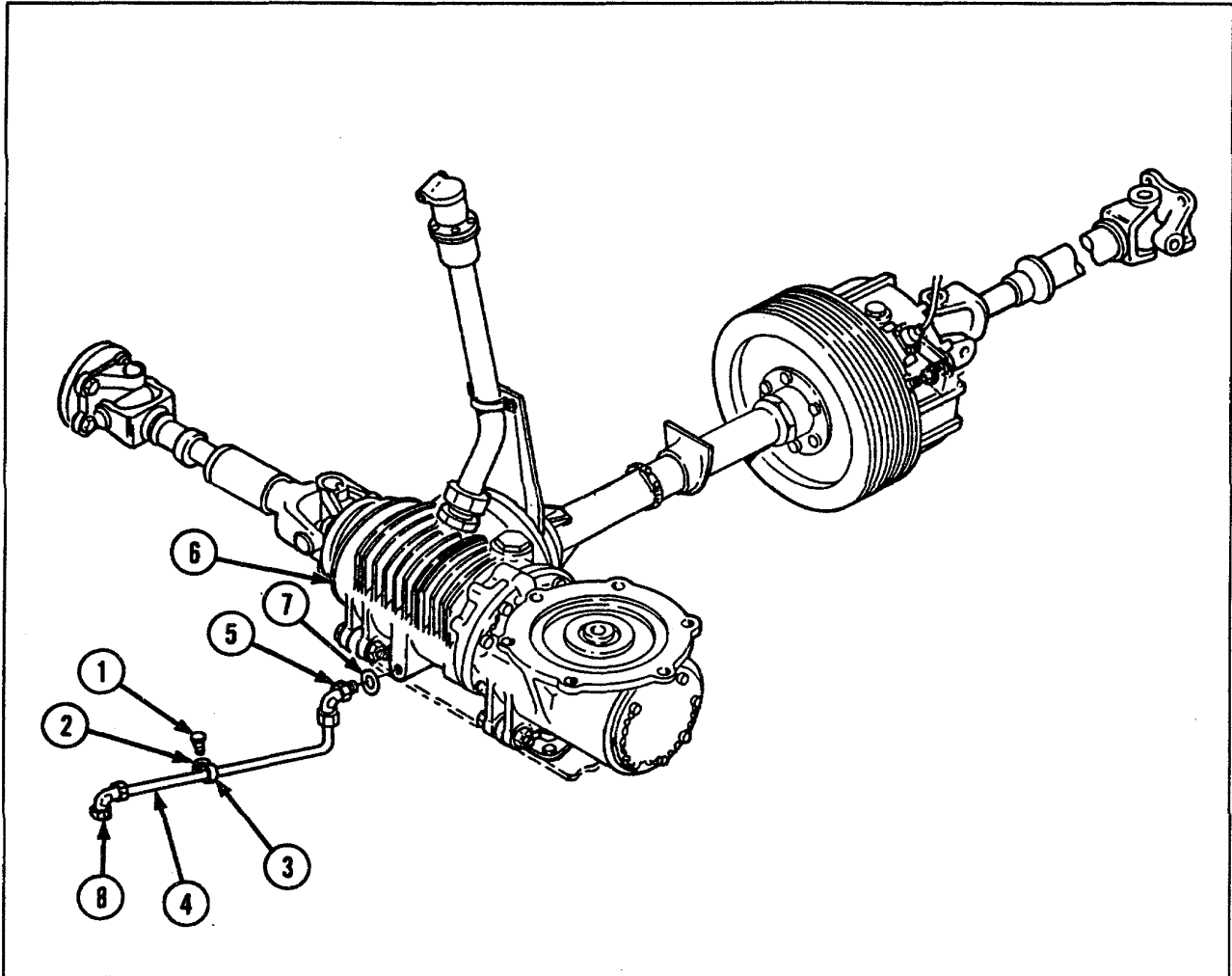
REASSEMBLY/INSTALLATION

- 1 Remove plug or cover from port (9).
- 2 Install new performed packing (7) and oil filler neck (6) on auxiliary drive assembly (8).
- 3 Tighten tube nipple (5) securely.
- 4 Install cover assembly (3), two hexagon head capscrews (1), and two new self-locking nuts (2) on angle bracket (4).

2-131. MAINTENANCE OF OIL DRAIN TUBE ASSEMBLY.

This task covers:	a. Removal/Disassembly	b. Inspection/Repair	c. Reassembly/Installation
INITIAL SETUP:			
<i>Materials/Parts</i>			
Lockwasher			
Performed packing			
<i>References</i>			
TM 9-2350-304-24P-1			
<i>Equipment Conditions</i>			
2-380 Powerplant removed			
2-12 Oil drained from auxiliary drive assembly			

2-131. MAINTENANCE OF OIL DRAIN TUBE ASSEMBLY (CONT).



REMOVAL/DISASSEMBLY

- 1 Remove hexagon head capscrew (1), lockwasher (2), and loop clamp (3) from oil drain tube assembly (4).
- 2 Loosen tube fitting locknut (5) and remove oil drain tube assembly (4) from auxiliary drive assembly (6).
- 3 Remove preformed packing (7) from oil drain tube assembly (4). Cover port to keep out dirt.
- 4 Remove tube cap (8) from oil drain tube assembly (4).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 For further disassembly, notify direct support maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

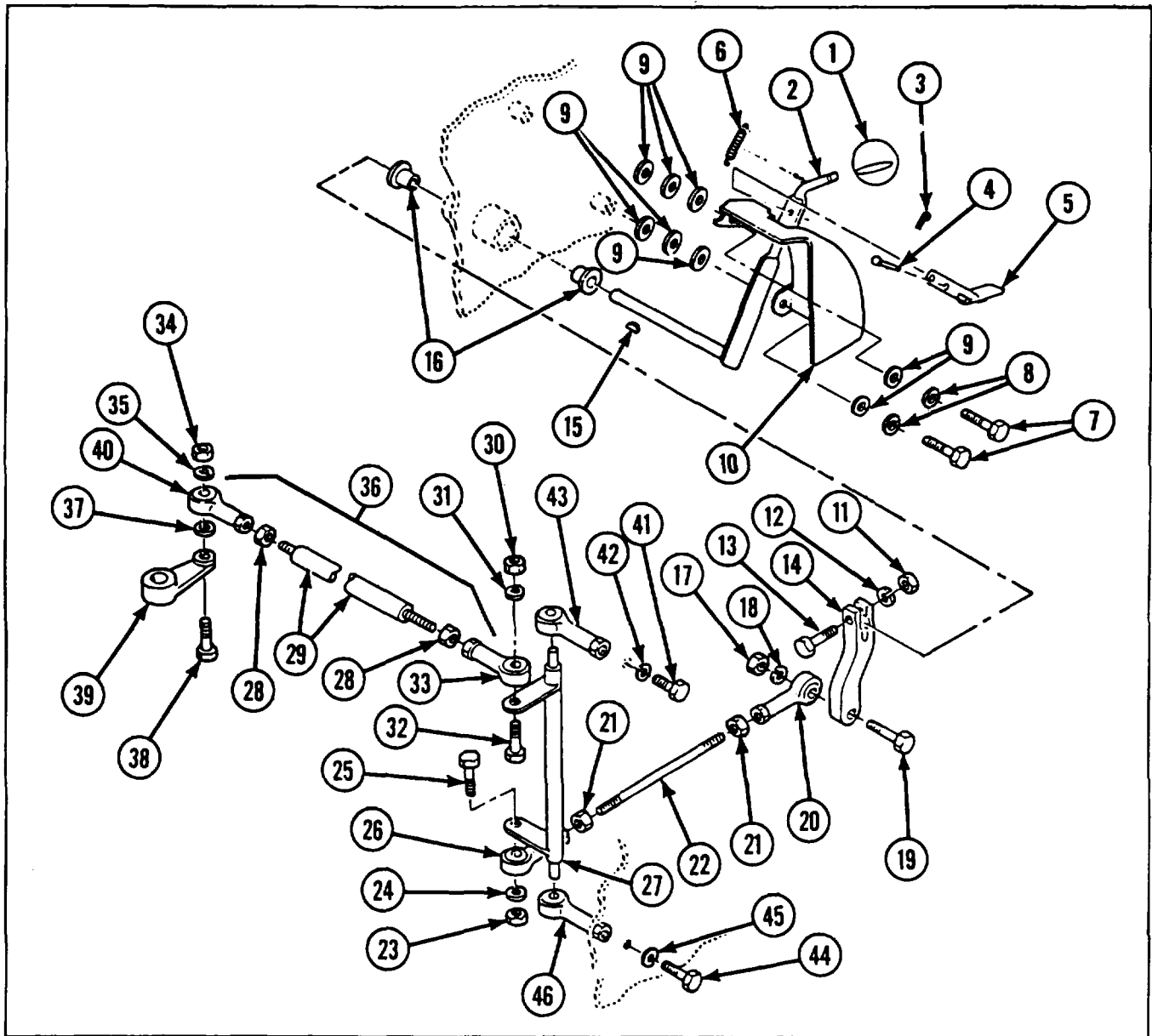
REASSEMBLY/INSTALLATION

- 1 Install tube cap (8) on oil drain tube assembly (4).
- 2 Install new preformed packing (7) on oil drain tube assembly (4).
- 3 Install oil drain tube assembly (4) on auxiliary drive assembly (6) and tighten tube fitting locknut (5).
- 4 Install loop clamp (3) on oil drain tube assembly (4) and secure with new lockwasher (2) and hexagon head capscrew (1).

2-132. MAINTENANCE OF SHIFTING CONTROL AND LINKAGE.

This task covers:	a. <i>Removal/Disassembly</i>	c. <i>Reassembly/Installation</i>
	b. <i>Inspection/Repair</i>	d. <i>Adjustment</i>
INITIAL SETUP		
<i>Materials/Parts</i>		
Cotter pin (2)		
Lockwasher (7)		
Lockwasher (2)		
<i>References</i>		
TM 9-2350-304-24P-1		
<i>Equipment Conditions</i>		
2-893 Transmission deck lid assembly removed		
2-887 Engine deck assembly removed		

2-132. MAINTENANCE OF SHIFTING CONTROL AND LINKAGE (CONT).



NOTE

Measure distance from center-to-center of rod ends on shift control linkage rod and shift linkage plain stud before removal to aid in installation.

- 1 Remove knob (1) from driver shift manual control lever (2).
- 2 Remove two cotter pins (3) from two headed straight pins (4).
- 3 Remove two headed straight pins (4) from shift control latch (5). Remove shift control latch.

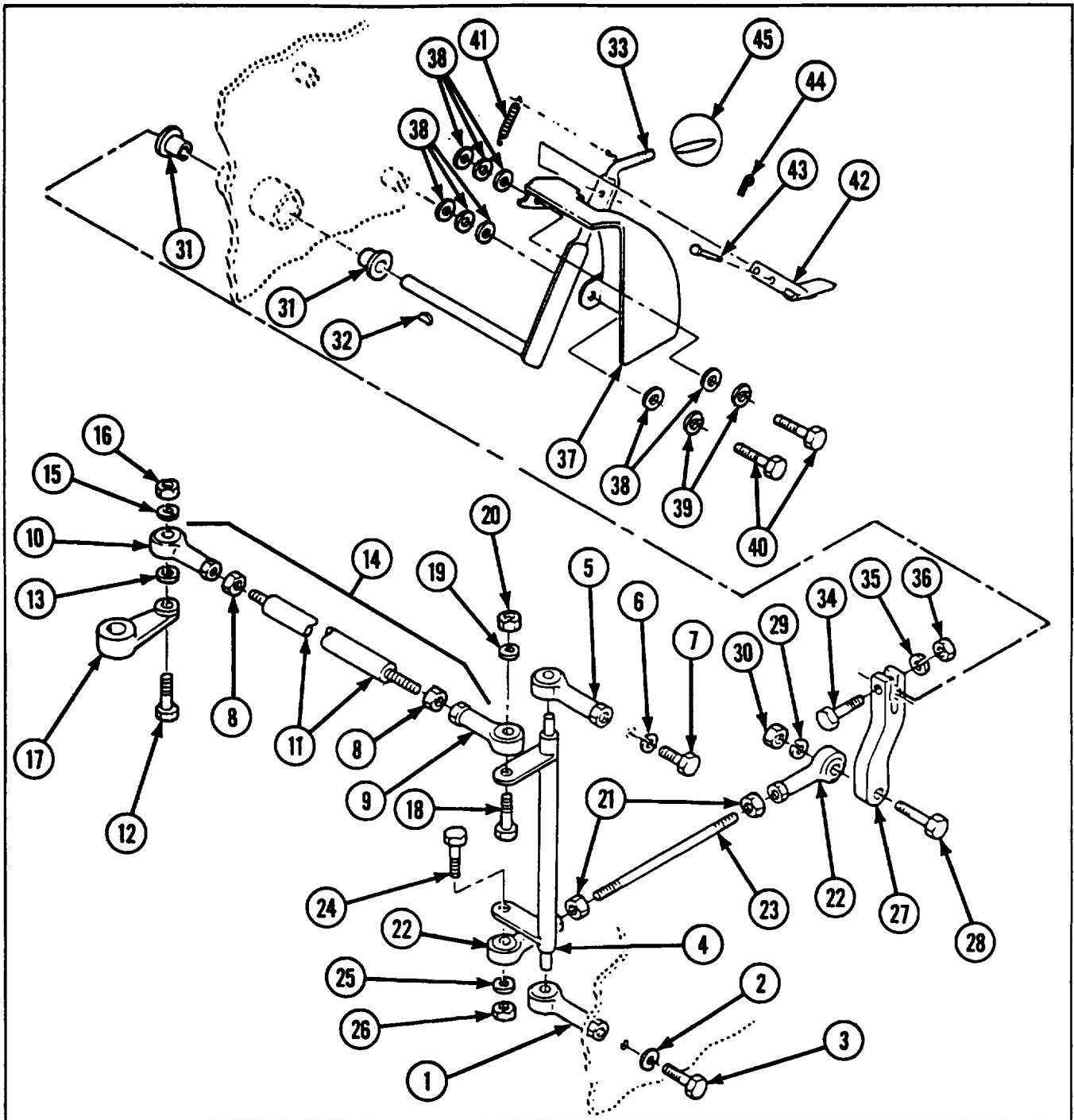
- 4 Remove helical extension spring (6) from driver shift manual control lever (2).
- 5 Remove two hexagon head capscrews (7), two lockwashers (8), and eight flat washers (9) from access cover (10).
- 6 Remove access cover (10) from bulkhead.
- 7 Remove hexagon plain nut (11), lockwasher (12), and hexagon head capscrew (13) from linkage shift control shift arm lever (14).
- 8 Remove driver shift manual control lever (2), woodruff key (15), and two sleeve bearings (16).
- 9 Remove hexagon plain nut (17), lockwasher (18), and hexagon head capscrew (19) from linkage shift control shift arm lever (14) and rod end plain bearing (20). Remove linkage shift control shift arm lever.
- 10 Loosen two hexagon plain nuts (21) at both ends of shift linkage plain stud (22).
- 11 Remove hexagon plain nut (23), lockwasher (24), and hexagon head capscrew (25) from rod end plain bearing (26) and shift control linkage bellcrank (27).
- 12 Remove two rod end plain bearings (20 and 26) and two hexagon plain nuts (21) from shift linkage plain stud (22).
- 13 Loosen two hexagon plain nuts (28) at both ends of shift control linkage rod (29).
- 14 Remove hexagon plain nut (30), lockwasher (31), and hexagon head capscrew (32) from rod end plain bearing (33) and shift control linkage bellcrank (27).
- 15 Remove hexagon plain nut (34), lockwasher (35), shift linkage rod assembly (36), flat washer (37), and hexagon head capscrew (38) from shift linkage rod remote control lever (39).
- 16 Remove two rod end plain bearings (33 and 40) and two hexagon plain nuts (28) from shift control linkage rod (29).
- 17 Remove hexagon head capscrew (41), lockwasher (42), and rod end plain bearing (43) from top of shift control linkage bellcrank (27).
- 18 Remove shift control linkage bellcrank (27).
- 19 Remove hexagon head capscrew (44), lockwasher (45), and rod end plain bearing (46) from hull.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If control rod is broken, damaged, or missing, repair is by replacement of next higher assembly.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-132. MAINTENANCE OF SHIFTING CONTROL AND LINKAGE (CONT).

REASSEMBLY/INSTALLATION

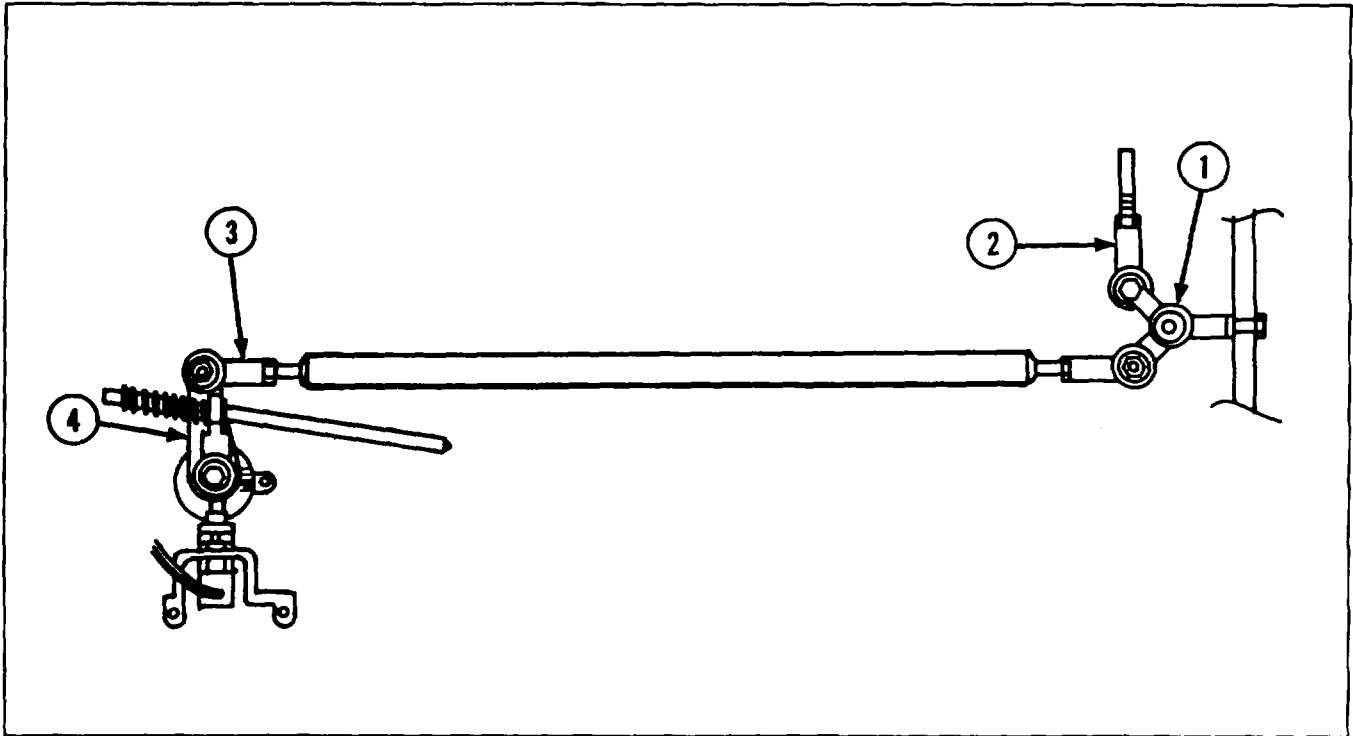


- 1 Install rod end plain bearing (1), new lockwasher (2), and hexagon head capscrew (3) in hull.
- 2 Install shift control linkage bellcrank (4) in rod end plain bearing (1).

- 3 Install rod end plain bearing (5) on shift control linkage bellcrank (4). Secure to hull with new lockwasher (6) and hexagon head capscrew (7).
- 4 Install two hexagon plain nuts (8), and two rod end plain bearings (9 and 10) on ends of shift control linkage rod (11).
- 5 Install hexagon head capscrew (12), flat washer (13), shift linkage rod assembly (14), new lockwasher (15), and hexagon plain nut (16) on shift linkage rod remote control lever (17).
- 6 Install hexagon head capscrew (18), new lockwasher (19), and hexagon plain nut (20) through shift control linkage bellcrank (4) and rod end plain bearing (9).
- 7 Tighten two hexagon plain nuts (8) at both ends of shift control linkage rod (11).
- 8 Install two hexagon plain nuts (21) and two rod end plain bearings (22) on shift linkage plain stud (23).
- 9 Install hexagon head capscrew (24), new lockwasher (25), and hexagon plain nut (26) through rod end plain bearing (22) and shift control linkage bellcrank (4).
- 10 Tighten hexagon plain nuts (21) at both ends of shift linkage plain stud (23).
- 11 Install linkage shift control shift arm lever (27). Install hexagon head capscrew (28), new lockwasher (29), and hexagon plain nut (30) through rod end plain bearing (22) and linkage shift control shift arm lever (27).
- 12 Install two sleeve bearings (31), woodruff key (32), and driver shift control manual control lever (33).
- 13 Install hexagon head capscrew (34), new lockwasher (35), and hexagon plain nut (36) through linkage shift control shift arm lever (27).
- 14 Install access cover (37) on bulkhead.
- 15 Install six flat washers (38), two new lockwashers (39), and two hexagon head capscrews (40) through access cover (37).
- 16 Install helical compression spring (41) on driver shift control manual control lever (33).
- 17 Install shift control latch (42). Install two headed straight pins (43) in shift control latch (42).
- 18 Install two new cotter pins (44) in two headed straight pins (43).
- 19 Install knob (45) on driver shift control manual control lever (33).

2-132. MAINTENANCE OF SHIFTING CONTROL AND LINKAGE (CONT).

ADJUSTMENT



- 1 Turn off engine.
- 2 Block tracks.
- 3 Shift transmission into first gear.
- 4 Measure distance from bulkhead to center of hole in upper lever of shift control linkage bellcrank (1). Distance must be 1.56 to 1.69 in. (3.96 to 4.29 cm). If not, disconnect rod end plain bearing (2) from shift control linkage bellcrank and adjust rod end plain bearing until distance is within tolerance. Connect rod end plain bearing to shift control linkage bellcrank.
- 5 Check shift position indicator on transmission. Number 1 must be aligned with index hole. If not, disconnect rod end plain bearing (3) from linkage shift control shift arm lever (4). Aline number 1 on indicator with index hole, as shown, then adjust rod end plain bearing until holes in rod end plain bearing and linkage shift control shift arm lever are aligned. Connect rod end plain bearing to linkage shift control shift arm lever.
- 6 Shift transmission through all positions. Stop at each position and check that shift position Indicator on transmission is aligned with index hole and agrees with shift control lever in driver's compartment.
- 7 Road test vehicle.

2-133. MAINTENANCE OF HYDRAULIC SYSTEM COMPONENTS, LINES, AND FITTINGS.

This task covers: a. Removal/Disassembly b. Inspection/Repair c. Reassembly/Installation

INITIAL SETUP:

Tools and Special Tools
 Plier wire twister (item 29, appx G)

References
 TM 9-2350-304-24P-1

Materials/Parts

General Safety Instructions

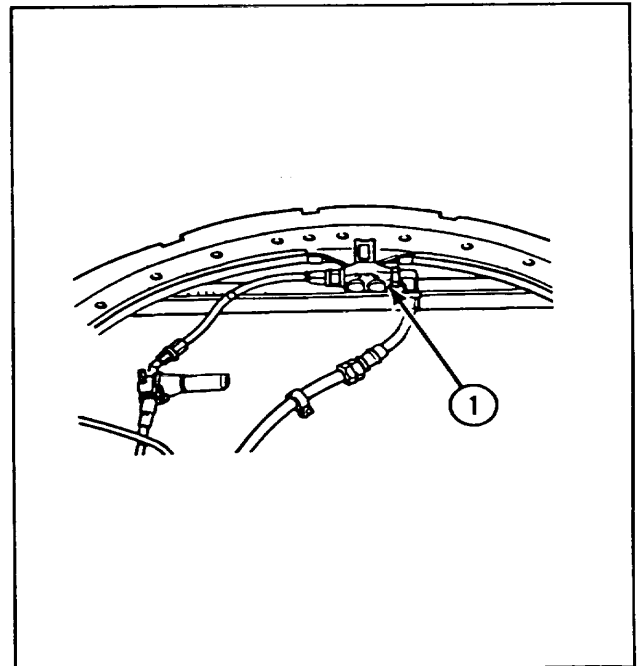
WARNING

- Gasket
- Hydraulic fluid (item 20, appx C)
- Locknut
- Locknut (2)
- Lockwasher (4)
- Lockwire (item 25, appx C)
- Packing retainer
- Performed packing (2)
- Performed packing (3)
- Performed packing
- Performed packing (2)
- Performed packing
- result in injury.

- Before relieving hydraulic pressure, be sure travel lock is engaged and vehicle is on as level ground as possible. This will stop the cannon from sliding out of battery.
- Wipe up any spilled hydraulic fluid. Failure to do so may

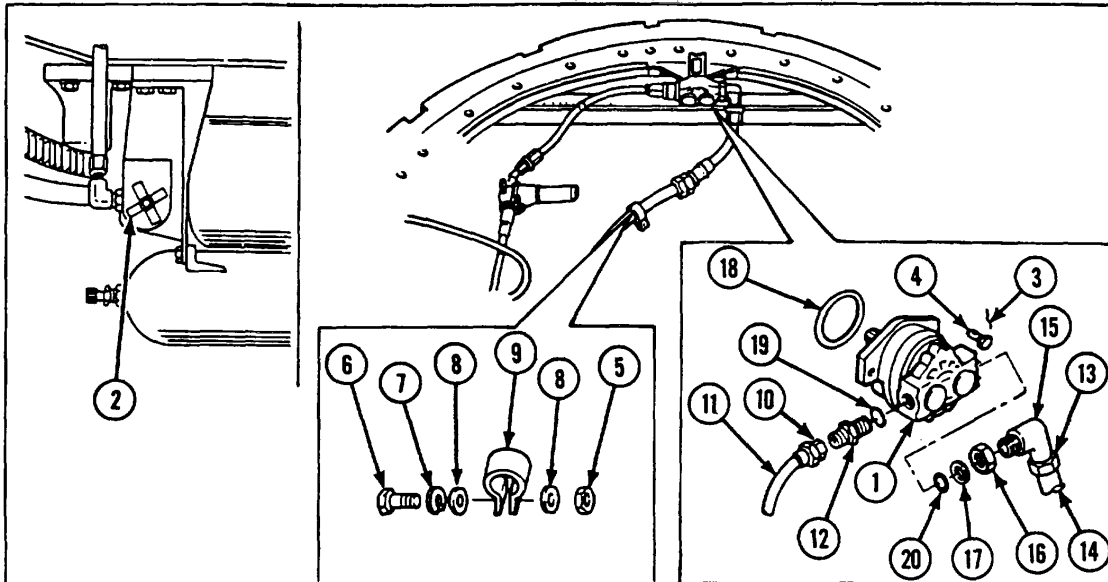
REMOVAL

- 1 Enter hull through turret well to gain access to rotary pump (1).



2-133. MAINTENANCE OF HYDRAULIC SYSTEM COMPONENTS, LINES AND FITTINGS (CONT).

REMOVAL (CONT)

**WARNING**

- Before relieving hydraulic pressure, ensure travel lock is engaged and vehicle is on as level ground as possible. This will keep the cannon from sliding out of battery.
- Wipe up any spilled hydraulic fluid. Failure to do so may result in injury.

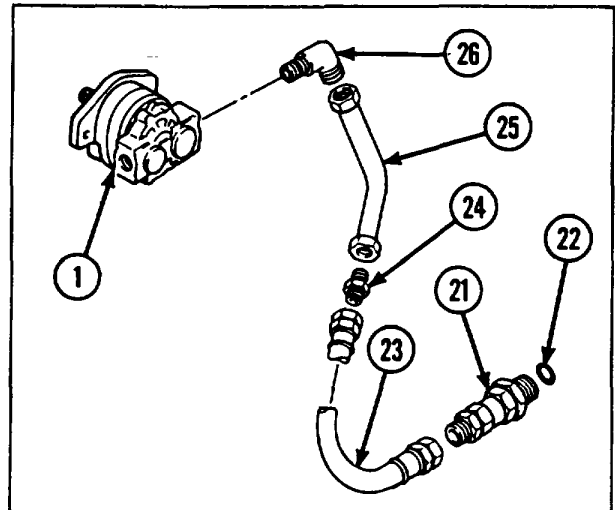
- 2 To relieve hydraulic pressure, set MASTER switch to OFF, open accumulator drain valve (2), and drain hydraulic fluid from reservoir.

NOTE

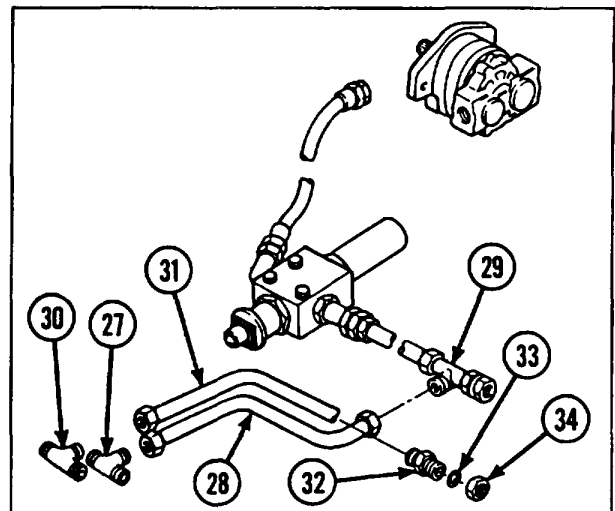
Steps 3 thru 8 apply to the removal of the rotary pump.

- 3 Remove lockwire (3) and two hexagon head capscrews (4) securing rotary pump (1) to hull.
- 4 Remove hexagon plain nut (5), hexagon head capscrew (6), lockwasher (7), two flat washers (8), and union-to-coupling hose clamp (9).
- 5 Loosen hose assembly fitting (10) and disconnect nonmetallic hose assembly (11) from rotary pump (1). Remove tube reducer (12) from rotary pump (1).
- 6 Loosen tube fitting (13) and disconnect metal tube assembly (14) from tube elbow (15).
- 7 Remove tube elbow (15), nut (16), and gasket (17) from rotary pump (1).

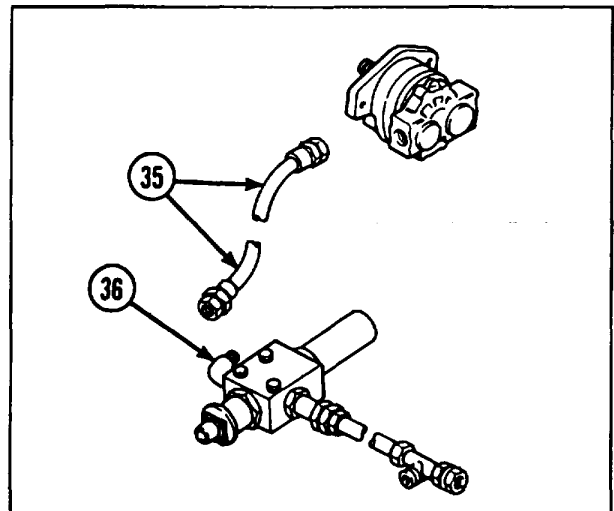
- 8 Remove rotary pump (1) from hull. Remove three preformed packings (18, 19, and 20) from rotary pump (1).
- 9 Disconnect coupling assembly (21) and remove preformed packing (22). Disconnect coupling assembly (21) from hose assembly (23).
- 10 Remove hose assembly (23), tube nipple (24), and tube assembly (25) from tube elbow (26).



- 11 Disconnect tube tee (27) from tube assembly (28).
- 12 Remove tube assembly (28) from tube tee (29).
- 13 Disconnect tube tee (30) from tube assembly (31).
- 14 Remove tube assembly (31), tube nipple (32), preformed packing (33), and locknut (34) from hull.



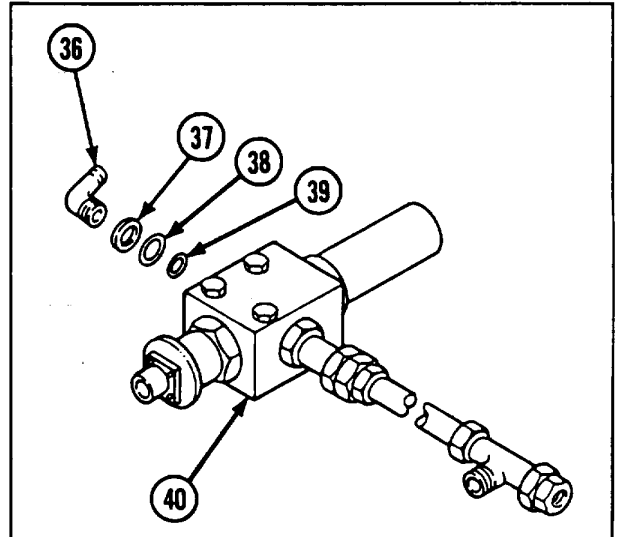
- 15 Loosen fitting and remove hose assembly (35) from tube elbow (36).



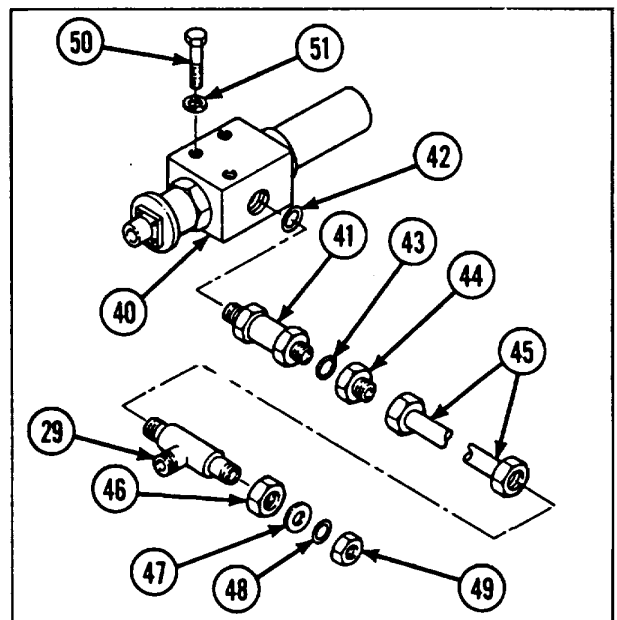
**2-133. MAINTENANCE OF HYDRAULIC SYSTEM COMPONENTS, LINES, AND FITTINGS
(CONT).**

REMOVAL (CONT)

- 16** Remove tube elbow (36), locknut (37), packing retainer (38), and preformed packing (39) from fluid filter (40).



- 17** Disconnect check valve (41), and remove preformed packing (42) from fluid filter (40).
- 18** Remove check valve (41), preformed packing (43), straight tube adapter (44), and tube assembly (45) from tube tee (29).
- 19** Remove tube tee (29), locknut (46), flat washer (47), preformed packing (48), and locknut (49) from hull.
- 20** Remove three hexagon head capscrews (50), three lockwashers (51) and fluid filter (40) from hull.

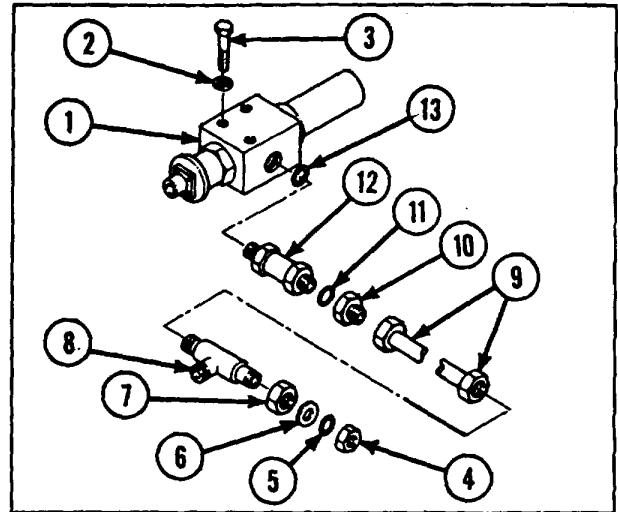


INSPECTION/REPAIR

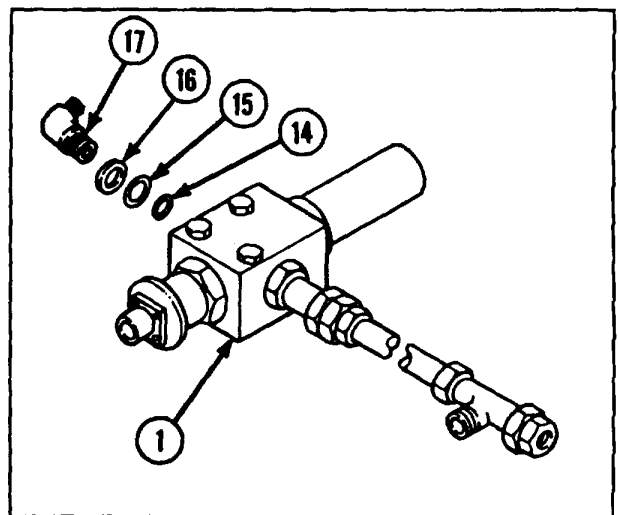
- 1** Inspect for broken, damaged, or missing parts.
- 2** Rotary pump is a repairable assembly. Notify next higher level of maintenance.
- 3** Fluid filter is a repairable assembly, refer to page 2-762.
- 4** Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

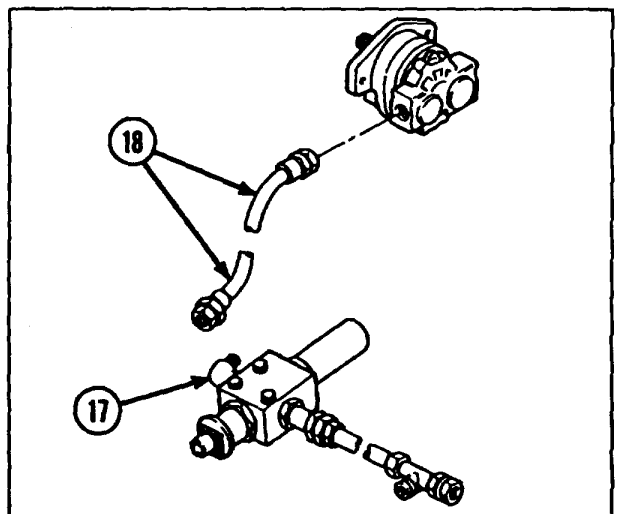
- 1 Install fluid filter (1), three new lockwashers (2), and three capscrews (3) to hull.
- 2 Install new locknut (4), new preformed packing (5), flat washer (6), new locknut (7), tube tee (8), tube assembly (9), straight tube adapter (10), new preformed packing (11), and check valve (12) to hull.
- 3 connect check valve (12) and install new preformed packing (13) to fluid filter (1).



- 4 Install new preformed packing (14), new packing retainer (15), new locknut (16), and tube elbow (17) to fluid filter (1).

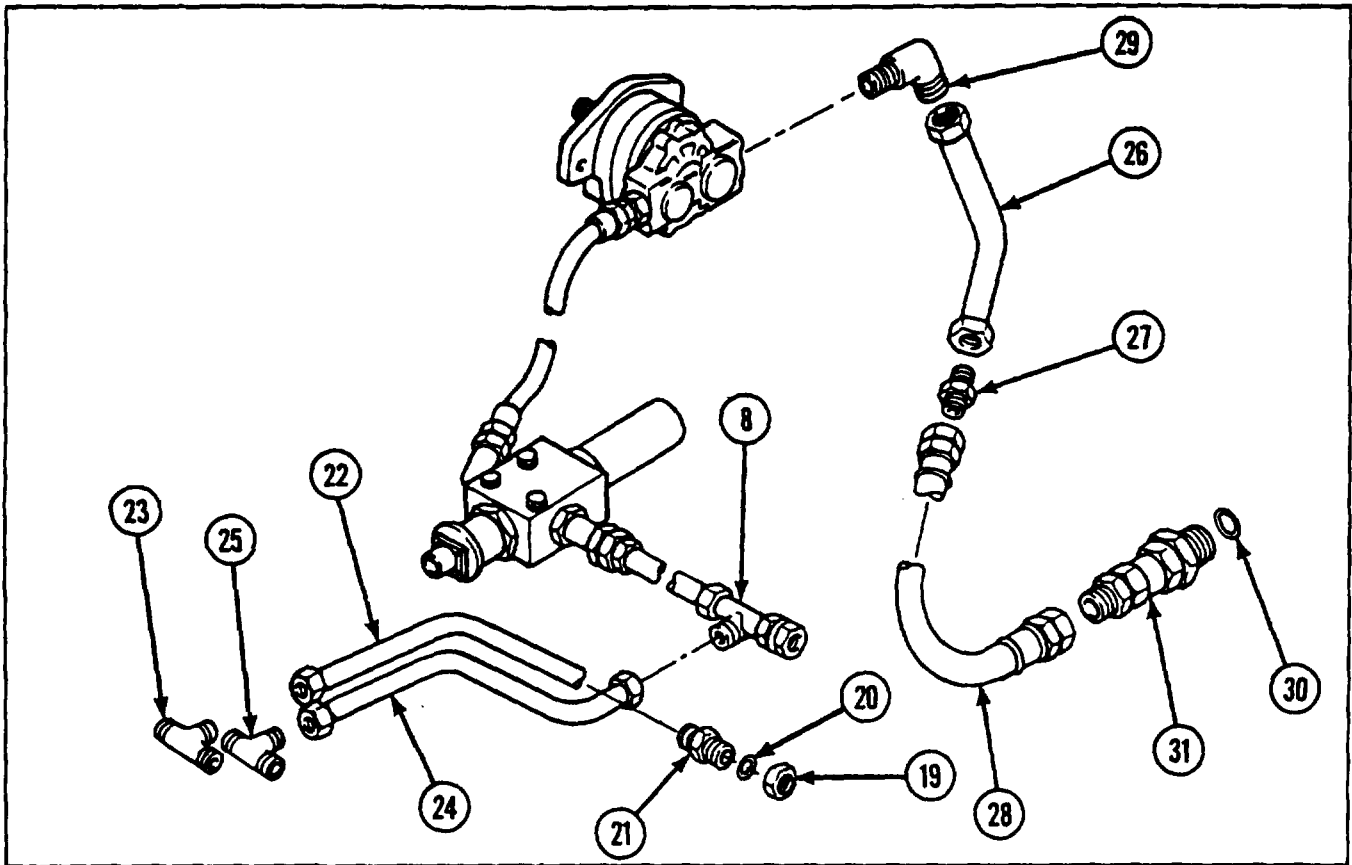


- 5 Install hose assembly (18) to tube elbow (17).

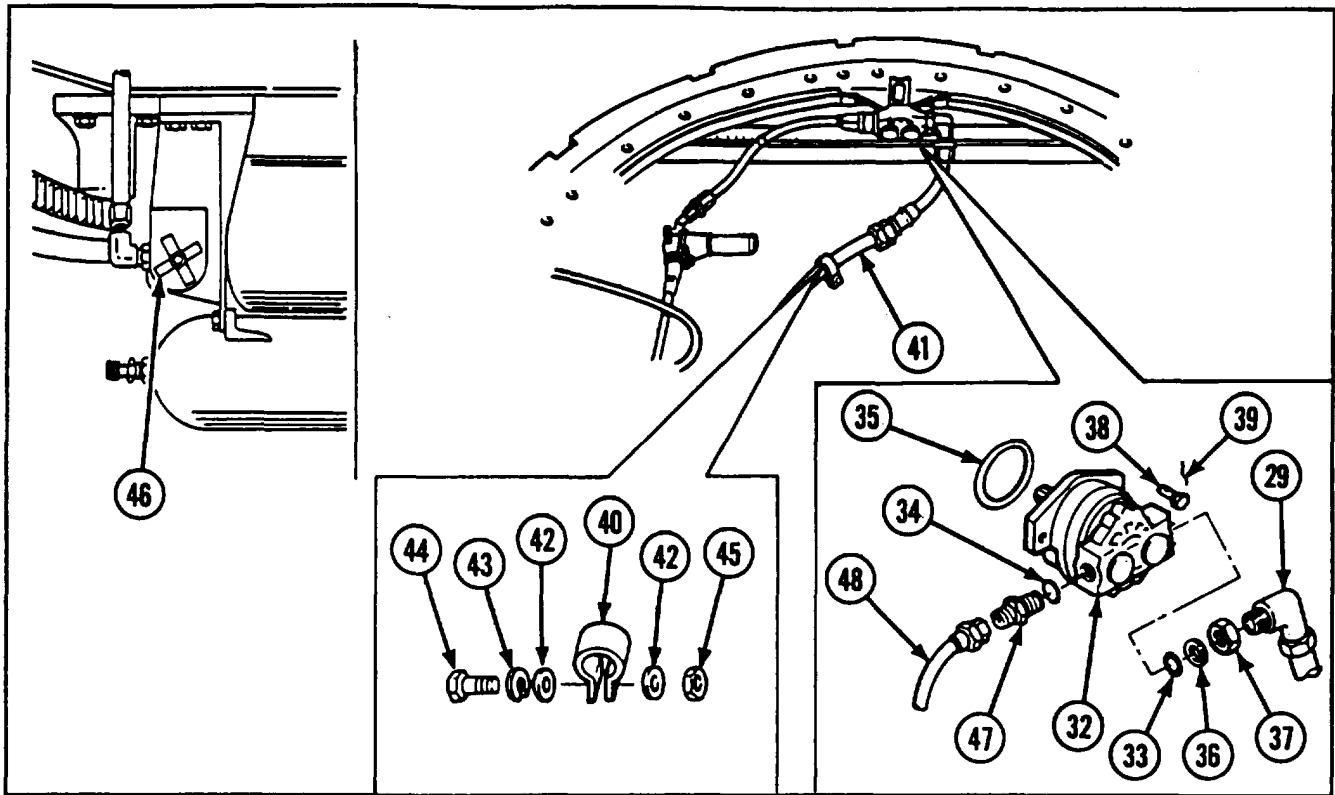


2-133. MAINTENANCE OF HYDRAULIC SYSTEM COMPONENTS, LINES, AND FITTINGS (CONT).

INSTALLATION (CONT)



- 7 Connect tube tee (23) to tube assembly (22).
- 8 Install tube assembly (24) to tube tee (25).
- 9 Connect tube tee (8) to tube assembly (24).
- 10 Install tube assembly (26), tube nipple (27), and nonmetallic hose assembly (28) to tube elbow (29).
- 11 Install new preformed packing (30) to coupling assembly (31). Install coupling assembly (31) to nonmetallic hose assembly (28).



- 12 Enter hull through turret well to gain access to rotary pump (32).
- 13 Install three new preformed packings (33, 34, and 35) to rotary pump (32).
- 14 Install new gasket (36), nut (37), and tube elbow (29) to rotary pump (32).
- 15 Install rotary pump (32) and secure to hull with two hexagon head capscrews (38) and new lockwire (39).
- 16 Install union-to-coupling hose clamp (40) to hose assembly (41) and secure with two flat washers (42), new lockwasher (43), hexagon head capscrew (44), and hexagon plain nut (45).

WARNING

Wipe up any spilled hydraulic fluid. Failure to do so may result in injury.

NOTE

Check hydraulic lines for oil leaks.

- 17 To establish hydraulic pressure, close accumulator drain valve (46), and fill reservoir with hydraulic fluid. Set MASTER switch to ON, set instrument switch to ON, and start engine. Set power takeoff switch to ON, then set power takeoff pump switch to OFF. Pull fuel shut-off handle. Set instrument switch to OFF, set MASTER switch to OFF, and shut off engine.
- 18 Connect tube reducer (47) to rotary pump (32). Tighten hose assembly fitting (48).

2-134. MAINTENANCE OF FLUID FILTER.

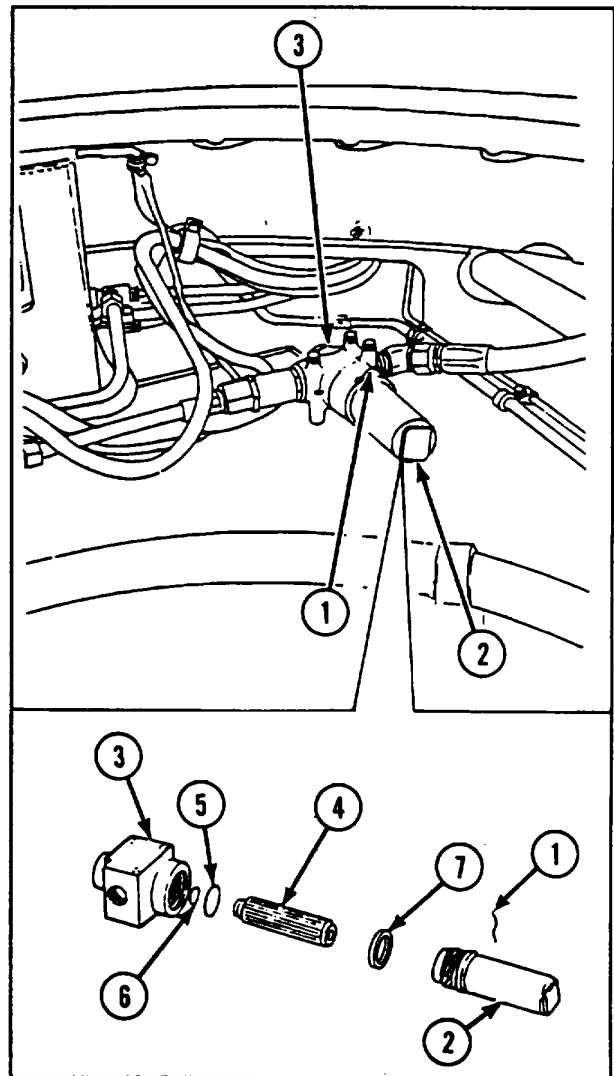
This task covers:	a. <i>Disassembly</i>	b. <i>Inspection/Repair</i>	c. <i>Reassembly</i>
INITIAL SETUP			
<i>Tools and Special Tools</i> Plier wire twister (item 29, appx G)	<i>References</i> TM 9-2350-304-24P-1		
<i>Materials/Parts</i> Hydraulic filter parts kit	<i>Equipment Conditions</i> 2-755 Hydraulic pressure relieved		

DISASSEMBLY

NOTE

- Filter kit contains two different sets of preformed packings and packing retainers. Check manufacturer's part number and refer to TM 9-2350-304-24P-1 when replacing preformed packing and packing retainer in filter.
- Repair of the fluid filter may be performed while the filter is installed, or after it has been removed. For removal of fluid filter, refer to page 2-762.

- 1 Set MASTER switch to OFF.
- 2 Remove lockwire (1).
- 3 Remove filter bowl (2) from housing (3).
- 4 Remove filter element (4) from filter bowl (2).
- 5 Remove preformed packing (5) from filter element (4).
- 6 Remove preformed packing (6) and packing retainer (7) from housing (3).
- 7 Discard preformed packings (5 and 6), packing retainer (7), and filter element (4).



INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

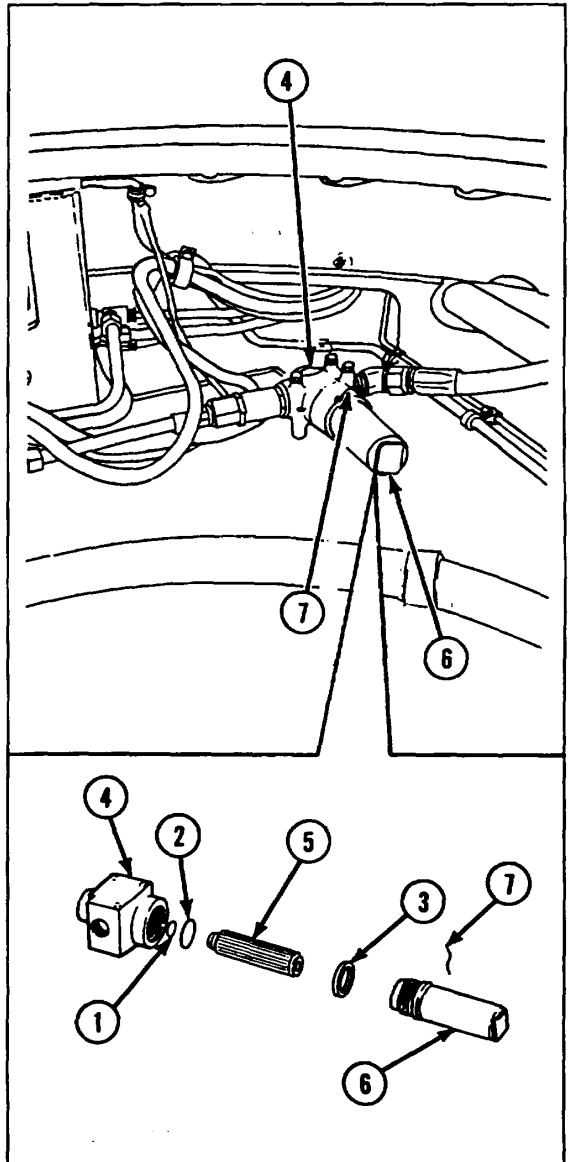
CAUTION

Filter bowl must be tightened securely in filter head. Do not back off filter bowl because this will cause shutoff valve in filter head to partly close, limiting oil flow through filter.

NOTE

Filter kit contains two different sets of preformed packings and packing retainers. Check manufacturer's part number and refer to TM 9-2350-304-24P-1 when replacing packing and retainer in filter.

- 1 Install new preformed packings (1 and 2 and new packing retainer (3) in housing (4).
- 2 Install new preformed packing (2) in new filter element (5).
- 3 Install new filter element (5) in filter bowl (6).
- 4 Install filter bowl (6) on housing (4).
- 5 Install new lockwire (7).
- 6 Set MASTER switch to ON.



2-135. MAINTENANCE OF AUXILIARY DRIVE SHAFTS, UNIVERSAL JOINTS, AND RELATED PARTS.

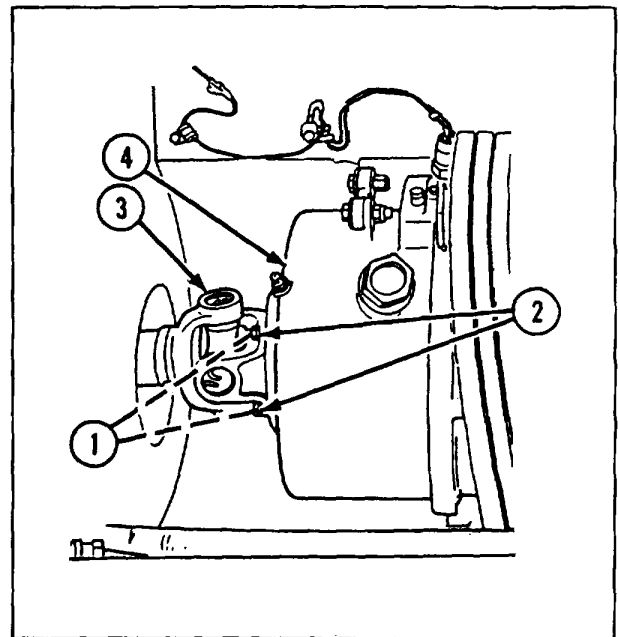
This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Tools and Special Tools</i>		<i>References</i>	
Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)		TM 9-2350-304-10	
• Torque wrench (0 to 170 in.-lb.)		TM 9-2350-304-24P-1	
Plier wire twister (item 29, appx G)		<i>Equipment Conditions</i>	
		2-879 Fanwell deck grille removed	
<i>Materials/Parts</i>			
Gasket			
Hydraulic fluid (item 20, appx C)			
Lockwasher			
Lockwire (item 25, appx C)			
Preformed packing			

REMOVAL

NOTE

The power takeoff drive shaft can be removed when the powerplant is removed. Refer to page 2-380.

- 1 Remove lockwire (1) and four self-locking bolts (2). Disconnect bearing unit drive shaft (3) from auxiliary drive assembly vehicular drive (4).

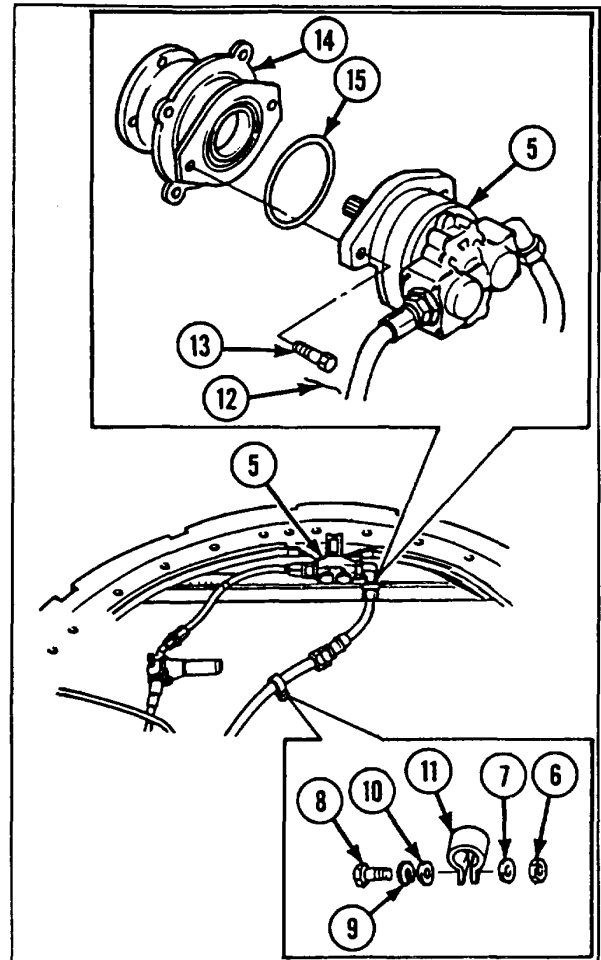


- 2 Enter hull through turret to gain access to rotary pump (5).
- 3 Remove hexagon plain nut (6), flat washer (7), hexagon head capscrew (8), lockwasher (9), flat washer (10), and union-to-coupling hose clamp (11).
- 4 Remove lockwire (12) and two hexagon head capscrews (13) securing rotary pump (5) to auxiliary drive line carrier ball bearing unit (14).

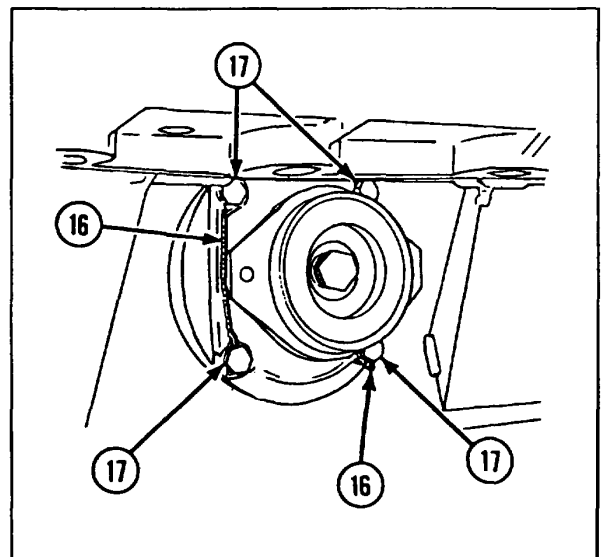
NOTE

Do not disconnect hose assemblies from rotary pump.

- 5 Pull rotary pump (5) down and out of the way, using care not to damage hose assemblies. Remove preformed packing (15) from rotary pump (5).



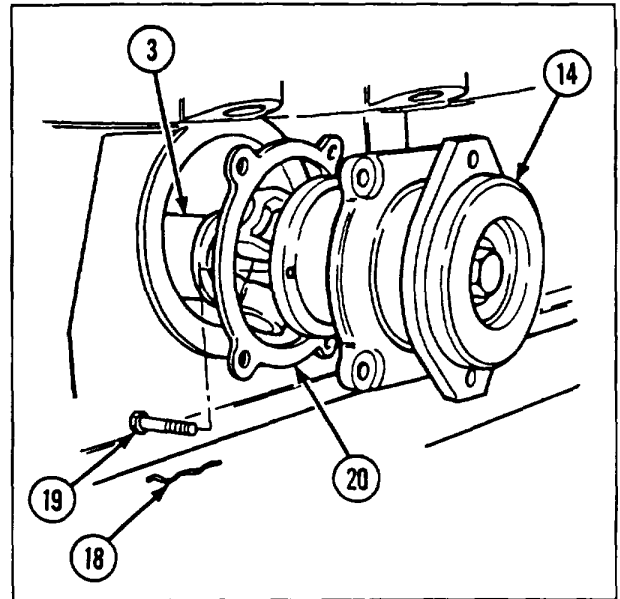
- 6 Remove lockwire (16) and four hexagon head capscrews (17).



2-135. MAINTENANCE OF AUXILIARY DRIVE SHAFTS, UNIVERSAL JOINTS, AND RELATED PARTS (CONT).

REMOVAL (CONT)

- 7 Pull auxiliary drive line carrier ball bearing unit (14) and bearing unit drive shaft (3) partly from hull recess.
- 8 Remove lockwire (18) and four hexagon head capscrews (19) attaching bearing unit drive shaft (3) to auxiliary drive line carrier ball bearing unit (14).
- 9 Remove auxiliary drive line carrier ball bearing unit (14) and bearing unit gasket (20) from bearing unit drive shaft (3).
- 10 Remove bearing unit drive shaft (3) from vehicle.

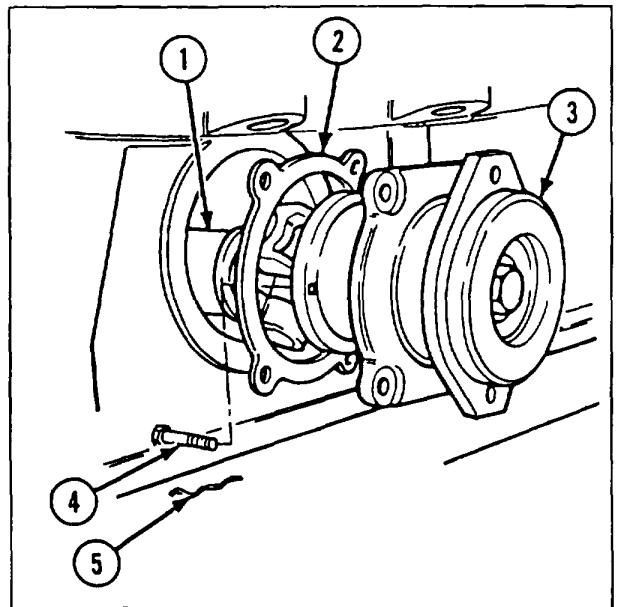


INSPECTION/REPAIR

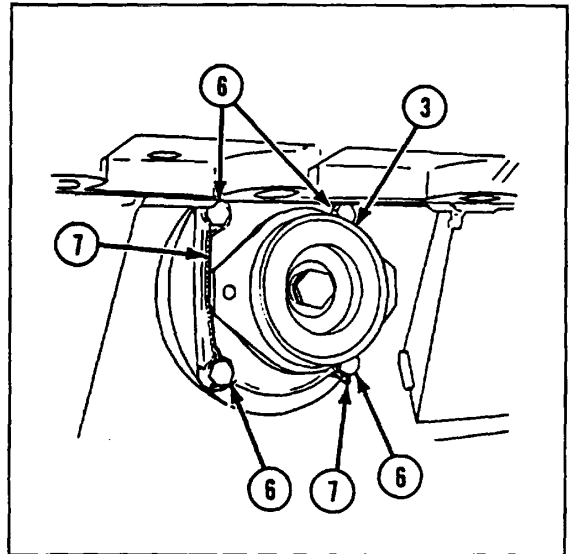
- 1 Inspect for broken, damaged, or missing parts.
- 2 Auxiliary drive line carrier ball bearing unit is a repairable assembly. Notify direct support maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

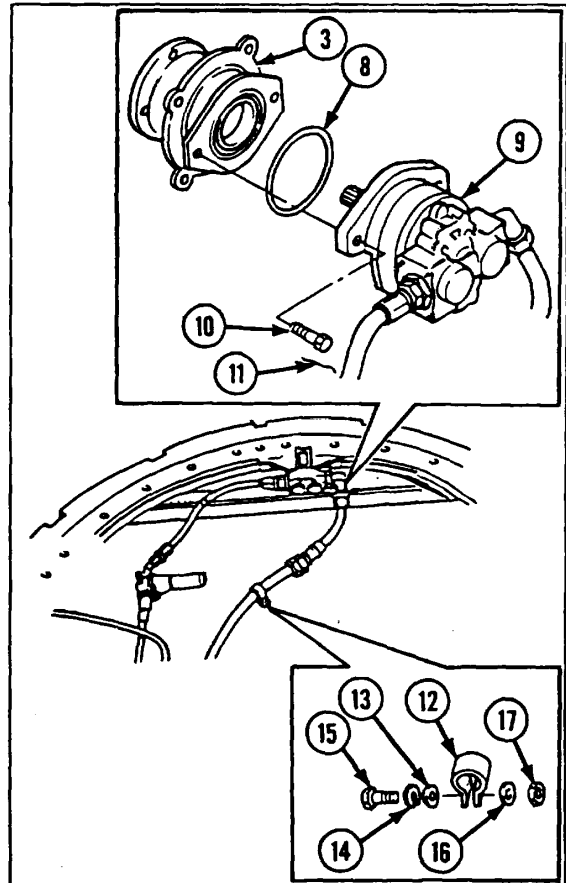
- 1 Install bearing unit shaft (1) in vehicle.
- 2 Install new bearing unit gasket (2) and auxiliary drive line carrier bearing unit (3) on bearing unit drive shaft (1).
- 3 Install four hexagon head capscrews (4) and new lockwire (5) attaching bearing unit drive shaft (1) to auxiliary drive line carrier ball bearing unit (3). Torque capscrews to 78 ft-lb. (105 N-m).



- 4 Position auxiliary drive line carrier ball bearing unit (3) on hull and install four hexagon head capscrews (6) and new lockwire (7).



- 5 Install new preformed packing (8) and rotary pump (9) to auxiliary drive line carrier ball bearing unit (3). Secure with two hexagon head capscrews (10) and new lockwire (11).

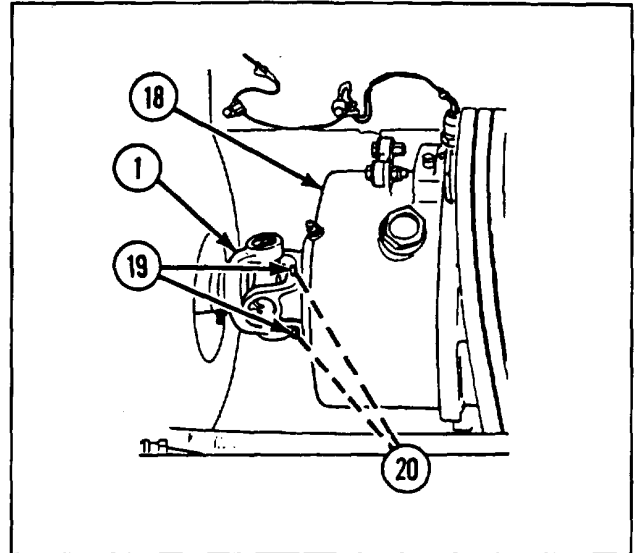


- 6 Install hose clamp (12), flat washer (13), new lockwasher (14), hexagon head capscrew (15), flat washer (16), and hexagon plain nut (17).

2-135. MAINTENANCE OF AUXILIARY DRIVE SHAFTS, UNIVERSAL JOINTS, AND RELATED PARTS (CONT).

INSTALLATION (CONT)

- 7 Install bearing unit drive shaft (1) on auxiliary drive assembly vehicular drive (18). Secure with four new self-locking bolts (19) and new lockwire (20). Torque self-locking bolts to 78 ft-lb. (105 N-m).
- 8 Lubricate universal joints and propeller shaft with hydraulic fluid per TM 9-2350 304-10.

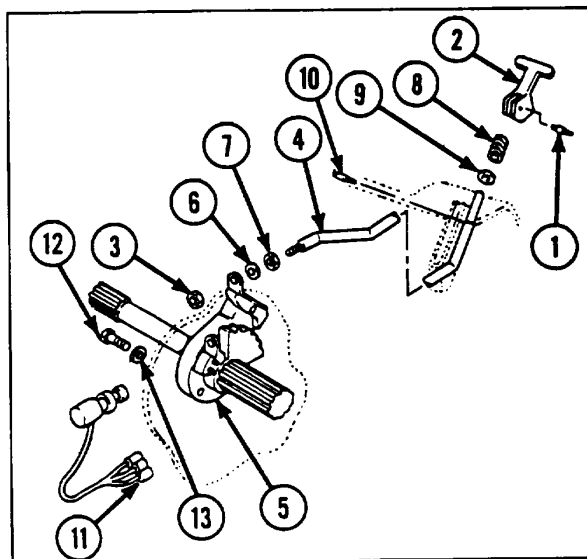


2-136. MAINTENANCE OF PARKING BRAKE CONTROL AND LINKAGE.

This task covers:	a. Removal b. Inspection/Repair	c. Installation d. Adjustment
INITIAL SETUP		
<p><i>Materials/Parts</i> Lockwasher Lockwasher (4) Self-locking nut Spring pin</p> <p><i>References</i> TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i> 2-893 Transmission deck lid assembly removed 2-775 Brake pedal, controls, and linkage removed</p>	<p><i>General Safety Instructions</i></p> <div style="border: 1px solid black; padding: 2px; text-align: center; font-weight: bold; margin: 10px 0;">WARNING</div> <p>Brake foot pedal is spring-loaded. Before working in driver's compartment, block vehicle tracks and release parking brake.</p>	

REMOVAL

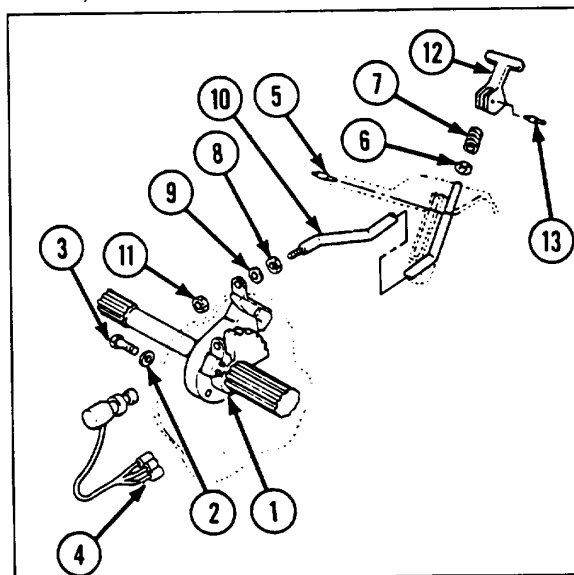
- 1 Remove spring pin (1) from brake handle (2), and remove handle.
- 2 Remove self-locking nut (3) from parking rod (4).
- 3 Remove parking rod (4) from parking brake assembly (5).
- 4 Remove lockwasher (6), hexagon plain nut (7), helical spring (8), flat washer (9), and grooved headless pin (10), from parking rod (4).
- 5 Disconnect three electrical connectors (11) of brake warning sensitive switch.
- 6 Remove four machine bolts (12) and four lockwashers (13). Remove parking brake assembly (5).

**INSPECTION/REPAIR**

- 1 Inspect for broken, damaged, or missing parts.
- 2 Parking brake assembly is a repairable assembly. Refer to page 2-770.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install parking brake assembly (1). Install four new lockwashers (2) and four machine bolts (3).
- 2 Connect three electrical connectors (4) of brake warning sensitive switch.
- 3 Install grooved headless pin (5), flat washer (6), helical spring (7), hexagon plain nut (8), and new lockwasher (9) on parking rod (10).
- 4 Install parking rod (10) on parking brake assembly (1).
- 5 Install new self-locking nut (11) on parking rod (1).
- 6 Install brake handle (12).
- 7 Install new spring pin (13) in brake handle (12).



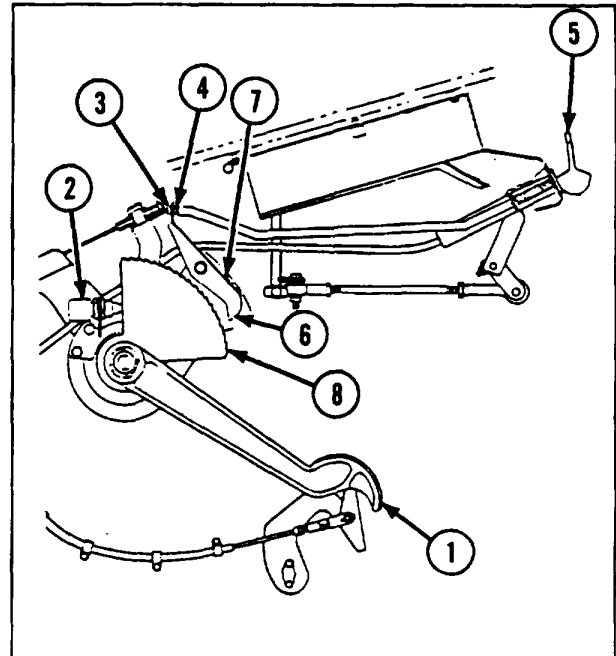
2-136. MAINTENANCE OF PARKING BRAKE CONTROL AND LINKAGE (CONT).

ADJUSTMENT

WARNING

Foot brake pedal is spring-loaded. Before working in driver's compartment, block vehicle tracks.

- 1 Release foot brake pedal (1).
- 2 Adjust brake warning sensitive switch (2) Refer to page 2-612.
- 3 Loosen self-locking nut (3) and hexagon plain nut (4).
- 4 Release parking brake handle (5).
- 5 Push pawl (6) against spring pin (7) to disengage parking brake assembly (8).
- 6 Tighten hexagon plain nut (4) and self-locking nut (3) to hold pawl (6) against spring pin (7).

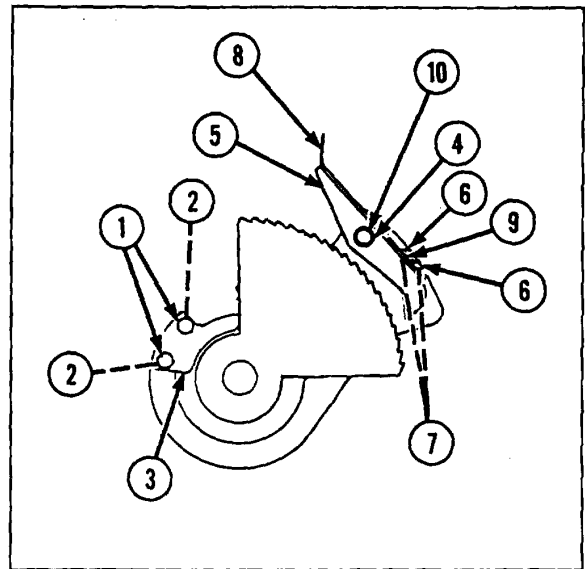


2-137. MAINTENANCE OF PARKING BRAKE ASSEMBLY.

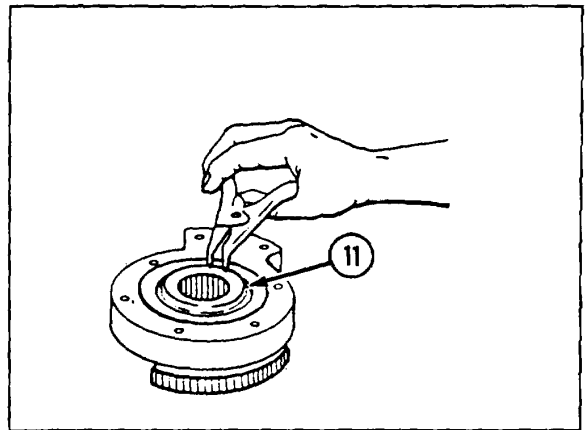
This task covers:	a. <i>Disassembly</i> b. <i>Inspection/Repair</i>	c. <i>Reassembly</i> d. <i>Adjustment</i>
INITIAL SETUP		
<i>Tools and Special Tools</i> Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B) • Retaining ring pliers		<i>References</i> TM 9-2350-304-24P-1
<i>Materials/Parts</i> Lockwasher (2)		<i>Equipment Conditions</i> 2-768 Parking brake assembly removed

DISASSEMBLY

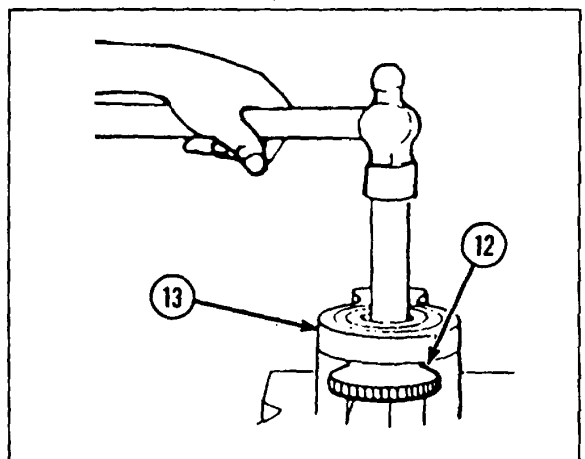
- 1 Remove two machine bolts (1) and two lockwashers (2).
- 2 Remove parking brake bracket (3).
- 3 Remove retaining ring (4).
- 4 Remove pawl (5) and attached parts.
- 5 Remove two machine screws (6) and two flat washers (7).
- 6 Remove leaf spring (8).
- 7 Drive out spring pin (9) and brake support pin (10), if damaged.



- 8 Using retaining ring pliers, remove retaining ring (11).



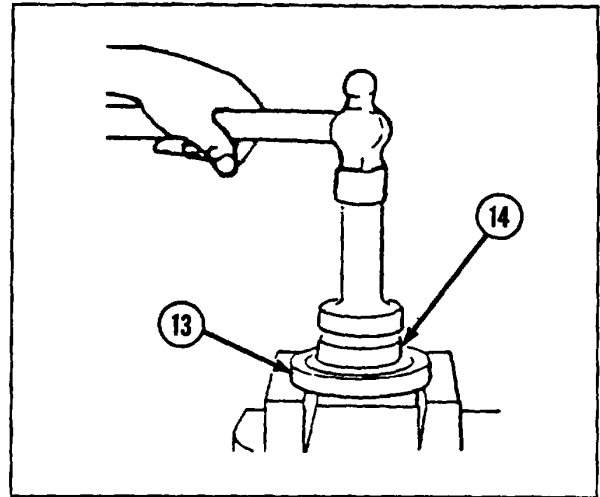
- 9 Using hammer and drift, remove bracket ratchet (12) from brake support (13).



2-137. MAINTENANCE OF PARKING BRAKE ASSEMBLY (CONT).

DISASSEMBLY (CONT)

- 10 Using hammer and drift, remove annular ball bearing (14) from brake support (1):

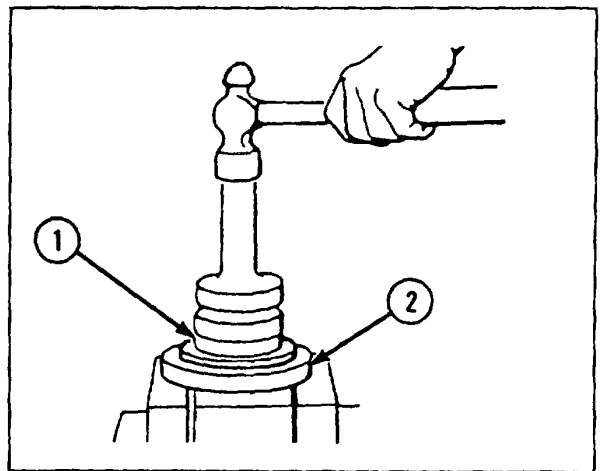


INSPECTION/REPAIR

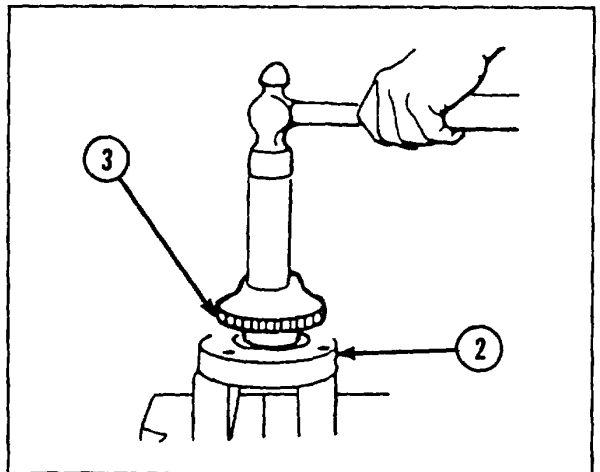
- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

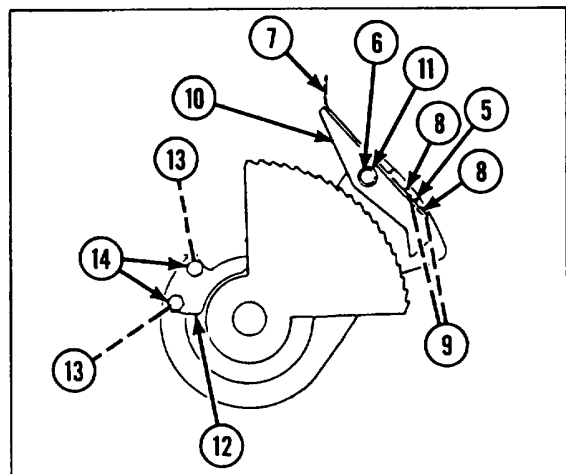
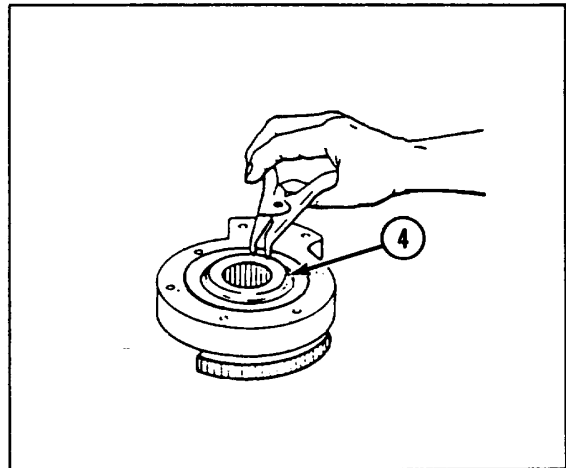
- 1 Using hammer and drift, install annular ball bearing (1) in brake support (2).



- 2 Using hammer and drift, install bracket ratchet (3) in brake support (2).



- 3 Using retaining ring pliers, install retaining ring (4).
- 4 Install new spring pin (5) and brake support pin (6), if necessary.
- 5 Install leaf spring (7).
- 6 Install two machine screws (8) and two flat washers (9).
- 7 Install pawl (10) and attached parts.
- 8 Install retaining ring (11).
- 9 Install parking brake bracket (12).
- 10 Install two new lockwashers (13) and two machine bolts (14).



ADJUSTMENT

WARNING

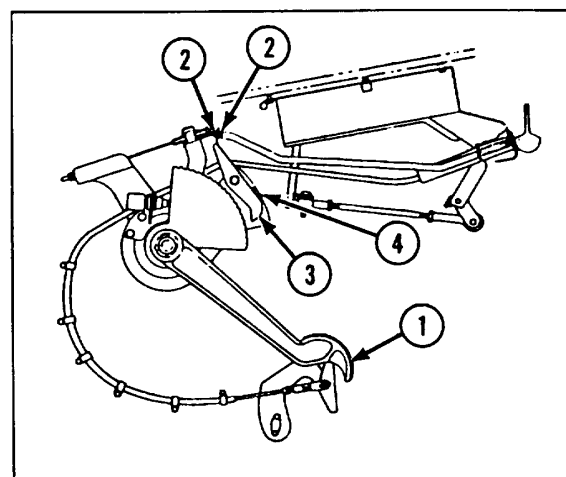
Foot brake pedal is spring-loaded. Before working in driver's compartment, block vehicle tracks and release parking brake.

- 1 Install parking brake assembly. Refer page 2-768.
- 2 Release foot brake pedal (1).

NOTE

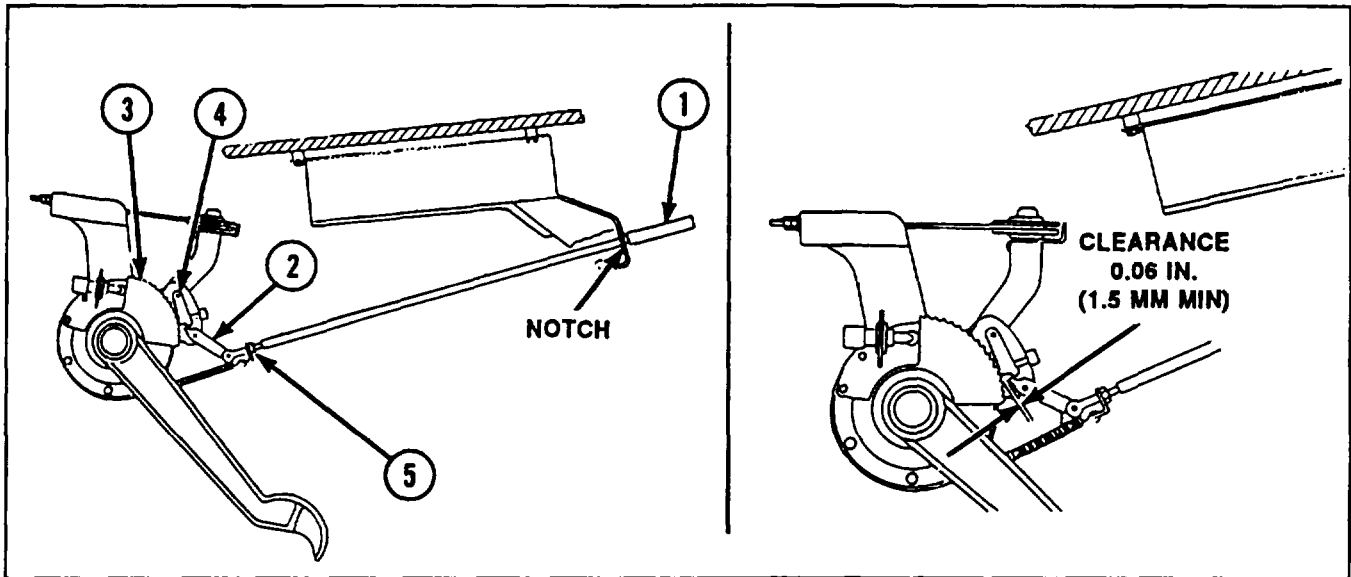
Steps 3 thru 5 are written and illustrated for "N" vehicles only.

- 3 Loosen two nuts (2).
- 4 Adjust nuts (2) to hold pawl (3) against spring pin (4).
- 5 Tighten two nuts (2).



2-137. MAINTENANCE OF PARKING BRAKE ASSEMBLY (CONT).

ADJUSTMENT (CONT)



NOTE

Steps 6 thru 11 are written and illustrated for "O" vehicles only.

- 6 Pull out parking brake handle (1) and engage notch.
- 7 Measure clearance between trigger plate (2) and ratchet (3). Clearance must be 0.06 to 0.07 inch (1.5 to 1.7 millimeters).
- 8 Release parking brake handle and operate foot brake. If dog plate (4) does not touch ratchet (3), parking brake is in adjustment. If dog plate (4) touches ratchet (3), go to step 9.
- 9 Loosen nut (5).
- 10 Turn handle (1) one full turn clockwise to decrease clearance between trigger plate (2) and ratchet (3) or counterclockwise to increase clearance.

NOTE

Notch in rod must face down.

- 11 Tighten nut (5) and repeat steps 6, 7, and 8.

2-138. MAINTENANCE OF MECHANICAL BRAKE CONTROL AND LINKAGE.

This task covers:

- a. *Removal*
- b. *Inspection/Repair*

- c. *Installation*
- d. *Adjustment*

INITIAL SETUP

Tools and Special Tools

- Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)
 - Torque wrench (0 to 170 ft-lb.)
- Brake adjustment splined wrench (item 34, appx G)
- Brake adjustment splined wrench (item 35, appx G)
- Wood blocks

References

- TM 9-2350-304-10
- TM 9-2350-304-24P-1

Equipment Conditions

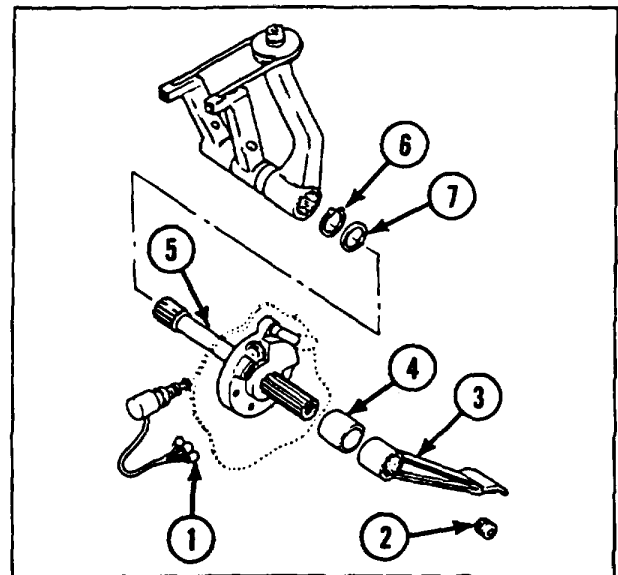
- 2-893 Transmission deck lid assembly removed
- 2-768 Braking shaft and ratchet installed
- Parking brake released

Materials/Parts

- Gasket (2)
- Lockwasher
- Sealing compound (item 37, appx C)
- Sealing compound (item 38, appx C)
- Self-locking nut (2)
- Spring pin (2)

REMOVAL

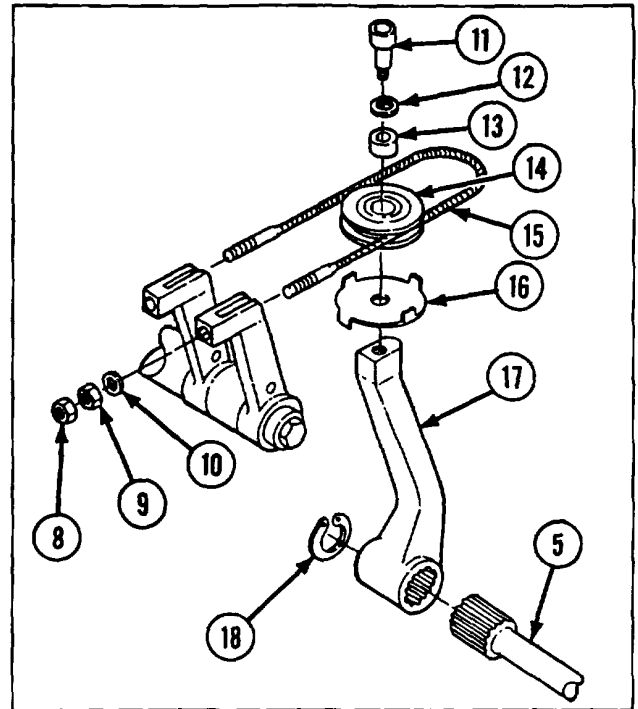
- 1 Disconnect three electrical connectors (1) of brake warning sensitive switch.
- 2 Remove pipe plug (2).
- 3 Remove brake pedal (3) and tube coupling (4) from straight control shaft (5).
- 4 Remove retaining ring (6) and ring space (7).



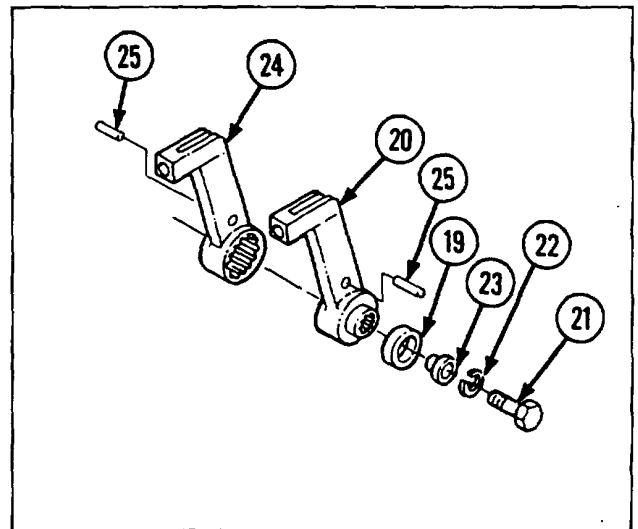
2-138. MAINTENANCE OF MECHANICAL BRAKE CONTROL AND LINKAGE (CONT).

REMOVAL (CONT)

- 5 Remove two self-locking nuts (8), two hexagon plain nuts (9), and two flat washers (10).
- 6 Remove shoulder screw (11) and flat washer (12).
- 7 Remove sleeve bearing (13), groove pulley (14), brake control cable (15), and brake clip assembly (16).
- 8 Support manual control lever (17) and pull straight control shaft (5) into driver's compartment.
- 9 Remove manual control lever (17).
- 10 Remove retaining ring (18) from inside manual control lever (17).



- 11 Remove bushing (19) from remote control lever (20).
- 12 Remove machine bolt (21), lockwasher (22), and shouldered washer (23) from remote control lever (20).
- 13 Remove two remote control levers (20 and 24) and two spring pins (25).

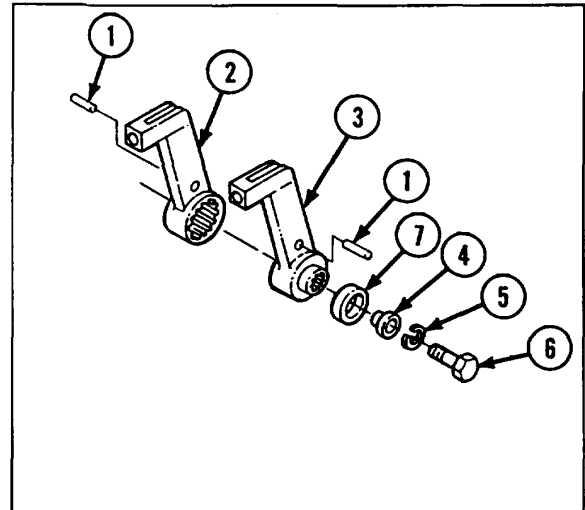


INSPECTION/REPAIR

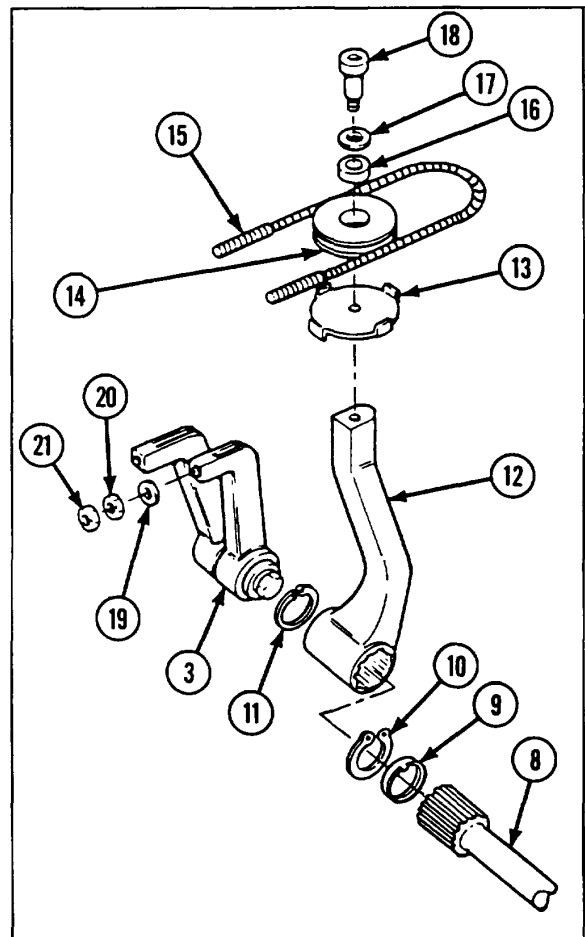
- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install two new spring pins (1) in two remote control levers (2 and 3).
- 2 Align blind spline in remote control lever (2) with blind spline in transmission, and install remote control lever.
- 3 Install remote control lever (3) so that spring pins (1) are aligned with each other
- 4 Install shouldered washer (4), new lockwasher (5), machine bolt (6), and bushing (7).



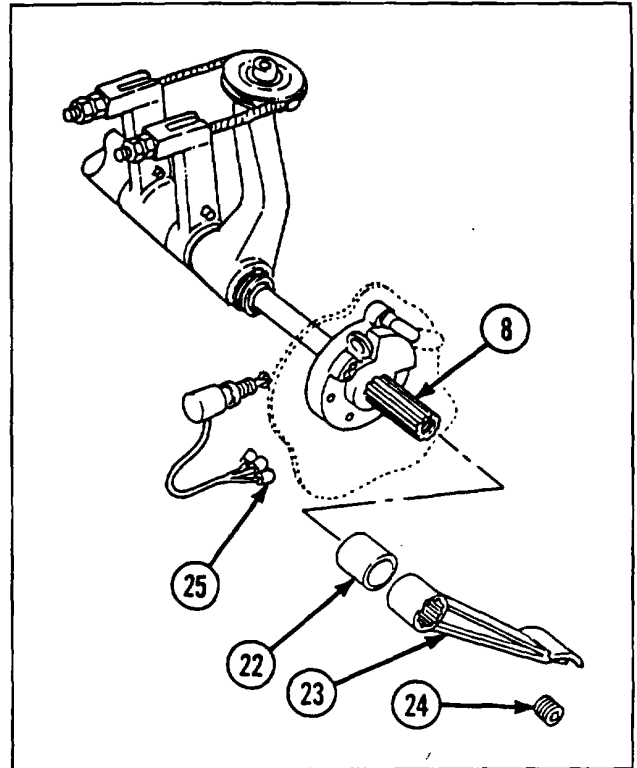
- 5 Partially install straight control shaft (8).
- 6 Install ring spacer (9) and retaining ring (10) on straight control shaft (8).
- 7 Install retaining ring (11) inside manual control lever (12).
- 8 Lube blind spline of straight control shaft (8). Refer to TM 9-2350-304-10. Align with blind spline in manual control lever (12), and install manual control lever.
- 9 From driver's compartment side, push against straight control shaft (8) so that manual control lever (12) is forced flush against remote control lever (3). Ensure that ring spacer (9) and retaining ring (10) are seated on straight control shaft (8).
- 10 Install brake clip assembly (13), groove pulley (14), brake control cable (15), and sleeve bearing (16).
- 11 Install flat washer (17) and shoulder screw (18).
- 12 Install two flat washers (19), two hexagon plain nuts (20), and two new self-locking nuts (21) on brake control cable (15).



2-138. MAINTENANCE OF MECHANICAL BRAKE CONTROL AND LINKAGE (CONT).

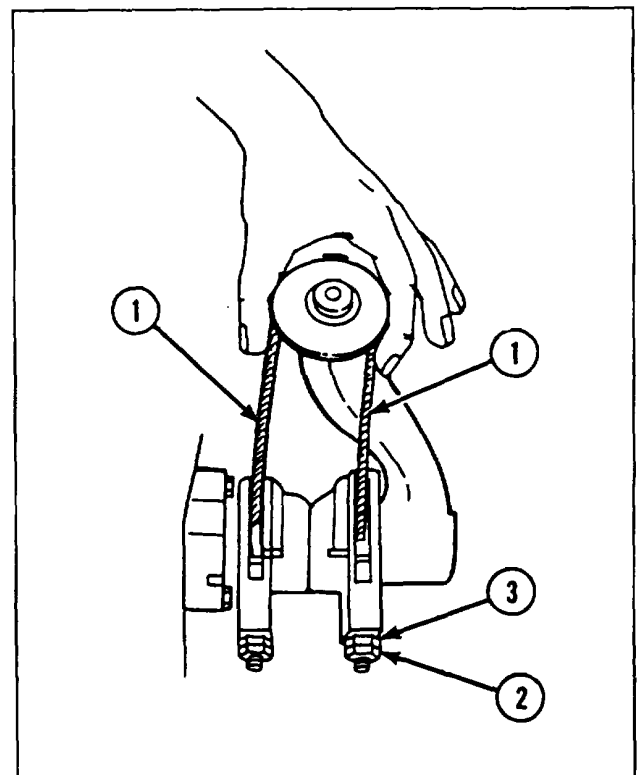
INSTALLATION (CONT)

- 13 Install tube coupling (22) and brake pedal (23) on straight control shaft (8).
- 14 Apply sealing compound (item 37, appx C) to threads of pipe plug (24). Install and torque pipe plug at 20 to 23 ft-lb. (27 to 31 N-m).
- 15 Connect three electrical connectors (25) of brake warning sensitive switch.
- 16 Set parking brake.

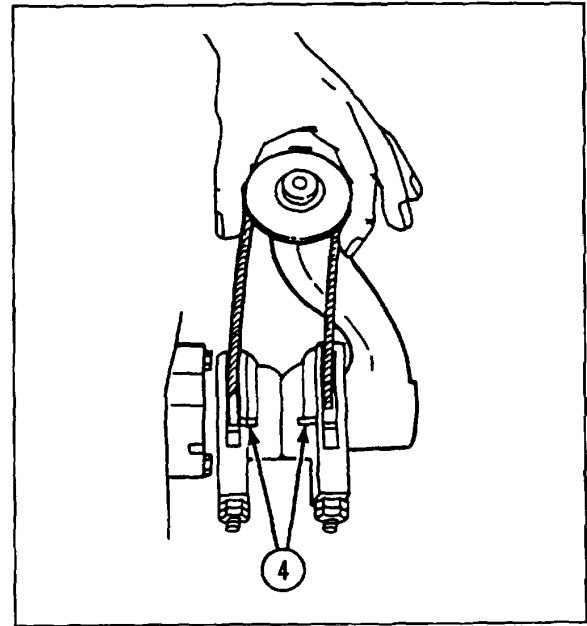


ADJUSTMENT

- 1 Park vehicle on level ground and block with 12 x 12 x 24-in. (30 x 30 x 61-cm) wood blocks (or equivalent) placed under front and rear of each track. Release parking brake.
- 2 Press brake control cables (1) toward each other using thumb and forefinger.
- 3 Measure distance between brake control cables (1) with slack removed.
- 4 If distance between brake control cables (1) is less than 1-7/8 in. (4.8 cm), loosen self-locking nut (2) and tighten hexagon plain nut (3) until distance between brake control cables (1) is 1-7/8 in. (4.8 cm).
- 5 Hold hexagon plain nut (3) from turning and tighten self-locking nut (2).



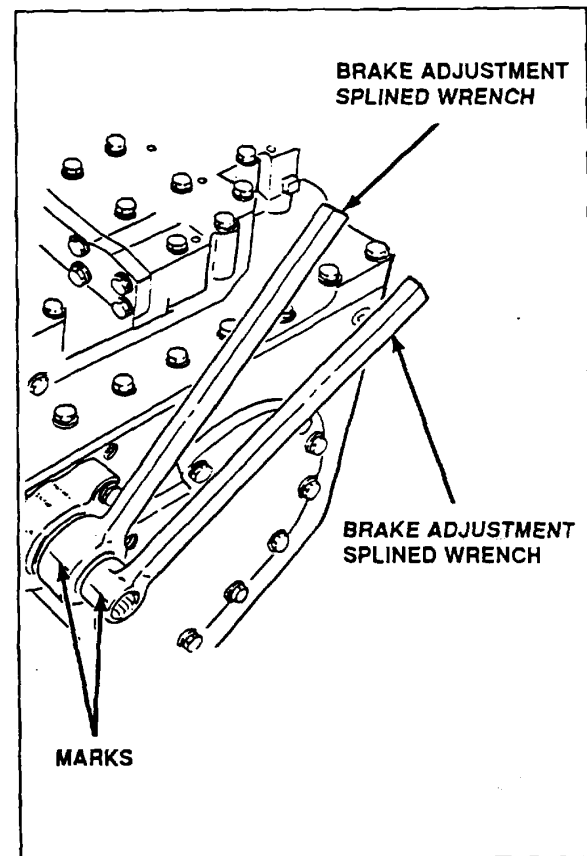
- 6 Check that both spring pins (4) are aligned with RELEASE mark. If not aligned, go to step 10.
- 7 Apply brakes fully, and check that both spring pins (4) are between APPLY and READJUST marks.
- 8 If either or both spring pins (4) are aligned with READJUST mark, brakes must be adjusted.



NOTE

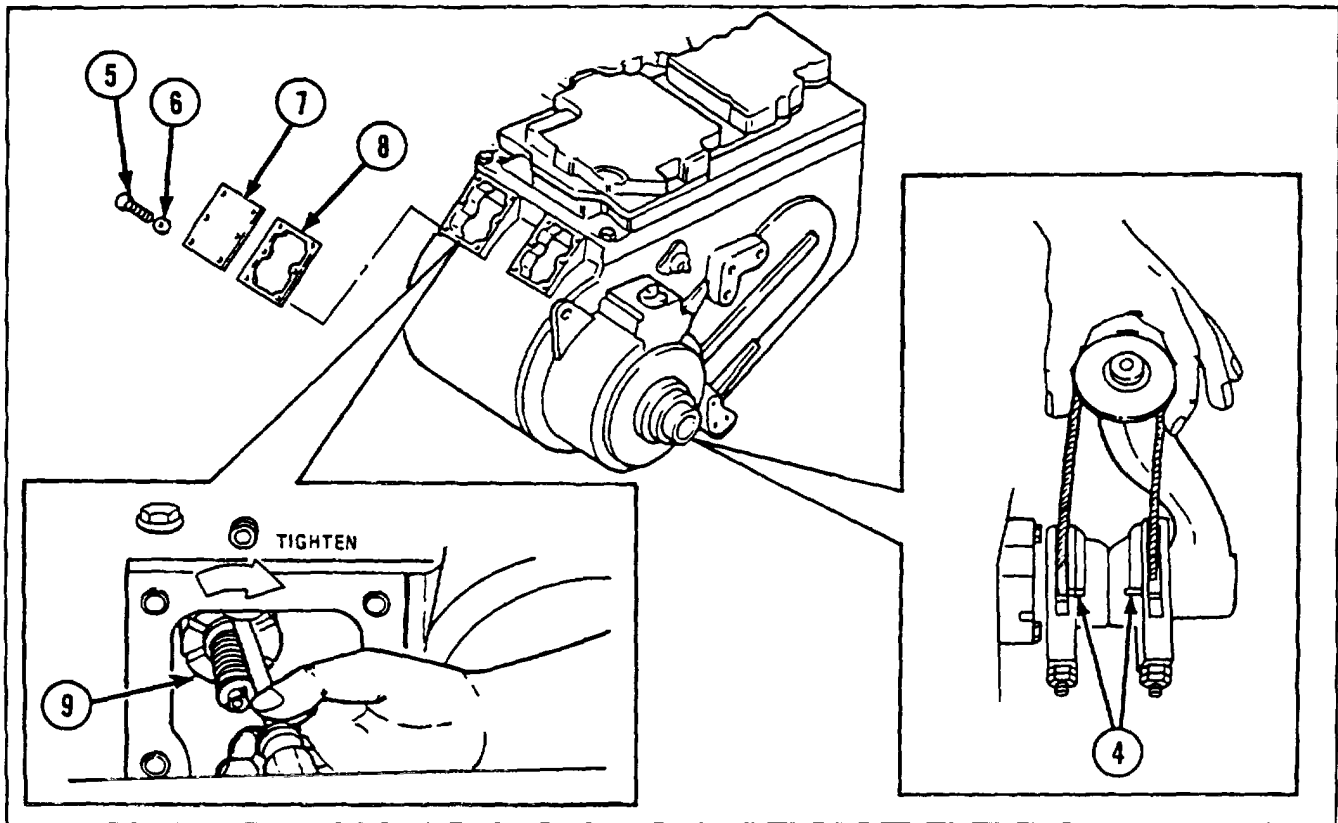
Steps 9 thru 13 are written for brake adjustment when powerplant is removed.

- 9 Place brake adjustment splined wrench (item 35, appx G) on right brake apply shaft (large shaft).
- 10 Place brake adjustment splined wrench (item 34, appx G) on left brake apply shaft (small shaft).
- 11 Mark both brake adjustment splined wrenches so that marks align with RELEASE mark.
- 12 Using brake adjustment splined wrenches, torque both brake apply shafts to 90 ft-lb. (10 N-m).
- 13 Check that marks are aligned with APPLY mark. If marks do not align with APPLY mark, continue adjustment procedure with powerplant installed.



2-138. MAINTENANCE OF MECHANICAL BRAKE CONTROL AND LINKAGE (CONT).

ADJUSTMENT (CONT)



NOTE

Steps 14 thru 19 are written for brake adjustment when powerplant is installed.

- 14 Remove 12 hexagon head capscrews (5) and 12 lockwashers (6).
- 15 Remove two brake adjustment covers (7) and two gaskets (8).

NOTE

Rotating brake adjusting nuts clockwise moves spring pins from READJUST mark toward APPLY mark.

- 16 Rotate brake adjusting nuts (9) evenly using screwdriver until both spring pins (4) are aligned with APPLY mark.
- 17 Apply sealing compound (item 38, appx C) to two new gaskets (8).
- 18 Install two new gaskets (8), two brake adjustment covers (7), 12 lockwashers (6), and 12 hexagon head capscrews (5).
- 19 Remove wood blocks and road test vehicle to ensure that brakes are working properly.

2-139. MAINTENANCE OF TORSION BARS

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Tools and Special Tools</i>			
Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 80, appx B)			
• Jack			
Driftpin (item 4, appx G)			
Rigid shaft coupling (item 3, appx G)			
Slide puller (item 18, appx G)			
Sling (item 85, appx B)			
Socket wrench (item 31, appx G)			
<i>Materials/Parts</i>			
Gasket			
Grease (item 19, appx C)			
Lockwasher			
<i>References</i>			
TM 9-2350-304-24P-1			
<i>Personnel Required</i>			
Two			
<i>Equipment Conditions</i>			
Suspension unlocked (TM 9-2350-304-10)			
2-802 Roadwheel removed			
NOTE			
The following equipment condition applies to gain access to the right side number 2 roadwheel torsion bar socket.			
2-911 Driver's seat removed			
		NOTE	
		The following equipment condition applies to gain access to the left side number 3 roadwheel torsion bar socket.	
		2-624 Batteries and battery tray removed	
		NOTE	
		The following equipment condition applies to gain access to the left side number 1 and number 2 roadwheel torsion bar sockets.	
		2-380 Powerplant removed	
		NOTE	
		The following equipment condition applies to gain access to the right side number 3 roadwheel torsion bar socket.	
		2-875 Hull recess cover plate removed	
		<i>General Safety Instructions</i>	
		WARNING	
		Roadwheel arms rotate in an arc when raised or lowered. Ensure jack is properly located and positioned under arm to allow for rotation and to provide a stable support for arm.	

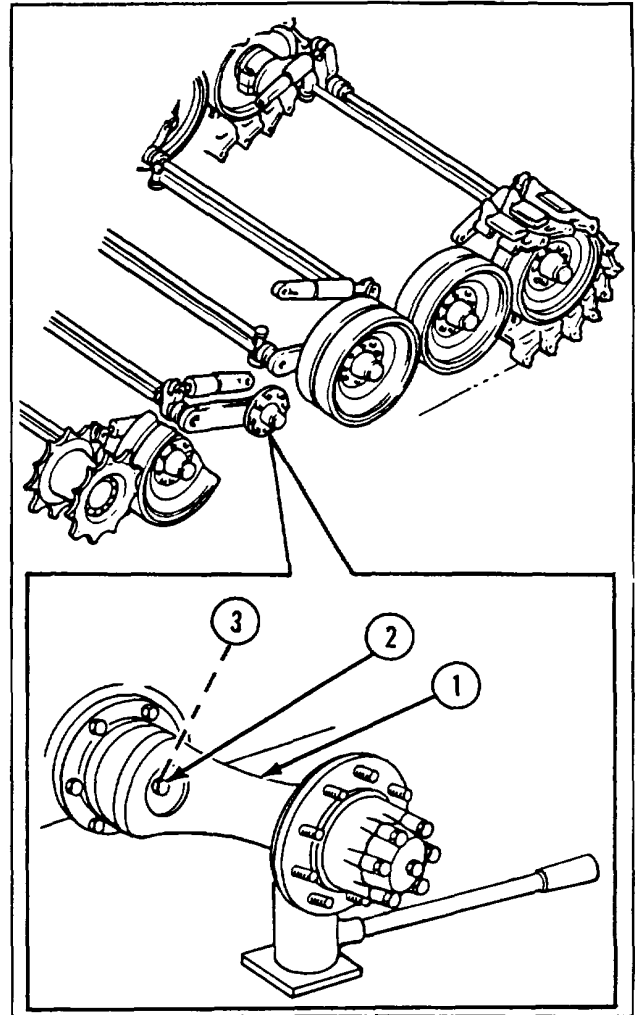
2-139. MAINTENANCE OF TORSION BARS (CONT).**REMOVAL****WARNING**

Roadwheel arms rotate in an arc when raised or lowered. Ensure jack is properly located and positioned under arm to allow for rotation and to provide a stable support for arm.

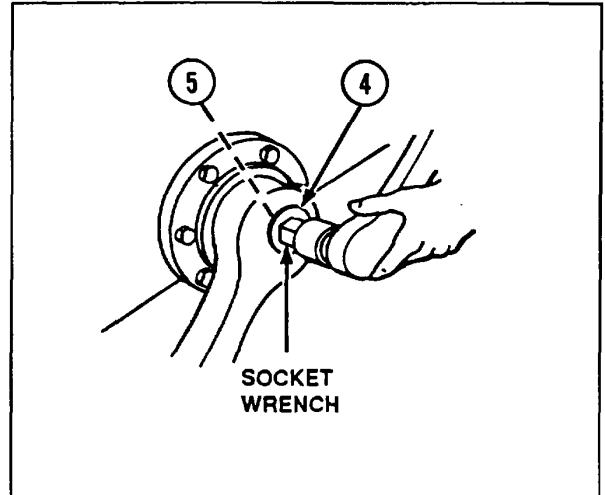
NOTE

- The following procedures are written for one torsion bar, but apply to all ten torsion bars.
- Steps 1 thru 7 apply to the removal of unbroken torsion bar.

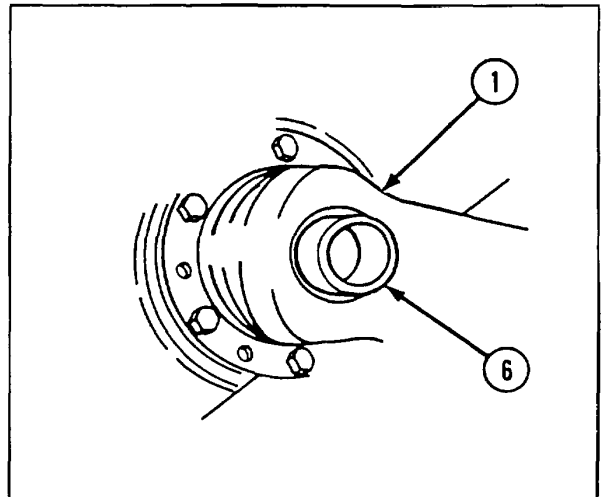
- 1 Jack up roadwheel arm assembly (1) until load is removed from torsion bar.
- 2 Remove hexagon head capscrew (2) and lockwasher (3).



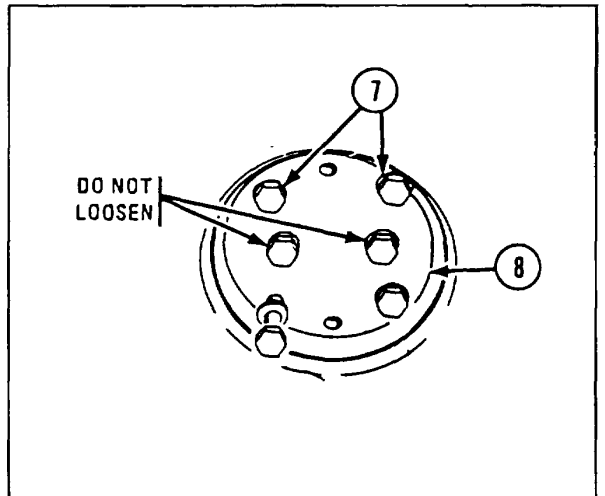
- 3 Remove machine thread plug (4) and gasket (5), using socket wrench.



- 4 Remove sleeve spacer (6) from roadwheel assembly (1).

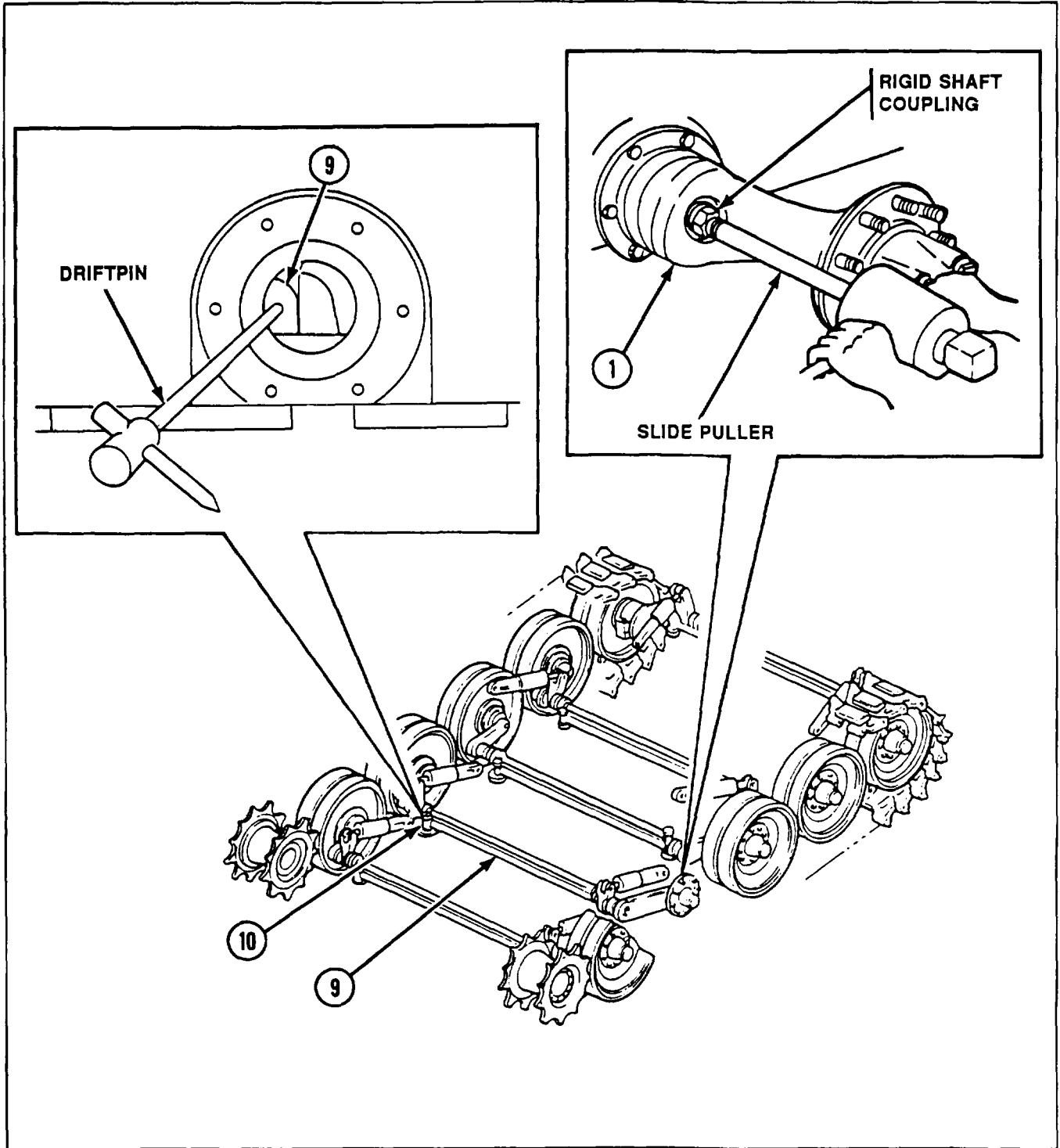


- 5 Loosen, but do not remove hexagon head capscrews (7) on torsion bar socket retainer (8) under vehicle.



2-139. MAINTENANCE OF TORSION BARS (CONT).

REMOVAL (CONT)



- 6 Screw rigid shaft coupling into end of torsion bar (9).
- 7 Remove torsion bar (9) using slide puller.

NOTE

Steps 8 thru 14 apply to removal of broken torsion bar.

- 8 To gain access to broken torsion bar, remove idler wheel arm and hub assembly, refer to page 2-809; or remove roadwheel arm and hub assembly, refer to page 2-790.
- 9 Form a slip loop in one end of sling.
- 10 Reach through opening in hull where arm and hub assembly (1) was removed.
- 11 Place slip loop around end of broken torsion bar (9) and remove broken torsion bar through arm and hub assembly opening.

NOTE

- For the right side number 1 roadwheel torsion bar socket, gain access at the bottom front of driver's compartment.
 - For the right side number 2 roadwheel torsion bar socket, gain access at the bottom rear of driver's compartment.
 - For the right side number 3 roadwheel torsion bar socket, gain access at the bottom of the battery compartment.
 - For the right side number 4 roadwheel torsion bar socket, gain access at the bottom left front of the turret well.
 - For the right side idler wheel torsion bar socket, gain access at the bottom left rear of the of the turret well.
 - For the left side number 1 and number 2 roadwheel torsion bar sockets, gain access at the right side of the powerplant compartment.
 - For the left side number 3 roadwheel torsion bar socket, gain access through the right side hull tunnel.
 - For the left side number 4 roadwheel torsion bar socket, gain access at the bottom right front of the turret well.
 - For the left side idler wheel torsion bar socket, gain access at the bottom right rear of the of the turret well.
 - Torsion bar socket may not come completely free from hull because of broken torsion bar.
- 12 If broken torsion bar cannot be reached or does not come loose, gain access to torsion bar socket (10). Remove torsion bar socket, refer to page 2-788.
 - 13 Reach through access to torsion bar socket (10) and turn torsion bar socket and broken torsion
 - 14 Tap broken end of torsion bar with driftpin to remove it from torsion bar socket (10). Remove broken torsion bar (9) and torsion bar socket (10) from hull.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-139. MAINTENANCE OF TORSION BARS (CONT).

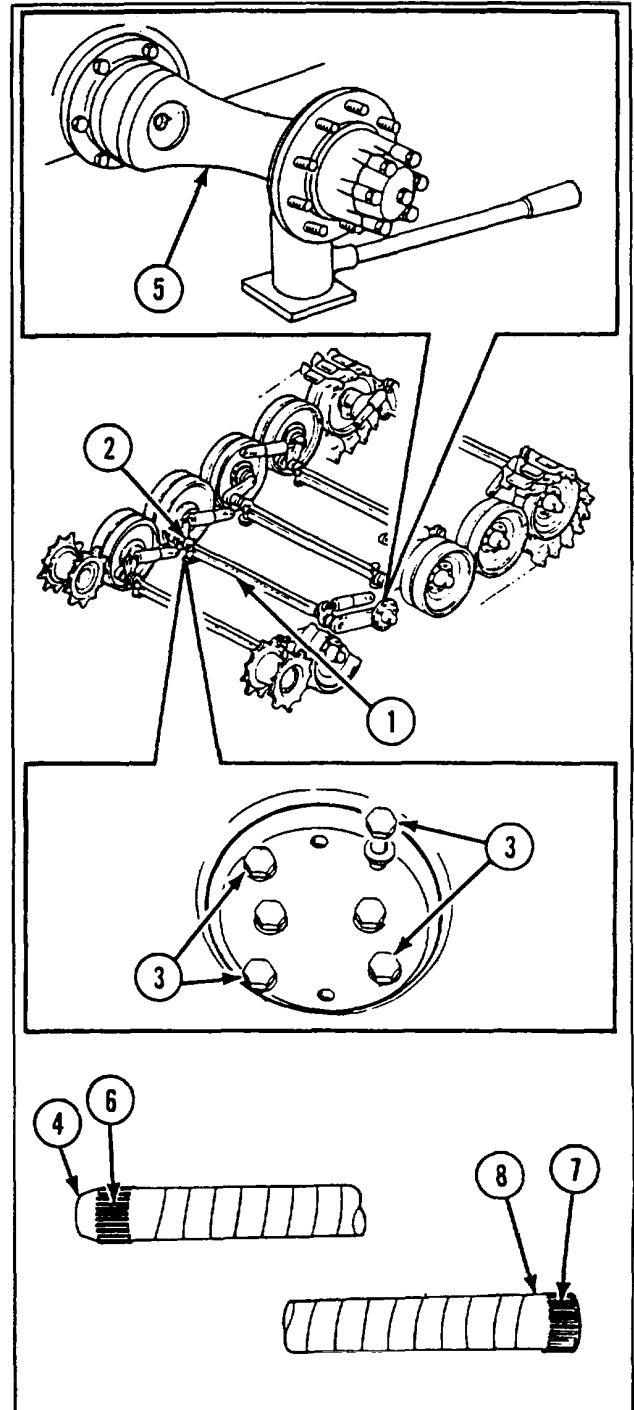
INSTALLATION

- 1 If broken torsion bar (1) was removed, install torsion bar socket (2), refer to page 2-788. Install but do not tighten four hexagon head capscrews (3).
- 2 If removed, install roadwheel arm and hub assembly, refer to page 2-790; or install idler arm and hub assembly, refer to page 2-809.
- 3 Coat splines at each end of torsion bar (1) with grease.

CAUTION

- Torsion bars are not identical. Ensure that torsion bar is correct for installation position. Part number is stamped on large end of torsion bar.
- Do not damage splines during installation.

- 4 Insert inner end (4) of torsion bar (1) into opening in arm and hub assembly (5). Be sure blind spline (6) is up.
- 5 Insert torsion bar (1) until spline touches torsion bar socket (2).
- 6 Rotate torsion bar (1) approximately 20 degrees clockwise on the right side of the vehicle and approximately 20 degrees counterclockwise on the left side of the vehicle to align and engage the blind spline on the end of the torsion bar with the blind spline in the torsion bar socket (2).
- 7 Insert torsion bar (1) only enough to engage blind spline of torsion bar socket (2).
- 8 Raise arm and hub assembly (5) until blind spline in arm is aligned with blind spline (7) on outer end (8) of torsion bar (1).

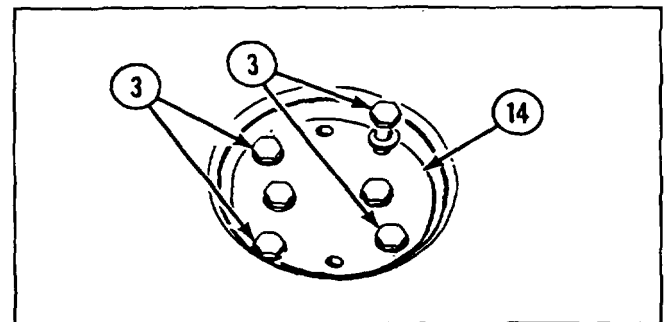
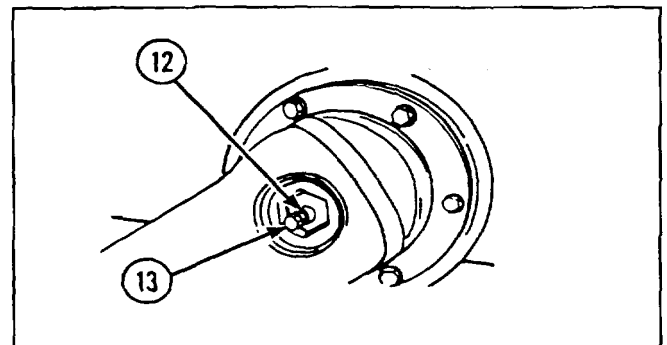
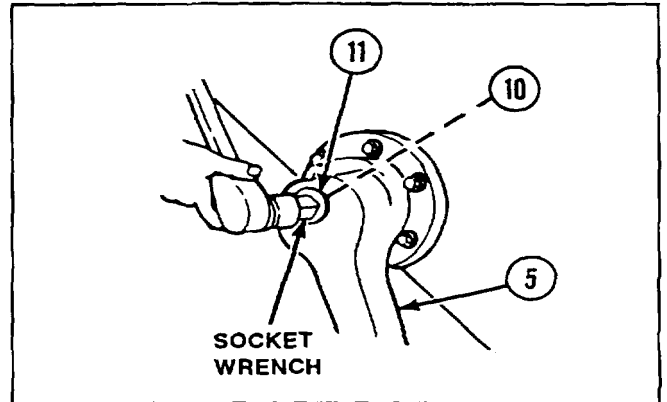
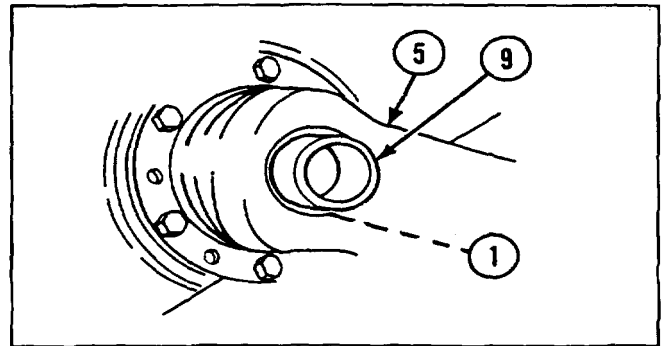


- 9 Push torsion bar in to engage splines.
- 10 Fill cavity at outer end of torsion bar (1) with about 1/4 in. (6 mm) of grease.

NOTE

The idler wheel arm and hub assembly has no sleeve spacer.

- 11 Lubricate sleeve spacer (9) with grease.
- 12 Install sleeve spacer (9) in arm and hub assembly (5). Press until sleeve spacer touching torsion bar (1). Outer end of spacer should be even with the inside of the plug threads in roadwheel arm assembly. If not, pull torsion bar back until even.
- 13 Install new gasket (10) and machine thread plug (11) in arm and hub assembly (5), using socket wrench.
- 14 Install new lockwasher (12) and hexagon head capscrew (13).
- 15 Tighten four hexagon head capscrews (3) to secure torsion bar socket retainer (14) to bottom of hull.



2-140. MAINTENANCE OF TORSION BAR SOCKETS.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Materials/Parts</i>		<i>Equipment Conditions</i>	
Dry cleaning solvent (item 15, appx C)		2-802 Roadwheel or idler wheel removed	
Grease (item 19, appx C)		2-781 Torsion bar removed	
Lockwasher (60)			
Torsion bar socket retainer gasket (10)			
<i>References</i>			
TM 9-2350-304-24P-1			

REMOVAL

NOTE

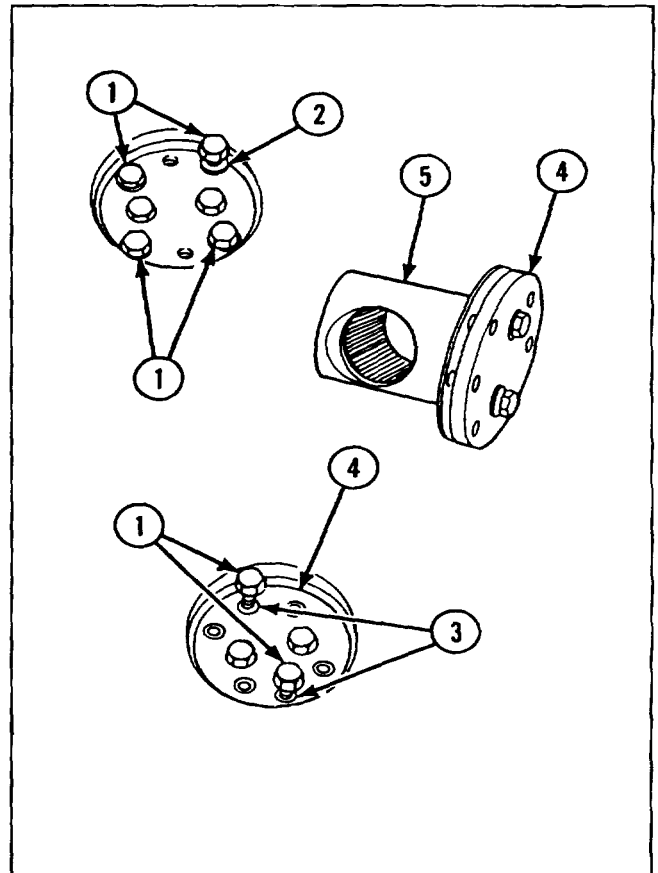
Procedure is written for one torsion bar socket, but applies to all ten torsion bar sockets.

- 1 Remove four hexagon head capscrews (1) and four lockwashers (2).

NOTE

Do not remove two hexagon head capscrews and two lockwashers securing anchor retainer to torsion bar socket.

- 2 Insert two hexagon head capscrews (1) into two jackscrew holes (3).
- 3 Tighten two hexagon head capscrews (1) evenly to separate anchor retainer (4) from hull.
- 4 Remove anchor retainer (4) with attached torsion bar socket (5).
- 5 Remove two hexagon head capscrews (1) from jackscrew holes (3).



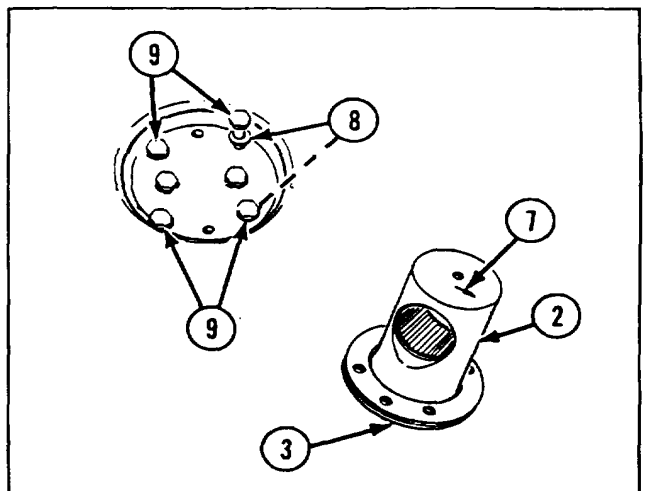
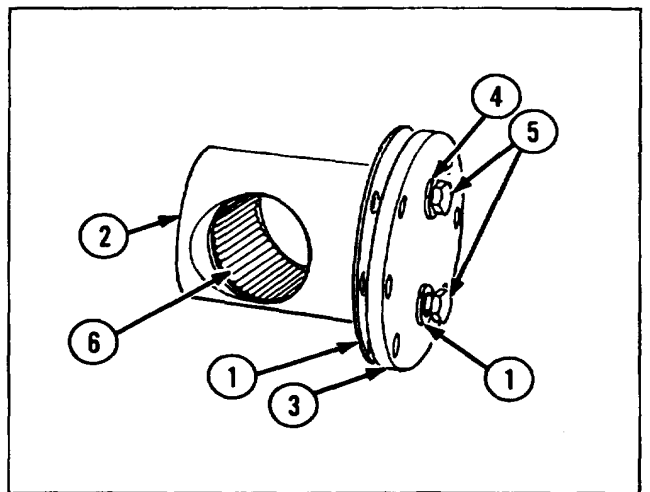
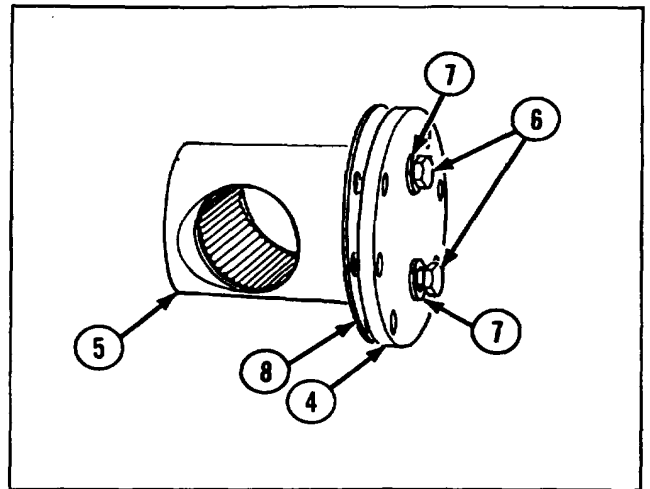
- 6 Remove two hexagon head capscrews (6) and two lockwashers (7).
- 7 Remove anchor retainer (4) and remove gasket (8) from torsion bar socket (5).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Clean surface of anchor retainer with dry cleaning solvent.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install new gasket (1) and torsion bar socket (2) on anchor retainer (3).
- 2 Install two new lockwashers (4) and two hexagon head capscrews (5).
- 3 Coat splines (6) with grease.
- 4 Clean mating surfaces on hull with dry cleaning solvent.
- 5 Install torsion bar socket (2) with attached anchor retainer (3).
- 6 Ensure arrow (7) points toward front of vehicle.
- 7 Install four new lockwashers (8) and four hexagon head capscrews (9).



2-141. MAINTENANCE OF ROADWHEEL ARM AND HUB ASSEMBLY AND ATTACHING PARTS; AND ROADWHEEL PIVOT ARM ASSEMBLY AND ARM GUARD ASSEMBLY.

This task covers: a. *Removal/Disassembly* b. *Inspection/Repair*
 c. *Reassembly/Installation*

INITIAL SETUP

Tools and Special Tools

- Automotive maintenance and repair shop equipment: organizational maintenance, common no 1 (less power) (item 83, appx B)
 - Bar
- Dowel pin (figure D-26, appx D)
- Feeler gage
- Hammer puller
- Hexagon head capscrew (3) (item 22, appx G)
- Hub spacer replacer (item 19, appx G)
- Puller
- Puller
- Puller adapter (item 2, appx G)
- Remover and replacer handle (item 9, appx G)
- Sling (item 85, appx B)
- Seal guard replacer (item 21, appx G)
- Seal inserter (item 11, appx G)
- Seal inserter (item 12, appx G)
- Slide puller (item 18, appx G)
- Threaded straight pin (2) (item 17, appx G)

- Materials/Parts*
- Bearing ring

- Connecting arm sleeve spacer
- Cotter pin (2)
- Gasket
- Grease (item 19, appx G)
- Lockwasher (6)
- Plain encased seal
- Plain encased seal
- Preformed packing
- Preformed packing (2)
- Roller bearing
- Roller bearing (2)
- Seal and retainer assembly (2)
- Sealing compound (item 36, appx C)

Personnel Required
Two

References
 TM 9-2350-304-10
 TM 9-2350-304-24P-1

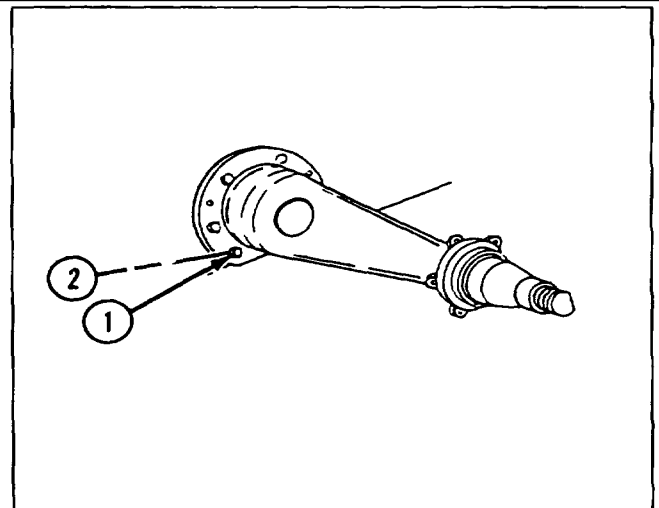
Equipment Conditions
 2-802 Roadwheel removed
 2-781 Torsion bar removed
 2-796 Roadwheel suspension hub removed

REMOVAL/DISASSEMBLY

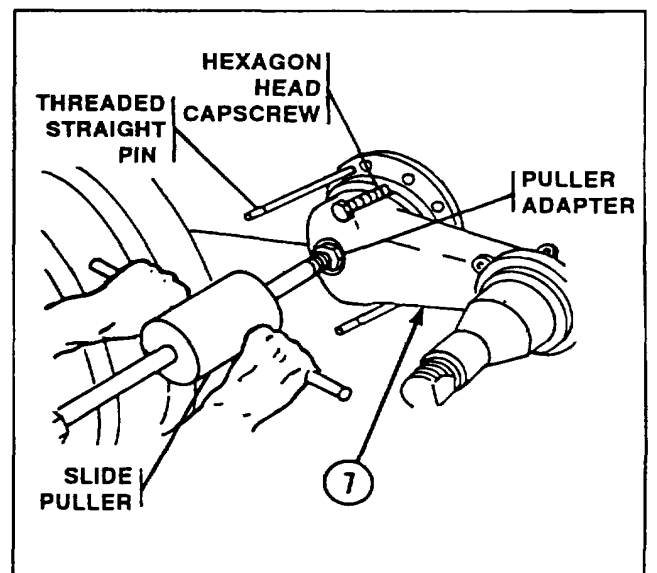
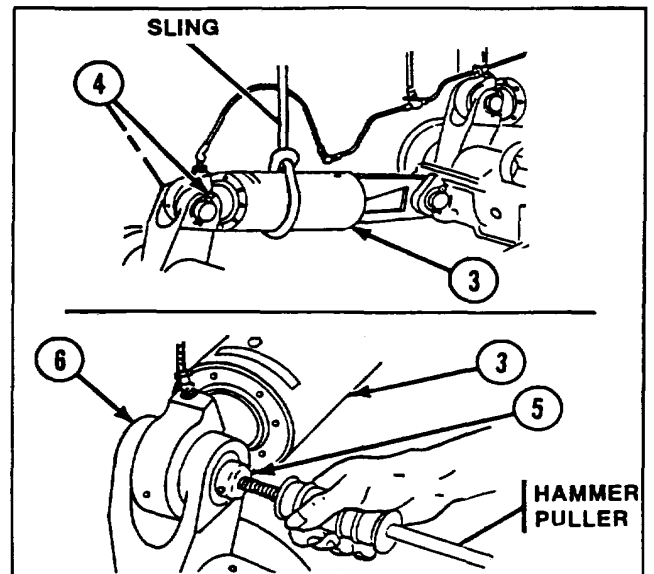
NOTE

Procedures are written for one roadwheel arm and hub assembly but apply to all roadwheel arm and hub assemblies.

- 1 Remove six hexagon head capscrews (1) and six lockwashers (2).



- 2 Refer to page 2-839 to gain access to lockout cylinder assembly (3) connected to roadwheel pivot arm assembly being removed.
- 3 Remove two cotter pins (4).
- 4 Rig a sling to support lockout cylinder assembly (3).
- 5 Remove straight headless pin (5), using hammer puller.
- 6 Remove lockout cylinder assembly (3) from roadwheel lever (6).
- 7 Install two threaded straight pins into opposing capscrew holes.
- 8 Install three hexagon head capscrews.
- 9 Screw puller adapter into roadwheel pivot arm assembly (7).
- 10 Screw slide puller into puller adapter.
- 11 Tighten three hexagon head capscrews evenly. At the same time, using slide puller, withdraw roadwheel pivot arm assembly (7) about 5 in. (13 cm) from hull.
- 12 Remove slide puller and puller adapter.
- 13 Remove three hexagon head capscrews.
- 14 Remove roadwheel pivot arm assembly (7).
- 15 Remove threaded straight pins.



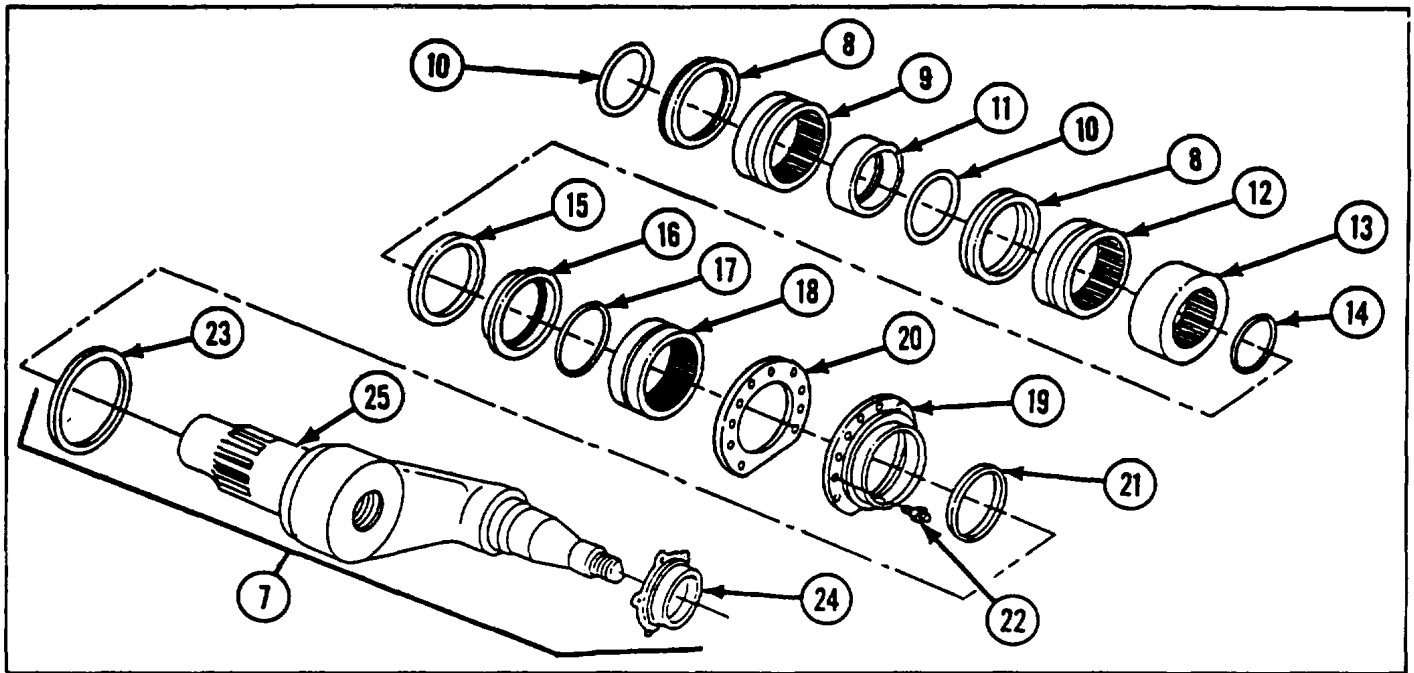
NOTE

On some vehicles, the middle road-wheel on each side is equipped with a sleeve spacer instead of a roadwheel lever.

- 16 Lift roadwheel lever (6) and remove from cavity in hull.

2-141. MAINTENANCE OF ROADWHEEL ARM AND HUB ASSEMBLY AND ATTACHING PARTS; AND ROADWHEEL PIVOT ARM ASSEMBLY AND ARM AND GUARD ASSEMBLY (CONT).

REMOVAL/DISASSEMBLY (CONT)



- 17 Remove two seal and retainer assemblies (8) and roller bearing (9) from hull, using puller.
- 18 Remove preformed packings (10) from each seal and retainer assembly (8).
- 19 Remove bearing ring (11) from roller bearing (9).
- 20 Remove roller bearing (12).

NOTE

Connecting arm sleeve spacer is found on middle roadwheel arm only.

- 21 Remove connecting arm sleeve spacer (13), retaining ring (14), plain encased seal (15), oil seal retainer (16), preformed packing (17), and roller bearing (18) from roadwheel pivot arm assembly (7).

- 22 Remove roadwheel arm retainer (19) from roadwheel arm assembly (7), using puller. Remove gasket (20) from roadwheel arm retainer.
- 23 Using drift, remove plain encased seal (21) from roadwheel arm retainer (20). Remove two lubrication fittings (22).
- 24 Remove dirt deflector (23) and inner arm and hub spacer (24) from arm (25).

INSPECTION/REPAIR

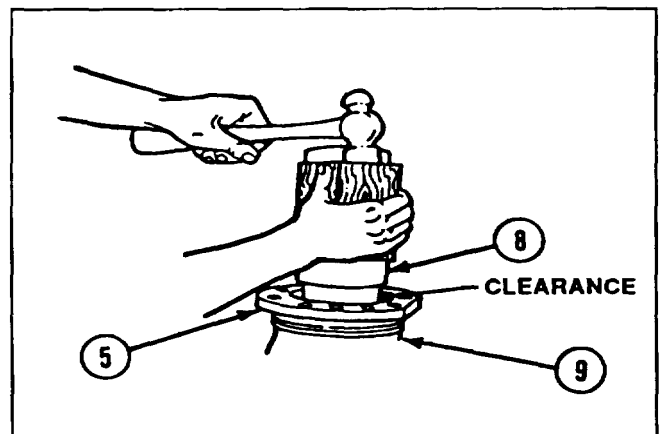
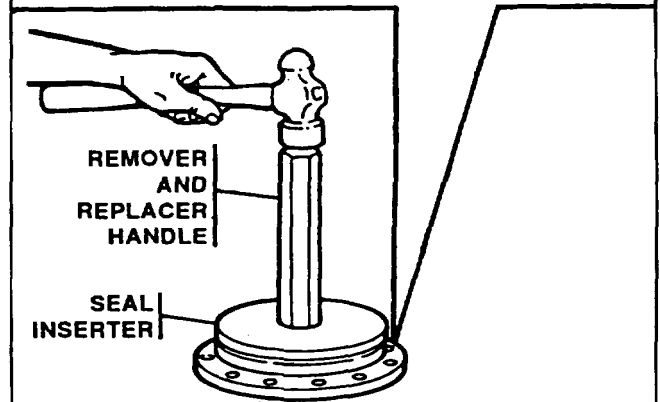
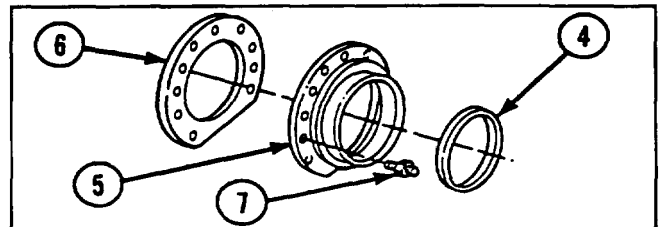
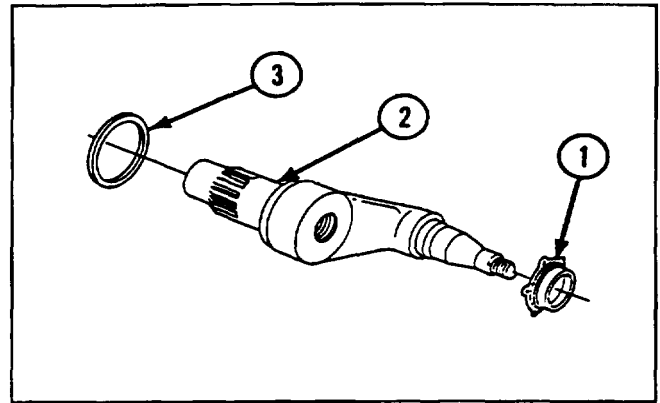
- 1 Inspect for broken, damaged, or missing parts.
- 2 If arm is damaged, repair is by replacement of next higher assembly.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY/INSTALLATION

NOTE

Procedures are written for one roadwheel arm and hub assembly but apply to all roadwheel arm and hub assemblies.

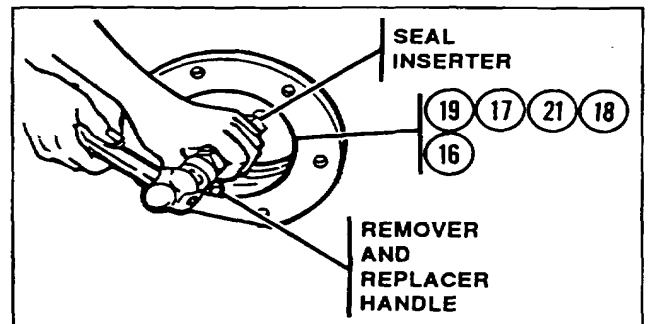
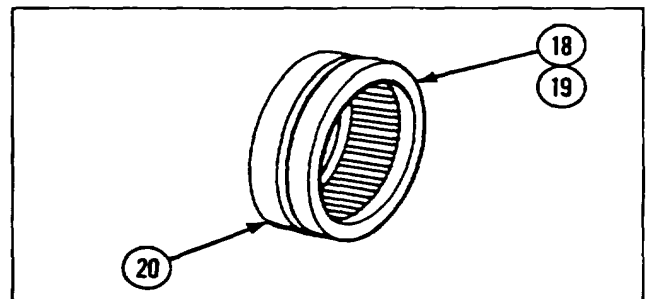
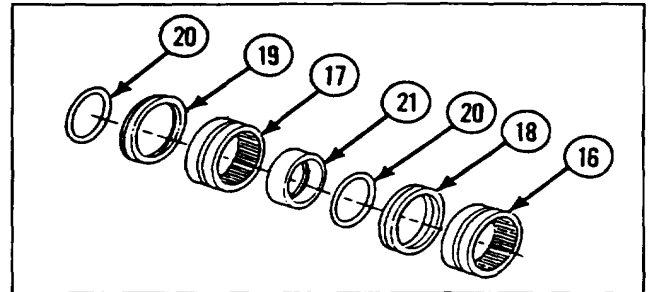
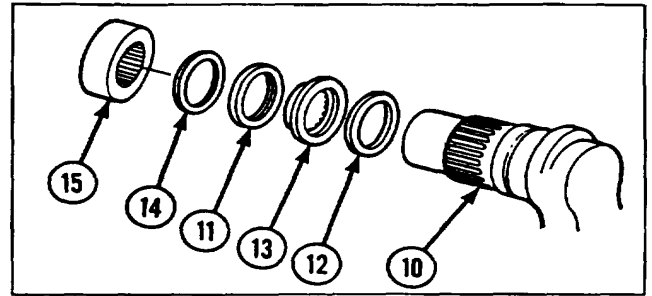
- 1 Using hub spacer replacer, Install Inner arm and hub spacer (1) to arm (2).
- 2 Using hammer and seal guard replacer, Install dirt deflector (3) on arm (2).
- 3 Coat all metal-to-metal surfaces of new plain encased seal (4) with sealing compound.
- 4 Install new plain encased seal (4) in roadwheel arm retainer (5), using seal inserter (item 11, appx G) and remover and replacer handle.
- 5 Install new gasket (6) and two lubrication fittings (7) in roadwheel arm retainer (5).
- 6 Install roadwheel arm retainer (5) and new roller bearing race (8) on upper spindle of roadwheel pivot arm assembly (9).
- 7 Use a feeler gage to maintain clearance 0.010 to 0.015 in. (0.254 to 0.381 mm) between roller bearing race (8) and face roadwheel arm retainer (5).



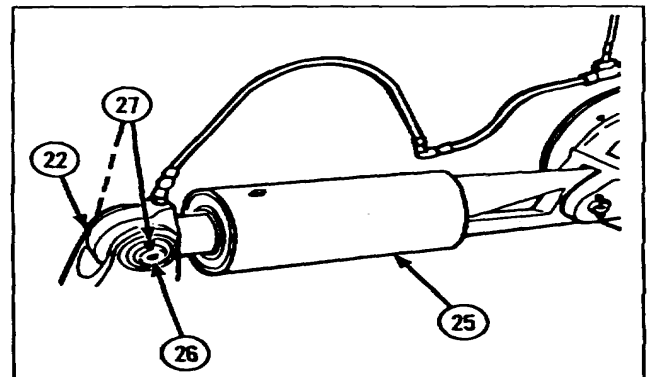
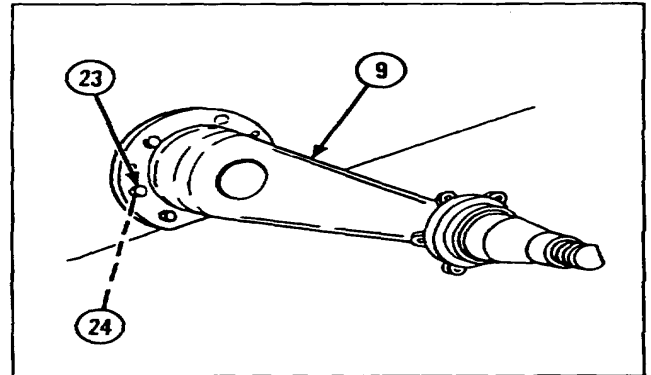
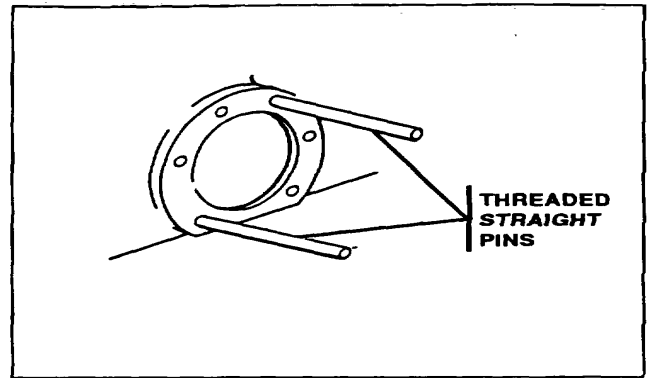
2-141. MAINTENANCE OF ROADWHEEL ATTACHING PARTS; AND ROAD AND GUARD ASSEMBLY (CONT)

REASSEMBLY/INSTALLATION (CONT)

- 8 Pack new roller bearing (10) with grease. Coat lip and face of new plain encased seal (11) and new preformed packing (12) with grease.
- 9 Install new roller bearing (10), new preformed packing (12), oil seal retainer (13), new plain encased seal (11), and retaining ring (14).
- 10 Install connecting arm sleeve spacer (15) (middle roadwheel arm only).
- 11 Pack two new roller bearings (16 and 17) with grease. Coat lip and face of two new seal and retainer assemblies (18 and 19), two new preformed packings (20), and new bearing ring (21) with grease.
- 12 Install new preformed packings (20) on new seal and retainer assemblies (18 and 19).
- 13 Using seal inserter (item 12, appx G) and remover and replacer handle, install new seal and retainer assembly (19) in roadwheel arm opening with seal lip facing inward.
- 14 Install new roller bearing (17) and new bearing ring (21) in roadwheel arm opening, using seal inserter (item 12, appx G) and remover and replacer handle.
- 15 Using seal inserter (item 12, appx G) and remover and replacer handle, install second new seal and retainer assembly (18) in roadwheel arm opening with seal lip outward.
- 16 Install new roller bearing (16), using seal inserter (item 11, appx G) and remover and replacer handle.



- 17 Install two threaded straight pins to opposing capscrew holes on hull.
- 18 Coat sealing surfaces of roadwheel pivot arm assembly (9) and hull with 'sealing compound.
- 19 Position roadwheel pivot arm assembly (9) on threaded straight pins.
- 20 Push roadwheel pivot arm assembly (9) into hull until end of spindle is visible in roadwheel lever cavity.
- 21 Insert and position roadwheel lever (22) into roadwheel lever cavity.
- 22 Position roadwheel lever (22) so blind spline on lever arm mates with blind spline on roadwheel arm spindle.
- 23 Remove two threaded straight pins.
- 24 Install and tighten six hexagon head capscrews (23) and six new lockwashers (24) in cross-pattern sequence.
- 25 Install eye of lockout cylinder assembly (25) into arm of roadwheel lever (22).
- 26 Install straight headless pin (26) and two new cotter pins (27).
- 27 Lubricate roadwheel and hub assembly. Refer to TM 9-2350-238-10.



2-142. MAINTENANCE OF ROADWHEEL SUSPENSION HUB AND HUB CAP RADIO STATIC SUPPRESSION SPRING.

This task covers:

a. <i>Removal</i>	d. <i>Reassembly</i>
b. <i>Disassembly</i>	e. <i>Installation/Adjustment</i>
c. <i>Inspection/Repair</i>	

INITIAL SETUP

Tools and Special Tools

Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)

- Torque wrench (0 to 120 ft-lb)
- Bearing inserter set (item 14, appx G)
- Bearing inserter set (item 15, appx G)
- Face socket wrench (item 30, appx G)
- Remover and replacer handle (item 9, appx G)

Materials/Parts

Grease (item 19, appx C)
Hub cap gasket (8)

Lock bearing nut (8)
Lockwasher (12)
Seal assembly to hub gasket (8)

Personnel Required

Two

References

TM 9-2350-304-10
TM 9-2350-304-24P-1

Equipment Conditions

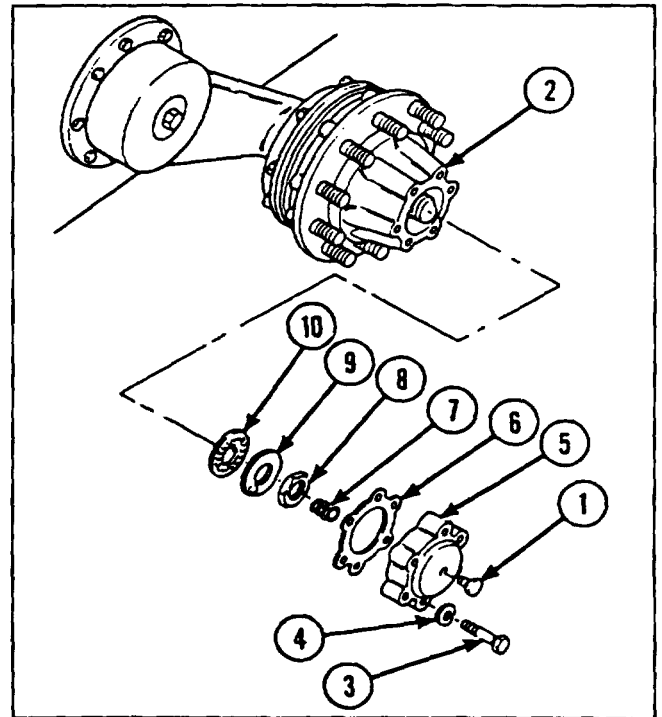
2-802 Roadwheel removed

REMOVAL

NOTE

- Procedures are written for one road-wheel arm and hub assembly, but apply to all.
- Steps 1 and 3 apply to removal of hub cap radio static suppression spring.

- 1 Remove pipe plug (1) from roadwheel suspension hub (2) and drain oil from hub.
- 2 Remove six hexagon head capscrews (3), six lockwashers (4), access cover (5), and hub cap gasket (6).
- 3 Remove hub cap radio static suppression spring (7).
- 4 Remove hexagon plain nut (8).
- 5 Remove lock bearing nut (9) and flat washer (10).

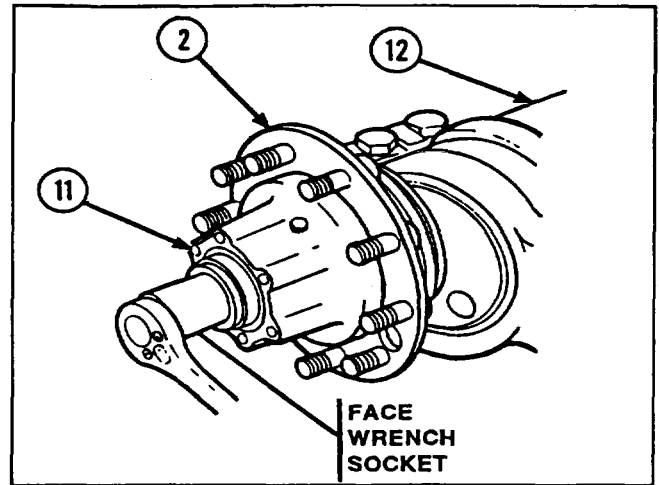


- Using face socket wrench, remove round plain nut (11).

CAUTION

Ensure that outer roller bearing does not fall on ground.

- Slide roadwheel suspension hub (2) from arm and guard assembly (12).

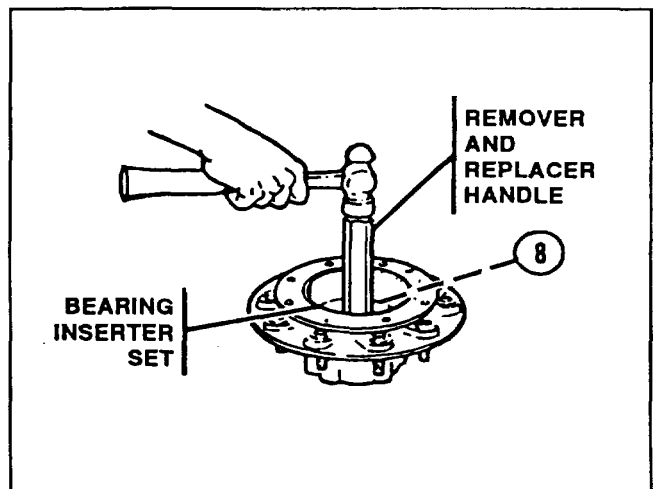
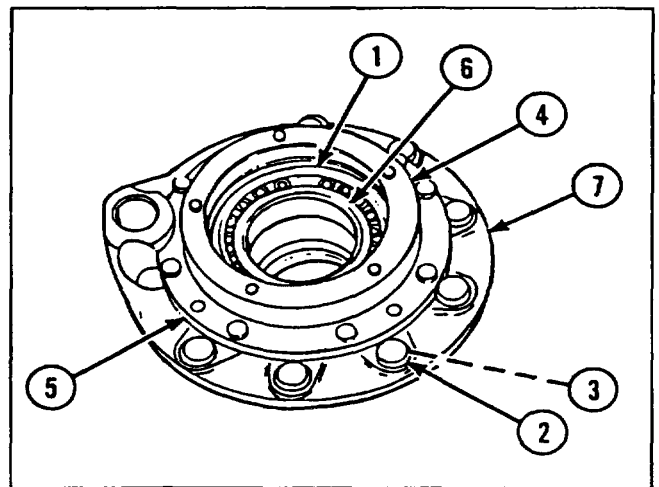


DISASSEMBLY

NOTE

Procedures are written for one road-wheel arm and hub assembly, but apply to all.

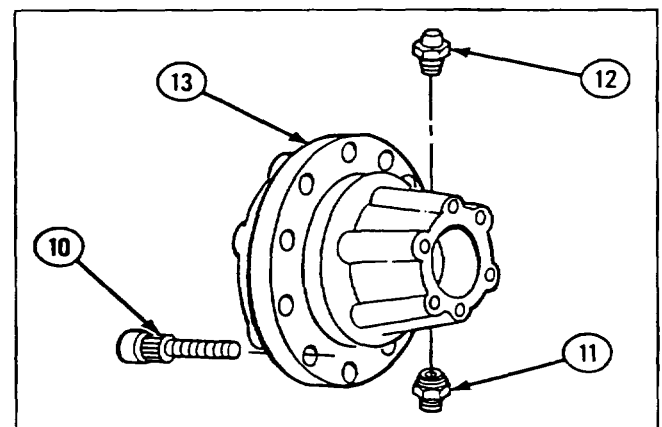
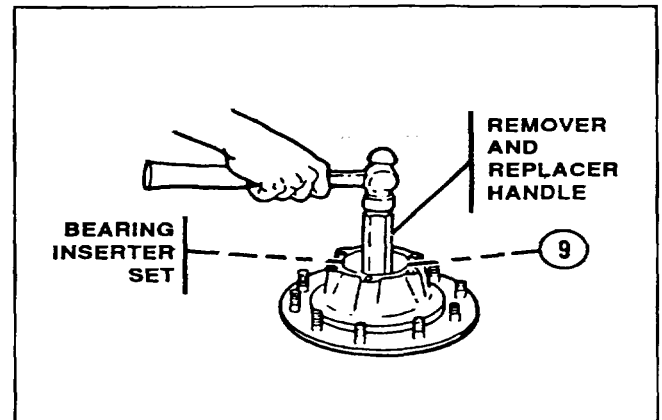
- Remove outer roller bearing cone (1).
- Remove eight hexagon head capscrews (2), eight lockwashers (3), hub seal assembly (4), seal assembly to hub gasket (5), and annular ball bearing cone (6) from roadwheel suspension hub (7).
- Remove outer roller bearing cup (8) from roadwheel suspension hub (7), using bearing inserter set (item 14, appx G) and remover and replacer handle.



2-142. MAINTENANCE OF ROADWHEEL SUSPENSION HUB AND HUB CAP RADIO STATIC SUPPRESSION SPRING

DISASSEMBLY (CONT)

- 4 Remove annular ball bearing cup (9) from roadwheel suspension hub (7), using bearing inserter set (item 15, appx G) and remover and replacer handle.
- 5 If damaged, remove ribbed shoulder bolts (10).
- 6 Remove safety relief valve (11) and lubrication fitting (12) from hub (13).



INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If hub is broken or damaged, repair is by replacement of next higher assembly.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

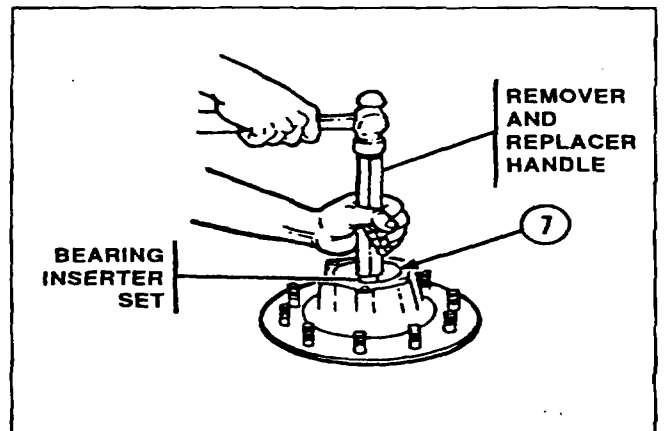
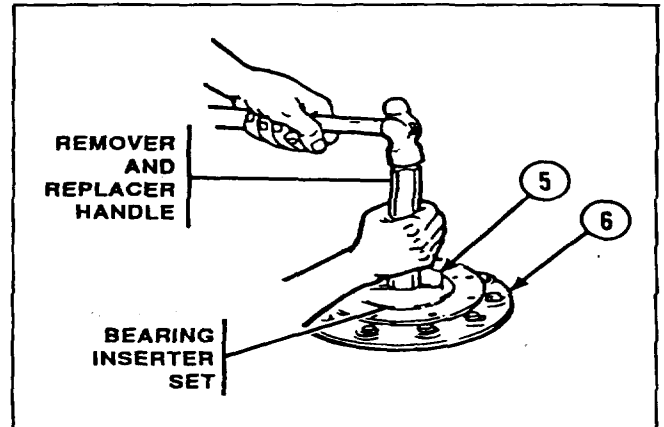
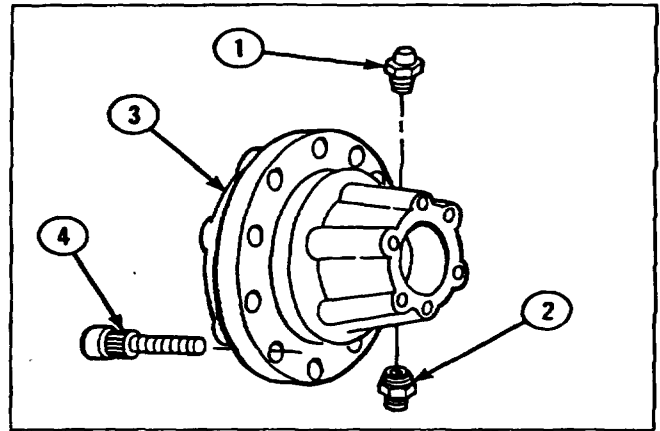
REASSEMBLY

- 1 Install lubrication fitting (1) and safety relief valve (2) on hub (3).
- 2 If necessary, Install new ribbed should bolts (4).

NOTE

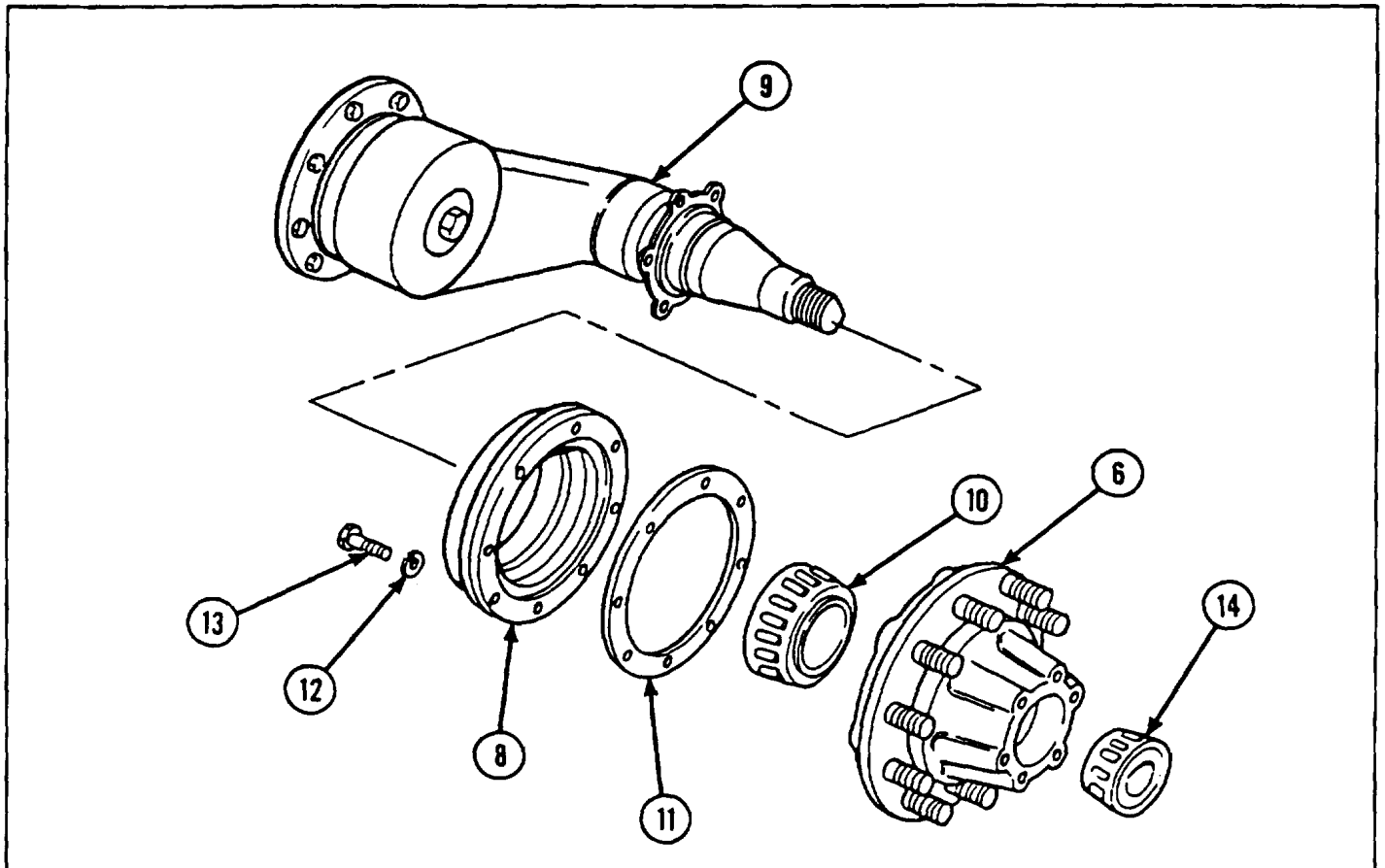
- Procedures are written for one roadwheel arm and hub assembly, but apply to all.
- Ensure that bearing cups are firmly seated against interior flanges of roadwheel suspension hub.

- 3 Install annular ball bearing cup (5) in roadwheel suspension hub (6), using bearing inserter set (item 15, appx G) a remover and replacer handle.
- 4 Install outer roller bearing cup (7) in roadwheel suspension hub (6), using bearing inserter set (item 14, appx G) a remover and replacer handle.



2-142. MAINTENANCE OF ROADWHEEL SUSPENSION HUB AND HUB CAP RADIO STATIC SUPPRESSION SPRING (CONT).

REASSEMBLY (CONT)



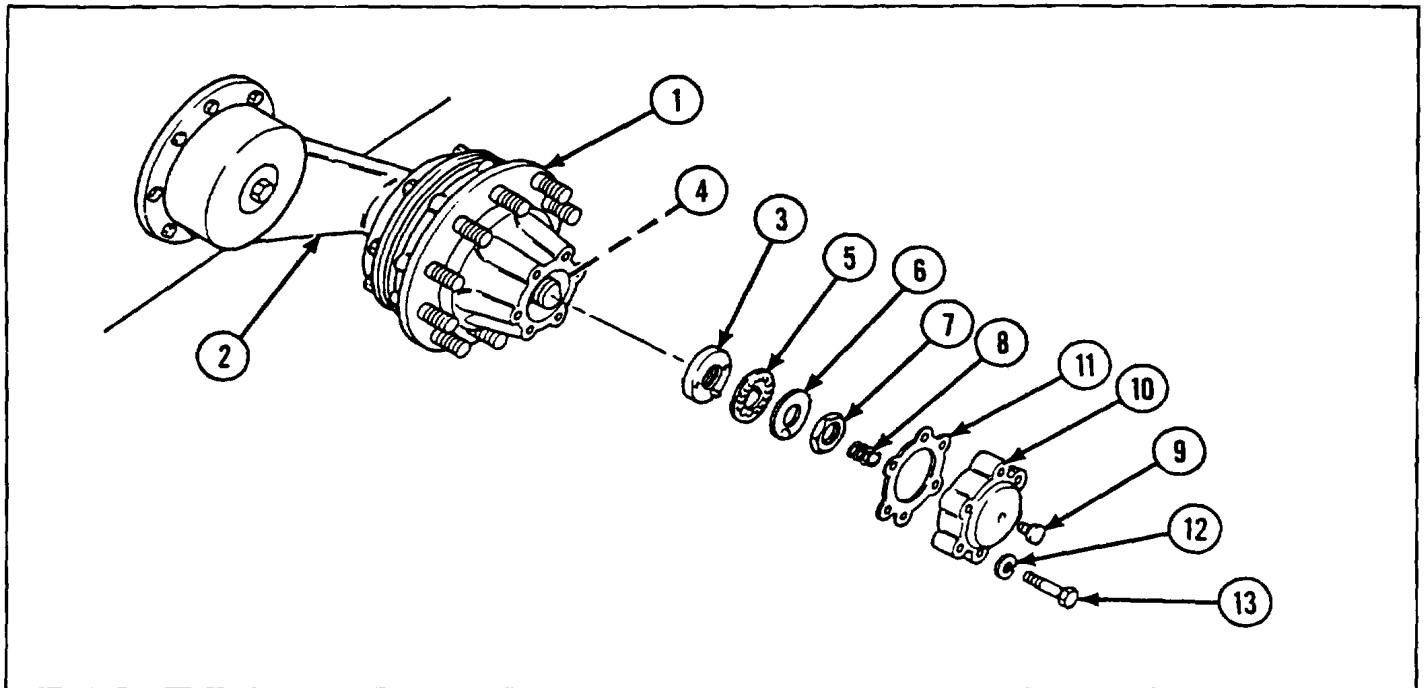
- 5 Install hub seal assembly (8) on roadwheel pivot arm assembly (9). Ensure that drive pins on seal mate with holes on spindle flange.
- 6 Pack annular ball bearing cone (10) with grease. Seat annular ball bearing cone firmly against collar of roadwheel pivot arm assembly (9).
- 7 Install new seal assembly to hub gasket (11), eight new lockwashers (12), and eight hexagon head capscrews (13) on roadwheel suspension hub (6).

NOTE

Torque eight hexagon head capscrews to 32 to 35 ft-lb (43 to 47 N-m) (dry) or 23 to 25 ft-lb (31 to 34 N-m) (lubricated).

- 8 Pack outer roller bearing cone (14) with grease. Install outer roller bearing cone on roadwheel pivot arm assembly (9).

INSTALLATION/ADJUSTMENT



1 Install roadwheel suspension hub (1) and assembled parts on roadwheel pivot arm assembly (2).

2 Install round plain nut (3).

NOTE

The completed wheel assembly must have between 0.0005 and 0.0050 in. (0.0013 and 0.013 cm) actual end play.

3 To adjust outer roller bearing (8), perform the following.

a. Using face socket wrench, turn round plain nut (3) clockwise, and at the same time, rotate roadwheel suspension hub (1), first in one direction, and then the other, until there is a slight bind.

b. Back off round plain nut (3) 1/6 to 1/4 turn.

c. Install flat washer (5), hexagon plain nut (7), and tighten hexagon plain nut.

4 Install new lock bearing nut (6) and hexagon plain nut (7), and tighten hexagon plain nut.

NOTE

Steps 5 and 6 apply to installation of hub cap radio static suppression spring.

5 Install hub cap radio static suppression spring (8) and pipe plug (9) in access cover (10).

6 Install new hub cap gasket (11), access cover (10), six new lockwashers (12), and six hexagon head capscrews (13).

7 Torque six hexagon head capscrews (13) to 32 to 35 ft-lb (43 to 47 N-m) (dry) or 23 to 25 ft-lb (31 to 34 N-m) (lubricated).

8 Lubricate roadwheel suspension hub. Refer to TM 9-2350-304-10.

2-143. MAINTENANCE OF IDLER WHEEL, ROADWHEEL WHEEL, AND LEFT LUBRICATION TUBE.

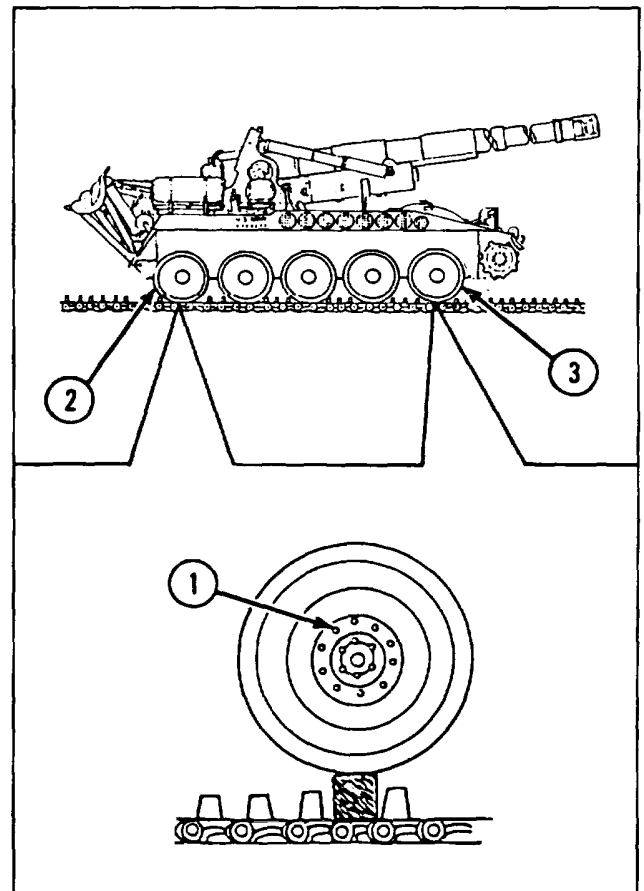
This task covers:	a Removal	b Inspection/Repair	c Installation
INITIAL SETUP			
<p><i>Tools and Special Tools</i></p> <p>Automotive maintenance and repair shop equipment: organizational maintenance, common no 1 (less power) (item 83, appx B)</p> <ul style="list-style-type: none"> • Breaker bar • Jack • Socket (1-1/4-in., 3/4-in drive) • Torque wrench (0 to 600 ft-lb) <p>Wood blocks</p>		<p>Preformed packing</p> <p>Self-locking nut (100)</p> <p>Tube fitting locknut</p>	
<p><i>Materials/Parts</i></p> <p>Gasket</p> <p>Lockwasher (10)</p>		<p><i>References</i></p> <p>TM 9-2350-304-10</p> <p>TM 9-2350-304-24P-1</p>	
		<p><i>Personnel Required</i></p> <p>Two</p>	
		<p><i>Equipment Conditions</i></p> <p>Cannon in battery (TM 9-2350-304-10)</p>	

REMOVAL

NOTE

- Steps 1 thru 24 are written and illustrated for left side of vehicle but apply to both sides.
- Steps 1 thru 8 apply to removal of idler wheel or number 1 roadwheel.

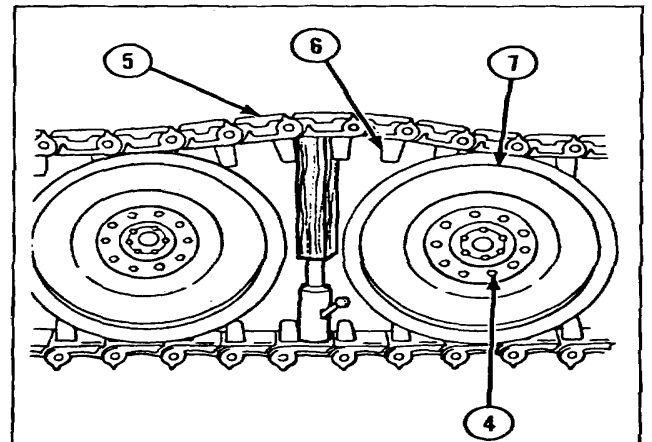
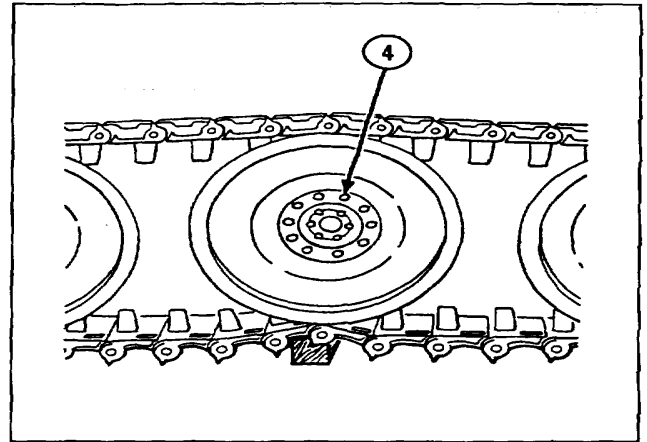
- 1 Remove track from top of road wheels and trailing idler wheel. Refer to page 2-829.
- 2 Loosen ten self-locking nuts (1) one-half turn.
- 3 Place 4 x 4 x 24-in. (10 x 10 x 61-cm) wood block between track guides in front of idler wheel (2) or roadwheel (3).
- 4 Move vehicle forward until idler wheel (2) or roadwheel (3) is on wood block.
- 5 Lock suspension.
- 6 Back vehicle off wood block.
- 7 Remove ten self-locking nuts (1).
- 8 Remove idler wheel (2) or roadwheel (3).



NOTE

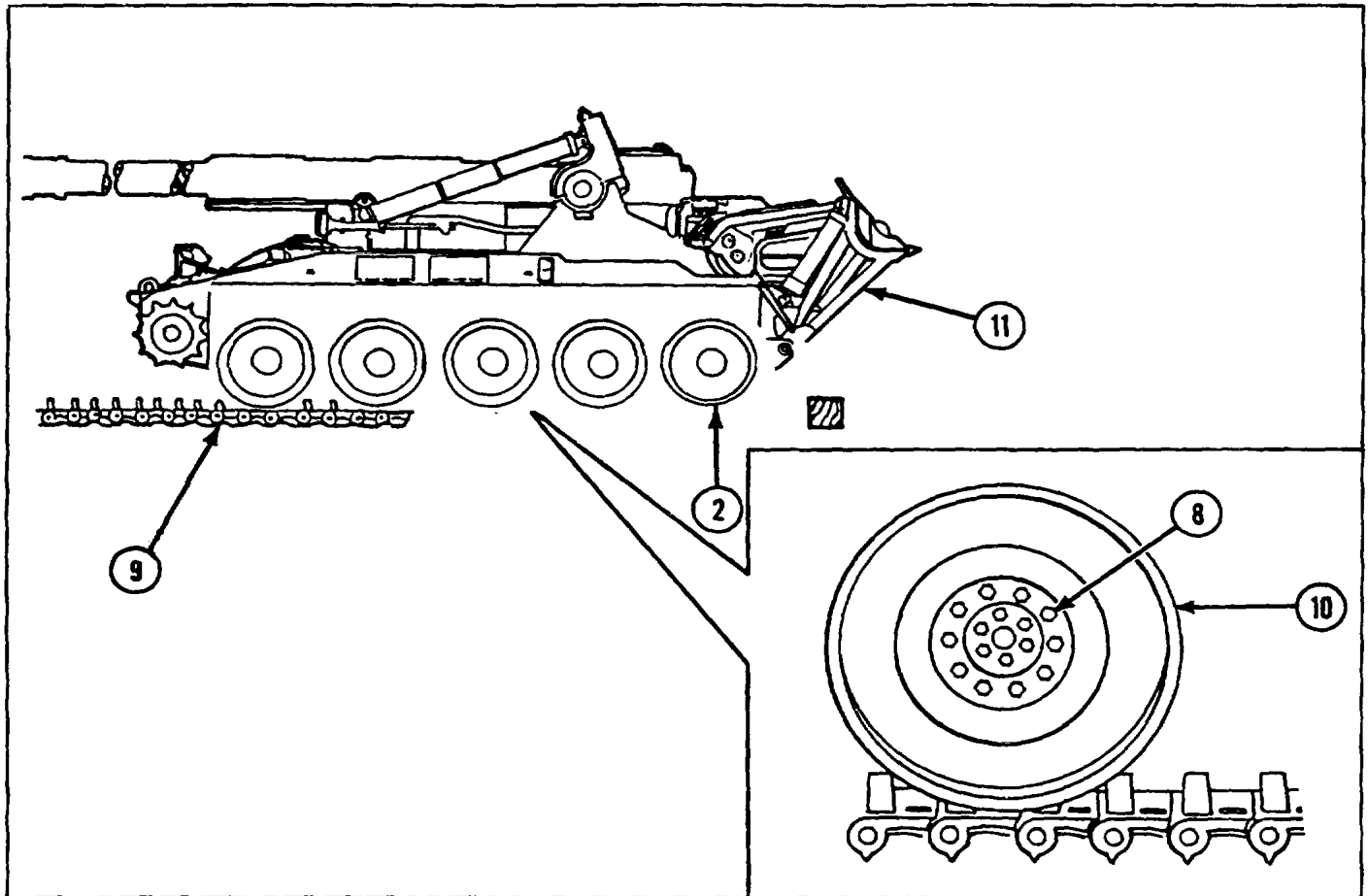
Steps 9 thru 16 apply to removal of number 2 and 4 roadwheels on all vehicles.

- 9 Decrease track tension. Refer to TM 9-2350-304-10.
- 10 Loosen ten self-locking nuts (4) on number 2 or 4 roadwheel one-half turn.
- 11 Drive vehicle onto 4 x 4 x 24-in. (10 x 61-cm) wood block.
- 12 Lock suspension.
- 13 Drive vehicle off wood block.
- 14 Lift track (5) using jack and 4 x 4 x 24 (10 x 10 x 61-cm) wood block until track guides (6) clear roadwheel (7).
- 15 Remove ten self-locking nuts (4).
- 16 Remove roadwheel (7).



2-143. MAINTENANCE OF IDLER WHEEL, ROADWHEEL WHEEL, AND LEFT LUBRICATION TUBE (CONT).

REMOVAL (CONT)



NOTE

Steps 17 thru 24 apply to removal of number 3 roadwheel and of roadwheels or idler wheel with leaking lockout cylinders.

- | | |
|--|--|
| <p>17 Loosen ten self-locking nuts (8) one-half turn.</p> <p>18 Back vehicle off track (9) until idler wheel (2) or roadwheel (10) is off track.</p> <p>19 Set parking brake.</p> <p>20 Place two 8 x 8 x 12-in. (20 x 20 x 31-cm) wood blocks behind vehicle.</p> | <p>21 Position blocks between spade teeth.</p> <p>22 For roadwheels number 2 thru 4 and for idler wheel (2), continue lowering spade (11) until wheel to be removed is raised off ground. For number 1 roadwheel, place jack under hull near roadwheel. Jack up vehicle until roadwheel is raised off ground.</p> <p>23 Remove ten self-locking nuts (8).</p> <p>24 Remove idler wheel (2) or roadwheel.</p> |
|--|--|

NOTE

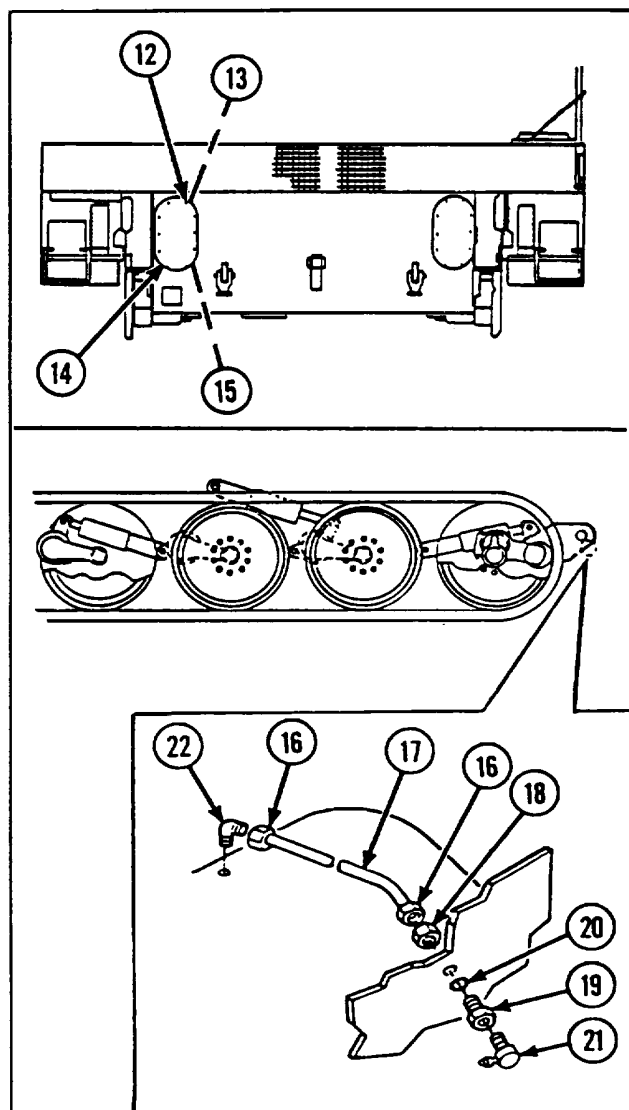
Steps 25 thru 31 apply to removal of left lubrication tube.

- 25 Lower spade on vehicle. Refer to TM 9-2350-304-10.
- 26 Remove ten screws (12), ten lockwasher (13), left rear hydraulic access cover (14), and gasket (15).

NOTE

Gain access to fittings from access cover opening and from well.

- 27 Loosen nuts (16) on both ends of idler wheel lubrication tube (17), and remove idler wheel lubrication tube.
- 28 Remove tube fitting locknut (18) from pipe straight adapter (19).
- 29 Remove pipe straight adapter (19).
- 30 Remove preformed packing (20) and lubrication fitting (21) from pipe straight adapter (17).
- 31 Remove pipe-to-tube elbow (22).

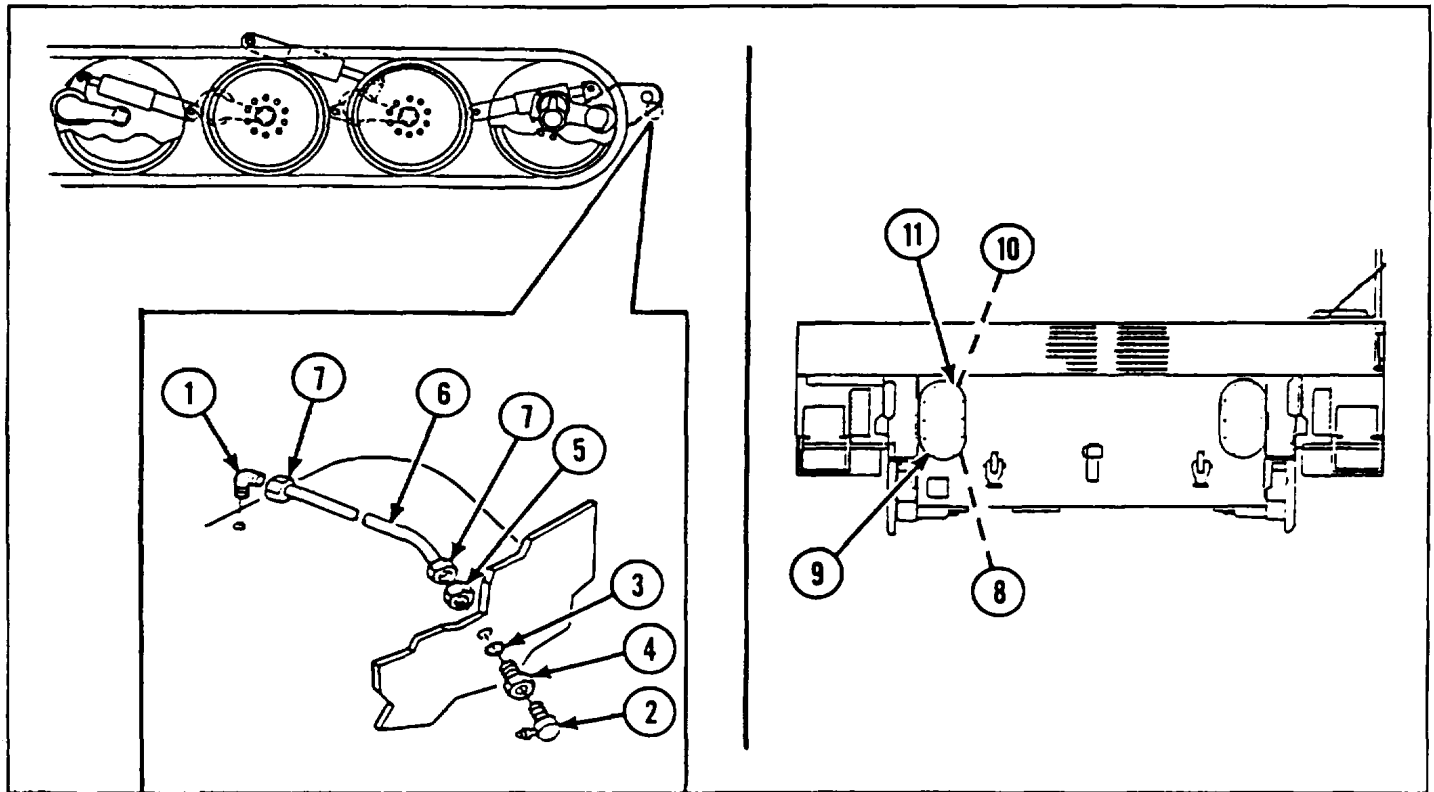


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Solid rubber wheel requires special handling or disposition. Notify next higher level of maintenance.
- 3 Repair is by replacement of authorized parts. Refer to TM 9-2350-304-24P-1.

2-143. MAINTENANCE OF IDLER WHEEL, ROADWHEEL, AND LEFT LUBRICATION TUBE (CONT).

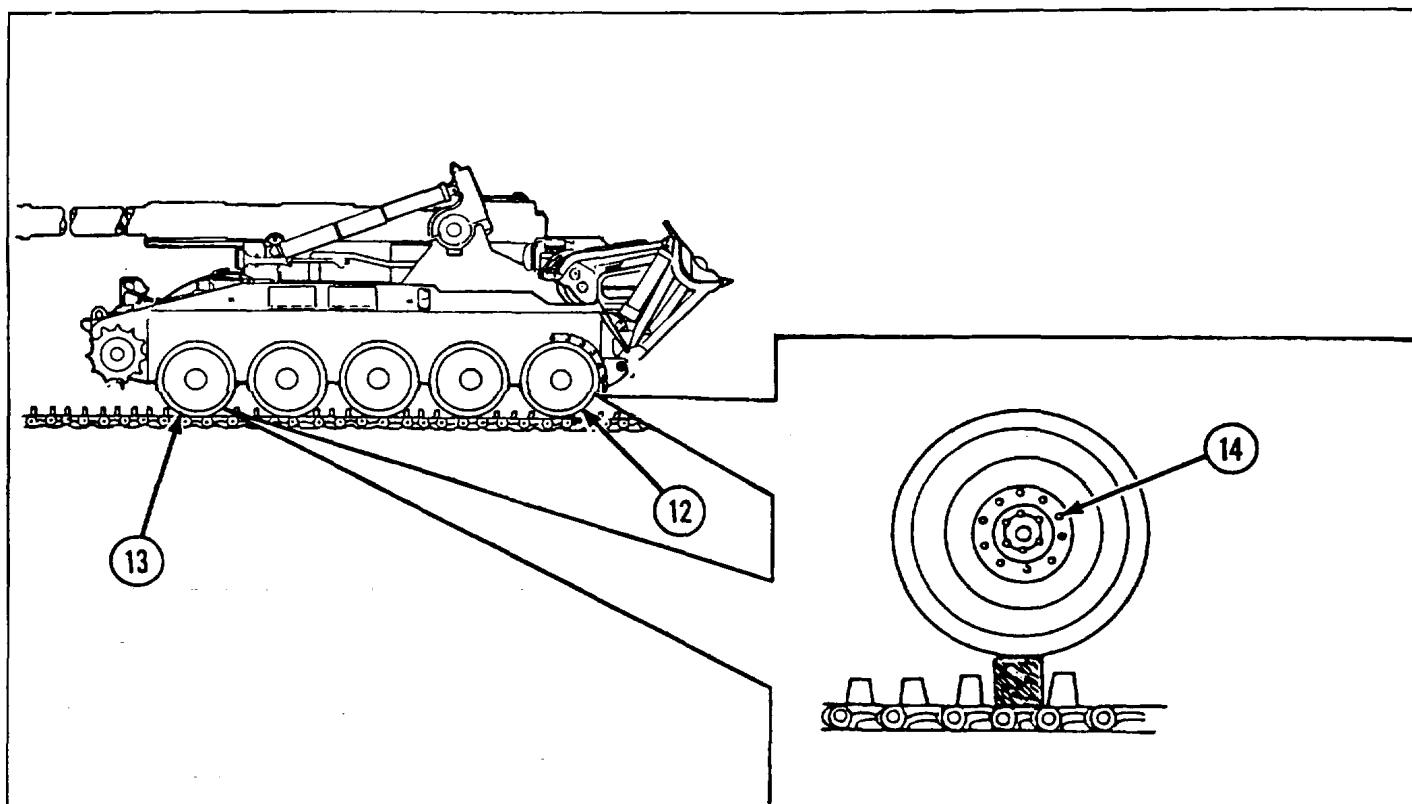
INSTALLATION



NOTE

- Steps 1 thru 6 apply to installation of left lubrication tube.
- Gain access to fittings from access cover opening and from well.

- 1 Install pipe-to-tube elbow (1).
- 2 Install lubrication fitting (2) and new preformed packing (3) on pipe straight adapter (4).
- 3 Install pipe straight adapter (4).
- 4 Install new tube fitting locknut (5) on pipe straight adapter (4).
- 5 Install idler wheel lubrication tube (6) and tighten nuts (7) on both ends of idler wheel lubrication tube.
- 6 Install new gasket (8), access cover (9), ten new lockwashers (10), and ten screws (11).

**NOTE**

- Steps 7 thru 28 are written and illustrated for left side of vehicle but apply to both sides.
- Steps 7 thru 13 apply to installation of idler wheel or number 1 roadwheel.

- 7 Install idler wheel (12) or roadwheel (13).
- 8 Install ten new self-locking nuts (14).
- 9 Tighten ten new self-locking nuts (14) to 200 to 220 ft-lb (271 to 298 N-m) (lubricated) or 270 to 300 ft-lb (366 to 407 N-m) (dry).
- 10 Drive vehicle onto 4 x 4 x 24-in. (10 x 10 x 61-cm) wood block.
- 12 Drive vehicle backward until idler wheel (12) or roadwheel (13) is off wood block. Remove wood block.
- 13 Install track on top of roadwheels and trailing idler wheel.

2-143. MAINTENANCE OF IDLER WHEEL, ROADWHEEL WHEEL, AND LEFT LUBRICATION TUBE (CONT).

INSTALLATION (CONT)

NOTE

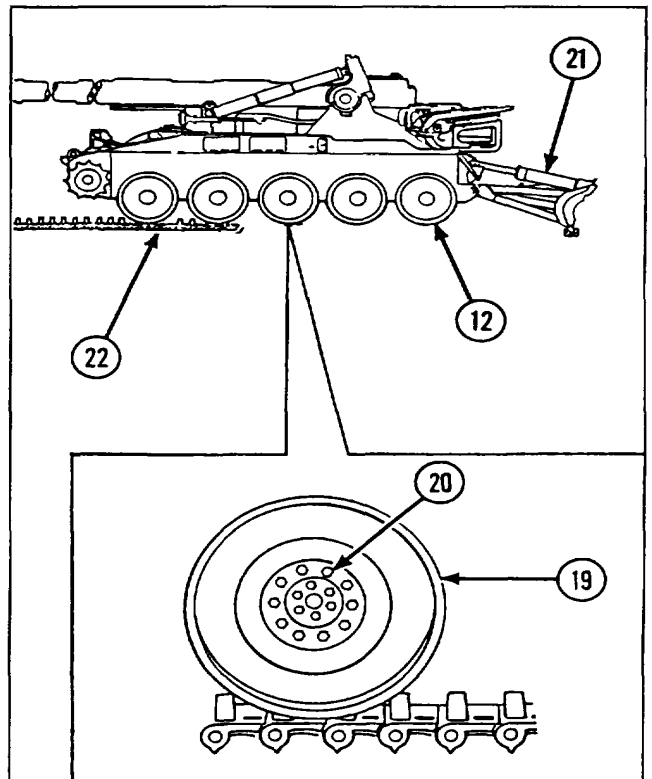
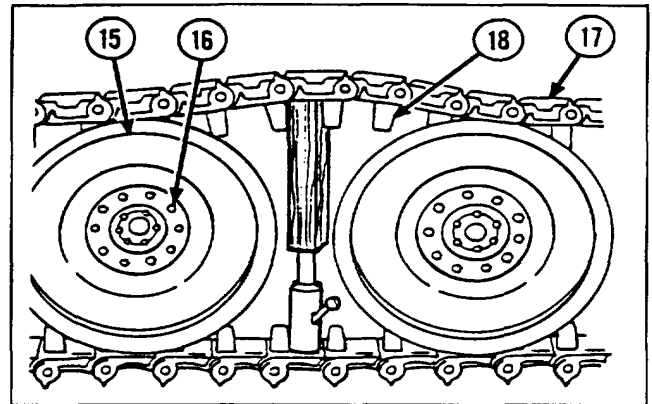
Steps 14 thru 21 apply to installation of number 2 and 4 roadwheels on all vehicles.

- 14 Install roadwheel (15).
- 15 Install ten new self-locking nuts (16).
- 16 Tighten ten new self-locking nuts (16) to 200 to 220 ft-lb (271 to 298 N-m) lubricated or 270 to 300 ft-lb (366 to 406 N-m) dry.
- 17 Lower track (17) by lowering jack and removing 4 x 4 x 24-in. (10 x 10 x 61-cm) wood block until track guides (18) seat or roadwheel (15).
- 18 Drive vehicle onto 4 x 4 x 24-in. (10 x 10 61-cm) wood block.
- 19 Unlock suspension.
- 20 Drive vehicle off wood block.
- 21 Adjust track tension. Refer to TM 9-2350-304-10.

NOTE

Steps 22 thru 28 apply to installation of number 3 roadwheels and of road-wheels or idler wheels with leaking lockout cylinders.

- 22 Install idler wheel (12) or roadwheel (19) on vehicle.
- 23 Install ten new self-locking nuts (20).



- 24 Tighten ten self-locking nuts (20) to 200 to 220 ft-lb (271 to 298 N-m) (lubricated) or 270 to 300 ft-lb (366 to 407 N-m) (dry).
- 25 Raise spade (21) until roadwheels 2 thru 4 and idler wheel are on ground. For number 1 roadwheel, lower jack until wheel is on ground. Remove jack.
- 26 Remove two 8 x 8 x 12-in. (20 x 20 x 31-cm) wood blocks from behind vehicle.
- 27 Release parking brake.
- 28 Drive vehicle forward until idler wheel or roadwheel is on track (22).

2-144. MAINTENANCE OF IDLER WHEEL ARM AND HUB ASSEMBLY AND ATTACHING PARTS, AND IDLER WHEEL ARM AND HUB.

This task covers:	a. <i>Removal/Disassembly</i>	b. <i>Inspection/Repair</i>
	c. <i>Reassembly/Installation</i>	
INITIAL SETUP		
<p><i>Tools and Special Tools</i></p> <ul style="list-style-type: none"> Automotive maintenance and repair shop equipment: organizational maintenance, common no 1 (less power) (item 83, appx B) <ul style="list-style-type: none"> • Bar • Puller • Torque wrench (0 to 600 ft-lb) Bearing inserter (item 10, appx G) Dowel pin (figure D-26, appx D) Hexagon head capscrew (3) (item 22, appx G) Idler adjustment wedge (item 28, appx G) Manual control handle (item 8, appx G) Puller adapter (item 2, appx G) Race and outer bearing replacer (item 20, appx G) Remover and replacer handle (item 9, appx G) Seal inserter (item 12, appx G) Seal inserter (item 13, appx G) Slide puller (item 18, appx G) Sling (item 85, appx B) Spanner wrench (item 33, appx G) Threaded straight pin (2) (item 17, appx G) Torque wrench extension (item 15, appx B) 	<p><i>Materials/Parts</i></p> <ul style="list-style-type: none"> Arm bearing seal idler wheel sleeve Cotter pin (4) Grease (item 19, appx C) Inner bearing ring (2) Inner bearing ring (2) Lockwasher (18) Plain encased seal (2) Plain encased seal (2) Plain encased seal (2) Plain encased seal (2) Preformed packing (2) Roller bearing (2) Roller bearing (2) Sealing compound (item 36, appx C) Self-locking nuts (4) Wiping rag (item 32, appx C) <p><i>Personnel Required</i></p> <ul style="list-style-type: none"> Two <p><i>References</i></p> <ul style="list-style-type: none"> TM 9-2350-304-10 TM 9-2350-304-24P-1 <p><i>Equipment Conditions</i></p> <ul style="list-style-type: none"> 2-818 Idler hub removed 	

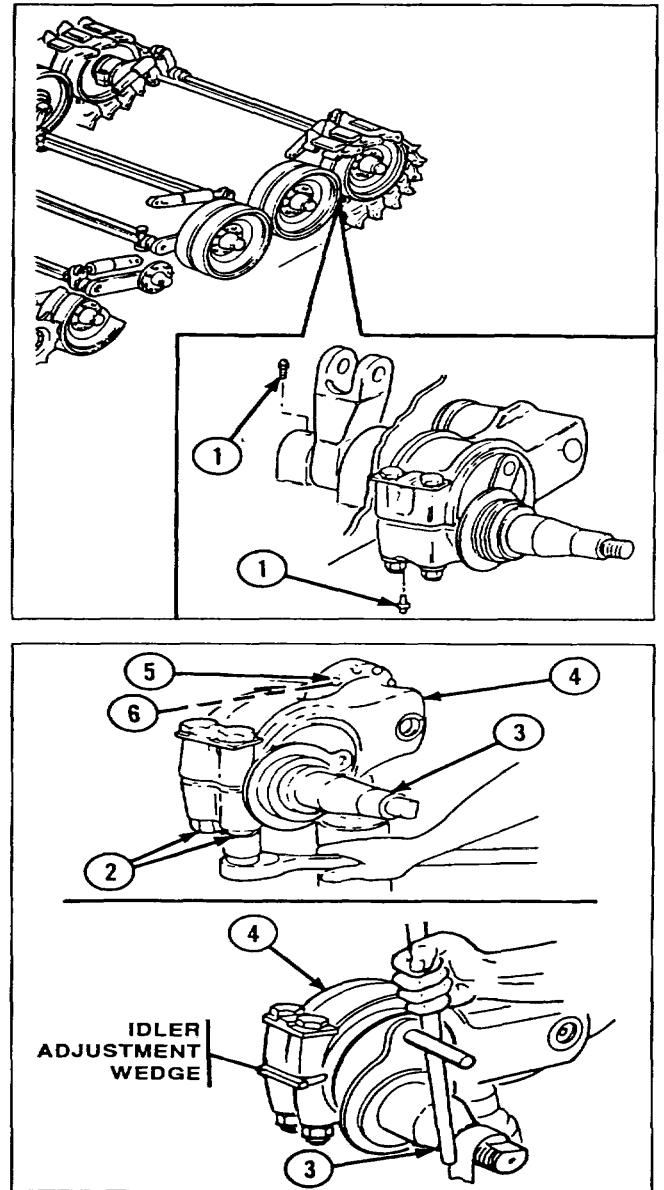
2-144. MAINTENANCE OF IDLER WHEEL ARM AND HUB ASSEMBLY AND ATTACHING PARTS, AND IDLER WHEEL ARM AND HUB (CONT).

REMOVAL/DISASSEMBLY

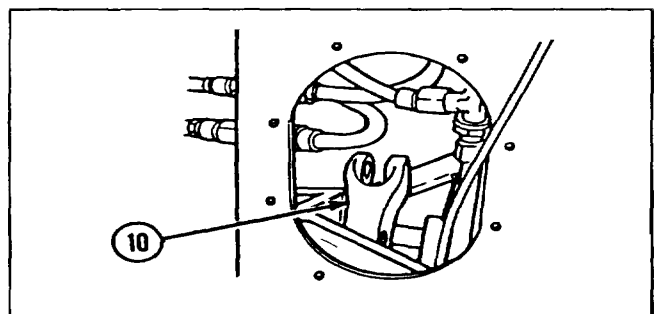
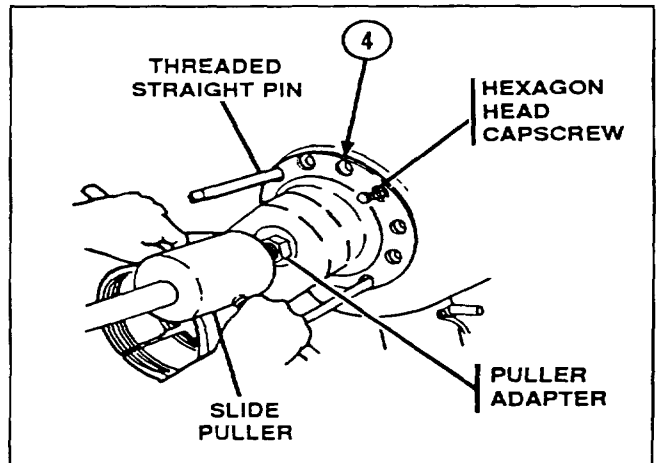
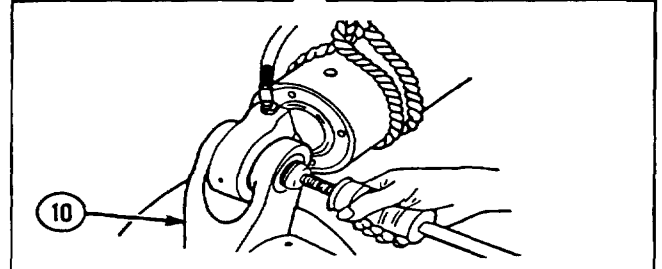
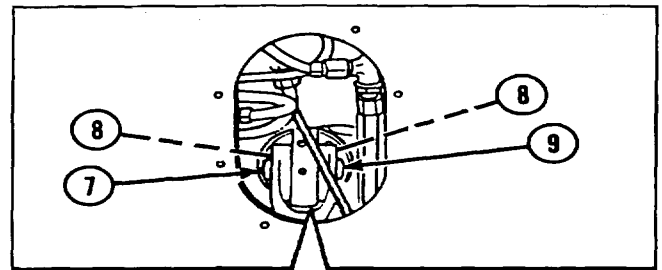
NOTE

Procedures are written for one idler wheel arm and hub assembly, but apply to both.

- 1 If damaged, remove lubrication fittings (1)
- 2 Loosen two self-locking nuts (2) completely.
- 3 Drive idler adjustment wedge into joint.
- 4 Insert 5.0 x 1.0 in. (12.7 x 2.5 cm) dowel pin into hole in idler wheel spindle (3).
- 5 Wrap bearing surface of idler wheel spindle (3) with clean wiping rag.
- 6 Insert a bar between dowel pin and idler wheel spindle (3).
- 7 Turn bar counterclockwise to unscrew idle wheel spindle (3) from pivot arm assembly (4).
- 8 Remove torsion bar. Refer to page 2-781.
- 9 Remove nine hexagon head capscrews (5) and nine lockwashers (6).



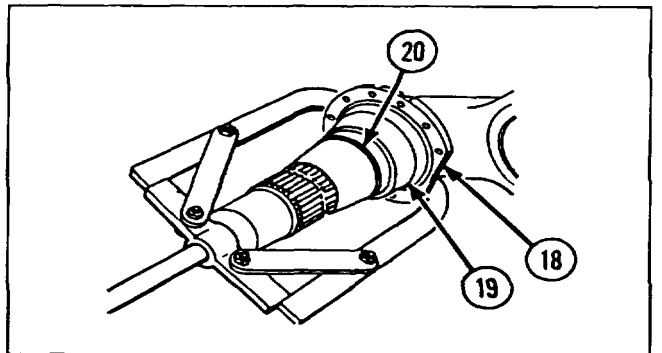
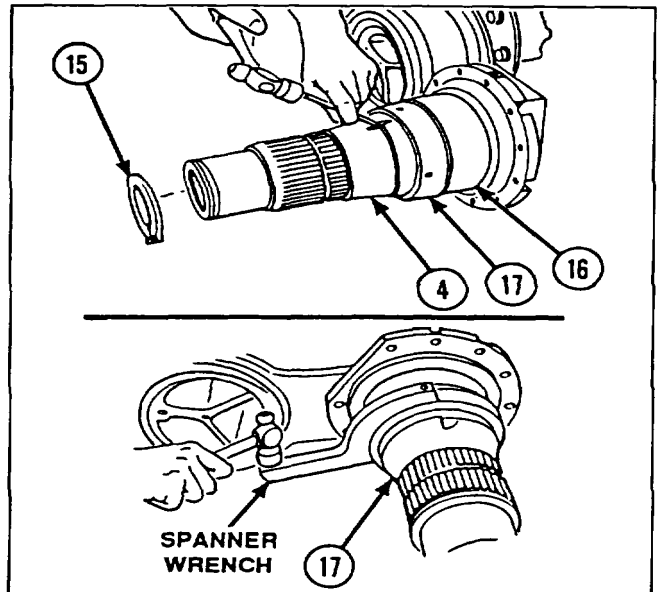
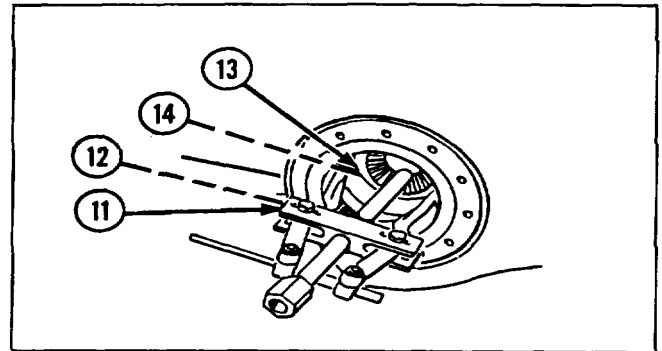
- 10 To gain access to lockout cylinder assembly, refer to page 2-839.
- 11 Using sling, support lockout cylinder assembly (7).
- 12 Remove two cotter pins (8).
- 13 Remove straight headless pin (9), using puller.
- 14 Using sling, remove lockout cylinder assembly (7) from roadwheel lever (10)
- 15 Install two threaded straight pins into opposing capscrew holes.
- 16 Install three hexagon head capscrews into capscrew holes.
- 17 Screw puller adapter into pivot arm assembly (3).
- 18 Screw slide puller into puller adapter.
- 19 Tighten three hexagon head capscrews evenly. At the same time, using slide puller, withdraw pivot arm assembly (4) about 5.0 in. (12.7 cm) from hull.
- 20 Support pivot arm assembly (4).
- 21 Remove slide puller and puller adapter.
- 22 Remove three hexagon head capscrew.
- 23 Remove pivot arm assembly (4).
- 24 Remove threaded straight pins.
- 25 Lift roadwheel lever (10), and remove from hull.



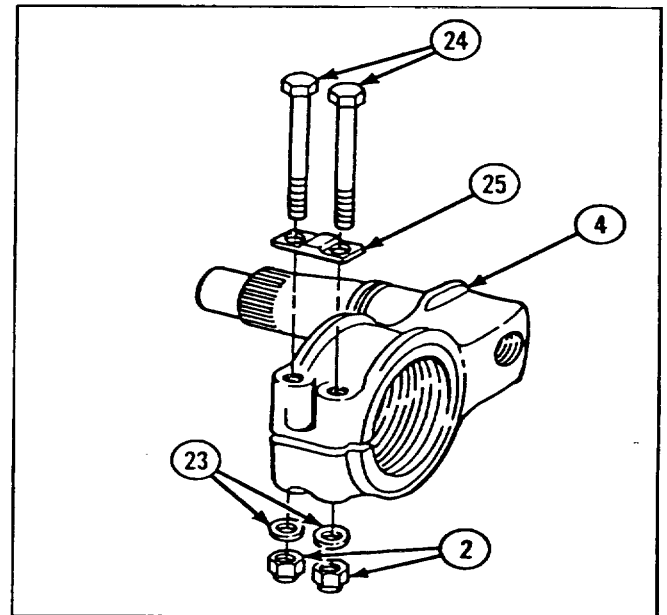
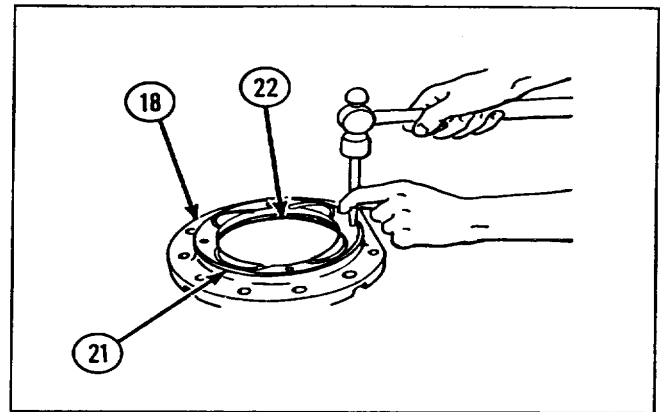
2-144. MAINTENANCE OF IDLER WHEEL ARM AND HUB ASSEMBLY AND ATTACHING PARTS, AND IDLER WHEEL ARM AND HUB (CONT).

REMOVAL/DISASSEMBLY (CONT)

- 26 Using puller, remove roller bearing (11) and plain encased seal (12) from hull.
- 27 Using puller, remove inner bearing ring (13) and plain encased seal (14) from hull.
- 28 Remove retaining ring (15) from pivot arm assembly (4).
- 29 Remove plain encased seal (16) from pivot arm assembly (4).
- 30 Pry up cut lip of arm bearing seal idler wheel sleeve (17) until clear of notch in pivot arm assembly (4).
- 31 Using spanner wrench, remove arm bearing seal idler wheel sleeve (17).
- 32 Using puller, remove arm to wheel support roadwheel flange (18), roller bearing (19), and inner bearing ring (20).



- 33 Remove preformed packing (21) from arm to wheel support roadwheel flange (18).
- 34 Using drift, tap through drift holes in roadwheel arm to wheel support flange (18) and remove plain encased seal (22).
- 35 Remove two self-locking nuts (2), two flat washers (23), two hexagon head capscrews (24), and idler wheel bar (25) from pivot arm assembly (4).
- 36 Remove pivot arm assembly (4) from hull



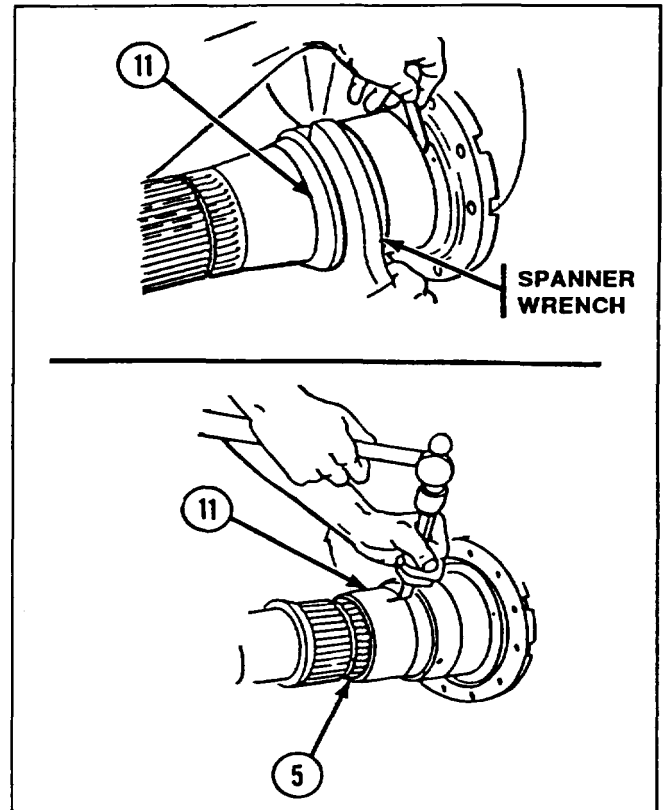
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If pivot arm assembly or idler wheel spindle is damaged, notify direct support maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-144. MAINTENANCE OF IDLER WHEEL ARM AND HUB ASSEMBLY AND ATTACHING PARTS, AND IDLER WHEEL ARM AND HUB (CONT).

REASSEMBLY/INSTALLATION

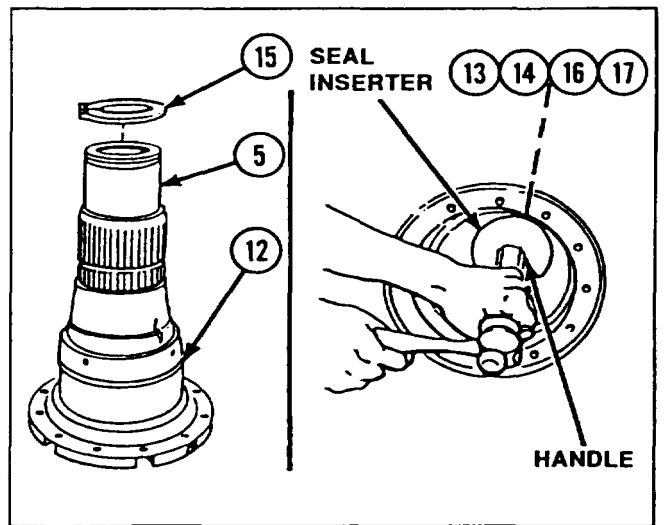
- 1 Install idler wheel bar (1), two hexagon head capscrews (2), two flat washers (3) and two new self-locking nuts (4) to pivot arm assembly (5).
- 2 Coat outside edge of new plain encased seal (6) with sealing compound.
- 3 Using seal inserter (item 12, appx G) and remover and replacer handle, install new plain encased seal (6) in arm to wheel support roadwheel flange (7).
- 4 Lubricate new preformed packing (8) with grease.
- 5 Install new preformed packing (8) in groove of arm to wheel support roadwheel flange (7).
- 6 Coat arm to wheel support roadwheel flange (7) and hull-to-flange mounting surface with sealing compound.
- 7 Install arm to wheel support roadwheel flange (7) and new plain encased seal (E on pivot arm assembly (5).



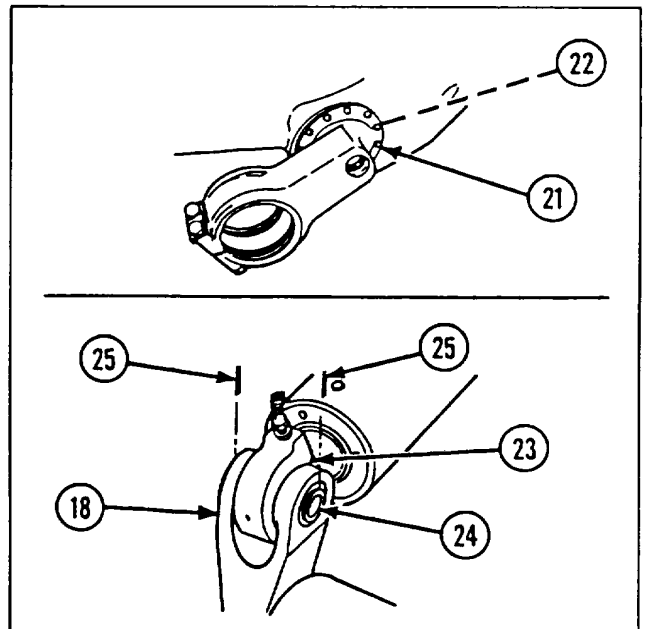
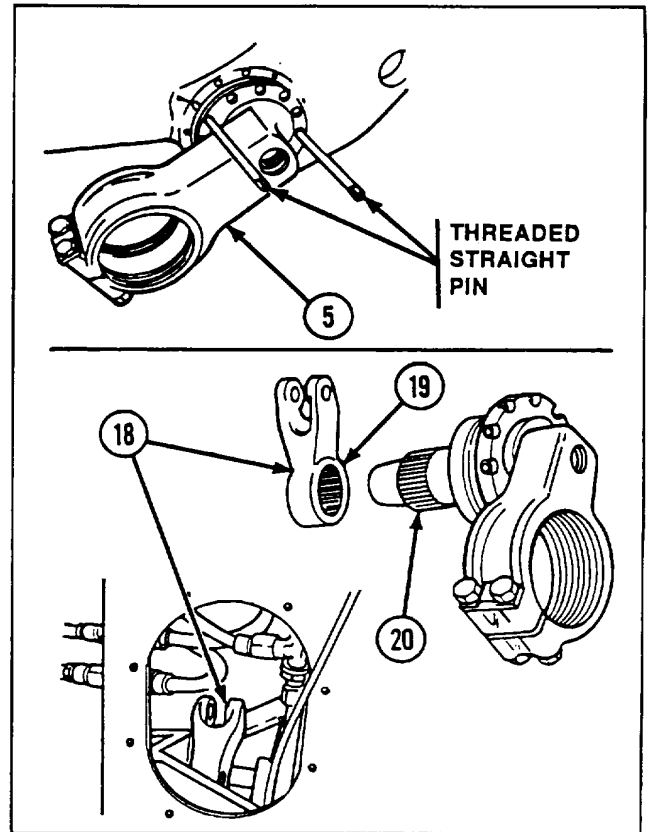
NOTE

Maintain a 0.010 to 0.015 in. (0.254 to 0.381 mm) clearance between roller bearing and arm to wheel support roadwheel flange.

- 8 Install new inner bearing ring (9) and new roller bearing (10), using bearing inserter



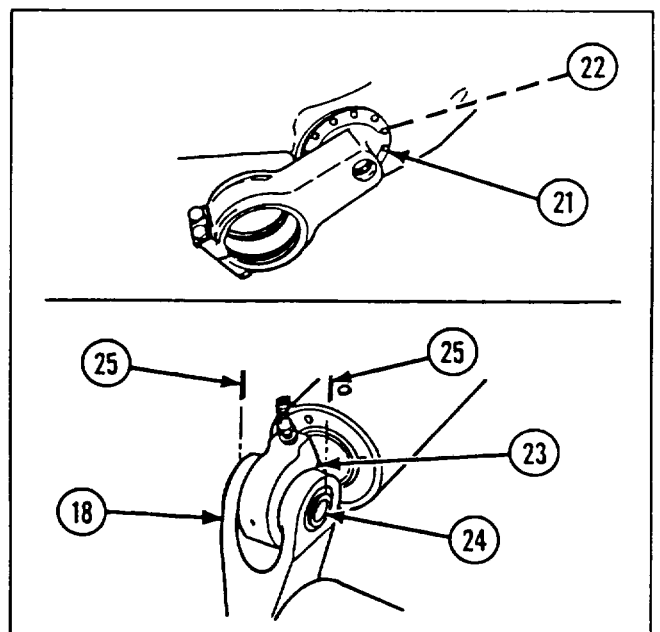
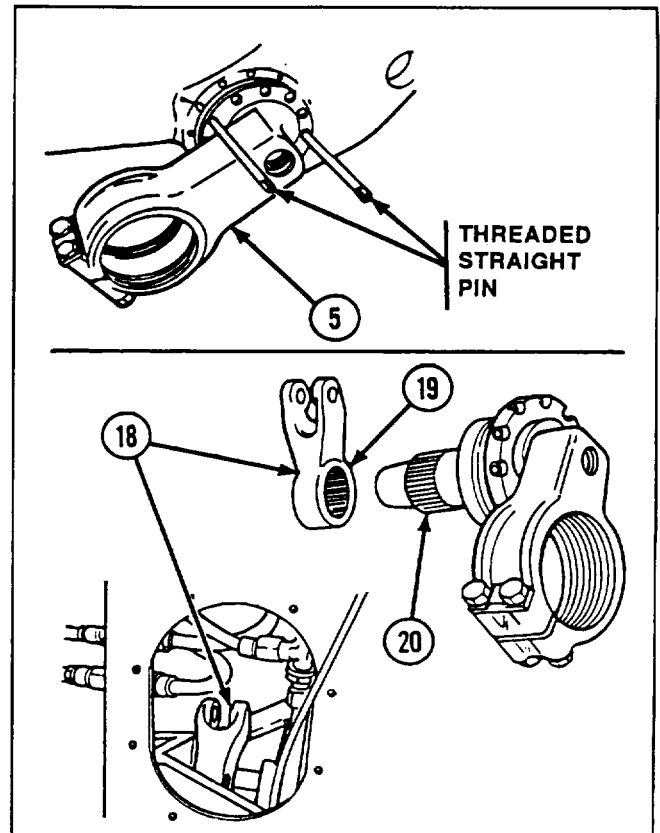
- 9 Coat threads of new arm bearing seal idler wheel sleeve (11) with sealing compound.
- 10 Using spanner wrench, install new arm bearing seal idler wheel sleeve (11).
- 11 Cut arm bearing seal idler wheel sleeve (11) lip.
- 12 Using hammer and small chisel, force arm bearing seal idler wheel sleeve (11) into groove in pivot arm assembly (5).
- 13 Coat outer diameter of new plain encased seals (12, 13, and 14) and all metal-to-metal mating surfaces with sealing compound.
- 14 Install new plain encased seal (12) on pivot arm assembly (5).
- 15 Install retaining ring (15) on pivot arm assembly (5).
- 16 Insert and position new plain encased seal (13) into idler arm housing. Ensure that rubber lip is facing in.
- 17 Seat new plain encased seal (13) firmly, using seal inserter (item 13, appx G) and handle.
- 18 Pack new roller bearing (16) with grease.
- 19 Insert and position new roller bearing (16) in idler arm housing, using seal inserter (item 12, appx G) and handle.
- 20 Install new inner bearing ring (17) in idler arm housing, using seal inserter (item 13, appx G) and handle.
- 21 Insert and position new plain encased seal (14) into idler arm housing with rubber lip facing out.
- 22 Seat new plain encased seal (14) firmly, using race and outer bearing replacer and remover and replacer handle.



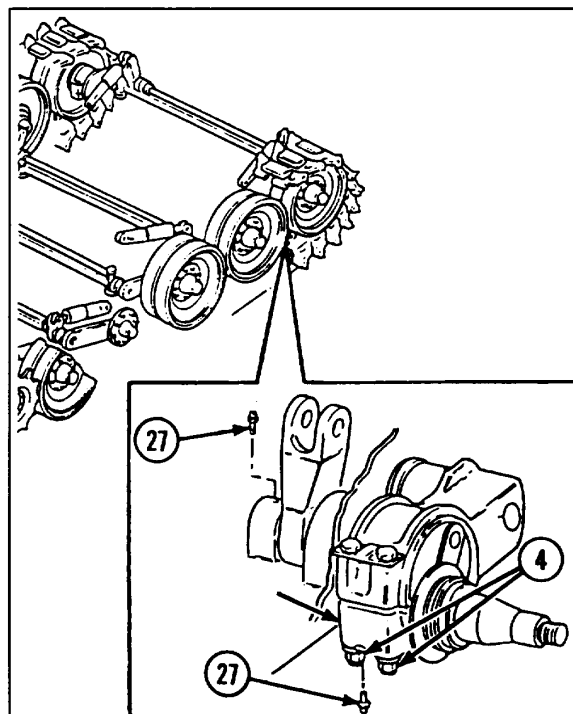
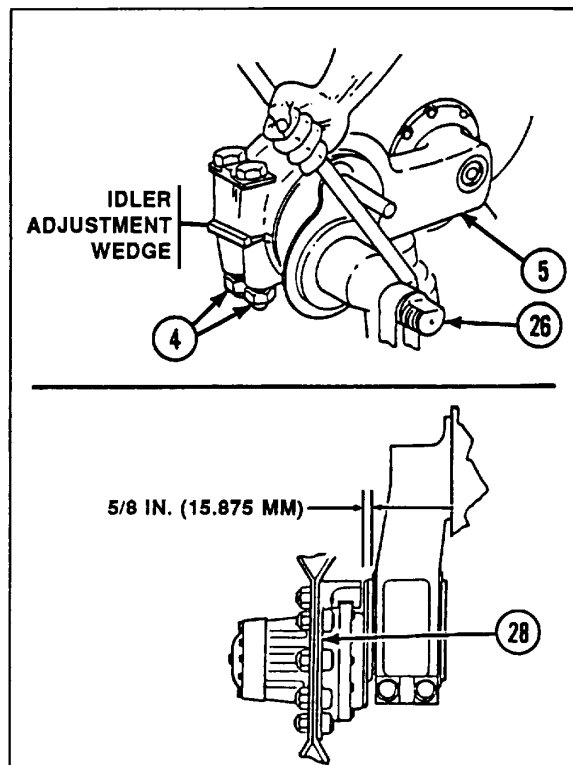
2-144. MAINTENANCE OF IDLER WHEEL ARM AND HUB ASSEMBLY AND ATTACHING PARTS, AND IDLER WHEEL ARM AND HUB (CONT).

REASSEMBLY/INSTALLATION (CONT)

- 23 Install two threaded straight pins into opposing capscrew holes of pivot arm assembly (5).
- 24 Coat sealing surfaces of pivot arm assembly (5) with sealing compound.
- 25 Position pivot arm assembly (5) on threaded straight pins.
- 26 Push pivot arm assembly (5) into housin until end of arm is visible in arm cavity o roadwheel lever (18).
- 27 Insert and position roadwheel lever (18) into lockout cylinder lever arm cavity.
- 28 Position roadwheel lever (18) so blind spline (19) on lever arm mates with blind spline (20) on pivot arm assembly.
- 29 Remove two threaded straight pins.
- 30 Install and tighten nine hexagon head capscrews (21) and nine new lockwashe (22) in cross-pattern sequence.
- 31 Install lockout cylinder eye (23) in roadwheel lever (18).
- 32 Install straight headless pin (24) and two new cotter pins (25).
- 33 Install torsion bar. Refer to page 2-781.



- 34 Loosen two self-locking nuts (4).
- 35 Drive in idler adjustment wedge far enough so threads on idler wheel spindle (26) engage threads on pivot arm assembly (5).
- 36 Temporarily install 1.00-in. (2.54-cm) diameter dowel pin.
- 37 Protect idler wheel spindle (26) bearing surface by wrapping with clean wiping rags.
- 38 Insert bar between dowel pin and idler wheel spindle (26).
- 39 Screw idler wheel spindle (26) into pivot arm assembly (5) until the outer face of idler wheel spindle is 5/8 in. (15.9 mm) from outer face of pivot arm assembly (5). Dowel and idler wheel arm spindle (26) should align 90 degrees from the pivot arm assembly (5) center line.
- 40 Remove idler adjustment wedge and dowel pin.
- 41 If removed, install lubrication fittings (27).
- 42 Install idler wheel vehicular wheel hub (28). Refer to page 2-818.
- 43 Lubricate pivot arm assembly (5) and idler wheel arm and hub assembly (29). Refer to TM 9-2350-304-10.
- 44 Tighten two self-locking nuts (4). Torque to 575 to 600 ft-lb (780 to 848 N-m).



2-145. MAINTENANCE OF IDLER WHEEL VEHICULAR WHEEL HUB AND HUB CAP RADIO STATIC SUPPRESSION SPRING.

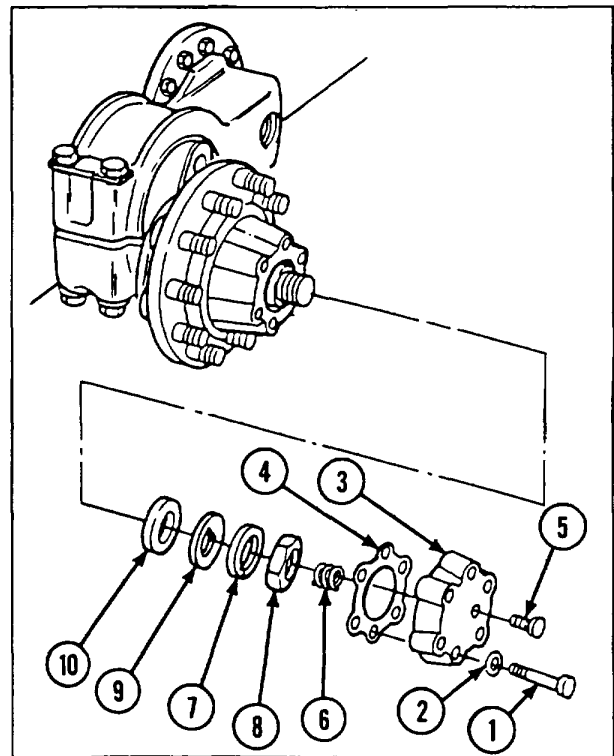
<p>This task covers:</p>	<p>a. Removal b. Disassembly c. Inspection/Repair</p>	<p>d. Reassembly e. Installation</p>
<p>INITIAL SETUP:</p> <p><i>Tools and Special Tools</i> Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B) • Torque wrench (0 to 170 ft-lb) Bearing inserter set (item 14, appx G) Bearing inserter set (item 15, appx G) Face socket wrench (item 30, appx G) Remover and replacer handle (item 9, appx G)</p> <p><i>Materials./Parts</i> Hub access cap gasket (20) Hub gasket seal</p> <p>Grease (item 19, appx C) Lock bearing nut (2) Lockwasher (28) Ribbed shoulder bolts (20)</p> <p>References TM 9-2350-304-10 TM 9-2350-304-24P-1</p> <p>Equipment Conditions 2-802 Idler wheel removed</p>		

REMOVAL

NOTE

- Procedures are written for one idler wheel arm and hub assembly, but apply to both.
- Steps 1 and 2 apply to removal of hub cap radio static suppression spring.

- 1 Remove six hexagon head capscrews (1), six lockwashers (2), access cover (3), and hub cap access gasket (4).
- 2 Remove pipe plug (5) and hub cap radio static suppression spring (6).
- 3 Straighten lock bearing nut (7) tang securing hexagon plain nut (8).

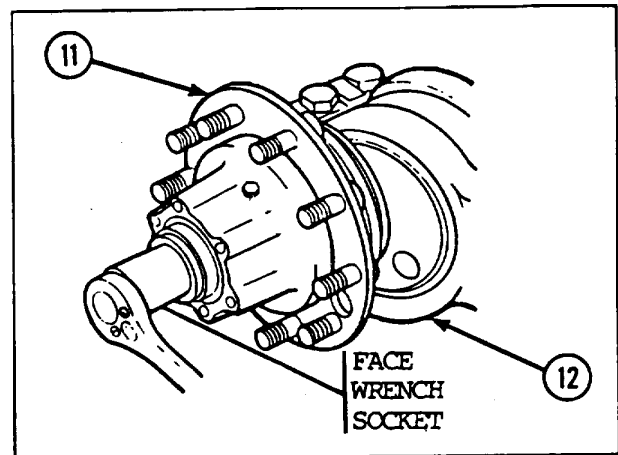


- 4 Remove hexagon plain nut (8).
- 5 Remove lock bearing nut (7), flat washer (11)
- 6 Using face socket wrench, remove round plain nut (10).

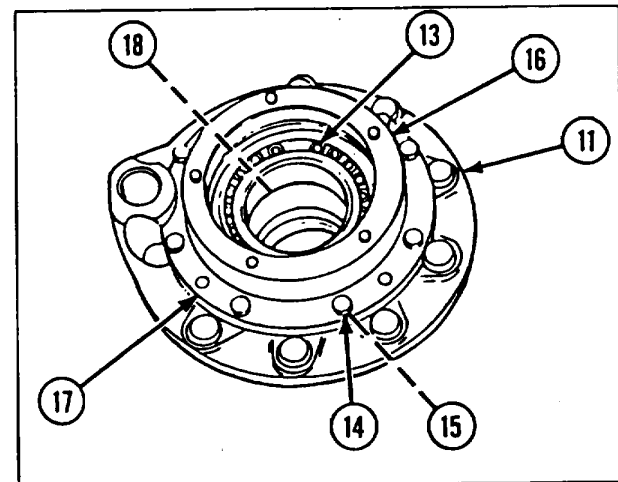
CAUTION

Ensure that outer roller bearing does not fall on ground.

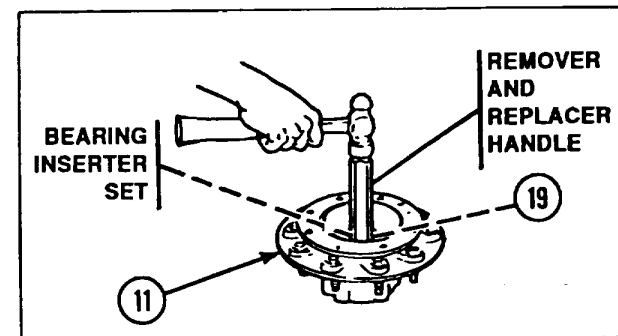
- 7 Slide idler wheel vehicular wheel hub (11) from idler wheel spindle (12).



- 8 Remove outer cone and rollers (13) from idler wheel vehicular wheel hub (11).
- 9 Remove eight hexagon head capscrews (14), eight lockwashers (15), seal assembly (16), hub seal gasket (17), and hub bearing inner cone and rollers (18) from idler wheel hub (11).



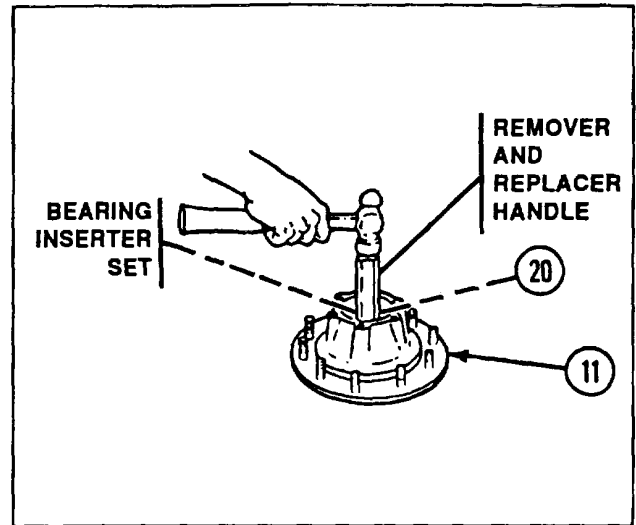
- 10 Remove outer roller bearing cup (19) from idler wheel vehicular wheel hub (11), using bearing inserter set (item 14, appx G) and remover and replacer handle.



2-145. MAINTENANCE OF IDLER WHEEL VEHICULAR WHEEL AND HUB AND HUB CAP RADIO STATIC SUPPRESSION SPRING (CONT).

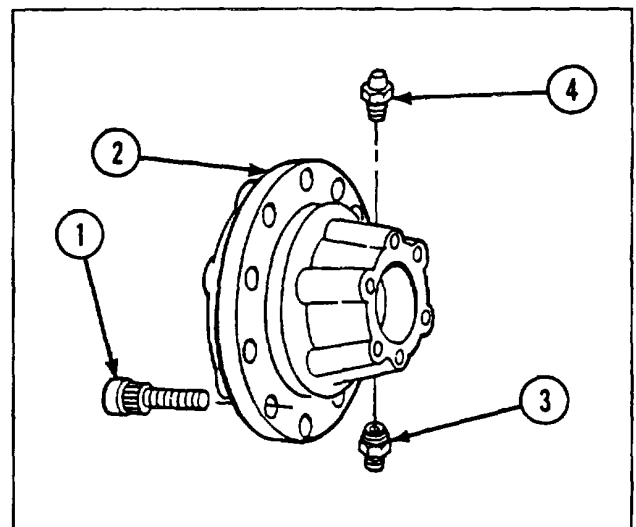
REMOVAL (CONT)

- 11 Remove inner roller bearing cup (20) from idler wheel vehicular wheel hub (11), using bearing inserter set (item 15, appx G) and remover and replacer handle.



DISASSEMBLY

- 1 If damaged, remove ribbed shoulder bolts (1) from hub (2).
- 2 Remove safety relief valve (3) and lubrication fitting (4).

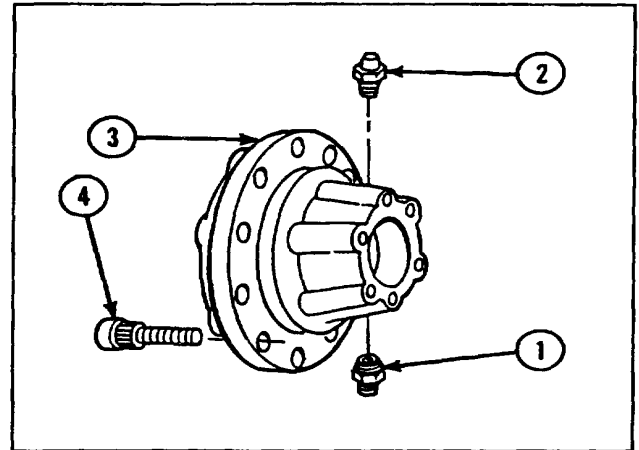


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If hub is damaged, repair is by replacement of next higher assembly.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

- 1 Install safety relief valve (1) and lubrication fitting (2) to hub (3).
- 2 If removed, install new ribbed shoulder bolts (4).

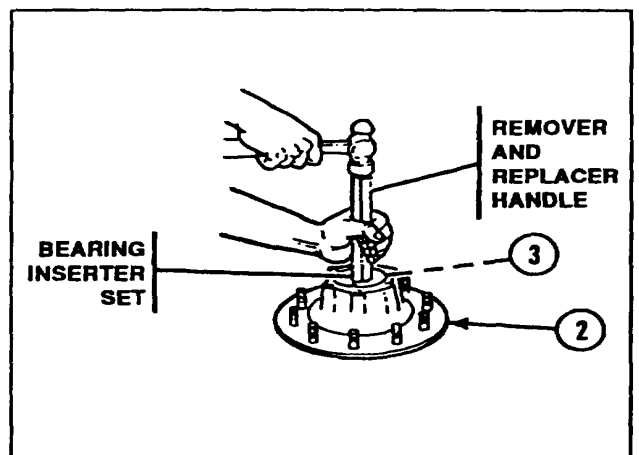
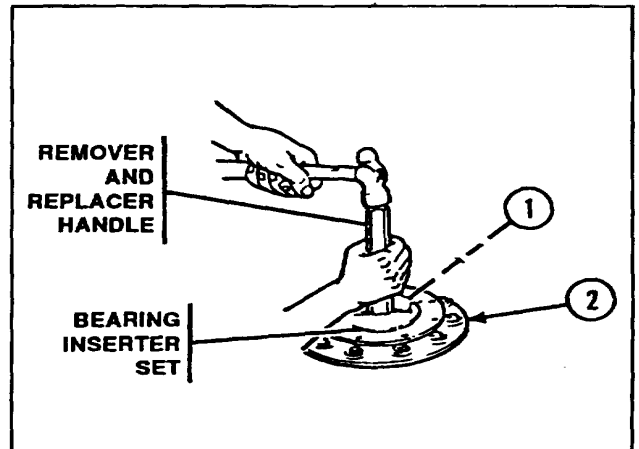


INSTALLATION

NOTE

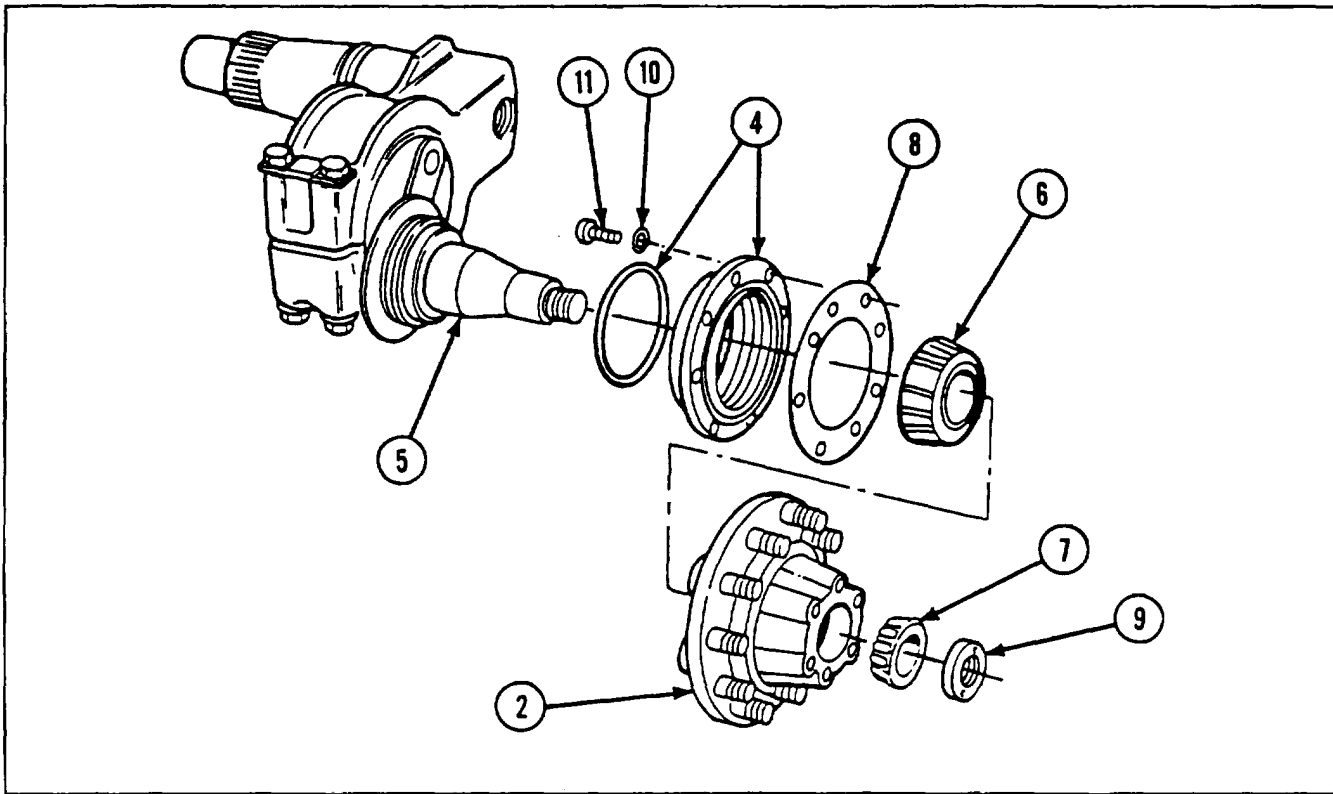
- Procedures are written for one idler wheel arm and hub assembly, but apply to both.
- Ensure that roller bearing cups are firmly seated against interior flanges of idler wheel vehicular wheel hub.

- 1 Install inner roller bearing cup (1) in idler wheel vehicular wheel hub (2), using bearing inserter set (item 15, appx G) and remover and replacer handle.
- 2 Install outer roller bearing cup (3) in idler wheel vehicular wheel hub (2), using bearing inserter set (item 14, appx G) and remover and replacer handle.

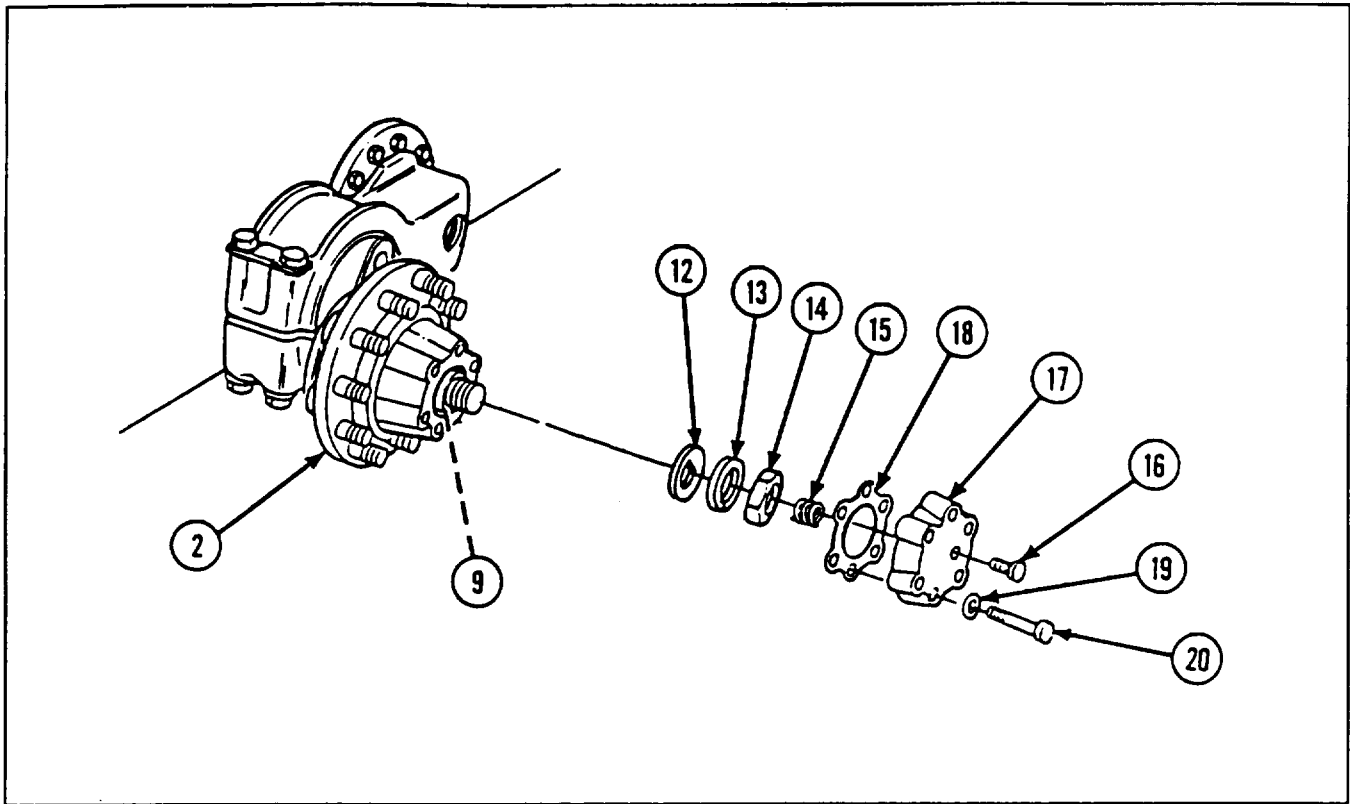


2-145. MAINTENANCE OF IDLER WHEEL VEHICULAR WHEEL HUB AND HUB CAP RADIO STATIC SUPPRESSION SPRING (CONT).

INSTALLATION (CONT)



3. Install seal assembly (4) on idler wheel spindle (5). Ensure that drive pins on seal mate with holes on spindle flange.
4. Pack inner cone and rollers (6) with grease. Seat inner cone and rollers firmly against collar of idler wheel spindle (5).
5. Pack outer cone and rollers (7) with grease. Install new hub seal gasket (8), idler wheel vehicular wheel hub (2), and outer cone and rollers on idler wheel spindle (5).
6. Align mounting holes in idler wheel vehicular wheel hub (2), hub seal gasket (8), and seal assembly (4).
7. Screw round plain nut (9) onto idler wheel spindle (5) until it is fingertight.
8. Install eight new lockwashers (10) and hexagon head capscrews (11). Torque capscrews in a cross-pattern sequence to 32 to 35 ft-lb (43 to 47 N-m) (dry) or to 23 to 25 ft-lb (31 to 34 N-m) (lubricated).



NOTE

The completed wheel assembly must have between 0.005 and 0.0050 in. (0.0013 to 0.0127 cm) actual end play.

- 9 Using face socket wrench, turn round plain nut (9) clockwise and, at the same time, rotate idler wheel vehicular wheel hub (2), first in one direction, and then the other, until there is a slight bind.
- 10 Back off round plain nut (9) 1/6 to 1/4 turn
- 11 Lock round plain nut (9) in this position by installing flat washer (12), being sure that hole indexes with pin.
- 12 Install new flat washer (13) and hexagon plain nut (14).
- 13 Tighten hexagon plain nut (14).

NOTE

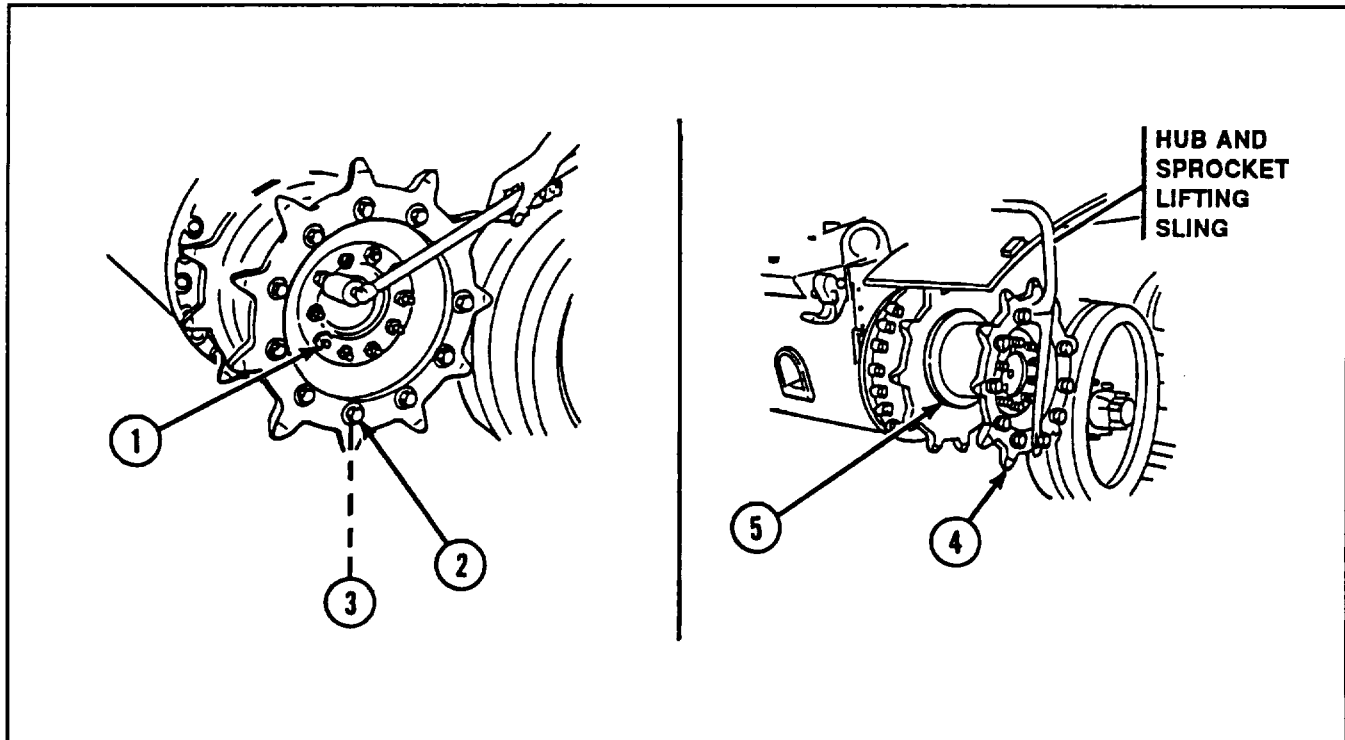
Steps 14 and 15 apply to installation of hub cap radio static suppression spring.

- 14 Install hub cap radio static suppression spring (15) and pipe plug (16) in access cover (17).
- 15 Install new hub access cap gasket (18), access cover (17), six new lockwashers (19), and six hexagon head capscrews (20).
- 16 Torque six hexagon head capscrews (20) to 32 to 35 ft-lb (43 to 47 N-m) (dry) or to 23 to 25 ft-lb (31 to 34 N-m) (lubricated).
- 17 Lubricate idler wheel vehicular wheel hub (2). Refer to TM 9-2350-304-10.

2-146. MAINTENANCE OF DRIVE HUB SPROCKETS AND RELATED PARTS.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP:			
Tools and Special Tools	Materials/Parts		
Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)	Dry cleaning solvent (item 15, appx C)		
• Breaker bar (3/4 in. drive)	Emery cloth (item 11, appx C)		
• Socket (1-1/2 in., 3/4 in. drive)	Hydraulic fluid (item 20, appx C)		
• Torque wrench (0 to 170 ft-lb)	Lockwasher (44)		
• Torque wrench (0 to 600 ft-lb)	Olive drab enamel (item 17, appx C)		
• Wire brush	Primer (item 30, appx C)		
Hoist	Personnel Required		
Hub and sprocket lifting sling (item 25, appx G)	Two		
Sprocket wear gage (item 7, appx G)	References		
	TM 9-2350-304-24P-1		
	Equipment Conditions		
	2-829 Tracks removed		

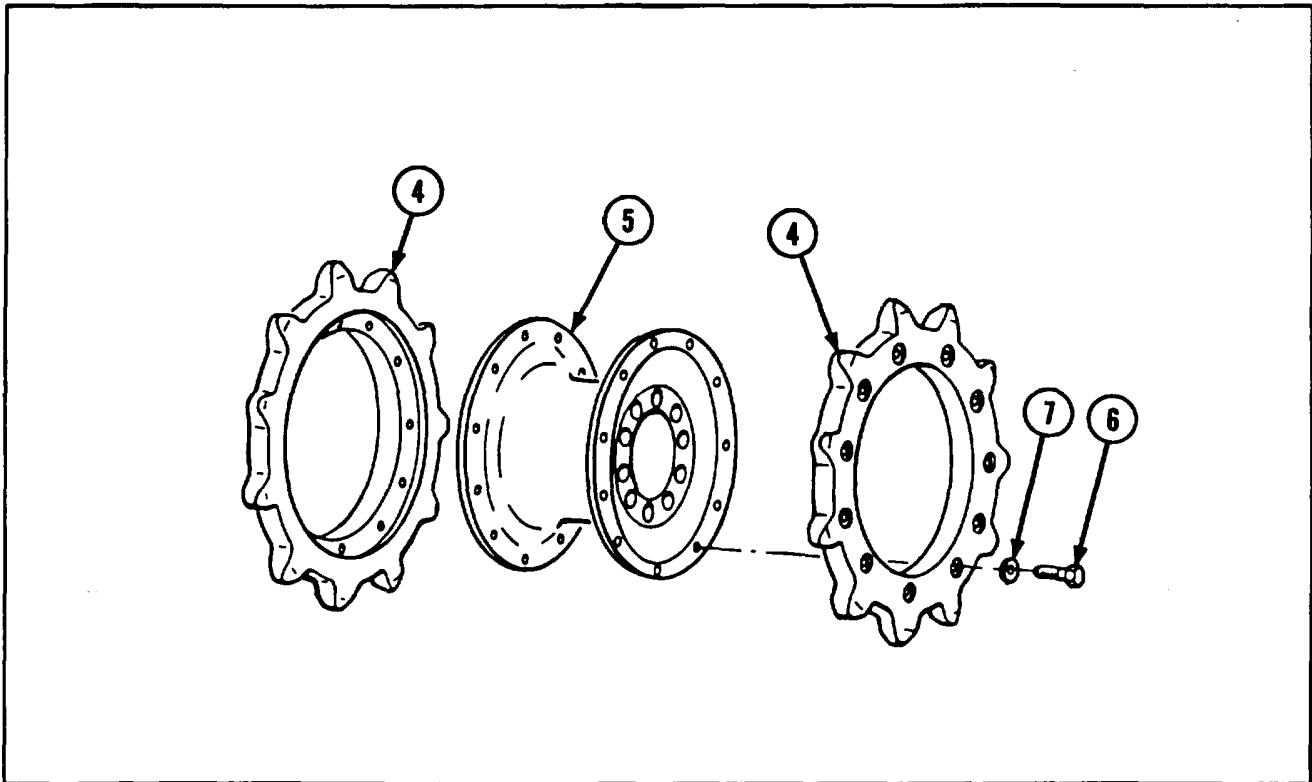
REMOVAL



NOTE

The following procedures are written and illustrated for the left drive hub sprocket, but apply to both the left and right drive hub sprockets.

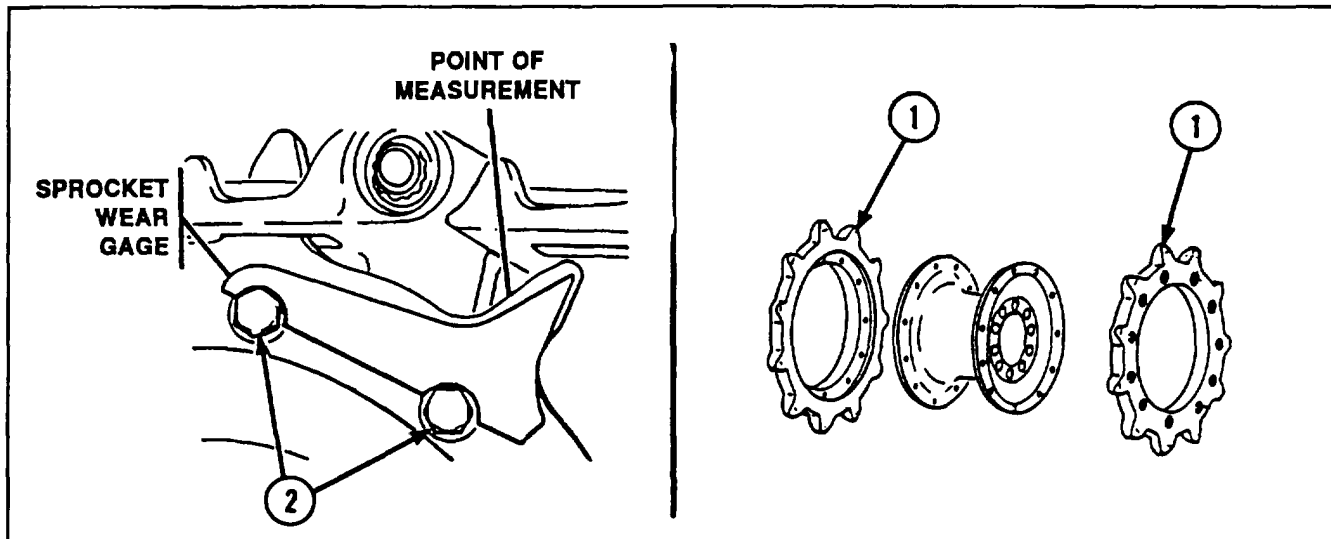
- 1 Remove ten nuts (1).
- 2 Remove three hexagon head capscrews (2) and three lockwashers (3) properly spaced to align with mounting holes in hub and sprocket lifting sling.
- 3 Using three removed hexagon head capscrews, attach hub and sprocket lifting sling to sprocket wheel (4).
- 4 Attach hoist to hub and sprocket lifting sling, and remove drive hub sprocket (5). Remove sling from sprocket wheel (4).



- 5 Remove 19 hexagon head capscrews (6) and 19 lockwashers (7).
- 6 Remove two sprocket wheels (4) from sprocket wheel hub (5).

2-146. MAINTENANCE OF DRIVE HUB SPROCKETS AND RELATED PARTS (CONT).

INSPECTION/REPAIR

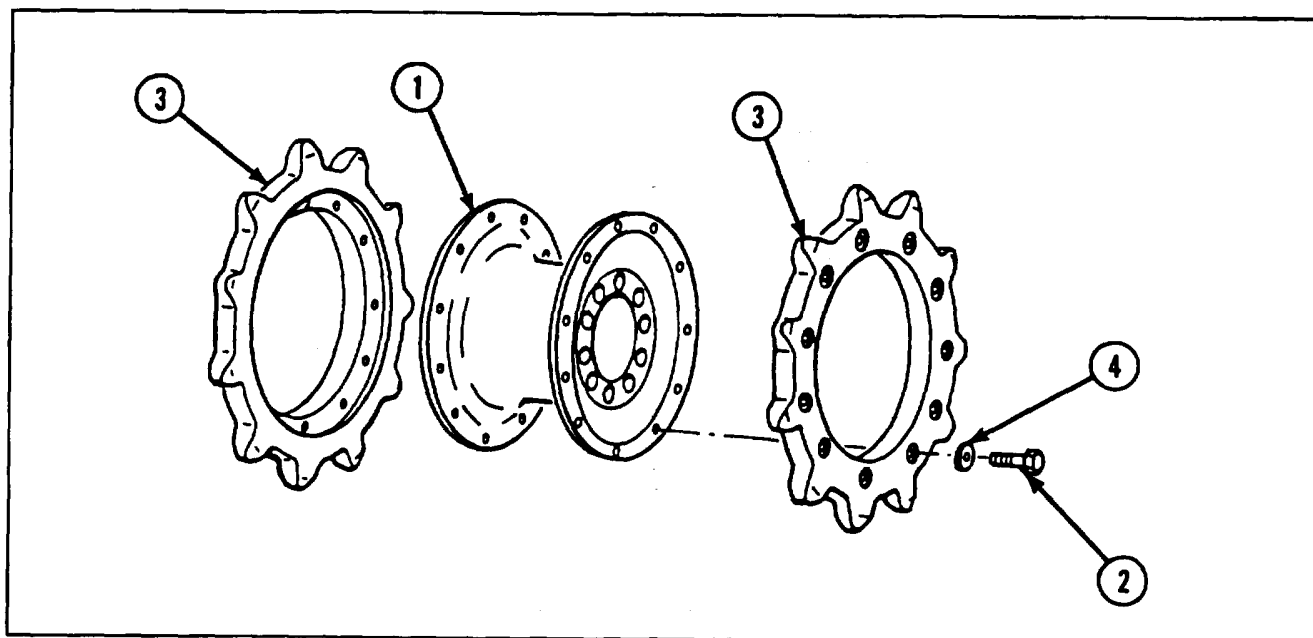


1. Inspect from broken, damaged, or missing parts.
2. Clean sprocket wheel (1) teeth and attaching hexagon head capscrew heads with wire brush and dry cleaning solvent.
3. Place sprocket wear gage against hexagon head capscrew heads (2).
4. Inspect sprocket wheel (1) tooth wear against sprocket wear gage profile.
5. Remove and rotate sprocket wheels (1) if tooth wear is down to, or beyond, sprocket wear gage
6. If sprocket wheel (1) teeth are worn on both sides or cracked, replace sprocket wheels (1).
7. Remove nicks, burrs, and corrosion with emery cloth.

CAUTION

Replace sprocket wheels in pairs. Do not use worn sprocket wheel and new sprocket wheel on the same sprocket wheel hub.

8. Repaint chipped and damaged surfaces using primer and olive drab enamel.
9. Repair is by replacement of authorized parts (TM 9-2350-304-24P-1) which do not meet Inspection criteria.

INSTALLATION**NOTE**

The following procedures are written and illustrated for the left drive hub sprocket, but apply to both the right and left drive hub sprockets.

- 1 Clean mounting surfaces on sprocket wheel hub (1) with dry cleaning solvent and dry with emery cloth.
- 2 Apply hydraulic fluid to threads of hexagon head capscrews (2).

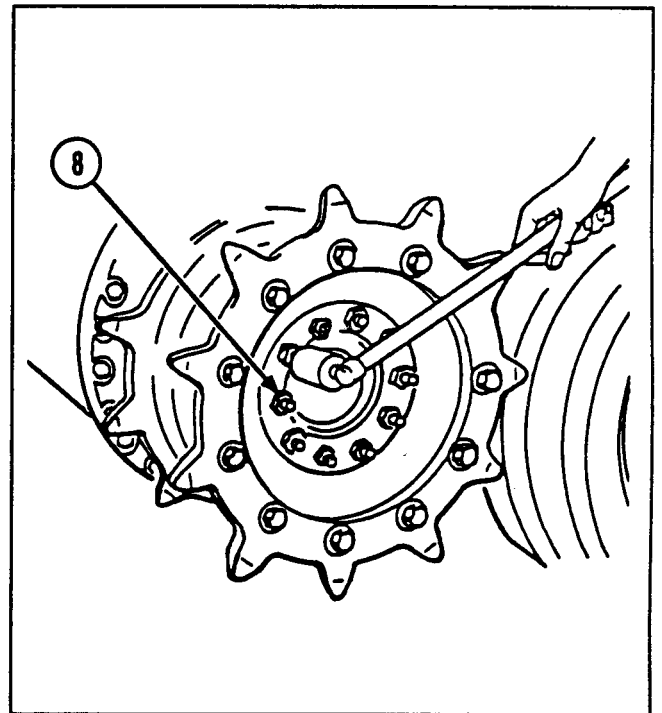
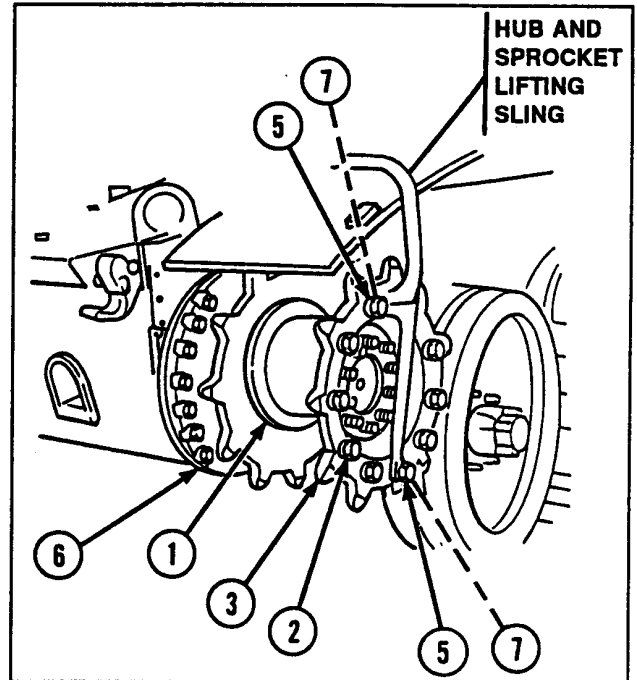
NOTE

Do not install new lockwashers and hexagon head capscrews in three holes that will be used to attach hub and sprocket lifting sling to sprocket wheel.

- 3 Install 2 sprocket wheels (3) on sprocket wheel hub (1) with 19 new lockwashers (4) and 19 hexagon head capscrews (2). Ensure that unworn parts of sprocket wheel (3) teeth are forward.

2-146. MAINTENANCE OF DRIVE HUB SPROCKETS AND RELATED PARTS (CONT).*INSTALLATION (CONT)*

4. Attach hub and sprocket lifting sling to sprocket wheel (3) with three hexagon head capscrews (5).
5. Tighten 19 hexagon head capscrews (2) evenly in a cross-pattern sequence to 120.0 to 130.0 ft-lb (162.7 to 176.3 N-m).
6. Attach hoist to hub and sprocket lifting sling and install sprocket wheel hub (1) on final drive assembly (6).
7. Remove hoist and hub and sprocket lifting sling. Install three new lockwashers (7) and three hexagon head capscrews (5) in sprocket wheel (3). Tighten capscrews to 120.0 to 130.0 ft-lb (162.7 to 176.3 N-m).
8. Clean threads on studs with wire brush and dry cleaning solvent.
9. Apply hydraulic fluid to threads to nuts (8) and studs.
10. Install ten nuts (8) and tighten to 450.0 to 475.0 ft-lb (610.2 to 644.1 N-m).



2-147. MAINTENANCE OF VEHICULAR TRACK SHOE INSTALLATION AND VEHICULAR TRACK SHOE.

This task covers:

- | | |
|----------------------|----------------------------|
| a. Removal | d. Reassembly |
| b. Disassembly | e. Installation/Adjustment |
| c. Inspection/Repair | |

INITIAL SETUP

Tools and Special Tools

Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)

- Torque wrench
 - Wire brush
- Driftpin (item 4 appx G)
Impact wire adapter (item 1, appx G)
Slide puller (item 18, appx G)
Track connecting fixture (2) (item 6, appx G)

Materials/Parts

Corrosion preventive sealant (item 34, appx C)
Self-locking nut (2)
Track shoe pad assembly parts kit

References

TM 9-2350-304-24P-1

Equipment Conditions

2-824 Fender extensions removed
Jacks applied to track
Track tension decreased (TM 9-2350-304-10)

NOTE

- Install one track before removing the other.
- Normally, the right track has 76 track shoes and the left track has 75 shoes. The number of the track shoes may vary due to track wear.

General Safety Instructions

WARNING

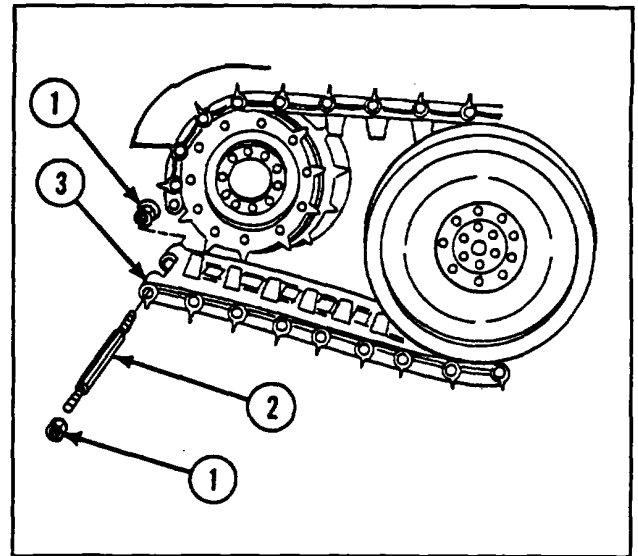
Keep personnel away from vehicle. Personnel injury could occur when track falls away from idler wheel.

2-147. MAINTENANCE OF VEHICULAR TRACK SHOE INSTALLATION AND VEHICULAR TRACK SHOE (CONT).

REMOVAL

NOTE

- It is not necessary to remove track from vehicle to replace shoe pad.
- Remove one track at a time.
- Select area large enough to allow vehicle to be driven or towed at least 5 vehicle lengths.
- Procedures are written for one track, but apply to both tracks.



- 1 Remove two self-locking nuts (1).

WARNING

Keep personnel away from vehicle. Personnel injury could result when track falls away from idler wheel.

NOTE

Step 2 applies to the removal of the track shoe link pin from the top of a roadwheel.

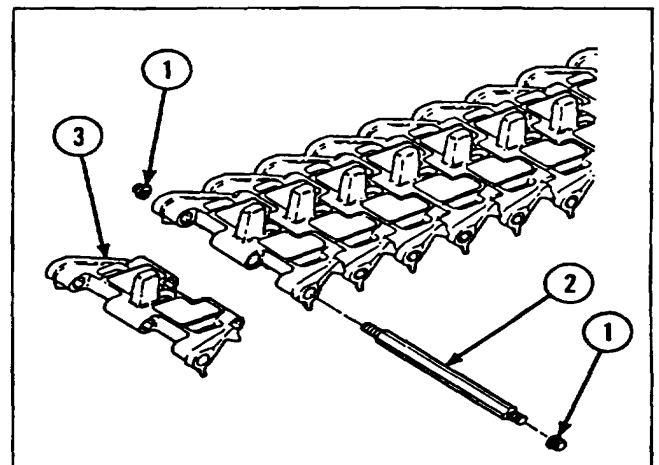
DISASSEMBLY

NOTE

- Procedures are written for one track shoe, but apply to all track shoes.
- Steps 1 and 2 apply to the disassembly of the track shoe when track is removed from vehicle.

- 1 Remove two self-locking nuts (1).
- 2 Using driftpin, drive out track shoe link pin (2) to remove track shoe (3).

- 2 Install Impact wire adapter on rack shoe link pin (2). Attach slide puller to impact wire adapter and remove track shoe link pin (2) from track (3).
- 3 Using driftpin, drive out track shoe link pin (2).
- 4 Slowly back vehicle until track is completely lying on ground.
- 5 Back vehicle off track.



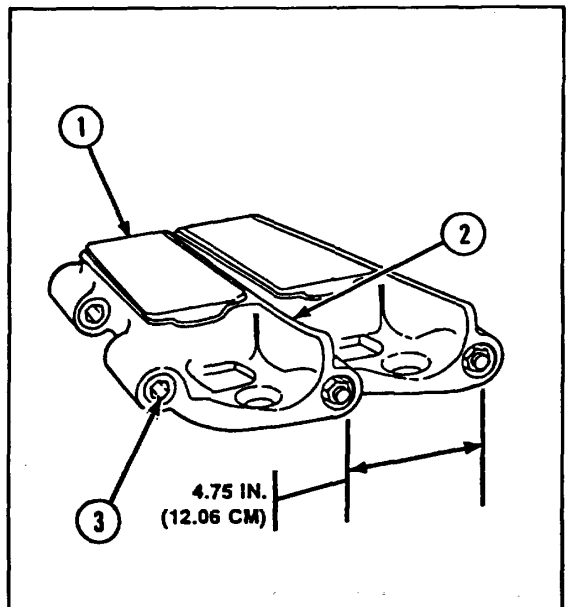
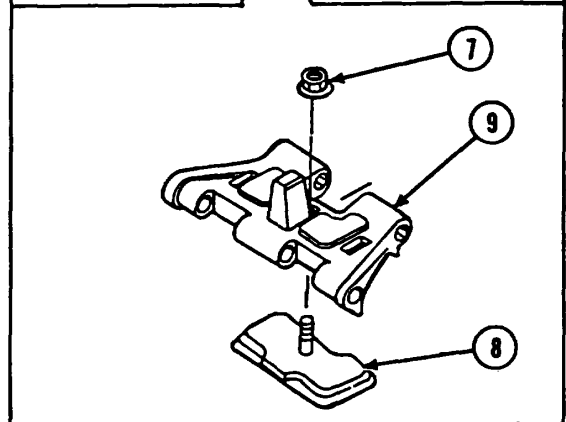
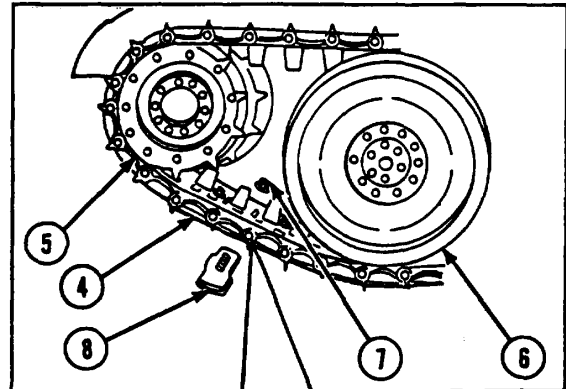
NOTE

Step 3 applies to the removal of the track shoe pad when the track is installed on the vehicle.

- 3 Position track shoe (4) between drive hub sprocket (5) and roadwheel (6).
- 4 If damaged, remove self-locking nut (7) and track shoe pad (8) from shoe assembly (9).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Inspect track shoe pads (1) for wear to or below height of grouser lugs (2).
- 3 Inspect track shoe pads (1) for chunks of rubber gouged out of contact surfaces.
- 4 Inspect bushing (3) to ensure that track pin is centered. Dimension cannot exceed 4.75 in. (12.06 cm).
- 5 Using wire brush, clean and remove old rubber from pad seating area on track shoe.
- 6 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1) which do not meet inspection criteria.



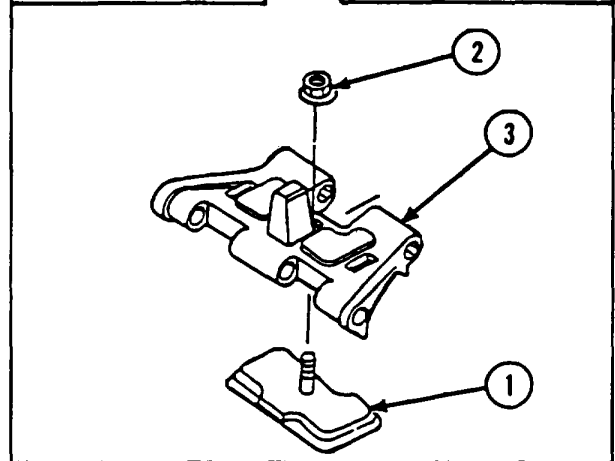
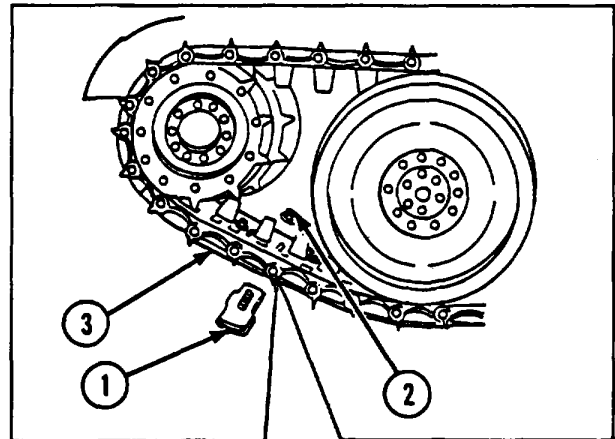
2-147. MAINTENANCE OF VEHICULAR TRACK SHOE INSTALLATION AND VEHICULAR TRACK SHOE (CONT).

REASSEMBLY

NOTE

Procedures are written for one track shoe, but apply to all track shoes.

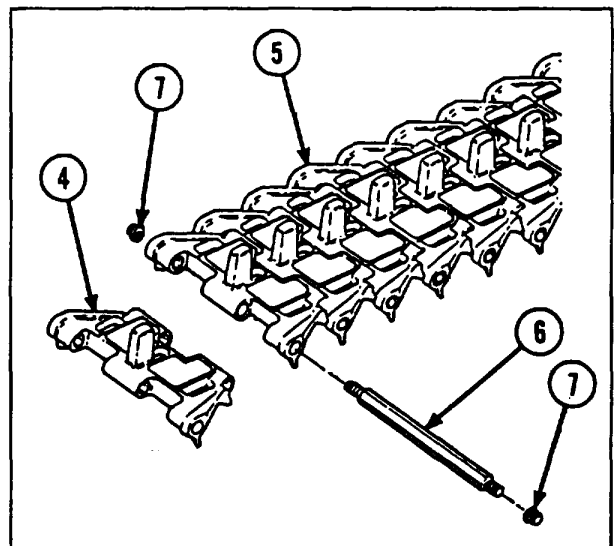
- 1 If removed, Install track shoe pad (1) and new self-locking nut (2) on shoe assemble (3). Tighten self-locking nut to 180 ft-lb (244 N-m).



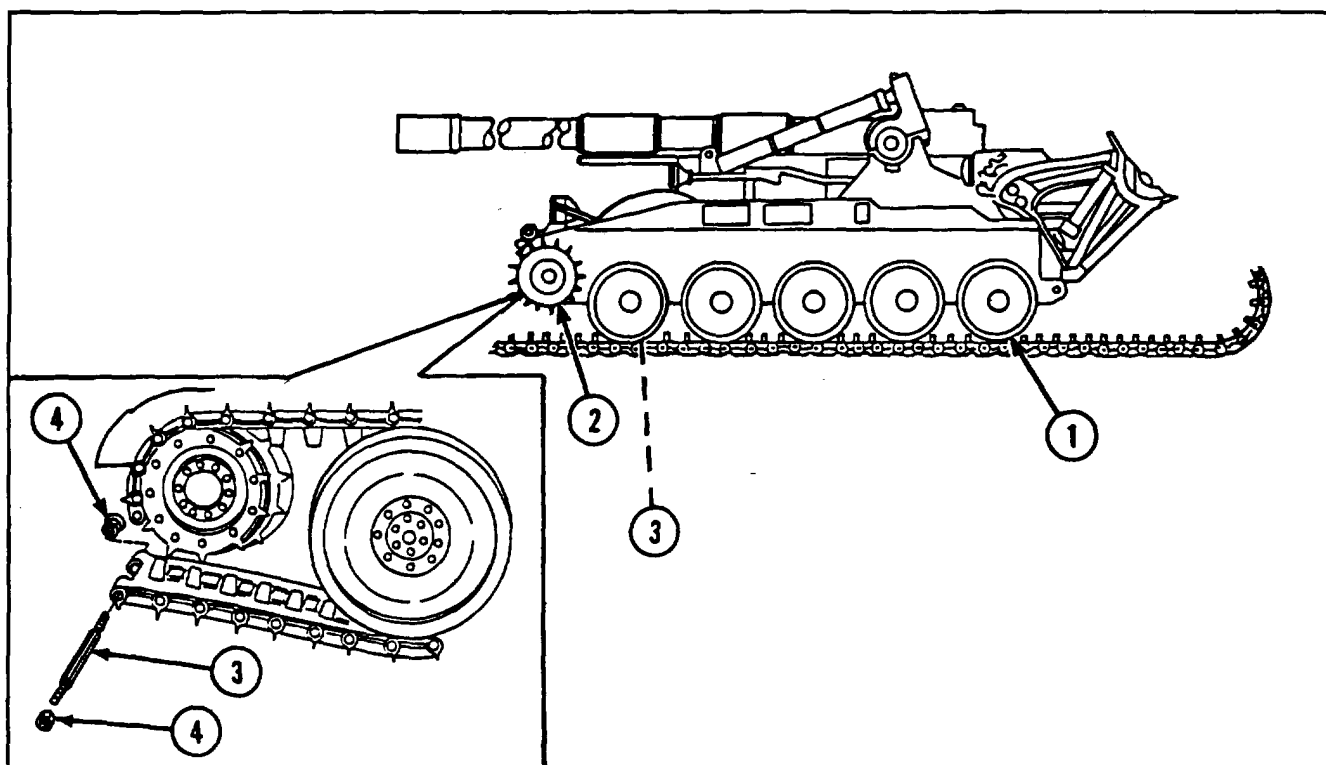
NOTE

Steps 2 and 3 apply to reassembly of track shoe when track is removed from vehicle.

- 2 Position track shoe (4) on track (5). Install track shoe link pin (6) in track shoe (4).
- 3 Install two new self-locking nuts (7) on track shoe link pin (6). Tighten self-locking nuts to 180 to 200 ft-lb (218 to 2, N-m).



INSTALLATION/ADJUSTMENT

**NOTE**

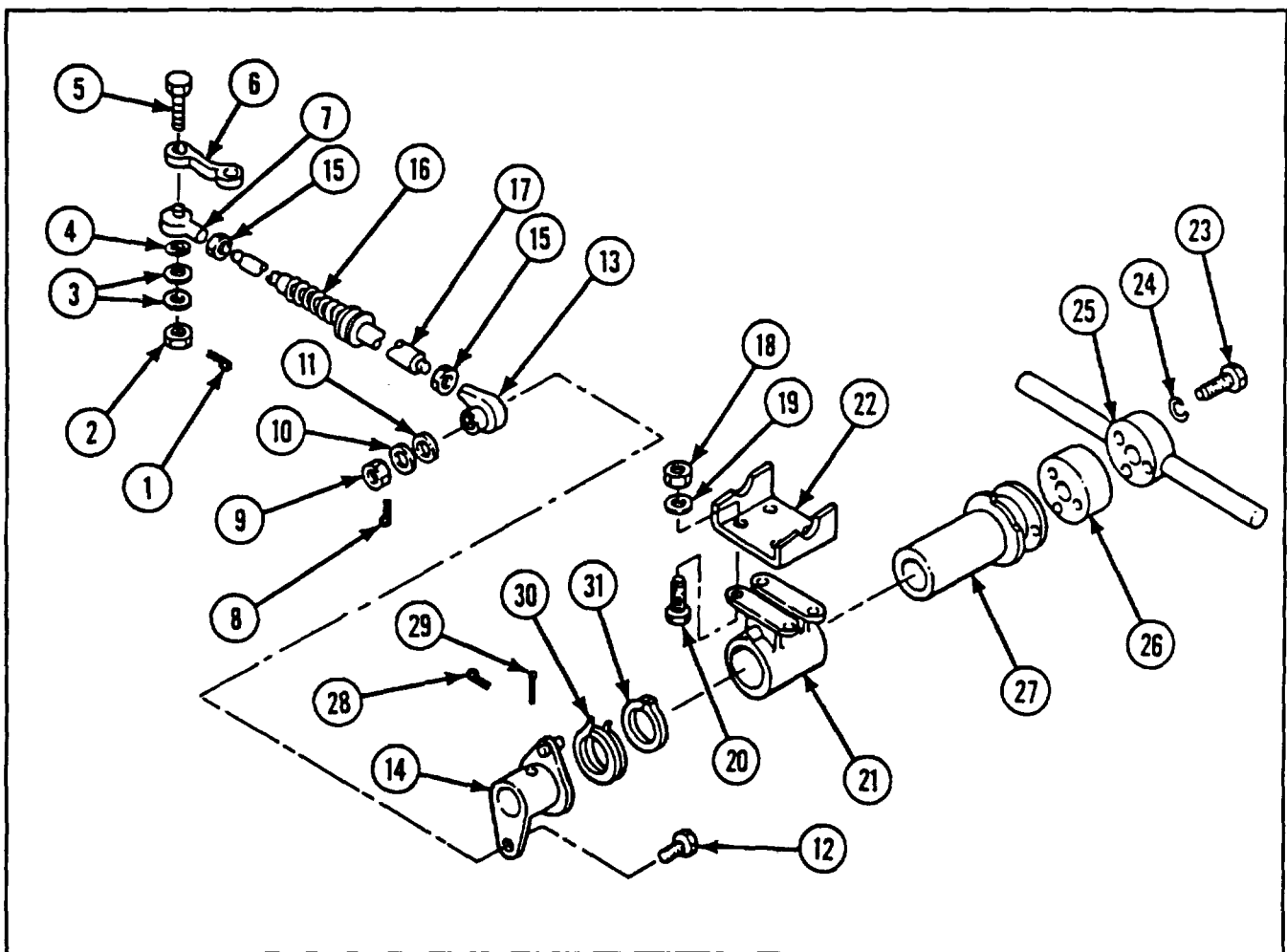
- Install one track before removing the other.

- Procedures are written for one track, but apply to both tracks.

- 1 Lay track in straight line in front of vehicle with track shoe grousers forward and track touching first roadwheel.
- 2 Start engine and slowly drive onto track until 11 track shoes extend past hub of trailing idler wheel (1).
- 3 Stop engine. Leave parking brake off.
- 4 Insert driftpin in last track shoe pin hole.
- 5 Lift end of track over idler wheel (1).
- 6 Start engine and slowly move vehicle forward. Guide track over roadwheels to prevent end from getting caught between roadwheels. When track reaches drive hub sprocket (2), pry or lift it over sprocket.
- 7 Using drive hub sprocket, bring ends of track together.
- 8 Remove driftpin.
- 9 Install two track connecting fixtures.
- 10 Apply corrosion preventive sealant to track shoe link pin (3). Install track shoe link pin (3) and two new selflocking nuts (4). Tighten self-locking nuts to 180 to 200 ft-lb (218 to 272 N-m).

2-148. MAINTENANCE OF STEERING CONTROLS AND LINKAGE, AND STEERING ROD ASSEMBLY.

This task covers:	a. Removal/Disassembly b. Inspection/Repair	c. Reassembly/Installation d. Adjustment
INITIAL SETUP:		
Material/Parts	Equipment Conditions	
Cotter pin Cotter pin (2) Lockwasher (3) Lockwasher (4)	2-893 Transmission deck lid assembly removed	
References		
TM 9-2350-304-24P-1		



REMOVAL/DISASSEMBLY

- 1 Remove cotter pin (1), slotted plain nut (2), two flat washers (3), rod assembly beveled washer (4), steering gear arm (5), and hexagon head capscrew (6) from rod end plain bearing (7).
- 2 Remove cotter pin (8), slotted plain nut (9), flat washer (10), beveled washer (11), and hexagon head capscrew (12) from rod end plain bearing (13) and control linkage pivoting wheel arm (14).
- 3 Remove two rod end plain bearings (7 and 13), two hexagon plain nuts (15), and dust and moist boot (16) from rod (17).

- 4 Remove four hexagon plain nuts (18), four lockwashers (19), four hexagon head capscrews (20), and steering bar assembly bearing unit housing (21) from bracket (22).
- 5 Remove three screws (23), three lockwashers (24), steering bar assembly (25), and steering bar to sleeve spacer (26) from steering control sleeve (27).
- 6 Remove cotter pin (28), straight headed pin (29), control linkage pivoting wheel arm (14), helical spring (30), retaining ring (31), and steering bar assembly bearing unit housing (21) from steering control sleeve (27).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.

- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY/INSTALLATION

- 1 Install steering bar assembly bearing unit housing (21), retaining ring (31), helical spring (30), and control linkage pivoting wheel arm (14) on steering control sleeve (27). Secure with straight headed pin (29) and new cotter pin (28).
- 2 Install steering bar to sleeve spacer (26) and steering bar assembly (25) on steering control sleeve (27). Secure with three new lockwashers (24) and three screws (23).
- 3 Install steering bar assembly bearing unit housing (21) on bracket (22). Secure with four hexagon head capscrews (20), four new lockwashers (19), and four hexagon plain nuts (18).
- 4 Install dust and moist boot (16), two hexagon plain nuts (15), and two rod end plain bearings (13 and 7) on rod (17). TM 9-2350-304-20-1

NOTE

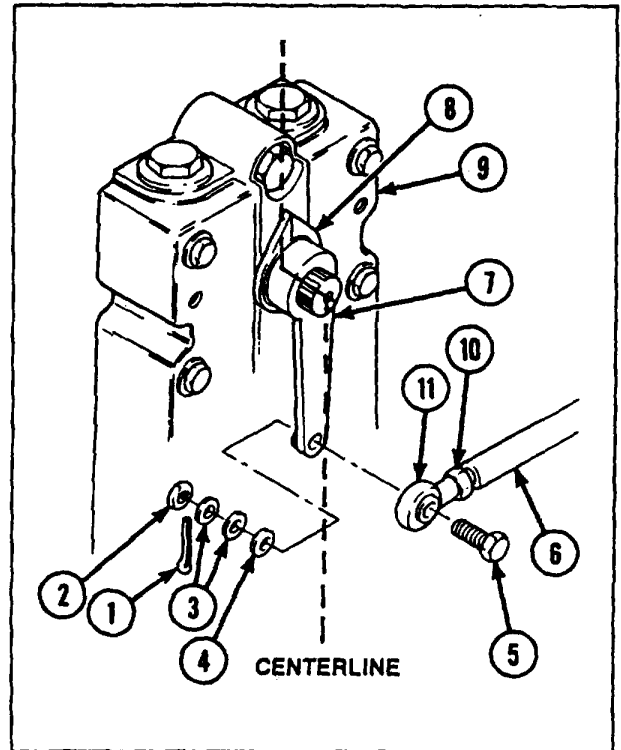
Adjust rod assembly to allow rod to move freely through dust and moist boot from one extreme steering position to the other.

- 5 Install hexagon head capscrew (12) in control linkage pivoting wheel arm (14) and rod end plain bearing (13). Secure with beveled washer (11), flat washer (10), slotted plain nut (9), and new cotter pin (8).
- 6 Install hexagon head capscrew (6) in steering gear arm (5) and rod end plain bearing (7). Secure with rod assembly beveled washer (4), two flat washers (3), slotted plain nut (2), and new cotter pin (1).
- 7 Rotate steering gear arm one spline tooth to left side of vehicle.

2-148. MAINTENANCE OF STEERING CONTROLS AND LINKAGE, AND STEERING ROD ASSEMBLY (CONT).

ADJUSTMENT

- 1 Remove cotter pin (1), slotted plain nut (2), two flat washers (3), beveled washer (4), and hexagon head capscrew (5). Disconnect steering rod assembly (6) from steering gear arm (7).
- 2 Hold steering bar in no steer (horizontal) Make sure that centerline of steering gear arm (7) aligns with pointer (8) on transmission (9).
- 3 Loosen hexagon plain nut (10), and turn rod end plain bearing (11) until holes in rod end plain bearing and steering gear arm (7) are aligned.
- 4 Aline steering rod assembly (6) with steering gear arm (7) and install hexagon head capscrew (5), beveled washer (4), two flat washers (3), slotted plain nut (2), and cotter pin (1).



2-149. MAINTENANCE OF TOWING PINTLE ASSEMBLY.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP:			
<p>Tools and Special Tools</p> <p>Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)</p> <ul style="list-style-type: none"> • Bar <p>Materials/Parts</p> <p>Cotter pin</p> <p>Grease (item 19, appx C)</p> <p>Performed packing</p>	<p>References</p> <p>TM 9-2350-304-10</p> <p>TM 9-2350-304-24P-1</p>		

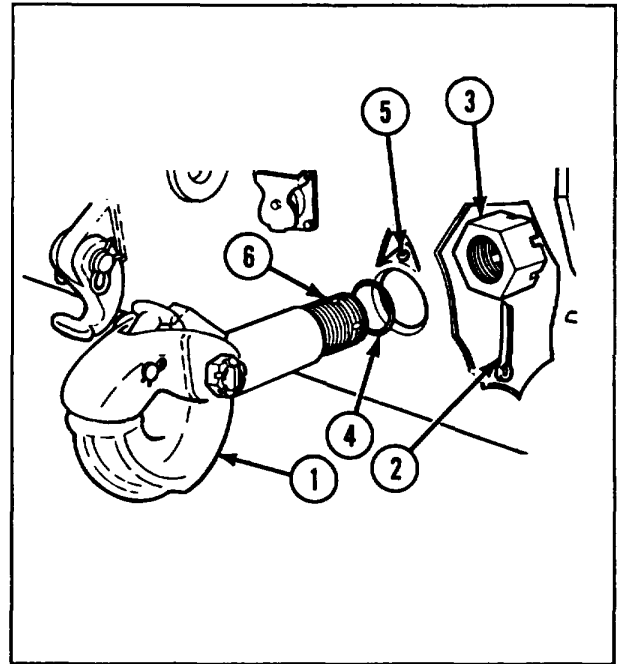
REMOVAL

- 1 Insert bar through towing pintle assembly (1) to keep it from turning.

NOTE

Enter hull through turret well to gain access to slotted nut and cotter pin.

- 2 Remove cotter pin (2) and slotted nut (3) from towing pintle assembly (1) inside hull.
- 3 Remove bar, towing pintle assembly (1), and performed packing (4) from outside of hull.
- 4 If damaged, remove lubrication fitting (5).

**INSPECTION/REPAIR**

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts.

INSTALLATION

- 1 Coat threads of towing pintle shaft (6) and new performed packing (4) with grease.
- 2 Install new performed packing (4) on towing pintle shaft (6).
- 3 Install towing pintle assembly (1) with new performed packing (4), slotted nut (3), and new cotter pin (2).
- 4 Insert bar through towing pintle assembly (1) to prevent it from turning. Tighten slotted nut until performed packing is tight against hull and slotted nut is compressed. Remove bar.
- 5 If removed, install lubrication fitting (5).
- 6 Lubricate towing pintle assembly. Refer to TM 9-2350-304-10.

2-150. MAINTENANCE OF TOW HOOK AND RELATED PARTS.

This task covers:

a. Removal

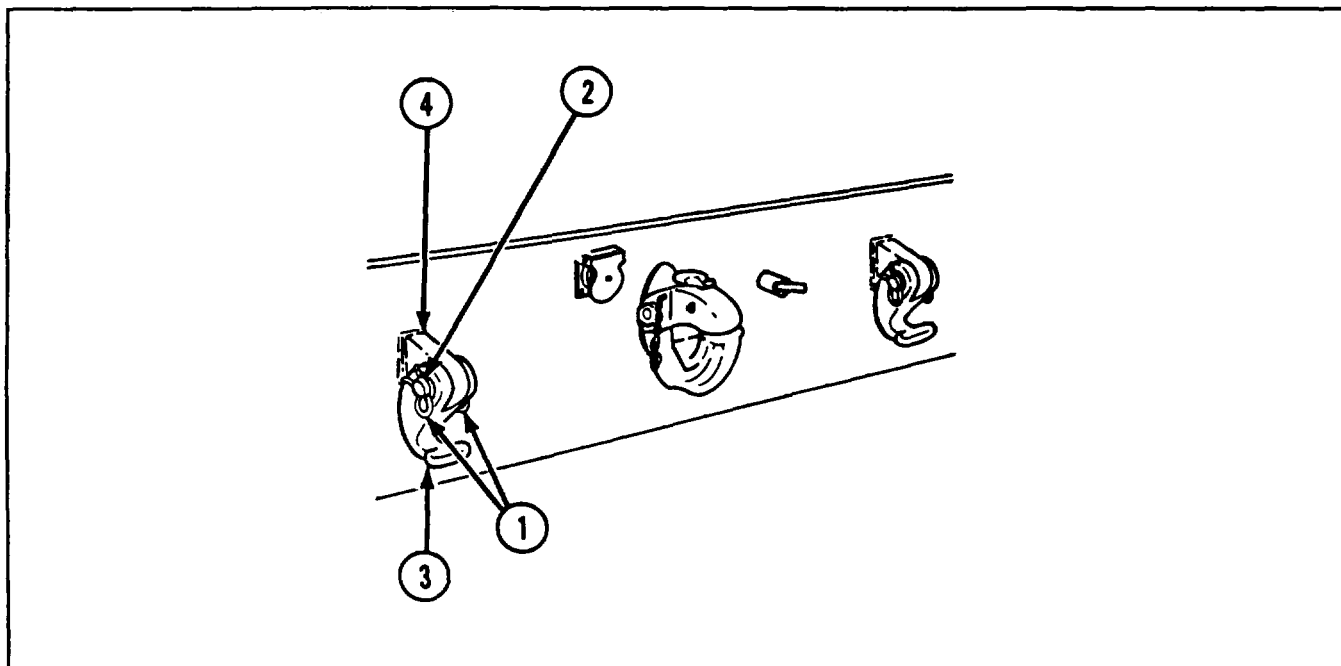
b. Inspection/Repair

c. Installation

INITIAL SETUP:

References

TM 9-2350-304-24P-1

**REMOVAL**

Remove two lock pins (1), headless grooved pin (2), and tow hook (3) from hull bracket (4).

INSPECTION/REPAIR

- 1 Inspect for broken, missing, or damaged parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

Install tow hook (3) and headless grooved pin (2) on hull bracket (4), and secure with two lock pins (1).

2-151. MAINTENANCE OF LOCKOUT CYLINDER AND RELATED PARTS.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP:			
<i>Tools and Special Tools</i>	Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B) Hammer puller Plier wire twister (item 29, appx G) Sling (item 85, appx B)	2-380 Powerplant removed	<p style="text-align: center;">NOTE</p> The following equipment condition applies to the right side number 4 lockout cylinder. Turret traversed to the left (TM 9-2350-30410)
<i>Materials/Parts</i>	Corrosion preventive sealant (item 34, appx C) Cotter pin (32) Hydraulic fluid (item 20, appx C) Lockwire (item 22, appx C) Masking tape (item 43, appx C) Performed packing (2)	<p style="text-align: center;">NOTE</p> The following equipment conditions apply to the left side number 2 lockout cylinder. 2-911 Driver's seat removed 2-624 Batteries removed 2-624 Battery compartment tray removed	
<i>References</i>	TM 9-2350-304-10 TM 9-2350-304-24P-1	<i>General Safety Instructions</i>	
<i>Personnel Required</i>	Two		<p style="text-align: center;">WARNING</p> Removing plugs and compressing cylinder may cause hydraulic fluid to spill. Wipe up any spilled hydraulic fluid.
<i>Equipment Conditions</i>	<p style="text-align: center;">NOTE</p> The following equipment condition applies to the right side number 1 and number 2 lockout cylinders.		

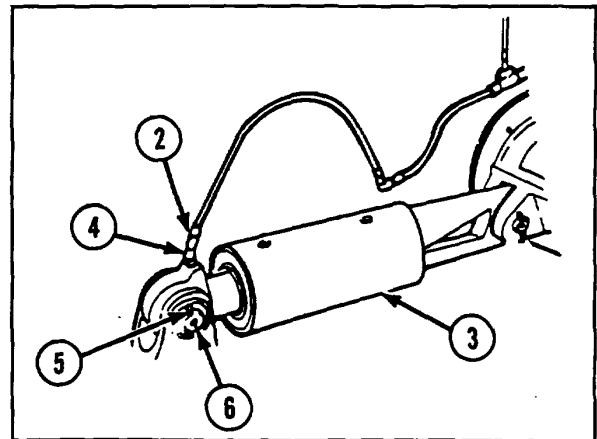
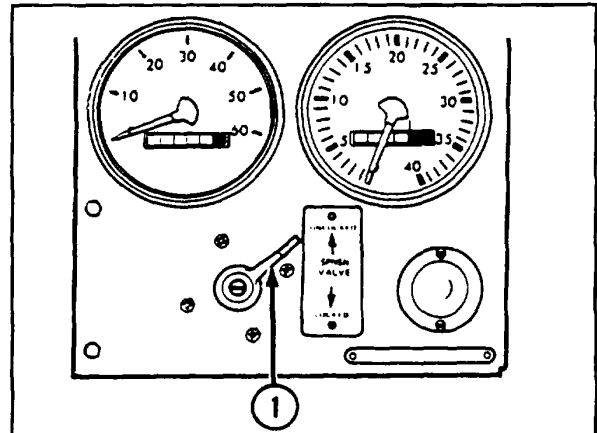
2-151. MAINTENANCE OF LOCKOUT CYLINDER AND RELATED PARTS (CONT).

REMOVAL

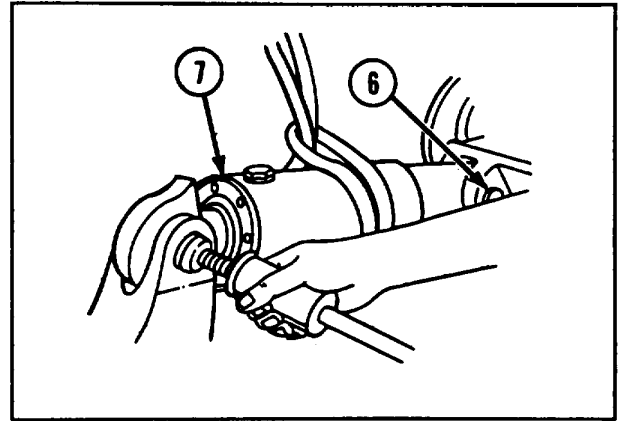
NOTE

- The following procedures are written for one lockout cylinder, but apply to all lockout cylinders.
- For right side number 1 and number 2 lockout cylinders, gain access through right side of power plant compartment.
- For right side number 3 and number 4 lockout cylinders, gain access through bottom right front of turret well.
- For left side number 1 and number 2 lockout cylinders, gain access through bottom rear of driver's compartment.
- For left side number 3 lockout cylinder, gain access through bottom left front of turret well.

- 1 Set SPNSN VALVE handle (1) to UNLOCKED.
- 2 Disconnect hydraulic hose connector (2) from lockout cylinder (3).
- 3 Cover fitting connector (4).
- 4 Cap hydraulic hose connector (2) with masking tape in upright position against hull to prevent oil drainage.
- 5 Remove two cotter pins (5) from each headless straight pin (6).



- 6 Attach sling to support lockout cylinder (3).
- 7 Using hammer puller, remove two headless straight pins (6).
- 8 Using sling, lift hydraulic suspension lockout cylinder assembly (7) from hull.



INSPECTION/REPAIR

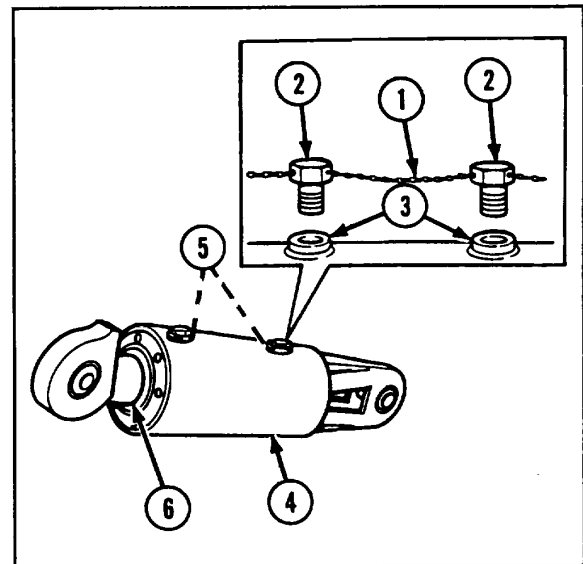
- 1 Inspect for broken, damaged, or missing parts.
- 2 Hydraulic suspension lockout cylinder assembly is a repairable assembly. Notify next higher level of maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

WARNING

Removing plugs and compressing the cylinder may cause hydraulic fluid to spill. Wipe up any spilled hydraulic fluid.

- 1 Remove lockwire (1), two plugs (2), and two performed packings (3).
- 2 Fully compress hydraulic suspension lockout cylinder assembly (4).
- 3 Fill hydraulic suspension lockout cylinder assembly (4) through two ports (5) with hydraulic fluid.
- 4 Extend and retract cylinder rod (6) slowly
- 5 Add hydraulic fluid as required to completely fill hydraulic suspension lockout cylinder assembly (4).
- 6 Install two new performed packings (3), two plugs (2), and new lockwire (1).



2-151. MAINTENANCE OF LOCKOUT CYLINDER AND RELATED PARTS (CONT).

INSTALLATION (CONT)

- 7 Using sling, lower hydraulic suspension lockout cylinder assembly (4) into hull.
- 8 Install hydraulic suspension lockout cylinder assembly (4) into remote control lever (7) and hull mounting arm (8).

NOTE

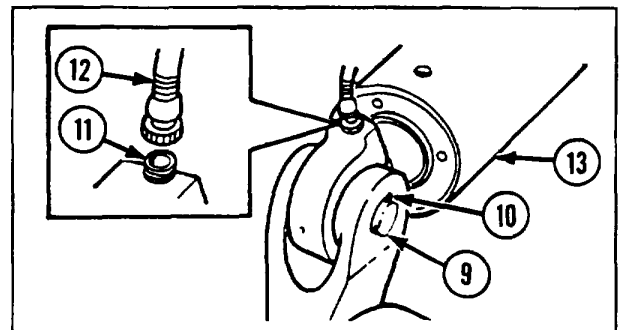
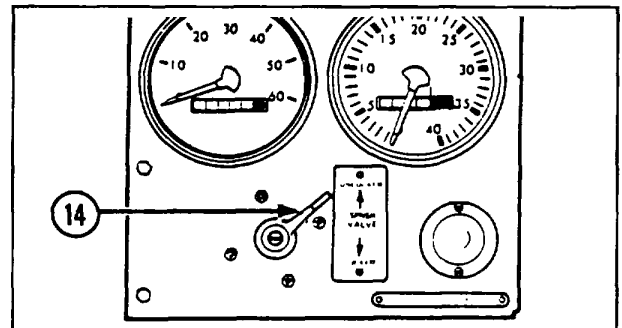
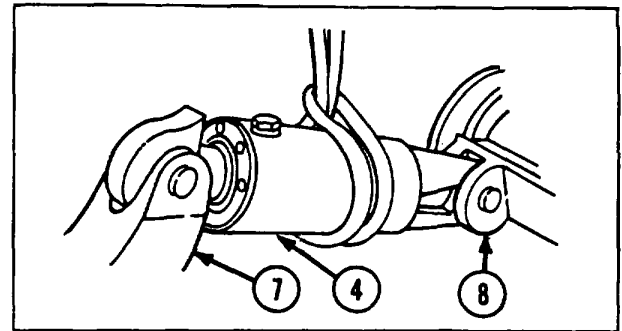
Apply corrosion preventive sealant to headless straight pins before installation.

- 9 Insert two headless straight pins (9).
- 10 Install four new cotter pins (10) in two headless straight pins (9).
- 11 Fully retract cylinder rod (6).
- 12 Remove cover from fitting connector ('
- 13 Connect hydraulic hose connector (12: fitting connector (11) on lockout cylinder (13). Do not tighten.
- 14 Start engine, and set HYD/PUMP/PTO CLUTCH switch ON.
- 15 Cycle valve handle (14) several times.
- 16 Tighten hydraulic hose connector (12).

NOTE

After installing right side number 4 lockout cylinder, the turret must be traversed to travel position.

- 17 Traverse turret to travel position. Refer TM 9-2350-304-10.
- 18 Check hydraulic fluid level. Refer to T 9-2350-304-10.
- 19 Start engine. Cycle valve handle (14) several times.



- 20 Check lines and fittings for leaks. If leaks exist, ensure all parts have been installed correctly. If leaks still exist, check for defective parts.

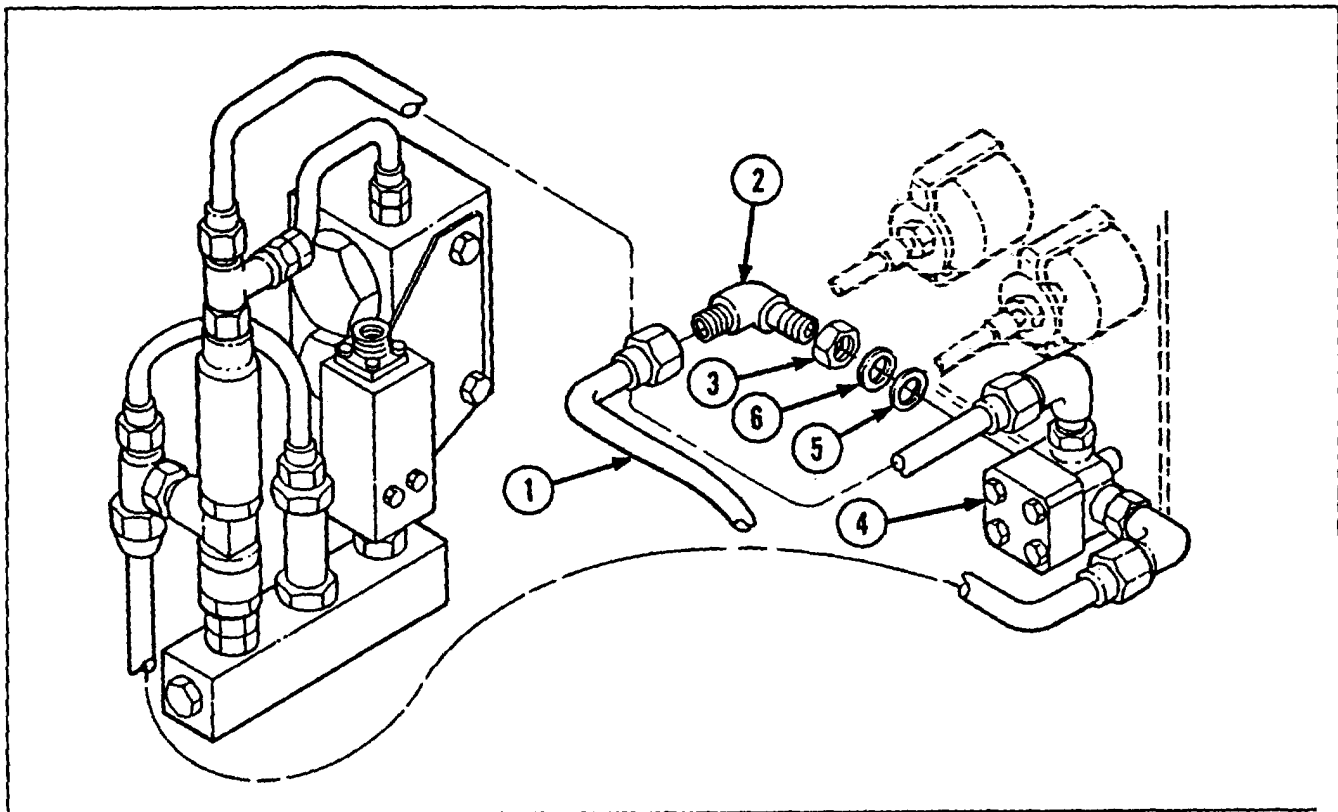
- 21 Disengage clutch.

- 22 Stop engine.

2-152. MAINTENANCE OF SUSPENSION LOCKOUT SYSTEM CONTROL VALVE AND ASSOCIATED PARTS.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP:			
Materials/Parts Lockwasher (4)		References TM 9-2350-304-24P-1	
Performed packing (3) Performed packing (11) Self-locking nut (2) Tube fitting locknut Tube fitting locknut (6)		Equipment Conditions 2-755 Hydraulic pressure relieved	

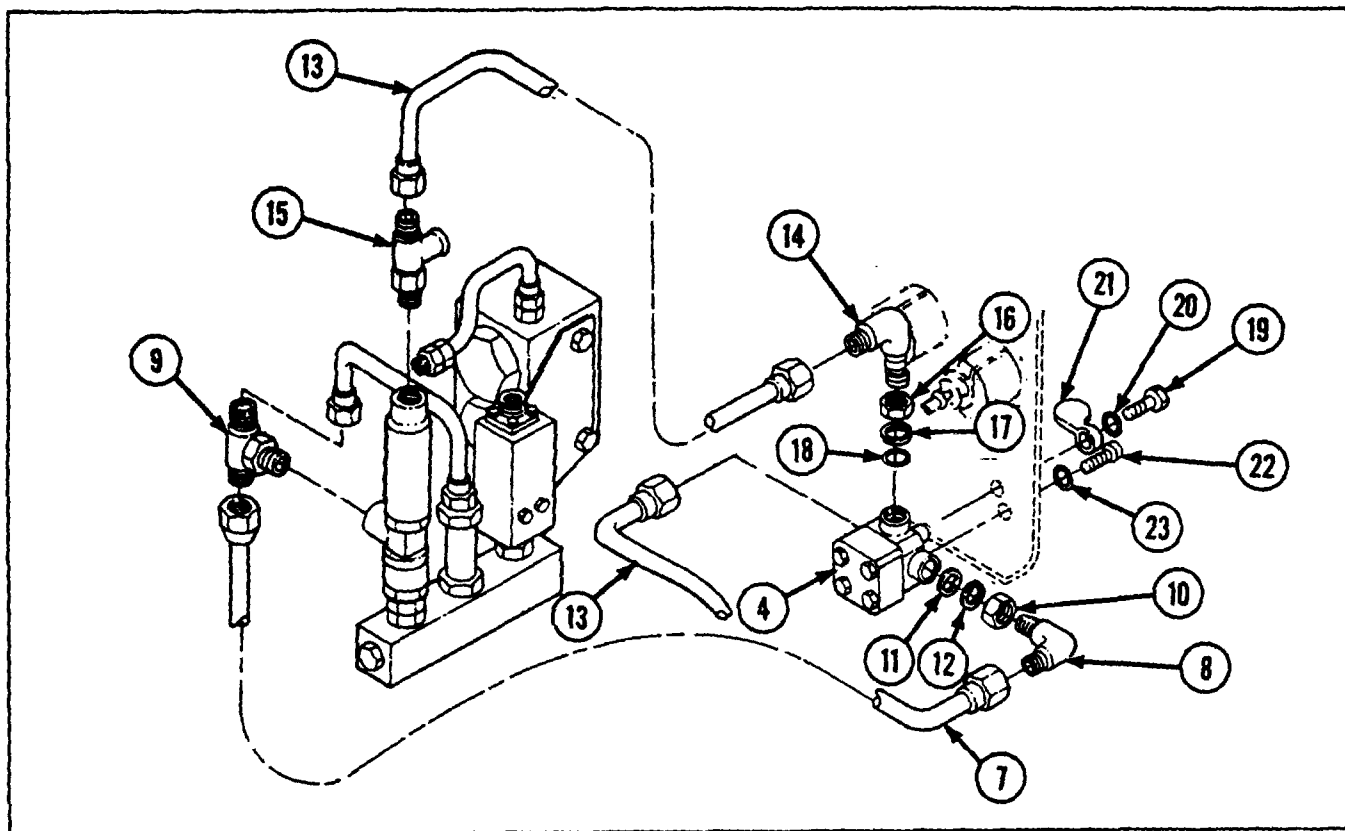
REMOVAL



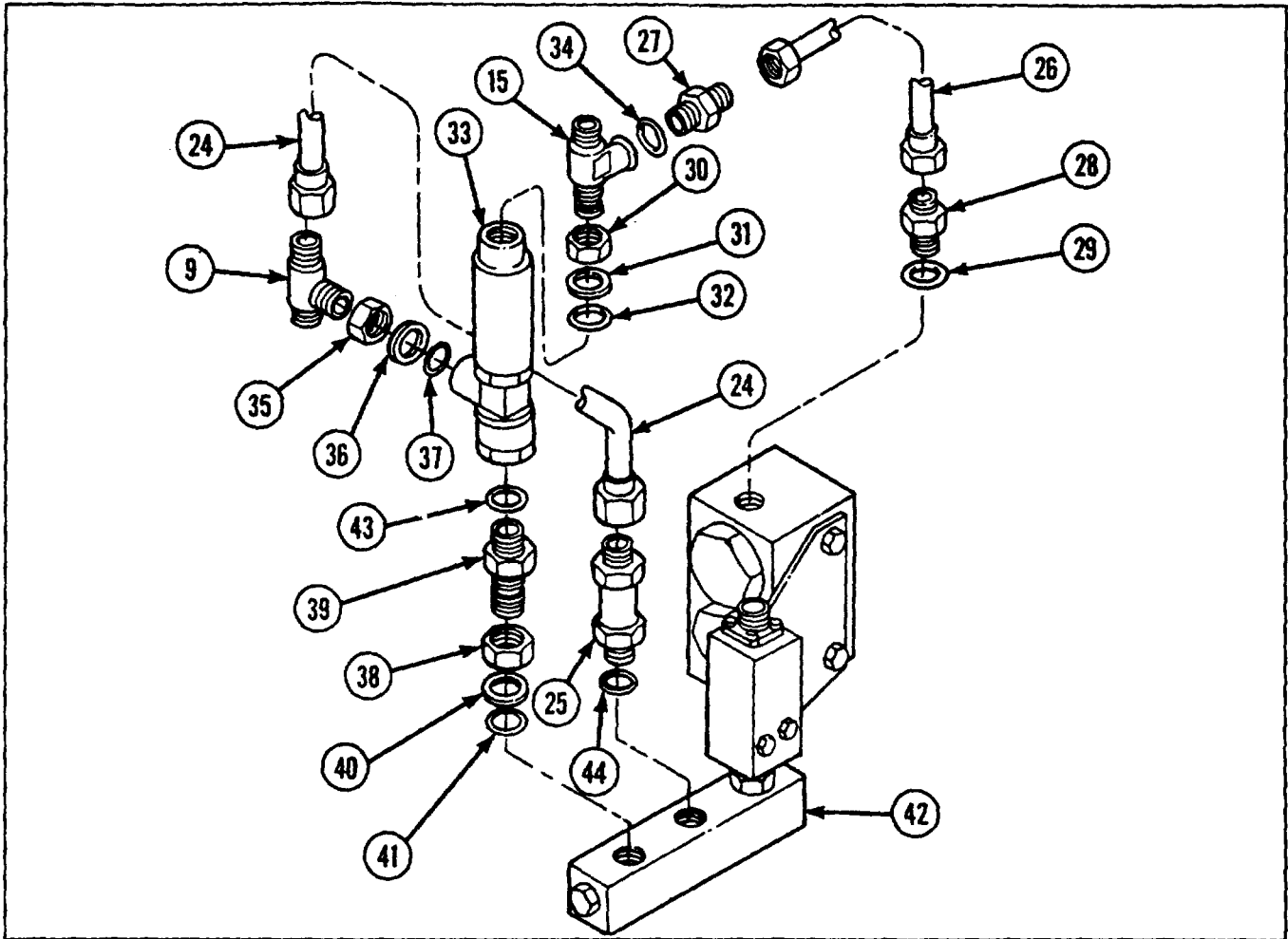
- | | |
|---|---|
| <p>1 Disconnect control line to pressure line reducer tube assembly (1) from tube elbow</p> <p>2 Loosen tube fitting locknut (3) and remove tube elbow (2) from selector control plug</p> | <p>valve (4). Remove packing retainer (5) and performed packing (6).</p> <p>3 Remove tube fitting locknut (3) from tube elbow (2).</p> |
|---|---|

2-152. MAINTENANCE OF SUSPENSION LOCKOUT SYSTEM CONTROL VALVE AND ASSOCIATED PARTS (CONT).

REMOVAL (CONT)



- 4 Disconnect control valve tee metal tube assembly (7) from tube elbow (8) and tube tee (9). Remove control valve to check valve tee metal tube assembly (7).
- 5 Loosen tube fitting locknut (10) and remove tube elbow (8) from selector control plug valve (4). Remove packing retainer (11) and performed packing (12).
- 6 Remove tube fitting locknut (10) from tube elbow (8).
- 7 Disconnect manifold to elbow metal tube assembly (13) from tube elbow (14) and tube to boss tee (15). Remove manifold to elbow metal tube assembly (13).
- 8 Loosen tube fitting locknut (16) and remove tube elbow (14) from selector control plug valve (4). Remove packing retainer (17) and performed packing (18) from selector control plug valve (4).
- 9 Remove tube fitting locknut (16) from tube elbow (14).
- 10 Remove machine screw (19), lockwasher (20), and door handle (21) from panel and selector control plug valve (4).
- 11 Remove four machine screws (22) and four lockwashers (23) from panel and selector control plug valve (4).
- 12 Remove selector control plug valve (4).



13 Disconnect manifold check valve metal tube assembly (24) from tube tee (9) and check valve (25). Remove manifold chemical, valve metal tube assembly (24).

14 Disconnect metal tube assembly (26) from tube nipple (27) and tube reducer (28). Remove performed packing (29) and metal tube assembly (26).

15 Loosen tube fitting locknut (30) and remove tube to boss tee (15), packing retainer (31), and performed packing (32) from pressure valve (33).

16 Remove tube nipple (27) and performed packing (34) from tube to boss tee (15).

17 Loosen tube fitting locknut (35) and remove tube tee (9), packing retainer (36), and performed packing (37) from pressure valve (33).

18 Loosen tube fitting locknut (38) on tube nipple (39). Remove tube nipple (39), packing retainer (40), performed packing (41), and pressure valve (33) from lockout cylinder control manifold (42).

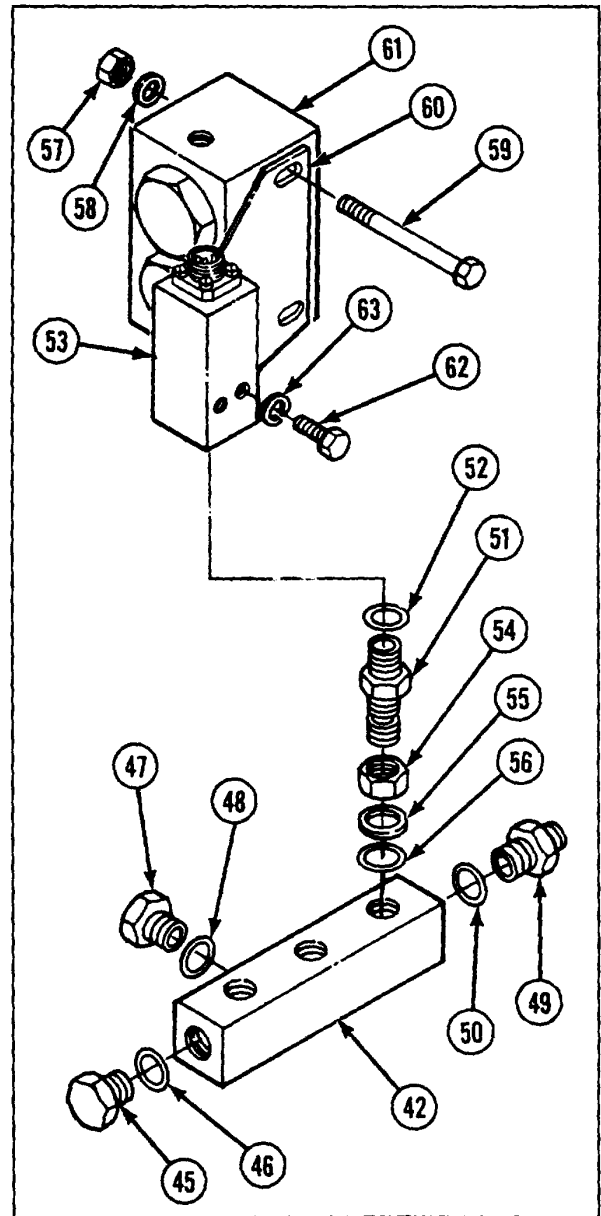
19 Remove tube nipple (39) and performed packing (43) from pressure valve (33).

20 Remove check valve (25) and performed packing (44) from lockout cylinder control manifold (42).

2-152. MAINTENANCE OF SUSPENSION LOCKOUT CONTROL SYSTEM VALVE AND ASSOCIATED PARTS (CONT).

REMOVAL (CONT)

- 21 Remove machine thread plug (45) and performed packing (46) from lockout cylinder control manifold (42).
- 22 Remove machine thread plug (47) and performed packing (48) from lockout cylinder control manifold (42).
- 23 Remove tube reducer (49) and performed packing (50) from lockout cylinder control manifold (42).
- 24 Remove tube nipple (51) and performed packing (52) from pressure switch (53).
- 25 Loosen tube fitting locknut (54) and remove tube nipple (51), flat washer (55) and performed packing (56) from lockout cylinder control manifold (42).
- 26 Remove two self-locking nuts (57), two flat washers (58), and two screws (59). Remove mounting bracket (60) and pressure switch (53) from check valve manifold (61).
- 27 Remove hexagon head capscrew (62) and lockwasher (63) from pressure switch (53).

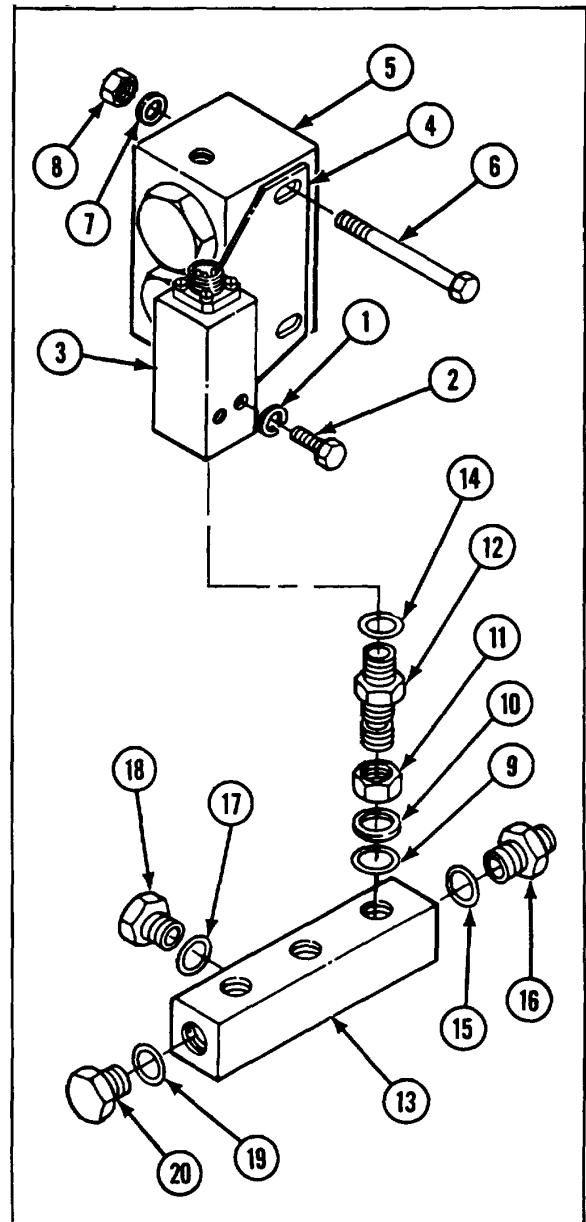


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

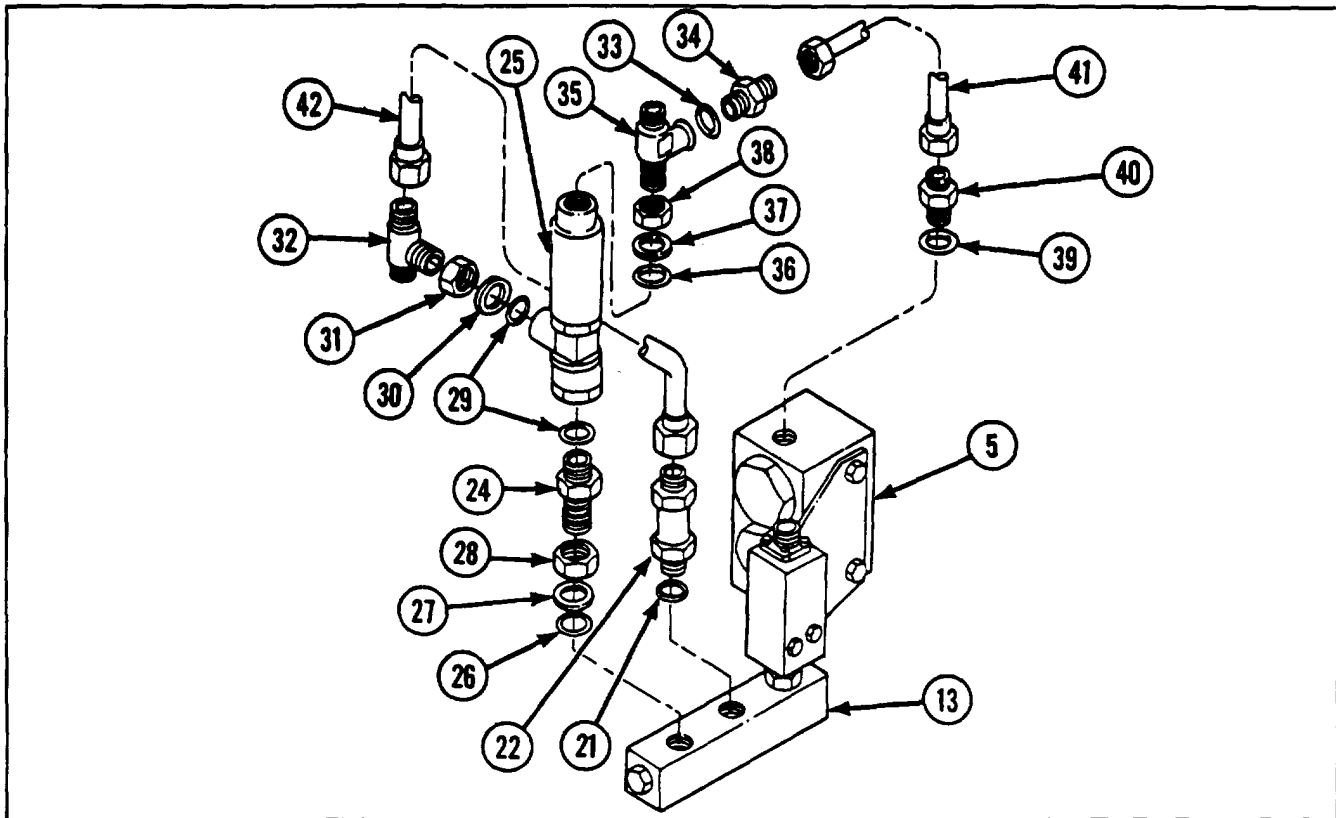
INSTALLATION

- 1 Install new lockwasher (1) and hexagon head capscrew (2) in pressure switch (3).
- 2 Position pressure switch (3) and mounting bracket (4) on check valve manifold (5). Install two screws (6), two flat washers and two new self-locking nuts (8).
- 3 Install new performed packing (9), flat washer (10), new tube fitting locknut (11) and tube nipple (12) in lockout cylinder control manifold (13). Tighten tube fitting locknut (11).
- 4 Install new performed packing (14) and tube nipple (12) and assembled parts in pressure switch (3).
- 5 Install new performed packing (15) and tube reducer (16) in lockout cylinder control manifold (13).
- 6 Install new performed packing (17) and machine thread plug (18) in lockout cylinder control manifold (13).
- 7 Install new performed packing (19) and plug (20) in lockout cylinder control manifold (13).

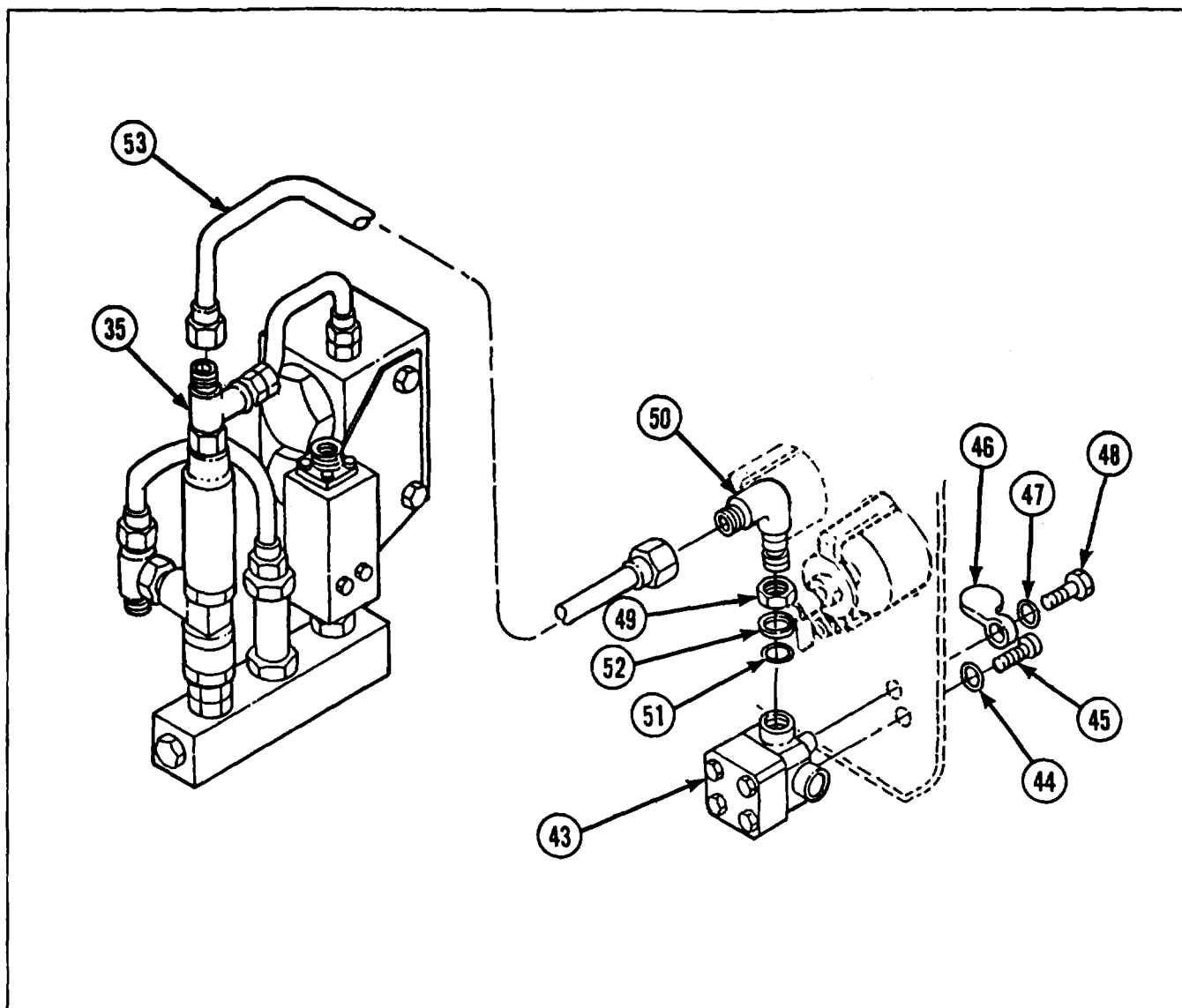


2-152. MAINTENANCE OF SUSPENSION LOCKOUT SYSTEM CONTROL VALVE AND ASSOCIATED PARTS (CONT).

INSTALLATION (CONT).



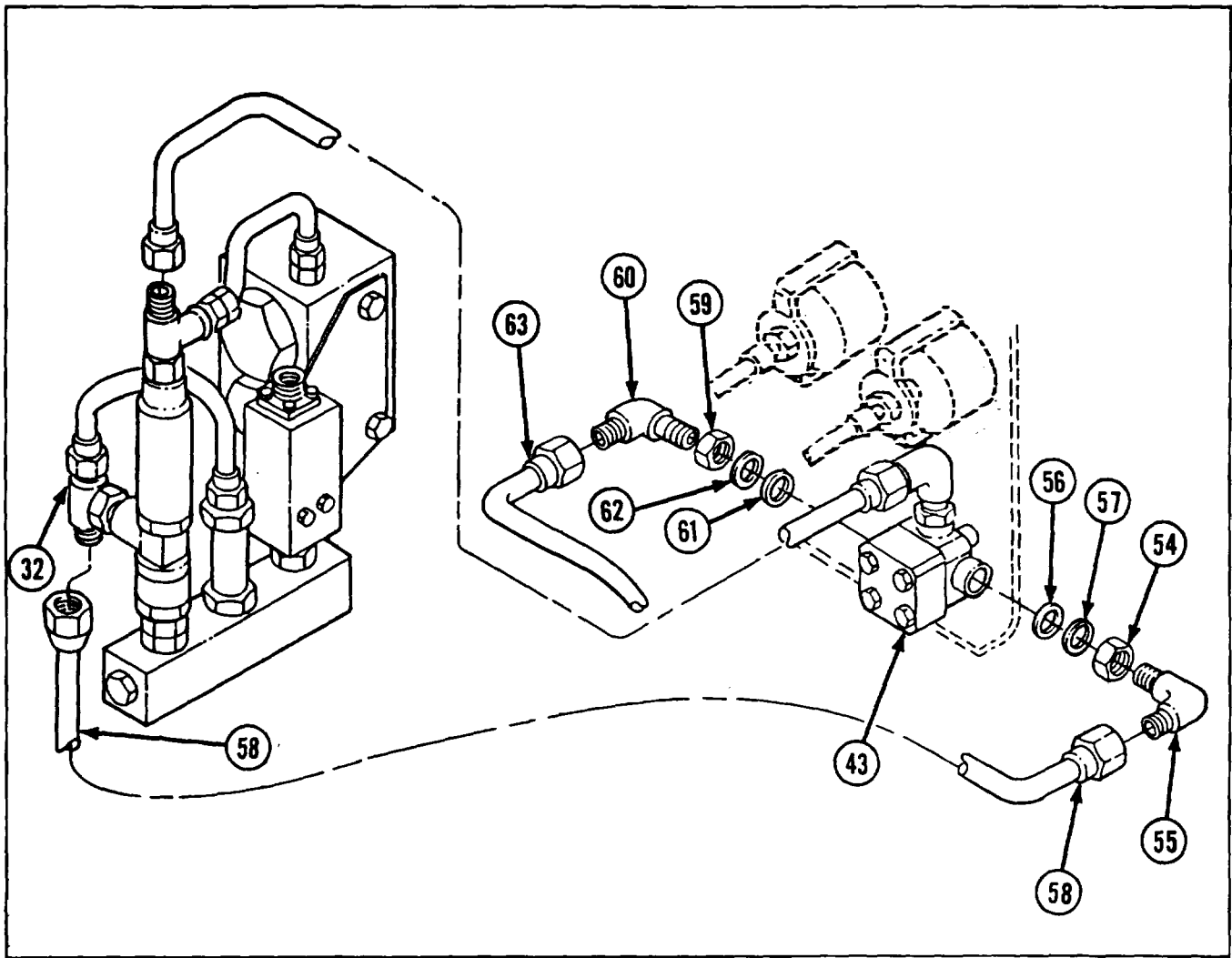
- | | |
|--|---|
| <p>8 check valve (22) in lockout cylinder control manifold (13).</p> <p>9 Install new performed packing (23) and tube nipple (24) in pressure valve (25).</p> <p>10 Install new performed packing (26), packing retainer (27), new tube fitting locknut (28), and tube nipple (24) in lockout cylinder control manifold (13), and tighten tube fitting locknut (28).</p> <p>11 Install new performed packing (29), packing retainer (30), new tube fitting locknut (31), and tube tee (32) in pressure valve (25). Tighten tube fitting locknut (31).</p> <p>12 Install new performed packing (33) and tube nipple (34) in tube to boss tee (35).</p> | <p>13 Install new performed packing (36) packing retainer (37), new tube fitting locknut (38), and tube to boss tee (35) in pressure valve (25) and tighten new tube fitting locknut (38).</p> <p>14 Install new performed packing (39) and tube reducer (40) in check valve manifold (5).</p> <p>15 Install and connect manifold to valve metal tube assembly (41) to tube reducer (40) and tube nipple (34).</p> <p>16 Install and connect manifold check valve metal tube assembly (42) to check valve (22) and tube tee (32).</p> |
|--|---|



- 17 Install selector control plug valve (43).
- 18 Install four new lockwashers (44) and four machine screws (45) through panel and selector control plug valve (43).
- 19 Install door handle (46), new lockwasher (47), and machine screw (48) to panel selector control plug valve (43).
- 20 Install new tube fitting locknut (49) on tube elbow (50).
- 21 Install new preformed packing (51) and packing retainer (52) in selector control plug valve (43). Install tube elbow (50) in selector control plug valve (43) and tighten tube fitting locknut (49).
- 22 Install and connect manifold to elbow metal tube assembly (53) to tube to boss tee (35) and tube elbow (50).

2-152. MAINTENANCE OF SUSPENSION LOCKOUT SYSTEM CONTROL VALVE AND ASSOCIATED PARTS (CONT.).

INSTALLATION (CONT)



23 Install new tube fitting locknut (54) on tube elbow (55).

24 Install new preformed packing (56) and packing retainer (57) in selector control plug valve (43). Install tube elbow (55) in selector control plug valve (43), and tighten tube fitting locknut (54).

25 Install and connect control valve to check valve tee metal tube assembly (58) to tube tee (32) and tube elbow (55).

26 Install new tube fitting locknut (59) on tube elbow (60).

27 Install new preformed packing (61) and packing retainer (62) in selector control plug valve (43). Install tube elbow (60) in selector control plug valve (43), and tighten tube fitting locknut (59).

28 Install and connect control line to pressure line reducer metal tube assembly (63) to tube elbow (60).

2-153. MAINTENANCE OF SUSPENSION SYSTEM HYDRAULIC LINES AND FITTINGS AND ATTACHING HARDWARE (RIGHT SIDE).

This task covers: a. *Removal* b. *Inspection/Repair* c. *Installation*

INITIAL SETUP*Materials/Parts*

Lockwasher (32)

References

TM 9-2350-304-10

TM 9-2350-304-24P-1

Equipment Conditions

Turret traversed to left
(TM 9-2350-304-10)

WARNING

Before relieving hydraulic pressure, ensure travel lock is engaged and vehicle is on as level ground as possible to keep cannon from sliding out of battery.

2-755 Hydraulic pressure relieved

2-153. MAINTENANCE OF SUSPENSION SYSTEM HYDRAULIC LINES AND FITTINGS AND ATTACHING HARDWARE (RIGHT SIDE) (CONT.).

REMOVAL

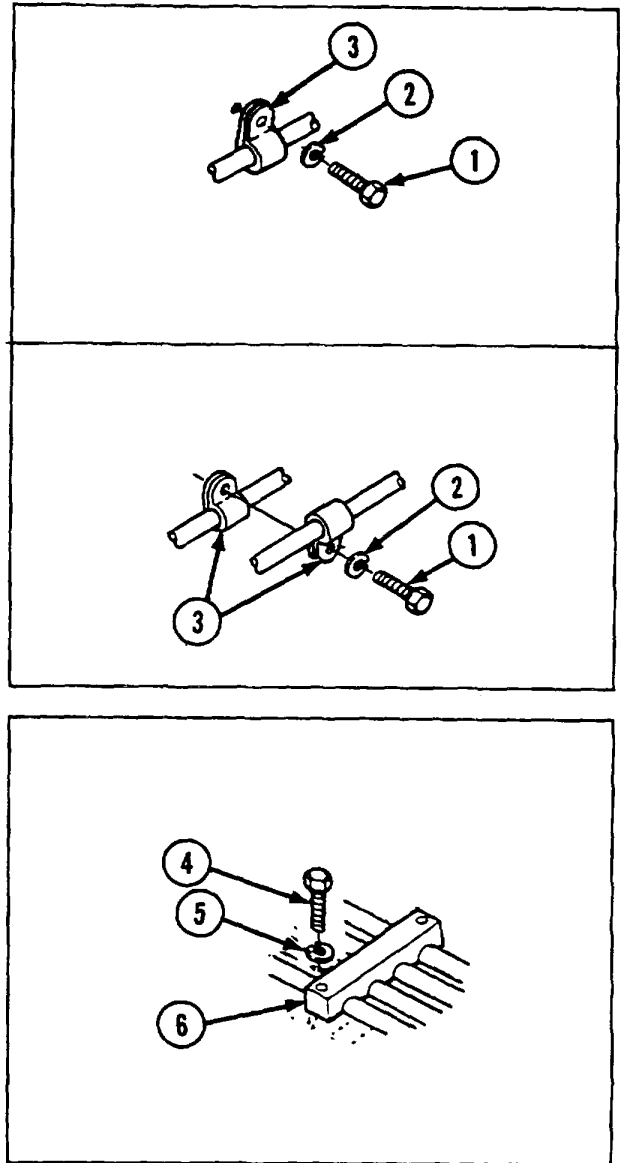
- 1 Inspect hydraulic lines and hoses for leaks. Refer to the PMCS/lubrication table, page 2-12, for leak definition.

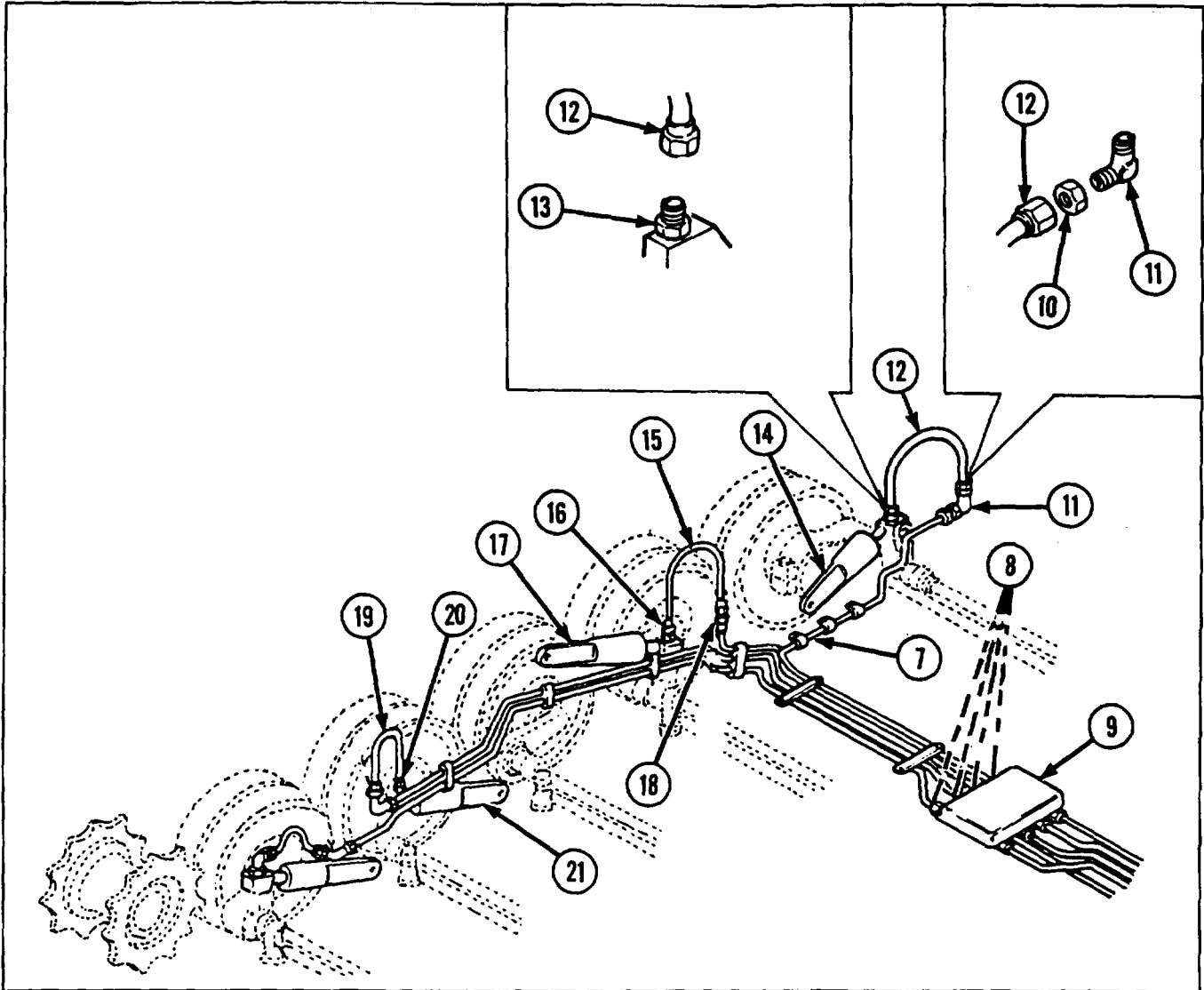
NOTE

Before removing damaged hydraulic line, remove attaching hardware. Steps 2 and 3 apply to the attaching hardware for the right side suspension system hydraulic lines.

- 2 Remove hexagon head capscrew (1) and lockwasher (2) from one loop clamp (3) c two loop clamps (3).

- 3 Remove two hexagon head capscrews (4 two lockwashers (5), and hydraulic line clamp (6) from hydraulic lines.





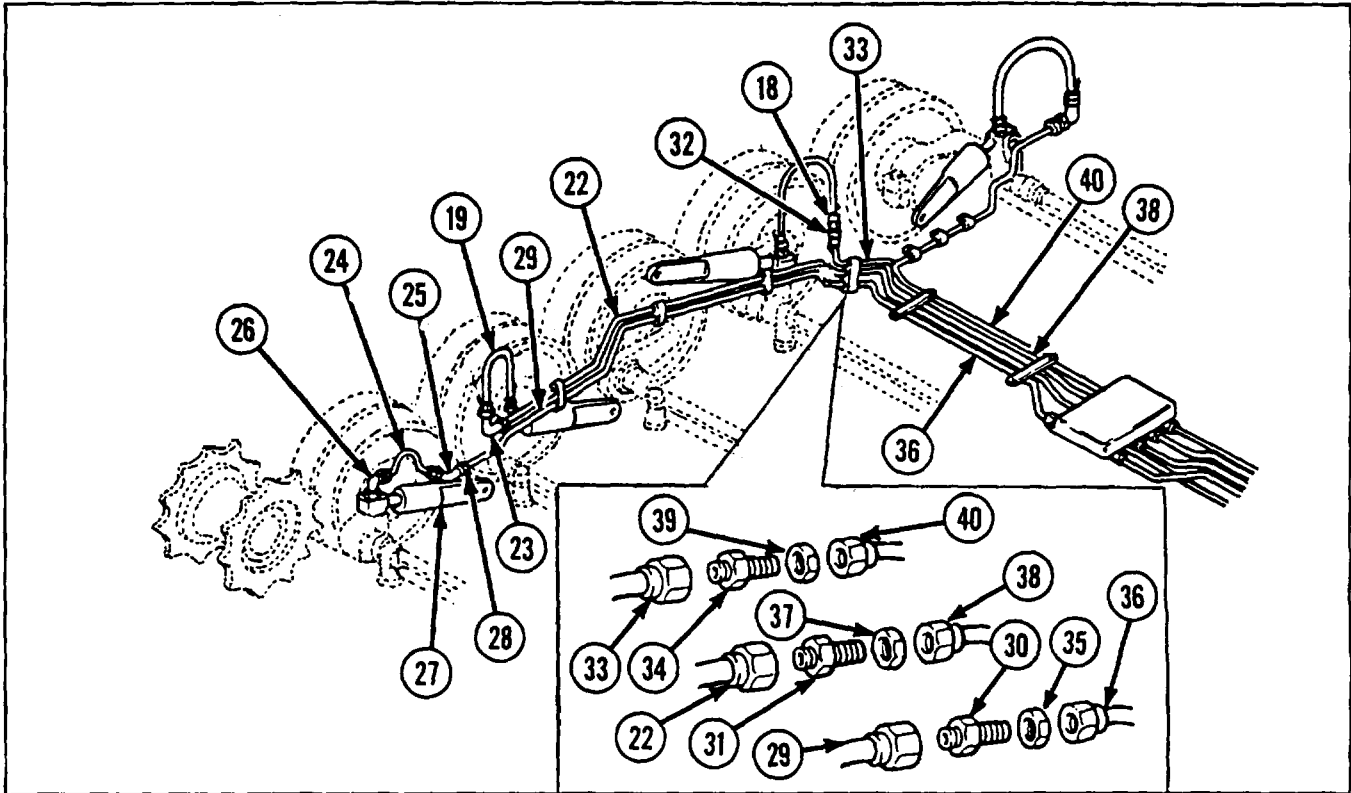
NOTE

Step 4 is written for one metal tube assembly but applies to all four metal tube assemblies connected to the lockout isolation manifold.

- 4 Loosen manifold to elbow right idler wheel metal tube assembly (7) and remove from tube nipple (8) on lockout isolation manifold (9).
- 5 Loosen tube fitting locknut (10) at tube elbow (11), and remove manifold to elbow right idler wheel metal tube assembly (7).
- 6 Loosen and remove lockout cylinder hose assembly (12) from tube nipple (13) on idler wheel lockout cylinder (14) and tube elbow (11).
- 7 Loosen and remove lockout cylinder hose assembly (15) from tube nipple (16) on number 3 lockout cylinder (17) and tube nipple (18).
- 8 Loosen and remove lockout cylinder hose assembly (19) from tube nipple (20) on number 2 lockout cylinder (21).

2-153. MAINTENANCE OF SUSPENSION SYSTEM HYDRAULIC LINES AND FITTINGS AND ATTACHING HARDWARE (RIGHT SIDE).

REMOVAL (CONT)

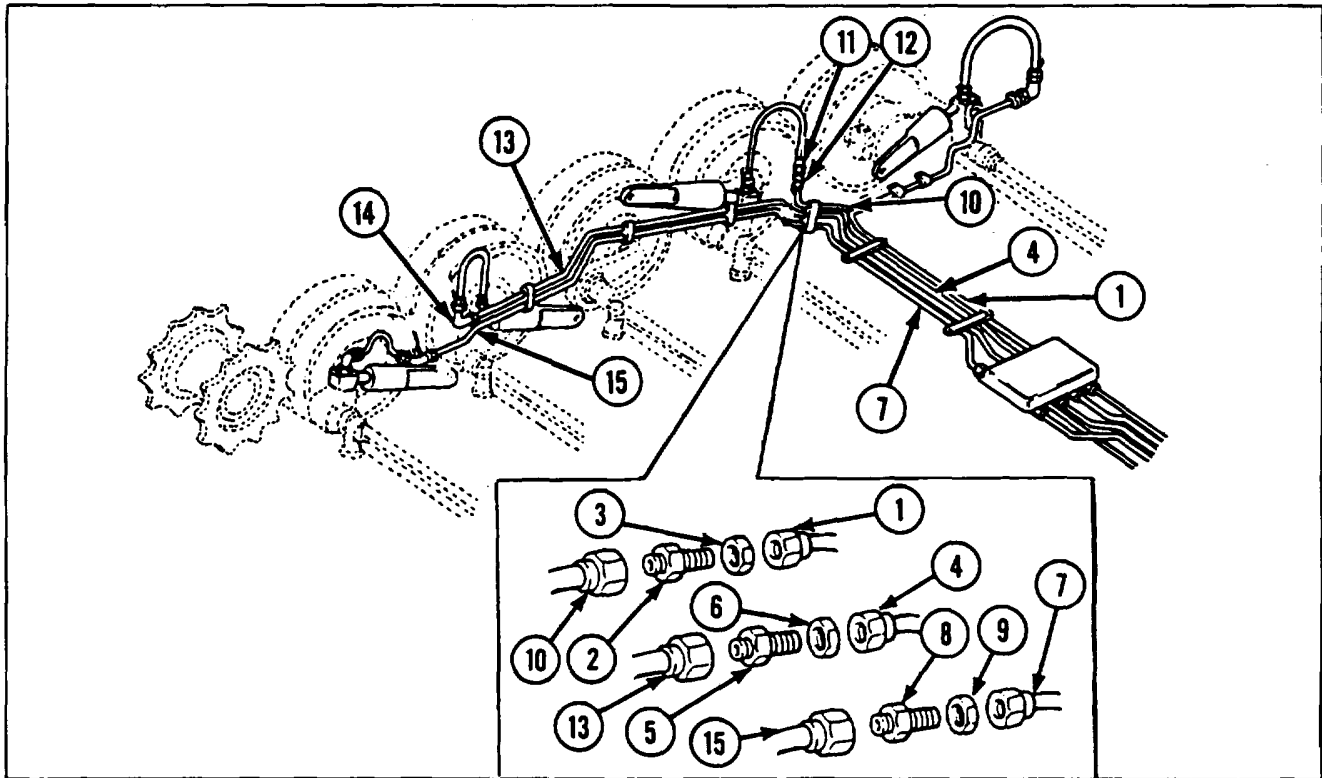


- | | |
|--|---|
| <p>9 Disconnect lockout cylinder hose assembly (19) from union to elbow number 2 lockout cylinder metal tube assembly (22) at tube elbow (23).</p> <p>10 Disconnect lockout cylinder hose assembly (24) from tube elbow (25) and tube elbow (26) on number 1 lockout cylinder (27).</p> <p>11 Loosen tube fitting locknut (28) and disconnect union to elbow number 1 lockout cylinder metal tube assembly (29) from tube elbow (25) and tube nipple (30).</p> <p>12 Disconnect union to elbow number 2 lockout cylinder metal tube assembly (22) from tube elbow (23) and tube nipple (31).</p> | <p>13 Loosen tube fitting locknut (32) and disconnect union to union number 3 lockout cylinder metal tube assembly (33) from tube nipple (18) and tube nipple (34).</p> <p>14 Loosen tube fitting lockout (35) and disconnect manifold to union number 1 lockout cylinder metal tube assembly (36) from tube nipple (30).</p> <p>15 Loosen tube fitting locknut (37) and disconnect manifold to union number 2 lockout cylinder metal tube assembly (38) from tube nipple (31).</p> <p>16 Loosen tube fitting locknut (39) and disconnect manifold to union number 3 lockout cylinder metal tube assembly (40) from tube nipple (34).</p> |
|--|---|

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 For complete repair of hydraulic fittings and hardware, refer to general maintenance, page 2-364.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

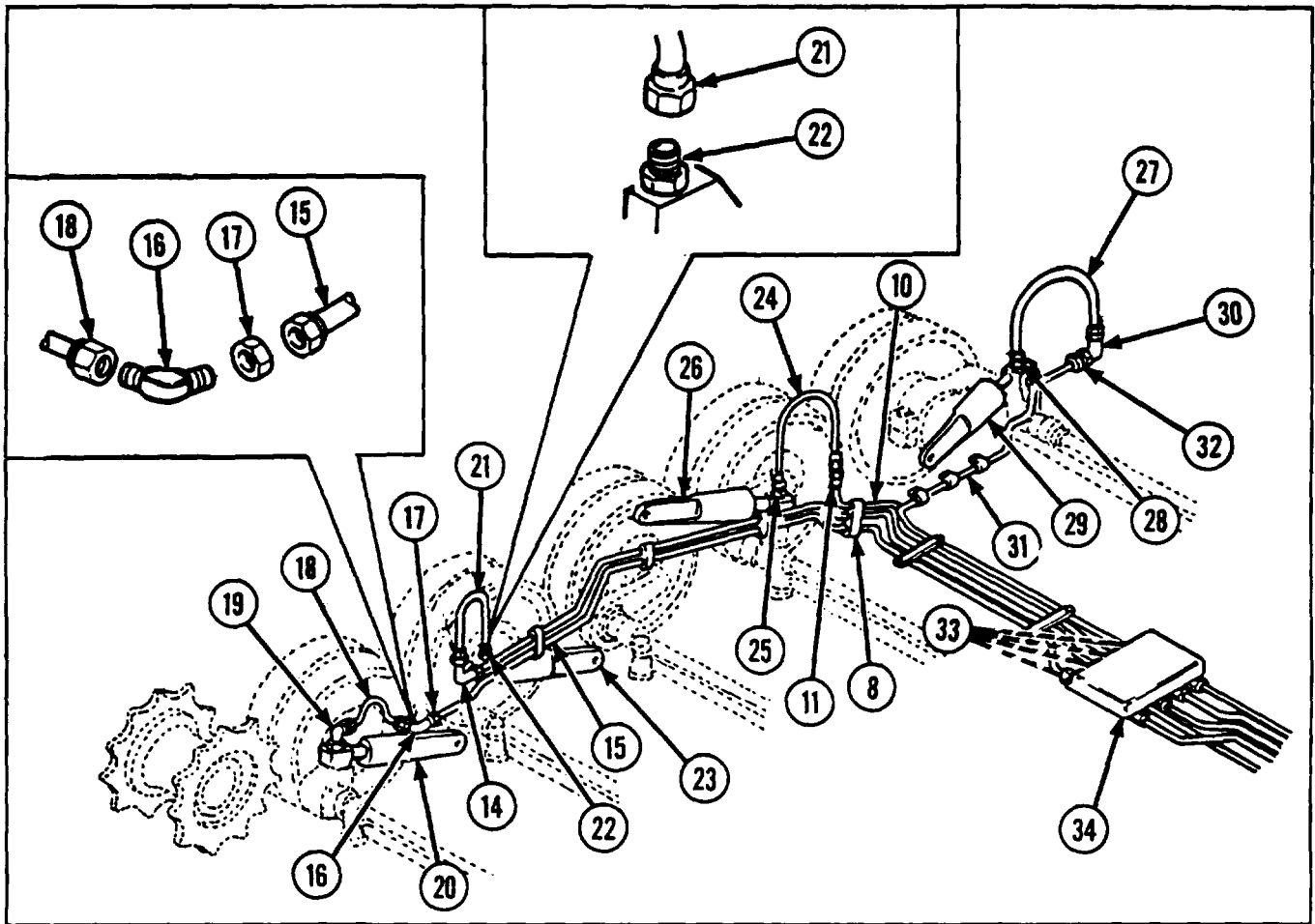
INSTALLATION



- | | |
|--|--|
| <ol style="list-style-type: none"> 1 Connect manifold to union number 3 lockout cylinder metal tube assembly (1) to tube nipple (2) and tighten tube fitting locknut (3). 2 Connect manifold to union number 2 lockout cylinder metal tube assembly (4) to tube nipple (5) and tighten tube fitting locknut (6). 3 Connect manifold to union number 1 lockout cylinder metal tube assembly (7) to tube nipple (8) and tighten tube fitting locknut (9). | <ol style="list-style-type: none"> 4 Connect union to union number 3 lockout cylinder metal tube assembly (10) to tube nipple (11). Tighten tube fitting locknut (12). 5 Connect union to elbow number 2 lockout cylinder metal tube assembly (13) to tube elbow (14) and tube nipple (5). |
|--|--|

2-153. MAINTENANCE OF SUSPENSION SYSTEM HYDRAULIC LINES AND FITTINGS AND ATTACHING HARDWARE (RIGHT SIDE) (CONT.).

INSTALLATION (CONT.)



- 6 Connect union to elbow number 1 lockout cylinder metal tube assembly (15) to tube nipple (8) and tube elbow (16). Tighten tube fitting locknut (17).
- 7 Connect lockout cylinder hose assembly (18) to tube elbow (16) and tube elbow (19) on number 1 lockout cylinder (20).
- 8 Connect lockout cylinder hose assembly (21) to tube elbow (14) on union to elbow number 2 lockout cylinder metal tube assembly (15).
- 9 Connect lockout cylinder hose assembly (21) to tube nipple (22) on number 2 lockout cylinder (23).

- 10 Connect lockout cylinder hose assembly (24) to tube nipple (25) on number 3 lockout cylinder (26) and tube nipple (11) on union number 3 lockout cylinder metal tube assembly (10).
- 11 Connect lockout cylinder hose assembly (27) to tube nipple (28) on idler wheel lockout cylinder (29) and tube elbow (30).
- 12 Connect manifold to elbow right idler wheel metal tube assembly (31) to tube elbow (30). Tighten tube fitting locknut (32).

NOTE

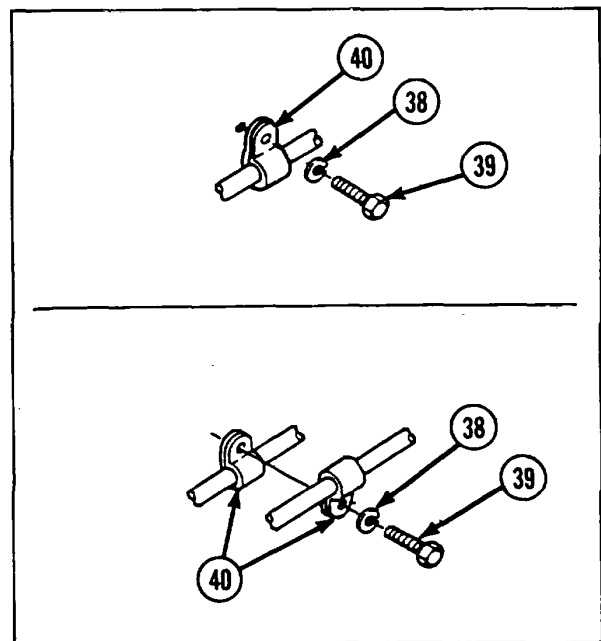
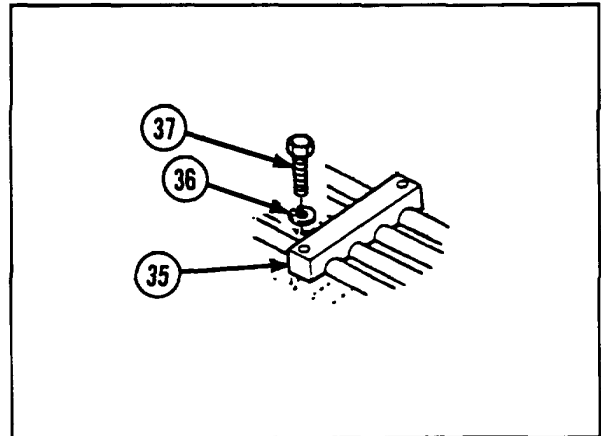
Step 13 is written for one metal tube assembly but applies to all four metal tube assemblies connected to the lockout isolation manifold.

- 13 Connect manifold to elbow right idler wheel metal tube assembly (31) to tube nipple (33) on lockout isolation manifold (34).

NOTE

After installing hydraulic lines, install all attaching hardware. Steps 14 and 15 apply to the attaching hardware for the right side suspension system hydraulic lines.

- 14 Install hydraulic line clamp (35), two net lockwashers (36), and two hexagon head capscrews (37).
- 15 Install new lockwasher (38) and hexagon head capscrew (39) on one loop clamp or two loop clamps (40).

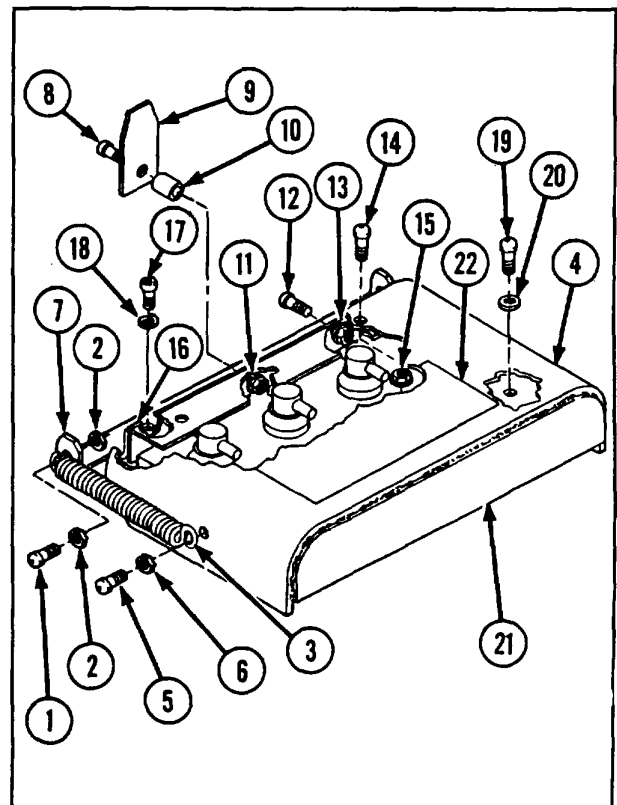


2-154. MAINTENANCE OF SUSPENSION SYSTEM HYDRAULIC LINES AND FITTINGS (LOCKOUT ISOLATION MANIFOLD).

This task covers:			
a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>	
INITIAL SETUP			
<i>Materials/Parts</i>		<i>Equipment Conditions</i>	
Identification marker	2-755	Hydraulic pressure relieved	
Locknut	2-851	Right side hydraulic lines and fittings removed from lockout isolation manifold	
Lockwasher (2)			
Lockwasher (2)			
Self-locking nut (6)	2-860	Left side hydraulic lines and fittings removed from lockout isolation manifold	
<i>References</i>			
TM 9-2350-304-24P-1			

REMOVAL

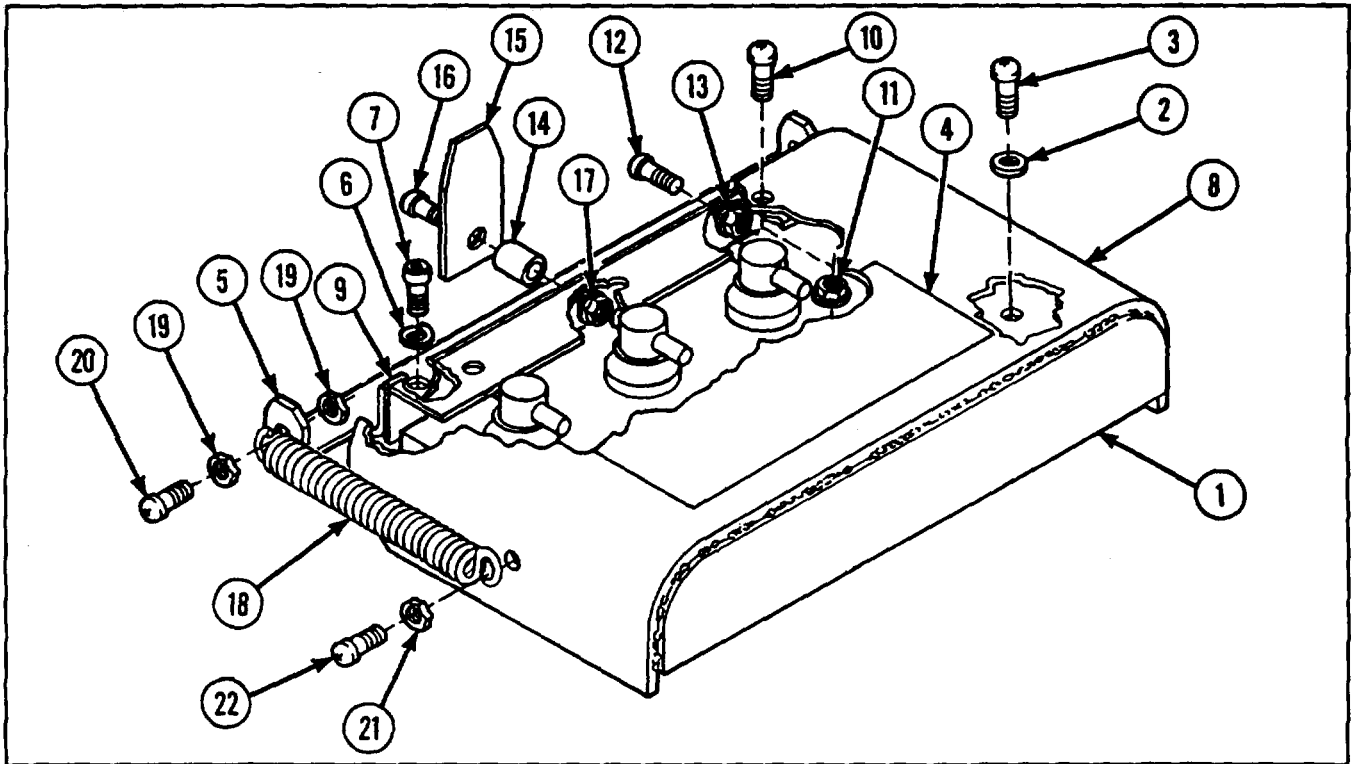
- 1 Remove two machine screws (1) and two hexagon plain nuts (2) securing two helical compression springs (3) to side of access cover (4).
- 2 Remove two machine screws (5), four hexagon plain nuts (6), and two helical compression springs (3) from manifold support (7).
- 3 Raise access cover (4). Remove machine screw (8), manifold plate (9), sleeve spacer (10), and self-locking nut (11).
- 4 Remove two machine screws (12) and two self-locking nuts (13).
- 5 Remove three machine screws (14) and three self-locking nuts (15).
- 6 Remove manifold cover butt hinge (16) and access cover (4).
- 7 Remove two socket head capscrews (17).
- 8 Remove two hexagon head capscrews (19) and two lockwashers (20) securing shutoff valve manifold (21) to well floor.
- 9 If damaged, remove identification marker (22) from shutoff valve manifold (21).



INSPECTION/REPAIR

- 1 inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION



- 1 Install shutoff valve manifold (1), and secure with two new lockwashers (2) and two hexagon head capscrews (3).
- 2 If removed, install new identification marker (4) on shutoff valve manifold (1).
- 3 Install manifold support (5), and secure with two new lockwashers (6) and two machine screws (7).
- 4 Install access cover (8) and manifold cover butt hinge (9), and partially secure with three machine screws (10) and three new self-locking nuts (11).
- 5 Install two machine screws (12) and two new self-locking nuts (13).
- 6 Install sleeve spacer (14), manifold plate (15), machine screw (16), and new selflocking nut (17).
- 7 Install two helical compression springs (18) to manifold support (5), and secure with four hexagon plain nuts (19) and two machine screws (20).
- 8 Install other ends of helical compression springs (18) to side of access cover (8), and secure with two hexagon plain nuts (21) and two machine screws (22).

2-155. MAINTENANCE OF SUSPENSION SYSTEM HYDRAULIC LINES AND FITTINGS AND ATTACHING HARDWARE (LEFT SIDE).

This task covers:		a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP				
<i>Materials/Parts</i>		2-755	Hydraulic pressure relieved	
Lockwasher		2-911	Driver's seat removed	
Preformed packing		2-879	Drivers compartment aft cowl removed	
Tube fitting locknut		2-879	Driver's compartment forward cowl removed	
<i>References</i>		2-555	Instrument switch panel removed	
TM 9-2350-304-24P-1				
<i>Equipment Conditions</i>				
MASTER power switch OFF				
SUSP VALVE control handle UNLOCKED				
WARNING				
Before relieving hydraulic pressure, ensure travel lock is engaged and vehicle is on as level ground as possible. This will keep the cannon from sliding out of battery.				

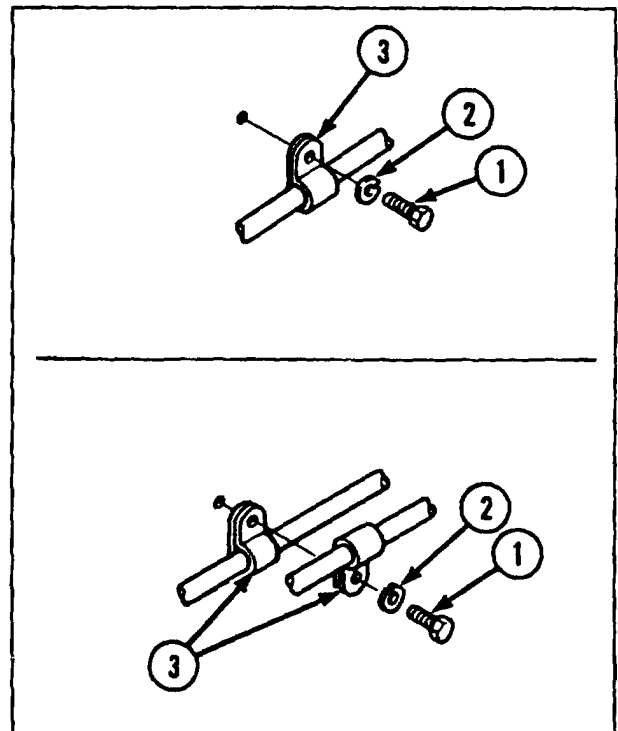
REMOVAL

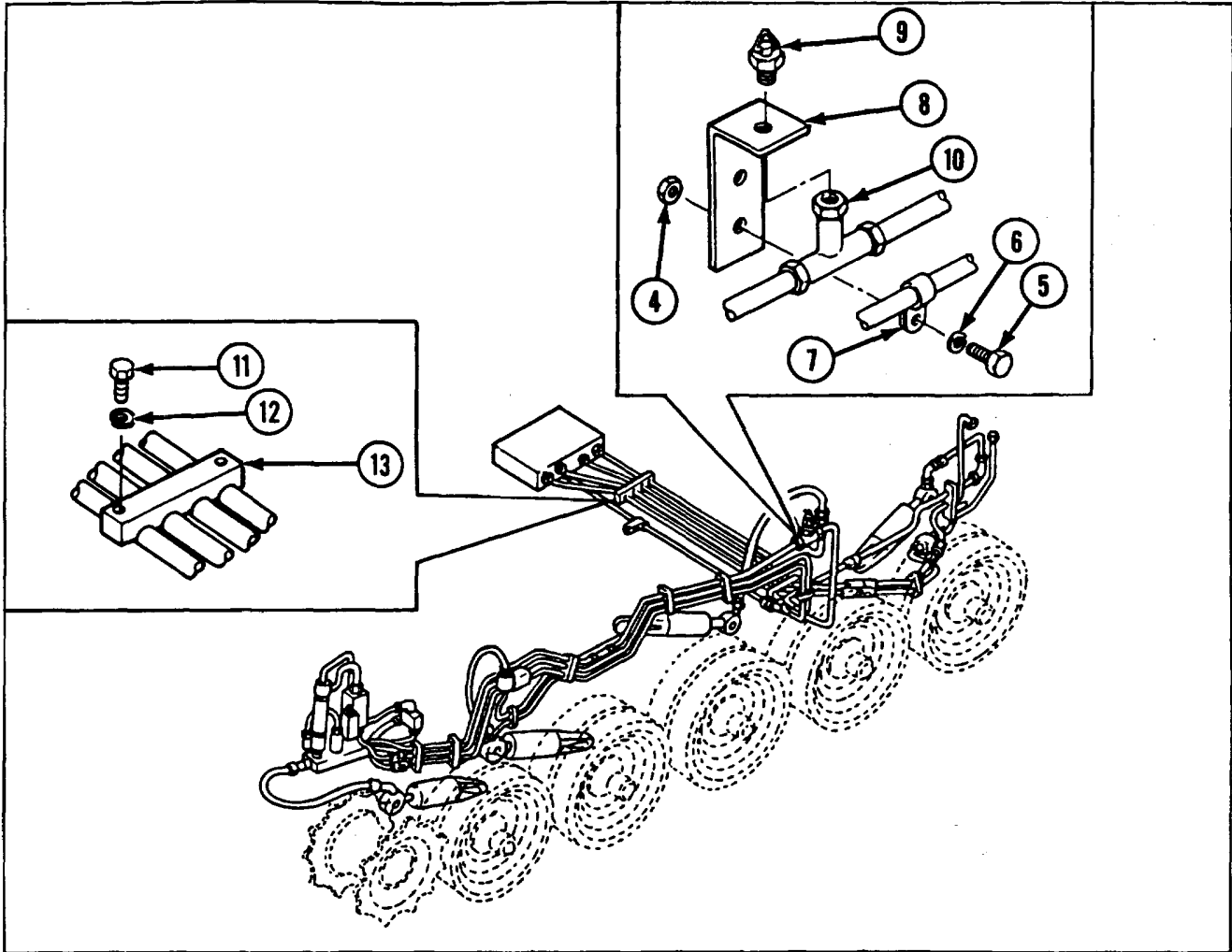
- 1 Inspect hydraulic lines and fittings for leaks. Refer to PMCS, page 2-12, for leakage definition.

NOTE

Before removing damaged hydraulic lines, remove attaching hardware. Steps 2 thru 6 apply to attaching hardware for the left side suspension system hydraulic lines.

- 2 Remove hexagon head capscrew (1), lockwasher (2), and one loop clamp (3) or two loop clamps (3).



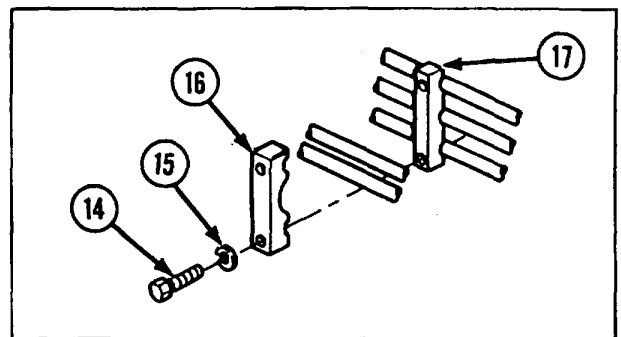


3 Remove two hexagon plain nuts (4), two hexagon head capscrews (5), two lockwashers (6), and two loop clamps (7) from angle bracket (8).

4 Remove tube cap (9) and angle bracket (8) from lockout switch tee (10).

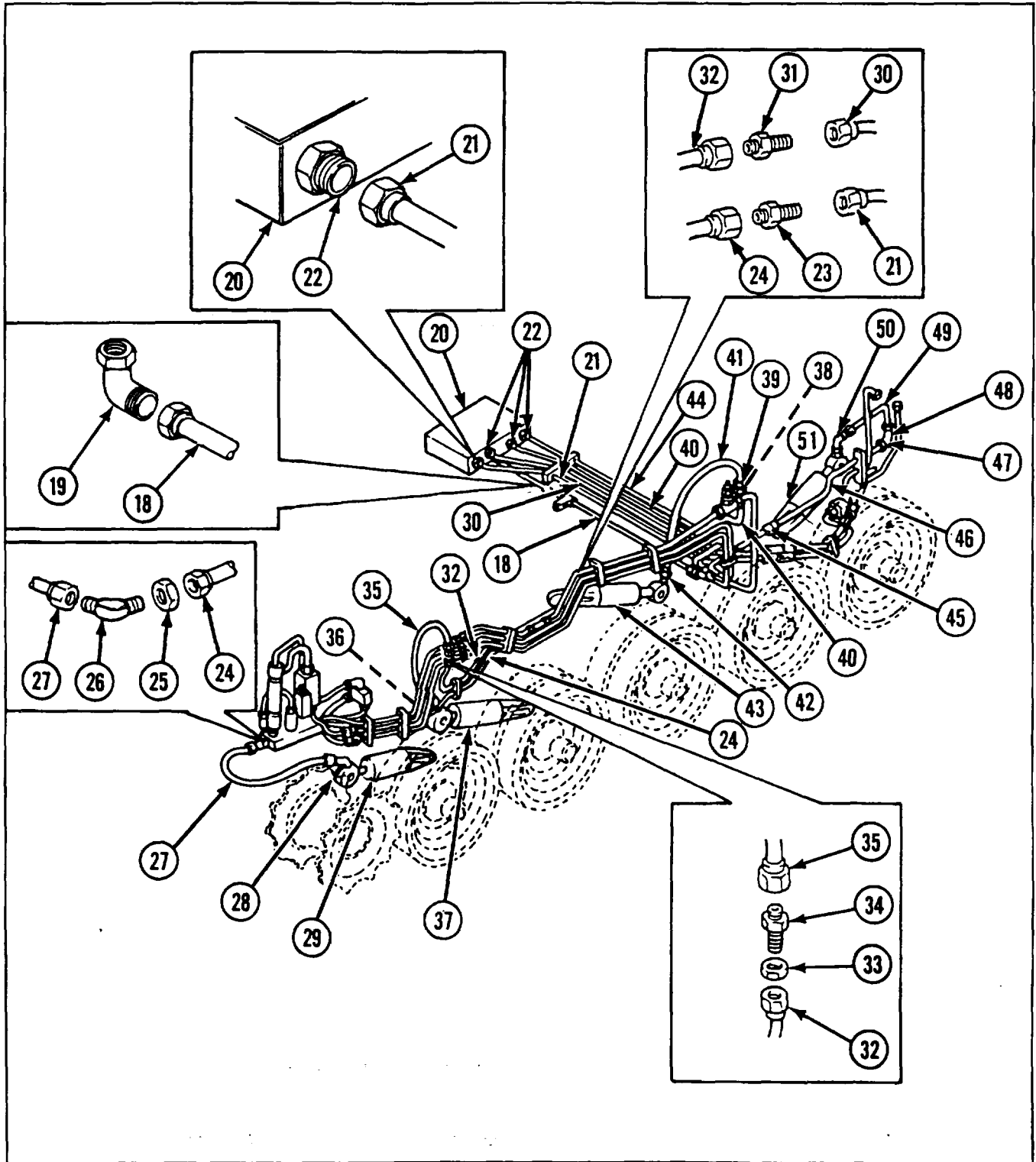
5 Remove two hexagon head capscrews (11), two lockwashers (12), and hydraulic line clamp (13).

6 Remove two hexagon head capscrews (14), two lockwashers (15), hydraulic lit clamp (16), and mounting bracket (17).



2-155. MAINTENANCE OF SUSPENSION SYSTEM HYDRAULIC LINES AND FITTINGS AND ATTACHING HARDWARE (LEFT SIDE) (CONT).

REMOVAL (CONT.)



- 7 Loosen lockout cylinder pressure line metal tube assembly (18) from tube elbow (19) on bottom of lockout isolation manifold (20).

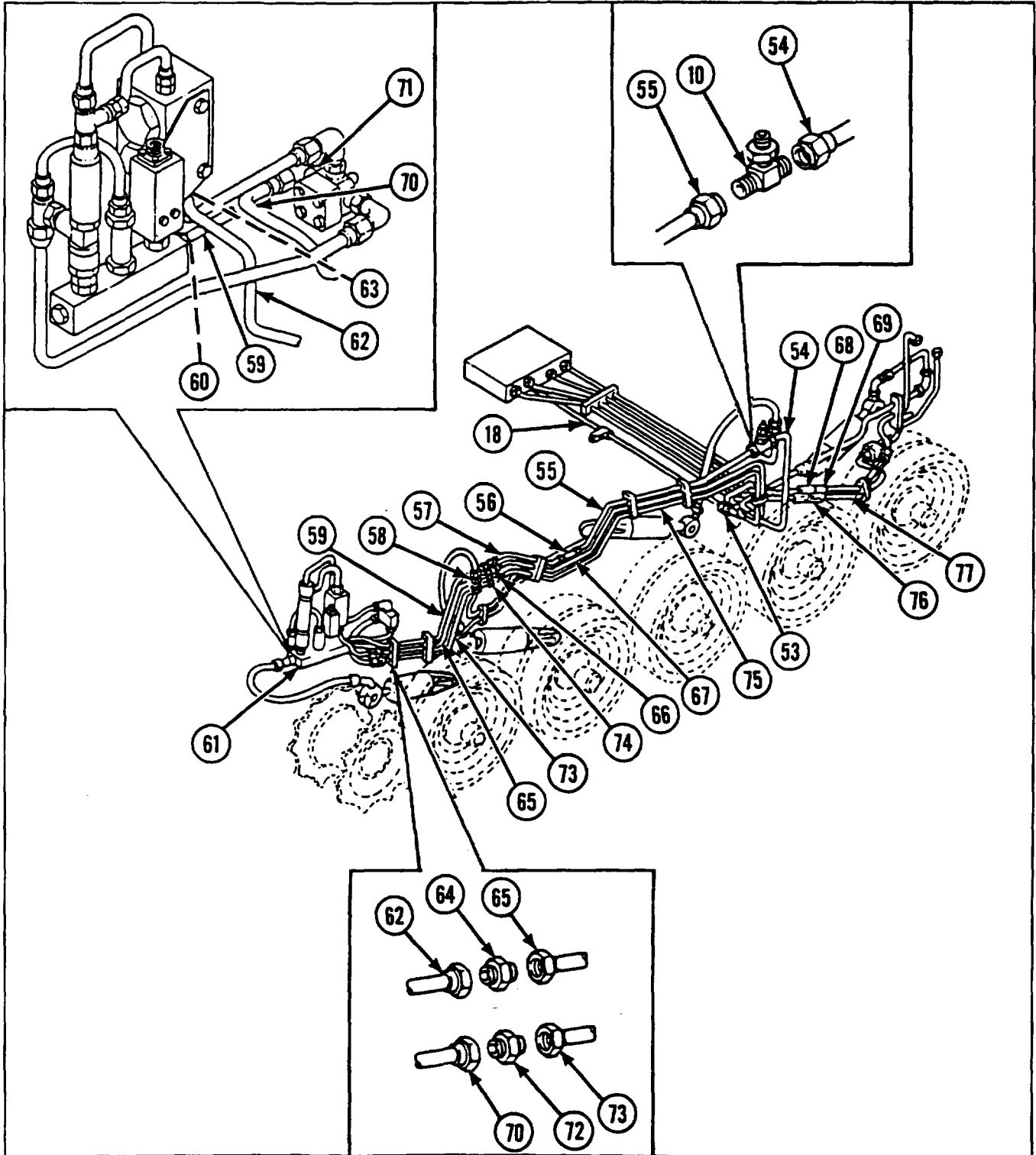
NOTE

Step 8 is written for one metal tube assembly but applies to four metal tube assemblies connected to the lockout isolation manifold.

- 8 Loosen manifold to union number 1 lockout cylinder metal tube assembly (21) from tube nipple (22) on lockout isolation manifold (20).
- 9 Loosen and remove manifold to union number 1 lockout cylinder metal tube assembly (21) from tube nipple (23).
- 10 Loosen union to hose elbow number 1 lockout cylinder metal tube assembly (24) from tube nipple (23).
- 11 Loosen tube fitting locknut (25) at tube elbow (26) on lockout cylinder hose assembly (27), and remove union to hose elbow number 1 lockout cylinder metal tube assembly (24).
- 12 Loosen and remove lockout cylinder hose assembly (27) from tube elbow (26) and tube elbow (28) on number 1 lockout cylinder (29).
- 13 Loosen and remove manifold to union number 2 lockout cylinder metal tube assembly (30) from tube nipple (31).
- 14 Loosen and remove union to union number 2 lockout cylinder metal tube assembly (32) from tube nipple (31).
- 15 Loosen tube fitting locknut (33) at tube nipple (34) and remove union to union number 2 lockout cylinder metal tube assembly (32).
- 16 Loosen and remove lockout cylinder hose assembly (35) at tube nipple (34) and tube elbow (36) on number 2 lockout cylinder (37).
- 17 Loosen tube fitting locknut (38) at tube nipple (39), and remove manifold to hose union number 3 lockout cylinder metal hose assembly (40).
- 18 Loosen and remove lockout cylinder hose assembly (41) from tube nipple (39) and tube nipple (42) on number 3 lockout cylinder (43).
- 19 Loosen and remove number 4 lockout cylinder pressure line metal tube assembly (44) from tube nipple (45) at union to hose elbow number 4 lockout cylinder metal tube assembly (46).
- 20 Loosen union to hose elbow number 4 lockout cylinder metal tube assembly (46) from tube nipple (45).
- 21 Loosen tube fitting locknut (47) at tube elbow (48), and remove union to hose elbow number 4 lockout cylinder metal tube assembly (46).
- 22 Loosen and remove lockout cylinder hose assembly (49) from tube elbow (48) and tube elbow (50) on number 4 lockout cylinder (51).

2-155. MAINTENANCE OF SUSPENSION SYSTEM HYDRAULIC LINES AND FITTINGS AND ATTACHING HARDWARE (LEFT SIDE) (CONT).

REMOVAL (CONT.)



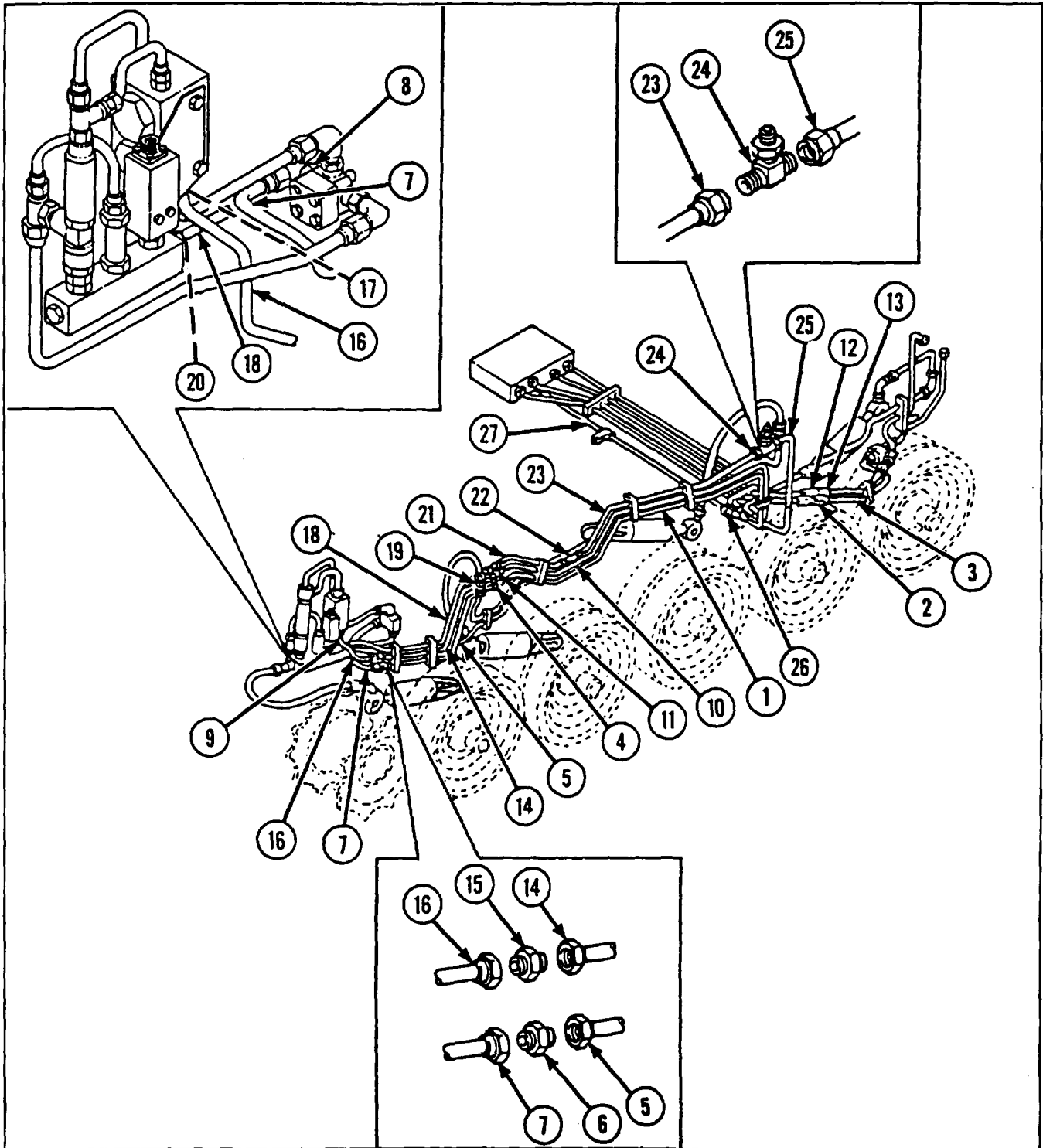
- 23 Loosen and remove lockout cylinder pressure line metal tube assembly (18) from tube reducer (53) on reducer to tee lockout system pressure line metal tube assembly (54).
- 24 Loosen and remove reducer to tee lockout system pressure line metal tube assembly (54) from tube reducer (53) and lockout switch tee (10).
- 25 Loosen and remove tee to union lockout system pressure line metal tube assembly (55) from lockout switch tee (10) and bulkhead union (56) on union to union lockout system pressure line metal tube assembly (57).
- 26 Loosen and remove union to union lockout system pressure line metal tube assembly (57) from bulkhead union (56) and bulkhead union (58) on lockout manifold metal tube assembly (59).
- 27 Loosen and remove lockout manifold metal tube assembly (59) from bulkhead union (58) and tube reducer (60) on suspension lockout system control valve (61).
- 28 Loosen and remove control valve manifold to union metal tube assembly (62) from tube nipple (63) on suspension lockout system control valve (61) and tube reducer (64) on check valve manifold to lockout control metal tube assembly (65).
- 29 Loosen and remove check valve manifold to lockout control metal tube assembly (65) from tube reducer (64) and tube nipple (66) on lockout system hydraulic return line metal tube assembly (67).
- 30 Loosen and remove lockout system hydraulic return line metal tube assembly (67) from tube nipple (66) and tube tee (68) on spade control return line relief valve (69).
- 31 Loosen and remove control line to pressure line tube assembly (70) from tube elbow (71) on suspension lockout system control valve (61) and tube reducer (72) on lockout system hydraulic pressure line metal tube assembly (73).
- 32 Loosen and remove lockout system hydraulic pressure line metal tube assembly (73) from tube reducer (72) and tube nipple (74) on lockout control valve to spade control metal tube assembly (75).
- 33 Loosen and remove lockout control valve to spade control metal tube assembly (75) from tube nipple (74) and tube tee (76) on spade control pressure line metal tube assembly (77).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 For complete repair of hydraulic fittings and hardware, refer to general maintenance, page 2-364.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-155. MAINTENANCE OF SUSPENSION SYSTEM HYDRAULIC LINES AND FITTINGS AND ATTACHING HARDWARE (LEFT SIDE) (CONT).

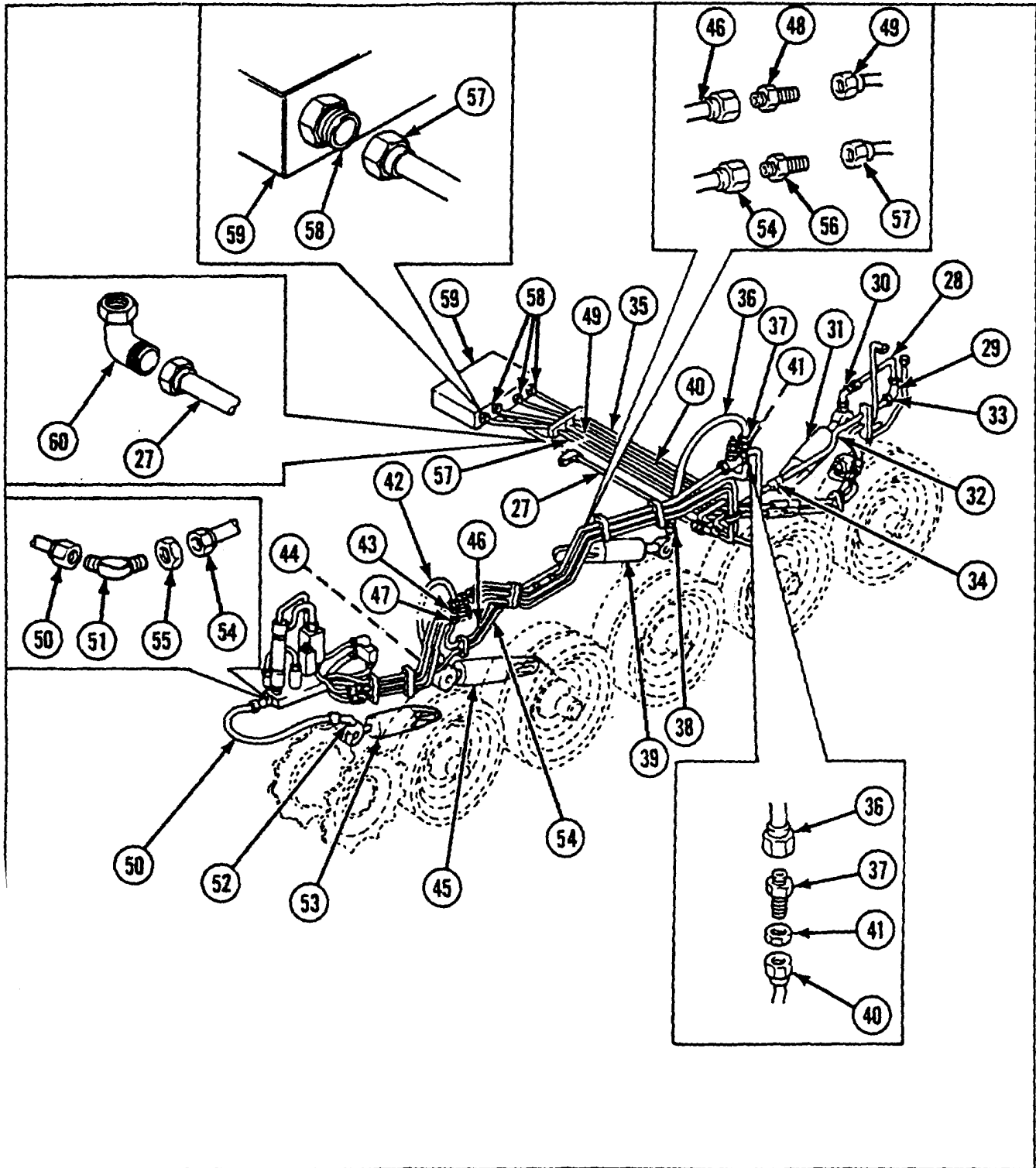
INSTALLATION



- 1 Connect lockout control valve to spade control metal tube assembly (1) to tube tee (2) on spade control pressure line metal tube assembly (3) and tube nipple (4).
- 2 Connect lockout system hydraulic pressure line metal tube assembly (5) to tube reducer (6) and tube nipple (4) on lockout control valve to spade control metal tube assembly (1).
- 3 Connect control line to pressure line tube assembly (7) to tube reducer (6) and tube elbow (8) on suspension lockout system control valve (9).
- 4 Connect lockout system hydraulic return line metal tube assembly (10) to tube nipple (11) and tube tee (12) on spade control return line relief valve (13).
- 5 Connect check valve manifold to lockout control metal tube assembly (14) to tube reducer (15) and tube nipple (11) on lockout system hydraulic return line metal tube assembly (10).
- 6 Connect control valve manifold to union metal tube assembly (16) to tube reducer (15) on check valve manifold to lockout control metal tube assembly (14) and tube nipple (17) on suspension lockout system control valve (9).
- 7 Connect lockout manifold metal tube assembly (18) to bulkhead union (19) and tube reducer (20) on suspension lockout system control valve (9).
- 8 Connect union to union lockout system pressure line metal tube assembly (21) to bulkhead union (22) and bulkhead union (19) on lockout manifold metal tube assembly (18).
- 9 Connect tee to union lockout system pressure line metal tube assembly (23) to lockout switch tee (24) and bulkhead union (22) on union to union lockout system pressure line metal tube assembly (21).
- 10 Connect reducer to tee lockout system pressure line metal tube assembly (25) to tube reducer (26) and lockout switch tee (24).
- 11 Connect lockout cylinder pressure line metal tube assembly (27) to tube reducer (26) on reducer to tee lockout system pressure line metal tube assembly (25).

2-155. MAINTENANCE OF SUSPENSION SYSTEM HYDRAULIC LINES AND FITTINGS AND ATTACHING HARDWARE (LEFT SIDE) (CONT).

INSTALLATION (CONT.)



- 12 Connect lockout cylinder hose assembly (28) to tube elbow (29) and tube elbow (30) on number 4 lockout cylinder (31).
- 13 Connect union to hose elbow number 4 lockout cylinder metal tube assembly (32) to tube elbow (29) on lockout cylinder hose assembly (28). Tighten tube fitting locknut (33).
- 14 Connect union to hose elbow number 4 lockout cylinder metal tube assembly (32) to tube nipple (34).
- 15 Connect number 4 lockout cylinder pressure line metal tube assembly (35) to tube nipple (34) on union to hose elbow number 4 lockout cylinder metal tube assembly (32).
- 16 Connect lockout cylinder hose assembly (36) to tube nipple (37) and tube nipple (38) on number 3 lockout cylinder (39).
- 17 Connect manifold to hose union number 3 lockout cylinder metal tube assembly (40) to tube nipple (37) on lockout cylinder hose assembly (36). Tighten tube fitting locknut (41).
- 18 Connect lockout cylinder hose assembly (42) to tube nipple (43) and tube elbow (44) on number 2 lockout cylinder (45).
- 19 Connect union to union number 2 lockout cylinder metal tube assembly (46) to tube nipple (43) on lockout cylinder hose assembly (42). Tighten tube fitting locknut (47).
- 20 Connect union to union number 2 lockout cylinder metal tube assembly (46) to tube nipple (48).
- 21 Connect manifold to union number 2 lockout cylinder metal tube assembly (49) to tube nipple (48) on union to union number 2 lockout cylinder metal tube assembly (46).
- 22 Connect lockout cylinder hose assembly (50) to tube elbow (51) and tube elbow (52) on number 1 lockout cylinder (53).
- 23 Connect union to hose elbow number 1 lockout cylinder metal tube assembly (54) to tube elbow (51) on lockout cylinder hose assembly (50). Tighten tube fitting locknut (55).
- 24 Connect union to hose elbow number 1 lockout cylinder metal tube assembly (54) to tube nipple (56).
- 25 Connect manifold to union number 1 lockout cylinder metal tube assembly (57) to tube nipple (56) on union to hose elbow number 1 lockout cylinder metal tube assembly (54).

NOTE

Step 26 is written for one metal tube assembly but applies to four metal tube assemblies connected to the lockout isolation manifold.

- 26 Connect manifold to union number 1 lockout cylinder metal tube assembly (57) to tube nipple (58) on lockout isolation manifold (59).
- 27 Connect lockout cylinder pressure line metal tube assembly (27) to tube elbow (60) on bottom of lockout isolation manifold (59).

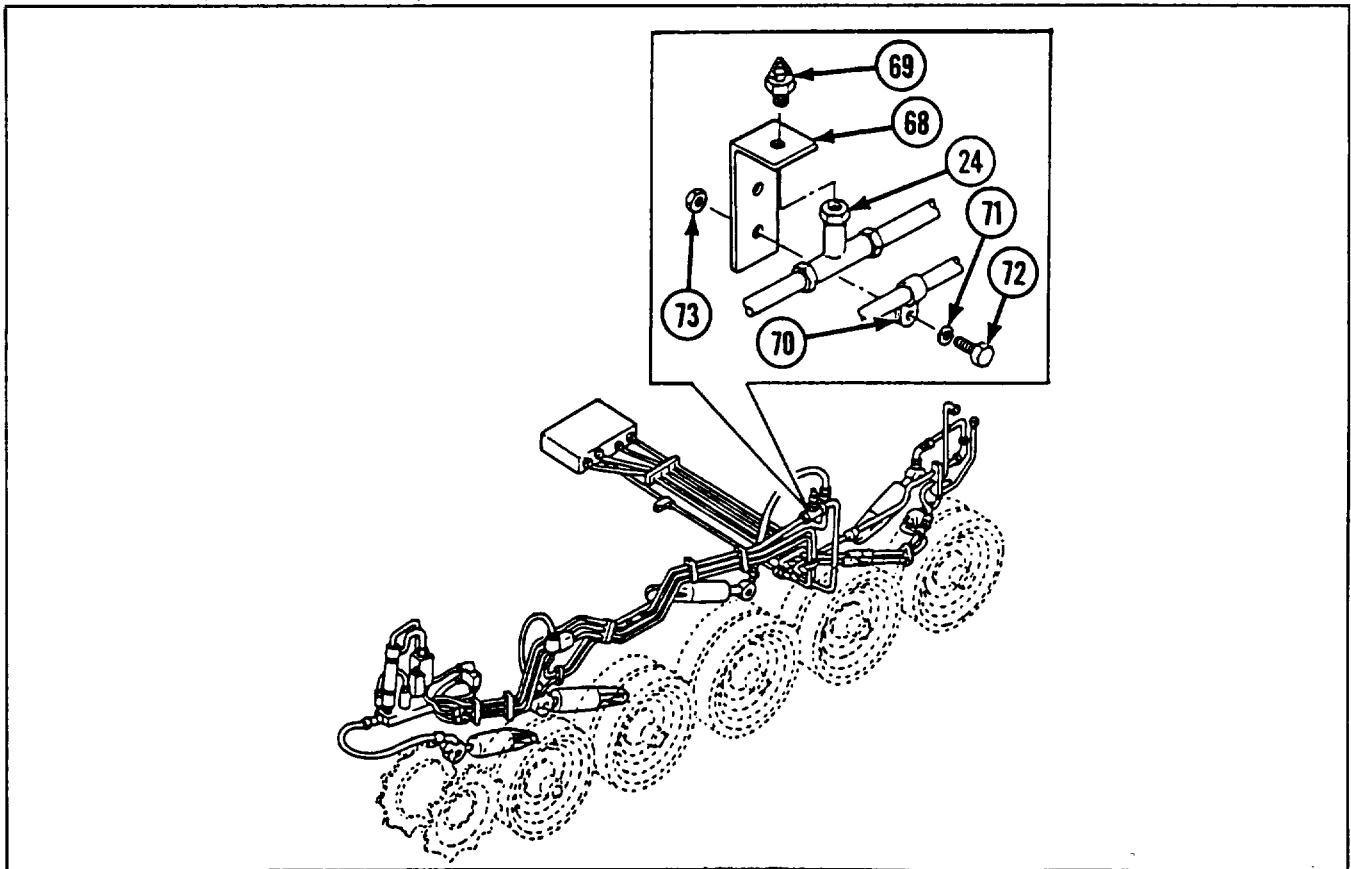
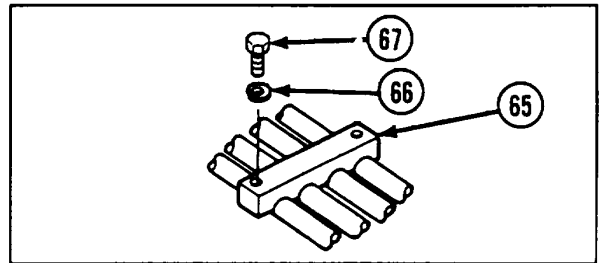
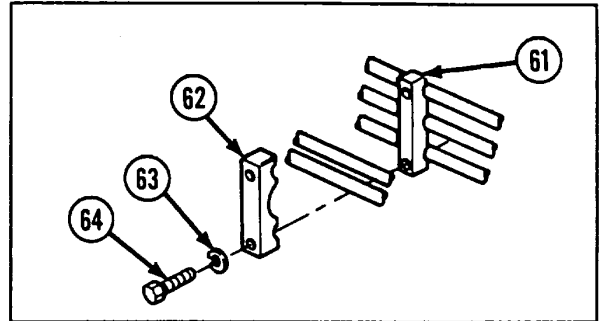
2-155. MAINTENANCE OF SUSPENSION SYSTEM HYDRAULIC LINES AND FITTINGS AND ATTACHING HARDWARE (LEFT SIDE) (CONT).

INSTALLATION (CONT.)

NOTE

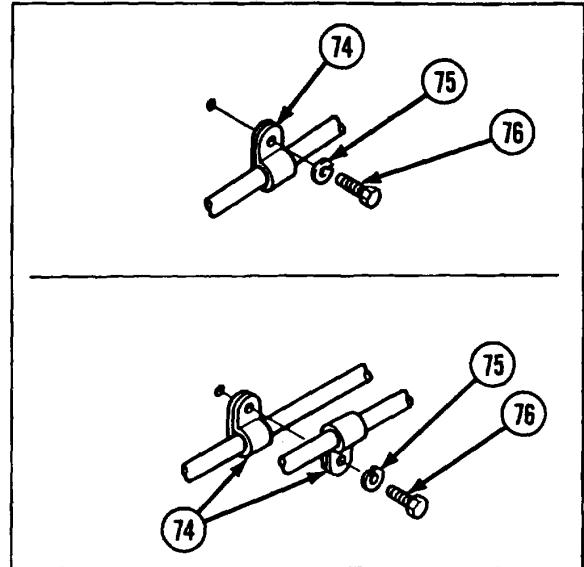
After installing hydraulic lines, install attaching hardware. Steps 28 thru 32 apply to attaching hardware for the left side suspension system hydraulic lines.

- 28** Install mounting bracket (61), hydraulic line clamp (62), two new lockwashers (63) and two hexagon head capscrews (64).
- 29** Install hydraulic line clamp (65), two new lockwashers (66), and two hexagon head capscrews (67).



- 30 Install angle bracket (68) and tube cap (69) on lockout switch tee (24).
- 31 Install two loop clamps (70), two new lockwashers (71), two hexagon head capscrews (72), and two hexagon plain nuts (73) on angle bracket (68).

- 32 Install one loop clamp (74) or two loop clamps (74), new lockwasher (75), and hexagon head capscrew (76).

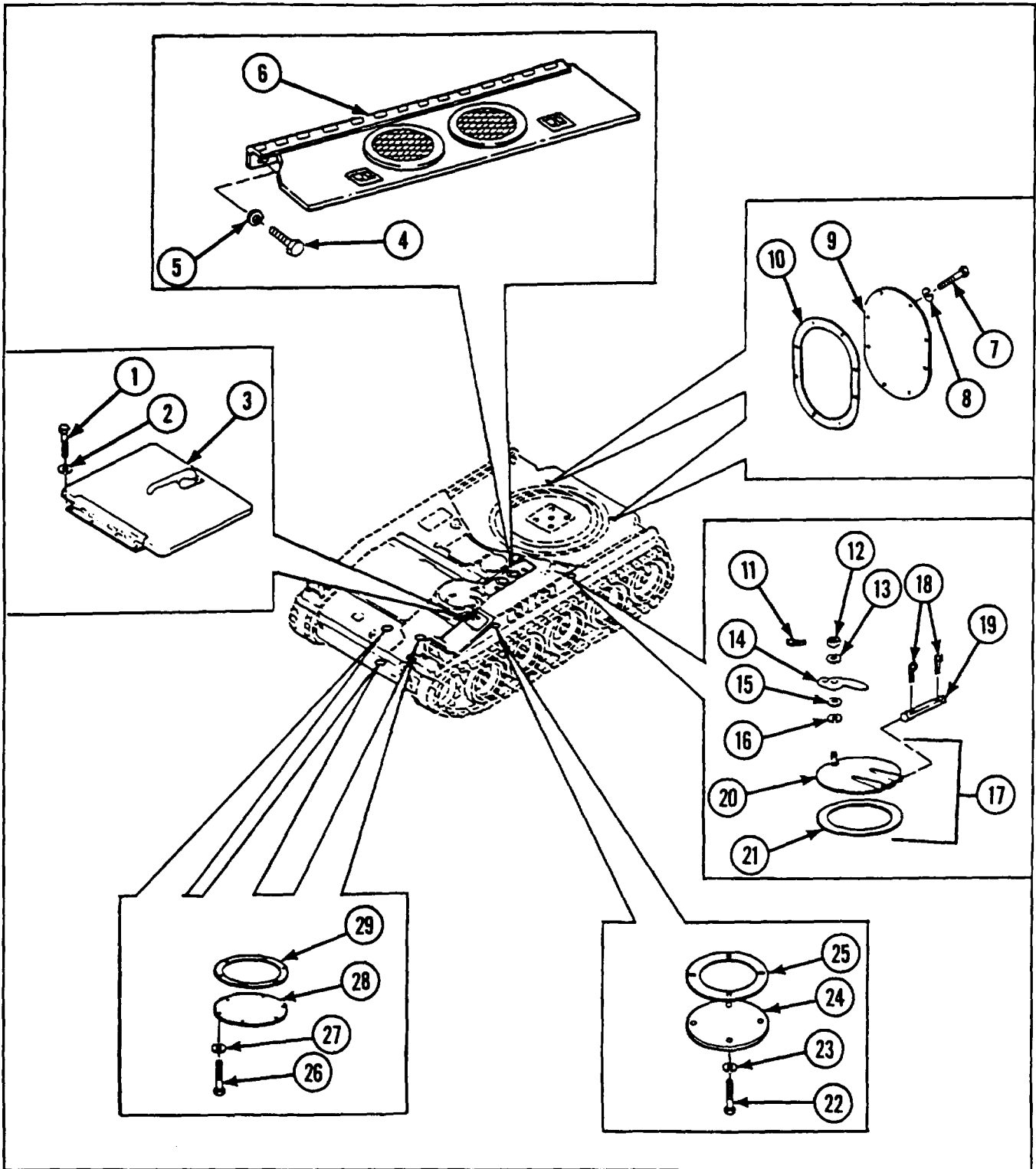


2-156. MAINTENANCE OF HULL COVERS AND ACCESS DOORS.

This task covers:	a. <i>Removal/Disassembly</i>	c. <i>Reassembly/Installation</i>
	b. <i>Inspection/Repair</i>	
INITIAL SETUP		
<i>Materials/Parts</i>		
Cotter pin		
Cotter pin (2)		
Fan well cleanout access cover gasket		
Gasket (3)		
Hydraulic access cover gasket (2)		
Lockwasher (11)		
Lockwasher (42)		
Spring tension washer		
Turret hull cleanout cover gasket		
<i>References</i>		
TM 9-2350-304-24P-1		

2-156. MAINTENANCE OF HULL COVERS AND ACCESS DOORS (CONT).

REMOVAL/DISASSEMBLY



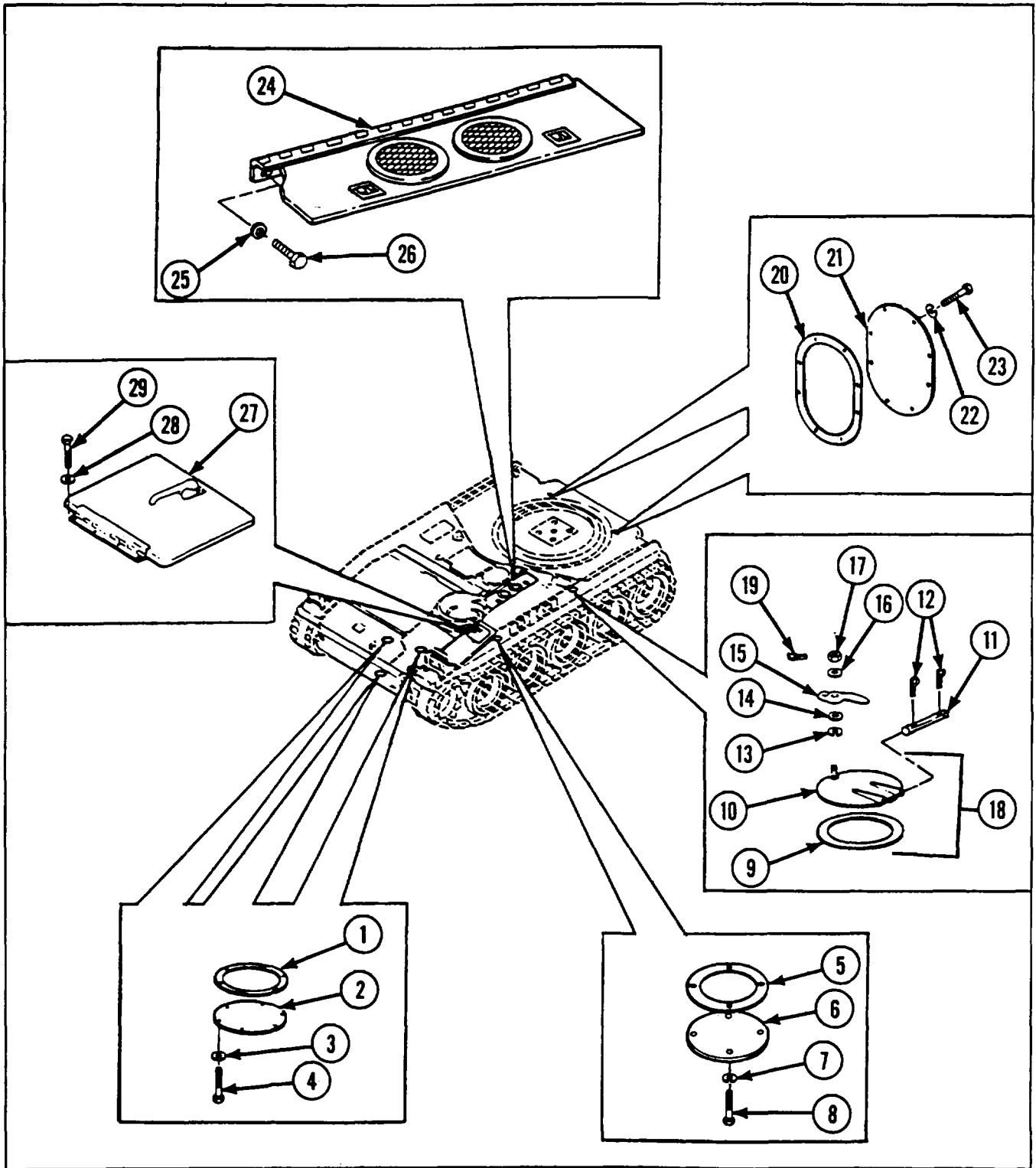
- 1 Remove four hexagon head capscrews (1), four lockwashers (2), and air cleaner blower access door assembly (3) from hull.
- 2 Remove 11 hexagon head capscrews (4), 11 lockwashers (5), and battery access cover (6) from hull.
- 3 Remove 16 hexagon head capscrews (7), 16 lockwashers (8), 2 rear hydraulic access covers (9), and 2 hydraulic access cover gaskets (10) from hull.
- 4 Remove cotter pin (11), slotted plain nut (12), flat washer (13), turret cover handle (14), flat washer (15), and spring tension washer (16) from turret hull cleanout access door (17).
- 5 Remove two cotter pins (18), headless straight pin (19), turret hull cleanout assembly cover (20) and turret hull cleanout cover gasket (21) from hull.
- 6 Remove four hexagon head capscrews (22), four lockwashers (23), fan well cleanout access cover (24), and fan well cleanout access cover gasket (25) from hull.
- 7 Remove 18 hexagon head capscrews (26), 18 lockwashers (27), 1 transmission drain and 2 radiator drain access covers (28), and 2 radiator drain and 1 transmission drain gaskets (29) from hull.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If turret hull cleanout assembly cover is broken, damaged, or missing, repair is by replacement of next higher assembly.
- 3 Air cleaner blower access door assembly is a repairable assembly. Notify direct support maintenance.
- 4 Battery access cover is a repairable assembly. Notify direct support maintenance.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-156. MAINTENANCE OF HULL COVERS AND ACCESS DOORS (CONT)

REASSEMBLY/INSTALLATION



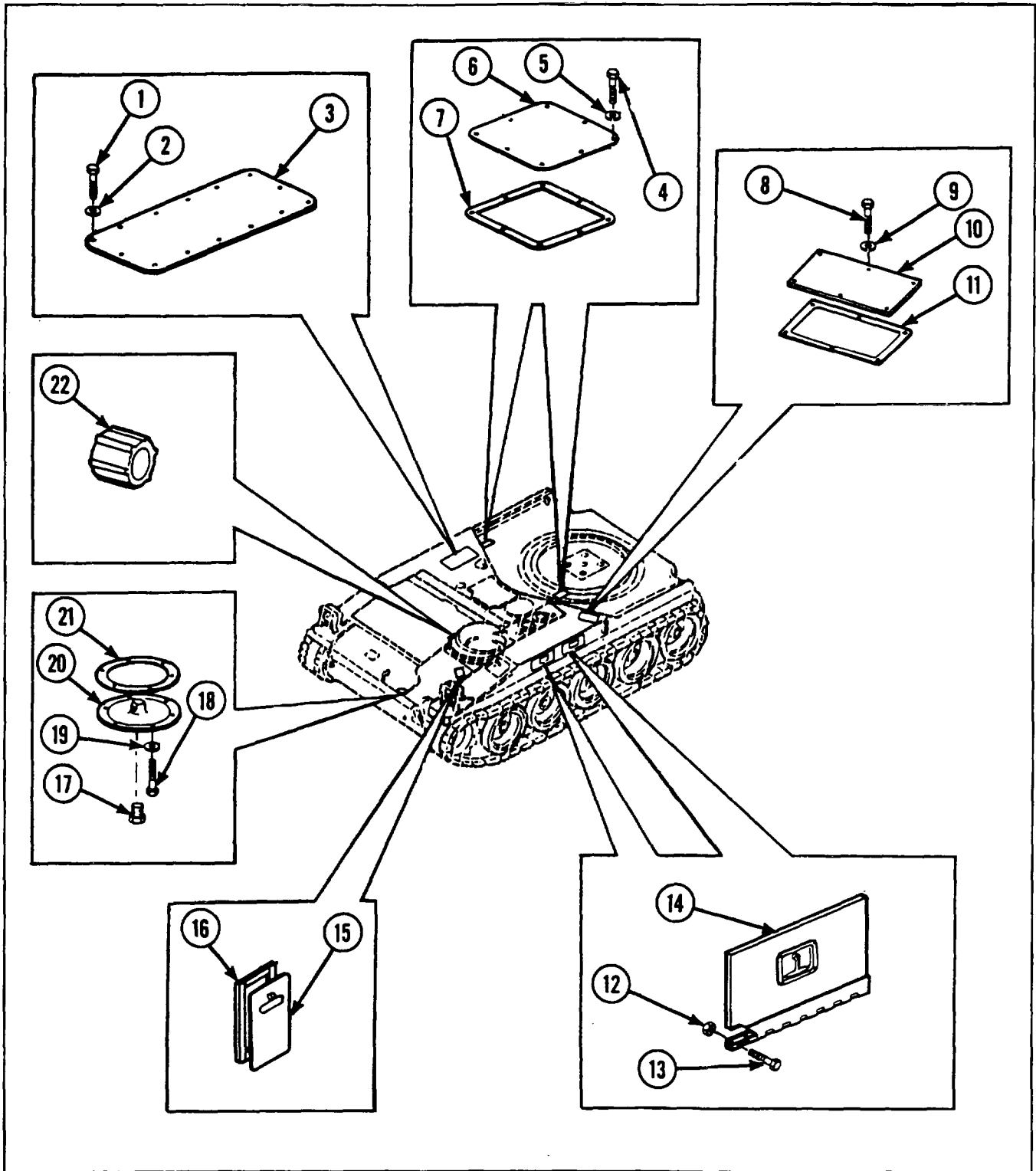
- 1 Install three new gaskets (1) to two radiator drain and one transmission drain access covers (2).
- 2 Install 1 transmission drain and 2 radiator drain access covers (2) to hull. Secure with 18 new lockwashers (3) and 18 hexagon head capscrews (4).
- 3 Install fan well cleanout access cover gasket (5), fan well cleanout access cover (6), four new lockwashers (7), and four hexagon head capscrews (8) to hull.
- 4 Install turret hull cleanout cover gasket (9), turret hull cleanout assembly cover (10), headless straight pin (11), and two new cotter pins (12) to hull.
- 5 Install new spring tension washer (13), flat washer (14), turret cover handle (15), flat washer (16), and slotted plain nut (17) to turret hull cleanout access door (18). Secure with new cotter pin (19).
- 6 Install 2 hydraulic access cover gaskets (20) and 2 rear hydraulic access covers (21) to hull. Secure with 16 new lockwashers (22) and 16 hexagon head capscrews (23).
- 7 Install battery access cover (24) to hull and secure with 11 new lockwashers (25) and 11 hexagon head capscrews (26).
- 8 Install air cleaner blower access door assembly (27) to hull and secure with four new lockwashers (28) and four hexagon head capscrews (29).

2-157. MAINTENANCE OF HULL COVERS, DOORS, AND PLATES.

This task covers:	<i>a. Removal</i>	<i>b. Inspection/Repair</i>	<i>c. Installation</i>
<p>INITIAL SETUP</p> <p><i>Materials/Parts</i></p> <ul style="list-style-type: none"> Air cleaner blower access cover gasket CO₂ bottle access cover gasket (2) Fuel filter access door seal (figure D-14, appx D) Gasket Lockwasher (42) Self-locking nut (18) <p><i>References</i></p> <ul style="list-style-type: none"> TM 9-2350-304-24P-1 			

2-157. MAINTENANCE OF HULL COVERS, DOORS, AND PLATES (CONT).

REMOVAL



- 1 Remove 14 hexagon head capscrews (1), 14 lockwashers (2), and hull cover plate (3) from hull.
- 2 Remove 16 hexagon head capscrews (4), 16 lockwashers (5), 2 access covers (6), and 2 CO₂ bottle access cover gaskets (7) from hull.
- 3 Remove six hexagon head capscrews (8), six lockwashers (9), air cleaner blower access hull cover assembly (10), and air cleaner blower access cover gasket (11) from hull.
- 4 Remove 18 self-locking nuts (12), 18 machine screws (13), and 2 air cleaner access doors (14) from hull.

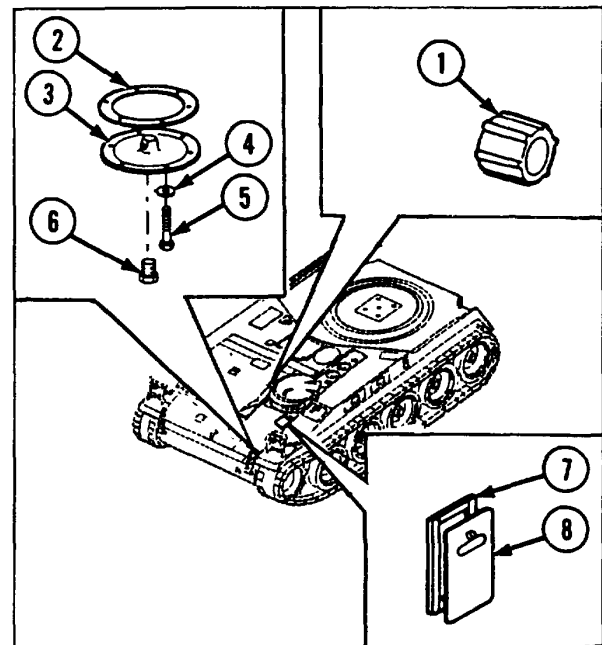
- 5 Remove engine fuel filter access door (15) seal.
- 6 If damaged, remove fuel filter access door seal (16).
- 7 Remove pipe plug (17), six hexagon head capscrews (18), six lockwashers (19), power plant reservoir drain access cover (20), and gasket (21) from hull.
- 8 Remove two protective caps (22) from hull.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Fuel filter access door seal is a manufactured item, refer to appendix D.
- 3 Engine fuel filter access door is a repairable assembly. Notify direct support maintenance.
- 4 Air cleaner access door is a repairable assembly. Notify direct support maintenance.

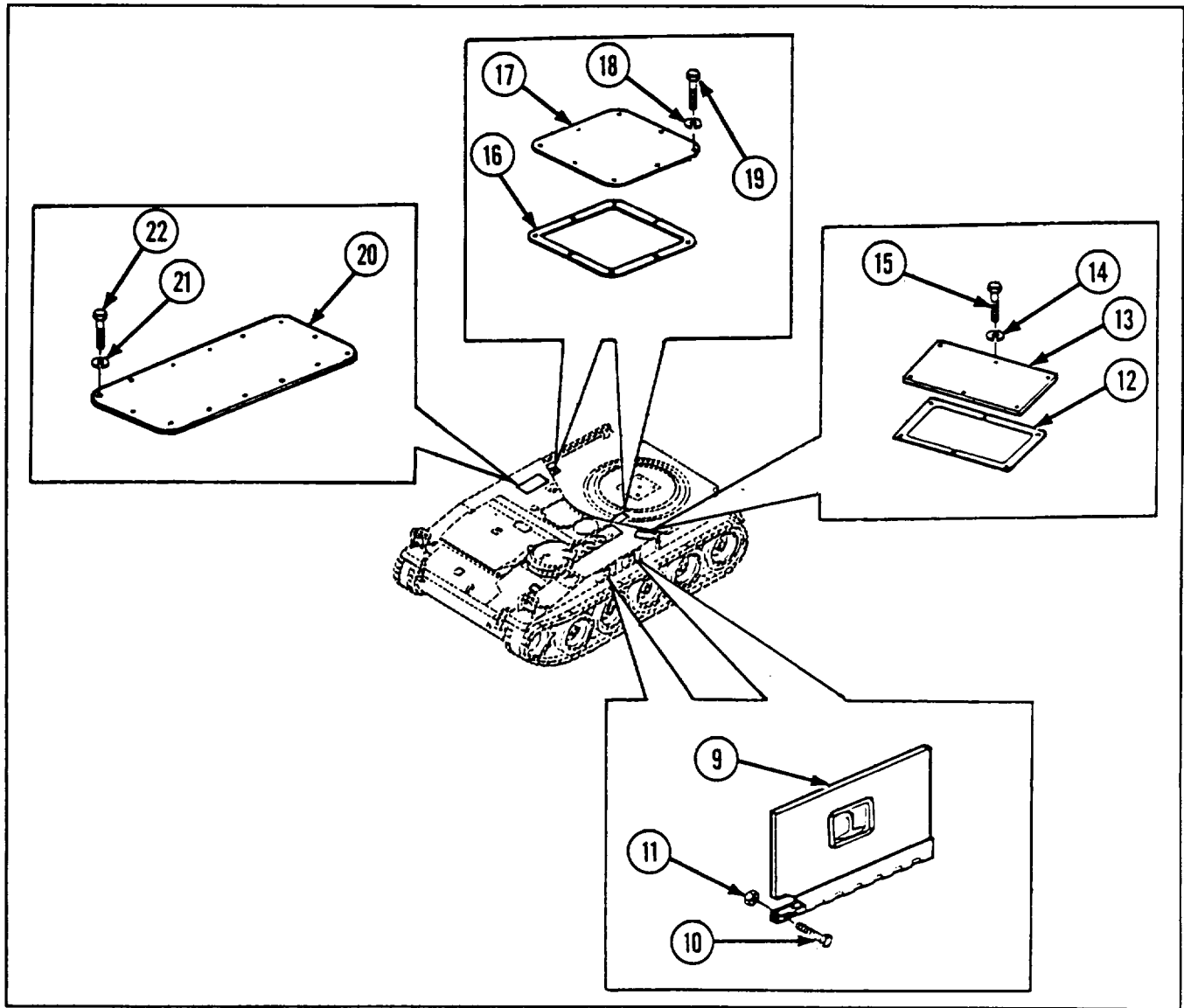
INSTALLATION

- 1 Install two protective caps (1) to hull.
- 2 Install new gasket (2), power plant reservoir drain access cover (3), six new lockwashers (4), and six hexagon head capscrews (5) to hull.
- 3 Install pipe plug (6) to power plant reservoir drain access cover (3).
- 4 If removed, install new fuel filter access, door seal (7).
- 5 Install engine fuel filter access door (8) hull.



2-157. MAINTENANCE OF HULL COVERS, DOORS, AND PLATES (CONT.).

INSTALLATION (CONT.)



6 Install 2 air cleaner access doors (9) to hull and secure with 18 machine screws (10) and 18 new self-locking nuts (11).

7 Install new air cleaner blower access cover gasket (12), air cleaner blower access hull cover assembly (13), six new lockwashers (14), and six hexagon head capscrews (15) to hull.

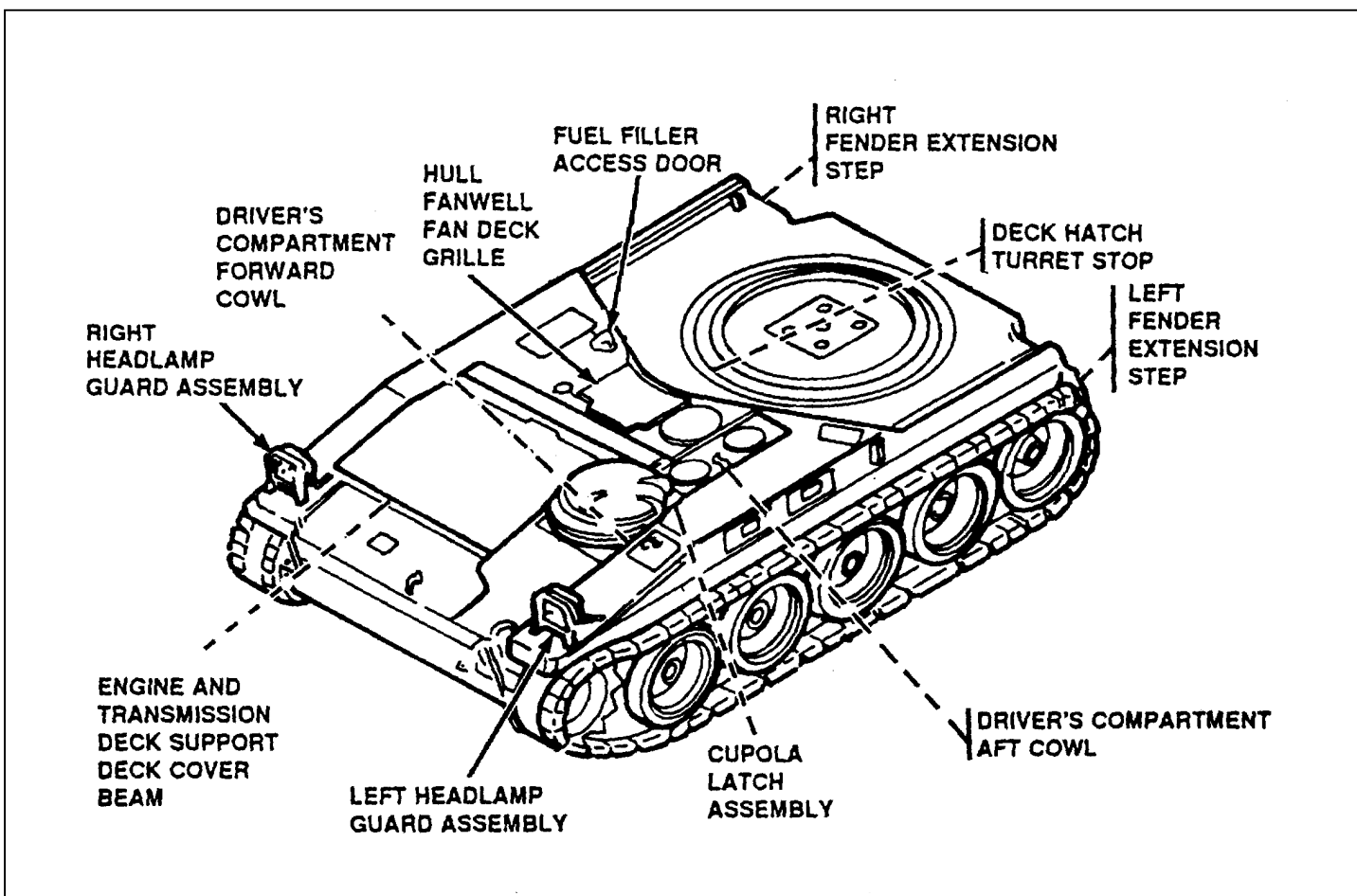
8 Install 2 new CO₂ bottle access cover gaskets (16) and 2 access covers (17) to hull. Secure with 16 new lockwashers (18) and 16 hexagon head capscrews (19).

9 Install hull cover plate (20), 14 new lockwashers (21), and 14 hexagon head capscrews (22) to hull.

2-158. MAINTENANCE OF HULL DECKS AND MISCELLANEOUS COMPONENTS.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Materials/Parts</i>		<i>References</i>	
Antipilferage seal		TM 9-2350-304-10	
Cotter pin (4)		TM 9-2350-304-24P-1	
Grease (item 19, appx C)			
Lockwasher (4)		<i>Equipment Conditions</i>	
Lockwasher (8)		2-887 Engine deck assembly removed	
Lockwasher (7)		2-893 Transmission deck lid assembly removed	
Lockwasher (4)			
Sealing compound (item 38, appx C)		Master relay removed	
Self-locking nut (4)		Safety pin installed in control valve handle	
Spring pin			

REMOVAL



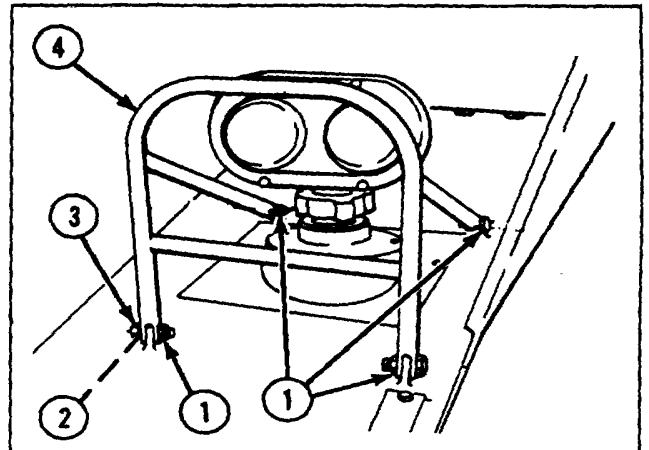
2-158. MAINTENANCE OF HULL DECKS AND MISCELLANEOUS COMPONENTS (CONT).

REMOVAL (CONT)

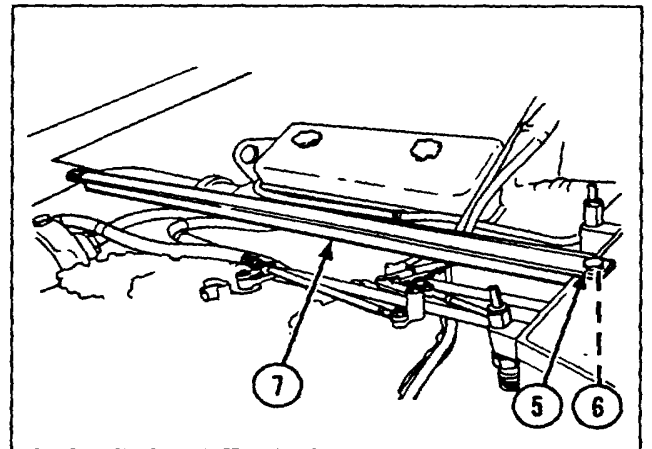
NOTE

Steps 1 and 2 are written for the left headlamp guard assembly, but apply to both right and left headlamp guard assemblies.

- 1 Remove four hexagon plain nuts (1), four lockwashers (2), and four hexagon head capscrews (3).
- 2 Remove left headlamp guard assembly (4).

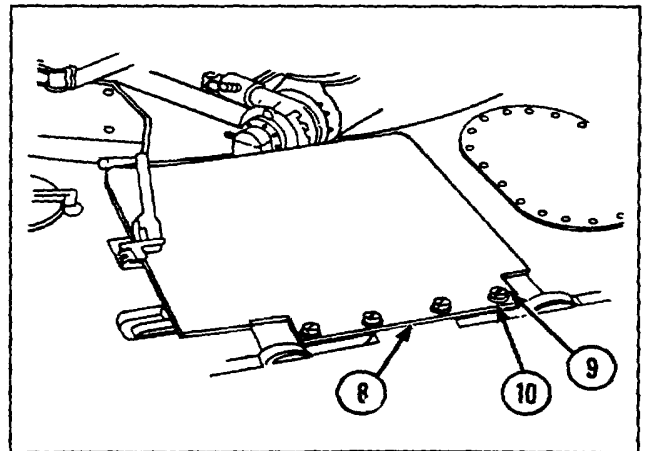


- 3 Remove two hexagon head capscrews (5) two lockwashers (6), and engine and transmission deck support deck cover beam (7).

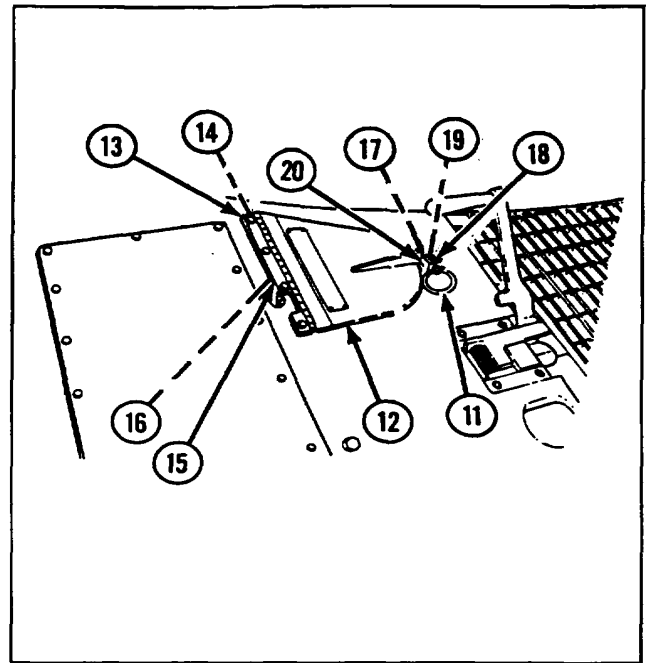


- 4 Elevate and traverse gun tube away from hull fanwell tan deck grille (8) area on hull. Refer to TM 9-2350-304-10.

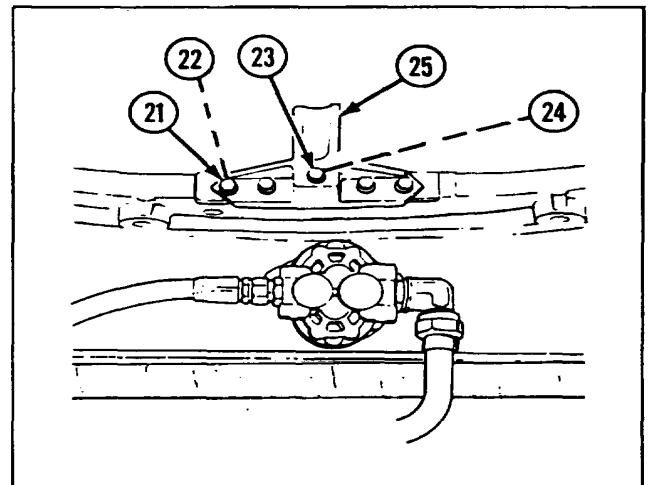
- 5 Remove four hexagon head capscrews (9), four flat washers (10), and hull fanwell fan deck grille (8).



- 6 Pull cover latch pin (11) to release fuel filler access door (12).
- 7 Remove four square neck bolts (13), four self-locking nuts (14), fuel filler access door (12), fuel filler cover hinge plate spacer (15), and fuel filler cover hinge stepped spacer (16).
- 8 Remove spring pin (17) from cover latch pin (11).
- 9 Remove cover latch pin (11), helical compression spring (18), and two flat washers (19) from hull bracket (20).



- 10 Remove four hexagon head capscrews (21), four lockwashers (22), hexagon her capscrew (23), lockwasher (24), and deck hatch turret stop (25).



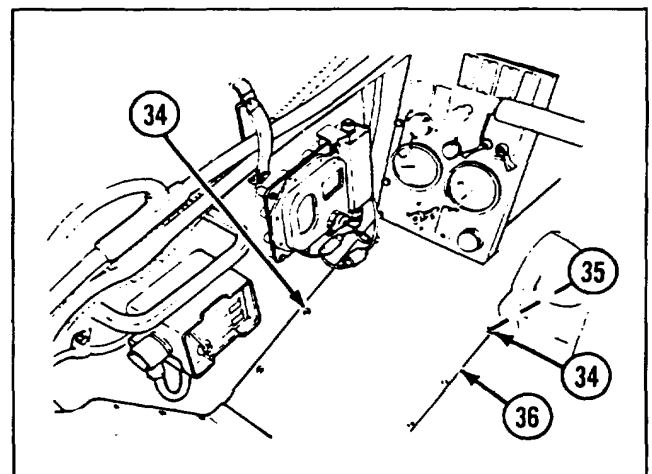
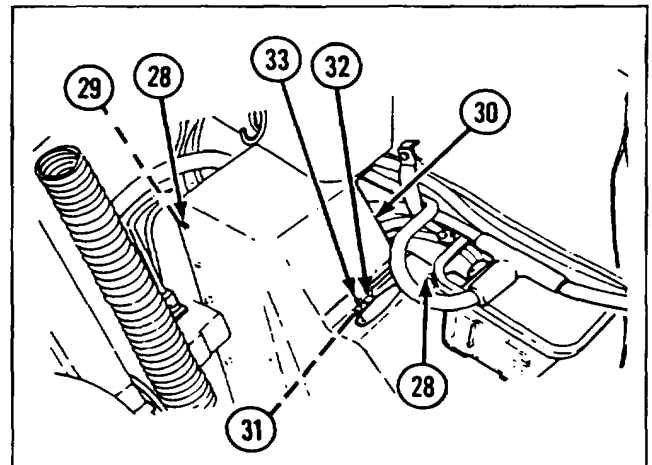
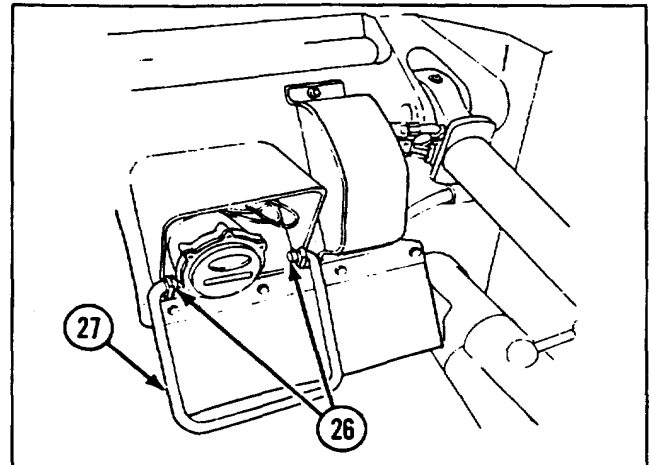
2-158. MAINTENANCE OF HULL DECKS AND MISCELLANEOUS COMPONENTS (CONT).

REMOVAL (CONT)

NOTE

Step 11 is written for removal of left fender extension step, but applies to both left and right fender extension steps.

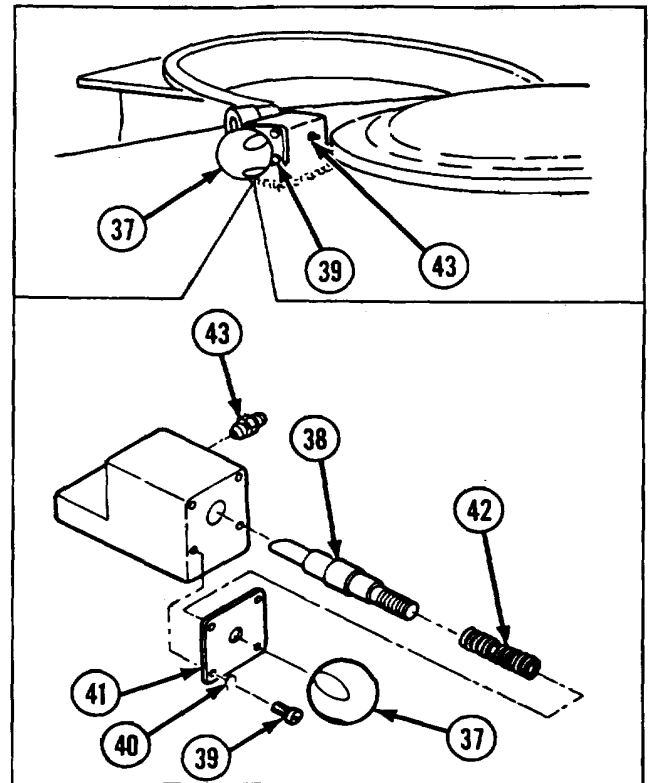
- 11 Remove two cotter pins (26) and left fender extension step (27).
- 12 Rotate nine driver's compartment cowl turnlock fastener studs (28) one quarter turn to release.
- 13 If any of nine driver's compartment cowl turnlock fastener studs (28) or six driver's compartment cowl retaining rings (29) are damaged, remove driver's compartment cowl turnlock fastener studs or retaining rings from driver's compartment aft cowl (30).
- 14 Remove antipilferage seal (31) from fire extinguisher control cable (32).
- 15 Loosen and slide nut (33) and fire extinguisher control cable (32) from slot in driver's compartment aft cowl (30), and remove driver's compartment aft cowl.
- 16 Rotate eight driver's compartment cowl turnlock fastener studs (34) one quarter turn to release.
- 17 If any of eight driver's compartment cowl fastener studs (34) or five retaining rings (35) are damaged, remove driver's compartment cowl fastener studs and retaining rings from driver's compartment forward cowl (36).
- 18 Remove driver's compartment forward cowl (36).



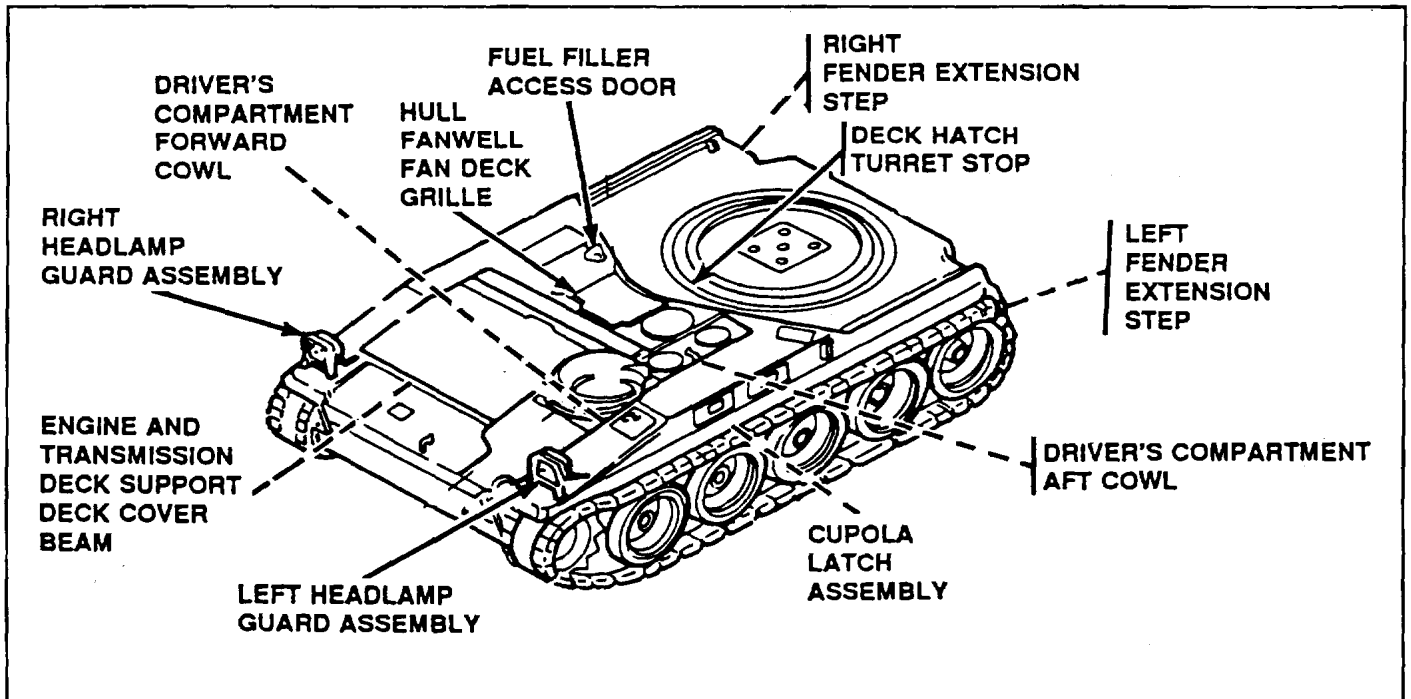
- 19 Unscrew latch pin knob (37) from cupola latch headless shoulder pin (38).
- 20 Remove four machine screws (39) and four lockwashers (40).
- 21 Remove cupola latch access cover (41), helical compression spring (42), and cupola latch headless shoulder pin (38).
- 22 Remove lubrication fitting (43).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).



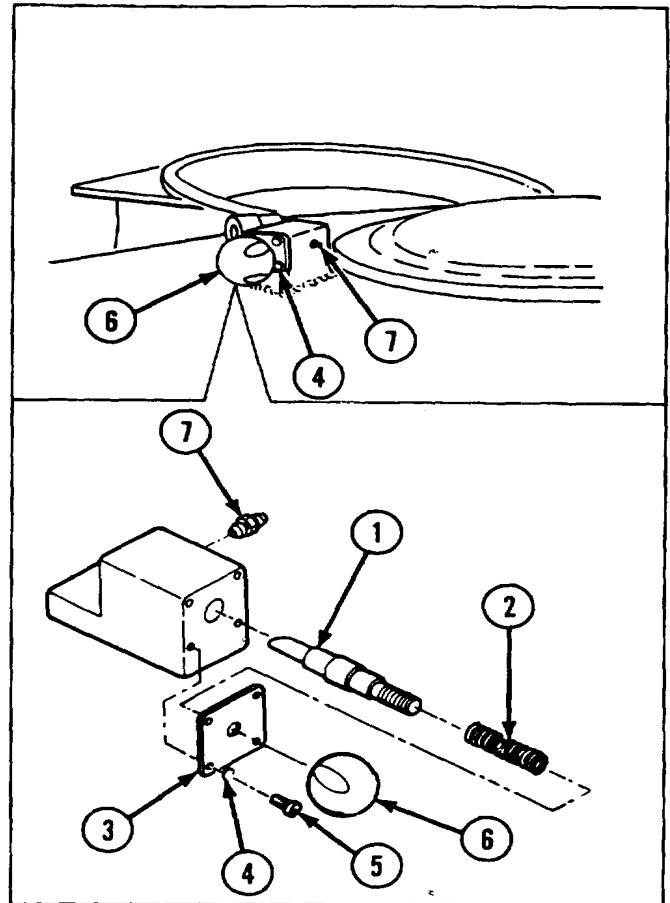
INSTALLATION



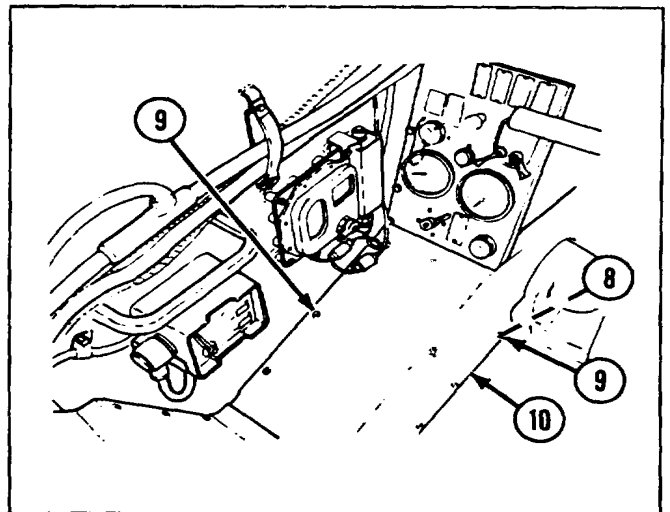
2-158. MAINTENANCE OF HULL DECKS AND MISCELLANEOUS COMPONENTS (CONT).

INSTALLATION (CONT)

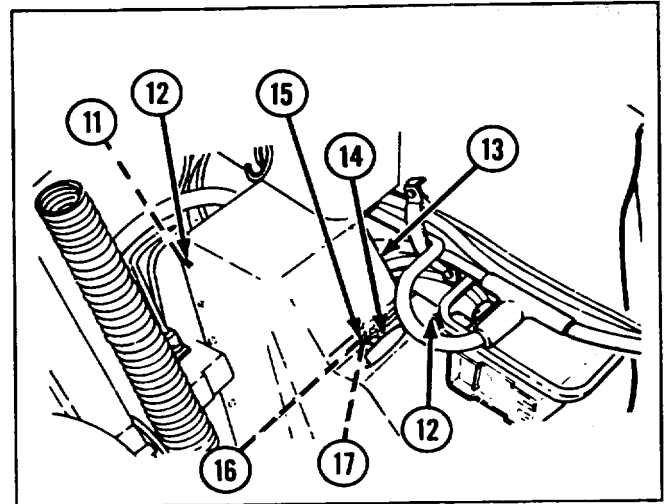
- 1 Install cupola latch headless shoulder pin (1) and helical compression spring (2).
- 2 Install cupola latch access cover (3), four new lockwashers (4), and four machine screws (5).
- 3 Apply sealing compound to threads of cupola latch headless shoulder pin (1) and latch pin knob (6).
- 4 Install latch pin knob (6) on cupola latch headless shoulder pin (1), and tighten.
- 5 Install lubrication fitting (7) and lubricate with grease.



- 6 If removed, install five retaining rings (8) and eight driver's compartment cowl turnlock fastener studs (9) in driver's compartment forward cowl (10).
- 7 Install driver's compartment forward cowl (10) and secure eight driver's compartment cowl fastener studs (9).



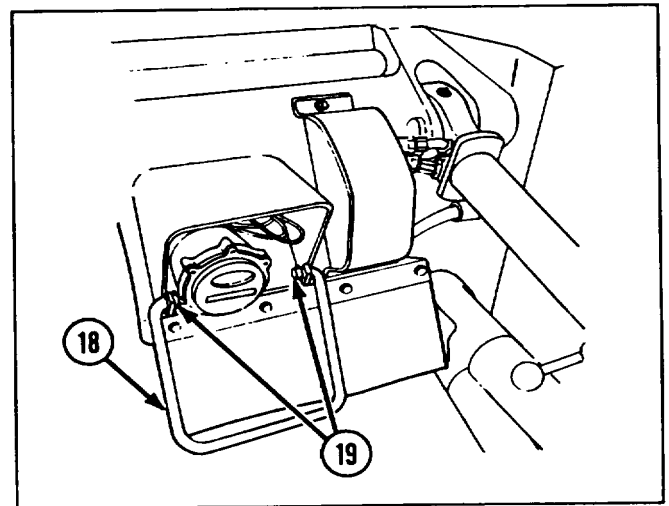
- 8 If removed, install six retaining rings (11) and nine driver's compartment cowl turnlock fastener studs (12) in driver's compartment aft cowl (13).
- 9 Slide fire extinguisher control cable (14) and nut (15) into slot in driver's compartment aft cowl (13), and install driver's compartment aft cowl. Secure nine driver's compartment cowl tumlock fastener studs (12).
- 10 Tighten nut (15). Install new antipilferage seal (16) around fire extinguisher control cable (14) and through head of hexagon head capscrew (17).



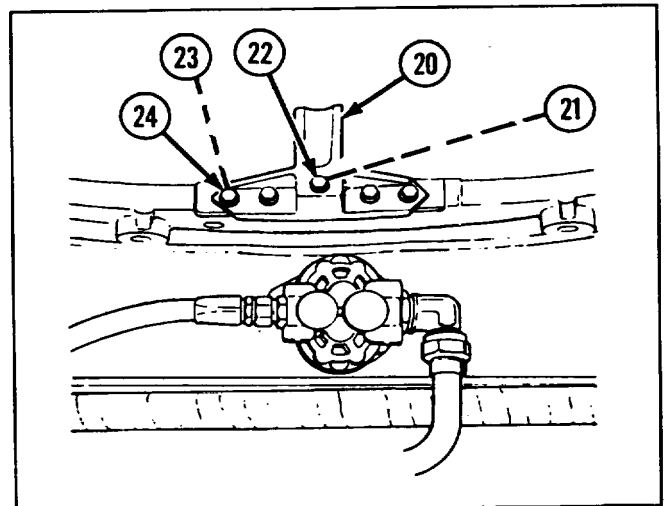
NOTE

Step 11 is written for installation of left fender extension step, but applies to both left and right fender extension steps.

- 11 Install left fender extension step (18), and secure with two new cotter pins (19).



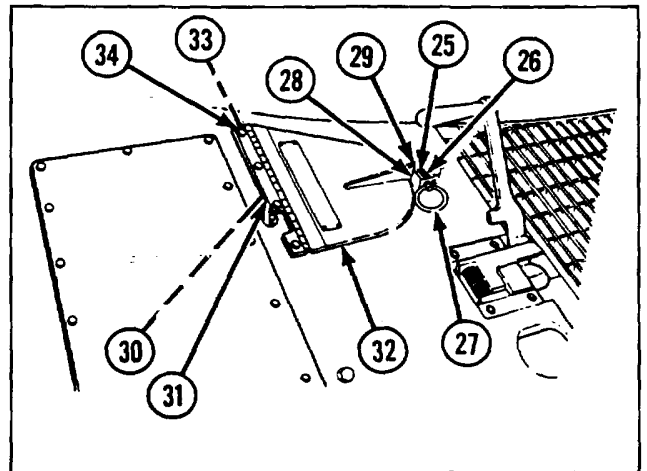
- 12 Install deck hatch turret stop (20), and secure with new lockwasher (21), hexagon head capscrew (22), four new lockwasher (23), and four hexagon head capscrews (24).



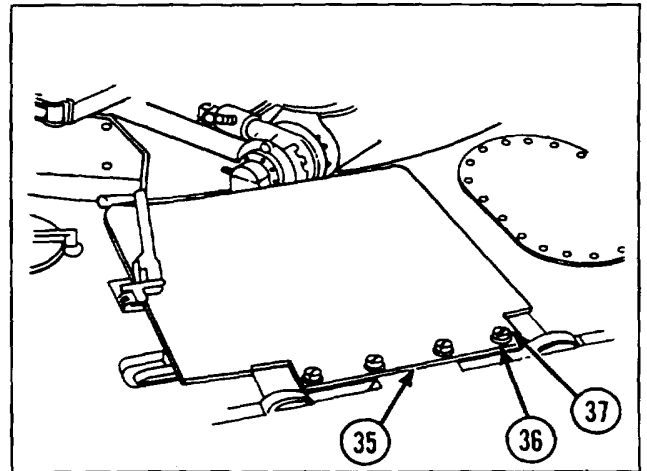
2-158. MAINTENANCE OF HULL DECKS AND MISCELLANEOUS COMPONENTS (CONT).

INSTALLATION (CONT)

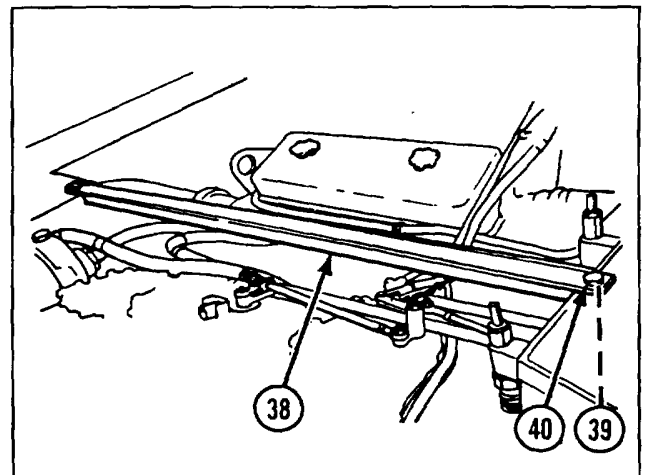
- 13 Install two flat washers (25), helical compression spring (26), and fuel filler cover latch radiator filler pin (27) in hull bracket (28).
- 14 Install new spring pin (29) in fuel filler cover latch radiator filler pin (27).
- 15 Install fuel filler cover hinge stepped spacer (30), fuel filler cover hinge plate spacer (31), and fuel filler access door (32). Secure with four new self-locking nuts (33) and four square neck bolts (34).
- 16 Pull cover latch pin (27) to latch, and secure fuel filler access door (32).



- 17 Install hull fanwell fan deck grille (35), and secure with four flat washers (36) and four hexagon head capscrews (37).



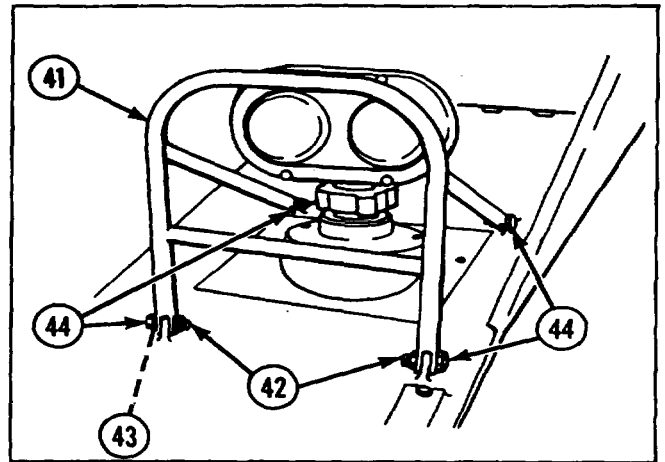
- 18 Install engine and transmission deck support deck cover beam (38), and secure with two new lockwashers (39) and two hexagon head capscrews (40).



NOTE

Step 19 is written for installation of left headlamp guard assembly, but applies to both right and left headlamp guard assemblies.

- 19** Install left headlamp guard assembly (41) and secure with four hexagon head capscrews (42), four new lockwashers (43), and four hexagon plain nuts (44).

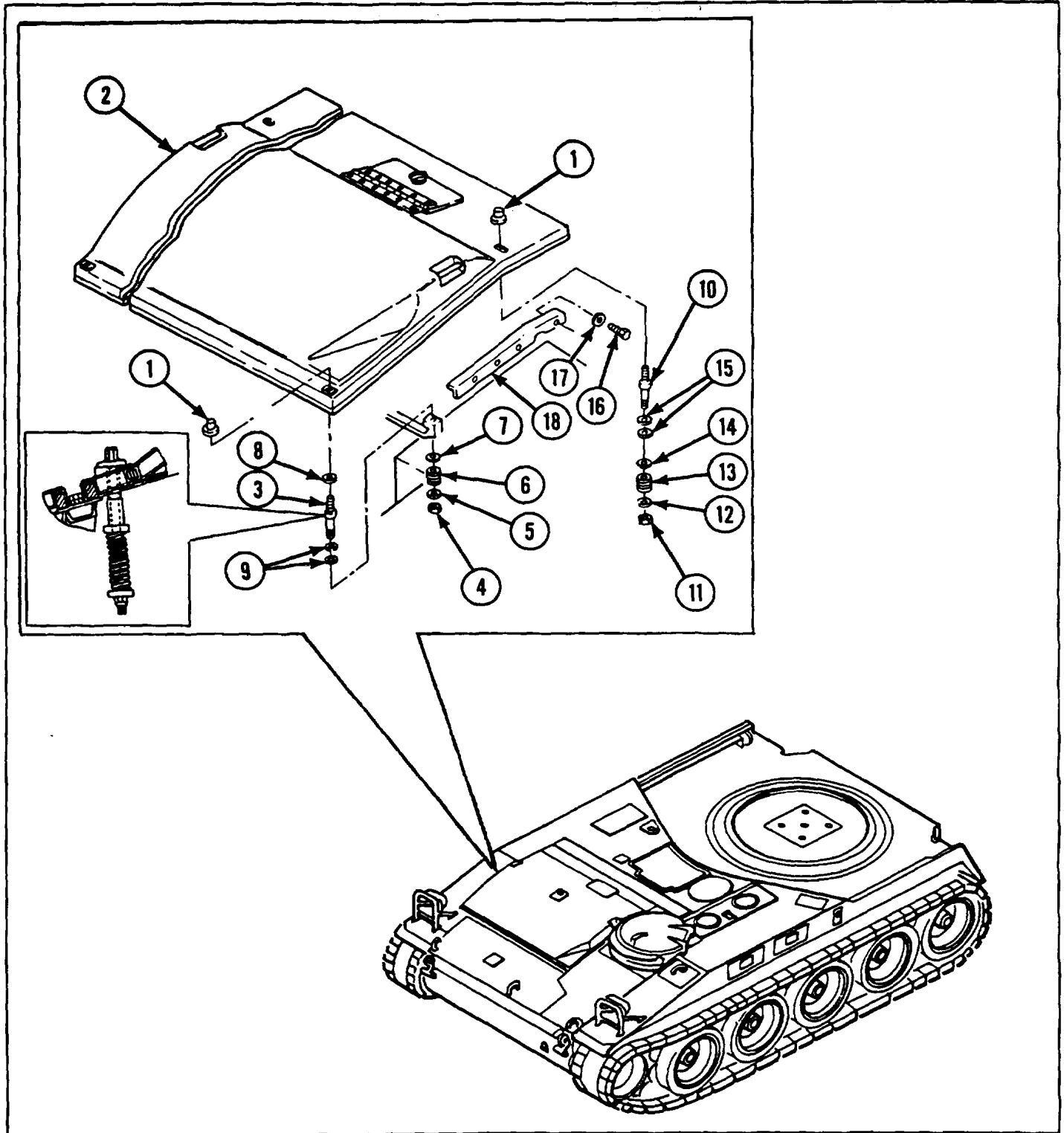


2-159. MAINTENANCE OF ENGINE DECK ASSEMBLY AND ATTACHING PARTS.

<p>This task covers:</p>	<p>a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i></p>	<p>d. <i>Reassembly</i> e. <i>Installation</i></p>
<p>INITIAL SETUP</p> <p><i>Tools and Special Tools</i> Automotive maintenance and repair shop equipments organizational maintenance, common no 1 (less power) (item 83, appx B)</p> <ul style="list-style-type: none"> • Torque wrench (0 to 170 ft-lb) <p><i>Materials/Parts</i> Adhesive (item 3, appx C) Deck seal (figure D-13, appx D) Door hinge (figure D-7, appx D) Headless straight rod (figure D-6, appx D) Lockwasher (12) Lockwasher (4) Self-locking nut (4) Silicone compound (item 40, appx C)</p> <p><i>References</i> TM 9-2350-24P-1</p>		

2-159. MAINTENANCE OF ENGINE DECK ASSEMBLY AND ATTACHING PARTS (CONT).

REMOVAL



- 1 Remove four plain cap nuts (1) and engine deck lid assembly (2).

NOTE

Steps 2 and 3 are written for removal of two forward deck cover engine rods.

- 2 Remove two self-locking nuts (3), two helical compression seats (4), two helical compression springs (5), and two helical compression seats (6).

- 3 Remove two deck cover engine rods (7), two sleeve spacers (8), and four flat washers (9).

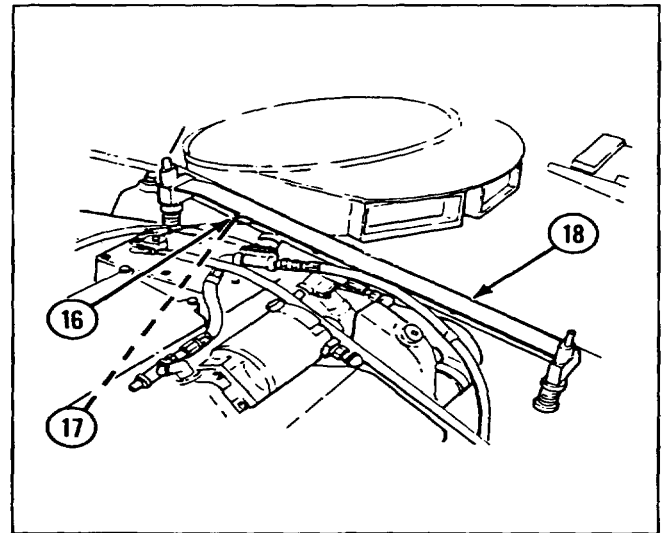
NOTE

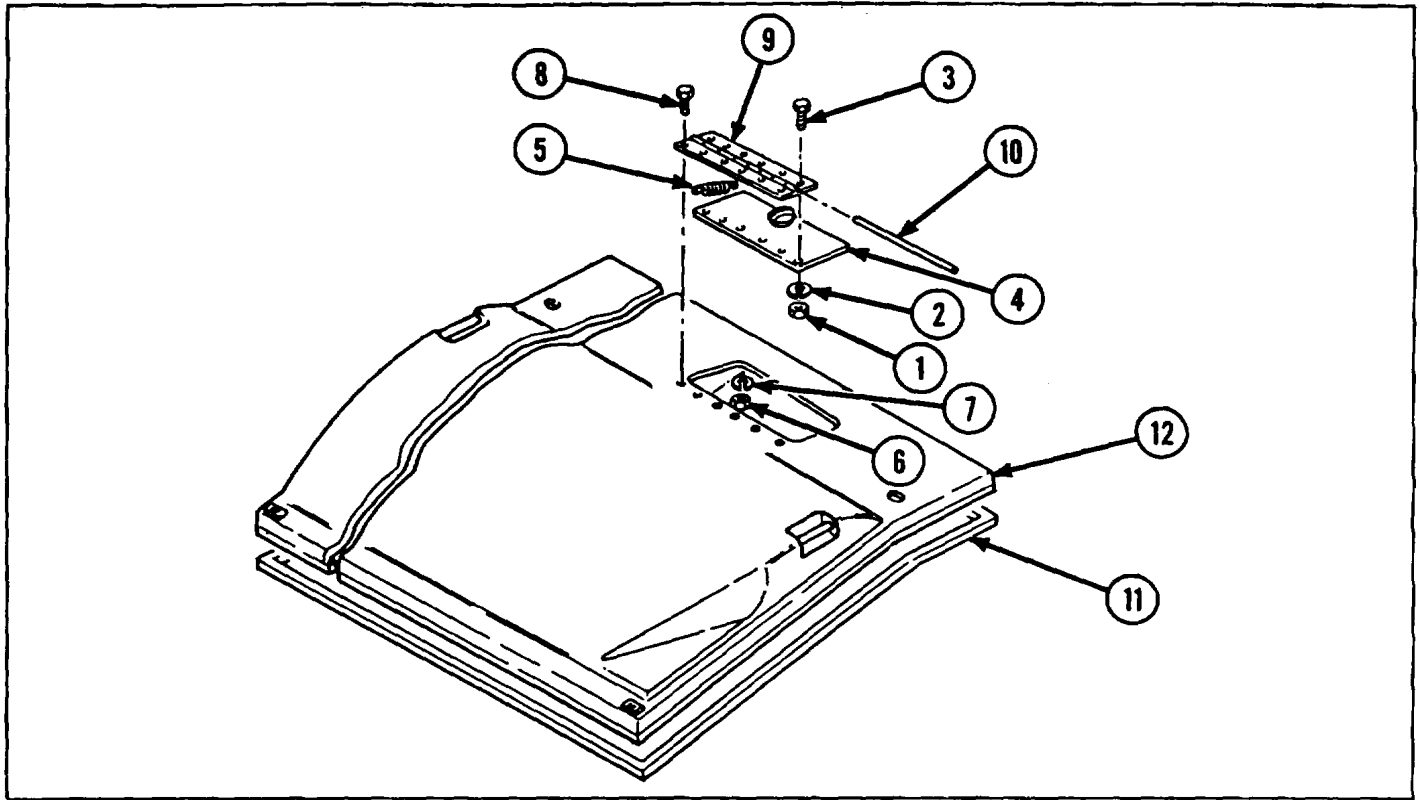
Steps 4 and 5 are written for removal of two rear deck cover engine rods.

- 4 Remove two self-locking nuts (10), two helical compression seats (11), two helical compression springs (12), and two helical compression seats (13).

- 5 Remove two deck cover engine rods (14) and four flat washers (15).

- 6 Remove four hexagon head capscrews (16), four lockwashers (17), and angle bracket (18).



2-159. MAINTENANCE OF ENGINE DECK ASSEMBLY AND ATTACHING PARTS (CONT).**DISASSEMBLY**

- 1 Remove six plain hexagon nuts (1), six lockwashers (2), and six hexagon head capscrews (3).
- 2 Remove engine deck access door (4). Remove helical extension spring (5) from engine deck access door (3).
- 3 Remove six plain hexagon nuts (6), six lockwashers (7), and six hexagon head capscrews (8).
- 4 Remove butt hinge (9) and headless straight rod (10).
- 5 If damaged, remove deck seal (11) from engine deck (12).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Butt hinge is a manufactured item, refer to appendix D.
- 3 Headless straight rod is a manufactured item, refer to appendix D.
- 4 Deck seal is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

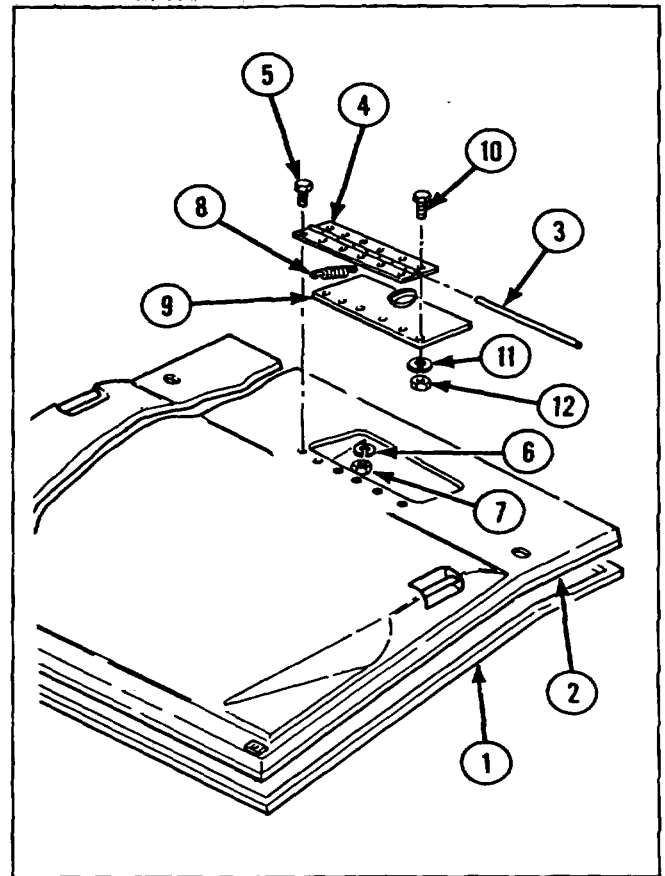
REASSEMBLY

- 1 If removed, cut and trim new deck seal to fit engine deck (2). Apply adhesive or silicone compound to new deck seal (1) and install on engine deck (2).

NOTE

Make headless straight rod (3) 0.10 to 0.20 in. (0.25 to 0.51 cm) shorter than door hinge (4).

- 2 Install headless straight rod (3) in butt hinge (4). Secure by bending corner of loops on butt hinge.
- 3 Install butt hinge (4) to engine deck (2), and secure with six new lockwashers (6) six hexagon head capscrews (7), and six plain hexagon nuts (8).
- 4 Install helical extension spring (8) on engine deck access door (9).
- 5 Install engine deck access door (9), and secure with six new lockwashers (10), six hexagon head capscrews (11), and six plain hexagon nuts (12).

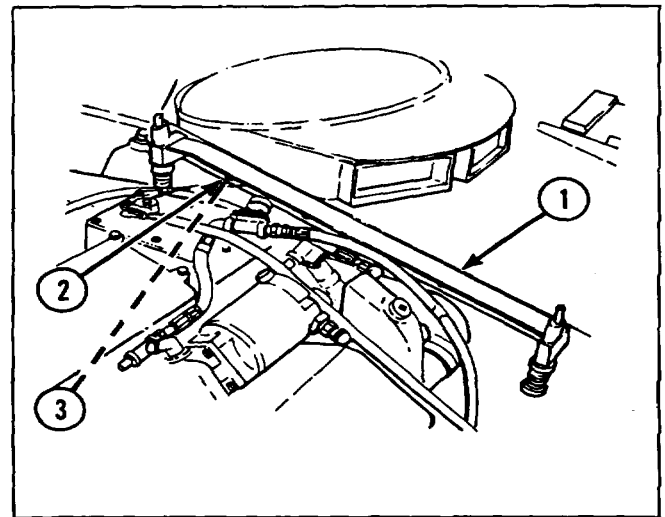


INSTALLATION

NOTE

Locate angle bracket so top edge is even with vehicle deck. Grind engine wall smooth, if necessary.

- 1 Install angle bracket (1), and secure with four new lockwashers (2) and four hexagon head capscrews (3). Torque screws to 21.00 to 23.00 ft-lb (28.35 to 31.05 N-m).



2-159. MAINTENANCE OF ENGINE DECK ASSEMBLY AND ATTACHING PARTS (CONT).

INSTALLATION (CONT)

NOTE

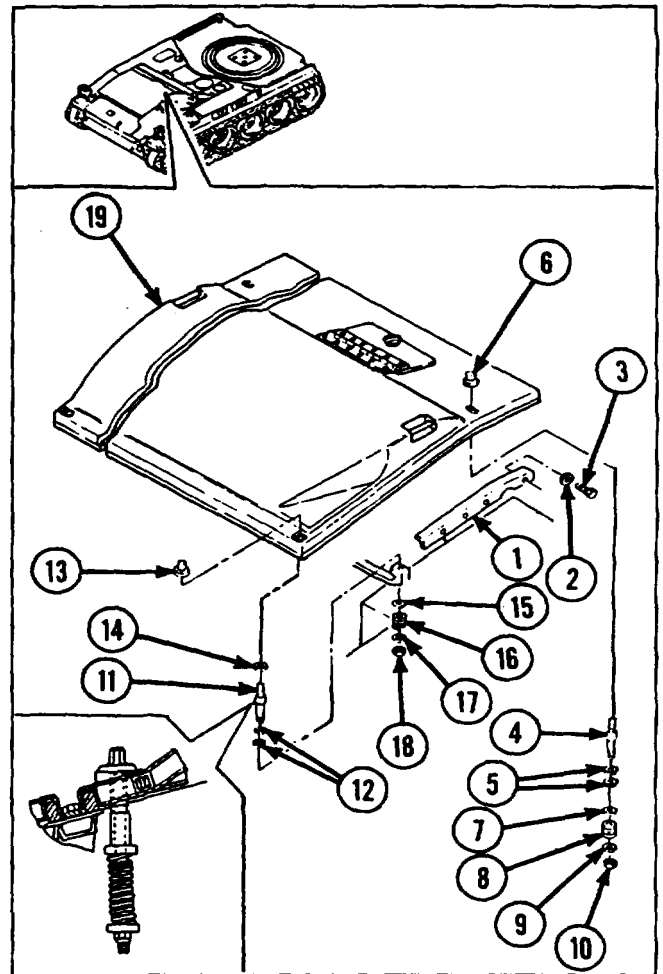
- Steps 2 and 3 are written for installation of two rear deck cover engine rods.
- Use flat washers as necessary to shim up deck cover engine rods so that plain cap nuts will start on threads.

2 Install four flat washers (4) on two deck cover engine rods (5), and install deck cover engine rods (5) in deck brackets.

3 Install two helical compression seats (7) two helical compression springs (8), two helical compression seats (9), and two new self-locking nuts (10). Tighten self-locking nuts (10) until helical compression springs (8) start to compress, then turn three full turns.

NOTE

- Steps 4 and 5 are written for installation of two forward deck cover engine rods.
- Use flat washers as necessary to shim deck cover engine rods so that plain cap nuts will start on threads.



4 Install four flat washers (11) and two sleeve spacers (12) on two deck cover engine rods (13), and install deck cover engine rods (13) in deck brackets.

5 Install two helical compression seats (14), two helical compression springs (15), two helical compression seats (16), and two new self-locking nuts (17). Tighten self-locking nuts (17) until helical compression springs (15) start to compress, then turn three full turns.

NOTE

If plain cap nuts will not engage on threads of any deck cover engine rod, install flat washers as necessary until adjustment is correct.

6 Install engine deck lid assembly (18), and secure with four plain cap nuts (19). Torque plain cap nuts to 50.00 ± 5.00 ft-lb (67.50 ± 6.75 N-m).

2-160. MAINTENANCE OF TRANSMISSION DECK LID ASSEMBLY AND ATTACHING PARTS.

This task covers:

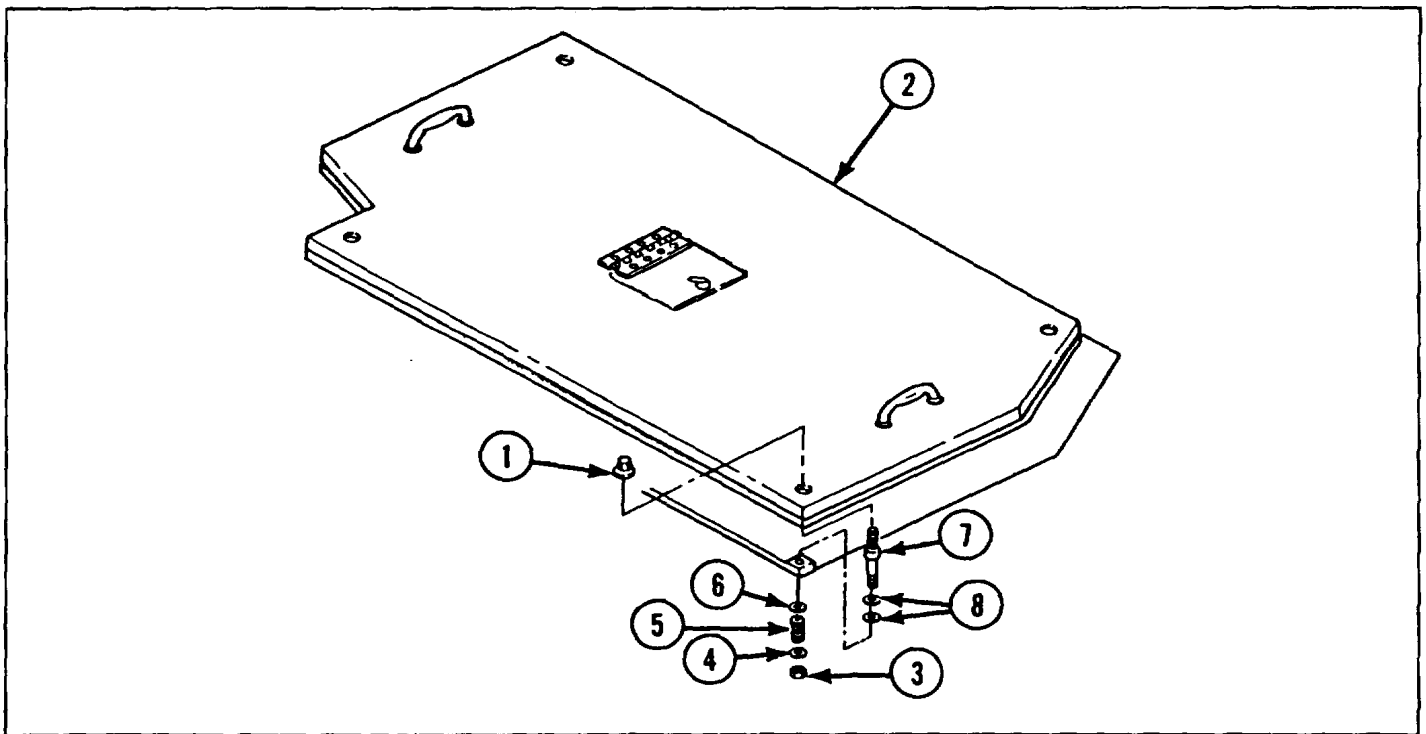
- | | |
|-----------------------------|------------------------|
| a. <i>Removal</i> | d. <i>Reassembly</i> |
| b. <i>Disassembly</i> | e. <i>Installation</i> |
| c. <i>Inspection/Repair</i> | |

INITIAL SETUP*Materials/Parts*

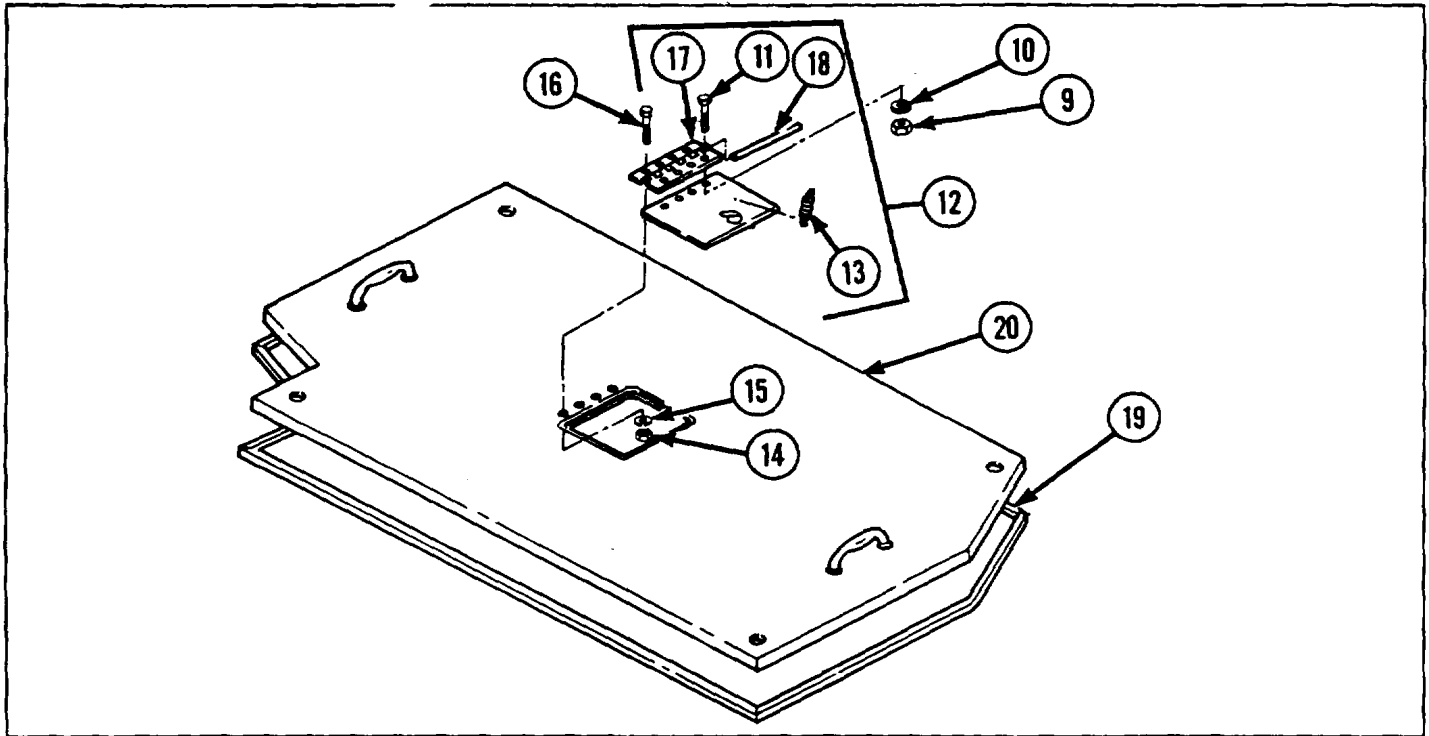
Adhesive (item 5, appx C)
 Butt hinge (figure D-7, appx D)
 Deck seal (figure 0-13, appx D)
 Headless straight pin (figure D-6, appx D)
 Lockwasher (8)
 Self-locking nut (4)
 Silicone compound (item 40, appx C)

References

TM 9-2350-304-24P-1

REMOVAL

- 1 Remove four plain cap nuts (1) and transmission deck lid assembly (2).
- 2 Remove four self-locking nuts (3), four helical compression seats (4), four helical compression springs (5), and four helical compression seats (6).
- 3 Remove four deck cover transmission rods (7) and eight flat washers (8).

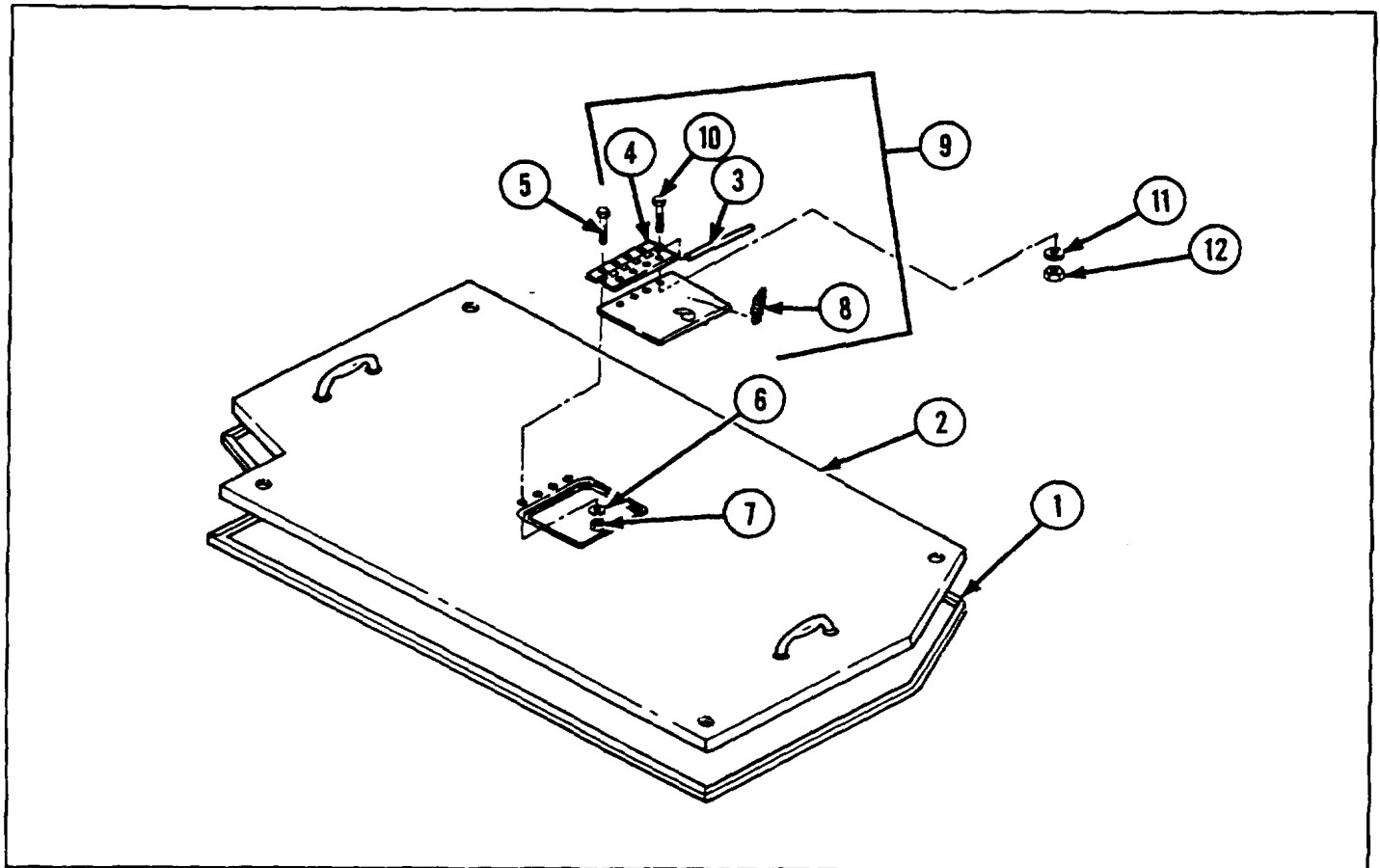
2-160. MAINTENANCE OF TRANSMISSION DECK LID ASSEMBLY AND ATTACHING PARTS (CONT).**DISASSEMBLY**

- 1 Remove four nuts (9), four lockwashers (10), and four hexagon head capscrews (11).
- 2 Remove access door (12). Remove helical extension spring (13) from transmission deck access door (12).
- 3 Remove four hexagon plain nuts (14), four lockwashers (15), and four hexagon head capscrews (16).
- 4 Remove butt hinge (17) and straight pin (18).
- 5 If damaged, remove deck seal (19) from transmission deck (20).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Headless straight pin is a manufactured item, refer to appendix D.
- 3 Butt hinge is a manufactured item, refer to appendix D.
- 4 Deck seal is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY



- 1 If removed, cut and trim new deck (1) to fit transmission deck (2). Apply adhesive or silicone compound to new deck seal (1) and install on transmission deck (2).

NOTE

Make straight pin 0.10 to 0.20 in. (0.25 to 0.51 cm) shorter than door hinge.

- 2 Install straight pin (3) in butt hinge (4). Secure by bending corner of loops on butt hinge.
- 3 Install butt hinge (4) to transmission deck (2), and secure with four new lockwashers (5), four hexagon head capscrews (6), and four hexagon plain nuts (7).
- 4 Install helical extension spring (8) on transmission deck access door (9).
- 5 Install transmission deck access door (9) on transmission deck (2), and secure with four new lockwashers (10), four hexagon head capscrews (11), and four hexagon plain nuts (12).

2-160. MAINTENANCE OF TRANSMISSION DECK LID ASSEMBLY AND ATTACHING PARTS (CONT).

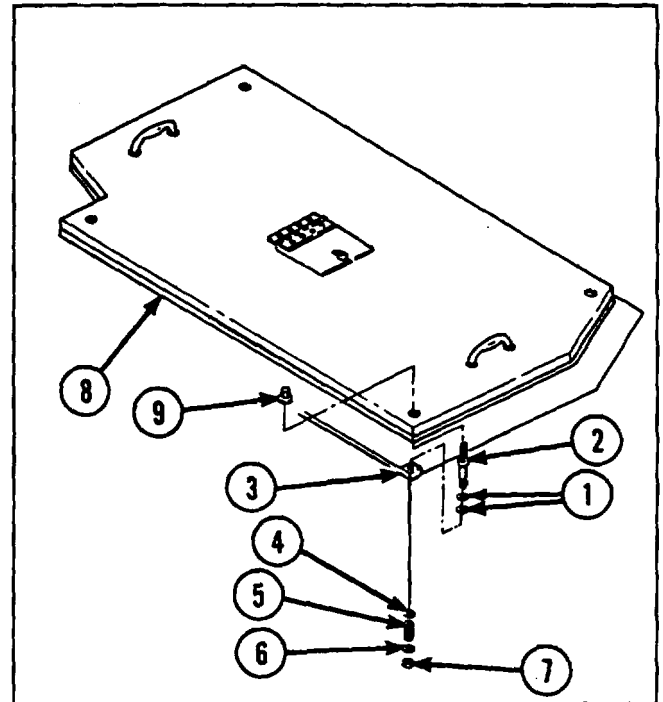
INSTALLATION

- 1 Install eight flat washers (1) on four deck cover transmission rods (2), and install deck cover transmission rods (2) in hull brackets (3).
- 2 Install four helical compression seats (4) four helical compression springs (5), four helical compression seats (6), and four new self-locking nuts (7).

NOTE

Use flat washers as necessary to shim up deck cover transmission rods so that cap nuts will start on threads.

- 3 Install transmission deck lid assembly (E) and secure with four plain cap nuts (9).



2-161. MAINTENANCE OF TRAVEL LOCK.

This task covers:

a. Removal

b. Inspection/Repair

c. Installation

INITIAL SETUP

Materials/Parts

- Cotter pin (2)
- Lockwasher (4)
- Lockwasher (3)

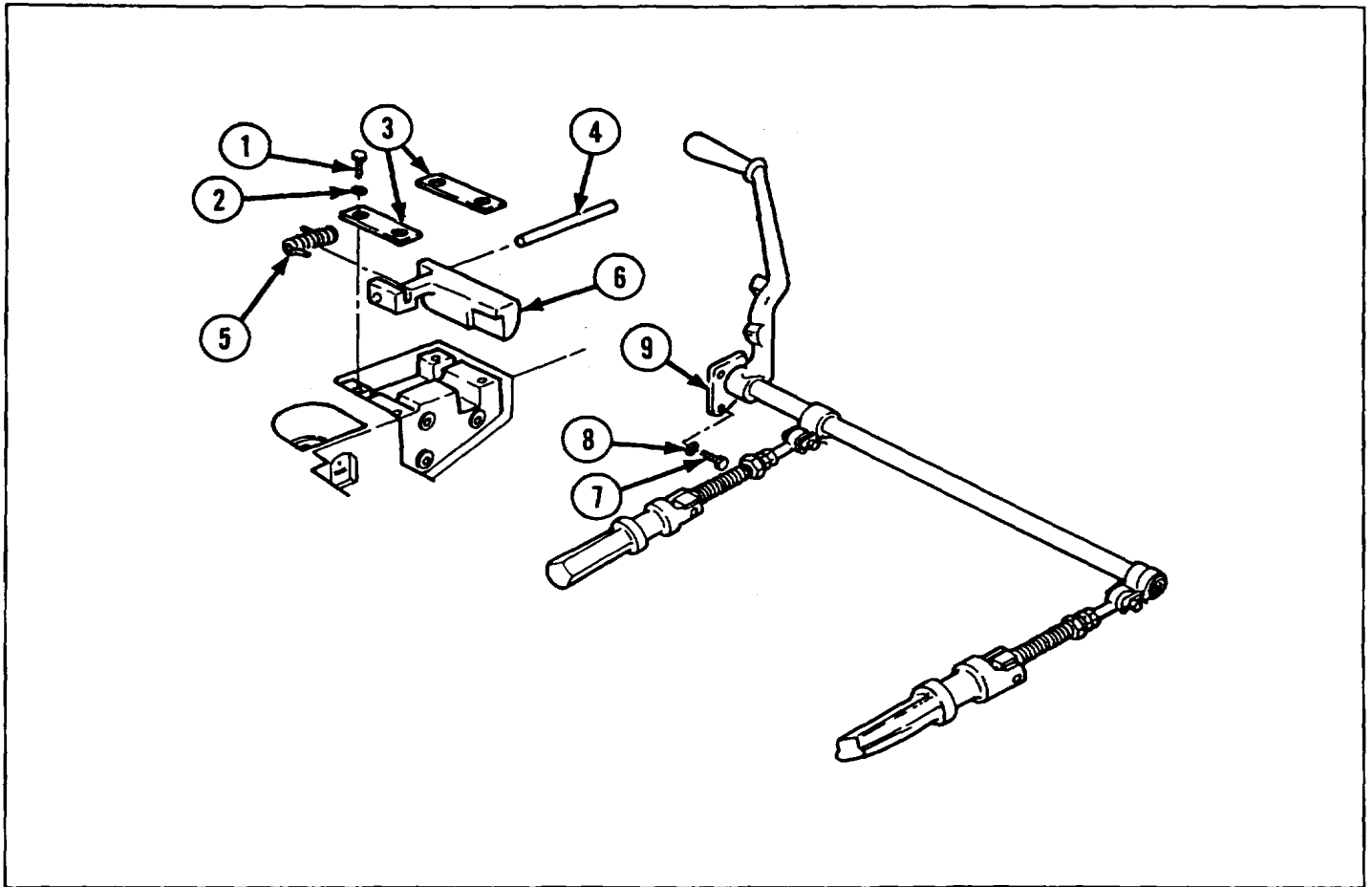
References

TM 9-2350-304-24P-1

Equipment Conditions

2-879 Hull fanwell deck grille removed

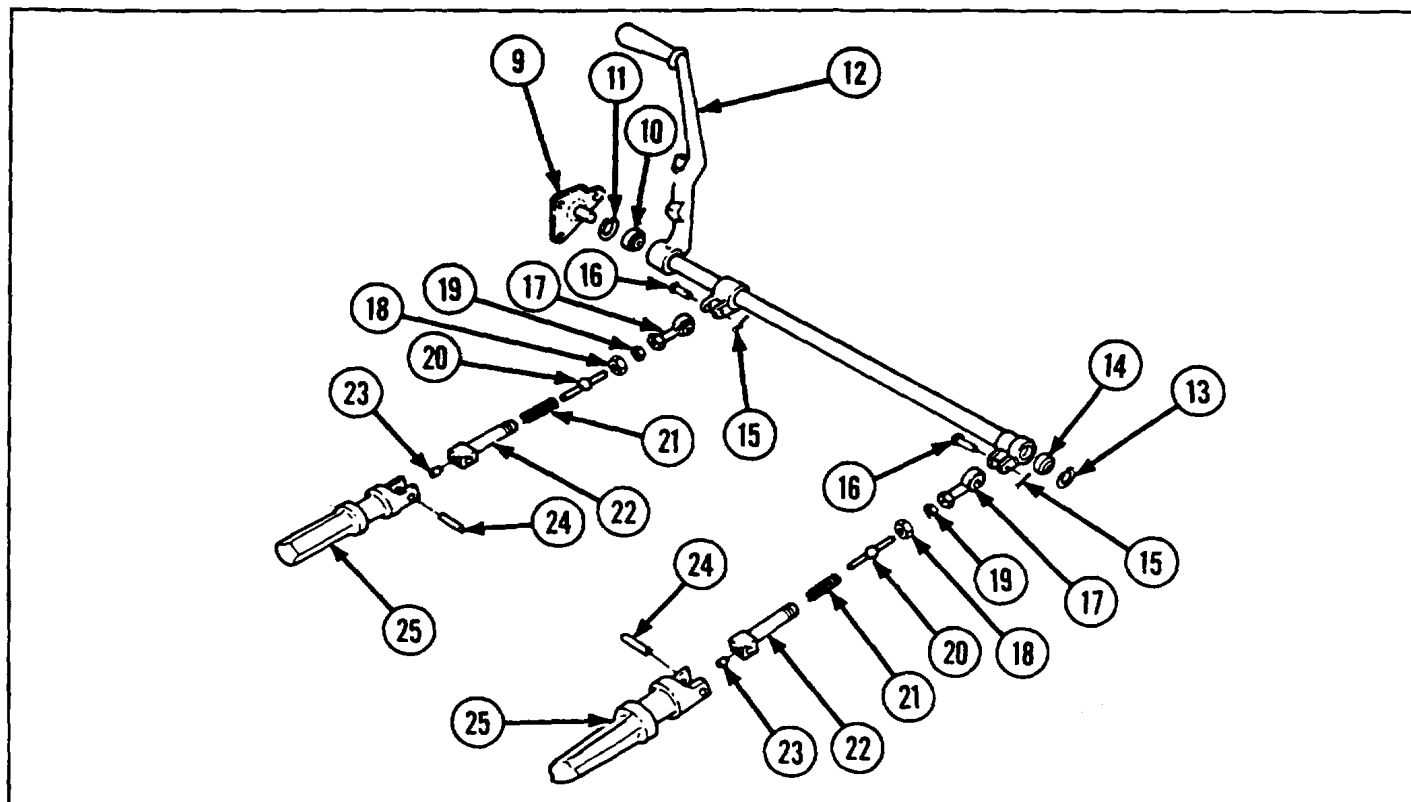
REMOVAL



- 1 Remove four hexagon head capscrews (1), four lockwashers (2), and two handle covers (3).
- 2 Remove straight headless pin (4), helical compression spring (5), and travel lock latch (6).
- 3 Remove three hexagon head capscrews (7), three lockwashers (8), and travel lock fulcrum (9) with attached parts.

2-161. MAINTENANCE OF TRAVEL LOCK (CONT).

REMOVAL (CONT)



4 Remove retaining ring (10), plain bearing (11), and travel lock fulcrum (9) from manual control lever (12).

5 Remove retaining ring (13) and plain bearing (14) from manual control lever (12).

NOTE

Steps 6 thru 8 are written for removal of one rod end clevis, but apply to both rod end clevises.

6 Remove cotter pin (15), straight headed pin (16), and plain rod end bearing (17) from manual control lever (12).

7 Remove plain rod end bearing (17), plain hexagon nut (18), packing nut (19), handle plunger (20), and helical compression spring (21) from travel lock cylinder (22).

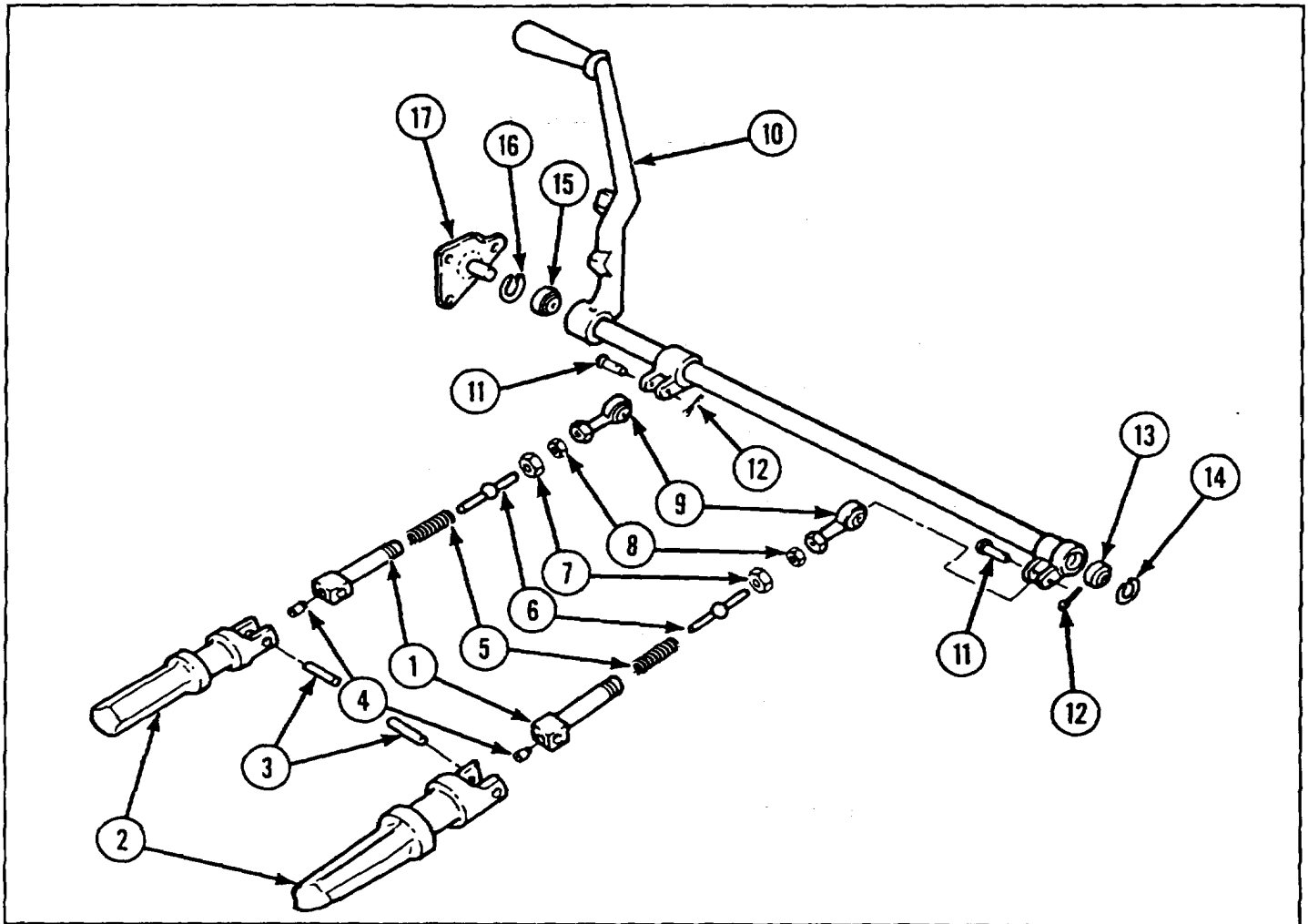
8 Remove setscrew (23), headless straight pin (24), and left rod end clevis (25) from travel lock cylinder (22).

INSPECTION/REPAIR

1 Inspect for broken, damaged, or missing parts.

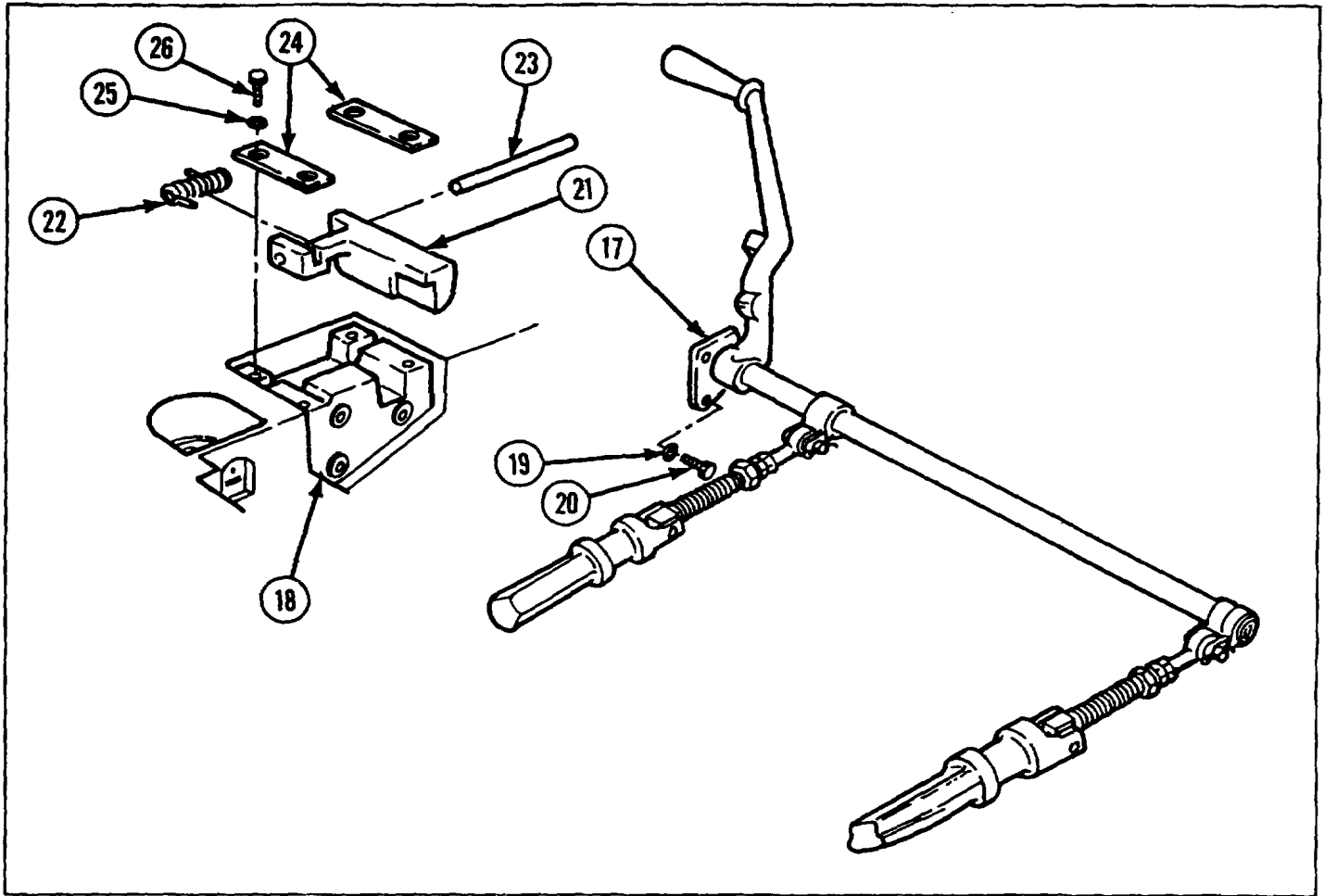
2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

**NOTE**

Steps 1 thru 3 are written for reassembly of left rod end clevis, but also apply to reassembly of right rod end clevis.

- 1 Install travel lock cylinder (1) in left rod end clevis (2), and secure with headless straight pin (3). Install setscrew (4) in travel lock cylinder (1).
- 2 Install helical compression spring (5), handle plunger (6), packing nut (7), plain hexagon nut (8), and plain rod end bearing (9) to travel lock cylinder (1).
- 3 Install travel lock cylinder (1) into slot of manual control lever (10), and secure with straight headed pin (11) and new cotter pin (12).
- 4 Install plain rod end bearing (13) and retaining ring (14) in end of manual control lever (10).
- 5 Install plain bearing (15), retaining ring (16), and travel lock fulcrum (17) to manual control lever (10).

2-161. MAINTENANCE OF TRAVEL LOCK (CONT).*INSTALLATION (CONT)*

- 6 Install travel lock fulcrum (17) with attached parts to housing (18), and secure with three new lockwashers (19) and three hexagon head capscrews (20).
- 7 Install travel lock latch (21), helical compression spring (22), and straight headless pin (23).
- 8 Install two handle covers (24), and secure with four new lockwashers (25) and four hexagon head capscrews (26).

2-162. MAINTENANCE OF MUD GUARDS, HOSE GUARDS, FENDER EXTENSIONS, AND ATTACHING PARTS.

This task covers: a. *Removal* b. *Inspection/Repair* c. *Installation*

INITIAL SETUP

Materials/Parts

Lockwasher (22)
Self-locking nut (4)

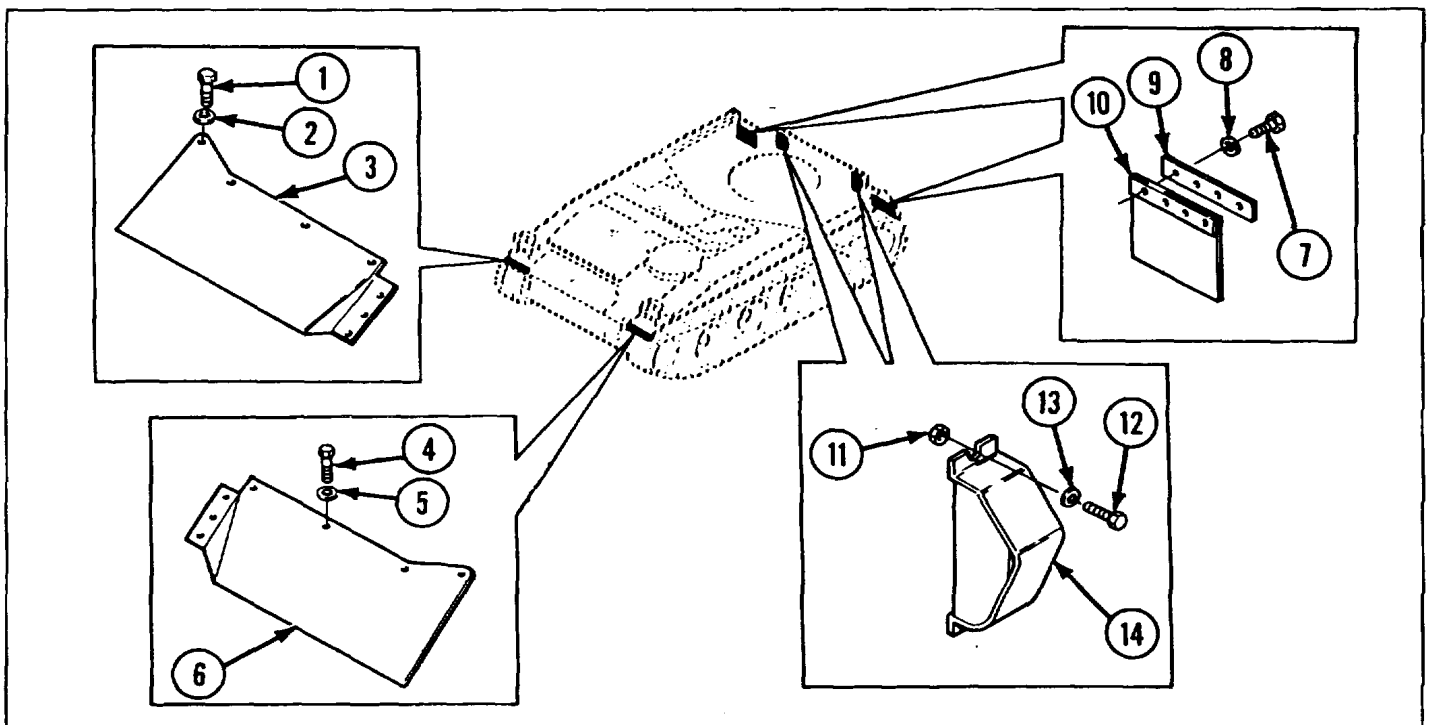
Equipment Conditions

Spade lowered for access to hose guards
(TM 9-2350-304-10)

References

TM 9-2350-304-10
TM 9-2350-304-24P-1

REMOVAL



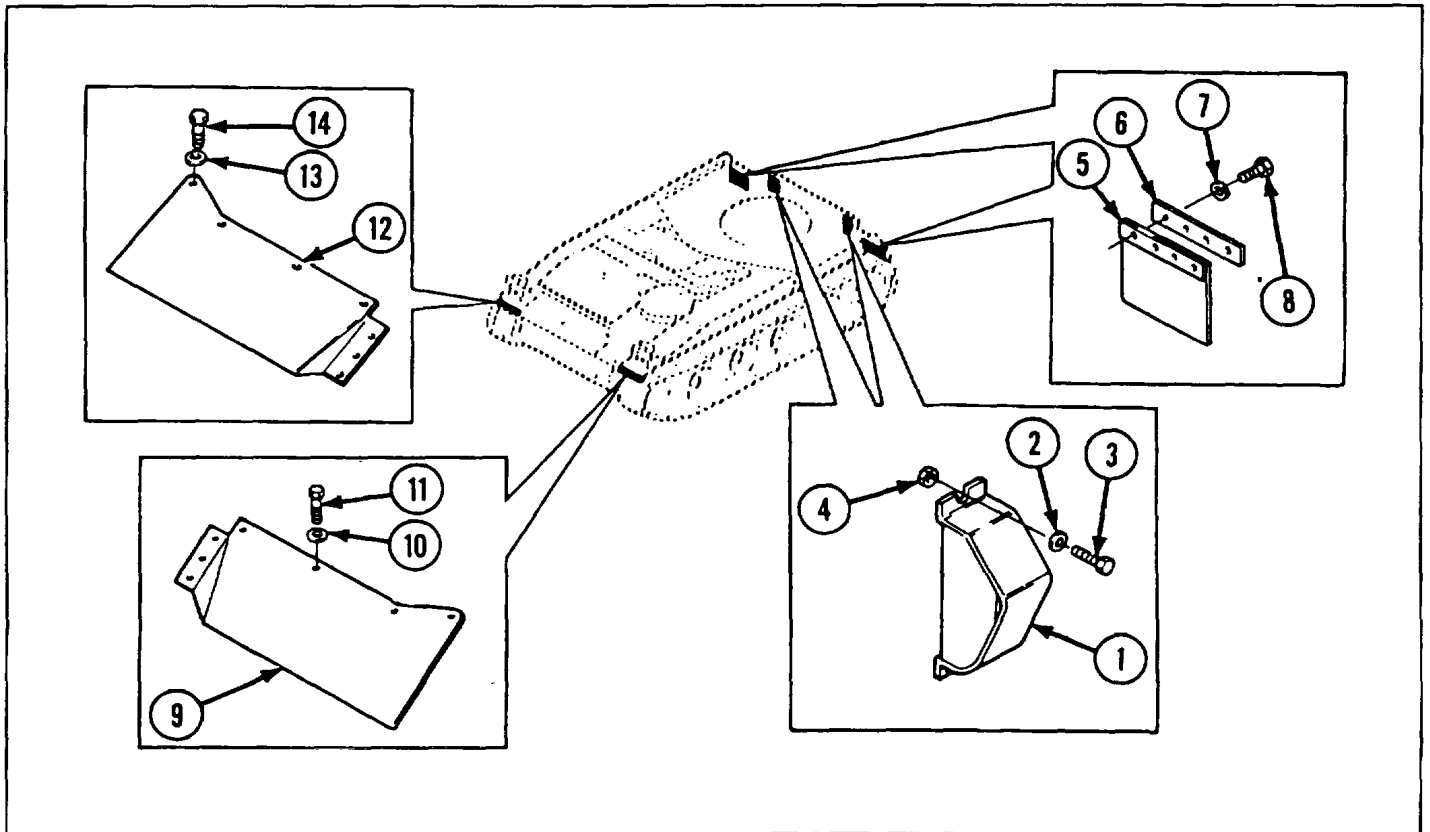
- 1 Remove seven hexagon head capscrews (1), seven lockwashers (2), and right front fender extension (3).
- 2 Remove seven hexagon head capscrews (4), seven lockwashers (5), and left front fender extension (6).
- 3 Remove eight hexagon head capscrews (7) and eight lockwashers (8). Remove two mud guard strips (9) and two wheel splash guards (10).
- 4 Remove four self-locking nuts (11), four hexagon head capscrews (12), and four flat washers (13). Remove two spade cylinder hose guards (14).

2-162. MAINTENANCE OF MUD GUARDS, HOSE GUARDS, FENDER EXTENSIONS, AND ATTACHING PARTS (CONT).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION



- 1 Install two spade cylinder hose guards (1). Install four flat washers (2), four hexagon head capscrews (3), and four new self-locking nuts (4).
- 2 Install two wheel splash guards (5) and two mud guard strips (6). Install eight new lockwashers (7) and eight hexagon head capscrews (8).
- 3 Install left front fender extension (9), seven new lockwashers (10), and seven hexagon head capscrews (11).
- 4 Install right front fender extension (12), seven new lockwashers (13), and seven hexagon head capscrews (14).

2-163. MAINTENANCE OF DRIVER'S HATCH COVER.

This task covers:

- a. *Removal/Disassembly*
 b. *Inspection/Repair*

- c. *Reassembly/Installation*

INITIAL SETUP*Materials/Parts*

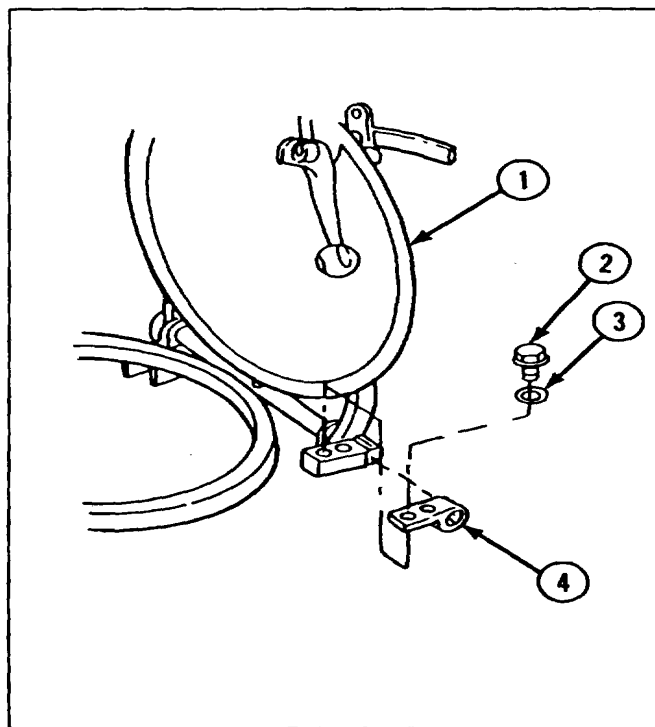
Cushioning pad
 Cushioning pad
 Grease (item 19, appx C)
 Lockwasher (2)
 Lockwasher (2)
 Rubber adhesive (item 4, appx C)
 Sealing compound (item 36, appx C)
 Self-locking nut
 Spring tension clip

References

TM 9-2350-304-24P-1

REMOVAL/DISASSEMBLY

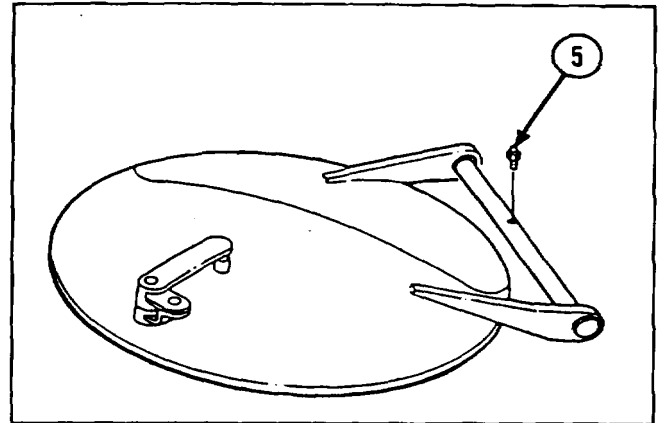
- 1 Open driver's hatch cover (1) and hold in upright position.
- 2 Remove two hexagon head capscrews (2) and two lockwashers (3).
- 3 Remove cupola spring anchor (4).



2-163. MAINTENANCE OF DRIVER'S HATCH COVER (CONT).

REMOVAL/DISASSEMBLY (CONT)

4 If damaged, remove lubrication fitting (5).



5 Remove self-locking nut (6) and flat washer (7).

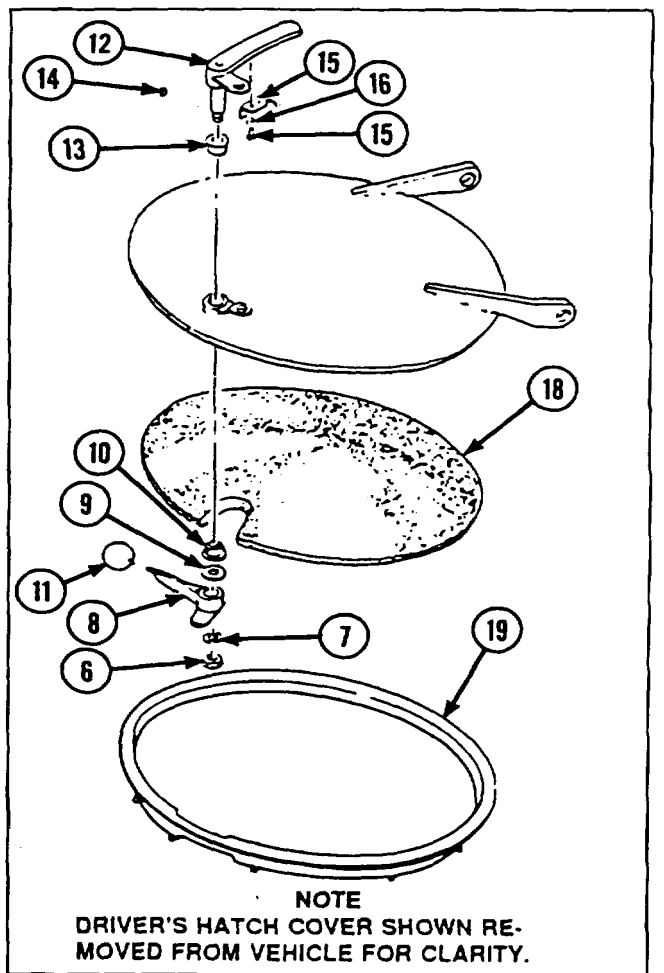
6 Remove cupola cover Inner door handle (8), flat washer (9), and cupola cover handle sleeve bearing (10).

7 Remove cupola cover inner handle knob (11).

8 Remove outer cover door handle (12), cupola cover handle sleeve bearing (13), and woodruff key (14).

9 Remove two machine screws (15) and two lockwashers (16).

10 Remove spring tension clip (17).



NOTE
Do not remove cushioning pads unless they are damaged and replacement is required.

11 Bend back tabs on cushioning pad (18).

12 Remove cushioning pads (18 and 19).

NOTE
DRIVER'S HATCH COVER SHOWN REMOVED FROM VEHICLE FOR CLARITY.

INSPECTION/REPAIR

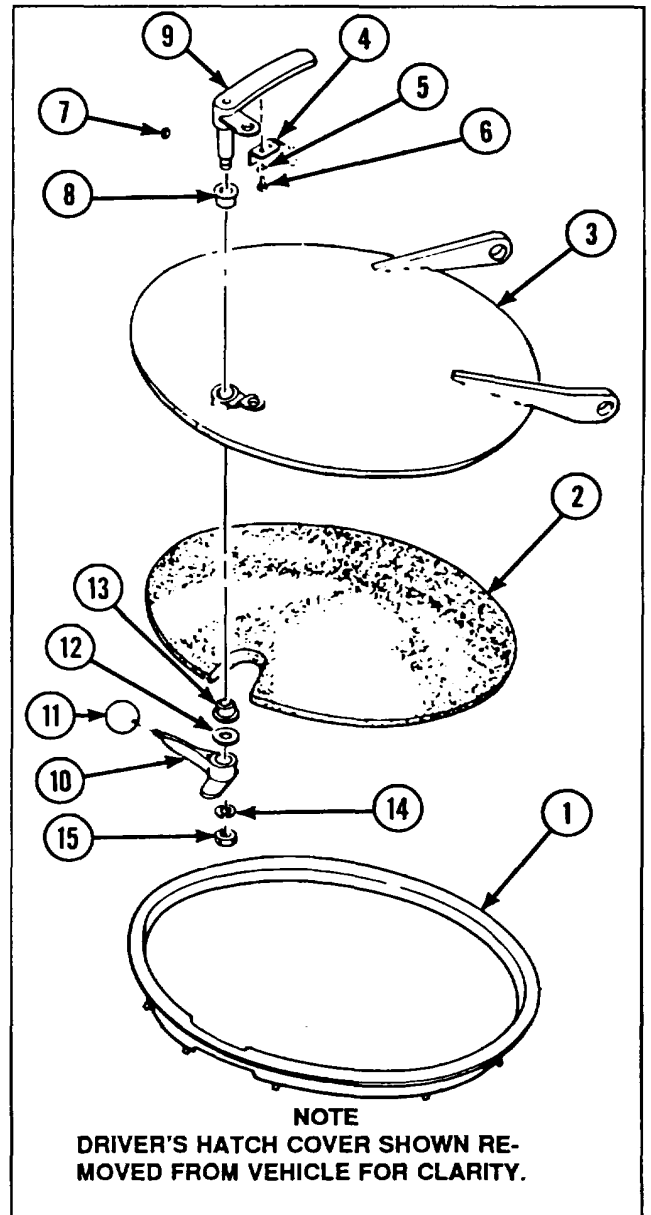
- 1 Inspect for broken, damaged, or missing parts.
- 2 For further repair of driver's hatch cover, notify direct support maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY/INSTALLATION

NOTE

Perform steps 1 and 2 only if cushioning pads have been removed.

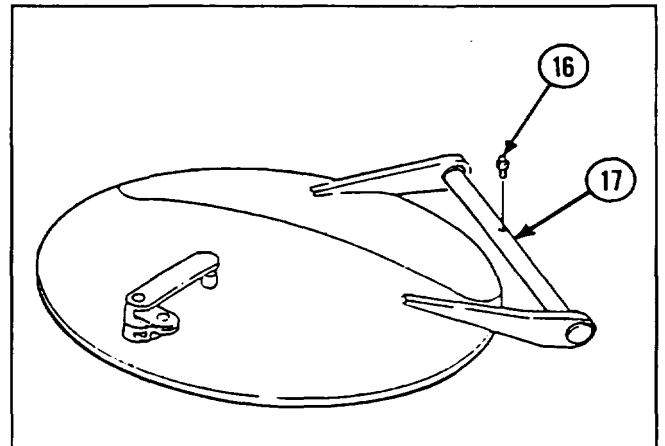
- 1 Coat mating surfaces of new cushioning pads (1 and 2) and hatch door (3) with rubber adhesive if removed.
- 2 Install new cushioning pads (1 and 2) on hatch door (3). Bend back tabs on cushioning pad (1). Allow to air dry for 1 hour.
- 3 Install new spring tension clip (4).
- 4 Install two new lockwashers (5) and two machine screws (6).
- 5 Install woodruff key (7), cupola cover handle sleeve bearing (8), and outer cove door handle (9).
- 6 Apply sealing compound to threads on cupola cover inner door handle (10).
- 7 Install cupola cover inner handle knob (11 on cupola cover inner door handle (10).
- 8 Install flat washer (12), cupola cover handle sleeve bearing (13), and cupola cover inner door handle (10).
- 9 Install flat washer (14) and new self-locking nut (15).



2-163. MAINTENANCE OF DRIVER'S HATCH COVER (CONT).

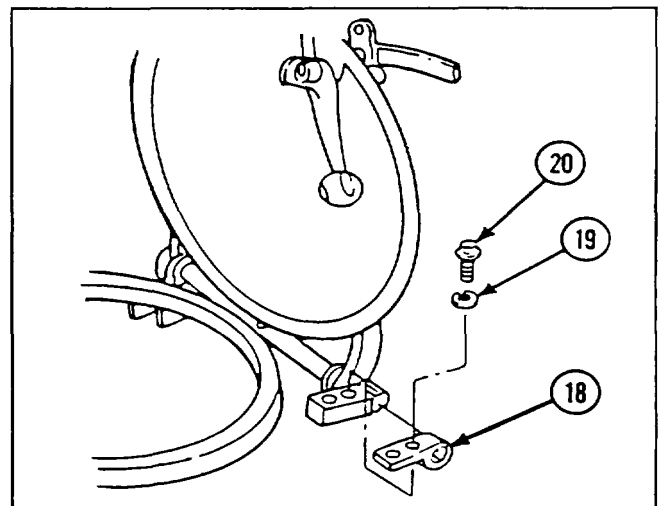
REASSEMBLY/INSTALLATION (CONT)

10 If removed, install new lubrication fitting (16). Fill cupola hinge torsion bar (17) with grease.



11 Install cupola spring anchor (18).

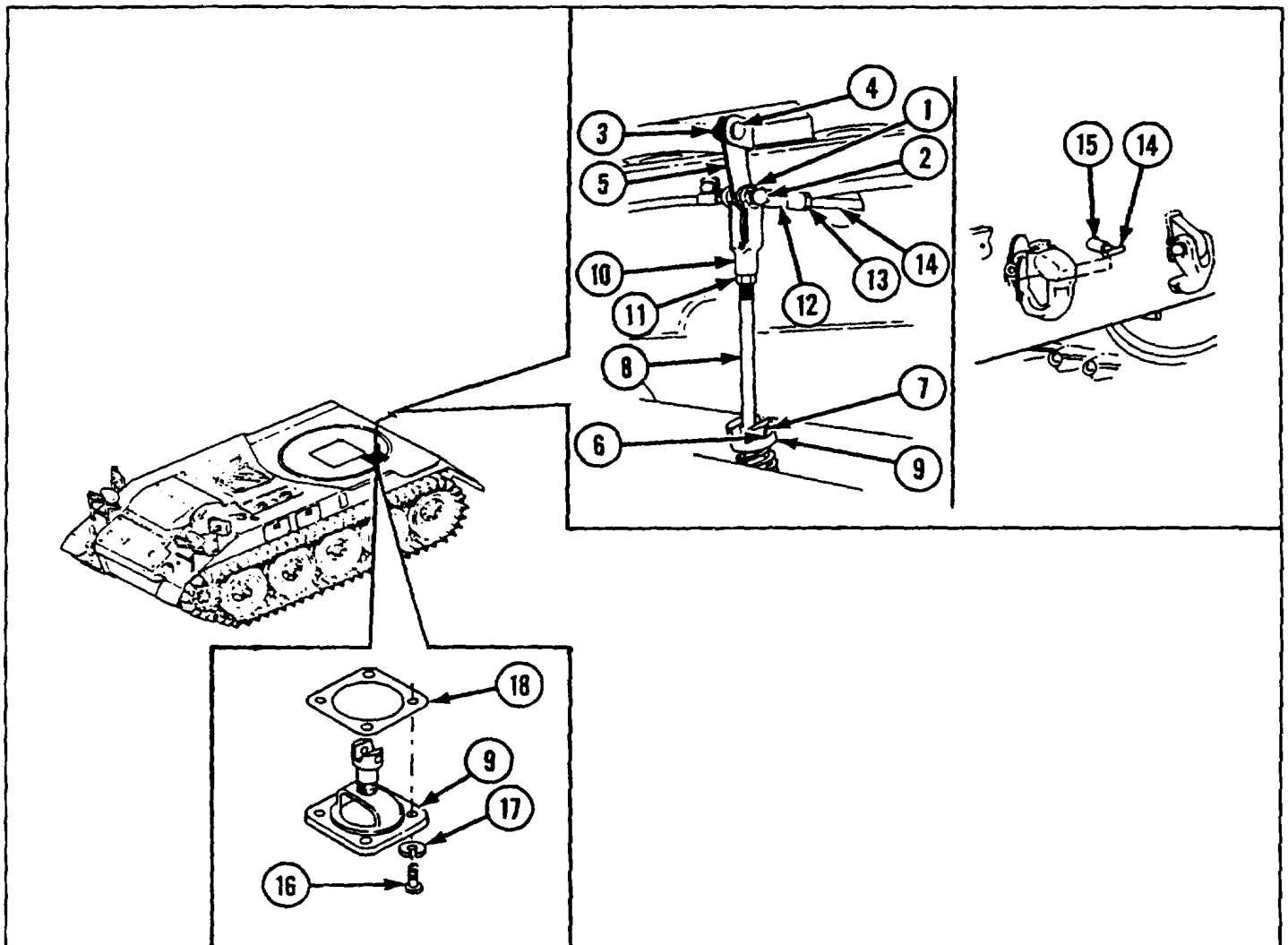
12 Install two new lockwashers (19) and two hexagon head capscrews (20).



2-164. MAINTENANCE OF HULL DRAIN PLUGS, VALVES, AND RELATED PARTS.

This task covers:	a	Removal	b	Inspection/Repair	c	Installation
INITIAL SETUP						
<i>Materials/Parts</i>						
Cotter pin (3)						
Cotter pin (2)						
Gasket (2)						
Gasket						
Lockwasher (12)						
<i>References</i>						
TM 9-2350-304-24P-1						
<i>Equipment Conditions</i>						
2-875 Hull recess cover plate removed						

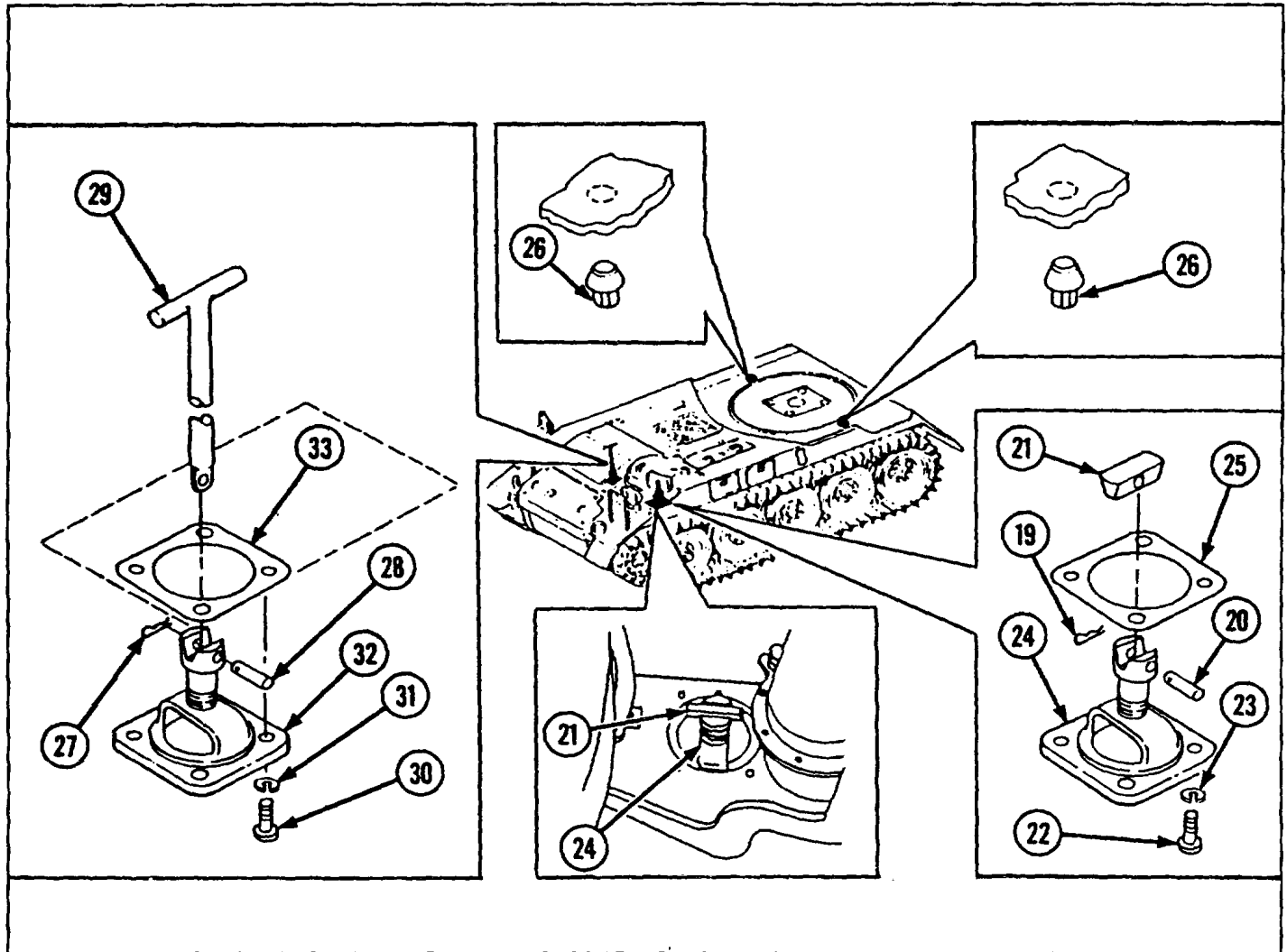
REMOVAL



- 1 Remove cotter pin (1) and headed straight pin (2).
- 2 Remove cotter pin (3), headed straight pin (4), and rigid connecting link (5).
- 3 Remove cotter pin (6), headed straight pin (7), and drain valve rod (8) from valve assembly (9).
- 4 Remove rod end clevis (10) and hexagon plain nut (1) from drain valve rod (8).
- 5 Remove rod end clevis (12) and hexagon plain nut (13) from rear drain valve handle (14).
- 6 Remove rear drain valve handle (14).
- 7 Remove drain valve handle plug (15).
- 8 Remove four capscrews (16) and four lockwashers (17).
- 9 Remove valve assembly (9) and gasket (18).

2-164. MAINTENANCE OF HULL DRAIN PLUGS, VALVES, AND RELATED PARTS (CONT).

REMOVAL (CONT)

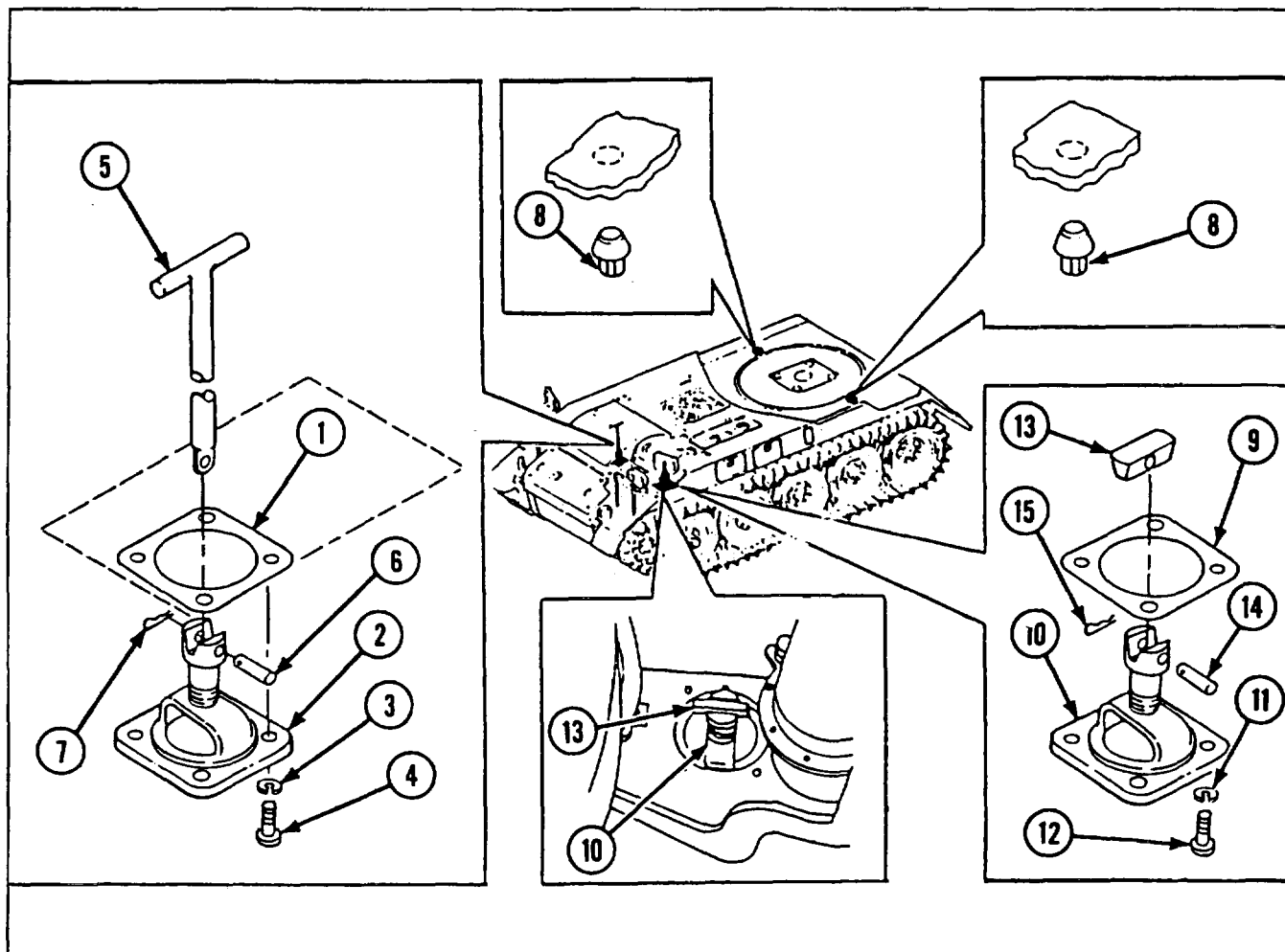


- | | |
|--|--|
| <p>10 Remove cotter pin (19), headed straight pin (20), and manual control lever (21).</p> <p>11 Remove four capscrews (22) and four lockwashers (23).</p> <p>12 Remove valve assembly (24) and gasket (25).</p> <p>13 Remove two pipe plugs (26) from the underside of the hull. pin (28), and drain valve handle (29).</p> | <p>14 Remove cotter pin (17), headed straight pin (28), and drain valve handle (29).</p> <p>15 Remove four capscrews (30) and four lockwashers (31).</p> <p>16 Remove valve assembly (32) and gasket (33).</p> |
|--|--|

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

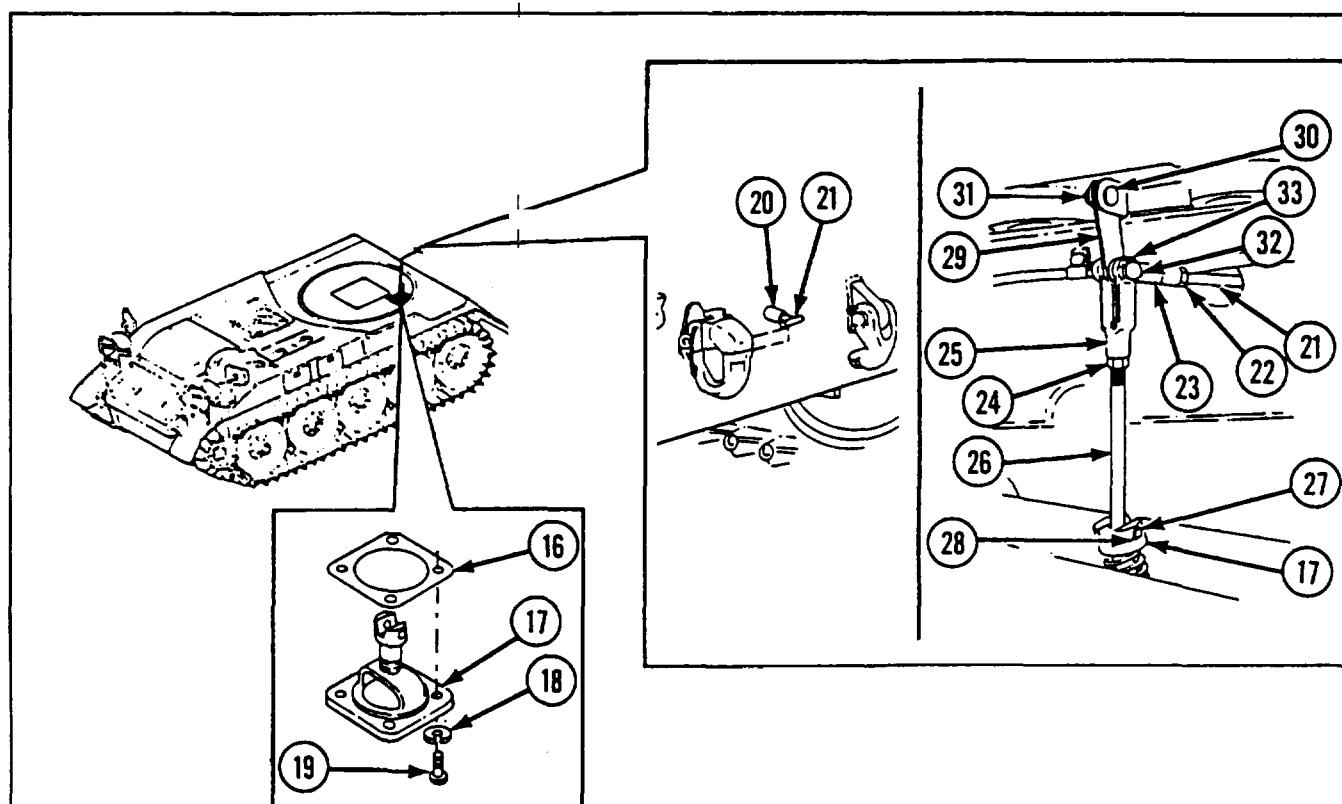
INSTALLATION



- | | |
|---|---|
| <ol style="list-style-type: none"> 1 Install new gasket (1) and valve assembly (2). 2 Install four new lockwashers (3) and four cap screws (4). 3 Install drain valve handle (5), headed straight pin (6), and new cotter pin (7). 4 Install two pipe plugs (8) in underside of hull. | <ol style="list-style-type: none"> 5 Install new gasket (9) and valve assembly (10). 6 Install four new lockwashers (11) and four cap screws (12). 7 Install manual control lever (13), headed straight pin (14), and new cotter pin (15). |
|---|---|

2-164. MAINTENANCE OF HULL DRAIN PLUGS, VALVES, AND RELATED PARTS (CONT).

INSTALLATION (CONT)

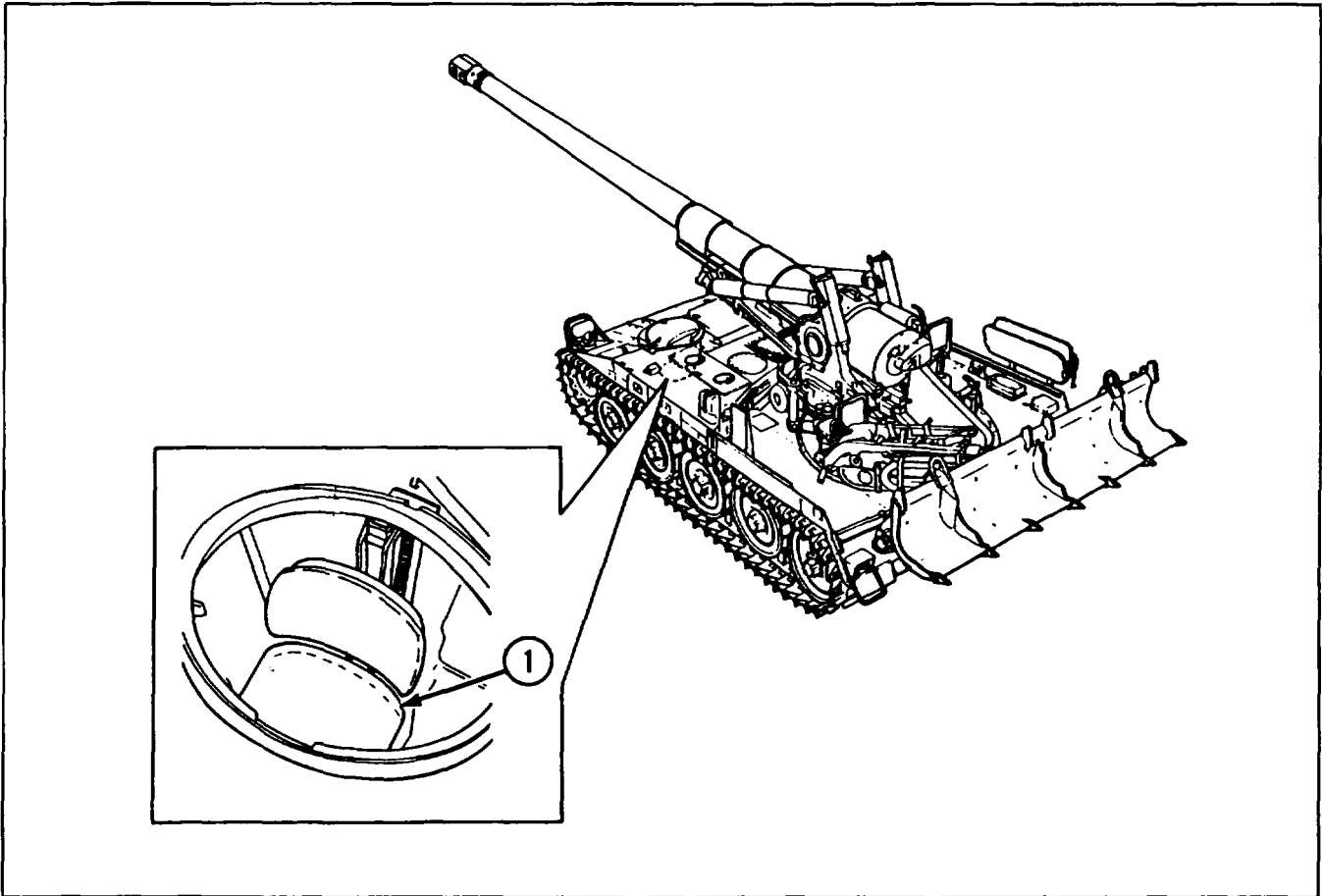


- 8 Install new gasket (16) and valve assembly (17).
- 9 Install four new lockwashers (18) and four capscrews (19).
- 10 Install drain valve handle plug (20) on rear drain valve handle (21).
- 11 Install rear drain valve handle (21).
- 12 Install hexagon plain nut (22) and rod end clevis (23) on rear drain valve handle (21).
- 13 Install hexagon plain nut (24) and rod end clevis (25) on drain valve rod (26).
- 14 Install drain valve rod (26), headed straight pin (27), and new cotter pin (28) on valve assembly (17).
- 15 Install rigid connecting link (29), headed straight pin (30), and new cotter pin (31).
- 16 Install headed straight pin (32) and new cotter pin (33) to connect two rod end devices (23 and 25) to connecting link (29).
- 17 Tighten two hexagon plain nuts (22 and 24).

2-165. MAINTENANCE OF DRIVER'S SEAT AND ASSOCIATED PARTS.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Materials/Parts</i>		<i>References</i>	
Cotter pin (2)		TM 9-2350-304-24P-1	
Cotter pin (2)			

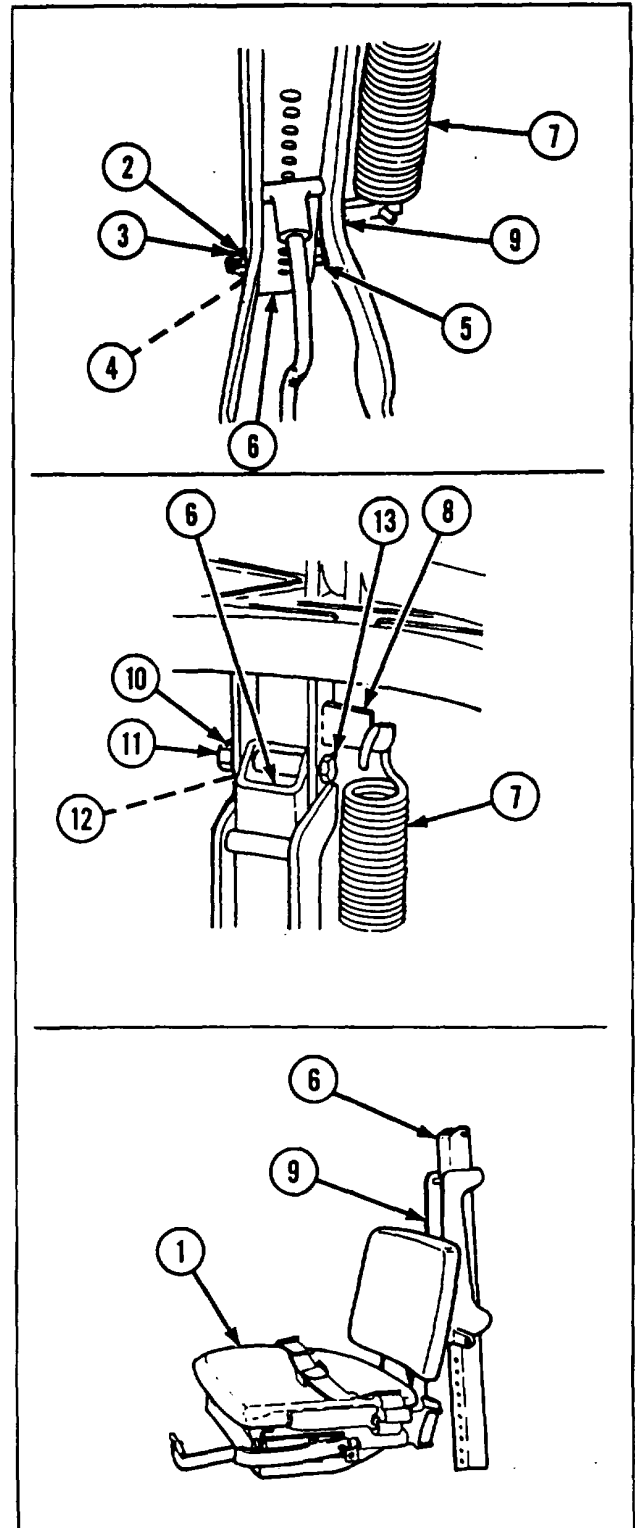
REMOVAL



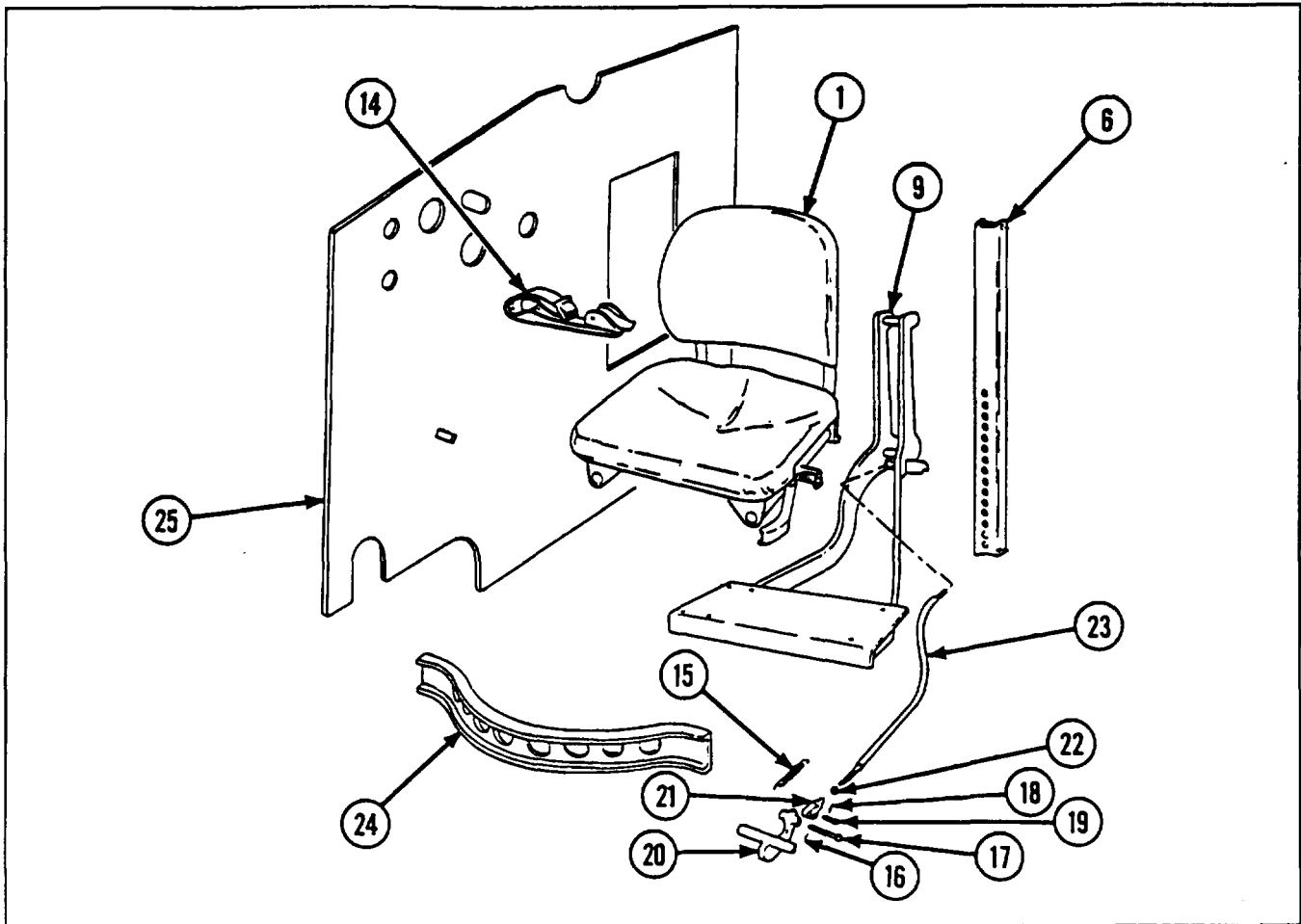
- 1 Open driver's hatch cover and lower individual seat (1) to full down position.

2-165. MAINTENANCE OF DRIVER'S SEAT AND ASSOCIATED PARTS (CONT).

REMOVAL (CONT)



- 2 Remove cotter pin (2), slotted plain nut (3), flat washer (4), and hexagon head capscrew (5) from lower end of seat support post (6).
- 3 Raise individual seat (1) to full up position
- 4 Disengage driver's seat suspension helical spring assembly (7) from hull bracket post (8) and driver's seat support (9).
- 5 Remove cotter pin (10), slotted plain nut (11), flat washer (12), and hexagon head capscrew (13) from upper end of seat support post (6).
- 6 Remove individual seat (1) and driver's seat support (9) with seat support post (6)



7 Remove vehicular safety belt (14) from individual seat (1).

NOTE

To remove individual seat from driver's seat support, refer to page 2-916.

8 Remove seat control handle return helical spring (15), cotter pin (16), straight headed pin (17), cotter pin (18), and straight headed pin (19).

9 Remove driver's release handle (20).

10 Remove rod end clevis (21) and hexagon plain nut (22) from adjusting seat rod (23). Remove adjusting seat rod (23).

11 Remove seat support post (6) from driver's seat support (9).

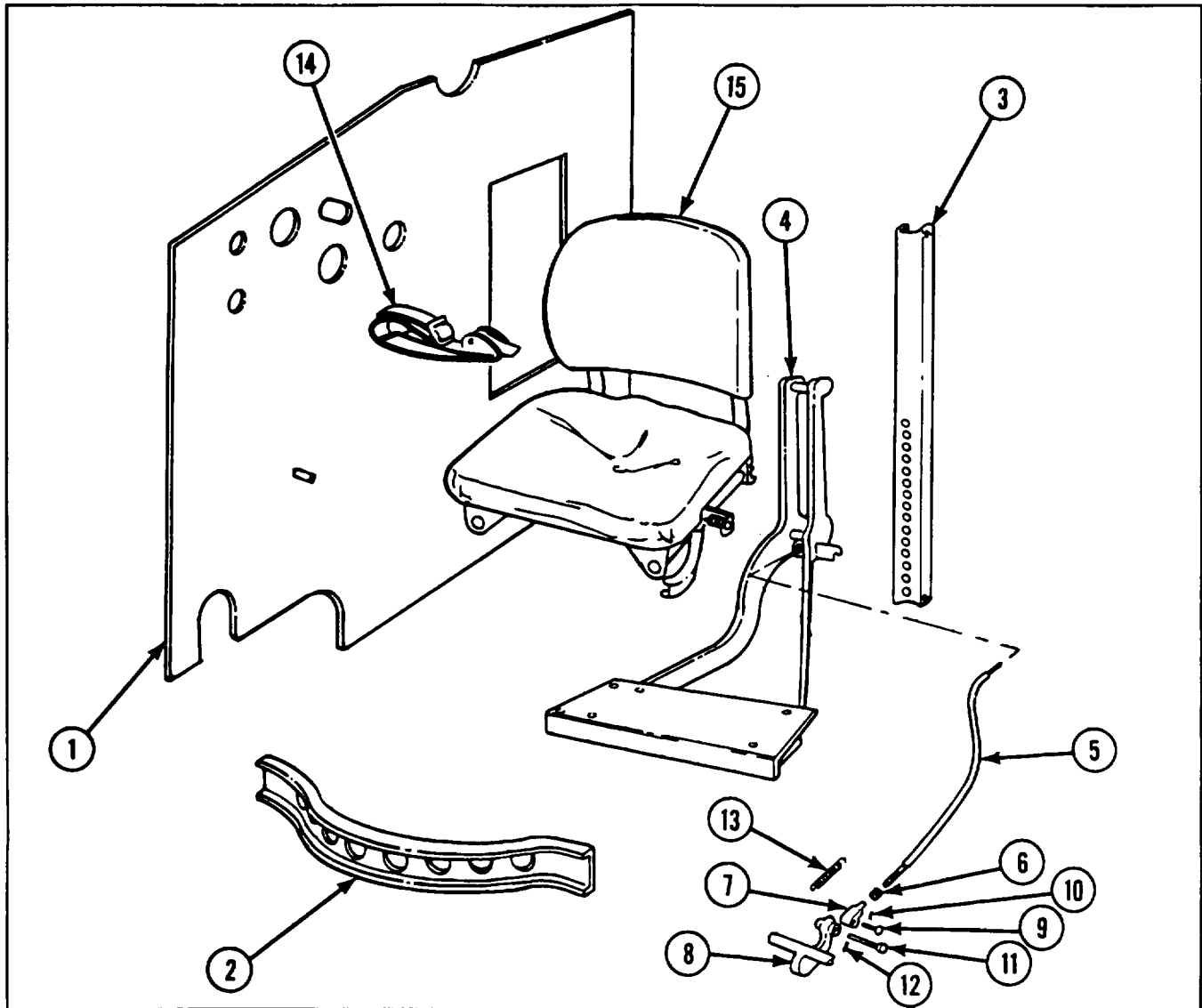
12 Remove driver's instruments cushioning pad (24) and driver's compartment cushioning pad (25).

INSPECTION/REPAIR

- 1 Check for broken, damaged, or missing parts.
- 2 Individual seat is a repairable assembly. Refer to page 2-916.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-165. MAINTENANCE OF DRIVER'S SEAT AND ASSOCIATED PARTS (CONT).

INSTALLATION



1 Install driver's compartment cushioning pad (1) and driver's instruments cushioning pad (2).

2 Install seat support post (3) in driver's seat support (4).

3 Install adjusting seat rod (5). Install hexagon plain nut (6) and rod end clevis (7) on adjusting seat rod (5).

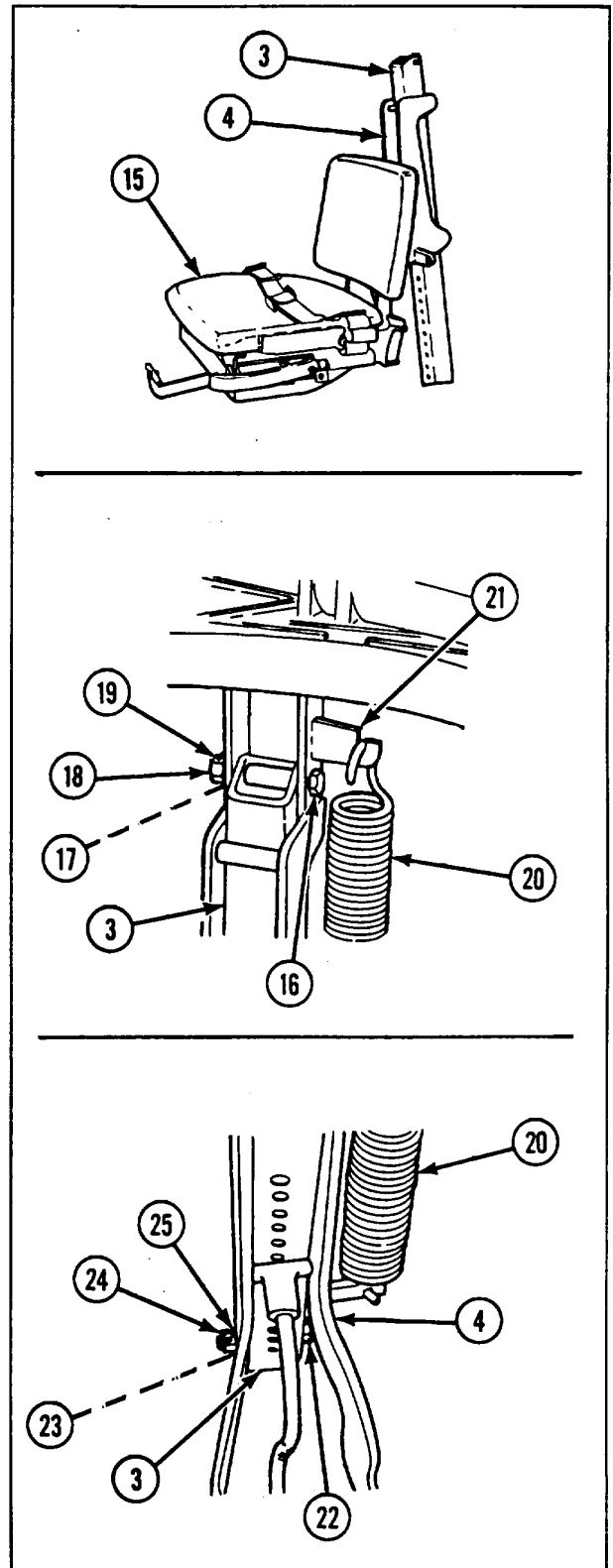
4 Install driver's release handle (8). Install headed straight pin (9), new cotter pin (10), headed

straight pin (11), new cotter pin (12), and seat control handle return helical spring (13).

NOTE

To install individual seat to driver's seat support, refer to page 2-916.

5 Install vehicular safety belt (14) on Individual seat (15).



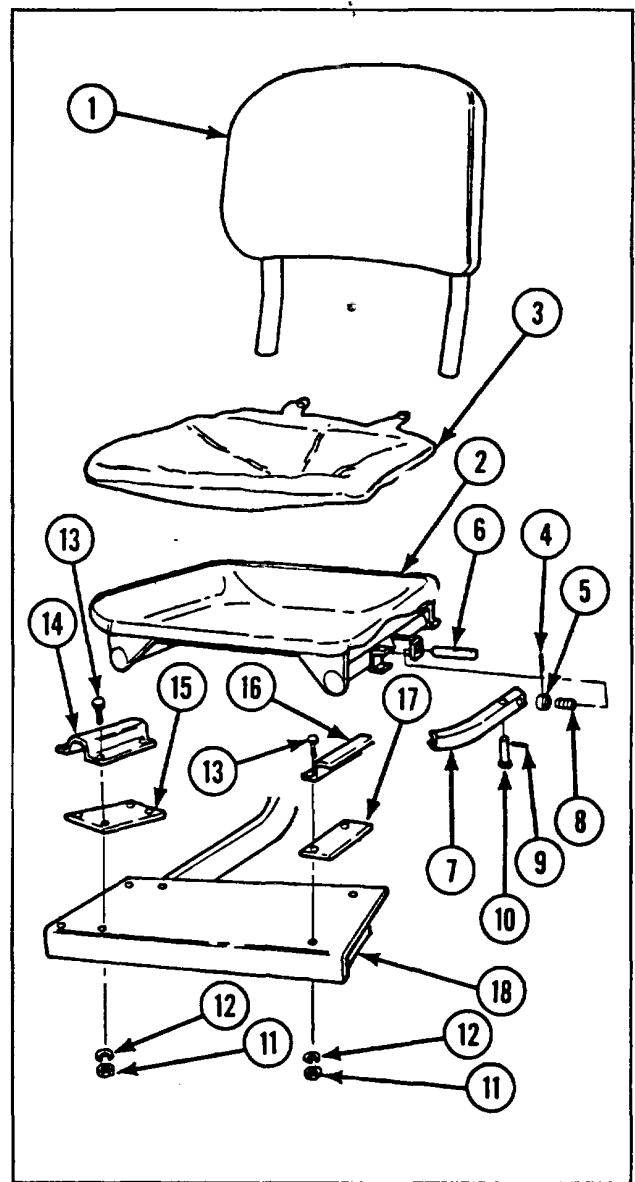
- 6 Install individual seat (15) and driver's seat support (4) with seat support post (3).
- 7 Raise individual seat (15) to full up position.
- 8 Install hexagon head capscrew (16), flat washer (17), slotted plain nut (18), and new cotter pin (19) in upper end of seat support post (3).
- 9 Engage driver's seat suspension helical spring (20) in hull bracket post (21) and driver's seat support (4).
- 10 Lower individual seat (15) to full down position.
- 11 Install hexagon head capscrew (22), flat washer (23), slotted plain nut (24), and new cotter pin (25) in lower end of seat support post (3).

2-166. MAINTENANCE OF INDIVIDUAL SEAT.

This task covers:	a. <i>Disassembly</i>	b. <i>Inspection/Repair</i>	c. <i>Reassembly</i>
INITIAL SETUP			
<i>Materials/Parts</i>	<i>Equipment Conditions</i>		
Cotter pin Lockwasher (6)	2-911 Drivers seat removed		
<i>References</i>			
TM 9-2350-304-24P-1			

DISASSEMBLY

- 1 Remove seat back cushion (1) from vehicular seat (2).
- 2 Remove vehicular seat cushion (3) from vehicular seat (2).
- 3 Remove headless straight pin (4) from shaft collar (5) and headless straight pin (6).
- 4 Remove headless straight pin (6) from lock-release lever (7). Remove compression helical spring (8) and shaft collar (5) from vehicular seat (2).
- 5 Remove cotter pin (9) from headed straight pin (10). Remove headed straight pin from lock-release lever (7). Remove lock-release lever from vehicular seat (2)
- 6 Remove six hexagon plain nuts (11), six lockwashers (12), and six hexagon head cap screws (13).
- 7 Remove vehicular seat (2), retaining strap (14), right bearing plate (15), double angle bracket (16), and left bearing plate (17) from vehicular seat support (18).

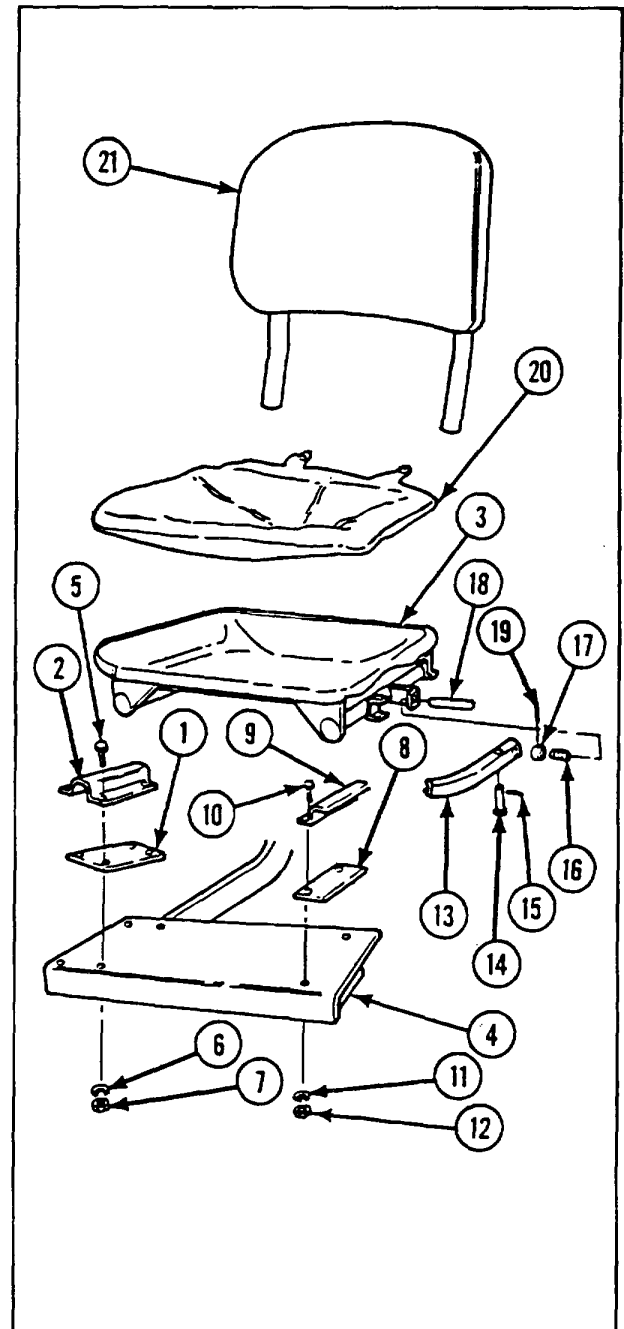


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

- 1 Position right bearing plate (1), retaining strap (2), and vehicular seat (3) on vehicular seat support (4). Install four hexagon head capscrews (5), four new lockwashers (6), and four hexagon plain nuts (7).
- 2 Position left bearing plate (8) and double angle bracket (9) on vehicular seat support (4). Install two hexagon head capscrews (10), two new lockwashers (11), and two hexagon plain nuts (12).
- 3 Install lock-release lever (13) in vehicular seat (3). Install headed straight pin (14) lock-release lever to secure lock-release lever. Install new cotter pin (15) in headed straight pin.
- 4 Install compression helical spring (16) and shaft collar (17) in vehicular seat (13). Install headless straight pin (18) through compression helical spring and shaft collar.
- 5 Line up holes in shaft collar (17) and headless straight pin (18). Install headless straight pin (19) through shaft collar and headless straight pin.
- 6 Install vehicular seat cushion (20) on vehicular seat (3).
- 7 Install seat back cushion (21) in vehicular seat (3).

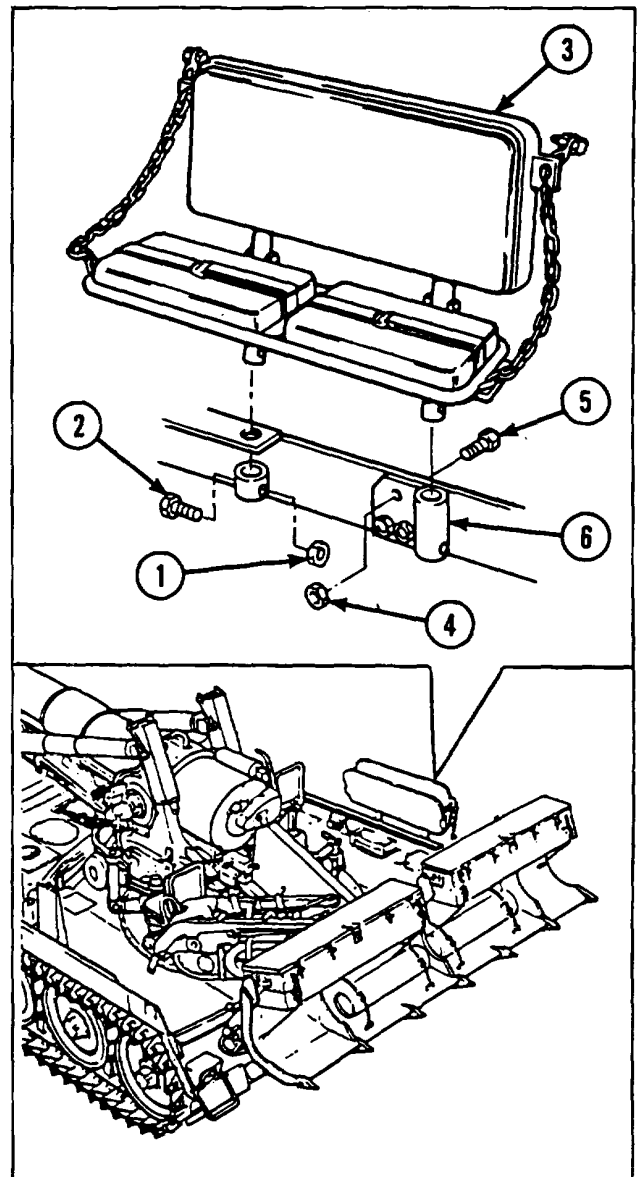


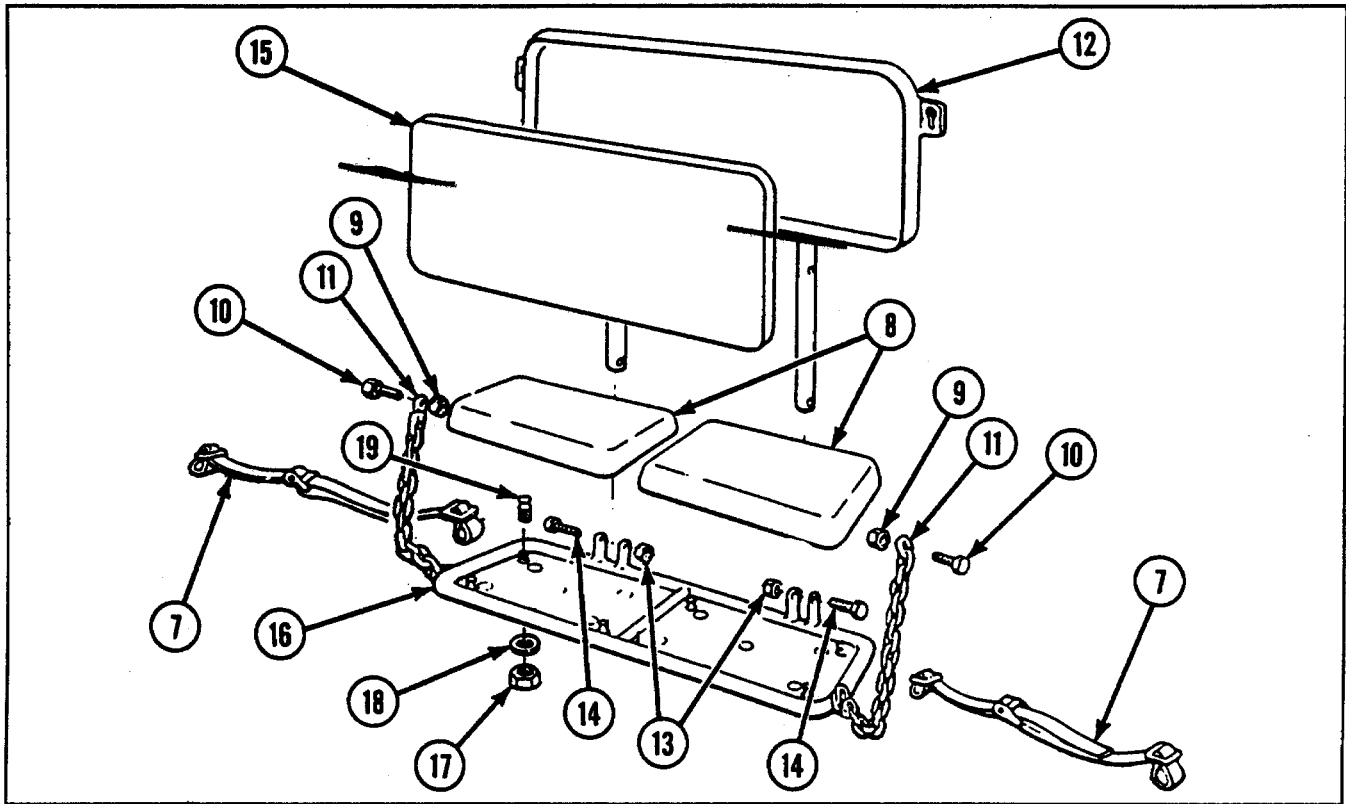
2-167. MAINTENANCE OF PERSONNEL SEAT AND ASSOCIATED PARTS.

This task covers:	a. <i>Removal/Disassembly</i> b. <i>Inspection/Repair</i>	c. <i>Reassembly/Installation</i>
INITIAL SETUP		
<i>Materials/Parts</i>	<i>References</i>	
Lockwasher (8)	TM 9-2350-304-24P-1	
Rubber adhesive (item 4, appx C)		
Self-locking nut (6)		
Self-locking nut (3)		

REMOVAL/DISASSEMBLY

- 1 Remove two self-locking nuts (1) and two hexagon head capscrews (2).
- 2 Remove personnel seat (3) from support posts.
- 3 Remove three self-locking nuts (4), three hexagon head capscrews (5), and seat support (6).





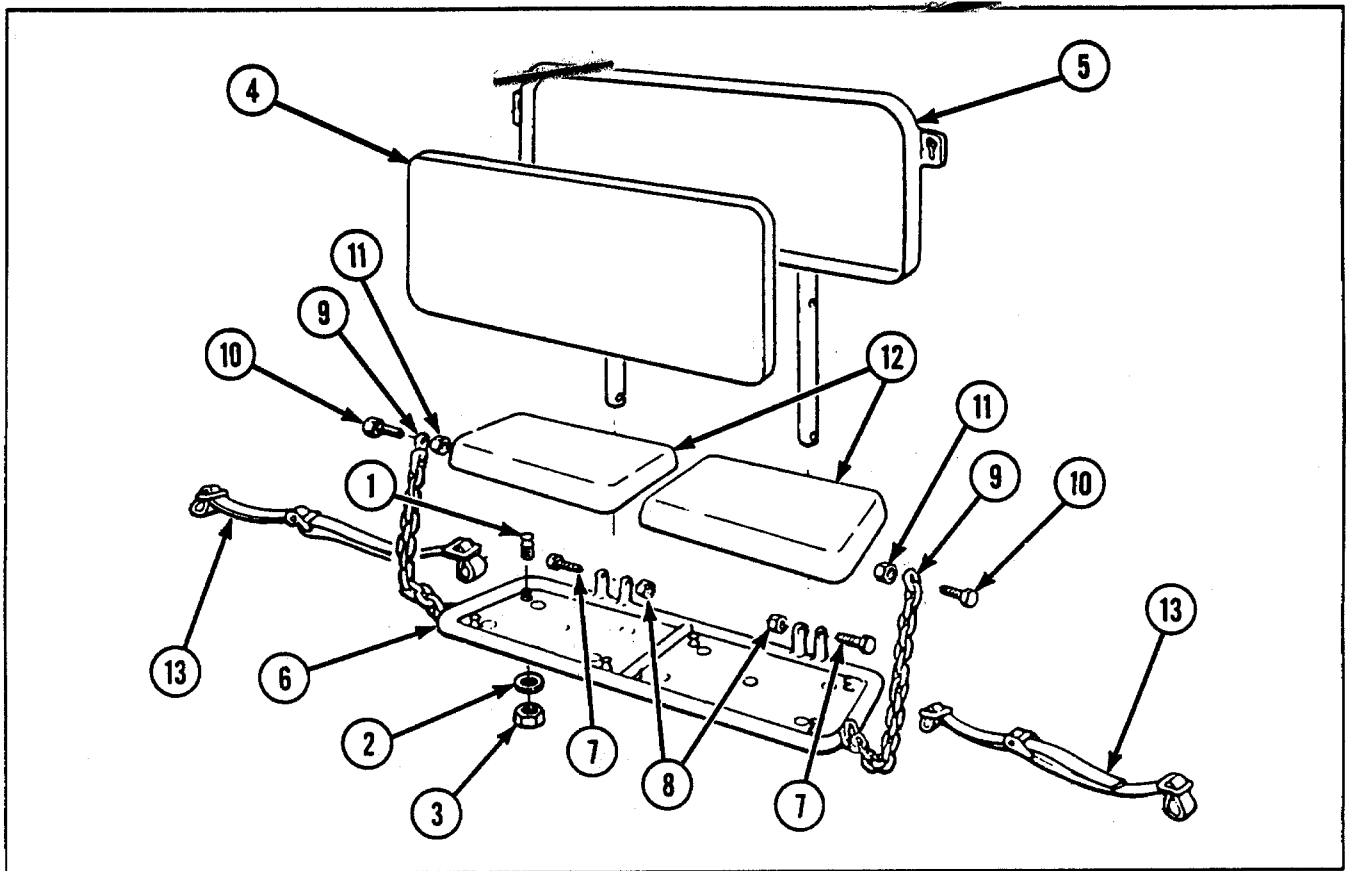
- 4 Remove two personnel seat vehicular safety belts (7) and two vehicular seat cushions (8).
- 5 Remove two self-locking nuts (9), two hexagon head capscrews (10), and two chains (11) from seat back (12).
- 6 Remove two self-locking nuts (13) and two hexagon head capscrews (14). Remove seat back (12) with attached personnel seat back cushioning pad (15) from personnel vehicular seat (16).
- 7 If damaged, remove personnel seat back cushioning pad (15) from seat back (12).
- 8 Remove eight hexagon plain nuts (17), eight lockwashers (18), and eight snap fastener studs (19).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 If seat back is broken, damaged, or missing, repair is by replacement of next higher assembly.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

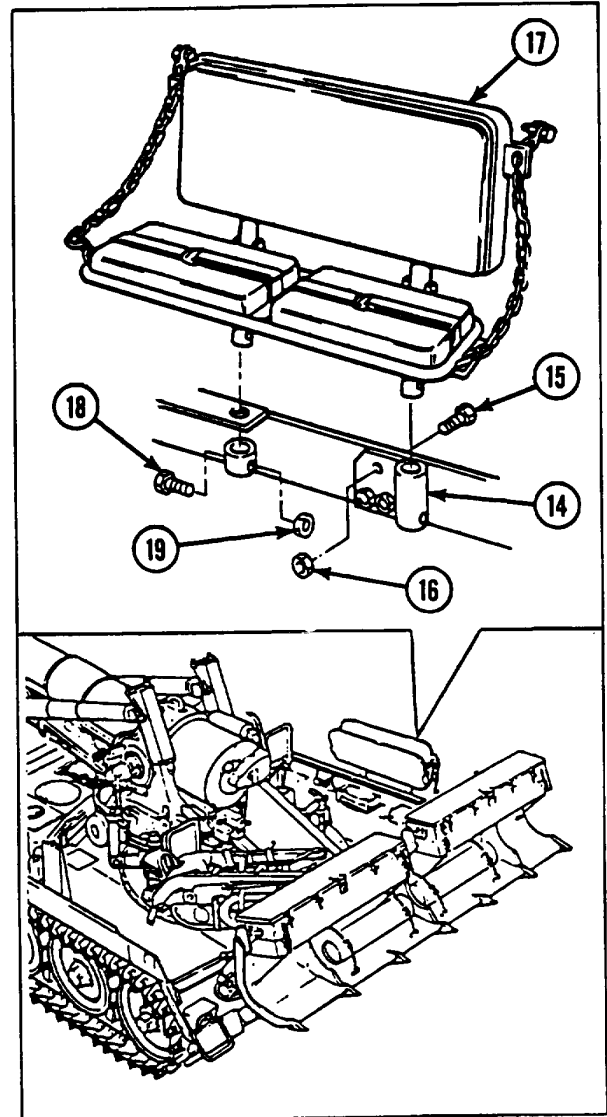
2-167. MAINTENANCE OF PERSONNEL SEAT AND ASSOCIATED PARTS (CONT).

REASSEMBLY/INSTALLATION



- 1 Install eight snap fastener studs (1), eight new lockwashers (2), and eight plain hexagon nuts (3).
- 2 If removed, apply rubber adhesive to new personnel seat back cushioning pad (4). Install new personnel seat back cushioning pad on seat back (5).
- 3 Install seat back (5) with personnel seat back cushioning pad (4) on personnel vehicular seat 96).
- 4 Install two hexagon head capscrews (7) and two new self-locking nuts (8).
- 5 Install two chains (9), two hexagon head capscrews (10), and two new self-locking nuts (11) on seat back (5).
- 6 Install two vehicular seat cushions (12) and two personnel seat vehicular safety belts (13).

- 7 Install seat support (14), three hexagon head capscrews (15), and three new self-locking nuts (16).
- 8 Install personnel seat (17) in seat supports.
- 9 Install two hexagon head capscrews (18) and two new self-locking nuts (19).



2-168. MAINTENANCE OF HULL STOWAGE (DRIVER'S COMPARTMENT) AND BRACKET ASSEMBLY.

This task covers:

- a. Removal/Disassembly
- b. Inspection/Repair

c. Reassembly/Installation

INITIAL SETUP

Materials/Parts

- Lockwasher (7)
- Lockwasher (8)
- Privet (2)

Equipment Conditions

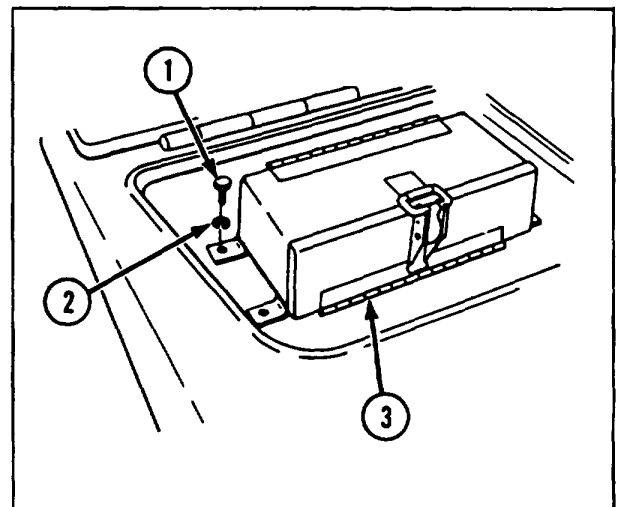
- 2-911 Driver's seat removed
- 2-488 Throttle removed
- 2-768 Parking brake removed

References

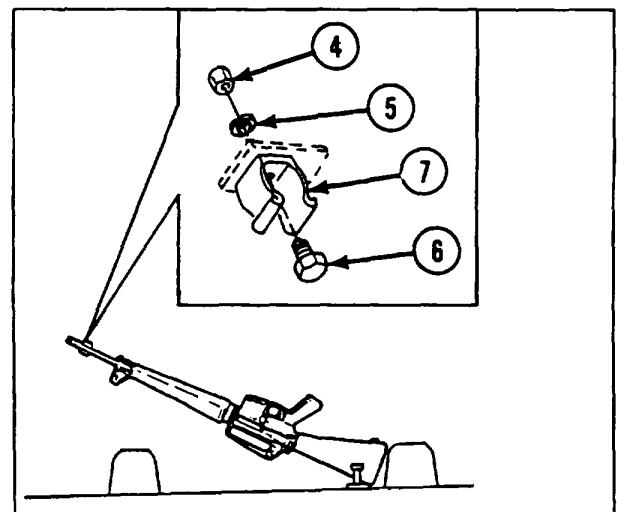
TM 9-2350-304-24P-1

REMOVAL/DISASSEMBLY

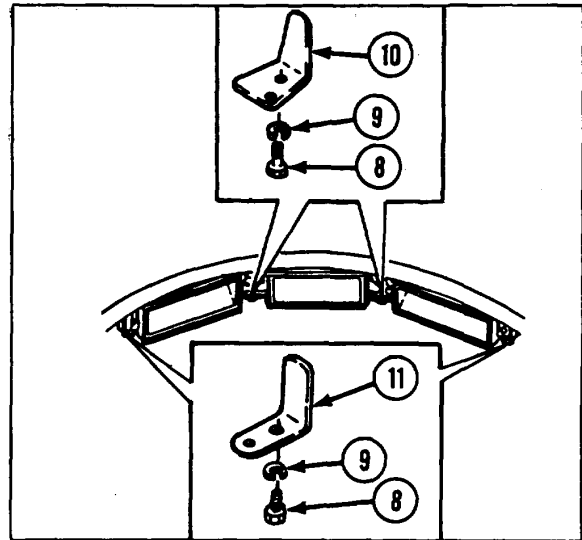
- 1 Open air cleaner blower motor door.
- 2 Remove four hexagon head capscrews (1), four lockwashers (2), and periscope accessories stowage box (3) from top of hull.



- 3 Remove hexagon plain nut (4), lockwasher (5), hexagon head capscrew (6), and rifle clip (7) from right bulkhead in driver's compartment.



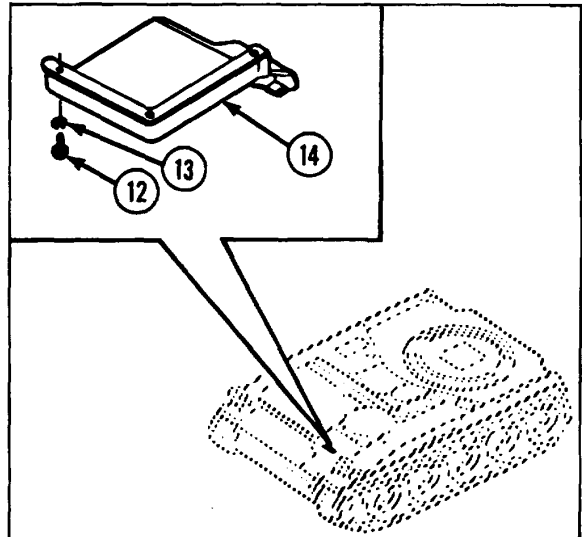
- 4 Remove eight hexagon head capscrews (8), eight lockwashers (9), two angle brackets (10), and two angle brackets (11) securing periscopes.



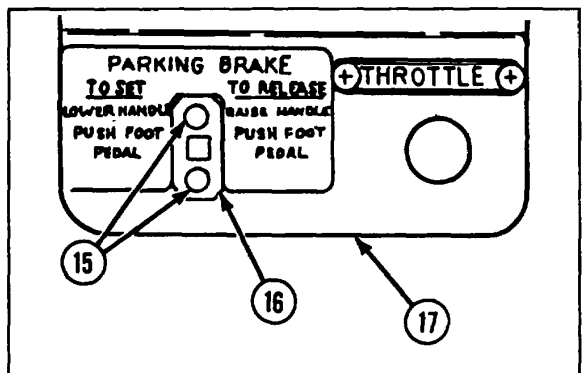
NOTE

Bracket assembly is attached to underside of hull top cock in forward part of driver's compartment.

- 5 Remove three hexagon head capscrews (12), three lockwashers (13), and bracket assembly (14) from top of hull.



- 6 Remove two rivets (15) and rigid connecting link (16) from bracket (17).



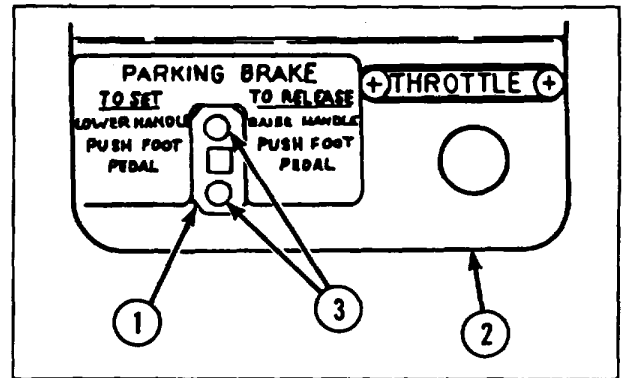
2-168. MAINTENANCE OF HULL STOWAGE (DRIVER'S COMPARTMENT) AND BRACKET ASSEMBLY (CONT).

INSPECTION/REPAIR

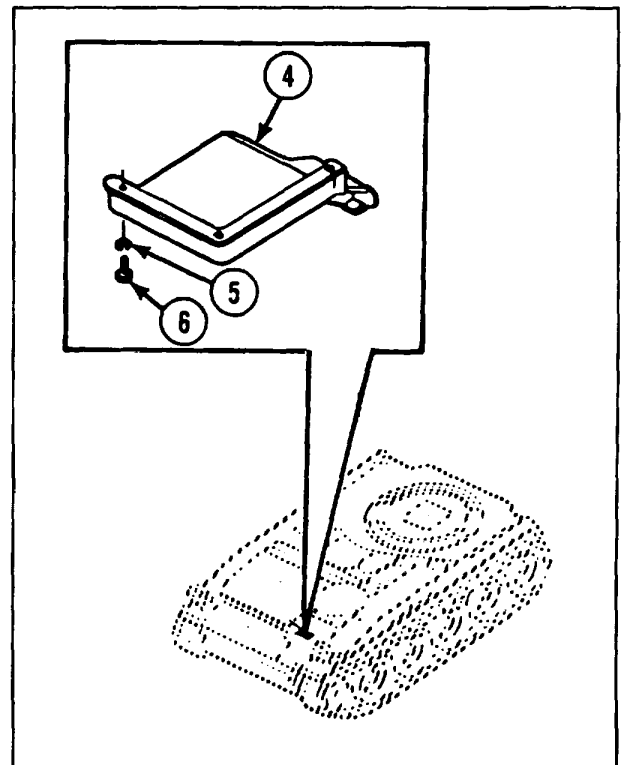
- 1 Inspect for broken, damaged, or missing parts.
- 2 If bracket is broken, damaged, or missing, repair is by replacement of next higher assembly.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY/INSTALLATION

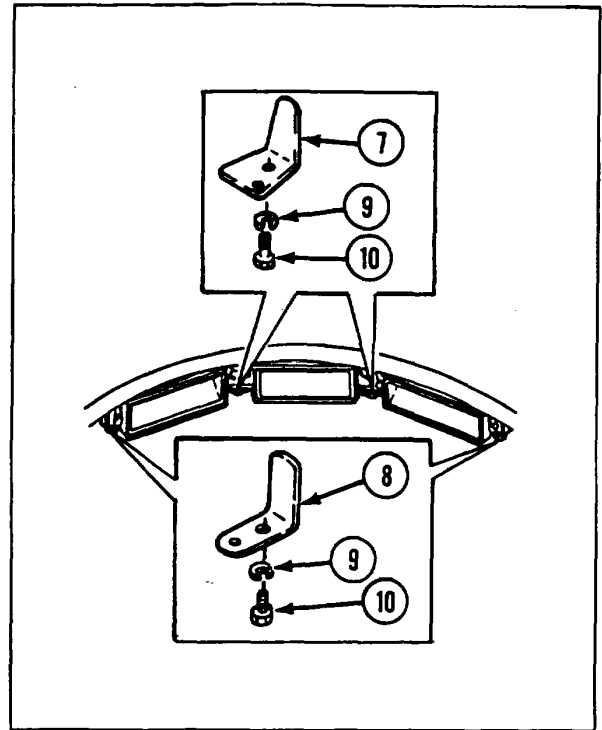
- 1 Install rigid connecting link (1) on bracket (2), and secure with two new rivets (3).



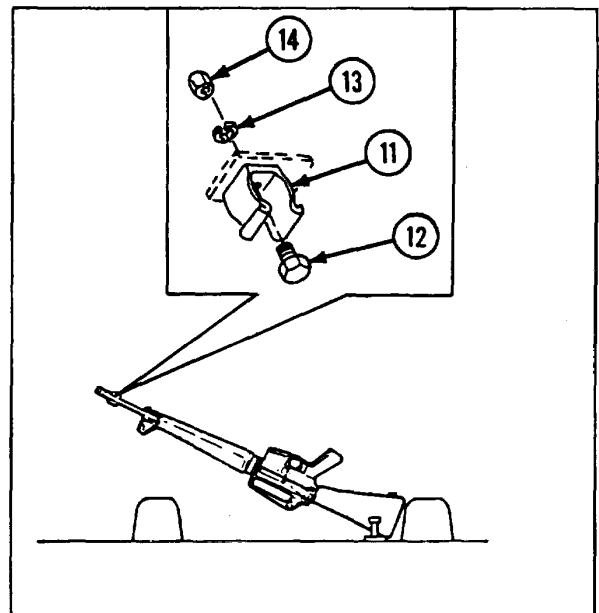
- 2 Install bracket assembly (4) on top deck of hull, and secure with three new lockwashers (5) and three hexagon head capscrews (6).



- 3 Install two angle brackets (7) and two angle brackets (8) on periscopes, and secure with eight new lockwashers (9) and eight hexagon head capscrews (10).



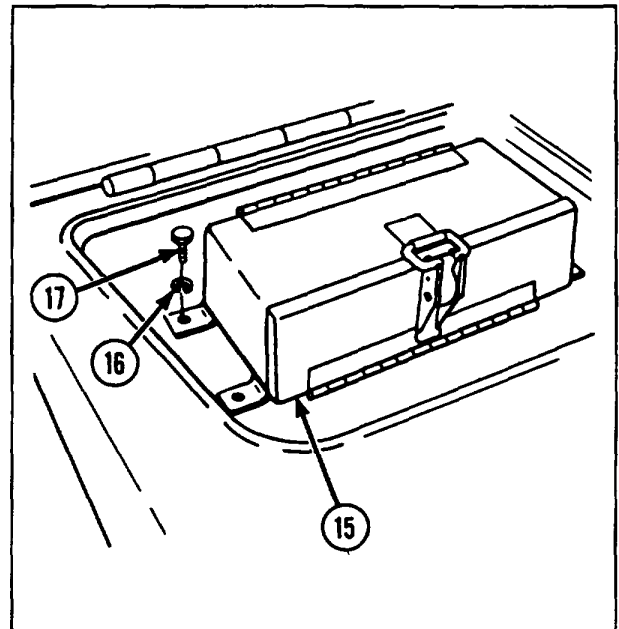
- 4 Install rifle clip (11) on right bulkhead in driver's compartment, and secure with hexagon head capscrew (12), new lockwasher (13), and hexagon plain nut (14).



2-168. MAINTENANCE OF HULL STOWAGE (DRIVER'S COMPARTMENT) AND BRACKET ASSEMBLY (CONT).

REASSEMBLY/INSTALLATION (CONT)

- 5 Install periscope accessories stowage box (15) on top of hull, and secure with four new lockwashers (16) and four hexagon head capscrews (17).
- 6 Close air cleaner blower motor door.

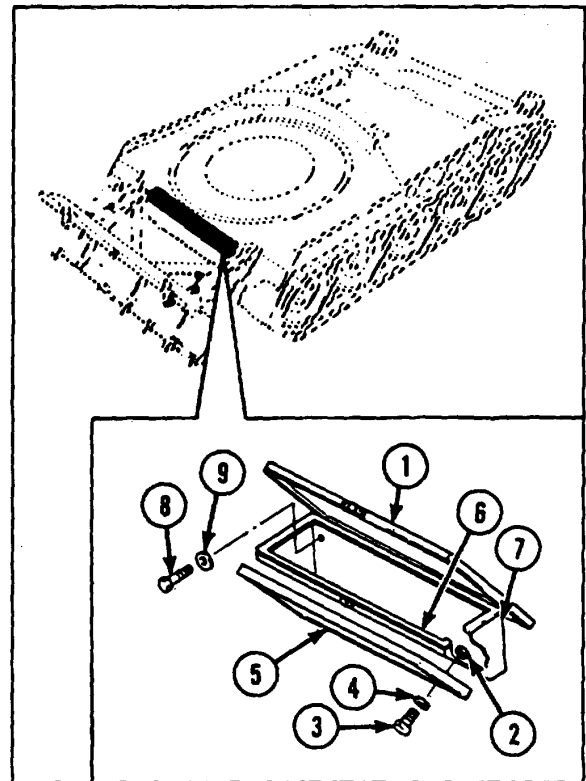


2-169. MAINTENANCE OF HULL STOWAGE (EXTERIOR) AND STOWAGE BOX ASSEMBLY.

This task covers:	a. <i>Removal</i>	c. <i>Installation</i>
	b. <i>Inspection/Repair</i>	d. <i>Adjustment</i>
INITIAL SETUP		
<i>Materials/Parts</i>	<i>References</i>	
Adhesive (item 3, appx C)	TM 9-2350-304-10	
Cleaning compound (item 9, appx C)	TM 9-2350-304-24P-1	
Gasket		
Grease (item 19, appx C)	<i>Equipment Conditions</i>	
Lockwasher (4)	Projectiles removed (TM 9-2350-304-10)	
Lockwasher (24)		
Lockwasher (4)		
Self-locking nut (8)		
Self-locking nut (16)		

REMOVAL

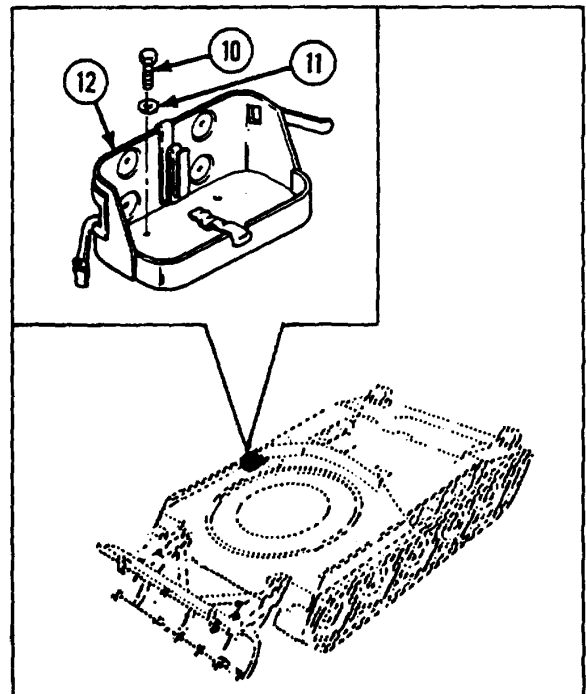
- 1 Open stowage box assembly cover (1).
- 2 Remove four hexagon plain nuts (2), four hexagon head capscrews (3), four lockwashers (4), pioneer tools bracket assembly (5), and stowage box gasket (6) from stowage box assembly (7).
- 3 Remove four hexagon head capscrews (8), four lockwashers (9), and stowage box assembly (7) from hull.



NOTE

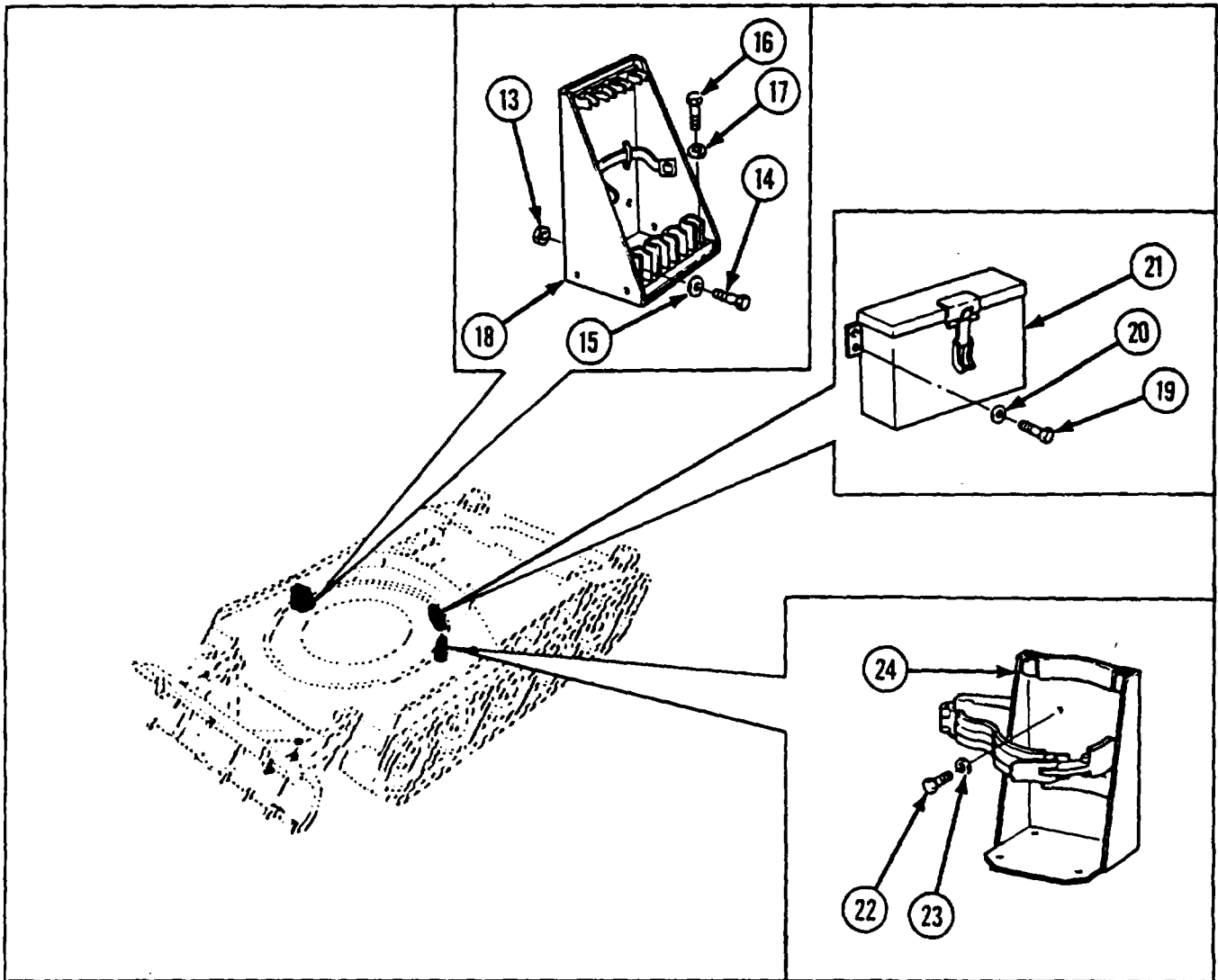
Step 4 is written for one water can bracket assembly, but applies to both water can bracket assemblies.

- 4 Remove four hexagon head capscrews (10), four lockwashers (11), and water can bracket assembly (12) from hull.



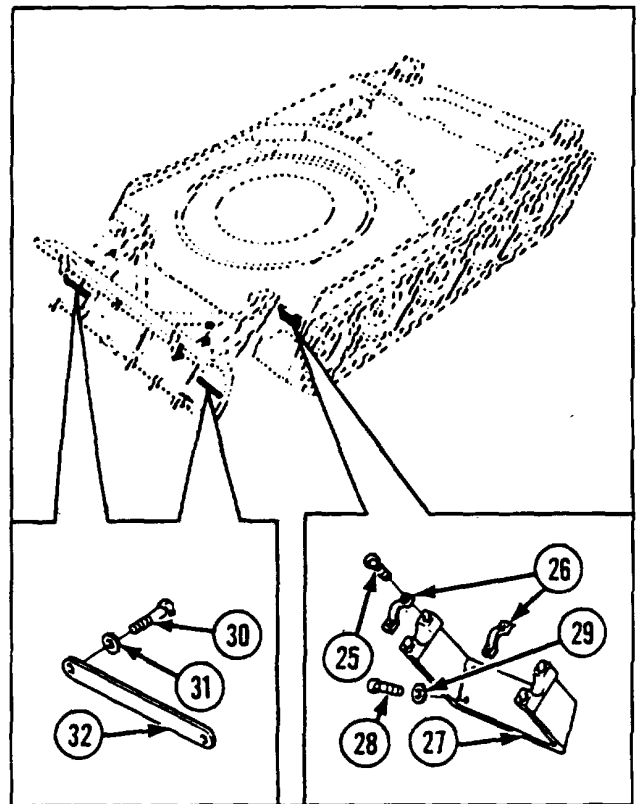
2-169. MAINTENANCE OF HULL STOWAGE (EXTERIOR) AND STOWAGE BOX ASSEMBLY (CONT).

REMOVAL (CONT)



- 5 Remove two hexagon plain nuts (13), two hexagon head cap screws (14), two flat washers (15), four hexagon head cap screws (16), four flat washers (17), and rifle rack assembly (18) from hull.
- 6 Remove four hexagon head cap screws (19), four lockwashers (20), and hand grenade box assembly (21) from hull.
- 7 Remove four hexagon head cap screws (22), four lockwashers (23), and fire extinguisher bracket (24) from hull.

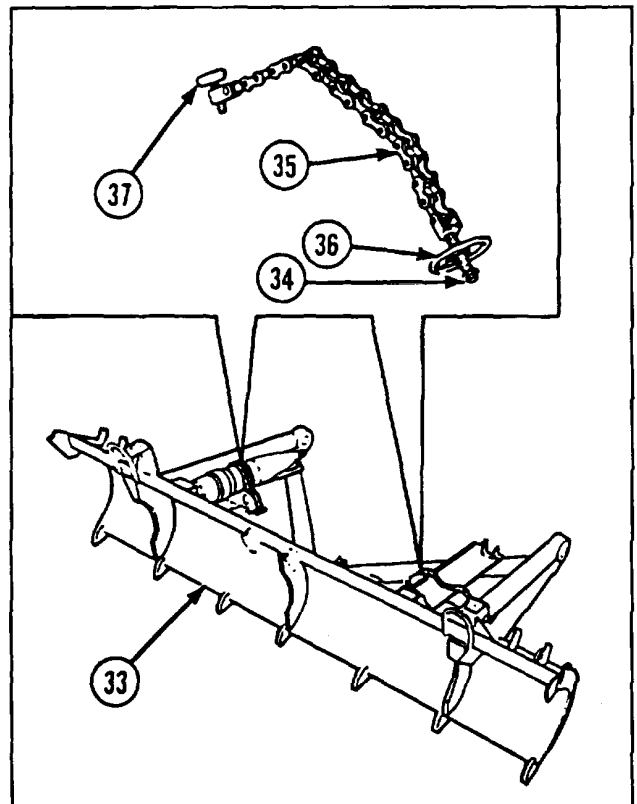
- 8 Remove four assembled washer bolts (25) and two securing plates (26) from interphone reel bracket (27).
- 9 Remove four hexagon head capscrews (28), four lockwashers (29), and interphone reel bracket (27) from hull.
- 10 Remove four hexagon head capscrews (30), four lockwashers (31), and two spare track bar assemblies (32) from spade (33)



NOTE

Steps 11 thru 15 are written for one projectile clamp chain assembly, but apply to both projectile clamp chain assemblies.

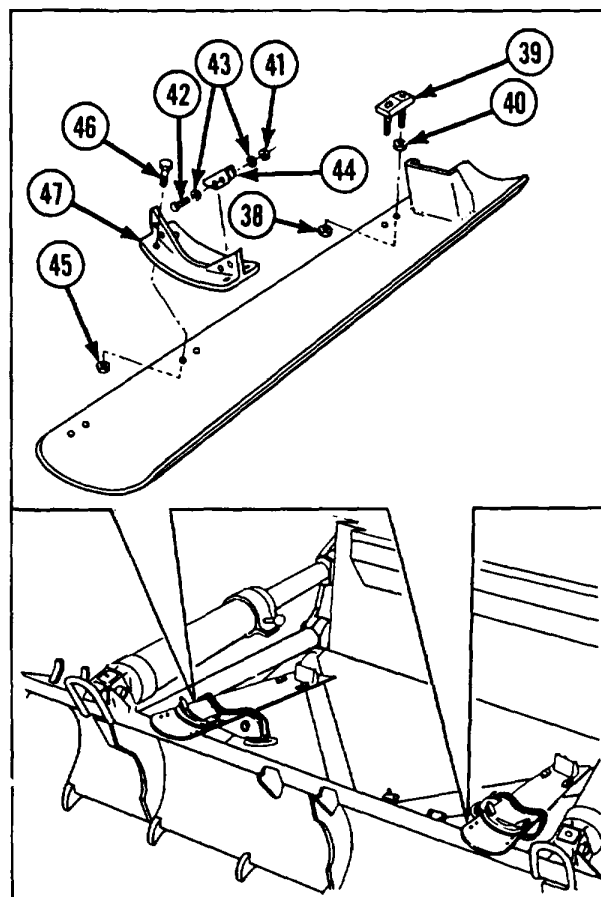
- 11 Loosen nut (34) on projectile clamp chain assembly (35) at side of spade (33).
- 12 Turn handwheel (36) counterclockwise.
- 13 Disengage handwheel (36) from projectile rack.
- 14 Unscrew thumbscrew (37).
- 15 Remove projectile clamp chain assembly (35) from side of spade.



2-169. MAINTENANCE OF HULL STOWAGE (EXTERIOR) AND STOWAGE BOX ASSEMBLY (CONT).**REMOVAL (CONT)****NOTE**

Steps 16 thru 18 are written for the left-hand projectile support and bracket assembly, but also apply to the right-hand projectile support and bracket assembly.

- 16** Remove four self-locking nuts (38), two projectile support bracket assemblies (39), and four hexagon plain nuts (40).
- 17** Remove four self-locking nuts (41), four hexagon head capscrews (42), eight flat washers (43), and two metal moldings (44).
- 18** Remove four self-locking nuts (45), four hexagon head capscrews (46), and projectile point support (47).

**INSPECTION/REPAIR**

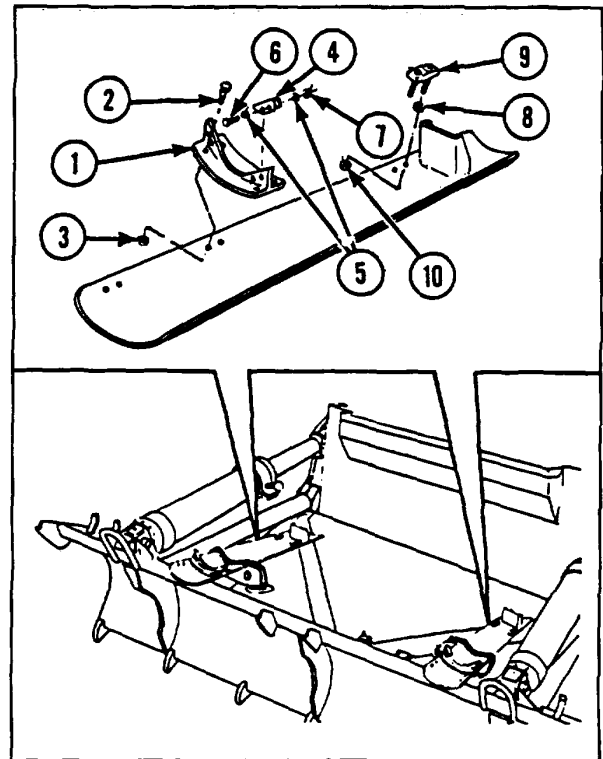
- 1** Inspect for broken, damaged, or missing parts.
- 2** Pioneer tools bracket assembly is a repairable assembly. Refer to page 2-935.
- 3** Water can bracket assembly is a repairable assembly. Refer to page 2-936.
- 4** Rifle rack assembly is a repairable assembly. Refer to page 2-937.
- 5** Fire extinguisher bracket is a repairable assembly. Refer to page 2-939.
- 6** Hand grenade box assembly is a repairable assembly, notify direct support maintenance.
- 7** Projectile clamp chain assembly is a repairable assembly, notify direct support maintenance.
- 8** Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

NOTE

Steps 1 thru 3 are written for the left-hand projectile support and bracket assembly, but also apply to the right-hand projectile support and bracket assembly.

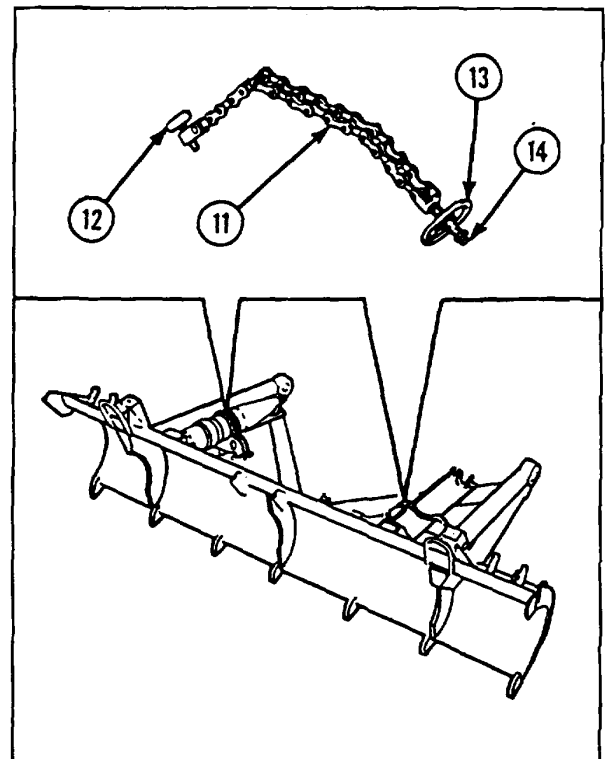
- 1 Install projectile point support (1), and secure with four hexagon head capscrews (2) and four new self-locking nuts (3).
- 2 Install two metal moldings (4) on projectile point support (1), and secure with eight flat washers (5), four hexagon head capscrews (6), and four new self-locking nuts (7).
- 3 Install four hexagon plain nuts (8) and two projectile support bracket assemblies (9), and secure with, four new self-locking nuts (10).



NOTE

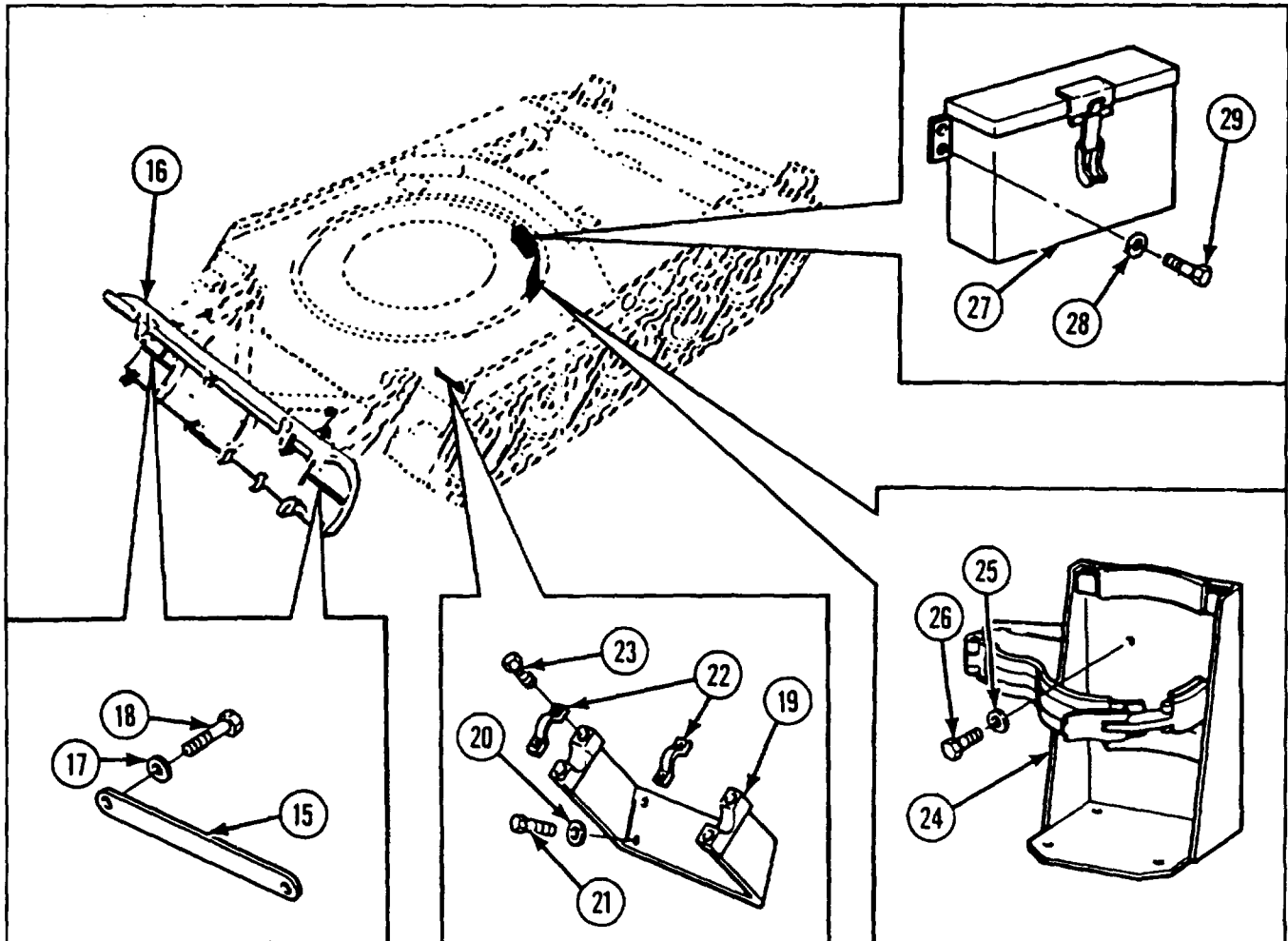
Steps 4 thru 9 are written for one projectile clamp chain assembly, but apply to both projectile clamp chain assemblies.

- 4 Install projectile clamp chain assembly (11).
- 5 Tighten thumbscrew (12).
- 6 Engage handwheel (13) on projectile rack.
- 7 Turn handwheel (13) clockwise.
- 8 Tighten nut (14) on projectile clamp chain assembly (11).
- 9 Lubricate projectile clamp chain assembly (11) with grease (item 19, appx C).

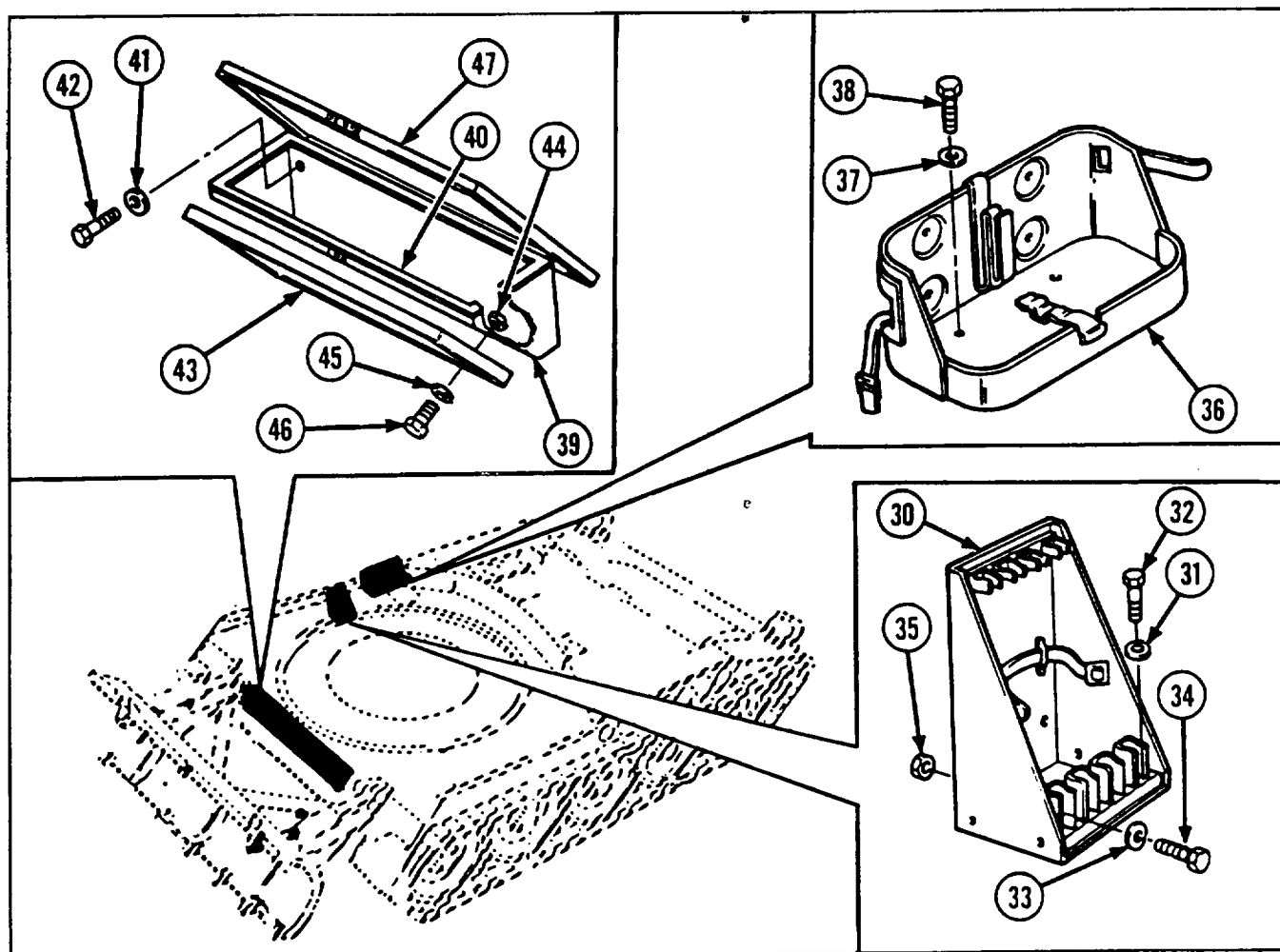


2-169. MAINTENANCE OF HULL STOWAGE (EXTERIOR) AND STOWAGE BOX ASSEMBLY (CONT).

INSTALLATION (CONT)



- 10** Install two spare track bar assemblies (15) on spade (16), and secure with four new lockwashers (17) and four hexagon head capscrews (18).
- 11** Install interphone reel bracket (19) on hull, and secure with four new lockwashers (20) and four hexagon head capscrews (21).
- 12** Install two securing plates (22) on interphone reel bracket (19), and secure with four assembled washer bolts (23).
- 13** Install fire extinguisher bracket (24) on hull, and secure with four new lockwashers (25) and four hexagon head capscrews (26).
- 14** Install hand grenade box assembly (27) on hull, and secure with four new lockwashers (28) and four hexagon head capscrews (29).



- 15** Install rifle rack assembly (30) on hull, and secure with four flat washers (31), four hexagon head capscrews (32), two flat washers (33), two hexagon head capscrews (34), and two hexagon plain nuts (35).

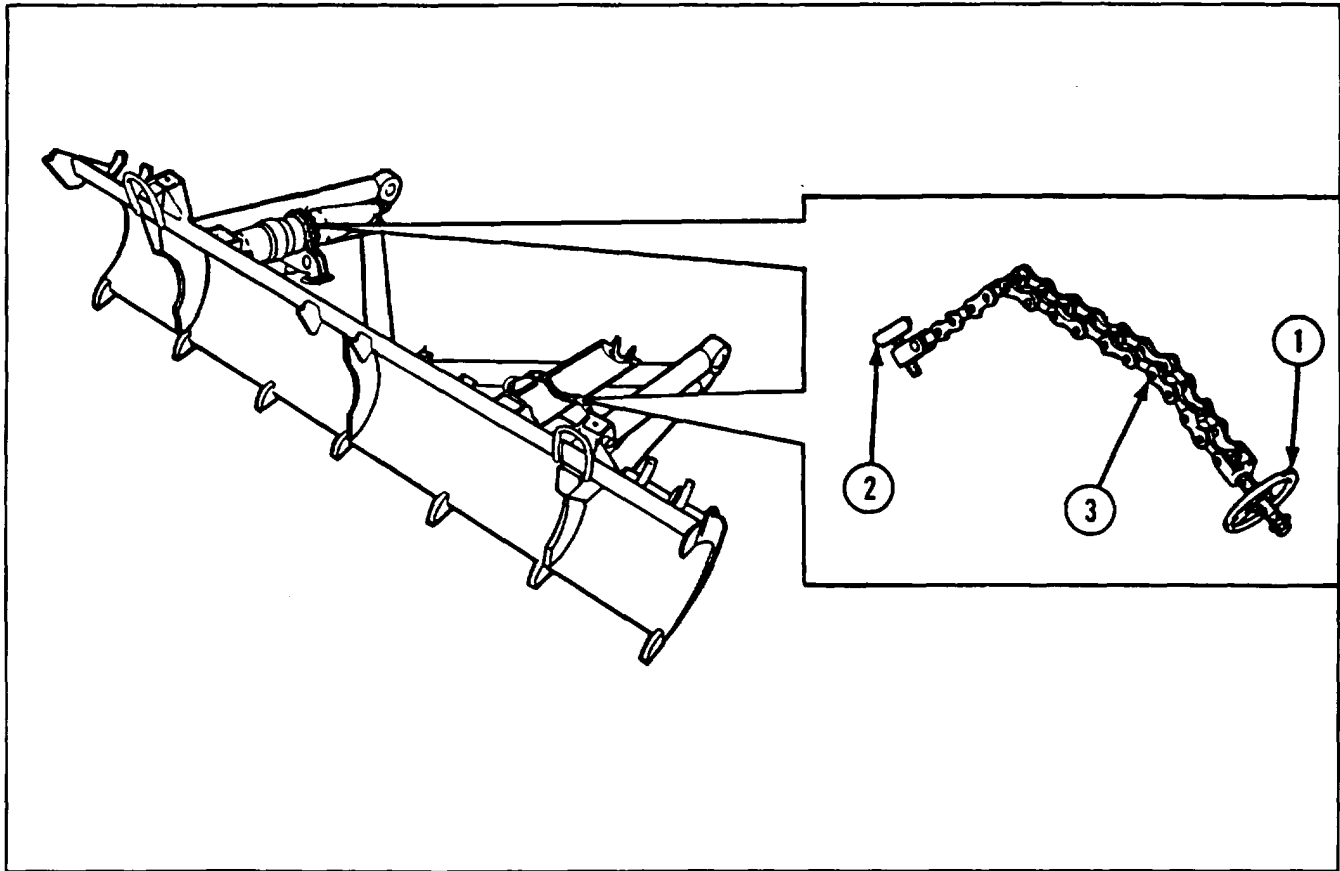
NOTE

Step 16 is written for one water can bracket assembly, but applies to both water can bracket assemblies.

- 16** Install water can bracket assembly (36) on hull, and secure with four new lockwashers (37) and four hexagon head capscrews (38).
- 17** Clean stowage box assembly (39) with cleaning compound.
- 18** Apply adhesive to new stowage box gasket (40), and install stowage box gasket on stowage box assembly (39).
- 19** Install stowage box assembly (39) on hull, and secure with four new lockwashers (41) and four hexagon head capscrews (42).
- 20** Install pioneer tools bracket assembly (43) on stowage box assembly (39), and secure with four hexagon plain nuts (44), four new lockwashers (45), and four hexagon head capscrews (46).
- 21** Close stowage box assembly cover (47).

2-169. MAINTENANCE OF HULL STOWAGE (EXTERIOR) AND STOWAGE BOX ASSEMBLY (CONT).

ADJUSTMENT



NOTE

The following procedure is written for one projectile clamp chain assembly, but applies to both projectile clamp chain assemblies.

- 1 If handwheel clamp (1) cannot be adjusted to securely hold projectile, remove thumbscrew (2).
- 2 Install thumbscrew (2) in next hole that will lengthen or shorten chain grip as necessary.
- 3 Install projectile. Refer to TM 9-2350-304-10.
- 4 Rotate handwheel clamp (1) to tighten projectile chain assembly (3).

2-170. MAINTENANCE OF PIONEER TOOLS BRACKET ASSEMBLY.

This task covers:	a. <i>Disassembly</i>	b. <i>Inspection/Repair</i>	c. <i>Reassembly</i>
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INITIAL SETUP*References*

TM 9-2350-304-24P-1

Equipment Conditions

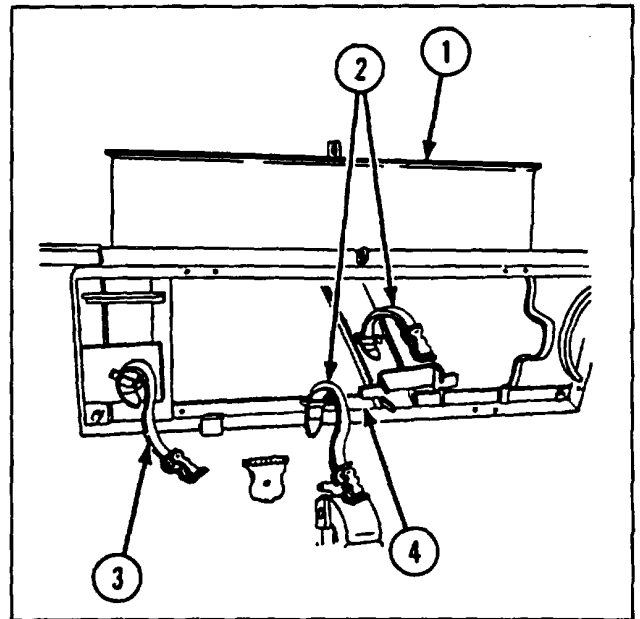
2-926 Stowage box assembly and pioneer tools bracket removed

DISASSEMBLY

- 1 Open stowage box assembly cover (1).
- 2 Remove two webbing straps (2) and webbing strap (3) from bracket (4).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

**REASSEMBLY**

- 1 Install two webbing straps (2) and webbing strap (3) on bracket (4).
- 2 Close stowage box assembly cover (1).

2-171. MAINTENANCE OF WATER CAN BRACKET ASSEMBLY.

This task covers:	a. <i>Disassembly</i>	b. <i>Inspection/Repair</i>	c. <i>Reassembly</i>
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INITIAL SETUP*References*

TM 9-2350-304-24P-1

Equipment Conditions

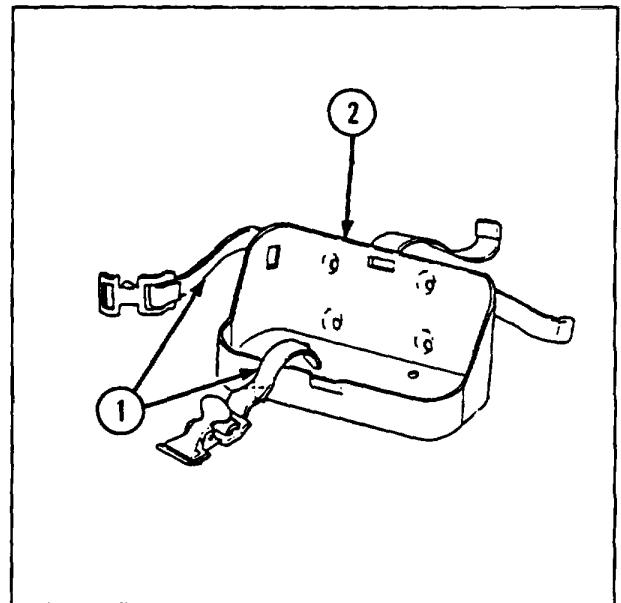
2-926 Water can bracket assembly removed

DISASSEMBLY

Remove two webbing straps (1) from water can bracket (2).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

**REASSEMBLY**

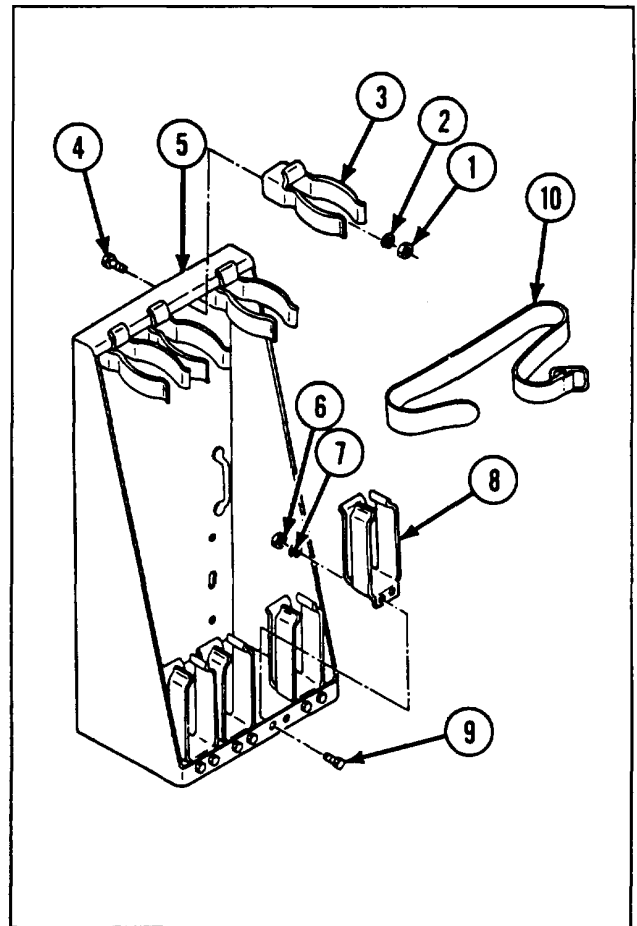
Install two webbing straps (1) on water can bracket (2).

2-172. MAINTENANCE OF RIFLE RACK ASSEMBLY.

This task covers:	a. <i>Disassembly</i>	b. <i>Inspection/Repair</i>	c. <i>Reassembly</i>
INITIAL SETUP			
<i>Materials/Parts</i> Lockwasher (12)			
<i>References</i> TM 9-2350-304-24P-1			
<i>Equipment Conditions</i> 2-926 Rifle rack assembly removed			

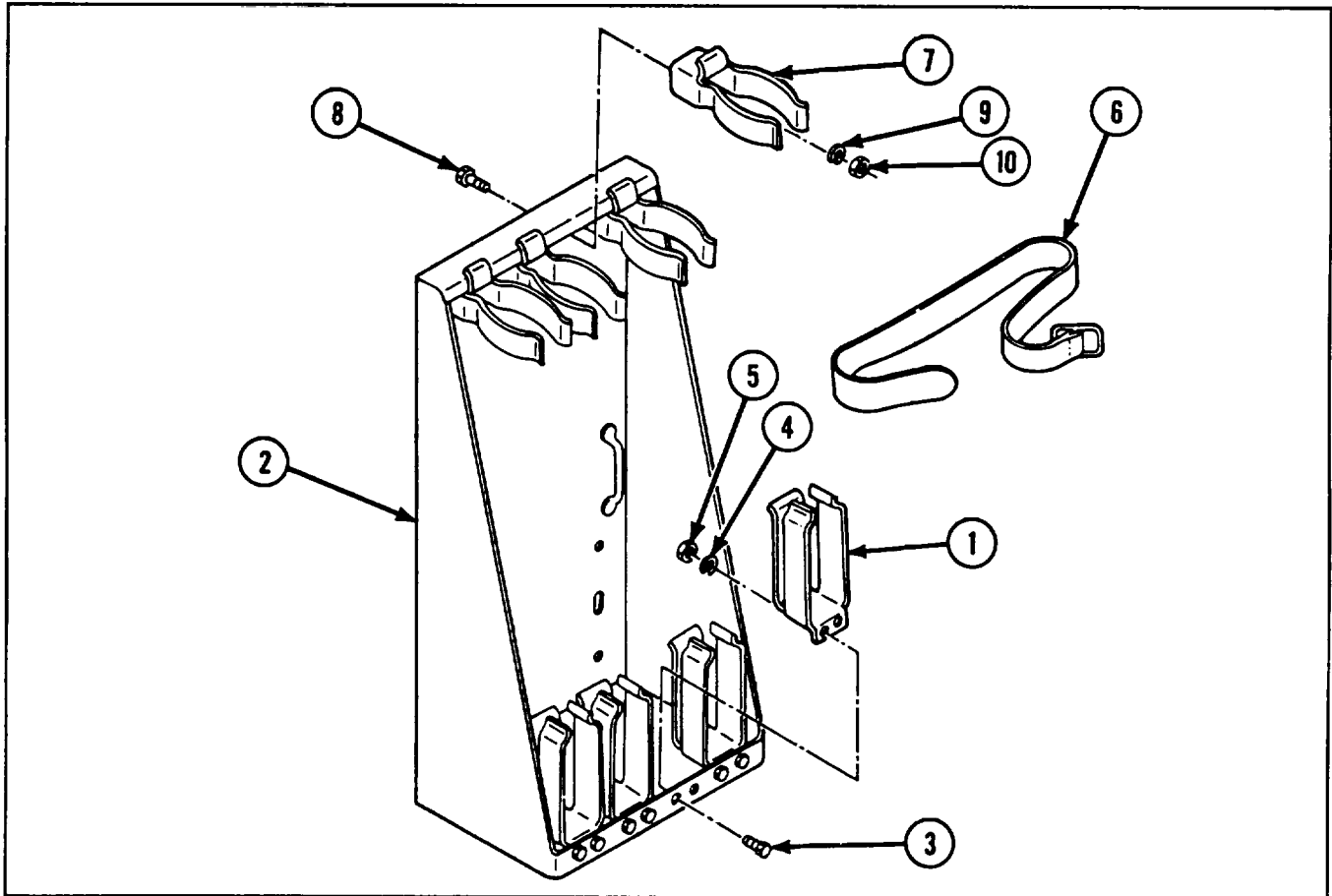
DISASSEMBLY

- 1 Remove four hexagon plain nuts (1), four lockwashers (2), four rifle stowage brackets (3), and four hexagon head capscrews (4) from rifle rack (5).
- 2 Remove eight hexagon plain nuts (6), eight lockwashers (7), four bracket assemblies (8), and eight hexagon head capscrews (9) from rifle rack (5).
- 3 Remove rifle rack webbing strap (10) from rifle rack (5).



2-172. MAINTENANCE OF RIFLE RACK ASSEMBLY (CONT).**INSPECTION/REPAIR**

- 1 Inspect for broken, damaged, or missing parts.
- 2 If rifle rack is broken, damaged, or missing, repair is by replacement of next higher assembly.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

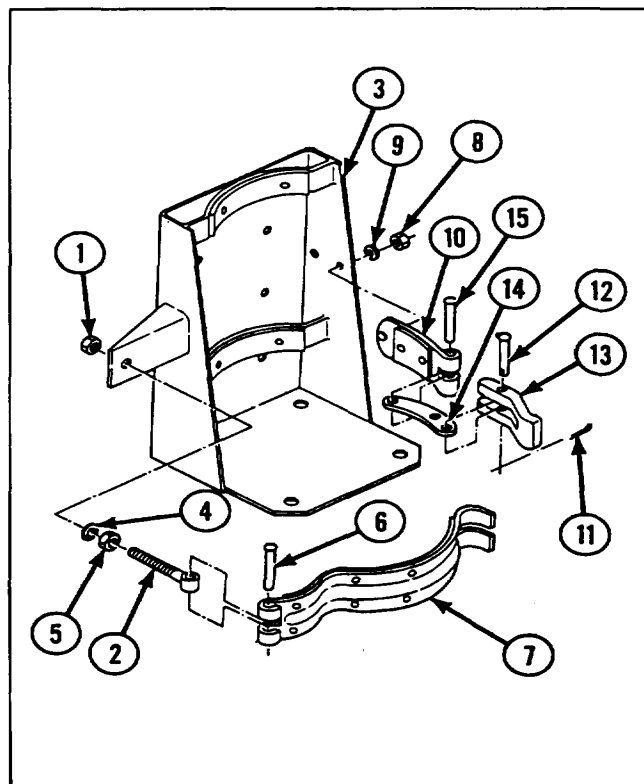
- 1 Install four bracket assemblies (1) to rifle rack (2), and secure with eight hexagon head capscrews (3), eight new lockwashers (4), and eight hexagon plain nuts (5).
- 2 Install webbing strap (6) on rifle rack (2).
- 3 Install four rifle stowage brackets (7) to rifle rack (2), and secure with four hexagon head capscrews (8), four new lockwashers (9), and four hexagon plain nuts (10).

2-173. MAINTENANCE OF FIRE EXTINGUISHER BRACKET.

This task covers:	a. <i>Disassembly</i>	b. <i>Inspection/Repair</i>	c. <i>Reassembly</i>
INITIAL SETUP			
<i>Materials/Parts</i>			
Cotter pin			
Enamel paint (item 17, appx C)			
Headed straight pin			
Lockwasher			
Lockwasher			
Primer (item 30, appx C)			
Solid pan head rivet (2)			
<i>References</i>			
TM 9-2350-304-24P-1			
<i>Equipment Conditions</i>			
2-926 Fire extinguisher bracket removed			

DISASSEMBLY

- 1 Remove hexagon plain nut (1) and rod end connector (2) with attached parts from mounting bracket (3).
- 2 Remove lockwasher (4) and hexagon plain nut (5) from rod end connector (2).
- 3 Remove solid pan head rivet (6) and fixed arm assembly (7) from rod end connector (2).
- 4 Remove hexagon plain nut (8), lockwasher (9), and arm assembly (10) with attached parts from mounting bracket (3).
- 5 Remove cotter pin (11), headed straight pin (12), and fire extinguisher latch (13) from fire extinguisher link (14).
- 6 Remove solid pan head rivet (15) and fire extinguisher link (14) from arm assembly (10).



—2-173.

MAINTENANCE OF FIRE EXTINGUISHER BRACKET (CONT).

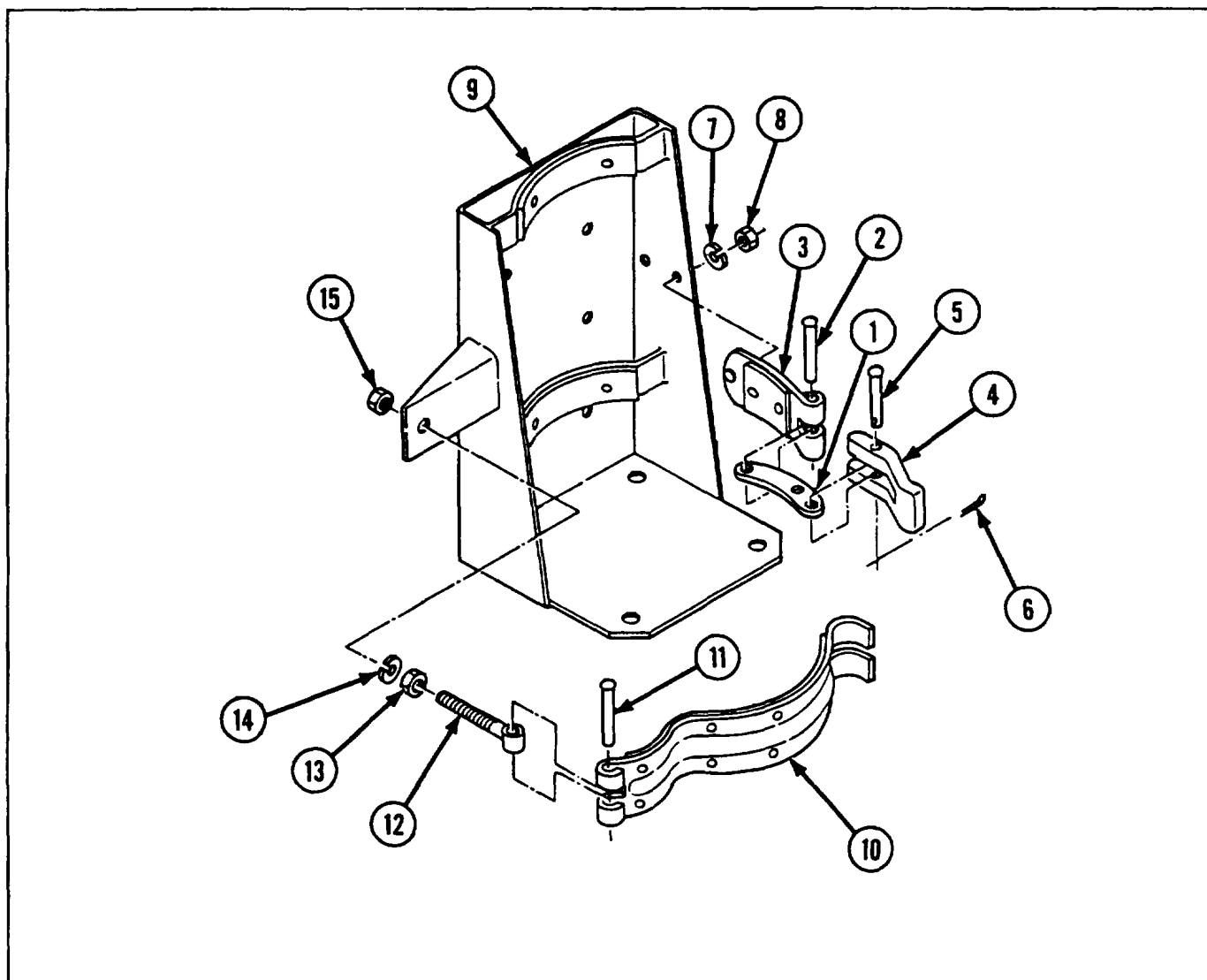
INSPECTION/REPAIR

—1—Inspect for broken, damaged, or missing parts.—

2—Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).—

REASSEMBLY

2 Install fire extinguisher latch (4), new headed straight pin (5), and new cotter pin (6) on fire extinguisher link (1).—



1 Install fire extinguisher link (1) and new solid pan head rivet (2) on arm assembly (3).

2 Install fire extinguisher latch (4), new headed straight pin (5), and new cotter pin (6) on fire extinguisher link (1).

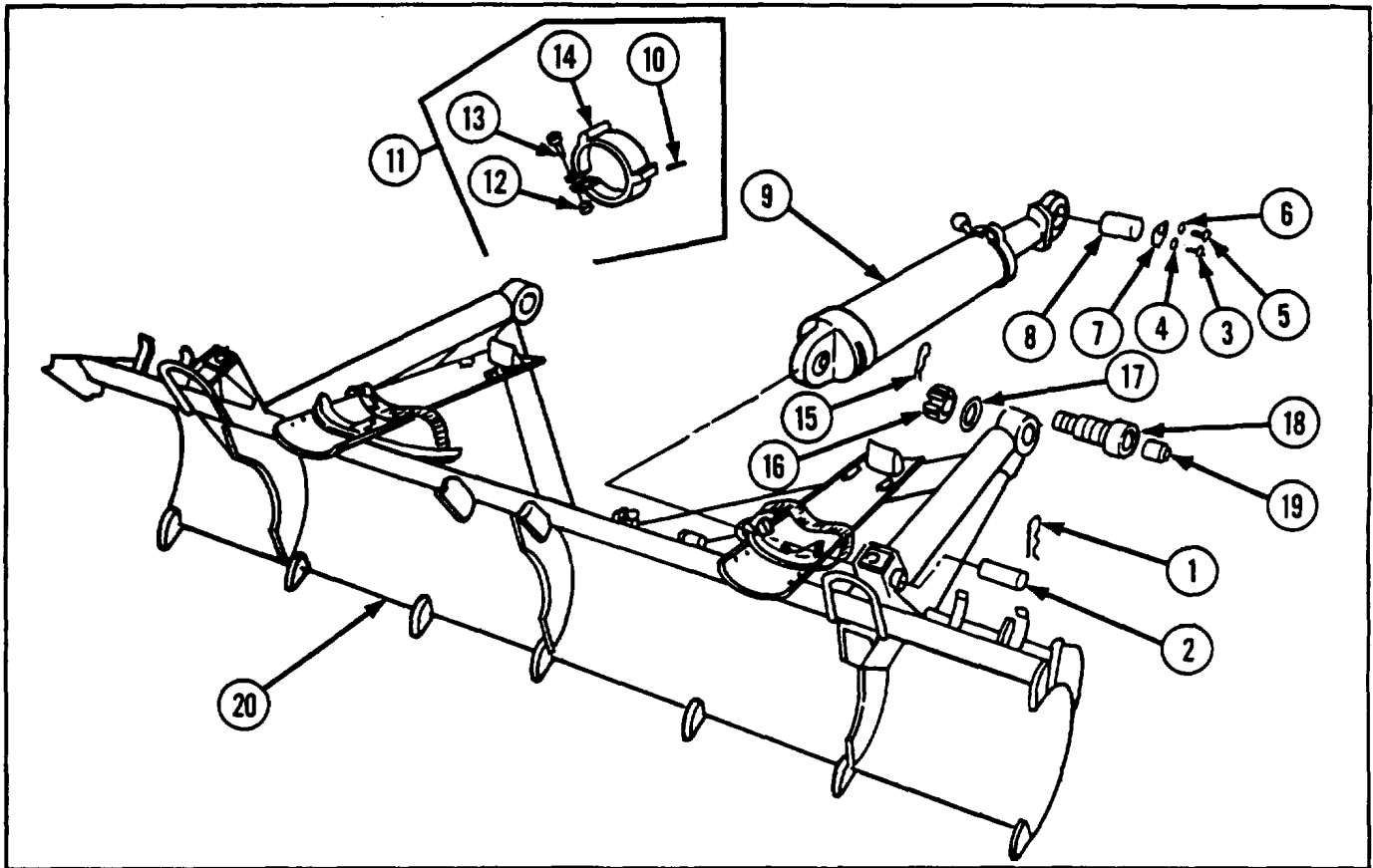
-2-940

- 3 Install arm assembly (3) with attached parts, new lockwasher (7), and hexagon plain nut (8) on mounting bracket (9).
- 4 Install fixed arm assembly (10) and new solid pan head rivet (11) on rod end connector (12).
- 5 Install hexagon plain nut (13) and new lockwasher (14) on rod end connector (12).
- 6 Install rod end connector (12) with attached parts and hexagon plain nut (15) on mounting bracket (9).
- 7 If necessary, perform the following:
 - a. Prime using primer.
 - b. Paint using enamel paint.

2-174. MAINTENANCE OF SPADE AND RELATED PARTS AND LOOP CLAMPS.

This task covers: _____		a. <i>Removal/Disassembly</i> _____	c. <i>Reassembly/Installation</i> _____
		b. <i>Inspection/Repair</i> _____	
INITIAL SETUP			
<i>Tools and Special Tools</i>		<i>Personnel Required</i>	
Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)		Two	
<ul style="list-style-type: none"> • Wire brush 		<i>References</i>	
Sling (item 85, appx B)		TM 9-2350-304-10	
Spade pin nut wrench (item 32, appx G)		TM 9-2350-304-24P-1	
<i>Materials/Parts</i>		<i>Equipment Conditions</i>	
Cotter pin (2)		Basic issue items removed (TM 9-2350-304-10)	
Cotter pin (2)		Spade lowered to ground (TM 9-2350-304-10)	
Dry cleaning solvent (item 15, appx C)		2-755 Hydraulic pressure relieved	
Grease (item 19, appx C)		2-947 Spade hydraulic lines removed	
Self-locking nut (2)			

2-174. MAINTENANCE OF SPADE AND RELATED PARTS AND LOOP CLAMPS (CONT).



REMOVAL/DISASSEMBLY

NOTE

Steps 1 thru 6 are written for the removal of one spade lifting cylinder assembly, but apply to both.

- 1 Remove cotter pin (1) and headless straight pin (2).
- 2 Remove two hexagon head capscrews (3), two lockwashers (4), hexagon head capscrew (5), lockwasher (6), and spade cylinder keeper (7).
- 3 Remove spade cylinder pin (8) and spade lifting cylinder assembly (9).
- 4 Remove setscrew (10) from loop clamp assembly (11).
- 5 Remove self-locking nut (12) and hexagon head capscrew (13) from loop clamp (14).
- 6 Remove loop clamp (14) from spade lifting cylinder assembly (9).
- 7 Remove two cotter pins (15). Using spade pin nut wrench, remove two round plain nuts (16) and two flat washers (17). Remove two spade hinge pins (18).

- 8 Remove two lubrication fittings (19).
- 9 Remove spade and shell rack (20).

<i>INSPECTION/REPAIR</i>

- 1 Inspect for broken, damaged, or missing parts.
- 2 Clean spade and attached parts using dry cleaning solvent and wire brush. Allow parts to dry thoroughly.
- 3 File off nicks and burrs.
- 4 Touch up damaged painted areas.
- 5 Spade lifting cylinder assembly is a repairable assembly. Refer to page 2-944.
- 6 For repair of spade and shell rack, notify next higher level of maintenance.
- 7 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1) which do not meet inspection criteria.

<i>REASSEMBLY/INSTALLATION</i>

- 1 Insert spade and shell rack struts (1) in flanges on vehicle.
- 2 Install two lubrication fittings (19) in two spade hinge pins (18).
- 3 Install two spade hinge pins (18), two flat washers (17), two round plain nuts (16), and two new cotter pins (15). Tighten nuts using spade pin nut wrench.

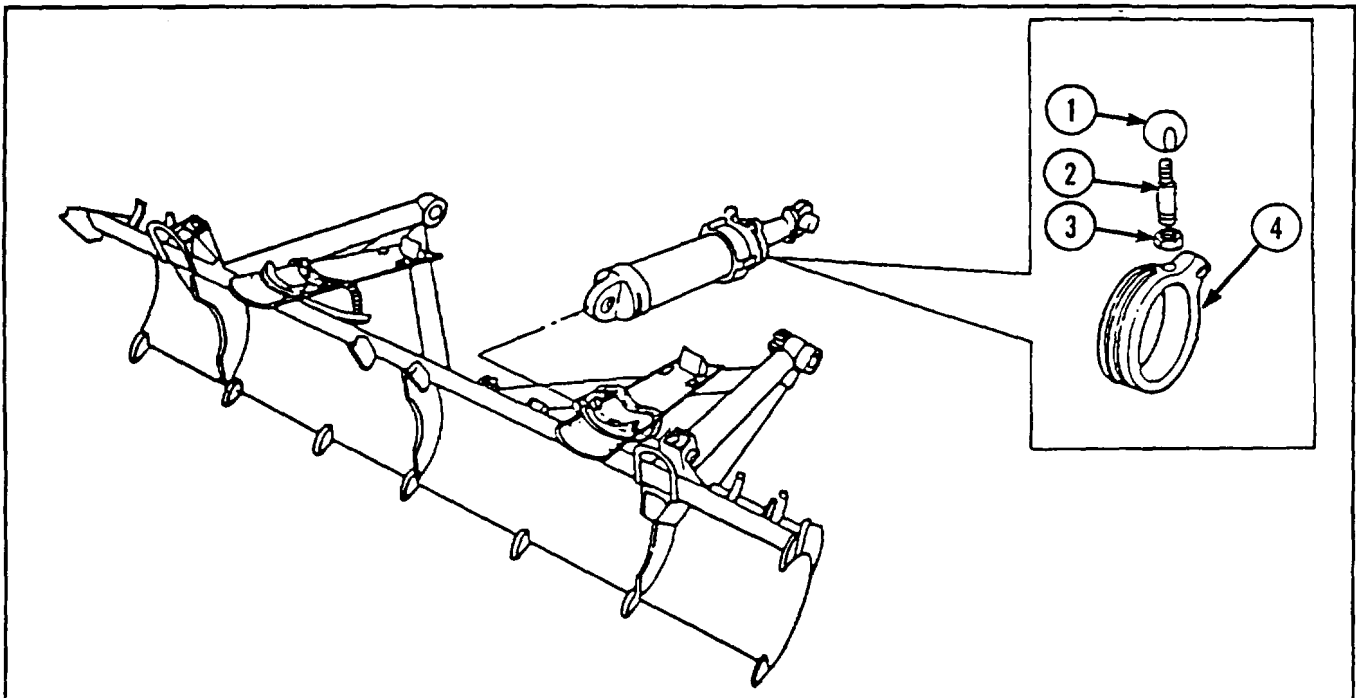
NOTE

Steps 4 thru 10 are written for one spade lifting cylinder assembly, but apply to both.

- 4 Install loop clamp (14) on spade lifting cylinder assembly (9).
- 5 Install hexagon head capscrew (13) and new self-locking nut (12) on loop clamp (14).
- 6 Install setscrew (10) in loop clamp assembly (11).
- 7 Install spade lifting cylinder assembly (9) and spade cylinder pin (8).
- 8 Install spade cylinder keeper (7), new lockwasher (6), hexagon head capscrew (5), two new lock-washers (4), and two hexagon head capscrews (3).
- 9 Install headless straight pin (2) and new cotter pin (1).
- 10 Lubricate cotter pins (1 and 15) with grease.
- 11 Raise and lower spade and shell rack (20) several times. Check for smooth operation.

2-175. MAINTENANCE OF SPADE LIFTING CYLINDER ASSEMBLY.

This task covers:	a. <i>Disassembly</i>	b. <i>Inspection/Repair</i>	c. <i>Reassembly</i>
INITIAL SETUP			
<i>Materials/Parts</i>	<i>Equipment Conditions</i>		
Grease (item 19, appx C)	2-941 Spade lifting cylinder assembly removed		
Sealing compound (item 38, appx C)			
<i>References</i>			
TM 9-2350-304-24P-1			

**DISASSEMBLY**

Remove lock control knob (1), spade lifting lock handle (2), and nut (3) from spade cylinder lock (4).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 For further disassembly, notify direct support maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

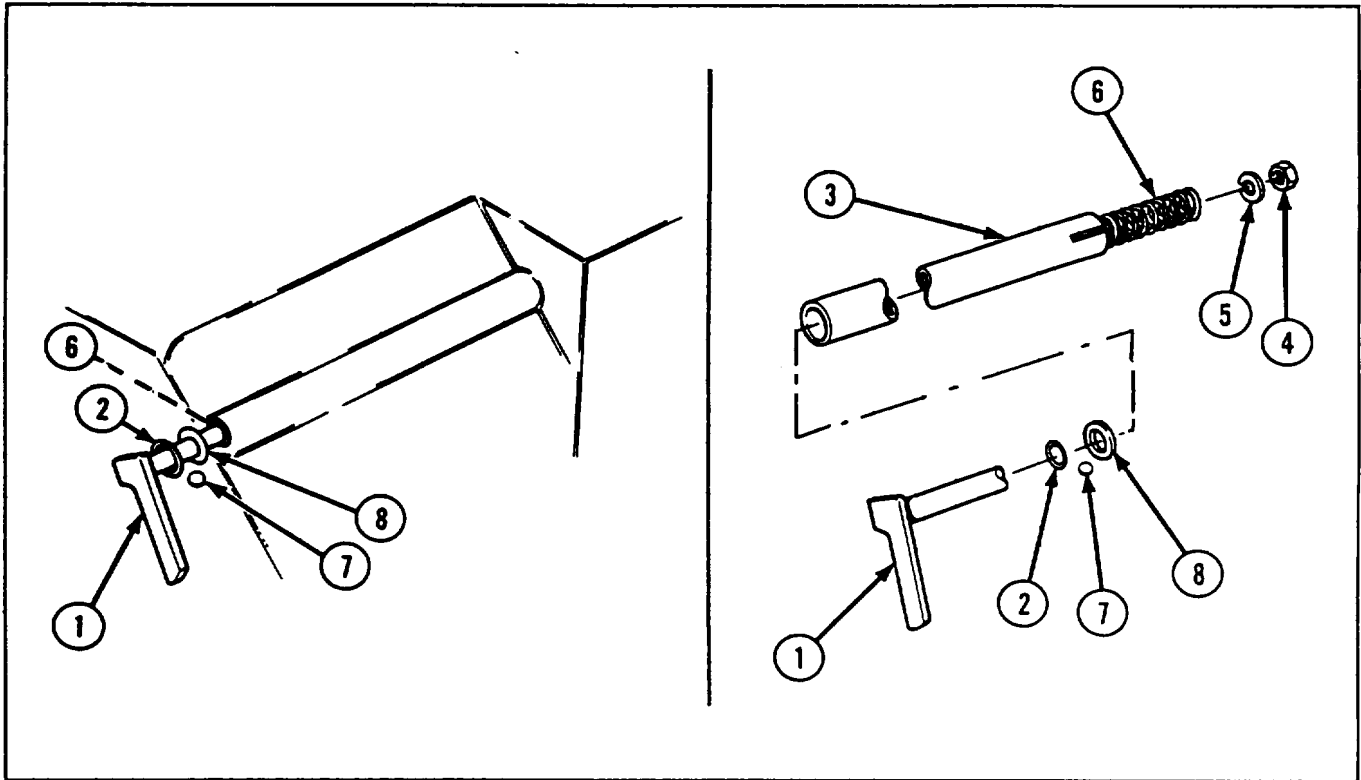
REASSEMBLY

- 1 Lubricate threads of nut (1) with grease, and install on spade lifting lock handle (2).
- 2 Apply sealing compound to threads of spade lifting lock handle (2), and install to spade cylinder lock (3).
- 3 Install lock control knob (4) on spade lifting lock handle (2).

2-176. MAINTENANCE OF SPADE CONTROL LEVER.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
<p>INITIAL SETUP</p> <p><i>Materials/Parts</i> Self-locking nut</p> <p><i>References</i> TM 9-2350-304-10 TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i> Spade lowered (TM 9-2350-304-10) 2-871 Rear hydraulic access cover removed 2-755 Hydraulic pressure relieved</p>			

2-176. MAINTENANCE OF SPADE CONTROL LEVER (CONT).



REMOVAL

CAUTION

Do not pull spade control valve manual control lever too far from hull. This could bind retaining ring.

- 1 Pull back spade control valve manual control lever (1) and block in place. Disconnect retaining ring (2).
- 2 Remove spade control lever control shaft (3).
- 3 Remove self-locking nut (4) and spade control sleeve spacer (5) from spade control valve manual control lever (1).
- 4 Remove compression helical spring (6) from spade control valve manual control lever (1).
- 5 Remove spade control lever indent ball bearing (7) and spade control lever indent flat washer (8) from spade control lever control shaft (3).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 For further disassembly, notify direct support maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

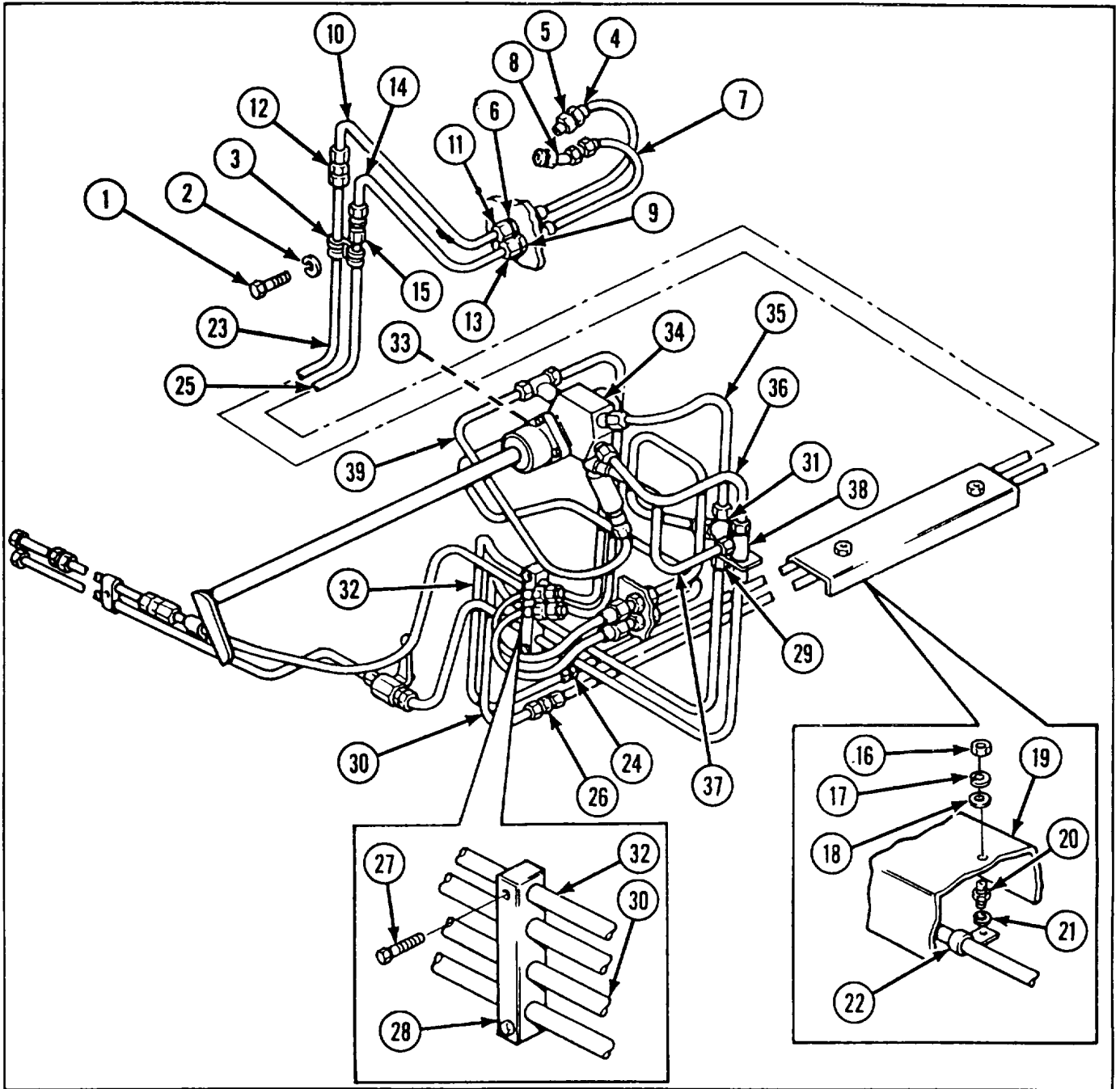
INSTALLATION

- 1 Install retaining ring (2), spade control lever indent flat washer (8), and spade control lever indent ball bearing (7) on spade control valve manual control lever (1).
- 2 Install spade control valve manual control lever (1) into spade control lever control shaft (3).
- 3 Install compression helical spring (6), spade control sleeve spacer (5), and new self-locking nut (4) on spade control valve manual control lever (1) inside spade control lever shaft (3).
- 4 Aline notch on hull housing and flat side of spade control lever control shaft (3). Install spade control lever control shaft in hull.
- 5 Pull back spade control valve manual control lever (1) and block in place. Compress compression helical spring (6) and install retaining ring (2) in hull. Remove blocking.

2-177. MAINTENANCE OF SPADE HYDRAULIC LINES AND FITTINGS.

This task covers:	<i>a. Removal</i>	<i>b. Inspection/Repair</i>	<i>c. Installation</i>
INITIAL SETUP			
<p><i>Materials/Parts</i></p> <ul style="list-style-type: none"> Lockwasher (11) Preformed packing Preformed packing (2) Preformed packing (4) Tube fitting locknut (2) Tube fitting locknut (6) <p><i>References</i></p> <ul style="list-style-type: none"> TM 9-2350-304-24P-1 	<p><i>Equipment Conditions</i></p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px 0;">WARNING</div> <p>Before relieving hydraulic pressure, ensure travel lock is engaged and vehicle is on as level ground as possible to keep cannon from sliding out of battery.</p> <p>2-755 Hydraulic pressure relieved</p>		

2-177. MAINTENANCE OF SPADE HYDRAULIC LINES AND FITTINGS (CONT).



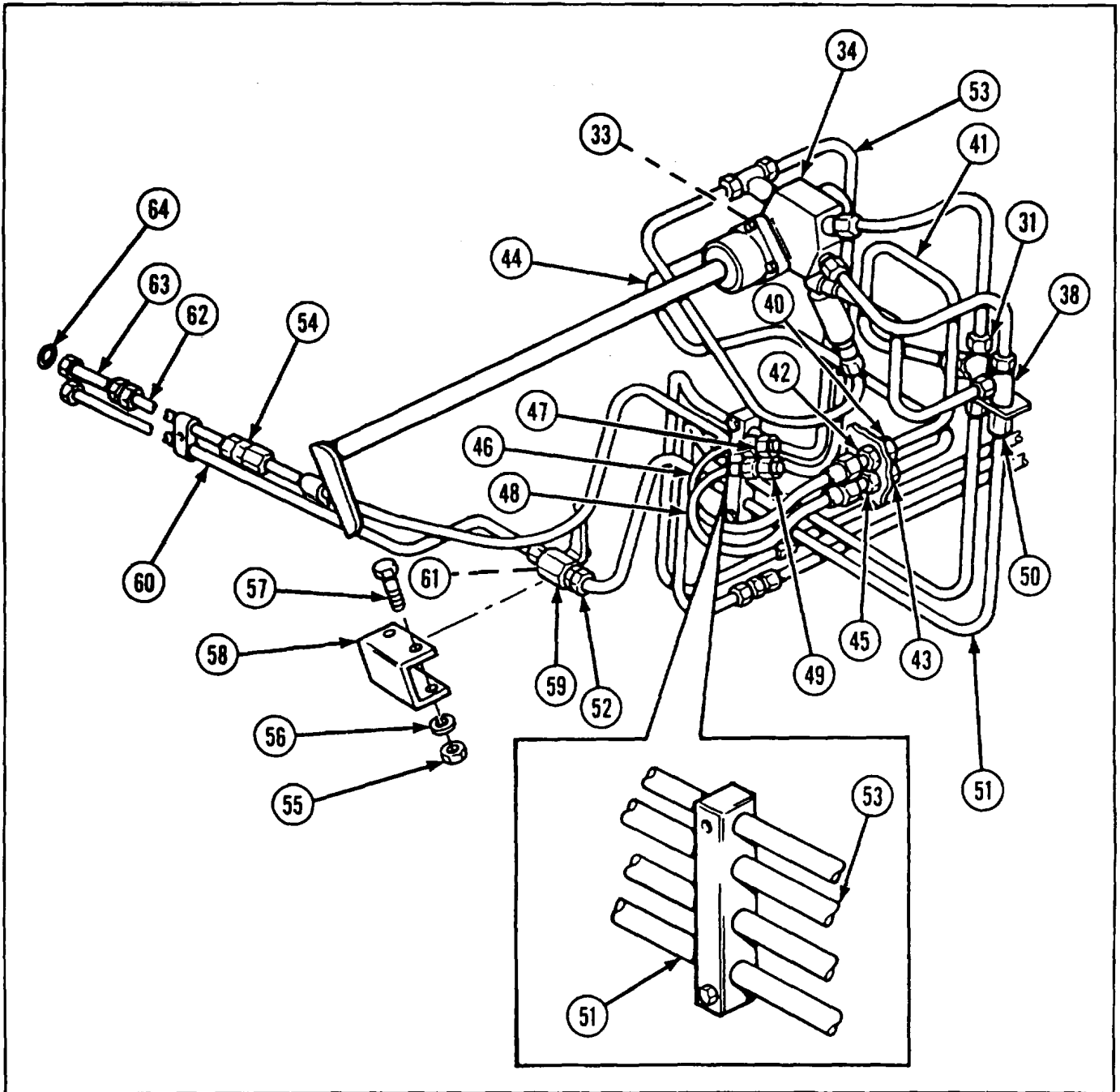
NOTE

Before removing leaking hydraulic lines, remove the attaching hardware. Step 1 is written and illustrated for one loop clamp but applies to all clamps.

- 1 Remove hexagon head capscrew (1), lockwasher (2), and loop clamp (3).
- 2 Disconnect spade cylinder raising and lowering hose assembly (4) from tube nipple (5) on right spade lifting cylinder and from pipe straight adapter (6).
- 3 Disconnect spade cylinder raising and lowering hose assembly (7) from tube elbow (8) on right spade lifting cylinder and from pipe straight adapter (9).
- 4 Loosen tube fitting locknut (10) and disconnect spade cylinder raising control line metal tube assembly (11) from pipe straight adapter (6) and tube nipple (12).
- 5 Loosen tube fitting locknut (13) and disconnect spade cylinder lowering control metal tube assembly (14) from pipe straight adapter (9) and tube nipple (15).
- 6 Remove two hexagon plain nuts (16), two lockwashers (17), two flat washers (18), hydraulic cylinder guard (19), two shouldered studs (20), two lockwashers (21), and two loop clamps (22).
- 7 Disconnect right spade cylinder raising control line metal tube assembly (23) from tube nipple (12) and tube nipple (24).
- 8 Disconnect spade control metal tube assembly (25) from tube nipple (15) and tube nipple (26).
- 9 Remove two hexagon head capscrews (27) and retaining strap (28).
- 10 Loosen tube fitting locknut (29) and disconnect right spade cylinder lowering line metal tube assembly (30) from tube tee (31) and tube nipple (26).
- 11 Disconnect right spade cylinder raising line metal tube assembly (32) from tube nipple (24) and tube tee (33) on spade control manifold (34).
- 12 Disconnect spade control manifold to tee metal tube assembly (35) from tube tee (31) and spade control lever manifold (34).
- 13 Disconnect pressure line tee to spade control manifold metal tube assembly (36) and spade control line tee to pressure reduction valve metal tube assembly (37) from tube tee (38) and spade control lever manifold (34).
- 14 Disconnect spade control valve tee to reducing valve metal tube assembly (39) from tube tee and tube nipple on spade control lever manifold (34).

2-177. MAINTENANCE OF SPADE HYDRAULIC LINES AND FITTINGS (CONT).

REMOVAL (CONT)



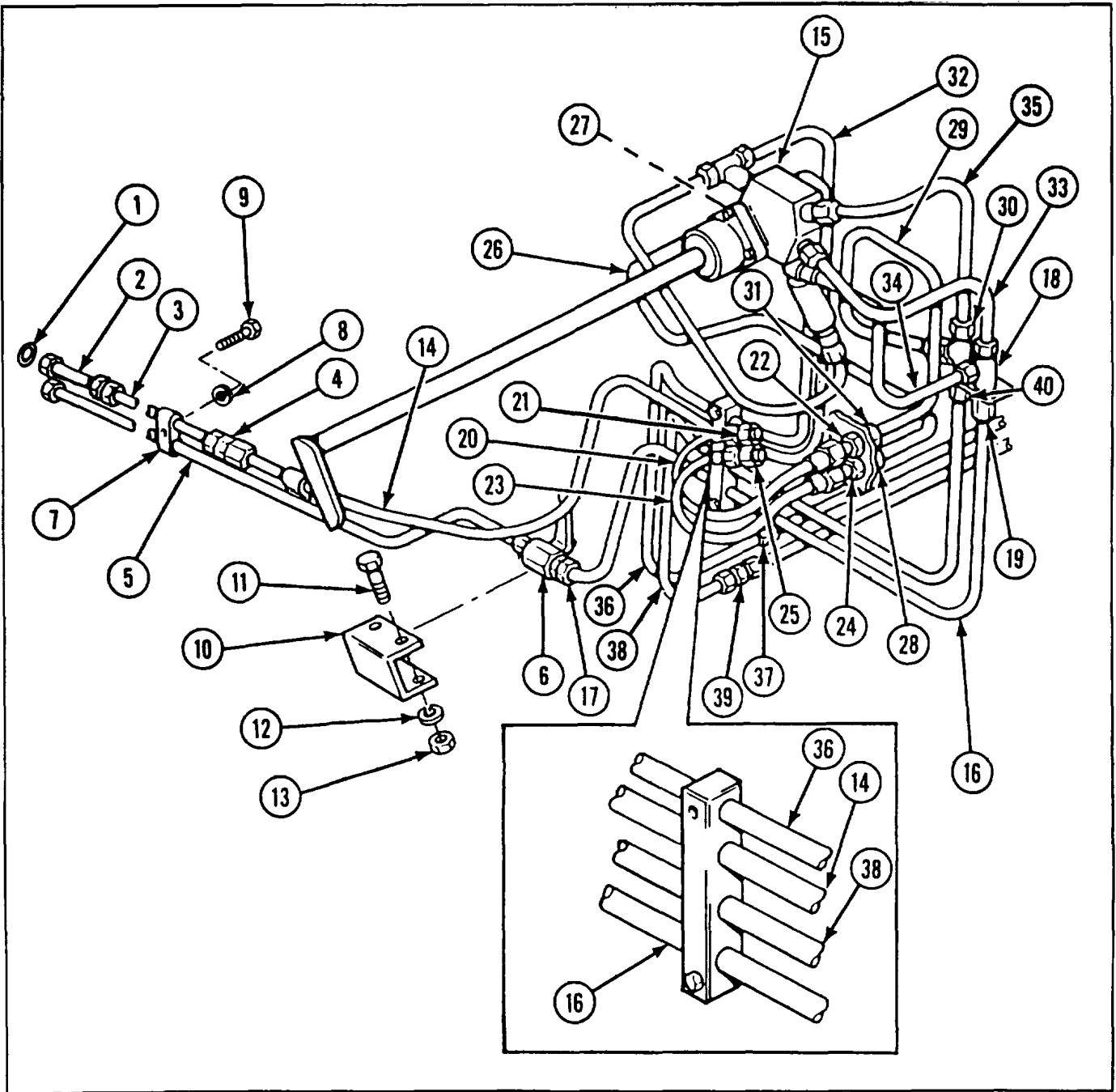
- 15 Loosen tube fitting locknut (40) and disconnect spade control left cylinder lowering tee to hose metal tube assembly (41) from pipe straight adapter (42) and tube tee (31).
- 16 Loosen tube fitting locknut (43) and disconnect metal tube assembly (44) from tube tee (33) on spade control lever manifold (34) and pipe straight adapter (45).
- 17 Disconnect spade cylinder raising and lowering hose assembly (46) from pipe straight adapter (42) and tube nipple (47) on left spade lifting cylinder.
- 18 Disconnect spade cylinder raising and lowering hose assembly (48) from pipe straight adapter (45) and tube nipple (49) on left spade lifting cylinder.
- 19 Loosen tube fitting locknut (50) and disconnect spade shut-off valve to tee metal tube assembly (51) from tube tee (38) and tube reducer (52).
- 20 Disconnect spade control valve tee to nipple metal tube assembly (53) from tube nipple (54) and tube tee on spade control lever manifold (34).
- 21 Remove two hexagon plain nuts (55), two lockwashers (56), and two hexagon head capscrews (57) from bracket (58) to release ball valve (59).
- 22 Disconnect supply tee to shutoff valve metal tube assembly (60) from tube reducer (61) on ball valve (59) and tube tee.
- 23 Disconnect return line union to check valve metal tube assembly (62) from tube nipple (54) and hydraulic relief valve (63).
- 24 Remove hydraulic relief valve (63) and preformed packing (64) from tube tee.

INSPECTION/REPAIR

- 1 Inspect for broken, missing, or damaged parts.
- 2 For complete repair of hydraulic fittings and hardware, refer to general maintenance, page 2-371.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-177. MAINTENANCE OF SPADE HYDRAULIC LINES AND FITTINGS (CONT).

INSTALLATION



- 1 Install new preformed packing (1) and hydraulic relief valve (2) to tube tee.
- 2 Connect return line union to check valve metal tube assembly (3) to hydraulic relief valve (2) and tube nipple (4).
- 3 Connect supply tee to shut-off valve metal tube assembly (5) to tube tee and ball valve (6).

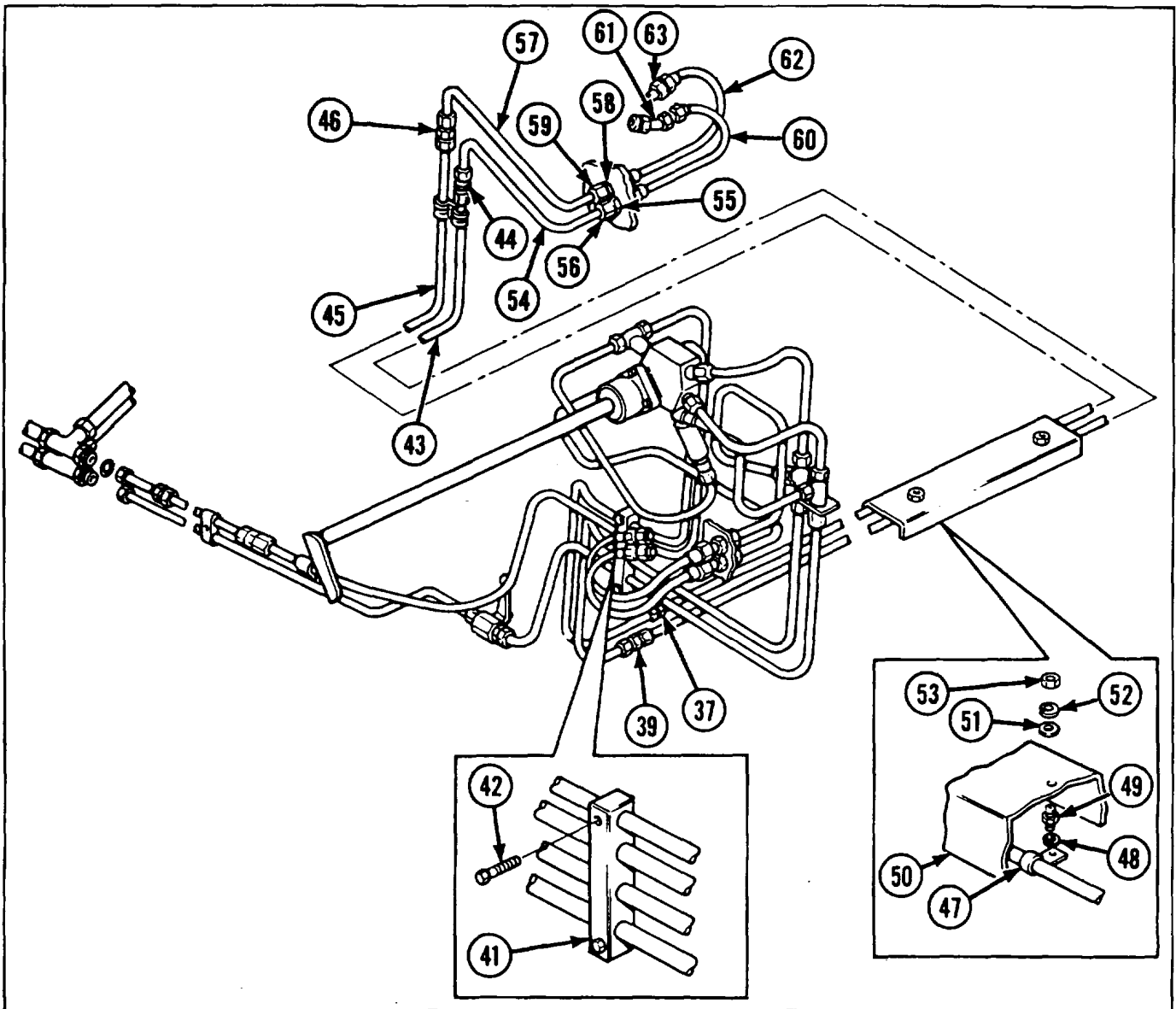
NOTE

Step 4 is written and illustrated for one loop clamp, but applies to all clamps.

- 4 Install loop clamp (7) and secure with new lockwasher (8) and hexagon head capscrew (9).
- 5 Place ball valve (6) into bracket (10) and secure with two hexagon head capscrews (11), two new lockwashers (12), and two hexagon plain nuts (13).
- 6 Connect spade control valve tee to nipple metal tube assembly (14) to tube nipple (4) and tube tee on spade control lever manifold (15).
- 7 Connect spade shut-off valve to tee metal tube assembly (16) to tube reducer (17) and tube tee (18). Tighten new tube fitting locknut (19).
- 8 Connect spade cylinder raising and lowering hose assembly (20) to tube nipple (21) on left spade lifting cylinder and to pipe straight adapter (22).
- 9 Connect spade cylinder raising and lowering hose assembly (23) to straight pipe adapter (24) and tube nipple (25) on left spade lifting cylinder.
- 10 Connect metal tube assembly (26) to pipe straight adapter (24) and tube tee (27) on spade control lever manifold (15). Tighten new tube fitting locknut (28).
- 11 Connect spade control left cylinder lowering tee to hose metal tube assembly (29) to straight pipe adapter (22) and tube tee (30). Tighten tube fitting locknut (31).
- 12 Connect spade control valve tee to reducing valve metal tube assembly (32) to tube tee and tube nipple on spade control lever manifold.
- 13 Connect pressure line tee to spade control manifold metal tube assembly (33) and spade control line tee to pressure reduction valve metal tube assembly (34) to tube tee (18) and spade control lever manifold.
- 14 Connect spade control manifold to tee metal tube assembly (35) to tube tee (30) and spade control lever manifold (15).
- 15 Connect right spade cylinder raising line metal tube assembly (36) to tube tee (27) on spade control lever manifold (15) and tube nipple (37).
- 16 Connect right spade cylinder lowering line metal tube assembly (38) with tube nipple (39) and tube tee (30). Tighten new tube fitting locknut (40).

2-177. MAINTENANCE OF SPADE HYDRAULIC LINES AND FITTINGS (CONT).

INSTALLATION (CONT)



- 17 Install retaining strap (41) with two hexagon head capscrews (42).
- 18 Connect spade control metal tube assembly (43) to tube nipple (39) and tube nipple (44).
- 19 Connect right spade cylinder raising control line metal tube assembly (45) to tube nipple (37) and tube nipple (46).
- 20 Install two loop clamps (47), two new lockwashers (48), two shouldered studs (49), hydraulic cylinder guard (50), two flat washers (51), two new lockwashers (52), and two hexagon plain nuts (53).

- 21 Connect spade cylinder lowering control metal tube assembly (54) to tube nipple (44) and pipe straight adapter (55). Tighten new tube fitting locknut (56).
- 22 Connect spade cylinder raising control line metal tube assembly (57) to tube nipple (46) and pipe straight adapter (58). Tighten new tube fitting locknut (59).
- 23 Connect spade cylinder raising and lowering hose assembly (60) to pipe straight adapter (55) and tube elbow (61) on right spade lifting cylinder.
- 24 Connect spade cylinder raising and lowering hose assembly (62) to pipe straight adapter (58) and tube nipple (63) on right spade lifting cylinder.

2-178. MAINTENANCE OF VEHICLE DATA PLATES.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Materials/Parts</i>		<i>References</i>	
Clear lacquer (item 21, appx C)		TM 9-2350-304-24P-1	
Dry cleaning solvent (item 15, appx C)			
Epoxy resin adhesive (item 3, appx C)			
Lockwasher (6)			
Self-locking nut (4)			

REMOVAL

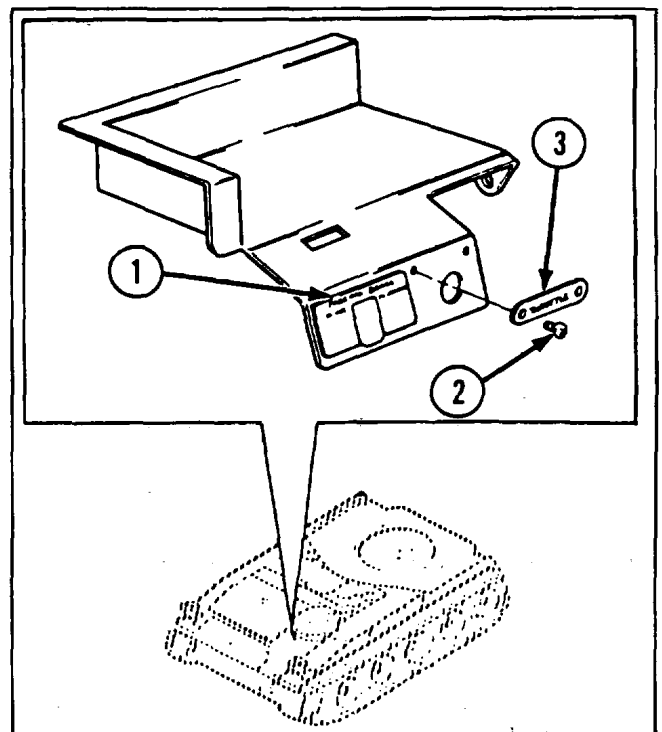
CAUTION

Do not remove vehicle data plates bonded with adhesive unless absolutely necessary.

NOTE

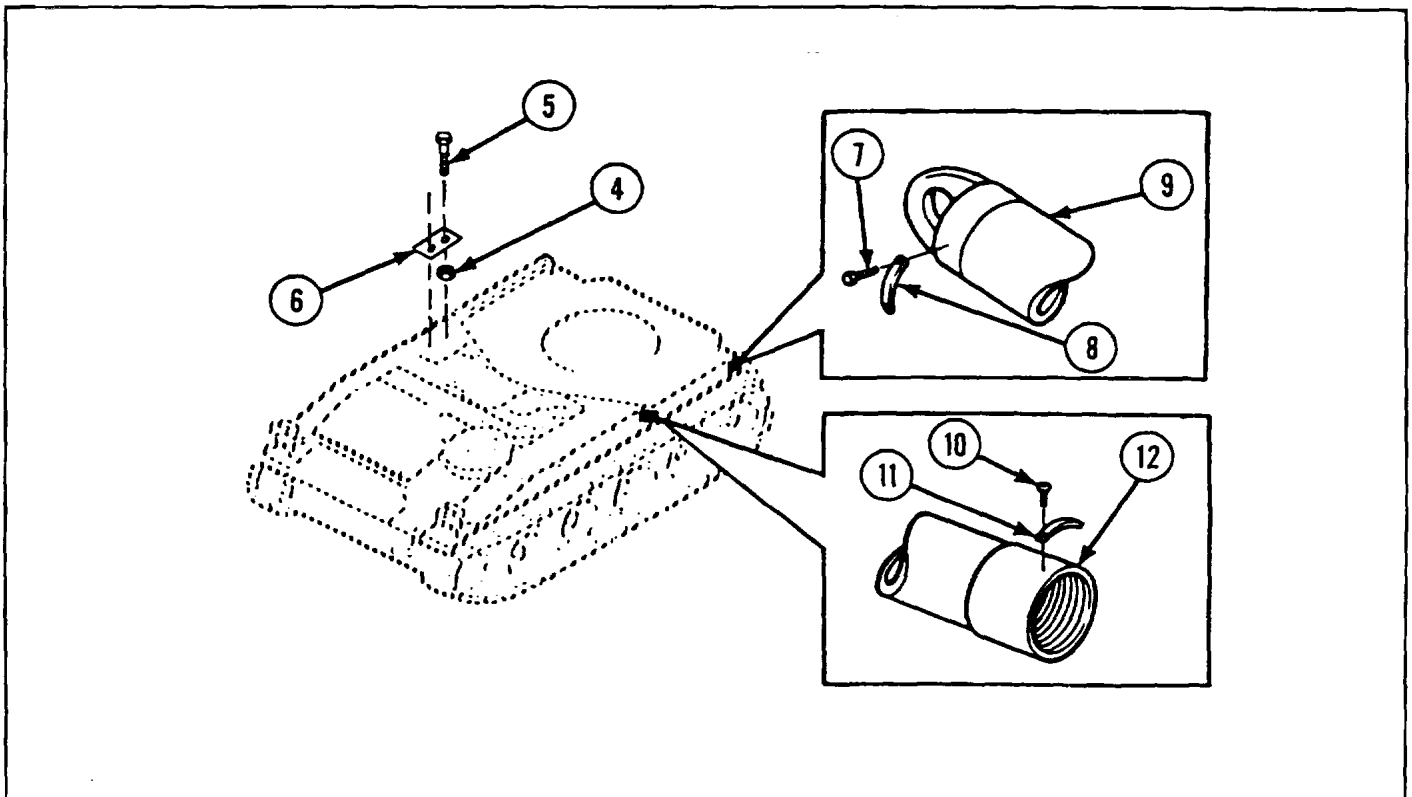
Scrape or pry off bonded vehicle data plates using putty knife.

- 1 If damaged, remove PARKING BRAKE SET-RELEASE instruction sign (1).
- 2 Remove two drive screws (2) and THROTTLE identification plate (3).



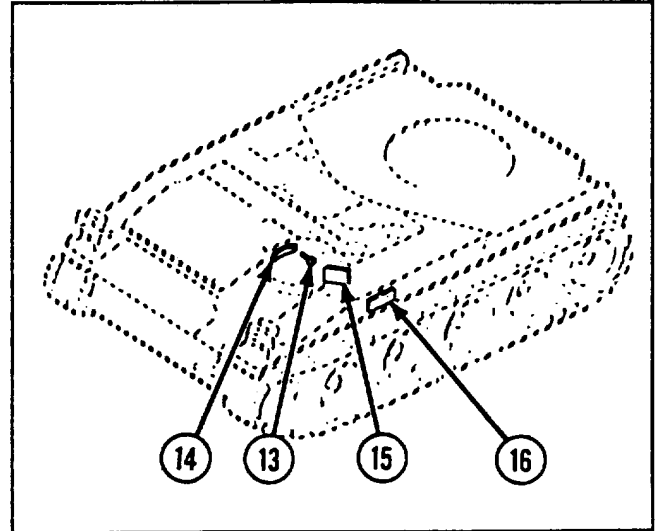
2-178. MAINTENANCE OF VEHICLE DATA PLATES (CONT).

REMOVAL (CONT)

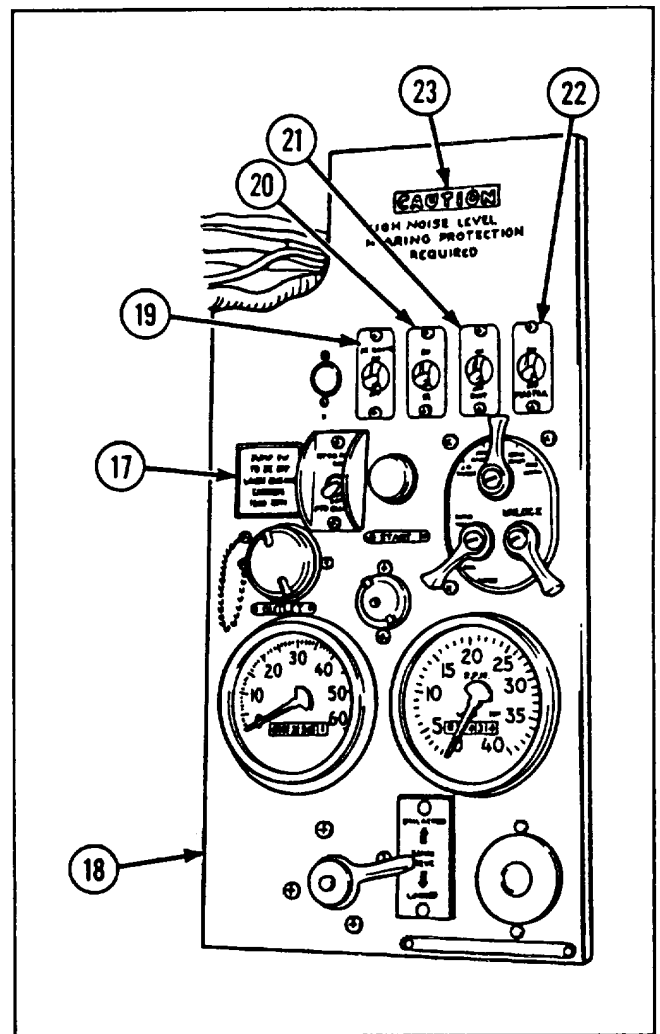


- 3 Remove four self-locking nuts (4), four machine screws (5), and DIESEL FUEL ONLY identification plate (6) from hull.
- 4 Remove three drive screws (7) and spade cylinder identification plate (8) from spade lifting cylinder assembly (9).
- 5 Remove three drive screws (10) and LOCKOUT CYLINDER identification plate (11) from lockout cylinder assembly (12).

- 6 Remove two drive screws (13) and ENGINE SHUT-DOWN identification plate (14) from bulkhead.
- 7 If damaged, remove M110A2 VEHICLE identification plate (15) from bulkhead.
- 8 If damaged, remove HIGH NOISE LEVEL instruction plate (16) from bulkhead.



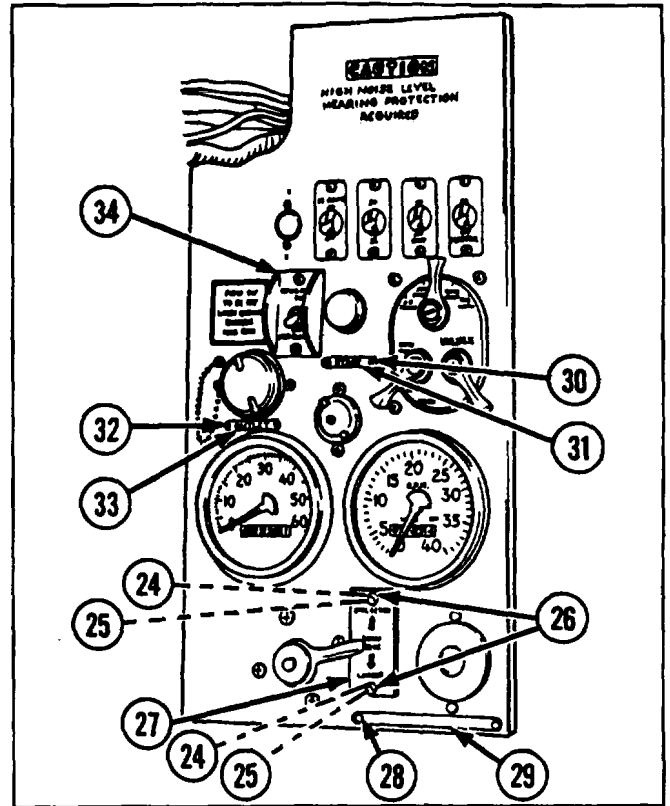
- 9 If damaged, remove CLUTCH OPERATION WARNING instruction plate (17) from switch panel (18).
- 10 If damaged, remove INFRARED RECEIVER switch identification plate (19) from switch panel (18).
- 11 If damaged, remove BO-IR SELECTOR designation plate (20) from switch panel (18).
- 12 If damaged, remove INSTRUMENT switch instruction plate (21) from switch panel (18).
- 13 If damaged, remove MASTER switch instruction plate (22) from switch panel (18).
- 14 If damaged, remove high intensity noise CAUTION sign (23) from switch panel (18).



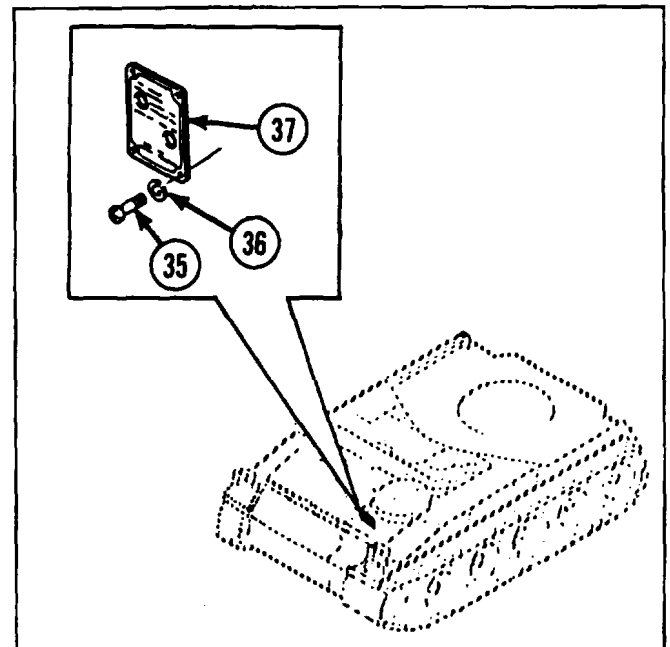
2-178. MAINTENANCE OF VEHICLE DATA PLATES (CONT).

REMOVAL (CONT)

- 15 Remove two hexagon plain nuts (24), two lockwashers (25), two machine screws (26), and SUSPENSION VALVE instruction plate (27).
- 16 Remove two drive screws (28) and SUSPENSION LOCKED indicator lamp Instruction plate (29).
- 17 Remove two drive screws (30) and Instruction plate (31) from switch panel (18).
- 18 Remove two drive screws (32) and UTILITY OUTLET identification plate (33) from switch panel (18).
- 19 If damaged, remove HYDRAULIC PUMP/PTO CLUTCH identification plate (34) from switch panel (18).



- 20 Remove four machine screws (35), four lockwashers (36), and instruction plate (37) from bulkhead.



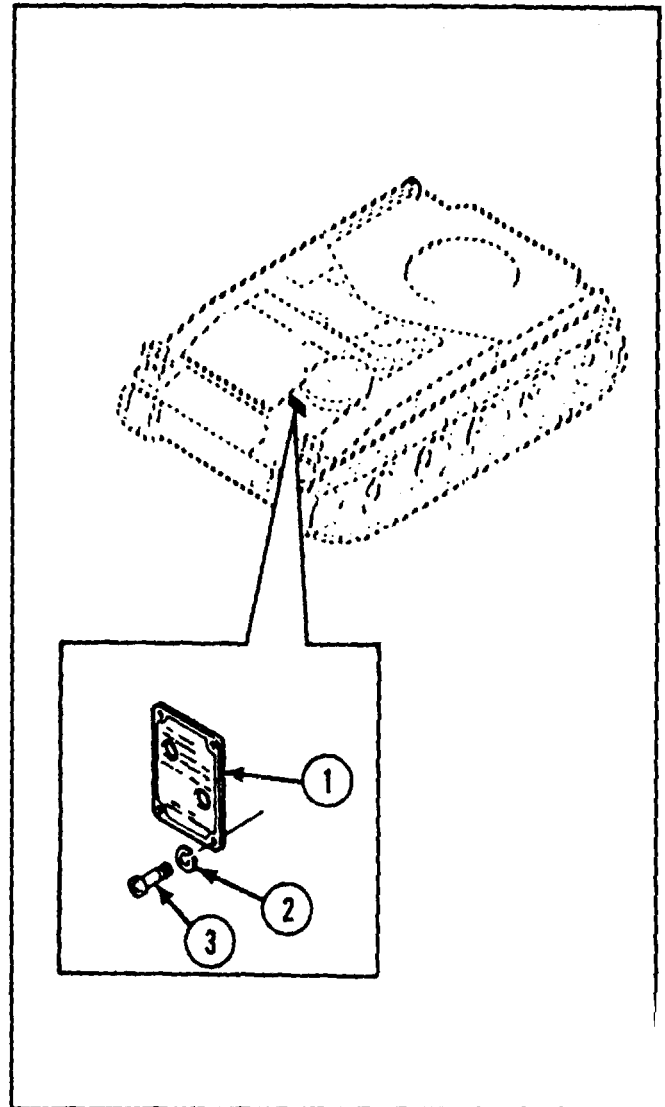
INSPECTION/REPAIR

- 1 Check for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION**NOTE**

Clean surface where vehicle data plate is to be installed. Roughen and degrease surface with dry cleaning solvent and dry surface immediately prior to application of adhesive. Bond screwless vehicle data plates to vehicle using epoxy resin adhesive. Spray vehicle data plate with a protective coating of clear lacquer.

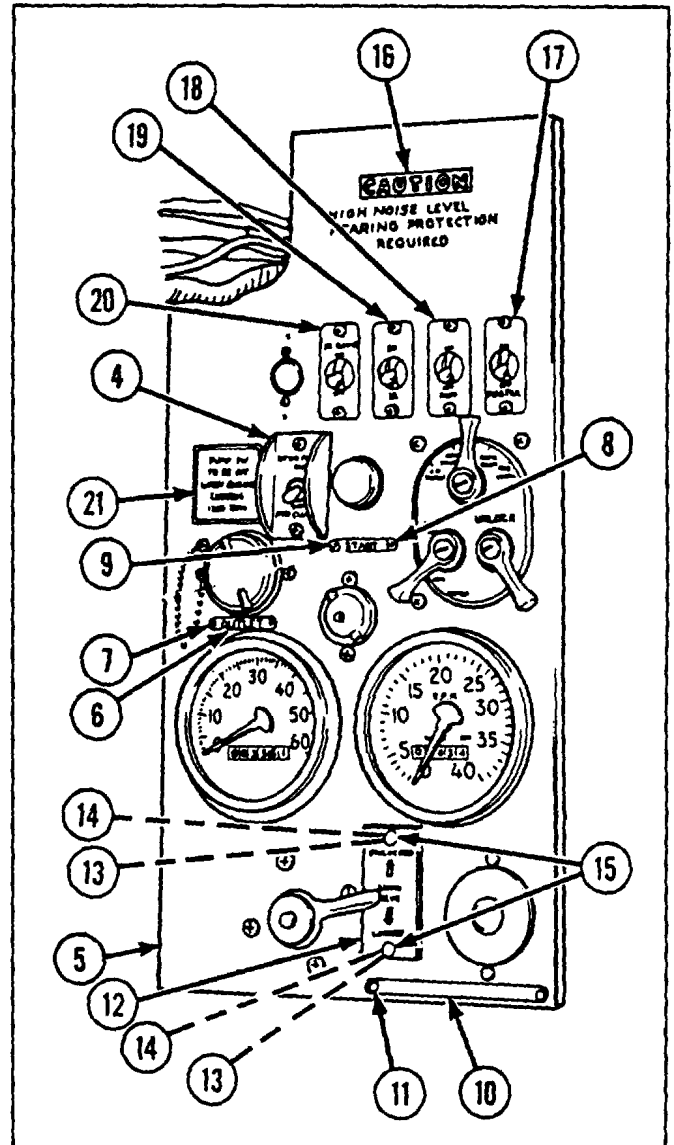
- 1 Install instruction plate (1), four new lockwashers (2), and four machine screws (3).



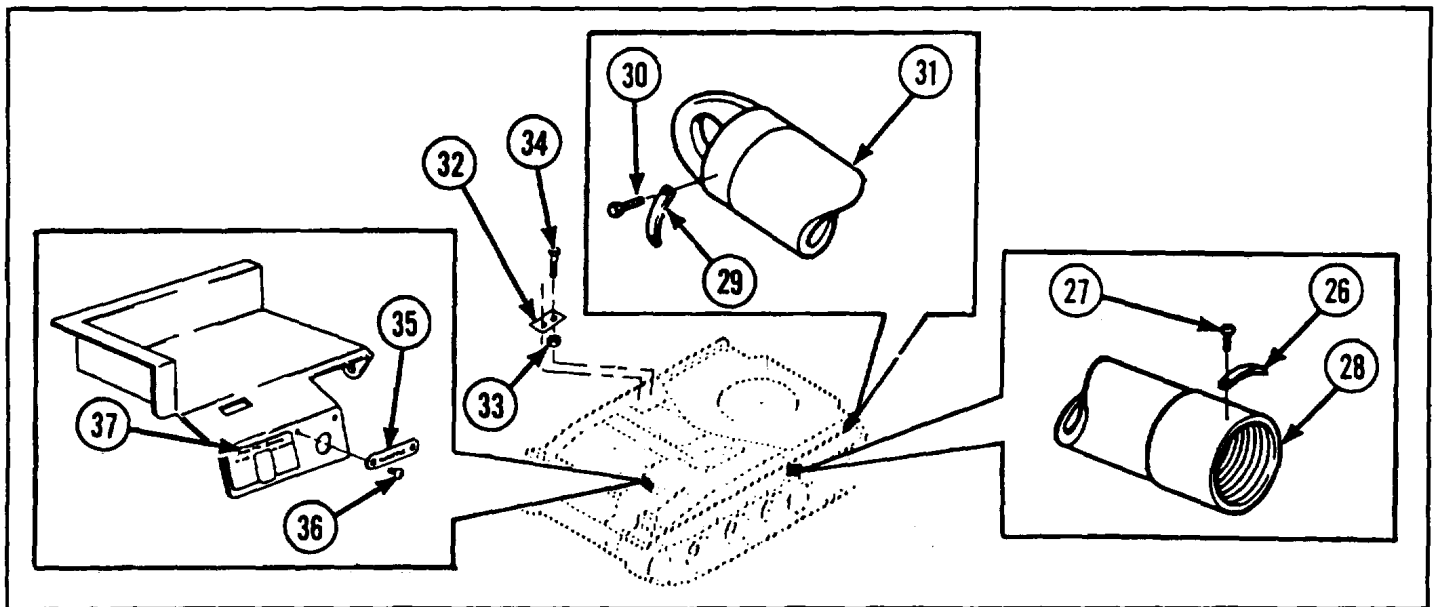
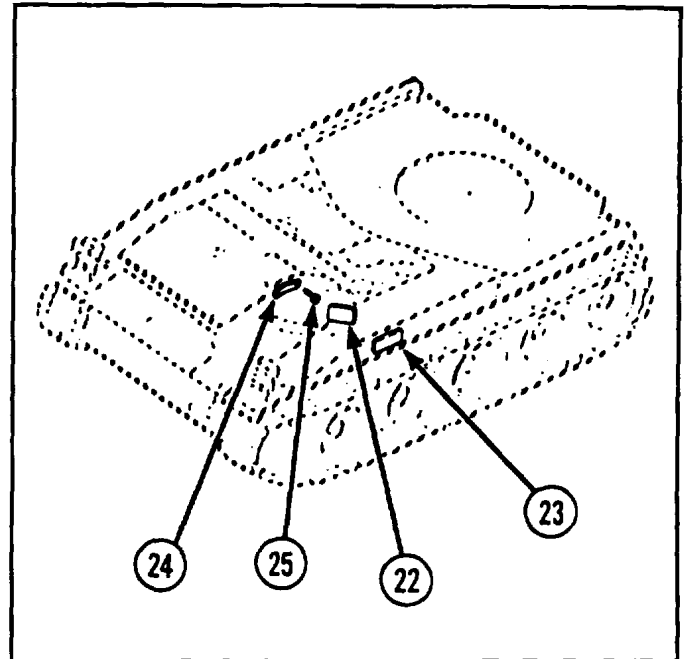
2-178. MAINTENANCE OF VEHICLE DATA PLATES (CONT).

INSTALLATION (CONT)

- 2 If removed, install new HYDRAULIC PUMP/PTO CLUTCH identification plate (4) on switch panel (5).
- 3 Install UTILITY OUTLET identification plate (6) and two drive screws (7) on switch panel (5).
- 4 Install instruction plate (8) and two drive screws (9) on switch panel (5).
- 5 Install SUSPENSION LOCKED indicator lamp instruction plate (10) and two drive screws (11).
- 6 Install SUSPENSION VALVE instruction plate (12), two hexagon plain nuts (13), two new lockwashers (14), and two machine screws (15).
- 7 If removed, install new high intensity noise CAUTION sign (16) on switch panel (5).
- 8 If removed, install new MASTER switch instruction plate (17) on switch panel (5).
- 9 If removed, install new INSTRUMENT switch instruction plate (18) on switch panel (5).
- 10 If removed, install new BO-IR SELECTOR designation plate (19) on switch panel (5)
- 11 If removed, install new INFRARED RECEIVER switch identification plate (20) on switch panel (5).
- 12 If removed, install new CLUTCH OPERATION WARNING instruction plate (21) on switch panel (5).



- 13 If removed, install new HIGH NOISE LEVEL instruction plate (22) on bulkhead.
- 14 If removed, install new M110A2 VEHICLE identification plate (23) on bulkhead.
- 15 Install ENGINE SHUT-DOWN identification plate (24) and two drive screws (25) on bulkhead.



- 16 Install LOCKOUT CYLINDER identification plate (26) and three drive screws (27) on lockout cylinder assembly (28).
- 17 Install spade cylinder identification plate (29) and three drive screws (30) on spade lifting cylinder assembly (31).
- 18 Install DIESEL FUEL ONLY identification plate (32), four new self-locking nuts (33), and four machine screws (34) on hull.
- 19 Install THROTTLE identification plate (35) and two drive screws (36).
- 20 If removed, install new PARKING BRAKE SET-RELEASE instruction sign (37).

2-179. MAINTENANCE OF HEATER INSTALLATION KIT.

This task covers: a. *Removal* b. *Inspection/Repair* c. *Installation*

INITIAL SETUP*Materials/Parts*

Exhaust hose (figure D-15, appx D)
Gasket
Lockwasher (16)

References

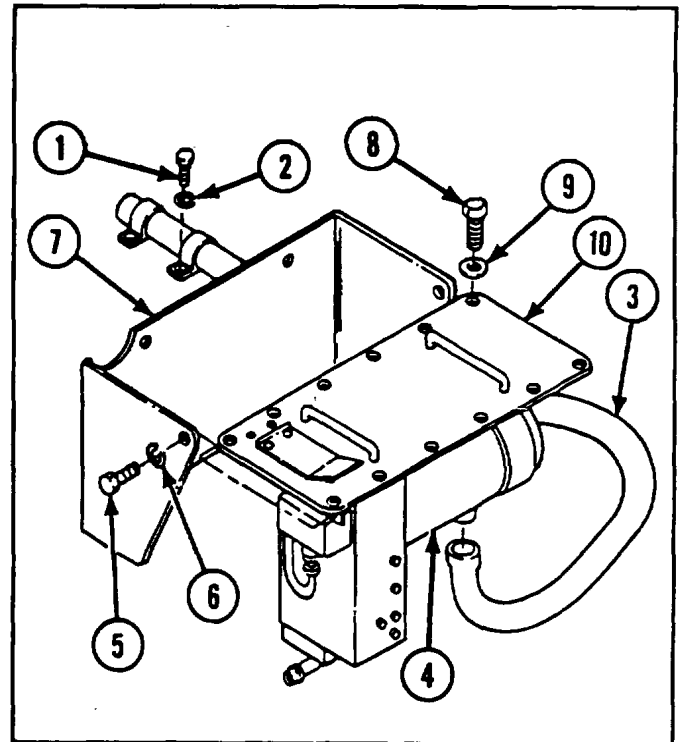
TM 9-2350-304-24P-1

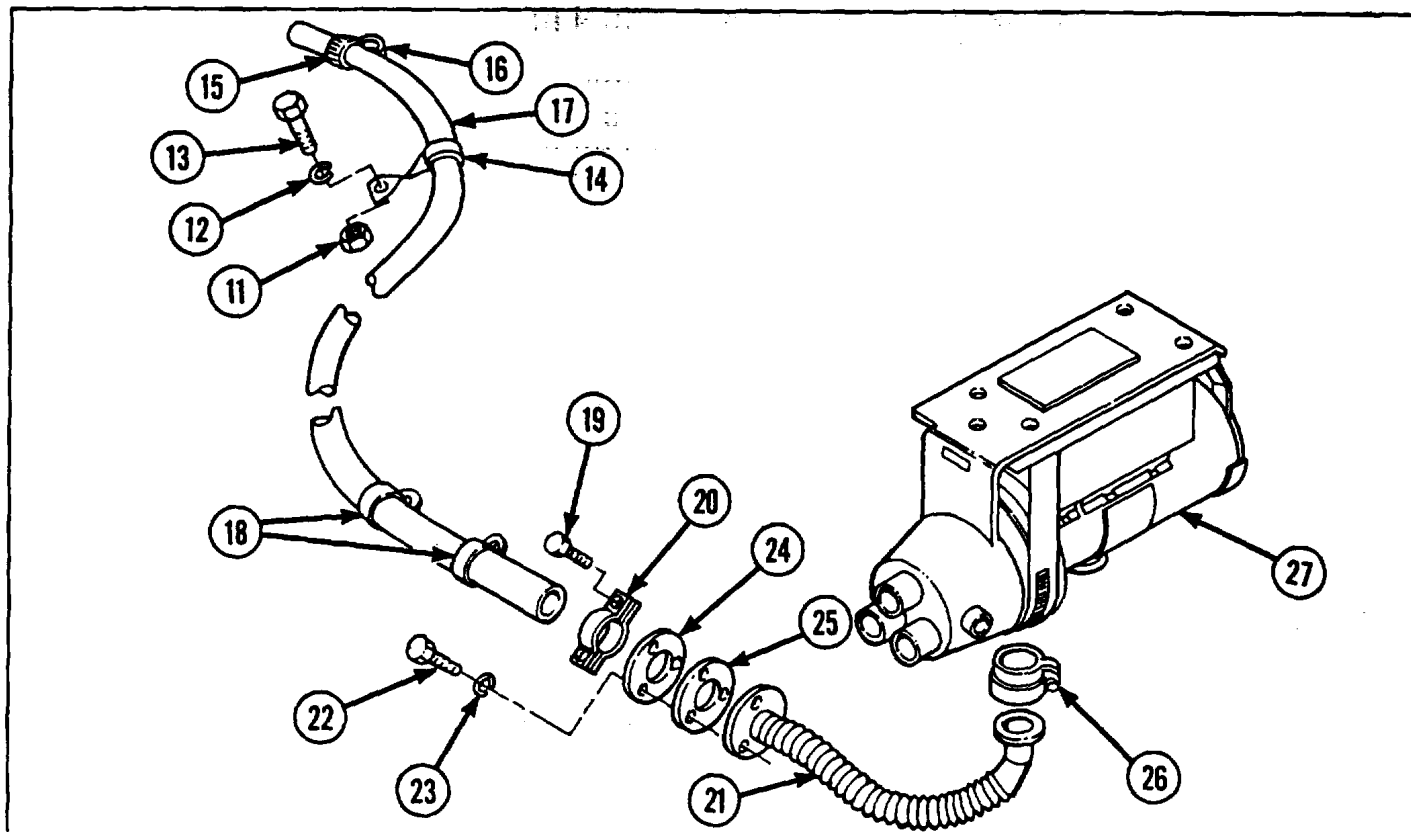
Equipment Conditions

2-973 Driver's heater hoses removed

REMOVAL

- 1 Remove four hexagon head capscrews (1), four lockwashers (2), and coolant heater exhaust pipe (3) from engine coolant heater (4).
- 2 Remove four hexagon head capscrews (5), four lockwashers (6), and coolant heater shield (7) from engine coolant heater (4).
- 3 Remove 12 screws (8) and 12 washers (9) from coolant heater mounting plate (10).
- 4 Lift engine coolant heater (4) from hull and support.



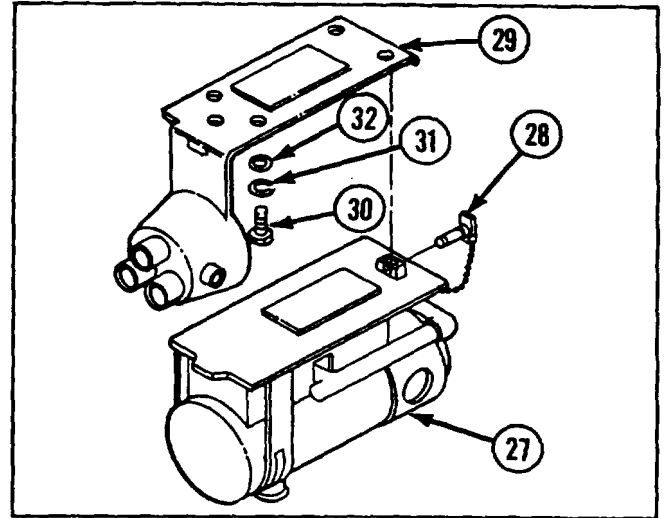


- 5 Disconnect fuel lines, refer to page 2-978.
- 6 Disconnect water hoses, refer to page 2-973.
- 7 Tag and disconnect electrical leads.
- 8 Remove hexagon plain nut (11), lockwasher (12), hexagon head capscrew (13), and exhaust clamp (14) from hull.
- 9 Loosen and remove two hose clamps (15 and 16) and exhaust clamp (14) from exhaust hose (17).
- 10 Remove two loop clamps (18).
- 11 Remove two hexagon head capscrews (19) and loop clamp (20) from exhaust hose (17).
- 12 Remove exhaust hose (17) from driver's heater exhaust assembly (21).
- 13 Remove three hexagon head capscrews (22), three lockwashers (23), exhaust mount plate (24), gasket (25), and driver's heater exhaust assembly (21).
- 14 Remove heater exhaust coupling (26) from vehicular heater (27).

2-179. MAINTENANCE OF HEATER INSTALLATION KIT (CONT).

REMOVAL (CONT)

- 15 Pull quick release pin (28) and disconnect vehicular heater (27) from electrical bracket (29). Slide vehicular heater out of electrical bracket and remove from hull.
- 16 Remove four hexagon head capscrews (30), four lockwashers (31), four flat washers (32), and electrical bracket (29) from hull.

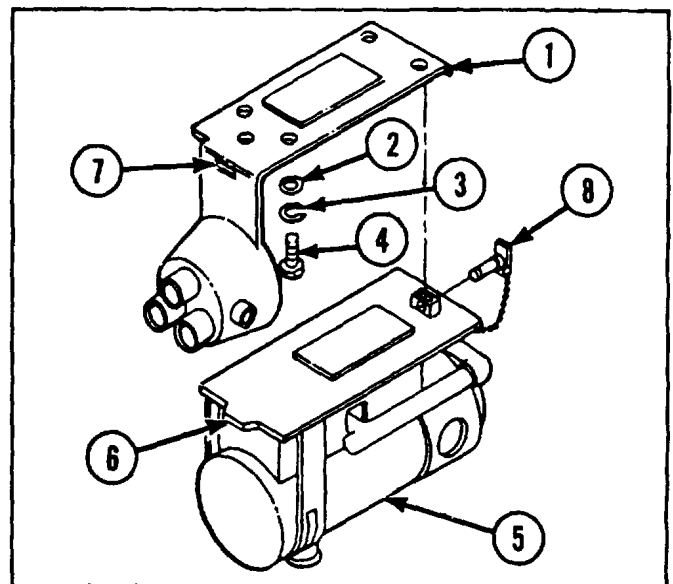


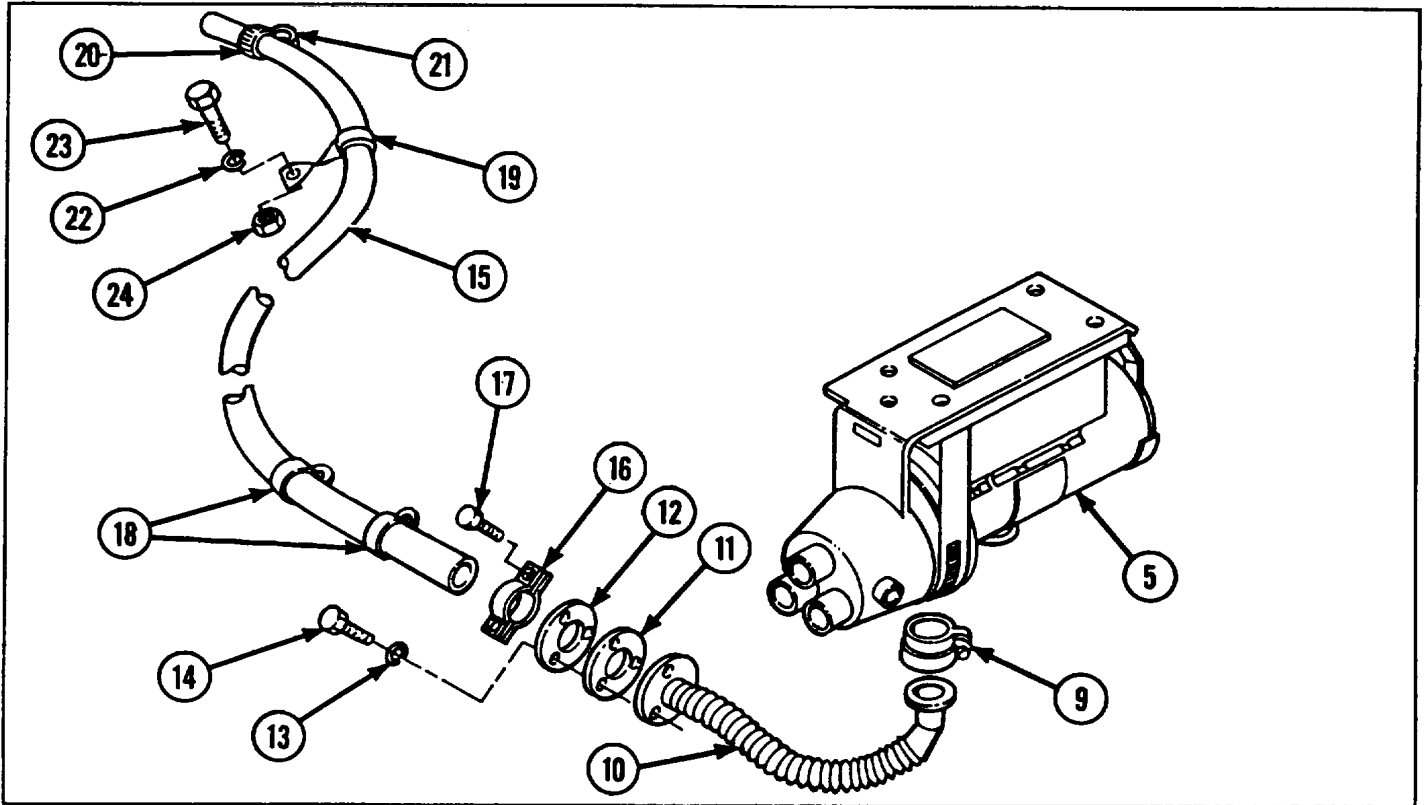
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Exhaust hose is a manufactured item, refer to appendix D.
- 3 Engine coolant heater is a repairable assembly. Refer to page 2-1018.
- 4 Vehicular heater is a repairable assembly. Refer to page 2-1028.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install electrical bracket (1), four flat washers (2), four new lockwashers (3), and four hexagon head capscrews (4) in hull.
- 2 Position vehicular heater (5) in electrical bracket (1). Ensure tab (6) on vehicular heater is securely seated in notch (7) on electrical bracket. Install quick release pin (8) to secure vehicular heater to electrical bracket.



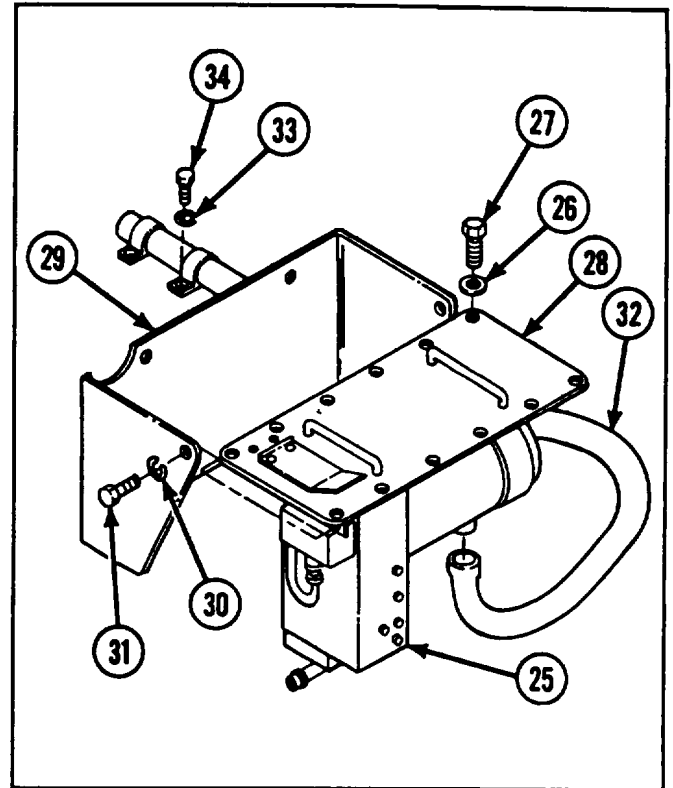


- 3 Install heater exhaust coupling (9) and driver's heater exhaust assembly (10) on vehicular heater (5).
- 4 Install new gasket (11), exhaust mount plate (12), three new lockwashers (13), and three hexagon head capscrews (14).
- 5 Install exhaust hose (15) on driver's heater exhaust assembly (9).
- 6 Install loop clamp (16) on exhaust hose (15), and secure with two hexagon head capscrews (17).
- 7 Install two loop clamps (18) on exhaust hose (15).
- 8 Install and tighten exhaust clamp (19) and two hose clamps (20 and 21) on exhaust hose (15).
- 9 Install exhaust clamp (19), new lockwasher (22), hexagon head capscrew (23), and hexagon plain nut (24) to hull.

2-179. MAINTENANCE OF HEATER INSTALLATION KIT (CONT).

INSTALLATION (CONT)

- 10 Untag and disconnect electrical leads.
- 11 Connect water hoses. Refer to page 2-973.
- 12 Connect fuel lines. Refer to page 2-978.
- 13 Lower engine coolant heater (25) into hull.
- 14 Install 12 washers (26) and 12 screws (27) in coolant heater mounting plate (28).
- 15 Install coolant heater shield (29) on engine coolant heater (25), and secure with four new lockwashers (30) and four hexagon head capscrews (31).
- 16 Install coolant heater exhaust pipe (32) on engine coolant heater (25), and secure with four new lockwashers (33) and four hexagon head capscrews (34).

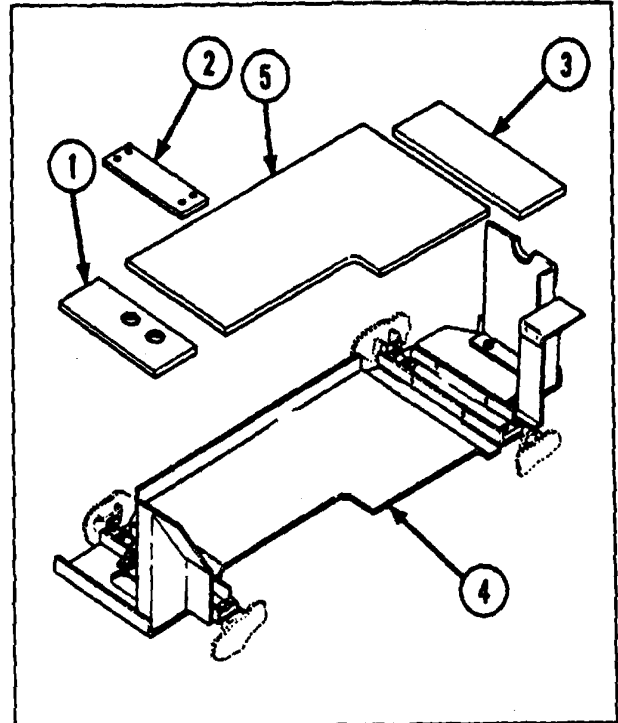


2-180. MAINTENANCE OF HEATER INSTALLATION KIT--BATTERY BOX SUPPORTS AND RELATED ITEMS.

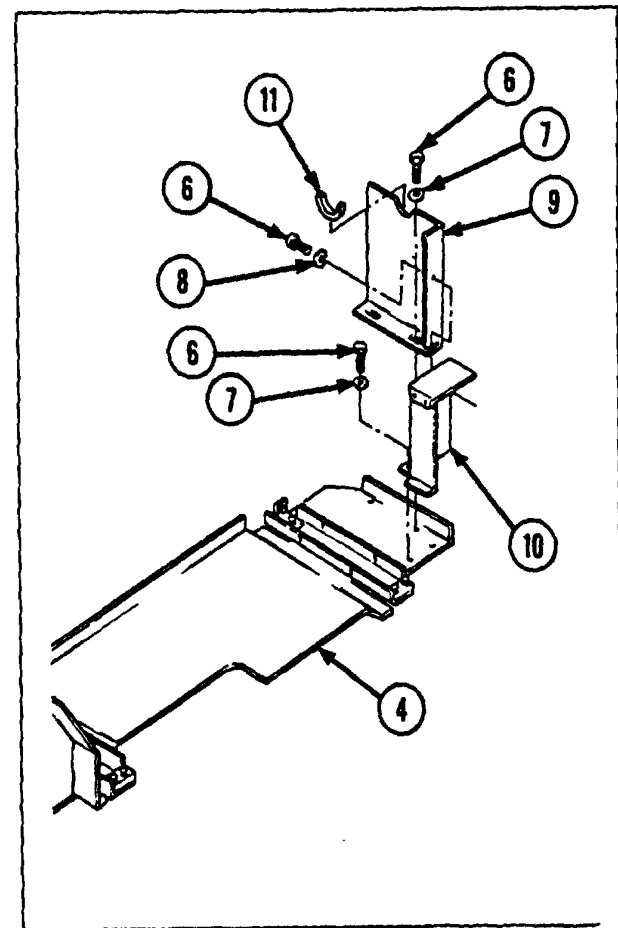
This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Materials/Parts</i>		<i>Equipment Conditions</i>	
Lockwasher (1)		2-624 Batteries removed	
Lockwasher (8)			
<i>References</i>			
TM 9-2350-304-24P-1			

REMOVAL

- 1 Remove battery box insulation pads (1, 2, and 3) from battery bottom plate (4).
- 2 Remove cushioning pad (5) from battery bottom plate (4).



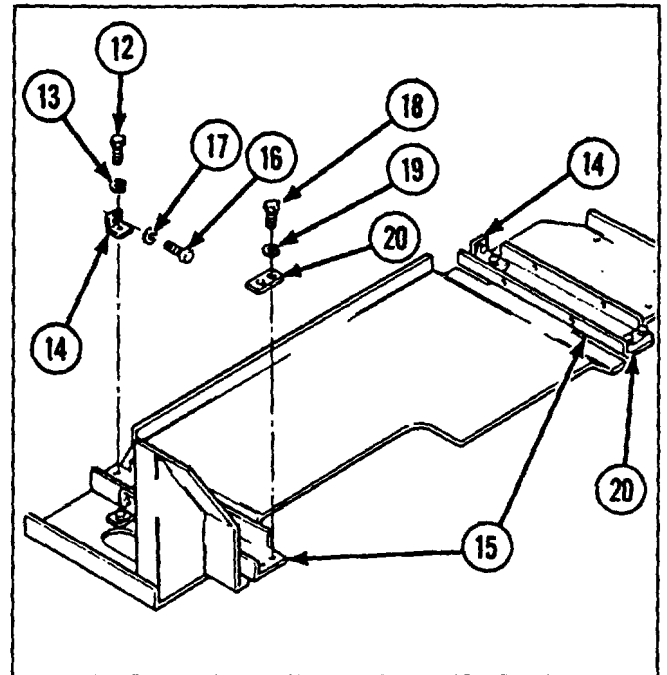
- 3 Remove five machine screws (6), four flat washers (7), lockwasher (8), battery side support plate (9), and heater air duct (10) from battery bottom plate (4).
- 4 Remove plastic grommet (11) from battery side support plate (9).



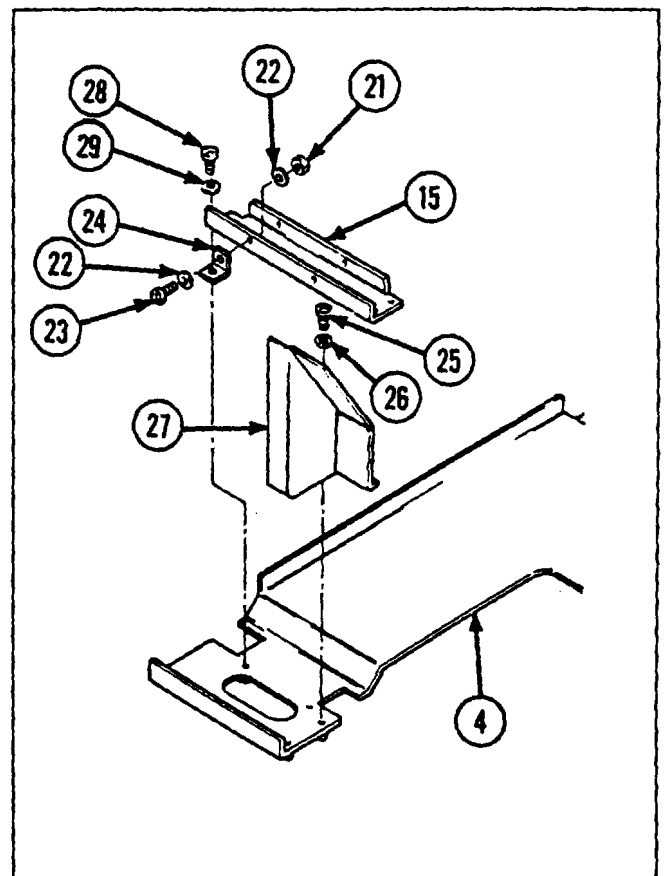
2-180. MAINTENANCE OF HEATER INFSTALLATION KIT—BATTERY BOX SUPPORTS AND RELATED ITEMS (CONT).

REMOVAL (CONT)

- 5 Remove machine screw (12), lockwasher (13), and support plate angle bracket (14) from each battery support plate bracket (15).
- 6 Remove two machine screws (16), two lockwashers (17), and two support plate angle brackets (14) from side of hull.
- 7 Remove hexagon head capscrew (18), lockwasher (19), and battery box plate (20) from each battery support plate bracket (15).



- 8 Remove four hexagon plain nuts (21), eight flat washers (22), four machine screws (23), and four angle brackets (24) from two battery support plate brackets (15).
- 9 Remove two machine screws (25), two flat washers (26), and heater air duct (27) from battery bottom plate (4).
- 10 Remove machine screw (28), flat washer (29), and battery support plate bracket (15) from battery bottom plate (4).

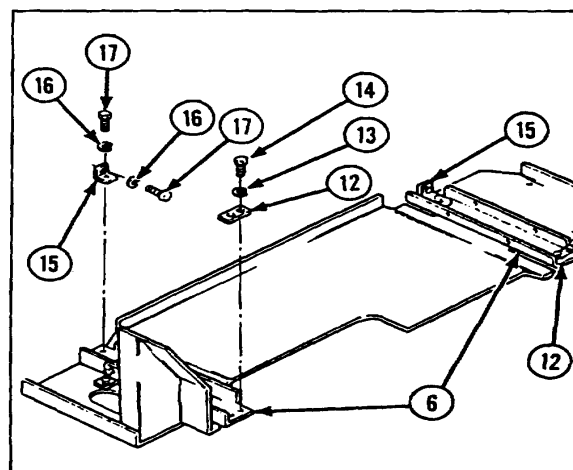
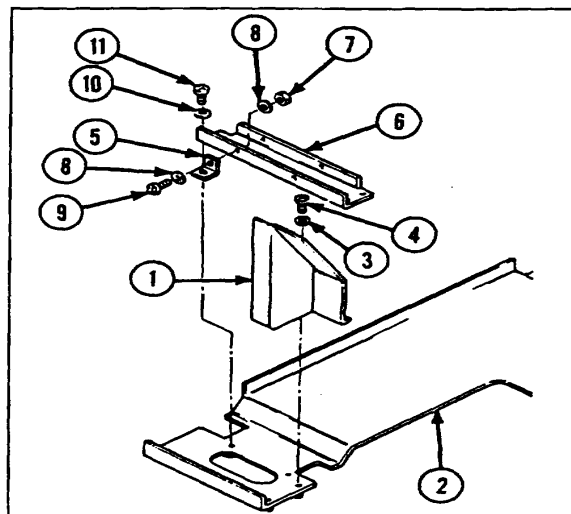


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

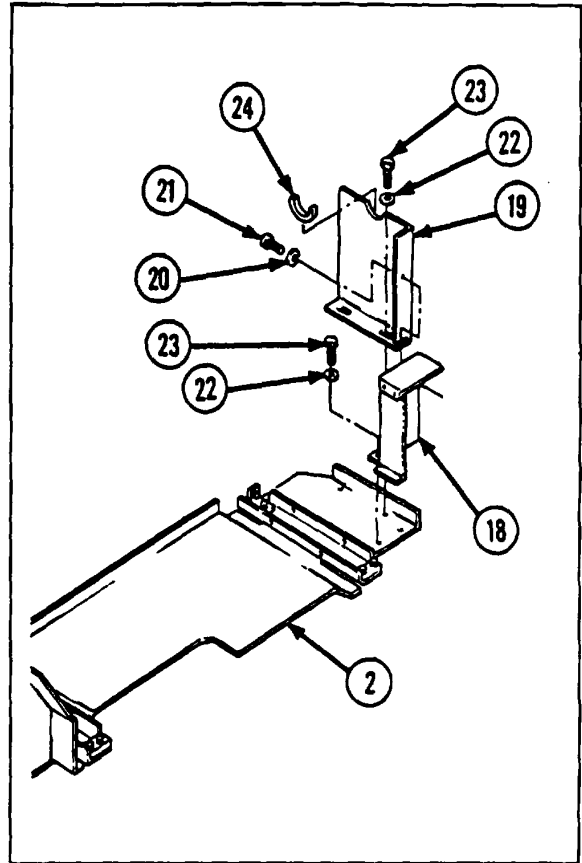
- 1 Position heater air duct (1) on battery bottom plate (2), and secure with two flat washers (3) and two machine screws (4).
- 2 Position two angle brackets (5) on each battery support plate bracket (6), and secure with four hexagon plain nuts (7), eight flat washers (8), and four machine screws (9).
- 3 Position each battery support plate brace (6) with attached parts on battery bottom plate (2), and secure with four flat washers (10) and four machine screws (11).
- 4 Position two battery box plates (12) on two battery support plate brackets (6), and secure with four new lockwashers (13) and four hexagon head capscrews (14).
- 5 Position two support plate angle brackets (15) against hull and two battery support brackets (6), and secure with four new lockwashers (16) and four machine screws (17).



**2-180. MAINTENANCE OF HEATER
INSTALLATION KIT-BATTERY BOX
SUPPORTS AND RELATED ITEMS
(CONT).**

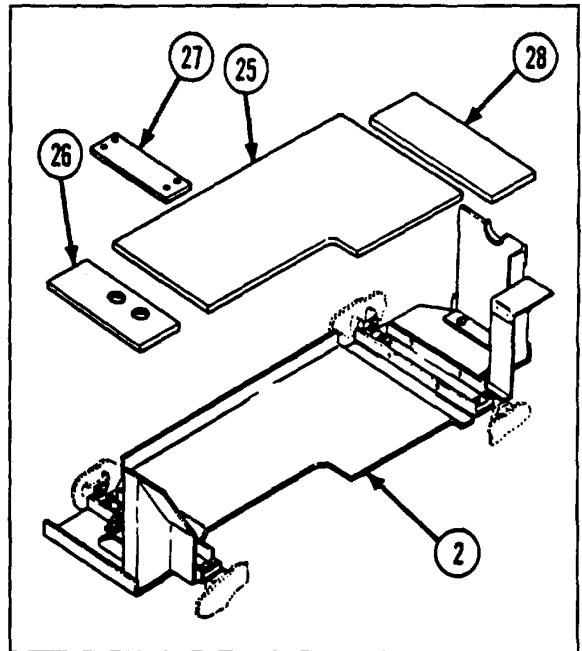
INSTALLATION (CONT)

- 6 Position heater air duct (18) on battery side support plate (19), and secure with new lockwasher (20) and machine screw (21).
- 7 Position heater air duct (18) and battery side support plate (19) on battery bottom plate (2), and secure with four flat washer (22) and four machine screws (23).
- 8 Install plastic grommet (24) to side batter) support plate (19).



- 9 Install cushioning pad (25) to battery bottom plate (2).

- 10 Install battery box Insulation pads (26, 27, and 28) to battery bottom plate (2).



2-181. MAINTENANCE OF HEATER INSTALLATION KIT-BATTERY BOX AND COVERS.

This task covers:		a.	Removal	b.	Inspection/Repair	c.	Installation
INITIAL SETUP:							
Materials/Parts				General Safety Instructions			
Cotter pin (4)				<div style="border: 2px solid black; padding: 5px; display: inline-block;">WARNING</div> <p>Disconnect ground leads first and connect ground leads last when removing or installing electrical leads.</p>			
References r TM 9-2350-304-24P-1							
Equipment Conditions Master switch in OFF position							

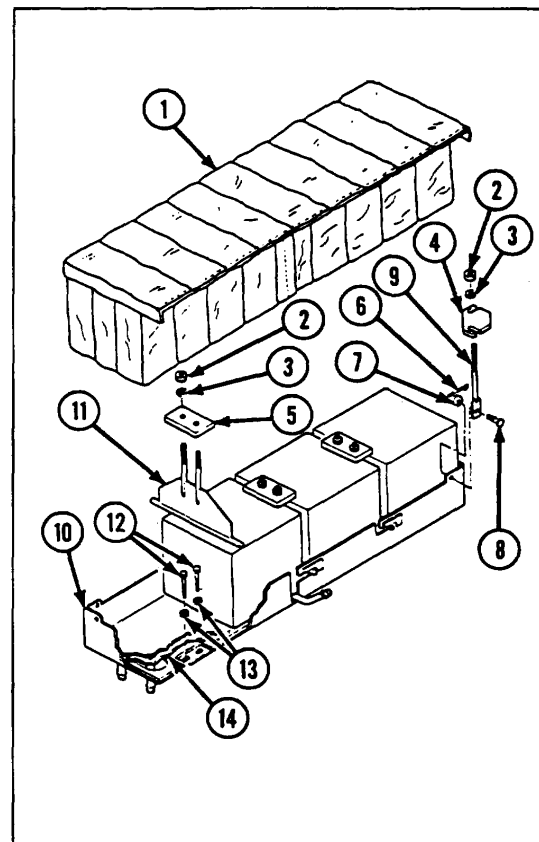
REMOVAL

- 1 Remove battery insulation pad (1).

WARNING

Disconnect both ground leads first.

- 2 Remove ten hexagon plain nuts (2), ten flat washers (3), two battery holddown plates (4), and three battery retaining plates (5).
- 3 Remove four cotter pins (6), four flat washers (7), four headed straight pins (1 and four battery holddown rod end connectors (9) from battery box (10).
- 4 Remove batteries. Refer to page 2-624.
- 5 Remove three plate assembly anchors (11) from battery box (10).
- 6 Remove eight hexagon head capscrews (12), eight flat washers (13), and battery heating pad (14) from battery box (10).
- 7 Remove battery box (10) from vehicle.



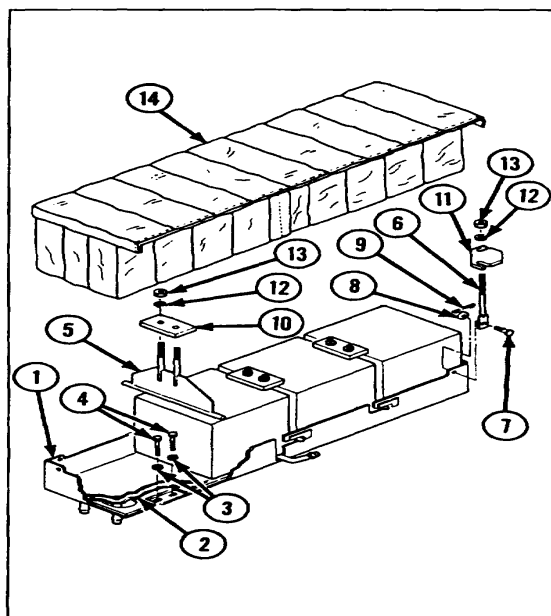
2-181. MAINTENANCE OF HEATER INSTALLATION KIT-BATTERY BOX AND COVERS (CONT).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair Is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install battery box (1) and battery heating pad (2) in vehicle, and secure with eight flat washers (3) and eight hexagon head capscrews (4).
- 2 Install three plate assembly anchors (5) in battery box (1).
- 3 Install batteries. Refer to page 2-624.
- 4 Install four battery holddown rod end connectors (6) in battery box (1), and secure with four headed straight pins (7), four flat washers (8), and four new cotter pins (9).
- 5 Install three battery retaining plates (10) and two battery holddown plates (11), and secure with ten flat washers (12) and ten hexagon plain nuts (13).



WARNING

Connect ground leads last when installing electrical leads to batteries.

- 6 Install battery insulation pad (14).

2-182. MAINTENANCE OF HEATER INSTALLATION KIT-HOSES AND FITTINGS.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
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INITIAL SETUP:

Materials/Parts

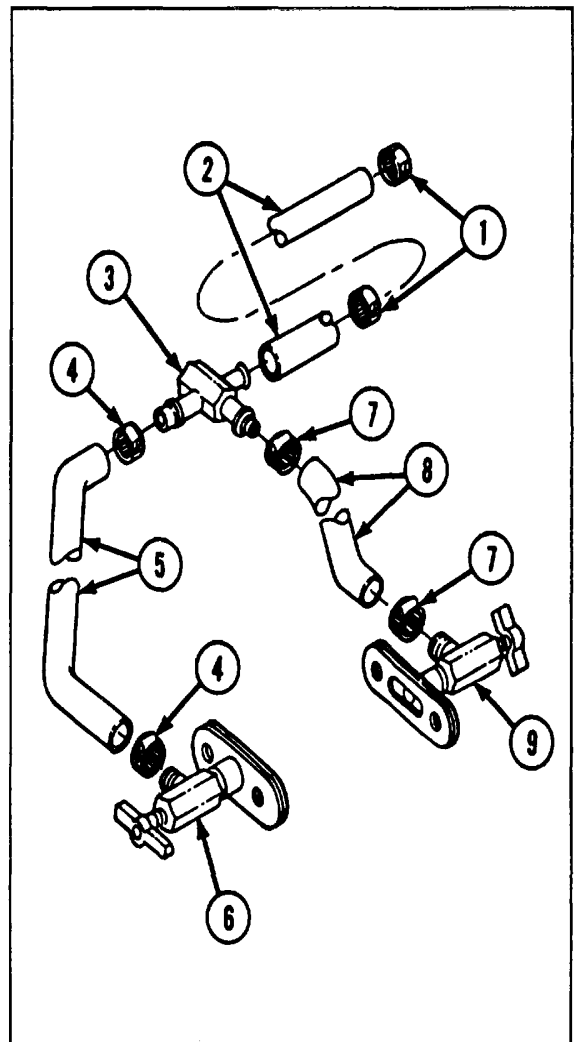
Engine water manifold gasket (2)
 Lockwasher
 Lockwasher (3)
 Nonmetallic hose (figure D-17, appx D)
 Rubber hose (5) (figure D-17, appx D)

References

TM 9-2350-304-24P-1

REMOVAL

- 1 Remove two hose clamps (1) and rubber hose (2) from hose tee (3) and engine coolant heater centrifugal pump unit.
- 2 Remove two hose clamps (4) and rubber hose (5) from hose tee (3) and drain co (6).
- 3 Remove two hose clamps (7) and rubber hose (8) from hose tee (3) and drain cock (9).



2-182. MAINTENANCE OF HEATER INSTALLATION KIT-HOSES AND FITTINGS (CONT).

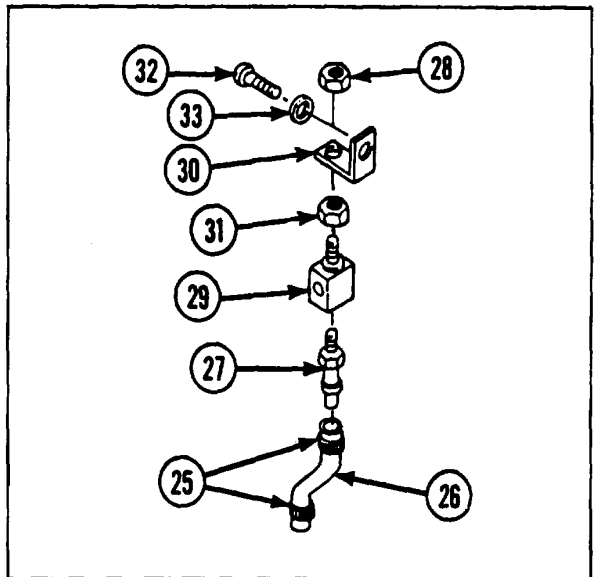
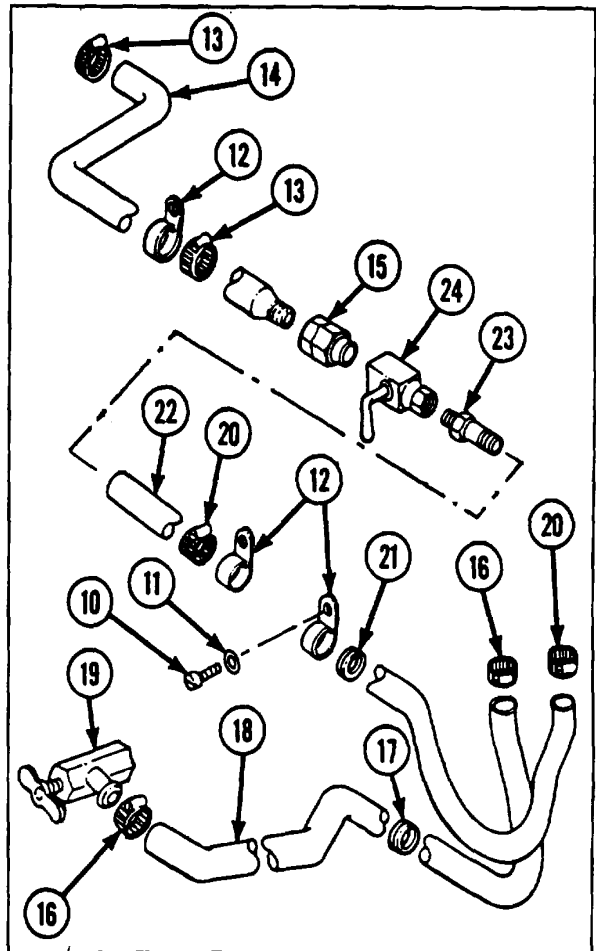
REMOVAL (CONT)

- 4 Remove three machine screws (10), three lockwashers (11), and three loop clamps (12).
- 5 Remove two hose clamps (13) and rubber hose (14) from straight adapter (15) and engine coolant heater assembly.
- 6 Remove two hose clamps (16), nonmetallic grommet (17), and rubber hose (18) from drain cock (19) and battery box.
- 7 Remove drain cock (19) from engine block behind fuel filter.
- 8 Remove two hose clamps (20), nonmetallic grommet (21), and rubber hose (22) from straight adapter (23) and battery box.
- 9 Remove two straight adapters (15 and 23) from plug cock (24).
- 10 Remove two hose clamps (25) and nonmetallic hose (26) from straight adapter (27).

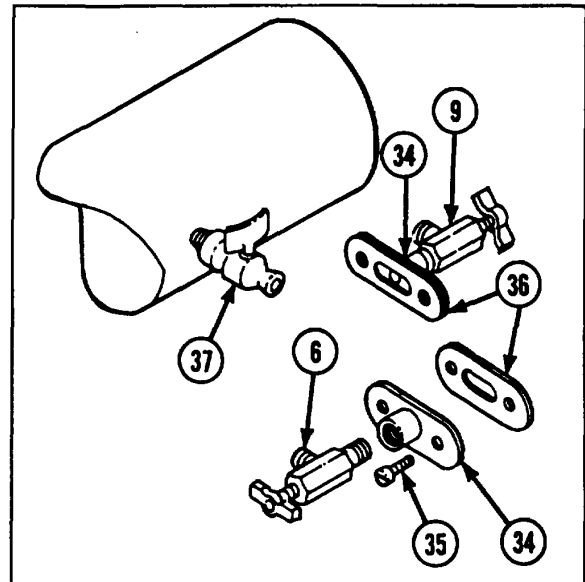
NOTE

Two nuts are supplied with air purge two-way control valve. Use care not to lose or damage nuts.

- 11 Remove nut (28) and air purge two-way control valve (29) from air purge valve angle bracket (30).
- 12 Remove nut (31) and straight adapter (27) from air purge two-way control valve (29).
- 13 Remove machine screw (32), lockwasher (33), and air purge valve angle bracket (30) from wall of battery compartment.



- 14 Remove two drain cocks (6 and 9) from two engine water manifold adapters (34)
- 15 Remove four screws (35), two engine water manifold engine adapters (34), and two engine water manifold gaskets (36) from engine block.
- 16 Remove drain cock (37) from engine manifold.

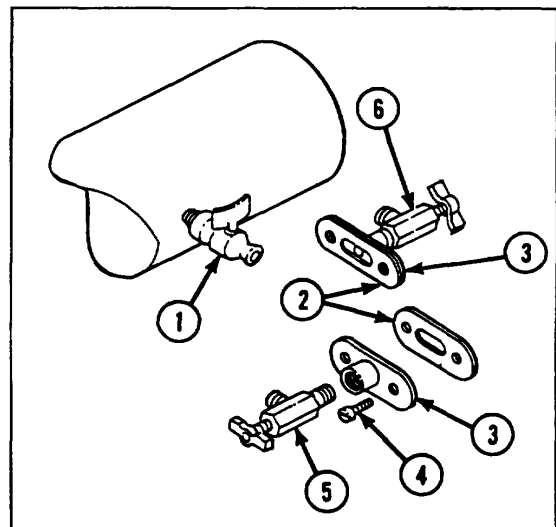


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Rubber hoses and nonmetallic hose are manufactured items, refer to appendix D.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

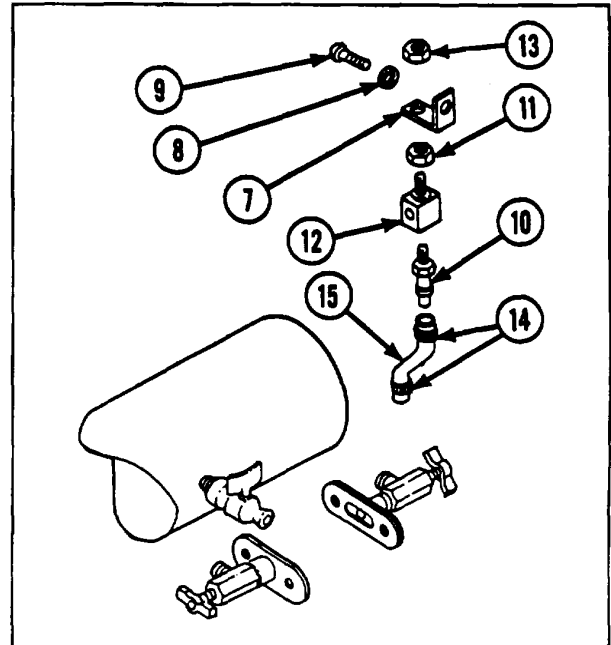
- 1 Install drain cock (1) on engine manifold
- 2 Position two new engine water manifold gaskets (2) and two engine water manifold adapters (3) on engine block, and secure with four screws (4).
- 3 Install two drain cocks (5 and 6) in two engine water manifold adapters (3).



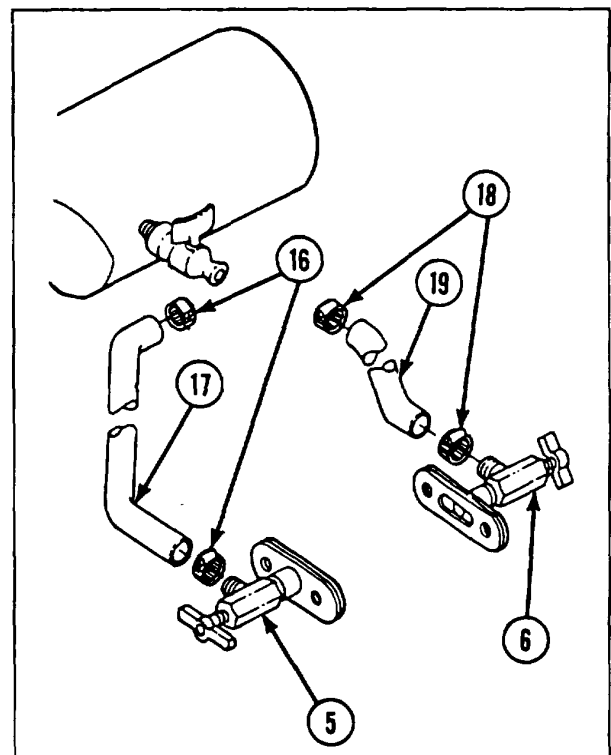
2-182. MAINTENANCE OF HEATER INSTALLATION KIT-HOSES AND FITTINGS (CONT).

INSTALLATION (CONT)

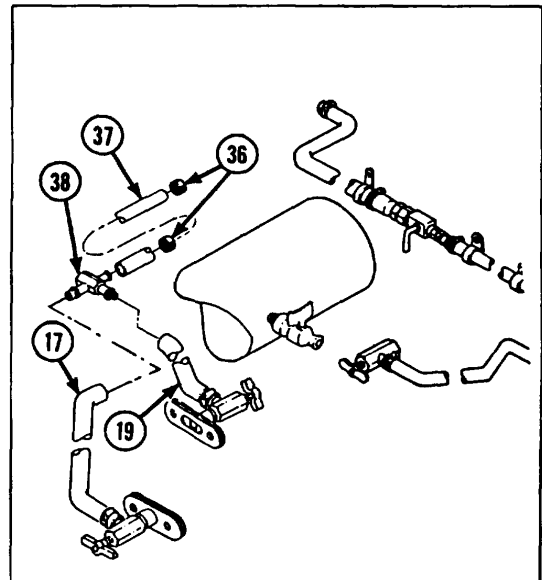
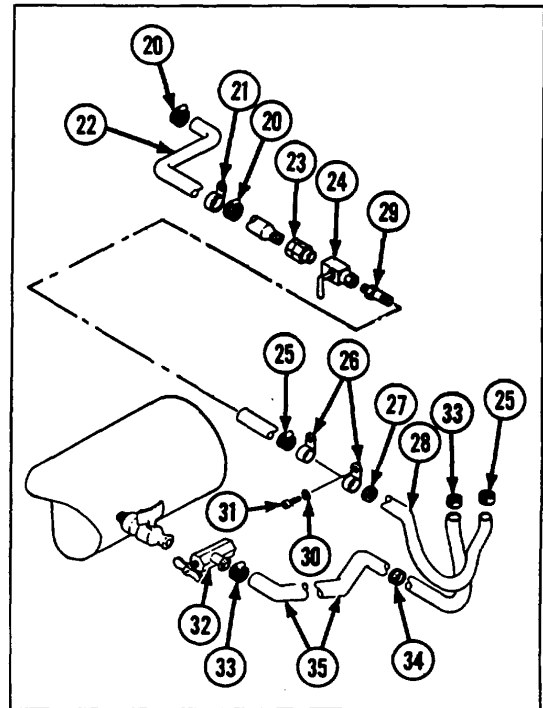
- 4 Position air purge valve angle bracket (7) on wall of battery compartment, and secure with new lockwasher (8) and machine screw (9).
- 5 Install straight adapter (10) and nut (11) on air purge two-way control valve (12).
- 6 Install air purge two-way control valve (12) on air purge valve angle bracket (7) and secure with nut (13).
- 7 Install two hose clamps (14) on nonmetallic hose (15), and install nonmetallic hose on straight adapter (10) and bottom of battery compartment.



- 8 Install two hose clamps (16) on rubber hose (17), and install rubber hose on drain cock (5).
- 9 Install two hose clamps (18) on rubber hose (19), and install rubber hose on drain cock (6).



- 10 Install two hose clamps (20) and loop clamp (21) on rubber hose (22).
- 11 Install rubber hose (22) on straight adapter (23) and engine coolant heater assembly, and install straight adapter on plug cock (24).
- 12 Install two hose clamps (25), two loop clamps (26), and nonmetallic grommet (27) on rubber hose (28). Install rubber hose on straight adapter (29) and batter box.
- 13 Secure loop clamp (21) and two loop clamps (26) with three new lockwashers (30) and three machine screws (31).
- 14 Install drain cock (32) on engine block behind fuel filter.
- 15 Install two loop clamps (33) and nonmetallic grommet (34) on rubber hose (35), and install rubber hose on drain cock (32) and battery box.
- 16 Install two hose clamps (36) on rubber hose (37). Install rubber hose (37), rubber hose (17), and rubber hose (19) on hose tee (38). Attach other end of rubber hose (37) to engine coolant heater centrifugal pump unit.
- 17 Tighten 12 hose clamps.

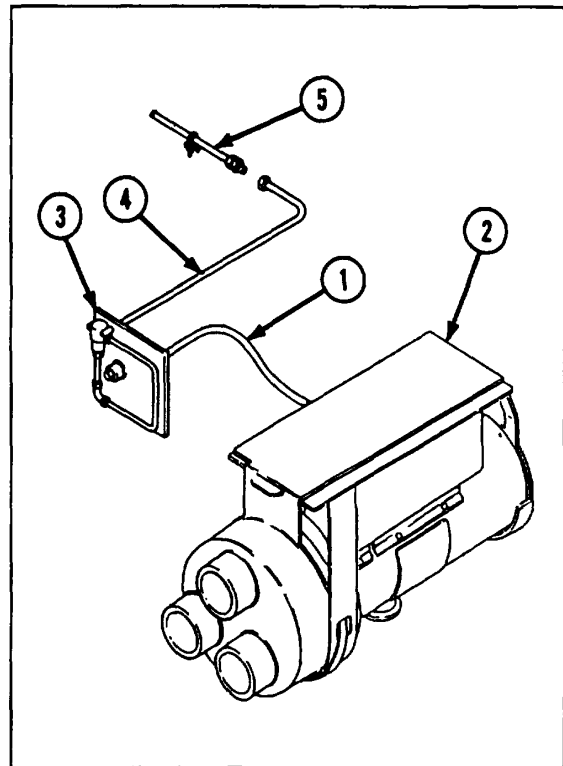


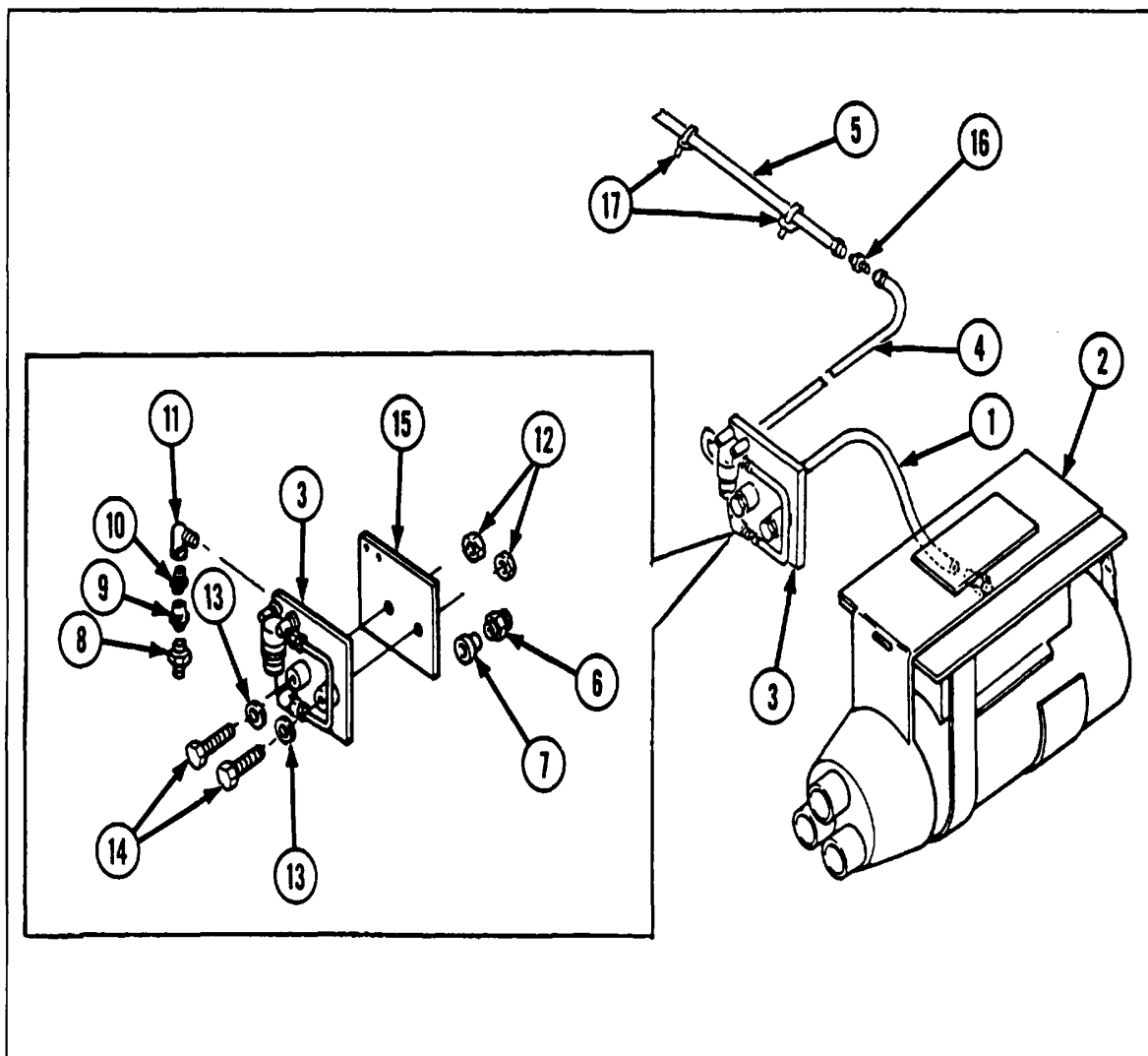
2-183. MAINTENANCE OF HEATER INSTALLATION KIT-FUEL LINES AND FITTINGS.

This task covers:		a.	Removal	b.	Inspection/Repair	c.	Installation
INITIAL SETUP:							
Materials Parts				Equipment Conditions			
Gasket				2-887 Engine deck lid assembly removed			
Gasket				2-893 Transmission deck lid assembly removed			
Lockwasher				Fuel tank valve in OFF position			
Lockwasher (6)							
Screen							
References							
TM 9-2350-304-24P-1							

REMOVAL

- 1 Disconnect fuel cell to coolant heater hose assembly (1) from vehicular heater (2) and filter mounting fluid filter (3).
- 2 Disconnect and remove fluid filter hose assembly (4) from filter mounting fluid filter (3) and fuel pump connecting hose assembly (5).

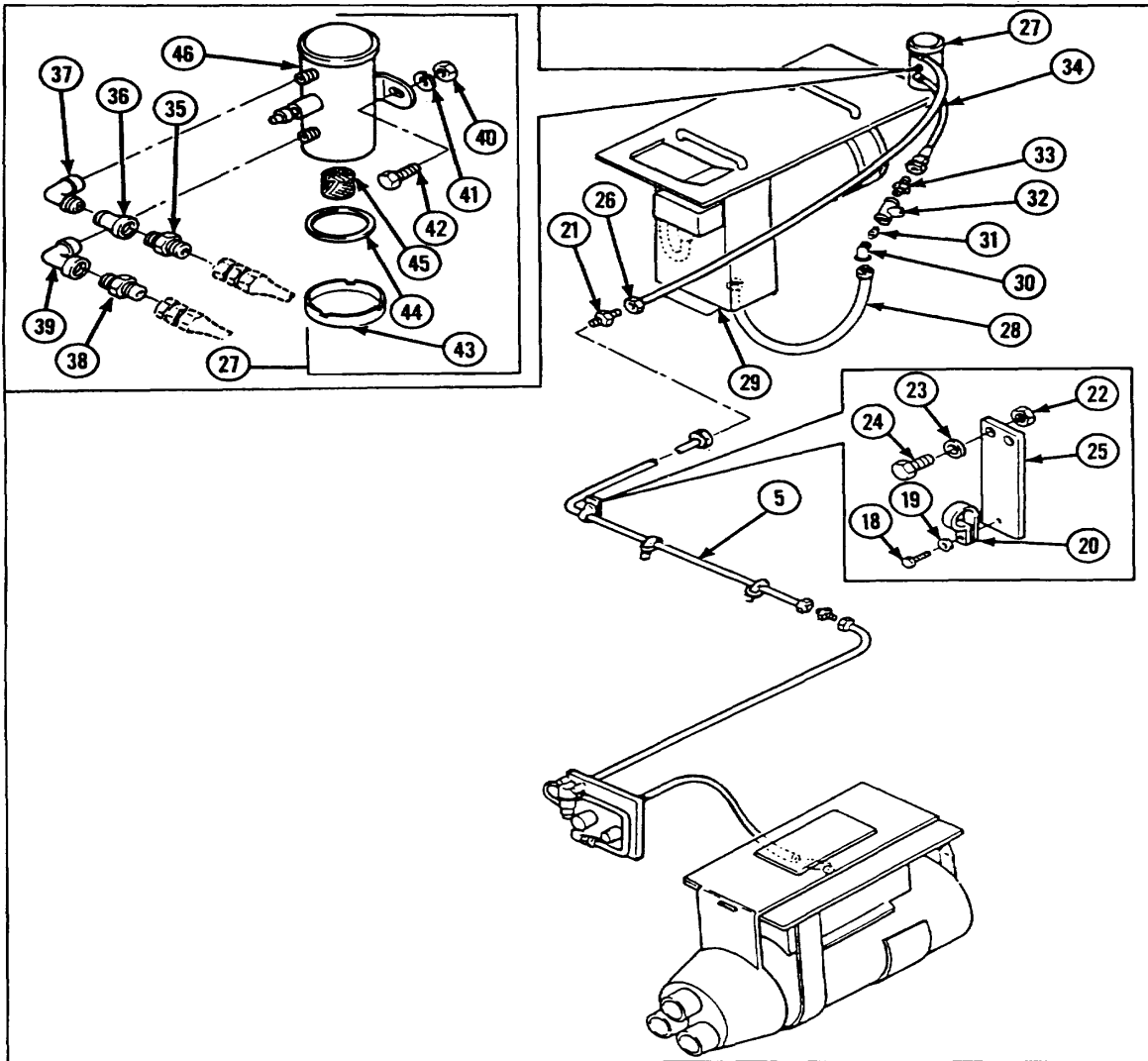




- 3 Remove straight pipe adapter (6) and quick coupling half (7) from filter mounting fluid filter (3).
- 4 Remove straight pipe adapter (8), pipe reducer (9), and pipe nipple (10) from pipe elbow (11).
- 5 Remove pipe elbow (11) from filter mounting fluid filter (3).
- 6 Remove two hexagon plain nuts (12), two lockwashers (13), and two hexagon head capscrews (14) from filter mounting fluid filter (3).
- 7 Remove filter mounting fluid filter (3) and gasket (15) from bulkhead.
- 8 Remove boss nipple (16) from fuel pump connecting hose assembly (5).
- 9 Remove two marker bands (17) from fuel pump connecting hose assembly (5).

2-183. MAINTENANCE OF HEATER INSTALLATION KIT-FUEL LINES AND FITTINGS (CONT).

REMOVAL (CONT)



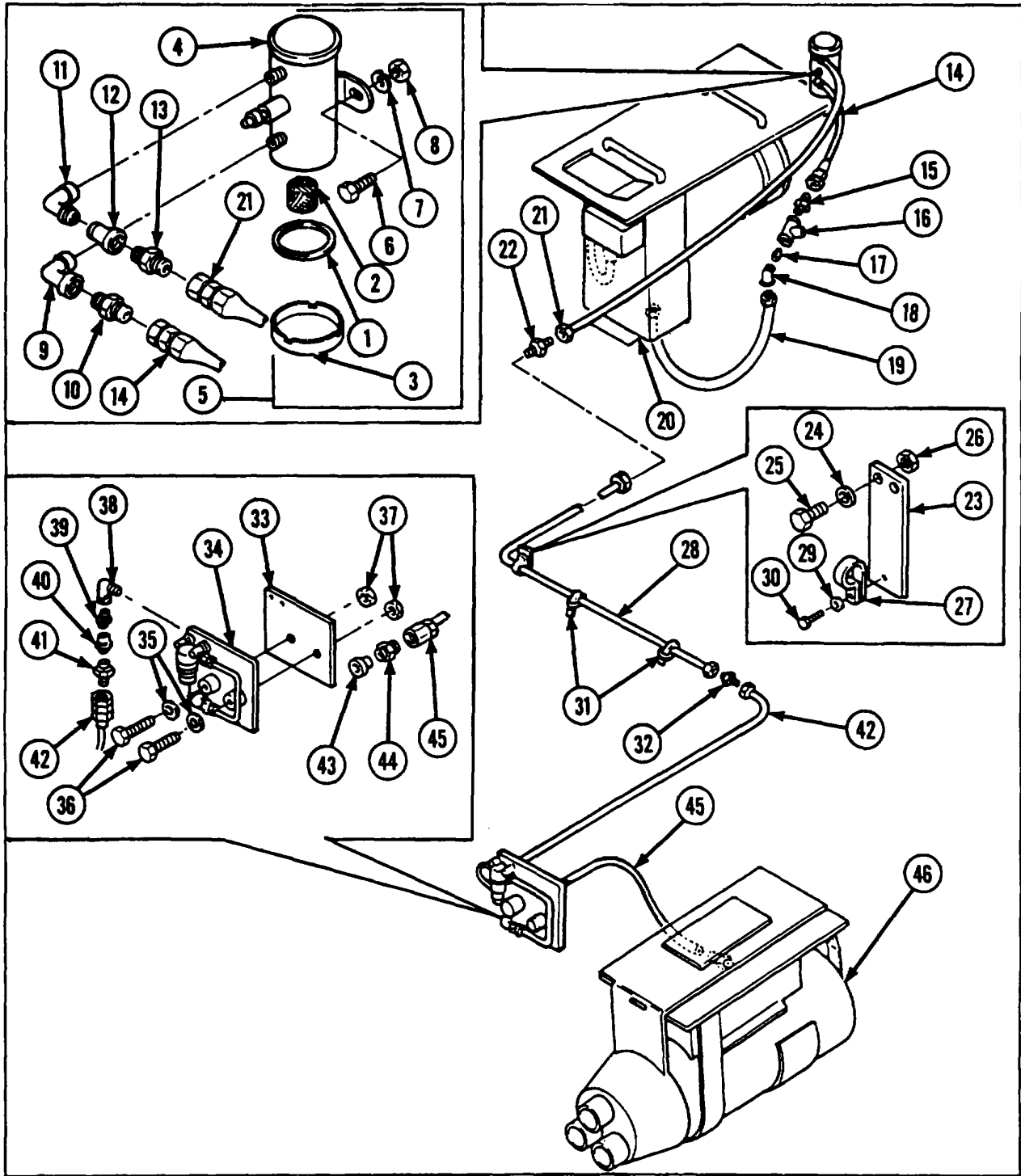
- 10 Remove machine screw (18) and lockwasher (19) from loop clamp (20).
- 11 Disconnect fuel pump connecting hose assembly (5) from tube nipple (21). Remove fuel pump connecting hose assembly (5) and loop clamp (22).
- 12 Remove loop clamp (20) from fuel pump connecting hose assembly (5).
- 13 Remove two hexagon plain nuts (22), two lockwashers (23), two hexagon head capscrews (24), and heater hose plate (25).
- 14 Remove tube nipple (21) from fuel pump to driver's heater hose assembly (26).
- 15 Disconnect fuel pump to driver's heater hose assembly (26) from electrical fuel pump (27), and remove fuel pump to driver's heater hose assembly (26).
- 16 Disconnect fuel cell to coolant heater hose assembly (28) from engine coolant heater (29) and pipe elbow (30).
- 17 Remove pipe elbow (30) and pipe nipple (31) from pipe tee (32).
- 18 Disconnect pipe tee (32) and straight pipe adapter (33) from fuel cell to fuel pump hose assembly (34).
- 19 Disconnect and remove fuel cell to fuel pump hose assembly (34) from electrical fuel pump (27).
- 20 Remove straight pipe adapter (35) and pipe reducer (36) from pipe elbow (37).
- 21 Remove pipe elbow (37) from electrical fuel pump (27).
- 22 Remove straight pipe adapter (38) and pipe elbow (39) from electrical fuel pump (27).
- 23 Remove two hexagon plain nuts (40), two lockwashers (41), two hexagon head capscrews (42), and electrical fuel pump (27).
- 24 Remove fuel pump cover (43), gasket (44), and screen (45) from fuel pump housing (46).

<i>INSPECTION/REPAIR</i>

- 1 Inspect for broken, damaged, or missing parts.
- 2 If fuel pump housing is broken or damaged, repair is by replacement of next higher assembly.
- 3 If fuel pump cover is broken, damaged, or missing, repair is by replacement of next higher assembly.
- 4 Filter mounting fluid filter is a repairable assembly. Refer to page 2-1013.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-183. MAINTENANCE OF HEATER INSTALLATION KIT-FUEL LINES AND FITTINGS (CONT).

INSTALLATION

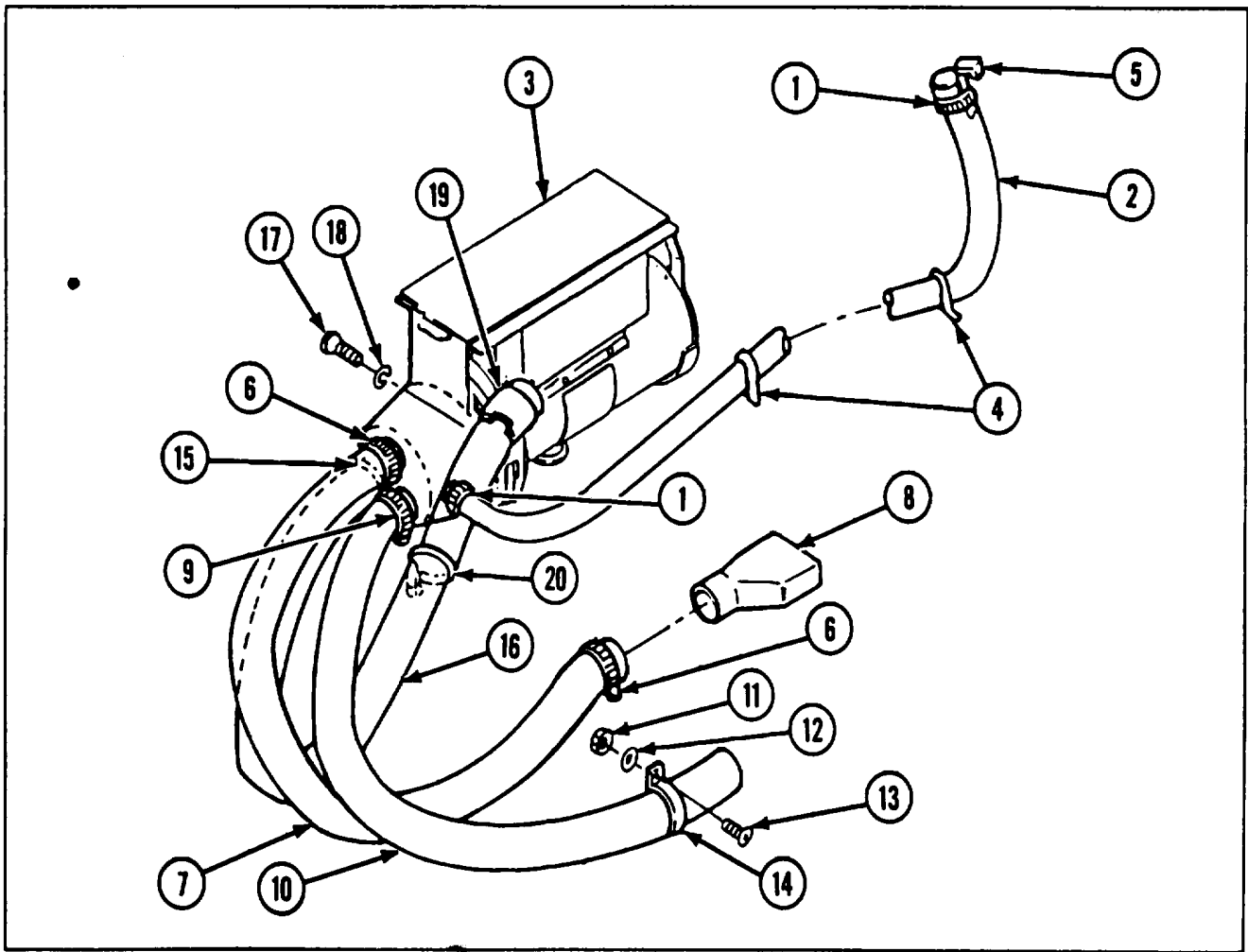


- 1 Install new gasket (1), new screen (2), and fuel pump cover (3) on fuel pump housing (4).
- 2 Install electrical fuel pump (5), and secure with two hexagon head capscrews (6), two new lockwashers (7), and two hexagon plain nuts (8).
- 3 Install pipe elbow (9) and straight pipe adapter (10) on electrical fuel pump (5).
- 4 Install pipe elbow (11) on electrical fuel pump (5).
- 5 Install pipe reducer (12) and straight pipe adapter (13) on pipe elbow (11).
- 6 Connect fuel cell to fuel pump hose assembly (14) to straight pipe adapter (10).
- 7 Install straight pipe adapter (15) and pipe tee (16) on fuel cell to fuel pump hose assembly (14).
- 8 Install pipe nipple (17) and pipe elbow (18) on pipe tee (16).
- 9 Connect fuel cell to coolant heater hose (19) to pipe elbow (18) and engine coolant heater (20).
- 10 Install fuel pump to driver's heater hose assembly (21). Connect fuel pump to driver's heater hose assembly (21) on straight pipe adapter (13).
- 11 Install tube nipple (22) on fuel pump to driver's heater hose assembly (21).
- 12 Install heater hose plate (23). Install two new lockwashers (24), two hexagon head capscrews (25), and two hexagon plain nuts (26) on heater hose plate (23).
- 13 Install loop clamp (27) on fuel pump connecting hose assembly (28).
- 14 Connect fuel pump connecting hose assembly (28) to tube nipple (22).
- 15 Install new lockwasher (29) and machine screw (30) on loop clamp (27).
- 16 Install two marker bands (31) on fuel pump connecting hose assembly (28).
- 17 Install boss nipple (32) on fuel pump connecting hose assembly (28).
- 18 Install new gasket (33) and filter mounting fluid filter (34) on bulkhead. Secure with two new lockwashers (35), two hexagon head capscrews (36),- and two hexagon plain nuts (37).
- 19 Install pipe elbow (38) on filter mounting fluid filter (34).
- 20 Install pipe nipple (39), pipe reducer (40), and straight pipe adapter (41) on pipe elbow (38).
- 21 Connect fluid filter hose assembly (42) to straight pipe adapter (41).
- 22 Install quick coupling half (43) and straight pipe adapter (44) on filter mounting fluid filter (34).
- 23 Install and connect fuel cell to coolant heater hose assembly (45) on straight pipe adapter (44) and vehicular heater (46).

2-184. MAINTENANCE OF HEATER INSTALLATION KIT-DRIVER'S HEATER AIR HOSES.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP			
Materials Parts		References	
Air duct hose (3) (figure D-5, appx D)		TM 9-2350-304-24P-1	
Lockwasher		Equipment Conditions	
Lockwasher		2-978	Fuel line disconnected
Spring tension clip			

REMOVAL



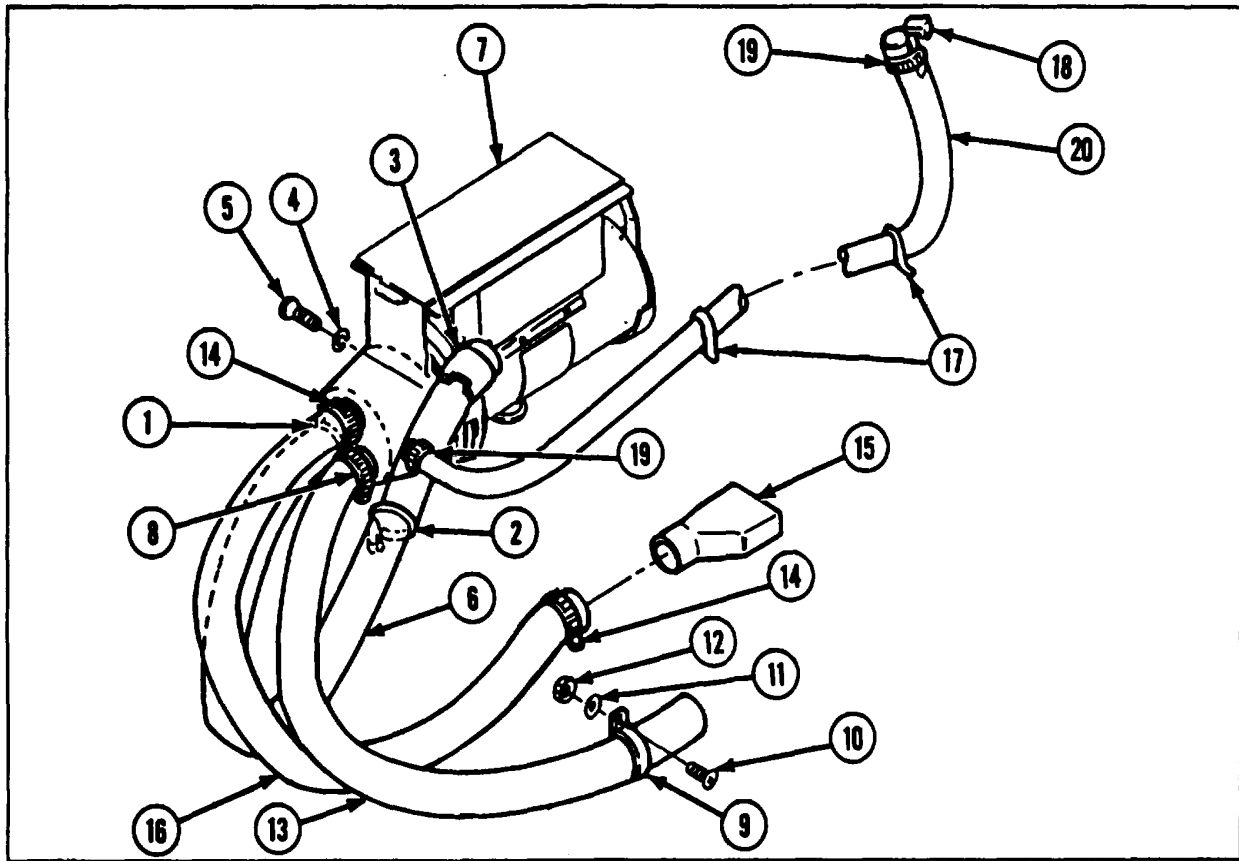
- 1 Loosen two hose clamps (1) and remove air duct hose (2) from driver's heater (3).
- 2 Remove two hose clamps (1), two marker bands (4), and hot air duct spring tension clip (5) from air duct hose (2).
- 3 Loosen two hose clamps (6), and remove air duct hose (7) from driver's heater (3).
- 4 Remove hot air center duct (8) and two hose clamps (6) from air duct hose (7).
- 5 Loosen hose clamp (9) and remove air duct hose (10) from driver's heater (3).
- 6 Remove plain hexagon nut (11), lockwasher (12), machine screw (13), loop clamp (14), and hose clamp (9) from air duct hose (10).
- 7 Loosen hose clamp (15), and remove air duct hose (16) from driver's heater (3).
- 8 Remove hose clamp (15), hexagon head capscrew (17), lockwasher (18), loop clamp (19), and loop clamp (20) from air duct hose (16).

<i>INSPECTION/REPAIR</i>

- 1 Inspect for broken, damaged, or missing parts.
- 2 Air duct hoses are manufactured items, refer to appendix D.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-184. MAINTENANCE OF HEATER INSTALLATION KIT-DRIVER'S HEATER AIR HOSES (CONT).

INSTALLATION



- 1 Install hose clamp (1), loop clamp (2), loop clamp (3), new lockwasher (4), and hexagon head capscrew (5) on air duct hose (6).
- 2 Position air duct hose (6) on driver's heater (7), and secure by tightening hose clamp (1).
- 3 Install hose clamp (8), loop clamp (9), machine screw (10), new lockwasher (11), and plain hexagon nut (12) on air duct hose (13).
- 4 Position air duct hose (13) on driver's heater (7), and secure by tightening hose clamp (8).
- 5 Install two hose clamps (14) and hot air center duct (15) on air duct hose (16).
- 6 Position air duct hose (16) on driver's heater (9), and secure by tightening two hose clamps (14).
- 7 Install two marker bands (17), hot air duct spring tension clip (18), and two hose clamps (19) on air duct hose (20).
- 8 Position air duct hose (20) on driver's heater (7), and secure by tightening two hose clamps (19).

2-185. MAINTENANCE OF HEATER INSTALLATION KIT-AIR INTAKE BLOWER, FUEL FILTER HEATERS, AND CONNECTING HARNESS; AND ENGINE COMPARTMENT BRANCHED WIRING HARNESS.

This task covers:	a. Removal b. Disassembly c. Inspection/Repair	d. Reassembly e. Installation
--------------------------	---	--

INITIAL SETUP:

Tools and Special Tools
Plier wire twister (item 29, appx G)

Materials/Parts
Electrical wire (figure D-1, appx D)
Electrical wire (figure D-1, appx D)
Lacing cord (figure D-16, appx D)
Lockwasher (6)
Lockwire (item 22, appx C)
Marker band (6)

References
TM 9-2350-304-24P-1

Equipment Conditions
2-624 Batteries disconnected

General Safety Instructions

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

REMOVAL

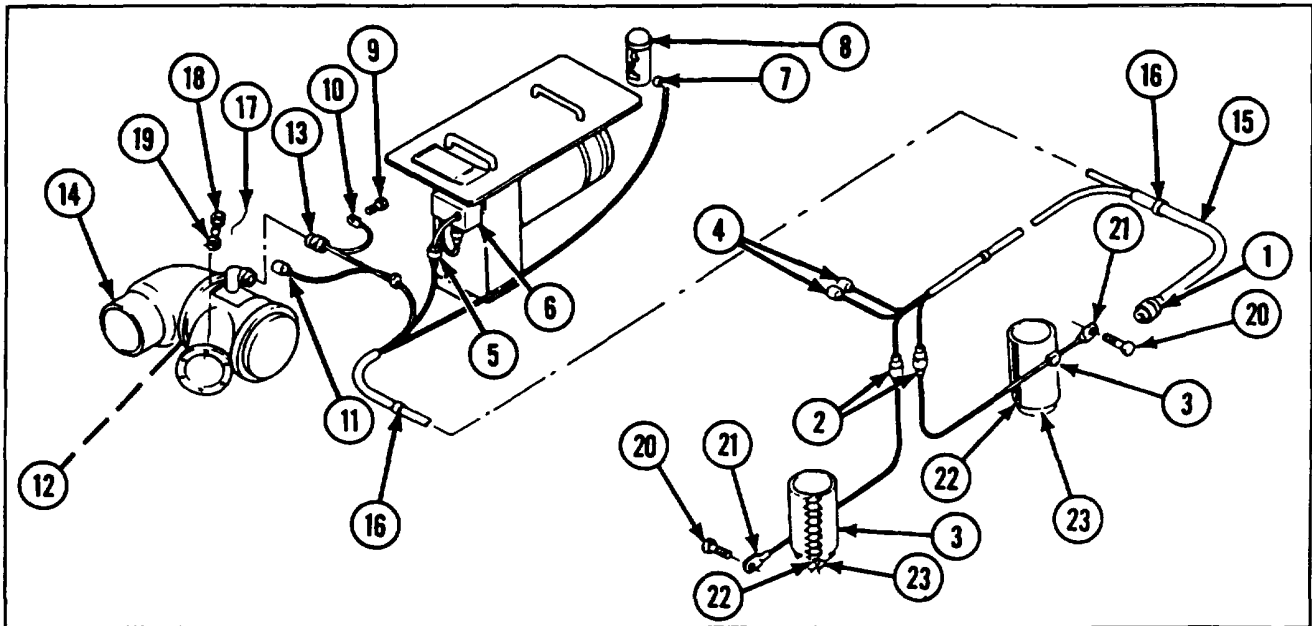
WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1** Wiring harness and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.

2-185. MAINTENANCE OF HEATER INSTALLATION KIT-AIR INTAKE BLOWER, FUEL FILTER HEATERS, AND CONNECTING HARNESS; AND ENGINE COMPARTMENT BRANCHED WIRING HARNESS (CONT).

REMOVAL (CONT)



- 2 Tag and disconnect plug connector (1) from bulkhead disconnect to circuit breakers and electrical components branched wiring harness at the wall of the driver's compartment.
- 3 Tag and disconnect two shell connectors (2) from line connections on two fuel filter heaters (3).
- 4 Tag and disconnect two shell connectors (4) from line connections.
- 5 Tag and disconnect shell connector (5) from engine coolant heater control box (6).
- 6 Tag and disconnect shell connector (7) from electrical fuel pump (8).
- 7 Remove screw (9) and disconnect cable terminal (10) from ground.
- 8 Tag and disconnect shell connector (11) from line connection on blower assembly electrical solenoid (12).

- 9 Tag and disconnect plug connector (13) from blower assembly (14), and remove engine compartment branched wiring harness (15) from hull.
- 10 If damaged, remove marker bands (16) from engine compartment branched wiring harness (15).
- 11 Remove lockwire (17), six screws (18), and six lockwashers (19) from blower assembly (14). Remove blower assembly (14) from hull.

NOTE

Steps 12 and 13 are written for one fuel filter heater but apply to both fuel filter heaters.

- 12 Remove screw (20) and disconnect ground lead (21) on fuel filter heater (3).
- 13 If damaged, remove lacing cord (22) and fuel heater filter (3) from fuel filter (23)

DISASSEMBLY

For disassembly of wiring harness plug connectors, refer to general maintenance, page 2-364.

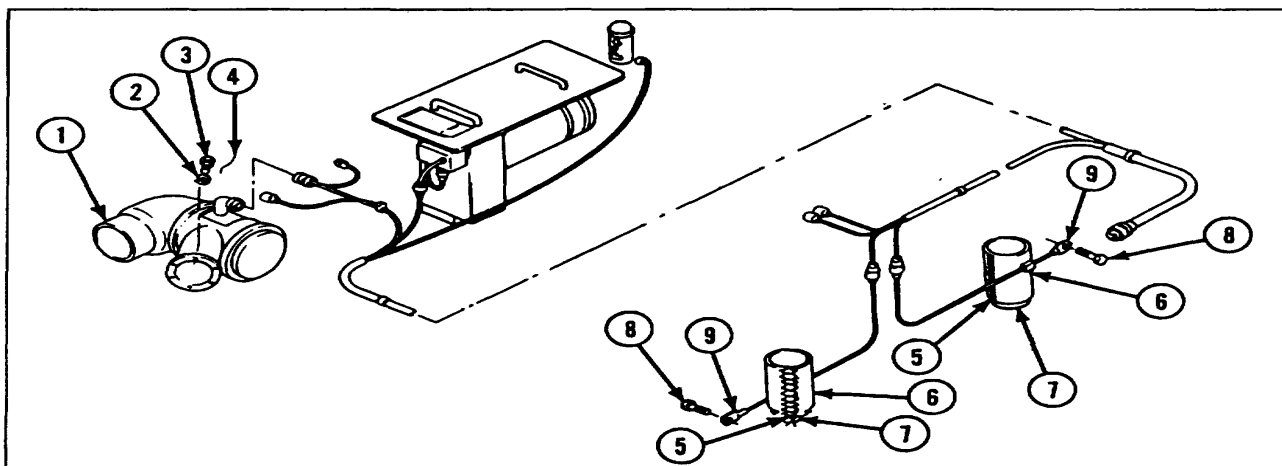
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts
- 2 For repair of cable terminals and shell connectors, refer to general maintenance,
- 3 Lacing cord is a manufactured item, refer to appendix D.
- 4 Electrical wires are manufactured items, refer to appendix D.
- 5 Blower assembly is a repairable assembly. Notify direct support maintenance.
- 6 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

For reassembly of wiring harness plug connectors, refer to general maintenance, page 2-364.

INSTALLATION



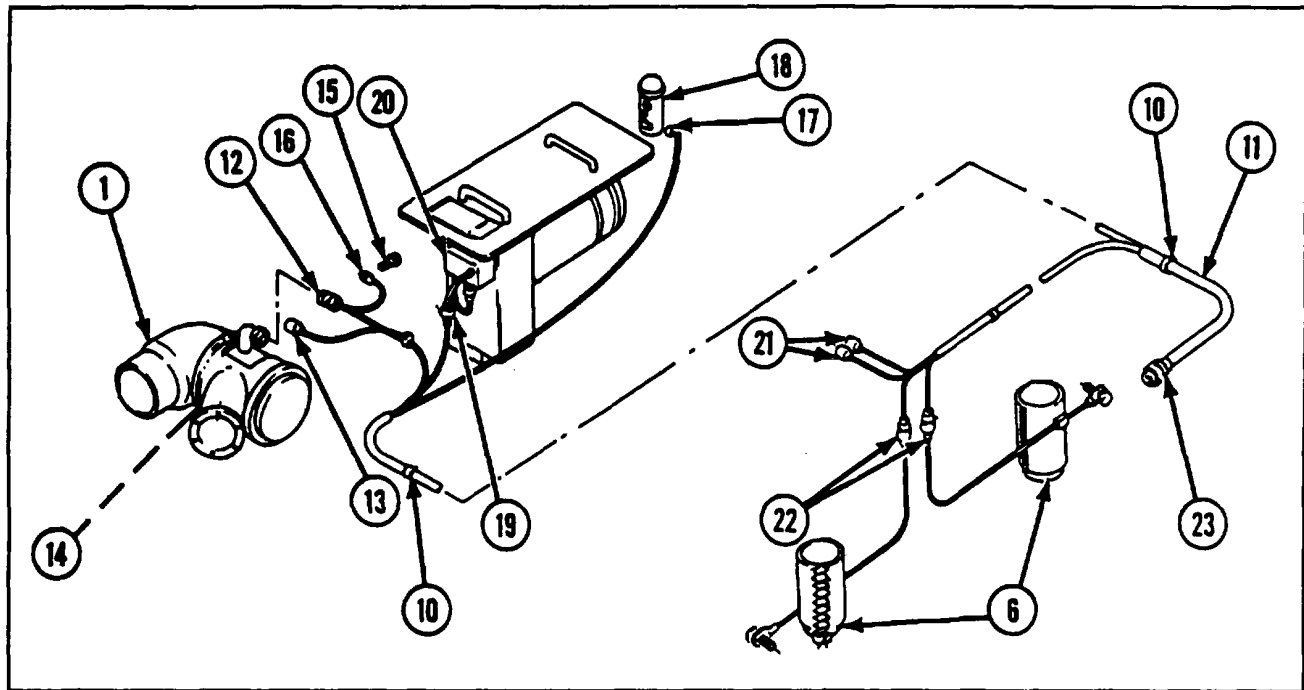
- 1 Position blower assembly (1) in hull, and secure with six new lockwashers (2), six screws (3), and new lockwire (4).
- 2 If removed, install new lacing cord (5) in fuel filter heater (6). Install fuel filter heater (6) on fuel filter (7).
- 3 Install screw (8) to connect ground lead (9) of fuel filter heater (6).

NOTE

Steps 2 and 3 are written for one fuel filter heater, but apply to both fuel filter heaters.

2-185. MAINTENANCE OF HEATER INSTALLATION KIT-AIR INTAKE BLOWER, FUEL FILTER HEATERS, AND CONNECTING HARNESS; AND ENGINE COMPARTMENT BRANCHED WIRING HARNESS (CONT).

INSTALLATION (CONT)



- 4 If removed, install new marker bands (10) on engine compartment branched wiring harness (11).
- 5 Install engine compartment branched wiring harness (11) in hull.
- 6 Untag and connect plug connector (12) to blower assembly (1).
- 7 Untag and connect shell connector (13) to line connection on blower assembly electrical solenoid (14).
- 8 Install screw (15) to connect cable terminal (16) to ground.
- 9 Untag and connect shell connector (17) to electrical fuel pump (18).
- 10 Untag and connect shell connector (19) to engine coolant heater control box (20).
- 11 Untag and connect two shell connectors (21) to line connections.
- 12 Untag and connect two shell connectors (22) to line connections on two fuel filter heaters (6).
- 13 Untag and connect plug connector (23) to bulkhead disconnect to circuit breakers and electrical components branch wiring harness at wall of driver's compartment.
- 14 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During Installation, make sure the wiring harness or lead is secure, and all hardware is tight.

2-186. MAINTENANCE OF HEATER INSTALLATION KIT-ELECTRICAL COMPONENTS.

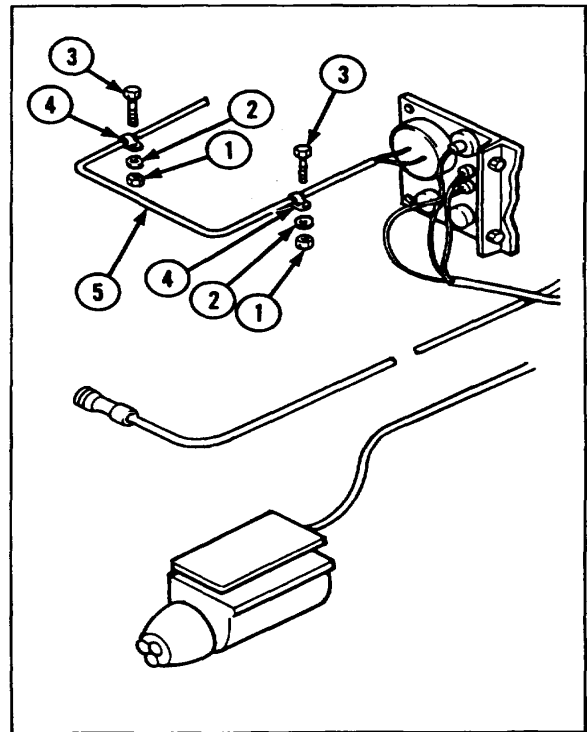
This task covers:		a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP:				
Materials/Parts	Assembled washer bolt		Equipment Conditions	
	Assembled washer screw (2)		2-624 Batteries disconnected	
	Gasket		General Safety Instructions	
	Lockwasher (2)			
	Lockwasher (2)			
	Lockwasher (16)			
	Lockwasher (4)			
	Lockwasher			
References	TM 9-2350-304-24P-1			

WARNING

Failure to remove or disconnect batteries before connecting or disconnecting any electrical wiring harness or lead may result in injury or damaged equipment.

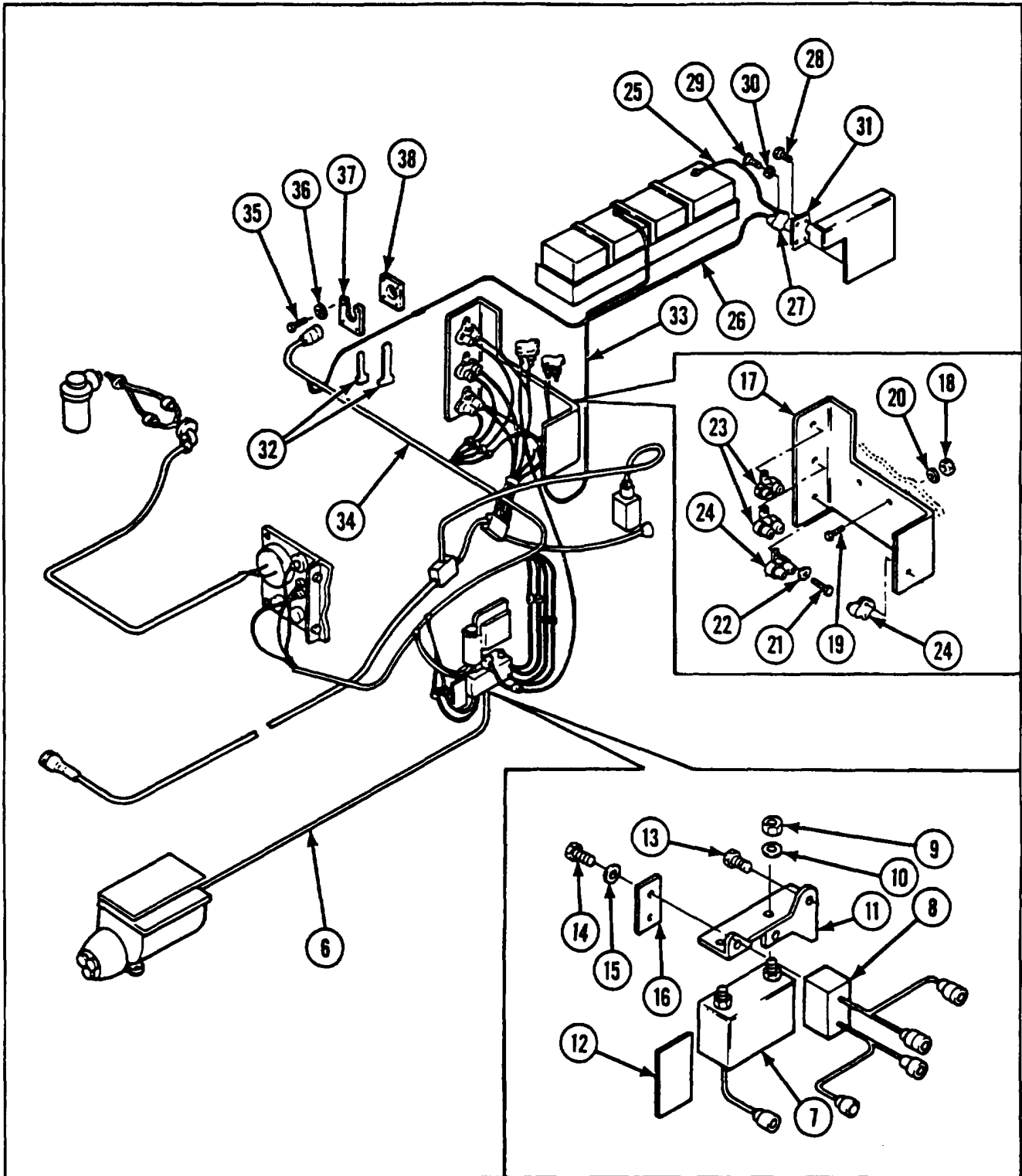
REMOVAL

- 1 Remove two hexagon plain nuts (1), two lockwashers (2), two socket head capscrews (3), and two loop clamps (4) from pyrometer panel assembly to thermo couple assembly electrical lead (5).



2-186. MAINTENANCE OF HEATER INSTALLATION KIT-ELECTRICAL COMPONENTS (CONT).

REMOVAL (CONT)



WARNING

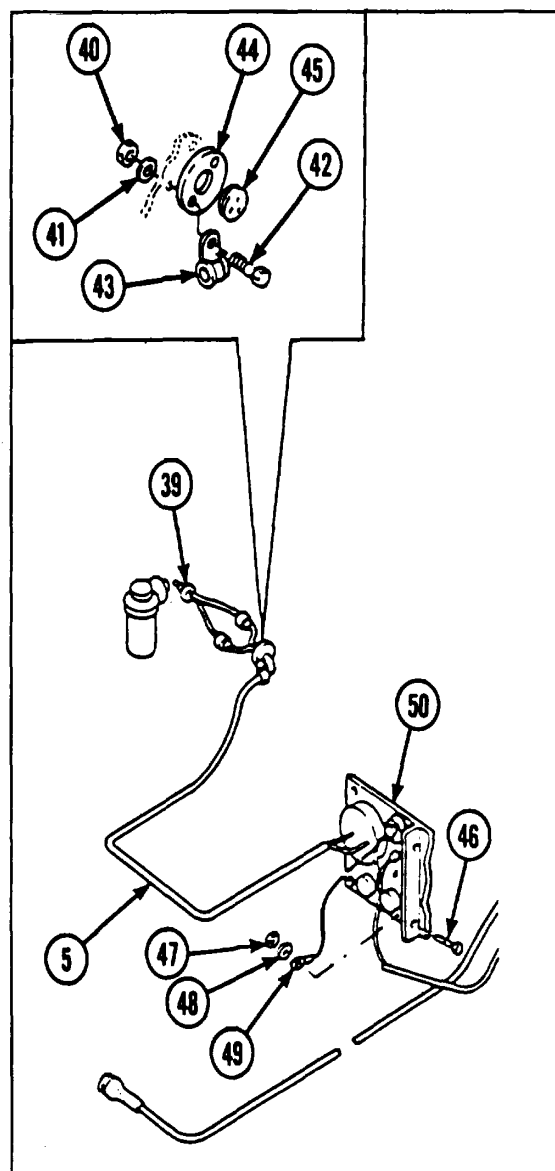
Failure to remove or disconnect batteries before connecting or disconnecting any electrical wiring harness or lead may result in injury or damaged equipment.

- 2 Tag and disconnect wiring harness (6) from driver's heater control box (7).
- 3 Tag and disconnect all electrical leads from driver's heater control box (7) and fuel filter heater toggle switch (8).
- 4 Remove two hexagon plain nuts (9), two lockwashers (10), and driver's heater control box (7) from driver's heater control box bracket (11).
- 5 If damaged, remove instruction plate (12) from wall of driver's compartment.
- 6 Remove two assembled washer screws (13) and fuel filter heater toggle switch (8) from driver's heater control box bracket (11).
- 7 If damaged, remove two machine screws (14), two lockwashers (15), and fuel filter heater switch identification plate (16) from fuel filter heater toggle switch (8).
- 8 Tag and disconnect all electrical leads from circuit breakers on circuit breaker double angle bracket (17).
- 9 Remove two hexagon plain nuts (18), two hexagon head capscrews (19), two lockwashers (20), and circuit breaker double angle bracket (17).
- 10 Remove eight machine screws (21), eight lockwashers (22), two circuit breakers (23), and two circuit breakers (24) from circuit breaker double angle bracket (17).
- 11 Tag and disconnect battery positive terminal to circuit breaker electrical lead (25) and coolant heater circuit breaker to line disconnect cable assembly (26) from coolant heater circuit breaker (27).
- 12 Remove assembled washer bolt (28), two machine screws (29), two lockwashers (30), coolant heater circuit breaker (27), and circuit breaker bracket (31).
- 13 Remove three straps (32) from coolant heater circuit breaker to line disconnect cable assembly (26) and electrical lead (33).
- 14 Tag and disconnect bulkhead disconnect to circuit breakers and electrical components wiring harness (34).
- 15 Remove four socket head capscrews (35), four lockwashers (36), electrical receptacle retaining plate (37), and gasket (38).

2-186. MAINTENANCE OF HEATER INSTALLATION KIT-ELECTRICAL COMPONENTS (CONT).

REMOVAL (CONT)

- 16 Tag and disconnect electrical leads from thermocouple assembly (39). Remove thermocouple assembly.
- 17 Remove two hexagon plain nuts (40), two lockwashers (41), two hexagon head capscrews (42), loop clamp (43), and pyrometer lead retaining plate (44).
- 18 Remove grommet (45) and pyrometer panel assembly to thermocouple assembly electrical lead (5) from pyrometer lead retaining plate (44).
- 19 Remove two screws (46), two nuts (47) two lockwashers (48), ground lead (49) and pyrometer panel assembly (50).



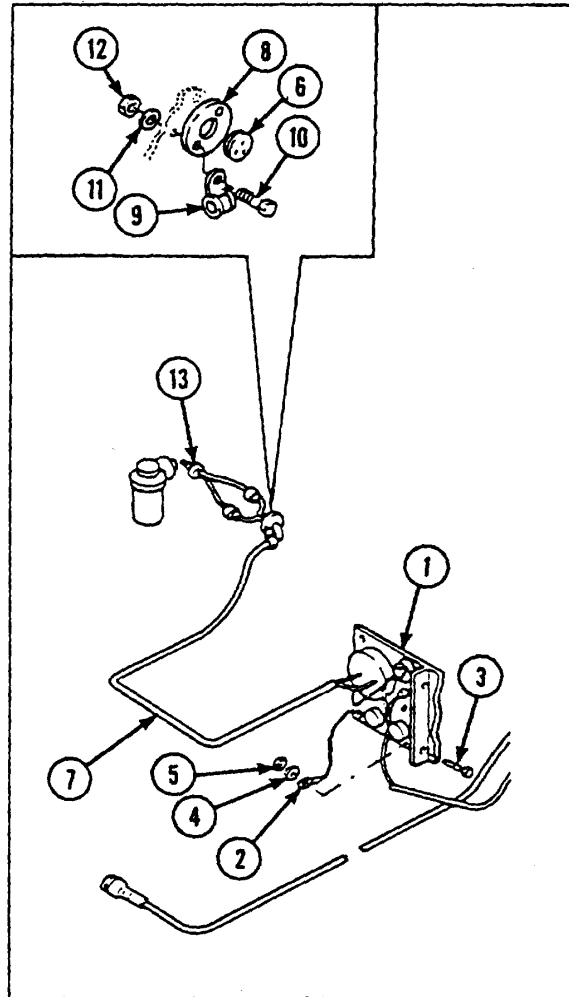
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Pyrometer panel assembly is a repairable assembly. Refer to page 2-1015
- 3 Driver's heater control box is a repairable assembly. Refer to page 2-1008.

- 4 For repair of electrical leads and wiring harnesses, refer to page 2-998.
- 5 For repair of shell connectors, refer to general maintenance, page 2-364.
- 6 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

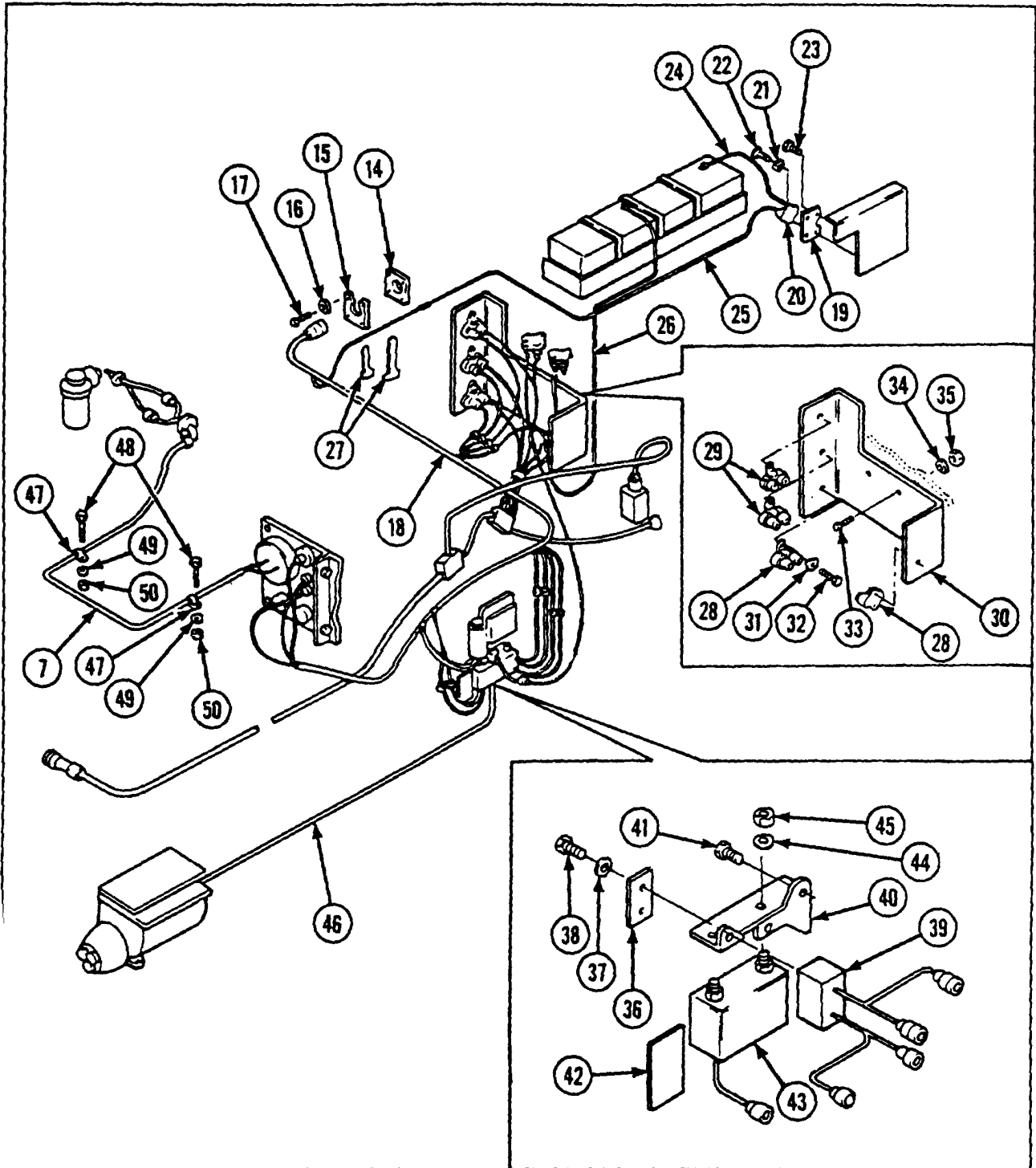
INSTALLATION

- 1 Install pyrometer panel assembly (1). Secure pyrometer panel assembly and ground lead (2) with two screws (3), two new lockwashers (4), and two nuts (5).
- 2 Install grommet (6) and pyrometer pane assembly to thermocouple assembly electrical lead (7) in pyrometer lead retaining plate (8).
- 3 Install pyrometer lead retaining plate (8) and loop clamp (9), and secure with two hexagon head capscrews (10), two new lockwashers (11), and two hexagon plain nuts (12).
- 4 Install thermocouple assembly (13). Untag and connect electrical leads to thermocouple assembly.



2-186. MAINTENANCE OF HEATER INSTALLATION KIT-ELECTRICAL COMPONENTS (CONT).

INSTALLATION (CONT)



- 5** Install new gasket (14), electrical receptacle retaining plate (15), four new lockwashers (16), and four socket head capscrews (17).
- 6** Untag and connect bulkhead disconnect to circuit breakers and electrical components wiring harness (18).
- 7** Install circuit breaker bracket (19) and coolant heater circuit breaker (20), and secure with two new lockwashers (21), two machine screws (22), and new assembled washer bolt (23).
- 8** Untag and connect battery positive terminal to circuit breaker electrical lead (24) and coolant heater circuit breaker to line disconnect cable assembly (25) to-coolant heater circuit breaker (20).
- 9** Secure coolant heater circuit breaker to line disconnect cable assembly (25) and electrical lead (26) with three straps (27).
- 10** Position two circuit breakers (28) and two circuit breakers (29) on circuit breaker double angle bracket (30), and secure with eight new lockwashers (31) and eight machine screws (32).
- 11** Install circuit breaker double angle bracket (30), and secure with two hexagon head capscrews (33), two new lockwashers (34), and two hexagon plain nuts (35).
- 12** Untag and connect all applicable electrical leads to circuit breakers on circuit breaker double angle bracket (30).
- 13** If removed, install new fuel filter heater switch identification plate (36), two new lockwashers (37), and two machine screws (38) on fuel filter heater toggle switch (39).
- 14** Position fuel filter heater toggle switch (39) on driver's heater control box bracket (40), and secure with two new assembled washer screws (41).
- 15** If removed, install new instruction plate (42) on driver's heater control box (43).
- 16** Position driver's heater control box (43) on driver's heater control box bracket (40), and secure with two new lockwashers (44) and two hexagon plain nuts (45).
- 17** Untag and connect all applicable electrical leads to driver's heater control box (43) and fuel filter heater toggle switch (39).
- 18** Untag and connect wiring harness (46) to driver's heater control box (43).
- 19** Install two loop clamps (47), two socket head capscrews (48), two new lockwashers (49), and two hexagon plain nuts (50) on pyrometer panel assembly to thermocouple assembly electrical lead (7).

2-187. MAINTENANCE OF HEATER INSTALLATION KIT-ELECTRICAL WIRING.**This task covers:**

- a. Removal of Battery Positive Terminal to Circuit Breaker Electrical Lead
- b. Removal of Coolant Heater Circuit Breaker to Line Disconnect Cable Assembly
- c. Removal of Bulkhead Disconnect to Circuit Breakers and Electrical Components Branched Wiring Harness
- d. Removal of Bulkhead Disconnects to Master Relay and Circuit Breakers Cable Assembly
- e. Removal of Heater Control Box to Driver's Heater Wiring Harness
- f. Disassembly
- g. Inspection/Repair
- h. Reassembly
- i. Installation of Heater Control Box to Driver's Heater Wiring Harness
- J. Installation of Bulkhead Disconnects to Master Relay and Circuit Breakers Cable Assembly
- k. Installation of Bulkhead Disconnect to Circuit Breakers and Electrical Components Branched Wiring Harness
- l. Installation of Coolant Heater Circuit Breaker to Line Disconnect Cable Assembly
- m. Installation of Battery Positive Terminal to Circuit Breaker Electrical Lead

INITIAL SETUP

Materials/Parts

- Gasket
- Electrical wire (figure D-1, appx D)
- Lockwasher (4)
- Lockwasher

References

TM 9-2350-304-24P-1

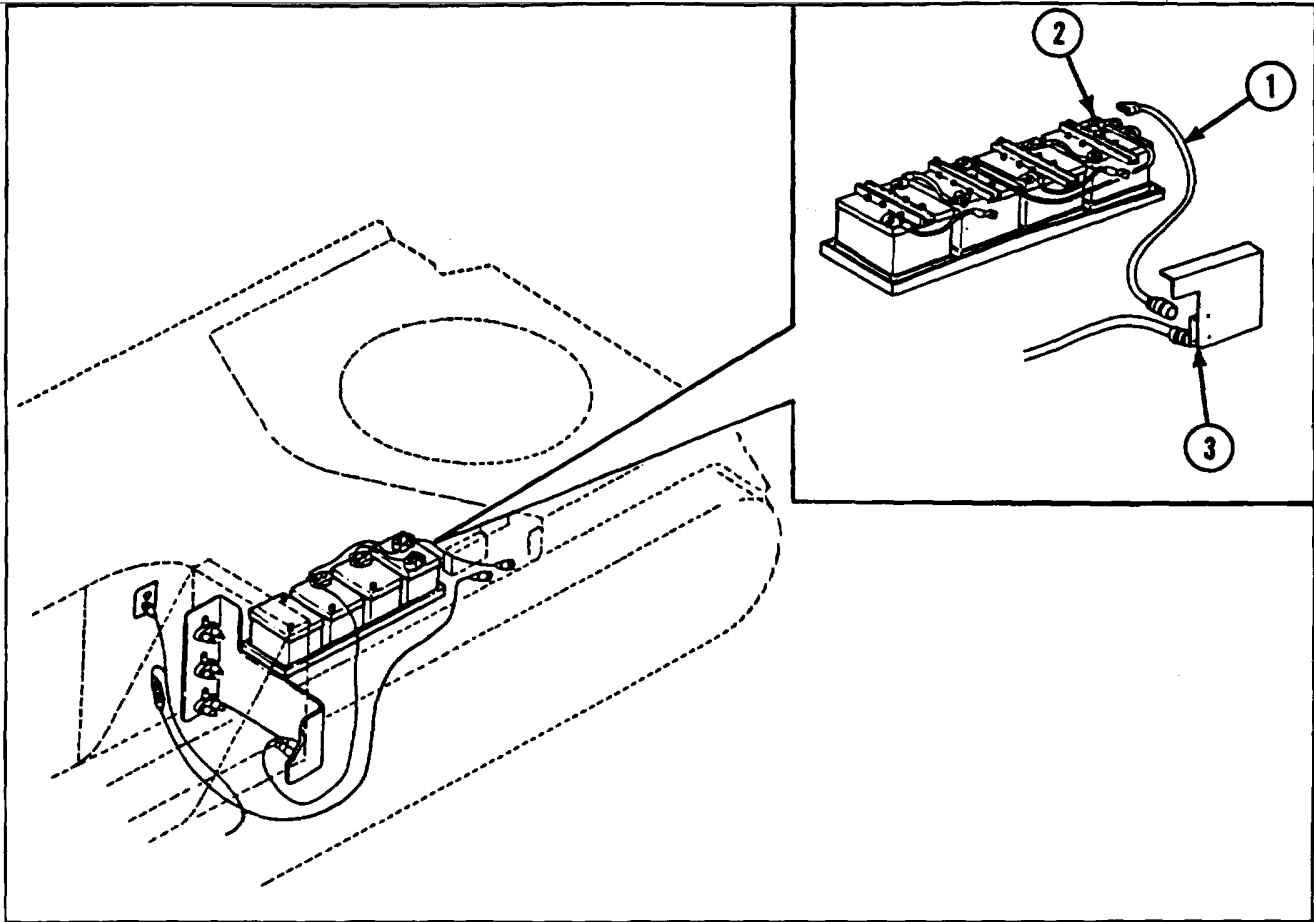
Equipment Conditions

- 2-624 Batteries disconnected
- General Safety Instructions

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical lead or wiring harness may result in injury or damage to equipment.

REMOVAL OF BATTERY POSITIVE TERMINAL TO CIRCUIT BREAKER ELECTRICAL LEAD

**WARNING**

Failure to remove or disconnect batteries before removing or installing any electrical lead or wiring harness may result in injury or damage to equipment.

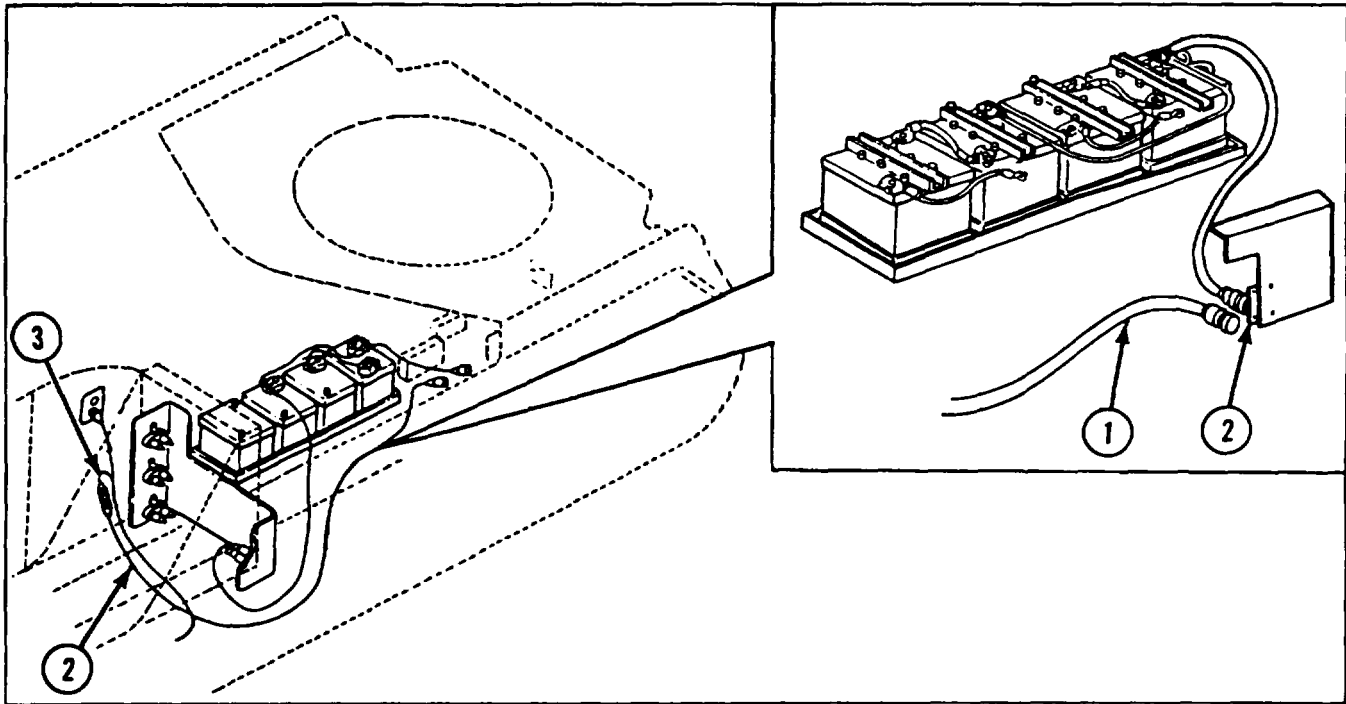
NOTE

Tag all electrical leads during removal to aid in installation.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the harness or lead being removed.
- 2 Tag and disconnect battery positive terminal to circuit breaker electrical lead (1) from battery positive terminal (2).
- 3 Tag and disconnect battery positive terminal to circuit breaker electrical lead (1) from coolant heater circuit breaker (3).

2-187. MAINTENANCE OF HEATER INSTALLATION KIT-ELECTRICAL WIRING (CONT).

REMOVAL OF COOLANT HEATER CIRCUIT BREAKER TO LINE DISCONNECT CABLE ASSEMBLY

**WARNING**

Failure to remove or disconnect batteries before removing or installing any electrical lead or wiring harness may result in injury or damage to equipment.

NOTE

Tag all electrical leads during removal to aid in installation.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the harness or lead being.
- 2 Tag and disconnect coolant heater circuit breaker to line disconnect cable assembly (1) from coolant heater circuit breaker (2) and bulkhead disconnect to circuit breakers and electrical removed components branched wiring harness (3).

REMOVAL OF BULKHEAD DISCONNECT TO CIRCUIT BREAKERS AND ELECTRICAL COMPONENTS BRANCHED WIRING HARNESS

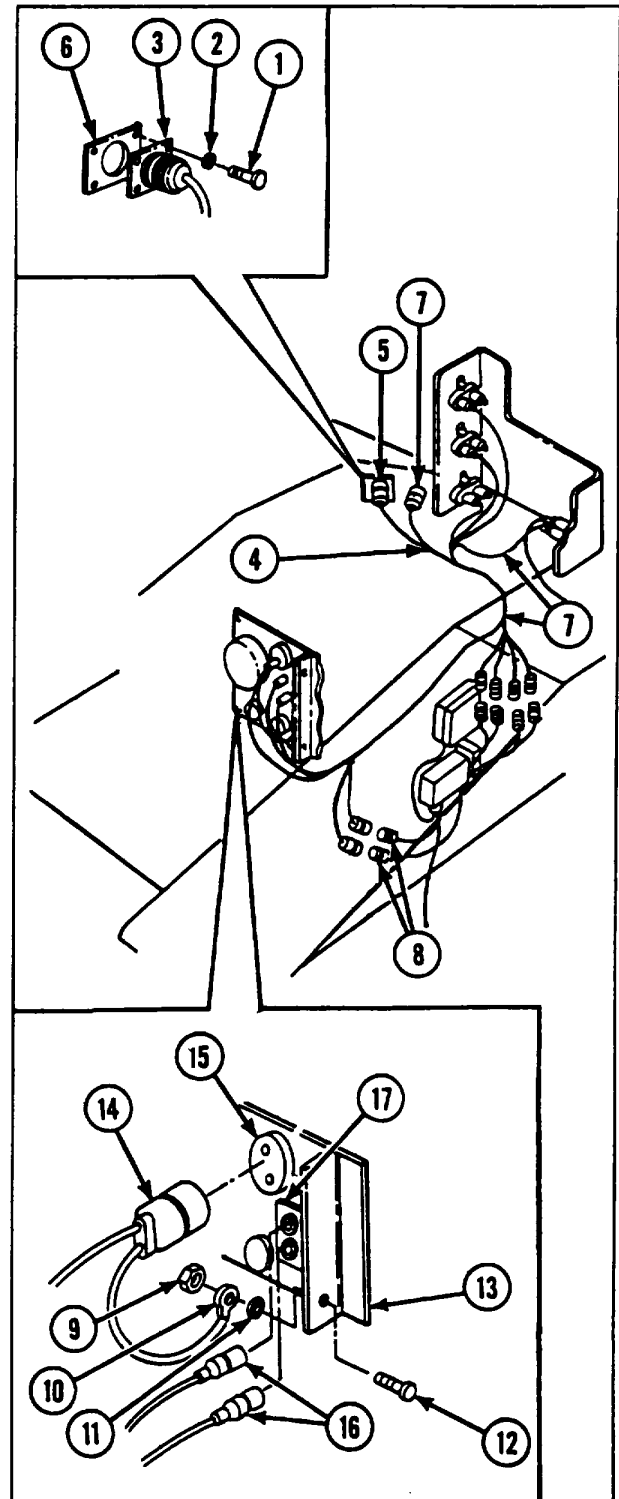
WARNING

Failure to remove or disconnect batteries before removing or installing any electrical lead or wiring harness may result in injury or damage to equipment.

NOTE

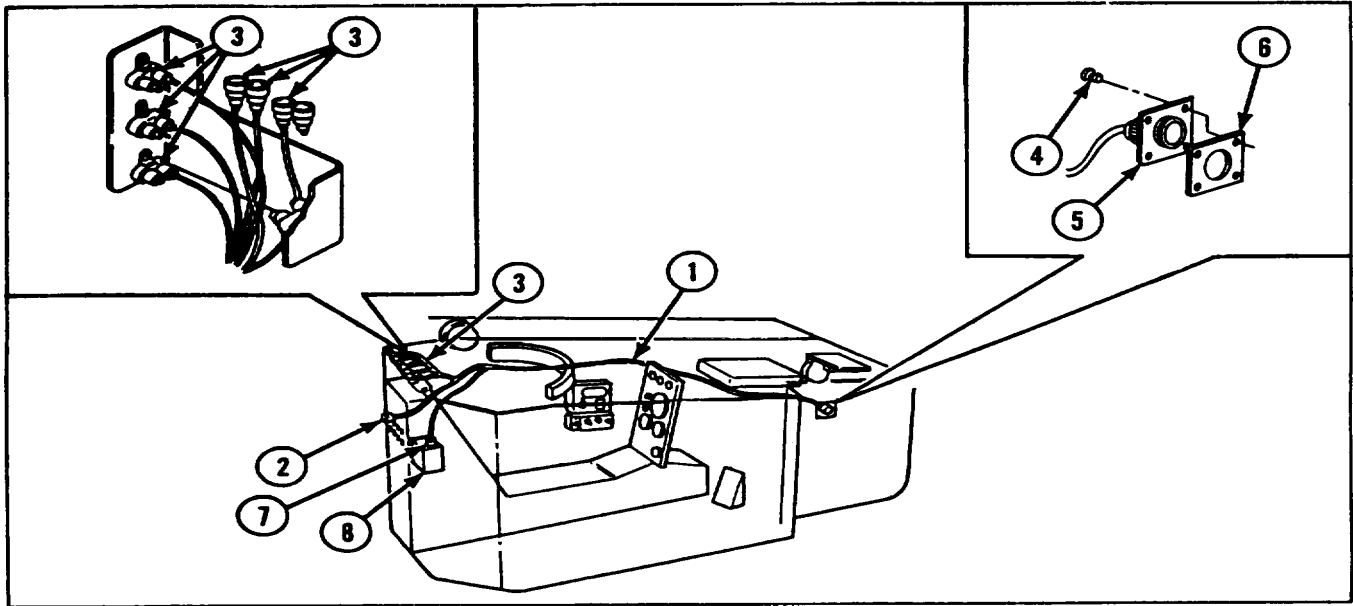
Tag all electrical leads during removal to aid in installation.

- 1 Wiring harnesses and leads are secure(to the hull and components with loop clamps, straps, clips, ground screws, et Remove only the hardware which secure the harness or lead being removed.
- 2 Remove four screws (1), four lockwasher (2), and receptacle connector (3).Tag and disconnect bulkhead disconnect to circuit breakers and electrical components branched wiring harness (4) from bulkhead receptacle assembly (5) and remove gasket (6).
- 3 Tag and disconnect nine shell connector (7) from line connections.
- 4 Tag and disconnect bulkhead disconnect to circuit breakers and electrical components branched wiring harness (4) from driver's heater electrical control box she connectors (8).
- 5 Remove hexagon plain nut (9), cable terminal (10), lockwasher (11), and screw (12) from pyrometer panel (13).
- 6 Tag and disconnect plug connector (14) from pyrometer panel indicator light (15)
- 7 Tag and disconnect two shell connector (16) from pyrometer panel toggle switch (17).



2-187. MAINTENANCE OF HEATER INSTALLATION KIT--ELECTRICAL WIRING (CONT).

REMOVAL OF BULKHEAD DISCONNECTS TO MASTER RELAY AND CIRCUIT BREAKERS CABLE ASSEMBLY.



WARNING

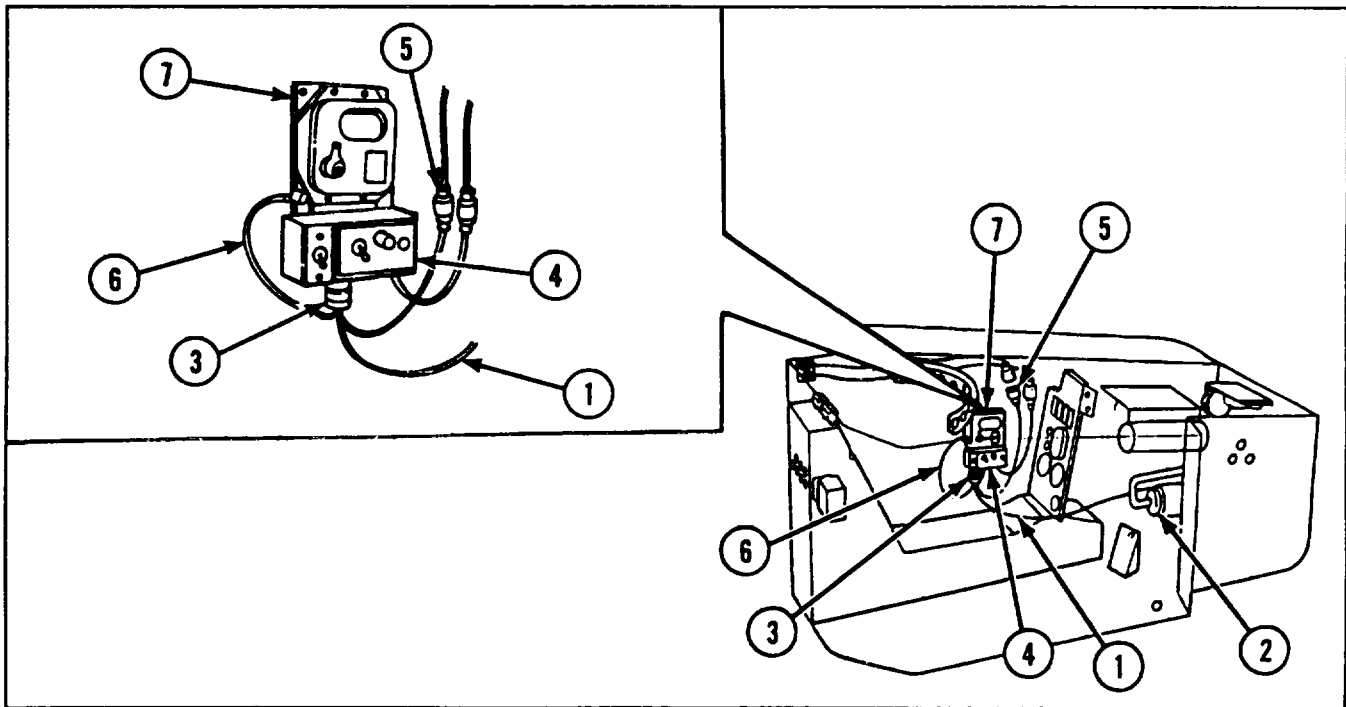
Failure to remove or disconnect batteries before removing or installing any electrical lead or wiring harness may result in injury or damage to equipment.

NOTE

Tag all electrical leads during removal to aid in installation.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the harness or lead being removed.
- 2 Tag and disconnect bulkhead disconnects to master relay and circuit breakers cable assembly (1) plug connector from vehicle bus receptacle connector (2).
- 3 Tag and disconnect six shell connectors (3) from line connections.
- 4 Remove four screws (4) and receptacle connector (5) from bulkhead disconnect. Tag and disconnect bulkhead disconnect to master relay and circuit breakers cable assembly (1) from bulkhead disconnect and remove gasket (6).
- 5 Tag and disconnect plug connector (7) from master relay assembly (8).

REMOVAL OF HEATER CONTROL BOX TO DRIVER'S HEATING WIRING HARNESS

**WARNING**

Failure to remove or disconnect batteries before removing or installing any electrical lead or wiring harness may result in injury or damage to equipment.

NOTE

Tag all electrical leads during removal to aid in installation.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the harness or lead being
- 2 Tag and disconnect heater control box to driver's heater wiring harness (1) plug connector from vehicular heater (2).
- 3 Tag and disconnect cable terminal (3) from dome light assembly (4).
- 4 Tag and disconnect shell connector (5) from line connection.
- 5 Tag and disconnect plug connector (6) from driver's heater electrical control box (7).

DISASSEMBLY

For disassembly of plug connectors and receptacle connectors, refer to general maintenance, page 2-364.

2-187. MAINTENANCE OF HEATER INSTALLATION KIT-ELECTRICAL WIRING (CONT).

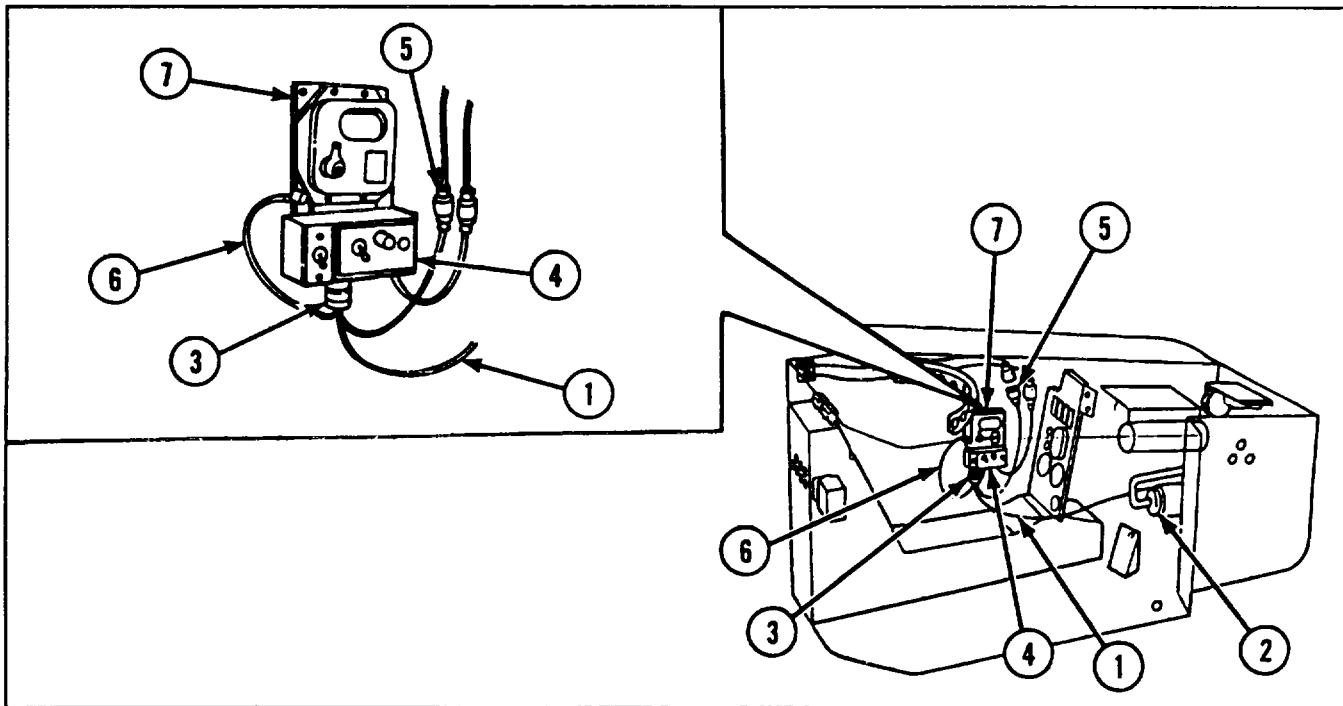
INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 For repair of shell connectors and cable terminals, refer to general maintenance, page 2-364.
- 3 Electrical wire is a manufactured item, refer to appendix D.
- 4 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

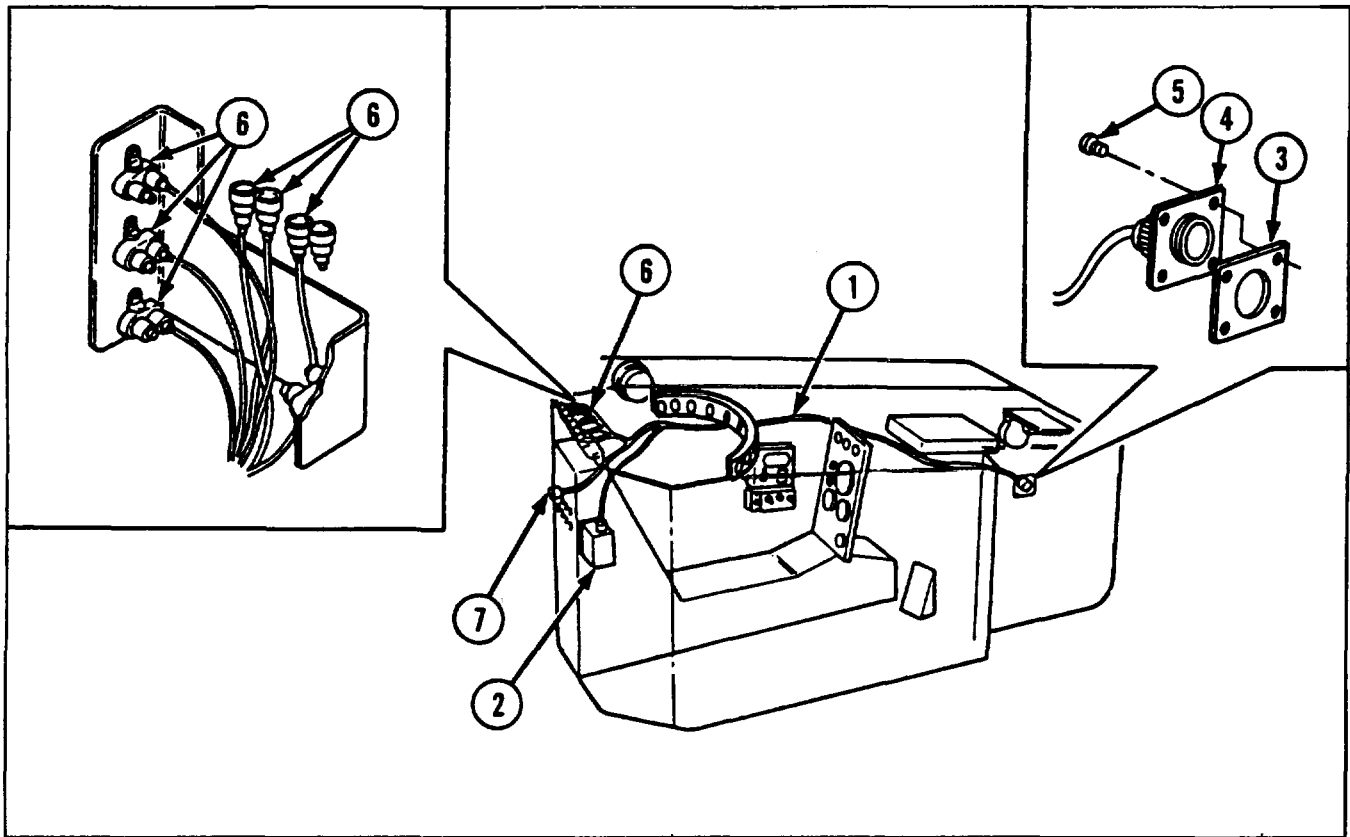
For reassembly of plug connectors and receptacle connectors, refer to general maintenance, page 2-364.

INSTALLATION OF HEATER CONTROL BOX TO DRIVER'S HEATING WIRING HARNESS



- | | |
|---|---|
| <ol style="list-style-type: none"> 1 Connect heater control box to driver's heating wiring harness (1) plug connector to vehicular heater (2). 2 Connect plug connector (3) to driver's heater electrical control box (4). 3 Connect shell connector (5) to line connection. | <ol style="list-style-type: none"> 4 Connect cable terminal (6) to dome light assembly (7). 5 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight. |
|---|---|

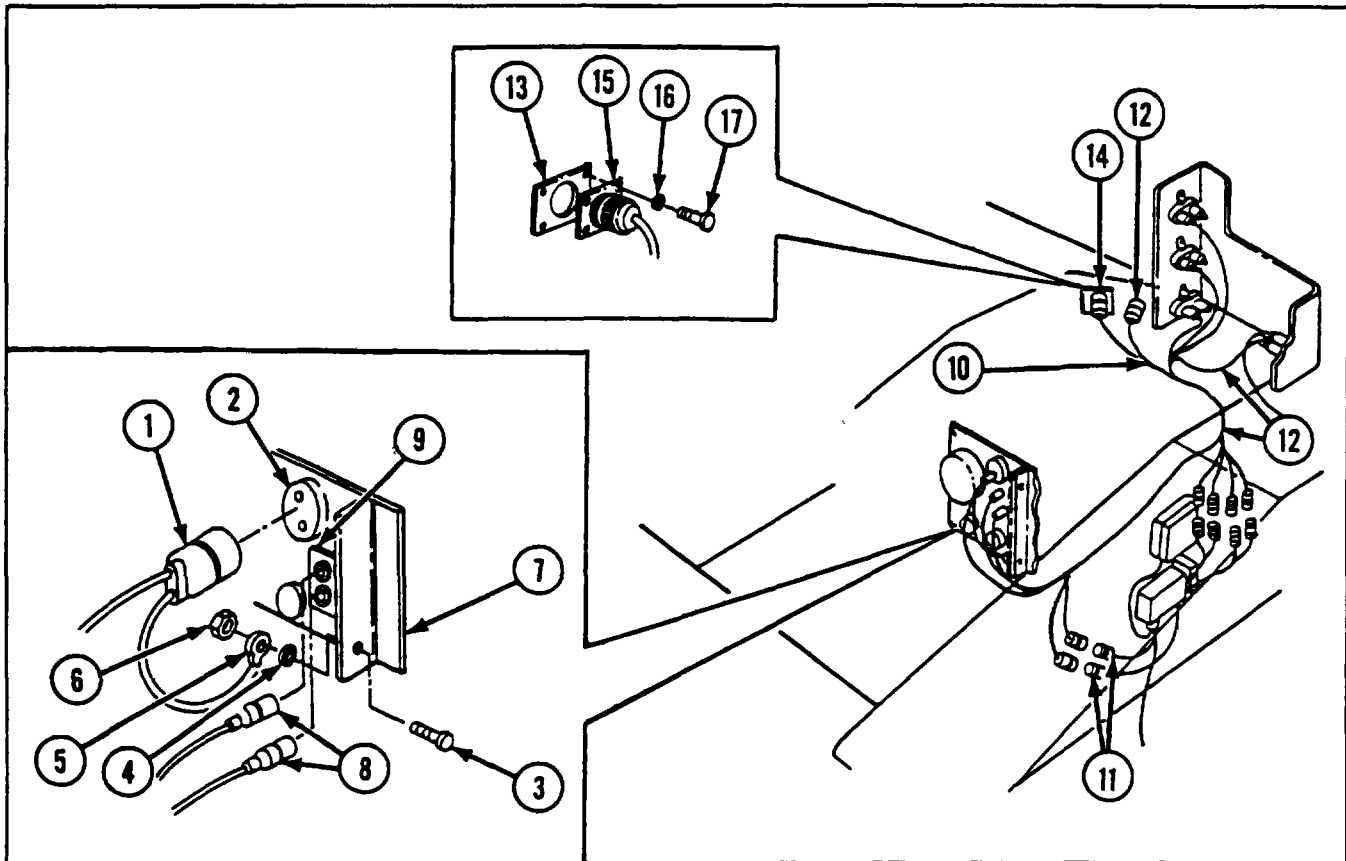
INSTALLATION OF BULKHEAD DISCONNECTS TO MASTER RELAY CIRCUIT BREAKERS CABLE ASSEMBLY



- 1 Connect bulkhead disconnects to master relay and circuit breakers cable assembly (1) plug connector to master relay assembly.
- 2 Install new gasket (3) and connect bulkhead disconnects to master relay and circuit breakers cable assembly (1) to bulkhead disconnect. Secure receptacle connector (4) with four screws (5).
- 3 Connect six shell connectors (6) to line connections.
- 4 Connect plug connector (7) to vehicle bus receptacle connector.
- 5 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

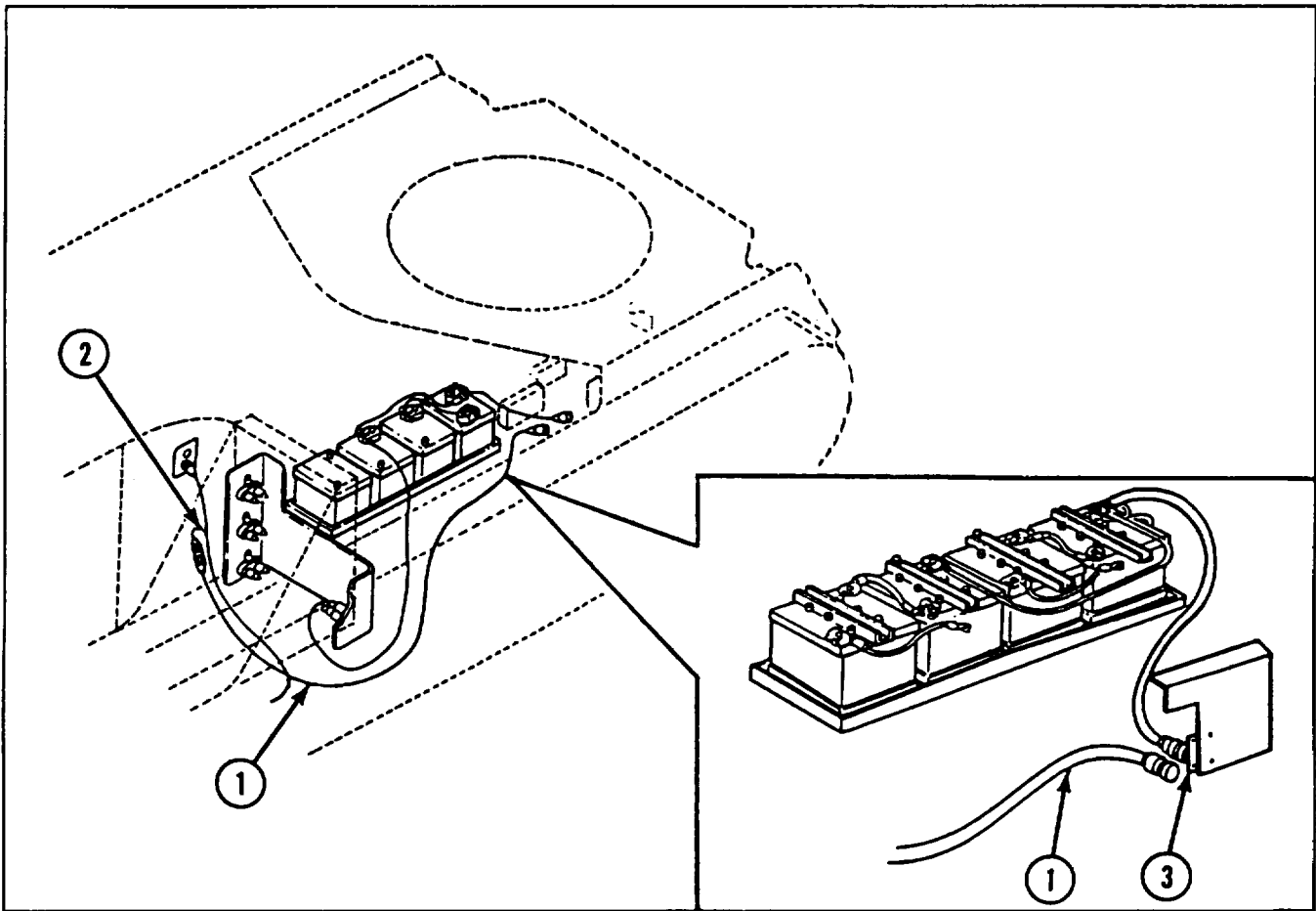
2-187. MAINTENANCE OF HEATER INSTALLATION KIT-ELECTRICAL WIRING (CONT).

INSTALLATION OF BULKHEAD DISCONNECT TO CIRCUIT BREAKERS AND ELECTRICAL COMPONENTS BRANCHED WIRING HARNESS



- 1 Connect plug connector (1) to pyrometer panel indicator light (2).
- 2 Install screw (3), new lockwasher (4), cable terminal (5), and hex nut (6) on pyrometer panel (7).
- 3 Connect two shell connectors (8) to pyrometer panel toggle switch (9).
- 4 Connect bulkhead disconnect to circuit breakers and electrical components branched wiring harness (10) to driver's heater electrical control box shell connectors (11).
- 5 Connect nine shell connectors (12) to line connections.
- 6 Install new gasket (13) and connect bulkhead disconnect to circuit breakers and electrical components wiring harness (10) to bulkhead receptacle assembly (14). Secure receptacle connector (15) with four new lockwashers (16) and four screws (17).
- 7 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

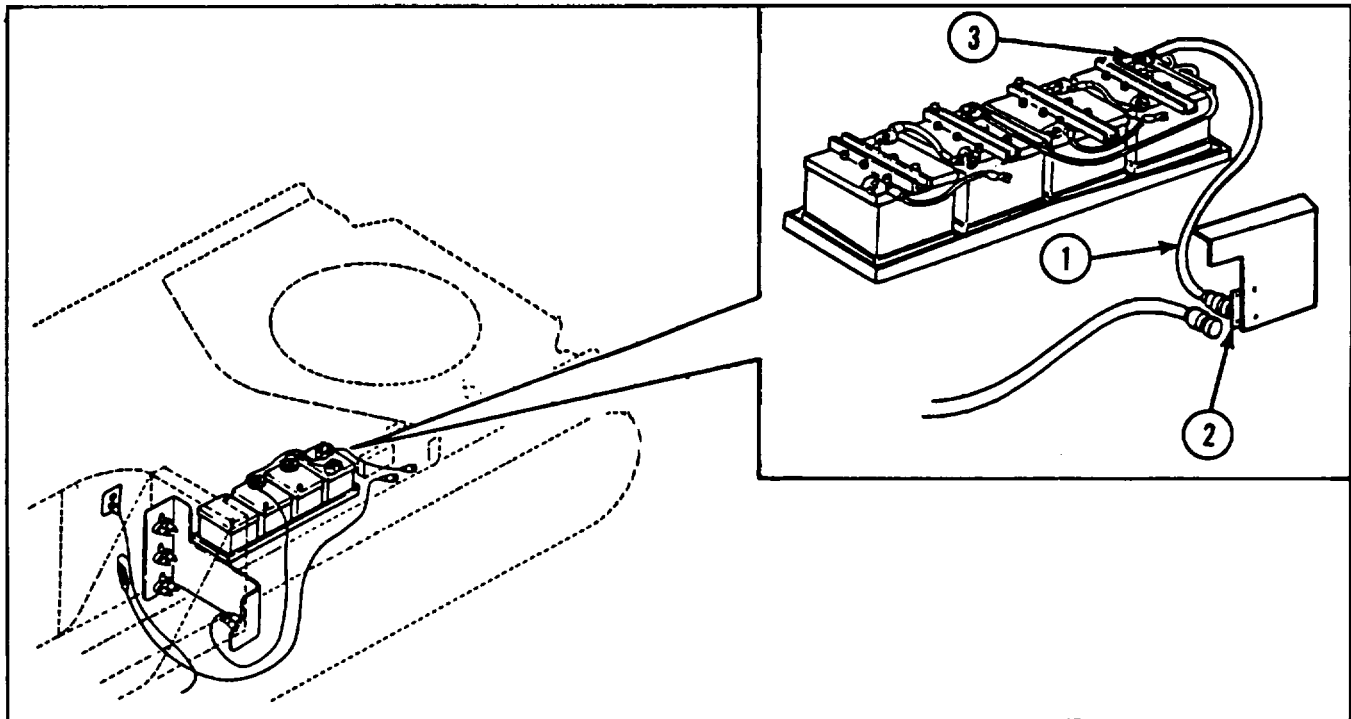
INSTALLATION OF COOLANT HEATER CIRCUIT BREAKER LINE DISCONNECT CABLE ASSEMBLY



- 1 Connect coolant heater circuit breaker to line disconnect cable assembly (1) to bulkhead disconnect to circuit breakers and electrical components branched wiring harness (2) and coolant heater circuit breaker (3).
- 2 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-187. MAINTENANCE OF HEATER INSTALLATION KIT-ELECTRICAL WIRING (CONT).

INSTALLATION OF BATTERY POSITIVE TERMINAL TO CIRCUIT BREAKER ELECTRICAL LEAD

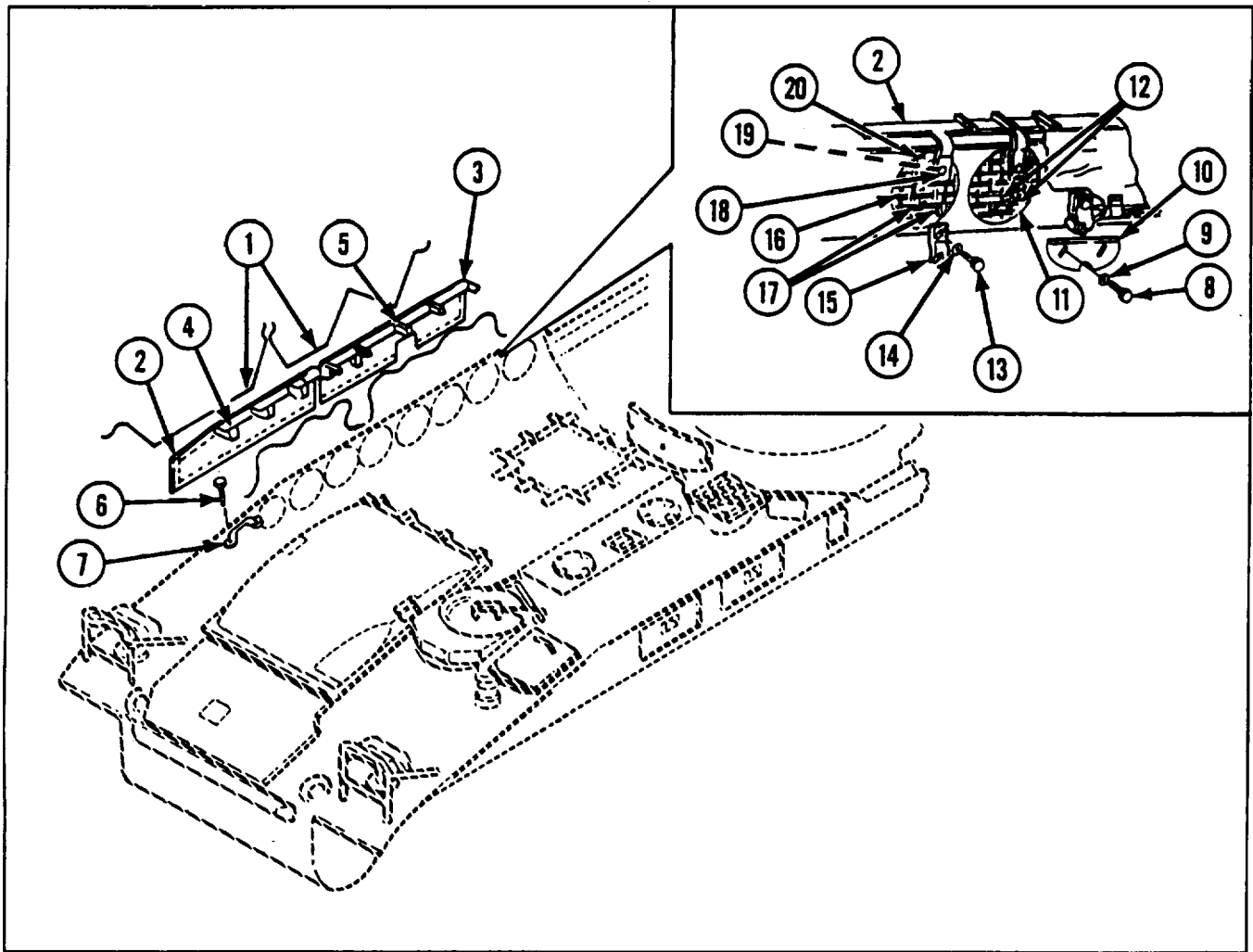


- 1 Connect battery positive terminal to circuit breaker electrical lead (1) to coolant heater circuit breaker (2).
- 2 Connect battery positive terminal to circuit breaker electrical lead (1) to battery positive terminal (3).
- 3 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secure and all hardware is tight.

2-188. MAINTENANCE OF HEATER INSTALLATION KIT-AIR INTAKE COVERS, PLATES, AND RELATED ITEMS.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP:			
<i>Materials/Parts</i>		<i>References</i>	
Fiber rope assembly (figure D-12, appx D)		TM 9-2350-304-24P-1	
Gasket			
Lockwasher (2)			
Lockwasher (8)			
Self-locking nut (3)			

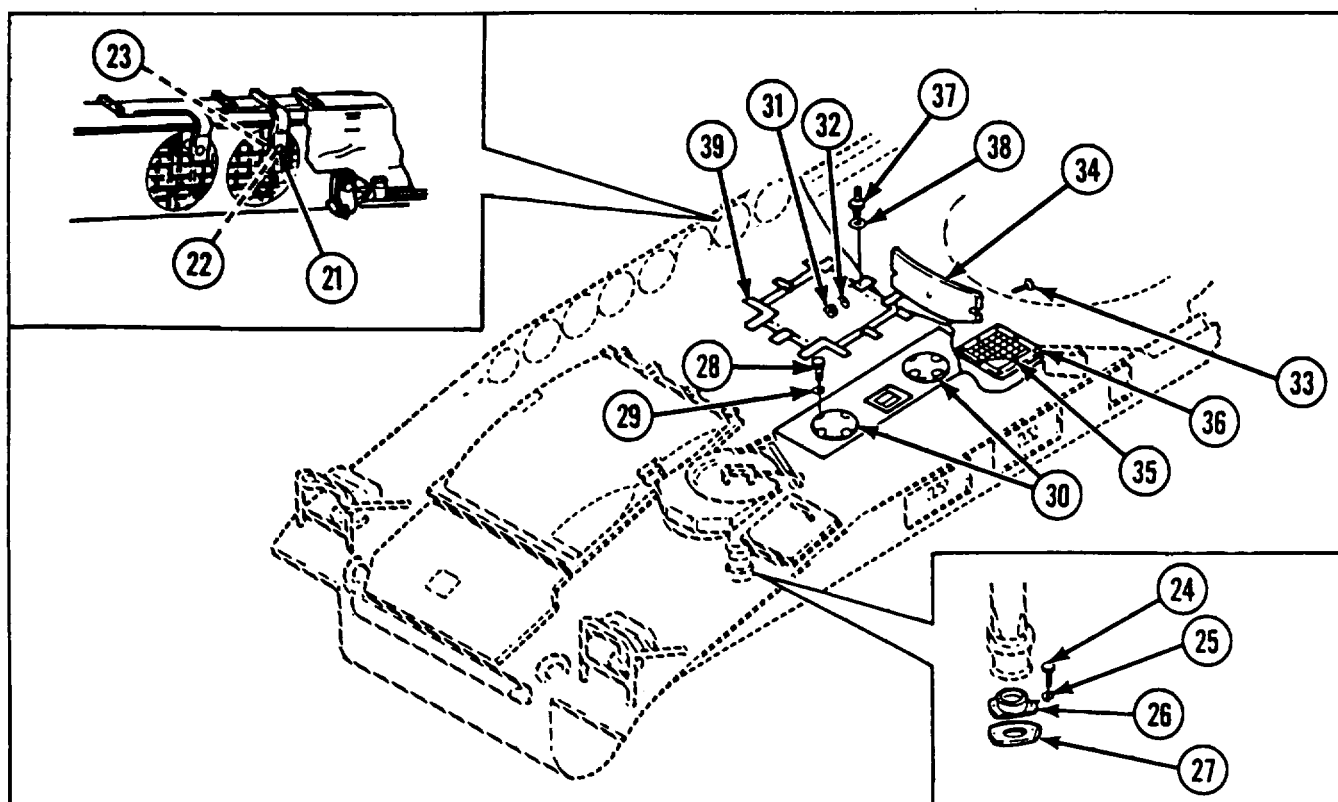
REMOVAL



- 1 Remove fiber rope assembly (1) from exhaust port cover (2) and exhaust cover assembly (3).
- 2 Unfasten three clasps (4) and fasten exhaust port cover (2) to rolled-up position.
- 3 Unfasten four clasps (5) and fasten exhaust cover assembly (3) to rolled-up position.
- 4 Remove two machine screws (6) and strap fastener loop (7) from vehicle.
- 5 Remove two hexagon head capscrews (8), two flat washers (9), and heater exhaust outlet cover plate (10). Reach through screen (11) and remove two heater outlet plate access covers (12).
- 6 Remove seven hexagon head capscrews (13), seven flat washers (14), and seven hull exhaust port cover brackets (15). Reach through screen (16) and remove seven port cover retaining bracket access covers (17).
- 7 Remove four hexagon head capscrews (18), four flat washers (19), and exhaust cover assembly (2). Reach through screen and remove four port cover retaining bracket plates (20).

2-188 MAINTENANCE OF HEATER INSTALLATION KIT-AIRTAKE COVERS, PLATES AND RELATED ITEMS (CONT).

REMOVAL (CONT)



- 8 Remove three hexagon head screw capsscrews (21), three flat washers (22), and exhaust port covers (3). Reach through screen and remove three port cover retaining bracket plates (23).
- 9 Remove two machine screws (24), two lockwashers (25), generator air intake (26), and generator air intake gasket (27) from inside of hull.
- 10 Remove eight hexagon head capscrews (28), eight lockwashers (29), and two battery compartment air intake port access covers (30).
- 11 Remove three self-locking nuts (31), three flat washers (32), three hexagon head capscrews (33), and air intake cover (34) from side of hull.

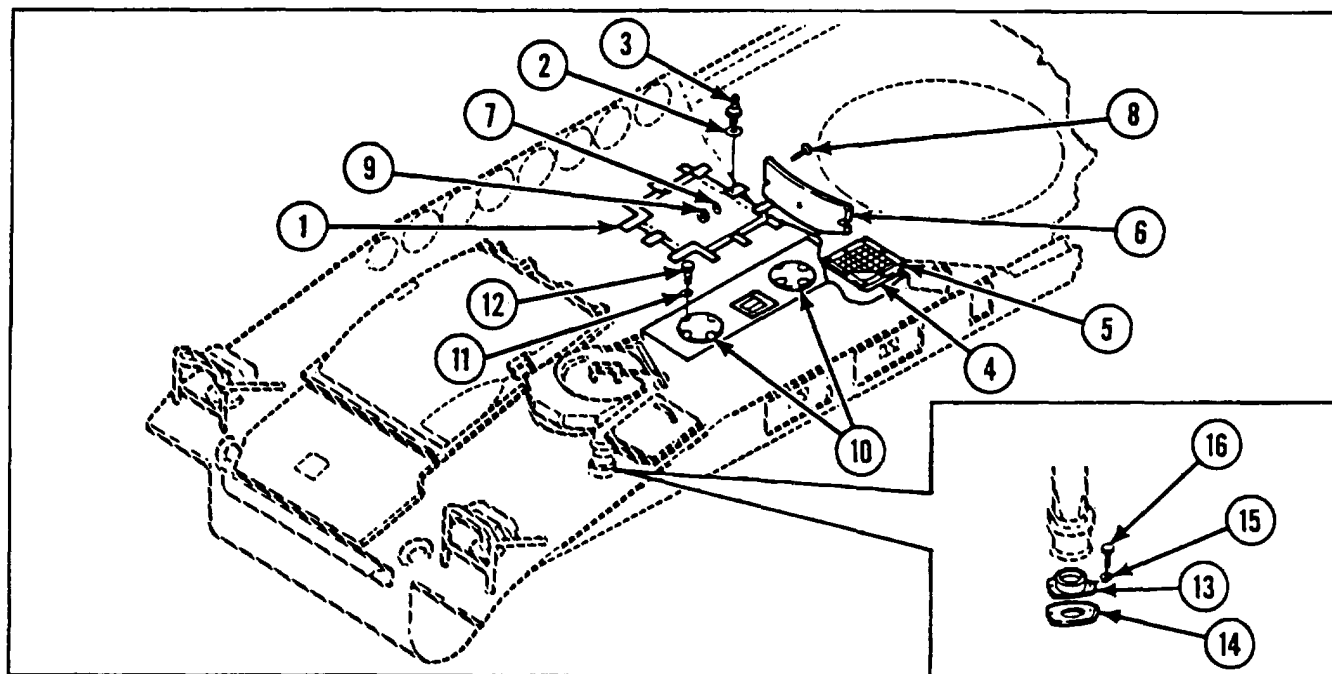
NOTE

Retain existing screws securing mechanical guard.

- 12 Remove eight screws (35) and mechanical guard (36).
- 13 Remove 12 snap fastener studs (37), 36 flat washers (38), and air intake grille radiator fabric cover (39) from vehicle.

INSPECTION/REPAIR

- 1 Inspect for broken, missing, or damaged parts.
- 2 Fiber rope assembly is a manufactured item, refer to appendix D.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install air intake grill radiator fabric cover (1) to vehicle, and secure with 36 flat washers (2) and 12 snap fastener studs (3).

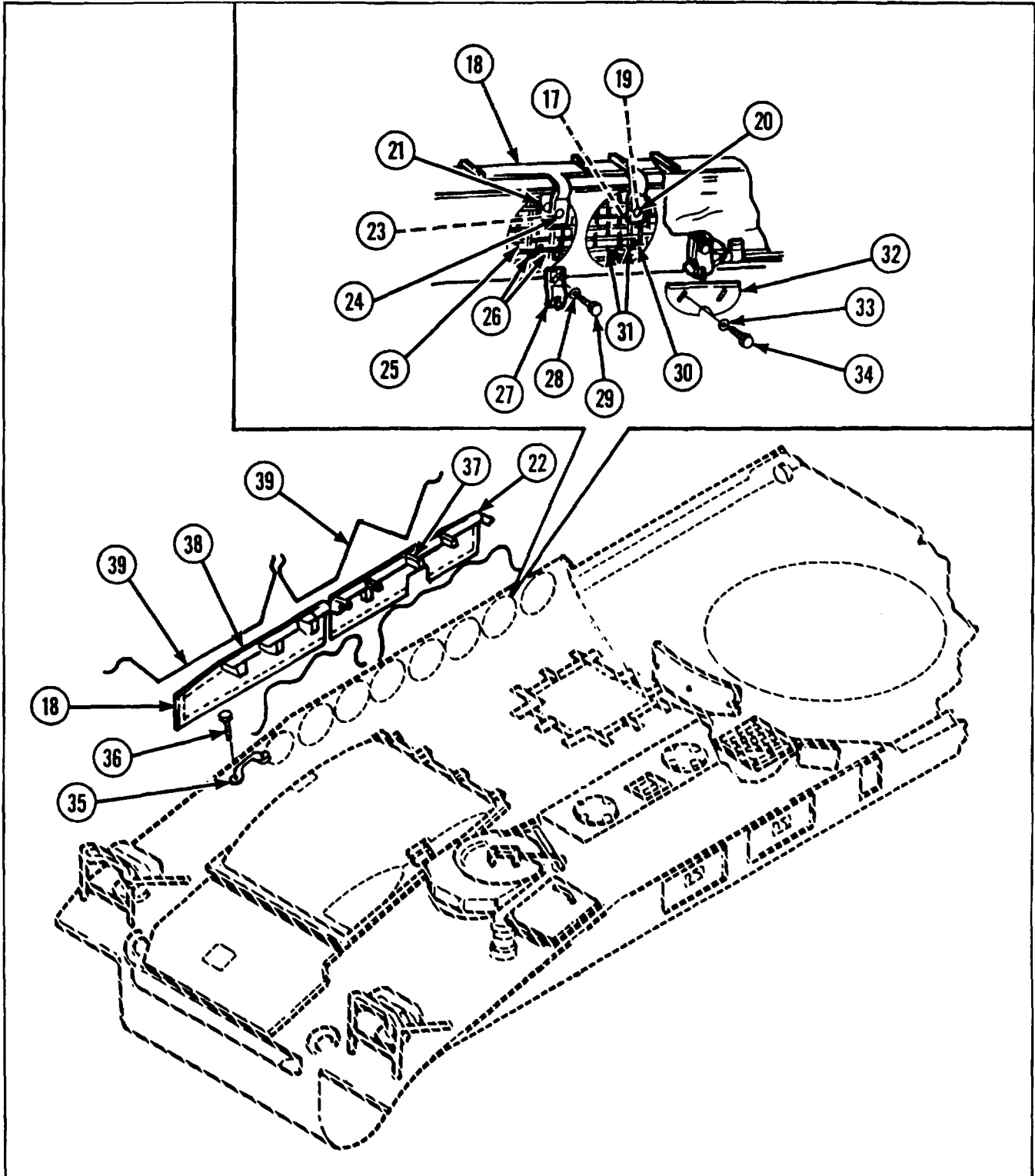
NOTE

Use screws retained during removal to secure mechanical guard to hull.

- 2 Install mechanical guard (4) to hull, and secure with eight screws (5).
- 3 Install air intake cover (6) to side of hull, and secure with three flat washers (7), three hexagon head capscrews (8), and three new self-locking nuts (9).
- 4 Install two battery compartment air intake port access covers (10), and secure with eight new lockwashers (11) and eight hexagon head capscrews (12).
- 5 Install new generator air intake gasket (13) to generator air intake (14). Install generator air intake, and secure with two new lockwashers (15) and two machine screws (16).

2-188. MAINTENANCE OF HEATER INSTALLATION KIT-AIR INTAKE COVERS, PLATES, AND RELATED ITEMS (CONT).

INSTALLATION (CONT)



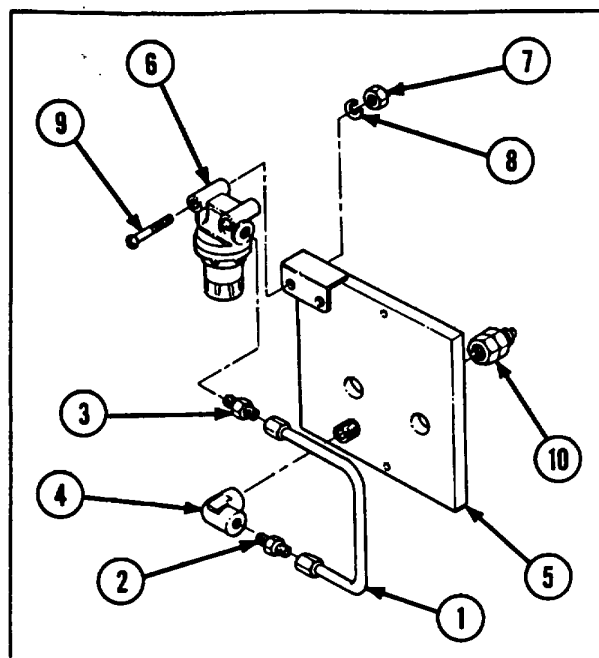
- 6 Reach through screen and install three port cover retaining bracket plates (17). Secure three port cover retaining bracket plates to exhaust port cover (18) with three flat washers (19) and three hexagon head capscrews (20).
- 7 Reach through screen and install four port cover retaining bracket plates (21). Secure four port cover retaining bracket plates to exhaust cover assembly (22), using four flat washers (23) and four hexagon head capscrews (24).
- 8 Reach through screen (25) and install seven port cover retaining bracket access covers (26). Install seven hull exhaust port cover brackets (27), and secure with seven flat washers (28) and seven hexagon head capscrews (29).
- 9 Reach through screen (30) and install two heater exhaust outlet plate access cover (31). Install two heater exhaust outlet cover plates (32), and secure with two flat washers (33) and two hexagon head capscrews (34).
- 10 Install strap fastener loop (35), and secure with two machine screws (36).
- 11 Pull exhaust cover assembly (22) down and fasten four clasps (37).
- 12 Pull exhaust port cover (18) down and fasten three clamps (38).
- 13 Secure exhaust port cover (18) and exhaust cover assembly (22) with fiber rope assembly (39).

2-189. MAINTENANCE OF FILTER MOUNTING FLUID FILTER (HEATER INSTALLATION KIT).

This task covers:	a. Removal	b. Inspection/Repair	c. Reassembly
INITIAL SETUP:			
<i>Materials/Parts</i>		<i>Equipment Conditions</i>	
Lockwasher (2)		2-978 Filter mounting fluid filter removed	
Self-locking nut (2)			
<i>References</i>			
TM 9-2350-304-24P-1			

2-189. MAINTENANCE OF FILTER MOUNTING FLUID (HEATER INSTALLATION KIT) (CONT).**DISASSEMBLY**

- 1 Remove metal tube assembly (1) from pipe straight adapter (2) and pipe straight adapter (3).
- 2 Remove pipe straight adapter (2) and pipe elbow (4) from plate (5).
- 3 Remove pipe straight adapter (3) from fluid filter (6).
- 4 Remove two self-locking nuts (7), two lockwashers (8), two machine screws (9), and fluid filter (6) from plate (5).
- 5 Remove pipe straight adapter (10) from plate 5.

**INSPECTION/REPAIR**

- 1 Inspect for broken, damaged, or missing parts.
- 2 If plate is broken or damaged, repair is by replacement of next higher assembly.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1) which do not meet inspection criteria.

REASSEMBLY

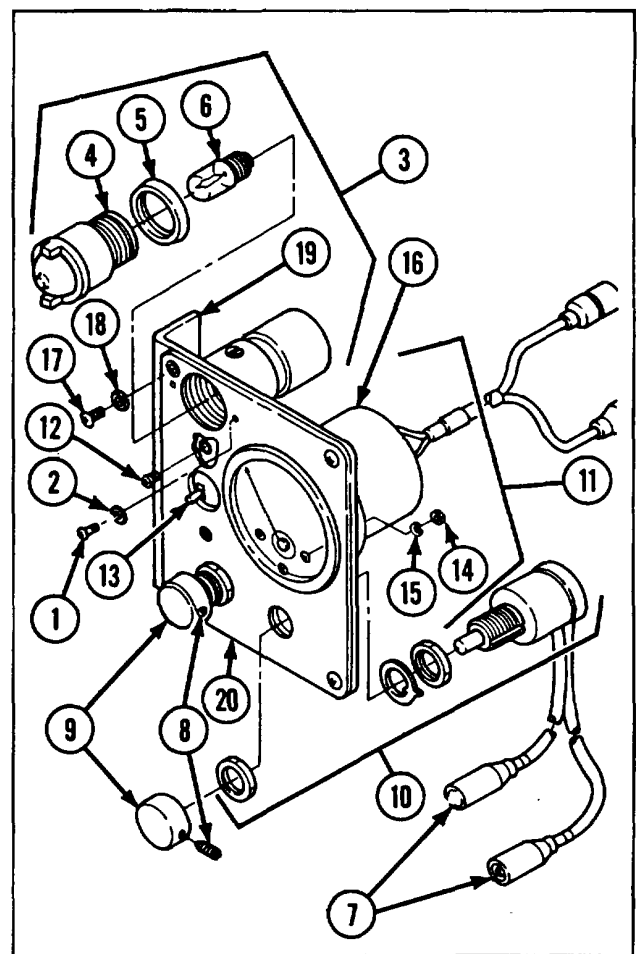
- 1 Install quick coupling half (10) on plate (5).
- 2 Install fluid filter (6), two machine screws (9), two new lockwashers (8), and two new self-locking nuts (7) on plate (5).
- 3 Install pipe straight adapter (3) on fluid filter (6).
- 4 Install pipe elbow (4) and pipe straight adapter (2) on plate (5).
- 5 Install metal tube assembly (1) on pipe straight adapter (2) and pipe straight adapter (3).

2-190. MAINTENANCE OF PYROMETER PANEL ASSEMBLY AND INDICATOR LIGHT (HEATER INSTALLATION KIT).

This task covers:			
a.	b.	c.	
Removal	Inspection/Repair	Reassembly	
INITIAL SETUP:			
<i>Materials/Parts</i>		<i>Equipment Conditions</i>	
Lockwasher (3)		2-991 Pyrometer panel assembly	
Lockwasher (6)		removed	
Performed packing			
<i>References</i>			
TM 9-2350-304-24P-1			

DISASSEMBLY

- 1 Remove two machine screws (1), two lockwashers (2), and indicator light (3) from panel assembly.
- 2 Remove light lens (4), warning light performed packing (5), and incandescent lamp (6).
- 3 Disconnect electrical leads (7), and remove four setscrews (8), two knobs (9) and two push switch assemblies (10) from pyrometer panel assembly (11).
- 4 Remove two machine screws (12) and toggle switch (13) from pyrometer panel assembly (11).
- 5 Remove three hexagon plain nuts (14), three lockwashers (15), and indicating pyrometer (16) from pyrometer panel assembly (11).
- 6 Remove four machine screws (17), four lockwashers (18), pyrometer bracket (19), and identification plate (20) from pyrometer panel assembly (11).



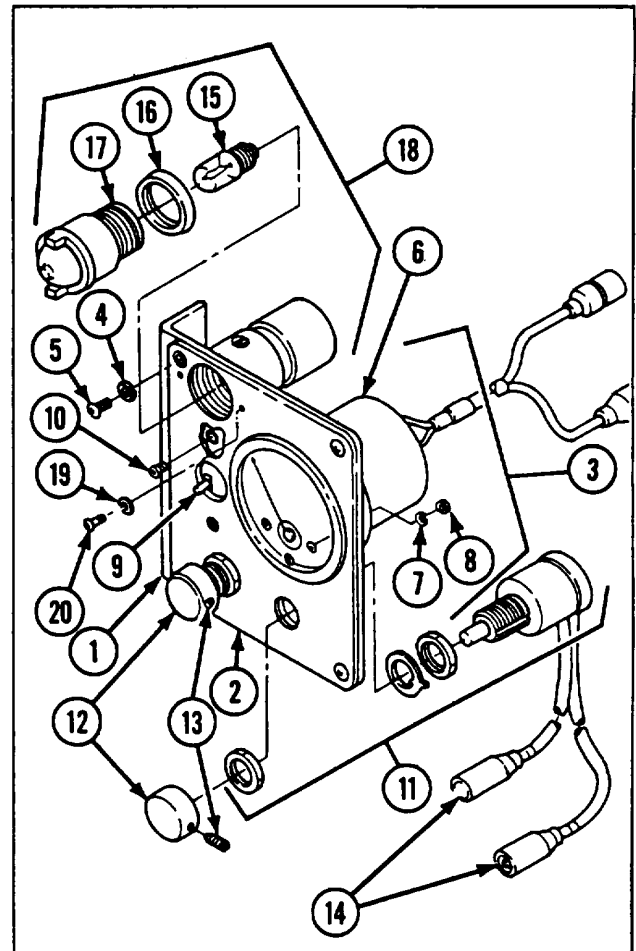
2-190. MAINTENANCE OF PYROMETER PANEL ASSEMBLY AND INDICATOR LIGHT (HEATER INSTALLATION KIT) (CONT).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 For repair of push switch shell connectors, refer to general maintenance, page 2-364.
- 3 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 4 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

- 1 Install pyrometer bracket (1) and identification plate (2) to pyrometer pane assembly (3), and secure with four new lockwashers (4) and four machine screw (5).
- 2 Install indicating pyrometer (6) to pyrometer panel assembly (3), and secure with three new lockwashers (7) and three hexagon plain nuts (8).
- 3 Install toggle switch (9) to pyrometer par assembly (3), and secure with two machine screws (10).
- 4 Install two push switch assemblies (11), two knobs (12), and four setscrews (13) pyrometer panel assembly (3). Connect electrical leads (14) to push switch assembly connectors.
- 5 Install incandescent lamp (15), new warning light performed packing (16), and light lens (17) in indicator light (18).
- 6 Install indicator light (18) to pyrometer panel assembly (3), and secure with two new lockwashers (19) and two machine screws (20).



2-191. MAINTENANCE OF HEATER ELECTRICAL CONTROL BOX (HEATER INSTALLATION KIT).

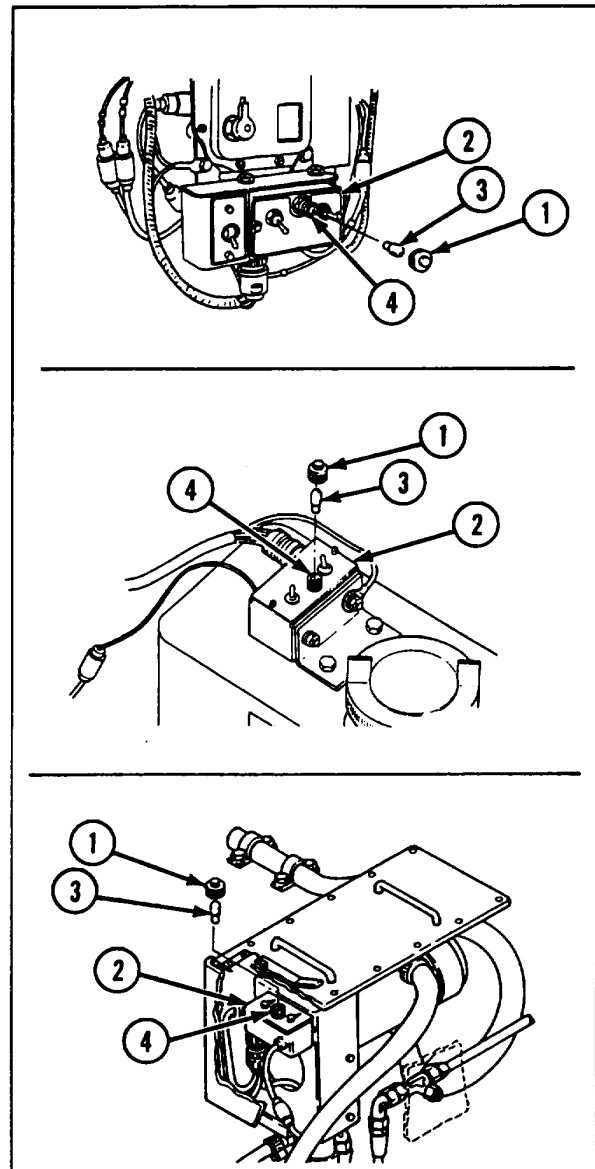
This task covers:	a. Removal	b. Inspection/Repair	c. Reassembly
INITIAL SETUP:			
<i>Materials/Parts</i>	<i>References</i>		
Silicone compound (item 39, appx C)	TM 9-2350-304-24P-1		
Incandescent lamp			

DISASSEMBLY

NOTE

There are three heaters in the heater installation kit, and each has a heater electrical control box. The following steps are written for one electrical control box, and illustrated for all three.

Unscrew lens (1) from heater electrical control box (2) and remove incandescent lamp (3).



INSPECTION/REPAIR

- 1 Check for broken, damaged, or missing parts.
- 2 For further disassembly of heater electrical control box, notify direct support maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

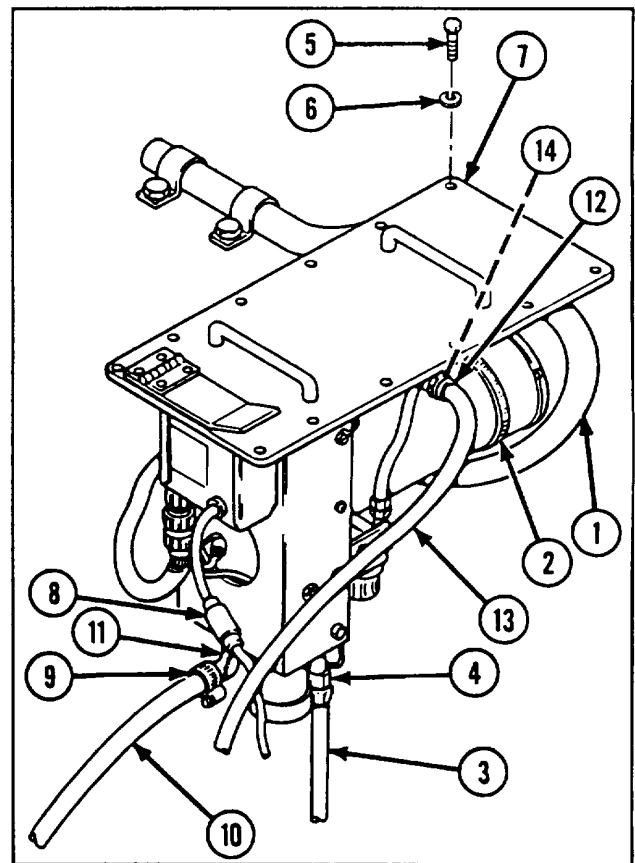
Lightly apply silicone compound to lamp socket (4) and install new incandescent lamp (3). Screw lens (1) securely on heater electrical control box (2).

2-192. MAINTENANCE OF ENGINE COOLANT HEATER AND COOLANT HEATER ASSEMBLY BRANCHED WIRING HARNESS (HEATER INSTALLATION KIT).

This task covers:	a. Removal	b. Inspection/Repair	c. Reassembly
INITIAL SETUP:			
<p>Materials/Parts</p> <ul style="list-style-type: none"> Adhesive (Item 5, appx C) Electrical cable (figure D-1, appx D) Gasket Lockwasher (2) Lockwasher (11) Preformed packing Rubber hose (figure D-17, appx D) Self-locking nut (4) Self-locking nut (4) Strainer element TM 9-2350-304-24P-1 	<p>Equipment Conditions</p> <ul style="list-style-type: none"> MASTER power switch and instrument switch in OFF position Fuel supply valve at fuel tank in OFF position 2-1008 Exhaust port cover removed 2-893 Transmission deck lid removed 2-887 Engine deck assembly removed 2-962 Coolant heater shield removed 		

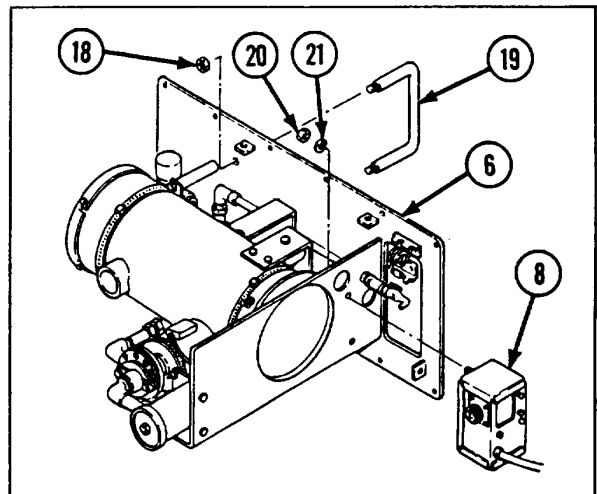
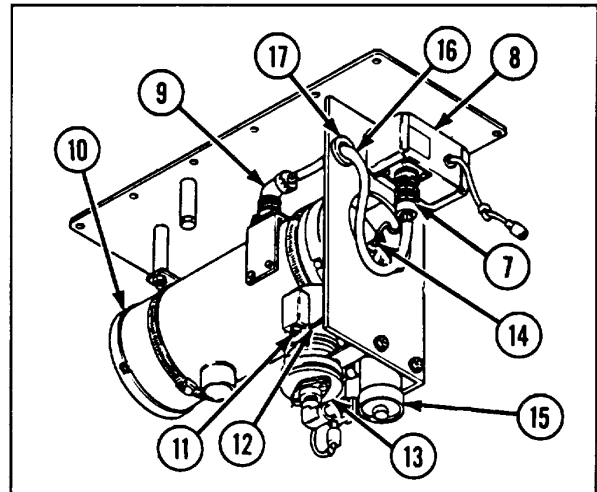
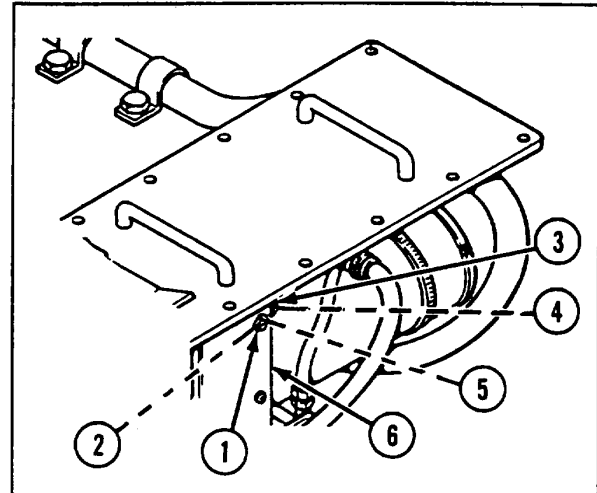
REMOVAL

- 1 Disconnect exhaust tube (1) from engine coolant heater (2).
- 2 Disconnect nonmetallic hose assembly from electrical fuel pump pipe to hose elbow (4).
- 3 Remove 12 screws (5) and 12 washers from coolant heater mounting plate (7).
- 4 Lift engine coolant heater (2) from hull support.
- 5 Disconnect coolant heater control box electrical connector (8).
- 6 Loosen hose clamp (9) and disconnect hose (10) from centrifugal pump unit (1)
- 7 Loosen hose clamp (12) and disconnect hose (13) from pipe to hose elbow (14).



DISASSEMBLY

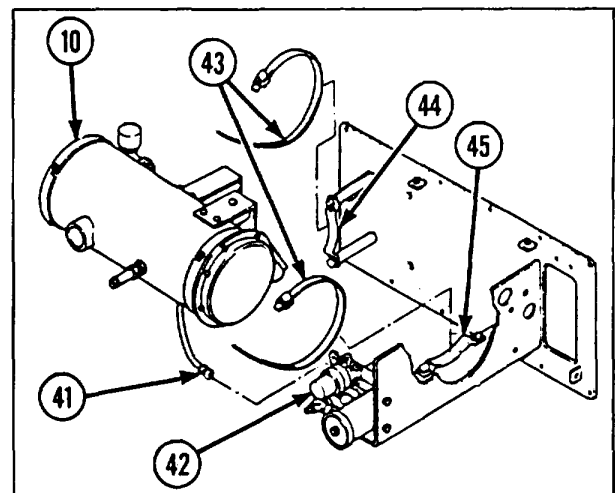
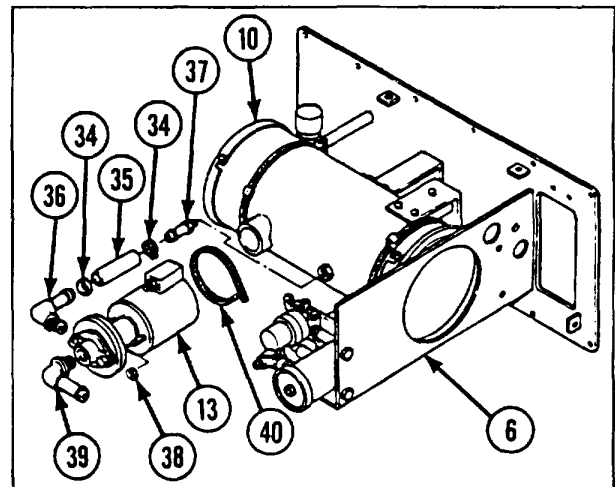
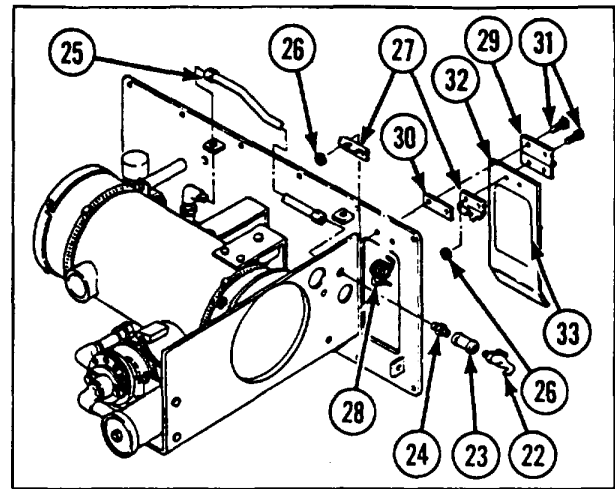
- 1 Remove hexagon plain nut (1), lockwasher (2), electrical lead (3), lockwasher (4), and hexagon head capscrew (5) from coolant heater mounting plate (6).
- 2 Disconnect electrical plug connector (7) from heater electrical control box (8).
- 3 Disconnect electrical plug connector (9) from coolant heater assembly (10).
- 4 Remove nut (11) and disconnect lead (12) from centrifugal pump unit (13).
- 5 Disconnect coolant heater assembly branched wiring harness shell connector (14) from electrical fuel pump (15).
- 6 Remove coolant heater assembly branched wiring harness (16) and nonmetallic grommet (17).
- 7 Remove four self-locking nuts (18) and two service repair coolant heater assembly bow handles (19) from coolant heater mounting plate (6).
- 8 Remove two hexagon plain nuts (20), two lockwashers (21), and heater electrical control box (8).



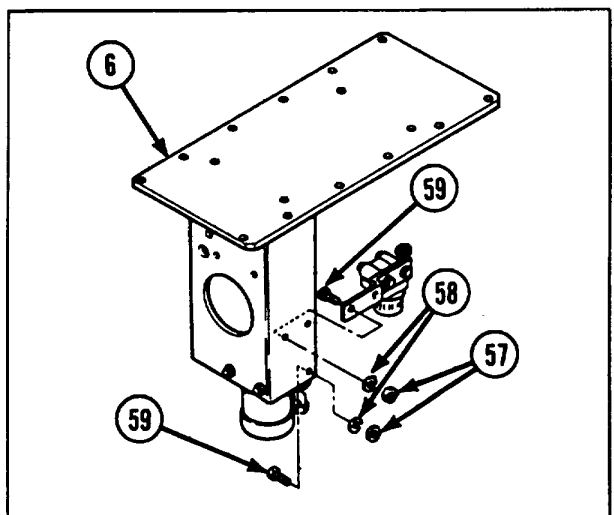
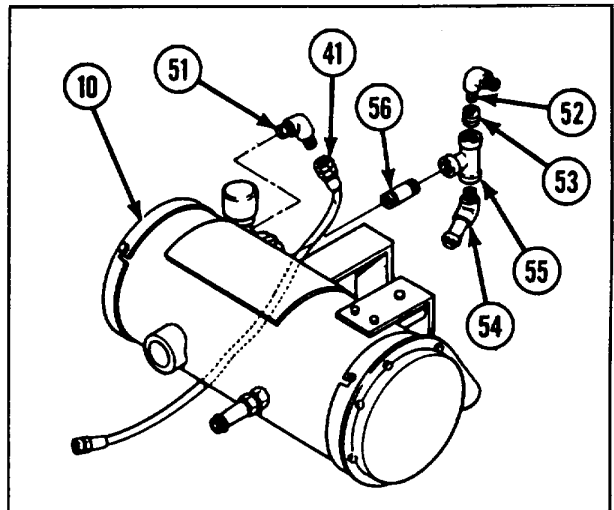
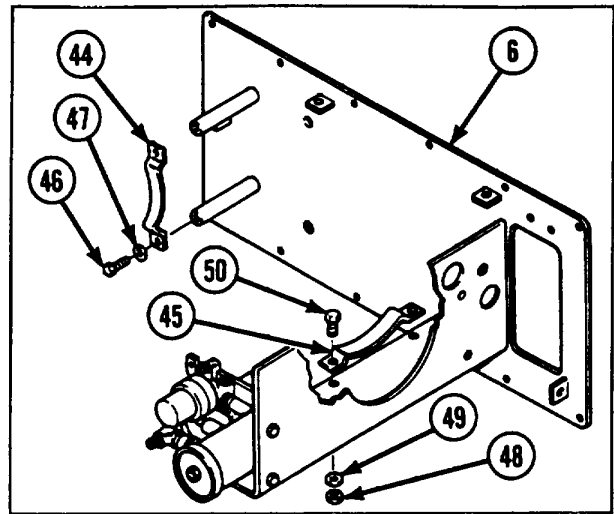
2-192. MAINTENANCE OF ENGINE C ASSEMBLY BRANCHED WIRII (CONT).

DISASSEMBLY (CONT)

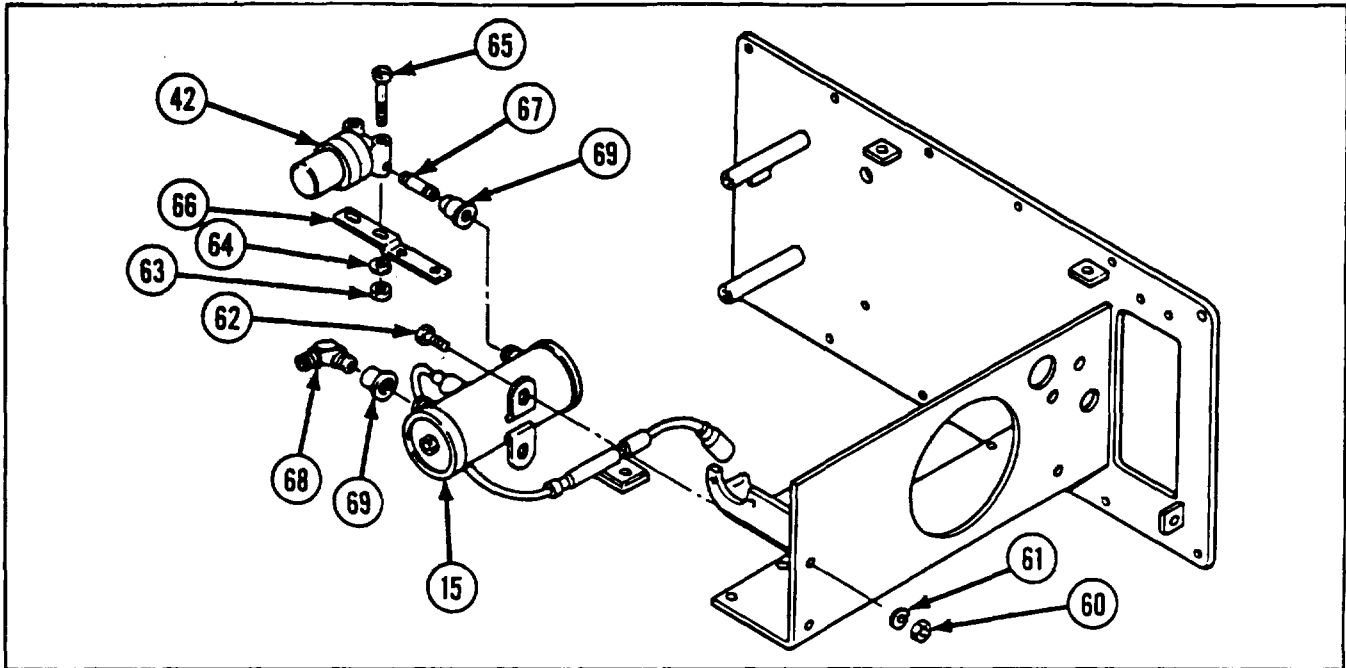
- 9 Remove drain cock (22), pipe coupling (23), pipe straight adapter (24), and me tube assembly (25).
- 10 Remove four self-locking nuts (26), two heater control box cover spring retainer (27), torsion heater control box cover helical spring (28), coolant heater control box cover butt hinge (29), heater control box cover hinge plate (30), four machine screws (31), and access cover (32).
- 11 If damaged, remove coolant heater instruction plate (33) from access cover (32).
- 12 Remove two hose clamps (34) and rubber hose (35) from engine coolant heater (1 and pipe to hose elbow (36). Remove pipe to tube straight adapter (37) from coolant heater assembly (10).
- 13 Remove two nuts (38) and centrifugal pump unit (13) from coolant heater mounting plate (6).
- 14 Remove two pipe to hose elbows (36 a 39) and hose clamp (40).
- 15 Disconnect fuel filter to regulator nonmetallic hose assembly (41) from filter (42).
- 16 Disconnect two hose clamps (43) and remove coolant heater assembly (10). Remove two hose clamps (43) from two heater mounting brackets (44 and 45).



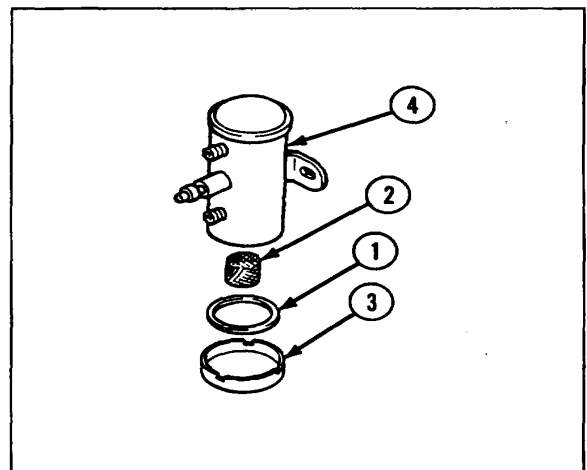
- 17 Remove two hexagon head capscrews (46), two lockwashers (47), and heater mounting bracket (44) from coolant heater mounting plate (6).
- 18 Remove hexagon plain nut (48), lockwasher (49), hexagon head capscrew (50), and heater mounting bracket (45) from coolant heater mounting plate (6).
- 19 Remove fuel filter to regulator nonmetallic hose assembly (41) and pipe to tube elbow (51).
- 20 Remove pipe to tube elbow (52), pipe bushing (53), pipe to hose elbow (54), pipe tee (55), and pipe nipple (56) from coolant heater assembly (10).
- 21 Remove three hexagon plain nuts (57), three lockwashers (58), and three hexagon head capscrews (59) from coolant heater mounting plate (6).



2-192. MAINTENANCE OF ENGINE COOLANT HEATER AND COOLANT HEATER ASSEMBLY BRANCHED WIRING HARNESS (HEATER INSTALLATION KIT) (CONT).



- 22 Remove two hexagon plain nuts (60), two lockwashers (61), two hexagon head capscrews (62), and electrical fuel pump (15) with fluid filter (42).
- 23 Remove two hexagon plain nuts (63), two lockwashers (64), two machine screws (65), and heater bracket (66) from fluid filter (42).
- 24 Remove fluid filter (42), pipe nipple (67), pipe to tube elbow (68) and two pipe reducers (69), from electrical pump.
- 25 Remove fuel pump cover (70), strainer element (71), and gasket (72) from fuel pump housing (73).



INSPECTION/REPAIR

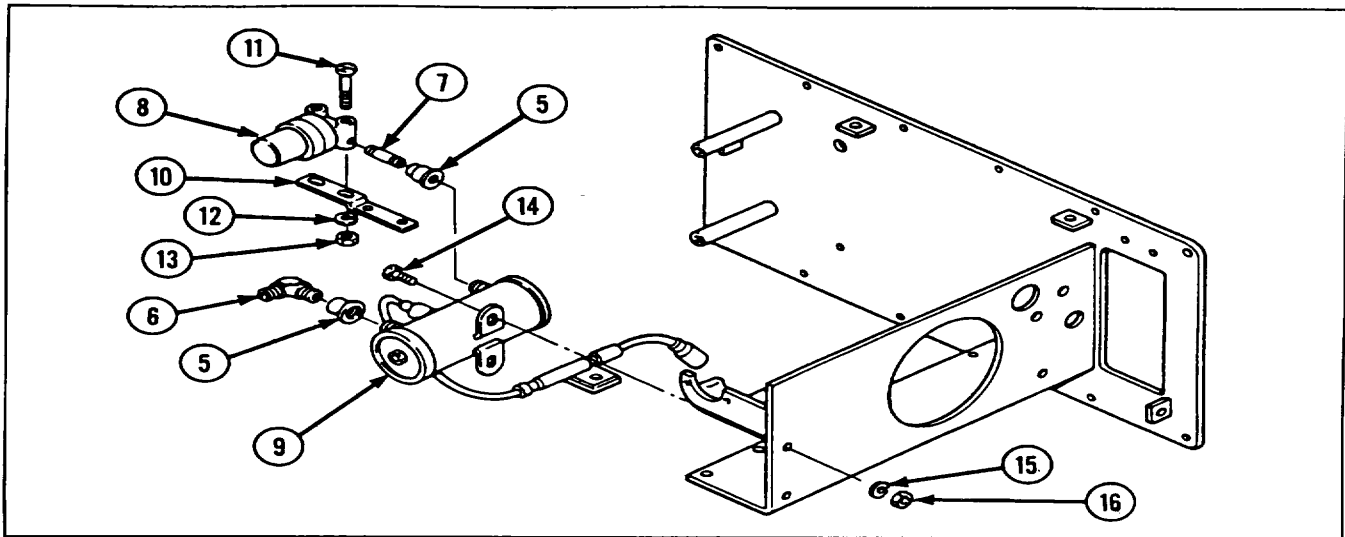
- 1 Inspect for broken, damaged, or missing parts.
- 2 If damaged or missing, replace wiring harness marker bands. Etch or stamp lead number on new band.
- 3 For repair of wiring harness shell connectors and cable terminals, refer to general maintenance, page 2-364
- 4 If damaged or missing, replace nonmetallic bushings on coolant heater assembly branched wire harness.
- 5 Heater electrical control box is a repairable assembly. Notify direct support maintenance.
- 6 Coolant heater assembly is a repairable assembly. Notify direct support maintenance.
- 7 If fuel pump cover or fuel pump housing is broken or damaged, repair is by replacement of next higher assembly.
- 8 Rubber hose and electrical wire are manufactured items. Refer to appendix D.
- 9 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1) which do not meet inspection criteria.

REASSEMBLY

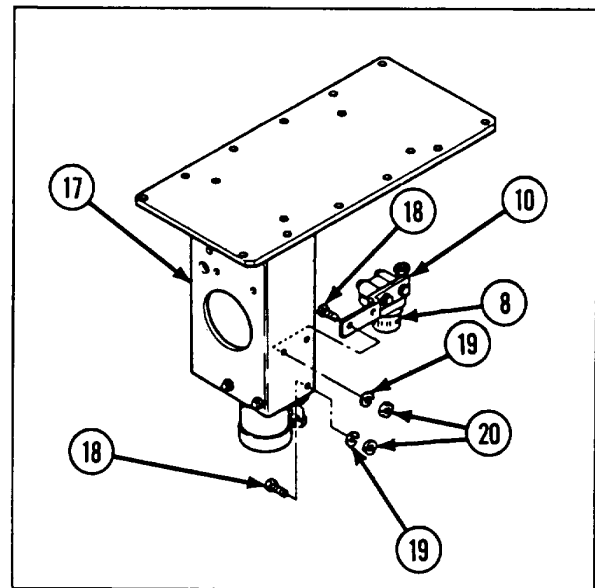
- 1 Install new gasket (1), new strainer element (2), and fuel pump cover (3) on fuel pump housing (4).

2-192. MAINTENANCE OF ENGINE COOLANT HEATER AND COOLANT HEATER ASSEMBLY BRANCHED WIRING HARNESS (HEATER INSTALLATION KIT) (CONT).

REASSEMBLY (CONT)

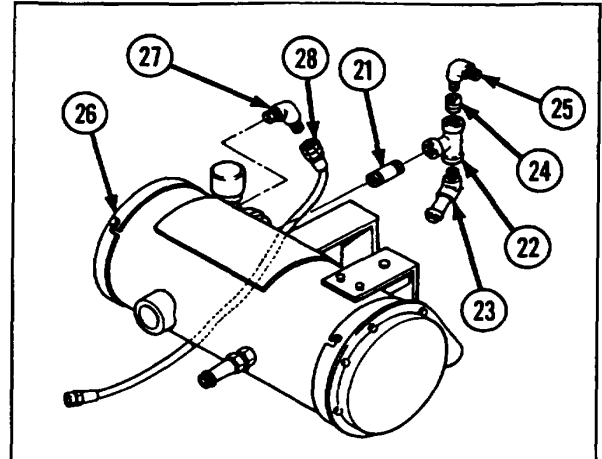


- 2 Install two pipe reducers (5), pipe to tube elbow (6), pipe nipple (7), and fluid filter (8) on electrical fuel pump (9).
- 3 Install heater bracket (10), two machine screws (11), two new lockwashers (12), and two hexagon plain nuts (13) on fluid filter (8).
- 4 Install electrical fuel pump (9) with fluid filter (8), and secure with two hexagon head capscrews (14), two new lockwashers (15), and two hexagon plain nuts (16).
- 5 Install heater bracket (10) with fluid filter (8) on coolant heater mounting plate (17). Secure with two hexagon head capscrews (18), two new lockwashers (19), and two hexagon plain nuts (20).



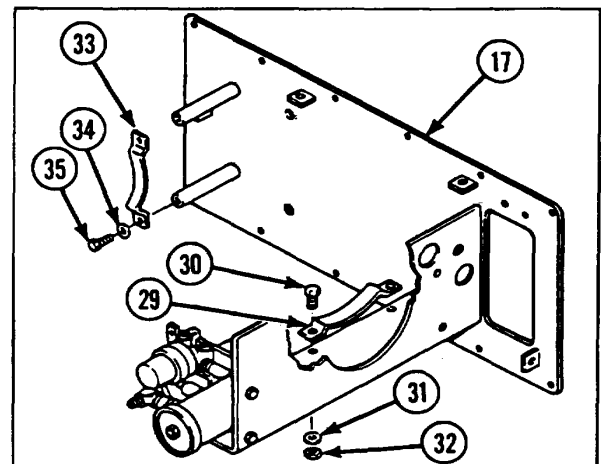
6 Install pipe nipple (21), pipe tee (22), pipe to hose elbow (23), pipe bushing (24) pipe to tube elbow (25) on coolant he assembly (26).

7 Install pipe to tube elbow (27) and fuel filter to regulator nonmetallic hose assembly (28).



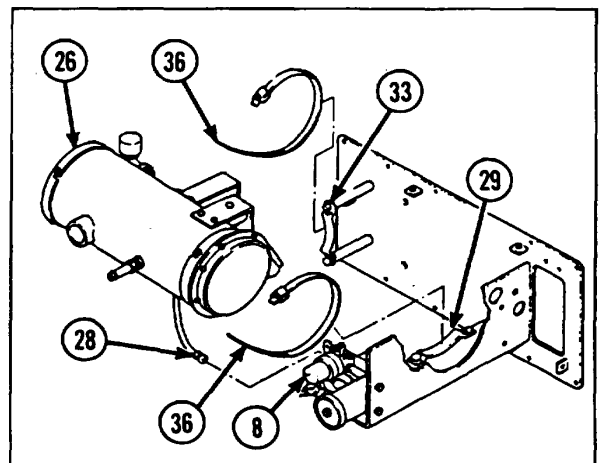
8 Install heater mounting bracket (29) to coolant heater mounting plate (17), and secure with hexagon head capscrew (30) new lockwasher (31), and hexagon plain nut (32).

9 Install heater mounting bracket (33) to coolant heater mounting plate (17), and secure with two new lockwashers (34) two hexagon head capscrews (35).



10 Install two hose clamps (36) to two heater mounting brackets (29 and 33). Install coolant heater assembly (26), securing. with two hose clamps.

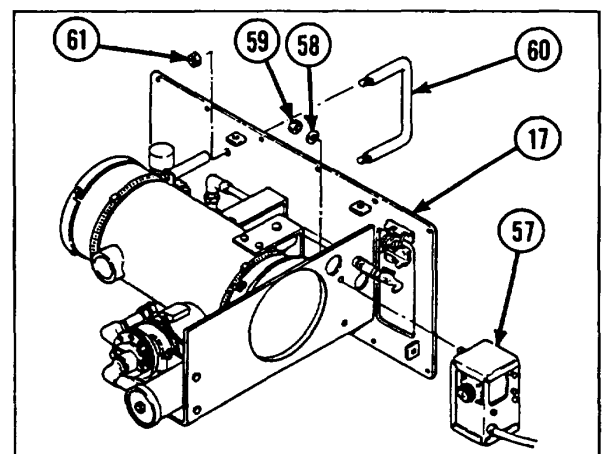
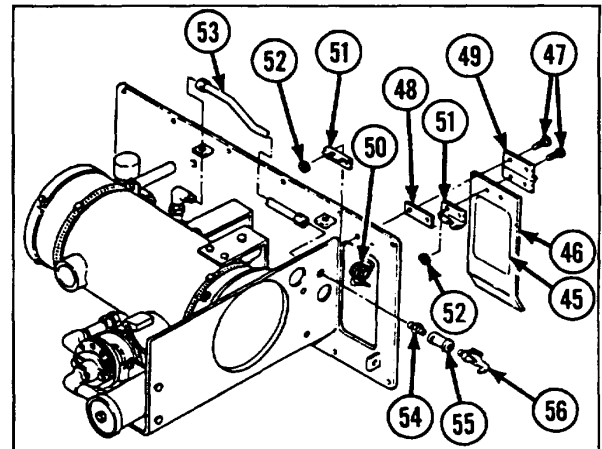
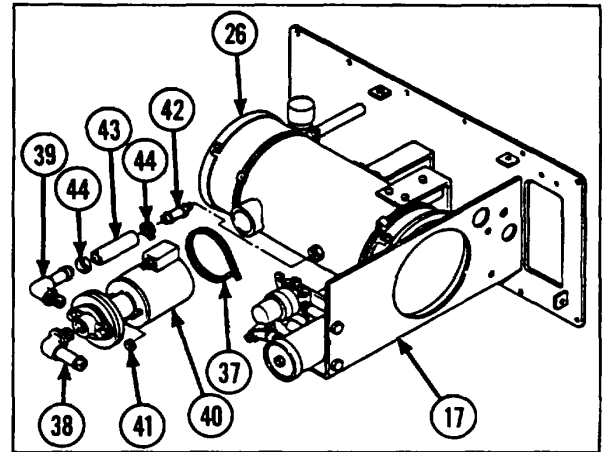
11 Connect fuel filter to regulator nonmetallic; hose assembly (28) to fluid filter (8).

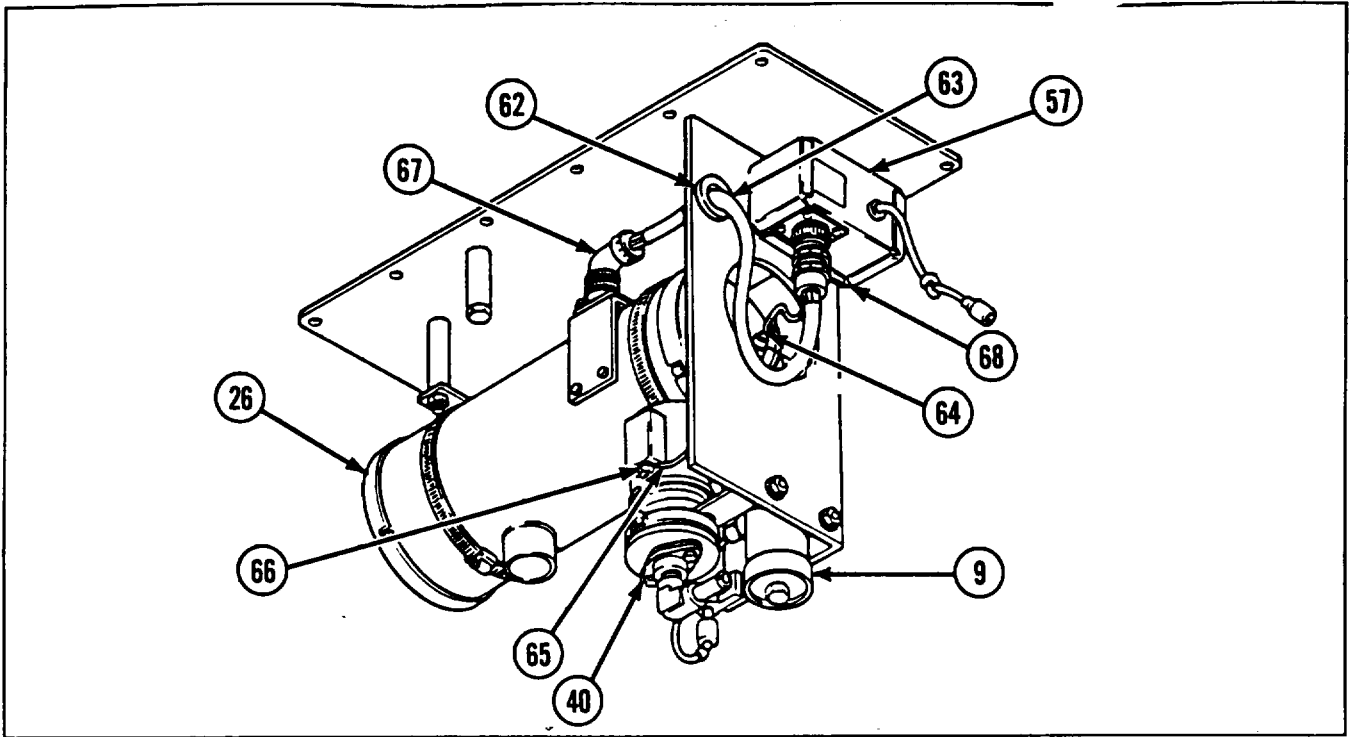


2-192. MAINTENANCE OF ENGINE CC ASSEMBLY BRANCHED WIRE (CONT). REASSEMBLY (CONT)

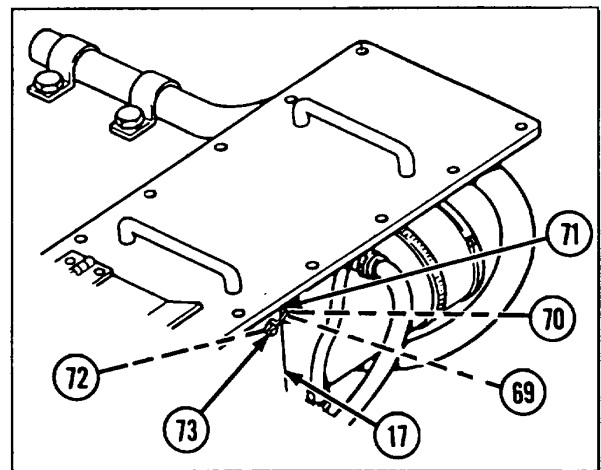
REASSEMBLY (CONT)

- 12 Install hose clamp (37) and two pipe to hose elbows (38 and 39).
- 13 Install centrifugal pump unit (40) to coolant heater mounting plate (17), and secure with two nuts (41).
- 14 Install pipe to tube straight adapter (42) coolant heater assembly (26). Install rubber hose (43) and two hose clamps (44) to pipe to hose elbow (39) and coolant heater assembly.
- 15 If removed, install coolant heater instruction plate (45) to access cover (46) with adhesive.
- 16 Install access cover (46), and secure with four machine screws (47). Install heater control box cover hinge plate (48), coolant heater control box cover butt hinge (49), torsion heater control box cover helical spring (50), two heater control box cover spring retainers (51), and four new self-locking nuts (52).
- 17 Install metal tube assembly (53), pipe straight adapter (54), pipe coupling (55), and drain cock (56).
- 18 Install coolant heater control box (57), and secure with two new lockwashers (58) and two hexagon plain nuts (59).
- 19 Install two service repair engine coolant heater bow handles (60) to coolant heater mounting plate (17), and secure with four new self-locking nuts (61).





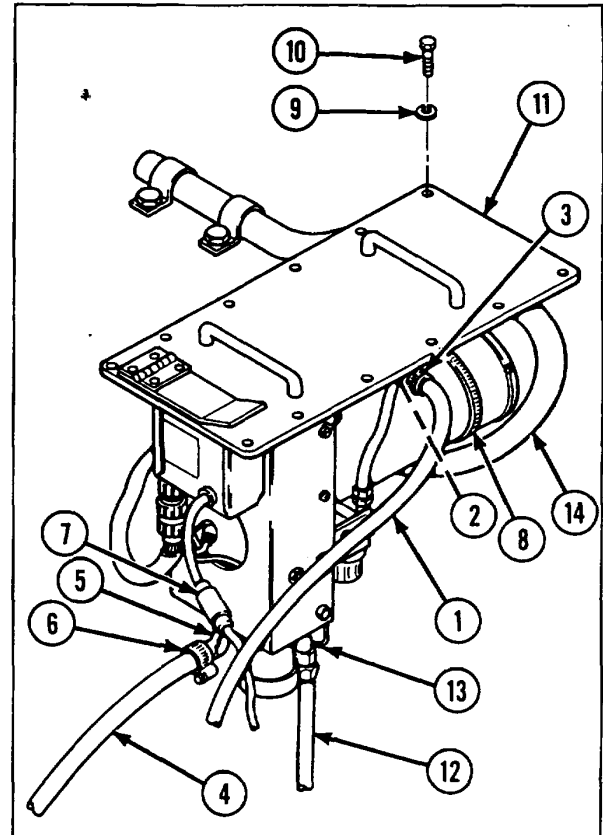
- 20 Install nonmetallic grommet 962) and coolant heater assembly branched wiring harness (63).
- 21 Connect coolant heater assembly branched wiring harness shell connector (64) to electrical fuel pump (9).
- 22 Connect lead (65) to centrifugal pump unit (40), and secure with nut (66).
- 23 Connect electrical plug connector (67) to coolant heater assembly (26).
- 24 Connect electrical plug connector (68) to coolant heater control box (57).
- 25 Install hexagon head capscrew (69), new lockwasher (70), electrical lead (71), new lockwasher (72), and hexagon plain nut (73) on coolant heater mounting plate (17).



2-192. MAINTENANCE OF ENGINE COOLANT HEATER AND COOLANT HEATER ASSEMBLY BRANCHED WIRING HARNESS (HEATER INSTALLATION KIT (CONT)).

INSTALLATION

- 1 Connect hose (1) to pipe to hose elbow (2), and tighten hose clamp (3).
- 2 Connect hose (4) to centrifugal pump unit (5), and tighten hose clamp (6).
- 3 Connect coolant heater control box electrical connector (7).
- 4 Lower coolant heater assembly (8) into hull.
- 5 Install 12 washers (9) and 12 screws (10) to coolant heater mounting plate (11).
- 6 Connect nonmetallic hose assembly (12) to electrical fuel pump pipe to hose elbow (13).
- 7 Connect exhaust tube (14) to coolant heater assembly (8).

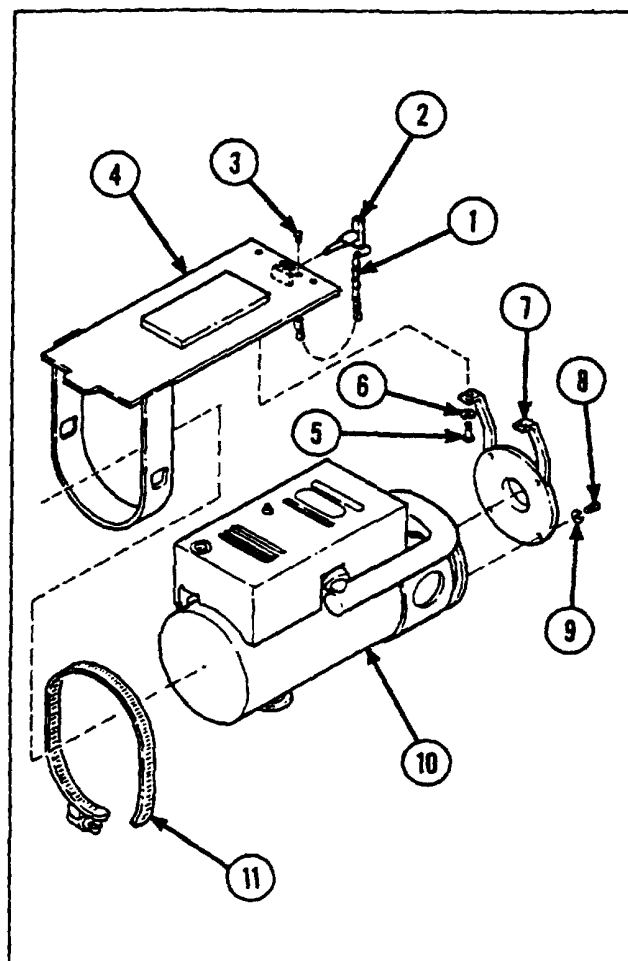


2-193. MAINTENANCE OF VEHICULAR HEATER (DRIVER'S COMPARTMENT)(HEATER INSTALLATION KIT).

This task covers:	a. Removal	b. Inspection/Repair	c. Reassembly
INITIAL SETUP:			
<i>Materials and Parts</i>			
Lockwasher (2)			
Lockwasher (3)			
Weldless chain (figure D-11, appx D)			
<i>References</i>			
TM 9-2350-304-24P-1			
<i>Equipment Condition</i>			
2-962 Vehicular heater removed			

REMOVAL

1. If damaged, remove weldless chain (1) from quick release pin (2).
2. If damaged, remove solid rivet (3) and quick release pin (2) from mounting bracket (4)..
3. Remove two hexagon head capscrews (5), lockwashers (6), and nonrotating eye bracket (7) from mounting bracket (4).
4. Remove three machine screws (8), three lockwashers (9), and nonrotating eye bracket (7) from vehicular heater (10).
5. Remove hose clamp (11) and vehicular heater (10) from mounting bracket (4).



INSPECTION/REPAIR

1. Inspect for broken, damaged, or missing parts.
2. Weldless chain is a manufactured item, refer to appendix D.
3. Repair is by replacement of authorized parts (TM 9-2350-304-24P-1)

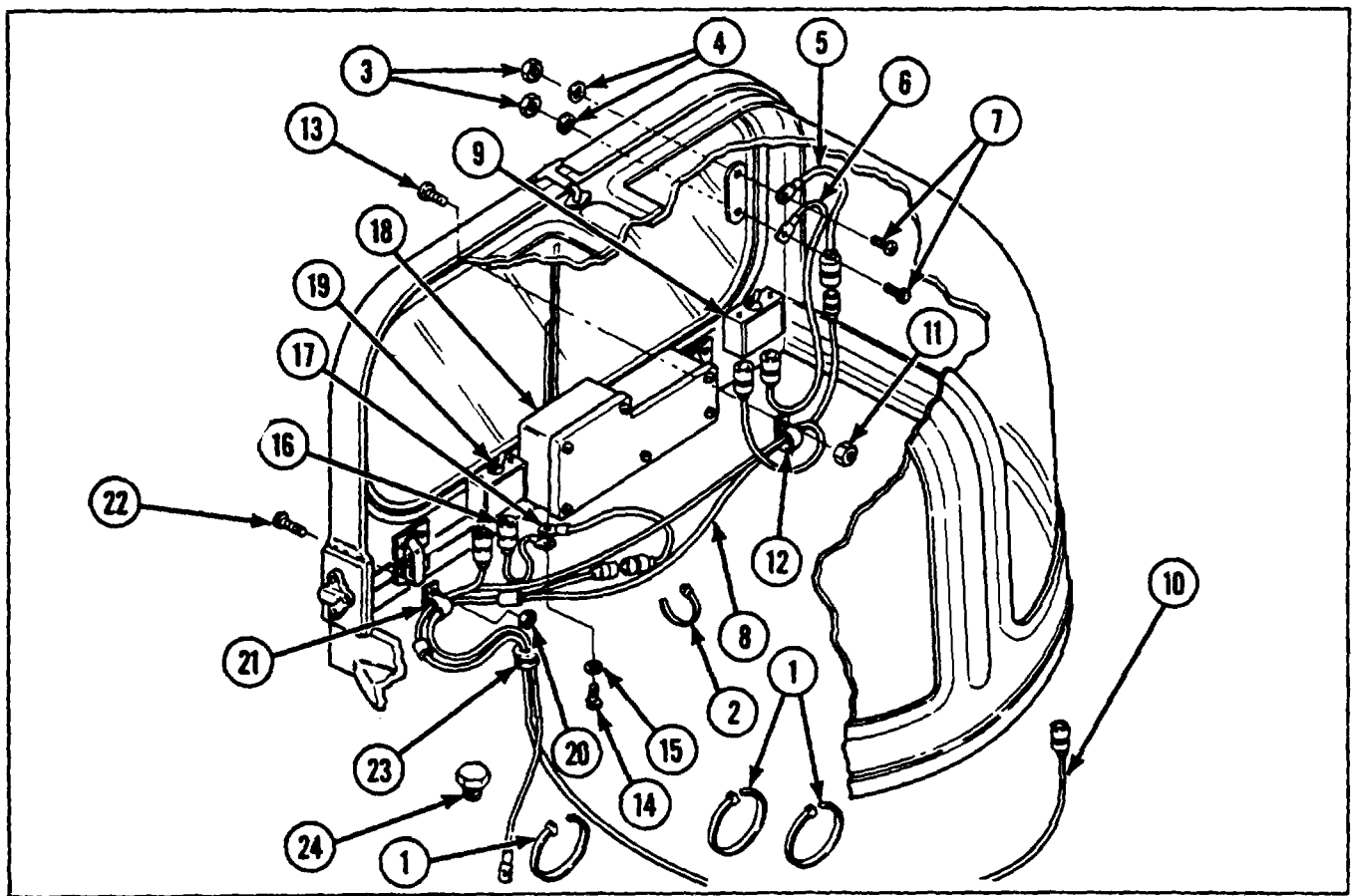
INSTALLATION

1. Install vehicular heater (10) and hose clamps (11) to mounting bracket (4).
2. Install nonrotating eye bracket (7), three new lockwashers (9), and three machine screw (8) on vehicular heater (10).
3. Install two new lockwashers (6), two hexagon head capscrews (5), and nonrotating eye bracke (7) on mounting bracket (4),
4. If removed, install quick release pin (2) and new solid rivet (3) to mounting bracket (4).
5. If removed, install new weldless chain (1) on quick release pin (2).

2-194. MAINTENANCE OF DRIVER'S WINDSHIELD ENCLOSURE KIT-ELECTRICAL WIRING AND ENCLOSURE.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP			
<p><i>Materials/parts</i></p> <ul style="list-style-type: none"> Electrical wire (figure D-1, appx D) Insulation sleeving (figure D-19, appx D) Lockwasher (4) in Lockwasher (6) Self-locking nut (6) 	<p>General Safety Instructions</p> <p>WARNING</p> <p>Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p>		
<p>References</p> <ul style="list-style-type: none"> TM 9-2350-304-24P-1 			
<p>Equipment Conditions</p> <ul style="list-style-type: none"> Master power switch OFF 2-624 Batteries disconnected 			

REMOVAL



WARNING

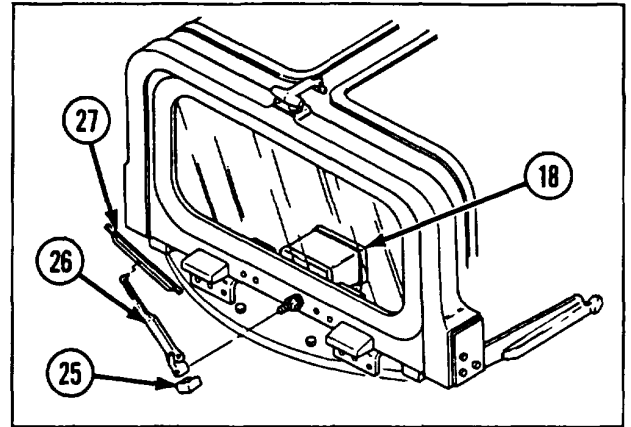
Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1** Remove three marker bands (1) and tiedown strap (2).
- 2** Remove two hexagon plain nuts (3), two lockwashers (4), defroster ground lead disconnects electrical lead (5), disconnect defroster to switch lead disconnects electrical lead (6), and two machine screws (7) from windshield.
- 3** Disconnect defroster ground lead disconnects electrical lead (5) from wiper motor and defroster lead disconnects electrical lead assembly (8).
- 4** Disconnect defroster to switch lead disconnects electrical lead (6) from toggle switch (9).
- 5** Disconnect circuit breaker to wiper motor and defroster switch electrical lead assembly (10) from toggle switch (9) and circuit breaker.
- 6** Remove self-locking nut (11), loop clamp (12), and machine screw (13).
- 7** Remove machine screw (14), lockwasher (15), wiper motor to switch electrical lead (16), and defroster ground lead disconnects electrical lead (17) from windshield wiper motor assembly (18).
- 8** Disconnect defroster ground lead disconnects electrical lead (17) from wiper motor and defroster lead disconnects electrical lead assembly (8).
- 9** Disconnect wiper motor to switch electrical lead (16) from toggle switch (19).
- 10** Disconnect circuit breaker to wiper motor and defroster switch electrical lead assembly (10) from toggle switch (19).
- 11** Remove self-locking nut (20), loop clamp (21), and machine screw (22).
- 12** Remove wiper motor and defroster lead disconnects electrical lead assembly (8), circuit breaker to wiper motor and defroster switch electrical lead assembly (10), and rubber grommet (23) from driver's cupola, and install electrical end seal plug (24) in hole.

2-194. MAINTENANCE OF DRIVER'S WINSHIELD ENCLOSURE KIT-ELECTRICAL WIRING AND ENCLOSURE (CONT).

REMOVAL (CONT)

- 13** Remove wiper blade clip (25) and windshield wiper arm (26) from windshield wiper motor assembly (18). Remove windshield wiper blade (27) from windshield wiper arm (26).



NOTE

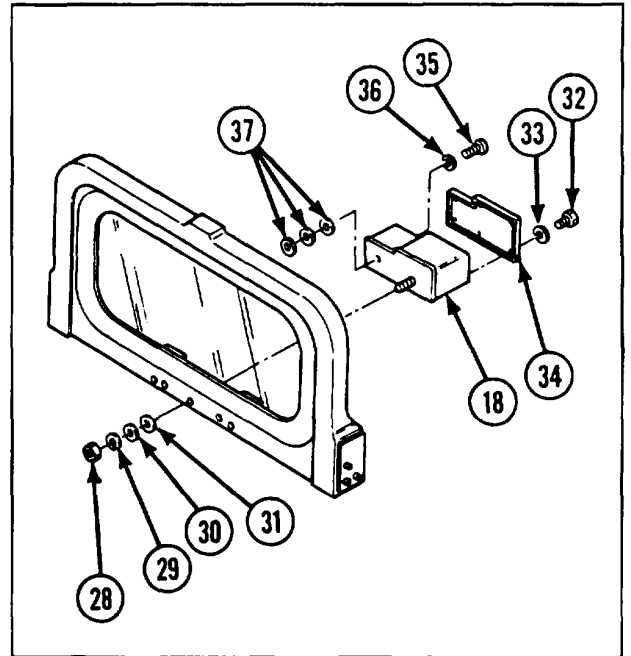
Nut, lockwasher, cup washer, and rubber washer are supplied with windshield wiper motor assembly. Use care not to lose or damage these components.

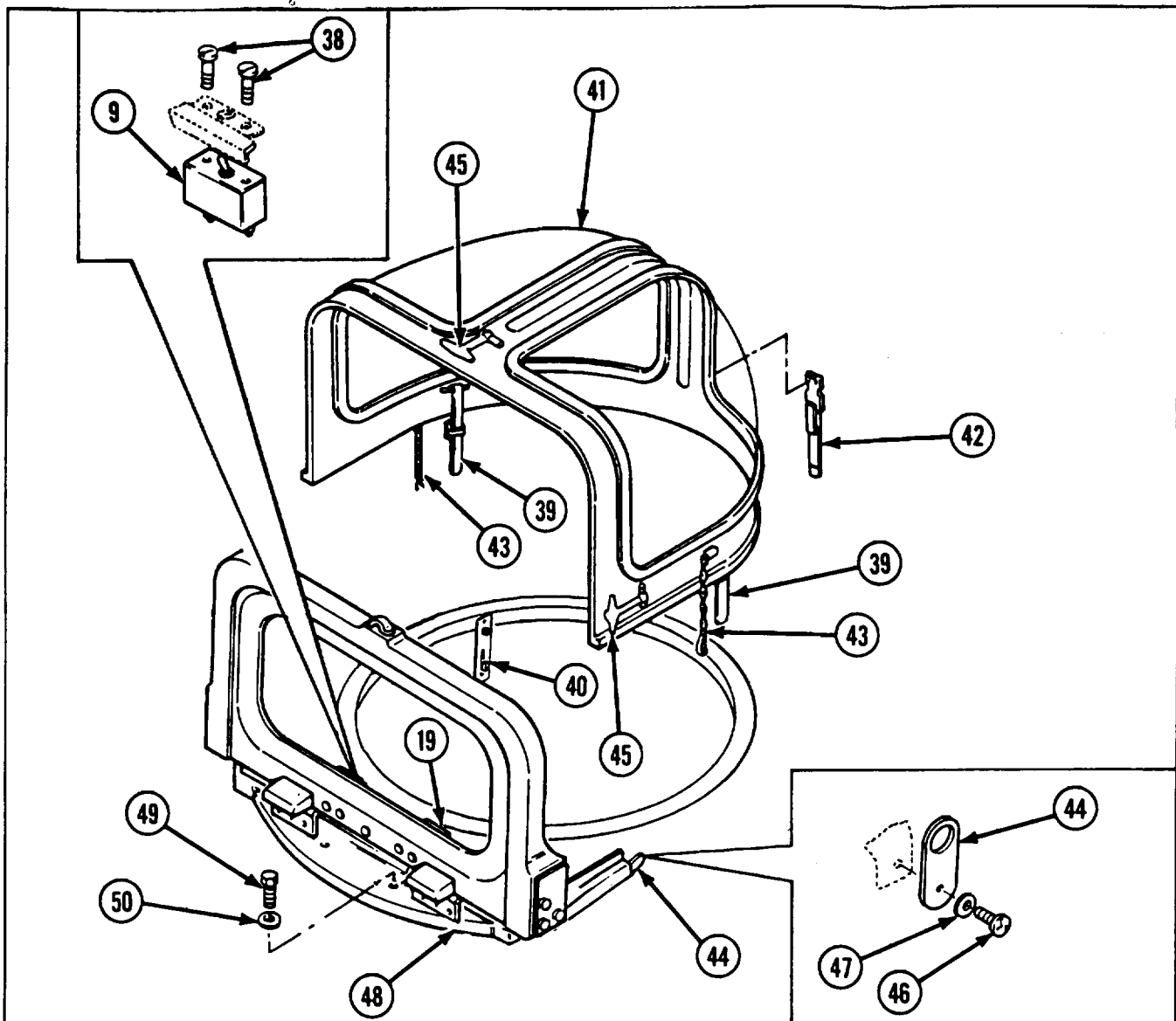
- 14** Remove nut (28), lockwasher (29), cup washer (30), and rubber washer (31) from windshield wiper motor assembly (18).

NOTE

The cover on the windshield wiper motor assembly must be removed to gain access to some of the windshield wiper motor assembly attaching hardware.

- 15** Remove six machine screws (32), six lockwashers (33), and cover (34) from windshield wiper motor assembly (18).
- 16** Remove machine screw (35), flat washer (36), windshield wiper motor assembly (18), and three flat washers (37).





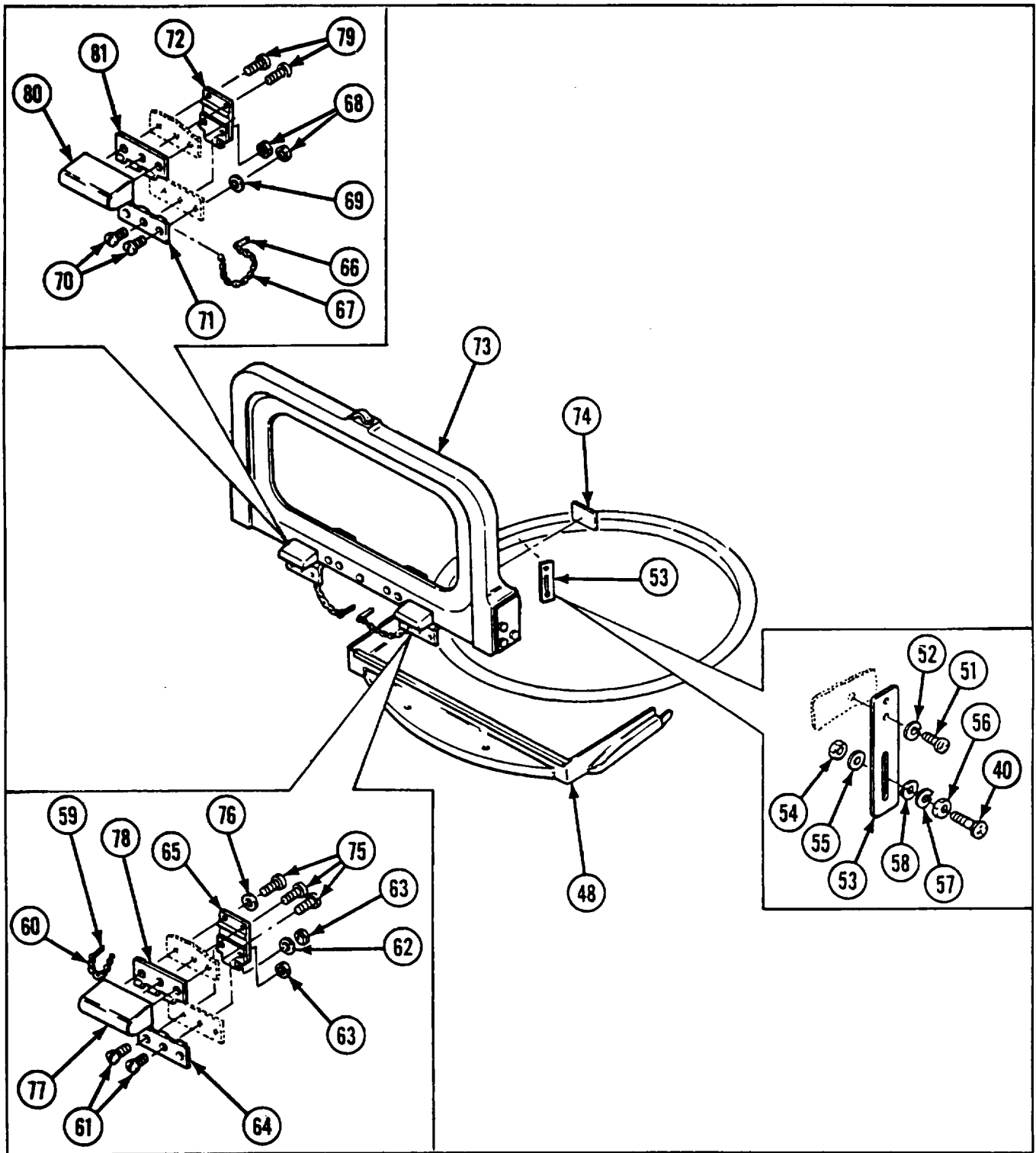
- 17 Remove four machine screw (38) and toggle switches (9 and 19)
- 18 Disconnect vehicular safety belt (39) from machine screw (40) on each side of vehicular window (41).
- 19 Remove webbing strap (42). Disconnect driver's cupola chain (43) from chain plate link (44) on both sides of vehicular window (41). Unlatch three fasteners (45), and remove vehicular window.

NOTE

Step 20 is written for removal of one chain plate link, but applies to both chain plate links.

- 20 Remove machine screw (46), flat washer (47), and chain plate link (44) from base assembly drive (48).
- 21 Remove two machine screws (49), two flat washers (50), and base assembly drive (48).

2-194. MAINTENANCE OF DRIVER'S WINDSHIELD ENCLOSURE KIT—ELECTRICAL WIRING AND ENCLOSURE (CONT.)



NOTE

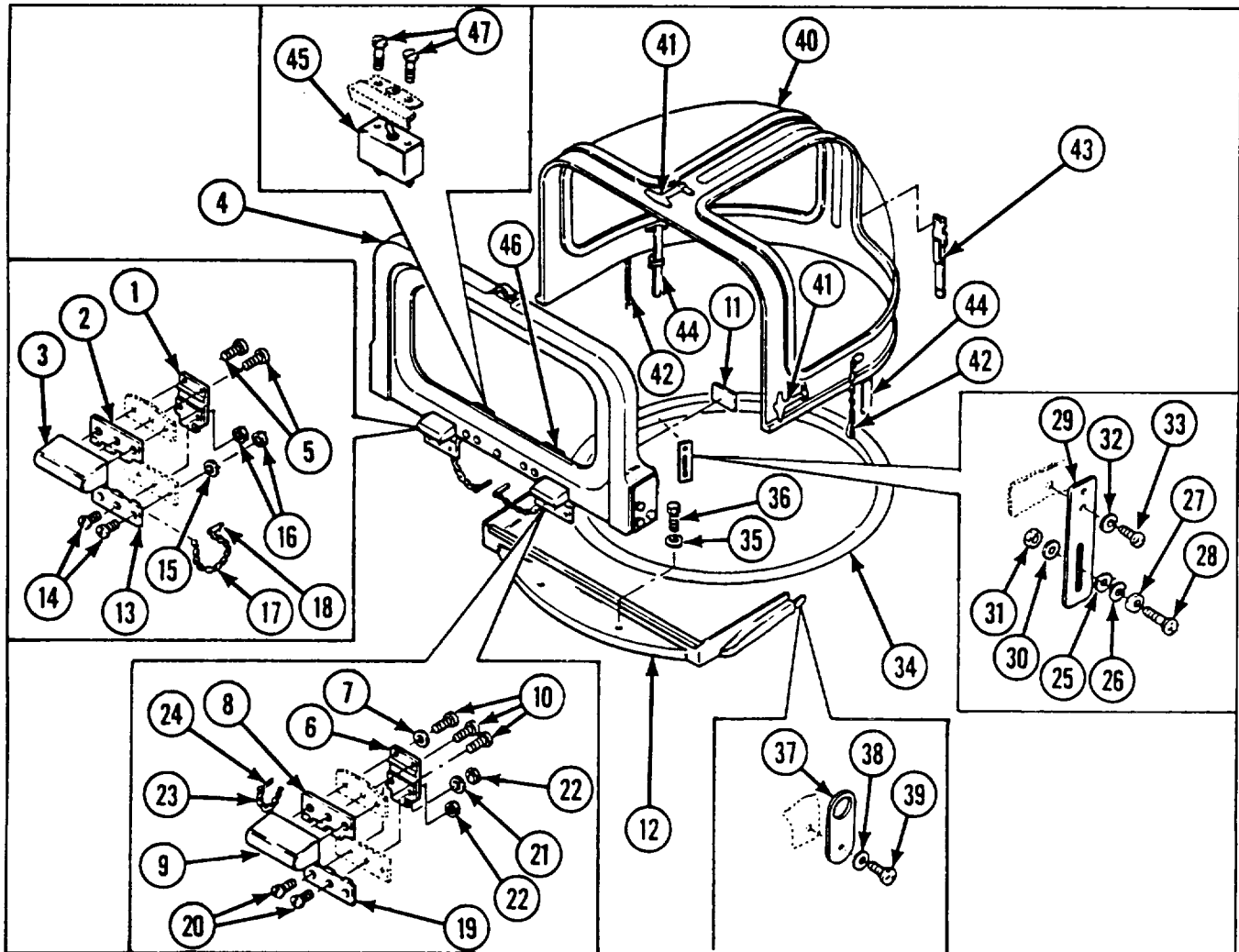
Steps 22 and 23 are written for one window strap plate, but apply to both window strap plates.

- 22 Remove two machine screws (51), two lockwashers (52), and window strap plate (53).
- 23 Remove hexagon plain nut (54), flat washer (55), machine screw (40), hexagon plain nut (56), lockwasher (57), and flat washer (58).
- 24 Remove cotter pin (59), chain assembly (60), two machine screws (61), flat washer (62), two self-locking nuts (63), and lower half of butt hinge (64) from lower half of windshield pivot retaining spring (65).
- 25 Remove cotter pin (66), chain assembly (67), two self-locking nuts (68), flat washer (69), two machine screws (70), and lower half of butt hinge (71) from lower half of windshield pivot retaining spring (72).
- 26 Remove vehicular window (73) from base assembly drive (48).
- 27 If damaged, remove identification marker (74) from vehicular window (73).
- 28 Remove three machine screws (75), flat washer (76), windshield pivot retaining spring (65), windshield support (77), and upper half of butt hinge (78) from vehicular window (73).
- 29 Remove two machine screws (79), windshield pivot retaining spring (72), windshield support (80), and upper half of butt hinge (81) from vehicular window (73).

INSPECTION/REPAIR I

- 1 Inspect for broken, damaged, or missing parts.
- 2 Vehicular window is a repairable assembly, notify direct support maintenance.
- 3 Windshield wiper motor assembly is a repairable assembly. Notify direct support maintenance.
- 4 If damaged or missing, replace marker bands. Etch or stamp lead number on new band.
- 5 For repair of shell connectors and cable terminals, refer to general maintenance, page 2-364.
- 6 Electrical wires and insulation sleeving are manufactured items, refer to appendix D.
- 7 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-194.MAINTENANCE OF DRIVER'S WINDSHIELD ENCLOSURE KIT- ELECTRICAL WIRING AND ENCLOSURE (CONT).



- 1 Position windshield pivot retaining spring (1), upper half of butt hinge (2), and windshield support (3) on vehicular window (4). Aline holes, and install two machine screws (5).
- 2 Position windshield pivot retaining spring (6), flat washer (7), upper half of butt hinge (8), and windshield support (9) on vehicular window (4). Aline holes, and install three machine screws
3. If removed, attach new identification marker (11) to vehicular window (4).
- 4 Install vehicular window (4) on base assembly drive (12).
- 5 Position lower half of butt hinge (13) and windshield pivot retaining spring (1) on base assembly (12), aline holes, and secure with two machine screws (14), flat washer (15), and two new self- locking nuts (16).

- 6 Aline holes in upper (2) and lower (13) halves of butt hinge, and secure by installing chain assembly (17) and new cotter pin (18).
- 7 Position lower half of hinge (19) and spring (6) on base assembly (12), aline holes, and secure with two machine screws (20), flat washer (21), and two new self-locking nuts (22).
- 8 Aline holes in upper (8) and lower (19) halves of hinge, and secure by installing chain assembly (23) and new cotter pin (24).

NOTE

Steps 9 and 10 are written for one window strap plate, but apply to both window strap plates.

- 9 Install flat washer (25), new lockwasher (26), hexagon plain nut (27), and machine screw (28) through window strap plate (29), and secure with flat washer (30) and hexagon plain nut (31).
- 10 Install window strap plate (29), two new lockwashers (32), and two machine screws (33).
- 11 Position top edge of base assembly (12) on top edge of driver's cupola opening (34), and secure with two flat washers (35) and two machine screws (36). Grind or trim pads to position base assembly (12) on driver's cupola opening (34).

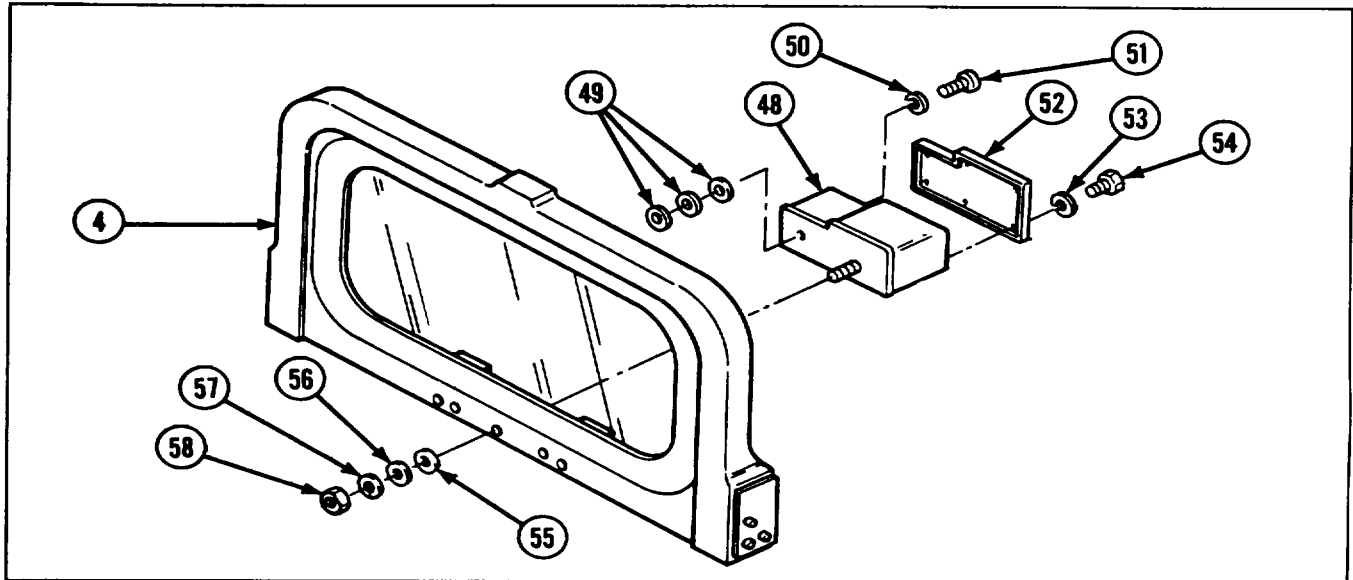
NOTE

Step 12 is written for installation of one chain plate link, but applies to both chain plate links.

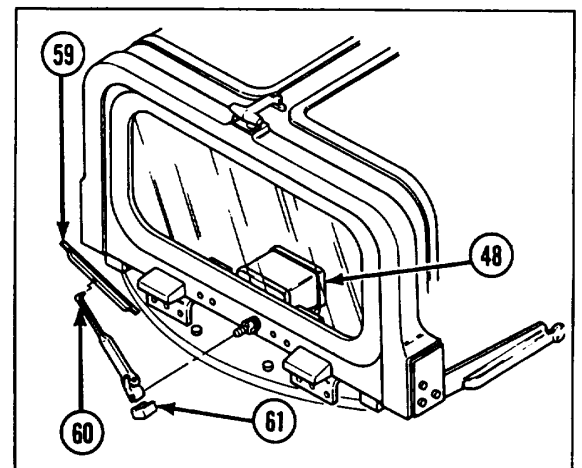
- 12 Install chain plate link (37), flat washer (38), and machine screw (39) on base assembly (12).
- 13 Position vehicular window (40) on base assembly (12). Latch three fasteners (41), and connect driver's cupola chain (42) to chain plate link (37) on both sides of vehicular window.
- 14 Install webbing strap (43) on rear of vehicular window (40).
- 15 Connect vehicular safety belt (44) to machine screw (28) on each side of vehicular window (40). If necessary, adjust distance between vehicular safety belt (44) and machine screw (28) as follows:
- a. Loosen hexagon plain nut (27).
 - b. Adjust machine screw (28) in or out until snap on vehicular safety belt (44) fastens over head of machine screw.
 - c. Adjust position of machine screw (28) in plate slot to secure vehicular window (40) to driver's cupola opening (34).
 - d. Tighten hexagon plain nut (27).
- 16 Install two toggle switches (45 and 46) and four machine screws (47).

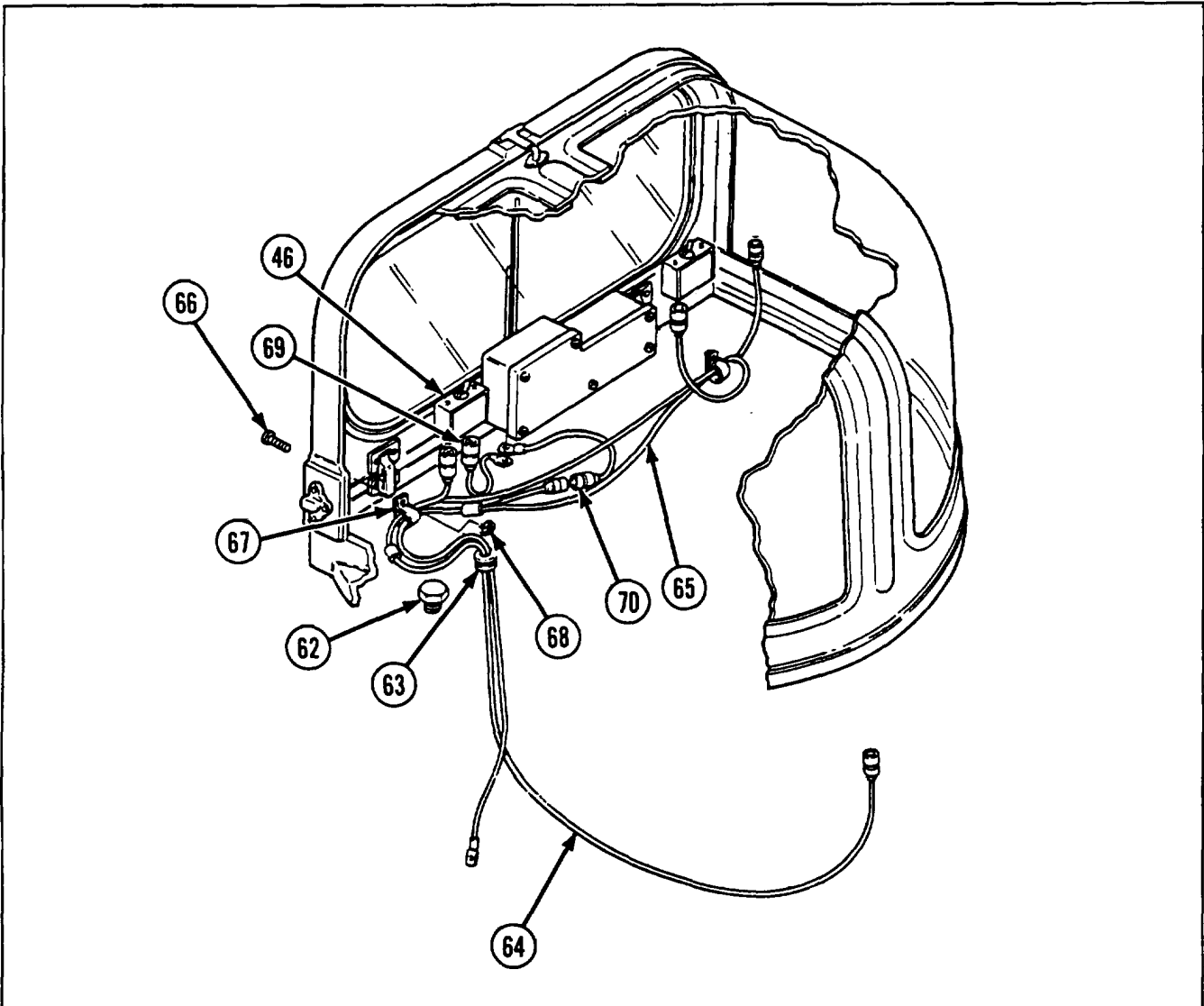
2-194. MAINTENANCE OF DRIVER'S WINDSHIELD ENCLOSURE KIT- ELECTRICAL WIRING AND ENCLOSURE (CONT).

INSTALLATION (CONT)



- 17 Insert windshield wiper motor assembly (48) through vehicular window (4).
- 18 Install three flat washers (49) as spacers between vehicular window (4) and windshield wiper motor assembly (48), and secure with flat washer (50) and machine screw (51).
- 19 Install cover (52), six new lockwashers (53), and six machine screws (54) on windshield wiper motor assembly (48).
- :
- 20 Install rubber washer (55), cup washer (56), new lockwasher (57), and nut (58).
- 21 Install windshield wiper blade (59) on windshield wiper arm (60). Install windshield wiper arm (60) and wiper blade clip (61) on windshield wiper motor assembly (48).





- 22 Remove electrical end seal plug (62) from hole, and install rubber grommet (63) , circuit breaker to wiper motor and defroster switch electrical lead assembly (64) , and wiper motor and defroster lead disconnects electrical lead assembly (65).
- 23 Install machine screw (66), loop clamp (67), and new self-locking nut (68).
- 24 Connect circuit breaker to wiper motor and defroster switch electrical lead assembly (64) to toggle switch (46).
- 25 Connect wiper motor to switch electrical lead (69) to toggle switch (46).
- 26 Connect defroster ground lead disconnects electrical lead (70) to wiper motor and defroster lead disconnects electrical lead assembly (65).

2-194. MAINTENANCE OF DRIVER'S WINDSHILD ENCLOSURE KIT -ELECTRICAL WIRING AND ENCLOSURE (CONT).

INSTALLATION (CONT)

27 Position defroster ground lead disconnects electrical lead (70) and wiper motor to switch electrical lead ^(6c) on windshield wiper motor assembly (48), and secure with new lockwasher (71) and machine screw (72).

28 Install machine screw (73), loop clamp (74), and new self-locking nut (75).

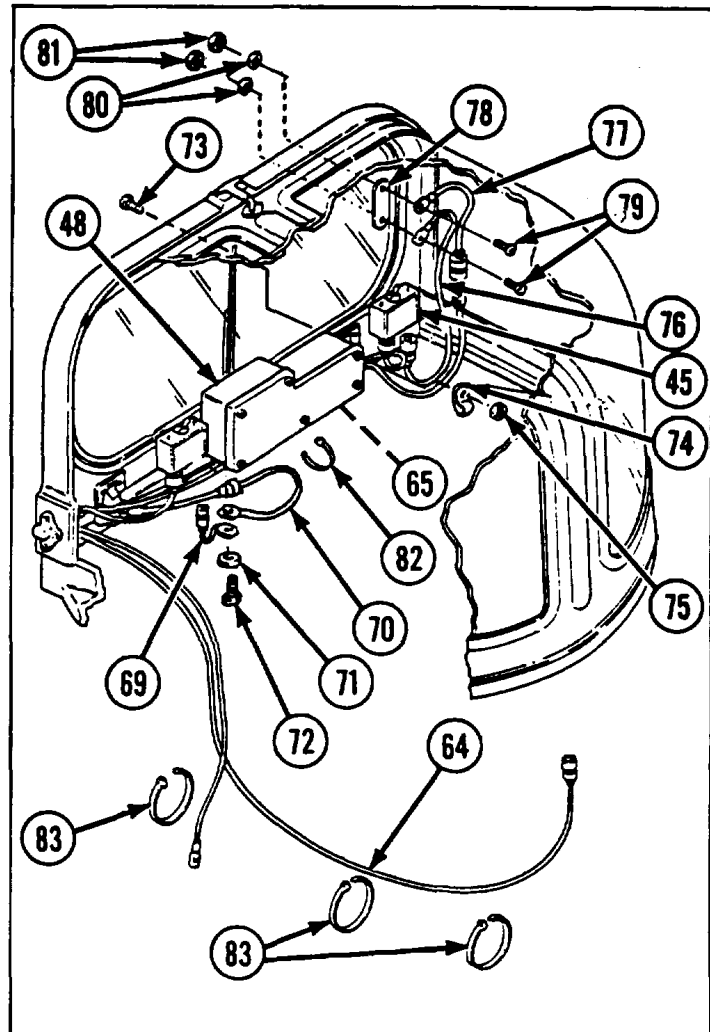
29 Connect circuit breaker to wiper motor and defroster switch electrical lead assembly (64) to toggle switch (45) and circuit breaker.

30 Connect disconnect defroster to switch electrical lead disconnects electrical lea (76) to toggle switch (45).

31 Connect defroster ground lead disconnects electrical lead (77) to wiper motor and defroster lead disconnects electrical lead assembly (65).

32 Position disconnect defroster to switch electrical lead disconnects electrical lea (76) and defroster ground lead disconnects electrical lead (77) on defroster (78), and secure with two machine screws (79), two new lockwashers (80), and two nuts (81).

33 Install tiedown strap (82) and three marker bands (83).



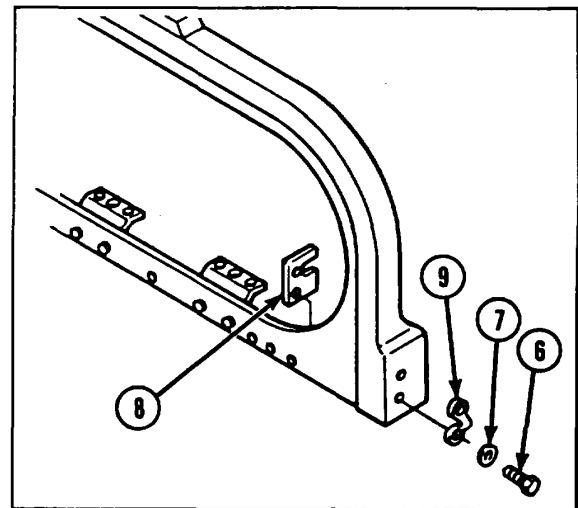
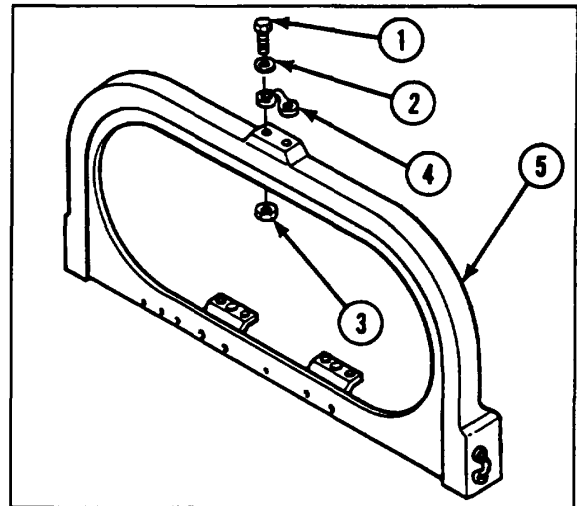
2-195. MAINTENANCE OF VEHICULAR WINDOW-WINDSHIELD (DRIVER'S WINDSHIELD ENCLOSURE KIT).

This task covers:	a. Disassembly	b. Inspection/Repair	c. Reassembly
INITIAL SETUP			
Materials/Parts		Equipment Conditions	
Lockwasher (6)		2-1030 Vehicular window removed	
Self-locking nut (6)			
References			

DISASSEMBLY

1 Remove two machine screws (1), two flat washers (2), two self-locking nuts (3), an top hood catch bracket (4) from windshield frame (5).

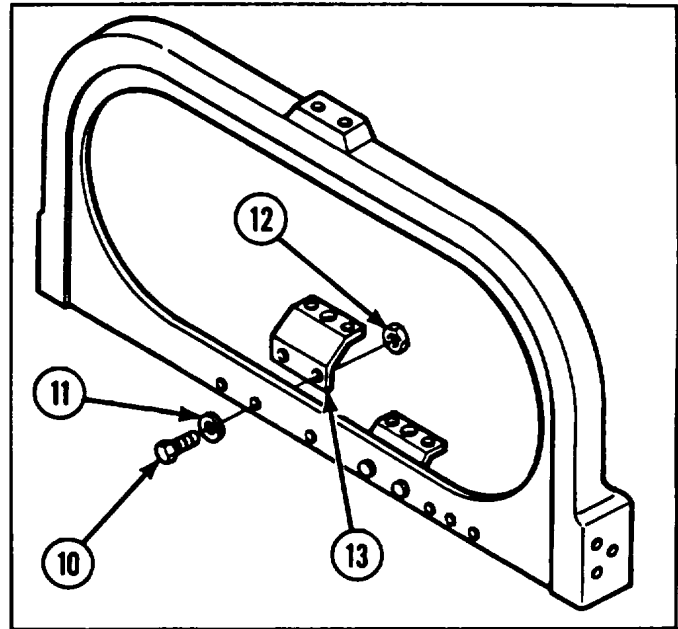
2 Remove six machine screws (6), six lockwashers (7), two locking plates (8), and two side latch hood catch brackets (9).



**2-195. MAINTENANCE OF VEHICULAR WINDOW—WINDSHIELD (DRIVER WINDSHIELD ENCLOSURE KIT)
DISASSEMBLY (CONT)**

DISASSEMBLY (CONT)

3 Remove four machine screws (10), four flat washers (11), four self-locking nuts (12), and two electrical switch support brackets (13).

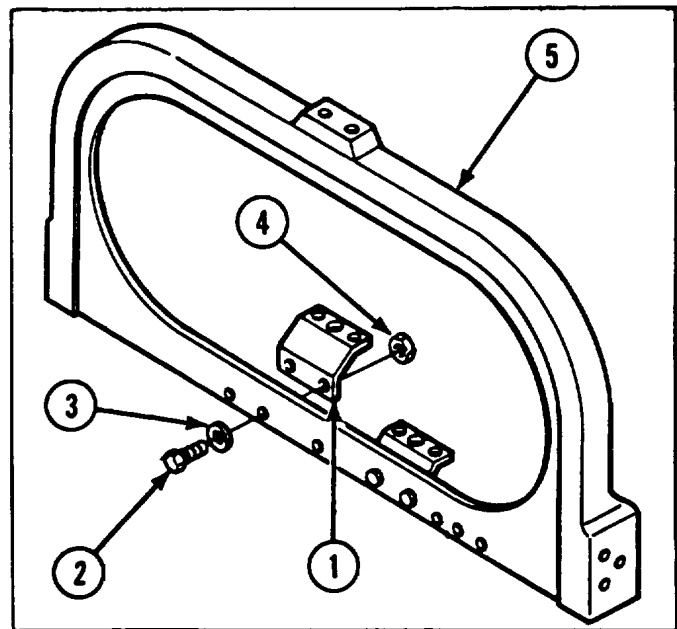


INSPECTION/REPAIR

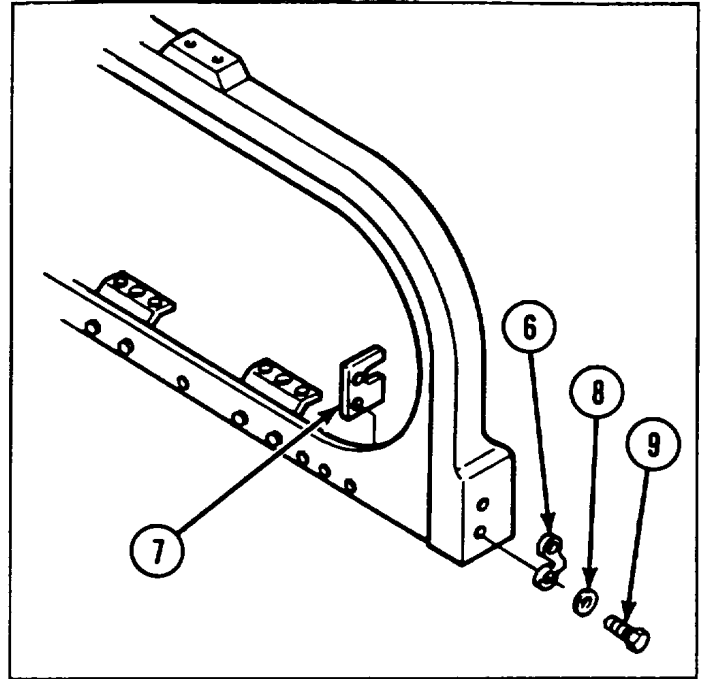
- 1 Inspect for broken, damaged, or missing parts.
- 2 For further repair of vehicular window, notify direct support maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

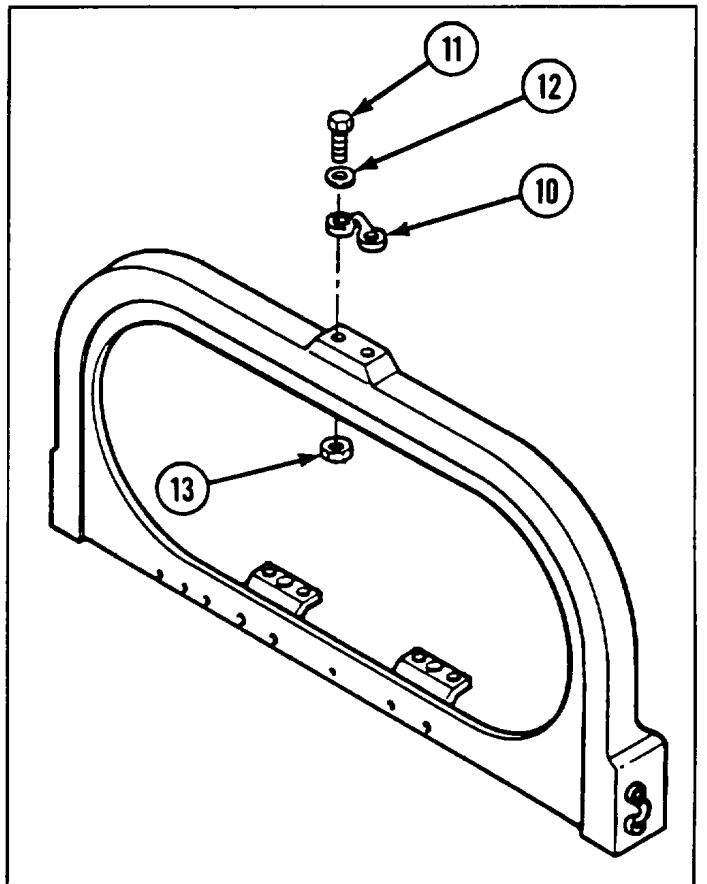
1 Install two electrical switch support brackets (1), four machine screws (2), four flat washers (3), and four new self-locking nuts (4) on windshield frame (5).



2 Install two side latch hood catch bracket (6), two locking plates (7), six new lockwashers (8), and six machine screw (9).



3 Install top catch bracket (10), two machine screws (11), two flat washers (12), and two new self-locking nuts (13).



2-196. MAINTENANCE OF VEHICULAR WINDOW (DRIVER'S WINDSHIELD ENCLOSURE KIT).

This task covers: a. *Disassembly* b. *Inspection/Repair* c. *Reassembly*

INITIAL SETUP

Materials/Parts

- Lockwasher (17)
- Nonmetallic window assembly seal
- Self-locking nut (2)
- Self-locking nut (6)
- Self-locking nut (7)

Equipment Conditions

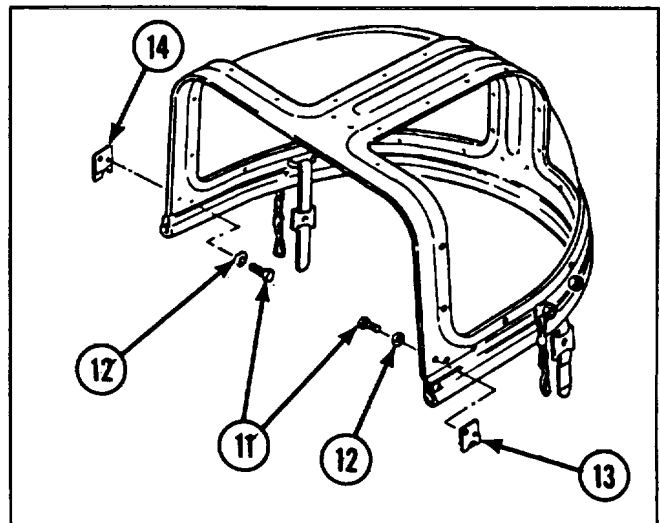
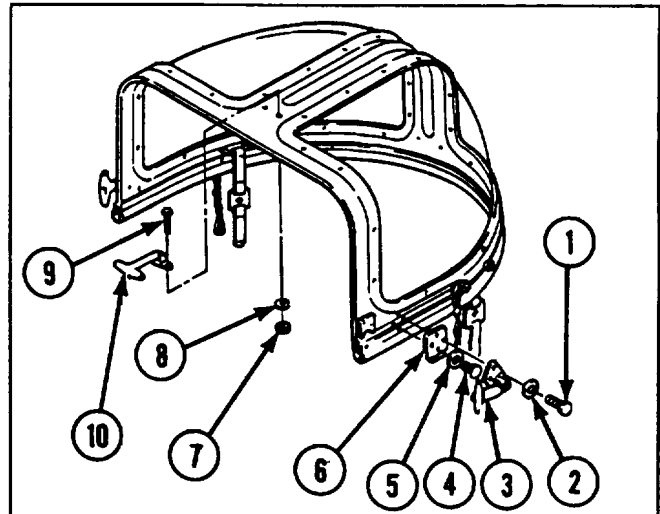
2-1030 Vehicular window removed from drivers cupola

References

TM 9-2350-304-24P-1

DISASSEMBLY

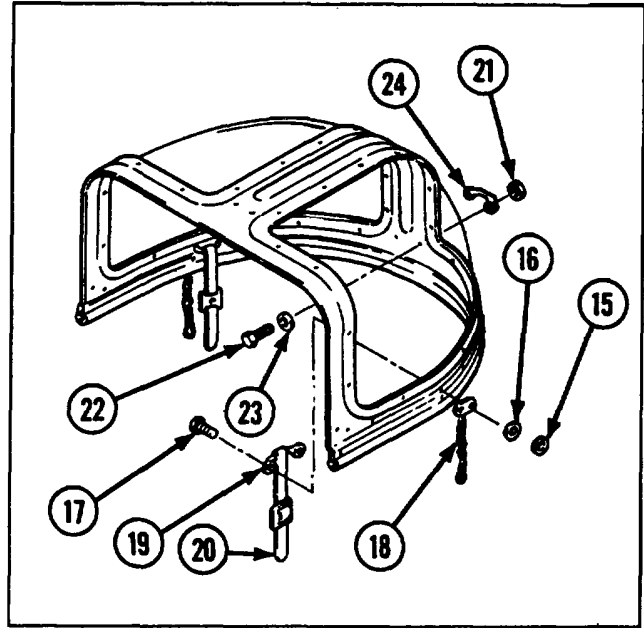
- 1 Remove four machine screws (1), four lockwashers (2), and two window assembly to windshield assembly cylinder fasteners (3).
- 2 Remove four machine screws (4), four lockwashers (5), and two window catch pads (6).
- 3 Remove two self-locking nuts (7), two flat washers (8), two machine screws (9), and window assembly to windshield assembly cylinder fastener (10).
- 4 Remove four machine screws (11), four lockwashers (12), locking assembly plate (13), and locking assembly plate (14).



5 Remove four self-locking nuts (15), four flat washers (16), four machine screws (17), two window assembly to driver's cupola chains (18), and two strap fastener loops (19).

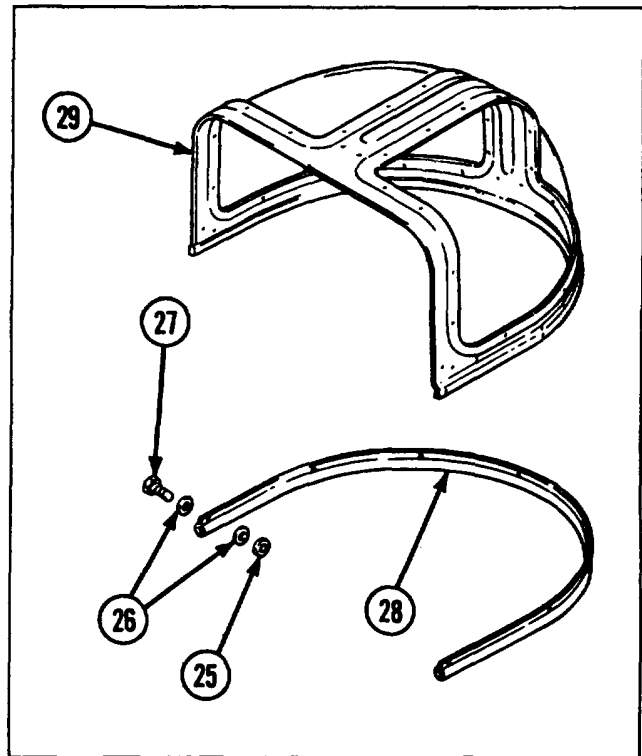
6 Remove two window assembly to driver's cupola holddown vehicular safety belts (20) from strap fastener loops (19).

7 Remove two self-locking nuts (21), two machine screws (22), two flat washers (23), and strap fastener loop (24).



8 Remove 7 self-locking nuts (25), 14 flat washers (26), and 7 machine screws (27)

9 Remove nonmetallic window assembly seal (28) from driver's cupola cover window frame (29).



2-196. MAINTENANCE OF VEHICULAR WINDOW (DRIVER'S WINDSHIELD ENCLOSURE KIT) (CONT).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 For further repair of vehicular window, notify direct support maintenance.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

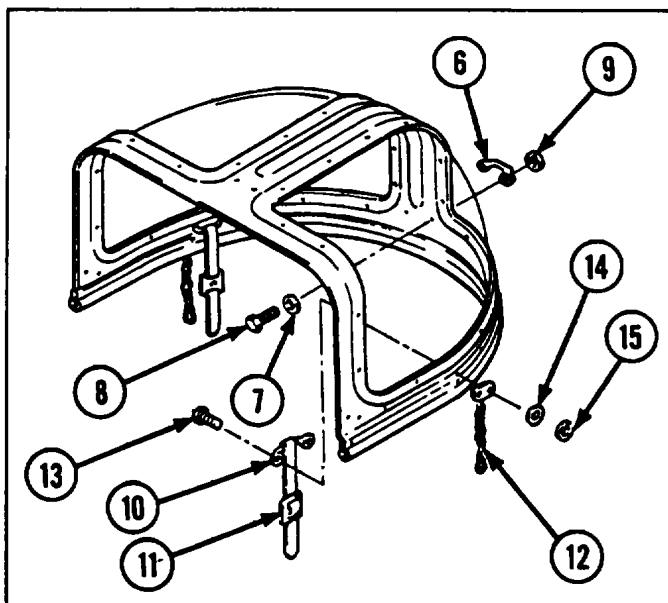
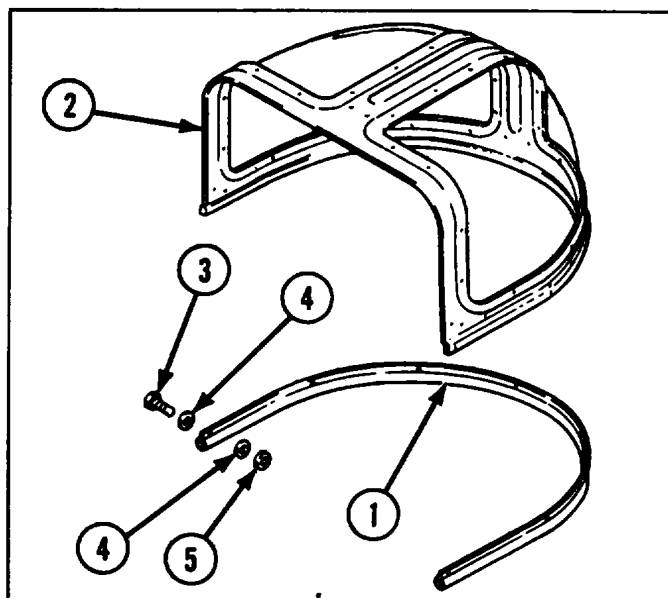
1 Install new nonmetallic window assembly seal (1) to driver's cupola cover window frame (2).

2 Install 7 machine screws (3), 14 flat washers (4), and 7 new self-locking nuts (5).

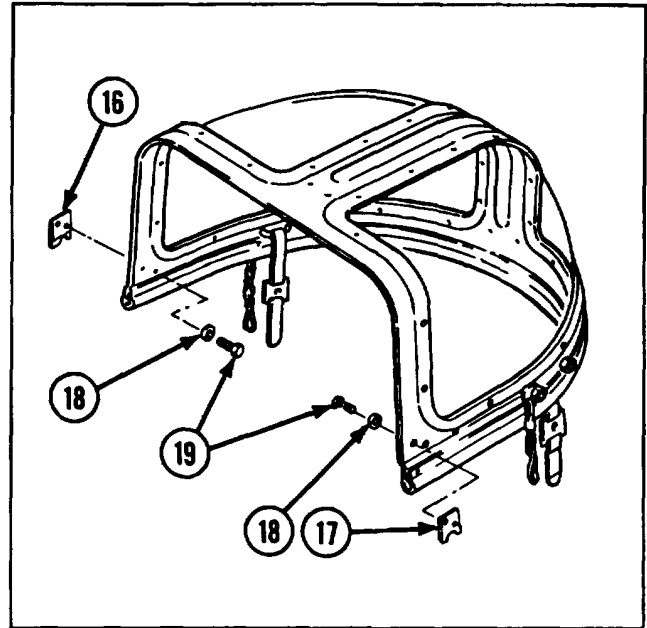
3 Install strap fastener loop (6), two flat washers (7), two machine screws (8), and two new self-locking nuts (9).

4 Install strap fastener loops (10) to two window assembly to driver's cupola holddown vehicular safety belts (11).

5 Install two strap fastener loops (10), two window assembly to driver's cupola chain (12), four machine screws (13), four flat washers (14), and four new self-locking nuts (15).



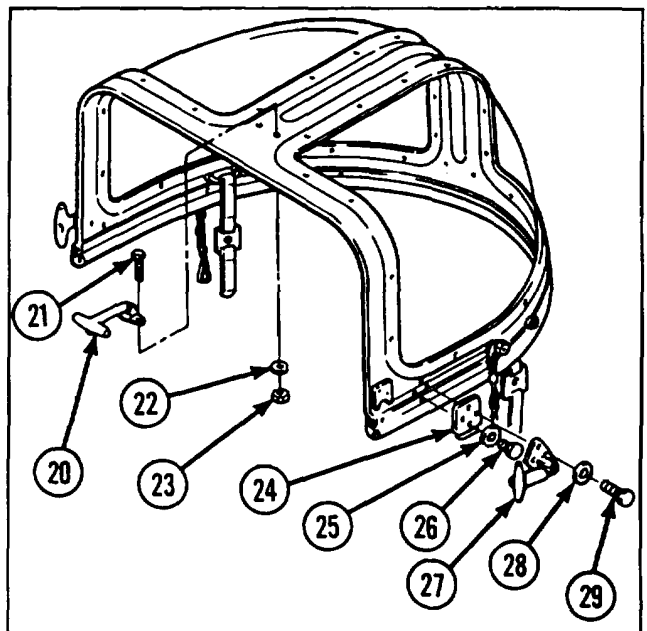
6 Install locking assembly plate (16), locking assembly plate (17), four new lockwasher (18), and four machine screws (19).



7 Install window assembly to windshield assembly cylinder fastener (20), two machine screws (21), two flat washers (22) and two new self-locking nuts (23).

8 Install two window catch pads (24), four new lockwashers (25), and four machine screws (26).

9 Install two window assembly to windshield assembly cylinder fasteners (27), four new lockwashers (28), and four machine screws (29).



2-197. MAINTENANCE OF PERSONNEL VEHICULAR HEATER-ELECTRICAL LEADS AND RELATED PARTS; CIRCUIT BREAKER TO LINE DISCONNECT BRACKET ELECTRICAL LEAD; LINE DISCONNECT BRACKET TO HEATER CONTROL ELECTRICAL LEAD; AND BATTERY POSITIVE TERMINAL TO CIRCUIT BREAKER ELECTRICAL LEAD (WINTERIZATION KIT).

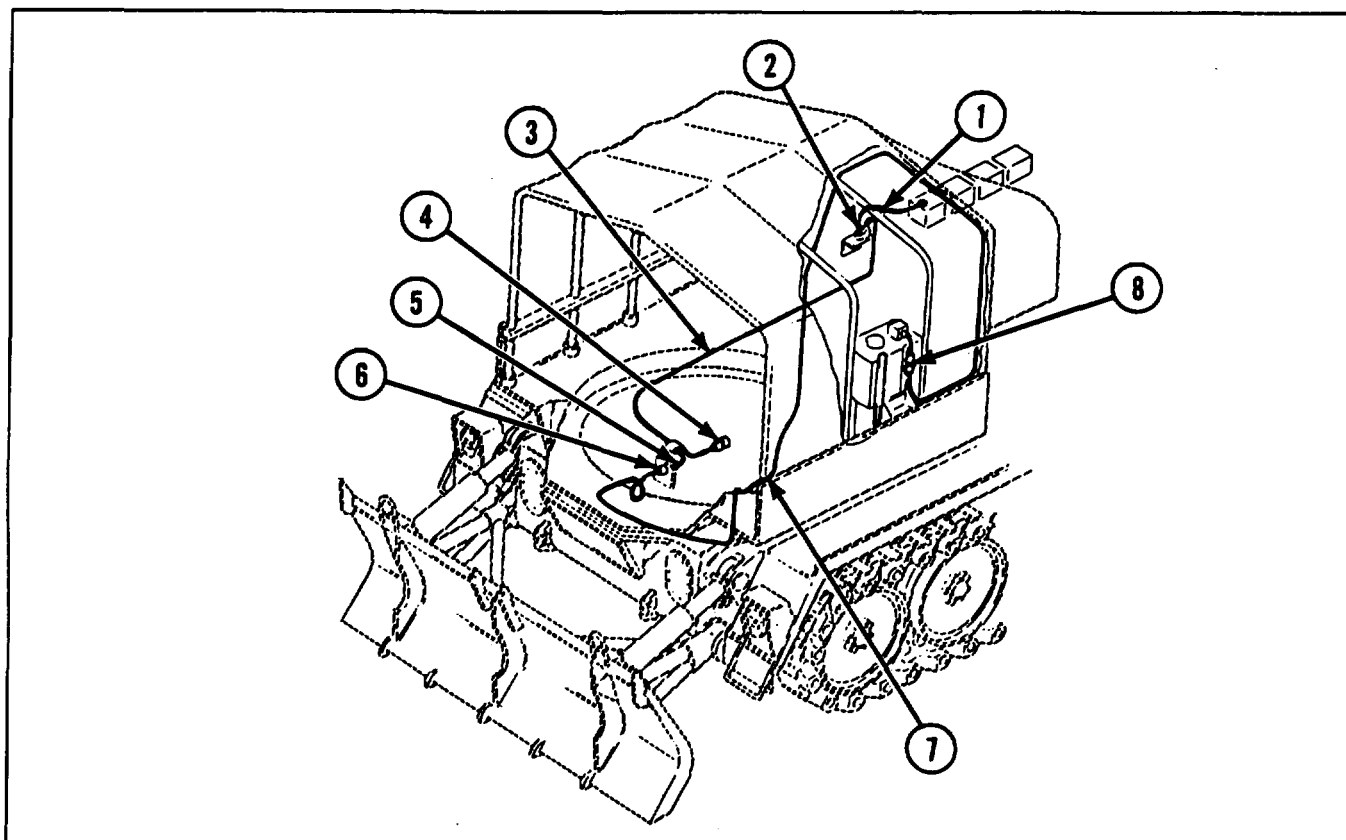
This task covers:	<i>a. Removal</i>	<i>b. Inspection/Repair</i>	<i>c. Installation</i>
<p>INITIAL SETUP</p> <p><i>Materials/Parts</i> Electrical wire (3) (figure D-1, appx D) Lockwasher (2) Marker band (18)</p> <p><i>References</i> TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i> MASTER power switch and instrument switch in OFF position 2-624 Batteries disconnected</p> <p><i>General Safety Instructions</i></p> <div style="text-align: center; border: 2px solid black; padding: 5px; width: fit-content; margin: 10px auto;">WARNING</div> <p style="text-align: center;">Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.</p>			

REMOVAL

WARNING

Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

- 1 Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. Remove only the hardware which secures the wiring harness or lead being removed.



2. Tag and disconnect battery positive terminal to circuit breaker electrical lead (1) from crew heater line circuit breaker (2) and battery terminal lug. Remove battery positive terminal to circuit breaker electrical lead from hull.
3. Tag and disconnect circuit breaker to line disconnect bracket electrical lead (3) from crew heater line circuit breaker (2).
4. Tag and disconnect shell connector (4) from line connection.
5. Tag and disconnect shell connector (5) on circuit breaker to line disconnect bracket electrical lead (3) from shell connector (6) on line disconnect bracket to heater control electrical lead (7). Remove circuit breaker to line disconnect bracket electrical lead from hull.
6. Tag and disconnect line disconnect bracket to heater control electrical lead (7) from heater control box shell connector (8). Remove line disconnect bracket to heater control electrical lead from hull.

2-197. MAINTENANCE OF PERSONNEL VEHICULAR HEATER-ELECTRICAL LEADS AND RELATED PARTS; CIRCUIT BREAKER TO LINE DISCONNECT BRACKET = ELECTRICAL LEAD; LINE DISCONNECT BRACKET TO HEATER CONTROL ELECTRICAL LEAD; AND BATTERY POSITIVE TERMINAL TO CIRCUIT BREAKER ELECTRICAL LEAD (WINTERIZATION KIT) (CONT). REMOVAL (CONT)

REMOVAL(CONT)

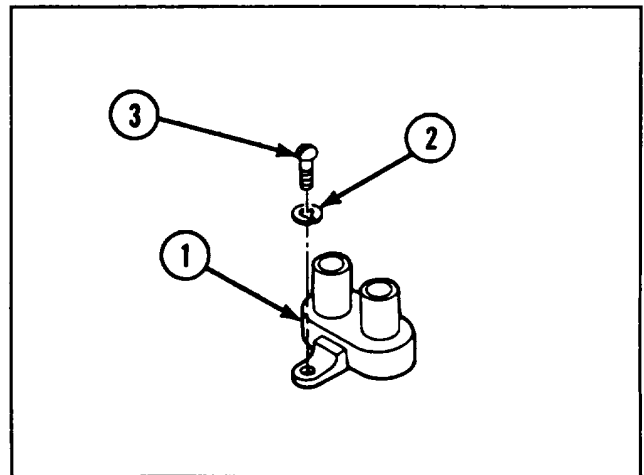
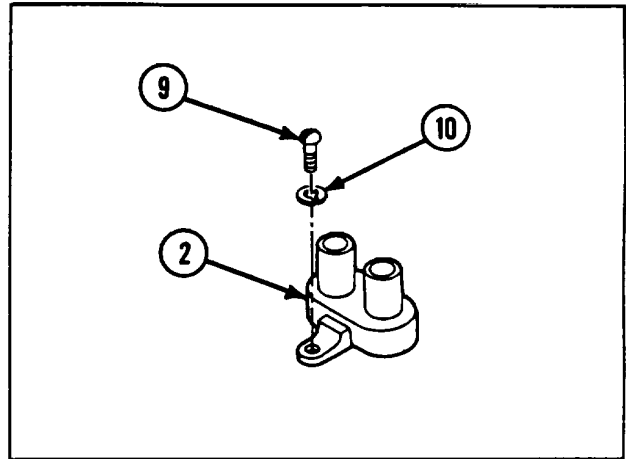
7. Remove two machine screws (9), two lockwashers (10), and crew heater line circuit breaker (2).

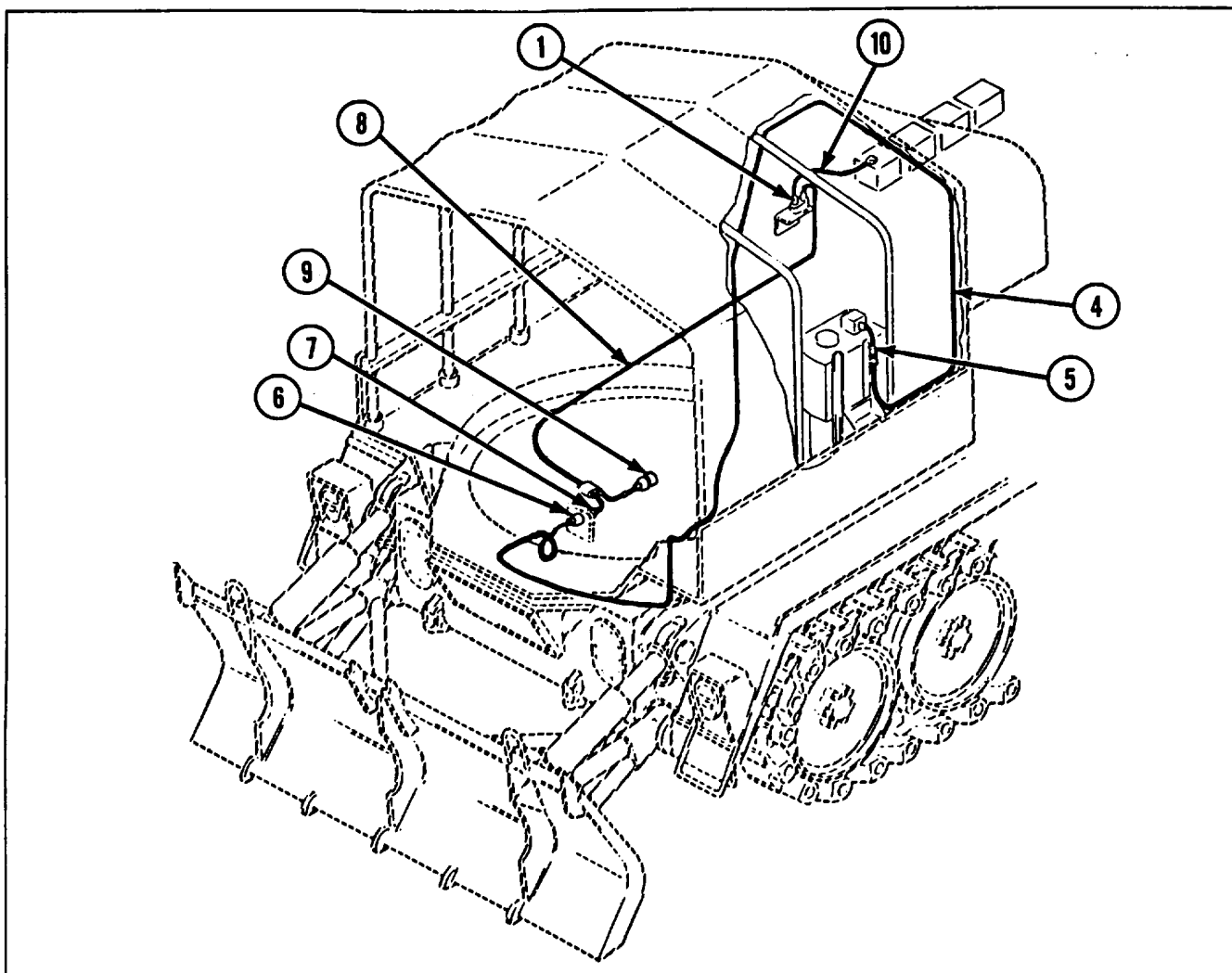
INSPECTION / REPAIR

1. Inspect for broken, damaged, or missing parts.
2. If damaged or missing, replace marker bands. Etch or stamp lead number on new marker
3. For repair of cable terminals and shell connectors, refer to general maintenance, page 2-364. band.
4. Electrical wire is a manufactured item. Refer to appendix D.
5. Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

1. Install crew heater line circuit breaker (1), two new lockwashers (2), and two machine screws (3).





2. Untag and connect line disconnect bracket to heater control electrical lead (4) to heater control box shell connector (5)
3. Untag and connect shell connector (6) on line disconnect bracket to heater control electrical lead (4) to shell connector (7) on circuit breaker to line disconnect bracket electrical lead (8).
4. Untag and connect shell connector (9) to line connection.
5. Untag and connect circuit breaker to line disconnect bracket electrical lead (8) to crew heater line circuit breaker (1).
6. Untag and connect battery positive terminal to circuit breaker electrical lead (10) to crew heater line circuit breaker (1) and battery terminal lug.
7. Wiring harnesses and leads are secured to the hull and components with loop clamps, straps, clips, ground screws, etc. During installation, make sure the wiring harness or lead is secured and all hardware is tight.

2-198. MAINTENANCE OF PERSONNEL VEHICULAR HEATER ASSEMBLY-HEATER AND RELATED PARTS (WINTERIZATION KIT).

This task covers: a. *Removal* b. *Inspection/Repair* c. *Installation*

INITIAL SETUP

Materials/Parts

- Lockwasher (8)
- Lockwasher (9)
- Threaded tapping screw (4)

Equipment Conditions

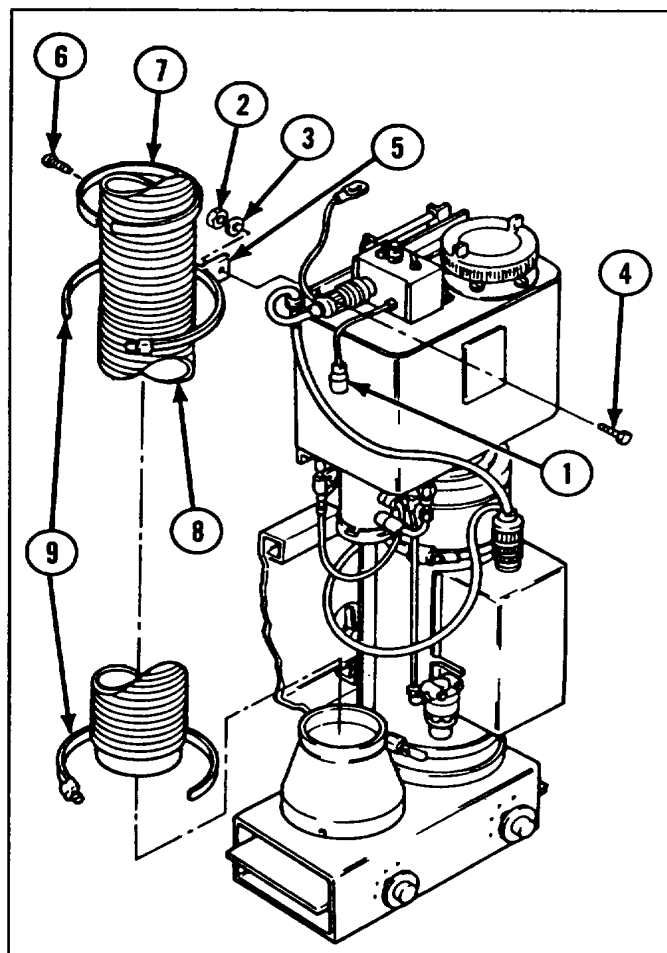
MASTER power switch in OFF position

References

TM 9-2350-304-24P-1

REMOVAL I

1. Disconnect heater control box connector from wiring harness (1).
2. Remove nut (2), washer (3), and hexagon(head capscrew (4) from hot air duct heater support bracket (5).
3. Remove four threaded tapping screws (E and four hot air duct retaining straps (7) from heater duct (8).
4. Remove two hose clamps (9), hot air duct heater support bracket (5), and heater duct (8).

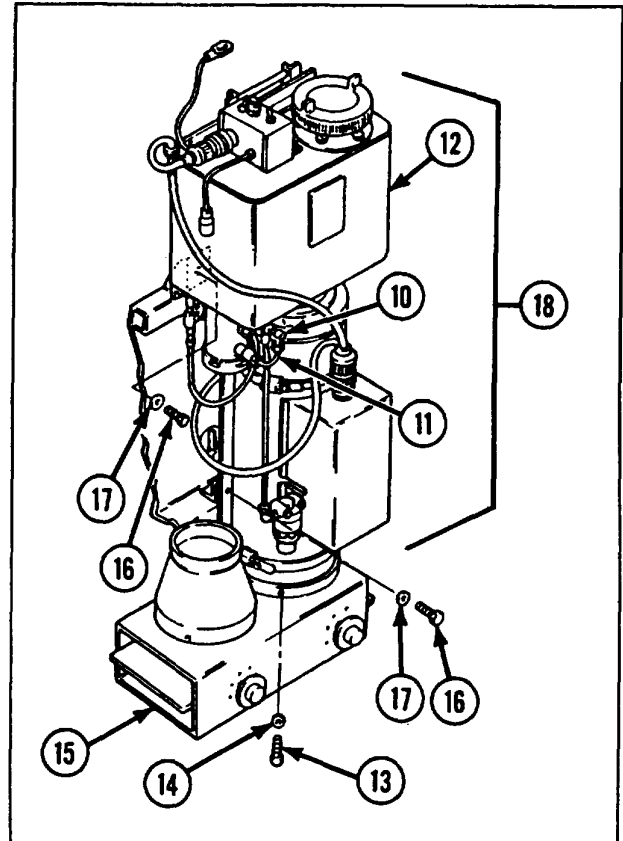


5. Close fuel shutoff valve (10) and disconnect fuel tube (11) from fuel shutoff valve.

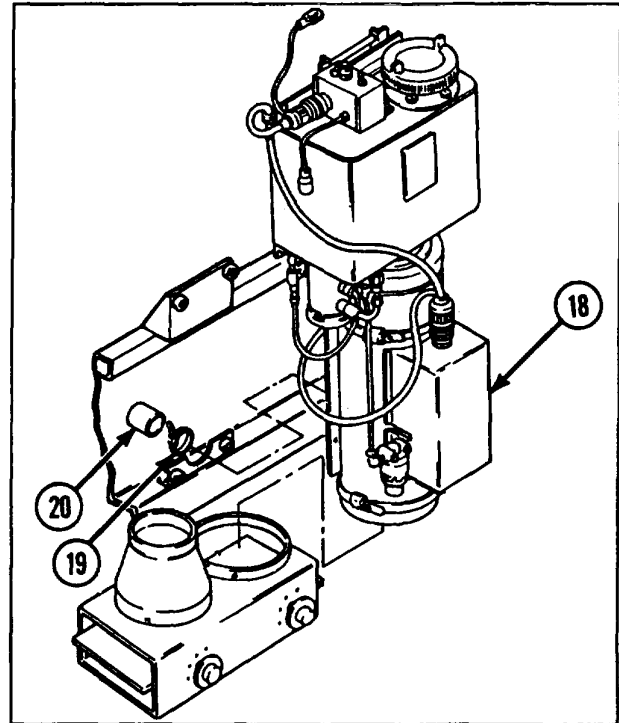
NOTE

Fuel tank capacity is 5.00 gal. (18.93 l).

6. Open fuel shutoff valve (10) to drain fuel from fuel tank (12). Drain fuel into suitable container.
7. Remove four machine screws (13) and four lockwashers (14) from heater hot air diffuser (15).
8. Remove four hexagon head capscrews (16) and four lockwashers (17) from personnel vehicular heater assembly (18).



9. Loosen hose clamp (19) and remove personnel vehicular heater assembly (18), hose clamp (19), and exhaust connector (20).

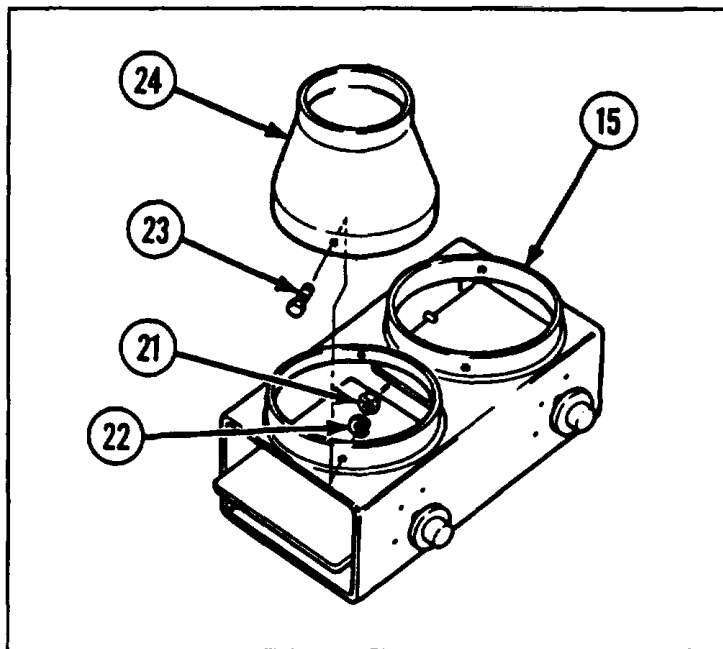


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2-198. MAINTENANCE OF PERSONNEL VEHICULAR HEATER ASSEMBLY –HEATER AND RELATED PARTS (WINTERIZATION KIT) CONT.)

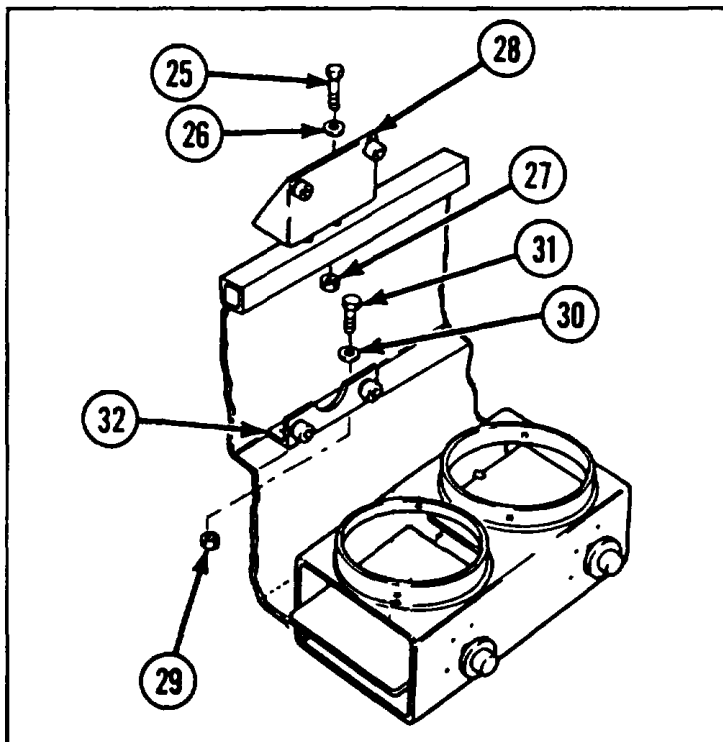
REMOVAL (CONT)

10. Remove four hexagon plain nuts (21), four lockwashers (22), four machine screws (23), and hot air duct heater duct adapter (24) from heater hot air diffuser (15).



11. Remove three hexagon head capscrews (25), three lockwashers (26), three hexagon plain nuts (27), and angle bracket (28).

12. Remove two hexagon plain nuts (29), two lockwashers (30), two hexagon head capscrews (31), and angle bracket (32).

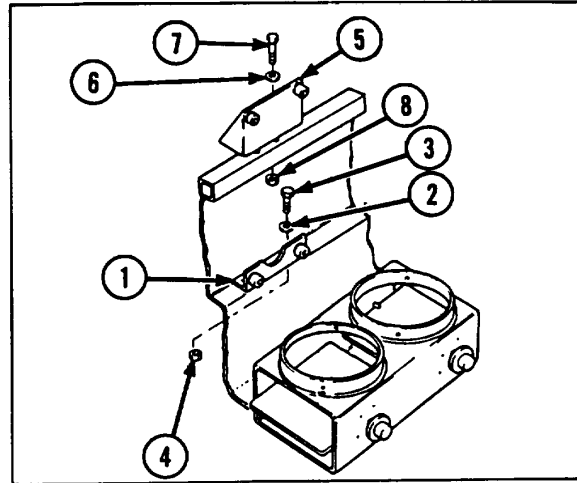


INSPECTION/REPAIR

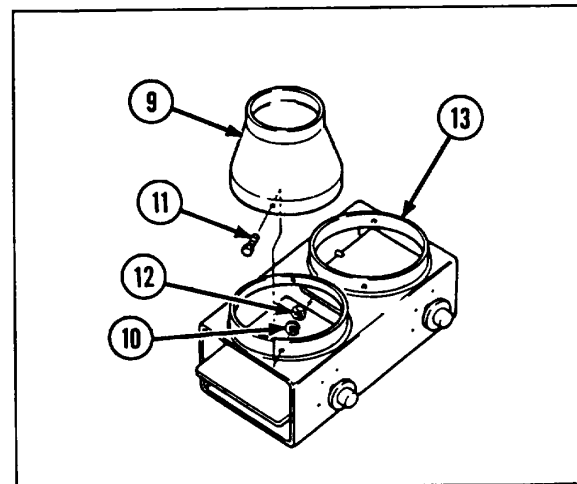
1. Inspect for broken, damaged, or missing parts.
2. Personnel vehicular heater assembly is a repairable assembly. Refer to page 2-1057.
3. Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

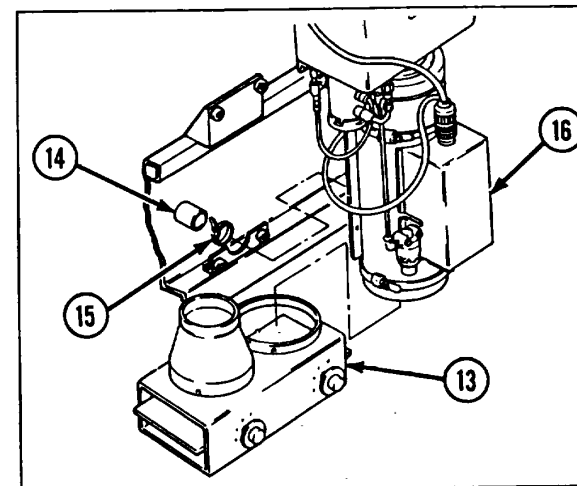
1. Install angle bracket (1), two new lock-washers (2), two hexagon head capscrew. (3), and two hexagon plain nuts (4).
2. Install angle bracket (5), three new lock-washers (6), three hexagon head cap- screws (7), and three hexagon plain nuts (8).



3. Install hot air duct heater duct adapter (9), four new lockwashers (10), four machine screws (11), and four hexagon plain nuts (12) on heater hot air diffuser (13).



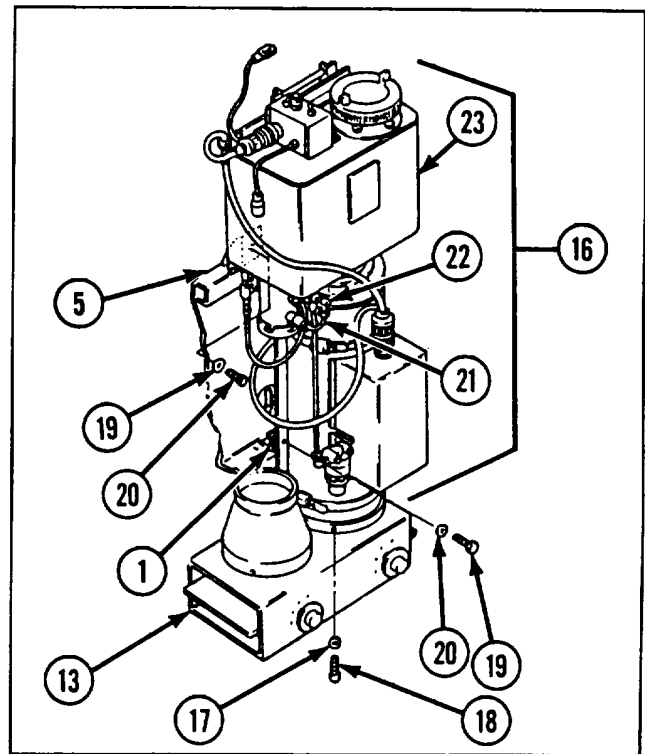
4. Install heater exhaust connector (14) and hose clamp (15) on personnel vehicular heater assembly (16). Position personnel vehicular heater assembly (16) on heater hot air diffuser (13), using care to ensure heater exhaust connector is correctly positioned.



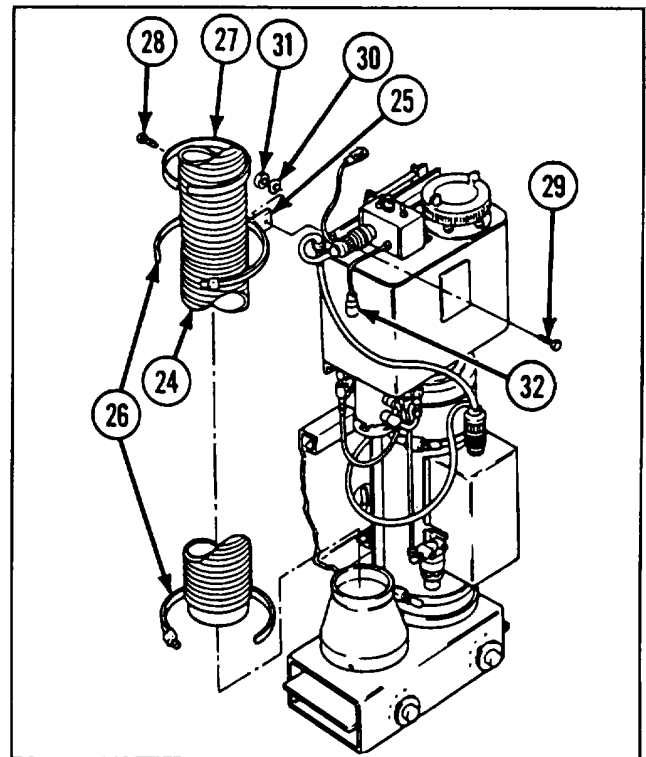
2-198. MAINTENANCE OF PERSONNEL VECHICULAR HEATER ASSEMBLY—HEATER AND RELATED PARTS (WINTERIZATION KIT) (CONT.)

INSTALLATION (CONT)

5. Install four new lockwashers (17) and four machine screws (18) in hot air diffuser (13).
6. Install four new lockwashers (19) and four hexagon head capscrews (20), securing personnel vehicular heater assembly (16) to two angle brackets (1 and 5).
7. Connect fuel tube (21) to fuel shutoff vale (22).
8. Ensure fuel shutoff valve (22) is open, an fill fuel tank (23).



9. Install heater duct (24), hot air duct heater support bracket (25), and two hose clam: (26).
10. Install four hot air duct retaining straps (27) and four new threaded tapping screws (28) to heater duct (24).
11. Install hexagon head capscrew (29) through hot air duct heater support bracket (25). Secure with washer (30) and nut (31).
12. Connect heater control box connector (32 to wiring harness).



2-199. MAINTENANCE OF PERSONNEL VEHICULAR HEATER ASSEMBLY, PTRSON- NEL HEATER TANK ASSEMBLY, AND CONTROL BOX ASSEMBLY TO HEATER ASSEMBLY WIRING HARNESS (WINTERIZATION KIT).

This task covers: *a. Disassembly* *b. Inspection/Repair* *c. Reassembly*

INITIAL SETUP

Material/Parts

- Electrical cable (figure D-1, appx D)
- Fuel tank ring gasket
- Gasket
- Instruction plate
- Lockwasher (2) assembly removed
- Lockwasher (10)
- Lockwire
- Preformed packing
- Self-locking nut (8)
- strainer element

References

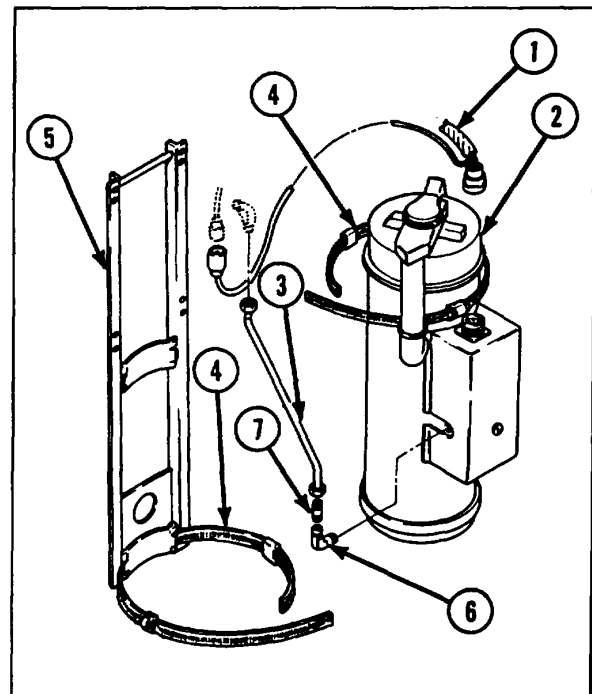
TM 9-2350-304-24P-1

Equipment Conditions

2-1052 Personnel vehicular heater

DISASSEMBLY

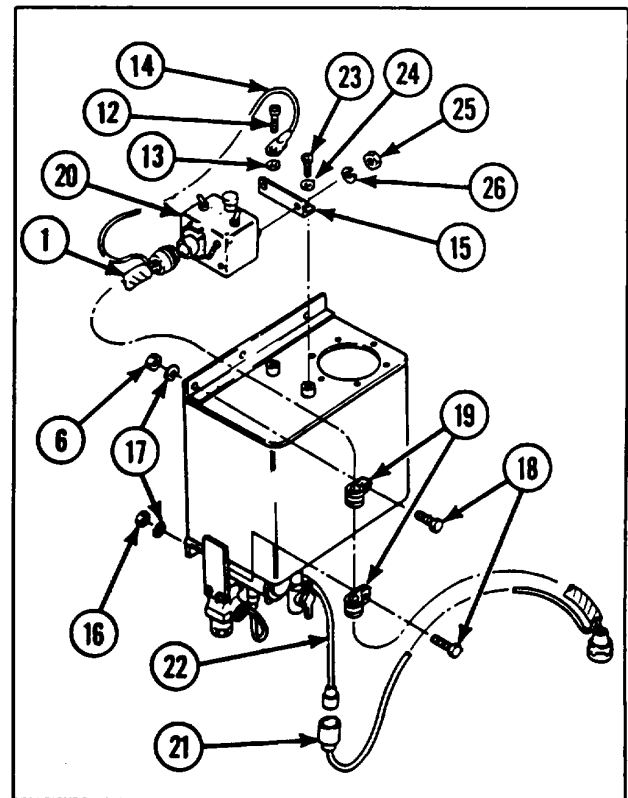
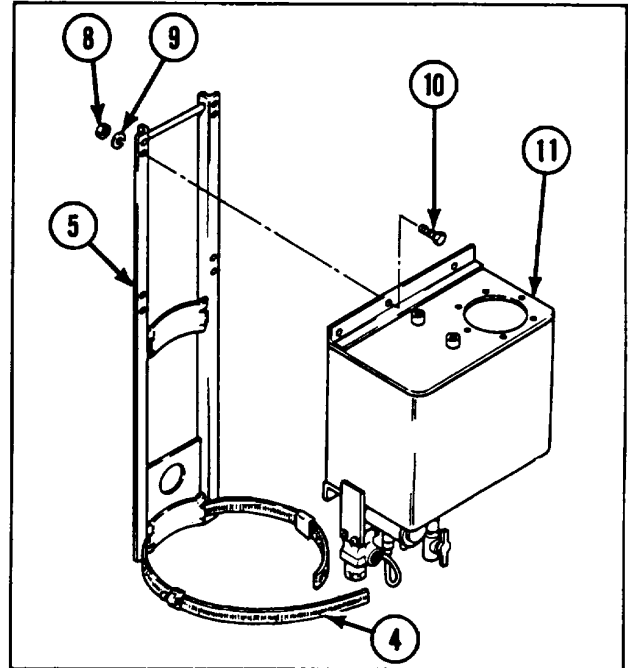
1. Disconnect control box assembly to heats assembly wiring harness (1) from cab hot air vehicular compartment heater (2).
2. Disconnect nonmetallic hose assembly (3) from cab hot air vehicular compartment heater (2).
3. Disconnect two hose clamps (4), and remove cab hot air vehicular compartment heater (2) from personnel heater mount (5).
4. Remove pipe to tube elbow (6) and pipe nipple (7) from cab hot air vehicular compartment heater (2).



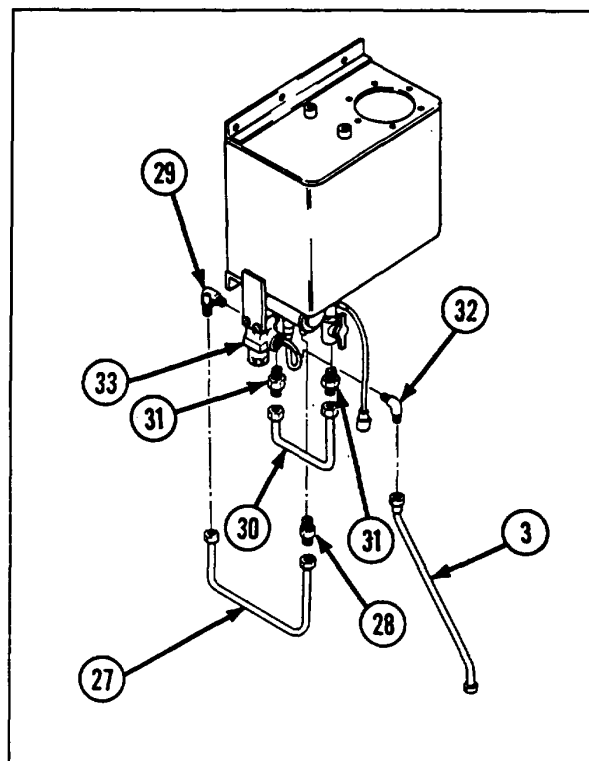
2-199. MAINTENANCE OF PERSONNEL VEHICULAR HEATER ASSEMBLY, PERSONNEL HEATER TANK ASSEMBLY, AND CONTROL BOX ASSEMBLY TO HEATER ASSEMBLY WIRING HARNESS (WINTERIZATION KIT).

DISASSEMBLY (CONT)

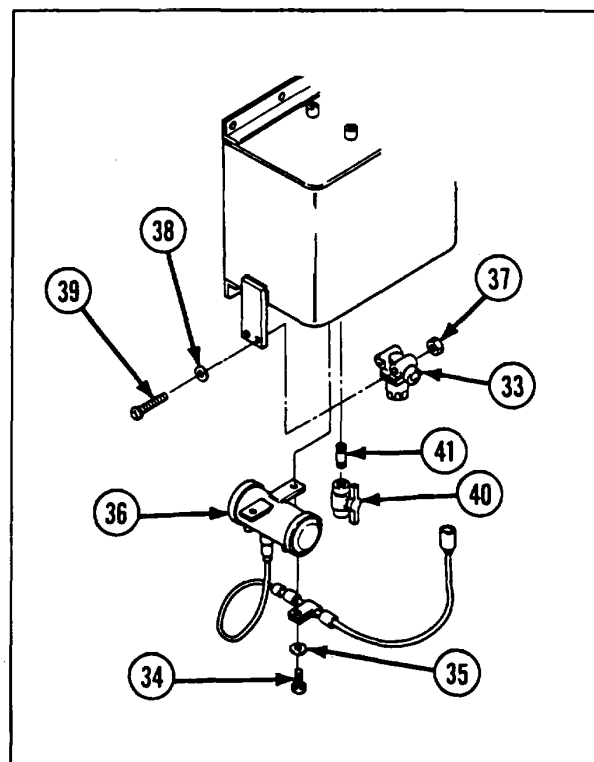
5. Remove four hexagon plain nuts (8), four lockwashers (9), four hexagon head cap-screws (10), and personnel heater tank assembly (11) from personnel heater mount (5).
6. Remove two hose clamps (4) from personnel heater mount (5).
7. Remove hexagon head capscrew (12), lockwasher(13), and ground terminal (14) from control box mounting cab heater bracket (15).
8. Remove two hexagon plain nuts (16), two lockwashers (17), two hexagon head capscrews (18), and two loop clamps (19) from control box assembly to heater assembly wiring harness (1).
9. Disconnect control box assembly to heater assembly wiring harness (1) from crew heater electrical control box (20). Unplug electrical lead (21) from electrical fuel pump lead (22) and remove wiring harness (1).
10. Remove hexagon head capscrew (23), lockwasher (24), crew heater electrical control box (20), and control box mounting cab heater bracket (15).
11. Remove two hexagon plain nuts (25), two lockwashers (26), and control box mounting cab heater bracket (15) from crew heater electrical control box (20).



12. Remove pre-formed metal tube assembly (27), pipe straight adapter (28), and pipe to tube elbow (29).
13. Remove tube assembly (30) and two pipe straight adapters (31).
14. Remove nonmetallic hose assembly (3) and pipe to tube elbow (32) from fluid filter (33).



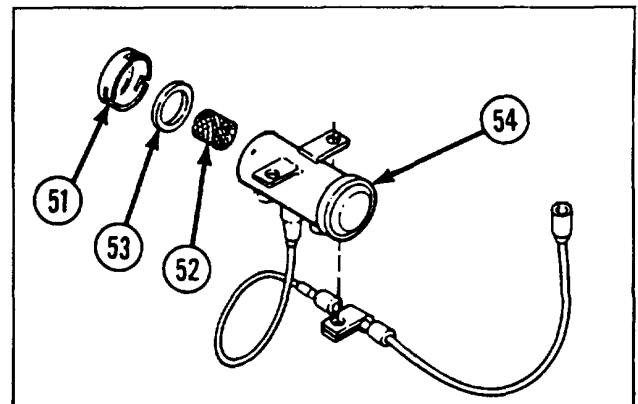
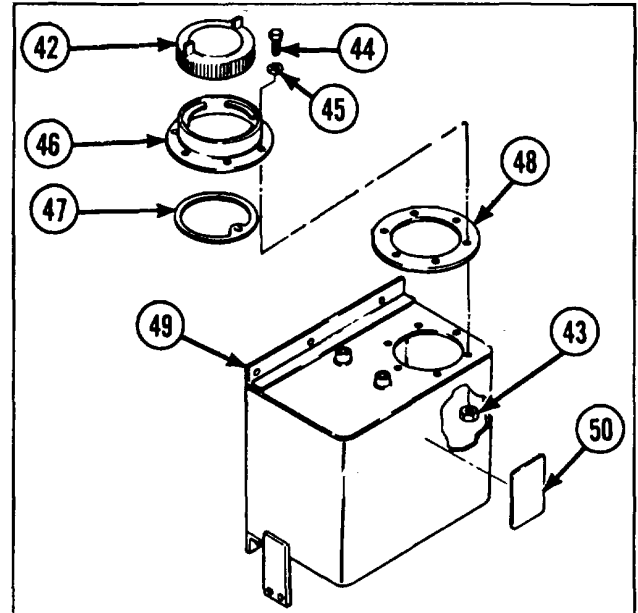
15. Remove two hexagon head capscrews (34), two lockwashers (35), and electrical fuel pump (36).
16. Remove two self-locking nuts (37), two flat washers (38), two machine screws (39), and fluid filter (33).
17. Remove screw shutoff cock (40) and pipe nipple (41).



2-199. MAINTENANCE OF PERSONNEL VEHICULAR HEATER ASSEMBLY, PERSONNEL HEATER TANK ASSEMBLY, AND CONTROL BOX ASSEMBLY TO HEATER ASSEMBLY WIRING HARNESS (WINTERIZATION KIT) (CONT).

DISASSEMBLY (CONT)

18. Remove filler opening cap (42).
19. Remove six self-locking nuts (43), six machine screws (44), six flat washers (45), fuel tank fill ring (46), fuel cap chain ring (47), and fuel tank ring gasket (48) from fuel tank (49).
20. Remove Instruction plate (50), only if damaged
21. Remove fuel pump cover (51), strainer element (52), and gasket (53) from fuel pump housing (54).

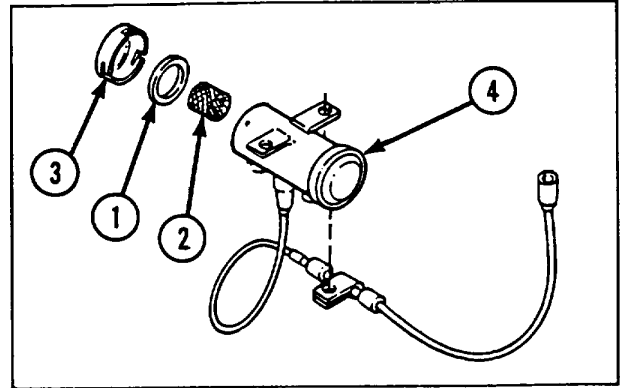


INSPECTION/REPAIR

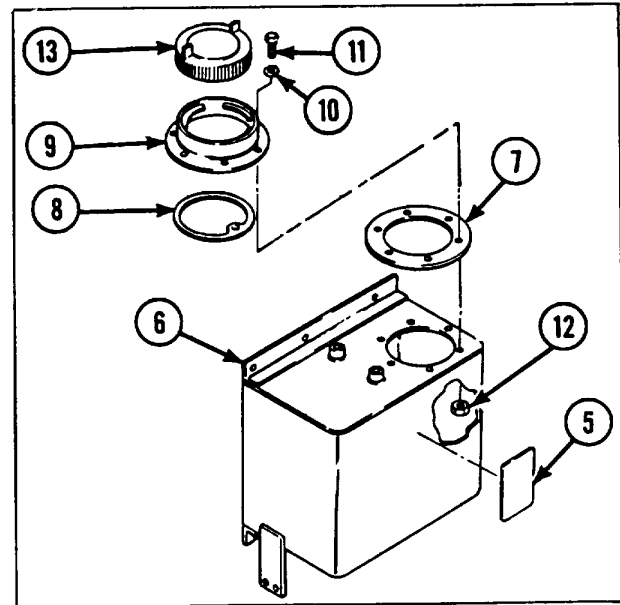
1. Inspect for broken, damaged, or missing parts.
2. If damaged or missing, replace wiring harness marker bands. Etch or stamp lead number on new marker band.
3. For repair of wiring harness shell connectors and cable terminals, refer to general maintenance, page 2-364.
4. Vehicular heater is a repairable assembly Notify direct support maintenance.
5. If fuel pump cover or fuel pump housing are broken or damaged, repair is by replacement of next higher assembly.
6. Electrical cable is a manufactured item. Refer to appendix D.
7. Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

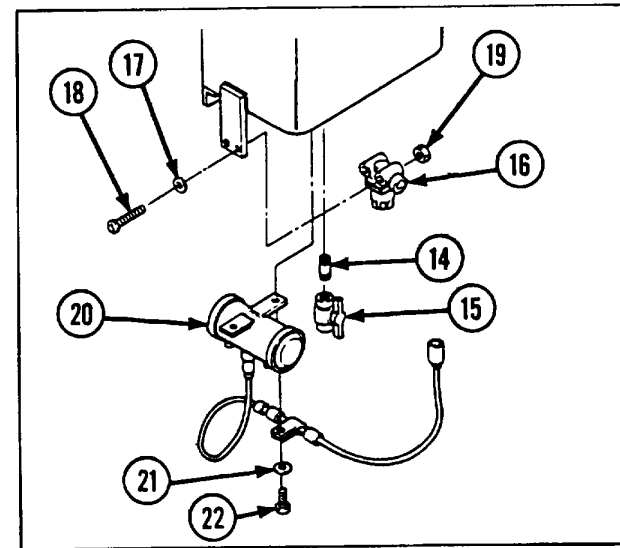
1. Install new gasket (1), new strainer element (2), and fuel pump cover (3) to fuel pump housing (4).



2. If removed, install instruction plate (5) to fuel tank (6).
3. Install new fuel tank ring gasket (7), fuel cap chain ring (8), fuel tank fill ring (9), six flat washers (10), six machine screws (11), and six new self-locking nuts (12).
4. Install filler opening cap (13).



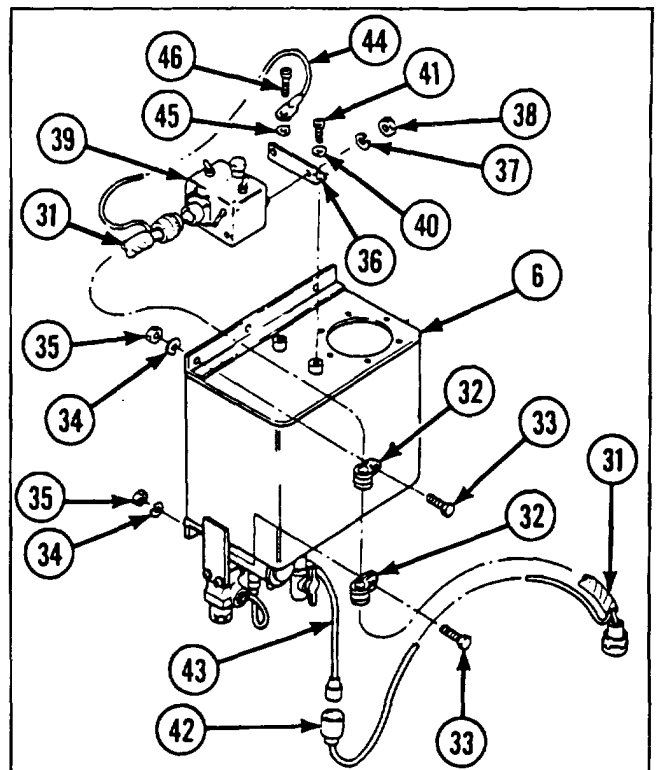
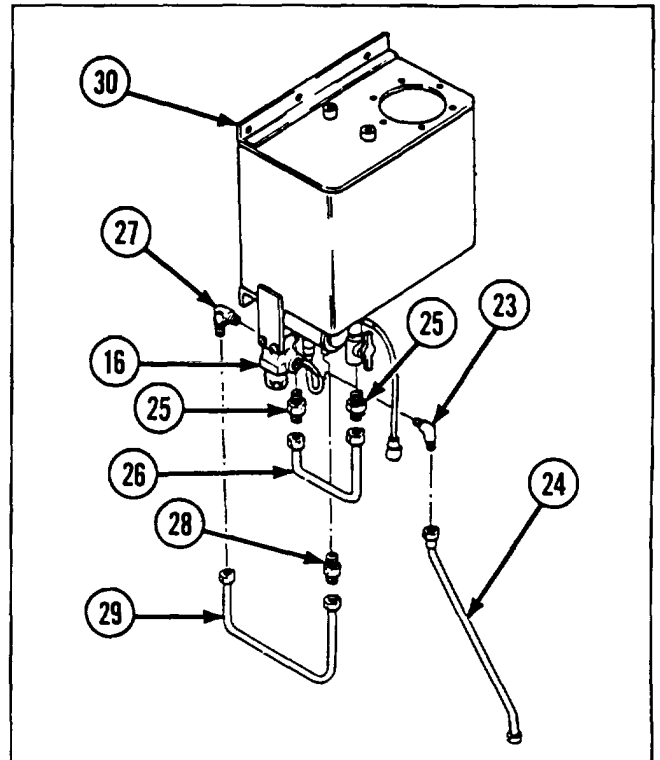
5. Install pipe nipple (14) and screw shutoff cock (15).
6. Install assembled fluid filter (16), two flat washers (17), two machine screws (18), and two new self-locking nuts (19).
7. Install assembled electrical fuel pump (20), two new lockwashers (21), and two hexagon head capscrews (22).



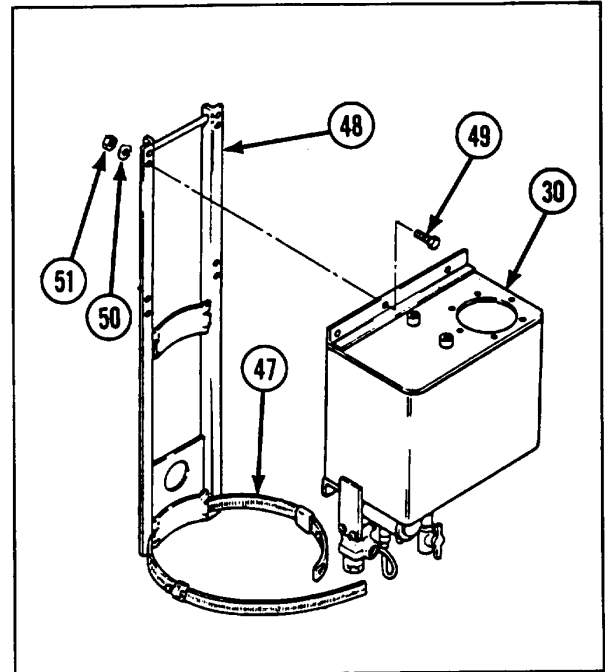
2-199. MAINTENANCE OF PERSONNEL VEHICULAR HEATER ASSEMBLY, PERSONNEL HEATER TANK ASSEMBLY, AND CONTROL BOX ASSEMBLY TO HEATER ASSEMBLY WIRING HARNESS (WINTERIZATION KIT) (CONT)

REASSEMBLY (CONT)

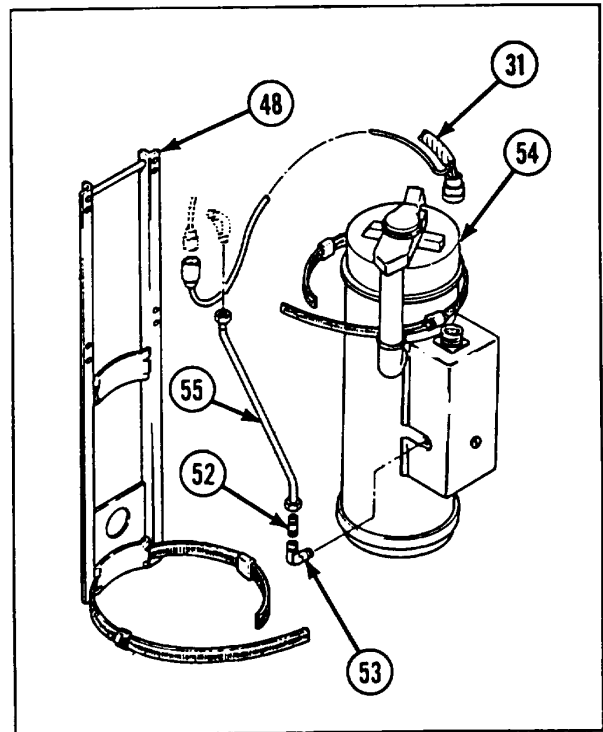
8. Install pipe to tube elbow (23) and nonmetallic hose assembly (24) to fluid filter (16)
9. Install two pipe straight adapters (25) and tube assembly (26).
10. Install pipe to tube elbow (27), pipe straight adapter (28), and preformed metal tube assembly (29) to personnel heater tank assembly (30).
11. Install control box assembly to heater assembly wiring harness (31), two loop clamps (32), two hexagon head capscrew. (33), two new lockwashers (34), and two hexagon plain nuts (35).
12. Install control box mounting cab heater bracket (36), two new lockwashers (37), and two hexagon plain nuts (38) to crew heater electrical control box (39).
13. Install crew heater electrical control box (39) with control box mounting cab heater bracket (36), new lockwasher (40), and hexagon head capscrew (41) to fuel tank (6).
14. Connect control box assembly to heater assembly wiring harness (31) to crew heater electrical control box (39). Plug electrical lead (42) to electric fuel pump lead (43).
15. Connect ground terminal (44), and install new lockwasher (45) and hexagon head capscrew (46) to control box mounting cat heater bracket (36).



16. Install two hose clamps (47) to personnel heater mount (48).
17. Install personnel heater tank assembly (30), four hexagon head capscrews (49), four new lockwashers (50), and four hexagon plain nuts (51) to personnel heater mount (48).



18. Install pipe nipple (52) and pipe to tube elbow (53) to cab hot air vehicular compartment heater (54).
19. Install cab hot air vehicular compartment heater (54) to personnel heater mount (48).
20. Connect nonmetallic hose assembly (55) to cab hot air vehicular compartment heater (54).
21. Connect control box assembly to heater assembly wiring harness (31) to cab hot air vehicular compartment heater (54).



2-200. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-SHROUD AND RELATED ITEMS.

This task covers:

a. *Removal*

b. *Inspection/Repair*

c. *Installation*

INITIAL SETUP

Materials/Parts

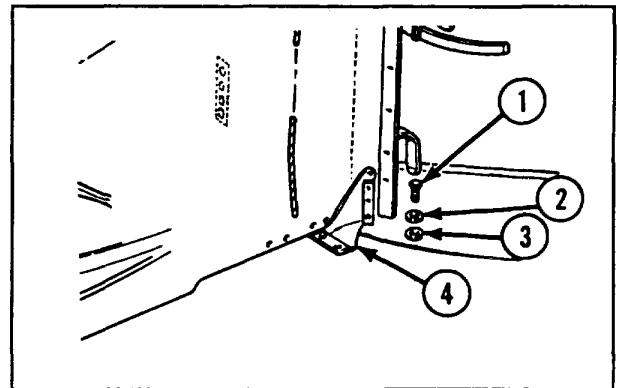
- Gasket
- Lockwasher (20)
- Lockwasher (11)
- Lockwasher

References

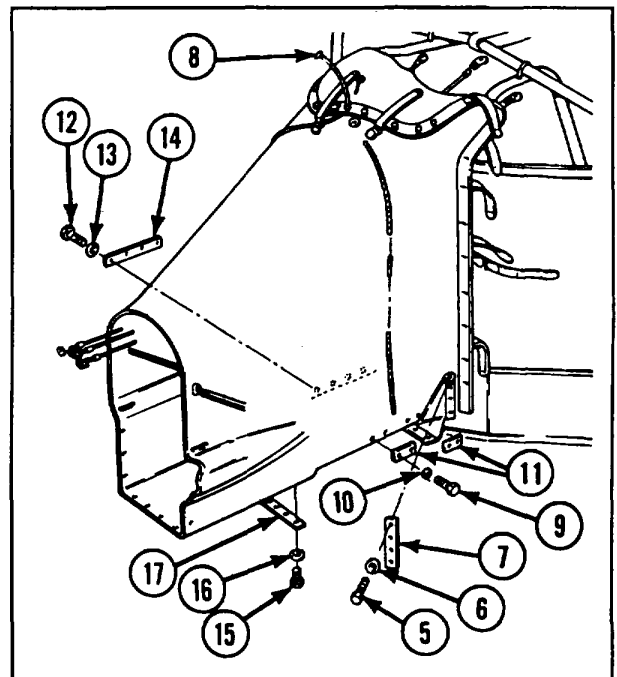
TM 9-2350-304-24P-1

REMOVAL

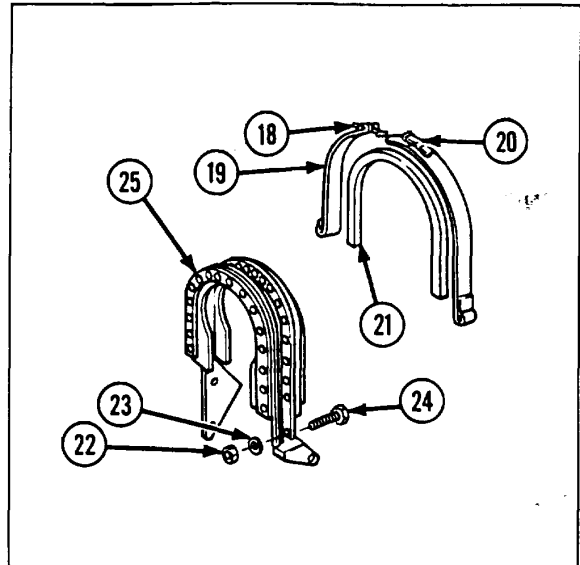
1. Remove six hexagon head capscrews (1), six lockwashers (2), six flat washers (3), and shroud bottom skirt (4).



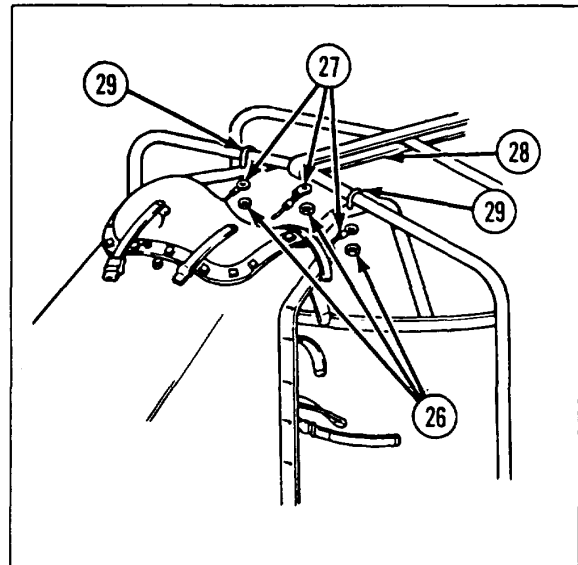
2. Remove eight hexagon head capscrews (5), eight lockwashers (6), and two shroud support strips (7).
3. Remove two shroud assembly ropes (8).
4. Remove four hexagon head capscrews (9), four lockwashers (10), and two left shroud support strips (11).
5. Remove four hexagon head capscrews (12), four lockwashers (13), and right shroud support strip (14).
6. Remove four hexagon head capscrews (15), four lockwashers (16), and bottom shroud support strip (17).



7. Disconnect T-bolt (18), separate shroud trunnion assembly (19) from shroud coupler assembly (20), and remove gasket (21).
8. Remove two hexagon plain nuts (22), two lockwashers (23), and two hexagon head capscrews (24). Remove shroud trunnion assembly (19) and shroud coupler assembly (20) from gun mount seal (25).



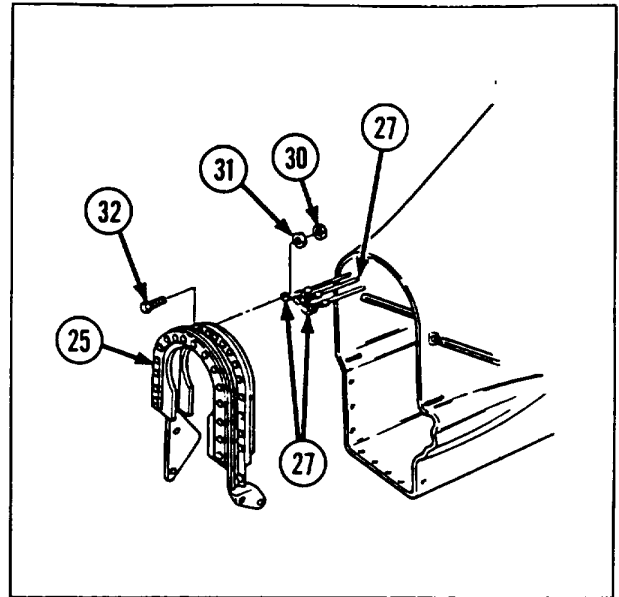
9. Remove three nuts (26) and disconnect three elastic cord assemblies (27) from ridge (28) and two U-bolts (29).



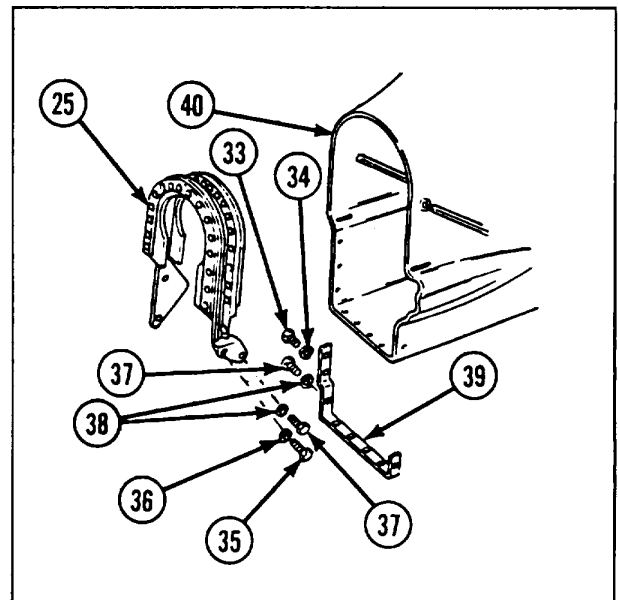
2-200. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-SHROUD AND RELATED ITEMS (CONT).

REMOVAL (CONT)

10. Remove three hexagon plain nuts (30), three lockwashers (31), and three hexagon head capscrews (32). Disconnect three elastic cord assemblies (27) from gun mount seal (25).



11. Remove two hexagon head capscrews (33), two washers (34), hexagon head capscrew (35), washer (36), and gun mount seal (25).
12. Remove six hexagon head capscrews (37), six washers (38), and front shroud bottom strap (39).
13. Remove shroud assembly (40).



INSPECTION/REPAIR

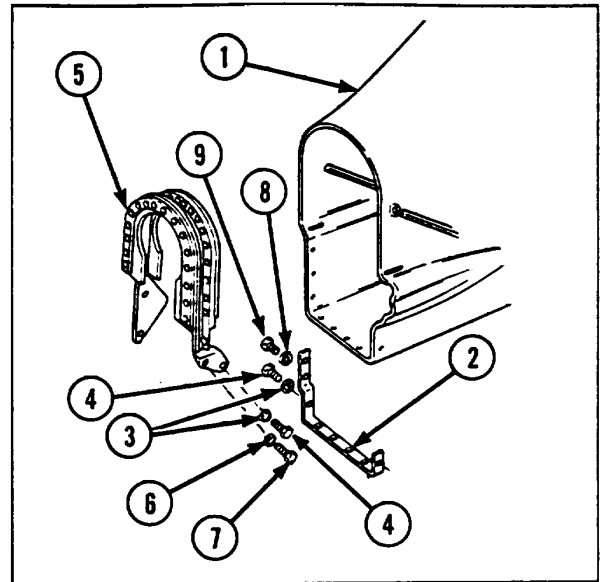
1. Inspect for broken, damaged, or missing parts.
2. Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

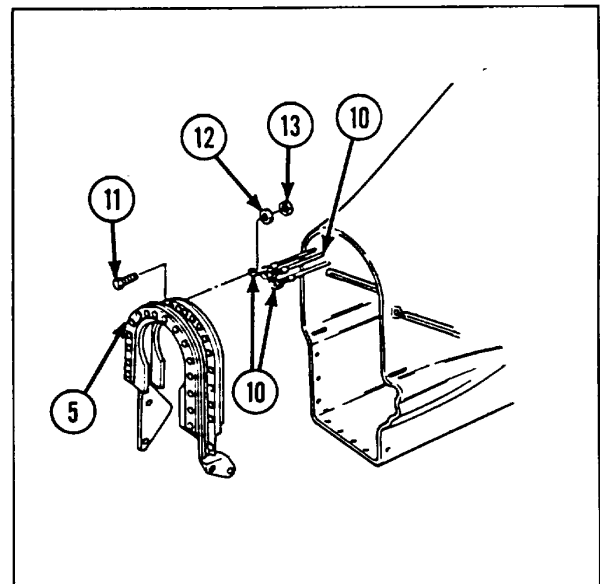
NOTE

Make holes in shroud assembly to accept screws.

- 1 Install shroud assembly (1).
- 2 Install front shroud bottom strap (2), six washers (3), and six hexagon head capscrews (4).
- 3 Install new gun mount seal (5), washer (6), hexagon head capscrew (7), two washers (8), and two hexagon head capscrews (9).



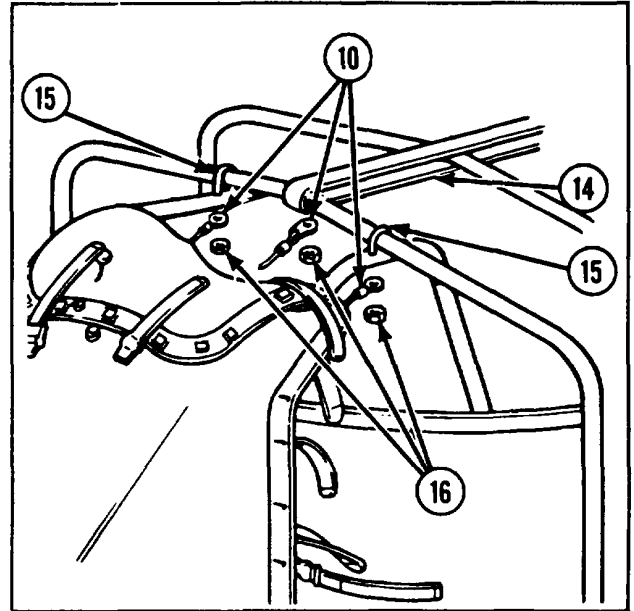
- 4 Connect three elastic cord assemblies (10) to gun mount seal (5), and install three hexagon head capscrews (11), three new lockwashers (12), and three hexagon plain nuts (13).



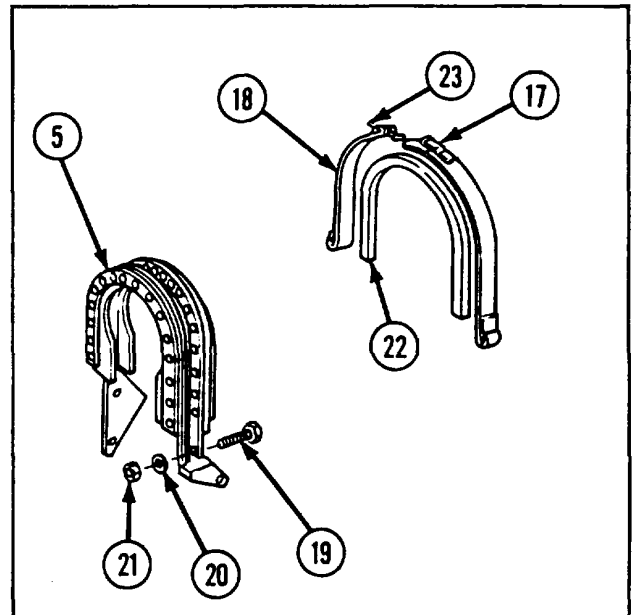
2-200. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-SHROUD AND RELATED ITEMS (CONT).

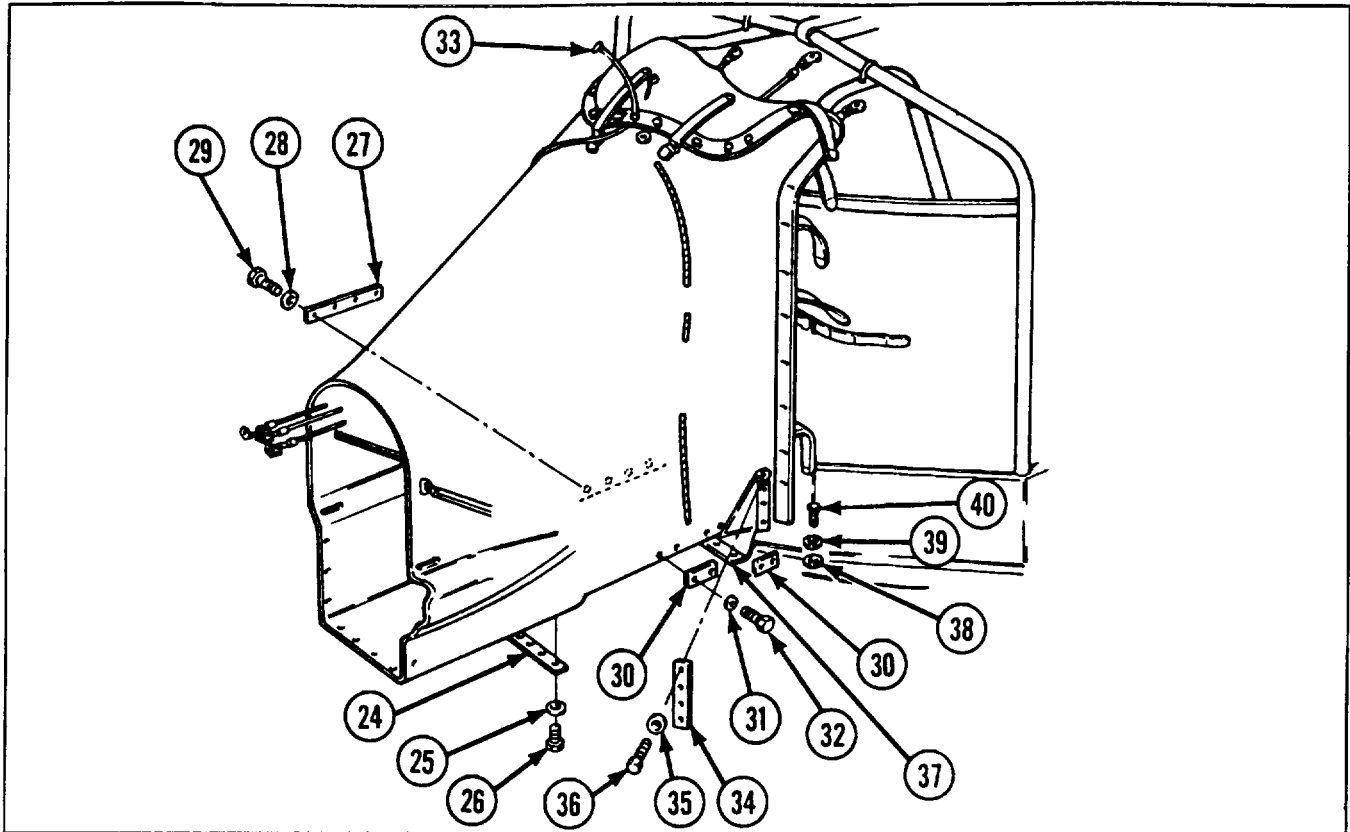
INSTALLATION (CONT)

- 5 Connect three elastic cord assemblies (10) to ridge (14) and two U-bolts (15). Secure with three nuts (16).



- 6 Install shroud coupler assembly (17), shroud trunnion assembly (18), two hexagon head capscrews (19), two new lockwashers (20), and two hexagon plain nuts (21) on gun mount seal (5).
- 7 Install new gasket (22), and connect shroud coupler assembly (17) to shroud trunnion assembly (18) and T-bolt (23).





NOTE

Install rounded side of bottom shroud support strip toward cloth.

- 8 Install bottom shroud support strip (24), four new lockwashers (25), and four hexagon head capscrews (26).

NOTE

Install rounded side of right shroud support strip toward cloth.

- 9 Install right shroud support strip (27), four new lockwashers (28), and four hexagon head capscrews (29).
 10 Install two left shroud support strips (30), four new lockwashers (31), and four hexagon head capscrews (32).
 11 Install two shroud assembly ropes (33).

NOTE

Install rounded side of shroud support strip toward cloth.

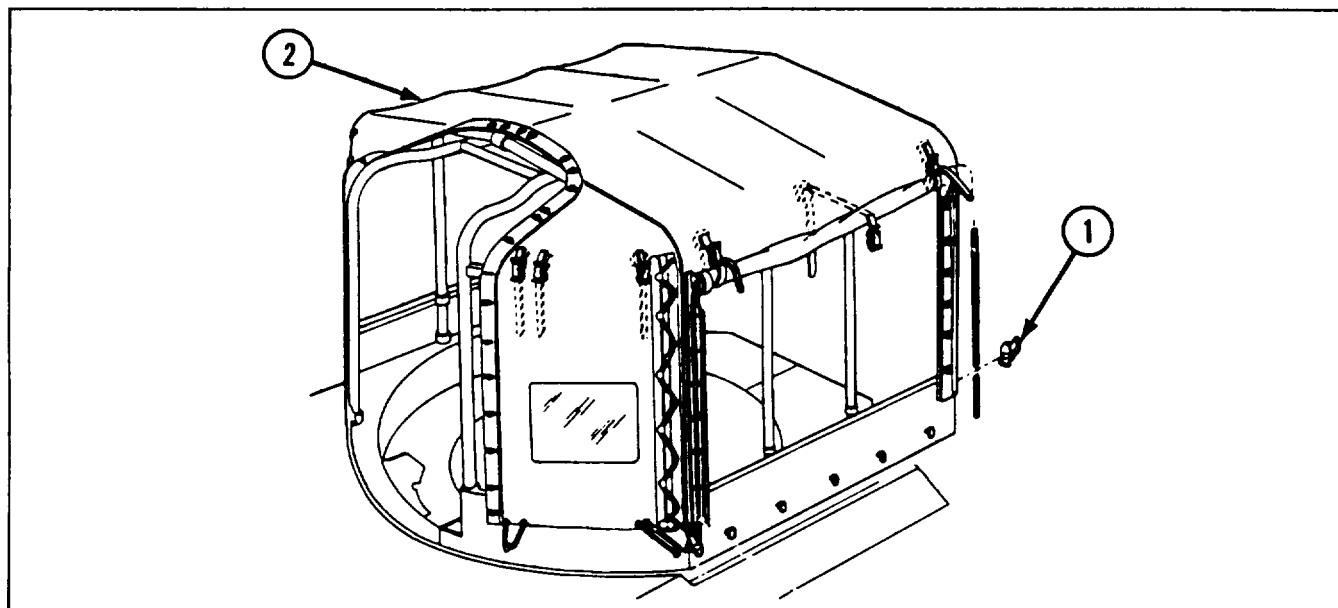
- 12 Install two shroud support strips (34), eight new lockwashers (35), and eight hexagon head capscrews (36).
 13 Install shroud bottom skirt (37), six flat washers (38), six new lockwashers (39), and six hexagon head capscrews (40).

2-201. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-COVER AND STRAP HOOKS.

This task covers:

a. *Removal*b. *Inspection/Repair*c. *Installation***INITIAL SETUP***References*

TM 9-2350-304-24P-1

**REMOVAL**

- 1 Remove ten strap hooks (1) from crew compartment vehicular fitted cover (2).
- 2 Remove crew compartment vehicular fitted cover (2).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

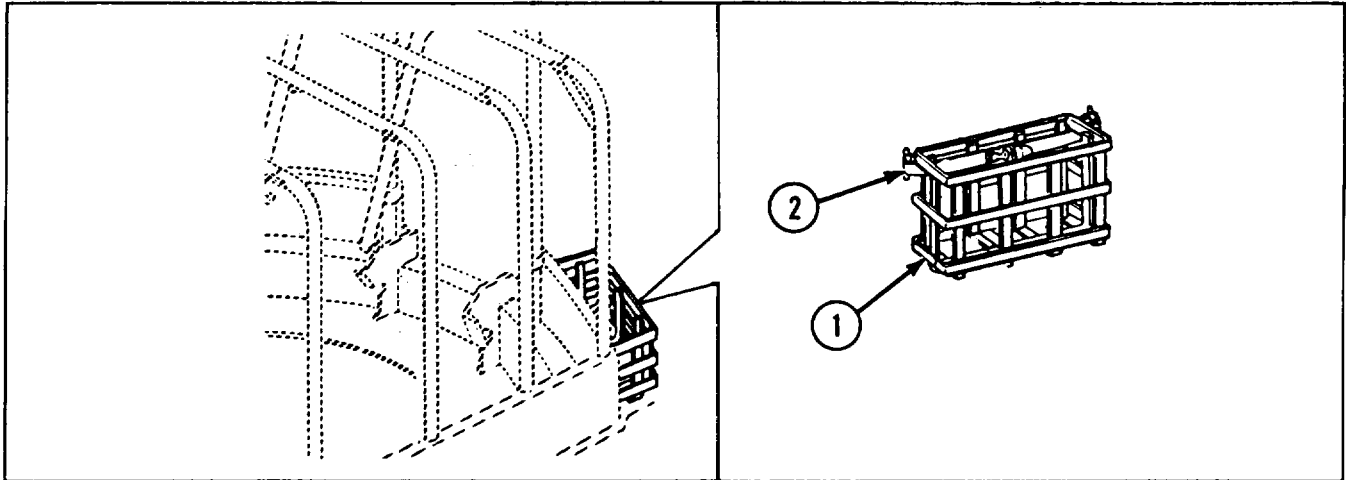
INSTALLATION

- 1 Install crew compartment vehicular fitted cover (2).
- 2 If removed, sew ten strap hooks (1) on crew compartment vehicular fitted cover (2).

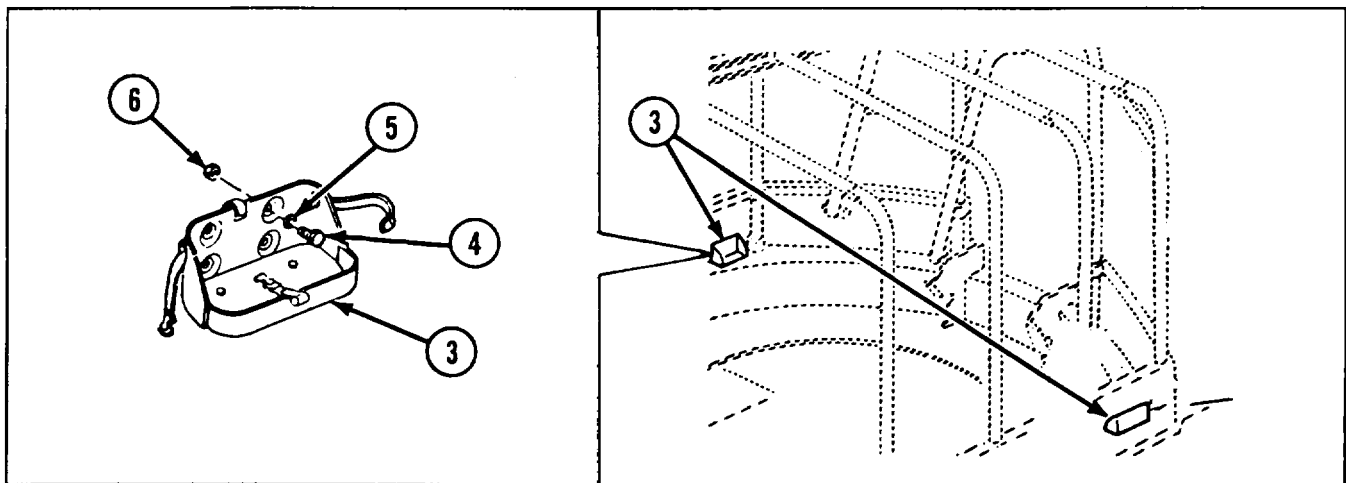
2-202. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-STOWAGE ITEMS AND RELATED PARTS.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Materials/Parts</i> Lockwasher (16)		<i>References</i> TM 9-2350-304-24P-1	

REMOVAL



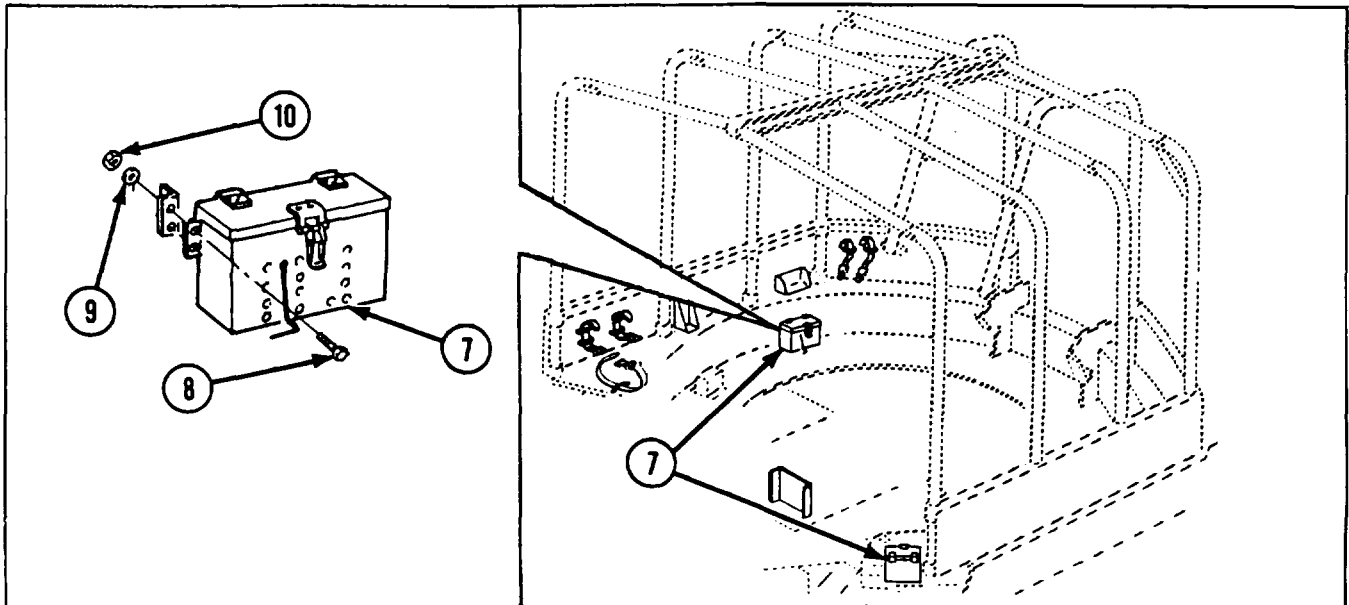
- 1 Remove tarpaulin from tarpaulin stowage rack (1).
- 2 Remove webbing strap (2) and tarpaulin stowage rack (1).



- 3 Remove water cans from two water can brackets (3).
- 4 Remove eight hexagon head capscrews (4), eight flat washers (5), eight hexagon plain nuts (6), and two water can brackets (3).

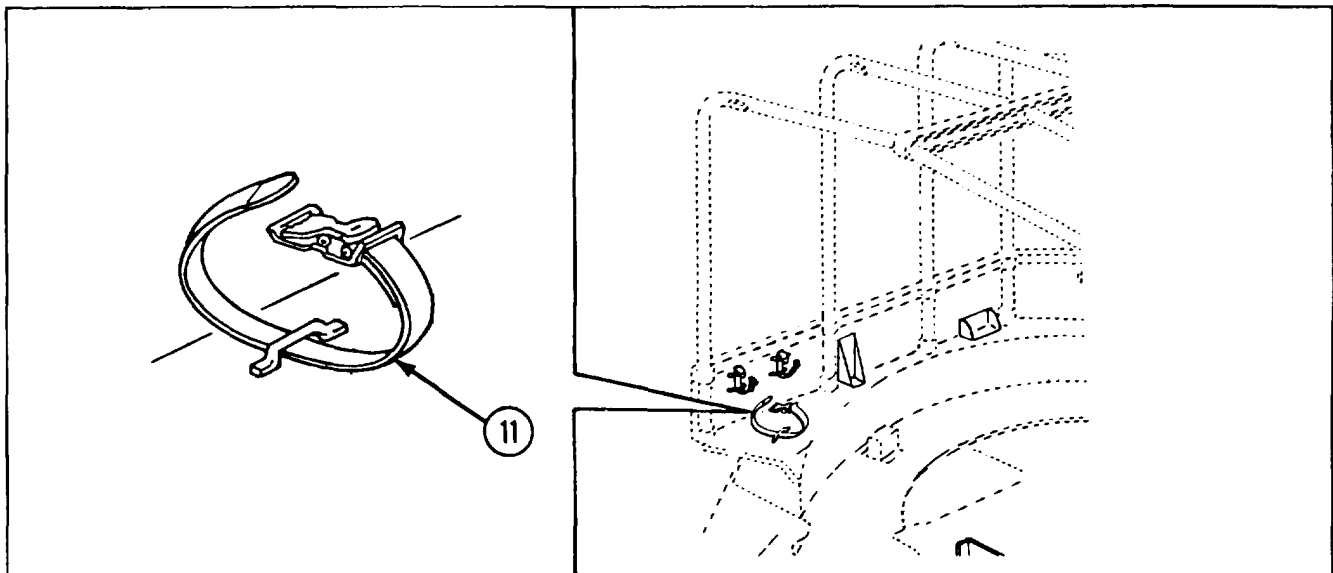
2-202. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-STORAGE ITEMS AND RELATED PARTS (CONT).

REMOVAL (CONT)



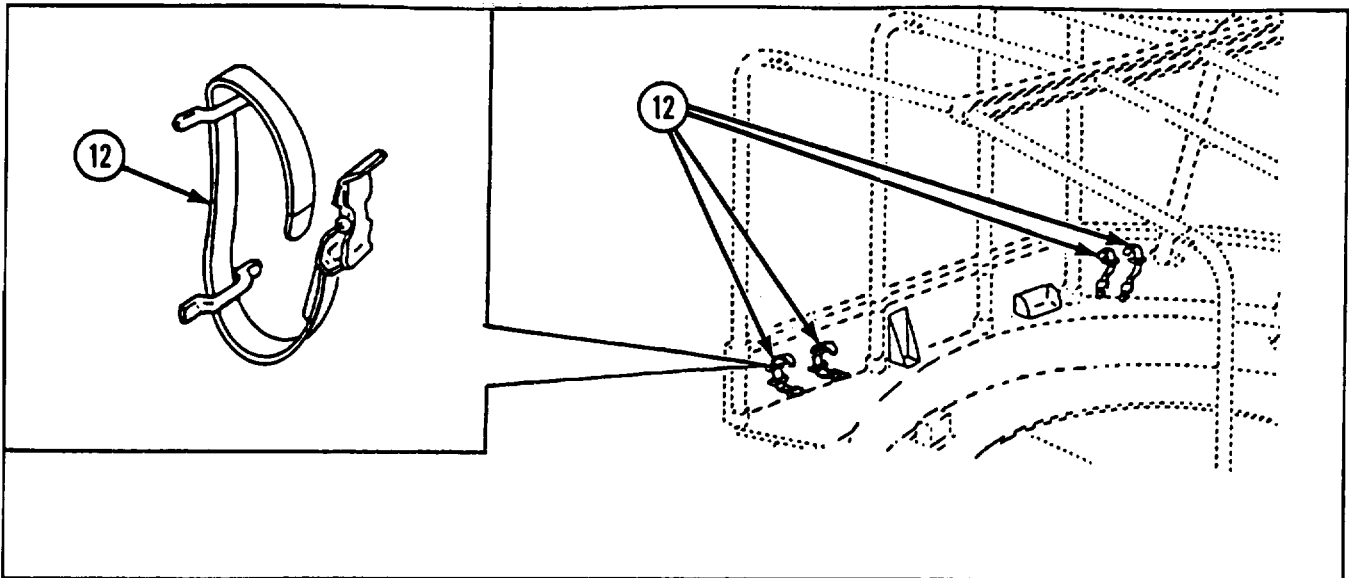
5 Remove contents of two grenade boxes (7).

6 Remove eight hexagon head capscrews (8), eight washers (9), eight hexagon plain nuts (10), and two grenade boxes (7).

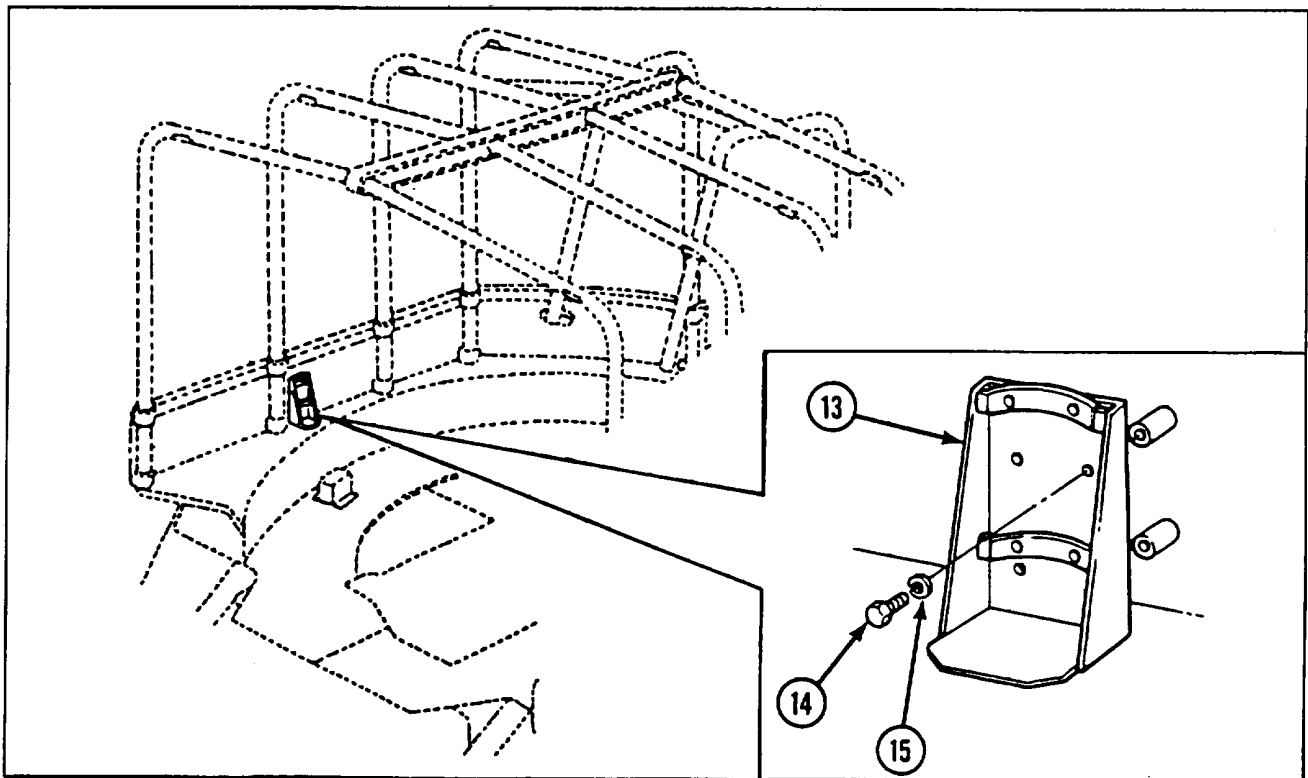


7 Remove two level bars from level bar webbing strap (11).

8 Remove level bar webbing strap (11).



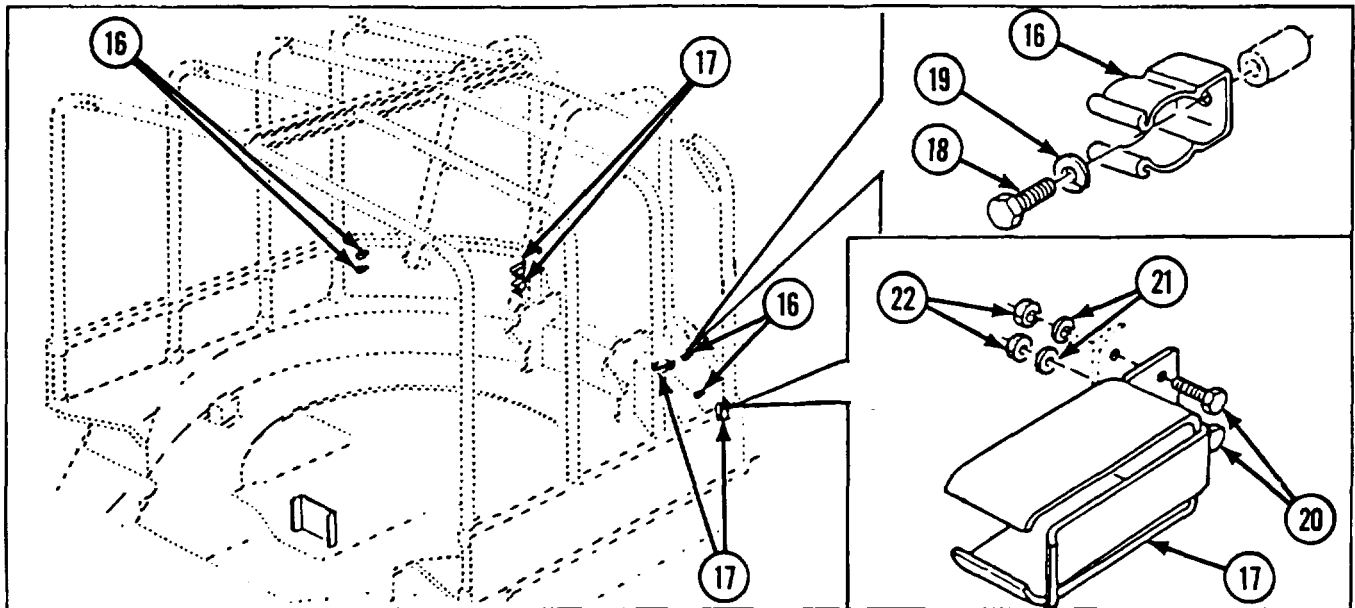
- 9 Remove two track connecting fixtures from track connecting fixture webbing straps (12).
- 10 Remove four track connecting fixture webbing straps (12).



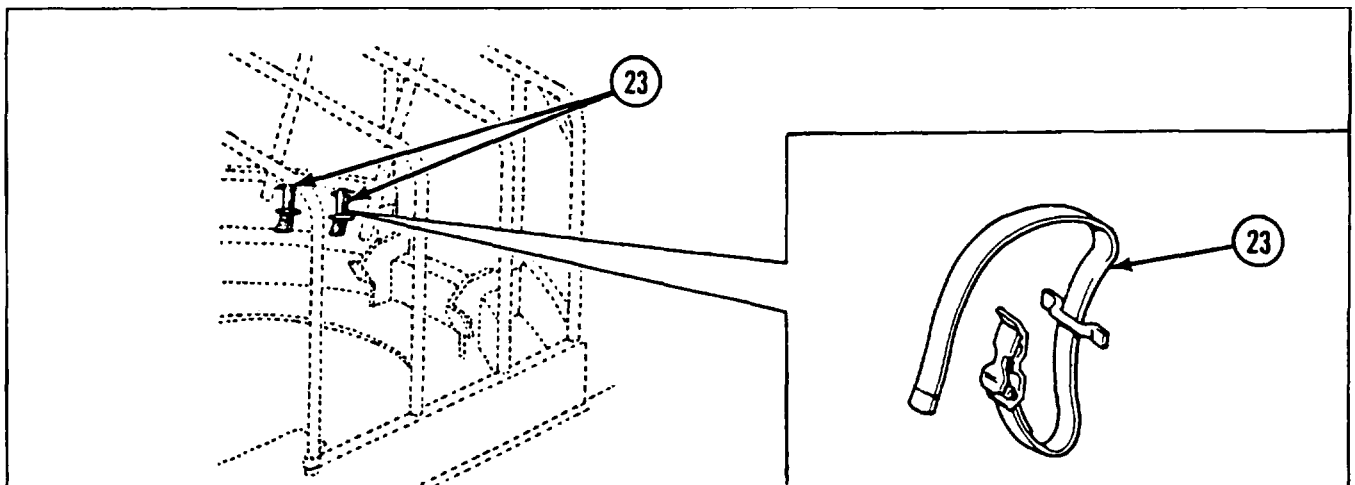
- 11 Remove fire extinguisher from fire extinguisher bracket (13).
- 12 Remove four hexagon head capscrews (14), four washers (15), and fire extinguisher bracket (13).

2-202. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-STORAGE ITEMS AND RELATED PARTS (CONT).

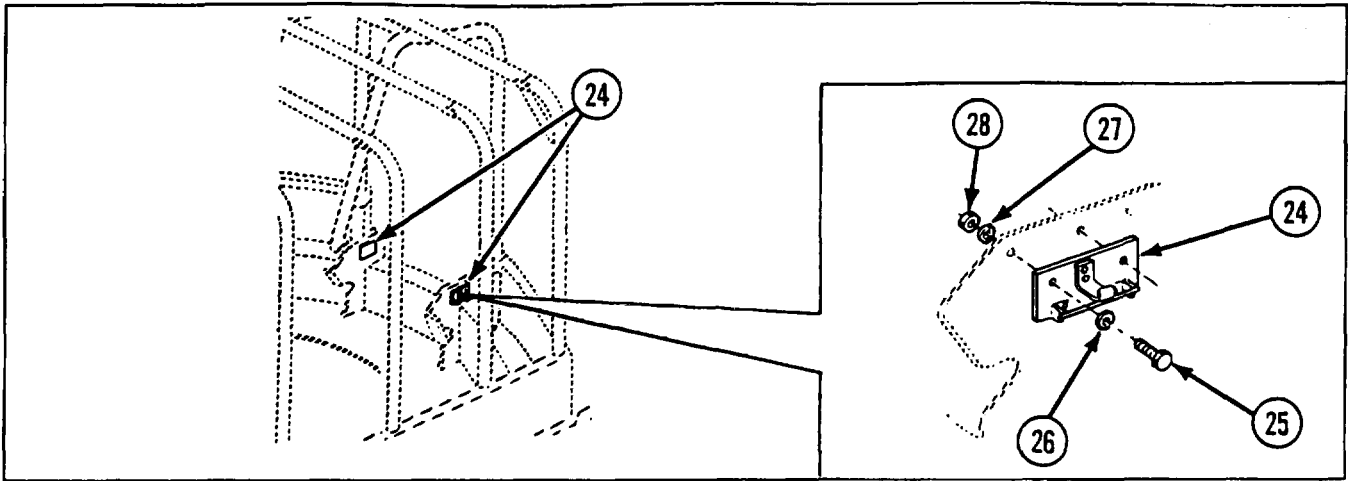
REMOVAL (CONT)



- 13 Remove four rifles from four spring tension clips (16) and four bracket assemblies (17).
- 14 Remove four machine screws (18), four lockwashers (19), and four spring tension clips (16).
- 15 Remove eight hexagon head capscrews (20), eight lockwashers (21), eight hexagon plain nuts



- 16 Remove tool bag from two tool bag assembly webbing straps (23).
- 17 Remove two tool bag assembly webbing straps (23).

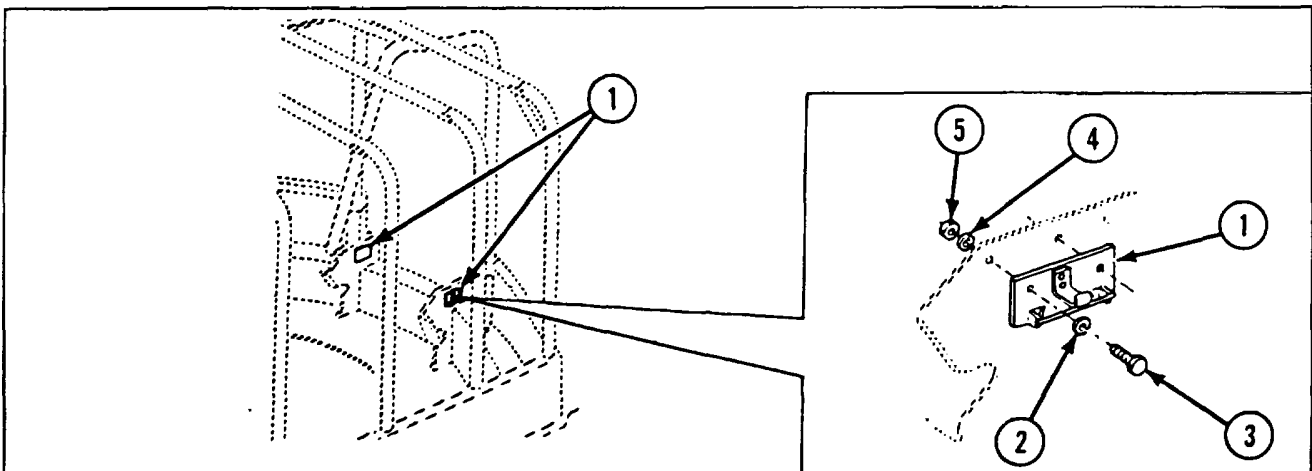


- 18 Remove water canteens from two canteen rack assemblies (24).
- 19 Remove four hexagon head capscrews (25), four flat washers (26), four lockwashers (27), four hexagon plain nuts (28), and two canteen rack assemblies (24).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

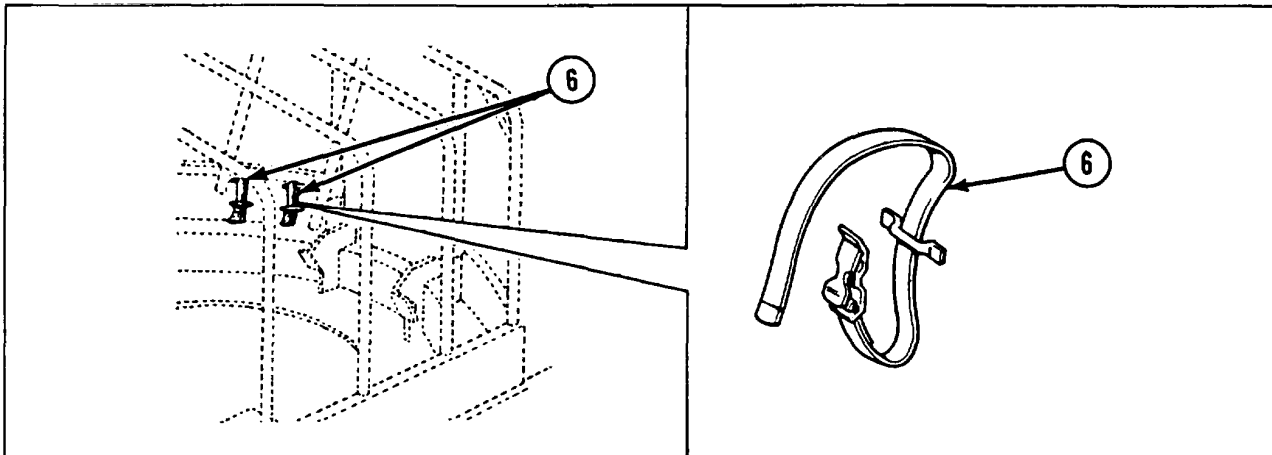
INSTALLATION



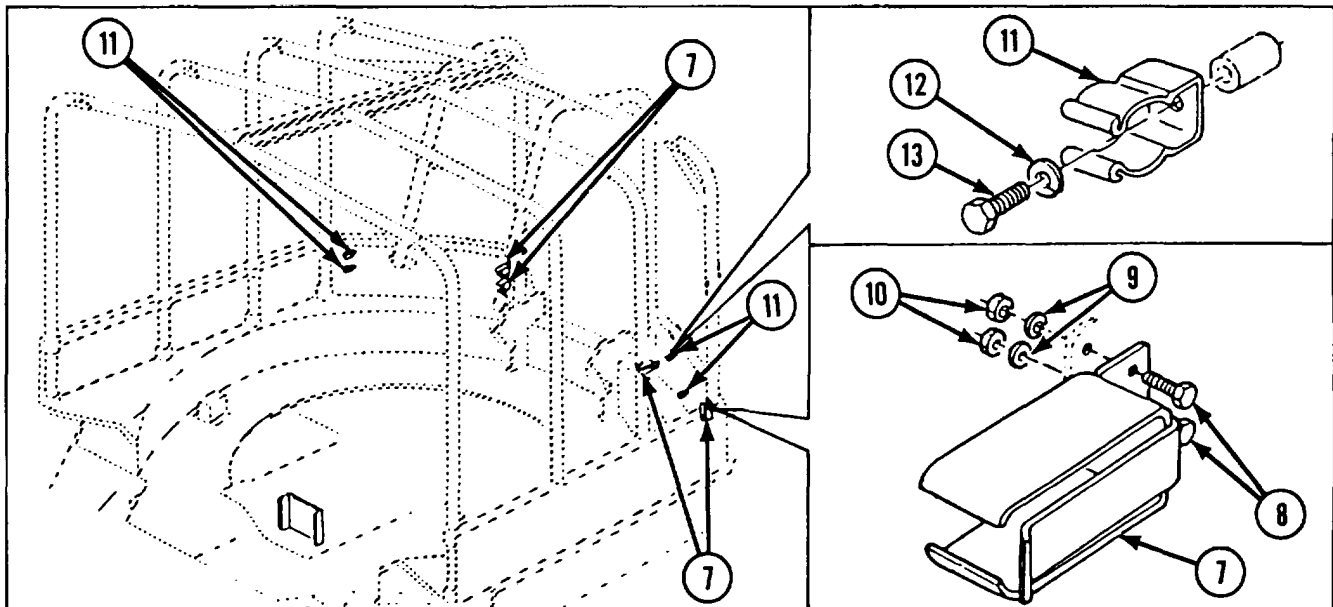
- 1 Install two canteen rack assemblies (1), four flat washers (2), four hexagon head capscrews (3), four new lockwashers (4), and four hexagon plain nuts (5).
- 2 Install water canteens on canteen rack assemblies (1).

2-202. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-STORAGE ITEMS AND RELATED PARTS (CONT).

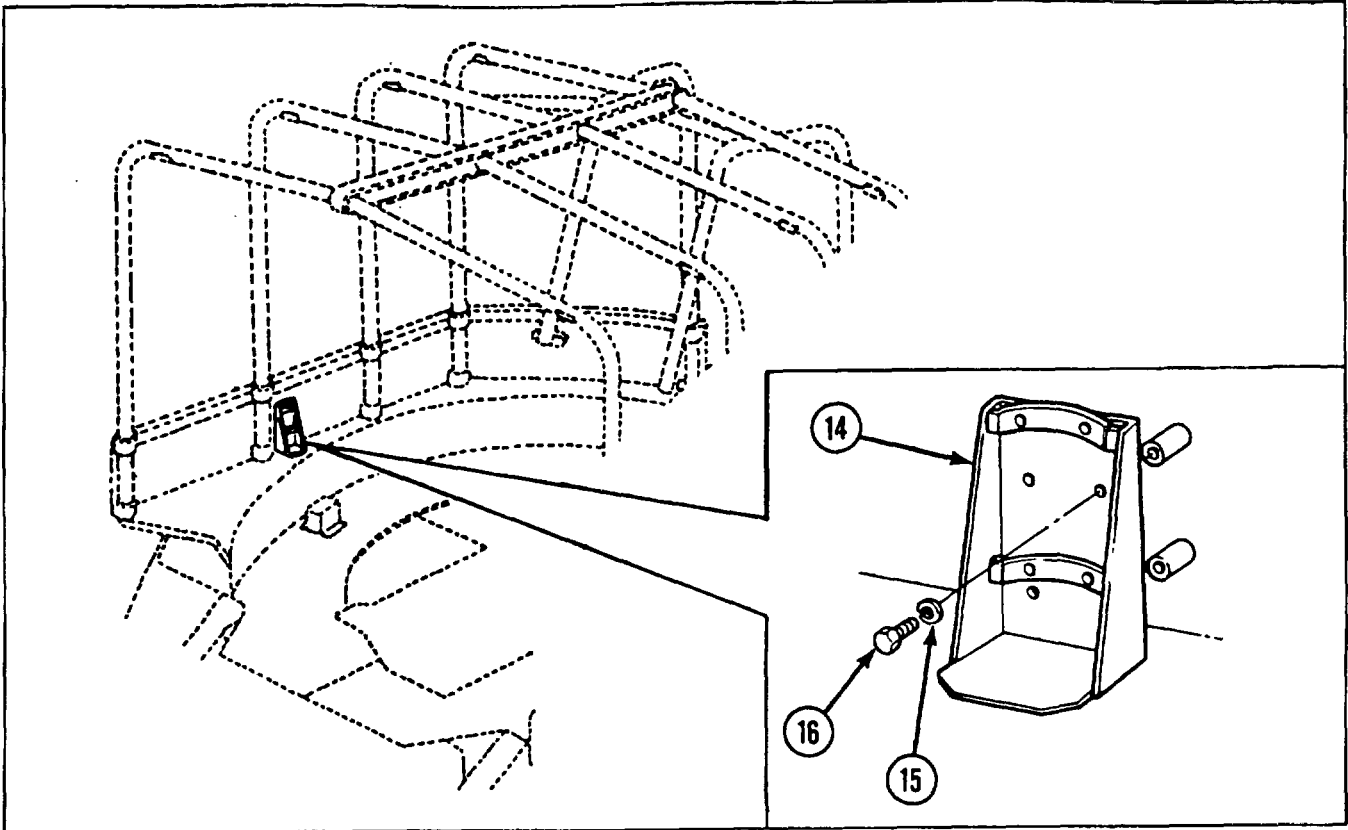
INSTALLATION (CONT)



- 3 Install two tool bag assembly webbing straps (6).
- 4 Install tool bag in tool bag assembly webbing straps (6).

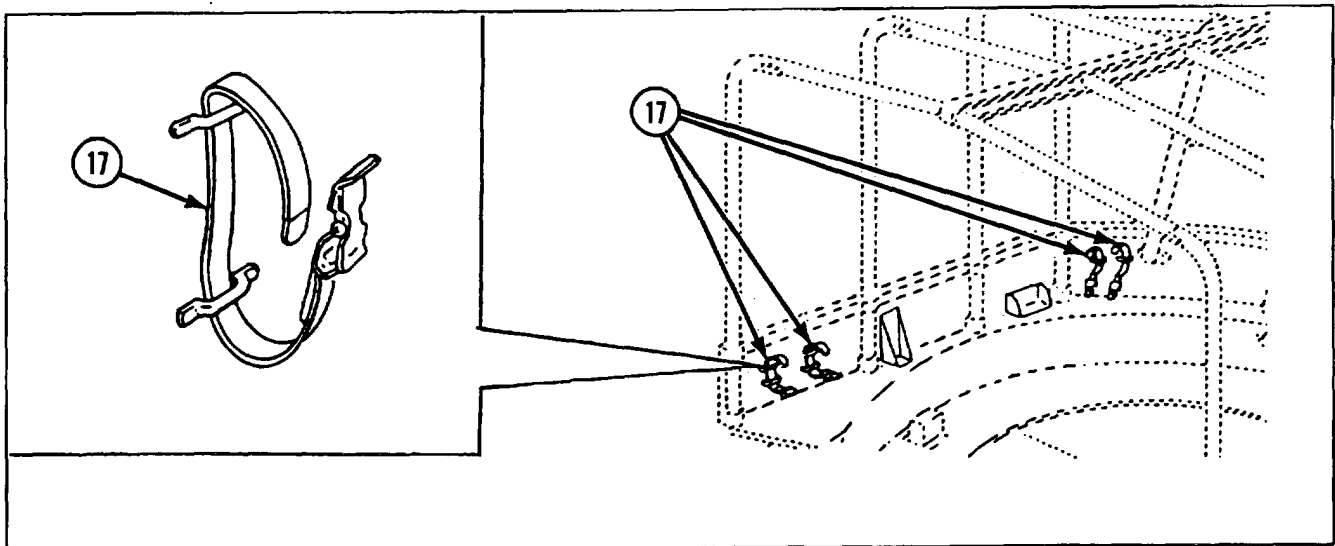


- 5 Install four bracket assemblies (7), eight hexagon head capscrews (8), eight new lockwashers (9), and eight hexagon plain nuts (10).
- 6 Install four new spring tension clips (11), four new lockwashers (12), and four machine screws (13).
- 7 Place rifles in four spring tension clips (11) and four bracket assemblies (7).



8 Install fire extinguisher bracket (14), four washers (15), and four hexagon head capscrews (16).

9 Install fire extinguisher on fire extinguisher bracket (14).

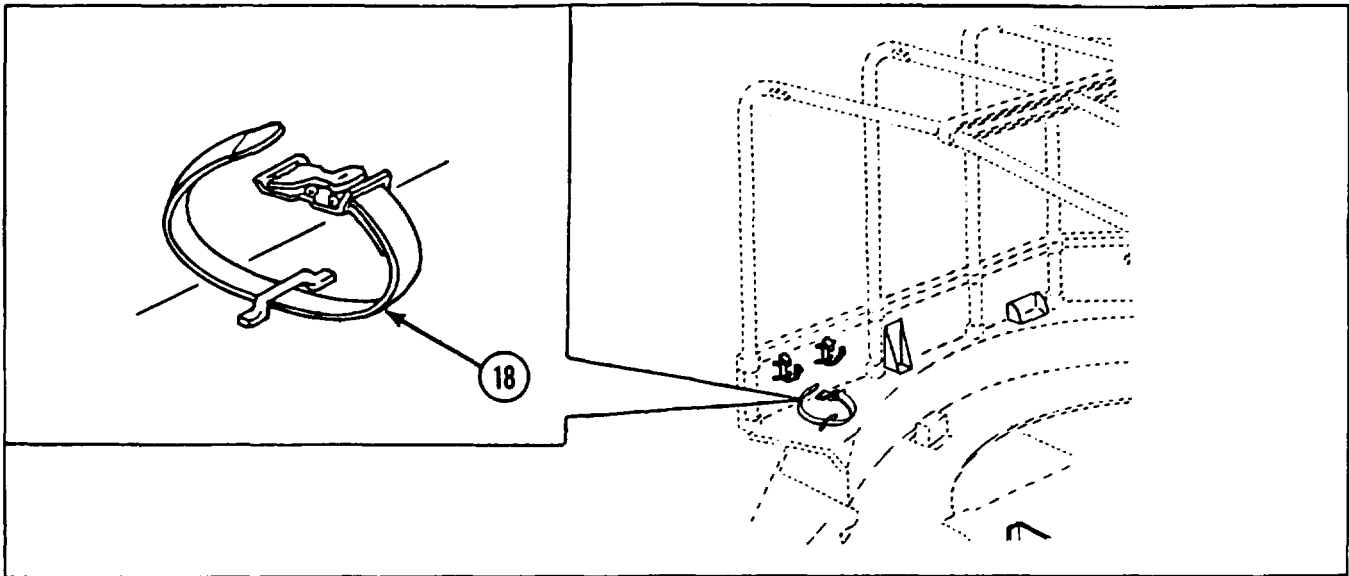


10 Install four track connecting fixture webbing straps (17).

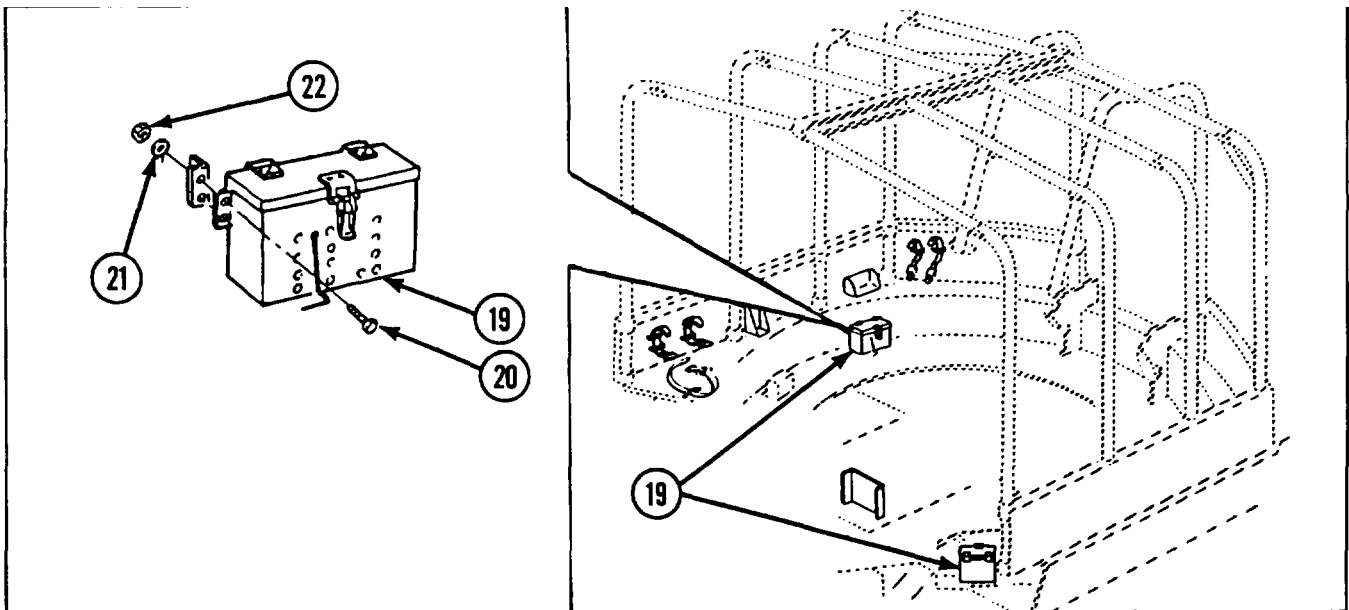
11 Install two track connecting fixtures in track connecting fixture webbing straps (17).

2-202. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-STORAGE ITEMS AND RELATED PARTS (CONT).

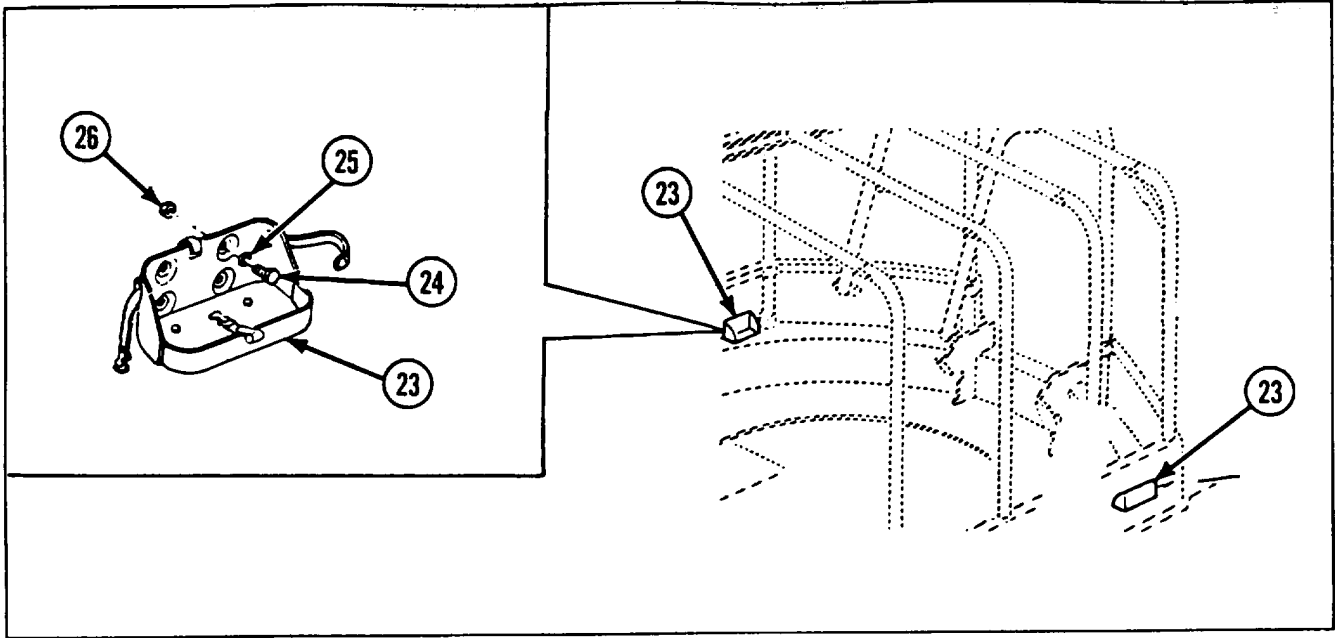
INSTALLATION (CONT)



- 12 Install level bar webbing strap (18).
- 13 Install two level bars in level bar webbing strap (18).

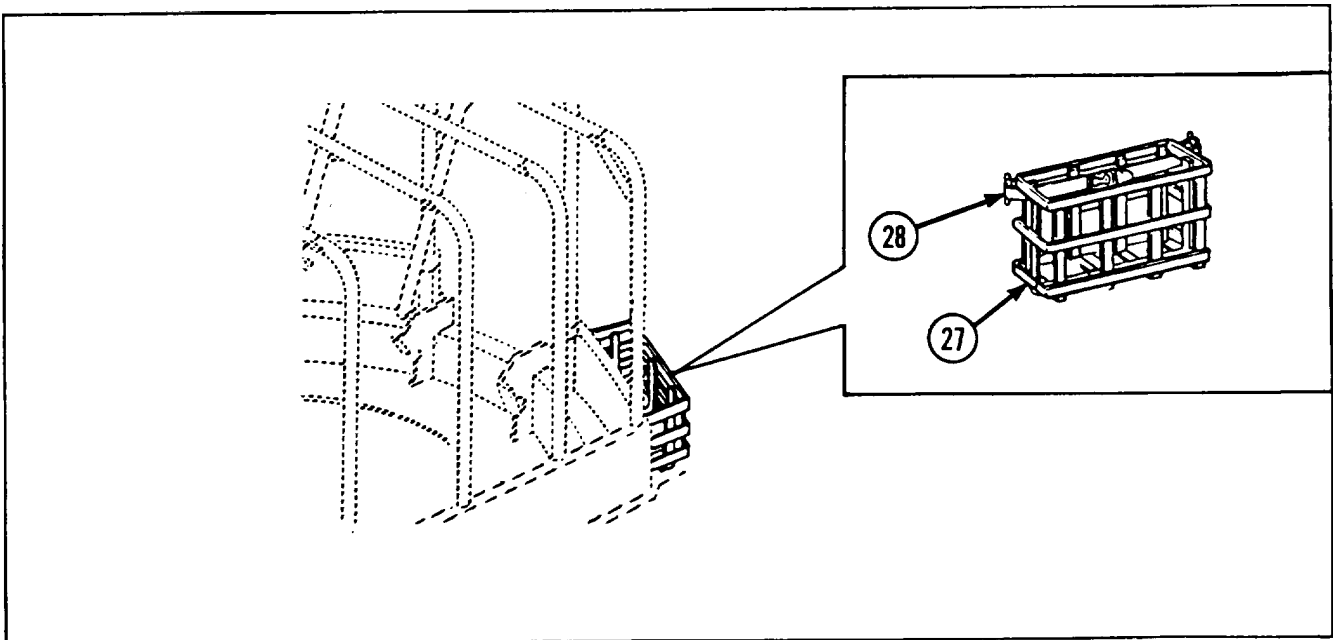


- 14 Install two grenade boxes (19), eight hexagon head capscrews (20), eight washers (21), and eight hexagon plain nuts (22).
- 15 Place contents in two grenade boxes (19).



16 Install two water can brackets (23), eight hexagon cap screws (24), eight washers (25), and eight hexagon plain nuts (26).

17 Install two water cans in two water can brackets (23).



18 Install tarpaulin stowage rack (27) and webbing strap (28).

19 Place tarpaulin in tarpaulin stowage rack (27).

2-203. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-DOME LIGHTS AND RELATED PARTS; AND DOME LIGHTS BRANCHED WIRING HARNESS.

This task covers: a. *Removal* b. *Inspection/Repair* c. *Installation*

INITIAL SETUP

Materials/Parts

- Bushing insulator (3) W
- Electrical cable (figure D-1, appx D)
- Insulation tape (item 44, appx C)
- Lockwasher (6)
- Lockwasher (12)
- Lug terminal (3)
- Marker band (12)

General Safety Instructions

WARNING

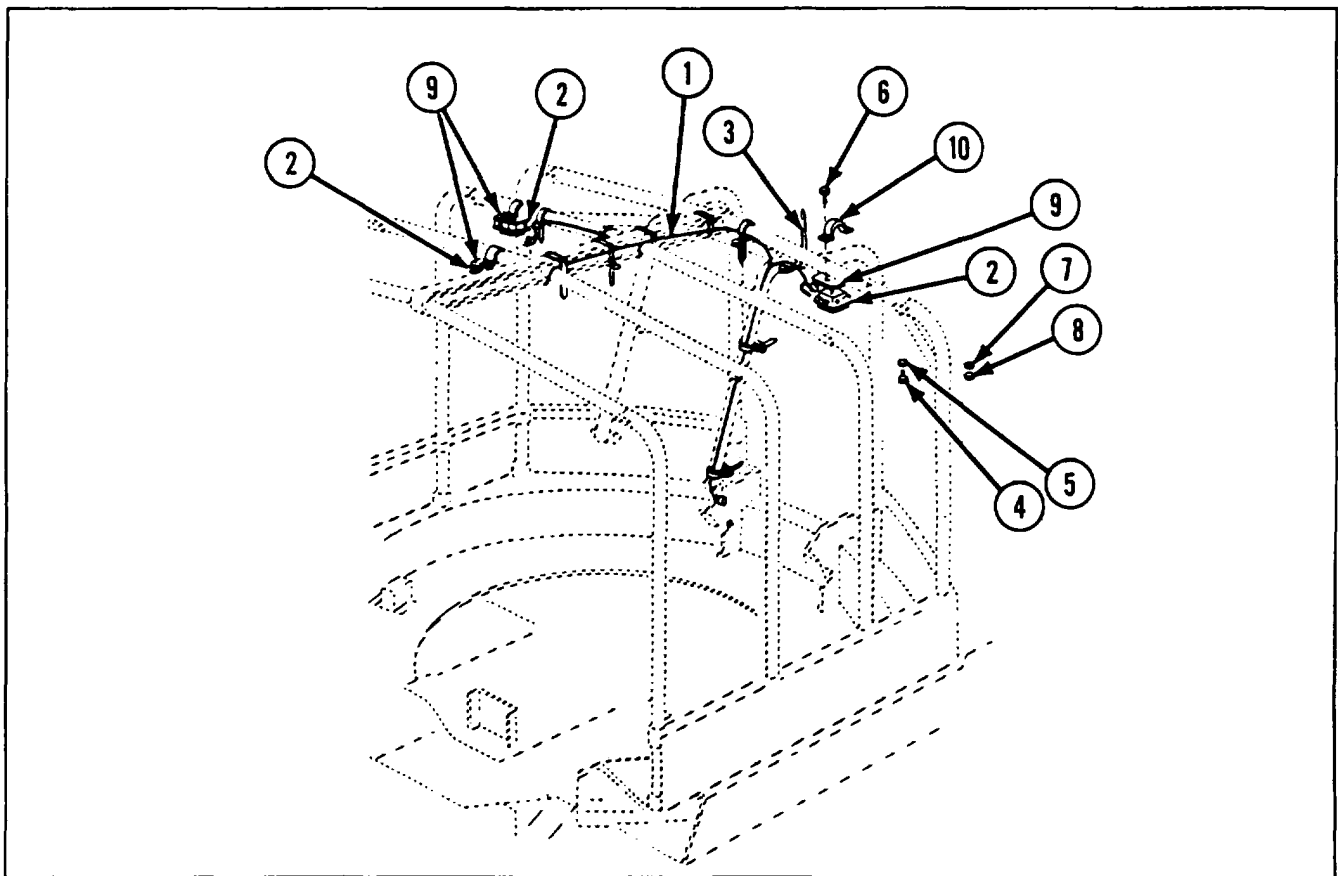
Failure to remove or disconnect batteries before removing or installing any electrical wiring harness or lead may result in injury or damaged equipment.

References

TM 9-2350-304-24P-1

Equipment Conditions

- MASTER power switch OFF
- 2-624 Batteries disconnected



REMOVAL

- 1 Disconnect plug connector on dome lights branched wiring harness (1) from utility outlet.
- 2 Tag and disconnect shell connectors and cable terminals on dome lights branched wiring harness (1) from three dome lights (2).
- 3 Remove 12 wiring harness marker bands (3) and dome lights branched wiring harness (1).

NOTE

Steps 4 thru 6 are written for one dome light, but apply to all three dome lights.

- 4 Remove four hexagon head capscrews (4), four lockwashers (5), and dome light (2).
- 5 Remove two hexagon head capscrews (6), two lockwashers (7), and two hexagon plain nuts (8) from light mount bracket (9).
- 6 Remove dome light bracket clamp (10) and light mount bracket (9).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Dome light is a repairable assembly. Refer to page 2-1102.
- 3 If damaged or missing, replace marker bands. Etch or stamp lead number on new marker
- 4 For repair of shell connectors and cable terminals, refer to general maintenance, page 2-364.
- 5 Electrical cable is a manufactured item. Refer to appendix D.
- 6 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

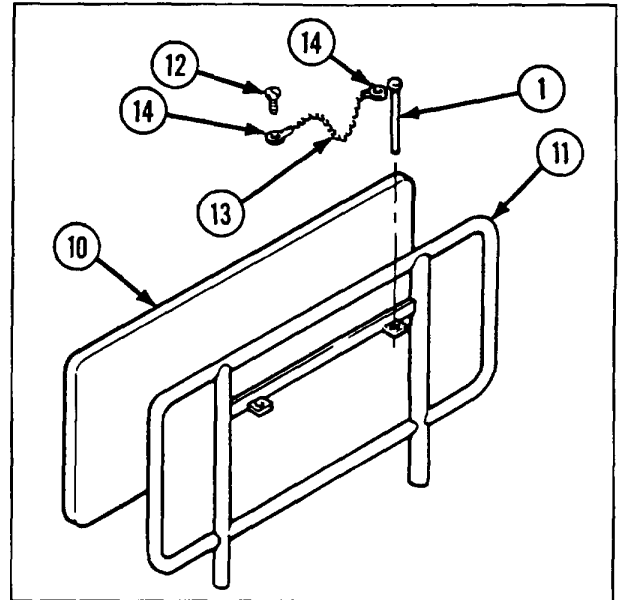
INSTALLATION**NOTE**

Steps 1 thru 3 are written for one dome light, but apply to all three dome lights.

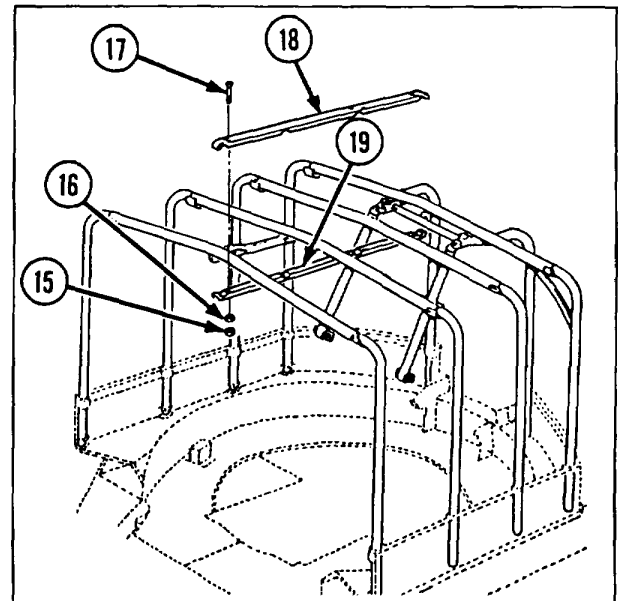
- 1 Install light mount bracket (9) and dome light bracket clamp (10).
- 2 Install two hexagon plain nuts (8), two new lockwashers (7), and two hexagon head capscrews (6) to light mount bracket (9).
- 3 Install dome light (2), four new lockwashers (5), and four hexagon head capscrews (4).
- 4 Install dome lights branched wiring harness (1), and secure with 12 new wiring harness marker
- 5 Untag and connect shell connectors and cable terminals on dome lights branched wiring harness (1) to three dome lights (2).
- 6 Connect dome lights branched wiring harness (1) to utility outlet.

- 1 Pull two quick release pins (1) securing crew seat back cushion (2) to cab floor (3).
- 2 Remove two self-locking nuts (4), two hexagon head capscrews (5), and two chains (6) from crew seat back cushion (2).
- 3 Remove two self-locking nuts (7) and two hexagon head capscrews (8) securing crew seat back cushion (2) to personnel vehicular seat (9).
- 4 Remove crew seat back cushion (2) from vehicle.

- 5 If damaged, remove cushioning pad (10) from seat back (11).
- 6 Remove two machine screws (12), two bead chains (13), and two quick release pins (1) from seat back (11). Remove two quick release pins from two bead chains.
- 7 If damaged, remove four bead chain couplings (14) from two bead chains (13).



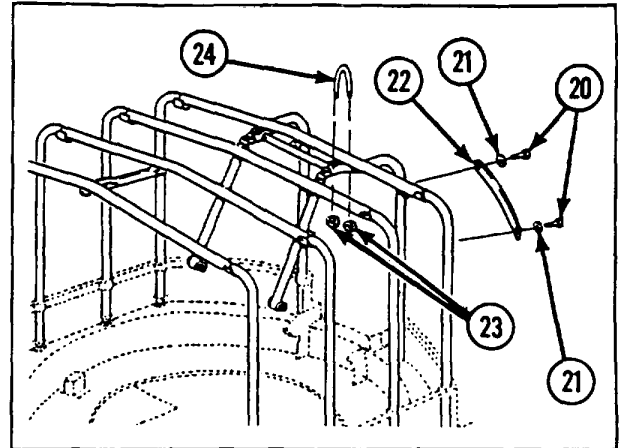
- 8 Remove eight hexagon plain nuts (15), eight lockwashers (16), eight machine screws (17), cover support ridge (18), and cover support ridge (19).



2-204. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-SHROUD SUPPORTS AND RELATED ITEMS (CONT).

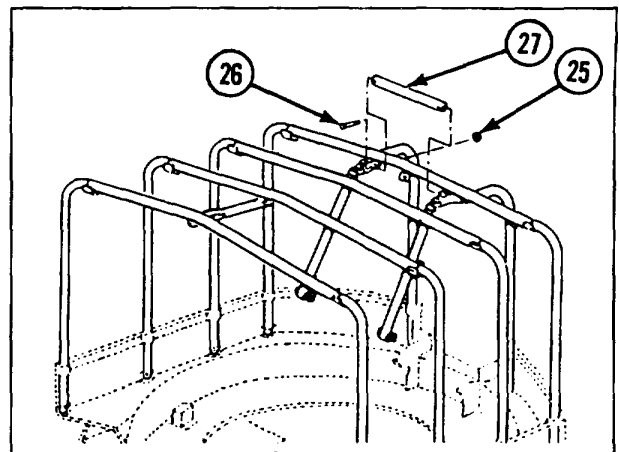
REMOVAL/DISASSEMBLY (CONT)

9 Remove four hexagon head capscrews (20), four lockwashers (21), and two bow support stiffener beams (22).

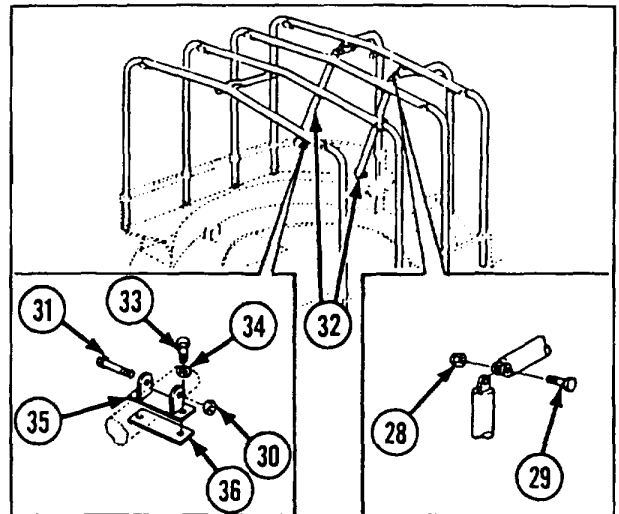


10 Remove four self-locking nuts (23) and two spring holddown bolts (24).

11 Remove two self-locking nuts (25), two hexagon head capscrews (26), and bow support tube (27).



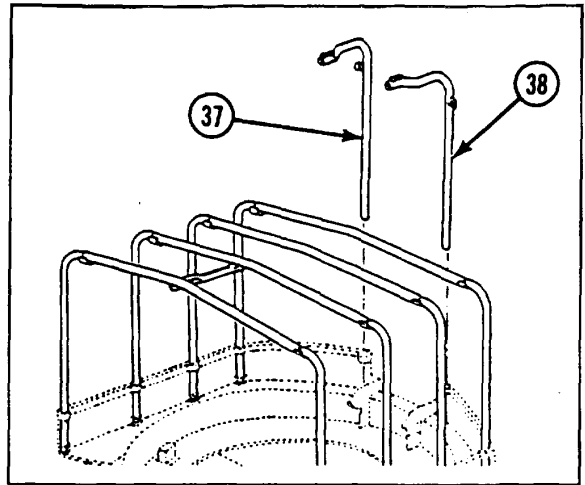
12 Remove two self-locking nuts (28) and two hexagon head capscrews (29).



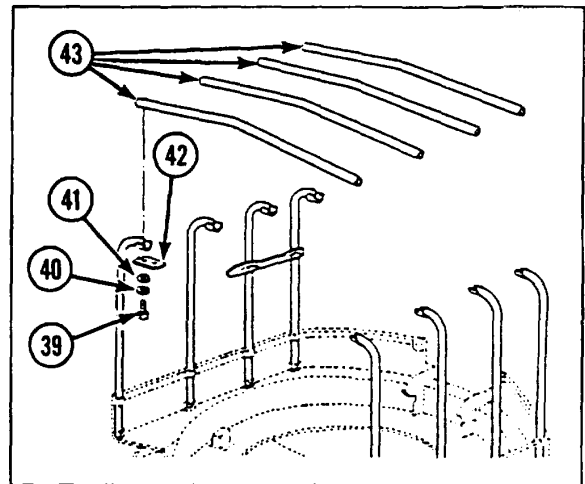
13 Remove four self-locking nuts (30), four hexagon head capscrews (31), and two shroud tube assemblies (32).

14 Remove eight hexagon head capscrews (33), eight lockwashers (34), four cover and tube support brackets (35), and shim (36).

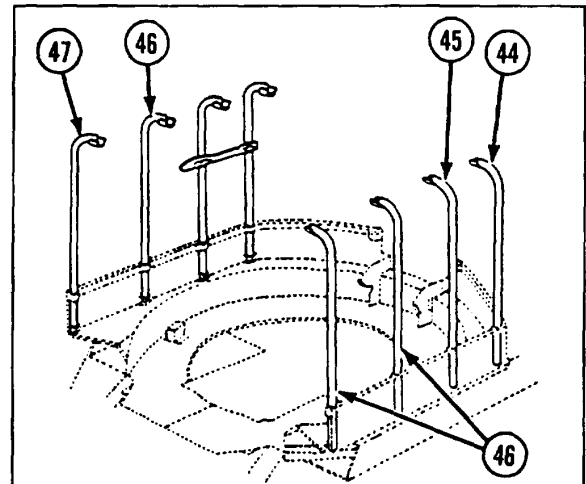
15 Remove left bow (37) and right bow (38).



16 Remove 16 hexagon head capscrews (39), 16 lockwashers (40), 16 flat wash (41), 8 cover support and beam plate spacers (42), and 4 vehicular top bows (43).



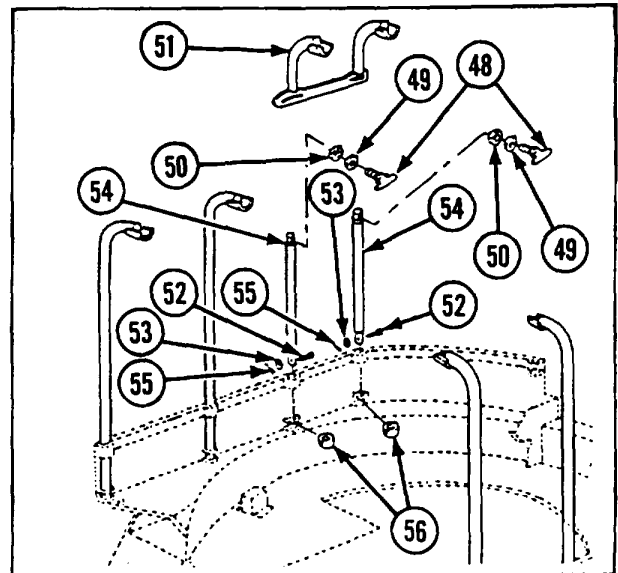
17 Remove cover support (44), cover support (45), three cover supports (46), and cover support (47).



2-204. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-SHROUD SUPPORTS AND RELATED ITEMS (CONT)

REMOVAL/DISASSEMBLY (CONT)

- 18 Remove two T-bolts (48), two flat washers (49), two lockwashers (50), and two supports (51).
- 19 Remove two headed straight pins (52), two flat washers (53), and two tubes (54).
- 20 Remove two cotter pins (55) and two supports (56).

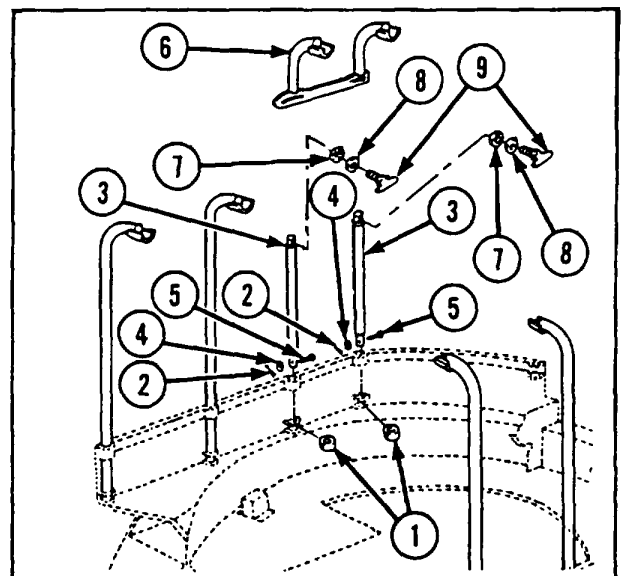


INSPECTION/REPAIR

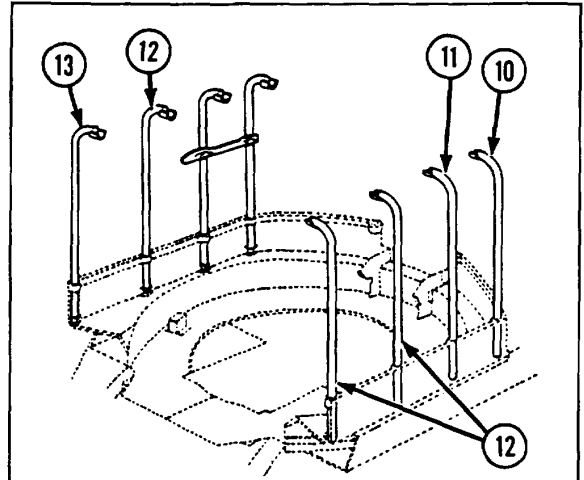
- 1 Inspect for broken, damaged, or missing parts.
- 2 If seat back is broken or damaged, repair is by replacement of next higher assembly.
- 3 If left or right bow is broken, damaged, missing, repair is by replacement of next higher assembly.
- 4 Bead chain is a manufactured item, refer to appendix D.
- 5 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY/INSTALLATION

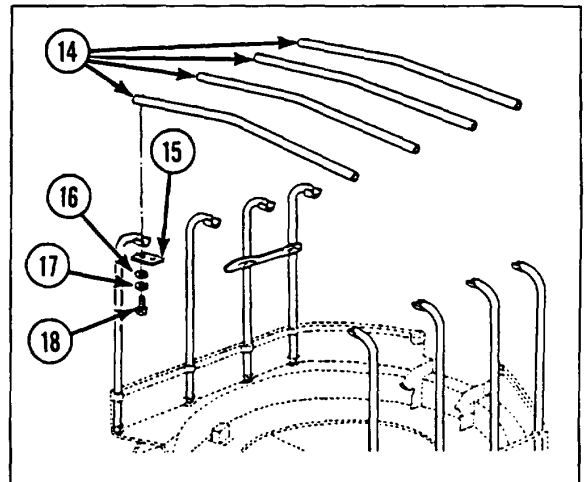
- 1 Install two supports (1) and two new cotter pins (2).
- 2 Install two tubes (3), two flat washers (4), and two headed straight pins (5).
- 3 Install two supports (6), two flat washer (7), two new lockwashers (8), and two T-bolts (9).



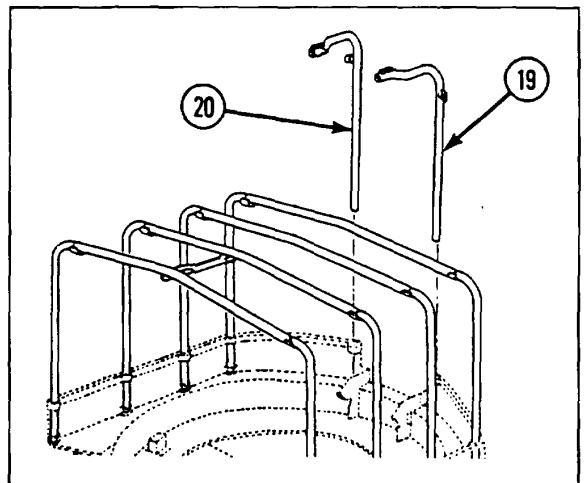
- 4 Install cover support (10), cover support (11), three cover supports (12), and cover support (13).



- 5 Install 4 vehicular top bows (14), 8 cover support and beam plate spacers (15), 16 flat washers (16), 16 new lockwashers (17), and 16 hexagon head capscrews (18).



- 6 Install right bow (19) and left bow (20).



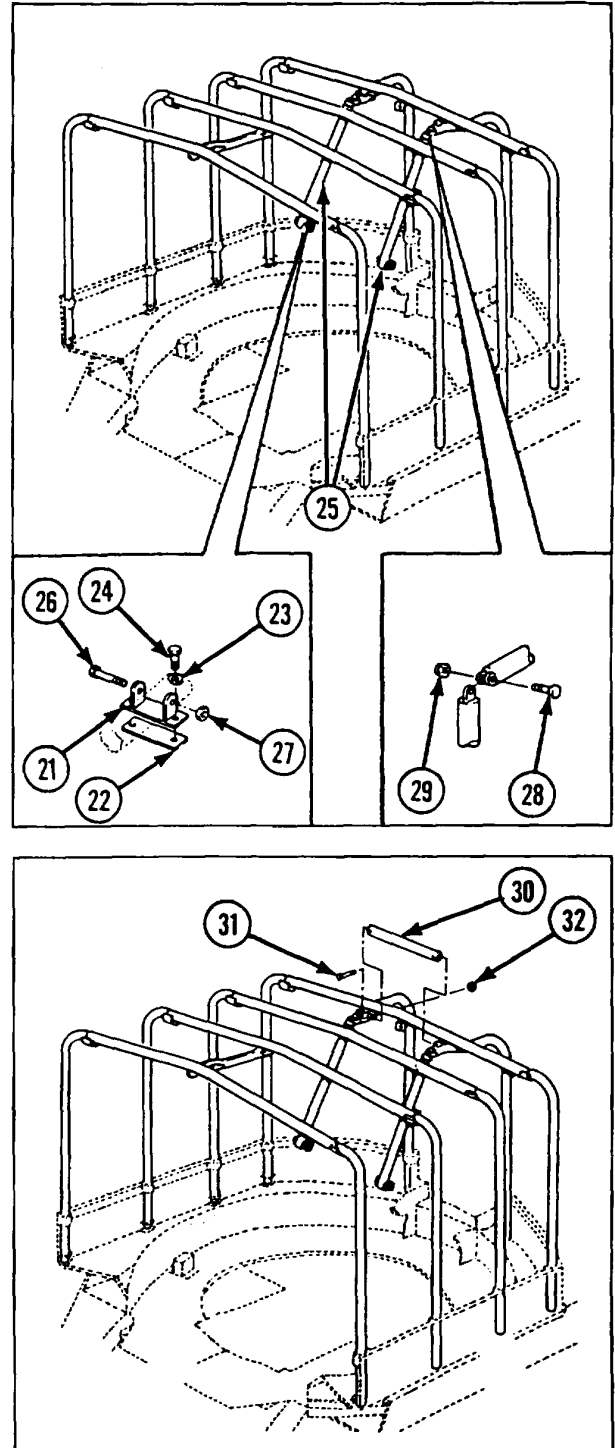
2-204. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-SHROUD SUPPORTS AND RELATED ITEMS (CONT).

REMOVAL/DISASSEMBLY (CONT)

NOTE

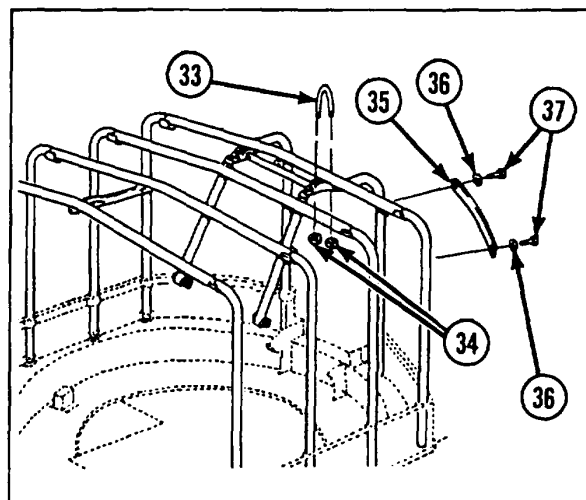
Shim as required to fill space between bracket and trunnion cap in step 7.

- 7 Install four cover and tube support brackets (21), shims (22), eight new lockwashers (23), and eight hexagon head capscrews (24).
- 8 Install two shroud tube assemblies (25), four hexagon head capscrews (26), and four new self-locking nuts (27).
- 9 Install two hexagon head capscrews (28) and two new self-locking nuts (29).

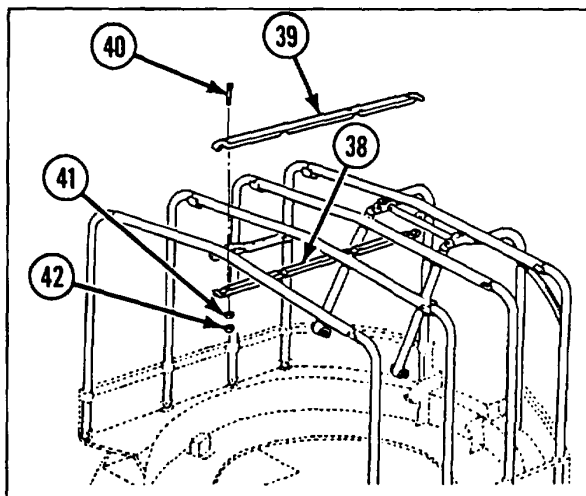


- 10 Install bow support tube (30), two hexagon head capscrews (31), and two new self-locking nuts (32).

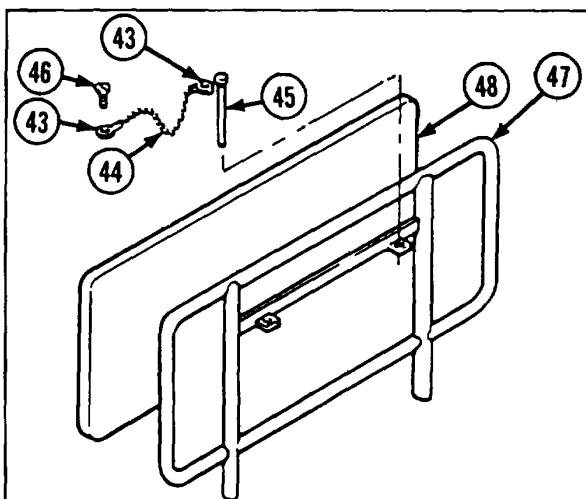
- 11 Install two spring holddown bolts (33) and four new self-locking nuts (34).
- 12 Install two bow support stiffener beams (35), four new lockwashers (36), and four hexagon head capscrews (37).



- 13 Install support ridge (38), support ridge (39), eight hexagon head capscrews (40), eight new lockwashers (41), and eight plain hexagon nuts (42).

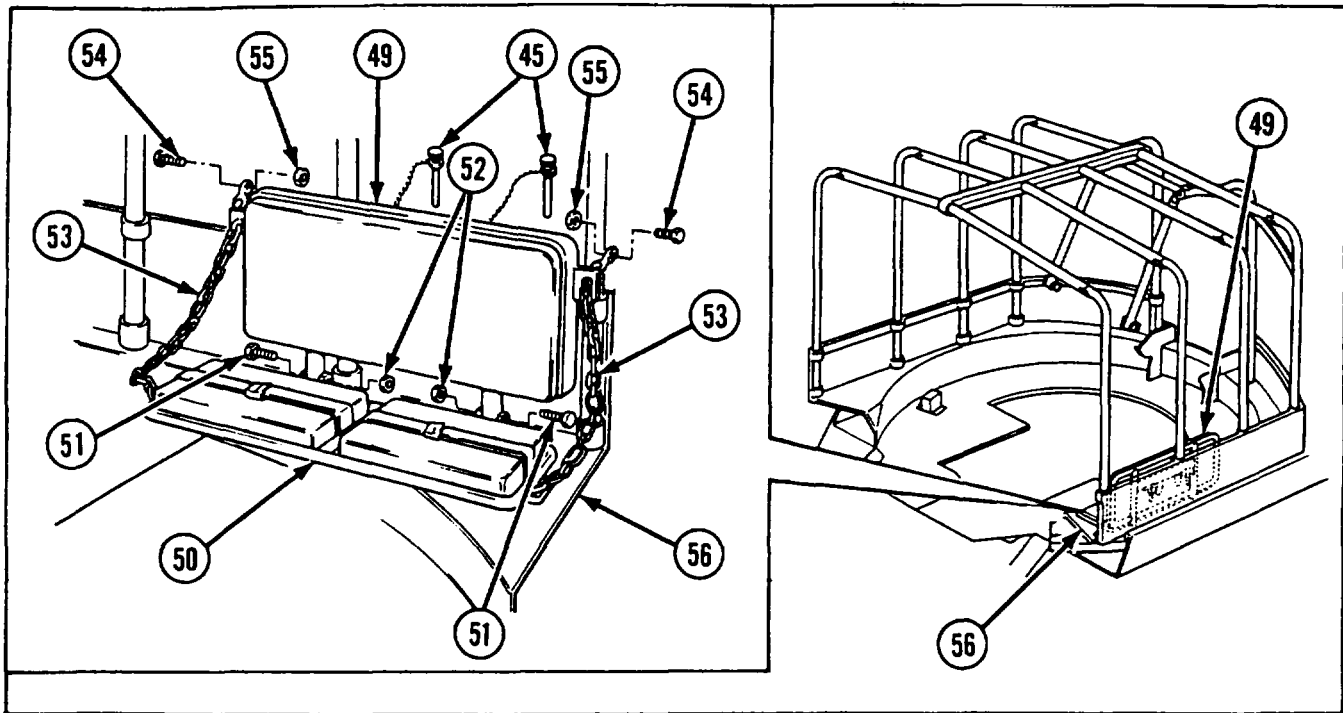


- 14 If removed, install four new bead chain couplings (43) on two bead chains (44).
- 15 Install two quick release pins (45) on two bead chains (44). Install two bead chains and two machine screws (46) on seat back (47).
- 16 If removed, apply rubber adhesive to new cushioning pad (48). Install new cushioning pad on seat back (47).



2-204. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-SHROUD SUPPORT' AND RELATED ITEMS (CONT).

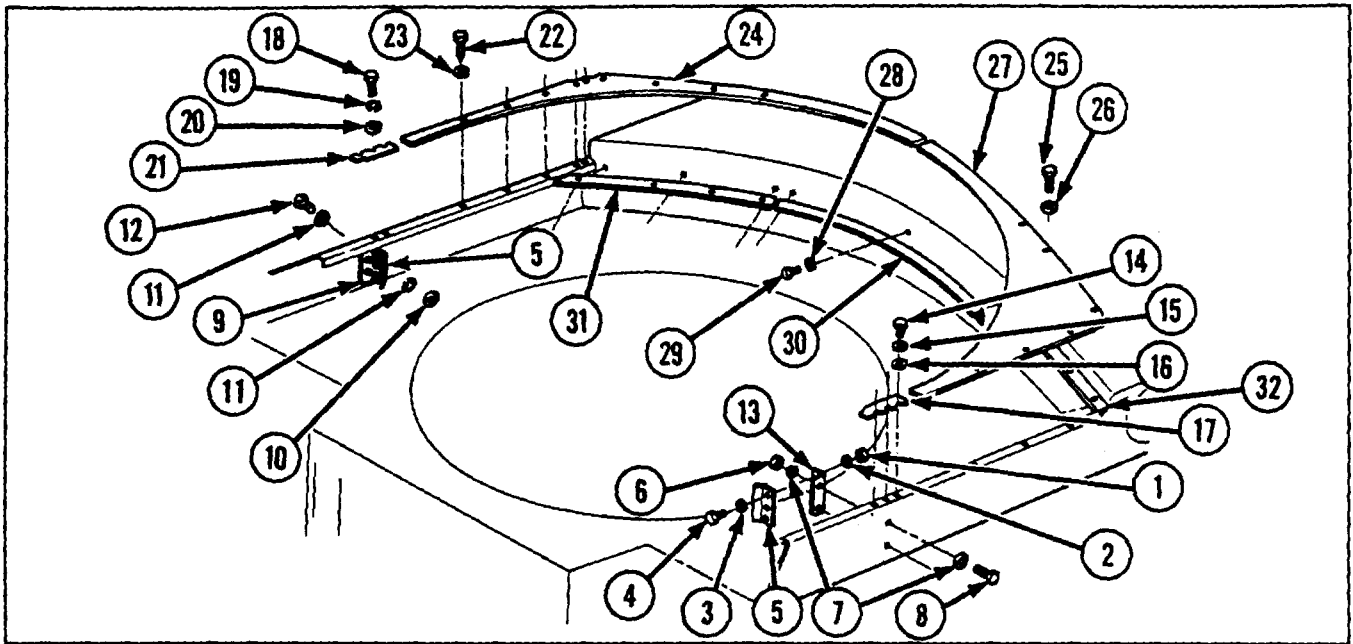
REASSEMBLY/INSTALLATION (CONT)



- 17 Install crew seat back cushion (49) on personnel vehicular seat (50) and secure with two hexagon head capscrews (51) and two new self-locking nuts (52).
- 18 Install two chains (53) on crew seat back cushion (49) and secure with two hexagon head capscrews (54) and two new self-locking nuts (55).
- 19 Install two quick release pins (45) to secure crew seat back cushion (49) to cab floor (56).

2-205. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-TURRET FLANGES AND RELATED PARTS.

This task covers:	a. Removal	b. Inspection/Repair	c. Installation
INITIAL SETUP			
<i>Materials/Parts</i>		<i>References</i>	
Lockwasher (6)		TM 9-2350-304-24P-1	
Lockwasher (4)			
Lockwasher (23)		<i>Equipment Conditions</i>	
Lockwasher (9)		2-1093 Floor and covers removed	
Nonmetallic strip seal (2)			

REMOVAL

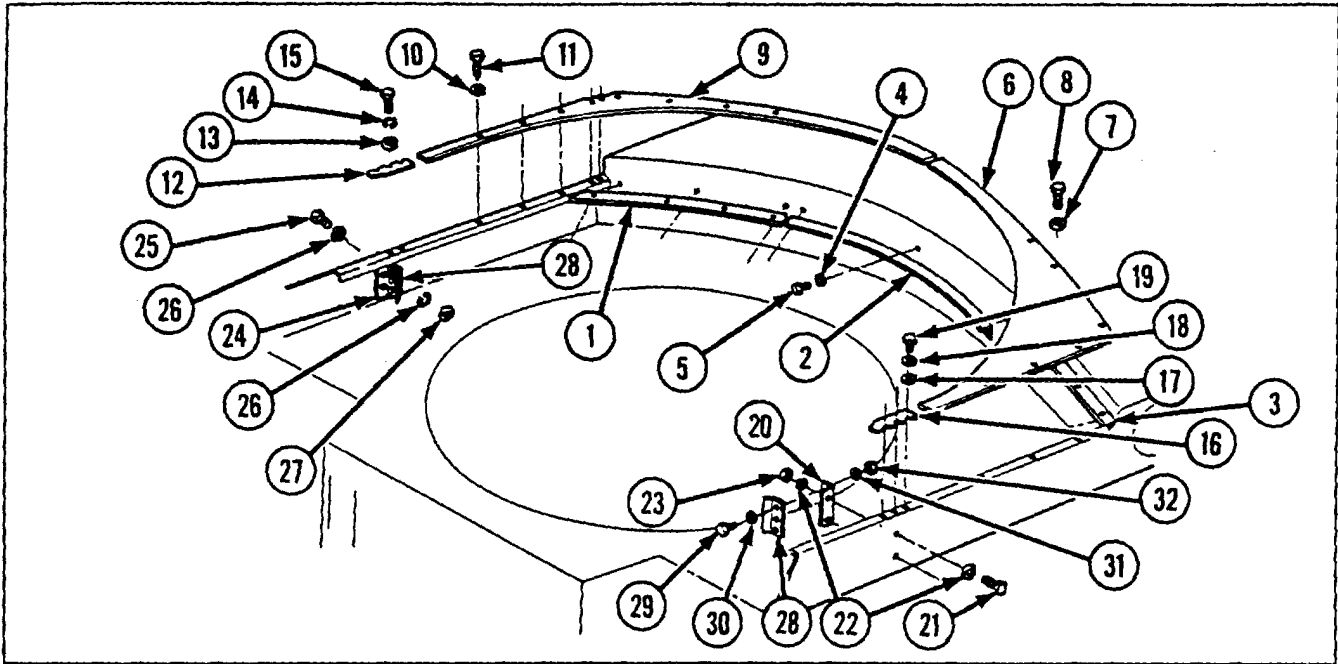
- 1 Remove six hexagon plain nuts (1), six flat washers (2), six lockwashers (3), six hexagon head capscrews (4), and two nonmetallic strip seals (5).
- 2 Remove two hexagon plain nuts (6), two lockwashers (7), two hexagon head capscrews (8), and seal strip angle bracket (9).
- 3 Remove two hexagon plain nuts (10), two lockwashers (11), two hexagon head capscrews (12), and seal strip angle bracket (13).
- 4 Remove two hexagon head capscrews (14), two lockwashers (15), two flat washers (16), and right seal guide (17).
- 5 Remove three hexagon head capscrews (18), three lockwashers (19), three flat washers (20), and left seal guide (21).
- 6 Remove nine hexagon head capscrews (22), nine lockwashers (23), and left hand side top seal support flange (24).
- 7 Remove nine hexagon head capscrews (25), nine lockwashers (26), and right hand side seal (27).
- 8 Remove nine hexagon head capscrews (28), nine lockwashers (29), and three seal support flanges (30, 31, and 32).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-205. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-TURRET FLANGES AND RELATED PARTS (CONT.).

INSTALLATION



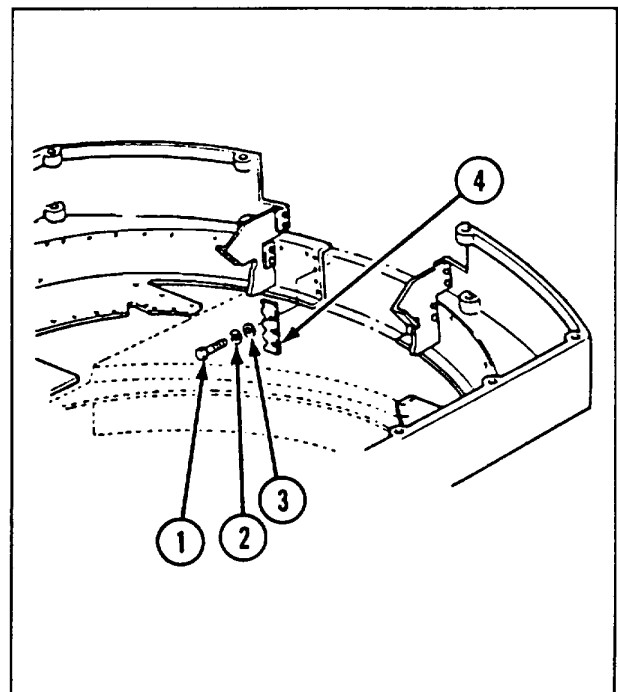
- 1 Install three seal support flanges (1,2, and 3), nine new lockwashers (4), and nine hexagon head capscrews (5).
- 2 Install right side seal support (6), nine new lockwashers (7), and nine hexagon head capscrews (8).
- 3 Install left side top seal support flange (9), nine new lockwashers (10), and nine hexagon head capscrews (11).
- 4 Install left seal guide (12), three flat washers (13), three new lockwashers (14), and three hexagon head capscrews (15).
- 5 Install right seal guide (16), two flat washers (17), two new lockwashers (18), and two hexagon head capscrews (19).
- 6 Install seal strip angle bracket (20), two hexagon head capscrews (21), two new lockwashers (22), and two hexagon plain nuts (23).
- 7 Install seal strip angle bracket (24), two hexagon head capscrews (25), two new lockwashers (26), and two hexagon plain nuts (27).
- 8 Install two new nonmetallic strip seals (28), six hexagon head capscrews (29), six new lockwashers (30), six flat washers (31), and six hexagon plain nuts (32).

2-206. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-FLOORS, COVERS, AND RELATED PARTS.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Materials/Parts</i>		<i>Equipment Conditions</i>	
Gasket (8)		2-1080 Dome lights and dome lights branched wiring harness removed	
Lockwasher (102)		2-1070 Cover and strap hooks removed	
Lockwasher (66)		2-1082 Shroud and supports removed	
Lockwasher (2)			
Nonmetallic seal (2)			
<i>References</i>			
TM 9-2350-304-24P-1			

REMOVAL

- 1 Remove eight hexagon head capscrew (1), eight lockwashers (2), eight flat washers (3), and floor connection plate spas (4).



2-206. MAINTENANCE OF CREW PERSONNEL KIT-FLOORS, COVERS AND RELATED PARTS (CONT).

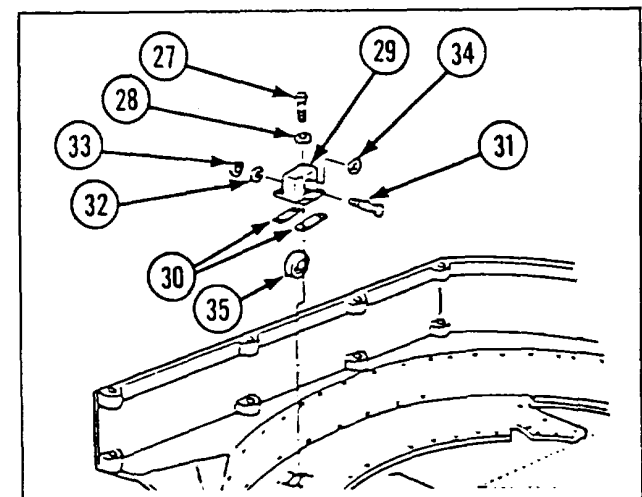
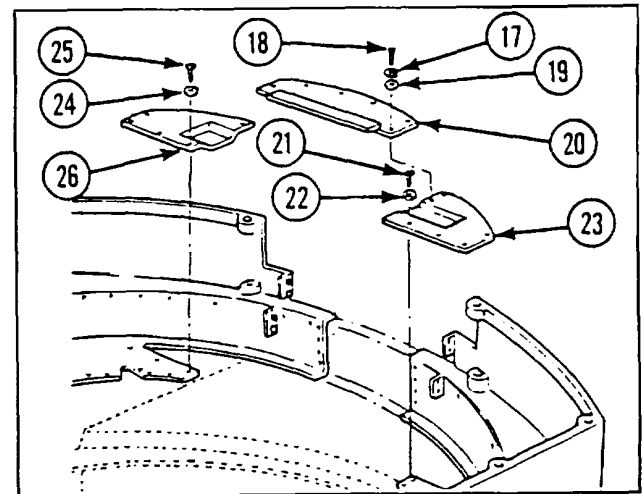
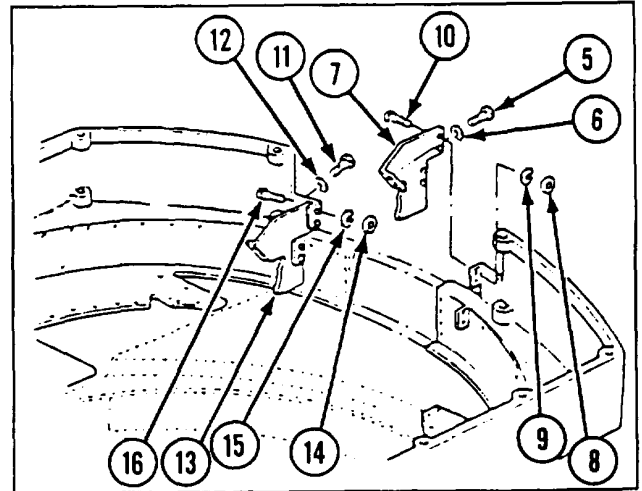
REMOVAL (CONT)

- 2 Remove two hexagon head capscrews (5) and two lockwashers (6) from turret support plate (7).
- 3 Remove four hexagon plain nuts (8), four lockwashers (9), four hexagon head capscrews (10), and turret support plate (7).
- 4 Remove two hexagon head capscrews (11) and two lockwashers (12) from turret support plate (13).
- 5 Remove four hexagon plain nuts (14), four lockwashers (15), four hexagon head capscrews (16), and turret support plate (13).
- 6 Remove seven hexagon head capscrews (17), seven lockwashers (18), seven washers (19), and cab floor front plate assembly (20).
- 7 Remove four hexagon head capscrews (21), four lockwashers (22), and fire extinguisher access cover (23).
- 8 Remove four hexagon head capscrews (24), four lockwashers (25), and winterization plate (26).

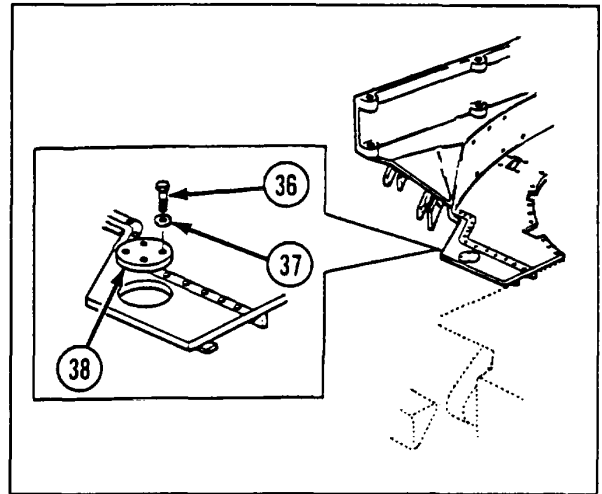
NOTE

Steps 9 and 10 are written for one support wheel, but apply to both.

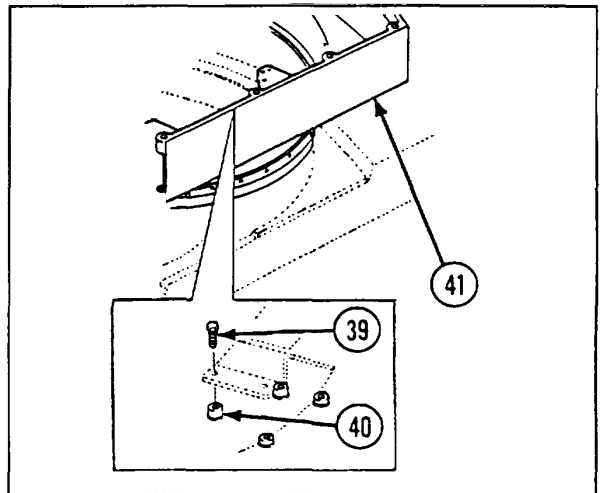
- 9 Remove four hexagon head capscrews (27), four lockwashers (28), support wheel winterization housing (29), and four gaskets (30).
- 10 Remove shoulder screw (31), lockwasher (32), hexagon plain nut (33), wheel housing plug (34), and support wheel (35) from wheel support winterization housing (29).



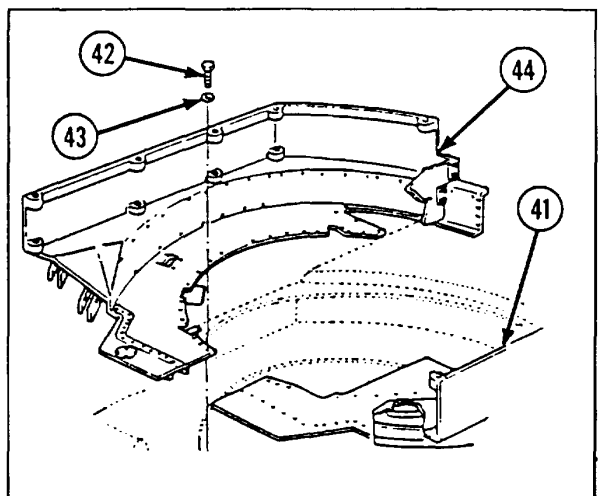
- 11 Remove two hexagon head capscrews (36), two lockwashers (37), and access cover (38).

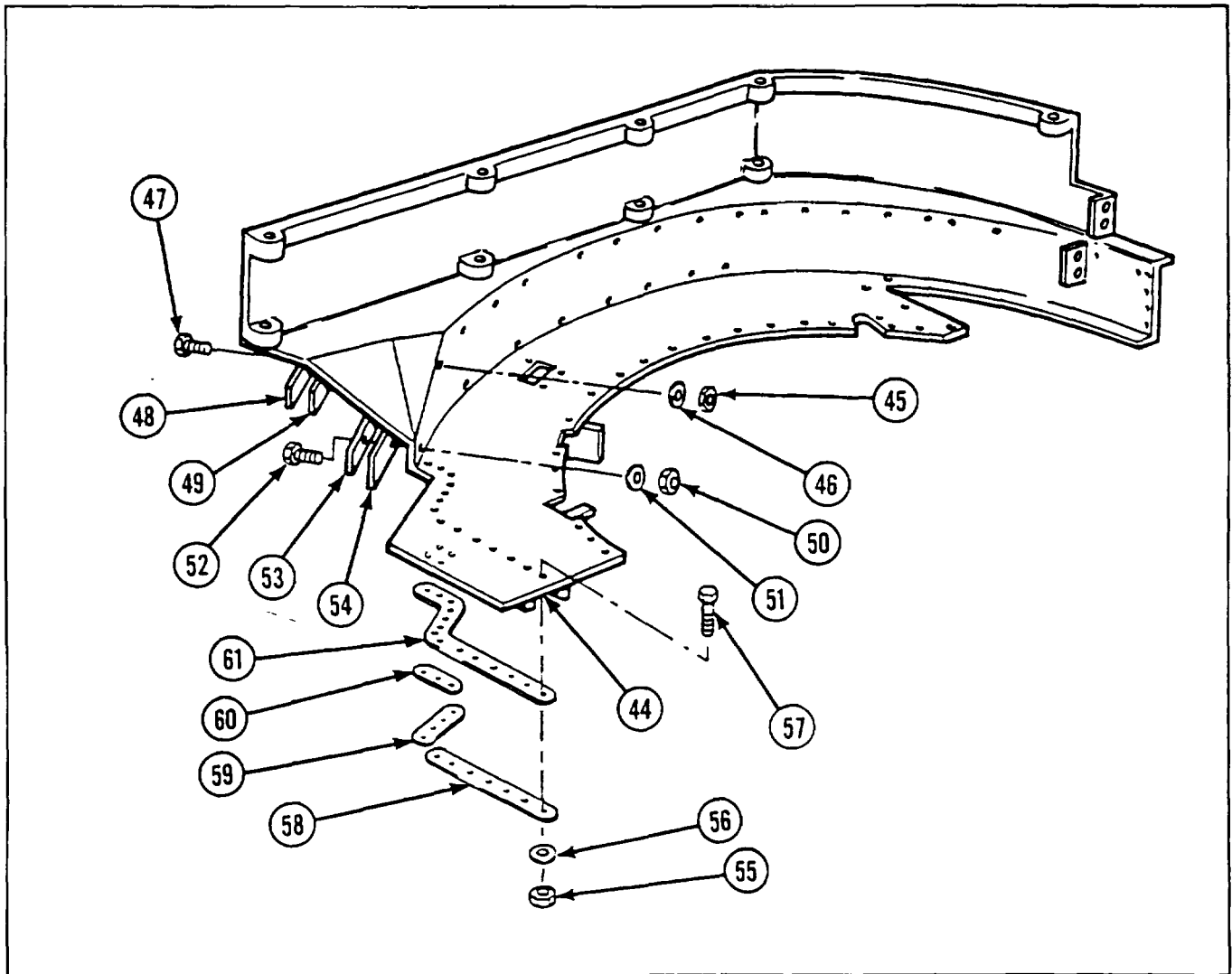


- 12 Remove four hexagon head capscrews (39) and four sleeve spacers (40) from cab floor (41).

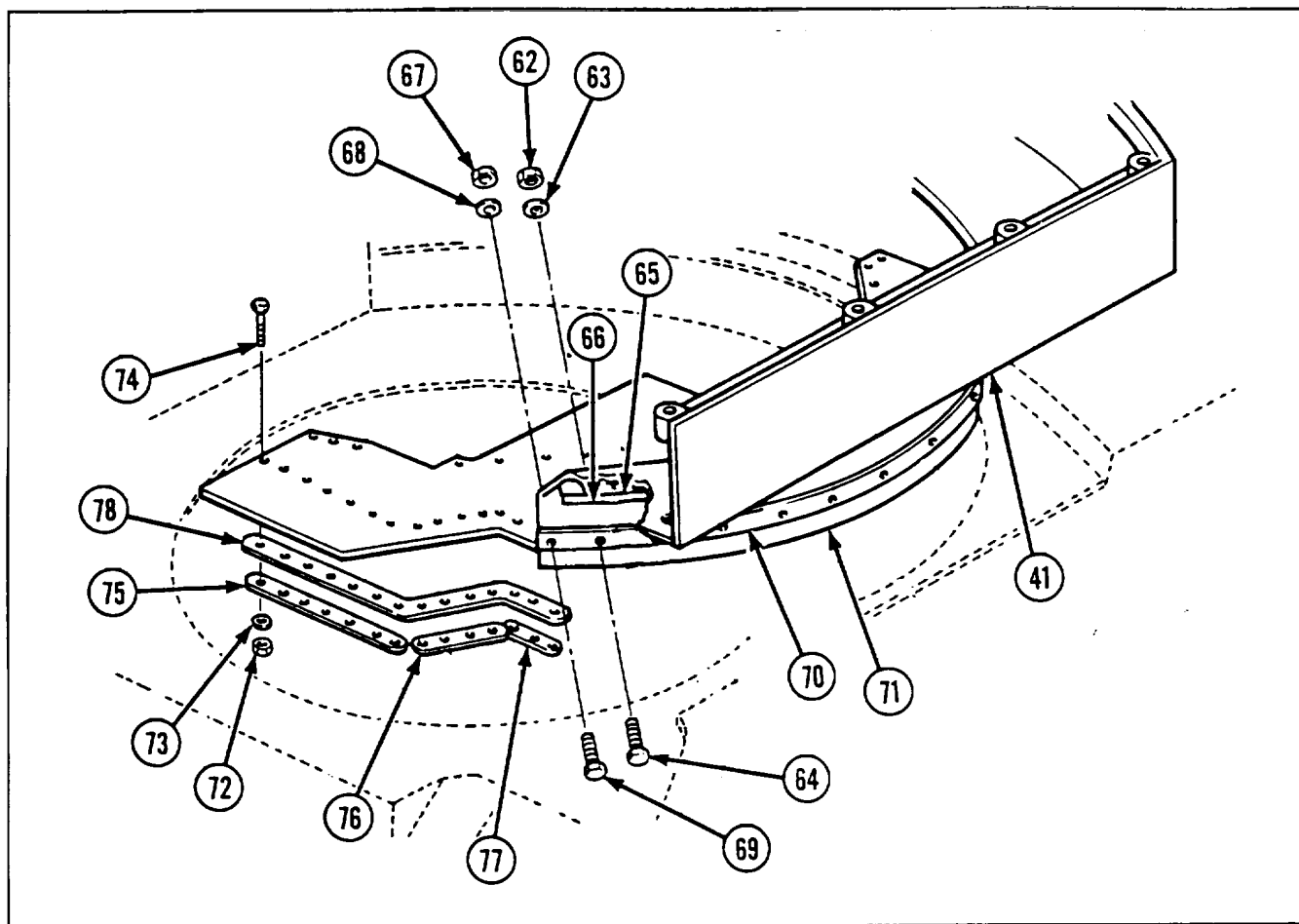


- 13 Remove 38 hexagon head capscrews and 38 lockwashers (43) from left cab floor (44) and cab floor (41).



2-206. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-FLOORS, COVERS, AND RELATED PARTS (CONT).*REMOVAL (CONT)*

- 14 Rotate turret to left and remove left cab floor (44) from turret.
- 15 Remove four hexagon plain nuts (45), four lockwashers (46), four hexagon head capscrews (47), left rear seal retainer metal strip (48), and left rear upper wiper strip (49) from left cab floor (44).
- 16 Remove 20 hexagon plain nuts (50) 20 lockwashers (51), 20 hexagon head capscrews (52), 4 anchor straps (53), and rubber strip (54) from left cab floor (44).
- 17 Remove 14 hexagon plain nuts (55), 14 lockwashers (56), 14 machine screws (57), nonmetallic seal (58), anchor strap (59), anchor strap (60), and rubber strip (61) from left cab floor (44).



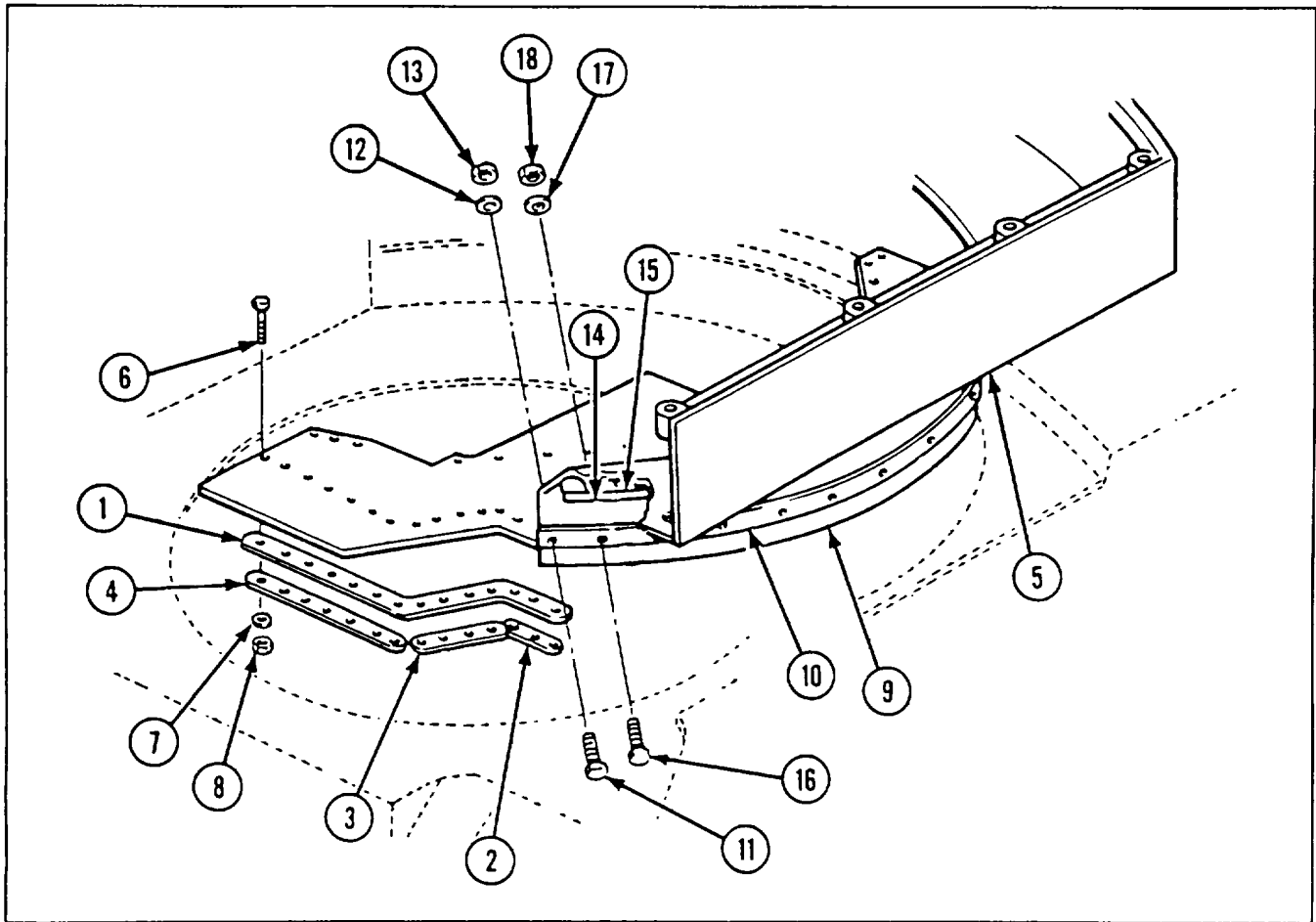
- 19** Remove 20 hexagon plain nuts (62), 20 lockwashers (63), 20 hexagon head capscrews (64), 4 anchor straps (65), and rubber strip (66).
- 20** Remove 15 hexagon plain nuts (67), 15 lockwashers (68), 15 hexagon head capscrews (69), 3 anchor straps (70), and rubber strip (71) from cab floor (41).
- 21** Remove 14 hexagon plain nuts (72), 14 lockwashers (73), 14 machine screws (74), nonmetallic seal (75), anchor strap (76), anchor strap (77), and rubber strip (78) from cab floor (41).

INSPECTION/REPAIR

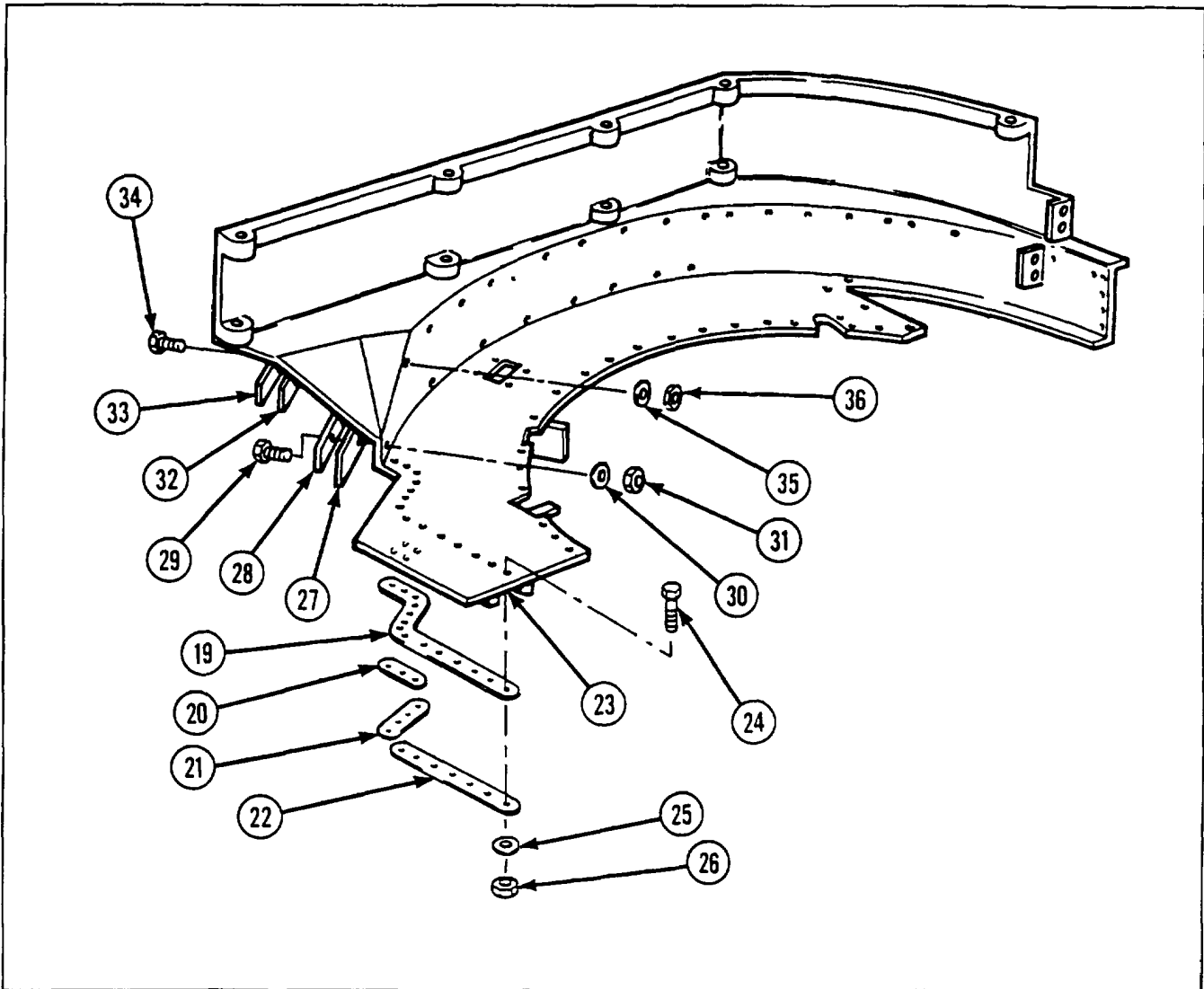
- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

2-206. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-FLOORS, COVERS, AND RELATED PARTS (CONT).

INSTALLATION



- 1 Install rubber strip (1), anchor strap (2), anchor strap (3), and nonmetallic seal (4) to cab floor (5). Secure with 14 machine screws (6), 14 new lockwashers (7), and 14 hexagon plain nuts (8).
- 2 Install rubber strip (9) and 3 anchor straps (10) to cab floor (5), and secure with 15 hexagon head cap screws (11), 15 new lockwashers (12), and 15 hexagon plain nuts (13).
- 3 Install rubber strip (14) and 4 anchor straps (15) to cab floor (5), and secure with 20 hexagon head cap screws (16), 20 new lockwashers (17), and 20 hexagon plain nuts (18).
- 4 Rotate turret to right and install cab floor (5).

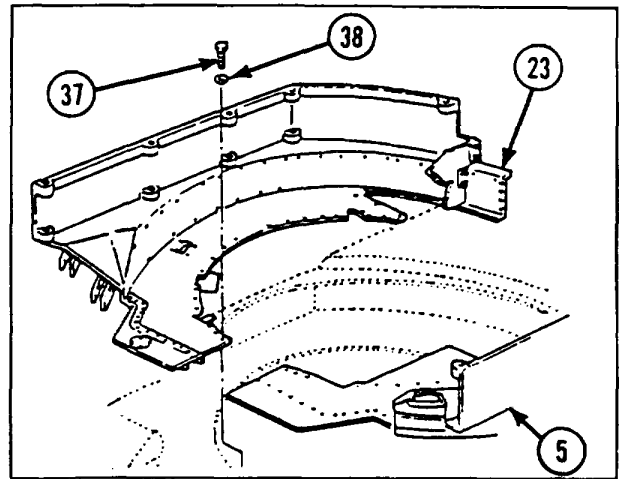


- 5 Install rubber strip (19), anchor strip (20), anchor strap (21), and nonmetallic seal (22) to left cab floor (23), and secure with 14 machine screws (24), 14 new lockwashers (25), and 14 hexagon plain nuts (26).
- 6 Install rubber strip (27) and 4 anchor straps (28) to left cab floor (23), and secure with 20 hexagon head capscrews (29), 20 new lockwashers (30), and 20 hexagon plain nuts (31).
- 7 Install left rear upper wiper rubber strip (32) and left rear seal retainer metal strip (33) to left cab floor (23), and secure with four hexagon head capscrews (34), four new lockwashers (35), and four hexagon plain nuts (36).
- 8 Rotate turret to left and install left cab floor (23) to turret.

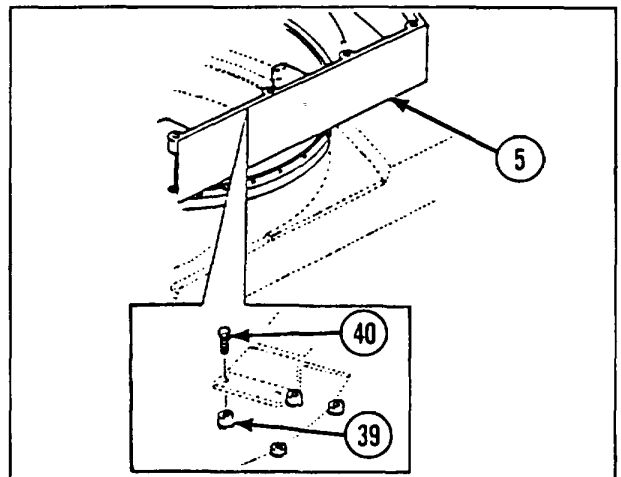
2-206. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-FLOORS, COVERS, AND RELATED PARTS (CONT).

INSTALLATION (CONT)

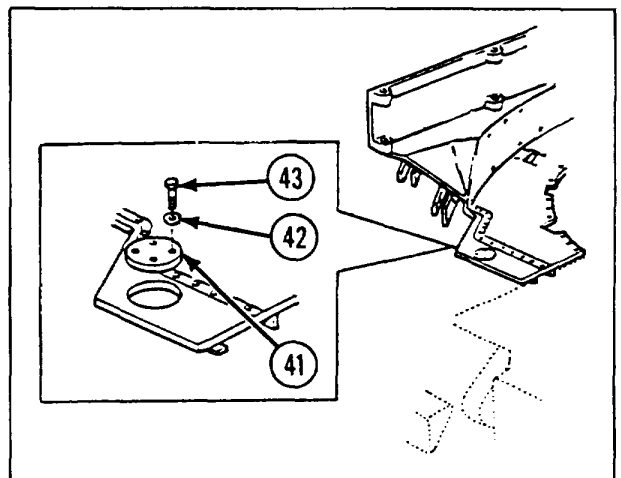
- 9** Install 38 new lockwashers (37) and 38 hexagon head capscrews (38) to left cab floor (23) and cab floor (5).



- 10** Install four sleeve spacers (39) and four hexagon head capscrews (40) to cab floor (5).



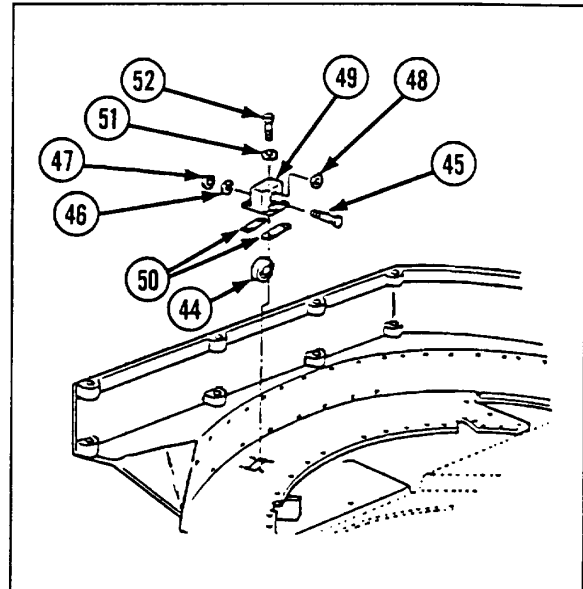
- 11** Install access cover (41), and secure with four new lockwashers (42) and four hexagon head capscrews (43).



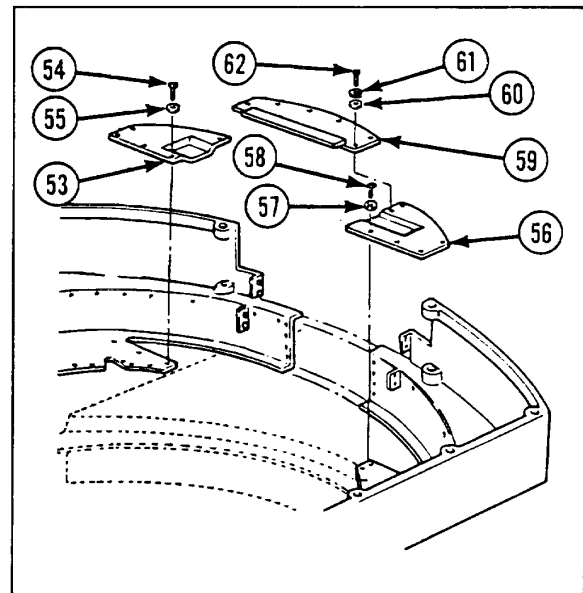
NOTE

Steps 12 and 13 are written for one support wheel, but apply to both.

- 12 Install support wheel (44), shoulder screw (45), new lockwasher (46), hexagon plain nut (47), and wheel housing plug (48) to wheel support winterization housing (49).
- 13 Install four new gaskets (50) and wheel support wheel winterization housing (49), and secure with four new lockwashers (51) and four hexagon head capscrews (52).



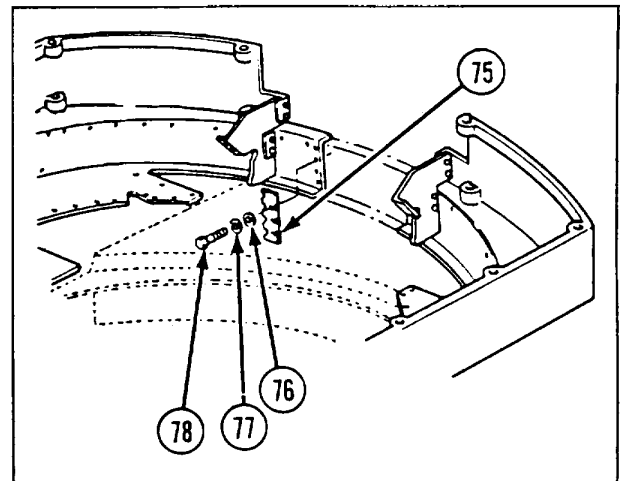
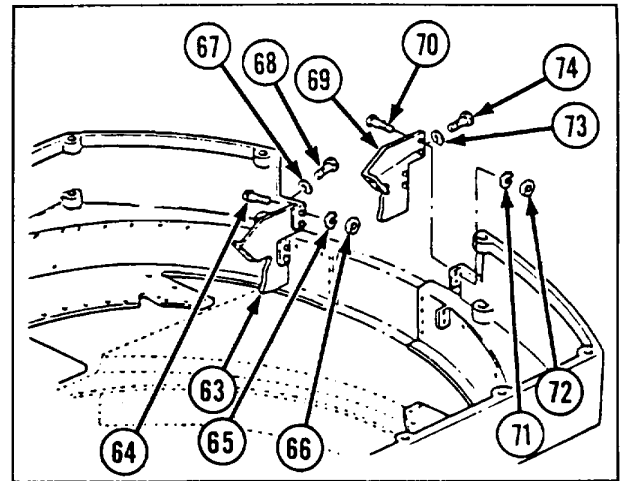
- 14 Install winterization plate (53), and secure with four new lockwashers (54), and four hexagon head capscrews (55).
- 15 Install fire extinguisher access cover (56), and secure with four new lockwashers (57) and four hexagon head capscrews (58).
- 16 Install cab floor plate assembly (59), and secure with seven flat washers (60), seven new lockwashers (61), and seven hexagon head capscrews (62).



2-206. MAINTENANCE OF CREW PERSONNEL SHELTER KIT-FLOORS, COVERS, AND RELATED PARTS (CONT).

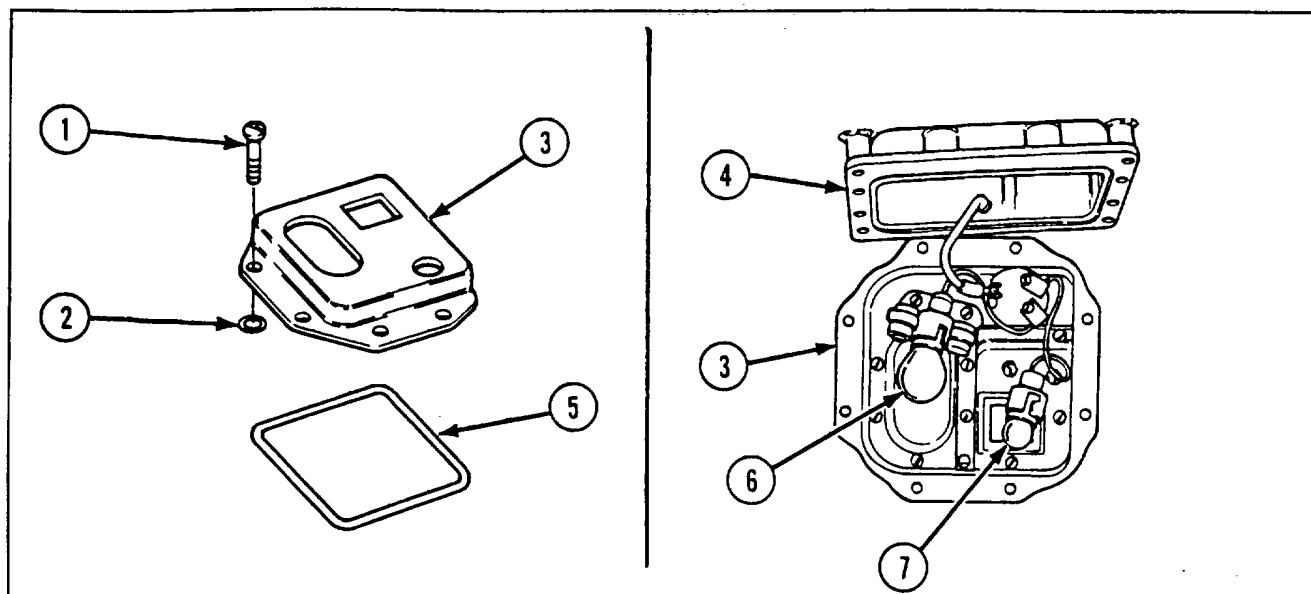
INSTALLATION (CONT)

- 17 Install turret support plate (63), and secure with four hexagon head capscrews (64), four new lockwashers (65), and four hexagon plain nuts (66).
- 18 Install two new lockwashers (67) and two hexagon head capscrews (68) to turret support plate (63).
- 19 Install turret support plate (69), and secure with four hexagon head capscrews (70), four new lockwashers (71), and four hexagon plain nuts (72).
- 20 Attach turret support plate (69), and secure with two new lockwashers (73) and two hexagon head capscrews (74).
- 21 Install floor connection plate spacer (75), eight flat washers (76), eight new lockwashers (77), and eight hexagon head capscrews (78).



2-207. MAINTENANCE OF DOME LIGHT ASSEMBLY (CREW PERSONNEL SHELTER KIT).

This task covers:	a. <i>Disassembly</i>	b. <i>Inspection/Repair</i>	c. <i>Reassembly</i>
INITIAL SETUP			
<i>Materials/Parts</i> Nonmetallic seal		<i>References</i> TM 9-2350-304-24P-1	

**DISASSEMBLY**

- 1 Loosen eight machine screws (1). Remove eight retaining rings (2) from eight machine screws (1). Remove eight machine screws (1) and lens retainer (3) from body (4).
- 2 Remove nonmetallic seal (5) from lens retainer (3).
- 3 Push incandescent lamps (6 and 7) in and turn counterclockwise to remove.

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 For further disassembly of dome light, refer to page 2-606.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

- 1 Install incandescent lamps (6 and 7) in sockets. Turn clockwise to lock in place.
- 2 Install new nonmetallic seal (5) on lens retainer (3).
- 3 Install eight machine screws (1) in lens retainer (3). Secure with eight retaining rings (2).

2-208. MAINTENANCE OF ARCTIC TRACTION KIT.

<p>This task covers:</p>	<p>a. <i>Removal</i> b. <i>Disassembly</i> c. <i>Inspection/Repair</i></p>	<p>d. <i>Reassembly</i> e. <i>Installation</i></p>
<p>INITIAL SETUP</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><i>Tools and Special Tools</i></p> <p>Automotive maintenance and repair shop equipment: organizational maintenance, common no. 1 (less power) (item 83, appx B)</p> <ul style="list-style-type: none"> • Breaker bar (3/4 in. drive) • Socket (15/16 in. 3/4 in. drive) • Torque wrench (O to 600 ft-lb) • Wire brush <p>Driftpin (item 4, appx G) Impact wire adapter (item 1, appx G) Slide puller (item 18, appx G) Track connecting fixture (2) (item 6, appx G)</p> <p><i>Materials/Parts</i></p> <p>Arctic traction parts kit Corrosion preventive sealant (item 34, appx C)</p> <p><i>Personnel Required</i></p> <p>Two</p> <p><i>References</i></p> <p>TM 9-2350-304-10 TM 9-2350-304-24P-1</p> </div> <div style="width: 45%;"> <p><i>Equipment Conditions</i></p> <p>2-901 Fender extension removed Jacks applied to track Track tension decreased (TM 9-2350-304-10)</p> <p style="text-align: center;">NOTE</p> <ul style="list-style-type: none"> • Install one track before removing the other. • Normally, the right track has 76 track shoes and the left track has 75 shoes. The number of track shoes may vary due to track wear. <p><i>General Safety Instructions</i></p> <div style="border: 2px solid black; padding: 5px; text-align: center; margin: 10px 0;">WARNING</div> <p>Keep personnel away from vehicle. Personnel injury could occur when track falls away from idler wheel.</p> </div> </div>		

REMOVAL

NOTE

- It is not necessary to remove track from vehicle to replace arctic track pad.
- Remove one track at a time.
- Select area large enough to allow vehicle to be driven or towed at least 5 vehicle lengths.
- Procedures are written for one track, but apply to both tracks.

- 1 Remove two self-locking nuts (1).

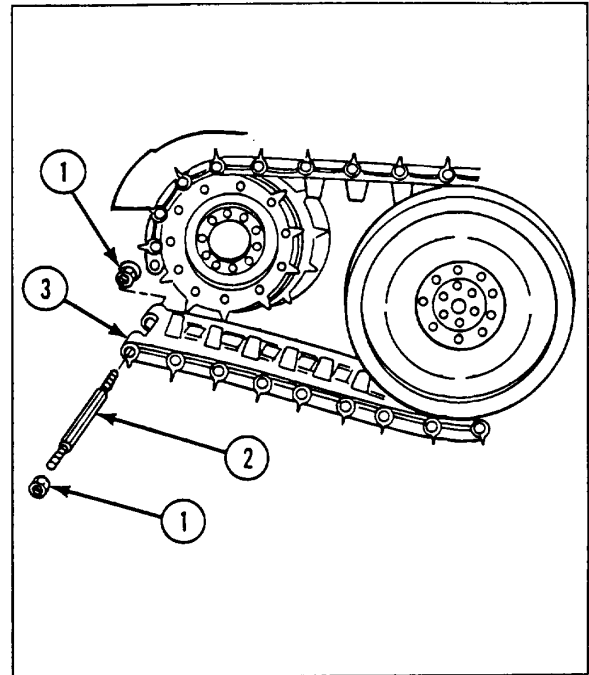
WARNING

Keep personnel away from vehicle. Personnel injury could result when track falls away from idler wheel.

NOTE

Step 2 applies to the removal of the track shoe link pin from the top of a roadwheel.

- 2 Install impact wire adapter on track shoe link pin (2). Attach slide puller to impact wire adapter and remove track shoe link pin (2) from track (3).
- 3 Using driftpin, drive out track shoe link pin (2).
- 4 Slowly back vehicle until track is completely lying on ground.
- 5 Back vehicle off track.

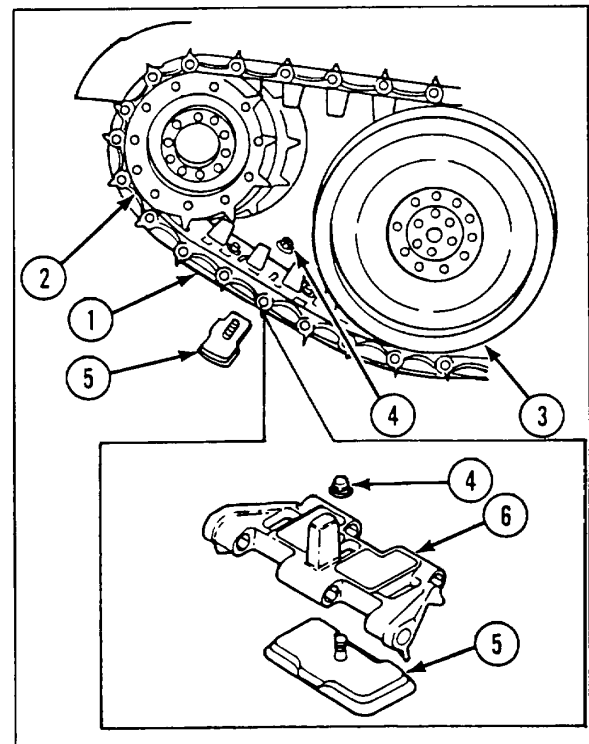


DISASSEMBLY

NOTE

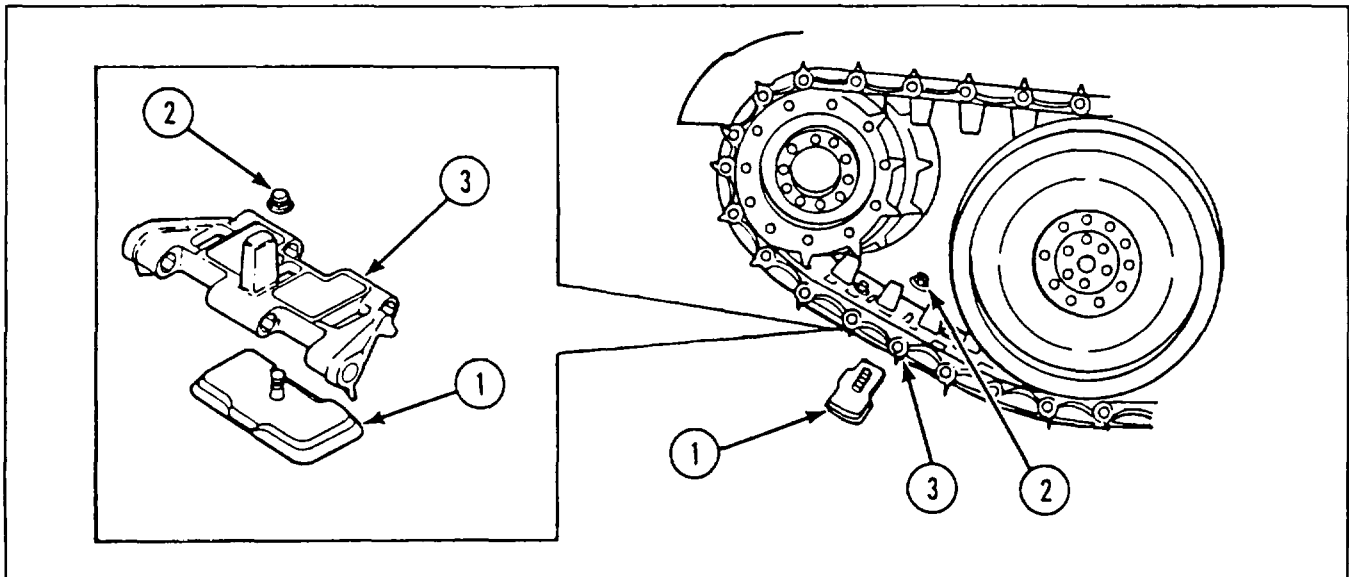
- Procedures are written for one track shoe pad, but apply to all track shoe pads.
- Step 1 applies to the removal of the track shoe pad when the track is installed on the vehicle.

- 1 Position track shoe (1) between drive hut sprocket (2) and roadwheel (3).
- 2 If damaged, remove self-locking nut (4) and track shoe pad (5) from shoe assembly (6).



2-208. MAINTENANCE OF ARCTIC TRACTION KIT (CONT).**INSPECTION/REPAIR**

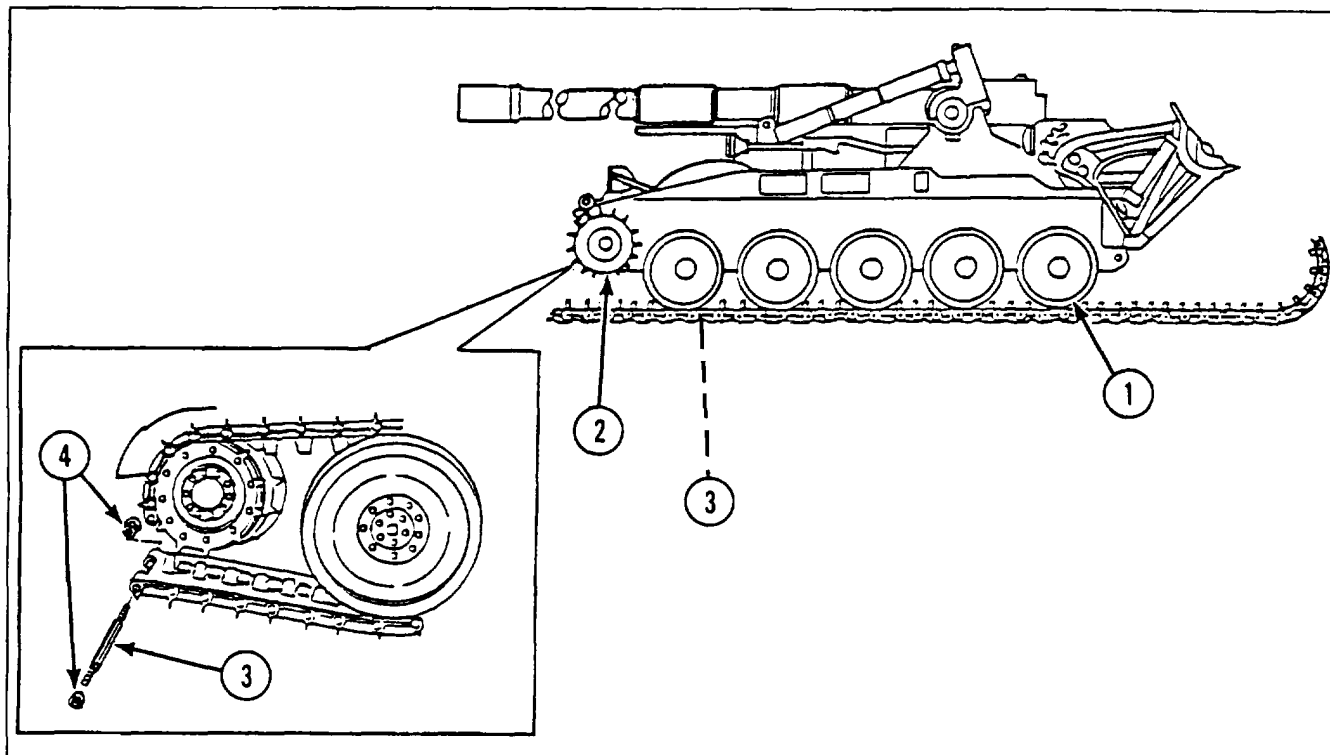
- 1 Inspect for broken, damaged, or missing parts.
- 2 Inspect track shoe pads for wear to or below height of grouser lugs.
- 3 Inspect track shoe pads for chunks of rubber gouged out of contact surfaces.
- 4 For disassembly of track, refer to page 2-829.
- 5 If installing arctic traction kit for the first time, store old track shoe pads in a clean, dry place.
- 6 Using a wire brush, clean and remove old rubber from pad seating area on track shoe.
- 7 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1) which do not meet inspection criteria.

REASSEMBLY**NOTE**

Procedures are written for one track shoe pad, but apply to all track shoe pads.

If removed, install track shoe pad (1) and new self-locking nut (2) on shoe assembly (3). Tighten self-locking nut to 180 ft-lb (244 N-m).

INSTALLATION/ADJUSTMENT

**NOTE**

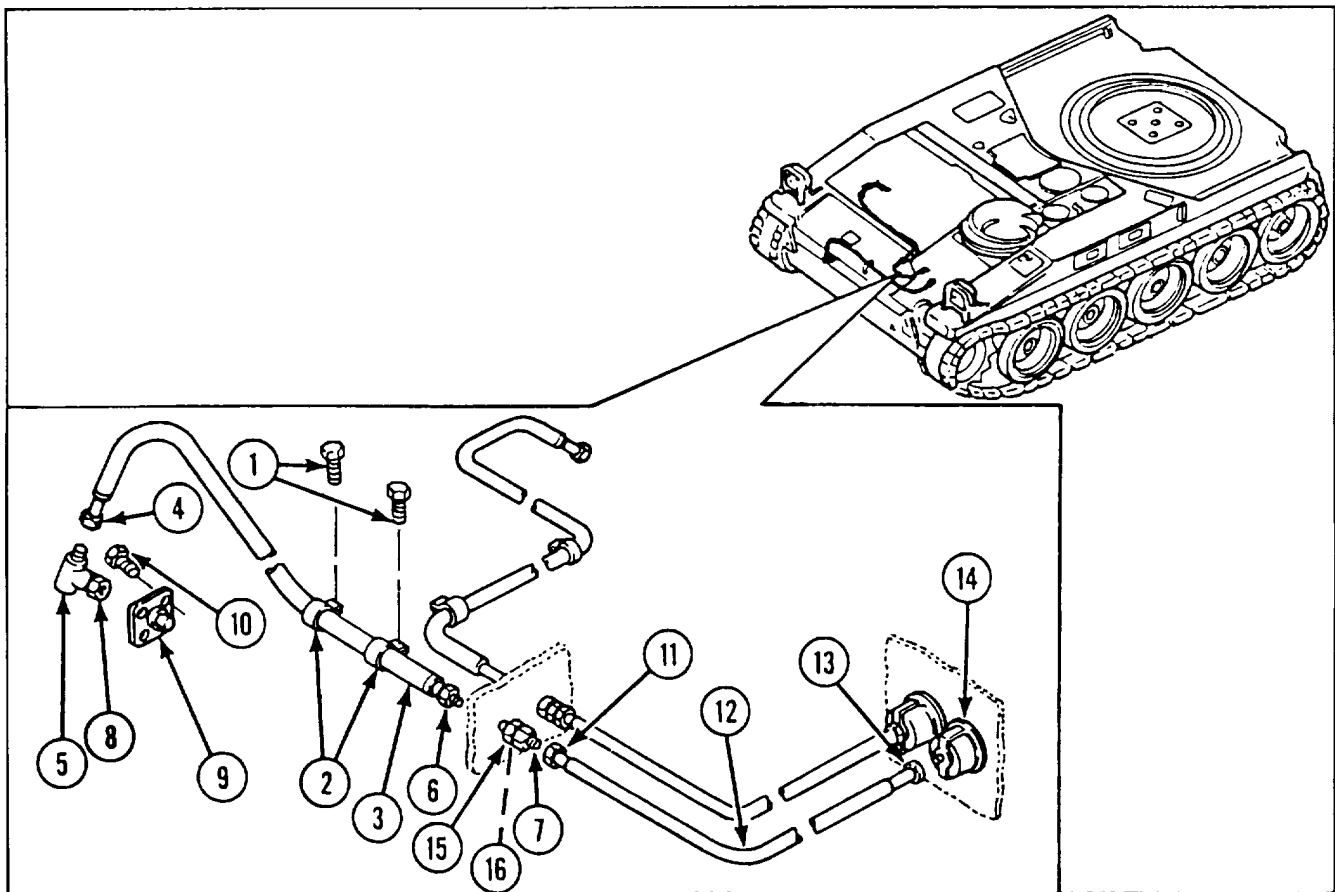
- Install one track before removing the other.
- Procedures are written for one track, but apply to both tracks.

- 1 Lay track in straight line in front of vehicle with track shoe grousers forward and track touching first road wheel.
- 2 Start engine and slowly drive onto track until 11 track shoes extend past hub of trailing idler wheel (1).
- 3 Stop engine. Leave parking brake off.
- 4 Insert driftpin in last track shoe pin hole.
- 5 Lift end of track over idler wheel (1).
- 6 Start engine and slowly move vehicle forward. Guide track over roadwheels to prevent end from getting caught between roadwheels. When track reaches drive hub sprocket (2), pry or lift it over sprocket.
- 7 Using drive hub sprocket, bring ends of track together.
- 8 Remove driftpin.
- 9 Install two track connecting fixtures.
- 10 Apply corrosion preventive sealant (item 29, appx C) to track shoe link pin (3). Install track shoe link pin (3) and two new self-locking nuts (4). Tighten self-locking nuts to 180 to 200 ft-lb (218 to 272 N-m).

2-209. MAINTENANCE OF SPEEDOMETER, TACHOMETER, AND RELATED PARTS.

This task covers:			
a. Removal	b. Inspection/Repair	c. Installation	
INITIAL SETUP			
<i>Materials/Parts</i>		<i>Equipment Conditions</i>	
Gasket		2-887 Engine deck assembly removed	
<i>References</i>		2-893 Transmission deck assembly removed	
TM 9-2350-304-24P-1			

REMOVAL



- 1 Remove two screws (1) and two loop clamps (2) from flexible speedometer shaft assembly (3).
- 2 Disconnect nut (4) on end of flexible speedometer shaft assembly (3) from speedometer drive
- 3 Disconnect nut (6) on end of flexible speedometer shaft assembly (3) from speedometer shaft adapter (7), and remove flexible speedometer shaft assembly.

NOTE

Place container under speedometer drive adapter to catch oil before removing speedometer drive adapter from engine.

- 4 Loosen nut (8) and remove speedometer drive adapter (5) from straight drive speedometer adapter (9).
- 5 Remove four capscrews (10) and straight drive speedometer adapter (9) from engine.
- 6 Disconnect nut (11) on end of flexible speedometer shaft assembly (12) from speedometer shaft adapter (7).
- 7 Disconnect nut (13) on end of flexible speedometer shaft assembly (12) from mechanical speedometer (14). Remove flexible speedometer shaft assembly.

NOTE

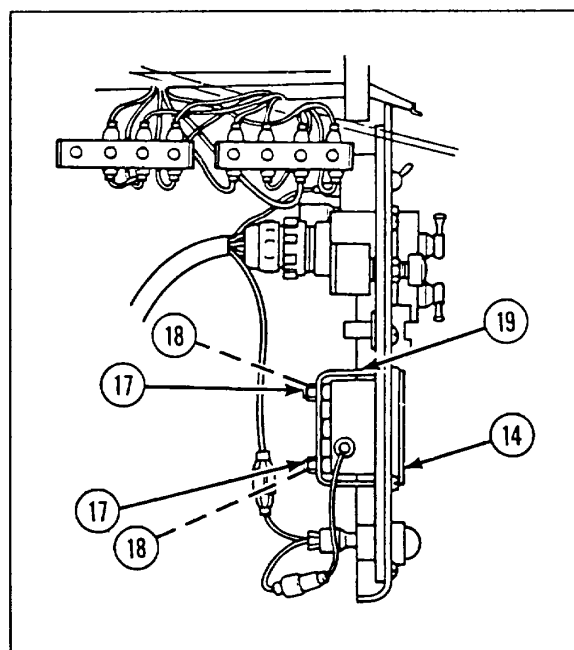
Nut and lockwasher removed in step 8 are supplied with speedometer shaft adapter. Take care, not to lose nut and lockwasher removed in step 8.

- 8 Remove nut (15) and lockwasher (16) from speedometer shaft adapter (7). Remove speedometer shaft adapter from wall of driver's compartment.

NOTE

Two nuts, two lockwashers, and mounting clamp removed in step 9 are supplied with mechanical speedometer. Take care not to lose hardware removed in step 9.

- 9 Remove two nuts (17), two lockwashers (18), and mounting clamp (19) from mechanical speedometer (14). Remove mechanical speedometer from driver's instrument panel.



2-209. MAINTENANCE OF SPEEDOMETER, TACHOMETER, AND RELATED PARTS (CONT).

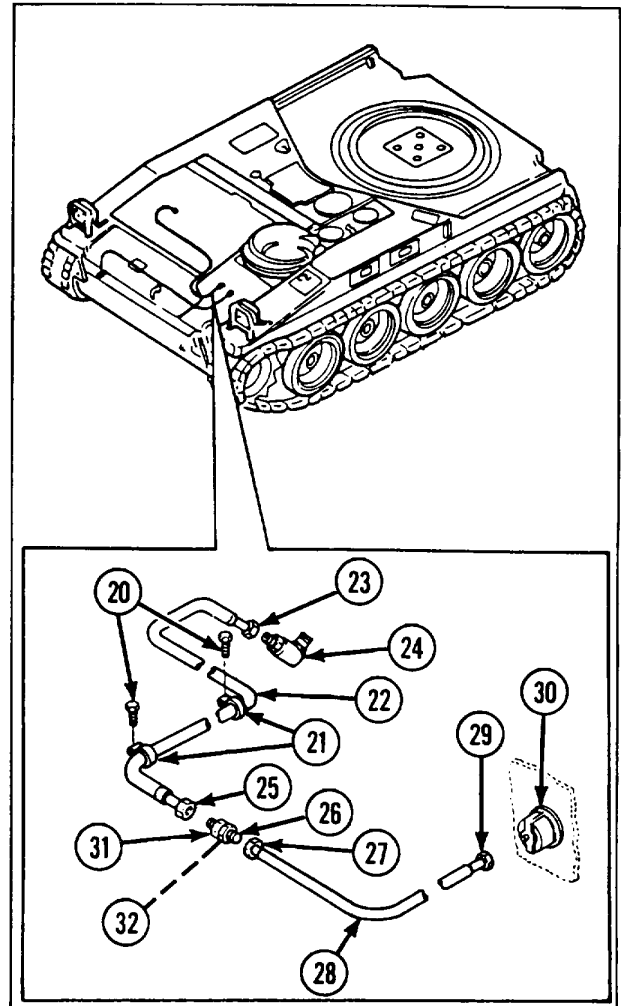
REMOVAL (CONT)

- 10 Remove two screws (20) and two loop clamps (21) from flexible tachometer shaft assembly (22).
- 11 Disconnect nut (23) on end of flexible tachometer shaft assembly (22) from tachometer drive (24).
- 12 Disconnect nut (25) on end of flexible tachometer shaft assembly (22) from tachometer shaft adapter (26), and remove flexible tachometer shaft assembly.
- 13 Disconnect nut (27) on end of flexible tachometer shaft assembly (28) from tachometer shaft adapter (26).
- 14 Disconnect nut (29) on end of flexible tachometer shaft assembly (28) from mechanical tachometer (30). Remove flexible tachometer shaft assembly.

NOTE

Nut and lockwasher removed in step 15 are supplied with tachometer shaft adapter. Take care not to lose nut and lockwasher removed in step 15.

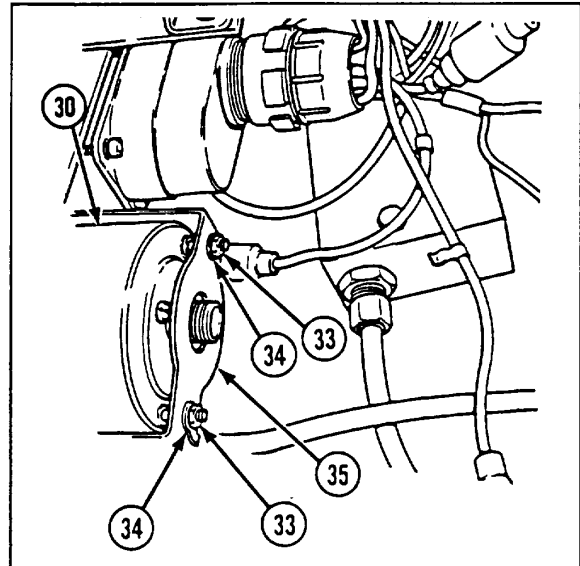
- 15 Remove nut (31) and lockwasher (32) from tachometer shaft adapter (26). Remove tachometer shaft adapter from wall of driver's compartment.



NOTE

Two nuts, two lockwashers, and mounting clamp removed in step 16 are supplied with mechanical tachometer. Take care not to lose hardware removed in step 16.

- 16 Remove two nuts (33), two lockwashers (34), and mounting clamp (35) from mechanical tachometer (30). Remove mechanical tachometer (30) from driver's instrument panel.



INSPECTION/REPAIR

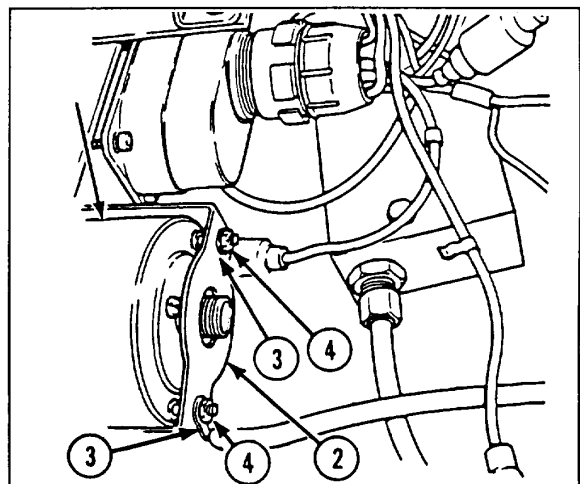
- 1 Inspect for broken, damaged, or missing! parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

NOTE

If mounting clamp, two lockwashers, or two nuts have been lost or damaged, replace entire mechanical tachometer.

- 1 Install mechanical tachometer (1) on driver's instrument panel. Install mount clamp (2) on mechanical tachometer, and secure with two lockwashers (3) and two nuts (4).



2-209. MAINTENANCE OF SPEEDOMETER, TACHOMETER, AND RELATED PARTS (CONT).

INSTALLATION (CONT)

NOTE

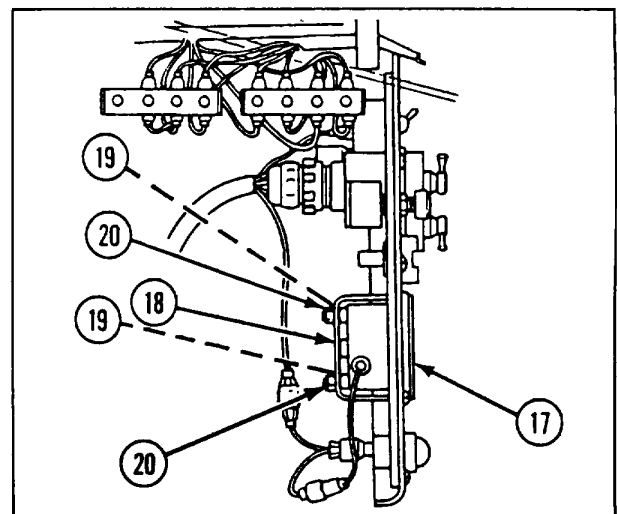
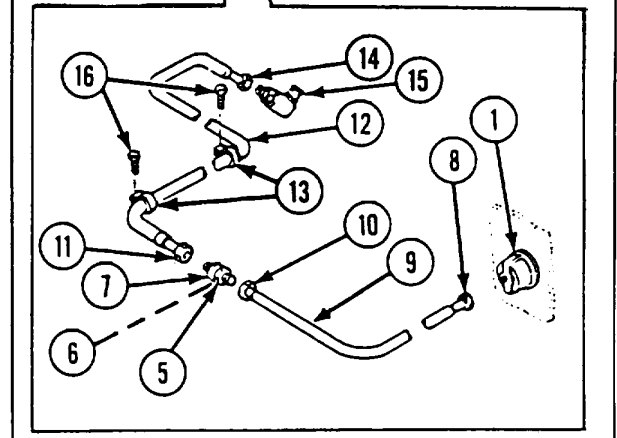
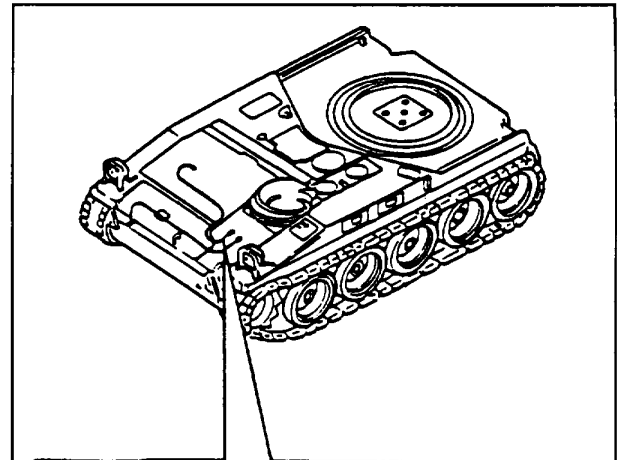
If lockwasher or nut has been lost or damaged, replace entire tachometer shaft adapter.

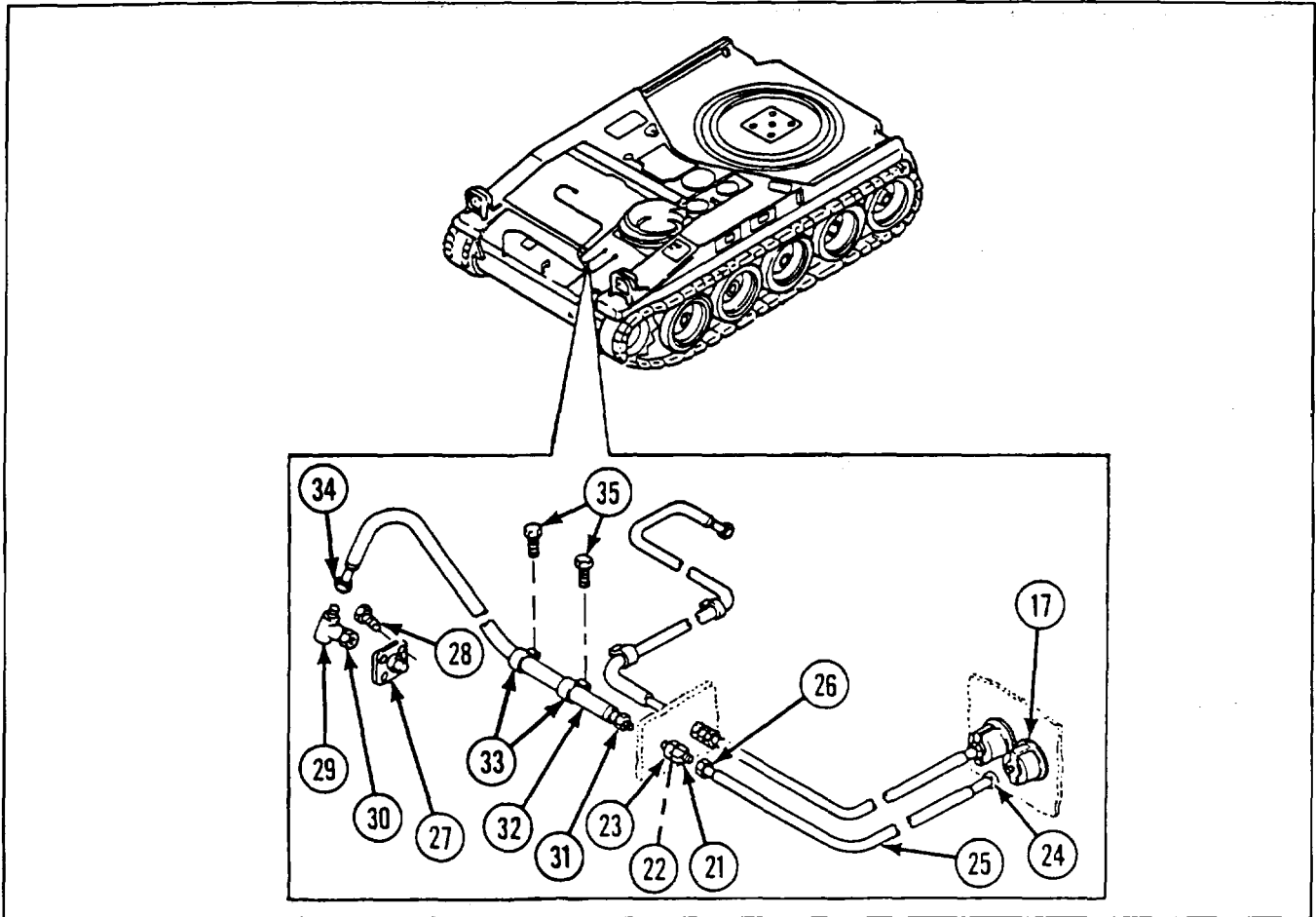
- 2 Install tachometer shaft adapter (5) in w of driver's compartment, and secure with lockwasher (6) and nut (7).
- 3 Connect nut (8) on end of flexible tachometer shaft assembly (9) to mechanical tachometer (1).
- 4 Connect nut (10) on end of flexible tachometer shaft assembly (9) to tachometer shaft adapter (5).
- 5 Connect nut (11) on end of flexible tachometer shaft assembly (12) to tachometer shaft adapter (5).
- 6 Install two loop clamps (13) on flexible tachometer shaft assembly (12).
- 7 Connect nut (14) on end of flexible tachometer shaft assembly (12) to tachometer drive (15).
- 8 Secure two loop clamps (13) with two screws (16).

NOTE

If two lockwashers and two nuts have been lost or damaged, replace entire mechanical speedometer.

- 9 Install mechanical speedometer (17) on driver's instrument panel. Install mount clamp (18), two new lockwashers (19), and two nuts (20) on mechanical speedometer (17).





NOTE

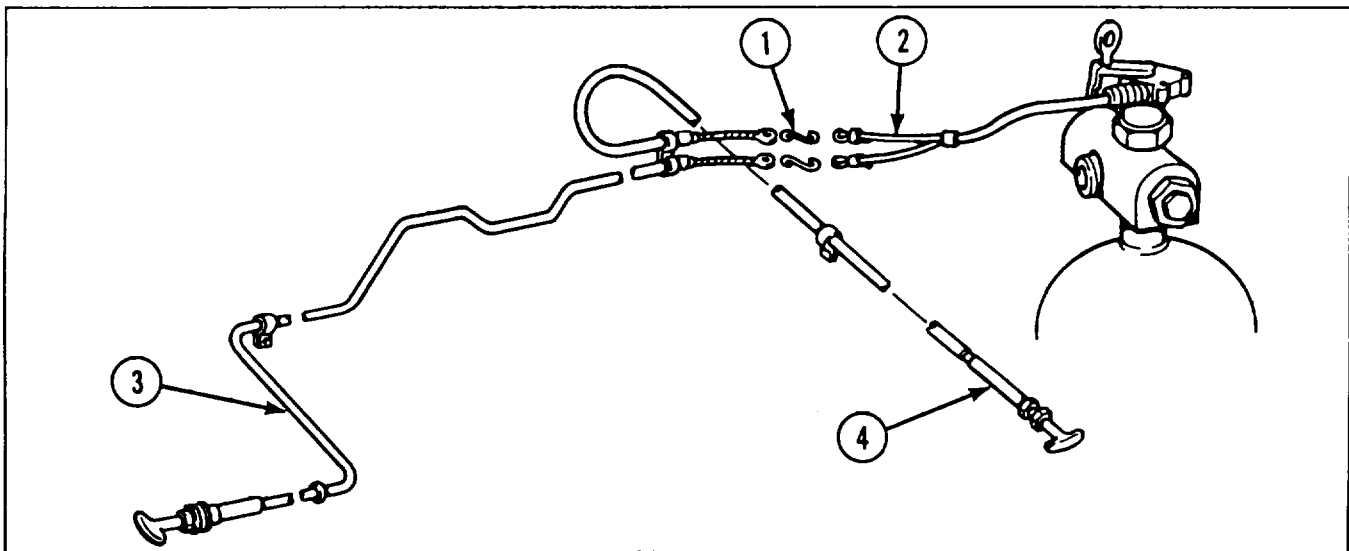
If lockwasher or nut has been lost or damaged, replace entire speedometer shaft adapter.

- 10 Install speedometer shaft adapter (21) wall of driver's compartment, and secure with lockwasher (22) and nut (23).
- 11 Connect nut (24) on end of flexible speedometer shaft assembly (25) to mechanical speedometer (17).
- 12 Connect nut (26) on end of flexible speedometer shaft assembly (25) to speedometer shaft adapter (21).
- 13 Install straight drive speedometer adapter (27) on engine, and secure with four capscrews (28).
- 14 Install speedometer drive adapter (29) on straight drive speedometer adapter (27), and tighten nut (30).
- 15 Connect nut (31) on end of flexible speedometer shaft assembly (32) to speedometer shaft adapter (21).
- 16 Install two loop clamps (33) on flexible speedometer shaft assembly (32).
- 17 Connect nut (34) on end of flexible speedometer shaft assembly (32) to speedometer drive adapter (29).
- 18 Secure two loop clamps (33) with two screws (35).

2-210. MAINTENANCE OF FIXED FIRE EXTINGUISHER CONTROL SYSTEM.

This task covers:			
a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>	
INITIAL SETUP			
<p><i>Materials/Parts</i></p> <p>Lockwasher(4)</p> <p>Lockwasher</p> <p>Pull cable control handle antipilferage seal (2)</p> <p>Self-locking nut (2)</p>		<p><i>General Safety Instructions</i></p>	
<p><i>References</i></p> <p>TM 9-2350-304-24P-1</p>		<div style="border: 2px solid black; padding: 5px; text-align: center;">WARNING</div> <ul style="list-style-type: none"> • Handle fire extinguisher cylinders with care-do not drop. • Never remove main valve head on top of fire extinguisher cylinder. Removal of main valve head can cause serious injury to personnel. 	
<p><i>Equipment Conditions</i></p> <p>2-875 CO₂ cylinder access cover removed</p> <p>2-624 Batteries and battery support removed</p> <p>2-911 Seat removed</p>			

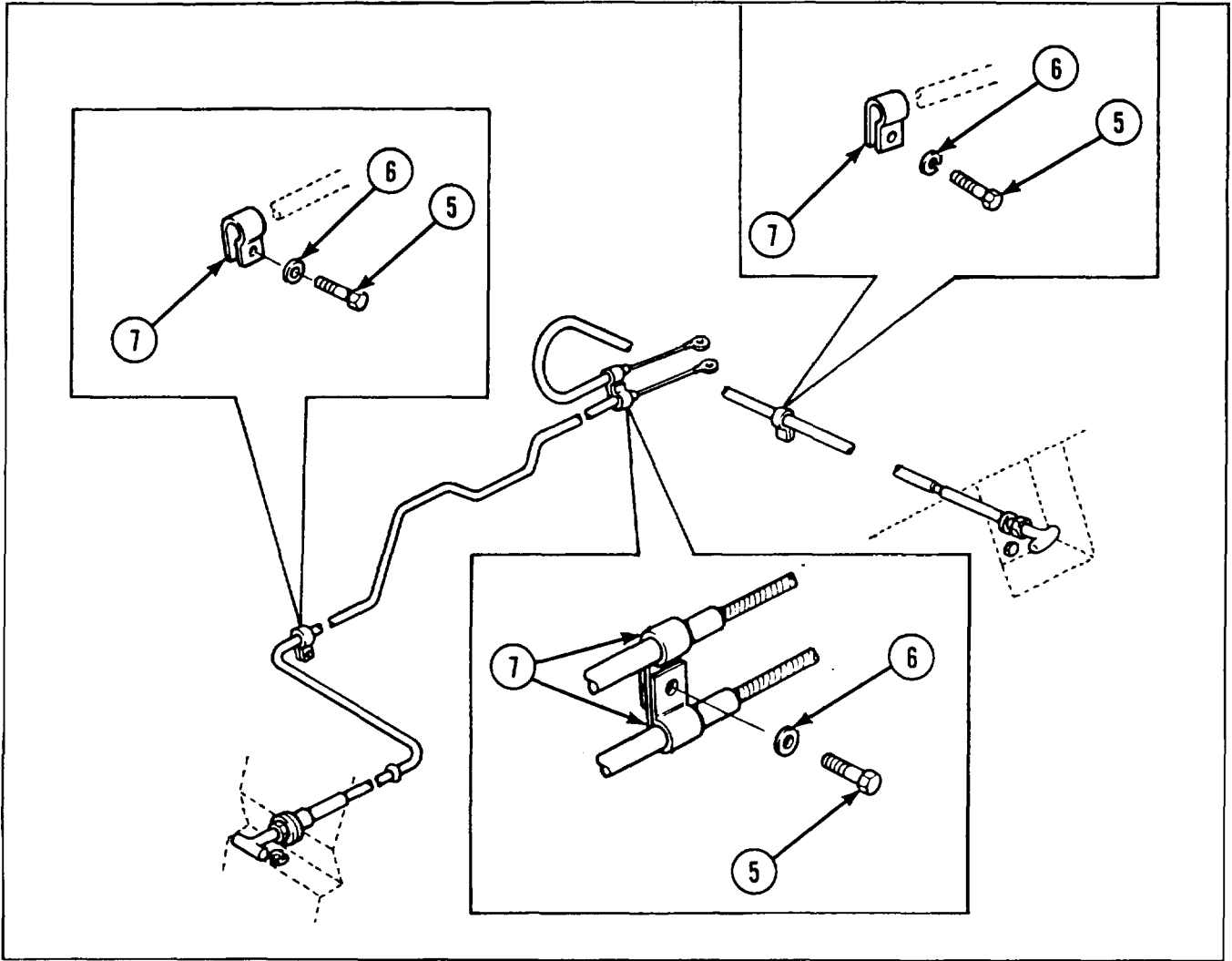
REMOVAL



CAUTION

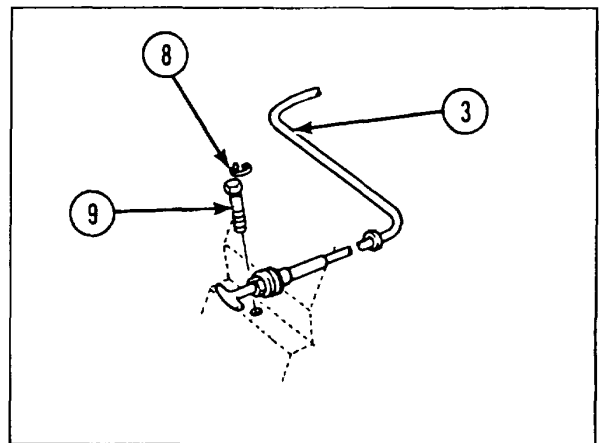
Turning fire extinguisher cylinder CO₂ release valve will discharge CO₂ cylinders.

- 1 Remove two chain hooks (1) from cylinder release cable sling wire rope (2), driver's compartment pull cable control assembly (3), and rear left fender pull cable control assembly (4). w



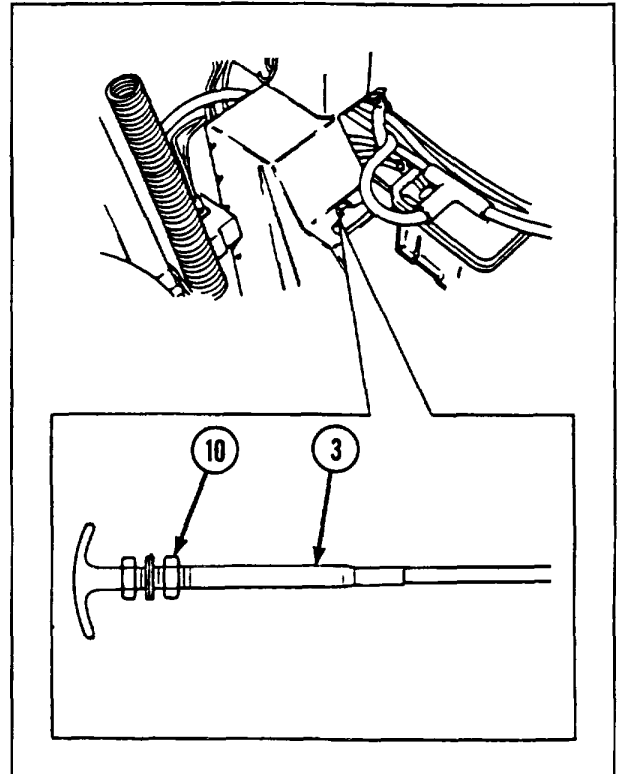
2 Remove three hexagon head capscrews (5), three lockwashers (6), and four loop clamps (7).

3 Cut and remove pull cable control handle antipilferage seal (8) from driver's compartment pull cable control assembly (3) and machine bolt (9).

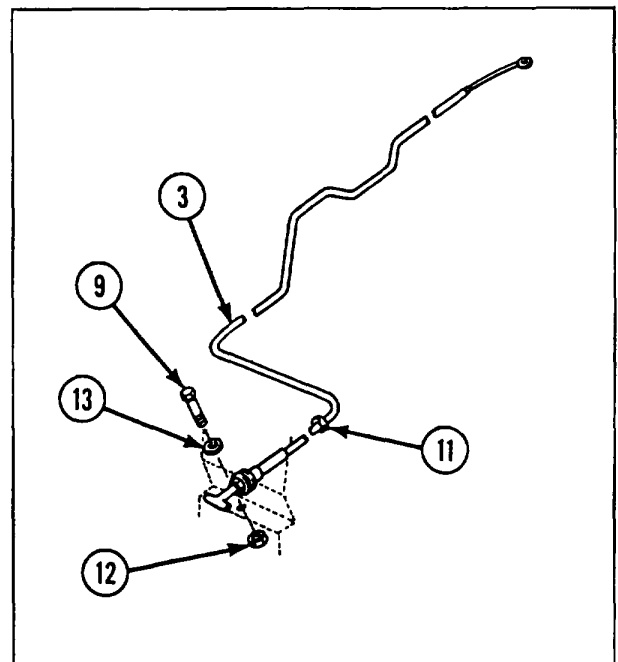


2-210. MAINTENANCE OF FIXED FIRE EXTINGUISHER CONTROL SYSTEM (CONT).*REMOVAL (CONT)*

- 4 From inside driver's compartment aft cowl, loosen jam nut (10).
- 5 Slide rubber grommet (11) off driver's compartment pull cable control assembly (3).



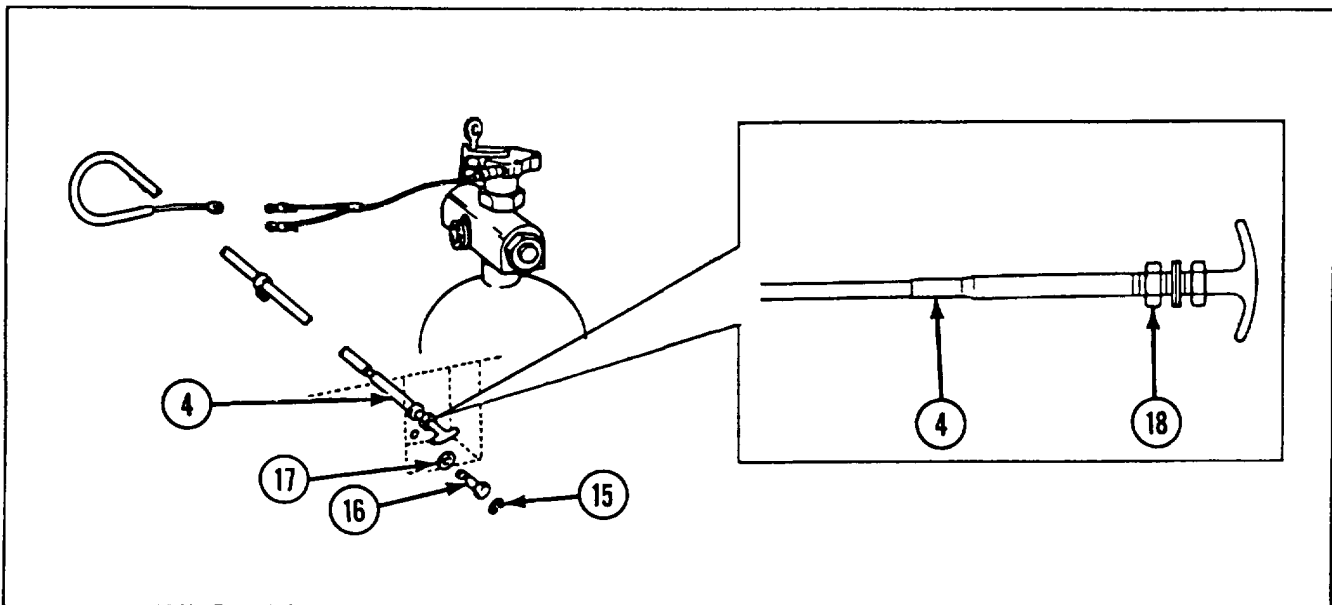
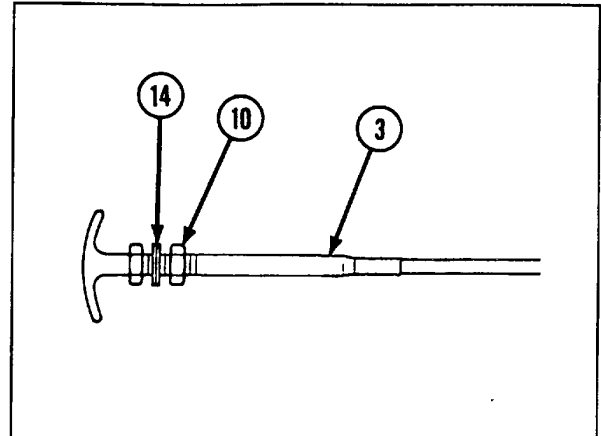
- 6 Remove hexagon plain nut (12), machine bolt (9), and lockwasher (13) from driver compartment aft cowl.
- 7 Remove driver's compartment pull cable control assembly (3) from vehicle.



NOTE

Jam nut is supplied with driver's compartment pull cable control assembly. Take care not to lose or damage this part.

- 8 Remove jam nut (10) from driver's compartment pull cable control assembly (3).
- 9 Remove two flat washers (14) from driver's compartment pull cable control assembly (3).



- 10 Cut and remove pull cable control handle antipilferage seal (15) from rear left fender pull cable control assembly (4) and hexagon head capscrew (16).
- 11 Remove hexagon head capscrew (16) and lockwasher (17) from rear left fender pull cable control assembly (4).

NOTE

Jam nut is supplied with rear left fender pull cable control assembly. Take care not to , lose or damage this part.

- 12 Loosen and remove jam nut (18) from rear left fender pull cable control assembly (4).
- 13 Remove rear left fender pull cable control assembly (4) from vehicle.

2-210. MAINTENANCE OF FIXED FIRE EXTINGUISHER CONTROL SYSTEM (CONT).

REMOVAL (CONT)

- 14 Loosen fitting (19) and disconnect left discharge tube (20) from fire extinguisher cylinder (21).
- 15 Loosen tube coupling nut (22) and disconnect left cylinder to union steel bent tube (23) from fire extinguisher cylinder CO2 release valve (24).
- 16 Release two cylinder brackets (25).

WARNING

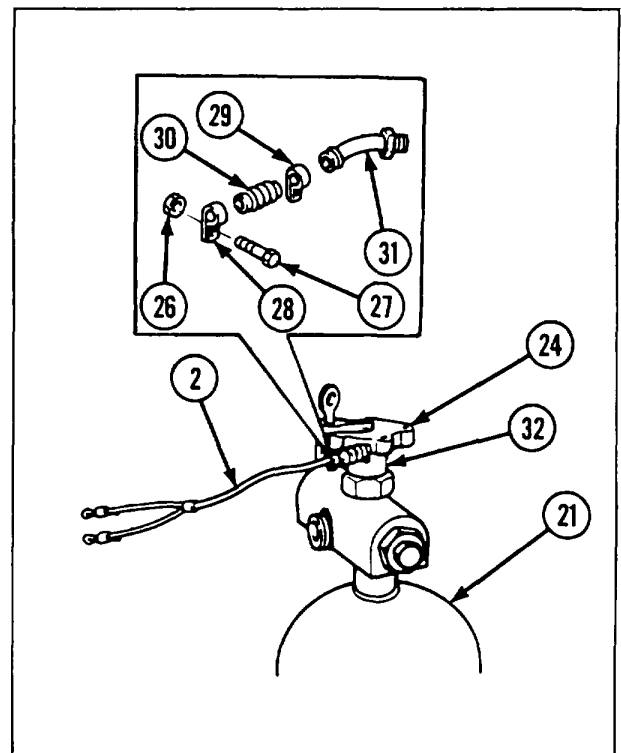
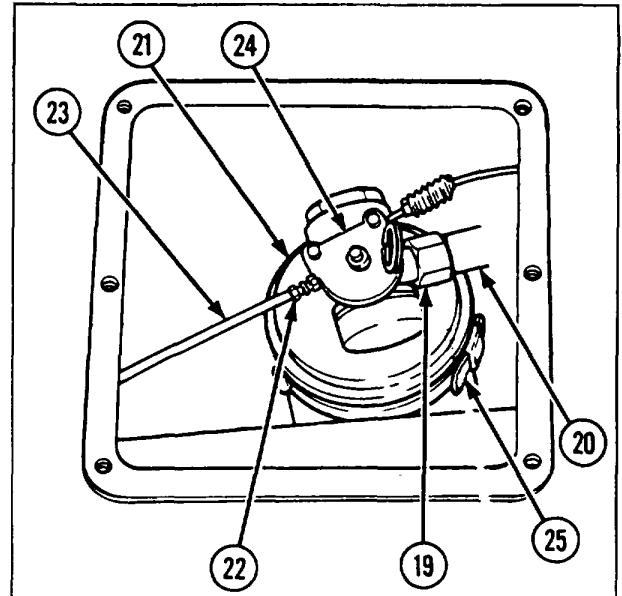
Handle fire extinguisher cylinders with care-do not drop.

- 17 Remove fire extinguisher cylinder (21) from vehicle.
- 18 Remove two self-locking nuts (26), two machine screws (27), loop clamp (28), loop clamp (29), dust and moisture boot (30), control cable pipe to hose elbow (31), and cylinder release cable sling wire rope (2) from fire extinguisher cylinder CO2 release valve (24).

WARNING

Never remove main valve head on top of fire extinguisher cylinder. Removal of main valve head can cause serious injury to personnel.

- 19 Remove fire extinguisher cylinder CO2 release valve (24) from main valve head (32) on top of fire extinguisher cylinder (21).

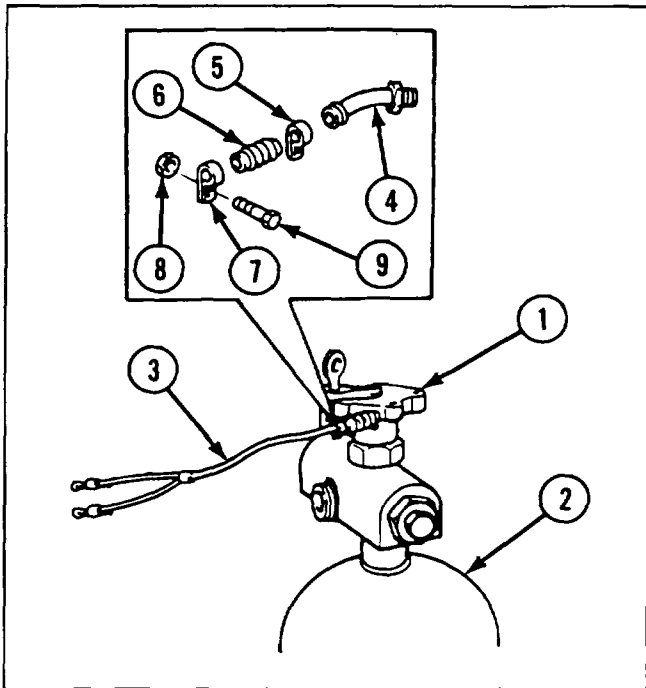


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Weigh fire extinguisher cylinder for proper weight and charge as necessary. Refer to PMCS, page 2-12.
- 3 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

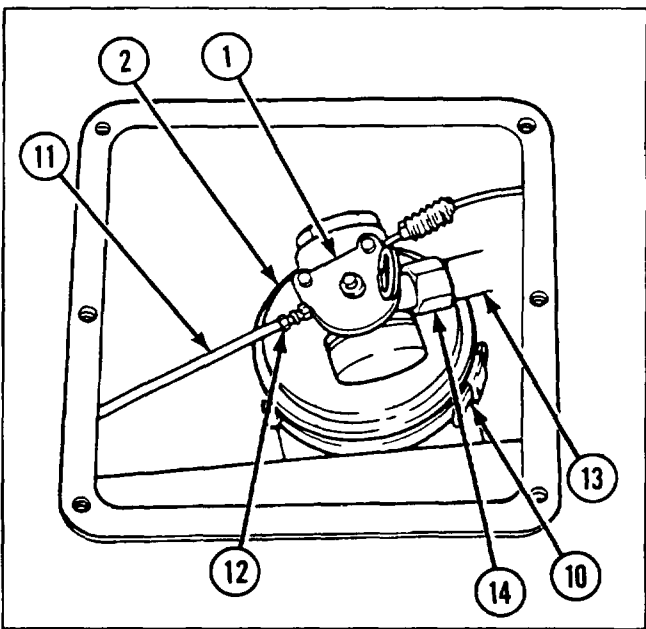
- 1 Install fire extinguisher cylinder CO₂ release valve (1) on fire extinguisher cylinder (2).
- 2 Install cylinder release cable sling wire rope (3), control cable pipe to hose elbow (4), loop clamp (5), dust and moisture boot (6), and loop clamp (7). Secure with two new self-locking nuts (8) and two machine screws (9).



WARNING

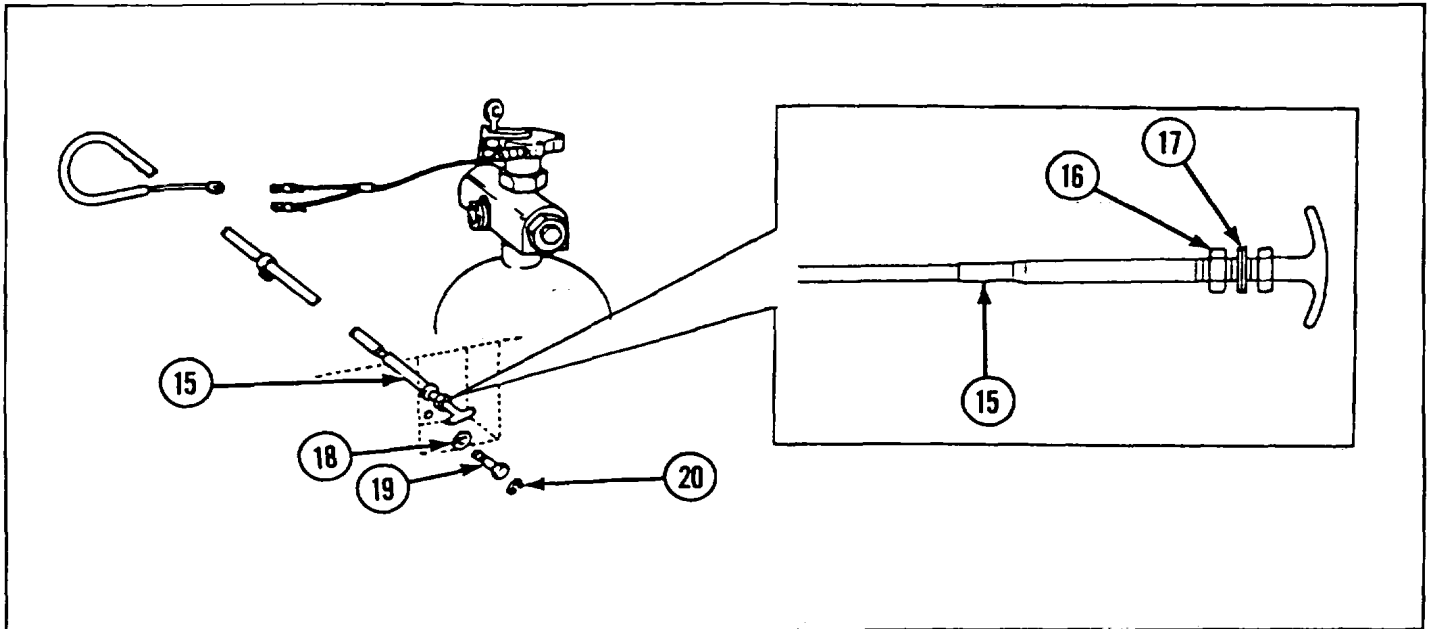
Handle fire extinguisher cylinders with care--do not drop.

- 3 Place fire extinguisher cylinder (2) in vehicle.
- 4 Secure fire extinguisher cylinder (2) with two cylinder brackets (10).
- 5 Connect left cylinder to union steel bent tube (11) to fire extinguisher cylinder CO₂ release valve (1) and tighten tube coupling nut (12).
- 6 Connect left discharge tube (13) to fire extinguisher cylinder (2) and tighten fitting (14).



2-210. MAINTENANCE OF FIXED FIRE EXTINGUISHER CONTROL SYSTEM (CONT).

INSTALLATION (CONT)



NOTE

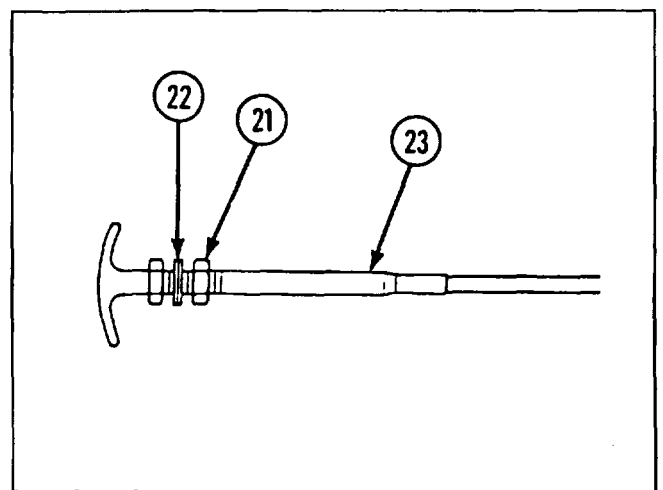
If jam nut is damaged or missing, replace rear left fender pull cable control assembly.

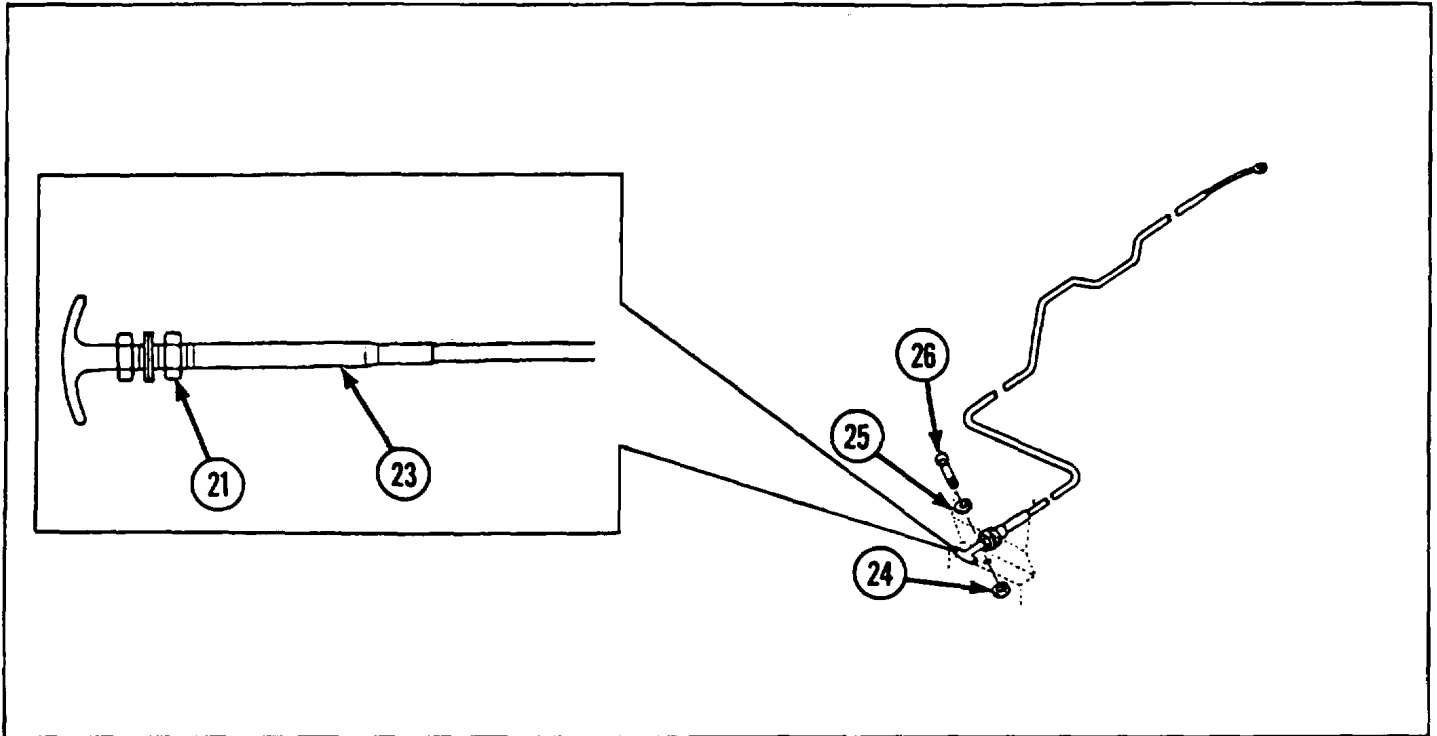
- 7 Install rear left fender pull cable control assembly (15) in vehicle. Secure with jam nut (16) and flat washer (17).
- 8 Install new lockwasher (18) and hexagon head capscrew (19).
- 9 Install antipilferage seal (20) on rear left fender pull cable control assembly (15).

NOTE

If jam nut is damaged or missing, replace driver's compartment pull cable control assembly.

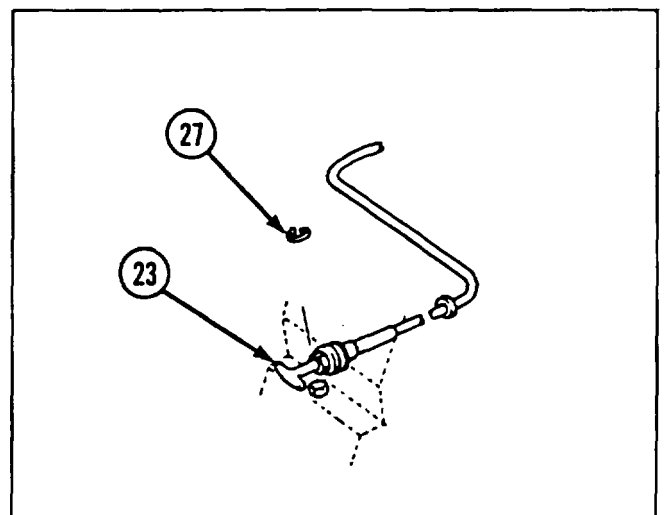
- 10 Install jam nut (21) and flat washer (22) driver's compartment pull cable control assembly (23).
- 11 Install driver's compartment pull cable control assembly (23) in vehicle.





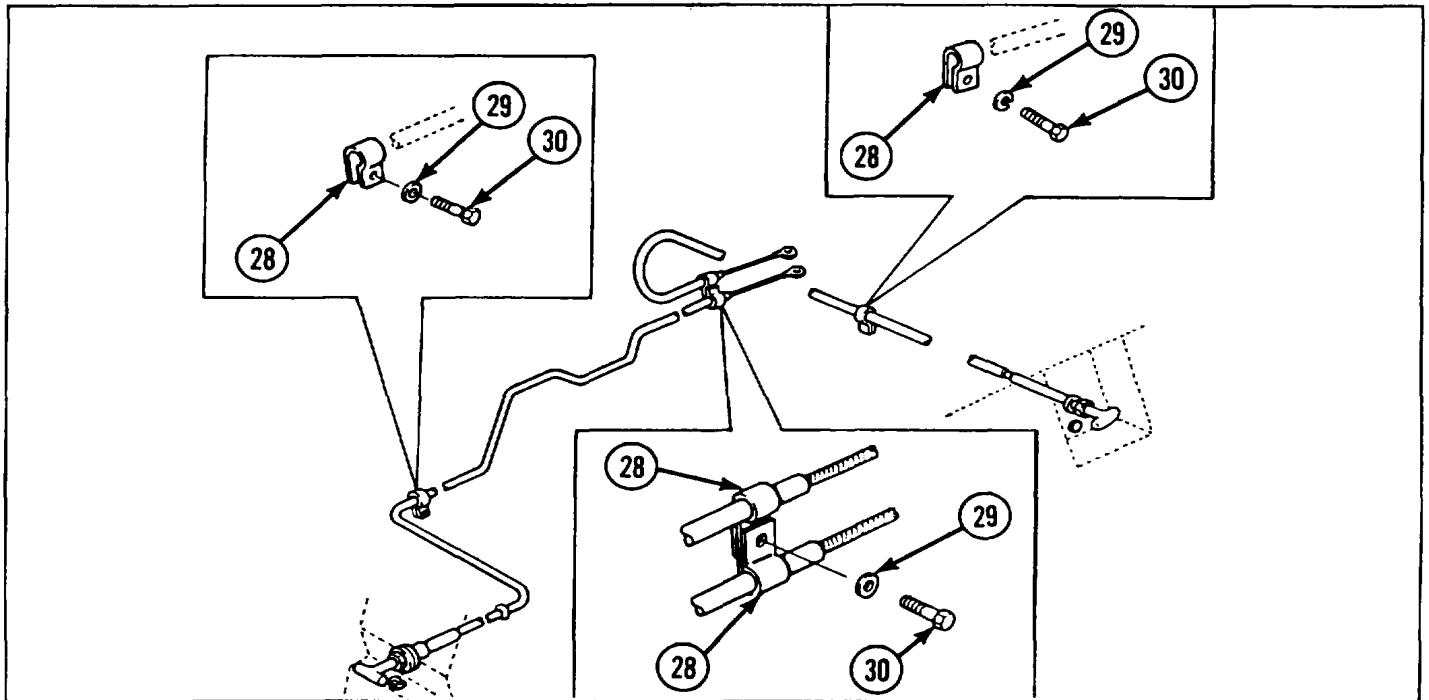
- 12 Install hexagon plain nut (24), new lockwasher (25), and machine bolt (26) on driver's compartment aft cowl. Tighten hexagon plain nut.
- 13 Slide driver's compartment pull cable control assembly (23) into slot of driver's compartment aft cowl. Tighten jam nut (21).

- 14 Secure driver's compartment pull cable control assembly (23) with antipilferage seal (27).

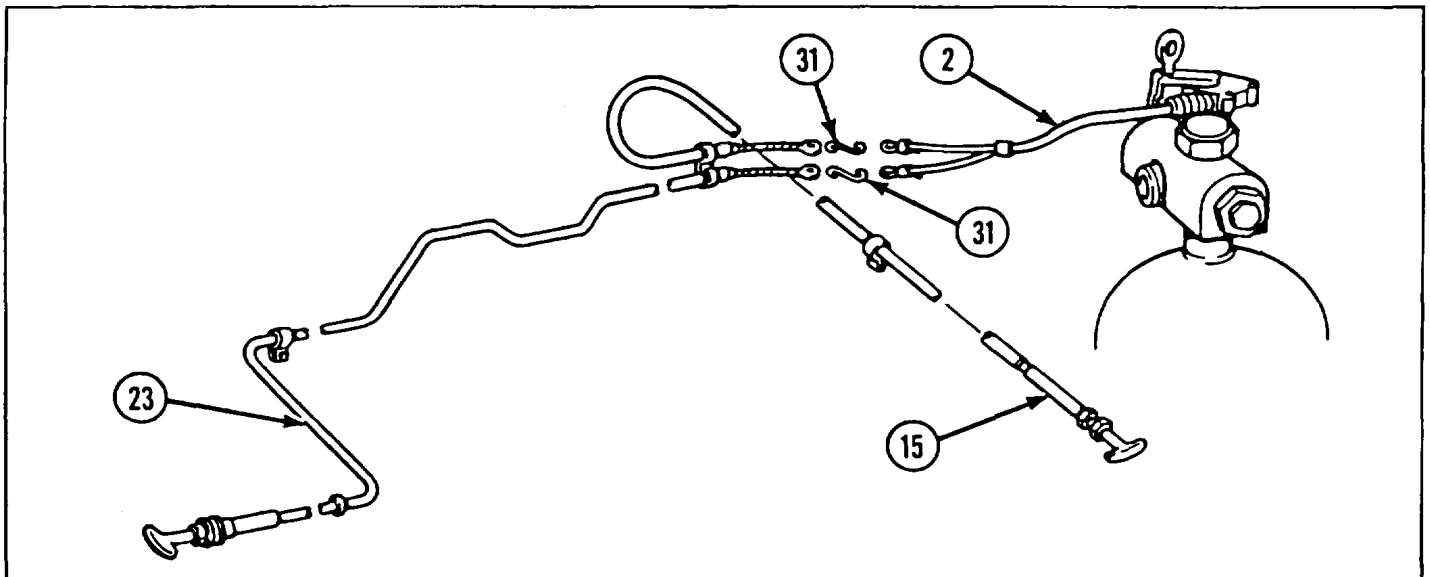


2-210. MAINTENANCE OF FIXED FIRE EXTINGUISHER CONTROL SYSTEM (CONT).

INSTALLATION (CONT)



15 Install four loop clamps (28), three new lockwashers (29), and three hexagon head capscrews (30).



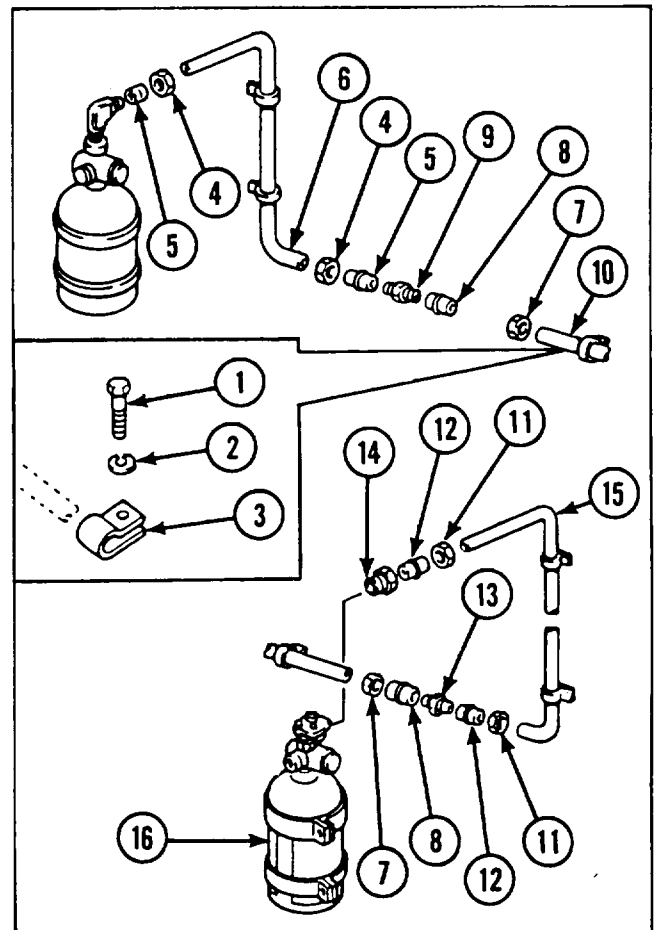
16 Connect cylinder release cable wire rope sling (2), driver's compartment pull cable control assembly (23) and rear left fender control assembly (15) to two chain hooks (31).

2-211. MAINTENANCE OF FIXED FIRE EXTINGUISHER CONNECTING LINES AND FITTINGS.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<p><i>Materials/Parts</i> Lockwasher (7)</p> <p><i>References</i> TM 9-2350-304-24P-1</p> <p><i>Equipment Conditions</i> 2-875 Access covers removed</p>		<p><i>General Safety Instructions</i></p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px 0;">WARNING</div> <ul style="list-style-type: none"> • Handle fire extinguisher cylinder with care--do not drop. • Never remove main valve head on top of fire extinguisher cylinder. Removal of main valve head can cause serious injury to personnel. 	

REMOVAL

- 1 Remove seven hexagon head capscrews (1), seven lockwashers (2), and seven loop clamps (3) from vehicle.
- 2 Remove two tube coupling nuts (4), two tube clinch sleeves (5), and right hand cylinder to union tube (6).
- 3 Remove two tube coupling nuts (7), two tube clinch sleeves (8), tube nipple (9), and union to union metal tube (10).
- 4 Remove two tube coupling nuts (11), two tube clinch sleeves (12), tube nipple (13), pipe straight adapter (14), and left cylinder to union steel bent tube (15) from left fire extinguisher cylinder (16).



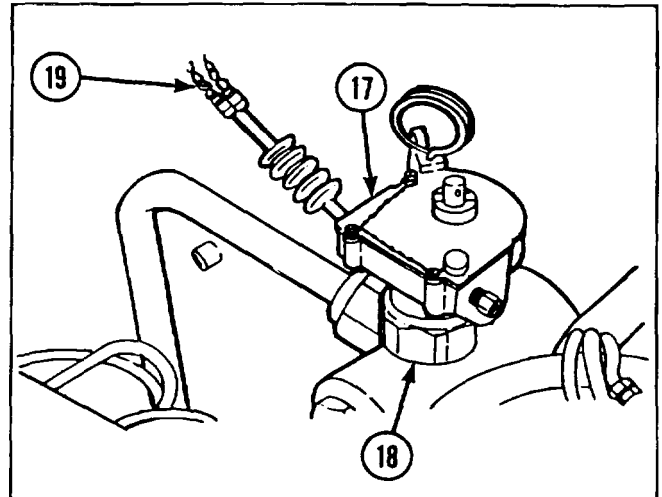
2-211. MAINTENANCE OF FIXED FIRE EXTINGUISHER CONNECTING LINES AND FITTINGS (CONT).

REMOVAL (CONT)

WARNING

Never remove main valve head on top of fire extinguisher cylinder. Removal of main valve head can cause serious injury to personnel.

- 5 Disconnect fire extinguisher cylinder CO₂ release valve (17) at nut (18). Carefully lift release valve straight up and remove from left fire extinguisher cylinder. Allow release valve to hang from cylinder release cable sling wire rope (19).

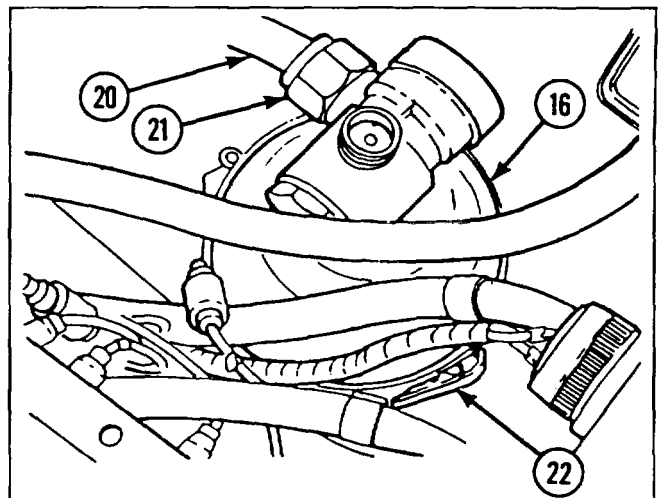


- 6 Disconnect left discharge tube (20) at nut (21).

WARNING

Handle fire extinguisher cylinder with care--do not drop.

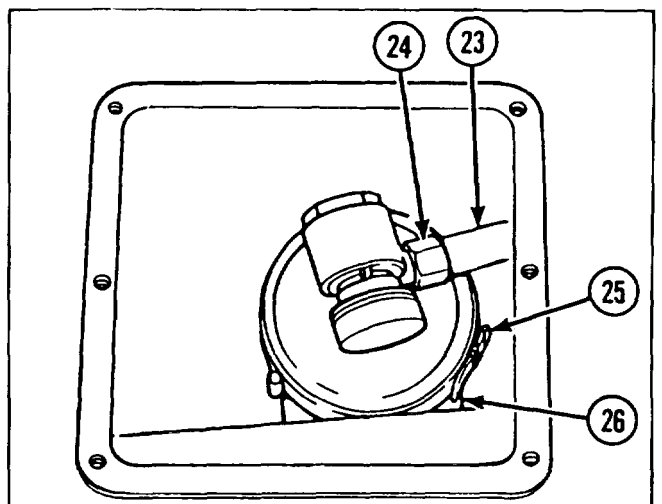
- 7 Release two cylinder brackets (22) and remove left fire extinguisher cylinder (16) from vehicle.
- 8 Disconnect right discharge tube (23) at nut (24).



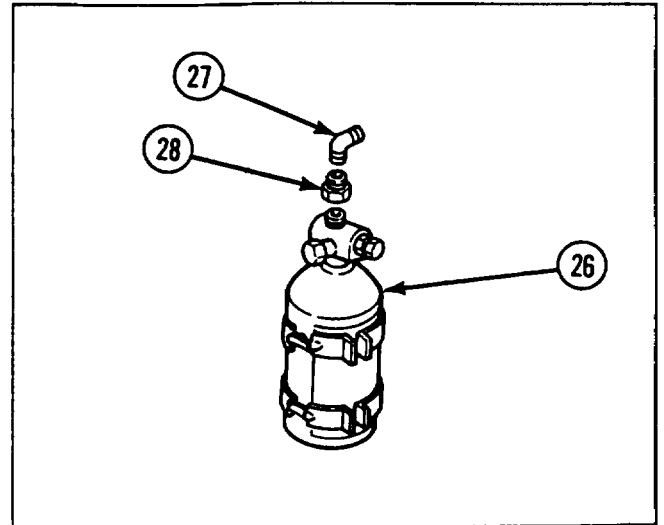
WARNING

Handle fire extinguisher with care--do not drop.

- 9 Release two cylinder brackets (25) and remove right fire extinguisher cylinder (26).



- 10 Remove pipe to tube elbow (27) and right cylinder head (28) from right fire extinguisher cylinder (26).

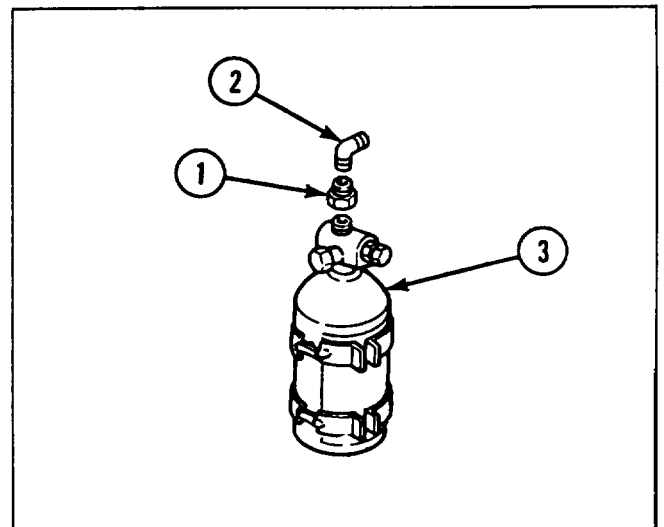


INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Weigh CO₂ cylinder for proper weight and charge as necessary. Refer to PMCS, page 2-12.
- 3 Cylinder brackets are repairable assemblies. Refer to page 2-1132.
- 4 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

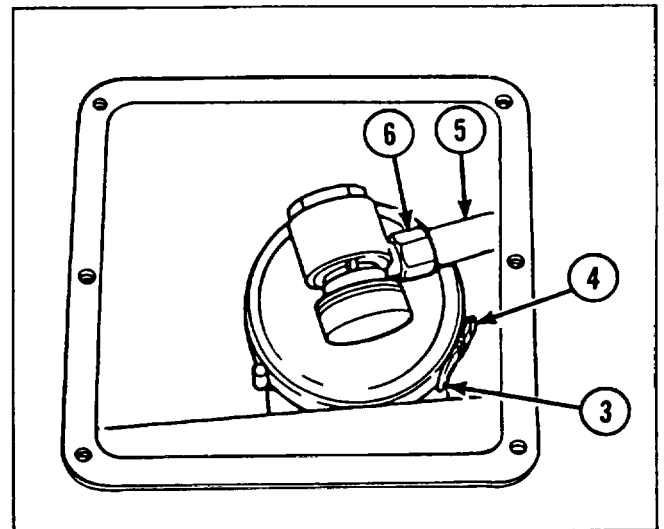
- 1 Install right cylinder head (1) and pipe to tube elbow (2) on right fire extinguisher cylinder (3).



WARNING

- Handle fire extinguisher cylinder with care--do not drop.
- Never remove main valve head on top of fire extinguisher cylinder. Removal of main valve head can cause serious injury to personnel.

- 2 Install right fire extinguisher cylinder (3) in vehicle and secure with two cylinder brackets (4).
- 3 Connect right discharge tube (5) to right fire extinguisher cylinder (3) and tighten nut (6).



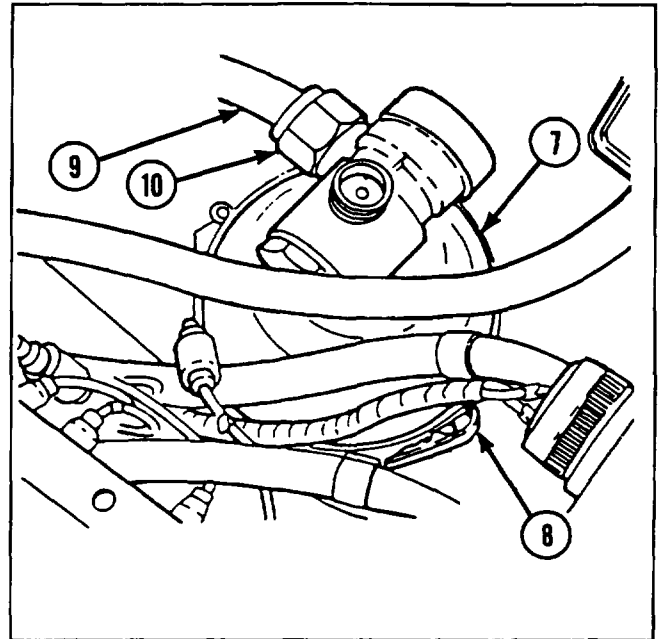
2-211. MAINTENANCE OF FIXED FIRE EXTINGUISHER CONNECTING LINES AND FITTINGS (CONT).

INSTALLATION (CONT)

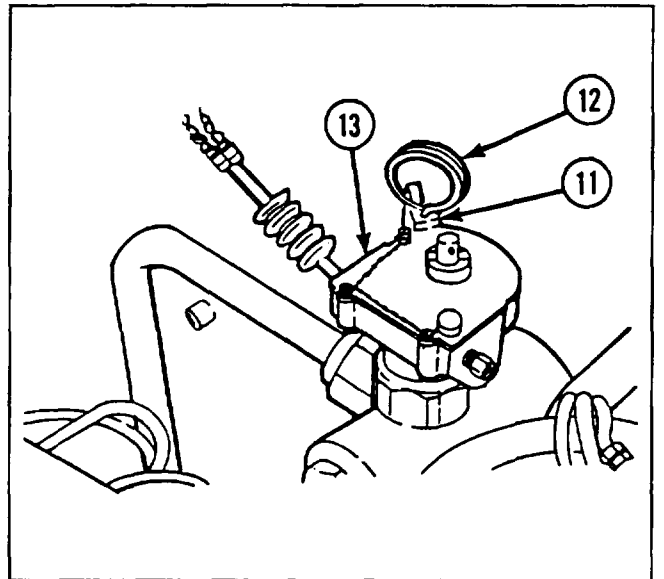
WARNING

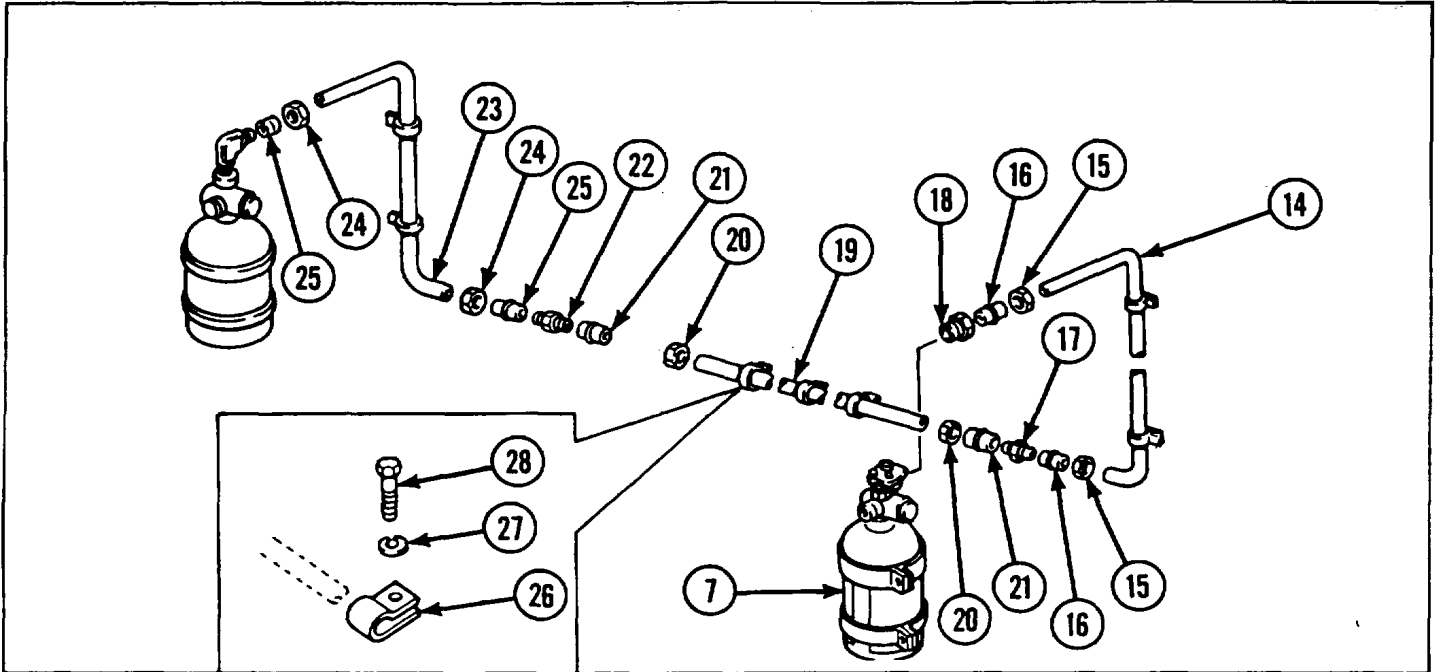
Handle fire extinguisher cylinder with care--do not drop.

- 4 Install left fire extinguisher cylinder (7) in vehicle and secure with two cylinder brackets (8).
- 5 Connect left discharge tube (9) to left fire extinguisher cylinder (7) and tighten nut (10).



- 6 Reset fire extinguisher cylinder CO₂ release valve handle (11) and install safety pin (12), if removed.
- 7 Carefully install fire extinguisher cylinder CO₂ release valve (13).





- 8 Install left cylinder to union bent steel tube (14), and secure with two tube coupling nuts (15), two clinch tube sleeves (16), tube nipple (17), and pipe straight adapter (18) on left fire extinguisher cylinder (7).
- 9 Install union to union metal tube (19), and secure with two tube coupling nuts (20), two clinch tube sleeves (21), and tube nipple (22).
- 10 Install right hand cylinder to union tube (23), and secure with two tube coupling nuts (24) and two clinch tube sleeves (25).
- 11 Install seven loop clamps (26), and secure with seven new lockwashers (27) and seven hexagon head capscrews (28).

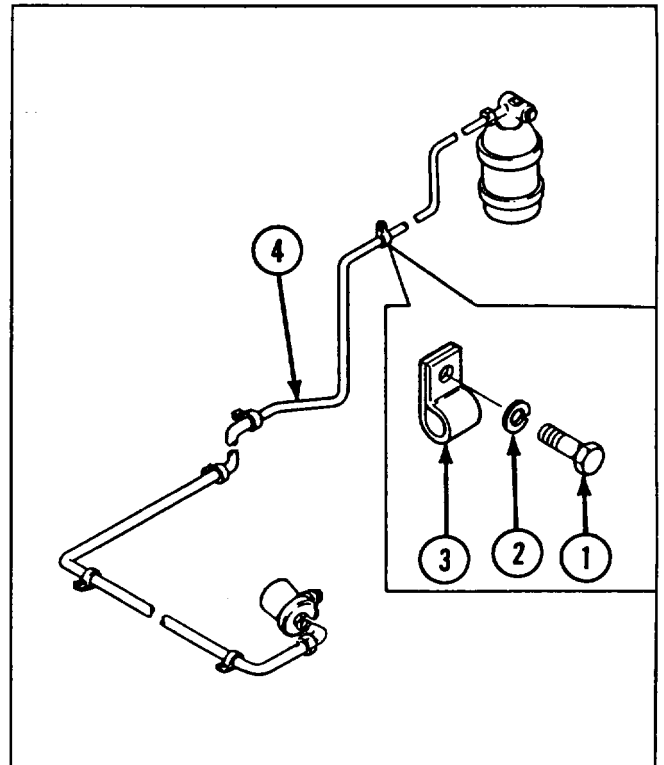
2-212. MAINTENANCE OF FIXED FIRE EXTINGUISHER FORWARD NOZZLE, LINES AND FITTINGS.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Materials/Parts</i>			
Lockwasher (7)			
<i>References</i>			
TM 9-2350-304-24P-1			

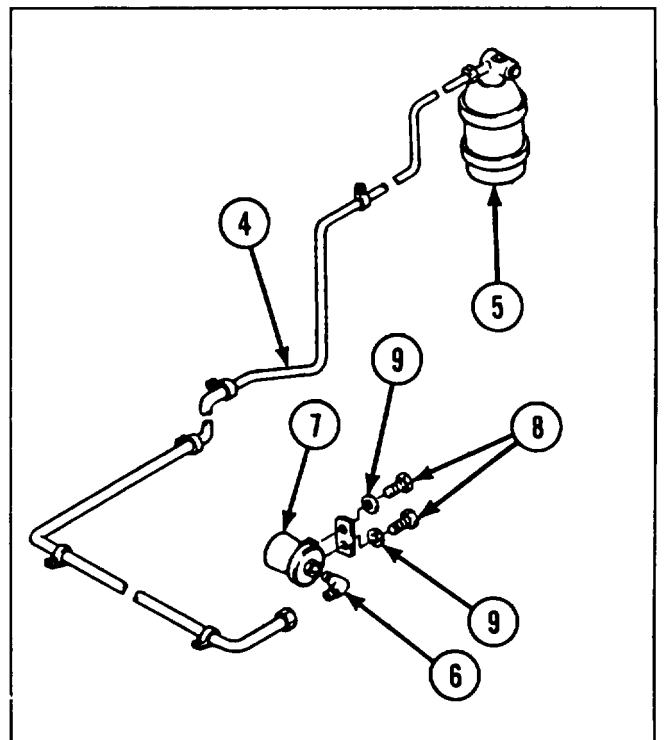
2-212. MAINTENANCE OF FIXED FIRE EXTINGUISHER FORWARD NOZZLE, LINES AND FITTINGS (CONT).

REMOVAL

- 1 Remove seven hexagon head capscrews (1), seven lockwashers (2), and seven loop clamps (3) from right discharge tube (4).



- 2 Disconnect and remove right discharge tube (4) from right fire extinguisher cylinder (5) and pipe to tube elbow (6).
- 3 Remove pipe to tube elbow (6) from fire hose nozzle (7).
- 4 Remove two hexagon head capscrews (8), two lockwashers (9), and fire hose nozzle (7) from vehicle.

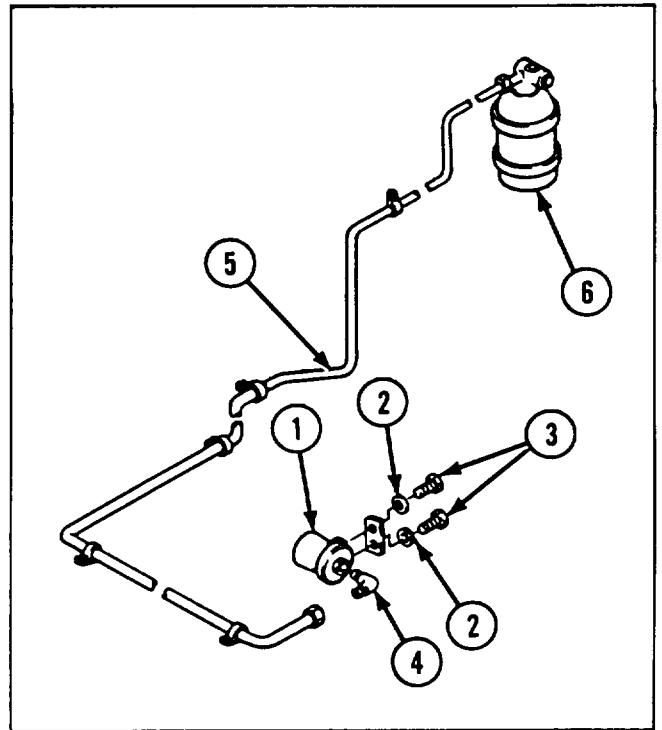


INSPECTION/REPAIR

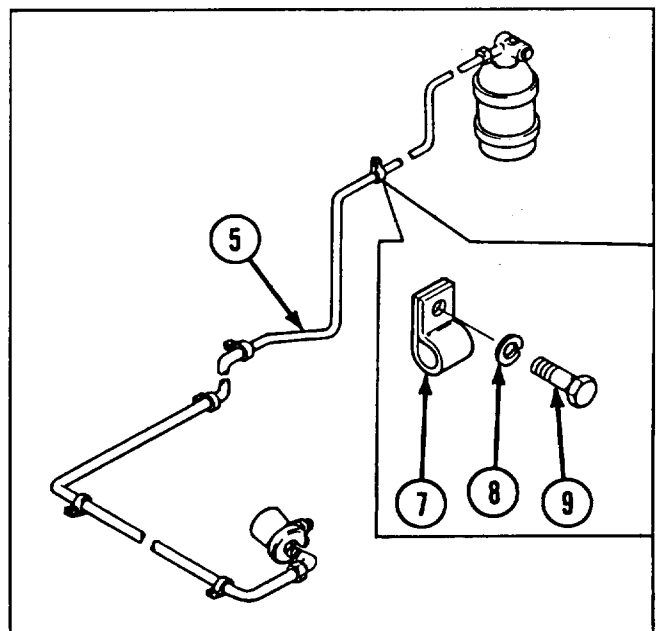
- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install fire hose nozzle (1) and secure with two new lockwashers (2) and two hexagon head capscrews (3).
- 2 Install pipe to tube elbow (4) in fire hose nozzle (1).
- 3 Install right discharge tube (5), and secure to right fire extinguisher cylinder (6) and pipe to tube elbow (4).

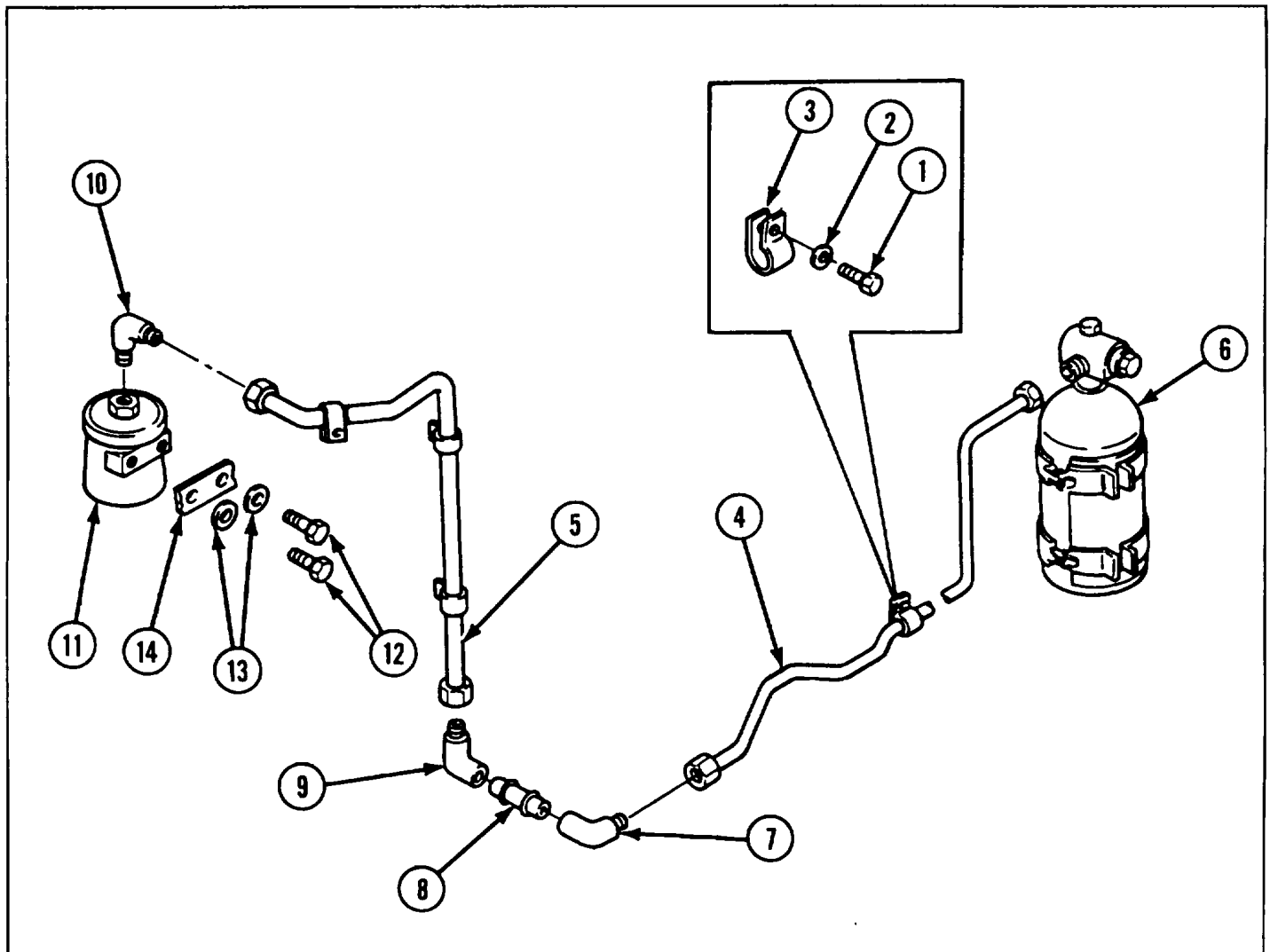


- 4 Secure right discharge tube (5) with seven loop clamps (7), seven new lockwashers (8), and seven hexagon head capscrews (9).



2-213. MAINTENANCE OF FIXED FIRE EXTINGUISHER REAR NOZZLE, LINES AND FITTINGS.

This task covers:	a. <i>Removal</i>	b. <i>Inspection/Repair</i>	c. <i>Installation</i>
INITIAL SETUP			
<i>Materials/Parts</i>			
Lockwasher (6)			
Lockwasher (2)			
<i>References</i>			
TM 9-2350-304-24P-1			



REMOVAL

- 1 Remove six hexagon head capscrews (1), six lockwashers (2), and six loop clamps (3) from left discharge tube (4) and nozzle to elbow metal hose assembly (5).
- 2 Disconnect and remove left discharge tube (4) from left fire extinguisher cylinder (6) and pipe to tube elbow.
- 3 Remove pipe to tube elbow (7), nozzle tube to cylinder tube pipe coupling (8), and pipe to tube elbow (9) from nozzle to elbow metal tube assembly (5).
- 4 Disconnect and remove nozzle to elbow metal hose assembly (5) from pipe to tube elbow (10).
- 5 Remove pipe to tube elbow (10) from fire hose nozzle (11).
- 6 Remove two hexagon head capscrews (12), two lockwashers (13), and fire hose nozzle (11) from bracket (14).

INSPECTION/REPAIR

- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

INSTALLATION

- 1 Install fire hose nozzle (11) to bracket (14), and secure with two new lockwashers (13) and two hexagon head capscrews (12).
- 2 Install pipe to tube elbow (10) in fire hose nozzle (11).
- 3 Connect nozzle to elbow metal hose assembly (5) to pipe to tube elbow (10).
- 4 Install pipe to tube elbow (9), nozzle tube to cylinder tube pipe coupling (8), and pipe to tube elbow (7) on nozzle to elbow metal hose assembly (5).
- 5 Connect left discharge tube (4) to left fire extinguisher cylinder (6) and pipe to tube elbow (7).
- 6 Install six loop clamps (3) on nozzle to elbow metal hose assembly (5) and left discharge tube (4), and secure with six new lockwashers (2) and six hexagon head capscrews (1).

2-214. MAINTENANCE OF FIRE EXTINGUISHER CYLINDER BRACKET.

This task covers:			
a. <i>Disassembly</i>	b. <i>Inspection/Repair</i>	c. <i>Reassembly</i>	
INITIAL SETUP			
<i>Materials/Parts</i>		<i>Equipment Conditions</i>	
Self-locking nut (4)		2-875 Access cover removed	
<i>References</i>			
TM 9-2350-304-24P-1			

DISASSEMBLY

NOTE

Fire extinguisher cylinder is shown removed for clarity. Fire extinguisher cylinder brackets can be repaired without removing the fire extinguisher cylinder.

- 1 Remove four self-locking nuts (1), four flat washers (2), four machine bolts (3), and two extinguisher bracket strap assemblies (4).
- 2 Remove two headless straight pins (5) and two extinguisher bracket strap assemblies (6).

INSPECTION/REPAIR

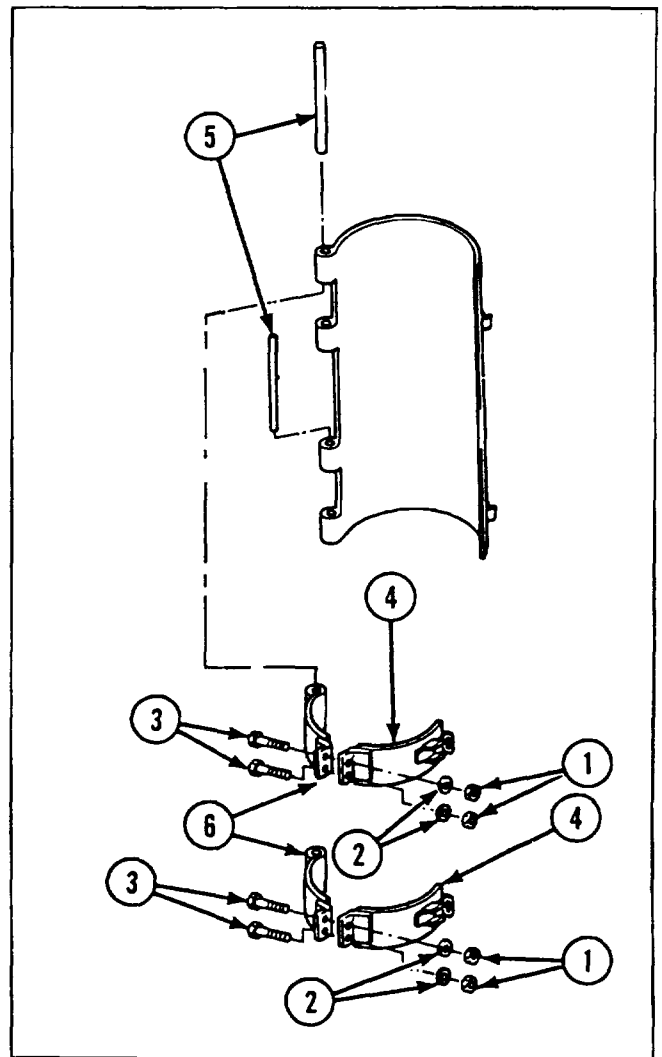
- 1 Inspect for broken, damaged, or missing parts.
- 2 Repair is by replacement of authorized parts (TM 9-2350-304-24P-1).

REASSEMBLY

NOTE

Replace headless straight pins only if damaged.

- 1 Position two extinguisher bracket strap assemblies (6) on vehicle frame, and secure with two headless straight pins (5).
- 2 Position two extinguisher bracket strap assemblies (4) on vehicle frame, and secure with four machine bolts (3), four flat washers (2), and four new self-locking nuts (1).



Section VIII. PREPARATION FOR STORAGE OR SHIPMENT

2-215. DEFINITION OF ADMINISTRATIVE STORAGE. The placement of equipment in administrative storage can be for short periods of time when: (1) an organization lacks operating funds, personnel, other resources, or normal usage of its organic materiel, and (2) materiel exceeds the capability of the owning organization to operate or maintain and must be retained by that organization for contingency or other cogent reasons.

Installation or organization commanders may authorize the administrative storage of their materiel within guidance furnished by MACOM commanders and AR 750-1. Howitzers should be ready for use within the time factors as determined by the directing authority.

During the storage period appropriate maintenance records will be kept.

a. Scope. The requirements specified herein are necessary to maintain the M110A2 self-propelled howitzer in administrative storage in such a way as to achieve the maximum readiness condition.

b. General.

(1) Except as indicated in the Maintenance Services and Inspection and Corrections of Shortcomings and Deficiencies paragraphs, equipment that is placed in administrative storage should be capable of being readied to perform its mission within a 24-hour period or as otherwise prescribed by the approving authority. Before equipment is placed in administrative storage, current maintenance services, shortcomings, and deficiencies should be corrected, and all modification work orders (MWOs) should be applied.

(2) Report equipment in administrative storage in Materiel Readiness and Unit Readiness reports as prescribed for all reportable equipment. See AR 220-1.

(3) Perform inspections, maintenance services, and lubrications IAW TM 9-2350-304 series manuals or applicable technical manuals.

(4) Records and reports to be maintained for equipment in administrative storage are those prescribed by DA PAM 738-750, for equipment in use.

(5) Ten percent variance is acceptable on time running hours, or mileage used to determine maintenance actions required.

c. Security. Instructions contained herein do not modify security procedures and requirements for classified or pilferable items. See AR 190-13, DA PAM 738-750, and DA PAM 750-35.

d. Storage Site.

(1) Select the best available site for administrative storage. Separate stored equipment from equipment in use. Conspicuously mark the area "Administrative Storage."

(2) Covered space is preferred. When sufficient covered space for all howitzers to be stored is not available, select an open site.

(3) Open sites should be improved hardstand, if available. Unimproved sites should be firm, well-drained, and kept free of excessive vegetation.

e. Storage Plan.

(1) Store equipment so as to provide maximum protection from the elements and to provide access for inspection, maintenance, and exercise. Anticipate removal or deployment problems and take suitable precautions.

(2) Take into account environmental conditions, such as extreme heat or cold; high humidity; blowing sand, dust, or loose debris; soft ground; mud; heavy snows; earthquakes; or combinations thereof and take adequate precautions.

(3) Establish a fire plan and provide for adequate firefighting equipment and personnel.

f. Maintenance Services and Inspection. Prior to storage, perform the next scheduled major preventive maintenance service (monthly, quarterly, or semiannually).

g. Auxiliary Equipment and Basic Issue Items. Process auxiliary and basic issue items simultaneously with the howitzer to which they are assigned. If possible, store auxiliary and basic issue items with the howitzer. If stored apart from the howitzer, mark auxiliary and basic issue items with tags indicating the howitzer, its registration or serial number and location, and store in protective type closures. In addition, place a tag or list indicating the location of the removed items in a conspicuous place on the howitzer.

h. Corrections of Shortcomings and Deficiencies. Correct all shortcomings and deficiencies prior to storage, or obtain a deferment from the approving authority.

i. Lubrication. Lubricate equipment IAW the applicable technical manual. Retract hydraulic systems linkage and coat exposed portion of shafts with grease.

j. General Cleaning, Painting, and Preservation.

CAUTION

Do not direct water or steam under pressure against air cleaners, air duct outlets, exhaust outlets, unsealed electrical systems, fire control instruments, upholstery, or any exterior opening which will damage a component.

(1) Clean the equipment of dirt, grease, and other contaminants IAW this manual.

(2) Removal of rust and damaged paint by scraping, wire brushing, sanding, or buffing is not authorized on cannon, fire control, or other armament components.

(3) After cleaning and drying, immediately coat unpainted metal surfaces with an oil or grease as appropriate.

CAUTION

Place a piece of barrier material between desiccant bags and metal surfaces.

NOTE

Air circulation under draped covers reduces deterioration from moisture and heat.

(4) Sunlight, heat, moisture (humidity), and dirt tend to accelerate deterioration. Install all covers (including vehicle protection closures) authorized for the equipment. Close and secure all openings except those required for venting and draining. Seal openings to prevent the entry of rain, snow, or dust. Insert desiccant when complete seal is required. Place equipment and provide blocking or framing to allow for ventilation and water drainage. Support cover away from howitzer surfaces which may rust, rot, or mildew.

k. *Preparation of Cannon and Fire Control Instruments.* Refer to TM 9-2350-304-20-2.

2-216. CARE OF EQUIPMENT IN ADMINISTRATIVE STORAGE.

a. *Maintenance Services.* After equipment has been placed in administrative storage, suspend all regularly scheduled preventive maintenance services and inspect and exercise as specified herein. Do not reduce Prescribed Load List. See DA PAM 738-750 and DA PAM 750-35.

b. *Inspection.* Inspection will usually be visual and must consist of at least a walk-around examination of all equipment to observe any deficiencies that may have occurred. Inspect equipment in open storage weekly and that in covered storage monthly. Immediately after any severe storm or environmental change inspect all equipment. The following are examples of things to look for during visual inspection:

(1) Leaks: coolant, fuel, oil, or hydraulic fluid.

(2) Condition of preservatives, seals, and wraps. Seals may develop leaks during storage, during exercise, or shortly thereafter. If leaking continues, refer to maintenance procedures in this manual or notify direct support maintenance.

(3) Corrosion or other deterioration.

(4) Missing or damaged parts.

(5) Water in compartments.

(6) Purge and charge fire control instruments as required. See TM 750-116.

(7) Inspect cannon at the time recoil mechanisms and equilibrators are exercised. See TB 9-1000-234-30. Record date of exercise on DA Form 2408-4.

(8) Any other readily recognizable shortcomings or deficiencies.

2-216. CARE OF EQUIPMENT IN ADMINISTRATIVE STORAGE (CONT).

c. *Exercising.* Exercise equipment before administrative storage if schedule calls for exercising during administrative storage. Limit depreservation to removal of materials that will restrict exercising. Perform the before, during, and after operational checks IAW TM 9-2350-304-10. Immediately take action to correct shortcomings and deficiencies noted. Exercise all hydraulic units when exercising the howitzer IAW TB 9-1000-234-30. Note inspection and exercise results on DA Form 2404. Record and report maintenance actions on DA Form 2407. After exercising, restore the preservation to the original condition. Replenish fuel and oil used during exercising and note the amount on DA Form 2408-1.

d. *Rotation.* To assure utilization of all assigned materiel, rotate items IAW any rotational plan that will keep equipment in an operational condition and reduce maintenance effort.

e. *Removal from Administrative Storage.* Remove preservative materials. Perform the next scheduled preventive maintenance service and prepare equipment for service as outlined in TM 9-2350-304-10.

f. *Servicing.* Resume the maintenance service schedule in effect at the commencement of storage as per DD Form 314. See DA PAM 738-750.

APPENDIX A REFERENCES

A-1. SCOPE. This appendix lists all forms, field manuals, technical bulletins, technical manuals, and miscellaneous publications referenced in this manual.

A-2. FORMS.

DA Form 2028	Recommended Changes to Publications and Blank Forms
DA Form 2028-2	Recommended Changes to Equipment Technical Manuals
DA Form 2404	Equipment Maintenance and Inspection Worksheet
DA Form 2407	Maintenance Request
DA Form 2408-4	Weapon Record Data
DA Form 2408-9	Acceptance and Registration
DA Form 2408-14	Uncorrected Fault Record
DA Form 2408-20	Oil Analysis Log
DD Form 314	Preventive Maintenance Schedule and Record
DD Form 1397	Processing and Deprocessing Record for Shipment, Storage, and Issue of Vehicles and Spare Engines
SF 364	Report of Discrepancy
SF 368	Product Quality Deficiency Report

A-3. FIELD MANUALS.

FM 9-207	Operation and Maintenance of Ordnance Materiel in Cold Weather (0 to -65 °F)
FM 21-11	First Aid for Soldiers
FM 21-40	Chemical, Biological, Radiological, and Nuclear Defense
FM 90-3	Desert Operations

A-4. TECHNICAL BULLETINS.

TB SIG-222	Solder and Soldering
TB 750-651	Antifreeze and Cleaning Compounds in Engines
TB 9-1000-234-30	Exercising of Recoil Mechanisms and Equilibrators

A-5. TECHNICAL MANUALS.

TM 9-214	Inspection, Care, and Maintenance of Antifriction Bearings
TM 9-237	Operator's Manual for Welding Theory and Application
TM 9-2350-238-10	Operators Manual for Recovery Vehicle, Full-Track: Light, Armored, M578
TM 9-2350-304-10	Operator's Manual for Howitzer, Heavy, Self-Propelled: 8-inch, M110A2

A-5. TECHNICAL MANUALS (CONT).

TM 9-2350-304-20-2	Unit Maintenance Manual for Howitzer, Heavy, Self-Propelled: 8-inch, M110A2, Armament and Turret Components
TM 9-2350-304-24P-1	Unit, Direct Support, and General Support Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Howitzer, Self-Propelled: 8-inch, M110A2
TM 9-2540-205-24&P	Organizational, Direct Support, and General Support Maintenance Manual Including Repair Parts and Special Tools for Heaters, Vehicular Compartment
TM 9-2815-202-24P	Unit, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools List) 8V71T Engines
TM 9-2815-202-34	Direct Support and General Support Maintenance 8V71T Engines
TM 9-6140-200-14	Storage Batteries, Lead-Acid Type
TM 11-6625-3052-14	Multimeter Digital AN/PSM-45
TM 43-0139	Painting Instructions for Field Use
TM 750-116	General Procedures for Purging and Charging of Fire Control Instruments
TM 750-244-5-1	Destruction of Conventional Ammunition and Improved Conventional Munitions to Prevent Enemy Use
TM 750-244-6	Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use
TM 750-254	Cooling Systems, Tactical Vehicles

A-6. MISCELLANEOUS PUBLICATIONS.

AR 190-13	The Army Physical Security Program
AR 220-1	Unit Status Reporting
AR 700-138	Army Logistics Readiness and Sustainability
AR 750-1	Army Materiel Maintenance Policies
CTA 8-100	Army Medical Department Expendable Durable Items
CTA 50-970	Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)
DA PAM 738-750	The Army Maintenance Management Systems (TAMMS)
DA PAM 750-35	Functional User's Guide for Motor Pool Operations
FED-STD-751	Stitches, Seams and Stitching
MIL-STD-190	Identification Marking of Rubber Products
MIL-STD-202	Test Methods for Electronics and Electrical Component Parts
MIL-STD-454	Standard General Requirements for Electronic Equipment
10CFR Part 19	Notices, Instructions, and Reports to Workers; Inspections
10CFR Part 20	Standards for Protection Against Radiation

**APPENDIX B
MAINTENANCE ALLOCATION CHART**

SECTION I

INTRODUCTION

B-1. GENERAL.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. The Maintenance Allocation Chart (MAC) in section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS. Maintenance functions will be limited to and defined as follows: (except for ammunition MAC¹)

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

d. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

¹Exception is authorized for ammunition MAC to permit the redesignation/redefinition of maintenance function headings to more adequately identify ammunition maintenance functions. The heading designations and definitions will be included in the appropriate technical manual for each category of ammunition.

B-2. MAINTENANCE FUNCTIONS (CONT).

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

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

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and is shown as the 3d position code of the SMR code.

i. Repair. The application of maintenance services², including fault location/troubleshooting³, removal/installation, and disassembly/assembly⁴ procedures, and maintenance actions⁵ to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

²Services inspect, test, service, adjust, aline, calibrate, and/or replace.

³Fault location/troubleshooting - The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).

⁴Disassembly/assembly encompasses the step-by-step taking apart (or breakdown) of a spare/functional group coded item to the level of its least componency identified as maintenance significant (i.e., assigned an SMR code) for the level of maintenance under consideration.

⁵Actions - welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

a. Column 1, Group Number. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "00."

b. Column 2, Component/Assembly. Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Function. Column 3 lists the functions to be performed on the item listed in column 2. (For detailed explanation of these functions, see paragraph B-2.)

d. Column 4, Maintenance Level. Column 4 specifies, by the listing of a work-time figure in the appropriate subcolumn(s), the level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work-time figures are to be shown for each level. The work-time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

- C Operator or crew maintenance
- O Unit maintenance
- F Direct support maintenance
- H General support maintenance
- L Specialized Repair Activity (SRA)⁶
- D Depot maintenance

e. Column 5, Tools and Equipment. Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. Column 6, Remarks. This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in section IV.

⁶This maintenance level is not included in section II, column (4) of the MAC. To identify functions to this level of maintenance, enter a work-time figure in the "H" column of section II, column (4), and use an associated reference code in the Remarks column (6). Key the code to section IV, Remarks, and explain the SRA complete repair application there. The explanatory remark(s) shall reference the specific Repair Parts and Special Tools List (RPSTL) TM which contains additional SRA criteria and the authorized spare/repair parts.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III.

- a. *Column 1, Reference Code.* The tool and test equipment reference code correlates with a code used in the MAC, section II, column 5.
- b. *Column 2, Maintenance Level.* The lowest level of maintenance authorized to use the tool or test equipment.
- c. *Column 3, Nomenclature.* Name or identification of the tool or test equipment.
- d. *Column 4, National Stock Number.* The National stock number of the tool or test equipment.
- e. *Column 5, Tool Number.* The manufacturer's part number.

B-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION IV.

- a. *Column 1, Reference Code.* The code recorded in column 6, section II.
- b. *Column 2, Remarks.* This column lists information pertinent to the maintenance function being performed as indicated in the MAC, section II.

**Section II. MAINTENANCE ALLOCATION CHART
FOR
HOWITZER, HEAVY, SELF-PROPELLED: 8-INCH,
M110A2 (2350-01-041-4590)
HULL AND RELATED COMPONENTS**

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
01	ENGINE								
0100	Engine and Related Parts	Inspect Test Service Adjust Replace Repair Overhaul Rebuild	1.0	0.5	0.3 3.0 8.0 8.0	48.0	72.0	1,4,10, 13,15,17, 19,20,21, 26,31,43, 44,45,51, 57,59,69, 72,77,82, 84,86,87, 95,96,99, 100	A
0106	External Oil Lines and Fittings	Inspect Service Replace	0.5 0.5	2.0	0.5				

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
03	Oil Pan	Inspect Service Replace	0.2 0.3	0.5	1.0				A
	FUEL SYSTEM								
0302	Fuel Pump	Replace Repair		0.5	0.5				A
0304	Engine Air Cleaner System	Inspect Replace	0.3	2.5					
0305	Air Cleaner Centrifugal Fan 10905010	Inspect Replace Repair	0.2	1.0	1.0				
	Engine Intake Air Ducts	Inspect Replace		0.3 1.0				99	
0306	Turbocharger Air Intake Filter and Related Items (Engine Model 7083- 7398)	Inspect Replace		0.1 0.5				99	
	Turbocharger Air Intake Screen and Related Items (Engine Model 7083- 7395)	Inspect Replace		0.1 0.5				84	
0309	Fabric Fuel Cell Filler Blocks	Inspect Test Replace	0.3		1.0 6.5				82
	Fabric Fuel Cell Installation	Inspect Test Replace Repair	0.3		1.0 2.0 2.0				82
0309	Fuel Lines and Fittings (Low Pressure)	Inspect Replace	0.5	2.5					
	Primary Fuel Filter	Inspect Replace		0.1 0.2					
	Secondary Fuel Filter	Inspect Replace		0.2 0.3					

**Section II. MAINTENANCE ALLOCATION CHART
FOR
HOWITZER, HEAVY, SELF-PROPELLED: 8-INCH,
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HULL AND RELATED COMPONENTS**

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
0311	Air Box Heater In- stallation and Air Box Heater Assembly	Inspect Replace Repair		0.2 1.5 1.5					
	Fuel and Purge-and- Prime Lines and Fittings	Replace Repair		1.0 0.5					
0312	Throttle and Accelerator Controls and Linkage	Service Replace Repair		0.5 1.5 1.0					
04	EXHAUST SYSTEM								
0401	Exhaust System	Inspect Replace Repair		0.3 1.0 1.0			99		
05	COOLING SYSTEM								
0501	Radiator and Related Parts	Inspect Replace Repair	0.3	1.0	1.0		83		B
	Radiator Support Beam and Related Parts	Replace Repair		1.0 0.5			83		
	Surge Tank and Related Parts	Replace Repair		1.0 0.5			83		
0503	Cooling System Hoses, Pipes, and Related Parts	Replace		1.0			27,42		
	Aeration Detector	Replace Test		1.0 0.2					
0505	Cooling System Fan Tensioner and Related Parts	Inspect Align Adjust Replace Repair	0.3	0.5 0.3 0.5 0.5			83,85		
		B-6							

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
06	Radiator Cooling Vaneaxial Fan	Replace Repair		0.5	0.5			82	
0601	ELECTRICAL SYSTEM								
0601	Generator and Cooling Air Intake System	Inspect Test Replace Repair	0.3	0.5 1.0 1.0	2.5			99	C
0602	Voltage Regulator and Related Parts	Inspect Replace Test	0.3	0.5 0.5					
0603	Starter and Mounting Hardware	Inspect Replace Repair		0.2 1.0	1.0				D
0606	Starter Relay and Related Items	Replace Test		0.5 0.5					
0606	Neutral Position Switch and Related Parts	Adjust Repair		0.5 0.5				83	
0607	Driver's Instrument Panel Installation	Inspect Replace Repair	0.5	1.0 0.5					
	Driver's Instrument Panel 10892415	Inspect Replace Repair	0.3	1.0 1.5					E
	Driver's Instrument Panel 10898510	Inspect Replace Repair	0.3 0.5 0.5	1.0 1.5	0.5				F
0608	Miscellaneous Electrical Components	Replace Test		2.0 0.5					
	Electrical Accessories Power Bus Panel 11675629	Replace Repair		1.0 1.0					D
0609	Headlight, Dome Light, Warning Light, and Stoplight-Taillight Installation	Align Replace Repair		1.0 0.5 0.5					

**Section II. MAINTENANCE ALLOCATION CHART
FOR
HOWITZER, HEAVY, SELF-PROPELLED: 8-INCH,
M110A2 (2350-01-041-4590)
HULL AND RELATED COMPONENTS**

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
0610	Headlight Assembly MS53022-1	Replace Repair	0.3	1.0 1.5				83	F
	Left Stoplight- Taillight 8378785	Replace Repair	0.5	1.0 1.2					F
	Right Stoplight- Taillight 8378786	Replace Repair	0.5	1.0 1.2					F
	Driver's Compart- ment Dome Light 7064671	Replace Repair	0.3	0.5 1.5					F
	Sending Units, Warning Switches, and Indicator Light	Adjust Replace	1.0	2.0					
0611	Low Engine Coolant Warning Indicator Light 11675565	Replace Repair		0.5 0.5				83	
	Audible Warning Horn and Related Parts	Replace		1.0					
0612	Batteries, Electrical Leads, and Related Parts	Inspect	0.3	0.5	1.5			83	G
		Test		0.3					
0613	Electrical Wiring Installation Attaching Hardware	Service	0.3	0.3					
		Replace		1.0					
		Repair							
0613	Generator to Ground Engine Ignition Lead 10914937 and Starter to Ground Electrical Lead 10901839	Inspect	0.3						
		Replace		2.0					
0613	Horn to Warning Relay Wiring Harness 10919885	Repair		0.2				83	
		Repair		0.5					
		Replace		0.5				83	
		Repair		1.0					

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
	Disconnect to Forward Air Cleaner Blower Motor Electrical Lead 10934867	Replace Repair		0.2 0.5				83	
	Electrical Wiring (Hull Aft)	Replace Repair		0.2 0.5				83	
	Suspension Lockout System Warning Light Ground and Horn Ground Electrical Lead 10892526	Replace Repair		0.5 0.5				83	
	Line Connection to Right Headlamp Disconnect Branched Wiring Harness 10901827	Replace Repair		1.0 1.5				83	
	Trailer Receptacle Assembly to Disconnect Branched Wiring Harness	Replace Repair		1.0 1.5				83	
	Battery to Circuit Breaker Electrical Lead 10901835	Replace Repair		0.5 0.5				83	
	Gages and Lights Disconnect to Instrument Panel Branched Wiring Harness 10901838	Replace Repair		1.0 4.5				83	
	Bulkhead Disconnect to Generator Armature Electrical Lead 10901840	Replace Repair		0.5 0.5				83	
	Bulkhead Disconnect to Starter Electrical Lead 10901842	Replace Repair		0.5 0.5				83	

**HOWITZER, HEAVY, SELF-PROPELLED: 8-INCH,
M110A2 (2350-01-041-4590)
HULL AND RELATED COMPONENTS**

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
	Bulkhead to Bulkhead Generator Circuit Electrical Lead 10901844	Replace Repair		0.5 0.5				83	
	Bulkhead Disconnect to Voltage Regulator Assembly Wiring Harness 10901852	Replace Repair		0.5 1.0				83	
	Circuit Breaker to Bulkhead Disconnect Branched Wiring Harness 10901853	Replace Repair		0.5 2.0				83	
	Floor Disconnect to Bulkhead Disconnect Wiring Harness 10901855	Replace Repair		0.5 0.5				83	
	Bulkhead Disconnect to Magnetic Clutch Branched Wiring Harness 10901856	Replace Repair		0.5 1.0				83	
	Hull Disconnect Interphone Amplifier to Bulkhead Disconnect and Driver's Control Box Branched Wiring Harness 10908425	Replace Repair		0.5 1.0				83	
	Driver's Controls Branched Wiring Harness 10914680	Replace Repair		0.8 2.0				83	
	Blower to Ground Electrical Lead 10914828	Replace Repair		0.5 0.5				83	

(1) Group number	(2) Component/assembly	(3) Maint. function	(4) Maint. category					(5) Tool/ equipment	(6) Remarks
			C	O	F	H	D		
	Generator Control Circuits to Bracket Disconnect Branched Wiring Harness 10919889	Replace Repair	1.0 1.5					83	
	Bulkhead Disconnect to Driver's Control Branched Wiring Harness 12254061	Replace Repair	2.0 5.0					83	
	Engine Warning Lights Circuits to Bulkhead Disconnect Branched Wiring Harness 10919945	Replace Repair	0.8 2.5					83	
	Lighting Switch to Vehicle Accessories and Disconnect Branched Wiring Harness 11592728	Replace Repair	1.5 1.0					83	
	Battery to Bulkhead Disconnect Cable Assembly 12289960	Replace Repair	0.5 0.5					83	
	Bulkhead to Bulkhead Starter Circuit Branched Wiring Harness 11592731	Replace Repair	0.5 1.0					83	
	Bulkhead Disconnect to Trailer Receptacle Disconnect and Taillights Branched Wiring Harness 11592733	Replace Repair	0.5 3.0					83	
	Disconnect to Headlamp Wiring Harness 11592755	Replace Repair	1.0 0.5					83	
	Relay to Starter and Neutral Position Switch Branched Wiring Harness 12290396	Replace Repair	1.0 1.5					83	

**Section II. MAINTENANCE ALLOCATION CHART - Continued
FOR
HOWITZER, HEAVY, SELF-PROPELLED: 8-INCH, M110A2 (2350-01-041-4590)
HULL AND RELATED COMPONENTS (CONT)**

(1) Group number	(2) Component/assembly	(3) Maint. function	(4) Maint. category					(5) Tool/ equipment	(6) Remarks
			C	O	F	H	D		
	Fuel Purge-and-Prime Switch to Solenoid Electrical Lead 11675547	Replace Repair	0.5 0.5					83	
	Fuel Purge-and-Prime Switch to Solenoid Electrical Lead 12254008	Replace Repair	0.5 0.5					83	
	Warning Light Low Coolant Detector to Bulkhead Disconnect Branched Wiring Harness 11675566	Replace Repair	1.0 0.5					83	
	Aeration Detector Branched Wiring Harness 11675567	Replace Repair	0.5 0.5					83	
	Low Coolant Warning Light to Bulkhead Disconnect Branched Wiring Harness 11675568	Replace Repair	1.0 0.5					83	
	Master Relay to Bulkhead Disconnect Repair Cable Assembly 12289961	Replace 0.5	0.5					83	
	Voltage Regulator to Bulkhead Disconnect, Slave Receptacle, and Accessories Panel Cable Assembly 12322791	Replace Repair	1.0 1.0					83	
	Slave Receptacle and Ground Electrical Lead 12322792	Replace Repair	0.5 0.5					83	
		B-12							

(1) Group number	(2) Component/assembly	(3) Maint. function	(4) Maint. category					(5) Tool/ equipment	(6) Remarks
			C	O	F	H	D		
			0615	Hub Cap Radio Static Suppression Spring 7379067	Replace	0.5			
07	TRANSMISSION								
0710	Transmission Assembly 5703079	Inspect Test Service Replace Repair Overhaul Rebuild	0.3 0.2 0.5 6.0 9.0	0.3 0.7				6,7,8,9, 11,14,24, 32,48,50, 71,75,82, 88,91,92, 97,103, 105,11	D
	Transmission Components	Replace	1.0				46.0 72.0		
0714	Transmission Plugs	Replace	0.5					83,97	
0721	Oil Sampling Drain Cock and Related Items	Inspect Service Replace Repair	0.3 0.5 0.5 0.5						
08	TRANSFER AND FINAL DRIVE ASSEMBLIE								
0801	Transfer Assembly	Inspect Service Replace Repair Overhaul Rebuild	0.3 	0.5 0.5	1.0 3.0			46,50,53, 56,60,79, 82,89	F,H
	Final Drive Assemblies	Inspect Service Replace Repair Overhaul Rebuild	0.3 	0.5 0.5 3.0	1.0 3.0		3.0 6.6	46,80,83, 85,89	F,H
	Auxiliary Drive Installation	Replace	2.0					85,99	
	Auxiliary Drive Assembly 11675634	Inspect Service Replace Repair Overhaul Rebuild	0.5 0.5 3.0 1.0	6.5			7.5 9.0	35,36,54, 55,58,61, 62,63,64, 66,67,68, 81,82,94, 105	

**Section II. MAINTENANCE ALLOCATION CHART
FOR
HOWITZER, HEAVY, SELF-PROPELLED: 8-INCH, M110A2 (2350-01-041-4590)
HULL AND RELATED COMPONENTS (CONT)**

(1) Group number	(2) Component/assembly	(3) Maint. function	(4) Maint. category					(5) Tool/ equipment	(6) Remarks
			C	O	F	H	D		
	Oil Filler Neck 10934580	Replace Repair		0.5	0.5				
	Oil Drain Tube Assembly 10902501-1	Replace Repair		0.5	0.5				
0803	Shifting Control and Linkage	Inspect Adjust Replace Repair	0.3	0.5 1.0 1.0					
0804	Hydraulic System Components, Lines, and Fittings	Inspect Repair	0.3	2.0			99		
	Fluid Filter	Inspect Replace Repair	0.3	0.5 0.3			99		
	Rotary Pump 10906747	Inspect Replace Repair		0.3 2.0		0.5	82		
09	PROPELLER AND PROPELLER SHAFTS								
0900	Auxiliary Drive Shafts, Universal Joints, and Related Parts	Service Replace Repair	0.5	1.0 0.5			83,99		
	Auxiliary Drive Line Carrier Ball Bearing Unit 10902580	Replace Repair		0.5	1.0		82,93		
12	BRAKES								
1201	Parking Brake Control and Linkage	Adjust Replace		0.5 1.0					
		B-14							

(1) Group number	(2) Component/assembly	(3) Maint. function	(4) Maint. category					(5) Tool/ equipment	(6) Remarks
			C	O	F	H	D		
	Parking Brake Assembly 12254047	Inspect Service Adjust Replace Repair	0.5	0.3 0.5 1.0 0.5				83	
1206	Mechanical Brake Control and Linkage	Inspect Service Adjust Replace	0.5	0.5 0.5 2.5				83,109, 110	
13	WHEELS AND TRACK								
1301	Torsion Bars and Sockets	Inspect Replace		0.5 2.0				16,18,49, 102	
	Roadwheel Arm and Hub Assembly and Attaching Parts	Inspect Service Replace Overhaul	0.5	0.5 1.0			2.1	3,37,38, 47,49,79, 83	
	Roadwheel Pivot Arm Assembly 10891653	Inspect Adjust Replace Repair	0.5	0.3 1.0 2.0				29,40,41, 70,74,83, 101	
	Roadwheel Suspension Hub 11631593	Inspect Replace Repair	0.5	1.0 1.0				83	
1303	Idler Wheel, Roadwheel Wheel, and Left Lubrication Tube	Inspect Replace	0.1	1.0				83	
I	Idler Wheel Arm and Hub Assembly and Attaching Parts	Inspect Adjust Service Replace	0.5	1.0 0.5 1.0				3,22,28, 29,33,38, 39,47,49, 73,79,83, 85,98,107	
	Idler Wheel Arm and Hub 10891675	Inspect Replace Repair	0.5	1.0 2.0				29,40,41, 83,101	
	Idler Wheel Vehicular Wheel Hub 10891677	Inspect Replace Repair	0.5	1.0 1.0				83	

**Section II. MAINTENANCE ALLOCATION CHART
FOR
HOWITZER, HEAVY, SELF-PROPELLED: 8-INCH, M110A2 (2350-01-041-4590)
HULL AND RELATED COMPONENTS (CONT)**

(1) Group number	(2) Component/assembly	(3) Maint. function	(4) Maint. category					(5) Tool/ equipment	(6) Remarks
			C	O	F	H	D		
1304	Drive Hub Sprockets and Related Parts	Inspect Replace	0.3	1.0				25,83,90	
1305	Vehicular Track Shoe Installation	Inspect Adjust Replace	1.5 0.5					2,18,23, 49,83	
	Vehicular Track Shoe 10934639	Inspect Replace Repair	0.3	0.5 0.5				18	
14	STEERING								
1401	Steering Controls and Linkage, and Steering Rod Assembly 12253961	Inspect Adjust Replace Repair		0.5 0.5 2.0 1.0					
15	TOWING ATTACHMENTS								
1503	Towing Pintle Assembly	Service Replace	0.5	1.0				83	
16	SPRINGS AND SHOCK ABSORBERS								
1604	Lockout Cylinder and Related Parts	Inspect Replace	0.5	1.0				83,85,99	
	Hydraulic Suspension Lockout Cylinder Assembly 12254156	Inspect Replace Repair		1.0 1.0		6.0		5,36,49, 52,62,82, 108	
	Suspension Lockout System Control Valve and Associated Parts	Replace Repair		1.0 2.0					
18	HULL								
1801	Hull Covers and Access Doors	Replace Repair		2.0 1.0					

(1) Group number	(2) Component/assembly	(3) Maint. function	(4) Maint. category					(5) Tool/ equipment	(6) Remarks
			C	O	F	H	D		
	Air Cleaner Blower Access Door Assembly 10903996	Replace Repair		0.5	1.0				
	Battery Access Cover 12355134	Replace Repair		0.5	1.0				
	Air Cleaner Access Door 12355090	Replace Repair		0.5	1.0				
	Engine Fuel Filter Access Door 11643066	Replace Repair		0.5	1.0				
	Hull Deck and Miscellaneous Components	Replace Repair		3.0	1.0				
	Engine Deck Assembly 10956703 and Attaching Parts	Replace Repair		0.3	0.5		83		
	Transmission Deck Lid Assembly 10956704 and Attaching Parts	Replace Repair		0.3	0.5				
	Travel Lock	Repair		4.5					
1802	Mud Guards, Hose Guards, Fender Extensions, and Attaching Parts	Replace		0.5					
1803	Driver's Hatch Cover	Replace Repair		1.5	1.0	2.0	82		
1804	Hull Drain Plugs, Valves, and Related Parts	Replace		1.5					
1806	Driver's Seat and Associated Parts	Replace		2.0					
	Individual Seat 10901351	Inspect Replace Repair	0.2		0.5	1.0			
	Personnel Seat and Associated Parts	Inspect Repair		0.1	0.5				

**Section II. MAINTENANCE ALLOCATION CHART
FOR
HOWITZERM, HEAVY, SELF-PROPELLED: 8-INCH, M110A2 (2350-01-041-4590)
HULL AND RELATED COMPONENTS (CONT)**

(1) Group number	(2) Component/assembly	(3) Maint. function	(4) Maint. category					(5) Tool/ equipment	(6) Remarks
			C	O	F	H	D		
			1808	Hull Stowage	Inspect Replace Repair	0.5	2.0		
	Projectile Clamp Chain Assembly 12253928	Inspect Replace Repair		0.1 0.1 0.1					
	Pioneer Tools Bracket Assembly 7346922	Inspect Replace Repair		0.1 0.1 0.1					
	Water Can Bracket Assembly 10904052	Inspect Replace Repair		0.1 0.1 0.1					
	Rifle Rack Assembly 10881934	Inspect Replace Repair		0.1 0.1 0.1					
	Fire Extinguisher Bracket 7357907-1	Inspect Replace Repair		0.1 0.1 0.1					
	Hand Grenade Box Assembly 8700274	Inspect Replace Repair		0.1 0.1	0.1				
20	POWER TAKEOFF								
2004	Power Takeoff Installation	Inspect Repair			0.3 1.0		82		
	Transmission Power Takeoff 10902000-1	Inspect Replace Repair			0.3 1.5	1.0	30,54,61, 65,76,82		
2005	Spade and Related Parts and Loop Clamp 10946300	Inspect Service Replace Repair	1.0	0.5 8.0 3.0			83,85,103		
		B-18							

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) Group number	(2) Component/assembly	(3) Maint. function	(4) Maint. category					(5) Tool/ equipment	(6) Remarks
			C	O	F	H	D		
	Spade Lifting Cylinder Assembly 10891960	Inspect Test Service Replace Repair	0.3 0.5		0.1 2.0 0.2	1.6		12,34,52, 65,82,106	
	Spade Control Lever	Inspect Repair	0.2		0.5	0.5			
	Spade Hydraulic Lines and Fittings	Inspect Repair	2.0		8.0				
22	HULLACCESSORY ITEMS								
2210	Vehicle Data Plates	Replace			1.5				
26	TOOLS AND TEST EQUIPMENT								
2604	Special Tools	Replace			0.5				
33	SPECIAL PURPOSE KITS								
3303	Winterization Kit 11643600	Replace Repair			72.0 72.0				
	Heater Installation Kit 11643540	Replace Repair		25.0 25.0			99		
	Battery Positive Terminal to Circuit Breaker Electrical Lead 10934557	Replace Repair		1.0 0.5	83				
	Coolant Heater Circuit Breaker to Line Disconnect Cable Assembly 11643550	Replace Repair		1.0 0.5			83		
	Heater Control Box to Driver's Heater Wiring 12322871	Replace Repair		1.0 0.5			83		
	Bulkhead Discon- nects to Master Relay and Circuit Breakers Cable Assembly 11643585	Replace Repair		1.0 0.5			83		

**Section II. MAINTENANCE ALLOCATION CHART
FOR
HOWITZER, HEAVY, SELF-PROPELLED: 8-INCH, M110A2 (2350-01-041-4590)
HULL AND RELATED COMPONENTS (CONT)**

(1) Group number	(2) Component/assembly	(3) Maint. function	(4) Maint. category					(5) Tool/ equipment	(6) Remarks
			C	O	F	H	D		
	Bulkhead Disconnect to Circuit Breakers and Electrical Components Branched Wiring Harness 11643591	Replace Repair		2.0 1.0				83	
	Engine Compartment Branched Wiring Harness 11643592	Replace Repair		1.5 1.0				83	
	Filter Mounting Fluid Filter 12322867	Inspect Replace Repair		0.3 1.0 0.5					
	Pyrometer Panel Assembly 11643533 and Indicator Light 8729063	Replace Repair	0.5 1.0						
	Engine Blower Assembly 10956647	Replace Repair		1.0	2.0			82	
	Heater Electrical Control Box 11669705	Replace Repair		0.5 0.5	1.0				
	Engine Coolant Heater 11643561	Replace Repair		1.0 2.5					
	Coolant Heater Assembly Branched Wiring Harness 11617762	Replace Repair		1.0 0.5				83	
	Engine Coolant Heater Assembly 11601698	Replace Repair Test		0.5	1.0 1.0				
	Coolant Heater Blower Assembly G702591	Replace Repair		0.5	1.0				
		B-20							

(1) Group number	(2) Component/assembly	(3) Maint. function	(4) Maint. category					(5) Tool/ equipment	(6) Remarks
			C	O	F	H	D		
	Vehicular Heater (Driver's Compartment)	Replace Repair Test		1.0 1.0		2.5 1.0			I
	Driver's Windshield Enclosure Kit	Replace Repair		5.0 3.0					
	Vehicular Window 11643497	Replace Repair		1.0 1.0		0.5			
	Vehicular Window 11643494	Replace Repair		1.0 1.0		1.0 3.0			
	Windshield Wiper Motor Assembly 12355188	Replace Repair		0.5		1.5			
	Wiper Motor and Defroster Lead Disconnects Electrical Lead Assembly 11643498	Replace Repair		1.0 0.5				83	
	Circuit Breaker to Wiper Motor and Defroster Switch Electrical Lead Assembly 11643499	Replace Repair		1.0 0.5				83	
	Disconnect Defroster to Switch Electrical Lead Disconnects 12355164 and Defroster Ground Lead Disconnects 11643576-2 Electrical Leads	Replace Repair		1.0 0.5				83	
	Wiper Motor to Switch Electrical Lead 11643608	Replace Repair		1.0 0.5		83			
	Personnel Vehicular Heater 11643097	Inspect Replace Repair	0.2			2.0 2.0			F

**Section II. MAINTENANCE ALLOCATION CHART
FOR
HOWITZER, HEAVY, SELF-PROPELLED: 8-INCH, M110A2 (2350-01-041-4590)
HULL AND RELATED COMPONENTS (CONT)**

(1) Group number	(2) Component/assembly	(3) Maint. function	(4) Maint. category					(5) Tool/ equipment	(6) Remarks
			C	O	F	H	D		
	Circuit Breaker to Line Disconnect Bracket Electrical Lead 10882042	Replace Repair		1.0 0.5				83	
	Line Disconnect Bracket to Heater Control Electrical Lead 10882043	Replace Repair		1.0 0.5				83	
	Battery Positive Terminal to Circuit Breaker Electrical Lead 10934557	Replace Repair		1.0 0.5				83	
	Personnel Vehicular Heater Assembly	Replace Repair		1.0 1.0	0.5 0.5			78	J
	Control Box Assembly to Heater Assembly Wiring Harness 10934482	Replace Repair		1.0 0.5				83	
	Crew Personnel Shelter Kit 11643054	Replace Repair		0.1 0.5					
	Dome Lights Branched Wiring Harness 10934558	Replace Repair		1.0 0.5				83	
	Dome Light Assembly 7064671	Replace Repair		0.3 1.0					D
3307	Arctic Traction Kit 11643271	Replace		9.0				2,18,23, 49,83	
47	GAGES (NON- ELECTRICAL)								
4701	Speedometer, Tachometer, and Related Parts	Replace		1.0					
		B-22							

(1) Group number	(2) Component/assembly	(3) Maint. function	(4) Maint. category					(5) Tool/equipment	(6) Remarks
			C	O	F	H	D		
76	FIRE FIGHTING EQUIPMENT COMPONENTS								
7639	Fixed Fire Extinguisher Control System	Inspect Service Replace		0.5 0.2 1.0					
	Fixed Fire Extinguisher Connecting Lines and Fittings	Replace		1.0					
	Fixed Fire Extinguisher Forward Nozzle, Lines and Fittings	Replace		1.0					
	Fixed Fire Extinguisher Rear Nozzle, Lines and Fittings	Replace		1.0					
	Fire Extinguisher Cylinder Bracket 10946585	Replace Repair		1.0 1.0					

**Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR HOWITZER, HEAVY,
SELF-PROPELLED, 8-INCH,
M1100A2 (2350-01-041-4590)
HULL AND RELATED COMPONENTS**

(1) TOOL OR TEST EQUIPMENT REF CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
1	F	Adapter	4910-00-019-5241	10934456
2	O	Adapter, Impact Wire	5130-00-840-4872	11592842
3	O	Adapter, Puller	5120-00-708-2997	7082997
4	F	Adapter, Reducer	2540-00-623-8303	444012
5	H	Adapter, Wrench	N/A	Refer to Section IV, ref code K.

**Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR HOWITZER, HEAVY,
SELF-PROPELLED, 8-INCH,
M110A2 (2350-01-041-4590)
HULL AND RELATED COMPONENTS (CONT)**

(1) TOOL OR TEST EQUIPMENT REF CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
6	H	Aligning Tool, Pinion and Roller	5120-00-733-8904	8351208
7	H	Aligning Tool, Pinion and Roller	5120-00-733-8905	8351209
8	H	Aligning Tool, Pinion and Roller	5120-00-738-1644	8351214
9	H	Bolt Guide	4910-00-722-3917	8351231
10	H	Bracket	4910-00-737-0432	10903999
11	F	Bracket, Lifting, Transmission	5340-00-977-5580	8355697
12	F	Cap, Linear Actuating	2590-01-063-5653	11675660
13	H	Clamp Set, Liner	5120-00-219-8390	10881871
14	H	Compressing Tool, Spring	5120-00-996-2119	8355784
15	H	Compressor, Piston Ring	5120-00-308-6785	10881876
16	O	Coupling, Shaft, Rigid	3010-00-733-8961	10904183
17	H	Cradle Assembly	4910-00-795-0198	7950198
18	C	Driftpin	5120-00-708-3639	7083639
19	H	Driver, Cam	4910-00-363-7556	5344997
20	F	Dye3950-00-823-7664	MILF35093	Type I
21	H	Expander, Oil Seal	5120-00-979-5596	10881890
22	O	Extension, Torque Wrench	N/A	Item 5, appx G.
23	C	Fixture, Track Connecting	5120-00-605-3926	8741739
24	F	Gage, Brake Adjusting	5120-00-733-5005	8351213
25	O	Gage, Sprocket Wear	4910-00-842-3051	11631464
26	F	Gage Assembly	4910-00-870-6283	10899180
27	O	Handle, Driver	5120-00-977-5578	J7079-2
28	O	Handle, Manual Control	5340-00-733-8970	10904204

(1) TOOL OR TEST EQUIPMENT REF CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
29	O	Handle, Remover and Replacer	5120-00-708-3883	7083883
30	H	Handle, Replacer, Oil	5340-00-316-9182	7950864
31	H	Holder	2815-00-705-9278	10881910
32	H	Hook, Lifting, Housing	4910-00-757-1961	8351888
33	O	Insertor, Bearing	5120-00-733-8973	10904210
34	F	Insertor, Bearing	5120-00-733-8979	10904217
35	F	Insertor, Bearing	5120-00-057-0302	10934814
36	H	Insertor, Oil Seal	5120-00-733-8929	10904174
37	O	Insertor, Seal	5120-00-733-8943	10904176
38	O	Insertor, Seal	5120-00-733-8951	10904181
39	O	Insertor, Seal	5120-00-733-8953	10904182
40	O	Insertor Set, Bearing	5120-00-473-7374	7082834
41	O	Insertor Set, Bearing	5120-00-473-7373	7082876
42	O	Installer, Thermostat Seal	5120-00-977-5579	J8550
43	F	Manometer	6685-00-065-5308	KMJ21478-1
44	F	Mercury	6810-00-290-0017	MILM191 Grade II
45	H	Pan, Drip, Oil	4910-00-545-8639	8708359
46	O	Pin, Shoulder, Headless	4910-00-722-3896	10904172
47	O	Pin, Straight, Threaded	4910-00-722-3888	10904178
48	H	Plate, Spindle, Replacer	4910-00-757-1960	8351492
49	O	Puller, Slide	5120-00-557-3615	5573615
50	H	Puller Attachment, Mechanical	5120-00-473-7352	7082201
51	H	Puller Kit, Mechanical	5120-00-338-6721	8708724
52	H	Pump Kit, Hydraulic, M3	4933-00-712-2378	7122378
53	H	Remover, Bearing	5120-00-034-0873	8355744
54	F	Remover, Bearing	5120-00-722-4063	10902750
55	F	Remover, Bearing	5120-00-722-4067	10902751

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**Section III. TOOLS AND TEST EQUIPMENT REQUIREMENTS
FOR HOWITZER, HEAVY,
SELF-PROPELLED, 8-INCH,
M110A2 (2350-01-0414590)
HULL AND RELATED COMPONENTS (CONT)**

(1) TOOL OR TEST EQUIPMENT REF CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
56	O	Remover, Final Drive	5120-00-034-8445	8390335
57	H	Remover, Sleeve Cylinder	5120-00-387-9615	6248510
58	F	Remover and Replacer	5120-00-383-3672	8375175
59	H	Remover and Replacer, Piston Ring	5120-00-494-1846	KMJ8128
60	H	Replacer	5120-00-034-0872	8351932
61	F	Replacer	5120-00-860-9579	10908787
62	F	Replacer, Bearing	5120-00-733-8948	10904179
63	F	Replacer, Bearing Cup	5120-00-722-4071	10902752
64	F	Replacer, Bearing Cup	5120-00-722-4083	10902756
65	F	Replacer, Bearing Cup	5120-00-722-4089	10902757
66	F	Replacer, Bearing Cup	5120-00-722-4093	10902758
67	F	Replacer, Clutch Bearing	5120-01-062-5606	12253880
68	F	Replacer, Gear	5120-00-098-6727	8390373
69	H	Replacer, Gear, Camshaft	5120-00-473-7456	5345096
70	O	Replacer, Hub Spacer	5120-00-733-8964	10904197
71	F	Replacer, Oil Seal	5120-00-893-3745	8351210
72	H	Replacer, Piston Pin Retainers	5120-00-733-8874	10881874
73	O	Replacer, Race and Outer Bearing	5120-00-733-8949	10904180
74	O	Replacer, Seal Guard	5120-00-733-8969	10904207
75	H	Replacer, Spindle	5120-00-733-8908	8351266
76	H	Replacer Assembly	5120-00-343-0123	8708070
77	F	Rubber Tube	4720-00-271-9839	MILS6855B Class 2 Grade 60
78	F	Scraper, Carbon	5110-00-735-5872	7355872
79	F	Screw, Cap, Hexagon Head	5305-00-532-9125	8708355

B-26

(1) TOOL OR TEST EQUIPMENT REF CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
80	O	Screw, Cap, Hexagon Head	5120-00-084-0796	10914934
81	F	Screw, Jacking	4910-00-722-3915	10904195
82	F	Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Basic, Less Power	4910-00-754-0705 95-CL-A31	SC 4910-
83	O	Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1 (Less Power)	4910-00-754-0654 95-CL-A74	SC 4910-
84	O	Shop Equipment, Automotive Maintenance and Repair: Organizational Maintenance, Common No. 2 (Less Power)	4910-00-754-0650 95-CL-A72	SC 4910-
85	O	Sling	4933-00-389-0349	REI-91 120 IN
86	O	Sling, Beam Type	3940-01-280-0872	12355173
87	F	Sling, Engine	4910-00-001-3993	11643469
88	H	Sling, Lifting	4910-00-708-3778	7083778
89	O	Sling, Lifting, Final Drive	4910-00-722-3886	10904212
90	O	Sling, Lifting, Hub and Sprocket	4910-00-722-3885	10904220
91	H	Sling, Output Carrier	4910-00-575-1959	8351496
92	F	Sling, Transmission	4910-00-473-7556	7081593
93	F	Socket, Wrench, Face	5120-00-860-9576	10908791
94	F	Socket Wrench, Face	5120-00-860-9575	10908794
95	H	Stand, Maintenance, Automotive Engine	4910-00-795-0189	7950189
96	F	Street Elbow	4730-00-933-3744	444490
97	O	Tester, Pressure Gage	6685-00-572-8612	8356176
98	C	Wedge, Idler Adjustment	2530-00-302-6784	11643492

**Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR HOWITZER, HEAVY,
SELF-PROPELLED, 8-INCH,
M1110A2 (2350-01-041-4590)
HULL AND RELATED COMPONENTS (CONT)**

(1) TOOL OR TEST EQUIPMENT REF CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
99	O	Wire Twister, Plier	5120-00-542-4171	GGGW340 SIZE12
100	O	Wrench	5120-00-891-7866	11617361
101,	O	Wrench, Face Socket	5120-00-588-4808	8708459
102	O	Wrench, Socket	5120-00-708-3642	7083642
103	O	Wrench, Spade Pin Nut	5120-00-084-0788	10909067
104	H	Wrench, Spanner	5120-00-950-9566	8355764
105	F	Wrench, Spanner	5120-01-310-1996	10518265
106	F	Wrench, Spanner	5120-00-860-9578	10904737
107	O	Wrench, Spanner	5120-00-860-9577	10908797
108	H	Wrench, Spanner Cylinder Lockout	5120-00-733-8982	10904219
109	O	Wrench, Splined, Brake Adjustment	5120-00-733-8909	8351386
110	O	Wrench, Splined, Brake Adjustment	5120-00-733-8912	8351387
B-28				

Section IV. REMARKS

REFERENCE CODE	REMARKS
A	For further repair of diesel engine, refer to TM 9-2815-202-24P.
B	For further repair of engine coolant radiator, refer to TM 750-254.
C	For further repair of engine generator and tube axial fan, refer to TM 9-2920-224-34&P.
D	All repair and replacement of parts performed by unit maintenance limited to authorized items listed in TM 9-2350-304-24P-1.
E	All repair and replacement of parts performed by crew maintenance limited to authorized items listed in TM 9-2350-304-24P-1.
F	All repair and replacement of parts performed by crew and unit maintenance limited to authorized items listed in TM 9-2350-304-24P-1.
G	For further repair of storage battery, refer to TM 9-6140-200-14.
H	For further repair of transfer and final drive assemblies, refer to TM 9-2520-234-34P.
I	For further repair of coolant vehicular heater and driver's compartment vehicular heater, refer to TM 9-2990-207-23&P.
J	For further repair of personnel vehicular heater, refer to TM 9-2540-205-24&P.
K	Wrench adapter is a fabricated tool. For fabrication instructions, refer to TM 9-2350-304-34-1.

B-29/(B-30 blank)

**APPENDIX C
EXPENDABLE/DURABLE SUPPLIES AND
MATERIALS LIST**

Section I. INTRODUCTION

C-1. SCOPE. This appendix lists expendable/durable supplies and materials you will need to operate and maintain the M 11 A2 Heavy, Self-propelled Howitzer. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

C-2. EXPLANATION OF COLUMNS.

a. Column (1) Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "cleaning compound (item 10, appx C)").

b. Column (2) Level. This column identifies the lowest level of maintenance that requires the listed item.

O-Unit Maintenance

c. Column (3) National Stock Number.

This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column (4) Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Contractor and Government Entity Code (CAGEC) in parentheses followed by the part number.

e. Column (5) Unit of Measure (U/M).

Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NO. AND FSCM	(5) UNIT OF MEAS.
1	O	5350-00-193-7227	ABRASIVE COMPOUND (58536) A-A-1203	LB
2	O	5350-00-598-5537	ABRASIVE PAPER, FLINT (58536) A-A-1202	SH
3	O	8040-00-059-5477	ADHESIVE: EPOXY RESIN (81348) MMM-A-134	KT
4	O	8040-00-262-9025	ADHESIVE: RECLAIMED RUBBER liquid, general purpose, type III 4-oz (113-g) tube (80244) MMM-A-1617	OZ
5	O	8040-00-262-9026	ADHESIVE: type 11 (81348) MMM-A-1617	PT
6	O	8030-00-753-4953	ANTISEIZE COMPOUND 1-lb (0.45-kg) can (81349) MIL-A-13881	CN
7	O	6810-00-264-6618	BAKING SODA (sodium bicarbonate) (85050) O-S-576	LB
8	O	9150-01-053-6688	CLEANER, LUBRICANT, PRESERV- ATIVE: CLP 1-gal(0.94-1) container	GL
	O	9150-01-054-6453	1-pt (0.47-mi) container (81349) MIL-L-63460	PT
9	O	6850-00-224-6665	CLEANING COMPOUND, SOLVENT: degreasing self-emulsifying, 5 gal can (81349) MIL-C-11090	GL
10	O	5350-00-221-0872	CLOTH, CROCUS: 9 x 11 sheet (81348) P-C-458	SH
11	O	5350-00-584-4654	CLOTH, FINE EMERY (58536) A-A-1049	EA
12	O	8305-00-152-3587 45-in	CLOTH, LINT-FREE (114.30-cm) wide (81349) MIL-C-40129	
C-2				

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NO. AND FSCM	(5) UNIT OF MEAS.
13		COOLANT, ANTIFREEZE		
	O	6850-00-243-1992	(81349) MIL-A-46153	CN
	O	6850-00-224-8730	(81349) MIL-A-46153	CN
14	0	4020-00-240-2154	CORD, FIBROUS 500-yd spool	YD
15			(81349) MIL-C-5040 DRY CLEANING SOLVENT: liquid, white, 140 IF (60 °C)	
	O	flashpoint (SD2)		
	O	6850-00-281-3061	4-oz (113-9) can	OZ
		6850-00-281-1985	1-gal (0.94-1) can	GL
16	O	8010-00-079-3752	(81348) P-D-680 ENAMEL, black, class A	PT
17			(70785) PSP6 ENAMEL, OLIVE DRAB	
	O	8010-00-297-2104	(...)TT-E-529	CN
	O	8010-00-297-2105	CN	
	O	8010-00-297-2103	CN	
18	0	9150-00-119-9291	GREASE, AIRCRAFT 2-oz (56.7-9) tube	TU
19			(81349) MIL-G-4343 GREASE, AUTOMOTIVE AND AR- TILLERY: (GAA)	
	O	9150-01-197-7693	14-oz (396.8-g) carton	OZ
	O	9150-01-197-7690	1.75-oz (49.6-g) can	OZ
	O	9150-01-197-7689	6.5-oz (184.2-9) can	OZ
20			(81349) MIL-G-10924 HYDRAULIC FLUID, PETROLEUM BASE: (OHT)	
	O	9150-00-935-9807	1-qt (0.94-1) can	QT
	O	9150-00-935-5808	1 -gal (3.78-1) can	GL
21	O	8010-00-959-4661	(81349) MIL-G-6083 LACQUER, CLEAR Epoxy-polyamide coating 1qt kit	QT
			(81349) MIL-C-22750	

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NO. AND FSCM	(5) UNIT OF MEAS.
22	O	9505-00-331-3275	NONELECTRICAL WIRE (96906) MS20995C41	FT
23	O	9505-01-236-9343	NONELECTRICAL WIRE (96906) MS20995C91	FT
24	O	9505-00-592-4690	(96906) MS20995C91AR NONELECTRICAL WIRE	FT
25	O	9505-01-684-4843	(96906) MS20995F32 NONELECTRICAL WIRE	FT
26	O	9505-00-592-4690	(96906) MS20995F41 NONELECTRICAL WIRE	FT
27	O	9150-00-231-2356	(96906) MS20995F43AR OIL, LUBRICATING: (OE/HDO)	GL
28	O	9150-00-402-2372	(81349) MIL-L-3150 OIL, LUBRICATING: (OEA)	GL can
29	O	6640-00-663-0832	5-gal (81349) MIL-L-46167 PAPER, LENS	EA
30	O	8010-00-161-5718	(81348) NNN-P-40 PRIMER COATING	GL
31	O	8010-00-899-0931	(81348) TT-P-636 PRIMER	QT
32	O	7920-00-205-1711	1-qt (0.946-l) can (81348) TT-P-1757	EA
33	O	8030-00-181-7529	RAG, WIPING: cleaned, 50-lb bale (81348) DDR-30	EA
34	O	8030-00-148-7362	RETAINING COMPOUND: type I 250-cc bottle (80244) MIL-R-46082	BT
			SEALANT, CORROSION PREVEN- TIVE (81349) MIL-S-8516	KT

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NO. AND FSCM	(5) UNIT OF MEAS.
35	0	8040-00-845-4304	SEALANT (RTV): type I (80244) MIL-A-46106	PT
36	O	8030-00-081-2330	SEALING COMPOUND: BLUE, liquid, C or CV	CC
	O	8030-00-900-4412	10-cc bottle	CC
	O		250-cc bottle (80244) MIL-S-22473	
37	0	8030-00-291-1789	SEALING COMPOUND: type II or III (80244) MIL-S-45180	GL
38	0	8030-01-069-3046	SEALING COMPOUND: type II, Grade M 50-cc bottle (80249) MIL-S-46163	CC
39	0	6850-01-304-6632	SILICONE COMPOUND 8-oz (225.8-g) can (81349) MIL-S-8660	OZ
40	0	8030-00-123-6955	SILICONE COMPOUND: RTV (81349) MIL-S-23586	KT
41	0	8520-00-228-0598	SOAP, LIQUID 6 gal (22.71 l) (81348) P-S-624	GL
42	0	3439-00-824-9856	SOLDER, TIN ALLOY 1-lb (0.45-kg) spool (81348) QQ-S-571	LB
43	0	7510-00-266-6712	TAPE, MASKING (58536) A-A-883	RO
44	O	5970-00-184-2003	TAPE, INSULATION (58536) A-A-2094	RO
45	0	5610-00-141-7838	WALKWAY COMPOUND, type 1 (nonslip paint), color OD 1-gal (3.79-l) can (81348) MIL-W-5044	GL

APPENDIX D
ILLUSTRATED LIST OF MANUFACTURED ITEMS

D-1. INTRODUCTION. This appendix includes complete instructions for making items authorized to be manufactured or fabricated at unit maintenance.

a. A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers fabrication criteria.

b. All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

D-2. MANUFACTURED ITEMS PART NUMBER INDEX.

Part Number	Figure Number
MIL-H-62028	D-5
MS27990-5D	D-6
MS35829-1DAR	D-7
MS35829-11D	D-7
MS521301A201024	D-8
MS521301A201052	D-8
MS521301A219030	D-9
MS521301 A219040	D-10
M13486/1-3AR	D-1
MI 3486/1-5	D-1
M13486/1-5AR	D-1
M13486/1-7	D-1
M13486/1-7AR	D-1
M13486/1-12	D-1
M13486/1-14	D-1
M13486/2-2AR	D-2
M1349/1-5	D-1
M1349/11-5	D-3
M23053/5-106-0	D-4
NAS 1455-00-6CAR	D-11
10946356	D-12
10956721-1	D-13
10956721-2	D-13
11643083AR	D-14
11643540NOTE20	D-15
11643553	D-16
11643558-1	D-17
11643558-2	D-17

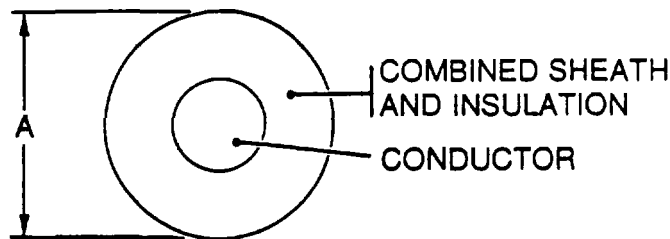
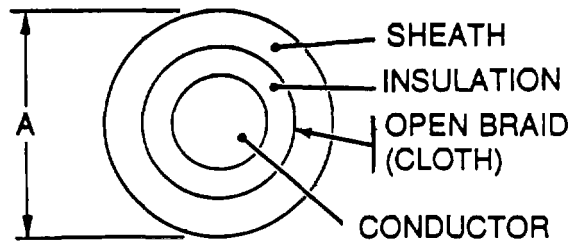
D-2. MANUFACTURED ITEMS PART NUMBER INDEX.(CONT).

Part Number	Figure Number
11643558-5	D-17
11643558-9	D-17
11643558-11	D-17
11643558-12	D-17
11643565-1	D-17
11675565NOTE3	D-18
1711725-96	D-19
1711725-96AR	D-19
17-1-1728-651	D-20
1711725-651	D-20
42Ci4154AR	D-21
7064704AR	D-22
8724763	D-23
8724769	D-24
8724783	D-25
8724783-10	D-25

D-3. MANUFACTURED ITEMS ILLUSTRATIONS.

Fabricate electrical wire and cable from:

PART NO	CONDUCTOR SIZE	DIAMETER "A"	NSN
M13486/1 -3AR	16	0.135 + 0.010 IN (0.343 ± 0.025 CM)	6145-00-161-1609
M13486/1-5	14	0.160 + 0.010 IN (0.406 ± 0.025 CM)	6145-00-152-6499
M13486/1-5AR	14	0.160 + 0.010 IN, (0.406 ± 0.025 CM)	6145-00-152-6499
M13486/1-7	12	0.235 + 0.010 IN (0.597 + 0.025 CM)	6145-00-705-6678
M13486/1-7AR	12	0.235 ± 0.010 IN (0.597 + 0.025 CM)	6145-00-705-6678
M13486/1-12	2	0.610 ± 0.010 IN (1.549 ± 0.025 CM)	6145-00-805-3354
M13486/1-14	0	0.672 ± 0.010 IN (1.707 + 0.025 CM)	6145-00-705-6674
M1349/1-5	(...)	(...)	6145-00-152-6499



OPTIONAL CONSTRUCTION

Figure D-1. Electrical Wire and Cable.

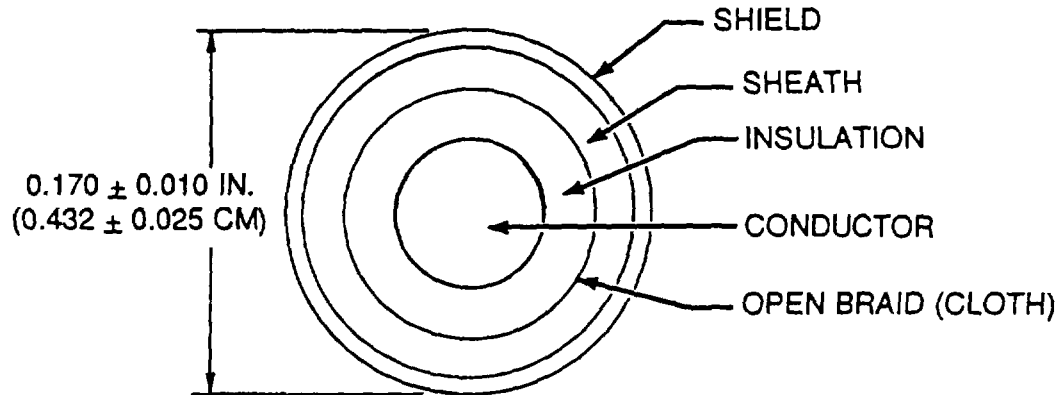
D-3. MANUFACTURED ITEMS ILLUSTRATIONS (CONT).

Fabricate electrical wire from:

NSN 6145-00-567-3255
CAGEC 81349

PN M13486/2-2AR

NOTE:
CONDUCTOR SIZE 16.



NOTES:

1. SHIELDING MATERIAL: COPPER BRAID
2. BRAID, STRANDS: 0.0063 IN. (0.0160 CM) DIAMETER, TINNED COPPERS
3. BRAID COVERAGE: 90 PERCENT

Figure D-2. Electrical Wire.

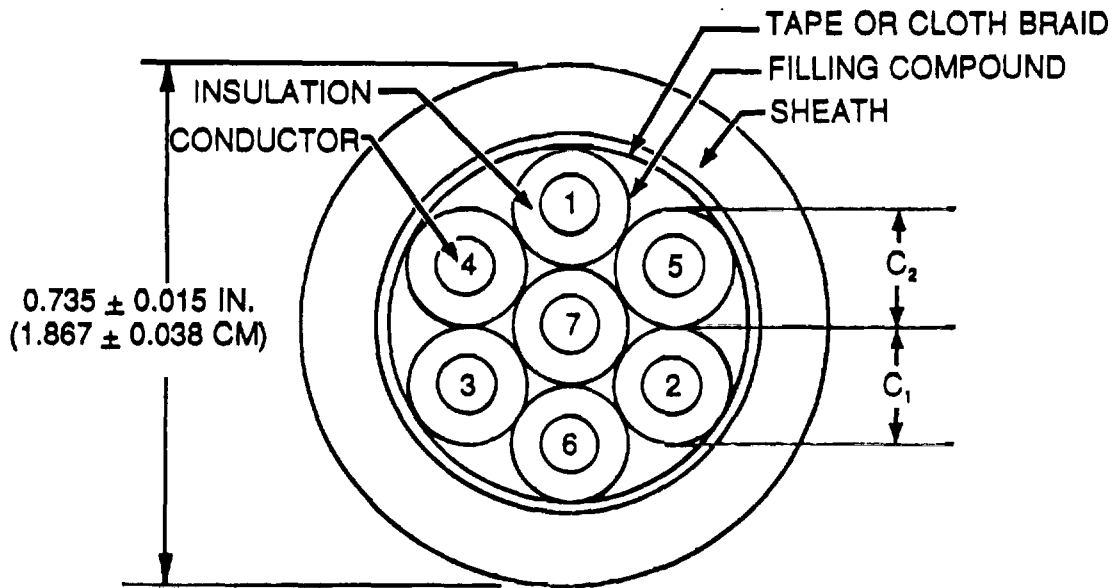


Figure D-3. Electrical Wire

D-3. MANUFACTURED ITEMS ILLUSTRATIONS (CONT).

Fabricate insulation Sleeving from:
 NSN 5970-00-815-1295 PN M23053/5-106-0
 CAGEC 81349

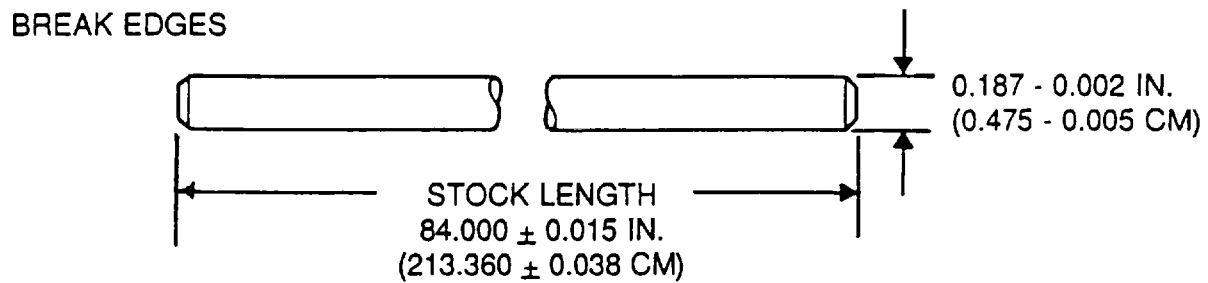
Illustration to be provided.

NOTES:
 ID MINIMUM (AS SUPPLIED): 0.250 IN. (0.635 CM)

Figure D-4. Insulation Sleeving

Fabricate air duct hose from:
 NSN 4720-01-119-0246 PN MIL-H-62028
 CAGEC 81349
 Illustration to be provided.

Figure D-5. Air Duct Hose



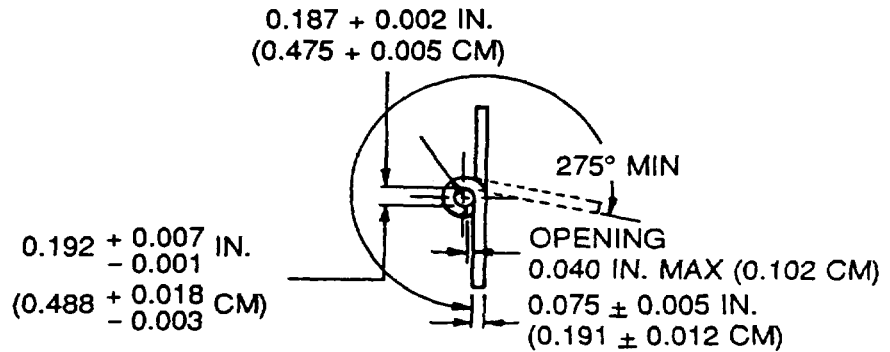
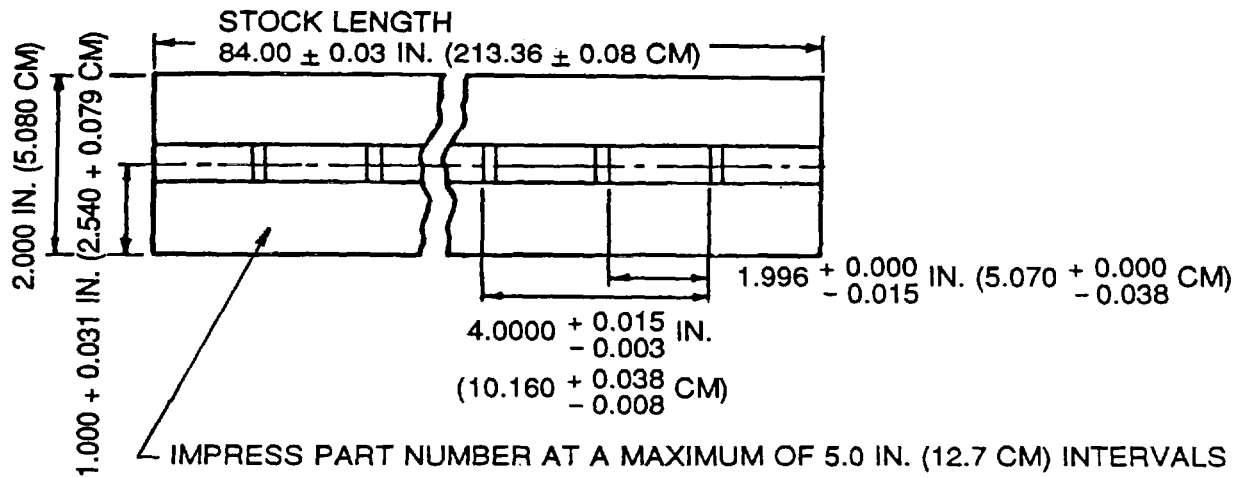
NOTES

1. DASH NUMBER 5 IS CANCELLED AND DASH NUMBER 13 IS ASSIGNED.
2. MATERIAL: STEEL CARBON, COMPOSITION 1010-1020, UNS G10100-G10200 IAW QQ-W-461.

Fabricate butt hinge from:

NSN 5340-00-935-8846
CAGEC 96906

PN MS35829-1DAR
MS35829-11D



NOTES:

1. DASH NUMBER 1 IS CANCELLED AND DASH NUMBER 11 IS ASSIGNED.
2. MATERIAL: CARBON STEEL-LEAF-COLD-ROLLED, TEMPER NO. 4 IAW QQ-6-698. CARBON STEEL-PIN-COMPOSITION 1010 (UNS G10100), 1020 (UNS G10200) IAW QQ-W-461.
3. FINISH: MATERIAL A, B, C, AND D SHALL BE PLAIN (UNCOATED). WHEN SPECIFIED, MATERIAL D SHALL BE ZINC PLATED IAW ASTM B633 TYPE II, FE/ZN 13 OR CADMIUM PLATED IAW QQ-P-416 TYPE II CLASS 1. MATERIAL E SHALL BE CADMIUM PLATED IAW QQ-P-416, TYPE II, CLASS 1.
4. KNUCKLES: END KNUCKLES SHALL BE A MINIMUM OF 1/2 KNUCKLE.
5. PITCH: CUMULATIVE TOLERANCE ON PITCH IS ± 0.015 IN. (0.038 CM) IN ANY 36 IN. (91 CM) SEGMENT.
6. HINGES SHALL BE STOCKED AND ISSUED IN LENGTHS OF 4.00 IN. (10.16 CM). APPLICATION MAY BE OF ANY LENGTH WITHIN THE ABOVE LENGTH.

Figure D-7. Butt Hinge

D-3. MANUFACTURED ITEMS ILLUSTRATIONS (CONT).

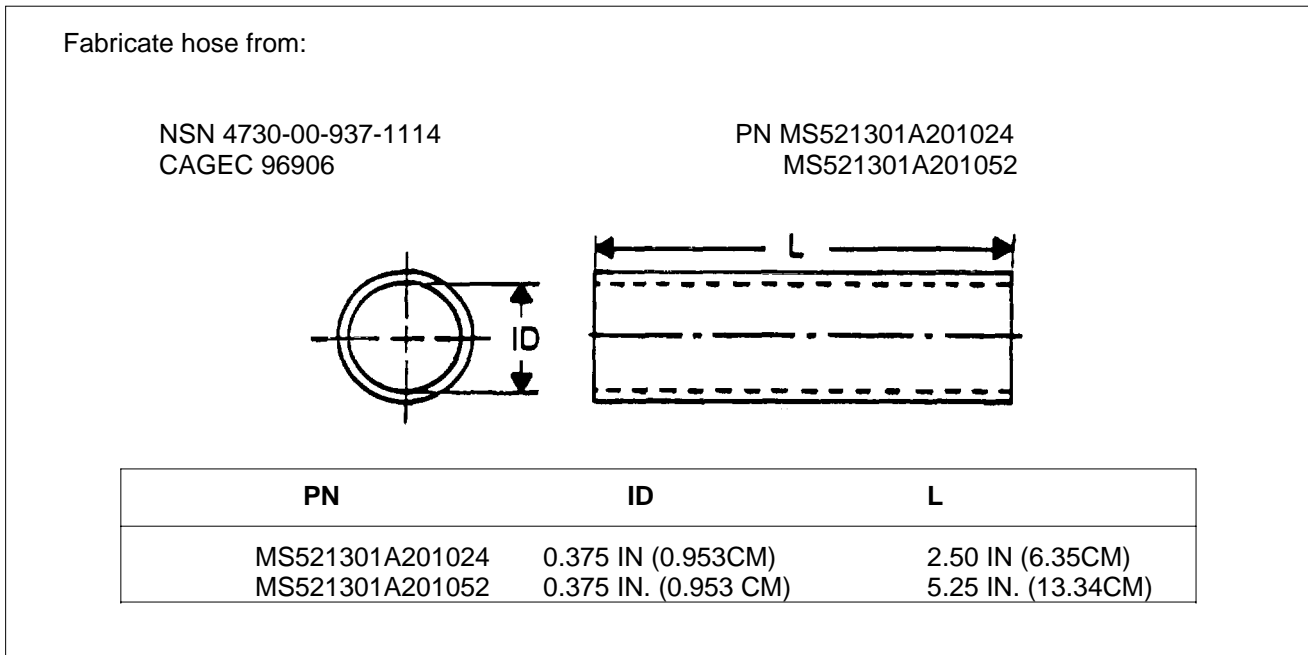


Figure D-8. Hose

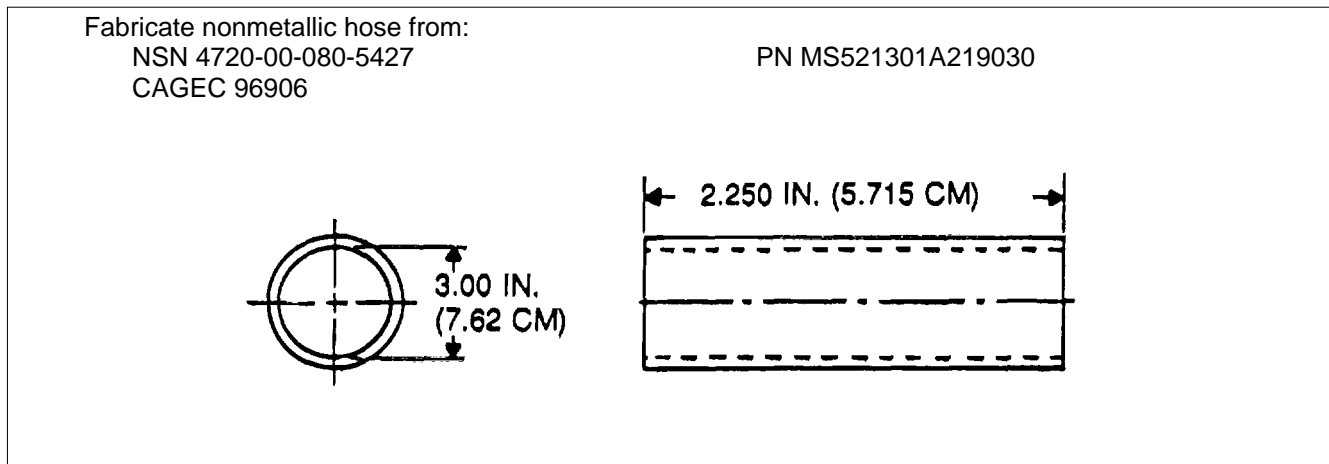


Figure D-9. Nonmetallic Hose.

Fabricate nonmetallic hose from:

NSN 4720-00-809-8802
CAGEC 96906

PN MS521301A219040

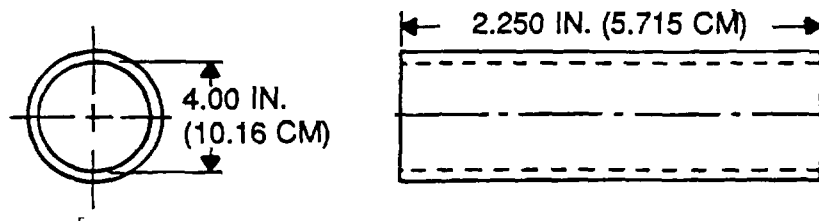


Figure D-10. Nonmetallic hose

Fabricate weldless chain from:

NSN 4010-00-457-1220
CAGEC 80205

PN NAS1455-00-6CAR

Illustration to be provided.

Figure D-11. Weldless Chain.

Fabricate fiber rope assembly from:

NSN 4020-00-915-8161
CAGEC 19207

PN 10946356

Illustration to be provided.

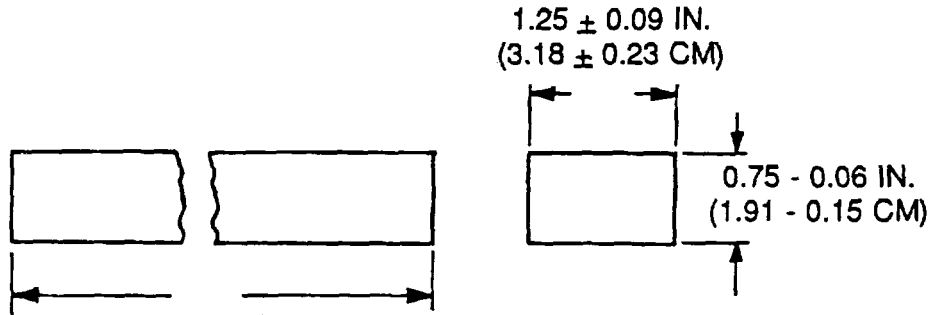
Figure D-12. Fiber Rope Assembly

D-3. MANUFACTURED ITEMS ILLUSTRATIONS (CONT).

Fabricate deck seal from:

NSN 5330-00-089-1473
CAGEC 19207 10956721-2

PN 10956721-1



PN	LENGTH A
10956721-1	222.00 + 1.00 IN. (563.88 + 2.54 CM)
10956721-2	184.00 + 1.00 IN. (467.36 + 2.54 CM)

NOTES:

CELLULAR ELASTOMERIC MATERIAL, GRADE TE 7 TO TE312, K2ZZ1, SPEC MIL-C-3133 EXCEPT: MEDIUM DENSITY, 0.02 LB/IN. MAX; SKIN ON FOUR SIDES.

Figure D-13. Deck Seal.

Fabricate door seal from:

NSN 9320-01-097-8659
CAGEC 19207

PN 11643083AR

Illustration to be provided.

Figure D-14. Door Seal

Fabricate exhaust hose from:

NSN 2540-01-027-6073
CAGEC 19207

PN 11643540NOTE20

Illustration to be provided.

Figure D-15. Exhaust Hose.

Fabricate exhaust hose from:

NSN 4020-00-954-1118
CAGEC 19207

PN 11643553



Figure D-16. Lacing Cord.

Fabricate rubber or nonmetallic hose from:

NSN 4720-01-142-1619
CAGEC 19207

PN 11643558-1
11643558-2
11643558-5
11643558-9

11643558-11
11643558-12
11643565-1

Illustration to be provided.

Figure D-17. Rubber or Nonmetallic Hose.

D-3. MANUFACTURED ITEMS ILLUSTRATIONS (CONT).

Fabricate Sleeving insulation from:

NSN 5970-00-954-1622 PN 11675565NOTE3
CAGEC 19207

Illustration to be provided.

NOTES:

CLASS I, BLACK, SPEC MIL-I-23053/5, 0.187 IN. (0.475 CM) ID, AS SUPPLIED.

Figure D-18. Sleeving Insulation

Fabricate Sleeving insulation from:

NSN 5970-00-284-8640 PN 1711725-96
CAGEC 80244 1711725-96AR

Illustration to be provided.

Figure D-19. Sleeving Insulation
D-12

Fabricate Sleeving insulation from:
 NSN 5970-00-811-0640
 CAGEC 80244

PN 1711725-651
 17-1-1728-651

Figure D-20. Sleeving insulation.

Fabricate bead chain from:
 NSN (...)
 CAGEC 21450

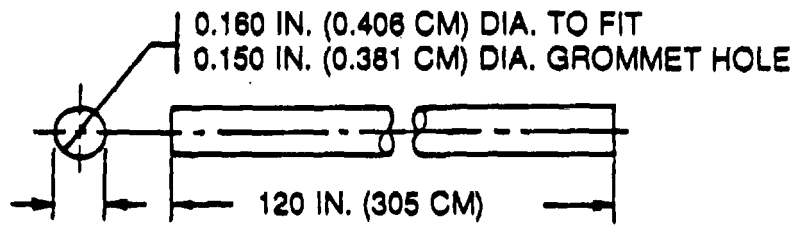
PN 42C14154AR

Illustration to be provided.

Figure D-21. Bead Chain

Fabricate rod from
 NSN 5315-00-695-6223
 CAGEC 19207

PN 7064704AR



NOTES:

MATERIALS LAMINATED THEROSETTING, ROD TYPEI, GRADE XX, SPEC L-L-31.

Figure D-22. Rod.

D-3. MANUFACTURED ITEMS ILLUSTRATIONS (CONT).

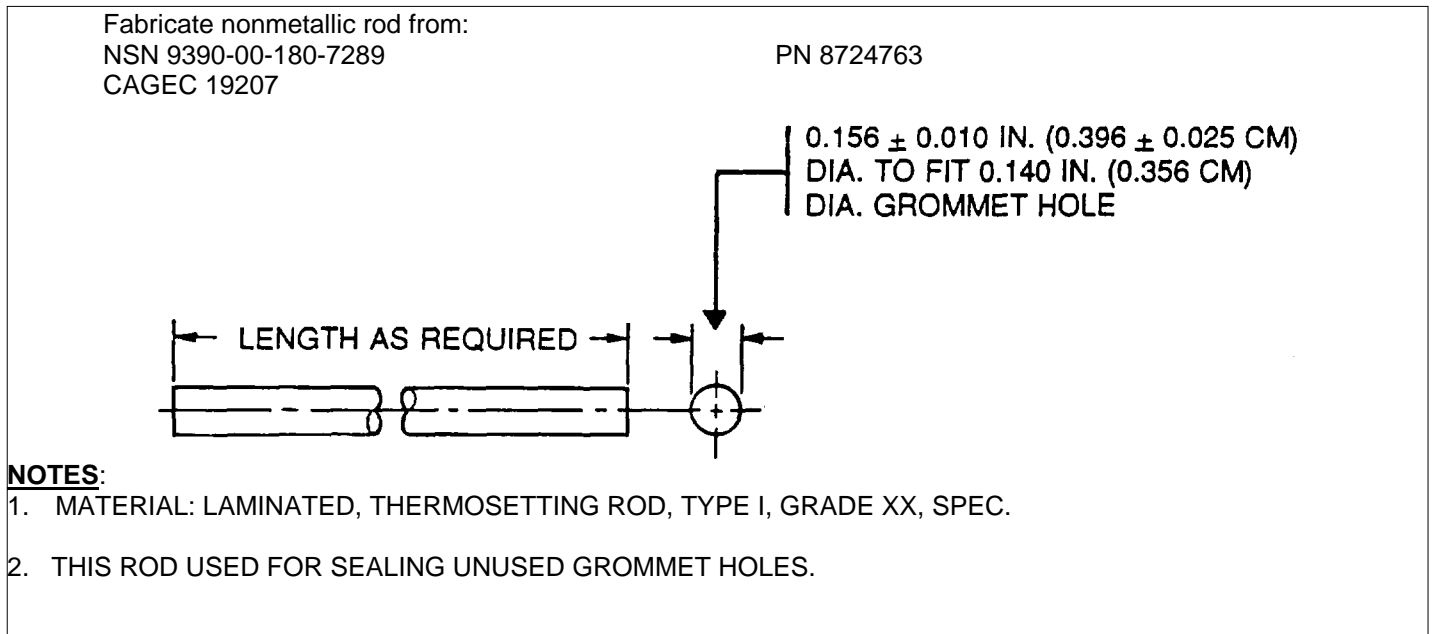


Figure D-23. Nonmetallic Rod.

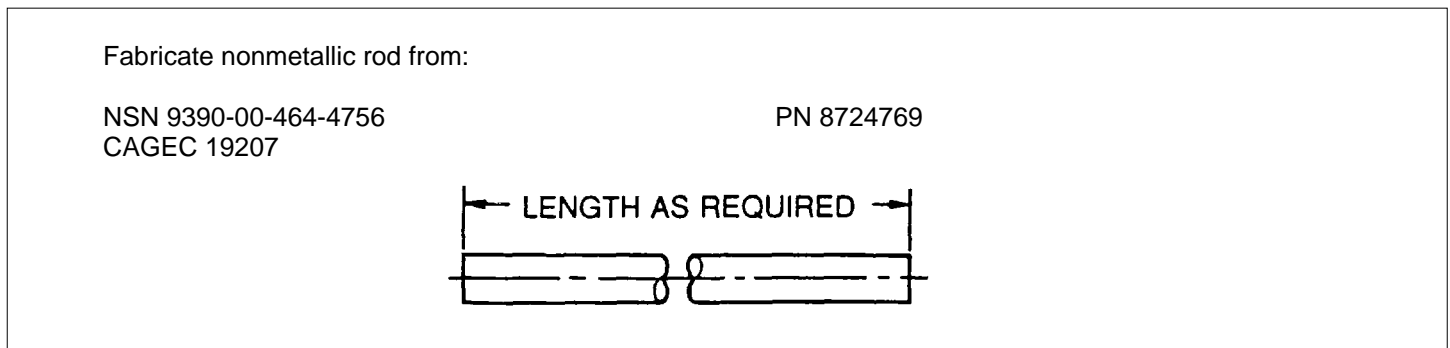


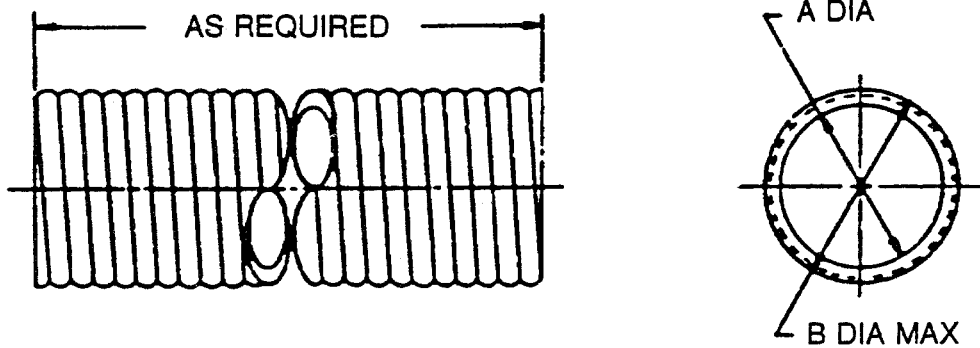
Figure D-24. Nonmetallic Rod

Fabricate air duct hose from:

NSN 4720-00-882-1669
CAGEC 19207

PN 8724783
8724783-10

AS REQUIRED



PN	A	B	ABRASION REQ'T APPLIES
8724783	(...)	(...)	(...)
8724783-10	(...)	(...)	(...)

NOTES:

MATERIAL AND CONSTRUCTION TO BE IAW MIL-H-62028, TYPE III, CLASS 3, EXCEPT FOR ABRASION REQUIREMENT AS FOLLOWS: WIRE IN HOSE MUST NOT BE EXPOSED AFTER OUTSIDE OF HOSE IS EXPOSED TO 500 2.50-IN. (6.35-CM) STROKES OF 3/0 EMERY POLISHING CLOTH. STROKES TO BE AT A RATE OF 220 ± 20 STROKES PER MINUTE TRANSVERSE TO LONG AXIS OF THE DUCT. LOAD ON CONTACT AREA TO BE 1.00 ± 0.10 LB (0.45 ± 0.05 KG) PER WIRE.

Figure D-25. Air Duct Hose.

D-3. MANUFACTURED ITEMS ILLUSTRATIONS (CONT).

NSN 5315-00-722-3888
CAGEC 19207

PN 10904178

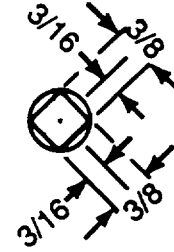
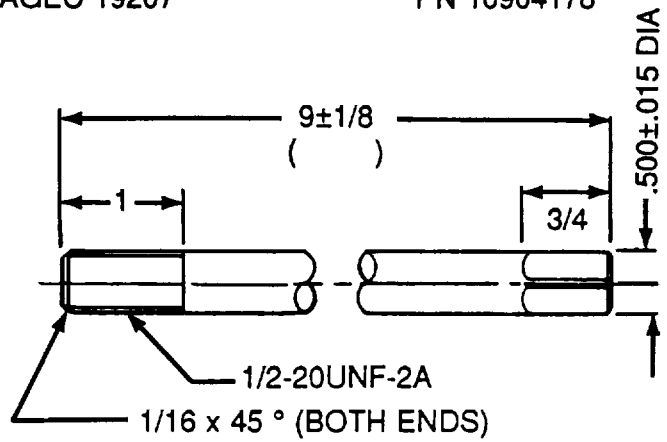


Figure D-26. Threaded Straight Pin

**APPENDIX E
TORQUE VALUES**

E-1. GENERAL.

a. Follow torque values given throughout this manual. When no torque value is given, follow the guide to prevent damaging parts.

b. The guide is based on using clean, dry threads.

TORQUE VALUE GUIDE

SCREW DIAMETER	TORQUE NO DASHES (SAE GRADE 2)	TORQUE 3 DASHES (SAE GRADE 5)	TORQUE 6 DASHES (SAE GRADE 8)	SOCKET SIZE
1/4—20 UNC	3—5 ft-lb (4—7 N-m)	6—8 ft-lb (8—11 N-m)	10—12 ft-lb (14—16 N-m)	7/16
1/4—28 UNF	4—6 ft-lb (5—8 N-m)	8—10 ft-lb (11—14 N-m)	9—14 ft-lb (12—19 N-m)	7/16
5/16—18 UNC	7—11 ft-lb (9—15 N-m)	13—17 ft-lb (18—23 N-m)	19—24 ft-lb (26—33 N-m)	1/2
5/16—24 UNF	7—11 ft-lb (9—15 N-m)	14—19 ft-lb (19—26 N-m)	23—28 ft-lb (31—38 N-m)	1/2
3/8—16 UNC	14—18 ft-lb (19—24 N-m)	26—31 ft-lb (35—42 N-m)	39—44 ft-lb (53—60 N-m)	9/16
3/8—24 UNF	15—19 ft-lb (20—26 N-m)	30—35 ft-lb (41—47 N-m)	46—51 ft-lb (62—69 N-m)	9/16
7/16—14 UNC	23—28 ft-lb (31—38 N-m)	44—49 ft-lb (60—66 N-m)	65—70 ft-lb (88—95 N-m)	5/8
7/16—20 UNF	23—28 ft-lb (31—38 N-m)	44—54 ft-lb (60—73 N-m)	69—79 ft-lb (94—107 N-m)	5/8
1/2—13 UNC	32—37 ft-lb (43—50 N-m)	65—75 ft-lb (88—102 N-m)	95—105 ft-lb (129—142 N-m)	3/4
1/2—20 UNF	34—41 ft-lb (46—56 N-m)	73—83 ft-lb (99—113 N-m)	113—123 ft-lb (153—167 N-m)	3/4
9/16—12 UNC	46—56 ft-lb (62—76 N-m)	100—110 ft-lb (136—149 N-m)	145—155 ft-lb (197—210 N-m)	13/16
9/16 UNF	47—57 ft-lb (64—77 N-m)	107—117 ft-lb (145—159 N-m)	165—175 ft-lb (224—237 N-m)	13/16
5/8—11 UNC	62—72 ft-lb (84—98 N-m)	140—150 ft-lb (190—203 N-m)	200—210 ft-lb (271—285 N-m)	15/16
5/8—18 UNF	67—77 ft-lb (91—104 N-m)	153—163 ft-lb (207—221 N-m)	235—245 ft-lb (319—332 N-m)	15/16

TORQUE VALUE GUIDE (CONT)

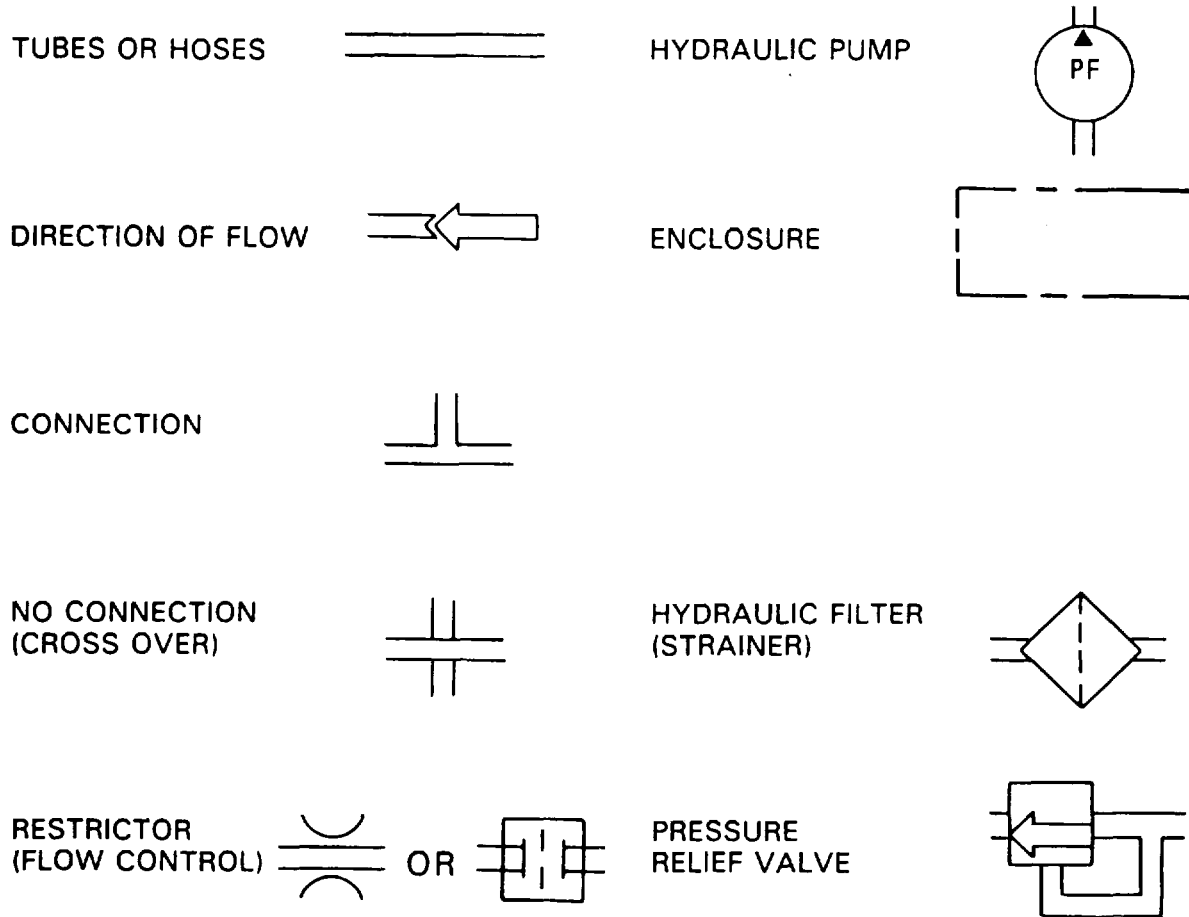
SCREW DIAMETER	TORQUE NO DASHES (SAE GRADE 2)	TORQUE 3 DASHES (SAE GRADE 5)	TORQUE 6 DASHES (SAE GRADE 8)	SOCKET SIZE
3/4—10 UNC	106—116 ft-lb (144—157 N-m)	260—270 ft-lb (353—366 N-m)	365—375 ft-lb (495—508 N-m)	1-1/4
3/4—16 UNF	115—125 ft-lb (156—169 N-m)	268—278 ft-lb (363—377 N-m)	417—427 ft-lb (565—579 N-m)	1-1/4
7/8—9 UNC	165—175 ft-lb (224—237 N-m)	385—395 ft-lb (522—536 N-m)	595—605 ft-lb (807—820 N-m)	1-5/16
7/8—14 UNF	178—188 ft-lb (241—255 N-m)	424—434 ft-lb (575—588 N-m)	663—673 ft-lb (899—912 N-m)	1-5/16
1—8 UNC	251—261 ft-lb (340—354 N-m)	580—590 ft-lb (786—800 N-m)	900—910 ft-lb (1220—1234 N-m)	1-1/2
1—14 UNF	255—265 ft-lb (346—359 N-m)	585—634 ft-lb (793—860 N-m)	943—993 ft-lb (1279—1346 N-m)	1-1/2
1-1/4—7 UNC	451—461 ft-lb (611—625 N-m)	1070—1120 ft-lb (1451—1518 N-m)	1767—1817 ft-lb (2396—2463 N-m)	1-7/8
1-1/4—12 UNF	488—498 ft-lb (662—675 N-m)	1211—1261 ft-lb (1642—1710 N-m)	1963—2013 ft-lb (2661—2729 N-m)	1-7/8
1-1/2—6 UNC	727—737 ft-lb (986—999 N-m)	1899—1949 ft-lb (2575—2642 N-m)	3111—3161 ft-lb (4218—4286 N-m)	2-1/4
1-1/2—12 UNF	816—826 ft-lb (1106—1120 N-m)	2144—2194 ft-lb (2907—2975 N-m)	3506—3556 ft-lb (4753—4821 N-m)	2-1/4

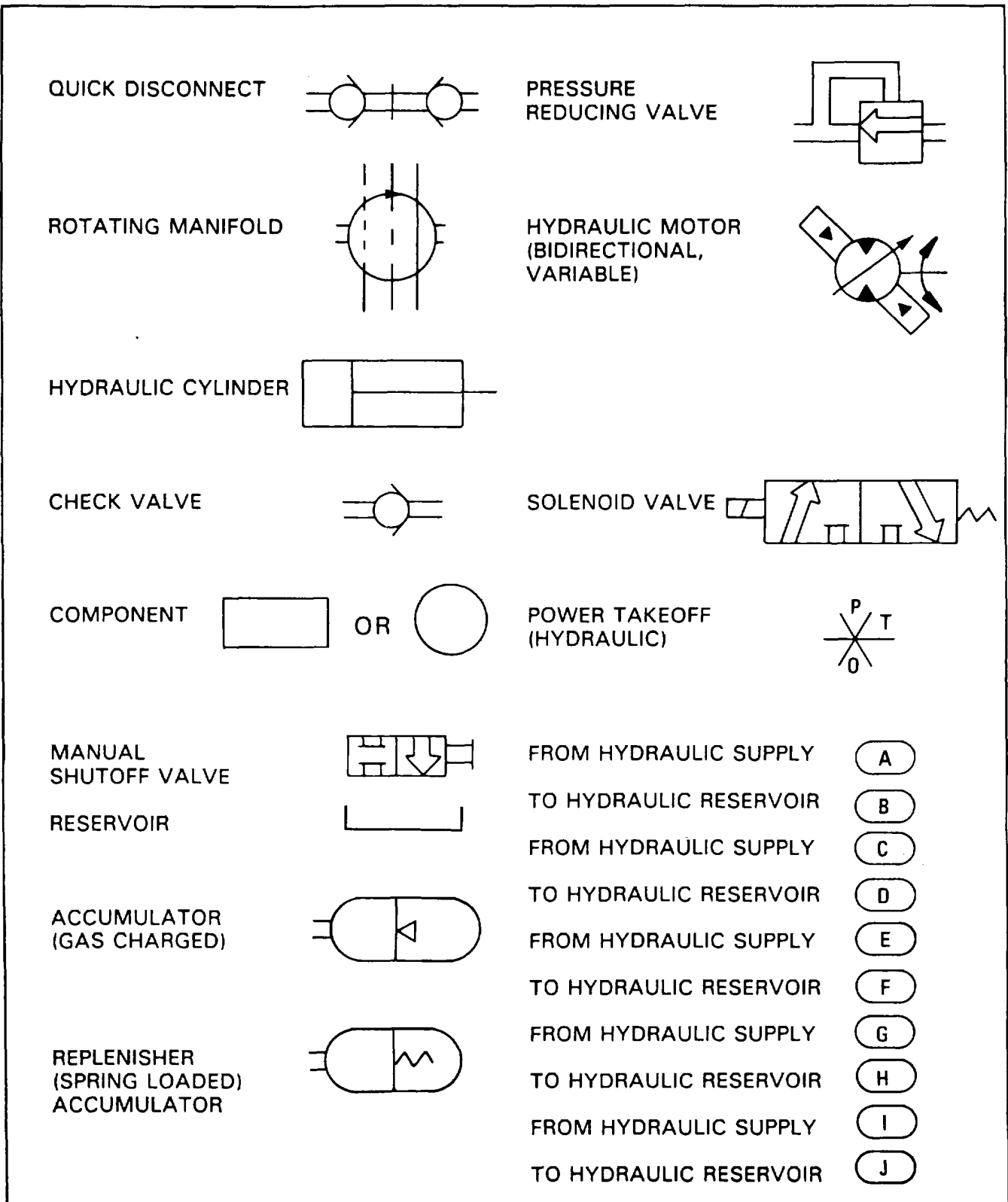
APPENDIX F

HYDRAULIC SYSTEM DESCRIPTION
AND SCHEMATIC DIAGRAMS

F-1. GENERAL. This appendix contains functional descriptions and schematic diagrams of the hydraulic system. The hydraulic system is divided into nine basic subsystems: hydraulic power, suspension lockout, spade, cannon recoil, turret traversing, cannon elevating, loader-hammer traversing, loader, and rammer.

F-2. HYDRAULIC SYMBOLS.





BAR CODE

LOCKOUT CYLINDER



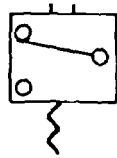
INTENSIFIED PRESSURE



SUPPLY PRESSURE



PRESSURE SWITCH



CHARGING PRESSURE
REDUCED PRESSURE
PILOT PRESSURE



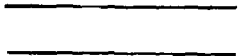
METERED OR BLOCKED
FLOW



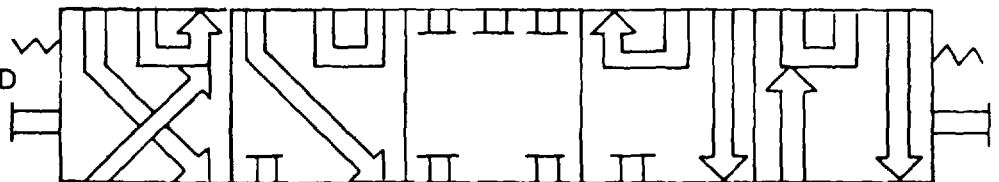
INTAKE DRAIN



BLANK INACTIVE



DIRECTIONAL
CONTROL VALVE
(MANUALLY OPERATED
SPRING RETURN
CENTER OFF)



F-3. HYDRAULIC POWER SUBSYSTEM.

Functional Description. Hydraulic reservoir (21) is filled with hydraulic fluid. Fluid from hydraulic reservoir (21) is filtered through strainer (20) and pumped through either filter (7) by engine driven pump (14) or filter (4) by electric motor driven pump (15). The fluid is pumped into nitrogen charged accumulator (6) until fluid pressure in accumulator (6) reaches 2400 psi (16,548 kPa). Then pressure switch (10) opens the electrical circuits to magnetic clutch (13) and electric motor (16), stopping the pump (14 or 15). Hydraulic pressure is stored in accumulator (6) ready for use by any of the other eight subsystems. When the hydraulic pressure in accumulator (6) drops below 1600 psi (11,032 kPa), pressure switch (10) closes to start either pump (14 or 15).







Check valves (5, 8, and 9) prevent hydraulic fluid from draining back to hydraulic reservoir (21) through engine-driven pump (14), electric motor-driven pump (15), and handdriven ram pump (17).

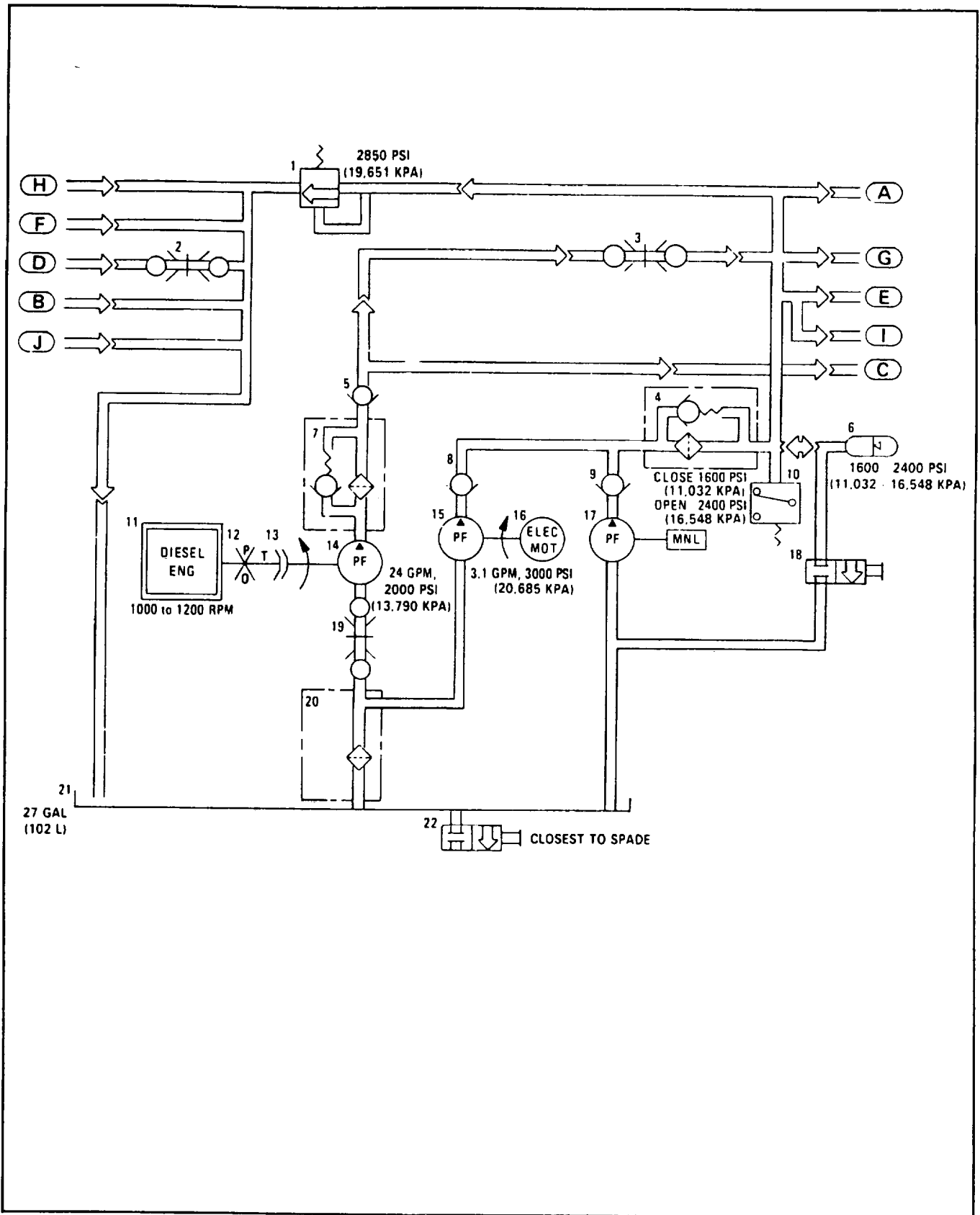
The system is protected from over-pressure by pressure relief valve (1), which bypasses fluid over 2850 psi (19,651 kPa) back to hydraulic reservoir (21).

In an emergency and for maintenance operations, hydraulic fluid pressure can be built up in accumulator (6) by operating hand- driven ram pump (17). Hydraulic system pressure can be quickly dropped to zero by opening dump valve (18). Hydraulic reservoir (21) is drained by opening valve (22).

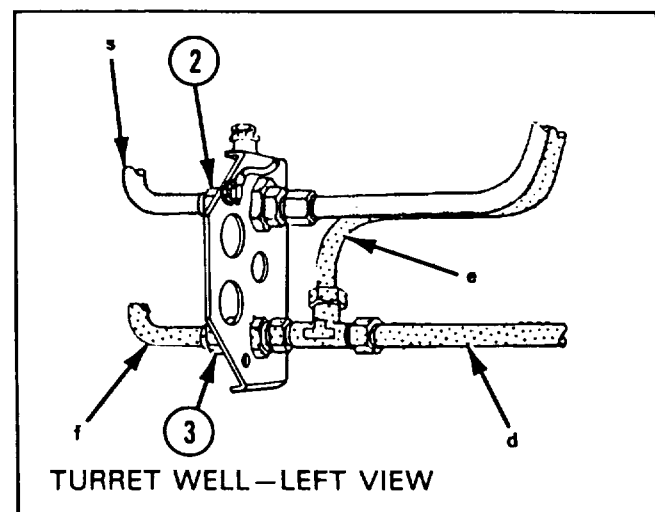
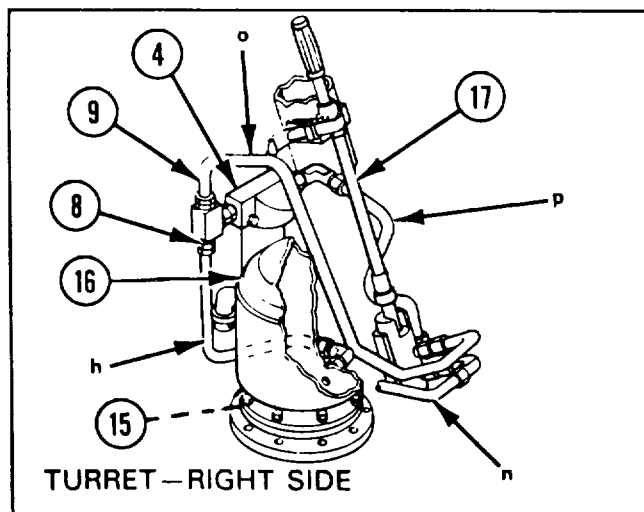
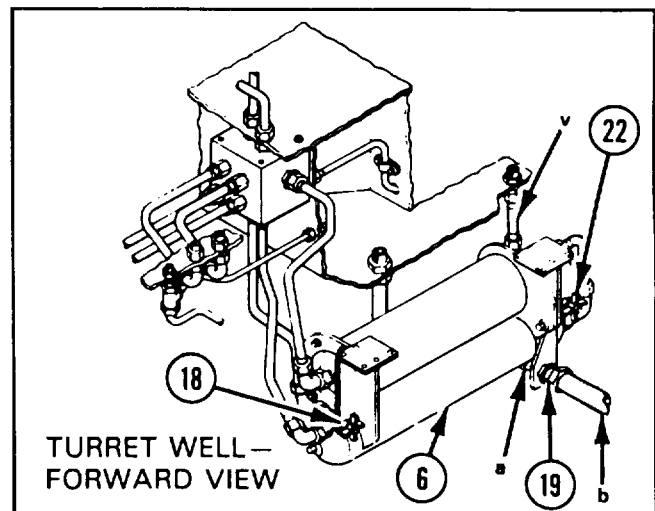
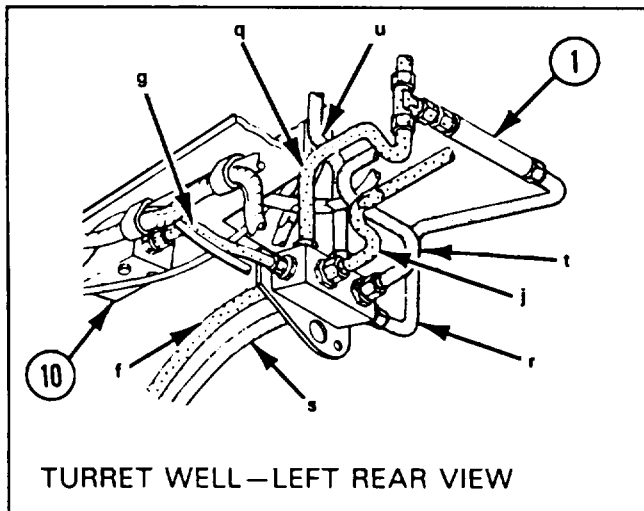
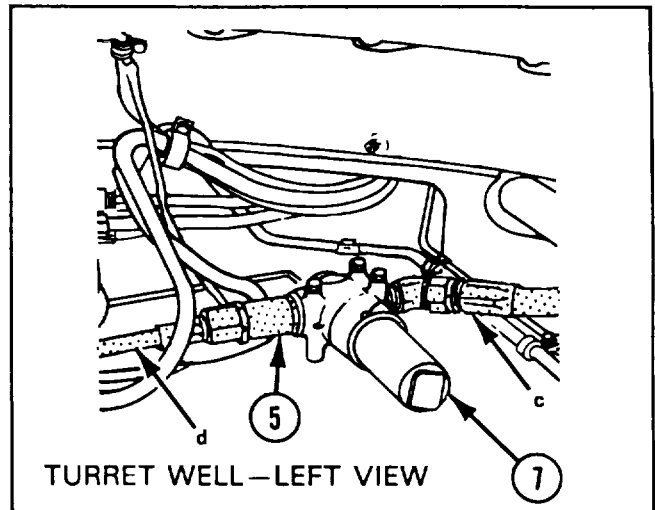
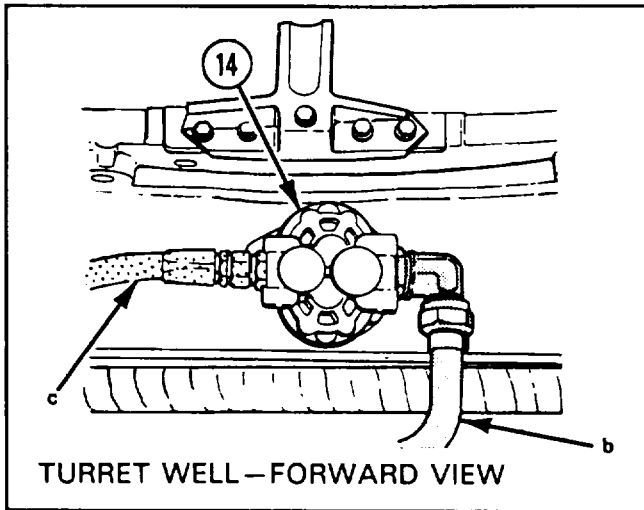
- 1 System pressure relief valve
- 2 Quick-disconnect coupling
- 3 Quick-disconnect coupling
- 4 Hydraulic fluid filter
- 5 Check valve
- 6 Accumulator
- 7 Hydraulic fluid filter
- 8 Check valve
- 9 Check valve
- 10 Hydraulic pressure switch
- 11 Diesel engine
- 12 Power takeoff (PTO)
- 13 Magnetic clutch
- 14 Hydraulic fluid pump
- 15 Hydraulic fluid pump
- 16 Electric motor
- 17 Hand-driven ram pump
- 18 Accumulator pressure dump valve
- 19 Quick-disconnect coupling
- 20 Hydraulic fluid strainer
- 21 Hydraulic reservoir
- 22 Reservoir drain valve

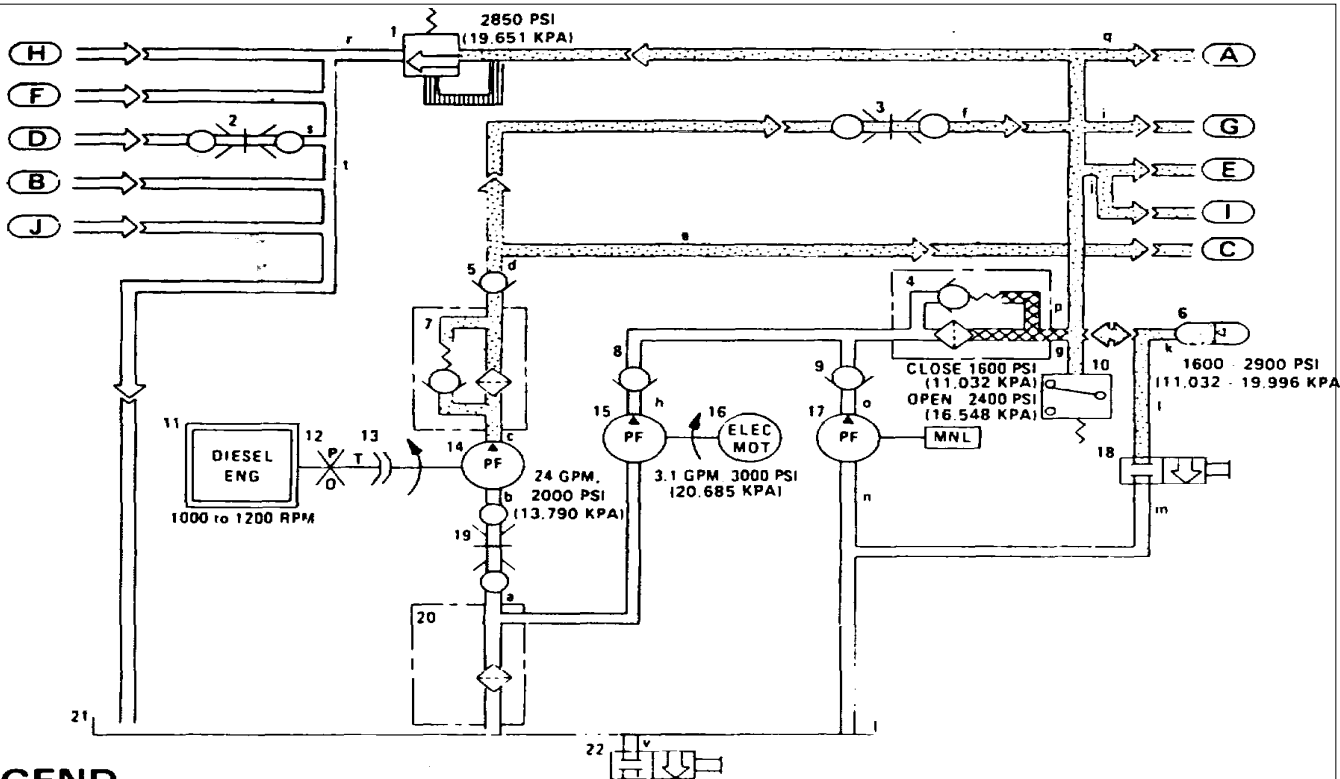
BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
Reduced pressure
Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive



F4. ENGINE-DRIVEN PUMP OPERATING .

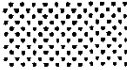




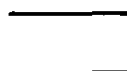






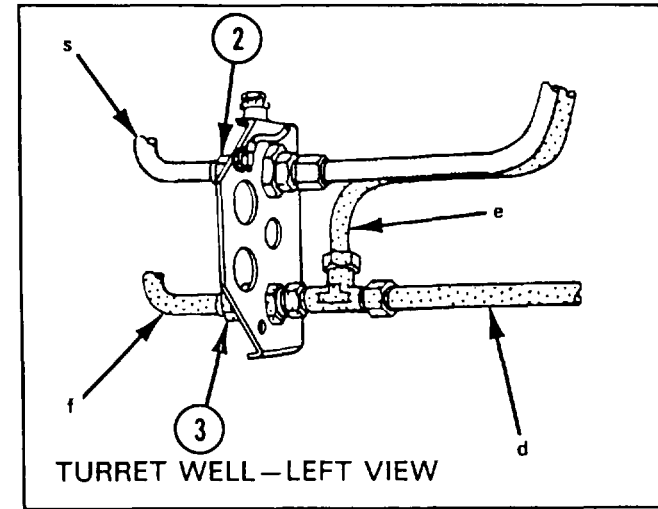
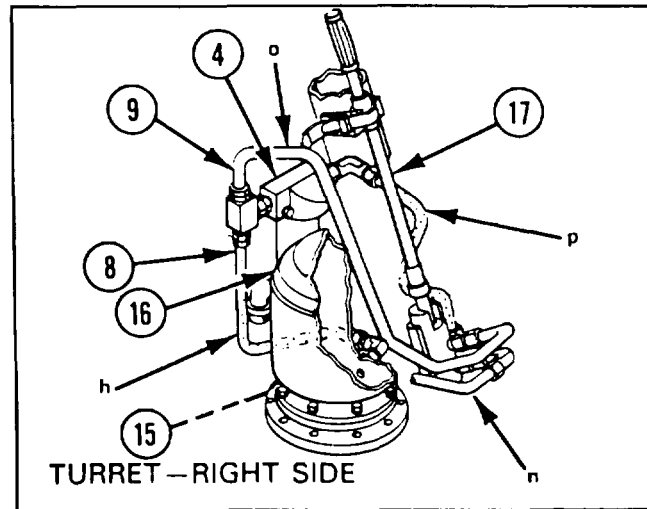
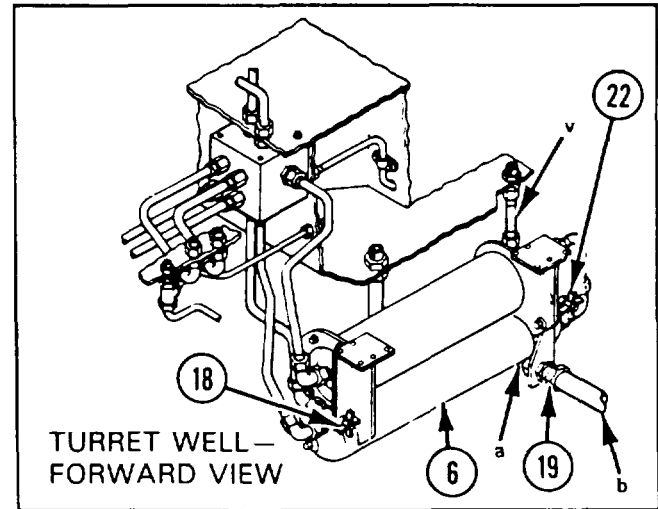
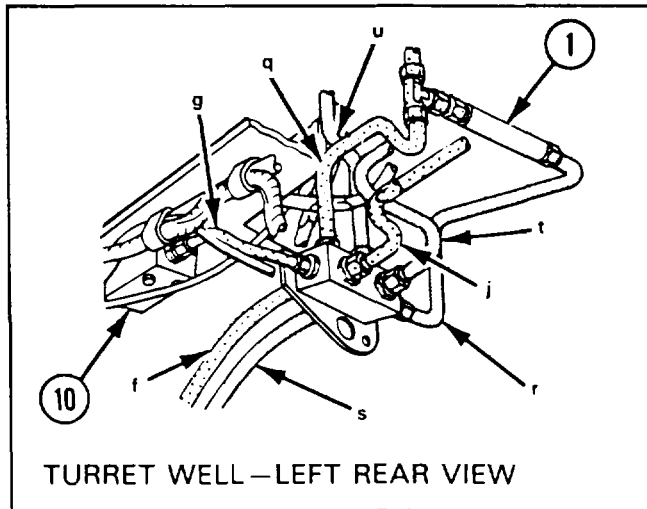
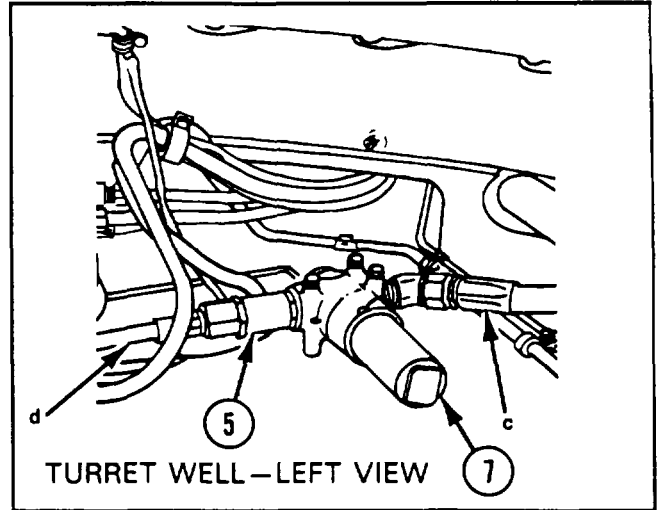
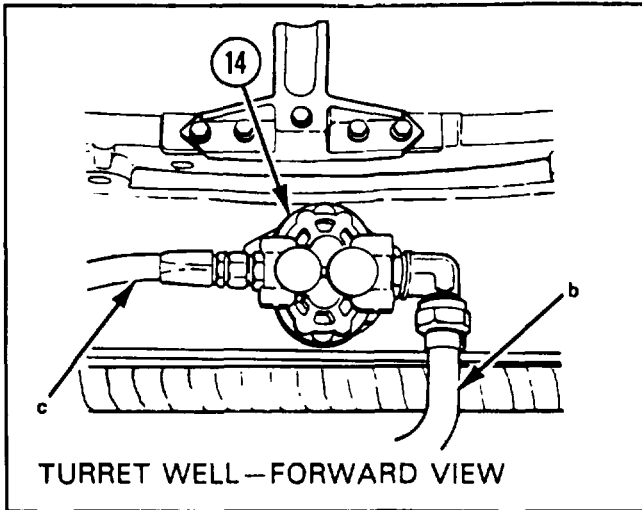
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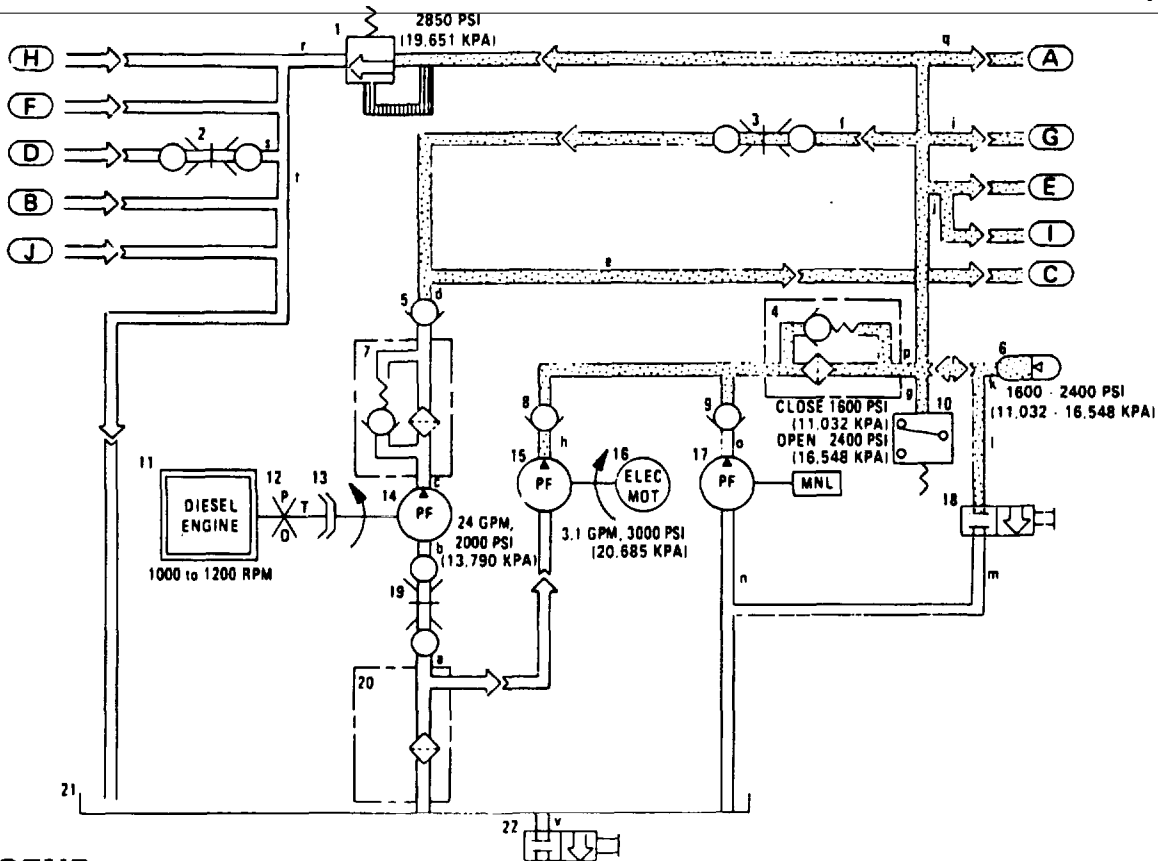
- 1 System pressure relief valve
- 2 Quick-disconnect coupling
- 3 Quick-disconnect coupling
- 4 Hydraulic fluid filter
- 5 Check valve
- 6 Accumulator
- 7 Hydraulic fluid filter
- 8 Check valve
- 9 Check valve
- 10 Hydraulic pressure switch
- 11 Diesel engine
- 12 Power takeoff (PTO)
- 13 Magnetic clutch
- 14 Hydraulic fluid pump
- 15 Hydraulic fluid pump
- 16 Electric motor
- 17 Hand-driven ram pump
- 18 Accumulator pressure dump valve
- 19 Quick-disconnect coupling
- 20 Hydraulic fluid strainer
- 21 Hydraulic reservoir
- 22 Reservoir drain valve

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-5. ELECTRIC MOTOR-DRIVEN PUMPT OPERATING

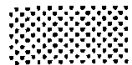











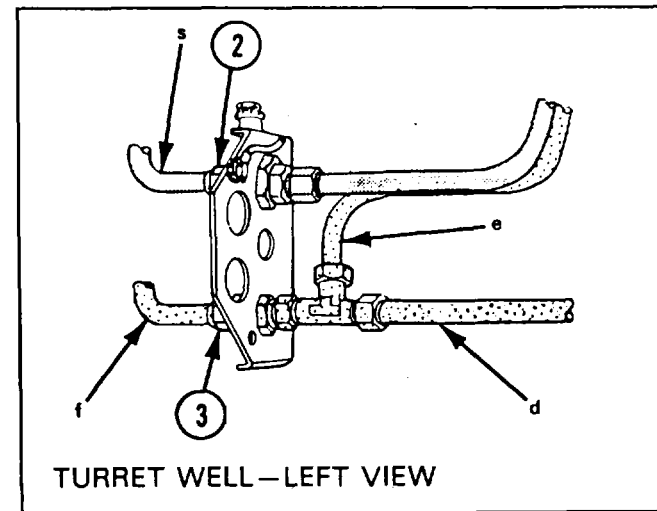
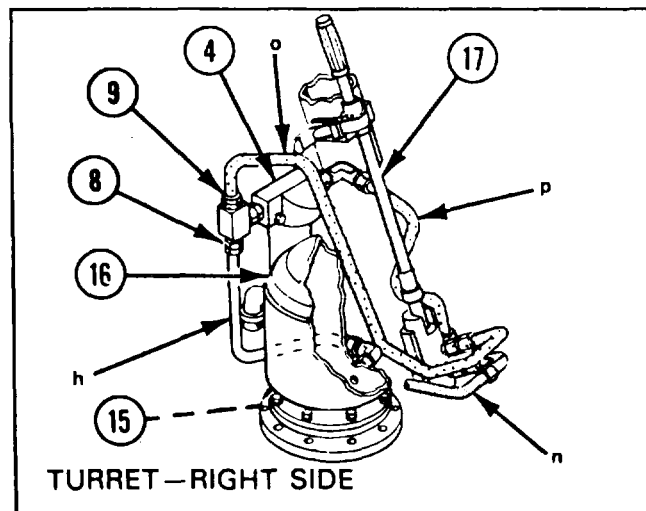
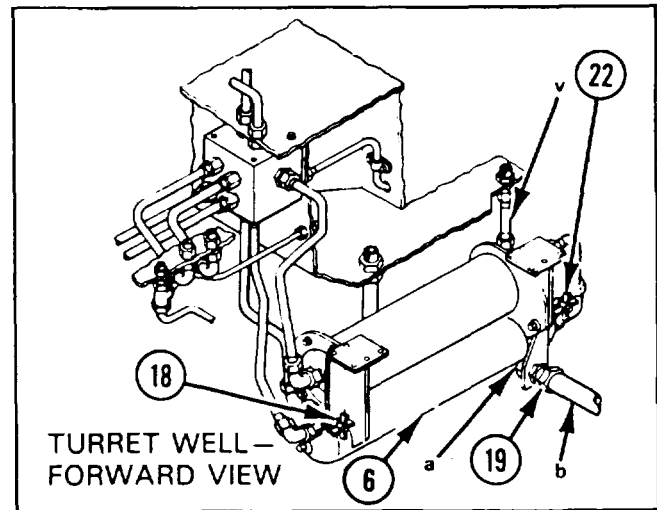
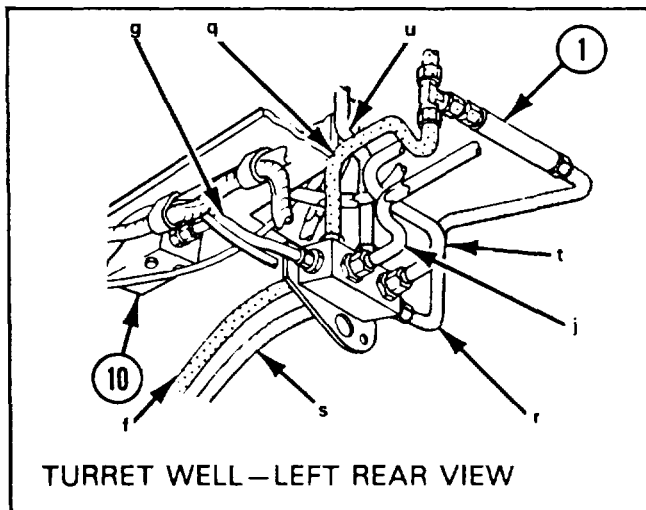
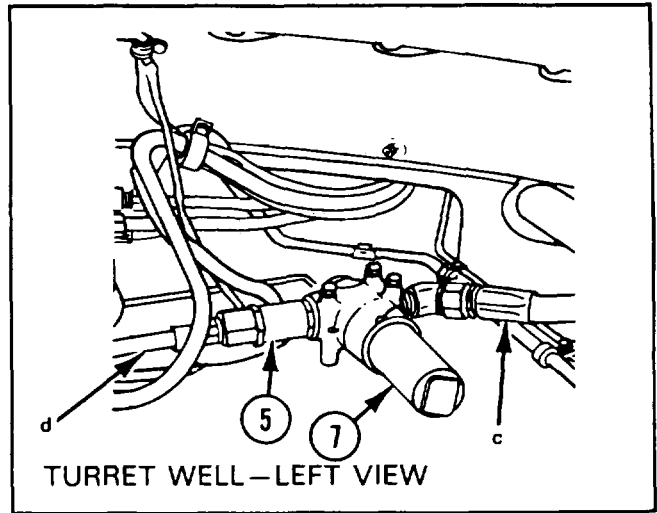
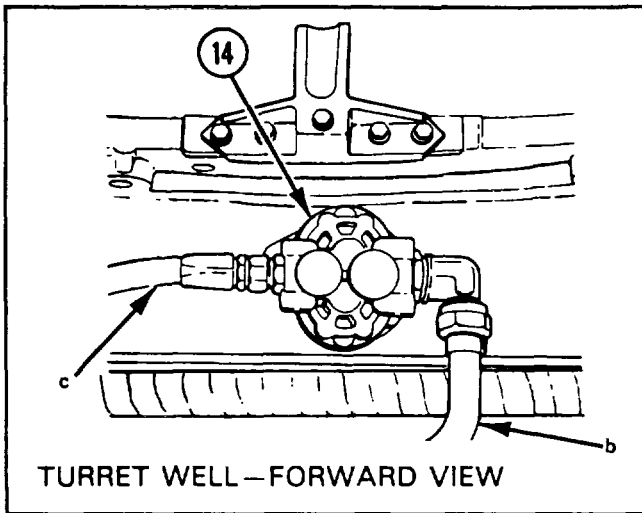
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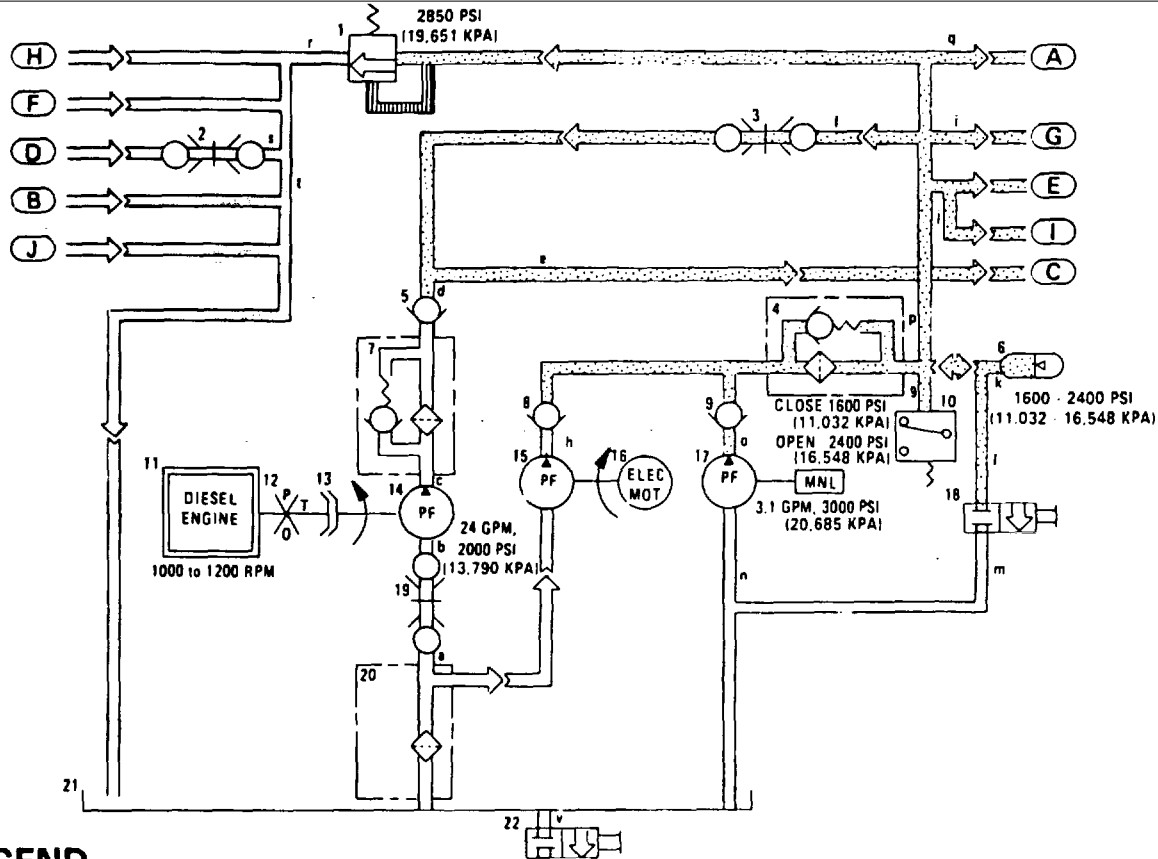
- 1 System pressure relief valve
- 2 Quick-disconnect coupling
- 3 Quick-disconnect coupling
- 4 Hydraulic fluid filter
- 5 Check valve
- 6 Accumulator
- 7 Hydraulic fluid filter
- 8 Check valve
- 9 Check valve
- 10 Hydraulic pressure switch
- 11 Diesel engine
- 12 Power takeoff (PTO)
- 13 Magnetic clutch
- 14 Hydraulic fluid pump
- 15 Hydraulic fluid pump
- 16 Electric motor
- 17 Hand-driven ram pump
- 18 Accumulator pressure dump valve
- 19 Quick-disconnect coupling
- 20 Hydraulic fluid strainer
- 21 Hydraulic reservoir
- 22 Reservoir drain valve

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-6. HAND-DRIVEN RAM PUMP OPERATING

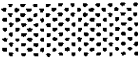




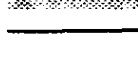






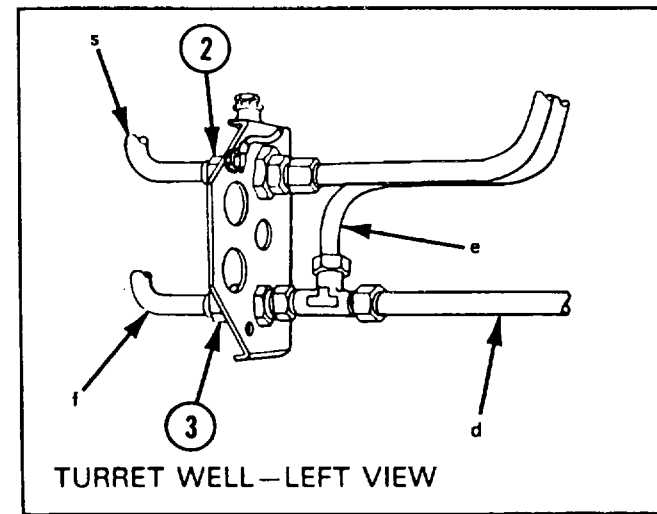
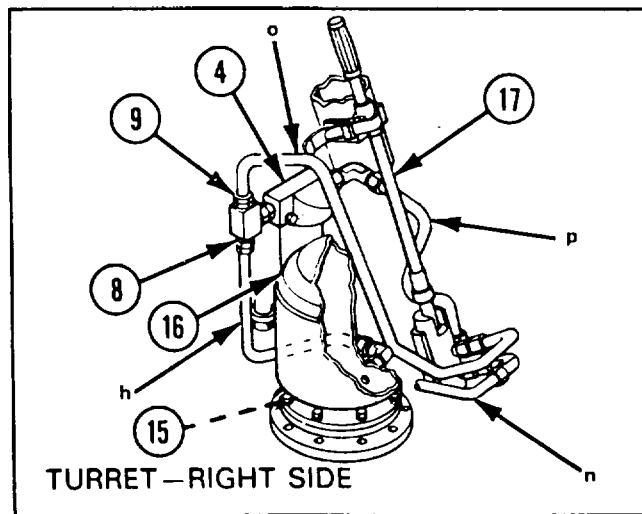
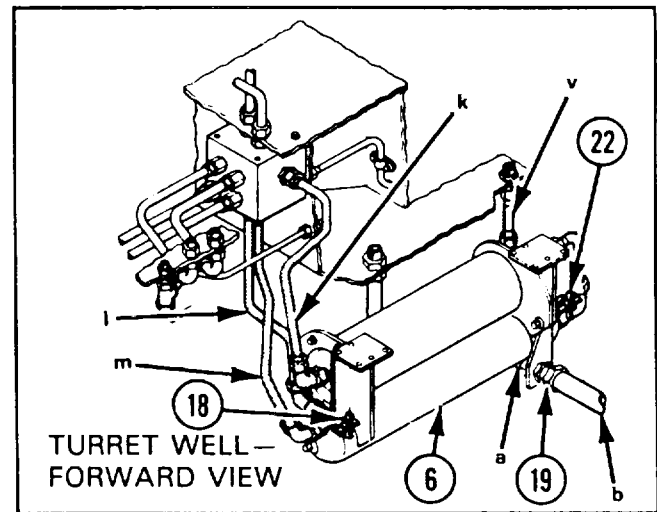
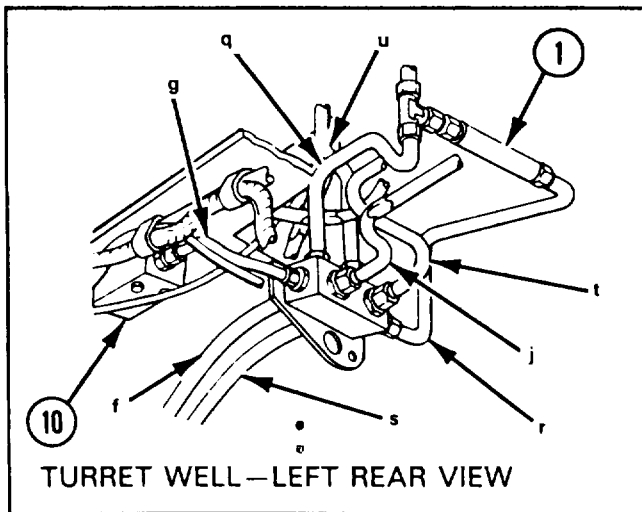
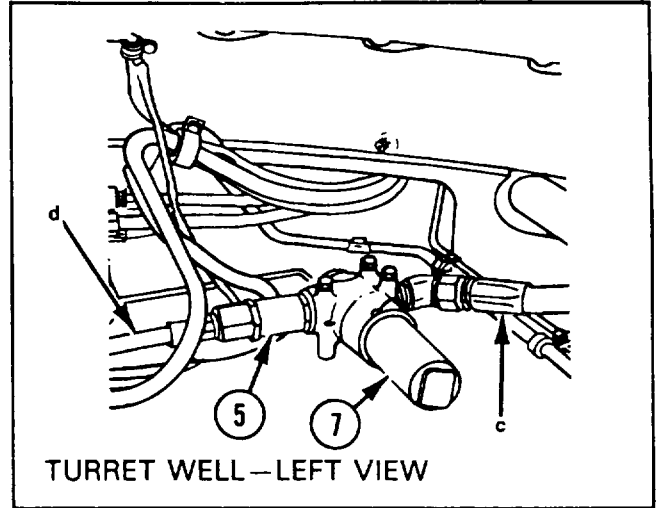
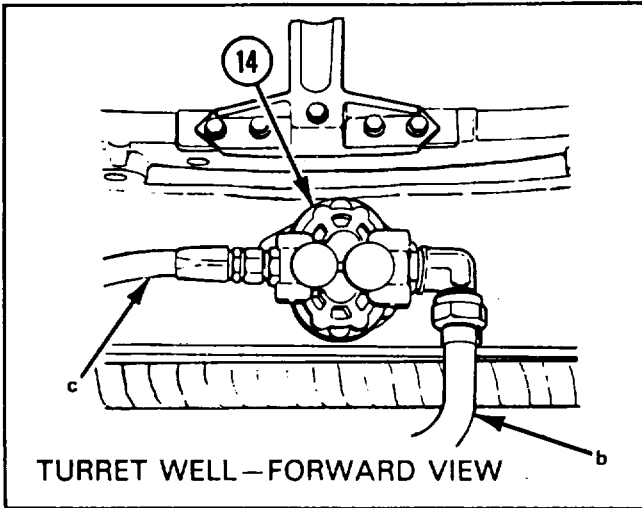
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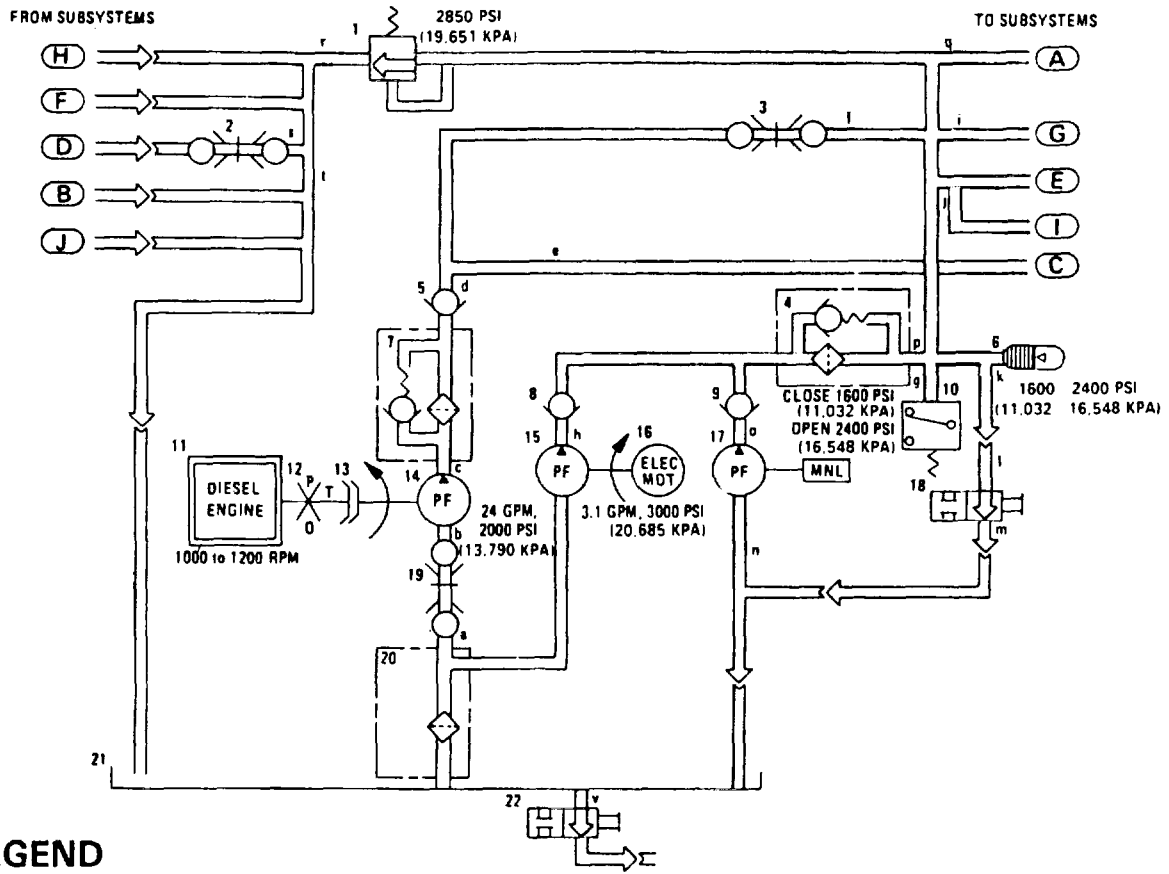
- 1 System pressure relief valve
- 2 Quick-disconnect coupling
- 3 Quick-disconnect coupling
- 4 Hydraulic fluid filter
- 5 Check valve
- 6 Accumulator
- 7 Hydraulic fluid filter
- 8 Check valve
- 9 Check valve
- 10 Hydraulic pressure switch
- 11 Diesel engine
- 12 Power takeoff (PTO)
- 13 Magnetic clutch
- 14 Hydraulic fluid pump
- 15 Hydraulic fluid pump
- 16 Electric motor
- 17 Hand-driven ram pump
- 18 Accumulator pressure dump valve
- 19 Quick-disconnect coupling
- 20 Hydraulic fluid strainer
- 21 Hydraulic reservoir
- 22 Reservoir drain valve

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-7. DRAINING






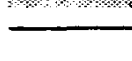
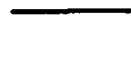





LEGEND

- 2 Quick-disconnect coupling
- 2 Quick-disconnect coupling
- 4 Hydraulic fluid filter
- 5 Check valve
- 6 Accumulator
- 7 Hydraulic fluid filter
- 8 Check valve
- 9 Check valve
- 10 Hydraulic pressure switch
- 11 Diesel engine
- 12 Power takeoff (PTO)
- 13 Magnetic clutch
- 14 Hydraulic fluid pump
- 15 Hydraulic fluid pump
- 16 Electric motor
- 17 Hand-driven ram pump
- 18 Accumulator pressure dump valve
- 19 Quick-disconnect coupling
- 20 Hydraulic fluid strainer
- 21 Hydraulic reservoir
- 22 Reservoir drain valve

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-8. SUSPENSION LOCKOUT HYDRAULIC SUBSYSTEM

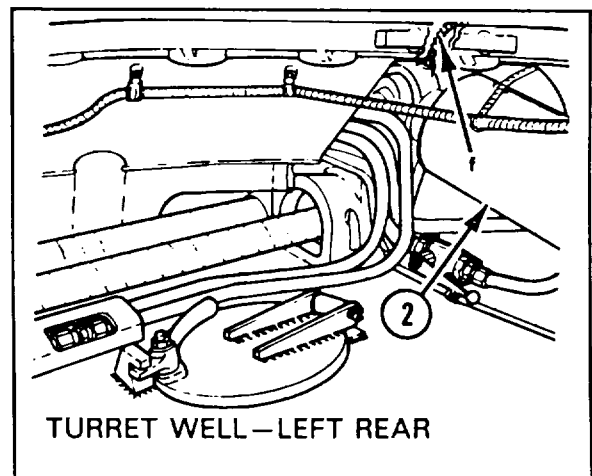
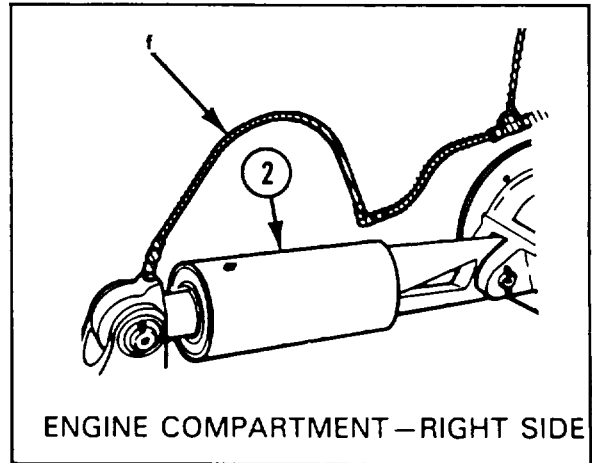
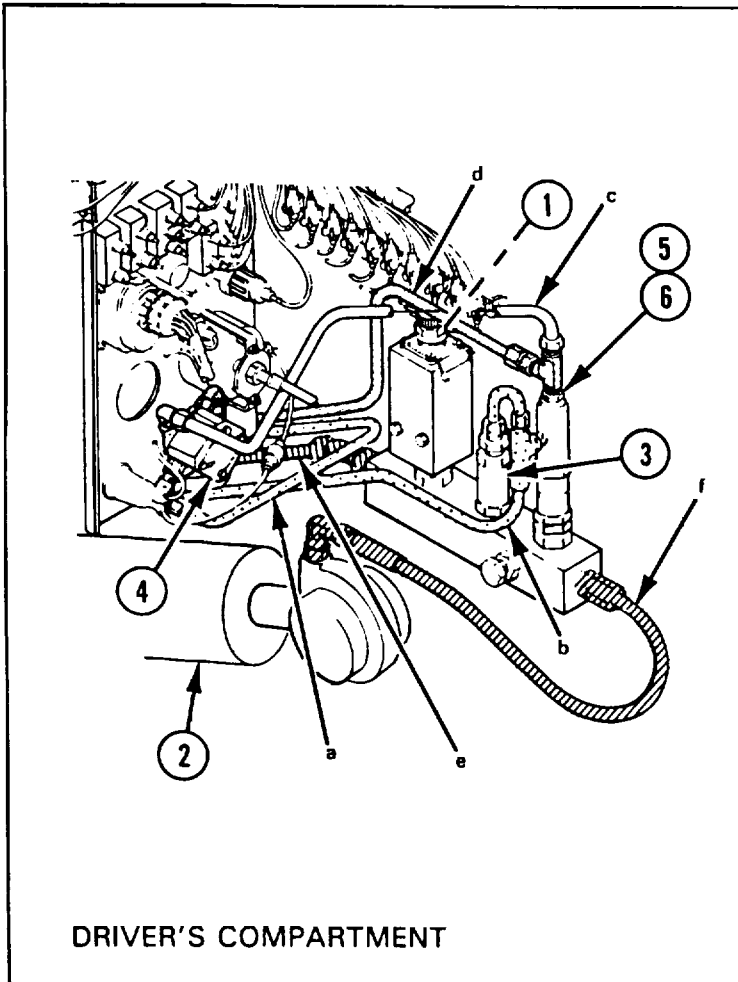
Functional Description. The suspension lockout hydraulic subsystem forms a hydrostatic lock within each lockout cylinder (2). This stops up and down movement of the road wheels and provides a solid firing platform when the cannon is fired.

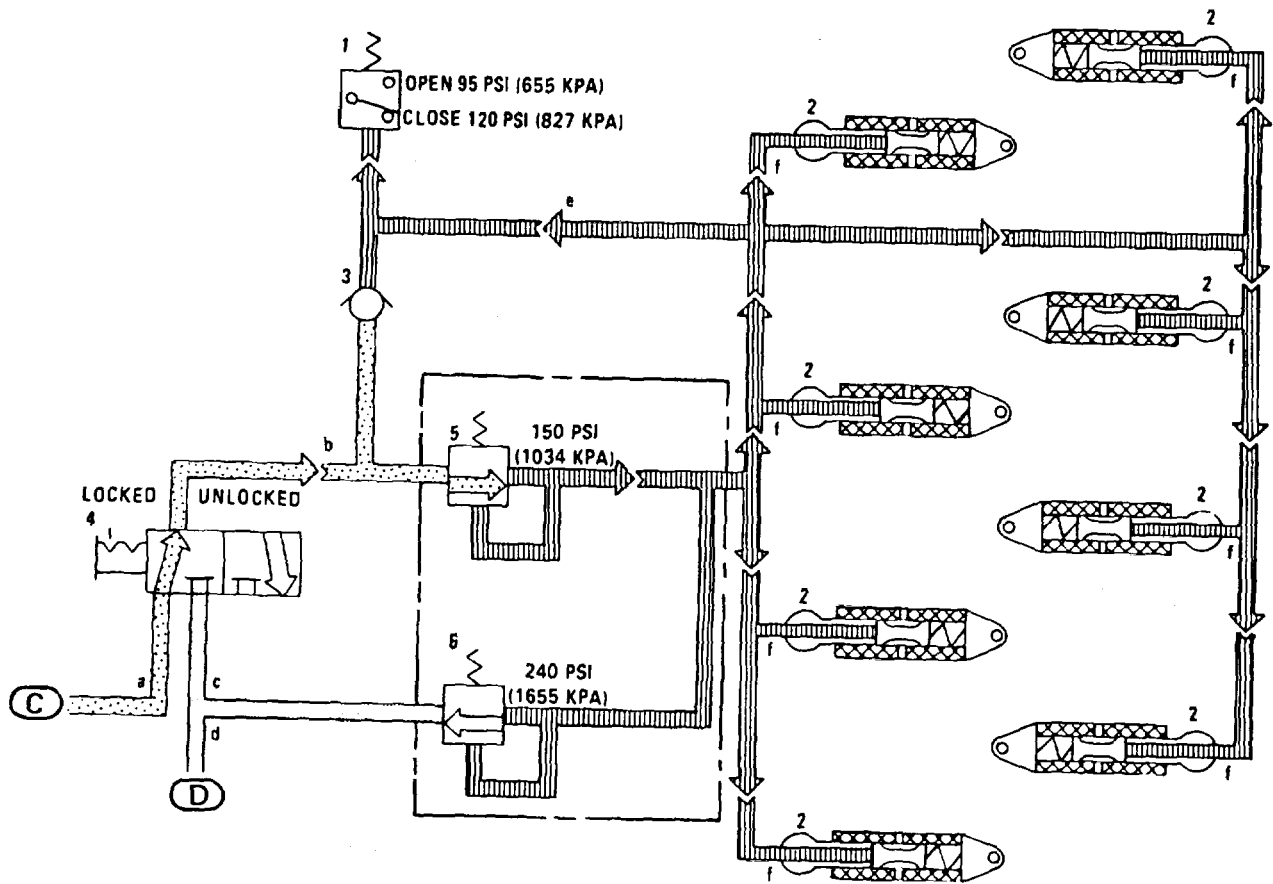
Lockout cylinders (2) are locked by setting valve (4) to LOCKED. Hydraulic fluid at 1600 to 2400 psi (11,032 to 16,548 kPa) flows through valve (4) to valve (5). Valve (5) reduces the fluid pressure to 150 psi (1034 kPa). As the fluid pressure builds up in lockout cylinders (2), the lockout pistons are forced into lockout position. This prevents hydraulic fluid from passing from one

side of the cylinder piston to the other. Pressure switch (1) is closed when pressure in the lockout cylinder is over 120 psi (827 kPa), lighting the SUSPENSION LOCK-ED indicator lights. When the hydraulic pressure drops below 95 psi (655 kPa), pressure switch (1) opens, putting out the SUSPENSION LOCKED indicator lights.

The subsystem is protected from overpressure by relief valve (6), which bypasses fluid over 240 psi (1655 kPa) back to reservoir. Cylinders (2) are unlocked by setting valve (4) to UNLOCKED. This allows the hydraulic fluid to flow back to the reservoir.

F-9. SUSPENSION LOCKOUT HYDRAULIC SUBSYSTEM-LOCKED







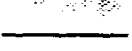





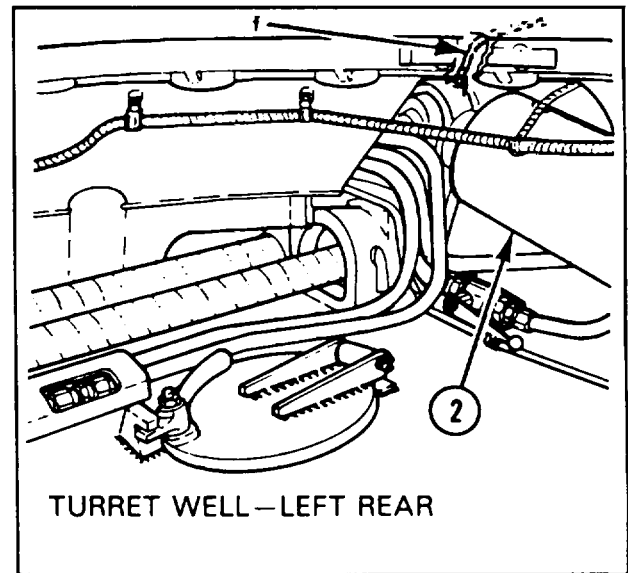
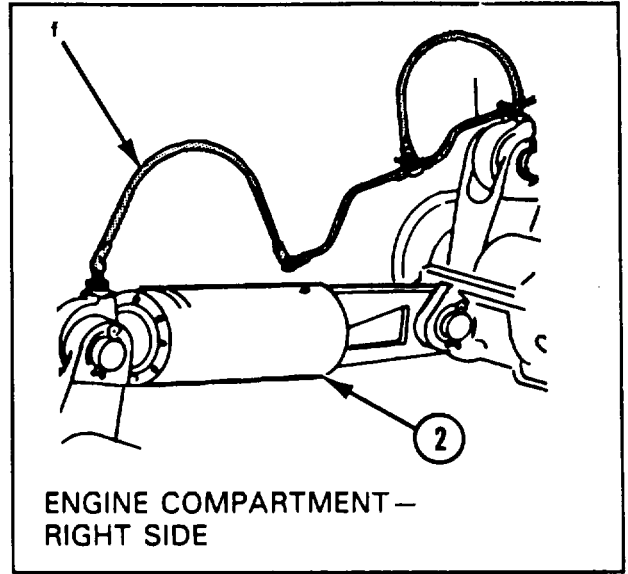
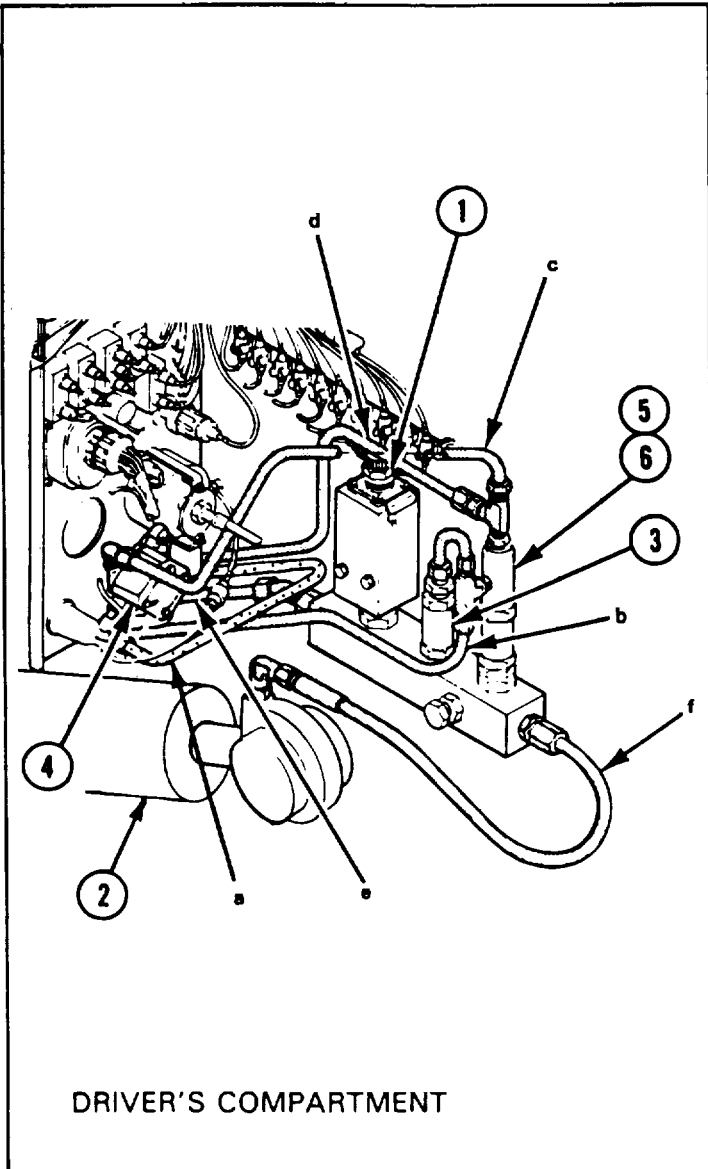
LEGEND

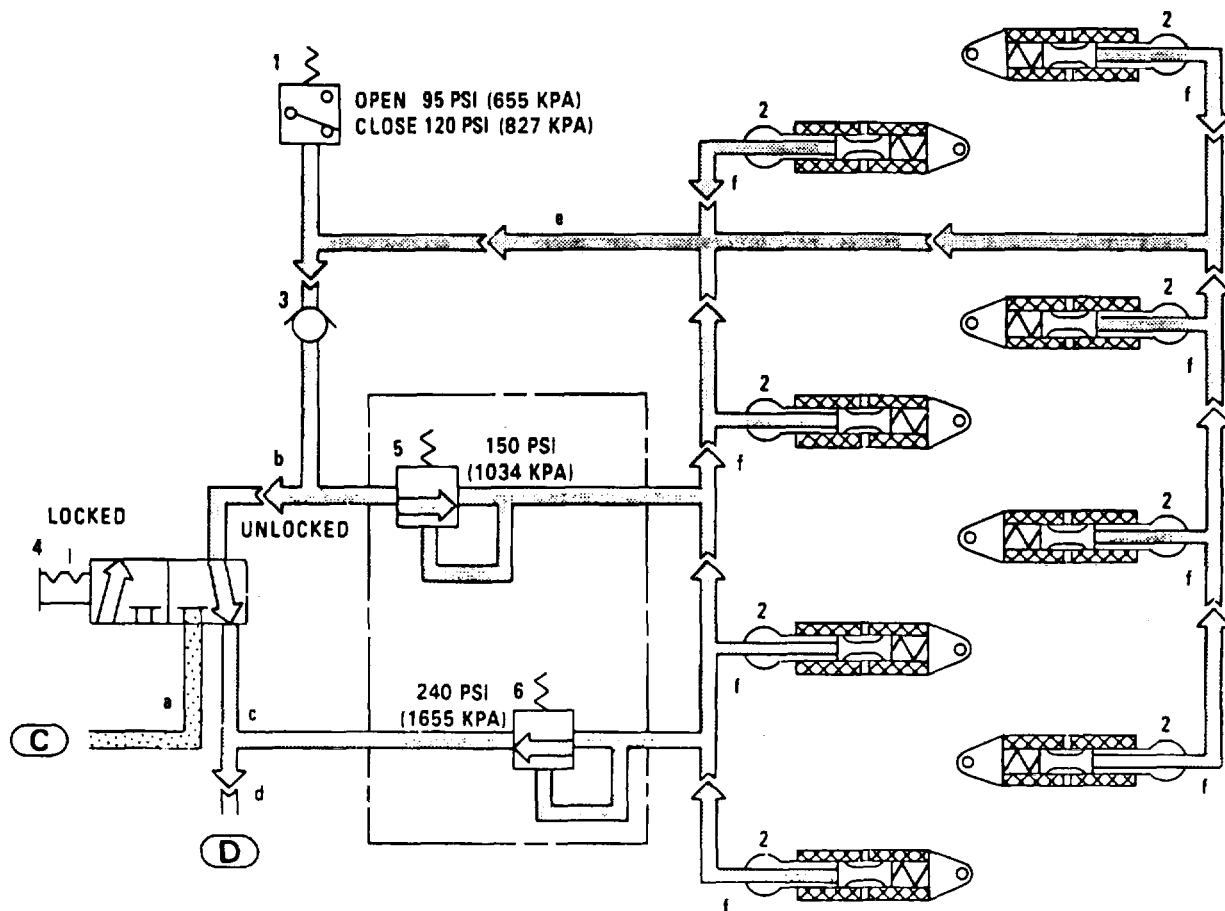
- 1 Pressure switch
- 2 Lockout cylinder
- 3 Check valve
- 4 Three-way valve
- 5 Pressure reducing valve
- 6 Pressure relief valve

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-10. SUSPENSION LOCKOUT HYDRAULIC SUBSYSTEM - UNLOCKED













LEGEND

- 1 Pressure switch
- 2 Lockout cylinder
- 3 Check valve
- 4 Three-way valve
- 5 Pressure relief valve
- 6 Pressure reducing valve

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-11. SPADE HYDRAULIC SUBSYSTEM

Functional Description. The spade hydraulic subsystem lowers the spade for firing emplacement or bulldozing, slows and cushions cannon recoil during firing, and raises the spade for stowage.

The spade is lowered by setting both cylinder lock handles to UNLOCK and, at the same time, holding the SPADE control valve handle in the RAISE position. Then, by holding the SPADE directional control valve handle in the LOWER position, hydraulic fluid at about 2400 psi (16,548 kPa) flows through directional control valve (5) to spade cylinders (1 and 2). Cylinder (1 and 2) extend to lower the spade. Pressure relief valve (10) keeps a 50 psi (345 kPa) back pressure in the subsystem to slow the speed of the spade.

The spade is raised by holding the SPADE control valve handle in the RAISED position. This causes hydraulic fluid at about 2400 psi (16,548 kPa) to flow through control valve (5) to spade cylinders (1 and 2). Cylinders (1 and 2) retract to raise the spade.

When the spade reaches the stowed position, the cylinder lock handles must be set to LOCK before releasing the SPADE control valve handle to prevent the spade from returning to the lowered position.

During cannon recoil, shock is slowed and cushioned by spade cylinders (1 and 2). This is done by forcing hydraulic fluid from the extend side of the cylinder through restrictors (3 and 4) to the retract side. The subsystem is protected from overpressure by pressure relief valve (7), which bypasses fluid over 1050 psi (7240 kPa) back to the reservoir.









When the SPADE control valve handle is in the OFF position, hydraulic pressure at 800 psi (5516 kPa) is applied to both sides of the spade cylinder pistons. The extend side of the spade cylinder pistons has a larger area exposed to hydraulic pressure. This keeps a downward force on the spade and causes it to reset after firing the cannon.

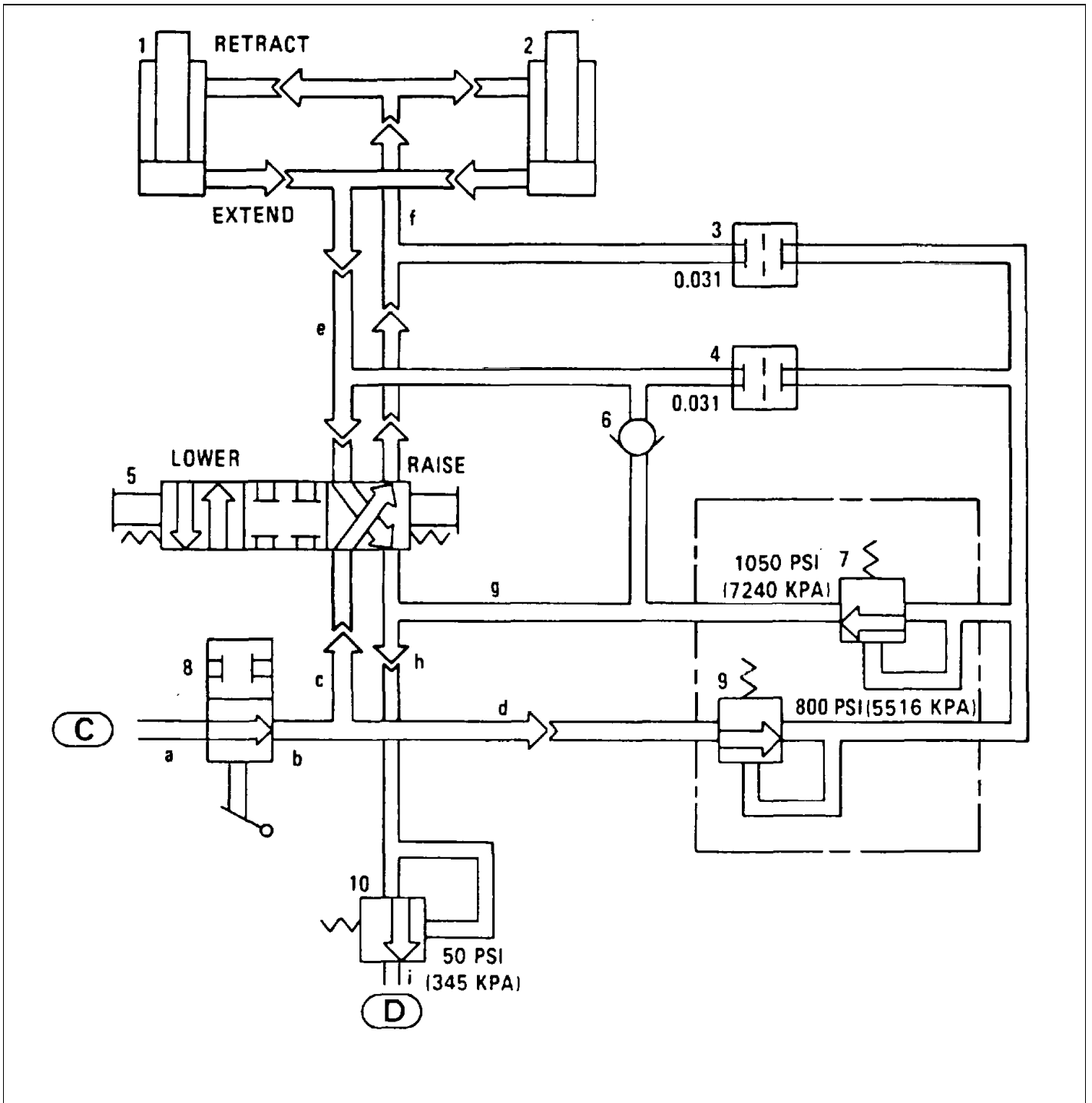
In an emergency and for maintenance operations, the input hydraulic pressure can be blocked by closing shutoff valve (8).

LEGEND

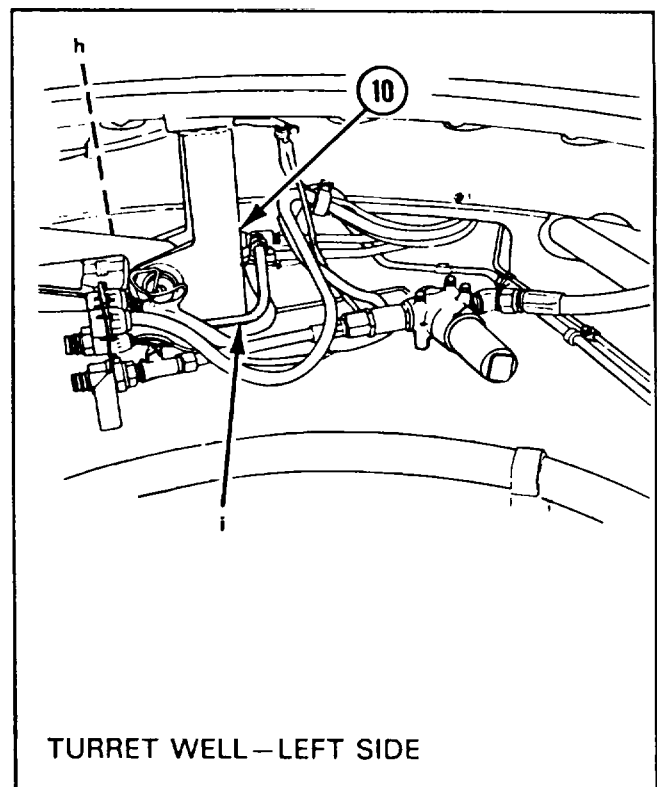
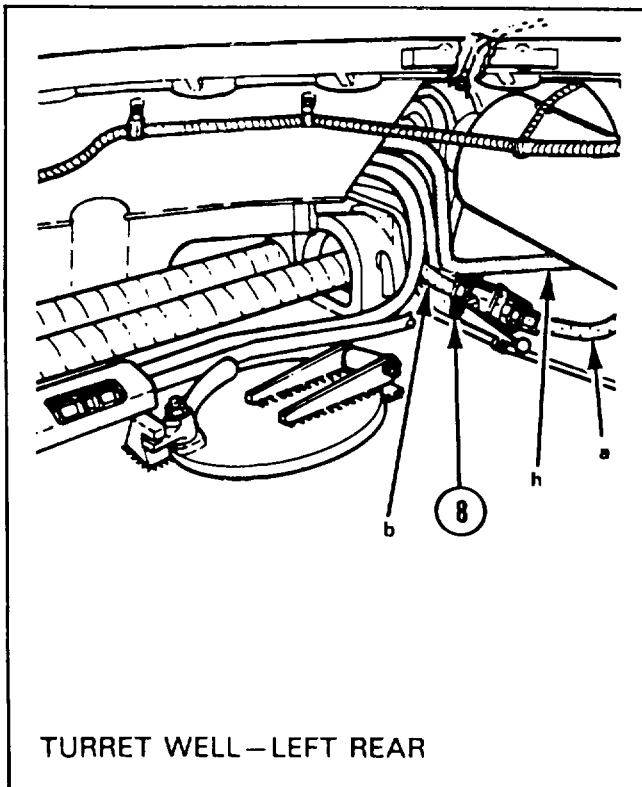
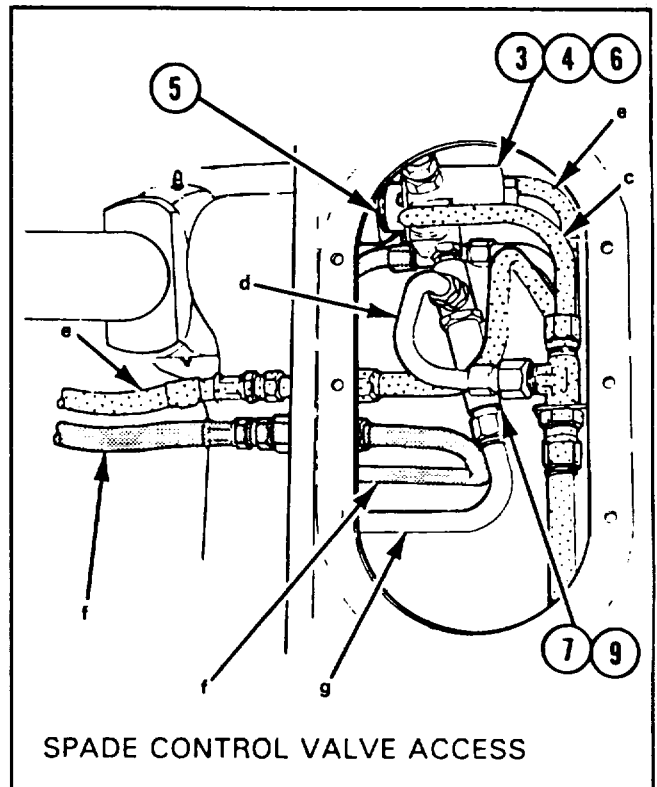
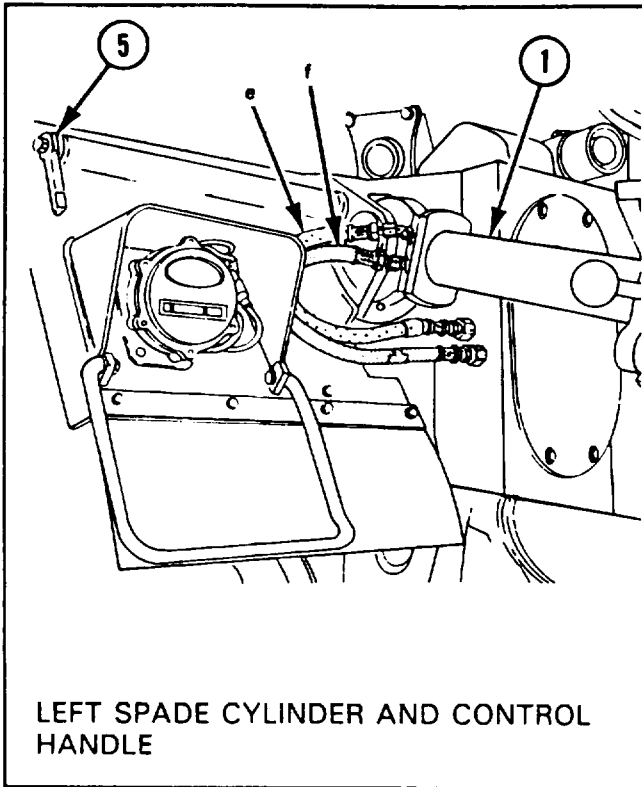
- 1 Left spade cylinder
- 2 Right spade cylinder
- 3 Restrictor
- 4 Restrictor
- 5 Directional control valve
- 6 Check valve
- 7 Pressure relief valve
- 8 Shutoff valve
- 9 Pressure reducing valve
- 10 Pressure relief valve

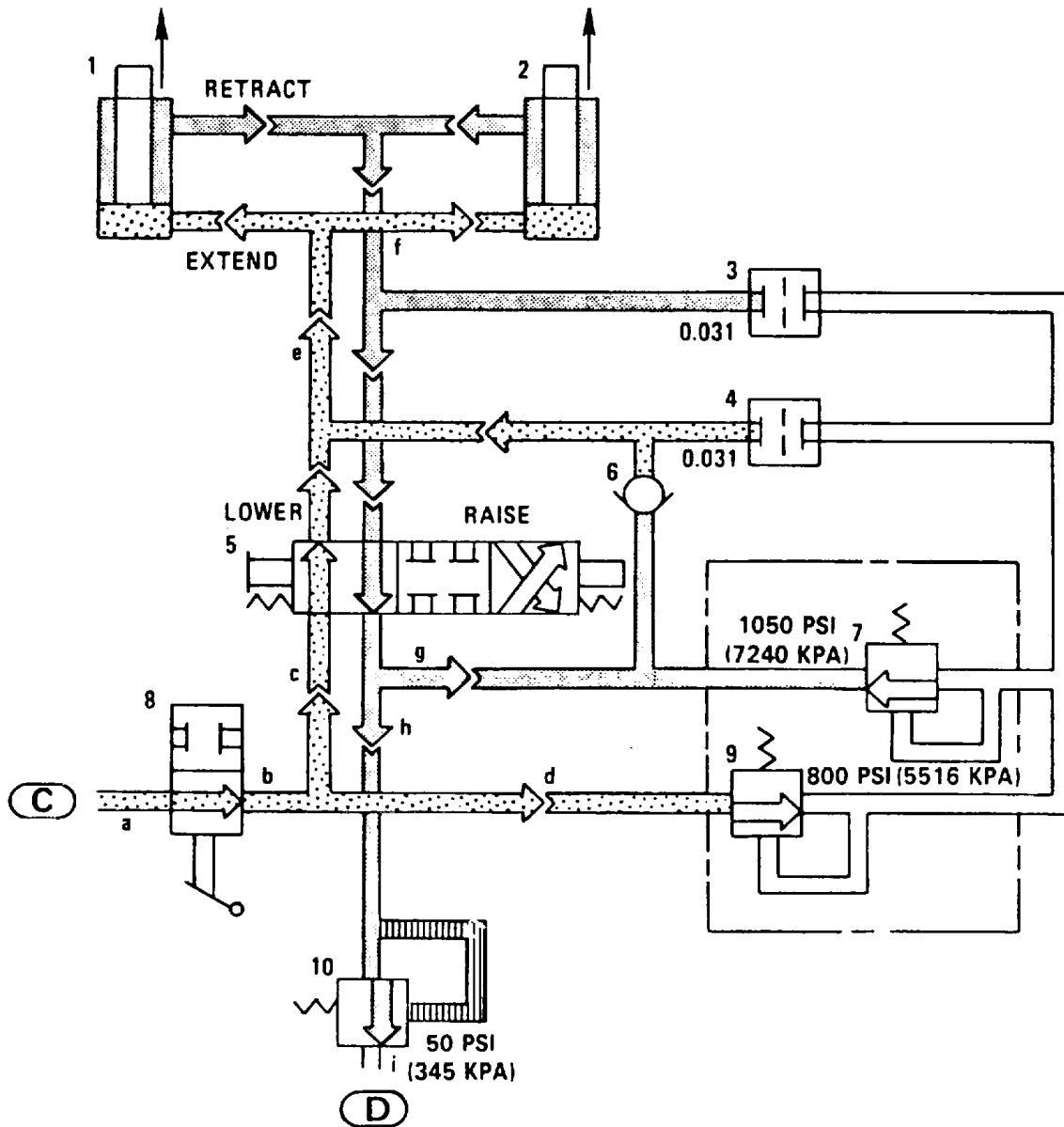
BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive



F-12. SPADE LOWERING.













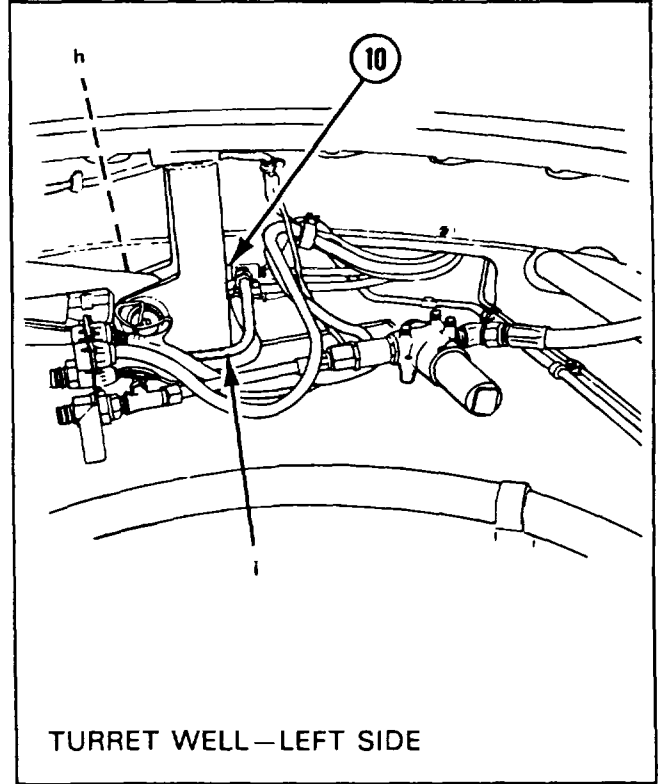
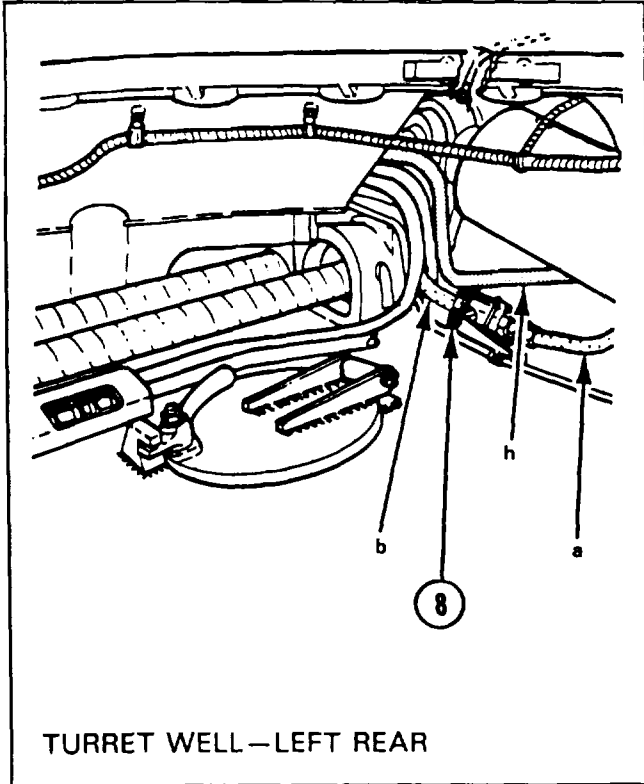
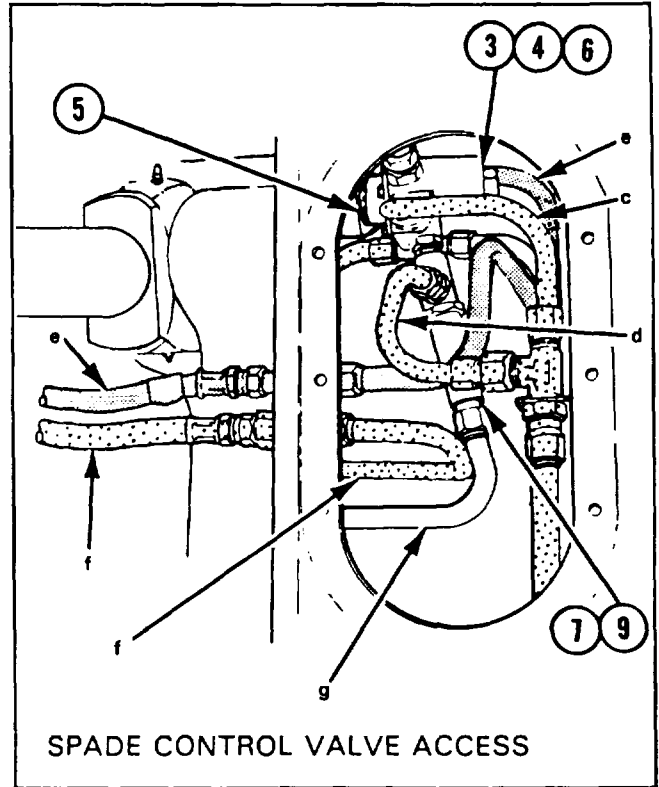
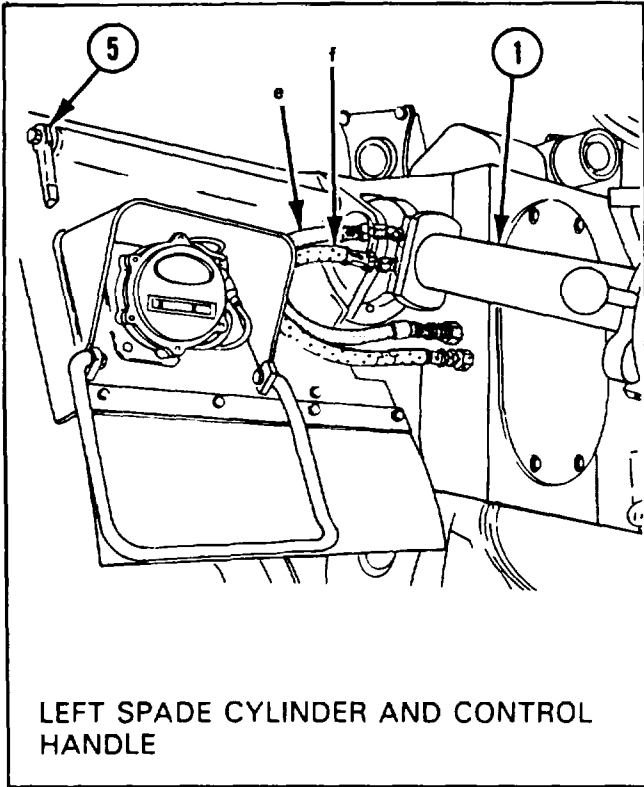
LEGEND

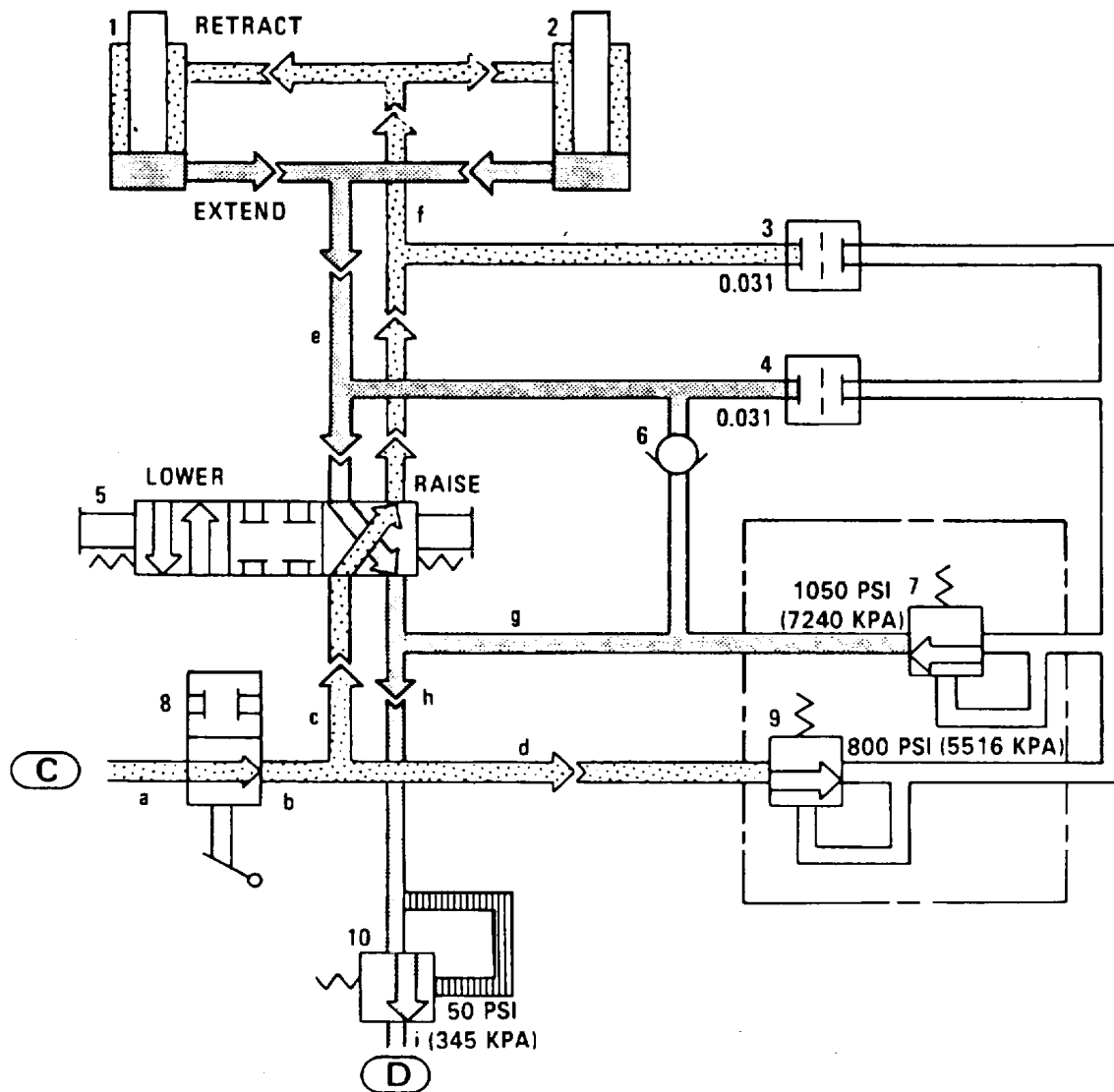
- 1 Left spade cylinder
- 2 Right spade cylinder
- 3 Restrictor
- 4 Restrictor
- 5 Directional control valve
- 6 Check valve
- 7 Pressure reducing valve
- 8 Shutoff valve
- 9 Pressure reducing valve
- 10 Pressure relief valve

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-13. SPADE RAISING.













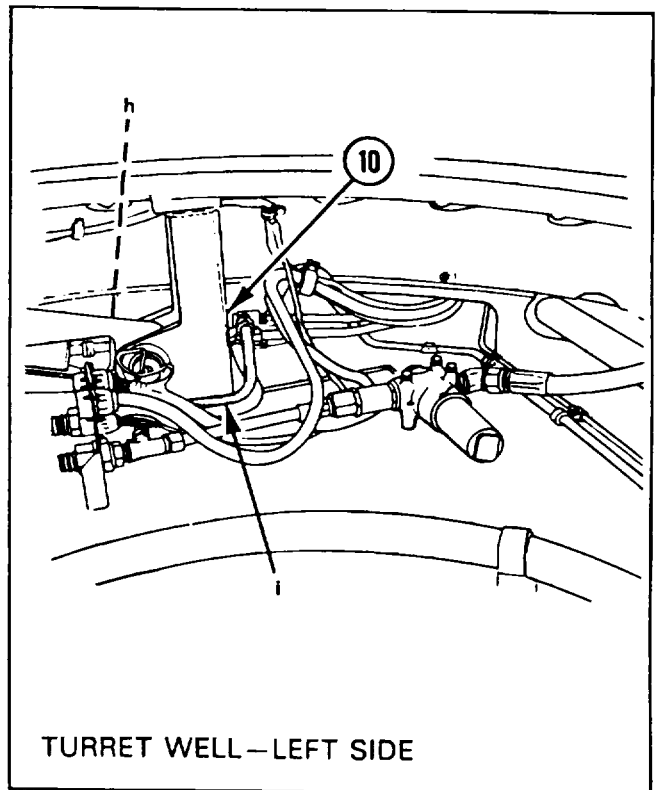
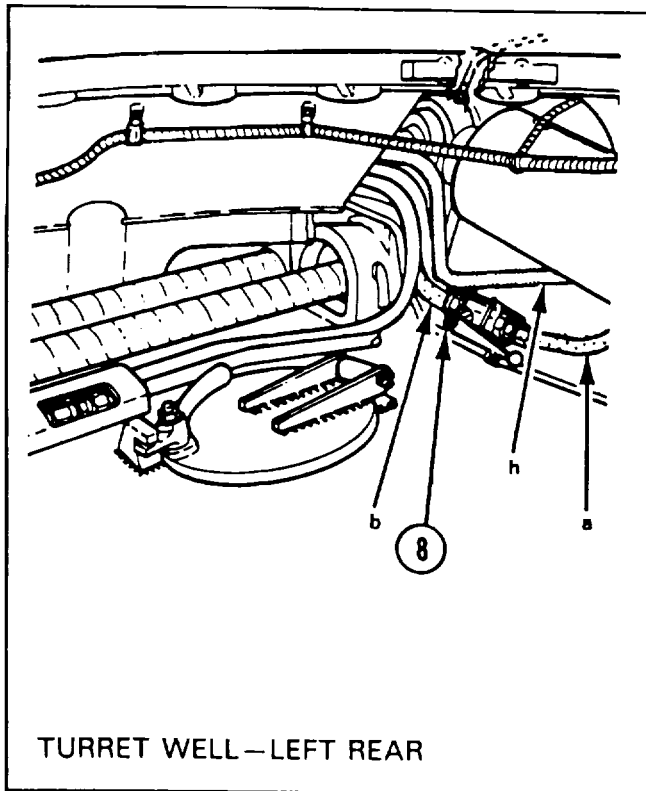
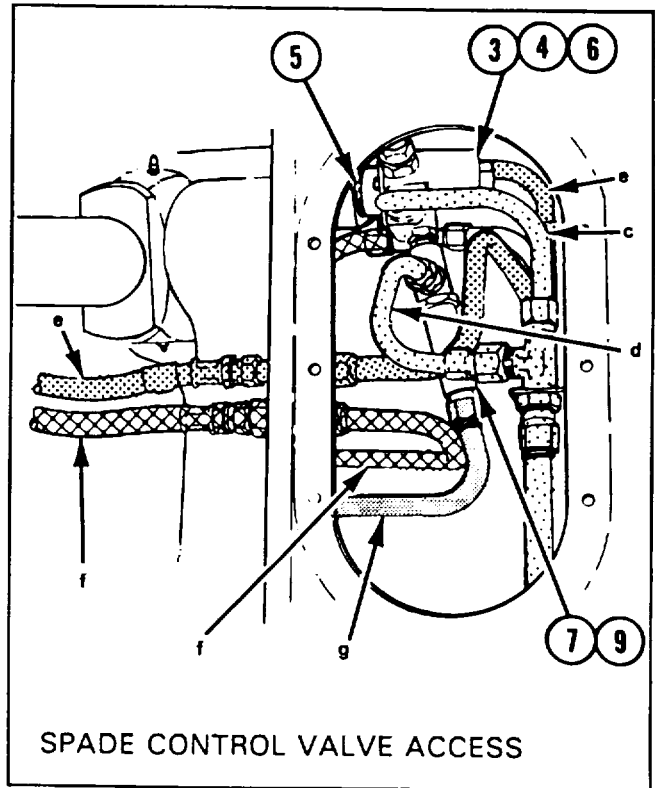
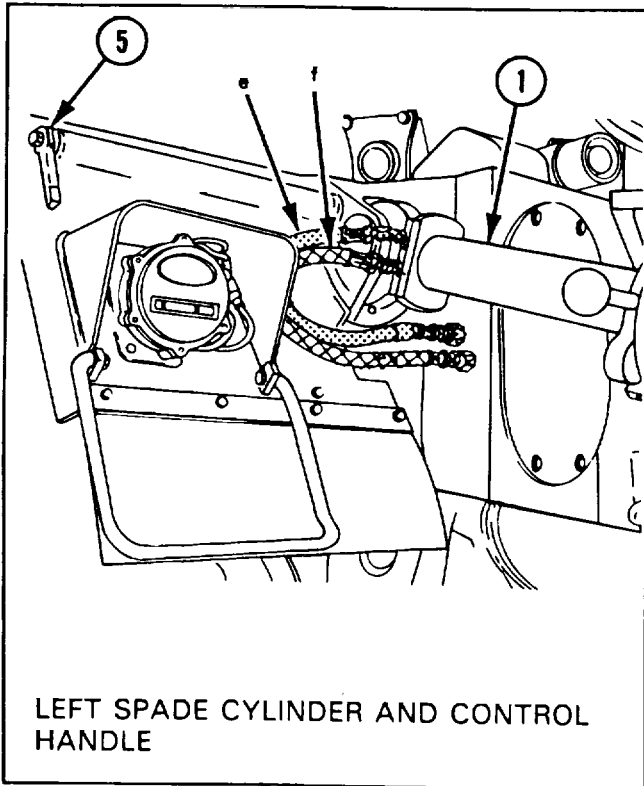
LEGEND

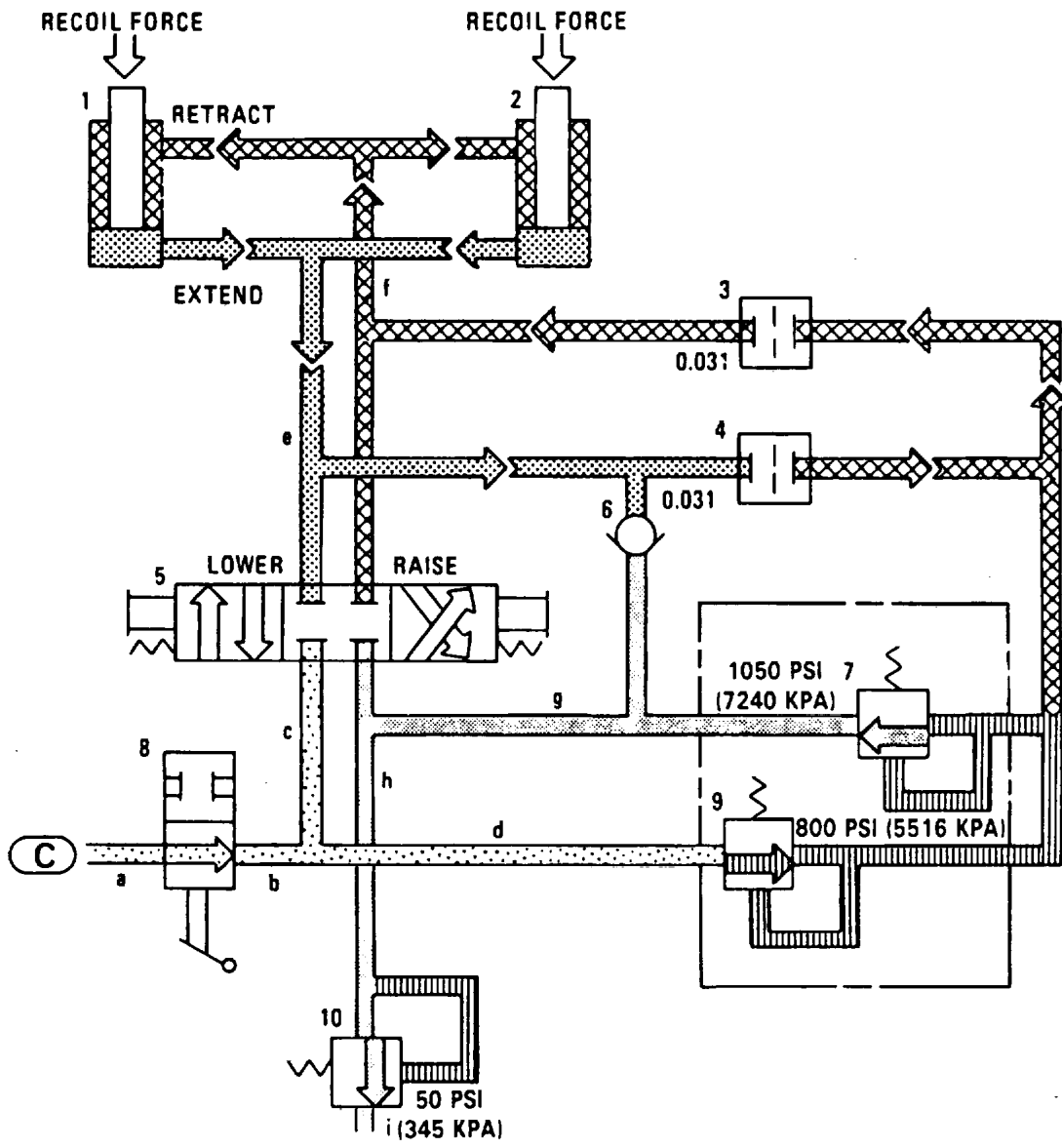
- 1 Left spade cylinder
- 2 Right spade cylinder
- 3 Restrictor
- 4 Restrictor
- 5 Directional control valve
- 6 Check valve
- 7 Pressure relief valve
- 8 Shutoff valve
- 9 Pressure reducing valve
- 10 Pressure relief valve

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-14. SPADE DURING RECOIL.





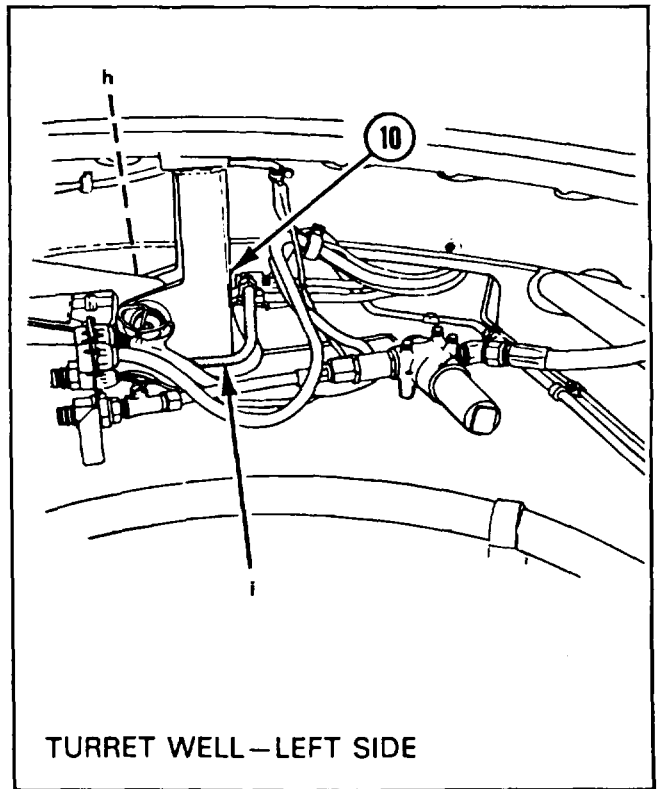
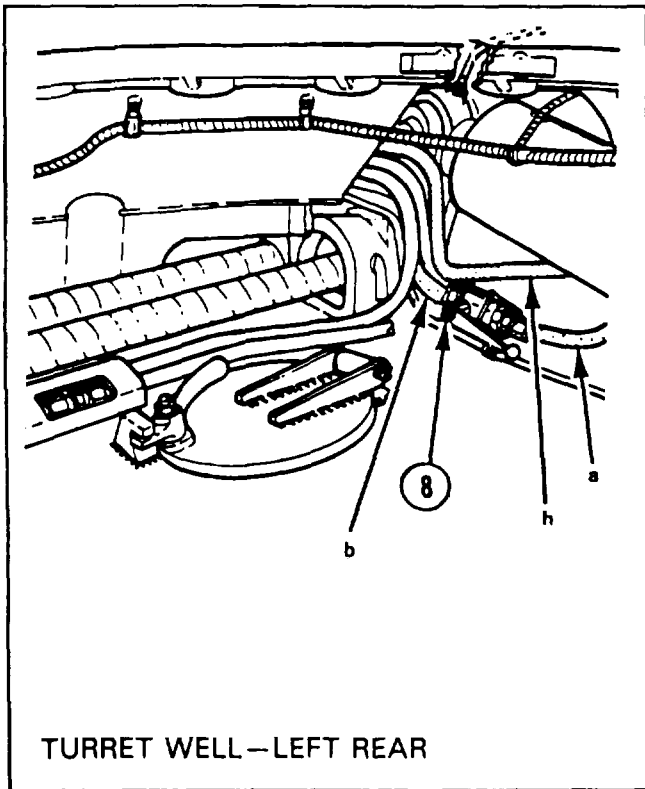
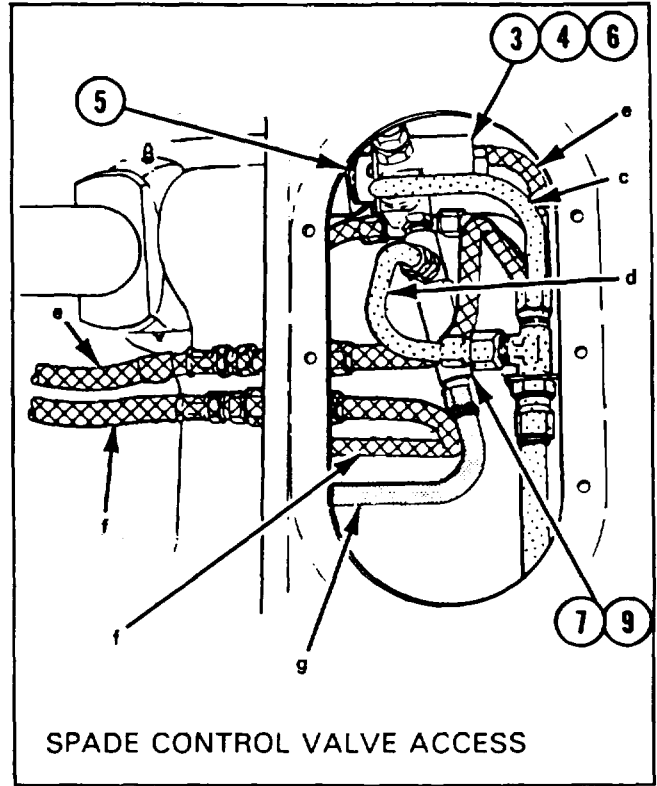
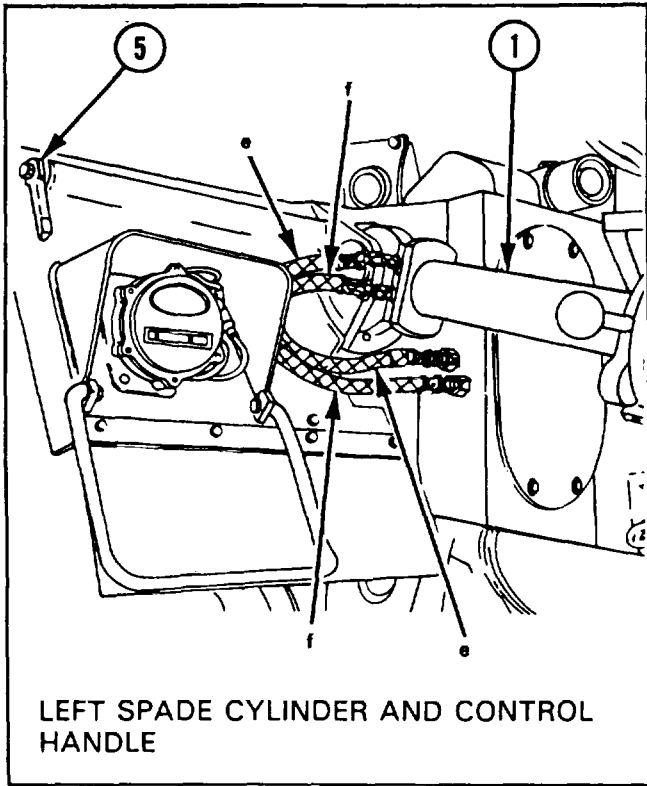
LEGEND

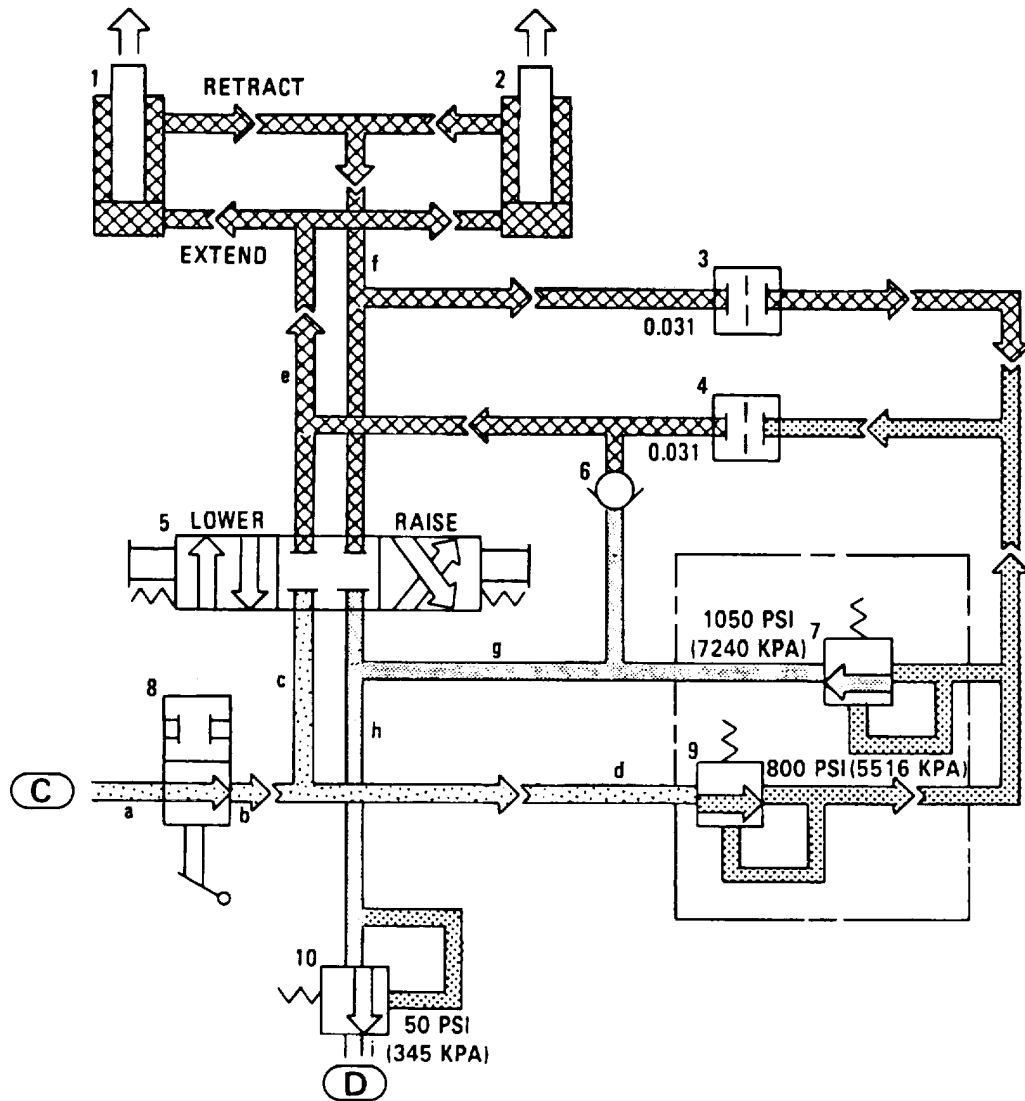
- 1 Left spade cylinder
- 2 Right spade cylinder
- 3 Restrictor
- 4 Restrictor
- 5 Directional control valve
- 6 Check valve
- 7 Pressure relief valve
- 8 Shutoff valve
- 9 Pressure reducing valve
- 10 Pressure relief valve

BAR CODE

- Intensified pressure
- Supply pressure
- Charging pressure
- Reduced pressure
- Pilot pressure
- Metered or blocked flow
- Intake drain
- Blank inactive

F-15. SPADE RESETTING.





LEGEND

- 1 Left spade cylinder
- 2 Right spade cylinder
- 3 Restrictor
- 4 Restrictor
- 5 Directional control valve
- 6 Check valve
- 7 Pressure relief valve
- 8 Shutoff valve
- 9 Pressure reducing valve
- 10 Pressure relief valve

BAR CODE

- Intensified pressure
- Supply pressure
- Charging pressure
- Reduced pressure
- Pilot pressure
- Metered or blocked flow
- Intake drain
- Blank inactive

F-16. CANNON RECOIL HYDRAULIC SUBSYSTEM.

Functional Description. The cannon recoil hydraulic subsystem slows and cushions the cannon when it is fired, retracts the cannon for traveling or maintenance, and returns the cannon to battery for firing.

During cannon firing, the directional control valve handle is in the NORMAL AND HOLD position. When fired, the cannon recoils. Hydraulic fluid in recoil cylinder (4) is forced from one side of the piston, through a restrictive opening in the piston, to the other side. The hydraulic fluid in counter-recoil cylinder (5) is forced into recuperator cylinder (7), where the fluid displaces high-pressure nitrogen gas.

After the recoil energy has been absorbed the high-pressure nitrogen gas forces the hydraulic fluid back into counter-recoil cylinder (5), which returns the cannon to the battery position.

When the control valve handle is held in RETRACT position, hydraulic pressure at

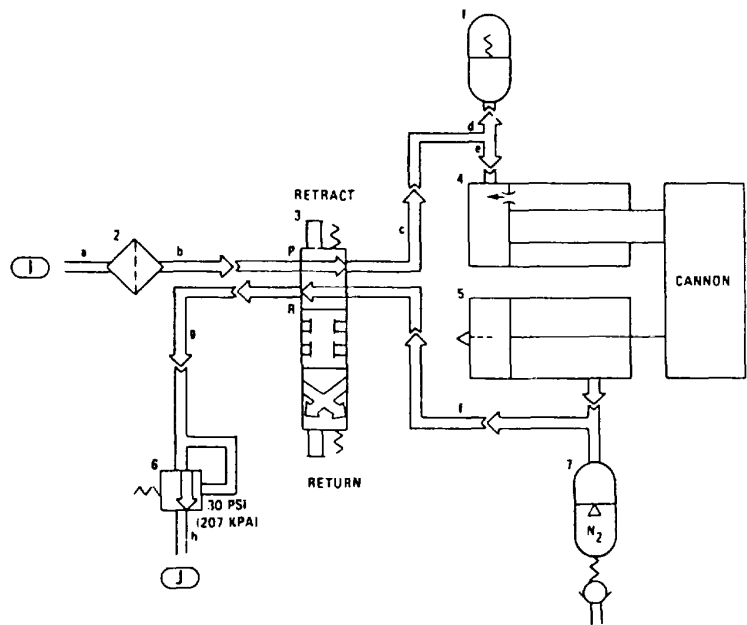
about 2400 psi (16,548 kPa) flows through control valve (3) to replenisher (1) and recoil cylinder (4). The piston area exposed to hydraulic pressure in the recoil cylinder is larger on the retract side. This produces a greater force in the retract direction. Hydraulic fluid in counterrecoil cylinder (5) and recuperator cylinder (7) is forced through control valve (3) and relief valve (6) to the hydraulic reservoir.

When the control valve handle is held in RETURN position, hydraulic pressure at about 2400 psi (16,548 kPa) flows through control valve (3) to counterrecoil cylinder (5) and recuperator cylinder (7), forcing the cannon into the battery position. Hydraulic fluid is forced from replenisher (1) through control valve (3) and relief valve (6) to the hydraulic reservoir. Relief valve (6) keeps the hydraulic pressure in replenisher (1) at about 30 psi (207 kPa). This allows the replenisher to adjust for minor fluid losses and for fluid expansion and contraction caused by temperature changes.

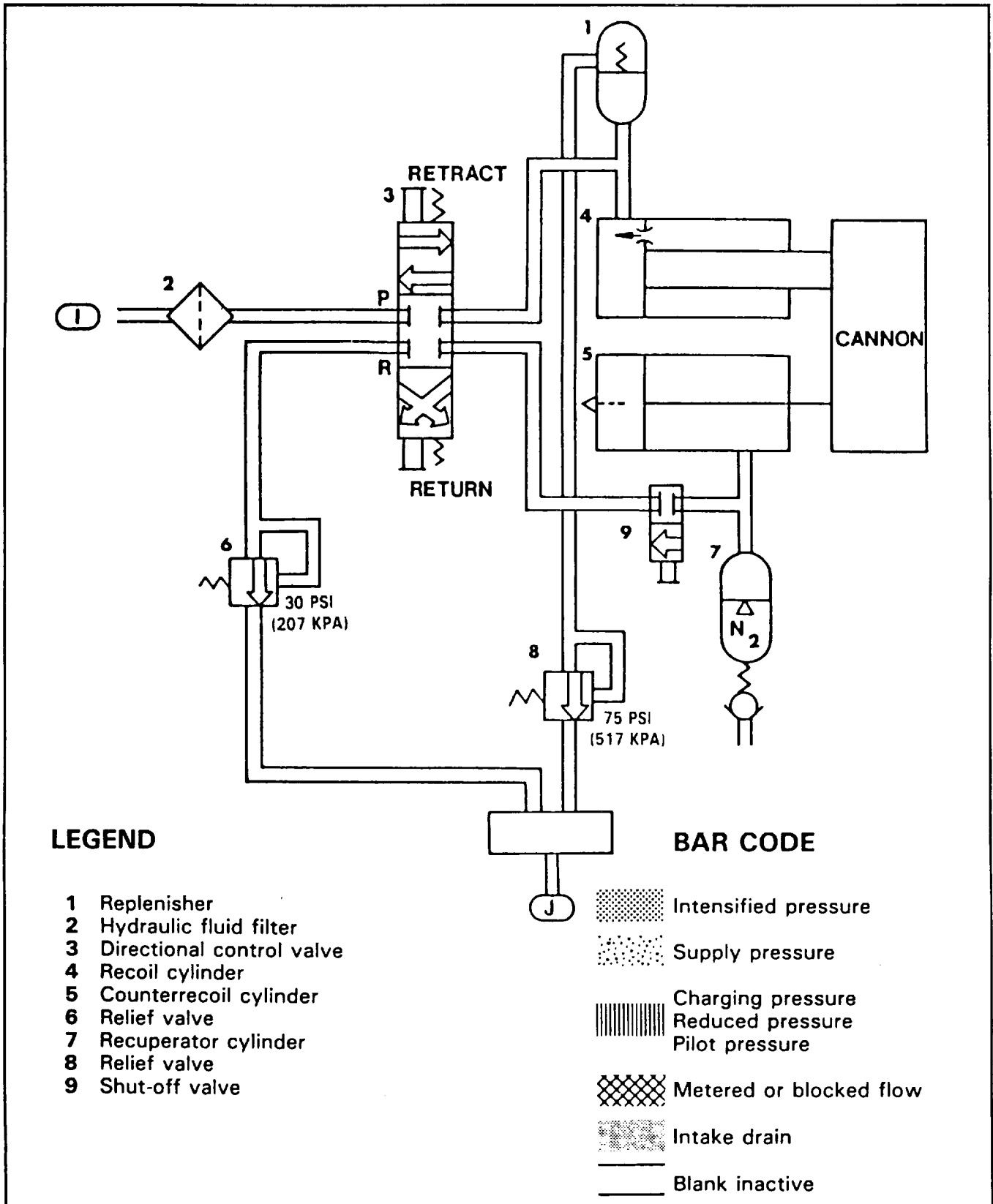
F-17. CANNON RECOIL HYDRAULIC SUBSYSTEM (UNMODIFIED WEAPON).

LEGEND

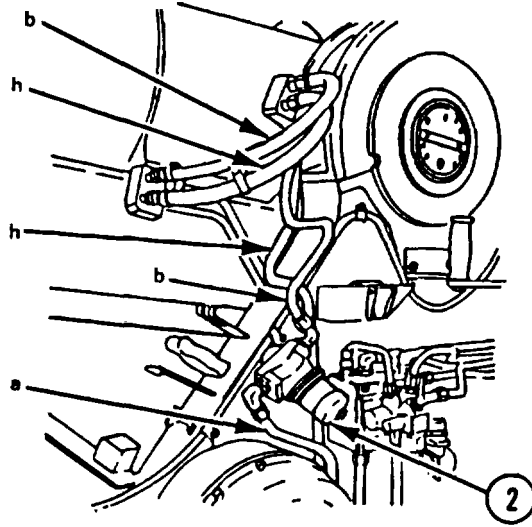
- 1 Replenisher
- 2 Hydraulic fluid filter
- 3 Directional control valve
- 4 Recoil cylinder
- 5 Counterrecoil cylinder
- 6 Relief valve
- 7 Recuperator cylinder



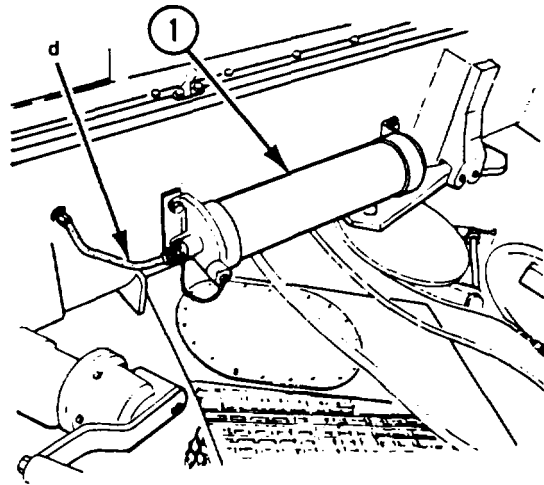
F-18. CANNON RECOIL HYDRAULIC SUBSYSTEM (MODIFIED WEAPON).



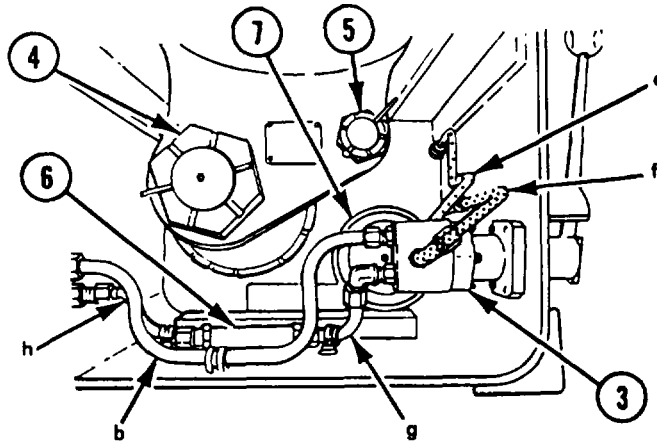
F-19. CANNON-RECOIL (UNMODIFIED WEAPON).



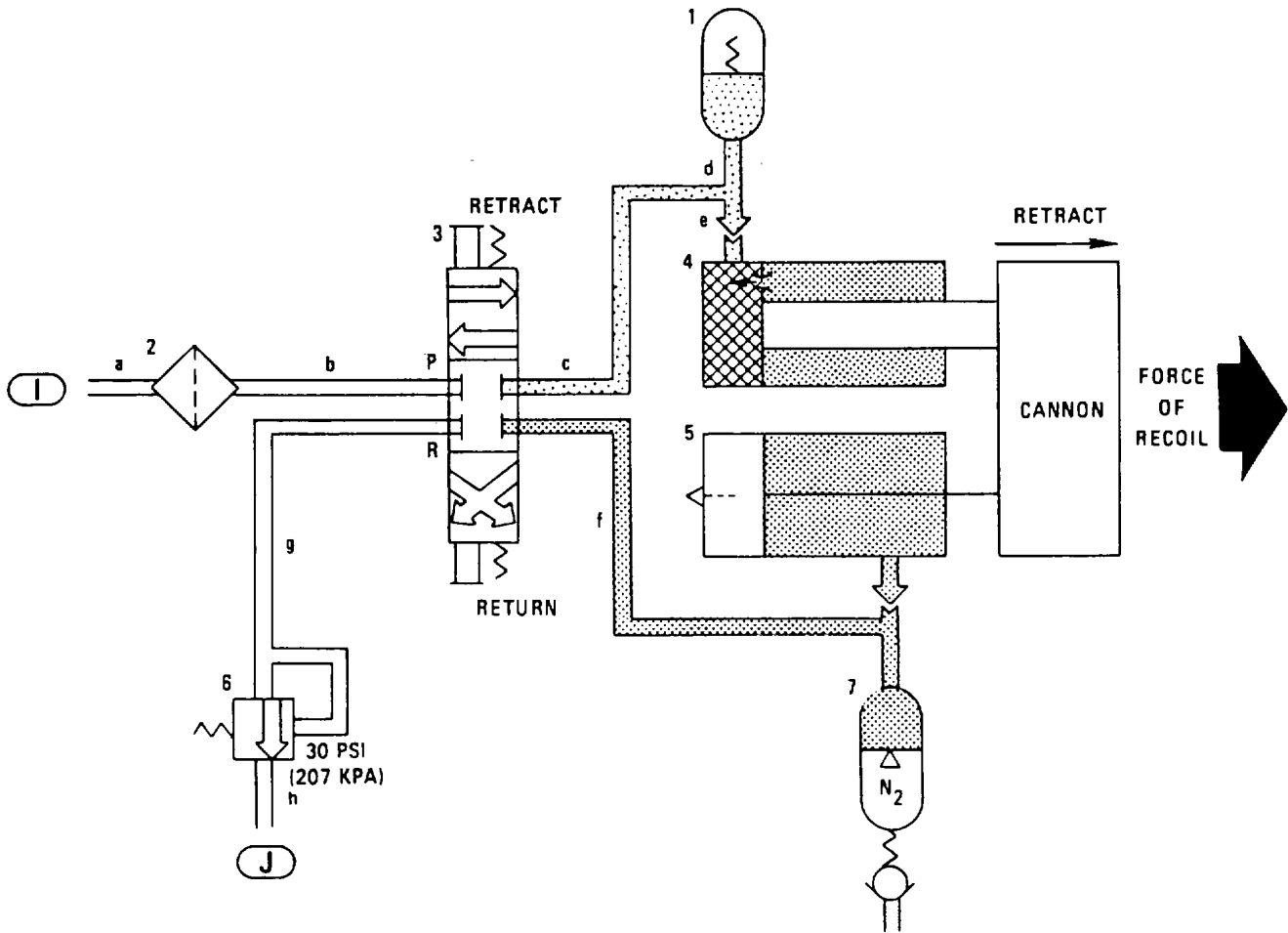
GUN MOUNT-LEFT SIDE



GUN MOUNT-RIGHT SIDE



GUN MOUNT-REAR VIEW



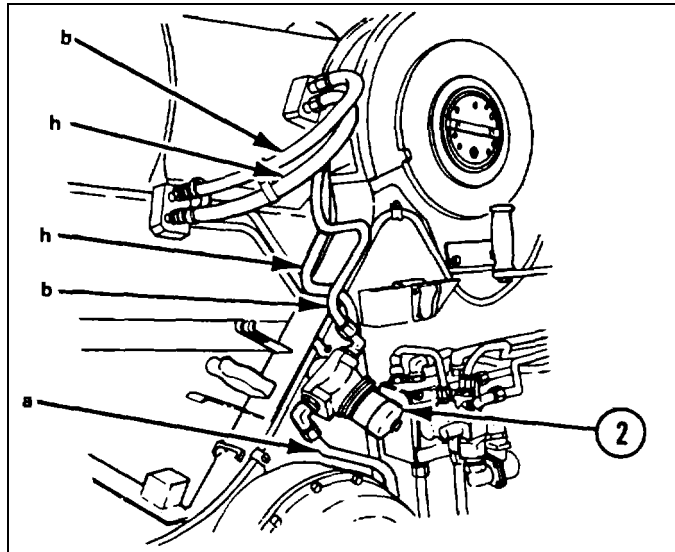
LEGEND

- 1 Replenisher
- 2 Hydraulic fluid filter
- 3 Directional control valve
- 4 Recoil cylinder
- 5 Counterrecoil cylinder
- 6 Relief valve
- 7 Recuperator cylinder

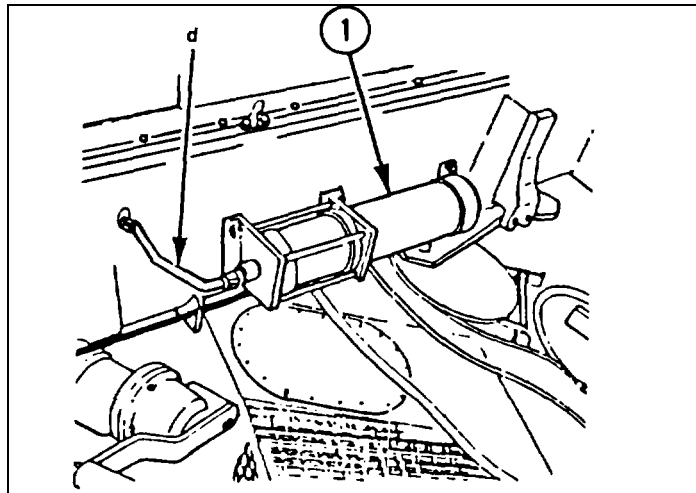
BAR CODE

- Intensified pressure
- Supply pressure
- Charging pressure
- Reduced pressure
- Pilot pressure
- Metered or blocked flow
- Intake drain
- Blank inactive

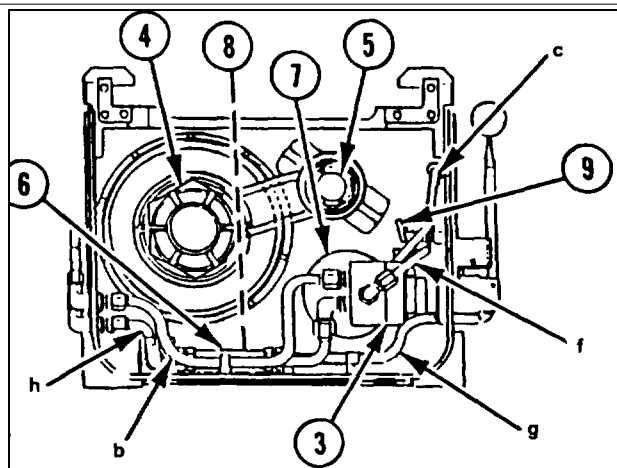
F-20. CANNON-RECOIL (MODIFIED WEAPON).



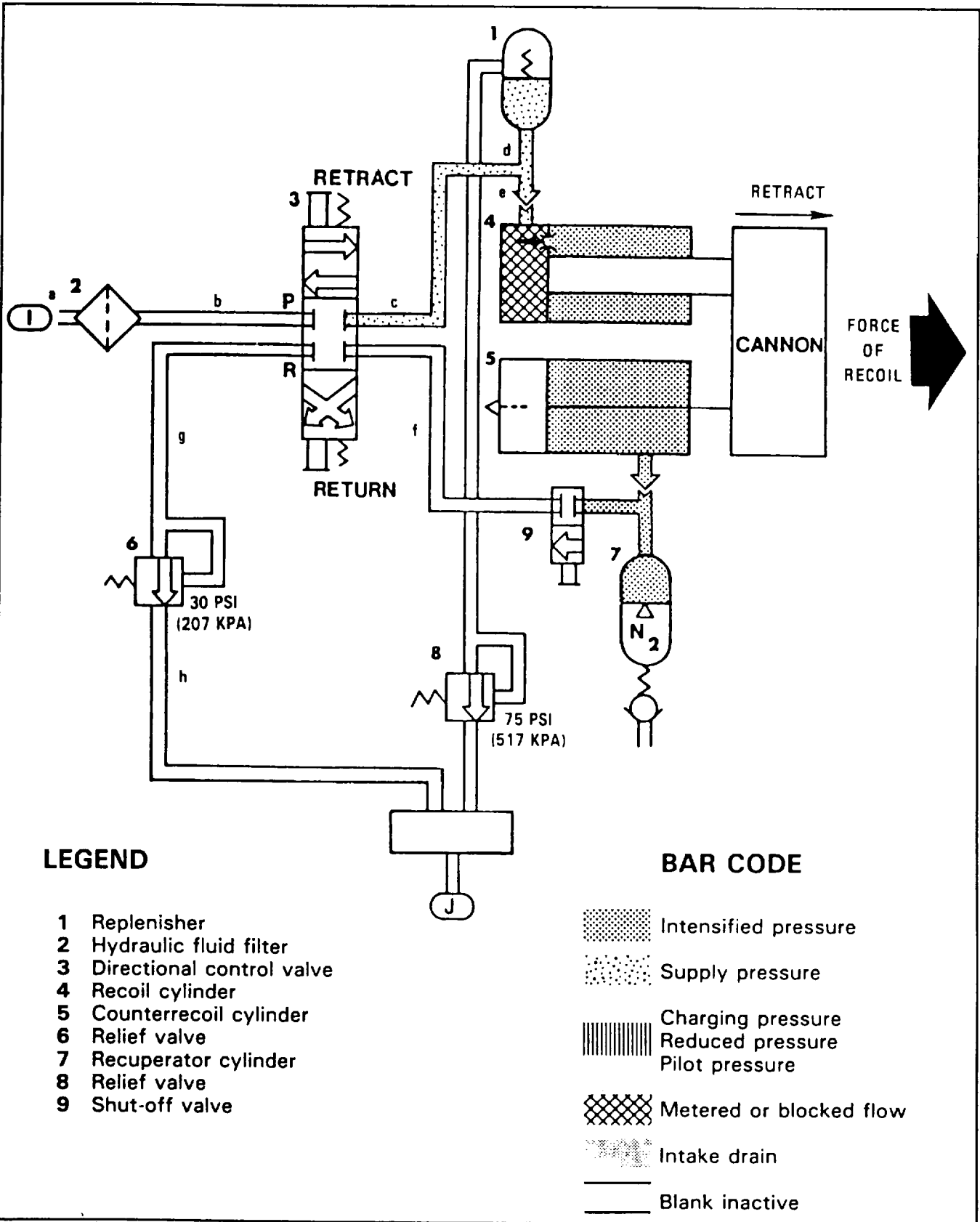
GUN MOUNT-LEFT SIDE



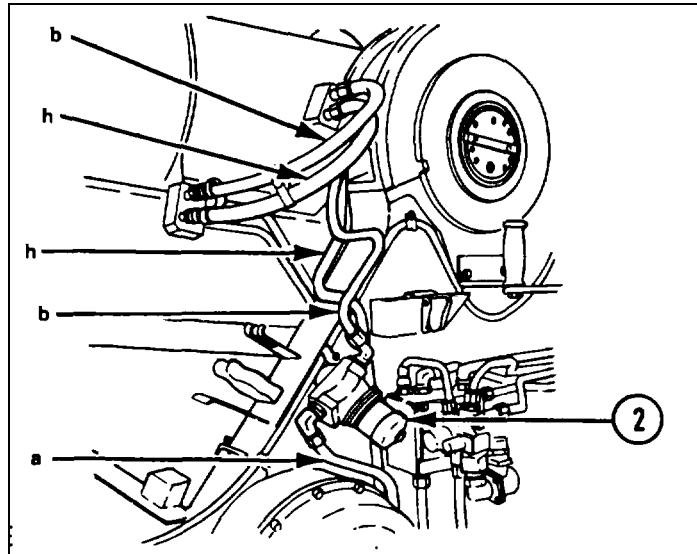
GUN MOUNT-RIGHT SIDE



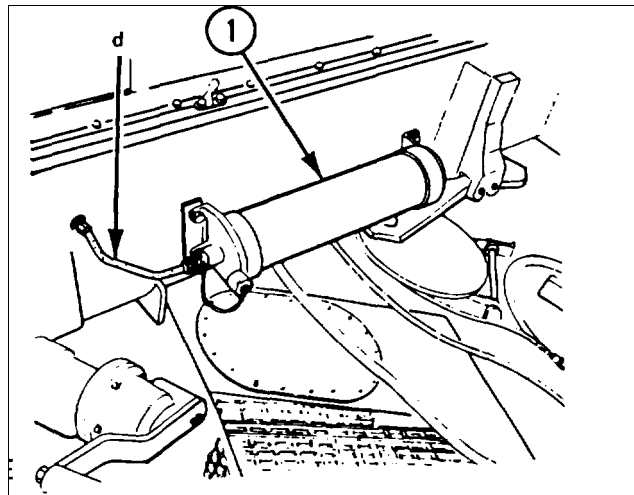
GUN MOUNT-REAR VIEW



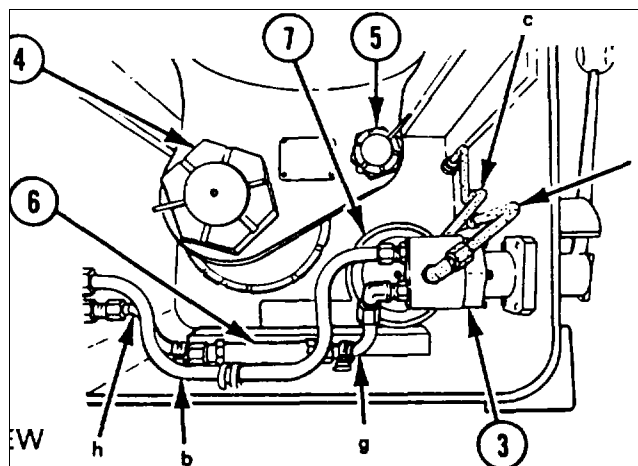
F-21. CANNON-RETURN AFTER RECOIL (UNMODIFIED WEAPON).



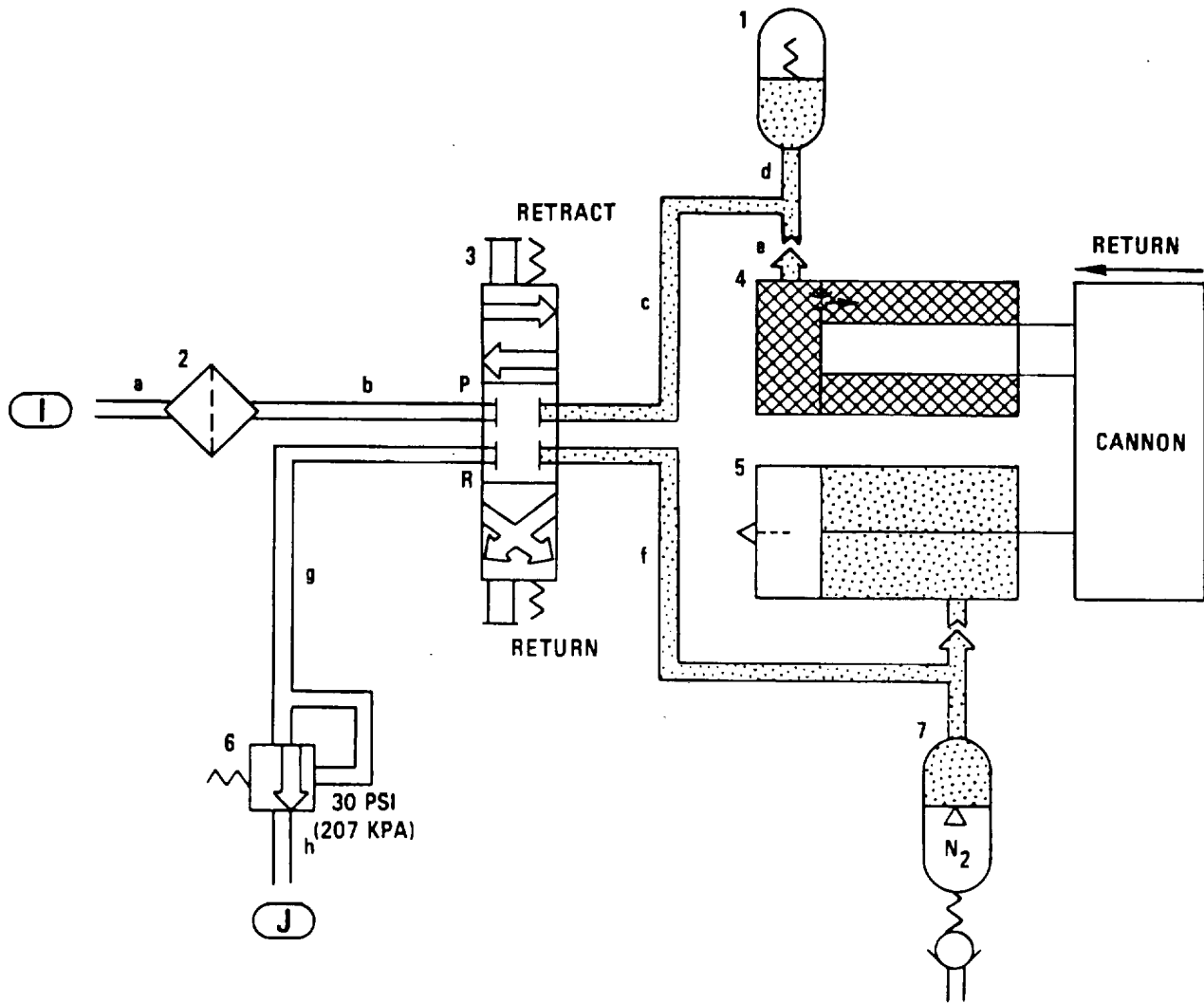
GUN MOUNT-LEFT SIDE



GUN MOUNT-RIGHT SIDE











GUN MOUNT-REAR VIEW



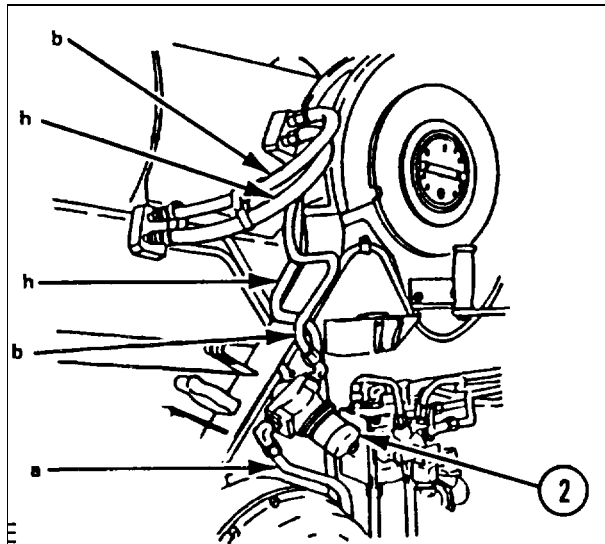
LEGEND

- 1 Replenisher
- 2 Hydraulic fluid filter
- 3 Directional control valve
- 4 Recoil cylinder
- 5 Counterrecoil cylinder
- 6 Relief valve
- 7 Recuperator cylinder

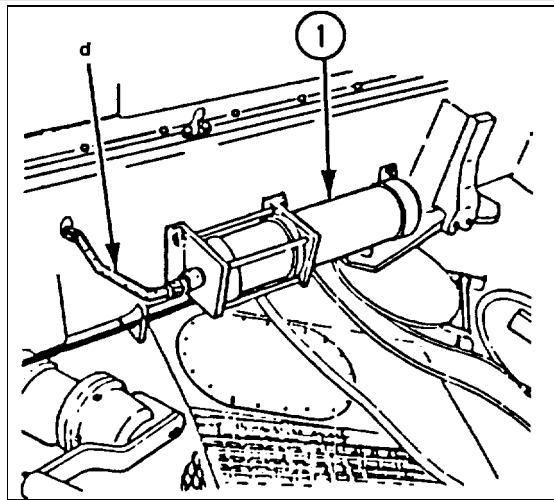
BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

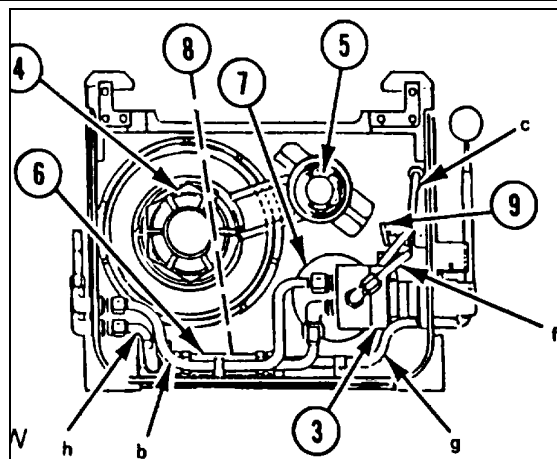
F-22. CANNON-RETURN AFTER RECOIL (MODIFIED WEAPON).



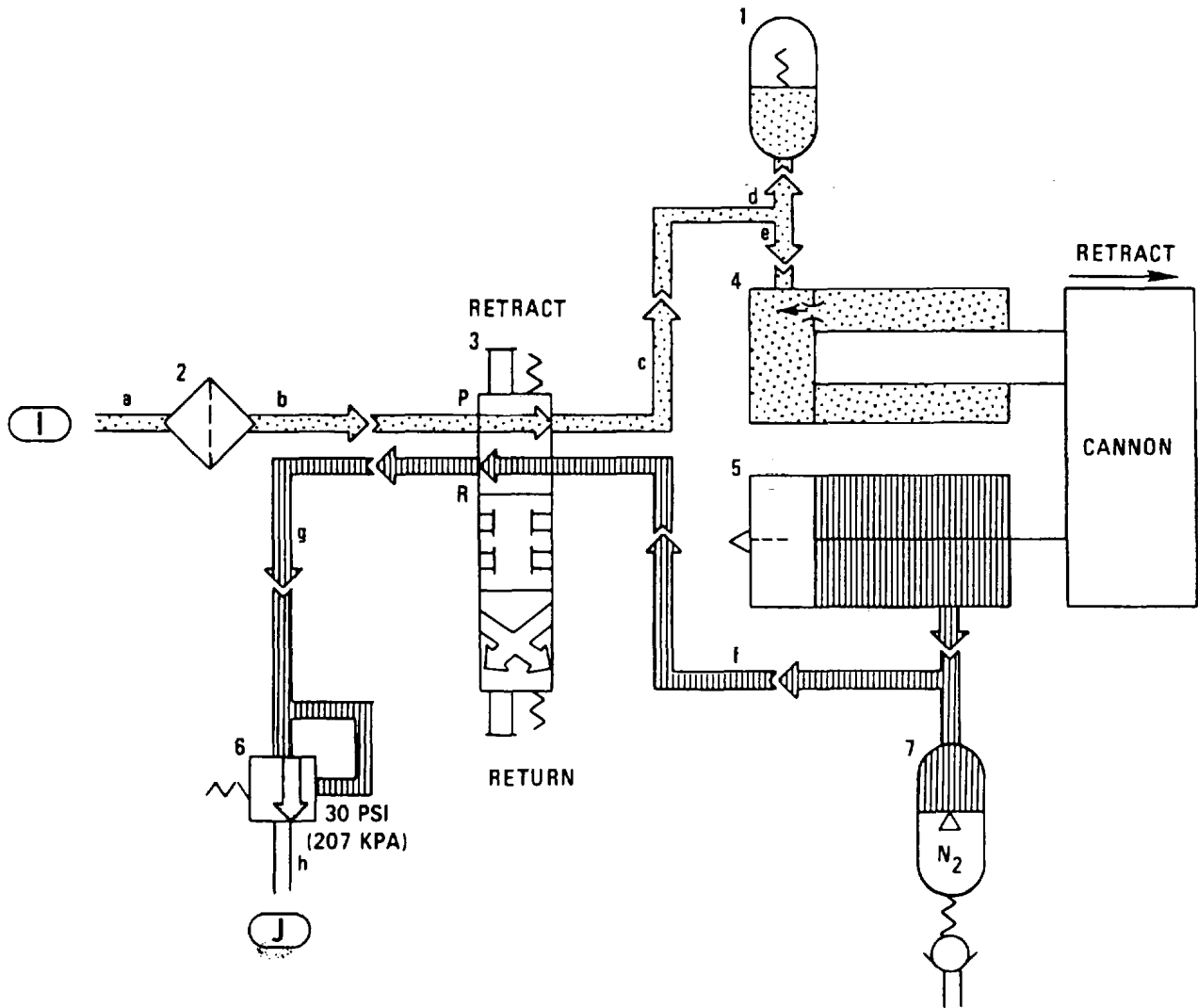
GUN MOUNT-LEFT SIDE



GUN MOUNT-RIGHT SIDE











GUN MOUNT-REAR VIEW



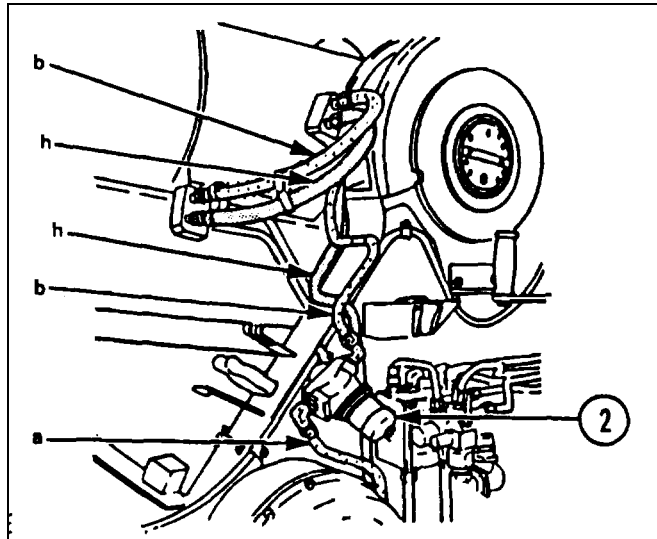
LEGEND

- 1 Replenisher
- 2 Hydraulic fluid filter
- 3 Directional control valve
- 4 Recoil cylinder
- 5 Counterrecoil cylinder
- 6 Relief valve
- 7 Recuperator cylinder

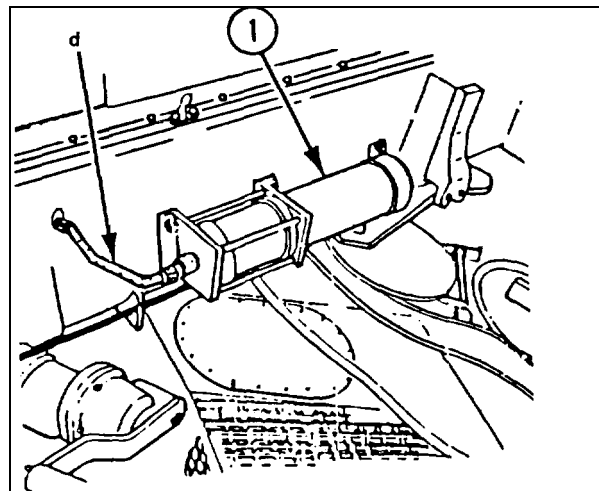
BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

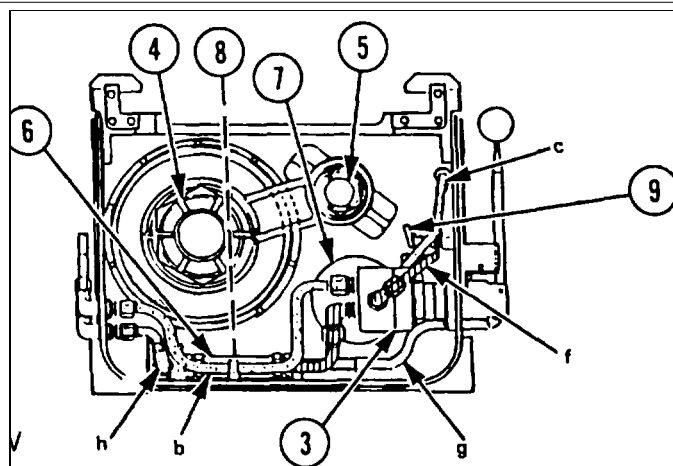
F-23. CANNON-RETRACTING (UNMODIFIED WEAPON).



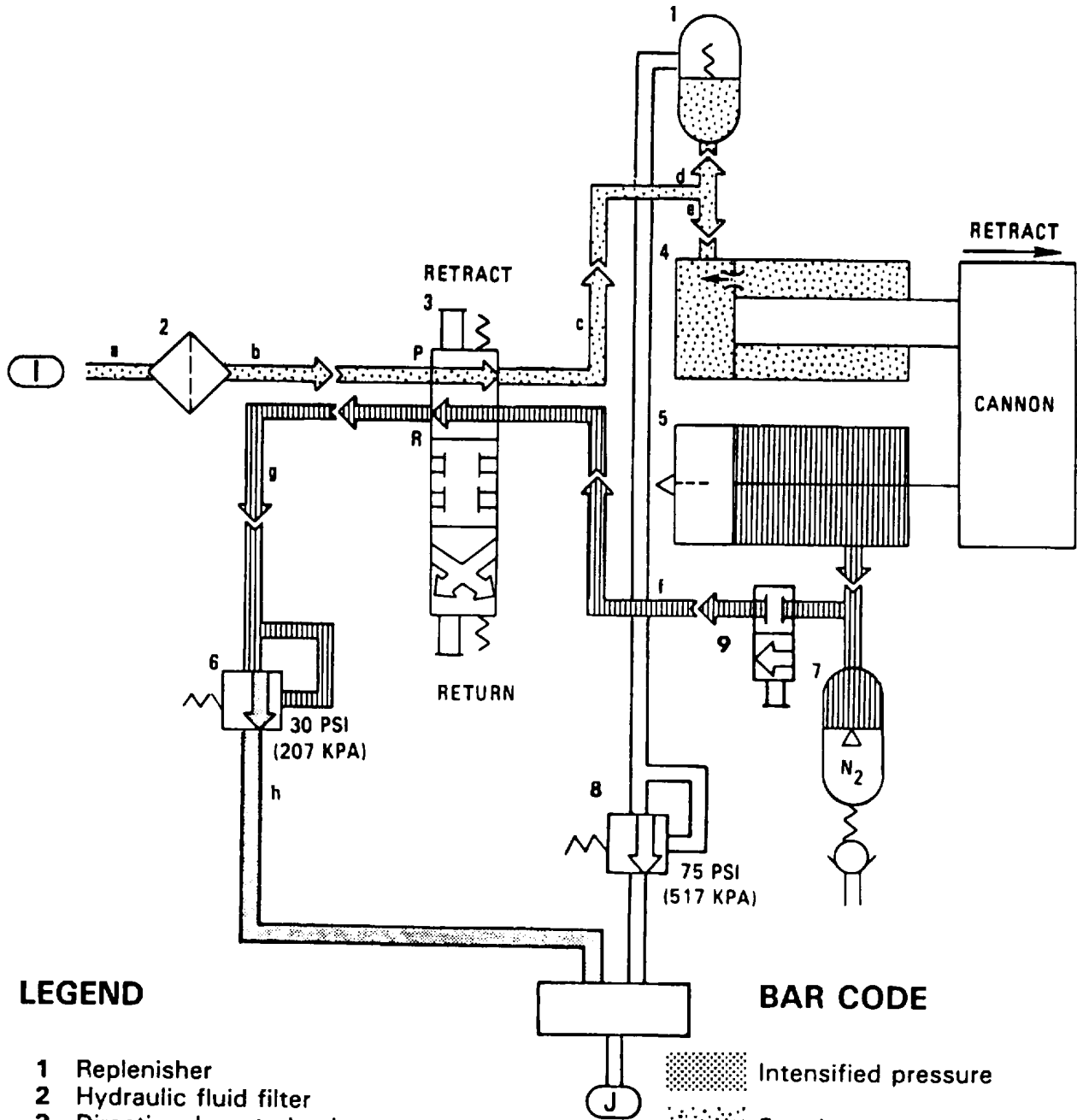
GUN MOUNT-LEFT SIDE



GUN MOUNT-RIGHT SIDE



GUN MOUNT-REAR VIEW



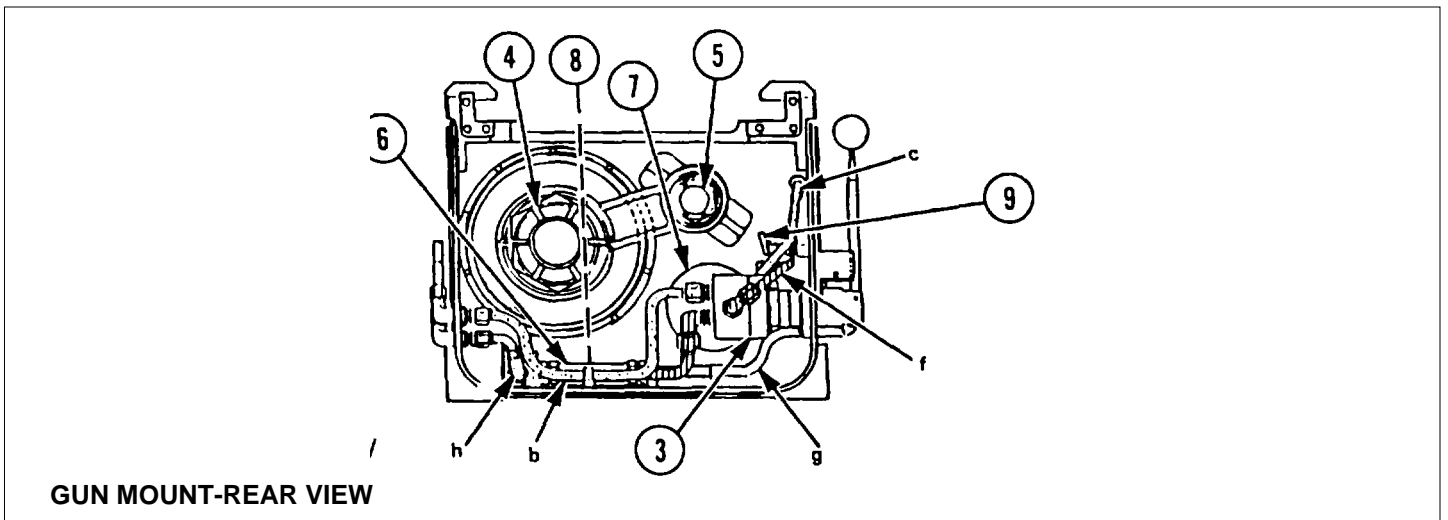
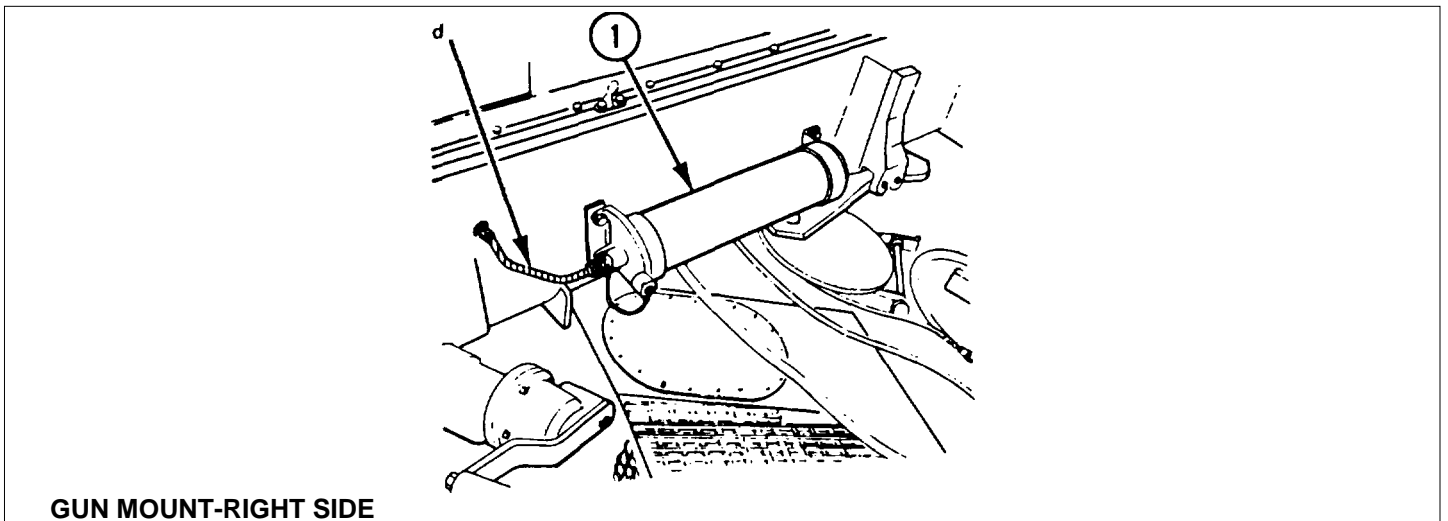
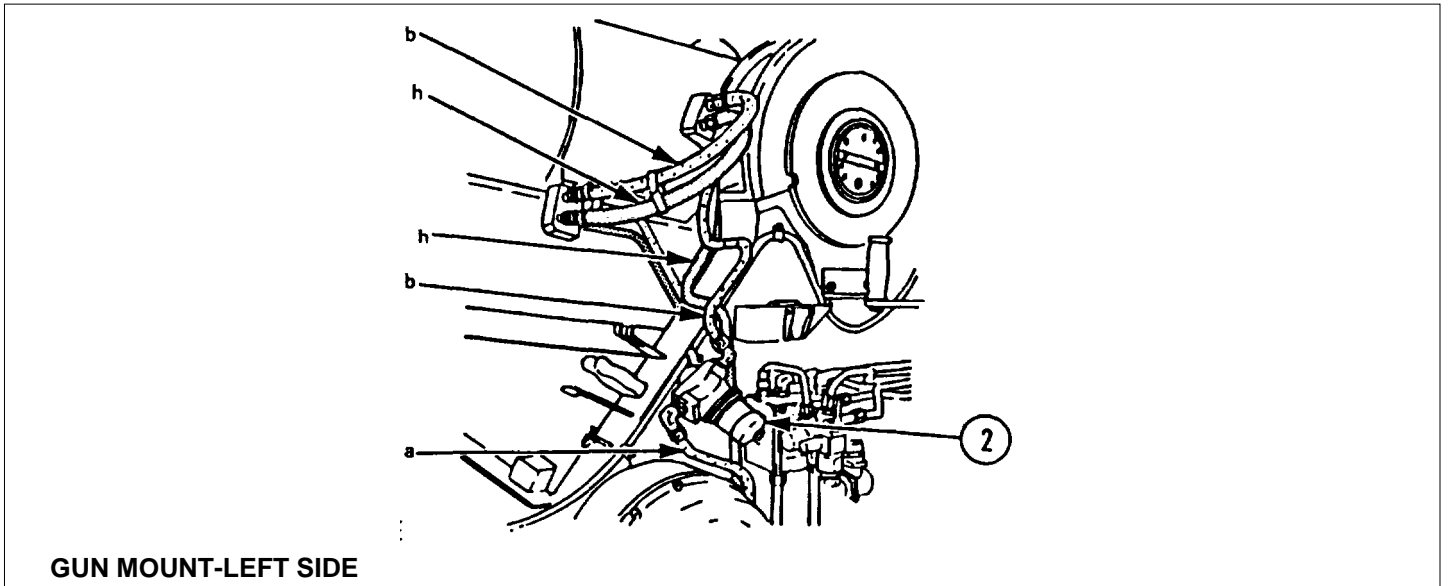
LEGEND

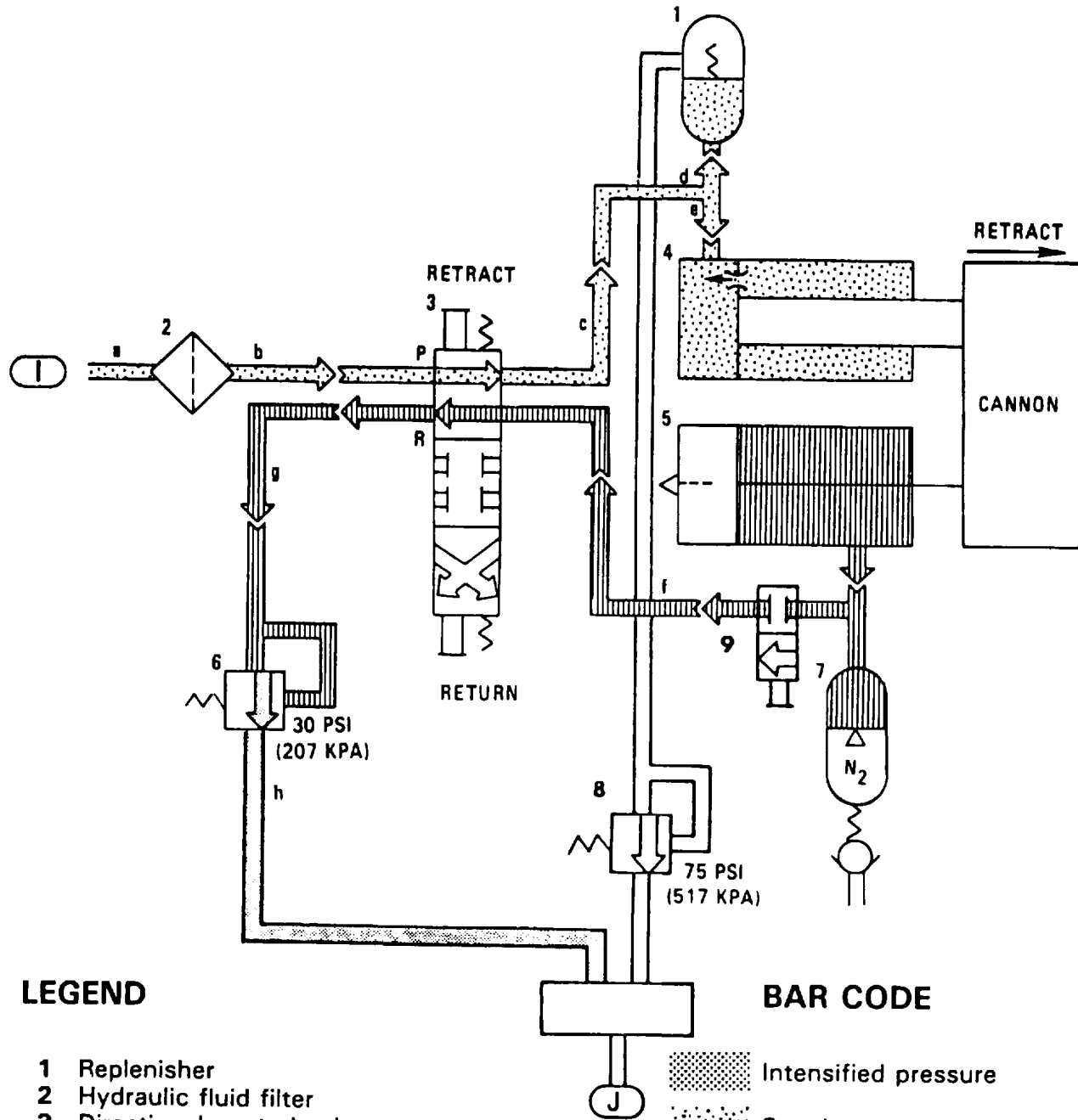
- 1 Replenisher
- 2 Hydraulic fluid filter
- 3 Directional control valve
- 4 Recoil cylinder
- 5 Counterrecoil cylinder
- 6 Relief valve
- 7 Recuperator cylinder
- 8 Relief valve
- 9 Shut-off valve

BAR CODE

- Intensified pressure
- Supply pressure
- Charging pressure
- Reduced pressure
- Pilot pressure
- Metered or blocked flow
- Intake drain
- Blank inactive

F-24. CANNON-RETRACTING (MODIFIED WEAPON).





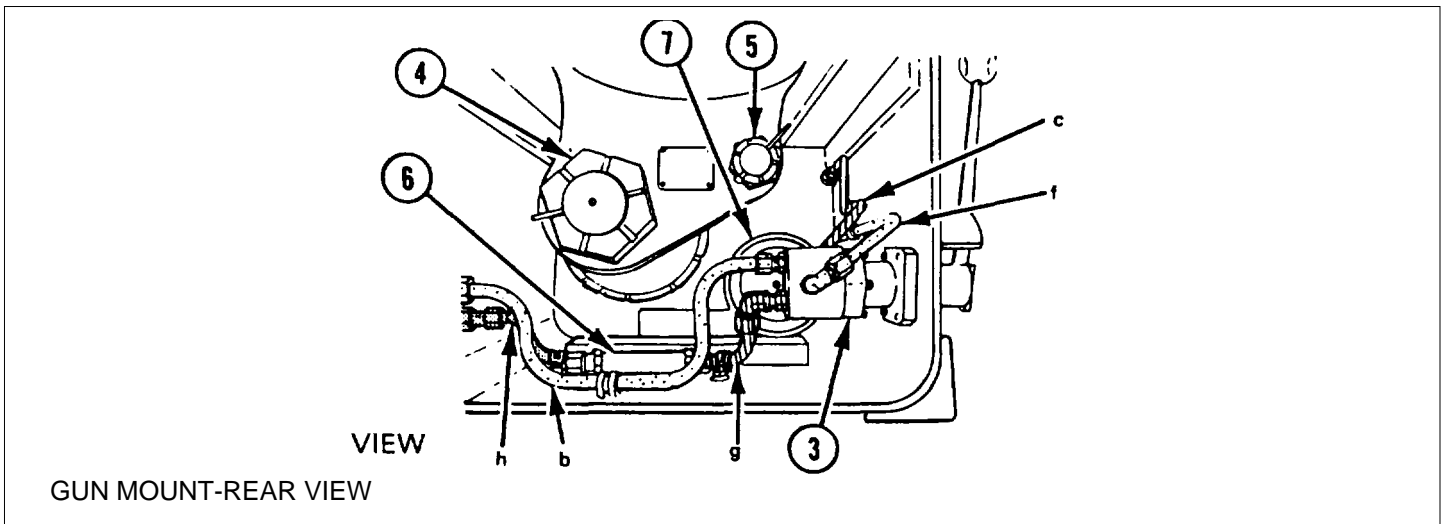
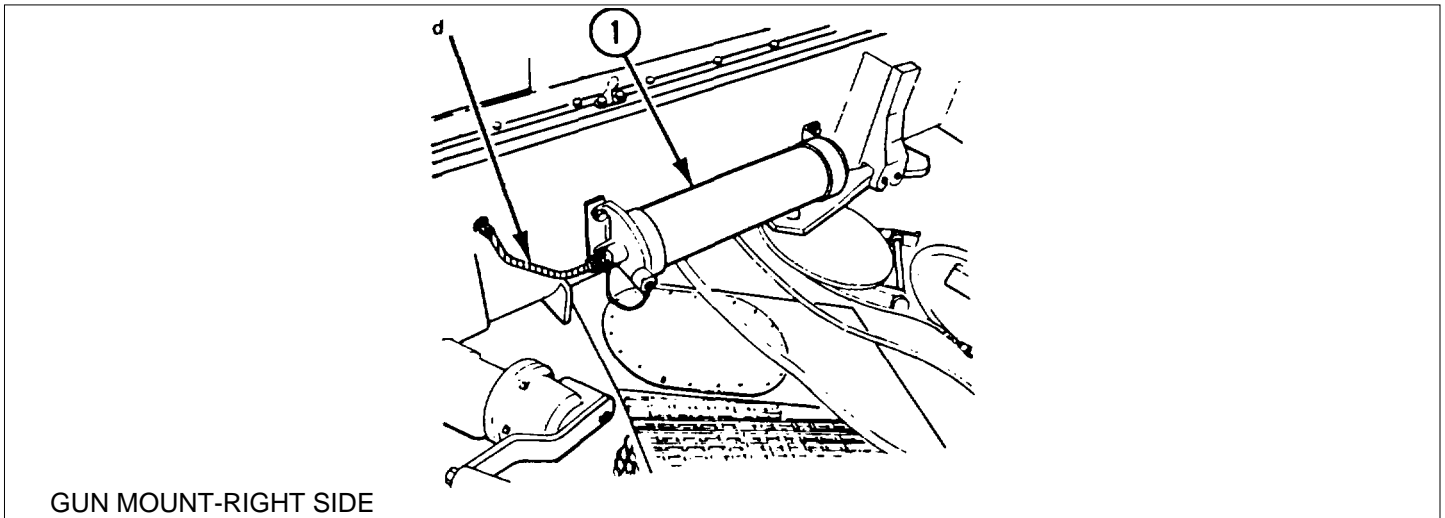
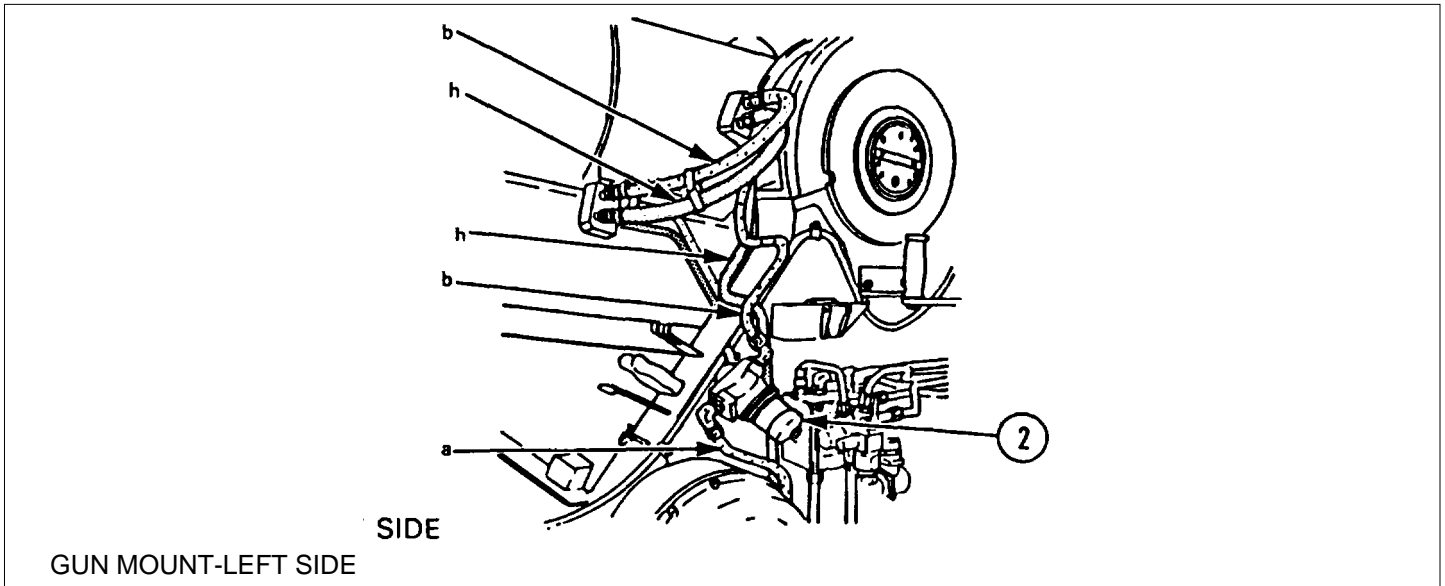
LEGEND

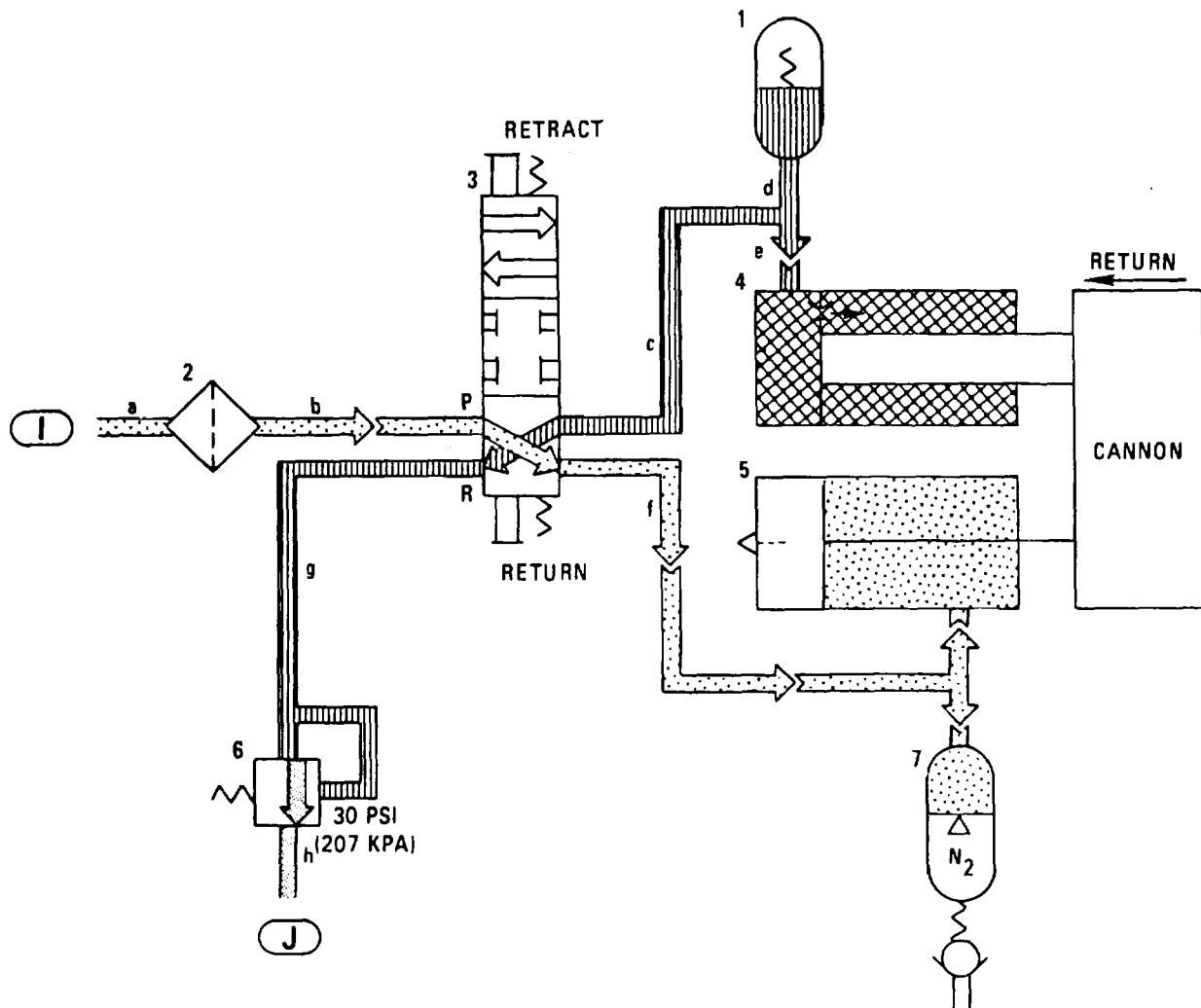
- 1 Replenisher
- 2 Hydraulic fluid filter
- 3 Directional control valve
- 4 Recoil cylinder
- 5 Counterrecoil cylinder
- 6 Relief valve
- 7 Recuperator cylinder
- 8 Relief valve
- 9 Shut-off valve

BAR CODE

- Intensified pressure
- Supply pressure
- Charging pressure
- Reduced pressure
- Pilot pressure
- Metered or blocked flow
- Intake drain
- Blank inactive

F-25. CANNON-RETURN (TO BATTERY) (UNMODIFIED WEAPON).













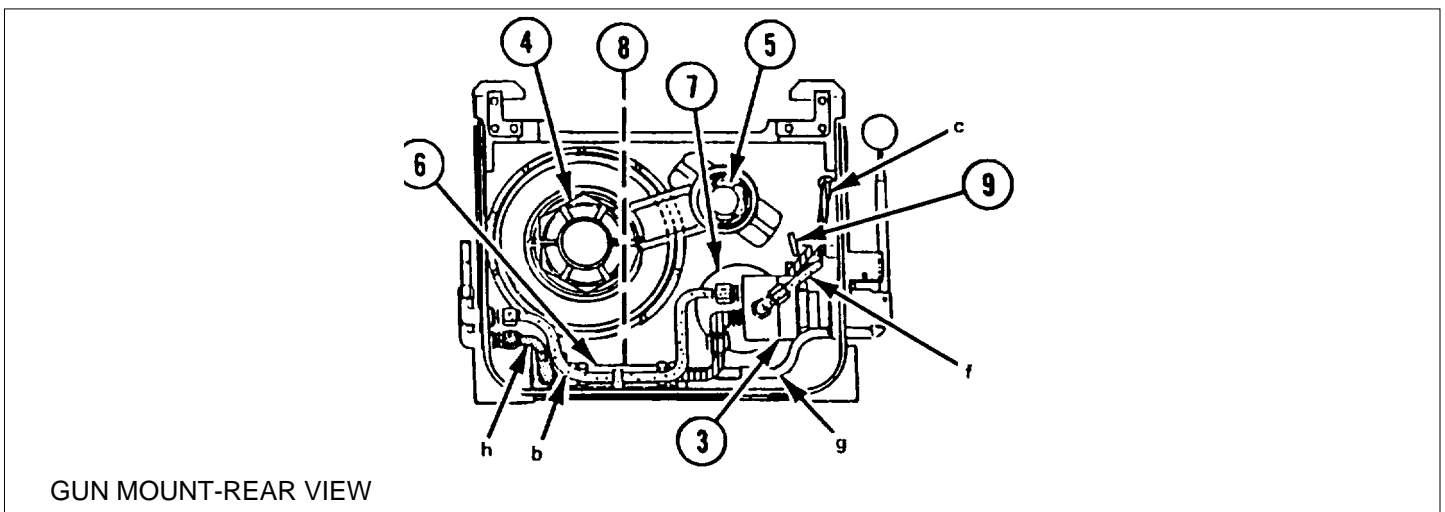
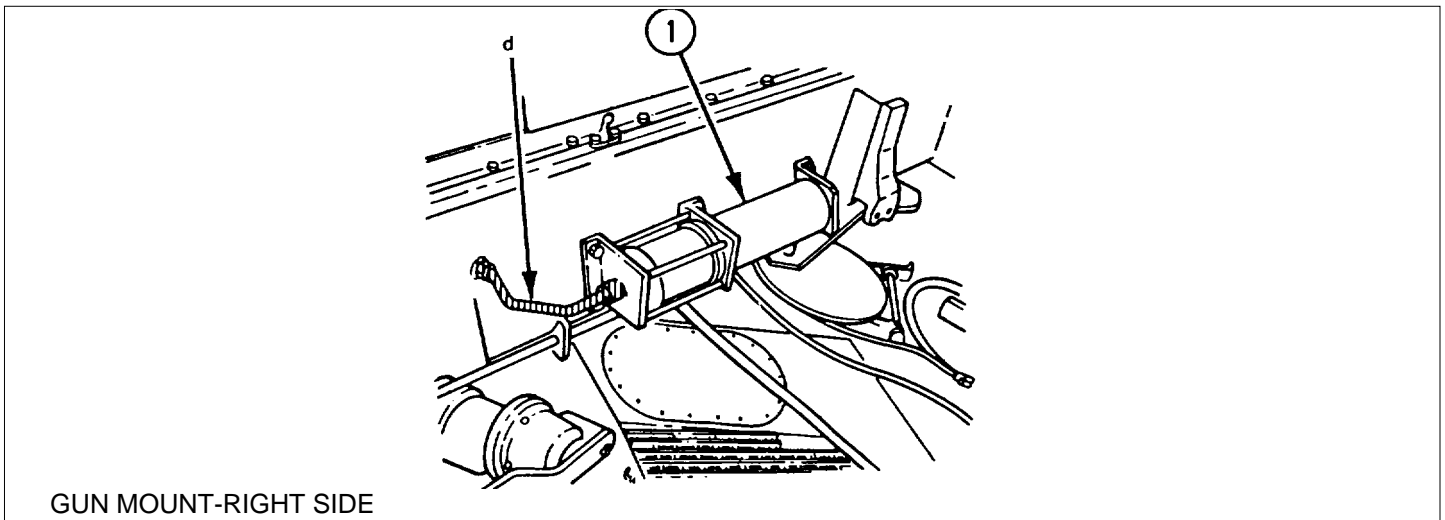
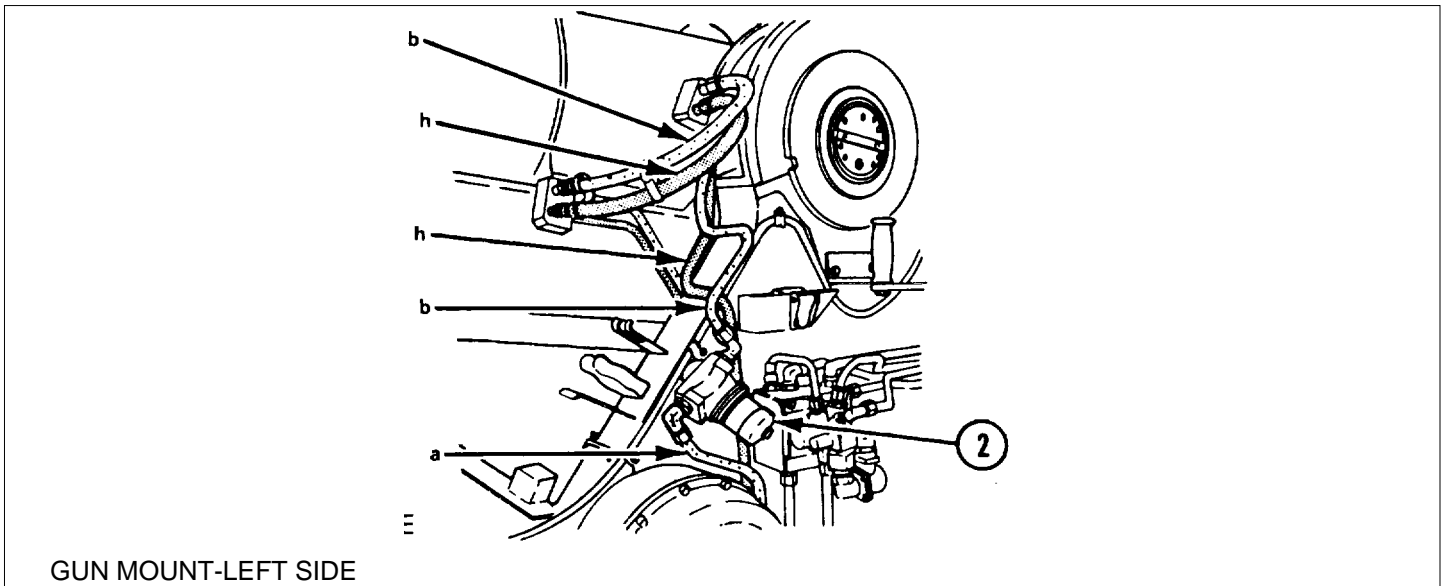
LEGEND

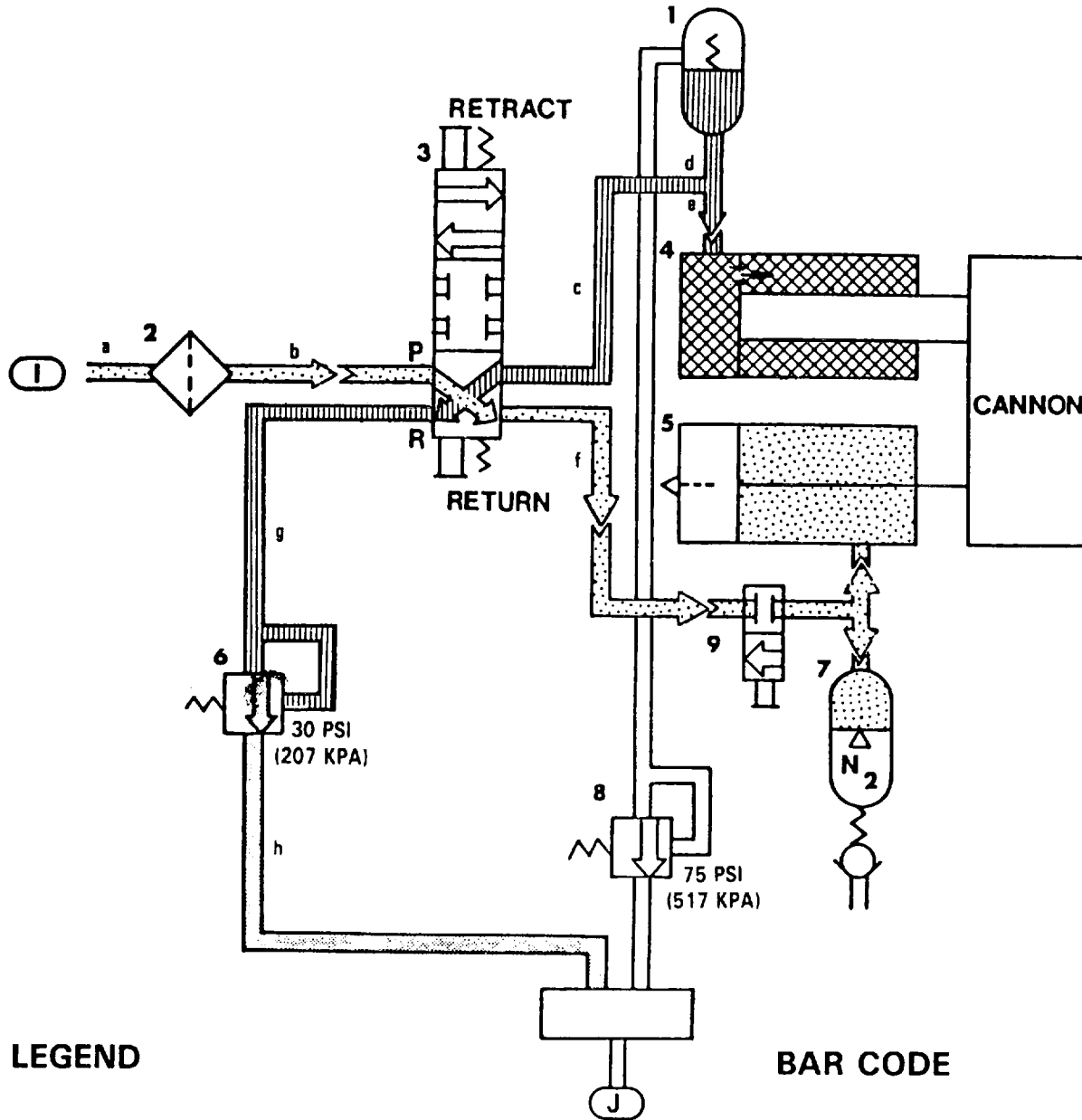
- 1 Replenisher
- 2 Hydraulic fluid filter
- 3 Directional control valve
- 4 Recoil cylinder
- 5 Counterrecoil cylinder
- 6 Relief valve
- 7 Recuperator cylinder

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-26. CANNON-RETURN (TO BATTERY) (MODIFIED WEAPON).













LEGEND

- 1 Replenisher
- 2 Hydraulic fluid filter
- 3 Directional control valve
- 4 Recoil cylinder
- 5 Counterrecoil cylinder
- 6 Relief valve
- 7 Recuperator cylinder
- 8 Relief valve
- 9 Shut-off valve

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-27. TURRET TRAVERSING HYDRAULIC SUBSYSTEM.

Functional Description. The turret traversing hydraulic subsystem traverses the gun turret to any position within 300 left or right of the vehicle centerline.

A single directional control valve (2) is provided on the left side of the turret so that the gunner can traverse the cannon to align it with a target. Squeezing the handle of directional control valve (2) actuates a switch that energizes solenoid valve (13).

When energized, solenoid valve (13) directs hydraulic pressure to hydraulic brake (9), to pressure reducing valve (5), to the stroke control cylinder of hydraulic motor (10), and to directional control valve (2).

Moving the handle of directional control valve (2) in either LEFT or RIGHT traversing direction controls and directs hydraulic fluid at about 2400 psi (16,548 kPa) to hydraulic motor (10). Moving the handle farther away from the center (off) position increases the hydraulic fluid flow through hydraulic motor (10). This increases the rotational speed of the turret.

As the turret approaches the 300 traverse position, deceleration solenoid valve (1) is energized by a cam-actuated switch.

When energized, solenoid valve (1) shuts off hydraulic pressure to the stroke control cylinder of motor (10), and directs the motor return fluid through the restrictor in solenoid valve (1) and through pressure reducing valve (5).

Supply pressure shifts the stroke control cylinder to position motor (10) at minimum stroke.









The momentum of the turret puts back pressure on motor (10), making it work as a pump. However, pressure reducing valve (5) prevents rapid return of the hydraulic fluid to the other side of the motor (10). This action slows the turret to prevent damage to the turret stops.

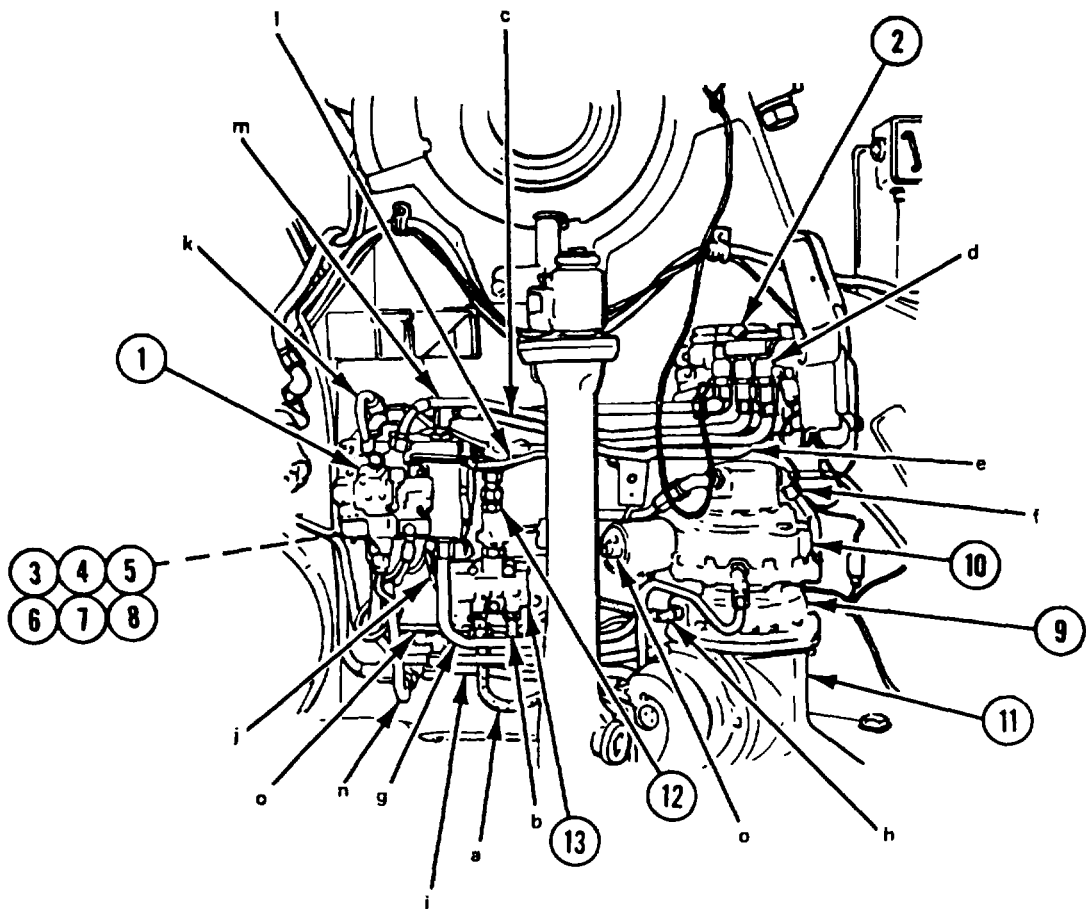
When the handle of directional control valve (2) is released, the switch is deactivated, which deenergizes solenoid valve (13). Hydraulic pressure to the subsystem is shut off, allowing spring pressure to set hydraulic brake (9), stopping hydraulic motor (10) and the turret.

LEGEND

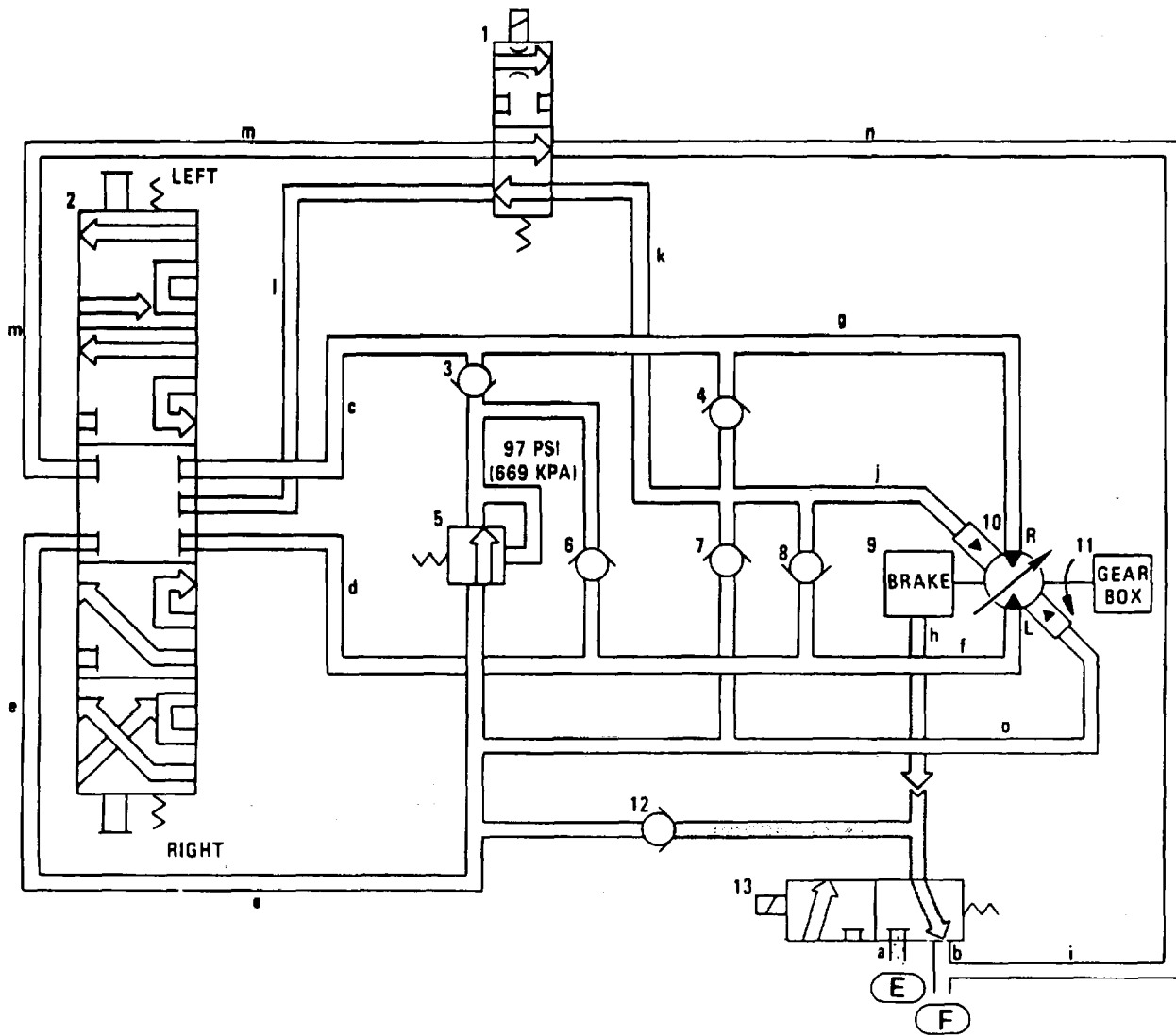
BAR CODE

- 1 Solenoid valve
- 2 Directional control valve
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control
- 11 Turret drive gearbox
- 12 Check valve
- 13 Solenoid valve

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive











F-48



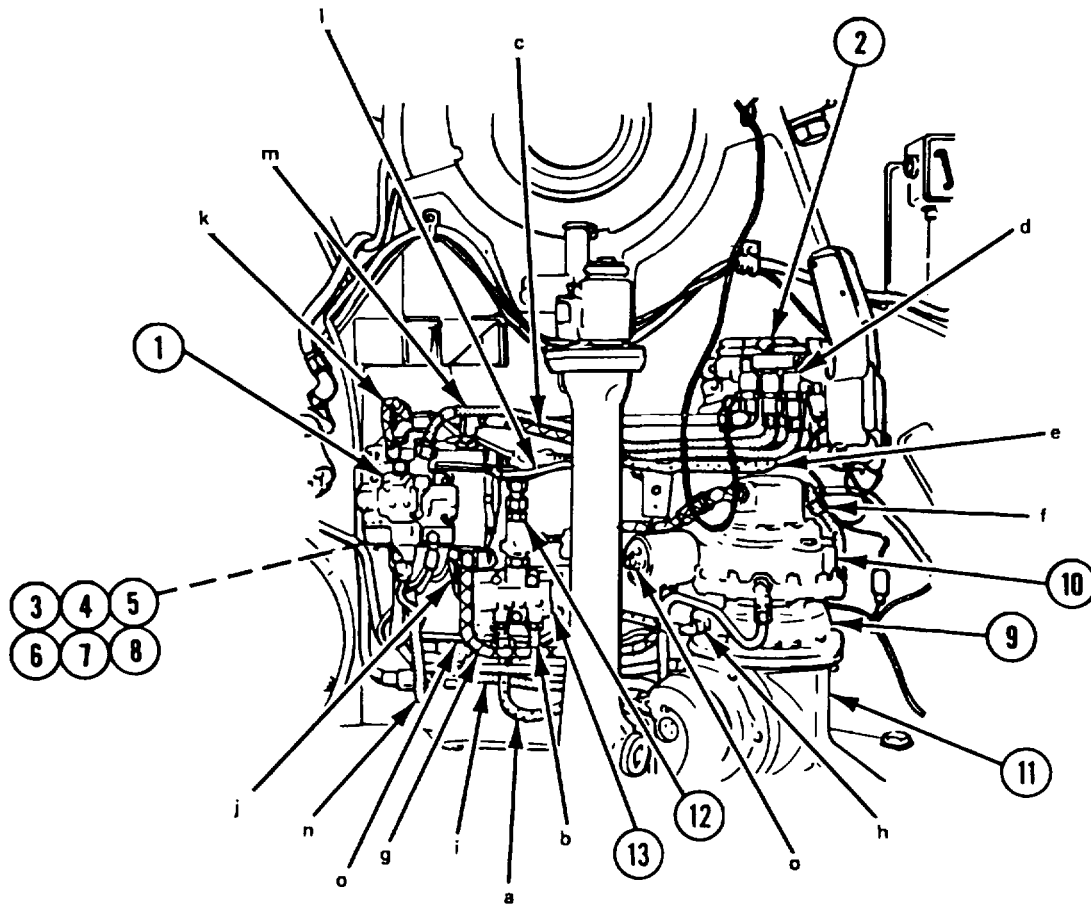
LEGEND

- 1 Solenoid valve
- 2 Directional control valve
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Turret drive gearbox
- 12 Check valve
- 13 Solenoid valve

BAR CODE

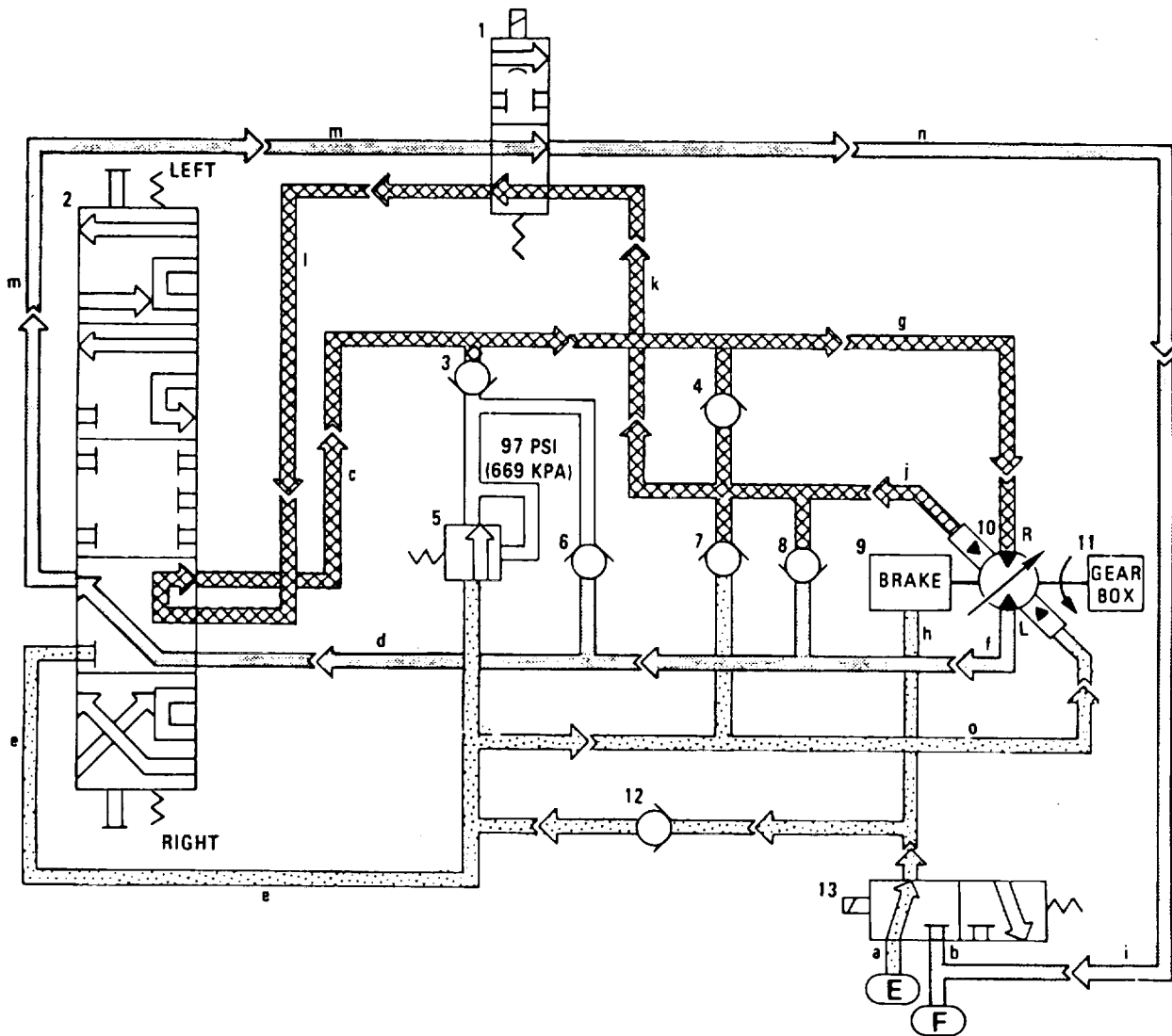
-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-29. TURRET TRAVERSING-RIGHT (SLOW).



TURRET LEFT SIDE

F-50



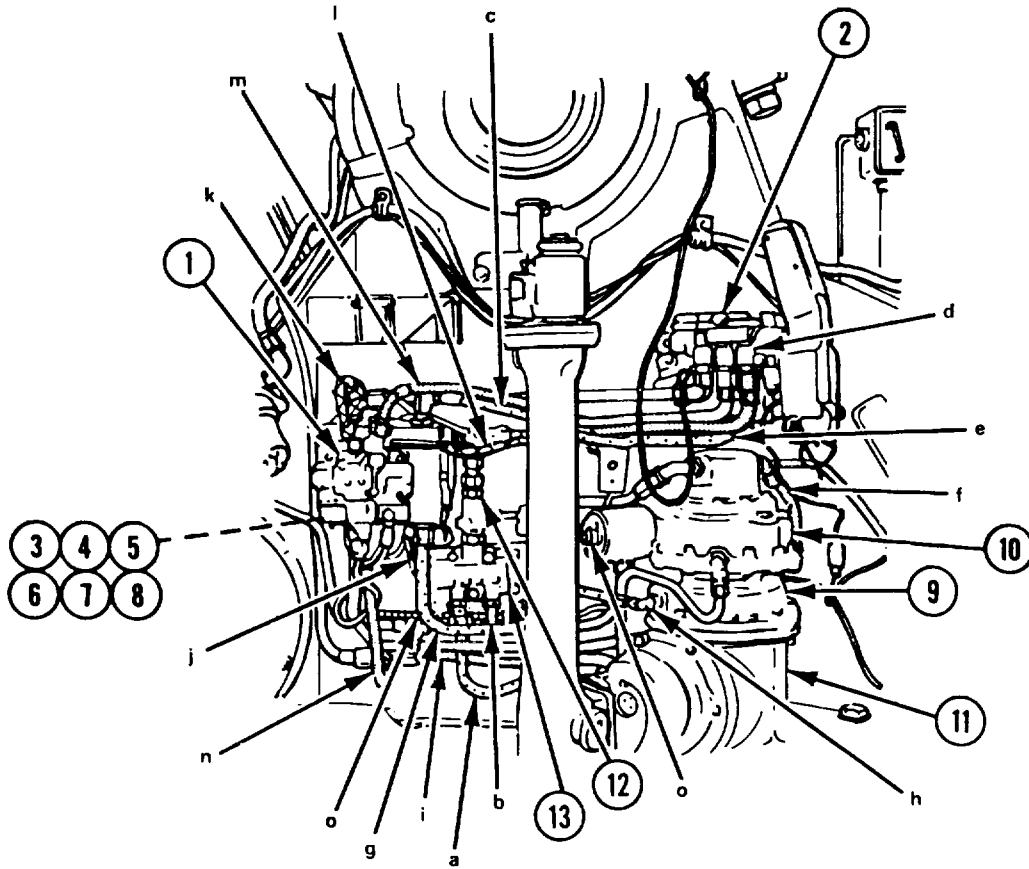
LEGEND

- 1 Solenoid valve
- 2 Directional control valve
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Turret drive gearbox
- 12 Check valve
- 13 Solenoid valve

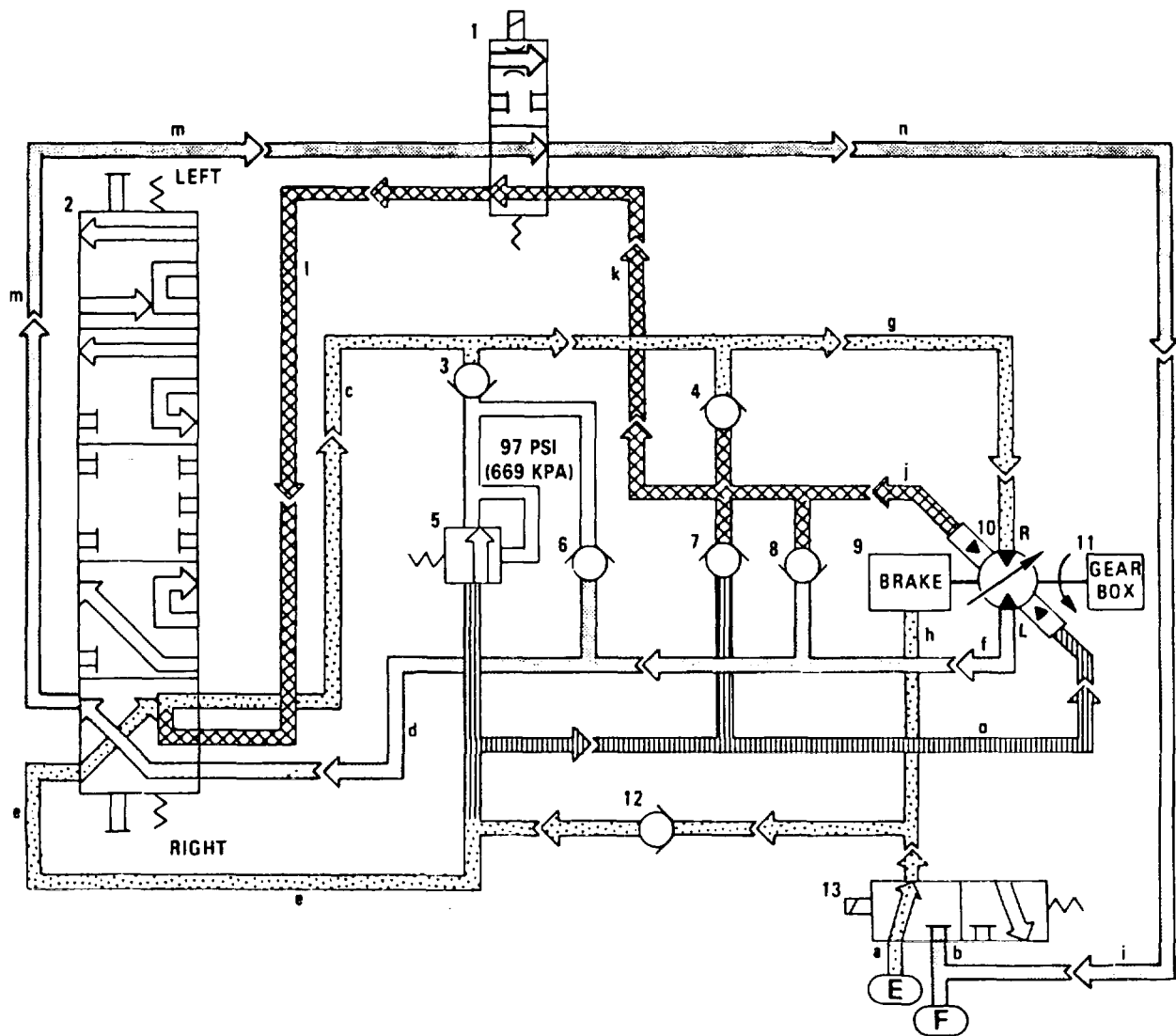
BAR CODE

- Intensified pressure
- Supply pressure
- Charging pressure
- Reduced pressure
- Pilot pressure
- Metered or blocked flow
- Intake drain
- Blank inactive

F-30. TURRET TRAVERSING-RIGHT (FULL FLOW).











TURRET-LEFT SIDE



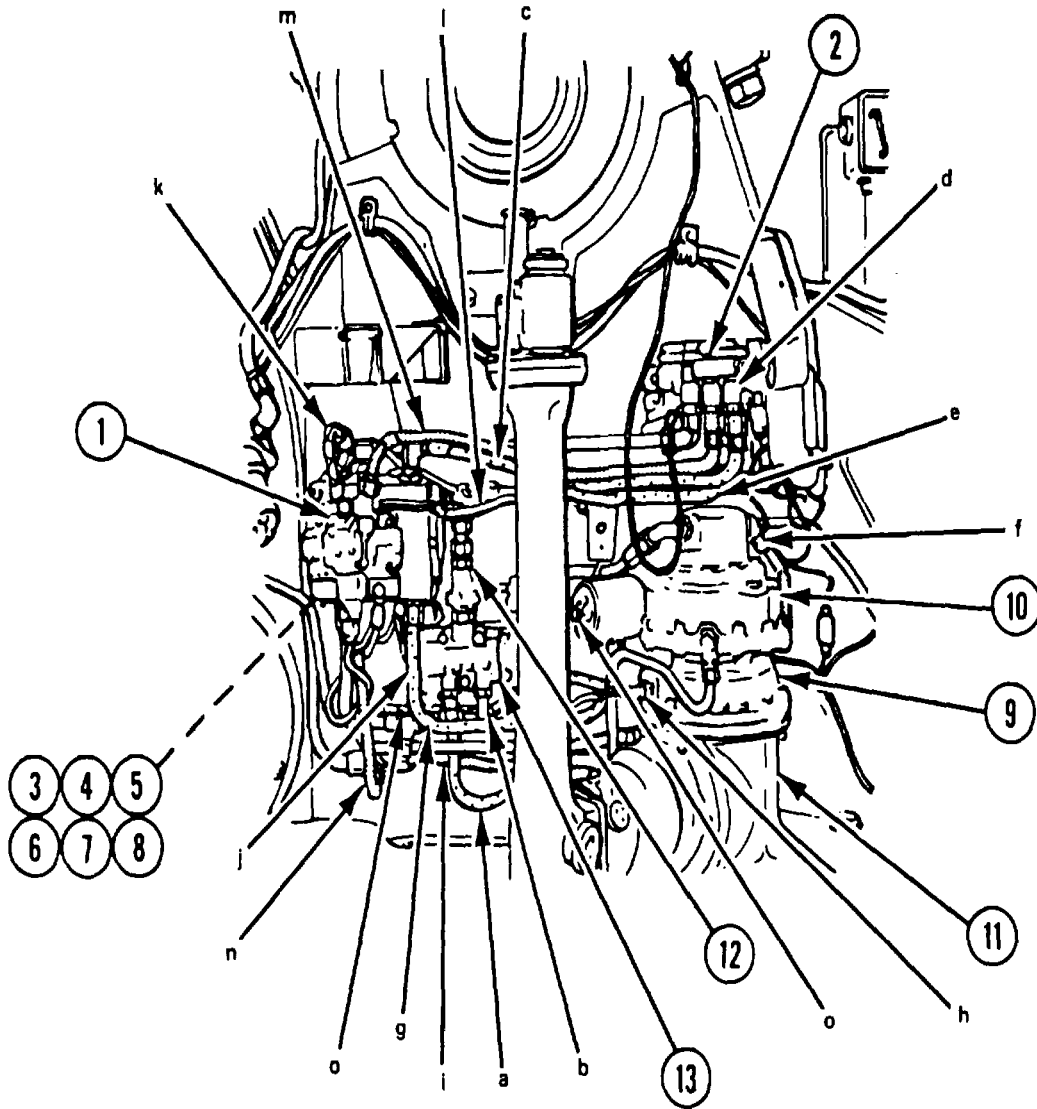
LEGEND

- 1 Solenoid valve
- 2 Directional control valve
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Turret drive gearbox
- 12 Check valve
- 13 Solenoid valve

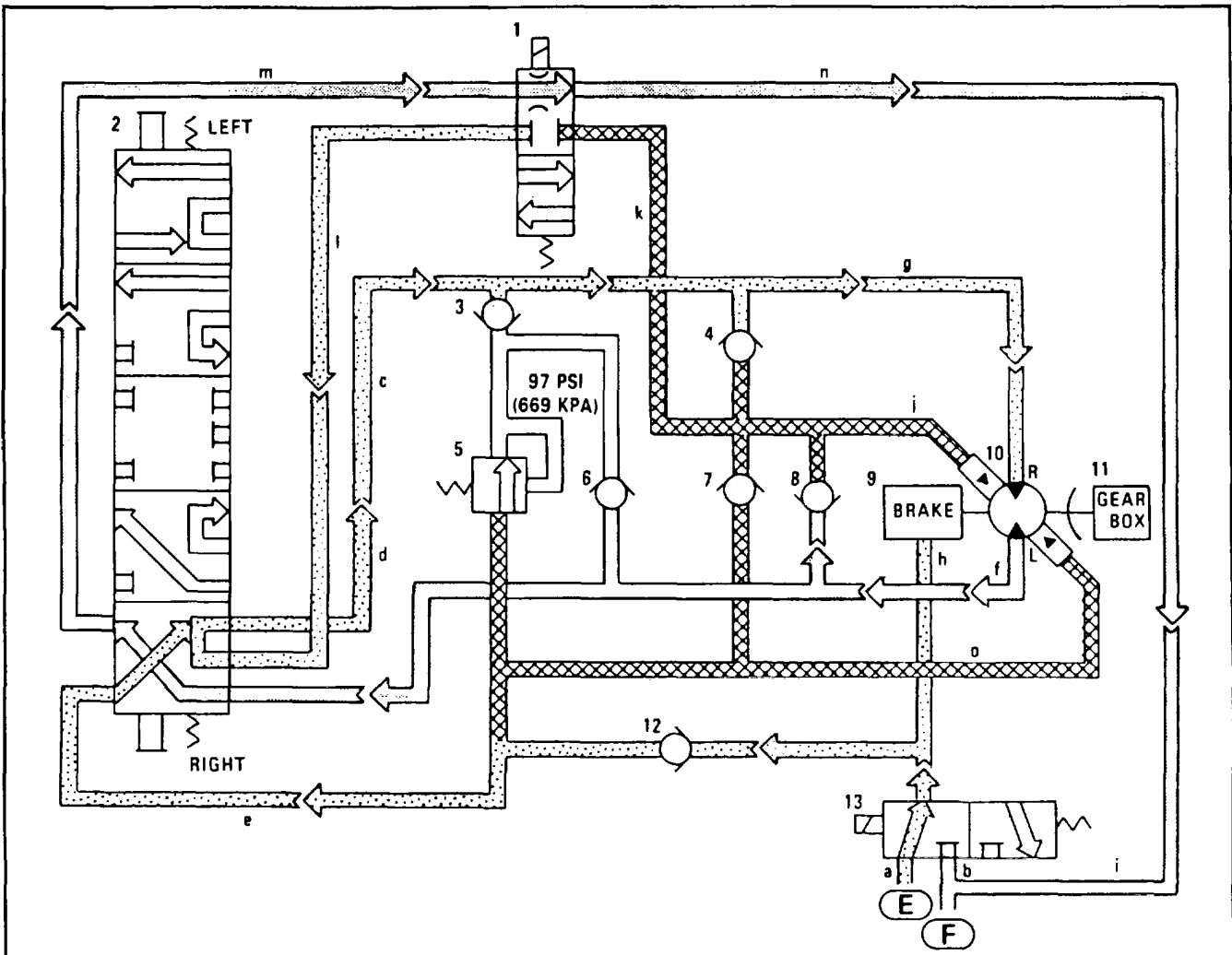
BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-31. TURRET TRAVERSING-RIGHT (DECLARATION).











TURRET-LEFT SIDE



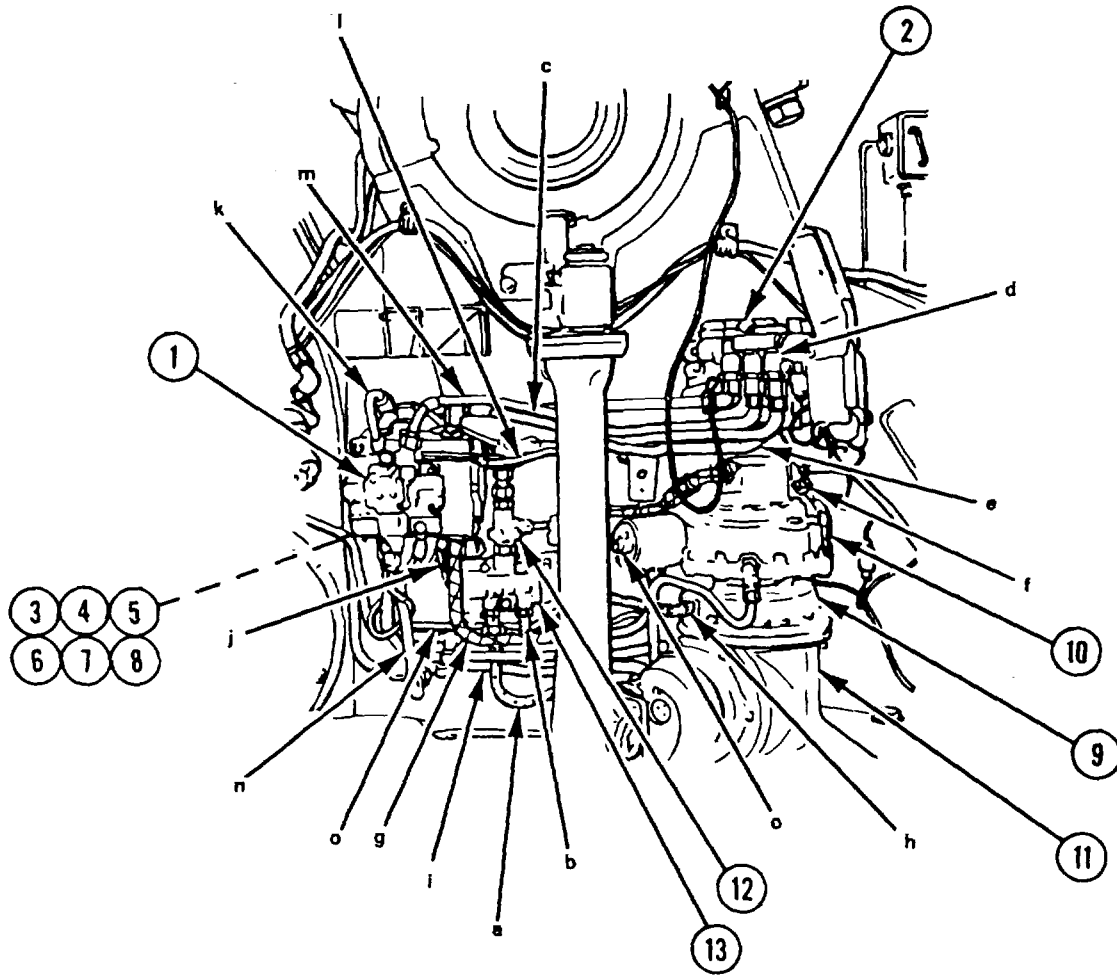
LEGEND

- 1 Solenoid valve
- 2 Directional control valve
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Turret drive gearbox
- 12 Check valve
- 13 Solenoid valve

BAR CODE

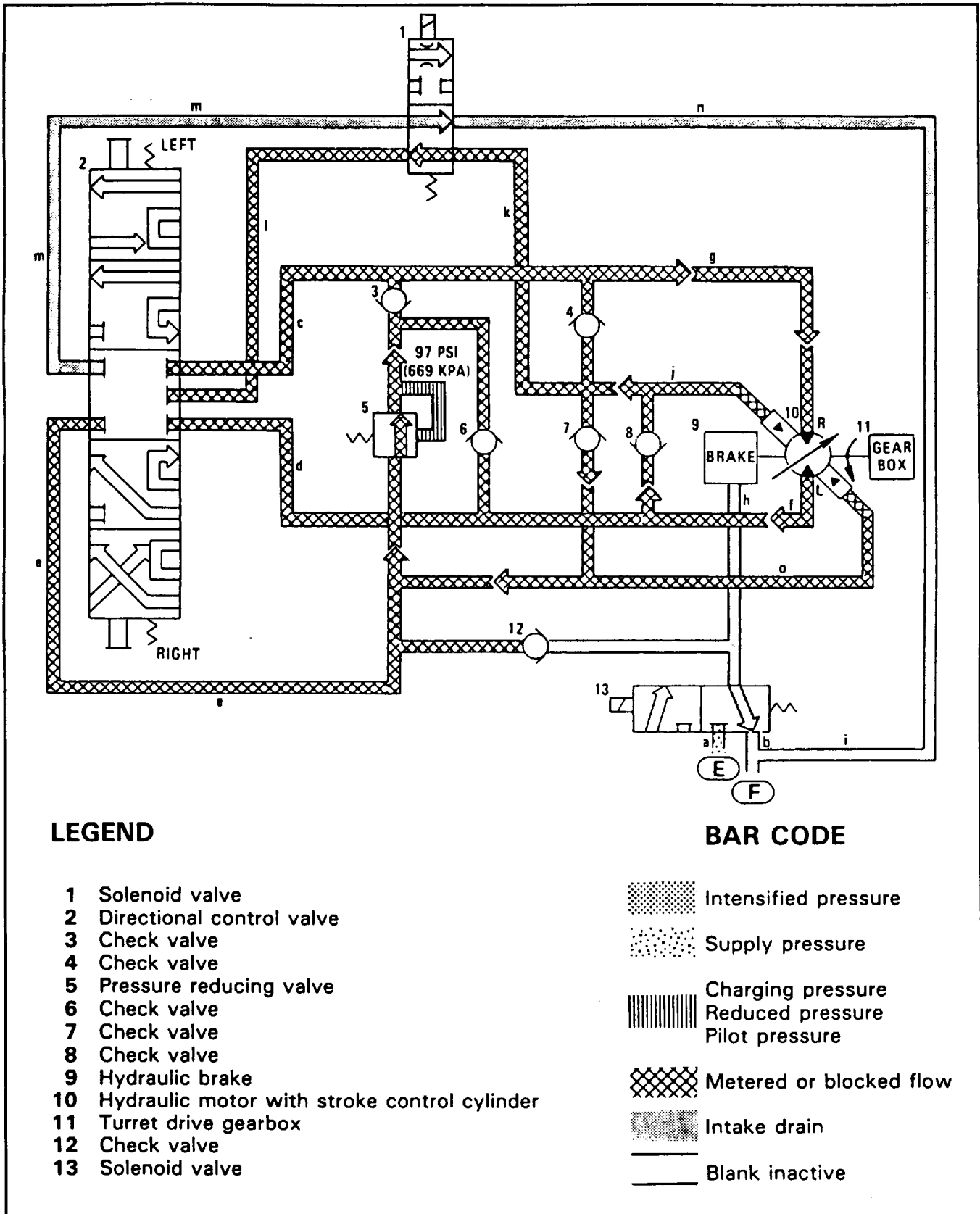
-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-32. TURRET TRAVERSING-RIGHT (STOPPING).



TURRET - LEFT SIDE









F-56

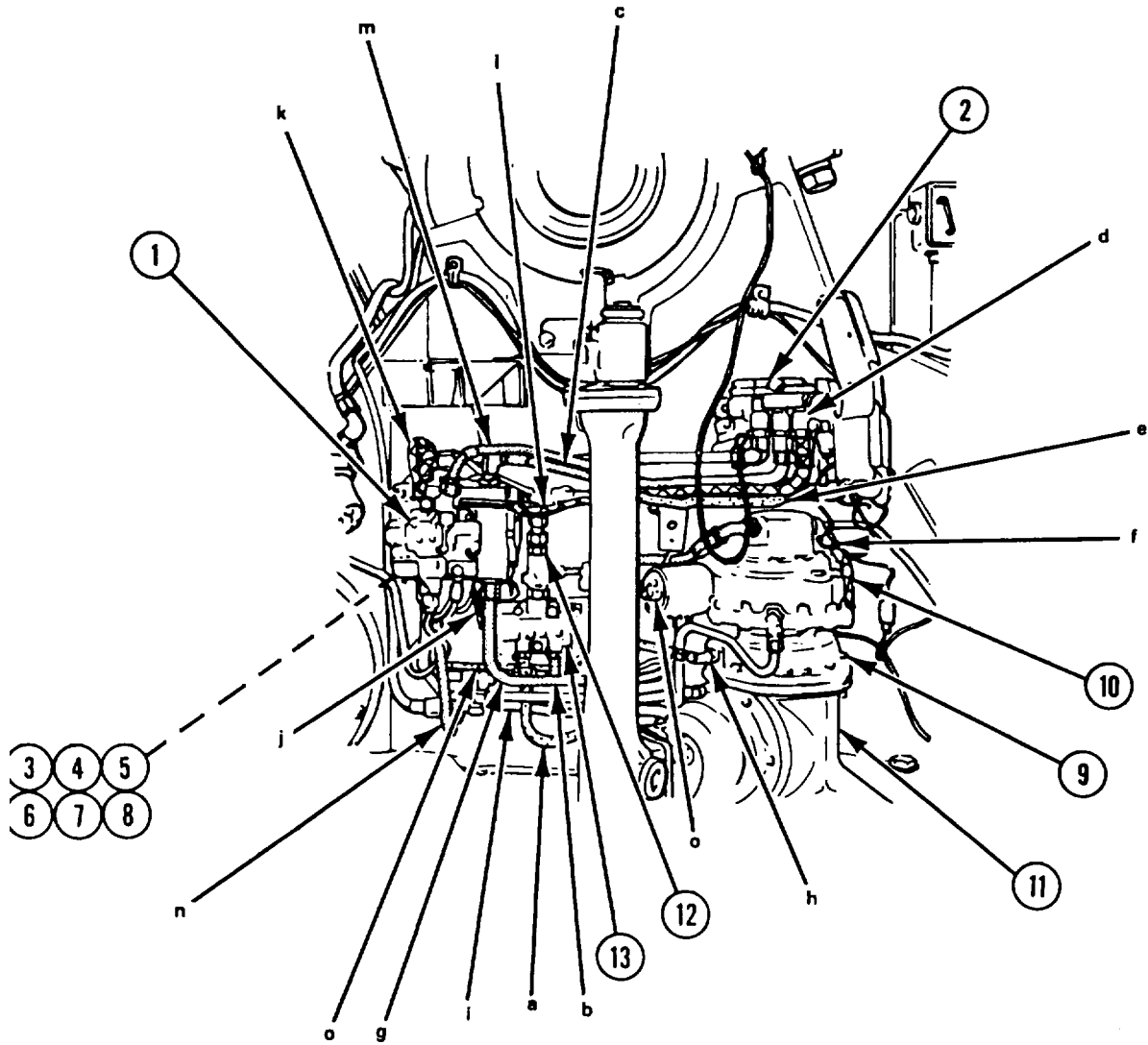


LEGEND

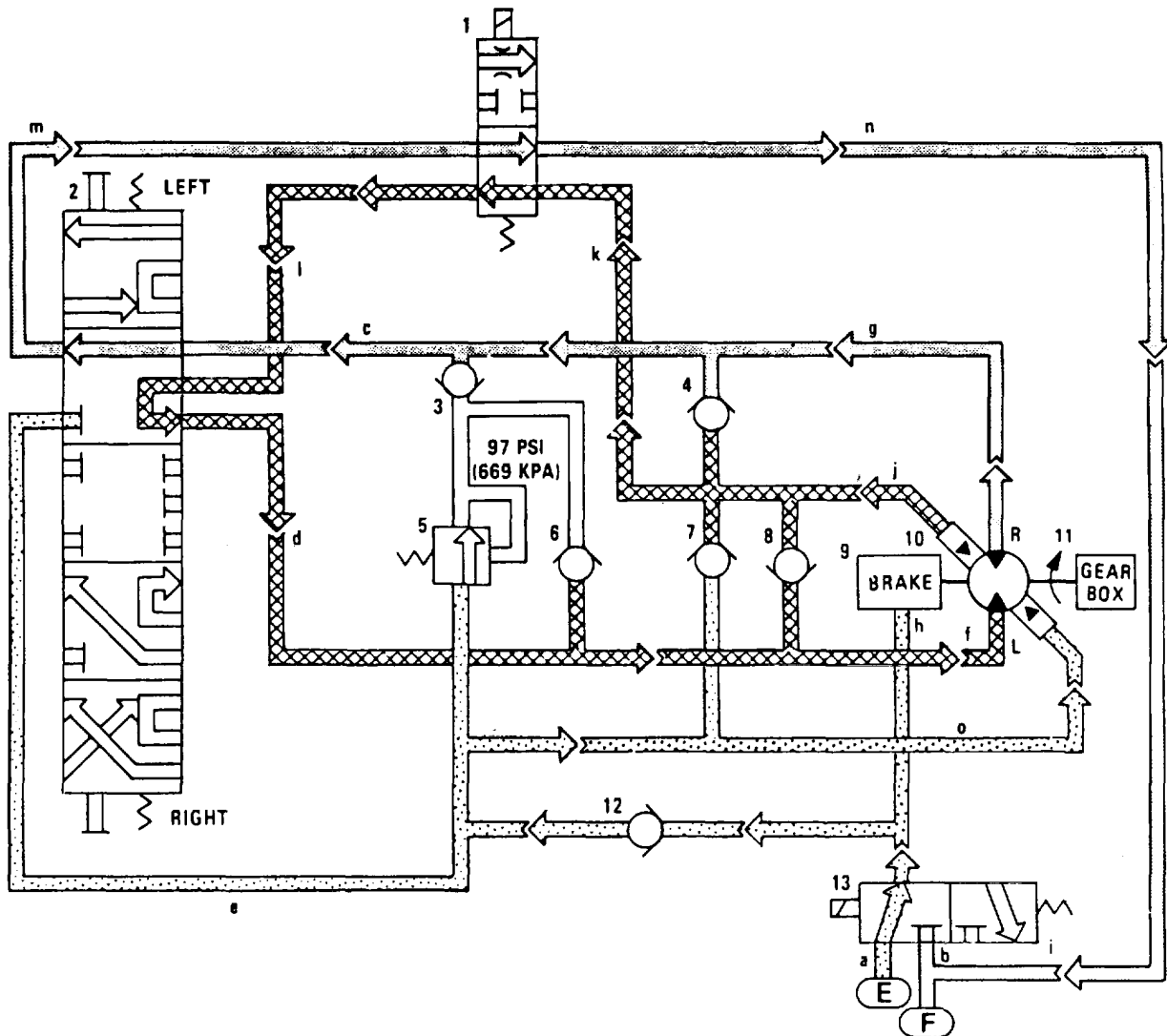
- 1 Solenoid valve
- 2 Directional control valve
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Turret drive gearbox
- 12 Check valve
- 13 Solenoid valve

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive











TURRET - LEFT SIDE



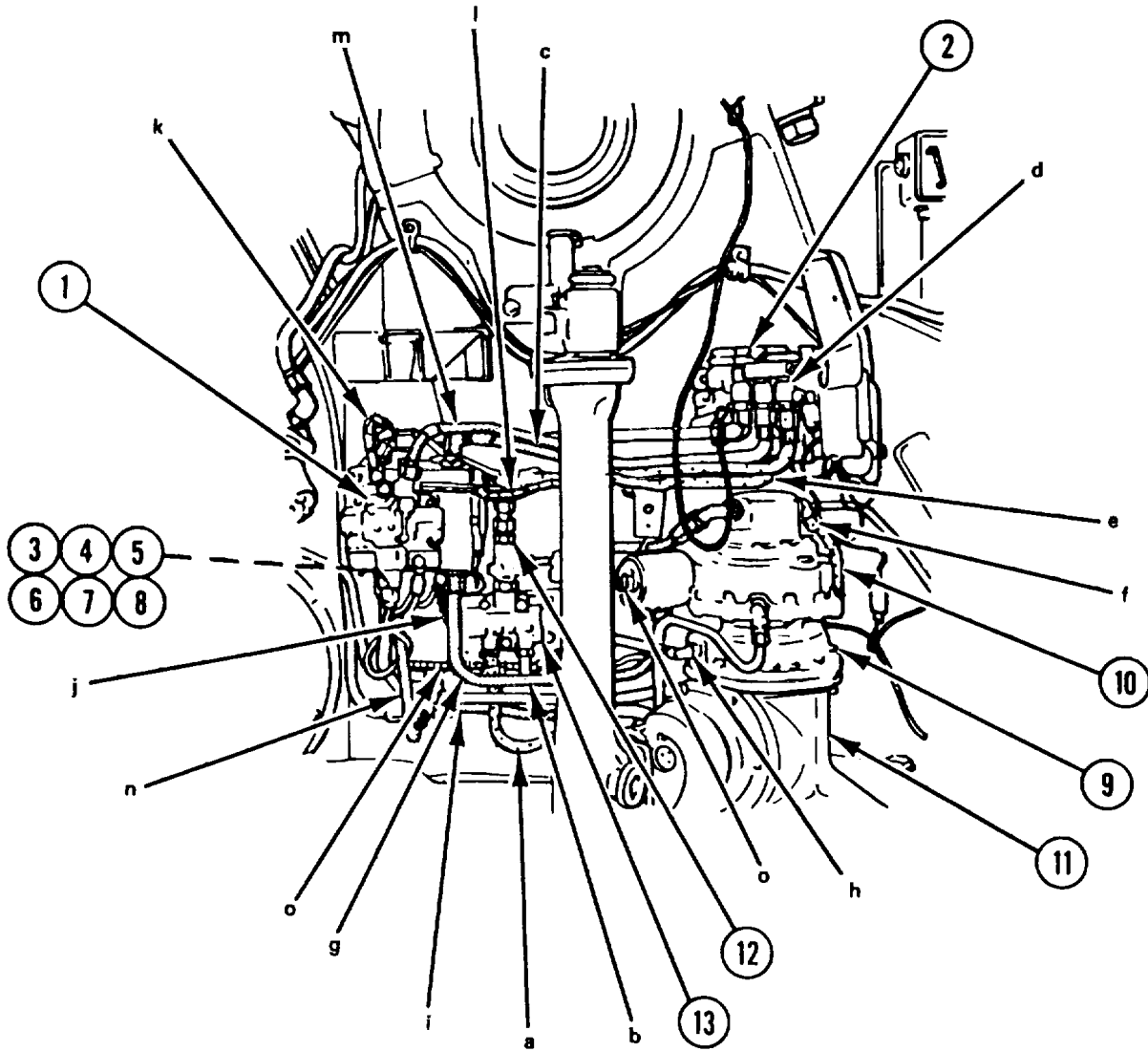
LEGEND

- 1 Solenoid valve
- 2 Directional control valve
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Turret drive gearbox
- 12 Check valve
- 13 Solenoid valve

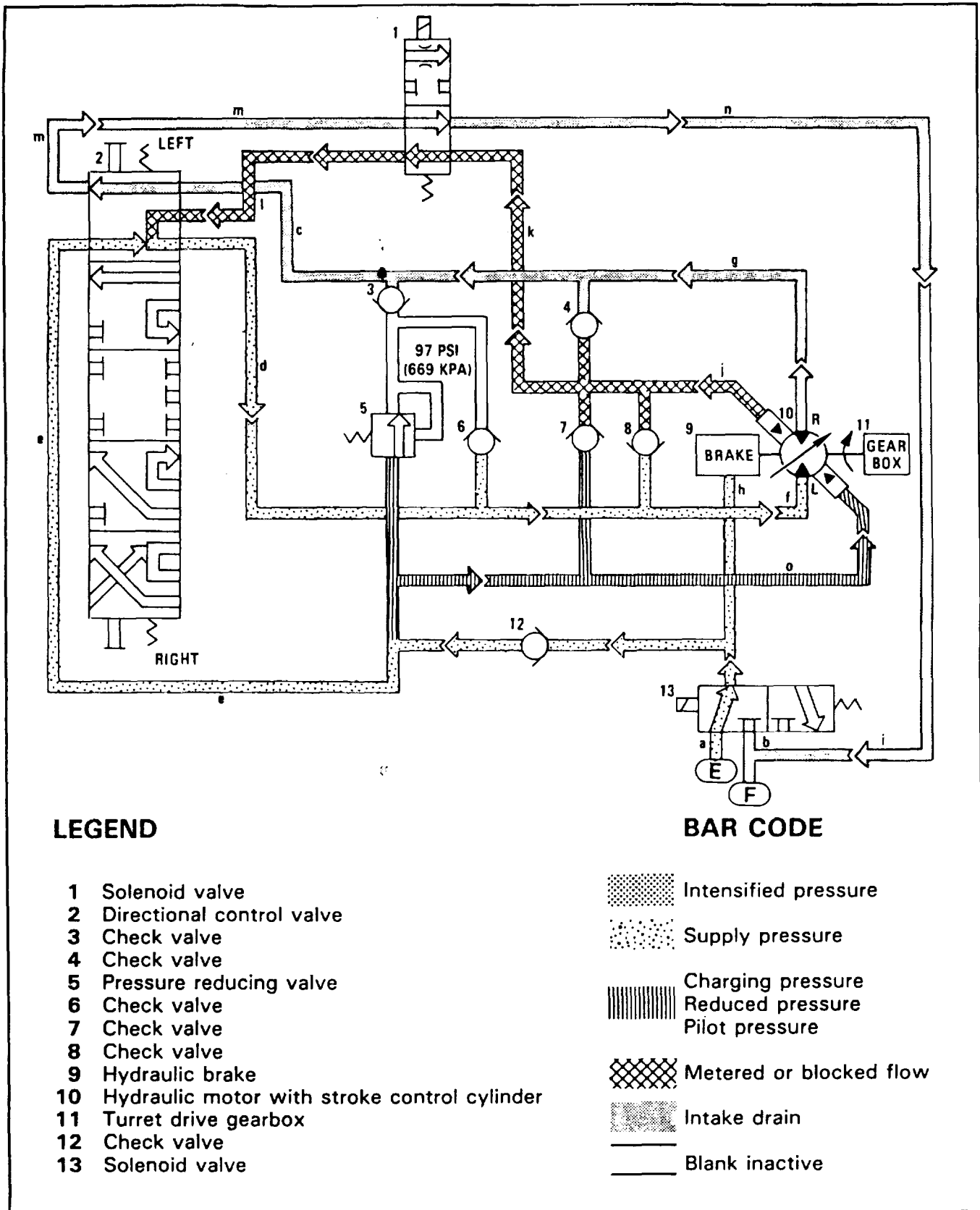
BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-34. TURRET TRAVERSING-LEFT (FULL FLOW).











TURRET-LEFT SIDE



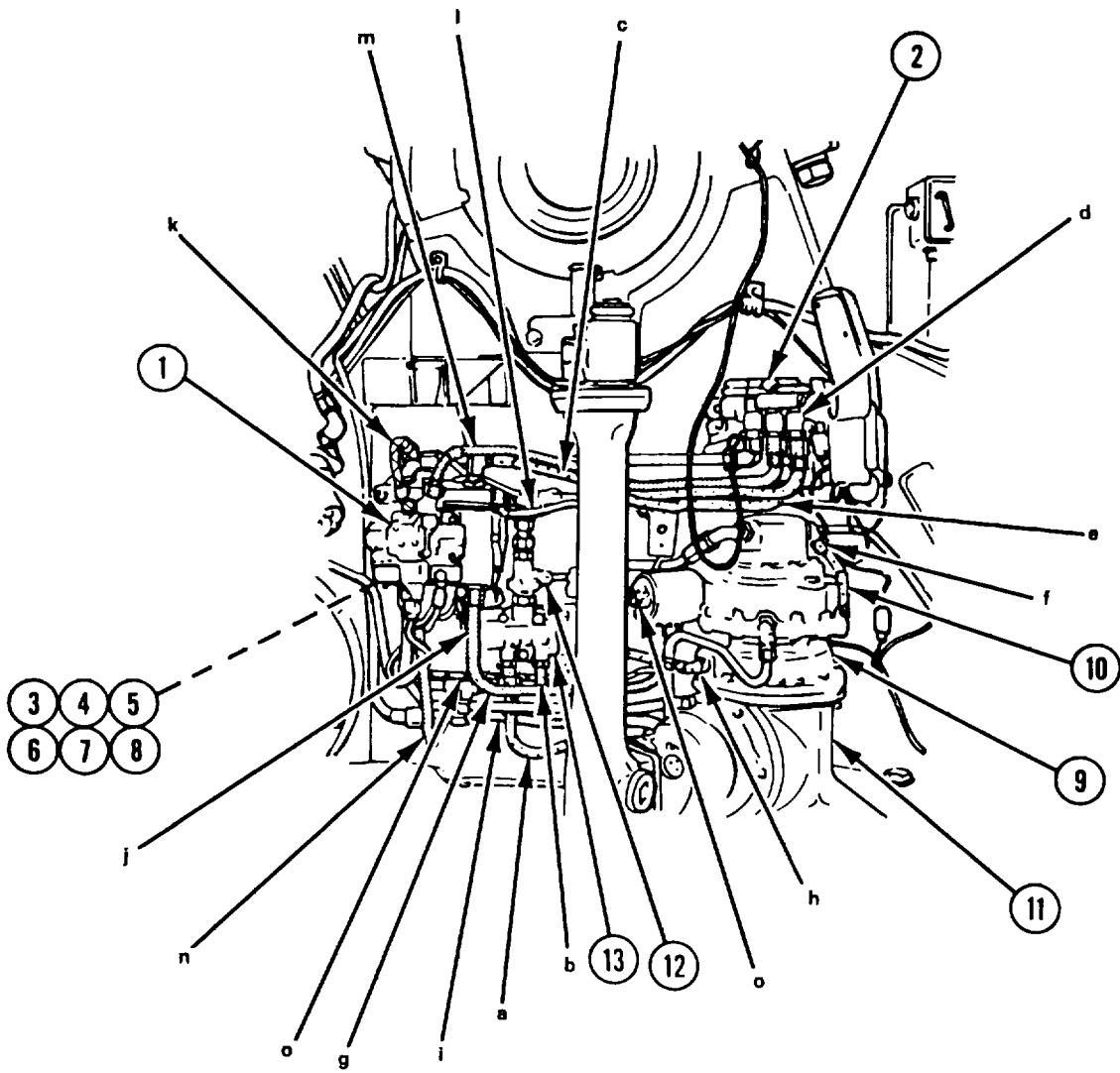
LEGEND

- 1 Solenoid valve
- 2 Directional control valve
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Turret drive gearbox
- 12 Check valve
- 13 Solenoid valve

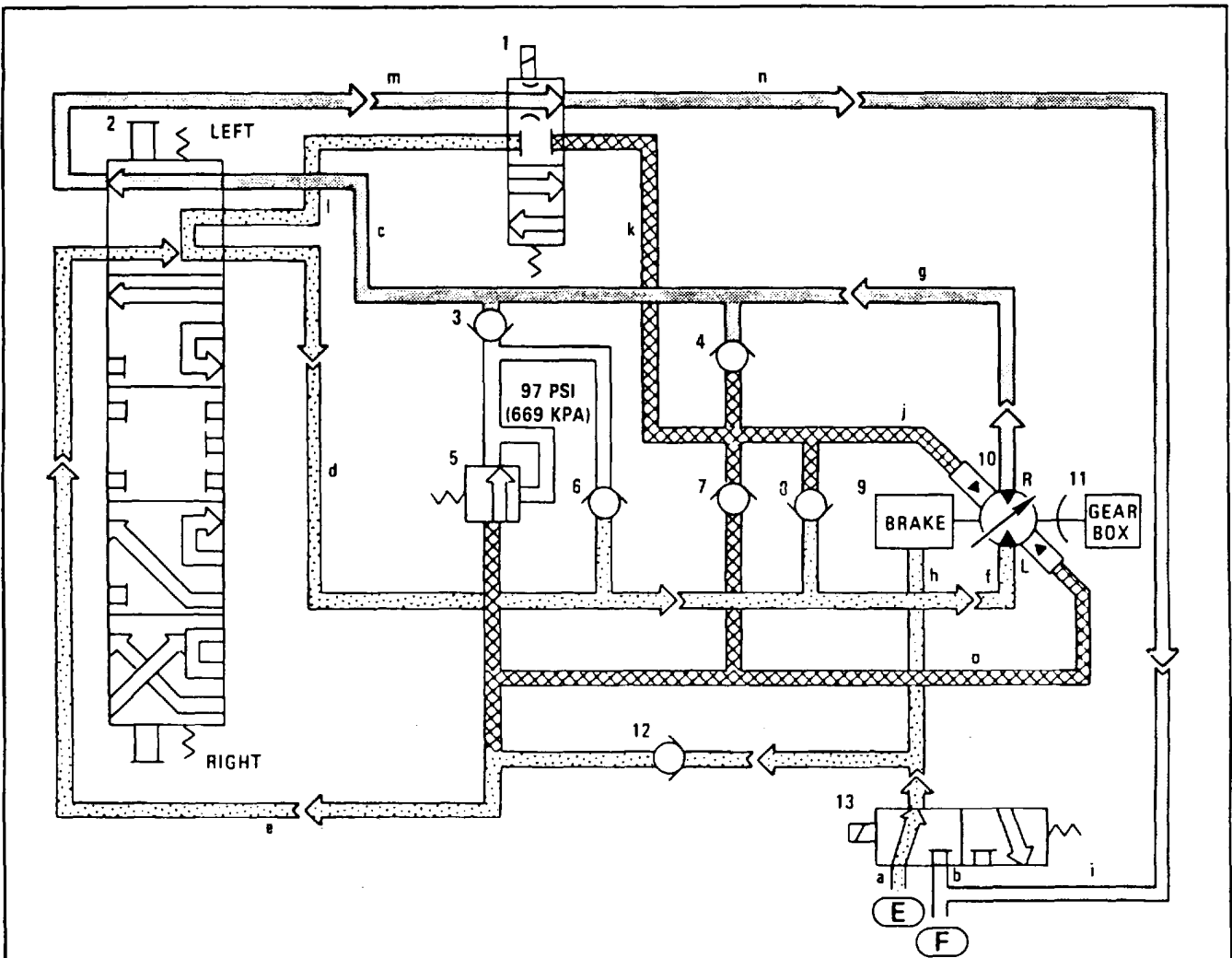
BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-35. TURRET TRAVERSING-LEFT (DECELERATION)











TURRET - LEFT SIDE



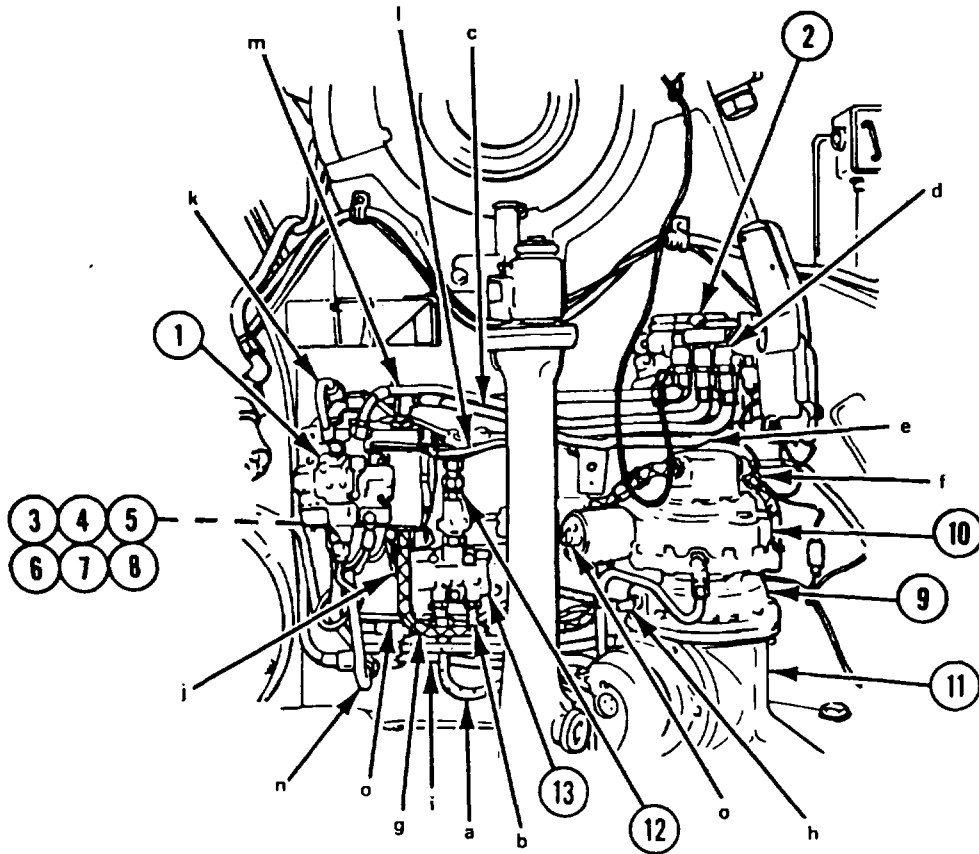
LEGEND

- 1 Solenoid valve
- 2 Directional control valve
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Turret drive gearbox
- 12 Check valve
- 13 Solenoid valve

BAR CODE

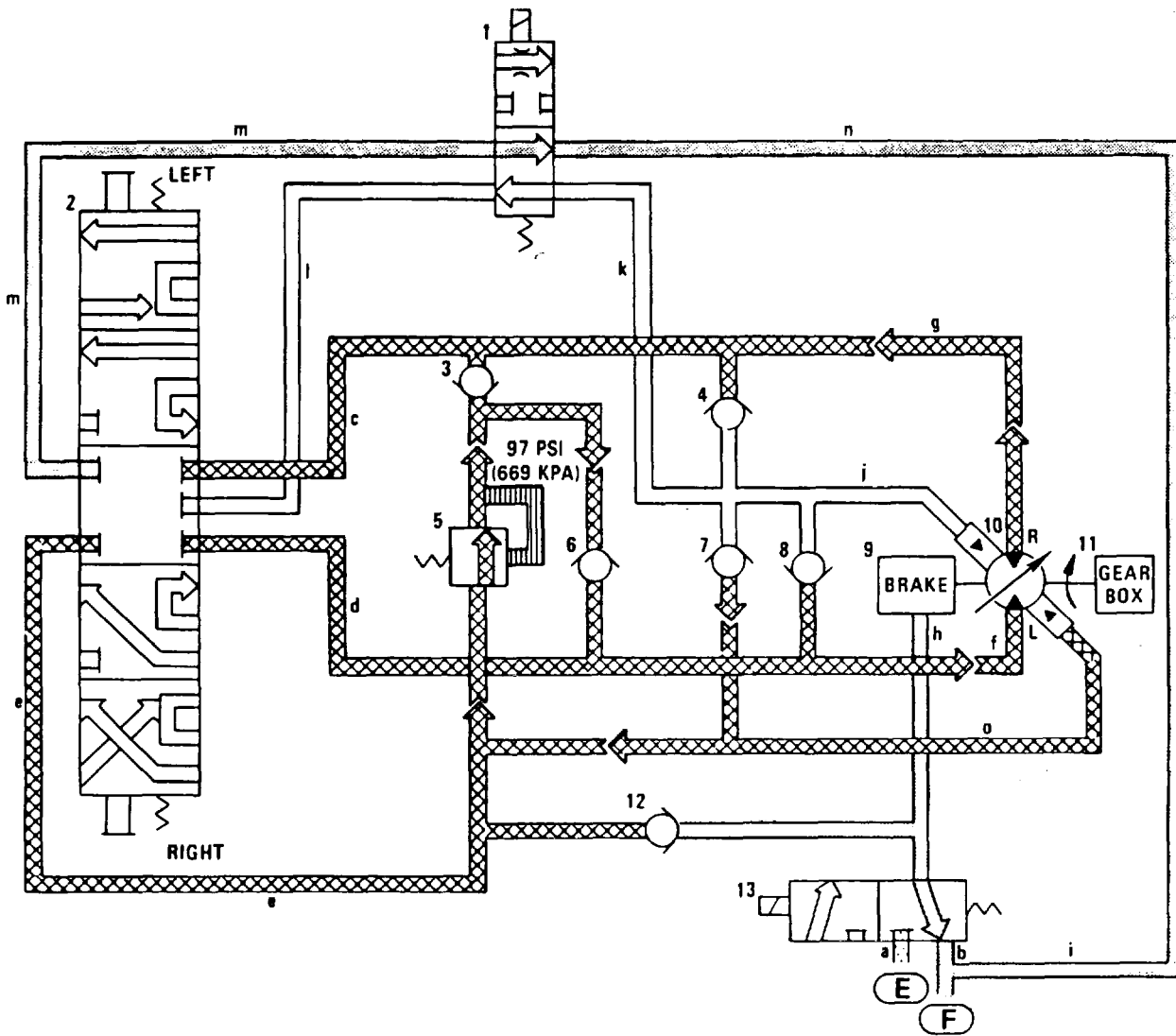
-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-36. TURRET TRAVERSING-LEFT (STOPPING)



TURRET-LEFT SIDE









F-64



LEGEND

- 1 Solenoid valve
- 2 Directional control valve
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Turret drive gearbox
- 12 Check valve
- 13 Solenoid valve

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-37. CANON ELEVATING HYDRAULIC SUBSYSTEM.

Functional Description. The cannon elevating hydraulic subsystem raises and lowers the cannon to any angle between 0° horizontal and 65° maximum raised position.

Two cannon elevating directional control valves (1 and 2) are provided so that either the gunner or the assistant gunner can raise or lower the cannon. Squeezing the handles of directional control valve (1 or 2) actuates a switch that energizes solenoid valve (13).

When energized, solenoid valve (13) directs hydraulic pressure to hydraulic brake (9), to pressure reducing valve (5), to the stroke control cylinder of hydraulic motor (10), and to directional control valve (1 and 2).

Moving the handle of either directional control valve in either RAISE or LOWER direction controls and directs hydraulic fluid at about 2400 psi (16,548 kPa) to hydraulic motor (10). Moving the handle farther

away from the center (off) position increases the hydraulic fluid flow through hydraulic motor (10). This increases the raising or lowering speed of the cannon.







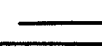

During lowering, the weight of the cannon puts back pressure on hydraulic motor (10), making it work as a pump. However, pressure reducing valve (5) prevents rapid return of the hydraulic fluid to the other side of hydraulic motor (10). This action slows the lowering of the cannon to a slow speed. Either directional control valve (1 or 2) bypasses pressure reducing valve (5) and allows the cannon to be lowered faster.

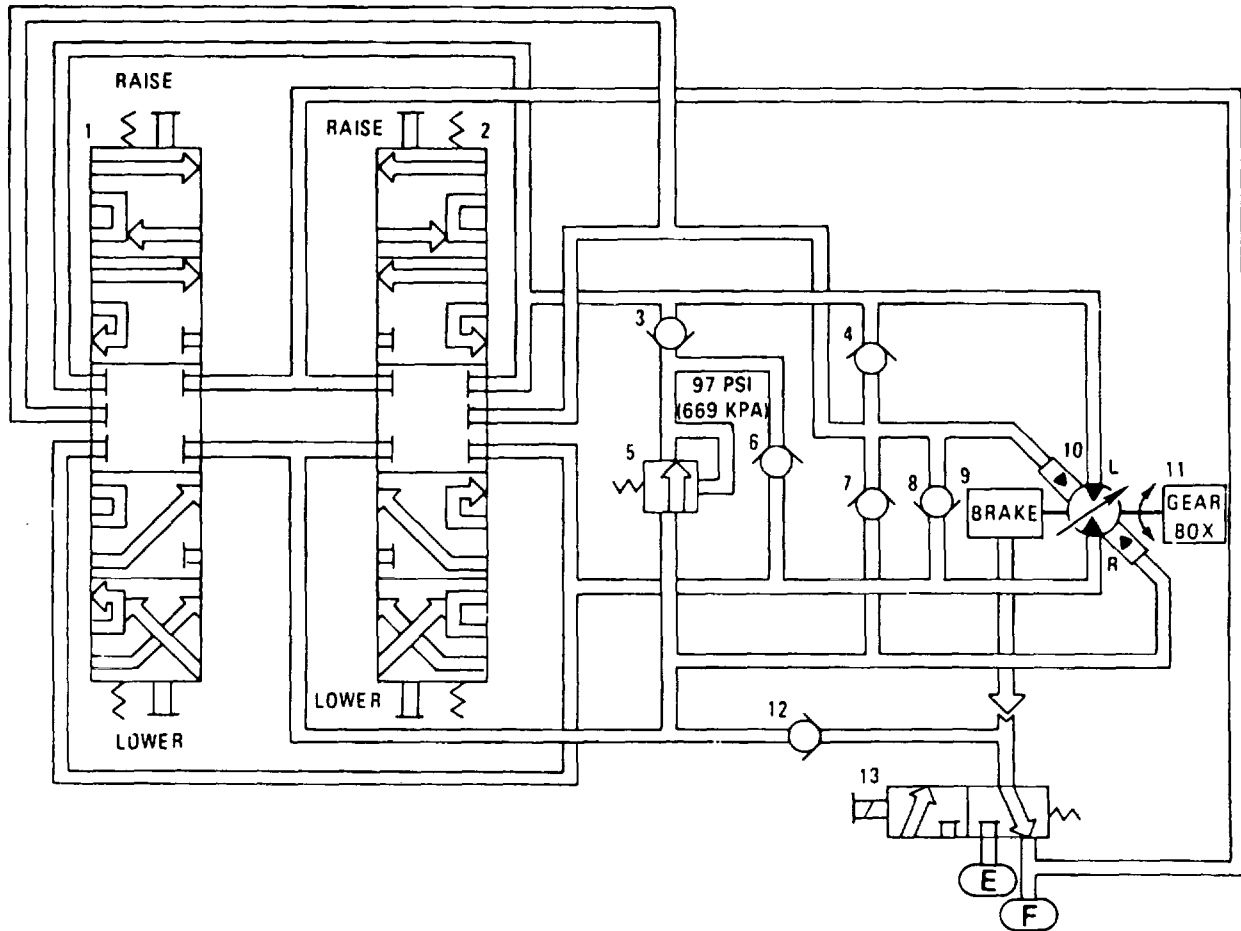
When the handle of directional control valve (1 or 2) is released, the switch is deactivated, which deenergizes solenoid valve (13). Hydraulic pressure to the subsystem is shut off, allowing spring pressure to set hydraulic brake (9), stopping hydraulic motor (10) and the cannon.

LEGEND

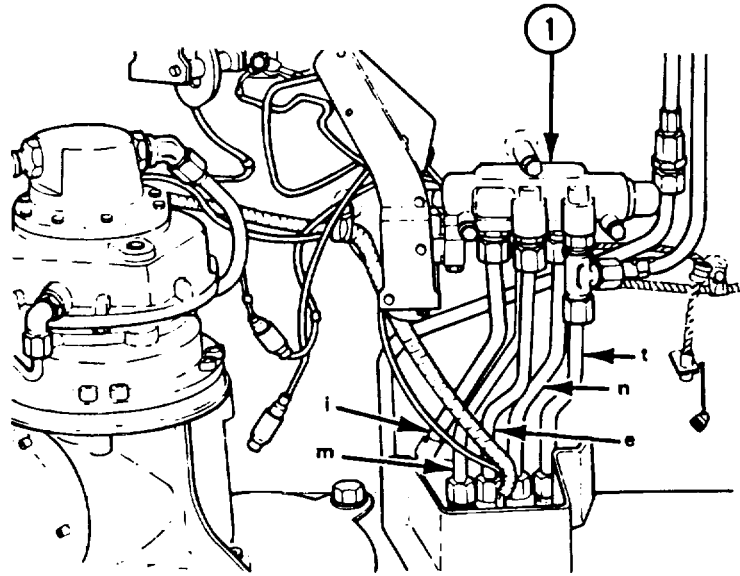
- 1 Directional control valve (left)
- 2 Directional control valve (right)
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Cannon elevating gearbox
- 12 Check valve
- 13 Solenoid valve

BAR CODE

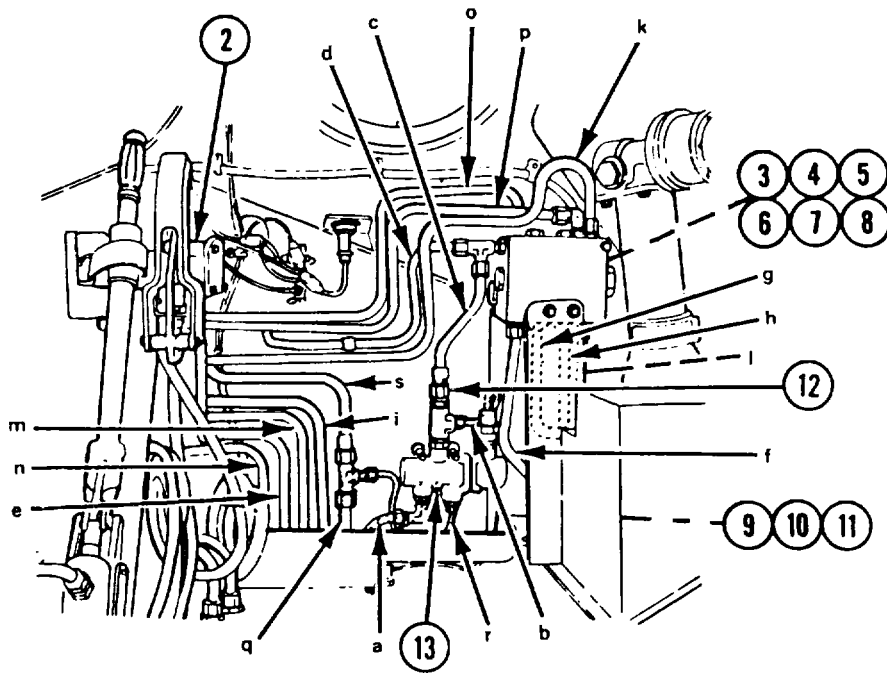
-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive



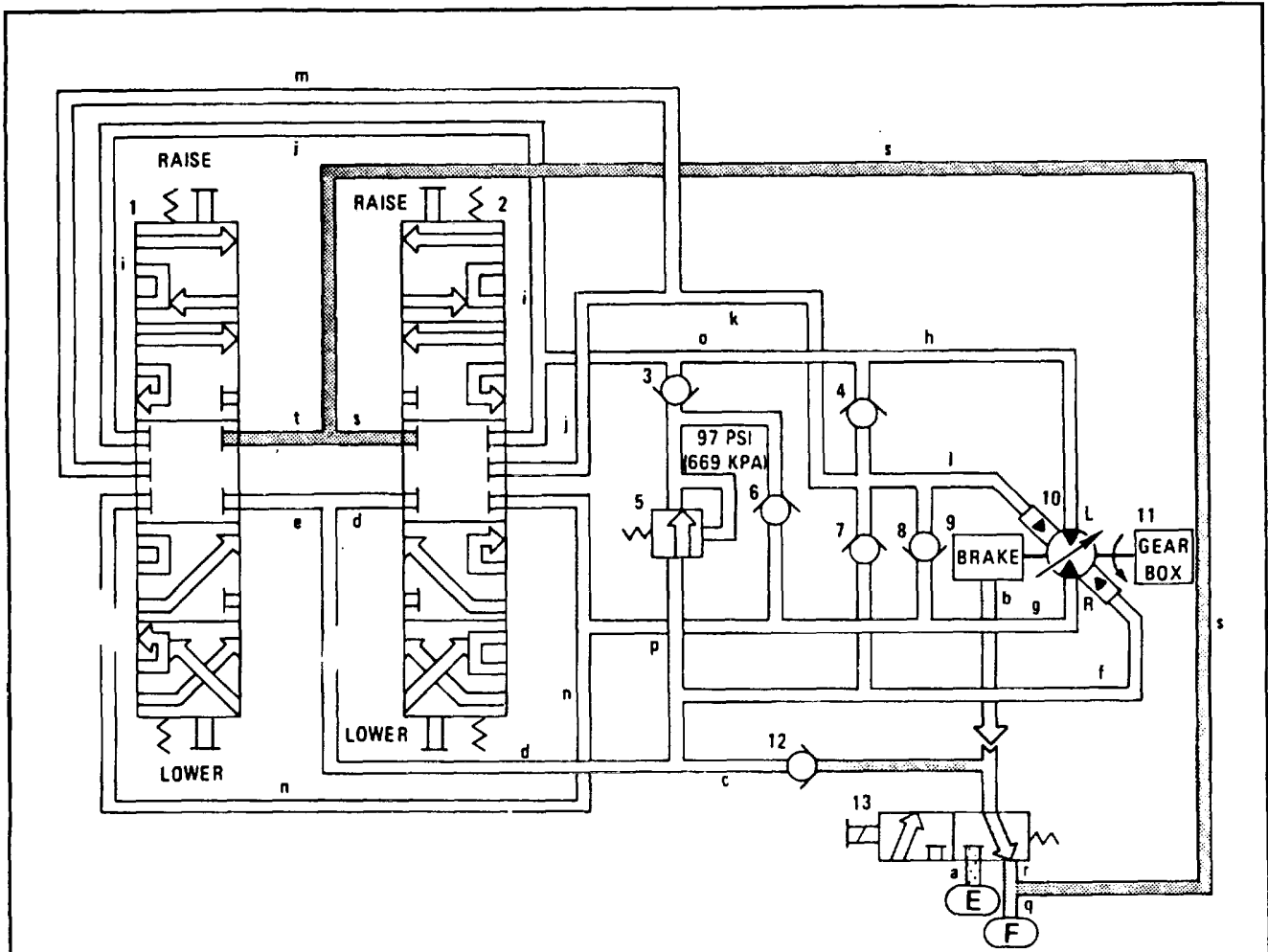
F-67



TURRET-LEFT SIDE











TURRET-LEFT SIDE

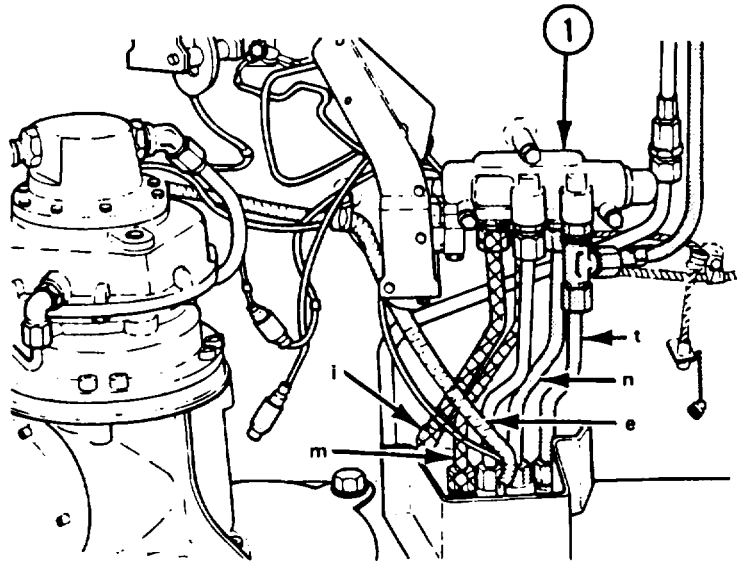


LEGEND

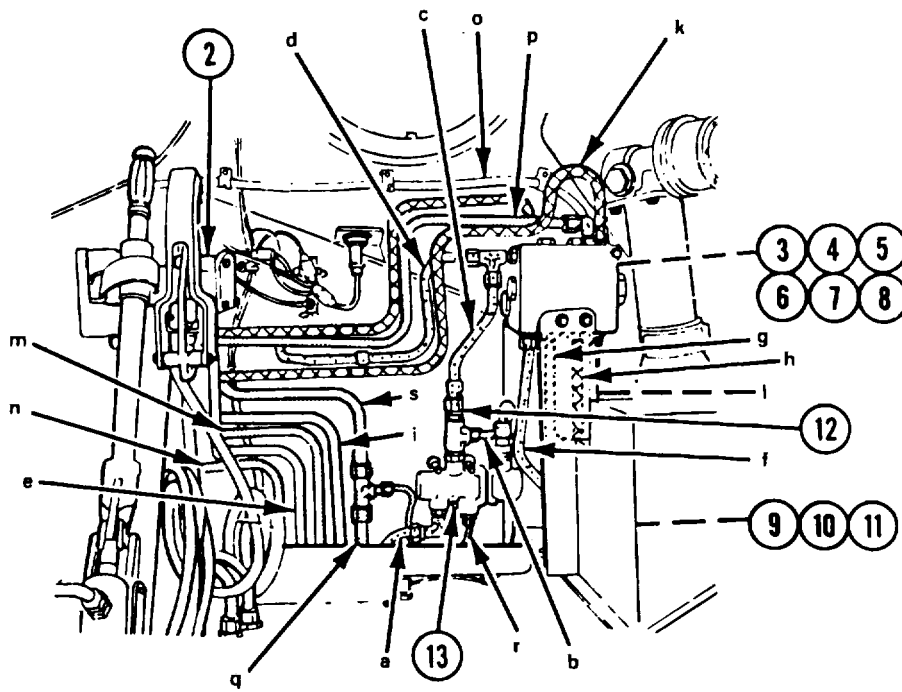
- 1 Directional control valve (left)
- 2 Directional control valve (right)
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Cannon elevating gearbox
- 12 Check valve
- 13 Solenoid valve

BAR CODE

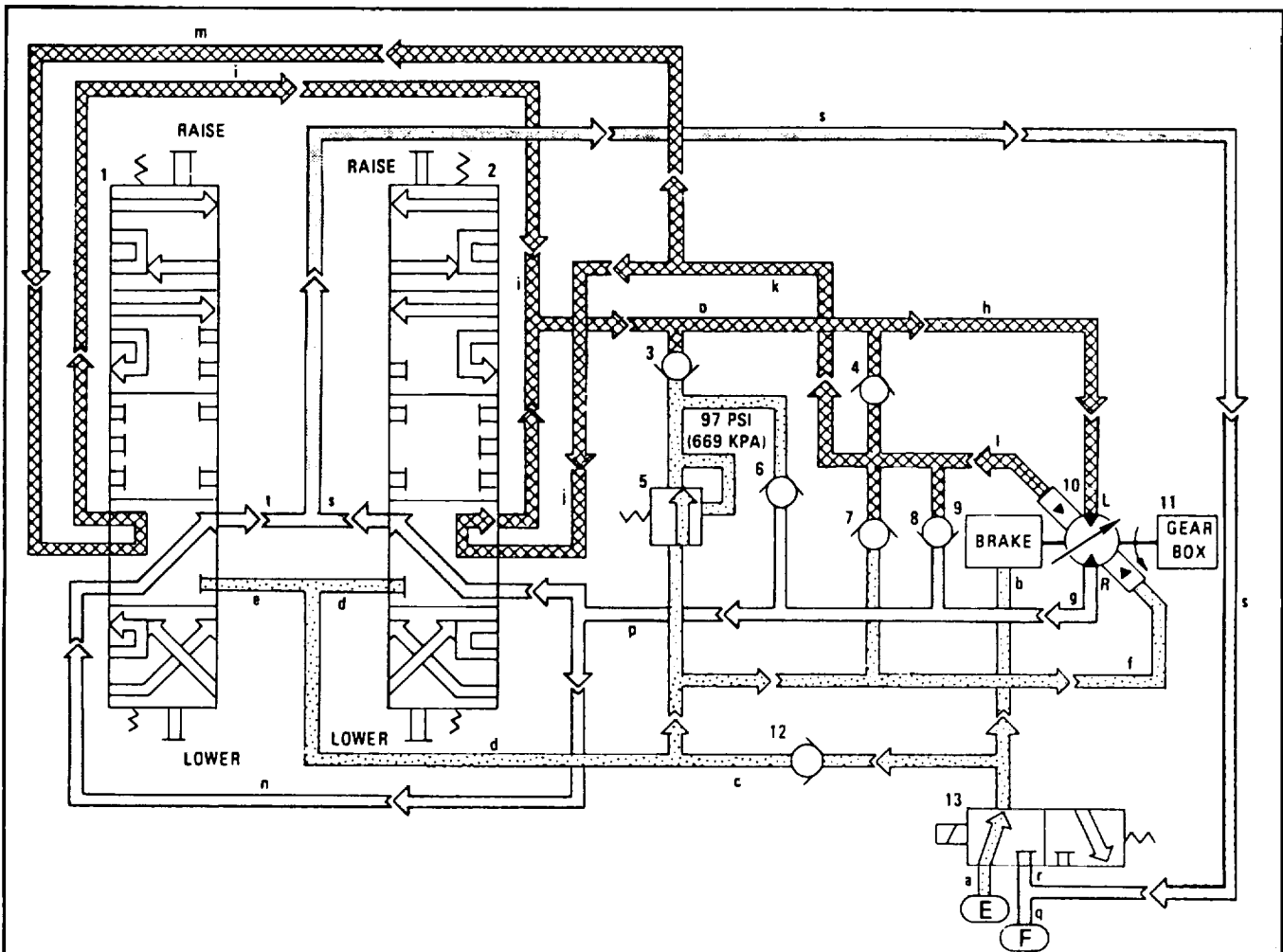
-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive



TURRET-LEFT SIDE



TURRET-RIGHT SIDE



NOTE

Both directional control valves (1 and 2) are shown operated; actually only one would be in use and the other one would be off.

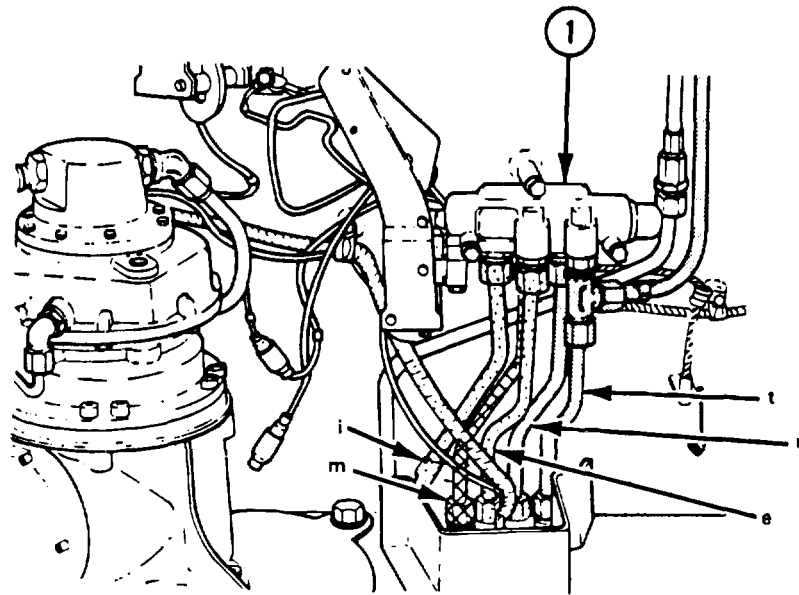
LEGEND

- 1 Directional control valve (left)
- 2 Directional control valve (right)
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Cannon elevating gearbox
- 12 Check valve
- 13 Solenoid valve

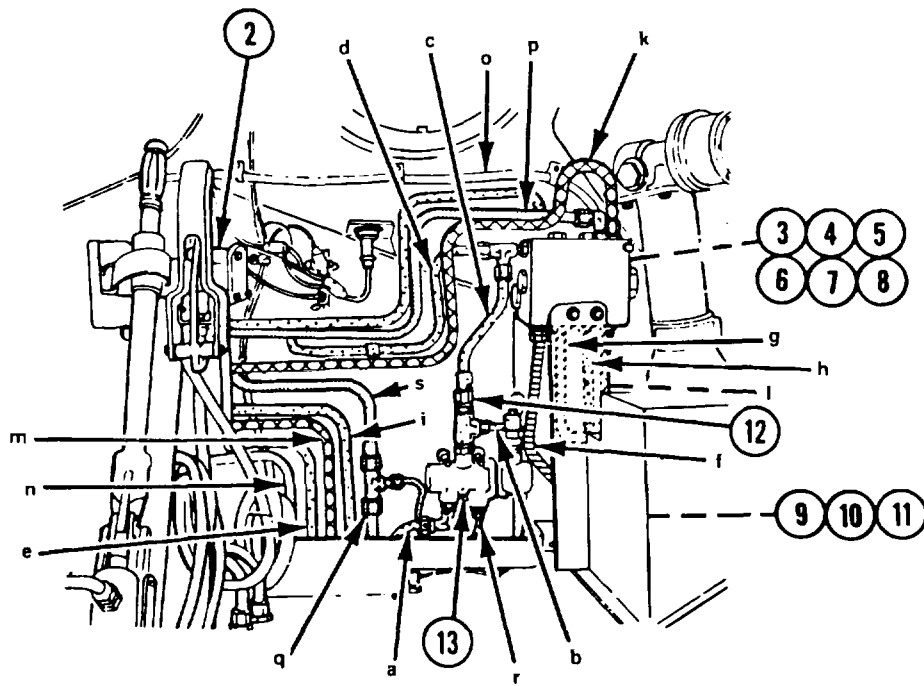
BAR CODE

- Intensified pressure
- Supply pressure
- Charging pressure
- Reduced pressure
- Pilot pressure
- Metered or blocked flow
- Intake drain
- Blank inactive

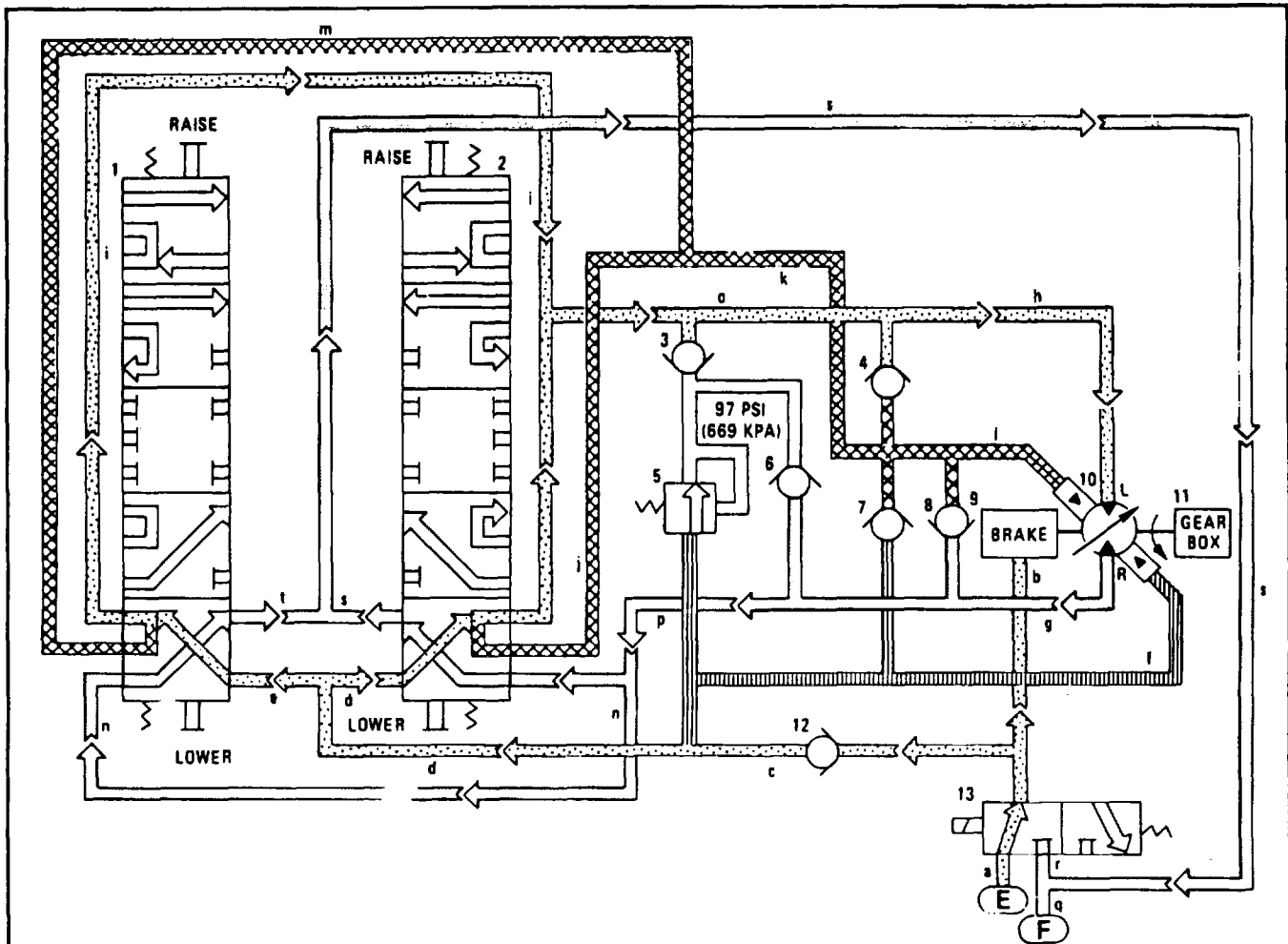
F-40. CANNON ELEVATING-LOWERING (FULL FLOW).



TURRET-LEFT SIDE



TURRET-RIGHT SIDE



NOTE

Both directional control valves (1 and 2) are shown operated; actually only one would be in use and the other one would be off.

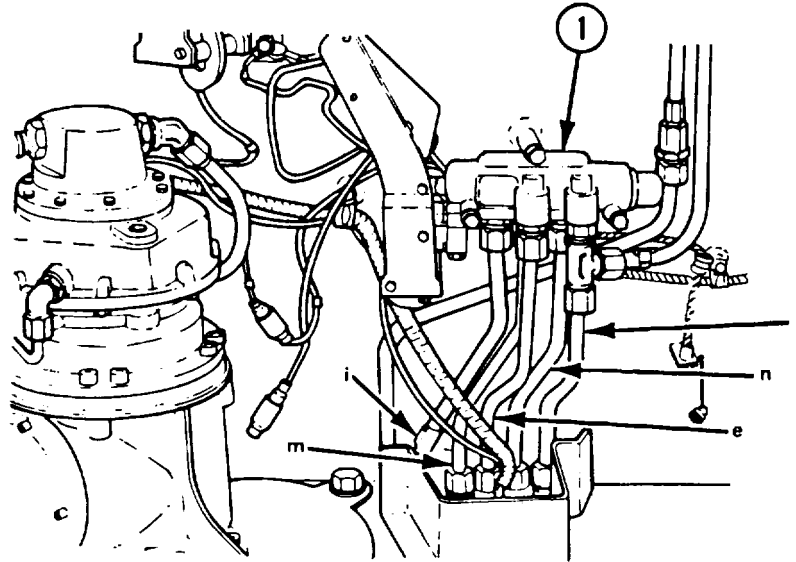
LEGEND

- 1 Directional control valve (left)
- 2 Directional control valve (right)
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Cannon elevating gearbox
- 12 Check valve
- 13 Solenoid valve

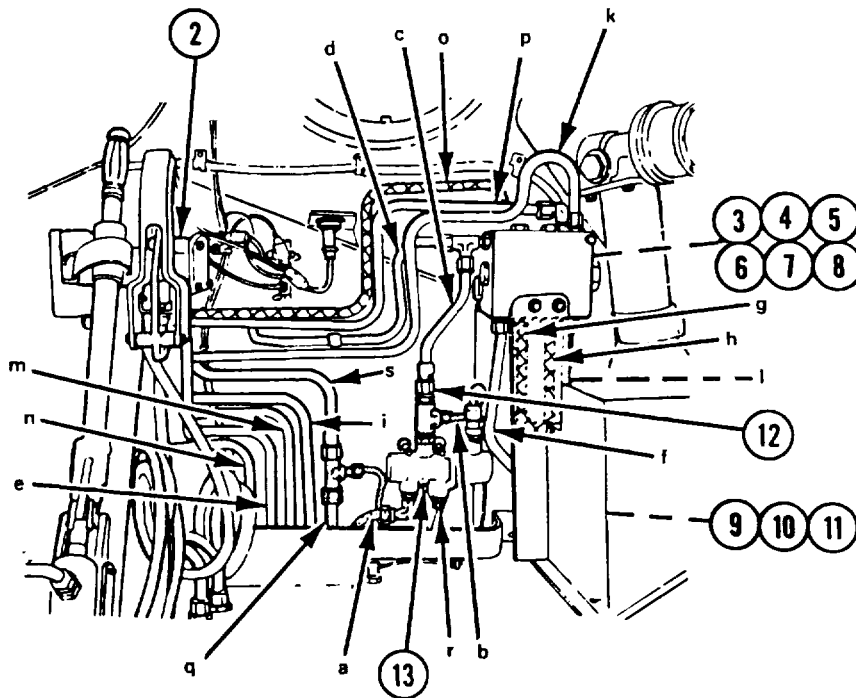
BAR CODE

- Intensified pressure
- Supply pressure
- Charging pressure
- Reduced pressure
- Pilot pressure
- Metered or blocked flow
- Intake drain
- Blank inactive

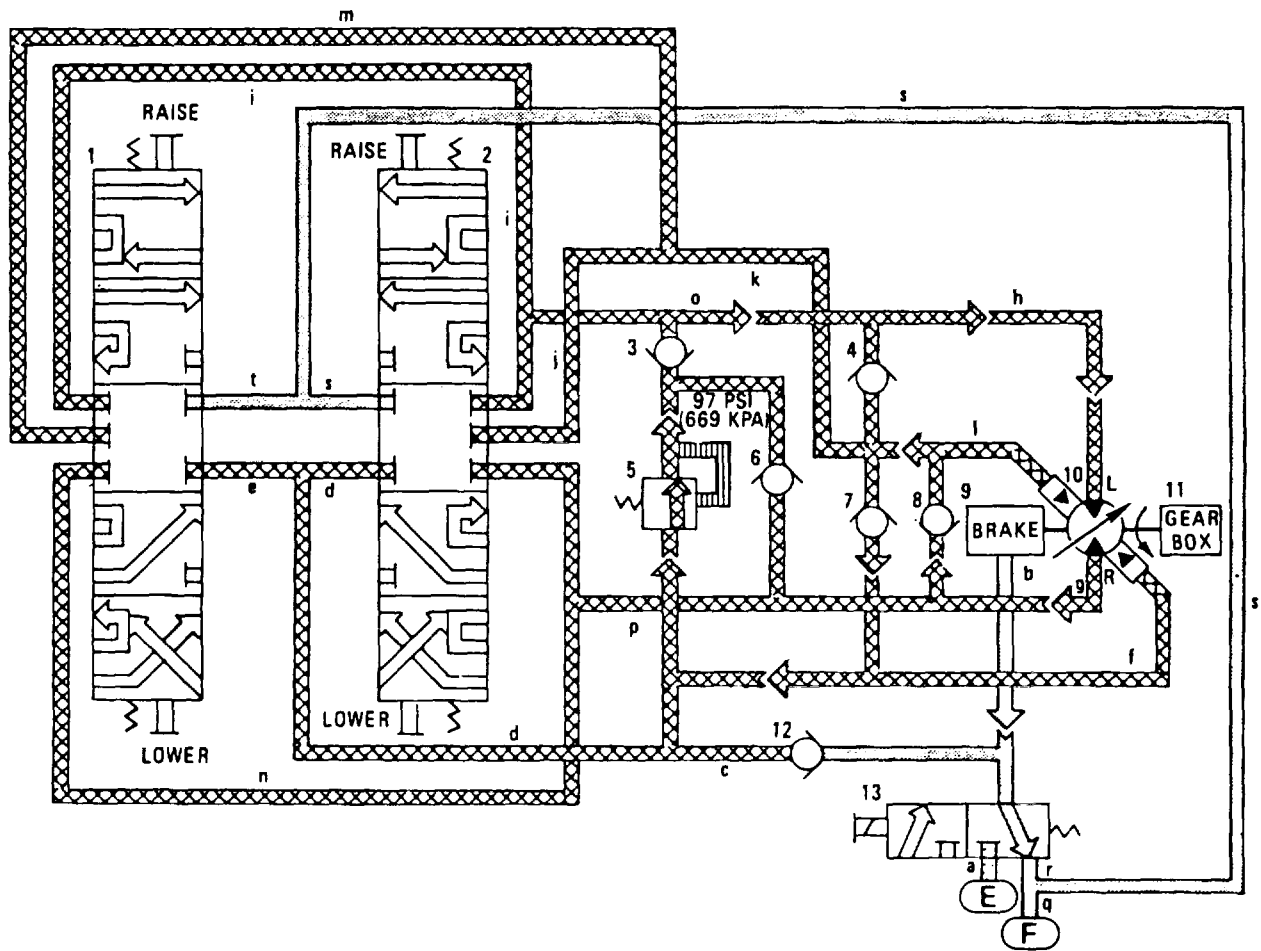
F-41. CANNON ELEVATING-LOWERING (STOPPING).



TURRET-LEFT SIDE











TURRET-RIGHT SIDE

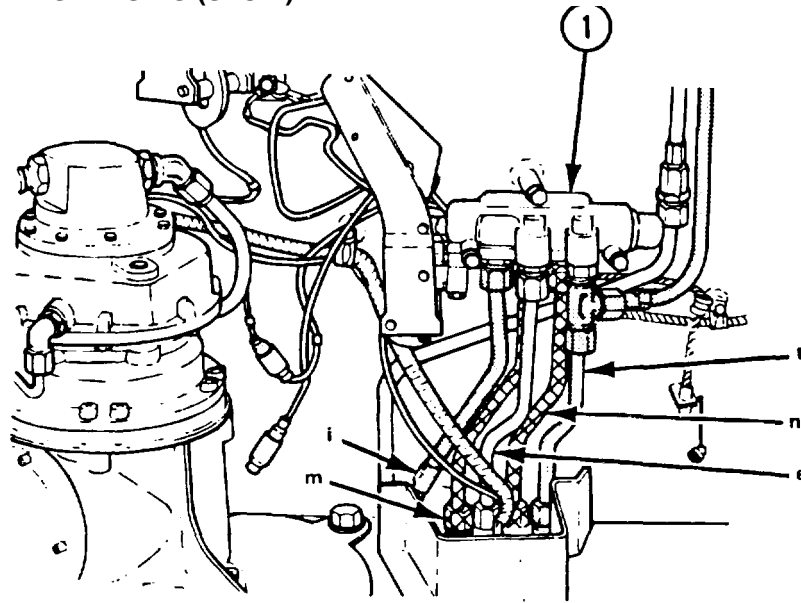


LEGEND

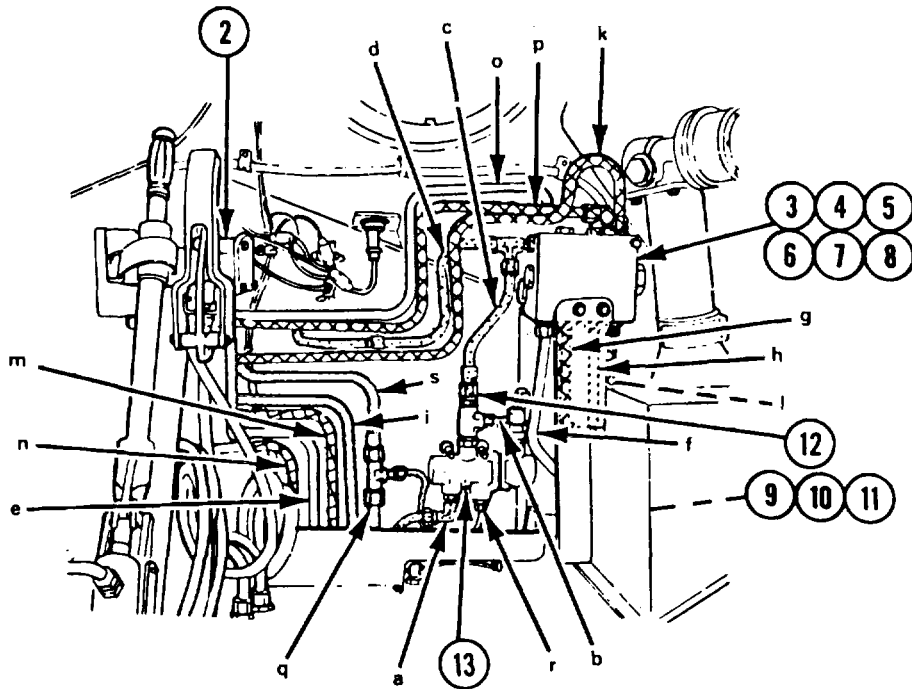
- 1 Directional control valve (left)
- 2 Directional control valve (right)
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Cannon elevating gearbox
- 12 Check valve
- 13 Solenoid valve

BAR CODE

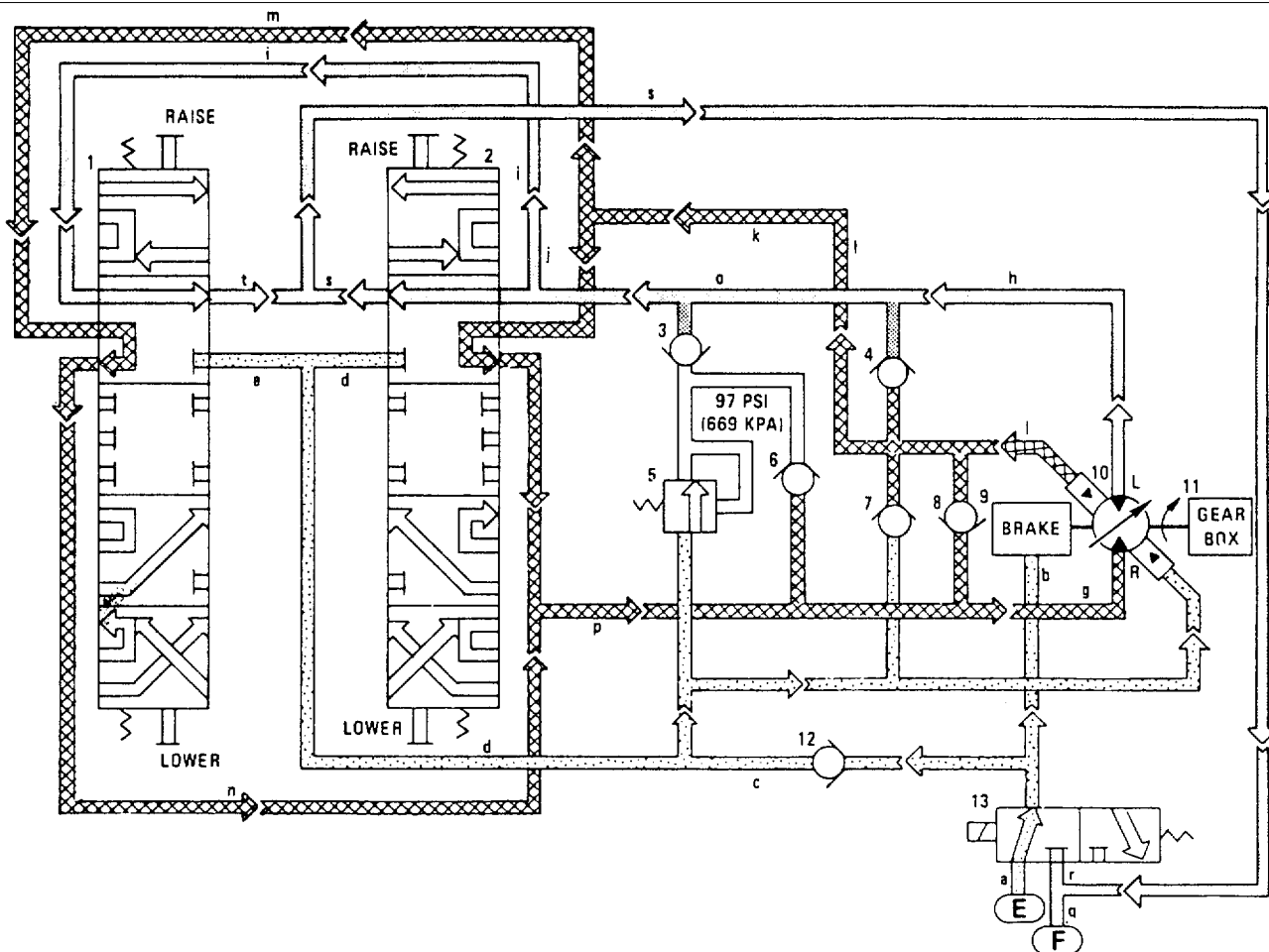
-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive



TURRET-LEFT SIDE



TURRET-SIDE










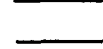
NOTE

Both directional control valves (1 and 2) are shown operated; actually only one would be in use and the other one would be off.

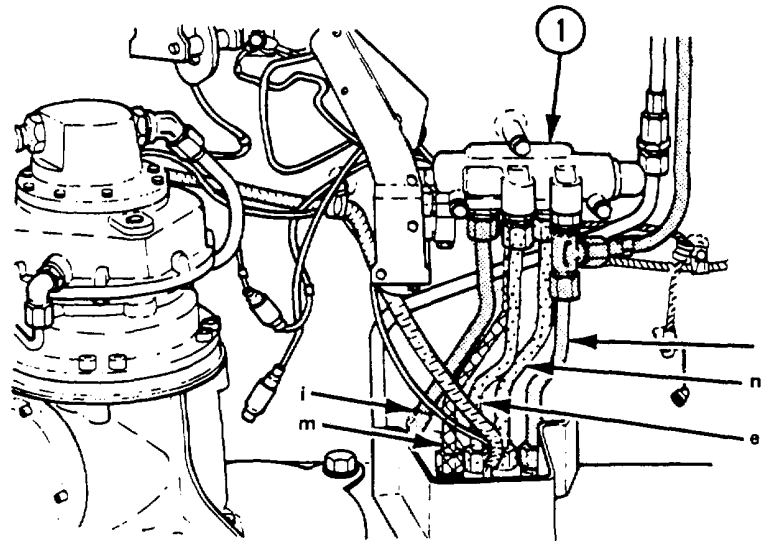
LEGEND

- 1 Directional control valve (left)
- 2 Directional control valve (right)
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Cannon elevating gearbox
- 12 Check valve
- 13 Solenoid valve

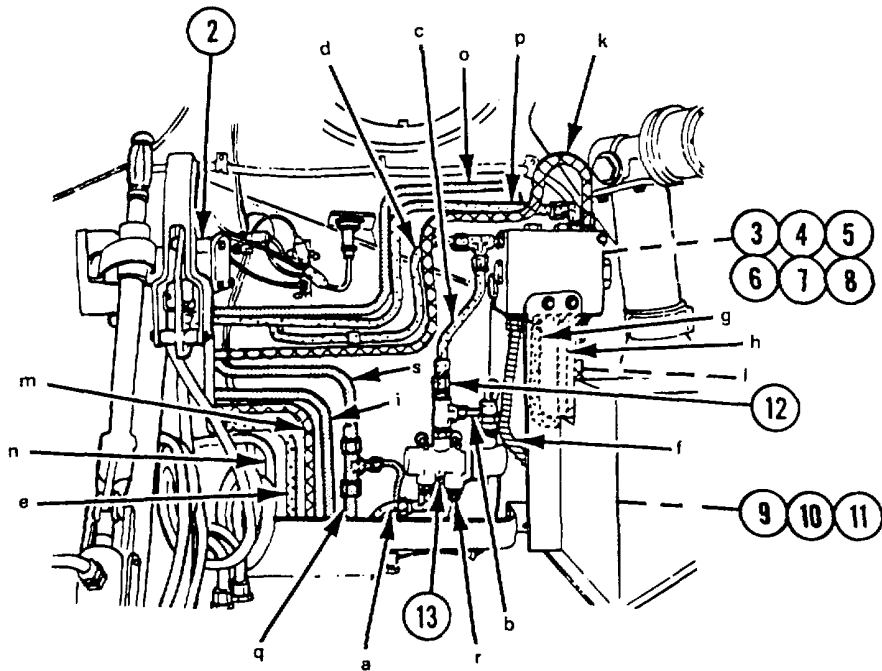
BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

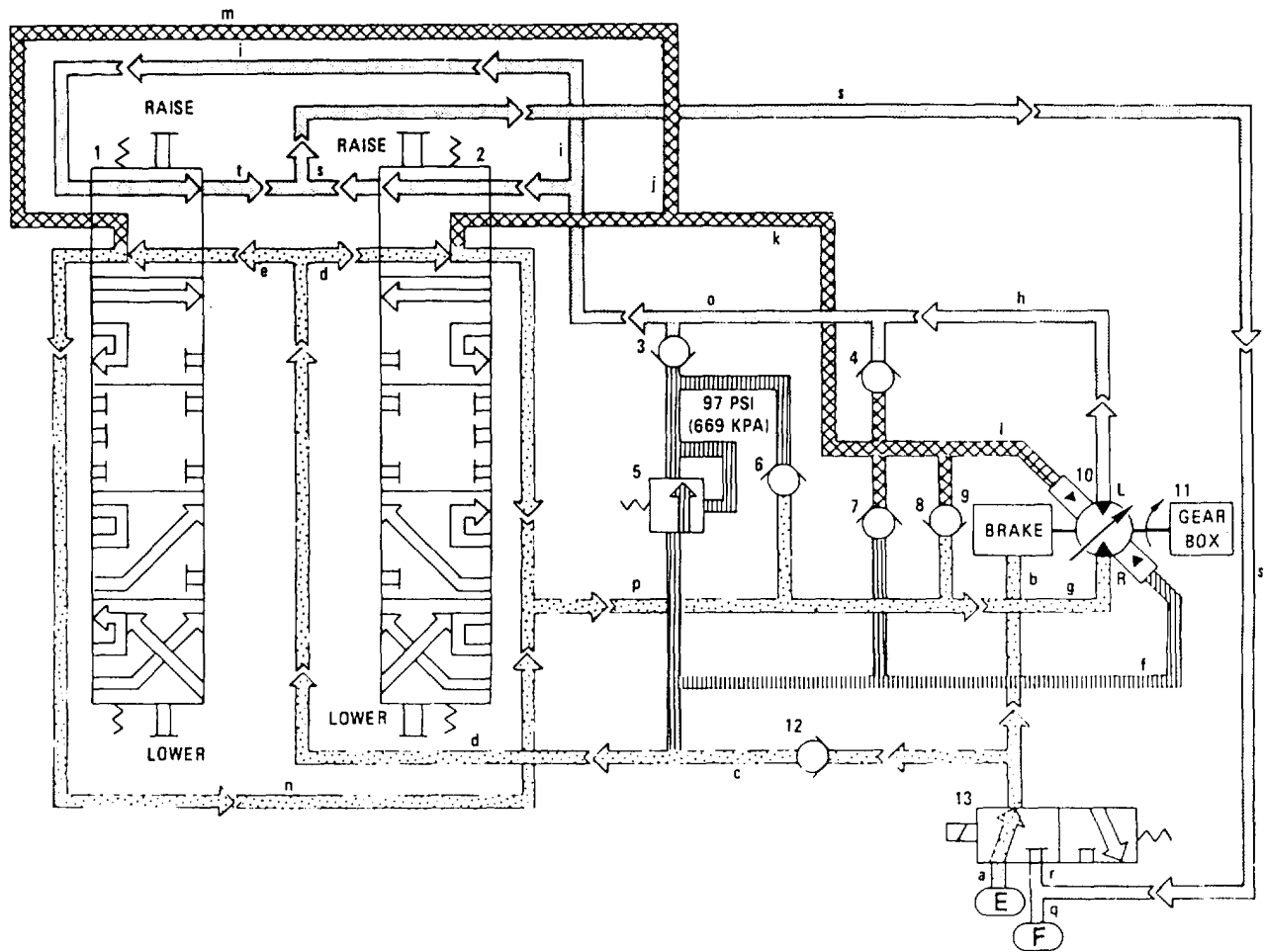
F-43. CANNON ELEVATING-RAISING (FULL FLOW).



TURRET-LEFT SIDE



TURRET-RIGHT SIDE











NOTE

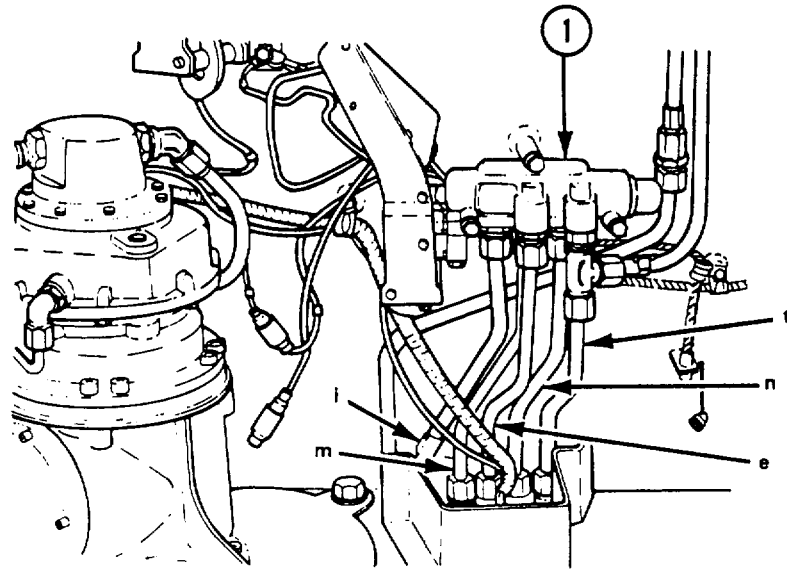
Both directional control valves (1 and 2) are shown operated; actually only one would be in use and the other one would be off.

LEGEND

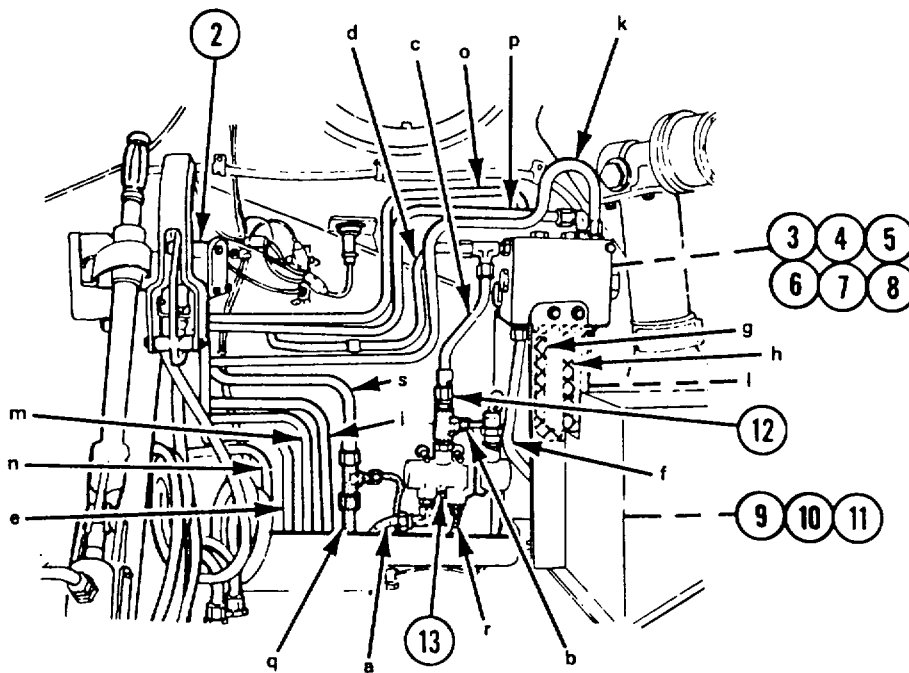
- 1 Directional control valve (left)
- 2 Directional control valve (right)
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Cannon elevating gearbox
- 12 Check valve
- 13 Solenoid valve

BAR CODE

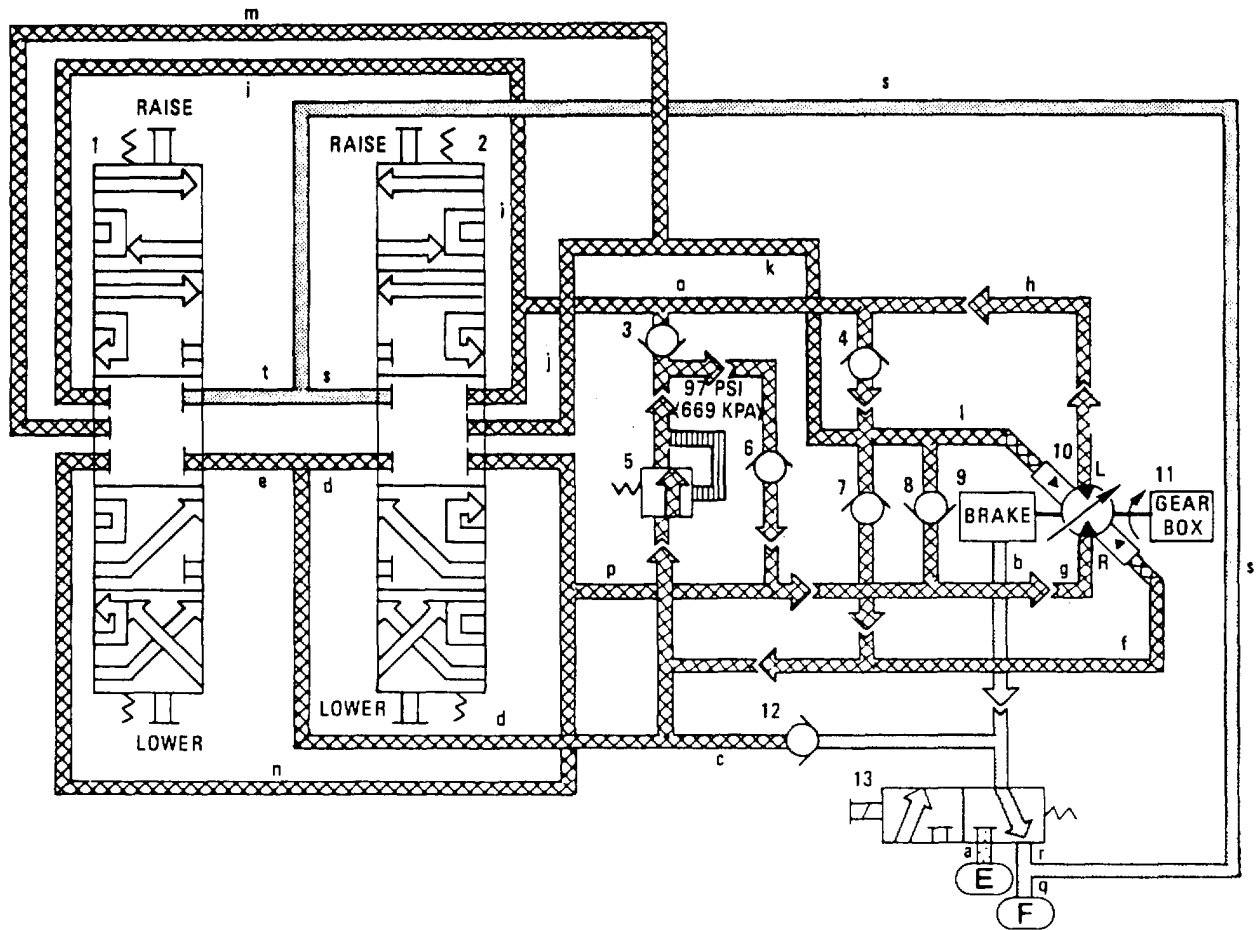
-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive



TURRET - LEFT SIDE




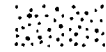




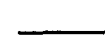

TURRET - RIGHT SIDE



LEGEND

- 1 Directional control valve (left)
- 2 Directional control valve (right)
- 3 Check valve
- 4 Check valve
- 5 Pressure reducing valve
- 6 Check valve
- 7 Check valve
- 8 Check valve
- 9 Hydraulic brake
- 10 Hydraulic motor with stroke control cylinder
- 11 Cannon elevating gearbox
- 12 Check valve
- 13 Solenoid valve

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-45. LOADER AND RAMMER TRAVERSING HYDRAULIC SUBSYSTEM.

Functional Description. The loader and rammer traversing hydraulic subsystem swings the loader and rammer from the stowed position to the loading position and back again.

Releasing the loader and rammer stowed position lock and moving the handle of directional control valve (9) to LOAD position directs hydraulic fluid at about 2400 psi (16,548 kPa) through restrictor (5) to extend side of loader and rammer traversing cylinder (8).

As cylinder (8) extends, a rack and pinion gearset swings the loader and rammer to the loading position.

Releasing the handle allows directional control valve (9) to return to the center (off) position, blocking both hydraulic fluid supply and return lines. This locks the loader and rammer in position.

When the loader and rammer is locked in the loading position, the pivot interlock switch is actuated, which energizes the rammer solenoid operated shutoff valve and allows the rammer hydraulic subsystem to be operated.

Releasing the ram position lock and moving the handle of directional control valve (9) to STOW position, directs hydraulic fluid through restrictor (1) to the retract side of loader and rammer traversing cylinder (8).







As cylinder (8) retracts, the loader and rammer swings back to the stowed and locked position.

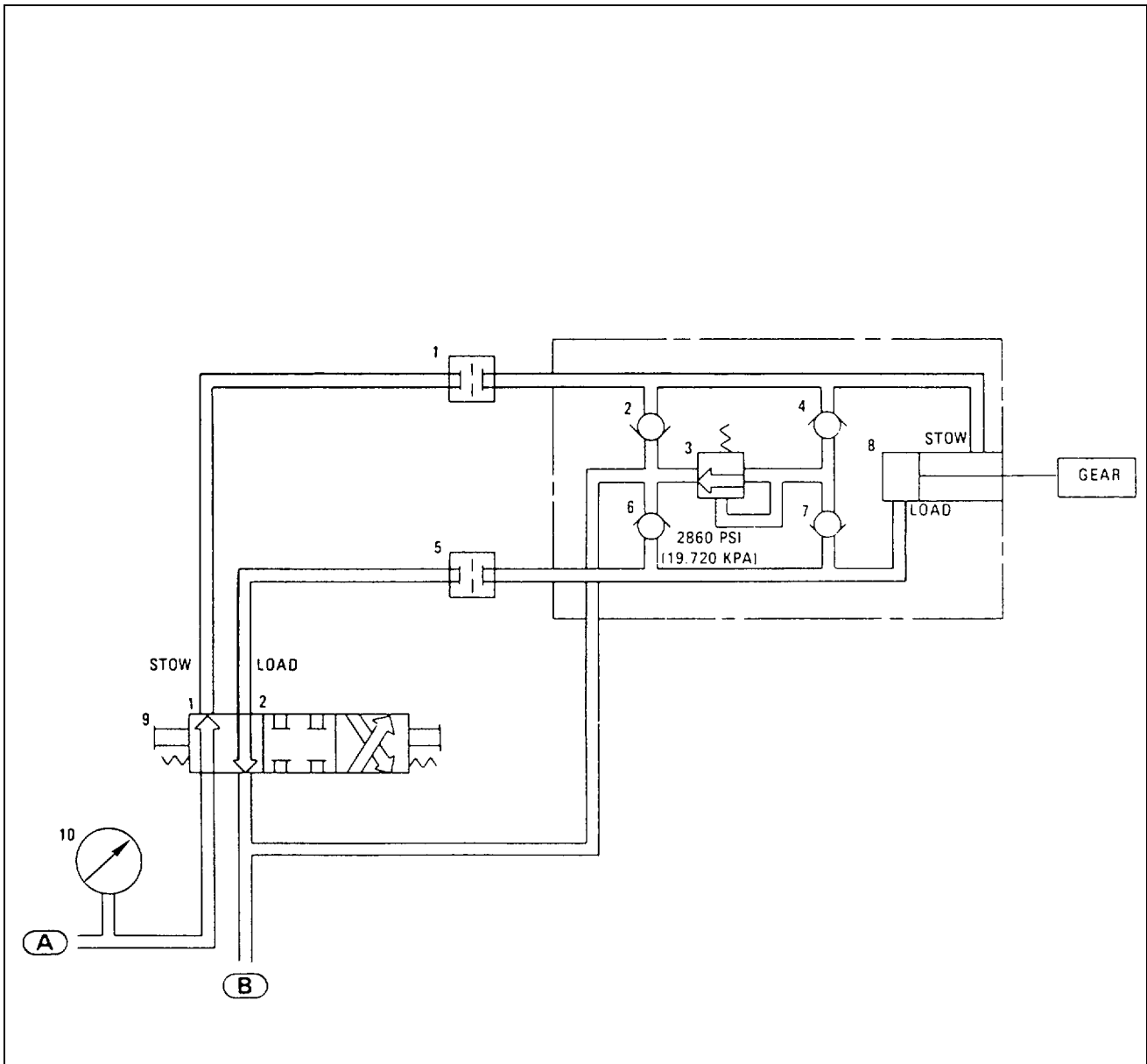
The subsystem is protected from over-pressure by pressure relief valve (3), which bypasses hydraulic fluid over 2860 psi (19,720 kPa) back to the reservoir.

LEGEND

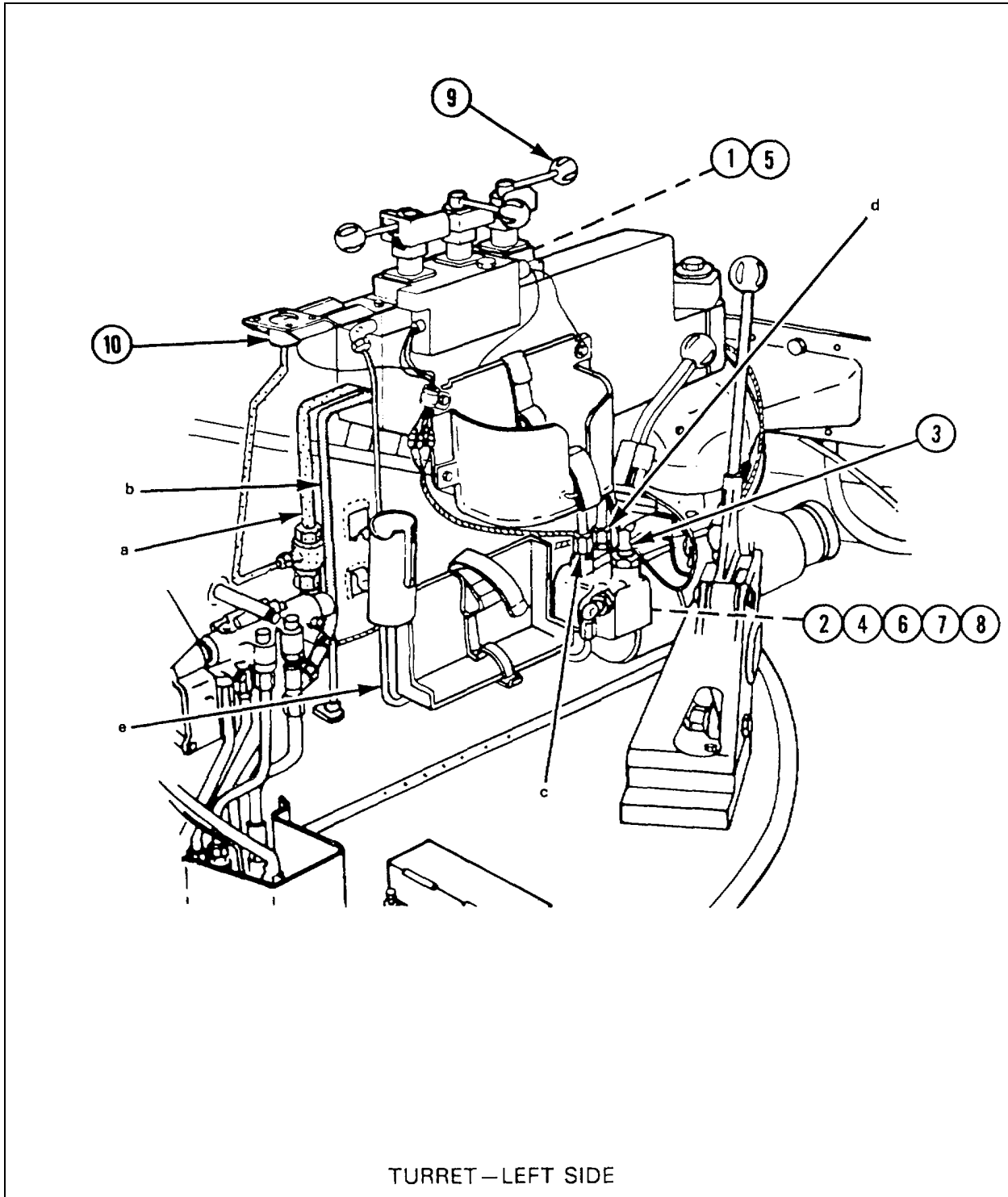
- 1 Restrictor union
- 2 Check valve
- 3 Pressure relief valve
- 4 Check valve
- 5 Restrictor union
- 6 Check valve
- 7 Check valve
- 8 Loader and rammer traversing cylinder
- 9 Directional control valve
- 10 Pressure gage

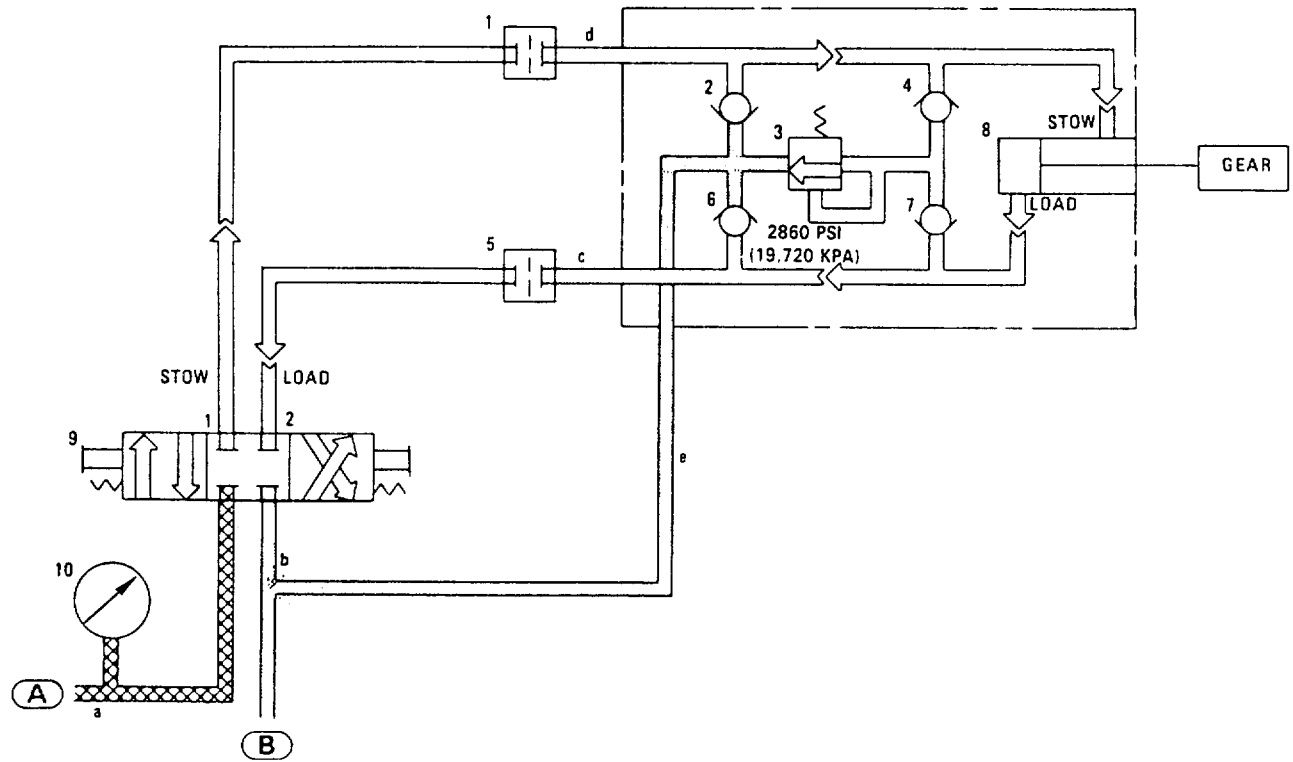
BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
Reduced pressure
Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive



F-46. LOADER AND RAMMER TRAVERSING-CENTER (OFF) POSITION.













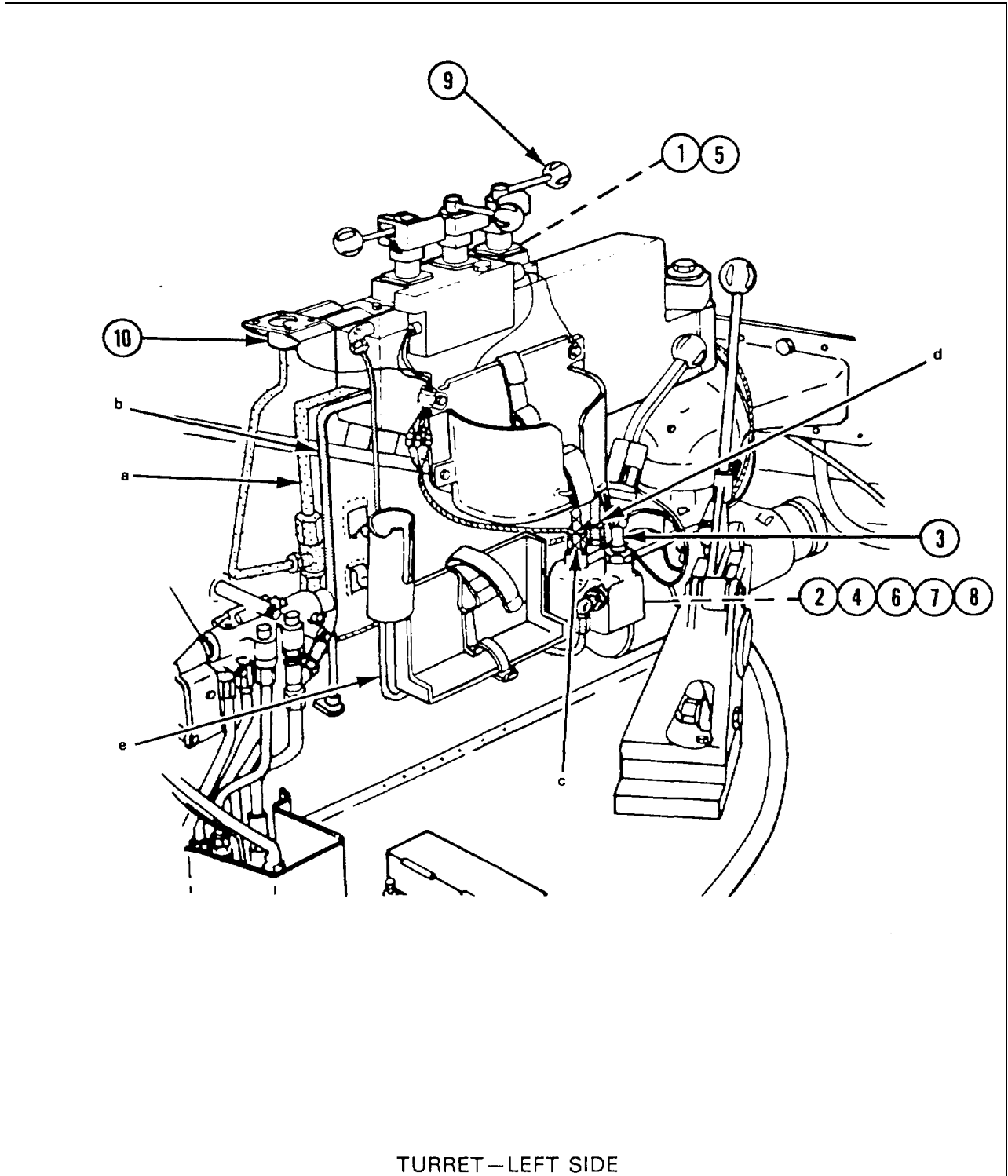
LEGEND

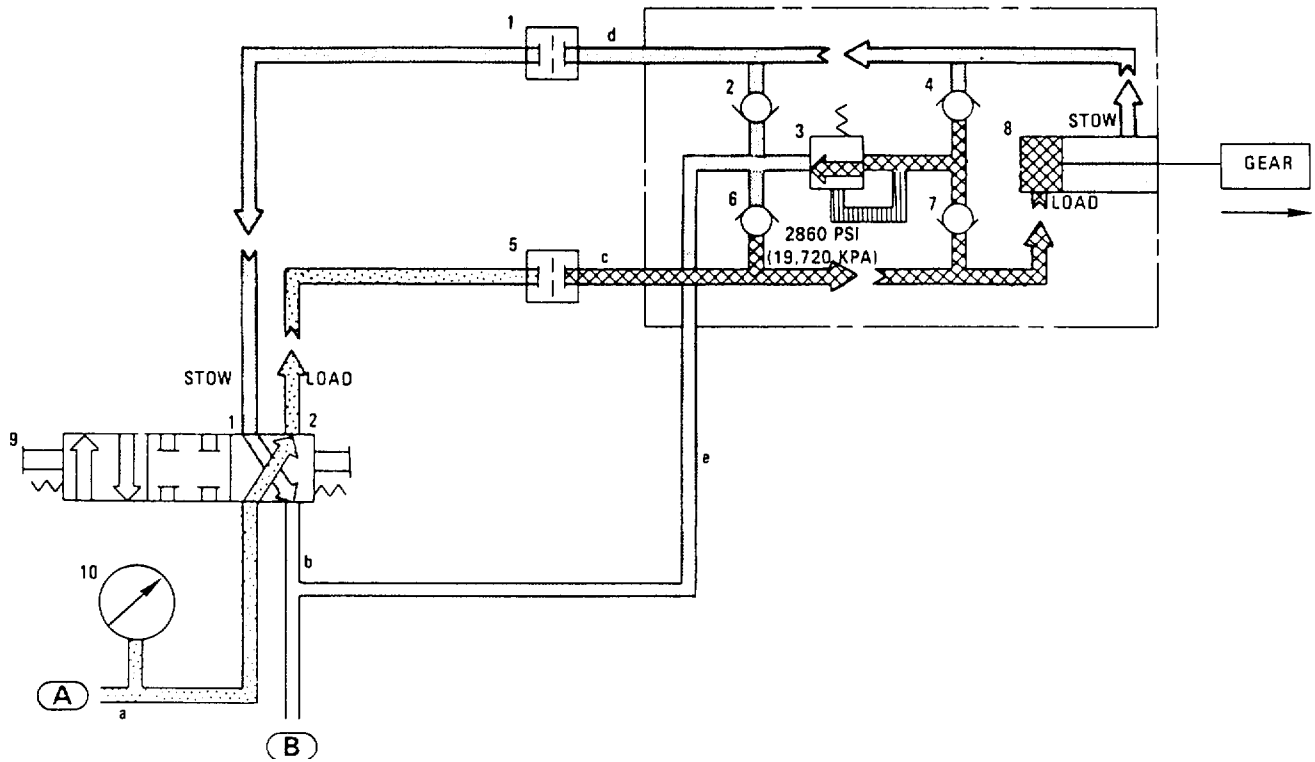
- 1 Restrictor union
- 2 Check valve
- 3 Pressure relief valve
- 4 Check valve
- 5 Restrictor union
- 6 Check valve
- 7 Check valve
- 8 Loader and rammer traversing cylinder
- 9 Directional control valve
- 10 Pressure gage

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-47. LOADER AND RAMMER TRAVERSING-LOAD POSITION.













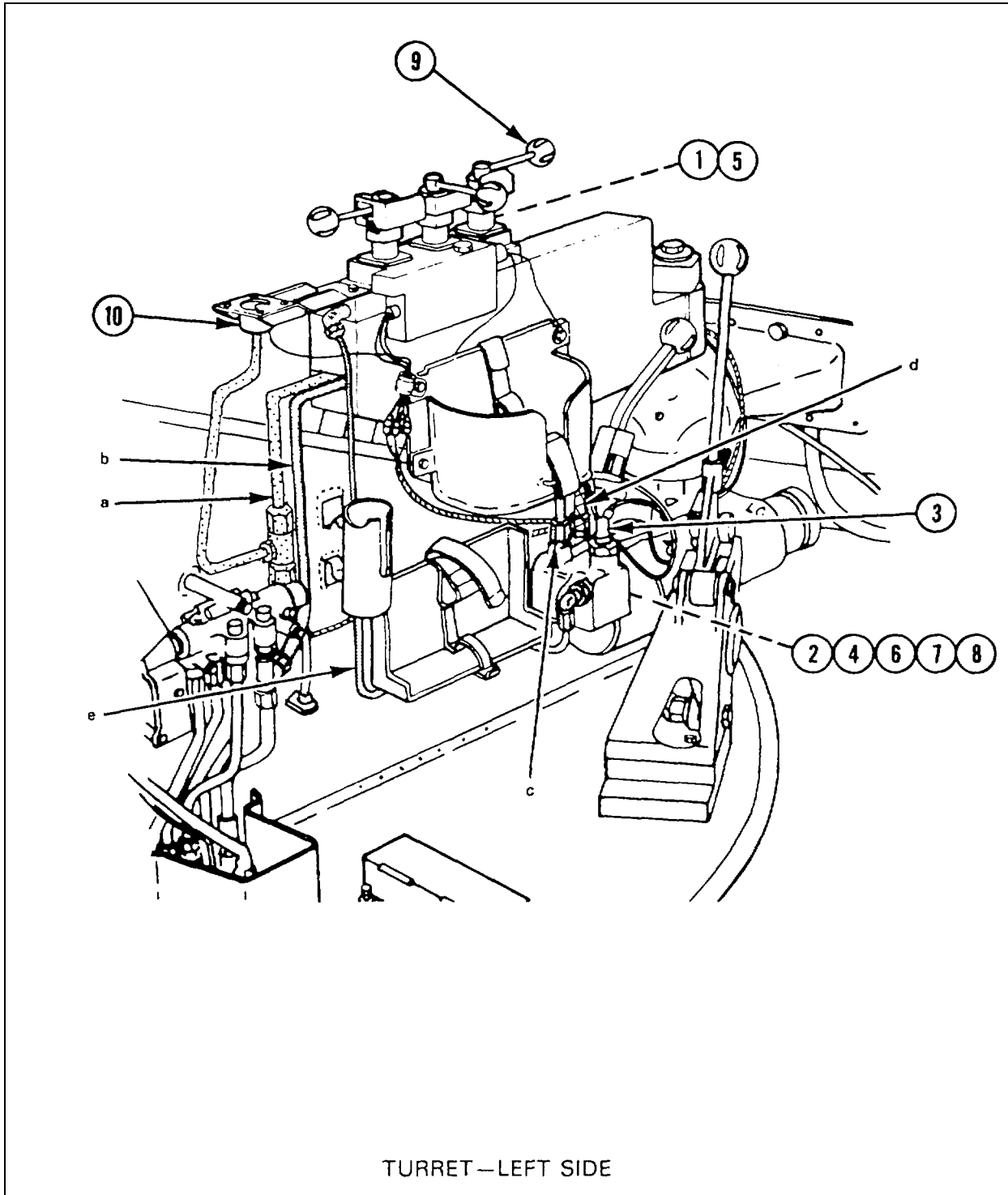
LEGEND

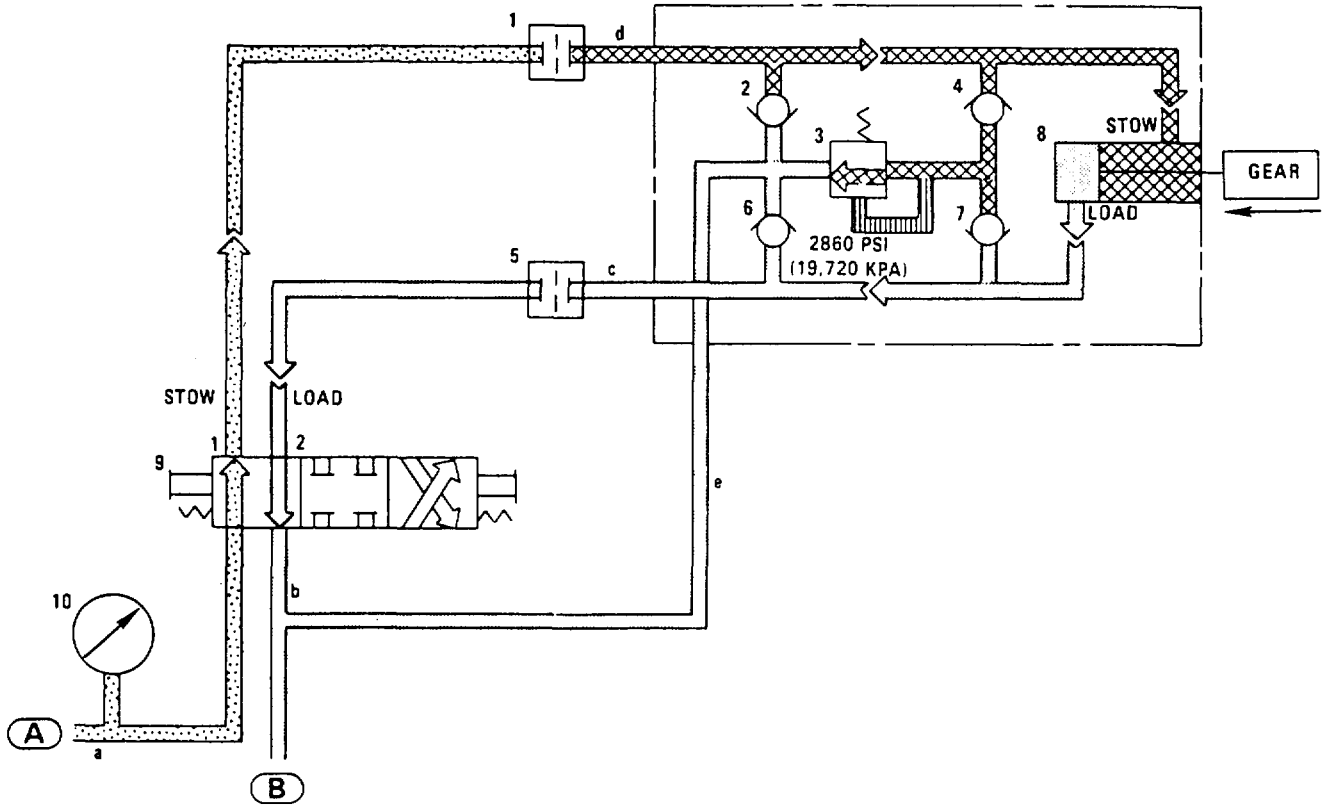
- 1 Restrictor union
- 2 Check valve
- 3 Pressure relief valve
- 4 Check valve
- 5 Restrictor union
- 6 Check valve
- 7 Check valve
- 8 Loader and rammer traversing cylinder
- 9 Directional control valve
- 10 Pressure gage

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-48. LOADER AND RAMMER TRAVERSING-STOW POSITION.













LEGEND

- 1 Restrictor union
- 2 Check valve
- 3 Pressure relief valve
- 4 Check valve
- 5 Restrictor union
- 6 Check valve
- 7 Check valve
- 8 Loader and rammer traversing cylinder
- 9 Directional control valve
- 10 Pressure gage

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-49. LOADER HYDRAULIC SUBSYSTEM.

Functional Description. The loader hydraulic subsystem swings the loader arms in and out to pick up and load ammunition on the loader and rammer.

Moving the handle of directional control valve (7) in the OUT position directs hydraulic fluid at about 2400 psi (16,548 kPa) through restrictor (6) and rotating manifold (2) to the retract sides of lift cylinders (3 and 5).

As cylinders (3 and 5) retract, loader arms (4) swing out over the spade to pick up a projectile.

Releasing the handle allows directional control valve (7) to return to the center (off) position, blocking both hydraulic fluid supply and return lines. This locks loader arms (4) in any desired position.







Moving the handle of directional control valve (7) in the IN position directs hydraulic fluid through restrictor (1) and rotating manifold (2) to the extend side of lift cylinders (3 and 5).

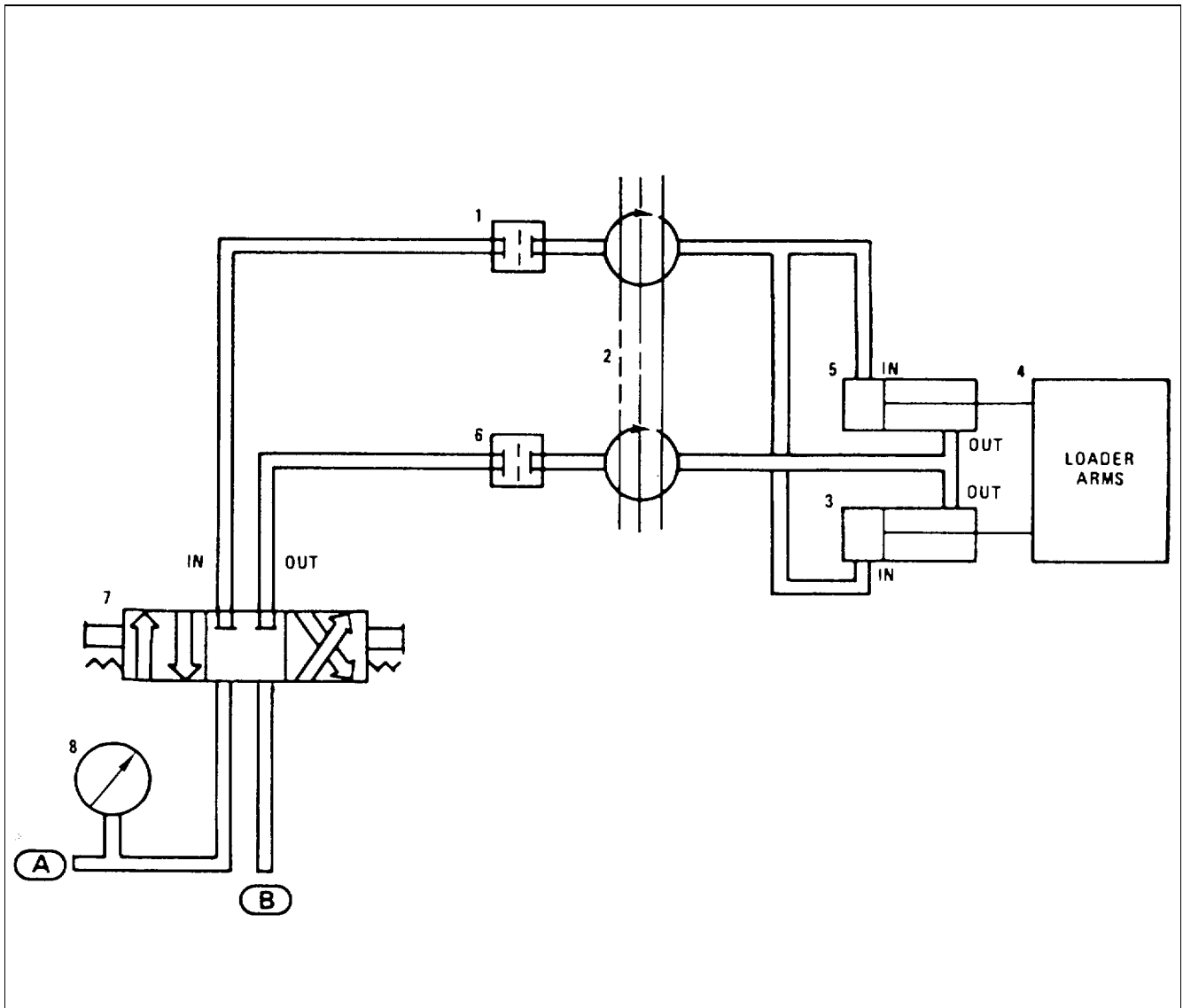
As cylinders (3 and 5) extend, loader arms (4) swing up and in, depositing the projectile on the loader and rammer, ready for ramming into the cannon breech.

LEGEND

- 1 Restrictor union
- 2 Rotating manifold
- 3 Lift cylinder
- 4 Loader arms
- 5 Lift cylinder
- 6 Restrictor union
- 7 Directional control valve
- 8 Pressure gage

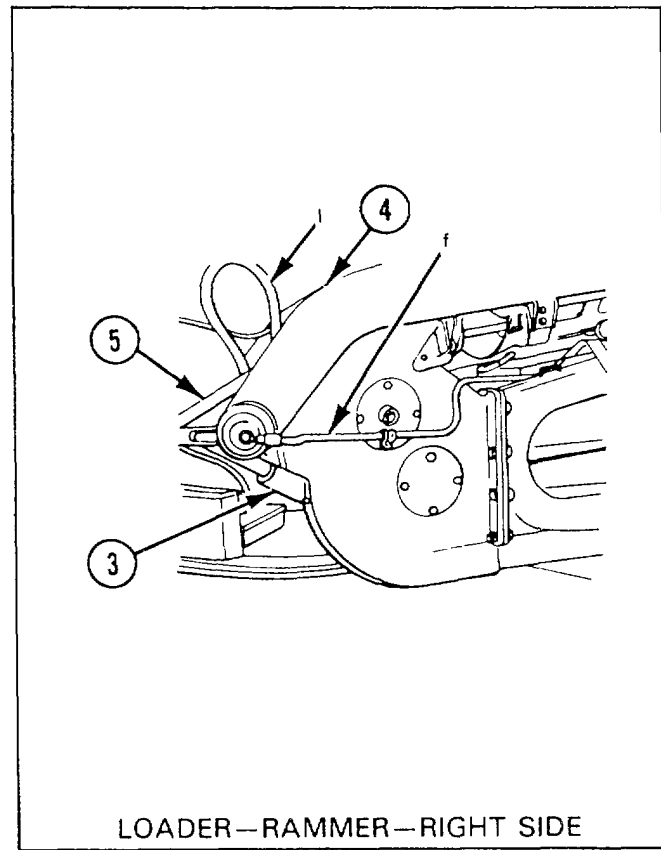
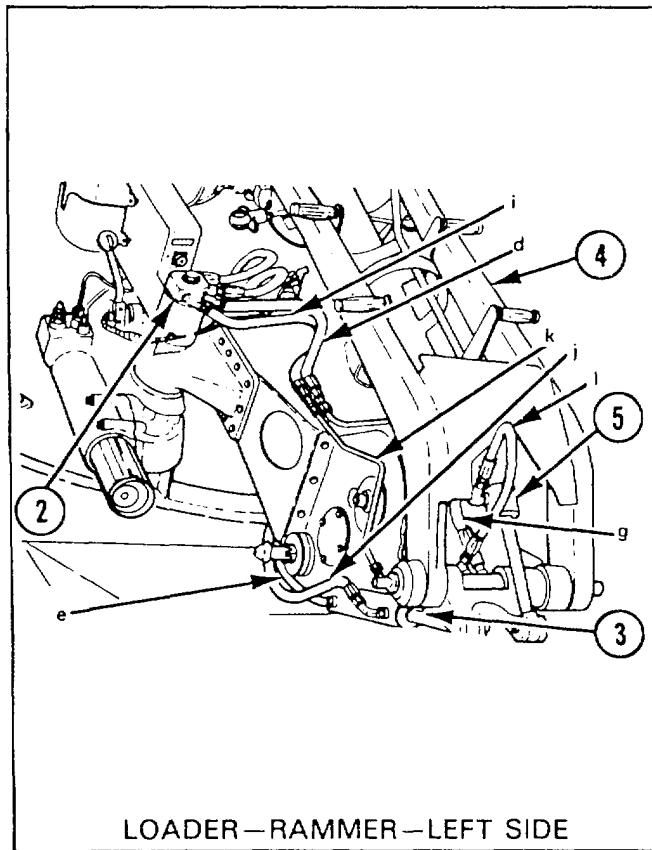
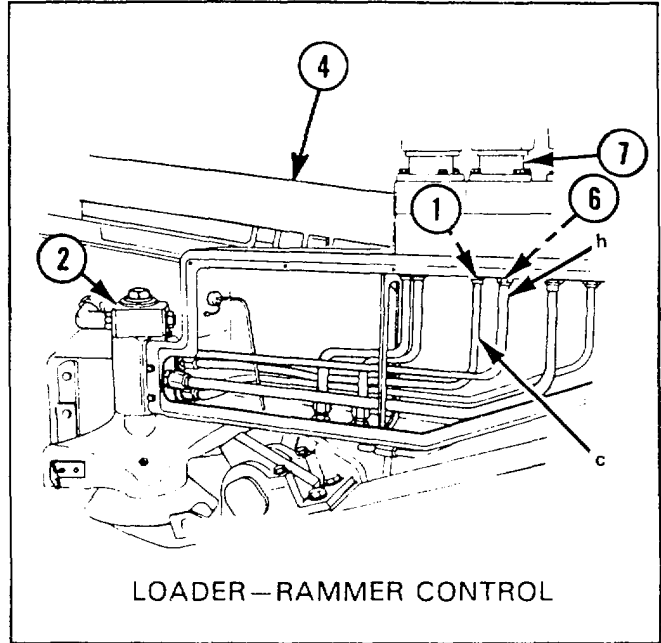
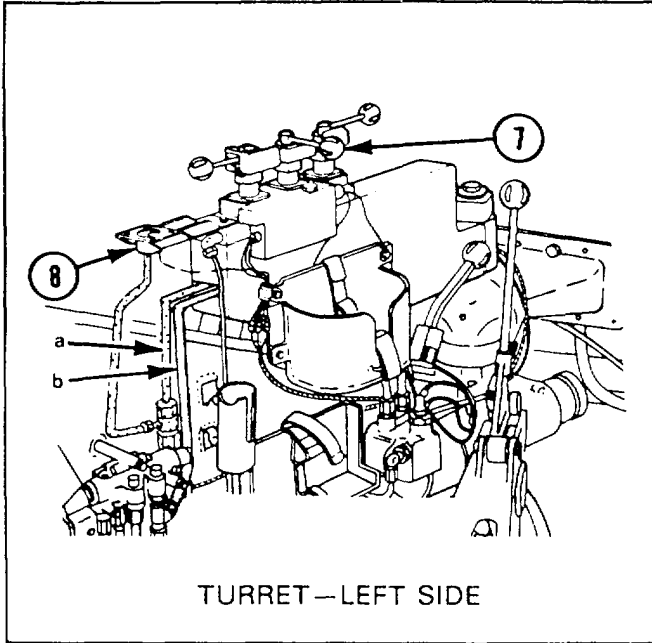
BAR CODE

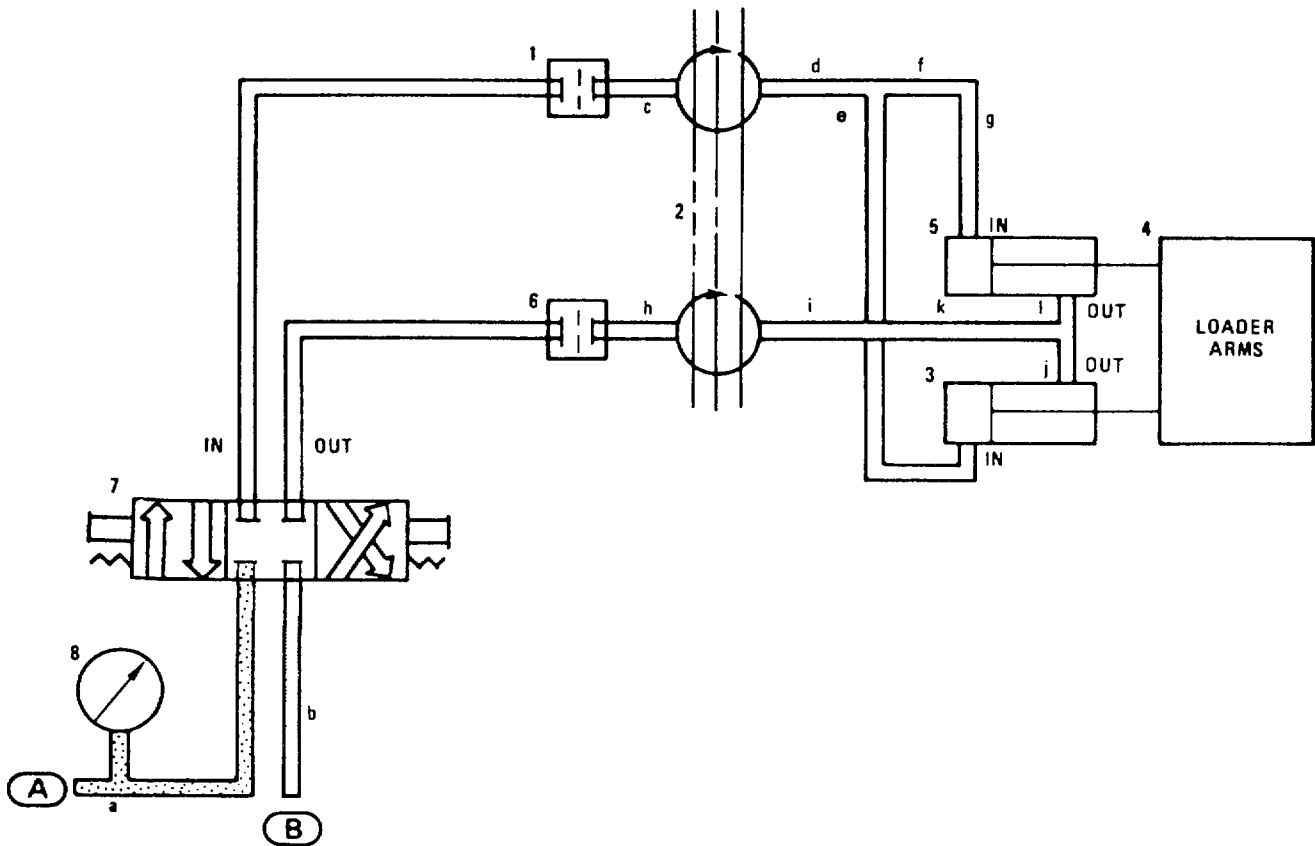
-  Intensified pressure
-  Supply pressure
-  Charging pressure
Reduced pressure
Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive



F-91

F-50. LOADER-CENTER (OFF) POSITION.













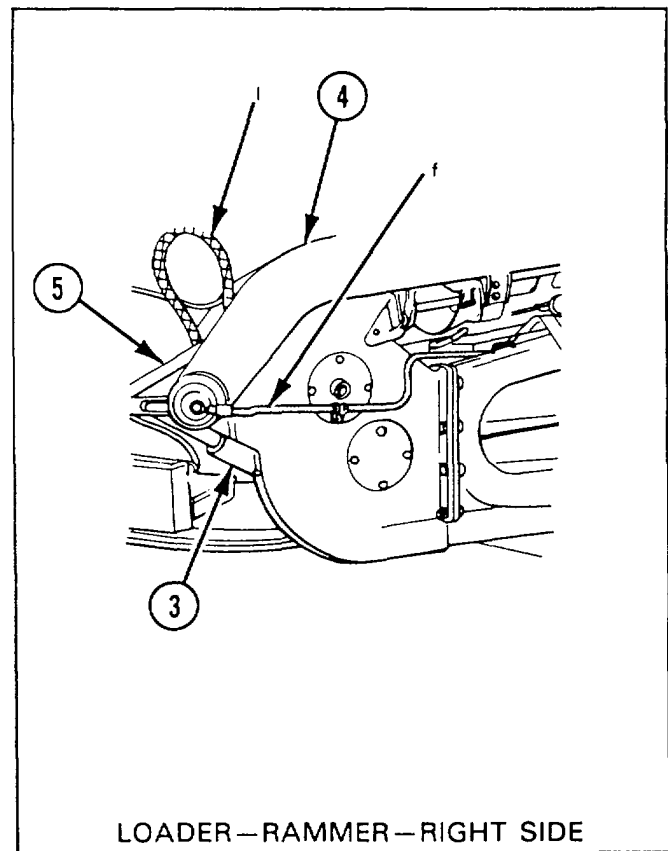
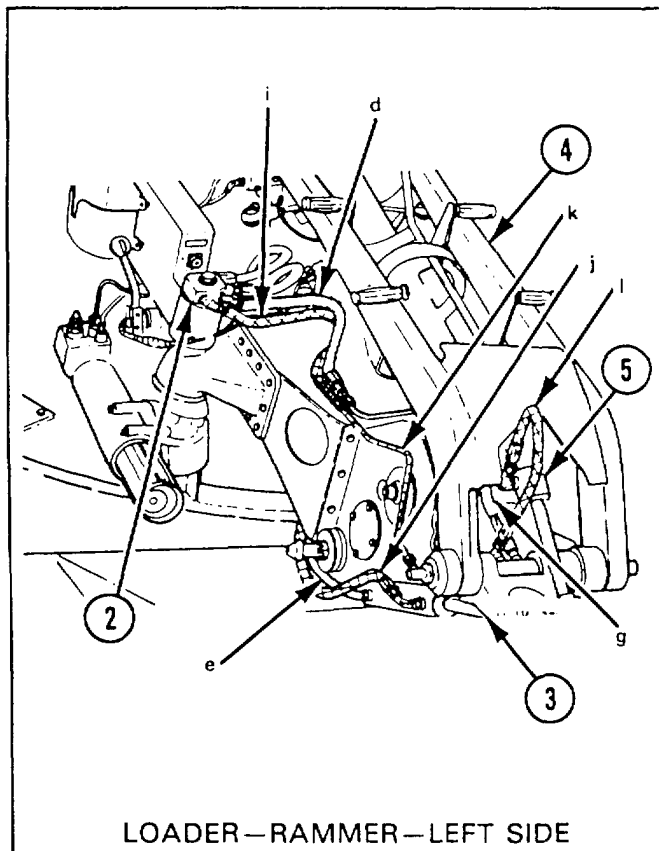
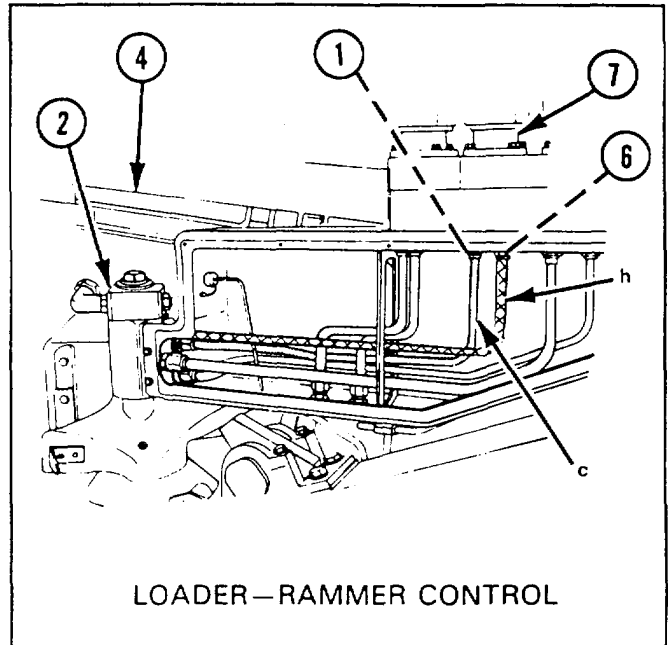
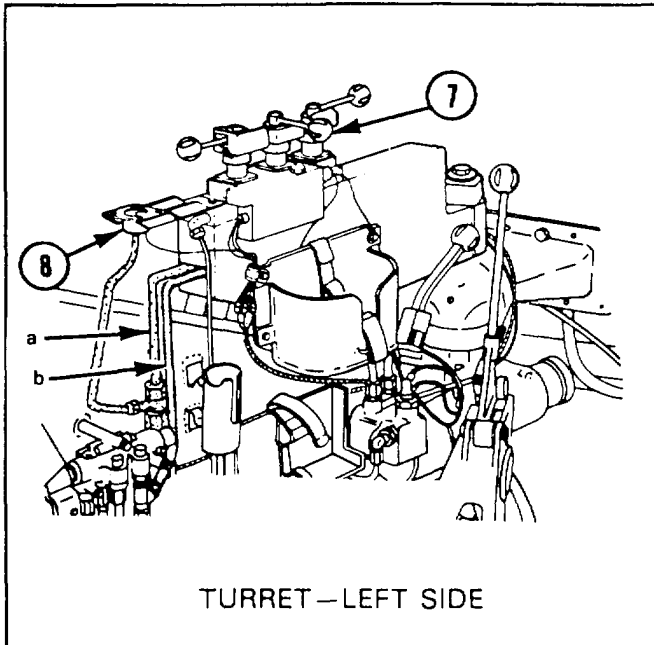
LEGEND

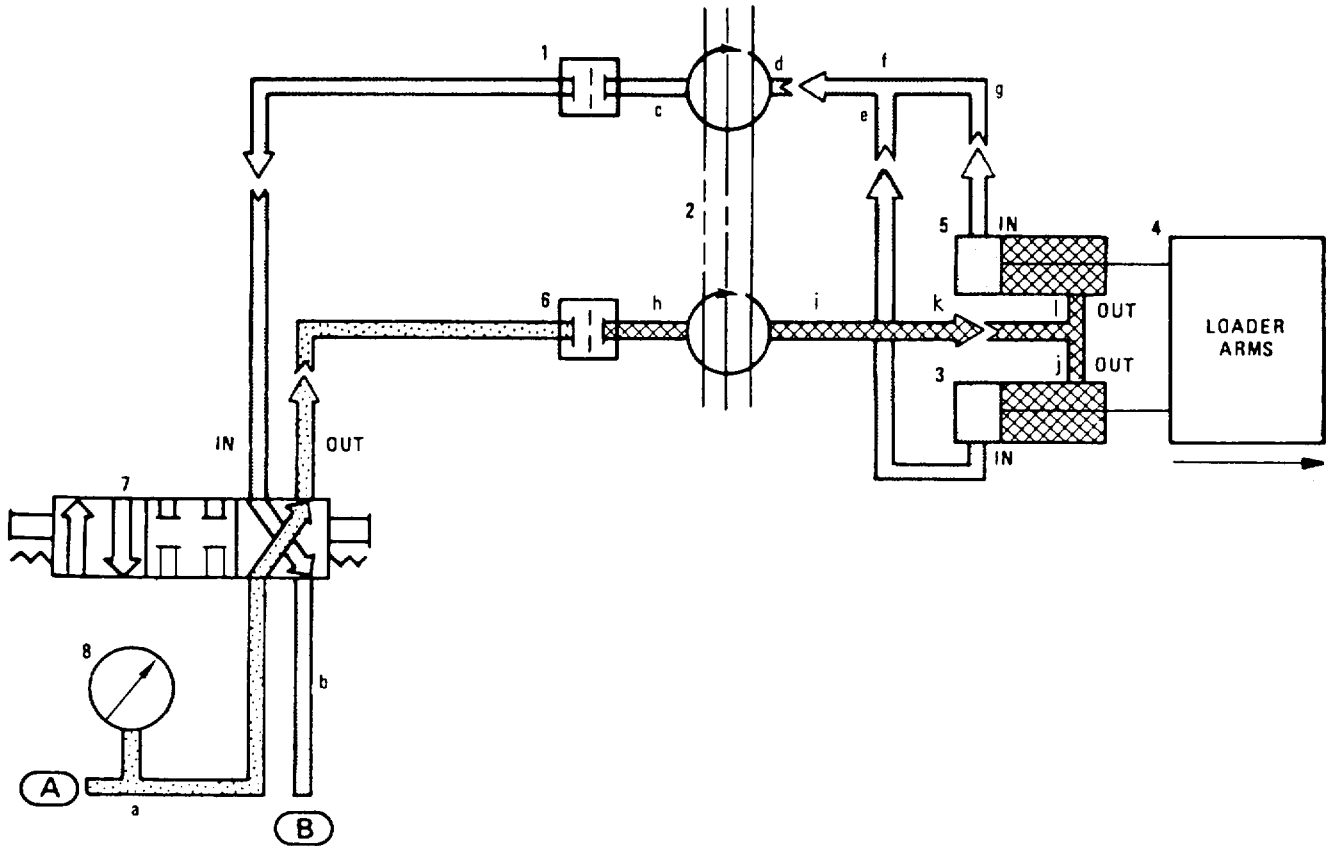
- 1 Restrictor union
- 2 Rotating manifold
- 3 Lift cylinder
- 4 Loader arms
- 5 Lift cylinder
- 6 Restrictor union
- 7 Directional control valve
- 8 Pressure gage

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-51. LOADER--"OUT" POSITION.











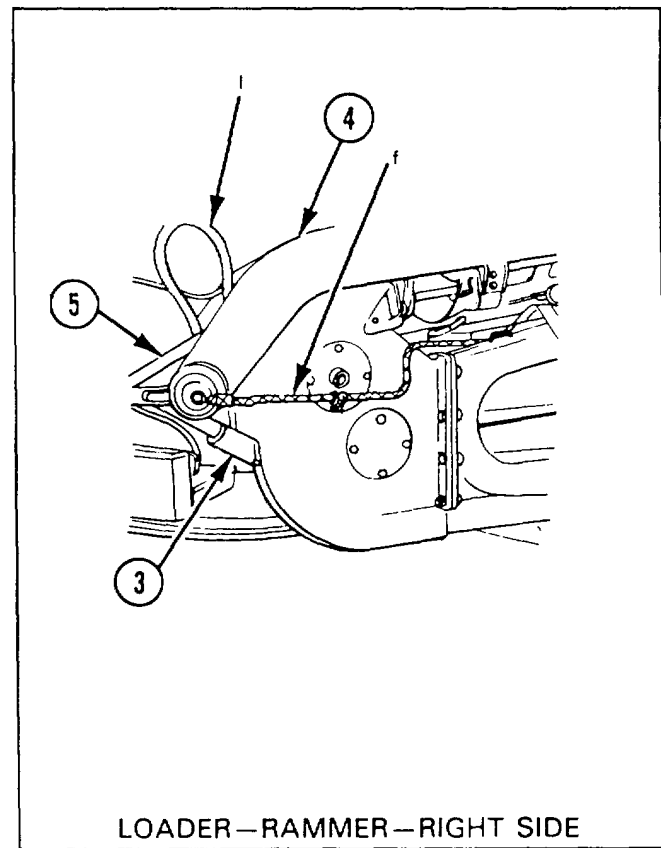
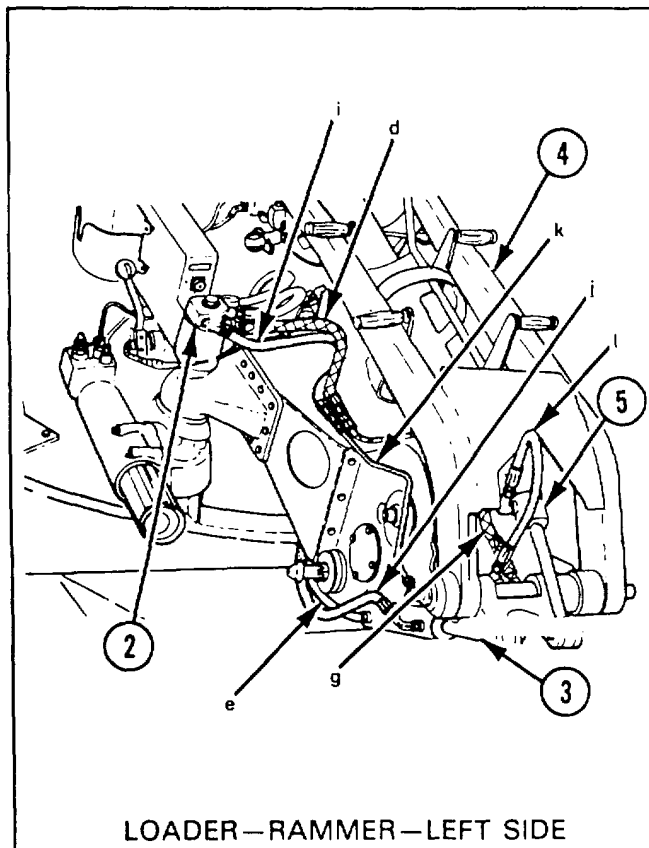
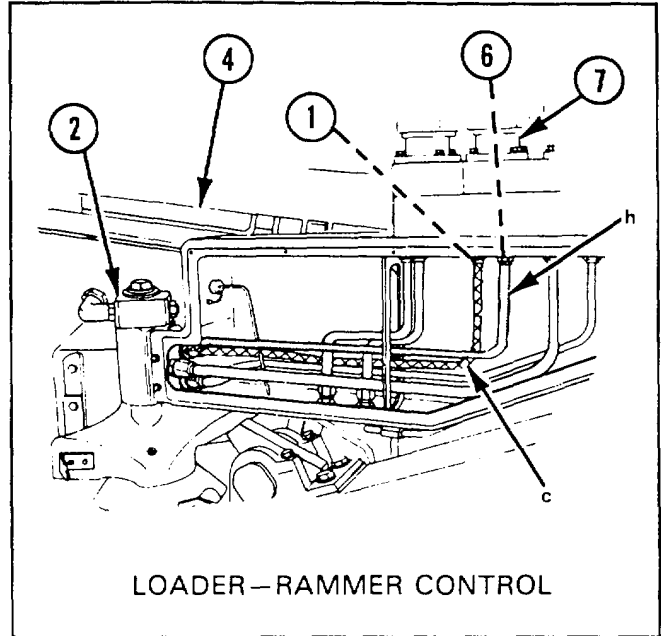
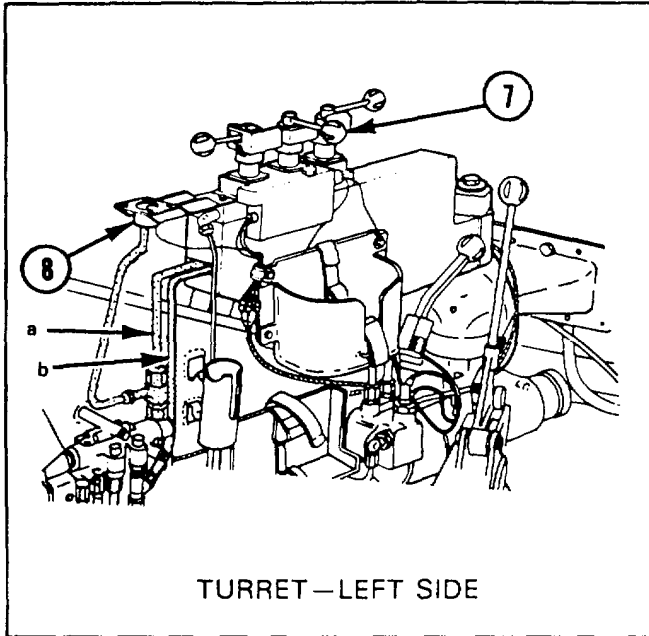


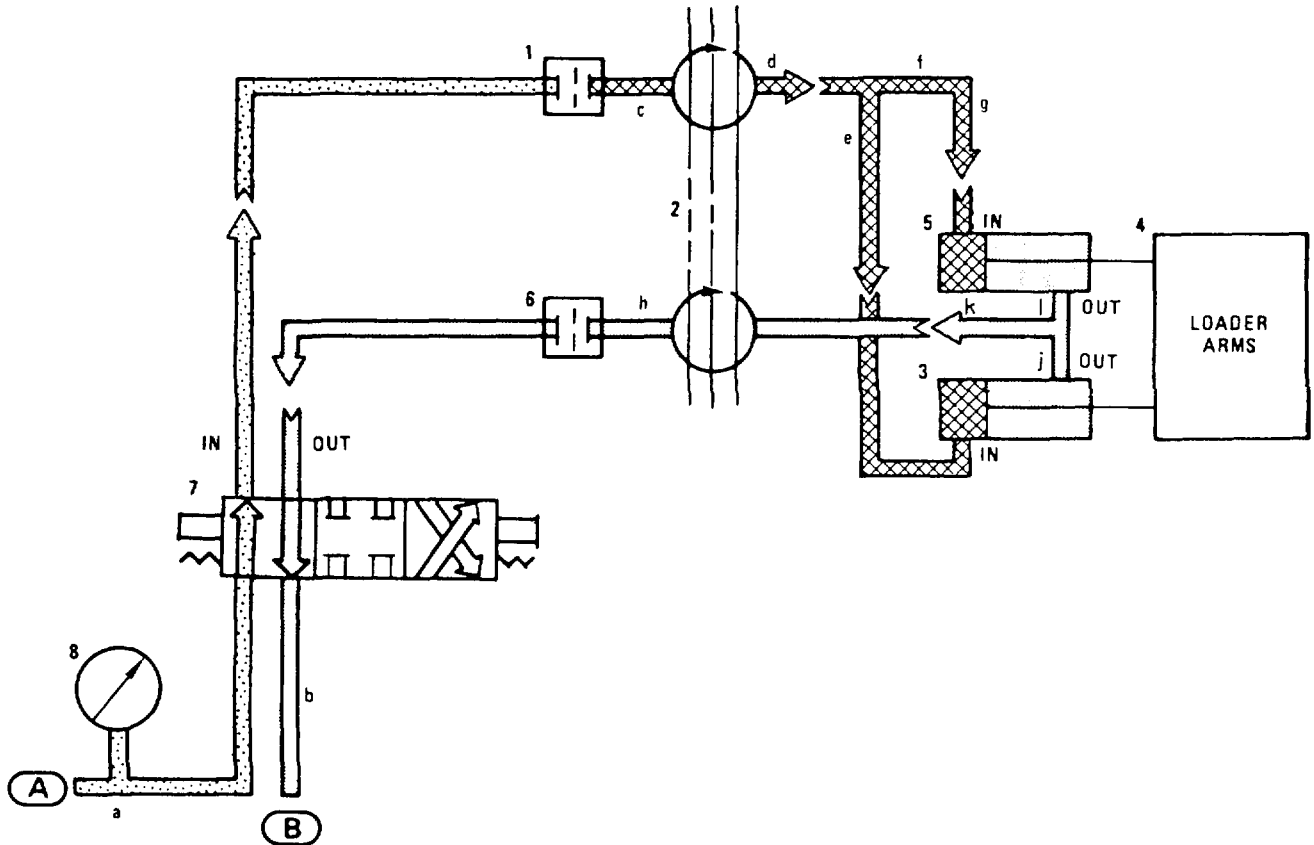
LEGEND

- 1 Restrictor union
- 2 Rotating manifold
- 3 Lift cylinder
- 4 Loader arms
- 5 Lift cylinder
- 6 Restrictor union
- 7 Directional control valve
- 8 Pressure gage

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive













LEGEND

- 1 Restrictor union
- 2 Rotating manifold
- 3 Lift cylinder
- 4 Loader arms
- 5 Lift cylinder
- 6 Restrictor union
- 7 Directional control valve
- 8 Pressure gage

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-53. RAMMER HYDRAULIC SUBSYSTEM.

Functional Description. The rammer hydraulic subsystem rams the projectile from the loading tray into the breech of the cannon.

When the pivot and tray interlock switches are closed, the rammer solenoid valve (1) is energized, allowing hydraulic fluid at about 2400 psi (16,548 kPa) to flow, independently, to the rammer control valve (2) and, through the rotating manifold (3), to the retract side of the rammer cylinder.

When the handle of the rammer control valve (2) is moved out of its spring loaded, rest position gate, fluid under pressure flows through the control valve and closes a pressure switch. This switch by-passes the tray and pivot interlock switches and keeps the solenoid valve (1) energized throughout the ram and retract cycle.

The flow of hydraulic fluid through the control valve (2) is also directed against a spring loaded piston within the rammer manifold. This forces open a poppet valve,

allowing pressure to flow to the extend side of the rammer cylinder, starting the ram action.







The ram cylinder drives the ramming chain gearbox and the ramming chain, which pushes the projectile into the cannon breech. When the cylinder bottoms, pressure within the rammer hydraulic subsystem equalizes, allowing spring pressure to return the piston to its rest position.

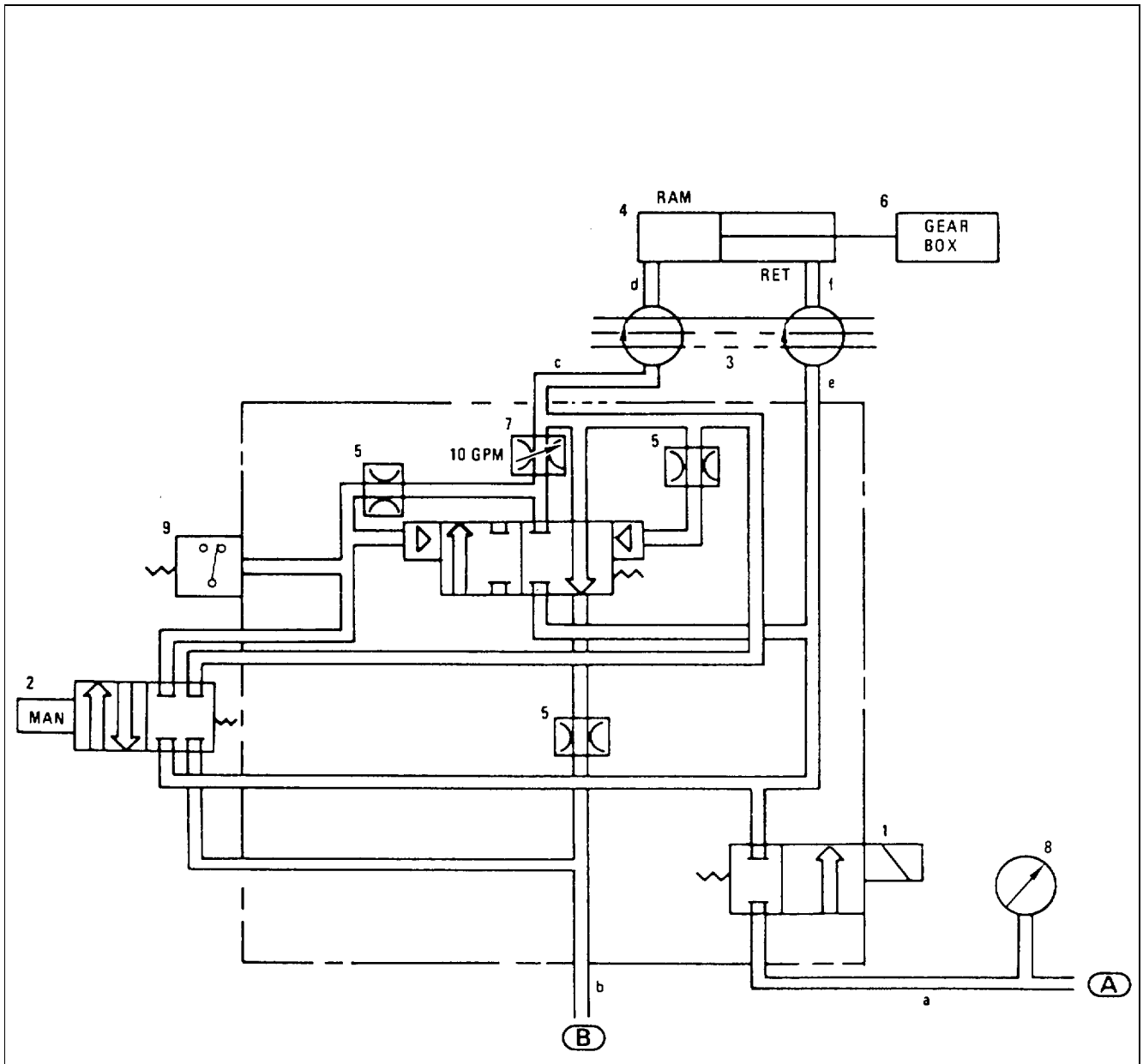
This piston movement closes the first poppet valve, transferring pressure flow back to the retract side of the rammer cylinder, starting the chain retraction. It also opens the second poppet valve which allows the flow to drain to the reservoir. Return speed of the chain is controlled by restricting the flow of hydraulic fluid through a flow control orifice.

LEGEND

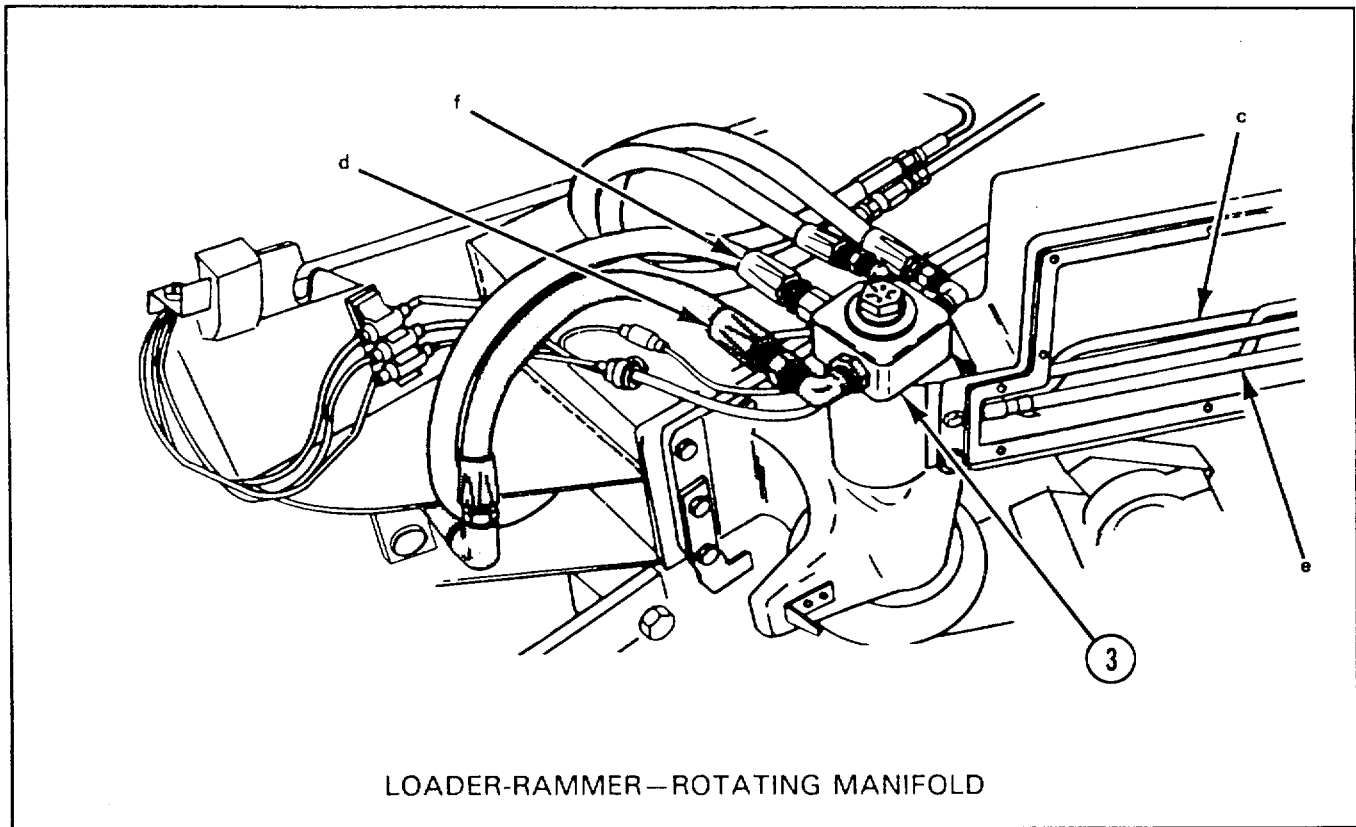
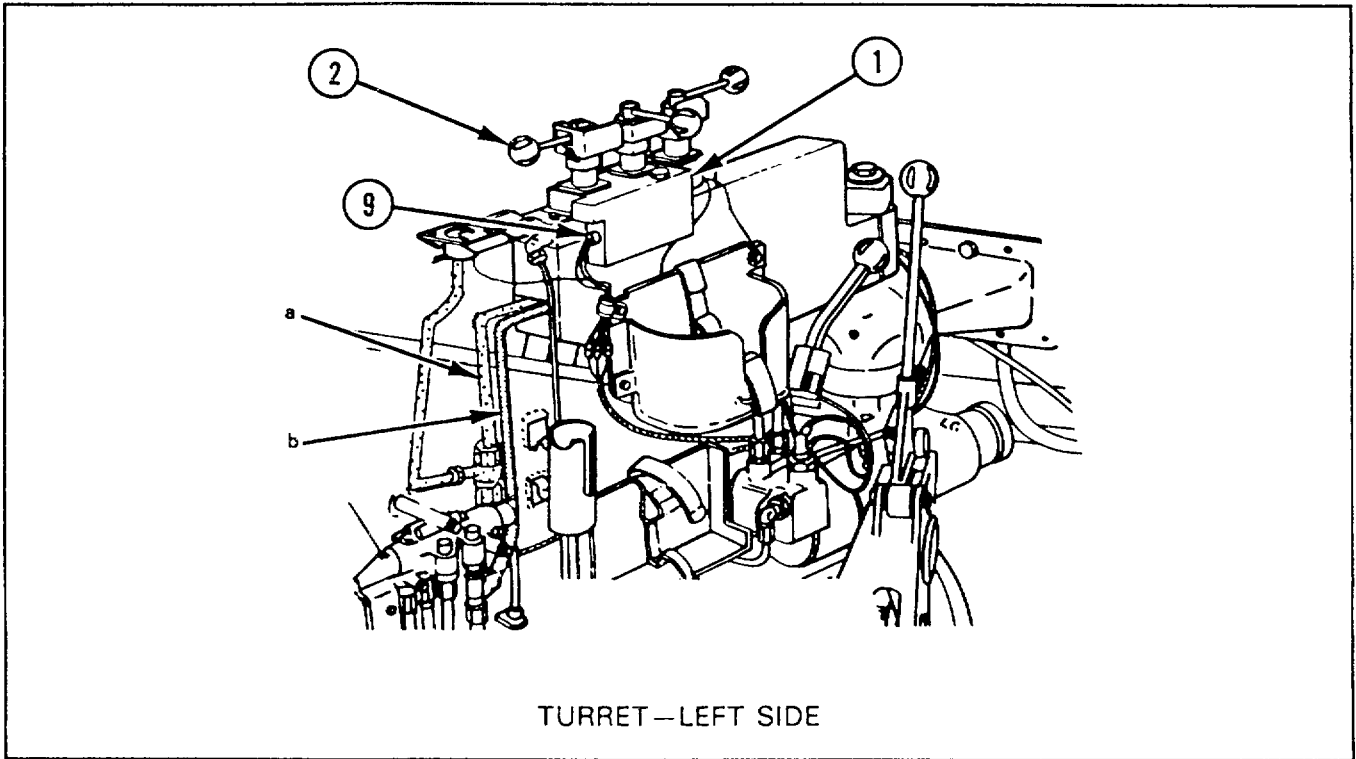
- 1 Solenoid operated shutoff valve
- 2 Ram control valve
- 3 Rotating manifold
- 4 Ramming cylinder
- 5 Flow control ports
- 6 Ramming chain gearbox
- 7 Flow control valve
- 8 Pressure gage
- 9 Pressure switch

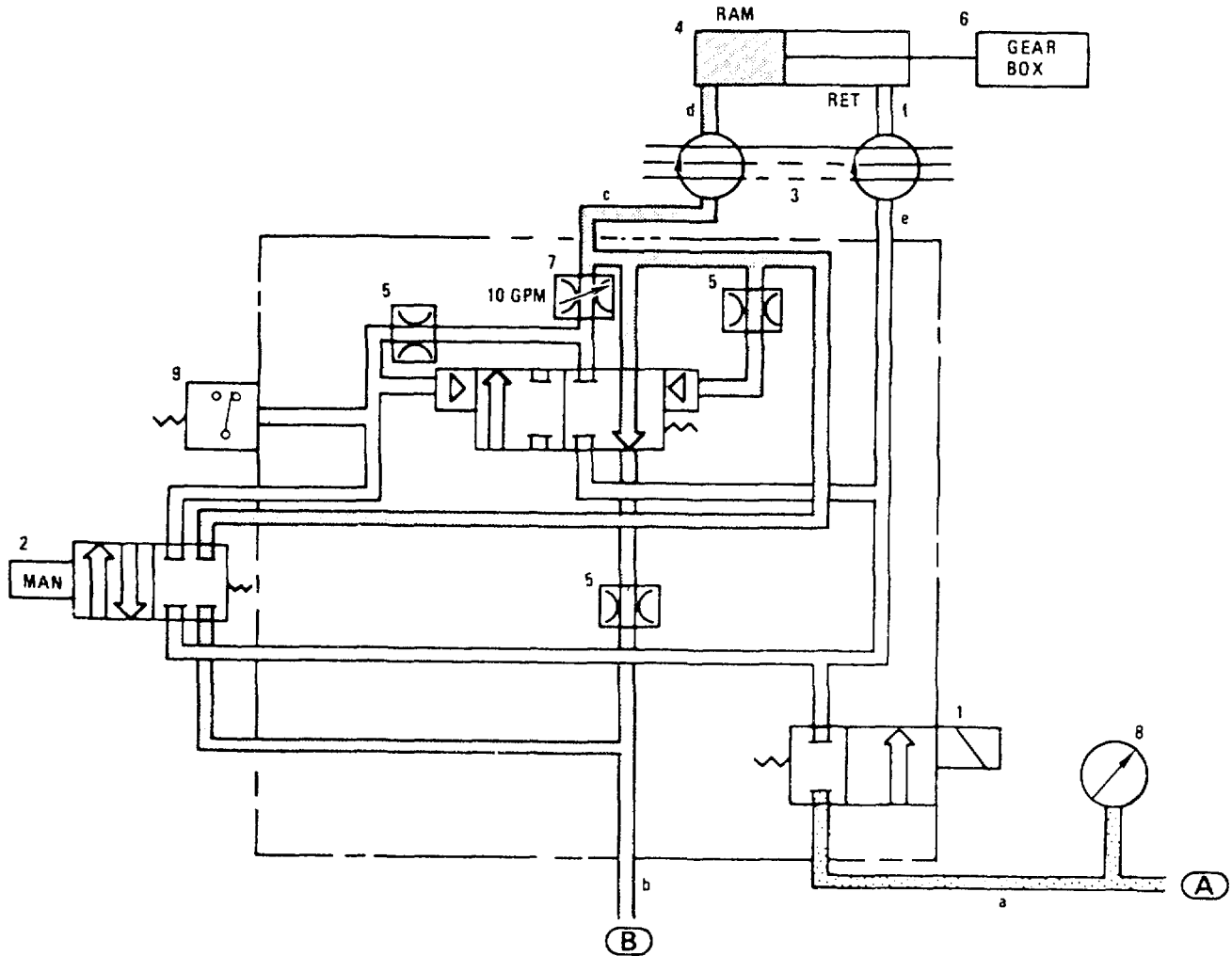
BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
Reduced pressure
Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive



F-99











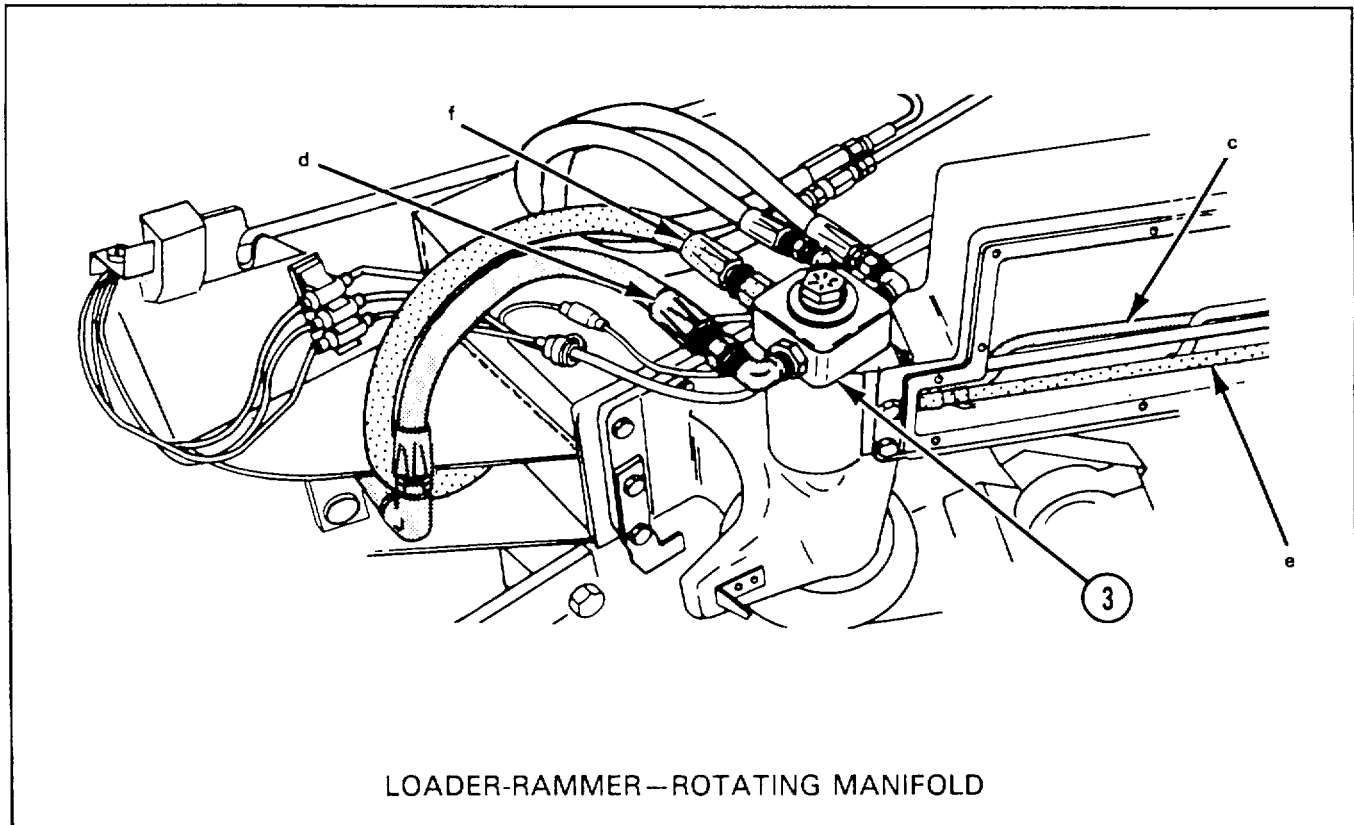
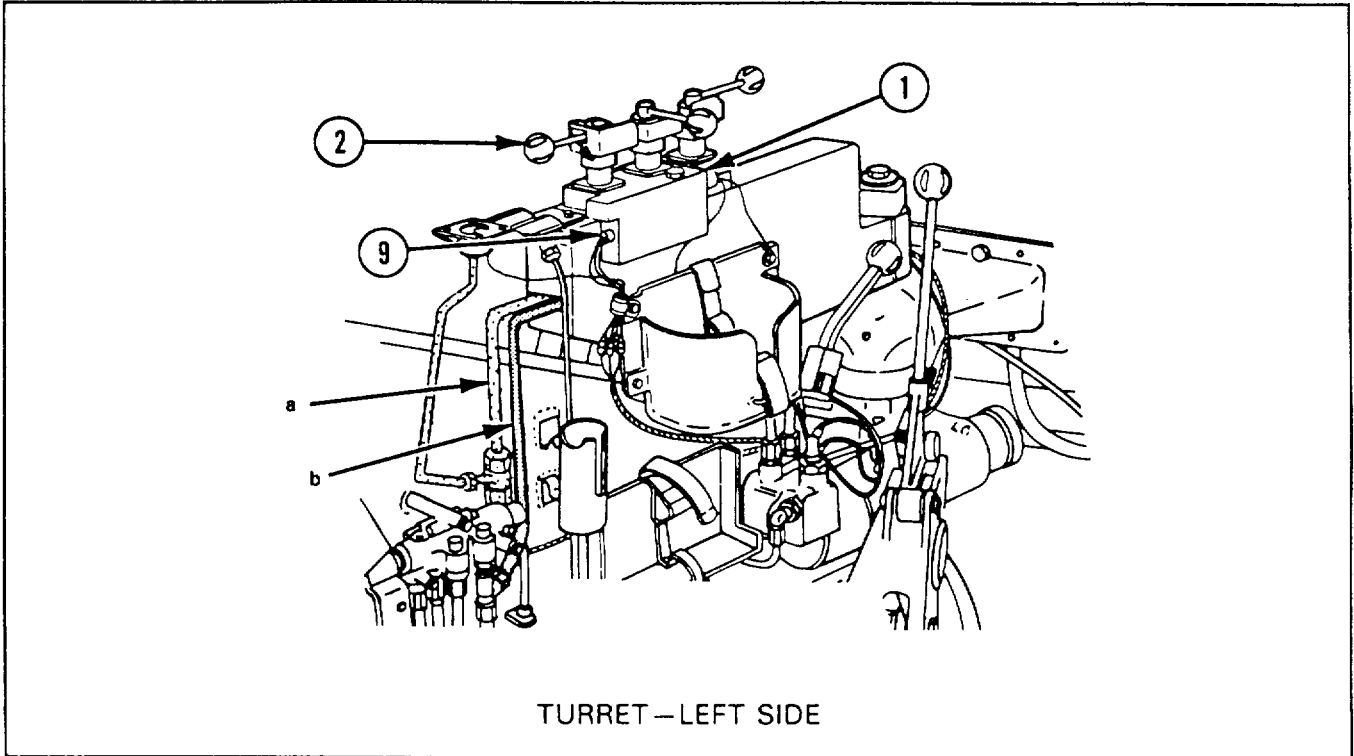


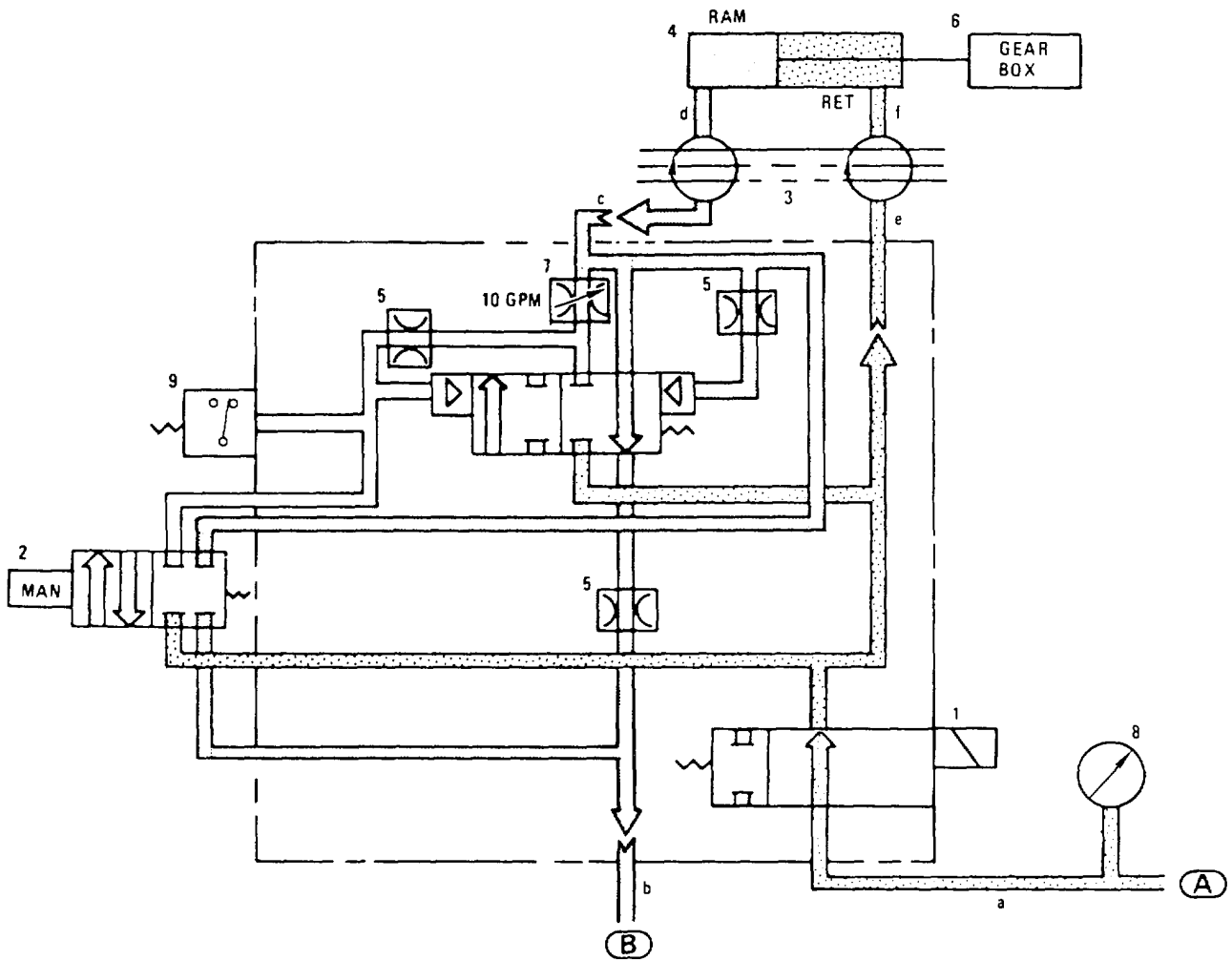
LEGEND

- 1 Solenoid operated shutoff valve
- 2 Ram control valve
- 3 Rotating manifold
- 4 Ramming cylinder
- 5 Flow control ports
- 6 Ramming chain gearbox
- 7 Flow control valve
- 8 Pressure gage
- 9 Pressure switch

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive







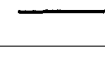





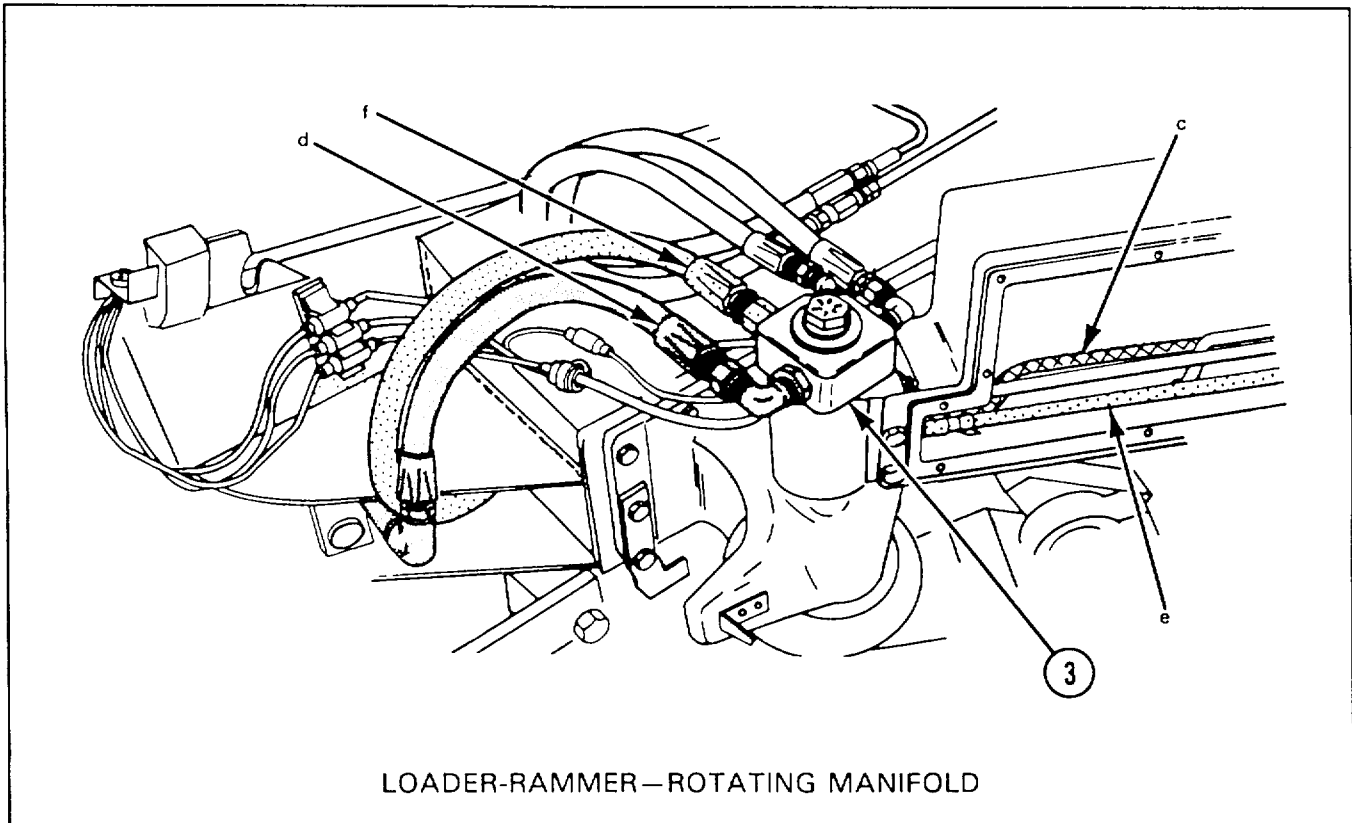
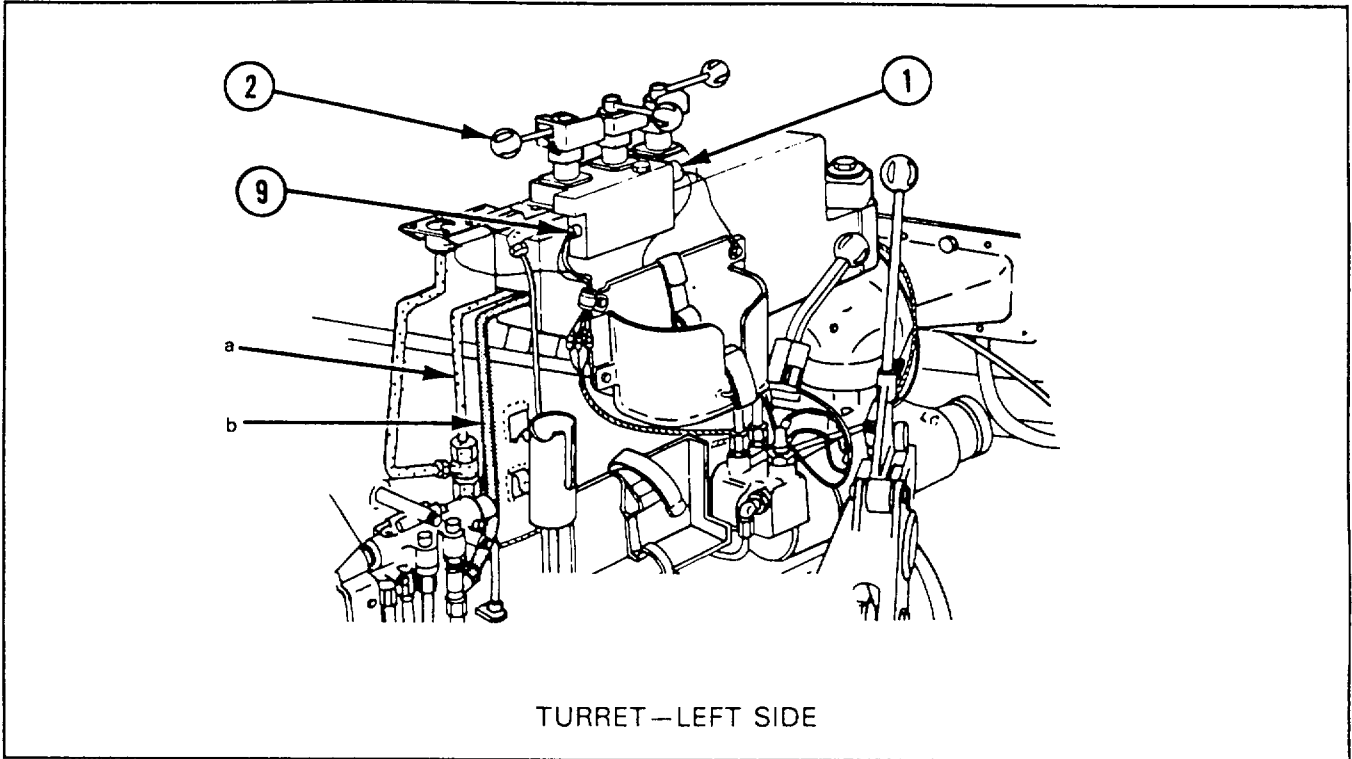
LEGEND

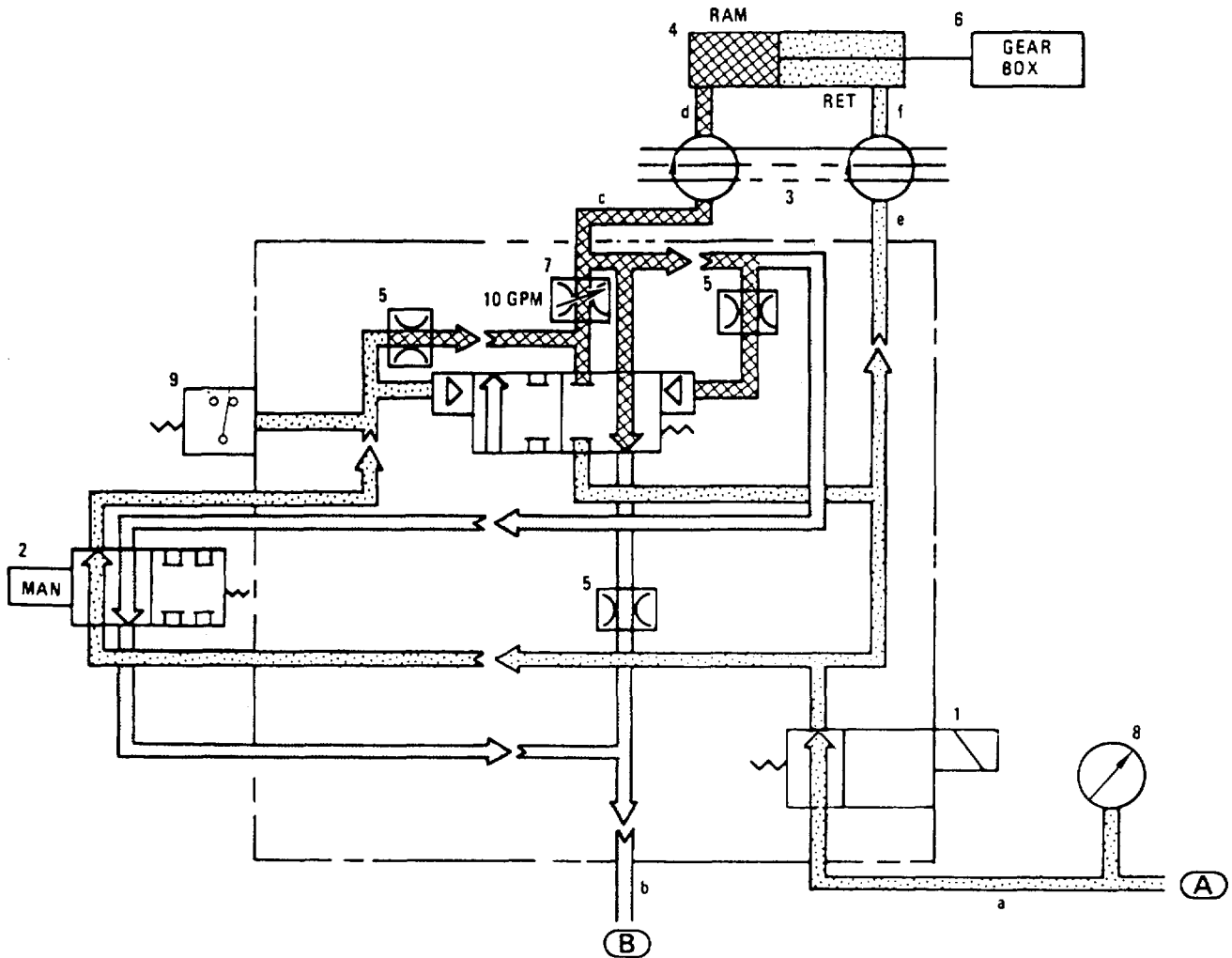
- 1 Solenoid operated shutoff valve
- 2 Ram control valve
- 3 Rotating manifold
- 4 Ramming cylinder
- 5 Flow control ports
- 6 Ramming chain gearbox
- 7 Flow control valve
- 8 Pressure gage
- 9 Pressure switch

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

F-56. RAMMER-CONTROL VALVE OPEN.











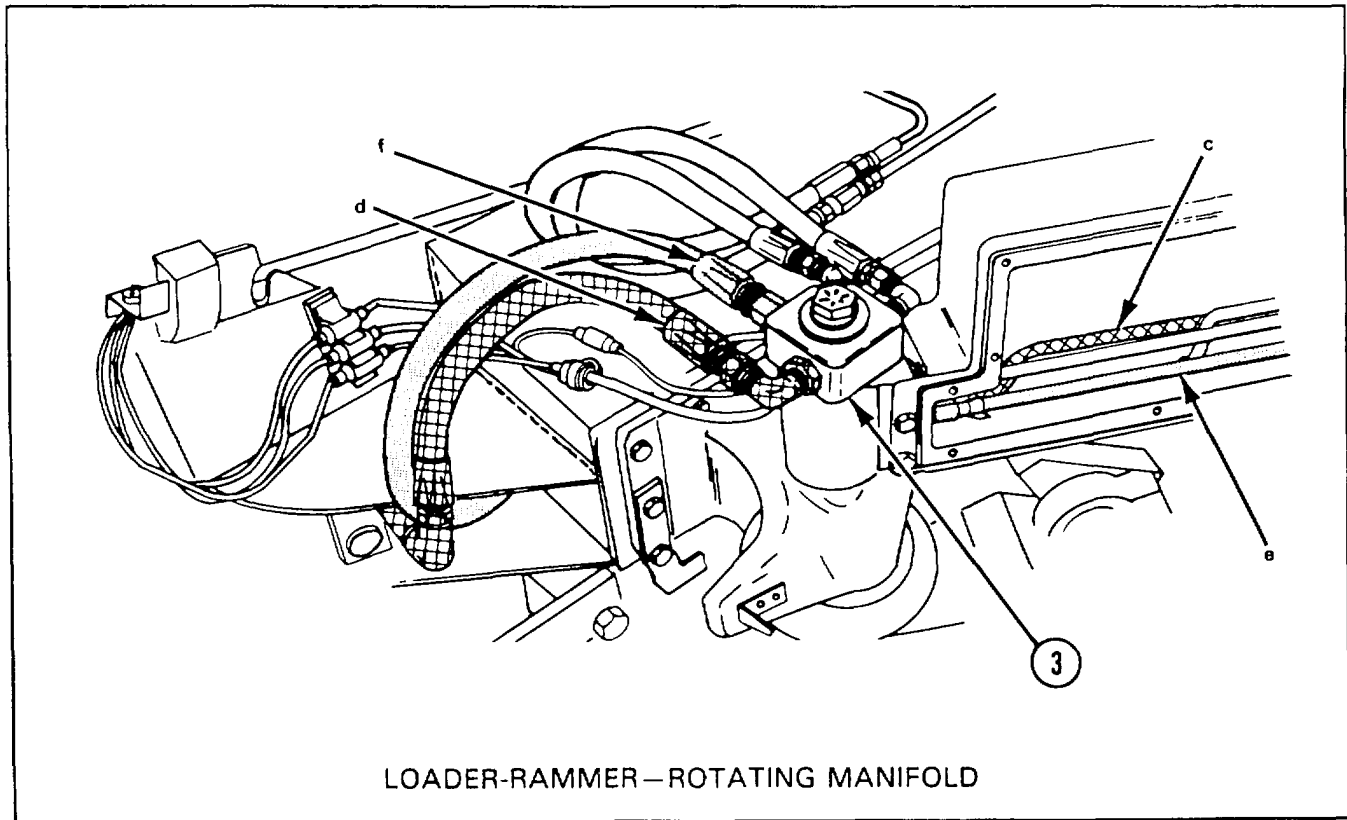
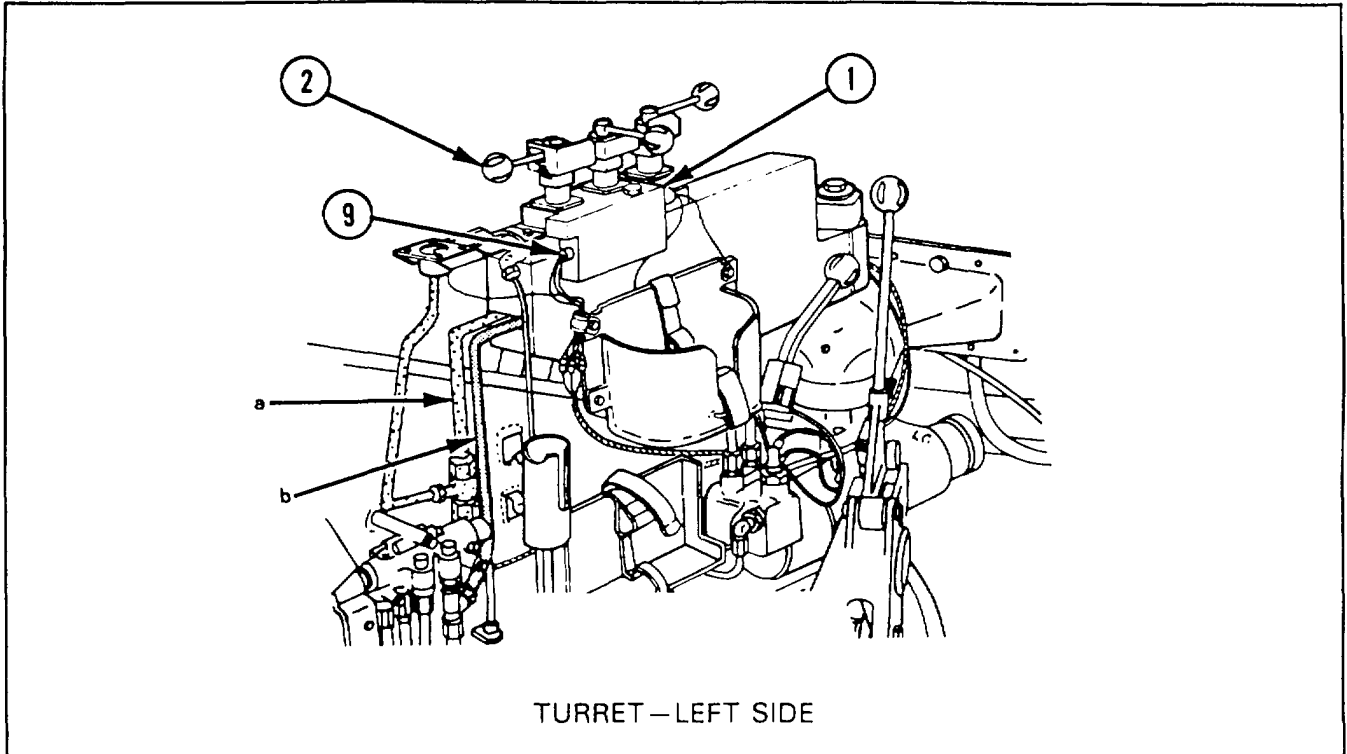


LEGEND

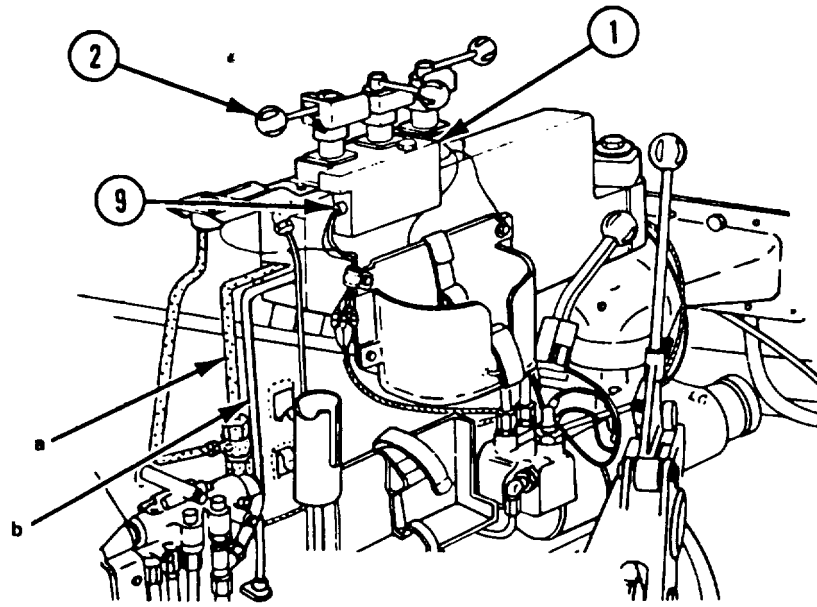
- 1 Solenoid operated shutoff valve
- 2 Ram control valve
- 3 Rotating manifold
- 4 Ramming cylinder
- 5 Flow control ports
- 6 Ramming chain gearbox
- 7 Flow control valve
- 8 Pressure gage
- 9 Pressure switch

BAR CODE

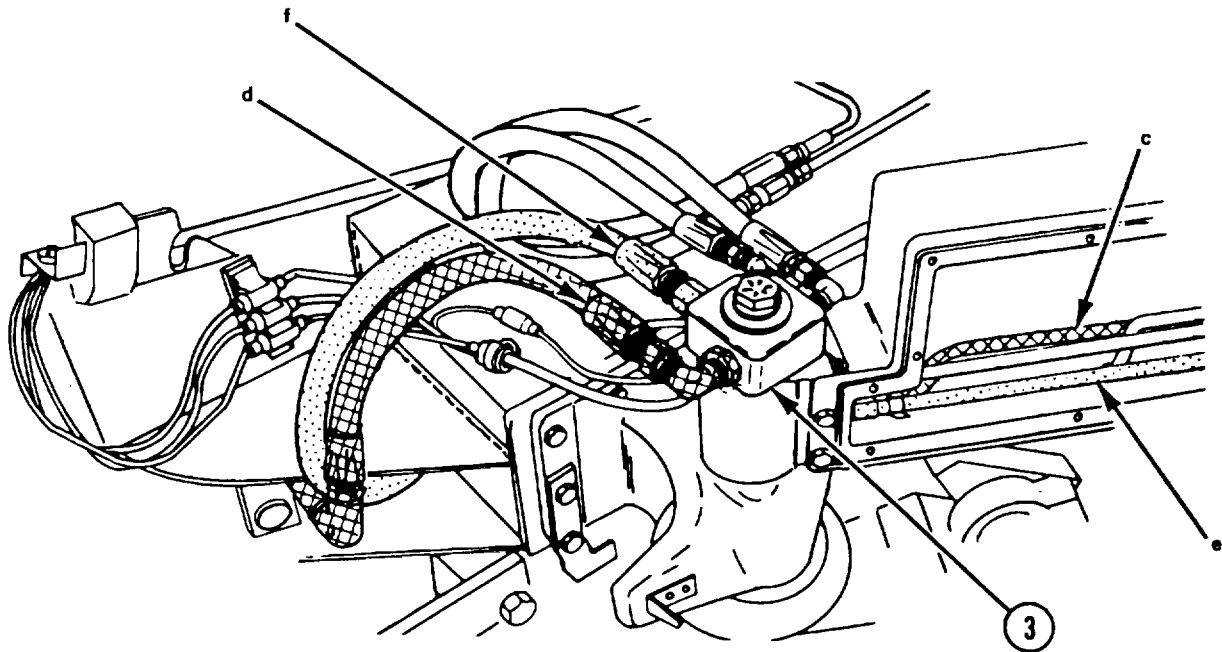
-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive



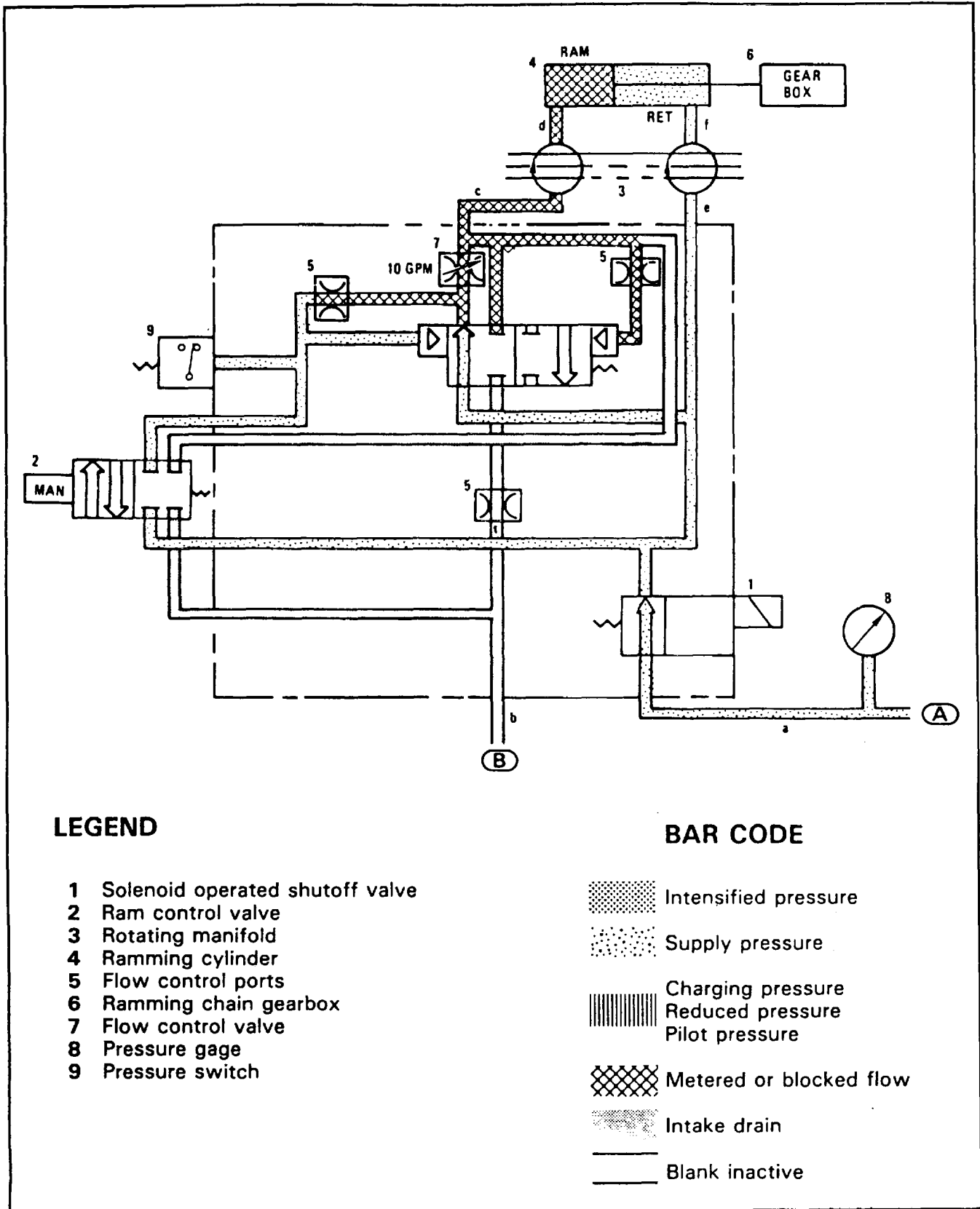
F-58. RAMMER-RAM COMPLETED, PROJECTILE SEATED.



TURRET-LEFT SIDE











LOADER RAMMER-ROTATING MANIFOLD



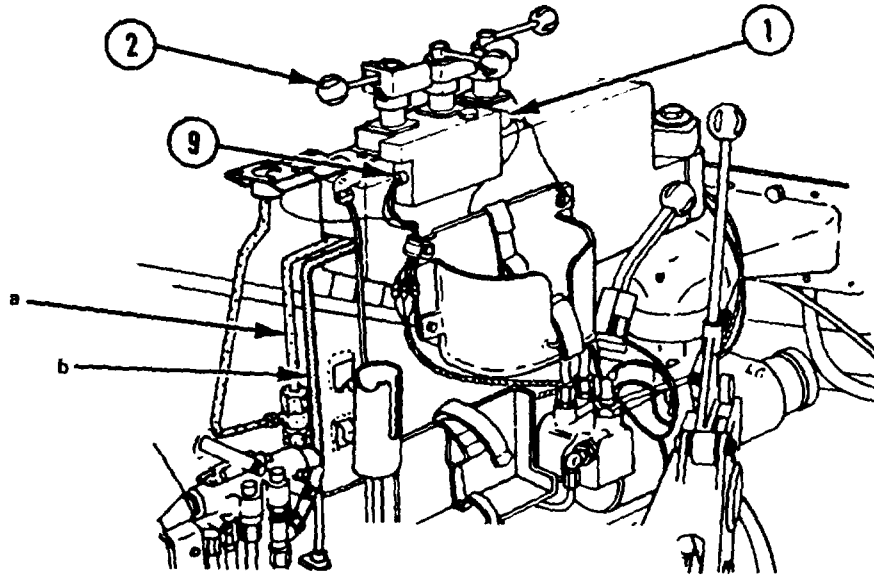
LEGEND

- 1 Solenoid operated shutoff valve
- 2 Ram control valve
- 3 Rotating manifold
- 4 Ramming cylinder
- 5 Flow control ports
- 6 Ramming chain gearbox
- 7 Flow control valve
- 8 Pressure gage
- 9 Pressure switch

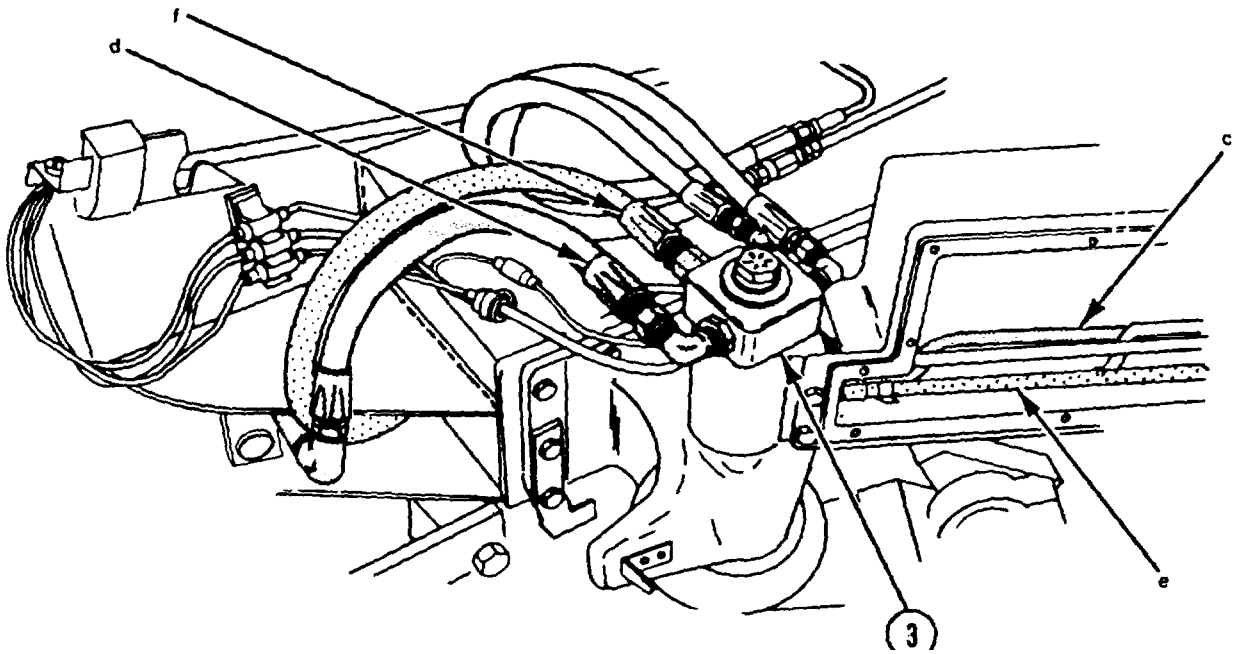
BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

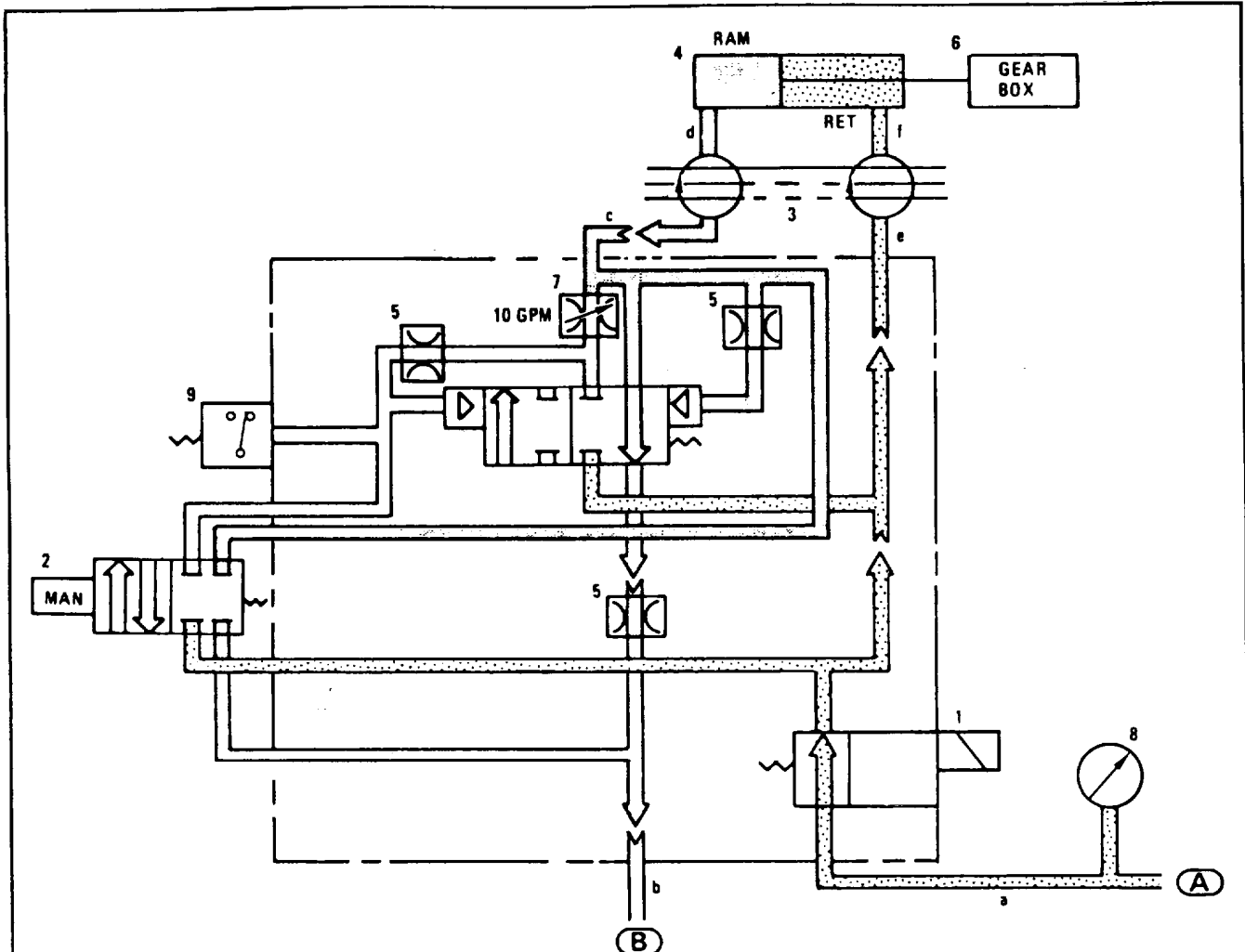
F-59. RAMMER-CHAIN RETRACTION.



TURRET-LEFT SIDE











LOADER-RAMMER-ROTATING MANIFOLD



LEGEND

- 1 Solenoid operated shutoff valve
- 2 Ram control valve
- 3 Rotating manifold
- 4 Ramming cylinder
- 5 Flow control ports
- 6 Ramming chain gearbox
- 7 Flow control valve
- 8 Pressure gage
- 9 Pressure switch

BAR CODE

-  Intensified pressure
-  Supply pressure
-  Charging pressure
-  Reduced pressure
-  Pilot pressure
-  Metered or blocked flow
-  Intake drain
-  Blank inactive

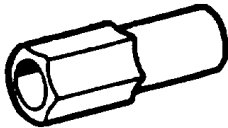

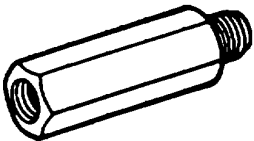
**APPENDIX G
SPECIAL TOOLS AND EQUIPMENT**

G-1. GENERAL. Repair parts, special tools, and support equipment are issued for maintaining the vehicle. Tools and equipment should not be used for purposes other than those prescribed. When not in use, they should be properly stowed.

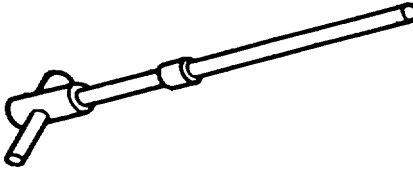
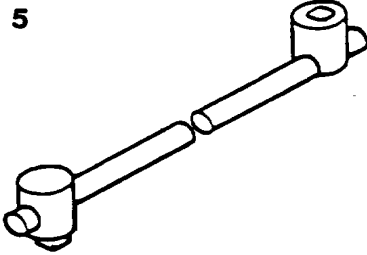
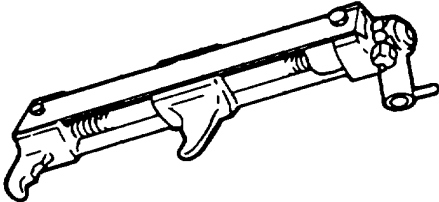
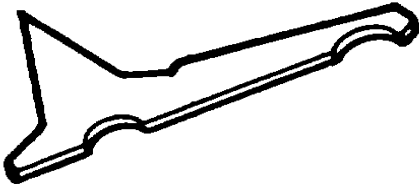
G-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT. Special tools and equipment necessary to perform the maintenance described in this manual are listed for your information. Special tools and support equipment are listed in TM 9-2350-304-24P-1, which is the authority for requisitioning replacements.

G-3. REPAIR PARTS. Repair parts are issued for the replacement of parts that have become worn, broken, or otherwise unserviceable. Repair parts are listed in TM 9-2350-304-24P-1, which is the authority for requisitioning replacements.

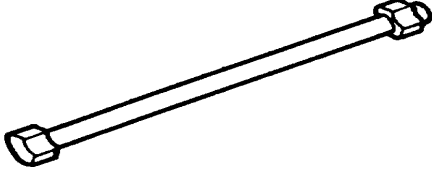
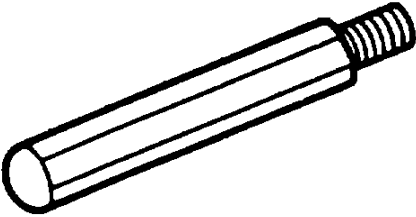
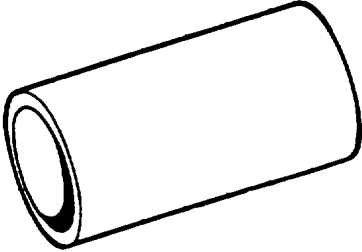
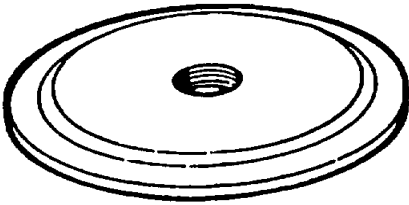
SPECIAL TOOLS AND EQUIPMENT

ITEM	NATIONAL STOCK NUMBER (PART NUMBER)	USE
<p>ITEM 1</p>  <p>ADAPTER, IMPACT WIRE</p>	<p>5130-00-840-4872 (11592842)</p>	<p>Used with slide puller to remove track pin (para 2-147 and para 2-208).</p>
<p>ITEM 2</p>  <p>ADAPTER, PULLER</p>	<p>5120-00-708-2997 (7082997)</p>	<p>Used with slide puller to remove road wheel arm (para 2-141) and idler wheel arm (para 2-144).</p>
<p>ITEM 3</p>  <p>COUPLING, SHAFT, RIGID</p>	<p>3010-00-733-8961 3(10-904183) (10904183)</p>	<p>Used with slide puller to remove torsion bar (para 2-139).</p>

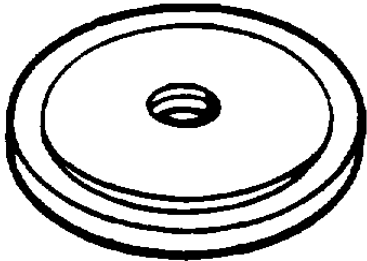
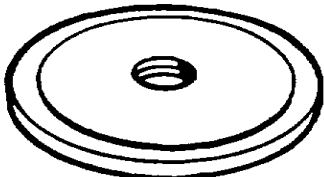
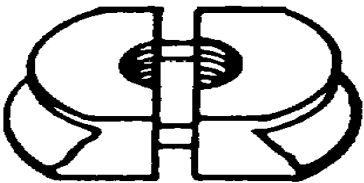
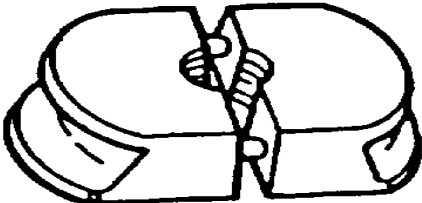
SPECIAL TOOLS AND EQUIPMENT (CONT)

ITEM	NATIONAL STOCK NUMBER (PART NUMBER)	USE
<p>ITEM 4</p>  <p>DRIFTPIN</p>	<p>5120-00-708-3639 (7083639)</p>	<p>Used to remove broken torsion bar (para 2-139); used to remove track pin and connect track (para 2-147 and para 2-208).</p>
<p>ITEM 5</p>  <p>EXTENSION, TORQUE WRENCH</p>	<p>No NSN (No PIN)</p>	<p>For fabrication instructions, notify direct support maintenance. Used to torque trailing idler eccentric bolts (para 2-144).</p>
<p>ITEM 6</p>  <p>FIXTURE, TRACK CONNECTING</p>	<p>5120-00-605-3926 (8741739)</p>	<p>Used with socket wrench adapter and power wrench to connect track (para 2-147 and para 2-208).</p>
<p>ITEM 7</p>  <p>GAGE, SPROCKET WEAR</p>	<p>5210-00-842-3051 (11631464)</p>	<p>Used to check sprocket wear (para 2-146).</p>

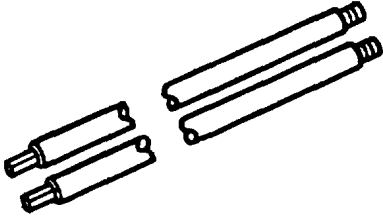
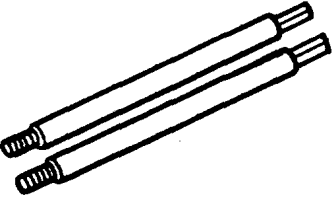
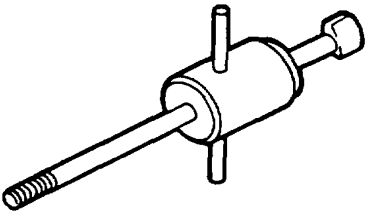
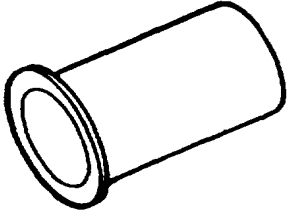
SPECIAL TOOLS AND EQUIPMENT (CONT)

ITEM	NATIONAL STOCK NUMBER (PART NUMBER)	USE
<p>ITEM 8</p>  <p>HANDLE, MANUAL CONTROL</p>	<p>5340-00-733-8970 (10904204)</p>	<p>Used with seal inserter to replace idler wheel upper spindle oil seal and bearing (para 2-144).</p>
<p>ITEM 9</p>  <p>HANDLE, REMOVER AND REPLACER</p>	<p>5340-00-708-3883 (7083883)</p>	<p>Used with seal inserters, bearing inserter sets, and race and outer bearing replacer in suspension system maintenance (para 2-141, para 2-142, para 2-144, and para 2-145).</p>
<p>ITEM 10</p>  <p>INSERTER, BEARING</p>	<p>5120-00-733-8973 (10904210)</p>	<p>Used to replace idler wheel arm inner bearing ring (para 2-144).</p>
<p>ITEM 11</p>  <p>INSERTER, SEAL</p>	<p>5120-00-733-8943 (10904176)</p>	<p>Used with remover and replacer handle to replace road wheel arm upper spindle oil seal in retainer (para 2-128).</p>

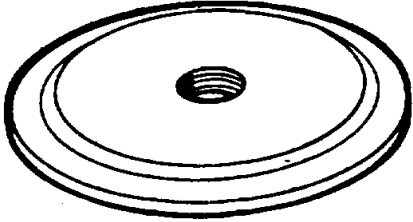
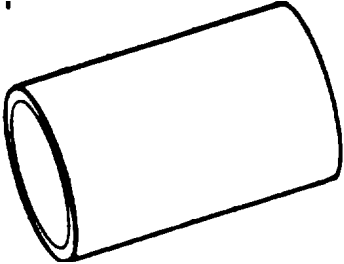
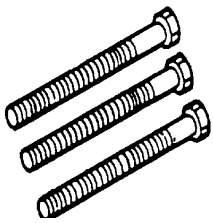
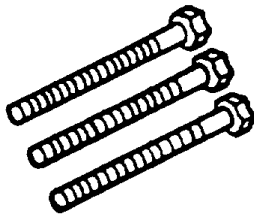
SPECIAL TOOLS AND EQUIPMENT (CONT)

ITEM	NATIONAL STOCK NUMBER (PART NUMBER)	USE
<p>ITEM 12</p>  <p>INSERTER, SEAL</p>	<p>5120-00-733-8951 (10904181)</p>	<p>Used with remover and replacer handle to replace road wheel arm upper spindle inner oil seal and inner bearing (para 2-141). Used with manual control handle to replace idler wheel upper spindle inner oil seal and inner bearing (para 2-144).</p>
<p>ITEM 13</p>  <p>INSERTER, SEAL</p>	<p>5120-00-733-8953 (10904182)</p>	<p>Used with remover and replacer handle to install seal in roadwheel flange (para 2-144).</p>
<p>ITEM 14</p>  <p>INSERTER, SET BEARING</p>	<p>5120-00-473-7374 (7082834) (7082834)</p>	<p>Used with remover and replacer handle to remove and replace road wheel hub bearing cup (para 2-142) and trailing idler wheel hub outer bearing cup (para 2-145).</p>
<p>ITEM 15</p>  <p>INSERTER, SET BEARING</p>	<p>5120-00-473-7373 (7082876)</p>	<p>Used with remover and replacer handle to remove and replace road wheel hub inner bearing cup (para 2-142) and compensating idler wheel hub inner bearing cup (para 2-145).</p>

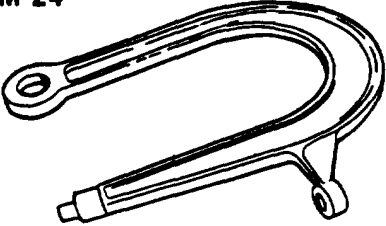
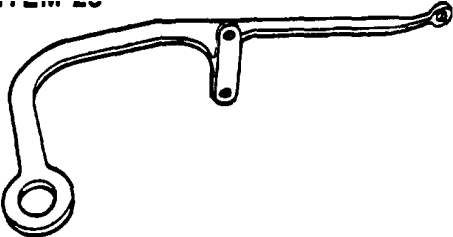
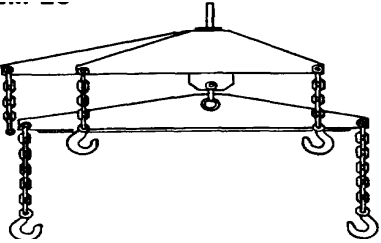
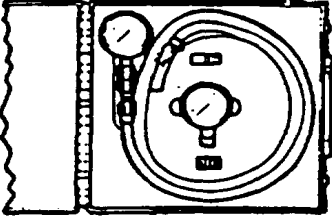
SPECIAL TOOLS AND EQUIPMENT (CONT)

ITEM	NATIONAL STOCK NUMBER (PART NUMBER)	USE
<p>ITEM 16</p>  <p>PIN, SHOULDER, HEADLESS</p>	<p>5315-00-722-3896 (10904172)</p>	<p>Guide final drive to hull (para 2-127).</p>
<p>ITEM 17</p>  <p>PIN, STRAIGHT, THREADED</p>	<p>5315-00-722-3888 (10904178)</p>	<p>Guide roadwheel arm to hull (para 2-141); guide idler wheel arm to hull (para 2-144).</p>
<p>ITEM 18</p>  <p>PULLER, SLIDE</p>	<p>5120-00-557-3615 (5573615)</p>	<p>Used with coupling or adapter to remove torsion bar (para 2-139), road wheel arm (para 2-141), idler wheel arm (para 2-144), and track shoe link pin (para 2-147 and para 2-208).</p>
<p>ITEM 19</p>  <p>REPLACER, HUB SPACER</p>	<p>5120-00-733-8964 (10904197)</p>	<p>Replace road wheel hub spacer (para 2-141).</p>


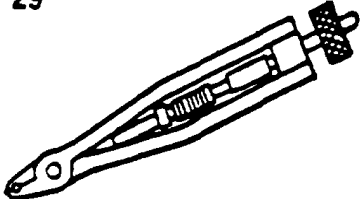
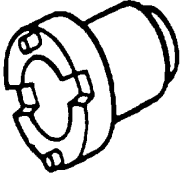


SPECIAL TOOLS AND EQUIPMENT (CONT)

ITEM	NATIONAL STOCK NUMBER (PART NUMBER)	USE
<p>ITEM 20</p>  <p>REPLACER, RACE AND OUTER BEARING</p>	<p>5120-00-733-8949 (10904180)</p>	<p>Used with remover and replacer handle to install oil seal in idler arm housing (para 2-144).</p>
<p>ITEM 21</p>  <p>REPLACER, SEAL GUARD</p>	<p>5120-00-733-8969 (10904207)</p>	<p>Replace road wheel arm seal guard (para 2-141).</p>
<p>ITEM 22</p>  <p>SCREW, CAP, HEXAGON HEAD</p>	<p>5305-00-532-9125 (8708355)</p>	<p>Remove roadwheel arm (para 2-141) and idler wheel arm (para 2-144).</p>
<p>ITEM 23</p>  <p>SCREW, CAP HEXAGON HEAD</p>	<p>5305-00-084-0796 (10914934)</p>	<p>Remove final drive (para 2-127).</p>


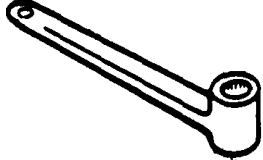
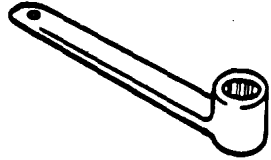
SPECIAL TOOLS AND EQUIPMENT (CONT)

ITEM	NATIONAL STOCK NUMBER (PART NUMBER)	USE
<p>ITEM 24 EM 24</p>  <p>SLING, LIFTING, FINAL DRIVE</p>	<p>3940-00-722-3886 (10904212)</p>	<p>Lift final drive (para 2-127).</p>
<p>ITEM 25 ITEM 25</p>  <p>SLING, LIFTING, HUB AND SPROCKET</p>	<p>4910-00-722-3885 (10904220)</p>	<p>Lift hub and sprocket (para 2-146).</p>
<p>ITEM 26 ITEM 26</p>  <p>SLING, BEAM TYPE</p>	<p>3940-01-280-0872 (12355173)</p>	<p>Lift powerplant (para 2-37).</p>
<p>ITEM 27</p>  <p>TESTER, PRESSURE GAGE</p>	<p>6685-00-572-8612 (8356176)</p>	<p>Check oil pressure (para 2-125).</p>

SPECIAL TOOLS AND EQUIPMENT (CONT)

ITEM	NATIONAL STOCK NUMBER (PART NUMBER)	USE
<p>ITEM 28</p>  <p>WEDGE, IDLER ADJUSTMENT</p>	<p>2530-00-302-6784 (11643492)</p>	<p>Used to remove, install, and adjust idler wheel arm (para 2-144).</p>
<p>ITEM 29</p>  <p>WIRE TWISTER, PLIER</p>	<p>5120-00-542-4171 (GGGW340S IZE12)</p>	<p>Used to remove and install lockwire.</p>
<p>ITEM 30</p>  <p>WRENCH, FACE SPROCKET</p>	<p>5120-00-588-4808 (8708459)</p>	<p>Turn road wheel bearing adjusting nut (para 2-142) and trailing idler wheel bearing adjusting nut (para 2-145).</p>
<p>ITEM 31</p>  <p>WRENCH, SOCKET</p>	<p>5120-00-708-3642 (7083642)</p>	<p>Used to remove and install machine thread plug in arm and hub assembly (para 2-139).</p>
<p>ITEM 32</p>  <p>WRENCH, SPADE PIN NUT</p>	<p>5120-00-084-0788 (10909067)</p>	<p>Hold spade pin nut (para 2-174).</p>
<p>G-7</p>		

SPECIAL TOOLS AND EQUIPMENT (CONT)

ITEM	NATIONAL STOCK NUMBER (PART NUMBER)	USE
<p>ITEM 33</p>  <p>WRENCH, SPANNER</p>	<p>5120-00-860-9577 (10908797)</p>	<p>Turn idler wheel upper spindle sleeve (para 2-144).</p>
<p>ITEM 34</p>  <p>WRENCH, SPLINED, BRAKE ADJUSTMENT</p>	<p>3040-00-733-8909 (8351386)</p>	<p>Used to adjust brakes (para 2-138).</p>
<p>ITEM 35</p>  <p>WRENCH, SPLINED, BRAKE ADJUSTMENT</p>	<p>3040-00-733-8912 (8351387)</p>	<p>Used to adjust brakes (para 2-138).</p>

G-9/(G-10 blank)

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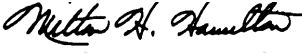
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By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:


MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

- 1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
- 1 Meter = 100 Centimeters = 1,000 Millimeters = 39.37 Inches
- 1 Kilometer = 1,000 Meters = 0.621 Miles

SQUARE MEASURE

- 1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
- 1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
- 1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

- 1 Cu Centimeter = 1,000 Cu Millimeters = 0.06 Cu Inches
- 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

LIQUID MEASURE

- 1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
- 1 Liter = 1,000 Milliliters = 33.82 Fluid Ounces

TEMPERATURE

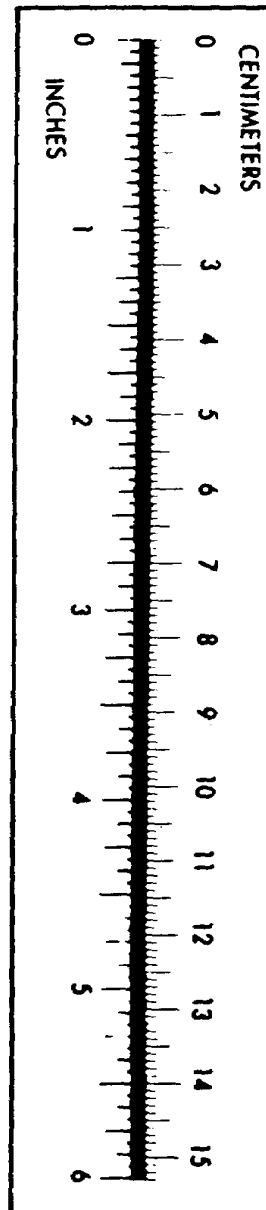
- $5/9 (^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
- 212° Fahrenheit is equivalent to 100° Celsius
- 90° Fahrenheit is equivalent to 32.2° Celsius
- 32° Fahrenheit is equivalent to 0° Celsius
- $9/5 \text{ C}^{\circ} + 32 = \text{F}^{\circ}$

WEIGHTS

- 1 Gram = 0.001 Kilograms = 1,000 Milligrams = 0.035 Ounces
- 1 Kilogram = 1,000 Grams = 2.2 lb.
- 1 Metric Ton = 1,000 Kilograms = 1 Megagram = 1.1 Short Tons

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	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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