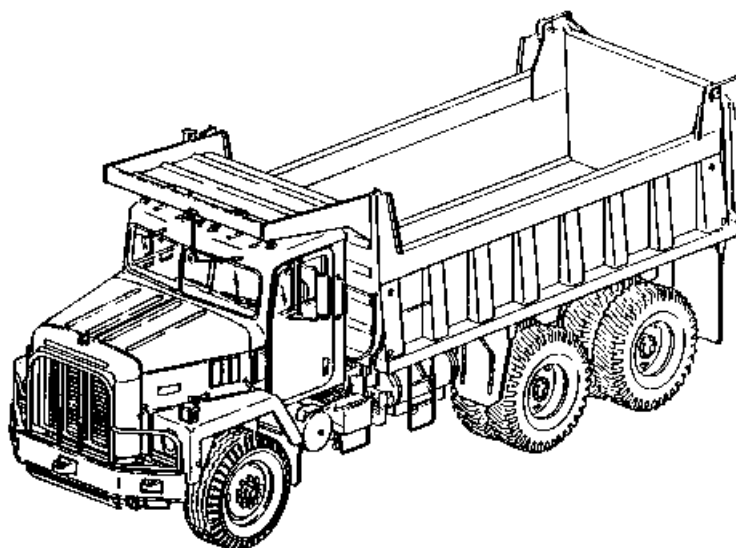


**TECHNICAL MANUAL
ORGANIZATIONAL MAINTENANCE MANUAL
VOLUME 1 OF 2**



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**TRUCK, DUMP, 20-TON, 6 x 4
ON-OFF HIGHWAY, 71,000 GVW
IHC MODEL F-5070 (CCE)
(NSN 3805-00-192-7249)**

Approved for Public Release Distribution is Unlimited

JANUARY 1988

HEADQUARTERS, DEPARTMENT OF THE ARMY

CHANGE

NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D.C., 25 February 1993

**ORGANIZATIONAL MAINTENANCE MANUAL
VOLUME 1 OF 2
TRUCK, DUMP: 20-TON, 6 X 4,
ON-OFF HIGHWAY, 71,000 GVW
(NSN 3805-00-192-7249)**

IHC MODEL F-5070 (CCE)

TM 5-3805-254-20-1, dated 20 January 1988, is changed as follows:

1. Remove old pages and insert new pages.
2. New or changed material is indicated by a vertical bar in the margin and by a vertical bar adjacent to the TA number.

Remove Pages

*1-1 and 1-2
1-7 and 1-8
2-215 and 2-216
2-445 and 2-446
2-465 and 2-466
2-627 and 2-628
None
2-651 and 2-652
Index 3 through Index 6
Index 9 through Index 12
Index 15 and Index 16*

Insert Pages

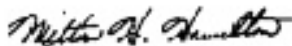
*1-1 and 1-2
1-7 and 1-8
2-215 and 2-216
2-445 and 2-446
2-465 through 2-466
2-627 and 2-628
2-642.1 through 2-642.5/(2-642.6 Blank)
2-651 and 2-652
Index 3 through Index 6
Index 9 through Index 12.1/(Index 12.2 Blank)
Index 15 and Index 16*

3. File this change sheet in front of the publication for reference purposes.

Approved for public release; distribution is unlimited.

By Order of the Secretary of the Army:

Official:



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*Administrative Assistant to the
Secretary of the Army*
03709

GORDON R. SULLIVAN
*General, United States Army
Chief of Staff*

Distribution:

To be distributed in accordance with DA Form 12-25-E, Block 1970, requirements for TM 5-3805-254-20-1.

WARNING

EXHAUST GAS CAN KILL YOU

Exhaust gas is without color or smell, but can kill you. Breathing exhaust gas produces symptoms of headache, dizziness, loss of muscular control, a sleepy feeling, and coma. Brain damage or death can result from heavy exposure of exhaust fumes of fuel-burning internal combustion engines. Exhaust gases can become dangerously concentrated under conditions of no air movement. Precautions must be followed to ensure crew safety when the engine of any vehicle is operated for any purpose.

1. **DO NOT** operate vehicle engine inside building unless ample ventilation is available.
2. **DO NOT** idle engine for long periods without ventilator blower operating.
3. **DO NOT** drive any vehicle with inspection plates, cover plates, or engine compartment doors removed unless necessary for maintenance purposes.
4. **BE ALERT** at all times during vehicle operation for exhaust odors and exposure symptoms. If either is present, **IMMEDIATELY VENTILATE** personnel compartments. If symptoms persist, remove affected crew to fresh air; keep warm; **DO NOT PERMIT PHYSICAL EXERCISE**; and, if necessary, give artificial respiration.
5. **FOR ARTIFICIAL RESPIRATION, REFER TO FM 21-11.**
6. **BE AWARE**; the field protective mask for chemical-biological-radiological (CBR) protection will not protect you from exhaust gas fumes.

THE BEST DEFENSE AGAINST ENGINE EXHAUST FUMES IS GOOD VENTILATION.

WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 dry-cleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

WARNING

Naphtha and its fumes are harmful and flammable. Do not use near open flame. Do not smoke while using naphtha. Use only in well-ventilated area. Naphtha can catch fire, and fumes can explode causing injury.

WARNING

Do not let positive wire touch metal surfaces at any time. Personal injury and equipment damage will occur.

WARNING

Edges of exhaust system components are sharp. Care must be taken to prevent personal injury.

WARNING

Metal edges of air cleaner housing are sharp. Care must be taken to prevent personal injury.

WARNING

Do not drain rear axle housing oil when hot. Hot oil can burn you.

WARNING

Do not drain interaxle differential oil when hot. Hot oil can burn you.

WARNING

Hot transmission oil can burn you. Care must be taken to prevent personal injury.

WARNING

Do not check rear axle housing oil level when hot. Hot oil can burn you.

WARNING

Support blocks must be used to support dump body weight. Death or serious injury could result if personnel fail to observe this warning.

WARNING

Make sure all personnel are clear of dump body before lowering, to prevent injury.

WARNING

Do not operate engine after removing turbocharger piping. Foreign matter could enter turbocharger air inlet pipe causing injury to personnel and damage to turbocharger.

WARNING

Do not touch heat shrinkable tubing for at least 30 seconds after heating. Hot tubing can burn you.

WARNING

Do not smoke or allow open flames or sparks into areas where alcohol is being used. Failure to observe this precaution could cause death or serious injury to personnel.

WARNING

Care must be taken when taking off cannister to prevent spilling alcohol. Injury to personnel could occur.

WARNING

Electrical parts solvent cleaning compound is flammable, and reacts violently with certain metals. Boiling point is 114°F (46°C). Do not wear jewelry. Wear safety goggles, rubber gloves, and use only in well ventilated area. Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat. If you become dizzy while using cleaning compound, get fresh air immediately and get medical aid. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and cause damage to equipment. Refer to TM 9-247.

WARNING

Parts of brake assembly will be coated with asbestos dust. Breathing this dust may be hazardous to your health. Use filter mask approved for use against asbestos dust. Never use compressed air or dry brush to clean these assemblies. Dust shall be removed using industrial type vacuum cleaner equipped with high efficiency filter system. Clean dirt or mud from brake assemblies with bristle brush or cloth, and water.

WARNING

Due to excessive weight, assistance will be needed to prevent personal injury when lifting heavy parts.

WARNING

Due to excessive weight, assistance will be needed to lift and remove pintle hook assembly from rear chassis cross-member. Serious injury to personnel could result.

WARNING

Safety goggles must be worn when working under truck to prevent eye injury.

WARNING

Hot engine oil could burn you. Care must be taken to prevent personal injury.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

WARNING

Safety goggles must be worn, when using chisel or drill, to prevent eye injury caused by flying steel chips.

WARNING

Safety goggles must be worn to prevent eye injury from flying metal chips when using compressed air, or striking metal surfaces.

WARNING

Safety goggles must be worn when using wire brush. Flying rust or metal particles could cause eye injury.

WARNING

Safety goggles must be worn when using a portable electric drill. Flying metal particles could cause eye injury.

WARNING

Brake springs under tension can injure or kill. Use extreme care to prevent injury. Safety goggles must be worn.

WARNING

Disconnect battery ground cable before cleaning or replacing parts. This will keep you from getting shocked or damaging parts.

WARNING

Batteries must be disconnected before working near electrical components. Failure to observe this precaution could cause serious injury to personnel or damage to equipment.

WARNING

Drain air from air brake system before removing lines or fittings to avoid injury to personnel from compressed air.

WARNING

Particles blown by compressed air are hazardous. Make certain the air stream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent personal injury.

WARNING

Stand to side of axle flange while striking to prevent injury from flying lock collars.

WARNING

Due to excessive weight and size, assistance will be needed when handling dry air reservoir. Failure to observe this precaution could cause injury to personnel.

WARNING

Assistant must support muffler to prevent falling and causing personal injury.

WARNING

Assistance will be needed to support hood panel to prevent falling and causing personal injury.

WARNING

Assistance will be needed to support air dryer to prevent injury to personnel.

WARNING

Assistant must support fuel tank support to prevent falling and causing injury.

WARNING

When jacking vehicle, be sure vehicle is on level ground. Put blocks in front and behind each wheel to prevent vehicle from moving, and support vehicle with trestle stands to prevent personnel injury.

WARNING

Do not operate engine after removing air cleaner housing. Foreign matter could enter turbocharger air inlet pipe causing injury to personnel and damage to turbocharger.

WARNING

Due to excessive weight, care must be taken to prevent front hub and brakedrum assembly from falling. Do not pull out too far on spindle. Serious injury to personnel could result.

WARNING

Due to excessive weight, assistance will be needed to lift hub and brake drum assembly. Failure to observe this precaution could cause serious injury to personnel.

WARNING

Remove all jewelry, prior to performing any electrical troubleshooting, to prevent accidental short circuits and/or electric shock.

WARNING

Starter motor solenoid battery terminal is capable of delivering high voltage. Do not touch or let tools or metal parts touch starter motor solenoid battery terminal or ground. Severe personal injury or death could occur.

WARNING

Do not smoke, use open flame, or allow sparks near batteries. Mixture of oxygen and hydrogen gases released from batteries is highly flammable and can explode causing injury to personnel.

WARNING

Due to excessive weight, assistance will be needed to lift and take off exhaust diverter.

WARNING

When removing battery cables, disconnect ground cable first. When installing battery cables, connect ground cable last. When two ground cables are used, both cables must be disconnected prior to working on equipment where shorting of cables can occur. In correct cable replacement sequence is extremely dangerous. Accidental contact of tools with vehicle causes direct short, resulting in arcing and instant heating of tool and causing painful burns. Shorted battery may explode, causing injury to personnel.

WARNING

When removing battery cables, disconnect negative (-) cable first. Failure to observe this precaution could cause injury to personnel or damage to equipment.

WARNING

When installing battery cables, connect negative (-) cable last. Failure to observe this precaution could cause injury to personnel or damage to equipment.

WARNING

Do not operate engine after removing air filter element. Foreign matter could enter turbocharger air inlet pipe and could cause damage to turbocharger or injury to personnel.

WARNING

Do not touch heater coil of glow plug when testing. Severe personal injury could occur.

WARNING

Safety props and support blocks must be used to support dump body to prevent falling and causing injury to personnel.

WARNING

Be careful when removing radiator cap. If engine is hot, escaping steam could burn you. Use a rag to cover radiator cap. Unscrew cap just enough to allow any built-up pressure to escape. When all pressure has been relieved, unscrew cap and take off.

WARNING

Rubber apron, safety gloves, and safety goggles must be worn when working with batteries. Failure to observe this precaution could cause serious injury to personnel.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

WARNING

Care must be taken when working under hood while engine is running. Hands must be kept away from belts, fan, and other moving parts. Failure to observe this precaution could cause serious injury to personnel.

WARNING

Do not attempt to disconnect hydraulic lines and fittings while engine is running or before hydraulic system pressure has been released. When engine is running, hydraulic system is under pressure. Hydraulic system pressure should be 0 psi (0 kPa) before lines are disconnected. A line or fitting disconnected under pressure will blow off with great force and can cause injury to personnel.

WARNING

When increasing air pressure in tires, be careful not to exceed recommended pressure, to prevent personal injury or damage to equipment.

WARNING

Draining hot cooling system is not recommended. If coolant must be drained with engine hot, use gloves to protect against hot coolant. Severe burns could result.

WARNING

Ensure that vehicle is on level ground and that rear wheels are chocked to prevent vehicle from moving or severe injury to personnel may result.

WARNING

When performing parking brake troubleshooting, follow procedure exactly. Release of trapped air inside brake chamber can cause brakes to apply suddenly, causing injury to personnel.

WARNING

Do not operate dump truck with tires of different construction. Injury to personnel and equipment could occur.

WARNING

No welding, grinding or use of heat producing devices permitted near fuel tank unless fuel tank has been cleaned and purged of all flammable liquids and vapors. Failure to observe these precautions could cause serious injury to personnel.

WARNING

Exhaust system parts become very hot when engine is running. Allow time for parts to cool before working on exhaust system. Hot exhaust system parts will cause serious burns.

WARNING

Be careful when bleeding torque converter cooler. Escaping steam and coolant could burn you. Open draincock just enough to allow any built up pressure to escape.

WARNING

Cab floor boards have sharp edges. Care must be taken to prevent injury to personnel.

WARNING

Use care when removing damaged headlight assembly, broken glass or sharp metal could cut you.

WARNING

Due to excessive weights, assistance will be needed to support battery box, to prevent personal injury.

WARNING

Care must be taken when removing lamp that is cracked or gray in color to prevent personal injury.

WARNING

Do not drain steering system when hot. Hot oil can burn you.

WARNING

Do not drain oil reservoir when hot. Hot oil can burn you.

WARNING

Seat belts must be positioned correctly for proper operation.

WARNING

To prevent injury, make sure all personnel are clear of tailgate when body is in raised position.

WARNING

Drain air from air tank system before removing lines or fittings to avoid injury to personnel from compressed air.

Organizational Maintenance Manual

**TRUCK, DUMP: 20-TON, 6 x 4,
ON-OFF HIGHWAY, 71,000 GVW,
IHC MODEL F-5070 (CCE)
(NSN 3805-00-192-7249)**

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 directly to: Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-MBS, Warren, MI 48397-5000. A reply will be sent to you.

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* This manual supersedes organizational portion of TM 5-3805-254-14&P1 dated August 1980 and TM 5-3805-254-14&P2 dated June 1980 including all changes.

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HOW TO USE THIS MANUAL

This manual is designed to help you maintain the IHC Model F-5070 (CCE) dump truck. The front cover table of contents is provided for quick reference to important information. There is also an index, located in the back of this manual, for use in locating specific items of information.

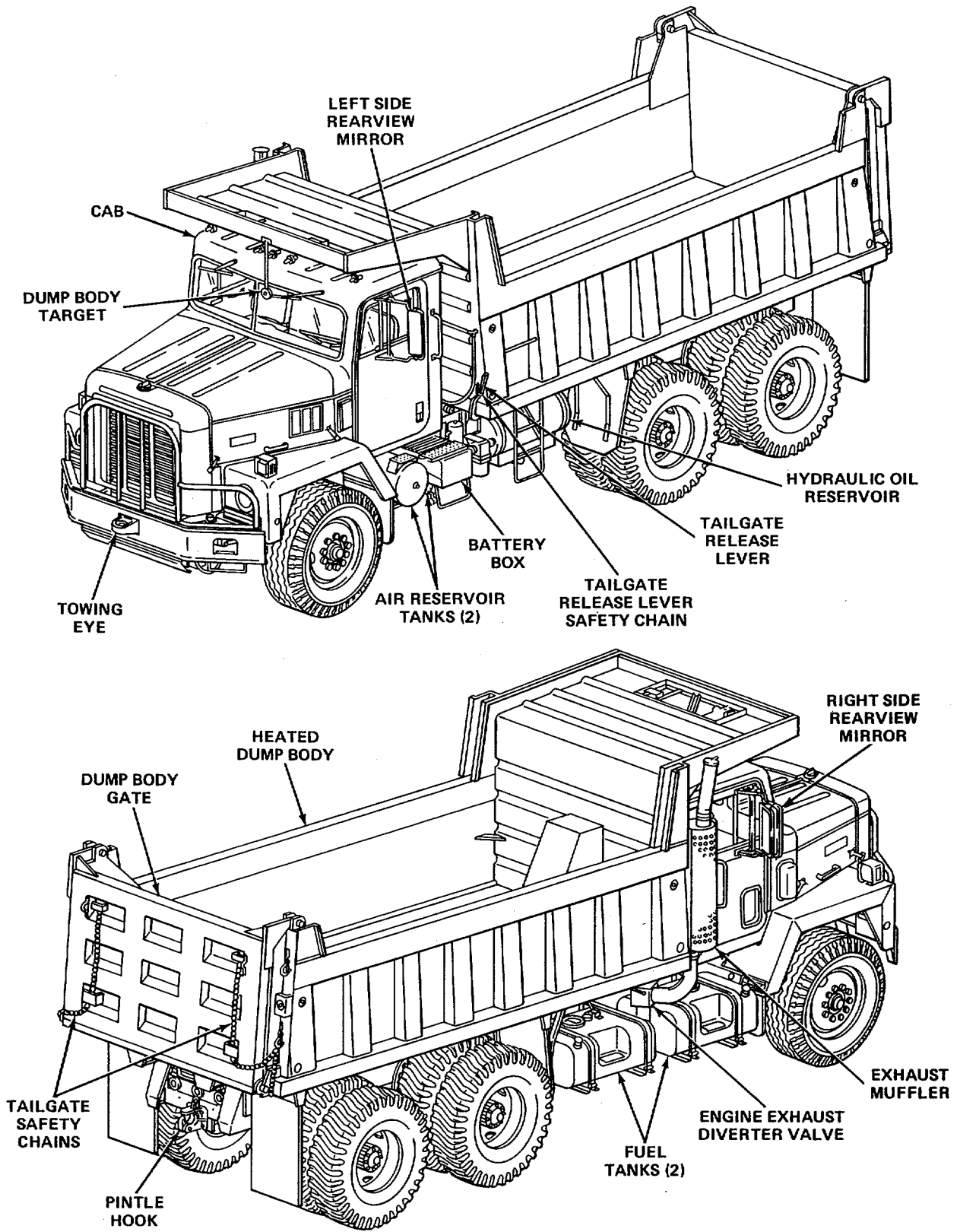
Measurements in this manual are given in both US standard and metric units. A metric to US standard conversion chart can be found on the inside back cover.

Read all preliminary information found at the beginning of each task. It has important information and safety instructions you must follow before beginning the task.

Equipment locator illustrations are also provided throughout the maintenance procedures. These illustrations are for use in locating components and assemblies of the overall equipment. It should be noted that the locator illustrations do not always reflect the equipment condition listed in the initial setup at the beginning of each task.

Warning pages are located in the front of this manual. You should read the warnings before operating or doing maintenance on the equipment.

A subject index appears at the beginning of each chapter listing sections that are included in that chapter. A more specific subject index is located at the beginning of each section to help you find the exact paragraph you're looking for.



Truck, Dump: 20-Ton, 6 x 4, On-Off Highway, 71,000 GVW,
IHC Model F-5070 (CCE)

TA243672

CHAPTER 1
INTRODUCTION

OVERVIEW

This chapter provides general information, equipment specifications, and principles of operation that are needed for reference while performing organizational maintenance on the dump truck.

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Section I. GENERAL INFORMATION

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SCOPE

Type of Manual: Organizational Maintenance

Model Number and Equipment Name: IHC Model F-5070 (CCE), Truck, Dump, 20-Ton, 6 x 4, 71,000 GVW, On-Off Highway.

Purpose of Equipment: On-off highway vehicle used for transporting materials for construction/rehabilitation of roads, airfields, ports, and beach and marine facilities, worldwide.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738750, The Army Maintenance Management System (TAMMS).

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Refer to TM 750-244-6 for instructions on the destruction of Army materiel to prevent enemy use.

■ EQUIPMENT IMPROVEMENT REPORT AND MAINTENANCE DIGEST

The quarterly Equipment Improvement Report and Maintenance Digest, TB 43-0001-39 series, contains valuable field information on the equipment covered in this manual. The information in the TB 43-0001-39 series is compiled from some of the Equipment Improvement Reports that you prepared on the vehicles covered in this manual. Many of these articles result from comments, suggestions, and improvement recommendations that you submitted to the EIR program. The TB 430001-39 series contains information on equipment improvements, minor alterations, proposed Modification Work Orders (MWOs), warranties (if applicable), actions taken on some of your DA Form 2028's (Recommended Changes to Publications), and advance information on proposed changes that may affect this manual. The information will help you in doing your job better and will help in keeping you advised of the latest changes to this manual. Also refer to DA PAM 310-1, Consolidated Index of Army Publications and Blank Forms, and appendix A, References, of this manual.

PREPARATION FOR STORAGE OR SHIPMENT

Refer to TM 740-90-1 for instructions on the administrative storage of Army materiel.

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

Make sure that you do all your work with quality of workmanship in mind. Use the following checklist as a guide.

Always use the right tool for the job.

Make sure that calibration stickers on test equipment are current, not out of date.

Fill out all required forms and make sure all in-time inspections are properly stamped.

If you have any doubts about performing a maintenance task, notify your supervisor.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your dump truck needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to us at: Commander, US Army Tank-Automotive Command, Attn: AMSTA-QRT, Warren, MI, 48397-5000. We'll send you a reply.

Section II. EQUIPMENT DESCRIPTION AND DATA

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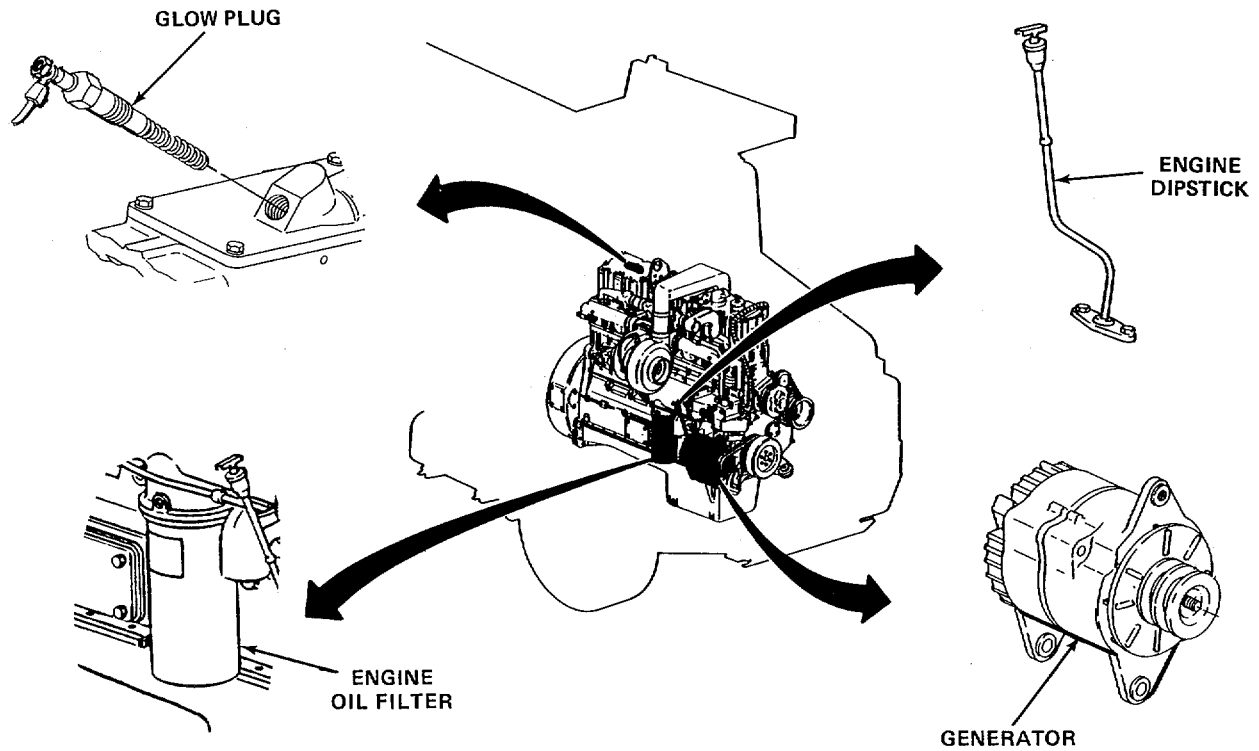
Change 1 1-2

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

Refer to TM 5-3805-254-10 for dump truck characteristics, capabilities, and features.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

ENGINE COMPARTMENT



Glow Plug

Used as a cold weather starting aid.

Engine Dipstick

Provides easy access for checking level of lubricating oil in lubrication system.

Generator

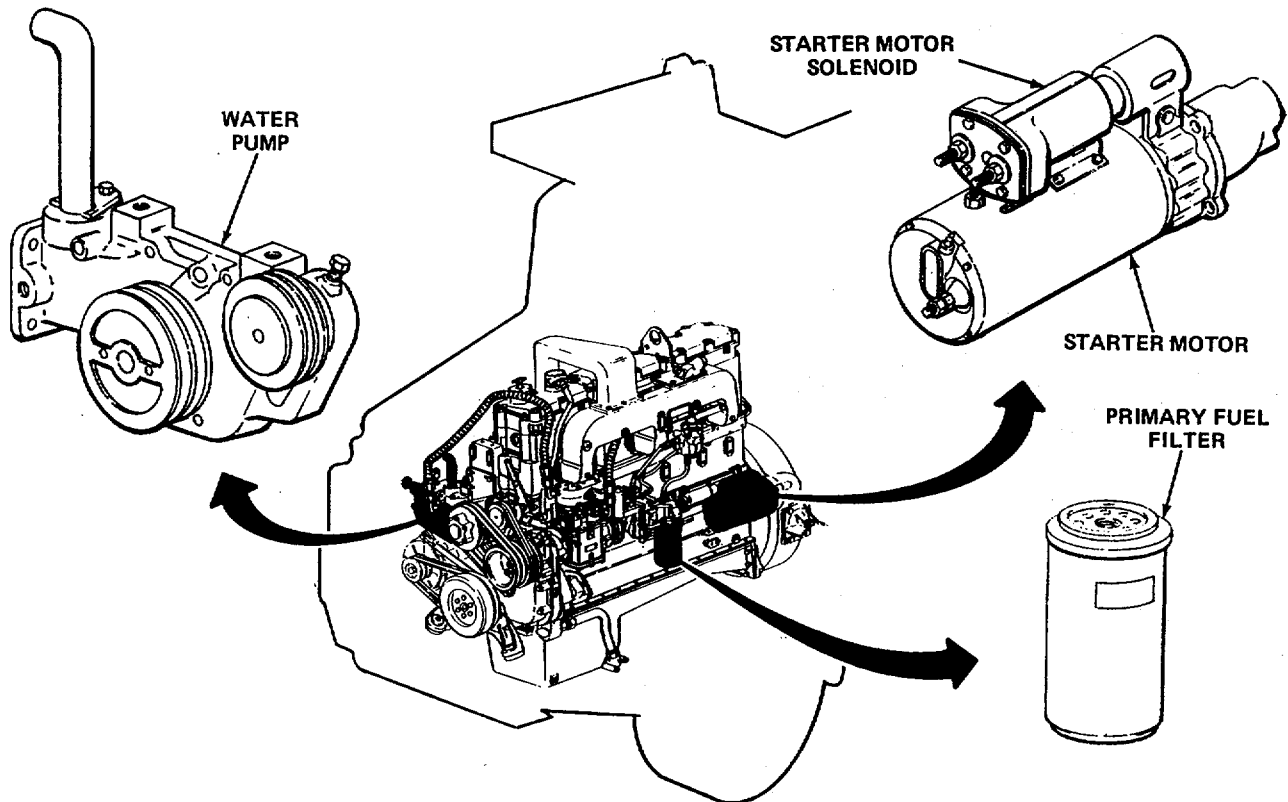
Provides power for electrical system components and recharging batteries.

Engine Oil Filter

Removes contaminants and impurities from engine lubricating oil.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

ENGINE COMPARTMENT - CONTINUED



Starter Motor Solenoid

When energized, causes starter motor spur gear to engage with flywheel, cranking the engine.

Starter Motor

Cranks engine when circuit is completed to starter motor solenoid.

Primary Fuel Filter

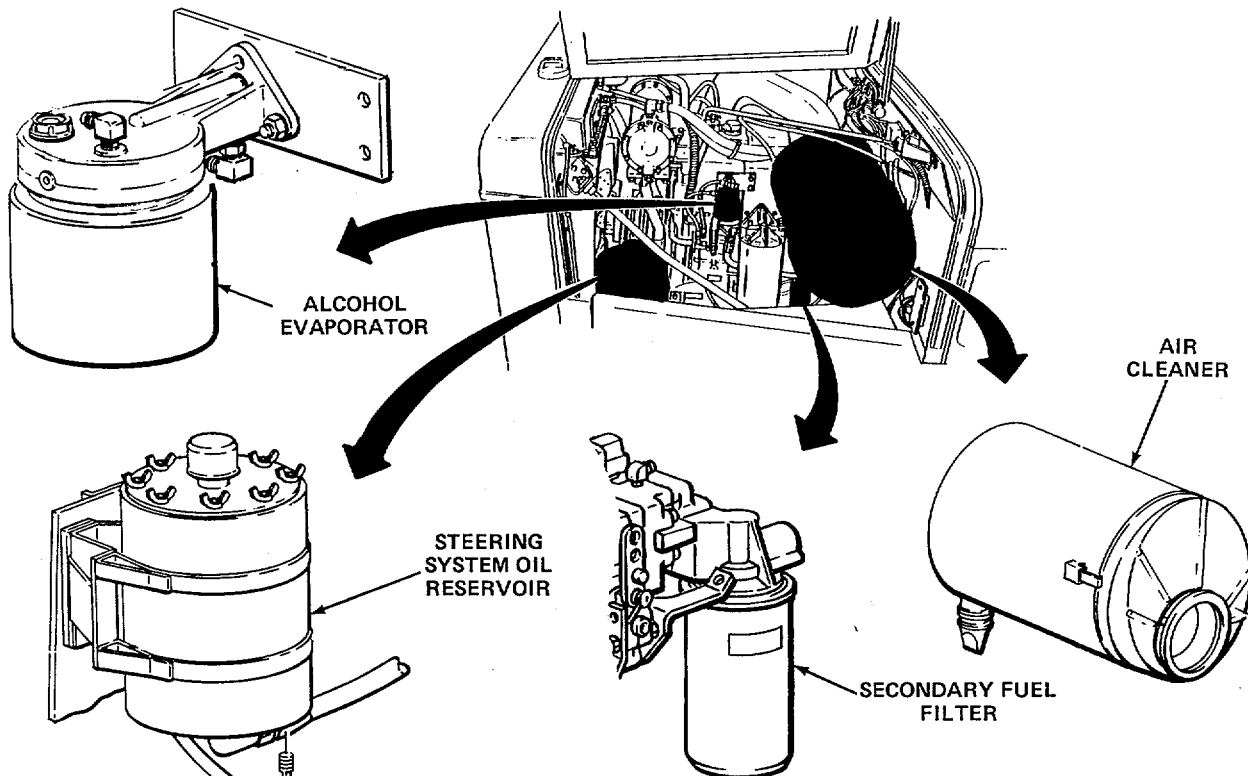
Removes contaminants and impurities from diesel fuel entering fuel injection pump.

Water Pump

Circulates engine coolant throughout engine cooling system.

TA243674

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED



Air Cleaner

Used to trap dust, dirt, and foreign matter and keep them from entering turbocharger inlet pipe.

Secondary Fuel Filter

Removes contaminants and impurities from diesel fuel entering fuel injection pump.

Steering System Oil Reservoir

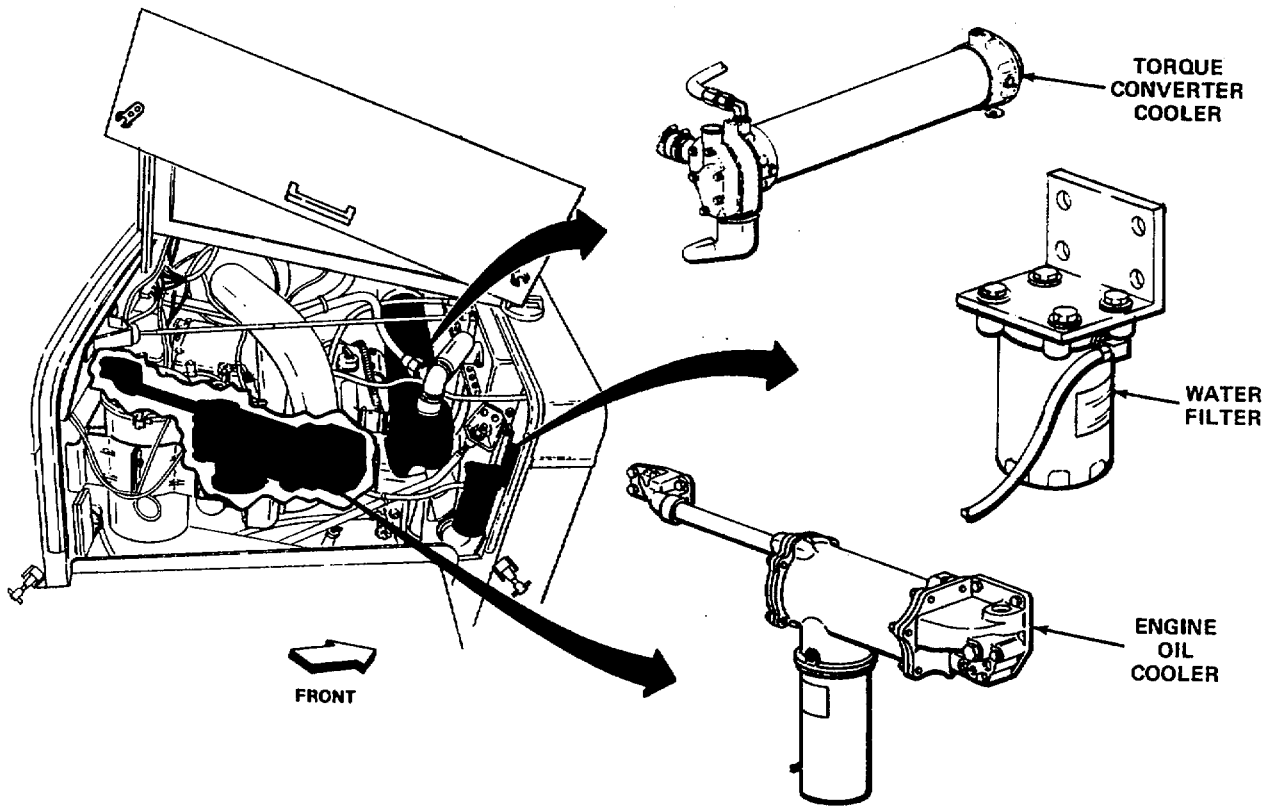
Provides safe storage for steering system oil. Houses filter for steering system.

Alcohol Evaporator

Removes moisture from air that enters air compressor during operation.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

ENGINE COMPARTMENT - CONTINUED



Water Filter

Removes contaminants and impurities, keeping them from entering cooling system.

Engine Oil Cooler

Dissipates heat from engine oil during engine operation. Prevents contaminants and impurities from entering oil system.

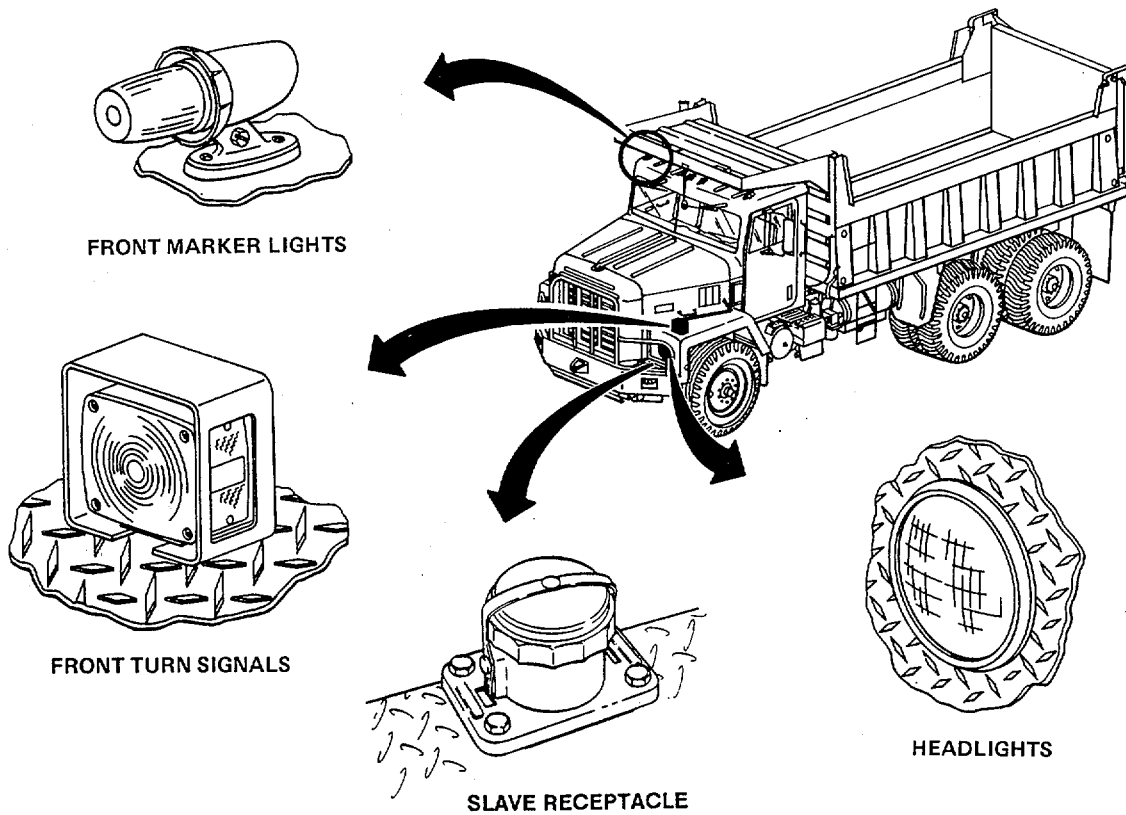
Torque Converter Cooler

Dissipates heat from torque converter and main transmission. Prevents contaminants and Impurities from entering torque converter and main transmission.

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LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

EXTERIOR LIGHTS



Head Lights (two)

Headlights are illuminated when headlight switch is set to down position.

Front Turn Signals (two)

Signal light filaments are illuminated by current supplied from signal flasher.

Front Marker Lights (five)

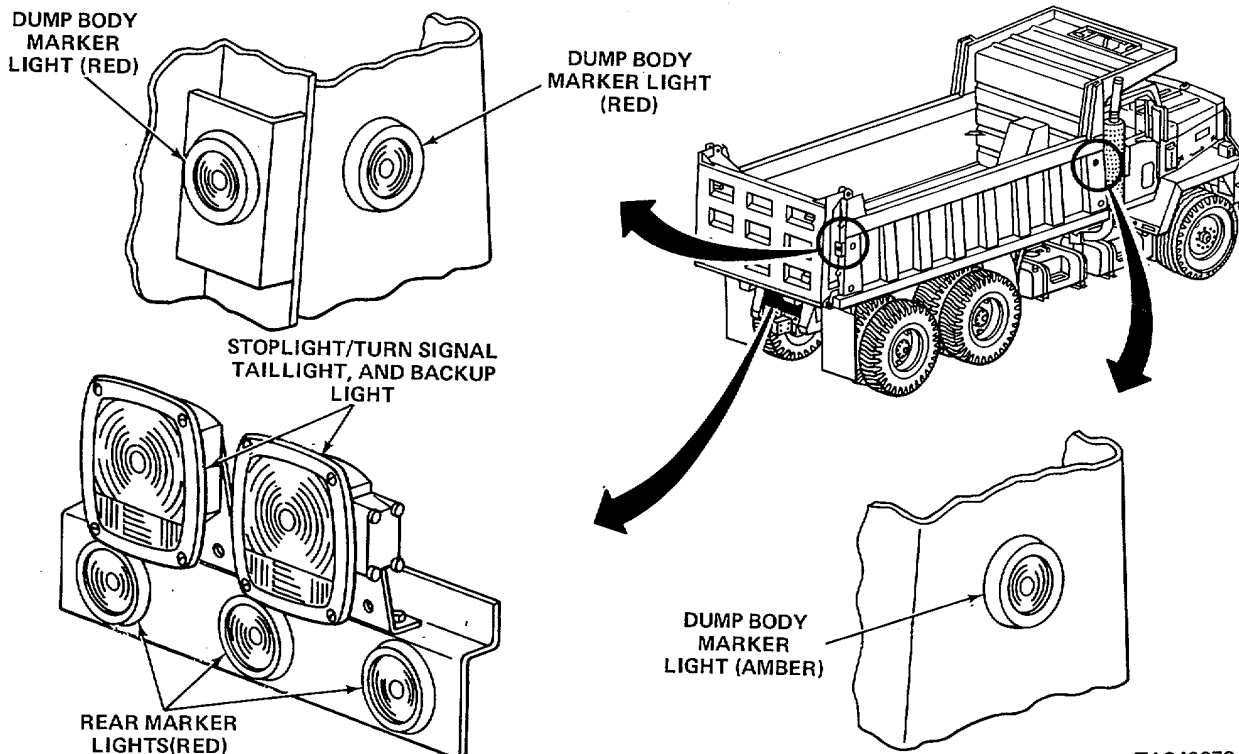
Marker light filaments are illuminated by current supplied from headlight switch, when in either up or down position.

Slave Receptacle

Supplies electrical power through jumper cables to start engine of another vehicle.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

EXTERIOR LIGHTS - CONTINUED



Taillights (two)

Taillights are illuminated when headlight switch is in either up or down position.

Rear Signal Lights (two)

Signal light filaments are illuminated by current supplied from signal flasher.

Rear Marker Lights (three)

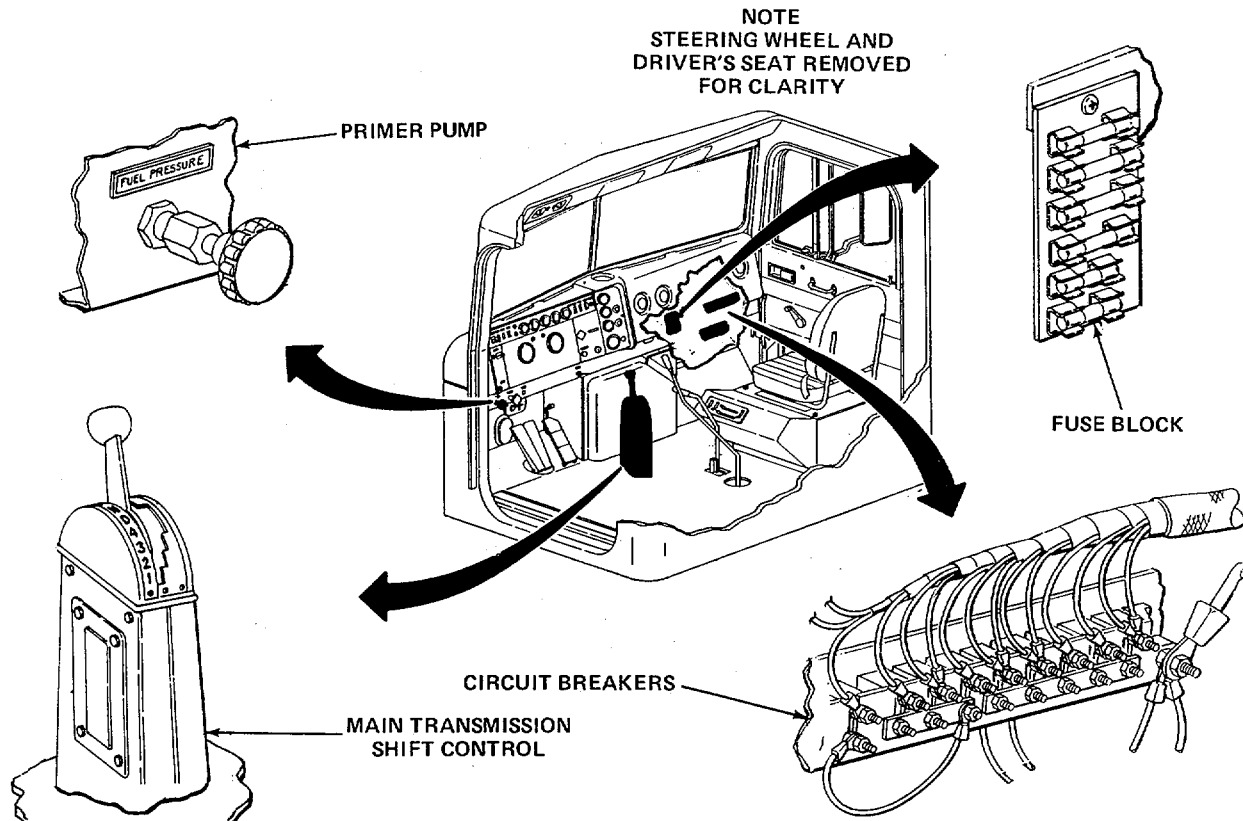
Marker light filaments are illuminated when headlight switch is in either up or down position.

Dump Body Marker Lights (six)

Dump body marker light filaments are illuminated when headlight switch is in either up or down position.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

INTERIOR

**Primer Pump**

Activated by operator from inside cab. Sense pressurized fuel to preheater nozzle for cold starting.

Circuit Breakers

Circuit breakers will open any time current demand exceeds rated capacity of circuit breaker. When switches are set to on position, that system is energized.

Fuse Block

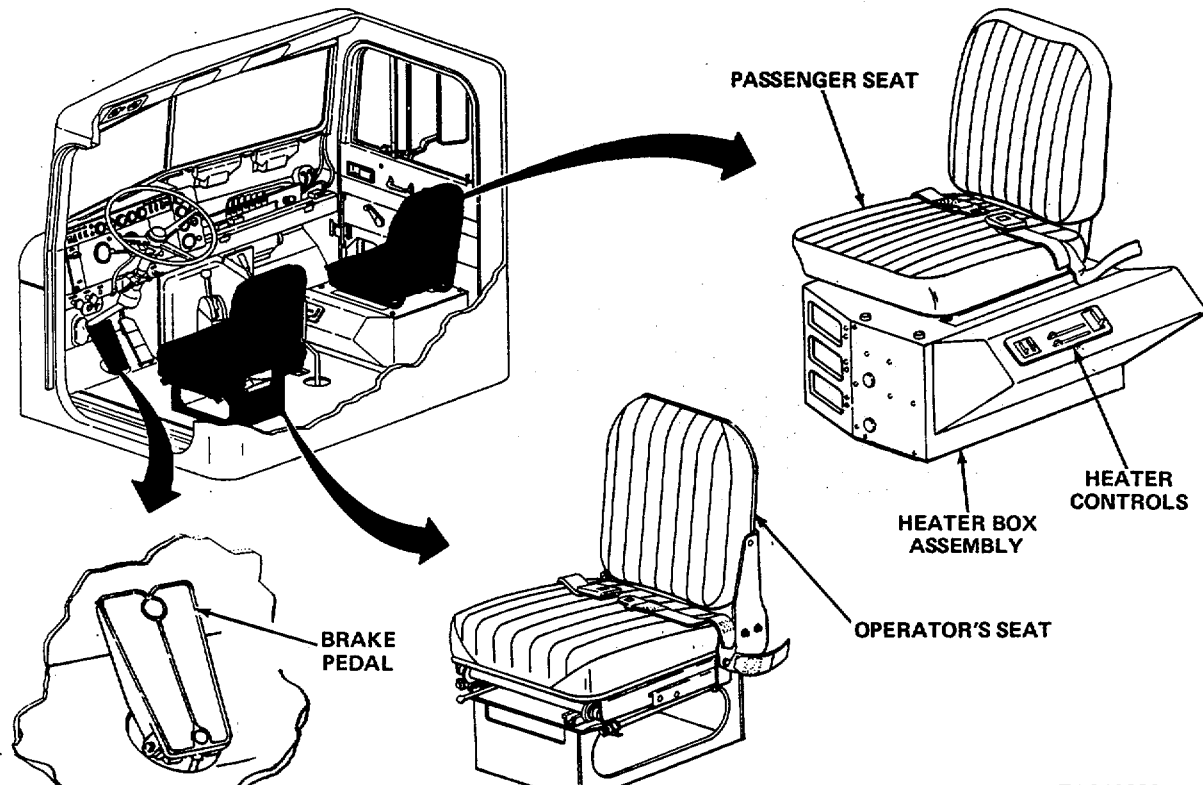
Groups fuses together and allows current to flow through circuit breakers.

Main Transmission Shift Control

Allows gear selections to be made manually, or when put in D, will automatically select one of five forward speeds.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

INTERIOR - CONTINUED

**Brake Pedal**

Mounted on cab floor, when brake pedal is depressed treadle valve is actuated allowing air to be sent to service airbrake system.

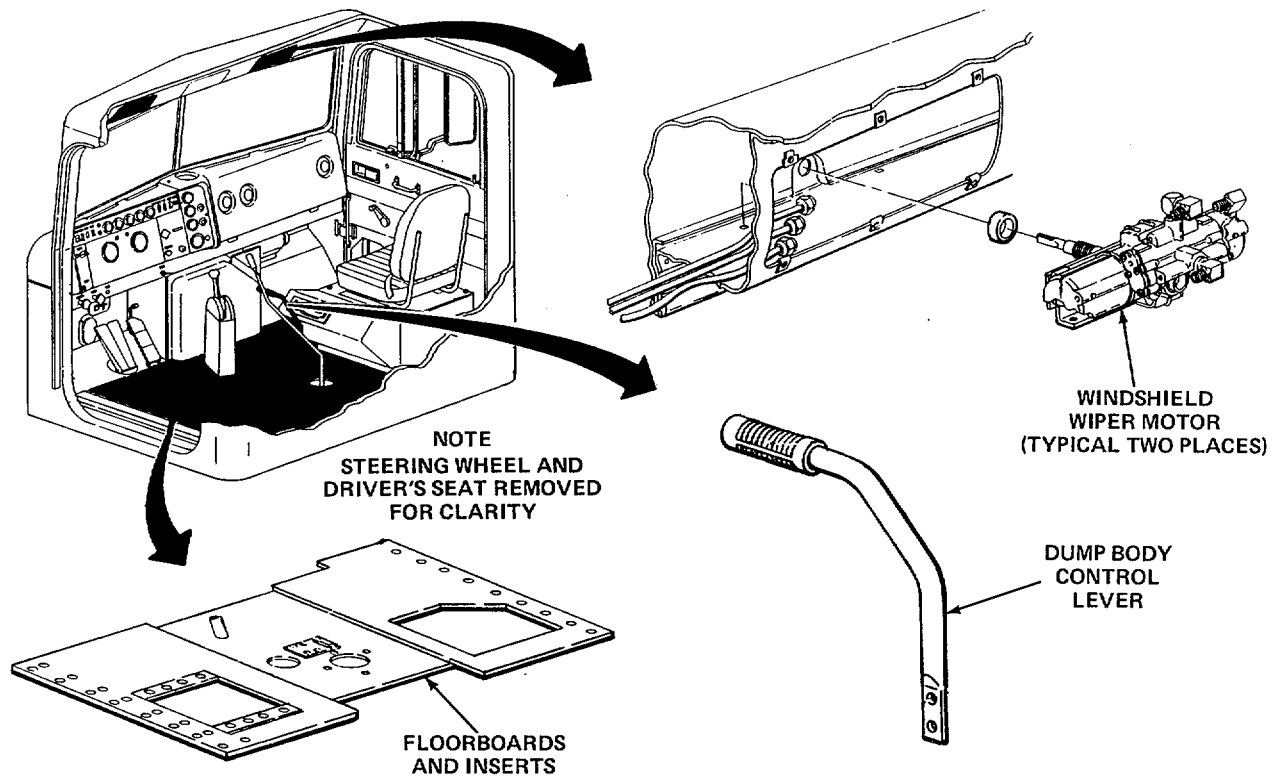
Operator's Seat

An adjustable bucket-type seat that moves forward and backward. Backrest adjusts to three positions, and built-in shock absorber assembly is adjustable to operator's weight.

Passenger Seat and Heater Box Assembly

Passenger seat is a fixed bucket-type seat mounted on top of heater box assembly. Heater controls are located on side of heater box assembly.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED



Floor Boards and Inserts

Provide area for floor-mounted controls and occupants feet. Also allows access to transmission and power take off (PTO).

Dump Body Control Lever

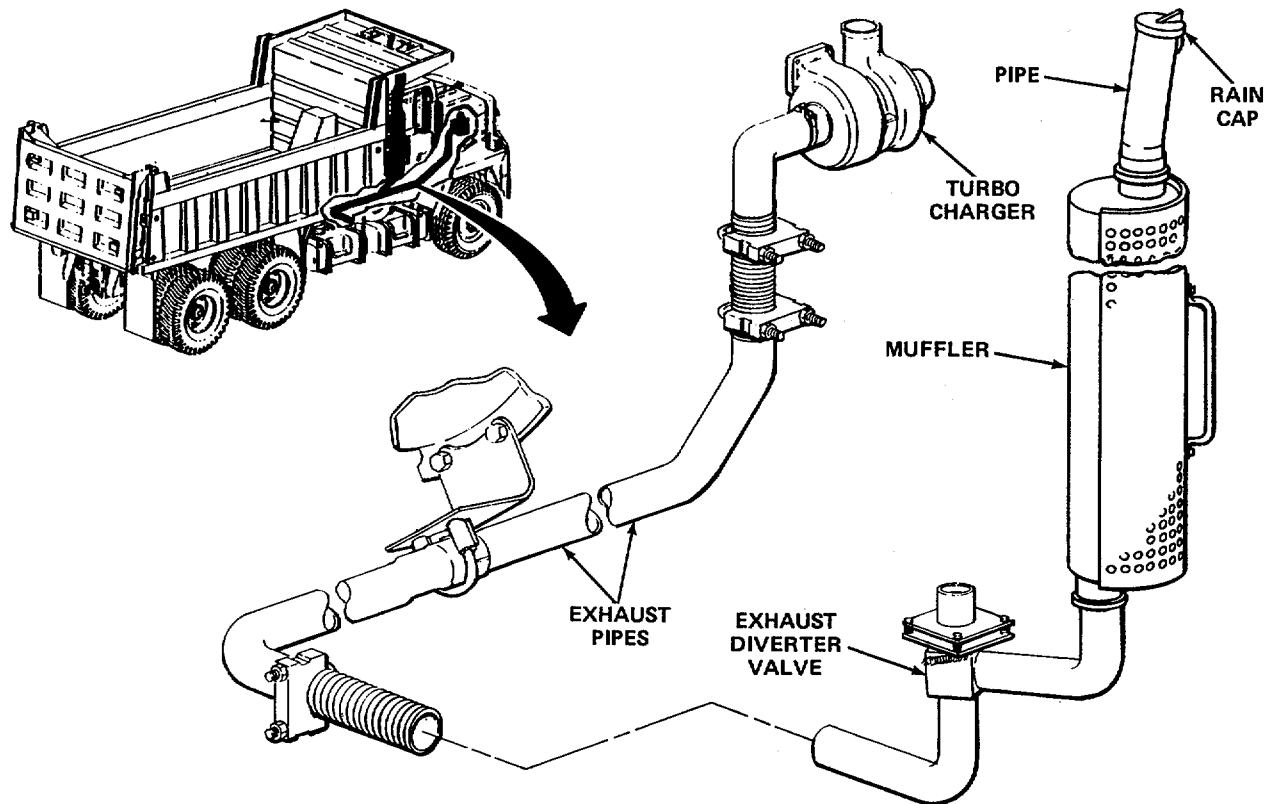
When lifted to up position, dump body will raise. When pushed to down position, dump body will lower.

Windshield Wiper Motors (two)

Compressed air-operated motors, used to operate windshield wipers.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

EXTERIOR



Exhaust Pipes (two)

Direct exhaust gases from turbocharger outlet to muffler.

Rain Cap

Secured to top of muffler by a hinge. Rain cap is closed when engine is not operating to prevent rain from entering muffler. Rain cap is opened by exhaust gas pressure when engine is running.

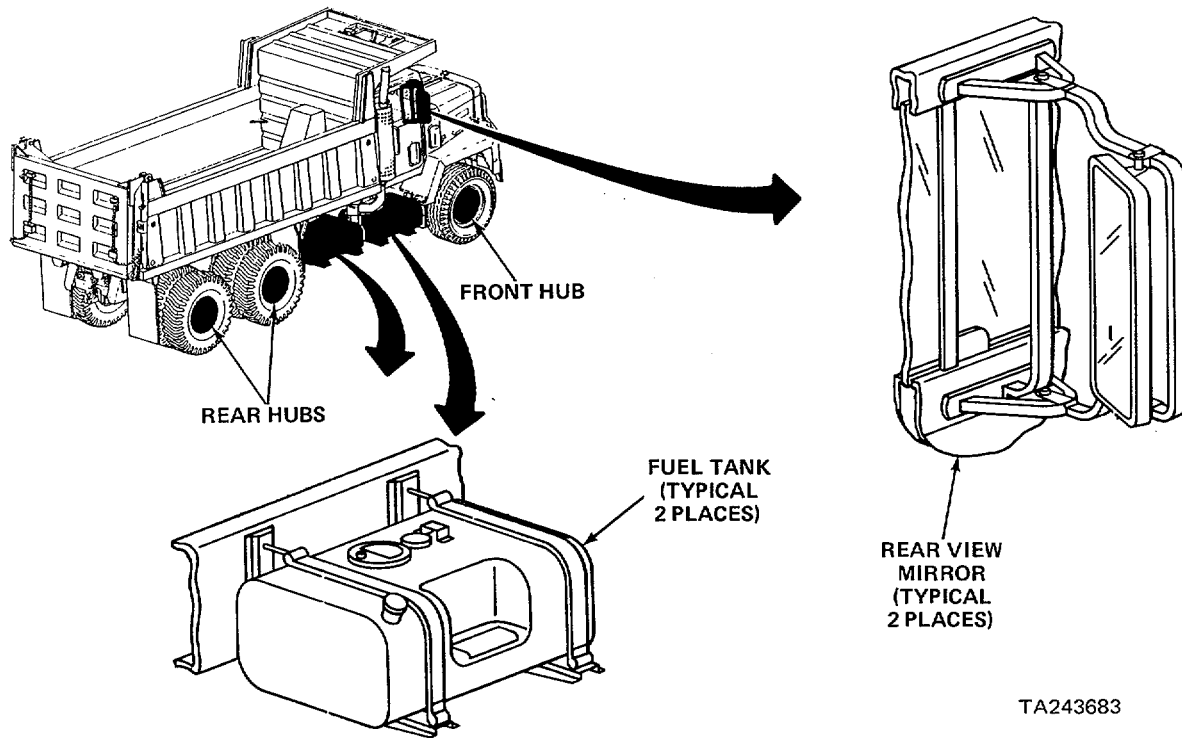
Muffler

Reduces engine exhaust noise. Directs exhaust gases through pipe, above roof line of cab.

Exhaust Diverter Valve

Directs exhaust gases through muffler to reduce engine noise or through dump body during cold weather dumping. A manually-operated lever on side of exhaust diverter valve directs exhaust gases.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED



TA243683

Fuel Tanks (two)

Provide safe storage for diesel fuel. Fuel tanks are joined together by an equalizer hose.

Mirrors (two)

Mounted to outside of each cab door. Both mirrors are adjustable.

Front Hub

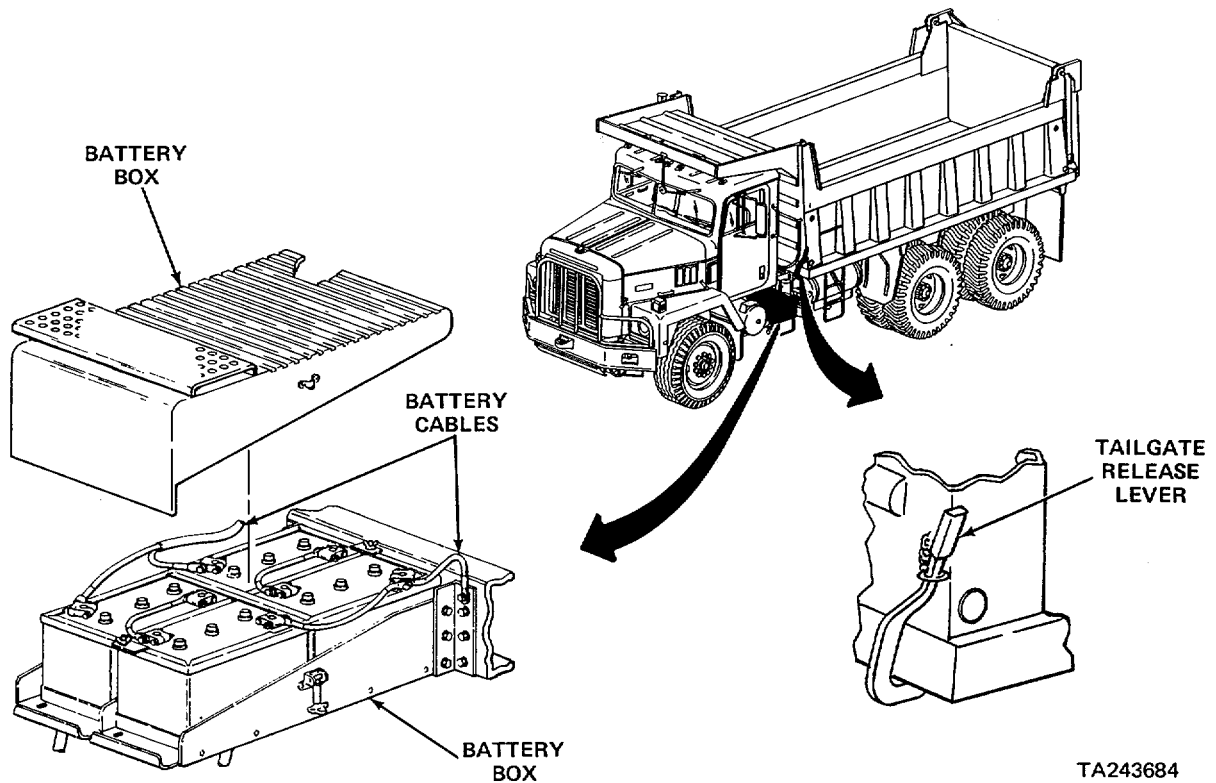
Supported by spindle, wheel bearings, brakedrum and axle. Also includes wheel bearing sight window for checking oil-level mark.

Rear Hubs

Supported by spindle, wheel bearings, drums and dual axles.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

EXTERIOR - CONTINUED



Batteries (four)

Connected in series-parallel providing 12 volts to electrical system.

Battery Cables

Negative battery cable is connected to frame. Positive battery cable is connected to starter motor solenoid.

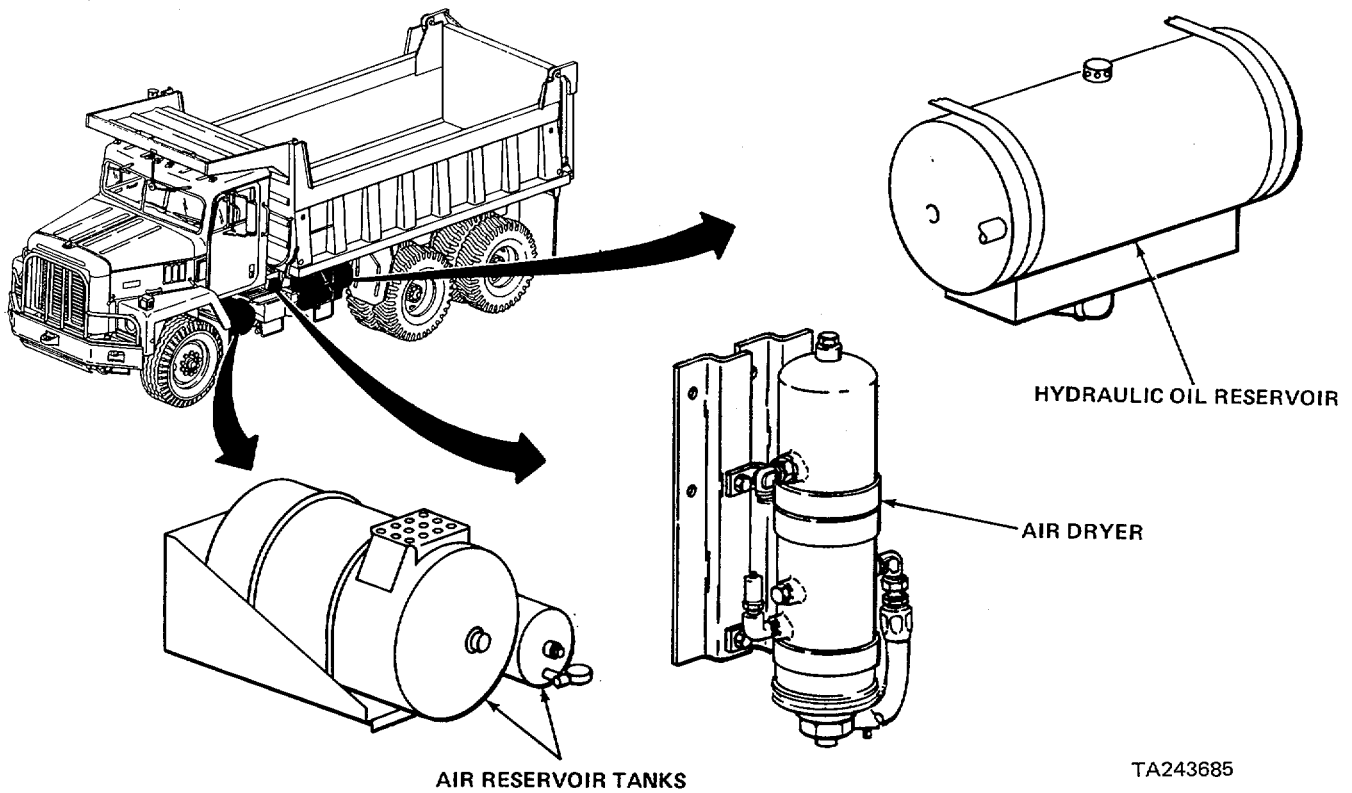
Battery Box

Supports and protects four six-volt batteries. Provides two steps for ease of entry into cab.

Tailgate Release Lever

Unlocks tailgate when dumping payload.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED



Air Dryer

Removes moisture from compressed air entering wet air reservoir.

Air Reservoir Tanks (two)

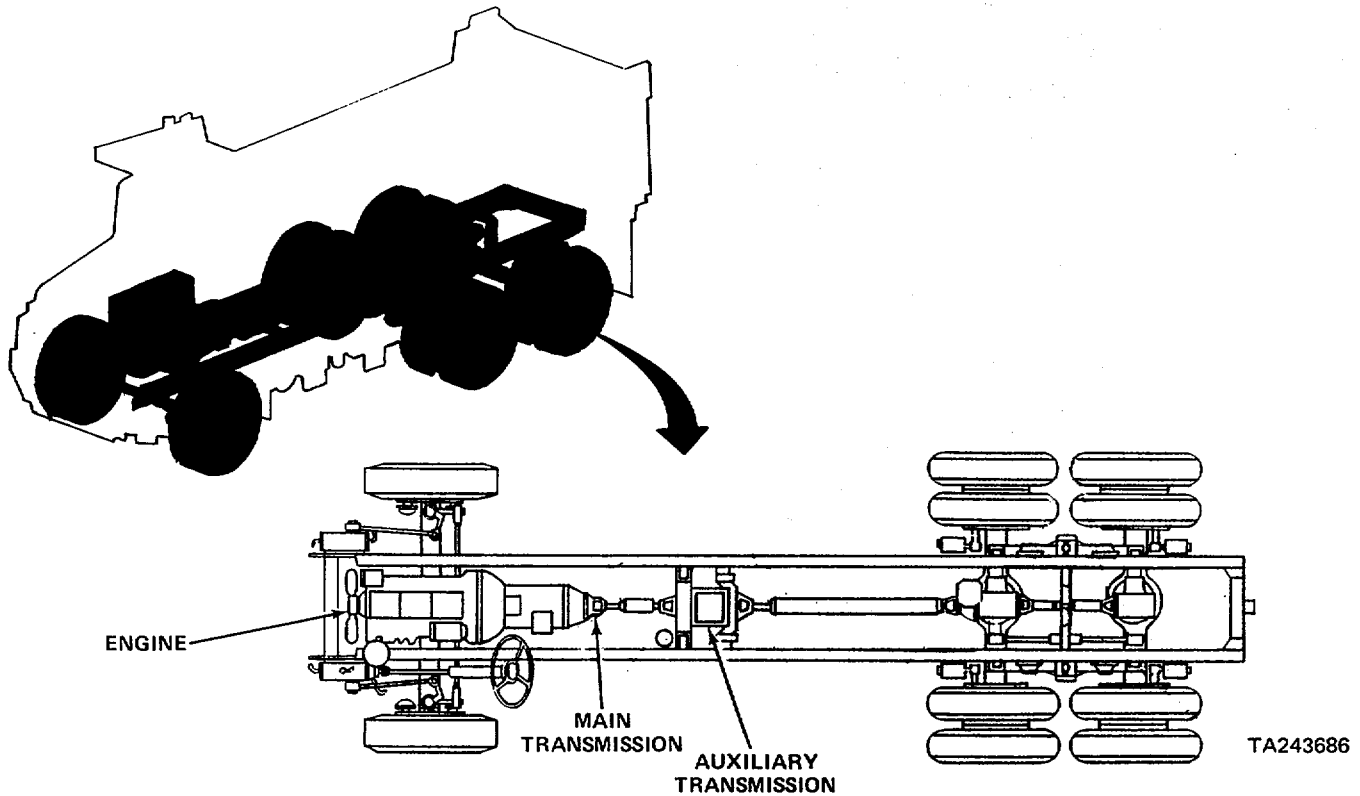
Hold compressed air for air system component operation. Front tank is a dry air reservoir. Rear tank is a wet air reservoir.

Hydraulic Oil Reservoir

Provides safe storage for hydraulic oil used during hydraulic system operation. A sight glass is mounted on front of tank to check level of hydraulic oil.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED

EXTERIOR - CONTINUED



Engine

Turbocharged, six-cylinder, in-line internal combustion diesel engine.

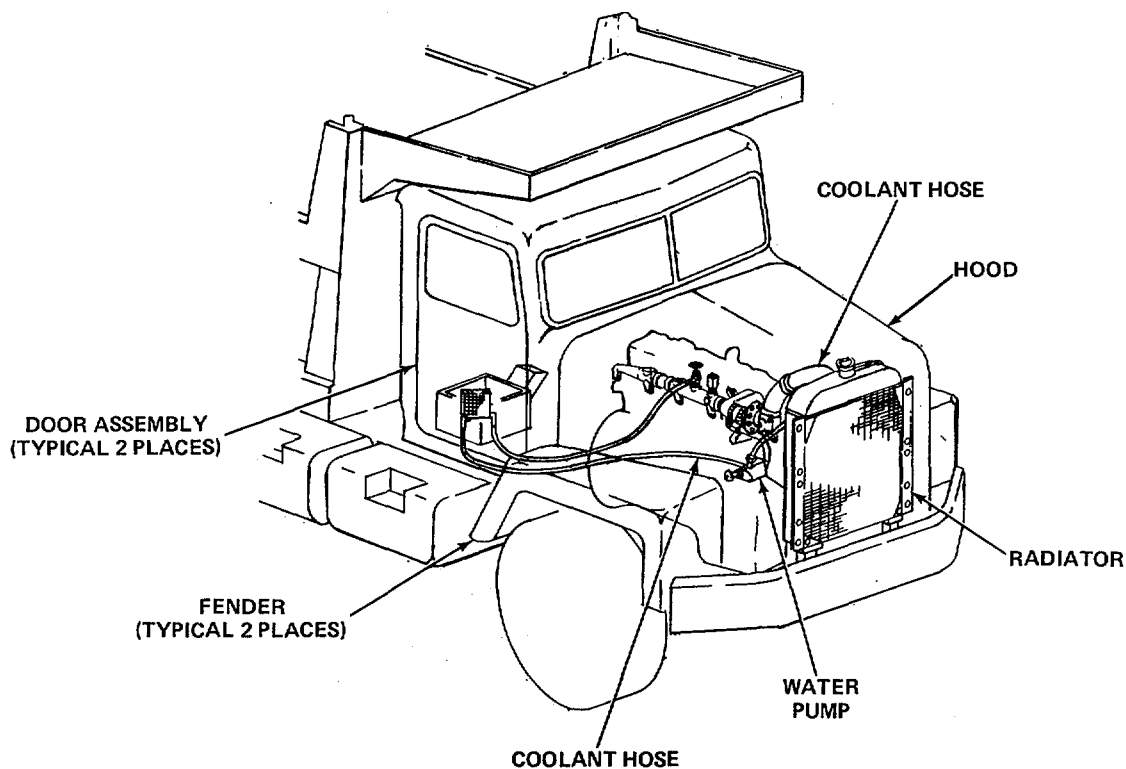
Main Transmission

Utilizes five forward speeds, one reverse and one neutral. Coupled to engine by torque converter through hydraulic pressure. Gear shifts can be made manually, or when put in D, hydraulic pressure in valve body allows automatic shifting.

Auxiliary Transmission

A three speed, manually-operated transmission used to assist main transmission gear ratios, under heavy loads or at highway speeds.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - CONTINUED



TA243687

Radiator

Dissipates heat from engine coolant during engine operation.

Coolant Hoses

Provide a means of circulating engine coolant through engine cooling system.

Water Pump

Circulates engine coolant through cooling system.

Hood

Provides cover for engine compartments.

Fenders

Prevent mud and foreign matter from entering engine compartment. Provide location for lights and mud flaps.

Door Assemblies

Provide access for entering or exiting cab.

EQUIPMENT DATA

Refer to TM 5-3805-254-10 for information on dump truck identification and data plates. For user convenience, major component specifications are listed on the following pages in tabular format. All weights and dimensions are approximate.

MAKE	International Harvester Corporation
MODEL	F-5070
WEIGHTS	
Curb Weight	31,000 lb (14,070 kg)
Gross Vehicle Weight Rating (GVWR)	71,000 lb (32,234 kg)
CAPACITIES	
Engine Oil	37 qt (35 liters), includes 14 qt (13.2 liters) for auxiliary oil filter
Cooling system	50 qt (47.3 liters)
Fuel Tanks	100 gal (378.5 liters)
Power Steering Pump Reservoir	15 qt (14.2 liters)
Transmission Oil	
Main	64 pt (30.3 liters)
Auxiliary	28 pt (13.2 liters)
Hydraulic Oil Reservoir	40 gal (151.4 liters)
Tandem Rear Axle Assembly	
Front, rear axle	30 pt (14.2 liters)
Rear, rear axle	28 pt (13.2 liters)
ENGINE	
Make	Cummins
Model	NTC-290
Type	Four-stroke, turbocharged diesel
Displacement	855 cu in. (14,250 cc)
Cylinders	6
Bore	5 1/2 in. (14 cm)
Stroke	6 in. (15.2 cm)
Gross Torque	930 ft lb (1261 N.m) at 1300 rpm
Maximum Horsepower	290 at 2100 rpm
Firing Order	1-5-3-6-2-4
FUEL SYSTEM	
Type Fuel	Diesel No. 2
Type Fuel System	Diesel fuel injection
Fuel Tank Quantity	2
Fuel Tank Capacity	50 gal (189.3 liters) per tank, 100 gal (378.5 liters) total

EQUIPMENT DATA - CONTINUED

Fuel Filter	
Type	Spin-on and canister
Quantity	2
Air Cleaner	
Type	Dry element
Quantity	1
Airflow capacity	900 cfm (25.5 cu m/min)

COOLING SYSTEM

Radiator Working Pressure	14 psi (96.5 kPa)
---------------------------	-------------------

ELECTRICAL SYSTEM

Voltage	12 V
Generator Output	12 V, 80 amp
Circuit Breakers	
Type	Manual reset
Quantity	1
Type	Automatic reset
Quantity	9
Batteries	
Quantity	4
Voltage (each)	6 V
Connection	Series-parallel
Capacity (each)	208 amp

AIR SYSTEM

Alcohol Evaporator	
Capacity,	1 pt
Type of alcohol	Methanol alcohol

TRANSMISSIONS

Main Transmission	
Type	Automatic
Number forward speeds	5
Number reverse speeds	1
Auxiliary Transmission	
Type	Manual
Number of ranges	3

BRAKE SYSTEM

Actuation	Air/mechanical
Rear Service/Spring Airbrake Chambers	
Type	S cam
Quantity	4

EQUIPMENT DATA - CONTINUED**BRAKE SYSTEM - CONTINUED**

Operating Pressure Range	90 to 125 psi (620.6 to 861.9 kPa)
Front Service Airbrake Chambers	
Type	Double wedge type
Quantity	2
Brakeshoes	
Type	Riveted web
Quantity	4 per axle
Engine Brake	Jacobs compression brake

WHEELS

Quantity	10
Spare Wheel Quantity	0
Stud Quantity per Wheel	10

TIRES

Quantity	10
Spare Tire Quantity	0
Tread Type	
Front axle tires	Military
Rear axle tires	Commerical hard rock
Size	
Front axle tires	16.5 x 22.5
Rear axle tires	12.00 x 20
Ply Rating	
Front axle tires	16 ply
Rear axle tires	14 ply
Load Range	
Front axle tires	H
Rear axle tires	G
Tire Air Pressure	
Front axle tires	80 psi (551.6 kPa)
Rear axle tires	80 psi (551.6 kPa)

STEERING SYSTEM

Type	Integral power valve and cylinder assembly
Actuation	Hydraulic power assist

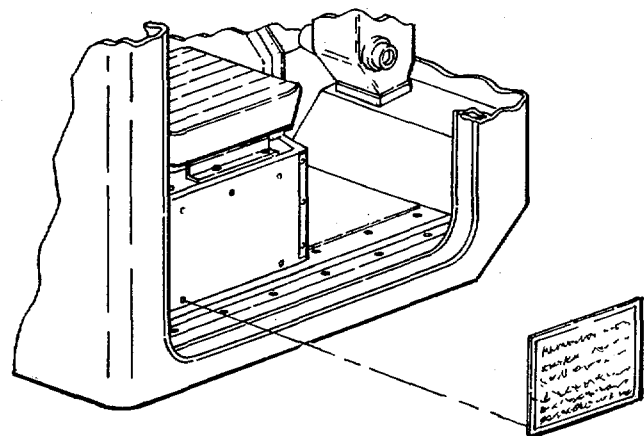
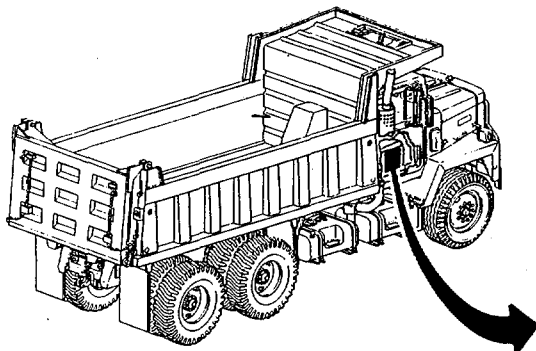
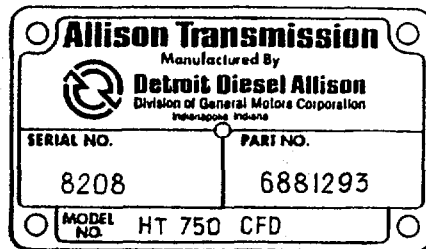
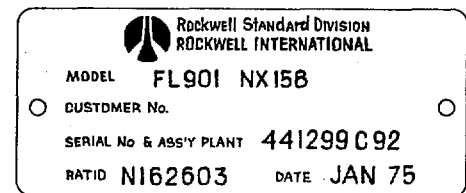
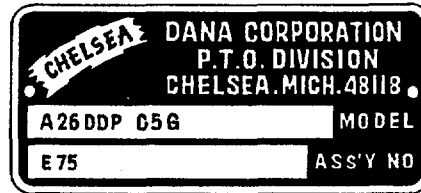
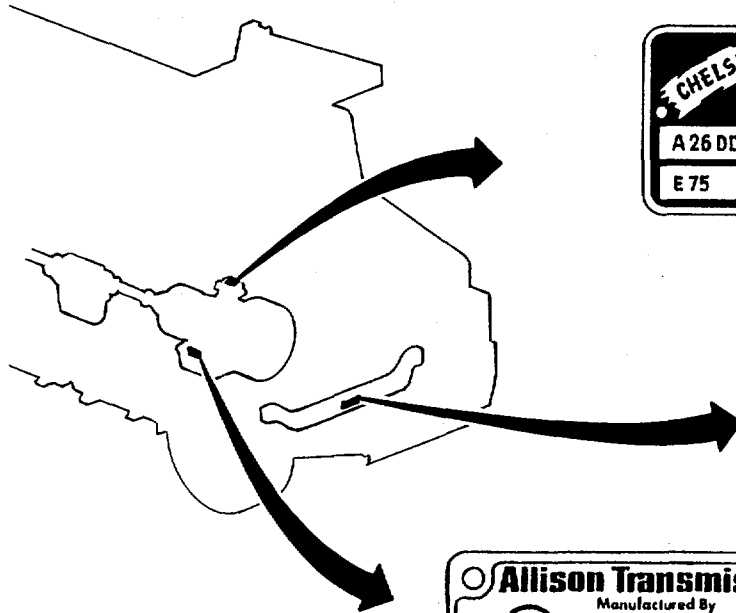
DUMP BODY

Type	Exhaust gas heated steel dump body
Actuation	Hydraulic lift cylinder
Maximum Dump Body Angle	50 degrees
Capacity	12 cubic yards (9.12 cubic meters)

LOCATION AND DESCRIPTION OF DATA AND INSTRUCTION PLATES

NOTE

Refer to TM 5-3805-254-10 for data and instruction plates not covered in this paragraph.



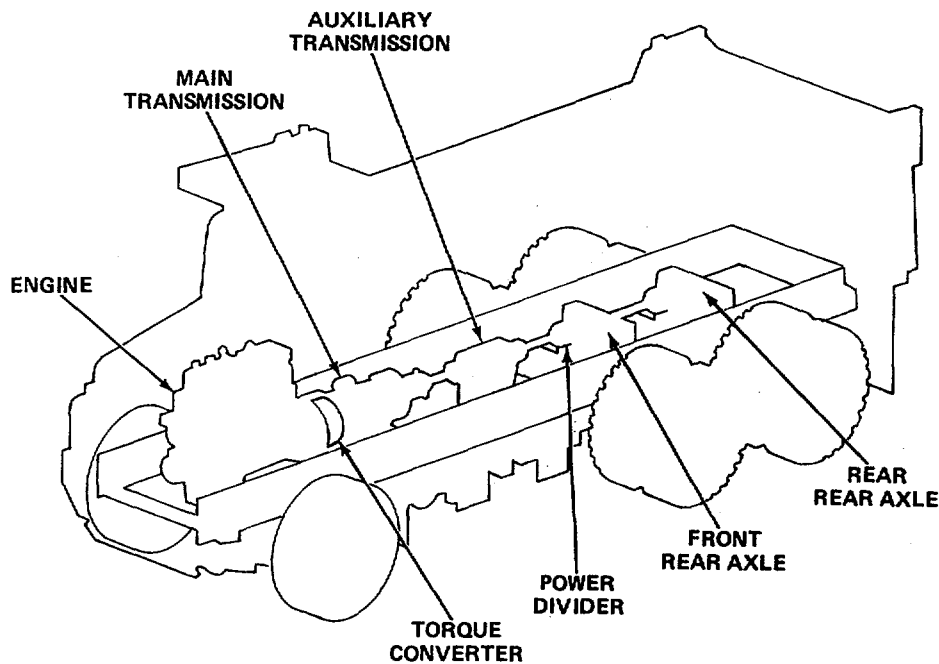
Section III. PRINCIPLES OF OPERATION

	Page		Page
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GENERAL

The power train system provides and uses power for moving the F-5070 Dump Truck and supplies power to the hydraulic system. It consists of the engine, torque converter, main transmission, auxiliary transmission, power takeoff, propeller shafts, power divider, and tandem rear axles. These systems are put together to make an efficient, load-carrying vehicle. Since each individual system is designed to work together with the others, no one system can function entirely on its own. The following paragraphs explain the operation of each individual system for the purpose of making their functions easier to understand.

POWER TRAIN



TA243689

POWER TRAIN - CONTINUED

The power created by the diesel engine is sent to the torque converter, which couples the diesel engine to the main transmission by means of a hydraulic pressure actuated fluid coupling. The main transmission is an automatic or manually shifted five-speed transmission, which is controlled by engine speed. The main transmission is coupled to an auxiliary transmission by means of a propeller shaft. The auxiliary transmission is manually shifted and adds three output gear ranges, underdrive, direct drive, and overdrive, which gives the dump truck 15 forward speeds and 3 reverse speeds. A second propeller shaft is used to couple the auxiliary transmission to the power divider. The power divider allows the driver to select power to the front rear axle or both front and rear axles to distribute power evenly to the rear wheels.

ENGINE

Four-stroke, turbocharged, in-line, six-cylinder internal-combustion diesel engine in which the heat of fuel is changed into work in the cylinders of the engine. First the turbo forces air into the cylinder, then the air is compressed in a cylinder by a piston. Then a charge of diesel fuel is sprayed into the cylinder by a fuel injection pump which distributes the diesel fuel to six fuel injectors located in cylinder heads. The heat of compression causes the fuel to ignite and push the piston down. The six pistons in the engine are connected to a crankshaft. Each time a piston is pushed down, it helps turn the crankshaft and create turning power.

MAIN TRANSMISSION

The automatic transmission has five forward speeds, one reverse, and one neutral. The turning power of the engine is sent to the transmission by a torque converter. Forward gear ranges can be manually selected or, when selector lever is in D, gear changes are automatically performed.

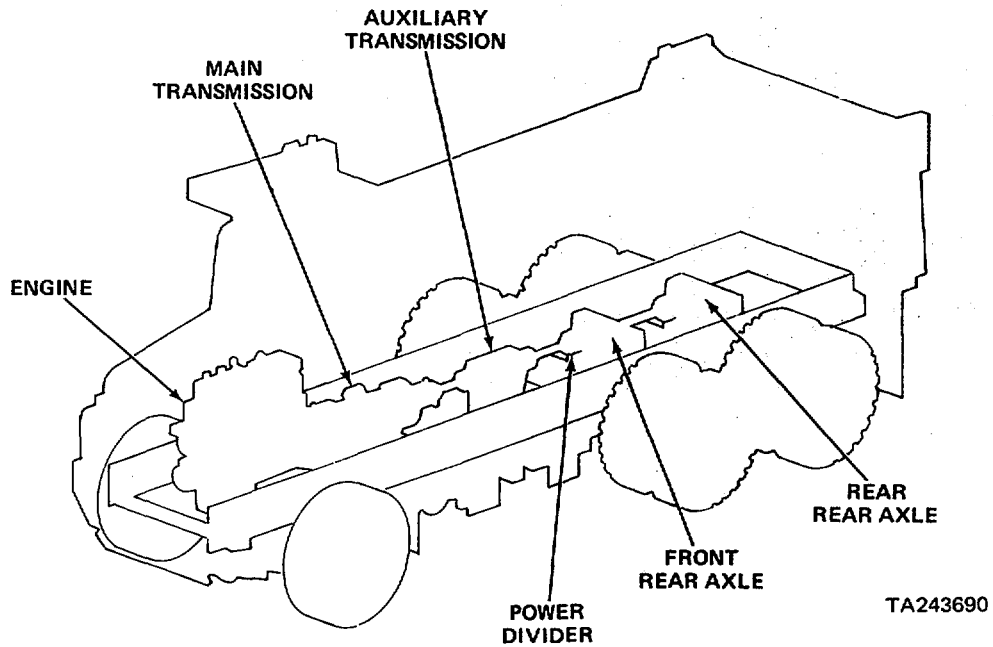
TORQUE CONVERTER

Links the engine to the transmission. It multiplies the engine power to the transmission when driven.

POWER TAKEOFF

Mounted on left side of transmission and is engaged by a sliding gear. It supplies power from transmission to the dump body hydraulic system oil pump when engaged.

POWER TRAIN - CONTINUED



AUXILIARY TRANSMISSION

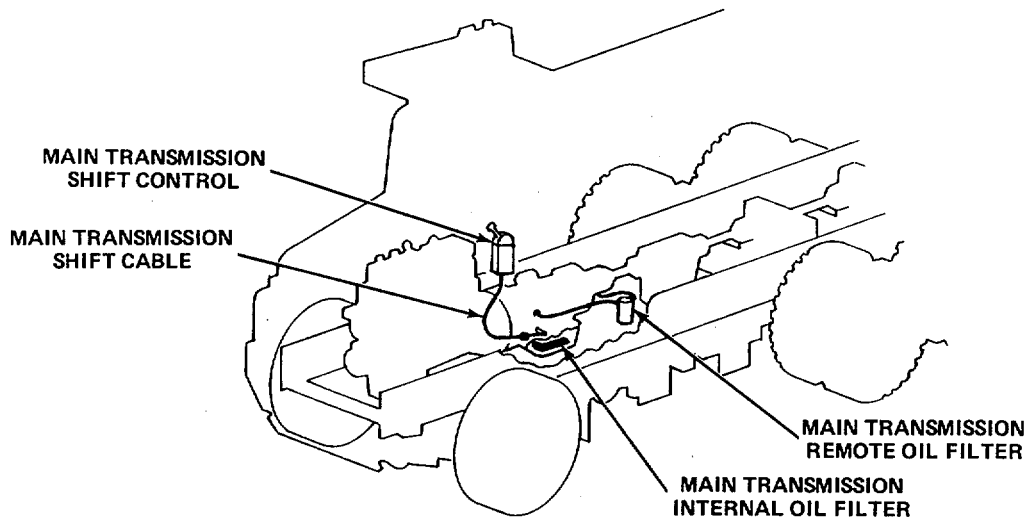
A three-speed manual transmission used to alter main transmission gear ratios. When O.D. position is selected, lower engine speed at higher road speed is accomplished. When U.D. position is selected, higher engine speed allows more power to be applied to rear wheels. When D position is selected, main transmission ratio is maintained.

POWER DIVIDER

Air-operated lockout valve to disconnect rear rear axle from forward rear axle.

POWER TRAIN - CONTINUED**FRONT AND REAR REAR AXLES**

Heavy duty single-reduction front rear axle with power divider and conventional heavy duty single reduction rear rear axle used to transmit engine power through transmission to rear wheels.

MAIN TRANSMISSION

TA243691

MAIN TRANSMISSION SHIFT CONTROL

Movement of shift control lever is relayed through cable to transmission control lever. Detents in shift control allow gear selections to lock into place, avoiding accidental shifting into other gear ranges. A light is provided to view gear selections during hours of darkness.

MAIN TRANSMISSION SHIFT CABLE

Relays movement of shift control lever to transmission control lever.

MAIN TRANSMISSION INTERNAL OIL FILTER

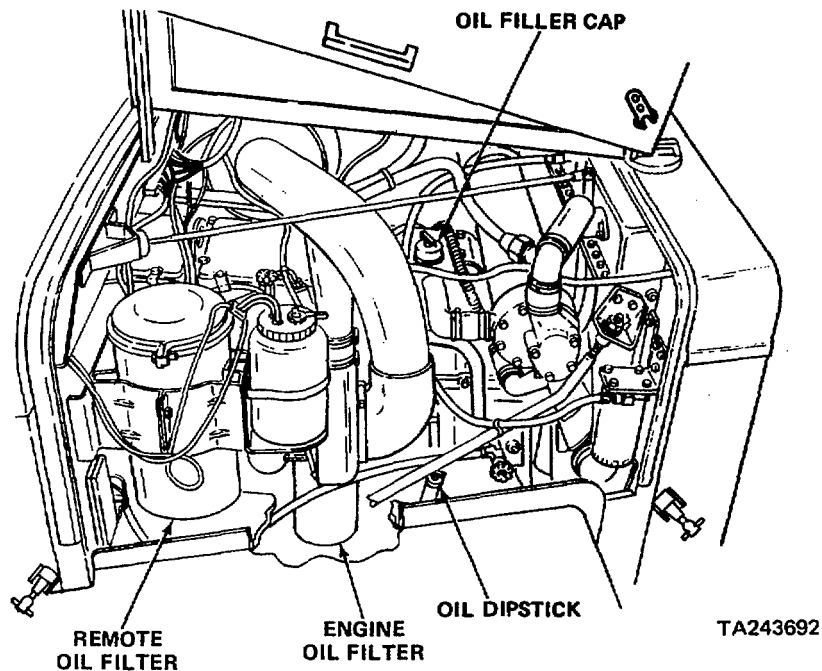
Removes contaminants and impurities from transmission oil.

MAIN TRANSMISSION REMOTE OIL FILTER

Removes contaminants and impurities from transmission oil. Check valve to route transmission oil back to transmission in case of a clogged filter.

TA243691

LUBRICATION SYSTEM



ENGINE OIL FILTER

Removes contaminants and impurities from engine lubricating oil before returning to engine. Check valve to route engine oil back to engine in case of clogged filter.

REMOTE OIL FILTER

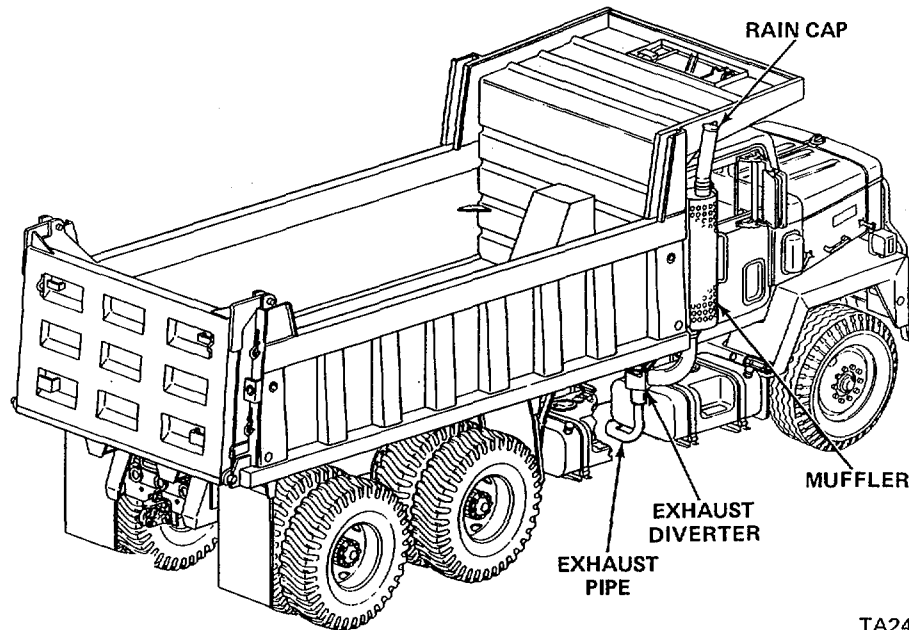
Removes contaminants and impurities from engine lubricating oil before returning to engine. Firewall mounted, adds additional lubricating oil to lubrication system.

OIL FILLER CAP

Prevents dirt and water from entering lubrication system when installed. Allows lubricating oil to be added to lubrication system when removed.

OIL DIPSTICK

Indicates amount of lubricating oil in lubrication system.

EXHAUST SYSTEM

TA243693

EXHAUST PIPES (Two)

Routes engine exhaust gases from turbocharger outlet to muffler inlet.

EXHAUST DIVERTER

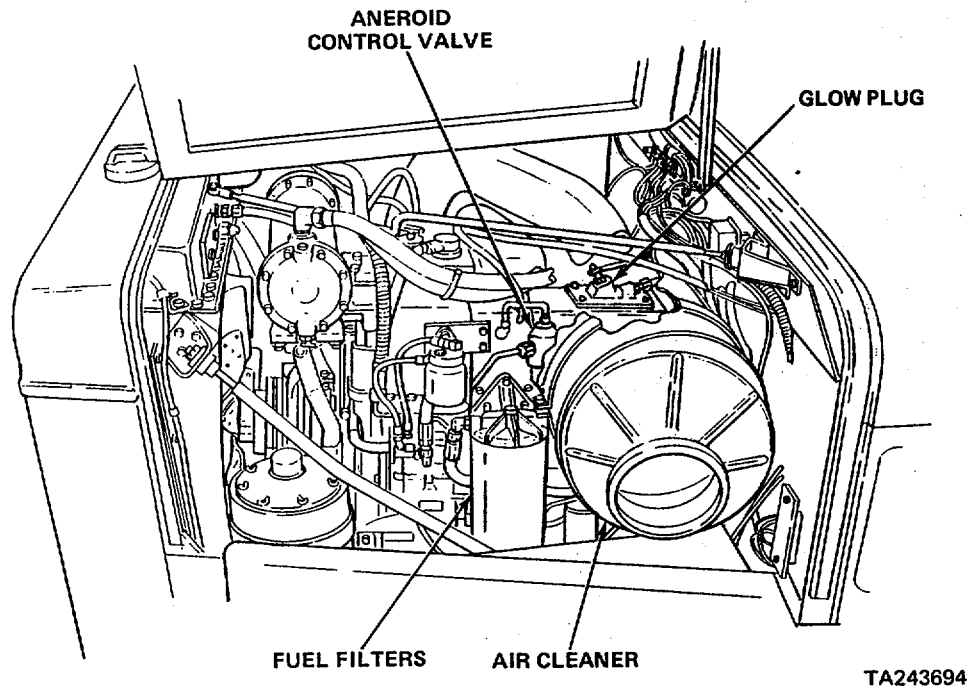
Routes engine exhaust gases through muffler to reduce engine noise or into dump body to heat payload. Manually operated by side-mounted lever.

MUFFLER

Reduces engine exhaust noise level. Routes engine exhaust gases above cab roof line.

RAIN CAP

Prevents rain water from entering muffler when engine is not running. Pushed open by exhaust gas pressure when engine is running.

FUEL SYSTEM**ANEROID CONTROL VALVE**

Vacuum operated to create a delay in fuel delivery to fuel injectors equal to the lag or delay of turbocharger boost.

AIR CLEANER

Dry element cartridge to trap dust, dirt, and foreign matter from entering turbocharger Inlet pipe.

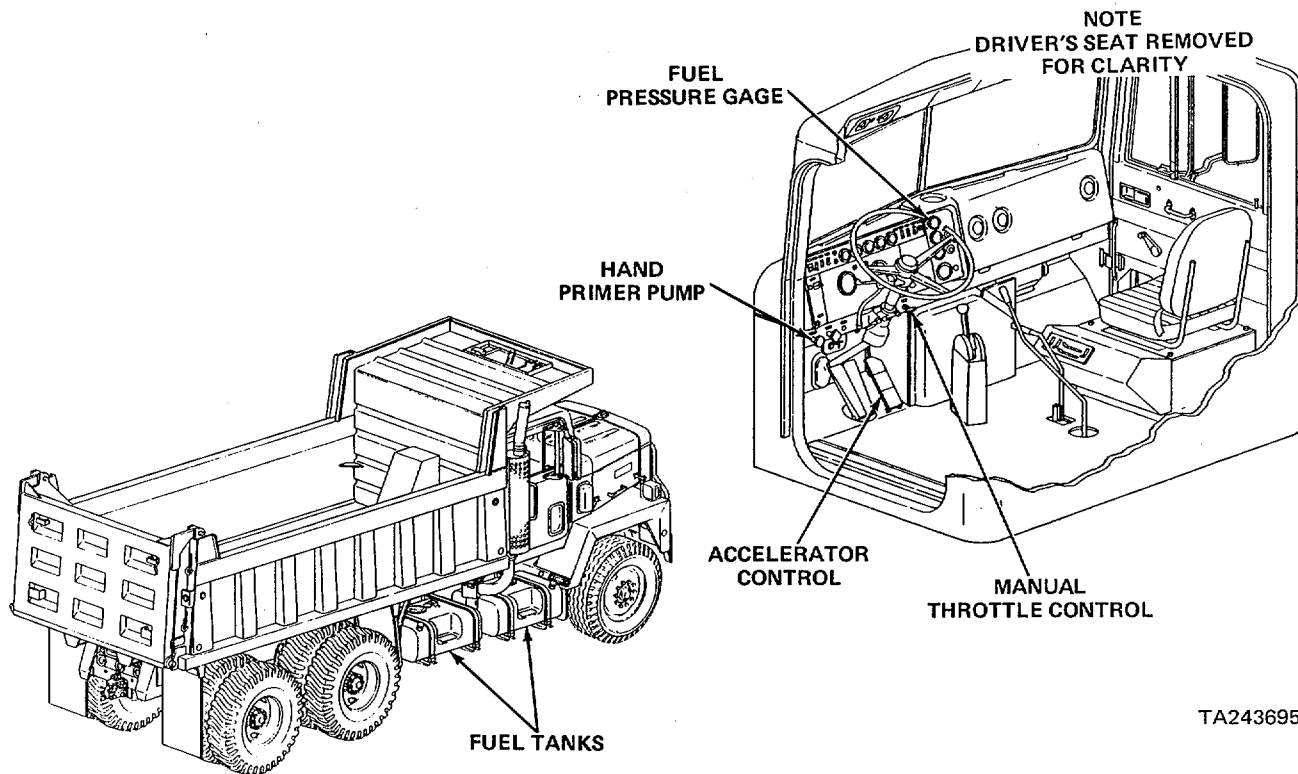
FUEL FILTERS (Two)

Removes contaminants and impurities from diesel fuel before entering fuel injection pump.

GLOW PLUG

Current is supplied by glow plug switch to glow plug. Grounding at glow plug causes glow plug coils to heat. Preheated air and fuel in intake manifold aid in starting diesel engine in cold weather.

FUEL SYSTEM - CONTINUED



TA243695

ACCELERATOR CONTROL

Pedal and linkage rod connected to fuel pump throttle shaft to increase or decrease fuel flow from fuel injection pump resulting in controlled engine speed.

MANUAL THROTTLE CONTROL

Knob and cable connected to accelerator control linkage to set and maintain a constant engine speed.

HAND PRIMER PUMP

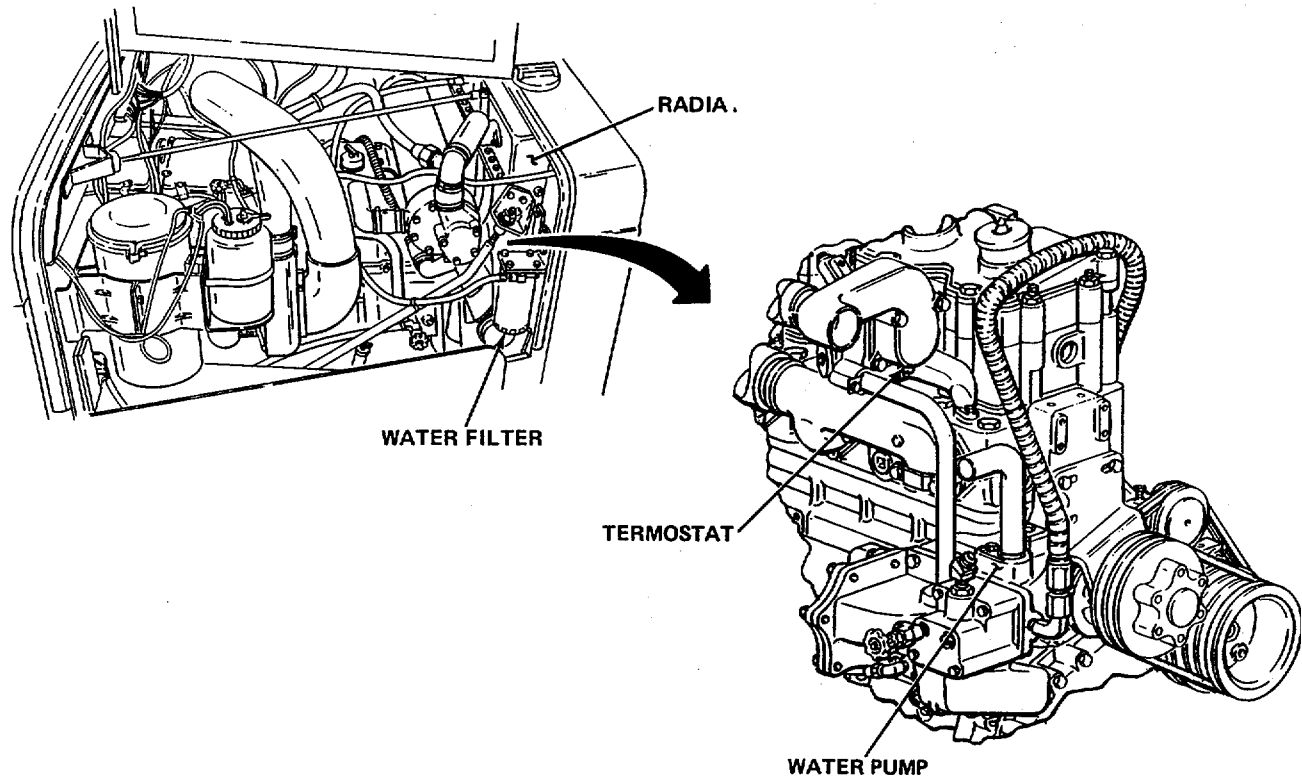
Hand-operated pump to spray diesel fuel in intake manifold.

FUEL PRESSURE GAGE

Indicates fuel pressure reached when using hand primer pump.

FUEL TANKS (Two)

Provides safe storage for diesel fuel.

COOLING SYSTEM

TA243696

RADIATOR

Provides a means of removing heat from engine coolant. Engine water pump pushes engine coolant through radiator from top tank to bottom tank as engine fan pulls air through radiator core.

THERMOSTAT

A blocking valve in engine coolant passages that gradually opens as engine heat increases until a predetermined engine coolant temperature is reached.

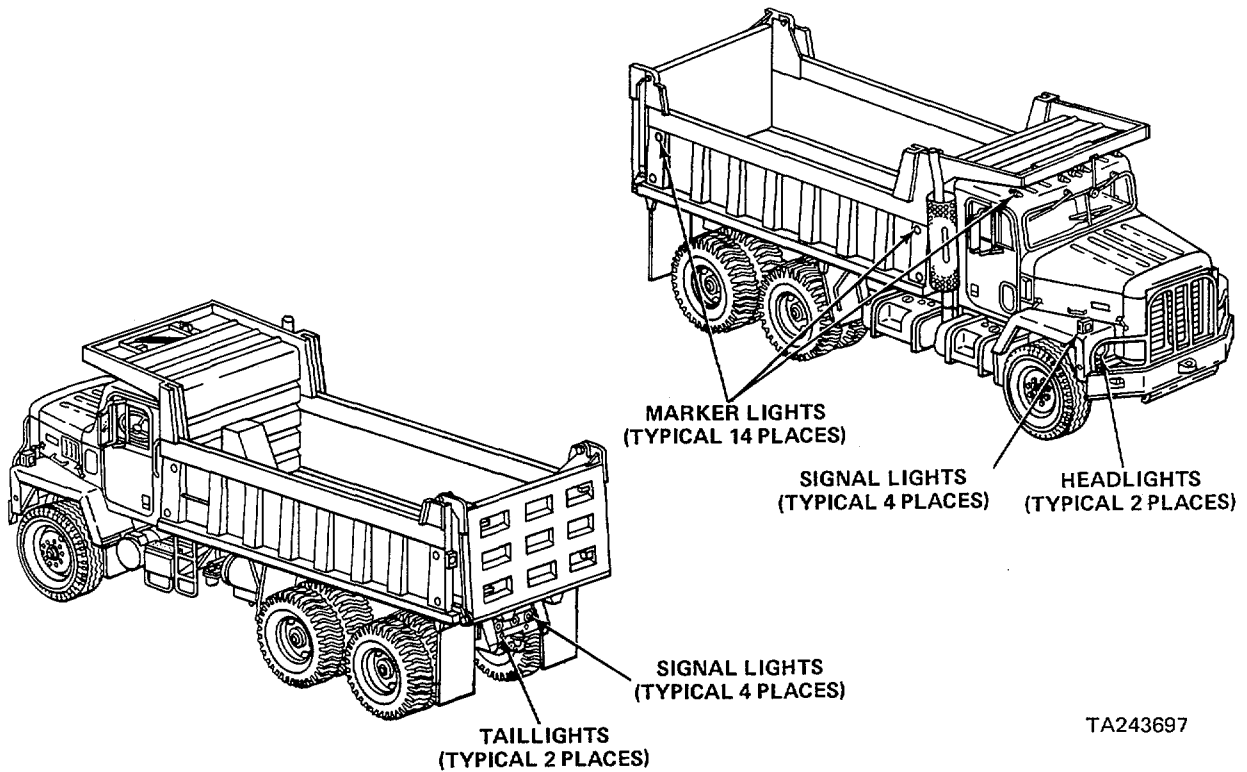
WATER PUMP

Centrifugal-type pump driven by two belts from accessory drive pulley. Circulates engine coolant through engine coolant passages and radiator.

WATER FILTER

Removes contaminants and impurities and provides an additive to reduce acidity in engine coolant.

ELECTRICAL SYSTEM



SIGNAL LIGHTS (Four)

Current is supplied from signal flasher to illuminate signal light filaments in taillights and parking lights.

HEADLIGHTS (Two)

Current from headlight switch, when in down position, flows through floor mounted dimmer switch to headlights. Dimmer switch selects high beam and/or low beam position which applies current to selected filaments to illuminate headlight.

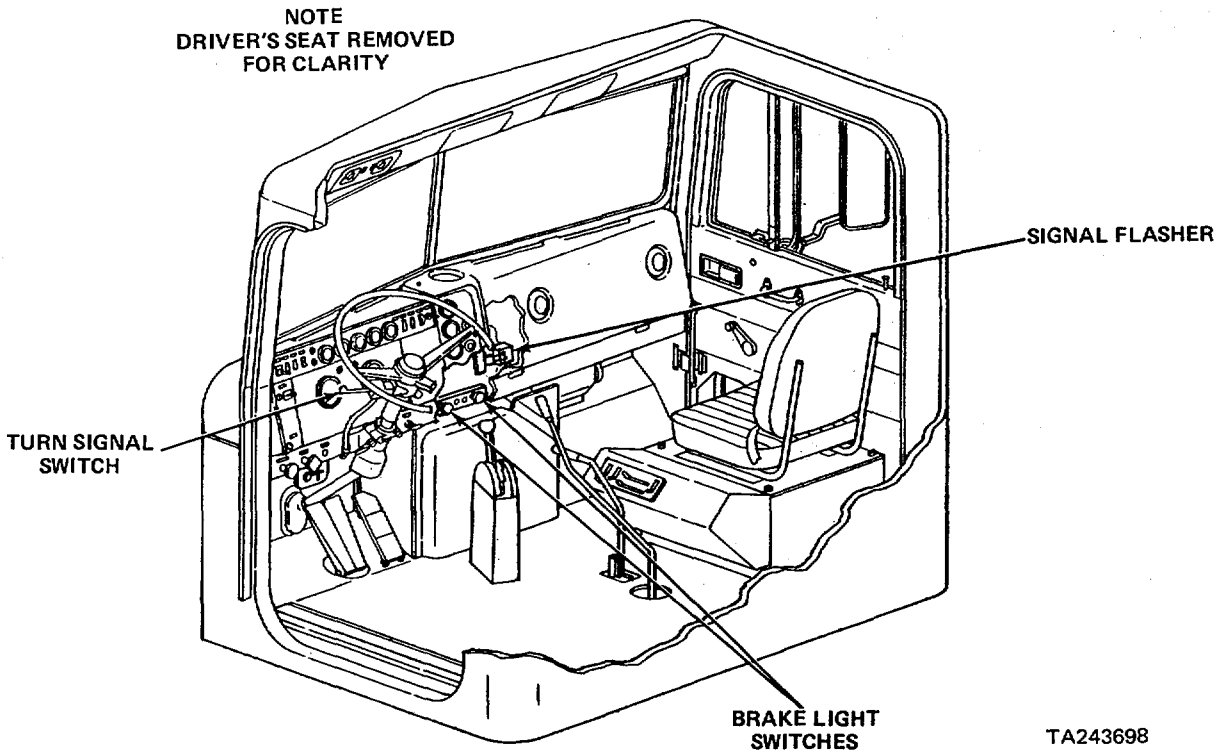
TAILLIGHTS (Two)

Current from headlight switch, when in either up or down position, flows to illuminate taillight filament in taillight.

MARKER LIGHTS (14)

Current from headlight switch, when in either up or down position, flows to illuminate single filament marker lights.

ELECTRICAL SYSTEM - CONTINUED



TURN SIGNAL SWITCH

Lever actuated switch that directs current flow to illuminate left or right side signal light filaments in taillights and parking lights.

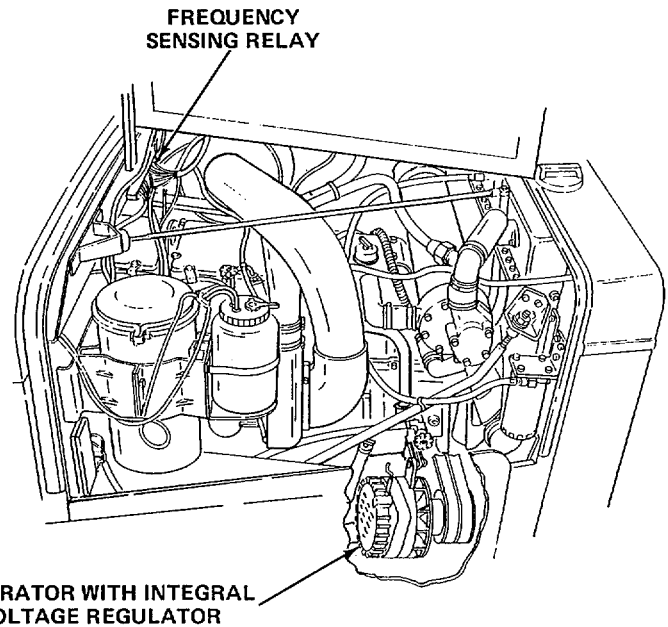
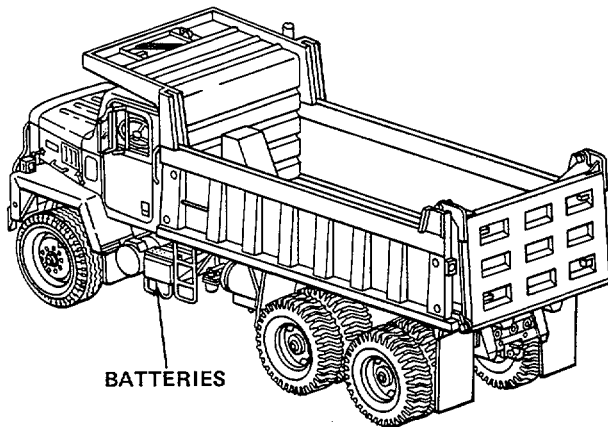
SIGNAL FLASHER

Current is supplied by turn signal switch to a heating coil, bi-metallic strip contact points and signal light filaments of taillights and parking lights. The heating coil heats the bi-metallic strip, causing it to bend, touching contact points and illuminating signal lights. The closed contact points allow the heating coil to cool, causing the bi-metallic strips to contract, pulling contact points open, shutting off signal lights. This sequence of events is repeated several times each second.

BRAKE LIGHT SWITCHES (Two)

Depressing brake pedal increases air pressure in air manifold. Increased air pressure pushes on pin inside brake light switch, closing contact points, allowing current to flow to brake light filaments in taillights.

ELECTRICAL SYSTEM - CONTINUED



TA243699

BATTERIES (Four)

Six-volt automobile lead-acid batteries. Connected series-parallel for combined voltage of 12 volts. Negative side of circuit is connected by cable to frame. Positive side of circuit is connected by cable to starter solenoid battery (BAT) terminal.

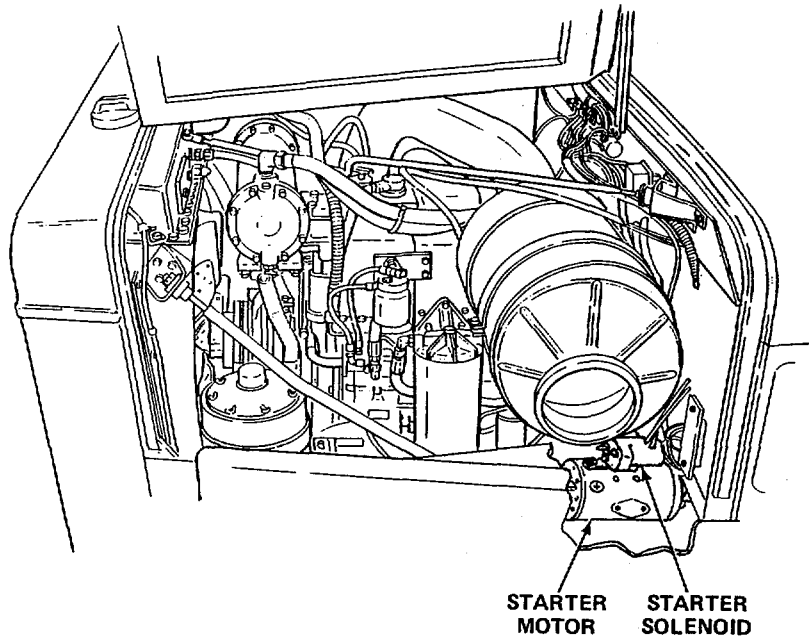
GENERATOR WITH INTEGRAL VOLTAGE REGULATOR

Driven by two belts from crankshaft pulley. Produces regulated 14 volts electrical output at 80 amps when engine is running to power electrical system components and to charge batteries.

FREQUENCY SENSING RELAY

Senses overcharge or surge in alternator and dissipates excess voltage through load cell.

ELECTRICAL SYSTEM - CONTINUED



TA243700

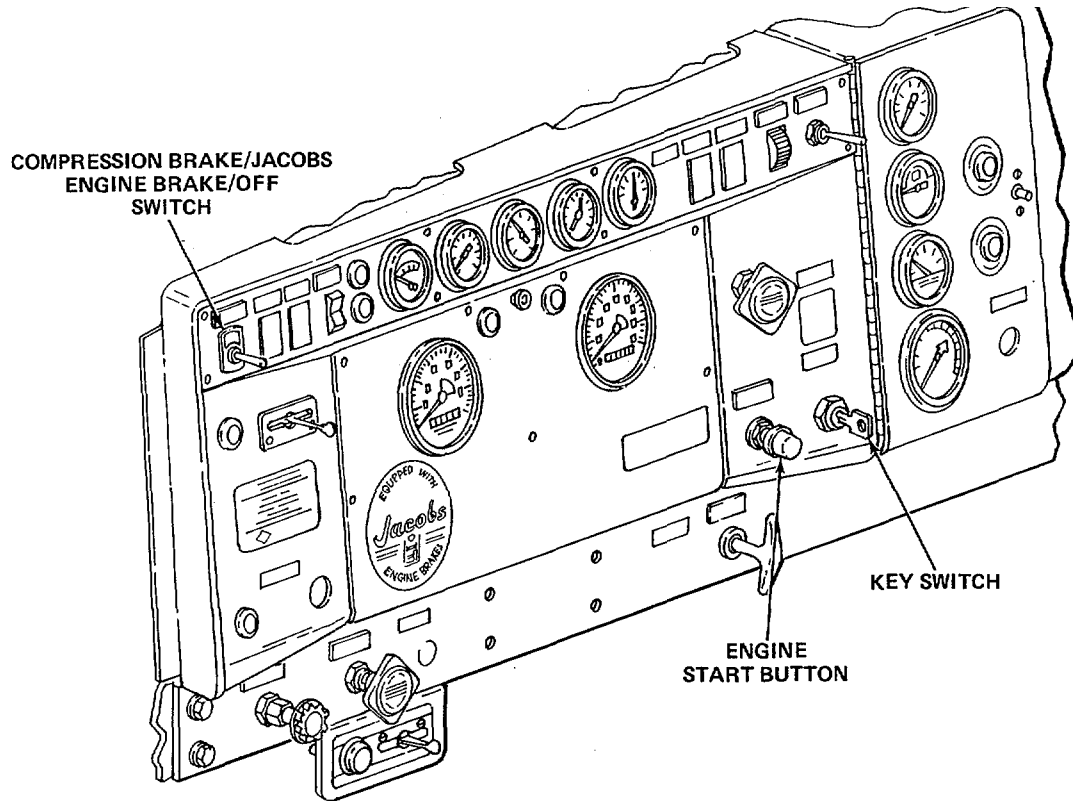
STARTER MOTOR

Current supplied by strap from motor (MOT) terminal on starter solenoid to positive terminal on starter motor. Ground terminal on starter motor housing connected by wire to ground terminal on starter solenoid, and straps to cylinder block and frame. Cranks engine when starter solenoid is energized.

STARTER SOLENOID

Current supplied by cable from positive battery terminal to battery (BAT) terminal on starter solenoid. MOT terminal on starter solenoid connected by strap to positive terminal on starter motor. Ground terminal on starter solenoid connected by wire to ground terminal on starter motor housing. Applied current causes starter solenoid to engage starter motor spur gear with engine flywheel, cranking engine.

ELECTRICAL SYSTEM - CONTINUED



TA243701

KEY SWITCH

Current supplied by batteries when key switch is in on position. Current flows from key switch to accessories, gages, switches, engine start button, and fuel shutoff switch through relay and automatic override module located behind instrument panel.

ENGINE START BUTTON

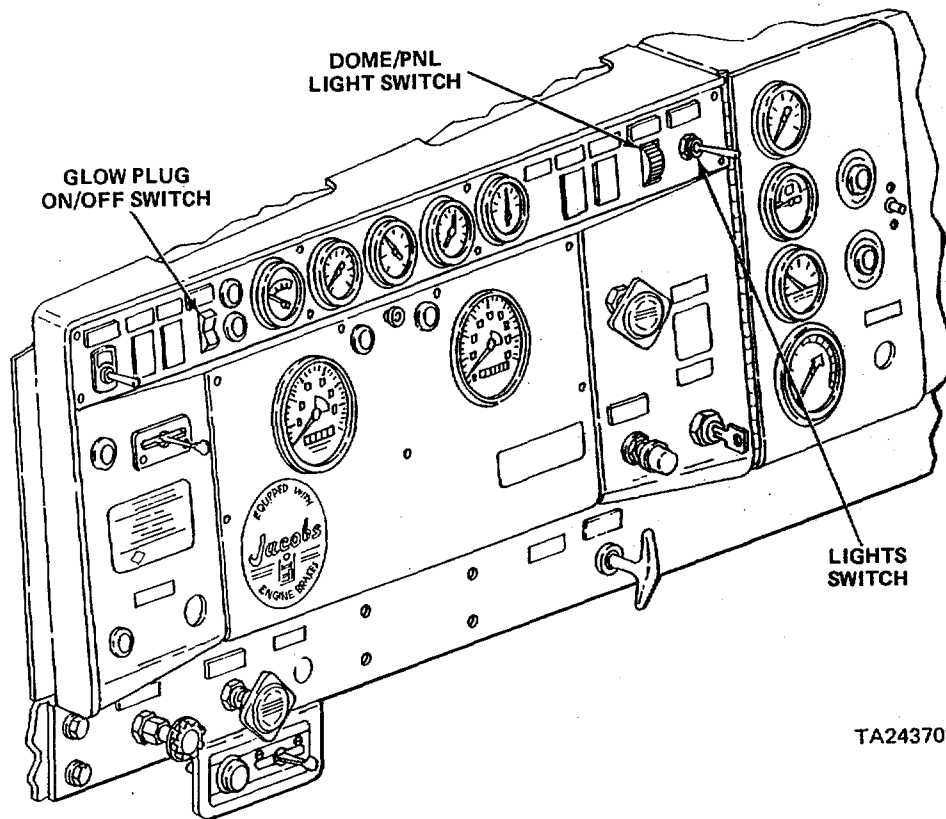
Current supplied through key switch when in on position. When depressed, allows current to flow to energize starter solenoid.

COMPRESSION BRAKE-JACOBS ENGINE BRAKE/OFF SWITCH

Current supplied by 15-amp circuit breaker. When turned on, current flows to energize pressure switch, throttle switch and solenoids.

TA243701

ELECTRICAL SYSTEM - CONTINUED



GLOW PLUG ON/OFF SWITCH

Current supplied through 40-amp circuit breaker. When turned on, current flows through glow plug to ground causing short circuit to heat heating coil.

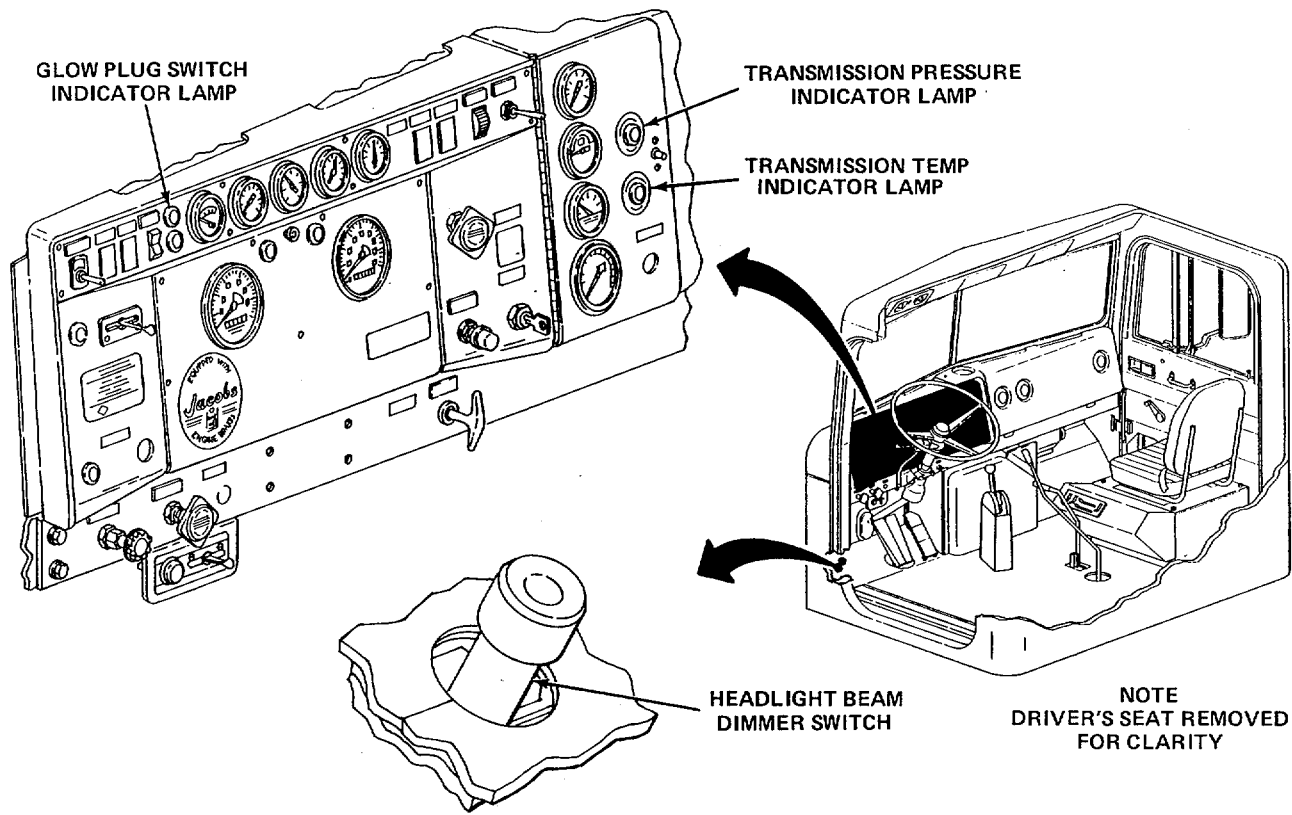
DOME/PNL LIGHT SWITCH

Current supplied through LIGHTS switch. Rheostat regulates brightness of panel lights. When rotated upward to stop, current is directed to illuminate dome light.

LIGHTS SWITCH

Current supplied through KEY SWITCH. Switch movement selects parking light position or headlight position.

ELECTRICAL SYSTEM - CONTINUED



TA243703

HEADLIGHT BEAM DIMMER SWITCH

Current supplied through LIGHTS switch. High beam or low beam may be selected by depressing then releasing switch. Current flows through switch to selected beam.

TRANSMISSION PRESSURE INDICATOR LAMP

Current supplied through KEY SWITCH when turned on. When transmission pressure drops below preset pressure, contact points in pressure switch ground circuit, illuminating indicator lamp.

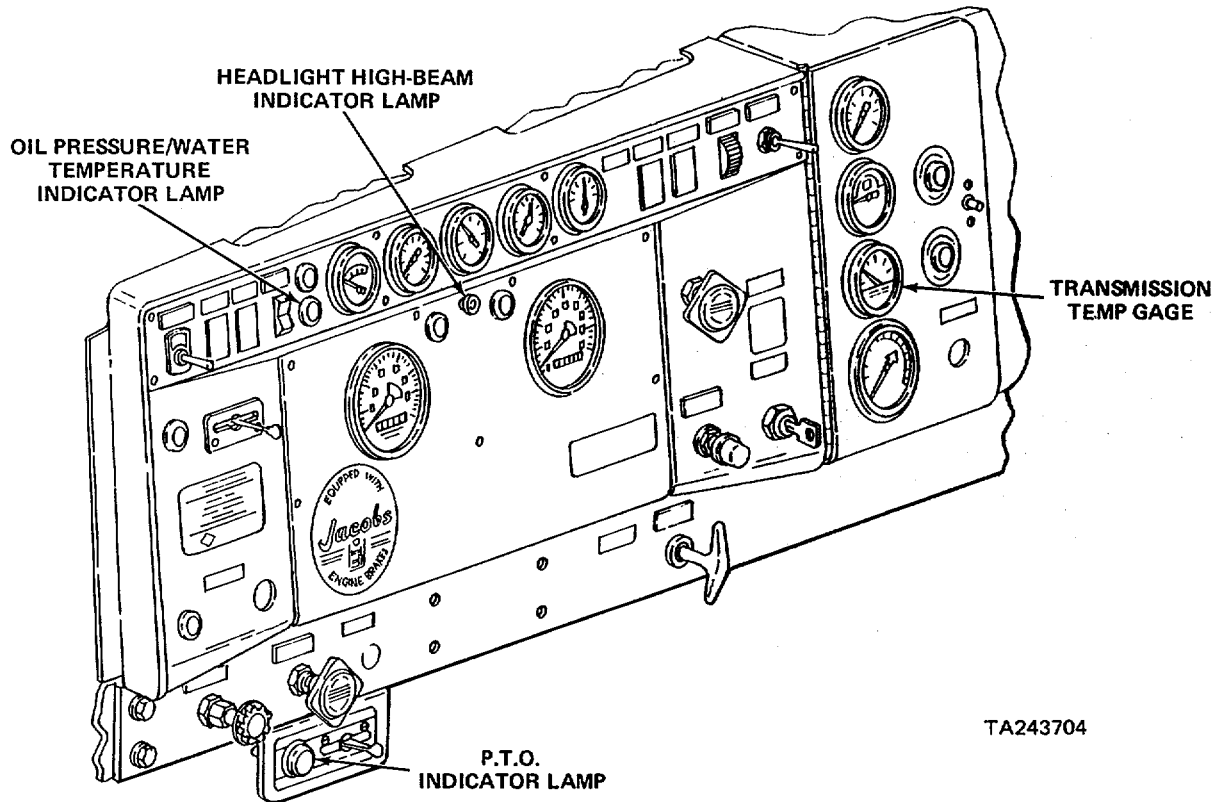
TRANSMISSION TEMP INDICATOR LAMP

Current supplied through KEY SWITCH when turned on. When transmission temperature exceeds preset temperature, contact points in temperature switch ground circuit, illuminating indicator light.

GLOW PLUG SWITCH INDICATOR LAMP

Current supplied through GLOW PLUG-ON/OFF switch when turned on.

ELECTRICAL SYSTEM - CONTINUED



P.T.O. (POWER TAKE OFF) INDICATOR LAMP

Current supplied through KEY SWITCH when turned on. Air pressure activates pto pressure switch completing circuit and illuminating indicator lamp.

HEADLIGHT HIGH BEAM INDICATOR LAMP

Current supplied through high beam wiring from headlight beam selector switch.

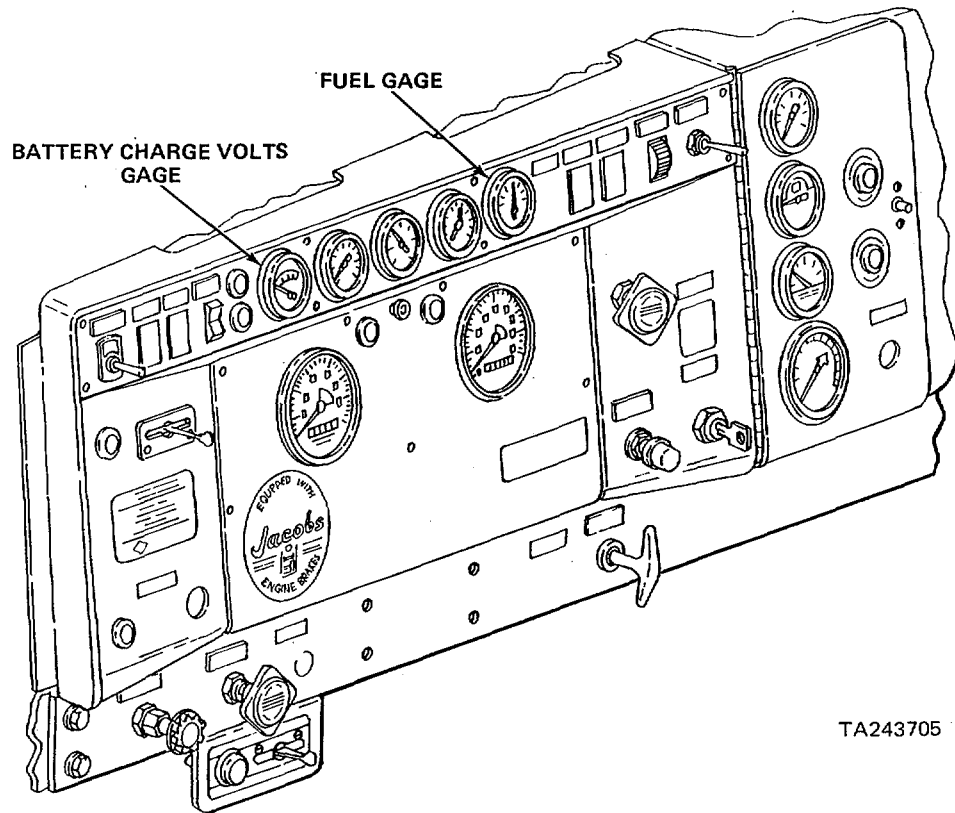
OIL PRESSURE/WATER TEMPERATURE INDICATOR LAMP

Current supplied through oil pressure switch and/or water temperature switch. When oil pressure drops or water temperature rises beyond limits, oil pressure switch or water temperature switch complete circuit and allow current to flow illuminating indicator lamp.

TRANSMISSION TEMP GAGE

Responds to impulse from transmission oil temperature gage switch.

ELECTRICAL SYSTEM - CONTINUED



TA243705

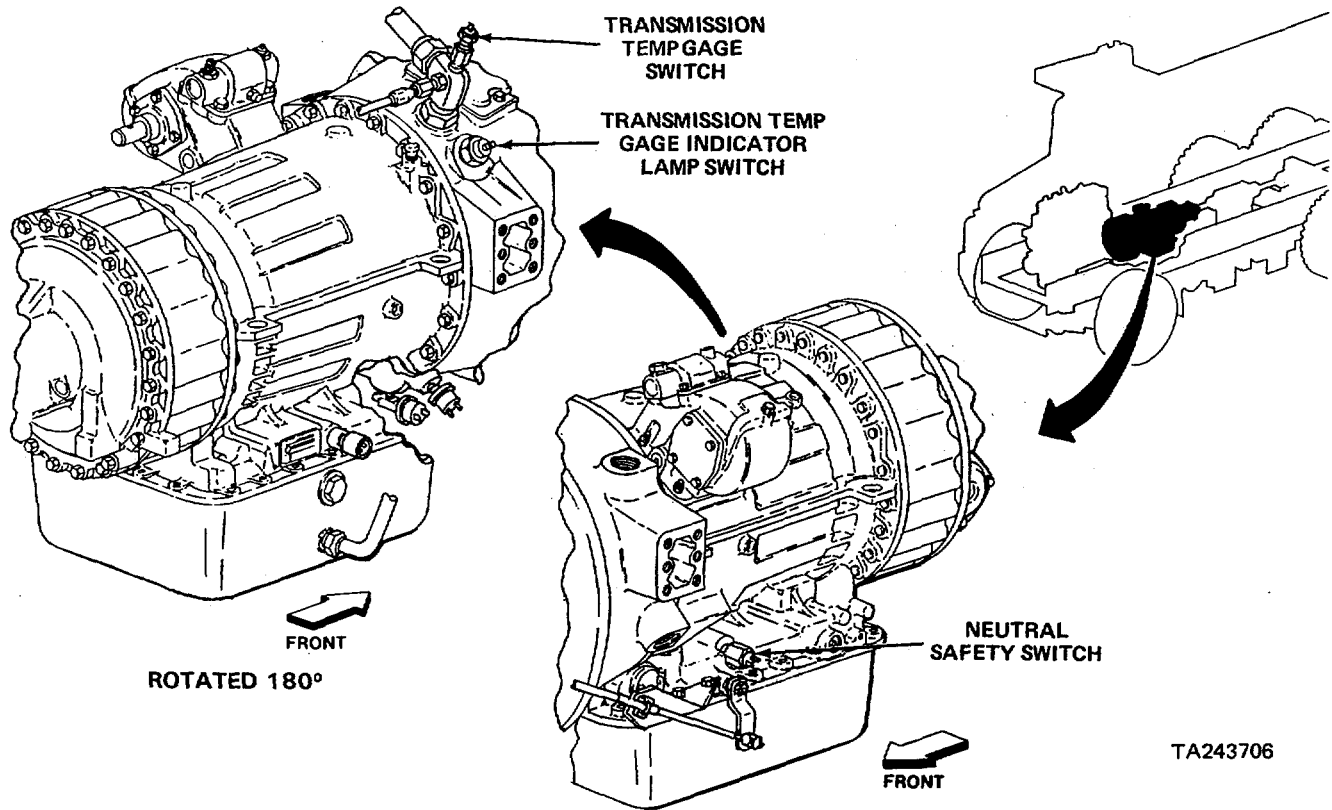
BATTERY CHARGE VOLTS GAGE

Dual function gage indicates battery condition when engine is not running. Indicates rate of charge or discharge when engine is running.

FUEL GAGE

An electrical gage that indicates fuel level.

ELECTRICAL SYSTEM - CONTINUED



TRANSMISSION TEMP INDICATOR LAMP SWITCH

Current supplied through KEY SWITCH when turned on. When transmission oil temperature exceeds a preset temperature, a bi-metallic strip bends to connect contact points, completing circuit and illuminating indicator lamp.

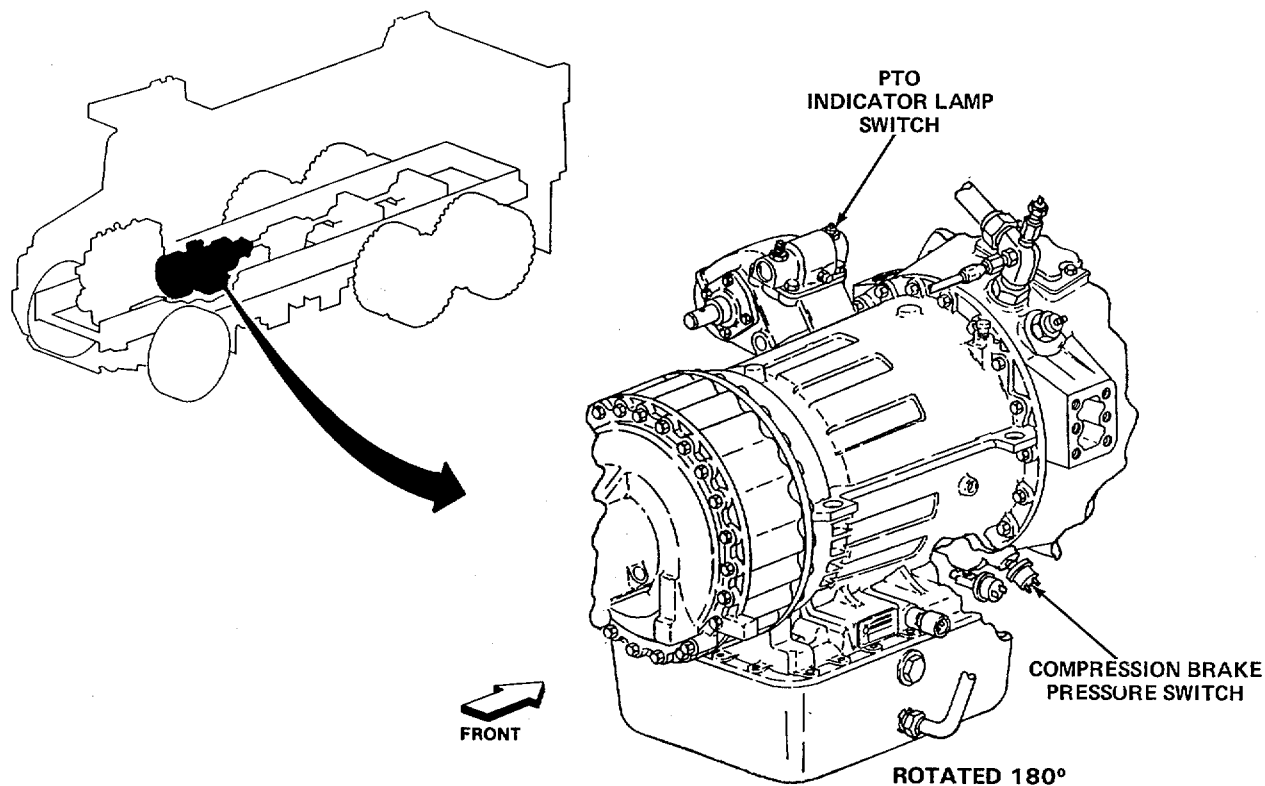
TRANSMISSION TEMP GAGE SWITCH

Electronic device whose resistance decreases proportionally as transmission oil temperature increases. Regulated current flows to TRANSMISSION TEMP gage to indicate reading.

NEUTRAL SAFETY SWITCH

Current supplied through magnetic switch on firewall. When main transmission is in neutral (N), switch is grounded to complete starting circuit to starter solenoid. When main transmission is in any other gear, hydraulic pressure prevents switch from grounding.

ELECTRICAL SYSTEM - CONTINUED



TA243707

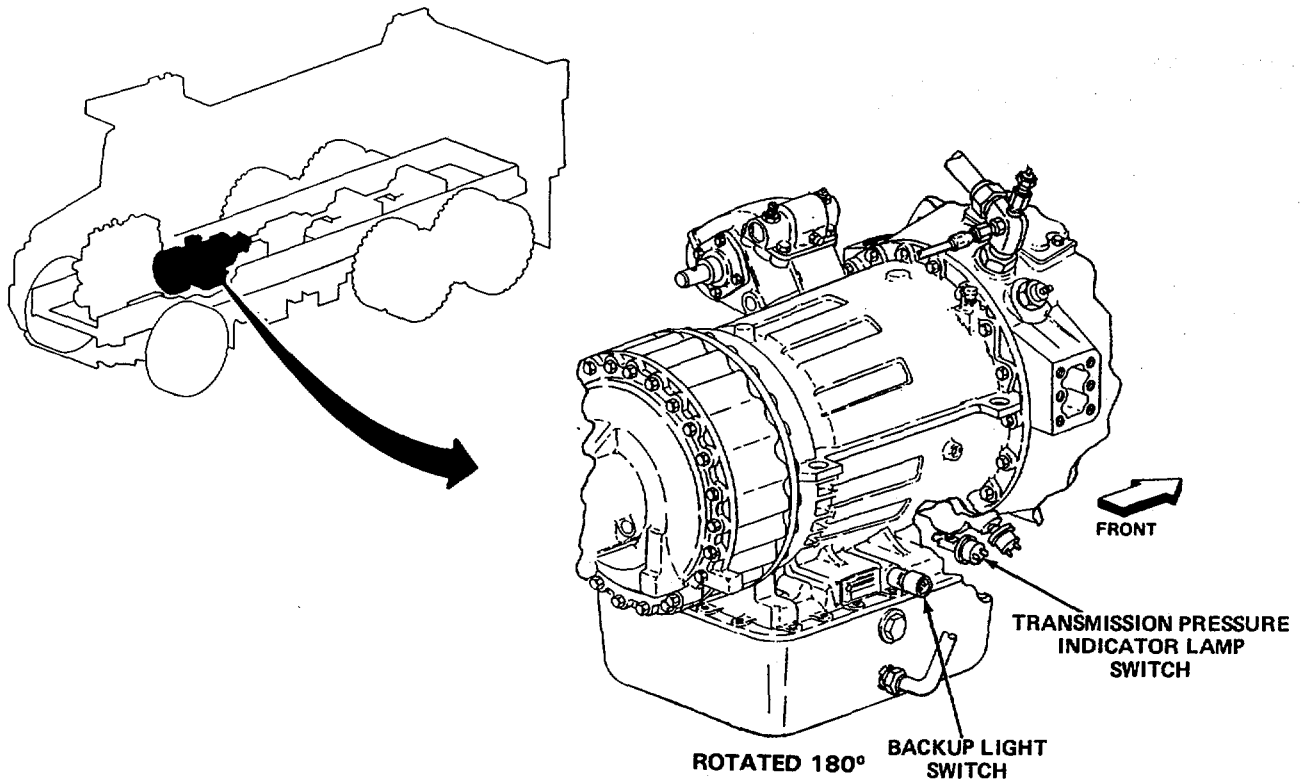
PTO (POWER TAKE OFF) INDICATOR LAMP SWITCH

Current supplied through KEY SWITCH when turned on. Air pressure entering pto control when engaging, pushes in on pin in switch. This connects contact points and completes circuit to illuminate indicator lamp.

COMPRESSION BRAKE PRESSURE SWITCH

Current supplied through COMPRESSION BRAKE-JACOBS ENGINE BRAKE/OFF switch. Circuit completion is accomplished by maintaining specified transmission oil pressure. Reduced transmission oil pressure at idle or when transmission is in neutral, opens circuit and disengages compression brake.

ELECTRICAL SYSTEM - CONTINUED



TA243708

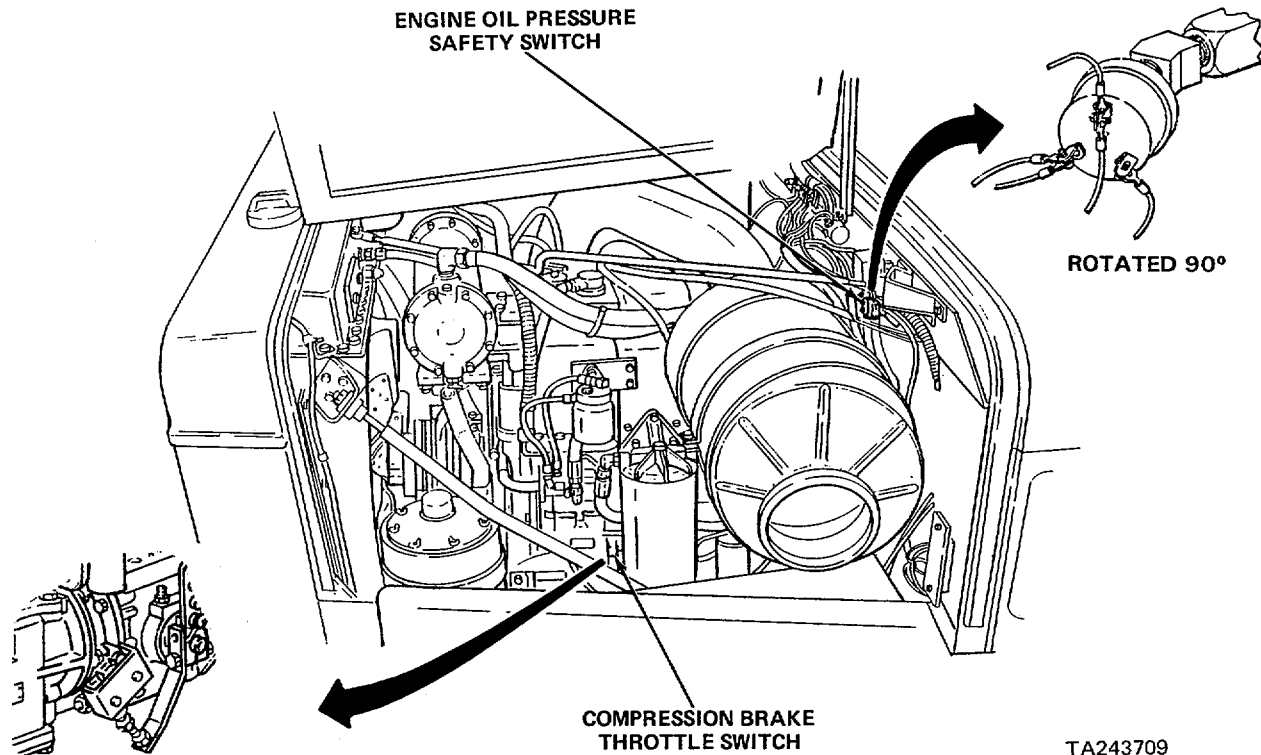
TRANSMISSION PRESSURE INDICATOR LAMP SWITCH

Current supplied through KEY SWITCH when turned on. When oil pressure drops below a preset pressure, contact points close grounding circuit illuminating indicator lamp.

BACKUP LIGHT SWITCH

Current supplied through KEY SWITCH when turned on. When reverse (R) gear is selected, oil pressure pushes in on pin in backup light switch, connecting contact points and completing circuit to illuminate backup lights.

ELECTRICAL SYSTEM - CONTINUED



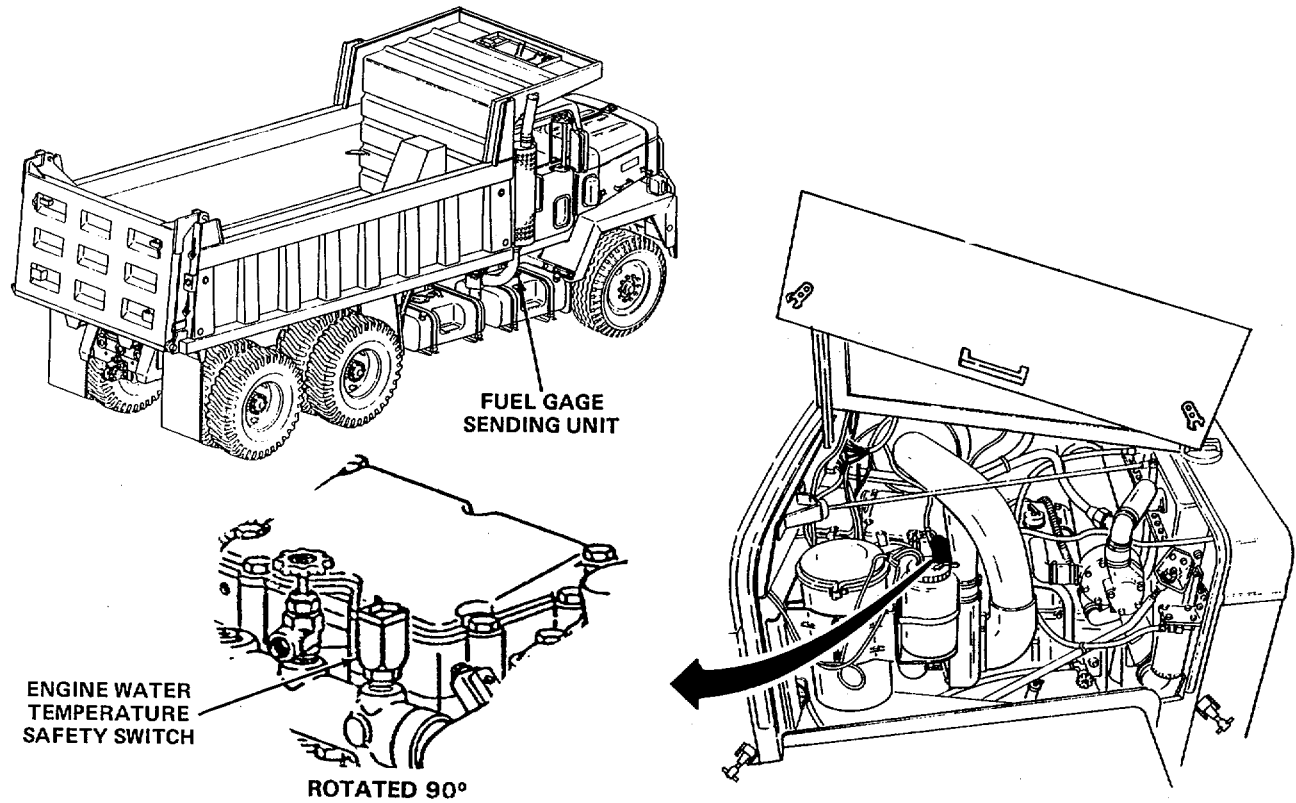
COMPRESSION BRAKE THROTTLE SWITCH

Current supplied through COMPRESSION BRAKE-JACOBS ENGINE BRAKE/OFF switch. Circuit completion is accomplished by releasing accelerator to allow fuel pump throttle control to contact compression brake throttle switch to energize compression brake.

ENGINE OIL PRESSURE SAFETY SWITCH

Current supplied through KEY SWITCH when turned on. When oil pressure drops below a preset pressure, contact points close to complete circuit. This energizes engine shutdown bell and fuel shutoff to shut down engine.

ELECTRICAL SYSTEM - CONTINUED



TA243710

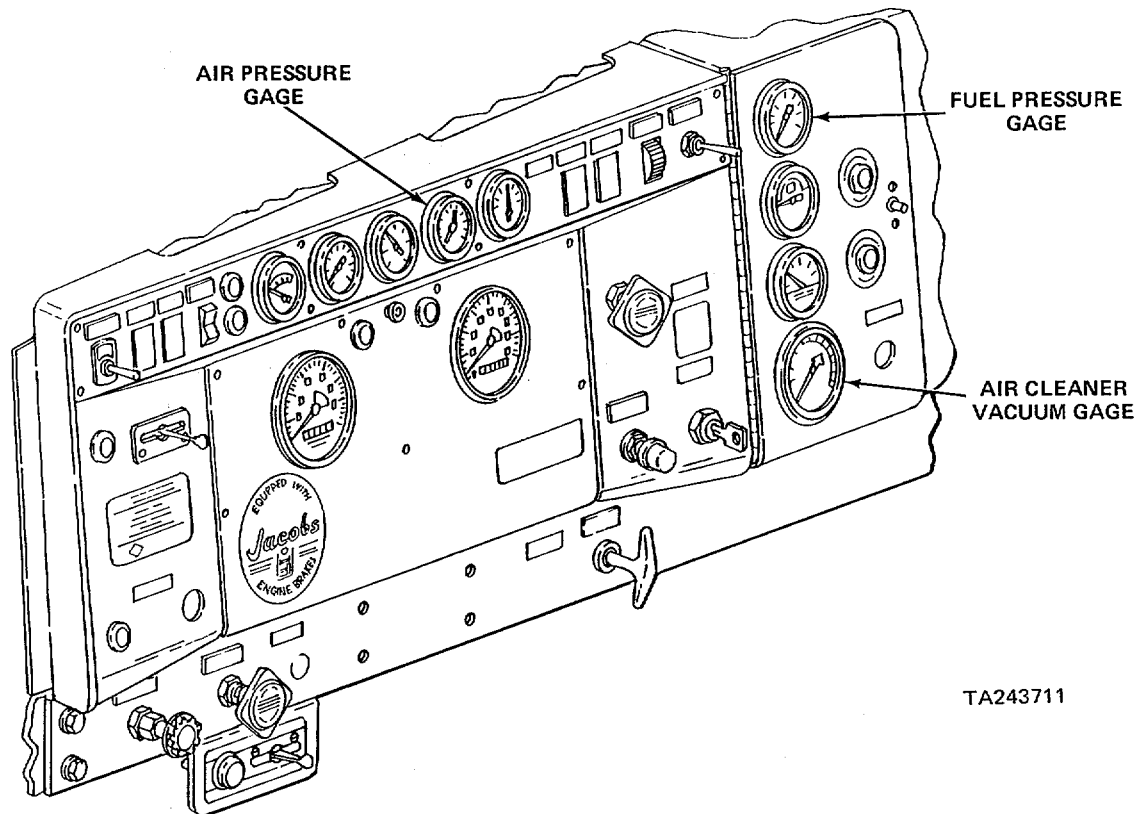
ENGINE WATER TEMPERATURE SAFETY SWITCH

Current supplied through KEY SWITCH when turned on. When engine coolant temperature reaches a preset temperature, a bi-metallic strip bends, connecting contact points and completing circuit. This energizes engine shutdown bell and fuel shutoff to shut down engine.

FUEL GAGE SENDING UNIT

Current supplied through fuel gage. Float movement alters resistance level through a rheostat as fuel level increases or decreases. Regulated current is transmitted to fuel gage needle to Indicate fuel level. Located on front fuel tank only.

NONELECTRIC GAGES



TA243711

AIR PRESSURE GAGE

Air pressure supplied by air compressor but readings read from air reservoir. Actual pressure is applied to bourbon tube causing it to straighten. This movement changes needle position in direct relationship to bourbon tube. Two needles are provided. First needle indicates spring brake release pressure, second needle shows safe running air pressure.

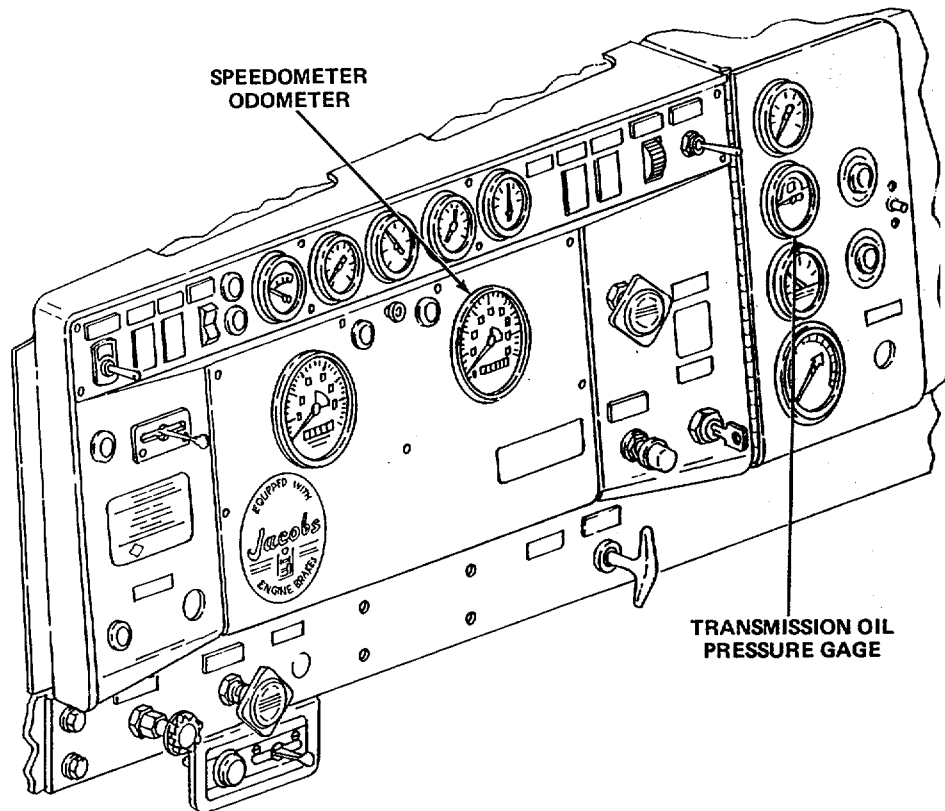
FUEL PRESSURE GAGE

Fuel pressure supplied by hand primer pump. Actual pressure is applied to bourbon tube causing it to straighten. This movement changes needle position in direct relationship to bourbon tube movement.

AIR CLEANER VACUUM GAGE

Vacuum supplied by engine through air cleaner element. High vacuum indicates a clogged air filter element. Low vacuum indicates a clean air filter element.

NONELECTRIC GAGES - CONTINUED



TA243712

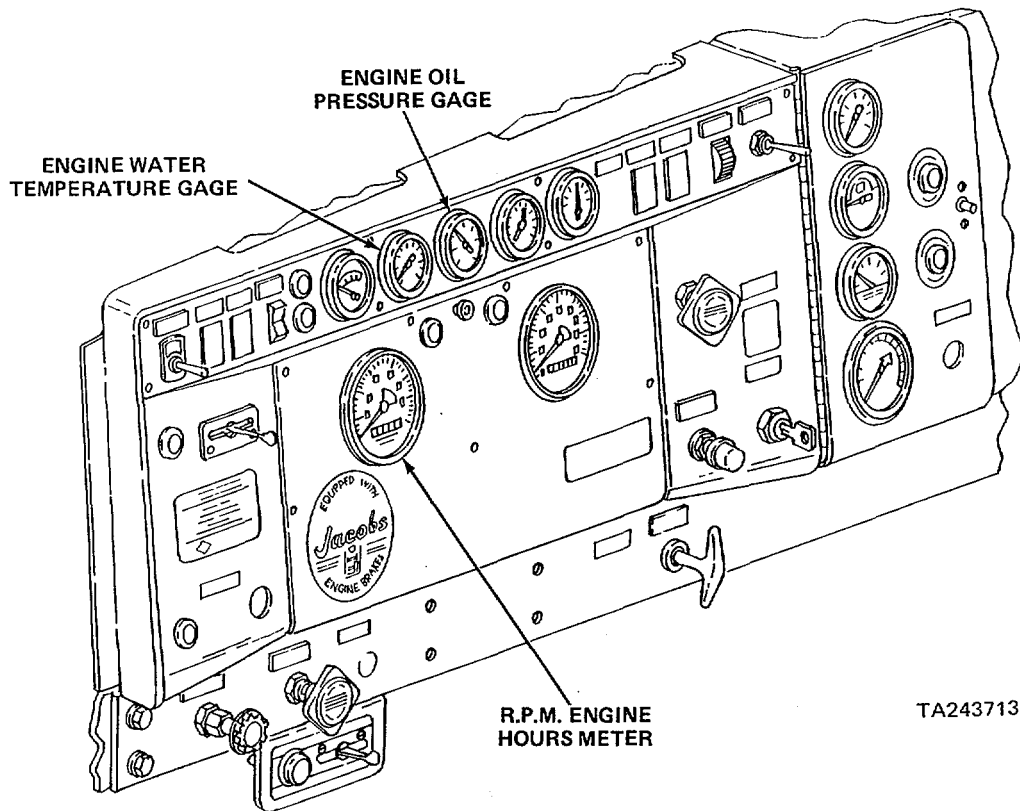
SPEEDOMETER - ODOMETER

Connected by cable and gears to auxiliary transmission. Speedometer gear size, drive axle gear ratio, and tire diameter play an important part in speedometer-odometer accuracy. Speedometer cable turns a permanent magnet inside a metal cup. The metal cup is attached to the needle on front face of speedometer. The magnetic field exerts a pull on metal cup causing it to rotate. A calibrated hairspring counters the rotation of the cup giving an accurate reading by the needle. The odometer is driven by a series of gears that indicates miles covered.

TRANSMISSION OIL PRESSURE GAGE

Mechanical gage connected to transmission by small diameter tubing. Actual pressure applied to bourbon tube causes it to straighten. This movement changes needle position in direct relationship to bourbon tube movement.

NONELECTRIC GAGES - CONTINUED



ENGINE WATER TEMP GAGE

Gage and sending unit are permanently connected by a capillary tube, making this a nonrepairable one-piece assembly. The capillary tube and bulb are filled with a liquid, such as ether, whose vapor pressure is proportional to its temperature. As temperature increases, the liquid expands, exerting pressure to bourbon tube causing it to straighten. This movement changes needle position in direct relationship to bourbon tube movement.

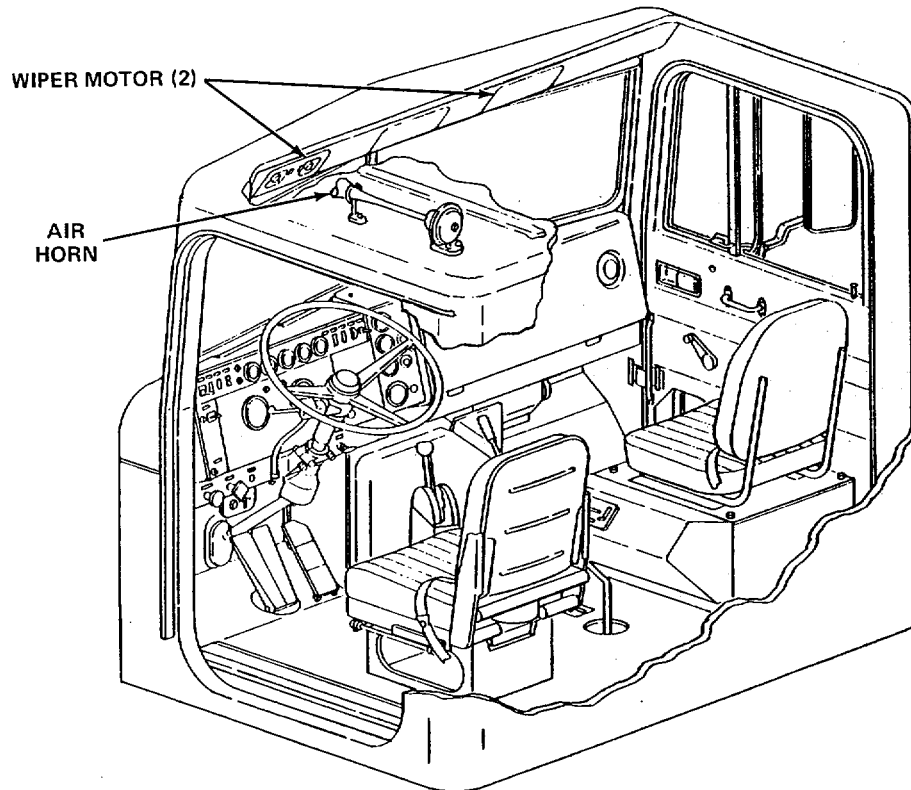
R.P.M./ENGINE HOURS METER

Tachometer is cable driven from engine fuel injection pump. It indicates engine revolutions per minute (rpm). Meter is graduated in 100 rpm increments from 0 to 2500 rpm. Speedometer and Tachometer operate similiary. However, Tachometer operates independently of speedometer and is engine driven instead of transmission driven. Hour meter indicates hours of engine running.

ENGINE OIL PRESSURE GAGE

Mechanical gage connected to engine lubrication system by small diameter tubing. Actual pressure applied to bourbon tube causes it to straighten, moving needle in direct relationship.

PNEUMATIC WIPER MOTOR AND HORN



TA243714

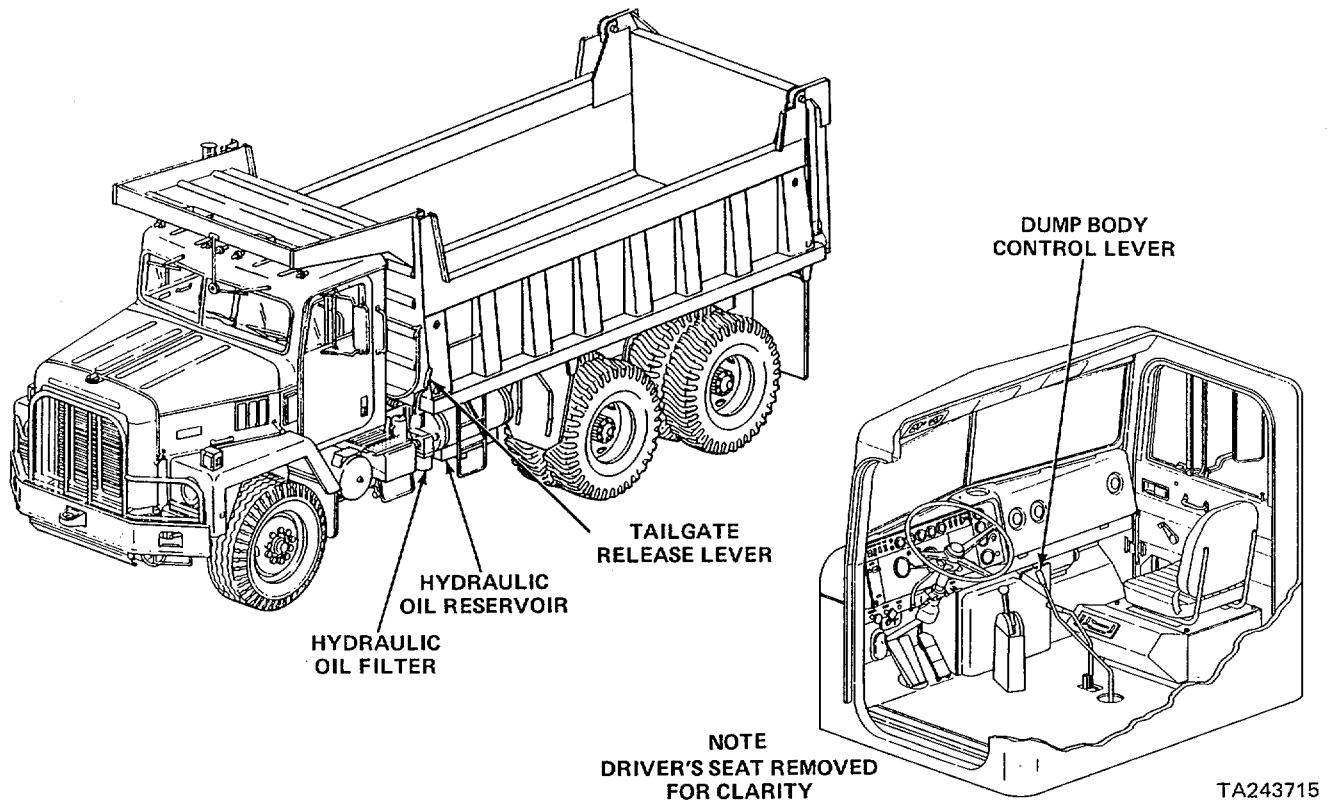
WIPER MOTOR (Two)

Air pressure supplied through hose from left air manifold to control valve. Turning knob on control valve increases or decreases air pressure to regulate speed of windshield wipers.

AIR HORN

Air pressure supplied through hose from left air manifold to air horn control valve. Pulling strap opens control valve, allowing air pressure to activate air horn.

DUMP BODY



HYDRAULIC OIL RESERVOIR

Provides safe storage for hydraulic oil.

HYDRAULIC OIL FILTER

Removes contaminants and impurities from hydraulic oil after leaving hydraulic pump.

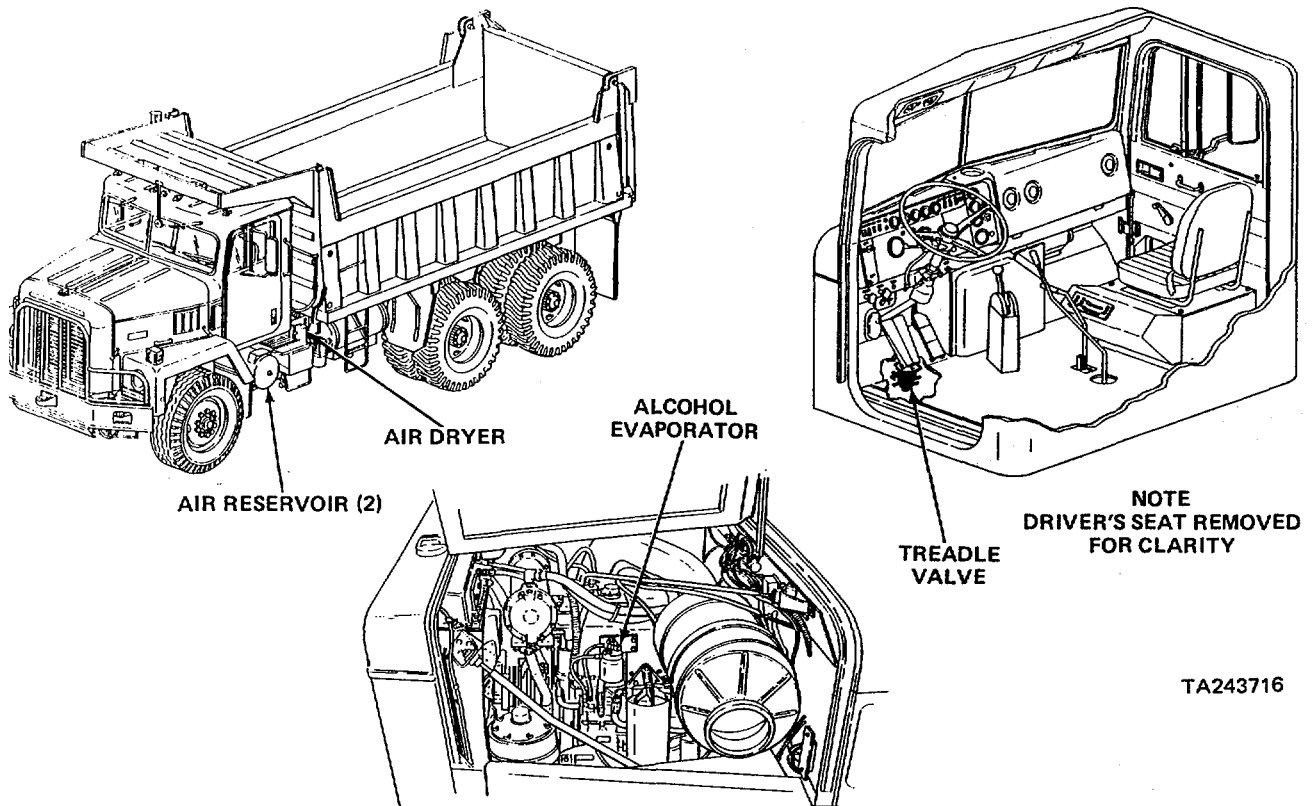
TAILGATE RELEASE LEVER

Releases locks on tailgate to allow payload to be dumped.

DUMP BODY CONTROL LEVER

Lever and rod connected to hydraulic control valve. Movement of lever directs hydraulic pressure to either raise or lower dump body.

AIRBRAKE SYSTEM



TA243716

TREADLE VALVE

Foot-operated air control valve to distribute air pressure throughout the airbrake system. Connected to air supply by main supply line. Provides distribution point for service or parking airbrake systems.

AIR DRYER

Cannister containing moisture absorbing pellets. Removes moisture from air before storing in air reservoirs.

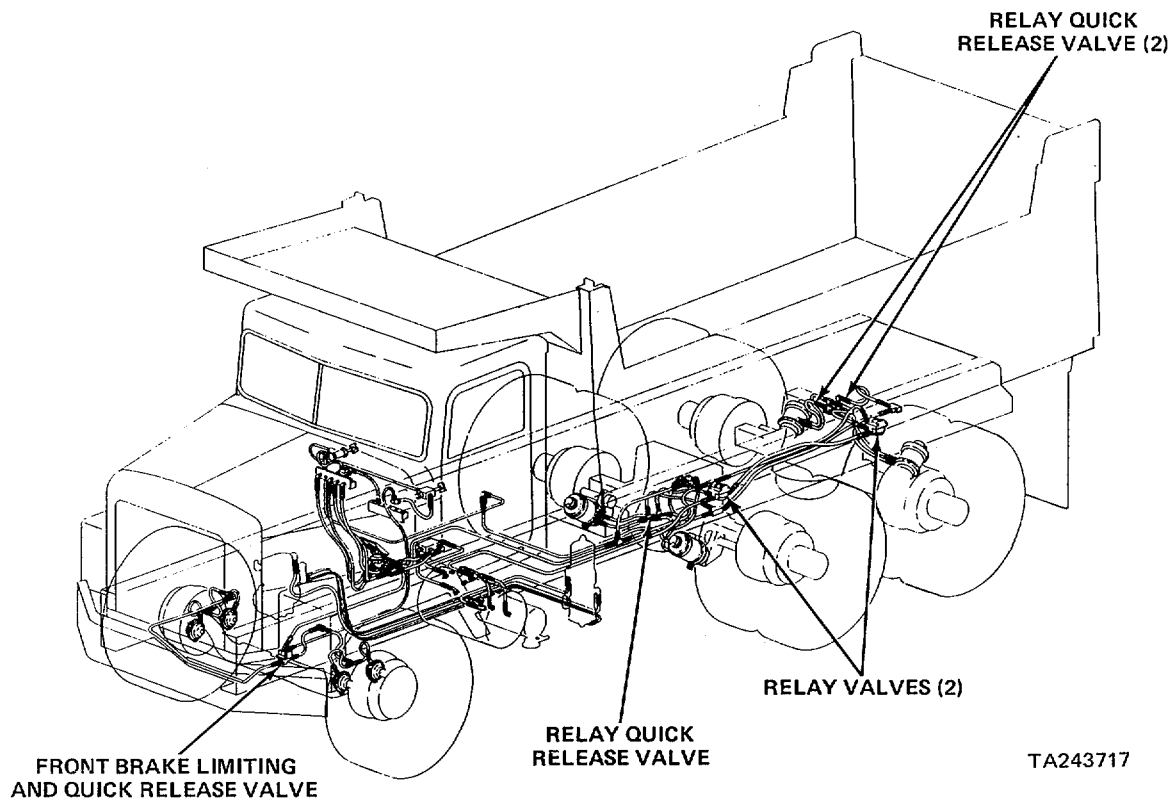
ALCOHOL EVAPORATOR

Air compressor draws fine alcohol mist from alcohol evaporator and pumps it into air system, to help prevent moisture from forming in air system during operation.

AIR RESERVOIRS (Two)

Provides storage for compressed air to supply airbrakes and air-operated components.

AIRBRAKE SYSTEM - CONTINUED



FRONT BRAKE LIMITING AND QUICK RELEASE VALVE

Diaphragm-type air-operated valve designed to speed application and release of air pressure to front airbrakes.

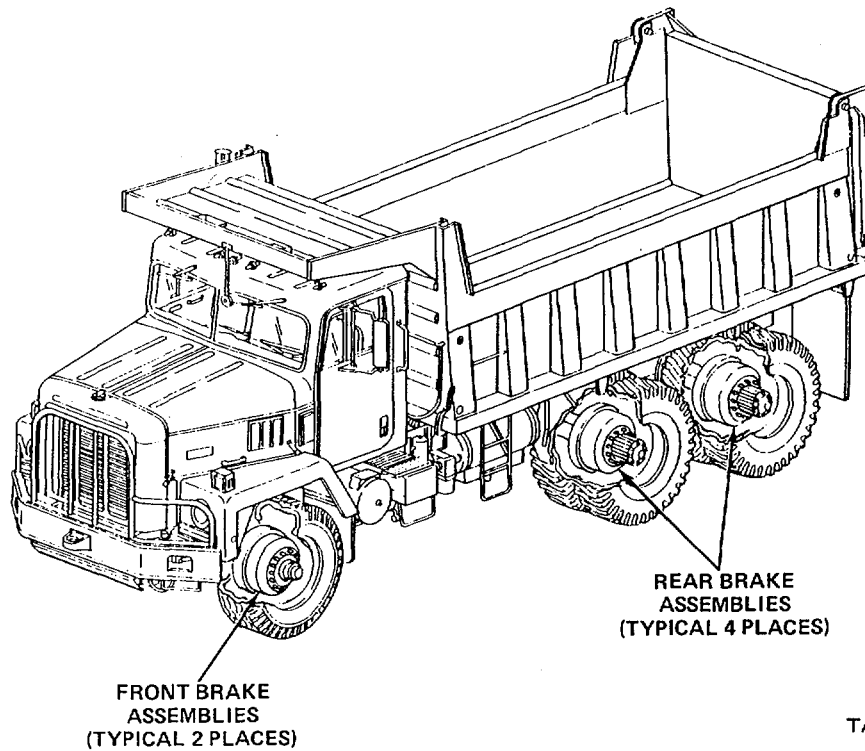
RELAY VALVES (Two)

Piston-type air-operated valve designed to speed application and release of rear brakes and to equalize air pressure to each brake.

RELAY QUICK-RELEASE VALVES (Three)

Piston-type air-operated valve designed to speed application and release of air pressure to spring brake chambers.

AIRBRAKE SYSTEM - CONTINUED



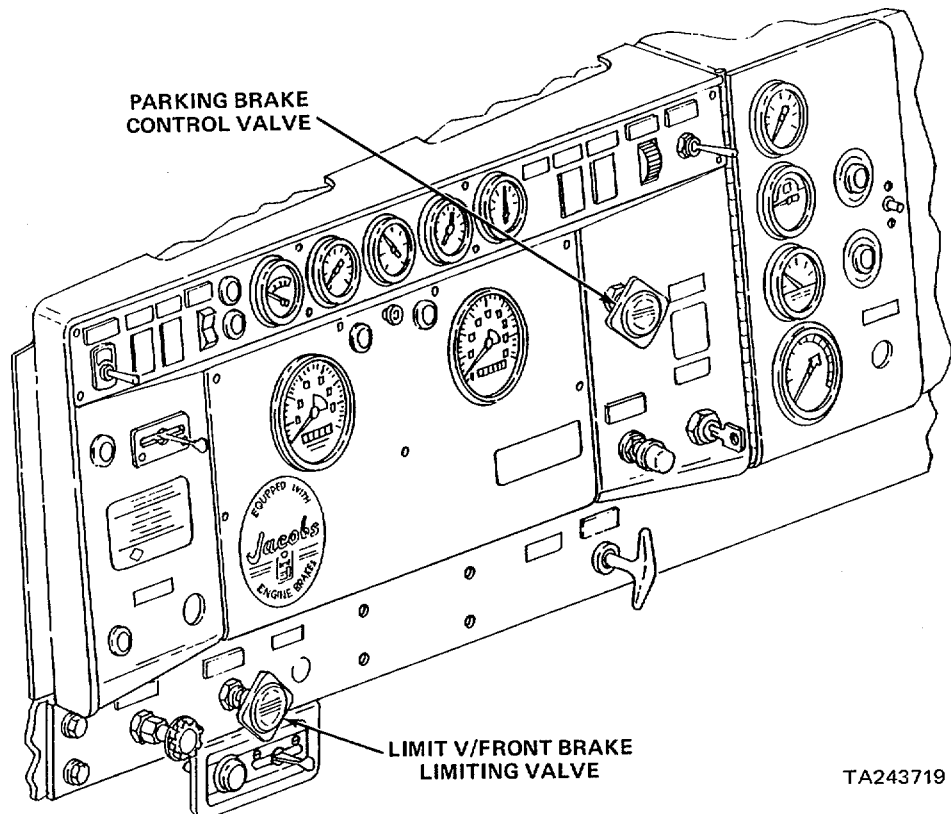
REAR BRAKE ASSEMBLIES (Four)

Cam-actuated conventional brake assembly mounted to each axle. Applying brake pedal pushes brakeshoes against brakedrums to slow down vehicle. Return springs pull brakeshoes away from brakedrums when brake pedal is released. A slack adjuster mounted on each brake camshaft allows uniform adjustment of brakes.

FRONT BRAKE ASSEMBLIES (Two)

Double wedge-actuated conventional brake assembly mounted to front axle. Applying brakes forces a wedge between two rollers and plungers, causing plungers to spread apart pushing brakeshoes against brakedrum.

AIRBRAKE SYSTEM - CONTINUED



TA243719

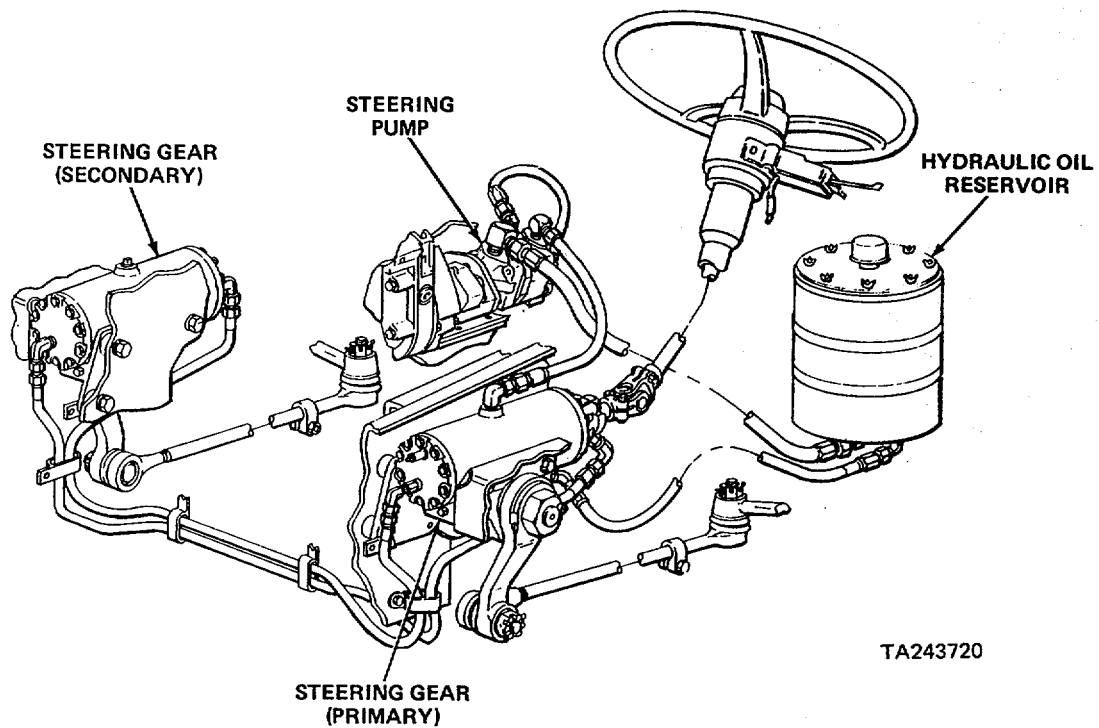
LIMIT VIFRONT BRAKE LIMITING VALVE

When actuated, limits air pressure to front brakes.

PARKING BRAKE CONTROL VALVE

When actuated, removes air pressure from spring brake chambers, allowing spring to apply parking brakes. In the event of a ruptured air line or other air pressure loss, parking brake control valve is automatically actuated to apply parking brakes.

STEERING SYSTEM



HYDRAULIC OIL RESERVOIR

Provides safe storage for hydraulic oil.

STEERING PUMP

Vane-type pump powered by engine oil pump. Provides and maintains hydraulic oil pressure to operate steering gear.

STEERING GEAR (Two)

Hydraulic oil pressure supplied by steering pump. Hydraulic oil pressure exerted against spool valve assists movement of steering wheel. Primary and secondary steering gear.

**CHAPTER 2
MAINTENANCE INSTRUCTIONS**

OVERVIEW

This chapter contains detailed maintenance procedures performed by Organizational Maintenance to maintain the dump truck.

	Page
Section I Repair Parts, Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment	2-1
Section II Service Upon Receipt.....	2-2
Section III Lubrication.....	2-3
Section IV Preventive Maintenance Checks and Services (PMCS)	2-21
Section V Organizational Troubleshooting	2-43
Section VI General Maintenance Instructions.....	2-424
Section VII Fuel System Maintenance.....	2-446
Section VIII Exhaust System Maintenance.....	2-590
Section IX Cooling System Maintenance.....	2-628
Section X Electrical System Maintenance	2-664
Section XI Transmission Maintenance	2-900
Section XII Propeller Shaft and Unviseral Joint Maintenance	2-939
Section XIII Rear Axle Maintenance	2-940
Section XIV Brake System Maintenance	2-947
Section XV Wheel, Tire, Hub and Drum Maintenance	2-1168
Section XVI Steering System Maintenance	2-1202
Section XVII Frame and Towing Attachment Maintenance	2-1248
Section XVIII Body and Cab Accessory Item Maintenance	2-1251
Section XIX Gages (Nonelectrical), Weighing and Measuring Device Maintenance.....	2-1290

Section I. REPAIR PARTS, SPECIAL TOOLS; TEST MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE), AND SUPPORT EQUIPMENT

NOTE

This section contains references to documents needed to help find parts, tools, and equipment you will need to perform Organizational Maintenance on the dump truck.

	Page		Page
Common Tools and Equipment.....	2-1	Special Tools, TMDE, and	
Repair Parts.....	2-2	Support Equipment	2-2

COMMON TOOLS AND EQUIPMENT

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

SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

No special tools or equipment are required for Organizational Maintenance of the dump truck.

REPAIR PARTS

Repair parts are listed and illustrated in Repair Parts and Special Tools List (RPSTL), TM 5-3805-254-20P, covering repair parts for the dump truck.

Section II. SERVICE UPON RECEIPT

Upon receipt of a new, used, or reconditioned vehicle, you must first determine if vehicle has been properly prepared for service. Perform the following steps.

1. Inspect all assemblies, subassemblies, and accessories to ensure proper working order.
2. Secure, clean, and adjust as needed.
3. Check all Basic Issue Items (BII) (TM 5-3805-254-10) to ensure every item is present, in good condition, properly mounted, or stowed.
4. Follow general procedures for all services and inspections given in TM 5-3805-254-10.
5. Clean rust preventive compound from all exterior surfaces with drycleaning solvent (item 18, appendix C).
6. Read Processing and Deprocessing Record of Shipping, Storage, and Issue of Vehicle and Spare Engines tag (DD Form 1397) and follow all precautions listed. This tag should be attached to steering wheel, steering column, or battery switch.
7. Perform all semiannual (S) preventive maintenance checks and services (PMCS) listed in section IV of this chapter.
8. Lubricate dump truck in accordance with LO 5-3805-254-12. Do not lubricate gear cases and engine unless processing tags state that oil is unsuitable for 500 miles of operation. If oil is suitable, check level.
9. Schedule semiannual service on DD Form 314 (Preventive Maintenance Schedule and Record Card). Arrange for engine oil change at 500 miles.
10. If dump truck is delivered with dry charged batteries, activate in accordance with TM 9-6140-200-14.
11. Check radiator coolant level and determine if coolant protection is sufficient for climate. See TB 750-651 for preparation of antifreeze solutions.

Section III. LUBRICATION INSTRUCTIONS

	Page		Page
Care of Lubricants	2-3	Fan Hub	2-17
Cleaning	2-3	Oil Level Gage	2-14
Engine Auxiliary Oil Filter.....	2-10	Reference.....	2-3
Engine Full-Flow Oil Filter	2-6	Water Pump	2-19
Engine Oil.....	2-4		

NOTE

This section contains reference to lubrication order, LO 5-3805-254-12, and additional mandatory lubricating instructions.

REFERENCE

Refer to current lubrication order, LO 5-3805-254-12, for servicing dump truck.

CARE OF LUBRICANTS

When storing or handling lubricants, be sure containers are clean and securely covered to prevent dirt, dust, or other foreign matter from entering. Be sure lubricant is clean before use.

CLEANING

Keep all parts not requiring lubrication clean of lubricants. Before lubricating any equipment, wipe all lubrication points free of dirt and grease. Clean all lubrication points after lubricating to prevent accumulation of foreign matter.

ENGINE OIL

This task covers:

a. Draining (page 2-4)

b. Filling (page 2-5)

INITIAL SETUP:

Tools

Container, 10-gallon
 Handle, hinged, 1/2-inch drive
 Socket, square 112-inch, 1/2-inch drive

Materials/Parts

Oil, lubricating (item 14, appendix C)
 Rags, wiping (item 15, appendix C)

Personnel Required

One

Equipment Condition

Right and left side hood panels opened
 (page 2-424).
 Vehicle parked on level ground.

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

DRAINING

WARNING

Safety goggles must be worn when working under truck to prevent eye injury.

Hot engine oil could burn you. Care must be taken to prevent personal injury.

NOTE

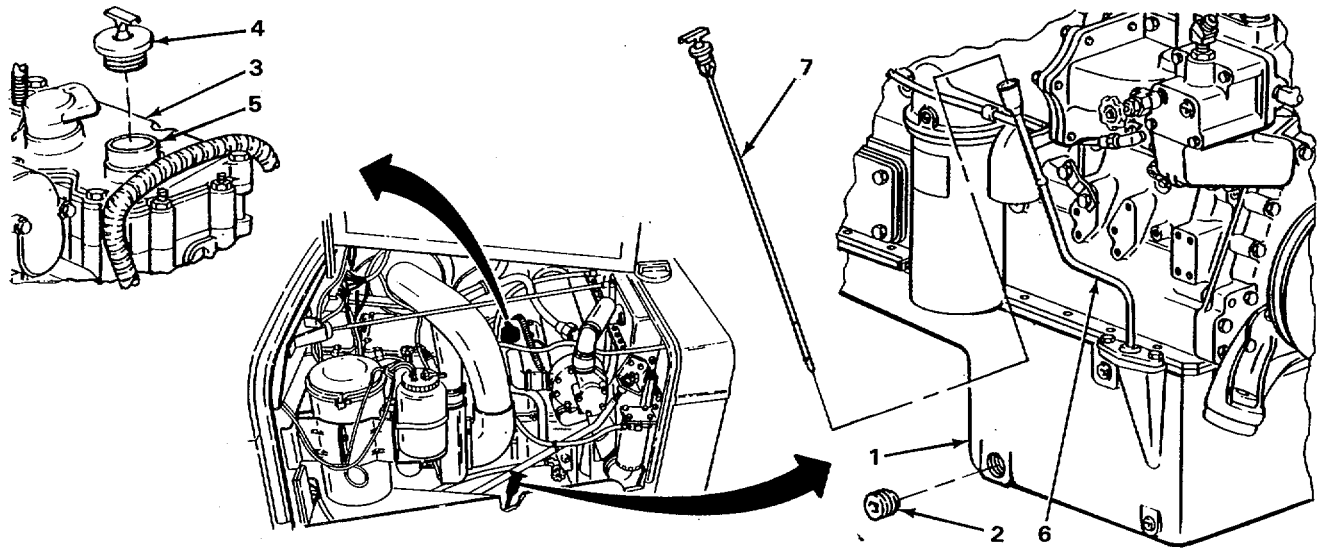
Change engine oil filter with each engine oil change (page 2-6).

Engine oil must be warm and engine shut down (TM 5-3805-254-10) before draining oil.

- | | | |
|----------------|---------------|---|
| 1. Oil pan (1) | Drainplug (2) | <ul style="list-style-type: none"> a. Place 10-gallon container underneath. b. Using 1/2-inch, 1/2-inch drive square socket and hinged handle, unscrew and take out. c. Allow oil to drain. d. When 10-gallon container is filled, screw in drainplug.
Do not tighten. e. Repeat steps a thru d until all oil is drained. f. Get rid of drained oil (page 2-424). g. Screw in and tighten using 1/2-inch, 112-inch drive square socket and hinged handle. |
|----------------|---------------|---|

ENGINE OIL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
FILLING			
2. Rocker housing cover (3)	Filler cap (4)	Take off.	
3.	Filler neck (5)	Fill with 27 quarts of lubricating oil.	
4.	Filler cap (4)	Put on. Check oil level. Check for oil leaks.	
5.	Dump truck	Start engine (TM 5-3805-254-10).	
6. Oil pan (1)	Drainplug (2)	Check for oil leaks.	
7.	Dump truck	Shut down engine (TM 5-3805-254-10).	
8. Dipstick tube (6)	Dipstick (7)	<ol style="list-style-type: none"> Take out and clean with wiping rag. Push in as far as possible. Pull out and check oil level. <p>Oil level should be between H and L marks on dipstick. If not between H and L, add oil.</p> <ol style="list-style-type: none"> Put in. 	



NOTE
FOLLOW-ON MAINTENANCE: Close right and left side hood panels (page 2-424).

TASK ENDS HERE

ENGINE FULL-FLOW OIL FILTER

This task covers:

- a. Draining (page 2-6)
 - b. Removal (page 2-7)
 - c. Cleaning (page 2-8)
 - d. Installation (page 2-8)
 - e. Filling (page 2-8)
-

INITIAL SETUP:

Tools

- Container, 10-gallon
- Extension, 6-inch, 1/2-inch drive
- Handle, ratchet, 112-inch drive
- Socket, 9/16-inch, 1/2-inch drive
- Wrench, box-end, 7/16-inch

Materials/Parts

- Oil filter element with packing
- Oil, lubricating (item 14, appendix C)

Materials/Parts - Continued

- Rags, wiping (item 15, appendix C)
- Solvent, drycleaning (item 19, appendix C)

Personnel Required

One

Equipment Condition

Right and left side hood panels opened (page 2-424).

LOCATION	ITEM	ACTION	REMARKS
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DRAINING

WARNING

Safety goggles must be worn when working under truck to prevent eye injury.

Hot engine oil could burn you. Care must be taken to prevent personnel injury.

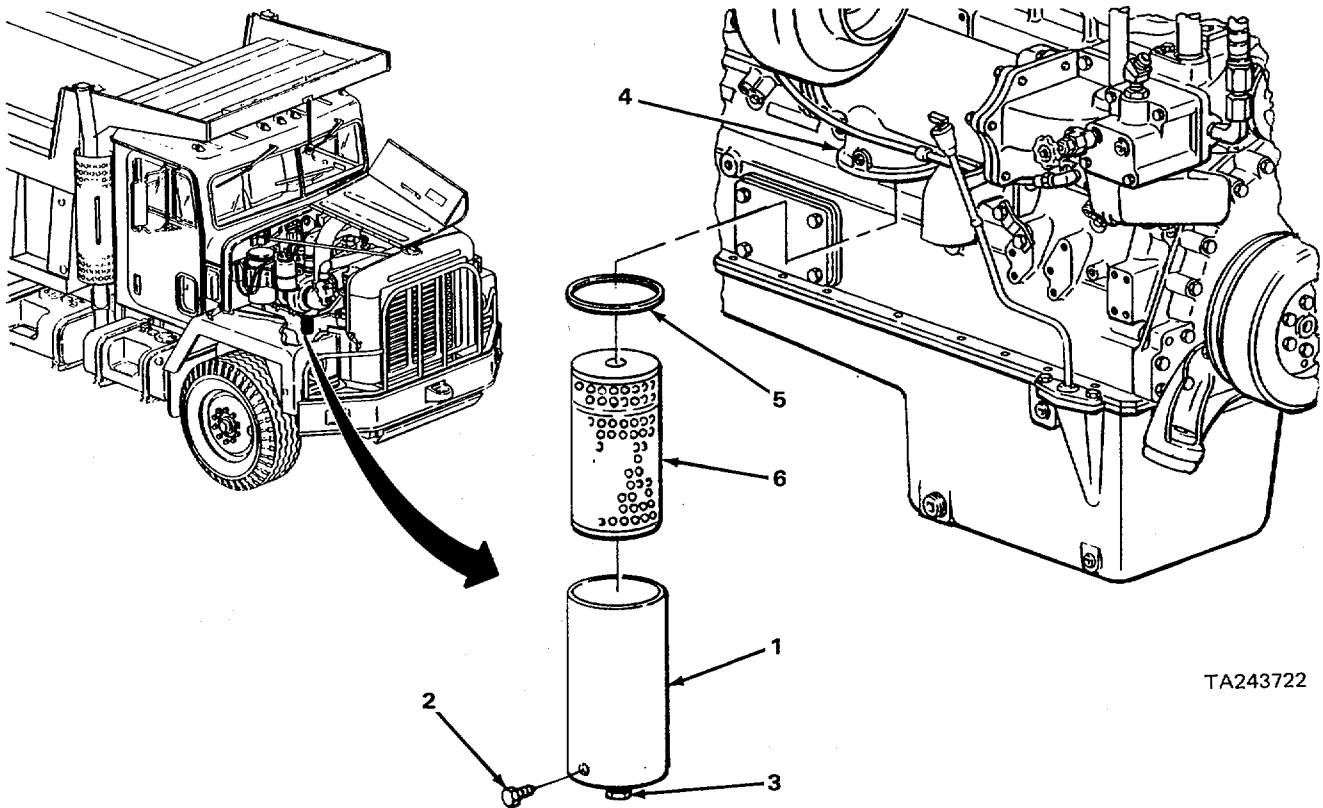
NOTE

Engine oil must be warm and engine shut down (TM 5-3805-254-10) before draining oil.

- | | | | |
|----|-----------|---------------|---|
| 1. | Shell (1) | Pipe plug (2) | <ul style="list-style-type: none"> a. Place 10-gallon container underneath. b. Using 7/16-inch box-end wrench, unscrew and take out. c. Allow oil to drain. d. Get rid of drained oil (page 2-424). |
|----|-----------|---------------|---|

ENGINE FULL-FLOW OIL FILTER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
2.	Shell screw (3)	Using 9116-inch, 1/2-inch drive socket, 6-inch extension, and ratchet handle, unscrew and loosen. Shell screw remains in shell.	
3.	Engine oil cooler (4)	Shell (1)	Take off.
4.	Packing (5)	a. Take out. b. Get rid of.	
5.	Shell (1)	Filter element (6)	a. Take out. b. Get rid of.



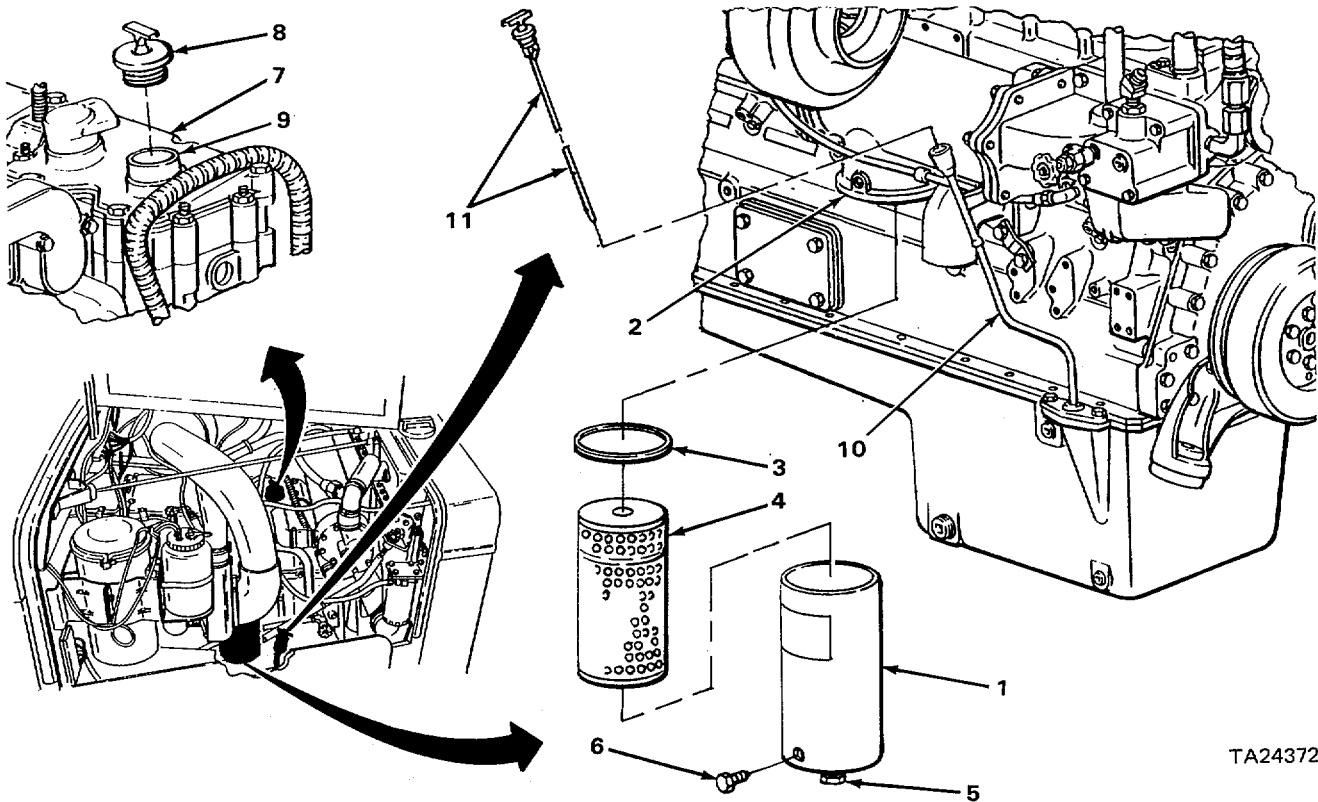
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ENGINE FULL-FLOW OIL FILTER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
CLEANING			
NOTE			
For more information on how to clean parts, go to General Maintenance Instructions (page 2-424) .			
WARNING			
Dry-cleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 dry-cleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.			
6.	Shell (1)	a. Clean with dry-cleaning solvent. b. Using clean, dry wiping rag, wipe dry.	
INSTALLATION			
7.	Engine oil cooler (2)	New packing (3)	Put in place.
8.	Shell (1)	New filter element (4)	Put in place.
9.	Engine oil cooler (2)	Shell (1)	Put in place.
10.	Shell (1)	Shell screw (5)	Screw in and tighten using 9/16-inch, 1/2-inch drive socket, 1/2-inch extension, and ratchet handle.
FILLING			
11.		Pipe plug (6)	Screw in and tighten using 7/16-inch box-end wrench.
12.	Rocker housing cover (7)	Filler cap (8) and filler neck (9)	a. Take off filler cap. b. Fill with 4 quarts of lubricating oil. c. Put on filler cap.

ENGINE FULL-FLOW OIL FILTER - CONTINUED

LOCATION	ITEM	ACTION REMARKS
13.	Dump truck	a. Start engine and allow to reach operating temperature (TM 5-3805-254-10). b. Shut down engine (TM 5-3805-254-10).
14. Dipstick tube (10)	Dipstick (11)	a. Take out and clean with wiping rag. b. Push in as far as possible. c. Pull out and check oil level. Oil level should be between H and L marks on dipstick. If not between H and L, add oil. d. Put in.



TA243723

NOTE

FOLLOW-ON MAINTENANCE: Close right and left side hood panels (page 2-424).

TASK ENDS HERE

ENGINE AUXILIARY OIL FILTER

This task covers:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. Draining (page 2-10) b. Removal (page 2-10) c. Cleaning (page 2-12) | <ul style="list-style-type: none"> d. Installation (page 2-12) e. Filling (page 2-12) |
|--|---|

INITIAL SETUP:

Tools

- Container, 10-gallon
- Screwdriver, flat-tip, 114-inch
- Wrench, open-end, 7/16-inch
- Wrench, box-end, 1/2-inch

Materials/Parts

- Filter element
- Lockwasher, shell clamp
- Ring, cover
- Oil, lubricating (item 14, appendix C)

Materials/Parts - Continued

- Rags, wiping (item 15, appendix C)
- Solvent, drycleaning (item 19, appendix C)

Personnel Required

One

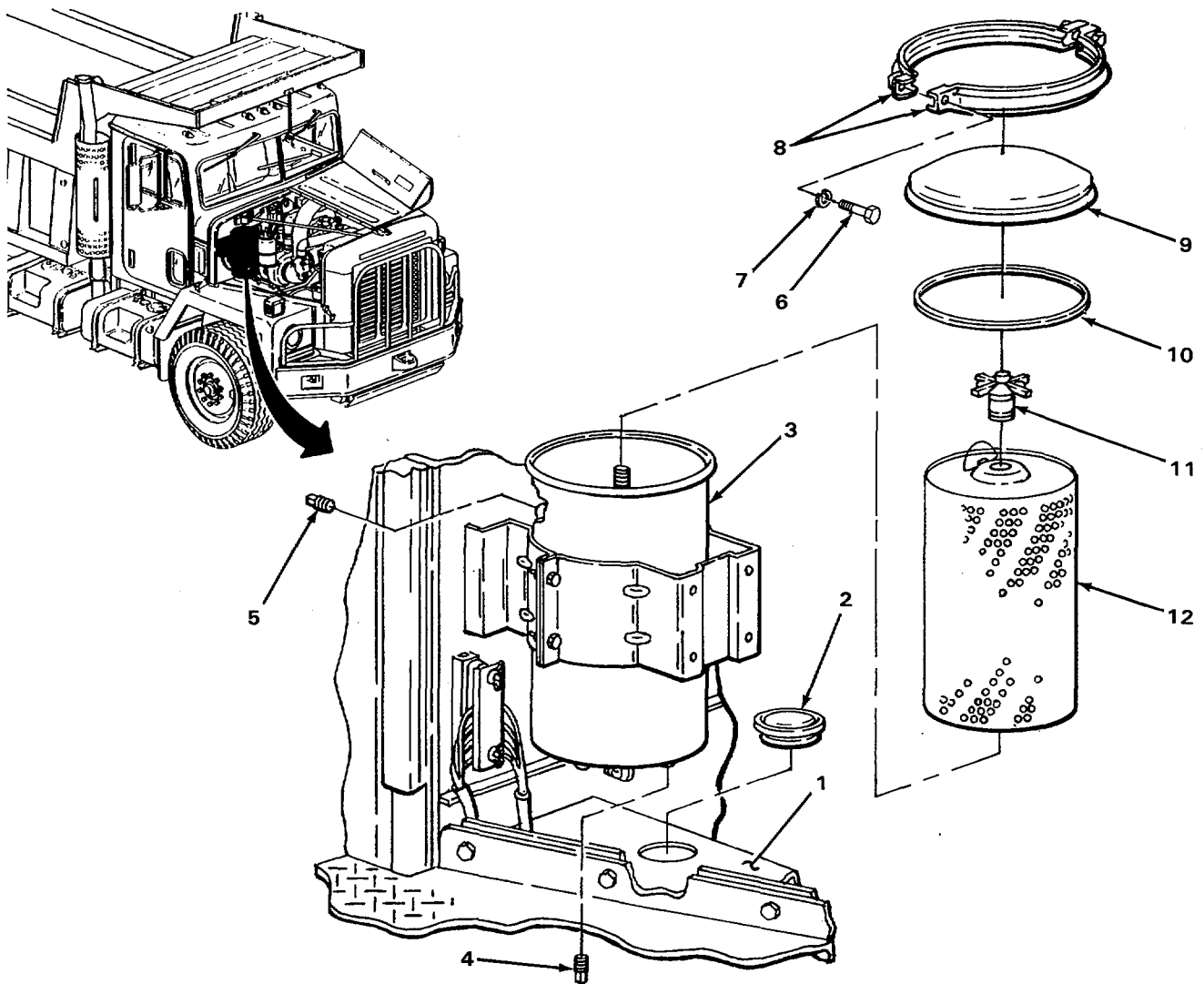
Equipment Condition

Right and left side hood panels opened (page 2-424).

LOCATION	ITEM	ACTION REMARKS
DRAINING		
1. Right inner fender (1)	Plate (2)	Using 1/4-inch flat-tip screwdriver, pry out.
2. Shell (3)	Drainplug (4) and	<ul style="list-style-type: none"> a. Place 10-gallon container underdrain-vent plug (5) plug. b. Using 7/16-inch open-end wrench, loosen vent plug. c. Using 7/16-inch open-end wrench, unscrew and take out drainplug. d. Allow oil to drain. e. Get rid of drained oil.
REMOVAL		
3.	Two screws (6), two lockwashers (7), and ring (8)	<ul style="list-style-type: none"> a. Using 1/2-inch box-end wrench, unscrew and take out. b. Take off ring. c. Get rid of lockwashers.

ENGINE AUXILIARY OIL FILTER - CONTINUED

LOCATION	ITEM	ACTION REMARKS
4. Shell (3)	Cover (9) and	a. Using 1/4-inch flat-tip screwdriver, pry ring (10) off cover. b. Take off ring. c. Get rid of ring.
5.	Wingnut (11)	Unscrew and take out.
6.	Filter element (12)	a. Take out. b. Get rid of filter element.



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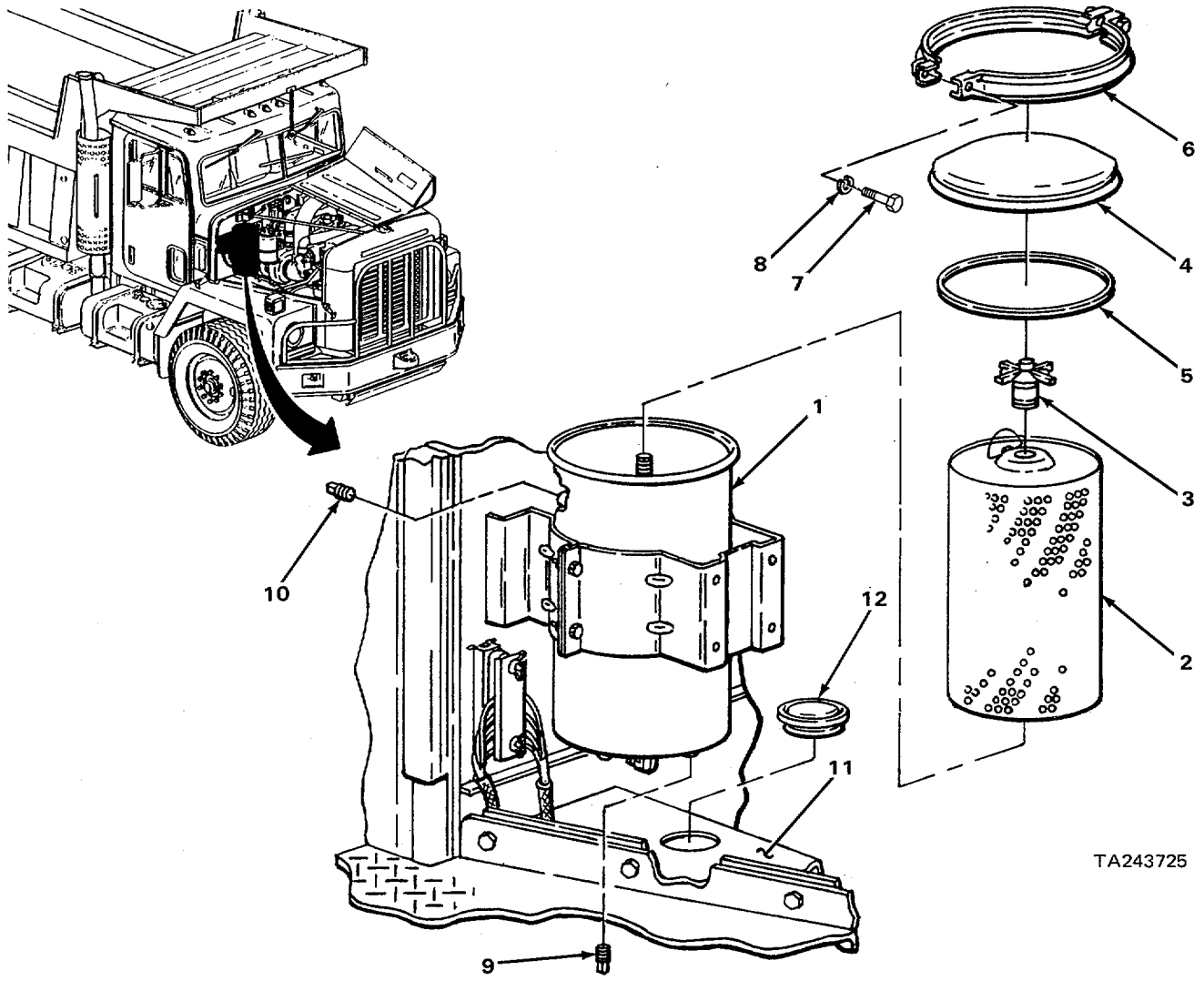
ENGINE AUXILIARY OIL FILTER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
CLEANING			
NOTE			
For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).			
WARNING			
Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.			
7.	Shell (1)	a. Clean with drycleaning solvent.	b. Using clean, dry wiping rags, wipe dry.
INSTALLATION			
8.	Shell (1)	New filter element (2)	Put in place.
9.	Wingnut (3)	Screw on and hand tighten.	
10.	Cover (4)	New ring (5)	Put on.
11.	Shell (1)	Cover (4)	Put on.
12.	Ring (6), two screws (7), and two new lock-washers (8)	a. Put ring in place. b. Screw in and tighten using 1/2-inch box-end wrench.	
13.	Shell (1)	Drainplug (9) and vent plug (10)	a. Screw in and tighten drainplug using 7/16-inch open-end wrench. b. Tighten vent plug using 7/16-inch open-end wrench.
14.	Right inner fender (11)	Plate (12)	Put in.

ENGINE AUXILIARY OIL FILTER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

15.	Engine	Fill with lubricating oil, (page 2-4)	
-----	--------	---------------------------------------	--



NOTE

FOLLOW-ON MAINTENANCE:

1. Check engine oil level (TM 5-3805-254-10).
2. Close right and left side hood panels (page 2-424).

**TASK ENDS HERE
ENGINE DIPSTICK**

This task covers:

- | | |
|---|--|
| <ul style="list-style-type: none"> a. Removal (page 2-14) b. Cleaning (page 2-14) | <ul style="list-style-type: none"> c. Inspection/Replacement (page 2-15) d. Installation (page 2-16) |
|---|--|

INITIAL SETUP:

Tools

- Handle, ratchet, 1/2-inch drive
- Socket, 5/8-inch, 1/2-inch drive
- Wrench, box-end, 9/16-inch (two required)
- Wrench, torque, 0 to 150 ft lb (0 to 210 N.m), 1/2-inch drive

Materials/Parts

- Gasket, dipstick tube
- Lockwasher, bracket

Materials/Parts - Continued

- Lockwasher, dipstick tube (two required)
- Rags, wiping (item 15, appendix C)
- Solvent, drycleaning (item 19, appendix C)

Personnel Required

One

Equipment Condition

Right side hood panel opened (page 2-424).

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1.	Dipstick tube bracket (1)	Screw (2), lockwasher (3), and nut (4)	<ul style="list-style-type: none"> a. Using two 9/16-inch box-end wrenches, unscrew and take off. b. Get rid of lockwasher.
2.	Oil pan (5)	Two screws (6) and two lockwashers (7)	<ul style="list-style-type: none"> a. Using 5/8-inch, 1/2-inch drive socket and ratchet handle, unscrew and take out. b. Get rid of lockwashers.
3.		Dipstick tube (8) and gasket (9)	<ul style="list-style-type: none"> a. Take out. b. Get rid of gasket.

CLEANING

NOTE

For more information on how to clean parts, go to **General Maintenance Instructions (page 2-424)**.

ENGINE DIPSTICK - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 1000F (380°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

4.	Dipstick tube (8)	a. Clean with drycleaning solvent.	b. Using clean, dry wiping rags, wipe dry.
----	-------------------	------------------------------------	--

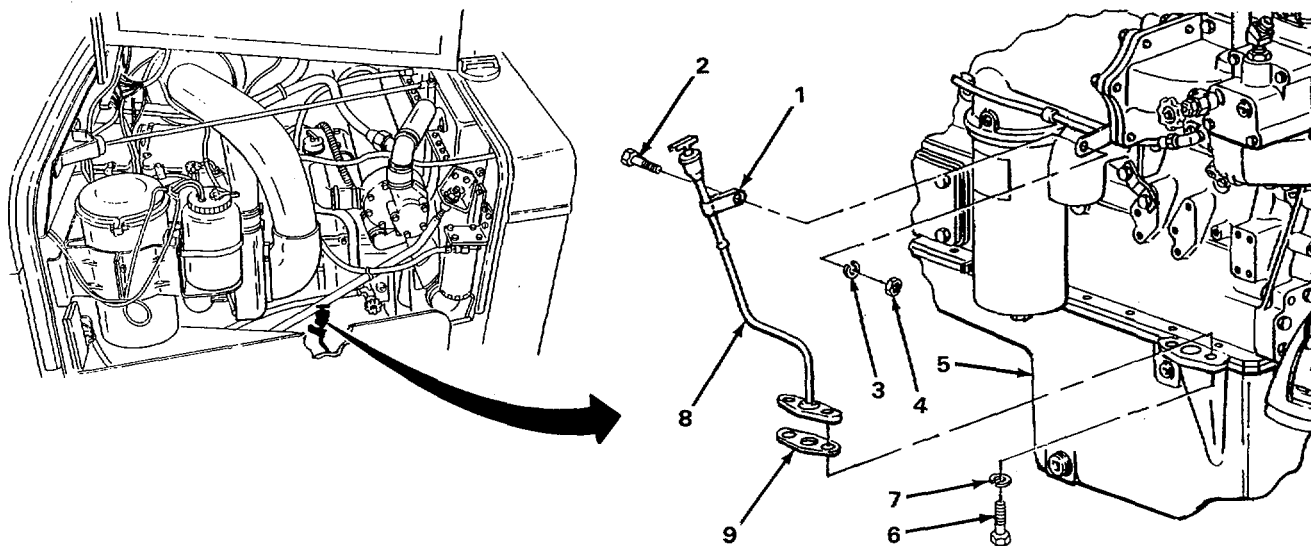
INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

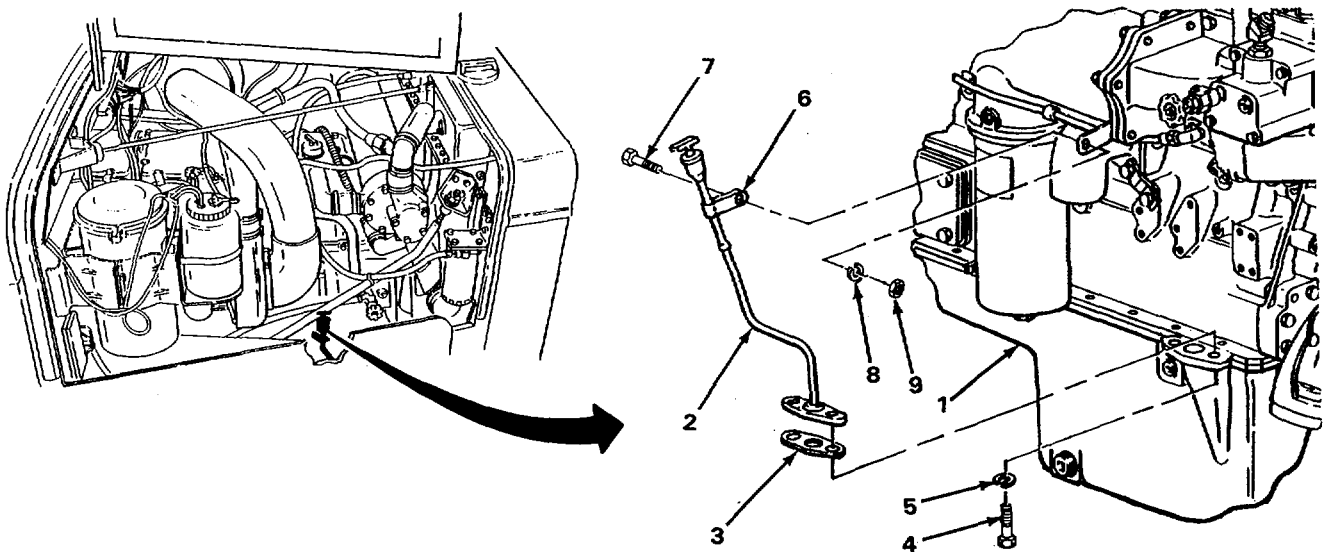
5.	All metal parts	Look for cracks and breaks.
6.	All threaded parts	Look for damaged threads or rounded heads.



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ENGINE DIPSTICK - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
7. Oil pan (1)	Dipstick tube (2) and new gasket (3)	Put in place.
8.	Two screws (4) and two new lock- washers (5)	a. Screw in until snug using 5/8-inch, 1/2-inch drive socket and ratchet handle. b. Using 5/8-inch, 1/2-inch drive socket and 0 to 150 ft lb (0 to 210 N.m) torque wrench, torque to 30 to 35 ft lb (40 to 47 N-m).
9. Dipstick tube bracket (6)	Screw (7), new lock- washer (8), and nut (9)	a. Put dipstick tube bracket in place. b. Screw in and tighten using two 9/16-inch box-end wrenches.



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NOTE

FOLLOW-ON MAINTENANCE: Close right side hood panel (page 2-424).

TASK ENDS HERE

FAN HUB

This task covers:

Lubrication (page 2-17)

INITIAL SETUP

Tools

- Gun, lubricating
- Wrench, box-end, 7/16-inch
- Wrench, hex, 5/32-inch

Materials/Parts

- Fitting, lubrication, fan hub (one required)
- Grease, GAA (item 10, appendix C)

Personnel Required

One

Equipment Condition

Right side hood panel opened (page 2-424).

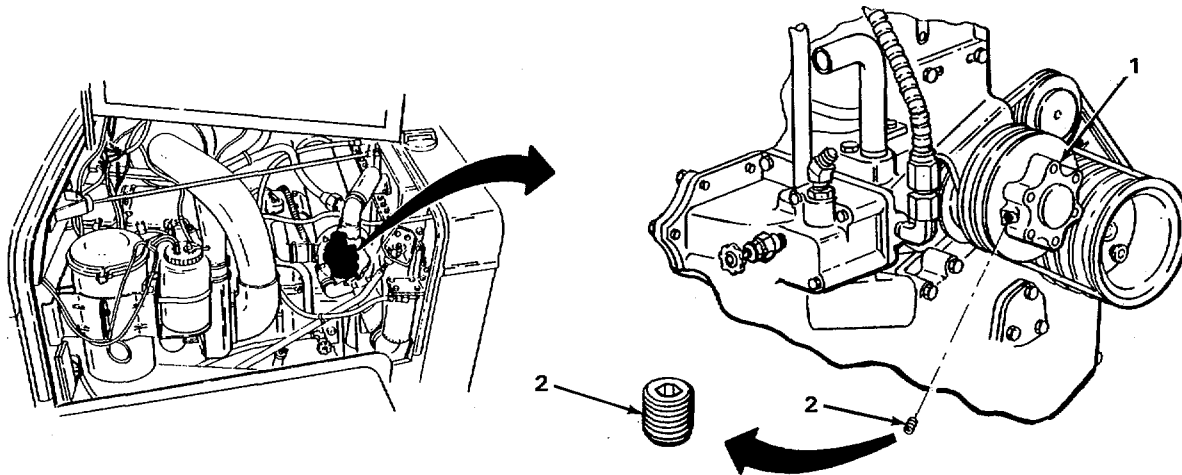
Reference

LO 5-3805-254-12 (Lubrication Order)

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

LUBRICATION

- | | | | |
|----------------|---------------|---|--|
| 1. Fan hub (1) | Pipe plug (2) | <ol style="list-style-type: none"> a. Turn fan hub to position pipe plug at 9 o'clock. b. Using 5/32-inch hex wrench, unscrew and take out. | |
|----------------|---------------|---|--|



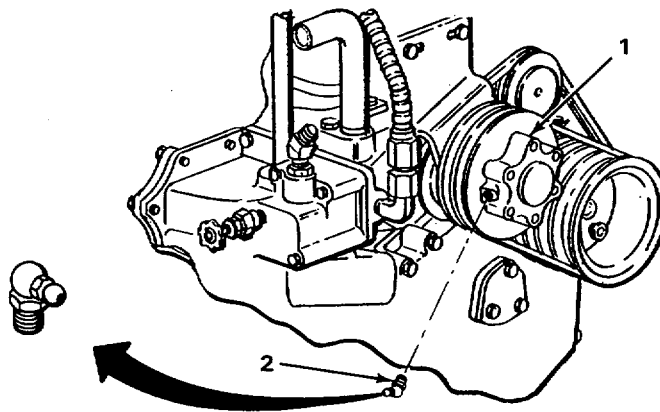
TA243728

FAN HUB - CONTINUED

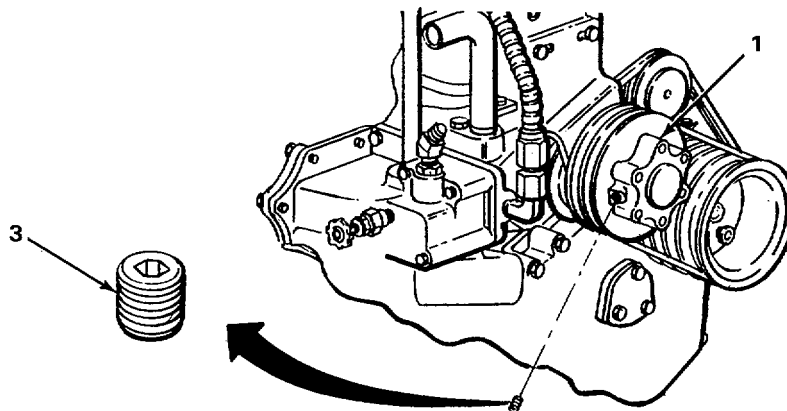
LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

LUBRICATION - CONTINUED

- | | | |
|----------------|-------------------------|--|
| 2. Fan hub (1) | Lubrication fitting (2) | <ul style="list-style-type: none"> a. Screw in and tighten using 7/16-inch box-end wrench. b. Using lubricating gun, lubricate with GAA grease (LO 5-3805-254-12). c. Using 7/16-inch box-end wrench, unscrew and take out. |
|----------------|-------------------------|--|



- | | | |
|----------------|---------------|---|
| 3. Fan hub (1) | Pipe plug (3) | Screw in and tighten using 5/32-inch hex wrench |
|----------------|---------------|---|



NOTE

FOLLOW-ON MAINTENANCE: Close right side hood panel (page 2-424).

TASK ENDS HERE

WATER PUMP

This task covers:

Lubrication (page 2-19)

INITIAL SETUP

Tools

Gun, lubricating
Wrench, box-end, 7/16-inch

Materials/Parts

Fitting, lubrication, water pump
(one required)
Grease, GAA (item 10, appendix C)

Personnel Required

One

Equipment Condition

Right side hood panel opened (page 2-424).

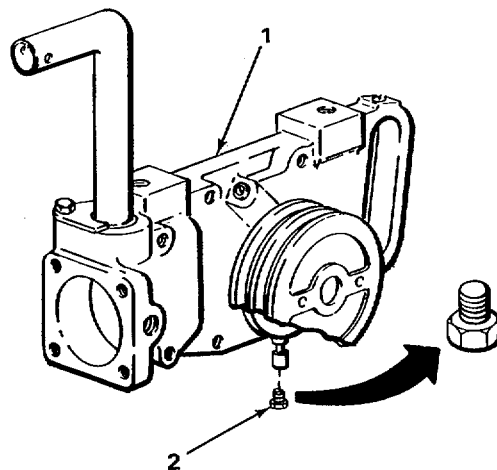
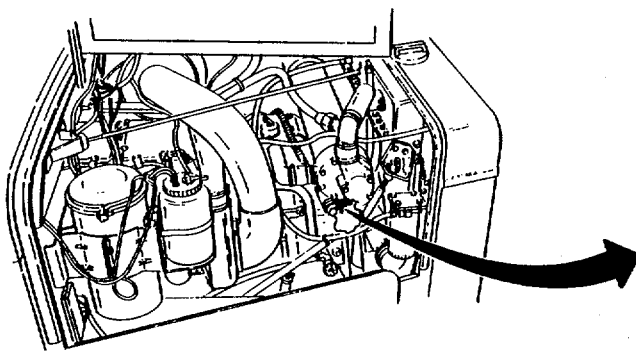
Reference

LO 5-3805-254-12 (Lubrication Order)

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

LUBRICATION

- | | | |
|-------------------|---------------|---|
| 1. Water pump (1) | Pipe plug (2) | Using 7/16-inch box-end wrench, unscrew and take out. |
|-------------------|---------------|---|



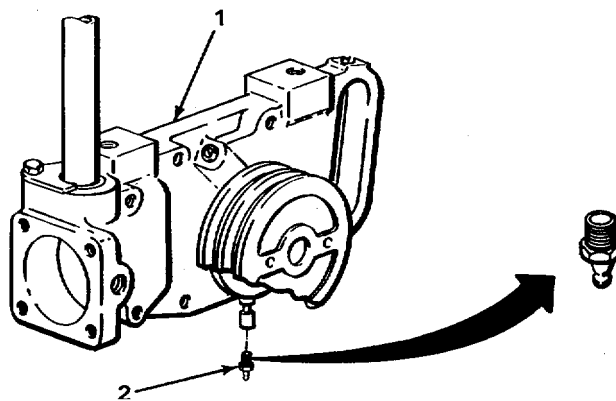
TA243730

WATER PUMP - CONTINUED

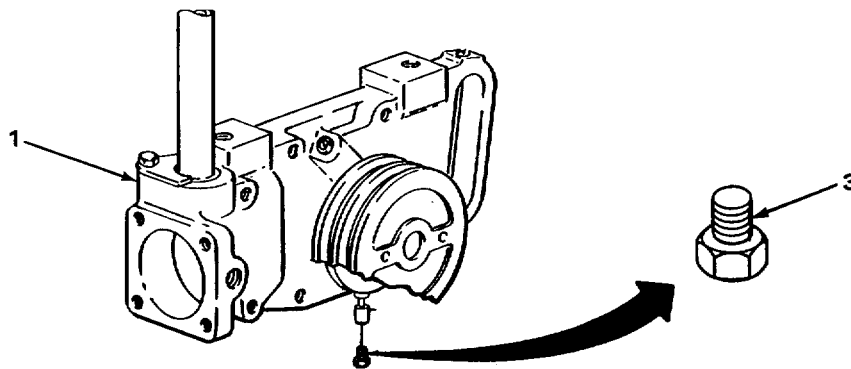
LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

LUBRICATION - CONTINUED

- | | | |
|-------------------|-------------------------|---|
| 2. Water pump (1) | Lubrication fitting (2) | <ul style="list-style-type: none"> a. Screw in and tighten using 7/16-inch box-end wrench. b. Using lubricating gun, lubricate with GAA grease (LO5-3805-254-12). c. Using 7/16-inch box-end wrench, unscrew and take out. |
|-------------------|-------------------------|---|



- | | | |
|-------------------|---------------|--|
| 3. Water pump (1) | Pipe plug (3) | Screw in and tighten using 7/16-inch box-end wrench. |
|-------------------|---------------|--|



NOTE

FOLLOW-ON MAINTENANCE: Close right side hood panel (page 2-424).

TASK ENDS HERE

Section IV. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

	Page		Page
Explanation of Columns	2-21	PMCS Procedures	2-21
Organizational PMCS.....	2-21	Special Instructions	2-21

NOTE

Perform Operator/Crew Preventive Maintenance Checks and Services (PMCS), TM 5-3805-254-10, before or at the same time as Organizational PMCS.

PMCS PROCEDURES

Preventive maintenance is systematic care, inspection, and servicing of equipment to maintain it in serviceable condition and to prevent breakdowns. Regular performance of PMCS procedures will help provide for safe and efficient operation of the dump truck at all times. While performing PMCS procedures, be alert to any other symptoms which could result in damage or failure of equipment. See appropriate troubleshooting and maintenance procedures, in this manual, to correct problems. Report symptoms outside the scope of this manual to your supervisor for corrective action.

SPECIAL INSTRUCTIONS

See Operator/Crew PMCS, TM 5-3805-254-10, for detailed explanation of PMCS special instructions for all levels of maintenance.

EXPLANATION OF COLUMNS

ITEM NO. - This column shows sequence of checks and services. Use this number to identify equipment item or area on DA Form 2024, Equipment Inspection and Maintenance Worksheet, when problems are found.

INTERVAL - This column shows when checks and services should be done.

ITEM TO BE INSPECTED - This column identifies item and shows checks and services to be done.

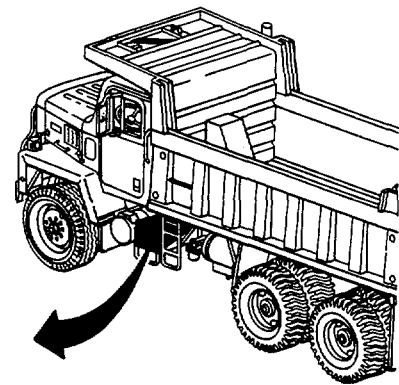
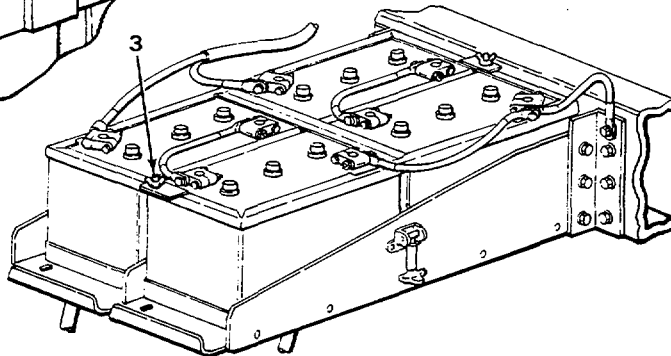
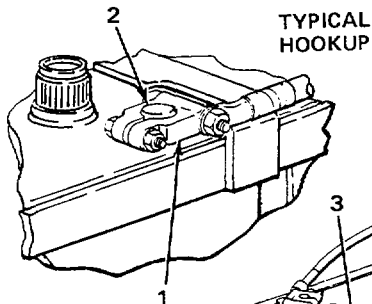
ORGANIZATIONAL PMCS

The following table provides complete information for performance of Organizational level preventive maintenance.

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

ITEM NO	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, adjusted as needed
	Q	S	A	B	MI	
1.						<p>BATTERIES</p> <p style="text-align: center;"><u>WARNING</u></p> <p>Do not smoke, use open flame, or allow sparks near batteries. Mixture of oxygen and hydrogen gases released from batteries is highly flammable and can explode causing serious injury or death.</p> <ul style="list-style-type: none"> a. Using battery terminal cleaner, remove corrosion from cable clamps (1) and battery posts (2). b. Using 1/2-inch open-end wrench, tighten loose cable clamps (1). c. Tighten loose battery holddown wingnuts (3). d. Check specific gravity of electrolyte in each cell (TM 9-6140-200-14). e. Inspect for cracked battery cases (4) and damaged cable clamps (1).

TA243732



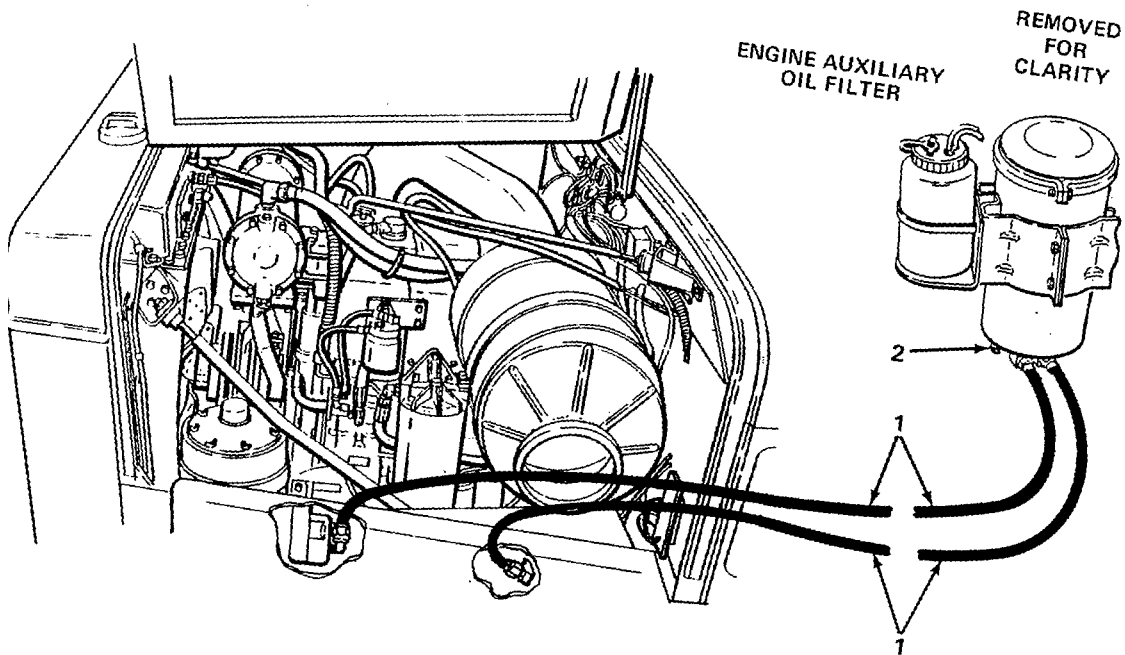
ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

B - Before S - Semiannually A - Annually B - Biennially H - Hours M - Miles						
ITEM NO	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, adjusted as needed
	Q	S	A	B	MI	
*2.					OC or 10,000	<p>MAIN TRANSMISSION</p> <p>a. Drain and fill transmission (page 2-900).</p> <p>b. Replace internal oil filter (page 2-907).</p> <p>c. Replace remote oil filter (page 2-935).</p>
3.		•			2500	<p>AUXILIARY TRANSMISSION</p> <p>a. Check auxiliary transmission oil level (page 2-932).</p> <p>b. Drain and fill auxiliary transmission (page 2-932).</p>
4.		•			2500	<p>INTERAXLE DIFFERENTIAL</p> <p>a. Check interaxle differential oil level (page 2-945).</p> <p>b. Drain and fill interaxle differential (page 2-945).</p>
5.		•			2500	<p>REAR AXLE ASSEMBLIES</p> <p>a. Check rear axle assembly oil level (page 2-940).</p> <p>b. Drain and fill rear axle assembly (page 2-940).</p>
6.			•			<p>REAR AXLE ASSEMBLY BREATHERS</p> <p>Remove and check for clogged rear axle assembly breathers (page 2-940).</p> <p>If clogged, clean or replace (page 2-940).</p>
7.					10,000	<p>REAR AXLE ASSEMBLY WHEEL BEARINGS</p> <p>Clean, inspect, lubricate, and adjust rear axle assembly wheel bearings (page 2-1188).</p> <p>Replace rear axle assembly wheel bearings if damaged or defective (page 2-1188).</p>

*On condition (OC) oil sample intervals shall be applied unless changed by the Army Oil Analysis Program (AOAP) laboratory (TM 9-2300-422-23&P and L05-2805-254-12).

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

ITEM NO	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, adjusted as needed
	Q	S	A	B	MI	
*8.						<p>ENGINE LUBRICATION</p> <p>OC or 10,000 a. Drain and fill engine oil (page 2-4).</p> <p>OC or 10,000 b. Replace engine full-flow oil filter (page 2-6).</p> <p>OC or 10,000 c. Replace engine auxiliary oil filter (page 2-10).</p> <p>d. Check engine-to-engine auxiliary oil filter lines (1) for leaks.</p> <p>e. Check engine auxiliary oil filter drain plug (2) for leaks.</p> <p>If leaks are found, tighten drain plug using 7/16-inch open-end wrench.</p>

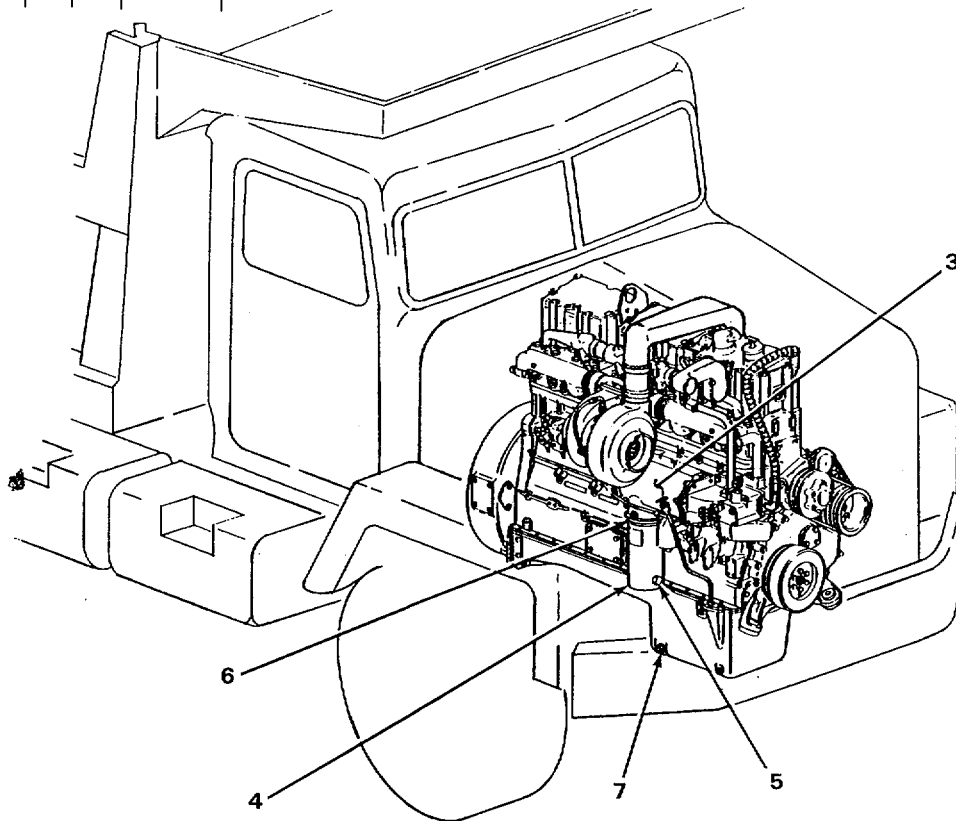


*On condition (OC) oil sample intervals shall be applied unless changed by the Army Oil Analysis Program (AOAP) laboratory (TM 9-2300-422-23&P and L05-3805-254-12).

TA243733

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

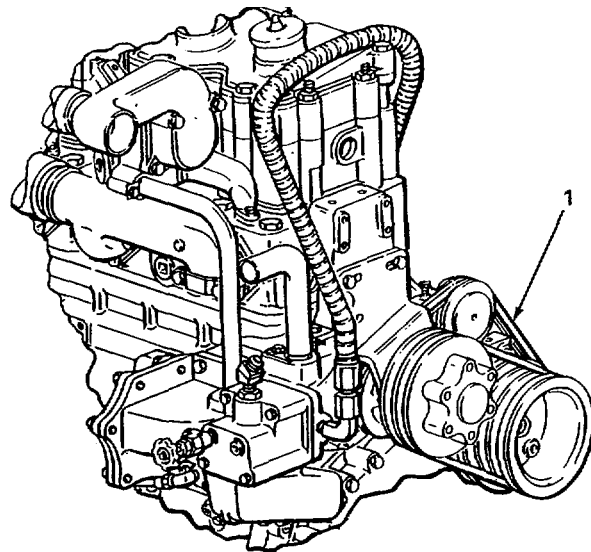
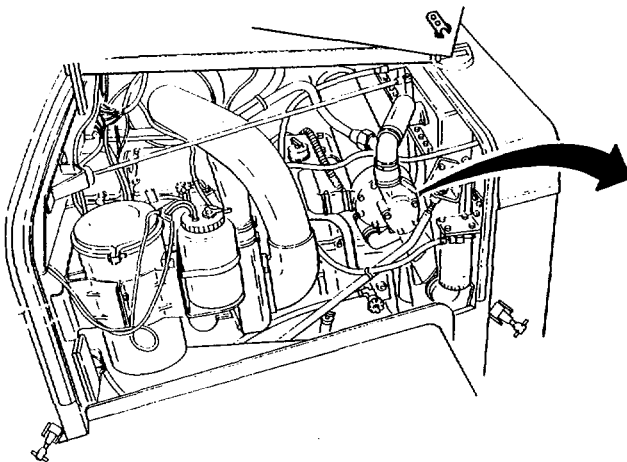
		B - Before	S - Semiannually	A - Annually	B - Biennially	H - Hours	M - Miles	
ITEM NO	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, adjusted as needed		
	Q	S	A	B	MI			
								<ul style="list-style-type: none"> • f. Check engine oil cooler (3) for leaks. If leaks are found at engine oil cooler, notify Direct Support Maintenance. • g. Check engine full-flow oil filter (4) for leaks. (1) If leaks are found at drain plug (5), tighten drain plug using 7/16-inch box-end wrench. (2) If leaks are found at gasket (6), replace gasket (page 2-6). • h. Check engine oil pan drain plug (7) for leaks. If leaks are found, tighten drain plug using 11/2-inch, 1/2-inch drive square socket and ratchet handle.



TA243734

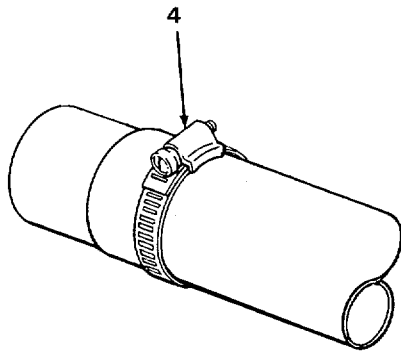
ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

ITEM NO	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, adjusted as needed
	Q	S	A	B	MI	
9.						ENGINE COOLING
					10,000	a. Lubricate water pump (page 2-19).
					10,000	b. Check for loose, cracked, or frayed water pump V. ... (1) If water pump belts are loose, adjust (page 2-636). (2) If water pump belts are damaged, notify Direct Support Maintenance.
					10,000	c. Lubricate fan hub (page 2-17).
				•		d. Drain, flush, and fill radiator (page 2-628).
			•			e. Check coolant protection (TB 750-651).

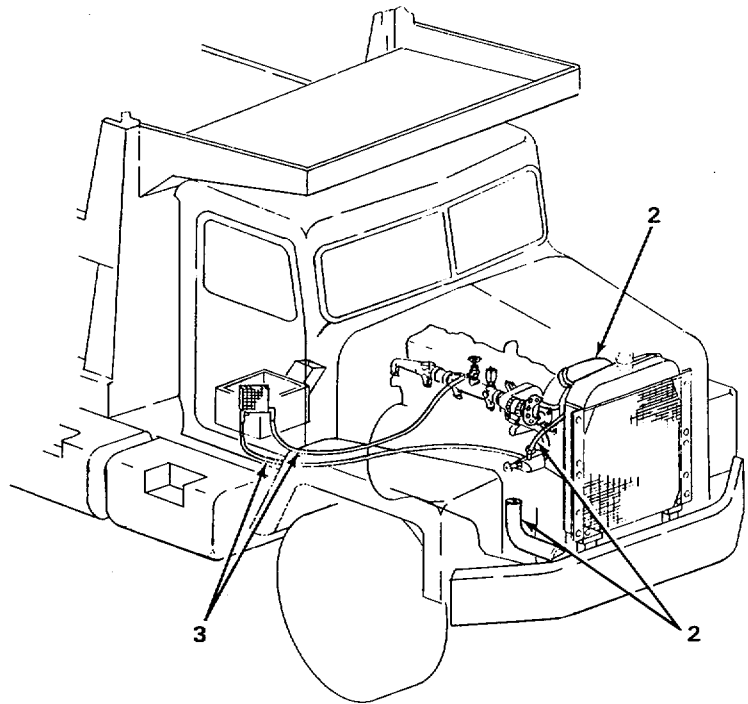


ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

		INTERVAL					ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, adjusted as needed
ITEM NO	Q	S	A	B	MI		
	•					10,000	<p>f. Check coolant hoses (2) and heater hoses (3) for hardness, cracks, or loose hose clamps (4).</p> <p>(1) If hoses (2 or 3) are damaged, replace (page 2-643).</p> <p>(2) If hose clamps (4) are loose, tighten using 1/4-inch flat-tip screwdriver.</p> <p>g. Replace water filter (page 2-637).</p>

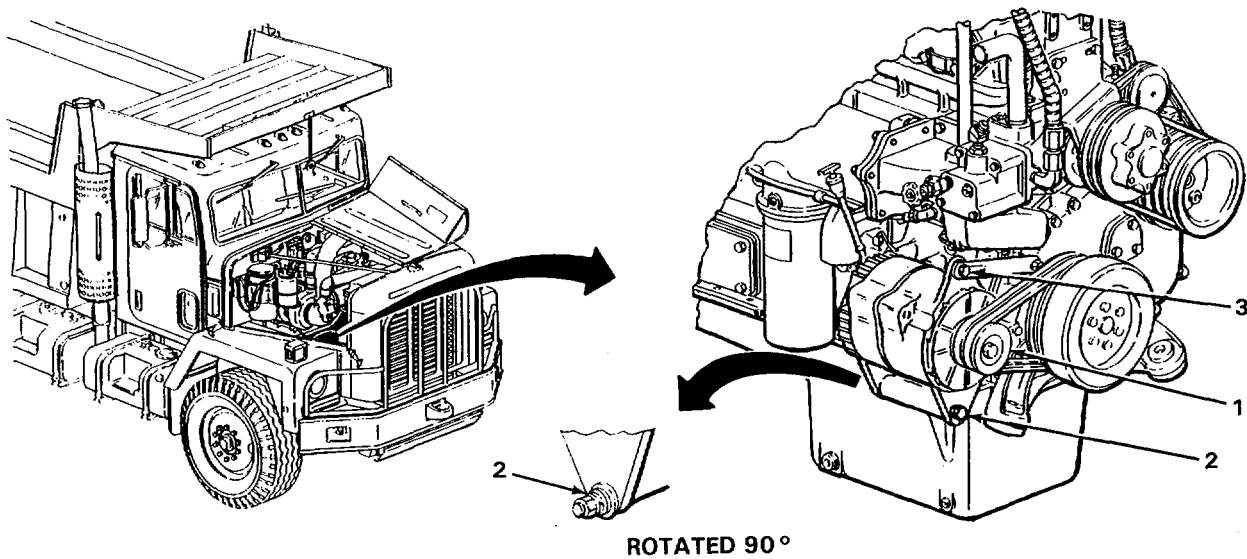


TYPICAL – ALL HOSE CLAMPS



TA243736

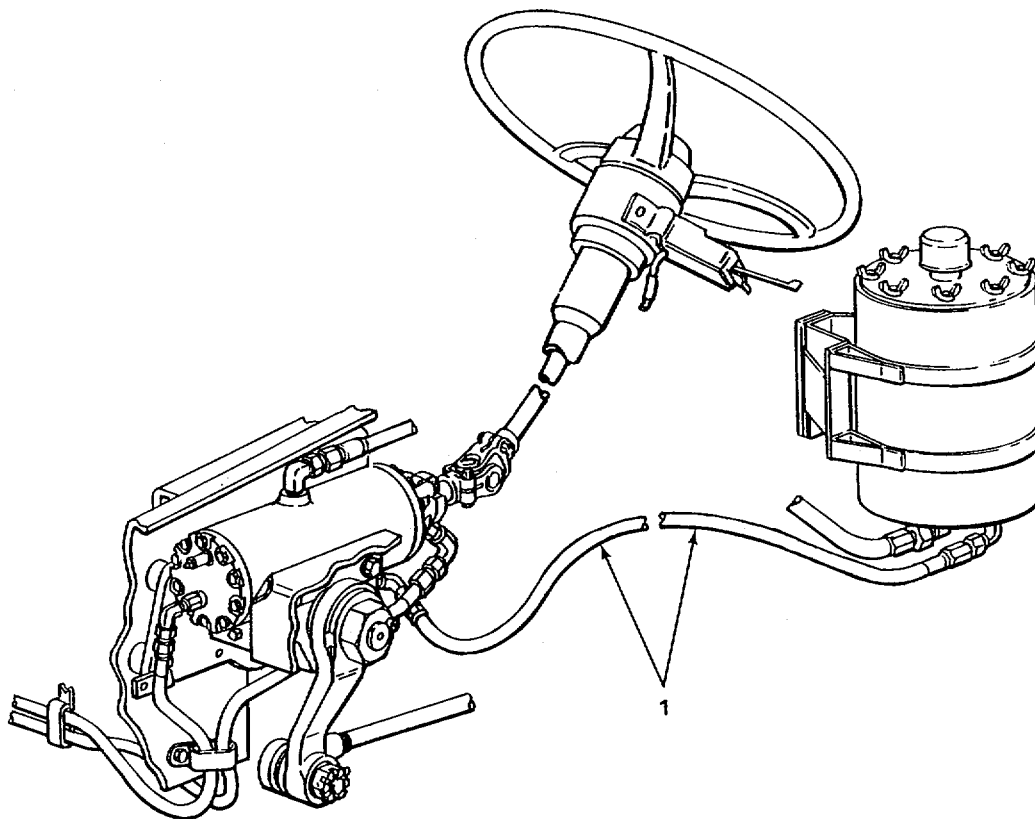
ITEM NO	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, adjusted as needed
	Q	S	A	B	MI	
10.						<p>GENERATOR</p> <ul style="list-style-type: none"> • a. Check for loose, cracked, or frayed generator drive belt (1). <ul style="list-style-type: none"> (1) If generator drive belt is loose, tighten (page 2-665). (2) If generator drive belt is damaged, replace (page 2-665). • b. Check for loose, broken, or missing generator mounting hardware (2 and 3). <ul style="list-style-type: none"> (1) If generator mounting hardware (2) is loose, tighten using two 3/4-inch box-end wrenches. (2) If generator mounting hardware (3) is loose, tighten using 3/4-inch box-end wrench. (3) Replace missing hardware (page 2-665).



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ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

ITEM NO	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, adjusted as needed
	Q	S	A	B	MI	
11.						<p>STEERING</p> <p>a. Drain and fill power steering reservoir (page 2-1173).</p> <p>b. Replace power steering reservoir oil filter (page 2-1168).</p> <p>c. Check left steering gear to reservoir hose (1) for leaks.</p> <p>(1) If hose (1) is loose, tighten fittings using 1-inch and 3/4-inch open-end wrenches.</p> <p>(2) If hose (1) is damaged, replace (page 2-1178).</p>



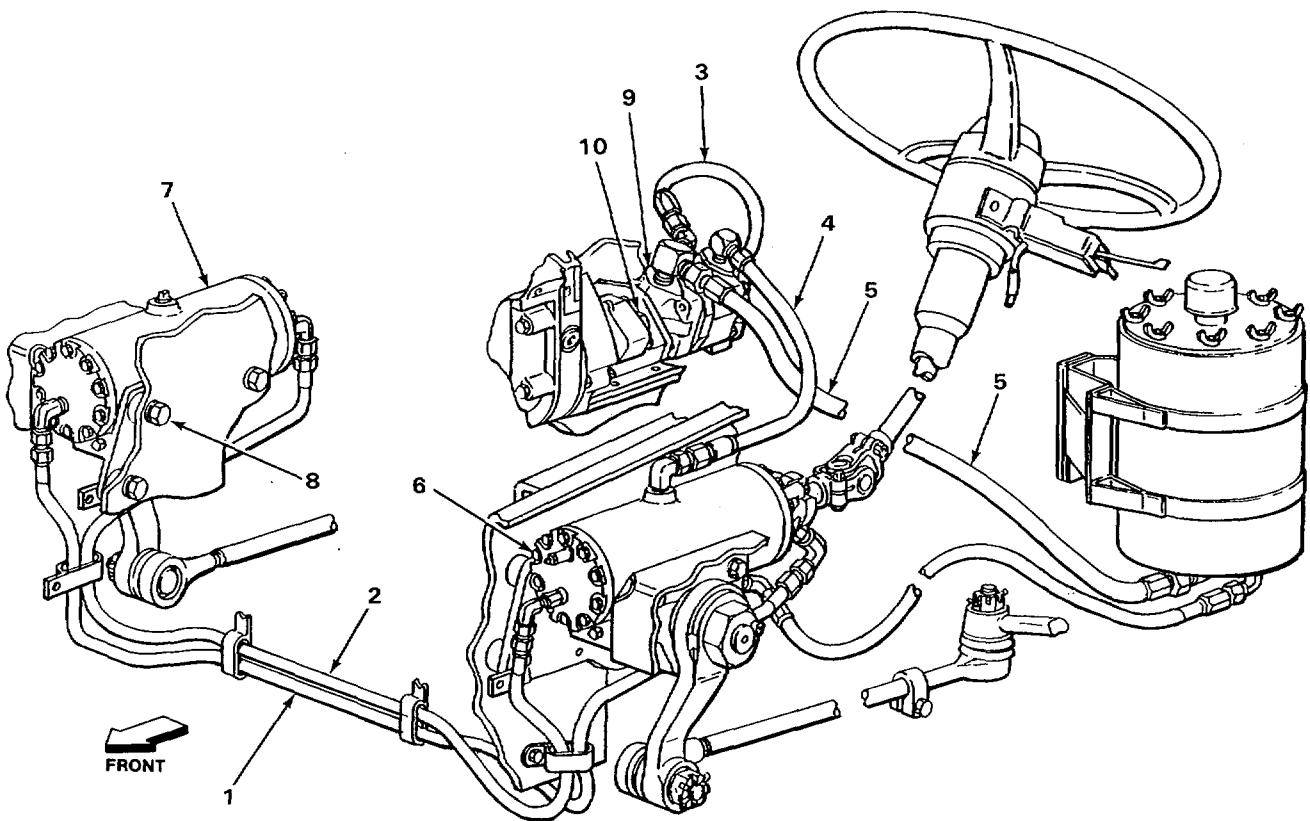
TA243738

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

		B - Before S - Semiannually A - Annually B - Biennially H - Hours M - Miles				
ITEM NO	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, adjusted as needed
	Q	S	A	B	MI	
11.						<p>STEERING - CONTINUED</p> <ul style="list-style-type: none"> • <ul style="list-style-type: none"> d. Check left steering gear to right steering gear hoses (1 and 2) for leaks. <ul style="list-style-type: none"> (1) If hoses (1 or 2) are loose, tighten fittings using 7/8-inch open-end wrench. (2) If hose (1) is damaged, replace (page 2-1181). (3) If hose (2) is damaged, replace (page 2-1186). e. Check pump bypass hose (3) for leaks. <ul style="list-style-type: none"> (1) If hose (3) is loose, tighten fittings using 1-inch open-end wrench. (2) If hose (3) is damaged, replace (page 2-1198). • <ul style="list-style-type: none"> f. Check pump to left steering gear hose (4) for leaks. <ul style="list-style-type: none"> (1) If hose (4) is loose, tighten fittings using 7/8-inch open-end wrench. (2) If hose (4) is damaged, replace (page 2-1194). • <ul style="list-style-type: none"> g. Check reservoir to pump hose (5) for leaks. <ul style="list-style-type: none"> (1) If hose (5) is loose, tighten fittings using 1 1/2-inch open-end wrench. (2) If hose (5) is damaged, replace (page 2-1190). • <ul style="list-style-type: none"> h. Check left steering gear (6) and right steering gear (7) for leaks. <p>If leaks are found, notify Direct Support Maintenance.</p>

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

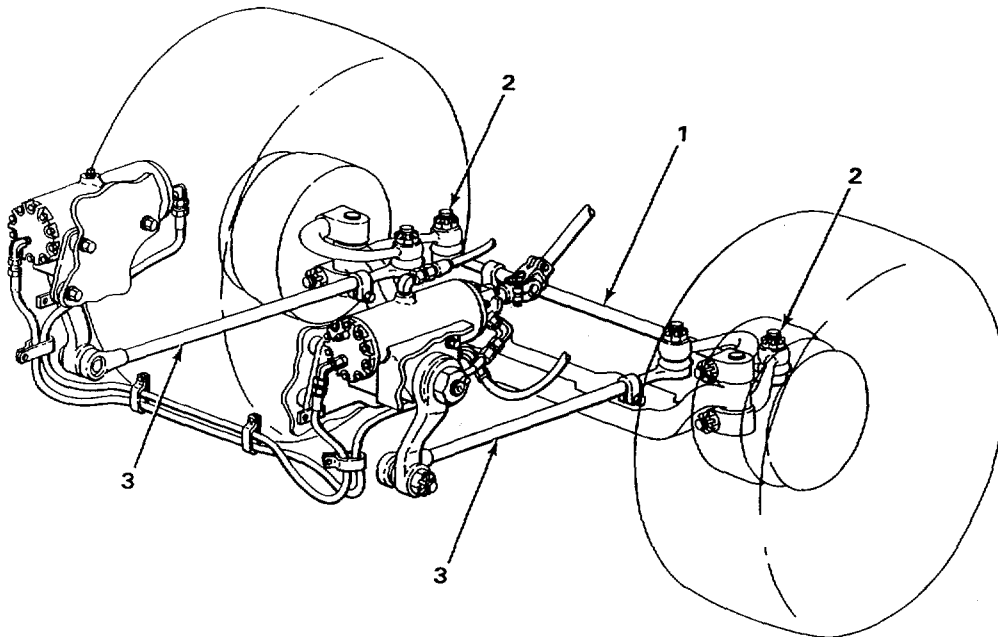
ITEM NO	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, adjusted as needed
	Q	S	A	B	MI	
	•					i. Check left steering gear (6) and right steering gear (7) for loose or missing mounting hardware (8). If hardware is loose or missing, notify Direct Support Maintenance.
	•					j. Check pump (9) for leaks. If leaks are found, notify Direct Support Maintenance.
	•					k. Check pump (9) for loose or missing mounting hardware (10). If hardware is loose or missing, notify Direct Support Maintenance.



TA243739

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

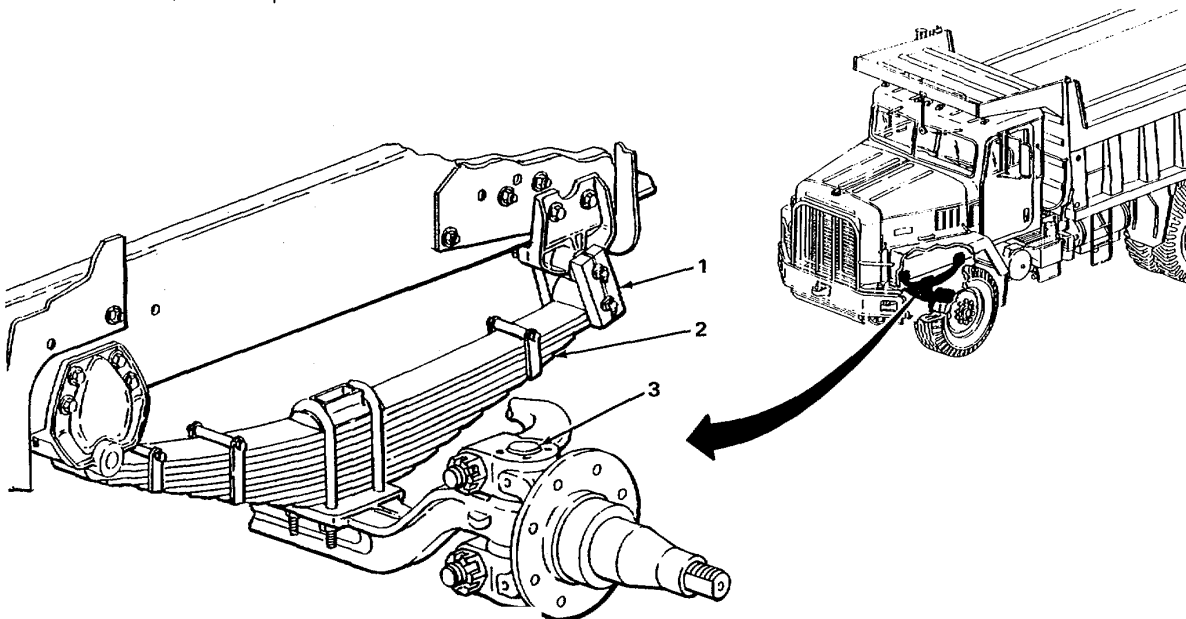
ITEM NO	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, adjusted as needed
	Q	S	A	B	MI	
11.						<p>STEERING - CONTINUED</p> <ul style="list-style-type: none"> l. Check for cracked or bent tie rod (1). <p>If tie rod is damaged, notify Direct Support Maintenance.</p> <ul style="list-style-type: none"> m. Check for cracked or worn tie rod ends (2). <p>If tie rod ends are damaged, notify Direct Support Maintenance.</p> <ul style="list-style-type: none"> n. Lubricate tie rod ends (LO 5-3805-254-12). o. Check for cracked or worn drag links (3). <p>If drag links are damaged, notify Direct Support Maintenance.</p> <ul style="list-style-type: none"> p. Lubricate drag links (LO 5-3805-254-12).



TA243740

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

ITEM NO	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, adjusted as needed
	Q	S	A	B	MI	
12.						<p>SUSPENSION</p> <ul style="list-style-type: none"> • a. Check for cracked, broken, or loose front or rear leaf spring shackles (1). If shackles are damaged or loose, notify Direct Support Maintenance. • b. Lubricate front and rear leaf spring shackles. (LO 5-3805-254-12). 2500 • c. Check for cracked or broken leaf springs (2). If leaf springs are damaged, notify Direct Support Maintenance. • d. Check for worn king pins (3). If king pins are worn, notify Direct Support Maintenance. • e. Lubricate king pins (LO 5-3805-254-12). 2500

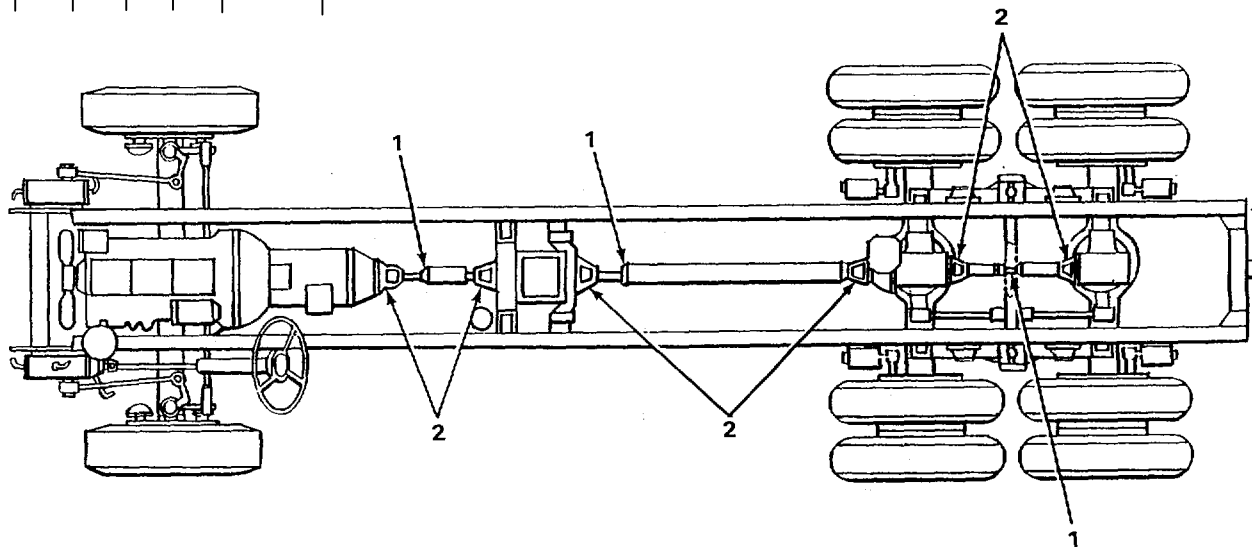


TA243741

NOTE:
FRONT SUSPENSION SHOWN 2-33
WHEELS AND BRAKES REMOVED FOR CLARITY

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

ITEM NO	INTERVAL					ITEM TO BE INSPECTED PROCEDURE: Check for and have repaired, filled, adjusted as needed
	Q	S	A	B	MI	
13.						<p>PROPELLER SHAFT SLIP JOINTS</p> <ul style="list-style-type: none"> a. Check for worn, rusted, cracked, or twisted propeller shaft slip joints (1). <p>If slip joints are damaged, notify Direct Support Maintenance.</p>
					2500	<ul style="list-style-type: none"> b. Lubricate propeller shaft slip joints (LO 5-2805-254-12).
14.						<p>PROPELLER SHAFT UNIVERSAL JOINTS</p> <ul style="list-style-type: none"> a. Check for worn or cracked propeller shaft universal joints (2). <p>If universal joints are damaged, notify Direct Support Maintenance.</p>
					2500	<ul style="list-style-type: none"> b. Lubricate propeller shaft universal joints (LO 5-3805-254-12).

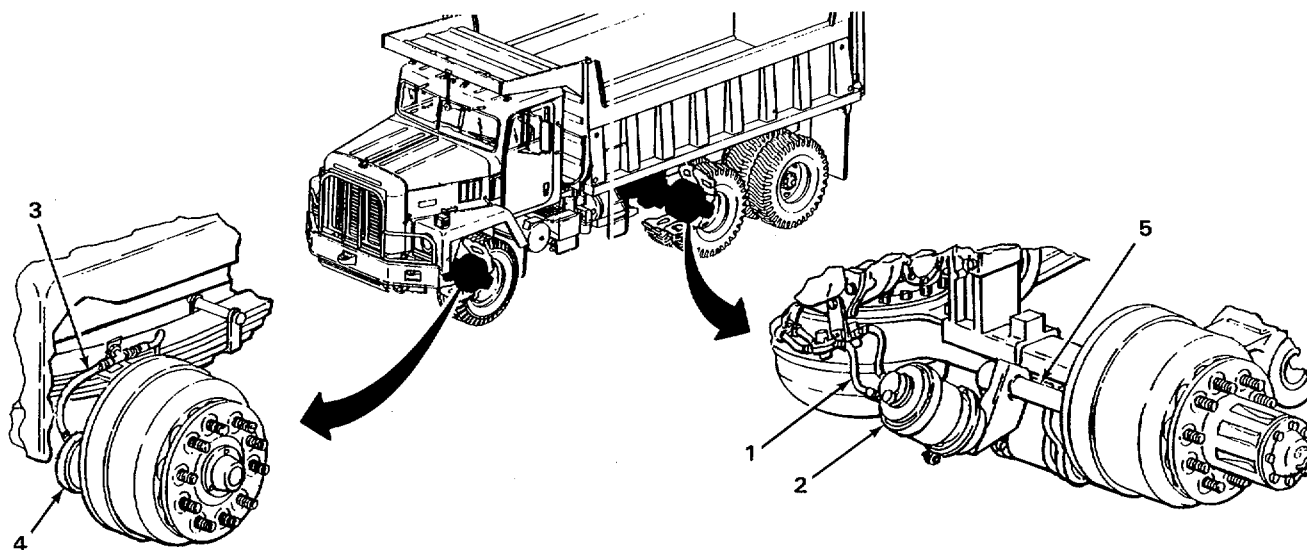


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ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

Q-QUARTERLY S-SEMIANNUALLY A-ANNUALLY B-BIENNIALY MI-MILES

Item No.	Interval					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED, REPLACED, OR ADJUSTED AS NEEDED
	Q	S	A	B	MI	
15					5000	a. Disconnect airhoses (1) from four rear airbrake chambers (2) using 3/4-inch and 5/8-inch open-end wrenches. Add 2 ounces (59 cc) of lubricating oil (LO 5-3805-254-12) to airbrake chambers. Connect airhoses and tighten using 3/4-inch and 5/8-inch open-end wrenches.
					5000	b. Disconnect airhoses (3) from four front airbrake chambers (4) using 3/4-inch and 5/8-inch open-end wrenches. Add 2 ounces (59 cc) of lubricating oil (LO 5-3805-254-12) to airbrake chambers. Connect airhoses and tighten using 3/4-inch and 5/8-inch open-end wrenches. Check air pressure.
					2500	c. Check for loose, worn, or cracked airbrake camshaft (5). Replace if damaged (page 2-946). d. Lubricate airbrake camshaft (LO 5-3805-254-12).



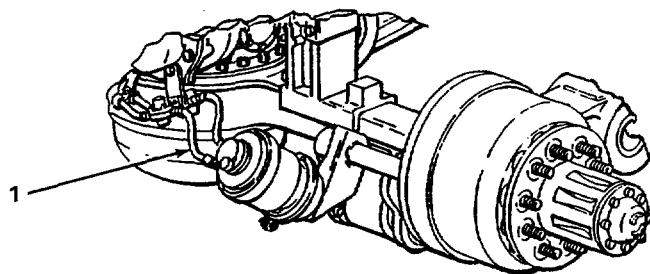
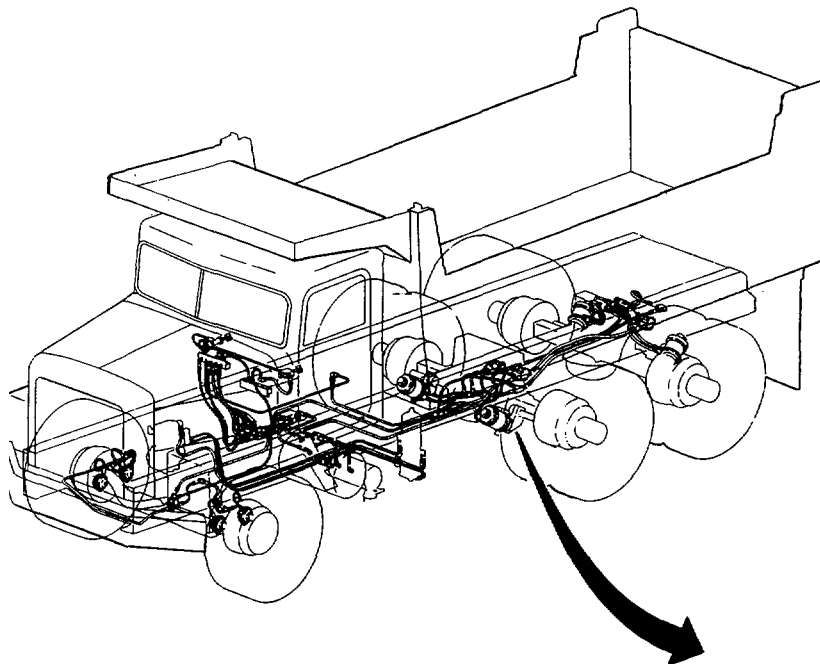
TA243743

WHEELS REMOVED FOR CLARITY

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

Q-QUARTERLY S-SEMIANNUALLY A-ANNUALLY B-BIENNIALY MI-MILES

Item No.	Interval					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED, REPLACED, OR ADJUSTED AS NEEDED
	Q	S	A	B	MI	
15						<p>AIRBRAKES - CONTINUED</p> <p>e. Check for cracked, broken, or frayed airhoses (1). Replace airhoses if damaged (page 2-941).</p>



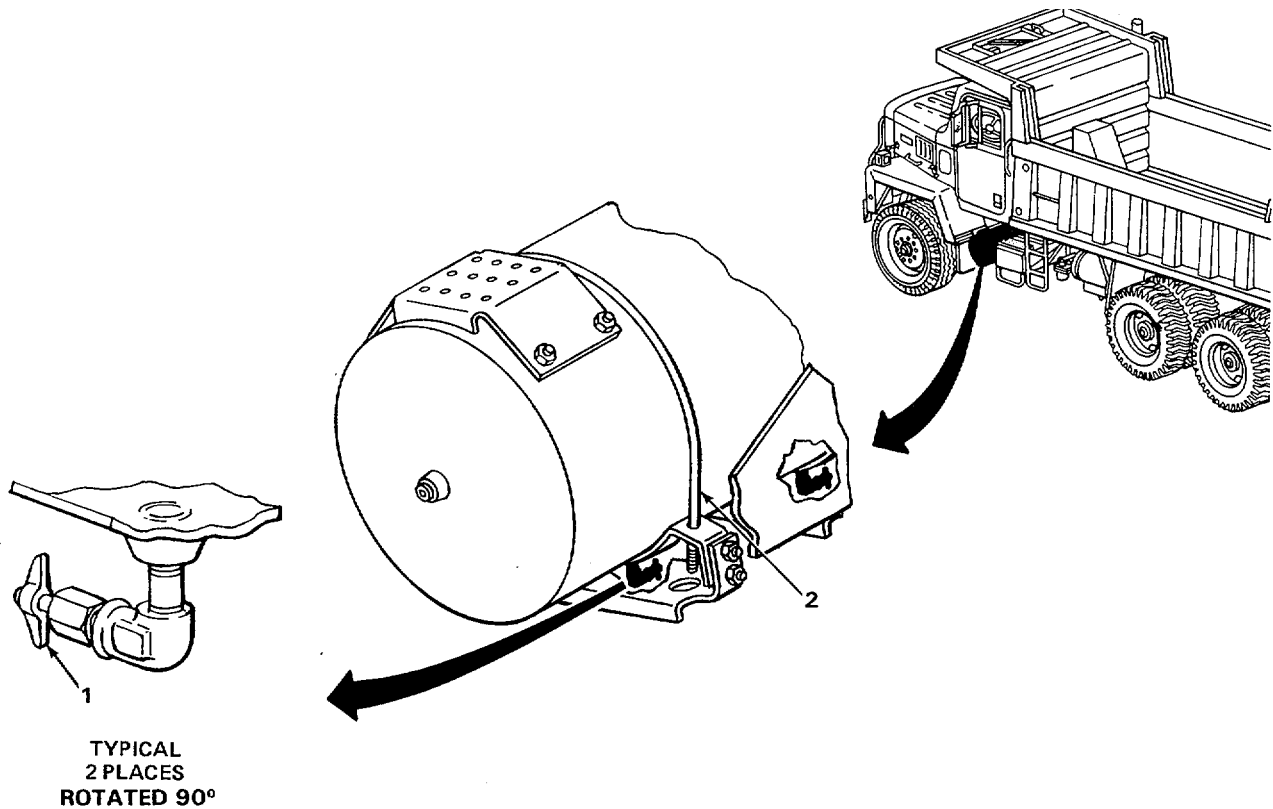
TYPICAL - ALL AIRHOSES

TA243744

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

Q-QUARTERLY S-SEMIANNUALLY A-ANNUALLY B-BIENNIALLY MI-MILES

Item No.	Interval					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED, REPLACED, OR ADJUSTED AS NEEDED
	Q	S	A	B	MI	
16						<p>DRY AIR RESERVOIR</p> <p>a. Check for leaks at draincocks (1).</p> <p>(1) If draincocks are open, turn clockwise to close.</p> <p>(2) If draincocks are defective, replace (page 2-1034).</p> <p>b. Check for loose, cracked, or missing holddown straps (2).</p> <p>(1) If holddown straps are loose, tighten using 9/16-inch, 1/2-inch drive deep socket, 6-inch extension, and ratchet handle.</p> <p>(2) If holddown straps are cracked, broken, or missing, replace (page 2-975).</p>



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ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

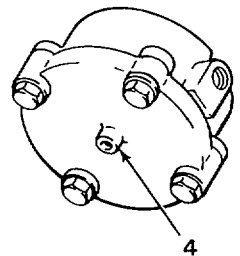
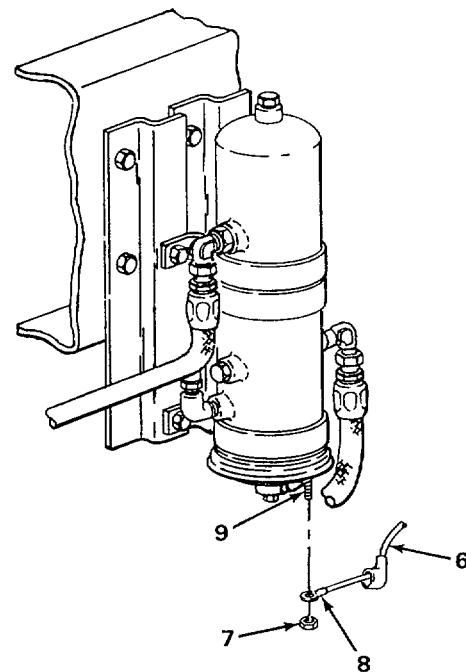
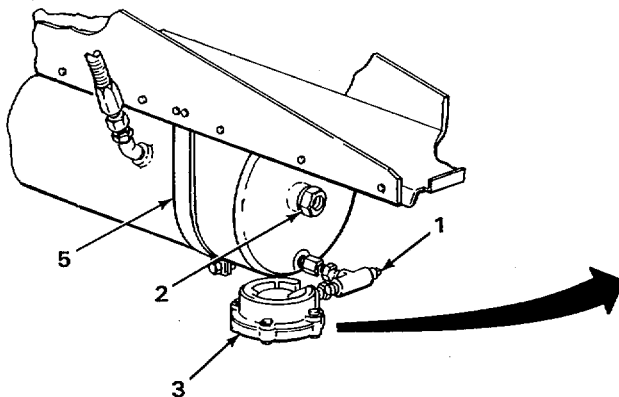
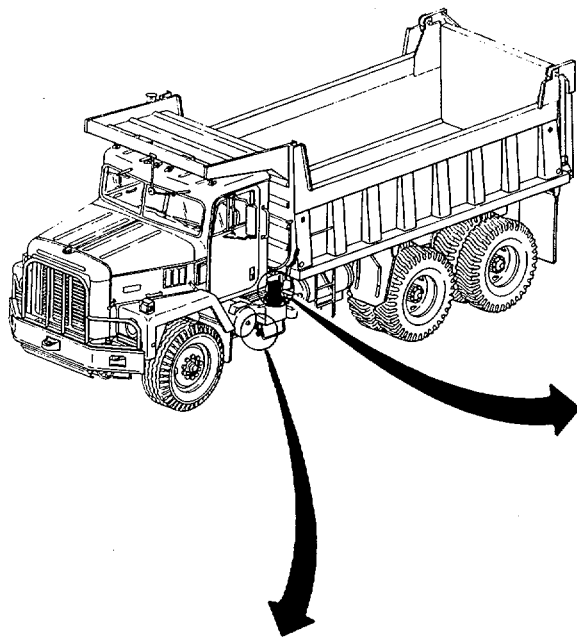
Q-QUARTERLY S-SEMIANNUALLY A-ANNUALLY B-BIENNIALY MI-MILES

Item No.	Interval					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED, REPLACED, OR ADJUSTED AS NEEDED
	Q	S	A	B	MI	
17						<p>WET AIR RESERVOIR</p> <ul style="list-style-type: none"> • a. Check for leaks at automatic drain valve plug (1). If plug is leaking, tighten using 3/8-inch open-end wrench. • b. Check for leaks at pressure relief valve (2). (1) If valve is leaking, tighten using 5/8-inch and 7/8-inch open-end wrenches. (2) If valve is defective, replace (page 2-986). • c. Check for leaks at automatic drain valve body (3) and manual drain pin (4). If automatic drain valve body or manual drain pin are leaking, replace automatic drain valve (page 2-986). • d. Check for loose, cracked, or missing holddown straps (5). (1) If holddown straps are loose, tighten using two 9/16-inch box-end wrenches. (2) If holddown straps are cracked or missing, replace (page 2-986).
18						<p>AIR DRYER</p> <ul style="list-style-type: none"> • a. Replace air dryer cartridge (page 2-1014). • b. Check for loose, corroded, or broken heater wire (6). (1) If wire is loose, tighten using 3/8-inch open-end wrench.

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

Q-QUARTERLY S-SEMIANNUALLY A-ANNUALLY B-BIENNIALLY MI-MILES

Item No.	Interval					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED, REPLACED, OR ADJUSTED AS NEEDED
	Q	S	A	B	MI	
						<p>(2) If wire is corroded, using 3/8-inch open-end wrench, unscrew and take off nut (7) and wire (6). Clean wire terminal (8) and heater stud (9) using wire brush. Put wire (6) and nut (7) on heater stud (9) and tighten using 3/8-inch open-end wrench.</p> <p>(3) If wire is broken, repair (page 2-424).</p>



VIEW LOOKING UP

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ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

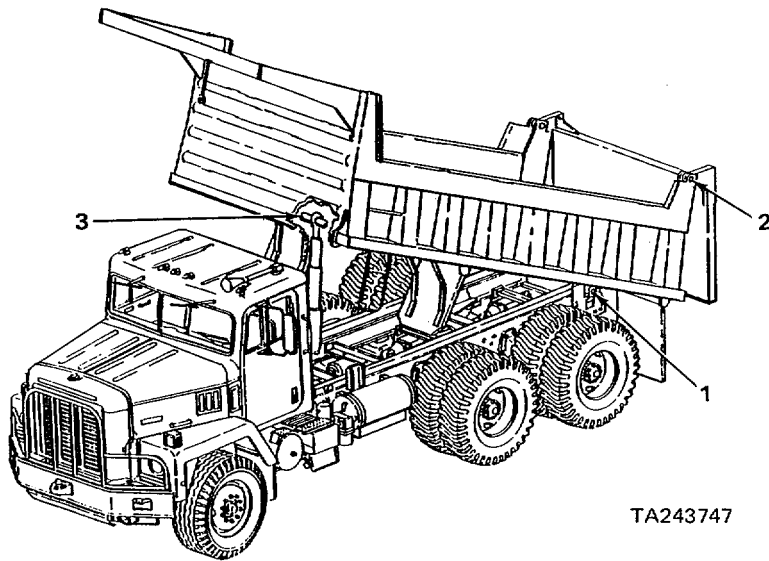
Q-QUARTERLY S-SEMIANNUALLY A-ANNUALLY B-BIENNIALY MI-MILES

Item No.	Interval					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED, REPLACED, OR ADJUSTED AS NEEDED	
	Q	S	A	B	MI		
19	•					DUMP BODY	
						a. Check for worn, cracked, or broken hinge pins (1). If hinge pins are worn or damaged, notify Direct Support Maintenance.	
						2500	b. Lubricate hinge pins (LO 5-3805-254-12).
						•	c. Check for worn, cracked, or broken tailgate pins (2). If tailgate pins are worn or damaged, notify Direct Support Maintenance.
						2500	d. Lubricate tailgate pins (LO 5-3805-254-12). <u>WARNING</u> Safety props and support blocks must be used to support dump body to prevent falling and causing injury to personnel.
						•	e. Check for worn, cracked, or broken lift cylinder upper hinge pin (3). If hinge pin is worn or damaged, notify Direct Support Maintenance.
				2500	f. Lubricate lift cylinder upper hinge pin (LO 5-3805-254-12).		

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

Q-QUARTERLY S-SEMIANNUALLY A-ANNUALLY B-BIENNIALY MI-MILES

Item No.	Interval					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED, REPLACED, OR ADJUSTED AS NEEDED
	Q	S	A	B	MI	
20.						<p>DUMP BODY HYDRAULICS</p> <ul style="list-style-type: none"> a. Drain and fill lift cylinder hydraulic oil reservoir (page 2-1375). b. Replace lift cylinder hydraulic oil reservoir oil filter (page 2-1362).

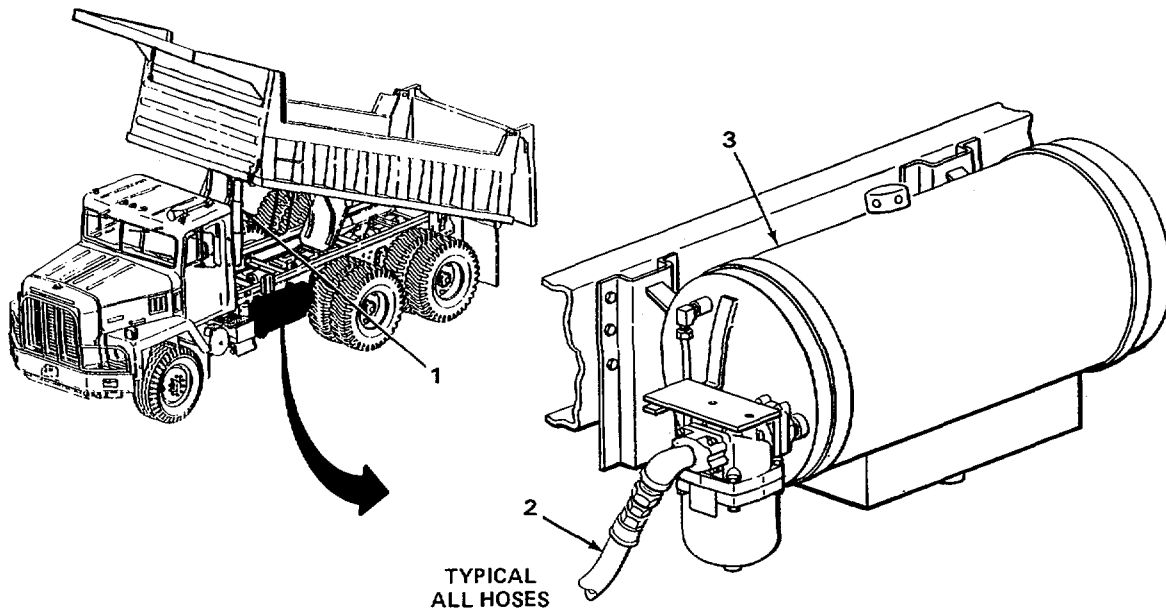


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ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - CONTINUED

Q-QUARTERLY S-SEMIANNUALLY A-ANNUALLY B-BIENNIALLY MI-MILES

Item No.	Interval					ITEM TO BE INSPECTED PROCEDURE: CHECK FOR AND HAVE REPAIRED, FILLED, REPLACED, OR ADJUSTED AS NEEDED
	Q	S	A	B	MI	
20.						<p>DUMP BODY HYDRAULICS - CONTINUED</p> <p><u>WARNING</u></p> <p>Safety props and support blocks must be used to prevent injury to personnel.</p> <ul style="list-style-type: none"> • c. Check lift cylinder (1) for leaks. If lift cylinder is leaking, notify Direct Support Maintenance. • d. Check hoses (2) for leaks. If hoses are leaking, tighten or replace fittings. (page 2-1362). • e. Check for loose, cracked, or broken holddown strap (3). (1) If holddown straps are loose, tighten using 5/8-inch open-end wrench. (2) If holddown straps are cracked or broken, replace (page 2-1375).



Section V. ORGANIZATIONAL TROUBLESHOOTING

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INTRODUCTION

This section contains troubleshooting procedures that Organizational Maintenance can use to find and repair malfunctions which may occur while the dump truck is being operated or maintained. Perform Operator's PMCS and Troubleshooting (TM 5-3805-254-10) and Organizational PMCS (page 2-IV-1) before performing Organizational Troubleshooting. If the problem cannot be found and corrected by Organizational Maintenance using these procedures, notify Direct Support Maintenance.

TROUBLESHOOTING

The troubleshooting table lists common malfunctions which may be found during operation or maintenance of the dump truck or its components. Tests, inspections, and corrective actions should be performed in the order listed.

This manual cannot list all malfunctions that may occur, or all tests, inspections, and corrective actions. If a malfunction is not listed or is not corrected by listed corrective action, notify your supervisor.

EXPLANATION OF COLUMNS

MALFUNCTION - Visual or operational indication that something is wrong with the dump truck.

TEST OR INSPECTION - Procedure to isolate the problem to a component or system.

CORRECTIVE ACTION - Procedure to correct the problem.

SYMPTOM INDEX

This Symptom Index is provided as a quick way to get you to that part of the troubleshooting table that will help you solve the problem you are having. It lists all malfunctions covered in the troubleshooting table.

To use the Symptom Index, find the problem that you have with the dump truck in the index. Then go to the page indicated for the troubleshooting procedures to help you find and correct the problem.

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ORGANIZATIONAL TROUBLESHOOTING

The following table provides procedures Organizational Maintenance can use to find and fix dump truck malfunctions.

NOTE

Perform Operators PMCS and Troubleshooting (TM 5-3805-254-10) and Organizational PMCS (page 2-21) before performing Organizational Troubleshooting.

Observe all WARNINGS and CAUTIONS to ensure safety of personnel and to prevent damage to equipment.

Scrape all painted surfaces to bare metal before connecting test leads to ensure correct mulimeter readings.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

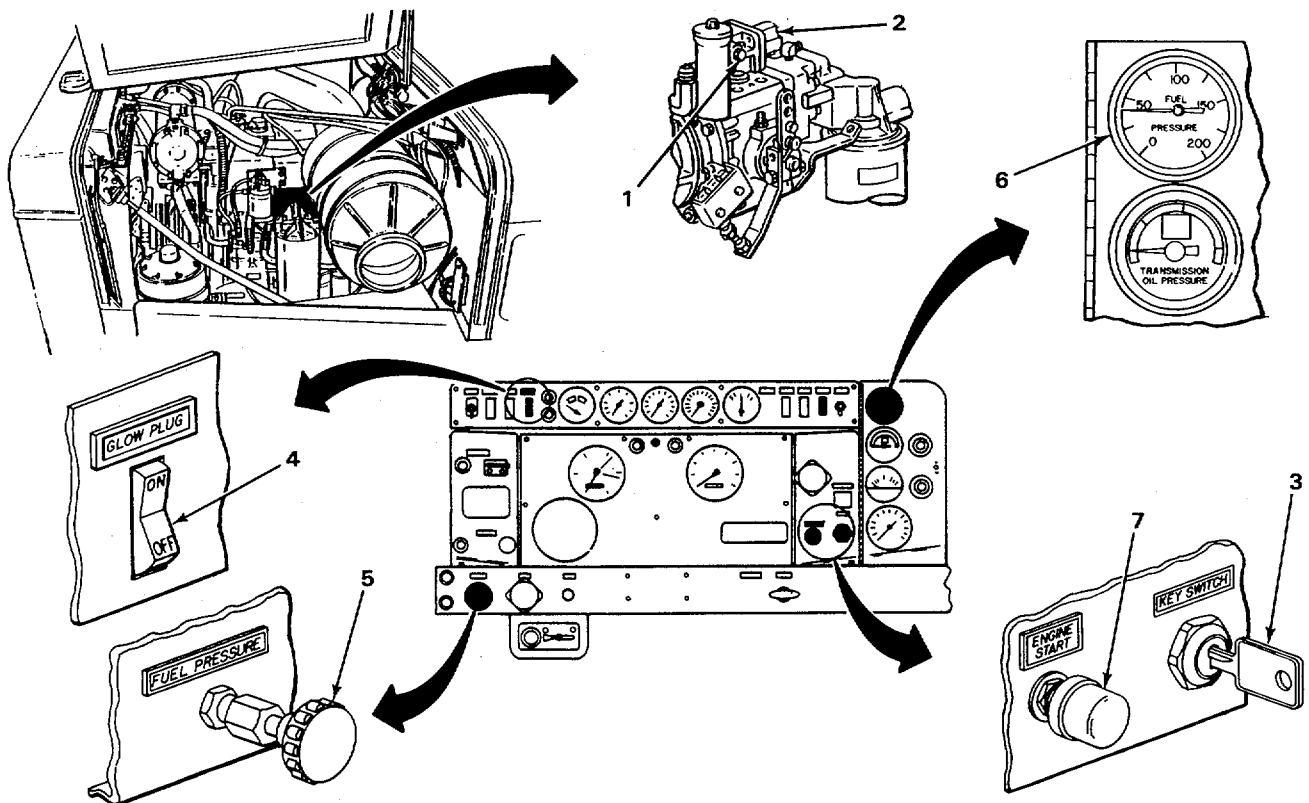
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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ENGINE

1. ENGINE CRANKS BUT FAILS TO START BELOW 50°F (18°C).

Step 1. Turn manual override thumbscrew (1) on fuel solenoid (2) fully clockwise. Rotate KEY SWITCH (3) clockwise to on position. Push GLOW PLUG ON/OFF switch (4) to ON position. Wait 30 seconds and pump preheater primer pump (5) until FUEL PRESSURE gage (6) reads above 40 psi. Press ENGINE START button (7) for 20 seconds. Press GLOW PLUG ON/OFF switch (4) to OFF position and rotate KEY SWITCH (3) counterclockwise to off position.

- a. If engine did not start, go to step 2.
- b. If engine starts, turn manual override thumbscrew (1) counterclockwise to stop and go to Malfunction 2, ENGINE CRANKS BUT FAILS TO START ABOVE 50°F (18°C) (page 2-68).



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

1. ENGINE CRANKS BUT FAILS TO START BELOW 50°F (18°C) - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

Step 2. Set multimeter to 20 vdc scale. Connect red test lead to glow plug terminal (1) and black test lead to ground. Have assistant press GLOW PLUG ON/OFF switch (2) to ON position. Check for 11 to 13 vdc on multimeter. Have assistant push GLOW PLUG ON/OFF switch (2) to OFF position. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc go to step 4.

b. If multimeter reads 11 to 13 vdc, go to step 3.

Step 3. Check glow plug (3) as follows: Using 3/8-inch open-end wrench, unscrew and take off nut (4) and wire (5) from glow plug terminal (1). Using 7/8-inch open-end wrench, unscrew and take glow plug (3) out of housing (6). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to glow plug terminal (1) and black test lead to glow plug body (7). Check for test lead to glow plug body (7). Check for 0 ohms on multimeter. Disconnect test leads.

a. If multimeter reads no continuity, replace glow plug (page 2-512).

b. If multimeter reads 0 ohms, screw glow plug (3) into housing (6) and tighten using 7/8-inch open-end wrench. Place wire (5) in position and screw nut (4) on to glow plug terminal (1). Tighten using 3/8-inch open-end wrench and go to step 19.

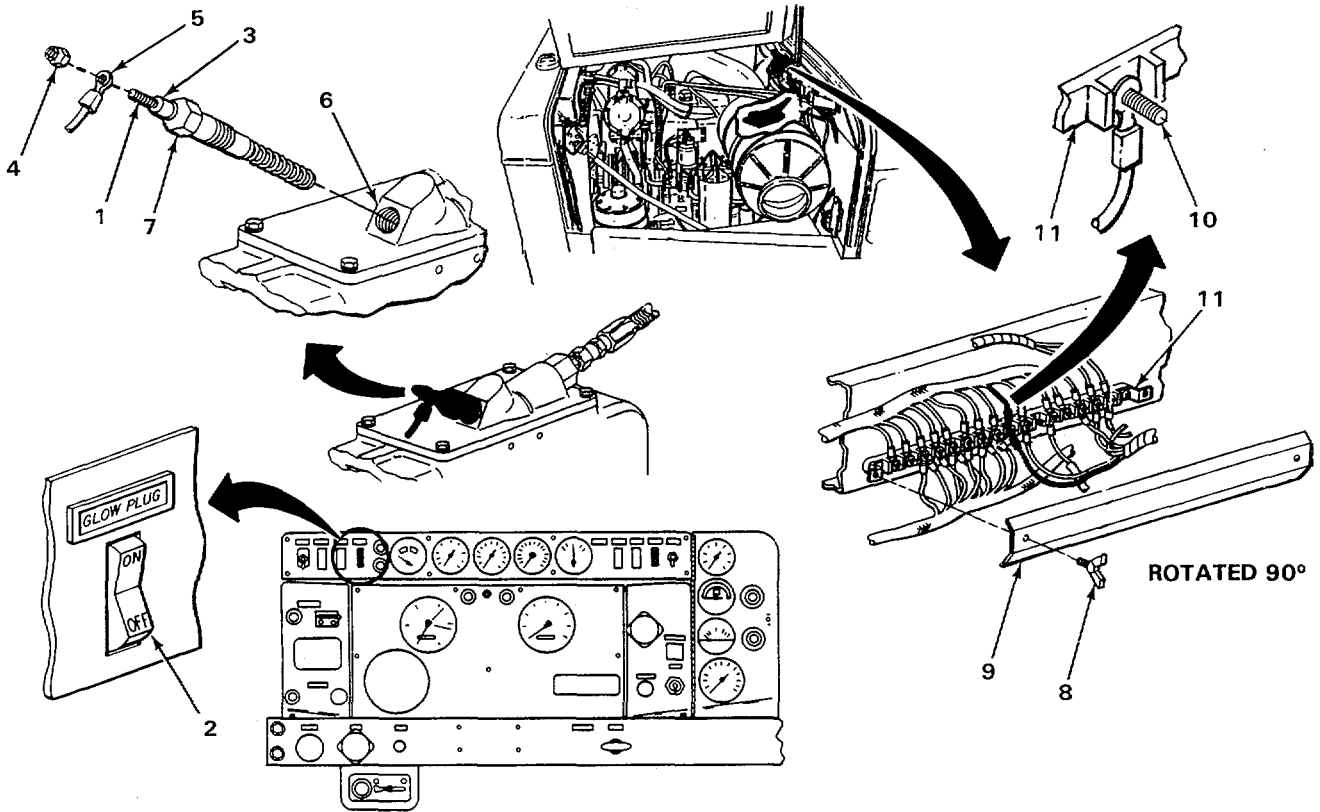
Step 4. Unscrew and take out two wing screws (8) and take off junction box cover (9). Set multimeter to 20 vdc scale. Connect red test lead to terminal stud (10) on junction box (11) and black test lead to ground. Have assistant press GLOW PLUG ON/OFF switch (2) to ON position. Check for 11 to 13 vdc on multimeter. Have assistant press GLOW PLUG ON/OFF switch (2) to OFF position. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, go to step 6.

b. If multimeter reads 11 to 13 vdc, go to step 5.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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TA243750

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

1. ENGINE CRANKS BUT FAILS TO START BELOW 500F (180C) - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

- Step 5. Inspect 18A-10 wire (1) for loose, corroded, frayed, or broken condition.
- a. If 18A-10 wire (1) is loose at terminal stud (2), tighten nut (3) using 3/8-inch open-end wrench.

WARNING

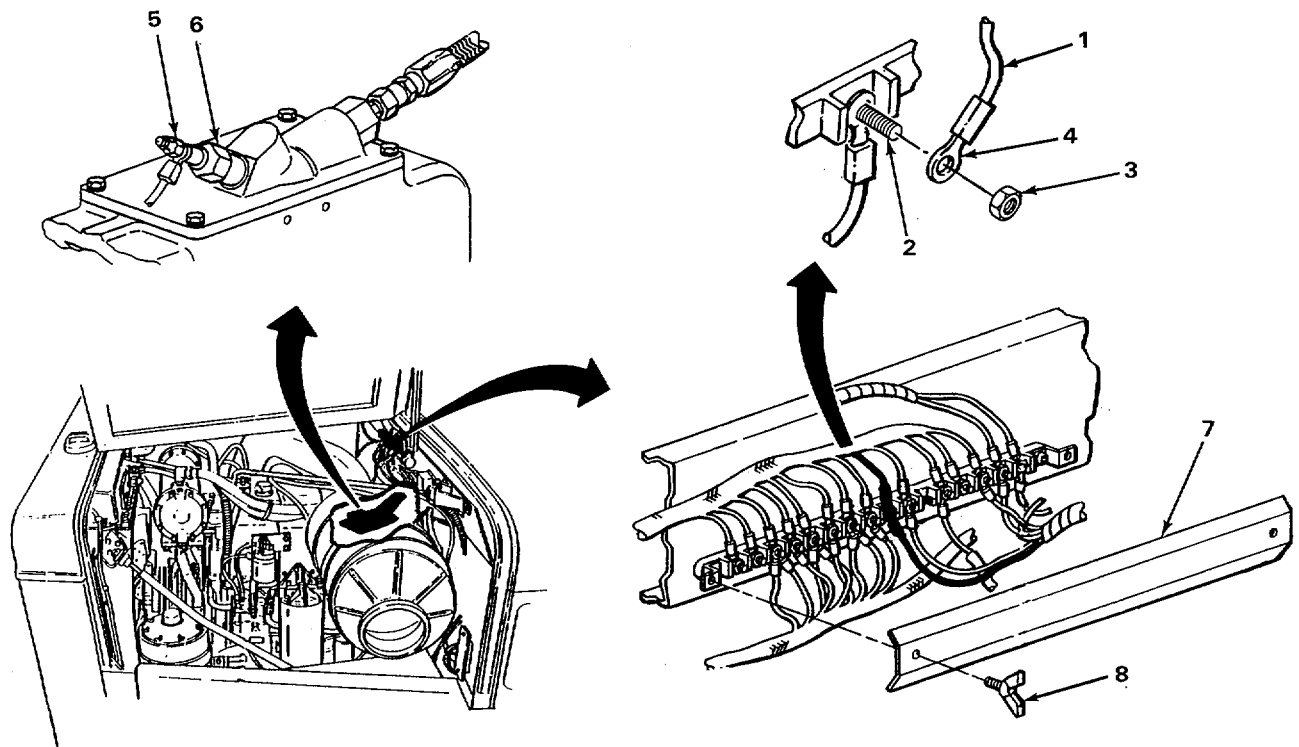
Safety goggles must be worn when using wire brush. Flying dust or metal particles could cause eye injury.

- b. If wire terminal (4) is corroded, unscrew and take off nut (3) and wire (1) from terminal stud (2) using 3/8-inch open-end wrench. Clean wire (1) and terminal stud (2) using wire brush and go to step 6.
 - c. If 18A-10 wire (1) is frayed or broken, repair (page 2-424).
 - d. If 18A-10 wire (1) is not loose, corroded, frayed, or broken go to step 6.
- Step 6. Test 18A-10 wire (1) as follows: Disconnect batteries (page 2-424). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (4) and black test lead to wire terminal (5) on glow plug (6). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, 18A-10 wire (1) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

- b. If multimeter reads 0 ohms, place wire terminal (4) in position and screw nut (3) onto terminal stud (2) and tighten using 3/8-inch open-end wrench. Place junction box cover (7) in position and screw on two wing screws (8) and tighten. Connect batteries (page 2-424) and go to step 7.



TA243751

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

1. ENGINE CRANKS BUT FAILS TO START BELOW 50°F (18°C) - CONTINUED.

WARNING

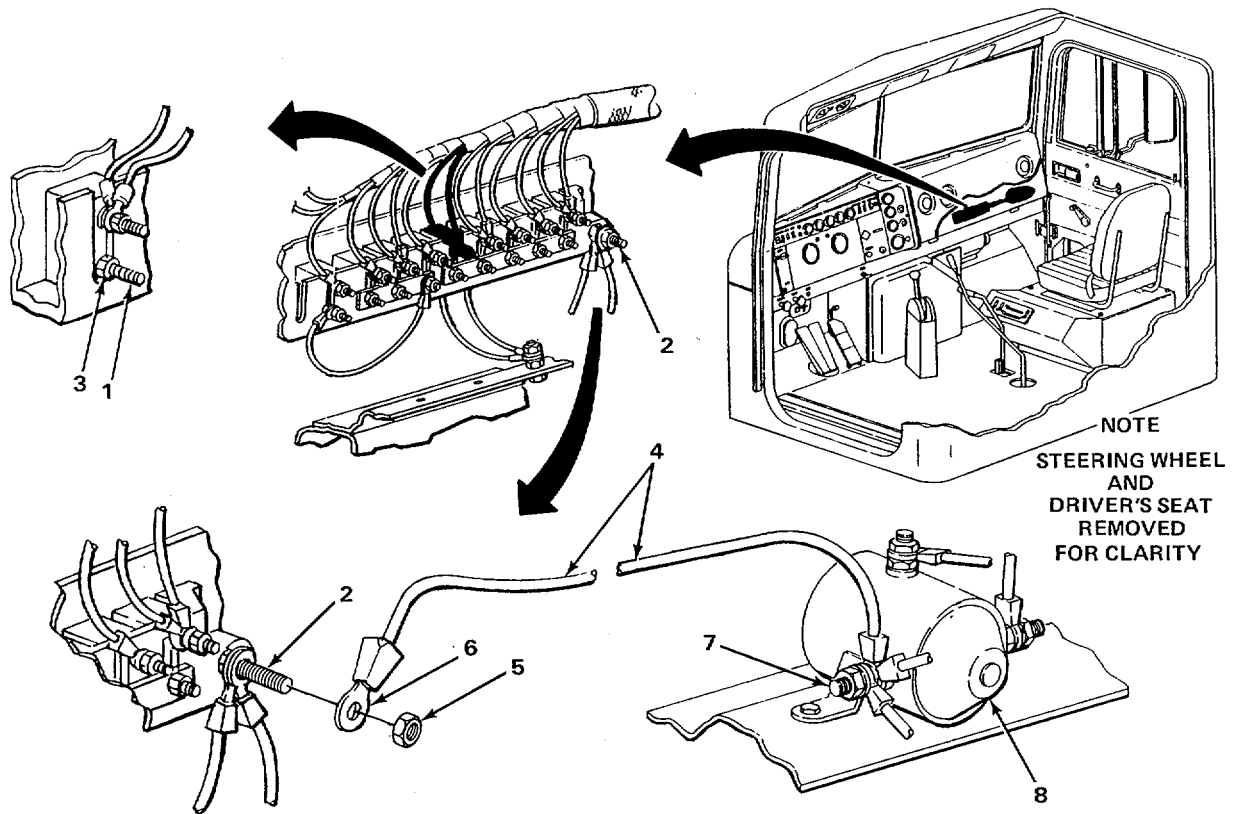
Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

- Step 7. Remove instrument panel pad (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to glow plug circuit breaker stud (1) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, go to step 8.
 - b. If multimeter reads 11 to 13 vdc, go to step 11.
- Step 8. Set multimeter to 20 vdc scale. Connect red test lead to circuit breaker strip feed stud (2) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, go to step 10.
 - b. If multimeter reads 11 to 13 vdc, go to step 9.
- Step 9. Check circuit breaker stud (1) for loose condition.
- If circuit breaker is loose, disconnect batteries (page 2-424). Using 3/8-inch open-end wrench, tighten nut (3). Connect batteries (page 2-424) and go to step 11.
- Step 10. Test 8 wire (4) as follows: Disconnect batteries (page 2-424). Using 1/2-inch open-end wrench, unscrew and take off nut (5) and 8 wire (4). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (6) and black test lead to terminal (7) on magnetic switch (8). Check for 0 ohms on multimeter. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

- a. If multimeter reads no continuity, 8 wire (4) must be replaced. Notify Direct Support Maintenance.
- b. If multimeter reads 0 ohms, clean wire terminal (6) and circuit breaker terminal stud (2) using wire brush. Place wire terminal (6) in position and screw nut (5) on to circuit breaker terminal stud (2) and tighten using 1/2-inch open-end wrench. Connect batteries (page 2-424) and go to step 11.



TA243752

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

1. ENGINE CRANKS BUT FAILS TO START ABOVE 50°F (18°C) - CONTINUED.

WARNING

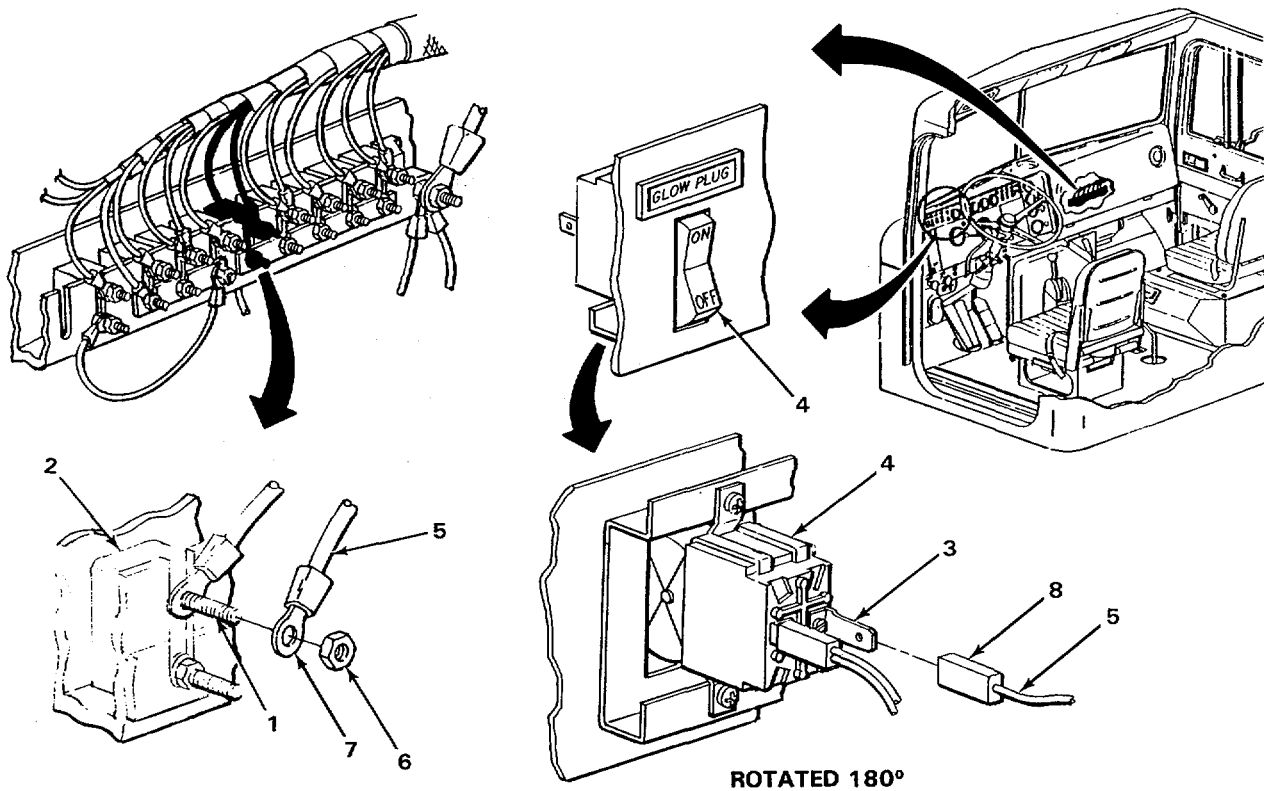
Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

- Step 11. Set multimeter to 20 vdc scale. Connect red test lead to circuit breaker terminal (1) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, replace glow plug circuit breaker (2) (page 2-756).
 - b. If multimeter reads 11 to 13 vdc, go to step 12.
- Step 12. Open upper instrument panel (page 2-424). Using multimeter to 20 vdc scale. Connect red test lead to input terminal (3) on rear of GLOW PLUG ON/OFF switch (4). Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, go to step 13.
 - b. If multimeter reads 11 to 13vdc, go to step 15.
- Step 13. Disconnect batteries (page 2-424). Inspect 18 wire (5) from GLOW PLUG ON/OFF switch (4) to glow plug circuit breaker (2) for loose, corroded, frayed, or broken condition.
- a. If 18 wire (5) is loose at glow plug circuit breaker (2), tighten nut (6) using 3/8-inch open-end wrench.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

- b. If wire terminal (7) is corroded, unscrew and take off nut (6) and 18 wire (5) from glow plug circuit breaker terminal (1) using 3/8-inch open-end wrench. Pull wire connector (8) off input terminal (3) on GLOW PLUG ON/OFF switch (4) and clean wire terminal (7) and wire connector (8) using wire brush. Go to step 14.
- c. If 18 wire (5) is frayed or broken, repair (page 2-424).
- d. If 18 wire (5) is not loose, corroded, frayed, or broken, go to step 14.



TA243753

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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1. ENGINE CRANKS BUT FAILS TO START BELOW 50°F (18°C) - CONTINUED.

WARNING

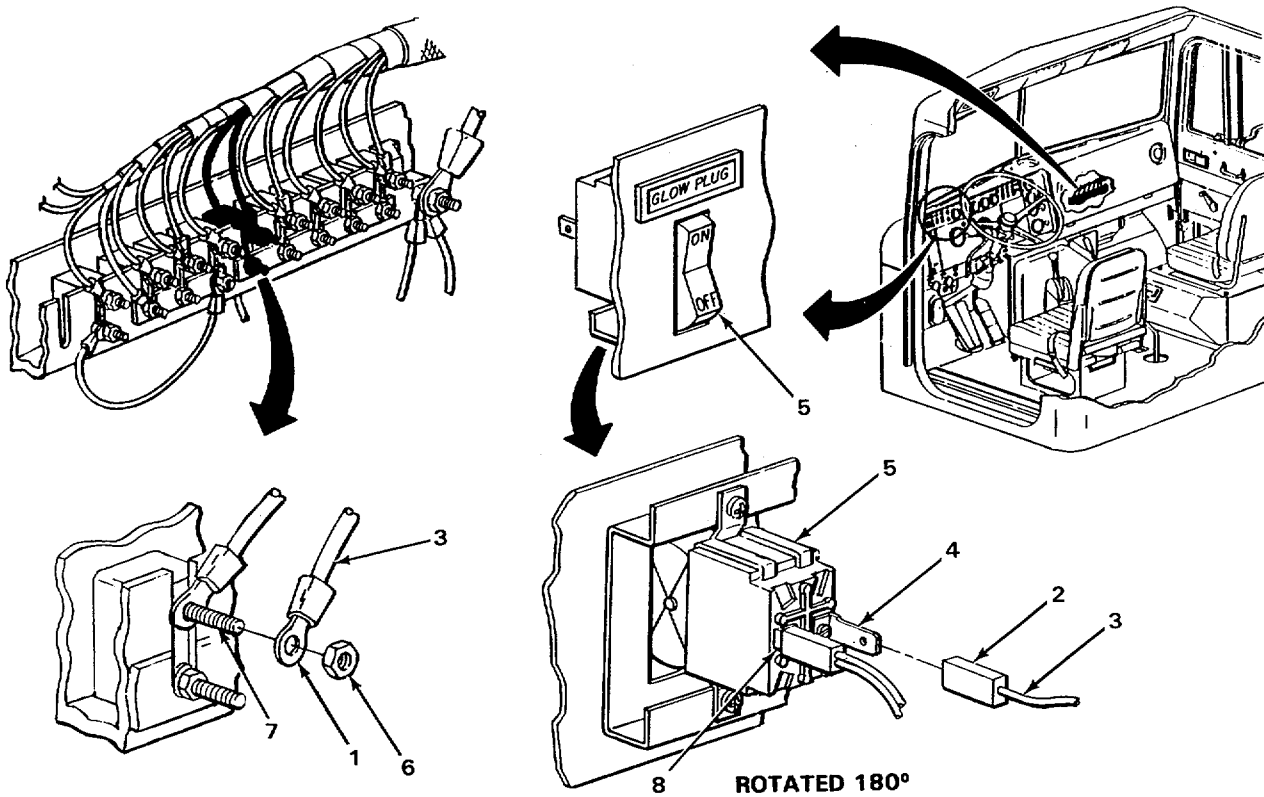
Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

- Step 14. Test 18 wire as follows: Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (1) and black test lead to wire connector (2). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, 18 wire (3) must be replaced. Notify Direct Support Maintenance.
 - b. If multimeter reads 0 ohms, push wire connector (2) on to input terminal (4) and rear of GLOW PLUG ON/OFF switch (5). Place wire terminal (1) in position and screw nut (6) on to glow plug circuit breaker terminal (7) and tighten using 3/8-inch open-end wrench. Connect batteries (page 2-424) and go to step 15.
- Step 15. Check GLOW PLUG ON/OFF switch (5) as follows: Set multimeter to 20 vdc scale. Connect red test lead to output terminal (8) on rear of GLOW PLUG ON/OFF switch (5) and black test lead to ground. Press GLOW PLUG ON/OFF switch (5) to ON position. Check for 11 to 13 vdc on multimeter. Push GLOW PLUG ON/OFF switch (5) to OFF position. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If multimeter does not read 11 to 13 vdc, replace GLOW PLUG ON/OFF switch (5) (page 2-734). Install instrument panel pad (page 2-424) and close upper instrument panel (page 2-424).
- b. If multimeter reads 11 to 13vdc, install instrument panel pad (page 2-424) and go to step 16.



TA243754

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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1. ENGINE CRANKS BUT FAILS TO START BELOW 50°F (18°C) - CONTINUED.

WARNING

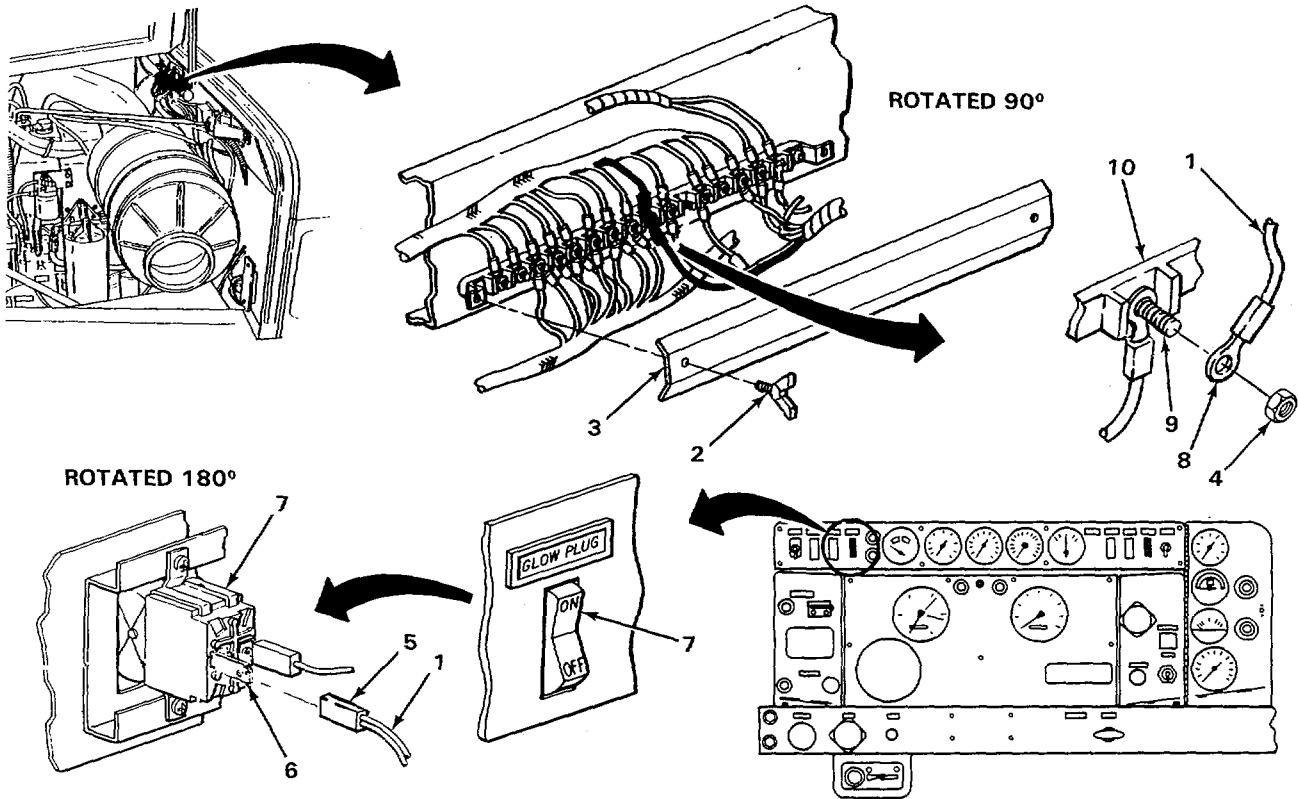
Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

- Step 16. Check 18A-12 wire (1) as follows: Disconnect batteries (page 2-424). Open left side hood panel (page 2-424). Unscrew and take out two wing screws (2) and take off junction box cover (3). Using 3/8-inch open-end wrench, unscrew and take off nut (4) and 18A-12 wire (1). Pull wire connector (5) off output terminal (6) on GLOW PLUG ON/OFF switch (7). Set multimeter to ohms scale adjust to 0 ohms. With assistant, connect red test lead to wire terminal (8) and black test lead to wire connector (5). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, 18A-12 wire (1) must be replaced. Notify Direct Support Maintenance.
 - b. If multimeter reads 0 ohms, push wire connector (5) on to output terminal (6) on GLOW PLUG ON/OFF switch (7). Place wire terminal (8) in position and screw nut (4) on to terminal stud (9) on junction block (10) and tighten using 3/8-inch open-end wrench.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- c. Place junction box cover (3) in position and screw on two wing screws (2) and tighten. Close upper instrument panel (page 2-424). Close left side hood panel (page 2-424). Connect batteries (page 2-424).



TA243755

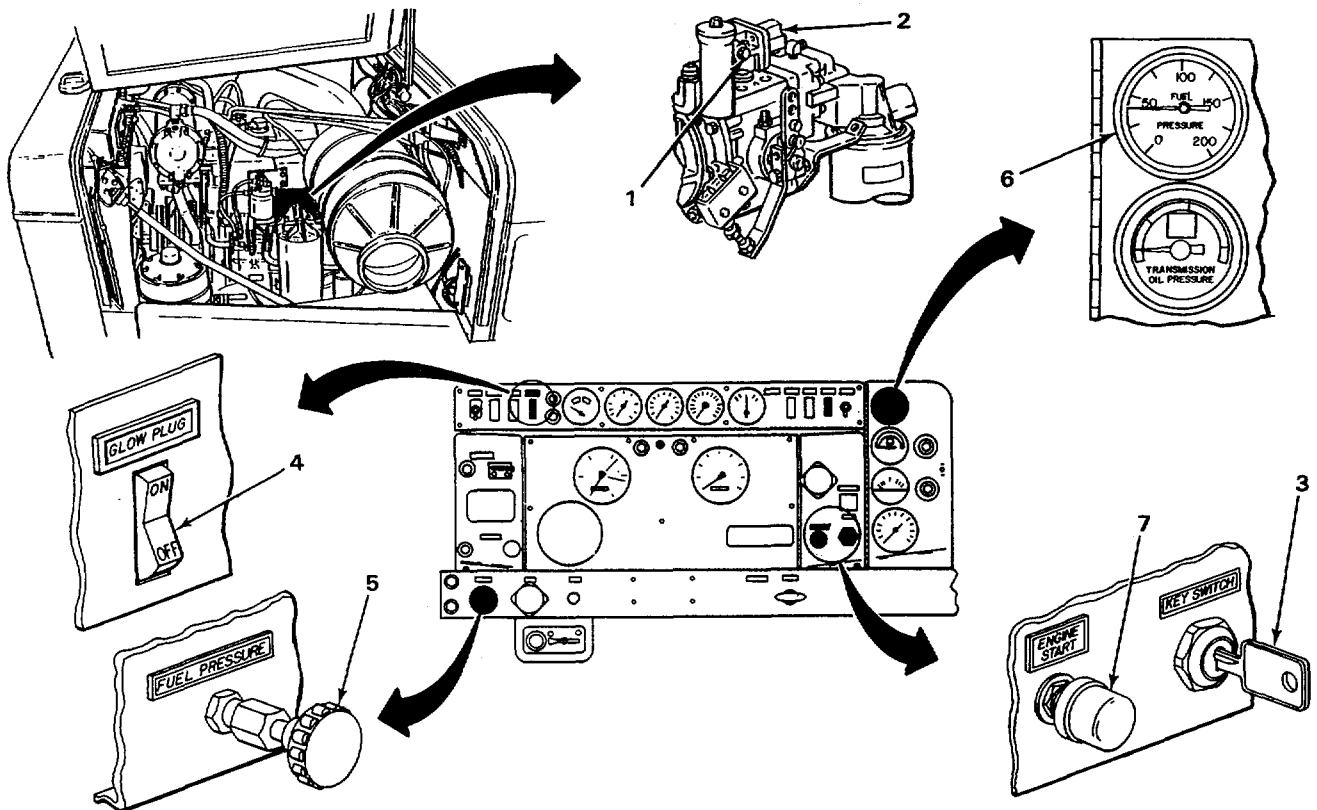
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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1. ENGINE CRANKS BUT FAILS TO START BELOW 50°F(180C) - CONTINUED.

Step 17. Turn manual override thumbscrew (1) on fuel solenoid (2) fully clockwise to stop. Rotate KEY SWITCH (3) clockwise to on position. Push GLOW PLUG ON/OFF switch (4) to ON position. Wait 30 seconds and pump preheater primer pump (5) until FUEL PRESSURE gage (6) reads above 40 psi. Press ENGINE START button (7) for 20 seconds. Press GLOW PLUG ON/OFF switch (4) to OFF position and rotate KEY SWITCH (3) counterclockwise to off position.

If engine did not start, go to step 18.



TA243756

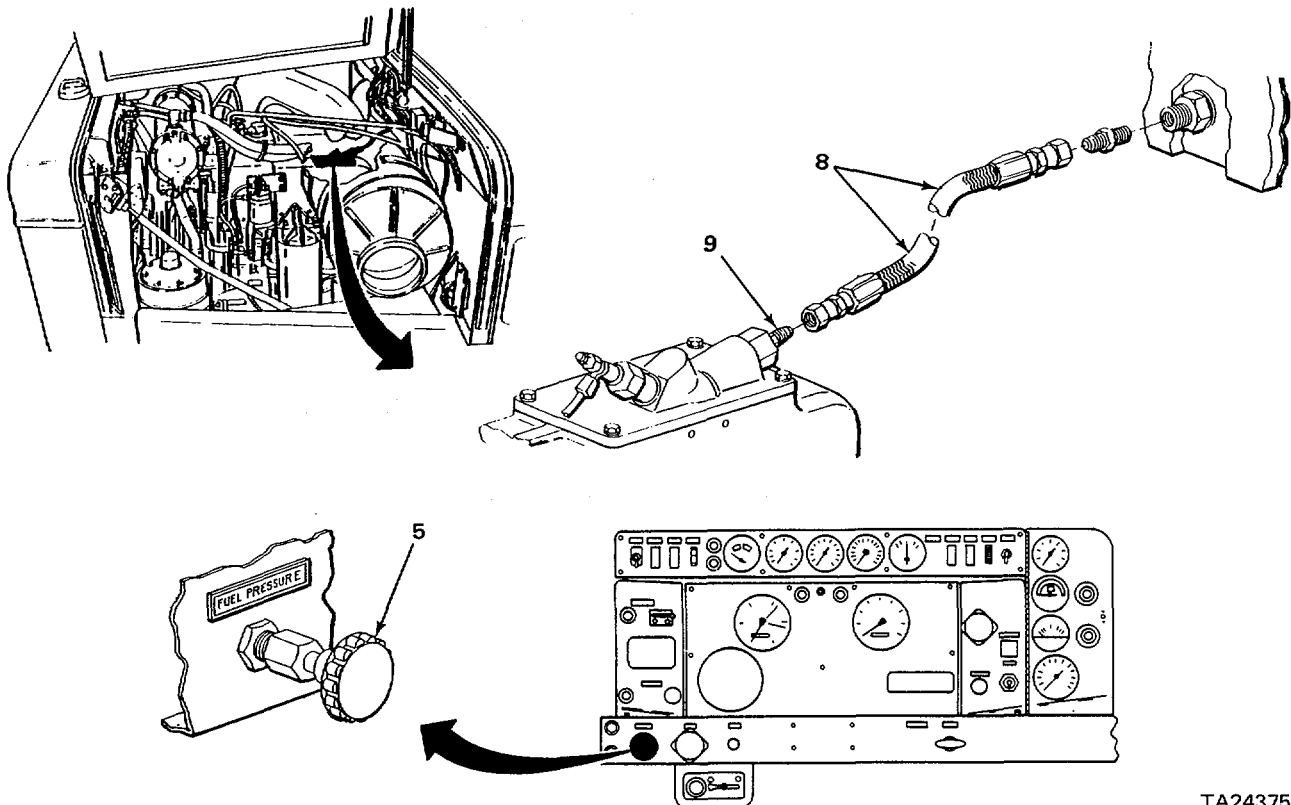
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury to personnel.

- Step 18. Check preheater primer pump (5) as follows: Using 9/16-inch and 7/16-inch open-end wrenches, unscrew and take pressure hose (8) off fitting (9). Put pressure hose (8) into a container and have assistant pump preheater primer pump (5). Check for a strong flow of fuel with no air bubbles. Get rid of drained fuel (page 2-424).
- a. If fuel flow is weak or air bubbles are present, go to step 19.
 - b. If fuel flow is strong and no air bubbles are present, go to step 23.



TA243757

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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1. ENGINE CRANKS BUT FAILS TO START BELOW 50°F (18°C) - CONTINUED.

WARNING

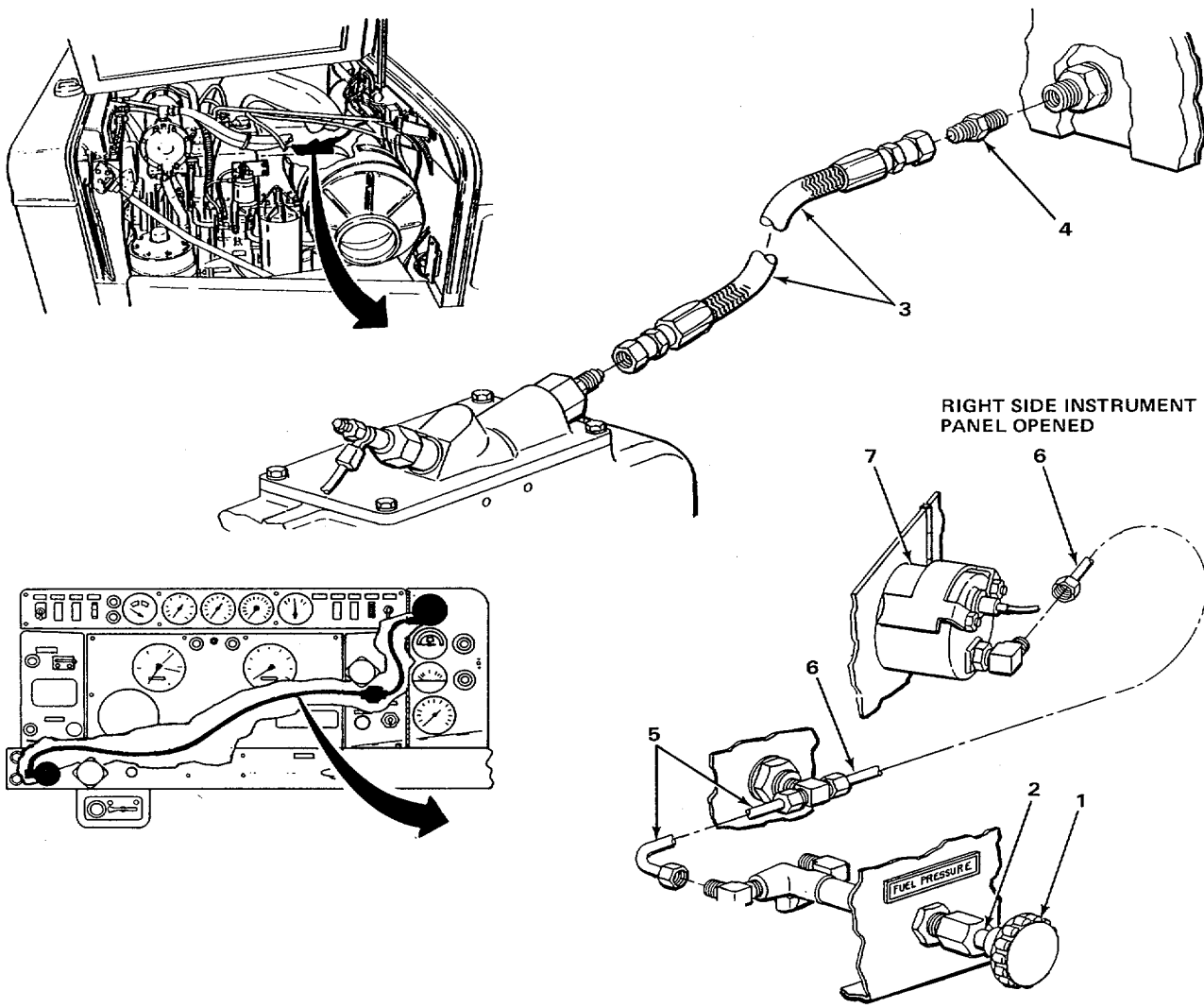
Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury to personnel.

- Step 19. Check preheater primer pump (1) for cracks in body or seepage from plunger stem (2).
- If preheater primer pump (1) has damage or see page, replace (page 2-484).
 - If preheater primer pump (1) has no damage or see page, go to step 20.
- Step 20. Check pressure hose (3) for cracked, broken, or loose condition.
- If pressure hose (3) is loose at bulkhead fitting (4), tighten using 9/16-inch and 7/16-inch open-end wrenches.
 - If pressure hose (3) is cracked or broken, it must be replaced (page 2-446).
 - If pressure hose (3) is not cracked, broken, or loose, go to step 21.
- Step 21. Check pressure hoses (5 and 6) for cracked, broken, or loose condition.
- If pressure hoses (5 and 6) are loose, tighten using 9/16-inch open-end wrench.
 - If pressure hoses (5 and 6) are cracked or broken, they must be replaced (page 2-446)
 - If pressure hoses (5 and 6) are not cracked, broken, or loose, go to step 22.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 22. Check FUEL PRESSURE gage (7) for cracked, broken, or leaking condition.
- a. If FUEL PRESSURE gage (7) is cracked, broken, or leaking, replace (page 2-1357).
 - b. If FUEL PRESSURE gage (7) is not cracked, broken, or leaking, go to step 23.



TA243758

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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1. ENGINE CRANKS BUT FAILS TO START BELOW 50°F (18°C) - CONTINUED.

WARNING

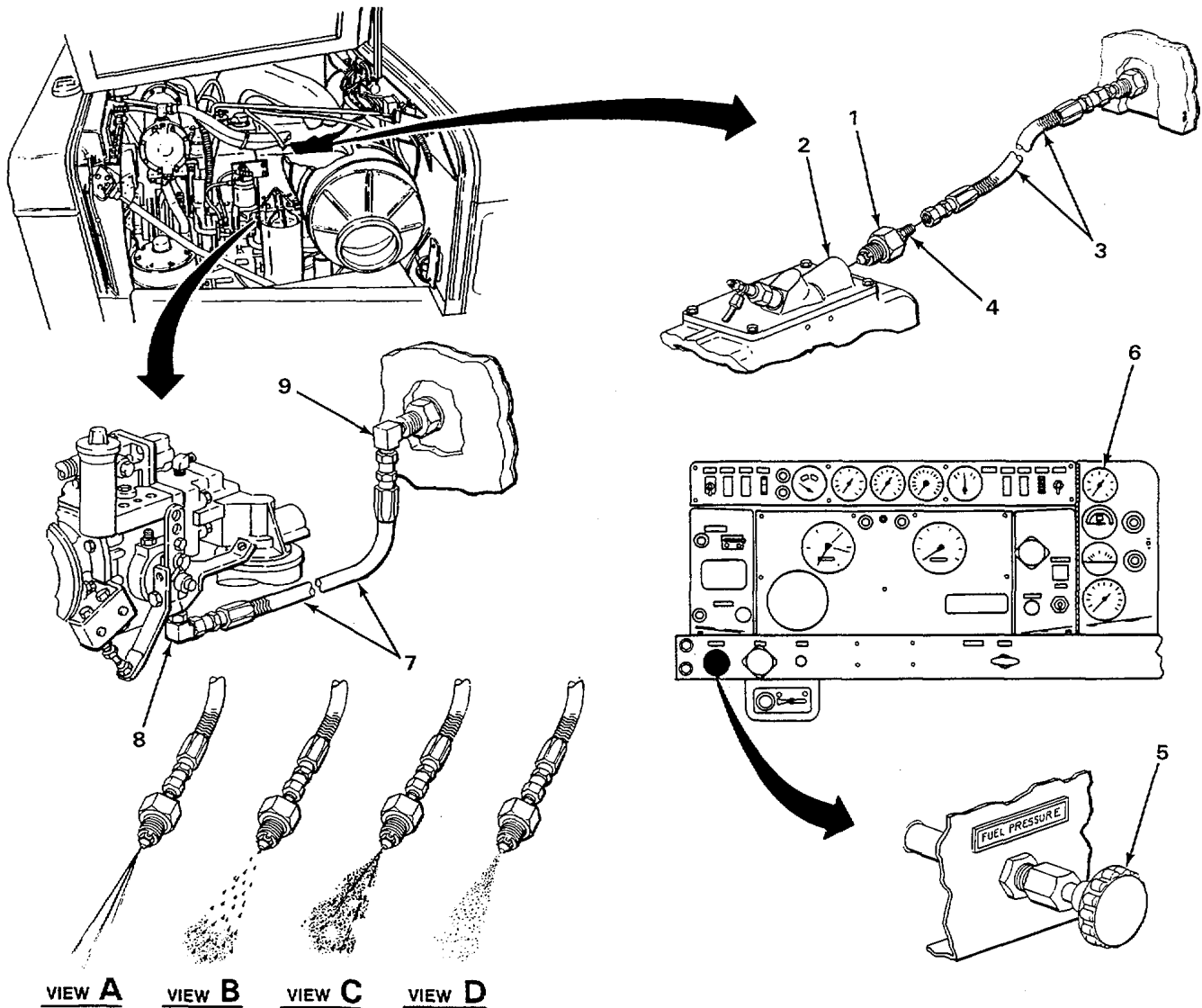
Diesel fuel burns easily. Do not smoke or allow flame nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury to personnel.

Direct spray from preheater nozzle away from you and other personnel. Keep hands away from front of preheater nozzle. Failure to observe these precautions could cause serious injury to personnel.

- Step 23. Check preheater nozzle (1) as follows: Using 1 1/4-inch open-end wrench, unscrew and take preheater nozzle (1) out of housing (2). Screw on and tighten pressure hose (3) to fitting (4) using 9/16-inch and 7/16-inch open-end wrenches. Point preheater nozzle (1) into a container and have assistant pump preheater primer pump (5) until FUEL PRESSURE gage (6) reads 40 to 80 psi and observe spray pattern from preheater nozzle (1) (see illustration). Get rid of drained fuel (page 2-424).
- If fuel flow is a solid stream (view A), an uneven cut-off dribble (view B), or an uneven off-center spray (view C), replace preheater nozzle (1) (page 2-510).
 - If fuel flow is completely restricted, replace preheater nozzle (1) (page 2-510).
 - If fuel flow is a fine cone-shaped even mist (view D), unscrew and take pressure hose (3) off fitting (4) using 9/16-inch and 1/16-inch open-end wrenches. Screw preheater nozzle (1) into housing (2) and tighten using 1 1/4-inch open-end wrench. Screw pressure hose (3) on to fitting (4) and tighten using 9/16-inch and 7/16-inch open-end wrenches. Go to step 24.
- Step 24. Check supply hose (7) from fuel pump fitting (8) to bulkhead fitting (9) for loose, cracked, or broken condition.
- If supply hose (7) is loose at fuel pump fitting (8), tighten using 9/16-inch open-end wrench.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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|--|--|--|
| | | <p>b. If supply hose (7) is loose at bulkhead fitting (9), tighten using 9/16-inch open-end wrench.</p> <p>c. If supply hose (7) is cracked or broken, it must be replaced (page 2-446).</p> <p>d. If supply hose (7) is not loose, cracked, or broken, go to step 25.</p> |
|--|--|--|



TA243759

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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1. ENGINE CRANKS BUT FAILS TO START BELOW 50°F (18°C) - CONTINUED.

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury to personnel.

Step 25. Check supply hose (1) from bulkhead fitting (2) to preheater primer pump (3) for loose, cracked, or broken condition.

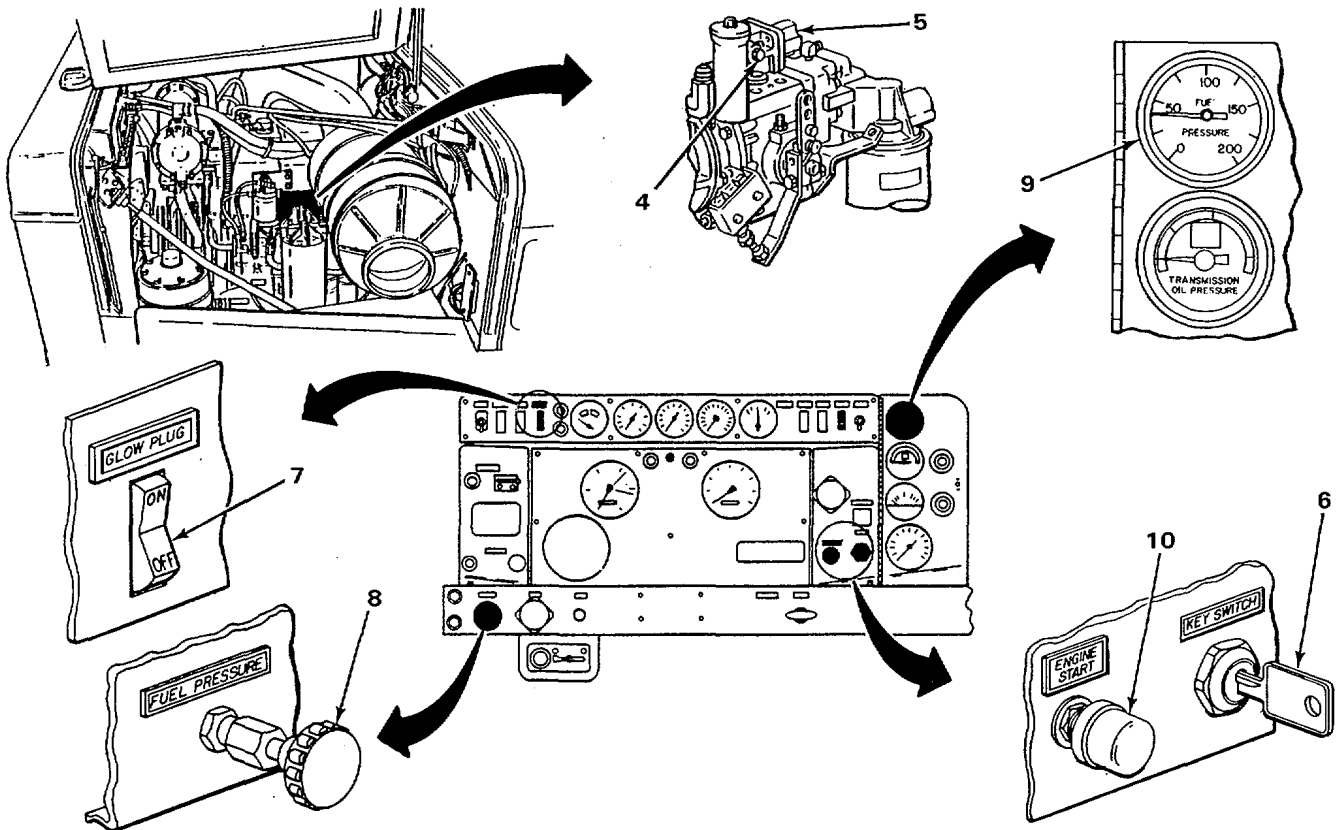
- a. If supply hose (1) is loose at bulkhead fitting (2), tighten using 9/16-inch open-end wrench.
- b. If supply hose (1) is loose at preheater primer pump (3), tighten using 9/16-inch open-end wrench.
- c. If supply hose (1) is cracked or broken, it must be replaced (page 2-446).
- d. If supply hose (1) is not loose, cracked, or broken, go to step 26.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 26. Turn manual override thumbscrew (4) on fuel solenoid (5) fully clockwise. Rotate KEY SWITCH (6) clockwise to on position. Push GLOW PLUG ON/OFF switch (7) to ON position. Wait 30 seconds, then pump preheater primer pump (3) until FUEL PRESSURE gage (8) reads above 40 psi. Press ENGINE START button (9) for 15 seconds. Press GLOW PLUG ON/OFF switch (7) to OFF position and rotate KEY SWITCH (6) counterclockwise to off position.

If engine did not start, go to Malfunction 2, ENGINE CRANKS BUT FAILS TO START ABOVE 50°F (18°C) (page 2-68).



TA243761

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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2. ENGINE CRANKS BUT FAILS TO START ABOVE 50°F (18°C).

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury to personnel.

CAUTION

Do not crank engine for more than 20 seconds. Allow starter motor to cool for 2 minutes between cranking attempts. Cranking too long can overheat and damage starter motor.

Step 1. Unscrew and take off filler cap (1) and check fuel level in front fuel tank (2).

- a. If fuel level is low, fill and prime fuel system (page 2-77).
- b. If fuel level is sufficient, go to step 2.

Step 2. Check fuel in front fuel tank (2) for water or dirt contamination.

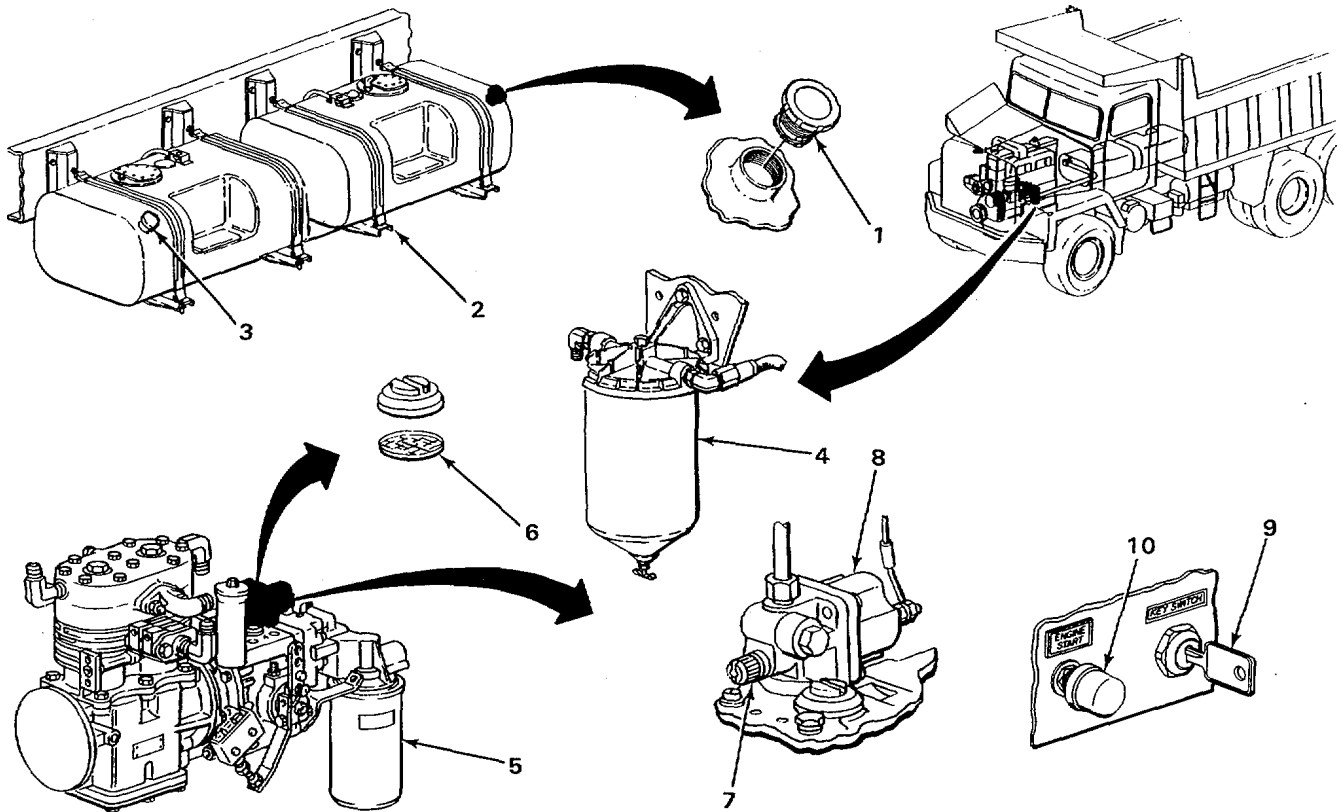
- a. If fuel is contaminated, drain and fill front and rear fuel tanks (2 and 3), replace primary fuel filter (4) (page 2-466), secondary fuel filter (5) (page 2-476), and fuel pump fuel filter (6) (page 2-477). Prime fuel system (page 2-446).
- b. If fuel is not contaminated, install filler cap (1) and go to step 3.

Step 3. Turn manual override thumbscrew (7) on fuel solenoid (8) fully clockwise to stop. Rotate KEY SWITCH (9) clockwise to on position and press ENGINE START button (10) for 15 seconds.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If engine does not start, rotate KEY SWITCH (9) counterclockwise to off position and go to step 4.
- b. If engine starts, turn manual override thumbscrew (7) counterclockwise to shut down engine. Rotate KEY SWITCH (9) counterclockwise to off position, check fuel solenoid (8), and go to step 8.



TA243762

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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2. ENGINE CRANKS BUT FAILS TO START ABOVE 50°F (18°C) CONTINUED.

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury to personnel.

CAUTION

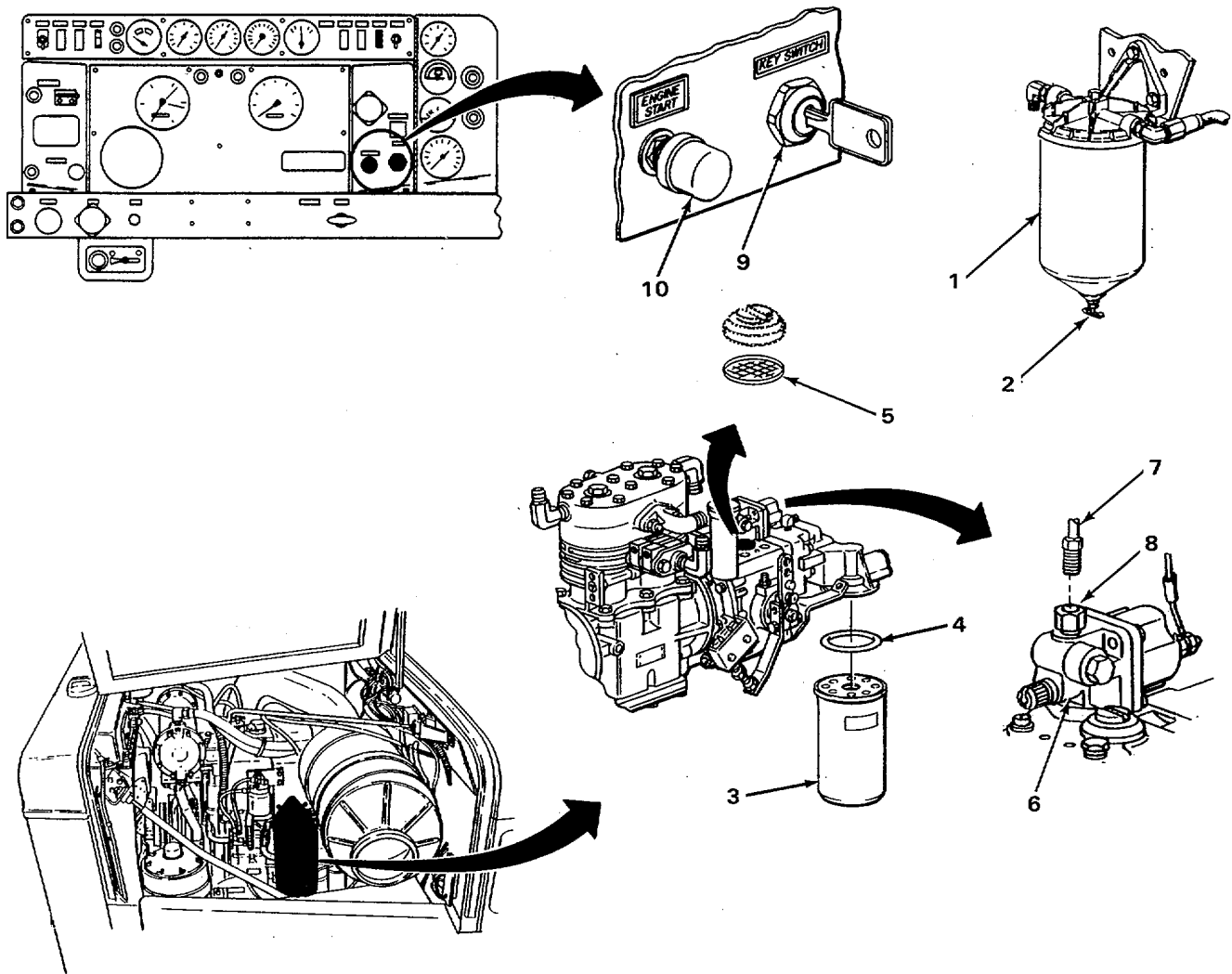
Do not crank engine for more than 20 seconds. Allow starter motor to cool for 2 minutes between cranking attempts. Cranking too long can overheat and damage starter motor.

- Step 4. Check primary fuel filter (1) for water or dirt contamination as follows: Place a see-through container underneath draincock (2). Turn draincock (2) counterclockwise and allow fuel to drain into see-through container. Turn draincock (2) clockwise to close. Observe condition of fuel. Get rid of drained fuel (page 2-424).
- a. If fuel is contaminated, replace primary fuel filter (1) (page 2-466), secondary fuel filter (3) (page 2-476), and fuel pump fuel filter (5) (page 2-477). Prime fuel system (page 2-446).
 - b. If fuel is not contaminated, go to step 5.
- Step 5. Unscrew and take off secondary fuel filter (3) and gasket (4), and check for low fuel level.
- a. If fuel level is low, fill secondary fuel filter (3), install new gasket (4), and screw on and tighten. Prime fuel system (page 2-446).
 - b. If fuel level is high, install secondary fuel filter (3) and new gasket (4), and screw on and tighten. Go to step 6.
- Step 6. Check for fuel at fuel solenoid (6) as follows: Using 9/16-inch and 1/2-inch open-end wrenches, unscrew and take off fuel line (7). Cover fitting (8) with wiping rag. Have assistant rotate KEY SWITCH (9) clockwise to on position and press ENGINE START button (10) for 5 seconds. Check for steady fuel flow from fuel solenoid (6). Have assistant rotate KEY SWITCH (9) counterclockwise to off position. Take wiping rag off fitting (8).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If there is little or no fuel flow from fuel solenoid (6), fuel solenoid (6) must be replaced. Notify Direct Support Maintenance.
- b. If there is steady fuel flow from fuel solenoid (6), screw on and tighten fuel line (7) using 9/16-inch and 1/2-inch open-end wrenches. Go to step 7.



TA243763

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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2. ENGINE CRANKS BUT FAILS TO START ABOVE 50°F (18°C) - CONTINUED

CAUTION

Do not crank engine for more than 20 seconds. Allow starter motor to cool for 2 minutes between cranking attempts. Cranking too long can overheat and damage starter motor.

- Step 7 Check AIR CLEANER VACUUM gage (1) reading as follows: Rotate KEY SWITCH (2) clockwise to on position and press ENGINE START button (3) for 20 seconds. Check for less than 25 inches of water on AIR CLEANER VACUUM gage (1). Rotate KEY SWITCH (2) counterclockwise to off position.
- a If AIR CLEANER VACUUM gage (1) reading is more than 25 inches of water, replace air cleaner element (page 2-452).
 - b If AIR CLEANER VACUUM gage (1) reading is less than 25 inches of water, notify Direct Support Maintenance.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

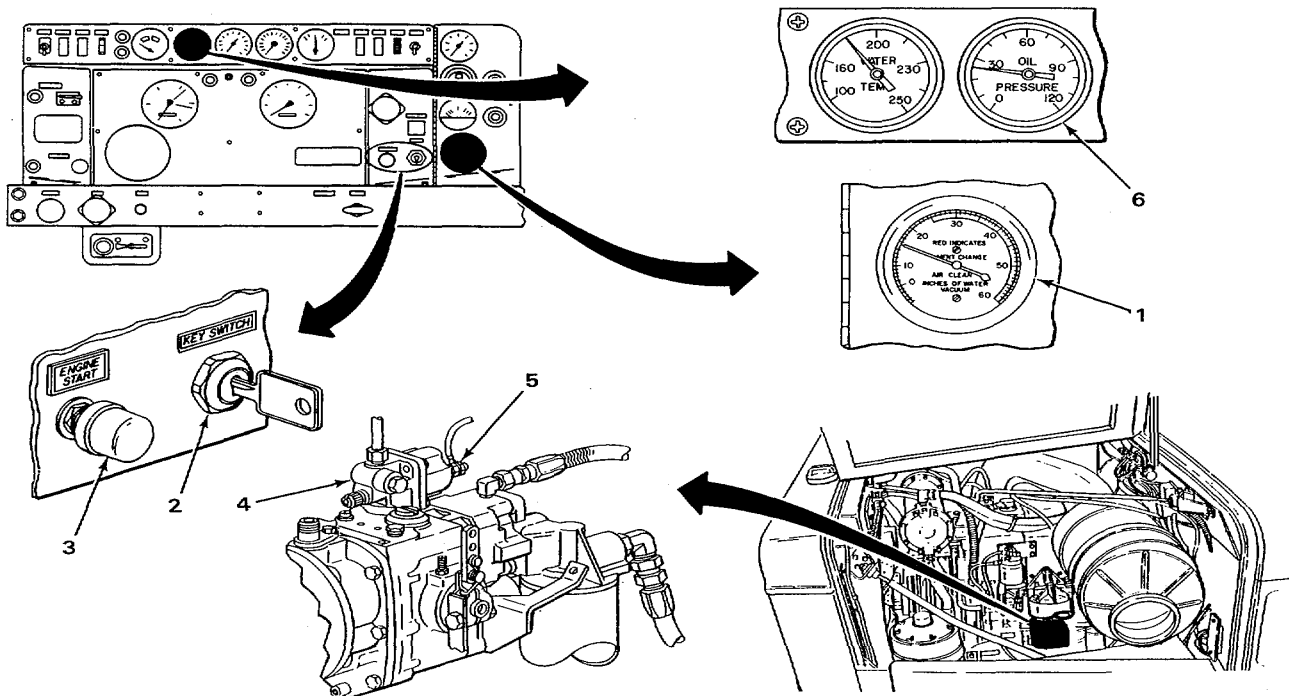
- Step 8 Check fuel solenoid (4) for 11 to 13 vdc as follows: Set multimeter to 20 vdc scale. Connect red test lead to fuel solenoid terminal stud (5) and black test lead to ground. Have assistant rotate KEY SWITCH (2) clockwise to on position and press ENGINE START button (3) for 1 second. Check for 11 to 13 volts on multimeter. Have assistant rotate KEY SWITCH (2) counterclockwise to off position. Disconnect test leads.
- a. If multimeter reads no voltage, go to step 9.
 - b. If multimeter reads 11 to 13 volts, fuel solenoid (4) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 9 Check engine OIL PRESSURE gage (6) reading as follows: Rotate KEY SWITCH (2) clockwise to on position and press ENGINE START button (3) for 20 seconds. Check for reading above 10 psi on engine OIL PRESSURE gage (6). Rotate KEY SWITCH (2) counterclockwise to off position.

- a If engine OIL PRESSURE gage (1) reading is below 10 psi, check engine oil level (TM 5-3805-254-10). If engine oil level is at proper level, notify Direct Support Maintenance.
- b If engine OIL PRESSURE gage (1) reading is above 10 psi, go to step 10.



TA243764

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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2. ENGINE CRANKS BUT FAILS TO START ABOVE 500F (180C) - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

CAUTION

Do not crank engine for more than 20 seconds. Allow starter motor to cool for 2 minutes between cranking attempts. Cranking too long can overheat and damage starter motor.

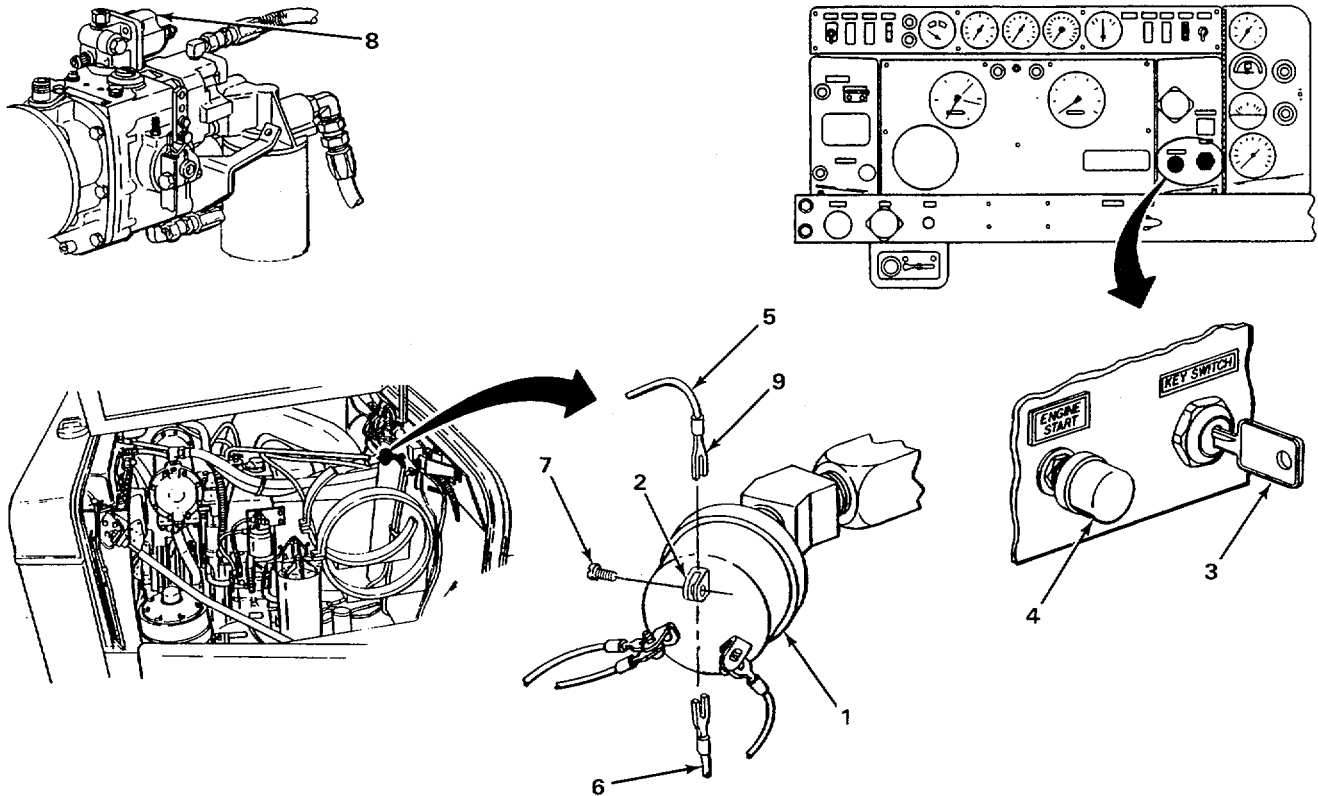
- Step 10. Check engine oil pressure switch (1) for 11 to 13 vdc as follows: Set multimeter to 20 vdc scale. Connect red test lead to normally open (NO) terminal (2) and black test lead to ground. Have assistant rotate **KEY SWITCH** (3) clockwise to on position and press **ENGINE START** button (4) for 1 second. Check for 11 to 13 vdc on multimeter. Have assistant rotate **KEY SWITCH** (3) counterclockwise to off position. Disconnect test leads.
- a. If multimeter reads no voltage, go to step 11.
 - b. If multimeter reads 11 to 13 vdc, to to step 12.
- Step 11. Check NO terminal (2) on engine oil pressure switch (1) and wires (5 and 6) for loose or corroded condition.
- a. If wires (5 and 6) are loose, tighten screw (7) using 3/16-inch flattip screwdriver.
 - b. If NO terminal (2) or wires (5 and 6) are corroded, loosen screw (7) and take off wires (5 and 6) using 3/16-inch flat-tip screwdriver. Clean NO terminal (2) and wire terminals on wires (5 and 6) using wire brush. Put wires (5 and 6) on NO terminal (2) and tighten screw (7) using 3/16-inch flat-tip screwdriver.
 - c. If wires (5 and 6) or NO terminal (2) are not loose or corroded, go to step 13.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 12 Check wire (5) from NO terminal (2) on oil pressure switch (1) to fuel solenoid (8) for broken condition as follows: Disconnect batteries (page 2-424). Using 3/16-inch flat-tip screwdriver, loosen screw (7) and take off wire (5). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (9) and black test lead to ground. Check for 0 ohms on multimeter. Disconnect test leads.

If multimeter reads no continuity, wire (5) must be replaced. Notify Direct Support Maintenance.



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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2. ENGINE CRANKS BUT FAILS TO START ABOVE 50°F (18°C) - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

CAUTION

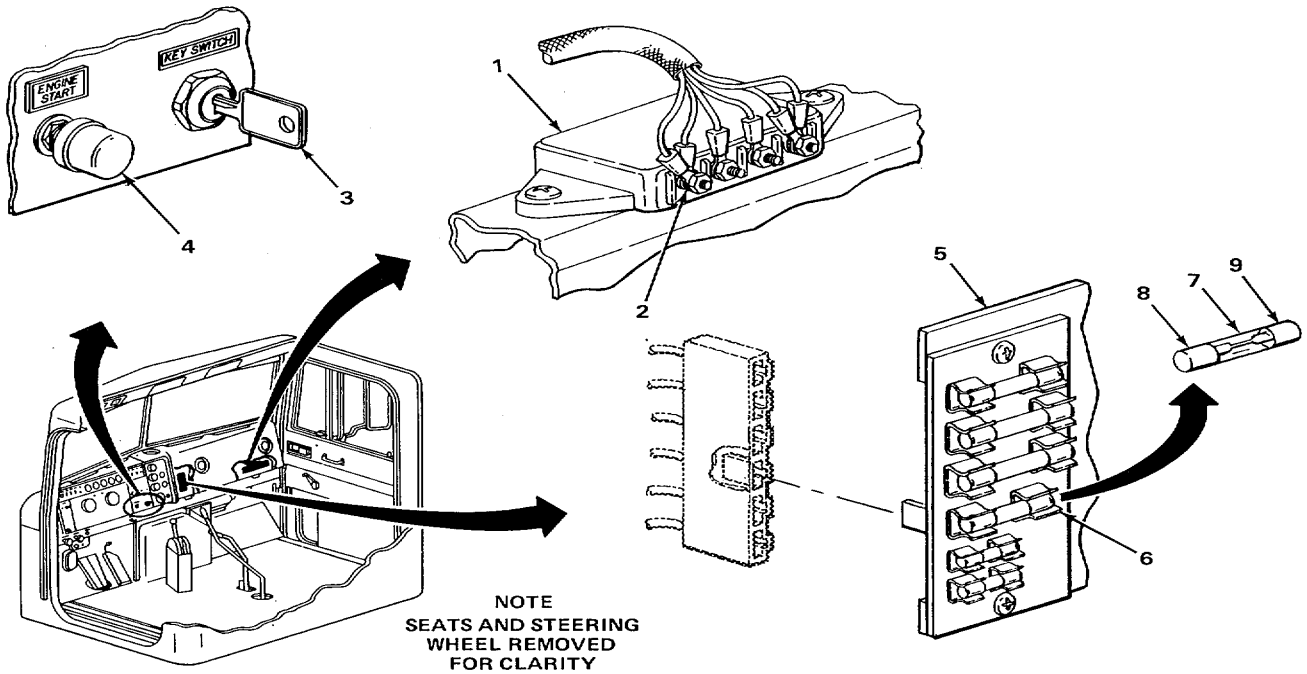
Do not crank engine for more than 20 seconds. Allow starter motor to cool for 2 minutes between cranking attempts. Cranking too long can overheat and damage starter motor.

- Step 13. Check automatic override module (1) for 11 to 13 vdc at POS 1 terminal (2) as follows: Remove instrument panel pad (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to POS 1 terminal (2) and black test lead to ground. Have assistant rotate **KEY SWITCH** (3) clockwise to on position and press **ENGINE START** button (4) for 1 second. Check for 11 to 13 vdc on multimeter. Have assistant rotate **KEY SWITCH** (3) counterclockwise to off position. Disconnect test leads.
- a If multimeter reads no voltage, go to step 14.
 - b If multimeter reads 11 to 13 vdc, go to step 17.
- Step 14 Check for 11 to 13 vdc to fuse panel (5) as follows: Set multimeter to 20 vdc scale. Connect red test lead to input terminal (6) and black test lead to ground. Have assistant rotate **KEY SWITCH** (3) clockwise to on position. Check for 11 to 13 vdc on multimeter. Have assistant rotate **KEY SWITCH** (3) counterclockwise to off position. Disconnect test leads.
- a If multimeter reads no voltage, go to step 19.
 - b If multimeter reads 11 to 13 vdc, go to step 15.
- Step 15. Remove fuse (7) and check for broken conditions as follows: Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to fuse end (8) and black test lead to fuse end (9). Check for 0 ohms on multimeter. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a If multimeter reads no continuity, replace fuse (7).
- b If multimeter reads 0 ohms, go to step 16.



TA243766

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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2. ENGINE CRANKS BUT FAILS TO START ABOVE 50°F (18°C) - CONTINUED

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

- Step 16 Check 19C wire (1) from fuse panel (2) to automatic override module (3) as follows: Disconnect batteries (page 2-424). Pull wire connector (4) from fuse panel (2) and, using 11/32-inch box-end wrench, unscrew and take off nut (5) and 19C wire (1) from POS 1 terminal (6). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (7) and black test lead to 19C wire (1) in wire connector (4). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, 19C wire (1) must be replaced. Notify Direct Support Maintenance.
 - b. If multimeter reads 0 ohms, put wire connector (4) on fuse panel (2) and put wire terminal (7) and nut (5) on POS 1 terminal (6). Tighten using 11/32-inch box-end wrench. Connect batteries (page 2-424) and go to step 17.
- Step 17. Check automatic override module (3) for proper ground as follows: Set multimeter to 20 vdc scale. Connect red test lead to GROUND 4 terminal (8) and black test lead to POS 1 terminal (6). Have assistant rotate KEY SWITCH (9) clockwise to on position. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (9) counterclockwise to off position. Disconnect test leads.
- a. If multimeter reads no voltage, go to step 18.
 - b. If multimeter reads 11 to 13 vdc, go to step 20.
- Step 18 Check ground wire (10) on automatic override module (3) for proper ground as follows: Disconnect batteries (page 2-424). Using 11/32-inch box-end wrench, unscrew and take off nut (11) and ground wire (10) from GROUND 4 terminal (8). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (12) and black test lead to ground post (13). Check 0' 0 ohms on multimeter. Disconnect test leads.

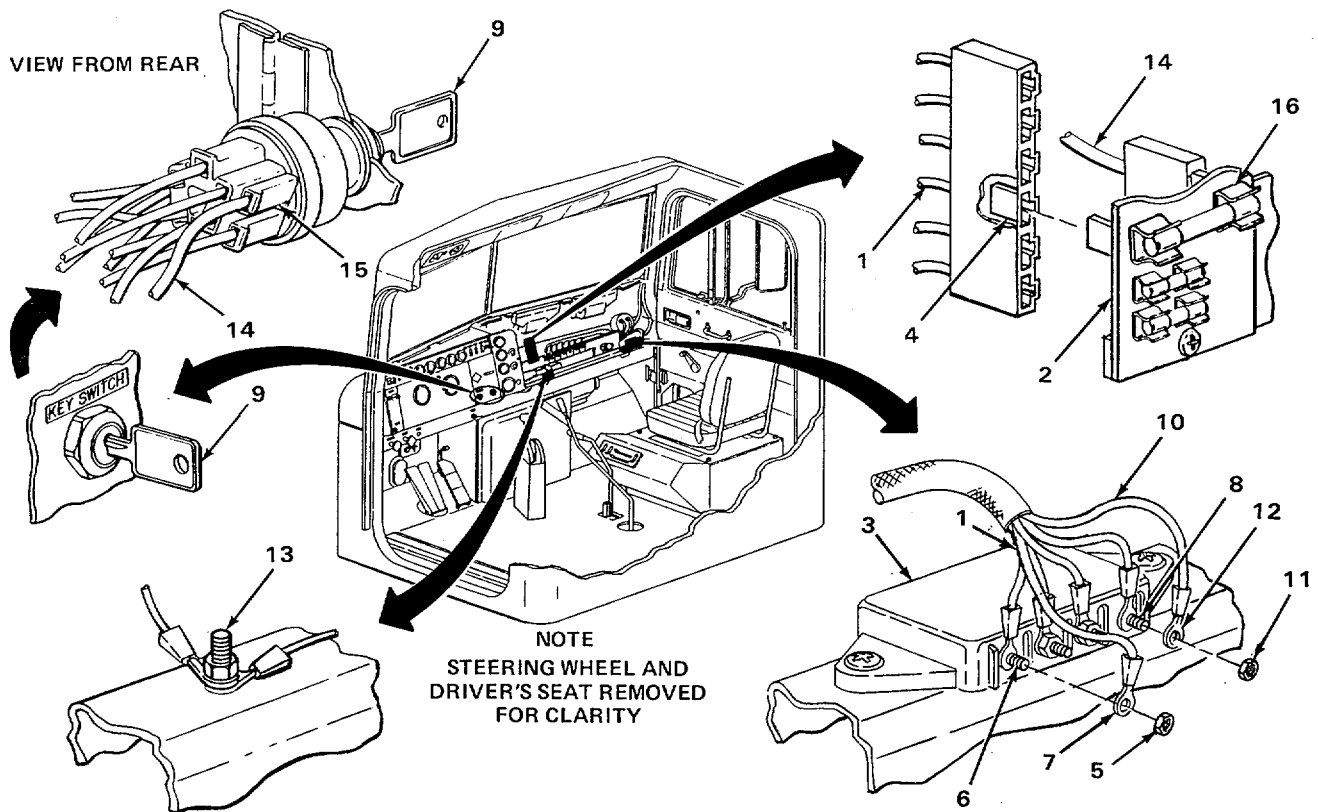
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a If multimeter reads no continuity, ground wire (10) must be replaced. Notify Direct Support Maintenance.
- b If multimeter reads 0 ohms, replace automatic override module (3) (page 2-877).

Step 19 Check 14 wire (14) from KEY SWITCH (1) to fuse panel (2) for broken condition as follows: Disconnect batteries (page 2-424). Set multimeter to ohm scale and adjust to 0 ohms. Connect red test lead to 14 wire (14) oh wire connector (15) and black test lead to input terminal (16). Check for 0 ohms on multimeter. Disconnect test leads.

- a If multimeter reads no continuity, 14 wire (14) must be replaced. Notify Direct Support Maintenance.
- b If multimeter reads 0 ohms, connect batteries (page 2-424) and go to step 20.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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2. ENGINE CRANKS BUT FAILS TO START ABOVE 50° (18°C) - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

CAUTION

Do not crank engine for more than 20 seconds. Allow starter motor to cool for 2 minutes between cranking attempts. Cranking too long can overheat and damage starter motor.

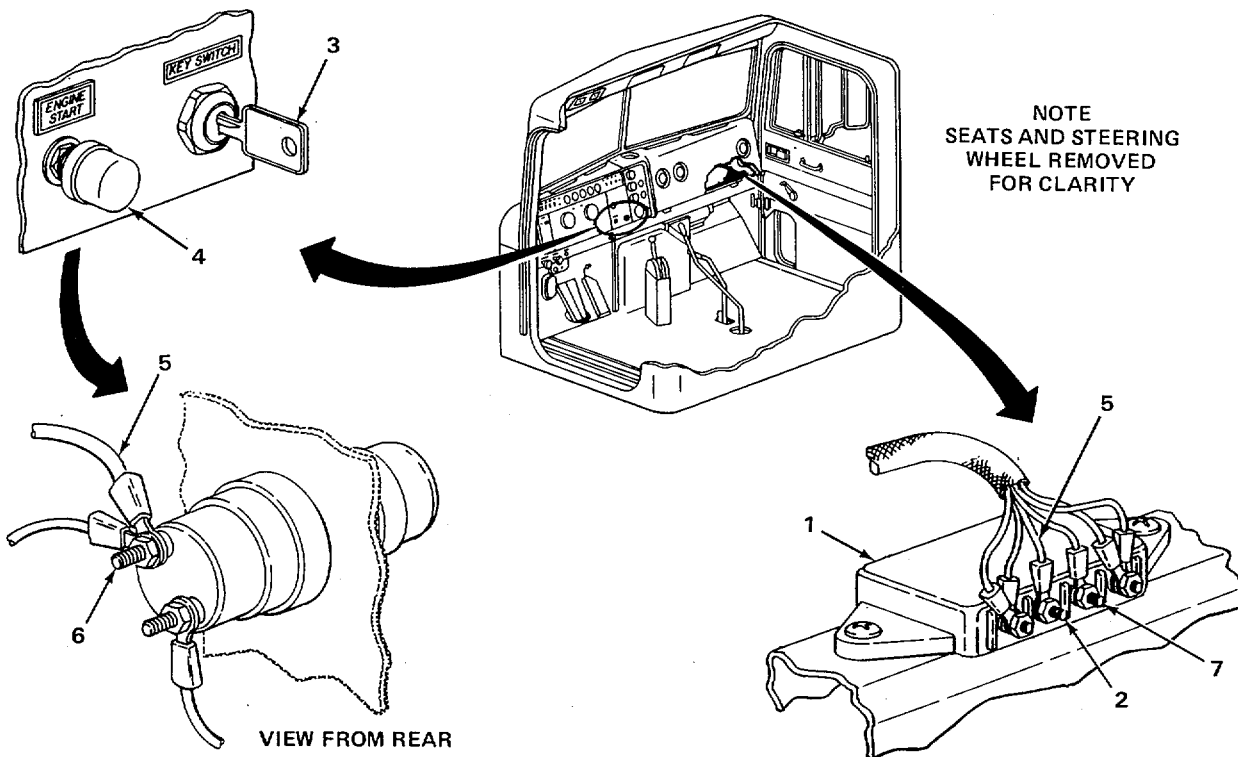
- Step 20 Check automatic override module (1) for 11 to 13 vdc at START 2 terminal (2) as follows: Set multimeter to 2 vdc scale. Connect red test lead to START 2 terminal (2) and black test lead to ground. Have assistant rotate **KEY SWITCH** (3) clockwise to on position and press **ENGINE START** button (4) for 1 second. Check for 11 to 13 vdc on multimeter. Have assistant rotate **KEY SWITCH** (3) counterclockwise to off position. Disconnect test leads.
- a If multimeter reads no voltage, go to step 21.
 - b If multimeter reads 11 to 13 vdc, go to step 22.
- Step 21 Check 19 wires (5) from automatic override module (1) to **ENGINE START** button (4) for broken condition as follows: Disconnect batteries (page 2-424). Set multimeter, to ohms scale and adjust to 0 ohms. Connect red test lead to START 2 terminal (2) and black test lead to terminal stud (6). Check for 0 ohms on multimeter. Disconnect test leads.
- If multimeter reads no continuity, 19 wire (5) must be replaced. Notify Direct Support Maintenance.
- Step 22 Check automatic override module (1) for 11 to 13 vdc at LOAD 3 terminal (7) as follows: Set multimeter to 20 vdc scale. Connect red test lead to LOAD 3 terminal (7) and black test lead to ground. Have assistant rotate **KEY SWITCH** (3)

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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clockwise to on position and press ENGINE START button (4) for 1 second. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.

- a If multimeter reads no voltage, replace automatic override module (1) (page 2-877).
- b If multimeter reads 11 to 13 vdc, go to step 23.



TA243768

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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2. ENGINE CRANKS BUT FAILS TO START ABOVE 50°F (18°C) - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

CAUTION

Do not crank engine for more than 20 seconds. Allow starter motor to cool for 2 minutes between cranking attempts. Cranking too long can overheat and damage starter motor.

Step 23 Check for 11 to 13 vdc at fuse panel (1) as follows: Set multimeter to 20 vdc scale. Connect red test lead to input terminal (2) and black test lead to ground. Have assistant rotate **KEY SWITCH** (3) clockwise to on position and press **ENGINE START** button (4) for 20 seconds. Check for 11 to 13 vdc on multimeter. Have assistant rotate **KEY SWITCH** (3) counterclockwise to off position. Disconnect test leads.

a If multimeter reads no voltage, go to step 24.

b If multimeter reads 11 to 13 vdc, go to step 25.

Step 24 Check 19E wire (5) from **LOAD 3** terminal (6) on automatic override module (7) to fuse panel (1) for broken conditions as follows: Disconnect batteries (page 2-424). Using 11/32-inch box-end wrench, unscrew and take off nut (8) and 19E wire (5) from **LOAD 3** terminal (6) and pull wire connector (9) from fuse panel (1). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (10) and black test lead to 19E wire (5) on wire connector (9). Check for 0 ohms on multimeter. Disconnect test leads.

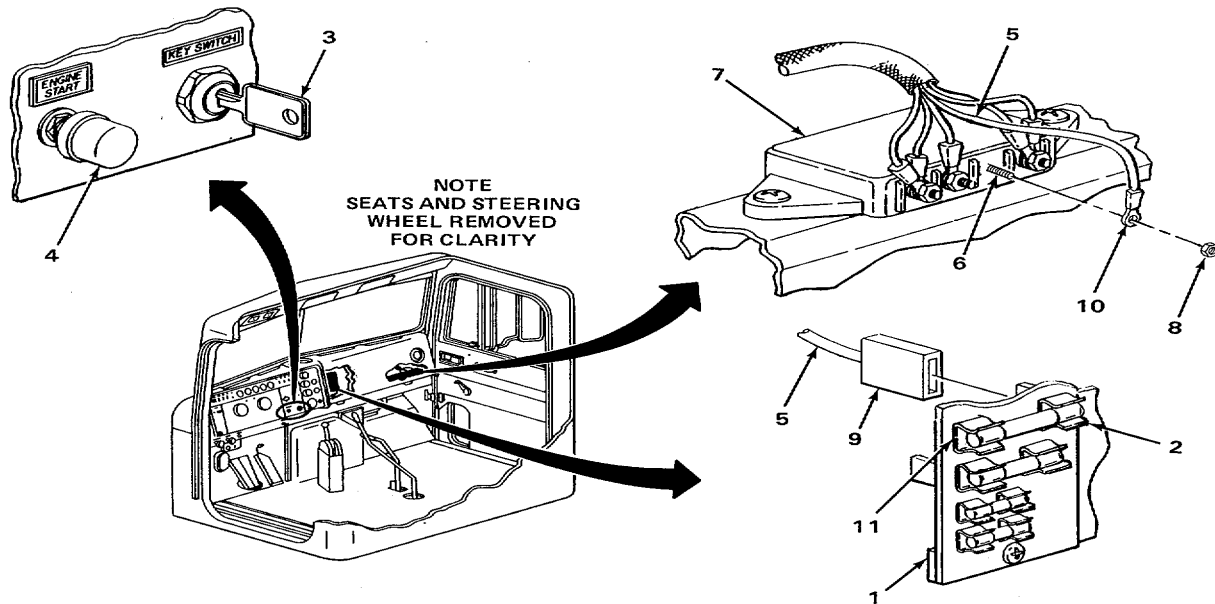
If multimeter reads no continuity, 19E wire (5) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 25 Check for 11 to 13 vdc at fuse panel (1) as follows: Set multimeter 20 vdc scale. Connect red test lead to output terminal (11) and black test lead to ground. Have assistant rotate KEY SWITCH (3) clockwise to on position and press ENGINE START button (4) for 20 seconds. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.

- a If multimeter reads no voltage, go to step 26.
- b If multimeter reads 11 to 13 vdc, go to step 27.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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2. ENGINE CRANKS BUT FAILS TO START ABOVE 50°F (18°C) - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

CAUTION

Do not crank engine for more than 30 seconds. Allow starter motor to cool for 2 minutes between cranking attempts. Cranking too long can overheat and damage starter motor.

- Step 26 Remove fuse (1) and check for broken condition as follows: Set multimeter, to ohms scale and adjust to 0 ohms. Connect red test lead to fuse end (2) and black test lead to fuse end (3). Check for 0 ohms on multimeter. Disconnect test leads.

If multimeter reads no continuity, replace fuse (1).

- Step 27 Check for 11 to 13 vdc at NO terminal (4) on oil pressure switch (5) as follows: Set multimeter to 20 vdc scale. Connect red test lead to NO terminal (4) and black test lead to ground. Have assistant rotate **KEY SWITCH** (6) clockwise to on position and press **ENGINE START** button (7) for 5 seconds. Check for 11 to 13 vdc on multimeter. Have assistant rotate **KEY SWITCH** (6) counterclockwise to off position. Disconnect test leads.

If multimeter reads no voltage, go to step 28.

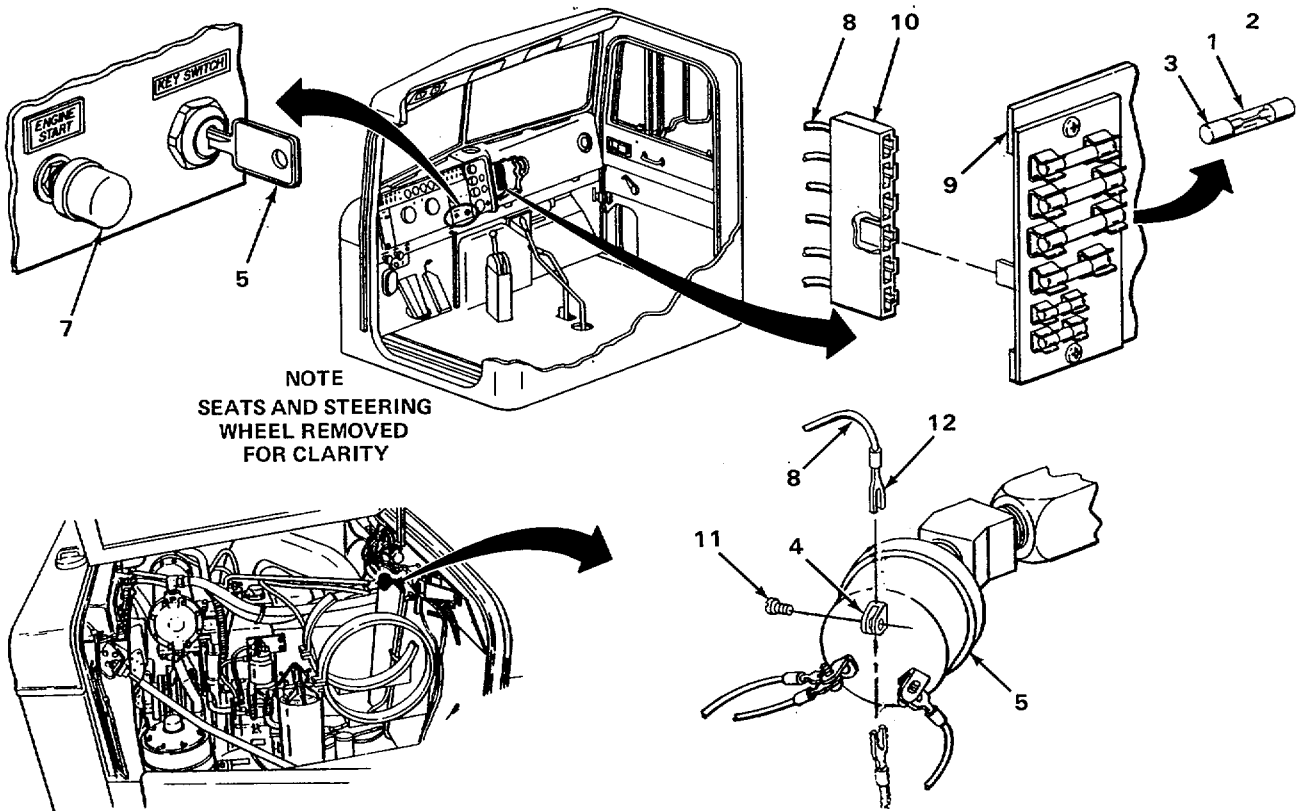
- Step 28 Check 19F wire (8) from fuse panel (9) to NO terminal (4) on oil pressure switch (5) for broken condition as follows: Pull wire connector (1) from fuse panel (9) and, using 3/16-inch flat-tip screwdriver, loosen screw (11) and take off 19F wire (8). Set multimeter to ohms scale and adjust to 0 ohms.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Connect red test lead to wire terminal (12) and black test lead to 19F wire (8) in wire connector (10). Check for 0 ohms on multimeter.

If multimeter reads no continuity, 19F wire (8) must be replaced. Notify Direct Support Maintenance.



TA243770

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

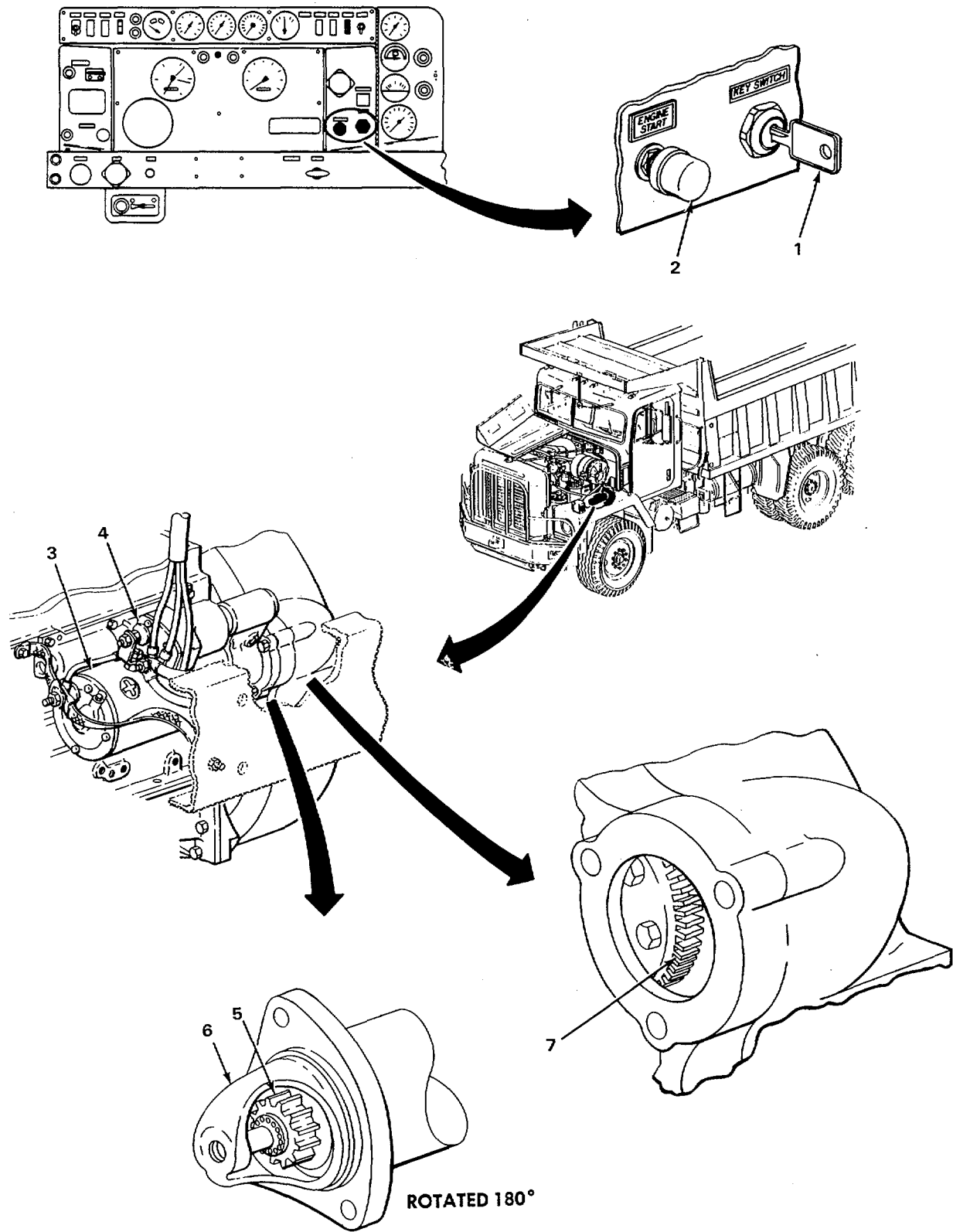
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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3. ENGINE FAILS TO CRANK.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

- Step 1 Have assistant rotate KEY SWITCH (1) clockwise to on position and press ENGINE START button (2) for 5 seconds. Listen to starter motor (3) and solenoid (4) for clicking, thumping, grinding, or spinning noise. Have assistant rotate KEY SWITCH (1) counterclockwise to off position.
- a If solenoid (4) made clicking noise or no noise was heard, go to step 4.
 - b If solenoid (4) thumped but starter motor (3) did not crank engine, notify Direct Support Maintenance.
 - c If starter motor (3) made grinding noise, go to step 2.
 - d If starter motor (3) spun without cranking engine, replace starter motor (3) (page 2-896).
- Step 2 Remove starter motor (3) (page 2-896). Look for broken teeth on starter motor drive gear (5). Check that starter motor drive gear (5) turns in one direction only. Look for cracks or breaks on starter motor end housing (6).
- a If teeth on starter motor drive gear (5) are broken, go to step 3.
 - b If starter motor drive gear (5) turns in both directions, replace starter motor (3) (page 2-896).
 - c If starter motor end housing (6) is cracked or broken, go to step 3.
- Step 3 Crank over engine (TM 5-3805-254-10) while inspecting flywheel ring gear (7) for broken or missing teeth.
- a If flywheel ring gear (7) has broken or missing teeth, notify Direct Support Maintenance.
 - b If flywheel ring gear (7) has no broken or missing teeth, replace starter motor (3) (page 2-896) and go to step 4.



TA243771

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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3. ENGINE FAILS TO CRANK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

Do not smoke, use open flame or allow sparks near batteries. Failure to observe these precautions could cause serious injury to personnel.

- Step 4 Check condition of batteries (1) as follows: Remove battery box cover (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to battery positive (+) cable (2) and black test lead to battery negative (-) cable (3). Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a If multimeter does not read 11 to 13 vdc, go to step 5.
 - b If multimeter reads 11 to 13 vdc, go to step 6.
- Step 5 Check two battery connector cables (4) for loose, corroded, frayed, or broken condition.
- a If battery connector cables (4) are loose, tighten nuts (5) using two 1/2-inch open-end wrenches.
 - b If battery cable terminals (6) are corroded, loosen nuts (5) using two 1/2-inch open-end wrenches and pull battery cable terminals (6) off battery posts (7) using battery terminal puller. Clean battery cable terminals (6) and battery posts (7) using battery terminal cleaner. Place battery cable terminals (6) on battery posts (7) and tighten nuts (5) using two 1/2-inch open-end wrenches.
 - c If battery connector cables (4) are frayed, repair (page 2-424).
 - d If battery connector cables (4) are broken, replace (pge 2-819).
 - e If battery connector cables (4) are not loose, corroded, frayed, or broken, charge batteries (1) and check output (TM 9-6140-200-14).

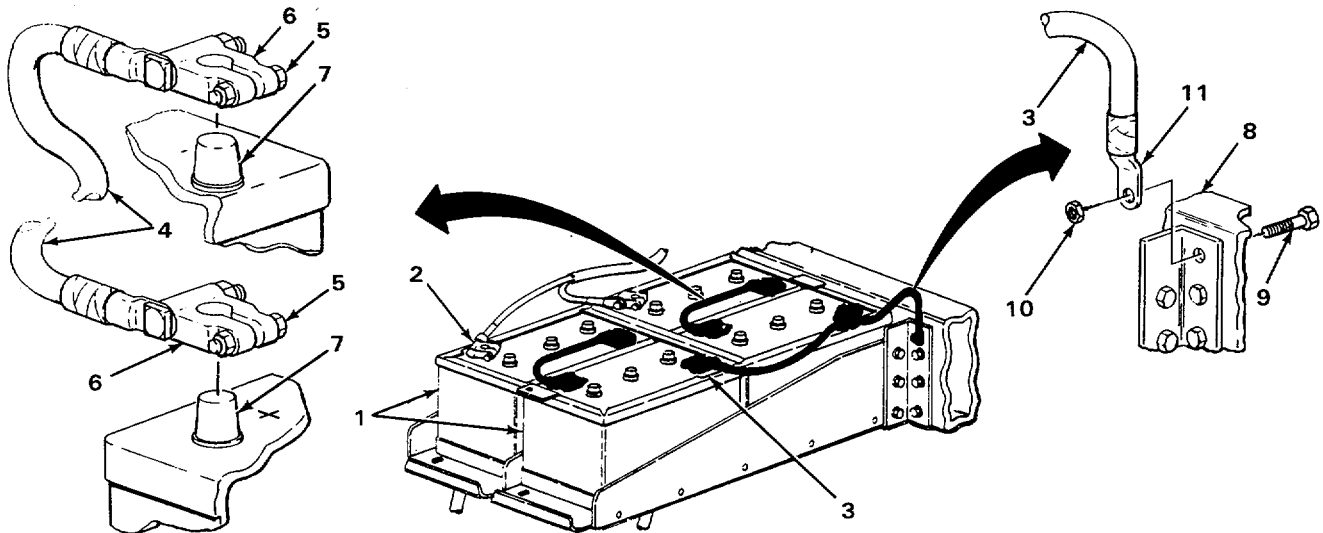
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- f If battery connector cables (4) are not loose, corroded, frayed, or broken and batteries are charged, go to step 6.

Step 6 Check battery negative (-) cable (3) connection at frame rail (8) for loose or corroded condition.

- a If battery negative (-) cable (3) is loose, tighten screw (9) and nut (10) using 3/4-inch, 1/2-inch drive socket, ratchet handle and 3/4-inch open-end wrench.
- b If battery cable terminal (11) is corroded, unscrew screw (9) and nut (10) using 3/4-inch, 1/2-inch drive socket, ratchet handle and 3/4-inch open-end wrench, and take off battery cable terminal (11). Clean battery cable terminal (11) and frame rail (8) mating surface using wire brush. Place screw (9) and battery cable terminal (11) in position and screw on and tighten nut (10) using 3/4-inch, 1/2-inch drive socket, ratchet handle and 3/4-inch open-end wrench.
- c If battery negative (-) cable (3) is not loose or corroded, go to step 7.



TA243772

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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3. ENGINE FAILS TO CRANK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

Do not smoke, use open flame or allow sparks near batteries. Failure to observe these precautions could cause serious injury to personnel.

Step 7 Check battery positive (+) cables (1) for loose, corroded, frayed, or broken condition.

- a If battery positive (+) cables (1) are loose, tighten nuts (2) using two 1/2-inch open-end wrenches.
- b If battery cable terminals (3) are corroded, loosen nuts (2) using two 1/2-inch open-end wrenches and pull battery cable terminals (3) off battery posts (4) using battery terminal puller. Clean battery positive (+) cables (1) and battery posts (4) using battery terminal cleaner. Place battery cable terminals (3) on battery posts (4) and tighten nuts (2) using two 1/2-inch open-end wrenches.
- c If battery positive (+) cables (1) are frayed, repair (page 2-424).
- d If battery positive (+) cables (1) are broken, replace (page 2-829).
- e If battery positive (+) cables (1) are not loose, corroded, frayed, or broken, go to step 8.

Step 8 Check battery negative (-) cables (5) for loose, corroded, frayed, or broken condition.

- a If battery negative (-) cables (5) are loose, tighten nuts (6) using two 1/2-inch open-end wrenches.
- b If battery cable terminals (7) are corroded, loosen nuts (6) using two 1/2-inch open-end wrenches and pull battery cable terminals (7) off battery posts (8) using battery terminal puller. Clean battery cable terminals (7) and battery posts (8) using battery terminal cleaner. Place battery cable terminals (7) on battery posts (8) and tighten nuts (6) using two 1/2-inch open-end wrenches. $\frac{3}{4}$

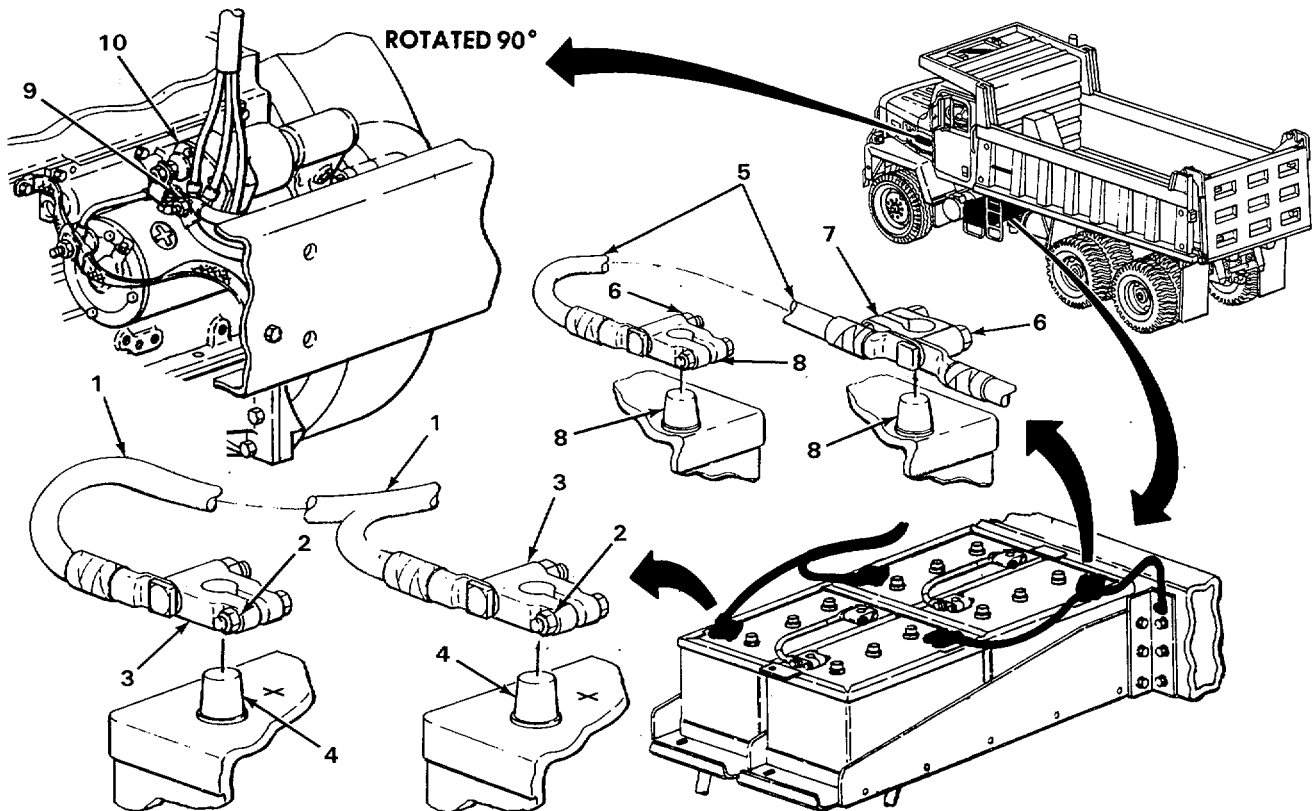
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- c. If battery negative (-) cables (5) are frayed, repair (page 2-424) and install battery box cover (page 2-424).
- d. If battery negative (-) cables (5) are broken, replace (page 2-824).
- e. If battery negative (-) cables (5) are not loose, corroded, frayed, or broken, install battery box cover (page 2-424) and go to step 9.

Step 9. Set multimeter to 20 vdc scale. Connect red test lead to BAT terminal (9) on solenoid (10) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, replace battery positive (+) cable (1) (page 2-829).
- b. If multimeter reads 11 to 13 vdc, go to step 10.



TA243773

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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3. ENGINE FAILS TO CRANK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

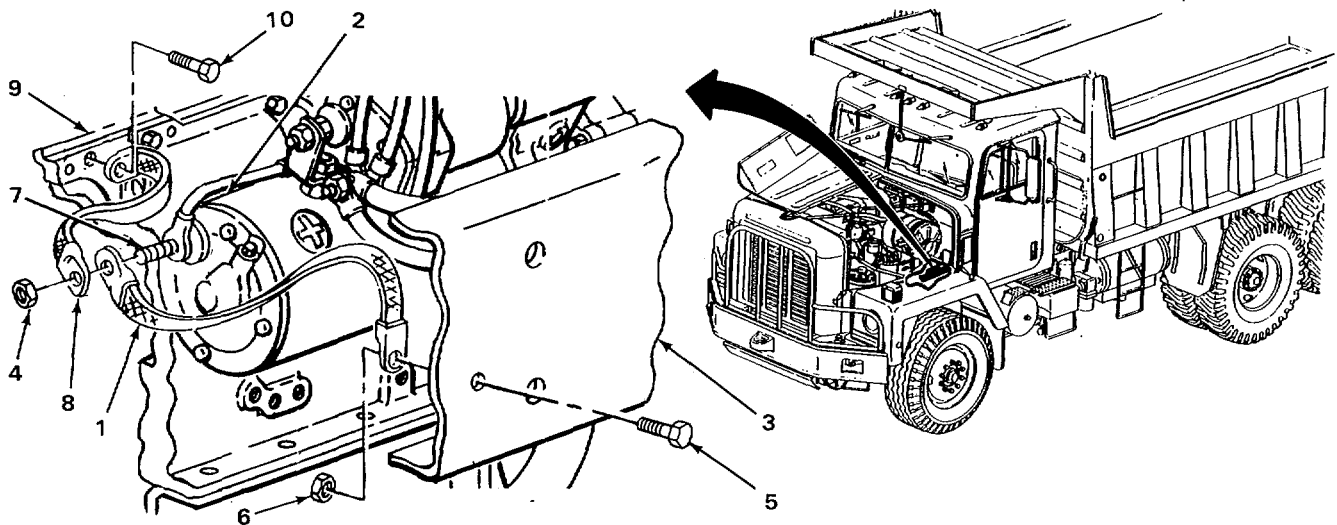
- Step 10 Check ground strap (1) from starter motor (2) to frame rail (3) for loose, corroded, or broken condition.
- a If ground strap (1) is loose at starter motor (2), tighten nut (4) using 3/4-inch box-end wrench.
 - b If ground strap (1) is loose at frame rail (3), tighten screw (5) and nut (6) using 9/16-inch, 11/2-inch drive socket, ratchet handle, and 9/16-inch box-end wrench.
 - c If ground strap (1) is corroded at starter motor (2), unscrew and take nut (4) and ground strap (1) off ground stud (7) using 3/4-inch box-end wrench. Clean ground stud (7) and ground strap (1) using wire brush. Place ground strap (1) on ground stud (7) and screw on and tighten nut (4) using 3/4-inch box-end wrench.
 - d If ground strap (1) is corroded at frame rail (3), unscrew and take off screw (5), ground strap (1) and nut (6) using 9/16-inch, 1/2-inch drive socket, ratchet handle, and 9/16-inch box-end wrench. Clean ground strap (1) and frame rail (3) mating surface using wire brush. Place screw (5) and ground strap (1) in position and screw on and tighten nut (6) using 9/16-inch, 1/2-inch drive socket, ratchet handle and 9/16-inch box-end wrench.
 - e If ground strap (1) is broken, replace (page 2-896).
 - f If ground strap (1) is not loose, corroded, or broken, go to step 11.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 11 Check ground wire (8) from starter motor (2) to engine (9) for loose, corroded, or broken condition.

- a If ground wire (8) is loose at starter motor (2), tighten nut (4) using 3/4-inch box-end wrench.
- b If ground wire (8) is loose at engine (9), tighten screw (10) using 9/16-inch box-end wrench.
- c If ground wire (8) is corroded at starter motor (2), unscrew and take nut (4) and ground wire (8) off ground stud (7) using 3/4-inch box-end wrench. Clean ground stud (7) and ground wire (8) using wire brush. Place ground wire (8) on ground stud (7) and screw on and tighten nut (4) using 3/4-inch box-end wrench.
- d If ground wire (8) is corroded at engine (9), unscrew and take off screw (10) and ground strap (8) using 9/16-inch box-end wrench. Clean ground strap (8) and engine (9) mating surface using wire brush. Place screw (10) and ground wire (8) in position and screw in and tighten using 9/16-inch box-end wrench.
- e If ground wire (8) is broken, replace (page 2-896).
- f If ground wire (8) is not loose, corroded, or broken, go to step 12.



TA243774

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

3. ENGINE FAILS TO CRANK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

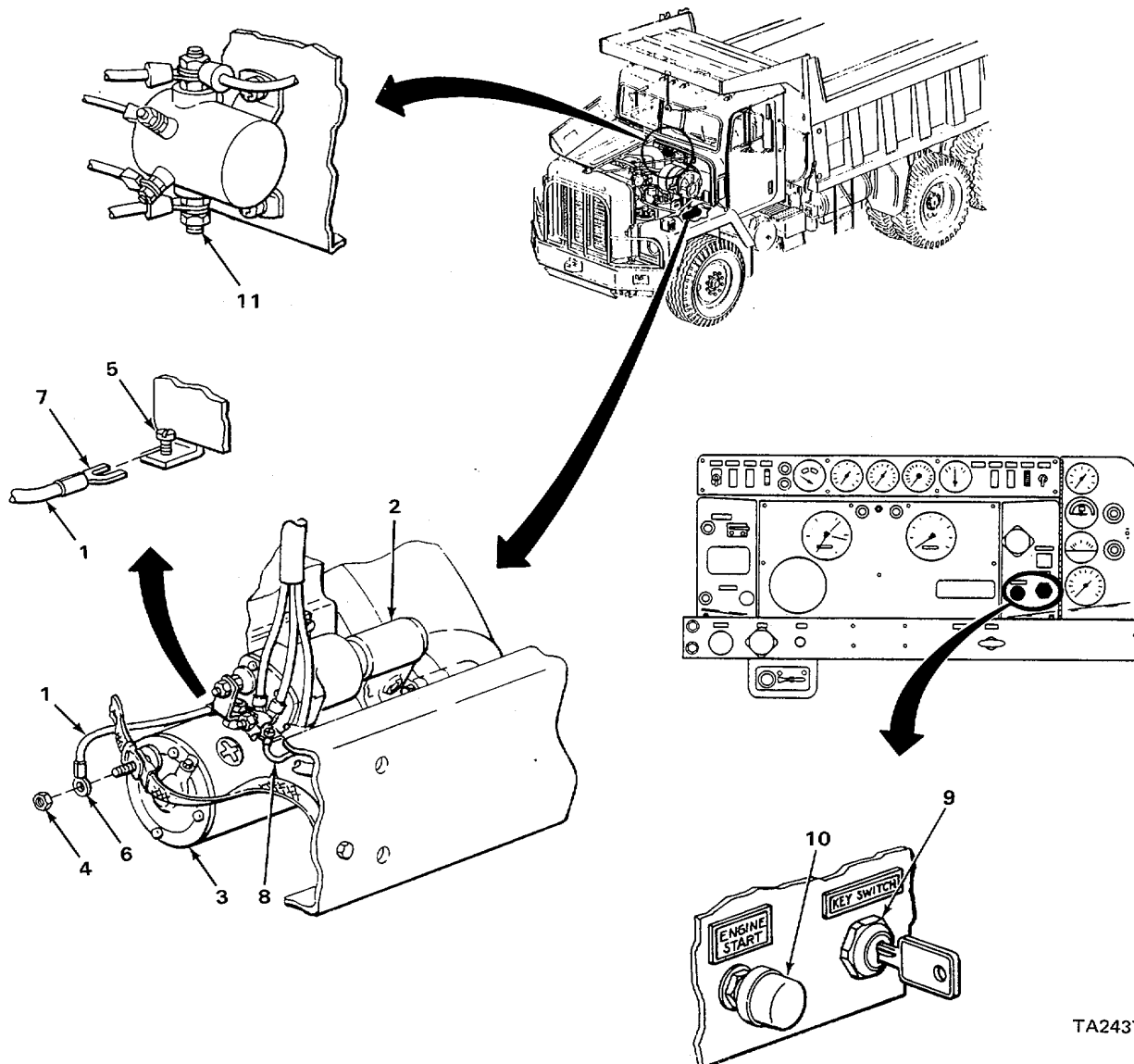
- Step 12 Check ground wire (1) from solenoid (2) to starter motor (3) for loose, corroded, or broken condition.
- a If ground wire (1) is loose at starter motor (3), tighten nut (4) using 3/4-inch box-end wrench.
 - b If ground wire (1) is loose at solenoid (2), tighten screw (5) using 1/4-inch flat-tip screwdriver.
 - c If terminal (6) is corroded at starter motor (3), unscrew and take off terminal (6) and nut (4) using 3/4-inch box-end wrench. Clean ground wire (1) using wire brush. Place terminal (6) in position and screw in and tighten nut (4) using 3/4-inch box-end wrench.
 - d If terminal (7) is corroded at solenoid (2), loosen screw (5) and take off terminal (7) using 1/4-inch flat-tip screwdriver. Clean terminal (7) using wire brush. Place terminal (7) in position and tighten screw (5) using 1/4-inch flat-tip screwdriver.
 - e If ground wire (1) is broken, replace (page 2896).
 - f If ground wire (1) is not loose, corroded, or broken, go to step 13.
- Step 13 Set multimeter to 20 vdc scale. Connect red test lead to terminal (8) on solenoid (2) and black test lead to ground. Have assistant rotate KEY SWITCH (9) clockwise to on position and press ENGINE START button (10) for 5 seconds. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (9) counterclockwise to off position. Disconnect test leads.
- a If multimeter does not read 11 to 13 vdc, go to step 14.
 - b If multimeter reads 11 to 13 vdc, replace starter motor (3) (page 2-896).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 14. Set multimeter to 20 vdc scale. Connect red test lead to terminal (11) on primary magnetic switch (12) and black test lead to ground. Have assistant rotate KEY SWITCH (9) clockwise to on position and press ENGINE START button (10) for 5 seconds. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (9) counterclockwise to off position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, go to step 16.
- b. If multimeter reads 11 to 13 vdc, go to step 15.



TA243775

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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3. ENGINE FAILS TO CRANK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

Step 15. Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to terminal (1) on solenoid (2) and black test lead to terminal (3) on primary magnetic switch (4). Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter reads no continuity, 17B wire (5) must be replaced. Notify Direct Support Maintenance.
- b. If multimeter reads 0 ohms, go to step 16.

Step 16. Connect batteries (2-424). Set multimeter to 20 vdc scale. Connect red test lead to terminal (6) on primary magnetic switch (4) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, go to step 17.
- b. If multimeter reads 11 to 13 vdc, go to step 18.

Step 17. Disconnect batteries (page 2-424). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to terminal (7) on solenoid (2) and black test lead to terminal (6) on primary magnetic switch (4). Check for 0 ohms on multimeter. Disconnect test leads.

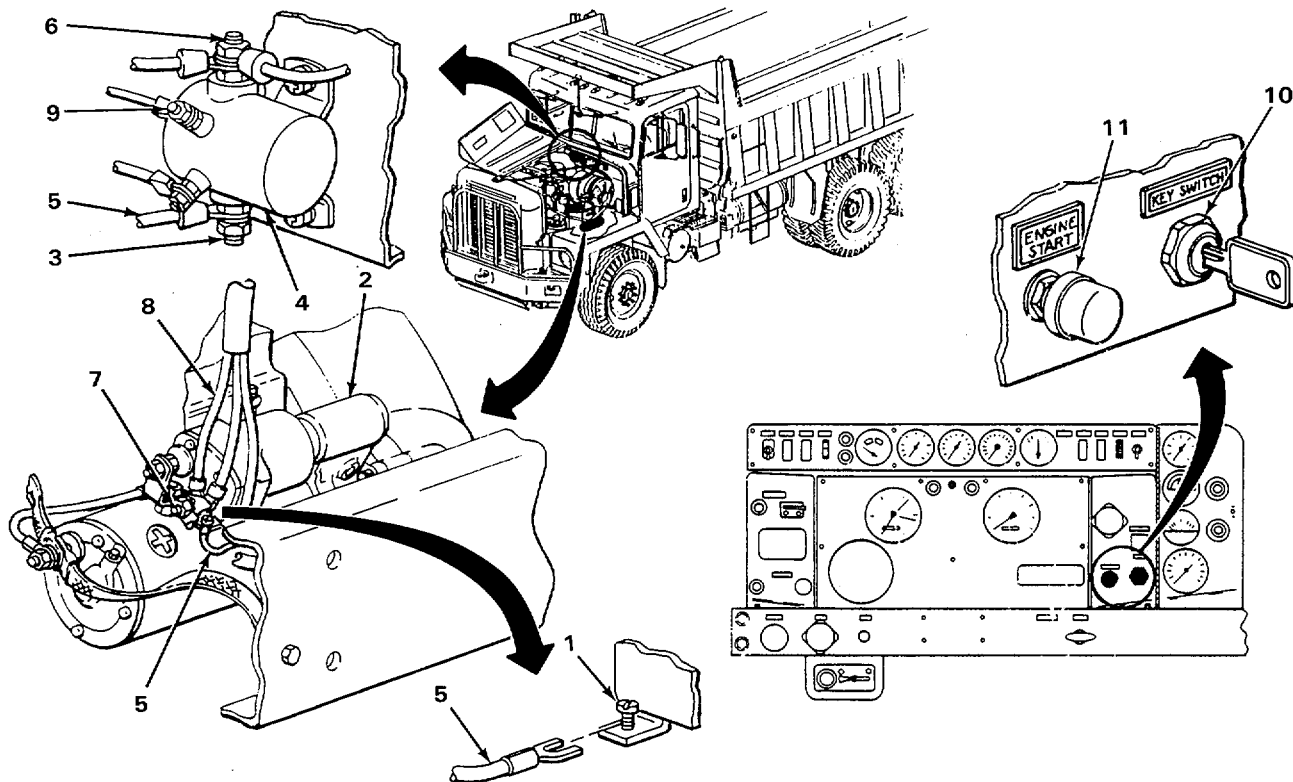
- a. If multimeter reads no continuity, 14-6 wire (8) must be replaced. Notify Direct Support Maintenance.
- b. If multimeter reads 0 ohms. Connect batteries (page 2-424) and go to step 18.

ORGANIZATOINAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 18. Set multimeter to 20 vdc scale. Connect red test lead to terminal (9) on primary magnetic switch (4) and black test lead to ground. Have assistant rotate KEY SWITCH (10) clockwise to on position and press ENGINE START button (11) for 5 seconds. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (10) counterclockwise to off position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, go to step 19.
- b. If multimeter reads 11 to 13 vdc, replace primary magnetic switch (4) (page 2-701).



TA243776

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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3. ENGINE FAILS TO CRANK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

- Step 19. Pull apart wire connectors (1 and 2) on neutral safety switch (3). Set multimeter to 20 vdc scale. Connect red test lead to output terminal (4) and black test lead to ground. Have assistant rotate KEY SWITCH (5) clockwise to on position and press ENGINE START button (6) for 5 seconds. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (5) counterclockwise to off position. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, go to step 21.
 - b. If multimeter reads 11 to 13 vdc, go to step 20.
- Step 20. Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire connector (2) on neutral safety switch (3) and black test lead to terminal (7) on primary magnetic switch (8). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, 14 wire (9) must be replaced. Notify Direct Support Maintenance.
 - b. If multimeter reads 0 ohms, go to step 21.
- Step 21. Pull apart wire connectors (10 and 11) on neutral safety switch (3). Set multimeter to 20 vdc scale. Connect red test lead to input terminal (12) on neutral safety switch (3) and black test lead to ground. Have assistant rotate KEY SWITCH (5) clockwise to on position and press ENGINE START button (6) for 5 seconds. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (5) counterclockwise to off position. Disconnect test leads.

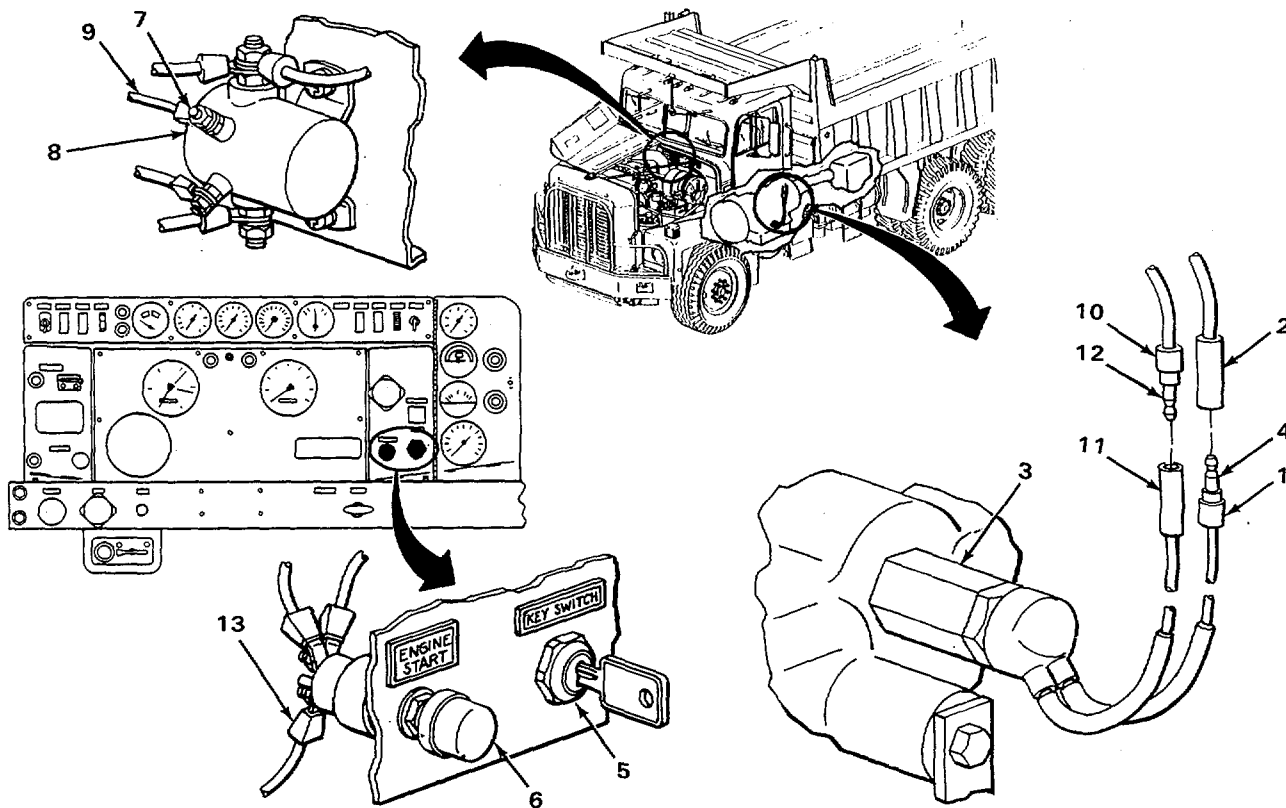
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If multimeter does not read 11 to 13 vdc, go to step 22.
- b. If multimeter reads 11 to 13 vdc, replace neutral safety switch (3) (page 2-690).

Step 22. Remove instrument panel pad (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to output terminal (13) on ENGINE START button (6) and black test lead to ground. Have assistant rotate KEY SWITCH (5) clockwise to on position and press ENGINE START button (6) for 5 seconds. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (5) counterclockwise to off position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, go to step 24.
- b. If multimeter reads 11 to 13 vdc, go to step 23.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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3. ENGINE FAILS TO CRANK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

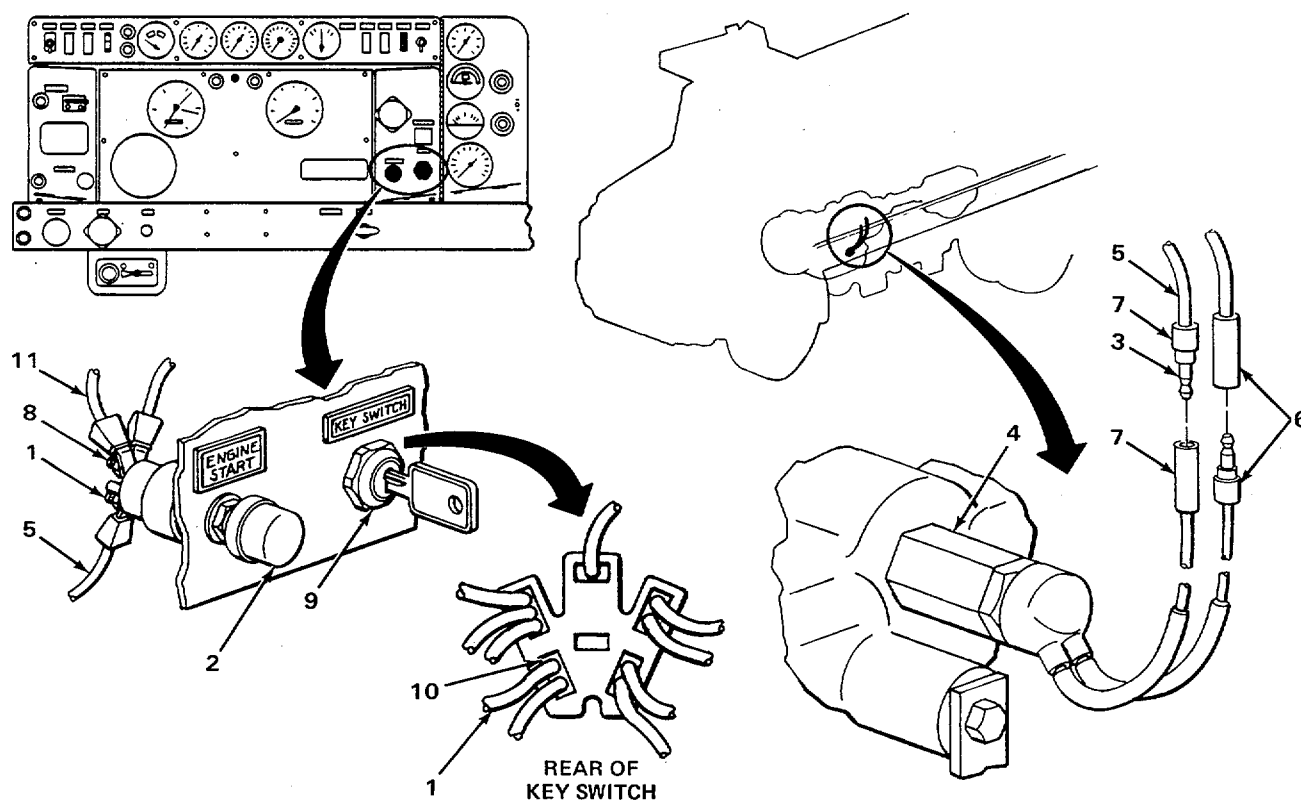
- Step 23. Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to output terminal (1) on ENGINE START button (2) and black test lead to input terminal (3) on neutral safety switch (4). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, 17C wire (5) must be replaced. Notify Direct Support Maintenance.
 - b. If multimeter reads 0 ohms, push wire connectors (6 and 7) together and go to step 24.
- Step 24. Set multimeter to 20 vdc scale. Connect red test lead to input terminal (8) on ENGINE START button (2) and black test lead to ground. Have assistant rotate KEY SWITCH (9) clockwise to on position. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (9) counterclockwise to off position. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, go to step 25.
 - b. If multimeter reads 11 to 13 vdc, replace ENGINE START button (2) (page 2-738).
- Step 25. Set multimeter to 20 vdc scale. Connect red test lead to output terminal (10) on KEY SWITCH (9) and black test lead to ground. Rotate KEY SWITCH (9) clockwise to on position. Check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (9) counterclockwise to off position. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, go to step 27.
 - b. If multimeter reads 11 to 13 vdc, go to step 26.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 26. Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to output terminal (10) on KEY SWITCH (9) and black test lead to input terminal (8) on ENGINE START button (2). Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter reads no continuity, 17 wire (11) must be replaced. Notify Direct Support Maintenance.
- b. If multimeter reads 0 ohms, go to step 27.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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3. ENGINE FAILS TO CRANK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

Step 27. Set multimeter to 20 vdc scale. Connect red test lead to input terminal (1) on KEY SWITCH (2) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, go to step 29.
- b. If multimeter reads 11 to 13 vdc, replace KEY SWITCH (2) (page 2-740).

Step 28. Disconnect batteries (page 2-424). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to input terminal (1) on KEY SWITCH (2) and black test lead to output terminal (3) on secondary magnetic switch (4). Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter reads no continuity, 15 wire (5) must be replaced. Notify Direct Support Maintenance.
- b. If multimeter reads 0 ohms, go to step 29.

Step 29. Check 15 wire (5), 14 wire (6), or 14B wire (7) at output terminal (3) on secondary magnetic switch (4) for loose or corroded condition.

- a. If 15 wire (5), 14 wire (6), and 14B wire (7) are loose at output terminal (3), tighten using 9/16-inch open-end wrench. Connect batteries (page 2-424).
- b. If 15 wire (5), 14 wire (6), or 14B wire (7) are corroded at output terminal (3), unscrew and take off nut (8), 15 wire (5), 14 wire (6), and 14B wire (7) using 9/16-inch open-end wrench. Clean terminals using wire brush.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

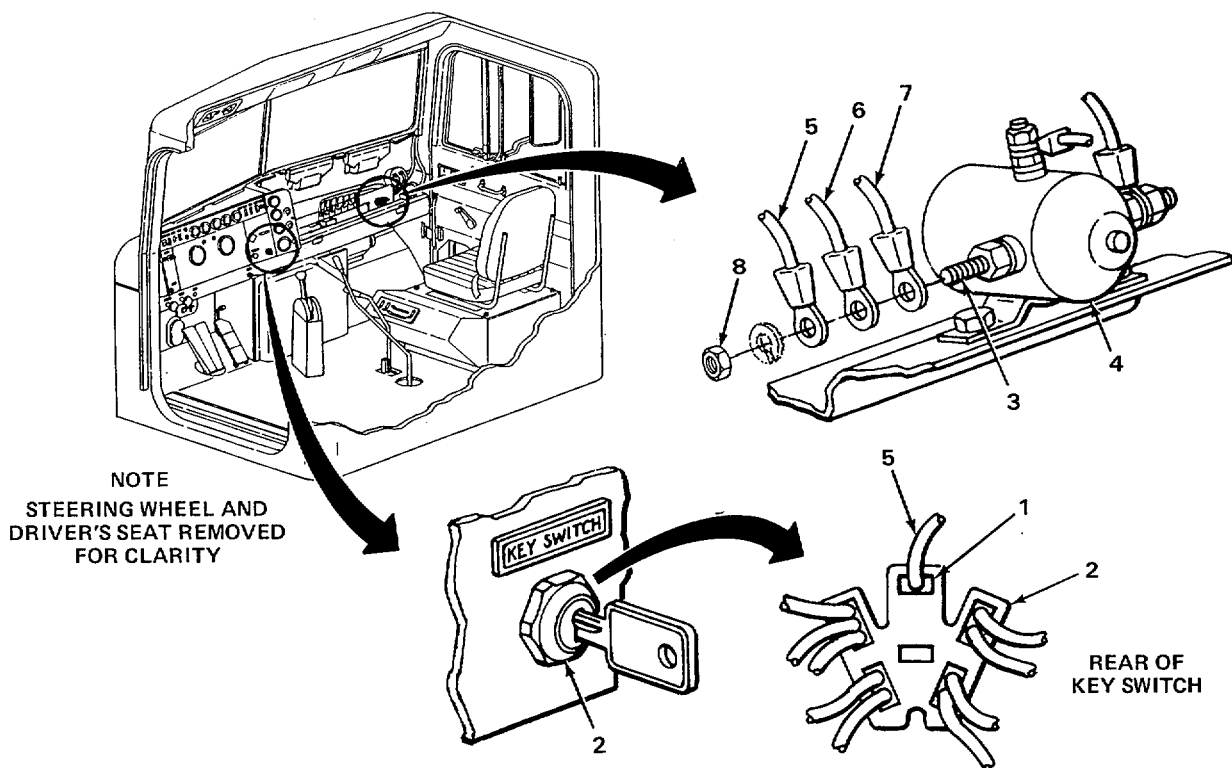
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Place 14B wire (7), 14 wire (6), and 15 wire (5) on output terminal (3) and screw on and tighten nut (8) using 9/16-inch open-end wrench. Connect batteries and install instrument panel pad (page 2-424).

- c. If 15 wire (5), 14 wire (6), and 14B wire (7) are not loose or corroded, connect batteries (page 2-424) and go to step 30.

Step 30. Set multimeter to 20 vdc scale and connect red test lead to output terminal (3) on secondary magnetic switch (4), and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

If multimeter reads 11 to 13 vdc, install instrument panel pad (page 2-424).



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION**

4. ENGINE COOLANT TEMPERATURE EXCEEDS 2250F (1070C).

WARNING

Be careful when removing radiator cap. If engine is hot, escaping steam could burn you. Use a rag to cover radiator cap. Unscrew cap just enough to allow any built-up pressure to escape. When all pressure has been relieved, unscrew cap and take off.

Step 1. Unscrew and take radiator cap (1) off radiator (2). Check that coolant level is within 1 inch (25.4 mm) below top of radiator. Check for rust, dirt, or lubricating oil in coolant.

- a. If coolant level is low, refill (page 2-628).
- b. If coolant is contaminated with rust or dirt, flush and refill (page 2-628).
- c. If coolant is contaminated with lubricating oil, notify Direct Support Maintenance.
- d. If coolant is clean and at proper level, go to step 2.

Step 2. Check that shutters (3) on radiator (2) are completely open.

- a. If shutters (3) are not open, notify Direct Support Maintenance.
- b. If shutters (3) are open, go to step 3.

Step 3. Check for loose, broken, or missing fan drivebelt (4).

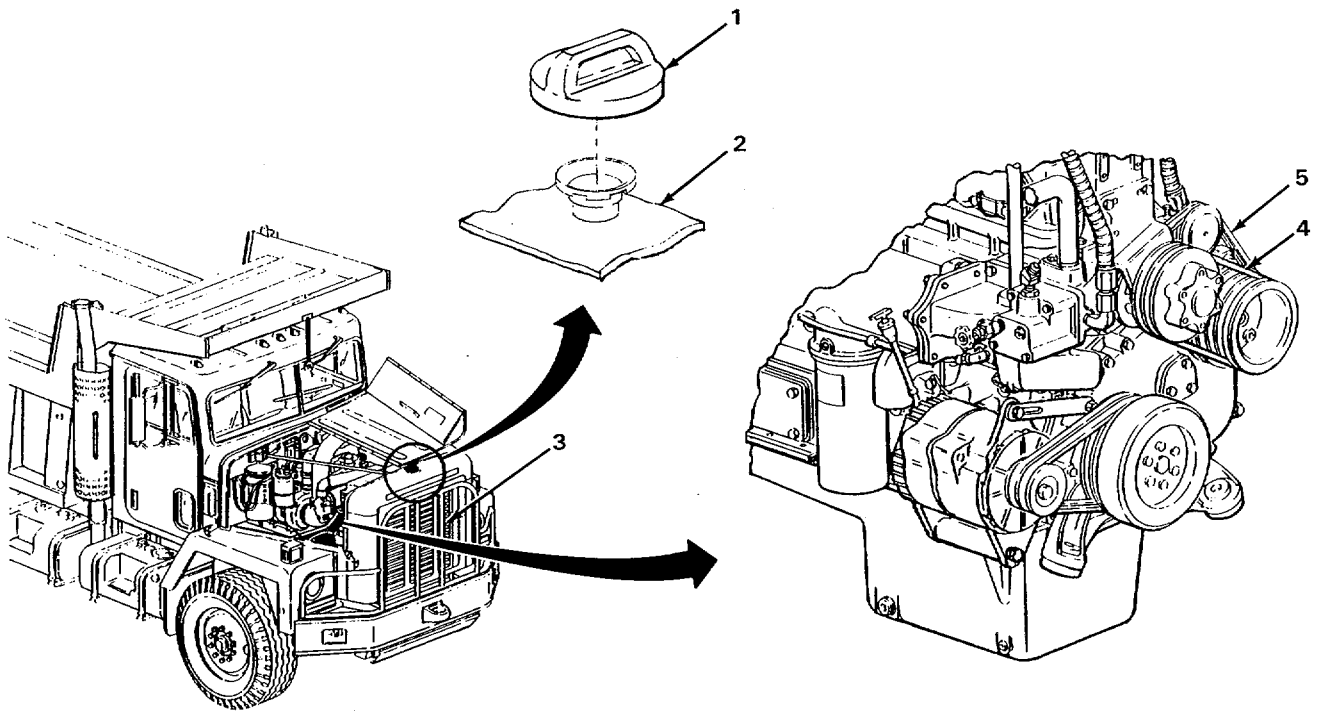
- a. If fan drivebelt (4) is loose, tighten (page 2-661).
- b. If fan drivebelt (4) is broken or missing, replace (page 2-661).
- c. If fan drivebelt (4) is not loose, broken, or missing, go to step 4.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 4. Check for loose, broken, or missing water pump belts (5).

- a. If water pump belts (5) are loose, tighten (page 2-636).
- b. If water pump belts (5) are broken or missing, notify Direct Support Maintenance.
- c. If water pump belts (5) are not loose, broken, or missing, go to step 5.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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4. ENGINE COOLANT TEMPERATURE EXCEEDS 2250F (1070C) - CONTINUED.

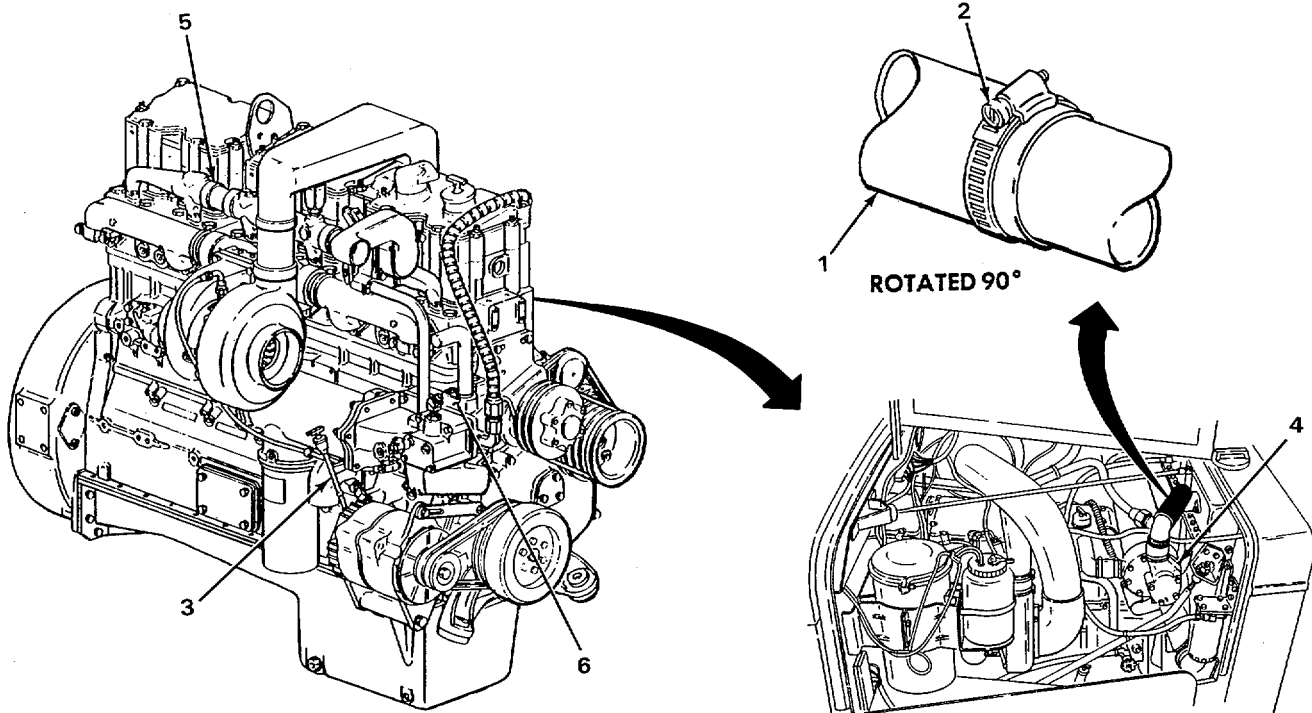
WARNING

Draining hot cooling system is not recommended. If coolant must be drained with engine hot, use gloves to protect against hot coolant. Severe burns could result.

- Step 5. Check radiator hoses (1) for loose, leaking, or collapsed condition.
- If radiator coolant hoses (1) are loose, tighten clamps (2) using 1/4-inch flat-tip screwdriver.
 - If radiator coolant hoses (1) are leaking or collapsed, replace (page 2-639, 2-643, and 2-647).
 - If radiator coolant hoses (1) are not loose, leaking, or collapsed, go to step 6.
- Step 6. Check that engine oil level is between H and L marks on dipstick (3) (TM 5-3805-254-10).
- If engine oil level is below L mark on dipstick (3), add oil to proper level (page 2-4).
 - If engine oil level is between H and L marks on dipstick (3), go to step 7.
 - If above H-level, go to malfunction 10 (page 2-112).
- Step 7. Check thermostat housing (4) for leaking condition.
- If thermostat housing (4) is leaking, replace gasket and test thermostat (page 2-633).
 - If thermostat housing (4) is not leaking, go to step 8.
- Step 8. Check water manifold (5) for leaking condition.
- If water manifold (5) is leaking, notify Direct Support Maintenance.
 - If water manifold (5) is not leaking, go to step 9.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

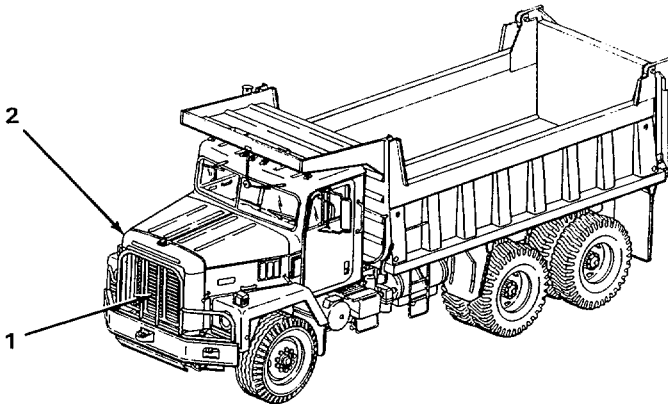
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 9.	Check water pump (6) for leaking condition.	<ul style="list-style-type: none"> a. If water pump (6) is leaking, notify Direct Support Maintenance. b. If water pump (6) is not leaking, go to step 10.
Step 10.	Remove thermostat and check that it is open completely (page 2-633).	<ul style="list-style-type: none"> a. If thermostat is defective, replace (page 2-633). b. If thermostat is not defective, notify Direct Support Maintenance.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
5. ENGINE DOES NOT REACH OPERATING TEMPERATURE, 165°F (740C).		
	Step 1. Check that shutters (1) on radiator (2) are closed.	
	a. If shutters (1) are not closed, notify Direct Support Maintenance.	
	b. If shutters (1) are closed, go to step 2.	
	Step 2. Remove thermostat and check for proper operation (page 2-633).	
	a. If thermostat is defective, replace (page 2-633).	
	b. If thermostat is not defective, go to step 3.	
	Step 3. Test coolant (TB 750-651) for correct amount of water and antifreeze.	
	a. If coolant mixture is not as specified, drain and fill radiator (page 2-628).	
	b. If coolant mixture is as specified, notify Direct Support Maintenance.	



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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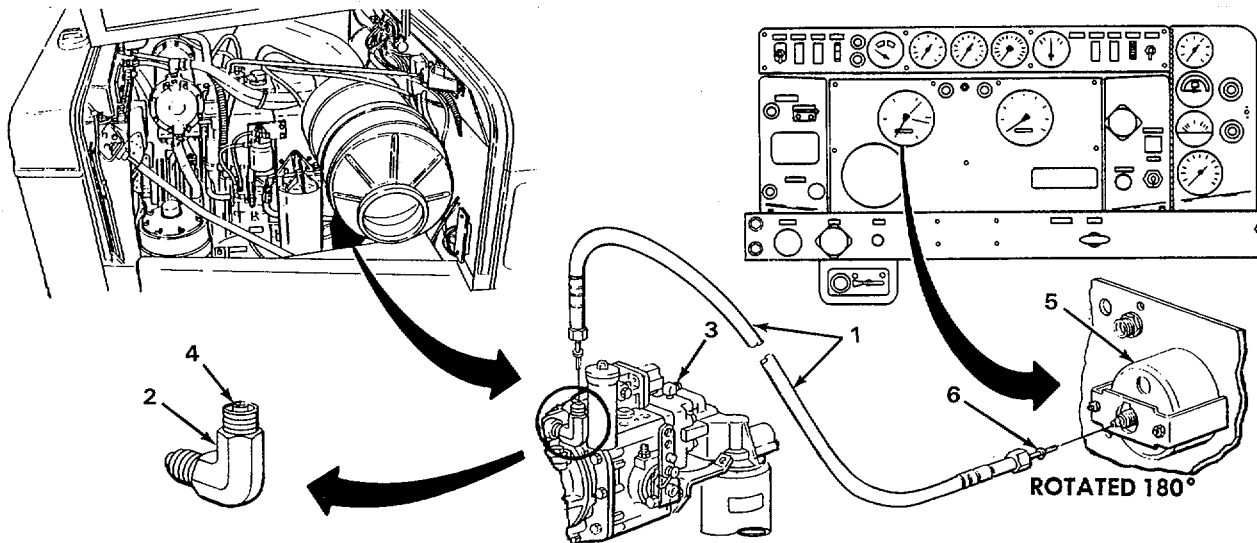
6. ENGINE TACHOMETER DOES NOT WORK.

Step 1. Using 1-inch open-end wrench, unscrew and take tachometer cable (1) off cable adapter (2) on fuel pump (3). Have assistant start engine (TM 5-3805-254-10). Look into cable adapter (2) and see if cable drive (4) is turning. Have assistant shut down engine (TM 5-3805-254-10).

- a. If cable drive (4) is not turning, notify Direct Support Maintenance.
- b. If cable drive (4) is turning, screw tachometer cable (1) onto cable adapter (2) and tighten using 1-inch open-end wrench. Go to step 2.

Step 2. Open lower center instrument panel (page 2-424). Using 3/4-inch open-end wrench, unscrew and take tachometer cable (1) off tachometer head (5). Start engine (TM 5-3805-254-10) and see if cable core (6) is turning. Shut down engine (TM 5-3805-254-10).

- a. If cable core (6) is not turning, replace tachometer drive cable (1) (page 2-1420).
- b. If cable core (6) is turning, replace tachometer head (5) (page 2-1411).



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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7. ENGINE WILL NOT SHUT DOWN.

WARNING

Care must be taken when working under hood while engine is running. Hands must be kept away from belts, fan, and other moving parts. Failure to observe this precaution could cause serious injury to personnel.

Step 1. Turn manual override thumbscrew (1) on fuel solenoid (2) fully counterclockwise to stop engine.

Step 2. Set multimeter to 20 vdc scale. Connect red test lead to terminal (3) on fuel solenoid (2) and black test lead to ground. Have assistant rotate KEY SWITCH (4) counterclockwise to off position. Check for no voltage on multimeter. Disconnect test leads.

Maintenance. a. If multimeter reads no voltage, fuel solenoid (2) must be replaced. Notify Direct Support

b. If multimeter reads 11 to 13 vdc, go to step 3.

Step 3. Set multimeter to 20 vdc scale. Connect red test lead to output terminal (5) on rear of KEY SWITCH (4) and black test lead to ground. Check for no voltage on multimeter. Disconnect test leads.

a. If multimeter reads 11 to 13 vdc, replace KEY SWITCH (4) (page 2-740).

b. If multimeter reads no voltage and engine still will not shut down, notify Direct Support Maintenance.

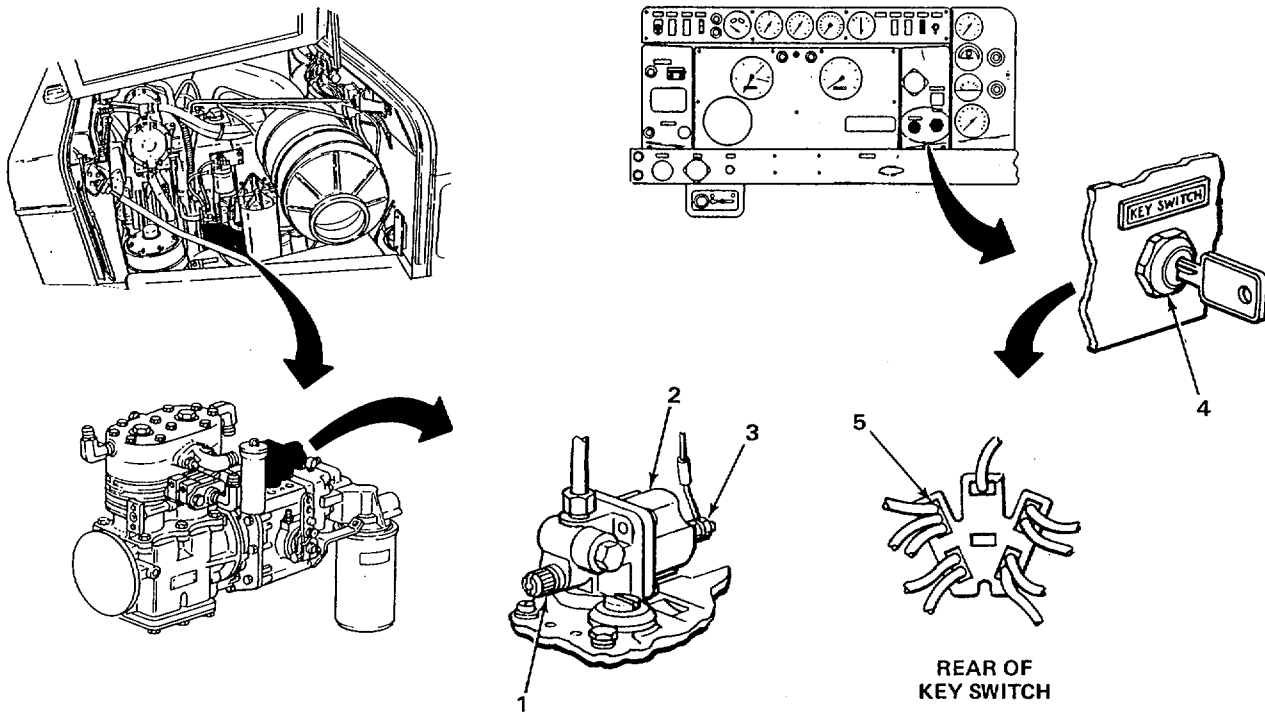
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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8. ENGINE OIL PRESSURE INDICATION BELOW 15 PSI AT IDLE.

Start engine (TM 5-3805-254-10) and allow to reach operating temperature. Shut down engine (TM 5-3805-254-10). Remove engine OIL PRESSURE gage (page 2-1426). Connect Simplified Test Equipment for Internal Combustion Engines (STE/ICE) to engine oil pressure gage supply line. Start engine (TM 5-3805-254-10) and check for 15 psi or more at idle on STE/ICE readout display. Shut down engine (TM 5-3805-254-10) and disconnect STE/ICE.

- a. Check oil level (TM 5-3805-254-10).
- b. If display reads 15 psi or more at idle, replace engine OIL PRESSURE gage (page 2-1426).
- c. If display reads less than 15 psi at idle, notify Direct Support Maintenance.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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9. ENGINE OIL PRESSURE INDICATION ABOVE 75 PSI AT 2100 RPM.

Start engine (TM 5-3805-254-10) and allow to reach operating temperature. Shut down engine (TM 5-3805-254-10). Remove engine OIL PRESSURE gage (page 2-1426). Connect Simplified Test Equipment for Internal Combustion Engines (STE/ICE) to engine oil pressure gage supply line. Start engine (TM 5-3805-254-10) and check for 40 to 75 psi at 2100 rpm on STE/ICE readout display. Shut down engine (TM 5-3805-254-10) and disconnect STE/ICE.

NOTE

For normal operating engine oil pressure refer to TM 5-3805-254-10.

- a. Check oil level (TM 5-3805-254-10).
- b. If display is between 40 and 75 psi at 2100 rpm, replace engine OIL PRESSURE gage (page 2-1426).
- c. If display is above 75 psi at 2100 rpm, notify Direct Support Maintenance.

10. ENGINE USES TOO MUCH FUEL.

Step 1. Check AIR CLEANER VACUUM gage reading (TM 5-3805-254-10). If in red zone, remove air cleaner element (1) (page 2-452) and check for clogged or damaged condition.

- a. If air cleaner element (1) is clogged or damaged, clean or replace (page 2-452).
- b. If air cleaner element (1) is not clogged or damaged, install (page 2-452) and go to step 2.

Step 2. Check muffler (2) and exhaust pipes (3) for clogged or damaged condition.

- a. If muffler (2) or exhaust pipes (3) are clogged or damaged, clean or replace (page 2-604 or 2-590).
- b. If muffler (2) or exhaust pipes (3) are not clogged or damaged, go to step 3.

Step 3. Check that engine oil level is not above H mark on dipstick (4) (TM 5-3805-254-10).

- a. If engine oil level is above H mark on dipstick (4), check for presence of diesel fuel in engine oil. If diesel fuel is present, notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
		<ul style="list-style-type: none">b. If engine oil level is above H mark on dipstick (4) and fuel oil is not present, drain oil to proper level (page 2-4).c. If engine oil level is below L mark on dipstick (4), add oil to proper level (page 2-4).d. If engine oil level is between H and L mark on dipstick (4), go to step 4.
Step 4.	Check fuel tanks (5) and all fuel lines for leaking condition.	<ul style="list-style-type: none">a. If fuel tanks (5) or fuel lines are leaking, replace (page 2-528, 2-537, or 2-488).b. If fuel tanks (5) and fuel lines are not leaking, notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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11. ENGINE KNOCKS.

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury to personnel.

Step 1. Check fuel tanks (1) for water in diesel fuel.

- a. If water is present, drain fuel system and refill, (page 2-514).
- b. If no water is present, go to step 2.

Step 2. Check fuel suction lines from fuel tanks (1) to fuel pump (2) for air leaks caused by holes, dents, cracks, or breaks; and loose connections due to stripped or damaged threads.

- a. If fuel suction lines are leaking, notify Direct Support Maintenance.
- b. If fuel suction lines are not leaking, go to step 3.

Step 3. Check engine WATER TEMP gage (3).

- a. If WATER TEMP gage (3) reads below 1650F, go to Malfunction 5, ENGINE DOES NOT REACH OPERATING TEMPERATURE, 165°F (740C) (page 2-108).
- b. If WATER TEMP gage (3) reads above 1950F, notify Direct Support Maintenance.

12. ENGINE OIL LEVEL ABOVE FULL MARK.

Go to Malfunction 10, ENGINE USES TOO MUCH FUEL, step 3 (page 2-112).

13. ENGINE USES TOO MUCH OIL.

Step 1. Remove engine oil breather (TM 5-3805-254-10) and check for clogged or damaged condition.

- a. If engine oil breather is clogged or damaged, clean or replace (TM 5-3805-254-10).
- b. If engine oil breather is not clogged or damaged, go to step 2.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

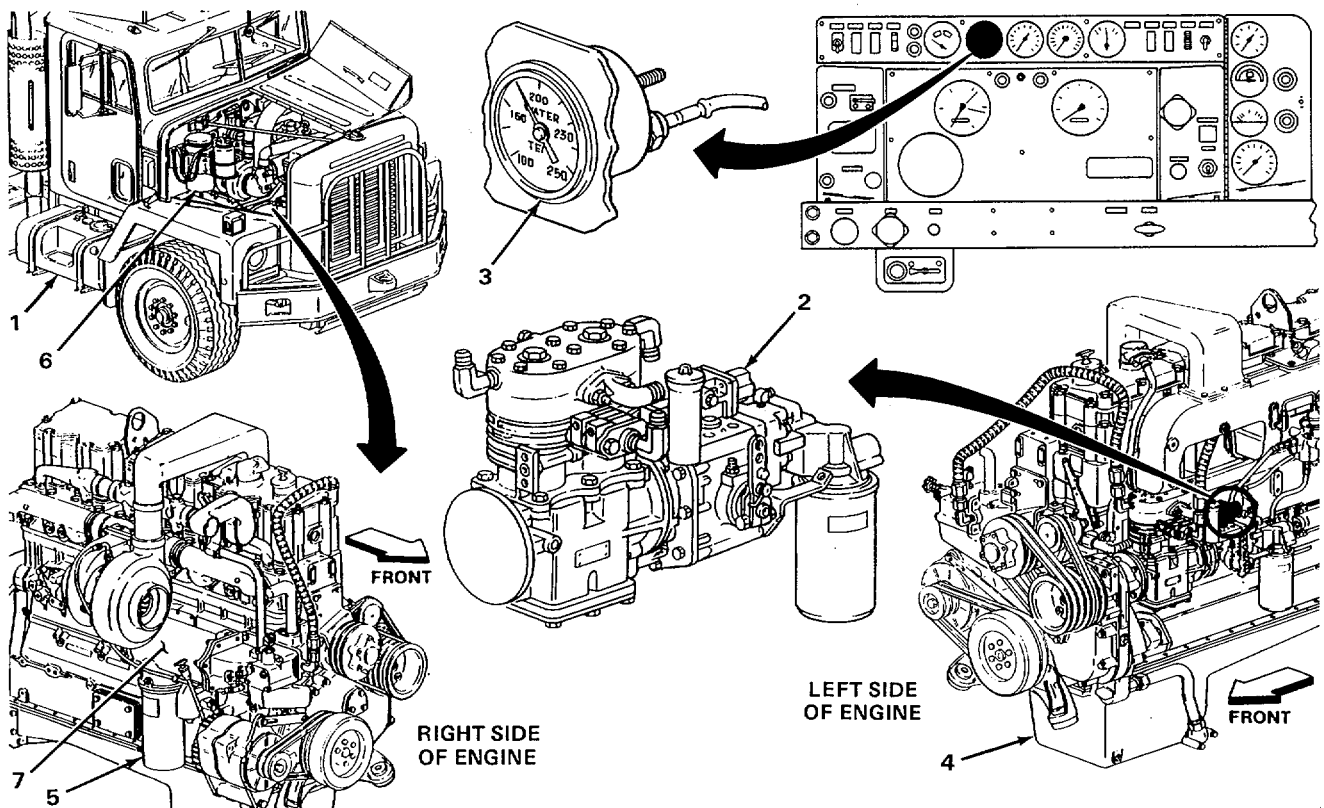
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 2. Check oil pan drain plug (4) for leaking condition.

- a. If oil pan drain plug (4) is leaking tighten. If damaged replace (page 2-4).
- b. If oil pan drain plug (4) is not leaking, go to step 3.

Step 3. Check engine full-flow oil filter (5), auxiliary oil filter (6), and oil cooler (7) for leaking condition.

- a. If engine full-flow oil filter (5) or auxiliary oil filter (6) are leaking, replace (page 2-8 or 2-12).
- b. If engine oil cooler (7) is leaking, notify Direct Support Maintenance.
- c. If engine full-flow oil filter (5), auxiliary oil filter (6) and oil cooler (7) are not leaking, notify Direct Support Maintenance.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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14. ENGINE BLOWS BLACK OR GREY SMOKE.

Step 1. Check AIR CLEANER VACUUM reading (TM 5-3805-254-10). If in red zone, remove air cleaner element (1) (page 2-452) and check for clogged or damaged condition.

- a. If air cleaner element (1) is clogged or damaged, clean or replace (page 2-452).
- b. If air cleaner element (1) is not clogged or damaged, install (page 2-452) and go to step 2.

Step 2. Check muffler (2) and exhaust pipes (3) for clogged or damaged condition.

- a. If muffler (2) or exhaust pipes (3) are clogged or damaged, clean or replace (page 2-604 or 2-590).
- b. If muffler (2) or exhaust pipes (3) are not clogged or damaged, go to step 3.

Step 3. Check for loose, broken, or kinked lines (4) at aneroid control valve (5).

- a. If lines (4) are loose, tighten using two 9116-inch open-end wrenches.
- b. If lines (4) are broken or kinked, notify Direct Support Maintenance.

15. ENGINE DOES NOT ACCELERATE

Step 1. Check for kinked, bent, or clogged fuel lines at fuel tanks (6).

- a. If fuel lines are kinked, bent, or clogged, notify Direct Support Maintenance.
- b. If fuel lines are not kinked, bent, or clogged, go to step 2.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

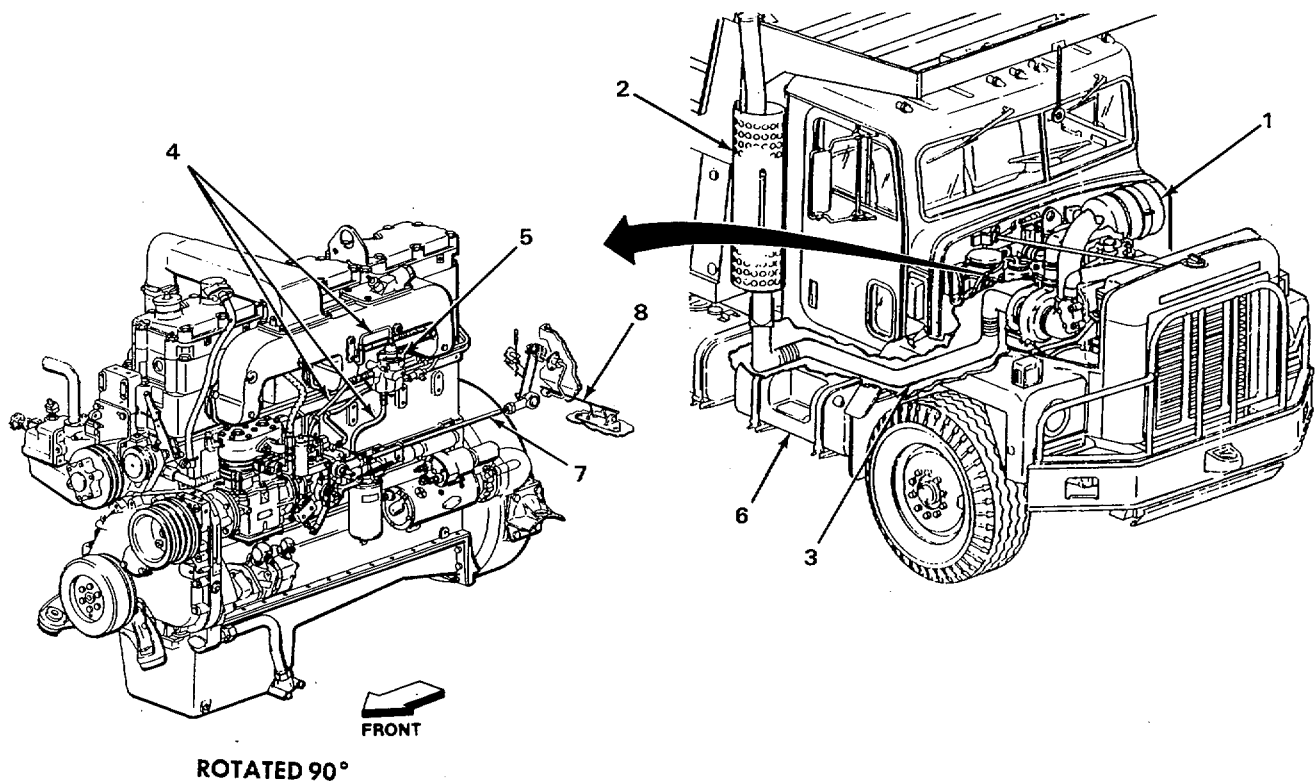
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 2. Check fuel tanks (6) for water in diesel fuel.

- a. If water is present, drain fuel system and refill (page 2-514) and 2-544).
- b. If no water is present, go to step 3.

Step 3. Check accelerator linkage (7) for full travel as follows: Have assistant press accelerator pedal (8) slowly to floor, then release.

If accelerator linkage (7) does not move full travel, accelerator linkage (7) must be adjusted. Notify Direct Support Maintenance.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

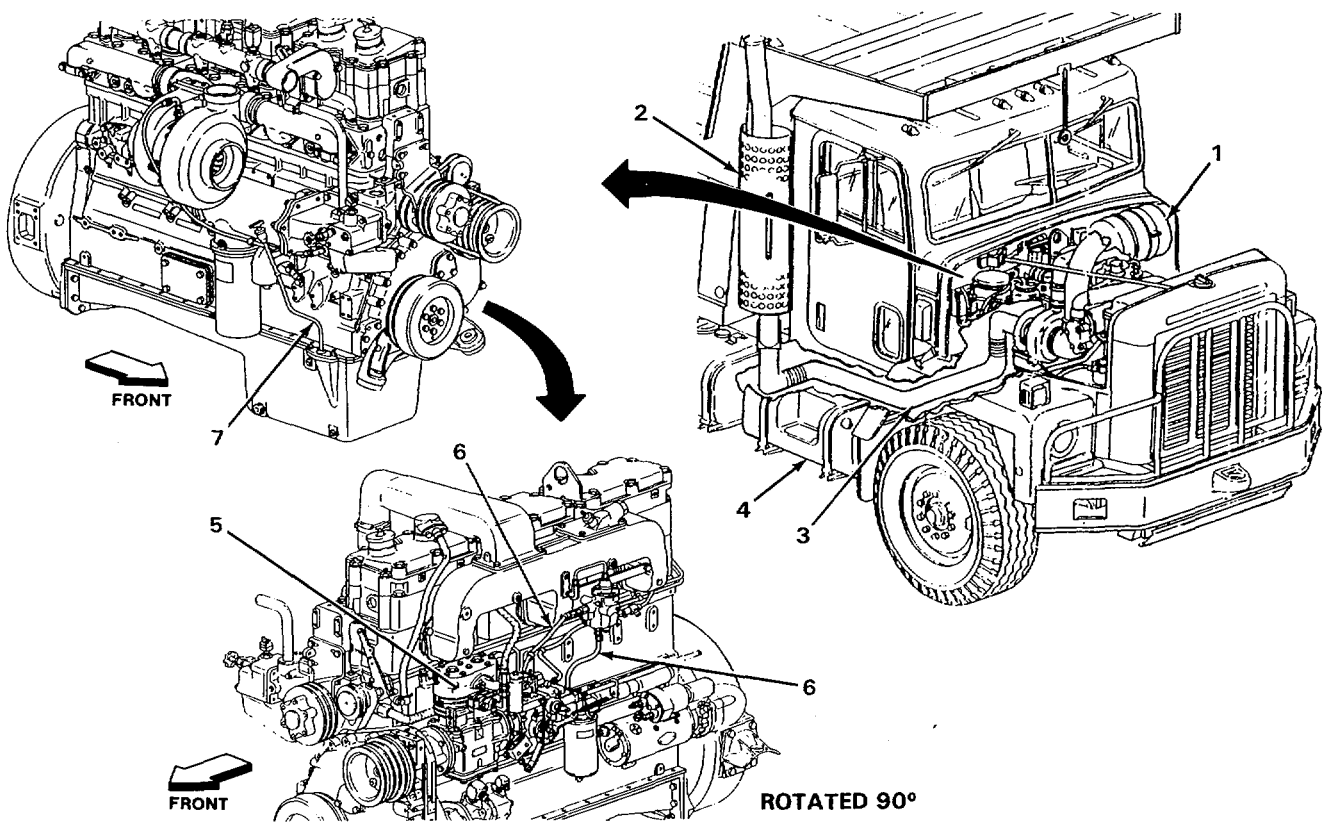
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
16. ENGINE LACKS POWER.		
Step 1.	Check AIR CLEANER VACUUM gate reading (TM 5-3805-254-10). If in red zone, remove air cleaner element (1) (page 2-452) and check for clogged or damaged condition.	<ul style="list-style-type: none">a. If air cleaner element (1) is clogged or damaged, clean or replace (page 2-452).b. If air cleaner element (1) is not clogged or damaged, go to step 2.
Step 2.	Check muffler (2) or exhaust pipes (3) for clogged or damaged condition.	<ul style="list-style-type: none">a. If muffler (2) or exhaust pipes (3) are clogged or damaged, clean or replace (page 2-604 or 2-590).b. If muffler (2) or exhaust pipes (3) are not clogged or damaged, go to step 3.
Step 3.	Check fuel tanks (4) for water in diesel fuel.	<ul style="list-style-type: none">a. If water is present, drain fuel system and refill (page 2-514 and 2-544).b. If water is not present, go to step 4.
Step 4.	Check fuel suction lines from fuel tanks (4) to fuel pump (5) for air leaks.	<ul style="list-style-type: none">a. If fuel suction lines are leaking, notify Direct Support Maintenance.b. If fuel suction lines are not leaking, go to step 5.
Step 5.	Check fuel tanks (4) and all fuel delivery lines to cylinder head (6) for bent or leaking condition.	<ul style="list-style-type: none">a. If fuel tanks (4) or fuel delivery lines are bent or leaking, notify Direct Support Maintenance.b. If fuel tanks (4) and fuel delivery lines are not leaking, go to step 6.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 6. Check that engine oil level is not above H mark on dipstick (7) (TM 5-3805-254-10).

- a. If engine oil level is above H mark on dipstick (7), check for presence of diesel fuel in engine oil. If diesel fuel is present, notify Direct Support Maintenance.
- b. If engine oil level is above H mark on dipstick (7) and fuel oil is not present, drain oil to proper level (page 2-4).
- c. If engine oil level is not above H mark on dipstick (7), go to step 7.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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16. ENGINE LACKS POWER - CONTINUED.

Step 7. Turn radiator cap (1) counterclockwise and take off. Check that engine coolant level is within 1 inch (25.4 mm) below top of top tank.

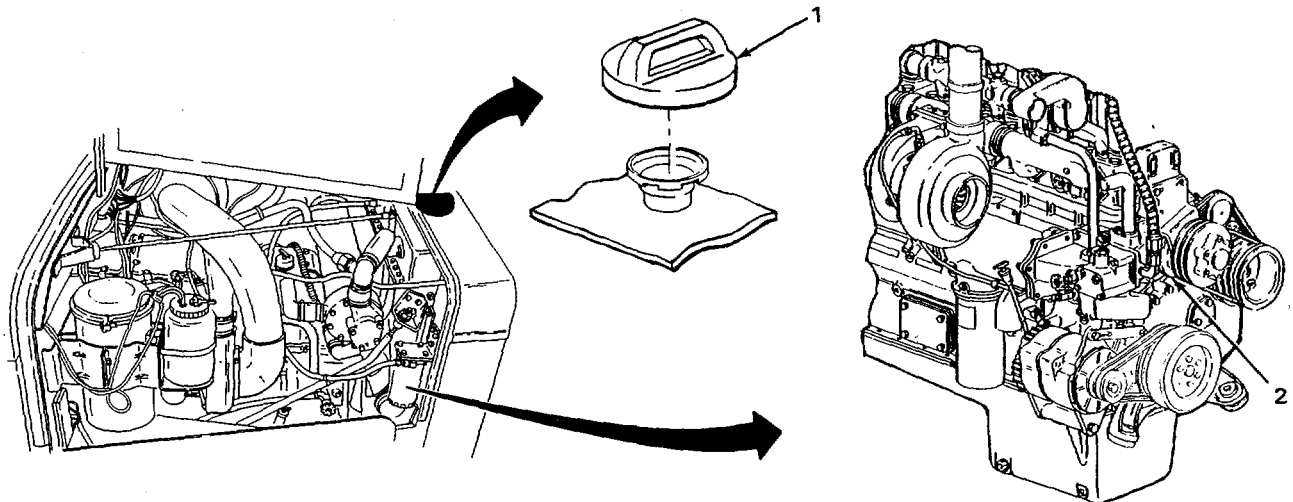
- a. If engine coolant is low, fill radiator to proper level (page 2-628).
- b. If engine coolant is at proper level, go to step 8.

Step 8. Check water pump (2) for worn or leaking condition.

- a. If water pump (2) is worn or leaking, water pump (2) must be replaced. Notify Direct Support Maintenance.
- b. If water pump (2) is not worn or leaking, go to step 9.

Step 9. Remove and test thermostat (page 2-633).

- a. If thermostat is defective, replace (page 2-633).
- b. If thermostat is not defective, notify Direct Support Maintenance.



TA243789

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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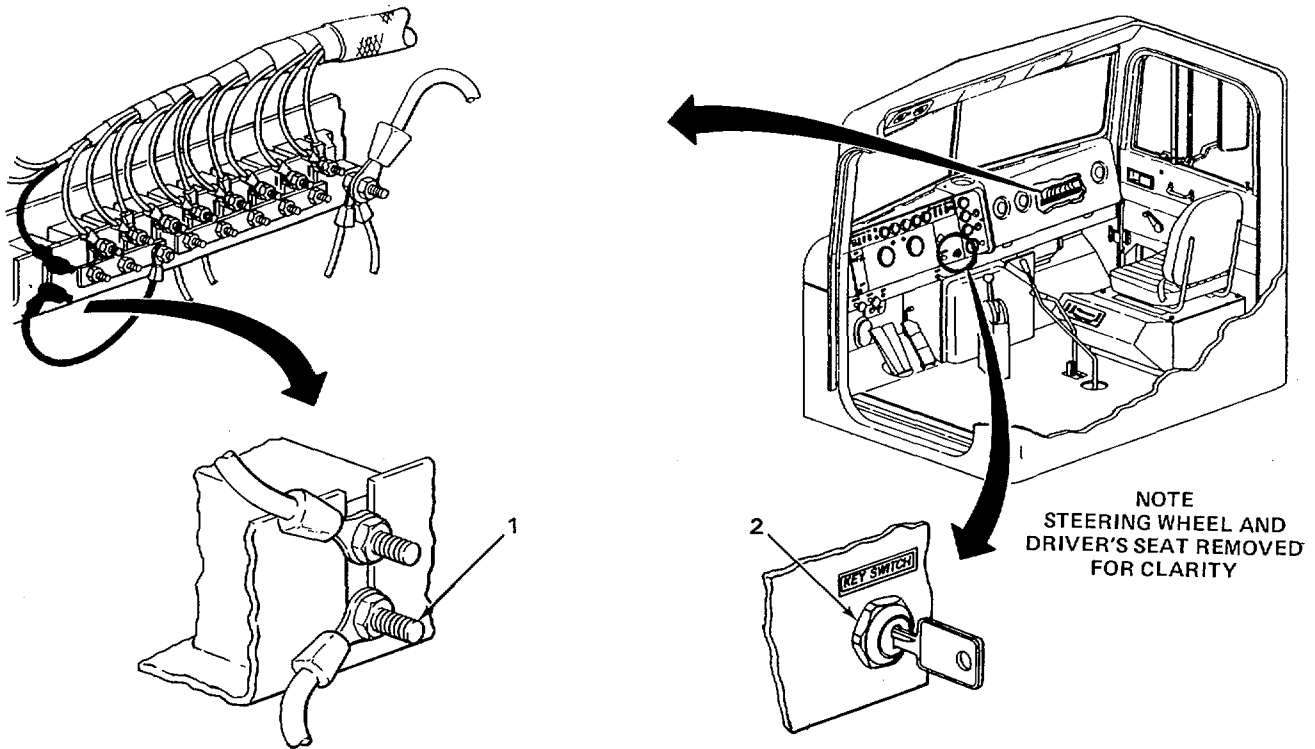
17. ENGINE COMPRESSION BRAKE DOES NOT WORK.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

Step 1. Set multimeter to 20 vdc scale. Connect red test lead to circuit breaker feed stud (1) and black test lead to ground. Rotate KEY SWITCH (2) clockwise to on position and check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (2) counterclockwise to off position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, go to step 3.
- b. If multimeter reads 11 to 13 vdc, go to step 2.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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17. ENGINE COMPRESSION BRAKE DOES NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

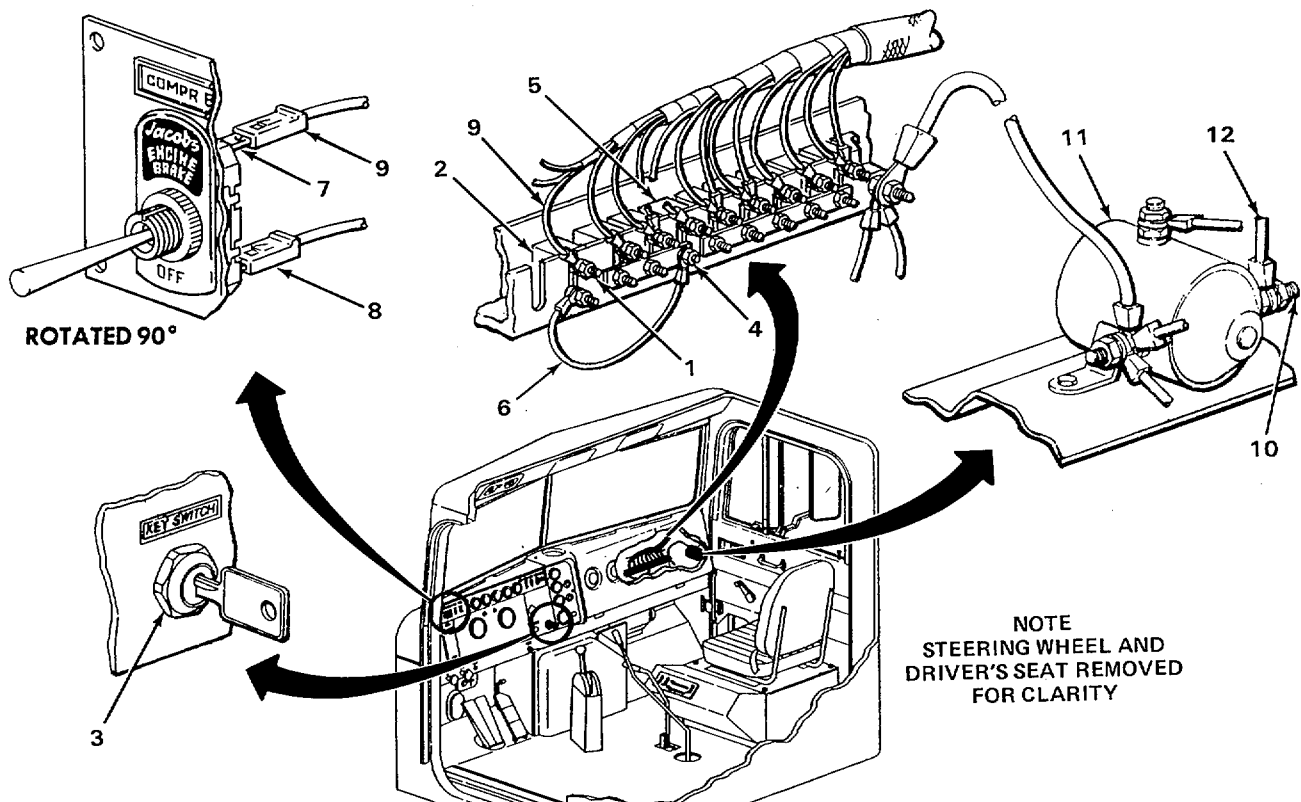
- Step 2. Set multimeter to 20 vdc scale. Connect red test lead to output terminal (1) on engine compression brake circuit breaker (2) and black test lead to ground. Rotate KEY SWITCH (3) clockwise to on position and check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.
- If multimeter does not read 11 to 13 vdc, replace engine compression brake circuit breaker (2) (page 2-748).
 - If multimeter reads 11 to 13 vdc, go to step 4.
- Step 3. Set multimeter to 20 vdc scale. Connect red test lead to input terminal (4) on backup light circuit breaker (5) and black test lead to ground. Rotate KEY SWITCH (3) clockwise to on position and check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.
- If multimeter does not read 11 to 13 vdc, go to step 5.
 - If multimeter reads 11 to 13 vdc, 14 wire (6) must be replaced. Notify Direct Support Maintenance.
- Step 4. Open lower center instrument panel (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to input terminal (7) on COMPR BRK switch (8) and black test lead to ground. ROTATE KEY SWITCH (3) clockwise to on position and check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.
- If multimeter does not read 11 to 13 vdc, 24 wire (9) must be replaced. Notify Direct Support Maintenance.
 - If multimeter reads 11 to 13 vdc, go to step 6.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 5. Set multimeter to 20 vdc scale. Connect red test lead to output terminal (10) on secondary magnetic switch (11) and black test lead to ground. Rotate KEY SWITCH (3) clockwise to on position and check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.

If multimeter does not read 11 to 13 vdc, notify Direct Support Maintenance.



TA243791

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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17. ENGINE COMPRESSION BRAKE DOES NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

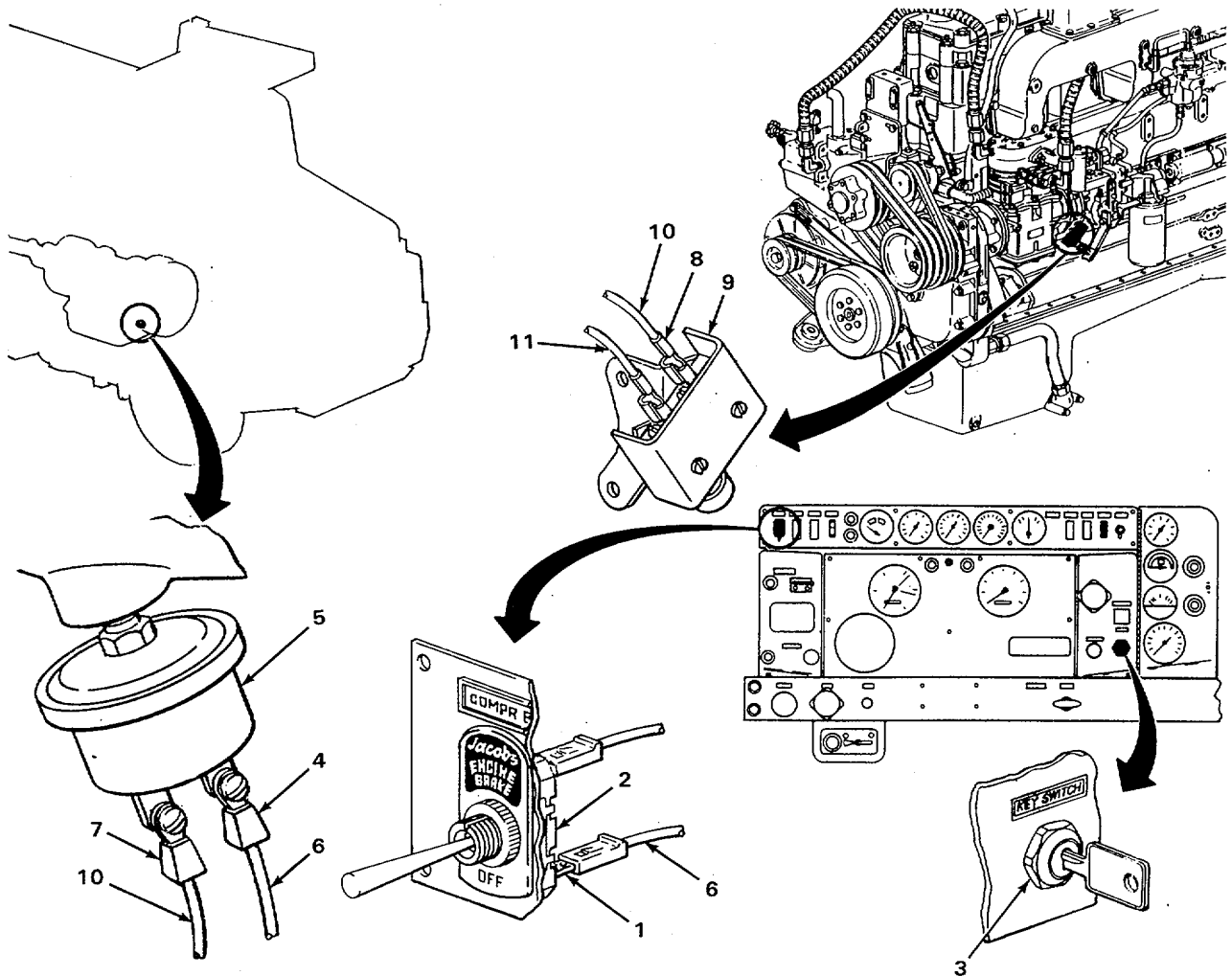
- Step 6. Set multimeter to 20 vdc scale. Connect red test lead to output terminal (1) on COMPR BRK switch (2) and black test lead to ground. Rotate KEY SWITCH (3) clockwise to on position and check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.
- If multimeter does not read to 11 to 13 vdc, replace COMPR BRK switch (2) (page 2-735).
 - If multimeter reads 11 to 13 vdc, close lower center instrument panel (page 2-424) and go to step 7.
- Step 7. Set multimeter to 20 vdc scale. Connect red test lead to input terminal (4) on transmission pressure switch (5) and black test lead to ground. Rotate KEY SWITCH (3) clockwise to on position and check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.
- If multimeter does not read 11 to 13 vdc, 24A wire (6) must be replaced. Notify Direct Support Maintenance.
 - If multimeter reads 11 to 13 vdc, go to step 8.
- Step 8. Connect jumper wire across input terminal (4) and output terminal (7) on transmission pressure switch (5). Set multimeter to 20 vdc scale. Connect red test lead to input terminal (8) on throttle switch (9) and black test lead to ground. Have assistant rotate KEY SWITCH (3) clockwise to on position. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.
- If multimeter does not read 11 to 13 vdc, 24B wire (10) must be replaced. Notify Direct Support Maintenance.
 - If multimeter reads 11 to 13 vdc, go to step 9.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 9. Set multimeter to 20 vdc scale. Connect red test lead to output terminal (11) on throttle switch (9) and black test lead to ground. Have assistant rotate KEY SWITCH (3) clockwise to on position. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads and jumper wire.

- a. If multimeter does not read 11 to 13 vdc, replace throttle switch (10) (page 2-695).
- b. If multimeter reads 11 to 13 vdc, go to step 10.



TA243792

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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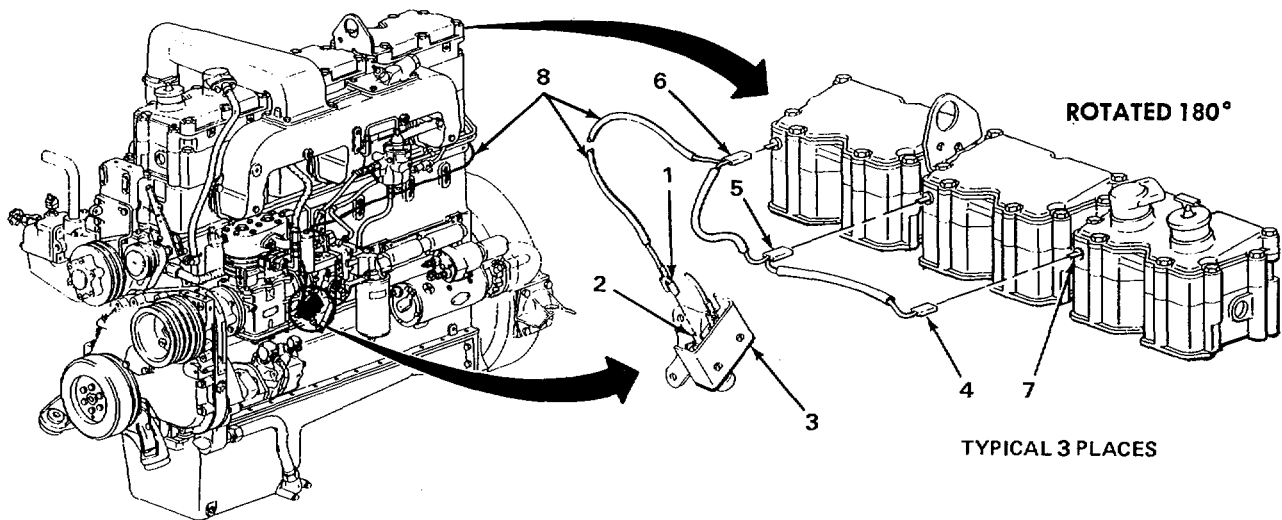
17. ENGINE COMPRESSION BRAKE DOES NOT WORK -CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

Step 10. Pull wire connector (1) off output terminal (2) on throttle switch (3) and pull three wire connectors (4, 5, and 6) off cylinder head connectors (7). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire connector (1) and black test lead to wire connector (4). Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter reads no continuity, 24 wire (8) must be replaced. Notify Direct Support Maintenance.
- b. If multimeter reads 0 ohms, push three wire connectors (4, 5, and 6) onto cylinder head connectors (7) and push wire connector (1) onto output terminal (2). Disconnect jumper wire and replace engine compression break pressure gage (page 2-683). If engine compression brake still does not work, notify Direct Support Maintenance.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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18. ENGINE IS HARD TO START.

Check surrounding air temperature and go to applicable malfunction.

- a. If engine is hard to start above 50°F (180C), go to Malfunction 2, ENGINE CRANKS BUT FAILS TO START ABOVE 50°F (180C) (page 2-68).
- b. If engine is hard to start below 50°F (180C), go to Malfunction 1, ENGINE CRANKS BUT FAILS TO START BELOW 500F (180C) (page 2-47).

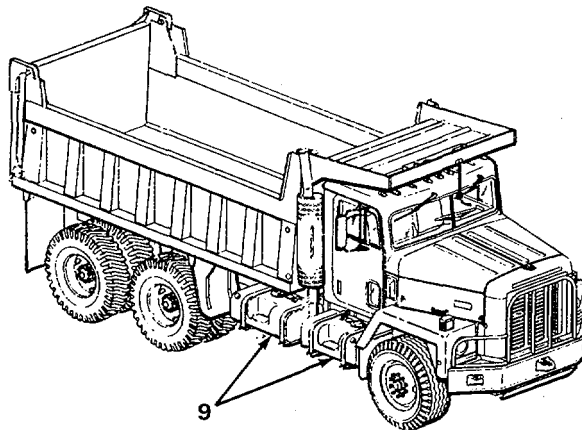
19. ENGINE STARTS BUT DOES NOT STAY RUNNING.

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury to personnel.

Step 1. Check fuel tanks (9) for water in diesel fuel.

- a. If water is present, drain fuel system and refill (page 2-514).
- b. If no water is present go to step 2



TA243794

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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19. ENGINE STARTS BUT DOES NOT STAY RUNNING - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

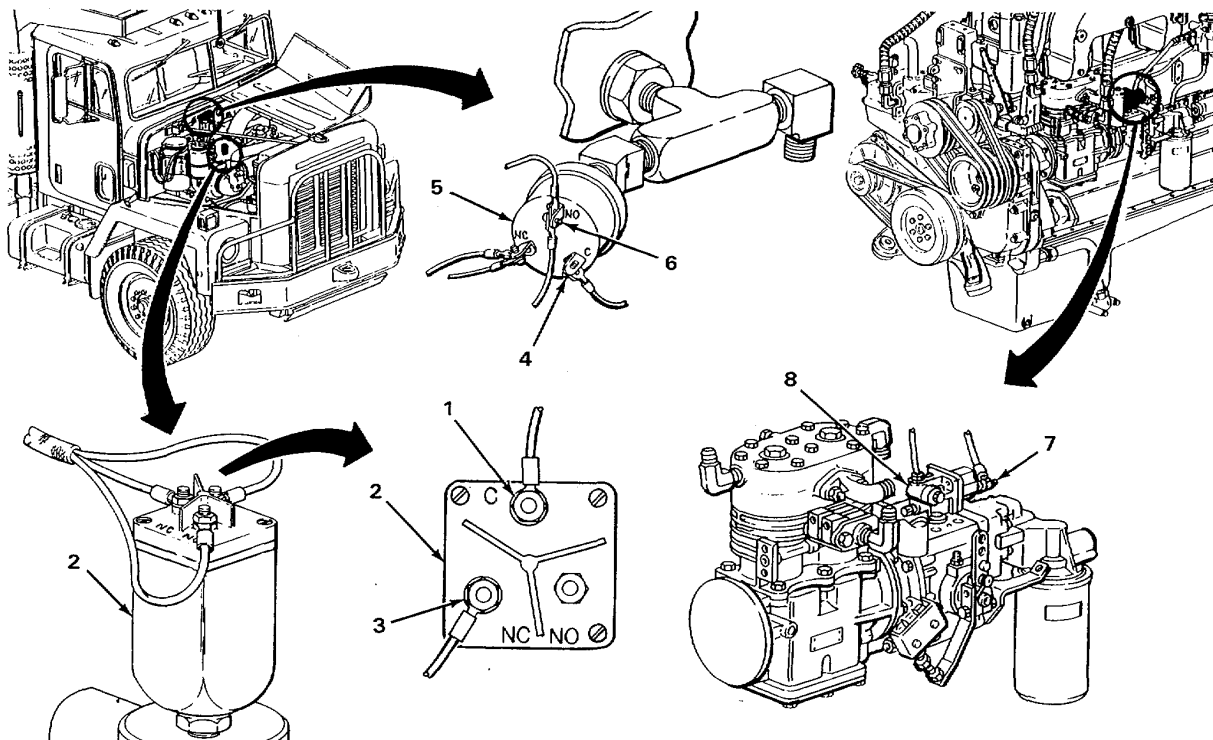
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

When performing steps 2 thru 6, it is important to observe multimeter reading the instant that engine begins to shut down.

- Step 2. Using multimeter set to 20 vdc scale, connect red test lead to C terminal (1) on water temperature switch (2) and black test lead to ground. Start engine (TM 5-3805-254-10). Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, go to step 7.
 - b. If multimeter reads 11 to 13 vdc, go to step 3.
- Step 3. Using multimeter set to 20 vdc scale, connect red test lead to NC terminal (3) on water temperature switch (2) and black test lead to ground. Start engine (TM 5-3805-254-10). Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, replace water temperature switch (2) (page 2-675).
 - b. If multimeter reads 11 to 13 vdc, go to step 4.
- Step 4. Using multimeter set to 20 vdc scale, connect red test lead to C terminal (4) on oil pressure switch (5) and black test lead to ground. Start engine (TM 5-3805254-10). Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, go to step 8.
 - b. If multimeter reads 11 to 13 vdc, go to step 5.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 5.	Using multimeter set to 20 vdc scale, connect red test lead to NO terminal (6) on oil pressure switch (5) and black test lead to ground. Start engine (TM 5-3805-254-10). Check for 11 to 13 vdc on multimeter. Disconnect test leads.	<ul style="list-style-type: none"> a. If multimeter does not read 11 to 13 vdc, replace oil pressure switch (5) (page 2-674). b. If multimeter reads 11 to 13 vdc, go to step 6.
Step 6.	Using multimeter set to 20 vdc scale, connect red test lead to terminal stud (7) on fuel solenoid (8) and black test lead to ground. Start engine (TM 5-3805254-10). Check for 11 to 13 vdc on multimeter. Disconnect test leads.	<ul style="list-style-type: none"> a. If multimeter does not read 11 to 13 vdc, go to step 9. b. If multimeter reads 11 to 13 vdc, fuel solenoid (8) must be replaced. Notify Direct Support Maintenance.



TA243795

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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19. ENGINE STARTS BUT DOES NOT STAY RUNNING - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

When performing following steps, KEY SWITCH must be in off position.

Step 7. Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to POS 1 terminal (1) on automatic override module (2) and black test lead to C terminal (3) on water temperature switch (4). Check for 0 ohms on multimeter. Disconnect test leads.

a. If multimeter reads no continuity, 19A wire (5) must be replaced. Notify Direct Support Maintenance.

b. If multimeter reads 0 ohms, go to step 10.

Step 8. Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to NC terminal (6) on water temperature switch (4) and black test lead to C terminal (7) on oil pressure switch (8). Check for 0 ohms on multimeter. Disconnect test leads.

If multimeter reads no continuity, 19C wire (9) must be replaced. Notify Direct Support Maintenance.

Step 9. Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to NC terminal (10) on oil pressure switch (8) and black test lead to terminal stud (11) on fuel solenoid (12). Check for 0 ohms on multimeter. Disconnect test leads.

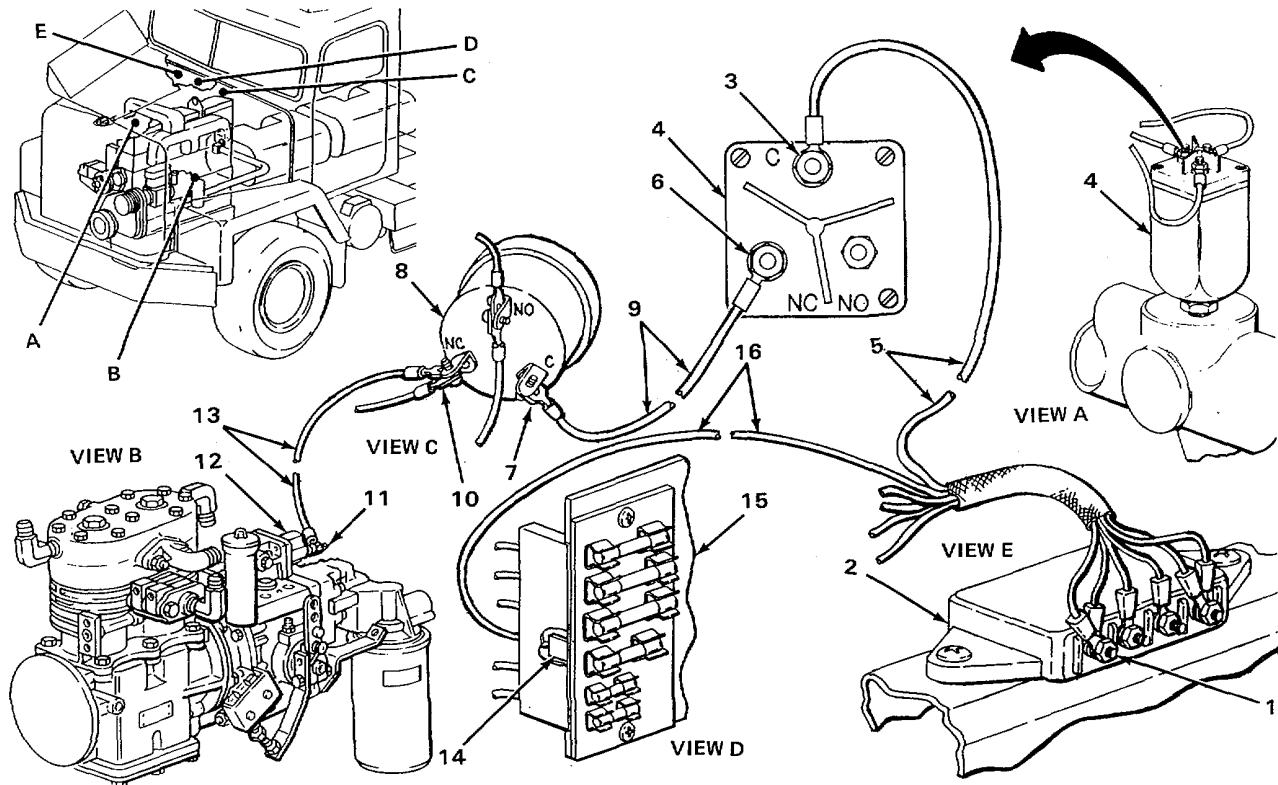
If multimeter reads no continuity, 19D wire (13) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 10. Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to output terminal (14) on fuse panel (15) and black test lead to POS 1 terminal (1) on automatic override module (2). Check for 0 ohms on multimeter. Disconnect test leads.

If multimeter reads no continuity, 19C wire (16) must be replaced. Notify Direct Support Maintenance.



TA243796

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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ELECTRICAL SYSTEM

20. ALL LIGHTS DO NOT WORK.

WARNING

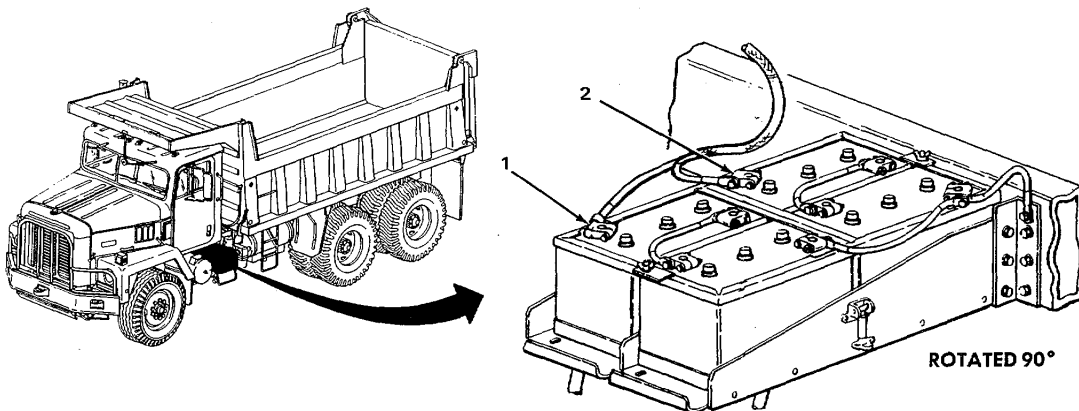
Do not smoke, use open flame, or allow sparks near batteries. Mixture of oxygen and hydrogen gases released from batteries is highly flammable and can explode causing serious injury or death.

Although key switch must be on and negative battery cable connected to test electrical circuit voltage, turn off key switch and disconnect negative battery cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

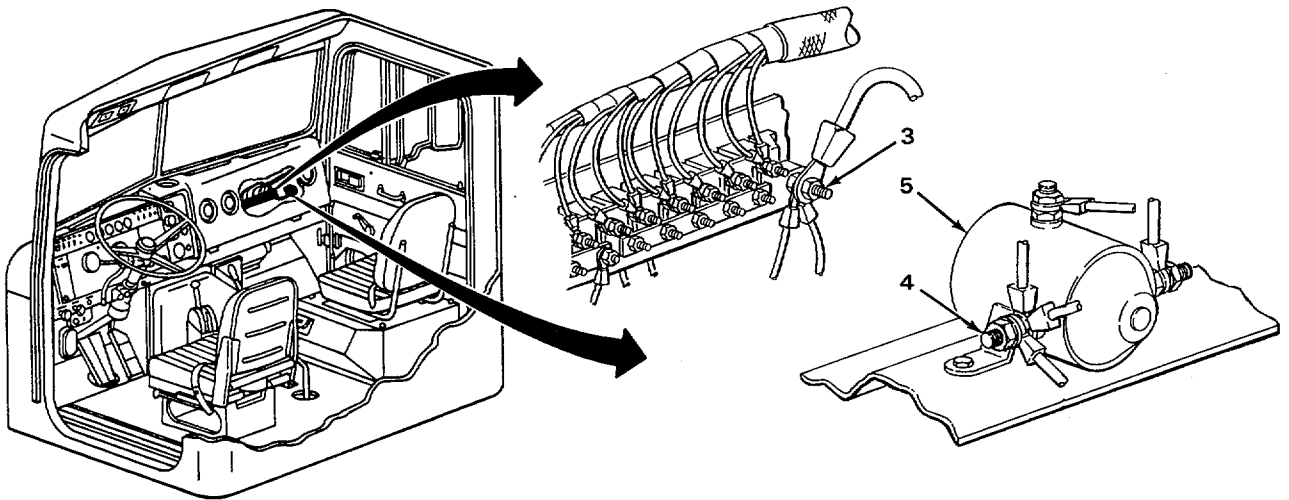
- Step 1. Check batteries as follows: Remove battery box cover (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to positive terminals (1) or (2) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, remove and clean battery cables (page 2-424).
 - b. If multimeter reads 11 to 13 vdc, install battery box cover (page 2-424) and go to step 2.



TA243797

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 2.	Remove instrument panel pad (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to circuit breaker strip feed stud (3) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.	<ul style="list-style-type: none"> a. If multimeter does not read 11 to 13 vdc go to step 3. b. If multimeter reads 11 to 13 vdc, go to step 9.
Step 3.	Set multimeter to 20 vdc scale. Connect red test lead to terminal (4) on secondary magnetic switch (5) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.	<ul style="list-style-type: none"> a. If multimeter does not read 11 to 13 vdc go to step 5. b. If multimeter reads 11 to 13 vdc, go to step 4.



TA243798

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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20. ALL LIGHTS DO NOT WORK - CONTINUED.

WARNING

Although key switch must be on and negative battery cable connected to test electrical circuit voltage, turn off key switch and disconnect negative battery cable before doing resistance test or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

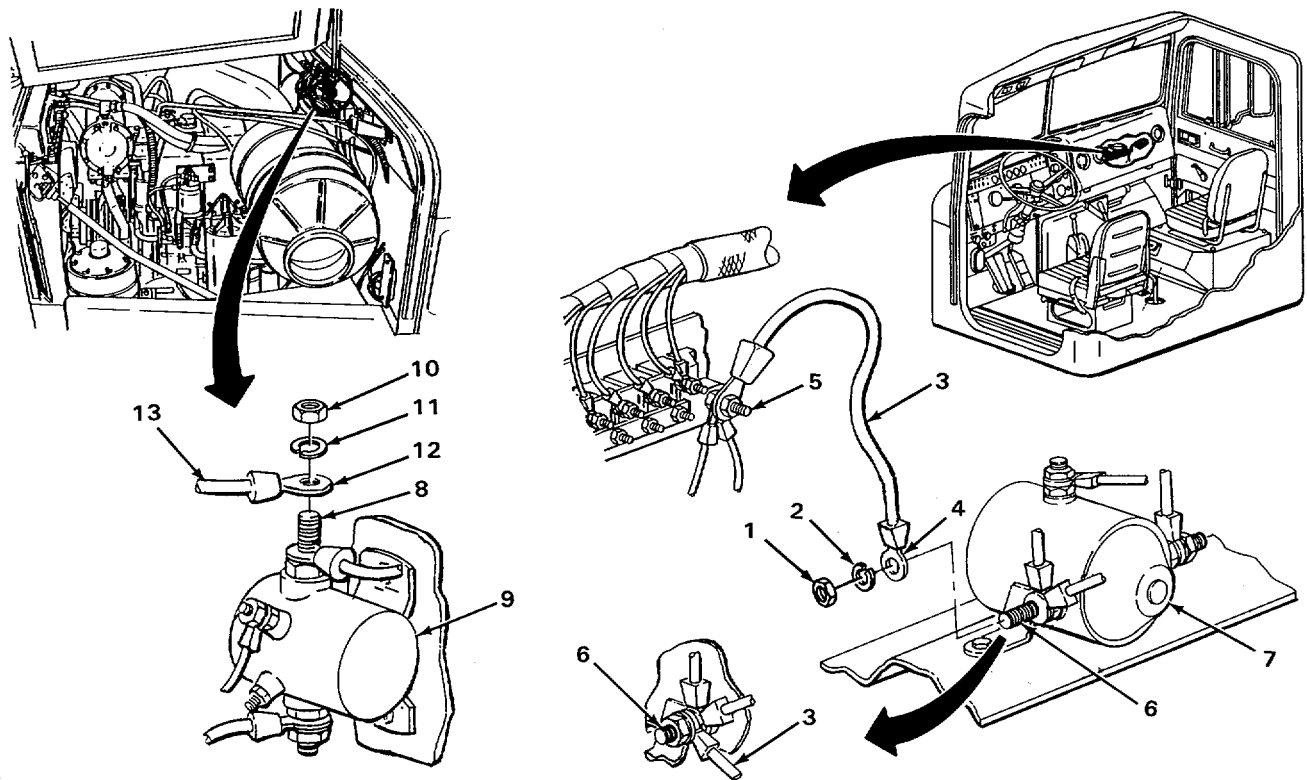
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 4. Test 8 wire (3) as follows: Disconnect batteries (page 2-424). Using 5/8-inch open-end wrench, unscrew and take off nut (1), lockwasher (2), and 8 wire (3). Set multimeter to ohms scale, and adjust to 0 ohms. Connect red test lead to wire terminal (4) and black test lead to circuit breaker strip feed stud (5). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, 8 wire (3) must be replaced. Notify Direct Support Maintenance.
 - b. If multimeter reads 0 ohms, place wire terminal (4) and lockwasher (2) in position and screw nut (1) onto terminal (6) of secondary magnetic switch (7) and tighten using 5/8-inch open-end wrench. Connect batteries (page 2-424) and go to step 5.
- Step 5. Open left side hood panel (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to terminal (8) on primary magnetic switch (9) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, install instrument panel pad (page 2-424) and go to step 7.
 - b. If multimeter reads 11 to 13 vdc, go to step 6.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 6. Disconnect batteries (page 2-424). Using 1/2-inch open-end wrench, unscrew and take off nut (10) lockwasher (11) and wire terminal (12). Set multimeter, set to ohms scale and adjust to 0 ohms. With assistance, connect red test lead to wire terminal (12) on 14-8 wire (13) and black test lead to terminal (6) on secondary magnetic switch (7). Check for 0 ohms on multimeter. Disconnect test leads.
- If multimeter reads no continuity, 14-8 wire (13) must be replaced. Notify Direct Support Maintenance.
 - If multimeter reads 0 ohms, place wire terminal (12) in position and screw nut (10) and lockwasher (11) on to terminal (8) and tighten using 1/2-inch open-end wrench. Go to step 7.



TA243799

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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20. ALL LIGHTS DO NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

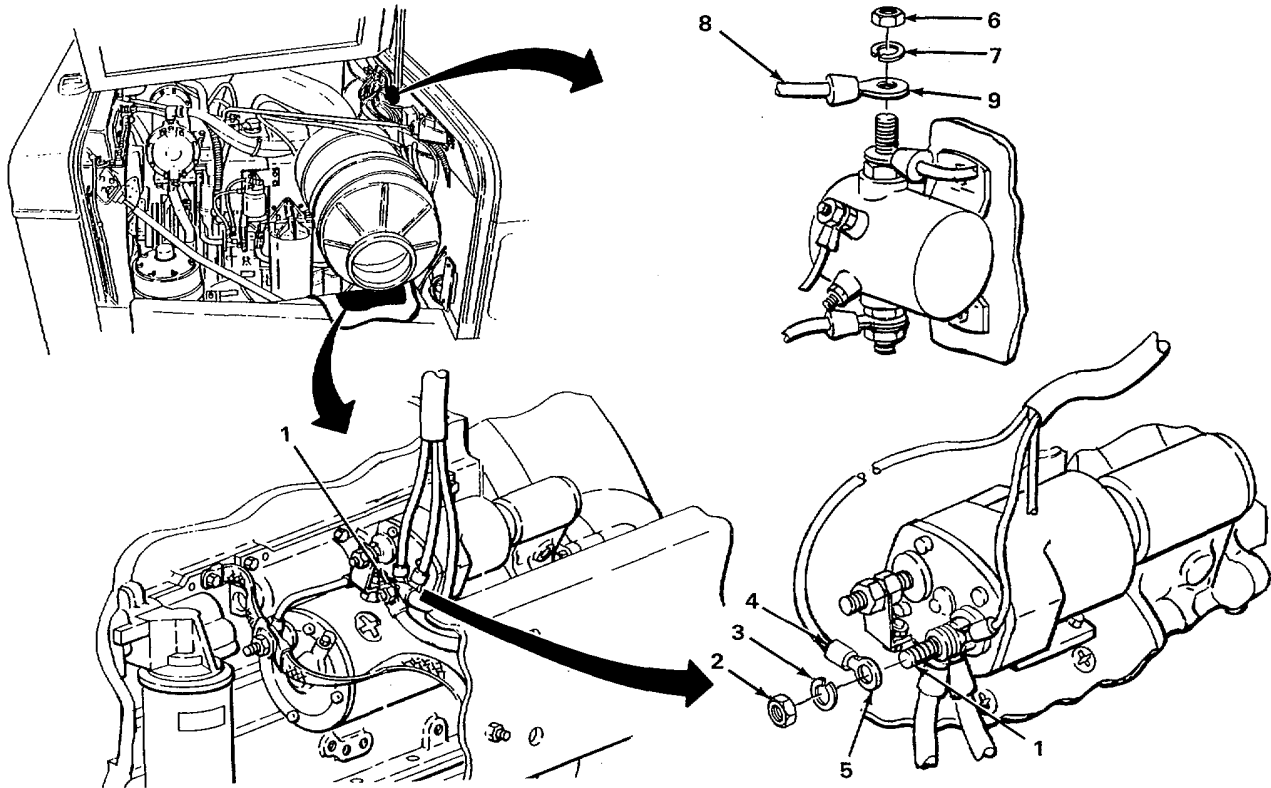
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 7. Set multimeter to 20 vdc scale. Connect red test lead to terminal (1) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, disconnect batteries (page 2-424). Using 3/4-inch box-end wrench, unscrew and take off nut (2), lockwasher (3), and 14-6 wire (4). Clean wire terminals (5) using wire brush. Place 14-6 wire (4) in position and screw nut (2) and lockwasher (3) on to terminal (1) and tighten using 3/4-inch box-end wrench. Connect batteries (page 2-424).
 - b. If multimeter reads 11 to 13 vdc, go to step 8.
- Step 8. Disconnect batteries (page 2-424). Using 1/2-inch open-end wrench, unscrew and take off nut (6), lockwasher (7), and 14-6 wire (8). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (9) and black test lead to terminal (1). Check for 0 ohms on multimeter. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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If multimeter reads no continuity, 14-6 wire (8) must be replaced. Notify Direct Support Maintenance.



TA243800

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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20. ALL LIGHTS DO NOT WORK - CONTINUED

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

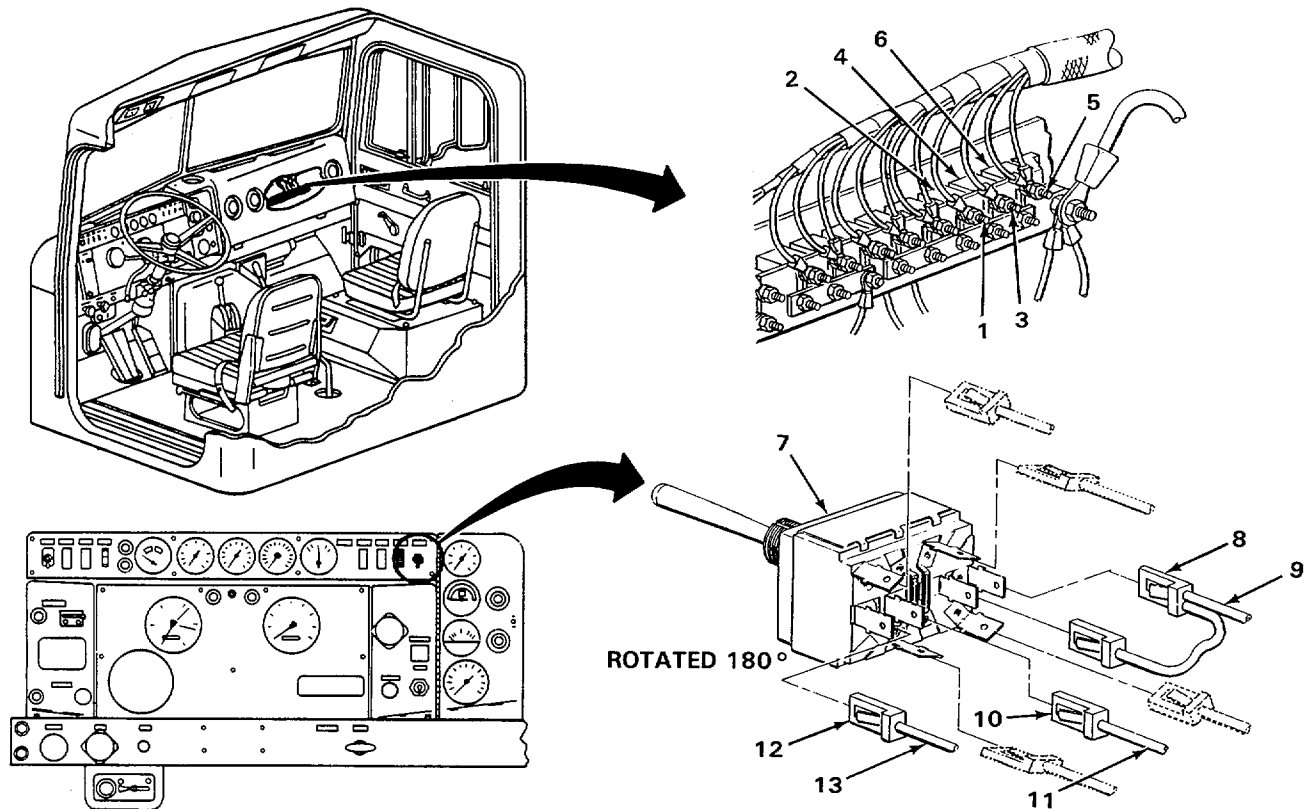
- Step 9. Set multimeter to 20 vdc scale. Connect red test lead to terminal (1) on marker light circuit breaker (2) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, replace marker light circuit breaker (2) (page 2-764).
 - b. If multimeter reads 11 to 13 vdc, go to step 10.
- Step 10. Set multimeter to 20 vdc scale. Connect red test lead to terminal (3) on headlight circuit breaker (4) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, replace headlight circuit breaker (4) (page 2-762).
 - b. If multimeter reads 11 to 13 vdc, go to step 11.
- Step 11. Set multimeter to 20 vdc scale. Connect red test lead to terminal (5) on tail and panel light circuit breaker (6) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13vdc, replace tail and panel light circuit breaker (6) (page 2-760).
 - b. If multimeter reads 11 to 13 vdc, go to step 12.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 12. Disconnect batteries (page 2-424). Remove headlight switch (7) (page 2-725). Connect batteries (page 2-424). Set multimeter to ohms scale and adjust to 0 ohms. Connect black test lead to ground and red test lead to wire terminal (8) on 68 wire (9). Check for 11 to 13 vdc on multimeter. Move red test lead to wire terminal (10) on 50 wire (11). Check for 11 to 13 vdc on multimeter. Move red test lead to wire terminal (12) on 58 wire (13). Check for 11 to 13 vdc on multimeter. Disconnect test leads.

- a. If multimeter reads no continuity on either wire terminals (8, 10, or 12), 68 wire (9), 50 wire (11), or 58 wire (13) must be replaced. Notify Direct Support Maintenance.
- b. If multimeter reads 0 ohms on all three terminals (8, 11, and 12), go to step 13.



TA243801

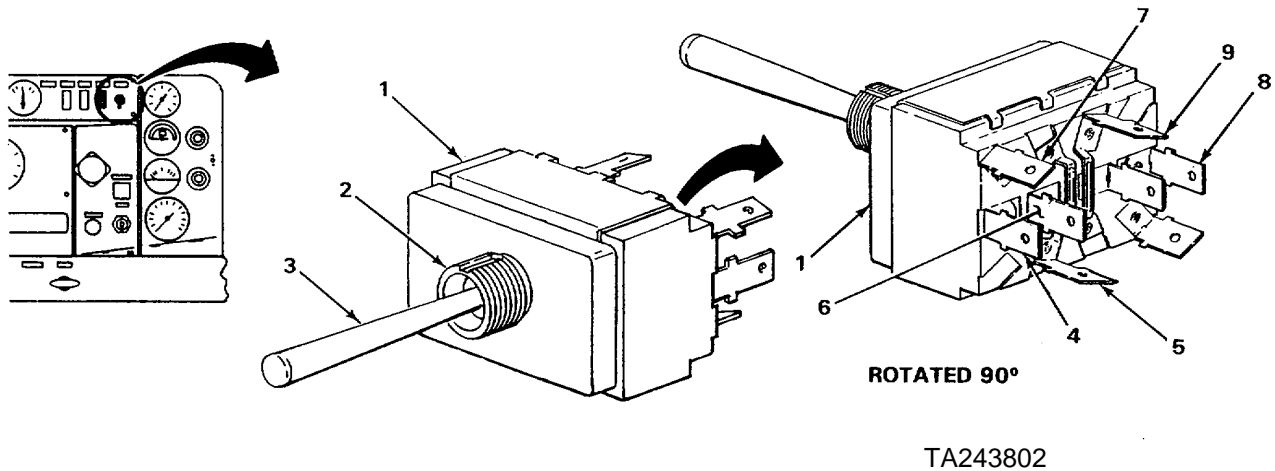
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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20. ALL LIGHTS DO NOT WORK - CONTINUED.

Step 13. Set multimeter to ohms scale and adjust to 0 ohms. Position headlight switch (1) with slot (2) facing 12 o'clock. Push switch handle (3) down to 6 o'clock position. Connect red test lead to terminal (4) and black test lead to terminal (5). Check for 0 ohms on multimeter. Move red test lead to terminal (6) and black test lead to terminal (7). Check for 0 ohms on multimeter. Move red test lead to terminal (8) and black test lead to terminal (9). Check for 0 ohms on multimeter. Disconnect test leads.

If multimeter reads no continuity on either terminals (5, 7, or 9), replace headlight switch (1) (page 2-725).



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED'

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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21. BOTH BACKUP LIGHTS DO NOT WORK.

WARNING

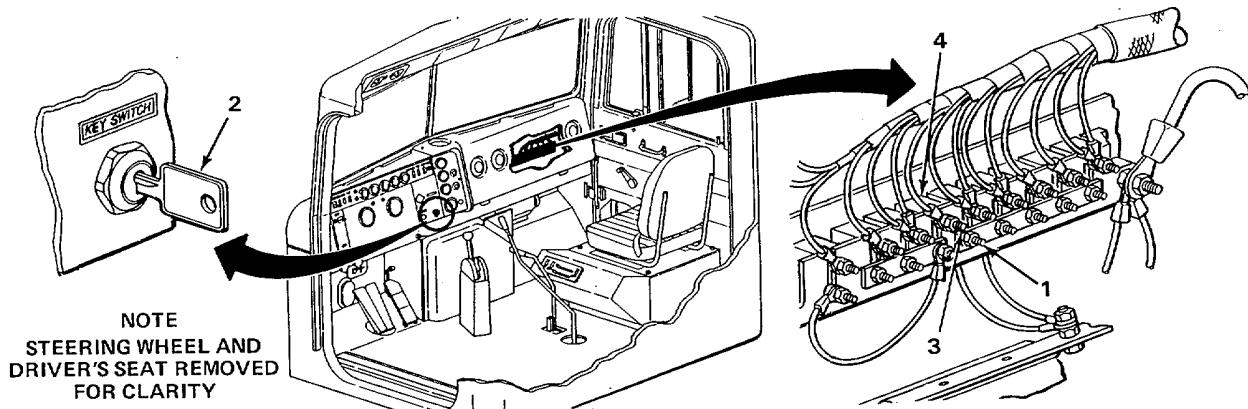
Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 1. Remove instrument panel pad (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to backup light circuit breaker terminal (1) and black test lead to ground. Rotate KEY SWITCH (2) clockwise to on position. Check for 11 to 13 vdc on multimeter. Move red test lead to circuit breaker terminal (3). Check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (2) counterclockwise to off position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, replace backup light circuit breaker (4) (page 2-750).
- b. If multimeter reads 11 to 13 vdc, install instrument panel pad (page 2-424) and go to step 2.



TA243803

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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21. BOTH BACKUP LIGHTS DO NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

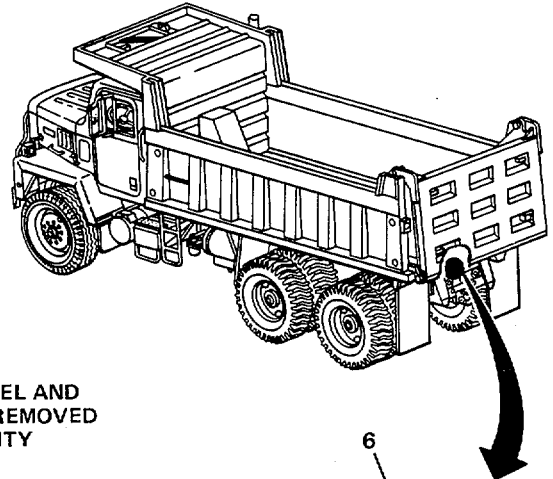
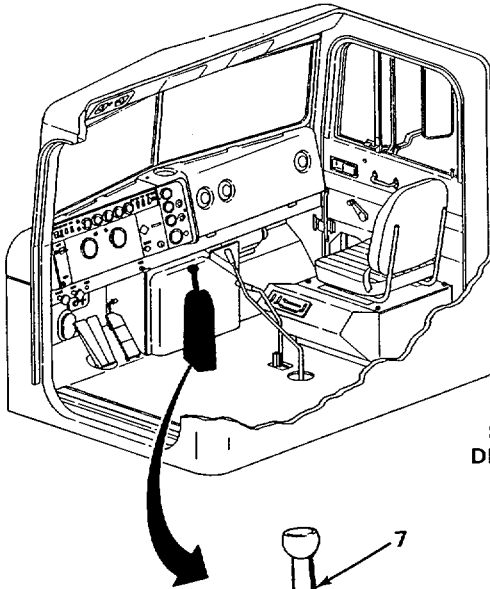
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 2. Using number one cross-tip screwdriver, unscrew and take out four screws (1) and take off terminal cover (2). Check blue wire (3) for broken, frayed, or corroded condition.
- a. If blue wire (3) is broken, blue wire (3) must be replaced. Notify Direct Support Maintenance.
 - b. If blue wire (3) is frayed, repair (page 2-424).
 - c. if blue wire (3) is corroded, pull wire terminal (4) off of terminal (5) on stoplight/taillight assembly (6). Clean wire terminal (4) and terminal (5) using wire brush. Place wire terminal (4) in position and push on to terminal (5) on stoplight/taillight assembly (6).
 - d. If blue wire (3) is not broken, frayed, or corroded, go to step 3.
- Step 3. Set multimeter to 20 vdc scale. Connect red test lead to wire terminal (4) and black test lead to ground. Have assistant start engine (TM 5-3805-254-10) and put shift lever (7) in reverse (R) position. Check for 11 to 13 vdc on multimeter. Have assistant put shift lever (7) in neutral (N) position and shut down engine (TM 5-3805-254-10). Disconnect test leads.

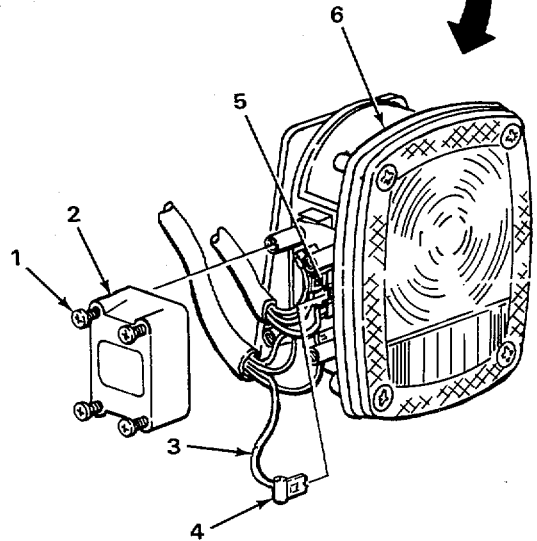
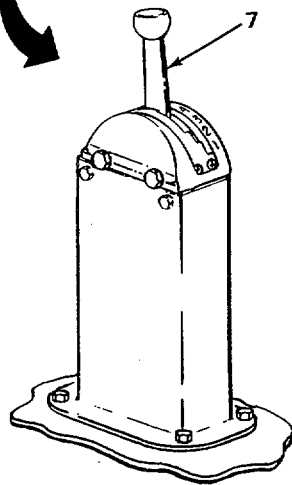
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If multimeter does not read 11 to 13 vdc, go to step 7.
- b. If multimeter reads 11 to 13 vdc, put terminal cover (2) on stoplight/taillight assembly (6). Screw in four screws (1) and tighten using number one cross-tip screwdriver and go to step 4.



NOTE
STEERING WHEEL AND
DRIVER'S SEAT REMOVED
FOR CLARITY



TA243804

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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21. BOTH BACKUP LIGHTS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps 4, 5, and 6 are typical for both backup light sockets.

Step 4. Check each stoplight/taillight assembly (1) for looseness.

- a. If stoplight/taillight assembly (1) is loose, tighten three nuts (2) using 7/16-inch box-end wrench.
- b. If stoplight/taillight assembly (1) is not loose, go to step 5.

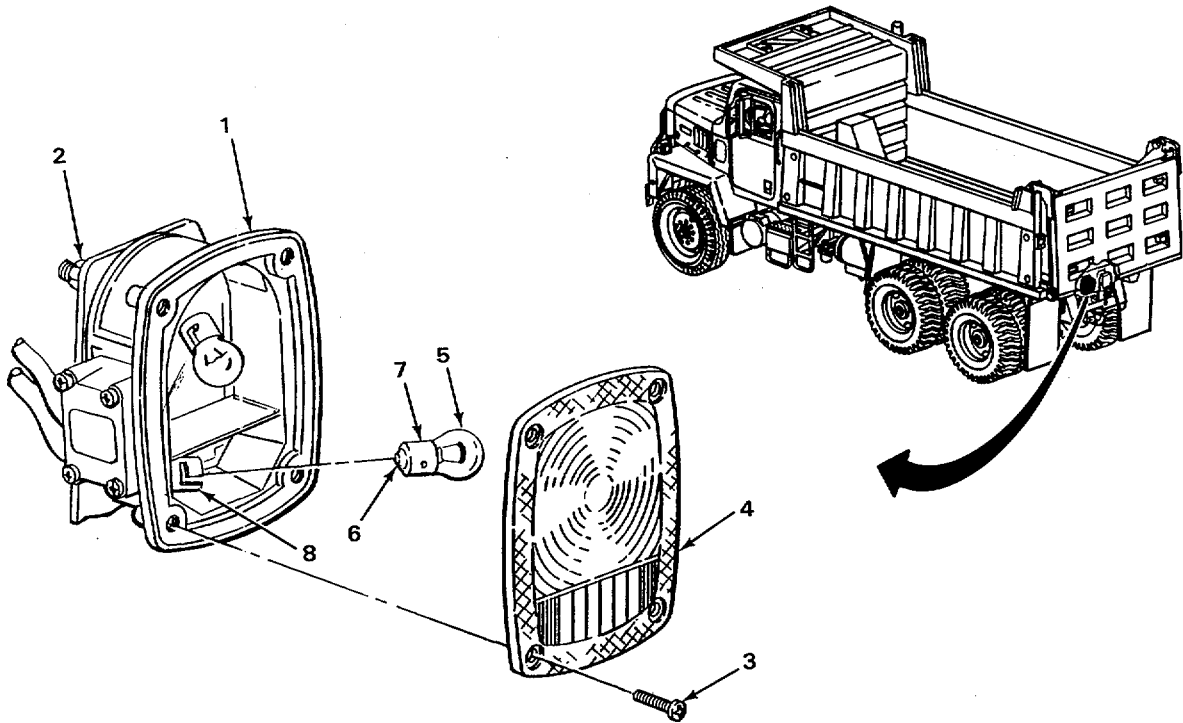
Step 5. Using number one cross-tip screwdriver, unscrew and take out four screws (3) and lens (4). Push backup lamp (5) in and turn counterclockwise and take out. Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to contact (6) and black test lead to metal base (7). Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter does not read 0 ohms, replace backup lamp (5). Put backup lamp (5) into socket (8), alining pins with slots. Push in, turn clockwise and release. Put lens (4) into stoplight/ taillight assembly (1). Screw in four screws (3) and tighten using number one cross-tip screwdriver.
- b. If multimeter reads 0 ohms, go to step 6.

Step 6. Check socket (8) for corrosion or rusted out condition.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
	a.	If socket (8) is corroded, clean using emery cloth. Put backup lamp (5) into socket (8), alining pins with slots. Push in, turn clockwise and release. Put lens (4) into stoplight/taillight assembly (1). Screw in four screws (3) and tighten using number one cross-tip screwdriver.
	b.	If backup lamp socket (8) is rusted out, replace stoplight taillight assembly (1) (page 2-788 or page 2-791).
	c.	If backup lamp socket is not corroded or rusted out, go to step 7.



TA243805

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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21. BOTH BACKUP LIGHTS DO NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

CAUTION

Care must be taken when removing left lower rear molding, to prevent damaging air line.

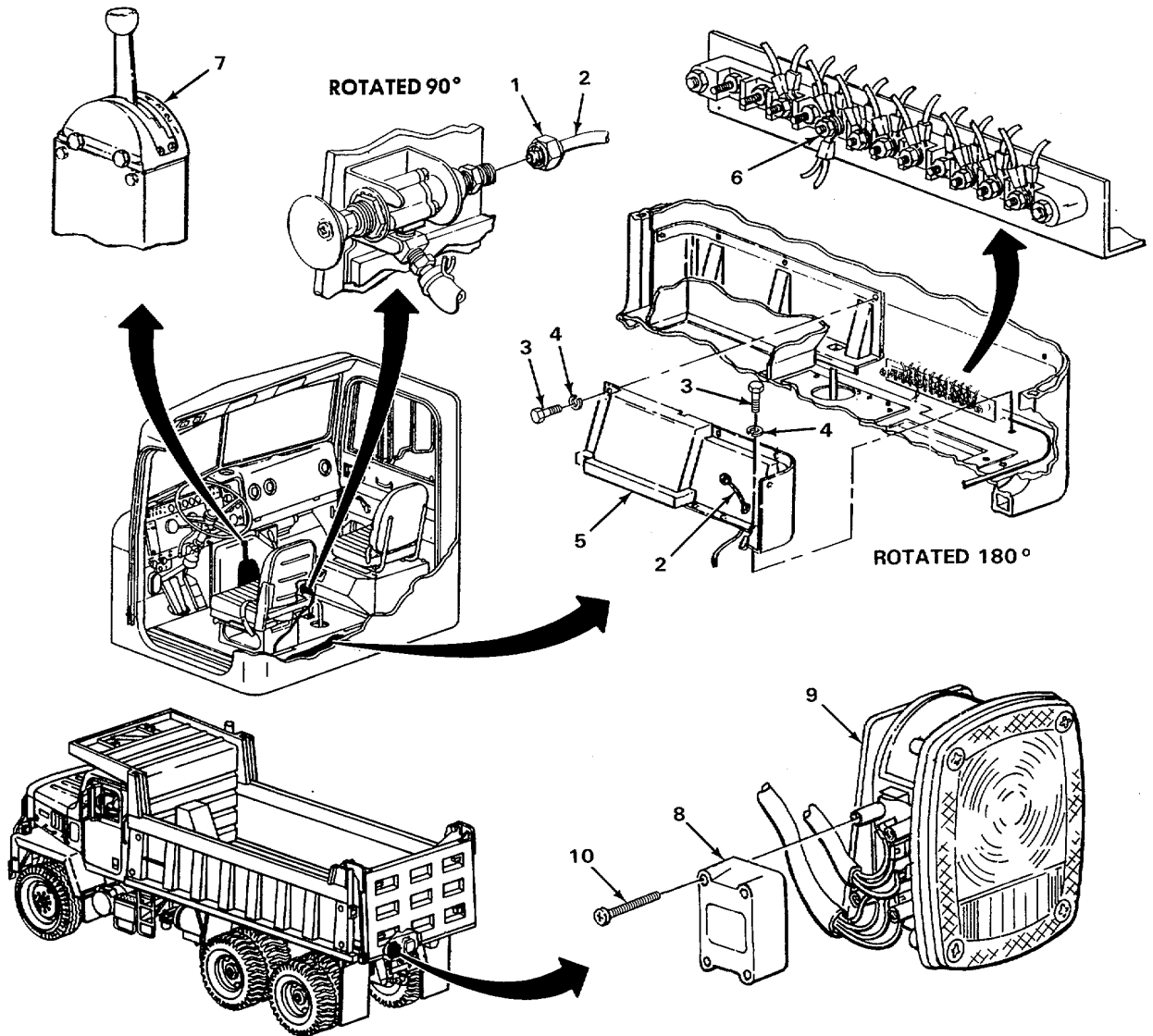
NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps performed on junction box with 12 terminals.

- Step 7. Using 9/16-inch open-end wrench, unscrew line nut (1) and take off air line (2). Using number two cross-tip screwdriver, unscrew and take out eight screws (3) and eight flat washers (4). Push air line (2) through hole while taking out left lower rear molding (5). Set multimeter to 20 vdc scale. Connect red test lead to junction box terminal (6) and connect black test lead to ground. Have assistant start engine (TM 5-3805-254-10) and put shift lever (7) in reverse (R) position. Check for 11 to 13 vdc on multimeter. Have assistant put shift lever (7) in neutral (N) position and shut down engine (TM 5-3805-254-10). Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, put terminal cover (8) on stoplight/taillight assembly (9). Screw in four screws (10) and tighten, using number one cross-tip screwdriver and go to step 9.
 - b. If multimeter reads 11 to 13 vdc, go to step 8.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED



TA243806

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
21. BOTH BACKUP LIGHTS DO NOT WORK - CONTINUED.		

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

CAUTION

Care must be taken when installing left lower rear molding, to prevent damaging air lines.

NOTE

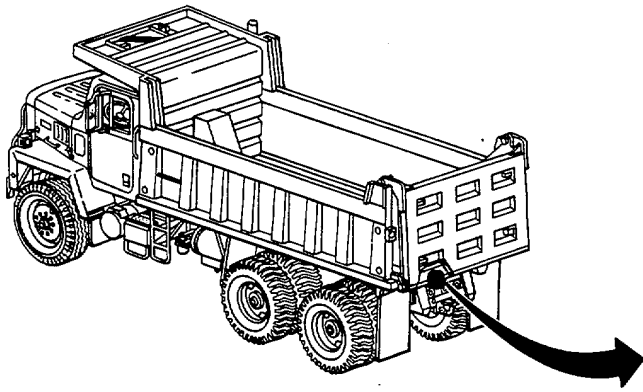
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps performed on junction box with 12 terminals.

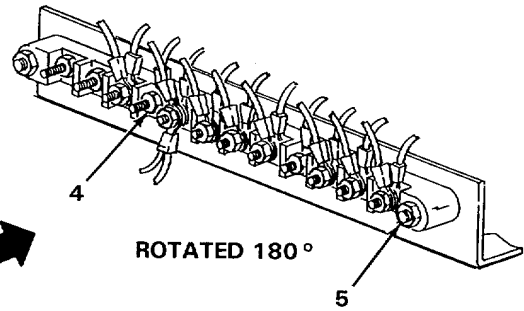
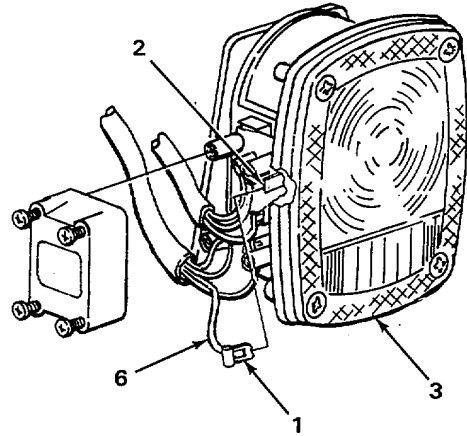
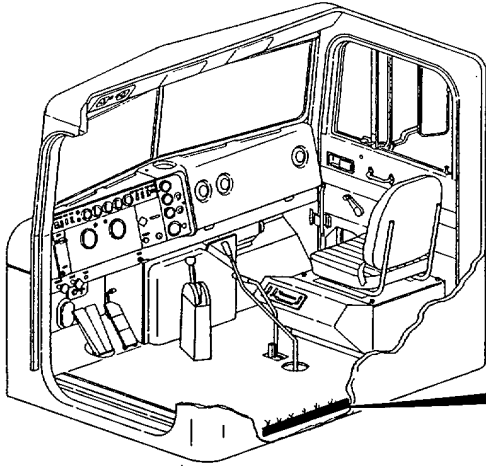
- Step 8. Disconnect batteries (page 2-424). Pull wire terminal (1) off terminal (2) on stoplight/taillight assembly (3). Set multimeter to ohms scale and adjust to 0 ohms. With assistant, connect red test lead to terminal (4) on junction box (5) and black test lead to wire terminal (1) on blue wire (6). Check for 0 ohms on multimeter. Disconnect test leads.

If multimeter reads no continuity, blue wire (6) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED



NOTE
STEERING WHEEL AND
DRIVER'S SEAT REMOVED
FOR CLARITY



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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21. BOTH BACKUP LIGHTS DO NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

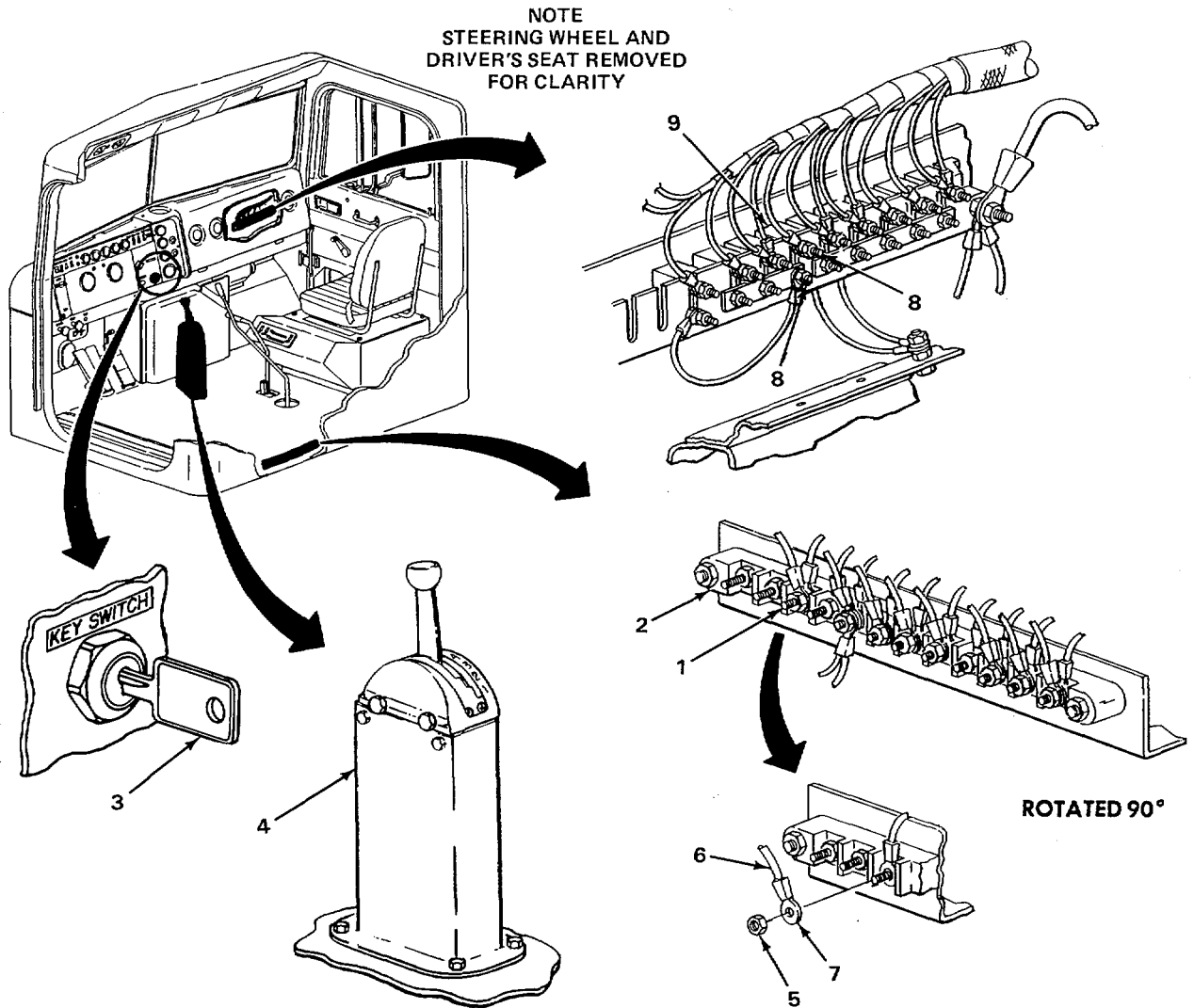
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 9. Set multimeter to 20 vdc scale. Connect red test lead to terminal (1) on junction box (2) and black test lead to ground. Have assistant rotate KEY SWITCH (3) clockwise to on position and put shift lever (4) in reverse (R) position. Check for 11 to 13 vdc on multimeter. Have assistant put shift lever (4) in neutral (N) position and rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, go to step 10.
 - b. If multimeter reads 11 to 13 vdc, go to step 11.
- Step 10. Disconnect batteries (page 2-424). Remove instrument panel pad (page 2-424). Using 3/8-inch box-end wrench, unscrew and take off nut (5) and 71A wire (6). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (7) on 71A wire (6) and black test lead to terminal (8) on circuit breaker (9). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, 71A wire (6) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- b. If multimeter reads 0 ohms, place wire terminal (7) in position and screw nut (5) onto terminal (1) and tighten using 3/8-inch box-end wrench. Connect batteries (page 2-424). Install instrument panel pad (page 2-424) and go to step 11.



TA243808

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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21. BOTH BACKUP LIGHTS DO NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

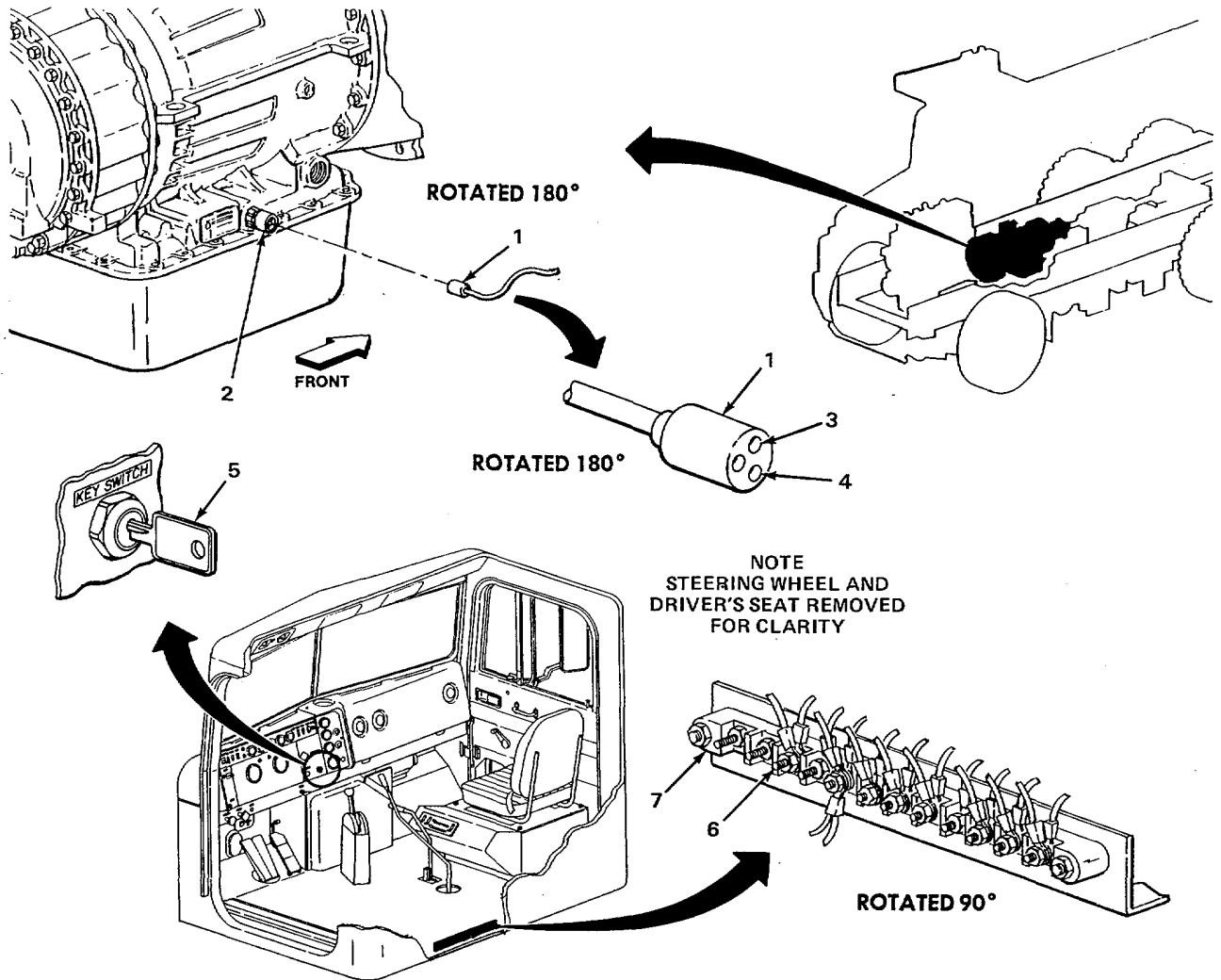
Step 11. Pull wire connector (1) off backup light switch (2) and position locator hole (3) at 12 o'clock. Set multimeter to 20 vdc scale. Connect red test lead to wire connector terminal (4) and black test lead to ground. Have assistant rotate KEY SWITCH (5) clockwise to on position. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (5) counterclockwise to off position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, go to step 12.
- b. If multimeter reads 11 to 13 vdc, go to step 13.

Step 12. Test wire connector (1) as follows: Disconnect batteries (page 2-424). Set multimeter to ohms scale and adjust to 0 ohms. Position locator hole (3) at 12 o'clock. With assistant, connect red test lead to wire connector terminal (4) and black test lead to terminal (6) on junctional box (7). Check for 0 ohms on multimeter. Disconnect test leads.

If multimeter reads no continuity, wire connector (1) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

21. BOTH BACKUP LIGHTS DO NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

CAUTION

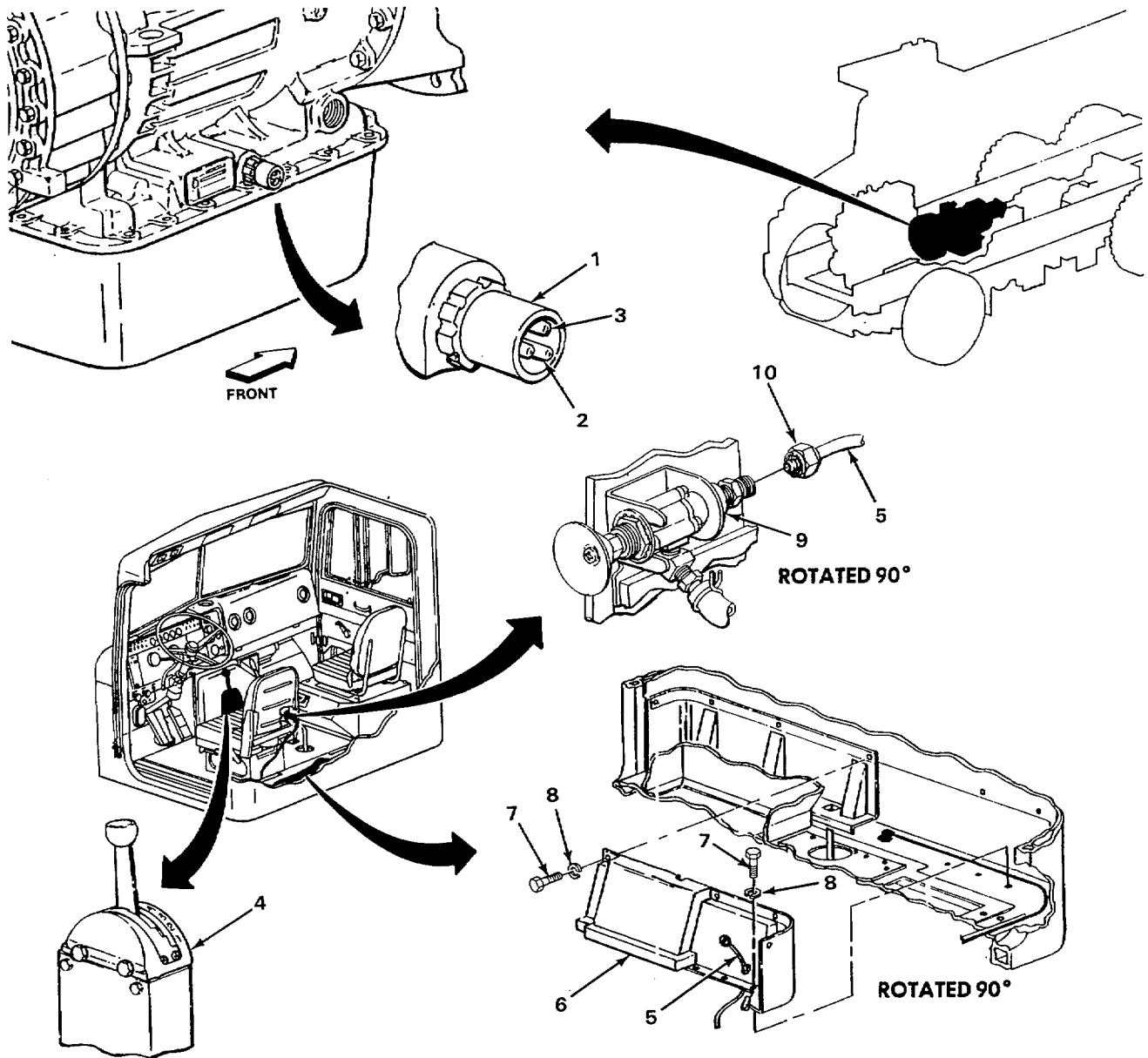
Care must be taken when installing left lower rear molding, to prevent damaging air line.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 13. Test backup light switch (1) as follows: Disconnect batteries (page 2-424). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to terminal (2) and black test lead to terminal (3) on backup light switch (1). Have assistant start engine (TM 5-3805-254-10) and put shift lever (4) in reverse (R) position. Check for 0 ohms on multimeter. Have assistant put shift lever (4) in neutral (N) position and shut down engine (TM 5-3805-254-10). Disconnect test leads.
- a. If multimeter reads no continuity, replace backup light switch (1) (page 2-689). Put air line (5) through hole in left lower rear molding (6) and put molding in place. Screw in eight screws (7) and eight flat washers (8) using number two cross-tip screwdriver. Put air line (5) in driver's seat valve assembly (9). Screw on line nut (10) and tighten using 9/16-inch open-end wrench. Connect batteries (page 2-424).
 - b. If multimeter reads 0 ohms, go to step 14.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED



TA243810

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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21. BOTH BACKUP LIGHTS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

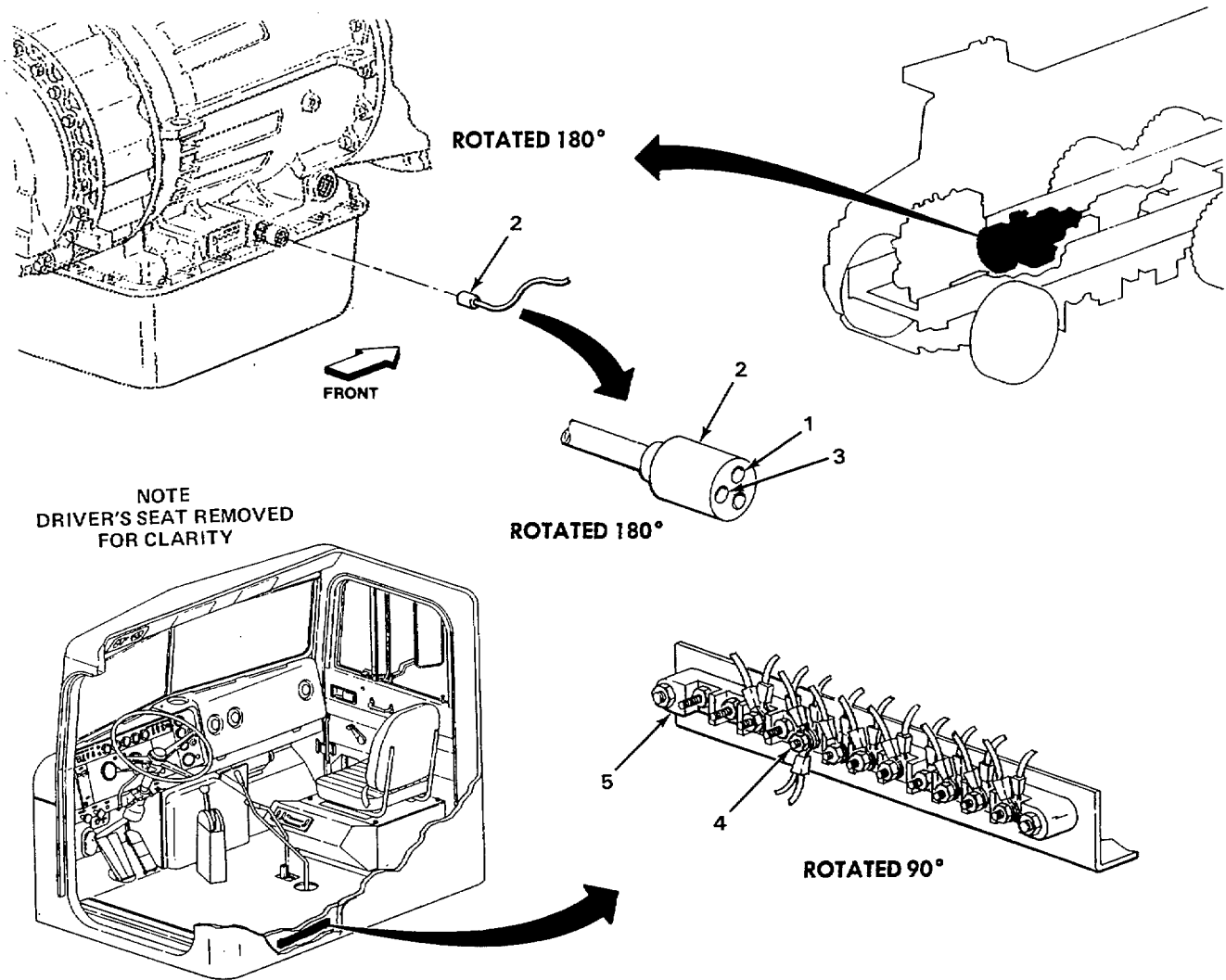
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Junction box has 12 terminals.

- Step 14. Disconnect batteries (page 2-424). Set multimeter to ohms scale and adjust to 0 ohms. Position locator hole (1) on wire connector (2) at 12 o'clock. Connect red test lead to terminal (3) on wire connector (2) and black test lead to terminal (4) on junction box (5). Check for 0 ohms on multimeter. Disconnect test leads.

If multimeter reads no continuity, wire connector (2) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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22. ONE BACKUP LIGHT DOES NOTWORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps 1 and 2 are typical for both backup light sockets.

Step 1. Using number one cross-tip screwdriver, unscrew and take out four screws (1) and lens (2). Push backup lamp (3) in and turn counterclockwise and take out. Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to contact (4) and black test lead to metal base (5). Check for 0 ohms on multimeter. $\frac{3}{4}$ > Disconnect test leads.

a. If multimeter does not read 0 ohms, replace backup lamp (3). Put backup lamp (3) into socket (6), aligning pins with slots. Push in, turn clockwise, and release. Put lens (2) into stoplight/taillight assembly (7). Screw in four screws (1) and tighten using number one cross-tip screwdriver.

b. If multimeter reads 0 ohms, go to step 2.

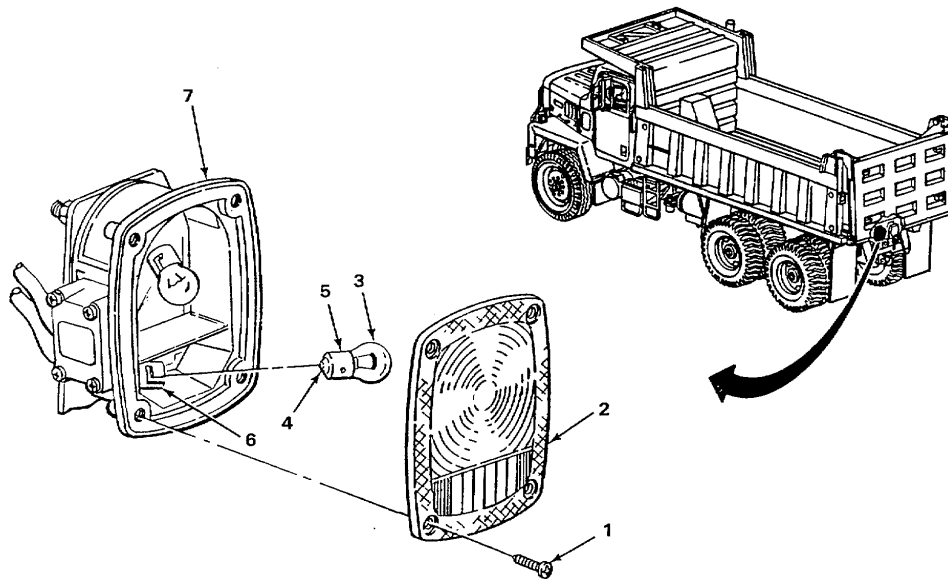
Step 2. Check socket (6) for corrosion or rusted out condition.

a. If socket (6) is corroded, clean using emery cloth. Put backup lamp (3) into socket (6), aligning pins with slots. Push in, turn clockwise and release. Put lens (2) into stoplight/taillight assembly (7). Screw in four screws (1) and tighten using number one cross-tip screwdriver. Go to step 3.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- b. If backup lamp socket (6) is rusted out, replace stoplight/taillight assembly (1) (page 2-788 or 2-791).
- c. If backup lamp socket is not corroded or rusted out, go to step 3.



TA243812

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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22. ONE BACKUP LIGHT DOES NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps 3 and 4 are typical for both stoplight/taillight assemblies.

Step 3. Check each stoplight/taillight assembly (1) for looseness.

- a. If stoplight/taillight assembly (1) is loose, tighten three nuts (2) using 7/16-inch box-end wrench and go to step 4.
- b. If stoplight/taillight assembly (1) is not loose, go to step 4.

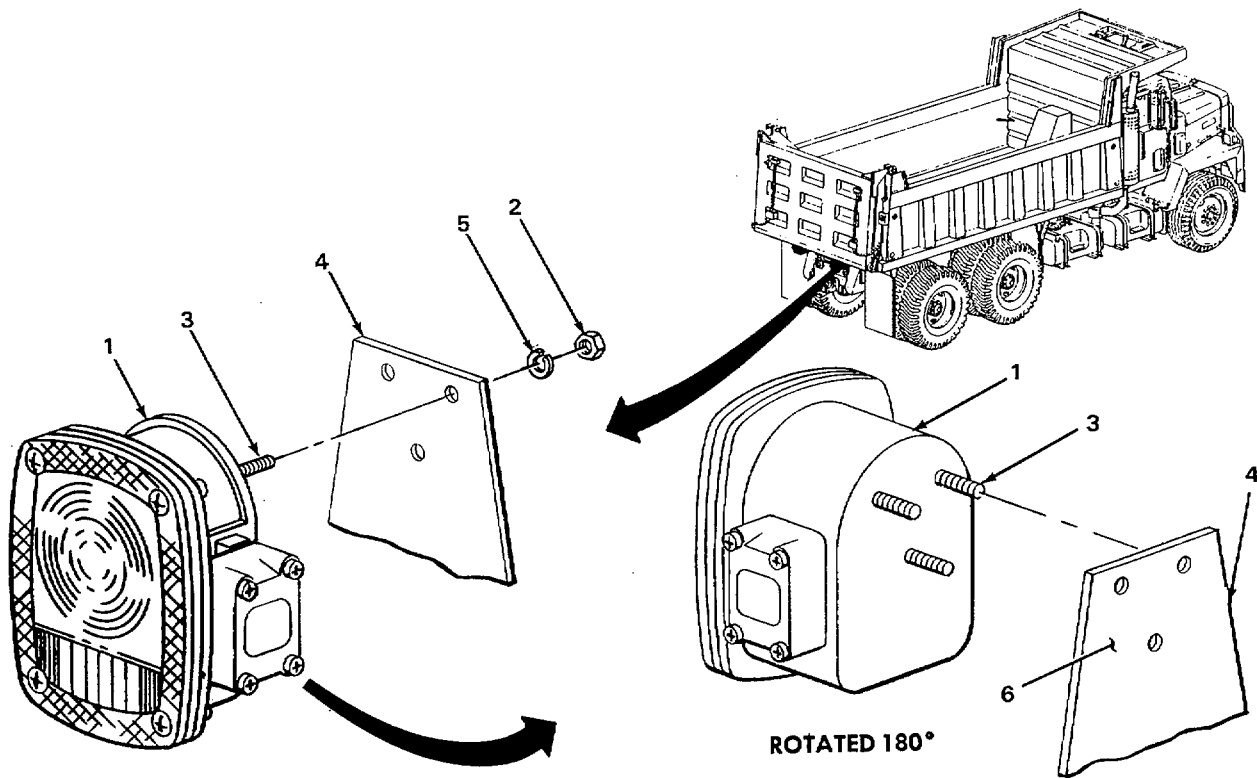
Step 4. Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to stud (3) on stoplight/taillight assembly (1) and black test lead to bracket (4). Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter reads no continuity, unscrew and take off three nuts (2) and three lockwashers (5) using 7/16-inch box-end wrench. Take stoplight/taillight assembly (1) off bracket (4). Clean three studs (3) and mating surface (6) using wire brush. Put stoplight/taillight assembly (1) on bracket (4).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- b. Screw three nuts (2) and three lockwashers (5) on to three studs (3) and tighten using 7/16-inch box-end wrench. Perform step 4 again to ensure continuity.
- c. If multimeter reads 0 ohms, go to step 5.



TA243813

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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22. ONE BACKUP LIGHT DOES NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

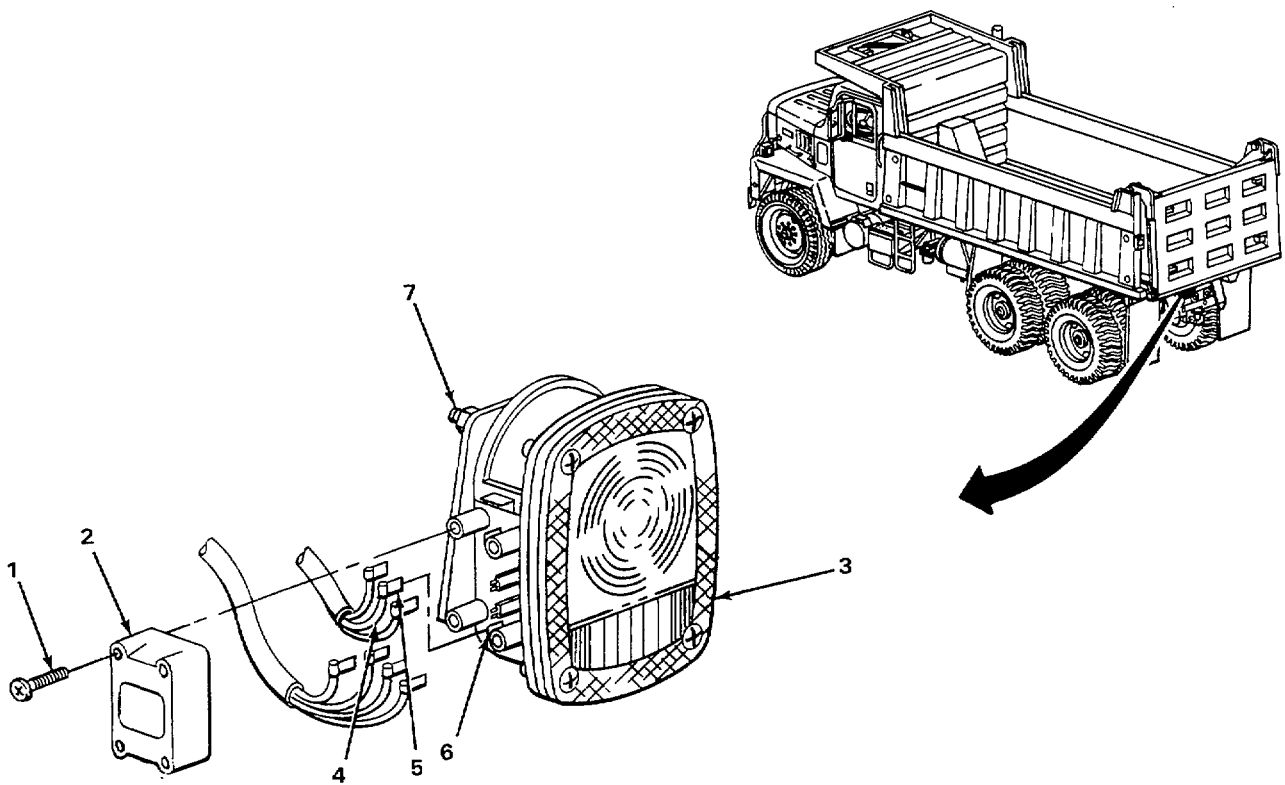
Steps 5 and 6 are for left backup light only.

- Step 5. Using number one cross-tip screwdriver, unscrew and take out four screws (1) and take off terminal cover (2) from left stoplight/taillight assembly (3). Check blue wire (4) for broken, frayed, or corroded condition.
- a. If blue wire (4) is broken, blue wire (4) must be replaced. Notify Direct Support Maintenance.
 - b. If blue wire (4) is frayed, repair (page 2-424).
 - c. If blue wire (4) is corroded, pull wire terminal (5) off terminal (6) on left stoplight/taillight assembly (3). Clean wire terminal (5) and terminal (6) using wire brush.
 - d. If blue wire (4) is not broken, frayed, or corroded, go to step 6.
- Step 6. Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to terminal (6) and black test lead to stud (7). Check for 0 ohms on multimeter. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If multimeter reads no continuity, replace left taillight assembly (3) (page 2-788).
- b. If multimeter reads 0 ohms, place wire terminal (5) in position and push on to terminal (6) on left taillight assembly (3). Put terminal cover (2) on left taillight assembly (3). Screw in four screws (1) and tighten using number one cross-tip screwdriver and go to step 7.



TA243814

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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22. ONE BACKUP LIGHT DOES NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

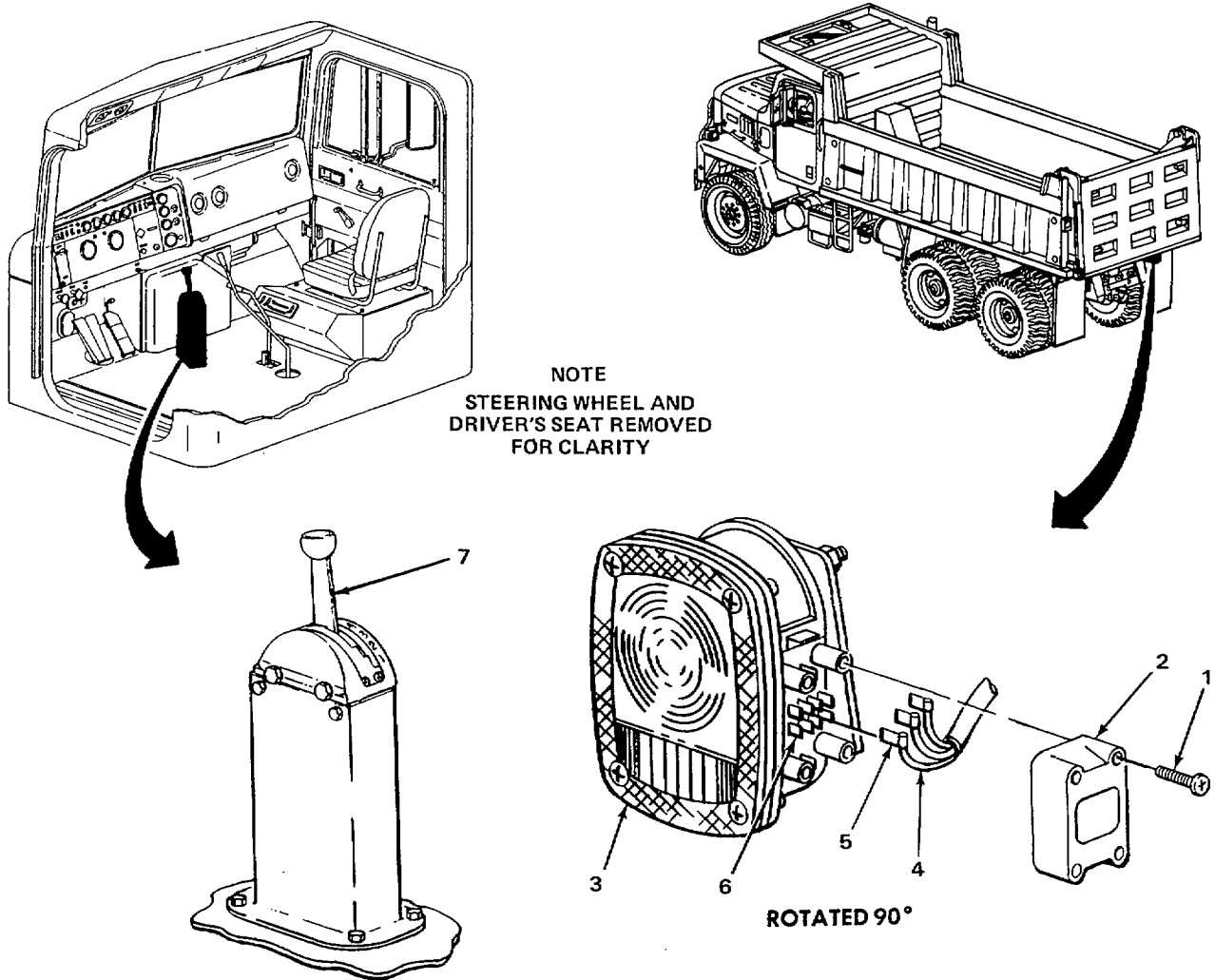
Steps 7 and 8 are for right backup light only.

- Step 7. Using number one cross-tip screwdriver, unscrew and take out four screws (1) and take off terminal cover (2) from right taillight assembly (3). Check blue wire (4) for broken, frayed, or corroded condition.
- If blue wire (4) is broken, blue wire (4) must be replaced. Notify Direct Support Maintenance.
 - If blue wire (4) is frayed, repair (page 2-424).
 - If blue wire (4) is corroded, pull wire terminal (5) off terminal (6) on right taillight assembly (3). Clean wire terminal (5) and terminal (6) using wire brush and go to step 8.
 - If blue wire (4) is not broke, frayed, or corroded, go to step 8.
- Step 8. Set multimeter to 20 vdc scale. Connect red test lead to wire terminal (5) and black test lead to ground. Have assistant start engine C(TM 5-3805-254-10) and put shift lever (7) in reverse (R) position. Check for 11 to 13 vdc on multimeter. Have assistant put shift lever (7) in neutral (N) position and shut down engine (TM 5-3805-254-10). Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If multimeter does not read 11 to 13 vdc, go to step 9.
- b. If multimeter reads 11 to 13 vdc, go to step 10.



TA243815

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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22. ONE BACKUP LIGHT DOES NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

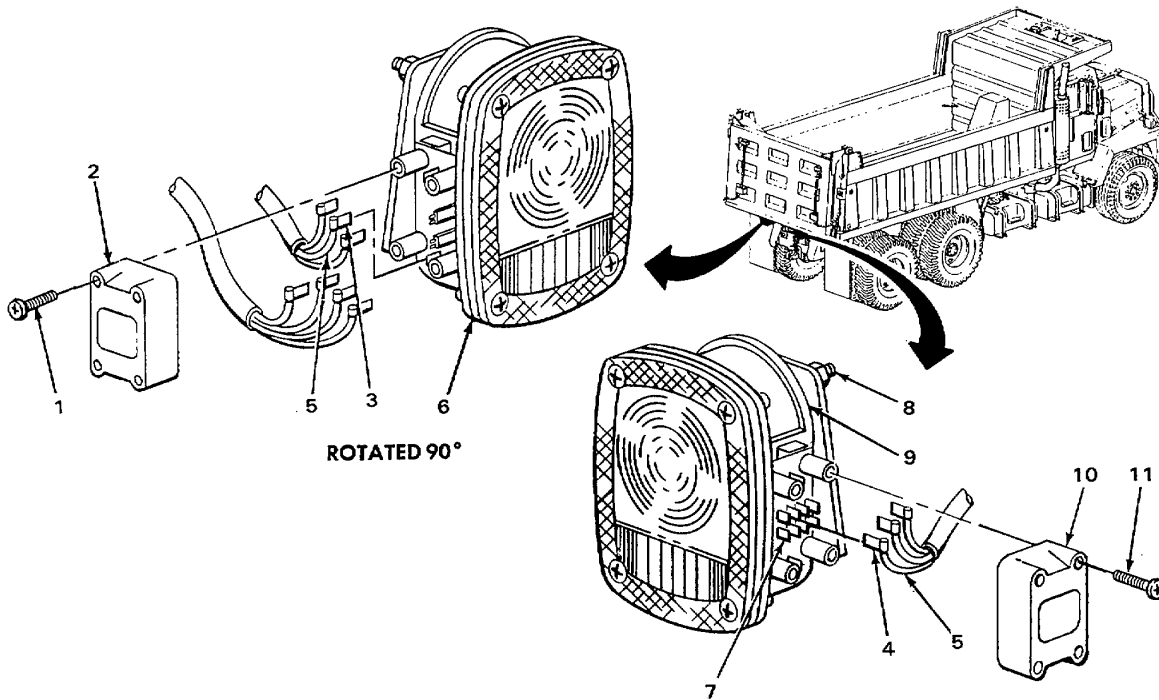
Steps 9 and 10 are for right backup light.

- Step 9. Using number one cross-tip screwdriver, unscrew and take out four screws (1) and take off terminal cover (2). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (3) and black test lead to wire terminal (4) on blue wire (5). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, blue wire (5) must be replaced. Notify Direct Support Maintenance.
 - b. If multimeter reads 0 ohms, put terminal cover (2) on left stoplight/ taillight assembly (6). Screw in four screws (1) and tighten using number one cross-tip screwdriver and go to step 10.
- Step 10. Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to terminal (7) and black test lead to stud (8). Check for 0 ohms on multimeter. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If multimeter reads no continuity, replace right stoplight/taillight assembly (9) (page 2-791).
- b. If multimeter reads 0 ohms, place wire terminal (4) in position and push on to terminal (7) on right stoplight/taillight assembly (9). Put terminal cover (10) on right stoplight/taillight assembly (9). Screw in four screws (11) and tighten using number one cross-tip screwdriver.



TA243816

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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23. BOTH HEADLIGHTS DO NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps 2 thru 23 apply to malfunction of both hi beams and both low beams.

Steps 24, 25, and 26 apply to malfunction of both hi beams.

Steps 27, 28, and 29 apply to malfunction of both low beams.

Step 1. Remove instrument panel pad (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to circuit breaker terminal (1) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, go to step 2.

b. If multimeter reads 11 to 13 vdc, go to step 15.

Step 2. Check nut (2) on circuit breaker terminal (1) for looseness.

a. If nut (2) is loose, disconnect batteries (page 2-424) and tighten nut (2) using 3/8-inch open-end wrench. Connect batteries (page 2-424) and go to step 3.

b. If nut (2) is not loose, go to step 3.

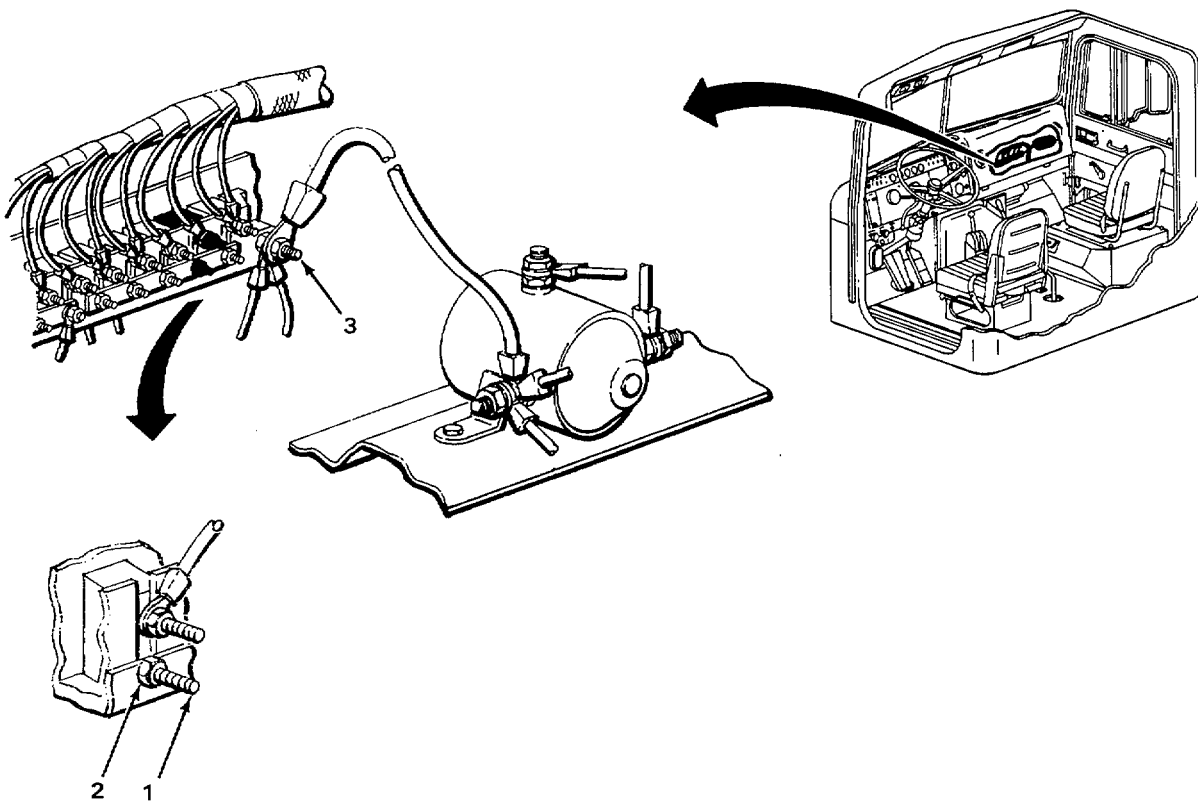
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 3. Set multimeter to 20 vdc scale. Connect red test lead to circuit breaker strip feed stud (3) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, go to step 4.

b. If multimeter reads 11 to 13 vdc, go to step 15.



TA243817

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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23. BOTH HEADLIGHTS DO NOT WORK - CONTINUED

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 4. Disconnect batteries (page 2-424). Check 8 wire (1) for loose, corroded, frayed, or broken condition.
- a. If 8 wire (1) is loose at circuit breaker terminal feed stud (2), tighten nut (3) using 1/2-inch open-end wrench. If 8 wire (1) is loose at terminal (5) on secondary magnetic switch (6), tighten nut (7) using 5/8-inch open-end wrench.
 - b. If wire terminal (8) is corroded, unscrew and take off nut (3), lockwasher (4), and wire terminal (8) using 11/2-inch open-end wrench. Using wire brush, clean wire terminal (8) and circuit breaker terminal feed stud (2). Place wire terminal (8) in position and screw lockwasher (4) and nut (3) on to circuit breaker terminal feed stud (2) and tighten using 1/2-inch open-end wrench. If wire terminal (9) is corroded, unscrew and take off nut (7), lockwasher (10), and wire terminal (9) using 5/8-inch open-end wrench. Using wire brush, clean wire terminal (9) and terminal (5) on secondary magnetic switch (6). Place wire terminal (9) in position and screw lockwasher (10) and nut (7) on to terminal (5) and tighten using 5/8-inch open-end wrench.
 - c. If 8 wire (1) is frayed, repair (page 2-424).
 - d. If 8 wire (1) is broken, 8 wire (1) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

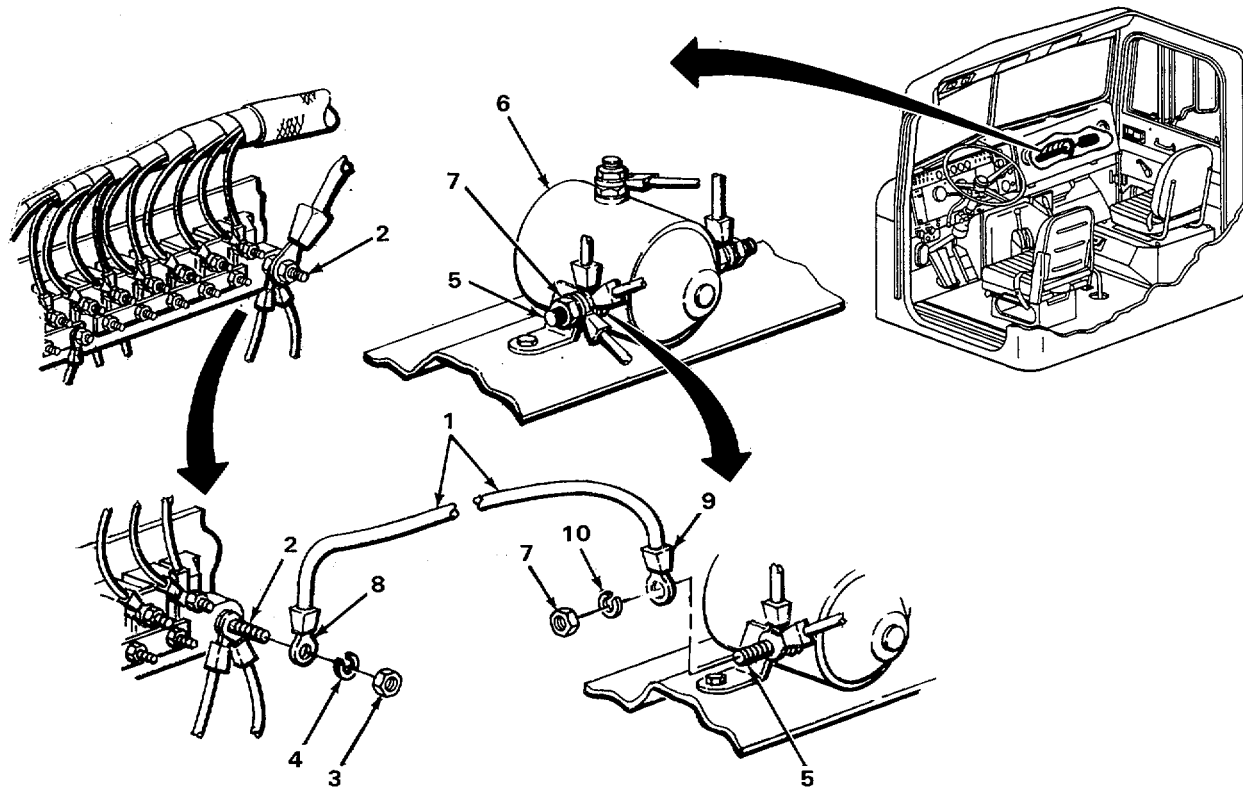
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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e. If 8 wire (1) is not loose, corroded, frayed, or broken, go to step 5.

Step 5. Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to circuit breaker terminal feed stud (2) and black test lead to terminal (5) on secondary magnetic switch (6). Check for 0 ohms on multimeter. Disconnect test leads.

a. If multimeter reads no continuity, 8 wire (1) must be replaced. Notify Direct Support Maintenance.

b. If multimeter reads 0 ohms, connect batteries (page 2-424) and go to step 6.



TA243818

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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23. BOTH HEADLIGHTS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

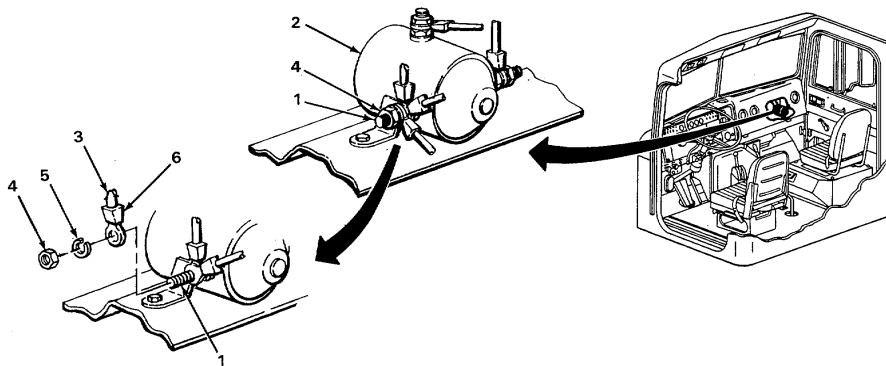
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 6. Set multimeter to 20 vdc scale. Connect red test lead to terminal (1) on secondary magnetic switch (2) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, go to step 7.
 - b. If multimeter reads 11 to 13 vdc, go to step 15.
- Step 7. Disconnect batteries (page 2-424). Check 14-8 wire (3) at secondary magnetic switch (2) for loose, corroded, frayed, or broken condition.
- a. If 14-8 wire (3) is loose, tighten nut (4) using 5/8-inch open-end wrench.
 - b. If 14-8 wire (3) is corroded, unscrew and take off nut (4), lockwasher (5), and wire terminal (6) using 5/8-inch open-end wrench. Using wire brush, clean wire terminal (6) and terminal (1) on secondary magnetic switch (2). Place wire terminal (6) in position and screw on nut (4) and lockwasher (5) on to terminal (1) on secondary magnetic switch (2).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- c. If 14-8 wire (3) is frayed, repair (page 2-424).
- d. If 14-8 wire (3) is broken, 14-8 wire must be replaced. Notify Direct Support Maintenance.
- e. If 14-8 wire (3) is not loose, corroded, frayed, or broken, connect batteries (page 2-424). Go to step 8.



TA243819

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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23. BOTH HEADLIGHTS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

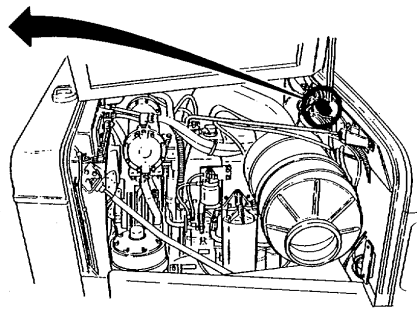
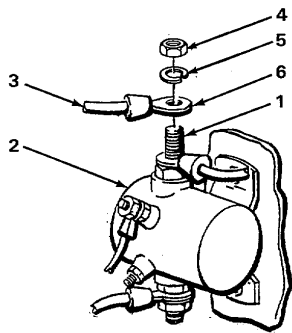
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 8. Set multimeter to 20 vdc scale. Connect red test lead to terminal (1) on magnetic switch (2) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, go to step 11
 - b. If multimeter reads 11 to 13 vdc, go to step 9.
- Step 9. Disconnect batteries (page 2-424). Check 14-8 wire (3) at primary magnetic switch (2) for loose, corroded, frayed, or broken condition.
- a. if 14-8 wire (3) is loose, using 1/2-inch open-end wrench, tighten nut (4).
 - b. If 14-8 wire (3) is corroded, unscrew and take off nut (4), lockwasher (5), and wire terminal (6) using 1/2-inch open-end wrench. Using wire brush, clean wire terminal (6) and terminal (1) on primary magnetic switch (2). Place wire terminal (6) in position and screw nut (4) and lockwasher (5) on to terminal (1) on primary magnetic switch (2).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- c. If 14-8 wire (3) is frayed, repair (page 2-424).
- d. If 14-8 wire (3) is broken, 14-8 wire (3) must be replaced. Notify Direct Support Maintenance.
- e. If 14-8 wire (3) is not loose, corroded, frayed, or broken, go to step 10.



TA243820

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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23. BOTH HEADLIGHTS DO NOT WORK - CONTINUED.

WARNING

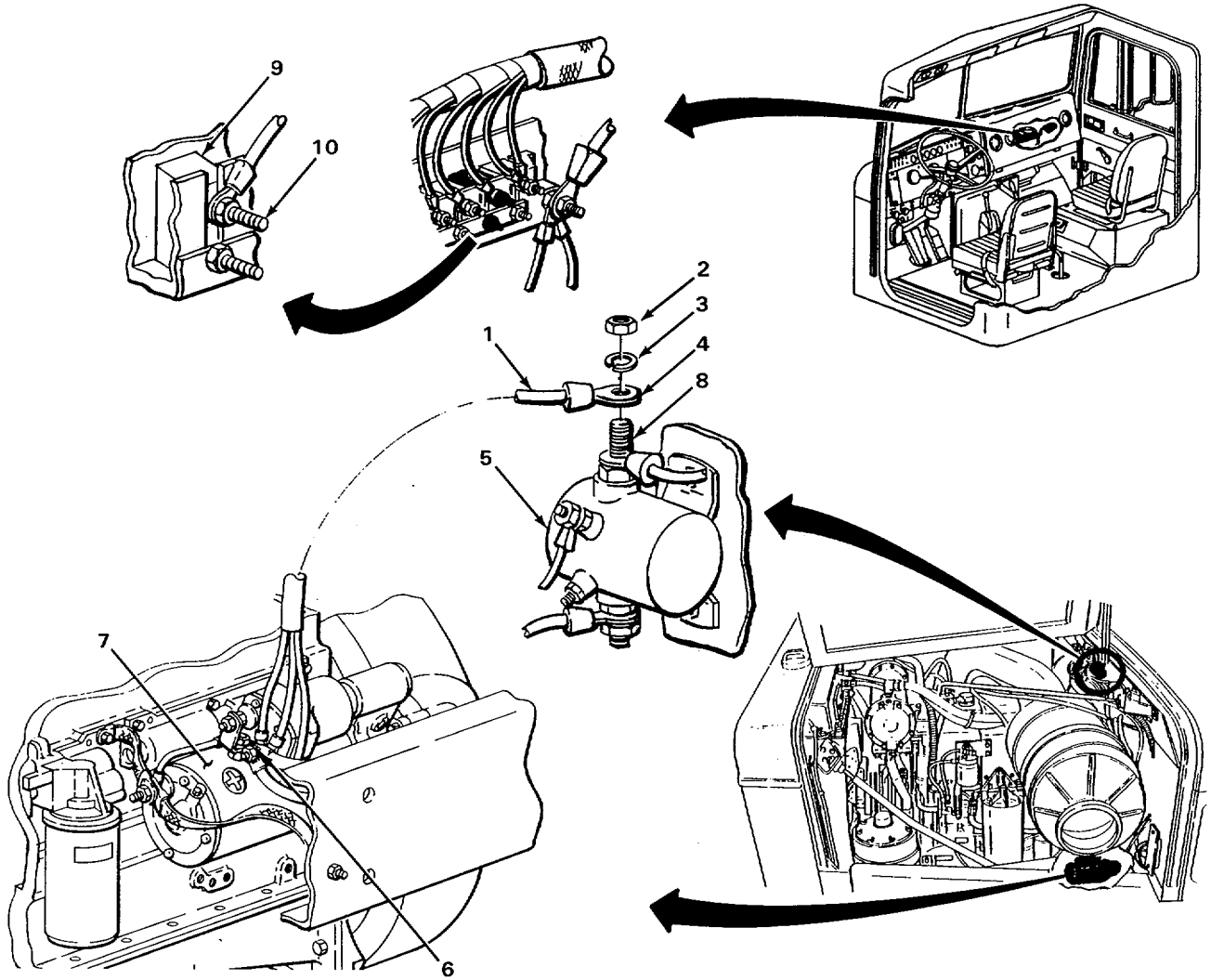
Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 10. Test 14-8 wire (1) as follows: Using 1/2-inch open-end wrench, unscrew and take off nut (2), lockwasher (3), and wire terminal (4) on primary magnetic switch (5). Set multimeter to ohms scale, and adjust to 0 ohms. With assistant, connect red test lead to wire terminal (4) on 14-8 wire (1) and black test lead to terminal (6) on secondary magnetic switch (7). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, 14-8 wire (1) must be replaced. Notify Direct Support Maintenance.
 - b. If multimeter reads 0 ohms, place wire terminal (4) in position and screw nut (2) and lockwasher (3) on to terminal (8) on primary magnetic switch (5) and tighten using 1/2-inch open-end wrench. Connect batteries (page 2-424). Install instrument panel pad (page 2-424).
- Step 11. Set multimeter to 20 vdc scale. Connect red test lead to terminal (9) on starter motor (10) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, go to step 12.
 - b. If multimeter reads 11 to 13 vdc, go to step 13.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED



TA243823

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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23. BOTH HEADLIGHTS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

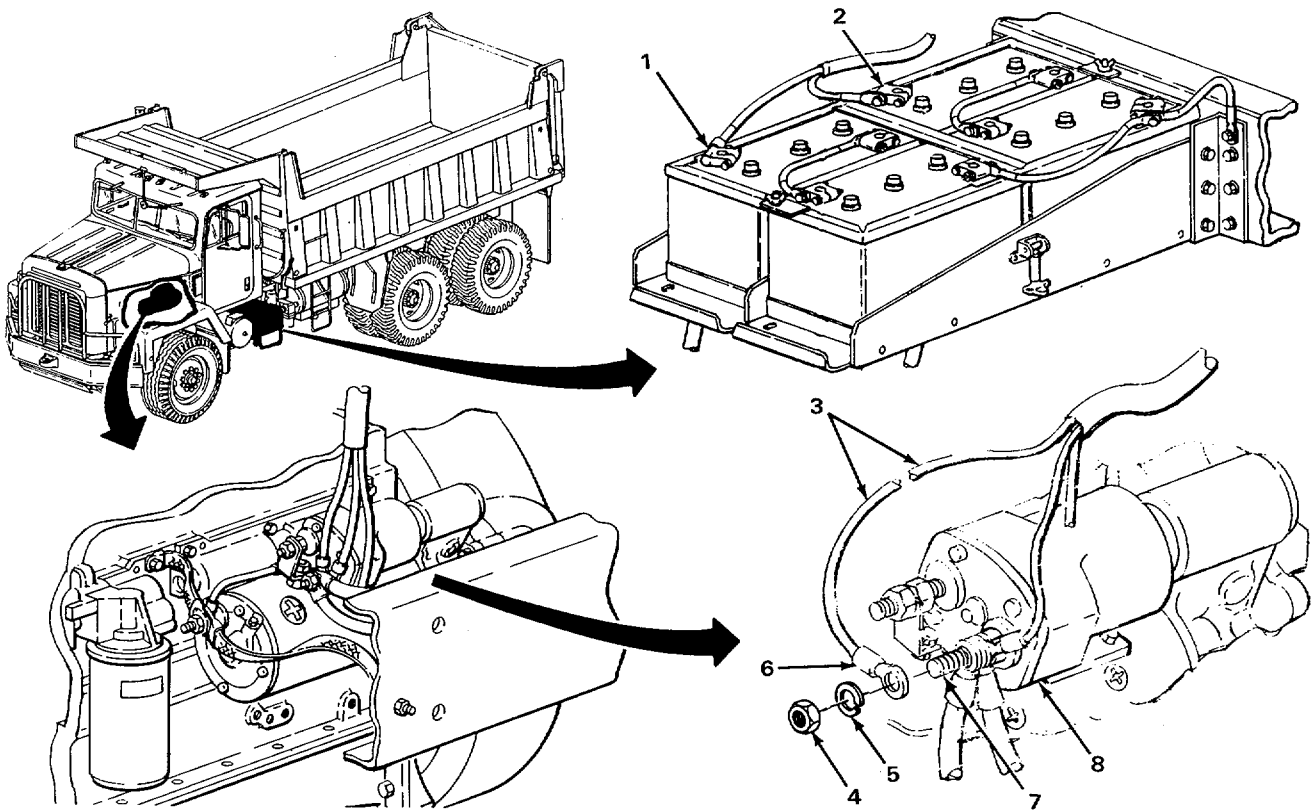
- Step 12. Check batteries as follows: Remove battery box cover (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to positive terminals (1 or 2) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, remove and clean battery cables (page 2-424).
 - b. If multimeter reads 11 to 13 vdc, install battery box cover (page 2-424) and go to step 13.
- Step 13. Disconnect batteries (page 2-424). Check 14-6 wire (3) for loose, corroded, frayed, or broken condition.
- a. If 14-6 wire (3) is loose, tighten nut (4) using 3/4-inch open-end wrench.
 - b. If 14-6 wire (3) is corroded, unscrew and take off nut (4), lockwasher (5), and wire terminal (6) using 3/4-inch open-end wrench. Using wire brush, clean wire terminal (6) on 14-6 wire (3). Place wire terminal (6) in position and screw nut (4) and lockwasher (5) on to terminal (7) on starter motor (8).
 - c. If 14-6 wire (3) is frayed, repair (page 2-424).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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d. If 14-6 wire (3) is broken, 14-6 wire (3) must be replaced. Notify Direct Support Maintenance.

e. If 14-6 wire (3) is not loose, corroded, frayed, or broken, go to step 14.



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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23. BOTH HEADLIGHTS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

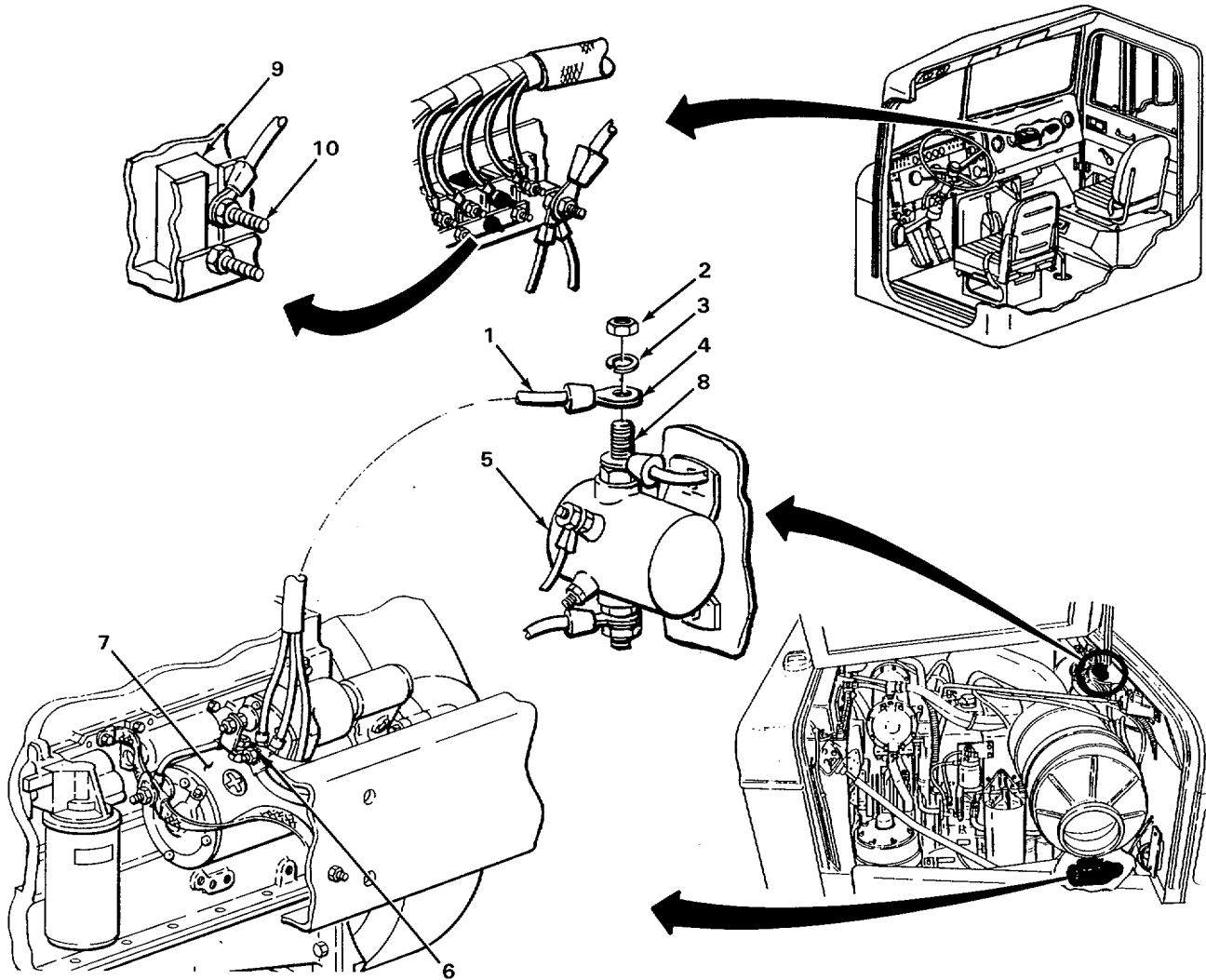
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 14. Test 14-6 wire (1) as follows: Using 1/2-inch open-end wrench, unscrew and take off nut (2), lockwasher (3), and wire terminal (4) on magnetic switch (5). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (4) on 14-6 wire (1) and black test lead to terminal (6) on starter motor (7). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, 14-6 wire (1) must be replaced. Notify Direct Support Maintenance.
 - b. If multimeter reads 0 ohms, place wire terminal (4) in position and screw nut (2) and lockwasher (3) on to terminal (8) on primary magnetic switch (5) and tighten using 11/2-inch open-end wrench. Connect batteries (page 2-424) and go to step 15.
- Step 15. Test headlight circuit breaker (9) as follows: Set multimeter to 20 vdc scale. Connect red test lead to circuit breaker terminal (10) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, replace headlight circuit breaker (9) (page 2-752).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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b. If multimeter reads 11 to 13 vdc, go to step 16.



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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23. BOTH HEADLIGHTS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

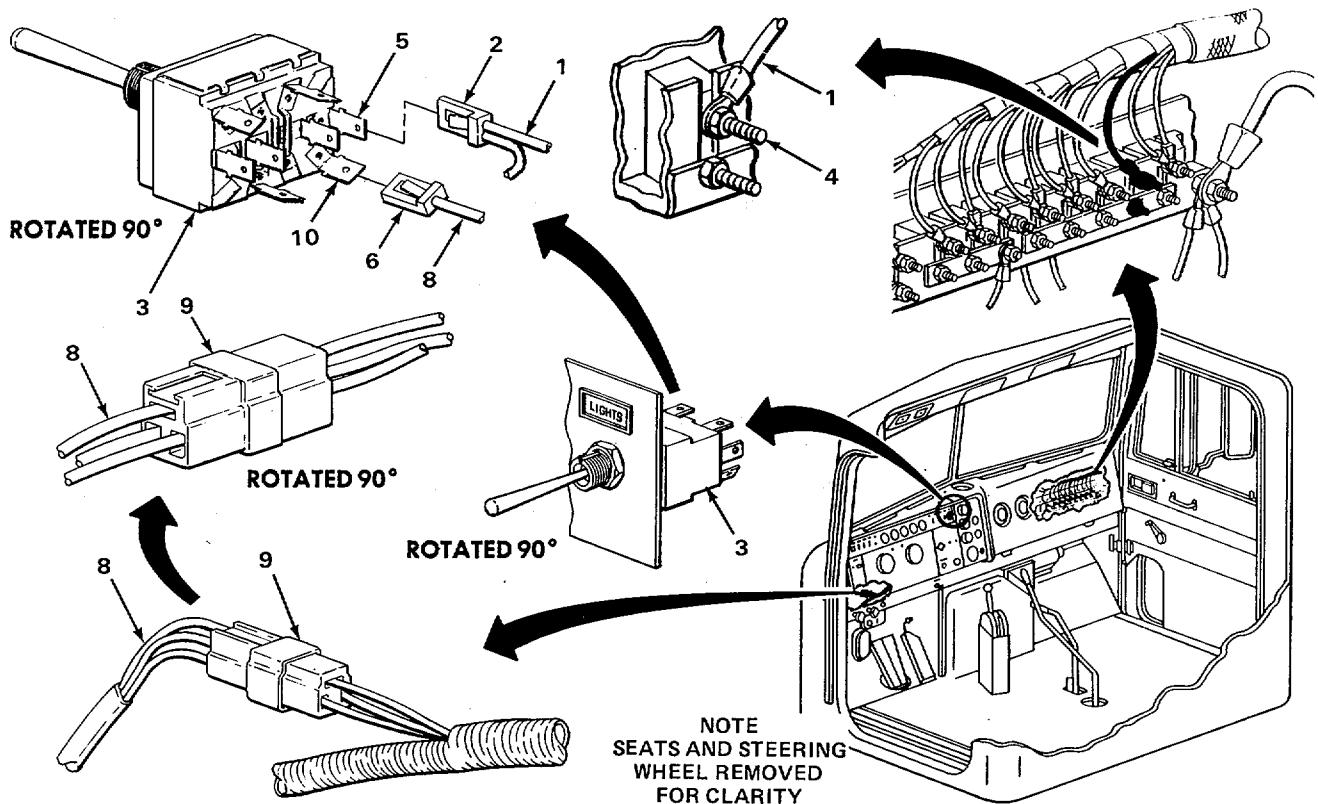
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 16. Remove lower center instrument panel (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to wire terminal (1) on wire connector (2) and black test lead to ground. Push LIGHTS switch handle (3) up to on position. Check for 11 to 13 vdc on multimeter. Push LIGHTS switch handle (3) down to off position. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc go to step 17.
 - b. If multimeter reads 11 to 13 vdc, go to step 22.
- Step 17. Open upper instrument panel (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to wire connector (4) on LIGHTS switch (5) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, go to step 18.
 - b. If multimeter reads 11 to 13 vdc, go to step 20.
- Step 18. Check 50 wire (6) at headlight circuit breaker (7) for loose, corroded, frayed, or broken condition.
- a. If 50 wire (6) is loose, tighten nut (8) using 3/8-inch open-end wrench.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- b. If 50 wire (6) is corroded, unscrew and take off nut (8) and wire terminal (9) using 3/8-inch open-end wrench. Using wire brush clean wire terminal (9). Place wire terminal (9) in position and screw nut (8) on to circuit breaker terminal (10) and tighten using 3/8-inch open-end wrench.
- c. If 50 wire (6) is frayed, repair (page 2-424).
- d. If 50 wire (6) is broken, 50 wire (6) must be replaced. Notify Direct Support Maintenance.
- e. If 50 wire (6) is not loose, corroded, frayed, or broken, go to step 19.



TA243825

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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23. BOTH HEADLIGHTS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

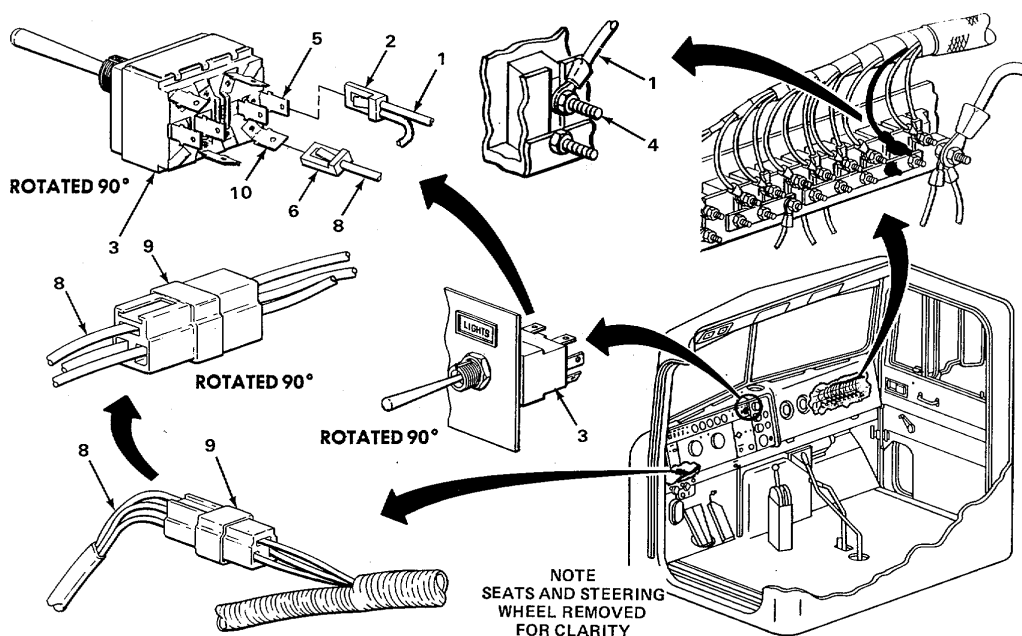
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 19. Test 50 wire (1) as follows: Disconnect batteries (page 2-424). Pull wire connector (2) off LIGHTS switch (3). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire connector (2) on 50 wire (1) and black test lead circuit breaker terminal (4). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, 50 wire (1) must be replaced. Notify Direct Support Maintenance.
 - b. If multimeter reads 0 ohms, push wire connector (2) on to terminal (5) on LIGHTS switch (3). Install instrument panel pad (page 2-424). Connect batteries (page 2-424). Go to step 20.
- Step 20. Set multimeter to 20 vdc scale. Connect red test lead to wire connector (6) on LIGHTS switch (3) and black test lead to ground. Push LIGHTS switch handle (7) up to on position. Check for 11 to 13 vdc on multimeter. Push LIGHTS switch handle (7) down to off position. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, replace LIGHTS switch (3) (page 2-725).
 - b. If multimeter reads 11 to 13 vdc, go to step 21.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 21. Test 51 wire (8) as follows: Disconnect batteries (page 2-424). Pull wire connector (6) off LIGHTS switch (3). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire connector (6) and black test lead to 51 wire (8) on wire connector (9). Check for 0 ohms on multimeter. Disconnect test leads.
- If multimeter reads no continuity, 51 wire (8) must be replaced. Notify Direct Support Maintenance.
 - If multimeter reads 0 ohms, push wire connector (6) on to terminal (10) on LIGHTS switch (3). Close upper instrument panel (page 2-424). Go to step 22.



TA243825

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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23. BOTH HEADLIGHTS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

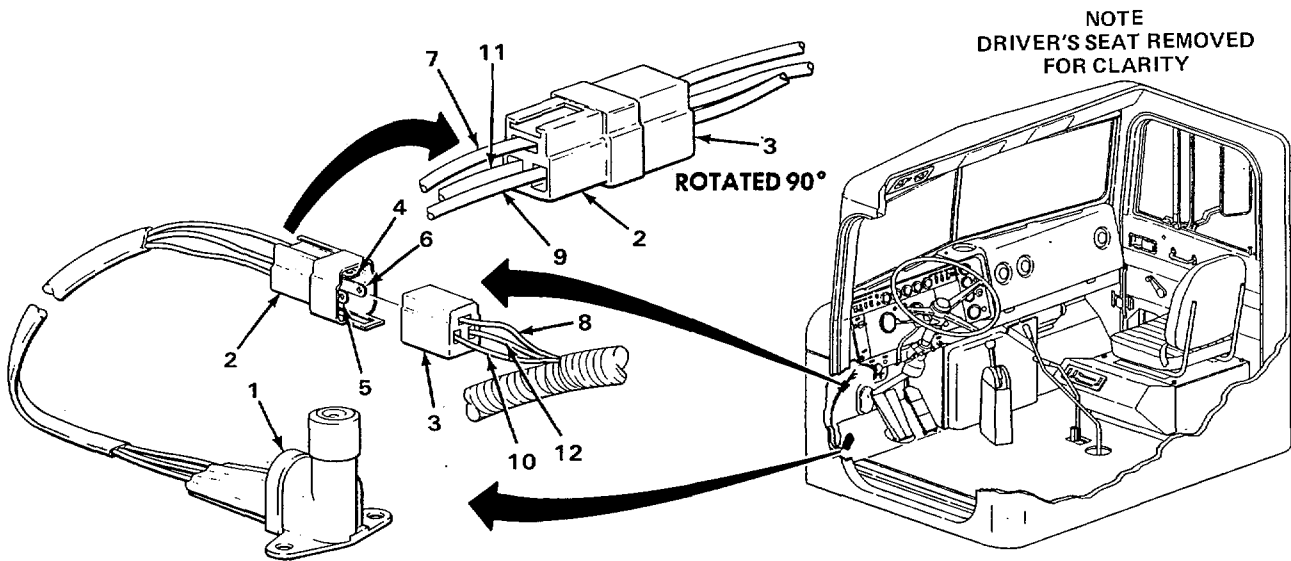
- Step 22. Test headlight beam selector switch (1) as follows: Pull apart wire connectors (2 and 3). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (4) and black test lead to wire terminal (5). Check for 0 ohms on multimeter. Move black test lead to wire terminal (6). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, on wire terminal (5) and wire terminal (6), replace headlight beam selector switch (1) (page 2-742).
 - b. If multimeter reads 0 ohms, on wire terminal (5) and wire terminal (6). Push wire connectors (2 and 3) together until locked and go to step 23.
- Step 23. Test wire connectors (2 and 3) as follows: Disconnect batteries (page 2-424). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to red wire (7) on wire connector (2) and black test lead to 51 wire (8) on wire connector (3). Check for 0 ohms on multimeter. Move red test lead to brown wire (9) on wire connector (2) and move black test lead to 52 wire (10) on wire connector (3). Check for 0 ohms on multimeter.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Move red test lead to blue wire (11) on wire connector (2) and move black test lead to 53 wire (12) on wire connector (3). Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter reads no continuity on 51 wire (8), 52 wire (10), or 53 wire (12), wire connectors (2 and 3) must be replaced. Notify Direct Support Maintenance.
- b. If multimeter reads 0 ohms on 51 wire (8), 52 wire (10), and 53 wire (12), install center instrument panel (page 2-424) and connect batteries (page 2-424).



TA243826

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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23. BOTH HEADLIGHTS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter reading.

Steps 24, 25, and 26 apply to malfunction of both hi beams.

To ensure correct multimeter reading, headlight beam selector switch (1) may have to be pressed to direct current to terminal being tested.

Step 24. Test headlight beam selector switch (1) as follows: Disconnect batteries (page 2-424). Remove center instrument panel (page 2-424). Pull apart wire connectors (2 and 3). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (4) and black test lead to wire terminal (5) on wire connector (3). Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter reads no continuity, replace headlight beam selector switch (1) (page 2-742).
- b. If multimeter reads 0 ohms, go to step 25.

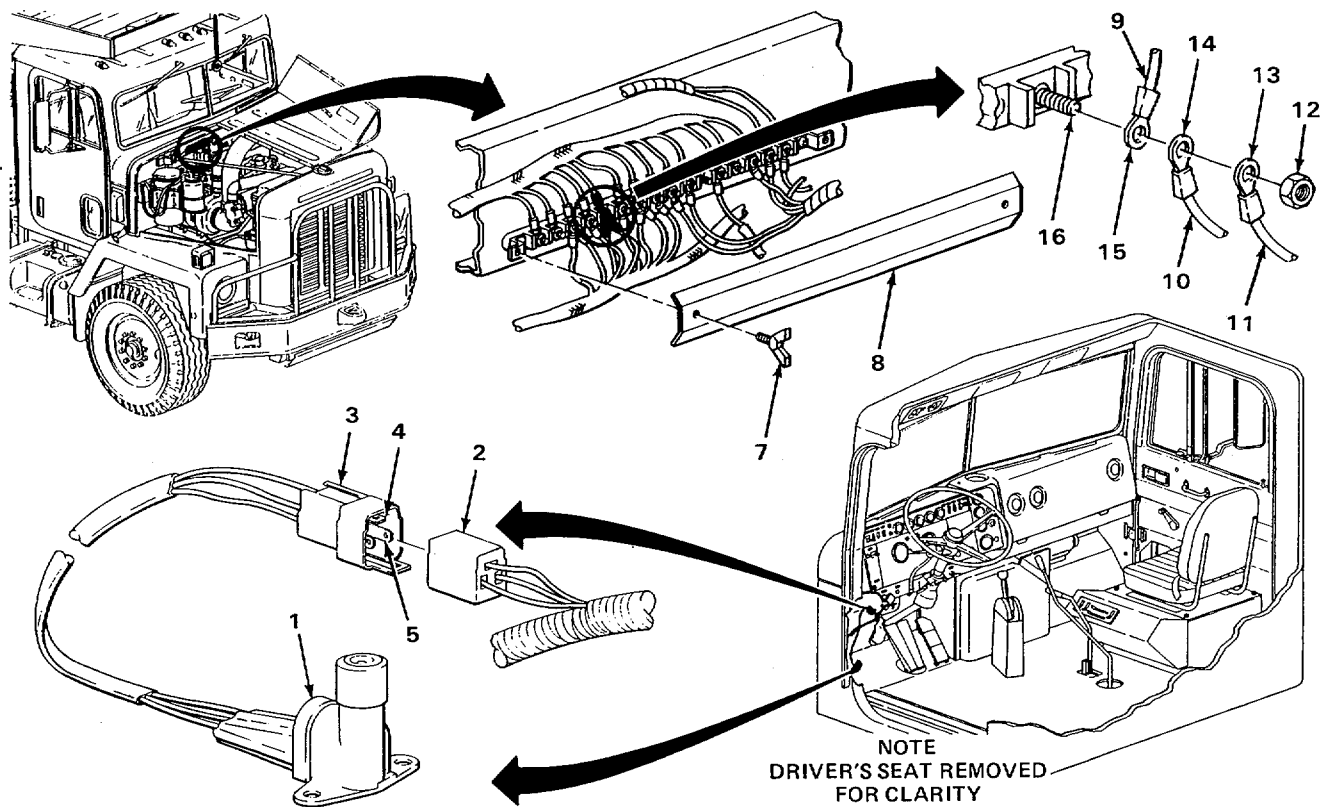
Step 25. Unscrew and take off two wing screws (6) and junction box cover (7). Check two 52 wires (8 and 9) and 52A wire (10) for loose, corroded, frayed, or broken condition.

- a. If two 52 wires (8 and 9) and 52A wire (10) are loose, tighten nut (11) using 3/8-inch open-end wrench.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- b. If two 52 wires (8 and 9) or 52A wire (10) are corroded, unscrew and take off nut (11) and two 52 wires (8 and 9) and 52A wire (10), using 3/8-inch open-end wrench. Using wire brush, clean wire terminals (12, 13, and 14). Place wire terminals (12, 13, and 14) in position and screw nut on to terminal (15) and tighten using 3/8-inch open-end wrench.
- c. If two 52 wires (8 and 9) or 52A wire (10) is frayed, repair (page 2-424).
- d. If two 52 wires (8 and 9) or 52A wire (10) is broken, two 52 wires (8 and 9) or 52A wire (10) must be replaced. Notify Direct Support Maintenance.
- e. If two 52 wires (8 and 9) or 52A wire (10) are not, loose, corroded, frayed, or broken, go to step 26.



TA243827

ORGANIZATIONAL MAINTENANCE - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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23. BOTH HEADLIGHTS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 26. Test 52 wire (1) as follows: Set multimeter to 20 vdc scale. With assistant, connect red test lead to wire terminal (2) on wire connector (3) and black test lead to terminal (4) on junction box (5). Check for 0 ohms on multimeter. Disconnect test leads.
- If multimeter reads no continuity, 52 wire (1) must be replaced. Notify Direct Support Maintenance.
 - If multimeter reads 0 ohms, push wire connectors (3 and 6) together until locked. Place junction box cover (7) in position and screw on two wing screws (8) and tighten. Install center instrument panel (page 2-424). Connect batteries (page 2-424). Go to Malfunction 24, ONE HEADLIGHT DOES NOT WORK (page 2-194).

NOTE

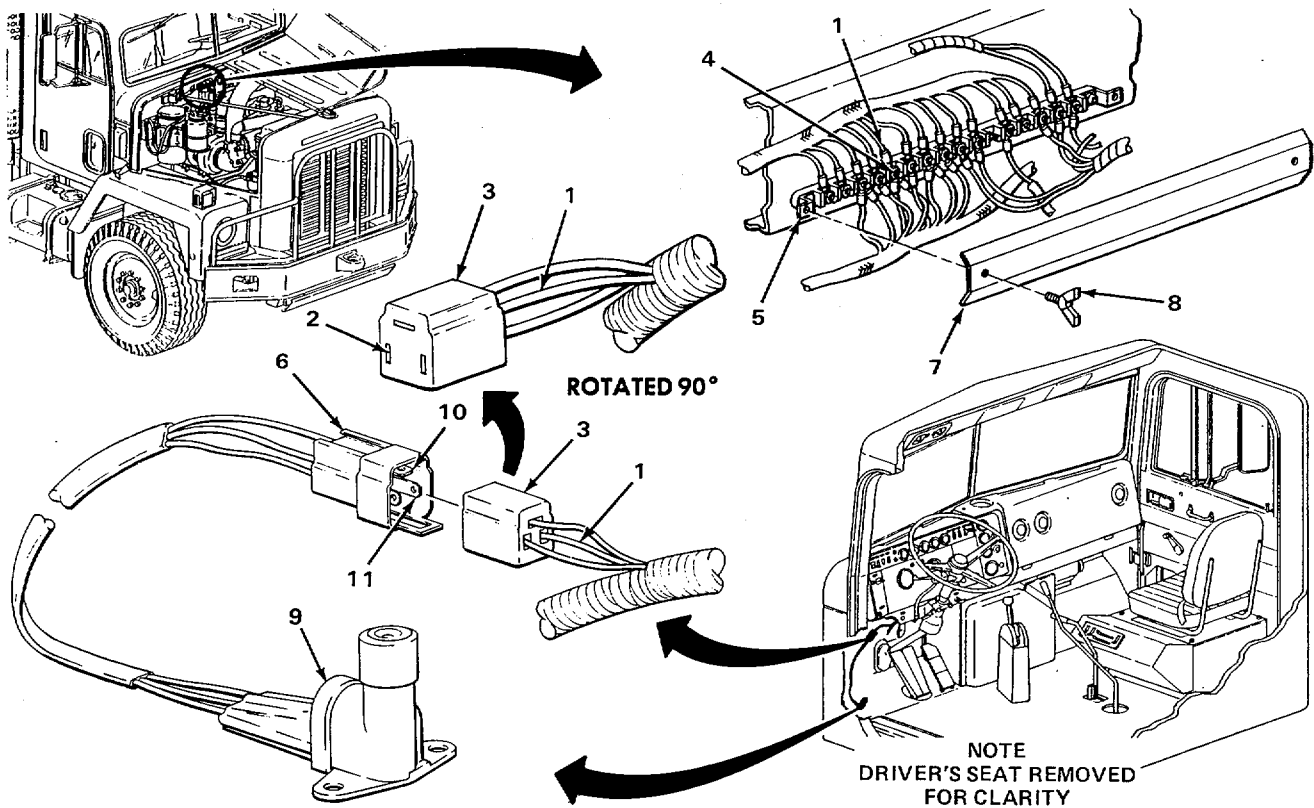
Steps 27, 28, and 29 apply to malfunction of both low beams.

To ensure correct multimeter reading, headlight beam selector switch (9) may have to be pressed to direct current to terminal being tested.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 27. Test headlight beam selector switch (9) as follows: Disconnect batteries (page 2-424). Remove center instrument panel (page 2-424). Pull apart wire connectors (3 and 6). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (10) and black test lead to wire terminal (11) on wire connector (6). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, replace headlight beam selector switch (1) (page 2-742).
 - b. If multimeter reads 0 ohms, go to step 28.



TA243828

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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23. BOTH HEADLIGHTS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 28. Unscrew and take off two wing screws (1) and junction box cover (2). Check two 53 wires (3 and 4) and 53A wire (5) for loose, corroded, frayed, or broken condition.

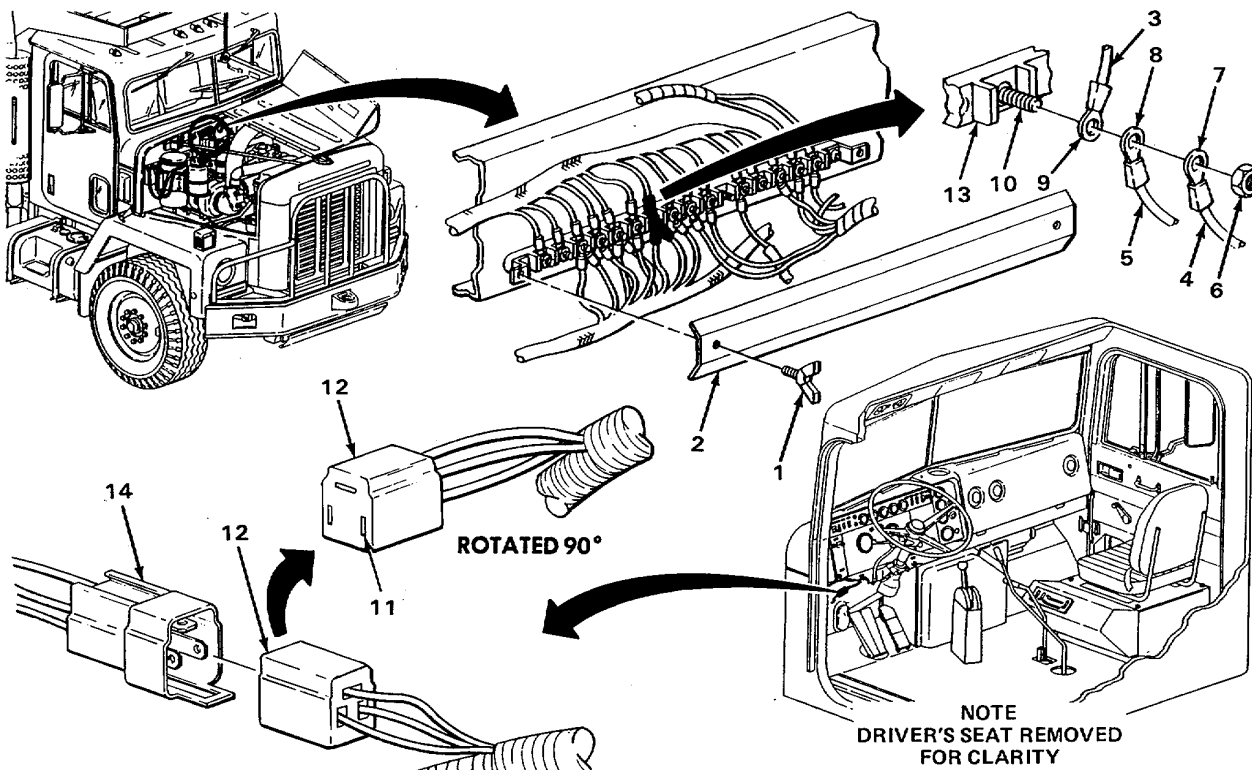
- a. If two 53 wires (3 and 4) or 53A wire (5) are loose, tighten nut (6) using 3/8-inch open-end wrench.
- b. If two 53 wires (3 and 4) or 53A wire (5) are corroded, unscrew and take off nut (6) and two wires (3 and 4) and 53A wire (5) using 3/8-inch open-end wrench. Clean wire terminals (7, 8, and 9) using wire brush. Place wire terminals (7, 8, and 9) in position and screw nut (6) on terminal (10) and tighten using 3/8-inch open-end wrench.
- c. If two 53 wires (3 and 4) or 53A wire (5) are frayed, repair (page 2-424).
- d. If two 53 wires (3 and 4) or 53A wire (5) are broken, two 53 wires (3 and 4) or 53A wire (5) must be replaced. Notify Direct Support Maintenance.
- e. If two 53 wires (3 and 4) or 53A wire (5) are not loose, corroded, frayed, or broken go to step 29.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 29. Test 53 wire (3) as follows: Set multimeter to 20 vdc scale. With assistant, connect red test lead to wire terminal (11) on wire connector (12) and black test lead to terminal (10) on junction box (13). Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter reads no continuity, 53 wire (3) must be replaced. Notify Direct Support Maintenance.
- b. If multimeter reads 0 ohms, push wire connectors (12 and 14) together until locked. Place junction box cover (2) in position and screw on two wing screws (1) and tighten. Install center instrument panel (page 2-424). Connect batteries (page 2-424). Go to Malfunction 24, ONE HEADLIGHT DOES NOT WORK (page 2-194).



TA243829

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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24. ONE HEADLIGHT DOES NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps 1 thru 7 are for low-beam headlights.
Steps 8 thru 13 are for hi-beam headlights.
Steps given are typical for left and right side headlights.

Step 1. Pull apart wire connectors (1 and 2). Set multimeter to 20 vdc scale. Connect red test lead to wire terminal (3) on wire connector (1) and black test lead to ground. Have assistant push LIGHTS switch handle (4) up to on position. Check for 11 to 13 vdc on multimeter. Have assistant push LIGHTS switch handle (4) down to off position. Disconnect test leads.

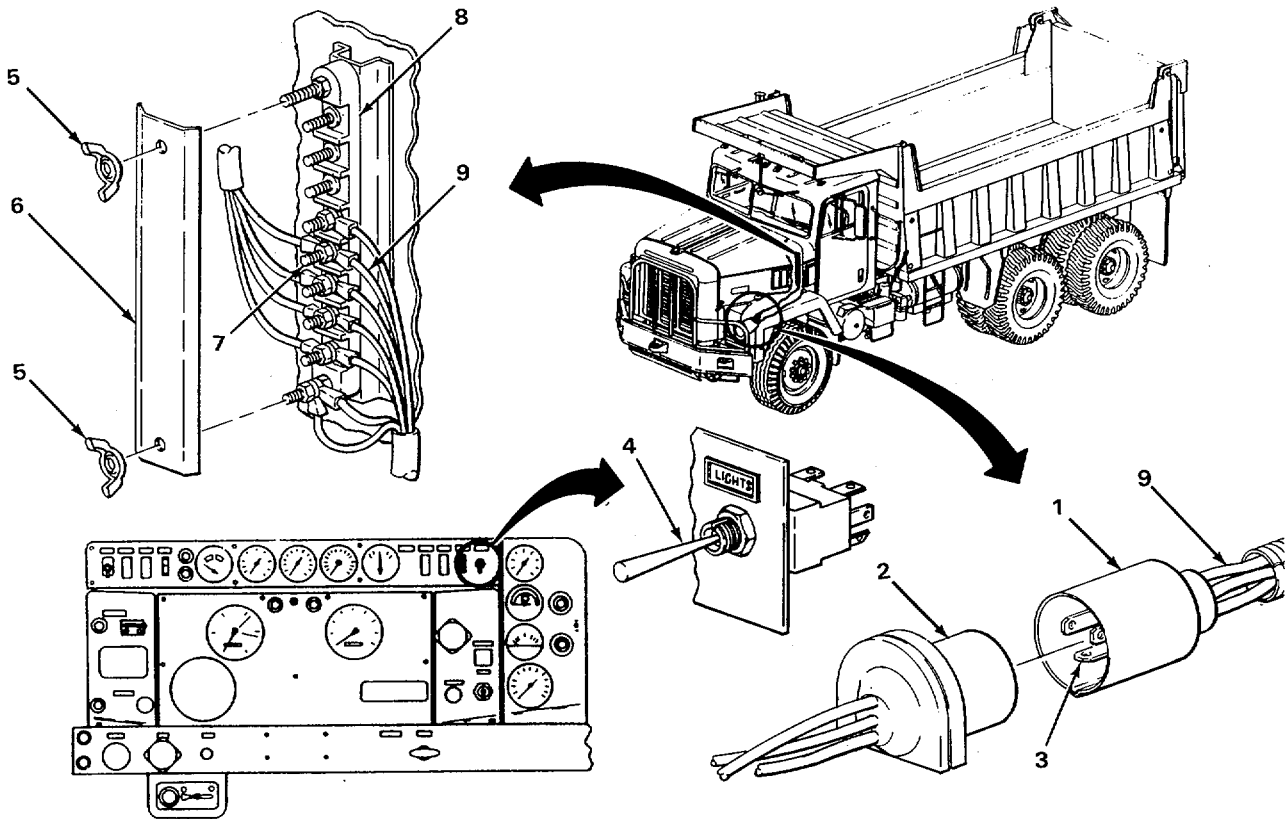
- a. If multimeter does not read 11 to 13 vdc, go to step 2.
- b. If multimeter reads 11 to 13 vdc, go to step 4.

Step 2. Unscrew and take off two wingnuts (5) and junction box cover (6). Set multimeter to 20 vdc scale. Connect red test lead to terminal (7) on junction box (8) and black test lead to ground. Have assistant push LIGHTS switch handle (3) up to on position. Check for 11 to 13 vdc on multimeter. Have assistant push LIGHTS switch handle (3) down to off position. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If multimeter does not read 11 to 13 vdc, go to step 3.
- b. If multimeter reads 11 to 13 vdc, 53 wire (9) must be replaced. Notify Direct Support Maintenance.



TA243830

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

TM 5-3805-254-20-1

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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24. ONE HEADLIGHT DOES NOTWORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Srape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Left side low-beam headlight wire is marked 53 and right side low-beam headlight wire is marked 53A.

Step 3. Unscrew and take off two wing screws (1) and junction box cover (2). Set multimeter to 20 vdc scale. Connect red test lead to terminal (3) on junction box (4) and black test lead to ground. Have assistant push **LIGHTS** switch handle (5) up to on position. Check for 11 to 13 vdc on multimeter. Have assistant push **LIGHTS** switch handle (5) down to off position. Disconnect test leads.

If multimeter reads 11 to 13 vdc 53/53A wire (6) must be replaced. Notify Direct Support Maintenance.

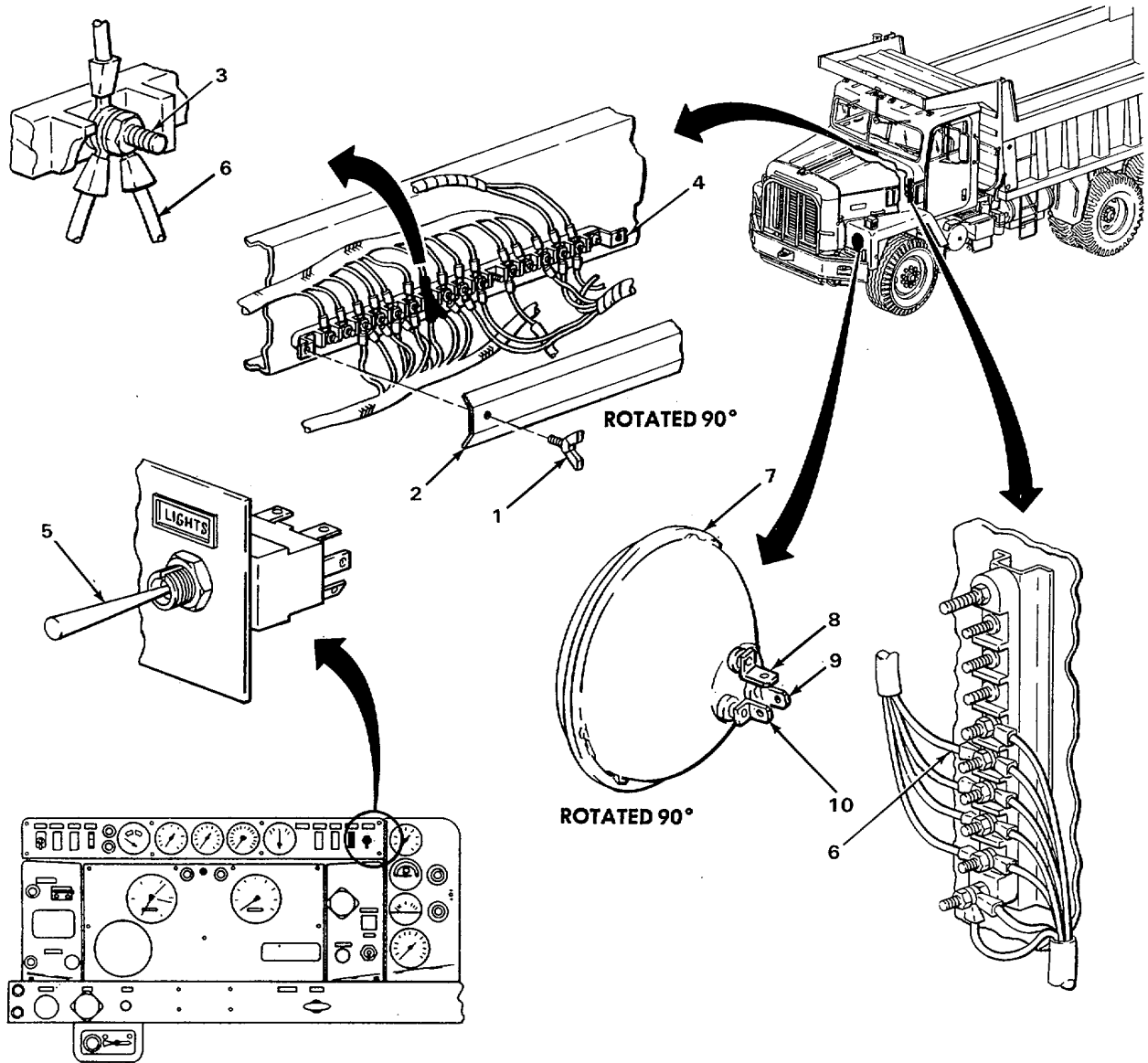
Step 4. Test headlight (7) as follows: Remove headlight (page 2-807). Set Multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to terminal (8) and black test lead to terminal (9). Check for 0 ohms on multimeter. Move black test lead to terminal (10). Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter read no continuity on terminals (9 or 10), replace headlight (7) (page 2-807).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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b. If multimeter reads 0 ohms on both terminals (9 and 10), go to step 5.



TA243831

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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24. ONE HEADLIGHT DOES NOTWORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 5. Test headlight harness (1) as follows: Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (2) on wire connector (3) and black test lead to wire terminal (4) on wire connector (5). Check for 0 ohms on multimeter. Move red test lead to wire terminal (6) on wire connector (3) and black test lead to wire terminal (7) on wire connector (5). Check for 0 ohms on multimeter. Disconnect test leads.

a.If multimeter reads no continuity on wire terminals (4 or 7), headlight harness (1) must be replaced. Notify Direct Support Maintenance.

b.If multimeter reads 0 ohms, install headlight (page 2-807) and go to step 6.

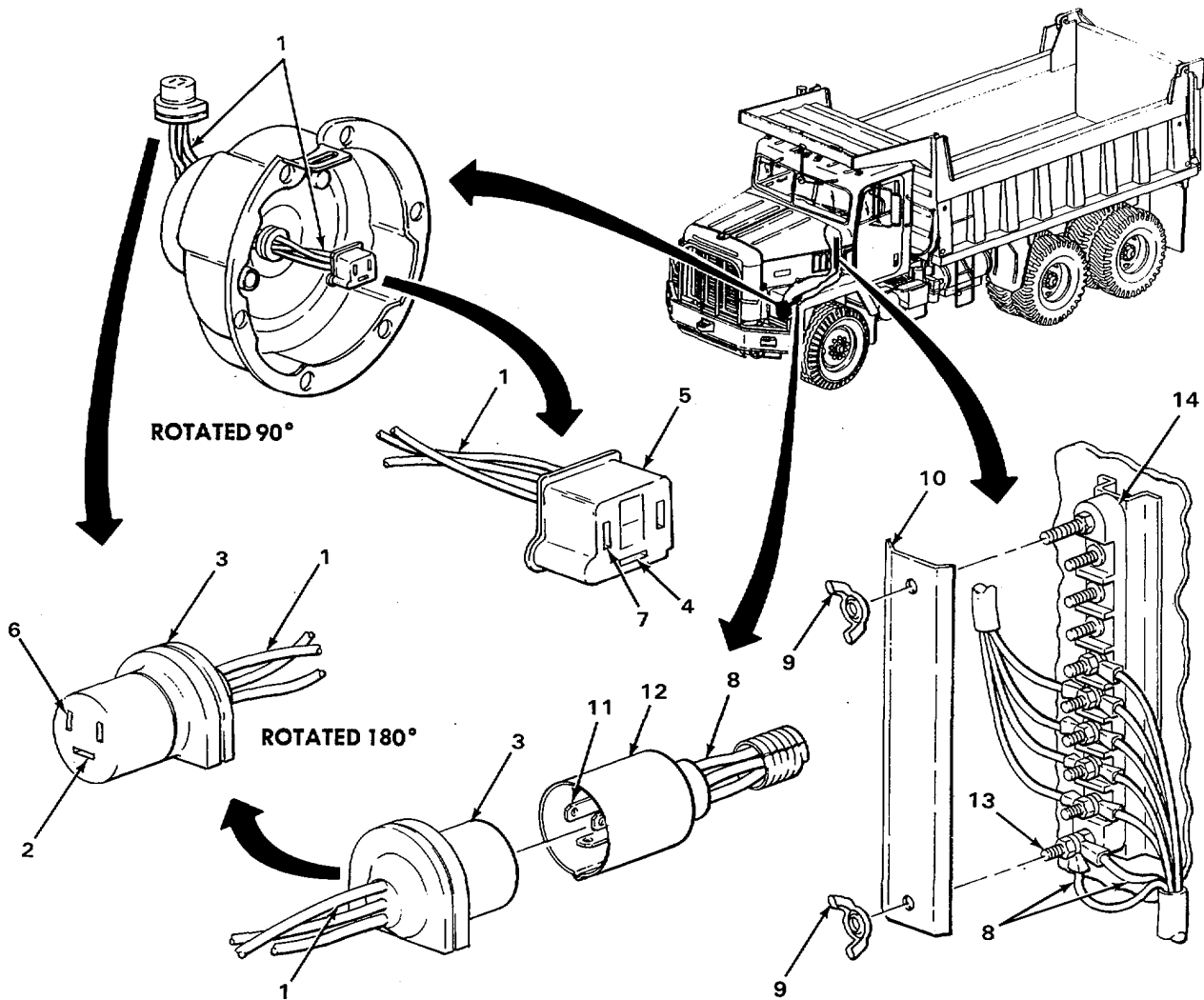
Step 6. Test 11 wire (8) as follows: Disconnect batteries (page 2-424). Unscrew and take off wingnuts (9) and junction box cover (10). Connect red test lead to wire terminal (11) on wire connector (12) and black test lead to terminal (13) on junction box (14). Check for 0 ohms on multimeter. Disconnect test leads.

a. If multimeter reads no continuity 11 wire (8) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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b. If multimeter reads 0 ohms, push wire connector (12 and 3) together. Place junction box cover (10 in position and screw on two wingnuts (9) and tighten. Connect batteries (page 2-424).



TA243832

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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24. ONE HEADLIGHT DOES NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps 7 thru 12 are for hi-beam headlights.

Steps given are typical for left and right side headlight.

Step 7. Pull apart wire connectors (1 and 2). Set multimeter to 20 vdc scale. Connect red test lead to wire terminal (3) on wire connector (1) and black test lead to ground. Have assistant push LIGHTS switch handle (4) up to on position. Check for 11 to 13 vdc on multimeter. Have assistant push LIGHTS switch handle (4) down to off position. Disconnect test leads.

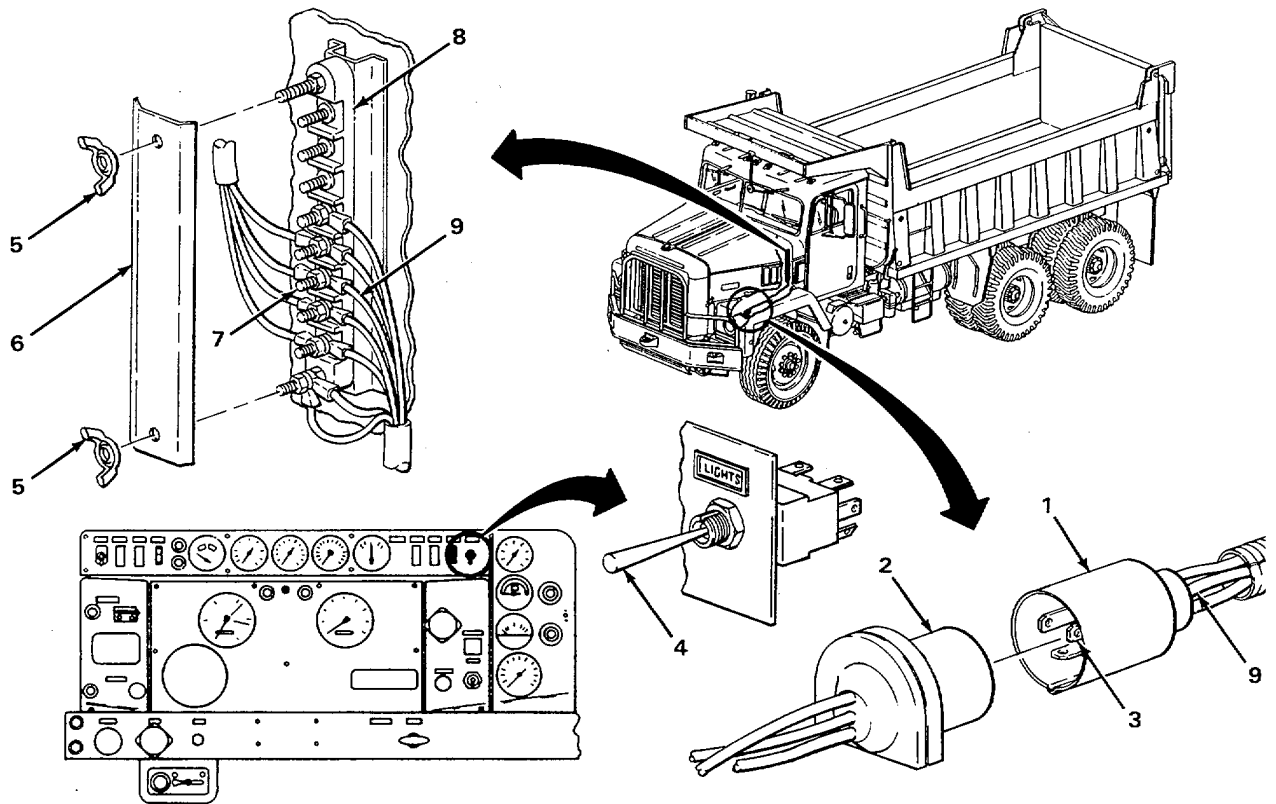
- a. If multimeter does not read 11 to 13 vdc, go to step 8.
- b. If multimeter reads 11 to 13 vdc go to step 10.

Step 8. Unscrew and take off two wingnuts (5) and junction box cover (6). Set multimeter to 20 vdc scale. Connect red test lead to terminal (7) on junction box (8) and black test lead to ground. Have assistant push LIGHTS switch handle (4) up to on position. Check for 11 to 13 vdc on multimeter. Have assistant push LIGHTS switch handle (4) down to off position. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If multimeter does not read 11 to 13 vdc, go to step 9.
- b. If multimeter reads 11 to 13 vdc, 52 wire (9) must be replaced. Notify Direct Support Maintenance.



TA243833

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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24. ONE HEADLIGHT DOES NOTWORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Left side hi-beam headlight wire is marked 52 and right side hi-beam headlight wire is marked 52A.

Step 9. Unscrew and take off two wing screws (1) and junction box cover (2). Using multimeter, set to 20 vdc scale. Connect red test lead to terminal (3) on junction box (4) and black test lead to ground. Have assistant push LIGHTS switch handle (5) up to on position. Check for 11 to 13 vdc on multimeter. Have assistant push LIGHTS switch handle (5) down to off position. Disconnect test leads.

If multimeter reads 11 to 13 vdc 52/52A wire (6) must be replaced. Notify Direct Support Maintenance.

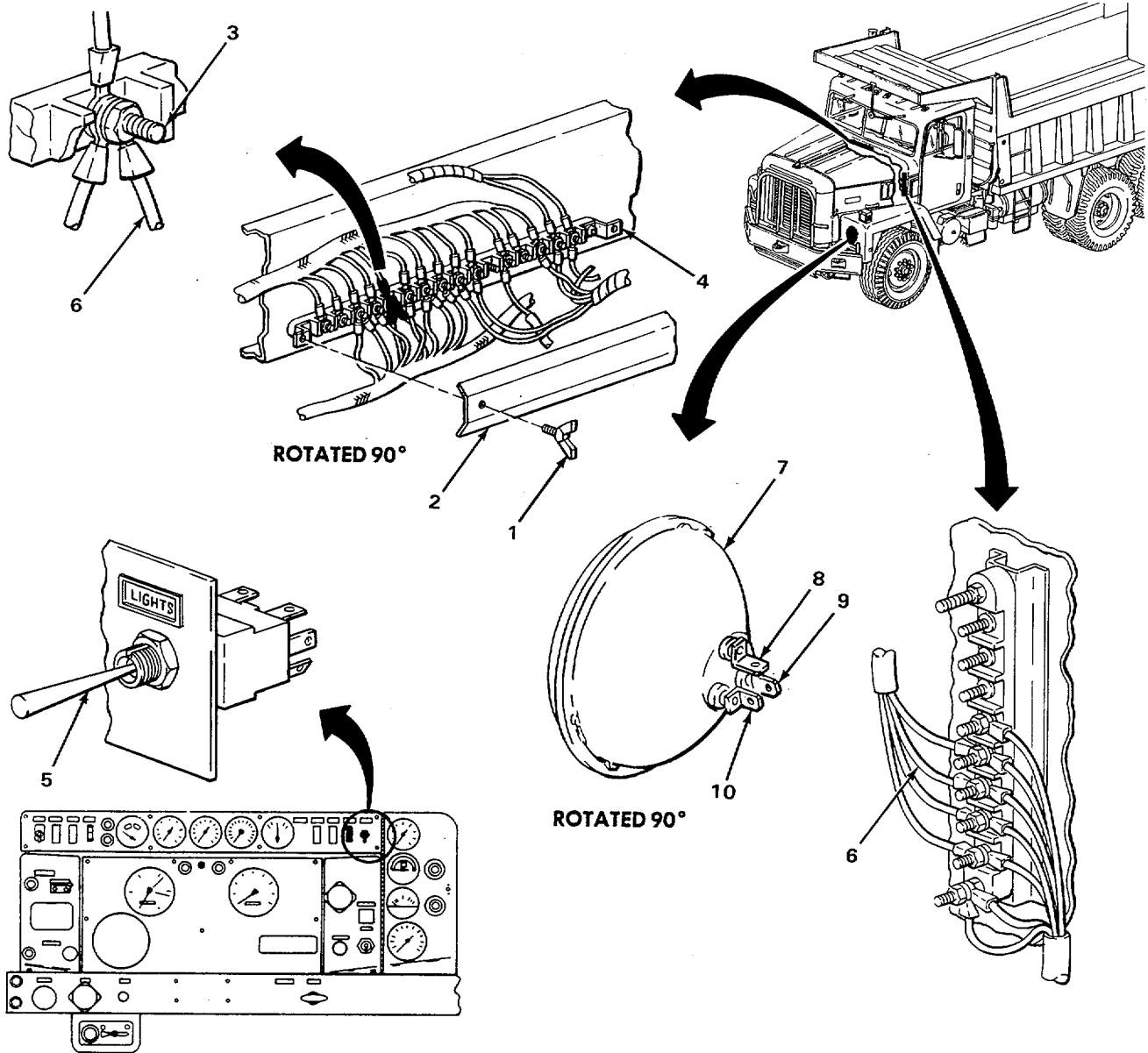
Step 10. Test headlight (7) as follows: Remove headlight (page 2-807). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to terminal (8) and black test lead to terminal (9). Check for 0 ohms on multimeter. Move black test lead to terminal (10). Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter reads no continuity on terminals (9 and 10), replace headlight (6) (page 2-807).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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b. If multimeter reads 0 ohms on both terminals (9 and 10), go to step 11.



TA243834

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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24. ONE HEADLIGHT DOES NOTWORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

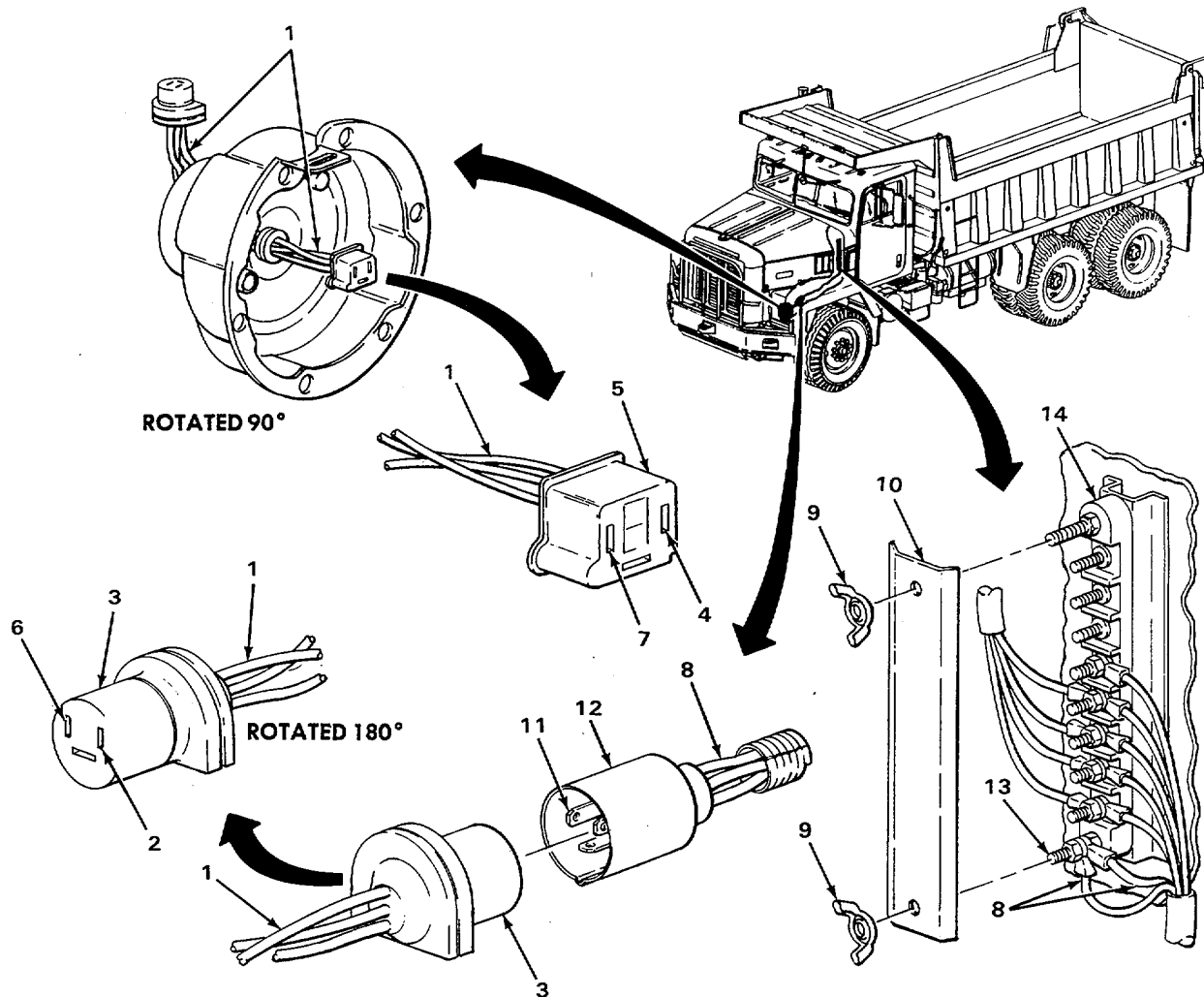
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 11. Test headlight harness (1) as follows: Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (2) on wire connector (3) and black test lead to wire terminal (4) on wire connector (5). Check for 0 ohms on multimeter. Move red test lead to wire terminal (6) on wire connector (3) and black test lead to wire terminal (7) on wire connector (5). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity on wire terminals (4 or 7), head-light harness (1) must be replaced. Notify Direct Support Maintenance.
 - b. If multimeter reads 0 ohms, install headlight (page 2-807) and go to step 12.
- Step 12. Test 11 wire (8) as follows: Disconnect batteries (page 2-424). Unscrew and take off two wingnuts (9) and junction box cover (10). Connect red test lead to wire terminal (11) on wire connector (12) and black test lead to terminal (13) on junction box (14). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, 11 wire (8) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- b. If multimeter reads 0 ohms, push wire connectors (12 and 3) together. Place junction box cover (10) in position and screw on two wingnuts (9) and tighten. Connect batteries (page 2-424).



TA243835

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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25. ALL TURN SIGNALS DO NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 1. Remove instrument panel pad (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to fuse terminal (1) on fuse panel (2) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, go to step 2.

b. If multimeter reads 11 to 13 vdc, go to step 3.

Step 2. Set multimeter to 20 vdc scale. Connect red test lead to circuit breaker strip feed stud (3) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

If multimeter reads 11 to 13 vdc, 55 wire (4) must be replaced. Notify Direct Support Maintenance.

Step 3. Set multimeter to 20 vdc scale. Connect red test lead to fuse terminal (5) on fuse panel (2) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc to step 4.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

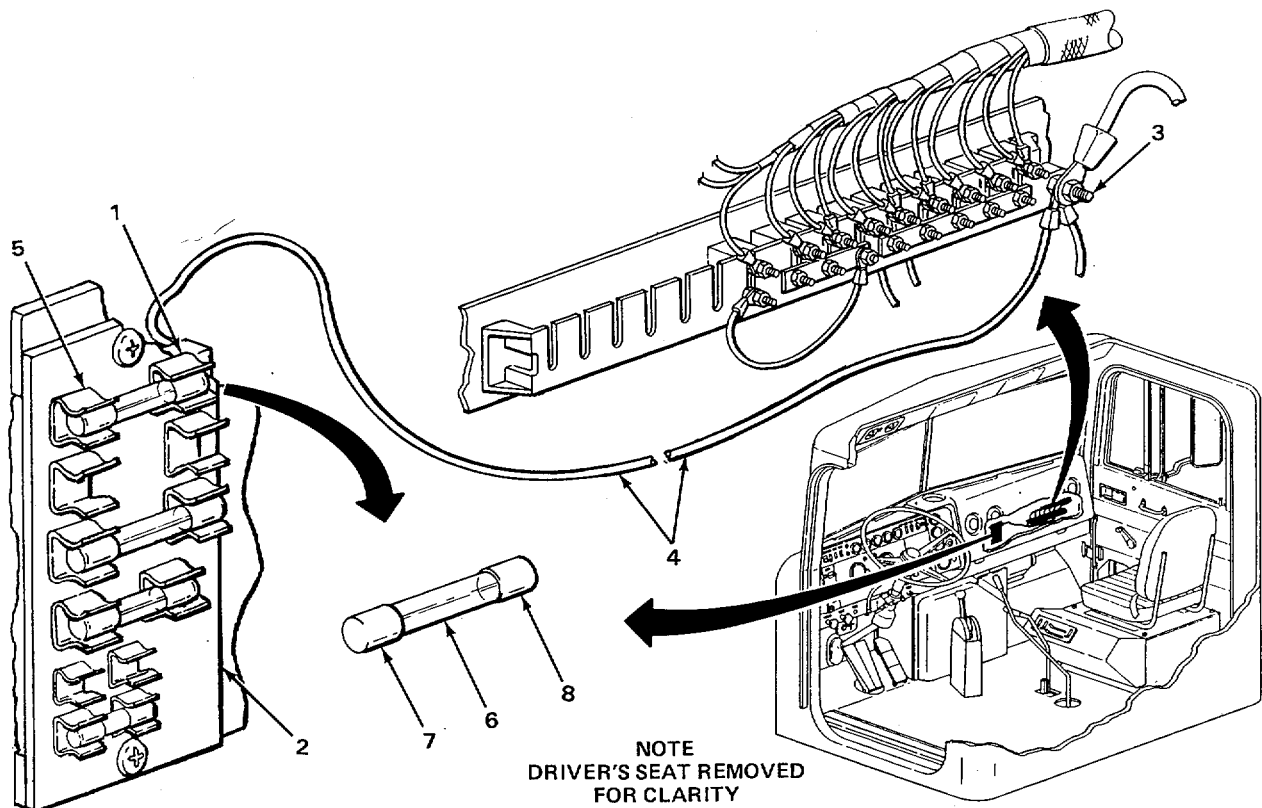
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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b. If multimeter reads 11 to 13 vdc, go to step 5.

Step 4. Test fuse (6) as follows: Using fuse puller, remove fuse (6). Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to fuse end (7) and black test lead to fuse end (8). Check for 0 ohms on multimeter. Disconnect test leads.

a. If multimeter reads no continuity, replace fuse (6) (page 2-424).

b. If multimeter reads 0 ohms, install fuse (6). Connect batteries (page 2-424) and go to step 5.



TA243836

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

25. ALL TURN SIGNALS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

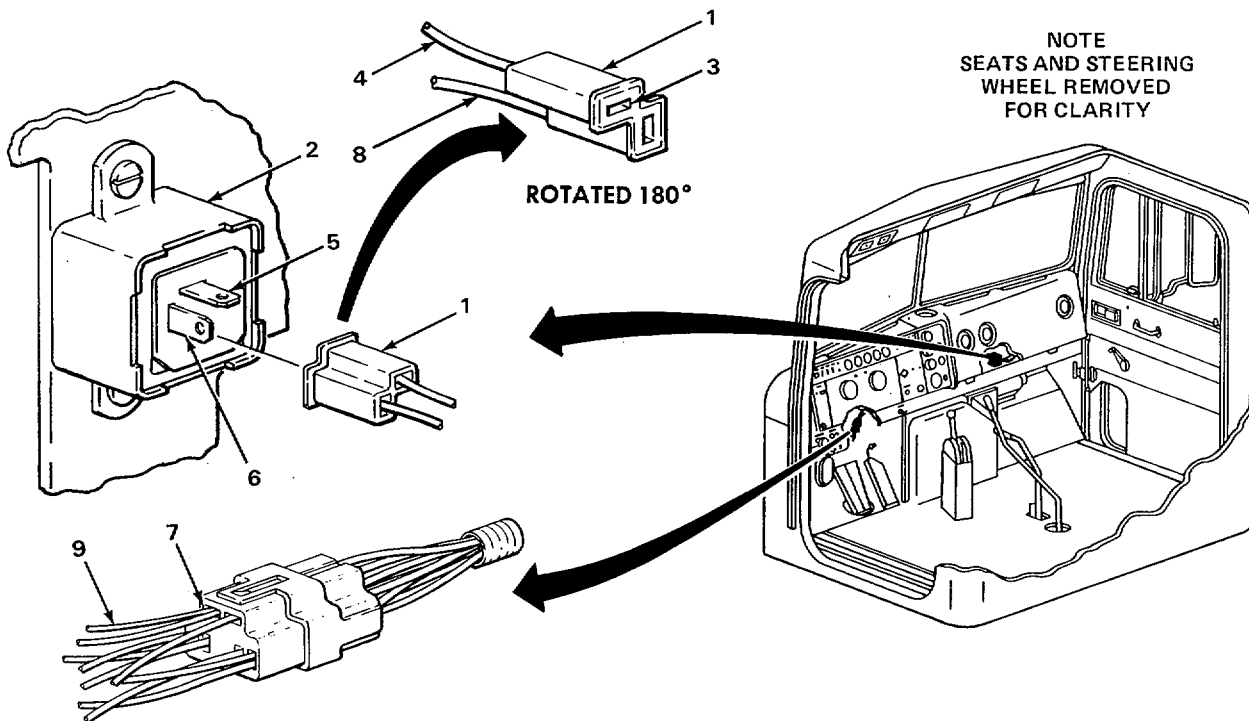
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 5. Pull wire connector (1) off turn signal and hazard flasher (2). Set multimeter to 20 vdc scale. Connect red test lead to wire terminal (3) on wire connector (1) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, 55A wire (4) must be replaced. Notify Direct Support Maintenance.
 - b. If multimeter reads 11 to 13 vdc, go to step 6.
- Step 6. Test turn signal and hazard flasher (2) as follows: Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to terminal (5) and black test lead to terminal (6). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, replace turn signal and hazard flasher (2) (page 2-711).
 - b. If multimeter reads 0 ohms, push wire connector (1) on to turn signal and hazard flasher (2) and go to step 7.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 7. Set multimeter to 20 vdc scale. Connect red test lead to wire terminal (7) on wire connector (8) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- If multimeter does not read 11 to 13 vdc, 55B wire (9) must be replaced. Notify Direct Support Maintenance.
 - If multimeter reads 11 to 13 vdc, install instrument panel pad (page 2-424). Go to step 8.



TA243837

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

25. ALL TURN SIGNALS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 8. Test turn signal switch (1) as follows: Disconnect batteries (page 2-424). Pull apart wire connectors (2 and 3). Push turn signal switch handle (4) to left turn position. Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (5) and black test lead to wire terminal (6). Check for 0 ohms on multimeter. Move black test lead to wire terminal (7). Check for 0 ohms on multimeter. Push turn signal switch handle (4) to off position. Disconnect test leads.

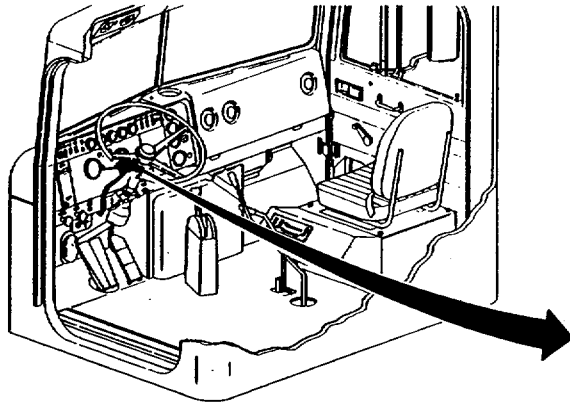
- a. If multimeter reads no continuity on wire terminals (6 and 7), replace turn signal switch (1) (page 2-744).
- b. If multimeter reads 0 ohms on wire terminals (6 and 7), go to step 9. Step 9. Push turn signal switch handle (4) to right turn position. Connect red test lead to wire terminal (5) and black test lead to wire terminal (8). Check for 0 ohms on multimeter. Move black test lead to wire terminal (9). Check for 0 ohms on multimeter. Push turn signal switch handle (4) to off position. Disconnect test leads.

Step 9. Push turn signal switch handle (4) to right turn position. Connect red test lead to wire terminal (5) and black test lead to wire terminal (8). Check for 0 ohms on multimeter. Move black test lead to wire terminal (9). Check for 0 ohms on multimeter. Push turn signal switch handle (4) to off position. Disconnect test leads.

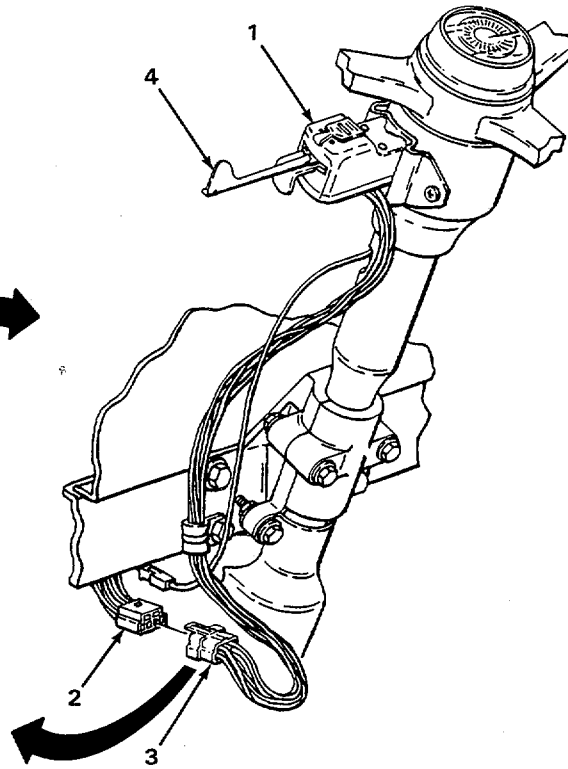
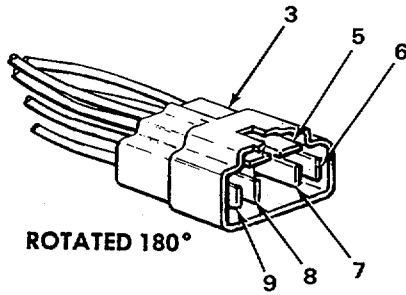
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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If multimeter reads no continuity on wire terminals (8 and 9), replace turn signal switch (1) (page 2-744).



NOTE
DRIVER'S SEAT REMOVED
FOR CLARITY



TA243838

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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26. BATTERIES DO NOT HOLD A CHARGE.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

Step 1. Check for defective batteries (TM 9-6140-200-14).

- a. If batteries are defective, replace (page 2-838).
- b. If batteries are not defective, go to step 2.

Step 2. Start engine (TM 5-3805-254-10) and check that BATT/CHGNOLTS gage (1) reads in CHG scale. Using multimeter, set to 20 vdc scale, connect red test lead to battery positive (+) cable (2) and black test lead to battery negative (-) cable (3). Have assistant run engine at 1100 rpm and check for 13 to 15.5 vdc on multimeter. Have assistant shut down engine (TM 5-3805-254-10). Disconnect test leads.

- a. If BATT/CHGNOLTS gage (1) is not in CHG scale and multimeter does not read 13 to 15.5 vdc, go to Malfunction 27, GENERATOR DOES NOT CHARGE (page 2-213).
- b. If BATT/CHGNOLTS gage (1) is in CHG scale and multimeter reads 13 to 15.5 vdc, go to step 3.

Step 3. Make sure all switches and controls that draw electrical current are off (TM 5-3805-254-10). Check for voltage drain on electrical system as follows: using two 1/2-inch open-end wrenches, loosen two screws (4) and using battery terminal puller, pull two battery negative (-) cables (3) from battery posts (5). Using multimeter set to 20 vdc scale, connect red test lead to one battery negative (-) cable (3) and black test lead to ground. Check for no voltage reading on multimeter. Disconnect test leads.

- a. If multimeter reads voltage drain, notify Direct Support Maintenance.
- b. If multimeter reads no voltage, place two battery negative (-) cables (3) on battery posts (5) and tighten two screws (4) using two 1/2-inch open-end wrenches.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

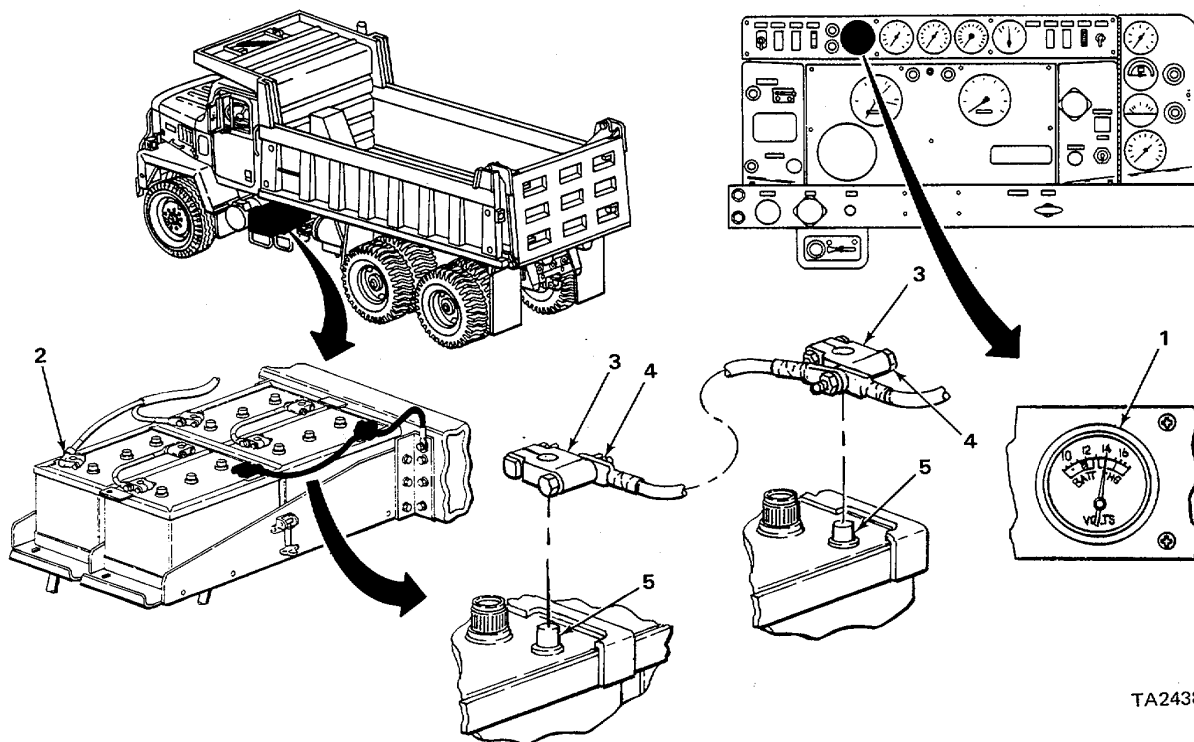
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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27. GENERATOR DOES NOT CHARGE

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

- Step** 1. Start engine (TM 5-3805-254-10) and check that BATT/CHGNOLTS gage (1) is in CHG scale. Using multimeter, set to 20 vdc scale, connect red test lead to battery positive (+) cable (2) and black test lead to battery negative (-) cable (3). Have assistant run engine at 1100 rpm and check for 13 to 15.5 vdc on multimeter. Have assistant shut down engine (TM 5-3805-254-10). Disconnect test leads.
- If BATT/CHGNOLTS gage (1) is in CHG scale and multimeter reads 13 to 15.5 vdc, go to step 3.
 - If BATT/CHGNOLTS gage (1) is not in CHG scale and multimeter does not read 13 to 15.5 vdc, go to step



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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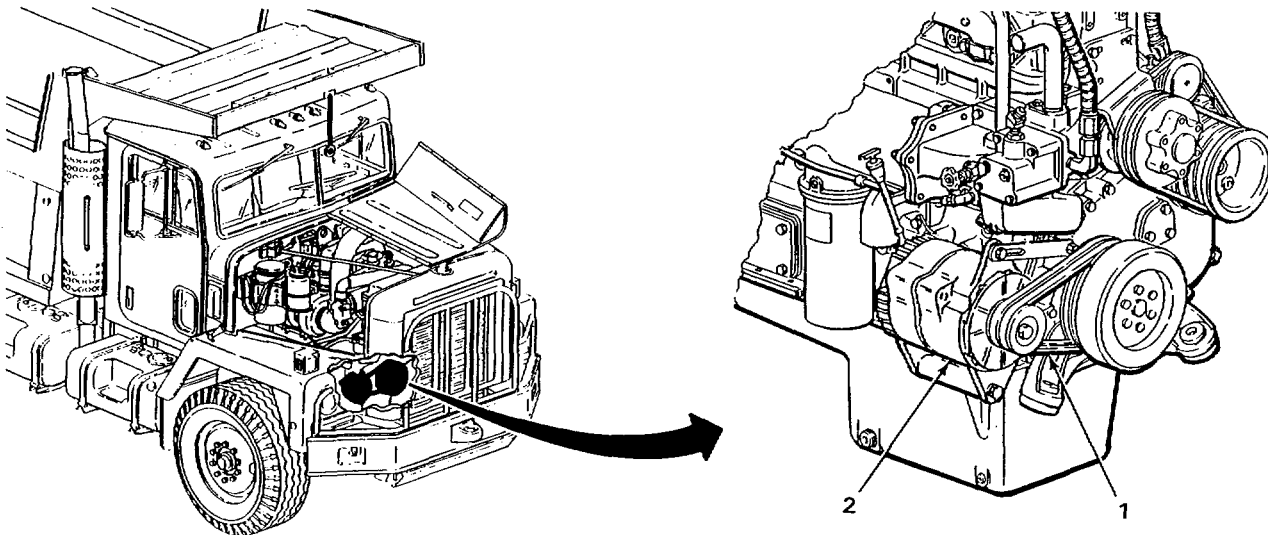
27. GENERATOR DOES NOT CHARGE - CONTINUED

Step 2. Check generator belts (1) for loose, worn, or broken condition.

- a. If generator belts (1) are loose, tighten (page 2-665).
- b. If generator belts (1) are worn or broken, replace (page 2-665).
- c. If generator belts (1) are not loose, worn, or broken, go to step 3.

Step 3. Using generator and voltage regulator test set and engine electrical system test adapter set, check generator (2) for proper output. Equipment Description and Data, page 1-19).

- a. If generator (2) is defective, replace (page 2-667).
- b. If internal voltage regulator in generator (2) is defective, replace generator (2) (page 2-667).
- c. If internal voltage regulator in generator (2) is out of adjustment, adjust, notify Direct Support Maintenance.
- d. If internal voltage regulator and generator (2) are not defective, notify Direct Support Maintenance.



TA243840

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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28. GENERATOR OVERCHARGES.

WARNING

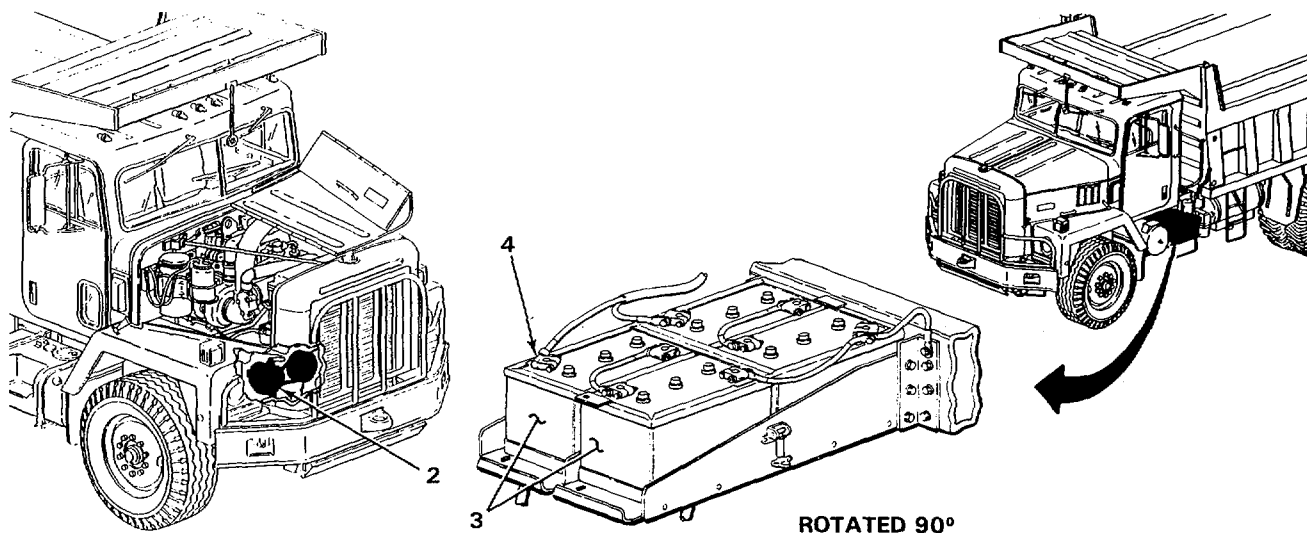
Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

Step 1. Check batteries (3) for shorted condition (TM 9-6140-200-14).

- a. If batteries are defective, replace (page 2-838).
- b. If batteries are not defective, go to step 2.

Step 2. Using multimeter, set to 20 vdc scale, connect red test lead to battery positive (+) cable (4) and black test lead to ground. Have assistant start engine (TM 5-3805-254-10). Check for 13 to 15.5 vdc on multimeter. Have assistant shut down engine (TM 5-3805-254-10). Disconnect test leads.

If multimeter reads above 15.5 vdc, replace generator (2) (page 2-667).



TA243841

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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29. ALL CAB MOUNTED MARKER LIGHTS DO NOT WORK.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 1. Remove instrument panel pad (page 2-424). Using multimeter, set to 20 vdc scale. Connect red test lead to circuit breaker wire terminal (1) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

breaker (2)

- a. If multimeter does not read 11 to 13 vdc, replace circuit (page 2-764).
- b. If multimeter reads 11 to 13 vdc, go to step 2.

Step 2. Install instrument panel pad (page 2-424). Using multimeter, set to 20 vdc scale. Connect red test lead to 58 wire (3) on LIGHTS switch (4) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

must be

- a. If multimeter does not read 11 to 13 vdc, 58 wire (3) replaced. Notify Direct Support Maintenance.
- b. If multimeter reads 11 to 13 vdc, go to step 3.

Step 3. Open upper center instrument panel (page 2-424). Using multimeter, set to 20 vdc scale. Connect red test lead to 58A wire (5) on LIGHTS switch (4) and black test lead to ground. Put LIGHTS switch (4) in down position. Check for 11 to 13 vdc on multimeter. Put LIGHTS switch (4) in center position, and disconnect test leads.

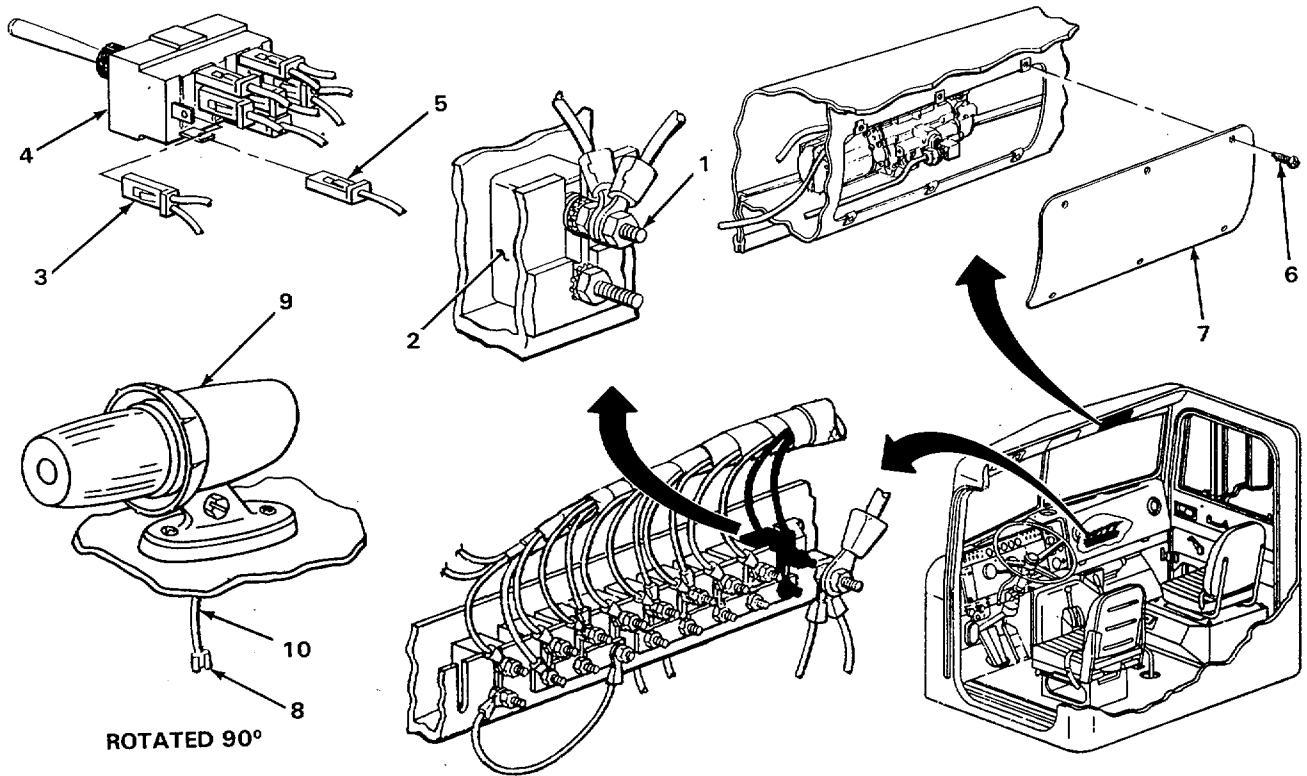
(4) must be

- a. If multimeter does not read 11 to 13 vdc, LIGHTS switch replaced (page 2-725).
- b. If multimeter reads 11 to 13 vdc, go to step 4.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 4. Using number one cross-tip screwdriver, unscrew and take out six screws (6). Take off cover (7). Using multimeter, set to 20 vdc scale. Connect red test lead to terminal (8) on marker light (9) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

If multimeter does not read 11 to 13 vdc, 58B wire (10) must be replaced. Notify Direct Support maintenance. Put cover (7) in place, screw in and tighten six screws (6) using number one cross-tip screwdriver.



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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30. ALL DUMP BODY MARKER LIGHTS DO NOT WORK.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

The following step will be performed on right taillight.

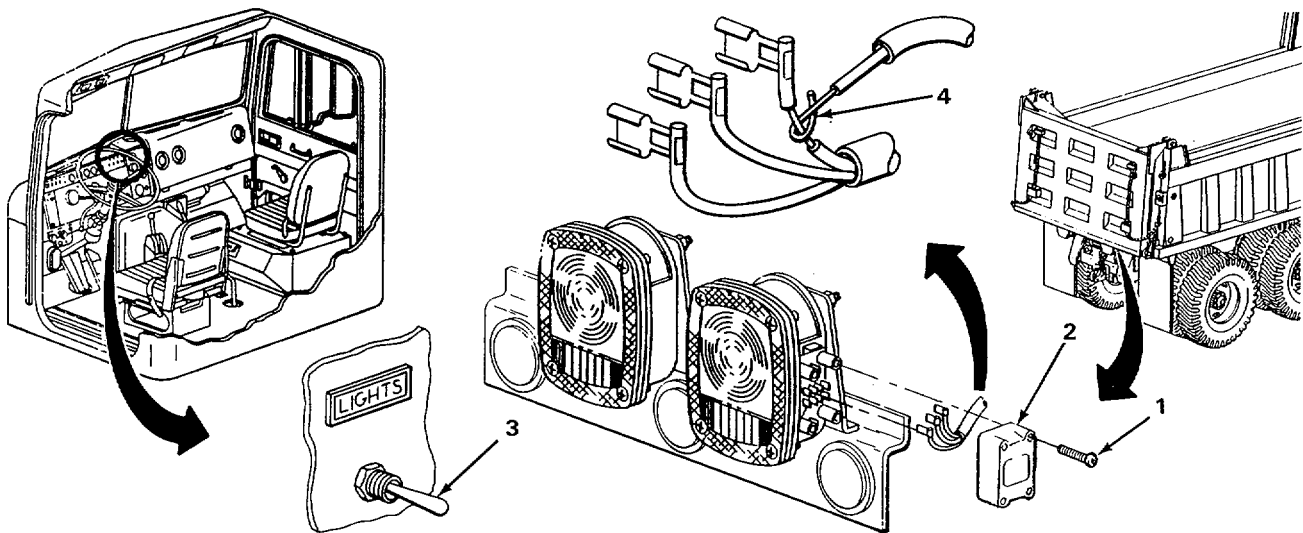
Using multimeter, set to 20 vdc scale. Using number one cross-tip screwdriver, unscrew and take out four screws (1). Take off cover (2). Using multimeter, set to 20 vdc scale. Put LIGHTS switch (3) in down position. Connect red test lead to white wire (4) and black test to ground. Check for 11 to 13 vdc on multimeter. Put LIGHTS switch (3) in center position and disconnect test leads.

replaced.

- a. If multimeter reads 11 to 13 vdc, white wire (4) must be
Notify Direct Support maintenance.

malfunction 44,

- b. If multimeter does not read 11 to 13 vdc, go to
BOTH TAILLIGHTS DO NOT WORK (page 2-282).



TA243843

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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31. ONE CAB MOUNTED MARKER LIGHT DOES NOT WORK.

NOTE

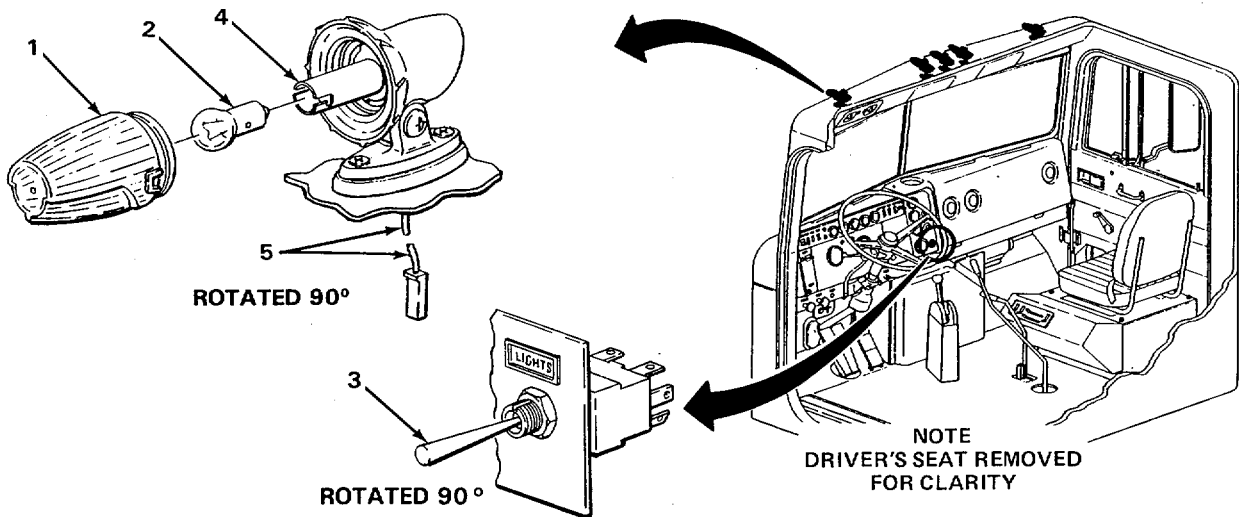
Steps given are typical for all cab mounted marker lights.

Cab mounted marker light wires are marked in following order from right to left side of cab, 58A, 58B, 58C, 58D, and 58E.

Step 1. Test marker light as follows: Using 1/4-inch flat-tip screwdriver, pry off lens (1). Push marker lamp (2) in and turn counterclockwise, and take out. Set multimeter to 20 vdc scale. Put LIGHTS switch (3) in down position. Connect red test lead to contact in light socket (4) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Put LIGHTS switch (3) in center position. Disconnect test leads.

58B, 58C,
maintenance.

- a. If multimeter does not read 11 to 13 vdc, supply wire (5) 58D, or 58E must be replaced. Notify Direct Support
- b. If multimeter reads 11 to 13 vdc, go to step 2.



TA243844

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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31. ONE CAB MOUNTED MARKER LIGHT DOES NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

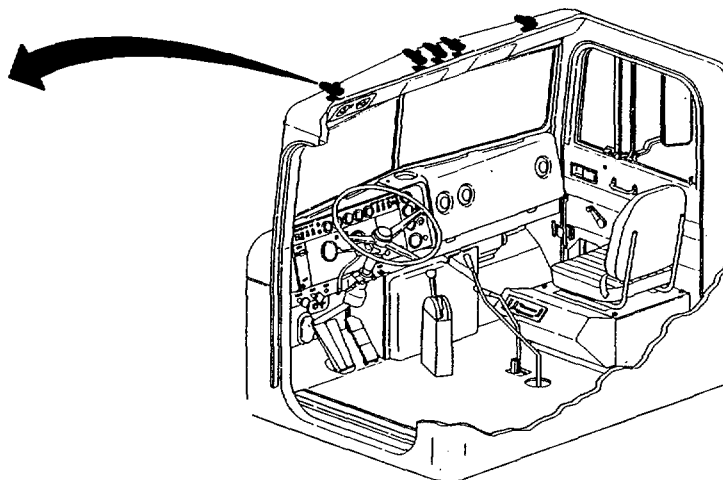
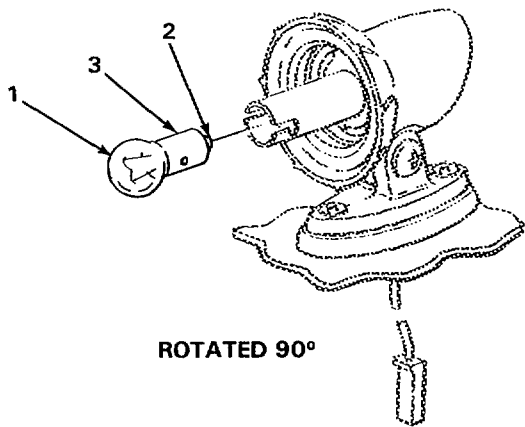
NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 2. Test marker lamp (1) as follows: Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to contact (2) on bottom of marker lamp (1) and black test lead to metal base (3) of marker lamp (1). Check for 0 ohms on multimeter. Disconnect test leads.

(1)

- a. If multimeter reads no continuity, replace marker lamp (page 2-801).
- b. If multimeter reads 0 ohms, go to step 3.



TA243845

NOTE
DRIVER'S SEAT REMOVED
FOR CLARITY

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 3. Check marker lamp socket (4) for corroded or rusted condition.

cloth.

be

step 4.

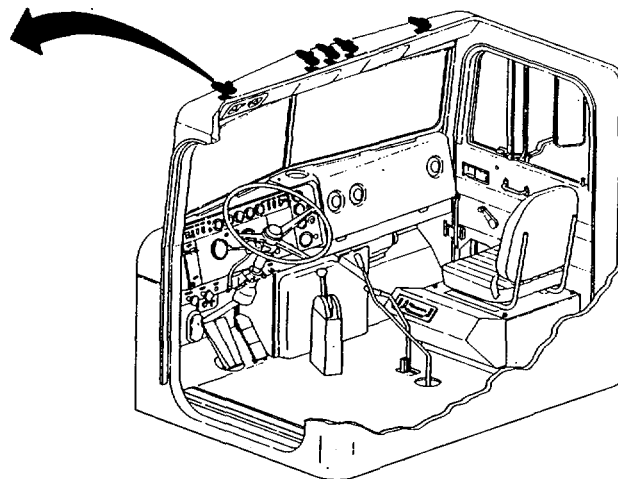
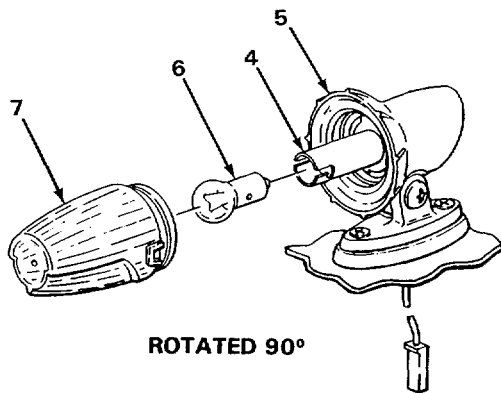
- a. If marker lamp socket (4) is corroded, clean using emery
- b. If marker lamp socket (4) is rusted, marker light (5) must replaced.
- c. If marker lamp socket (4) is not corroded or rusted, go to

Step 4. Check marker light (5) for proper ground as follows: Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to marker lamp socket (4) and black test lead to ground. Check for 0 ohms on multimeter. Disconnect test leads.

be replaced

marker lamp
clockwise, and

- a. If multimeter reads no continuity, marker light (5) must (page 2-802).
- b. If multimeter reads 0 ohms, put marker lamp (6) into socket (4), aligning pins with slots. Push in, turn release. Put lens (7) on.



TA243846

NOTE
DRIVER'S SEAT REMOVED
FOR CLARITY

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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32. ONE DUMP BODY MARKER LIGHT DOES NOT WORK.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps given are typical for all dump body marker lights.

Step 1. Test marker light (1) as follows: Using 3/16-inch flat-tip screwdriver, pry marker light (1) out of grommet (2). Pull marker light (1) off plug (3). Set multimeter to 20 vdc scale. Connect red test lead to connector (4) and black test lead to ground. Put LIGHTS switch (5) in down position. Check for 11 to 13 vdc on multimeter. Put LIGHTS switch (5) in center position. Disconnect test leads.

- must be
- a. If multimeter does not read 11 to 13 vdc, black wire (6) replaced. Notify Direct Support maintenance.
 - b. If multimeter reads 11 to 13 vdc, go to step 2.

Step 2. Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to connector (7) and black test lead to ground. Check for 0 ohms on multimeter. Disconnect test leads.

- replaced.
- a. If multimeter read no continuity, white wire (8) must be replaced. Notify Direct Support maintenance.
 - b. If multimeter reads 0 ohms, go to step 3.

Step 3. Test marker light (1) as follows: Set multimeter to ohms scale and adjust to 0 ohms. Connect red test lead to contact (9) and black test lead to contact (10). Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter reads no continuity, replace marker light (1) (page 2-805).
- b. If multimeter reads 0 ohms, go to step 4.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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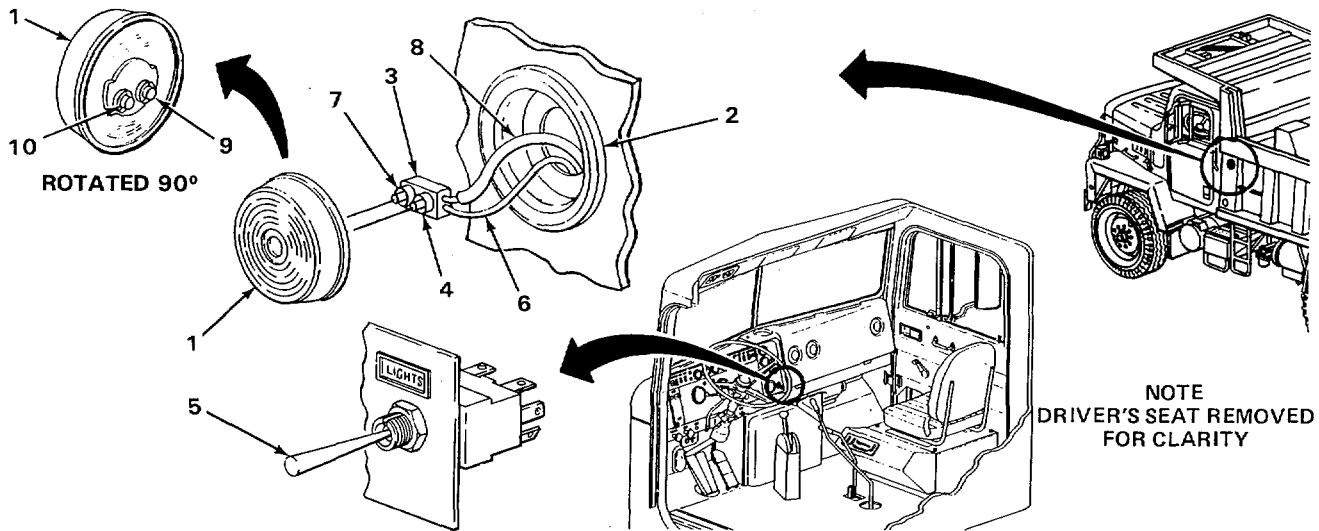
Step 4. Check marker light contacts (9 and 10) and plug contacts (4 and 7) for corroded or rusted condition.

and 7) are

light (1) must

replaced.

- a. If marker light contacts (9 and 10) and plug contacts (4 and 7) are corroded, clean using emery cloth.
- b. If marker light contacts (9 and 10) are rusted, marker light (1) must be replaced (page 2-802).
- c. If plug contacts (4 and 7) are rusted, plug (3) must be replaced. Notify Direct Support maintenance.
- d. Put marker light (1) on plug (3). Push marker light (1) in grommet (2).



TA243847

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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33. BOTH FRONT TURN SIGNALS DO NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Using multimeter, set to 20 vdc scale. Connect red test lead to wire terminal (1) on wire connector (2) and black test lead to ground. Push turn signal switch handle (3) to left turn position. Check for 11 to 13 vdc on multimeter. Push turn signal switch handle (3) to off position. Move red test lead to wire terminal (4). Push turn signal switch handle (3) to right turn position. Check for 11 to 13 vdc on multimeter. Push turn signal switch handle (3) to off position. Disconnect test leads. ,

If multimeter does not read 11 to 13 vdc on wire terminals (1 and 4), replace turn signal switch (5) (page 2-664).

34. BOTH REAR TURN SIGNALS DO NOT WORK.

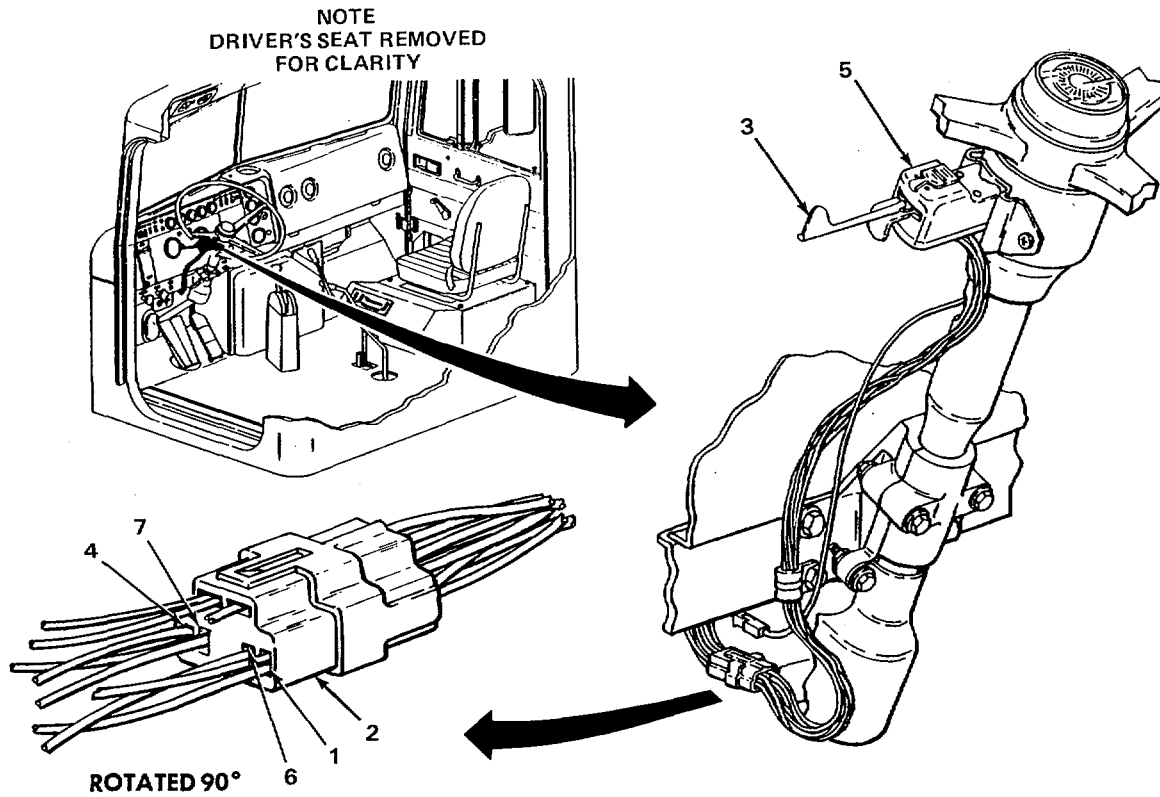
Using multimeter, set to 20 vdc scale. Connect red test lead to wire terminal (6) and black test lead to ground. Push turn signal switch handle (3) to left turn position. Check for 11 to 13 vdc on multimeter. Move red test lead to wire terminal (7).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Push turn signal switch handle (3) to right turn position. Check for 11 to 13 vdc on multimeter. Push turn signal switch handle (3) to off position. Disconnect test leads.

If multimeter does not read 11 to 13 vdc on wire terminals (6 and 7), replace turn signal switch (5) (page 2-664).



TA243848

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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35. ONE FRONT TURN SIGNAL DOES NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps 1 thru 5 are for left front turn signal.

Steps 6 thru 11 are typical for both left and right front turn signals.

Steps 12 thru 18 are for right front turn signal.

Step 1. Pull wire connector (1) off of front turn signal assembly (2). Using multimeter, set to 20 vdc scale. Connect red test lead to wire terminal (3) on wire connector (1) and black test lead to ground. Have assistant put turn signal switch handle (4) in left turn position. Check for 11 to 13 vdc on multimeter. Have assistant put turn signal switch handle (4) to off position. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, go to step 2.

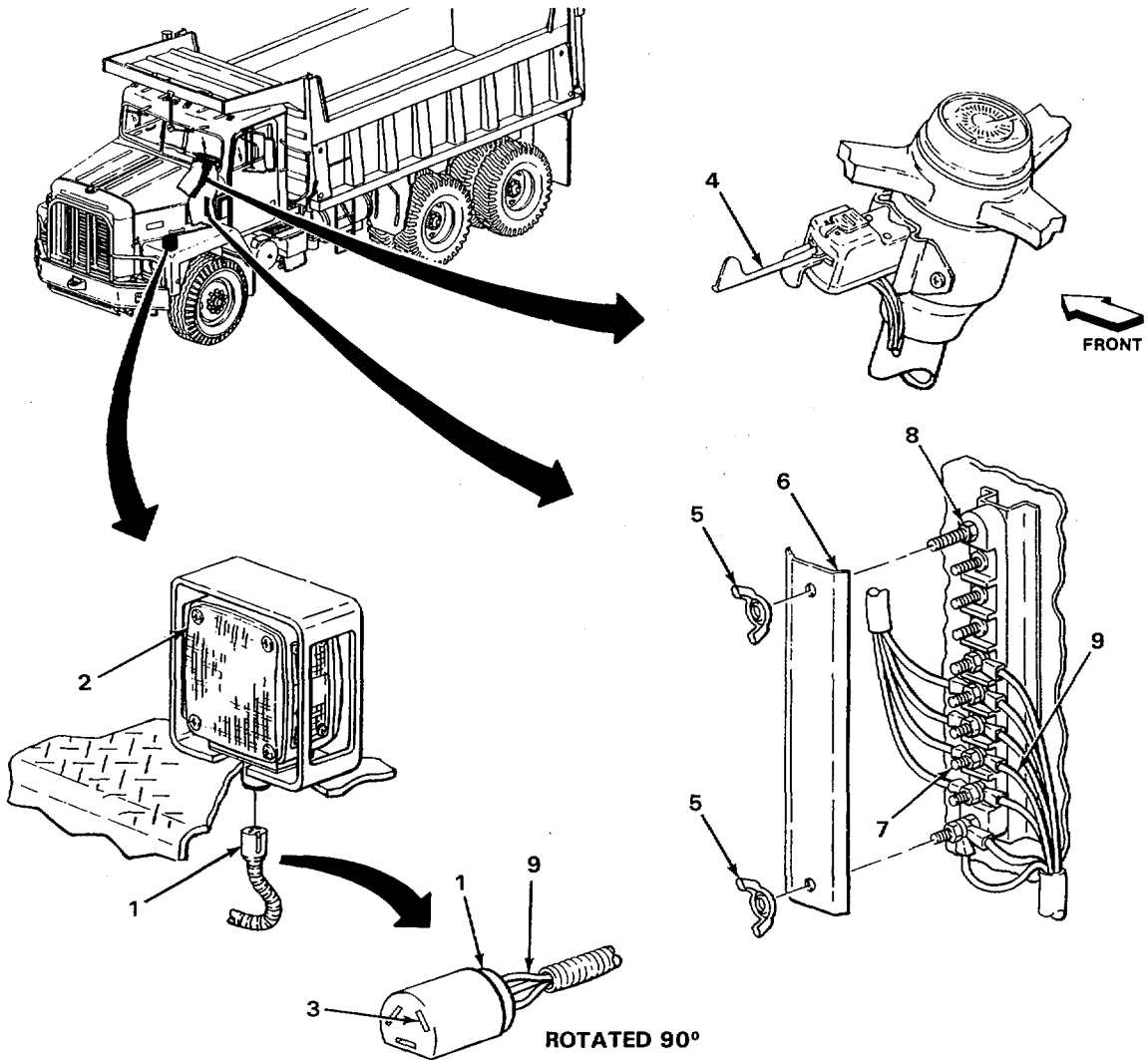
b. If multimeter reads 11 to 13 vdc, go to step 6.

Step 2. Unscrew and take off two wing nuts (5) and junction box cover (6). Using multimeter, set to 20 vdc scale. Connect red test lead to terminal (7) on junction box (8) and black test lead to ground. Have assistant put turn signal switch handle (4) in left turn position. Check for 11 to 13 vdc on multimeter. Have assistant put turn signal switch handle (4) in off position. Disconnect test leads.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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replaced. Notify

- a. If multimeter does not read 11 to 13 vdc, go to step 3.
- b. If multimeter reads 11 to 13 vdc, 55 wire (9) must be replaced. Notify Direct Support Maintenance.



TA243849

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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35. ONE FRONT TURN SIGNAL DOES NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

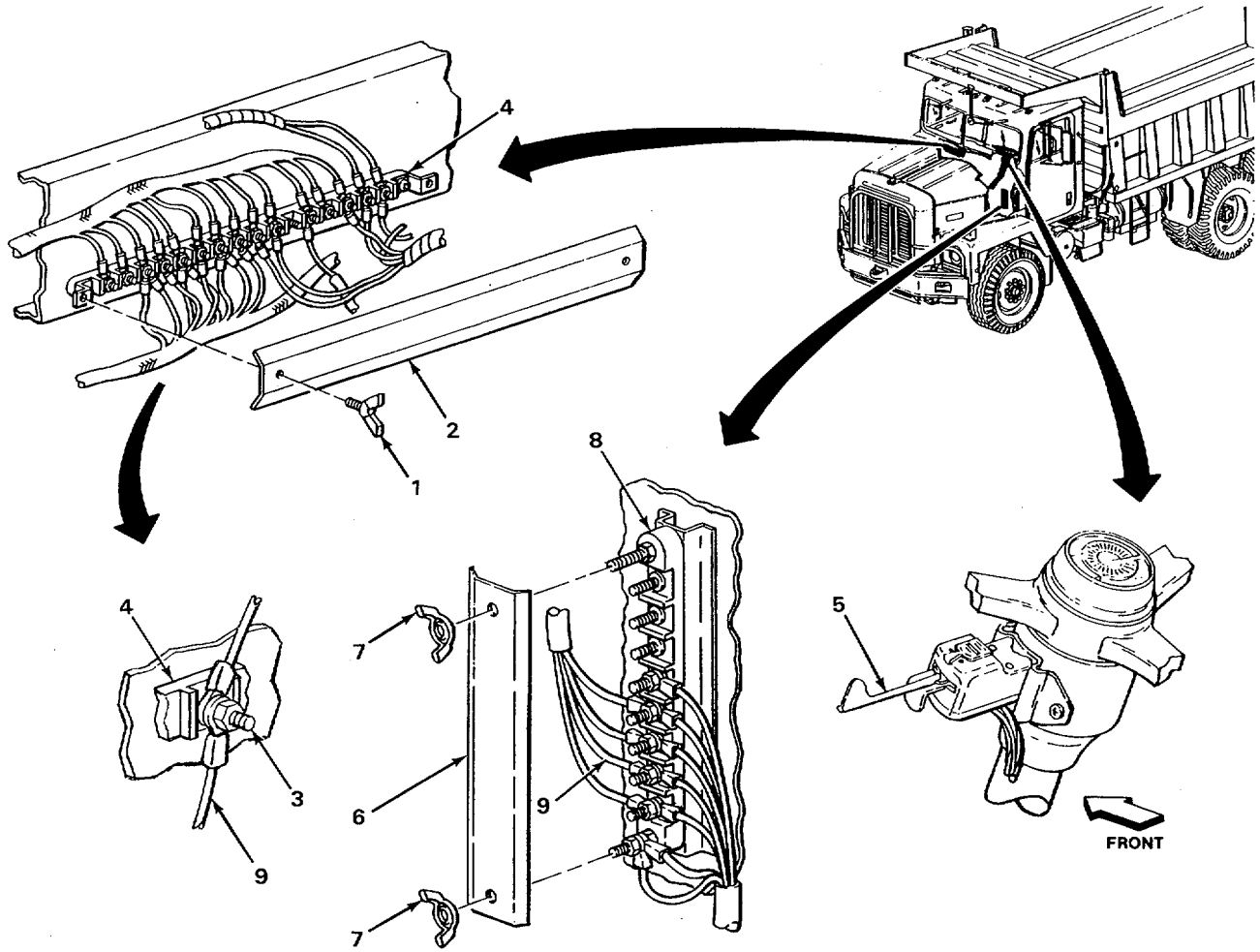
NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 3. Unscrew and take off two wing screws (1) and junction box cover (2). Using multimeter, set to 20 vdc scale. Connect red test lead to terminal (3) on junction box (4) and black test lead to ground. Have assistant put turn signal switch handle (5) in left turn position. Check for 11 to 13 vdc on multimeter. Have assistant put turn signal switch handle (5) in off position. Disconnect test leads.

- | | |
|------------------|---|
| box cover (2) | <ul style="list-style-type: none"> a. If multimeter does not read 11 to 13 vdc, place junction in position and screw two wing screws (1) onto junction tighten. Place junction box cover (6) in position and nuts (7) onto junction box (8) and tighten. Go to step 4. |
| box (4) and | |
| screw two wing | |
| replaced. Notify | <ul style="list-style-type: none"> b. If multimeter reads 11 to 13 vdc, 56 wire (9) must be Direct Support Maintenance. |

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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35. ONE FRONT TURN SIGNAL LIGHT DOES NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 4. Using multimeter, set to 20 vdc scale. Connect red test lead to wire terminal (1) on wire connector (2) and black test lead to ground. Put turn signal switch handle (3) in left turn position. Check for 11 to 13 vdc on multimeter. Put turn signal switch handle (3) in off position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, go to step 5.
- b. If multimeter reads 11 to 13 vdc, 56 wire (4) must be

replaced. Notify

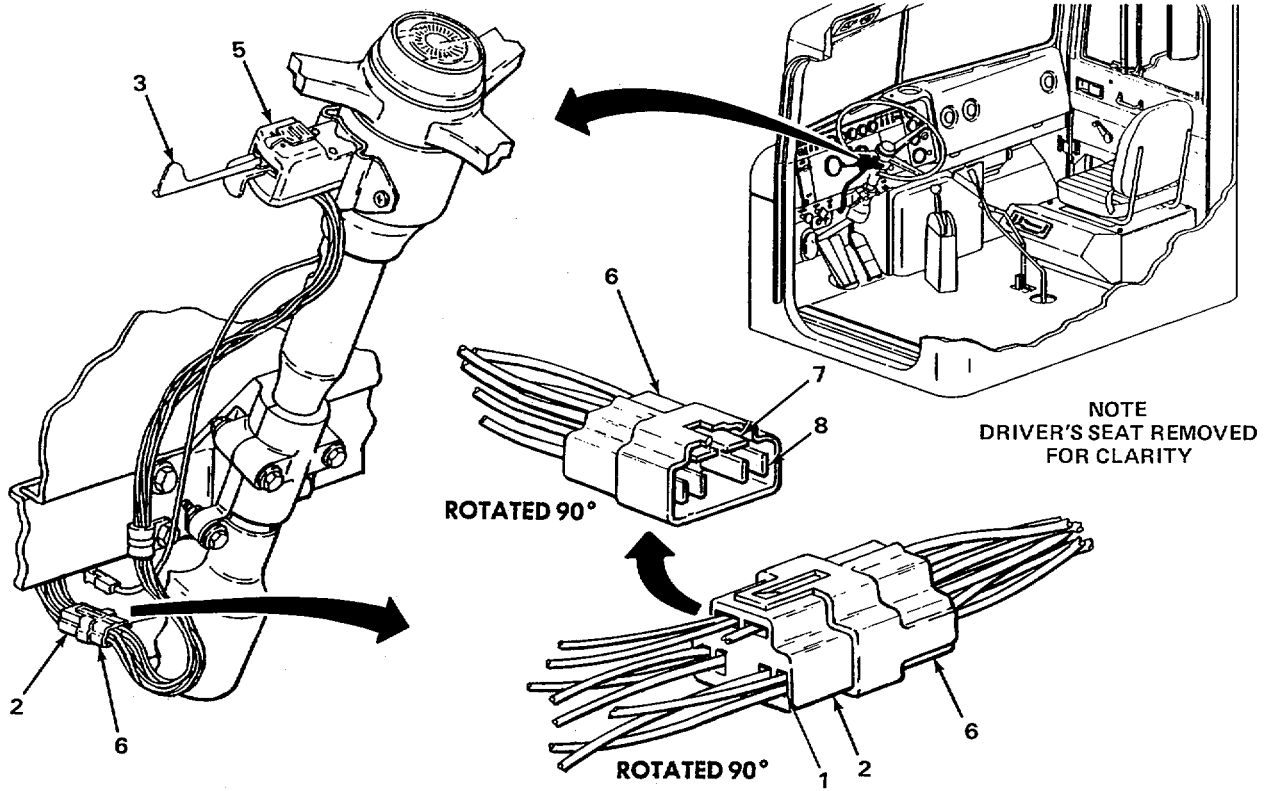
Direct Support Maintenance.

Step 5. Test turn signal switch (5) as follows: Pull apart wire connectors (2 and 6). Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (7) and black test lead to wire terminal (8). Put turn signal switch handle (3) in left turn position. Check for 0 ohms on multimeter. Put turn signal switch handle (3) in off position. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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If multimeter reads no continuity, replace turn signal switch (5) (page 2-664).



TA243851

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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35. ONE FRONT TURN SIGNAL DOES NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps 6 thru 11 are typical for both left and right front turn signals.

Step 6. Test turn signal lamp (1) as follows: Using number one cross-tip screwdriver, unscrew and take off eight screws (2). Take out amber lens (3) and red lens (4). Push turn signal lamp (1) down and turn counterclockwise and release. Take out turn signal lamp (1). Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to contact (5) and black test lead to metal base (6). Check for 0 ohms on multimeter. Disconnect test leads.

lamp (1) (page

- a. If multimeter reads no continuity, replace turn signal 2-664).
- b. If multimeter reads 0 ohms, go to step 7.

Step 7. Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to lamp socket (7) and black test lead to wire terminal (8). Check for 0 ohms on multimeter. Disconnect test leads.

assembly

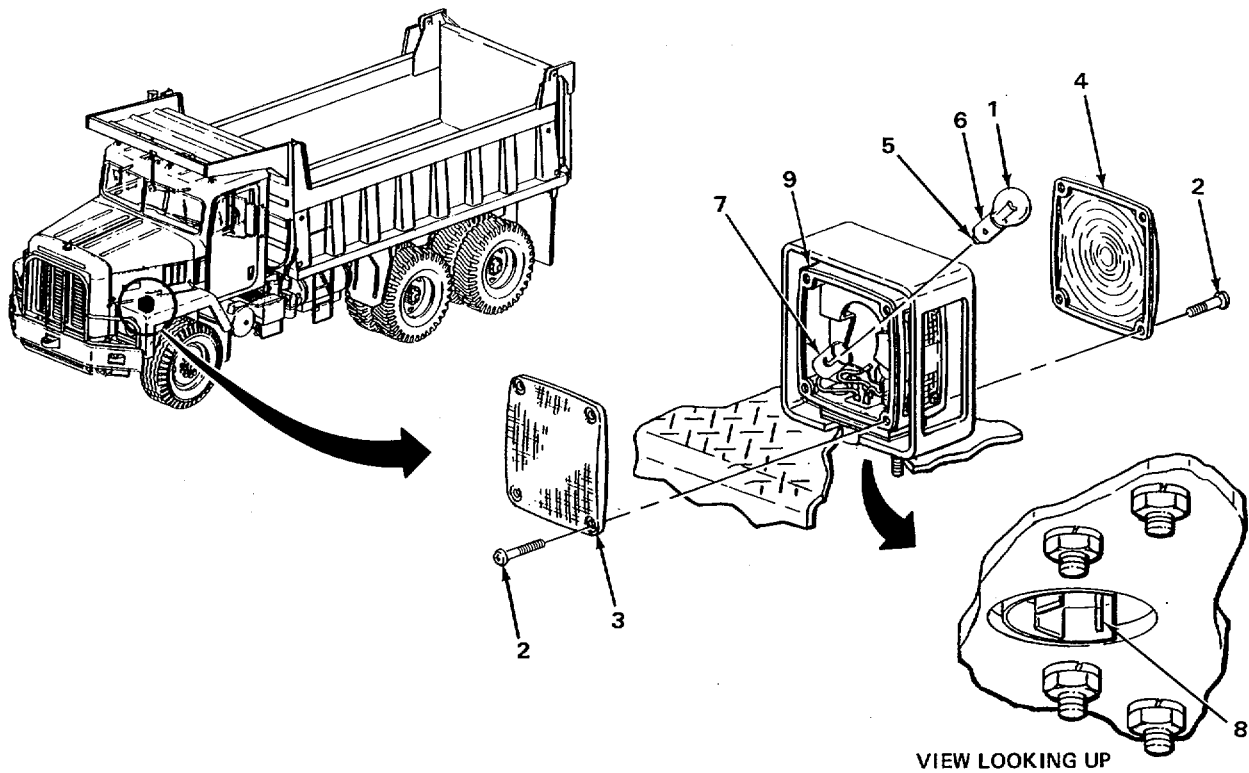
- a. If multimeter reads no continuity, replace front turn signal (9) (page 2-664).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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socket (7),
 release. Put
 amber
 Screw in eight
 screwdriver.

- b. If multimeter reads 0 ohms, put turn signal lamp (1) into aligning pins with slots. Push in and turn clockwise and red lens (4) into rear of front turn signal assembly (9) and lens (3) into front of front turn signal assembly (9).
 screws (2) and tighten, using number one cross-tip
 Go to step 8.



TA243852

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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35. ONE FRONT TURN SIGNAL DOES NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 8. Test ground as follows: Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (1) on wire connector (2) and black test lead to ground on front turn signal assembly (3). Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter reads no continuity, go to step 9.
- b. If multimeter reads 0 ohms, connect batteries (page 2-779) and go to step 12.

Step 9. Unscrew and take off two wing nuts (4) and junction box cover (5). Check two 11 wires (6 and 7) for loose, corroded, frayed, or broken condition.

- a. If two 11 wires (6 or 7) are loose, tighten nut (8) using 7/16-inch open-end wrench.
- b. If two 11 wires (6 or 7) are corroded, using 7/16-inch wrench, unscrew and take off nut (8) and two 11 wires (6 and 7). Clean wire terminals (9 and 10) using wire brush. Place terminals (9 and 10) in position and screw nut (8) onto terminal stud (11) and tighten using 7/16-inch open-end wrench.

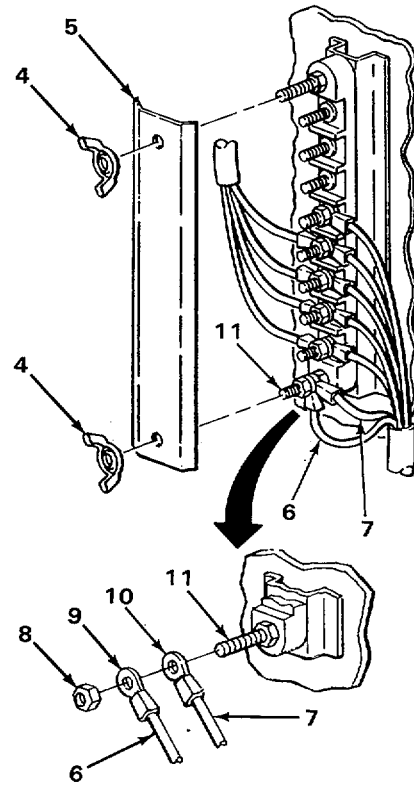
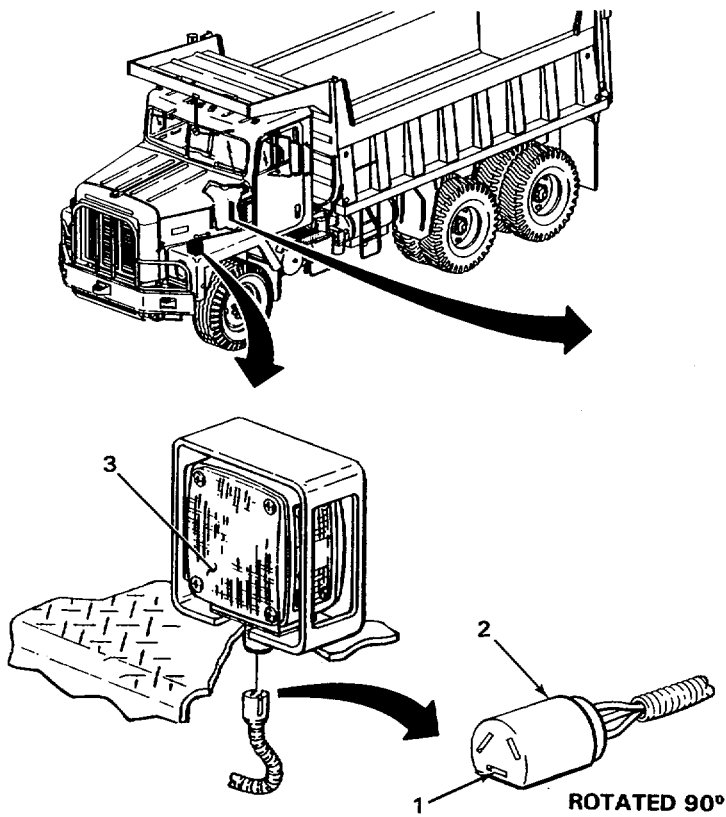
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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(7) must be

or broken,

- c. If two 11 wires (6) or (7) are frayed, repair (page 2-424).
- d. If two 11 wires (6) or (7) are broken, two 11 wires (6) or replaced. Notify Direct Support Maintenance.
- e. If two 11 wires (6 and 7) are not loose, corroded, frayed, go to step 10.



TA243853

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

35. ONE FRONT TURN SIGNAL DOES NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 10. Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to terminal ground (1) on junction box (2) and black test lead to ground. Check for 0 ohms on multimeter. Disconnect test leads.

end
wrenches,
wrench,
continuity.

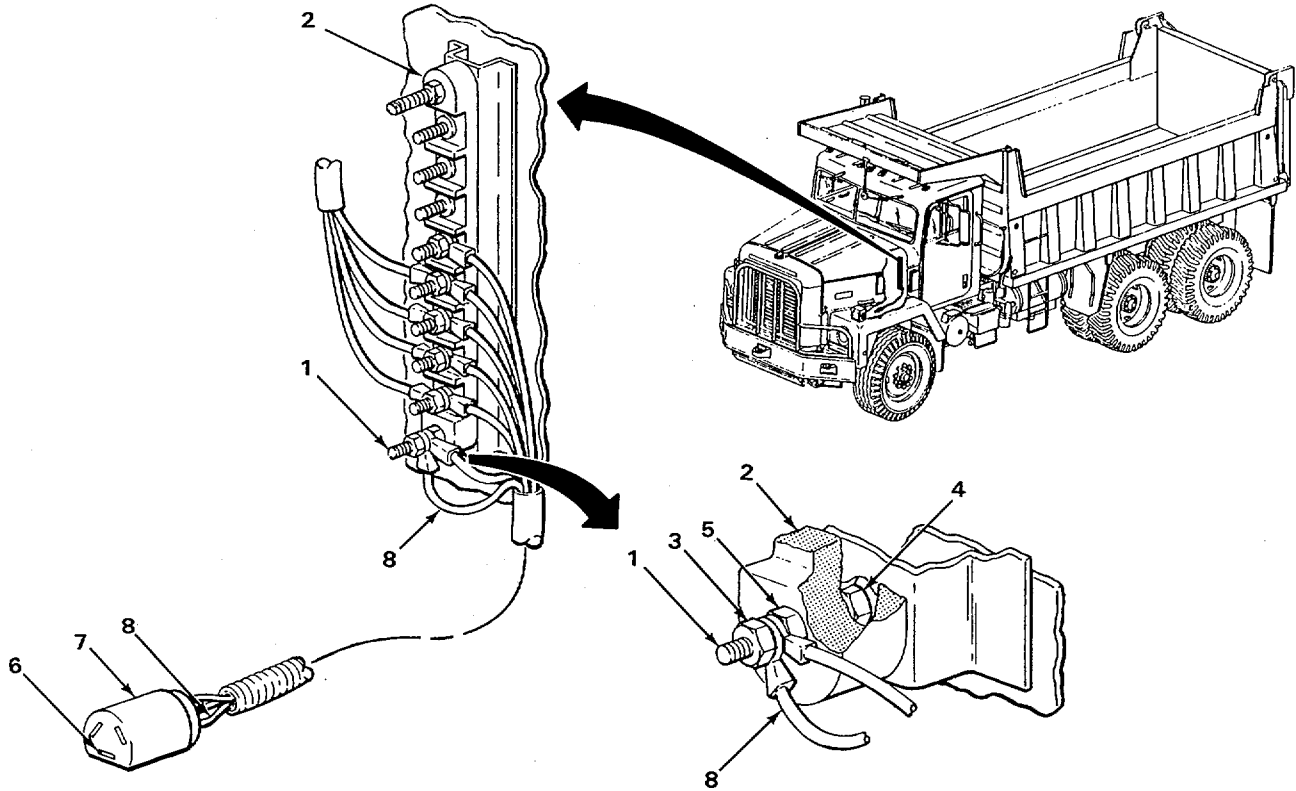
- a. If multimeter reads no continuity, using 7/16-inch open-end wrench, loosen nut (3). Using two 7/16-inch open-end tighten screw (4) and nut (5). Using 7/16-inch open-end tighten nut (3). Perform step 10 again to ensure
- b. If multimeter reads 0 ohms, go to step 11.

Step 11. Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (6) on wire connector (7) and black test lead to terminal stud (1) on junction box (2). Check for 0 ohms on multimeter. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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If multimeter reads no continuity, 11 wire (8) must be replaced. Notify Direct Support Maintenance.



TA243854

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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35. ONE FRONT TURN SIGNAL DOES NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 12. Pull wire connector (1) off of front turn signal assembly (2). Using multimeter, set to 20 vdc scale. Connect red test lead to wire terminal (3) on wire connector (1) and black test lead to ground. Have assistant put turn signal switch handle (4) in right turn position. Check for 11 to 13 vdc on multimeter. Have assistant put turn signal switch handle (4) in off position. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, go to step 13.

b. If multimeter reads 11 to 13 vdc, go to step 6.

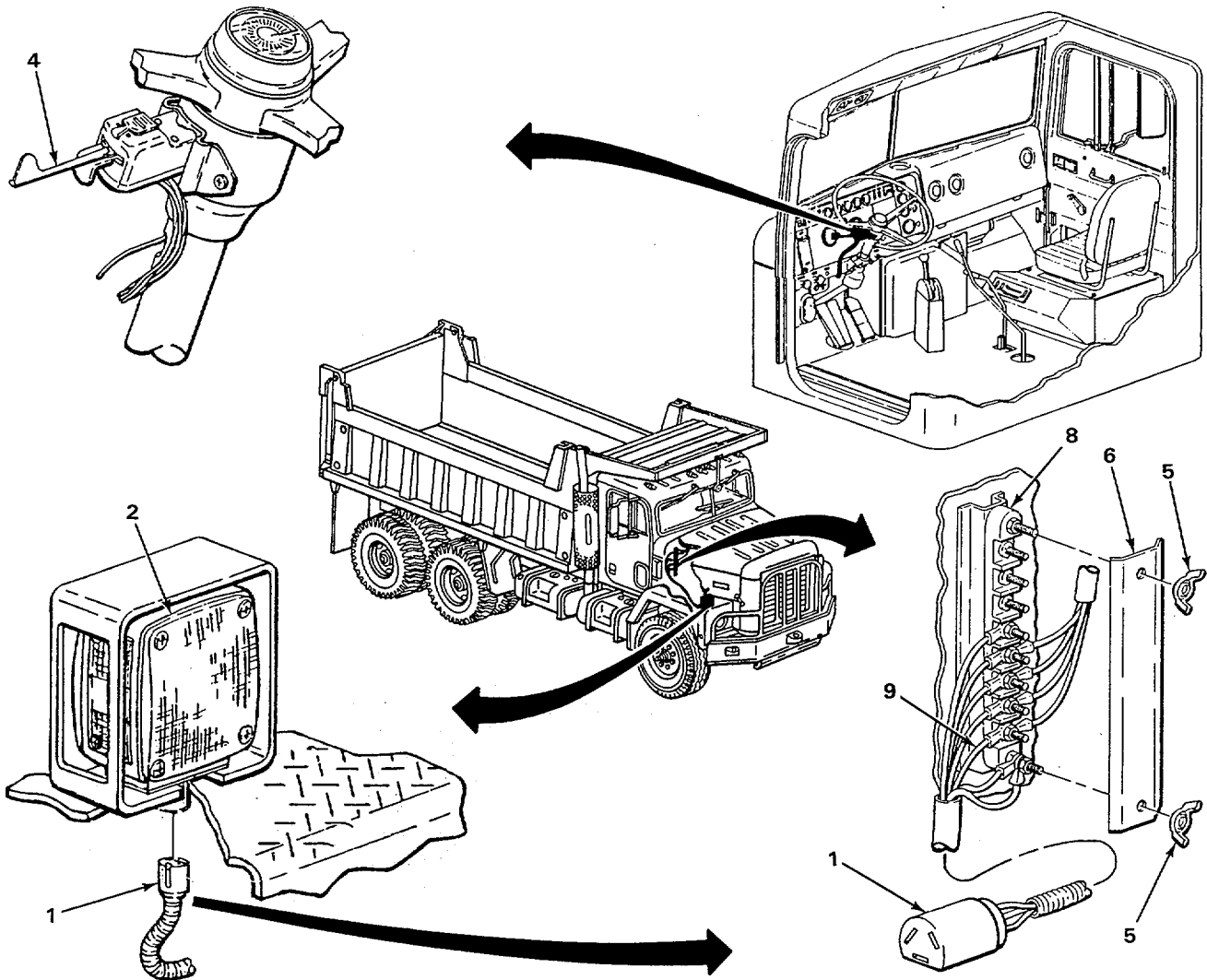
Step 13. Unscrew and take off two wing nuts (5) and junction box cover (6). Using multimeter, set to 20 vdc scale. Connect red test to terminal (7) on junction box (8) and black test lead to ground. Have assistant put turn signal switch handle (4) in right turn position. Check for 11 to 13 vdc on multimeter. Have assistant put turn signal switch handle (4) in off position. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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replaced. Notify

- a. If multimeter does not read 11 to 13 vdc, go to step 14.
- b. If multimeter reads 11 to 13vdc, 55 wire (9) must be replaced. Notify Direct Support Maintenance.



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

35. ONE FRONT TURN SIGNAL DOES NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

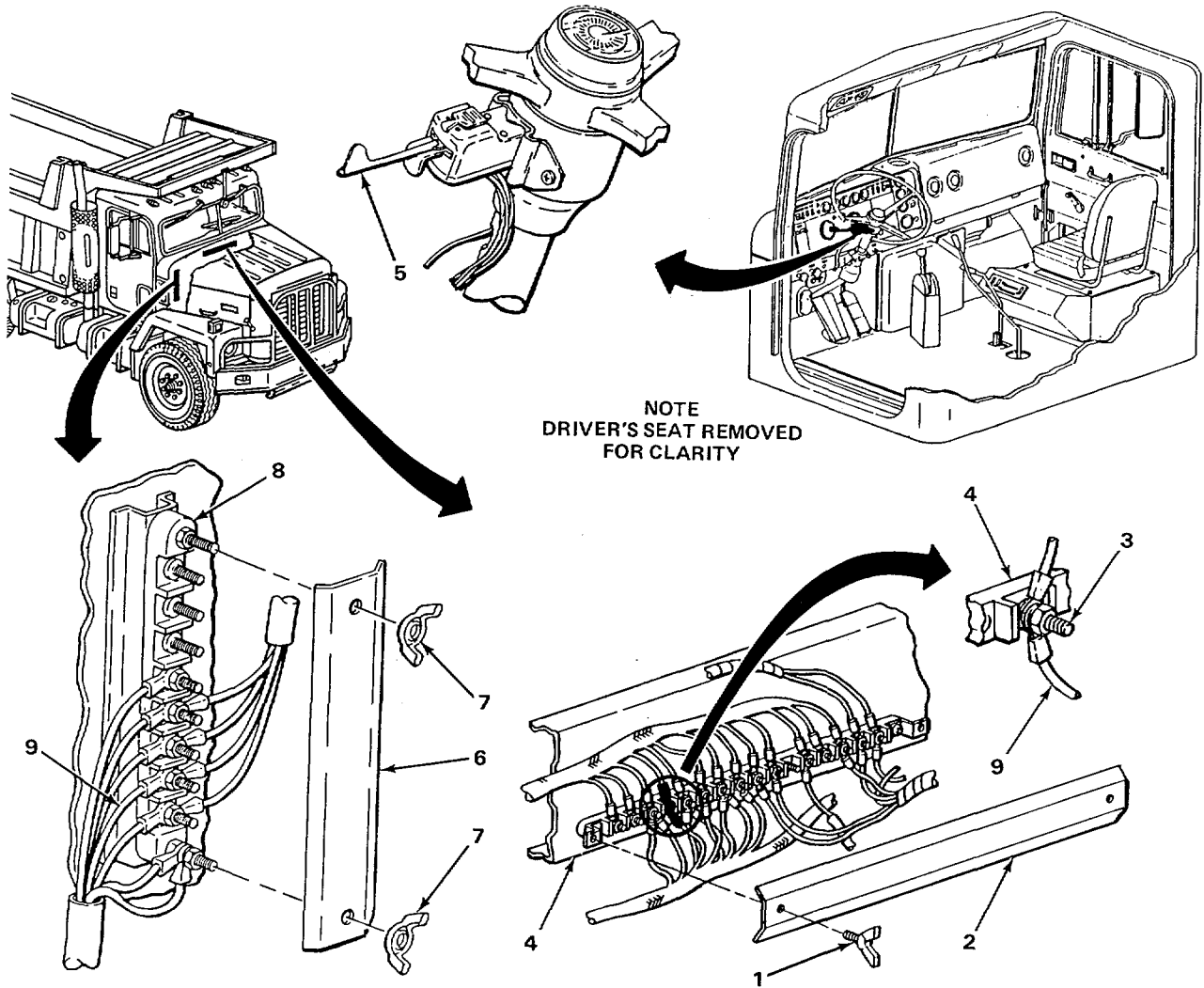
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 14. Unscrew and take off two wing screws (1) and junction box cover (2). Using multimeter, set to 20 vdc scale. Connect red test lead to terminal (3) on junction box (4) and black test lead to ground. Have assistant put turn signal switch handle (5) in right turn position. Check for 11 to 13 vdc on multimeter. Have assistant put turn signal switch handle (5) in off position. Disconnect test leads.

box cover (2)
 box (4) and
 screw two wing
 15.
 replaced. Notify

- a. If multimeter does not read 11 to 13 vdc, place junction in position and screw two wing screws (1) onto junction tighten. Place junction box cover (6) in position and nuts (7) on to junction box (8) and tighten. Go to step
- b. If multimeter reads 11 to 13 vdc, 57 wire (9) must be Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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35. ONE FRONTTURN SIGNAL DOES NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 15. Using multimeter, set to 20 vdc scale. Connect red test lead to wire terminal (1) on wire connector (2) and black test lead to ground. Put turn signal switch handle (3) in right turn position. Check for 11 to 13 vdc on multimeter. Put turn signal switch handle (3) in off position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, go to step 16.
- b. If multimeter reads 11 to 13 vdc, 57 wire (4) must be

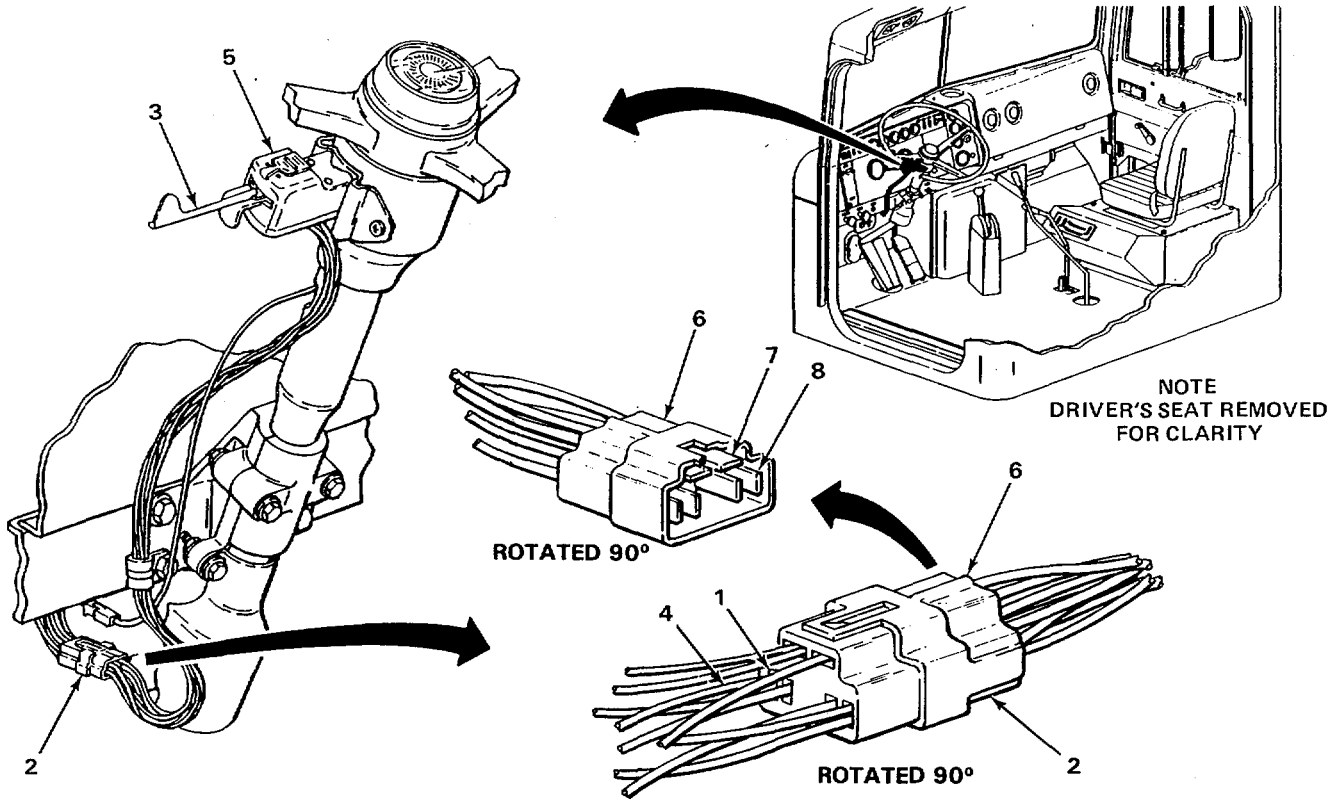
replaced. Notify

Direct Support Maintenance.

Step 16. Test turn signal switch (5) as follows: Pull apart wire connectors (2 and 6). Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (7) and black test lead to wire terminal (8). Put turn signal switch handle (3) in right turn position. Check for 0 ohms on multimeter. Put turn signal switch handle (3) in off position. Disconnect test leads.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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If multimeter reads no continuity, replace turn signal switch (5) (page 2-664).



TA243857

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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36. ONE REAR TURN SIGNAL DOES NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 1 is for left rear turn signal and step 2 is for right rear turn signal.

Step 1. Test turn signal switch (1) as follows: Pull apart wire connectors (2 and 3). Using multimeter set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (4) and black test lead to wire terminal (5) on wire connector (3). Push turn signal switch handle (6) to left turn position. Check for 0 ohms on multimeter. Push turn signal switch handle (6) to off position. Disconnect test leads.

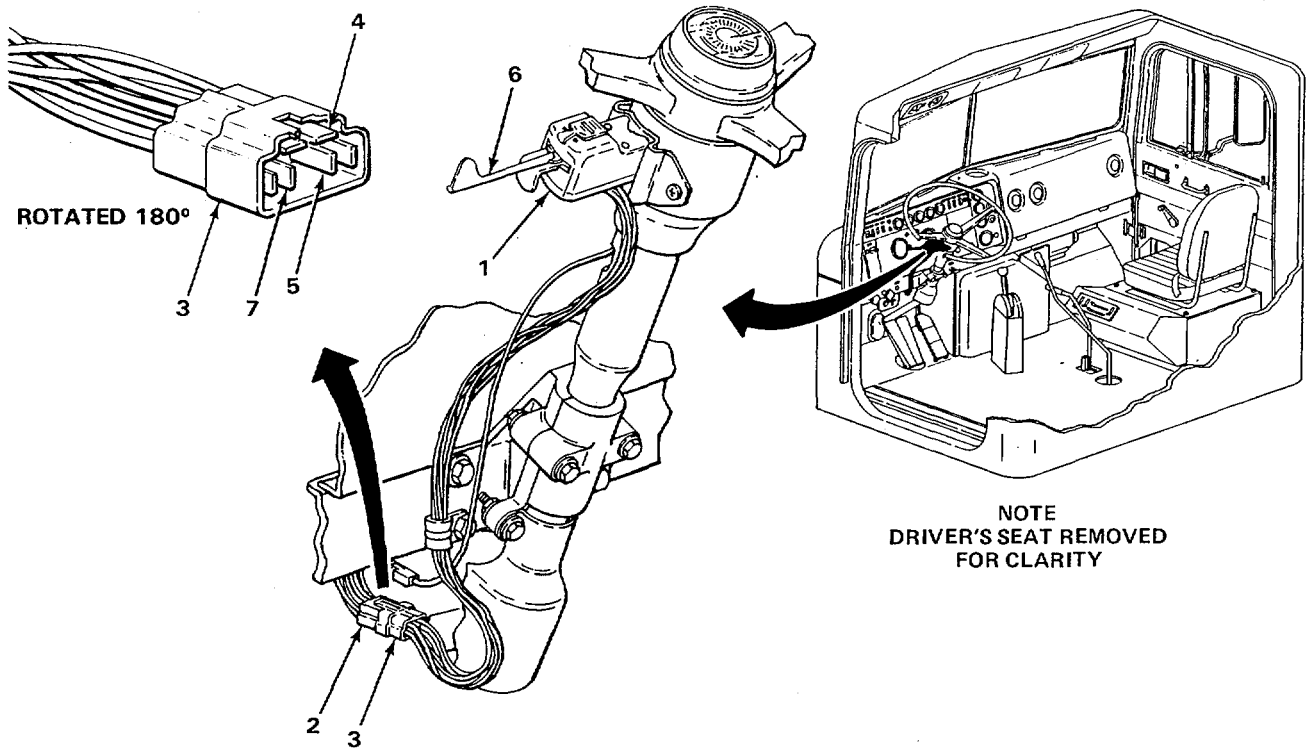
If multimeter reads no continuity, replace turn signal switch (1) (page 2-664).

Step 2. Test turn signal switch (1) as follows: Pull apart wire connectors (2 and 3). Using multimeter set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (4) and black test lead to wire terminal (7). Push turn signal switch handle (6) to right turn position. Check for 0 ohms on multimeter. Push turn signal switch handle (6) to off position. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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If multimeter reads no continuity, replace turn signal switch (1) (page 2-664).



TA243858

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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37. ALL EMERGENCY FLASHERS DO NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 1. Remove instrument panel pad (page 2-424). Using multimeter, set to 20 vdc scale. Connect red test lead to fuse terminal (1) on fuse panel (2) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, go to step 2.

b. If multimeter reads 11 to 13 vdc, go to step 3.

Step 2. Using multimeter, set to 20 vdc scale. Connect red test lead to circuit breaker strip feed stud (3) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

If multimeter reads 11 to 13 vdc, 55 wire (4) must be replaced. Notify Direct Support Maintenance.

Step 3. Using multimeter, set to 20 vdc scale. Connect red test lead to fuse terminal (5) on fuse panel (2) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

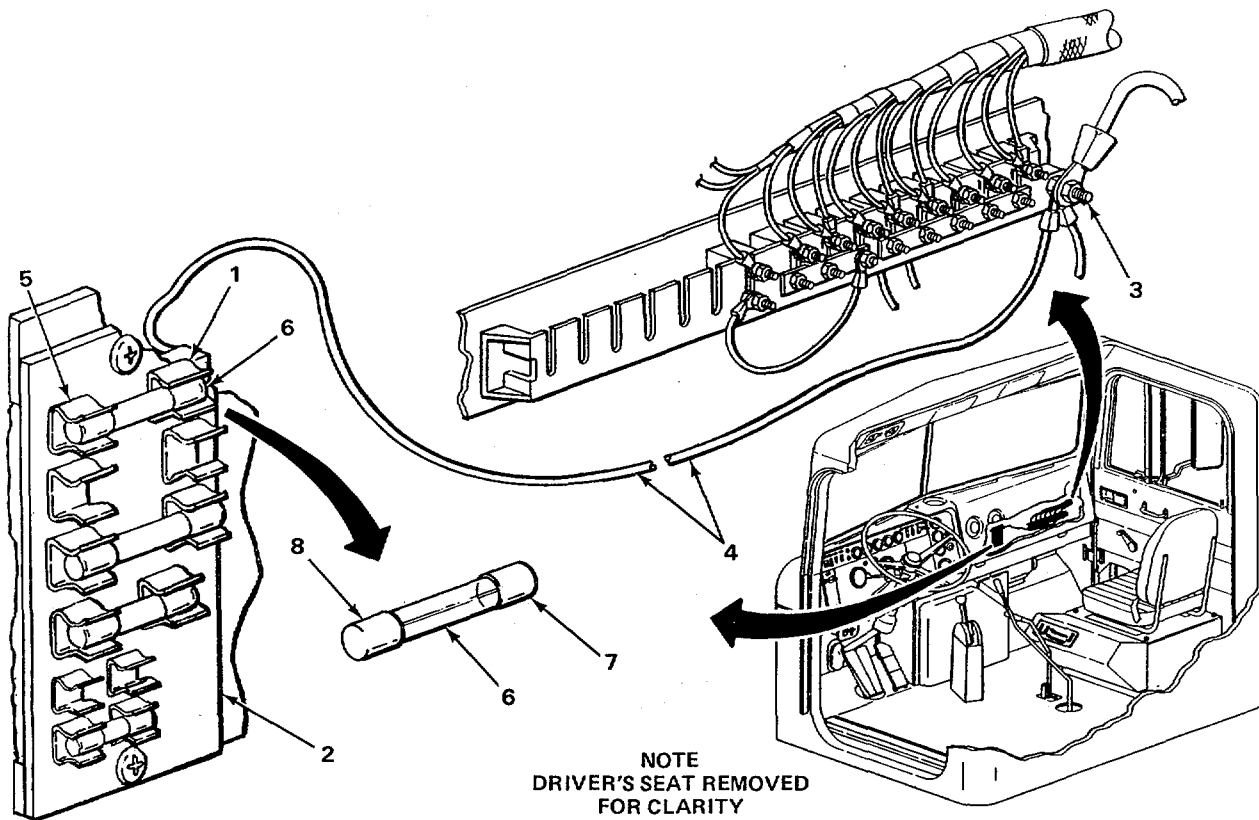
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If multimeter does not read 11 to 13 vdc, go to step 4.
- b. If multimeter reads 11 to 13 vdc, go to step 5.

Step 4. Test fuse (6) as follows: Remove fuse (6). Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to fuse end (7) and black test lead to fuse end (8). Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter reads no continuity, replace fuse (6) (page 2-664).
- b. If multimeter reads 0 ohms, install fuse (6) and go to step 5.



TA243859

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION**TEST OR INSPECTION****CORRECTIVE ACTION**

37. ALL EMERGENCY FLASHERS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

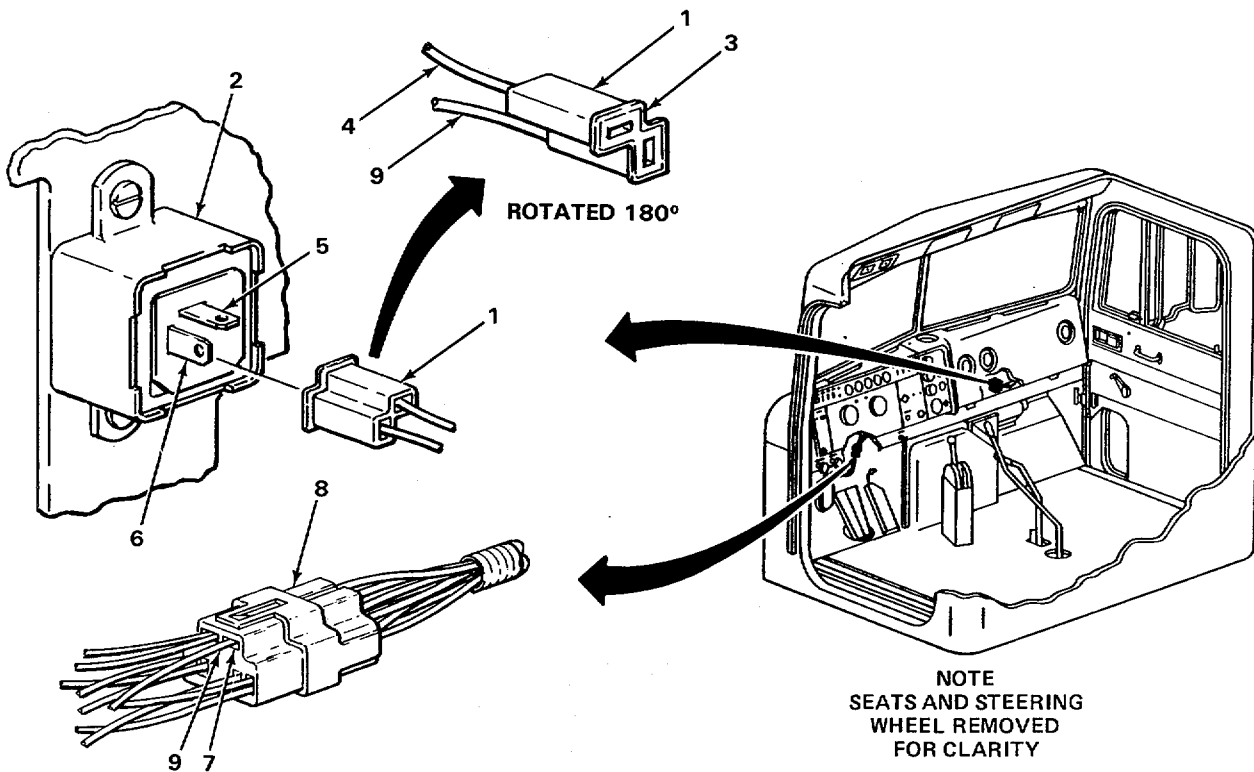
- Step 5. Pull wire connector (1) off of turn signal and hazard flasher (2). Using multimeter, set to 20 vdc scale. Connect red test lead to wire terminal (3) on wire connector (1) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, 55A wire (4) must be replaced. Notify Direct Support Maintenance.
 - b. If multimeter reads 11 to 13 vdc, go to step 6.
- Step 6. Test turn signal warning flasher (2) as follows: Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to terminal (5) and black test lead to terminal (6). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, replace turn signal and hazard flasher (2) (page 2-664).
 - b. If multimeter reads 0 ohms, push wire connector (1) onto turn signal and hazard flasher (2) and go to step 7.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 7. Using multimeter, set to 20 vdc scale. Connect red test lead to wire terminal (7) on wire connector (8) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc 55B wire (9) must be replaced. Notify Direct Support Maintenance.
- b. If multimeter reads 11 to 13 vdc, install instrument panel pad (page 2-424). Go to step 8.



TA243860

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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37. ALL EMERGENCY FLASHERS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 8. Test turn signal switch (1) as follows: Pull apart wire connectors (2 and 3). Pull emergency flasher switch handle (4) out to on position. Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (5) and black test lead to wire terminal (6). Check for 0 ohms on multimeter. Move black test lead to wire terminal (7). Check for 0 ohms on multimeter. Push turn signal switch handle (8) towards left turn position to release emergency flasher switch handle (4). Push turn signal switch handle (8) to off position. Disconnect test leads.

a. If multimeter reads no continuity on wire terminals (6) or (7), replace turn signal switch (1) (page 2-664).

b. If multimeter reads 0 ohms on wire terminals (6 and 7), go to step 9.

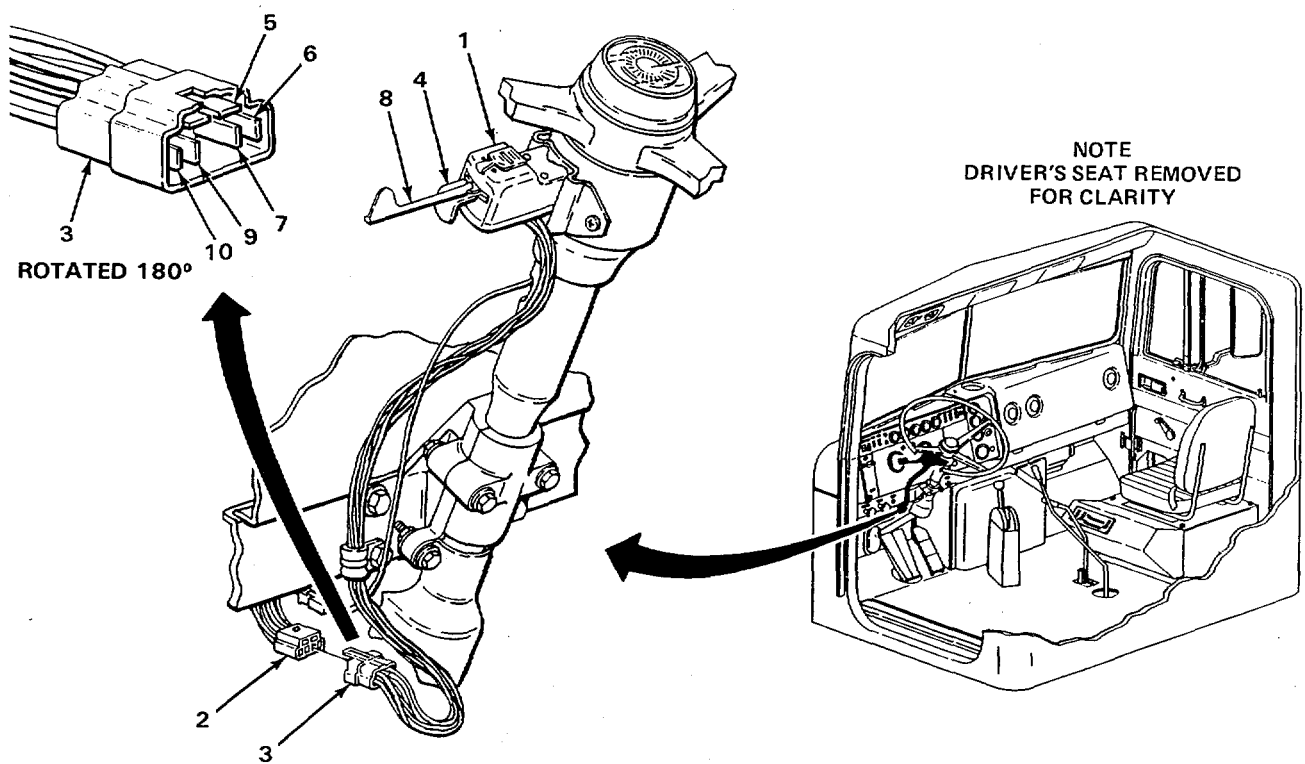
Step 9. Test turn signal switch (1) continued: Pull emergency flasher switch handle (4) out to on position. Using multimeter set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (5) and black test lead to wire terminal (9). Check for 0 ohms on multimeter.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Move black test lead to wire terminal (10). Check for 0 ohms on multimeter. Push turn signal switch handle (8) towards left turn position to release emergency flasher switch handle (4). Push turn signal switch handle (8) to off position. Disconnect test leads.

If multimeter reads no continuity on wire terminal (10), replace turn signal switch (1) (page 2-664).



TA243861

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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38. BOTH FRONT EMERGENCY FLASHERS DO NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Test turn signal switch (1) as follows: Pull apart wire connectors (2 and 3). Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (4) and black test lead to wire terminal (5). Pull emergency flasher switch handle (6) out to on position. Check for 0 ohms on multimeter. Move black test lead to wire terminal (7). Check for 0 ohms on multimeter. Push turn signal switch handle (8) towards left turn position to release emergency flasher switch handle (4). Push turn signal switch handle (8) to off position. Disconnect test leads.

If multimeter reads no continuity on wire terminals (4) or (7), replace turn signal switch (1) (page 2-664).

39. BOTH REAR EMERGENCY FLASHERS DO NOT WORK.

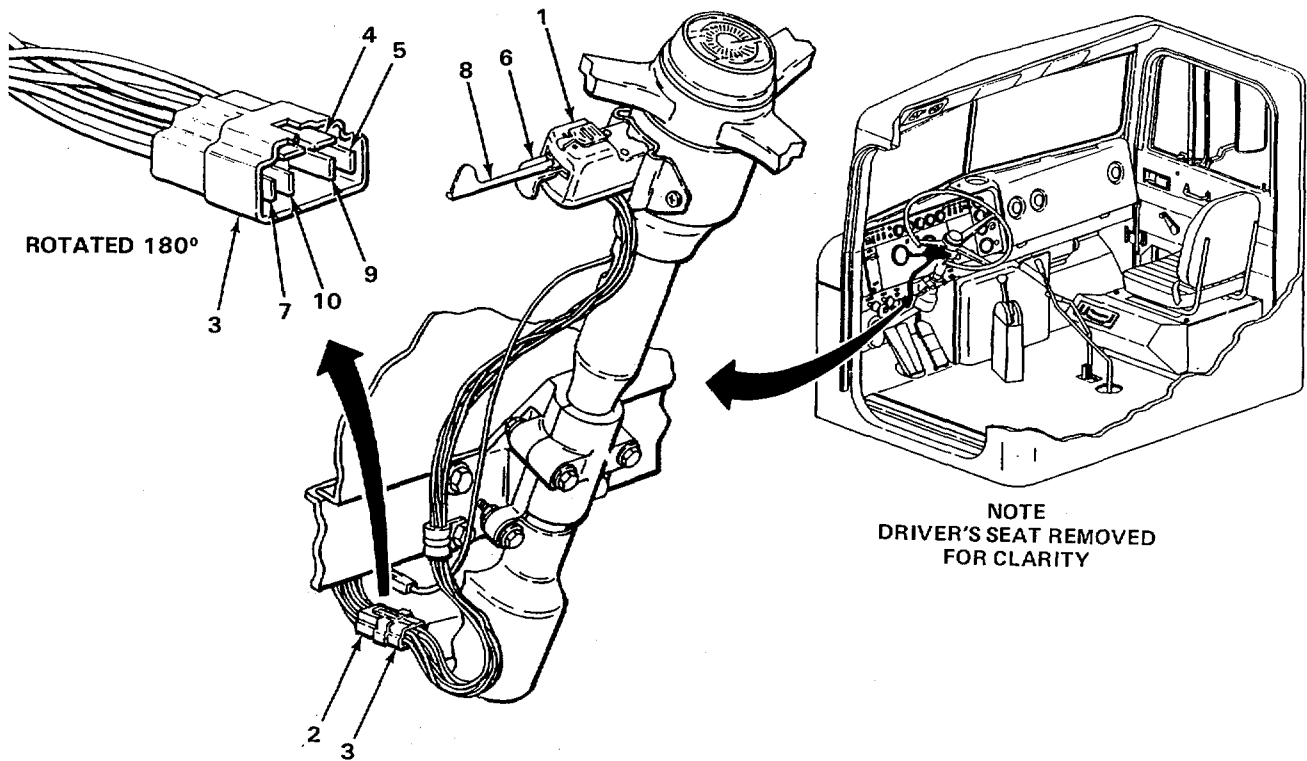
Test turn signal switch (1) as follows: Pull apart wire connectors (2 and 3). Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (4) and black test lead to wire terminal (9). Pull emergency flasher switch handle (6) out to on position. Check for 0 ohms on multimeter. Move black test lead to wire terminal (10). Check for 0 ohms on multimeter.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Push turn signal switch handle (8) towards left turn position to release emergency flasher switch handle (4). Push turn signal handle (8) to off position. Disconnect test leads.

If multimeter reads no continuity on wire terminals (9) or (10), replace turn signal switch (1) (page 2-664).



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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40. ONE FRONT EMERGENCY FLASHER DOES NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps 1 thru 5 are for left front emergency flasher.

Steps 6 thru 11 are typical for both left and right front emergency flashers.

Steps 12 thru 16 are for right front emergency flasher.

Step 1. Pull wire connector (1) off of front turn signal assembly (2). Using multimeter set to 20 vdc scale. Connect red test lead to wire terminal (3) on wire connector (1) and black test lead to ground. Have assistant pull emergency flasher switch handle (4) out to on position. Check for 11 to 13 vdc on multimeter. Have assistant push turn signal switch handle (5) towards left turn position to release emergency flasher switch handle (4). Have assistant push turn signal switch handle (5) to off position. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, go to step 2.

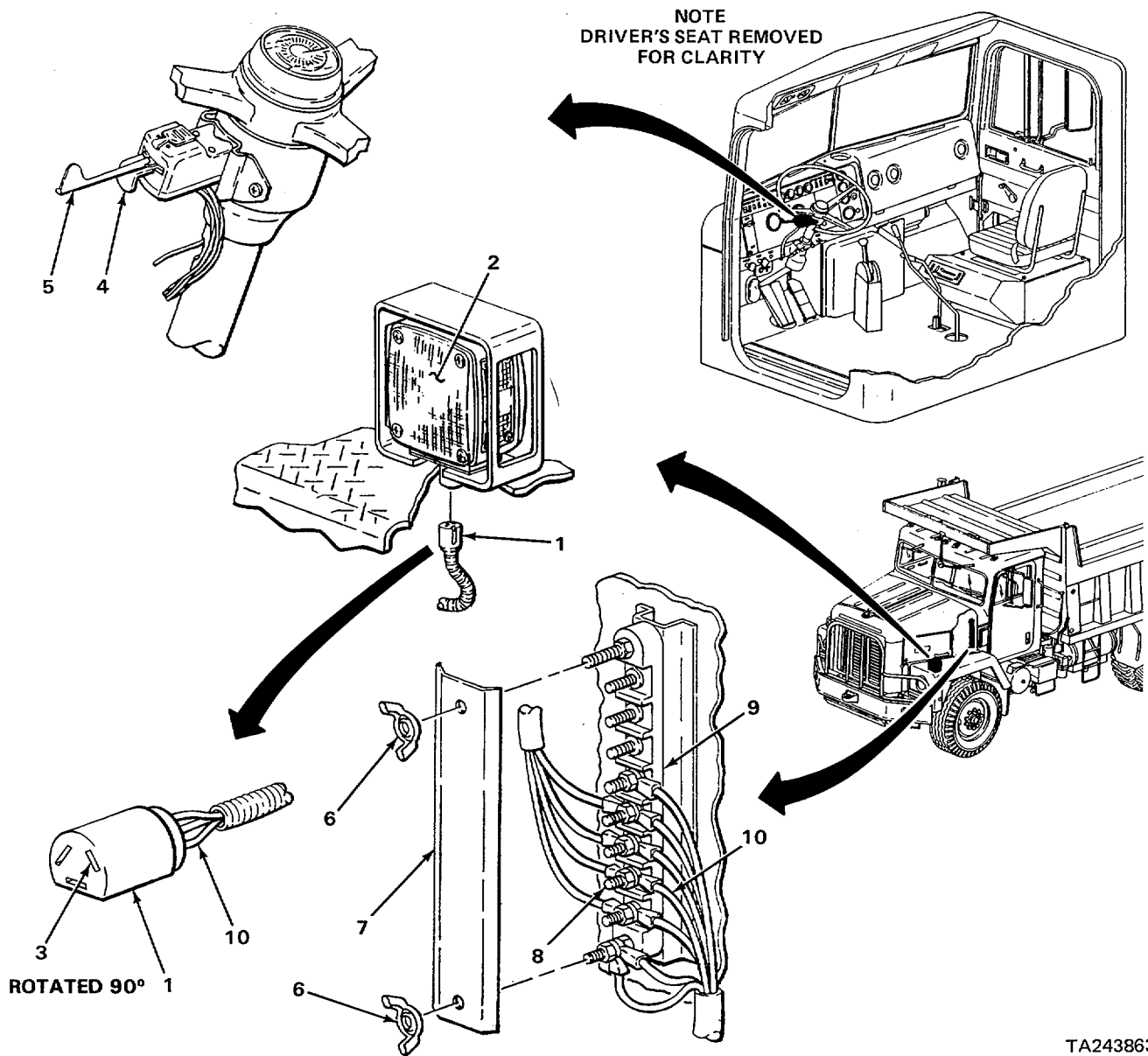
b. If multimeter reads 11 to 13 vdc, go to step 6.

Step 2. Unscrew and take off two wing nuts (6) and junction box cover (7). Using multimeter, set to 20 vdc scale. Connect red test lead to wire terminal (8) on junction box (9) and black test lead to ground. Have assistant pull emergency flasher switch handle (4) out to on position. Check for 11 to 13 vdc on multimeter. Have assistant push turn signal switch handle (5) towards left turn position, to release emergency flasher switch handle (4). Have assistant push turn signal switch handle (5) to off position. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If multimeter does not read 11 to 13 vdc, go to step 3.
- b. If multimeter reads 11 to 13 vdc, 55 wire (10) must be replaced. Notify Direct Support Maintenance.



TA243863

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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21. ONE FRONT EMERGENCY FLASHER DOES NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

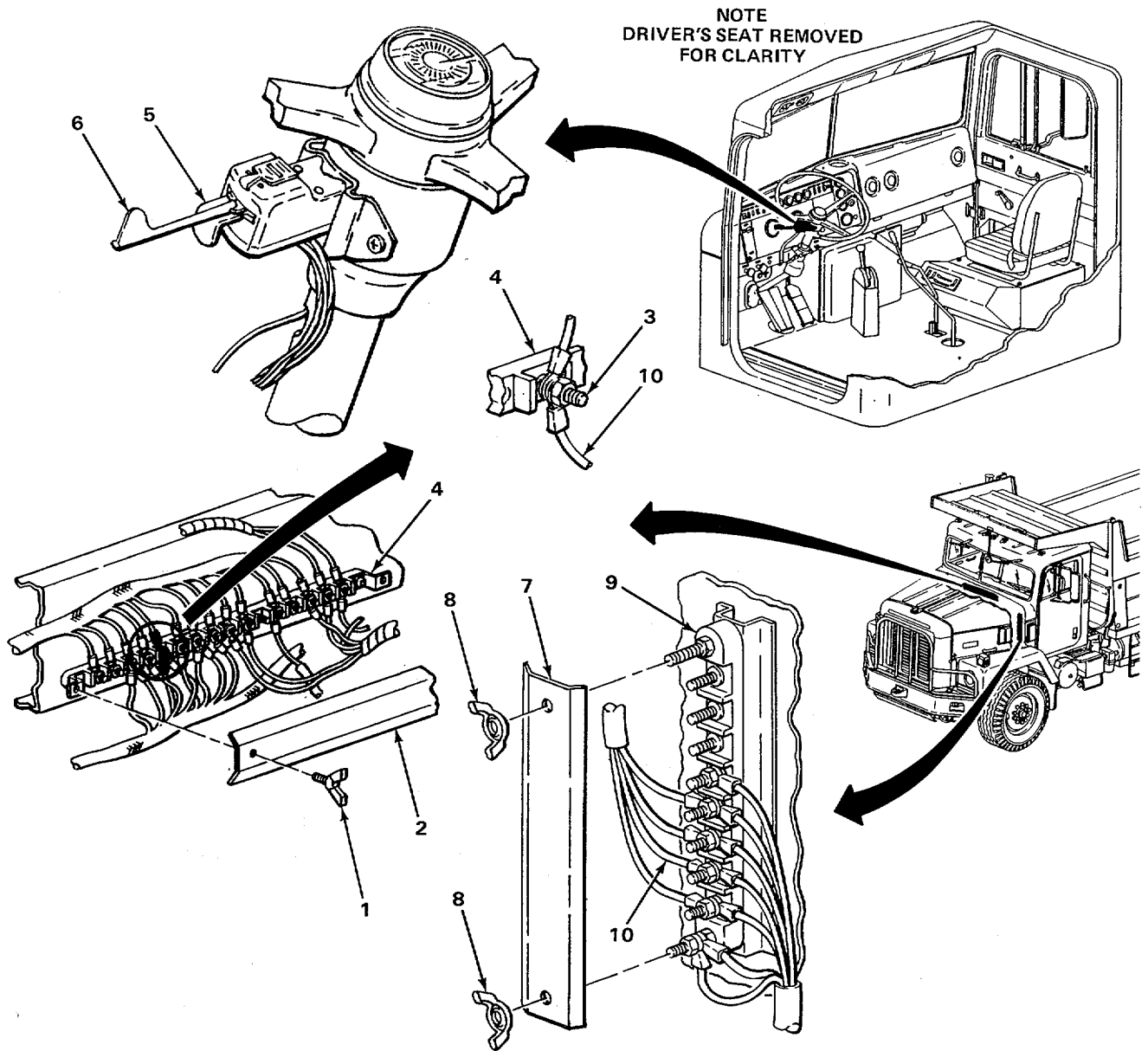
NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 3. Unscrew and take off two wing screws (1) and junction box cover (2). Using multimeter, set to 20 vdc scale. Connect red test lead to terminal (3) on junction box (4) and black test lead to ground. Have assistant pull emergency flasher switch handle (5) out to on position. Check for 11 to 13 vdc on multimeter. Have assistant push turn signal switch handle (6) towards left turn position to release emergency flasher switch handle (5). Have assistant push turn signal switch handle (6) to off position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, place junction box cover (2) in position and screw on two wing screws (1) onto junction box (4) and tighten. Place junction box cover (7) in position and screw two wing screws (8) onto junction box (9) and tighten. Go to step 4.
- b. If multimeter reads 11 to 13 vdc, 56 wire (10) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED



TA243864

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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40. ONE FRONT EMERGENCY FLASHER DOES NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

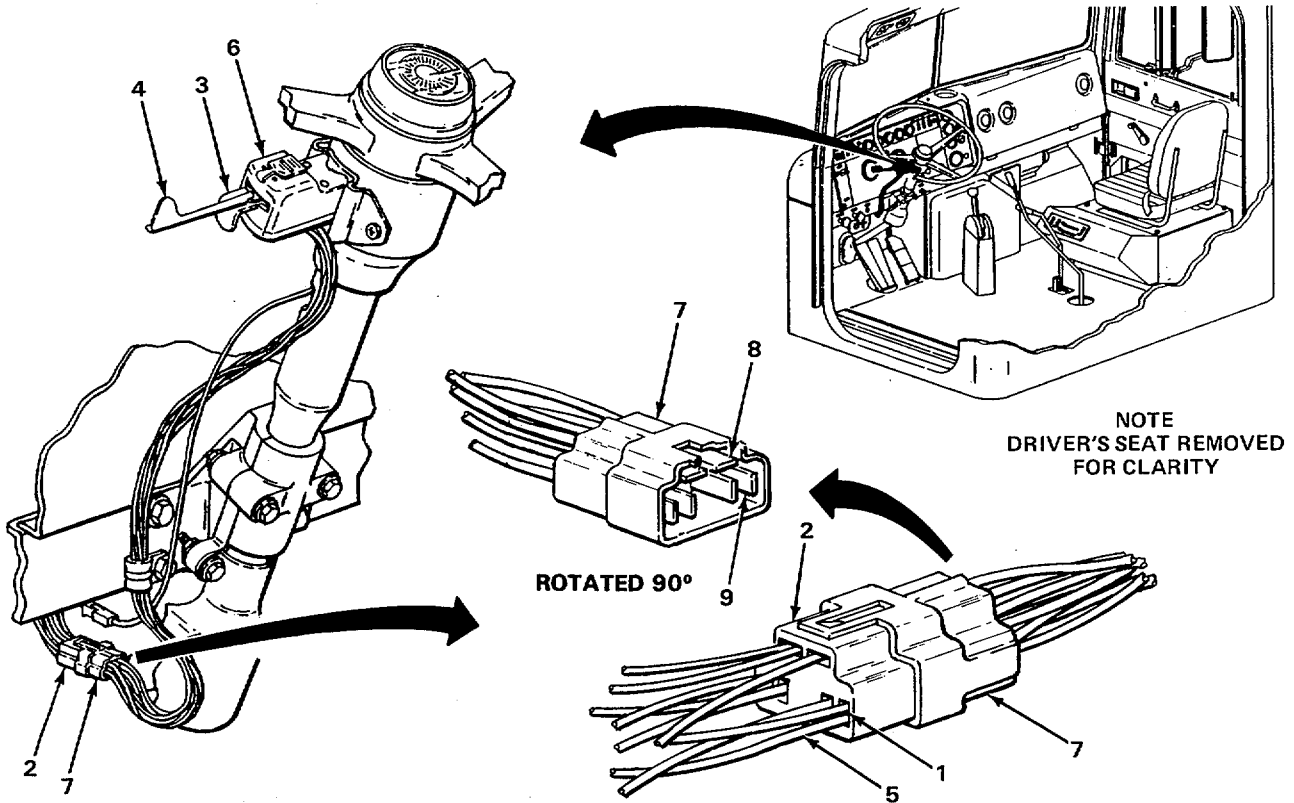
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 4. Using multimeter, set to 20 vdc scale. Connect red test lead to wire terminal (1) on wire connector (2) and black test lead to ground. Pull emergency flasher switch handle (3) out to on position. Check for 11 to 13 vdc on multimeter. Push turn signal switch handle (4) towards left turn position to release emergency flasher switch handle (3). Push turn signal switch handle (4) to off position. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, go to step 5.
 - b. If multimeter reads 11 to 13 vdc, 56 wire (5) must be replaced. Notify Direct Support Maintenance.
- Step 5. Test turn signal switch (6) as follows: Pull apart wire connector (2 and 7). Using multimeter set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (8) on wire connector (7). Pull emergency flasher switch handle (3) out to on position. Check for 0 ohms on multimeter. Push turn signal switch handle (4) towards left turn position to release emergency flasher switch handle (3). Push turn signal switch handle (4) to off position. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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If multimeter reads no continuity, replace turn signal switch (6)
(page 2-664).



TA243865

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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40. ONE FRONT EMERGENCY FLASHER DOES NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps 6 thru 11 are typical for left and right front emergency flashers.

Step 6. Test turn signal lamp (1) as follows: Using number one cross-tip screwdriver, unscrew and take off eight screws (2). Take out amber lens (3) and red lens (4). Push turn signal lamp (1) down and turn counterclockwise and release. Take out turn signal lamp (1). Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to contact (5) and black test lead to metal base (6). Check for 0 ohms on multimeter. Disconnect test leads.

a. If multimeter reads no continuity, replace turn signal lamp (1) (page 2-664).

b. If multimeter reads 0 ohms, go to step 7.

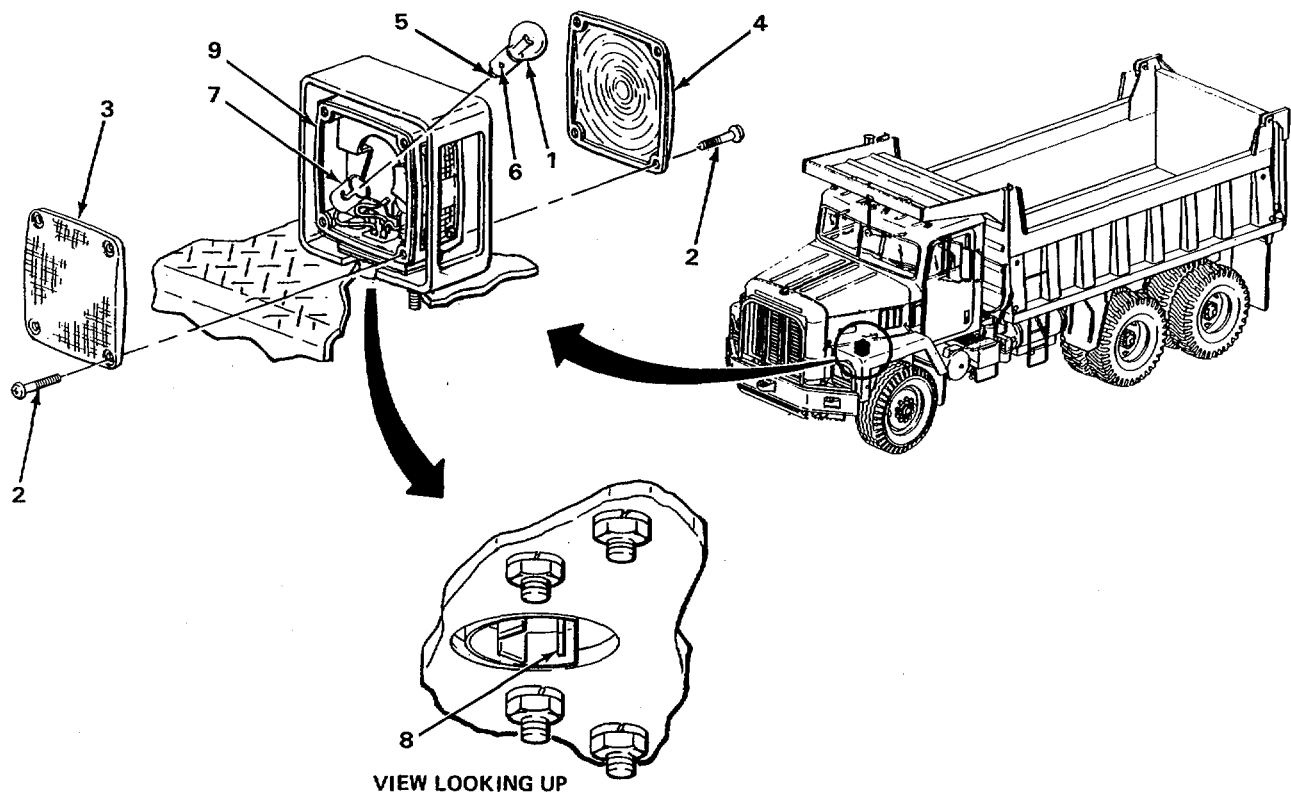
Step 7. Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to lamp socket (7) and black test lead to wire terminal (8). Check for 0 ohms on multimeter. Disconnect test leads.

a. If multimeter reads no continuity, replace front turn signal assembly (9) (page 2-664).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- b. If multimeter reads 0 ohms, put turn signal lamp (1) into socket (7), aligning pins with slots. Push in and turn clockwise and release. Put red lens (4) into rear of front turn signal assembly (9) and put amber lens (3) into front of front turn signal assembly (9). Screw in eight screws (2) and tighten, using number one cross-tip screwdriver. Go to step 8.



TA243866

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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40. ONE FRONT EMERGENCY FLASHER DOES NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 8. Test ground as follows: Using multimeter set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (1) on wire connector (2) and black test lead to ground. Check for 0 ohms on multimeter. Disconnect test leads.

- a. If multimeter reads no continuity, go to step 9.
- b. If multimeter reads 0 ohms, put wire connector (2) into front turn signal assembly (3).

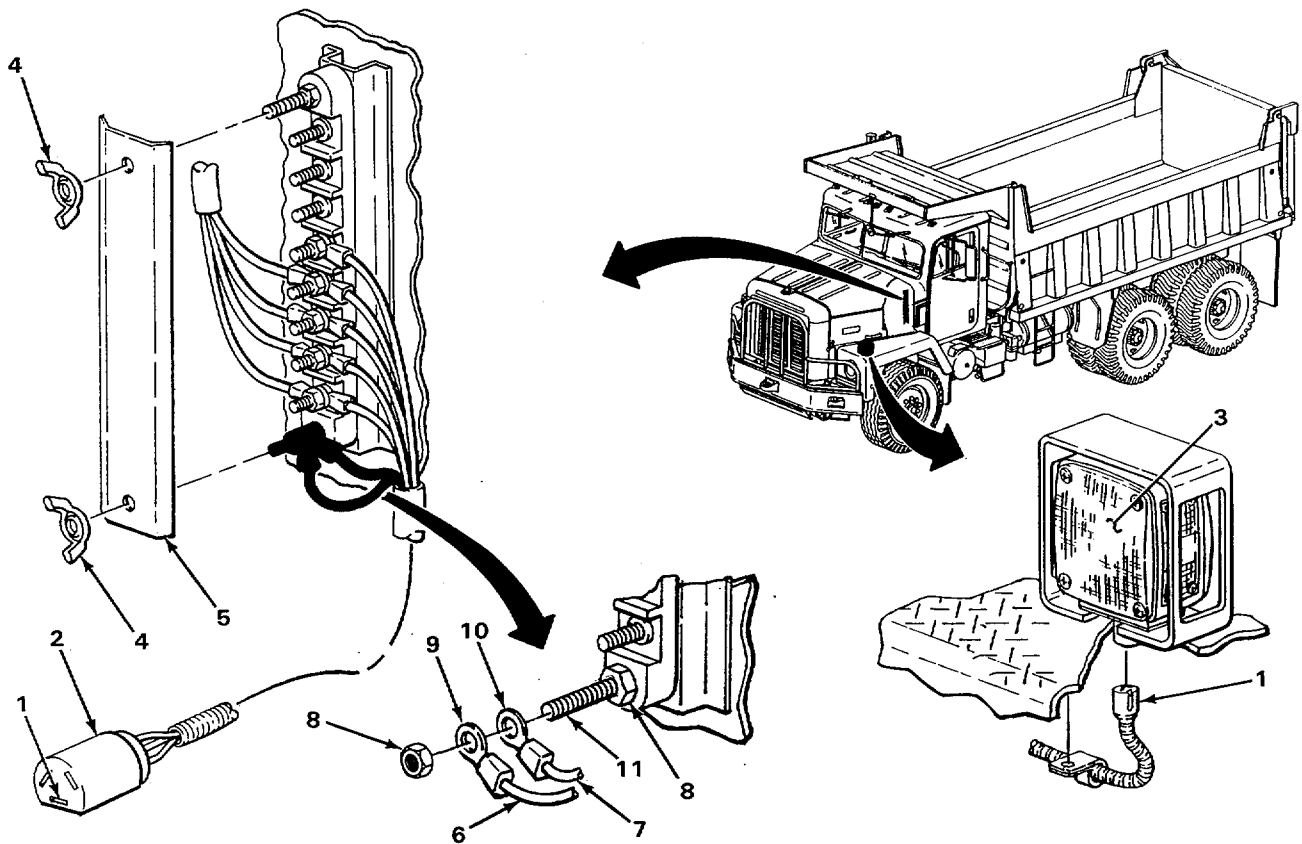
Step 9. Unscrew and take off two wing screws (4) and junction box cover (5). Check two 11 wires (6 and 7) for loose, corroded, frayed or broken condition.

- a. If two 11 wires (6) or (7) are loose, tighten nut (8) using 7/16-inch open-end wrench.
- b. If two 11 wires (6) or (7) are corroded, using 7/16-inch open-end wrench, unscrew and take off nut (8) and two 11 wires (6 and 7). Clean wire terminals (9 and 10) using wire brush. Place wire terminals (9 and 10) in position and screw nut (8) onto terminal stud (11) and tighten using 7/16-inch open-end wrench.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- c. If two 11 wires (6) or (7) are frayed, repair (page 2-424).
- d. If two 11 wires (6) or (7) are broken, two 11 wires (6) or (7) must be replaced. Notify Direct Support Maintenance.
- e. If two 11 wires (6 and 7) are not loose, corroded, frayed or broken, go to step 10.



TA243867

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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40. ONE FRONT EMERGENCY FLASHER DOES NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 10. Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to terminal stud (1) on junction box (2) and black test lead to ground. Check for 0 ohms on multimeter. Disconnect test leads.

a. If multimeter reads no continuity, using 7/16-inch open-end wrench, loosen nut (3). Using two 7/16-inch open-end wrenches, tighten screw (4) and nut (5). Using 7/16-inch open-end wrench, tighten nut (3). Perform step 10 again to ensure continuity.

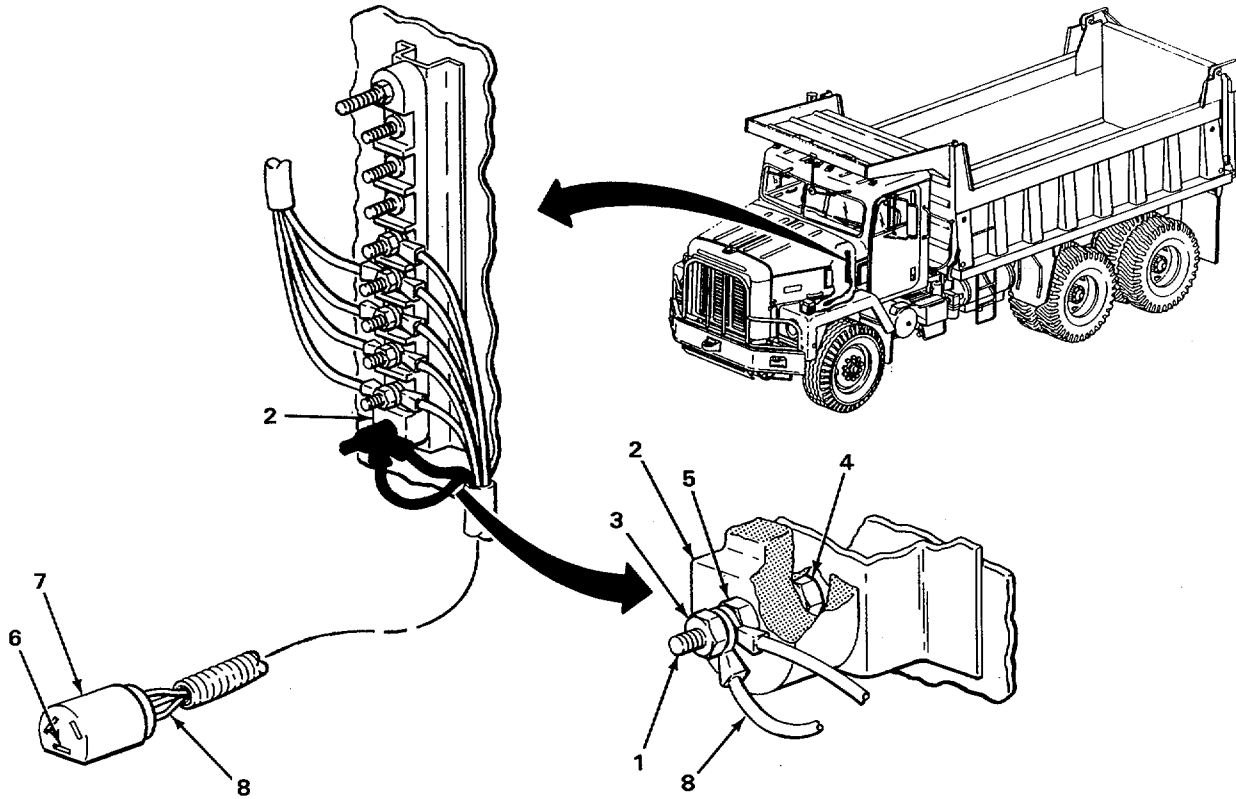
b. If multimeter reads 0 ohms, go to step 11.

Step 11. Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (6) on wire connector (7) and black test lead to terminal stud (1) on junction box (2). Check for 0 ohms on multimeter. Disconnect test leads. Go to step 12.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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If multimeter reads no continuity, 11 wire (8) must be replaced. Notify Direct Support Maintenance.

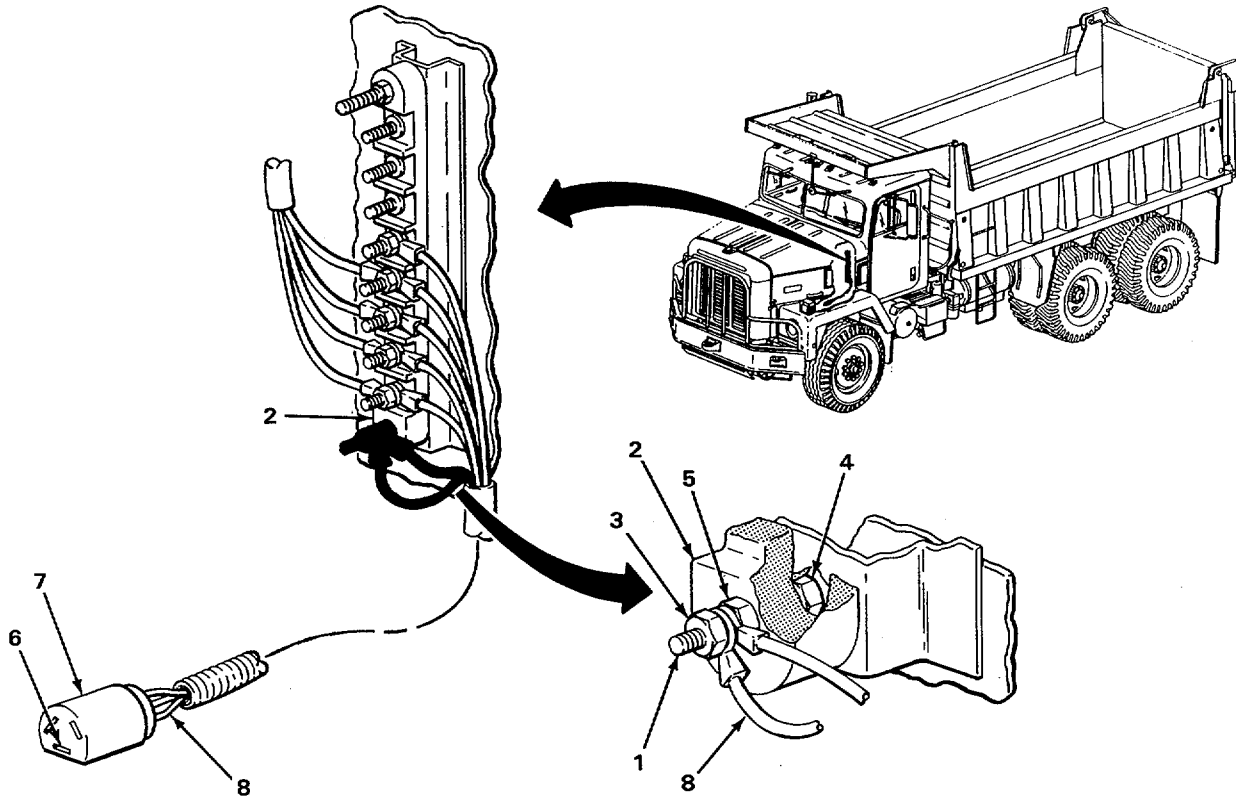


TA243868

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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If multimeter reads no continuity, 11 wire (8) must be replaced. Notify Direct Support Maintenance.



TA243868

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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40. ONE FRONT EMERGENCY FLASHER DOES NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps 12 thru 16 are for right front emergency flasher.

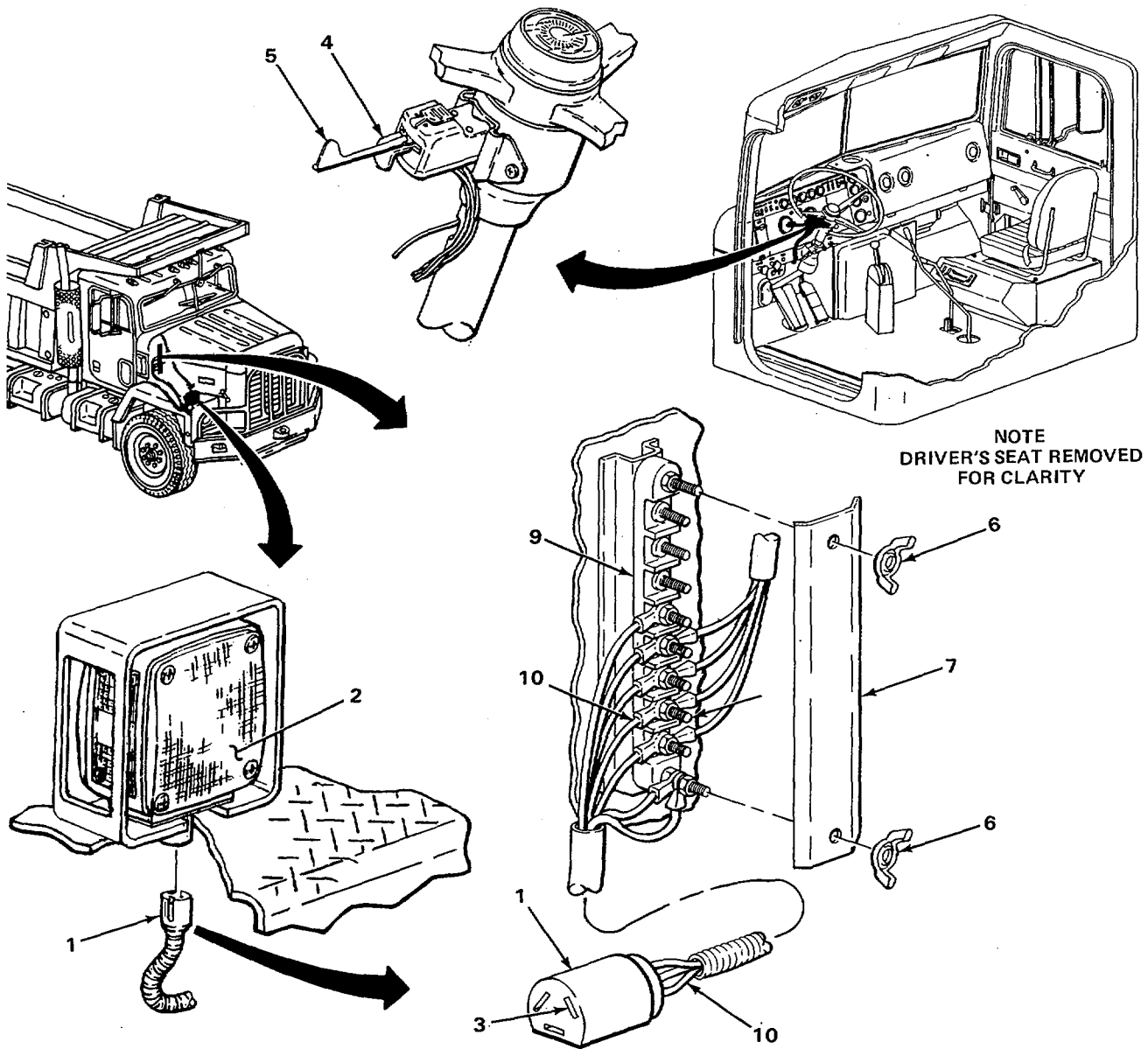
Step 12. Pull wire connector (1) off of front turn signal assembly (2). Using multimeter, set to 20 vdc scale. Connect red test lead to wire terminal (3) on wire connector (1) and black test lead to ground. Have assistant pull emergency flasher switch handle (4) out to on position. Check for 11 to 13 vdc on multimeter. Have assistant push turn signal switch handle (5) towards left turn position to release emergency flasher switch handle (4). Have assistant push turn signal switch handle (5) to off position. Disconnect test leads.

Step 13. Unscrew and take off two wing nuts (6) and junction box cover (7). Using multimeter, set to 20 vdc scale. Connect red test lead to terminal (8) on junction box (9) and black test lead to ground. Have assistant pull emergency flasher switch handle (4) out to on position. Check for 11 to 13 vdc on multimeter. Have assistant push turn signal switch handle (5) towards left turn position to release emergency flasher switch handle (5) to off position. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If multimeter does not read 11 to 13 vdc, go to step 14.
- b. If multimeter reads 11 to 13 vdc, 55 wire (10) must be replaced. Notify Direct Support Maintenance.



TA243869

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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40. ONE FRONT EMERGENCY FLASHER DOES NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

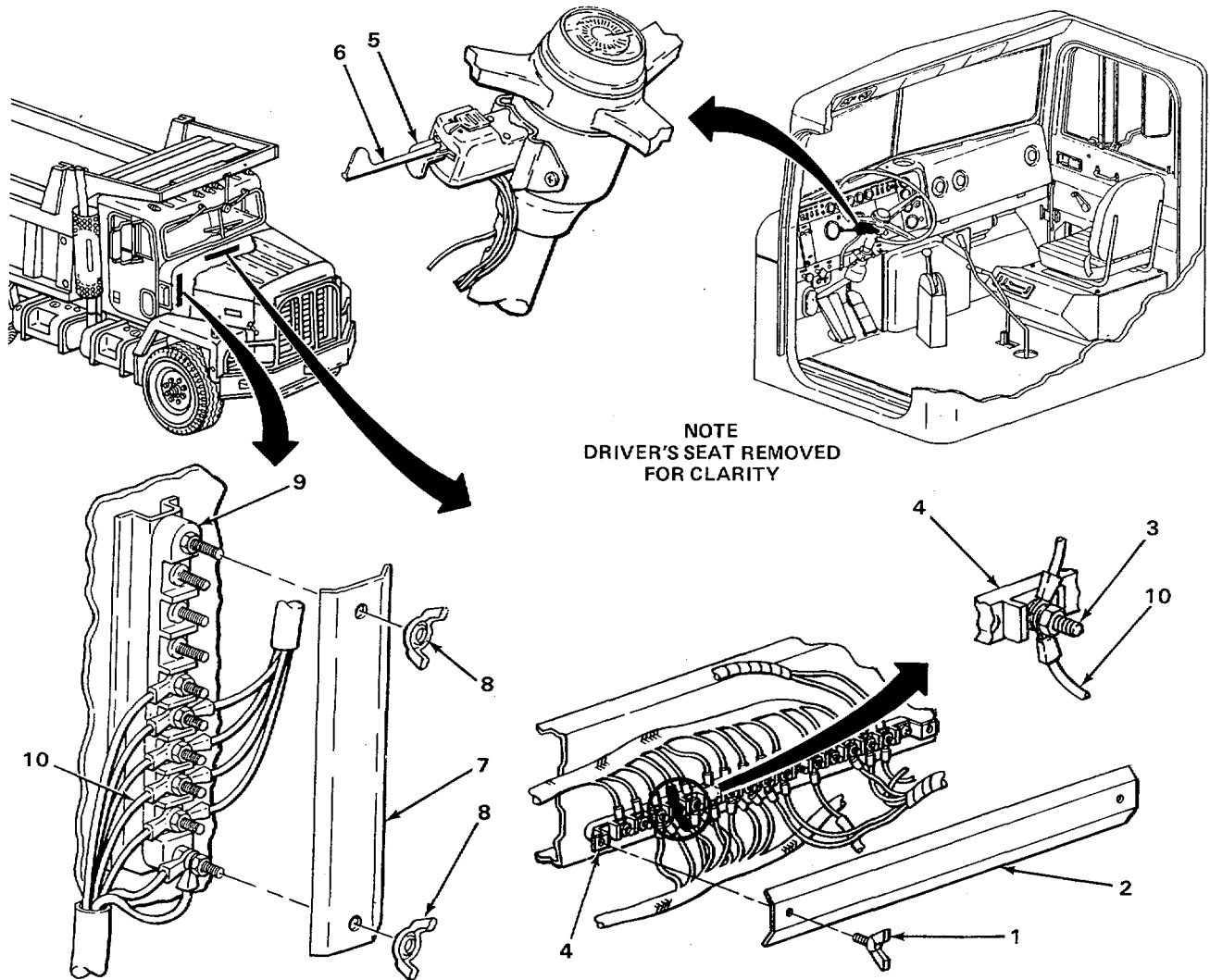
NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 14. Unscrew and take off two wing screws (1) and junction box cover (2). Using multimeter, set to 20 vdc scale. Connect red test lead to terminal (3) on junction box (4) and black test lead to ground. Have assistant pull emergency flasher switch handle (5) out to on position. Check for 11 to 13 vdc on multimeter. Have assistant push turn signal switch handle (6) towards left turn position to release emergency flasher switch handle (5). Push turn signal switch handle (6) to off position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, place junction box cover (2) in position and screw two wing screws (1) onto junction box (4) and tighten. Place junction box cover (7) in position and screw two wing nuts (8) onto junction box (9) and tighten. Go to step 15.
- b. If multimeter reads 11 to 13 vdc, 57 wire (10) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED



TA243870

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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40. ONE FRONT EMERGENCY FLASHER DOES NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

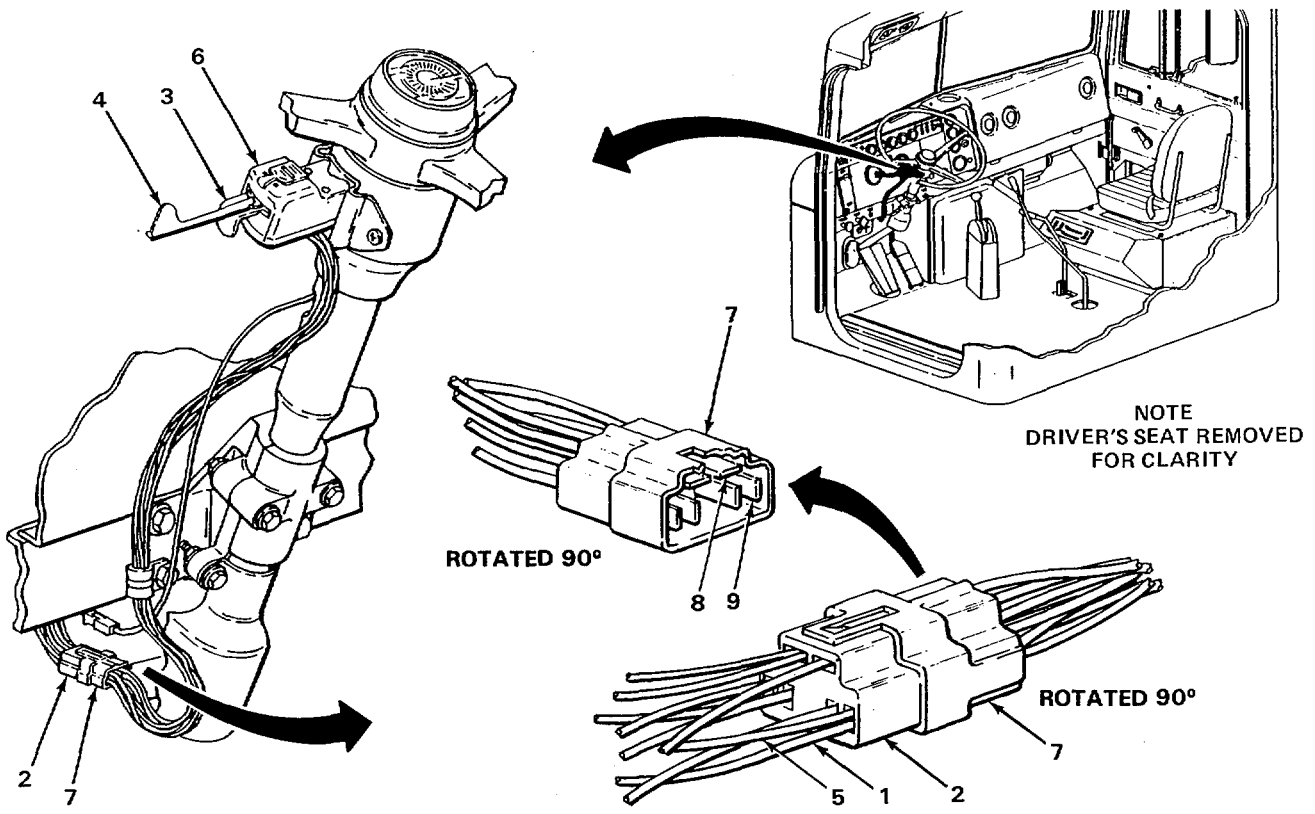
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 15. Using multimeter, set to 20 vdc scale. Connect red test lead to wire terminal (1) on wire connector (2) and black test lead to ground. Pull emergency flasher switch handle (3) out to on position. Check for 11 to 13 vdc on multimeter. Push turn signal switch handle (4) towards left turn position to release emergency flasher switch handle (3). Push turn signal switch handle (4) to off position. Disconnect test leads. $\frac{3}{4}$ __
- a. If multimeter does not read 11 to 13 vdc, go to step 16.
 - b. If multimeter reads 11 to 13 vdc, 57 wire (5) must be replaced. Notify Direct Support Maintenance.
- Step 16. Test turn signal switch (6) as follows: Pull apart wire connectors (2 and 7). Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (8). Pull emergency flasher switch handle (3) out to on position. Check for 0 ohms on multimeter. Push turn signal switch handle (4) towards left turn position to release emergency flasher switch handle (3). Push turn signal switch handle (4) to off position. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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If multimeter reads no continuity, replace turn signal switch (6) (page 2-664).



TA243871

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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41. ONE REAR EMERGENCY FLASHER DOES NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 1 is for left rear emergency flasher and step 2 is for right rear emergency flasher.

Step 1. Test turn signal switch (1) as follows: Pull apart wire connectors (2 and 3). Using multimeter set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (4) and black test lead to wire terminal (5) on wire connector (3). Pull emergency flasher switch handle (6) out to on position. Check for 0 ohms on multimeter. Push turn signal switch handle (7) towards left turn position to release emergency flasher switch handle (6). Push turn signal switch handle (7) to off position. Disconnect test leads.

If multimeter reads no continuity, replace turn signal switch (1)
(page 2-664).

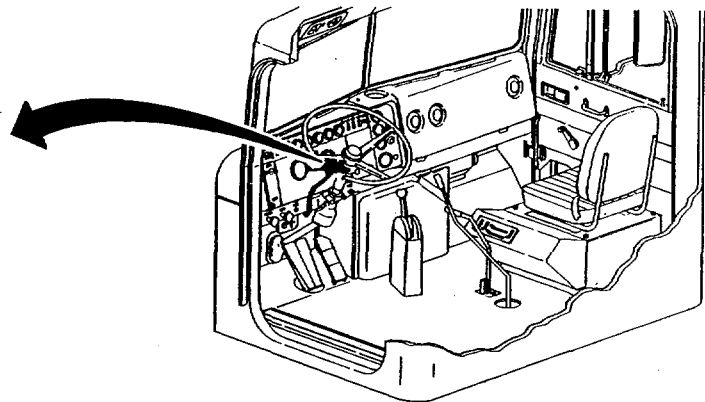
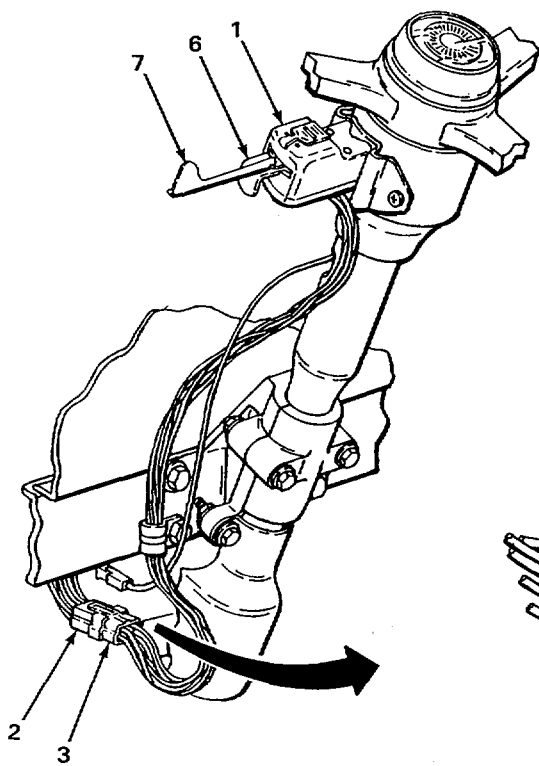
Step 2. Test turn signal switch (1) as follows: Pull apart wire connectors (2 and 3). Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (4) and black test lead to wire terminal (8) on wire connector (3). Pull emergency flasher switch handle (6) out to on position.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

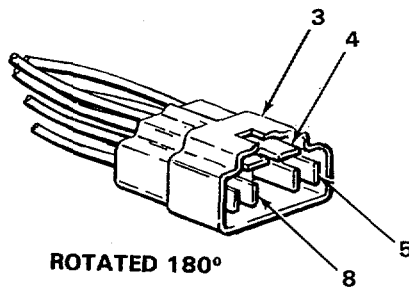
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Check for 0 ohms on multimeter. Push turn signal switch handle (7) to off position. Disconnect test leads.

If multimeter reads no continuity, replace turn signal switch (1) (page 2-664).



NOTE
DRIVER'S SEAT REMOVED
FOR CLARITY



TA243872

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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42. BOTH STOP LIGHTS DO NOT WORK.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Start engine and check that air pressure in air system is between 90 and 130 psi (TM 53805-254-10). Shut down engine (TM 5-3805-254-10).

Step 1. Using multimeter, set to 20 vdc scale. Connect red test lead to terminal (1) on stoplight switch (2) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, 70 wire (3) must be replaced. Notify Direct Support Maintenance.

b. If multimeter reads 11 to 13 vdc, go to step 2.

Step 2. Using multimeter, set to 20 vdc scale. Connect red test lead to terminal (4) on stoplight switch (2) and black test lead to ground. Push break pedal (5) down. Check for 11 to 13 vdc on multimeter. Release brake pedal (5). Disconnect test leads. Go to step 3.

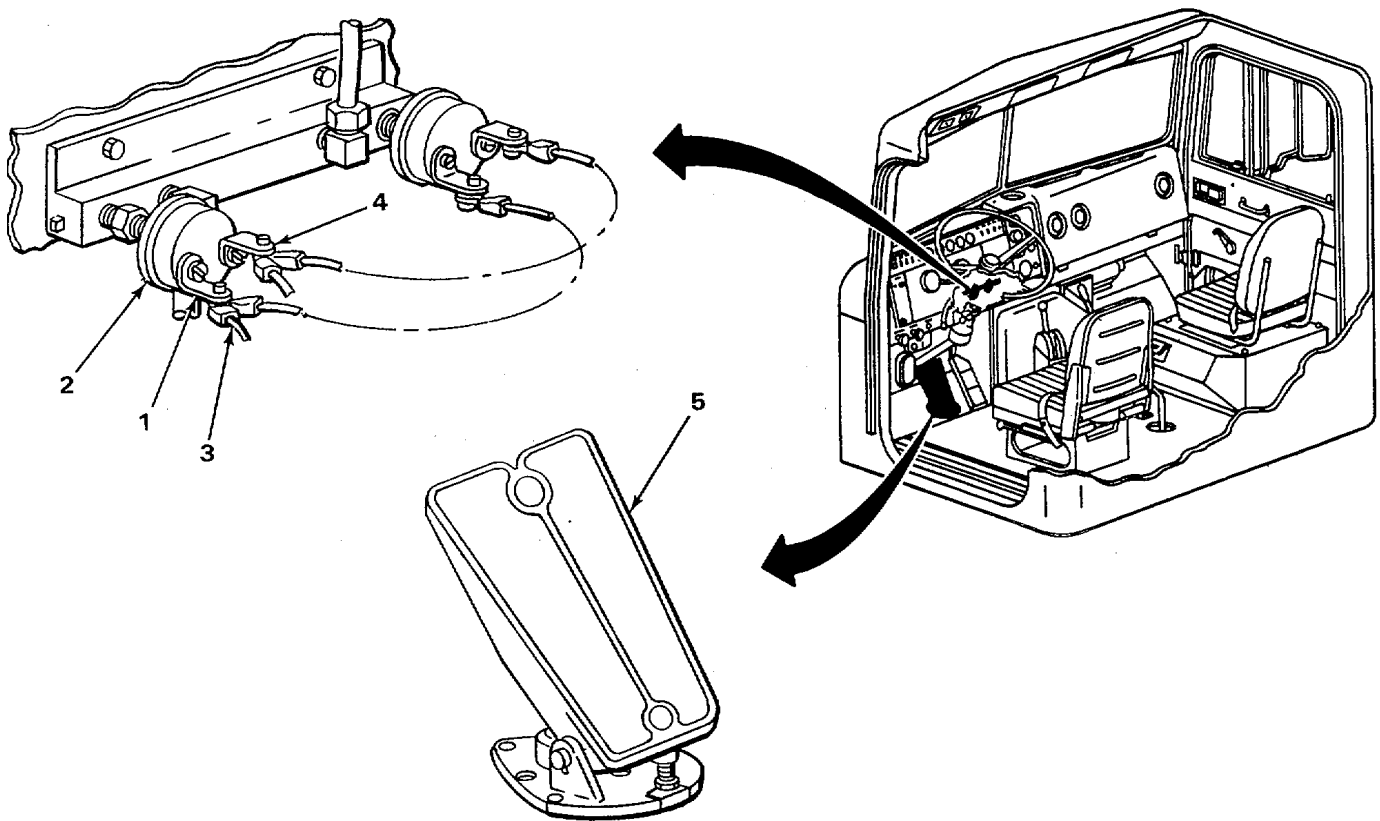
Step 3. Test stoplight switch (2) as follows: Disconnect batteries (page 2-664). Using multimeter, set to ohms scale and adjust to 0 ohms.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Connect red test lead to terminal (1) and black test lead to terminal (4) on stoplight switch (2). Push brake pedal (5) down. Check for 11 to 13 vdc on multimeter. Release brake pedal (5). Disconnect test leads.

- a. If multimeter reads no continuity, replace stoplight switch (2) (page 2-664).
- b. If multimeter reads 0 ohms, go to step 4.



TA243873

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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42. BOTH STOP LIGHTS DO NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 4. Test stoplight switch (1) as follows: Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to terminal (2) and black test lead to terminal (3). Push brake pedal (4) down. Check for 0 ohms on multimeter. Release brake pedal (4). Disconnect test leads.

(1) (page 2-664).

a. If multimeter reads no continuity, replace stoplight switch

b. If multimeter reads 0 ohms, go to step 5.

Step 5. Test jumper wire (5) as follows: Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to terminal (2) on stoplight switch (1) and black test lead to terminal (6) on stoplight switch (7). Check for 0 ohms on multimeter. Disconnect test leads.

a. If multimeter reads no continuity, jumper wire (5) must be replaced. Notify Direct Support Maintenance.

b. If multimeter reads 0 ohms, go to step 6.

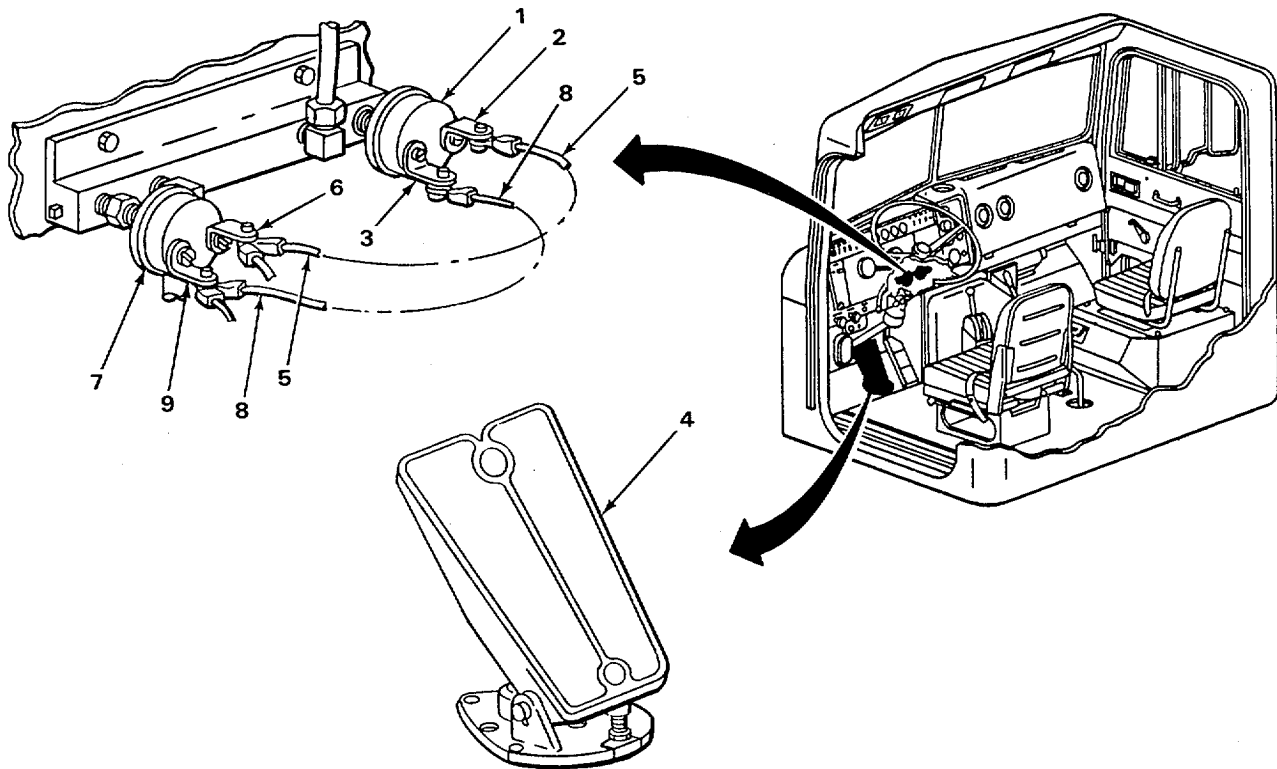
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 6. Test jumper wire (8) as follows: Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to terminal (3) on stoplight switch (1) and black test lead to terminal (9) on stoplight switch (7). Check for 0 ohms on multimeter. Disconnect test leads.

a. If multimeter reads no continuity, jumper wire (8) must be replaced. Notify Direct Support Maintenance.

b. If multimeter reads 0 ohms, connect batteries (page 2-424) and go to step 7.



TA243874

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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42. BOTH STOPLIGHTS DO NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

Step 7.Using multimeter set to 20 vdc scale. Connect red test lead to wire terminal (1) on wire connector (2) and black test lead to ground. Push brake pedal (3) down. Check for 11 to 13 vdc on multimeter. Release brake pedal (3). Disconnect test leads.

a.If multimeter does not read 11 to 13 vdc, 70A wire (4) must be replaced. Notify Direct Support Maintenance.

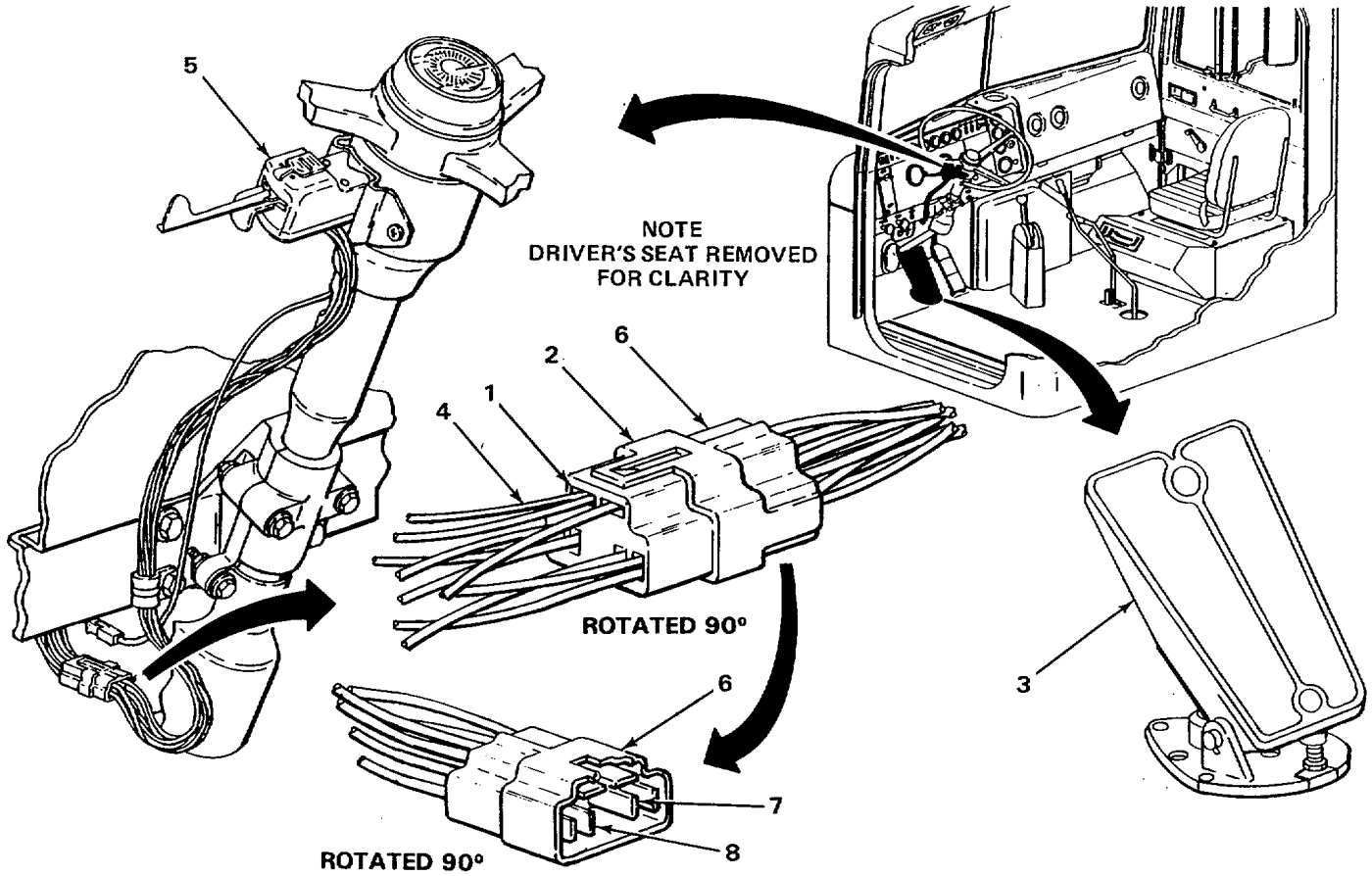
b. If multimeter reads 11 to 13 vdc, go to step 8.

Step 8.Test turn signal switch (5) as follows: Pull apart wire connectors (2 and 6). Using multimeter set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (1) and black test lead to wire terminal (7) on wire connector (2). Check for 0 ohms on multimeter. Move black test lead to wire terminal (8). Check for 0 ohms on multimeter. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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If multimeter reads no continuity on wire terminals (7 and 8), replace turn signal switch (5) (page 2-664).



TA243875

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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43. ONE STOPLIGHT DOES NOT WORK.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 1 is for left stoplight and step 2 is for right stoplight.

Step 1. Test turn signal switch (1) as follows: Pull apart wire connectors (2 and 3). Using multimeter set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (4) and black test lead to wire terminal (5) on wire connector (3). Check for 0 ohms on multimeter. Disconnect test leads.

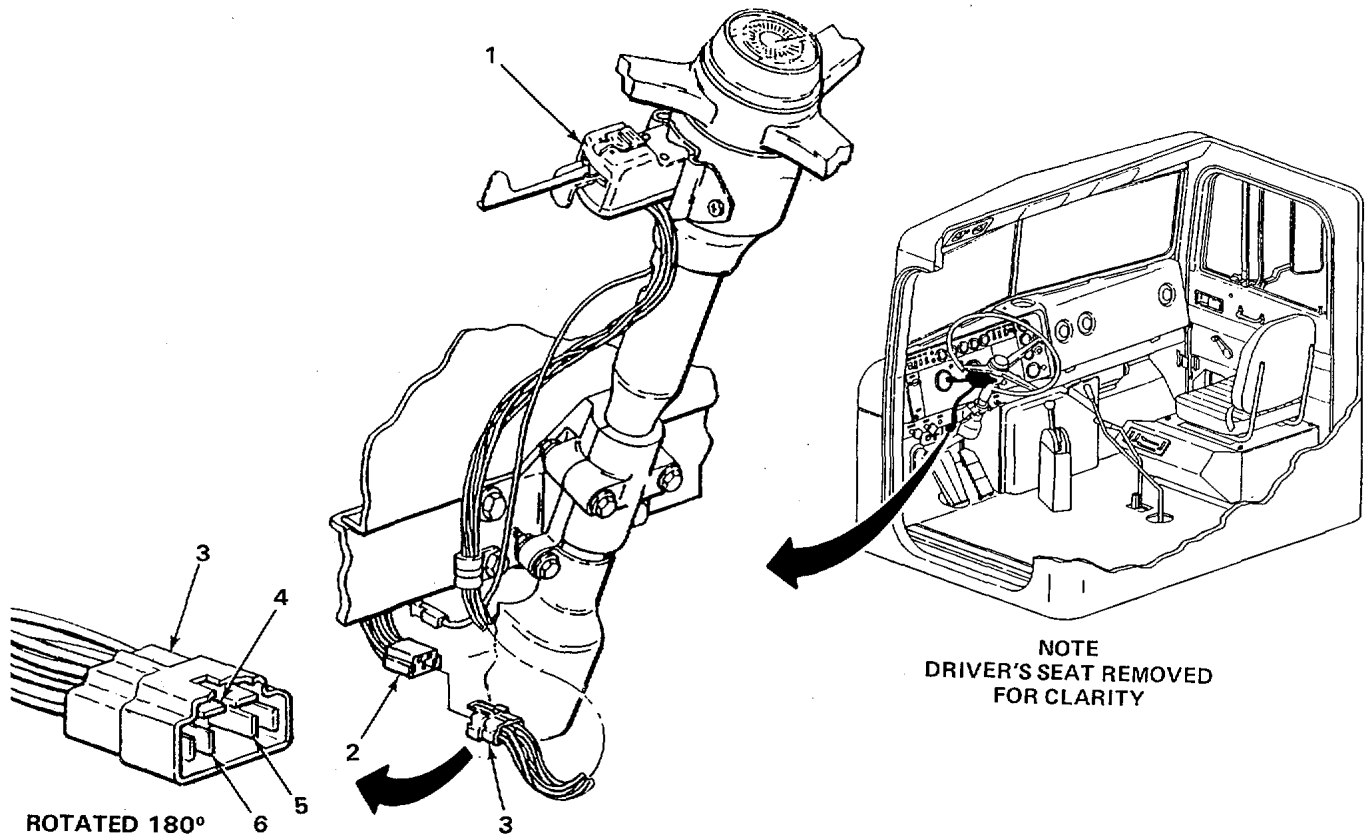
If multimeter reads no continuity, replace turn signal switch (1) (page 2-664).

Step 2. Test turn signal switch (1) as follows: Pull apart wire connectors (2 and 3). Using multimeter set to ohms scale and adjust to 0 ohms. Connect red test lead to wire terminal (4) and black test lead to wire terminal (6) on wire connector (3). Check for 0 ohms on multimeter. Disconnect test leads.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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If multimeter reads no continuity, replace turn signal switch (1) (page 2-664).



TA243876

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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44. BOTH TAILLIGHTS DO NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 1. Using number one cross-tip screwdriver, unscrew and take out four screws (1) and take terminal cover (2) off of left taillight assembly (3). Using multimeter set to 20 vdc scale. Connect red test lead to wire terminal (4) and black test lead to ground. Have assistant push **LIGHTS** switch handle (5) up to on position. Check for 11 to 13 vdc on multimeter. Have assistant push **LIGHTS** switch handle (5) to off position. Disconnect test leads.

If multimeter does not read 11 to 13 vdc, place terminal cover (2) into position and screw in four screws (2) and tighten using number one cross-tip screwdriver and go to step 2.

Step 2. Using 9/16-inch open-end wrench, unscrew line nut (6) and take off air line (7). Using number one cross-tip screwdriver, unscrew and take out eight screws (8) and eight flat washers (9). Push air line (7) through hole while taking out left lower rear molding (10). Using multimeter set to 20 vdc scale. Connect red test lead to terminal (11) on junction box (12). Have assistant push **LIGHTS** switch handle (5) up to on position. Check for 11 to 13 vdc on multimeter. Have assistant push **LIGHTS** switch handle (5) to off position. Disconnect test leads.

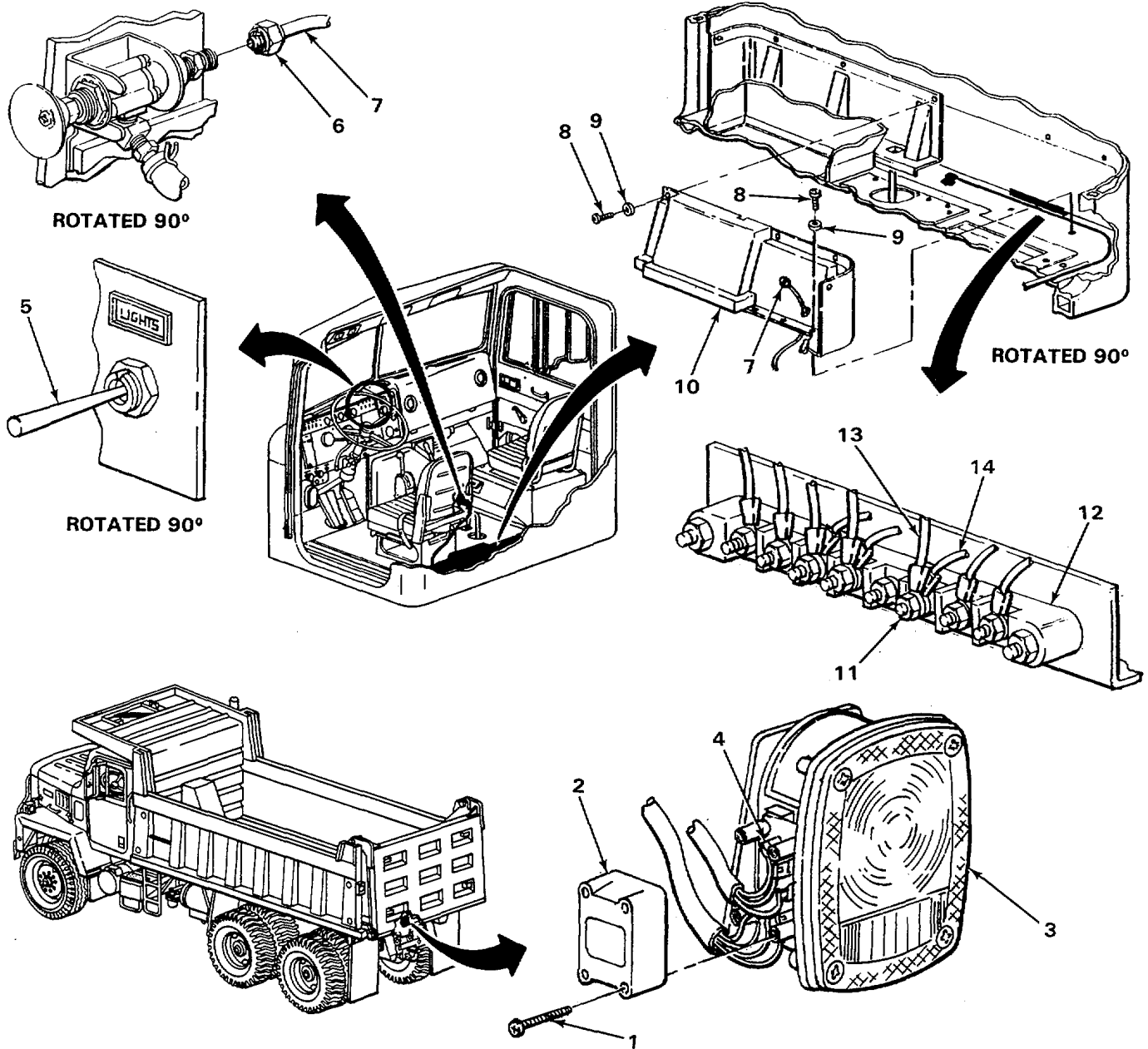
a. If multimeter does not read 11 to 13 vdc, 68A wire (13) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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be replaced. Notify Direct Maintenance.

b. If multimeter reads 11 to 13 vdc, brown wire (14) must Support



TA243877

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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45. ONE TAILLIGHT DOES NOT WORK.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 1 is for right taillight only.

Steps 2 thru 5 are typical for both right and left taillights.

Step 1. Using number one cross-tip screwdriver, unscrew and take out four screws (1) and terminal cover (2). Using multimeter set to 20 vdc scale. Connect red test lead to terminal (3) and black test lead to ground. Have assistant push LIGHTS switch handle (4) up to on position. Check for 11 to 13 vdc on multimeter. Have assistant push LIGHTS switch handle (4) to off position. Disconnect test leads.

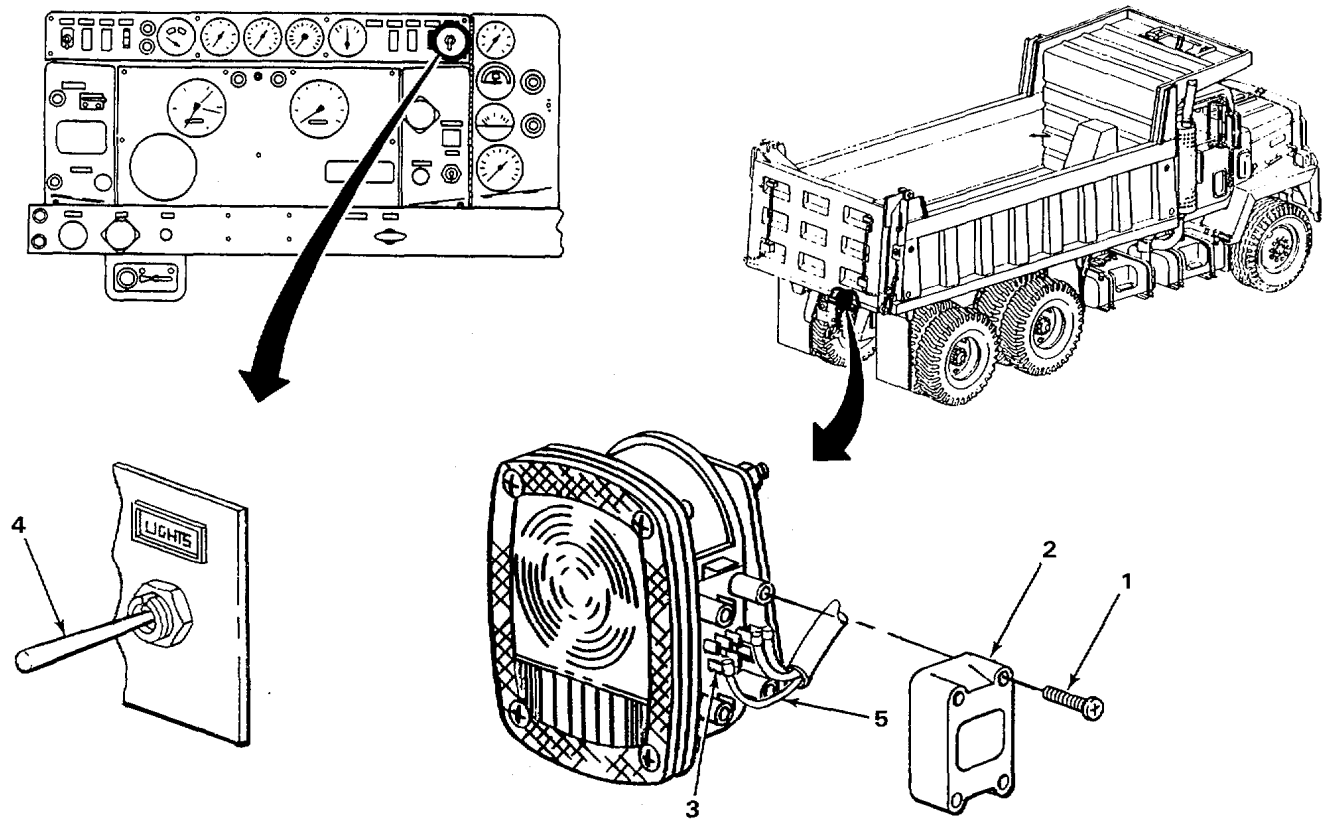
a. If multimeter does not read 11 to 13 vdc, 14 brown wire (5), between left and right taillight assembly must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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cover (2) into position and screw screws (2) and tighten, using number one cross-tip screwdriver. Go to step 2.

b. If multimeter reads 11 to 13 vdc, place terminal in four



TA243878

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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45. ONETAILLIGHT DOES NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Steps 2 thru 5 are typical for both right and left taillight.

Step 2. Using number one cross-tip screwdriver, unscrew and take out four screws (1) and lens (2). Push lamp (3) in and turn counterclockwise and take out. Using multimeter set to ohms scale and adjust to 0 ohms. Connect red test lead to contact (4) and black test lead to metal base (5). Check for 0 ohms on multimeter. Move red test lead to contact (6) check for 0 ohms on multimeter. Disconnect test leads.

a. If multimeter reads no continuity on contact (4) or (6), replace lamp (3). Put lamp (3) into socket (7), aligning pins with slots. Put lens (2) into stoplight/taillight assembly (8). Screw in four screws (1) and tighten using number one cross-tip screwdriver.

b. If multimeter reads 0 ohms, go to step 3.

Step 3. Check socket (7) for corrosion or rusted out condition.

a. If socket (7) is corroded, clean using emery cloth. Put
aligning pins with slots.

lamp (3) into socket (7),
Push in, turn clockwise and release. Put lens (2) into
stoplight/taillight assembly (8).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

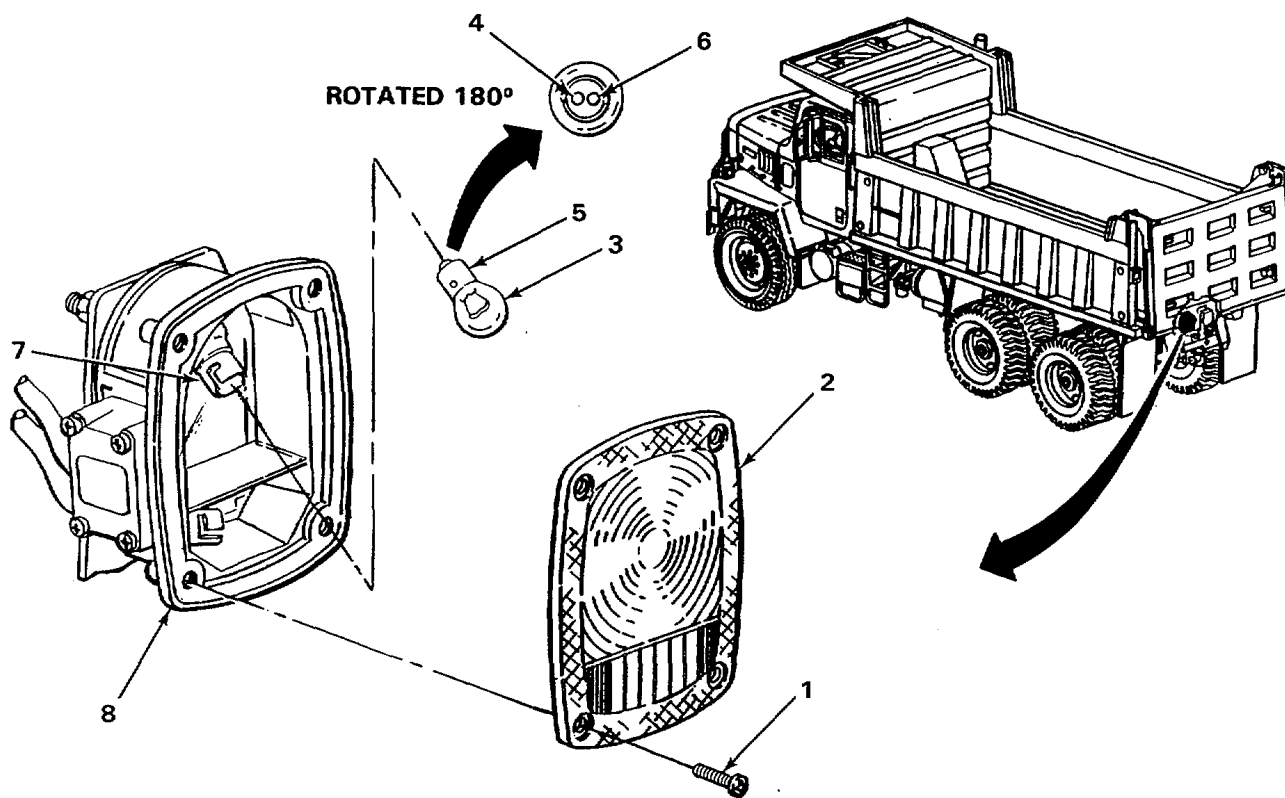
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Screw in four screws (1) and tighten using number one cross-tip screwdriver.

(page 2-664).

b. If socket (7) is rusted out, replace taillight assembly (8)

c. If socket is not corroded or rusted out, go to step 4.



TA243879

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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45. ONE TAILLIGHT DOES NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 4. Check taillight assembly (1) for looseness.

using 7/16-inch box-end
not work, go to step 5.

a. If taillight assembly (1) is loose, tighten three nuts (2) wrench. If tail light does

b. If taillight assembly (1) is not loose, go to step 5.

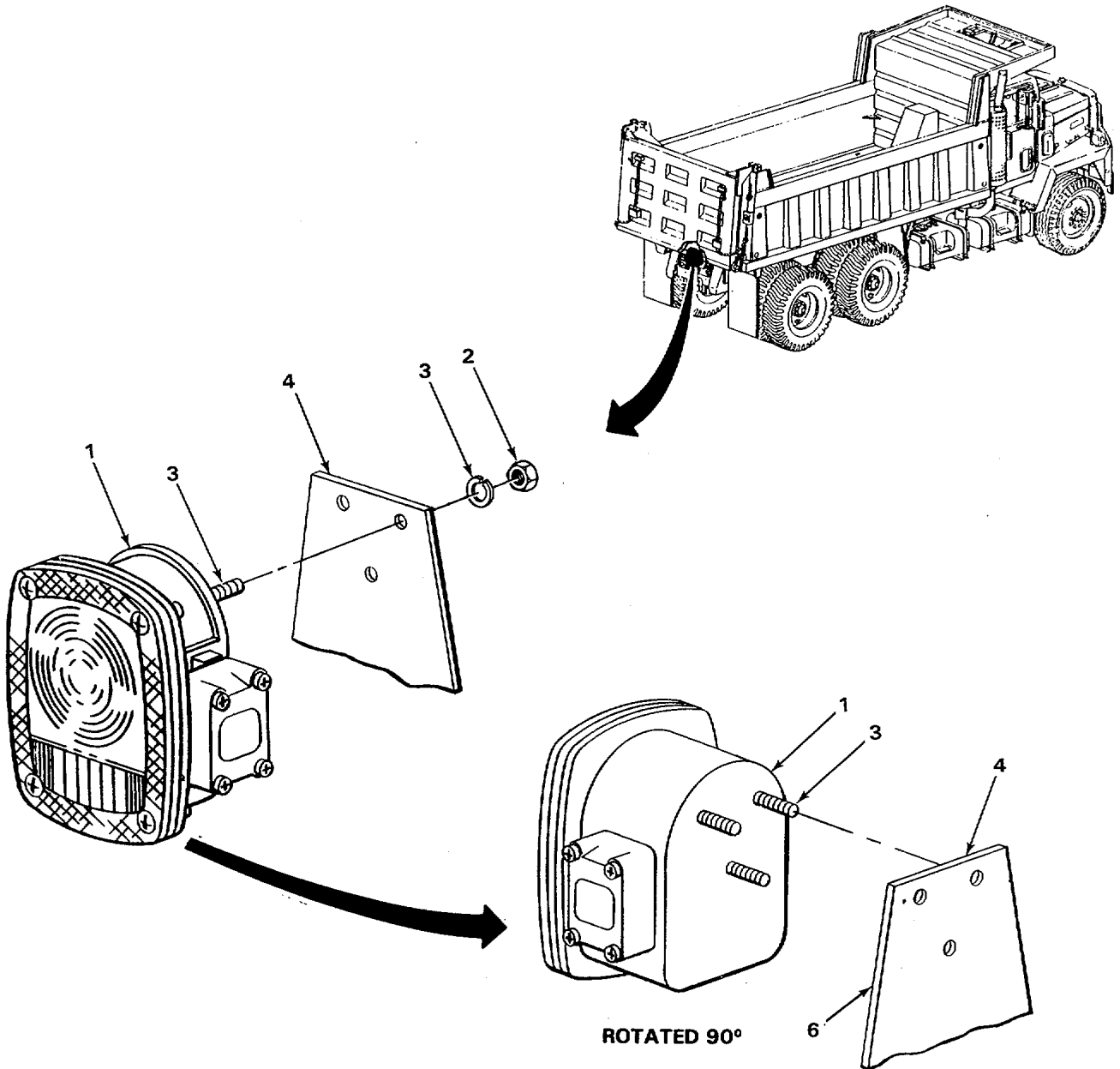
(3) on
Check for 0 ohms on multimeter.

Step 5. Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to stud taillight assembly (1) and black test lead to bracket (4). Disconnect test leads.

If multimeter reads no continuity, using 7/16-inch box-end wrench, unscrew and take off three nuts (2) and three lockwashers (5). Take taillight assembly (1) off of bracket (4).

Clean three studs (3) and mating surfaces (6) using wire brush. Put taillight assembly (1) on bracket (4). Screw three nuts (2) and three lockwashers (5) onto three studs (3) and tighten using 7/16-inch box-end wrench. Perform step 5 again to ensure continuity.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED



TA243880

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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46. DOME LIGHT DOES NOT WORK.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 1. Remove instrument panel pad (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to circuit breaker output stud (1) and black test lead to ground. Rotate KEY SWITCH (2) clockwise to on position and check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (2) counterclockwise to off position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, go to step 3.
- b. If multimeter reads 11 to 13 vdc, go to step 2.

Step 2. Set multimeter to 20 vdc scale. Connect red test lead to 63 wire (3) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, 63 wire (3) must be replaced. Notify Direct Support maintenance.

- b. If multimeter reads 11 to 13 vdc, go to step 3.

Step 3. Test dome light base (4) as follows: Using 3/16-inch flat-tip screwdriver, pry off dome light lens (5). Set multimeter to 20 vdc scale. Connect red test lead to socket end (6) and black test lead to ground. Rotate DOME/PNL light switch (7) until click is felt. Check for 11 to 13 vdc on multimeter. Rotate DOME/PNL light switch (7) to dim position. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, 63A wire (8) must be replaced. Notify Direct Support maintenance.

- b. If multimeter reads 11 to 13 vdc, go to step 4.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

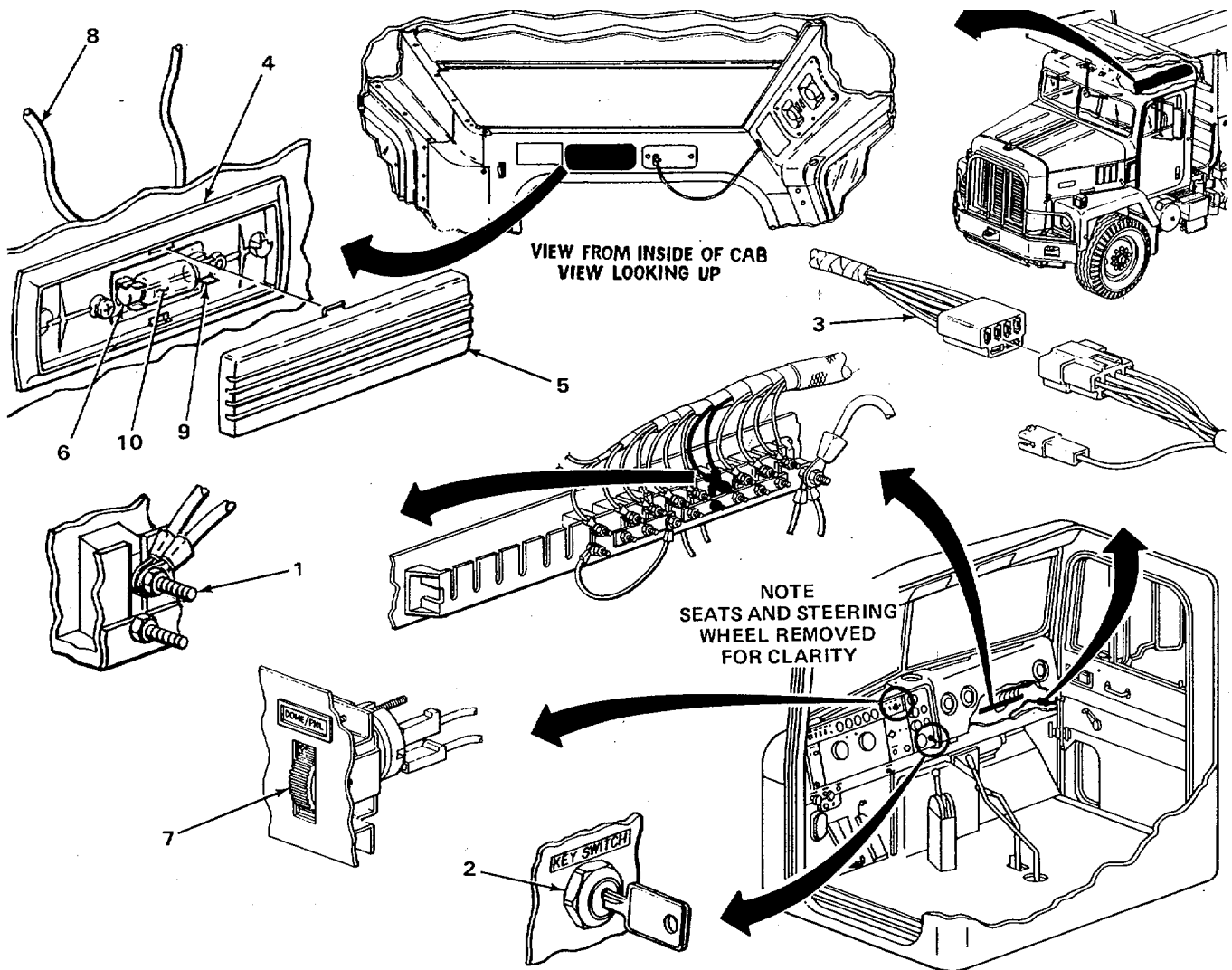
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 4. Set multimeter to 20 vdc scale. Connect red test lead to socket end (9) and black test lead to ground. Rotate DOME/PNL light switch (7) until click is felt. Check for 11 to 13 vdc on multimeter. Rotate DOME/PNL light switch (7) to dim position. Disconnect test leads.

be replaced (page 2-719).

a. If multimeter does not read 11 to 13 vdc, lamp (10) must

b. If multimeter reads 11 to 13 vdc, go to step 5.



TA243881

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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46. DOME LIGHT DOES NOT WORK - CONTINUED.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 5. Set multimeter to 20 vdc scale. Connect red test lead to 63C wire (1) at output side (2) of connector (3) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

output side of connector (2) replaced. Notify Direct Support maintenance.

a. If multimeter does not read 11 to 13 vdc, 63C wire (1) on must be

b. If multimeter reads 11 to 13 vdc, go to step 6.

Step 6. Set multimeter to 20 vdc scale. Connect red test lead to 63C wire (4) at input side (5) of connector (3) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, go to step 7.

b. If multimeter reads 11 to 13 vdc, go to step 8.

Step 7. Check connector (3) for corrosion.

a. If connector(3) is corroded, clean using emery cloth.

b. If connector(3) is not corroded, go to step 8.

Step 8. Open upper center instrument panel (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to 63C wire terminal (6) on DOME PNL light switch (7) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, 63C wire (8) must be replaced. Notify Direct Support maintenance.

b. If multimeter reads 11 to 13 vdc, go to step 9.

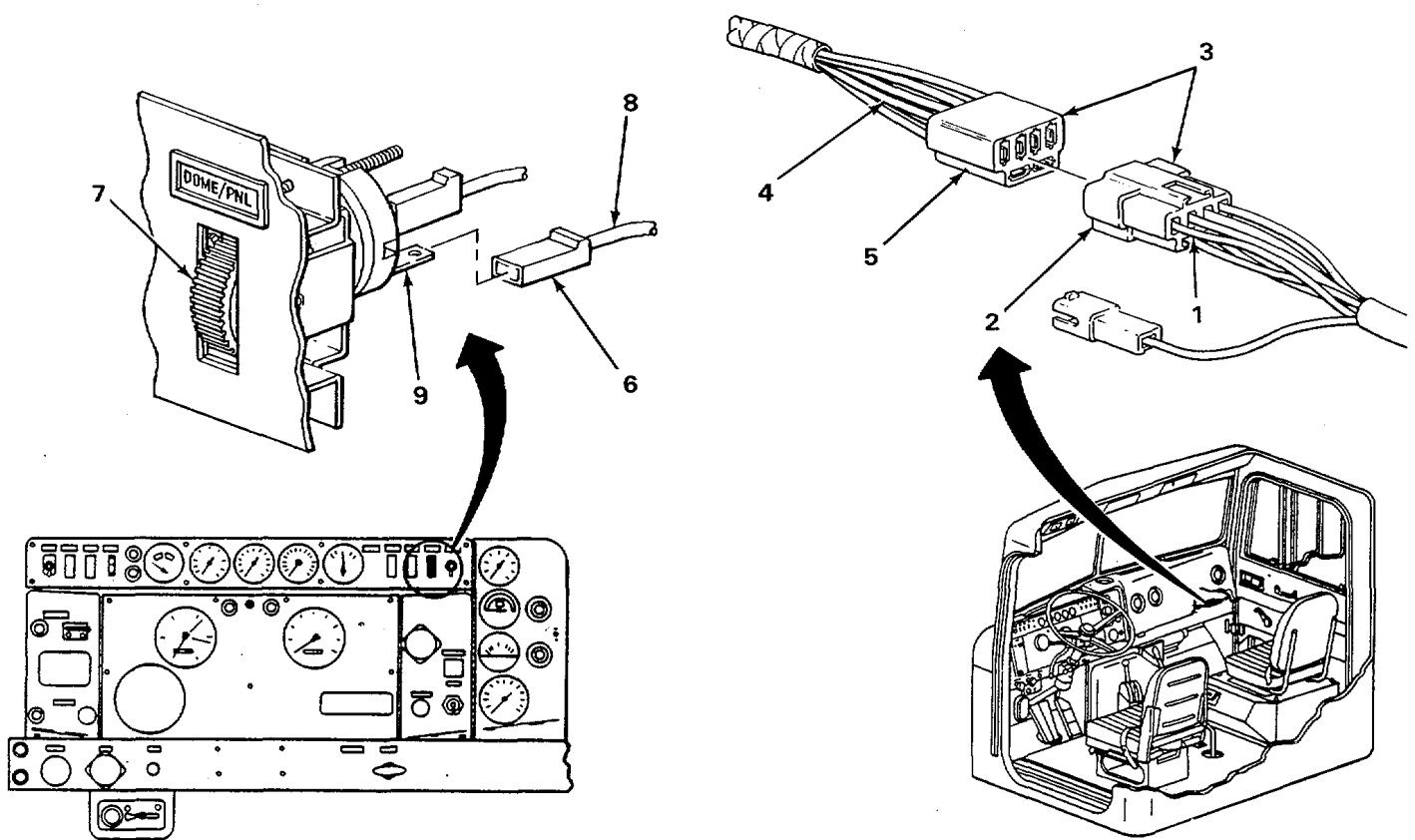
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 9. Open upper center instrument panel (page 2-424). Set multimeter to ohms scale and adjust to 0 ohms. Pull wire terminal (6) off DOME terminal (9). Connect red test lead to DOME terminal (9) on DOME/PNL L light switch (7) and black test lead to ground. Rotate DOME/PNL light switch (7) until click is felt. Check for 0 ohms on multimeter. Rotate DOME/PNL light switch (7) to dim position. Disconnect test leads.

(7) must be replaced (page

- a. If multimeter reads no continuity, DOME/PNL light switch (7) must be replaced (page 2-722).



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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47. ENGINE WARNING BELL DOES NOT WORK.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

Step 1. Remove instrument panel pad (page 2-424). Using multimeter set to 20 vdc scale, connect red test lead to input terminal (1) on engine warning bell (2) and black test lead to ground. Rotate KEY SWITCH (3) clockwise to on position and check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.

- a. If multimeter reads 11 to 13 vdc, go to step 2.
- b. If multimeter does not read 11 to 13 vdc, go to step 3.

Step 2. Using multimeter set to 20 vdc scale, connect red test lead to output terminal (4) on engine warning bell (2) and black test lead to ground. Rotate KEY SWITCH (3) clockwise to on position and check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.

warning bell (2) (page 2-

- a. If multimeter does not read 11 to 13 vdc, replace engine 717).
- b. If multimeter reads 11 to 13 vdc, go to step 4.

Step 3. Using multimeter set to 20 vdc scale, connect red test lead to NC terminal (5) on engine oil pressure switch (6) and black test lead to ground. Have assistant rotate KEY SWITCH (3) clockwise to on position. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.

oil pressure switch (6) (page

replaced. Notify Direct

- a. If multimeter does not read 11 to 13 vdc, replace engine 2-674).
- b. If multimeter reads 11 to 13 vdc, 19B wire (7) must be Support Maintenance.

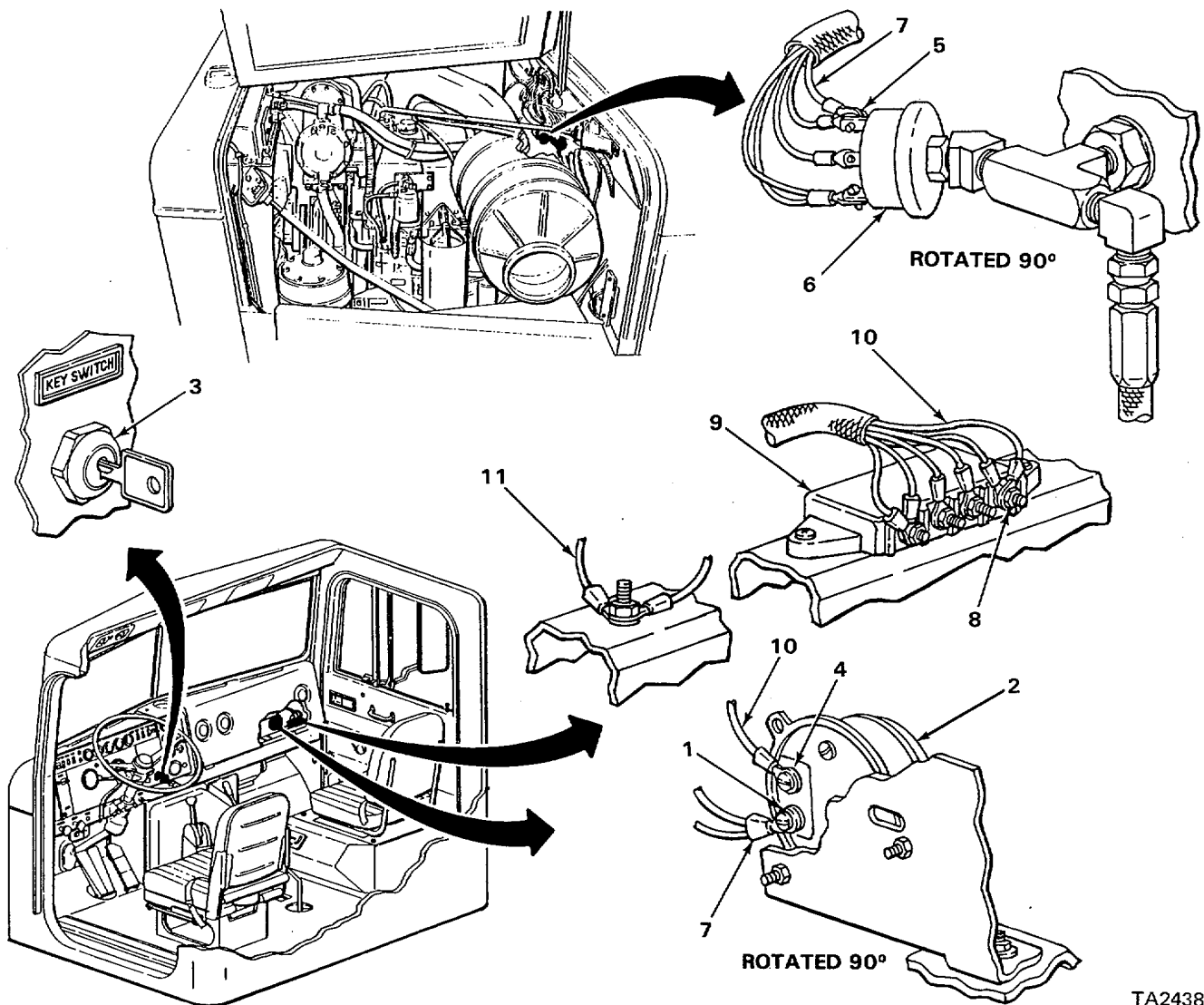
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 4. Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to output terminal (4) on engine warning bell (2) and black test lead to GROUND 4 terminal (8) automatic override module (9). Check for 0 ohms on multimeter. Disconnect test leads.

a. If multimeter reads no continuity, 11A wire (10) must be replaced. Notify Direct Support Maintenance.

b. If multimeter reads 0 ohms, 11B wire (11) must be replaced. Notify Direct Support Maintenance.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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48. OIL PRESSURE/WATER TEMPERATURE INDICATOR LAMP DOES NOT WORK.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

Step 1. Open upper center instrument panel (page 2-424). Pull lamp socket (1) out of oil pressure/water temperature indicator (2). Push in lamp (3), turn counterclockwise and pull out. Using multimeter set to 20 vdc scale, connect red test lead to center contact (4) and black test lead to lamp socket (1). Rotate KEY SWITCH (5) clockwise to on position and check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (5) counterclockwise to off position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, go to step 2.
- b. If multimeter reads 11 to 13 vdc, go to step 3.

Step 2. Remove instrument panel pad (page 2-424). Using multimeter set to 20 vdc scale, connect red test lead to output terminal (6) on engine warning bell (7) and black test lead to ground. Rotate KEY SWITCH (5) clockwise to on position and check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (5) counterclockwise to off position. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, close upper instrument panel (page 2-424) and go to, Malfunction 47, ENGINE WARNING BELL DOES NOT WORK (page 2-294).

b. If multimeter reads 11 to 13 vdc, 19F wire (8) must be replaced. Notify Direct Support Maintenance.

Step 3. Check lamp (3) as follows: Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to center contact (9) and black test lead to metal base (10). Check for 0 ohms on multimeter. Disconnect test leads.

a. If multimeter reads no continuity, replace lamp (3). Put lamp (3) into lamp socket (1). Push in, turn clockwise and release. Push lamp socket (1) into oil pressure/water temperature indicator (2). Close upper center instrument panel (page 2-424).

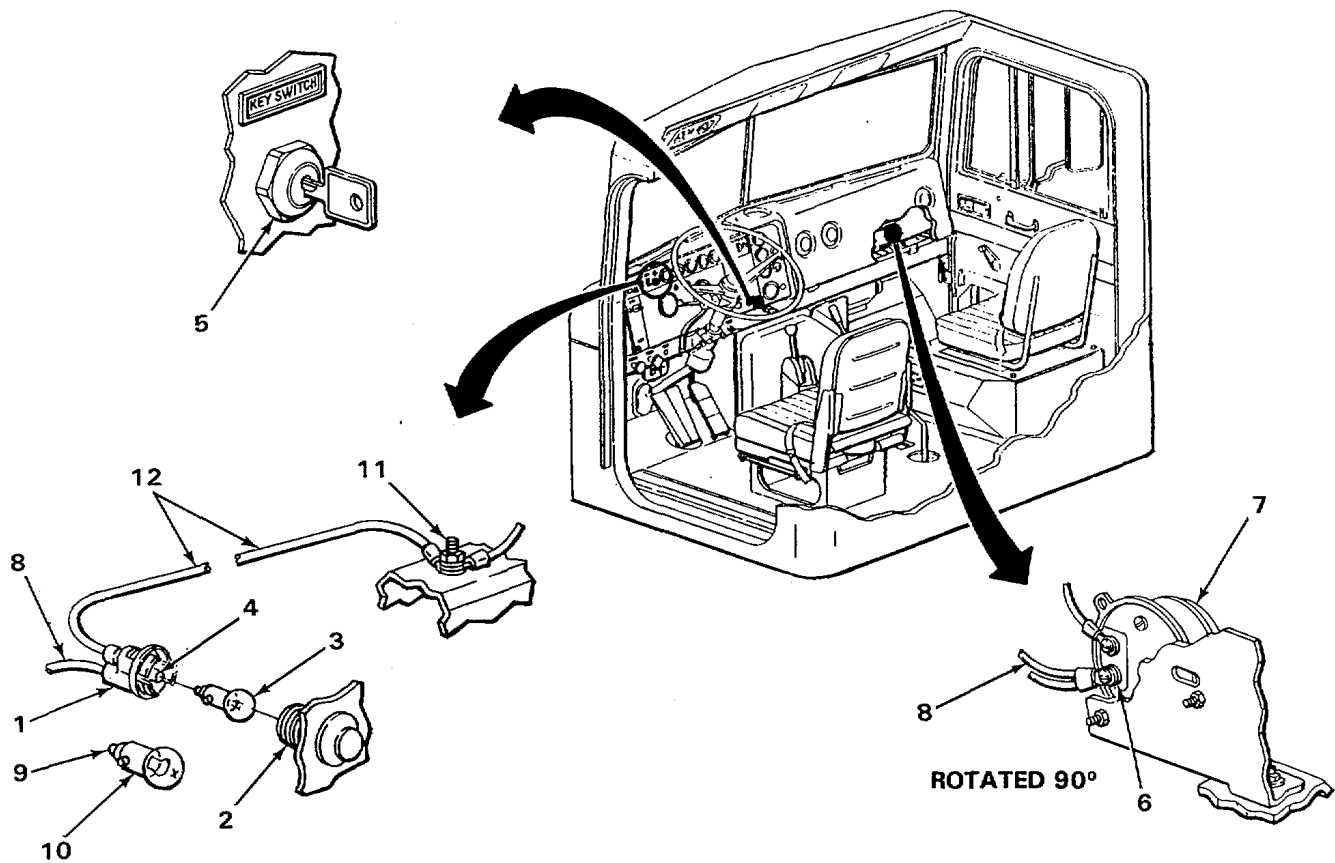
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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b.If multimeter reads 0 ohms, install lamp (3). Put lamp (3) in lamp socket (1). Push in, turn clockwise and release. Push lamp socket (1) into oil pressure/water temperature indicator (2) and go to step 4.

Step 4.Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to lamp socket (1) and black test lead to ground stud (11). Check for 0 ohms on multimeter. Disconnect test leads.

If multimeter reads no continuity, 11 wire (12) must be replaced. Notify Direct Support Maintenance.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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49. GLOW PLUG INDICATOR LAMP DOES NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape all painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 1. Open upper center instrument panel (page 2-424). Pull lamp socket (1) out of glow plug indicator (2). Push in lamp (3), turn counterclockwise and pull out. Using multimeter set to 20 vdc scale, connect red test lead to center contact (4) and black test lead to ground. Press **GLOW PLUG ON/OFF** switch (5) to ON position and check for 11 to 13 vdc on multimeter. Press **GLOW PLUG ON/OFF** switch (5) to OFF position. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, go to step 2.

b. If multimeter reads 11 to 13 vdc, go to step 3.

Step 2. Using multimeter set to 20 vdc scale, connect red test lead to output terminal (6) on **GLOW PLUG ON/OFF** switch (5) and black test lead to ground. Press **GLOW ON/OFF** switch (5) to ON position and check for 11 to 13 vdc on multimeter. Press **GLOW PLUG ON/OFF** switch (5) to OFF position. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc on multimeter, go to Malfunction 1, **ENGINE CRANKS BUT FAILS TO START BELOW 50°F (18°C)** (page 2-47).

b. If multimeter reads 11 to 13 vdc, 18B wire (7) must be replaced. Notify Direct Support Maintenance.

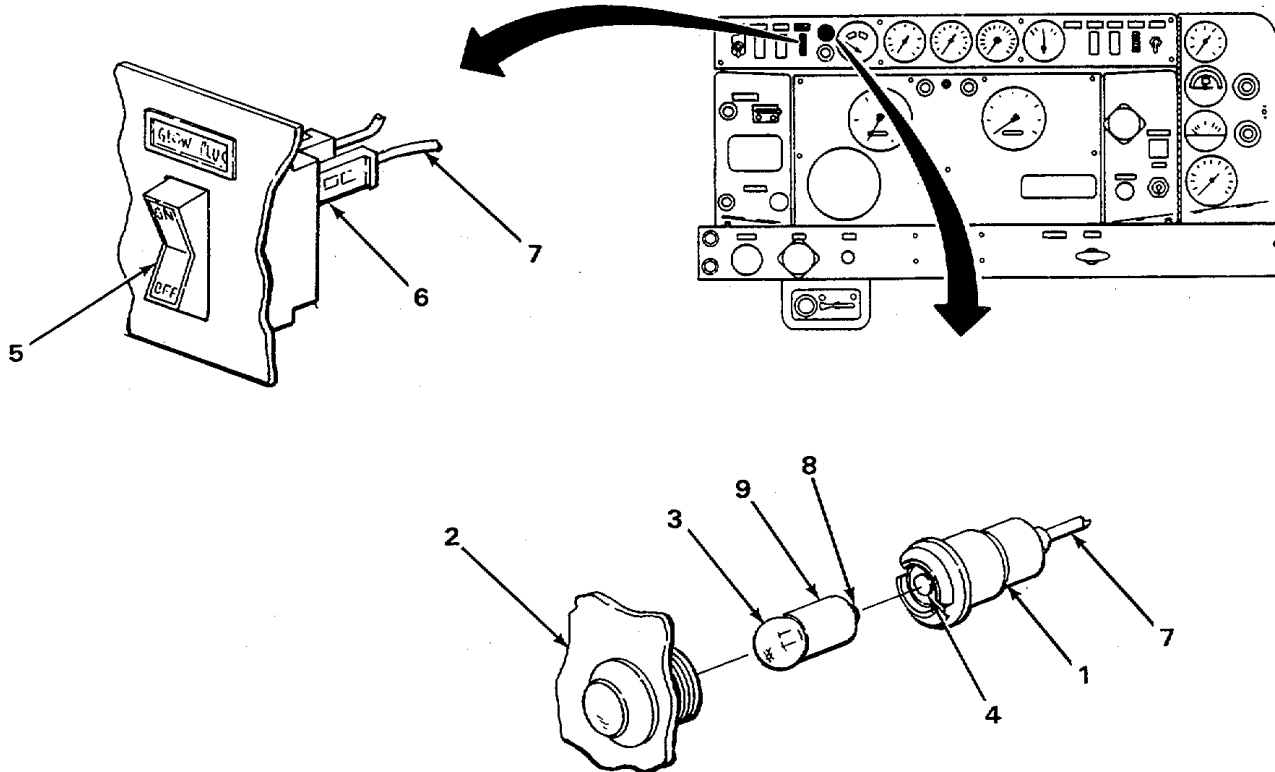
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 3. Check lamp (3) as follows: using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to center contact (8) and black test lead to metal base (9). Check for 0 ohms on multimeter. Disconnect test leads.

a. If multimeter reads no continuity, replace lamp (3). Put lamp (3) in socket (1). Push in, turn clockwise and release. Push socket (1) into rear of glow plug indicator (2). Close upper center instrument panel (page 2-424).

b. If multimeter reads 0 ohms, install lamp (1). Put lamp (1) in socket (2). Push in, turn clockwise and release. Push socket (2) into rear of indicator (2). Close up center instrument panel (page 2-424).



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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50. INSTRUMENT PANEL LAMPS DO NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 1. Open upper center instrument panel (page 2-424). Set multimeter to 20 vdc scale. Put LIGHTS switch (1) in up position and rotate DOMEIPNL light switch (2) to full bright position. Connect red test lead to wire terminal (3) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Put LIGHTS switch (1) in center position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, go to step 2.
- b. If multimeter reads 11 to 13 vdc, go to step 3.

Step 2. Remove instrument panel pad (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to circuit breaker wire terminal (4) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, replace circuit breaker (5) (page 2-760).
- b. If multimeter reads 11 to 13 vdc, 68 wire (6) must be replaced. Notify Direct Support Maintenance.

Step 3. Set multimeter to 20 vdc scale. Put LIGHTS switch (1) in up position. Connect red test lead to wire terminal (7) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Put LIGHTS switch (1) in center position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, LIGHTS switch (8) must be replaced (page 2-725).
- b. If multimeter reads 11 to 13 vdc, go to step 4.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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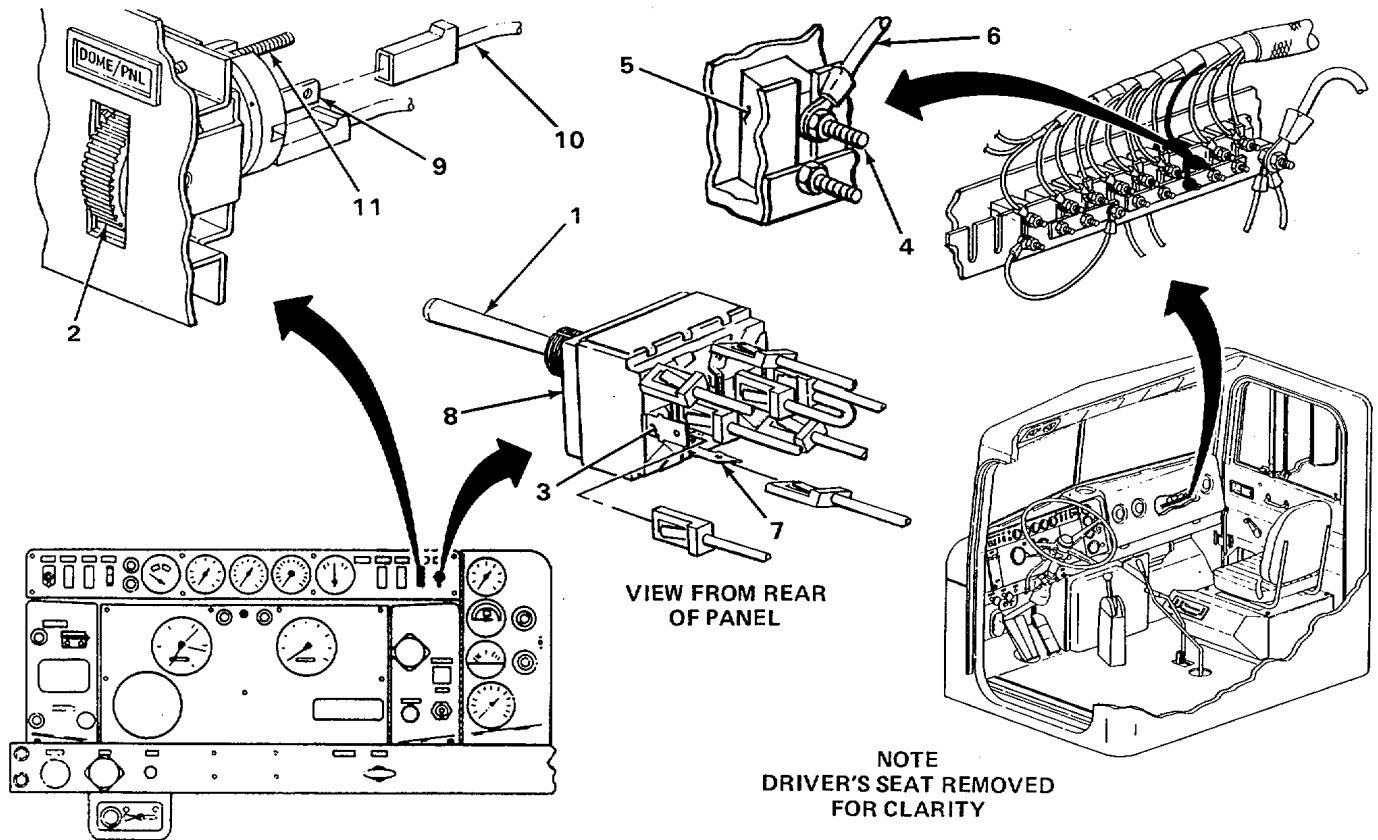
Step 4. Set multimeter to 20 vdc scale. Connect red test lead to wire terminal (9) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

must be replaced.

- a. If multimeter does not read 11 to 13 vdc, 62 wire (10) must be replaced.
- b. If multimeter reads 11 to 13 vdc, go to step 5.

Step 5. Set multimeter to 20 vdc scale. Connect red test lead to wire terminal (11) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.

If multimeter does not read 11 to 13 vdc, DOME/PNL light switch (2) must be replaced (page 2-722).



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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51. LEFT TURN SIGNAL INDICATOR LAMP DOES NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 1. Open lower center instrument panel (page 2-424). Pull lamp socket (1) out of left turn signal indicator (2). Push in lamp (3), turn counterclockwise and pull out. Using multimeter set to 20 vdc scale, connect red test lead to center contact (4) and black test lead to ground. Move turn signal switch (5) to left turn position and check for 11 to 13 vdc on multimeter. Move turn signal switch (5) to neutral position. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, go to step 2.

b. If multimeter reads 11 to 13 vdc, go to step 3.

Step 2. Using multimeter set to 20 vdc scale, connect red test lead to 56A wire (6) in connector (7) and black test lead to ground. Move turn signal switch (5) to left turn position and check for 11 to 13 vdc on multimeter. Move turn signal switch (5) to neutral position. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, put lamp (3) in lamp socket (1). Push in, turn clockwise and release. Push lamp socket (1) into left turn signal indicator (2). Close lower center instrument panel (page 2-424) and go to Malfunction 33, BOTH FRONT TURN SIGNALS DO NOT WORK (page 2-196).

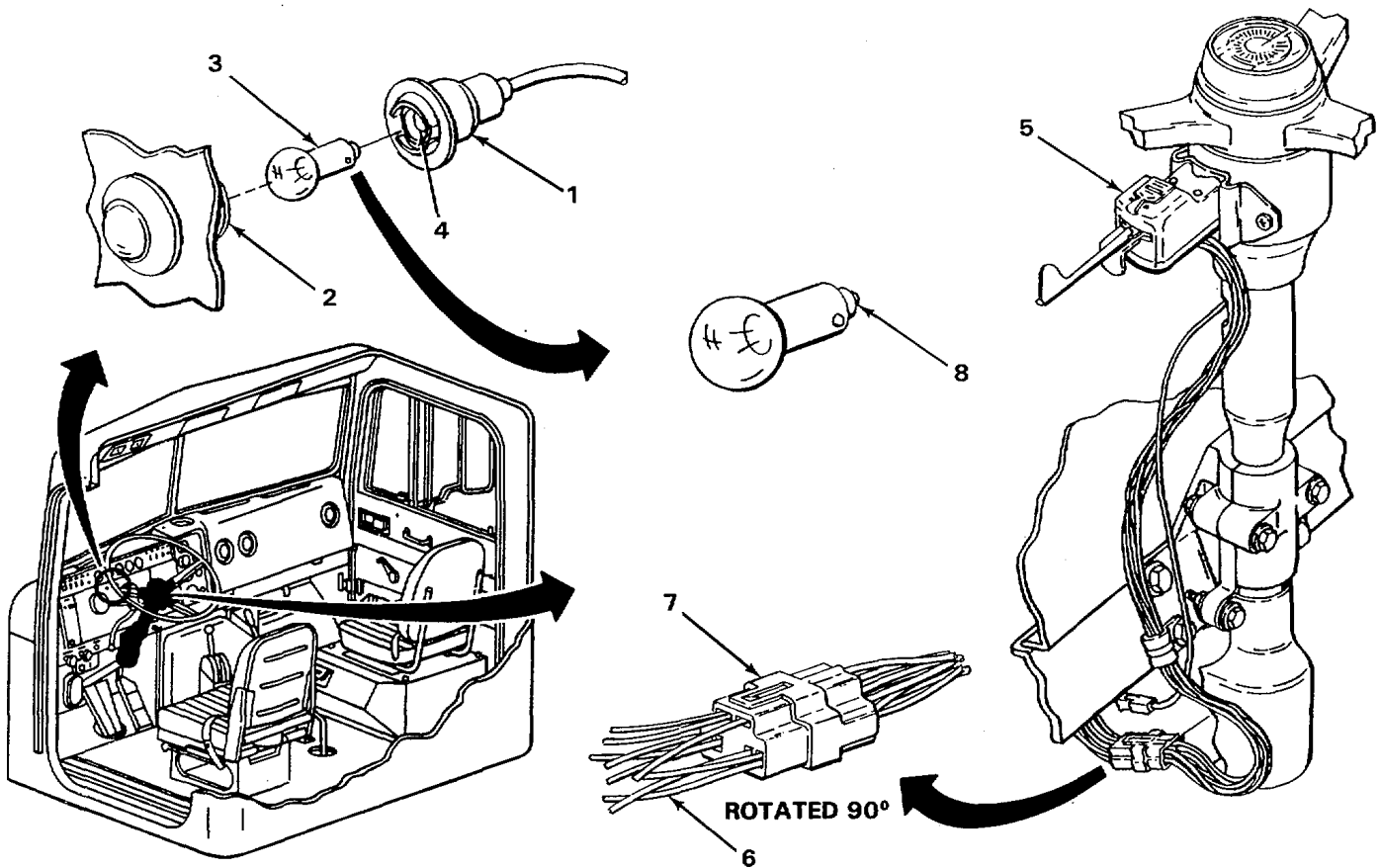
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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b.If multimeter reads 11 to 13 vdc, 56A wire (6) must be replaced. Notify Direct Support Maintenance.

Step 3. Check lamp (3) as follows: Using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to center contact (8) and black test lead to metal base (9). Check for 0 ohms on multimeter. Disconnect test leads.

If multimeter reads no continuity, replace lamp (3). Put lamp (3) into lamp socket (1). Push in, turn clockwise and release. Push lamp socket (1) into left turn signal indicator (2). Close lower center instrument panel (page 2-424).



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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52. LOW AIR-PRESSURE BUZZER DOES NOT WORK.

WARNING

Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 1. Remove instrument panel pad (page 2-424). Set multimeter to 20 vdc scale. Connect red test lead to input terminal (1) on low air pressure buzzer (2) and black test lead to ground. Have assistant rotate KEY SWITCH (3) clockwise to on position. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.

- a. If multimeter reads 11 to 13 vdc, go to step 2.
- b. If multimeter does not read 11 to 13 vdc, go to step 3.

Step 2. Set to 20 vdc scale. Connect red test lead to output terminal (4) on low air pressure buzzer (2) and black test lead to ground. Have assistant rotate KEY SWITCH (3) clockwise to on position. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.

a. If multimeter does not read 11 to 13 vdc, replace low air-pressure buzzer (2) (page 2-709).

- b. If multimeter reads 11 to 13 vdc, go to step 4.

Step 3. Set multimeter to 20 vdc scale. Connect red test lead to output terminal (5) on KEY SWITCH (3) and black test lead to ground. Rotate KEY SWITCH (3) clockwise to on position and check for 11 to 13 vdc on multimeter. Rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.

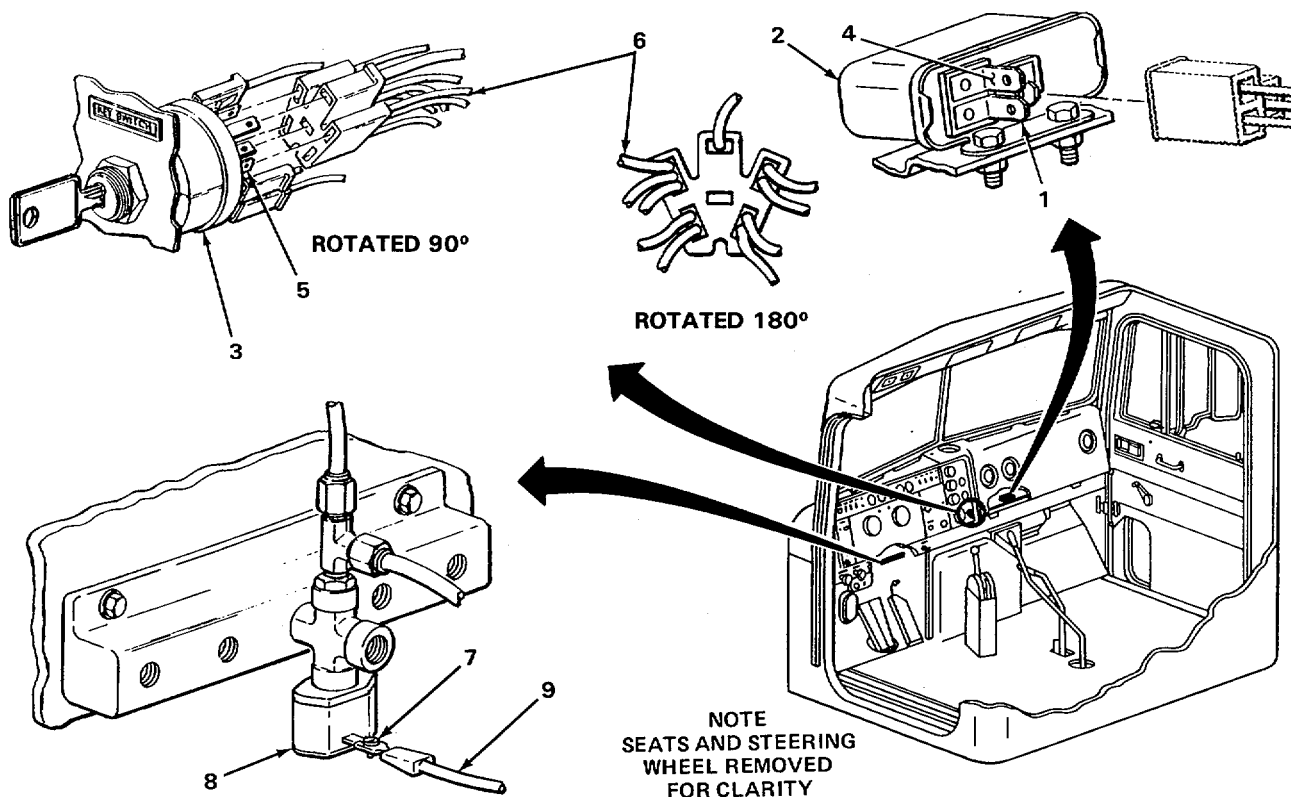
If multimeter reads 11 to 13 vdc, 40 wire (6) must be replaced. Notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 4. Set multimeter to 20 vdc scale. Connect red test lead to input terminal (7) on low air-pressure buzzer switch (8) and black test lead to ground. Have assistant rotate KEY SWITCH (3) clockwise to on position. Check for 11 to 13 vdc on multimeter. Have assistant rotate KEY SWITCH (3) counterclockwise to off position. Disconnect test leads.

- a. If multimeter does not read 11 to 13 vdc, 14 wire (9) must be replaced. Notify Direct Support Maintenance.
- b. If multimeter reads 11 to 13 vdc, replace low air-pressure buzzer switch (8) (page 2-699).



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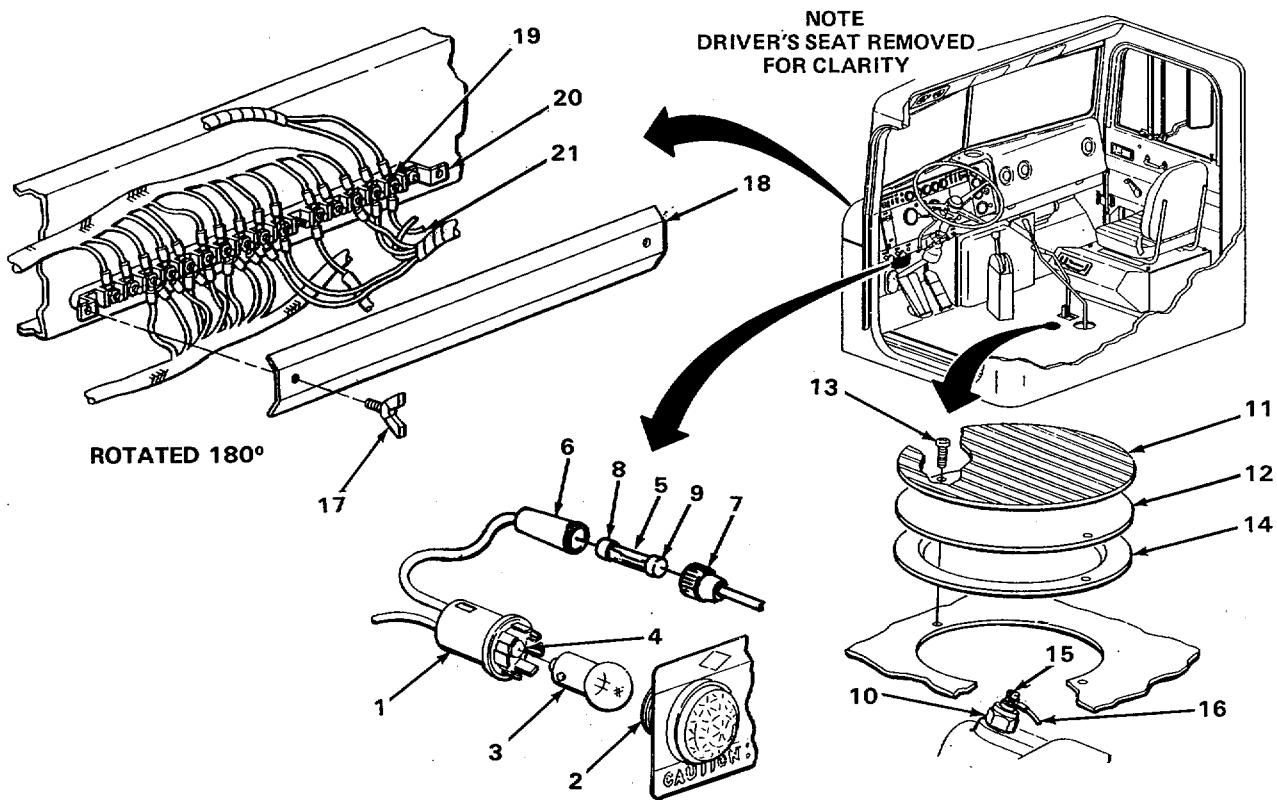
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
53.	POWER TAKE OFF INDICATOR LAMP DOES NOT WORK.	<p data-bbox="745 436 876 464" style="text-align: center;"><u>WARNING</u></p> <p data-bbox="285 468 1336 590">Although KEY SWITCH must be on and battery ground cable connected to test electrical circuit voltage, turn off KEY SWITCH and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.</p> <p data-bbox="773 625 849 653" style="text-align: center;">NOTE</p> <p data-bbox="285 657 1336 716">Scrape all painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.</p> <p data-bbox="261 747 1520 835">Step 1. Pull lamp socket (1) out of power take off indicator (2). Push in lamp (3), turn counterclockwise and pull out. Using multimeter set to 20 vdc scale, connect red test lead to center contact (4) and black test lead to lamp socket (1). Check for 11 to 13 vdc on multimeter. Disconnect test lead.</p> <ul style="list-style-type: none"> <li data-bbox="477 869 1149 896">a. If multimeter does not read 11 to 13 vdc, go to step 2. <li data-bbox="477 930 1053 957">b. If multimeter reads 11 to 13 vdc, go to step 3. <p data-bbox="261 991 1520 1108">Step 2. Remove in-line fuse (5) from plastic fuse holder (6 and 7) as follows: push both ends of fuse holder (6 and 7) together, turn counterclockwise and pull apart. Remove fuse (5). Using multimeter, set ohms scale and adjust to 0 ohms. Connect red test lead to fuse end (8) and black test lead to fuse end (9). Check for 0 ohms on multimeter. Disconnect test leads.</p> <ul style="list-style-type: none"> <li data-bbox="477 1142 1102 1169">a. If multimeter reads no continuity, replace fuse (5). <li data-bbox="477 1203 1224 1230">b. If multimeter reads 0 ohms, install fuse (5) and go to step 4. <p data-bbox="261 1264 1520 1381">Step 3. Check P.T.O. light switch (10) as follows: take out floor mat insert (11) and insulation (12). Using number one cross-tip screwdriver, unscrew and take out two screws (13) and power take off cover plate (14). Using multimeter set to 20 vdc scale, connect red test lead to terminal (15) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test leads.</p> <ul style="list-style-type: none"> <li data-bbox="477 1415 1487 1474">a. If multimeter does not read 11 to 13 vdc, wire (16) must be replaced. Notify Direct Support Maintenance. <li data-bbox="477 1507 1045 1535">b. If multimeter reads 11 to 13 vdc, go to step5.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 4. Unscrew and take out two wing screws (17) and take off cover (18). Using multimeter set to 20 vdc scale, connect red test lead to 15 terminal (19) on fire wall junction box (20) and black test lead to ground. Check for 11 to 13 vdc on multimeter. Disconnect test lead.
- a. If multimeter does not read 11 to 13 vdc, go to step 6.
 - b. If multimeter reads 11 to 13 vdc, wire (21) must be replaced, notify Direct Support Maintenance.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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53. POWER TAKE OFF INDICATOR LAMP DOES NOT WORK - CONTINUED.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape all painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

Step 5. Perform power take off engagement procedure (TM 10-3805-254-20) and make sure that power take off shaft is turning. Check power take off indicator light is on.

If power take off indicator light is not lit and power take off shaft is turning, go to step 7.

Step 6. Check wire terminal (1) on firewall junction box (2) for loose or corroded condition.

a. If loose, tighten nut (3) using 3/8-inch open-end wrench.

b. If corroded, using 3/8-inch open-end wrench, unscrew and take off nut (3), lockwasher (4) and wire terminal (1) from terminal stud (5). Clean wire terminal (1) and terminal stud (5) using wire brush. Place wire terminal (1), lockwasher (4) and nut (3) on terminal stud (5) and tighten using 3/8-inch open-end wrench.

Step 7. Check wire terminal (6) on terminal stud (7) on power take off light switch (8) for loose or corroded condition.

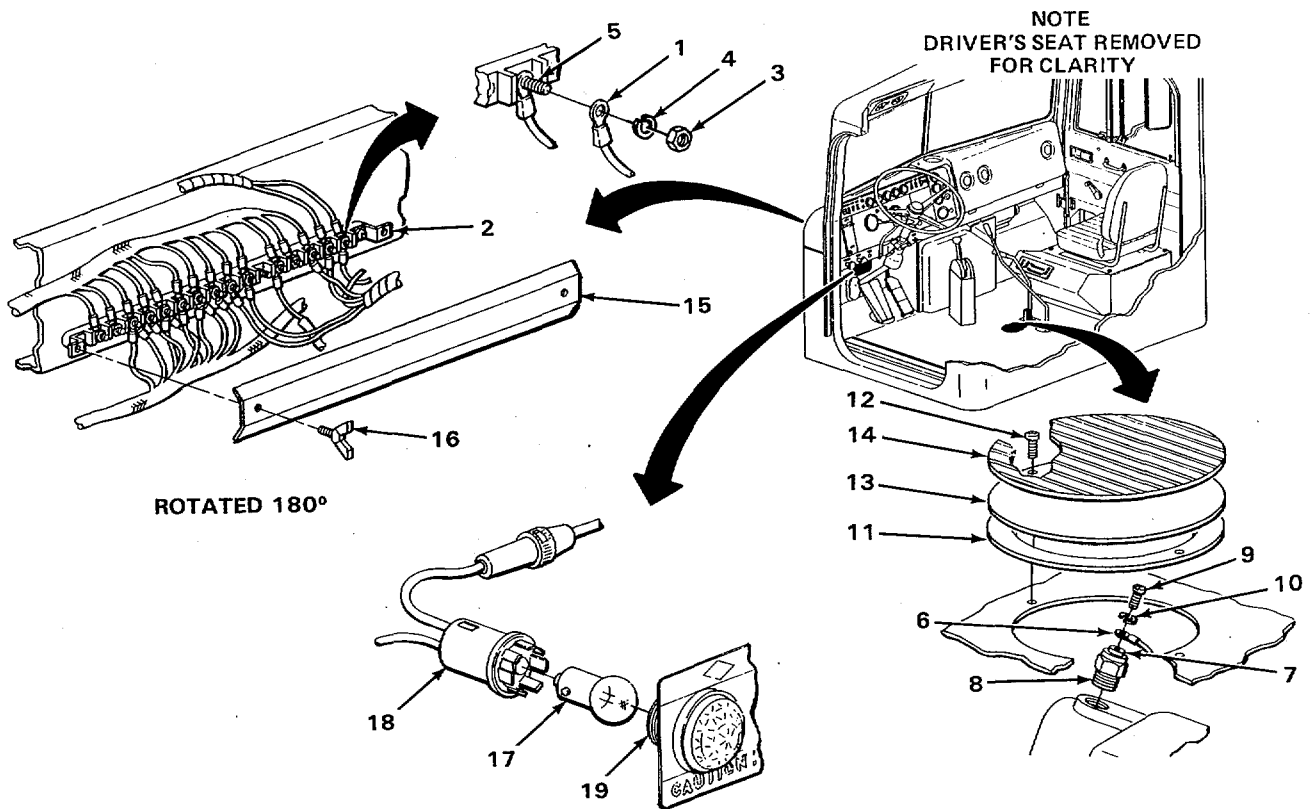
a. If loose, tighten screw (9) using number one cross-tip screwdriver.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- b. If corroded, using number one cross-tip screwdriver, unscrew and take off screw (9), lockwasher (10) and wire terminal (6) from terminal stud (7). Clean wire terminal (6) and terminal stud (7) using wire brush. Place wire terminal (6), lockwasher (10) and screw (9) on terminal stud (7) and tighten using number one cross-tip screwdriver. Put power take off cover plate (11) and two screws (12) in place and screw in and tighten using number one cross-tip screwdriver. Put insulation (13) and floor mat insert (14) in place. Put cover (15) and screw on and tighten two wing screws (16).

- c. If not loose or corroded, replace power take off light switch (8) (page 2-693). Put lamp (17) in lamp socket (18). Push in, turn clockwise and release. Push lamp socket (18) into power take off indicator (19)



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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54. RIGHT TURN SIGNAL INDICATOR LAMP DOES NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 1. Open lower center instrument panel (page 2-424). Pull lamp socket (1) out of right turn signal indicator (2). Push in lamp (3), turn counterclockwise and pull out. Using multimeter set to 20 vdc scale, connect red test lead to center contact (4) and black test lead to ground. Move turn signal switch (5) to right turn position and check for 11 to 13 vdc on multimeter. Move turn signal switch (5) to neutral position. Disconnect test leads.
- a. If multimeter reads 11 to 13 vdc, go to step 3.
 - b. If multimeter does not read 11 to 13 vdc, go to step 2.
- Step 2. Using multimeter set to 20 vdc scale, connect red test lead to 57A wire (6) in connector (7) and black test lead to ground. Move turn signal switch (5) to right turn position and check for 11 to 13 vdc on multimeter. Move turn signal switch (5) to neutral position. Disconnect test leads.
- a. If multimeter does not read 11 to 13 vdc, put lamp (3) into lamp socket (1). Push in, turn clockwise and release. Push lamp socket (1) into right turn signal indicator (2). Close lower center instrument panel (page 2-424) and go to Malfunction 33, BOTH FRONT TURN SIGNAL LIGHTS DO NOT WORK (page 2-224).

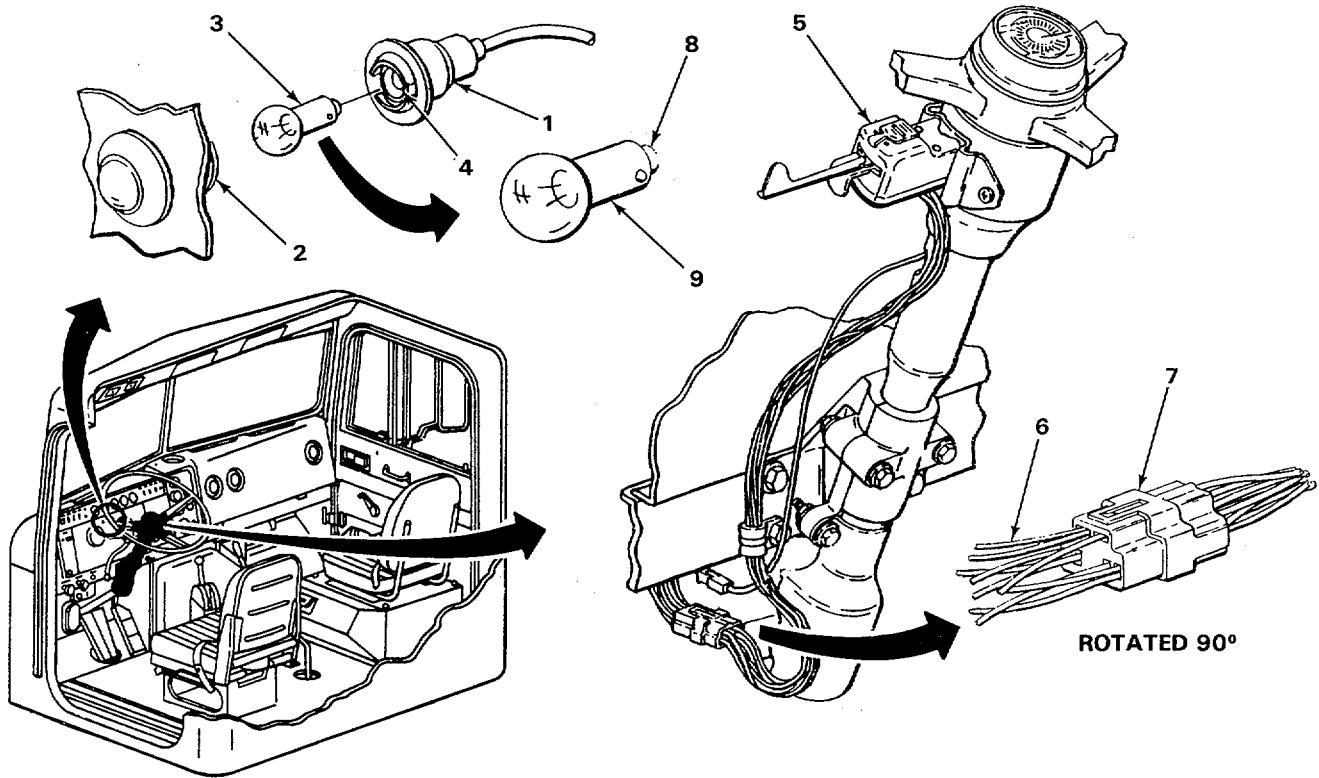
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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b. If multimeter does read 11 to 13 vdc, 57A wire (6) must be replaced. Notify Direct Support Maintenance.

Step 3. Check lamp (3) as follows: using multimeter, set to ohms scale and adjust to 0 ohms. Connect red test lead to center contact (8) and black test lead to metal base (9). Check for 0 ohms on multimeter. Disconnect test leads.

If multimeter reads no continuity, replace lamp (3). Put lamp (3) into lamp socket (1). Push in, turn clockwise and release. Push lamp socket (1) into right turn signal indicator (2). Close lower center instrument panel (page 2-424).



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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55. TRANSMISSION POSITION INDICATOR LAMP DOES NOT WORK.

WARNING

Although **KEY SWITCH** must be on and battery ground cable connected to test electrical circuit voltage, turn off **KEY SWITCH** and disconnect battery ground cable before doing resistance tests or replacing parts. This will keep you from getting shocked and prevent damage to parts and equipment.

NOTE

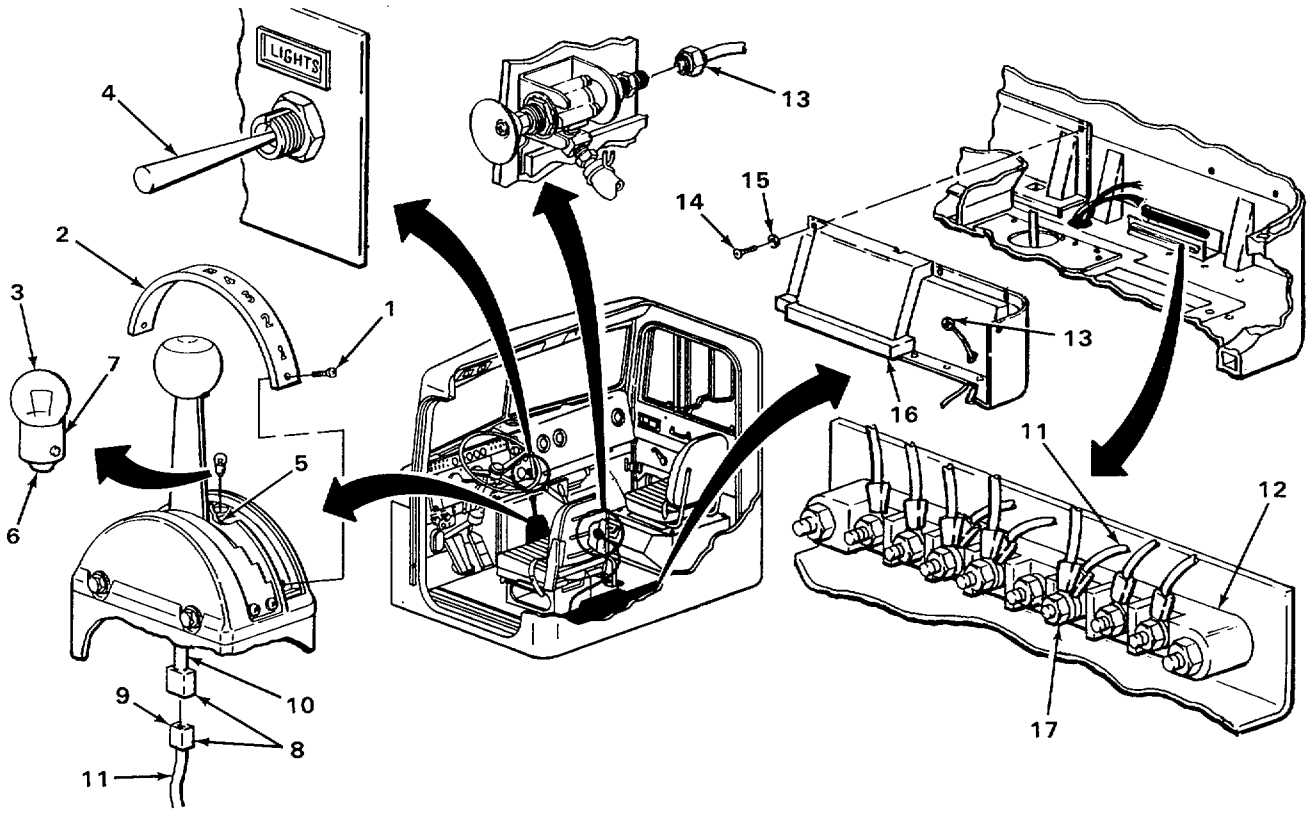
Scrape painted surfaces to bare metal before connecting test leads to ensure correct multimeter readings.

- Step 1. Using number-one cross-tip screwdriver, unscrew and take out two screws (1). Take off position strip lens (2). Push in lamp (3), turn counterclockwise and pull out. Using multimeter set to 20 vdc scale. Put **LIGHTS** switch (4) in up position. Connect red test lead to contact in light socket (5) connect black test lead to ground. Check for 11 to 13 vdc on multimeter. Put **LIGHTS** switch (4) in center position and disconnect test leads.
- a. If multimeter reads 11 to 13 vdc, go to step 2.
 - b. If multimeter does not read 11 to 13 vdc, go to step 3.
- Step 2. Test lamp (3) as follows: Set multimeter, ohms scale and adjust to 0 ohms. Connect red test lead to contact (6) on bottom of lamp (3) and black test lead to metal base (7) of lamp (3). Check for 0 ohms on multimeter. Disconnect test leads.
- a. If multimeter reads no continuity, replace lamp (3) (page 2-894).
 - b. If multimeter reads 0 ohms, go to step 3.
- Step 3. Pull apart wire connector (8). Set multimeter to 20 vdc scale. Connect red test lead to wire terminal (9) and black test lead to ground. Put **LIGHTS** switch (4) in up position. Check for 11 to 13 vdc on multimeter. Put **LIGHTS** switch (4) in center position. Disconnect test leads.
- a. If multimeter reads 11 to 13 vdc, 62J wire (10) from wire connector (8) to light socket (5) must be replaced. Notify Direct Support Maintenance.
 - b. If multimeter does not read 11 to 13 vdc, go to step 4.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 4. Check 62J wire (11) on junction box (12) as follows: Using 9/16-inch open-end wrench, unscrew and take off air line fitting (13). Using number two cross-tip screwdriver, unscrew and take out six screws (14) and six flat washers (15). Take off lower rear molding (16). Check 62J wire (11) for loose or frayed condition.
- If 62J wire (11) is loose, tighten nut (17) using 3/8-inch open-end wrench. Put lower rear molding (16) in place. Screw in and tighten six screws (14) and six flat washers (15) using number two cross-tip screwdriver. Screw on and tighten air line fitting (13) using 9/16inch open-end wrench.
 - If 62J wire (11) is frayed, it must be replaced. Notify Direct Support Maintenance.



TA243892

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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MAIN TRANSMISSION

56. TRANSMISSION DOES NOT OPERATE IN ANY GEAR.

Step 1. Check that auxiliary transmission is in gear range D., U.D., or O.D.

- a. If auxiliary transmission is not in a gear range D., U.D., or O.D., put in gear range D., U.D., or O.D. (TM 5-3805-254-20).
- b. If auxiliary transmission is in a gear range D., U.D., or O.D., go to step 2.

Step 2. Check that PARKING BRAKE is disengaged.

- a. If PARKING BRAKE is not disengaged, disengage by pushing in on PARKING BRAKE control knob (1).
- b. If PARKING BRAKE is disengaged, go to step 3.

Step 3. Check oil level in main transmission on dipstick (2) (TM 5-3805-254-10).

- a. If main transmission oil level is low, fill (page 2-XI-6).
- b. If main transmission oil level is not low, go to step 4.

Step 4. Take dipstick (2) out of dipstick tube (3) and check for dirt, sludge or water. Put dipstick (2) back into dipstick tube (3).

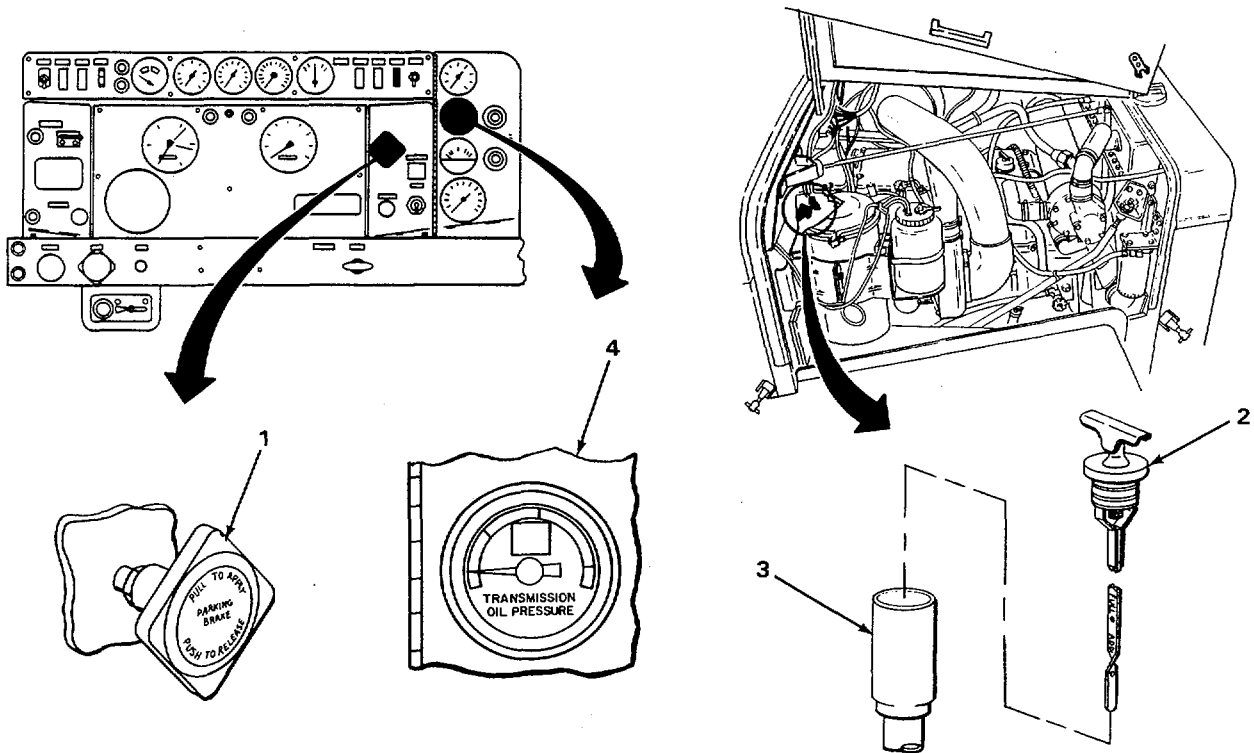
- a. If there are contaminants on dipstick (2), drain and refill (page 2-906).
- b. If there are no contaminants on dipstick (2), go to step 5.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 5. Check that TRANSMISSION OIL PRESSURE gage (4) reads 90 psi.

- a. If TRANSMISSION OIL PRESSURE gage (4) does not read 90 psi, notify Direct Support Maintenance.
- b. If TRANSMISSION OIL PRESSURE gage (4) does read 90 psi, go to step 6.



TA243893

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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56. TRANSMISSION DOES NOT OPERATE IN ANY GEAR - CONTINUED.

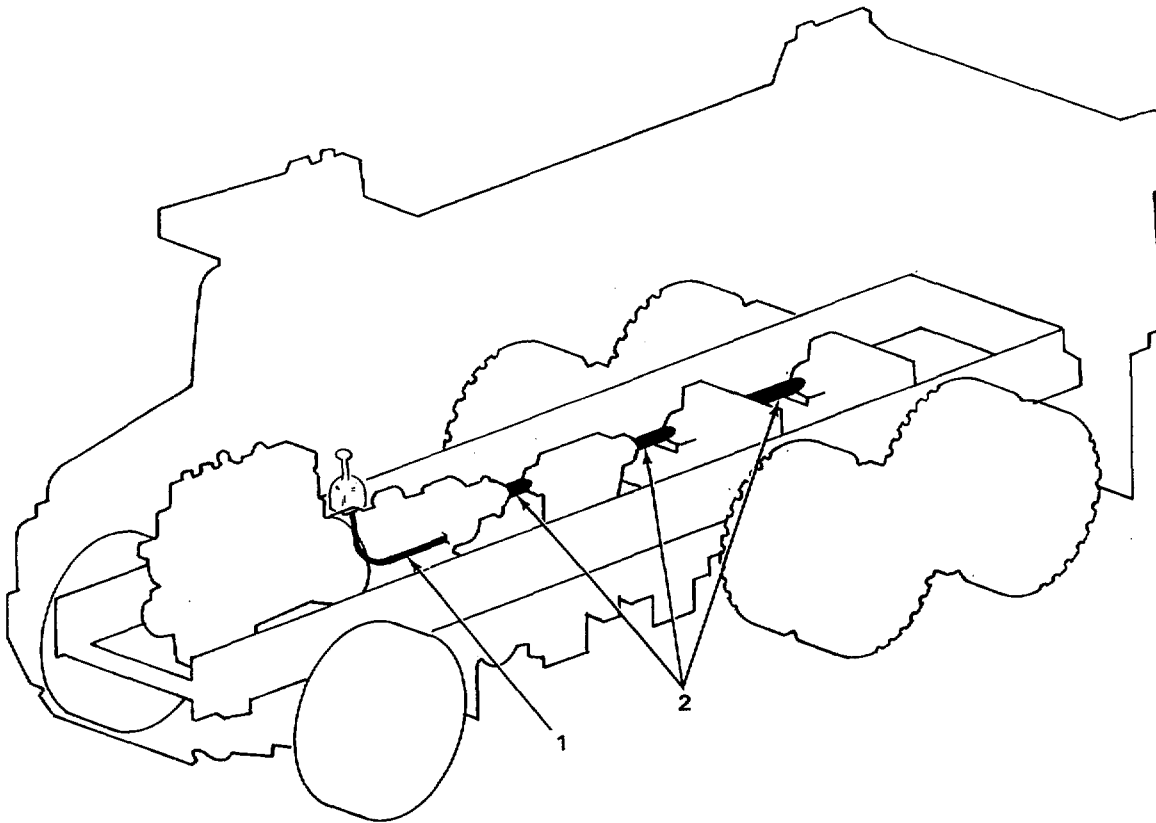
Step 6. Check that shift cable (1) is connected.

a. If shift cable (1) is not connected, connect (page 2-919).

b. If shift cable (1) is connected, go to step 7.

Step 7. Check that drive shafts (2) are connected.

If drive shafts (2) are not connected, notify Direct Support Maintenance.



TA243894

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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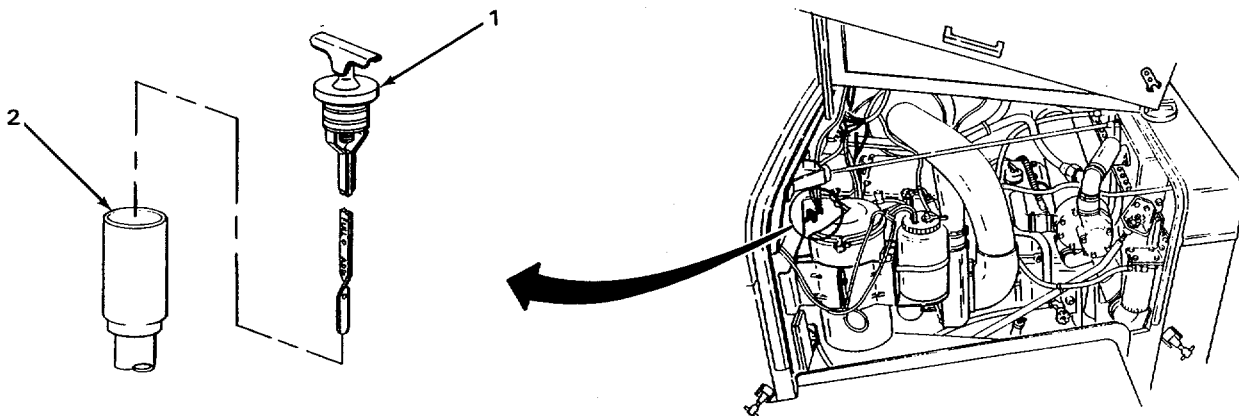
57. TRANSMISSION DOES NOT SHIFT PROPERLY.

Step 1. Check oil level in main transmission on dipstick (1).

- a. If main transmission oil level is low, fill (page 2-906).
- b. If main transmission oil level is not low, go to step 2.

Step 2. Take dipstick (1) out of dipstick tube (2) and check for dirt, sludge, or water. Put dipstick (1) back into dipstick tube (2).

- a. If there are contaminants on dipstick (1), drain and refill, (page 2-906).
- b. If there are no contaminants on dipstick (1), go to step 3.



TA243895

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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57. TRANSMISSION DOES NOT SHIFT PROPERLY - CONTINUED.

WARNING

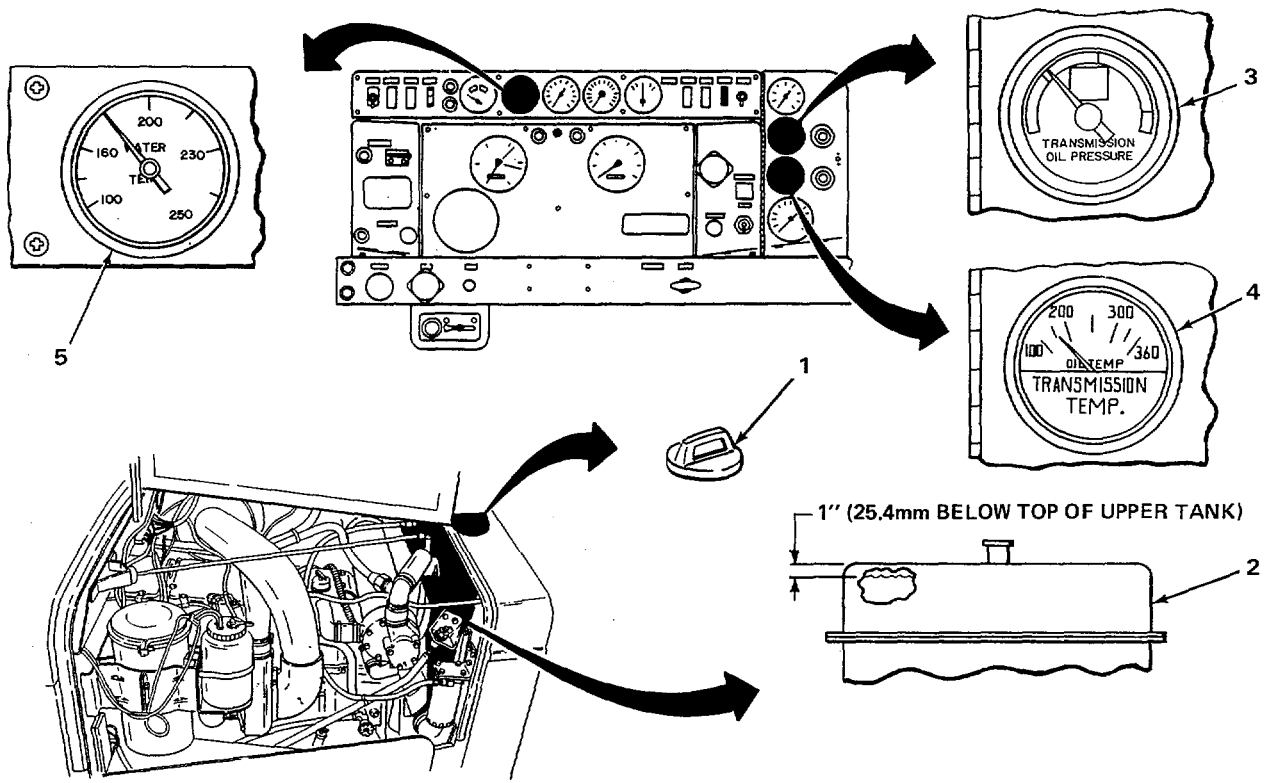
Be careful when removing radiator cap. If engine is hot, escaping steam could burn you. Use a rag to cover radiator cap. Unscrew cap just enough to allow any built-up pressure to escape. When all pressure has been relieved, unscrew cap and take off.

- Step 3. Unscrew and take radiator cap (1) of radiator (2). Check that coolant level is within 1-inch (25.4 mm) below top of radiator (2). Check for rust, dirt, or lubricating oil in coolant.
- a. If coolant level is low, refill (page 2-628).
 - b. If coolant is contaminated with rust or dirt, flush and refill (page 2-628).
 - c. If coolant is contaminated with lubricating oil, notify Direct Support Maintenance.
 - d. If coolant is clean and at proper level, go to step 4.
- Step 4. Check that TRANSMISSION OIL PRESSURE gage (3) reads 90 psi.
- a. If TRANSMISSION OIL PRESSURE gage (3) does not read 90 psi, notify Direct Support Maintenance.
 - b. If TRANSMISSION OIL PRESSURE gage (3) does read 90 psi, go to step 5.
- Step 5. Check that TRANSMISSION TEMP gage (4) does not read above 300° F.
- a. If TRANSMISSION TEMP gage (4) does read above 300°F, notify Direct Support Maintenance.
 - b. If TRANSMISSION TEMP gage (4) does not read above 300°F, go to step 6.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 6. Check that engine coolant does not exceed 225°F (107°C).
- If WATER TEMP gage (5) does exceed a reading of 225°F, go to Malfunction 4, ENGINE COOLANT TEMPERATURE EXCEEDS 225°F (107°C) (page 2-104).
 - If WATER TEMP gage (5) does not exceed a reading of 225°F, go to step 7.



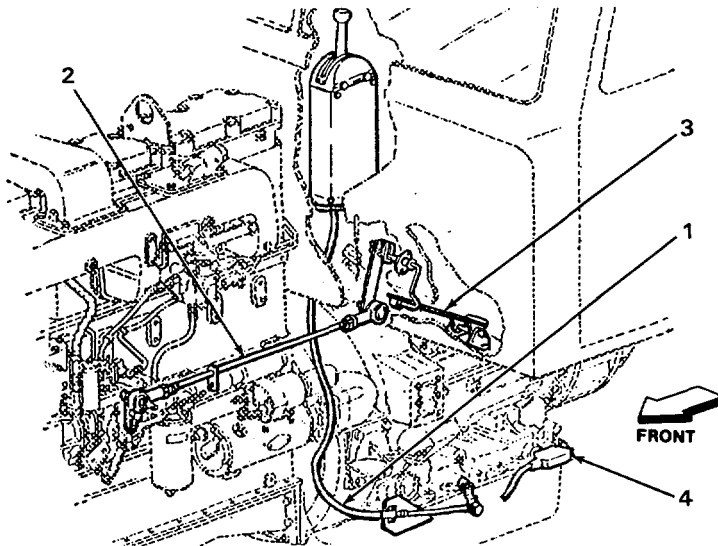
TA243896

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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57. TRANSMISSION DOES NOT SHIFT PROPERLY CONTINUED.

- Step 7. Check transmission shift cable (1) adjustment (page 2-924).
- a. If transmission shift cable (1) is out of adjustment, adjust (page 2-924).
 - b. If transmission shift cable (1) is not out of adjustment, go to step 8.
- Step 8. Check accelerator linkage (2) for full travel as follows: Have assistant press accelerator pedal (3) slowly to the floor then release.
- a. If accelerator linkage (2) does not move full travel (page 2-446), notify Direct Support Maintenance.
 - b. If accelerator linkage (2) does move full travel, go to step 9.
- Step 9. Check that transmission modulator (4) is connected. If transmission modulator is not connected, notify Direct Support Maintenance.



TA243897

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

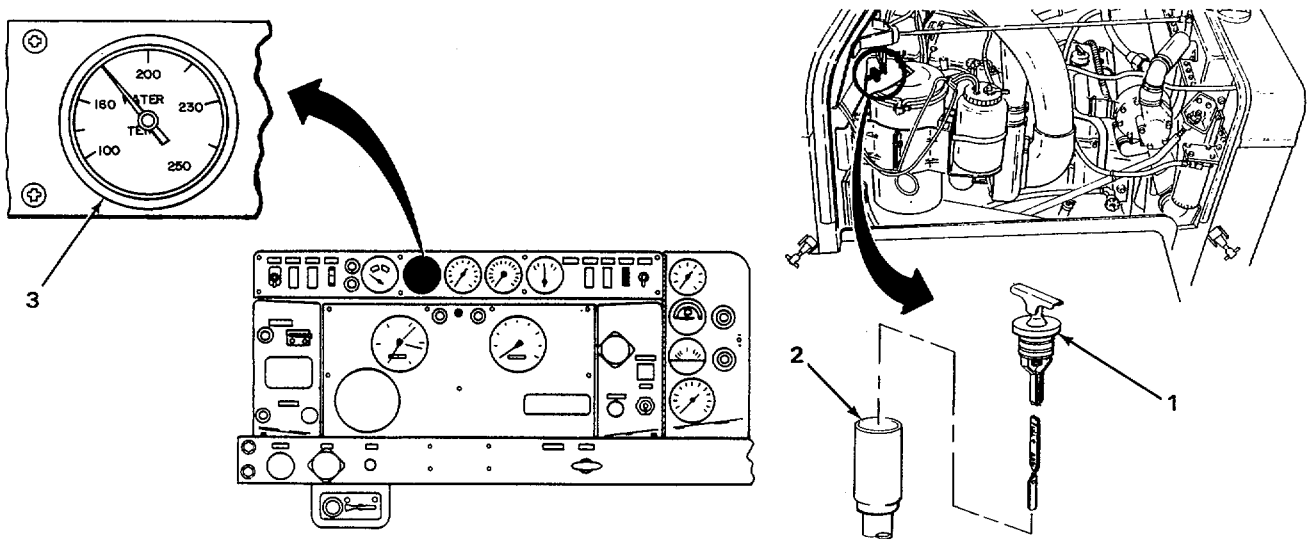
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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58. TRANSMISSION OIL TEMPERATURE EXCEEDS 300°F (149°C).

- Step 1. Check oil level in main transmission on dipstick (1).
 - a. If main transmission oil level is low, fill (page 2-906).
 - b. If main transmission oil level is not low, go to step 2.

- Step 2. Take dipstick (1) out of dipstick tube (2) and check main transmission oil for dirt, sludge, or water. Put dipstick (1) back into dipstick tube (2).
 - a. If there are contaminants on dipstick (1), drain and refill (page 2-906).
 - b. If there are no contaminants on dipstick (1), go to step 3.

- Step 3. Check that engine coolant does not exceed 225°F (107°C).
 - a. If WATER TEMP gage (3) does exceed 225°F, go to Malfunction 4, ENGINE COOLANT TEMPERATURE EXCEEDS 225°F (107°C) (page 2-104).
 - b. If WATER TEMP gage (3) does not exceed 225°F, go to step 4.



TA243898

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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58. TRANSMISSION OIL TEMPERATURE EXCEEDS 3000F (1490C)CONTINUED.

WARNING

Be careful when removing radiator cap. If engine is hot, escaping steam could burn you. Use a rag to cover radiator cap. Unscrew cap just enough to allow any built-up pressure to escape. When all pressure has been relieved, unscrew cap and take off.

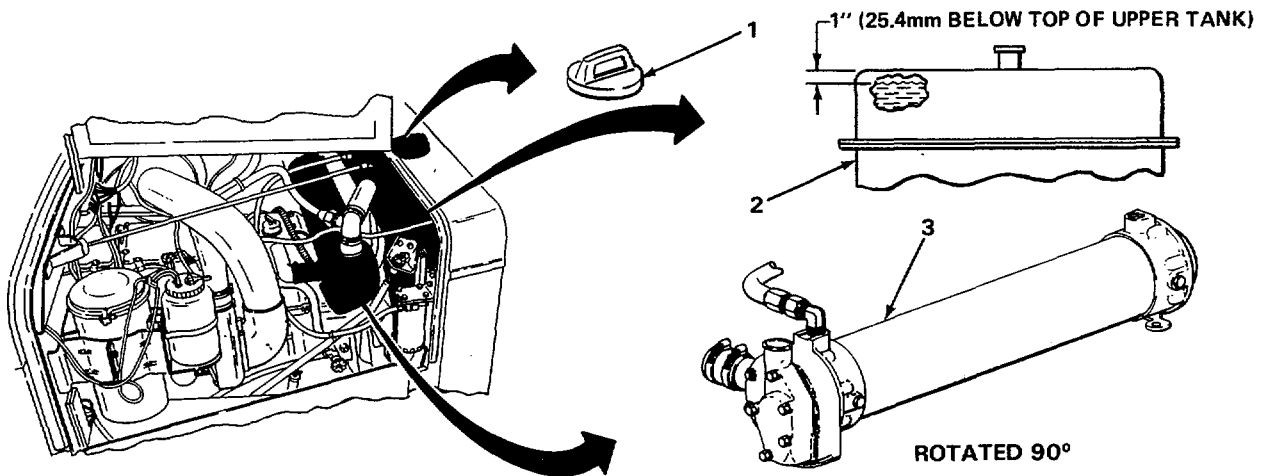
Step 4. Unscrew and take off radiator cap (1). Check that coolant level is within 1 inch (25.4 mm) below top of radiator. Check for rust, dirt, or lubricating oil in coolant.

- a. If coolant level is low, refill (page 2-628).
- b. If coolant level is contaminated with rust or dirt, flush and refill (page 2-628).
- c. If coolant is contaminated with lubricating oil, notify Direct Support Maintenance.
- d. If coolant is clean and at proper level, put radiator cap (1) onto radiator (2), go to step

5.

Step 5. Check torque converter cooler (3), for leaks.

If torque converter cooler (3) is leaking, notify Direct Support Maintenance.



TA243899

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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59. TRANSMISSION SLIPS.

WARNING

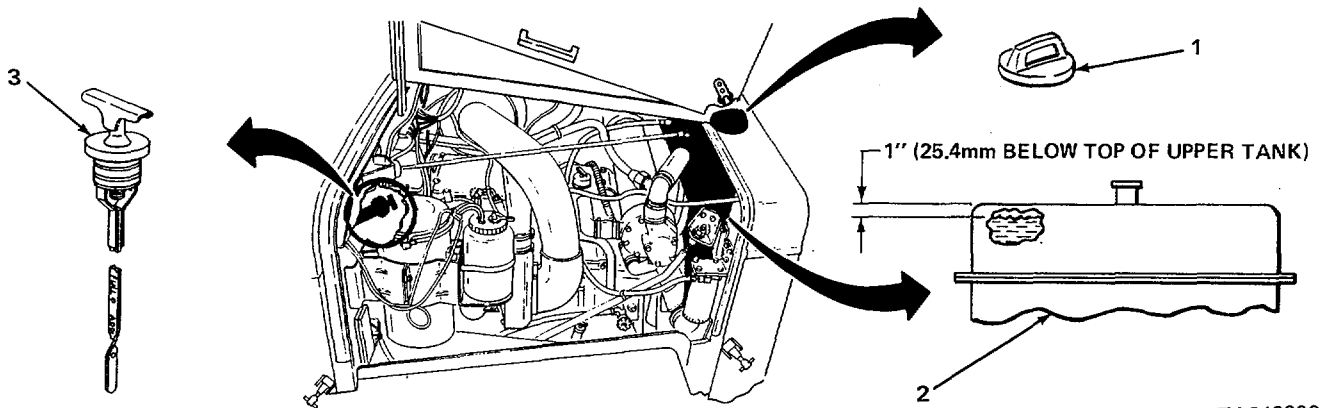
Be careful when removing radiator cap. If engine is hot, escaping steam could burn you. Use a rag to cover radiator cap. Unscrew cap just enough to allow any built-up pressure to escape. When all pressure has been relieved, unscrew cap and take off.

- Step 1. Unscrew and take radiator cap off (1). Check that coolant level is within 1 inch (25.4 mm) below top of radiator (2). Check for dirt, rust, or lubricating oil in coolant.
- a. If coolant level is low, refill (page 2-628).
 - b. If coolant level is contaminated with rust or dirt, flush and refill (page 2-628).
 - c. If coolant is contaminated with lubricating oil, notify Direct Support Maintenance.
 - d. If coolant is clean and at proper level, put radiator cap (1) onto radiator (2).

NOTE

Start engine (TM 5-3805-254-10).

- Step 2. Check oil level in main transmission, on dipstick (3).
- a. If main transmission oil level is low, fill (page 2-906).
 - b. If main transmission oil level is not low, go to step 3.



TA243900

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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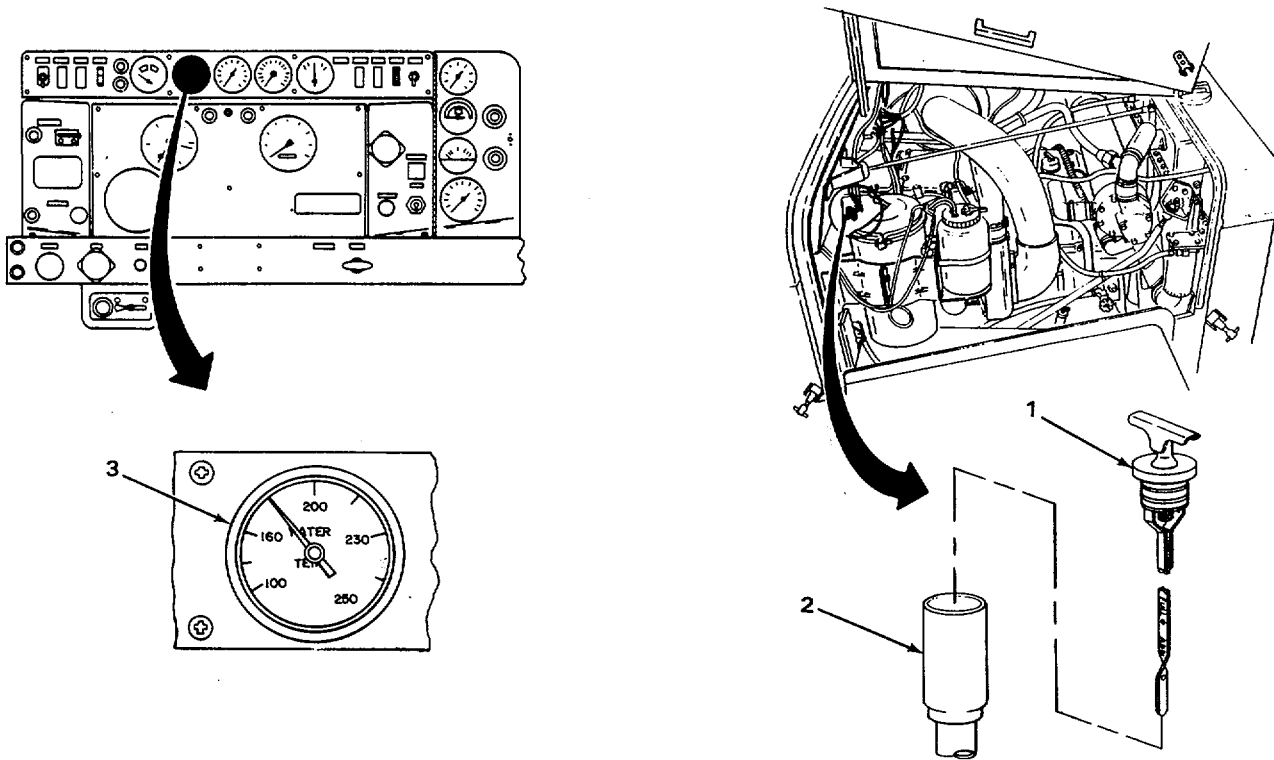
59. TRANSMISSION SLIPS CONTINUED.

Step 3. Take dipstick (1) out of dipstick tube (2) and check for dirt, sludge, or water. Put dipstick (1) back into dipstick tube (2).

- a. If there are contaminants on dipstick (1), drain and refill.
- b. If there are no contaminants on dipstick (1), go to step 4.

Step 4. Check that engine coolant does not exceed 225°F (107°C).

- a. If WATER TEMP gage (3) does exceed a reading of 225°F, go to Malfunction 4, ENGINE COOLANT TEMPERATURE EXCEEDS 225°F (107°C) (page 2-104).
- b. If WATER TEMP gage (3) does not exceed a reading of 225°F, go to step 5.



TA243901

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

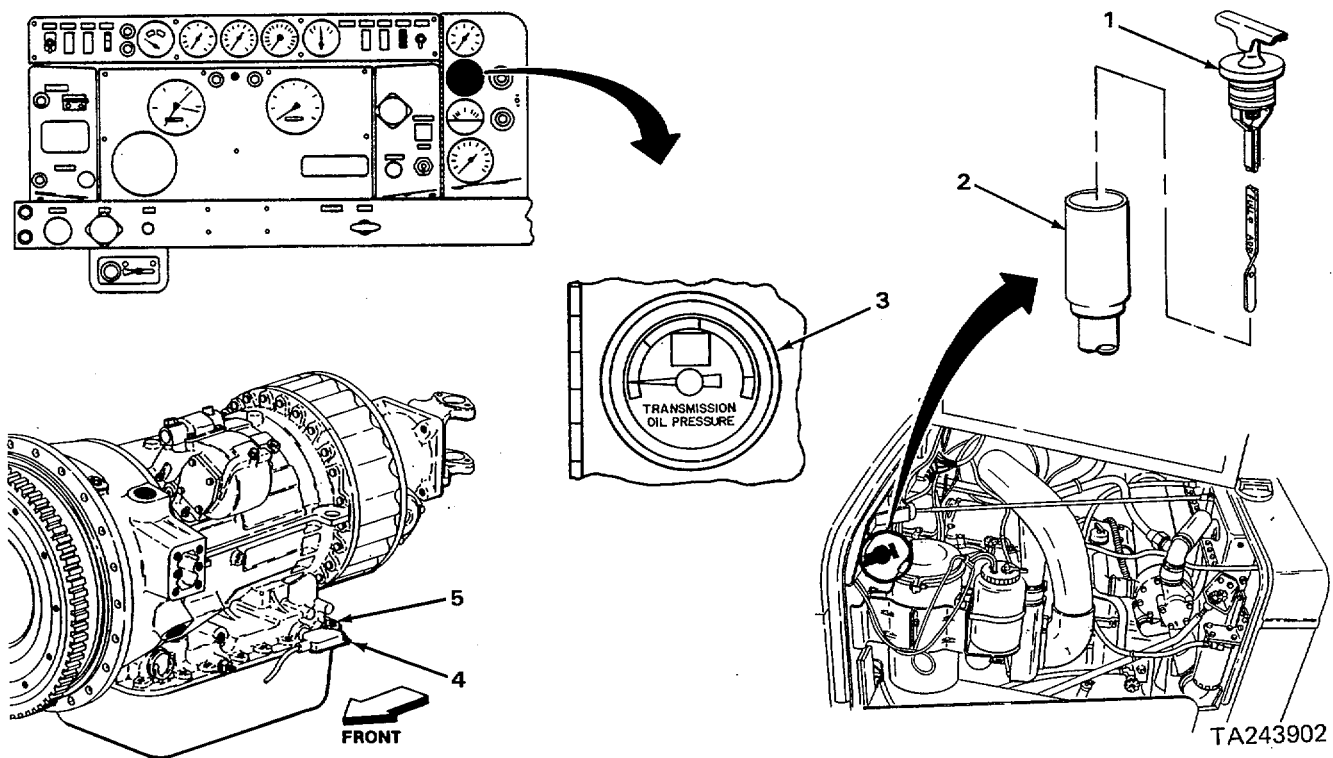
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 5. Take dipstick (1) out of dipstick tube (2) and check for foamy oil. Put dipstick (1) back into dipstick tube (2).
- a. If there is foamy oil on dipstick (1), notify Direct Support Maintenance.
 - b. If there is no foamy oil on dipstick (1), go to step 6.

- Step 6. Check that TRANSMISSION OIL PRESSURE gage (3) reads 90 psi.
- a. If TRANSMISSION OIL PRESSURE gage (3) does not read 90 psi, notify Direct Support Maintenance.
 - b. If TRANSMISSION OIL PRESSURE gage (3) does read 90 psi, go to step 7.

NOTE
Shut down engine (TM 5-3805-254-10).

- Step 7. Check that transmission modulator (4) is connected to transmission (5).
- If transmission modulator (4) is not connected, notify Direct Support Maintenance.



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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AIR SYSTEM AND BRAKES

60. AIR HORN DOES NOT WORK.

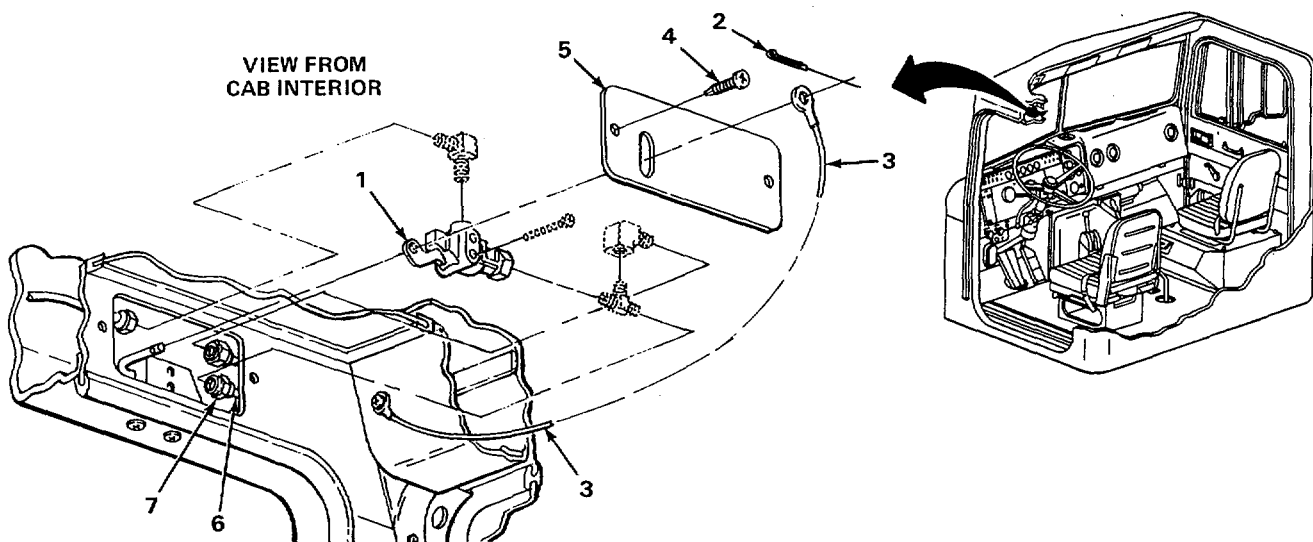
WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

- Step 1. Check for air pressure at valve (1) as follows: Using 6-inch slip-joint pliers, take out cotter pin (2), and pull chain (3). Using number one cross-tip screwdriver, unscrew and take out two screws (4), and take off cover (5). Using 5/8-inch open-end wrench, loosen input hose fitting (6) six turns. Listen for air pressure hissing at input hose fitting (7).
- If air pressure is not present at input hose fitting (7), go to step 2.
 - If air pressure is present at input hose fitting (7), tighten hose fitting (7) using 5/8-inch open-end wrench, and go to step 3.

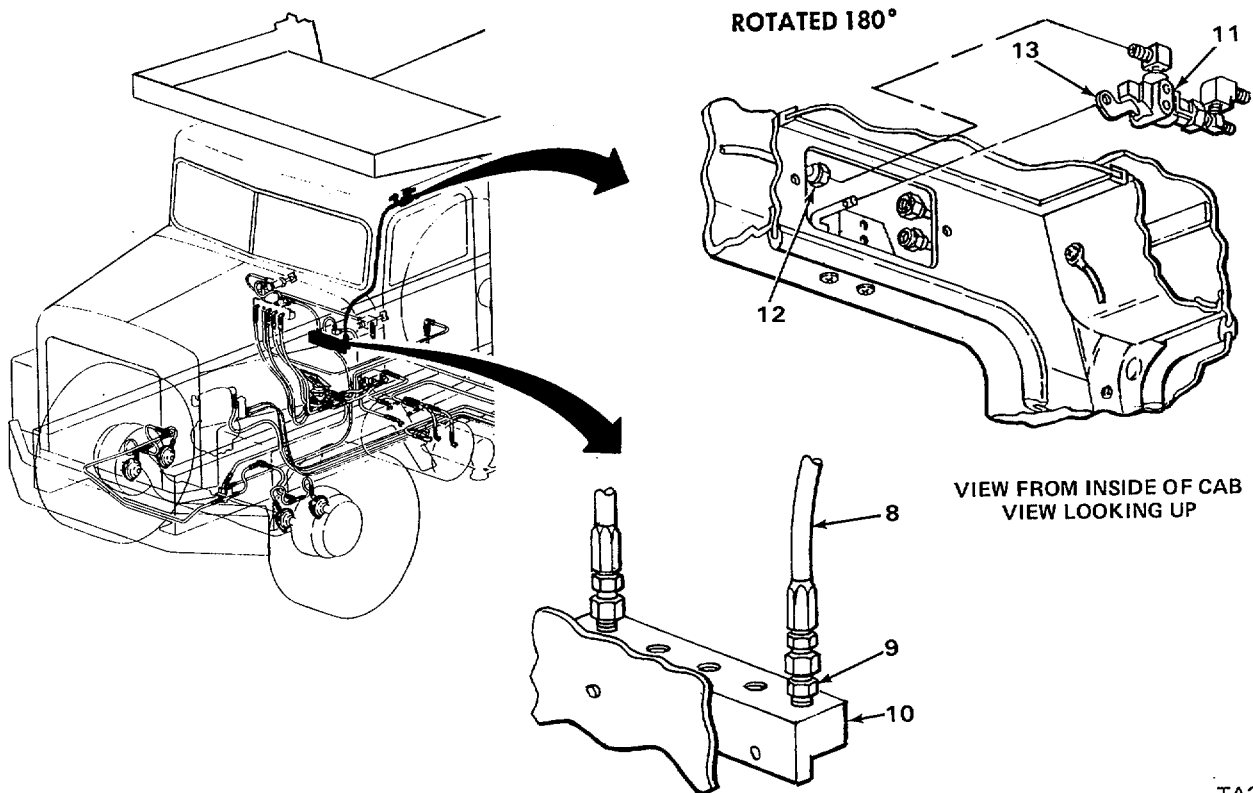


TA243903

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 2. Check for air pressure at input hose (8) as follows: Using 5/8-inch open-end wrench, loosen input hose fitting (9) six turns at air manifold (10).
- a. If air pressure is not present at input hose (8), tighten input hose fitting (9) using 5/8-inch open-end wrench, and go to malfunction 71 AIR SYSTEM WILL NOT HOLD AIR PRESSURE (page 2-373).
 - b. If air pressure is present at input hose (8), tighten input hose fitting (9) at air manifold (10) using 5/8-inch open-end wrench. Go to step 3.
- Step 3. Check valve (11) as follows: Using 9/16-inch open-end wrench, loosen output hose fitting (12) six turns at valve (11). Pull down lever (13) and check for air pressure coming out of valve (11).
- a. If air pressure is not present, replace valve (11) (page 2-1355).
 - b. If air pressure is present, tighten output hose fitting (12), using 9/16-inch open-end wrench. Go to step 4.

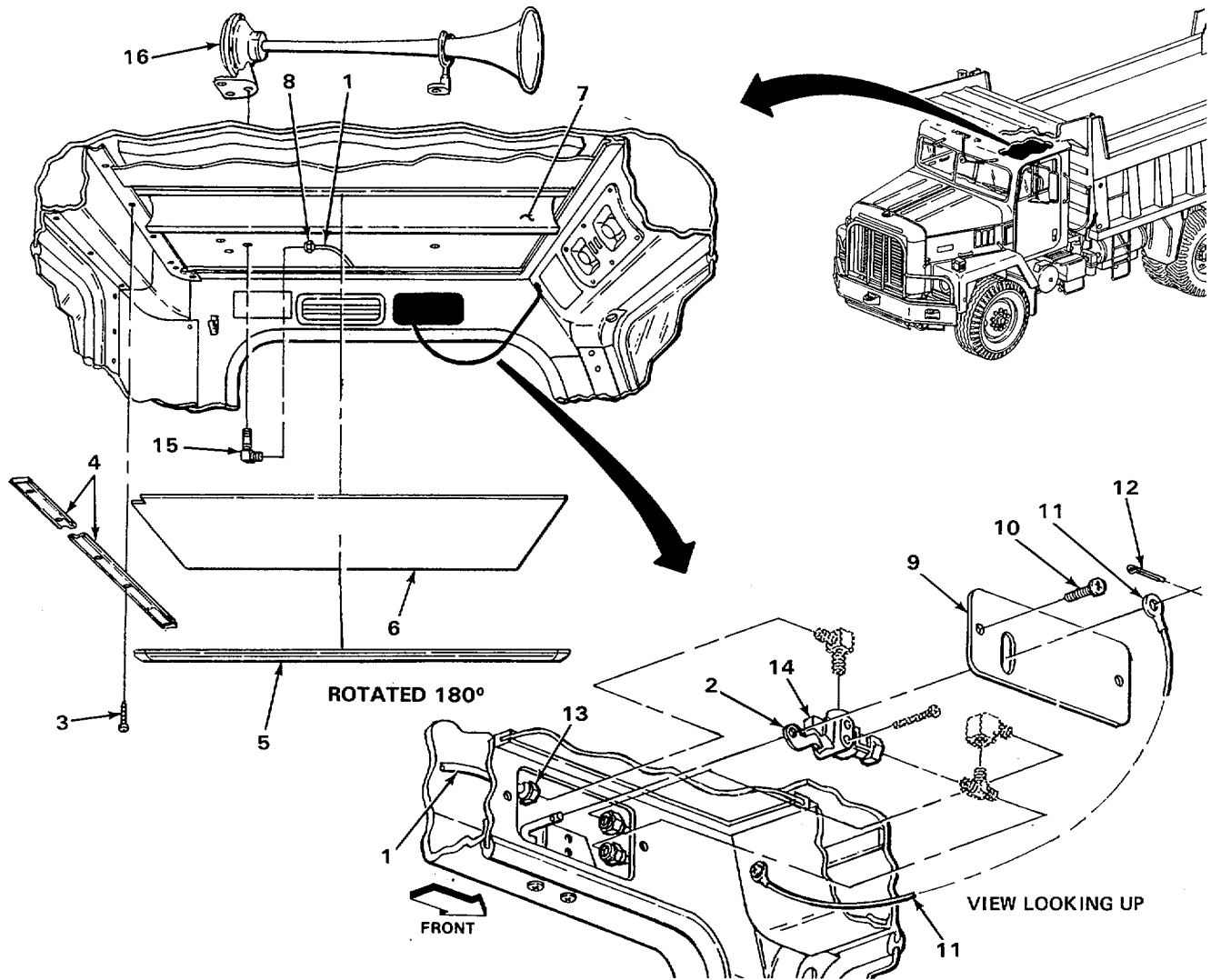


TA243904

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
60.	AIR HORN DOES NOT WORK CONTINUED.	<p>Step 4. Check output hose (1) for leaks as follows: Pull down lever (2) and listen for hissing noise from output hose (1). If hissing noise is heard, using number two cross-tip screwdriver, unscrew and take out 14 screws (3), and take off molding (4). Take down headlining retainer (5) and headlining (6). Peel insulation (7) down gently.</p> <p>a. If output hose fitting (8) is loose, using 9/16-inch open-end wrench, tighten. Put insulation (7) in place, put up headlining (6), and headlining retainer (5). Screw in and tighten 14 screws (3), using number two cross-tip screwdriver. Put cover (9) in place, screw in and tighten two screws (10), using number one cross-tip screwdriver. Put pull chain (11) in place, using 6-inch slip-joint pliers, put in cotter pin (12).</p> <p>b. If output hose (1) is leaking, replace. Using 9/16-inch open-end wrench, unscrew and take off output hose fitting (13) at valve (14). Using 9/16-inch open-end wrench, unscrew and take off output hose fitting (8), at fitting (15). Screw on and tighten, output hose fitting (13) at valve (14) using 9/16-inch open-end wrench. Screw on and tighten, output hose fitting (8) at fitting (15) using 9/16-inch open-end wrench. Put insulation (7) in place, put up headlining (6) and headlining retainer (5). Screw in and tighten 14 screws (3) using number two cross-tip screwdriver. Put cover (9) in place, screw in and tighten two screws (10) using number one cross-tip screwdriver. Put pull chain (11) in place, using 6-inch slip-joint pliers, put in cotter pin (12).</p> <p>c. If hissing noise is not heard, replace air horn (16) (page 2-1329). Put cover (9) in place, screw in and tighten two screws (10), using number one cross-tip screwdriver. Put pull chain (11) in place, using 6-inch slip-joint pliers, put in cotter pin (12).</p>

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED



TA243905

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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61. ALL BRAKES DO NOT OPERATE.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

Chock wheels of dump truck (TM 5-3805-254-10).

NOTE

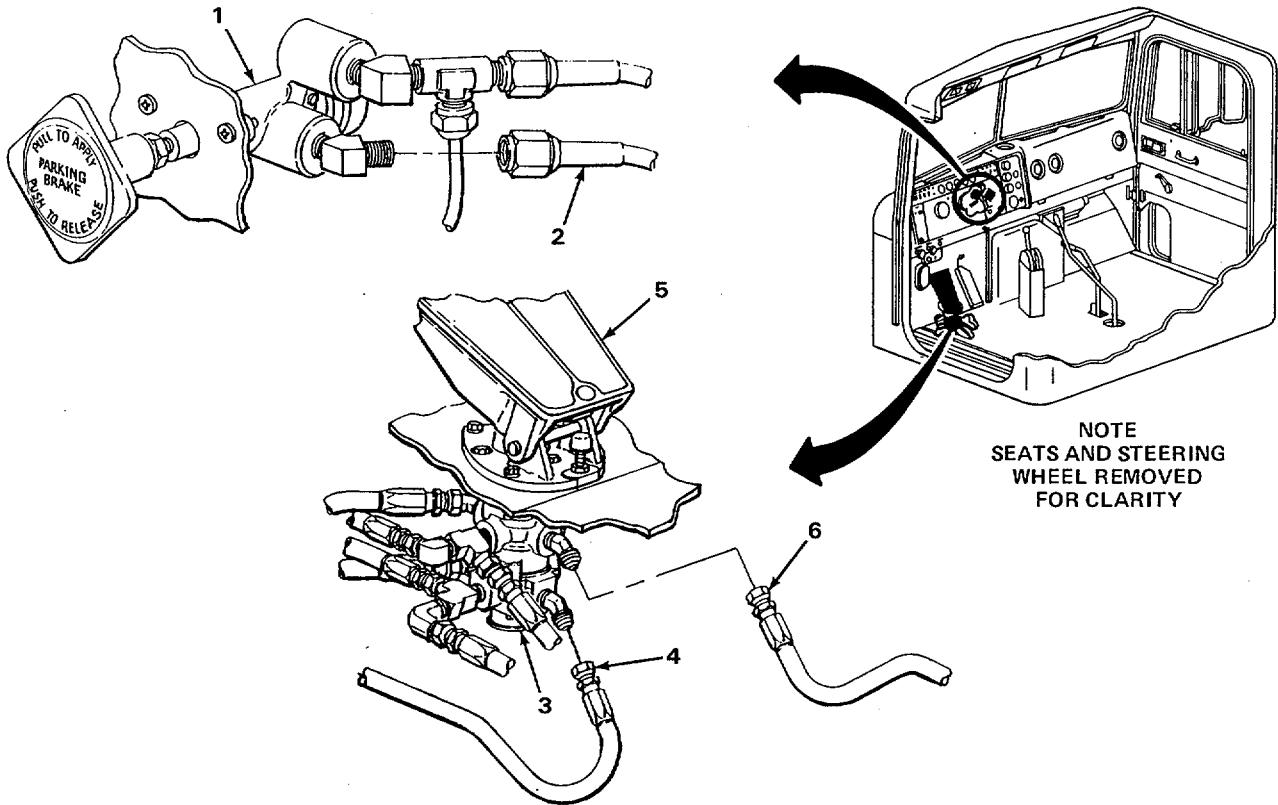
Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

- Step 1. Check parking brake hand valve (1) for air pressure as follows: pull handle out to apply parking brakes, using 5/8-inch open-end wrench, loosen output hose fitting (2) six turns, push in handle and listen for hissing noise.
- a. If hissing noise is not heard, replace parking brake hand valve (1), notify Direct Support Maintenance.
 - b. If hissing noise is heard, pull out handle to apply brakes. Tighten output hose fitting (2) using 5/8-inch open-end wrench, and go to step 2.
- Step 2. Check treadle valve (3) front brake output air line (4) for air pressure as follows: using 7/8-inch open-end wrench, unscrew and take off front brake output air line (4). Have assistant press down brake pedal (5), and listen for air pressure hissing, release brake pedal (5).
- a. If air pressure is not present, replace treadle valve (3) (page 2-1052).
 - b. If air pressure is present, go to step 3.
- Step 3. Check treadle valve (3) rear brake output air line (6) for air pressure as follows: using 7/8-inch open-end wrench, unscrew and take off rear brake output air line (6). Have assistant press down brake pedal (5), and check for air pressure, release brake pedal (5).
- a. If air pressure is not heard, replace treadle valve (3) (page 2-1052).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- b. If air pressure is present, screw on and tighten rear brake output air line (6), using 7/8-inch open-end wrench. Screw on and tighten front brake output air line (4) using 7/8-inch open-end wrench.



TA243906

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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62. FRONT BRAKES DO NOT RELEASE.

WARNING

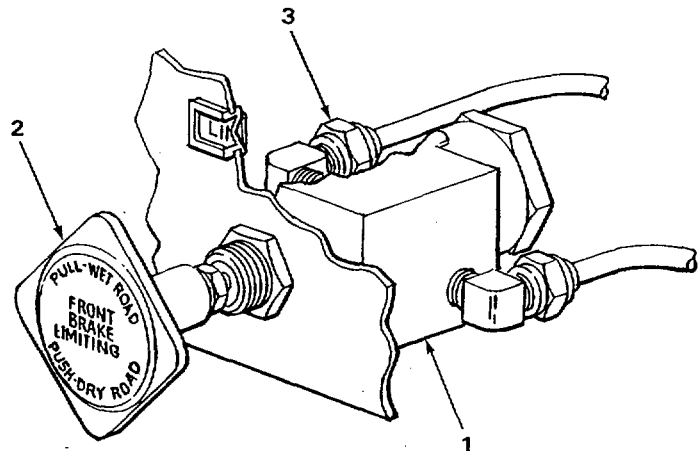
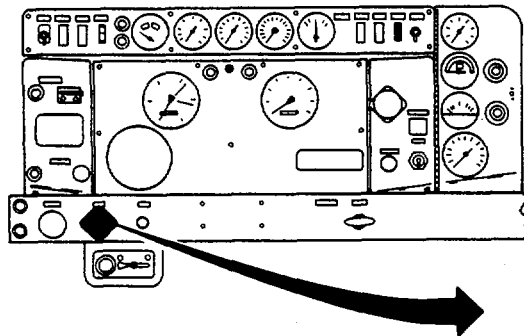
Safety goggles must be worn when working with air lines to prevent personal injury.

Chock wheels of dump truck (TM 5-3805-254-10).

NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

- Step 1. Check front brake limiting control valve (1) for air pressure as follows: push handle (2) in, using 5/8-inch open-end wrench, loosen output hose fitting (3) six turns, and listen for hissing noise.
- a. If hissing noise is not heard, replace front brake limiting control valve (1), notify Direct Support Maintenance.
 - b. If hissing noise is heard, tighten output hose fitting (3), using 5/8-inch open-end wrench, and go to step 2.



TA243907

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

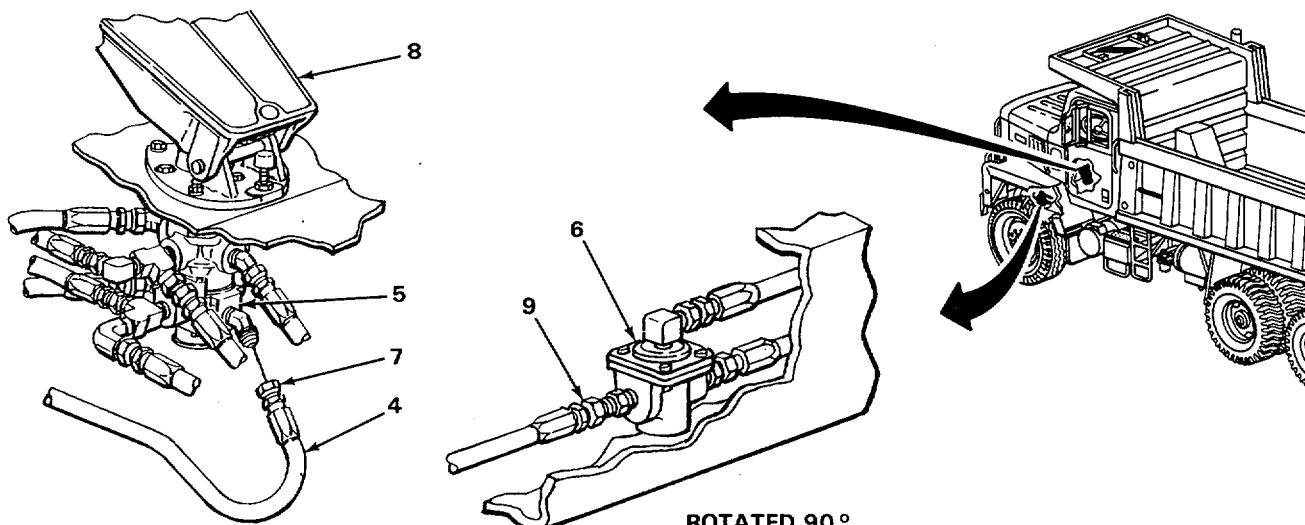
CORRECTIVE ACTION

Step 2. Check output air hose (4) from treadle valve (5) to front brake limiting and quick release valve (6) as follows: using 7/8-inch open-end wrench, loosen output air hose fitting (7) six turns, have assistant press down brake pedal (8), listen for hissing noise, release brake pedal (8).

- a. If hissing noise is not heard, replace treadle valve (5) (page 2-1052).
- b. If hissing noise is heard, tighten out hose fitting (7) using 7/8-inch open-end wrench and go to step 3.

Step 3. Check front brake limiting and quick release valve (6) for air pressure as follows: using 7/8-inch open-end wrench loosen output air hose fitting (9) six turns, have assistant press down brake pedal (8), listen for hissing noise, release brake pedal (8).

- a. If hissing noise is not heard, replace front brake limiting and quick release valve (6), notify Direct Support Maintenance.
- b. If hissing noise is heard, tighten output hose fitting (9), using 7/8-inch open-end wrench, and go to step 4.



2-333

TA243908

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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62. FRONT BRAKES DO NOT RELEASE - CONTINUED.

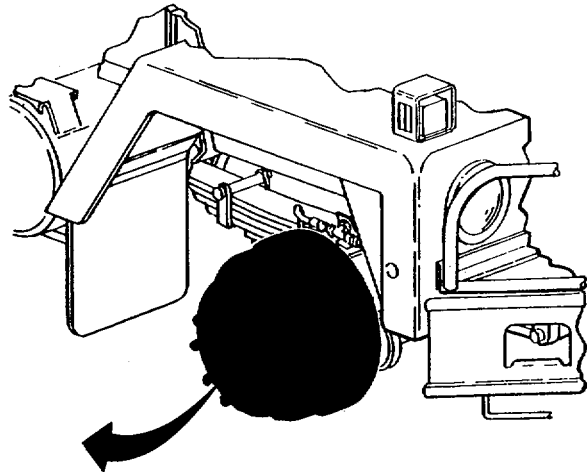
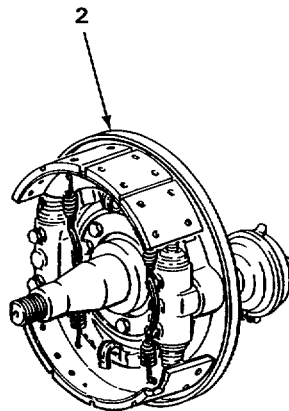
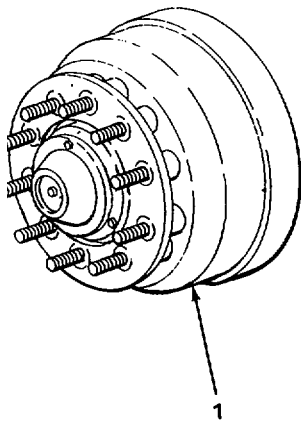
Step 4. Check two front brake drums (1) for foreign matter as follows: take off two front brake drums (1) (page 2-959).

a. If foreign matter is found, clean out and put on two front brake drums (1) (page 2-959).

b. If foreign matter is not found, go to step 5.

Step 5. Check brakeshoes (2) and mounting hardware for damage (page 2-947).

If brakeshoes (2) or mounting hardware are damaged, replace defective parts (page 2-947).



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

63. REAR BRAKES DO NOT RELEASE.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

Chock wheels of dump truck (TM 5-3805-254-10).

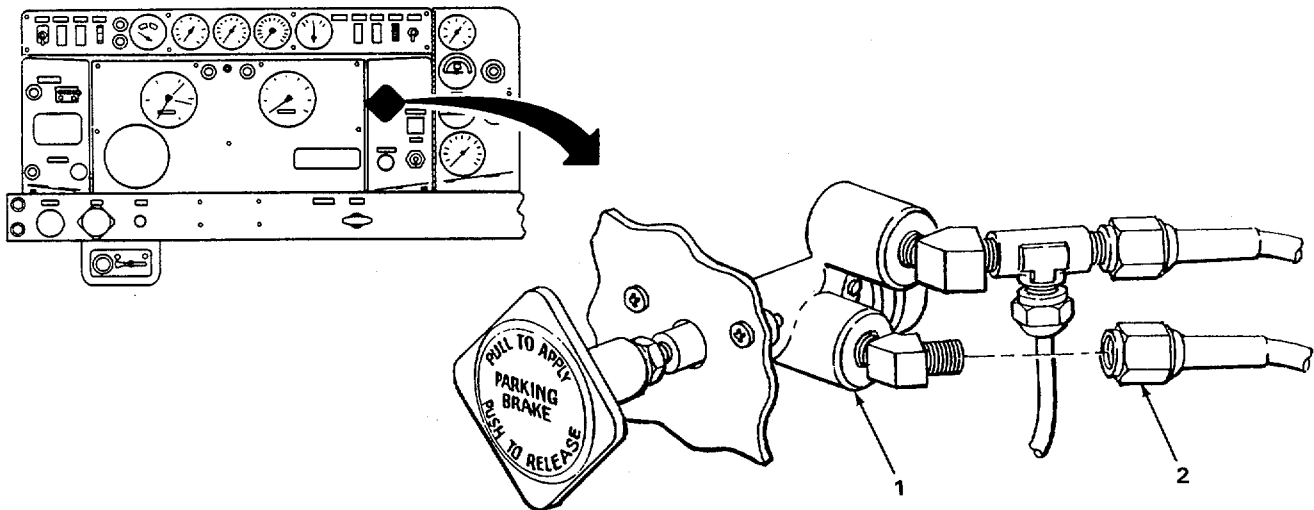
NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

Step 1. Check parking brake hand valve (1) for air pressure as follows: pull handle out to apply parking brakes, using 5/8-inch open-end wrench, loosen output hose fitting (2) six turns, push in handle and listen for hissing noise.

a. If hissing noise is not heard, replace parking brake hand valve (1), notify Direct Support Maintenance.

b. If hissing noise is heard, pull out handle to apply brakes. Tighten output hose fitting (2) using 5/8-inch open-end wrench, and go to step 2.



TA243910

TA243910

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

63. REAR BRAKES DO NOT RELEASE - CONTINUED.

Step 2. Check treadle valve (1) for air pressure as follows: have assistant press down brake pedal (2), check for exhaust of air pressure from valve vent (3) on bottom of treadle valve (1) when brake pedal (2) is released.

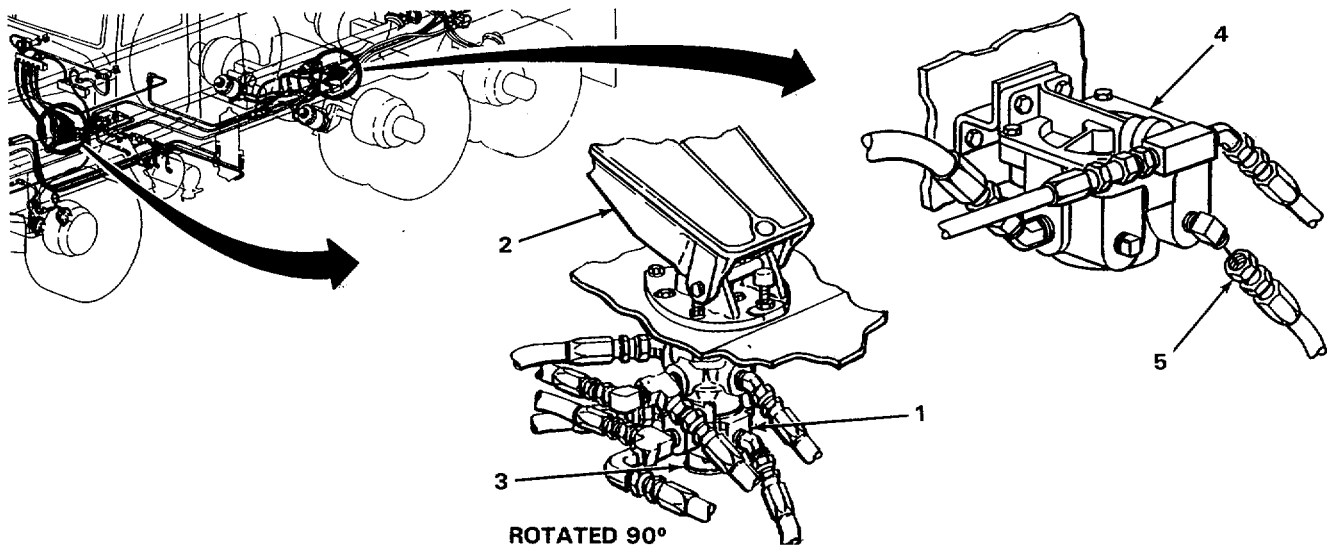
a. If air pressure is not vented from valve vent (3) on bottom of treadle valve (1) when brake pedal (2) is released, replace treadle valve (1) (page 2-1052).

b. If air pressure is vented from valve vent (3) on bottom of treadle valve (1) when brake pedal (2) is released, go to step 3.

Step 3. Check front relay valve (4) for air pressure as follows: using 7/8-inch open-end wrench, loosen output hose fitting (5) six turns. Have assistant press down brake pedal (2), listen for hissing noise at output hose fitting (5).

a. If hissing noise is not heard at output fitting (5), replace front relay valve (4), notify Direct Support Maintenance.

b. If hissing noise is heard at output hose fitting (5), go to step 4.



TA243911

TA234911

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

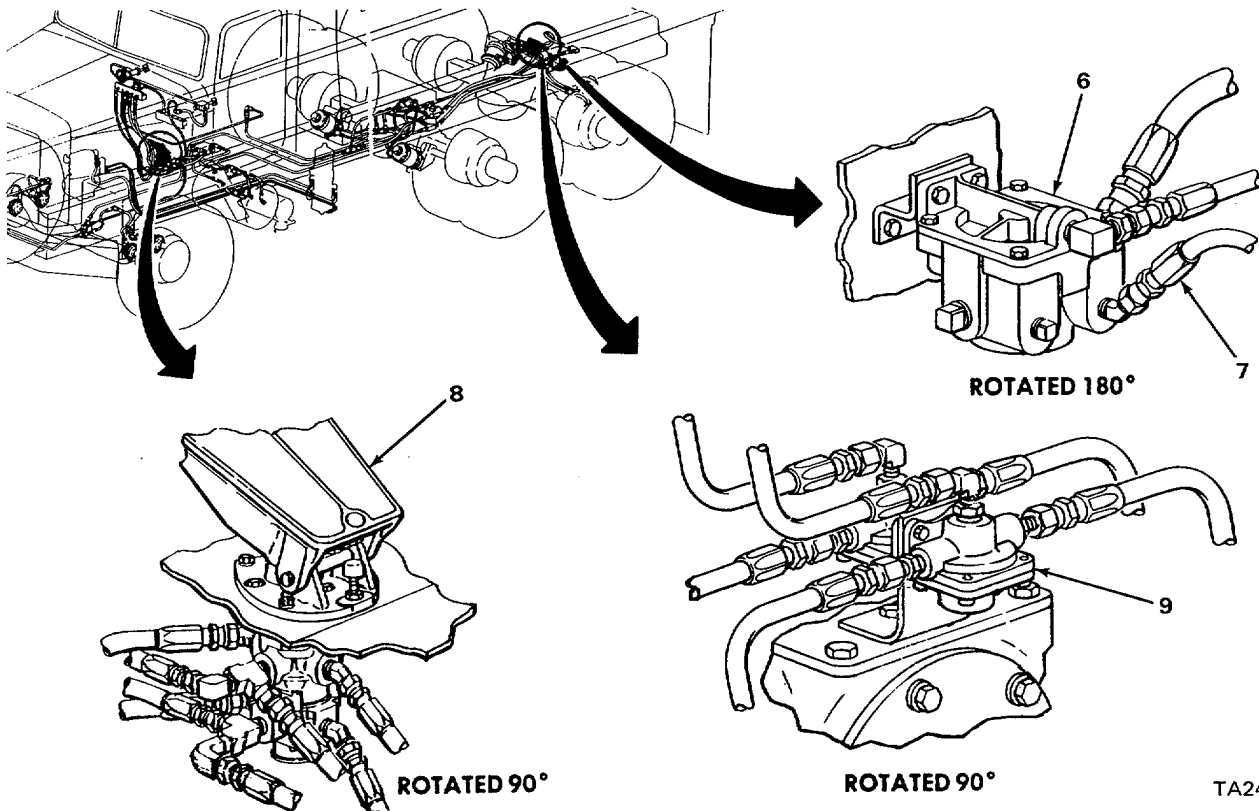
CORRECTIVE ACTION

Step 4. Check rear relay valve (6) for air pressure as follows: using 7/8-inch open-end wrench, loosen output hose fitting (7) six turns. Have assistant press down brake pedal (8), listen for hissing noise at output hose fitting (7), release brake pedal.

- a. If hissing noise is not heard at output hose fitting (7), replace rear relay valve (6), notify Direct Support Maintenance.
- b. If hissing noise is heard at output hose fitting (7), tighten using 7/8inch open-end wrench, and go to step 5.

Step 5. Check rear rear quick release valve (9) for air pressure as follows: have assistant press down brake pedal (8) and release. Check for exhaust of air pressure from valve vent on bottom of rear rear quick release valve (9).

- a. If air pressure is not vented when brake pedal (8) is released, replace rear rear quick release valve (9), notify Direct Support Maintenance.
- b. If air pressure is vented when brake (8) pedal is released, go to step 6.



TA243912

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

63. REAR BRAKES DO NOT RELEASE - CONTINUED.

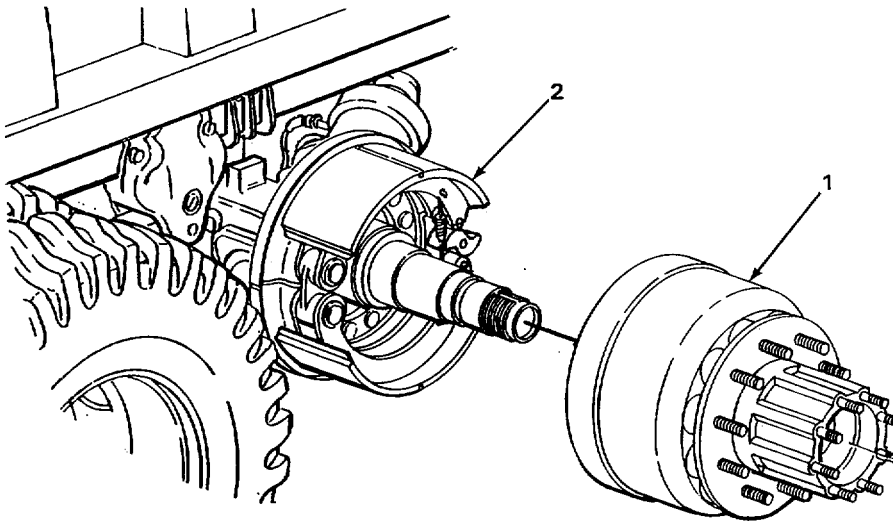
Step 6. Check rear brake drums (1) for foreign matter as follows: take off rear brake drums (1) (page 2-955).

a. If foreign matter is found, clean out and put on rear brake drums (1) (page 2-955).

b. If foreign matter is not found, go to step 7.

Step 7. Check brakeshoes (2) and mounting hardware for damage (page 2-955).

If brakeshoes (2) or mounting hardware are damaged, replace defective parts (page 2-955).



TA243913

TA243913

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

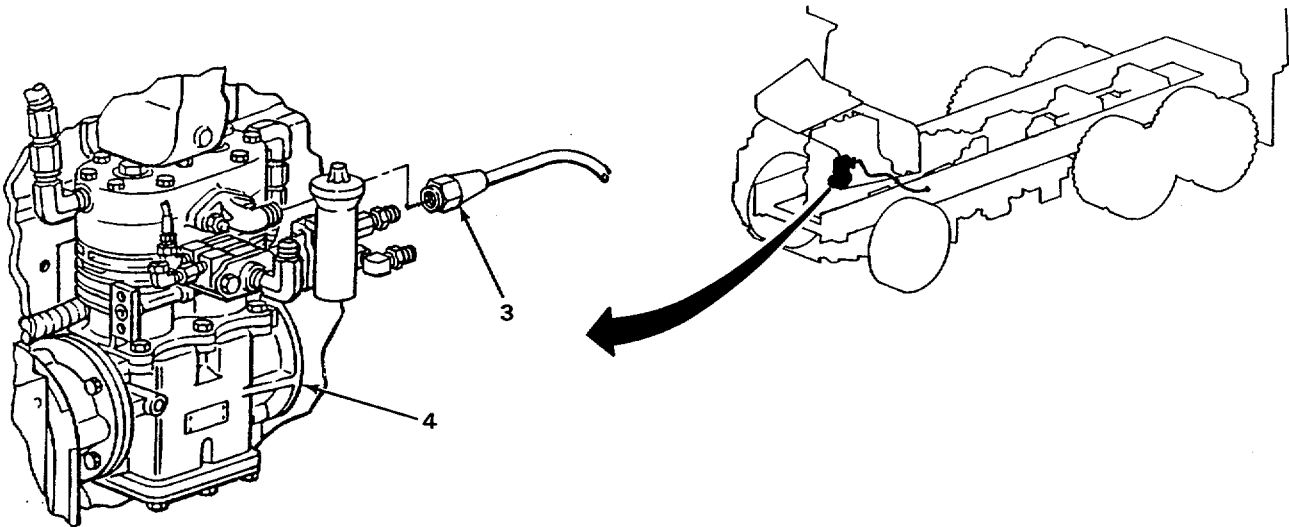
64. AIR PRESSURE DOES NOT EXCEED 90 PSI.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

Step 1. Check for clogged or restricted output line (3) on air compressor (4) as follows: using 1-inch open-end wrench, unscrew and take off output line (3) at air compressor (4). Visually check for a restricted opening or a build of carbon clogging the opening of the output line (3).

- a. If output line (3) is clogged, bent, dented or broken, replace (page 2-1035).
- b. If output line (3) is not clogged, bent, dented or broken, go to step 2.



TA243914

TA243914

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

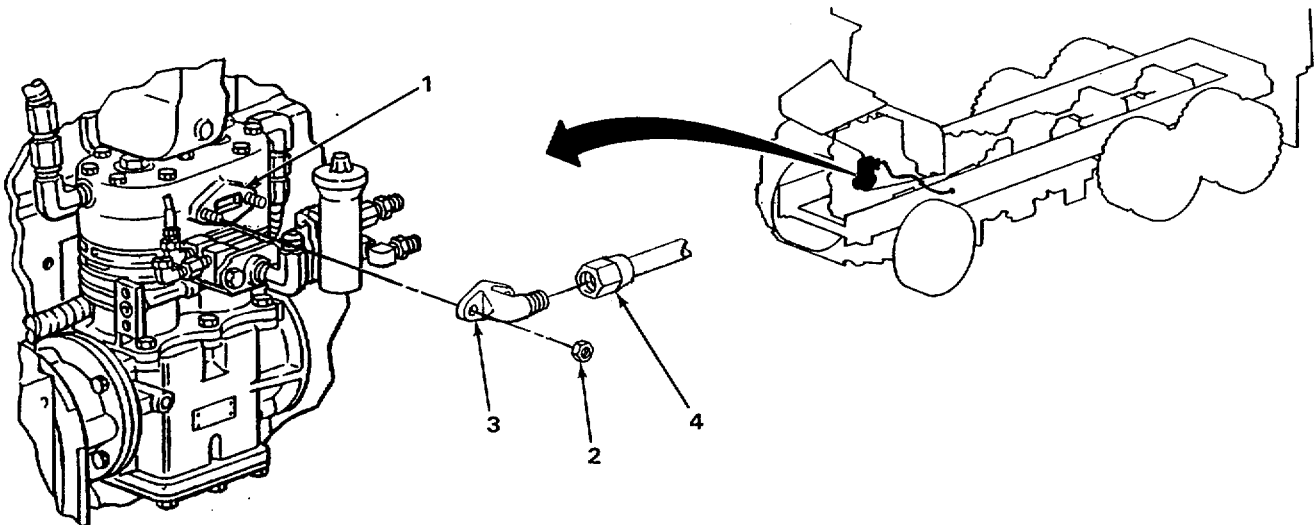
64. AIR PRESSURE DOES NOT EXCEED 90 PSI - CONTINUED.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

Step 2. Check air compressor output port (1) for air pressure as follows: using 1/2-inch box-end wrench, unscrew and take off two nuts (2), take off 900 elbow (3). Start engine (TM 5-3805-254-10), check for air pressure coming out of output port (1). Shut down engine (TM 5-3805-254-10).

- a. If air pressure is not coming out of output port (1), put 900 elbow (3) in place, screw on and tighten two nuts (2) using 1/2-inch box-end wrench. Screw on and tighten output line (4) using 1-inch open-end wrench and notify Direct Support Maintenance.
- b. If air pressure is coming out of output port (1), put 900 elbow (3) in place, screw on and tighten two nuts (2) using 1/2-inch box-end wrench. Screw on and tighten output line (4) using 1-inch open-end wrench and go to step 3.



TA243915

TA243915

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

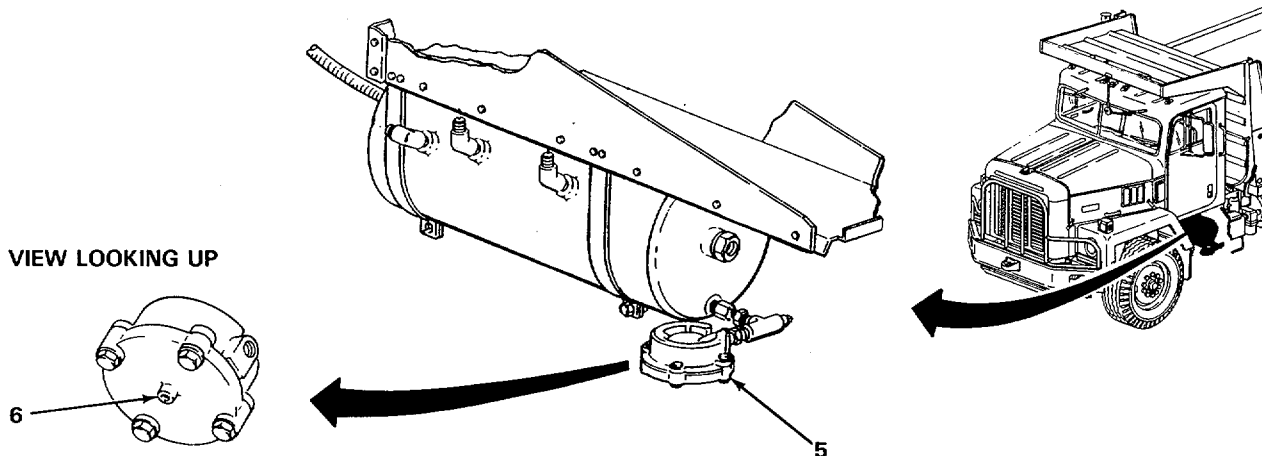
CORRECTIVE ACTION

NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

Step 3. Check automatic drain valve (5) for cracks, breaks, chips, or frozen manual drain pin.

- a. If automatic drain valve (5) is cracked, broken, or chipped, notify Direct Support Maintenance.
- b. If manual drain pin (6) on automatic drain valve (5) is frozen, notify Direct Support Maintenance.
- c. If automatic drain valve (5) is not cracked, broken, or chipped, go to step 4.
- d. If manual drain pin (6) on automatic drain valve (5) is not frozen, go to step 4.



TA243916

TA243916

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

64. AIR PRESSURE DOES NOT EXCEED 90 PSI - CONTINUED.

Step 4. Check air compressor governor (1) for proper operation as follows: start engine (TM 5-3805-254-10), wait for air compressor (2) to cut out approximately 120 psi, have assistant apply brake pedal several times and note air pressure when air compressor (2) cuts in.

- a. If air compressor (2) cuts in below 80 psi, notify Direct Support Maintenance.
- b. If air compressor governor (1) discharges air pressure out of exhaust port (3) before the air system reaches 120 psi, notify Direct Support Maintenance.
- c. If air compressor (2) cuts in at 80 psi, go to step 5.
- d. If air compressor governor (1) discharges air pressure out of exhaust port (3) when the air system reaches 120 psi, go to step 5.

Step 5. Check air hoses for leaks or damage as follows: listen for hissing noise along air hoses.

- a. If leaks are found, or air hoses are damaged, replace (page 2-947).
- b. If leaks are not found, or air hoses are not damaged, go to step 6.

Step 6. Check front and rear relay valves (4 and 5) for leaks or damage as follows: have assistant press brake pedal (6) down and hold it. Listen for hissing noise on or around front and rear relay valves (4 and 5). Release brake pedal (6).

- a. If front or rear relay valves (4 and 5) are leaking or damaged, replace, notify Direct Support Maintenance.
- b. If front or rear relay valves (4 and 5) are not leaking or damaged, go to step 7.

NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-20). Shut down engine (TM 5-3805-254-20).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

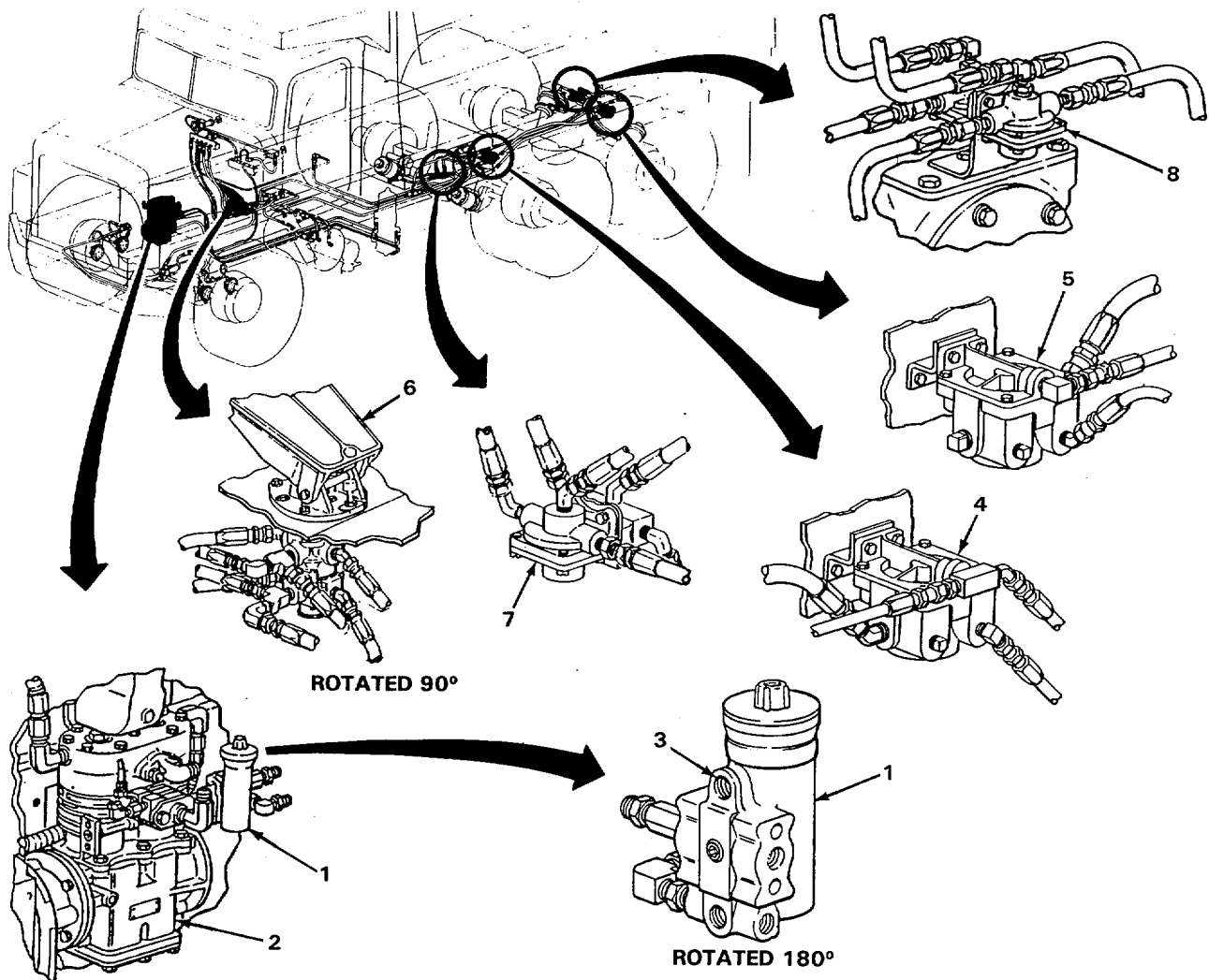
MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

Step 7. Check front rear and rear rear quick release valves (7 and 8) for leaks or damage as follows: have assistant hold brake pedal (6) down. Listen for hissing noise on or around front rear and rear rear quick release valves (7 and 8). Release brake pedal (6).

If front rear and rear rear quick release valves (7 and 8) are leaking or damaged, replace, notify Direct Support Maintenance.



TA243917

TA243917

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

65. AIR PRESSURE EXCEEDS 130 PSI.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

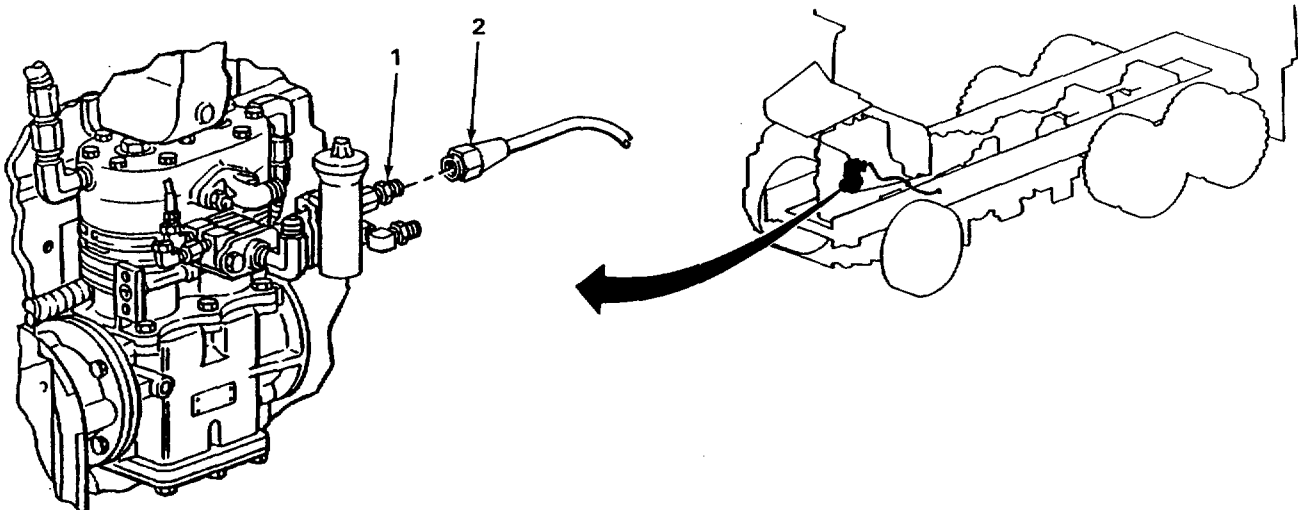
NOTE**Drain air system (2-947).**

Step 1. Check air compressor unloader port (1) and air line (2) for clogged condition as follows: using 1-inch open-end wrench, unscrew and take off air line (2), and look at end of airline (2) and end of air compressor unloader port (1) for clogs.

- a. If end of air line (2) is clogged, using 1/4-inch flat-tip screwdriver, unplug and clean.
- b. If air compressor unloader port (1) is clogged, using 1/4-inch flat-tip screwdriver, unplug and clean. Put air line (2) in place, screw on and tighten using 1-inch open-end wrench.
- c. If air compressor unloader port (1) and air line (2) are not clogged, go to step 2.

Step 2. Check air line (2) for abnormal bends and kinks which could restrict air flow.

- a. If air line (2) is damaged, replace (page 2-1035).
- b. If air line (2) is not damaged, go to step 3.



TA243918

TA243918

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

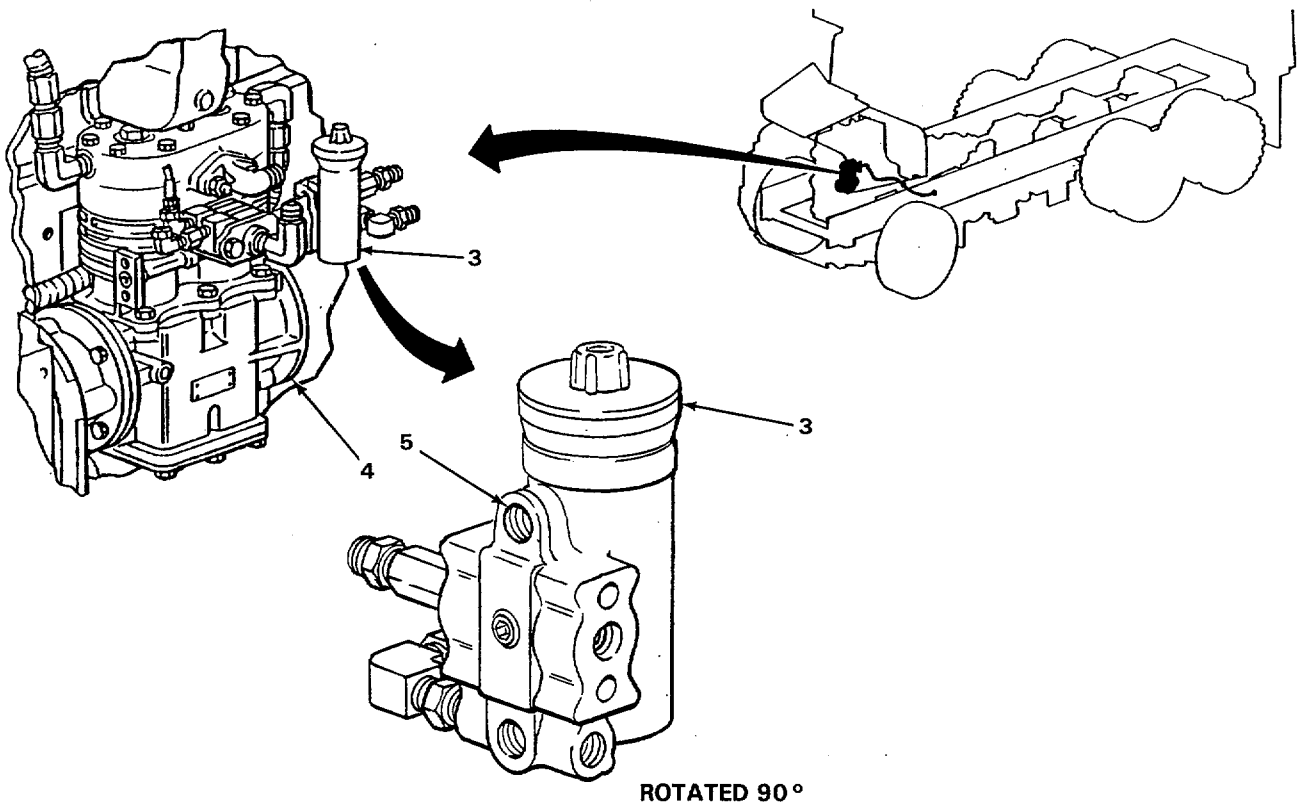
MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

Step 3. Check air compressor governor (3) for proper operation as follows: start engine (TM 5-3805-254-10), wait for air compressor (4) to cut out. Note air pressure when air compressor (4) cuts out and air compressor governor (3) exhaust air pressure out of exhaust port (5). Air compressor governor (3) should discharge air pressure out of exhaust port (5) at 120 to 125 psi (827 to 861 kPa).

If air compressor governor (3) does not exhaust air pressure out of exhaust port (5) at 120 to 125 psi (827 to 861 kPa), notify Direct Support Maintenance.



TA243919

TA243919

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED**MALFUNCTION****TEST OR INSPECTION****CORRECTIVE ACTION**

66. AIR BRAKES DO NOT RELEASE.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

Step 1. Start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

- a. If air pressure is not between 90 and 130 psi, go to Malfunction 64, AIR PRESSURE DOES NOT EXCEED 90 PSI (page 2-339).
- b. If air pressure is between 90 and 130 psi, go to step 2.

WARNING

Ensure that vehicle is on level ground and that rear wheels are chocked to prevent vehicle from moving or severe injury to personnel may result.

Step 2. Chock rear wheels of truck. Check PARKING BRAKE control valve (3) for air pressure as follows: pull knob (1) out to apply parking brakes. Using 5/8-inch open-end wrench, loosen output hose fitting (2) six turns, push in knob (1) and listen for hissing noise.

- a. If hissing noise is not heard, replace PARKING BRAKE control valve (3) and notify Direct Support Maintenance.
- b. If hissing noise is heard, pull out handle (1) to apply brakes. Tighten output hose fitting (2) using 5/8-inch open-end wrench, and go to step 3.

Step 3. Check treadle valve (4) for air pressure as follows: have assistant press down brake pedal (5) and release. Check for exhaust of air pressure from valve vent (6) on bottom of treadle valve (4) when brake pedal (5) is released.

- a. If air pressure is not vented from valve vent (6) on bottom of treadle valve (4), go to step 4.
- b. If air pressure is vented from valve vent (6) on bottom of treadle valve (4), go to step 5.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

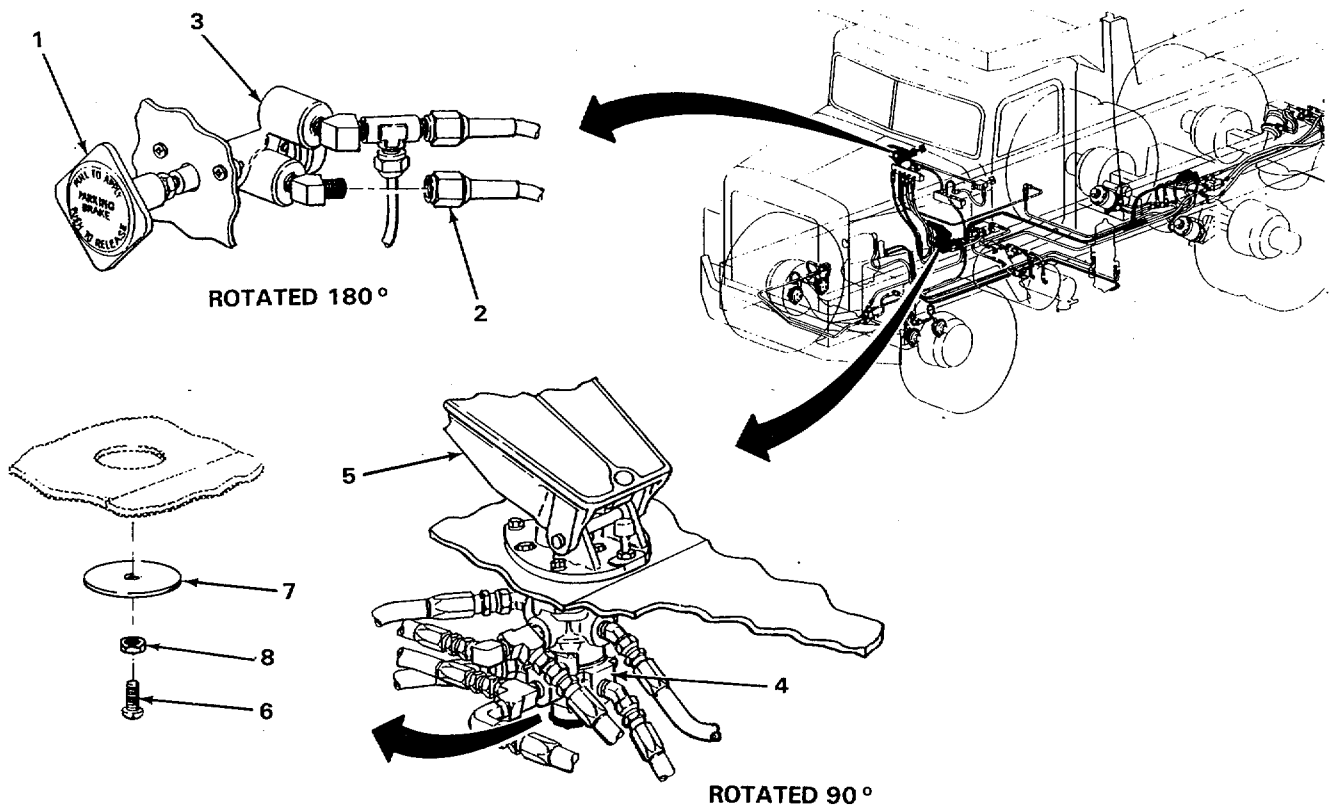
TEST OR INSPECTION

CORRECTIVE ACTION

Step 4. Check valve vent (6) on bottom of treadle valve (4) for foreign matter as follows: drain air system (page 2-1034). Using 1/4-inch flat-tip screwdriver, pull back diaphragm (7) and check for foreign matter or other restrictions.

a. If foreign matter or other restriction is found in valve vent (6), using 3/8-inch box-end wrench, unscrew and take off nut (8), and diaphragm (7). Using 1/4-inch flat-tip screwdriver, unclog any foreign matter and clean. Put diaphragm (7) in place, screw on and tighten nut (8) using 3/8-inch box-end wrench. If air pressure is still not exhausted, replace treadle valve (4) (page 2-1052).

b. If foreign matter is not found, replace treadle valve (4) (page 2-1052).



TA243920
TA243920

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

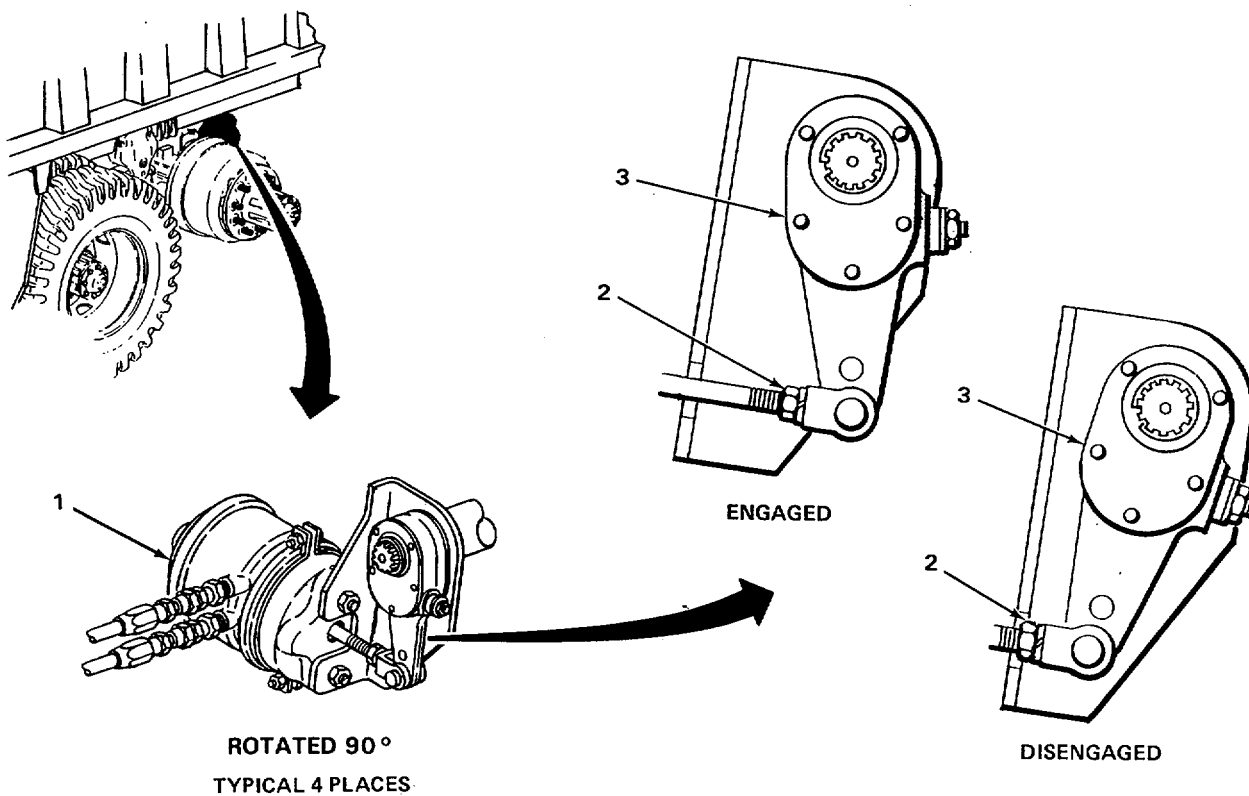
CORRECTIVE ACTION

66. AIR BRAKES DO NOT RELEASE - CONTINUED.

Step 5. Check rear airbrake chambers (1) for proper position as follows: look at position of push rod (2) and slack adjuster (3). When push rod (2) is out and slack adjuster (3) is back, then brake is engaged. When push rod (2) is in and slack adjuster (3) is forward, then brake is disengaged.

a. If push rod (2) is in and slack adjuster (3) is forward and brakes do not disengage, notify Direct Support Maintenance.

b. If push rod (2) is in and slack adjuster (3) is forward and brakes are disengaged, go to step 6.



TA243921

TA243921

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

WARNING

When jacking vehicle, be sure vehicle is on level ground. Put blocks in front and behind each wheel to prevent vehicle from moving, and support vehicle with trestle stands to prevent personnel injury.

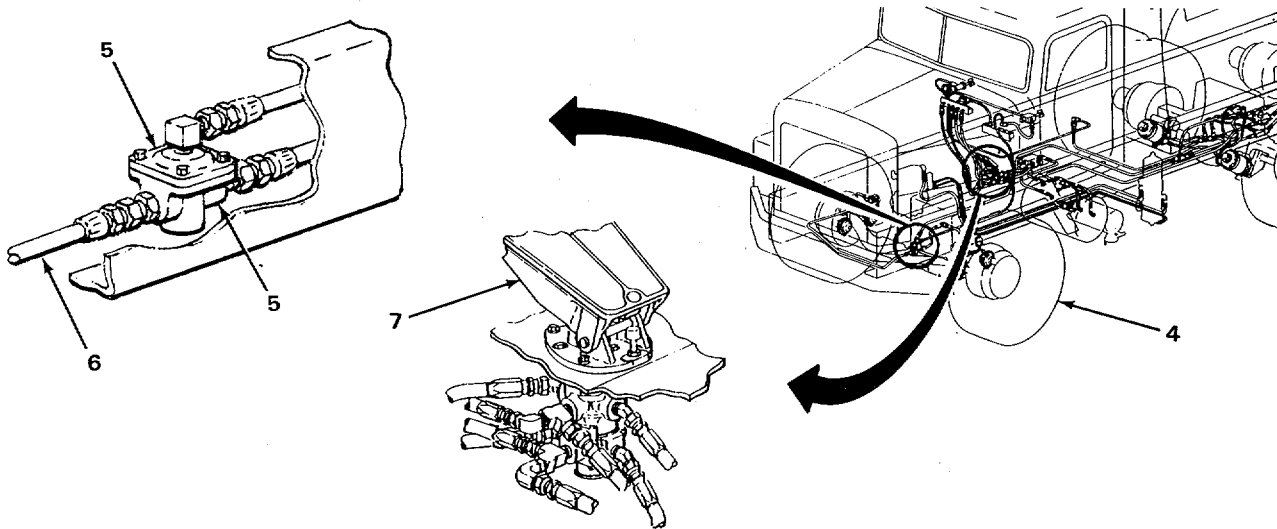
Step 6. Check front brakes for proper operation as follows: jack up one side of dump truck (page 2-424). Spin wheel (4) and check for freedom of movement. Lower dump truck (page 2-424). Jack up opposite side of dump truck (page 2-424). Spin wheel (4) and check for freedom of movement. Lower dump truck (page 2-424).

If one or both wheels (4) do not spin, go to step 7.

Step 7. Check front brake limiting and quick release valve (5) for output air pressure as follows: using 7/8-inch open-end wrench, loosen output hose fitting (6) six turns. Have assistant press down brake pedal (7), and release. Listen for hissing noise.

a. If hissing noise is not heard, replace front brake limiting and quick release valve (5). Notify Direct Support Maintenance.

b. If hissing noise is heard, tighten output hose fitting (6), using 7/8inch open-end wrench. Go to step 8.



TA243922

TA243922

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

67. FRONT BRAKES DO NOT WORK.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

Ensure that vehicle is on level ground and that rear wheels are chocked to prevent vehicle from moving or severe injury to personnel may result.

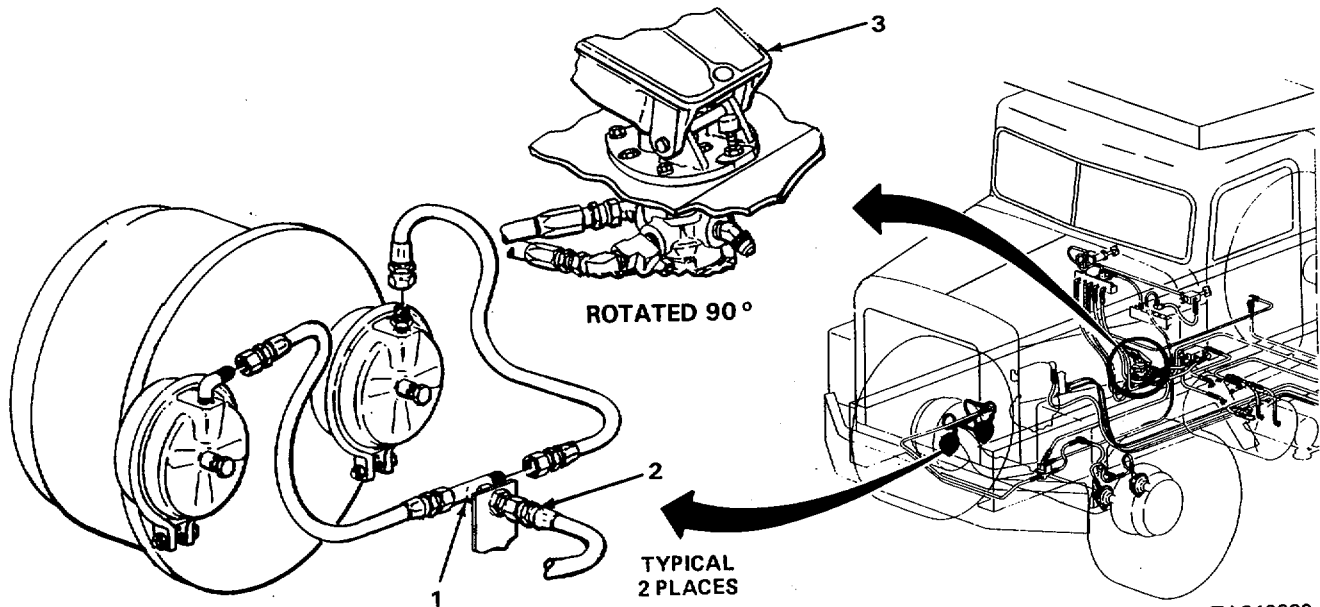
NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

Step 1. Chock rear wheels of truck. Check both front wheel tee fittings (1) for air pressure as follows: using 3/4-inch and 5/8-inch open-end wrenches, loosen input hose fitting (2) six turns. Have assistant press down brake pedal (3), and listen for hissing noise. Have assistant release brake pedal (3).

a. If hissing noise is not heard, go to step 2.

b. If hissing noise is heard, go to step 5.



TA243923

TA243923

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

Step 2. Check front brake limiting and quick release valve (4) for air pressure as follows: using 7/8-inch open-end wrench, loosen output air hose fitting (5) six turns, have assistant press down brake pedal (6), listen for hissing noise, release brake pedal (6).

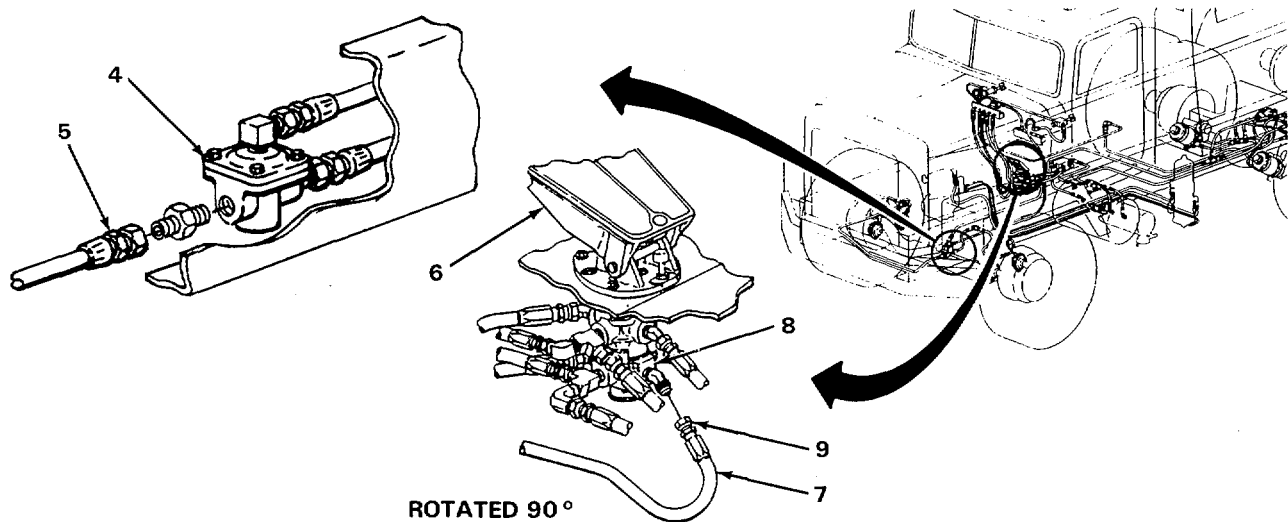
a. If hissing noise is not heard, replace front brake limiting and quick release valve (4), notify Direct Support Maintenance.

b. If hissing noise is heard, tighten output hose fitting (5) using 7/8-inch open-end wrench, and go to step 3.

Step 3. Check output air hose (7) from treadle valve (8) to front brake limiting and quick release valve (4) as follows: using 7/8-inch open-end wrench, loosen output air hose fitting (9) six turns, have assistant press down brake pedal (6), listen for hissing noise, release brake pedal (6).

a. If hissing noise is not heard, replace treadle valve (8) (page 2-1052).

b. If hissing noise is heard, tighten output hose fitting (9) using 7/8-inch open-end wrench and go to step 4.



TA243924

TA243924

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

67. FRONT BRAKES DO NOT WORK - CONTINUED.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

Ensure that vehicle is on level ground and that rear wheels are chocked to prevent vehicle from moving or severe injury to personnel may result.

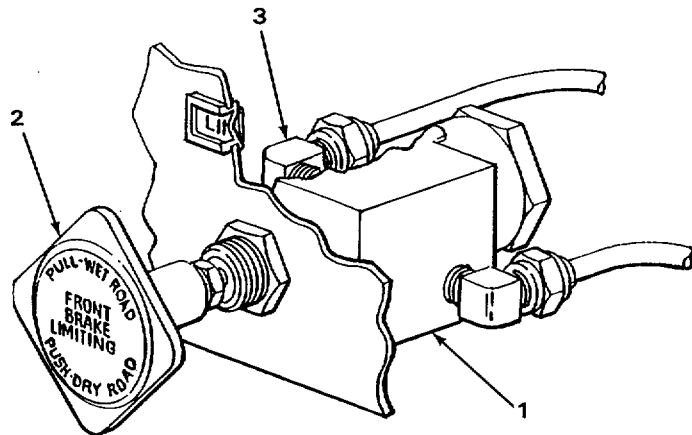
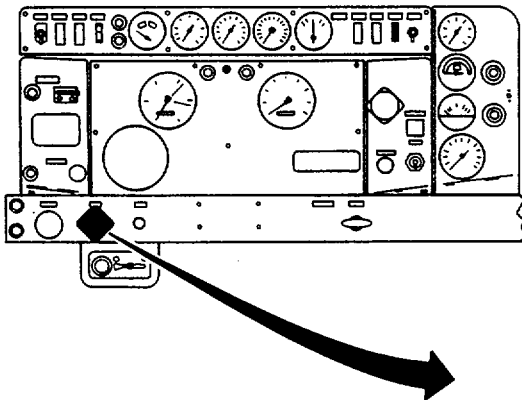
NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (CM 5-3805-254-10).

Step 4. Check front brake limiting control valve (1) for air pressure as follows: push handle (2) in, using 5/8-inch open-end wrench, loosen output hose fitting (3) six turns, and listen for hissing noise.

a. If hissing noise is not heard, replace front brake limiting control valve (1), notify Direct Support Maintenance.

b. If hissing noise is heard tighten output hose fitting (3) using 5/8inch open-end wrench, and go to step 4.



TA243925

TA243925

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

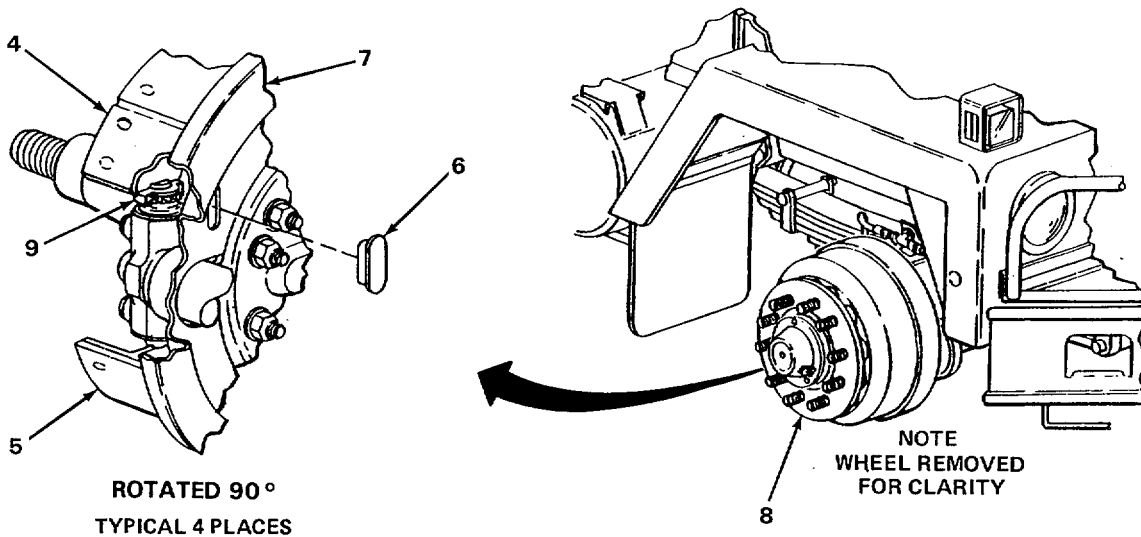
NOTE

Steps given are typical for adjusting upper and lower brake shoes on right and left front wheels.

Step 5. Jack up front of dump truck (page 2-424). Check adjustment of front brakeshoes (4 and 5) as follows: using 3/8-inch flat-tip screwdriver, pry out cover (6) from dust shield (7). Slowly turn front hub and brakedrum assembly (8), while turning each adjusting screw ring (9) until a heavy drag is felt, then back off each adjusting screw ring (9) to allow a slight drag, using brake adjusting tool. Push cover (6) in place.

a. If adjusting screw ring (9) does not turn, notify Direct Support Maintenance.

b. If front brakeshoes (4 and 5) are adjusted with a slight drag, go to step 6.



TA243926

TA243926

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

67. FRONT BRAKES DO NOT WORK - CONTINUED.

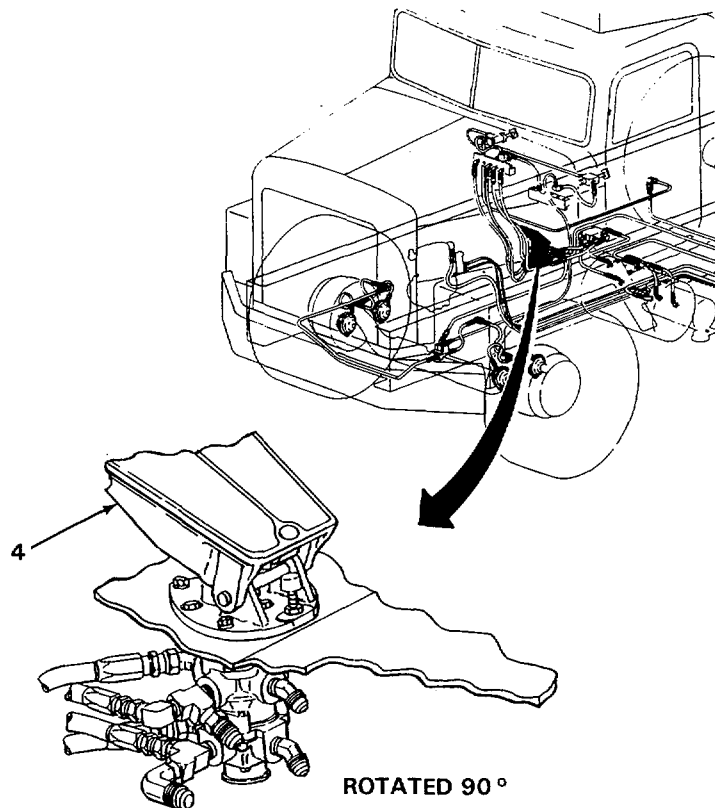
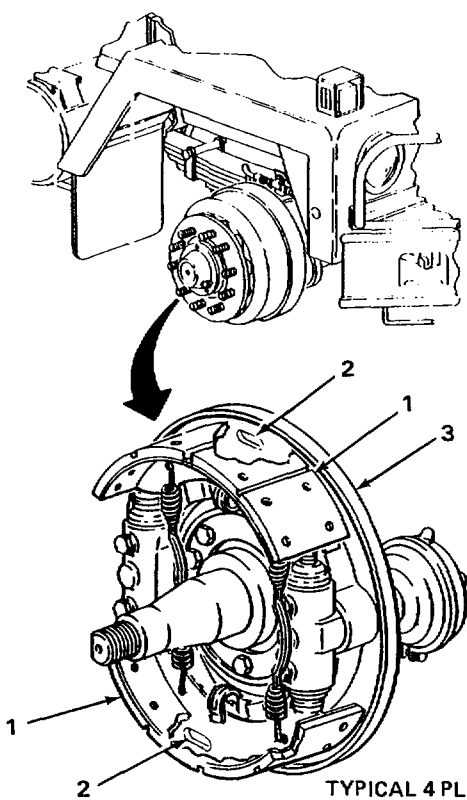
NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

Step 6. Check operation of both front wheel brakeshoes (1) as follows: using flashlight, look at brakeshoes (1) through two inspection holes (2) in backing plate (3). Have assistant apply brake pedal (4) several times and check for free movement of brakeshoes (1).

a. If brakeshoes (1) do not move, go to step 7.

b. If brakeshoes (1) do not release from drums, go to Malfunction 66, AIR BRAKES DO NOT RELEASE (page 2-346).



TA243927

TA243927

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

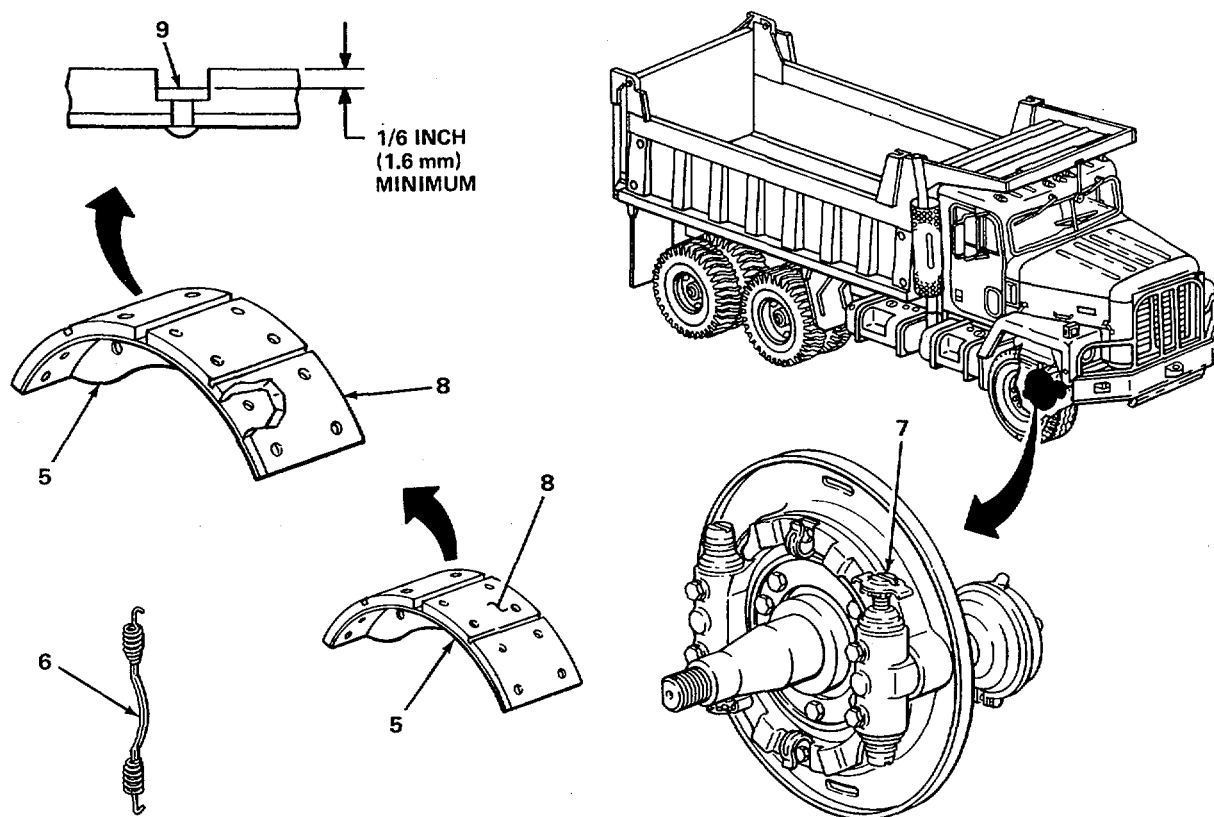
CORRECTIVE ACTION

WARNING

Parts of brake assembly will be coated with asbestos dust. Breathing this dust may be hazardous to your health. Use filter mask approved for use against asbestos dust. Never use compressed air or dry brush to clean these assemblies. Dust shall be removed using industrial type vacuum cleaner equipped with high efficiency filter system. Clean dirt or mud from brake assemblies with bristle brush or cloth, and water.

Step 7. Check brakeshoes (5) and mounting hardware for damage as follows: inspect brake springs (6) for cracks, breaks, distorted ends, or stretched coils. Inspect adjusting screw rings (7) for missing or broken teeth or binding condition. Inspect brakeshoes (5) for oil soaked, cracked, burned, or chipped lining (8). Using tire tread depth gage, check that lining (8) thickness is more than 1/16inch (1.6 mm) above rivets (9).

If brakeshoes (5) and mounting hardware are damaged, replace (page 2-947).



TA243928

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

68. REAR BRAKES DO NOT WORK.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

Ensure that vehicle is on level ground and that rear wheels are chocked to prevent vehicle from moving or severe injury to personnel may result.

NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

- Step 1. Chock rear wheels of truck. Check rear airbrake chambers (1) for proper operation as follows: have assistant push in PARKING BRAKE knob (2) to release parking brakes. Look at position of push rod (3) and slack adjuster (4), and have assistant press down brake pedal (5). When push rod (3) is out of airbrake chamber (1), brake is engaged. Have assistant release brake pedal (5), when push rod (3) is in toward airbrake chamber (1), brake is disengaged.
- a. If push rod (3) and slack adjuster (4) are not moving, go to step 2.
 - b. If push rod (3) and slack adjuster (4) are moving, go to step 11.
- Step 2. Check rear airbrake chambers (1) for air pressure as follows: using 3/4-inch and 5/8-inch open-end wrenches, loosen service brake airhose fitting (6) six turns. Have assistant press down brake pedal (5), and listen for hissing noise, release brake pedal (5).
- a. If hissing noise is heard, defective airbrake chamber (1) must be replaced. Notify Direct Support Maintenance.
 - b. If hissing noise is not heard, tighten service brake airhose fitting (6), using 3/4-inch and 5/8-inch open-end wrenches, go to step 3.
- Step 3. Check rear relay valve (7) for output air pressure as follows: using 7/8-inch open-end wrench, loosen output hose fitting (8) six turns. Have assistant press down brake pedal (5), listen for hissing noise at output hose fitting (8), release brake pedal (5).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

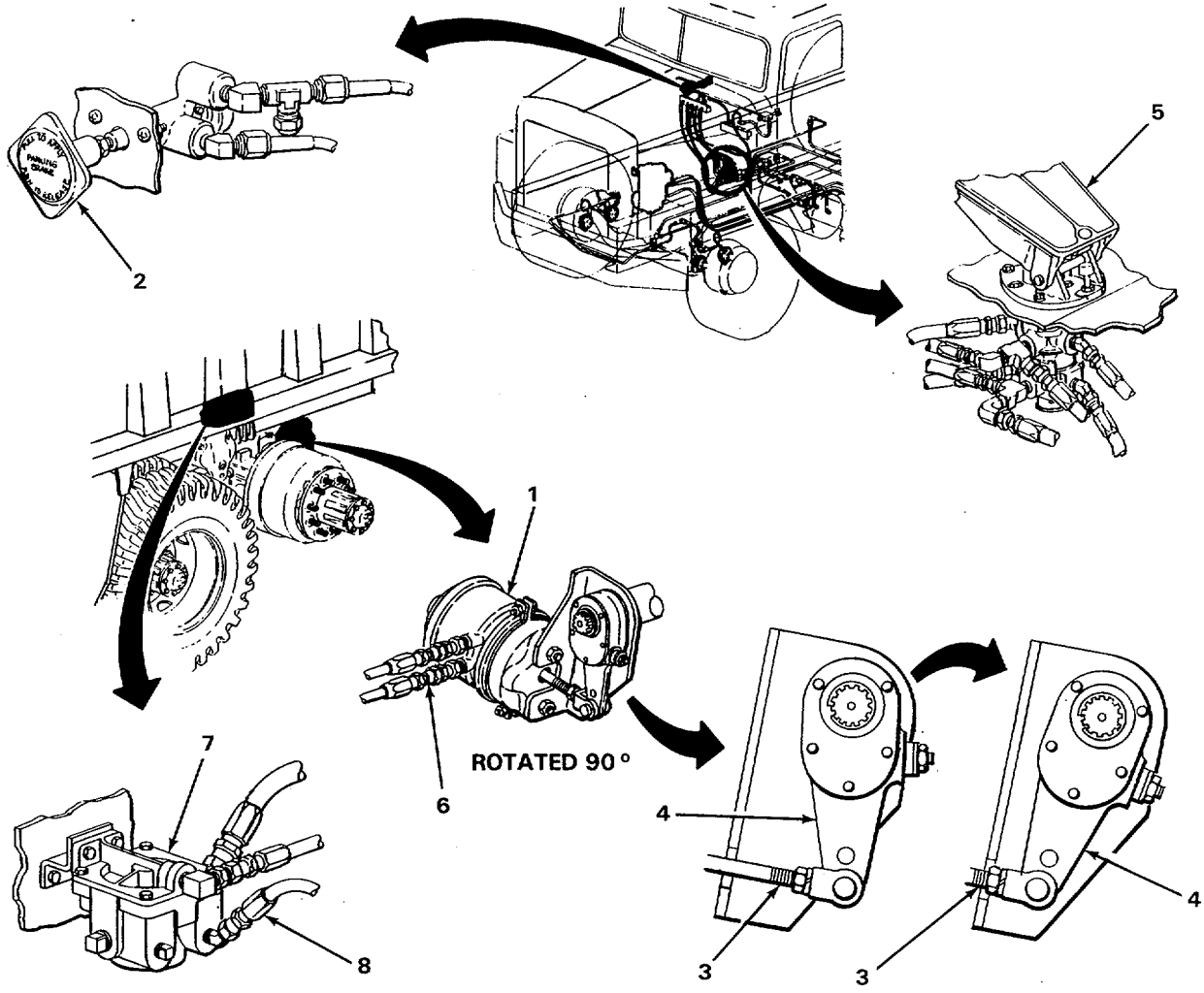
MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

a. If hissing noise is heard at output hose fitting (8), go to step 4.

b. If hissing noise is not heard at output hose fitting (8), defective rear relay valve (7) must be replaced. Notify Direct Support Maintenance.



TA243929

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

68. REAR BRAKES DO NOT WORK - CONTINUED.

NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-25410).

Step 4. Check rear relay valve (1) for input air pressure as follows: using 1 1/4-inch open-end wrench, loosen input hose fitting (2) six turns. Have assistant press down brake pedal (3), listen for hissing noise at input hose fitting (2), release brake pedal (3).

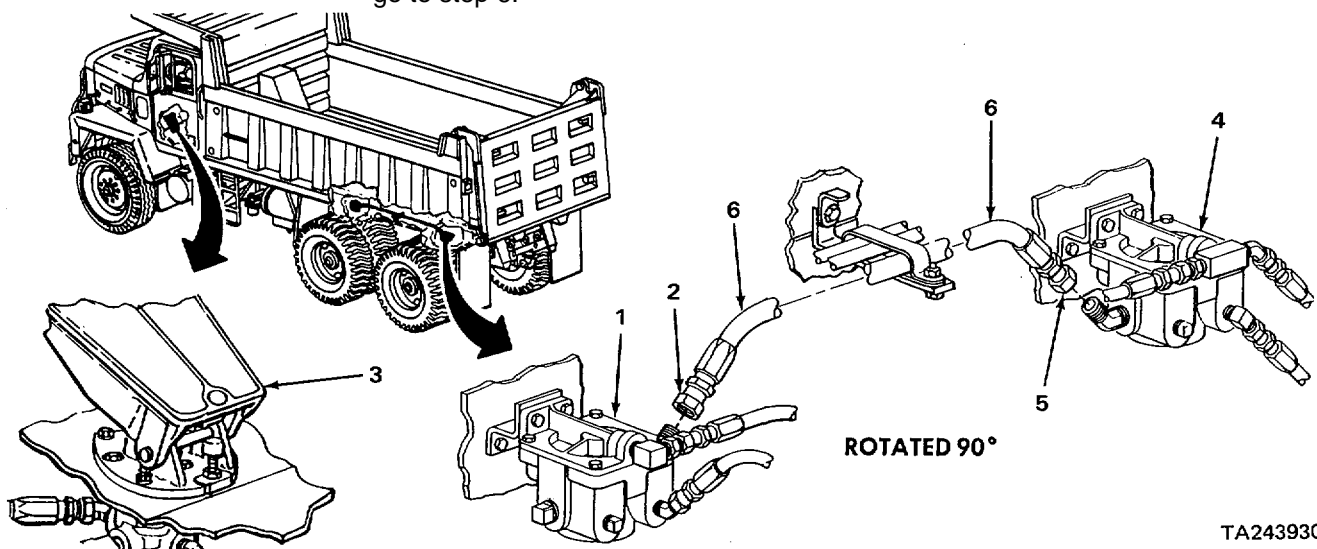
a. If hissing noise is heard at input hose fitting (2), rear relay valve (1) must be replaced. Notify Direct Support Maintenance.

b. If hissing noise is not heard at input hose fitting (2), go to step 5.

Step 5. Check front relay valve (4) for output air pressure as follows: using 1 1/4-inch open-end wrench, loosen output hose fitting (5) six turns. Have assistant press down brake pedal (3), listen for hissing noise at output hose fitting (5), release brake pedal (3).

a. If hissing noise is not heard at output hose fitting (5), replace front relay valve to rear relay valve hose (6) (page 2-1101).

b. If hissing noise is heard at output hose fitting (5), tighten using 1 1/4-inch wrench, and go to step 6.



TA243930

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

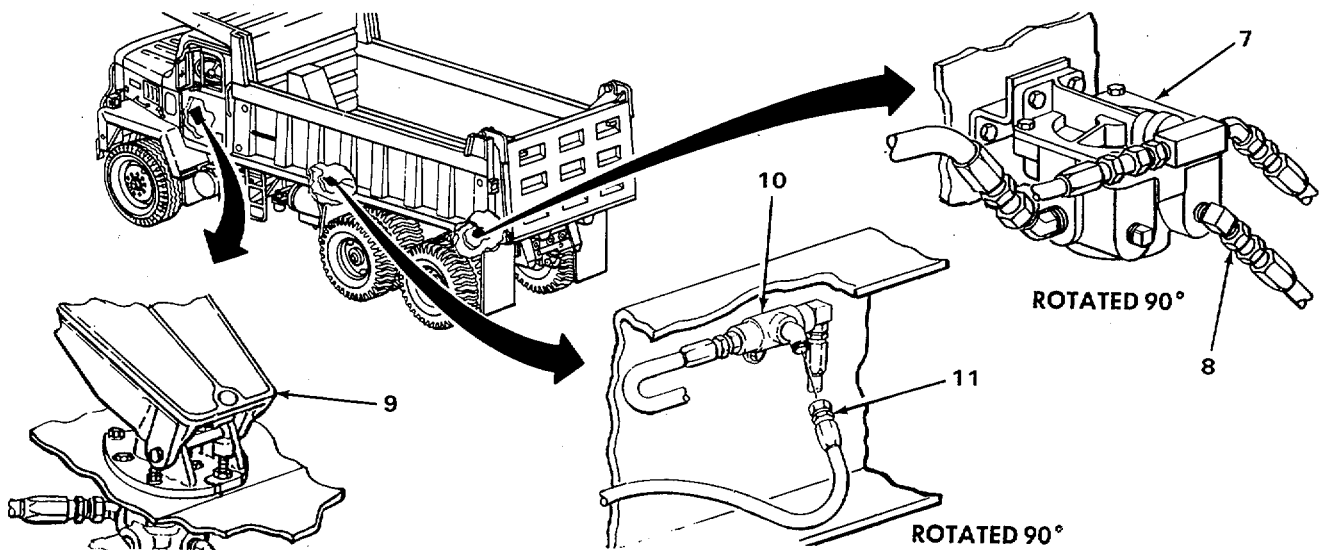
CORRECTIVE ACTION

Step 6. Check front relay valve (7) for input air pressure as follows: using 1 1/4-inch and 1 1/16-inch open-end wrenches, loosen input hose fitting (8) six turns. Have assistant press down brake pedal (9), listen for hissing noise at input hose fitting (8), release brake pedal (9).

- a. If hissing noise is heard at input hose fitting (8), tighten using 1 1/4-inch and 1 1/16-inch open-end wrenches, replace, notify Direct Support Maintenance.
- b. If hissing noise is not heard at input hose fitting (8), tighten using 1 1/4-inch and 1 1/16-inch open-end wrenches, and go to step 7.

Step 7. Check double check valve (10) for output air pressure as follows: using 3/4-inch open-end wrench, loosen output hose fitting (11) six turns. Have assistant press down brake pedal (9), listen for hissing noise at output hose fitting (11), release brake pedal (9).

- a. If hissing noise is not heard at output hose fitting (11), tighten using 3/4-inch open-end wrench, and go to step 8.
- b. If hissing noise is heard at output hose fitting (11), go to step 9.



TA243931

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

68. REAR BRAKES DO NOT WORK - CONTINUED.

NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

Step 8. Check double check valve (1) for input air pressure as follows: using 3/4-inch and 5/8-inch open-end wrenches, loosen input hose fitting (2) six turns. Have assistant press down brake pedal (3), listen for hissing noise at input hose fitting (2), release brake pedal (3).

a. If hissing noise is heard at input hose fitting (2), tighten using 3/4-inch and 5/8-inch open-end wrenches, replace double check valve, notify Direct Support Maintenance.

b. If hissing noise is not heard at input hose fitting (2), tighten using 3/4-inch and 5/8-inch open-end wrenches, and go to step 9.

Step 9. Check treadle valve (4) rear brake output air line (5) for air pressure as follows: using 7/8-inch and 13/16-inch open-end wrenches, unscrew and loosen output air line fitting (6) at tee fitting (7) six turns. Have assistant press down brake pedal (3), listen for hissing at output air line fitting (6), release brake pedal (3).

a. If hissing noise is not heard at output air line fitting (6), tighten using 7/8-inch and 13/16-inch open-end wrenches. Replace treadle valve (4) (page 2-1052).

b. If hissing noise is heard at output air line fitting (6), tighten using 7/8-inch and 13/16-inch open-end wrenches. Go to step 10.

WARNING

Ensure that vehicle is on level ground and that rear wheels are chocked to prevent vehicle from moving or severe injury to personnel may result.

Step 10. Chock rear wheels of truck. Check parking brake valve (8) for air pressure as follows: pull handle (9) out to apply parking brakes, using 5/8-inch open-end wrench, loosen output hose fitting (10) six turns, push in handle (9) and listen for hissing noise.

a. If hissing noise is not heard at output hose fitting (10), tighten using 5/8-inch open-end wrench. Replace parking brake hand valve (8), notify Direct Support Maintenance.

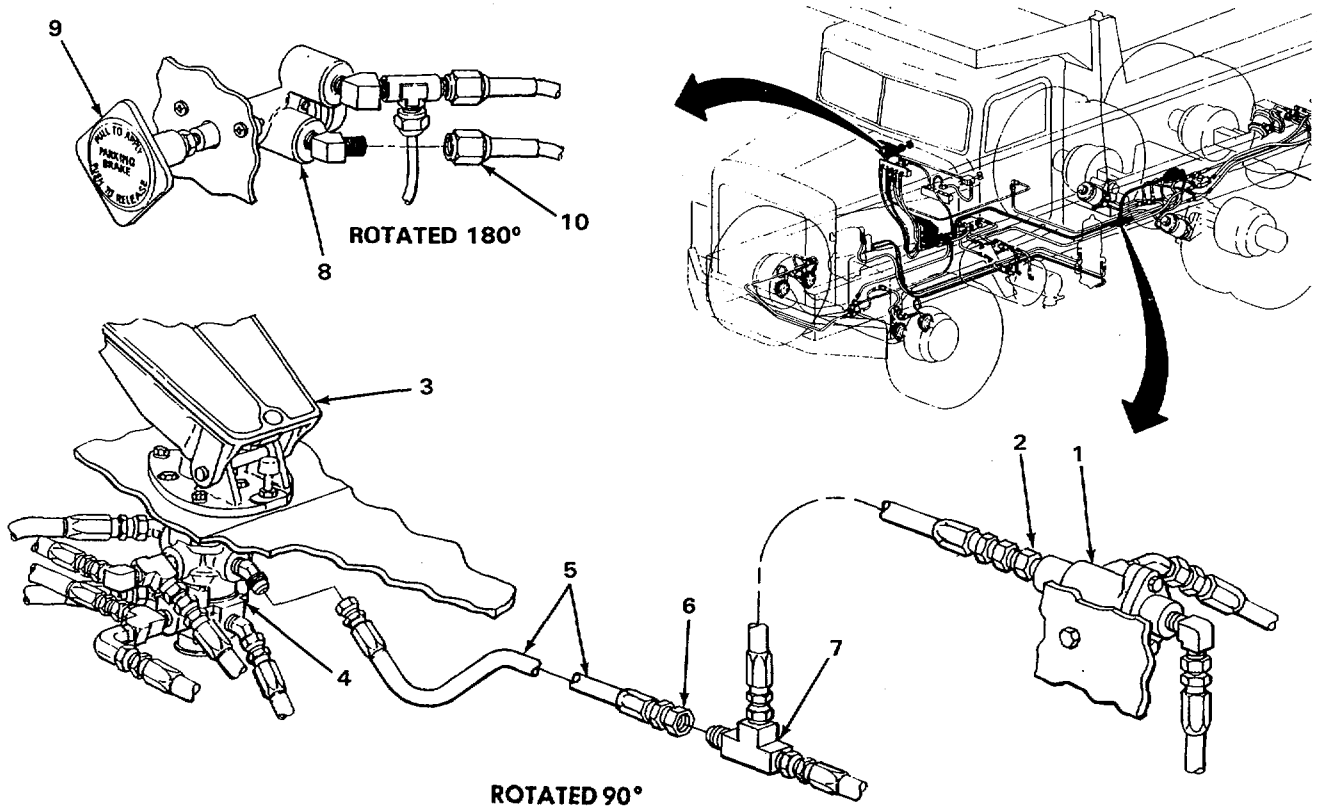
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

- b. If hissing noise is heard at output hose fitting (10), pull handle (9) out to apply brakes. Tighten using 5/8-inch open-end wrench, and go to step 11.



TA243932

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

68. REAR BRAKES DO NOT WORK - CONTINUED

NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

Step 11. Check operation of four rear wheel brakeshoes (1) as follows: using flashlight, look at brakeshoes (1) through two inspection holes (2) in backing plate (3). Have assistant apply pedal (4) several times and check for free movement of brakeshoes (1).

a. If brakeshoes (1) do not operate, go to step 12.

b. If brakeshoes (1) do not release from drums, go to Malfunction 66, AIR BRAKES DO NOT RELEASE (page 2-346).

Step 12. Check adjustment of rear brakeshoes (1) as follows: Using feeler gage, .025inch (.635 mm), measure distance between rear brakeshoes (1) and drum (5).

a. If rear brakeshoes (1) are more than .025-inch (.635 mm) away from drum (5), adjust rear brakes (page 2-973).

b. If rear brakeshoes are adjusted to .025-inch (.635 mm) from drum (5), go to step 13.

WARNING

Parts of brake assembly will be coated with asbestos dust. Breathing this dust may be hazardous to your health. Use filter mask approved for use against asbestos dust. Never use compressed air or dry brush to clean these assemblies. Dust shall be removed using industrial type vacuum cleaner equipped with high efficiency filter system. Clean dirt or mud from brake assemblies with bristle brush or cloth, and water.

When jacking vehicle, make sure and support vehicle with trestle stands to prevent personnel injury. Chock wheels to prevent undue movement of vehicle.

Step 13. Jack up rear of dump truck (page 2-424). Check rear brakeshoes (1) and mounting hardware for damage as follows: inspect brake spring (6) and clips (7) for cracked, bent, broken, or stretched coils or distorted ends. Inspect brake rollers (8) for deep grooves or excessive wear. Inspect brakeshoes (1) for oil soaked, cracked, burned, or chipped lining (9). Using tire tread depth gage, check that lining (9) thickness is more than 1116-inch (1.6 mm) above rivets (10).

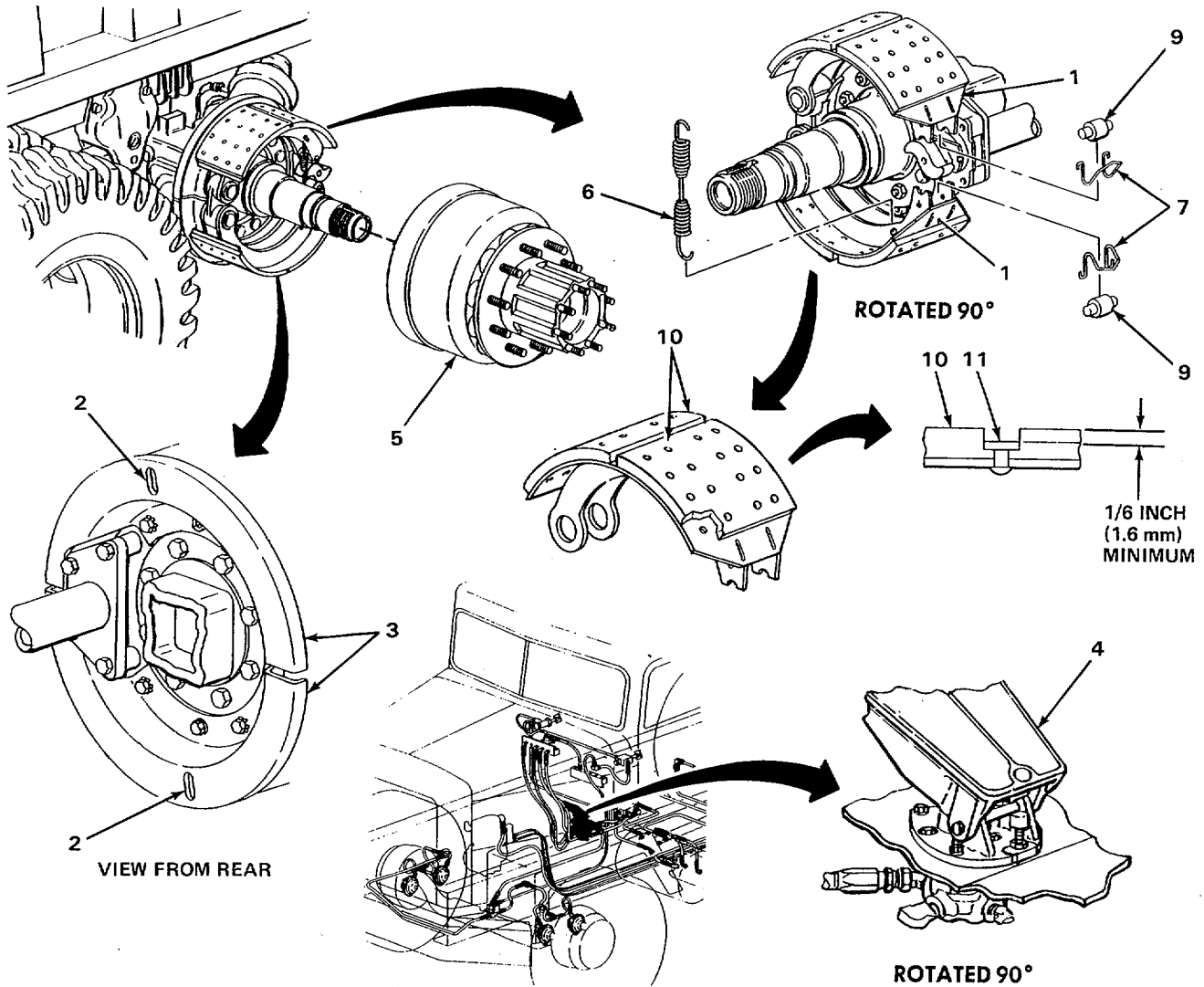
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

- a. If mounting hardware is cracked, bent, broken, stretched, or distorted, replace (page 2-955).
- b. If brakeshoes (1) are oil soaked, cracked, burned, or chipped, replace (page 2-955).



TA243933

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

69. PARKING BRAKE DOES NOT HOLD.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

Ensure that vehicle is on level ground and that rear wheels are chocked to prevent vehicle from moving or severe injury to personnel may result.

When performing parking brake troubleshooting, follow procedure exactly. Release of trapped air inside brake chamber can cause brakes to apply suddenly, causing injury to personnel.

NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

- Step 1. Chock rear wheels of truck. Check for operation of push rod (1) and slack adjuster (2) as follows: have assistant pull PARKING BRAKE control knob (3). Check to see that push rod (1) and slack adjuster (2) are moving.
- a. If push rod (1) and slack adjuster (2) are not moving, go to step 2.
 - b. If push rod (1) and slack adjuster (2) are moving, adjust rear brakes (page 2-973).

CAUTION

Care must be taken when working behind instrument panel to prevent damaging wires or components.

- Step 2. Check parking brake control valve (4) for output air pressure as follows: using 5/8-inch open-end wrench, loosen output hose fitting (5) six turns, push in PARKING BRAKE control knob (3) and listen for hissing noise.
- a. If hissing noise is not heard, replace parking brake control valve (4), notify Direct Support Maintenance.
 - b. If hissing noise is heard, pull out PARKING BRAKE control knob (3). Tighten output hose fitting (5), using 5/8-inch open-end wrench, and go to step 3.
- Step 3. Check front relay valve (6) for exhaust of air pressure from bottom as follows: have assistant push in PARKING BRAKE control knob (3). Check for exhaust of air pressure from exhaust vent (7) on bottom of front relay valve (6).

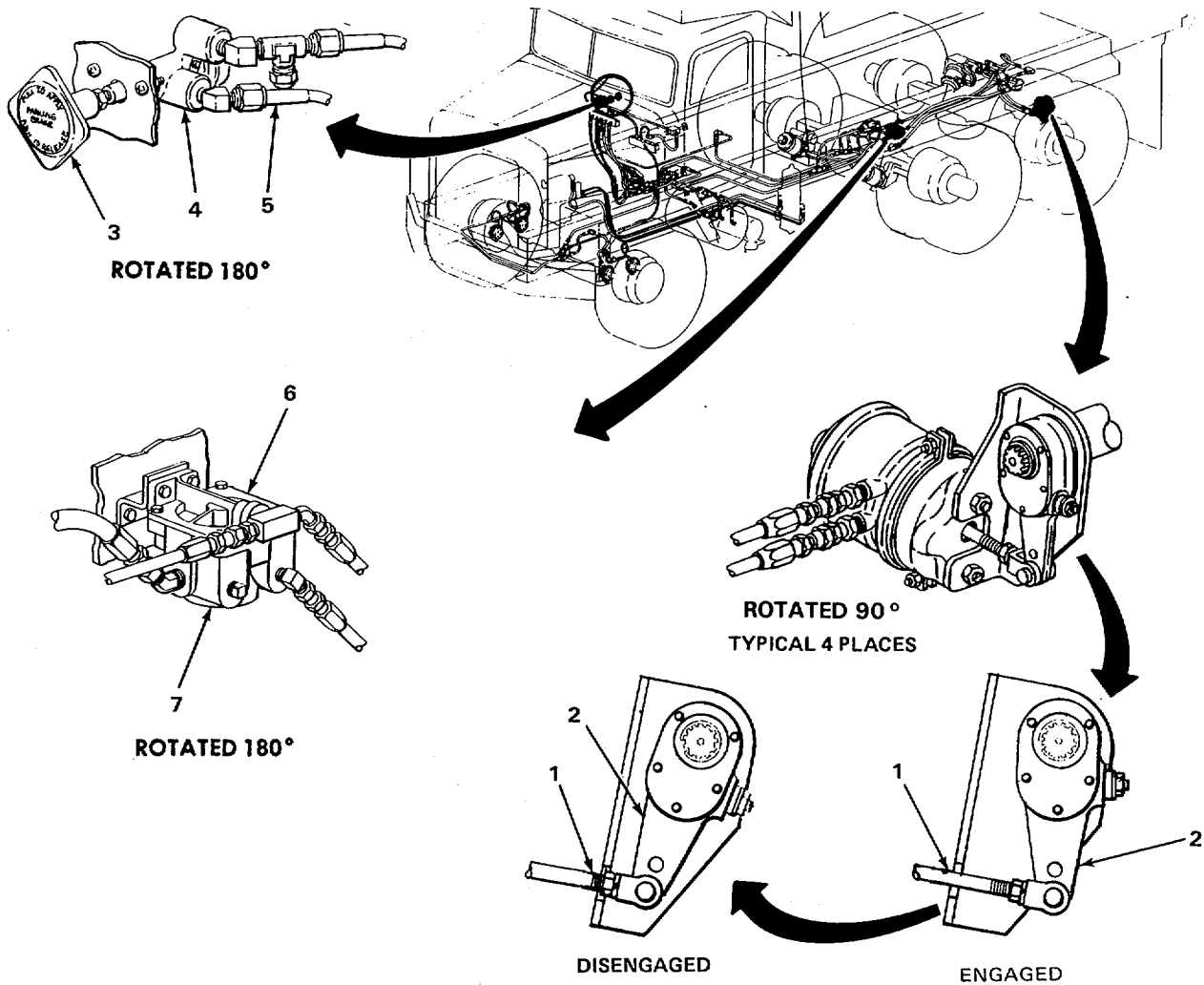
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

- a. If air pressure is not vented from exhaust vent (7), front relay valve (6) must be replaced. Notify Direct Support Maintenance.
- b. If air pressure is vented from exhaust vent (7), have assistant pull out PARKING BRAKE control knob (3). Go to step 4.



TA243934

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

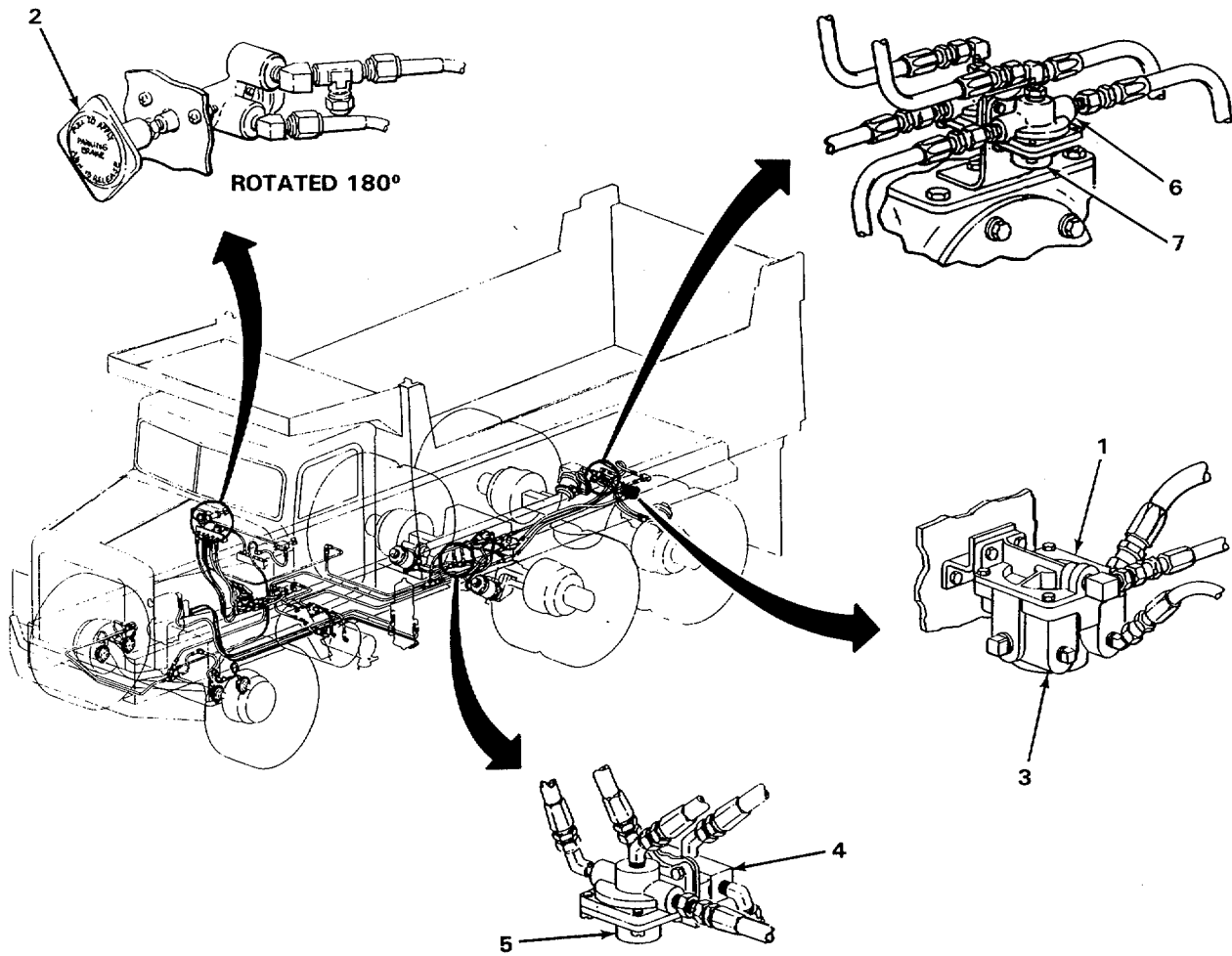
69. PARKING BRAKE DOES NOT HOLD - CONTINUED.

NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

- Step 4. Check rear relay valve (1) for air pressure as follows: have assistant push in PARKING BRAKE control knob (2). Check for exhaust of air pressure from exhaust vent (3) on bottom of rear relay valve (1).
- a. If air pressure is not vented from exhaust vent (3), rear relay valve (1) must be replaced. Notify Direct Support Maintenance.
 - b. If air pressure is vented from exhaust vent (3), have assistant pull out PARKING BRAKE control knob (2). Go to step 5.
- Step 5. Check front rear quick release valve (4) for air pressure as follows: have assistant push in PARKING BRAKE control knob (2). Check for exhaust of air > pressure from exhaust vent (5) on bottom of front rear quick release valve (4).
- a. If air pressure is not vented from exhaust vent (5), front rear quick release valve (4) must be replaced. Notify Direct Support Maintenance.
 - b. If air pressure is vented from exhaust vent (5), have assistant pull out PARKING BRAKE control knob (2). Go to step 6.
- Step 6. Check rear rear quick release valve (6) for air pressure as follows: have assistant push in PARKING BRAKE control knob (2). Check for exhaust of air pressure from exhaust vent (7) on bottom of rear rear quick release valve (6).
- a. If air pressure is not vented from exhaust vent (7), rear rear quick release valve (6) must be replaced. Notify Direct Support Maintenance.
 - b. If air pressure is vented from exhaust vent (7), have assistant pull out PARKING BRAKE control knob (2). Go to step 7.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED



TA243935

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

69. PARKING BRAKE DOES NOT HOLD - CONTINUED.

NOTE

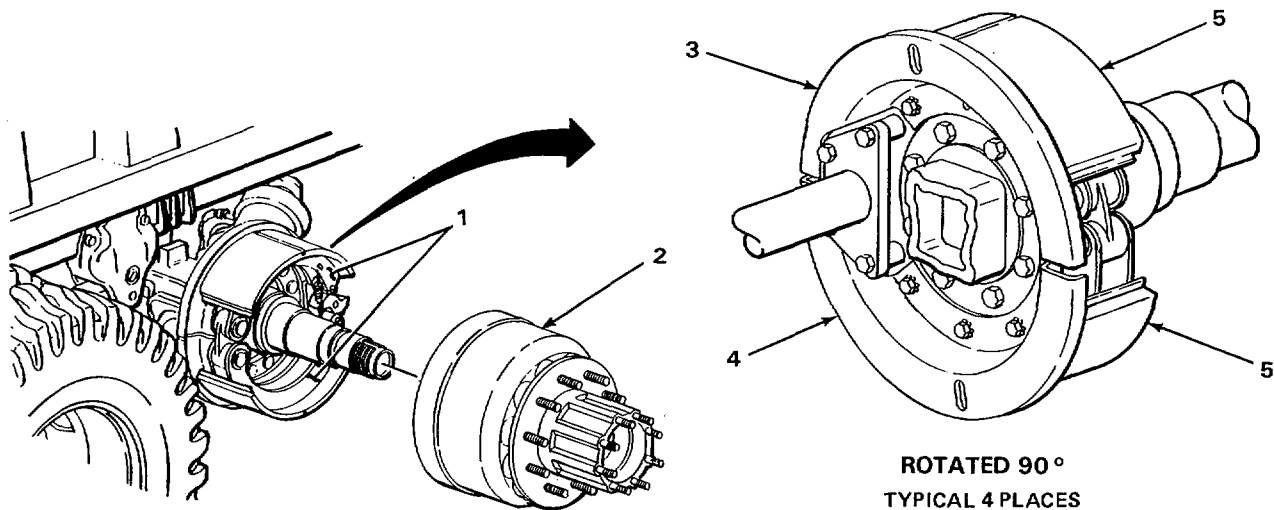
Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

Step 7. Check adjustment of rear brakeshoes (1) as follows: using .025-inch (.635 mm) feeler gage, measure distance between rear brakeshoes (1) and drum (2), through upper dust shield (3) and lower dust shield (4).

a. If rear brakeshoes (1) are more than .025-inch (.635 mm) away from drum (2), adjust rear brakes (page 2-973).

b. If rear brakeshoes (1) are adjusted to .025-inch (.635 mm) from drum (2), go to step 8.

Step 8. Measure thickness of rear brakeshoe lining (5) (page 2-963).



TA243936

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

70. PARKING BRAKE DOES NOT RELEASE.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

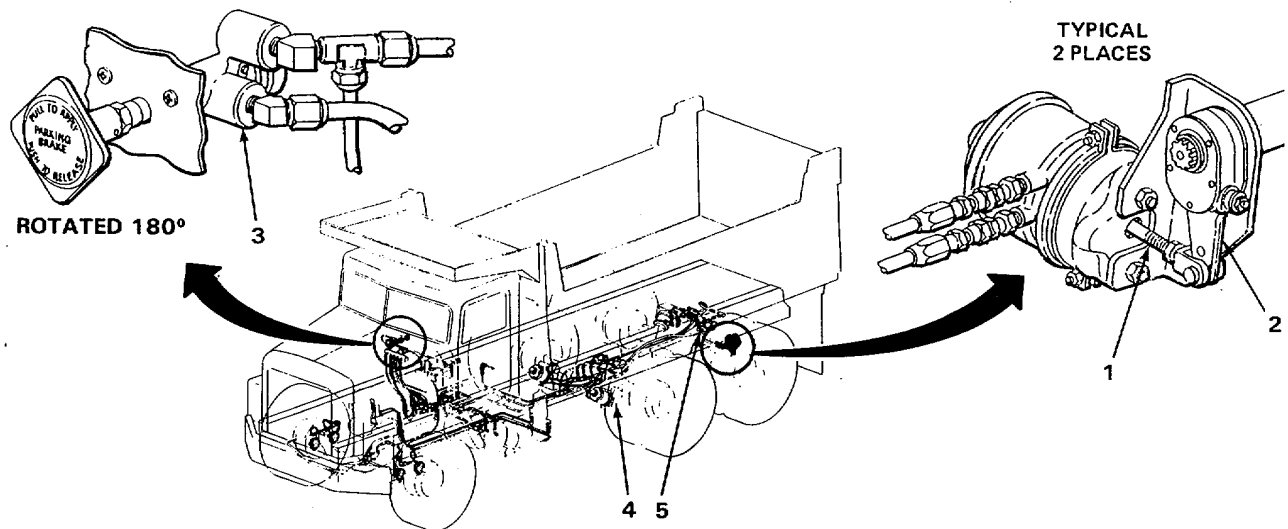
Ensure that vehicle is on level ground and that rear wheels are chocked to prevent vehicle from moving or severe injury to personnel may result.

NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10)

Step 1. Check for proper operation of push rods (1) and slack adjusters (2) as follows: have assistant release and apply PARKING BRAKE control valve (3) several times. Check for movement of push rods (1) and slack adjusters (2).

- a. If push rods (1) and slack adjusters (2) are not moving, go to step 2.
- b. If push rods (1) and slack adjusters (2) are only moving on front rear axle (4), go to step 7.
- c. If push rods (1) and slack adjusters (2) are only moving on rear rear axle (5), go to step 6.



TA243937

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

70. PARKING BRAKE DOES NOT RELEASE - CONTINUED.

- Step 2. Check four airbrake chambers (1) for air leaks as follows: have assistant release and apply PARKING BRAKE control knob (2) several times. Check each individual airbrake chamber (1) for air leaks.
- a. If one or more airbrake chambers (1) are leaking, defective airbrake chamber must be replaced. Notify Direct Support Maintenance.
 - b. If four airbrake chambers (1) are not leaking, go to step 3.
- Step 3. Check PARKING BRAKE control valve (3) for input air pressure as follows: pull PARKING BRAKE control knob (2) out to apply parking brakes. Using 5/8-inch open-end wrench, loosen input hose fitting (4) six turns. Push in PARKING BRAKE control knob (2), and listen for hissing noise.
- a. If hissing noise is not heard, go to step 4.
 - b. If hissing noise is heard, pull out PARKING BRAKE control knob (2). Tighten input hose fitting (4), using 5/8-inch open-end wrench. Go to step 5.
- Step 4. Check double check valve (5) for output air pressure as follows: using 5/8-inch open-end wrench, loosen output hose fitting (6) six turns. Listen for hissing noise.
- a. If hissing noise is not heard, notify Direct Support Maintenance.
 - b. If hissing noise is heard, replace air line (7), (page 2-1025). Go to step 5.
- Step 5. Check PARKING BRAKE control valve (3) for output air pressure as follows: pull PARKING BRAKE control knob (2) out to apply parking brakes. Using 5/8-inch open-end wrench, loosen output hose fitting (8) six turns. Push in PARKING BRAKE control knob (2) and listen for hissing noise.
- a. If hissing noise is not heard, defective PARKING BRAKE control valve (3) must be replaced. Notify Direct Support Maintenance.
 - b. If hissing noise is heard, go to step 6.
- Step 6. Check double check valve (9) for output air pressure as follows: using 3/4-inch open-end wrench, loosen output hose fitting (10) six turns. Have assistant push in PARKING BRAKE control knob (2). Listen for hissing noise.

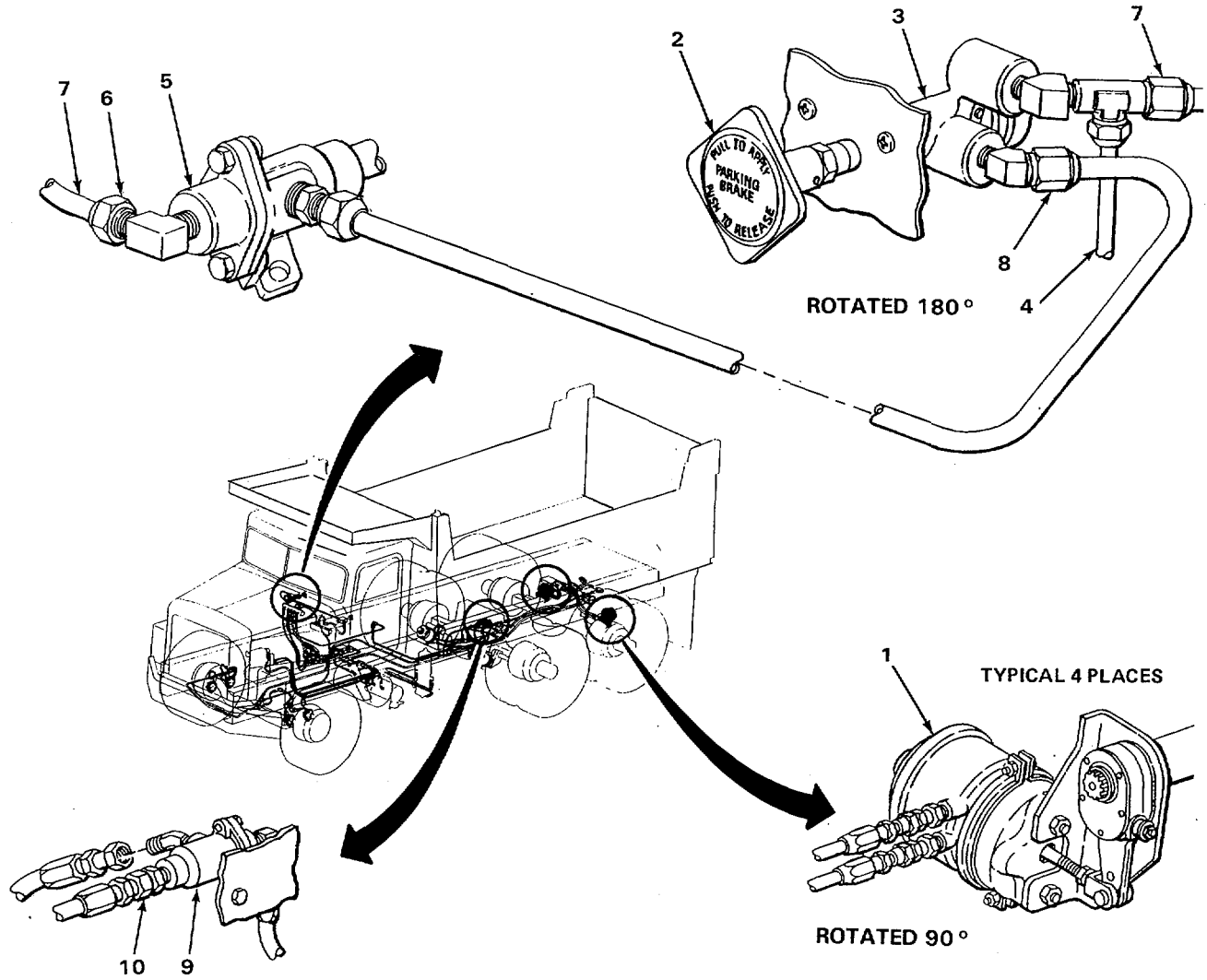
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

- a. If hissing noise is not heard, defective double check valve (9) must be replaced. Notify Direct Support Maintenance.
- b. If hissing noise is heard, go to step 7.



TA243938

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

70. PARKING BRAKE DOES NOT RELEASE - CONTINUED.

NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine. Raise air pressure between 90 and 130 psi then shut down engine (TM 5-3805-254-10).

Step 7. Check front rear quick release valve (1) for output air pressure as follows: have assistant pull out PARKING BRAKE control knob (2). Using 3/4-inch open-end wrench, loosen output hose fitting (3) six turns. Have assistant push in PARKING BRAKE control knob (2). Listen for hissing noise.

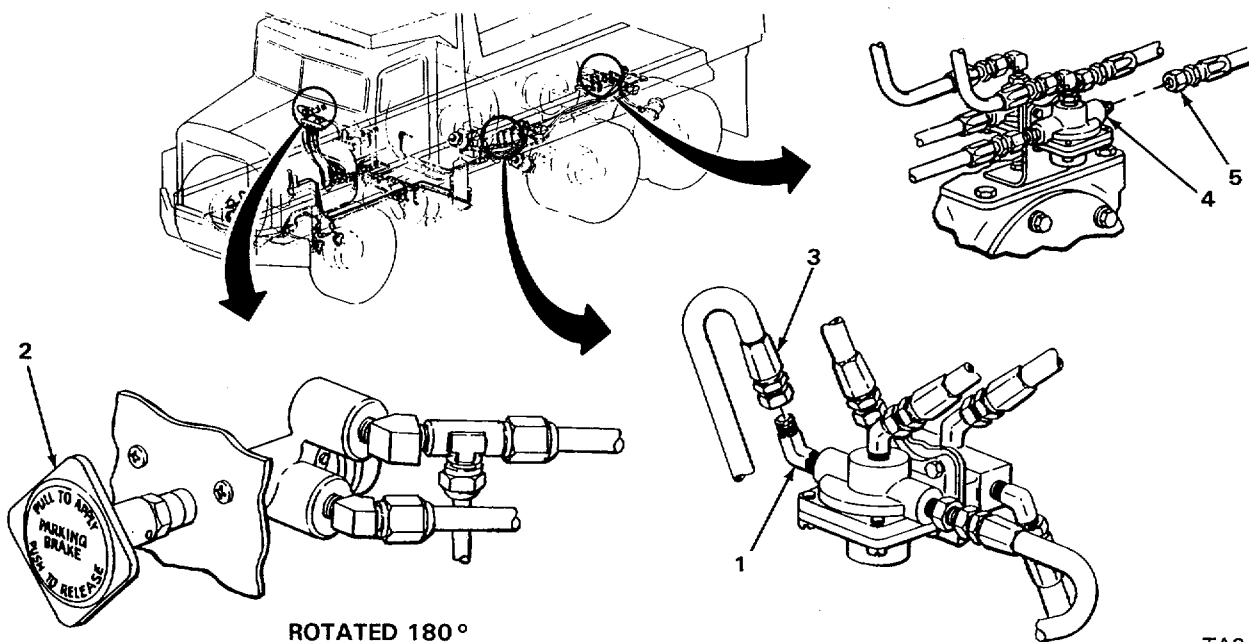
a. If hissing noise is not heard, defective front rear quick release valve (1) must be replaced. Notify Direct Support Maintenance.

b. If hissing noise is heard, go to step 8.

Step 8. Check rear rear quick release valve (4) for output air pressure as follows: have assistant pull out PARKING BRAKE control knob (2). Using 3/4-inch open-end wrench, loosen output hose fitting (5) six turns. Have assistant push in PARKING BRAKE control knob (2). Listen for hissing noise.

a. If hissing noise is not heard, defective rear rear quick release valve (4) must be replaced. Notify Direct Support Maintenance.

b. If hissing noise is heard, notify Direct Support Maintenance.



ROTATED 180°

TA243939

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

71. AIR SYSTEM DOES NOT HOLD AIR PRESSURE.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

NOTE

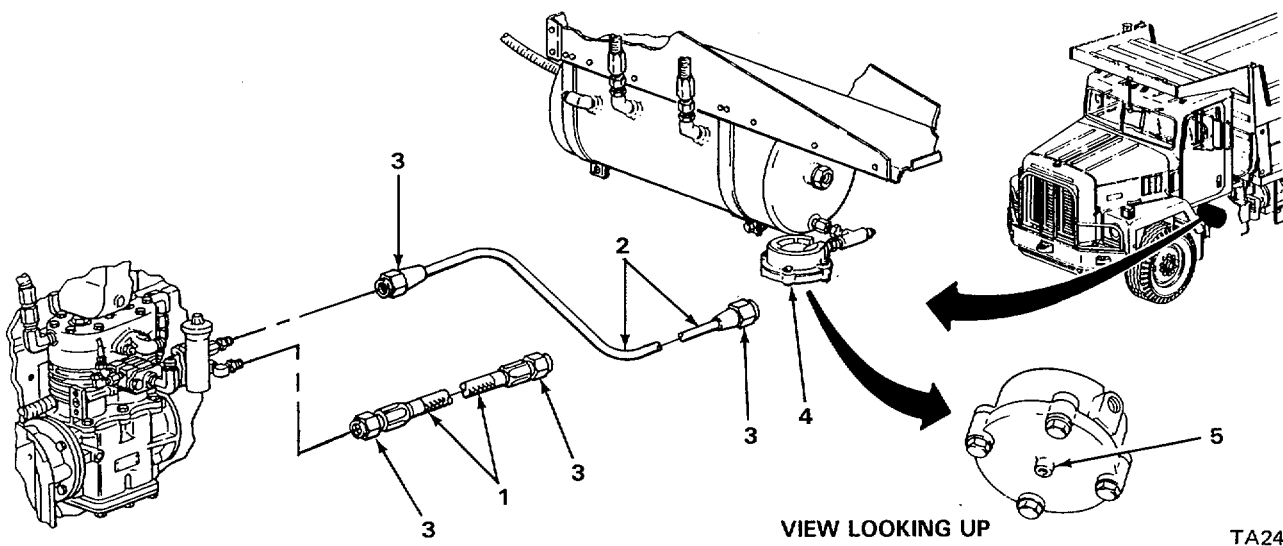
Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

Step 1. Check all airhoses (1), air lines (2), and fittings (3) for leaks.

- a. If airhoses (1), air lines (2), or fittings (3) are leaking, replace (page 2-947).
- b. If airhoses (1), air lines (2), or fittings (3) are not leaking, go to step 2.

Step 2. Check automatic drain valve (4) for leaks, or frozen manual drainpin (5).

- a. If automatic drain valve (4) is leaking or manual drainpin (5) is frozen, defective automatic drain valve (4) must be replaced, notify Direct Support Maintenance.
- b. If automatic drain valve (4) is not leaking or manual drainpin (5) is not frozen, go to step 3.



TA243940

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

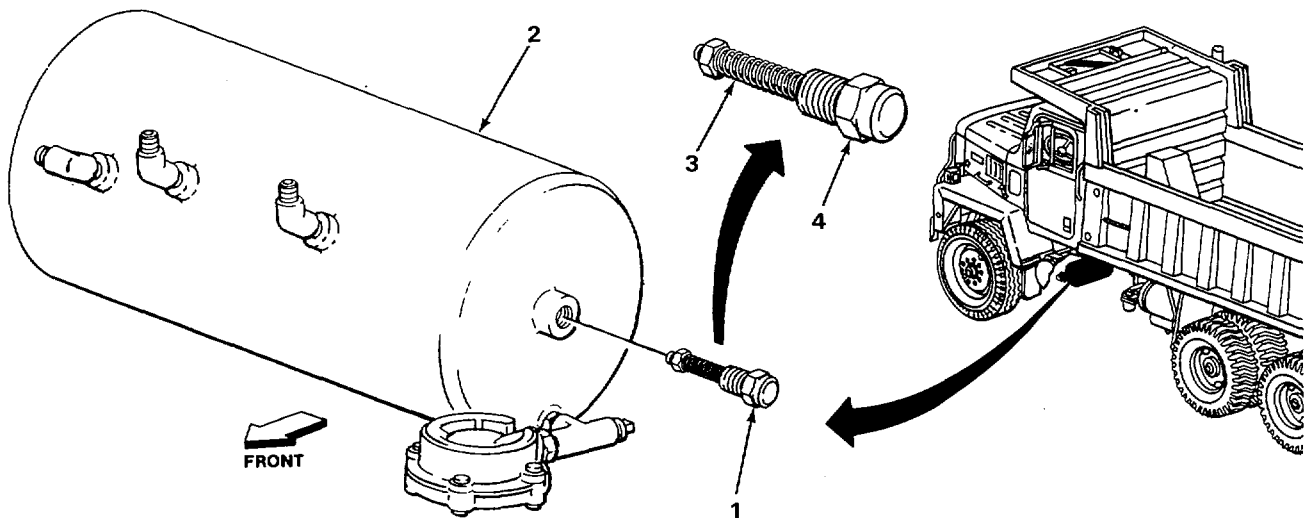
71. AIR SYSTEM DOES NOT HOLD AIR PRESSURE - CONTINUED.

Step 3. Check pressure relief valve (1) in wet air reservoir (2) for broken or frozen spring (3), or bent, dented, or cracked cap (4).

- a. If pressure relief valve (1) is damaged, notify Direct Support Maintenance.
- b. If pressure relief valve (1) is not damaged, go to step 4.

Step 4. Check wet air reservoir (2) for leaks.

- a. If wet air reservoir (2) is leaking, replace (page 2-986).
- b. If wet air reservoir (2) is not leaking, go to step 5.



TA243941

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

Step 5. Check pressure relief valve (5) in air dryer (6) for leaks.

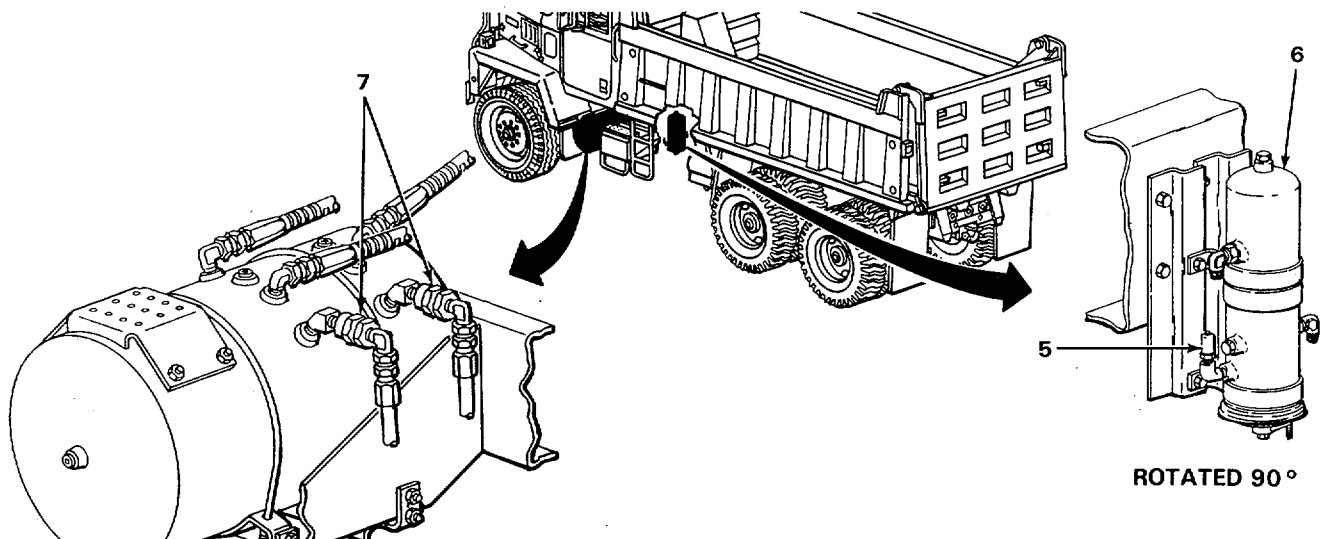
- a. If pressure relief valve (5) is leaking, replace (page 2-1004).
- b. If pressure relief valve (5) is not leaking, go to step 6.

Step 6. Check air dryer (6) for cracks, broken welds, or leaks.

- a. If air dryer (6) is cracked, broken, or leaking, replace (page 2-1002).
- b. If air dryer (6) is not cracked, broken, or leaking, go to step 7.

Step 7. Inspect two check valves (7) in dry air reservoir (8) for cracks or leaks.

If two check valves (7) are cracked or leaking, replace (page 2-975).



TA243942

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

72. BOTH WINDSHIELD WIPERS DO NOT WORK.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

- Step 1. Check air manifold (1) for output air pressure as follows: using 5/8-inch opened wrench, loosen output line fitting (2) six turns. Listen for hissing noise.
- a. If hissing noise is not heard, notify Direct Support Maintenance.
 - b. If hissing noise is heard, tighten output line fitting (2) using 5/8inch open-end wrench. Go to step 2.
- Step 2. Check elbow (3) for input air pressure as follows: using 5/8-inch open-end wrench, loosen input line fitting (4) six turns. Listen for hissing noise.
- a. If hissing noise is not heard, replace air line (5). Using 5/8-inch open-end wrench, unscrew and take off input line fitting (4) and output line fitting (2). Screw on and tighten input line fitting (4) and output line fitting (2) using 5/8-inch open-end wrench.
 - b. If hissing noise is heard, go to step 3.
- Step 3. Check windshield WIPER control (6) for input air pressure as follows: using 5/8inch open-end wrench, loosen input line fitting (7) six turns. Listen for hissing noise.
- a. If hissing noise is not heard, replace air line (8). Using 5/8-inch open-end wrench, unscrew and take off input line fitting (7) and output line fitting (9). Screw on and tighten input line fitting (7) and output line fitting (9) using 5/8-inch open-end wrench.
 - b. If hissing noise is heard, go to step 4.
- Step 4. Check windshield wiper control (6) for output air pressure as follows: using 9/16-inch open-end wrench, loosen output line fitting (10) six turns. Turn windshield WIPER control knob (11) clockwise to on position, and listen for hissing noise.

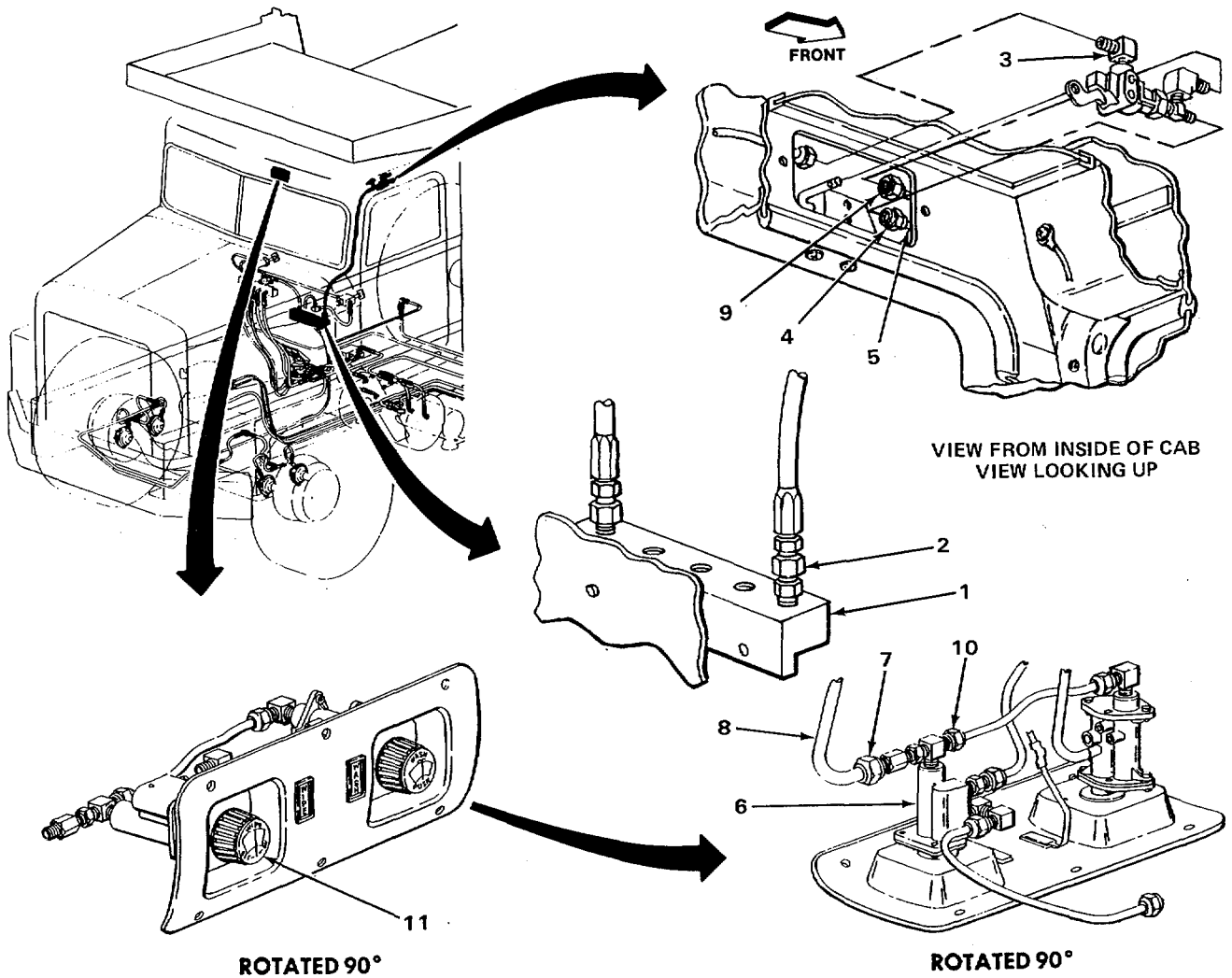
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

If hissing noise is not heard, defective windshield wiper control (6) must be replaced (page 2-1321).



TA243943

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

73. ONE WINDSHIELD WIPER DOES NOT WORK.

WARNING

Safety goggles must be worn when working with air lines to prevent personal injury.

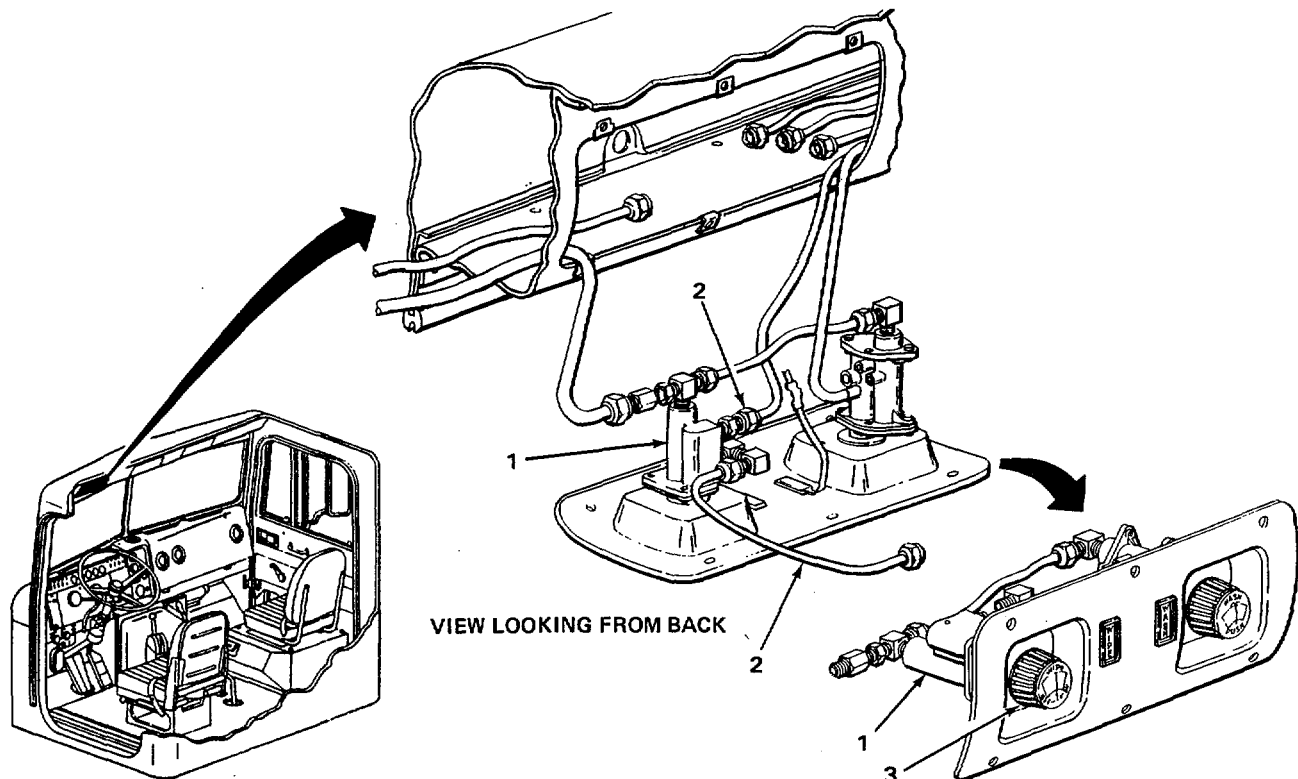
NOTE

Check AIR PRESSURE gage for air pressure between 90 and 130 psi. If specified air pressure is not present, start engine and check that air pressure in air system is between 90 and 130 psi (TM 5-3805-254-10). Shut down engine (TM 5-3805-254-10).

Step 1. Check windshield wiper control (1) for output air pressure as follows: using 9/16-inch open-end wrench, loosen output line fitting (2) six turns to windshield WIPER motor that is not working. Turn windshield wiper control knob (3) clockwise to on position, listen for hissing noise. Turn windshield wiper control knob (3) counterclockwise to off position.

a. If hissing noise is not heard, replace windshield wiper control (1) (page 2-1321).

b. If hissing noise is heard, go to step 2.



TA243944

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

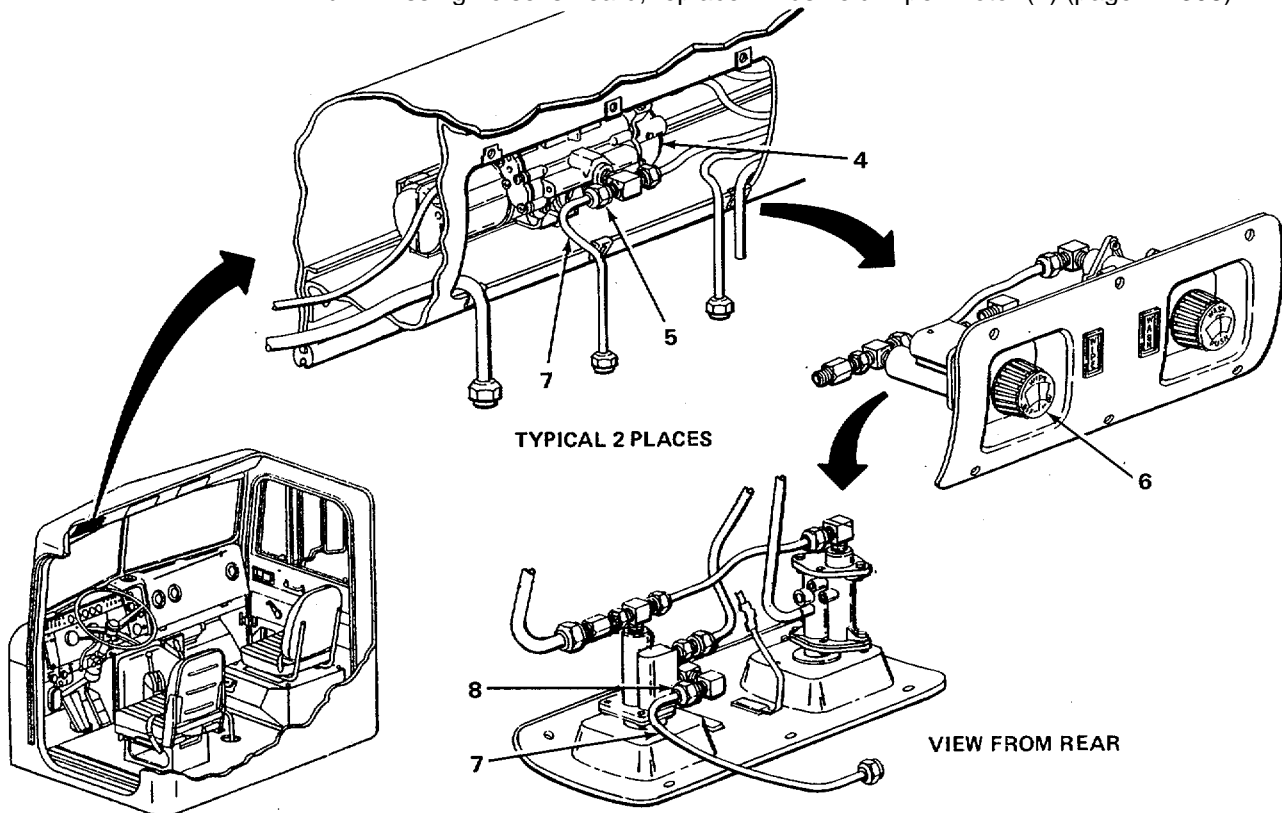
TEST OR INSPECTION

CORRECTIVE ACTION

Step 2. Check defective windshield wiper motor (4) for input air pressure as follows: using 9/16-inch open-end wrench, loosen input line fitting (5) six turns. Turn windshield wiper control knob (6) clockwise to on position, listen for hissing noise. Turn windshield wiper control knob (6) counterclockwise to off position.

a. If hissing noise is not heard, replace air line (7). Using 9/16-inch open-end wrench, unscrew and take off input line fitting (5) and output line fitting (8). Screw on and tighten input line fitting (5) and output line fitting (8).

b. If hissing noise is heard, replace windshield wiper motor (4) (page 2-1308).



TA243945

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

STEERING SYSTEM

74. STEERING WHEEL DOES NOT TURN SMOOTHLY.

WARNING

Do not attempt to disconnect hydraulic lines and fittings while engine is running or before hydraulic system pressure has been released. When engine is running, hydraulic system is under pressure. Hydraulic system pressure should be 0 psi (0 kPa) before lines are disconnected. A line or fitting disconnected under pressure will blow off with great force and can cause injury to personnel.

- Step 1. Check hydraulic fluid level in reservoir (1) as follows: pull up cap (2) and take out. Wipe off dipstick (3), put cap (2) on and take out. Check that hydraulic fluid level is between F and L on dipstick (3).
- Fill reservoir (1) with hydraulic fluid to 4-inches (10.1 mm) below top of filler neck using 6-inch machinist scale. Put cap (2) on and bleed steering system (page 2-1202).
 - If reservoir (1) is full, put cap (2) on reservoir (1) and bleed steering system (page 2-1202).
 - If reservoir (1) is full and steering system is bled, go to step 2.
- Step 2. Check power steering pump (4) for noise.
- If reservoir (1) is full and steering system has been bled and noise is heard, notify Direct Support Maintenance.
 - If no noise is heard, go to step 3.
- Step 3. Pull up and take out cap (2) and check reservoir (1) for air bubbles. If air bubbles are present check lines, fittings and hoses for loose, cracked or broken condition.
- If hose (5) is loose, tighten using 1-inch and 3/4-inch open-end wrenches. Fill and bleed steering system (page 2-1202).
 - If hoses (6 or 7) are loose, tighten using 7/8-inch open-end wrench. Fill and bleed steering system (page 2-1202).
 - If hose (8) is loose, tighten using 1-inch open-end wrench. Fill and bleed steering system (page 2-1202).

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

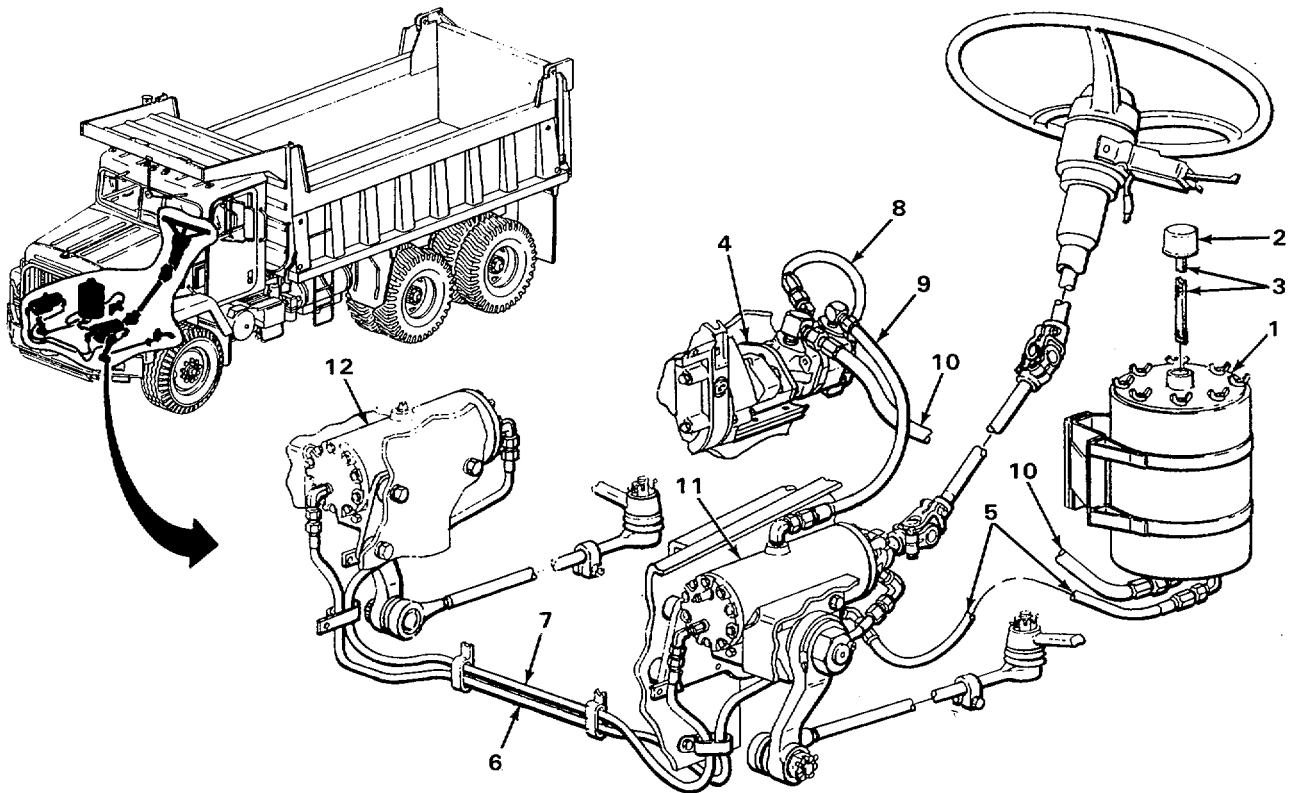
MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

- d. If hose (9) is loose, tighten using 7/8-inch open-end wrench. Fill and bleed steering system (page 2-1202).
- e. If hose (10) is loose, tighten using 1 1/2-inch open-end wrench. Fill and bleed steering system (page 2-1202).
- f. If hoses (5 thru 10) or fittings are damaged, replace (page 2-1168).
- g. If hoses (5 thru 10) or fittings are not damaged, go to step 4.

Step 4. Check left steering gear (11) and right steering gear (12) for leaks. If leaks are found, notify Direct Support Maintenance.



TA243946

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

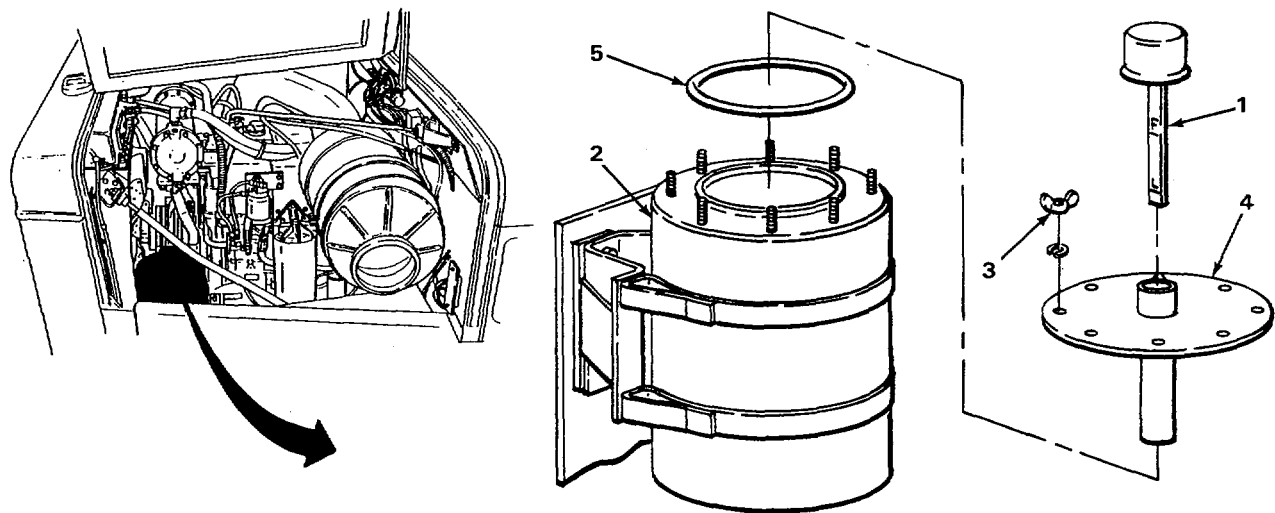
75. POWER STEERING RESERVOIR OIL IS GRAY AND MURKY.

WARNING

Do not attempt to disconnect hydraulic lines and fittings while engine is running or before hydraulic system pressure has been released. When engine is running, hydraulic system is under pressure. Hydraulic system pressure should be 0 psi (0 kPa) before lines are disconnected. A line or fitting disconnected under pressure will blow off with great force and can cause injury to personnel.

- Step 1. Pull up cap (1) and take off. Inspect hydraulic fluid in reservoir (2) for water contamination. If hydraulic fluid is contaminated, go to step 2.
- Step 2. Using 8-inch slip-joint pliers, unscrew and take off eight wingnuts (3). Take off cover (4) and ring (5).

Drain steering system (page 2-1207). Replace filter and ring (5) (page 2-1202). Fill and bleed steering system (page 2-1243).



TA243947

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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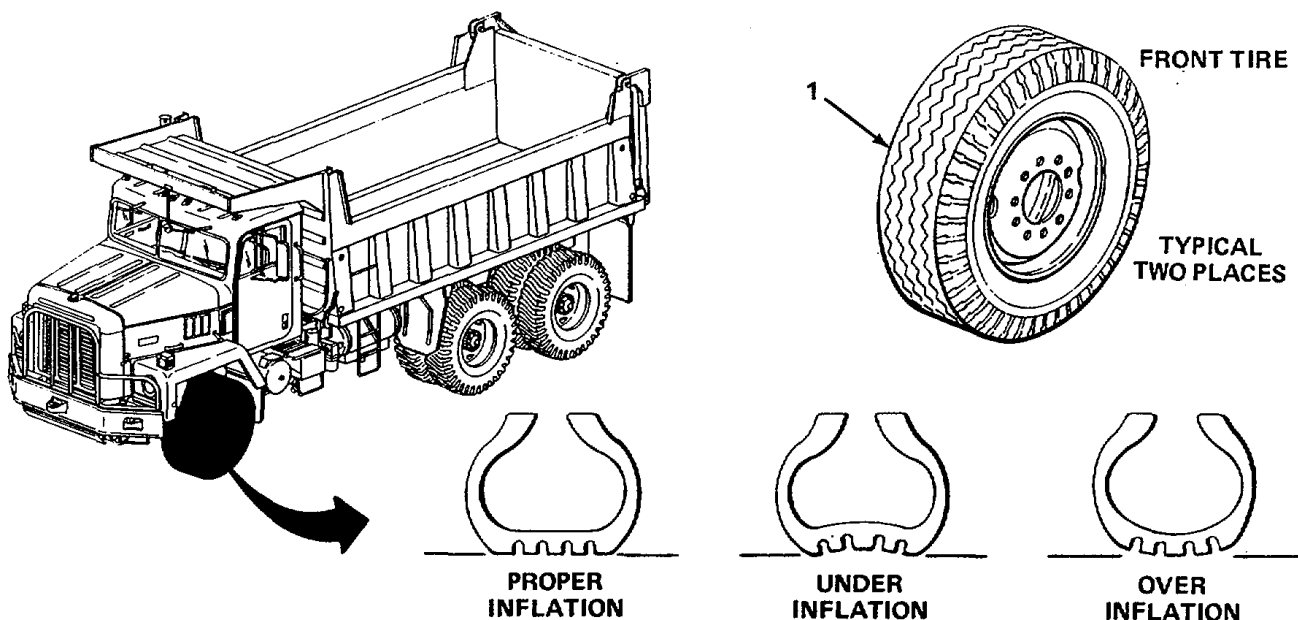
76. STEERING WHEEL IS HARD TO TURN IN BOTH DIRECTIONS.

WARNING

When increasing air pressure in tires, be careful not to exceed recommended pressure, to prevent personal injury or damage to equipment.

Step 1. Using tire pressure gage, check that air pressure in two front tires (1) is 80 psi (551.6 kPa).

If air pressure in two front tires (1) is below 80 psi (551.6 kPa) increase air pressure to 80 psi (551.6 kPa). Go to step 2.



TA243948

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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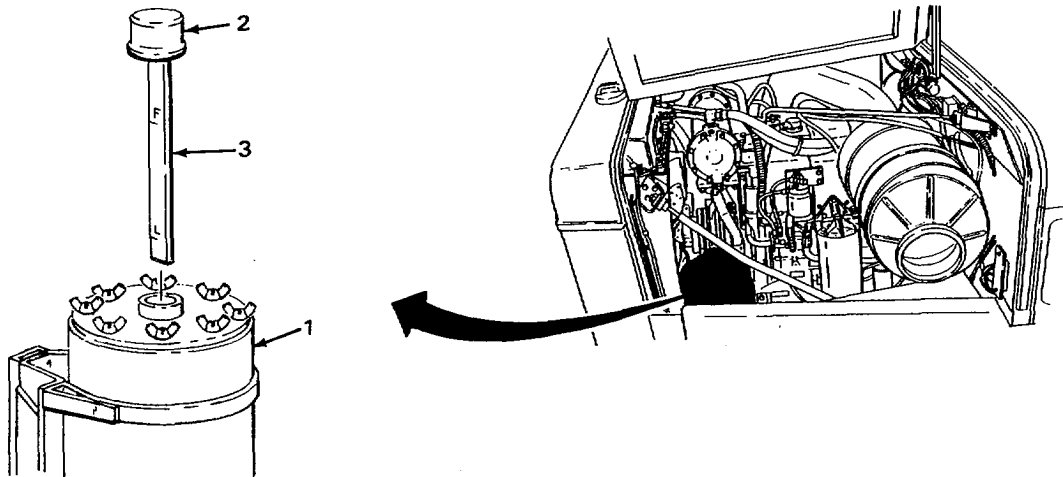
76. STEERING WHEEL IS HARD TO TURN IN BOTH DIRECTIONS - CONTINUED.

WARNING

Do not attempt to disconnect hydraulic lines and fittings while engine is running or before hydraulic system pressure has been released. When engine is running, hydraulic system is under pressure. Hydraulic system pressure should be 0 psi (0 kPa) before lines are disconnected. A line or fitting disconnected under pressure will blow off with great force and can cause injury to personnel.

Step 2. Check hydraulic fluid level in reservoir (1). Pull up cap (2) and take out. Wipe off dipstick (3), put cap (2) on and take out. Check that hydraulic fluid level is between F and L mark on dipstick (3).

- a. If hydraulic fluid level is low, fill reservoir (1) with hydraulic fluid to 4-inches (10.1 mm) below top of filler neck using 6-inch machinist scale. Put cap (2) on and bleed steering system (page 2-1202).
- b. If reservoir (1) is full, bleed steering system (page 2-1202).
- c. If reservoir (1) is full and steering system has been bled, go to step 3.

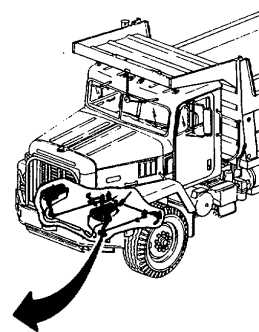
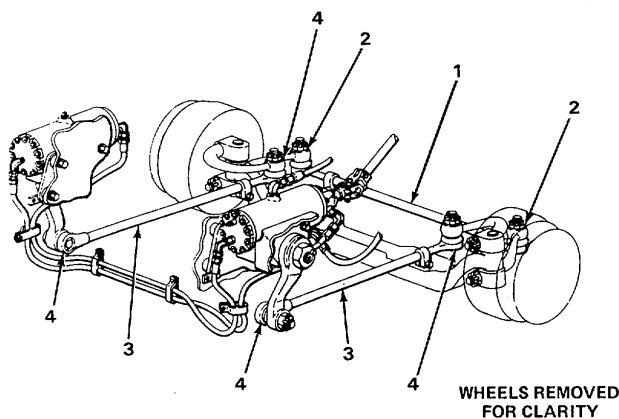


TA243949

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 3. Check tie rod (1) and tie rod ends (2) for bent, worn or binding condition.
- a. If tie rod (1) is bent or worn, notify Direct Support Maintenance.
 - b. If tie rod ends (2) are binding, lubricate (LO 5-3805-254-12). If tie rod ends (2) are still binding, notify Direct Support Maintenance.
 - c. If tie rod (1) or tie rod ends (2) are not bent, worn or binding, go to step 4.
- Step 4. Check drag links (3) for bent, cracked or broken condition.
- a. If drag links (3) are bent, cracked or broken, notify Direct Support Maintenance.
 - b. If drag links (3) are not bent, cracked or broken, go to step 5.
- Step 5. Check drag link ends (4) for worn, loose, or binding condition.
- a. If drag link ends (4) are worn or loose, notify Direct Support Maintenance.
 - b. If drag link ends (4) are binding, lubricate (LO 5-3805-254-12). If drag link ends (4) are still binding, notify Direct Support Maintenance.
 - c. If drag link ends (4) are not worn, loose or binding, go to step 6.



TA243950

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

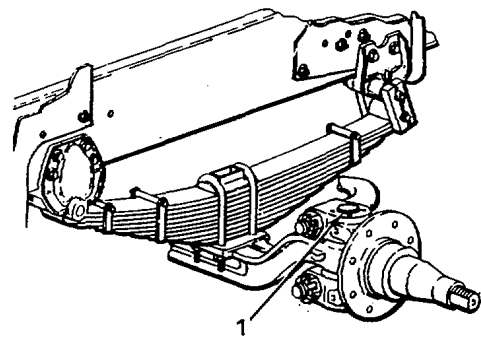
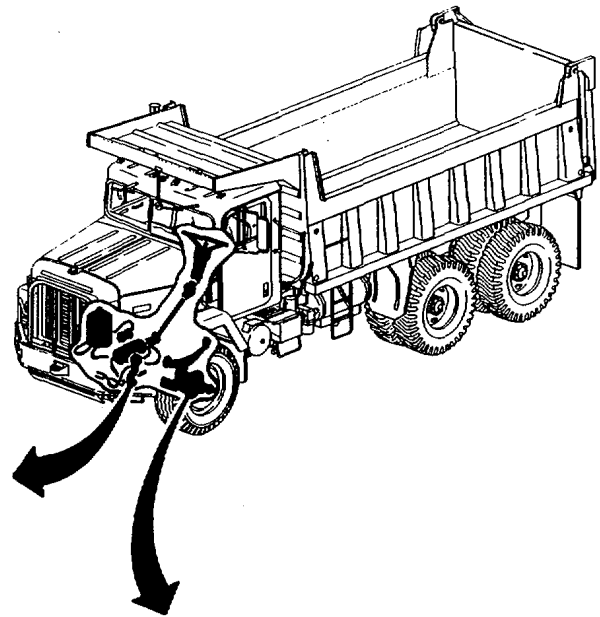
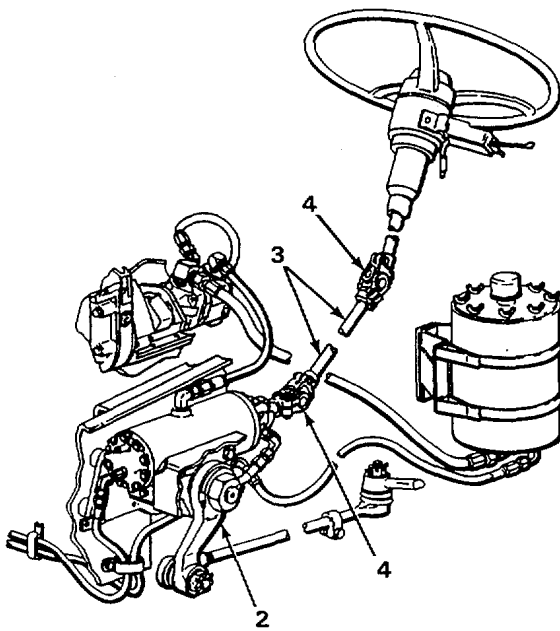
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
76.	STEERING WHEEL IS HARD TO TURN IN BOTH DIRECTIONS - CONTINUED.	<p style="text-align: center;"><u>WARNING</u></p> <p>When jacking vehicle, be sure vehicle is on level ground. Put blocks in front and behind each wheel to prevent vehicle from moving, and support vehicle with trestle stands to prevent personnel injury.</p>
Step 6.	Check king pins (1) for worn condition as follows: jack tire off ground (page 2-424). Using block of wood and pry bar, lift up tire and check for looseness at kingpins (1).	<ul style="list-style-type: none"> a. If kingpins (1) are worn, notify Direct Support Maintenance. b. If kingpins (1) are not worn, go to step 7.
Step 7.	Check king pins (1) for frozen condition as follows: jack up front of dump truck (page 2-424). Have assistant turn steering wheel left and right, check for tightness at kingpins (1).	<ul style="list-style-type: none"> a. If kingpins (1) are frozen, lubricate (LO 5-3805-254-12). If kingpins (1) are still frozen, notify Direct Support Maintenance. b. If kingpins (1) are not frozen, go to step 8.
Step 8.	Check steering arms (2) for bent, cracked, or broken condition.	<ul style="list-style-type: none"> a. If steering arms (2) are bent or broken, notify Direct Support Maintenance. b. If steering arms (2) are not bent or broken, go to step 9.
Step 9.	Check steering shaft (3) for bent, cracked, or broken condition.	<ul style="list-style-type: none"> a. If steering shaft (3) is bent or broken, notify Direct Support Maintenance. b. If steering shaft (3) is not bent, cracked or broken, go to step 10.
Step 10.	Check steering shaft universal joints (4) for frozen, loose, worn or rusted conditions.	<ul style="list-style-type: none"> a. If steering shaft universal joints (4) are frozen, lubricate (LO 5-3805-254-12). If steering shaft universal joints (4) are still frozen, notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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b. If steering shaft universal joints (4) are loose, worn or rusted notify Direct Support Maintenance.

c. If steering shaft universal joints (4) are not frozen, loose, worn or rusted, go to step 11.



WHEEL ASSEMBLIES
REMOVED FOR CLARITY

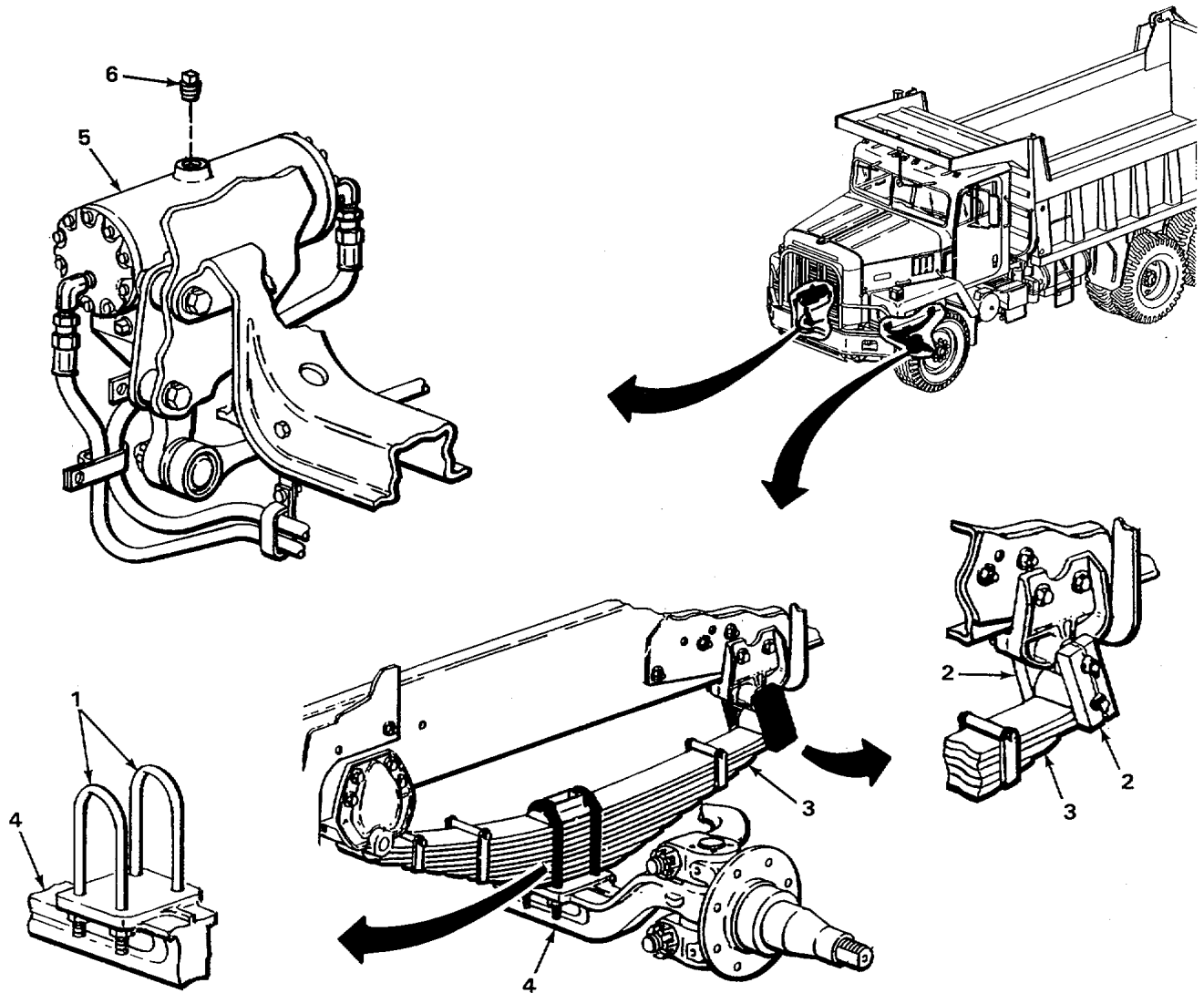
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
76. STEERING WHEEL IS HARD TO TURN IN BOTH DIRECTIONS - CONTINUED.		
Step 11.	Check U-bolts (1) and shackles (2) for loose, cracked, bent, or broken condition. Check for missing parts.	<ul style="list-style-type: none"> a. If U-bolts (1) and shackles (2) are loose or missing parts, notify Direct Support Maintenance. b. If U-bolts (1) and shackles (2) are cracked, bent, or broken, notify Direct Support Maintenance. c. If U-bolts (1) and shackles (2) are not loose, cracked, bent, broken or missing parts, go to step 12.
Step 12.	Check springs (3) for cracked, bent, or broken parts. Check that both left and right sides of vehicle have the same number of leafs.	<ul style="list-style-type: none"> a. If springs (3) are cracked, bent, or broken, notify Direct Support Maintenance. b. If springs (3) do not have the same amount of leafs on both left and right sides, notify Direct Support Maintenance. c. If springs (3) are not cracked, bent, or broken, go to step 13. d. If springs (3) have the same amount of leafs on both left and right sides, go to step 13.
Step 13.	Check front axle (4) for loose, cracked, bent, or broken condition.	<ul style="list-style-type: none"> a. If front axle (4) is loose, cracked, bent, or broken, notify Direct Support Maintenance. b. If front axle (4) is not loose, cracked, bent, or broken, go to step 14.
Step 14.	<p>Check right steering gear (5) as follows: Using 1/2-inch, open-end wrench, unscrew and take out plug (6). Screw hydraulic pressure gauge, 0 to 3000 psi (0 to 20, 685 kPa) into plug hole and tighten. Start engine and allow to reach operating temperature (TM 5-3805-254-10). Check hydraulic gage reading. It should read 1750 psi (12,066 kPa). Shut down engine (TM 5-3805-254-10) and allow engine to cool and hydraulic pressure to drain. Unscrew and take out hydraulic gage. Screw in and tighten plug (6) using 1/2-inch, open-end wrench.</p>	

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If hydraulic gage does not read 1750 psi (12,066 kPa) at right steering gear (5), notify Direct Support Maintenance.
- b. If hydraulic gage reads 1750 psi (12,066 kPa) at right steering gear (5), go to step 15.



TA243952

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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76. STEERING WHEEL IS HARD TO TURN IN BOTH DIRECTIONS - CONTINUED.

- Step 15. Check two front tires (1) for uneven tire wear (TM 5-3805-254-10).
- a. If two front tires (1) are worn unevenly, front wheel alignment must be checked. Notify Direct Support Maintenance.
 - b. If two front tires (1) are not worn unevenly and alignment is good, go to step 16.
- Step 16. Check two front wheels (2) for bent, cracked or broken condition.
- a. If two front wheels (2) are bent, cracked or broken, replace wheel (2) (page 2-1168).
 - b. If two front wheels (2) are not bent, cracked or broken, go to step 17.

WARNING

Do not operate dump truck with tires of different construction. Injury to personnel and equipment could occur.

- Step 17. Check front axle (3) for two different tire sizes or two different tire types.
- a. If front axle (3) has two different tire sizes, see EQUIPMENT DATA page 1-20 for proper tire size. Replace incorrect tires (page 2-1168).
 - b. If front axle (3) has two different tire types, see EQUIPMENT DATA page 1-20 for proper tire type. Replace incorrect tires (page 2-1168).
 - c. If front axle (3) does not have two different tire sizes, or different tire types, go to step 18.

WARNING

When jacking vehicle, be sure vehicle is on level ground. Put blocks in front and behind each wheel to prevent vehicle from moving, and support vehicle with trestle stands to prevent personnel injury.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

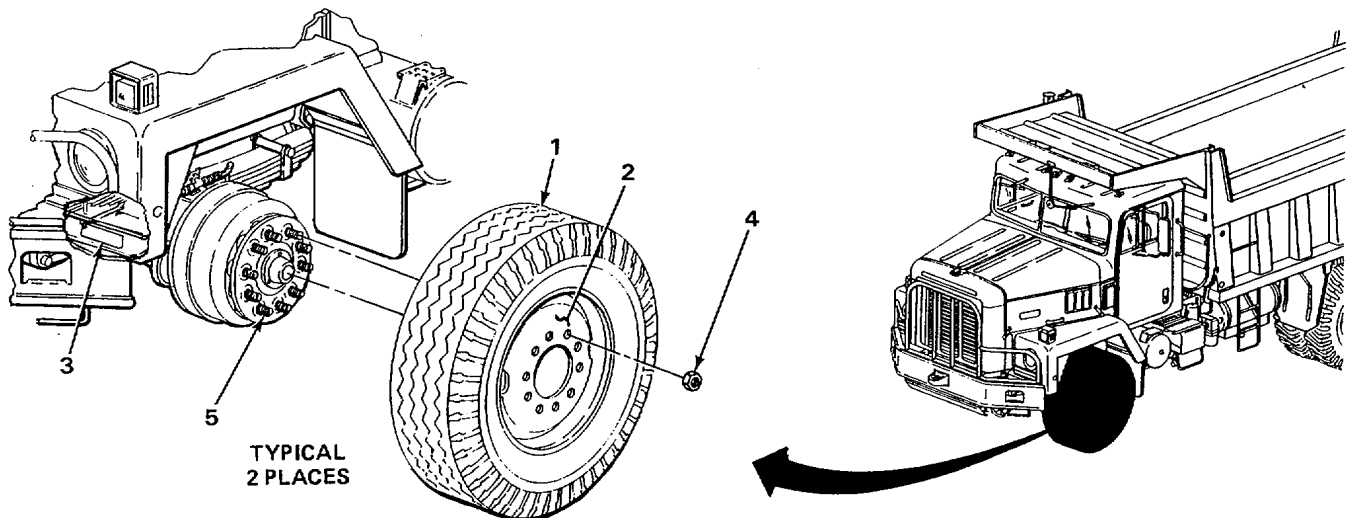
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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NOTE

Lug nuts on right side of dump truck have right hand threads and lug nuts on left side of dump truck have left hand threads.

Step 18. Jack up front of dump truck (page 2-442). Remove front tire (1) (page 2-1168). Check lug nuts (4) and lugs (5) for loose or damaged condition or missing parts.

- a. If lug nuts (4) or lugs (5) are loose, alternately tighten until snug using 1 1/2-inch, 3/4-inch drive socket and hinged handle. Tighten using 1 1/2-inch, 3/4-inch drive socket and hinged handle.
- b. If lug nuts (4) or lugs (5) are damaged, replace (page 2-1168).
- c. If lug nuts (4) or lugs (5) are missing, replace (page 2-1168).



TA243953

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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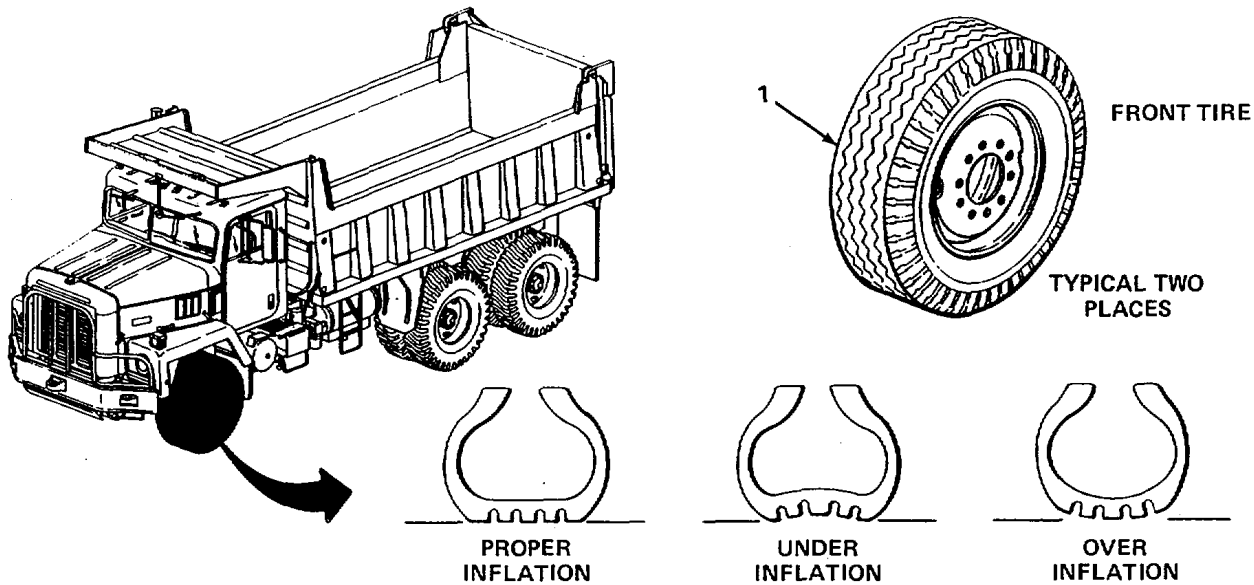
77. STEERING WHEEL IS HARD TO TURN COUNTERCLOCKWISE.

WARNING

When increasing air pressure in tires be careful not to exceed recommended pressure to prevent personal injury or damage to equipment.

Step 1. Using tire pressure gage, check that air pressure in two front tires (1) is 80 psi (551.6 kPa).

- a. If air pressure in two front tires (1) is below 80 psi (551.6 kPa), increase air pressure and recheck with tire pressure gage.
- b. If air pressure in two front tires (1) is 80 psi (551.6 kPa), go to step 2.
- c. If air pressure in two front tires (1) is over 80 psi (551.6 kPa), release air pressure until 80 psi is reached.



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

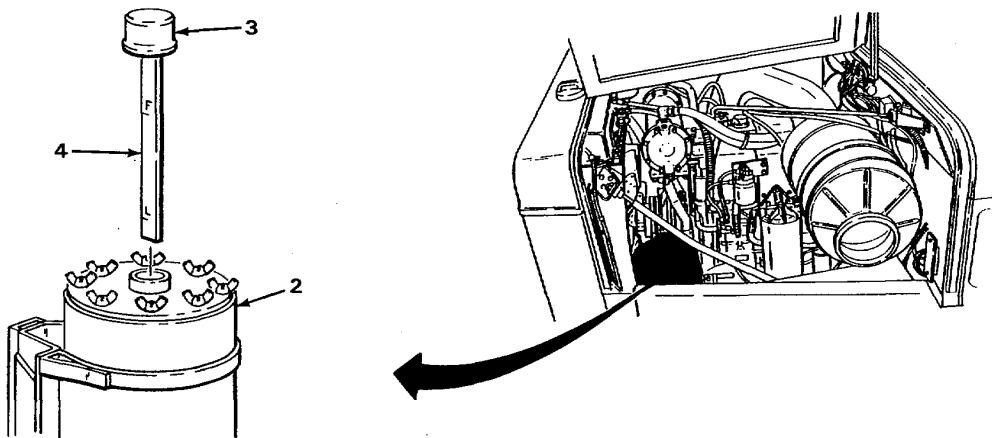
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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WARNING

Do not attempt to disconnect hydraulic lines and fittings while engine is running or before hydraulic system pressure has been released. When engine is running, hydraulic system is under pressure. Hydraulic system pressure should be 0 psi (0 kPa) before lines are disconnected. A line or fitting disconnected under pressure will blow off with great force and could cause injury to personnel.

Step 2. Check hydraulic fluid level in reservoir (2). Pull up cap (3) and take out. Wipe off dipstick (4), put cap (3) on and take out. Check that hydraulic fluid level is between F and L mark on dipstick (4).

- a. If hydraulic fluid level is low, fill reservoir (2) with hydraulic fluid to 4-inches (10.1 mm) below top of filler neck using 6-inch machinist scale. Put cap (3) on and bleed steering system (page 2-1202).
- b. If reservoir (2) is full, bleed steering system (page 2-1202).
- c. If reservoir (2) is full and steering system has been bled, go to step 3.



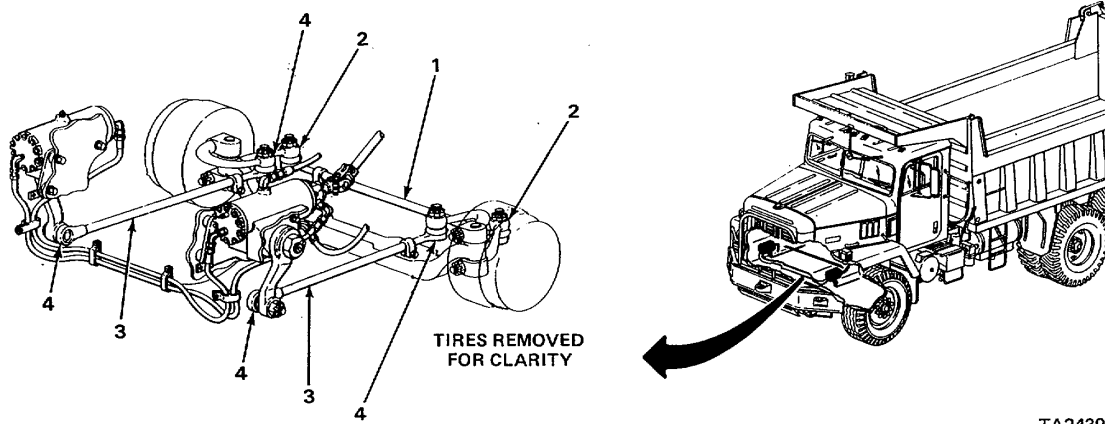
TA243955

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED TM 53805-254-20-1

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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77. STEERING WHEEL IS HARD TO TURN COUNTERCLOCKWISE - CONTINUED.

- Step 3. Check tie rod (1) and tie rod ends (2) for bent, worn, or binding condition.
- a. If tie rod (1) is bent or worn, notify Direct Support Maintenance.
 - b. If tie rod ends (2) are binding, lubricate (LO 5-3805-254-12). If tie rod ends (2) are still binding, notify Direct Support Maintenance.
 - c. If tie rod (1) or tie rod ends (2) are not bent, worn, or binding, go to step 4.
- Step 4. Check drag links (3) for bent, cracked, or broken condition.
- a. If drag links (3) are bent, cracked or broken, notify Direct Support Maintenance.
 - b. If drag links (3) are not bent, cracked, or broken go to step 5.
- Step 5. Check drag link ends (4) for worn, loose or binding condition.
- a. If drag link ends (4) are worn or loose, notify Direct Support Maintenance.
 - b. If drag link ends (4) are binding, lubricate (LO 5-3805-254-10). If drag link ends (4) are still binding, notify Direct Support Maintenance.
 - c. If drag link ends (4) are not worn, loose, or binding, go to step 6.



TA243956

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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WARNING

When jacking vehicle, be sure vehicle is on level ground. Put blocks in front and behind each wheel to prevent vehicle from moving, and support vehicle with trestle stands to prevent personnel injury.

Step 6. Check kingpins (5) for worn condition as follows: jack tire off ground (page 2-424). Using block of wood and pry bar, lift up tire and check for looseness at kingpins (5).

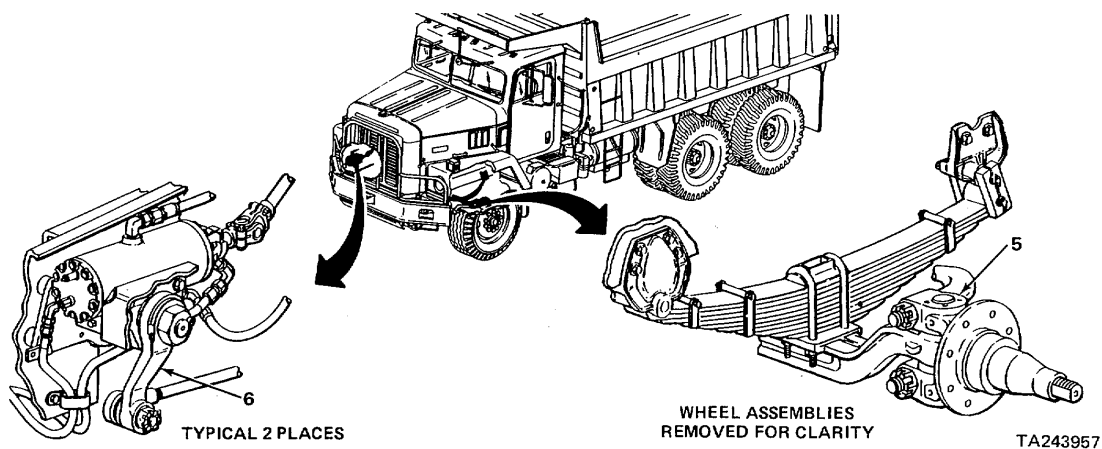
- a. If kingpins (5) are worn, notify Direct Support Maintenance.
- b. If kingpins (5) are not worn, go to step 7.

Step 7. Check kingpins (5) for frozen condition as follows: jack up front of dump truck (page 2-424). Have assistant turn steering wheel left and right. Check for tightness at kingpins (5).

- a. If kingpins (5) are frozen, lubricate (LO 5-3805-254-12). If kingpins (5) are still frozen, notify Direct Support Maintenance.
- b. If kingpins (5) are not frozen, go to step 8.

Step 8. Check steering arms (6) for bent, cracked, or broken condition.

- a. If steering arms (6) are bent or broken, notify Direct Support Maintenance.
- b. If steering arms (6) are not bent or broken, go to step 9.

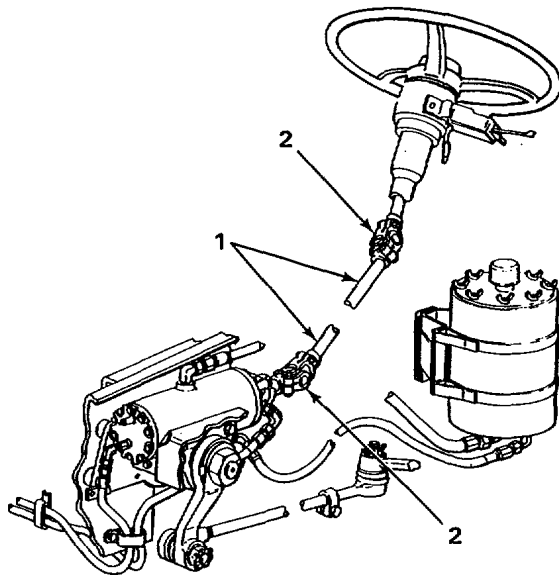


ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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77. STEERING WHEEL IS HARD TO TURN COUNTERCLOCKWISE - CONTINUED.

- Step 9. Check steering shaft (1) for bent, cracked, or broken condition.
 - a. If steering shaft (1) is bent or broken, notify Direct Support Maintenance.
 - b. If steering shaft (1) is not bent, cracked, or broken, go to step 10.
- Step 10. Check steering shaft universal joints (2) for frozen, loose, worn, or rusted conditions.
 - a. If steering shaft universal joints (2) are frozen, lubricate (LO 5-3805-254-12). If steering shaft universal joints (2) are still frozen, notify Direct Support Maintenance.
 - b. If steering shaft universal joints (2) are loose, worn or rusted, notify Direct Support Maintenance.
 - c. If steering shaft universal joints (2) are not frozen, loose, worn, or rusted, go to step 11.



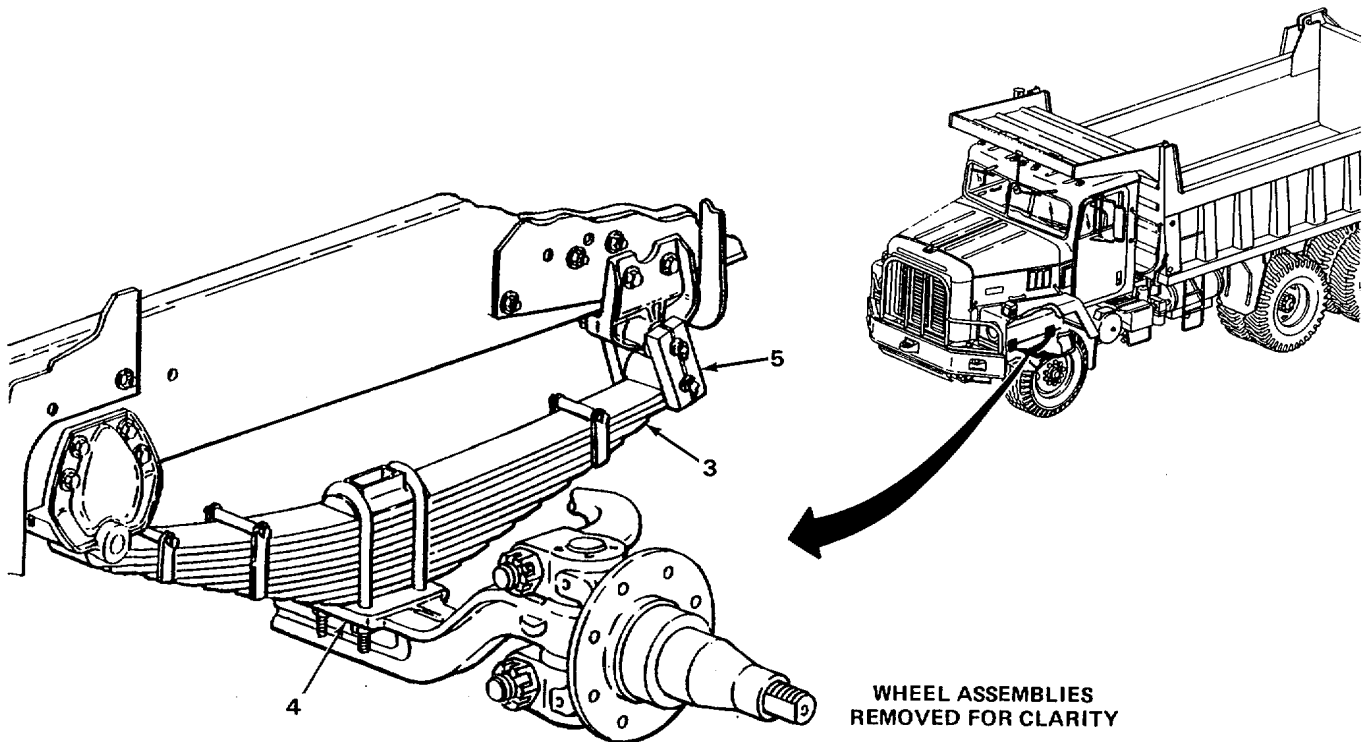
TA243958

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 11. Check springs (3), U-bolts (4) and shackles (5) for loose, cracked, bent or broken condition. Check for missing parts.

- a. If springs (3), U-bolts (4) and shackles (5) are loose or missing parts, notify Direct Support Maintenance.
- b. If springs (3), U-bolts (4) and shackles (5) are cracked, bent or broken, notify Direct Support Maintenance.
- c. If springs (3), U-bolts (4) and shackles (5) are not loose, cracked, bent, broken, or missing parts, go to step 12.



TA243959

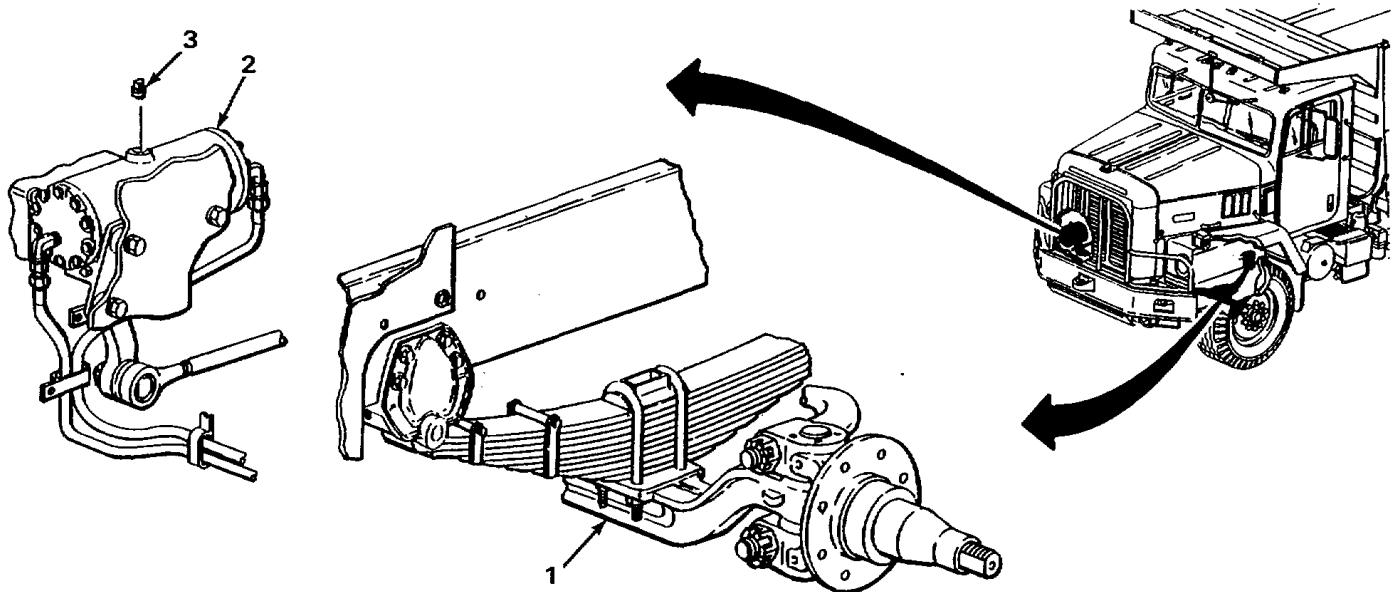
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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77. STEERING WHEEL IS HARD TO TURN COUNTERCLOCKWISE - CONTINUED.

- Step 12. Check front axle (1) for loose, cracked, bent or broken condition.
- a. If front axle (1) is loose, cracked, bent, or broken, notify Direct Support Maintenance.
 - b. If front axle (1) is not loose, cracked, bent, or broken, go to step 13.

- Step 13. Check right steering gear (2) as follows: Using 1/2-inch, open-end wrench, unscrew and take out plug (3). Start engine (TM 5-3805-254-10) and allow to reach operating temperature. Check that hydraulic fluid is being pumped through right steering gear (2). Shut down engine (TM 5-3805-254-10). Screw in and tighten plug (3) using 1/2-inch, open-end wrench.
- a. If hydraulic fluid is not being pumped through right steering gear (2), notify Direct Support Maintenance.
 - b. If hydraulic fluid is being pumped through right steering gear (2), go to step 14.



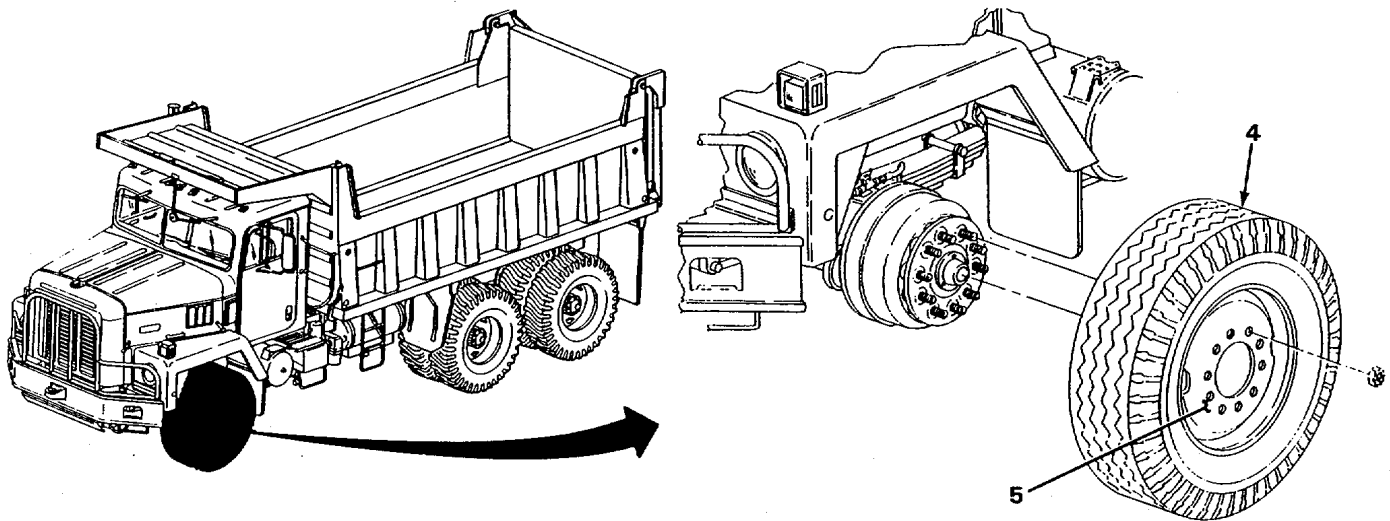
TA243960

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 14. Check two front tires (4) for uneven tire wear (TM 5-3805-254-10).
- a. If two front tires (4) are worn unevenly, front wheel alignment must be checked. Notify Direct Support Maintenance.
 - b. If two front tires (4) are not worn unevenly and alignment is good, go to step 15.

- Step 15. Check two front wheels (5) for bent, cracked, or broken condition.
- a. If two front wheels (5) are bent, cracked, or broken, replace wheel (5) (page 2-1168).
 - b. If two front wheels (5) are not bent, cracked, or broken, go to step 16.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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77. STEERING WHEEL IS HARD TO TURN COUNTERCLOCKWISE - CONTINUED.

WARNING

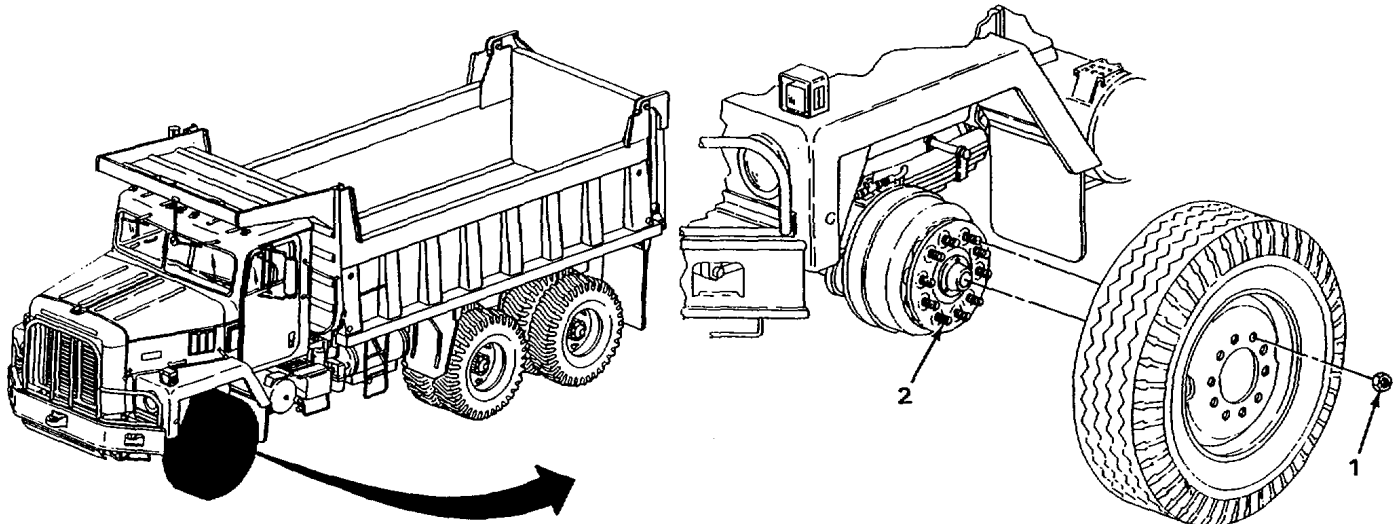
When jacking vehicle, be sure vehicle is on level ground. Put blocks in front and behind each wheel to prevent vehicle from moving, and support vehicle with trestle stands to prevent personnel injury.

NOTE

Lug nuts on right side of dump truck have right hand threads and lug nuts on left side of dump truck have left hand threads.

Step 16. Jack up front of dump truck (page 2-424). Remove front tire (page 2-1168). Check lug nuts (1) and lugs (2) for loose or damaged condition or missing parts.

- a. If lug nuts (1) or lugs (2) are loose tighten alternately using 1 1/2-inch, 3/4-inch drive socket and hinged handle. Tighten to 450 to 500 ft. lbs. (610 to 678 N•m) using 1 1/2-inch, 3/4-inch drive socket and hinged handle and 0 to 600 ft. lbs. (0 to 814 N•m) torque wrench.
- b. If lug nuts (1) or lugs (2) are damaged, replace (page 2-1168).
- c. If lug nuts (1) or lugs (2) are missing, replace (page 2-1168).



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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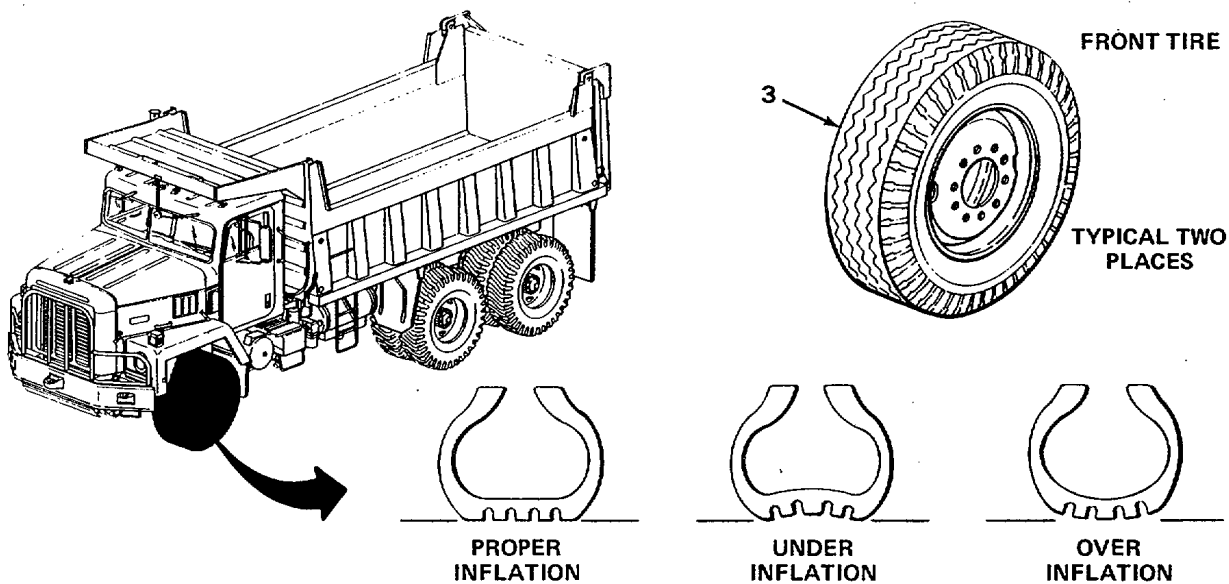
78. STEERING WHEEL IS HARD TO TURN CLOCKWISE.

WARNING

When increasing air pressure in tires be careful not to exceed recommended pressure to prevent personal injury or damage to equipment.

Step 1. Using tire pressure gage, check that air pressure in two front tires (3) is 80 psi (551.6 kPa).

- a. If air pressure in two front tires (3) is below 80 psi (551.6 kPa), increase air pressure and recheck with tire pressure gage.
- b. If air pressure in two front tires (3) is 80 psi (551.6 kPa), go to step 2.
- c. If air pressure in two front tires is over 80 psi (551.6 kPa), decrease air pressure to 80 psi (551.6 kPa).



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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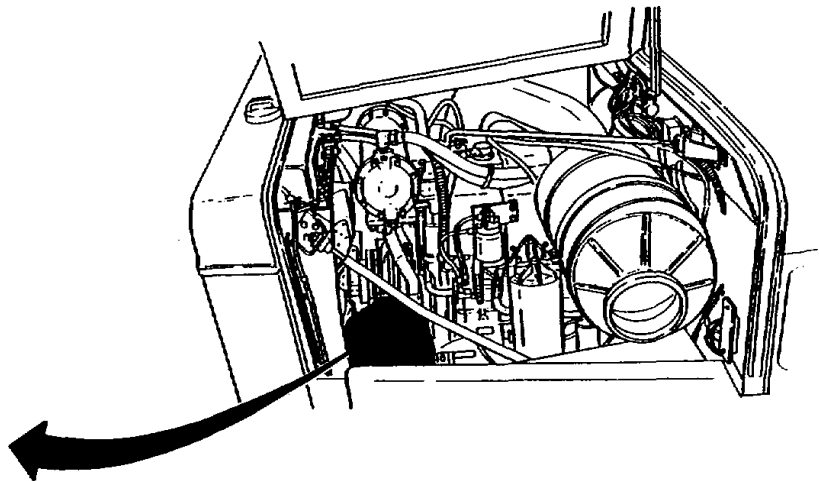
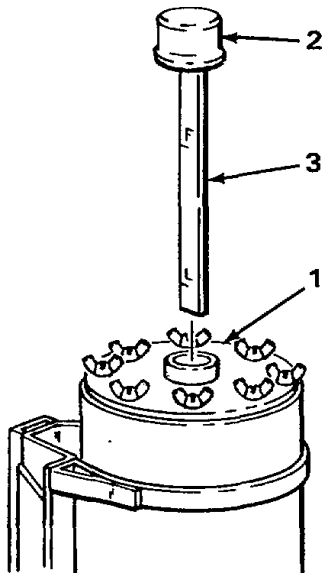
78. STEERING WHEELS IS HARD TO TURN CLOCKWISE - CONTINUED.

WARNING

Do not attempt to disconnect hydraulic lines and fittings while engine is running or before hydraulic system pressure has been released. When engine is running, hydraulic system is under pressure. Hydraulic system pressure should be 0 psi (0 kPa) before lines are disconnected. A line or fitting disconnected under pressure will blow off with great force and could cause injury to personnel.

Step 2. Check hydraulic fluid level in reservoir (1). Pull up cap (2) and take out. Wipe off dipstick (3) put cap (2) on and take out. Check that hydraulic fluid level is between F and L mark on dipstick (3).

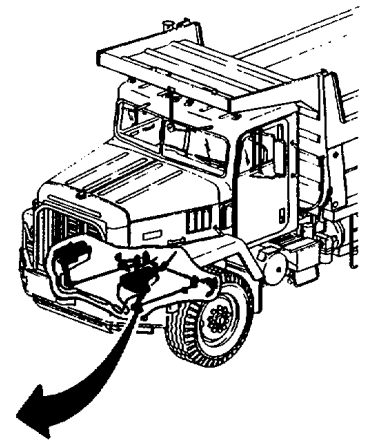
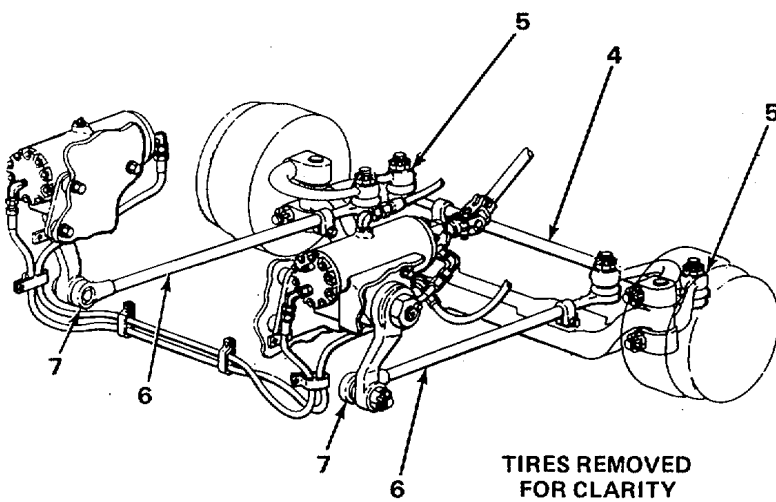
- a. If hydraulic fluid level is low fill reservoir (1) with hydraulic fluid to 4-inches (10.1 mm) below top of filler neck using 6-inch machinist scale. Put cap (2) on and bleed steering system (page 2-1202).
- b. If reservoir (1) is full, bleed steering system (page 2-1202).
- c. If reservoir (1) is full and steering system has been bled, go to step 3.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
Step 3.	Check tie rod (4) and tie rod ends (5) for bent, worn, or binding condition.	<ul style="list-style-type: none"> a. If tie rod (4) is bent or worn, notify Direct Support Maintenance. b. If tie rod ends (5) are binding, lubricate (LO 5-3805-254-12). If tie rod ends (5) are still binding, notify Direct Support Maintenance. c. If tie rod (4) or tie rod ends (5) are not bent, worn, or binding, go to step 4.
Step 4.	Check drag links (6) for bent, cracked, or broken condition.	<ul style="list-style-type: none"> a. If drag links (6) are bent, cracked, or broken, notify Direct Support Maintenance. b. If drag links (6) are not bent, cracked, or broken, go to step 5.
Step 5.	Check drag link ends (7) for worn, loose, or binding condition.	<ul style="list-style-type: none"> a. If drag link ends (7) are worn or loose, notify Direct Support Maintenance. b. If drag link ends (7) are binding, lubricate (LO 5-3805-254-12). If drag link ends (7) are still binding, notify Direct Support Maintenance. c. If drag link ends (7) are not worn, loose, or binding, go to step 6.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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78. STEERING WHEEL IS HARD TO TURN CLOCKWISE - CONTINUED.

WARNING

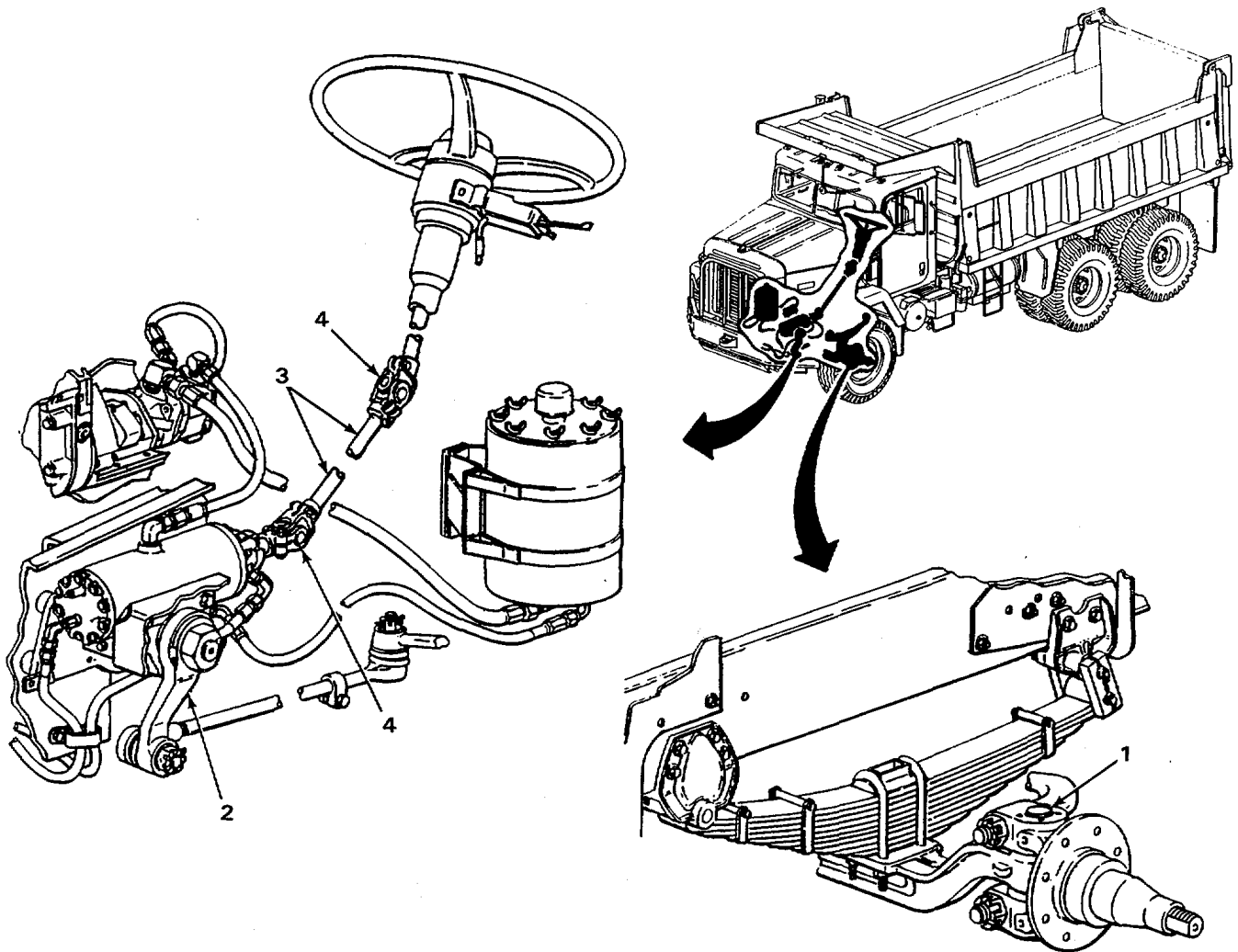
When jacking vehicle, be sure vehicle is on level ground. Put blocks in front and behind each wheel to prevent vehicle from moving, and support vehicle with trestle stands to prevent personnel injury.

- Step 6. Check kingpins (1) for worn condition as follows: jack tire off ground (page 2-424). Using block of wood and pry bar lift up tire and check for looseness at kingpins (1).
- a. If kingpins (1) are worn, notify Direct Support Maintenance.
 - b. If kingpins (1) are not worn, go to step 7.
- Step 7. Check kingpins (1) for frozen condition as follows: jack up front of dump truck (page 2-424). Have assistant turn steering wheel left and right. Check for tightness at kingpins (1).
- a. If king pins (1) are frozen, lubricate (LO 5-3805-254-12). If kingpins (1) are still frozen, notify Direct Support Maintenance.
 - b. If kingpins (1) are not frozen, go to step 8.
- Step 8. Check steering arms (2) for bent, cracked, or broken condition.
- a. If steering arms (2) are bent or broken, notify Direct Support Maintenance.
 - b. If steering arms (2) are not bent or broken, go to step 9.
- Step 9. Check steering shaft (3) for bent, cracked, or broken condition.
- a. If steering shaft (3) is bent or broken, notify Direct Support Maintenance.
 - b. If steering shaft (3) is not bent, cracked, or broken, go to step 10.
- Step 10. Check steering shaft universal joints (4) for frozen, loose, worn, or rusted conditions.
- a. If steering shaft universal joints (4) are frozen, lubricate (LO 5-3805-254-12). If steering shaft universal joints (4) are still frozen, notify Direct Support Maintenance.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- b. If steering shaft universal joints (4) are loose, worn or rusted, notify Direct Support Maintenance.
- c. If steering shaft universal joints (4) are not frozen, loose, worn or rusted, go to step 11.



WHEEL ASSEMBLIES
REMOVED FOR CLARITY

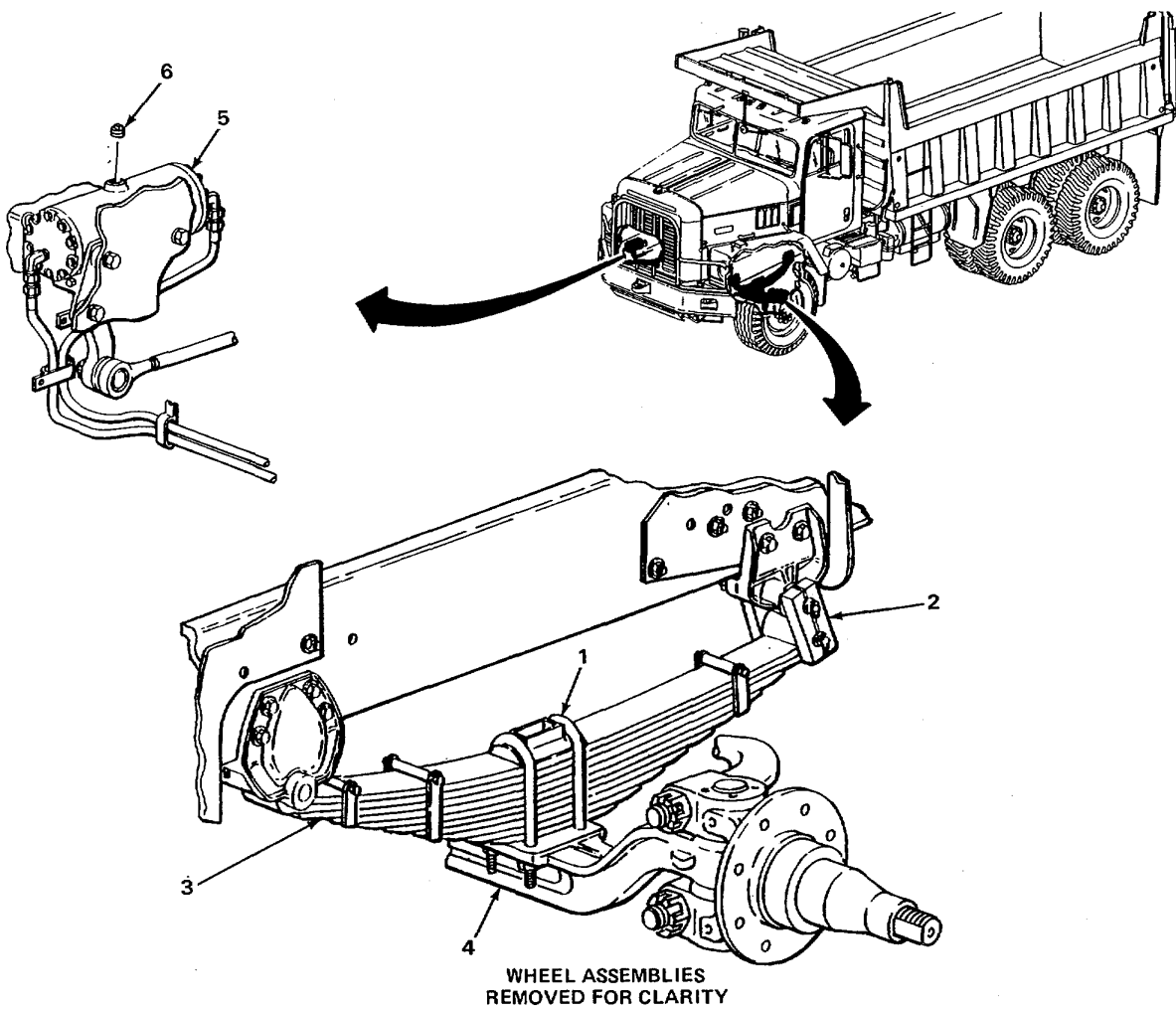
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
78. STEERING WHEEL IS HARD TO TURN CLOCKWISE - CONTINUED.		
Step 11.	Check U-bolts (1) and shackles (2) for loose, cracked, bent, or broken condition. Check for missing parts.	<ul style="list-style-type: none"> a. If U-bolts (1) and shackles (2) are loose or missing parts, notify Direct Support Maintenance. b. If U-bolts (1) and shackles (2) are cracked, bent, or broken, notify Direct Support Maintenance. c. If U-bolts (1) and shackles (2) are not loose, cracked, bent, broken or missing parts, go to step 12.
Step 12.	Check springs (3) for cracked, bent, or broken parts. Check that both left and right sides of vehicle have the same number of leafs.	<ul style="list-style-type: none"> a. If springs (3) are cracked, bent, or broken, notify Direct Support Maintenance. b. If springs (3) do not have the same amount of leafs on both left and $\frac{3}{4}$ right sides, notify Direct Support Maintenance. c. If springs (3) are not cracked, bent, or broken, go to step 13. d. If springs (3) have the same amount of leafs on both left and right sides, go to step 13.
Step 13.	Check front axle (4) for loose, cracked, bent, or broken condition.	<ul style="list-style-type: none"> a. If front axle (4) is loose, cracked, bent, or broken, notify Direct Support Maintenance. b. If front axle (4) is not loose, cracked, bent, or broken, go to step 14.
Step 14.	Check right steering gear (5) as follows: Using 1/2-inch, open-end wrench, unscrew and take out plug (6). Start engine (TM 5-3805-254-10) and allow to reach operating temperature. Check that hydraulic fluid is being pumped through right steering gear. Shut down engine (TM 5-3805-254-10). Screw in and tighten plug (6) using 1/2-inch, open-end wrench.	

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- a. If hydraulic fluid is not being pumped through right steering gear (5), notify Direct Support Maintenance.
- b. If hydraulic fluid is being pumped through right steering gear (5), no to step 15.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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78. STEERING WHEEL IS HARD TO TURN CLOCKWISE - CONTINUED.

- Step 15. Check two front tires (1) for uneven tire wear (TM 5-3805-254-10).
- If two front tires (1) are worn unevenly, front alignment must be checked. Notify Direct Support Maintenance.
 - If two front tires (1) are not worn unevenly, and alignment is good, go to step 16.
- Step 16. Check two front wheels (2) for bent, cracked, or broken condition.
- If two front wheels (2) are bent, cracked, or broken, replace wheel (2) (page 2-1168).
 - If two front wheels (2) are not bent, cracked, or broken, go to step 17.

WARNING

Do not operate dump truck with tires of different construction. Injury to personnel and equipment could occur.

- Step 17. Check front axle (3) for two different tire sizes or two different tire types.
- If front axle (3) has two different tire sizes, refer to (TM 5-3805-254-10) for proper tire size. Replace incorrect tires (page 2-1168).
 - If front axle (3) has two different tire types, refer to (TM 5-3805-254-10) for proper tire type. Replace incorrect tires (page 2-1168).
 - If front axle (3) does not have two different tire sizes, or different tire types, go to step 18.

WARNING

When jacking vehicle, be sure vehicle is on level ground. Put blocks in front and behind each wheel to prevent vehicle from moving, and support vehicle with trestle stands to prevent personnel injury.

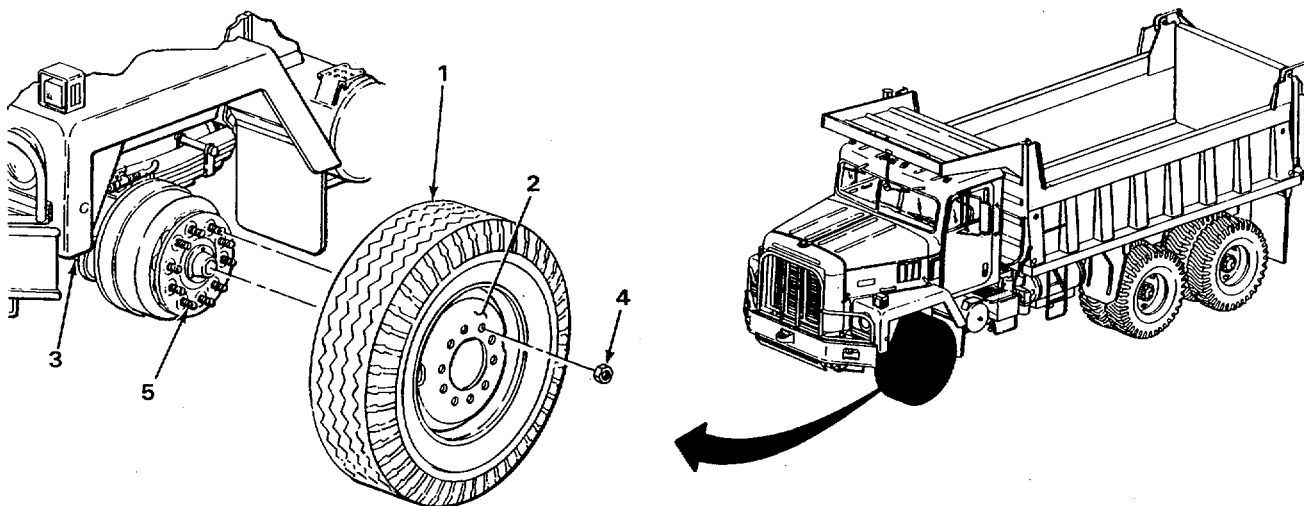
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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NOTE

Lug nuts on right side of dump truck have right hand threads and lug nuts on left side of dump truck have left hand threads.

- Step 18. Using hydraulic floor jack, jack up vehicle (page 2-442). Remove front tire (page 2-1168). Check lug nuts (4) and lugs (5) for loose or damaged condition or missing parts.
- a. If lug nuts (4) or lugs (5) are loose, tighten alternately, using 1 1/2-inch, 3/4-inch drive socket and hinged handle. Tighten to 450 to 500 ft/lbs (610 to 678 N.m) using 1 1/2-inch, 3/4-inch drive socket and hinged handle and 0 to 600 ft. lb. (0 to 814 N.m) torque wrench.
 - b. If lug nuts (4) or lugs (5) are damaged, replace (page 2-1168).
 - c. If lug nuts (4) or lugs (5) are missing, replace (page 2-1168).



TA243968

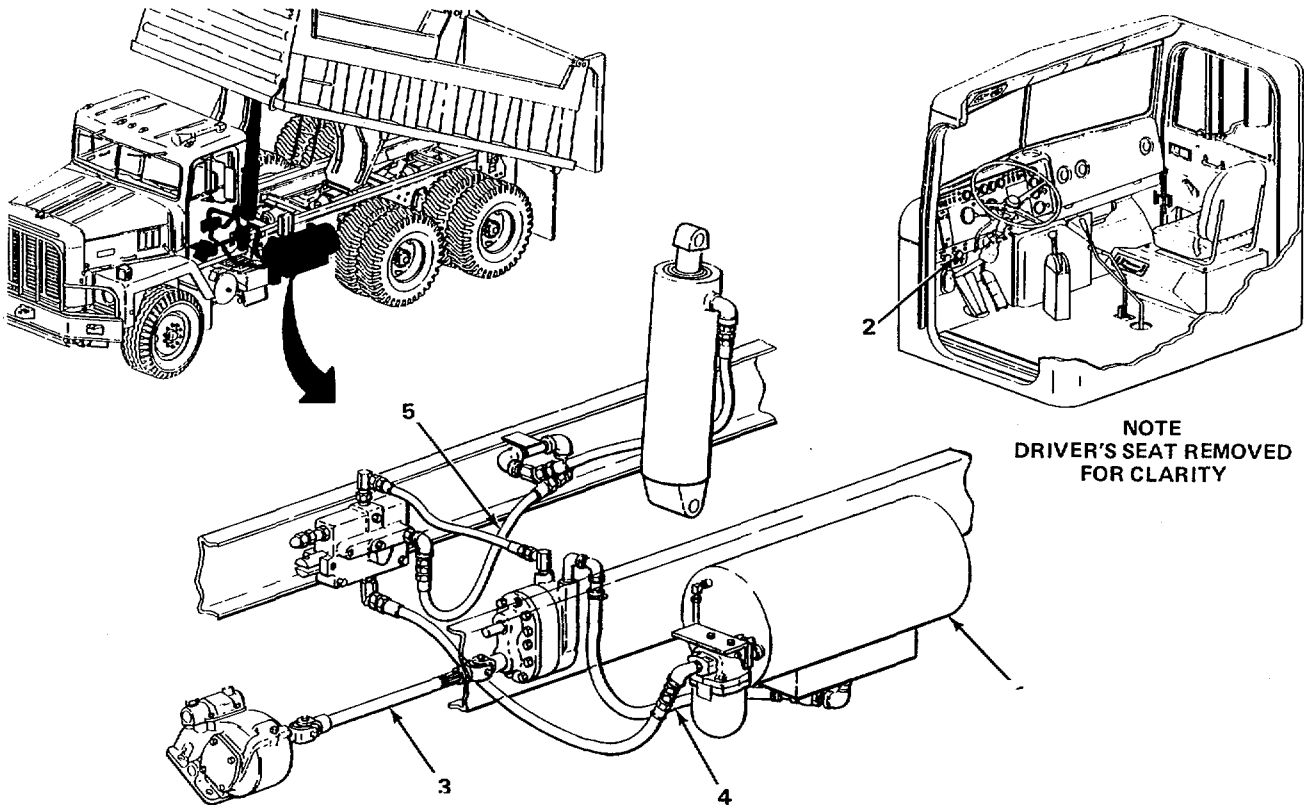
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
DUMP BODY		
79. DUMP BODY DOES NOT RAISE.		
Step 1.	Check oil level in hydraulic oil reservoir (1).	
		<ul style="list-style-type: none"> a. If hydraulic oil level is low, fill (page 2-1375). b. If hydraulic oil level is not low, go to step 2.
Step 2.	Check that power take off switch (2) is on.	
		<ul style="list-style-type: none"> a. If power take off (3) is not engaged, perform power take off engagement procedure (TM 5-3805-254-10). b. If power take off (3) is engaged, go to step 3.
Step 3.	Check that power take off shaft (4) is turning.	
		<ul style="list-style-type: none"> a. If power take off shaft (4) is not turning, notify Direct Support Maintenance. b. If power take off shaft (4) is turning, go to step 4.
Step 4.	Check reservoir-to-pump suction hose (5) for cracked, leaking, or loose condition.	
		<ul style="list-style-type: none"> a. If reservoir-to-pump suction hose (5) is cracked or leaking, replace (page 2-1390). b. If reservoir-to-pump suction hose (5) is loose, tighten using 1/4-inch flat-tip screwdriver. c. If reservoir-to-pump suction hose (5) is not cracked, leaking, or loose, go to step 5.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 5. Check valve-to-cylinder pressure hose (6) for cracked, leaking, or loose condition.
- a. If valve-to-cylinder pressure hose (6) is cracked or leaking, replace (page 2-1400).
 - b. If valve-to-cylinder pressure hose (6) is loose, tighten using 1 3/8-inch and 1 1/2-inch open-end wrenches.
 - c. If valve-to-cylinder pressure hose (6) is not cracked, leaking, or loose, go to step 6.



TA243970

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<hr/>		
79. DUMP BODY DOES NOT RAISE - CONTINUED.		
Step 6.	Check pump-to-valve pressure hose (1) for cracked, leaking, or loose condition.	<ul style="list-style-type: none">a. If pump-to-valve pressure hose (1) is cracked or leaking, replace (page 2-1385).b. If pump-to-valve pressure hose (1) is loose, tighten using 1 1/4-inch open-end wrench.c. If pump-to-valve pressure hose (1) is not cracked, leaking, or loose, go to step 7.
Step 7.	Check lift cylinder (2) for leaking condition.	<ul style="list-style-type: none">a. If lift cylinder (2) is leaking, notify Direct Support Maintenance.b. If lift cylinder (2) is not leaking, go to step 8.
Step 8.	Check that dump body control lever (3) is connected.	<ul style="list-style-type: none">a. If dump body control lever (3) is not connected, connect (page 2-1367).b. If dump body control lever (3) is connected, go to step 9.
Step 9.	Check dump body control lever (3) adjustment (page 2-1367).	<ul style="list-style-type: none">a. If dump body control lever (3) is out of adjustment, adjust (page 2-1367).b. If dump body control lever (3) is not out of adjustment, go to step 10.
Step 10.	Check hydraulic oil reservoir (4) for cracked or leaking condition.	<ul style="list-style-type: none">a. If hydraulic oil reservoir (4) is cracked or leaking, notify Direct Support Maintenance.b. If hydraulic oil reservoir (4) is not cracked or leaking, go to step 11.

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

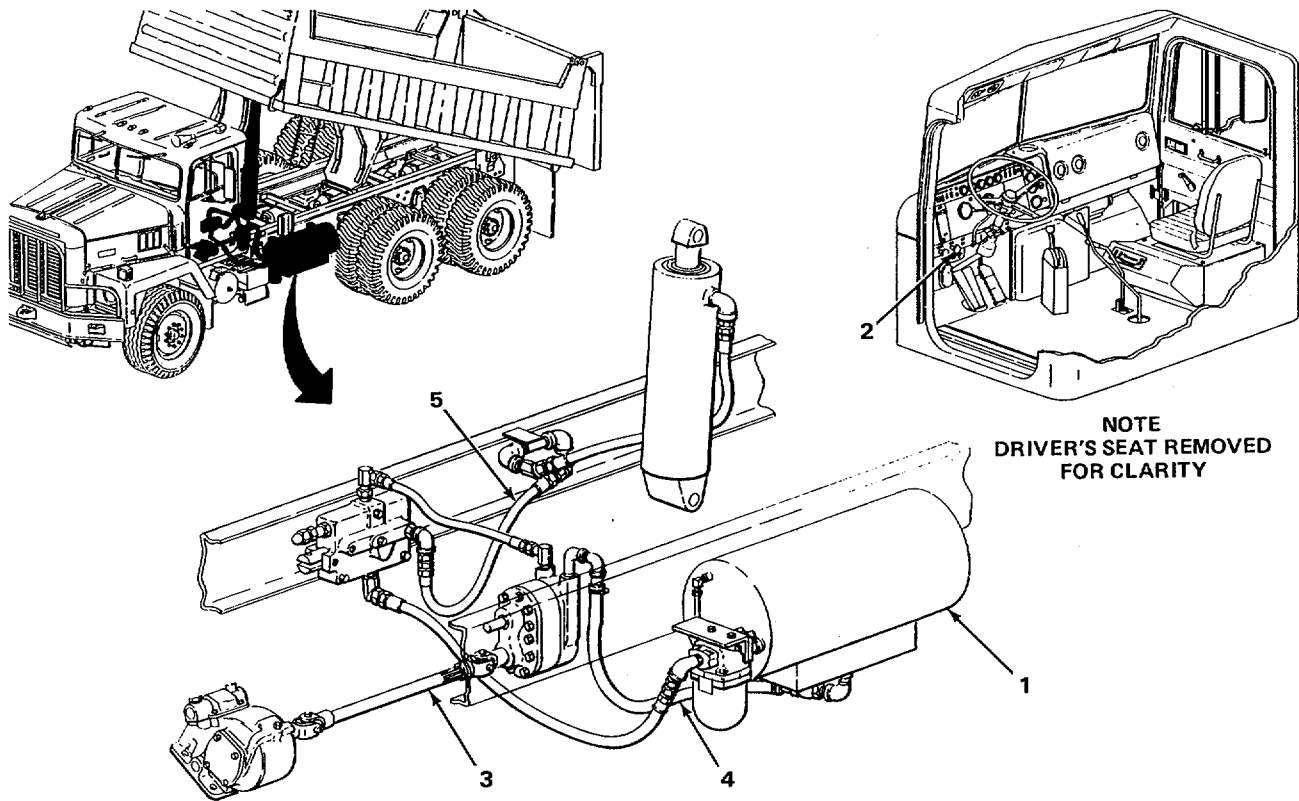
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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Step 11. Check hydraulic pump (5) for cracked or leaking condition.

- a. If hydraulic pump (5) is cracked or leaking, notify Direct Support Maintenance.
- b. If hydraulic pump (5) is not cracked or leaking, go to step 12.

Step 12. Check hydraulic control valve (6) for cracked or leaking condition.

If hydraulic control valve (6) is cracked or leaking, notify Direct Support Maintenance.



ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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80. DUMP BODY RAISES SLOWLY.

Step 1. Check that engine is operating at 1100 to 1500 rpm.

- a. If engine is not operating at 1100 to 1500 rpm, set manual throttle (TM 5-3805-254-10).
- b. If engine is operating at 1100 to 1500 rpm, go to step 2.

Step 2. Check oil level in hydraulic oil reservoir (1).

- a. If hydraulic oil level is low, fill (page 2-1385).
- b. If hydraulic oil level is not low, go to step 3.

Step 3. Check reservoir-to-pump suction hose (2) for cracked, kinked, or loose condition.

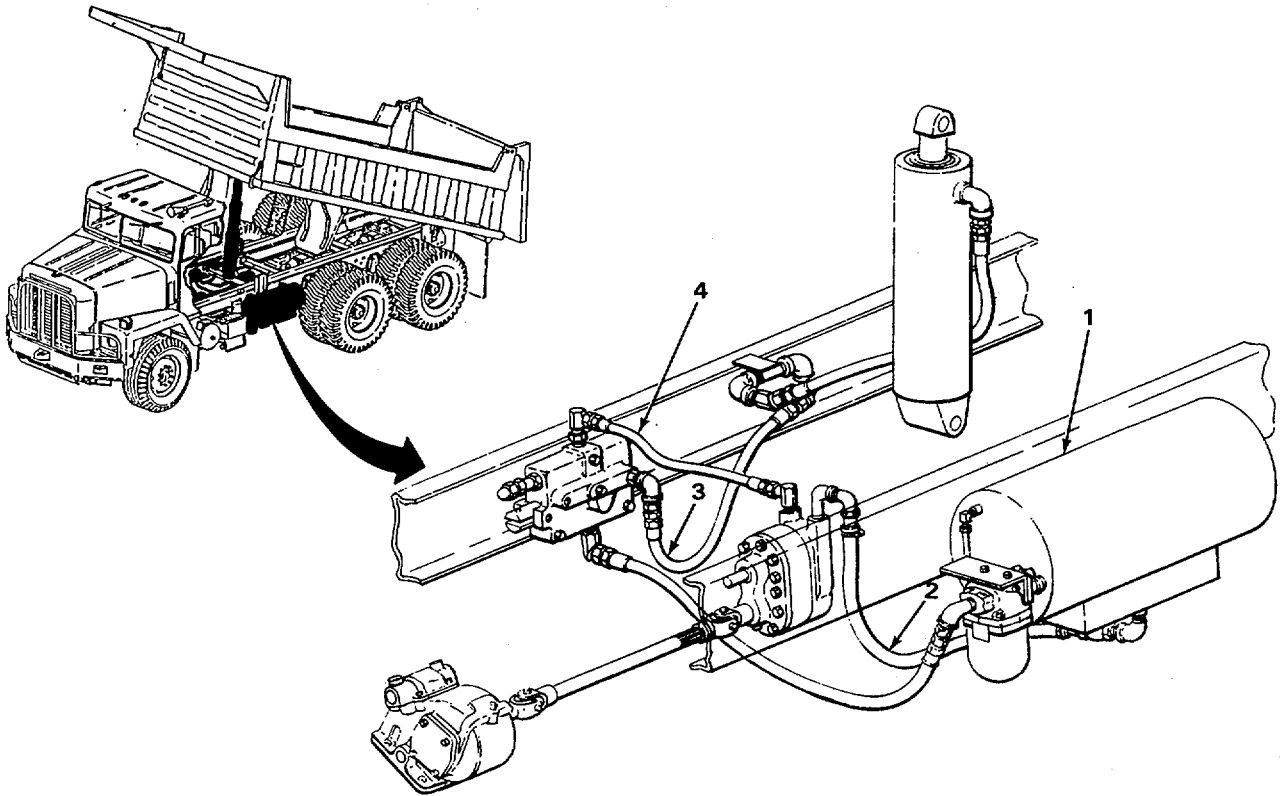
- a. If reservoir-to-pump suction hose (2) is cracked or kinked, replace (page 2-1390).
- b. If reservoir-to-pump suction hose (2) is not cracked, kinked, or loose, tighten using 1 1/4-inch flat-tip screwdriver.
- c. If reservoir-to-pump suction hose (2) is not cracked, kinked, or loose, go to step 4.

Step 4. Check valve-to-cylinder pressure hose (3) for cracked, kinked, or loose condition.

- a. If valve-to-cylinder pressure hose (3) is cracked or kinked, replace (page 2-1400).
- b. If valve-to-cylinder pressure hose (3) is loose, tighten using 1 3/8-inch and 1 1/2-inch open-end wrenches.
- c. If valve-to-cylinder pressure hose (3) is not cracked, kinked, or loose, go to step 5.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 5. Check pump-to-valve pressure hose (4) for cracked, kinked, or loose condition.
- a. If pump-to-valve pressure hose (4) is cracked or kinked, replace (page 2-1385).
 - b. If pump-to-valve pressure hose (4) is loose, tighten using 1 1/4-inch open-end wrench.
 - c. If pump-to-valve pressure hose (4) is not cracked, kinked, or loose, go to step 6.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

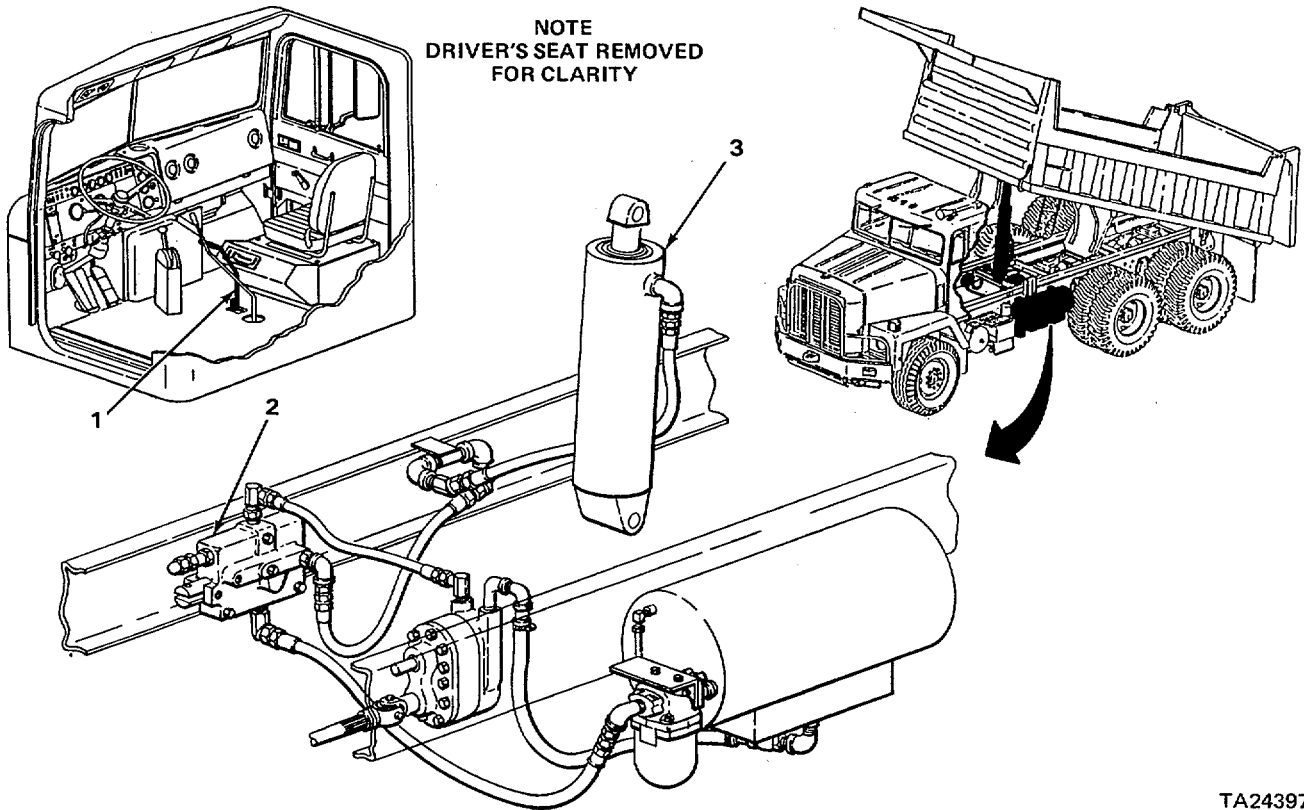
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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80. DUMP BODY RAISES SLOWLY - CONTINUED.

- Step 6. Check dump body control lever (1) adjustment (page 2-1251).
 - a. If dump body control lever (1) is out of adjustment, adjust (page 2-1367).
 - b. If dump body control lever (1) is not out of adjustment, go to step 7.

- Step 7. Check hydraulic control valve (2) for cracked or leaking condition.
 - a. If hydraulic control valve (2) is cracked or leaking, notify Direct Support Maintenance.
 - b. If hydraulic control valve (2) is not cracked or leaking, go to step 8.

- Step 8. Check lift cylinder (3) for leaking condition.
 - If lift cylinder (3) is leaking, notify Direct Support Maintenance.



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

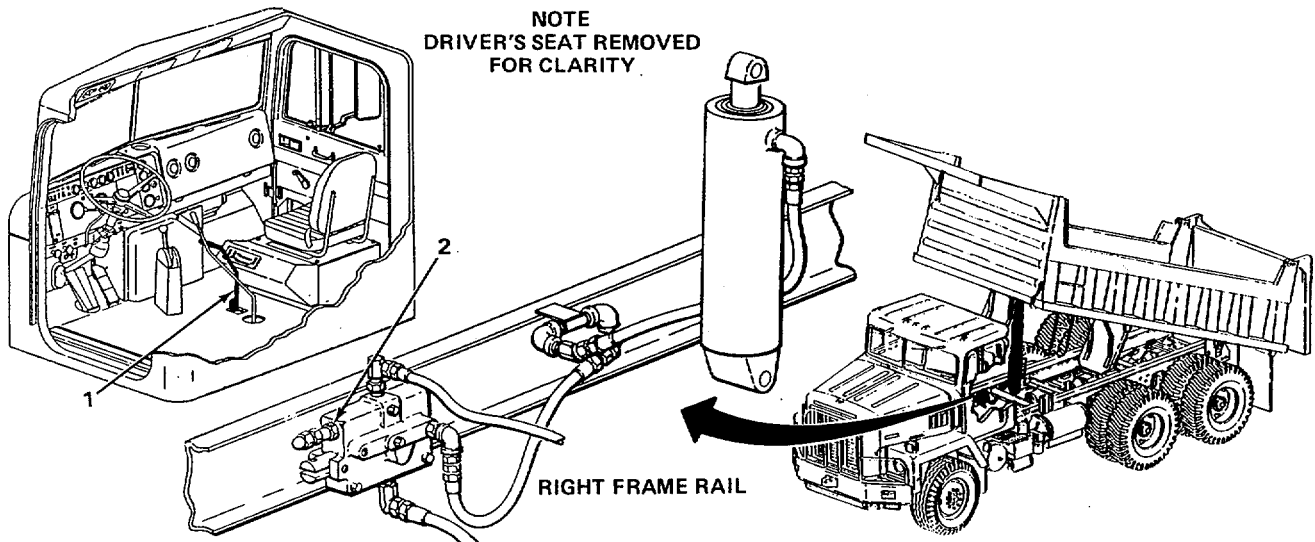
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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81. DUMP BODY DOES NOT STAY UP.

- Step 1. Check that dump body control lever (1) is in neutral position.
 - a. If dump body control lever (1) is not in neutral position, put in neutral position.
 - b. If dump body control lever (1) is in neutral position, go to step 2.

- Step 2. Check dump body control lever (1) adjustment (page 2-1367).
 - a. If dump body control lever (1) is out of adjustment, adjust (page 2-1367).
 - b. If dump body control lever (1) is not out of adjustment, go to step 3.

- Step 3. Check hydraulic control valve (2) for cracked or leaking condition.
 - a. If hydraulic control valve (2) is cracked or leaking, notify Direct Support Maintenance.
 - b. If hydraulic control valve (2) is not cracked or leaking, go to step 4.



TA243973

ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

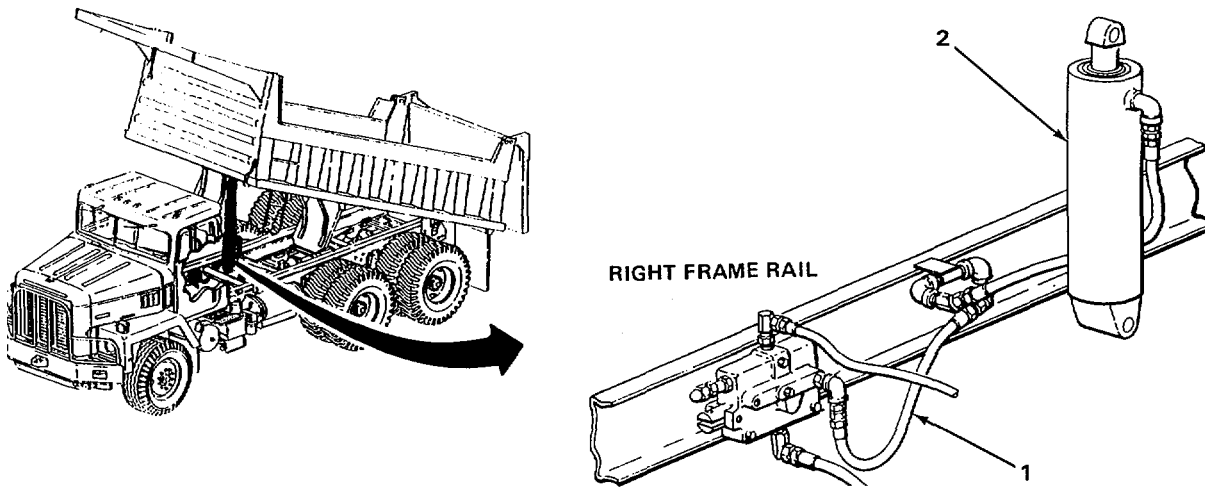
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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81. DUMP BODY DOES NOT STAY UP - CONTINUED.

- Step 4. Check valve-to-cylinder pressure hose (1) for cracked, leaking, or loose condition.
- If valve-to-cylinder pressure hose (1) is cracked or leaking, replace (page 2-1400).
 - If valve-to-cylinder pressure hose (1) is loose, tighten using 1 3/8-inch and 1 1/2-inch open-end wrenches.
 - If valve-to-cylinder pressure hose (1) is not cracked, leaking, or loose, go to step 5.

- Step 5. Check lift cylinder (2) for leaking condition.

If lift cylinder (2) is leaking, notify Direct Support Maintenance.



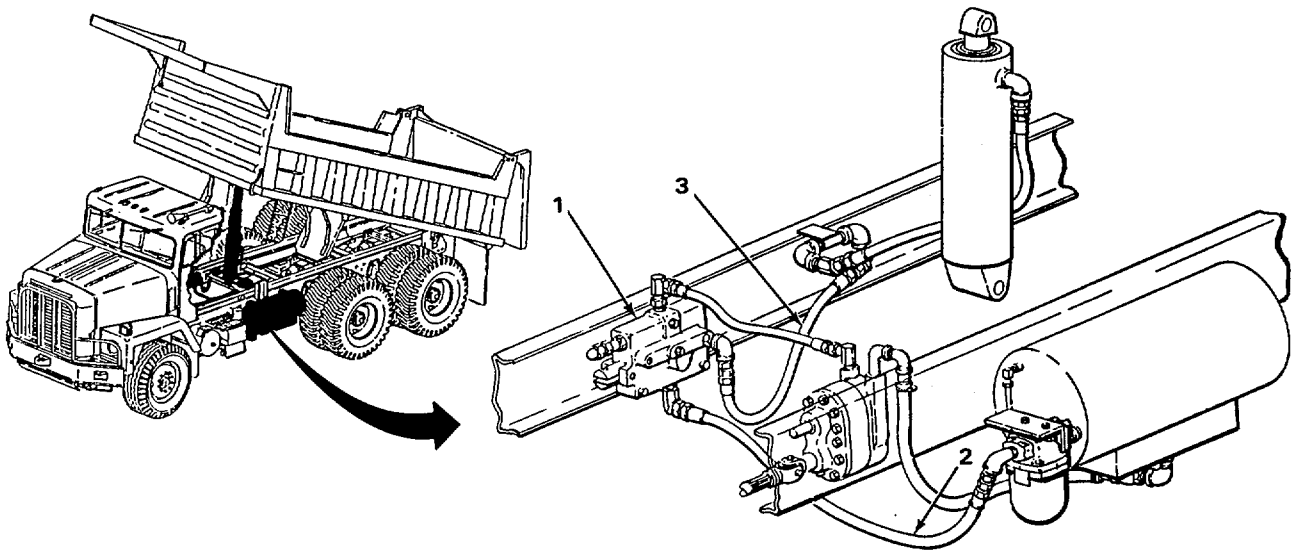
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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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82. DUMP BODY DOES NOT LOWER.

- Step 1. Check hydraulic control valve (1) for cracked or leaking condition.
- If hydraulic control valve (1) is cracked or leaking, notify Direct Support Maintenance.
 - If hydraulic control valve (1) is not cracked or leaking, go to step 2.
- Step 2. Check valve-to-reservoir return hose (2) for kinked condition.
- If valve-to-reservoir return hose (2) is kinked, replace (page 2-1395).
 - If valve-to-reservoir return hose (2) is not kinked, go to step 3.
- Step 3. Check valve-to-cylinder pressure hose (3) for kinked condition.
- If valve-to-cylinder pressure hose (3) is kinked, replace (page 2-1400).
 - If valve-to-cylinder pressure hose (3) is not kinked, go to step 4.



TA243975

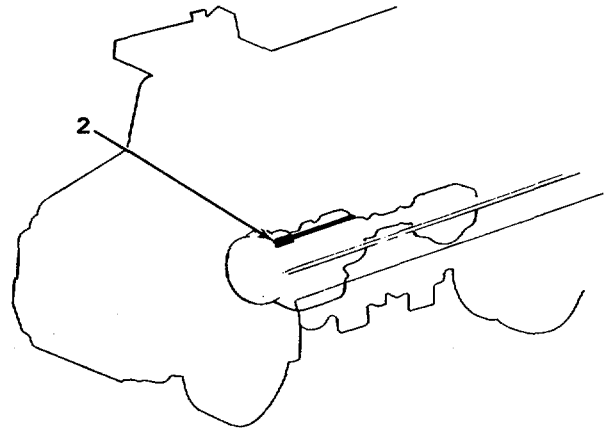
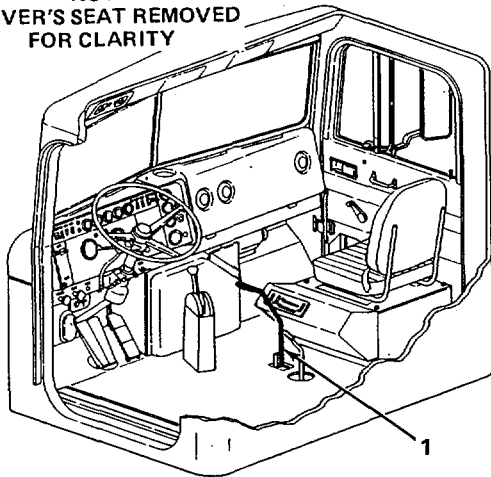
ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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82. DUMP BODY DOES NOT LOWER - CONTINUED.

- Step 4. Check dump body control lever (1) adjustment (page 2-1367).
- a. If dump body control lever (1) is out of adjustment, adjust (page 2-1367).
 - b. If dump body control lever (1) is not out of adjustment, go to step 5.
- Step 5. Check dump body control lever (1) for worn or broken condition.
- a. If dump body control lever (1) is worn or broken, replace (page 2-1367).
 - b. If dump body control lever (1) is not worn, or broken, go to step 6.
- Step 6. Check dump body control lever linkage (2) for bent or binding condition.
- If dump body control lever linkage (2) is bent or binding, replace (page 2-1367).

NOTE
DRIVER'S SEAT REMOVED
FOR CLARITY



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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

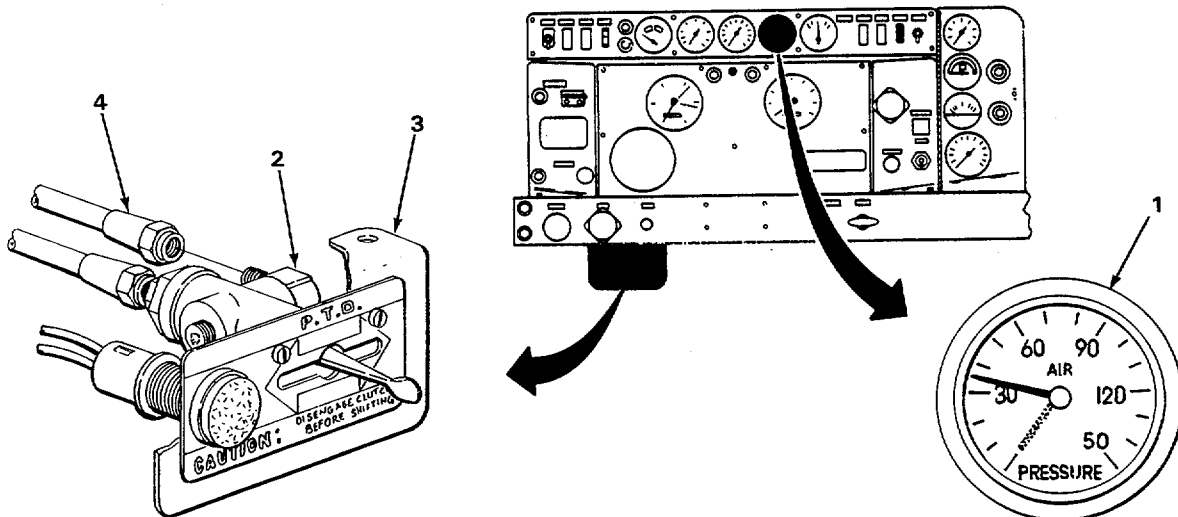
MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

83. PTO DOES NOT ENGAGE.

- Step 1. Perform PTO engagement procedure (TM 5-3805-254-20), then attempt to disengage PTO.
- a. If PTO still does not disengage, notify Direct Support Maintenance.
 - b. If PTO does engage, go to step 2.
- Step 2. Check that air pressure on AIR PRESSURE GAGE (1) indicates above 90 psi.
- a. If AIR PRESSURE gage (1) does not indicate above 90 psi, go to Malfunction 64, AIR PRESSURE DOES NOT EXCEED 90 PSI, (page 2-339).
 - b. If AIR PRESSURE gage (1) indicates above 90 psi, go to step 3.
- Step 3. Check for air pressure at output fitting (2) on PTO IN/OUT switch (3) as follows: Using 7/16-inch open-end wrench, unscrew and take off air hose (4), move PTO IN/OUT switch (3) to IN position, and check for air pressure at output fitting (2).
- a. If air pressure is not present, go to step 4.
 - b. If air pressure is present, screw on and tighten using 7/16-inch open-end wrench, and go to step 5.



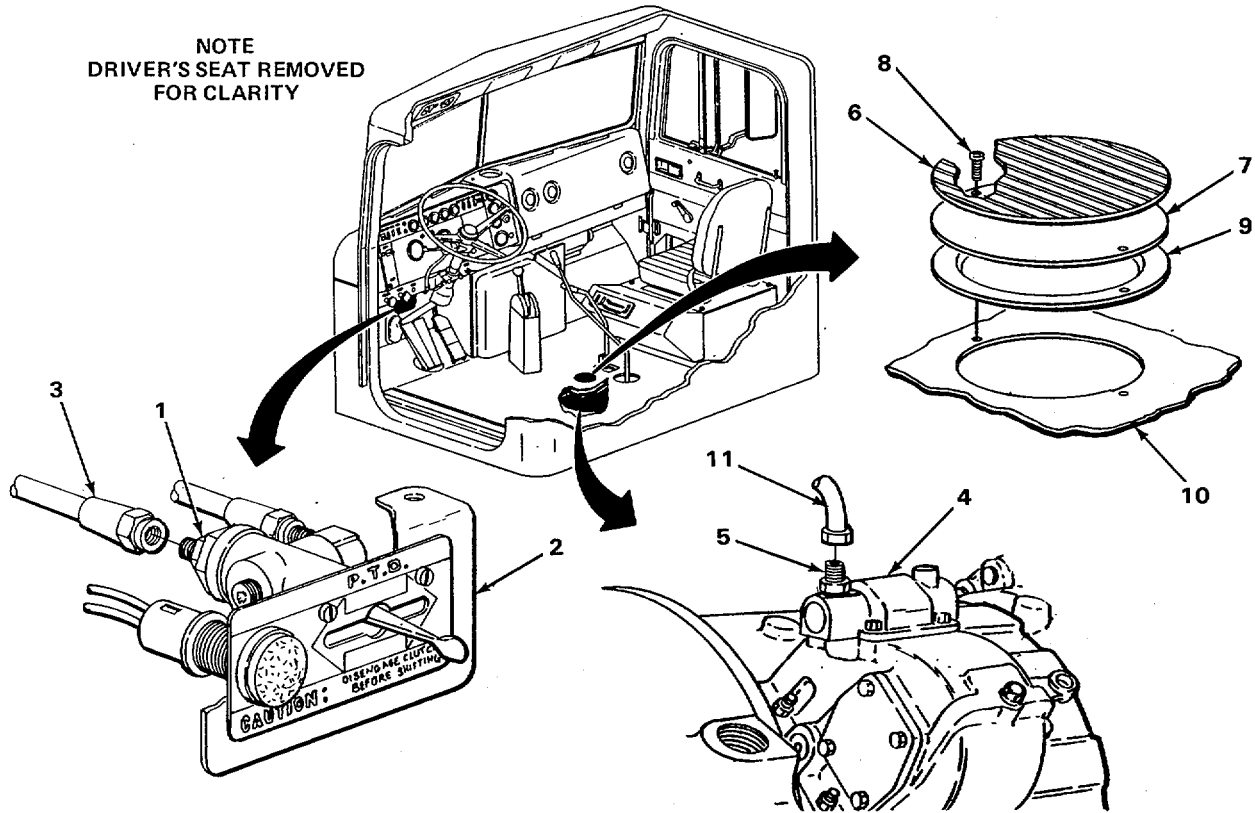
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ORGANIZATIONAL TROUBLESHOOTING - CONTINUED

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
83. PTO DOES NOT ENGAGE - CONTINUED.		
Step 4.	Check for air at input fitting (1) on PTO IN/OUT switch (2) as follows: Using 7/16-inch open-end wrench, unscrew and take off airhose (3). Check for air pressure at airhose (3).	<ul style="list-style-type: none"> a. If air pressure is not present, go to Malfunction 71, AIR SYSTEM DOES NOT HOLD AIR PRESSURE (page 2-373). b. If air pressure is present, PTO IN/OUT switch (2) must be replaced. Notify Direct Support Maintenance.
Step 5.	Check PTO IN/OUT switch-to-air shift control airhose (3) for loose, cracked, broken, or kinked condition.	<ul style="list-style-type: none"> a. If PTO IN/OUT switch-to-air shift control airhose (3) is cracked, broken, or kinked, it must be replaced. Notify Direct Support Maintenance. b. If PTO IN/OUT switch-to-air shift control airhose (3) is loose, tighten using 7/16-inch open-end wrench. c. If PTO IN/OUT switch-to-air shift control airhose (3) is not loose, cracked, broken, or kinked, go to step 6.
Step 6.	Check for air at input fitting (4) on air shift control (5) as follows: Remove cutout (6) and insulation (7). Using number one cross-tip screwdriver, unscrew and take out two screws (8). Remove inspection cover (9) from floor-board (10). Using 7/16-inch open-end wrench, remove input hose (11) from input fitting (4). Turn on PTO IN/OUT switch (2) and check for air.	<ul style="list-style-type: none"> a. If air is present at air shaft control input hose (11), notify Direct Support Maintenance. b. If air is not present at air shaft control input hose (11), go to step 7.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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- Step 7. Check air shaft control input hose (11) for loose, cracked, broken, or kinked condition.
- a. If air shift control input hose (11) is cracked, broken, or kinked, input hose must be replaced. Notify Direct Support Maintenance.
 - b. If air shift control input hose (11) is loose, tighten using 7/16-inch open-end wrench.



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Section VI. GENERAL MAINTENANCE INSTRUCTIONS

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SCOPE

These general maintenance instructions contain general shop practices and specific techniques you must be familiar with to maintain the dump truck properly. You should read and understand the information provided here and in the Operator's General Maintenance Instructions, TM 5-3805-254-10, before performing Organizational Maintenance tasks on the dump truck.

WORK SAFETY

Before you start a task, think about the risks and hazards to your personal safety and the safety of others. Wear protective gear such as safety goggles or lenses, safety shoes, rubber apron, or gloves. Protect yourself against injury.

Always clean up spilled fluids right away to avoid slipping hazards. > When lifting heavy parts, have someone help you. Make sure that lifting/jacking tool is working properly, that it meets the weight requirement of the part to be lifted, and that it is securely fastened to the part.

Always use power tools carefully.

Observe all warnings and cautions found in this manual.

PRESHOP ANALYSIS

The purpose of preshop analysis is to find out how much repair, modification, or replacement is needed to fix the equipment as outlined in this manual. Sometimes the reason for equipment failure can be seen right away and therefore complete tear down is not necessary for repair. Disassemble equipment only as far as necessary to repair or replace defective parts.

All tags and forms attached to the equipment must be checked to find out the reason for removal from service. Also check all Modification Work Orders (MWO) and technical bulletins (TB) for equipment changes and updates.

In some cases you may damage a part just by removing it. If the part appears to be good, and other parts behind it are not defective, leave that part on and continue with procedure. Here are a few simple rules:

1. Don't take out dowel pins unless bent, broken, or damaged.

PRESHOP ANALYSIS - CONTINUED

2. Don't pull bearings or bushings unless they are damaged. If you must get to a damaged or defective part behind bearings or bushings, pull them off very carefully.
3. Replace all gaskets, lockwashers, and packings.

CLEANING

All parts must be cleaned before inspection and assembly and after repair. If part is to be removed from vehicle, wipe off grease and grime before removal so dirt particles will not fall into delicate engine or hydraulic components.

When working on systems where extreme cleanliness is required, steam clean parts and surrounding area before removal or disassembly.

Hands should be kept clean and free of grease, which can collect dust and dirt.

WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Wear safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes, and do not breathe vapors. Do not use near open flame or excessive heat. Flashpoint for type #1 drycleaning solvent is 1000F (380C) and for type #2 is 1380F (590C). If you become dizzy while using solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, wash your eyes with water, and get medical aid immediately.

Clean inner and outer surfaces of metal parts and all areas that get greasy or oily with drycleaning solvent (item 19, appendix C). Clean out sludge and gum with stiff brush. Put small parts in wire mesh basket before immersing in solvent. Use steam cleaning to take off grease and dirt buildup. After drycleaning solvent has been applied, dry with clean rags (item 15, appendix E).

WARNING

Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent injury to personnel.

Use clean water or soap (item 7, appendix C) and water to clean rubber or plastic material. Clean off rust on metallic parts with wire brush or abrasive cloth. Use low-pressure compressed air to blow away rust and cloth particles. Clean off solder with soldering iron. Hydraulic system components must be cleaned and dried carefully so that dirt and metal or fiber particles cannot get into and contaminate hydraulic fluid.

WARNING

Electrical parts solvent cleaning compound is flammable, and reacts violently with certain metals. Boiling point is 1140F(460C). Do not wear jewelry. Wear safety goggles, rubber gloves, and use only in well-ventilated area. Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat. If you become dizzy while using cleaning compound, get fresh air immediately and get medical aid. If contact with eyes is made, wash your eyes with water and get medical aid immediately.

CLEANING - CONTINUED

Use clean rags dampened with cleaning compound (item 5, appendix C) to clean dust, dirt, and grease from electrical wiring harnesses and connectors. If parts are too dirty to wipe clean, dip them into cleaning compound, shake off excess, and wipe clean with clean dry rags. To get dirt out of recessed area, use a stiff brush. Wiring harnesses and connectors must be completely dry before use. Dry wiring harnesses and connectors with clean dry rags and allow to air dry. To speed up drying time, use dry compressed air at less than 30 psi (207 kPa) to prevent personal injury.

Cover parts after cleaning to protect from dust and dirt.

General cleaning covered by other manuals is as follows:

TM 9247: Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel and Related Materials, Including Chemicals

TM 9214: Inspection, Care, and Maintenance of Antifriction Bearings

TB 750-1047: Elimination of Combustibles from Interiors of Metal or Plastic Gasoline and Diesel Fuel Tanks (TO 36Y31-3-6).

INSPECTION

Parts must be inspected to find out which can be used and which must be replaced. Specifications and tolerances are given in this manual but sometimes you must make the decision which parts should be replaced.

To find out if you can use a part that is otherwise in good condition, check the clearance between mating surfaces. If clearance is within tolerance, reinstall part.

Inspect castings for wear, distortion, cracks, and breaks in and around drilled and tapped holes. Look for damaged threads.

Carefully look at all machined surfaces and polished areas. Use a light to shine across polished surfaces to check for score marks, cracks, breaks, and too much wear.

Inspect gears for cracked, nicked, and chipped teeth. Look for metal to metal abrasion, pitting, and wear. When a gear is found to be defective, replace it and its mating gear.

TAGGING PARTS

Use tags (item 21, appendix C) with fasteners to identify all electrical wires; hydraulic, fuel, oil, and coolant lines; and any other parts which may be hard to identify or place later. Fasten tags to parts during removal by wrapping fasteners around or through parts and twisting ends together. Position tags so they are out of the way during cleaning, inspection, and repair. Mark tags with a pencil or pen.

To avoid confusion, identify electrical wires with number of terminal or wire to which it connects whenever possible. If no markings can be found, tag both wires or wire and terminal, and use the same identifying mark for both. If you cannot tag a wire because it must fit through a small hole or you cannot reach it, write down a description of the wire and the point to which it connects, and draw a simple diagram on paper. Be sure to write down enough information so you will be able to connect wires correctly during assembly.

TAGGING PARTS - CONTINUED

If you need to identify a loose wire, look for identifying numbers stamped on a permanent metal tag, near the end of the wire. Compare this number to the wire numbers on the electrical system schematic.

Identify hydraulic, fuel, coolant, and oil lines whenever you are taking off more than one line at the same time. Mark tags with the points to which lines and hoses must be connected. For example, "bulkhead adapter to scarifier cylinder tube and adapter" might be written on the tag for a hydraulic hose. If it is not obvious which end of a line goes where, tag each end of the line.

Identify other parts as necessary by name and installed location.

SOLDERING

CAUTION

Use a low-wattage soldering gun when soldering electrical wires, connectors, terminal lugs, and receptacles. A high-wattage soldering gun may damage parts by overheating them.

Solder connections must be bright and clean before soldering. Take off dirt and grease with cleaning compound and small stiff fiber brush. Solder (item 18, appendix C) must be nonacid type. Use rosin flux (item 9, appendix C). All wires, parts, and soldering gun must be pretinned for good connection and maximum transfer of heat.

To prevent overheating damage to electrical parts when soldering and unsoldering connections, hold bare wire, lead, or terminal lug close to soldering point with long roundnose pliers. Pliers act as a heat sink, absorbing excess heat. Clean all solder joints with an acid swabbing brush and cleaning compound, after soldering, to get a bright clean surface.

HEAT SHRINKABLE TUBING

Heat shrinkable tubing (item 27, appendix C) is used to insulate soldered and crimped electrical connections as follows:

1. Cut desired length of new tubing twice the diameter of the connection to be covered.
2. Slide tubing onto wire and out of the way before making connection.
3. After making electrical connections, slide tubing into place over it.

WARNING

Do not touch heat shrinkable tubing for at least 30 seconds after heating. Hot tubing can burn you.

HEAT SHRINKABLE TUBING - CONTINUED

4. Hold heat gun 4 to 5 inches away from tubing and apply heat for about 30 seconds. Stop applying heat as soon as tubing forms to shape of connection.

WIRE TERMINAL LUG AND CONNECTOR REPLACEMENT

Replace wire terminal lugs and connectors as follows:

1. Cut off damaged terminal lug or connector with diagonal cutting pliers.
2. Slide new length of heat shrinkable tubing onto wire if desired.
3. Using wire stripper, strip enough insulation from wire to allow bare wire to go all the way into hole in terminal lug or connector.
4. Select proper terminal lug or connector for wire size and terminal stud or other mating connector.
5. Insert bare end of wire all the way into hole in terminal lug or connector.
6. Crimp or solder terminal lug or connector to wire. Make sure that connection is tight.
7. If heat shrinkable tubing is used, shrink it around connection.

WIRE REPLACEMENT**WARNING**

Disconnect battery ground cable before replacing parts. This will keep you from getting shocked or damaging parts.

Replace damaged electrical wires as follows:

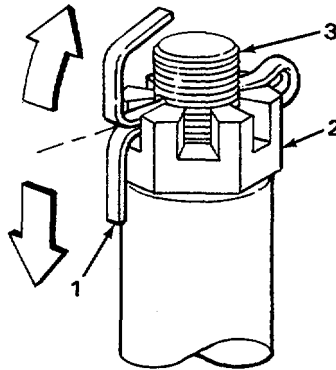
1. If terminal lugs or connections of wire to be replaced are covered with heat shrinkable tubing, cut off using sharp knife.
2. If a solder type terminal lug is in good condition, it can be unsoldered and reused.
3. Unsolder wires from soldered splice and terminal connections.
4. Cut new wire, of same gage and type as wire being replaced, to desired length using diagonal cutting pliers.
5. Slide new lengths of heat shrinkable tubing onto wire ends if desired. Always use heat shrinkable tubing around wire splices, or wrap splices with electrical tape (item 24, appendix C).
6. Connect terminal lugs or connectors to wire by soldering or crimping as necessary. Make sure that connections are tight.
7. To splice two wires together, twist and tin end strands of each wire separately. After allowing tinned ends to cool, twist both ends together and reheat to fuse ends together.
8. If heat shrinkable tubing is used, shrink it around connections.

COTTER PINS

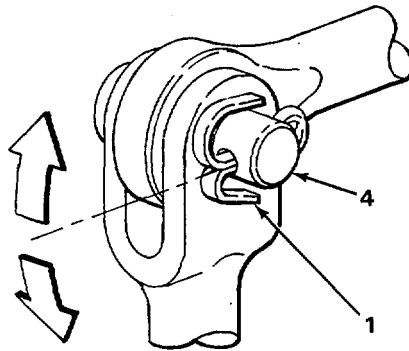
NOTE

There are two basic cotter pin installations for slotted nuts and clevis pins. Steps 1, 2, and 3 are for slotted nuts and steps 4, 5, and 6 are for clevis pins.

1. Put cotter pin (1) through slotted nut (2) and screw (3).
2. Roll long end of cotter pin (1) over end of screw (3) using long-nose pliers, and tap pin onto screw (3) using hammer.
3. Cut short end of cotter pin (1) with diagonal pliers if needed, and bend down into slotted nut (2) using long-nose pliers.



4. Put cotter pin (1) through clevis pin (4).
5. Roll cotter pin (1) ends over clevis pin (4) using long-nose pliers.
6. Cut off excess cotter pin (1) ends using diagonal pliers.



ELECTRICAL GROUND POINTS

Many electrical problems are the result of poor ground connections. You can make sure ground connections are good by doing the following:

WARNING

Disconnect battery ground cable before cleaning or replacing parts. This will keep you from getting shocked or damaging parts.

1. Remove hardware connecting ground cable terminal lug to ground point.
2. Clean mounting hardware, ground cable terminal lug, and ground point with cleaning compound and acid swabbing brush.
3. Remove any rust with wire brush and emery cloth (item 3, appendix C).
4. Look for cracks, loose terminal lugs, and stripped threads. Replace any defective parts.
5. Install hardware connecting ground cable terminal lug to ground point. Make sure all hardware is tight.

LINES AND PORTS

To keep dirt from contaminating fluid systems when removing and installing hydraulic, fuel, coolant and oil lines, do the following:

1. Clean fittings and surrounding areas before disconnecting lines.
2. Cover, cap, plug, or tape lines and ports right after disconnecting lines. Whenever possible, use protective plastic caps and plugs. When these are not available, use clean rags, duct tape, (item 23, appendix C) or similar materials to keep dirt out of fluid systems.
3. Make sure new and used parts are clean before installing them.
4. Wait to uncover, uncap, unplug, or remove tape from lines and ports until just before installing lines.

ANTISEIZING TAPE

New antiseizing tape (item 22, appendix C) should be used to keep connections from leaking whenever you are connecting fuel, oil, air, and hydraulic system lines and fittings without compression sleeves or packings as follows:

1. Be sure threads are clean and dry.
2. Start tape one or two threads from small or leading edge of fitting, joining tape together with an overlap of about 1/8 inch (3.18 mm) for fittings with fine threads. For fittings with coarse threads, tape should be wrapped around threads two or three times.

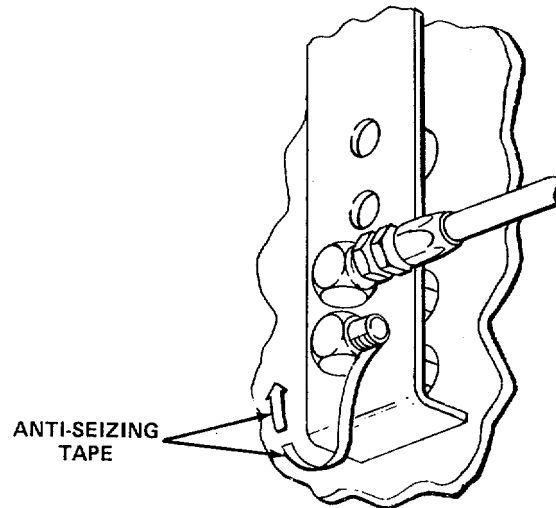
ANTISEIZING TAPE - CONTINUED

3. Wrap tape tightly in same direction as you would tighten a nut. Tape must be pressed into threads without cutting or ripping.

CAUTION

Do not go over specified torque or use power tools to tighten antiseizing-taped fittings. Overtightening could damage fitting threads and cause connection to leak.

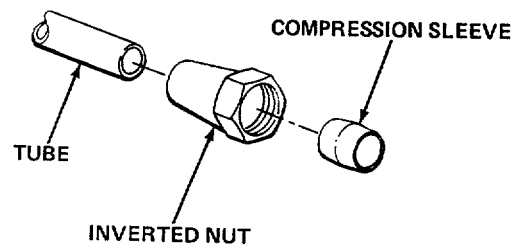
4. Use proper hand tools to tighten fittings.

**TUBES WITH COMPRESSION FITTINGS**

Tubes with inverted nuts and compression fittings are designed for one-time assembly. Once assembled, they must be replaced as a unit if any parts are found defective. Used parts may not seal properly when paired with new parts. Used tube assemblies, that are in good condition, can be reinstalled to their original locations without leaking.

Assemble new tubes, compression sleeves, and inverted nuts as follows:

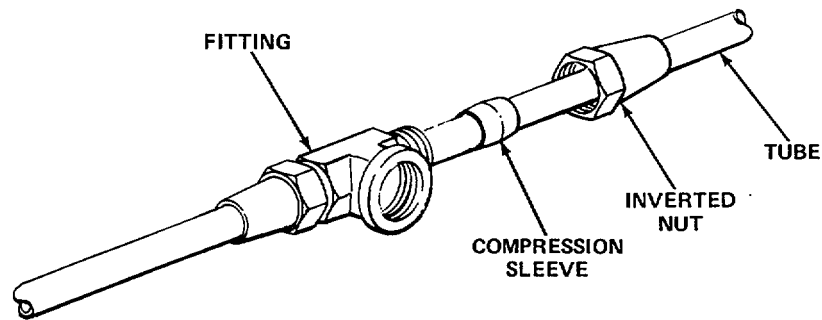
1. Slide inverted nut onto end of tube.
2. Slide compression sleeve onto end of tube.
3. Repeat steps 1 and 2 for other end of tube if needed.



TUBES WITH COMPRESSION FITTINGS - CONTINUED

Install assembled tubes as follows:

1. Insert end of tube, as far as it will go, into fitting to which tube is being installed.
2. Screw inverted nut into fitting and tighten it against compression sleeve using open-end wrench. Compression sleeve will clamp down around tube and conform to internal surface of fitting and inverted nut.
3. Repeat steps 1 and 2 for other end of tube if needed.



AIR SYSTEM LEAK CHECK

If air system leakage is suspected, check suspected components as follows:

1. Make sure that components are under air pressure by having an assistant operate them (TM 53805-254-10). For example, if you suspect a leak in brake parts, have assistant step on brake treadle with air system fully charged.
2. Coat suspected parts with solution of soap and water.
3. Air valve exhaust parts may produce up to a 1-inch (2.5 cm) bubble in 1 minute. If soap solution foams or makes a bubble faster, replace valve.
4. Air line connections and air chambers should not leak at all. Any bubbling of soap solution is cause to repair or replace connection or air chamber.

FLUID DISPOSAL

Get rid of contaminated drained fluids in accordance with your unit's Standard Operating Procedures (SOP)

ACCESS PROCEDURES

When performing maintenance tasks, it may be necessary to have access to various areas of the dump truck, some of which may be hidden. The following subparagraphs will explain how to gain access to these areas.

CAB DOOR

Unlock and Open

NOTE

Steps given are typical for both right and left doors.

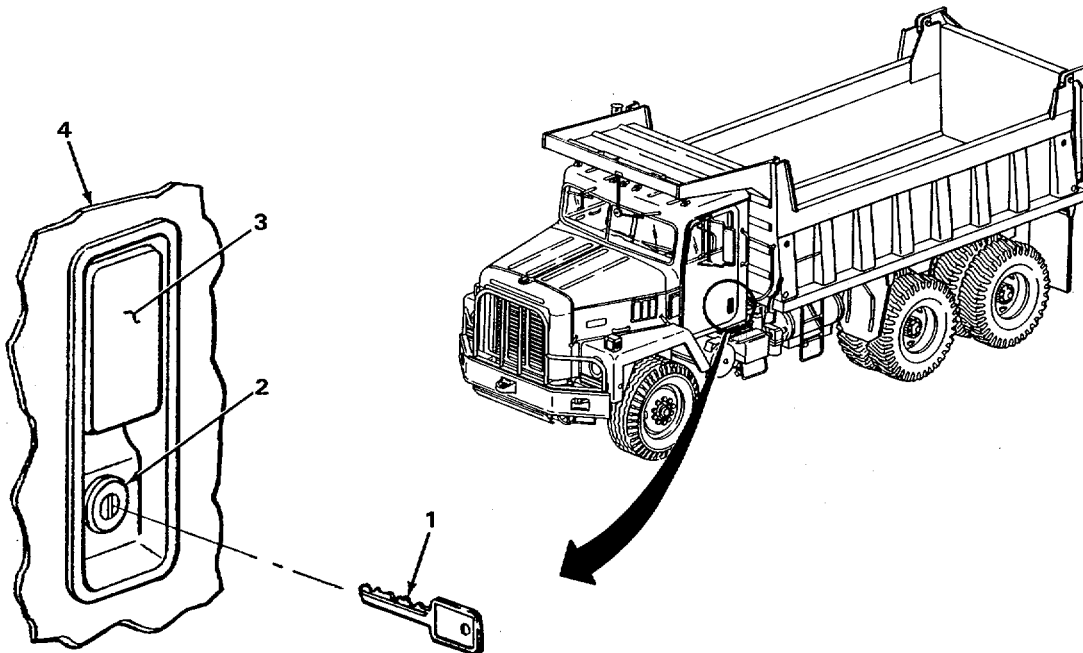
1. Place door key (1) in key hole (2) and turn toward front of dump truck to unlock.
2. Pull door latch (3) from bottom, up and away from door (4), and pull door (4) open.

Close and Lock

NOTE

Steps given are typical for both right and left doors.

3. Push door (4) to close.
4. Place door key (1) in key hole (2) and turn toward rear of dump truck to lock.



ACCESS PROCEDURES - CONTINUED**DUMP BODY****Raising**

1. Start engine (refer to TM 5-3805-254-10) and idle at 1000 rpm.
2. Place main transmission control lever (1) in neutral (N).
3. Engage parking brake (2).
4. Move PTO IN/OUT control (3) to IN. PTO indicator lamp (4) should light.
5. Pull dump body control lever (5) back to raise dump body to desired height.
6. Place safety props (6) in safety position.

WARNING

Support blocks must be used to support dump body weight. Death or serious injury could result if personnel fail to observe this warning.

7. Place support blocks (7) in position. (Type of support blocks will be at discretion of repair facility).

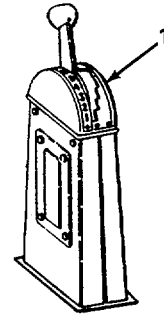
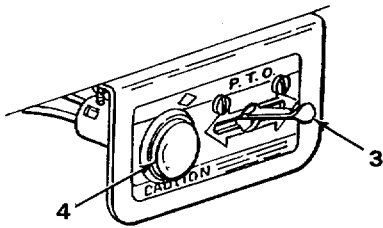
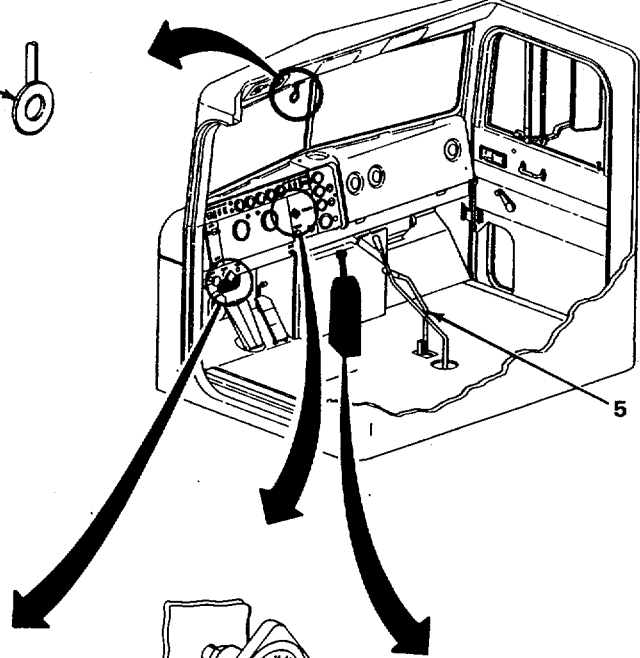
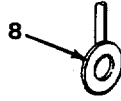
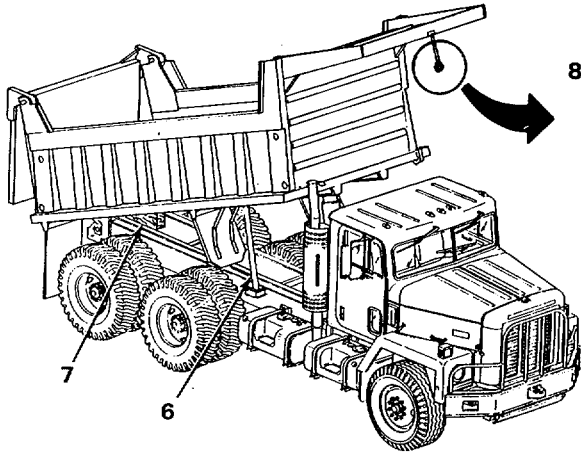
Lowering**WARNING**

Make sure all personnel are clear of dump body before lowering to prevent injury.

8. Remove support blocks (7).
9. Place safety props (6) in stored position.
10. Push dump body control lever (5) forward to lower dump body.
11. Release dump body control lever (5) when dump body target (8) is visible and dump body is fully lowered.
12. Set PTO IN/OUT control (3) to OUT position. PTO indicator lamp (4) should go out.

ACCESS PROCEDURES - CONTINUED

NOTE
SEATS AND STEERING
WHEEL REMOVED
FOR CLARITY



ACCESS PROCEDURES - CONTINUED**HOOD PANELS****Opening****NOTE**

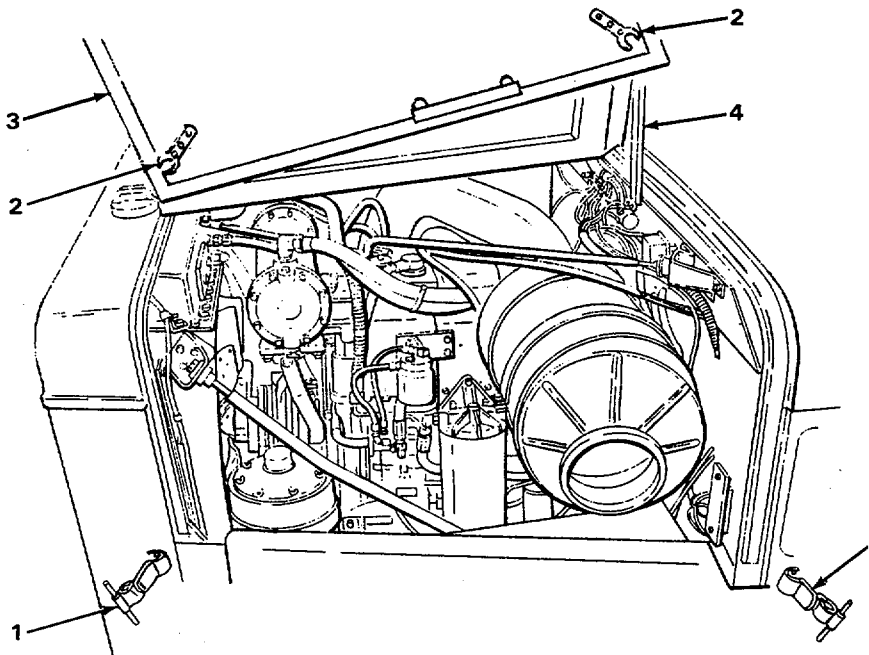
Steps given are typical for right and left side hood panels.

1. Pull two latches (1) up and away from hooks (2).
2. Raise hood panel (3) to stop, then lower to engage hood prop assembly (4).

Closing**NOTE**

Steps given are typical for right and left side hood panels.

3. Raise hood panel (3) past stop, then lower to disengage hood prop assembly (4).
4. Lower hood panel (3) and pull two latches (1) up and engage in hooks (2).



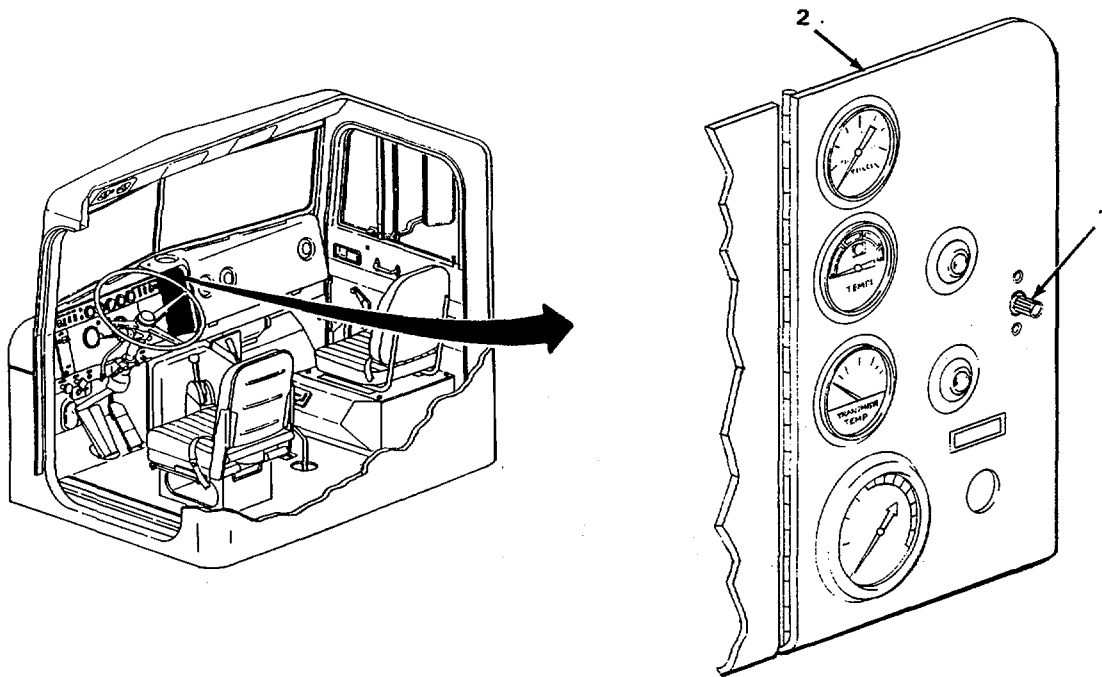
ACCESS PROCEDURES - CONTINUED**RIGHT INSTRUMENT PANEL****Opening****WARNING**

Batteries must be disconnected before working near electrical components. Failure to observe this precaution could cause serious injury or damage to equipment.

1. Disconnect battery cables (page 2-444).
2. Turn captive thumbscrew (1) counterclockwise until fully loosened.
3. Open right instrument panel (2).

Closing

4. Close right instrument panel (2).
5. Turn captive thumbscrew (1) clockwise until tight.
6. Connect battery cables (page 2-444).



ACCESS PROCEDURES - CONTINUED**LOWER CENTER INSTRUMENT PANEL****Opening****WARNING**

Batteries must be disconnected before working near electrical components. Failure to observe this precaution could cause serious injury or damage to equipment.

1. Disconnect battery cables (page 2-444).
2. Using cross-tip screwdriver, unscrew and take out 11 screws (1).

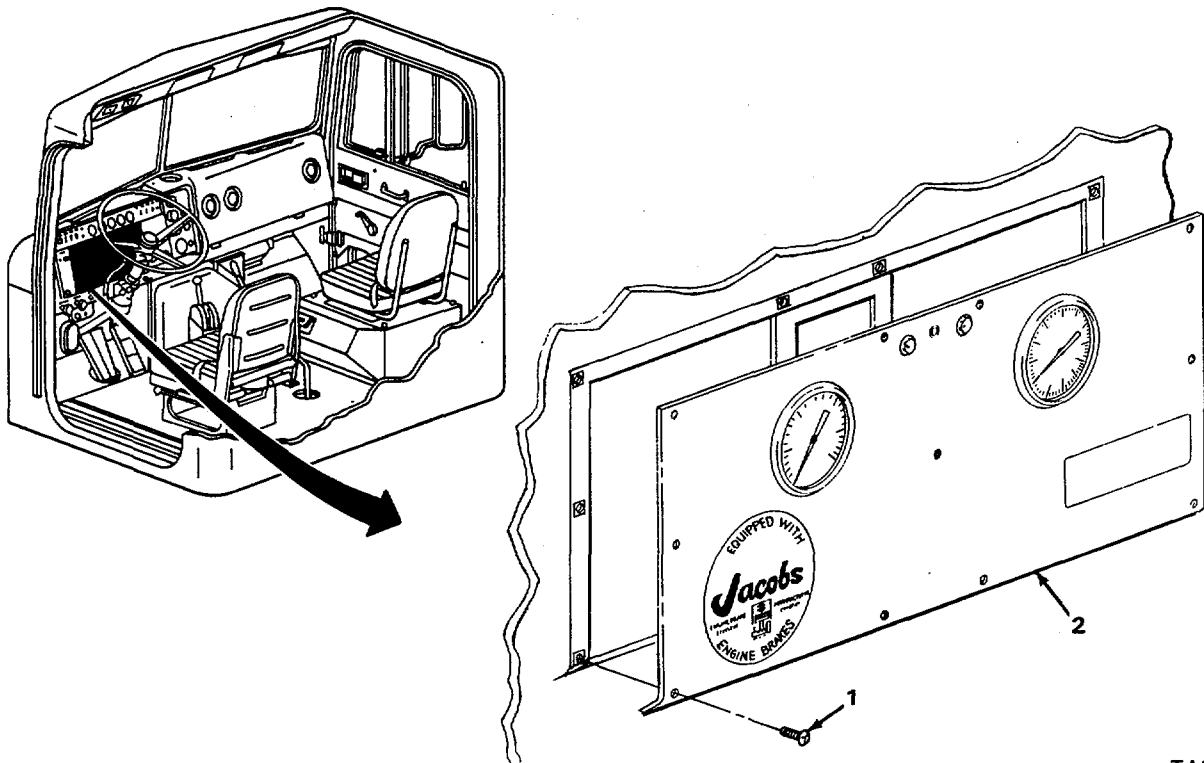
CAUTION

Do not pull instrument panel out too far, light bulbs could be pulled from sockets or wires broken.

3. Open lower center instrument panel (2).

Closing

4. Place lower center instrument panel (2) in position.
5. Screw in and tighten 11 screws (1) using cross-tip screwdriver.
6. Connect battery cables (page 2-444).



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ACCESS PROCEDURES - CONTINUED

UPPER CENTER INSTRUMENT PANEL

Opening**WARNING**

Batteries must be disconnected before working near electrical components. Failure to observe this precaution could cause serious injury or damage to equipment.

1. Disconnect battery cables (page 2-444).
2. Using cross-tip screwdriver, take out eight screws (1).

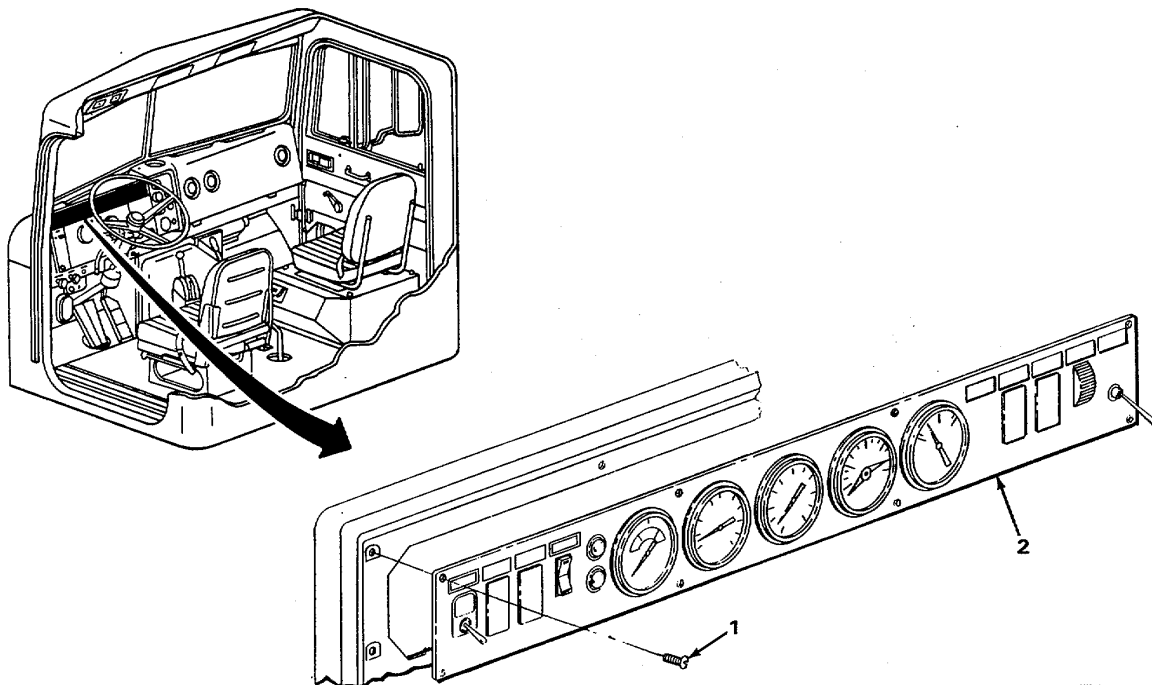
CAUTION

Do not pull instrument panel out too far, light bulbs could be pulled from sockets or wires broken.

3. Open upper center instrument panel (2).

Closing

4. Place upper center instrument panel (2) in position.
5. Screw in and tighten eight screws (1) using cross-tip screwdriver.
6. Connect battery cables (page 2-444).



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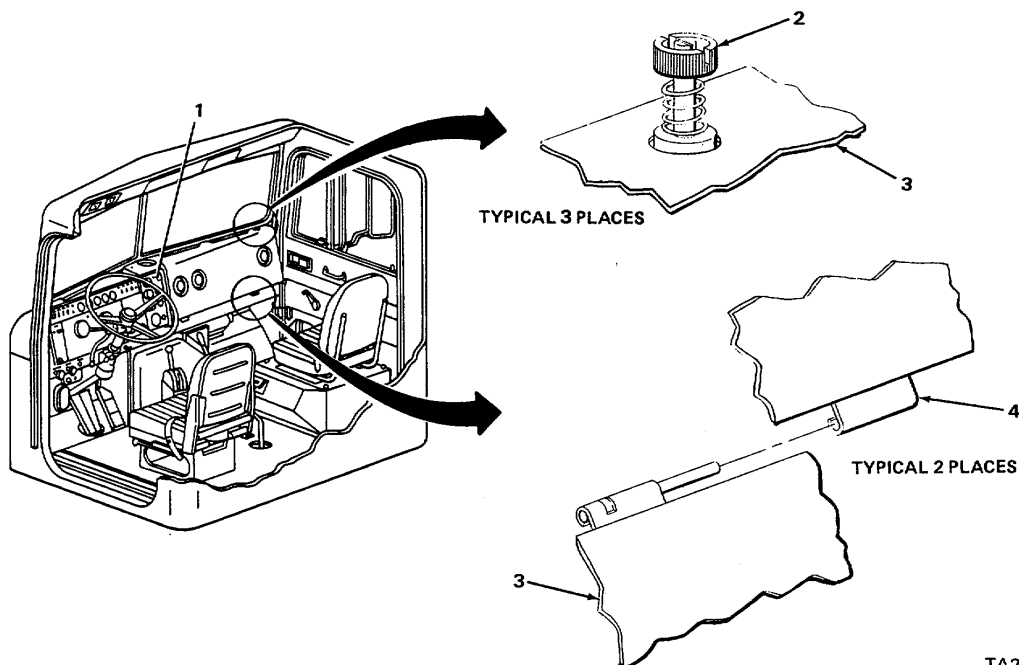
ACCESS PROCEDURES - CONTINUED**INSTRUMENT PANEL PAD****Removal****WARNING**

Batteries must be disconnected before working near electrical components. Failure to observe this precaution could cause serious injury or damage to equipment.

1. Disconnect battery cables (page 2-444).
2. Open right instrument panel (1) (page 2-437).
3. Turn three captive thumbscrews (2) counterclockwise until fully loosened.
4. Lower instrument panel pad (3) and move to left to disconnect from two hinges (4).
5. Remove instrument panel pad (3).

Installation

6. Aline two hinges (4) and move instrument panel pad (3) to right to secure.
7. Raise instrument panel pad (3) to closed position.
8. Turn three captive thumbscrews (2) clockwise to lock.
9. Close right instrument panel (1) (page 2-437).
10. Connect battery cables (page 2-444).



TA243988

ACCESS PROCEDURES - CONTINUED

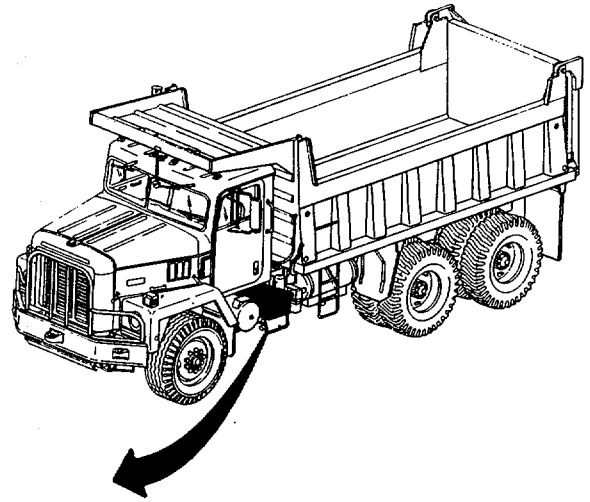
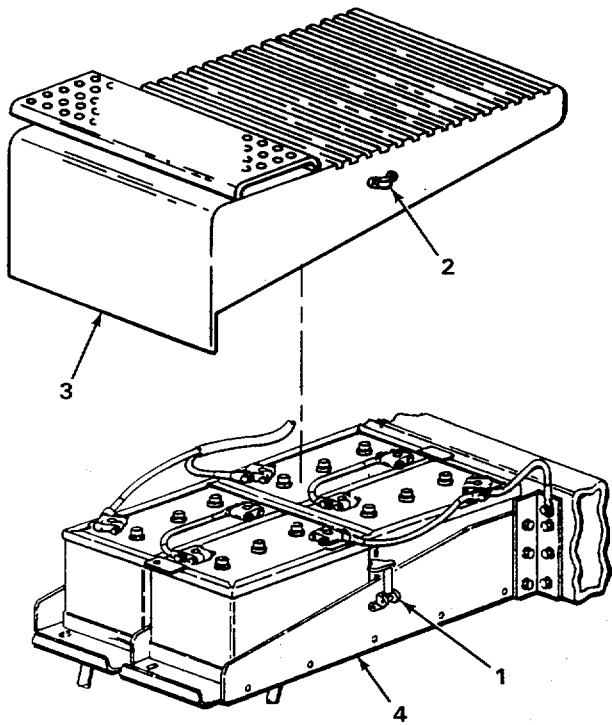
BATTERY BOX COVER

Removal

1. Lift two latches (1) from two hooks (2).
2. Remove battery box cover (3) from battery compartment (4).

Installation

3. Position battery box cover (3) on battery compartment (4).
4. Lift two latches (1) up and secure to two hooks (2).



TA243989

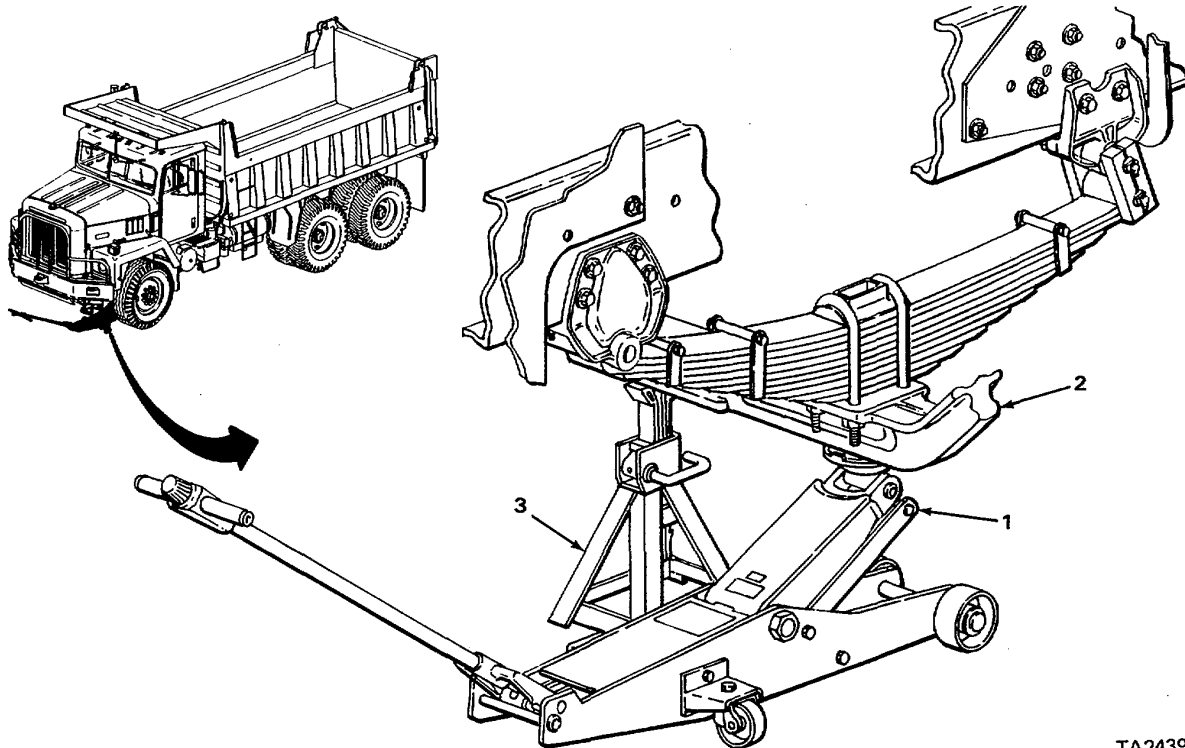
ACCESS PROCEDURES - CONTINUED**JACKING FRONT OF DUMP TRUCK****Raising****NOTE**

Steps given are typical for left or right side.

1. Position dolly-type hydraulic jack (1) under front I-beam (2).
2. Raise vehicle until tire is off ground.
3. Position 10-ton trestle (3) under I-beam (2).
4. Lower dolly-type hydraulic jack (1) and take out from under dump truck.

Lowering

5. Position dolly-type hydraulic jack (1) under front I-beam (2).
6. Raise vehicle until front I-beam (2) is off 10-ton trestle (3).
7. Take 10-ton trestle (3) out from under dump truck.
8. Lower dolly-type hydraulic jack (1) completely.
9. Take dolly-type hydraulic jack (1) out from under dump truck.



TA243990

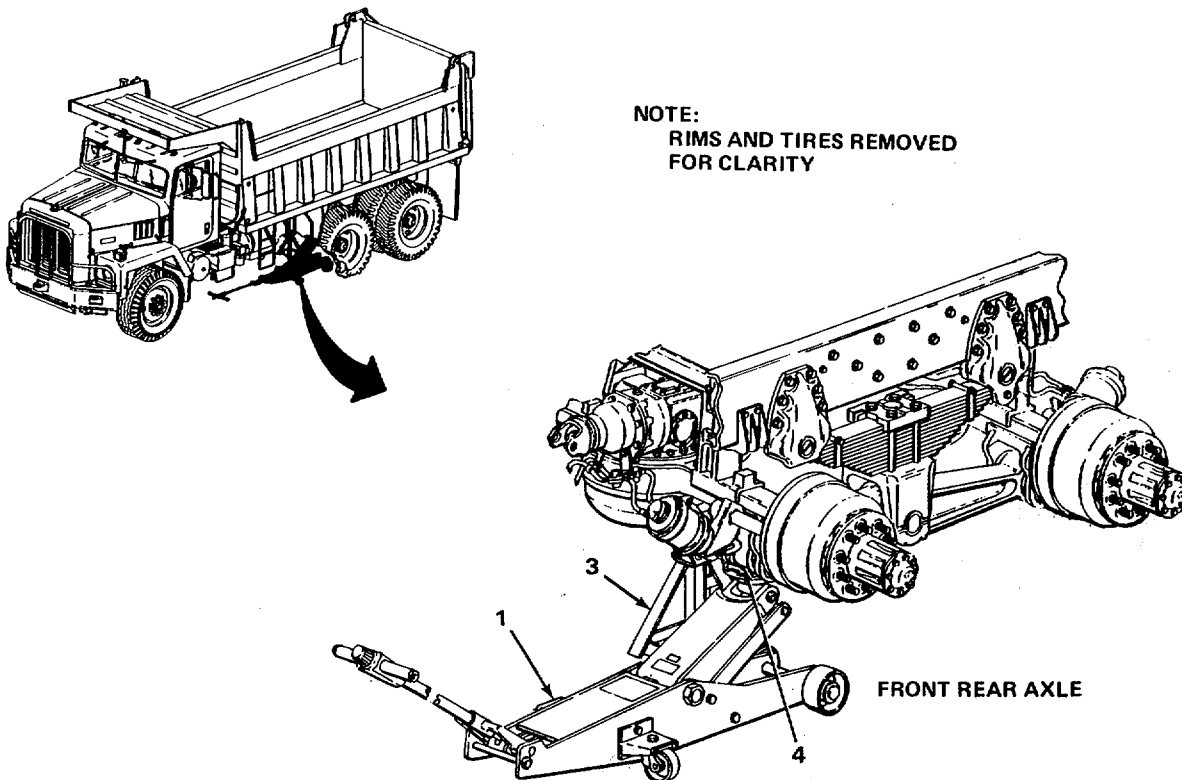
ACCESS PROCEDURES - CONTINUED**JACKING REAR OF DUMP TRUCK****Raising****NOTE**

Steps given are typical left or right side.

1. Position dolly-type hydraulic jack (1) under equalizer beam (2).
2. Raise vehicle until tire is off ground.
3. Position 10-ton trestle (3) under equalizer beam (2).
4. Lower dolly-type hydraulic jack (1) and take out from under dump truck.

Lowering

5. Position dolly-type hydraulic jack (1) under equalizer beam (2)
6. Raise vehicle until equalizer beam (2) is off 10-ton trestle (3).
7. Take 10-ton trestle (3) out from under dump truck.
8. Lower dolly-type hydraulic jack (1) completely.
9. Take dolly-type hydraulic jack (1) out from under dump truck.



TA243991

BATTERY CABLES

Disconnecting

1. Perform battery box cover removal (page 2-441).

WARNING

When removing battery cables, disconnect negative (-) cable first. Failure to observe this precaution could cause injury to personnel or damage to equipment.

NOTE

Tag battery cables to ensure correct installation.

2. Using 3/4-inch, 1/2-inch drive socket and ratchet handle and 3/4-inch box-end wrench, unscrew and take off negative (-) battery cable (1) from frame rail (2).
3. 1/2-inch box-end wrench, loosen and take off two positive (+) battery cable terminals (3) from batteries.

Connecting

WARNING

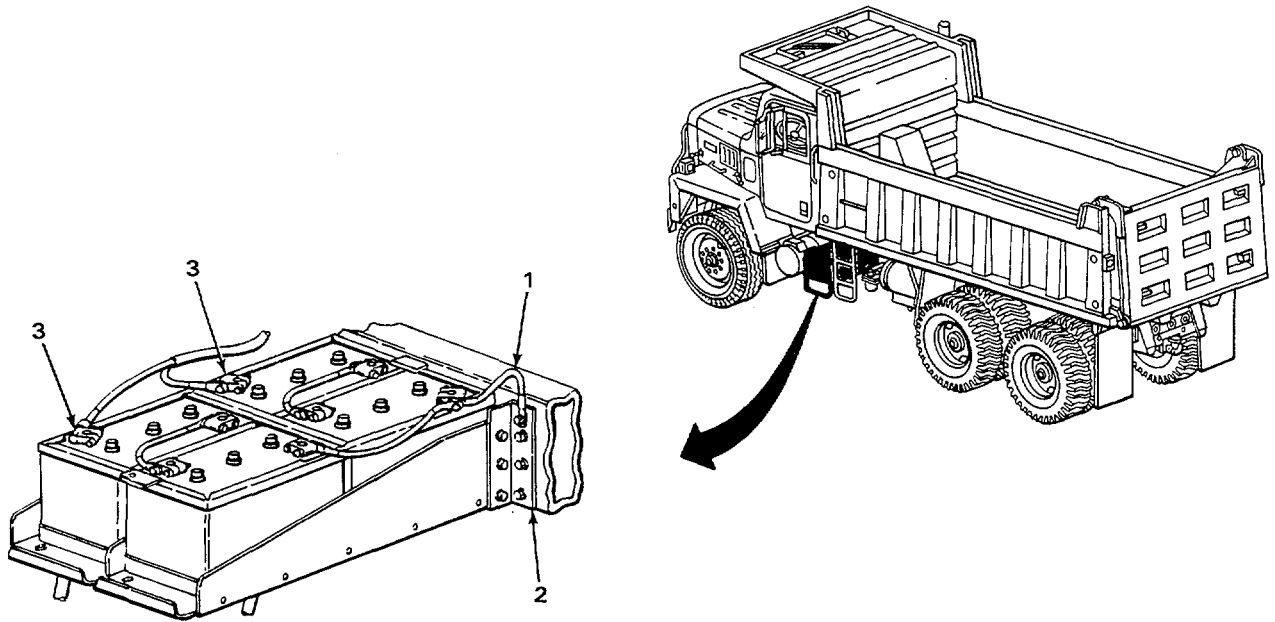
When installing battery cables, connect negative (-) cable last. Failure to observe this precaution could cause injury to personnel or damage to equipment.

NOTE

Remove tags from cables after completing installation.

4. Position two positive (+) battery cable terminals (3) on batteries and tighten using 1/2-inch box-end wrench.
5. Position negative (-) battery cable (1) on frame rail (2) and screw in and tighten using 3/4 inch, 112-inch drive socket and ratchet handle and 3/4-inch box-end wrench.
6. Perform battery box cover installation (page 2-441).

BATTERY CABLES - CONTINUED



TA243992

Section VII. FUEL SYSTEM MAINTENANCE

Page	Page
Accelerator Control Pedal.....2-574	Fuel Tank Straps 2-523
Accelerator Control Rod2-550	Fuel Tank Supports 2-546
Accelerator Control Lever.....2-562	Fuel Tank Vent Hoses 2-520
Accelerator Control Pivot Arm2-568	Glow Plug 2-512
Air Cleaner Element.2-452	Hand Throttle Control.....2-580
Air Filter Housing.....2-462	Preheater Primer Pump 2-484
Engine Auxiliary Oil Filter Hoses	Preheater Primer Pump Fuel
and Fittings2-465.0	Lines and Fittings..... 2-488
Engine Auxiliary Oil Filter Shell2-465.8	Preheater Primer Pump Nozzle 2-510
Front Fuel Tank2-528	Primary Fuel Filter 2-466
Fuel Gage Sending Unit.....2-516	Primary Fuel Filter Housing 2-470
Fuel Pump Fuel Filter2-477	Priming Fuel System 2-481
Fuel Tank Draining2-514	Rear Fuel Tank 2-537
Fuel Tank Filling2-544	Secondary Fuel Filter 2-476
	Turbocharger Piping 2-446

TURBOCHARGER PIPING

This task covers:

- | | |
|-----------------------------|--|
| a. Removal (page 2-446) | d. Inspection/Replacement (page 2-449) |
| b. Disassembly (page 2-448) | e. Assembly (page 2-450) |
| c. Cleaning (page 2-448) | f. Installation (page 2-451) |
-

INITIAL SETUP:

<p>Tools</p> <p>Goggles, safety Gun, air blow Hose, air, assembly Screwdriver, flat-tip, 1/4-inch</p> <p>Materials/Parts</p> <p>Detergent, liquid, GP (item 7, appendix C)</p>	<p>Personnel Required</p> <p>One</p> <p>Equipment Condition</p> <p>Right and left side hood panels opened (page 2-424).</p> <p>References</p> <p>TM 9-247 (Authorized Cleaning Methods).</p>
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LOCATION	ITEM	ACTION	REMARKS
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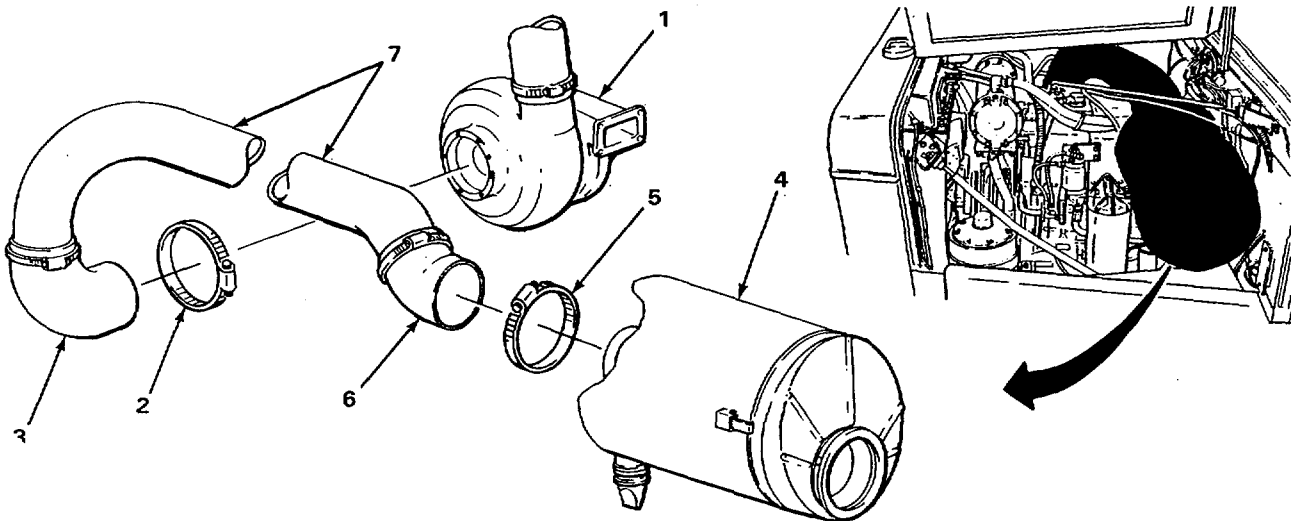
REMOVAL

WARNING

Do not operate engine after removing turbocharger piping. Foreign matter could enter turbocharger air inlet pipe and cause damage to personnel and damage to turbocharger.

TURBOCHARGER PIPING - CONTINUED

LOCATION	ITEM	ACTION REMARKS
1. Turbocharger (1)	Hose clamp (2)	Using 1/4-inch flat-tip screwdriver, loosen.
2.	Turbocharger air hose (3)	Pull off.
3. Turbocharger air hose (3)	Hose clamp (2)	Take off.
4. Air cleaner housing (4)	Hose clamp (5)	Using 1/4-inch flat-tip screwdriver, loosen.
5.	Air cleaner air hose (6)	Pull off.
6. Air cleaner air hose (6)	Hose clamp (5)	Take off.
7. Engine compartment	Turbocharger air hose (3), air cleaner air hose (6), and air pipe (7)	Take out as an assembly.



TA243993

TURBOCHARGER PIPING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
DISASSEMBLY			
8. Turbocharger air hose (1)	Hose clamp (2)	Using 1/4-inch flat-tip screwdriver, loosen and take off.	
9. Air pipe (3)	Turbocharger air hose (1)	Take off.	
10. Air cleaner air hose (4)	Hose clamp (5) and take off.	Using 1/4-inch flat-tip screwdriver, loosen	
11. Air pipe (3)	Air cleaner air hose (4)	Take off.	

CLEANING

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and cause damage to equipment. Refer to TM 9247.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

12.	Turbocharger air hose (1), air pipe (3), air cleaner air hose (4), and two hose clamps (2 and 5)	Clean thoroughly with liquid detergent.	
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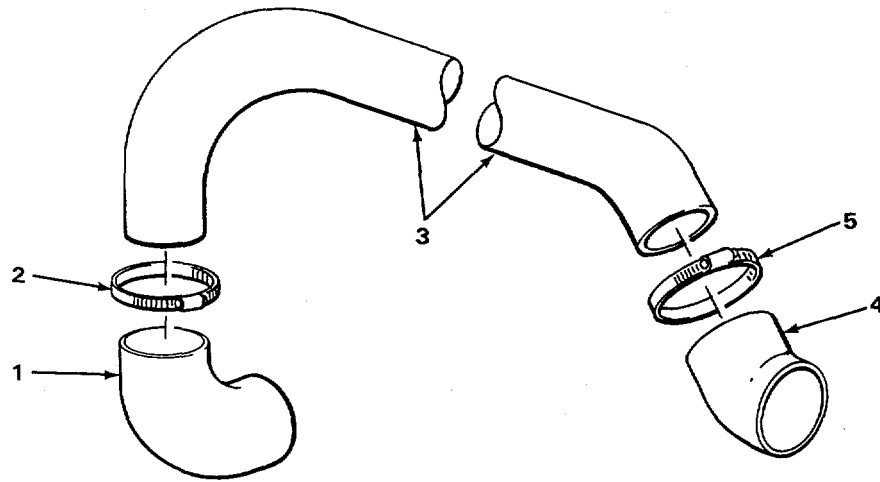
WARNING

Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent injury to personnel.

TURBOCHARGER PIPING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

13.	Turbocharger air hose (1), air pipe (3), air cleaner hose (4), and two hose clamps (2 and 5)	Using air hose assembly and air blow gun, dry thoroughly.	
-----	--	---	--



INSPECTION/REPLACEMENT

TA243994

NOTE

Replace all damaged or defective parts.

2-449

TURBOCHARGER PIPING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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INSPECTION/REPLACEMENT - CONTINUED

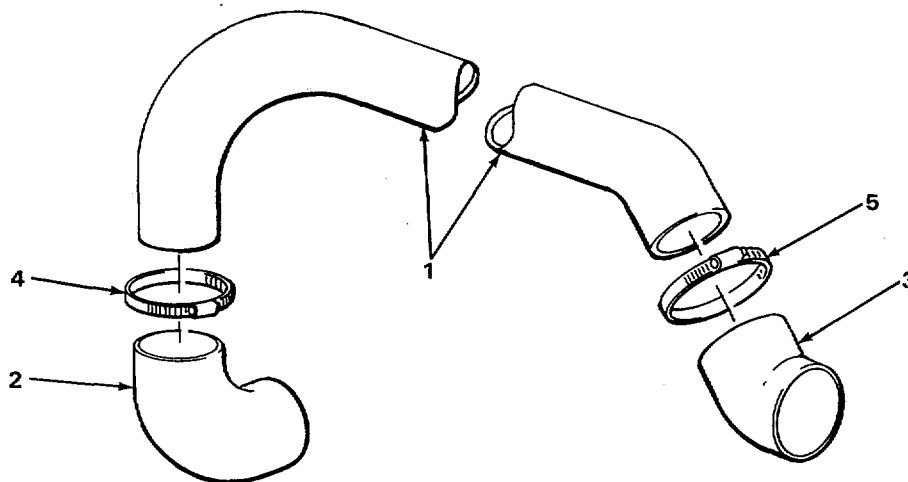
NOTE

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

14.	Air pipe (1)	Look for cracks and breaks.
15.	Turbocharger air hose (2) and air cleaner air hose (3)	Look for cracks, dry rot, and damaged areas.
16.	Hose clamps (4 and 5)	Look for twisted shape or stripped threads.

ASSEMBLY

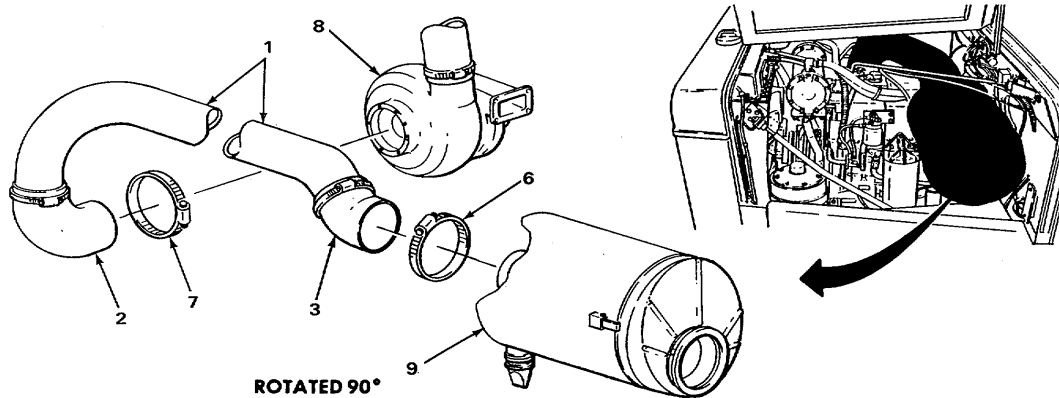
17.	Air pipe (1)	Turbocharger air hose (2)	Put on.
18.	Turbocharger air hose (2)	Hose clamp (4)	Put onto air hose and tighten using 1/4-inch flat-tip screwdriver.
19.	Air pipe (1)	Air cleaner air hose (3)	Put on.
20.	Air cleaner air hose (3)	Hose clamp (5)	Put onto air hose and tighten using 1/4-inch flat-tip screwdriver.



TA243995

TURBOCHARGER PIPING - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
21. Air cleaner air hose (3)	Hose clamp (6)	Put on.
22. Turbocharger air hose (2)	Hose clamp (7)	Put on.
23. Turbocharger (8) and air cleaner (9)	Air pipe (1), turbocharger air hose (2), air cleaner air hose (3), and hose clamps (6 and 7)	Align and push into place as an assembly.
24. Turbocharger air hose (2)	Hose clamp (7)	Position to secure air hose to turbocharger (8) and tighten using 1/4-inch flat-tip screwdriver.
25. Air cleaner air hose (3)	Hose clamp (6)	Position to secure air cleaner hose to air cleaner (9) and tighten using 1/4-inch flat-tip screwdriver.



TA243996

NOTE

FOLLOW-ON MAINTENANCE: Close right and left side hood panels (page 2-424).

TASK ENDS HERE

AIR CLEANER HOUSING

This task covers:

- | | |
|-----------------------------|--|
| a. Removal (page 2-452) | d. Inspection/Replacement (page 2-458) |
| b. Disassembly (page 2-454) | e. Assembly (page 2-458) |
| c. Cleaning (page 2-457) | f. Installation (page 2-460) |
-

INITIAL SETUP:

Tools

- Gloves, safety
- Goggles, safety
- Gun, air blow
- Handle, ratchet, 1/2-inch drive
- Hose, air, assembly Personnel Required
- Screwdriver, flat-tip, 1/4-inch
- Socket, 9/16-inch, 1/2-inch drive One
- Wrench, box-end, 9/16-inch
- Wrench, open-end, 7/16-inch
- Wrench, open-end, 9/16-inch

Materials/Parts

- Detergent, liquid, GP (item 7, appendix C)
- Element, air filter

Materials/Parts - Continued

- Gasket, wingnut
- Lockwasher (two required)
- Solvent, drycleaning (item 19, appendix C)

Equipment Condition

Left side hood panel opened (page 2-424).

References

TM 9-247 (Authorized Cleaning Methods)

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

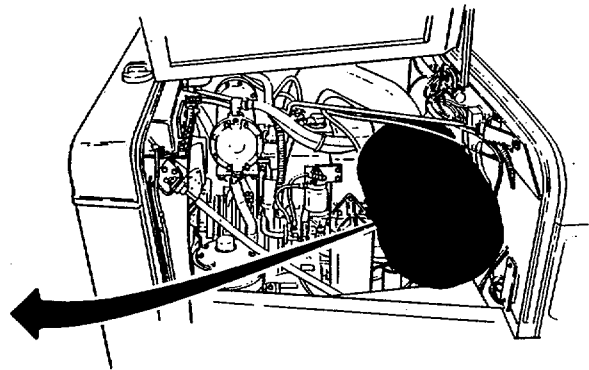
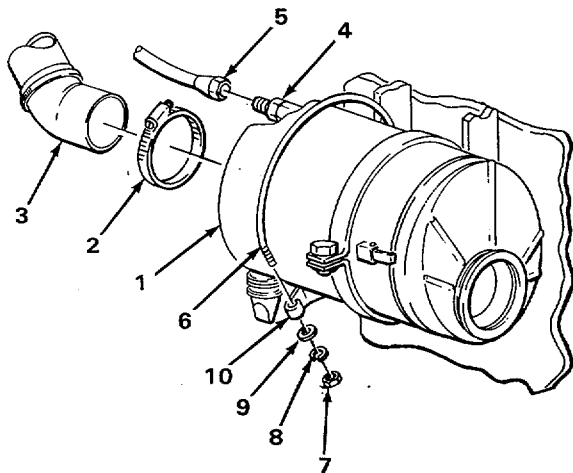
WARNING

Do not operate engine after removing air cleaner housing. Foreign matter could enter turbocharger air inlet pipe and cause damage to turbocharger or injury to personnel.

- | | | |
|----------------------------|----------------|--|
| 1. Air cleaner housing (1) | Hose clamp (2) | Using 1/4-inch flat-tip screwdriver, loosen. |
|----------------------------|----------------|--|

AIR CLEANER HOUSING - CONTINUED

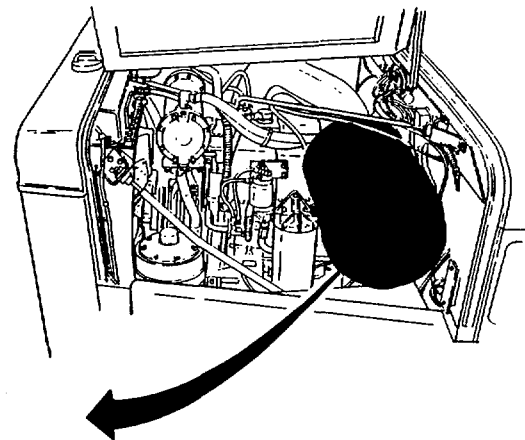
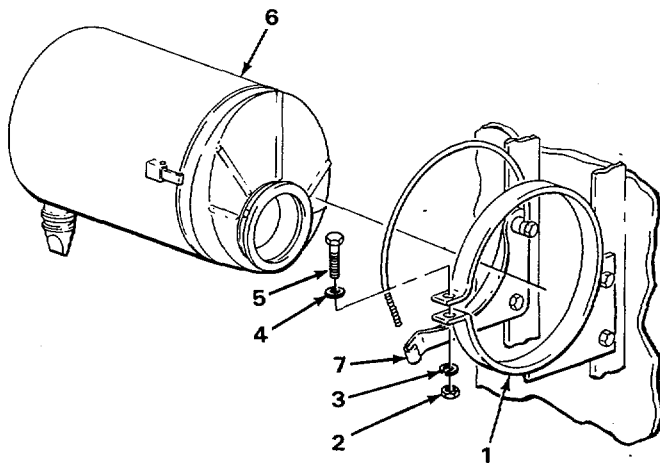
LOCATION	ITEM	ACTION REMARKS
2.	Air cleaner air hose (3)	Pull off of air cleaner housing.
3. Air cleaner air hose (3)	Hose clamp (2)	Take off.
4. Air cleaner housing (1)	Fitting (4) and vacuum line (5)	a. Using 9/16-inch and 7/16-inch open-end wrenches, loosen vacuum line. b. Take off vacuum line.
5. Cable (6)	Nut (7), lockwasher (8), and flat washer (9)	a. Using 9/16-inch, 1/2-inch drive socket and ratchet handle, unscrew and take off. b. Get rid of lockwasher.
6. Mounting bracket (10)	Cable (6)	Pull out.



TA243997

AIR CLEANER HOUSING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL - CONTINUED			
7. Clamp (1)	Nut (2), lockwasher (3), flat washer (4), and screw (5)	a. Using 9/16-inch box-end wrench and 9/16-inch, 1/2-inch drive socket and ratchet handle, unscrew and take off. b. Get rid of lockwasher.	
8. Air cleaner housing (6)	Clamp (1)	Pull open only enough to allow air cleaner housing to be taken out.	
9. Clamp (1) and mounting bracket (7)	Air cleaner housing (6)	Take out.	



DISASSEMBLY

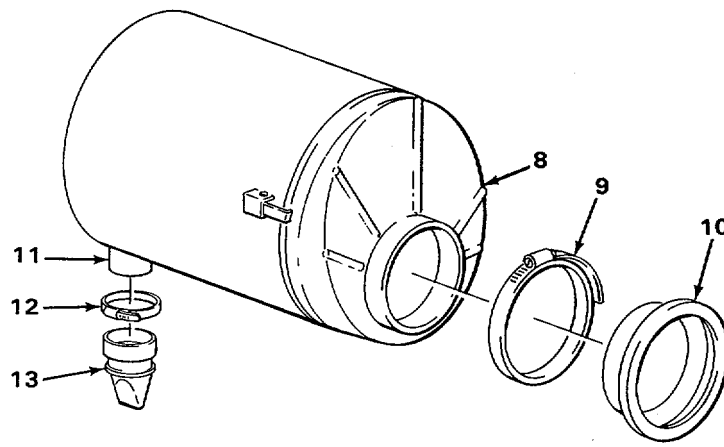
WARNING

Metal edges of air cleaner housing are sharp. Care must be taken to prevent personal injury.

TA243998

AIR CLEANER HOUSING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
10. Air cleaner cover (8)	Clamp (9) and seal (10)	a. Using 1/4-inch flat-tip screwdriver, loosen clamp and take off. b. Pull off seal.	
11. Air cleaner housing tube (11)	Clamp (12) and ejection valve (13)	a. Using 1/4-inch flat-tip screwdriver, loosen clamp and take off. b. Pull off ejection valve.	



TA243999

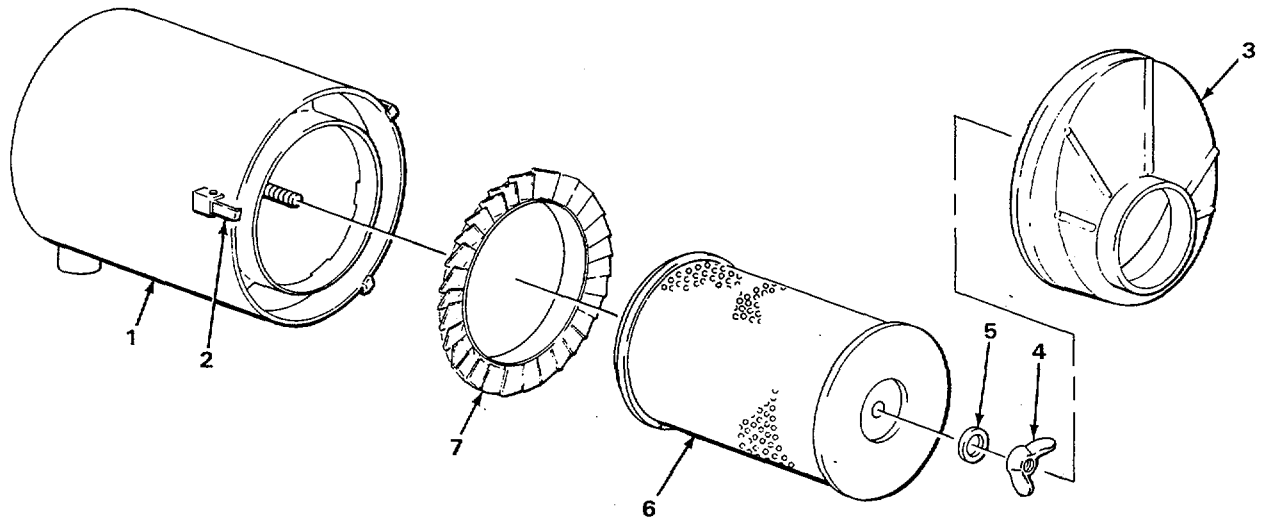
AIR CLEANER HOUSING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
DISASSEMBLY - CONTINUED			
12. Air cleaner housing (1)	Three clips (2)	Pull up to release.	
13.	Air cleaner cover (3)	Pull off.	
14.	Wingnut (4) and gasket (5)	a. Unscrew and take off. b. Get rid of gasket.	
15.	Air filter element (6)	a. Take out. b. Get rid of.	

CAUTION

Fin ring is plastic and can break easily. Care must be taken to prevent damage when removing.

16.	Fin ring (7)	Take out.	
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TA244000

AIR CLEANER HOUSING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CLEANING

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and cause damage to equipment. Refer to TM 9-247.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

- | | | |
|-----|------------------------------|---|
| 17. | All plastic and rubber parts | Clean thoroughly with liquid detergent and water. |
|-----|------------------------------|---|

WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

- | | | |
|-----|-----------------|--|
| 18. | All metal parts | Clean thoroughly with drycleaning solvent. |
|-----|-----------------|--|

WARNING

Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent injury to personnel.

- | | | |
|-----|-----------|---|
| 19. | All parts | Using air hose assembly and air blow gun, dry thoroughly. |
|-----|-----------|---|

AIR CLEANER HOUSING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

20.	All metal and plastic parts	Look for cracks and breaks.	
21.	All rubber parts	Look for cracks, dry rot, and damaged areas.	

ASSEMBLY

WARNING

Metal edges of air cleaner housing are sharp. Care must be taken to prevent personal injury.

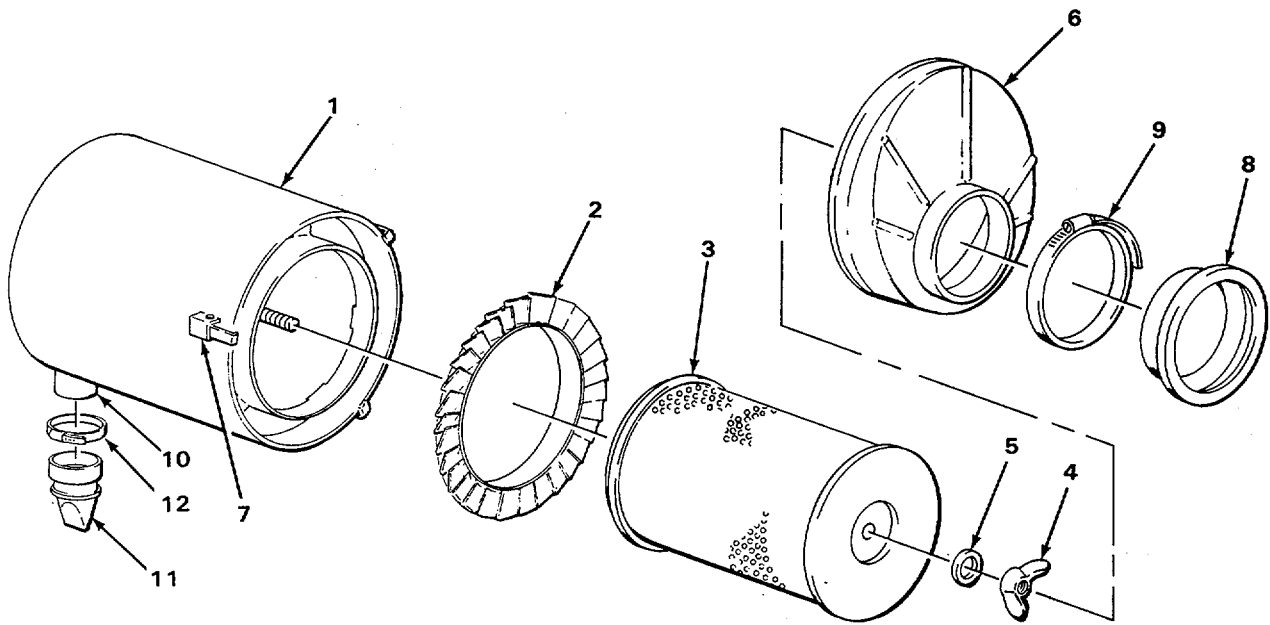
CAUTION

Fin ring is plastic and can break easily. Care must be taken to prevent damage when installing.

22. Air cleaner housing (1)	Fin ring (2)	Put in.	
23.	New air filter element (3)	Put in.	
24. Wingnut (4)	New gasket (5)	Put on.	
25. Air cleaner housing (1)	Wingnut (4)	Screw on and tighten. Air filter element should not rattle.	
26.	Air cleaner cover (6) and three clips (7)	a. Aline and put on. b. Connect clips and push down to lock.	

AIR CLEANER HOUSING - CONTINUED

LOCATION	ITEM	ACTION REMARKS
27. Air cleaner cover (6)	Seal (8) and clamp (9)	a. Put on seal. b. Put on clamp and tighten using 1/4-inch flat-tip screwdriver.
28. Air cleaner housing tube (10)	Ejection valve (11) and clamp (12)	a. Push on ejection valve. b. Put on clamp and tighten using 1/4-inch flat-tip screwdriver.



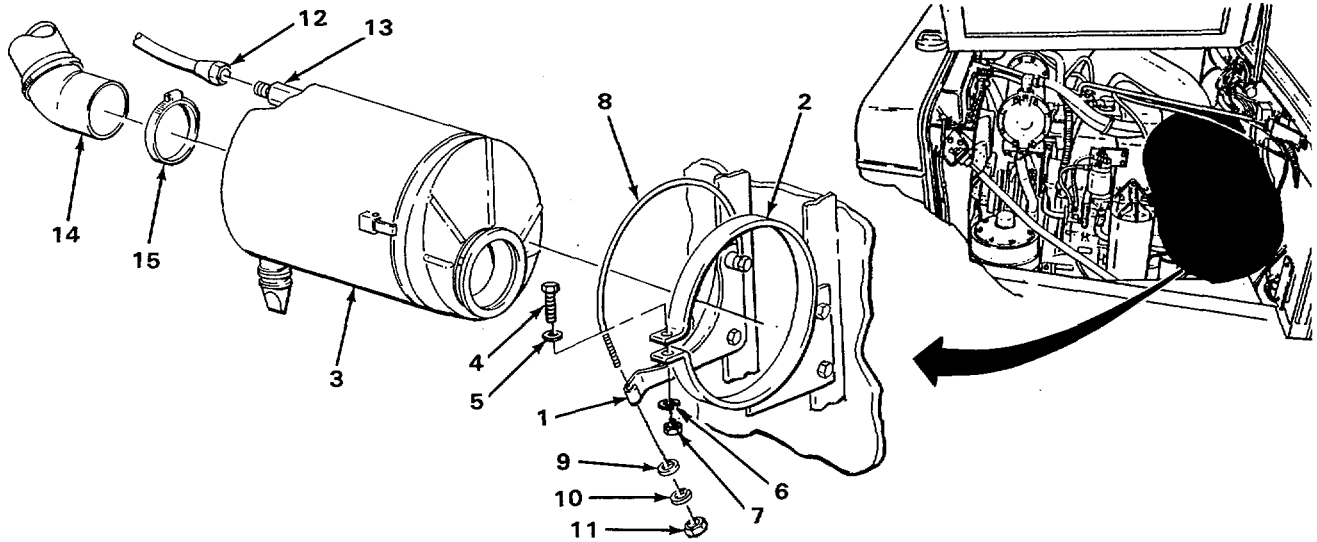
TA244001

AIR CLEANER HOUSING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
NOTE			
Ejection valve must be positioned on far side of mounting bracket and pointing downward.			
29. Mounting bracket (1) and clamp (2)	Air cleaner housing (3)	Put in.	
30. Air cleaner housing (3)	Clamp (2)	Push closed.	
31. Clamp (2)	Screw (4), flat washer (5), new lockwasher (6), and nut (7)	Screw on and tighten using 9/16-inch box- end wrench and 9/16-inch, 112-inch drive socket and ratchet handle.	
32. Mounting bracket (1)	Cable (8)	Put through hole in mounting bracket.	
33. Cable (8)	Flat washer (9), new lockwasher (10), and nut (11)	Screw on and tighten using 9/16-inch, 1/2- inch drive socket and ratchet handle.	
34. Air cleaner housing (3)	Vacuum line (12) and fitting (13)	Screw on and tighten using 9/16-inch and 7/16-inch open-end wrenches.	
35. Air cleaner air hose (14)	Hose clamp (15)	Put on.	
36. Air cleaner housing (3)	Air cleaner air hose (14)	Push on.	

AIR CLEANER HOUSING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
37. Air cleaner air hose (14)	Hose clamp (15)	Tighten, using 1/4-inch flat-tip screwdriver.	



NOTE

FOLLOW-ON MAINTENANCE: Close right and left side hood panels (page 2-424).

TASK ENDS HERE

TA244002

AIR FILTER ELEMENT

This task covers:

- | | |
|---|---|
| <ul style="list-style-type: none"> a. Removal (page 2-462) b. Cleaning (page 2-464) | <ul style="list-style-type: none"> c. Inspection/Replacement (page 2-464) d. Assembly/Installation (page 2-464) |
|---|---|
-

INITIAL SETUP:

<p>Tools</p> <ul style="list-style-type: none"> Goggles, safety Gun, air blow Hose, air, assembly Screwdriver, flat-tip, 1/4-inch <p>Materials/Parts</p> <ul style="list-style-type: none"> Element, air filter Gasket, wingnut 	<p>Personnel Required</p> <p>One</p> <p>Equipment Condition</p> <p>Right and left side hood panels opened (page 2-424).</p> <p>References</p> <p>TM 9-247 (Authorized Cleaning Methods)</p>
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LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

WARNING

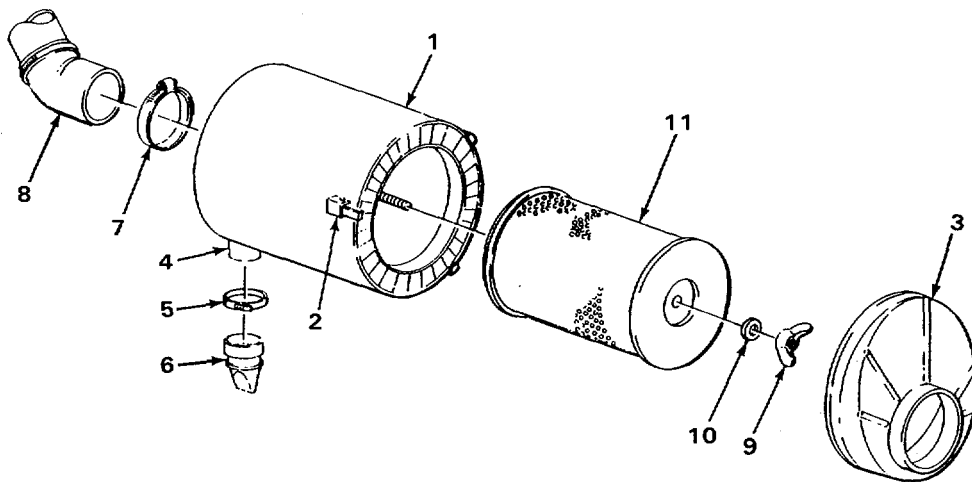
Do not operate engine after removing air filter element. Foreign matter could enter turbocharger air inlet pipe and could cause damage to turbocharger or injury to personnel.

Metal edges of air cleaner housing are sharp. Care must be taken to prevent personal injury.

- | | | | |
|----|-------------------------|-----------------|---------------------|
| 1. | Air cleaner housing (1) | Three clips (2) | Pull up to release. |
| 2. | | Cover (3) | Take off. |

AIR FILTER ELEMENT - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
3. Air cleaner housing tube (4)	Clamp (5)		Using 1/4-inch flat-tip screwdriver, loosen and take off.
4.	Ejection valve (6)	Pull off.	
5.	Hose clamp (7)	Using 1/4-inch flat-tip screwdriver, loosen.	
6.	Air hose (8)	Pull off.	
7.	Hose clamp (7)	Take off.	
8.	Wingnut (9) and gasket (10)	a. Unscrew and take off. b. Get rid of gasket.	
9.	Air filter element (11)	a. Take out. b. Get rid of.	



TA244003

AIR FILTER ELEMENT - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CLEANING

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and cause damage to equipment. Refer to TM 9-247.

Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent injury to personnel.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

12.	Air cleaner housing and ejection valve	Using air hose assembly and air blow gun, clean inside.
-----	--	---

INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

13.	Air cleaning housing and ejection valve	Look for damaged, broken, or cracked areas.
-----	---	---

ASSEMBLY/INSTALLATION

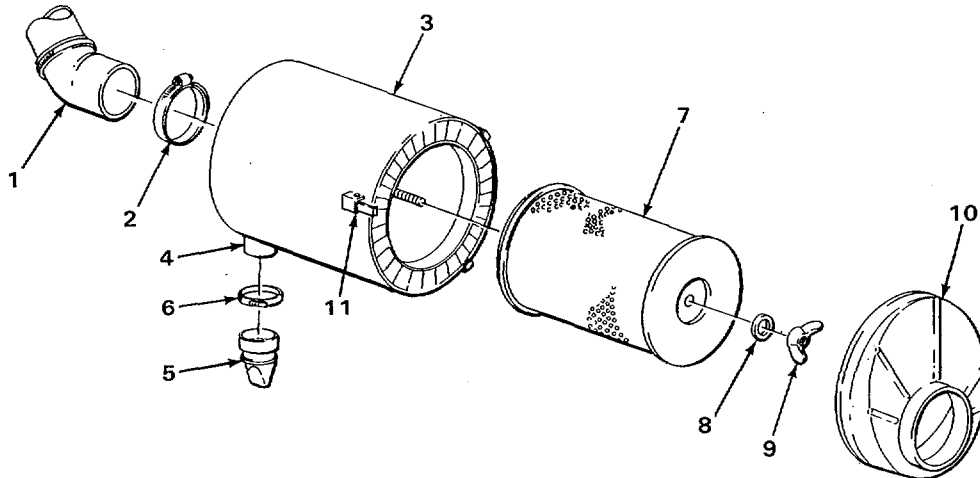
WARNING

Metal edges of air cleaner housing are sharp, care must be taken to prevent personal injury.

14. Air hose (1)	Hose clamp (2)	Put on.
15. Air cleaner housing (3)	Air hose (1)	Push on.

AIR FILTER ELEMENT - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
16. Air hose (1)	Hose clamp (2)	Tighten, using 1/4-inch flat-tip screwdriver.	
17. Air cleaner housing tube (4)	Ejection valve (5)	Push on.	
18. Ejection valve (5)	Clamp (6)	Put on and tighten using 1/4-inch flat-tip screwdriver.	
19. Air cleaner housing (3)	New air filter element (7)	Put in.	
20.	New gasket (8) and wingnut (9)	Screw in and tighten until air filter element is secure.	
21.	Cover (10) and three clips (11)	a. Aline and put on. b. Connect clips and push down to lock.	



TA244004

NOTE

FOLLOW-ON MAINTENANCE: Close right and left side hood panels (page 2-424).

TASK ENDS HERE

ENGINE AUXILIARY OIL FILTER HOSES AND FITTINGS

This task covers:

- | | |
|---|--|
| <p>a. Removal (page 2-465.0)
b. Cleaning (page 2-465.2)</p> | <p>b. Inspection/Replacement (page 2-465.2)
d. Installation (page 2-465.4)</p> |
|---|--|

INITIAL SETUP:

<p>Equipment Conditions</p> <p>Engine auxiliary oil filter drained (see page 2-10).</p> <p>Tools/Test Equipment</p> <p>Wrench, open-end, 7/16-inch Wrench, box-end, 1/2-inch Wrench, open-end, 5/8-inch Wrench, open-end, 3/4-inch Wrench, open-end, 7/8-inch</p>	<p>Materials/Parts</p> <p>Detergent, liquid, GP (Item 7, Appendix C) Rags, wiping (Item 15, Appendix C) Solvent, drycleaning (Item 19, Appendix C) Tags, marker (Item 21, Appendix C) Tape, antiseizing (Item 22, Appendix C)</p> <p>Personnel Required</p> <p>One</p>
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LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

NOTE

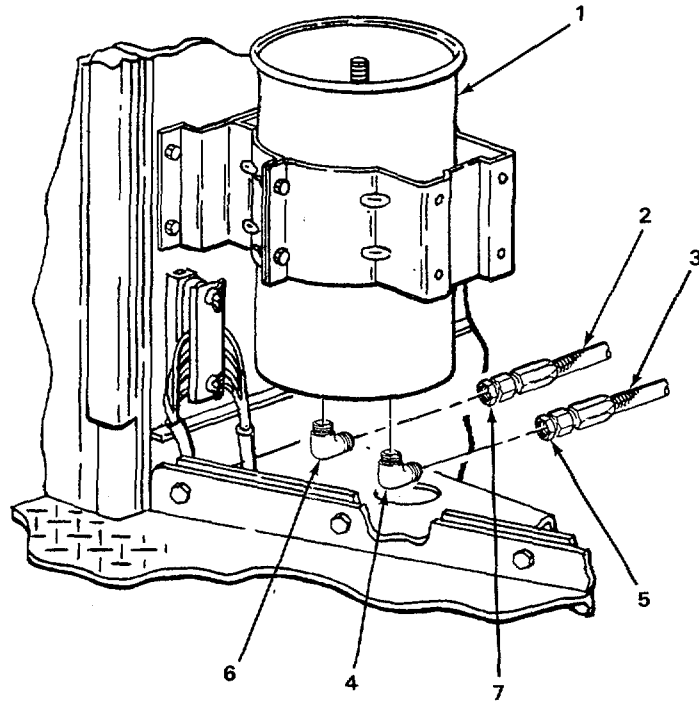
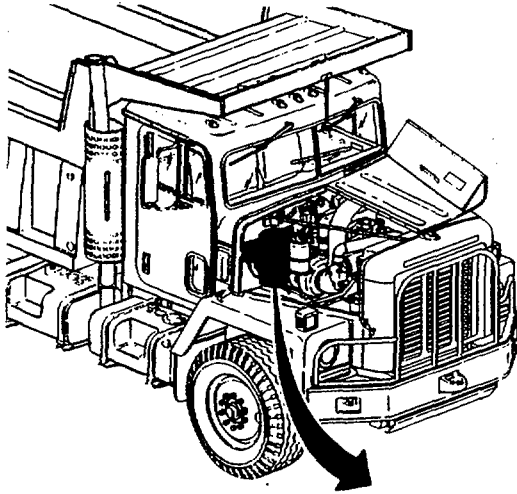
Tag hoses to ensure correct installation.

1. Oil filter shell (1)	Hose (2) and hose (3)	Tag.
2. 90-degree elbow (4)	Line nut (5)	Using 3/4-inch open-end wrench, unscrew, and take off.
3. 90-degree elbow (6)	Line nut (7)	Using 3/4-inch open-end wrench, unscrew, and take off.
4. Oil filter shell (1)	90-degree elbows (4 and 6)	Using 5/8-inch open-end wrench, unscrew, and take off.

Change 1 2-465.0

ENGINE AUXILIARY OIL FILTER HOSES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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ENGINE AUXILIARY OIL FILTER HOSES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL - CONTINUED			
5.	90-degree elbow (1)	Line nut (2)	Using 3/4-inch open-end wrench, unscrew, and take off.
6.	90-degree elbow (3)	Line nut (4)	Using 3/4-inch open-end wrench, unscrew, and take off.
7.	Left side of engine (5)	90-degree elbow (3)	Using 5/8-inch open-end wrench, unscrew, and take off.
8.	Bushing (6)	90-degree elbow (1)	Using 5/8-inch open-end wrench, unscrew, and take off.
9.	Engine oil pump (7)	Bushing (6)	Using 7/8-inch open-end wrench, unscrew, and take off.
NOTE			
Step 10 is typical for three clamp assemblies.			
10.	Extension (8)	Screw (9), locknut (10), and clamp (11)	<ol style="list-style-type: none"> a. Using 7/16-inch open-end wrench and 1/2-inch box-end wrench, unscrew, and take out. b. Get rid of locknuts. c. Take clamps off hose (12) and hose (13). d. Take out hose (12) and hose (13).

CLEANING

WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 100°F (38 °C) and for type #2 is 138°F(59 °C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

NOTE

For more information on how to clean parts, go to **General Maintenance Instructions (page 2-424)**.

11.	Two hoses (12 and 13)	Clean using liquid detergent and wiping rag.
12.	All metal parts	Clean using drycleaning solvent and wiping rag.

INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

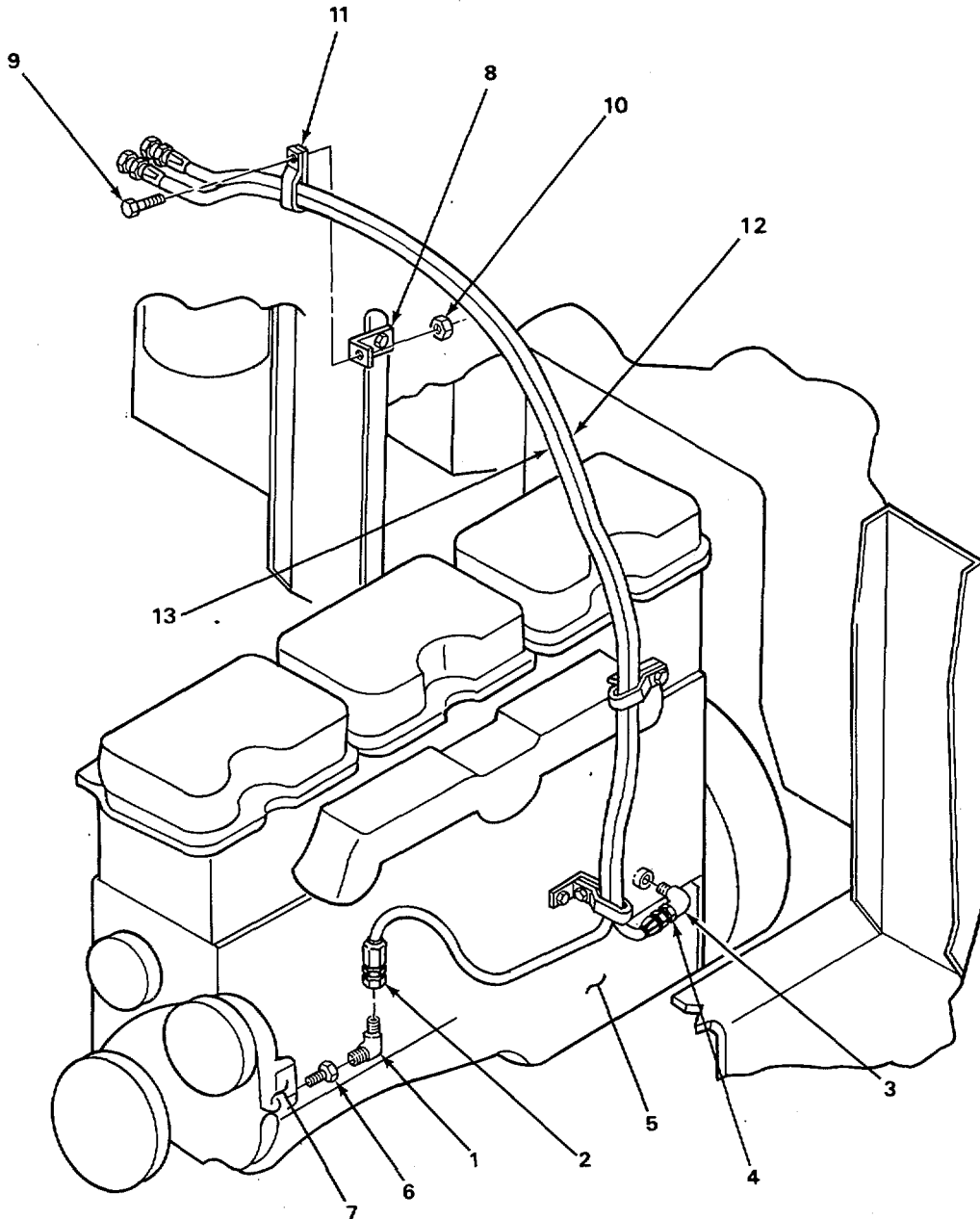
For more information on how to inspect parts, go to **General Maintenance Instructions (page 2-424)**.

13.	Two hoses (12 and 13)	<ol style="list-style-type: none"> a. Check for cracks, breaks, chafing, or hardness. b. Look for excessive rust or corrosion.
14.	All threaded parts	Look for damaged threads or rounded heads.

Change 1 2-465.2

ENGINE AUXILIARY OIL FILTER HOSES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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TA701873 ■

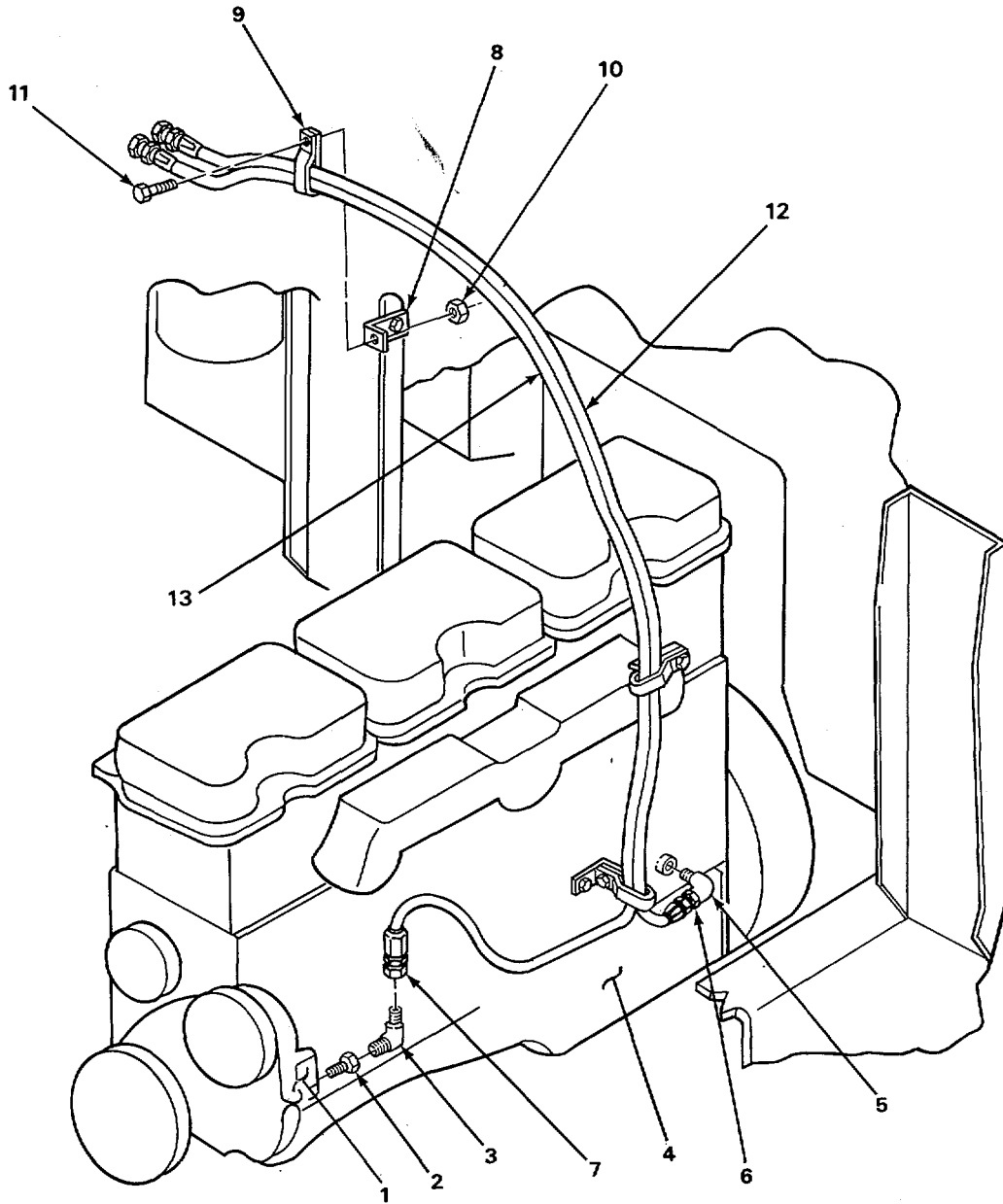
Change 1 2-465.3

ENGINE AUXILIARY OIL FILTER HOSES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
<u>CAUTION</u>			
Antiseizing tape must be used on all pipe threads to provide a good seal and to prevent threaded parts from seizing.			
NOTE			
For more information on how to use antiseizing tape, go to General Maintenance Instructions (page 2-424) . See tags for correct location of hoses.			
15. Engine oil pump (1)	Bushing (2)	a. Wrap pipe threads with antiseizing tape (page 2-424). b. Screw in and tighten using 7/8-inch open-end wrench.	
16. Bushing (2)	90-degree elbow (3)	a. Wrap pipe threads with antiseizing tape (page 2-424). b. Screw in and tighten using 5/8-inch open-end wrench.	
17. Left side of engine (4)	90-degree elbow (5)	a. Wrap pipe threads with antiseizing tape (page 2-424). b. Screw in and tighten using 5/8-inch open-end wrench.	
18. 90-degree elbow (5)	Line nut (6)	Screw in and tighten using 3/4-inch open-end wrench.	
19. 90-degree elbow (3)	Line nut (7)	Screw in and tighten using 3/4-inch open-end wrench.	
NOTE			
Step 20 is typical for three clamp assemblies.			
20. Extension (8)	Clamp (9), new locknut (10), and screw (11).	a. Put clamps (9) on hose (12) and hose (13). b. Screw in and tighten using 1/2-inch box-end wrench and 7/16-inch open-end wrench.	

ENGINE AUXILIARY OIL FILTER HOSES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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TA701874 ■

Change 1 2-465.5

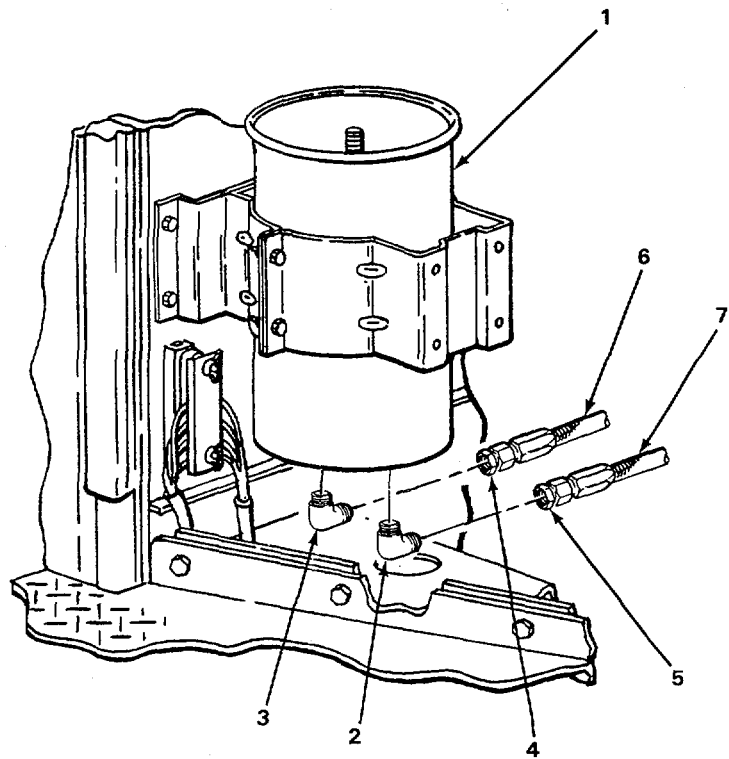
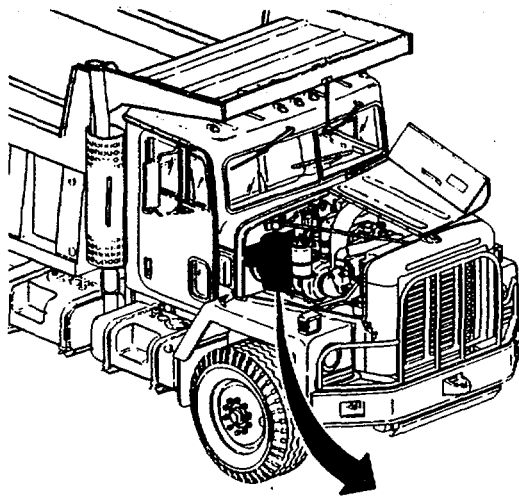
ENGINE AUXILIARY OIL FILTER HOSES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION - CONTINUED			
21. Oil filter shell (1)	90-degree elbows (2 and 3)	a. Wrap pipe threads with antiseizing tape (page 2-424). b. Screw in and tighten using 5/8-inch open-end wrench.	
22. 90-degree elbow (3)	Line nut (4)	Screw in and tighten using 3/4-inch open-end wrench.	
23. 90-degree elbow (2)	Line nut (5)	Screw in and tighten using 3/4-inch open-end wrench.	
24. Oil filter shell (1)	Hose (6) and hose (7)	a. Take off tags. b. Get rid of tags.	

Change 1 2-465.6

ENGINE AUXILIARY OIL FILTER HOSES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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NOTE

FOLLOW-ON MAINTENANCE: Fill engine auxiliary oil filter (page 2-10).

TASK ENDS HERE

TA701875

Change 1 2-465.7

ENGINE AUXILIARY OIL FILTER SHELL

This task covers:

- a. Removal (page 2-465.8)
- b. Cleaning (page 2-465.10)
- c. Inspection/Replacement (page 2-465.10)
- d. Installation (page 2-465.10)

INITIAL SETUP:

Equipment Conditions

Windshield washer reservoir removed (page 2-1344.1).
 Engine auxiliary oil filter hoses and fittings disconnected (page 2-465.0).
 Engine auxiliary oil filter element removed (see page 2-10).

Materials/Parts

Rags, wiping (Item 15, Appendix C)
 Solvent, drycleaning (Item 19, Appendix C)
 Locknut, mounting bracket (four required)

References

TM 9-247 (Authorized Cleaning Methods)

Tools/Test Equipment

Wrench, open-end, 9/16-inch
 Wrench, box-end, 9/16-inch

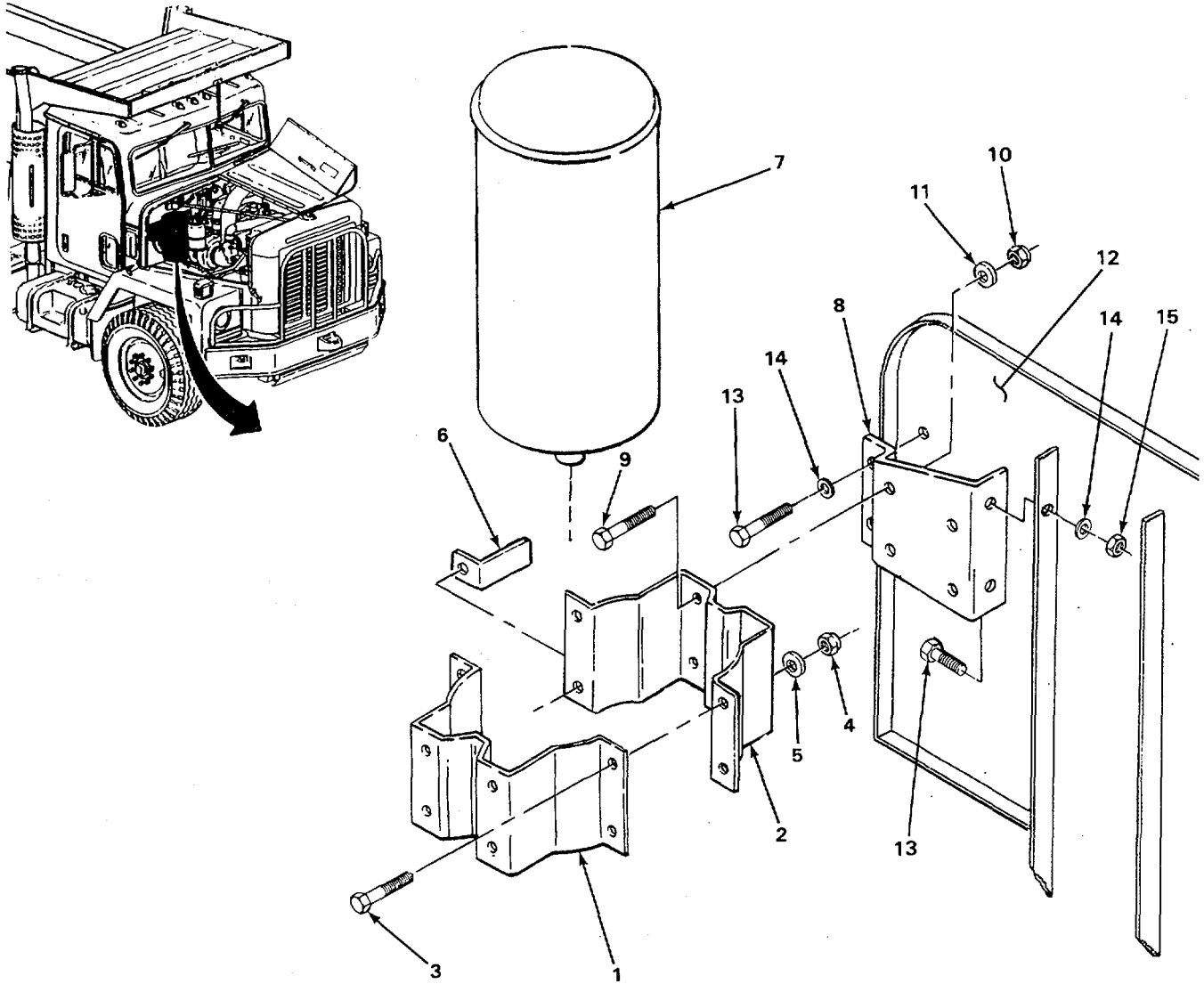
Personnel Required

One

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1.	Oil filter mounting brackets (1 and 2)	Four screws (3), nuts (4), and washers (5)	Using 9/16-inch open-end wrench and 9/16-inch box-end wrench, unscrew and take out.
2.	Oil filter mounting bracket (2)	Oil filter mounting bracket (1), extension (6), and oil filter shell (7)	Take off.
3.	Oil filter mounting brackets (2 and 8)	Four screws (9), locknuts (10), and washers (11)	a. Using 9/16-inch open-end wrench and 9/16 box-end wrench, unscrew, and take out. b. Get rid of locknuts.
4.	Oil filter mounting bracket (8)	Oil filter mounting bracket (2)	Take off.
5.	Cab firewall (12)	Four screws (13), washers (14), and two nuts (15)	Using 9/16-inch open-end wrench and 9/16-inch box-end wrench, unscrew, and take out.
6.		Oil filter mounting bracket (8)	Take off.

ENGINE AUXILIARY OIL FILTER SHELL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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TA701876 ■

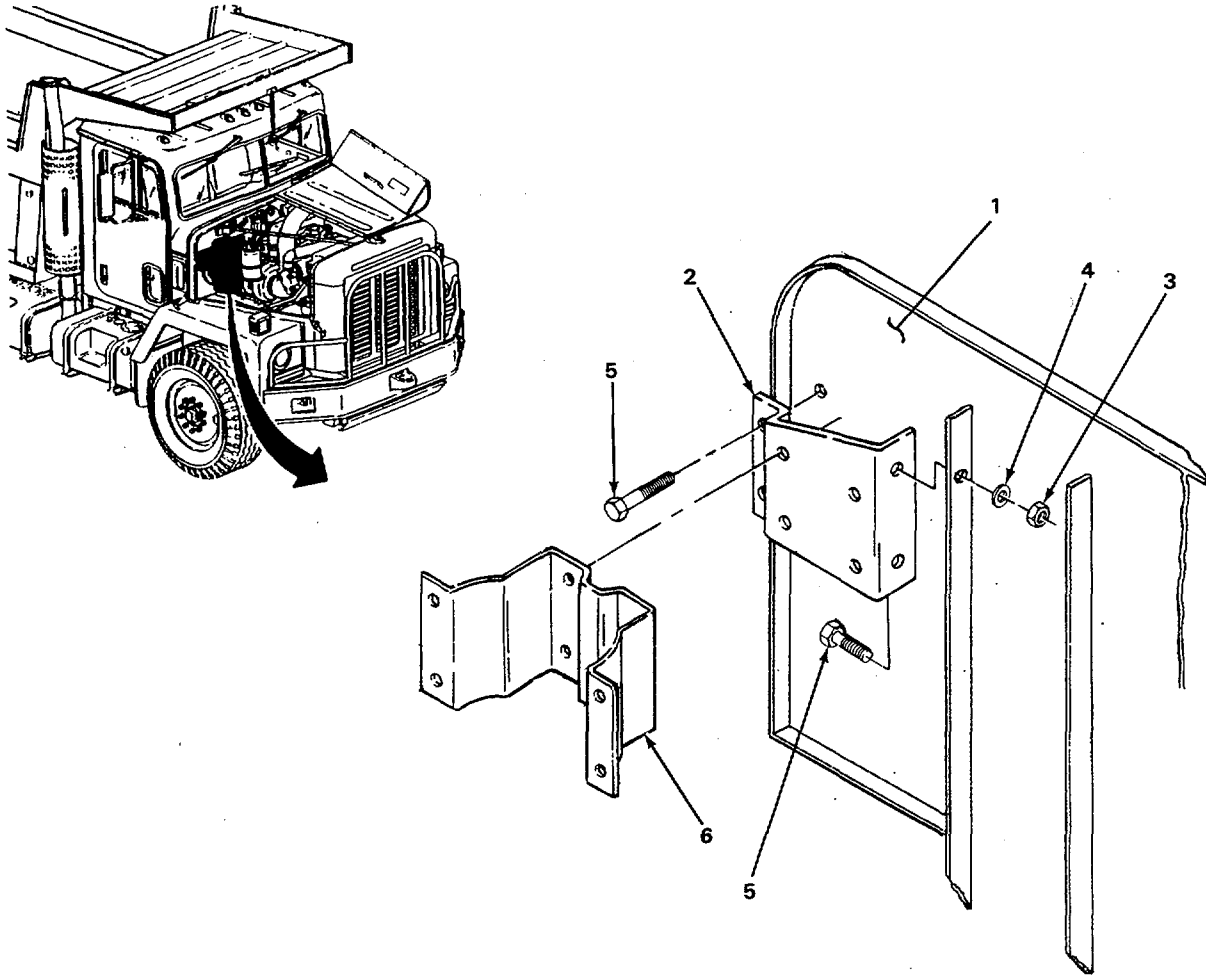
Change 1 2-465.9

ENGINE AUXILIARY OIL FILTER SHELL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
CLEANING			
<u>WARNING</u>			
Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 100 °F (38 °C) and for type #2 is 1380F (59 °C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.			
NOTE			
For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).			
7.	All metal parts	Clean using drycleaning solvent and wiping rag.	
INSPECTION/REPLACEMENT			
NOTE			
Replace all damaged or defective parts.			
For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).			
8.	All metal parts	a. Check for cracks, breaks, or other damage. b. Look for excessive rust or corrosion.	
9.	All threaded parts	Look for damaged threads or rounded heads.	
INSTALLATION			
10.	Cab firewall (1) Oil filter mounting bracket (2)	Put in place.	
11.	Two nuts (3), four washers (4), and screws (5)	Screw in and tighten using 9/16-inch box-end wrench and 9/16-inch open-end wrench.	
12.	Oil filter mounting bracket (2) Oil filter mounting bracket (6)	Put in place.	

ENGINE AUXILIARY OIL FILTER SHELL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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TA701877

Change 1 2-465.11

ENGINE AUXILIARY OIL FILTER SHELL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION - CONTINUED			
13.	Four new locknuts (1), washer (2), and screws (3)	Screw in and tighten using 9/16-inch box-end wrench and 9/16-inch open-end wrench.	
14.	Oil filter mounting bracket (4)	Put in place.	
15.	Oil filter shell (5), extension (6), and oil filter mounting bracket (7)		
15.	Four nuts (8), washers (9), and screws (10)	Screw in and tighten using 9/16-inch box-end wrench and 9/16-inch open-end wrench.	

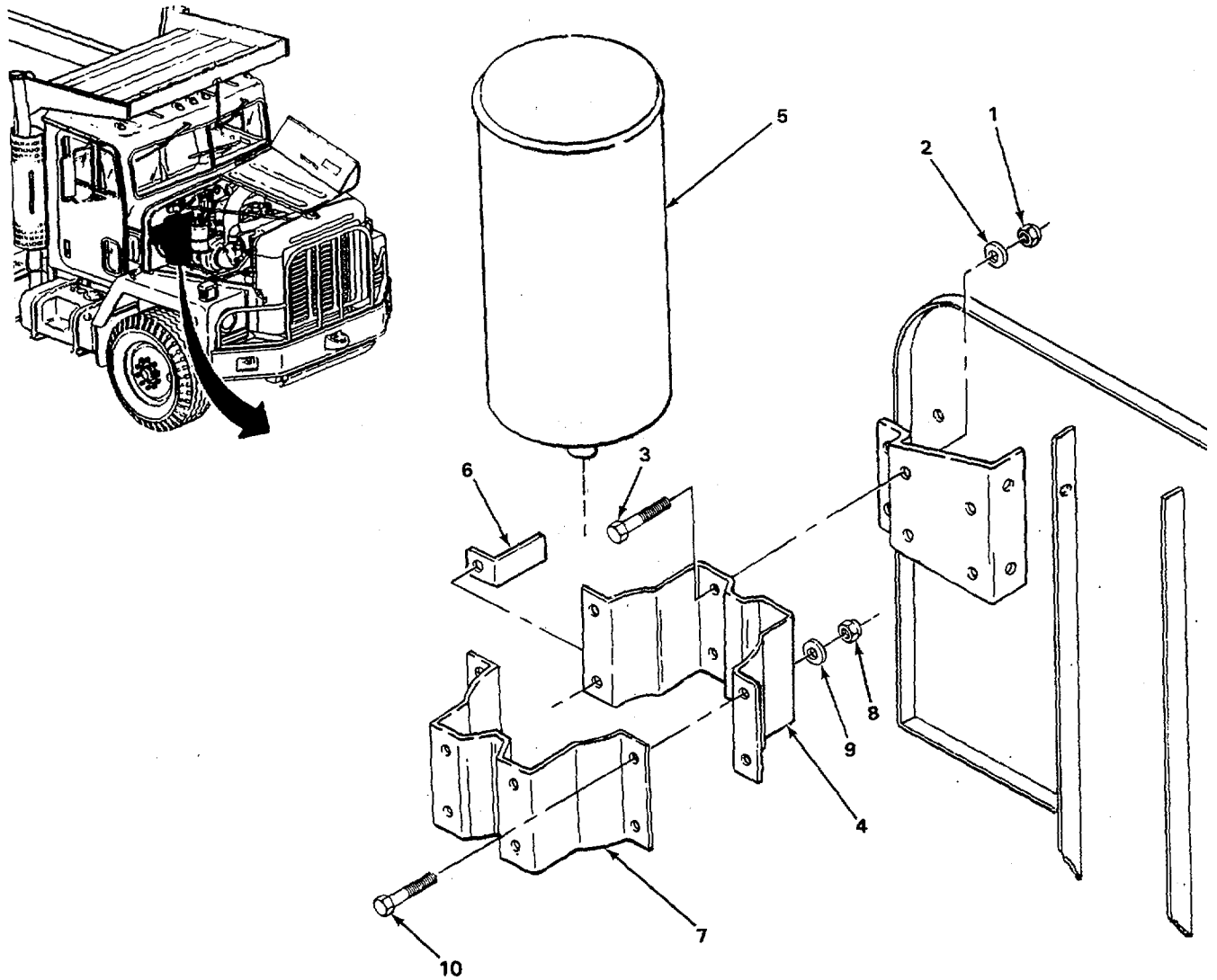
NOTE**FOLLOW-ON MAINTENANCE:**

1. Install engine auxiliary oil filter element (page 2-10).
2. Connect engine auxiliary oil filter hoses and fittings (page 2-465.0).
3. Install windshield washer reservoir (page 2-1344.1).

Change 1 2-465.12

ENGINE AUXILIARY OIL FILTER SHELL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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TASK ENDS HERE

TA701878

Change 1 2-465.13

PRIMARY FUEL FILTER

This task covers:

- a. Removal (page 2-466)
- b. Cleaning (page 2-468)
- c. Installation (page 2-468)

INITIAL SETUP:

Tools

- Gloves, safety
- Goggles, safety
- Gun, air blow
- Handle, ratchet, 1/2-inch drive
- Hose, air, assembly
- Pan, drain, 2-gallon
- Socket, 3/4-inch, 1/2-inch drive
- Wrench, torque, 0 to 175 ft lb (0 to 245 N.m), 1/2-inch drive

- Element, filter
- Gasket, fuel filter housing
- Oil, fuel, diesel (item 12, appendix C)

Materials/Parts - Continued

- Packing
- Solvent, drycleaning (item 19, appendix C)

Personnel Required

One

Equipment Condition

- Left side hood panel opened (page 2-424).
- Materials/Parts Battery cables disconnected (page 2-424).

References

TM 9-247 (Authorized Cleaning Methods)

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

- | | | |
|-----------------|---------------|--|
| 1. Canister (1) | Draincock (2) | <ul style="list-style-type: none"> a. Place 2-gallon drain pan underneath. b. Turn counterclockwise to open and allow diesel fuel oil to drain into 2-gallon drain pan. c. Get rid of drained diesel fuel oil (page 2-424). |
|-----------------|---------------|--|

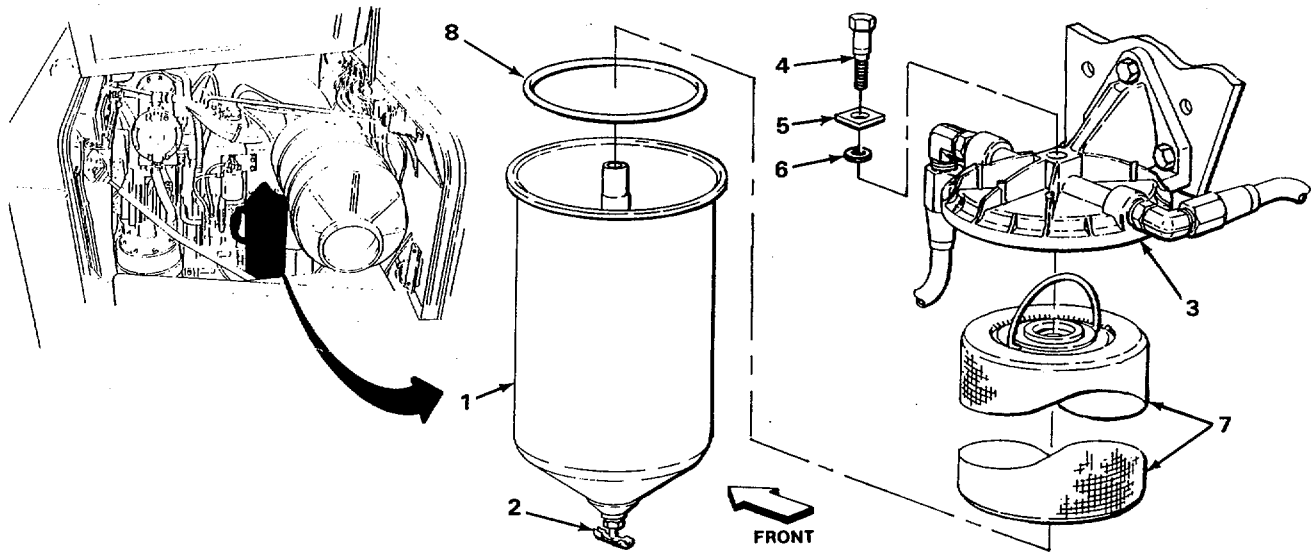
PRIMARY FUEL FILTER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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NOTE

Support canister while removing screw.

2. Fuel filter housing (3)	Canister (1), screw (4), washer (5), and packing (6)	a. Using 3/4-inch, 1/2-inch drive socket and ratchet handle, unscrew and take out. b. Get rid of packing.
3. Canister (1)	Filter element (7)	a. Take out. b. Get rid of.
4. Fuel filter housing (3)	Gasket (8)	a. Take out. b. Get rid of.



TA244005

PRIMARY FUEL FILTER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CLEANING

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and cause damage to equipment. Refer to TM 9-247.

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 1000F (380C) and for type #2 is 138°F (590C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

- | | | |
|----|--------------|--|
| 5. | Canister (1) | Clean thoroughly with drycleaning solvent. |
|----|--------------|--|

WARNING

Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent injury to personnel.

- | | | |
|----|--------------|---|
| 6. | Canister (1) | Using air hose assembly and air blow gun, dry thoroughly. |
|----|--------------|---|

INSTALLATION

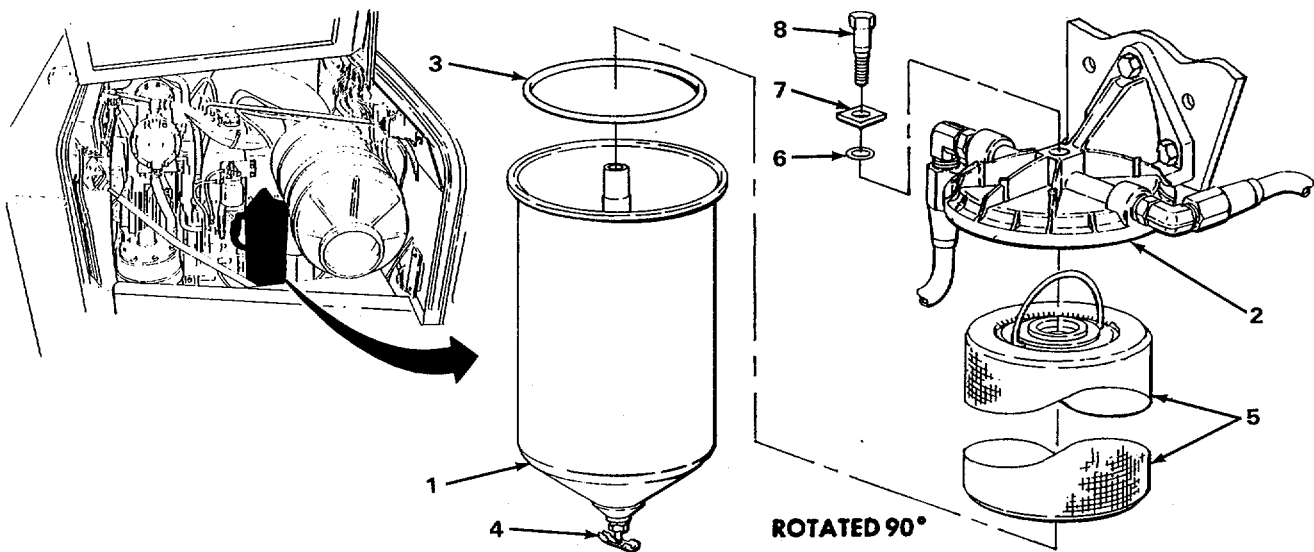
WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

- | | | |
|----------------------------|----------------|---|
| 7. Fuel filter housing (2) | New gasket (3) | a. Coat with diesel fuel oil.
b. Put in. |
|----------------------------|----------------|---|

PRIMARY FUEL FILTER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
8. Canister (1)	Draincock (4)	Turn clockwise to close.	
9.	New filter element (5)	a. Put in. b. Fill with clean diesel fuel oil.	
NOTE			
Support canister while installing screw.			
10. Fuel filter housing (2)	New packing (6), washer (7), screw (8), and canister (1)	Align canister and screw in screw until snug. Do not tighten.	
11.	Screw (8)	Tighten to 25 to 30 ft lb (35 to 42 N•m) using 3/4-inch, 112-inch drive socket and 0 to 175 ft lb (0 to 245 N•m) torque wrench.	



NOTE

FOLLOW-ON MAINTENANCE:

1. Close left side hood panel (page 2-424).
2. Connect battery cables (page 2-424).

TASK ENDS HERE

TA244006

PRIMARY FUEL FILTER HOUSING

This task covers:

- | | |
|--------------------------|--|
| a. Removal (page 2-470) | c. Inspection/Replacement (page 2-473) |
| b. Cleaning (page 2-472) | d. Installation (page 2-474) |
-

INITIAL SETUP:

Tools

- Gloves, safety
- Goggles, safety
- Gun, air blow
- Handle, ratchet, 1/2-inch drive
- Hose, air, assembly
- Socket, 9/16-inch, 1/2-inch drive
- Wrench, box-end, 9/16-inch
- Wrench, open-end, 15/16-inch
- Wrench, open-end, 1-inch

Materials/Parts

- Cloth, crocus (item 2, appendix C)
- Lockwasher, mounting bracket (three required)
- Solvent, drycleaning (item 19, appendix C)

Materials/Parts - Continued

- Oil, fuel, diesel (item 12, appendix C)
- Ring (two required)
- Tags, marker (item 21, appendix C)

Personnel Required

One

Equipment Condition

Primary fuel filter removed (page 2-466).

References

TM 9-247 (Authorized Cleaning Methods)

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

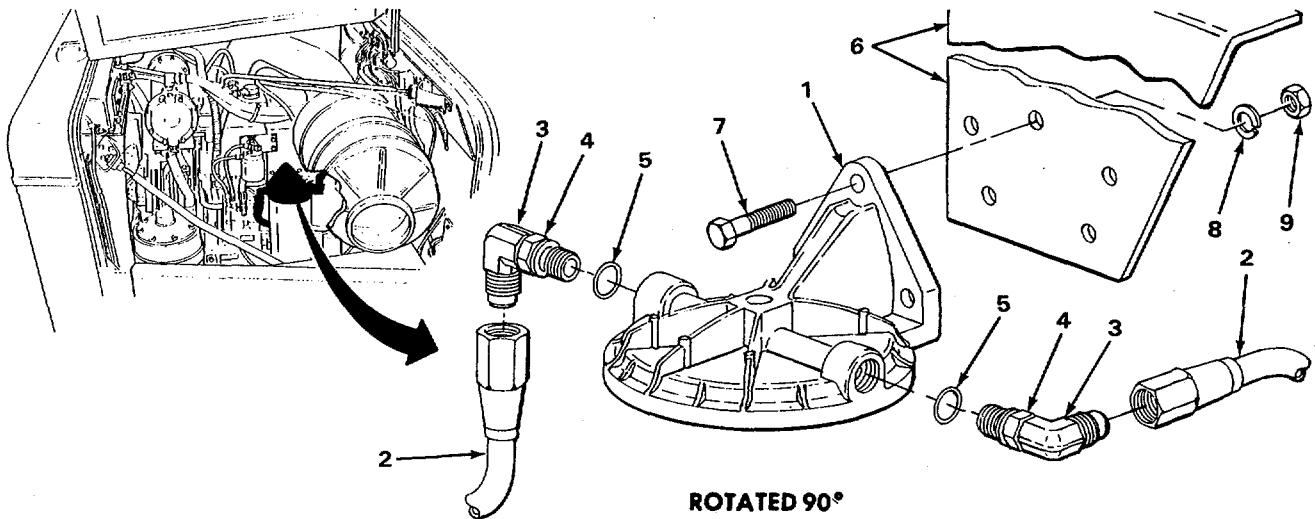
NOTE

Fuel filter housing is stamped with IN and OUT near fuel hose fittings. Use this for identification of fuel hoses.

- | | | |
|----------------------------|--------------------|--|
| 1. Fuel filter housing (1) | Two fuel hoses (2) | Using marker tags, tag for identification. |
|----------------------------|--------------------|--|

PRIMARY FUEL FILTER HOUSING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
2. Two fuel hose fittings (3)	Two fuel hoses (2)	Using 1-inch and 15/16-inch open-end wrenches, unscrew and take off.	
NOTE			
Note positioning of fuel hose fittings to aid in assembly.			
3.	Two locknuts (4)	Using 1-inch and 15/16-inch open-end wrenches, loosen.	
4. Fuel filter housing (1)	Two fuel hose fittings (3)	Unscrew and take off.	
5. Two fuel hose fittings (3)	Two rings (5)	a. Take off. b. Get rid of.	
6. Mounting bracket (6)	Three screws (7), three lockwashers (8), and three nuts (9)	a. Using 9/16-inch, 1/2-inch drive socket and ratchet handle and 9/16-inch box-end wrench, unscrew and take out. b. Get rid of lockwashers.	



TA244007

PRIMARY FUEL FILTER HOUSING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CLEANING

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and cause damage to equipment. Refer to TM 9-247.

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

All fuel passages in fuel filter housing and fuel hose fittings must be cleaned thoroughly.

7.	Fuel filter housing (1) and two fuel hose fittings (2)	Clean thoroughly with drycleaning solvent.	
----	--	--	--

WARNING

Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent injury to personnel.

CAUTION

All fuel passages in fuel filter housing and fuel hose fittings must be dried thoroughly to prevent filter damage.

8.	Fuel filter housing (1) and two fuel hose fittings (2)	Using air hose assembly and air blow gun, dry thoroughly.	
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PRIMARY FUEL FILTER HOUSING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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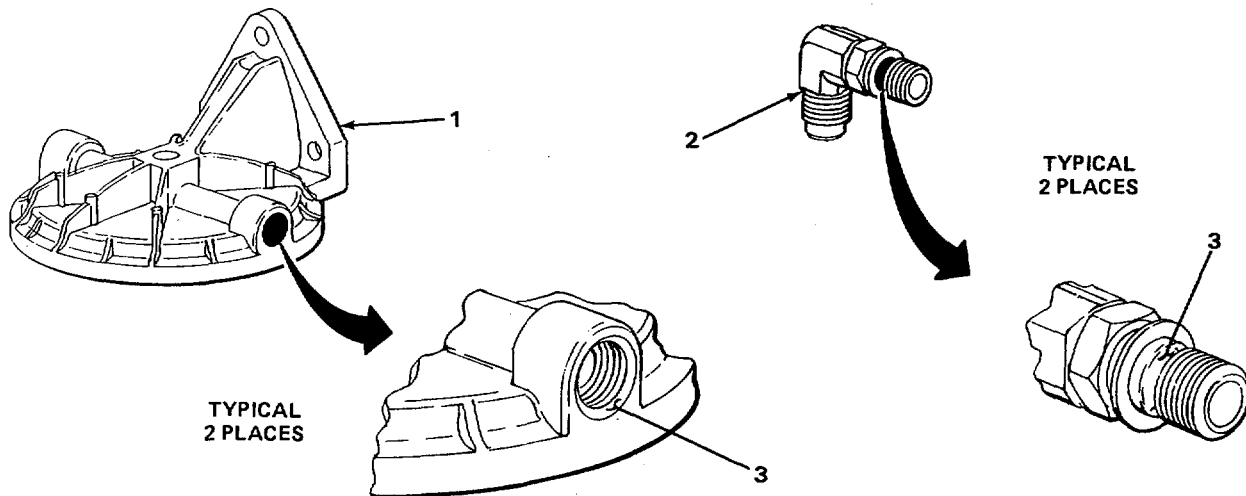
INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

- | | | | |
|-----|--|--|---|
| 9. | Fuel filter housing (1) and two fuel hose fittings (2) | Fuel filter housing (1) and two fuel hose fittings (2) | Look for cracks, breaks, and gouged or stripped threads. |
| 10. | Fuel filter housing (1) and two fuel hose fittings (2) | Ring contact | <ul style="list-style-type: none"> a. Look for nicks, burrs, or any sharp surfaces (3) edges. b. Remove minor nicks or burrs with crocus cloth. |



TA244008

PRIMARY FUEL FILTER HOUSING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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INSTALLATION

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

- | | | | |
|-----------------------------|--|--|--|
| 11. Mounting bracket (1) | Fuel filter housing (2) | Aline screw holes. | |
| 12. Fuel filter housing (2) | Three screws (3), three new lock-washers (4), and three nuts (5) | Screw in and tighten using 9/16-inch, 1/2-inch drive socket and ratchet handle and 9/16-inch box-end wrench. | |

CAUTION

Care must be taken when performing next step to prevent damaging O-rings.

- | | | | |
|--------------------------------|-------------------|---|--|
| 13. Two fuel hose fittings (6) | Two new rings (7) | a. Coat with clean diesel fuel oil.
b. Put onto hose fitting until seated. | |
|--------------------------------|-------------------|---|--|

CAUTION

Do not overtighten hose fittings to prevent damaging O-rings.

- | | | | |
|-----------------------------|----------------------------|--|--|
| 14. Fuel filter housing (2) | Two fuel hose fittings (6) | a. Screw in until O-rings seat in fuel filter housing.
b. Position fuel hose fittings in same position as before removal. | |
|-----------------------------|----------------------------|--|--|

CAUTION

Do not overtighten locknuts, damage to fuel filter housing, fuel hose fittings, and O-rings could occur.

PRIMARY FUEL FILTER HOUSING - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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- | | | | |
|-----|---|---|--|
| 15. | Two fuel hose fittings (6) and two locknuts (8) | Screw in and tighten using 1-inch and 15/16-inch open-end wrenches. | |
|-----|---|---|--|

NOTE

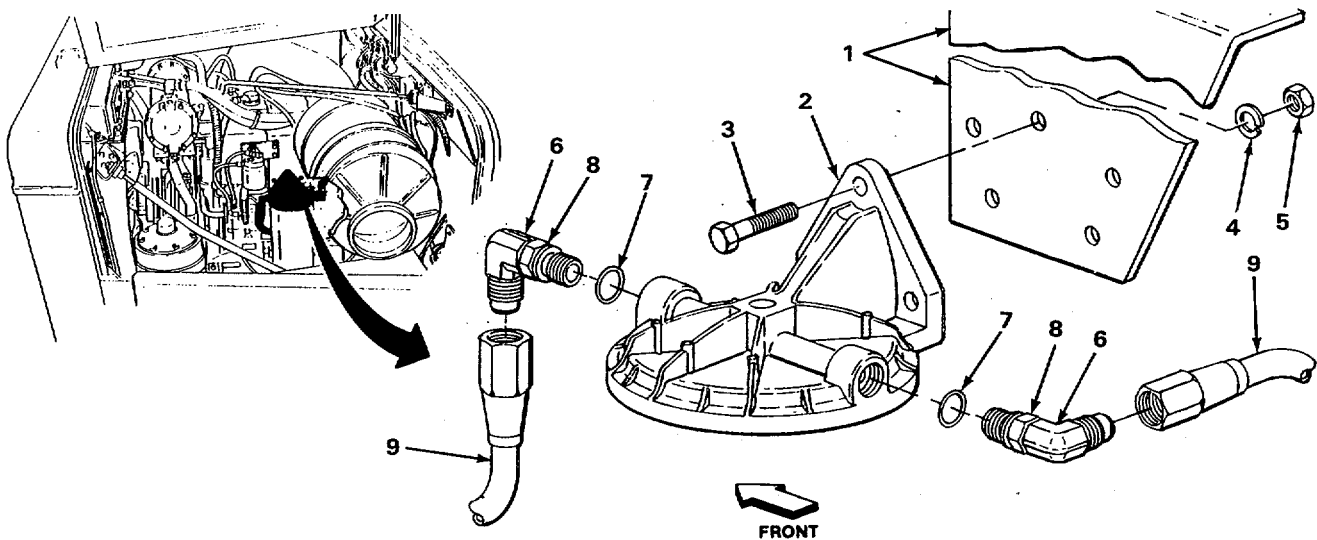
Fuel filter housing is stamped with IN and OUT near fuel hose fittings. Identify hoses from tags for proper location.

- | | | | |
|-----|----------------------------|--------------------|----------------------|
| 16. | Two fuel hose fittings (6) | Two fuel hoses (9) | Screw on until snug. |
|-----|----------------------------|--------------------|----------------------|

CAUTION

Do not overtighten fuel hoses, damage to fuel hoses or fittings could occur.

- | | | | |
|-----|----------------------------|--------------------|--|
| 17. | Two fuel hose fittings (6) | Two fuel hoses (9) | Tighten using 1-inch and 15/16-inch open-end wrenches. |
|-----|----------------------------|--------------------|--|



NOTE

FOLLOW-ON MAINTENANCE: Install primary fuel filter (page 2466).

TASK ENDS HERE

TA244009

SECONDARY FUEL FILTER

This task covers:

- a. Removal (page 2-476)
 - b. Installation (page 2-476)
-

INITIAL SETUP:

<p>Tools</p> <p>Pan, drain, 2-gallon Wrench, oil filter</p> <p>Materials/Parts</p> <p>Element, filter Oil, fuel, diesel (item 12, appendix C)</p>	<p>Personnel Required</p> <p>One</p> <p>Equipment Condition</p> <p>Left side hood panel opened (page 2-424). Battery cables disconnected (page 2-424).</p>
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LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

WARNING

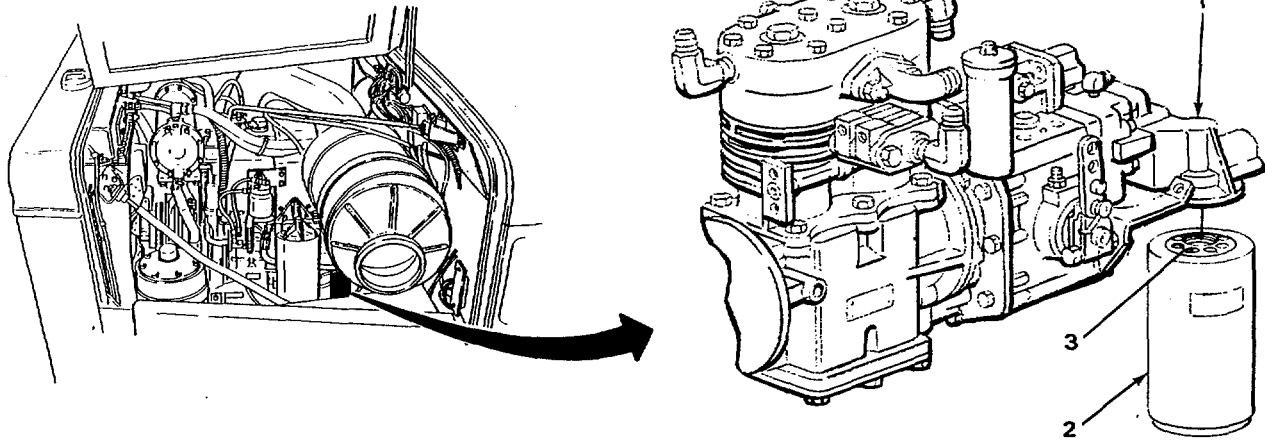
Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

<p>1. Rear of fuel pump (1)</p>	<p>Filter element (2)</p>	<ul style="list-style-type: none"> a. Place 2-gallon drain pan underneath. b. Using oil filter wrench, loosen and allow diesel fuel oil to drain into 2-gallon drain pan. c. Get rid of drained diesel fuel oil (page 2-424).
<p>2.</p>	<p>Filter element (2) and gasket (3)</p>	<ul style="list-style-type: none"> a. Take off. b. Get rid of.

INSTALLATION

<p>3. Rear of fuel pump (1)</p>	<p>New filter element (2) and gasket (3)</p>	<ul style="list-style-type: none"> a. Coat gasket with clean diesel fuel oil. b. Fill filter element with clean diesel fuel oil. c. Screw on until gasket makes contact with fuel pump, then tighten three-quarters turn.
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SECONDARY FUEL FILTER - CONTINUED



NOTE

FOLLOW-ON MAINTENANCE:

1. Close left side hood panel (page 2-424).
2. Connect battery cables (page 2-424).

TASK ENDS HERE

FUEL PUMP FUEL FILTER

This task covers:

- | | |
|---|--|
| <ol style="list-style-type: none"> a. Removal (page 2-478) b. Cleaning (page 2-478) | <ol style="list-style-type: none"> c. Inspection/Replacement (page 2-479) d. Installation (page 2-480) |
|---|--|

INITIAL SETUP:

Tools

- Bit, screwdriver, flat-tip, 112-inch, 1/2-inch drive
- Gloves, safety.
- Goggles, safety
- Gun, air blow
- Handle, ratchet, 1/2-inch drive
- Hose, air, assembly
- Wrench, torque, 0 to 175 ft lb (0 to 245 N•m), 1/2-inch drive

Materials/Parts

- Cap seal
- Solvent, drycleaning (item 19, appendix C)

Personnel Required

One

TA244010

FUEL PUMP FUEL FILTER - CONTINUED

INITIAL SETUP:

Equipment Condition

References

Left hood panel opened (page 2-424).
 Battery cables disconnected (page 2-424).

TM 9-247 (Authorized Cleaning Methods)

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

1. Top of fuel pump (1)	Filter cap (2)	Using 1/2-inch, 112-inch drive, flat-tip screwdriver bit and ratchet handle, unscrew and take off.	
2. Filter cap (2)	Cap seal (3)	a. Take off. b. Get rid of.	
3. Top of fuel pump (1)	Spring (4) and magnetic filter (5)	Take out.	

CLEANING

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and cause damage to equipment. Refer to TM 9-247.

WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

FUEL PUMP FUEL FILTER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
4.	Filter cap (2), spring (4), and magnetic filter (5)	Clean thoroughly with drycleaning solvent.	
<u>WARNING</u>			
<p>Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent injury to personnel.</p>			
5.	Filter cap (2), spring (4), and magnetic filter (5)	Using air hose assembly and air blow gun, dry thoroughly.	

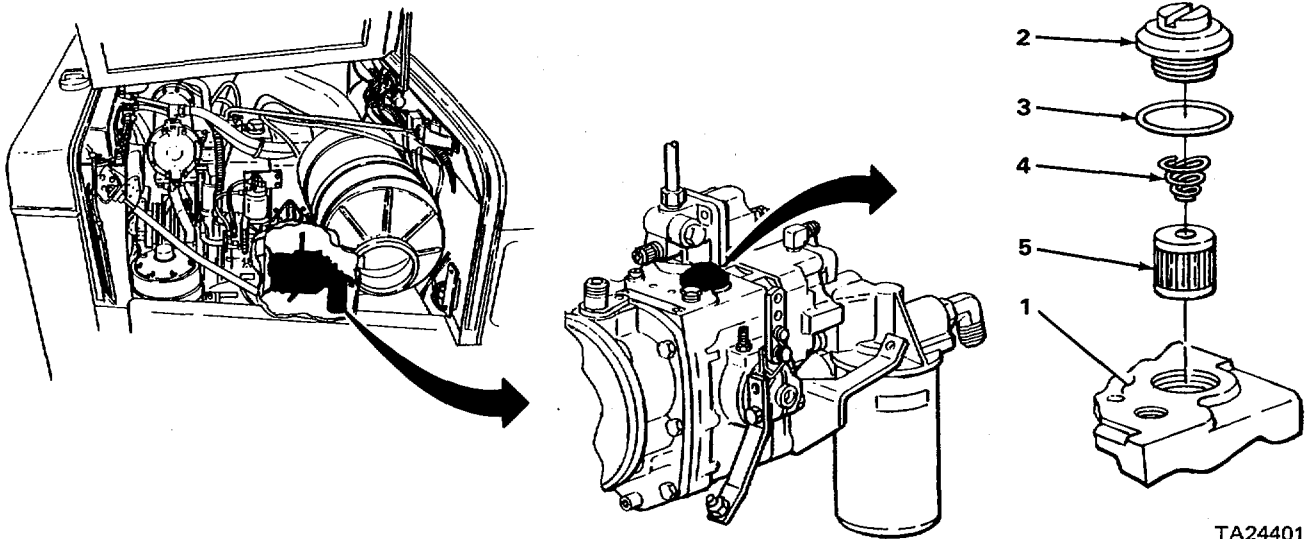
INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

6.	Filter cap (2), spring (4), and magnetic filter (5)	Look for cracks, breaks, and gouged or stripped threads.
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TA244011

FUEL PUMP FUEL FILTER - CONTINUED

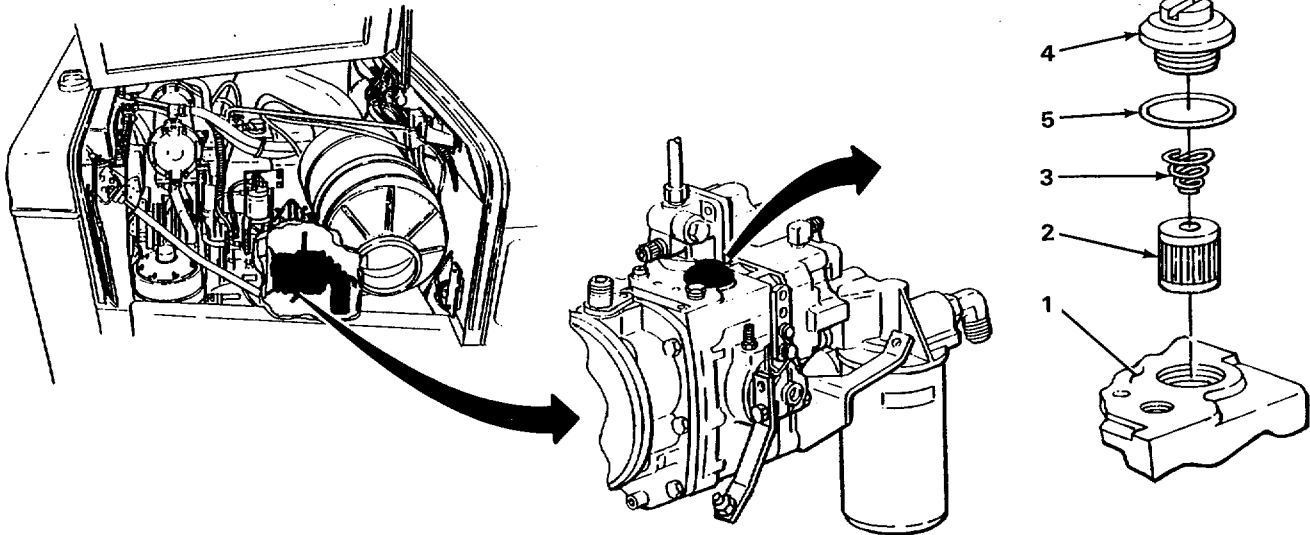
LOCATION	ITEM	ACTION	REMARKS
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INSTALLATION

NOTE

Position magnetic filter with hole facing into fuel pump.

7. Top of fuel pump (1)	Magnetic filter (2) and spring (3)	Put in.	
8. Filter cap (4)	New cap seal (5)	Put on.	
9. Top of fuel pump (1)	Filter cap (4)	Screw in until O-ring touches housing. Do not tighten.	
10.	Filter cap (4)	Tighten to 20 to 25 ft lb (28 to 35 N•m) using 1/12-inch, 1/2-inch drive, flat-tip screwdriver bit and 0 to 175 ft lb (2 to 245 N•m) torque wrench.	



NOTE

FOLLOW-ON MAINTENANCE:

1. Close left side hood panel (page 2-424).
2. Connect battery cables (page 2-424).

TASK ENDS HERE

TA244012

PRIMING FUEL SYSTEM

This task covers:

- a. Filling Primary Fuel Filter (page 2-481)
 - b. Filling Secondary Fuel Filter (page 2-482)
 - c. Filling Fuel Pump (page 2-483)
-

INITIAL SETUP:

Tools

- Handle, ratchet, 1/2-inch drive
- Socket, 3/4-inch, 1/2-inch drive
- Wrench, box-end, 9/16-inch
- Wrench, oil filter
- Wrench, torque, 0 to 175 ft lb (0 to 245 N•m), 1/2-inch drive

Personnel Required

One

Equipment Condition

- Left side hood panel opened (page 2-424).
- Battery cables disconnected (page 2-424).

Materials/Parts

- Gasket, canister
 - Oil, fuel, diesel (item 12, appendix C)
 - Packing, canister
-

LOCATION	ITEM	ACTION	REMARKS
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FILLING PRIMARY FUEL FILTER

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries (page 2-424) when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

NOTE

These steps are to be performed if engine has run out of fuel.

If fuel filters have been previously changed and filled, proceed to step 10.

Canister gasket and packing must be changed each time fuel canister is removed.

PRIMING FUEL SYSTEM - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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FILLING PRIMARY FUEL FILTER - CONTINUED

NOTE

Support canister while removing screw.

1.	Fuel filter housing (1)	Screw (2), washer (3), packing (4), and canister (5)	<ul style="list-style-type: none"> a. Using 3/4-inch, 1/2-inch drive socket and ratchet handle, unscrew and take out. b. Get rid of packing.
2.		Canister gasket (6)	<ul style="list-style-type: none"> a. Take out. b. Get rid of.
3.		New canister gasket (6)	<ul style="list-style-type: none"> a. Coat with clean diesel fuel oil. b. Put in.
4.		Canister (5)	Fill with clean diesel fuel oil.

NOTE

Support canister while installing screw.

5.	Fuel filter housing (1)	Screw (2), washer (3), new packing (4), and canister (5)	<p>Aline canister and screw in screw until snug.</p> <p>Do not tighten.</p>
6.		Screw (2)	Tighten to 25 to 30 ft lb (35 to 42 N•m) using 3/4-inch, 1/2-inch drive socket and 0 to 175 ft lb (0 to 245 N•m) torque wrench.

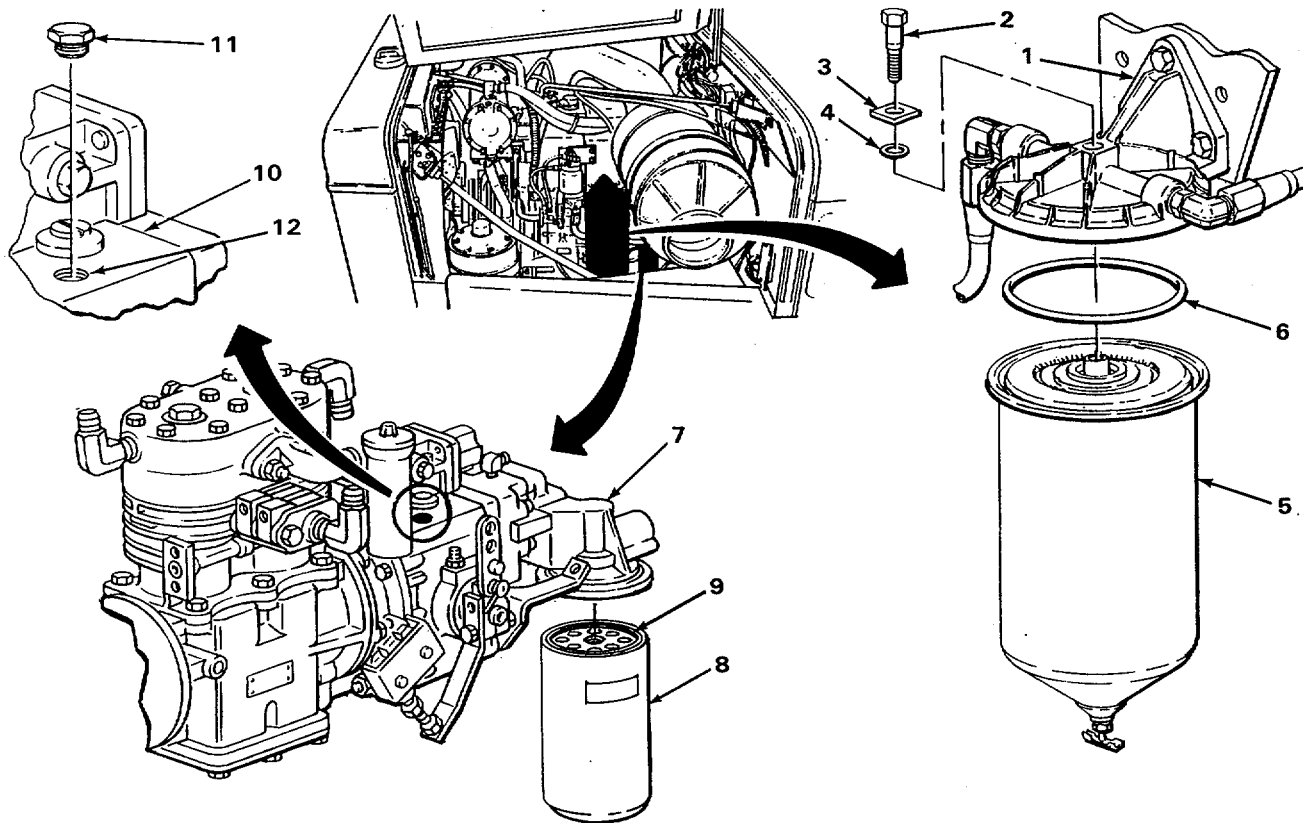
FILLING SECONDARY FUEL FILTER

7.	Rear of fuel pump (7)	Filter element (8)	Using oil filter wrench, unscrew and take off.
8.		Filter element (8) and gasket (9)	<ul style="list-style-type: none"> a. Coat with clean diesel fuel oil. b. Fill with clean diesel fuel oil. c. Screw on until gasket makes contact with fuel pump, then tighten three-quarters turn.

PRIMING FUEL SYSTEM - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
9.	Top of fuel pump (10)	Plug (11)	Using 9/16-inch box-end wrench, unscrew and take off.
10.	Hole (12)		Fill with clean diesel fuel oil until diesel fuel oil level reaches threads in hole.
11.	Plug (11)	Plug (11)	Screw in and tighten using 9/16-inch box-end wrench.

FILLING FUEL PUMP



NOTE

FOLLOW-ON MAINTENANCE:

1. Close left side hood panel (page 2-424).
2. Connect battery cables (page 2-424).

TASK ENDS HERE

TA244013

PREHEATER PRIMER PUMP

This task covers:

- a. Removal (page 2-484)
 - b. Installation (page 2-484)
-

INITIAL SETUP:

Tools

- Pan, drain, 2-gallon
- Pliers, slip-joint, 6-inch
- Wrench, open-end, 1/2-inch
- Wrench, open-end, 9/16-inch
- Wrench, open-end, 11/16-inch
- Wrench, open-end, 13/16-inch
- Scale, machinist's, 6-inch

Personnel Required

One

Equipment Condition

Left side hood panel opened (page 2-424).
 Battery cables disconnected (page 2-424).

Materials/Parts

Tags, marker (item 21, appendix C)

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

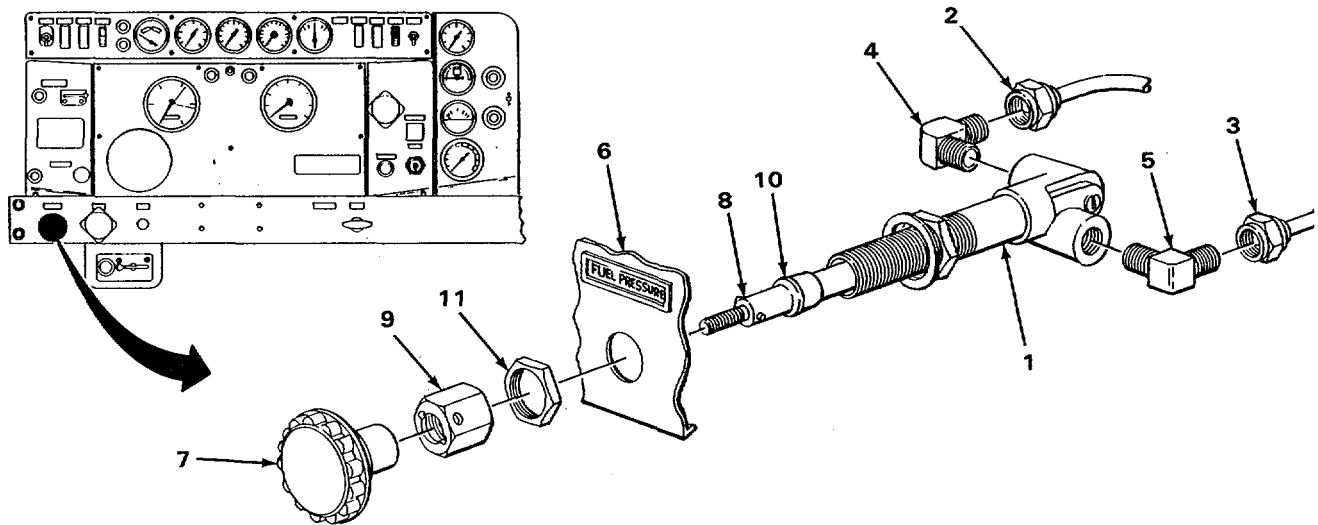
WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

1. Preheater primer pump (1)	Outlet fuel line (2)	Using marker tags, tag as OUTLET.	
2.	Inlet fuel line (3)	Using marker tags, tag as INLET.	
3. Outlet fitting (4)	Outlet fuel line (2)	Using 9/16-inch and 1/2-inch open-end wrenches, unscrew and take off.	
4. Inlet fitting (5)	Inlet fuel line (3)	Using 9/16-inch and 1/2-inch open-end wrenches, unscrew and take off.	

PREHEATER PRIMER PUMP - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
5. Dashboard (6)	Knob (7) and shaft (8)	a. Push in and turn to unlock, then pull out to stop. b. Using 6-inch slip-joint pliers, hold shaft and unscrew and take off knob.	
6.	Locknut (9) and collar (10) loosen.	a. Using 11/16-inch open-end wrench, b. Aline pins on shaft with slots in locknut and pull off. c. Push collar on shaft (8).	
7.	Nut (11) and pre-heater primer pump (1)	a. Using 13/16-inch open-end wrench, unscrew and take off nut. b. Take out preheater primer pump.	
8. Pre-heater primer pump (1)	Outlet fitting (4) and inlet fitting (5)	Using 1/2-inch open-end wrench, unscrew and take off.	



TA244014

PREHEATER PRIMER PUMP -CONTINUED

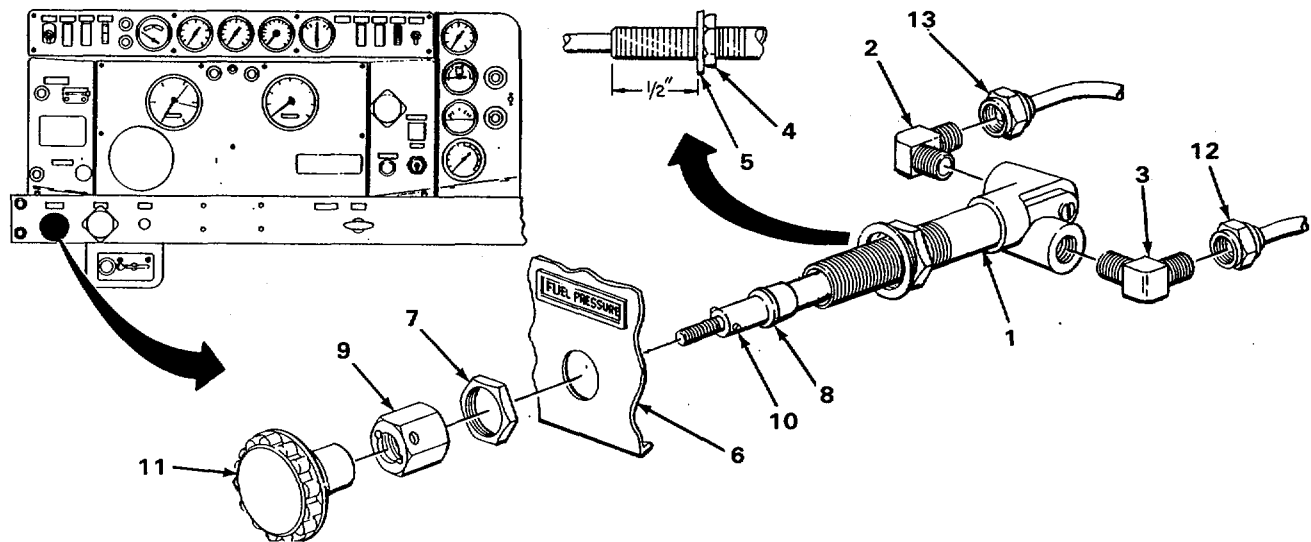
LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
9.	Pre-heater primer pump (1)	Outlet fitting (2) and inlet fitting (3)	Screw in and tighten, using 1/2-inch open-end wrench. Position fittings to face rear of pre-heater primer pump.
10.		Nut (4) and washer (5)	a. Using 6-inch machinist's scale, measure distance from washer to edge of threads. Distance should be 1/2 inch (1.27 cm). b. Turn nut to adjust as required.
11.	Dashboard (6)	Preheater primer pump (1)	Put in. Position rear of preheater primer pump horizontal to dashboard.
12.	Preheater primer	Nut (7) pump (1)	Screw on and tighten using 13/16-inch open-end wrench.
13.		Collar (8) and locknut (9)	a. Collar must seat against preheater primer pump. b. Aline pins on shaft with slots in locknut and put on.
14.		Locknut (9)	Screw on and tighten using 13/16-inch open-end wrench.
15.		Shaft (10)	Pull out.
16.		Shaft (10) and knob (11)	Hold shaft using 6-inch slip-joint pliers and screw on and tighten knob.

NOTE

Inlet and outlet fuel lines are tagged INLET and OUTLET. Inlet side of preheater primer pump is stamped INLET.

PREHEATER PRIMER PUMP - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
17. Inlet fitting (3)	Inlet fuel line (12)	Screw on and tighten using, 1/2-inch and 9/16-inch open-end wrenches.	
18. Outlet fitting (2)	Outlet fuel line (13)	Screw on and tighten using, 1/2-inch and 9/16-inch open-end wrenches.	
19. Preheater primer pump (1)	Inlet fuel line (12) and outlet fuel line (13)	a. Take off tags. b. Get rid of tags.	



NOTE

FOLLOW-ON MAINTENANCE:

1. Close left side hood panel (page 2-424). 2-487
2. Connect battery cables (page 2-424).

TASK ENDS HERE

TA244015

PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS

This task covers:

- a. Removal (page 2-488)
- b. Disassembly (page 496)
- c. Cleaning (page 2-497)
- d. Inspection/Replacement (page 2-498)
- e. Assembly (page 2-500)
- f. Installation (page 2-502) ,

INITIAL SETUP:

Tools

- Extension, 6-inch, 1/2-inch drive
- Goggles, safety
- Gun, air blow
- Handle, ratchet, 1/2-inch drive
- Hose, air, assembly
- Pan, drain, 2-gallon
- Socket, 7/16-inch, 1/2-inch drive
- Socket, deep, 1-inch, 1/2-inch drive
- Wrench, box-end, 7/16-inch
- Wrench, open-end, 7/16-inch
- Wrench, open-end, 1/2-inch
- Wrench, open-end, 9/16-inch (two required)
- Wrench, open-end, 1-inch
- Wrench, open-end, 1 1/8-inch

Personnel Required

Two

Equipment Condition

- Battery cables disconnected (page 2-424).
- Instrument panel pad removed (page 2-424).
- Right side instrument panel opened (page 2-424).
- Engine cover removed (page 2-1270).
- Left side cab door opened (page 2-424).
- Right and left side hood panels opened (page 2-424).

References

TM 9-247 (Authorized Cleaning Methods)

Materials/Parts

- Detergent, liquid, GP (item 7, appendix C)
- Tags, marker (item 21, appendix C)
- Lockwasher, bracket

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

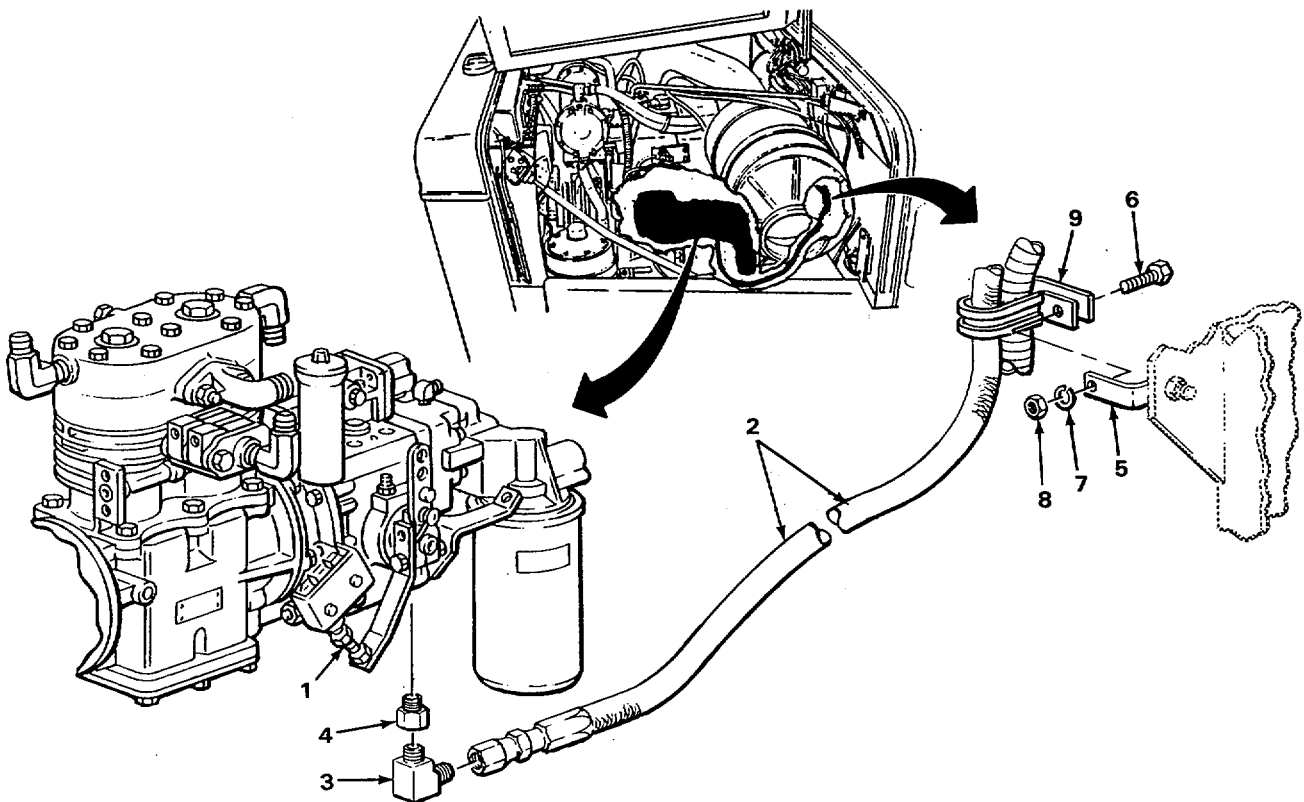
WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

- | | | | |
|----|-------------------------|---|--|
| 1. | Bottom of fuel pump (1) | Fuel hose (2) and 90° elbow fitting (3) | <ul style="list-style-type: none"> a. Place 2-gallon drain pan underneath. b. Using 1/2-inch and 9/16-inch open-end wrenches, unscrew fuel hose. |
|----|-------------------------|---|--|

PREHEATER PRIMER FUEL PUMP FUEL LINES AND FITTINGS - CONTINUED

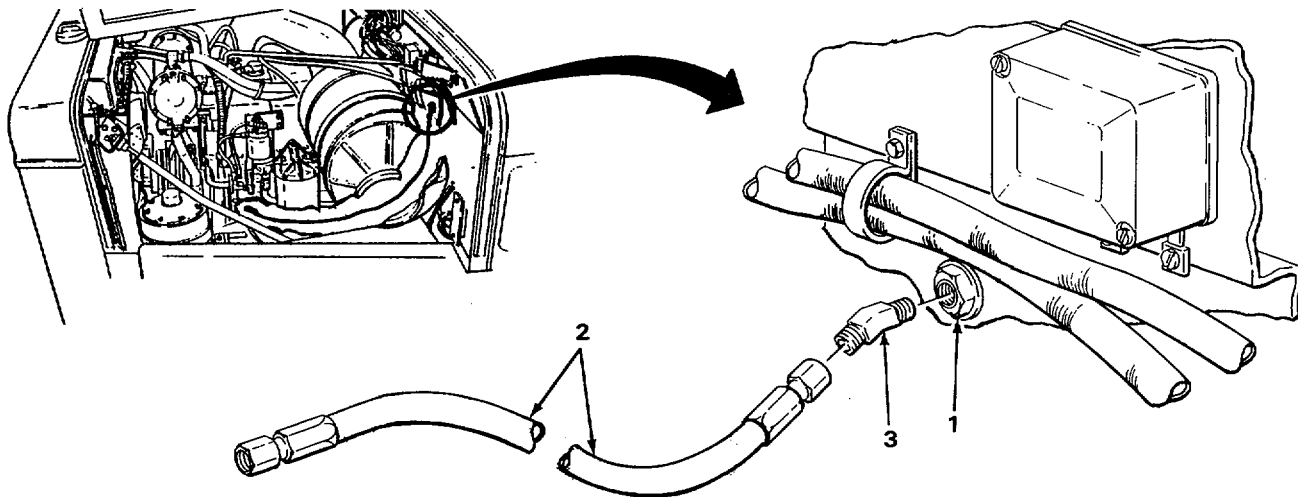
LOCATION	ITEM	ACTION	REMARKS
		c.	Unscrew and take off fuel hose and allow to drain.
		d.	Get rid of diesel fuel oil (page 2-424).
2.	90° elbow fitting (3) and adapter fitting (4)		Using 1/2-inch and 9/16-inch open-end wrenches, unscrew and take out 90° elbow fitting.
3.	Adapter fitting (4)		Using 9/16-inch open-end wrench, unscrew and take off.
4. Bracket (5)	Screw (6), lock-washer (7), and nut (8)	a.	Using 7/16-inch, 1/2-inch drive socket and ratchet handle and 7/16-inch box-end wrench, unscrew and take off.
		b.	Get rid of lockwasher.
5.	Clamp (9) and fuel hose (2)	a.	Open clamp.
		b.	Take fuel hose out of clamp.



TA244016

PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL - CONTINUED			
6. Bulkhead fitting (1)	Fuel hose (2) and 45° elbow fitting (3)	a. Using 9/16-inch and 1/2-inch open-end wrenches, unscrew fuel hose. b. Take off fuel hose.	
7. Bulkhead fitting (1)	45° elbow fitting (3)	Using 1/2-inch open-end wrench, unscrew and take off.	



NOTE

Tag fuel lines for length and location, to aid during installation.

8. Preheater primer pump (4)	Inlet fuel line (5)	Using marker tags, tag as INLET-12.	
9.	Inlet fuel line (5) and inlet fitting (6)	a. Using 9/16-inch and 1/2-inch open-end wrenches, unscrew inlet fuel line. b. Take off inlet fuel line.	

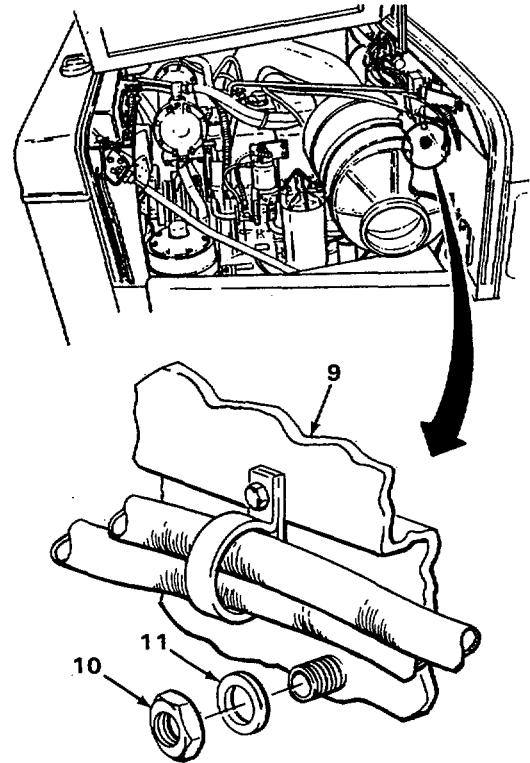
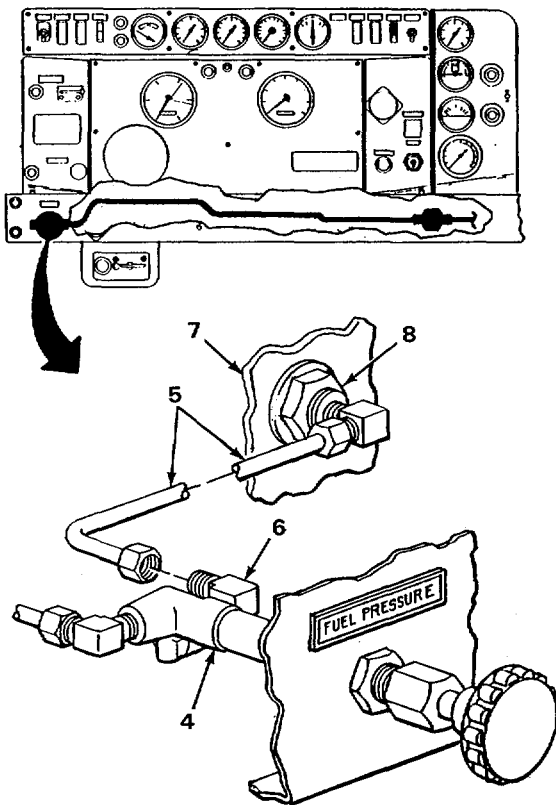
PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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NOTE

Assistance will be required to perform steps 10 and 11.

- | | | |
|----------------------------|-------------------------------|--|
| 10. Rear of dash-board (7) | Nut (8) | Using 1 1/8-inch open-end wrench, hold nut from moving. |
| 11. Firewall (9) | Nut (10) and flat washer (11) | Using 1-inch deep, 1/2-inch drive socket and ratchet handle, unscrew and take off. |



TA244018

PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL - CONTINUED

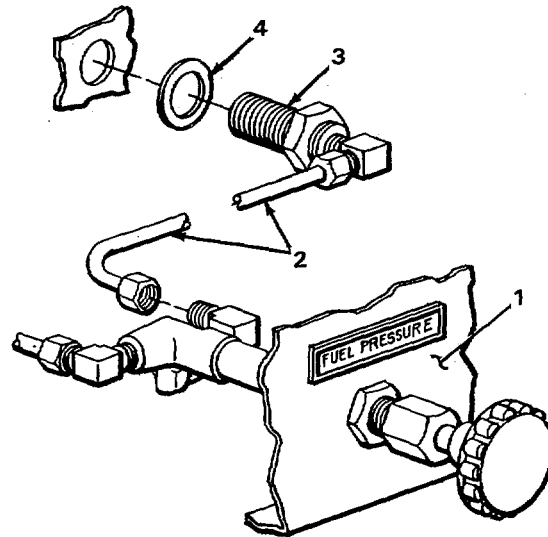
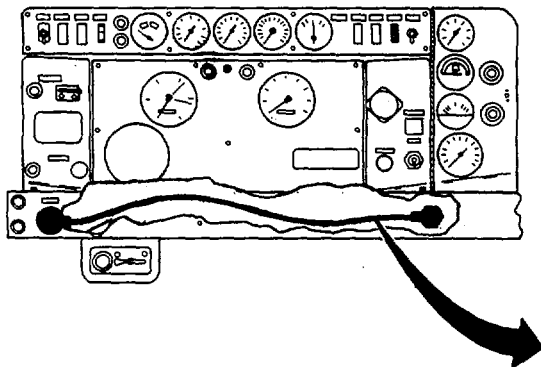
CAUTION

Use care when removing bulkhead fitting and inlet fuel line, damage to inlet fuel line or nearby wiring could occur.

12. Rear of dash-board (1)

Inlet fuel line (2), bulkhead fitting (3), and flat washer (4)

Take out.



NOTE

Tag fuel lines for length and location, to aid during installation.

13. Preheater primer pump (5)

Outlet fuel line (6)

Using marker tags, tag as OUTLET-30.

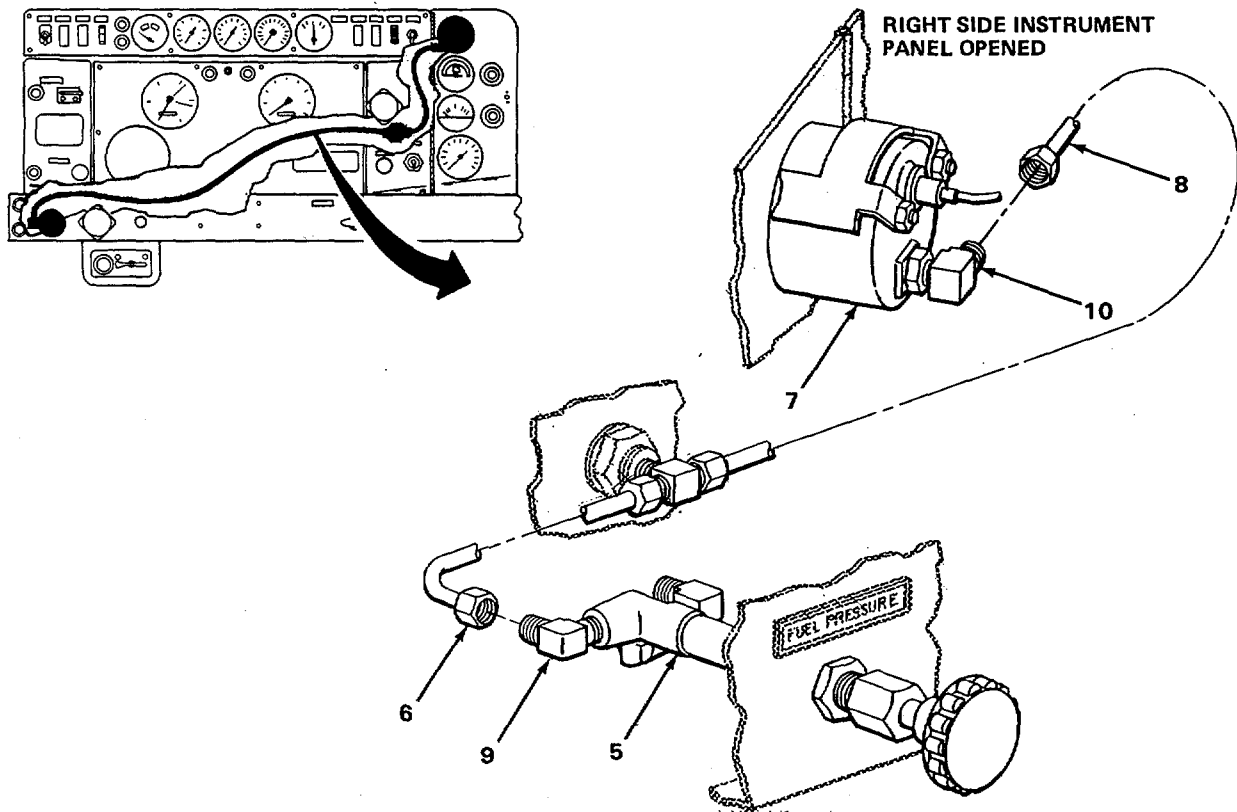
14. Fuel pressure gage (7)

Fuel pressure gage fuel line (8)

Using marker tags, tag as PRESSURE GAGE-8.

PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

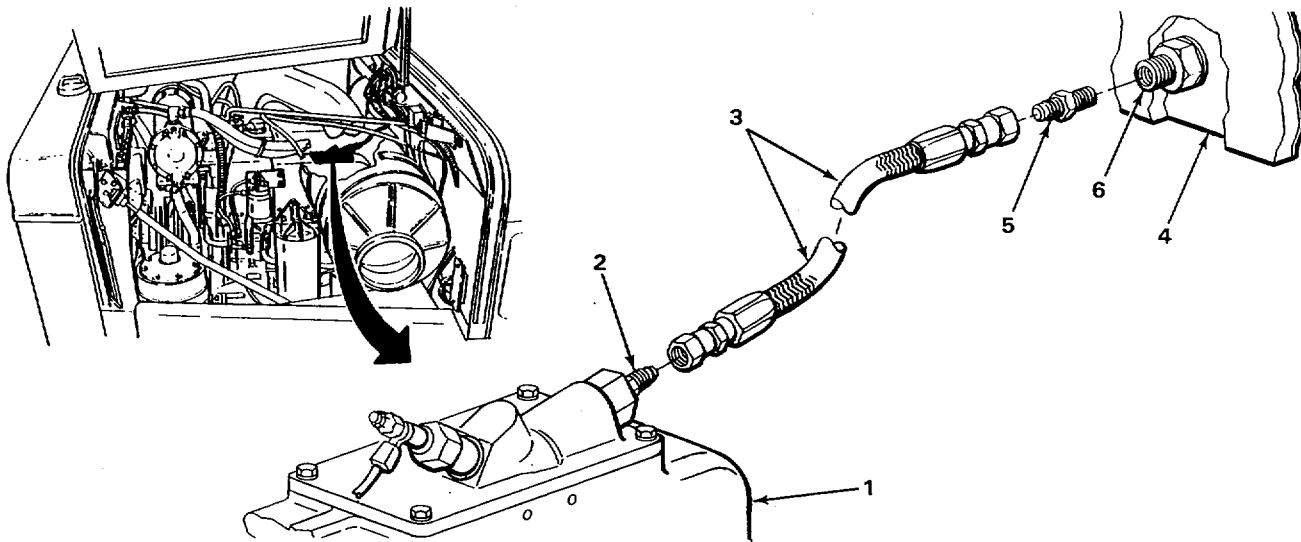
LOCATION	ITEM	ACTION	REMARKS
15. Preheater primer pump (5)	Fitting (9) and outlet fuel line (6)	a. Using 9/16-inch and 1/2-inch open-end wrenches, unscrew fuel line. b. Take off outlet fuel line.	
16. Fuel pressure gage (7)	90° elbow fitting (10) and fuel pressure gage fuel line (8)	a. Using two 9/16-inch open-end wrenches, unscrew fuel line. b. Take off fuel pressure gage fuel line.	



TA244020

PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL - CONTINUED			
17. Engine intake manifold (1)	Fitting (2) and preheater nozzle fuel hose (3)	a. Using 9/16-inch and 7/16-inch open-end wrenches, unscrew fuel hose. b. Take off preheater nozzle fuel hose.	
18. Firewall (4)	Fitting (5) and preheater nozzle fuel hose (3)	a. Using 9/16-inch and 7/16-inch open-end wrenches, unscrew fuel hose. b. Take off preheater nozzle fuel hose.	
19. Bulkhead fitting (6)	Fitting (5)	Using 7/16-inch open-end wrench, unscrew and take off.	



NOTE

Assistance will be required to perform steps 20 and 21.

20. Rear of dashboard (7)	Nut (8)	Using 1 1/8-inch open-end wrench, hold nut from moving.
21. Engine side firewall (9)	Nut (10) and flat-washer (11)	Using 1-inch deep, 1/2-inch drive socket, 6-inch extension, and ratchet handle, unscrew and take off.

TA244021

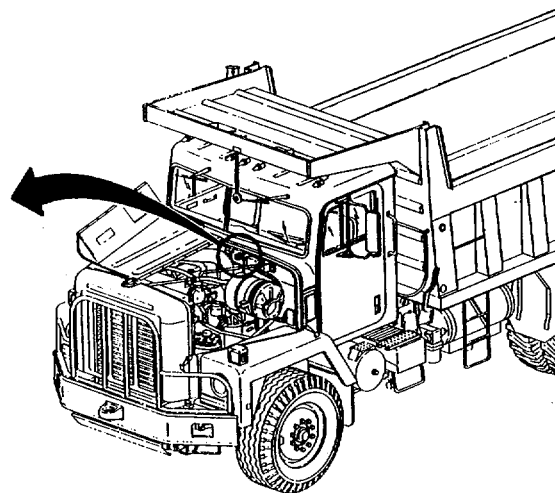
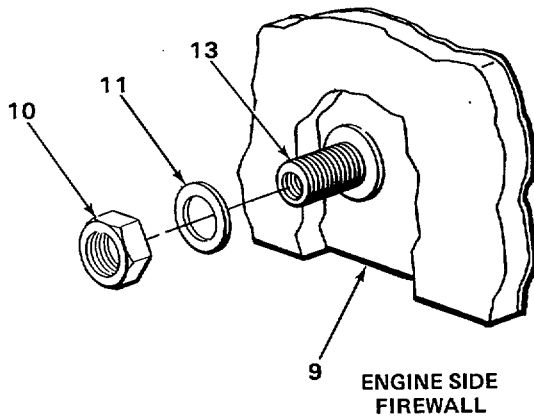
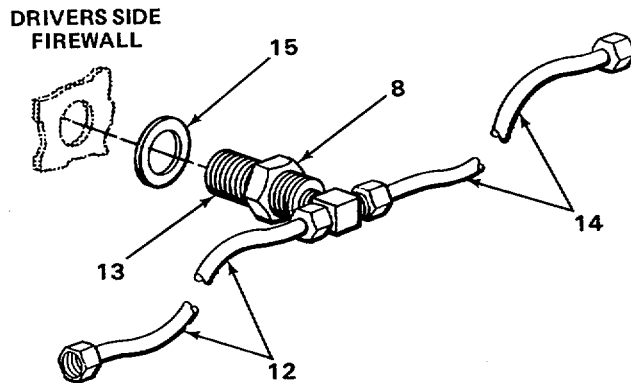
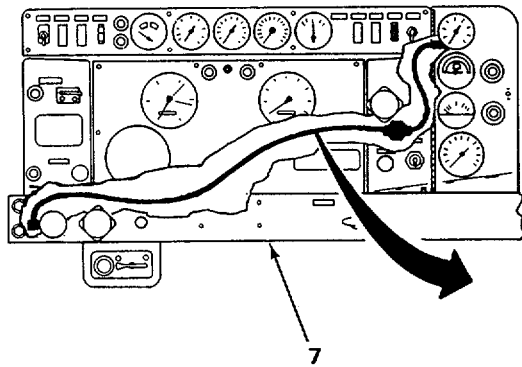
PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CAUTION

Use care when removing bulkhead fitting, outlet fuel line, and fuel pressure gage fuel line. Damage to fuel lines or nearby wiring could occur.

- | | | | |
|----------------------------|---|-----------|--|
| 22. Rear of dash-board (7) | Outlet fuel line (12), bulkhead fitting (13), fuel pressure gage fuel line (14), and flat washer (15) | Take out. | |
|----------------------------|---|-----------|--|



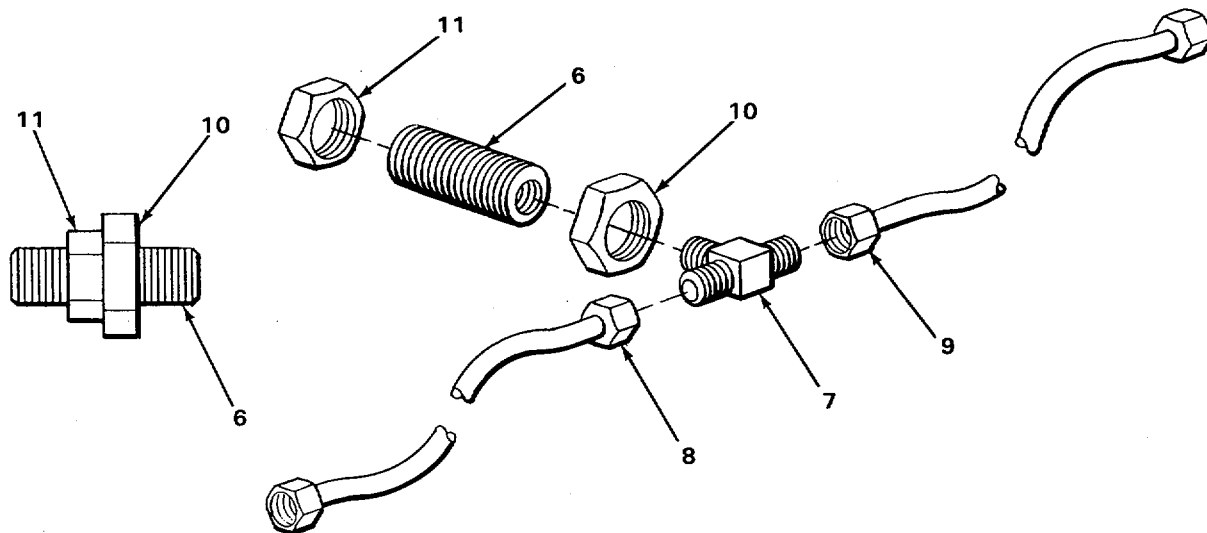
TA244022

PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
DISASSEMBLY			
23. Bulkhead fitting (1)	90° elbow fitting (2) and inlet fuel line (3)	a. Using 9/16-inch and 1/2-inch open-end wrenches, unscrew inlet fuel line. b. Take off inlet fuel line.	
24.	Large nut (4) and small nut (5)	Screw on and tighten together using 1 1/8-inch and 1-inch open-end wrenches.	
25.	90° elbow fitting (2) and large nut (4)	Using 1 1/8-inch and 1/2-inch open-end wrenches, unscrew and take off 90° elbow fitting.	
26.	Large nut (4) and small nut (5)	Using 1 1/8-inch and 1-inch open-end wrenches, unscrew and take off.	
TA244023			
27. Bulkhead fitting (6)	Tee fitting (7) and outlet fuel line (8)	a. Using 9/16-inch and 1/2-inch open-end wrenches, unscrew outlet fuel line. b. Take off outlet fuel line.	
28.	Tee fitting (7) and fuel pressure gage fuel line (9)	a. Using 9/16-inch and 1/2-inch open-end wrenches, unscrew fuel pressure gage fuel line. b. Take off fuel pressure gage fuel line.	

PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
29.	Large nut (10) and small nut (11)	Screw on and tighten together using 1 1/8 inch and 1-inch open-end wrenches.	
30.	Tee fitting (7) and large nut (10)	Using 1 1/8-inch and 1/2-inch open-end wrenches, unscrew and take off tee fitting.	
31.	Large nut (10) and small nut (11)	Using 1 1/8-inch and 1-inch open-end wrenches, unscrew and take off.	



CLEANING

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and cause damage to equipment. Refer to TM 9-247.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

TA244024

PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CLEANING - CONTINUED

NOTE

All fuel passages in fuel hoses, fuel lines, and fittings must be cleaned thoroughly.

32.	All parts		Clean thoroughly with liquid detergent and water.
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WARNING

Particles blown by compressed air are hazardous. Make certain the air stream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent injury.

33.	All parts		Using air blow gun and air hose assembly, blow dry.
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INSPECTION/REPLACEMENT

NOTE

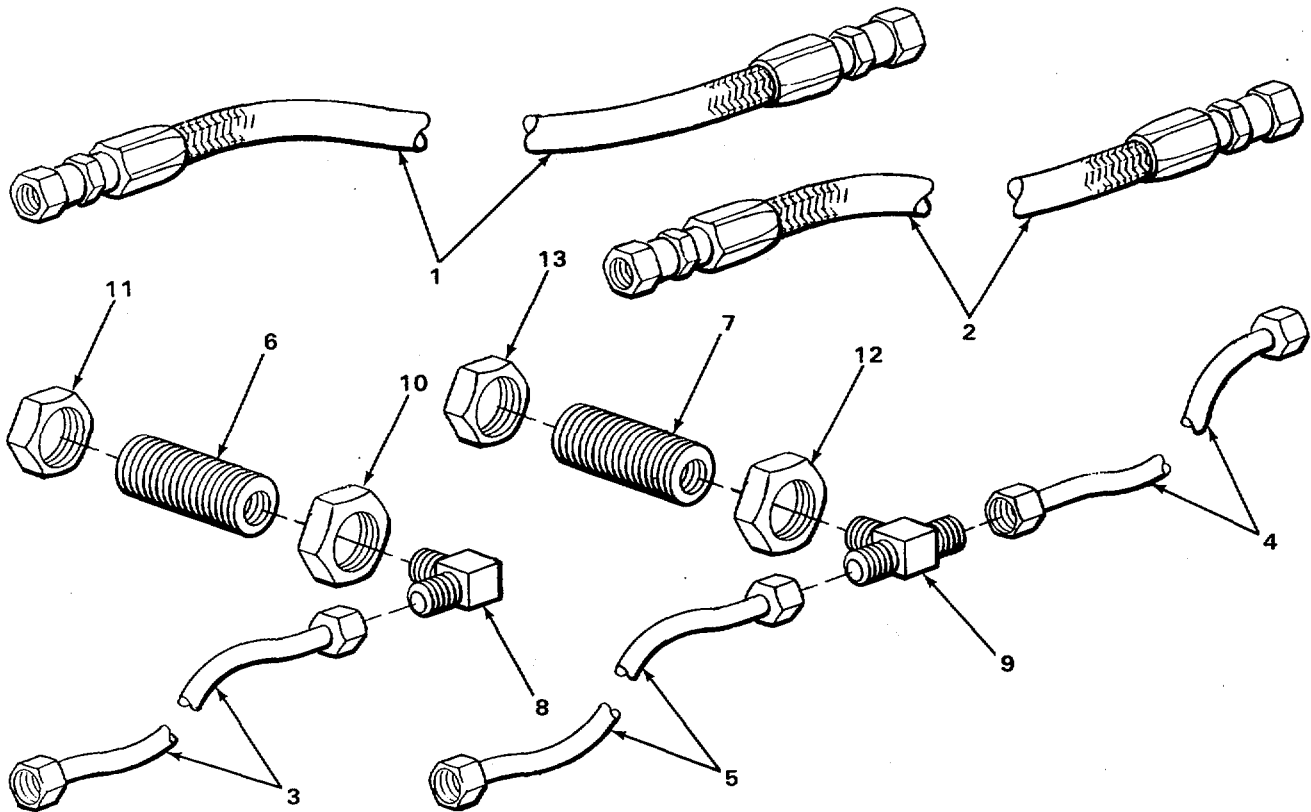
Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

34.	Inlet fuel hose (1) and preheater nozzle fuel hose (2)		Look for cracked, dry rot, gouged, stripped, or damaged threads.
35.	Inlet fuel line (3), fuel pressure gage fuel line (4), and outlet fuel line (5)		Look for cracked, gouged, stripped, or damaged threads.

PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
36.	Bulkhead fittings (6) and (7), 90° elbow fitting (8) and tee fitting (9)	Look for cracked, gouged, stripped or damaged threads.	
37.	Four nuts (10, 11, 12, and 13)	Look for cracked, gouged, stripped, or damaged threads.	



TA244025

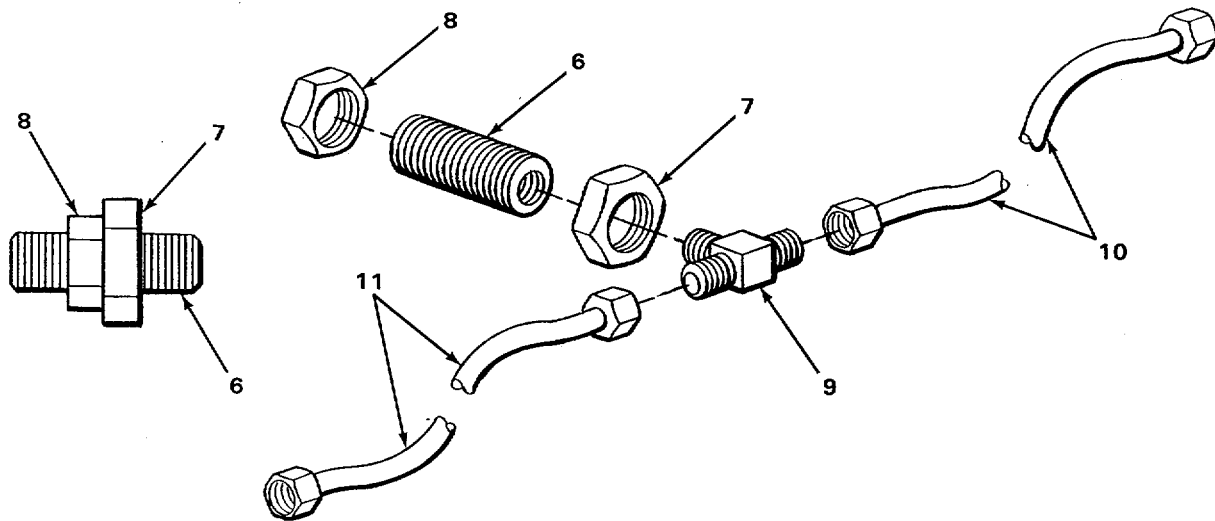
PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
ASSEMBLY			
38. Bulkhead fitting (1)	Large nut (2) and small nut (3)	Screw on and tighten as shown using 1 1/8-inch and 1-inch open-end wrenches.	
39.	Large nut (2) and 90° elbow Fitting (4)	Screw on and tighten using 1 1/8-inch and 1/2-inch open-end wrenches.	

NOTE

Fuel lines are tagged for identification. Inlet fuel line is tagged as INLET-12.

40.	90° elbow fitting (4) and inlet fuel line (5)	Screw on and tighten using 9/16-inch and 1/2-inch open-end wrenches. Do not take off tag.
41.	Large nut (2) and small nut (3)	a. Using 1 1/8-inch and 1-inch open-end wrenches, loosen both nuts. b. Using 1-inch open-end wrench, unscrew and take off small nut.



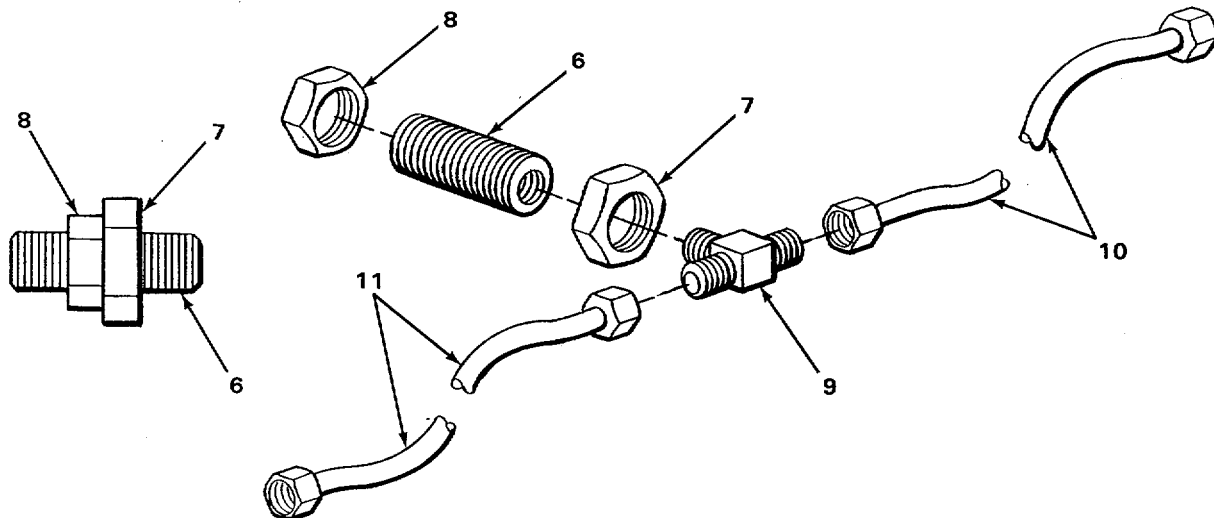
PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
42. Bulkhead fitting (6)	Large nut (7) and small nut (8)	Screw on and tighten as shown using 1 1/8-inch and 1-inch open-end wrenches.	
43.	Large nut (7) and tee fitting (9)	Screw on and tighten using 1 1/8-inch and 1/2-inch open-end wrenches.	

NOTE

Fuel lines are tagged for identification. Outlet fuel line is tagged as PUMP OUTLET-30 and fuel pressure gage fuel line is tagged as PRESSURE GAGE-8.

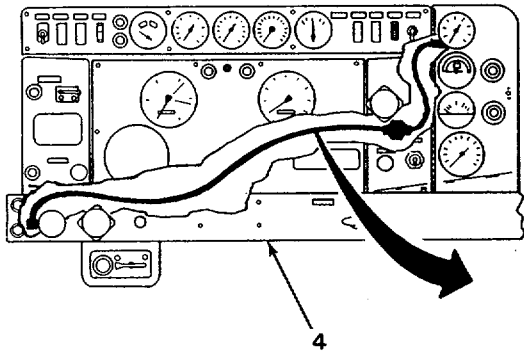
44.	Tee fitting (9) and fuel pressure gage fuel line (10)	Screw on and tighten using 9/16-inch and 1/2-inch open-end wrenches.	
45.	Tee fitting (9) and outlet fuel line (11)	Screw on and tighten using 9/16-inch and 1/2-inch open-end wrenches.	
46.	Large nut (7) and small nut (8)	<ol style="list-style-type: none"> Using 1 1/8-inch and 1-inch open-end wrenches, loosen both nuts. Using 1-inch open-end wrench, unscrew and take off small nut. 	



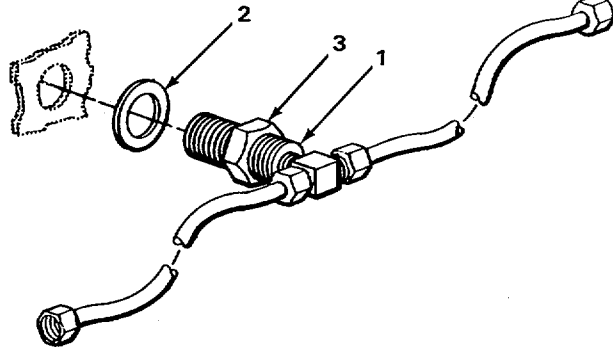
PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
47. Bulkhead fitting (1)	Flat washer (2) and nut (3)	a. Put washer on bulkhead fitting. b. Turn nut until a few threads can be seen on tee fitting side of nut.	
CAUTION			
Use care when installing bulkhead fitting, outlet fuel line, and fuel pressure gage fuel line. Damage to fuel lines nearby or wiring could occur.			
NOTE			
Fuel pressure gage fuel line, tagged as PRESSURE GAGE-8 must be positioned to right of tee fitting when installed behind dashboard.			
48. Rear of dash-board (4)	Bulkhead fitting (1)	Put in.	
49. Firewall (5)	Bulkhead fitting (1) and flat washer (6)	Put washer on bulkhead fitting. -	
NOTE			
Assistance will be required to perform steps 50 and 51.			
50.	Nut (3)	Using 1 1/8-inch open-end wrench, hold nut from moving.	
51. Bulkhead fitting (1)	Nut (7)	Screw on and tighten using 1-inch deep, 1/2-inch drive socket, 6-inch extension and ratchet handle.	

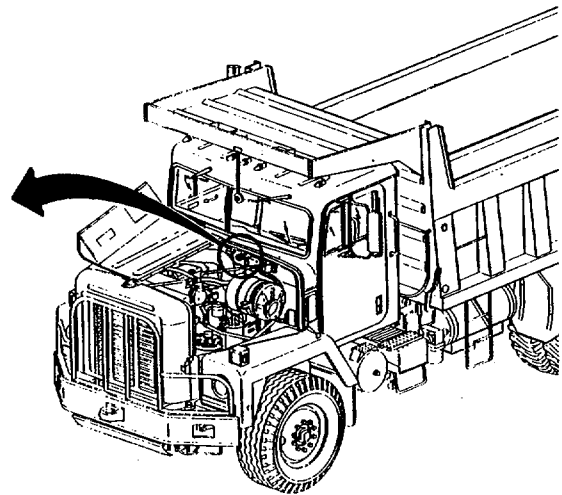
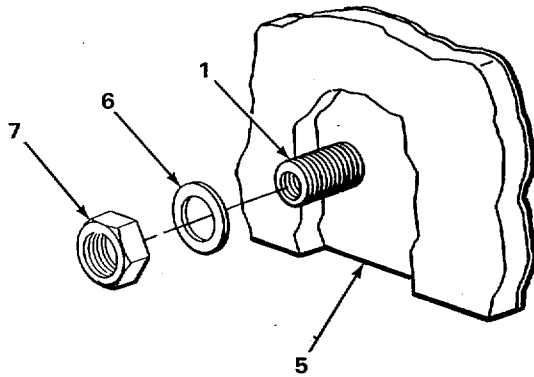
PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED



DRIVERS SIDE FIREWALL

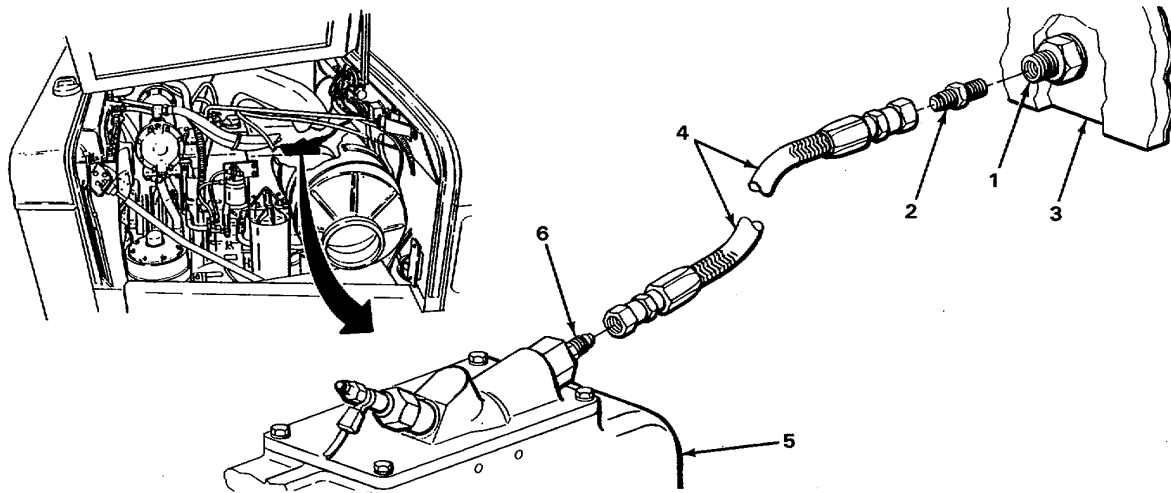


ENGINE SIDE FIREWALL



PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSTALLATION - CONTINUED		
52. Bulkhead fitting (1)	Fitting (2)	Screw on and tighten using 7/16-inch box-end wrench.
53. Firewall (3)	Fitting (2) and pre-heater nozzle fuel hose (4)	Screw on and tighten using 9/16-inch and 7/16-inch open-end wrenches.
54. Engine intake manifold (5)	Fitting (6) and pre-heater nozzle fuel hose (4)	Screw on and tighten using 9/16-inch and 7/16-inch open-end wrenches.



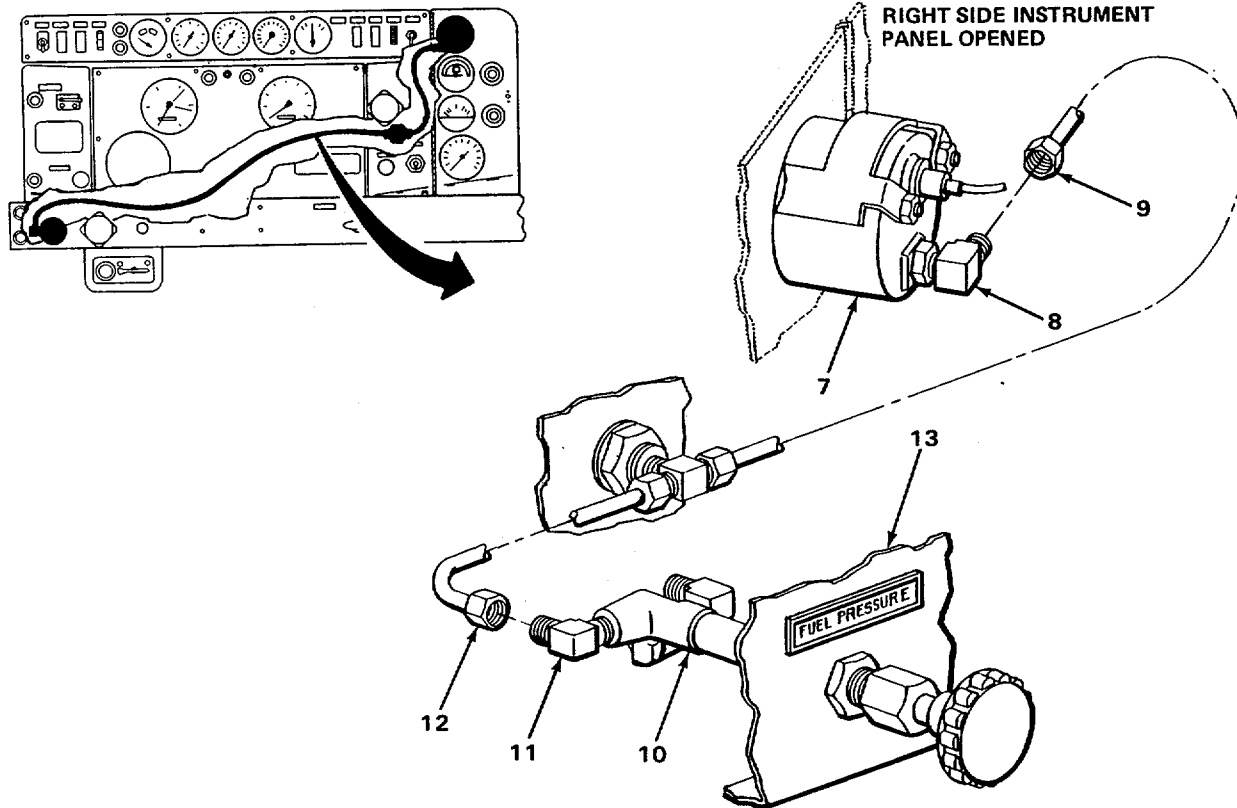
TA244029

NOTE

Fuel lines are tagged for identification, fuel pressure gage fuel line is tagged as PRESSURE GAGE-8 and outlet fuel line is tagged as PUMP OUTLET-30.

PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
55. Fuel pressure gage (7)	90° elbow fitting (8) and fuel pressure gage fuel line (9)	Screw on and tighten using two 9/16-inch open-end wrenches.	
NOTE			
Inlet side of preheater primer pump is stamped INLET near fitting, outlet is on opposite side of preheater primer pump.			
56. Preheater primer pump (10)	Outlet fitting (11) and outlet fuel line (12)	Screw on and tighten using 9/16-inch and 1/2-inch open-end wrenches.	
57. Dashboard (13)	Fuel pressure gage fuel line (9) and outlet fuel line (12)	a. Take off tags. b. Get rid of tags.	



TA244030

PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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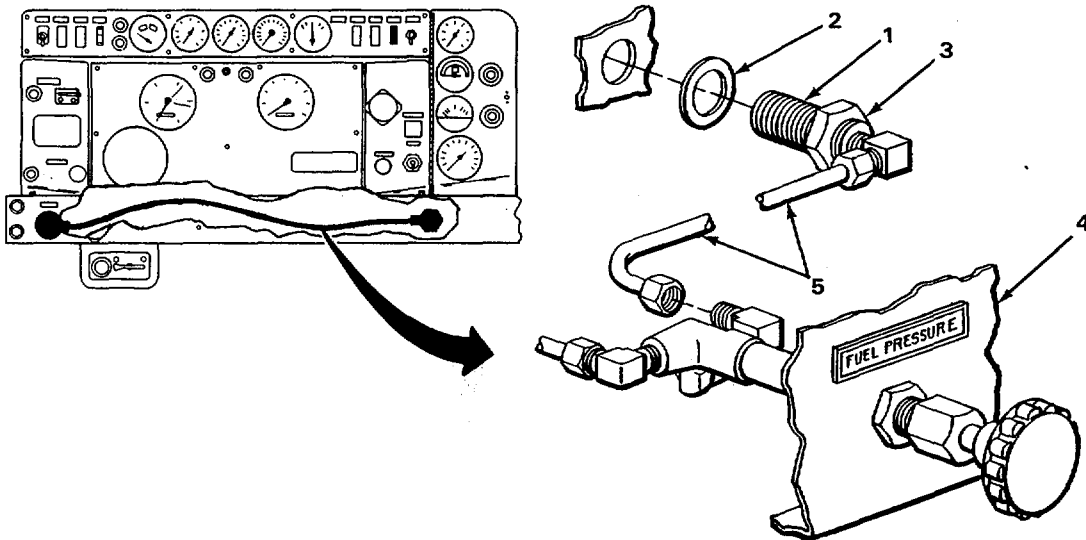
INSTALLATION - CONTINUED

- | | | | |
|--------------------------|--------------------------------|--|--|
| 58. Bulkhead fitting (1) | Flat washer (2)
and nut (3) | a. Put washer on bulkhead fitting.
b. Turn nut until a few threads can be seen
on fitting side of nut. | |
|--------------------------|--------------------------------|--|--|

CAUTION

Use care when installing bulkhead fitting and inlet fuel line. Damage to inlet fuel line or nearby wiring could occur.

- | | | | |
|----------------------------|--|---------|--|
| 59. Rear of dash-board (4) | Bulkhead fitting (1)
and inlet fuel
line (5) | Put in. | |
|----------------------------|--|---------|--|

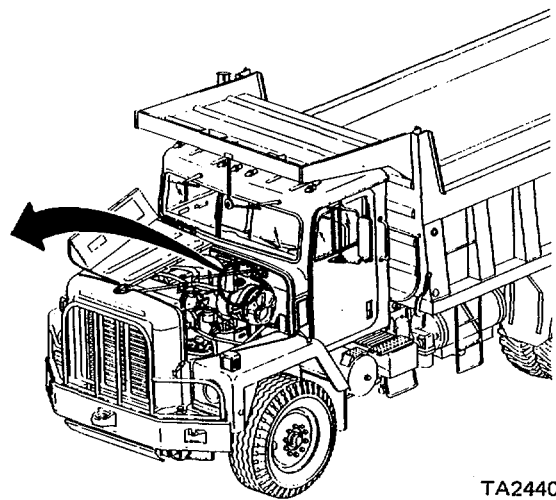
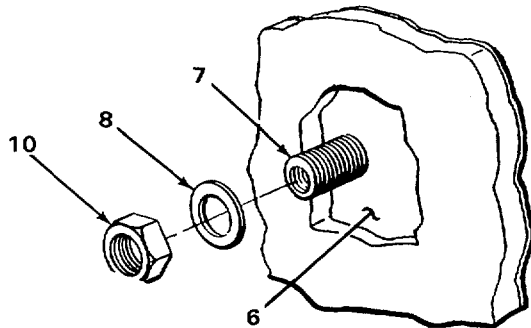
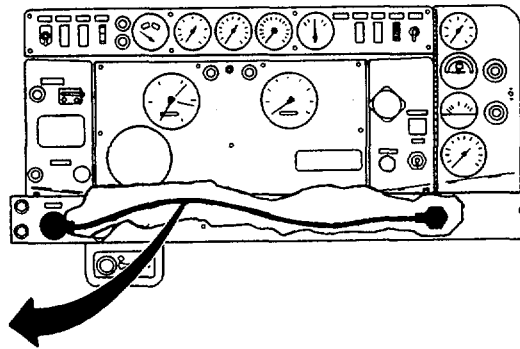
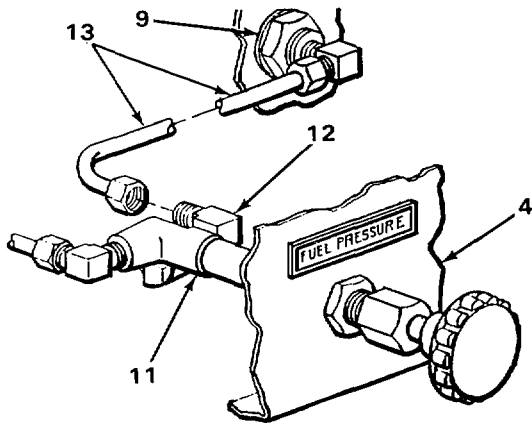


- | | | | |
|------------------|---|---------|--|
| 60. Firewall (6) | Bulkhead fitting (7)
and flat washer (8) | Put on. | |
|------------------|---|---------|--|

TA244031

PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
NOTE			
Assistance will be needed to perform steps 61 and 62.			
61. Rear of dash	Nut (9) board (4)	Using 1 1/8-inch open-end wrench, hold nut from moving.	
62. Firewall (6)	Nut (10)	Screw on and tighten using 1-inch deep, 1/2-inch drive socket, 6-inch extension and ratchet handle.	
63. Preheater primer pump (11)	Outlet fitting (12) and outlet fuel line (13)	Screw on and tighten using 9/16-inch and 1/2-inch open-end wrenches.	
64.	Outlet fuel line (13)	a. Take off tag. b. Get rid of tag.	

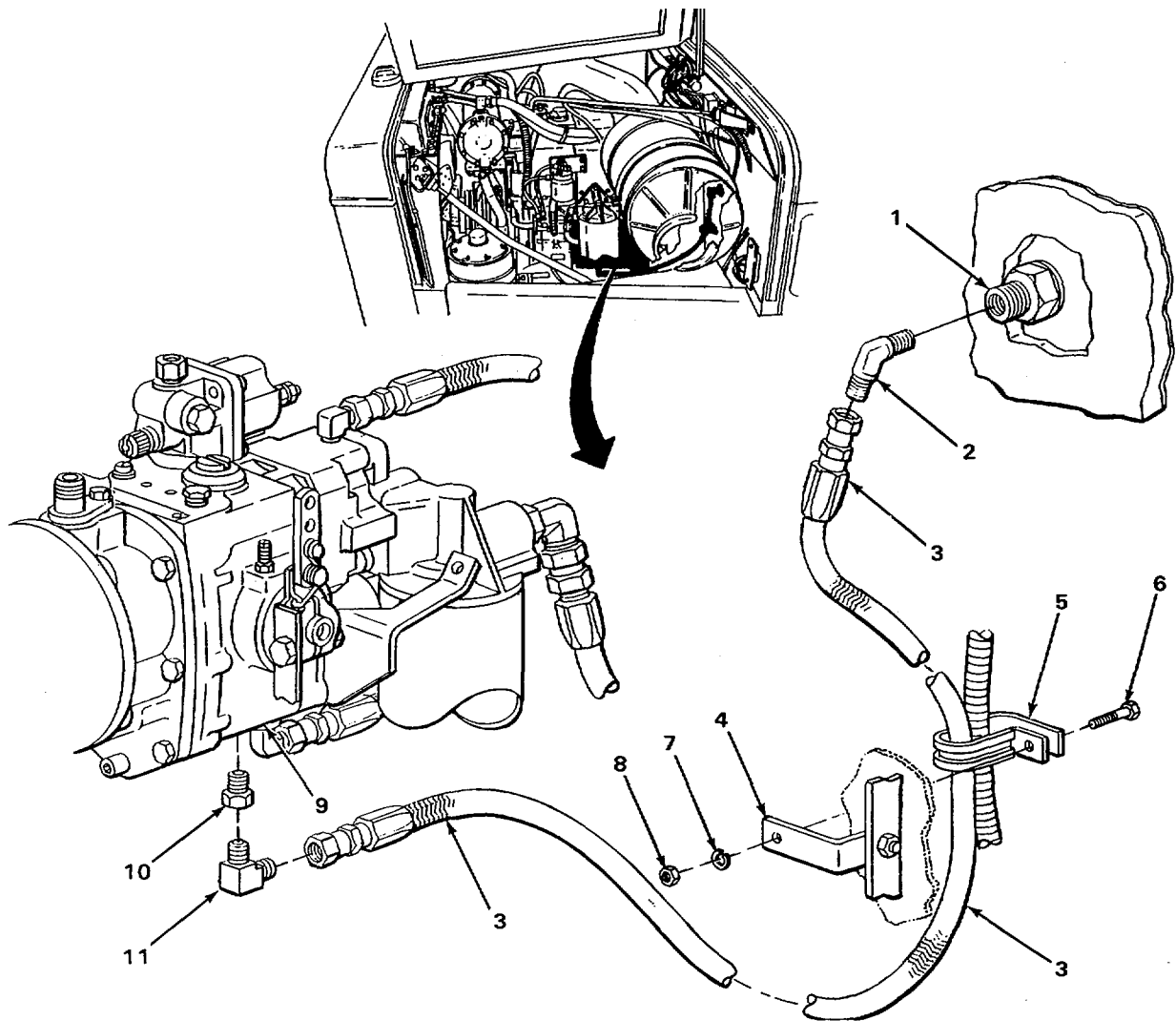


TA244032

PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSTALLATION - CONTINUED		
65. Bulkhead fitting (1)	45° elbow fitting (2)	Screw on and tighten using 1/2-inch open-end wrench.
66.	45° elbow fitting (2) and fuel hose (3)	Screw on and tighten using 9/16-inch and 1/2-inch open-end wrenches.
67. Bracket (4)	Fuel hose (3) and clamp (5)	Open clamp and put fuel hose inside clamp.
68. Bracket (4) and clamp (5)	Screw (6), new lock-washer (7), and nut (8)	Screw on and tighten using 7/16-inch, 1/2-inch drive socket, ratchet handle and 7/16-inch box-end wrench.
69. Bottom of fuel pump (9)	Adapter fitting (10)	Screw on and tighten using 9/16-inch open-end wrench.
70.	Adapter fitting (10) and 90° elbow fitting (11)	Screw on and tighten using 9/16-inch and 1/2-inch open-end wrenches.
71.	Fuel hose (3) and 90° elbow fitting (11)	Screw on and tighten using 9/16-inch and 1/2-inch open-end wrenches.

PREHEATER PRIMER PUMP FUEL LINES AND FITTINGS - CONTINUED



NOTE

FOLLOW-ON MAINTENANCE:

1. Prime fuel system (page 2-481).
2. Connect battery cables (page 2-424).
3. Install instrument panel pad (page 2-424).
4. Close right side instrument panel (page 2-424).
5. Install engine cover (page 2-1270). TA244033
6. Close left side cab door (page 2-424).
7. Close right and left side hood panels (page 2-424).

TASK ENDS HERE

PREHEATER PRIMER PUMP NOZZLE

This task covers:

- a. Removal (page 2-510)
- b. Installation (page 2-511)

INITIAL SETUP:

Tools

- Wrench, box-end, 7/16-inch
- Wrench, open-end, 7/16-inch
- Wrench, open-end, 9/16-inch
- Wrench, open-end, 1 1/4-inch

Personnel Required

One

Equipment Condition

Right and left side hood panels opened (page 2-424).

Materials/Parts

Gasket, preheater nozzle

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

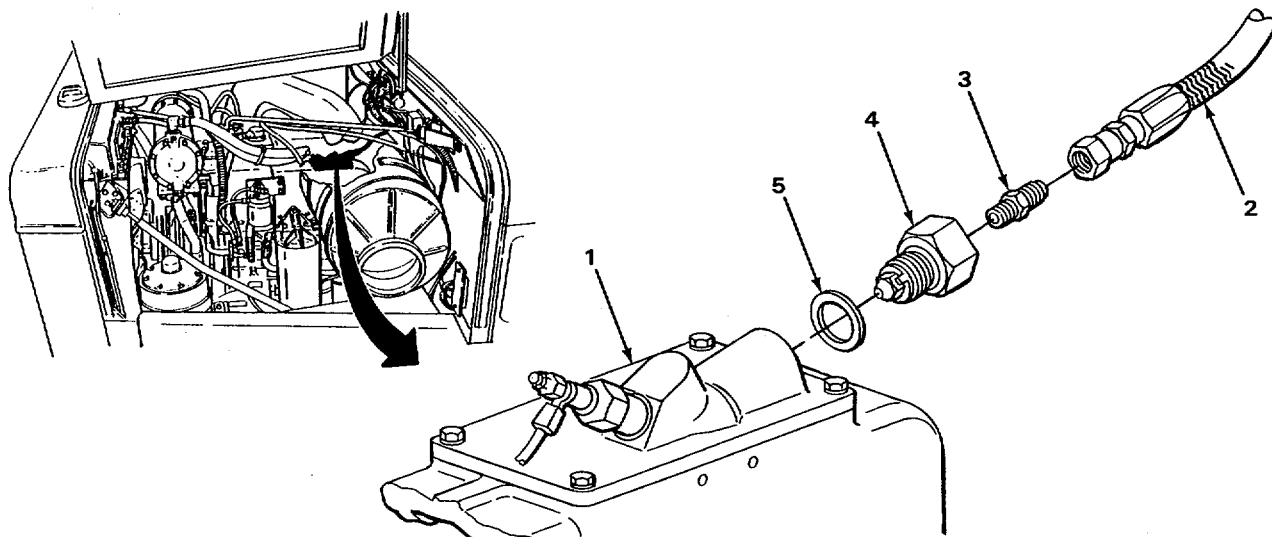
WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries (page 2-424) when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

1.	Preheater housing (1)	Preheater nozzle fuel hose (2) and fitting (3)	<ul style="list-style-type: none"> a. Using 9/16-inch and 7/16-inch open-end wrenches, unscrew fuel hose nut. b. Take off preheater nozzle fuel hose.
2.		Fitting (3) and preheater nozzle (4)	Using 1 1/4-inch open-end and 7/16-inch box-end wrenches, unscrew and take off fitting.
3.		Preheater nozzle (4) and gasket (5)	<ul style="list-style-type: none"> a. Using 1 1/4-inch open-end wrench, unscrew and take off. b. Get rid of gasket.

PREHEATER PRIMER PUMP NOZZLE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
4. Pre-heater housing (1)	New gasket (5) and preheater nozzle (4)	a. Put new gasket on preheater nozzle. b. Screw in and tighten using 1 1/4-inch open-end wrench.	
5. Preheater nozzle (4)	Fitting (3)	Screw in and tighten using 7/16-inch box-end wrench.	
6.	Fitting (3) and preheater nozzle fuel hose (2)	Screw on and tighten using 9/16-inch and 7/16-inch open-end wrenches.	



NOTE

FOLLOW-ON MAINTENANCE: Close right and left side hood panels (page 2-424).

TASK ENDS HERE

GLOW PLUG

This task covers:

- | | |
|---|--|
| <p>a. REMOVAL (pages 2-512)
 b. INSPECTION (page 2-512)</p> | <p>c. TESTING (page 2-512)
 d. INSTALLATION (page 2-513)</p> |
|---|--|

INITIAL SETUP:

<p>Tools</p> <p>Power supply, 12 vdc Wire, jumper (two required) Wrench, box-end, 3/8-inch Wrench, box-end, 7/8-inch</p>	<p>Personnel Required</p> <p>One</p> <p>Equipment Condition</p> <p>Left side hood panel opened (page 2-424).</p>
---	--

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1.	Preheater housing (1)	Glow plug (2), nut (3), wire (4), and flat washer (5)	a. Using 3/8-inch box-end wrench, unscrew and take off nut. b. Take off wire and flat washer.
2.	Glow plug (2)		Using 7/8-inch box-end wrench, unscrew and take out.

INSPECTION

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

- | | | |
|----|---------------|---|
| 3. | Glow plug (2) | Look for cracks, breaks, gouges, or stripped threads. |
|----|---------------|---|

TESTING

WARNING

Do not let positive wire touch metal surfaces at any time. Personal injury and equipment damage will occur.

GLOW PLUG - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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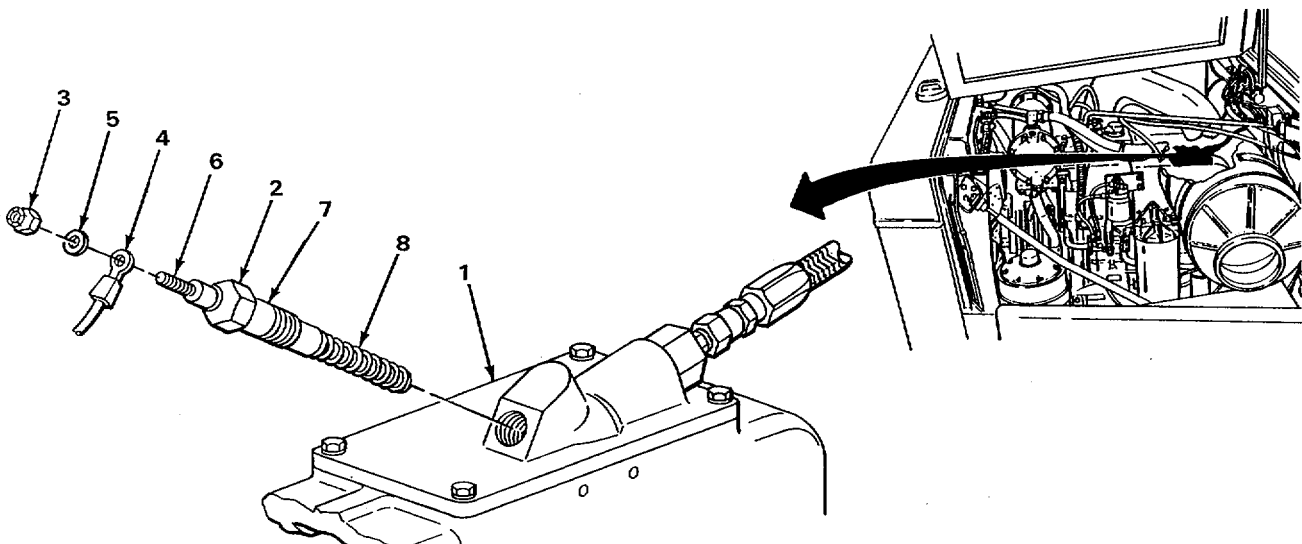
WARNING

Do not touch heater coil of glow plug when TESTING. Severe personal injury could occur.

4. Glow plug (2)	Terminal (6), metal housing (7), and heater coil (8)	Using jumper wire and 12 vdc power source, connect positive (+) wire to terminal and negative (-) wire to metal housing.	If heater coil turns red, glow plug is good. If heater coil does not turn red, replace glow plug.
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INSTALLATION

5. Pre-heater housing (1)	Glow plug (2)	Screw in and tighten using 7/8-inch box-end wrench.
6. Glow plug (2) wire (4), and	Flat washer (5), end wrench. nut (3)	Screw on and tighten using 3/8-inch box-



NOTE

FOLLOW-ON MAINTENANCE: Close left side hood panel (page 2-424).

TASK ENDS HERE

DRAINING FUEL TANKS

This task covers:

DRAINING

INITIAL SETUP

<p>Tools</p> <p>Container, 55-gallon (two required)</p> <p>Pump, hand</p> <p>Screwdriver, flat-tip, 3/16-inch</p> <p>Materials/Parts</p> <p>Gasket, cover</p>	<p>Personnel Required</p> <p>One</p> <p>Equipment Condition</p> <p>Disconnect battery cables (page 2-424).</p>
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LOCATION	ITEM	ACTION	REMARKS
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DRAINING

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. DIS-connect batteries when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

NOTE

Drain only rear fuel tank when removing rear fuel tank. Drain both fuel tanks when removing front or both fuel tanks.

- | | | | |
|----|-----------------------------|-------------------|--------------------------|
| 1. | Rear of front fuel tank (1) | Shutoff valve (2) | Turn clockwise to close. |
|----|-----------------------------|-------------------|--------------------------|

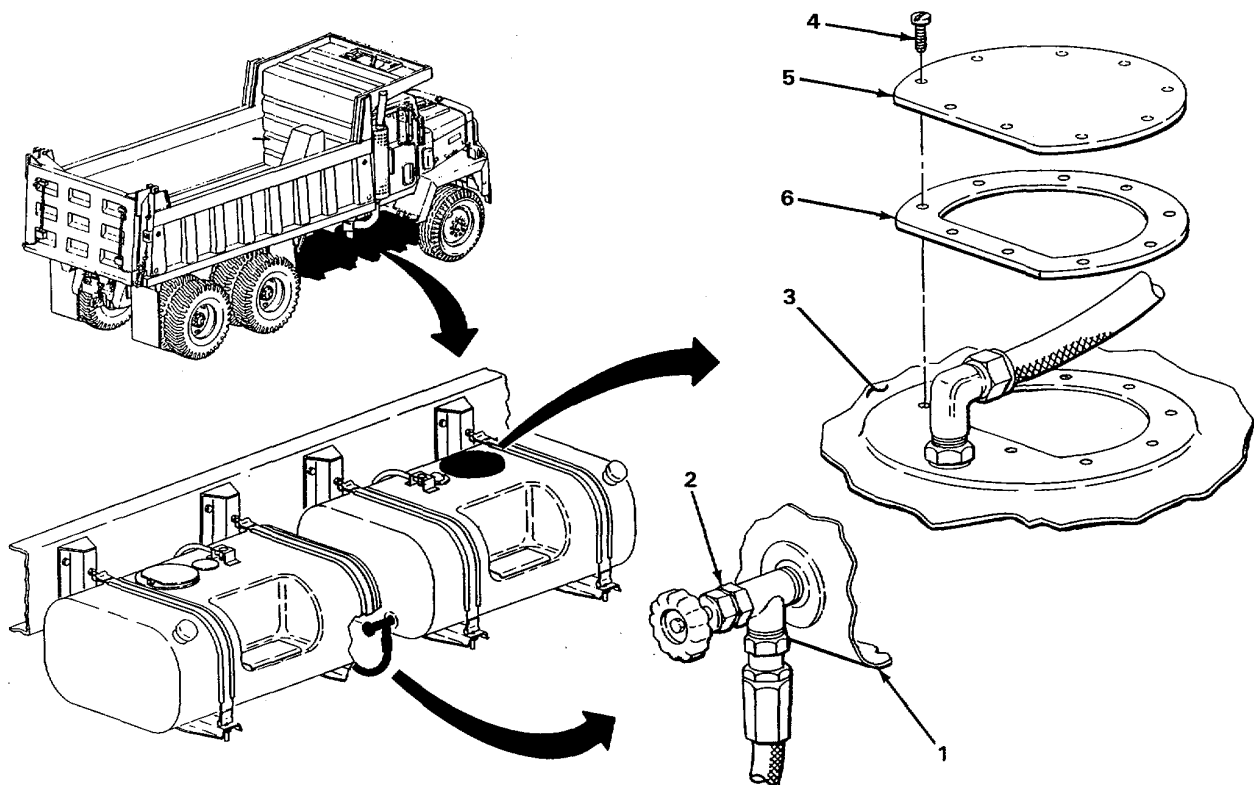
NOTE

Steps 2 thru 5 are typical for both fuel tanks.

- | | | | |
|----|----------------------|--------------------------------|---|
| 2. | Top of fuel tank (3) | Nine screws (4) | Using 3/16-inch flat-tip screwdriver, unscrew and take out. |
| 3. | | Cover (5) and cover gasket (6) | <ul style="list-style-type: none"> a. Take off. b. Get rid of cover gasket. |

DRAIN FUEL TANKS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
4.	Top of fuel tank (3)	a. Using hand pump and two 55-gallon containers, pump out fuel. b. Get rid of fuel (page 2-424).	
5.	Nine screws (4), cover (5), and new cover gasket	a. Put on new cover gasket and cover. b. Screw in and tighten using 3/16-inch screwdriver.	



NOTE

FOLLOW-ON MAINTENANCE: Connect battery cables (page 2-424).

TASK ENDS HERE

FUEL GAGE SENDING UNIT

This task covers:

- a. **REMOVAL (page 2-516)**
 - b. **INSPECTION (page 2-517)**
 - c. **TESTING (page 2-518)**
 - d. **INSTALLATION (page 2-518)**
-

INITIAL SETUP

<p>Tools</p> <p>Multimeter, AN/URM-105C Screwdriver, flat-tip, 3/16-inch Wrench, box-end, 3/8-inch</p> <p>Materials/Parts</p> <p>Gasket, fuel gage sending unit</p>	<p>Personnel Required</p> <p>One</p> <p>Equipment Condition</p> <p>Disconnect battery cables (page 2-424).</p>
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LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. DIS-connect batteries when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

1. Top of front fuel tank (1)	Three screws (2) and cover (3)	a. Using 3/16-inch flat-tip screwdriver, unscrew and take out three screws. b. Take off cover.	
2. Fuel gage sending unit (4)	Nut (5) and brown wire (6)	Using 3/8-inch box-end wrench, unscrew and take off.	
3.	Three screws (7) and red wire (8)	Using 3/16-inch flat-tip screwdriver, unscrew and take out.	
4. Top of front fuel tank (1)	Fuel gage sending unit (4) and gasket (9)	a. Take out. b. Get rid of gasket.	

FUEL GAGE SENDING UNIT - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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INSPECTION

NOTE

Replace all damaged or defective parts.

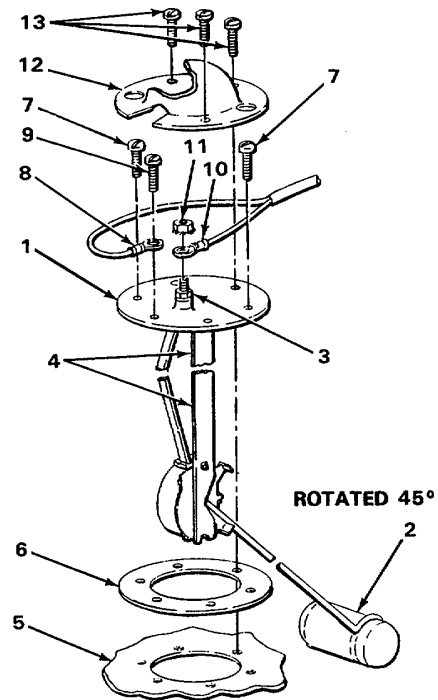
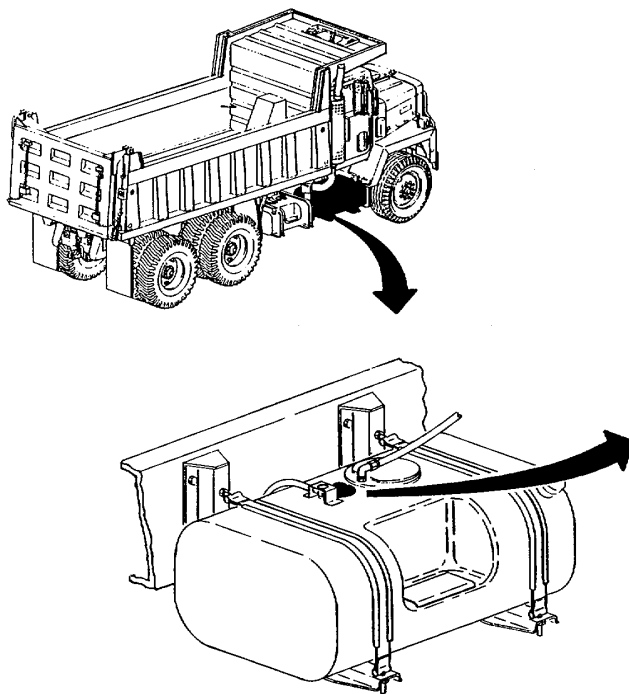
For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

5. Fuel gage sending unit (4)

Float (10)

- a. Look for hole, dents, cracks, or breaks.
- b. Check float for fuel in float.

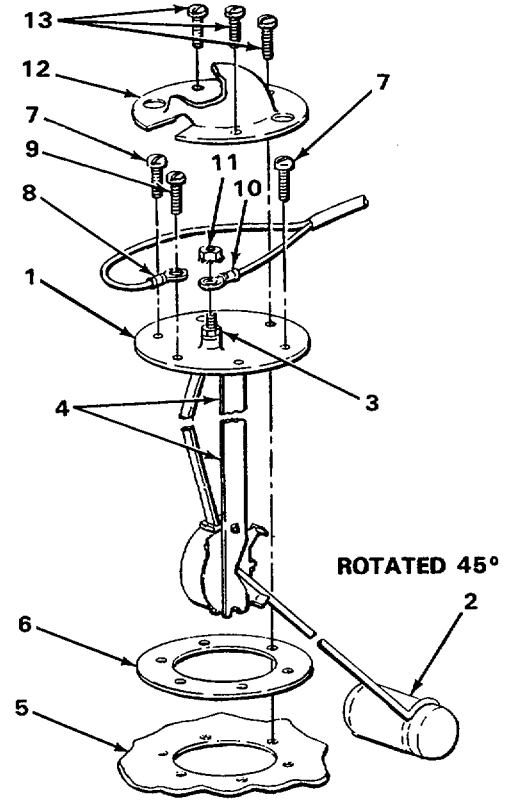
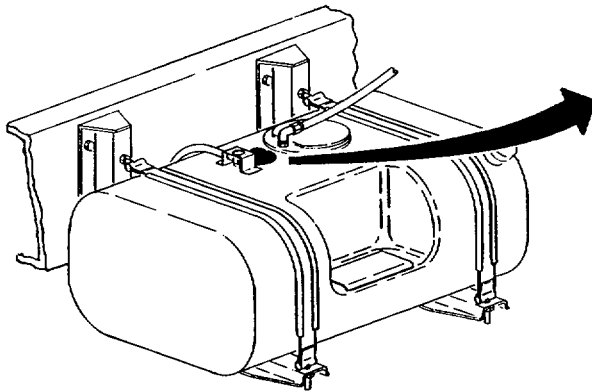
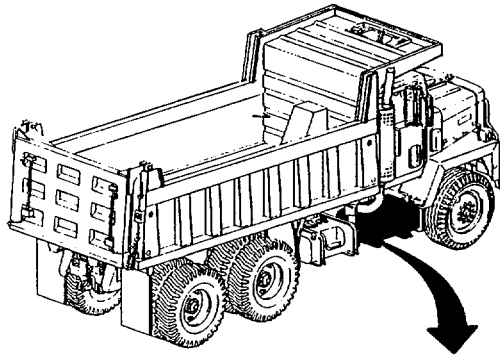
If float has fuel in it, get rid of fuel gage sending unit.



FUEL GAGE SENDING UNIT - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
TESTING			
6.	Fuel gage sending unit (1)	Float (2)	Push to lowest position.
7.		Terminal (3) and tube (4)	<ul style="list-style-type: none"> a. Set multimeter to off position. b. Using multimeter, put positive test lead on terminal. c. Put negative test lead on table.
8.		Float (2)	<ul style="list-style-type: none"> a. Set multimeter scale from 0 to 100 ohms range. b. Raise float to highest position. <p>Meter should read 0 ohms.</p> <p>Needle should rise slowly to 90 to 95 ohms. If meter readings are as indicated, fuel gage sending unit is good, go to step 9. If meter reading is not as indicated, get rid of fuel gage sending unit.</p>
INSTALLATION			
9.	Top of fuel tank (5)	New gasket (6), fuel gage sending unit (1), and two screw (7)	<ul style="list-style-type: none"> a. Put in new gasket, put in fuel gage sending unit. b. Screw in and tighten using 3/16-inch flat-tip screwdriver.
10.	Fuel gage sending unit (1)	Red wire (8) and screw (9)	<ul style="list-style-type: none"> a. Put wire in position. b. Screw on and tighten, using 3/16-inch flat-tip screwdriver.
11.	Terminal (3)	Brown wire (10) and nut (11)	<ul style="list-style-type: none"> a. Position brown wire on terminal. b. Screw on and tighten using 3/8-inch box-end wrench.
12.	Fuel gage sending unit (1)	Cover (12) and three screws (13)	Screw and tighten using 3/16-inch flat-tip screwdriver.

FUEL GAGE SENDING UNIT - CONTINUED



NOTE

FOLLOW-ON MAINTENANCE: Connect battery cables (page 2-424).

TASK ENDS HERE

FUEL TANK VENT HOSES

This task covers:

- a. **REMOVAL (page 2-520)**
- b. **INSPECTION (page 2-520)**
- c. **INSTALLATION (page 2-522)**

INITIAL SETUP

Tools

- Handle, ratchet, 1/2-inch drive
- Pliers, slip-joint, 6-inch
- Socket, 7/16-inch, 11/2-inch drive
- Wrench, box-end, 7/16-inch
- Wrench, open-end, 9/16-inch

Materials/Parts

- Lockwasher, support clamp
- Wire, mechanics (item 28, appendix C)

Personnel Required

One

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

REMOVAL

NOTE

Steps given are typical for both fuel tank vent hoses.

1. Top of fuel tank (1)	Clamp (2) and vent hose (3)	Using 6-inch slip-joint pliers, squeeze clamp and pull off hose.
2.	Fitting (4)	Using 9/16-inch open-end wrench, unscrew and take out.
3. Fuel tank support (5)	Screw (6), clamp (7), vent hose (3), lockwasher (8), and nut (9)	<ul style="list-style-type: none"> a. Using 7/16-inch, 1/2-inch drive socket and ratchet handle, and 7/16-inch box-end wrench, unscrew and take out. b. Open clamp and take out vent hose. c. Get rid of lockwasher.

INSPECTION/REPLACEMENT

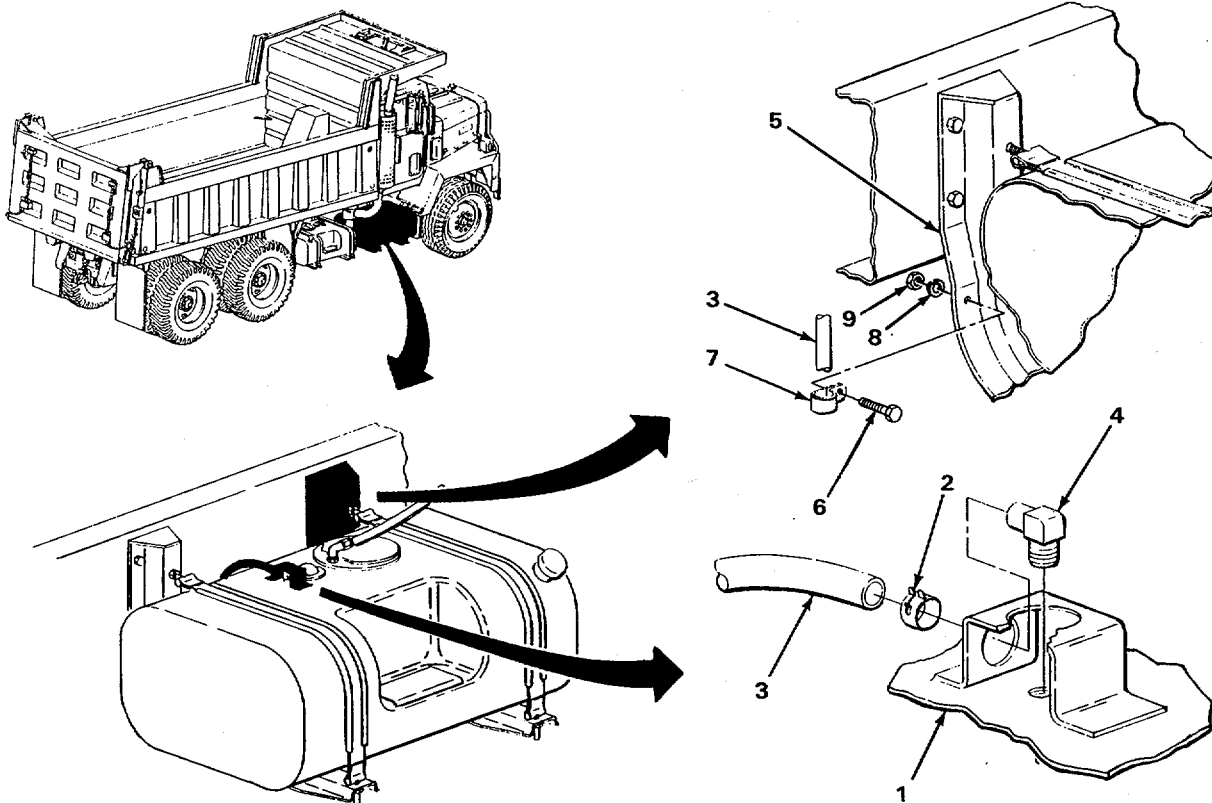
NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

FUEL TANK VENT HOSES - CONTINUED

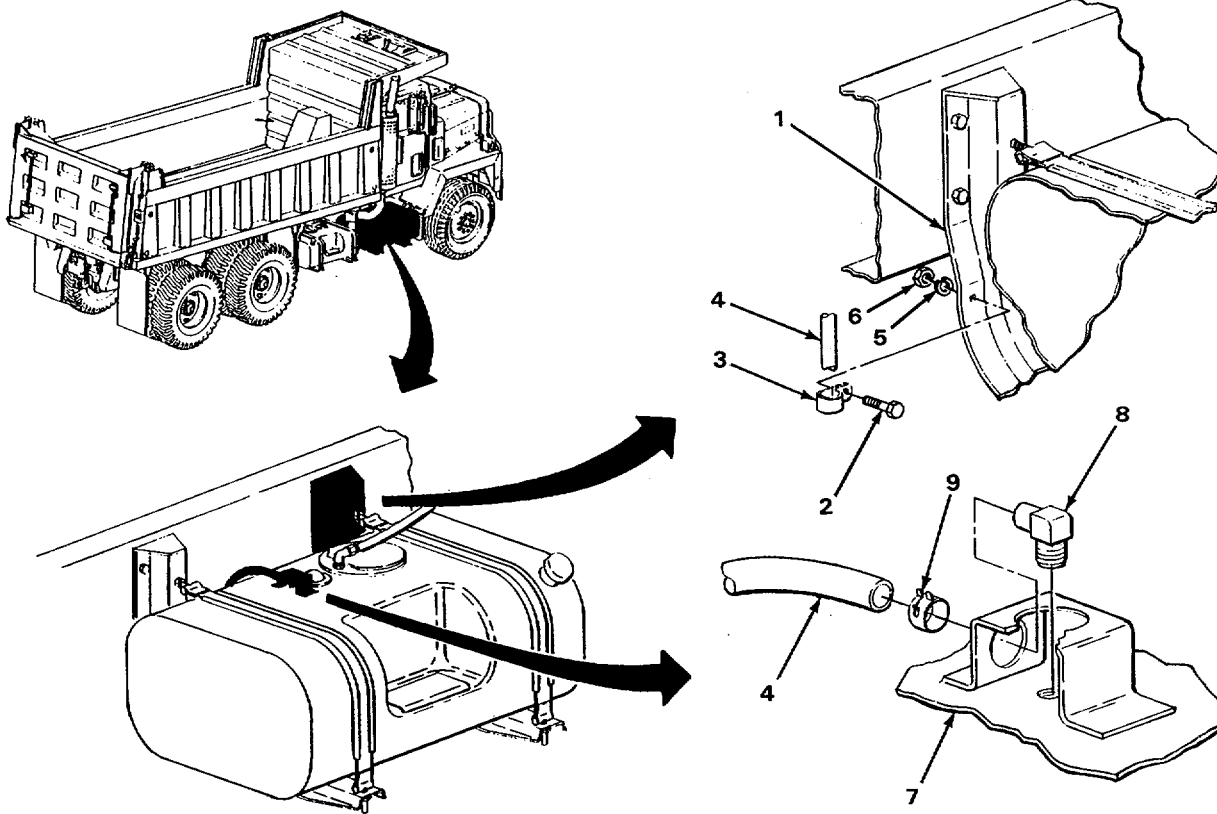
LOCATION	ITEM	ACTION	REMARKS
4.	Vent hose (3)		Look for cracks, dry rot, or clogged passage.
5.	Fitting (4)		Look for cracks, breaks, stripped threads, and clogged vent passage. If vent passage is clogged, go to step 6.
6.	Fitting (4)		Using mechanics wire, unclog vent passage.
7.	All threaded parts		Look for damaged threads or rounded heads.



TA244039

FUEL TANK VENT HOSES - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
8. Fuel tank support (1)	Screw (2), clamp (3), vent hose (4), new lockwasher (5), and nut (6)	a. Open clamp and put in vent hose. b. Screw on and tighten using 7/16-inch, 1/2-inch drive socket and ratchet handle, and 9/16-inch box-end wrench.	
9. Top of fuel tank (7)	Fitting (8)	Screw in and tighten using 7/16-inch open-end wrench.	Position hose end of fitting toward frame rail.
10.	Vent hose (4), fitting (8), and clamp (9)	a. Put clamp on hose. b. Put hose on fitting, using 6-inch slip-joint pliers. c. Put clamp on hose and fitting, and tighten.	



TA244040

TASK ENDS HERE

FUEL TANK STRAPS

This task covers:

- a. REMOVAL (page 2-523)
- b. INSPECTION (page 2-525)
- c. INSTALLATION (page 2-526)

INITIAL SETUP

Tools
 Wrench, box-end, 15/16-inch
 Wrench, open-end, 3/4-inch (two required)

Personnel Required
 One

LOCATION	ITEM	ACTION	REMARKS
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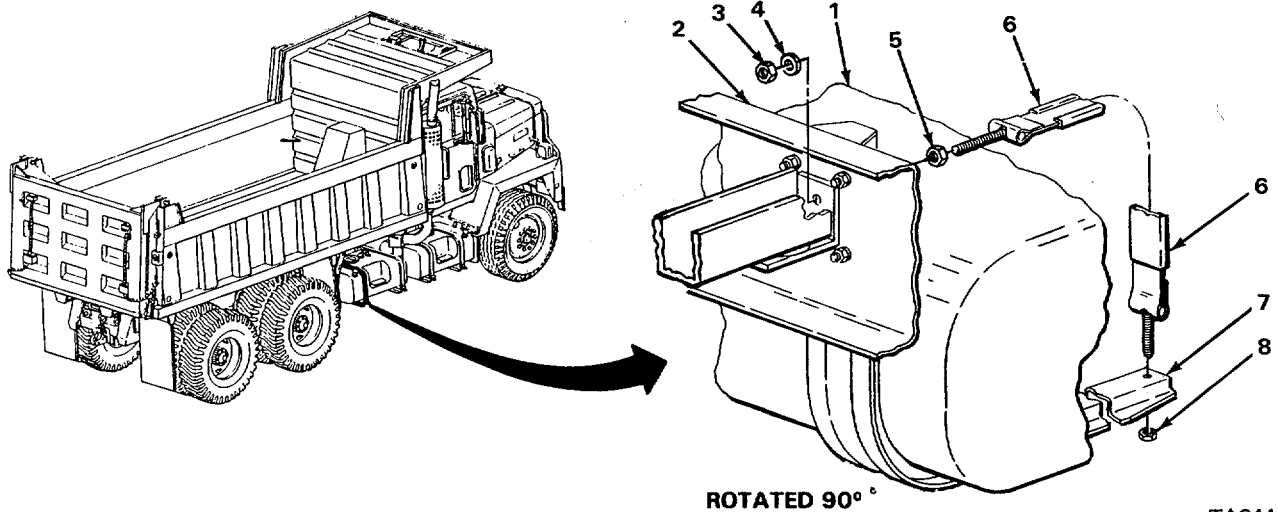
REMOVAL

NOTE

Steps 1 and 2 are for rear strap of rear fuel tank only.

- | | |
|--|--|
| 1. Rear fuel tank (1) and frame rail (2) | Nut (3), flat washer (4), jamnut (5), and rear fuel tank strap (6) |
| 2. Fuel tank support (7) | Rear fuel tank strap (6) and nut (8) |

- a. Using two 3/4-inch open-end wrenches, unscrew and take off nut.
- b. Remove fuel tank strap from frame rail (2).
- a. Using 15/16-inch open-end wrench, unscrew and take off nut.
- b. Remove fuel tank strap from support (7).



ROTATED 90°

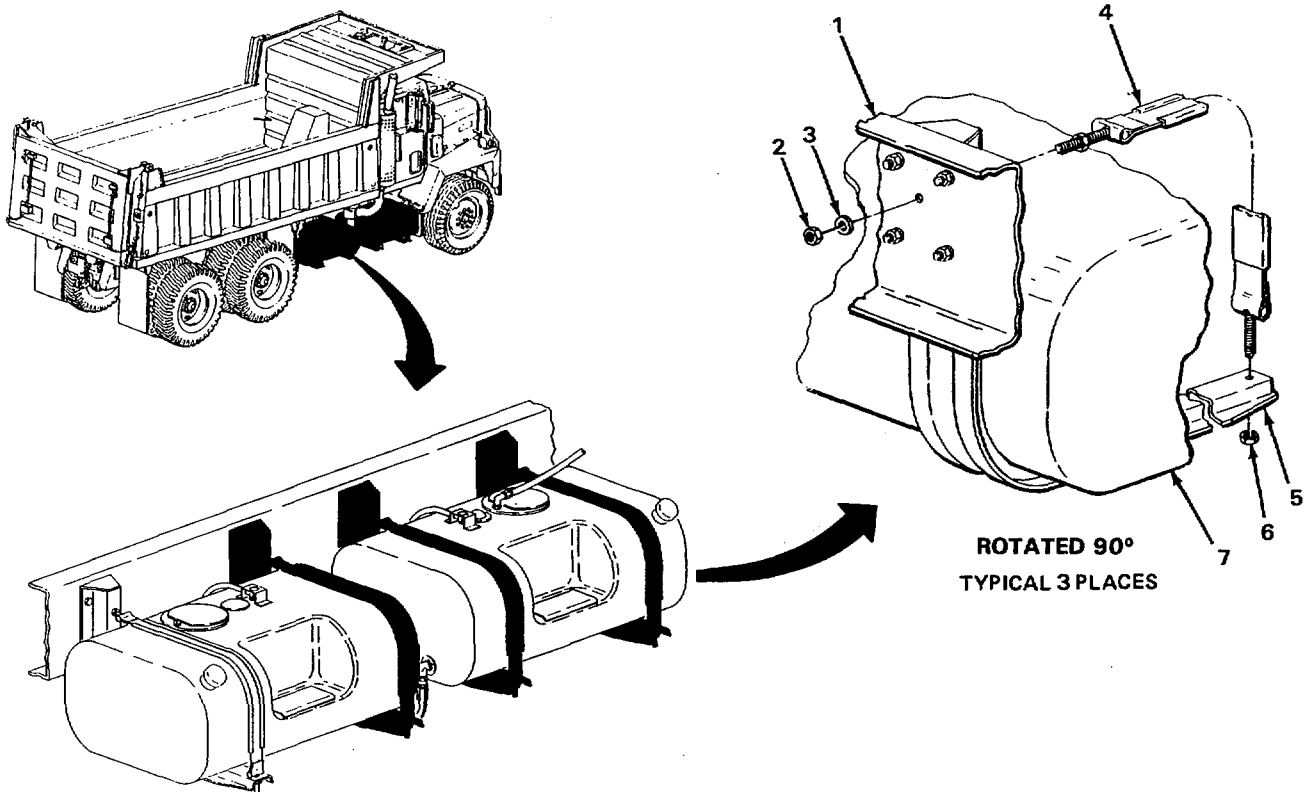
TA244041

FUEL TANK STRAPS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL - CONTINUED

- | | | |
|--------------------------|---|--|
| 3. Frame rail (1) | Nut (2), flat washer (3), and fuel tank strap (4) | Using 3/4-inch open-end wrench, unscrew and take off nut. |
| 4. Fuel tank support (5) | Fuel tank strap (4) and nut (6) | Using 15/16-inch box-end wrench, unscrew and take off nut. |
| 5. Fuel tank (7) | Fuel tank strap (4) | Take off. |



TA244042

FUEL TANK STRAPS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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INSPECTION

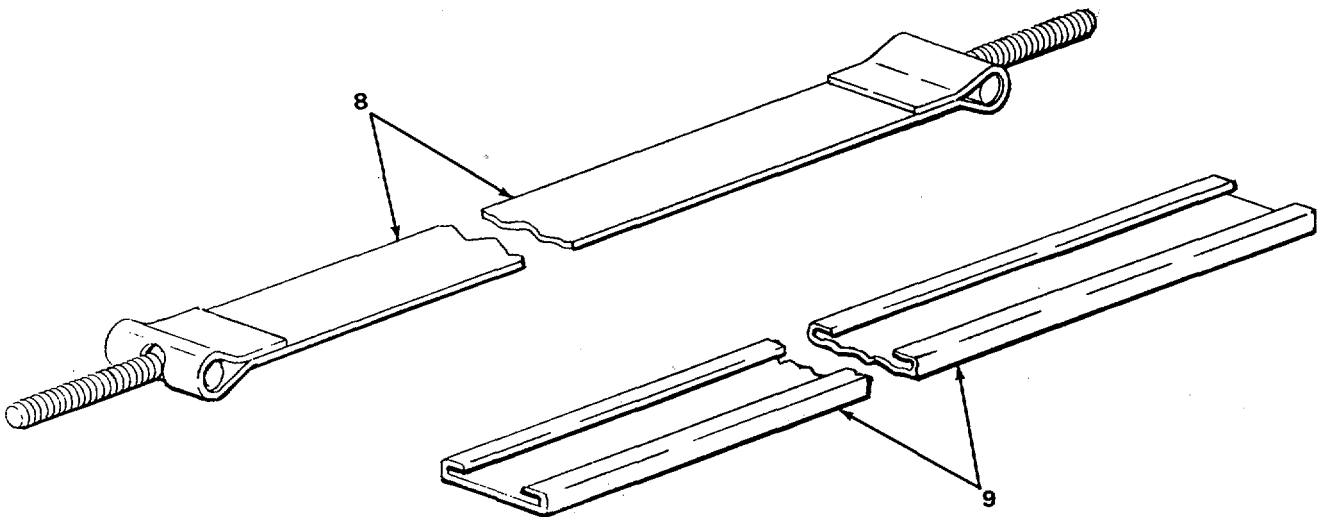
NOTE

Steps given are typical for all four fuel tank straps.

Replace all damaged or defective parts..

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

- | | | |
|----|----------------------------|---|
| 6. | Fuel tank strap (8) | Look for breaks, cracks, twisted areas, and stripped threads. |
| 7. | Fuel tank strap lining (9) | Look for breaks, cracks, cuts, and twisted areas. |



TA244043

FUEL TANK STRAPS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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INSTALLATION

NOTE

Steps 8 thru 11 are for rear strap of rear fuel tank only.

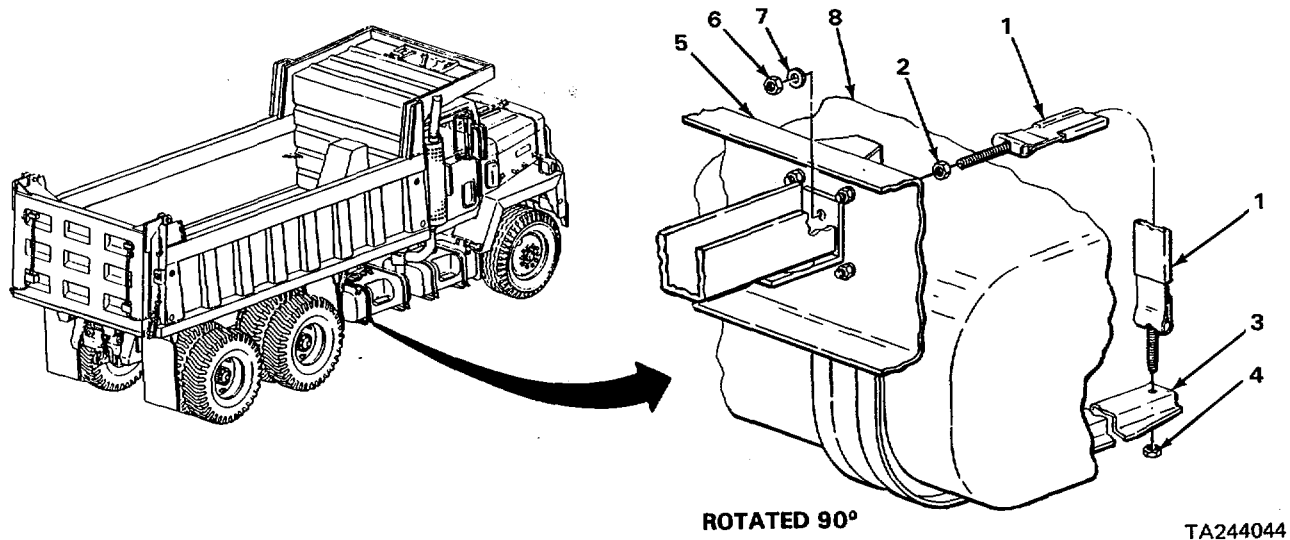
Jamnut must go on long stud end of fuel tank strap.

8. Rear fuel tank strap (1)	Jamnut (2) threads.	a. Position jamnut on long stud end. b. Screw on until jamnut is at end of
-----------------------------	------------------------	---

NOTE

Long stud end of rear fuel tank strap is positioned toward top of rear fuel tank.

9. Fuel tank support (3)	Rear fuel tank strap (1) and nut (4)	Screw on and tighten using 15/16-inch box-end wrench.
10. Frame rail (5)	Rear fuel tank strap (1), nut (6), and flat washer (7)	Screw on and tighten using 3/4-inch open end wrench.
11. Frame rail (5) and top of fuel tank (8)	Jamnut (2) and nut (6)	Using two 3/4-inch open-end wrenches, screw jamnut towards frame rail until tight.



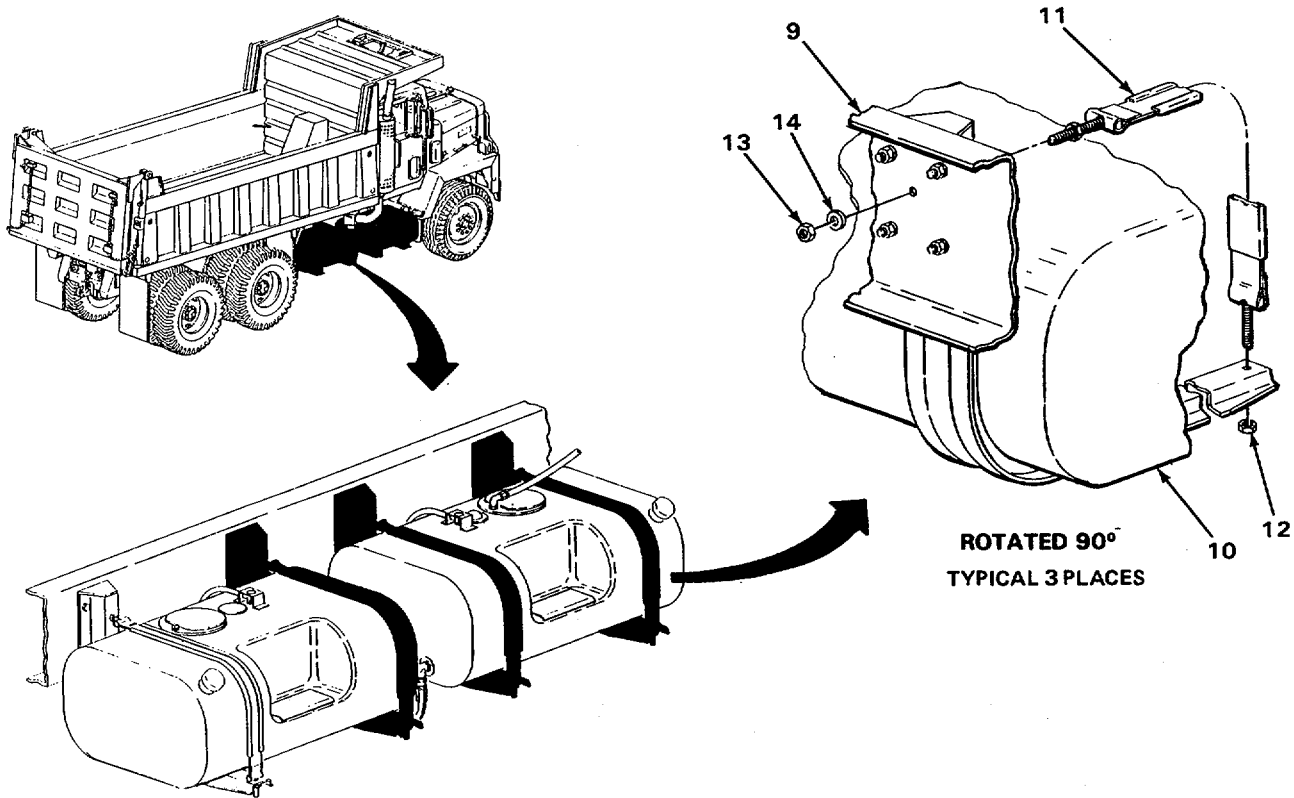
FUEL TANK STRAPS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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NOTE

Long stud of fuel tank strap goes through fuel tank support and frame rail.

12. Frame rail (5) and fuel tank support (9)	Fuel tank strap (10)	Put in.	
13. Fuel tank support (9)	Nut (11)	Screw on and tighten using 15/16-inch box-end wrench.	
14. Frame rail (5)	Nut (12) and flat washer (13)	Screw on and tighten using 3/4-inch open end wrench.	



TASK ENDS HERE

FRONT FUEL TANK

This task covers:

- a. **REMOVAL** (page 2-528)
- b. **DIS-ASSEMBLY** (page 2-530)
- c. **CLEANING** (page 2-532)
- d. **INSPECTION** (page 2-532)
- e. **REPAIR** (page 2-532)
- f. **ASSEMBLY** (page 2-532)
- g. **INSTALLATION** (page 2-534)

INITIAL SETUP

Tools

Screwdriver, flat-tip, 3/16-inch
 Wrench, open-end, 9/16-inch
 Wrench, open-end, 13/16-inch
 Wrench, open-end, 7/18-inch
 Wrench, open-end, 1 1/16-inch

Materials/Parts

Gasket, cover
 Tape, antiseizing (item 22,
 appendix C)

Personnel Required
 Two

Equipment Condition

Front and rear fuel tanks drained
 (page 2-514).
 Fuel gage sending unit removed
 (page 2-516).
 Fuel tank straps removed (page 2-523).
 Field tank vent hoses removed (page 2-520).

References

TB43-0212
 TM9-237

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

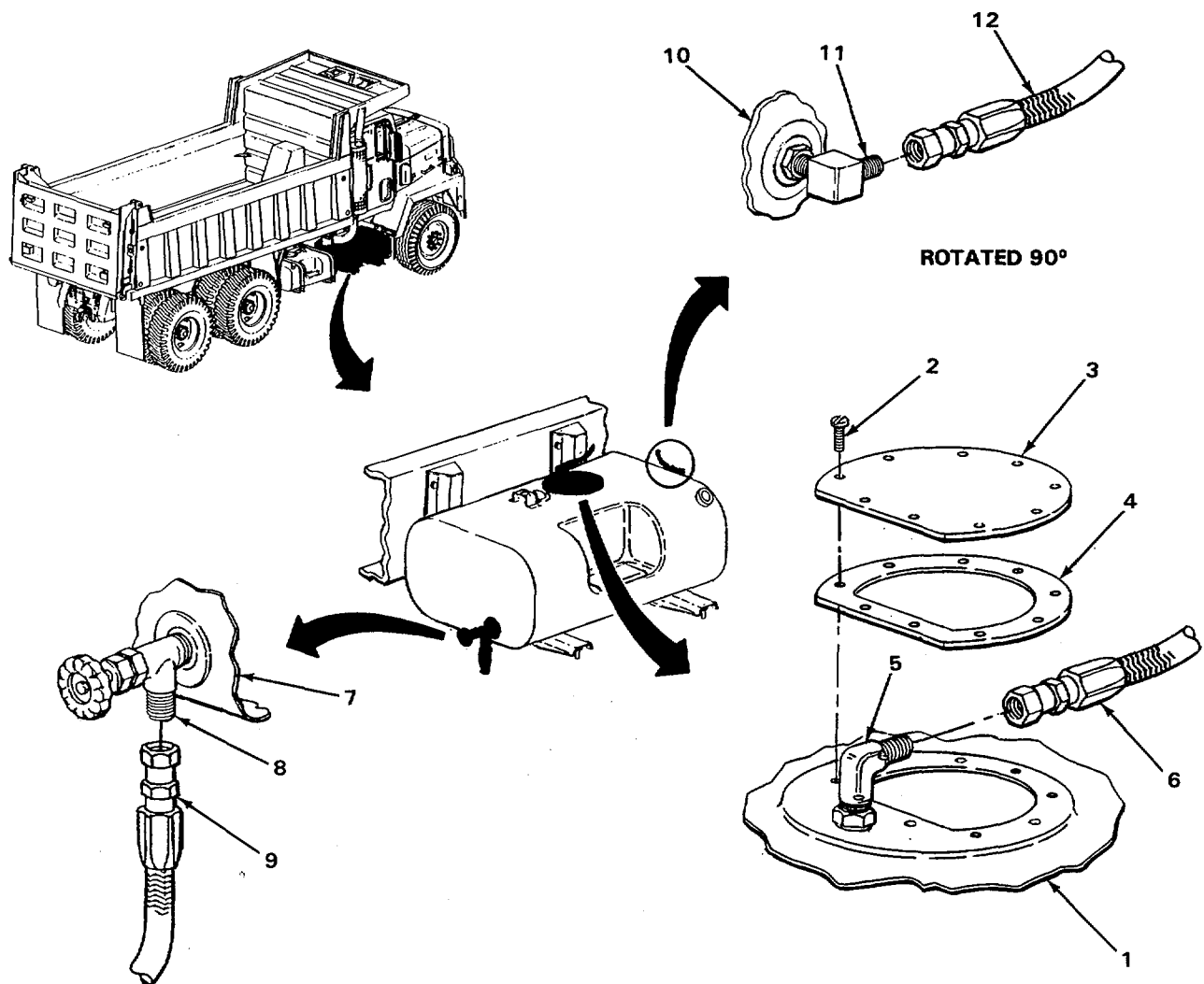
WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. DIS-connect batteries (page 2-424) when working on fuel system. Failure to observe these precautions could cause serious injury.

1.	Top of fuel tank (1) Nine screws (2)		Using 3/16-inch flat-tip screwdriver, unscrew and take out.
2.	Cover (3) and cover gasket (4)	a. Take off. b. Get rid of cover gasket.	
3.	Fitting (5) and fuel hose (6)	a. Using 1-inch and 13/16-inch open-end wrenches, unscrew fuel hose. b. Take off fuel hose.	

FRONT FUEL TANK - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
4. Left side of fuel tank (7)	Shutoff valve (8) and equalizer hose (9)	a. Using 1-inch and 7/8-inch open-end wrenches, unscrew equalizer hose. b. Take off equalizer hose.	
5. Right side of fuel tank (10)	Fitting (11) and fuel return hose (12)	a. Push fuel tank towards rear of truck. b. Using 7/8-inch and 13/16-inch open-end wrenches, unscrew fuel return hose. c. Take off fuel return hose.	



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FRONT FUEL TANK - CONTINUED

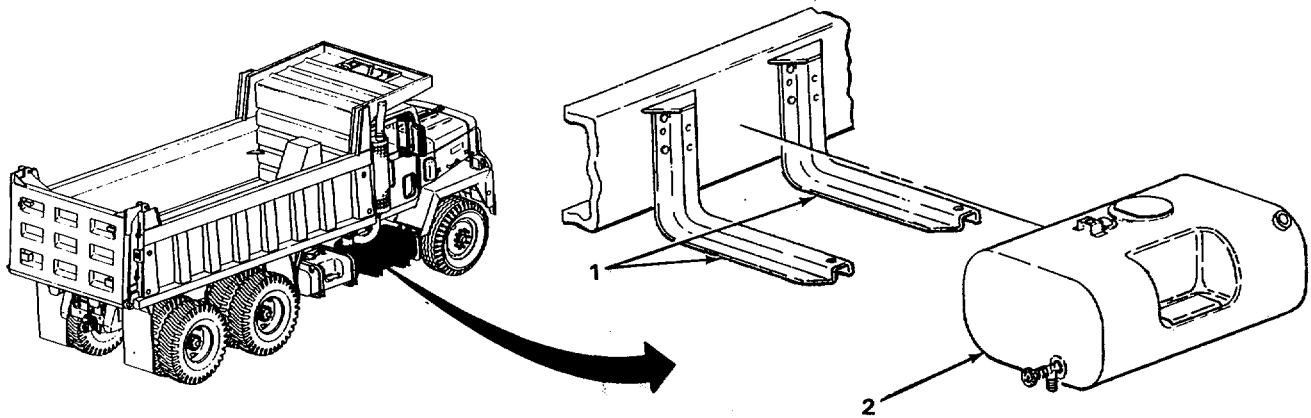
LOCATION	ITEM	ACTION	REMARKS
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REMOVAL - CONTINUED

WARNING

Due to excessive weight, assistance will be needed to prevent personal injury when lifting heavy parts.

6. Fuel tank supports (1)	Front fuel tank (2)	Using assistance, take off.
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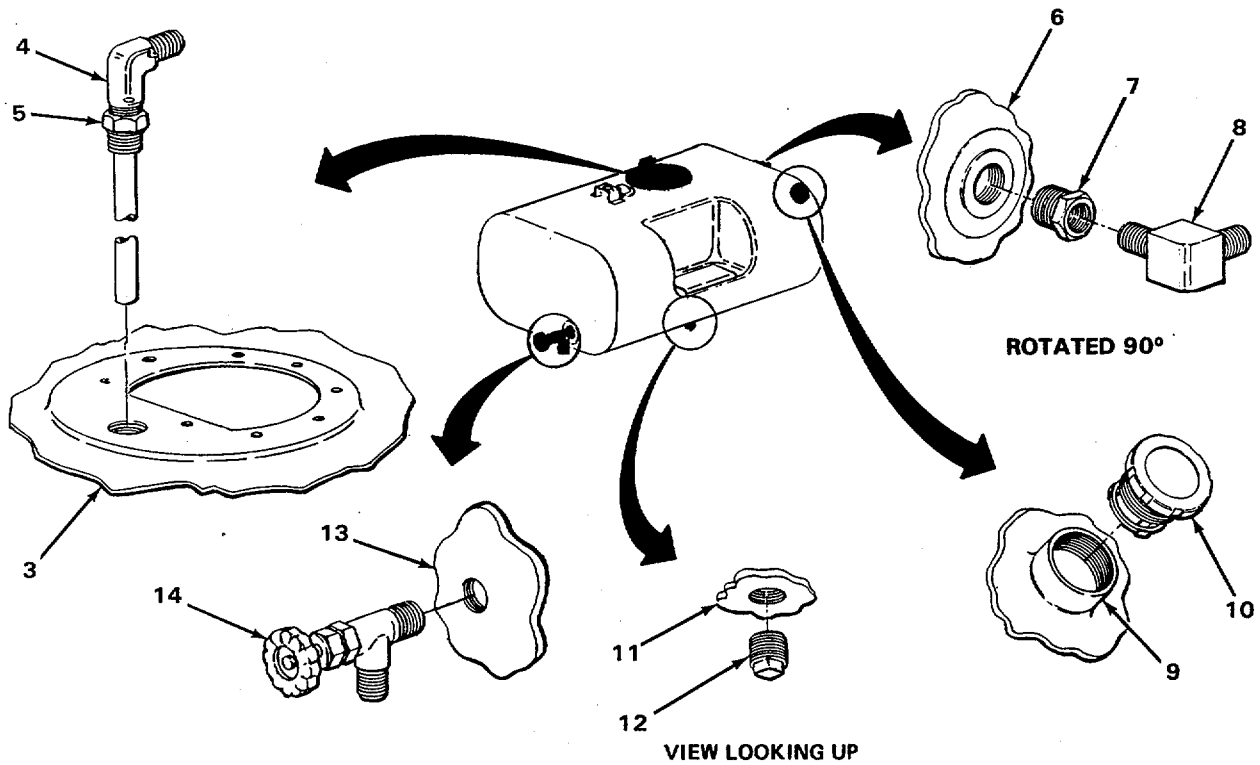


DIS-ASSEMBLY

7. Top of fuel tank (3)	Fitting (4) and locknut (5)	a. Using 1 1/16-inch and 13/16-inch open-end wrenches, loosen locknut. b. Using 13/16-inch open-end wrench, unscrew and take out fitting.
8. Right side of fuel tank (6)	Adapter (7) and fitting (8)	a. Using 7/8-inch and 13/16-inch open end wrenches, unscrew and take off fitting. b. Using 7/8-inch open-end wrench, unscrew and take off adapter.

FRONT FUEL TANK - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
9. Filler neck of fuel Tank (9)	Filler cap (10)	Unscrew and take off.	
10. Bottom of fuel tank (11)	Pipe plug (12)	Using 9/16-inch open-end wrench, unscrew and take out.	
11. Left side of fuel tank (13)	Shutoff valve (14)	Using 7/8-inch open-end wrench, unscrew and take out.	



TA244048

FRONT FUEL TANK - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CLEANING

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

12.	Fuel tank (1)	Clean (TB43-0212).	
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INSPECTION

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

13.	Fuel tank (1)	Inspect (TB43-0212).	
14.	All Metal Parts corrosion.	Look for cracks, breaks, rust and	
15.	All threaded parts	Look for damaged threads or rounded heads.	

REPAIR

WARNING

No welding, grinding or use of heat producing devices permitted near fuel tank unless fuel tank has been cleaned and purged of all flammable liquids and vapors. Failure to observe these precautions could cause serious injury to personnel.

16.	Fuel tank (1)	a. Purge (TB43-0212). b. Weld cracks and holes (TM9-237). c. Apply protective coating (TB43-0212).	
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ASSEMBLY

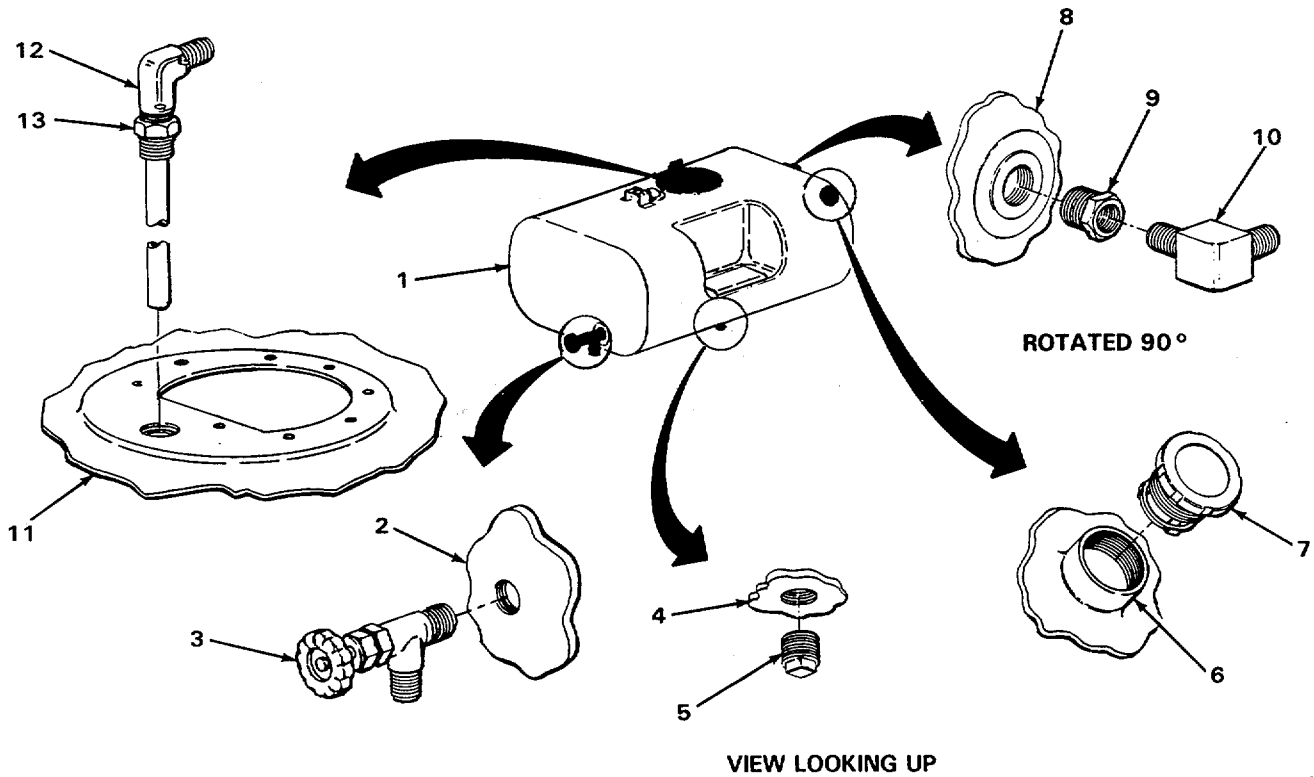
NOTE

For more information on how to use antiseizing tape, go to General Maintenance Instructions (page 2-424).

17. Left side of fuel tank (2)	Shutoff valve (3)	a. Using antiseizing tape, wrap threads. b. Screw on and tighten using 7/8-inch open-end wrench.	
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FRONT FUEL TANK - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
18. Bottom of fuel tank (4)	Pipe plug (5)	a. Using antiseizing tape, wrap threads. b. Screw on and tighten using 9/16-inch open-end wrench.	
19. Filler neck of fuel tank (6)	Filler cap (7)	Screw on and tighten.	
20. Right side of fuel tank (8)	Adapter (9) and fitting (10)	a. Using antiseizing tape, wrap threads. b. Screw on and tighten adapter using 7/18 inch open-end wrench. c. Screw on and tighten fitting using 13/16 inch open-end wrench. Fitting must face towards rear of fuel tank.	
21. Top of fuel tank (11)	Fitting (12) and locknut (13)	a. Screw locknut up to end of threads. b. Using antiseizing tape, wrap threads. c. Screw on using 13/16-inch open-end wrench. Do not tighten.	



TA244049

FRONT FUEL TANK - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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INSTALLATION

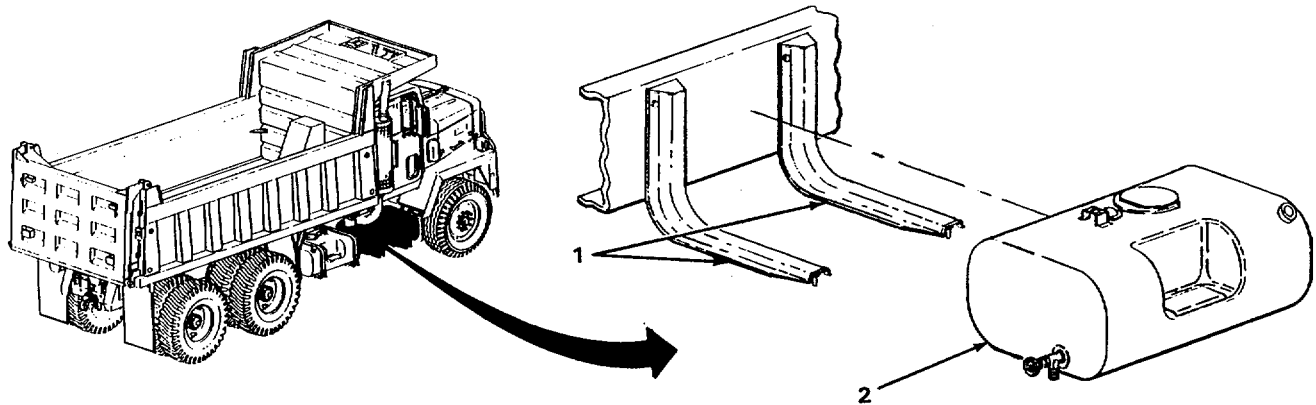
WARNING

Due to excessive weight, assistance will be needed to prevent personal injury when lifting heavy parts.

22. Fuel tank supports (1)

Front fuel tank (2)

Using assistance, put on.



23. Right side of fuel tank (3)

Fitting (4) and fuel return hose (5)

- a. Push fuel tank towards rear of truck.
- b. Screw on and tighten using 7/8-inch and 13/16-inch open-end wrenches.

TA244050

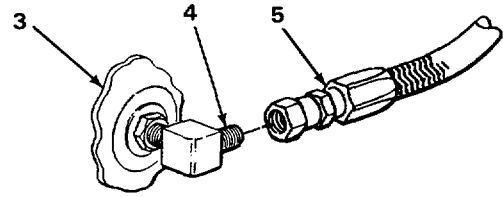
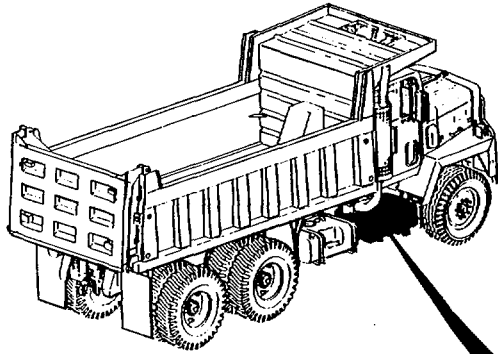
FRONT FUEL TANK - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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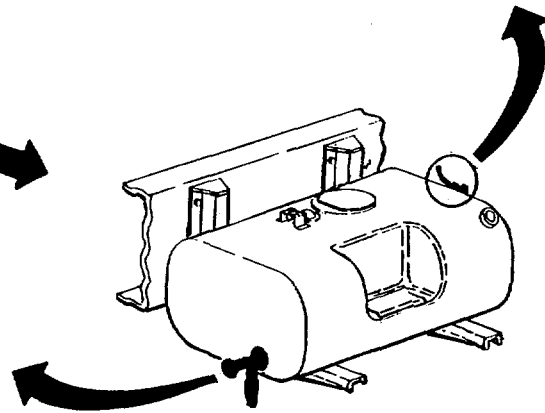
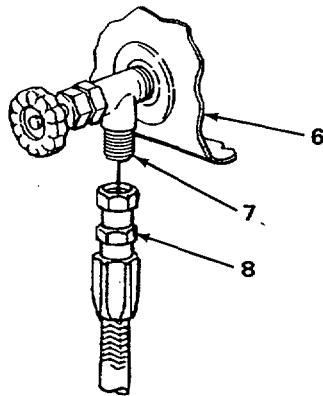
24. Left side of fuel tank (6)

Shutoff valve (7) and equalizer hose (8)

- a. Push fuel tank towards front of truck.
- b. Screw on and tighten using 1-inch and 7/8-inch open-end wrenches.



ROTATED 90°



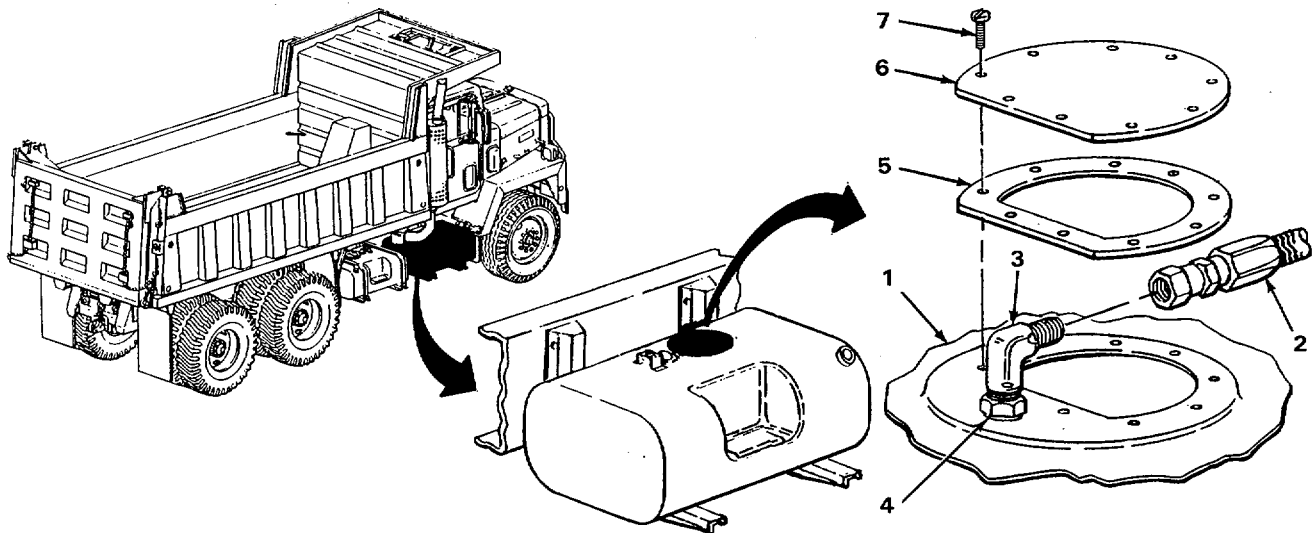
TA244051

FRONT FUEL TANK - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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INSTALLATION - CONTINUED

- | | | |
|--------------------------|--|---|
| 25. Top of fuel tank (1) | Fuel hose (2), fitting (3), and locknut (4) | <ol style="list-style-type: none"> a. Using 13/16-inch open-end wrench, turn fitting to align with fuel hose. b. Screw on and tighten using 1-inch and 13/16-inch open-end wrenches. c. Using 1 1/16-inch and 13/16-inch open-end wrenches, tighten locknut. |
| 26. | New cover gasket (5), cover (6), and nine screws (7) | <ol style="list-style-type: none"> a. Put on cover and new cover gasket. b. Screw in and tighten using 3/16-inch flat-tip screwdriver. |



NOTE

FOLLOW-ON MAINTENANCE:

1. Install fuel gage sending unit (page 2-516).
2. Install fuel tank straps (page 2-523).
3. Install fuel tank vent hoses (page 2-520).

TASK ENDS HERE

REAR FUEL TANK

This task covers:

- | | |
|--------------------------------------|-------------------------------------|
| a. REMOVAL (page 2-528) | e. REPAIR (page 2-532) |
| b. DIS--ASSEMBLY (page 2-530) | f. ASSEMBLY (page 2-532) |
| c. CLEANING (page 2-532) | g. INSTALLATION (page 2-534) |
| d. INSPECTION (page 2-532) | |
-

INITIAL SETUP

Tools

Screwdriver, flat-tip, 3/16-inch
Wrench, open-end, 9/16-inch
Wrench, open-end, 5/8-inch
Wrench, open-end, 13/16-inch
Wrench, open-end, 1-inch

Materials/Parts

Gasket, cover
Gasket, fuel tank sending unit cover
Tape, antiseizing (item 22, appendix C)
Personnel Required
Two

Equipment Condition

Rear fuel tank drained (page 2-514).
Fuel tank vent hoses removed (page 2-520).
Fuel tank straps removed (page 2-523).

References

TB43-0212
TM9-237

2-537

REAR FUEL TANK - CONTINUED

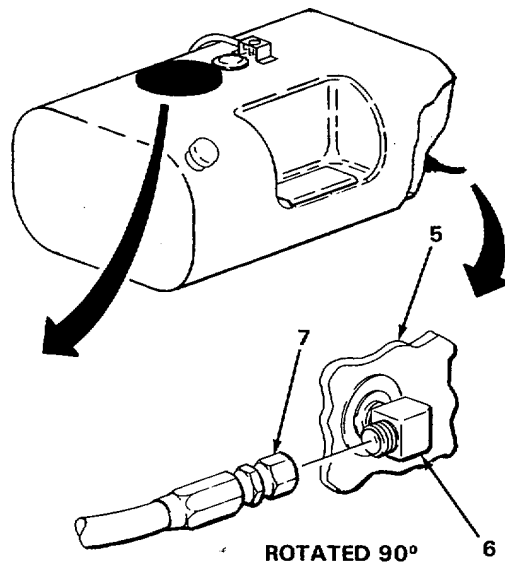
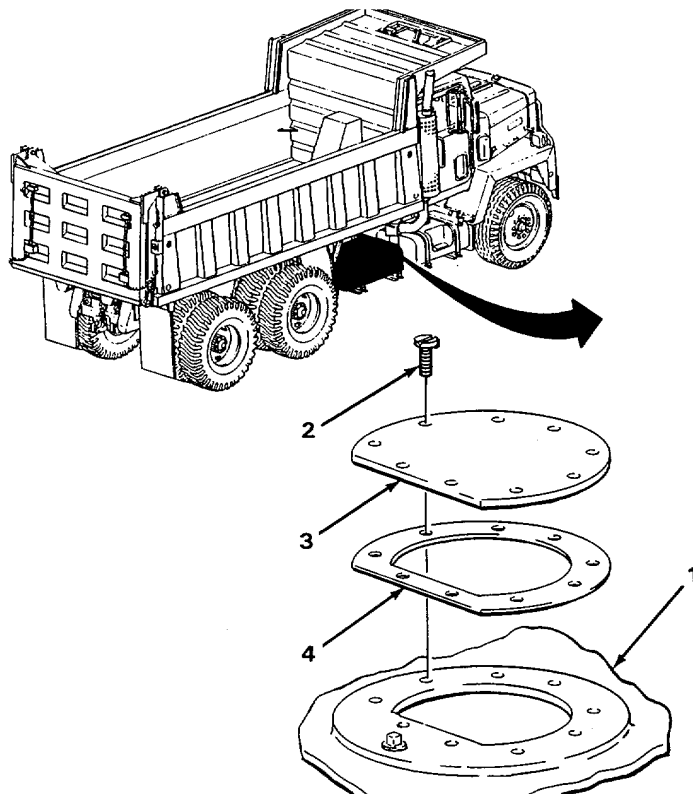
LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. DIS-connect batteries when working on fuel system. Failure to observe these precautions could cause serious injury.

- | | | |
|-----------------------------------|--|---|
| 1. Top of fuel tank (1) | Nine screws (2)
screw and take off. | Using 3/16-inch flat-tip screwdriver, un- |
| 2. | Cover (3) and
cover gasket (4) | a. Take off.
b. Get rid of cover gasket. |
| 3. Right side of
fuel tank (5) | Fitting (6) and
equalizer hose (7) | a. Using 1-inch and 13/16-inch open-end
wrenches, unscrew hose.
b. Take off hose. |

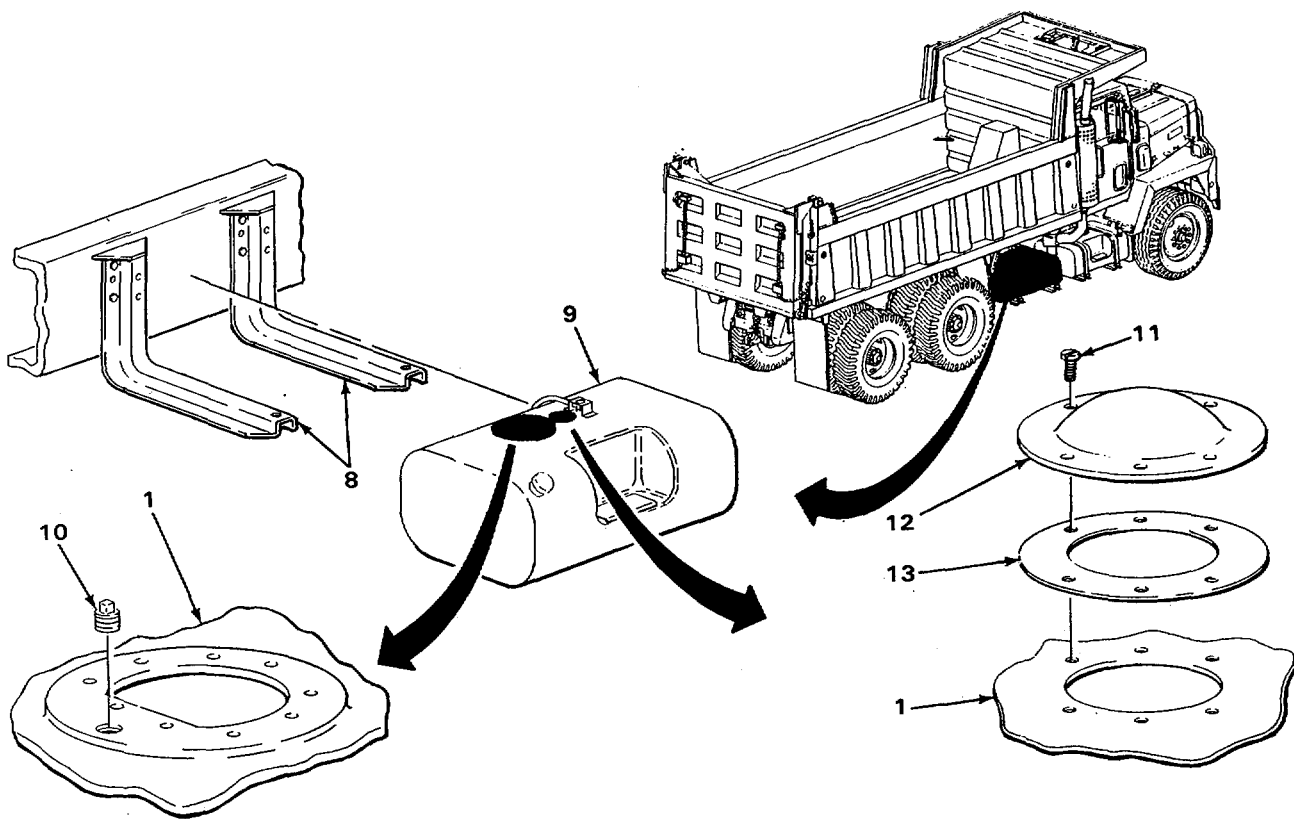


WARNING

Due to excessive weight, assistance will be needed to prevent personal injury when lifting heavy parts.

REAR FUEL TANK - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
4. Fuel tank supports (8)	Rear fuel tank (9)		With assistance, take off.
DISASSEMBLY			
5. Top of fuel tank (1)	Pipe plug (10)		Using 5/8-inch open-end wrench, unscrew and take out.
6.	Six screws (11)		Using 3/16-inch flat-tip screwdriver, unscrew and take off.
7.	Cover (12) and cover gasket (13)		a. Take off. b. Get rid of cover gasket.



REAR FUEL TANK - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
DISASSEMBLY - CONTINUED			
8.	Filler neck of fuel tank (1)	Filler cap (2)	Unscrew and take off.
9.	Right side of fuel tank (3)	Fitting (4)	Using 13/16-inch open-end wrench, unscrew and take off.
10.	Bottom of fuel tank (5)	Pipe plug (6)	Using 9/16-inch open-end wrench, unscrew and take out.

CLEANING**NOTE**

For more information on how to clean parts, go to **General Maintenance Instructions (page 2-424)**.

- | | | |
|-----|---------------|--------------------|
| 11. | Fuel tank (7) | Clean (TB43-0212). |
|-----|---------------|--------------------|

INSPECTION**NOTE**

Replace all damaged or defective parts.

For more information on how to inspect parts, go to **General Maintenance Instructions (page 2-424)**.

- | | | |
|-----|--------------------|--|
| 12. | Fuel tank (7) | Inspect (TB43-0212). |
| 13. | All metal parts | Look for cracks, breaks, rust and corrosion. |
| 14. | All threaded parts | Look for damaged threads or rounded heads. |

REPAIR**WARNING**

No welding, grinding or use of heat producing devices permitted near fuel tank unless fuel tank has been cleaned and purged of all flammable liquids and vapors. Failure to observe this precaution could cause serious injury to personnel.

REAR FUEL TANK - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
15.	Fuel tank (7)	a. Purge (TB43-0212). b. Weld cracks and holes (TM9-237). c. Apply protective coating (TB43-0212).	

ASSEMBLY

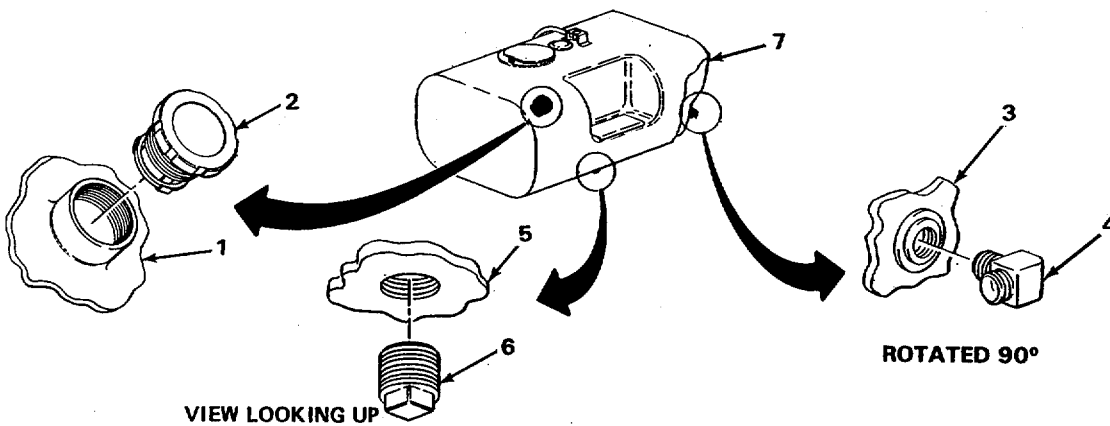
CAUTION

Antiseizing tape must be used on all pipe threads to provide a good seal and to prevent threaded parts from seizing.

NOTE

For more information on how to use antiseizing tape, go to General Maintenance Instructions (page 2-424).

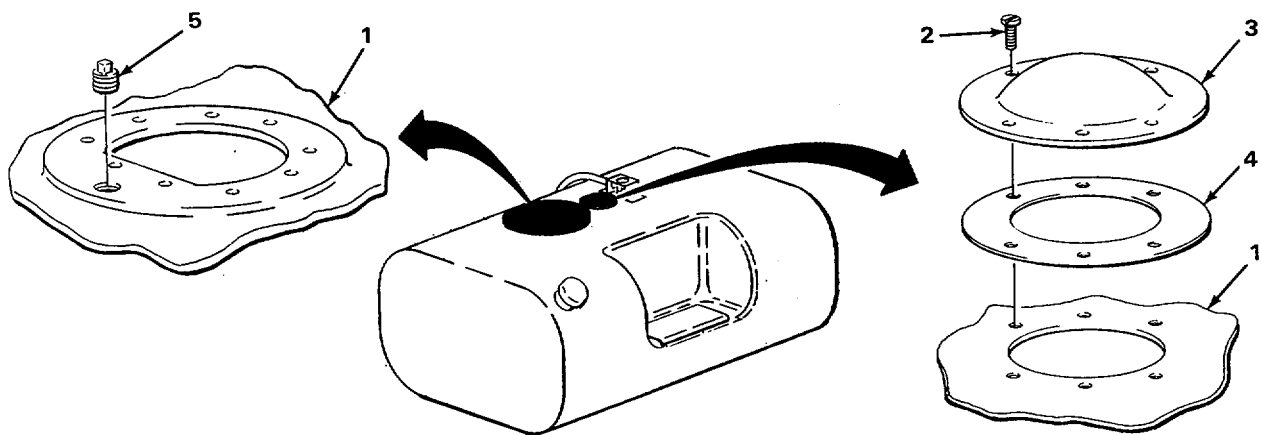
16. Bottom of fuel tank (5)	Pipe plug (6)	a. Wrap threads with antiseizing tape. b. Screw on and tighten using 9/16-inch open-end wrench.	
17. Right side of fuel tank (3)	Fitting (4)	a. Wrap threads with antiseizing tape. b. Screw on and tighten using 13/16-inch open-end wrench. Fitting must face towards frame rail side of fuel tank.	
18. Filler neck of fuel tank (1)	Filler cap (2)	Screw on and tighten.	



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REAR FUEL TANK - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
ASSEMBLY - CONTINUED			
19. Top of fuel tank (1)	Six screws (2), cover (3), and new cover gasket (4)	a. Put on new cover gasket and cover. b. Screw on and tighten, using 3/16-inch flat-tip screwdriver.	
20.	Pipe plug (5)	a. Wrap threads with antiseizing tape. b. Screw on and tighten using 5/8-inch open-end wrench.	



INSTALLATION

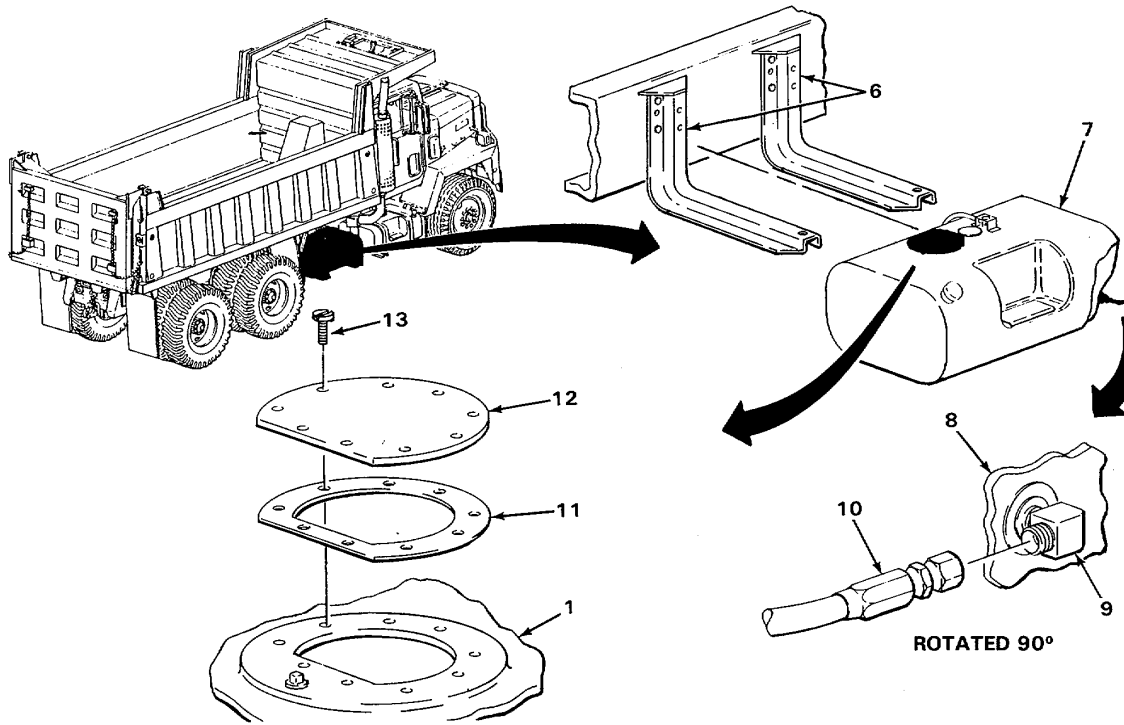
WARNING

Due to excessive weight, assistance will be needed to prevent personal injury when lifting heavy parts.

21. Fuel tank supports (6)	Rear fuel tank (7)	With assistance, put on.
----------------------------	--------------------	--------------------------

REAR FUEL TANK - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
22. Right side of fuel tank (8)	Fitting (9) and equalizer hose (10)		Screw on and tighten using 1-inch and 13/16-inch open-end wrenches.
23. Top of fuel tank (1)	New cover gasket (11), cover (12), and six screws (13)		a. Put on new cover gasket and cover. b. Screw on and tighten.



NOTE

FOLLOW-ON MAINTENANCE:

1. Install fuel tank vent hoses (page 2-520).
2. Install fuel tank straps (page 2-523).

TA244057

TASK ENDS HERE

FILLING FUEL TANK

This task covers:

- | | |
|---|---|
| <ul style="list-style-type: none"> a. Filling Front Fuel Tank (page 2-544) b. Filling Rear Fuel Tank (page 2-544) | <ul style="list-style-type: none"> c. Filling Front and Rear Fuel Tanks (TM 5-3805-254-10) |
|---|---|

INITIAL SETUP:

Personnel Required

Equipment Condition

One

Engine shut down (TM 5-3805-254-10).

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

FILLING FRONT FUEL TANK

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> 1. Front fuel tank (1) 2. | <ul style="list-style-type: none"> Equalizer valve (2) Filler cap (3) | <ul style="list-style-type: none"> Turn clockwise to close. a. Unscrew and take off. b. Fill fuel tank to within 2-inches (51 mm) below top, with proper grade of diesel fuel (TM 5-3805-254-10). c. Screw on and tighten. |
|--|---|--|

FILLING REAR FUEL TANK

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury or death to personnel.

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> 1. Front fuel tank (1) | <ul style="list-style-type: none"> Equalizer valve (2) | <ul style="list-style-type: none"> Turn clockwise to close. |
|--|---|--|

FILLING FUEL TANK - CONTINUED

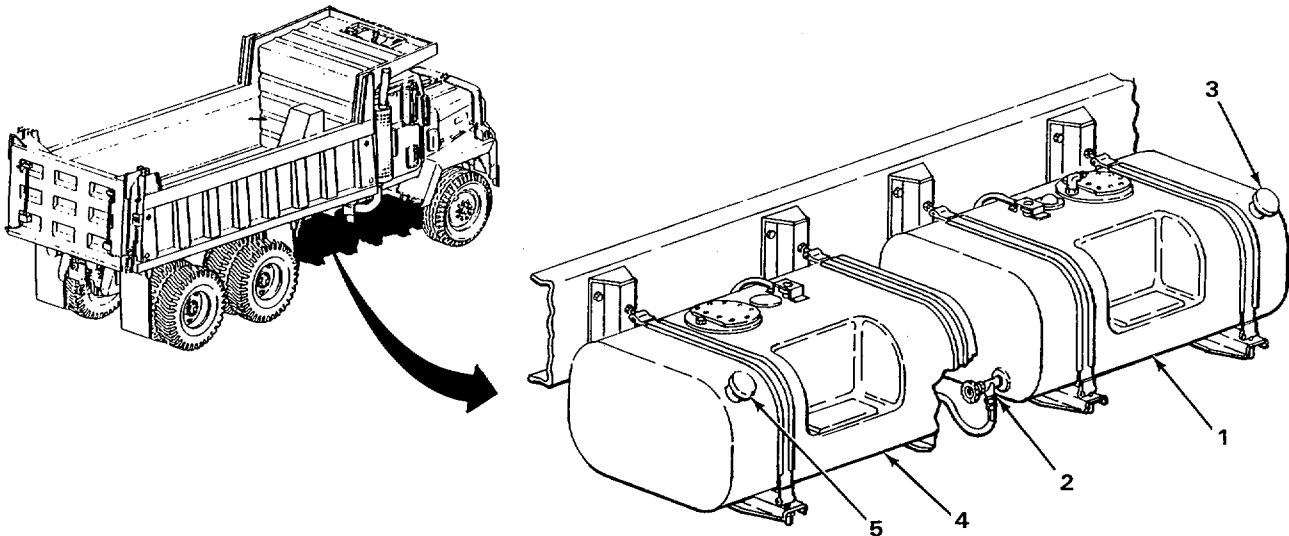
LOCATION	ITEM	ACTION	REMARKS
2. Rear fuel tank (4)	Filler cap (5)	a. Unscrew and take off. b. Fill fuel tank to within 2-inches (51 mm) below top, with proper grade of diesel fuel. c. Screw on and tighten.	

FILLING FRONT AND REAR FUEL TANKS

WARNING

Diesel fuel burns easily. Do not smoke or allow flames nearby. Disconnect batteries when working on fuel system. Failure to observe these precautions could cause serious injury.

- | | | |
|------------------------|---------------------|--|
| 1. Front fuel tank (1) | Equalizer valve (2) | Turn counterclockwise to open. |
| 2. | Filler cap (5) | a. Unscrew and take off.
b. Fill fuel tanks to within 2-inches (51 mm) below top, with proper grade of diesel fuel.
c. Screw on and tighten. |



TASK ENDS HERE

TA244058

FUEL TANK SUPPORTS

This task covers:

- | | |
|---|--|
| <ul style="list-style-type: none"> a. Removal (page 2-546) b. Cleaning (page 2-547) | <ul style="list-style-type: none"> c. Inspection (page 2-548) d. Installation (page 2-548) |
|---|--|
-

INITIAL SETUP:

Tools Personnel Required

- Brush, wire
- Gloves, safety
- Goggles, safety
- Gun, air blow
- Handle, ratchet, 112-inch drive
- Hose, air, assembly
- Socket, 3/4-inch, 1/2-inch drive
- Wrench, box-end, 314-inch

Two

Equipment Condition

- Fuel tanks drained (page 2-514).
- Fuel tank vent hoses removed (page 2-520).
- Fuel tank straps removed (page 2-523).
- Front fuel tank removed (page 2-528).
- Rear fuel tank removed (page 2-537).

Materials/Parts

- Solvent, drycleaning (item 19, appendix C)

References

TM 9-247 (Authorized Cleaning Methods)

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

WARNING

Assistant must support fuel tank support to prevent falling and causing personal injury.

NOTE

Steps given are typical for all four fuel tank supports.

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> 1. Frame rail (1) | <ul style="list-style-type: none"> Four nuts (2), four-screws (3), and fuel tank support (4) | <ul style="list-style-type: none"> a. With assistant, install fuel tank support. b. Using 3/4-inch, 1/2-inch drive socket and ratchet handle, and 3/4-inch box-end wrench, unscrew and take off. |
|---|---|--|

2-546

FUEL TANK SUPPORTS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CLEANING

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and cause damage to equipment. Refer to TM 9-247.

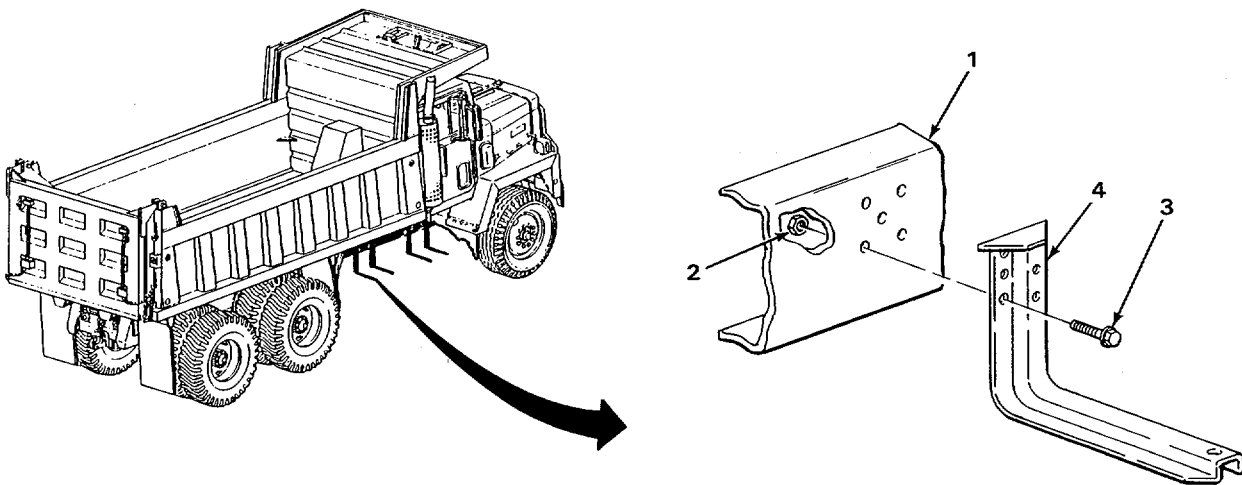
Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

Safety goggles must be worn when using wire brush. Flying rust or metal particles could cause eye injury.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

- | | | |
|----|-----------------------|--|
| 2. | Fuel tank support (4) | Using wire brush, take off dirt and corrosion. |
| 3. | Fuel tank support (4) | Clean thoroughly with drycleaning solvent. |



FUEL TANK SUPPORTS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

CLEANING - CONTINUED

WARNING

Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent injury to personnel.

- | | | |
|----|-----------------------|---|
| 4. | Fuel tank support (1) | Using air hose assembly and air blow gun, dry thoroughly. |
|----|-----------------------|---|

INSPECTION

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

- | | | |
|----|-----------------------|--|
| 5. | Fuel tank support (1) | Look for cracks, breaks, or corrosion. |
| 6. | All threaded parts | Look for damaged threads or rounded heads. |

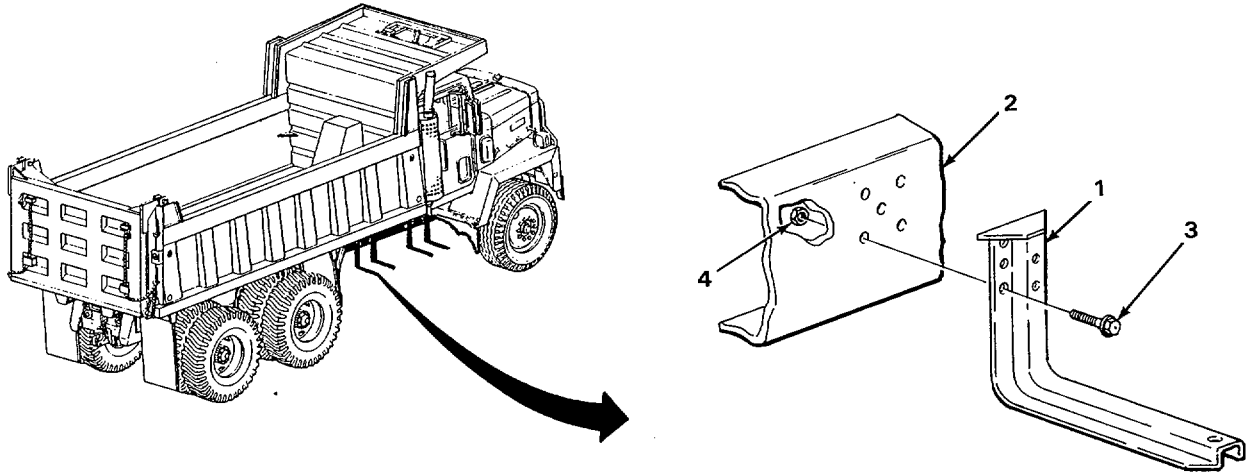
INSTALLATION

WARNING

Assistant must support fuel tank support to prevent falling and causing personal injury.

- | | | |
|-------------------|---|---|
| 7. Frame rail (2) | Fuel tank support (1), four screws (3), and four nuts (4) | <ul style="list-style-type: none"> a. With assistant, install fuel tank support. b. Screw on and tighten using 3/4-inch, 112-inch drive socket and ratchet handle, and 3/4-inch box-end wrench. |
|-------------------|---|---|

FUEL TANK SUPPORTS - CONTINUED

**NOTE**

FOLLOW-ON MAINTENANCE:

1. Install front fuel tank (page 2-528).
2. Install rear fuel tank (page 2-537).
3. Install fuel tank straps (page 2-523).
4. Install fuel tank vent hoses (page 2-520).

TASK ENDS HERE

2-549

TA244060

ACCELERATOR CONTROL ROD

This task covers:

- | | |
|-----------------------------|------------------------------|
| a. Removal (page 2-550) | e. Assembly (page 2-554) |
| b. Disassembly (page 2-552) | f. Installation (page 2-554) |
| c. Cleaning (page 2-552) | g. Adjustment (page 2-558) |
| d. Inspection (page 2-553) | |

INITIAL SETUP:

Tools Personnel Required

- Gloves, safety
- Goggles, safety
- Gun, blow, air
- Hose, air, assembly
- Measurer, tape
- Pliers, diagonal-cutting, 6-inch
- Pliers, slip-joint, 6-inch
- Wrench, open-end, 7/16-inch
- Wrench, open-end, 1/2-inch (two required)
- Wrench, open-end, 9/16-inch (two required)

One

Equipment Condition

- Right and left side hood panels opened (page 2-424).
- Battery cables disconnected (page 2-424).
- Air cleaner element removed (page 2-452).

References

TM 9-247 (Authorized Cleaning Methods)

Materials/Parts

- Cotter pin, accelerator control rod
- Lockwasher, accelerator control rod (two required)
- Solvent, drycleaning (item 19, appendix C)

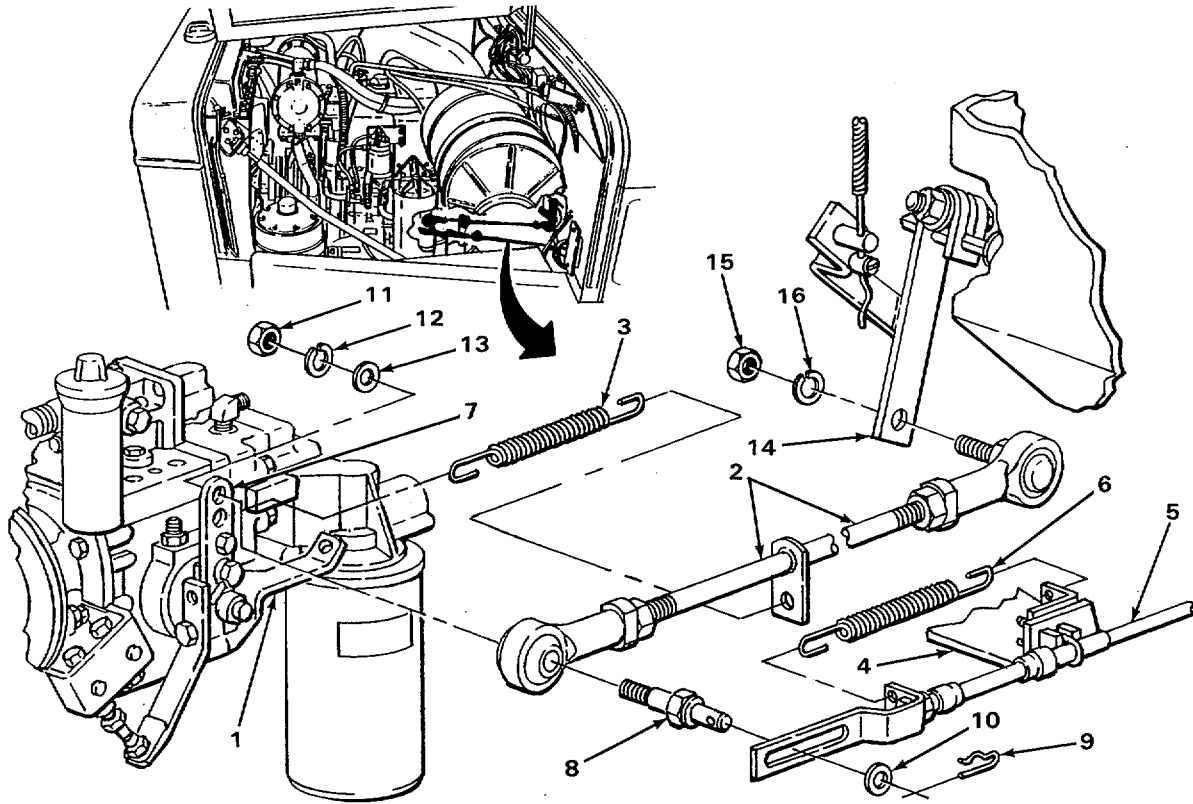
LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1.	Fuel pump bracket (1) and accelerator control rod (2)	Spring (3)	Using 6-inch slip-joint pliers, take off.
2.	Bracket (4) and modulator cable (5)	Spring (6)	Using 6-inch slip-joint pliers, take off.

NOTE

For more information on cotter pins, go to General Maintenance Instructions (page 2-424).

ACCELERATOR CONTROL ROD - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
3. Throttle lever (7) and machine bolt (8)	Modulator cable (5), cotter pin (9), and flat washer (10)	a. Using 6-inch diagonal-cutting pliers, close legs of cotter pin and pull out. b. Take off. c. Get rid of cotter pin.	
4. Throttle lever (7)	Accelerator control rod (2), machine bolt (8), nut (11), lockwasher (12), and flat washer (13)	a. Using two 1/2-inch open-end wrenches, unscrew and take off. b. Take out machine bolt. c. Get rid of lockwasher.	
5. Lever assembly (14)	Accelerator control rod (2), nut (15), and lockwasher (16)	a. Using 1/2-inch and 7/16-inch open-end wrenches, unscrew and take off. b. Take out accelerator control rod. c. Get rid of lockwasher.	



ACCELERATOR CONTROL ROD - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
DISASSEMBLY			
6. Accelerator control rod (1)	Two ball joint assemblies (2) and two locknuts (3)	<ul style="list-style-type: none"> a. Using tape measurer, measure overall length of accelerator control rod. b. Using two 9/16-inch open-end wrenches, loosen locknuts. c. Unscrew and take off ball joint assemblies. 	
7.	Two locknuts (3)		Using 9/16-inch open-end wrench, unscrew and take off.

CLEANING

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and cause damage to equipment. Refer to TM 9-247.

WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

8.	Accelerator control rod (1), two ball joint assemblies (2), and two locknuts (3)	Clean thoroughly with drycleaning solvent.
----	--	--

WARNING

Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent injury to personnel.

ACCELERATOR CONTROL ROD - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
9.	Accelerator control rod (1), two ball joint assemblies (2), and two lock-nuts (3)		Using air hose assembly and air blow gun, dry thoroughly.

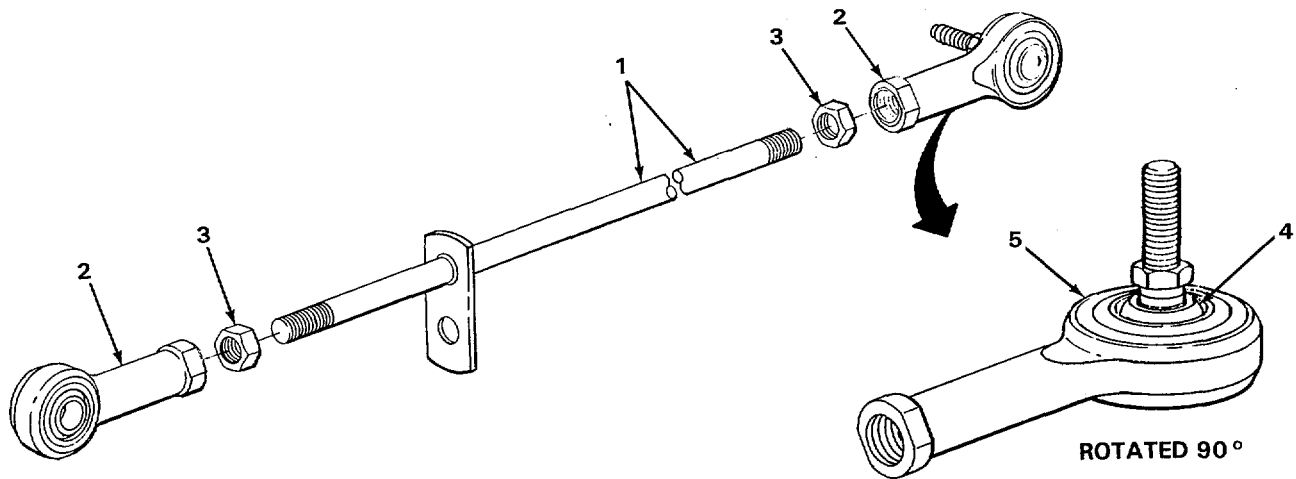
INSPECTION

NOTE

Replace all damaged or defective parts.

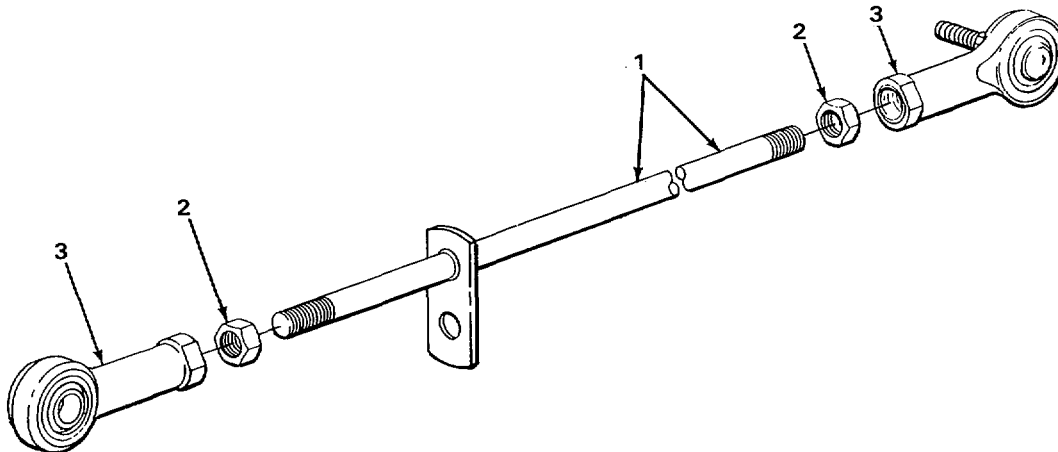
For more information on how to inspect parts, go to **General Maintenance Instructions (page 2-424)**.

10.	Accelerator control rod (1)	Look for cracks, breaks, and bends.
11.	Two ball joint assemblies (2)	Look for cracks, breaks, and wear.
12.	Two ball joint assemblies (2) Ball (4) and socket (5)	Look for excessive wear or seized condition.
13.	All threaded parts	Look for damaged threads.



ACCELERATOR CONTROL ROD - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
ASSEMBLY			
14. Accelerator control rod (1)	Two locknuts (2)	Screw on until locknuts reach end of threads.	
15.	Ball joint assemblies (3)	a. Screw on until accelerator control rod is same length, measured before disassembly (step 6). Ball joint assemblies must be threaded evenly on accelerator control rod. b. Position ball joints as shown.	
16.	Two locknuts (2)	a. Turn until locknuts touch ball joints. b. Hand tighten to keep ball joint assemblies from moving.	



TA244063

INSTALLATION

17. Lever assembly (4)	Accelerator control rod (1)	Put in.
------------------------	-----------------------------	---------

ACCELERATOR CONTROL ROD - CONTINUED

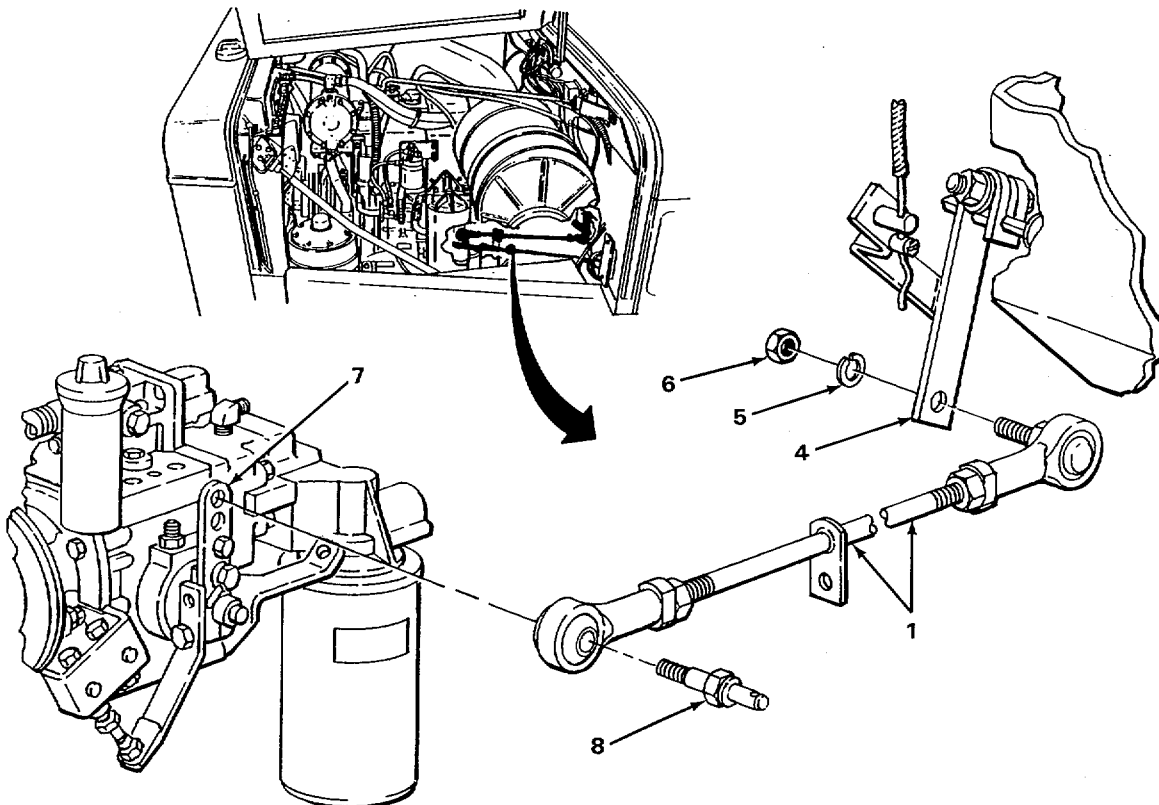
LOCATION	ITEM	ACTION	REMARKS
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- | | | | |
|-----|--------------------------------|--|--|
| 18. | New lockwasher (5) and nut (6) | | Screw on and tighten using 7/16-inch and 1/2-inch open-end wrenches. |
|-----|--------------------------------|--|--|

NOTE

Throttle lever and accelerator control rod must align to reach maximum engine rpm.

- | | | | |
|------------------------|---|---|---|
| 19. Throttle lever (7) | Accelerator control rod (1) and machine rod. bolt (8) | a. Put machine bolt in accelerator control | b. Push throttle lever toward rear of truck and hold in position. |
| | | c. Align threaded end of machine bolt with hole in throttle lever and put in. | If threaded end of machine bolt and hole in throttle lever do not align go to step 20. |
| | | | If threaded end of machine bolt and hole in throttle lever align go to step 22. |



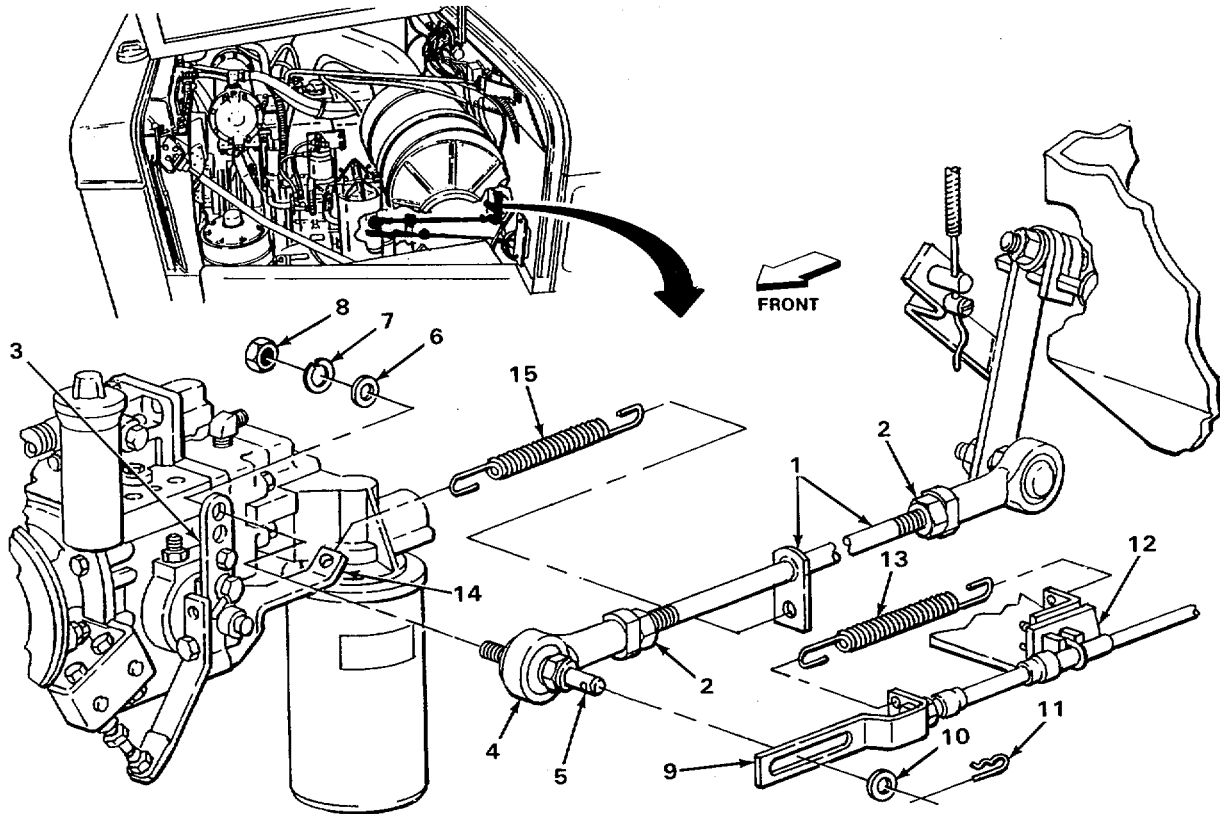
TA244064

ACCELERATOR CONTROL ROD - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION - CONTINUED			
20. Accelerator control rod (1)	Two locknuts (2)		Loosen and turn locknuts to end of threads.
NOTE			
With correct alinement, machine bolt will slide in throttle lever easily.			
21. Throttle lever (3)	Accelerator control rod (1), ball joint assembly (4), and machine bolt (5)		<ul style="list-style-type: none"> a. Hold ball joint assembly from turning. b. Turn accelerator control rod until machine bolt aligns with hole in throttle lever.
22. Throttle lever (3) and machine bolt (5)	Flat washer (6), new lockwasher (7), and nut (8)		<ul style="list-style-type: none"> a. Put threaded end of machine bolt in throttle lever. b. Screw on and tighten using two 1/2-inch open-end wrenches.
23. Accelerator control rod (1)	Two locknuts (2)		<ul style="list-style-type: none"> a. Hold accelerator control rod from turning. b. Turn until locknuts touch ball joint assemblies. c. Tighten using two 9/16-inch open-end wrenches.
NOTE			
For more information on cotter pins, go to General Maintenance Instructions (page 2-424).			
24. Throttle lever (3) and machine bolt (5)	Modulator cable (9), flat washer (10), and new cotter pin (11)		<ul style="list-style-type: none"> a. Put on modulator cable and flat washer. b. Put in new cotter pin and bend back legs using 6-inch diagonal-cutting pliers.

ACCELERATOR CONTROL ROD - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
25. Modulator cable (9) and bracket (12)	Spring (13)	Put in using 6-inch slip-joint pliers.	
26. Fuel pump bracket (14) and accelerator control rod (1)	Spring (15)	Put in using 6-inch slip-joint pliers.	



TA244065

ACCELERATOR CONTROL ROD - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
ADJUSTMENT			
27. Fuel pump bracket (1) and accelerator control rod (2)	Spring (3)		Using 6-inch slip-joint pliers, take off.
28. Bracket (4) and modulator cable (5)	Spring (6)		Using 6-inch slip-joint pliers, take off.
NOTE			
For more information on cotter pins, go to General Maintenance Instructions (page 2-424).			
29. Throttle lever (7) and machine bolt (8)	Modulator cable (5), cotter pin (9), and flat washer (10)	a. Using 6-inch diagonal-cutting pliers, close legs of cotter pin and pull out. b. Take off.	
30. Accelerator control rod (2)	Two locknuts (11)		Using two 9/16-inch open-end wrenches, loosen.
31. Throttle lever (7)	Accelerator control rod (2), machine bolt (8), nut (12), lockwasher (13), and flat washer (14)		Using two 1/2-inch open-end wrenches, unscrew and take off. Do not take machine bolt out of accelerator control rod.
NOTE			
Throttle lever and accelerator control rod must align to reach maximum engine rpm.			
32. Throttle lever (7)	Accelerator control rod (2), machine bolt (8), and ball joint assembly (15)	a. Push throttle lever toward rear of truck and hold in position. b. Hold ball joint assembly from turning. c. Turn accelerator control rod until machine bolt aligns with hole in throttle lever.	

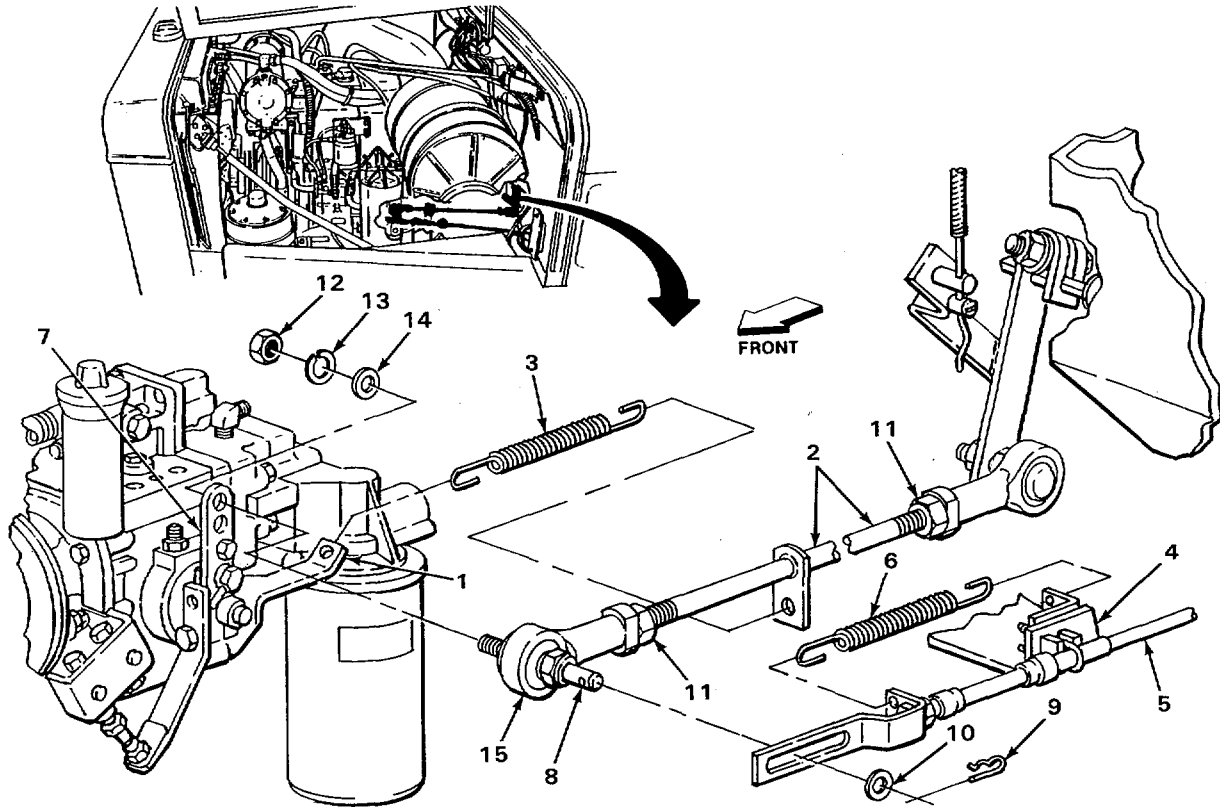
ACCELERATOR CONTROL ROD - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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NOTE

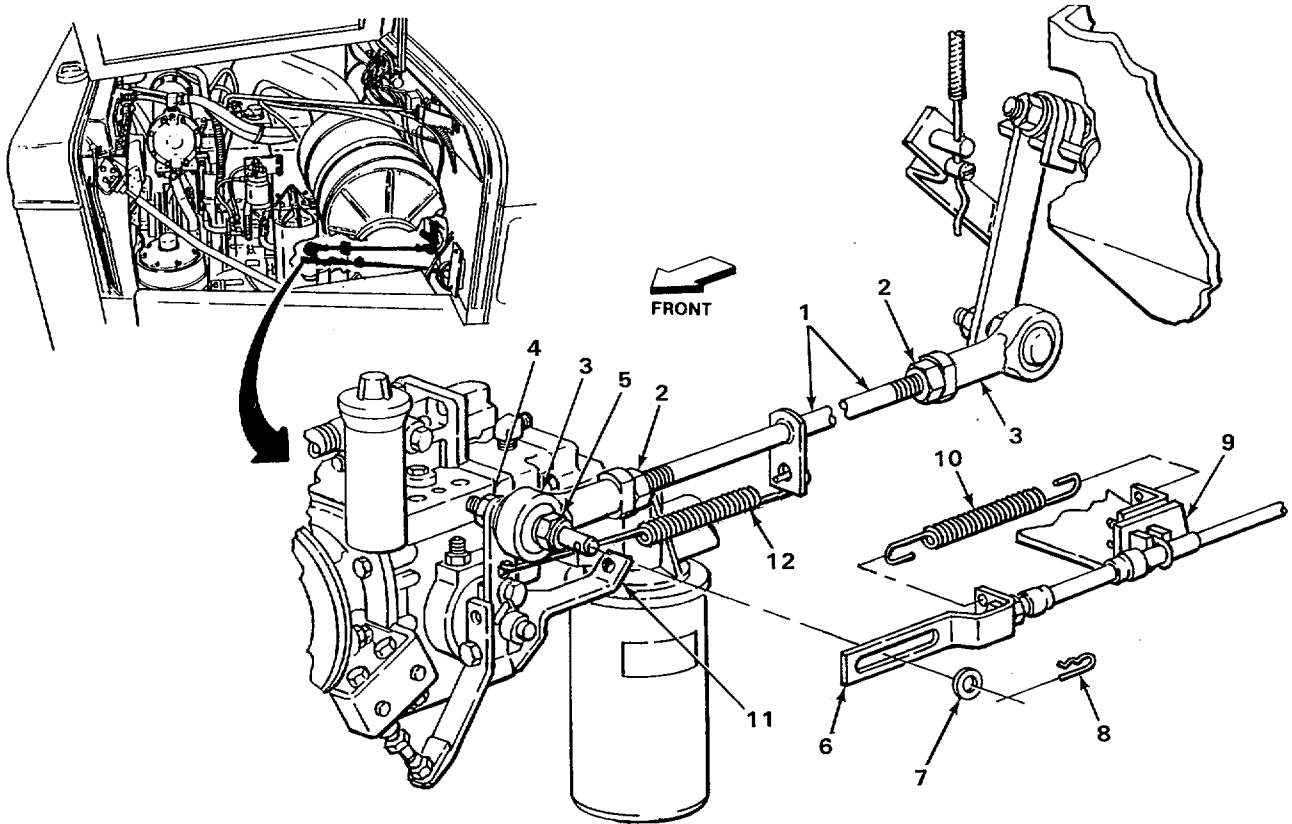
With correct alinement, machine bolt will slide in throttle lever easily.

- | | | |
|--|---|--|
| <p>33. Throttle lever (7)
and machine bolt (8)</p> | <p>Nut (12), lock-washer (13), and flat washer (14)</p> | <p>a. Put machine bolt in throttle lever.
b. Screw on and tighten, using two 1/2-inch open-end wrenches.</p> |
|--|---|--|



ACCELERATOR CONTROL ROD - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
ADJUSTMENT - CONTINUED			
34. Accelerator control rod (1)	Two locknuts (2) and two ball joint assemblies (3)	<ul style="list-style-type: none"> a. Hold accelerator control rod from moving. b. turn until locknuts touch ball joint assemblies. c. Tighten using two 9/16-inch open-end wrenches. 	
NOTE			
For more information on cotter pins, go to General Maintenance Instructions (page 2-424).			
35. Throttle lever (4) and machine bolt (5)	Modulator cable (6), flat washer (7), and cotter pin (8)	<ul style="list-style-type: none"> a. Put on modulator cable and flat washer. b. Using 6-inch diagonal-cutting pliers, put in cotter pin and bend back legs. 	
36. Modulator cable (6) and bracket (9)	Spring (10)	Put in using 6-inch slip-joint pliers.	
37. Fuel pump bracket (11) and accelerator control rod (1)	Spring (12)	Put in using 6-inch slip-joint pliers.	



NOTE

FOLLOW-ON MAINTENANCE:

1. Install air cleaner element (page 2-452).
2. Connect battery cables (page 2-424).
3. Close right and left side hood panels (page 2-424).

TA244067

TASK ENDS HERE

ACCELERATOR CONTROL LEVER

This task covers:

- | | |
|---|--|
| <ul style="list-style-type: none"> a. Removal (page 2-562) b. Cleaning (page 2-564) | <ul style="list-style-type: none"> c. Inspection (page 2-565) d. Installation (page 2-566) |
|---|--|

INITIAL SETUP:

Tools Materials/Parts - Continued

Extension, 12-inch, 1/2-inch drive
 Gloves, safety
 Goggles, safety
 Gun, blow, air
 Handle, ratchet, 1/2-inch drive
 Hose, air, assembly
 Pliers, diagonal-cutting, 6-inch
 Pliers, slip-joint, 6-inch
 Socket, 9/16-inch, 1/2-inch drive
 Wrench, box-end, 9/16-inch
 Wrench, open-end, 7/16-inch
 Wrench, open-end, 1/2-inch

Lockwasher, lever assembly
 Solvent, drycleaning (item 19, appendix C)

Personnel Required

Equipment Condition

Right and left side hood panels opened (page 2-424).
 Air Cleaner element removed (page 2-452).
 Left side cab door opened (page 2-424).
 Engine cover removed (page 2-1270).
 Battery cables disconnected (page 2-424).

Materials/Parts

Cotter pin, swivel
 Lockwasher accelerator control rod

References

TM 9-247 (Authorized Cleaning Methods)

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

REMOVAL

- | | | | |
|----|---|------------|---|
| 1. | Fuel pump bracket (1) and accelerator control rod (2) | Spring (3) | Using 6-inch slip-joint pliers, take off. |
|----|---|------------|---|

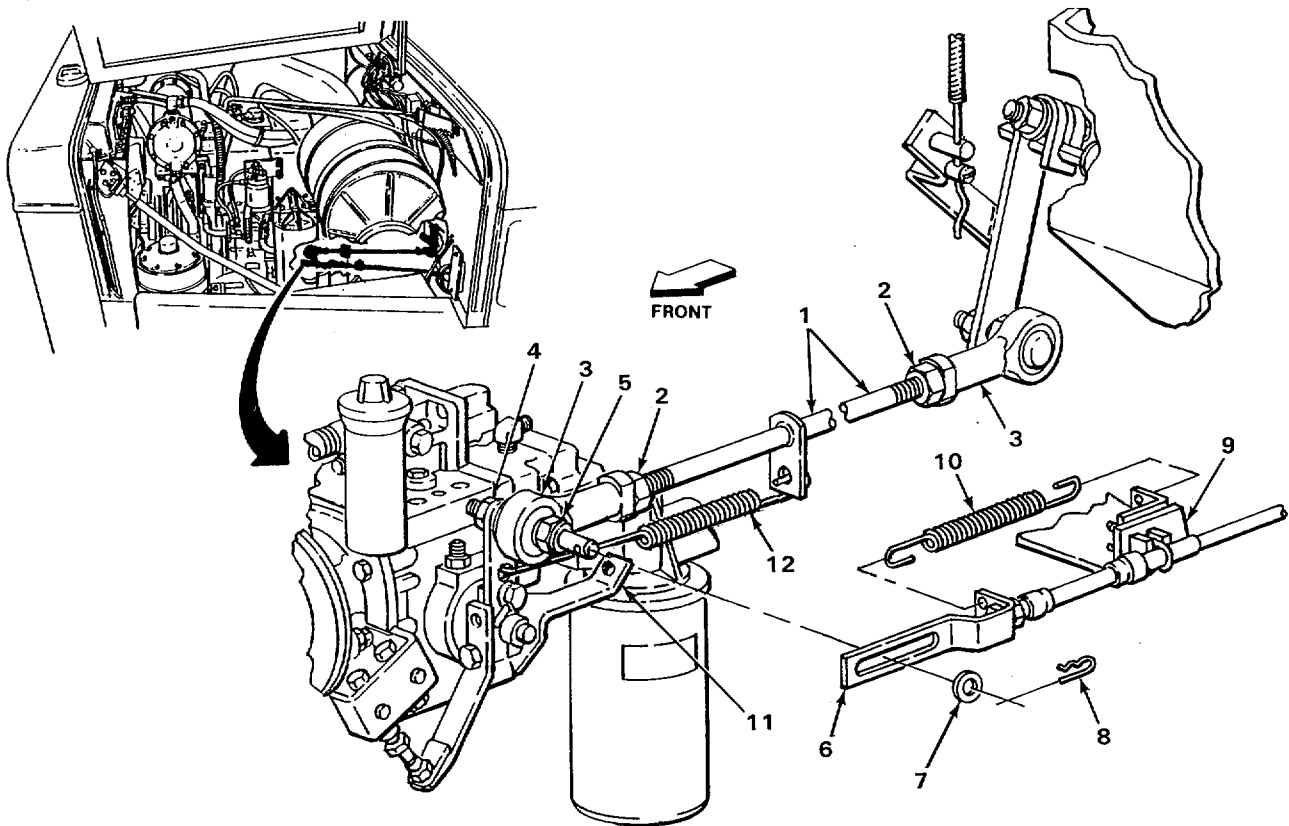
NOTE

For more information on cotter pins, go to General Maintenance Instructions (page 2-424).

- | | | | |
|----|--------------------|---|--|
| 2. | Lever assembly (4) | Cotter pin (5), flat washer (6), and swivel (7) | <ul style="list-style-type: none"> a. Using 6-inch diagonal-cutting pliers, close ends of cotter pin and pull out. b. Take off. c. Get rid of cotter pin. |
|----|--------------------|---|--|

ACCELERATOR CONTROL LEVER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
3.	Accelerator control rod (2), nut (8), and lockwasher (9)	a. Using 7/16-inch and 1/2-inch open-end wrenches, unscrew and take off. b. Get rid of lockwasher.	
4.	Nut (10), lockwasher (11), two flat washers (12), and screw (13)	a. Using 9/16-inch, 1/2-inch drive socket, 12-inch extension, ratchet handle, and 9/16-inch box-end wrench, unscrew and take out. b. Get rid of lockwasher.	
5. Pivot arm assembly (14)	Lever assembly (4)	Slide off.	



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TA244068

ACCELERATOR CONTROL LEVER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CLEANING**WARNING**

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and cause damage to equipment. Refer to TM 9-247.

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective goggles and gloves and use only in a well ventilated area. Avoid contact with skin, eyes, and clothes and don't breathe vapors. Do not use near open flame or excessive heat. The flash point for Type #1 Drycleaning Solvent is 100°F (38°C) and for Type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

- | | | |
|----|--------------------|--|
| 6. | Lever assembly (1) | Clean thoroughly with drycleaning solvent. |
|----|--------------------|--|

WARNING

Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent injury to personnel.

- | | | |
|----|--------------------|---|
| 7. | Lever assembly (1) | Using air hose assembly and air blow gun, dry thoroughly. |
|----|--------------------|---|

ACCELERATOR CONTROL LEVER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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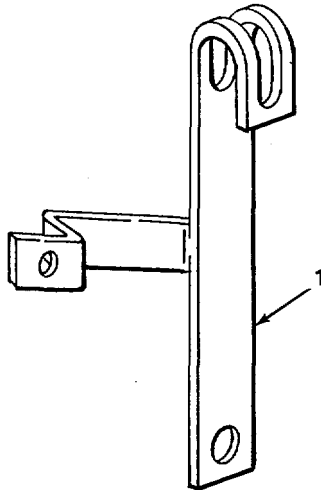
INSPECTION

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to **General Maintenance Instructions (page 2-424)**.

- | | | |
|----|--------------------|---|
| 8. | Lever assembly (1) | Look for cracks, breaks, and bends. |
| 9. | All threaded parts | Look for damaged threads and rounded heads. |

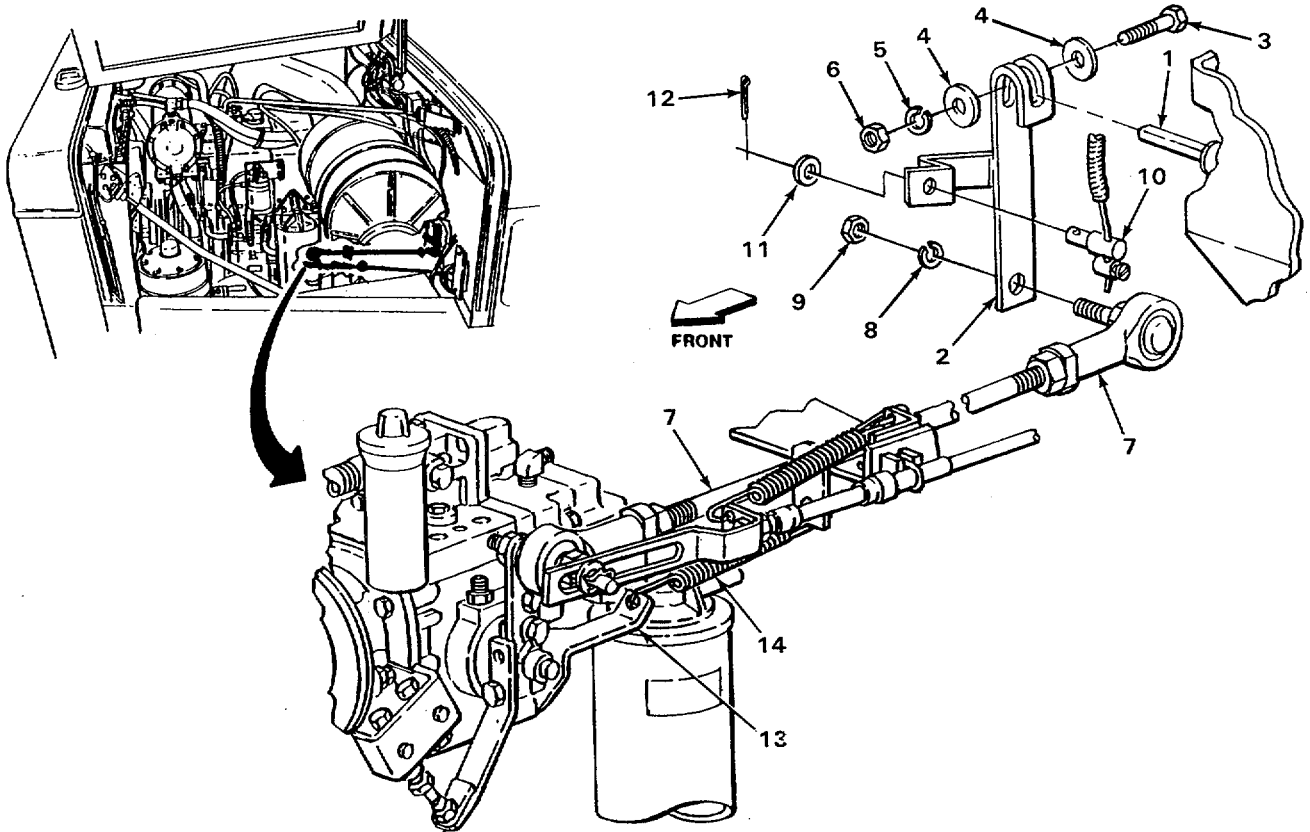


2-565

ACCELERATOR CONTROL LEVER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
NOTE			
Flat sides of pivot arm assembly must align with slot on lever assembly.			
10. Pivot arm assembly (1)	Lever assembly (2)		Slide on.
11. Lever assembly (2)	Screw (3), two flat washers (4), new lockwasher (5), and nut (6)		Screw on and tighten using, 9/16-inch, 1/2-inch drive socket, 12-inch extension, ratchet handle, and 9/16-inch box-end wrench.
12.	Accelerator control rod (7), new lockwasher (8), and nut (9)	a. Put in accelerator control rod. b. Screw on and tighten using 7/16-inch and 112-inch open-end wrenches.	
NOTE			
For more information on cotter pins, go to General Maintenance Instructions (page 2-VI-1).			
13.	Swivel (10), flat washer (11), and new cotter pin (12)	a. Put in swivel. b. Put on flat washer. c. Put in cotter pin and bend back ends using 6-inch diagonal-cutting pliers.	
14. Fuel pump bracket (13) and accelerator control rod (7)	Spring (14)		Put on using 6-inch slip-joint pliers.

ACCELERATOR CONTROL LEVER - CONTINUED



NOTE

FOLLOW-ON MAINTENANCE:

1. Install air cleaner element (page 2-452).
2. Close right and left side hood panels (page 2-424).
3. Install engine cover (page 2-424).
4. Close left side cab door (page 2-424).
5. Connect battery cables (page 2-424).

TASK ENDS HERE

ACCELERATOR CONTROL PIVOT ARM

This task covers:

- | | |
|---|--|
| <ul style="list-style-type: none"> a. Removal (page 2-568) b. Cleaning (page 2-570) | <ul style="list-style-type: none"> c. Inspection (page 2-571) d. Installation (page 2-572) |
|---|--|

INITIAL SETUP

Tools Materials/Parts - Continued

Extension, 12-inch, 1/2-inch drive
 Goggles, safety
 Gun, blow, air
 Handle, ratchet, 1/2-inch drive
 Hose, air, assembly
 Pliers, diagonal-cutting, 6-inch
 Pliers, slip-joint, 6-inch
 Socket, 7/16-inch, 1/2-inch drive
 Socket, 9/16-inch, 1/2-inch drive
 Wrench, box-end, 9/16-inch
 Wrench, open-end, 7/16-inch
 Wrench, open-end, 1/2-inch

Materials/Parts

Cotter pin, pedal bracket
 Detergent, liquid, GP (item 7, appendix C)

Lockwasher, accelerator control rod
 Lockwasher, lever assembly
 Lockwasher, pivot arm assembly (two required)

Personnel Required

One

Equipment Condition

Right and left side hood panels opened (page 2-424).
 Left side cab door opened (page 2-424).
 Air cleaner element removed (page 2-452).
 Battery cables disconnected (page 2-424).
 Engine cover removed (page 2-1270).

References

TM 9-247 (Authorized Cleaning Methods)

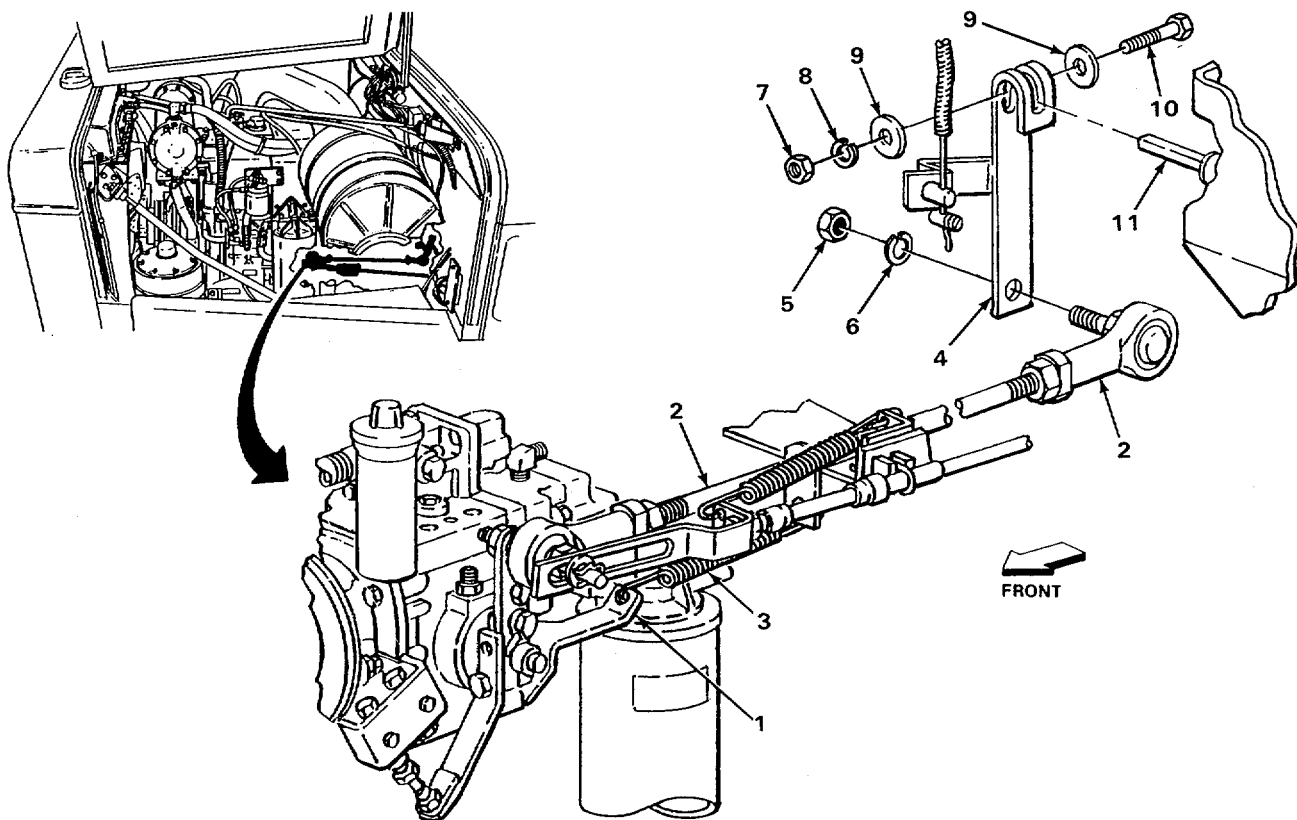
LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

- | | | | |
|----|---|--|---|
| 1. | Fuel pump bracket (1) and accelerator control rod (2) | Spring (3) | Using 6-inch slip-joint pliers, take off. |
| 2. | Lever assembly (4) | Accelerator control rod (2), nut (5), and lockwasher (6) | <ul style="list-style-type: none"> a. Using 112-inch and 7/16-inch open-end wrenches, unscrew and take off. b. Get rid of lockwasher. |

ACCELERATOR CONTROL PIVOT ARM - CONTINUED

LOCATION	ITEM	ACTION REMARKS
3.	Nut (7), lockwasher (8), two flat washers (9), and screw (10)	a. Using 9/16-inch, 1/2-inch drive socket, 12-inch extension, ratchet handle, and 9/16-inch box-end wrench, unscrew and take off. b. Get rid of lockwasher.
4. Pivot arm assembly (11)	Lever assembly (4)	Slide off.



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ACCELERATOR CONTROL PIVOT ARM - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL - CONTINUED			
NOTE			
For more information on cotter pins, go to General Maintenance Instructions (page 2-424).			
5.	Pedal bracket (1)	Cotter pin (2) and flat washer (3)	<ol style="list-style-type: none"> a. Using 6-inch diagonal-cutting pliers, close ends of cotter pin and pull out. b. Take off flat washer. c. Get rid of cotter pin.
6.		Clevis pin (4) and control pedal (5)	<ol style="list-style-type: none"> a. Using 6-inch slip-joint pliers, pull out clevis pin. b. Take out control pedal.
7.	Engine cover side panel (6)	Pivot arm assembly (7), two screws (8), two lockwashers (9), and two nuts (10)	<ol style="list-style-type: none"> a. Using 7/16-inch, 1/2-inch drive socket, ratchet handle, and 7/16-inch open-end wrench, unscrew and take out. b. Take out pivot arm assembly. c. Get rid of lockwashers.

CLEANING

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and damage equipment. Refer to TM 9-247.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

8.	Pivot arm assembly (7)	Clean thoroughly with liquid detergent.
----	------------------------	---

WARNING

Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent injury to personnel.

ACCELERATOR CONTROL PIVOT ARM - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
9.	Pivot arm assembly (7)	Using airhose assembly and air blow gun, dry thoroughly.	

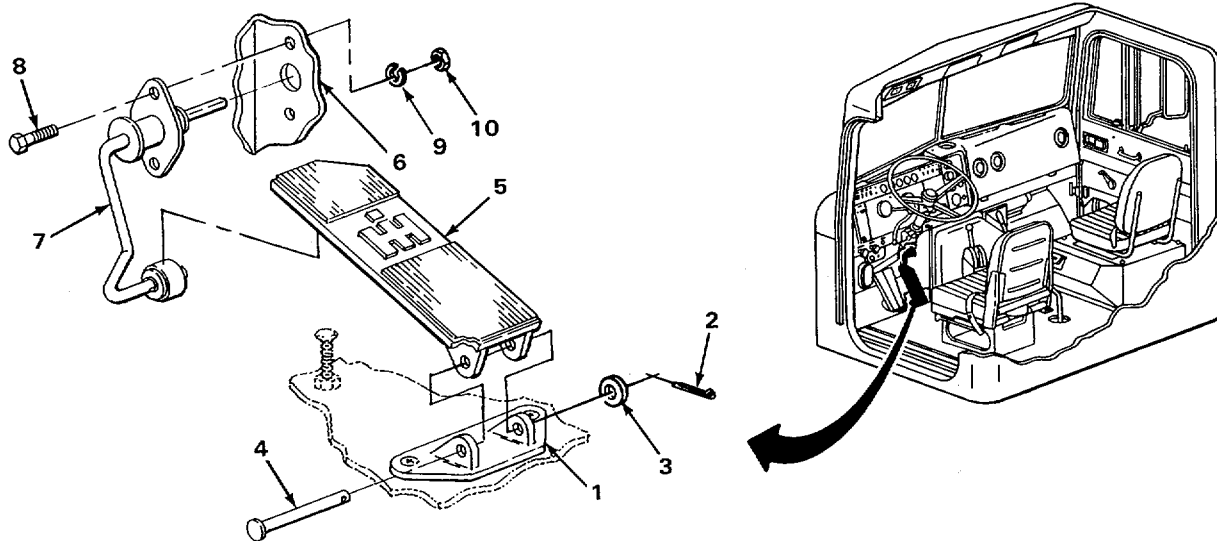
INSPECTION

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to **General Maintenance Instructions (page 2-424)**.

10.	Pivot arm assembly (7)	Look for cracks, breaks, and worn areas.
11.	All threaded parts	Look for damaged threads and rounded heads.



TA244072

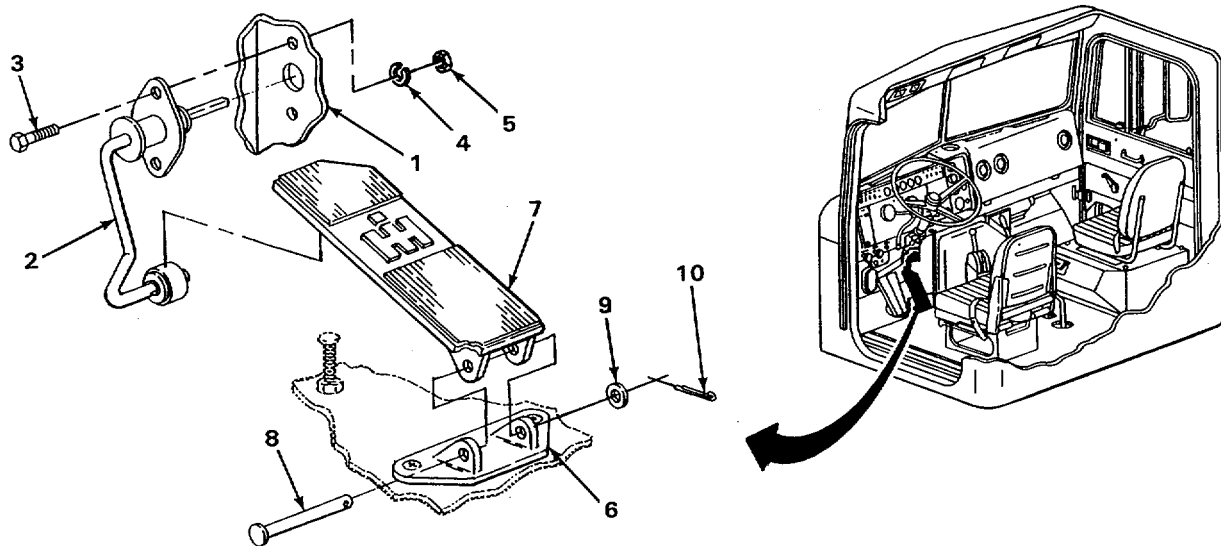
ACCELERATOR CONTROL PIVOT ARM - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
12. Engine cover side panel (1)	Pivot arm assembly (2), two screws (3), two new lockwashers (4), and two nuts (5)	a. Put pivot arm assembly in place. b. Screw on and tighten using 7/16-inch, 1/2-inch drive socket, ratchet handle, and 7/16-inch open-end wrench.	
13. Pedal bracket (6)	Control pedal (7) and clevis pin (8)	a. Put control pedal in place. b. Put in clevis pin using 6-inch slip-joint pliers.	

NOTE

For more information on cotter pins, go to **General Maintenance Instructions (page 2-424)**.

14.	Flat washer (9) and new cotter pin (10)	a. Put on flat washer. b. Put in cotter pin and bend back ends using 6-inch diagonal-cutting pliers.	
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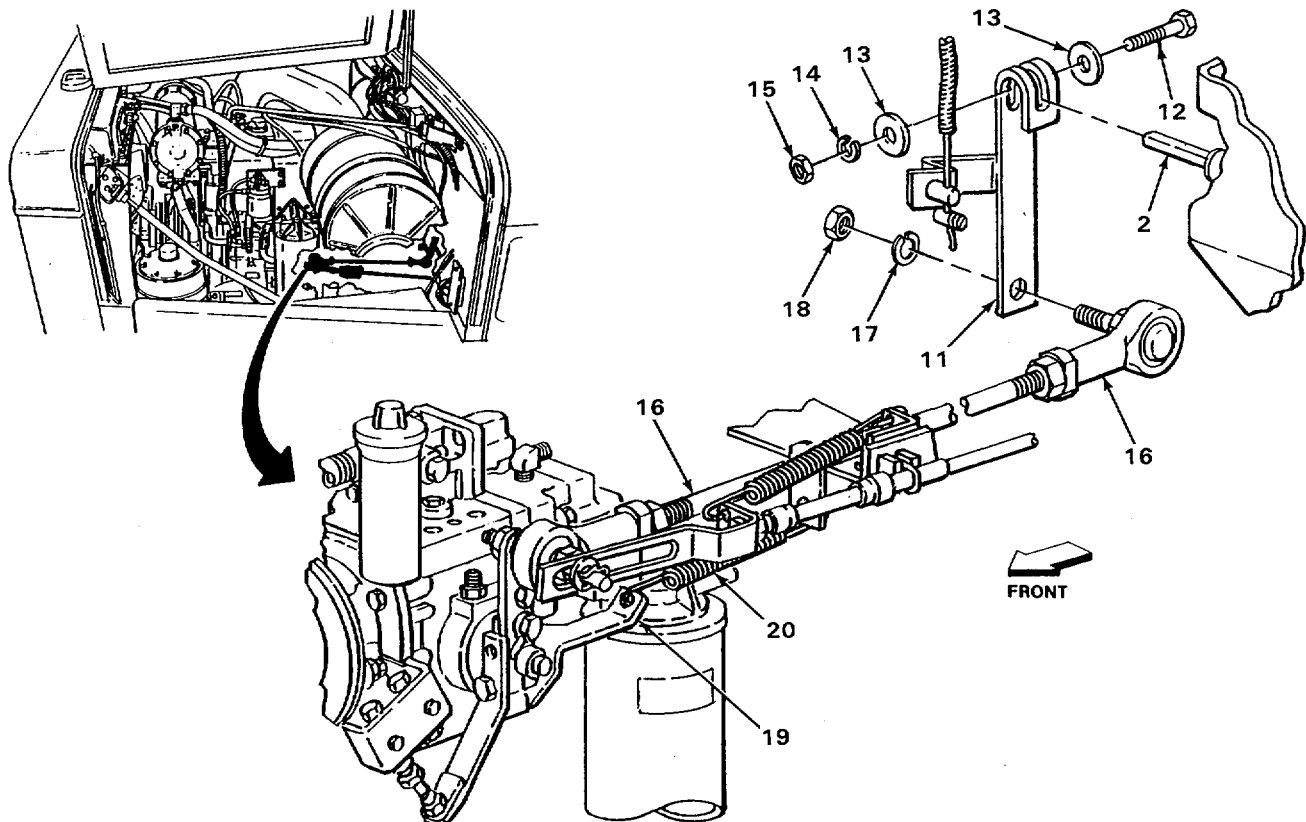


NOTE

Flat sides of pivot arm assembly must align with slot on lever assembly.

ACCELERATOR CONTROL PIVOT ARM - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
15. Pivot arm assembly (2)	Lever assembly (11)	Slide on.	
16. Lever assembly (11)	Screw (12), two flat washers (13), new lockwasher (14), and nut (15)	Screw on and tighten using 9/16-inch, 1/2-inch drive socket, 12-inch extension, ratchet handle, and 9/16-inch box-end wrench.	
17.	Accelerator control rod (16), new lockwasher (17), and nut (18)	Screw on and tighten using 1/2-inch and 7/16-inch open-end wrenches.	
18. Accelerator control rod (16) and fuel pump bracket (19)	Spring (20)	Put on using 6-inch slip-joint pliers.	



TA244074

ACCELERATOR CONTROL PIVOT ARM - CONTINUED**NOTE****FOLLOW-ON MAINTENANCE:**

1. Install air cleaner element (page 2-452).
2. Connect battery cables (page 2-424).
3. Close right and left side hood panels (page 2-424).
4. Install engine cover (page 2-1270).
5. Close left side cab door (page 2-424).

TASK ENDS HERE**ACCELERATOR CONTROL PEDAL**

This task covers:

- | | |
|----------------------------|------------------------------|
| a. Removal (page 2-575) | d. Installation (page 2-577) |
| b. Cleaning (page 2-576) | e. Adjustment (page 2-578) |
| c. Inspection (page 2-576) | |
-

INITIAL SETUP:**Tools**

Gloves, safety
 Goggles, safety
 Gun, blow, air
 Hose, air, assembly
 Pliers, diagonal-cutting, 6-inch
 Pliers, slip-joint, 6-inch
 Screwdriver, cross-tip, number three
 Wrench, open-end, 1/2-inch

Materials/Parts

Cotter pin, pedal bracket
 Solvent, drycleaning (item 19,
 appendix C)

Personnel Required

Two

Equipment Condition

Battery cables disconnected (page 2-424).
 Left side cab door opened (page 2-424).
 Left side hood panel opened (page 2-424).

References

TM 9-247 (Authorized Cleaning Methods)

2-574

ACCELERATOR CONTROL PEDAL - CONTINUED

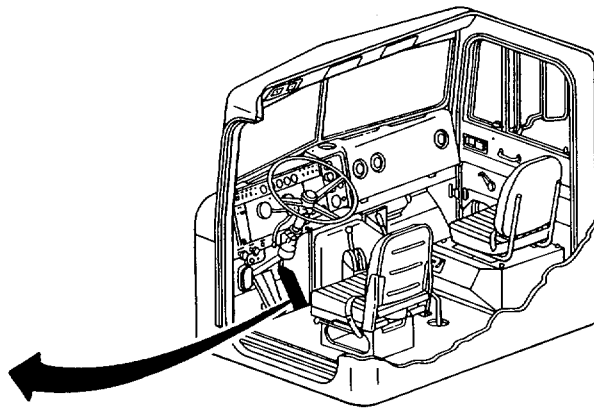
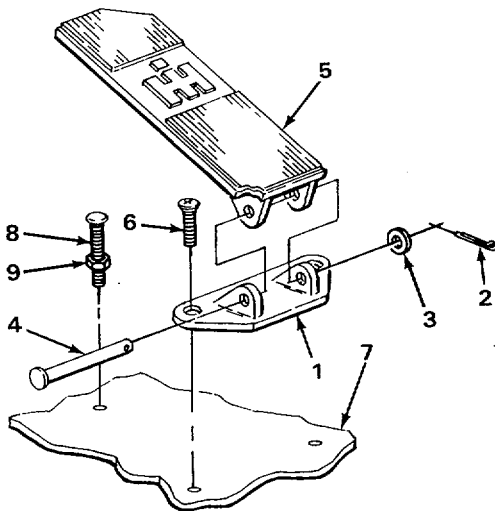
LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

NOTE

For more information on cotter pins, go to General Maintenance Instructions (page 2-424).

- | | | |
|----------------------|--------------------------------------|--|
| 1. Pedal bracket (1) | Cotter pin (2) and flat washer (3) | <ul style="list-style-type: none"> a. Using 6-inch diagonal-cutting pliers, close ends of cotter pin and pull out. b. Take off flat washer. c. Get rid of cotter pin. |
| 2. | Clevis pin (4) and control pedal (5) | <ul style="list-style-type: none"> a. Using 6-inch slip-joint pliers, pull out clevis pin. b. Take out control pedal. |
| 3. | Two screws (6) | <ul style="list-style-type: none"> a. Using number three cross-tip screwdriver, unscrew and take out. b. Take out pedal bracket. |
| 4. Floor panel (7) | Bolt (8) and locknut (9) | <ul style="list-style-type: none"> a. Using 1/2-inch open-end wrench, loosen locknut. b. Unscrew and take out bolt. |



ACCELERATOR CONTROL PEDAL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CLEANING

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and cause damage to equipment. Refer to TM 9-247.

WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 1000F (380C) and for type #2 is 138°F (590C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

5.	Control pedal (1) and pedal bracket (2)	Clean thoroughly with drycleaning solvent.
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WARNING

Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent injury to personnel.

6.	Control pedal (1) and pedal bracket (2)	Using air hose assembly and air blow gun, dry thoroughly.
----	---	--

INSPECTION

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

7.	Control pedal (1) and pedal bracket (2)	Look for cracks, breaks, and worn areas.
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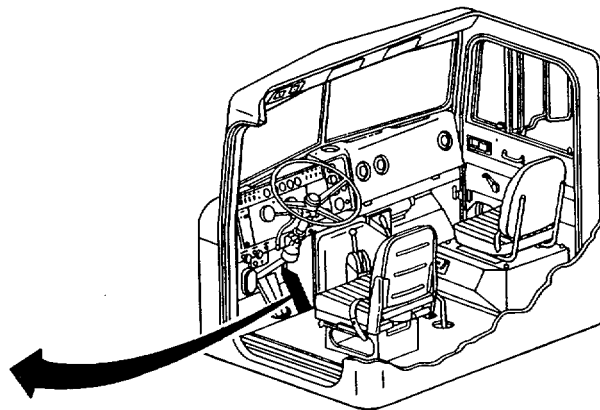
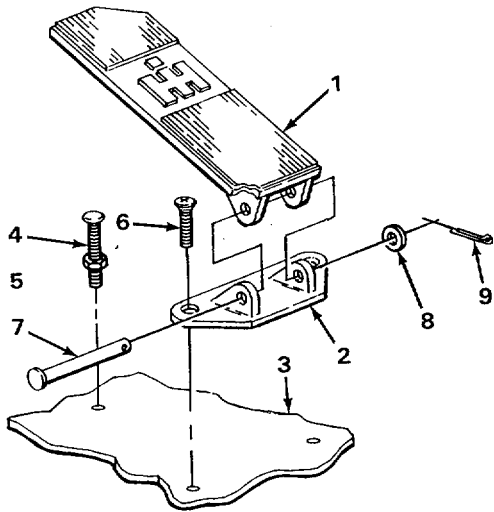
ACCELERATOR CONTROL PEDAL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
8.	All threaded parts		Look for damaged threads.
9. Floor panel (3)	Bolt (4) and locknut (5)	a. Turn locknut to end of threads. b. Screw in bolt.	Do not tighten.
10.	Pedal bracket (2) and two screws (6)	a. Put pedal bracket in place. b. Screw in and tighten using number three cross-tip screwdriver.	
11. Pedal bracket (2)	Control pedal (1) and clevis pin (7)	a. Put control pedal in place. b. Put in clevis pin using 6-inch slip-joint pliers.	

NOTE

For more information on cotter pins, go to **General Maintenance Instructions (page 2-424)**.

12.	Flat washer (8) and new cotter pin (9)	a. Put on flat washer. b. Put in cotter pin and bend back ends using 6-inch diagonal-cutting pliers.	
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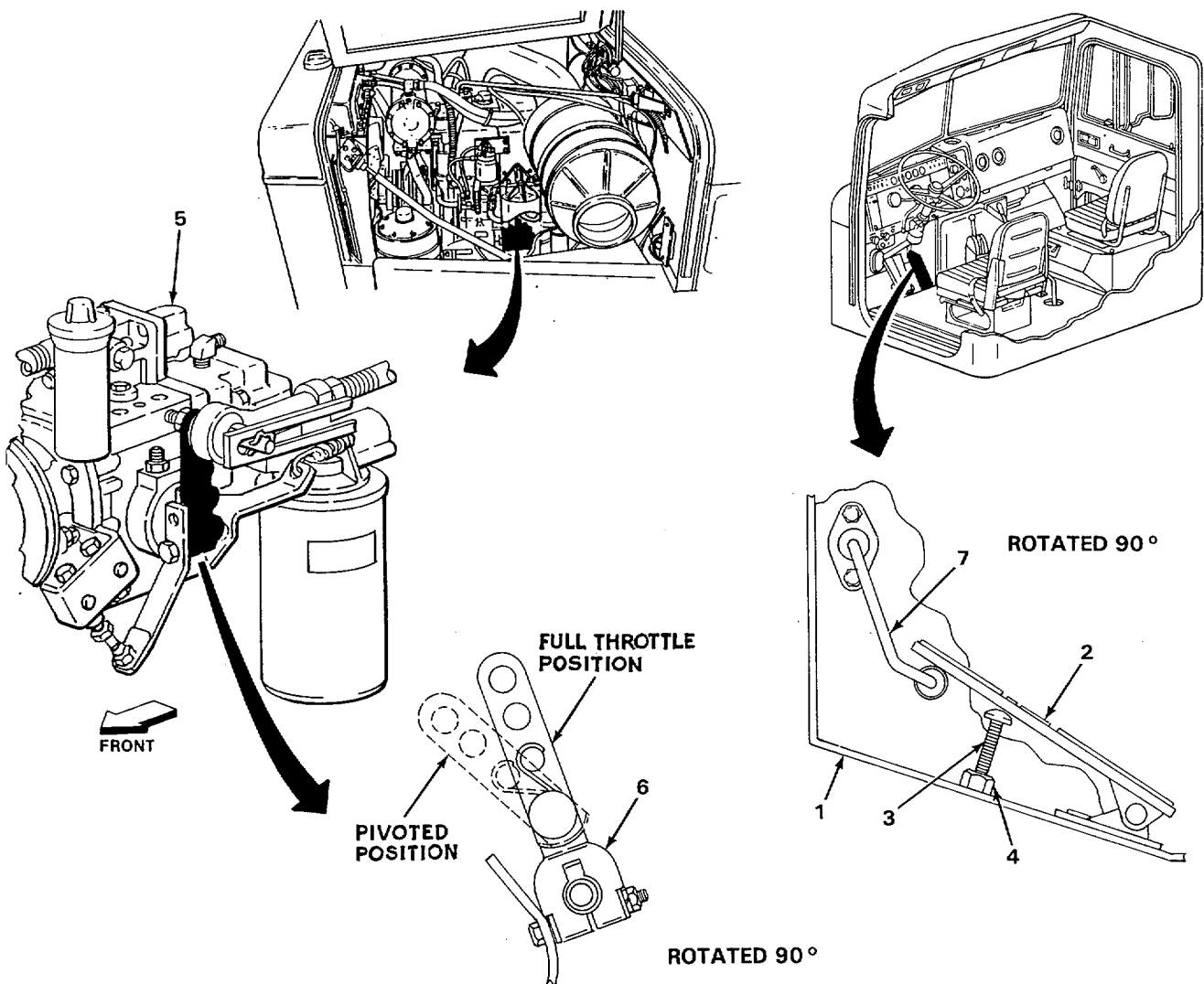
TA244076

ACCELERATOR CONTROL PEDAL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
ADJUSTMENT			
NOTE			
If locknut on bolt is tight, perform step 13.			
13. Floor panel (1)	Control pedal (2), bolt (3), and locknut (4)	a. Lift control pedal. b. Using 1/2-inch open-end wrench, loosen locknut. c. Turn locknut to end of threads.	
14.	Bolt (3) and locknut (4)	Turn bolt down until locknut touches floor panel.	
NOTE			
Assistance will be needed to perform the following steps.			
Top of throttle lever will pivot when pushed past full throttle position.			
15. Fuel pump (5)	Throttle lever (6)	a. Have assistant push throttle lever to full throttle position. b. Push throttle lever past full throttle position until top of throttle lever pivots slightly, and hold in position.	
NOTE			
When performing next step control pedal (2) must contact pivot arm assembly (7).			
16. Floor panel (1)	Bolt (3)	Turn until head of bolt touches control pedal (2).	
17. Fuel pump (5)	Throttle lever (6)	Have assistant release throttle lever.	
18. Floor panel (1)	Bolt (3) and locknut (4)	a. Hold bolt in position. b. Tighten locknut using 1/2-inch open-end wrench.	

ACCELERATOR CONTROL PEDAL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
19. Floor panel (1)	Control pedal (2)	Push down until control pedal touches bolt and hold in position.	
20. Fuel pump (5)	Throttle lever (6)	Have assistant check throttle lever. Throttle lever should be in slightly pivoted position. If throttle lever is not in slighted pivoted position, go to step 13.	



TA244077

LOCATION	ITEM	ACTION	REMARKS
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NOTE**FOLLOW-ON MAINTENANCE:**

1. Connect battery cables (page 2-424).
2. Close left side hood panel (page 2-424).
3. Close left side cab door (page 2-424).

TASK ENDS HERE**HAND THROTTLE CONTROL**

This task covers:

- | | |
|---|--|
| <ol style="list-style-type: none"> a. Removal (page 2-581) b. Cleaning (page 2-584) | <ol style="list-style-type: none"> c. Inspection (page 2-584) d. Installation (page 2-586) |
|---|--|

INITIAL SETUP:**Tools**

Gloves, safety
 Goggles, safety
 Gun, blow, air
 Handle, ratchet, 1/2-inch drive
 Hose, air, assembly
 Pliers, diagonal-cutting, 6-inch
 Screwdriver, flat-tip, 3/16-inch
 Socket, 7/16-inch, 1/2-inch drive
 Wrench, box-end, 7/16-inch
 Wrench, open-end, 9/16-inch

Materials/Parts

Cotter pin, swivel
 Grommet, hand throttle cable
 Lockwasher, clamp
 Lockwasher, hand throttle bar
 (two required)

Materials/Parts - Continued

Lockwasher, hand throttle cable
 Solvent, drycleaning (item 19, appendix C) '--

Personnel Required

One

Equipment Condition

Right and left side hood panels opened
 (page 2-424).
 Left side cab door opened (page 2-424).
 Air cleaner element removed (page 2-452).
 Engine cover removed (page 2-1270).
 Battery cables disconnected (page 2-424).

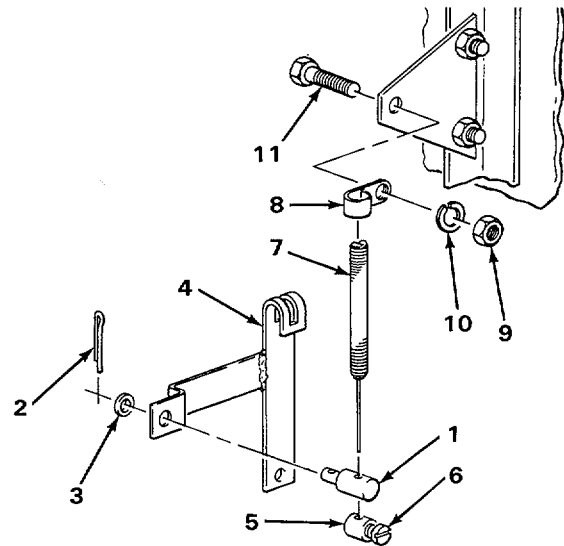
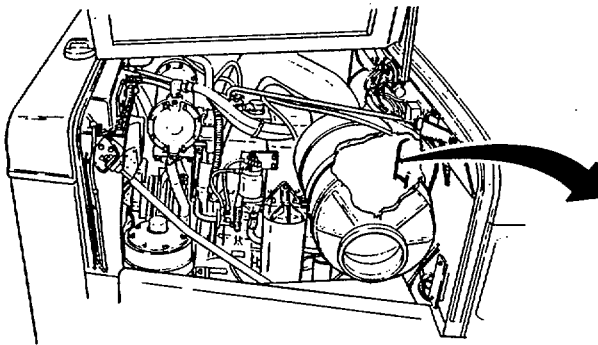
References

TM 9-247 (Authorized Cleaning Methods)

2-580

HAND THROTTLE CONTROL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
NOTE			
For more information on cotter pins, go to General Maintenance Instructions (page 2-424).			
1. Swivel (1)	Cotter pin (2) and flat washer (3)	a. Using 6-inch diagonal-cutting pliers, close ends of cotter pin and pull out. b. Take off flat washer. c. Get rid of cotter pin.	
2. Lever assembly (4)	Swivel (1)	Pull out.	
3. Throttle stop (5)	Screw (6)	Using 3/16-inch flat-tip screwdriver, loosen.	
4. Hand throttle cable (7)	Swivel (1) and throttle stop (5)	Pull off.	
5. Clamp (8)	Nut (9), lockwasher (10), and screw (11)	a. Using 7/16-inch, 1/12-inch drive socket, ratchet handle, and 7/16-inch box-end wrench, unscrew and take off. b. Get rid of lockwasher.	
6. Hand throttle cable (7)	Clamp (8)	a. Using 3/16-inch flat-tip screwdriver, open clamp. b. Take off clamp.	



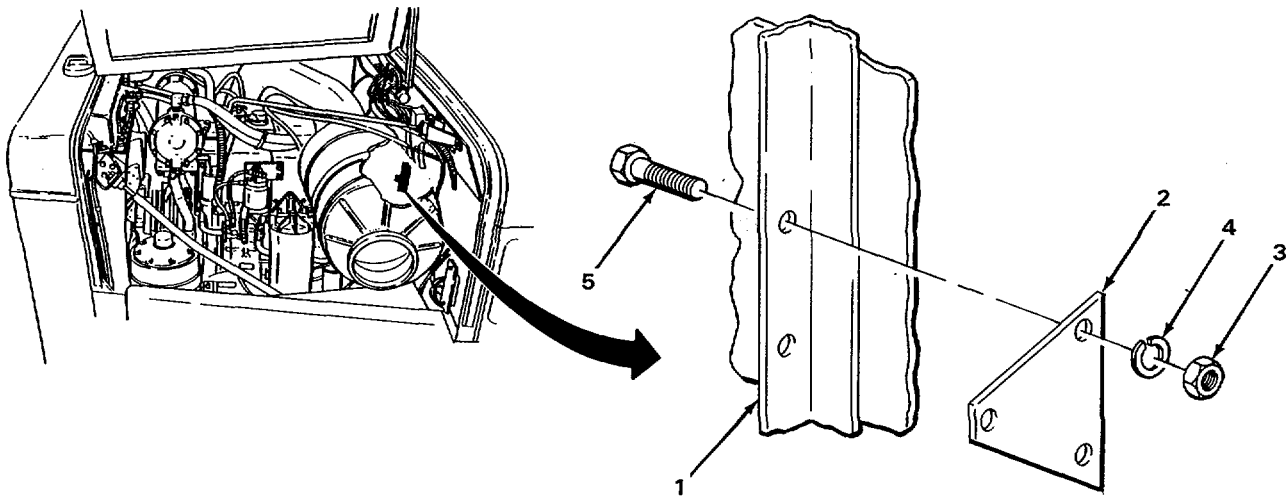
TA244078

HAND THROTTLE CONTROL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL - CONTINUED

- | | | |
|-----------------|--|---|
| 7. Firewall (1) | Hand throttle bar (2), two nuts (3), two lockwashers (4), and two screws (5) | <ol style="list-style-type: none"> Using 7/16-inch, 1/2-inch drive socket ratchet handle, and 7/16-inch box-end wrench, unscrew and take off. Get rid of lockwashers. |
|-----------------|--|---|



- | | | |
|------------------|--|--|
| 8. Dashboard (6) | Hand throttle cable (7), nut (8), and lockwasher (9) | <ol style="list-style-type: none"> Using 9/16-inch open-end wrench, loosen nut. Unscrew nut to end of threads. |
|------------------|--|--|

CAUTION

Use care when pulling out hand throttle cable as damage to wiring could occur.

- | | | |
|----|--|---|
| 9. | Hand throttle cable (7), nut (8), and lockwasher (9) | <ol style="list-style-type: none"> Hold nut and lockwasher. Pull out hand throttle cable. Get rid of lockwasher. |
|----|--|---|

TA244079

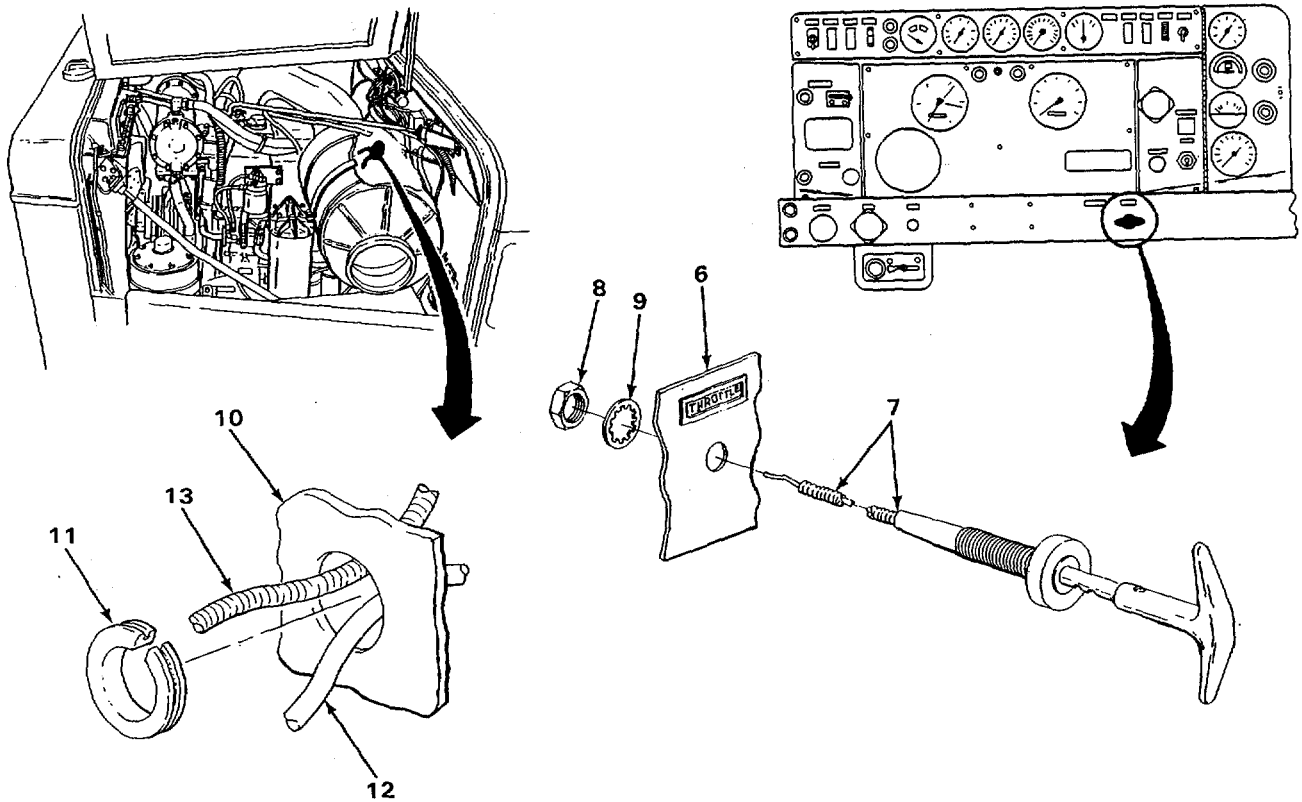
HAND THROTTLE CONTROL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CAUTION

Use care when removing grommet as damage to temperature gage tube and wires could occur.

- | | | |
|-------------------|--|--|
| 10. Firewall (10) | Grommet (11), wire (12), and tube (13) | <ol style="list-style-type: none"> Using 3/16-inch flat-tip screwdriver, pry out grommet. Take grommet off wire and tube. Get rid of grommet. |
|-------------------|--|--|



HAND THROTTLE CONTROL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CLEANING

WARNING

Improper cleaning methods and use of unauthorized cleaning liquids or solvents can injure personnel and cause damage to equipment. Refer to TM 9-247.

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

11.	Hand throttle cable (1), clamp (2), and hand throttle bar (3)	Clean thoroughly with drycleaning solvent.
-----	---	--

WARNING

Particles blown by compressed air are hazardous. Make certain the airstream is directed away from user and other personnel in the area. Compressed air used for cleaning purposes shall not exceed 30 psi (207 kPa). User must wear safety goggles or face shield to prevent injury to personnel.

12.	Hand throttle cable (1), clamp (2), and hand throttle bar (3)	Using air hose assembly and air blow gun, dry thoroughly.
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INSPECTION

NOTE

Replace all damaged or defective parts.

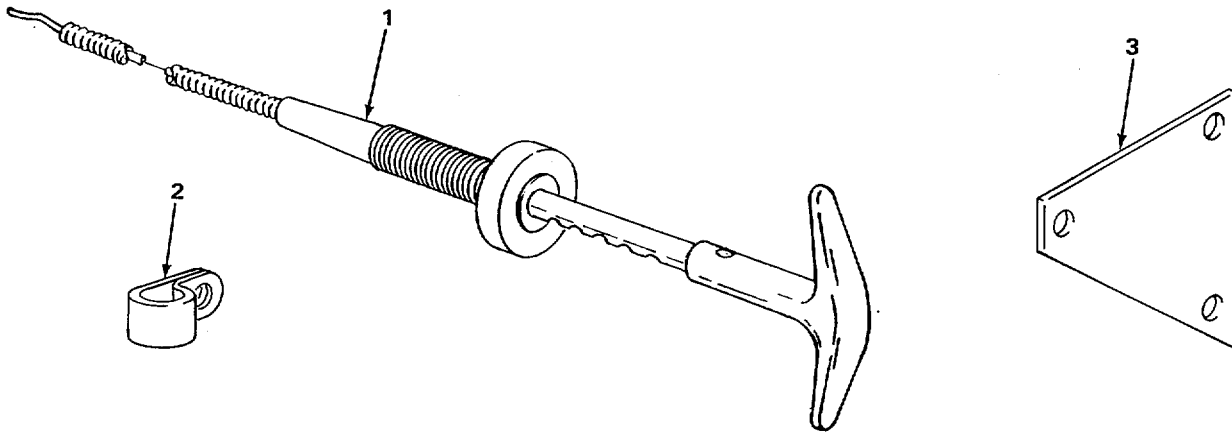
HAND THROTTLE CONTROL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

NOTE

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

- | | | | |
|-----|-------------------------------------|---|--|
| 13. | Hand throttle cable (1) | Look for cracks, breaks, and twisted areas. | |
| 14. | Clamp (2) and hand throttle bar (3) | Look for cracks, breaks, and damaged areas. | |
| 15. | All threaded parts | Look for damaged heads and rounded heads. | |



TA244081

HAND THROTTLE CONTROL - CONTINUED

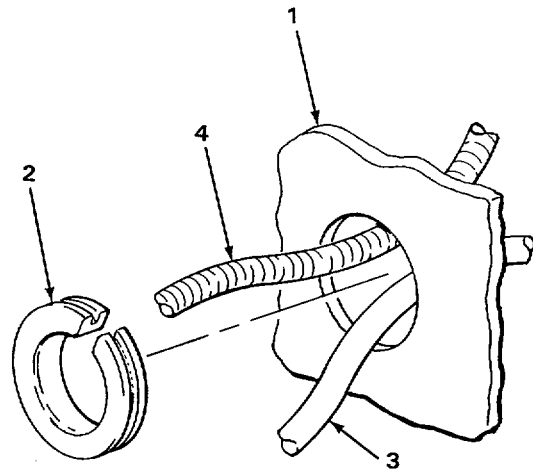
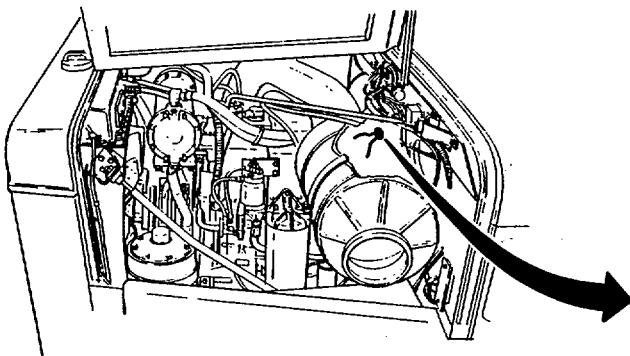
LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

INSTALLATION

CAUTION

Use care when installing grommet as damage to temperature gage tube and wires could occur.

- | | | |
|------------------|---|--|
| 16. Firewall (1) | New grommet (2), wire (3), and tube (4) | <ul style="list-style-type: none"> a. Open grommet and put in wire and tube. b. Put grommet in place using 3/16-inch flat-tip screwdriver. |
|------------------|---|--|



CAUTION

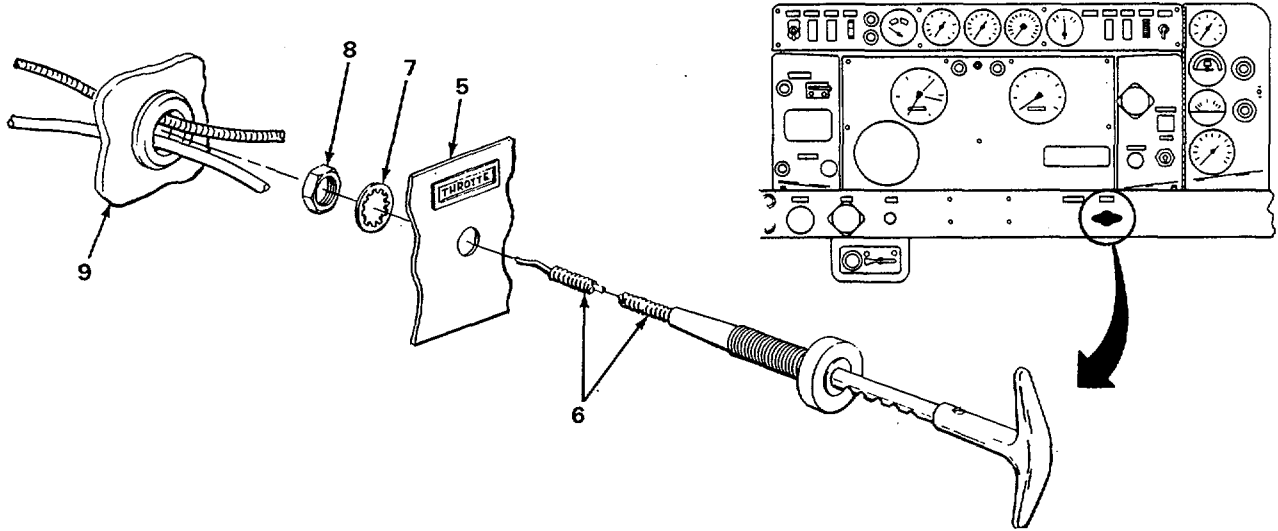
Use care when installing hand throttle cable as damage to wiring could occur.

- | | | |
|--------------------------------|--|--|
| 17. Dashboard (5) | Hand throttle cable (6), new lockwasher (7), and nut (8) | <ul style="list-style-type: none"> a. Put hand throttle cable in place. b. Screw on nut and lockwasher. c. Tighten nut using 9/16-inch open-end wrench. |
| 18. Driver's side firewall (9) | Hand throttle cable (6) | Push through hole. |

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HAND THROTTLE CONTROL - CONTINUED

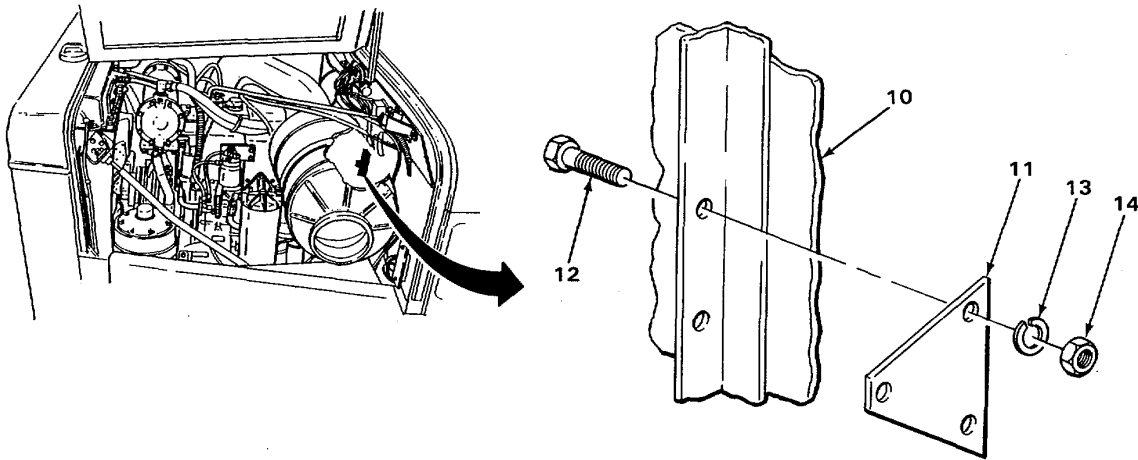
LOCATION	ITEM	ACTION	REMARKS
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19. Firewall (10)

Hand throttle bar (11), two screws (12), two new lock-washers (13), and two nuts (14)

Screw on and tighten using 7/16-inch, 1/2-inch drive socket and ratchet handle and 7/16-inch open-end wrench.



TA244083

HAND THROTTLE CONTROL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
20.	Hand throttle cable (1)	Clamp (2)	Put on.
21.	Hand throttle bar (3)	Clamp (2), screw (4), new lockwasher (5), and nut (6)	Screw on and tighten using 7/16-inch, 1/2-inch drive socket, ratchet handle, and 7/16-inch box-end wrench.
22.	Hand throttle cable (1)	Swivel (7)	Put on.

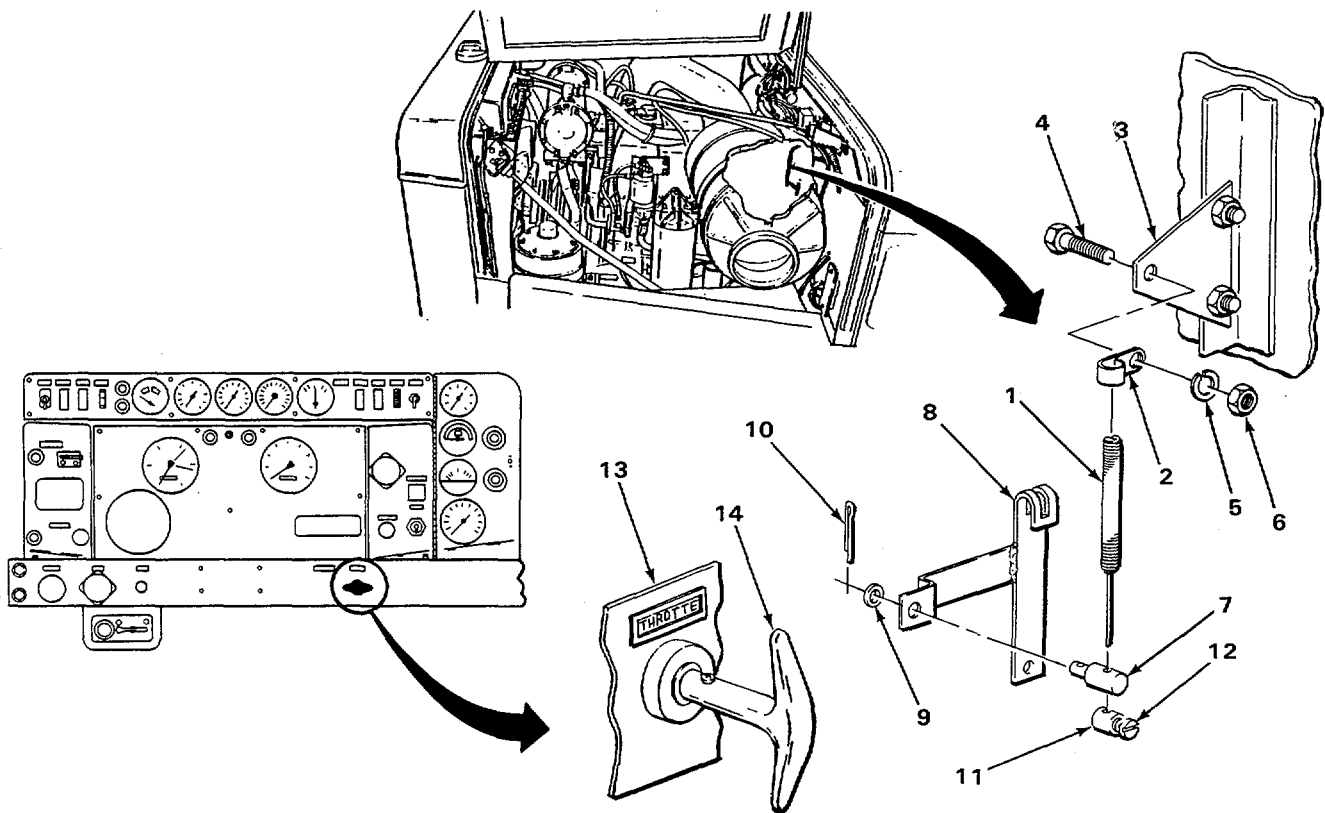
NOTE

For more information on cotter pins, go to General Maintenance Instructions (page 2-424).

23.	Lever assembly (8)	Flat washer (9) and new cotter pin (10)	<ol style="list-style-type: none"> Put on flat washer. Put in cotter pin and bend back ends using 6-inch diagonal-cutting pliers.
24.	Hand throttle cable (1)	Throttle stop (11) and screw (12)	<ol style="list-style-type: none"> Put throttle stop on hand throttle cable. Tighten screw using 3/16-inch flat-tip screwdriver.
ADJUSTMENT			
25.	Dashboard (13)	Hand throttle handle (14)	Push in.
26.	Hand throttle cable (1)	Throttle stop (11) and screw (12)	<ol style="list-style-type: none"> Using 3/16-inch flat-tip screwdriver, loosen screw. Take off throttle stop.
27.		Lever assembly (8)	Push down.
28.		Throttle stop (11) and screw (12)	<ol style="list-style-type: none"> Put throttle stop on hand throttle cable. Leave a small space between throttle stop and swivel. Tighten screw using 3/16-inch flat-tip screwdriver.

HAND THROTTLE CONTROL - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
29. Dashboard (13)	Hand throttle handle (14)	a. Pull out. b. Push in.	
30. Hand throttle cable (1)	Swivel (7) and throttle stop (11)	Check space.	Space between swivel and throttle stop should be same. If space is less, repeat steps 25 thru 30.



NOTE

FOLLOW-ON MAINTENANCE:

1. Install air cleaner element (page 2-452).
2. Install engine cover (page 2-1270).
3. Connect batteries (page 2-424).
4. Close right and left side hood panels (page 2-424).
5. Close left cab door (page 2-424).

TASK ENDS HERE

TA244084

Section VIII. EXHAUST SYSTEM MAINTENANCE

	Page		Page
Exhaust Diverter	2-600	Exhaust Pipe Front Hanger.....	2-619
Exhaust Diverter Bracket.....	2-611	Exhaust Pipe Rear Hanger	2-621
Exhaust Diverter Bracket		Muffler and Rain Cap	2-604
Supports	2-615	Muffler Upper Support	2-624
Exhaust Pipe	2-590		

EXHAUST PIPE

This task covers:

- | | |
|-----------------------------|--|
| a. Removal (page 2-590) | d. Inspection/Replacement (page 2-594) |
| b. Disassembly (page 2-592) | e. Assembly (page 2-594) |
| c. Cleaning (page 2-594) | f. Installation (page 2-596) |

INITIAL SETUP:

Tools

Brush, wire
 Gloves, safety
 Goggles, safety
 Handle, ratchet, 1/2-inch drive
 Socket, deep, 9/16-inch, 1/2-inch drive
 Socket, deep, 11/16-inch, 1/2-inch drive
 Wrench, box-end, 7/16-inch
 Wrench, box-end, 9/16-inch
 Wrench, box-end, 11/16-inch

Materials/Parts

Rags, wiping (item 15, appendix C)
 Solvent, drycleaning (item 19, appendix C)

Personnel Required

Two

Equipment Condition

Right side hood panel opened
 (page 2-424)

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

WARNING

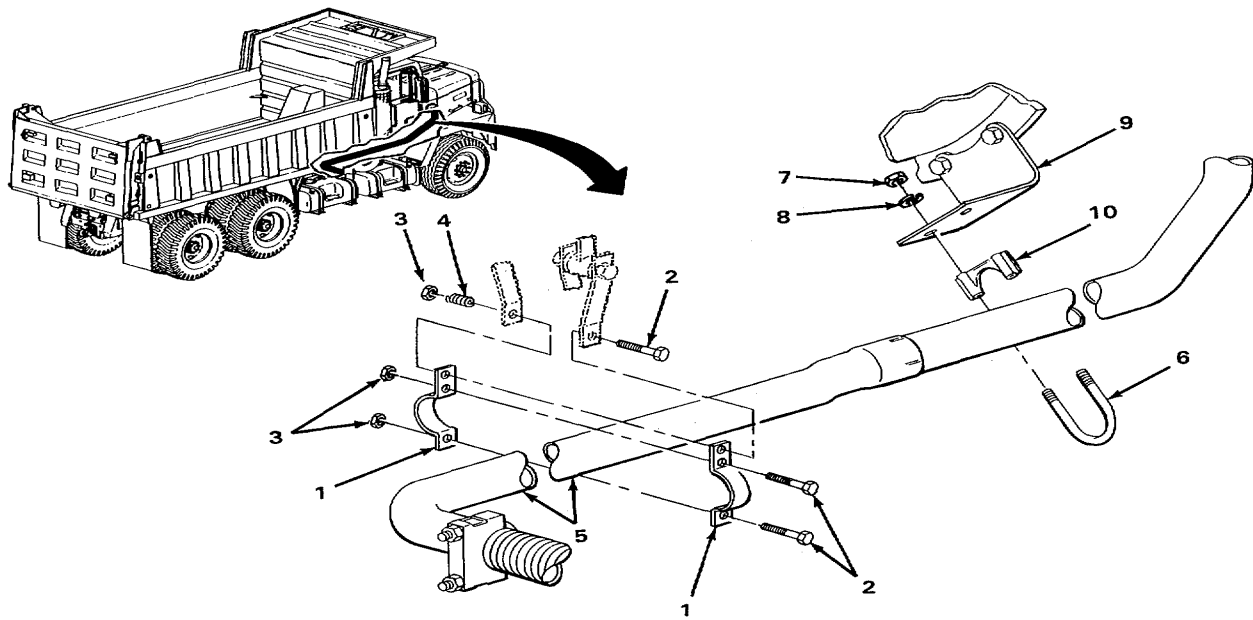
Exhaust system parts become very hot when engine is running. Allow time for parts to cool before working on exhaust system. Hot exhaust system parts will cause serious burns.

- | | | | |
|----|----------------------|--|---|
| 1. | Two clamp halves (1) | Three screws (2), three nuts (3), and spring (4) | Using 9/16-inch box-end wrench and 9/16-inch, 1/2-inch drive, deep socket and ratchet handle, unscrew and take off. |
|----|----------------------|--|---|

2-590

EXHAUST PIPE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
2. Rear exhaust pipe (5)	Two clamp halves (1)	Take off.	
3. Loop clamp (6)	Two nuts (7) and two flat washers (8)	Using 11/16-inch box-end wrench, unscrew and take off.	
4. Bracket (9)	Loop clamp (6) and saddle (10)	Take off.	



2-591

TA244085

EXHAUST PIPE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL - CONTINUED			
5.	Loop clamp (1)	Two nuts (2) and two flat washers (3)	Using 11/16-inch, 1/2-inch drive, deep socket and ratchet handle, unscrew and take off.
6.	Metallic hose (4)	Loop clamp (1) and saddle (5)	Take off.
NOTE			
Assistant must support front and rear exhaust pipes and exhaust pipe elbow when performing steps 7, 8, and 9.			
7.	Clamp (6)	Nut (7)	Using 7/16-inch box-end wrench, unscrew and take off.
8.	Exhaust pipe elbow (8) and turbocharger (9)	Clamp (6)	Take off.
9.	Exhaust diverter (10)	Rear exhaust pipe (11), front exhaust pipe (12), and exhaust pipe elbow (8)	a. Pull off rear exhaust pipe. b. Take front and rear exhaust pipe and exhaust pipe elbow out from under dump truck.

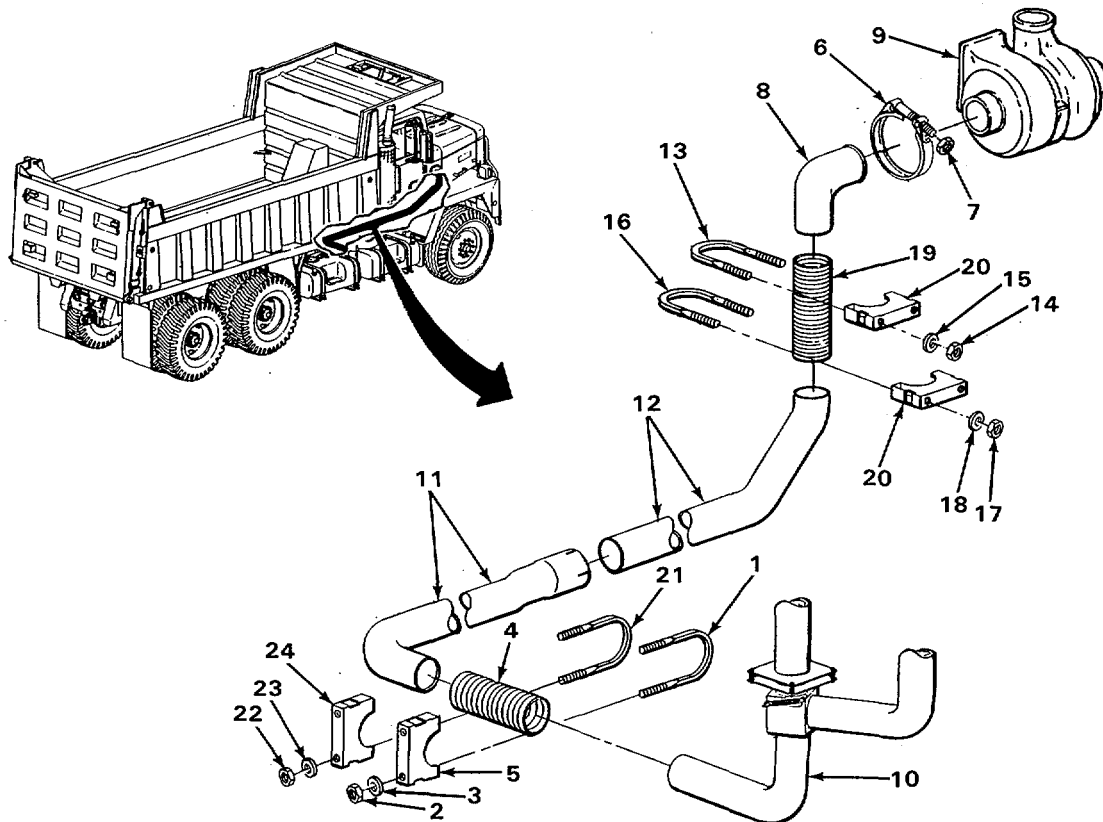
DISASSEMBLY

WARNING**Edges of exhaust system components are sharp. Care must be taken to prevent personal injury.**

10.	Loop clamp (13)	Two nuts (14) and two flat washers (15)	Using 11/16-inch box-end wrench, unscrew and take off.
11.	Loop clamp (16)	Two nuts (17) and two flat washers (18)	Using 11/16-inch box-end wrench, unscrew and take off.
12.	Metallic hose (19)	Two loop clamps (13) and (16) and two saddles (20)	Take off.

EXHAUST PIPE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
13.	Metallic hose (19)	Exhaust pipe elbow (8)	Pull out.
14.	Front exhaust pipe (12)	Metallic hose (19)	Pull off.
15.	Rear exhaust pipe (11)	Front exhaust pipe (12)	Pull out.
16.	Loop clamp (21)	Two nuts (22) and two flat washers (23)	Using 11/16-inch box-end wrench, unscrew and take off.
17.	Metallic hose (4)	Loop clamp (21) and saddle (24)	Take off.
18.	Rear exhaust pipe (11)	Metallic hose (4)	Pull off.



TA244086

EXHAUST PIPE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CLEANING

WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 1000F (380C) and for type #2 is 138°F (590C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

Safety goggles must be worn when using wire brush. Flying rust and metal particles could cause eye injury.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

19.	All parts	<ul style="list-style-type: none"> a. Using wire brush, remove any rust. - b. Clean in drycleaning solvent. c. Using clean dry rags, wipe dry. 	
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INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

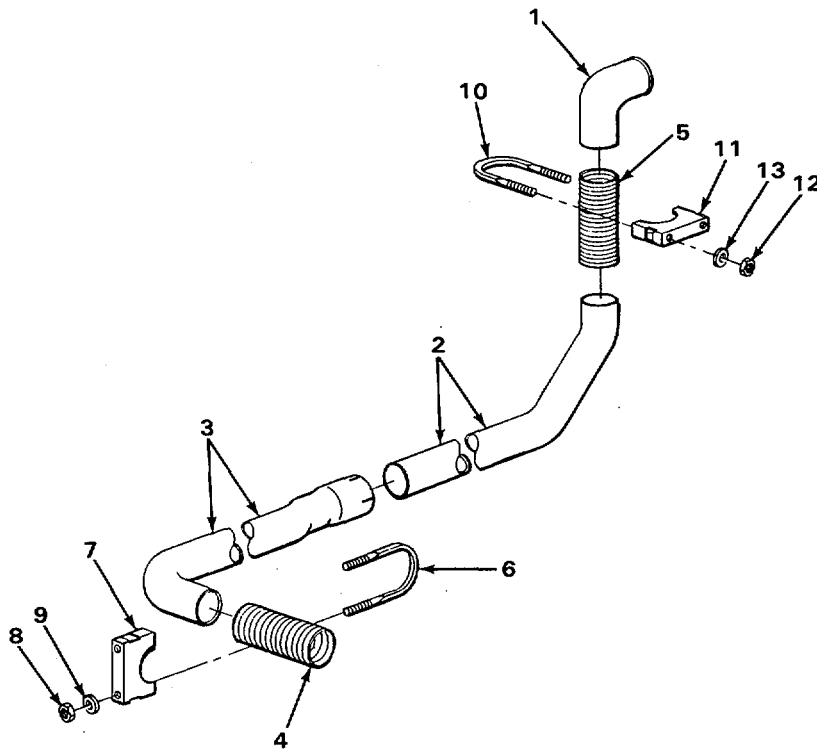
20.	Exhaust pipe elbow (1), front exhaust pipe (2), rear exhaust pipe (3), and metallic hoses (4) and (5)	<ul style="list-style-type: none"> a. Look for cracks, holes, broken welds, and severe rust. b. Look for dents and bends which could restrict exhaust flow. 	
21.	All threaded parts	Look for damaged threads or rounded heads.	

ASSEMBLY

22.	Rear exhaust pipe (3)	Metallic hose (4)	Put on far enough to hold securely.
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EXHAUST PIPE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
23. Metallic hose (4)	Loop clamp (6) and saddle (7)	Put on.
24. Loop clamp (6)	Two nuts (8) and two flat washers (9)	Screw on and tighten using 11/16-inch box-end wrench.
25. Rear exhaust pipe (3)	Front exhaust pipe (2)	Put in far enough to hold securely.
26. Front exhaust pipe (2)	Metallic hose (5)	Put on far enough to hold securely.
27. Metallic hose (5)	Loop clamp (10) and saddle (11)	Put on.
28. Loop clamp (10)	Two nuts (12) and two flat washers (13)	Screw on and tighten using 11/16-inch box-end wrench.



TA244087

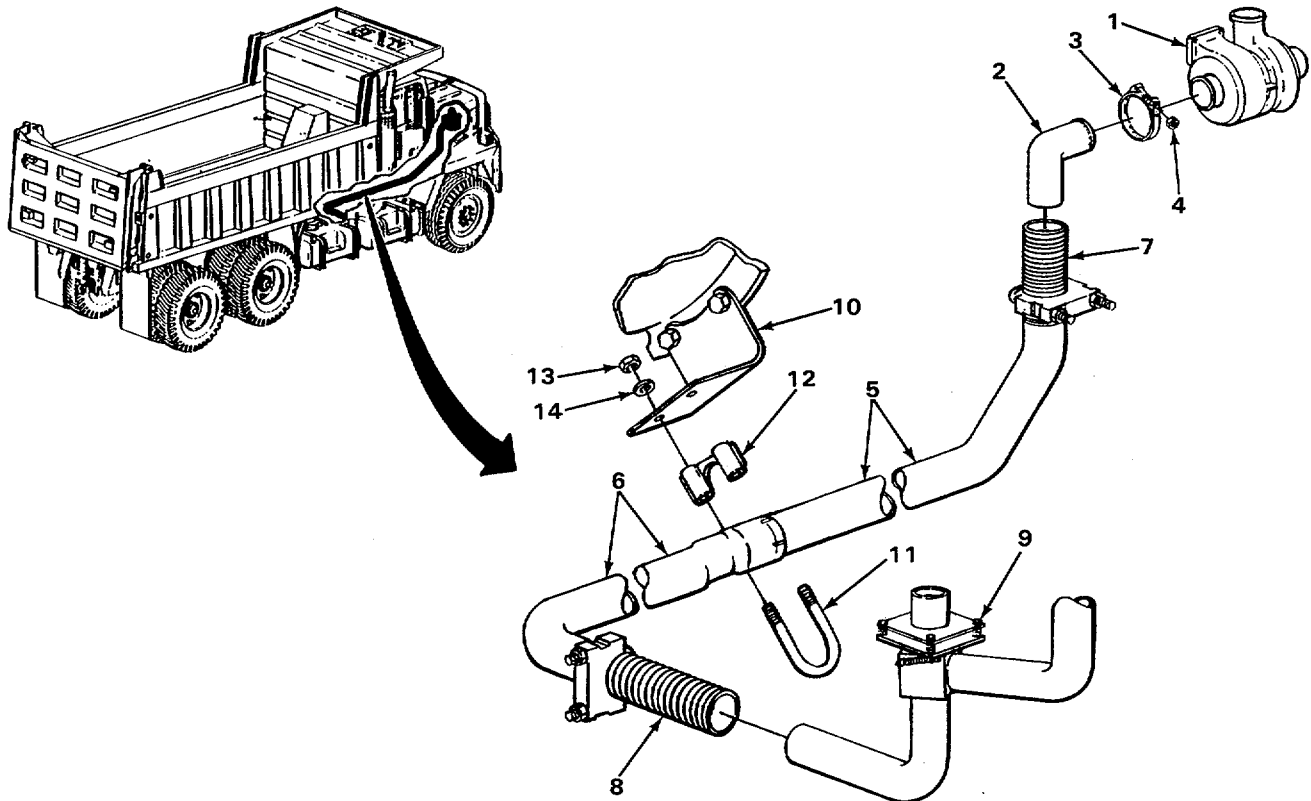
EXHAUST PIPE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
29.	Turbocharger (1)	Exhaust pipe elbow (2)	Put into position.
30.	Exhaust pipe elbow (2)	Clamp (3)	Put on.
31.	Clamp (3)	Nut (4)	Screw on using 7/16-inch box-end wrench. Tighten only enough to hold exhaust pipe elbow in position.
32.		Front exhaust pipe (5), rear exhaust pipe (6), and two metallic hoses (7) and (8)	Place under dump truck as an assembly.
33.	Exhaust pipe elbow (2)	Metallic hose (7)	Put on far enough to hold securely.
34.	Exhaust diverter (9)	Metallic hose (8)	Put on far enough to hold securely.
NOTE			
It may be necessary to rotate front or rear exhaust pipes or adjust depth of metallic hoses in order to mount exhaust pipes to hangers, and to prevent exhaust pipes from touching engine, transmission or frame components.			
35.	Bracket (10)	Loop clamp (11) and saddle (12)	Put in position. Loop clamp must secure front and rear exhaust pipes.

EXHAUST PIPE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

36. Loop clamp (11)	Two nuts (13) and two flat washers (14)	Screw on and tighten using 11/16-inch box-end wrench.	
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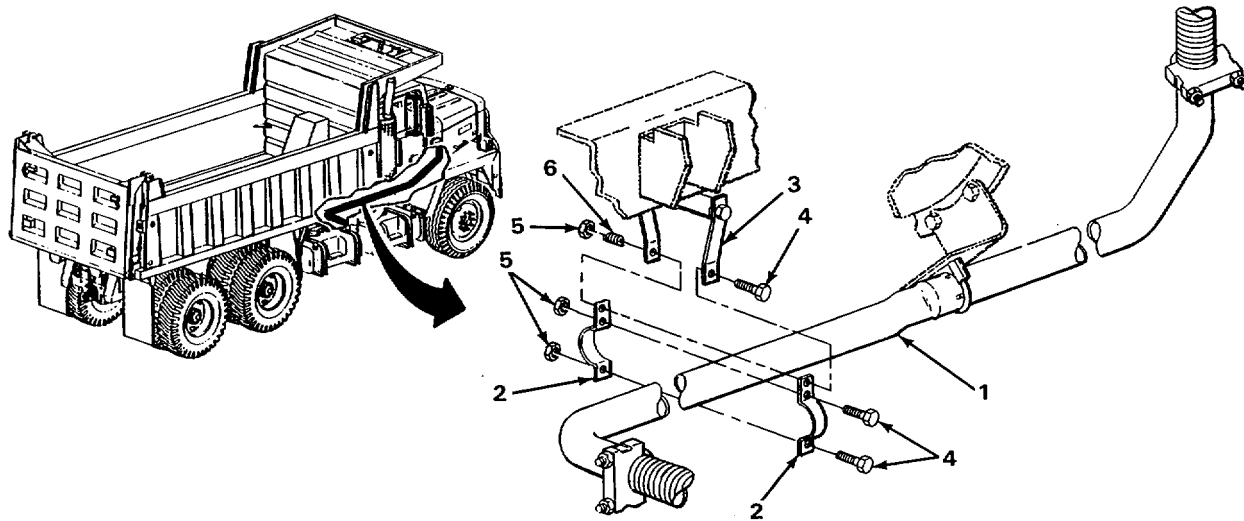
TA244088

EXHAUST PIPE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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INSTALLATION - CONTINUED

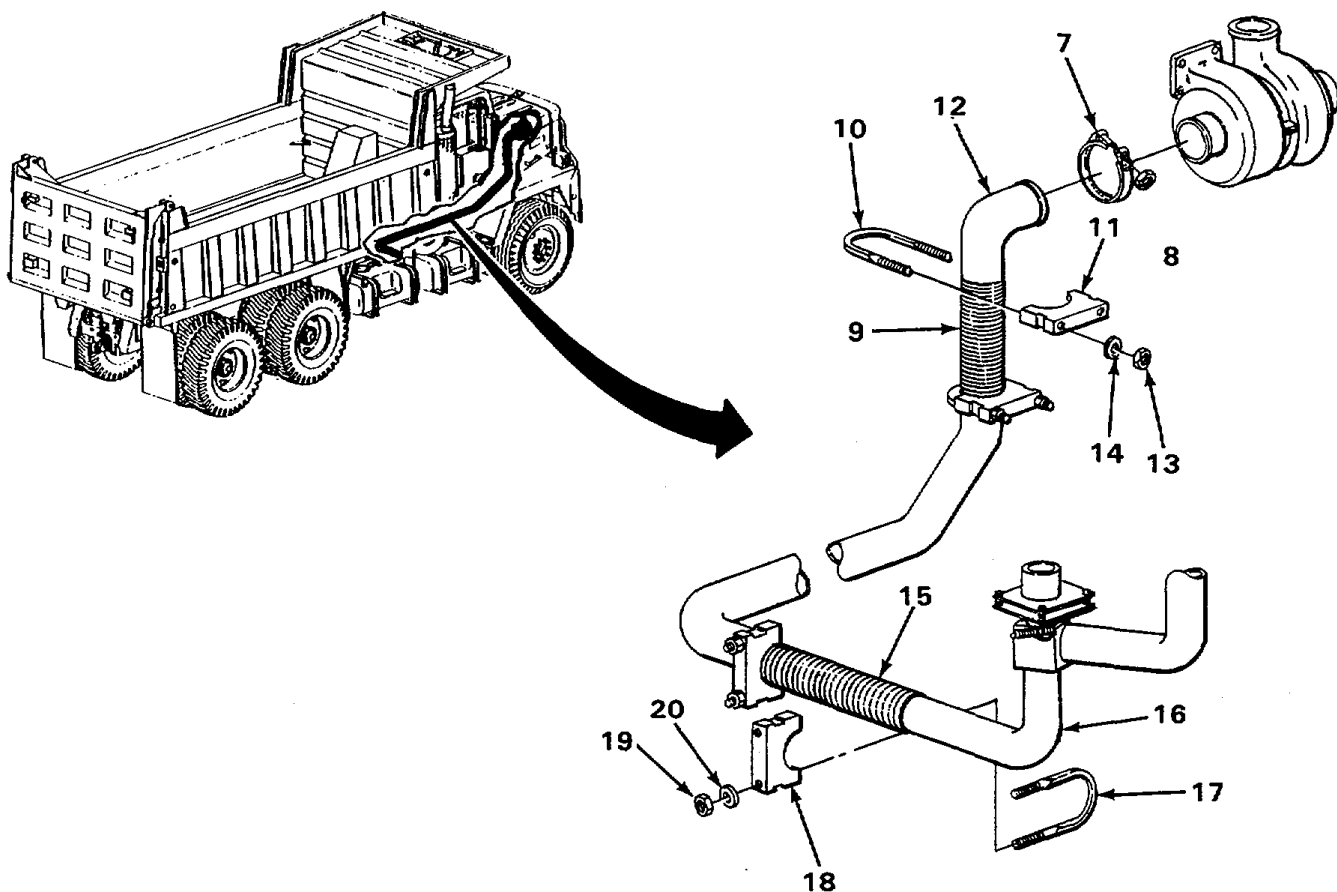
- | | | | |
|-----|-----------------------|--|---|
| 37. | Rear exhaust pipe (1) | Two clamp halves (2) and hanger brackets (3) | Put two clamps in position around rear exhaust pipe and between hanger brackets. |
| 38. | Two clamp halves (2) | Three screws (4), three nuts (5), and spring (6) | <ol style="list-style-type: none"> Position spring on screw. Screw on and tighten using 9/16-inch box-end wrench and 9/16-inch, 1/2-inch drive, deep socket and ratchet handle. |



- | | | | |
|-----|-------------------|--|--|
| 39. | Clamp (7) | Nut (8) | Tighten using 7/16-inch box-end wrench. |
| 40. | Metallic hose (9) | Loop clamp (10), saddle (11), and exhaust elbow (12) | Put loop clamp and saddle in position.
Loop clamp must secure connection of metallic hose and exhaust elbow. |
| 41. | Loop clamp (10) | Two nuts (13) and two flat washers (14) | Screw on and tighten using 11/16-inch box-end wrench. |

TA244089

LOCATION	ITEM	ACTION	REMARKS
42. Metallic hose (15) and exhaust diverter (16)	Loop clamp (17) and saddle (18)	Put loop clamp and saddle in position.	Loop clamp must secure connection of metallic hose and exhaust diverter.
43. Loop clamp (17)	Two nuts (19) and two flat washers (20)	Screw on and tighten using 11/16-inch box-end wrench.	



NOTE

FOLLOW-ON MAINTENANCE: Close right side hood panel (page 2-424).

TASK ENDS HERE

EXHAUST DIVERTER

This task covers:

- | | |
|--------------------------|--|
| a. Removal (page 2-600) | c. Inspection/Replacement (page 2-602) |
| b. Cleaning (page 2-601) | d. Installation (page 2-602) |

INITIAL SETUP:

Tools

- Brush, wire
- Gloves, safety
- Goggles, safety
- Wrench, box-end, 9/16-inch
- Wrench, box-end, 3/4-inch (two required)

Personnel Required

Two

Equipment Condition

Exhaust pipe removed (page 2-590).
Dump body raised and secured (page 2-424).

Materials/Parts

- Rags, wiping (item 15, appendix C)
- Solvent, dry-cleaning (item 19, appendix C)

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL

WARNING

Exhaust system parts become very hot when engine is running. Allow time for parts to cool before working on exhaust system. Hot exhaust system parts will cause serious burns.

Edges of exhaust system components are sharp. Care must be taken to prevent personal injury.

- | | | |
|---|---|---|
| 1. Loop clamp (1) and upper support (2) | Two nuts (3) and two flat washers (4) | Using 9/16-inch box-end wrench, unscrew and take off. |
| 2. Muffler (5) | Loop clamp (1) and saddle (6) | Take off. |
| 3. Exhaust diverter (7) | Four locknuts (8), exhaust shield plate (9), and four springs (10). | <ul style="list-style-type: none"> a. Using 3/4-inch box-end wrench, unscrew and take off locknuts. b. Lift off exhaust shield plate and springs. |

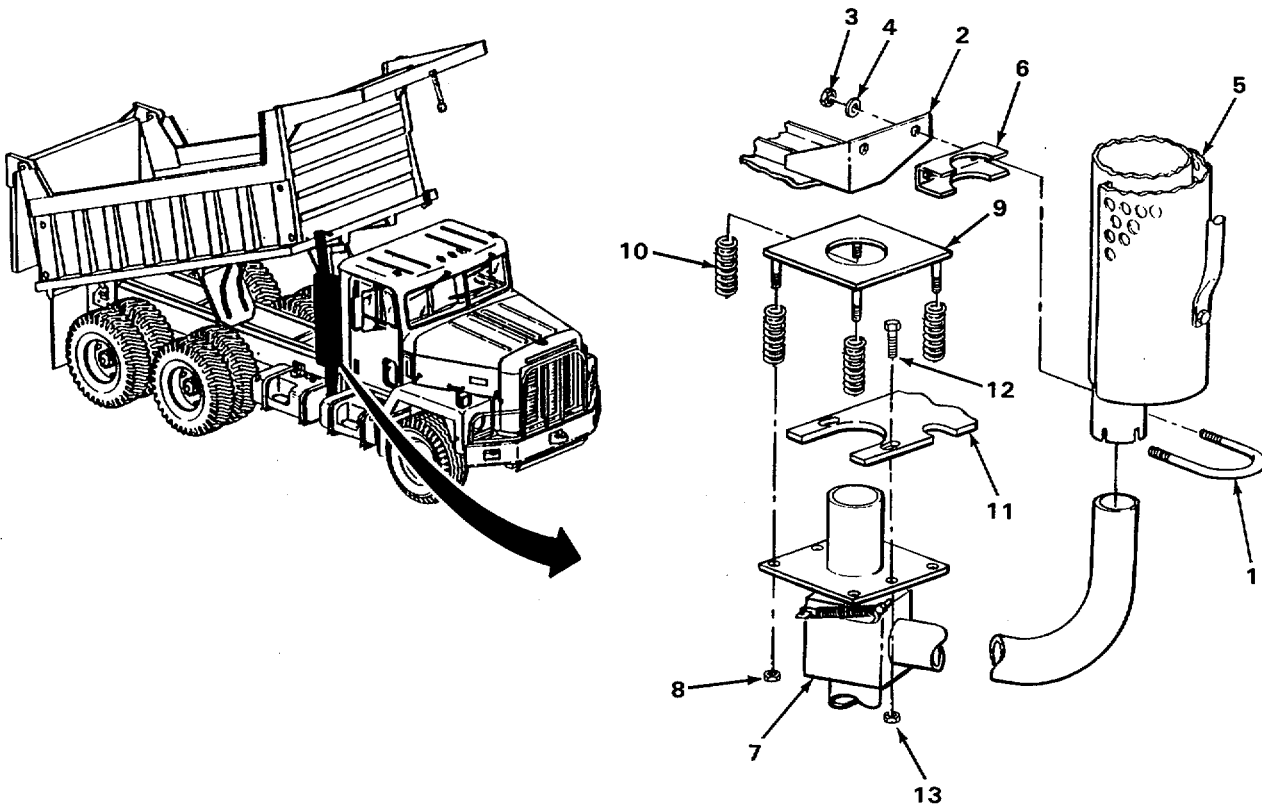
EXHAUST DIVERTER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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WARNING

Due to excessive weight, assistance will be needed to lift and take off exhaust diverter.

- | | | |
|-----------------|-----------------------------------|--|
| 4. Bracket (11) | Two screws (12) and two nuts (13) | Using two 3/4-inch box-end wrenches, unscrew and take off. |
| 5. Muffler (5) | Exhaust diverter (7) | With assistance, take off. |



CLEANING

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

TA244091

EXHAUST DIVERTER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CLEANING - CONTINUED

WARNING

Dry-cleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

Safety goggles must be worn when using wire brush. Flying rust and metal particles could cause eye injury.

- | | | |
|----|-----------|--|
| 6. | All parts | <ul style="list-style-type: none"> a. Using wire brush, remove any rust. b. Clean in dry-cleaning solvent. c. Using clean dry rags, wipe dry. |
|----|-----------|--|

INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

- | | | |
|----|----------------------|---|
| 7. | Exhaust diverter (1) | <ul style="list-style-type: none"> a. Look for cracks, holes, broken welds, and severe rust. b. Check flapper valve (2) for proper operation. c. Check for weak or broken springs. |
| 8. | All threaded parts | Look for damaged threads or rounded heads. |

INSTALLATION

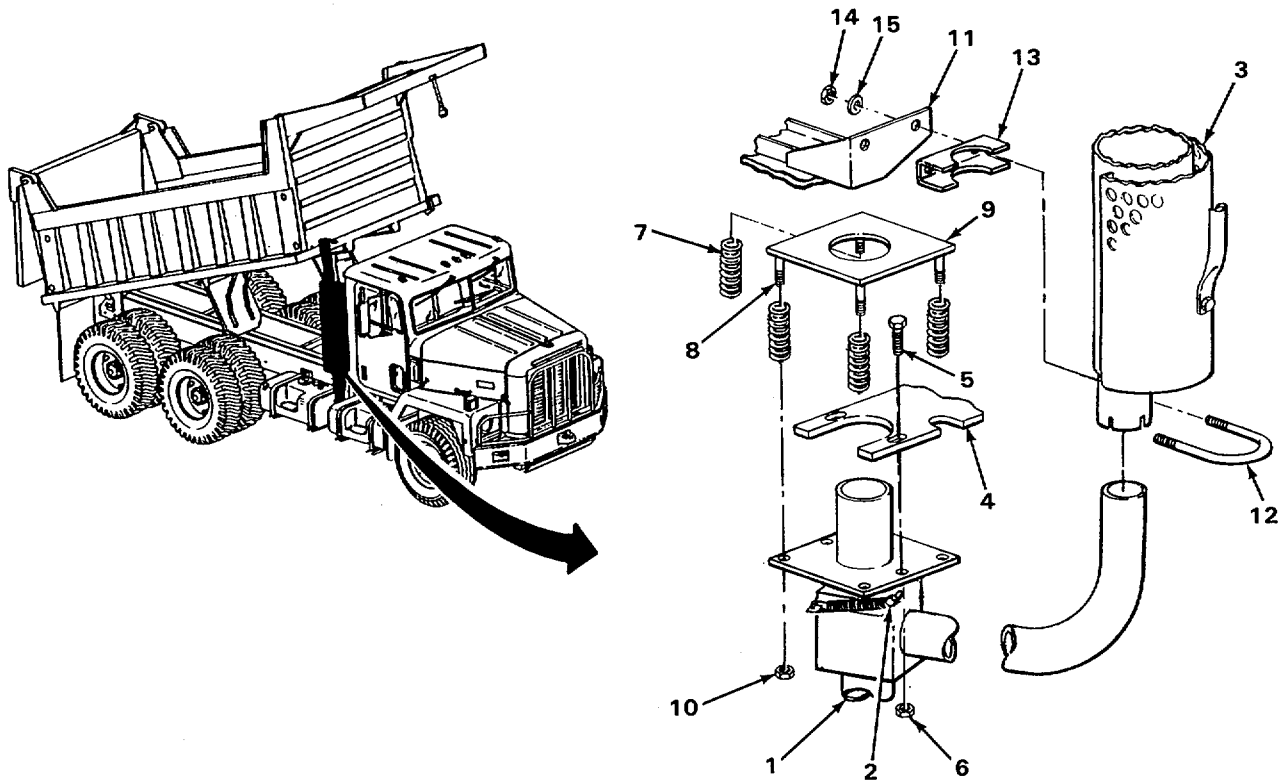
WARNING

Edges of exhaust system components are sharp. Care must be taken to prevent personal injury.

- | | | |
|-----------------|---------------------------------|---|
| 9. Muffler(3) | Exhaust diverter (1) | Put in far enough to hold securely. |
| 10. Bracket (4) | Two screws (5) and two nuts (6) | <ul style="list-style-type: none"> a. Put in position. b. Screw in and tighten using two 3/4-inch box-end wrenches. |

EXHAUST DIVERTER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
11. Exhaust diverter (1)	Four springs (7), four studs (8), and exhaust shield plate (9)	Put on.	
12. Exhaust shield plate (9)	Four locknuts (10)	Screw on using 3/4-inch box-end wrench until four springs begin to compress, then tighten one additional turn.	
13. Muffler (3) and upper support (11)	Loop clamp (12) and saddle (13)	Put in position.	
14. Loop clamp (12)	Two nuts (14) and two flat washers (15)	Screw on and tighten using 9/16-inch box-end wrench.	



FOLLOW-ON MAINTENANCE:

1. Install exhaust pipe (page 2-590).
2. Release and lower dump body (page 2-424).

TASK ENDS HERE

TA244092

MUFFLER AND RAIN CAP

This task covers:

- | | |
|-----------------------------|--|
| a. Removal (page 2-604) | d. Inspection/Replacement (page 2-607) |
| b. Disassembly (page 2-605) | e. Assembly (page 2-608) |
| c. Cleaning (page 2-607) | f. Installation (page 2-609) |

INITIAL SETUP:

Tools

- Brush, wire
- Gloves, safety
- Goggles, safety
- Wrench, box-end, 1/2-inch
- Wrench, box-end, 9/16-inch (two required)

Materials/Parts

- Rags, wiping (item 15, appendix C)
- Solvent, dry-cleaning (item 19, appendix C)

Materials/Parts - Continued

- Lockwasher, grab handle (two required)
- Lockwasher, mounting clamp (four required)

Personnel Required

Two

Equipment Condition

Dump body raised and secured (page 2-424).

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

REMOVAL

WARNING

Exhaust system parts become very hot when engine is running. Allow time for parts to cool before working on exhaust system. Hot exhaust system parts will cause serious burns.

- | | | |
|--|---------------------------------------|--|
| 1. Loop clamp (1) and spacer bracket (2) | Two nuts (3) and two flat washers (4) | Using 9/16-inch box-end wrench, loosen and take off. |
| 2. Muffler(5) | Loop clamp (1) and saddle (6) | Take off. |

WARNING

Assistant must support muffler to prevent falling and causing personal injury.

- | | | |
|---|--|--|
| 3. Loop clamp (7) and upper support (8) | Two nuts (9) and two flat washers (10) | Using 9/16-inch box-end wrench, loosen and take off. |
|---|--|--|

MUFFLER AND RAIN CAP - CONTINUED

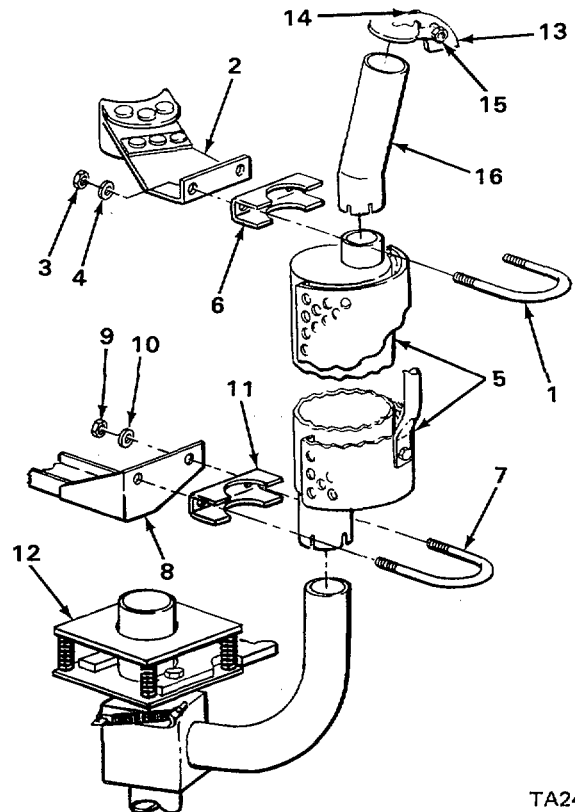
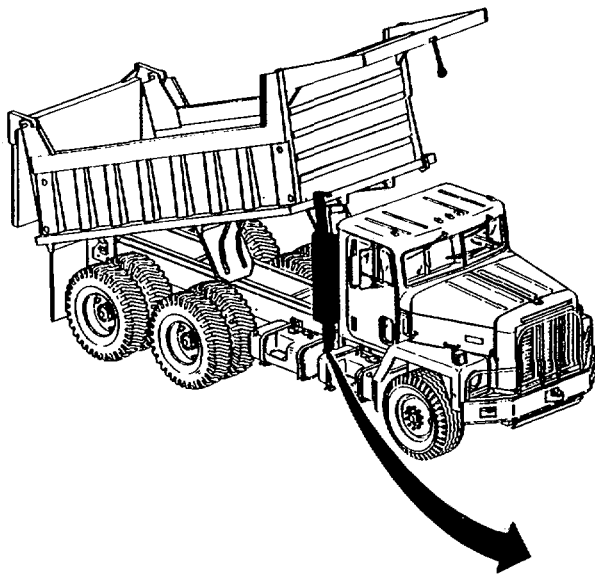
LOCATION	ITEM	ACTION	REMARKS
4. Muffler(5)	Loop clamp (7) and saddle (11)	Take off.	
5. Exhaust diverter (12)	Muffler (5)	With assistance, pull off.	

DISASSEMBLY

WARNING

Edges of exhaust system components are sharp. Care must be taken to prevent personal injury.

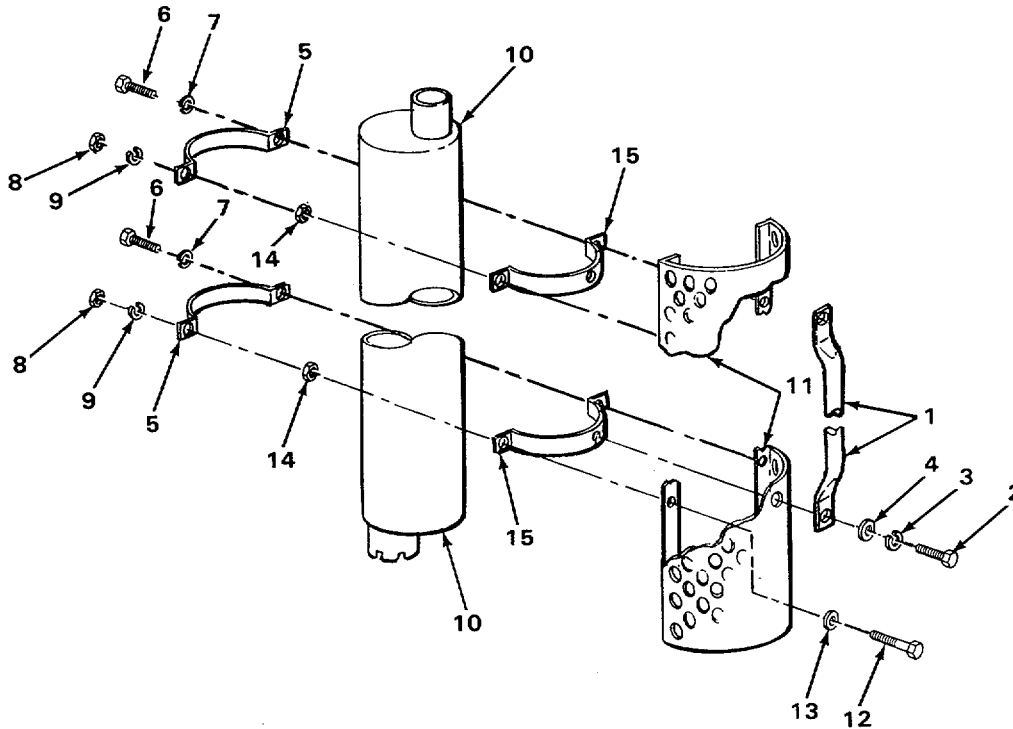
6. Rain cap (13)	Screw (14) and nut (15)	Using 1/2-inch box-end wrench, loosen only. Do not take off.
7. Muffler pipe (16)	Rain cap (13)	Pull off.
8. Muffler (5)	Muffler pipe (16)	Pull off.



TA244093

MUFFLER AND RAIN CAP - CONTINUED

LOCATION	ITEM	ACTION REMARKS
DISASSEMBLY - CONTINUED		
9. Grab handle (1)	Two screws (2), two lockwashers (3), and two flat washers (4)	a. Using 1/2-inch box-end wrench, unscrew and take off. b. Take off grab handle. c. Get rid of lockwashers.
10. Two mounting clamps (5)	Two screws (6) and two lockwashers (7)	a. Using 9/16-inch box-end wrench, unscrew and take off. b. Get rid of lockwashers.
11.	Two nuts (8) and two lockwashers (9)	a. Using 9/16-inch box-end wrench, unscrew and take off. b. Get rid of lockwashers. c. Take off mounting clamps (5).
12. Muffler (10)	Muffler guard (11)	Slide off.
13. Two mounting clamps (5)	Two screws (12), two flat washers (13), two nuts (14), and two mounting clamps (15)	a. Using two 9/16-inch box-end wrenches, unscrew and take off. b. Take two mounting clamps off muffler guard (11).



TA244094

MUFFLER AND RAIN CAP - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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CLEANING

WARNING

Dry-cleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 100°F (380C) and for type #2 is 138°F (590C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

Safety goggles must be worn when using wire brush. Flying rust and metal particles could cause eye injury.

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

- | | | | |
|-----|-----------|--|--|
| 14. | All parts | a. Using wire brush, remove any rust.
b. Clean in dry-cleaning solvent.
c. Using clean dry rags, wipe dry. | |
|-----|-----------|--|--|

INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

MUFFLER AND RAIN CAP - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSPECTION/REPLACEMENT - CONTINUED			
15.	Muffler (1), muffler pipe (2), and muffler guard (3)	a. Look for cracks, holes, broken welds, and excessive rust. b. Look for dents and bends which would restrict exhaust flow.	
16.	Rain cap (4)	Check for freedom of movement.	
17.	All threaded parts	Look for damaged threads or rounded heads.	
ASSEMBLY			
18. Muffler guard (3)	Two mounting clamps (5), grab handle (6), two screws (7), two new lockwashers (8), and two flat washers (9)	a. Aline holes with mounting clamps and grab handle. b. Screw in and tighten using 1/2-inch box-end wrench.	
19. Two mounting clamps (5)	Two screws (10), two flat washers (11), and two nuts (12)	Screw in and tighten using two 9/16-inch box-end wrenches.	
20. Muffler (1)	Muffler guard (3), two mounting clamps (13), two new lockwashers (14), and two nuts (15)	a. Position muffler guard on muffler. b. Aline mounting clamps. c. Screw in and tighten using 9/16-inch box-end wrench. Tighten only enough to hold in place.	
21.	Two screws (16) and two new lockwashers (17)	Screw in and tighten using 9/16-inch box-end wrench.	
22.	Muffler pipe (2)	Put on.	
23. Muffler pipe (2)	Rain cap (4), screw (18), and nut (19)	Put on.	Do not tighten nut.

MUFFLER AND RAIN CAP - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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INSTALLATION

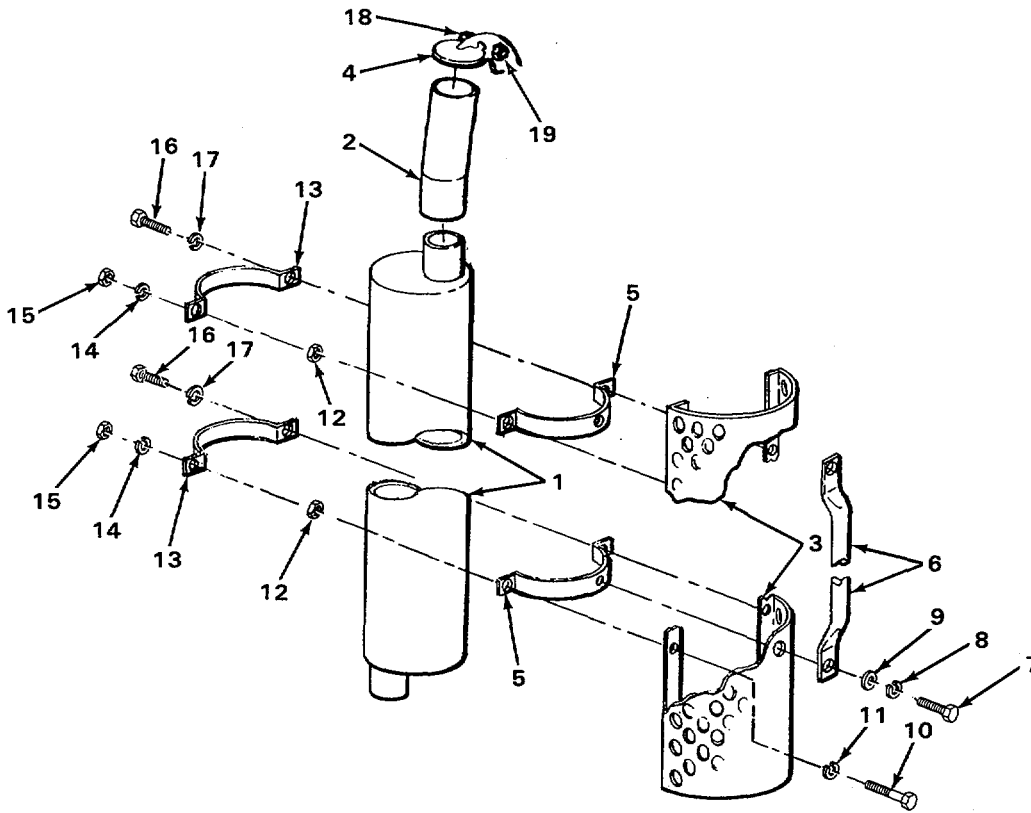
WARNING

Assistant must support muffler to prevent falling and causing personal injury.

Edges of exhaust system components are sharp. Care must be taken to prevent personal injury.

NOTE

Before tightening mounting clamps, make sure exhaust system components do not obstruct dump body or right side door operation.

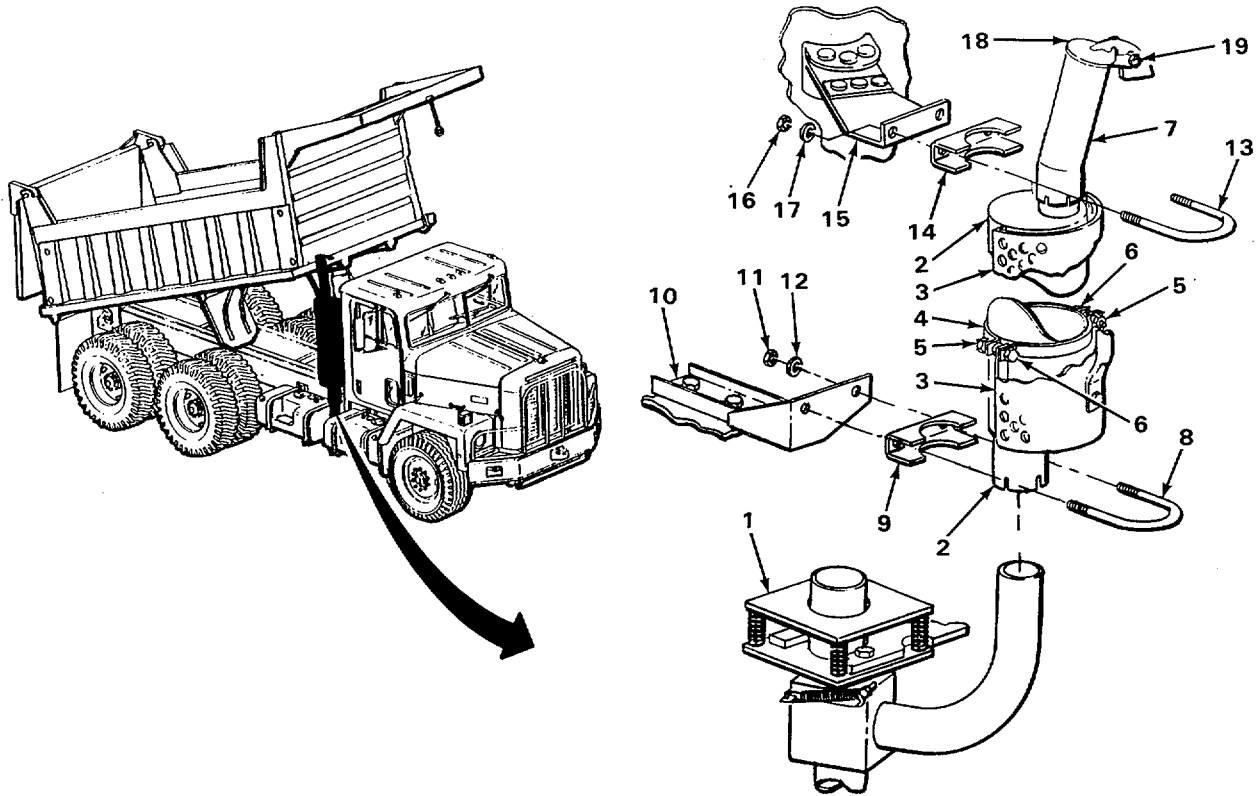


TA244095

MUFFLER AND RAIN CAP - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSTALLATION - CONTINUED		
24. Exhaust diverter (1)	Muffler (2)	Put on and rotate so that muffler is closest to dump truck cab and will not interfere with right side door and dump body operation.
25. Muffler (2)	Muffler guard (3)	Rotate until grab handle is at a 45-degree angle from right side door.
26. Two mounting clamps (4)	Two nuts (5) and two screws (6)	Tighten using two 9/16-inch box-end wrenches.
27. Muffler (2)	Muffler pipe (7)	Rotate until outlet faces away from dump truck.
28. Muffler (2)	Loop clamp (8) and saddle (9)	Position around muffler and through upper support (10).
29. Loop clamp (8)	Two nuts (11) and two flat washers (12)	Put on and tighten using 9/16-inch box-end wrench.
30. Muffler pipe (7)	Loop clamp (13) and saddle (14)	Position around muffler pipe and through spacer bracket (15).
31. Loop clamp (13)	Two nuts (16) and two flat washers (17)	Put on and tighten using 9/16-inch box-end wrench.
32. Muffler pipe (7)	Rain cap (18)	Rotate until hinge faces towards front of dump truck.
33. Rain cap (18)	Nut (19)	Tighten using 1/2-inch box-end wrench.

MUFFLER AND RAIN CAP - CONTINUED



NOTE

FOLLOW-ON MAINTENANCE: Lower dump body (page 2-424).

TASK ENDS HERE NOTE

EXHAUST DIVERTER BRACKET

This task covers:

- a. Removal (page 2-612)
- b. Inspection/Replacement (page 2-613)
- c. Installation (page 2-614)

TA244096

EXHAUST DIVERTER BRACKET - CONTINUED

INITIAL SETUP:

Tools

- Extension, 6-inch, 1/2-inch drive
- Handle, ratchet, 1/2-inch drive
- Socket, 5/8-inch, 1/2-inch drive
- Wrench, box-end, 11/16-inch
- Wrench, box-end, 3/4-inch (two required)

Personnel Required

One

Equipment Condition

Dump body raised and secured (page 2-424).

Materials/Parts

- Lockwasher (two required)
- Locknut (four required)

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

REMOVAL

WARNING

Exhaust system parts become very hot when engine is running. Allow time for parts to cool before working on exhaust system. Hot exhaust system parts will cause serious burns.

1. Exhaust diverter (1)	Four locknuts (2), exhaust shield plate (3), and four springs (4)	<ul style="list-style-type: none"> a. Using 3/4-inch box-end wrench, unscrew and take off. Get rid of locknuts. b. Lift off exhaust shield plate and springs. 	
2.	Two screws (5) and two nuts (6)	Using two 3/4-inch box-end wrenches, unscrew and take off.	
3. Upper support (7) and lower support (8)	Two screws (9), two flat washers (10), two lockwashers (11), and two nuts (12)	Using 5/8-inch, 1/2-inch drive socket, 6-inch extension and ratchet handle, and 11/16-inch box-end wrench, unscrew and take out. Get rid of lockwashers.	
4.	Two lower insulators (13), two spacers (14), bracket (15), and two upper insulators (16)	<ul style="list-style-type: none"> a. Take off lower insulators. b. Pull spacers down and out. c. Take off bracket and upper insulators. 	

EXHAUST DIVERTER BRACKET - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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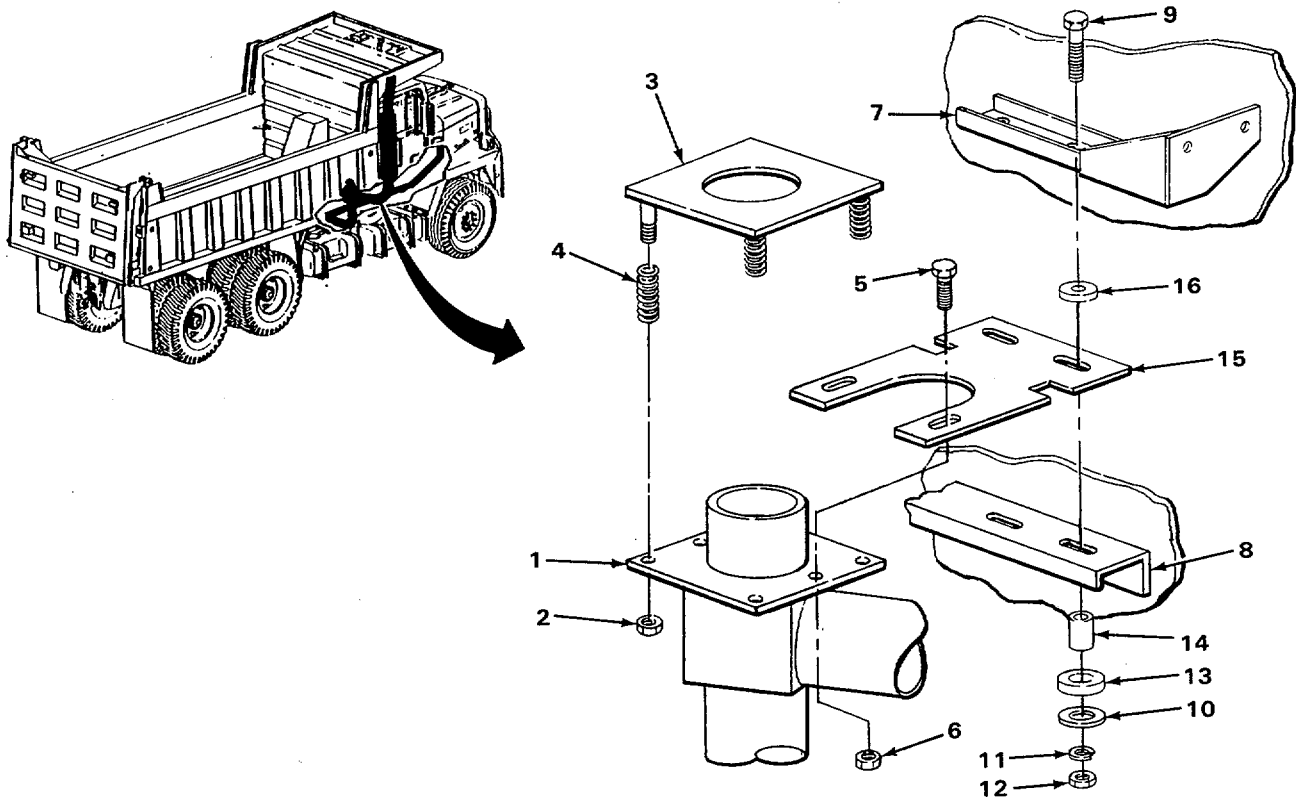
INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to **General Maintenance Instructions** (page 2-424).

- | | | |
|------|--------------------------|---|
| 5. | Exhaust shield plate (3) | Look for cracks, breaks, bends, or worn screw slots. |
| 6. | Insulators (13 and 16) | Look for cracks, breaks, hardness, or excessive wear. |
| 7. A | All threaded parts | Look for damaged threads or rounded heads. |

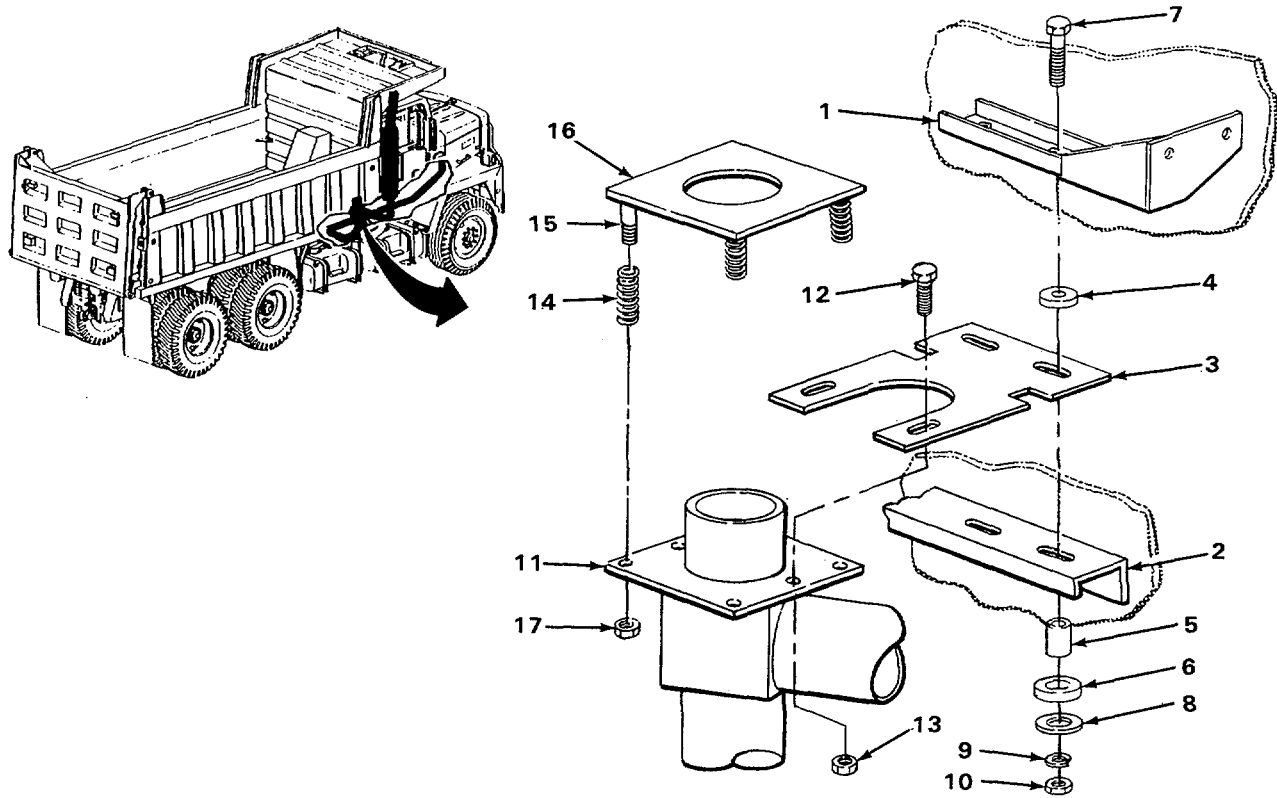


TA244097

EXHAUST DIVERTER BRACKET - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
8. Upper support (1) and lower support (2)	Bracket (3)	Put between upper and lower supports.
9.	Two upper insulators (4), two spacers (5), two lower insulators (6)	a. Put upper insulators in position. b. Push spacers up through upper c. Put lower insulators on spacers.
10.	Two screws (7), two flat washers (8), two new lockwashers (9), and two nuts (10)	a. Push screws down through upper support (1). b. Put on flat washers, new lockwashers, and nuts. Hand tighten.
11. Exhaust diverter (11)	Bracket (3)	Aline holes.
12. Bracket (3)	Two screws (12) and two nuts (13)	Screw in and tighten using two 3/4-inch box-end wrenches.
13. Upper support (1)	Two screws (7) and two nuts (10)	Tighten using 5/8-inch, 1/2-inch drive socket, 6-inch extension and ratchet handle, and 11/16-inch box-end wrench.
14. Exhaust diverter (11)	Four springs (14), four studs (15), and exhaust shield plate (16)	a. Put springs on studs. b. Put exhaust shield plate in position.
15.	Exhaust shield plate (16) and four new locknuts (17)	a. Push exhaust shield plate down. b. Screw on locknuts and tighten using 3/4-inch box-end wrench, until springs begin to compress, then tighten one additional turn.

EXHAUST DIVERTER BRACKET - CONTINUED



NOTE

FOLLOW-ON MAINTENANCE: Release and lower dump body (page 2-424).

TASK ENDS HERE

EXHAUST DIVERTER BRACKET SUPPORTS

This task covers:

- a. Removal (page 2-616)
- b. Inspection/Replacement (page 2-616)
- c. Installation (page 2-618)

INITIAL SETUP:

Tools

- Wrench, box-end, 9/16-inch
- Wrench, box-end, 5/8-inch
- Wrench, box-end, 11/16-inch

Materials/Parts

Lockwasher (five required)

Personnel Required

Two

Equipment Condition

Exhaust diverter bracket removed (page 2-611).

TA244098

EXHAUST DIVERTER BRACKET SUPPORTS - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
<u>WARNING</u>			
Exhaust system parts become very hot when engine is running. Allow time for parts to cool before working on exhaust system. Hot exhaust system parts will cause serious burns.			
Assistant must support muffler to prevent falling and causing personal injury.			
1.	Loop clamp (1)	Two nuts (2) and two flat washers (3)	Using 9/16-inch box-end wrench, unscrew and take off.
2.	Muffler (4)	Loop clamp (1) and saddle (5)	Take off.
3.	Upper support (6)	Screw (7), flat washer (8), lockwasher (9), and nut (10)	a. Using 5/8-inch and 11/16-inch box-end wrenches, unscrew and take out. b. Get rid of lockwasher.
4.		Upper support (6), lower insulator (11), spacer (12), and upper insulator (13)	Take off.
NOTE			
Hold lower support while performing next step.			
5.	Lower support (14)	Four screws (15) and four lockwashers (16)	a. Using 9/16-inch box-end wrench, unscrew and take out. b. Get rid of lockwashers.
6.	Rear of cab (17)	Lower support (14)	Take off.

INSPECTION/REPLACEMENT

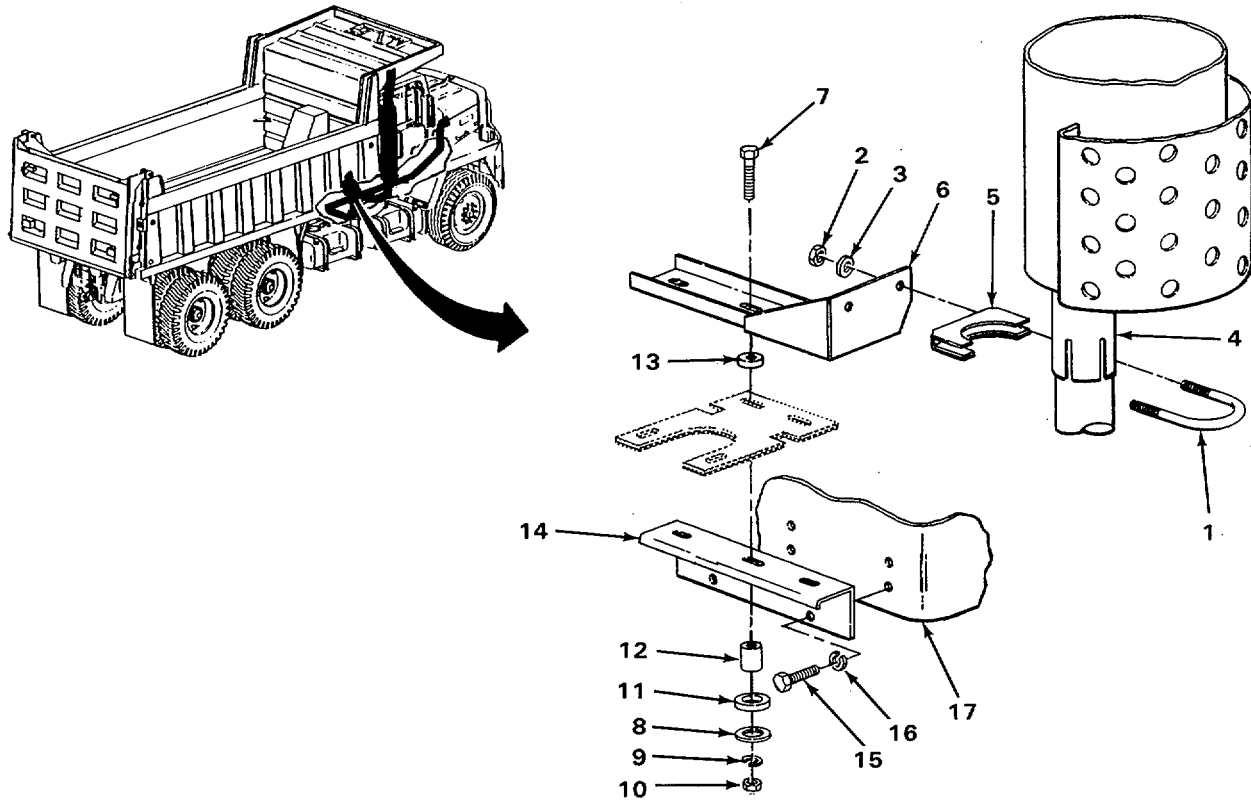
NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

EXHAUST DIVERTER BRACKET SUPPORTS - CONTINUED

LOCATION	ITEM	ACTION REMARKS
7.	Upper support (6)	Look for cracks, breaks, bends, or worn screw holes.
8.	Lower support (14)	Look for cracks, breaks, bends, or worn screw slots or holes.
9.	Insulators (11 and 13)	Look for cracks, breaks, hardness, or excessive wear.
10.	All threaded parts	Look for damaged threads or rounded heads.



TA244099

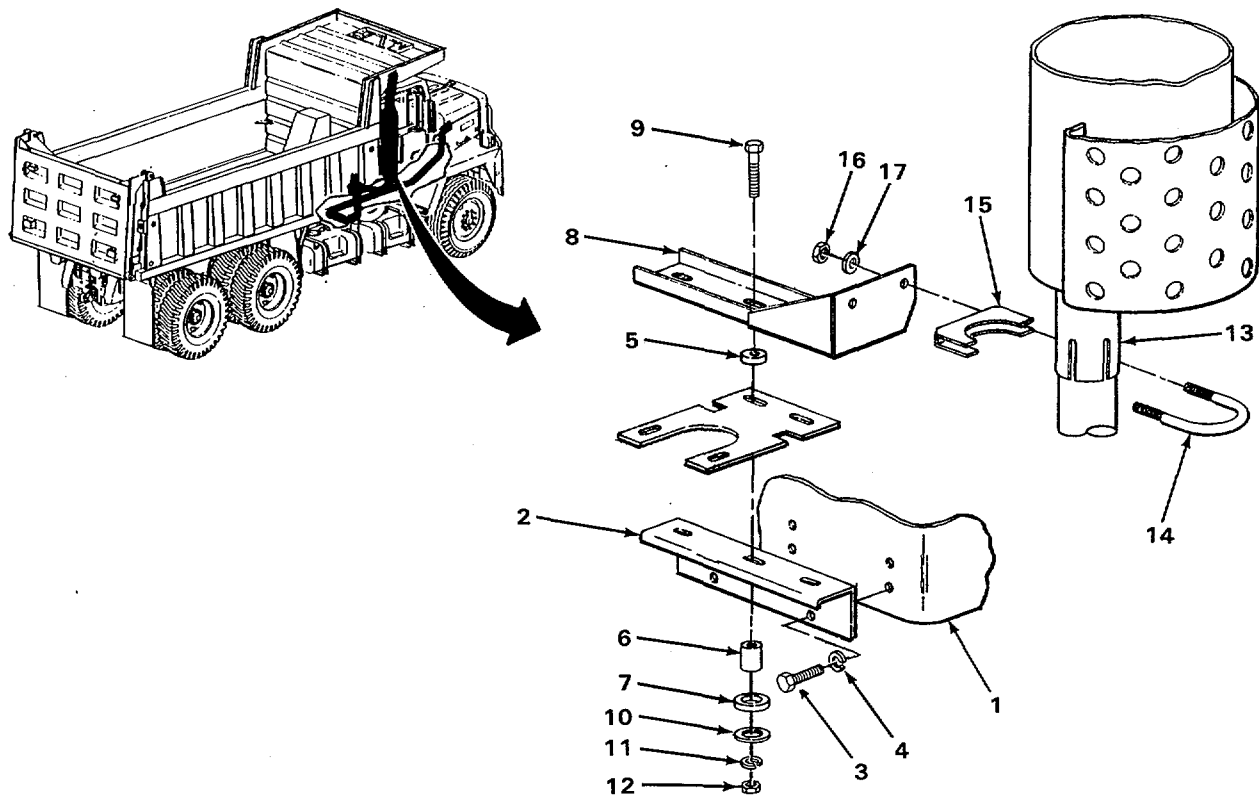
EXHAUST DIVERTER BRACKET SUPPORTS - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
11. Rear of cab (1)	Lower support (2), four screws (3), and four new lock-washers (4)	a. Put lower support into position. b. Screw in and tighten using 9/16-inch box-end wrench.
12. Lower support (2)	Upper insulator (5), spacer (6), and lower insulator (7)	a. Put upper insulator into position. b. Push spacer up through upper insulator. c. Put lower insulator on spacer.
13.	Upper support (8)	Put into position.
14. Upper support (8)	Screw (9), flat washer (10), new lockwasher (11), and nut (12)	a. Push screws down through upper support. b. Put on flat washer, new lockwasher, and nut.

NOTE**Aline open holes on upper and lower supports.**

15.	Screw (9) and nut (12)	Tighten using 5/8-inch and 11/16-inch box-end wrenches.
16. Muffler (13)	Loop clamp (14) and saddle (15)	Put on.
17.	Two nuts (16) and flat washers (17)	Screw on and tighten using 9/16-inch box-end wrench.

EXHAUST DIVERTER BRACKET SUPPORTS - CONTINUED



NOTE

FOLLOW-ON MAINTENANCE: Install exhaust diverter bracket (page 2-611).

TASK ENDS HERE

EXHAUST PIPE FRONT HANGER

This task covers:

- a. Removal (page 2-620)
- b. Inspection (page 2-620)
- c. Installation (page 2-620)

INITIAL SETUP:

Tools

- Wrench, box-end, 9/16-inch
- Wrench, box-end, 11/16-inch

Personnel Required

One

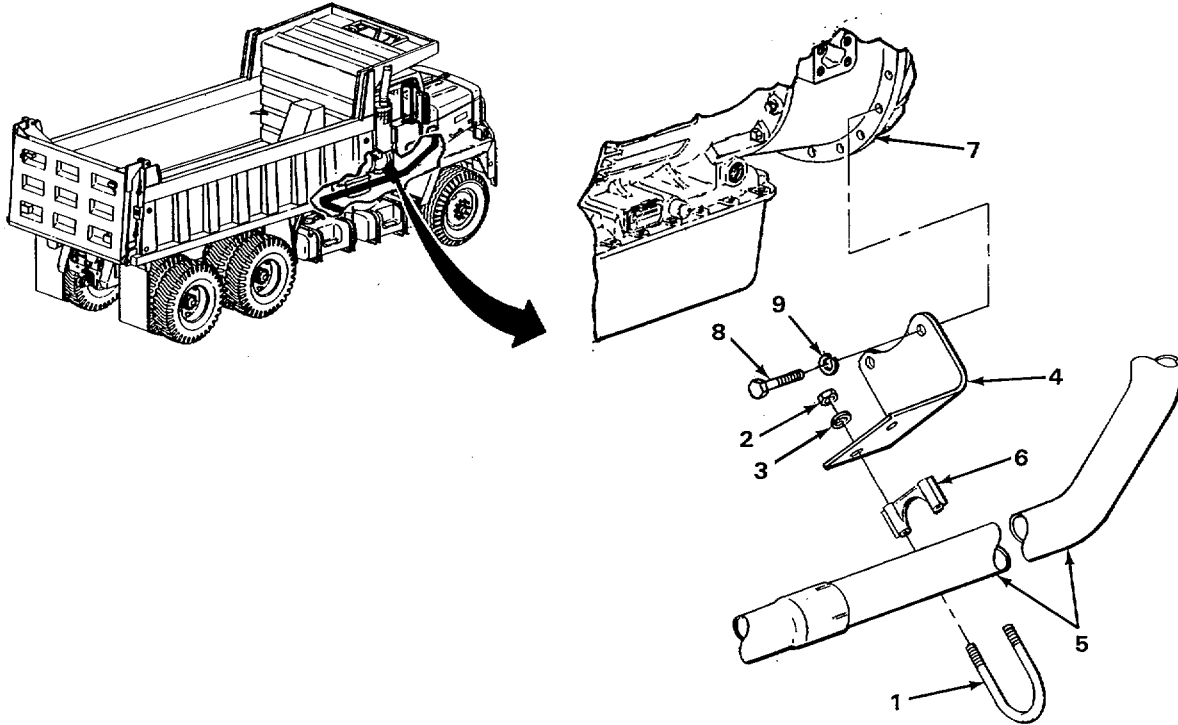
Materials/Parts

- Lockwasher (two required)

EXHAUST PIPE FRONT HANGER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
<u>WARNING</u>			
Exhaust system parts become very hot when engine is running. Allow time for parts to cool before working on exhaust system. Hot exhaust system parts will cause serious burns.			
1. Loop clamp (1)	Two nuts (2) and two flat washers (3)		Using 11/16-inch box-end wrench, unscrew and take off.
2. Bracket (4) and	Loop clamp (1) exhaust pipe (5)		Take off. and saddle (6)
3. Transmission (7)	Two screws (8), two lockwashers (9), and bracket (4)	a. Using 9/16-inch box-end wrench, unscrew and take out. b. Take off bracket. c. Get rid of lockwashers.	
INSPECTION			
NOTE			
Replace all damaged or defective parts.			
For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).			
4.	Bracket (4)		Look for cracks, breaks, bends, or oversized holes.
5.	All threaded parts		Look for damaged threads or rounded heads.
INSTALLATION			
6. Transmission (7)	Bracket (4), two screws (8), and two new lockwashers (9)	a. Put in position.	b. Screw in and tighten using 9/16-inch box-end wrench.
7. Bracket (4) and exhaust pipe (5)	Loop clamp (1) and saddle (6)		Put around exhaust pipe and through bracket.
8. Loop clamp (1)	Two nuts (2) and two flat washers (3)		Screw on and tighten using 11/16-inch box- $\frac{3}{4}$ end wrench.

EXHAUST PIPE FRONT HANGER - CONTINUED



TASK ENDS HERE

EXHAUST PIPE REAR HANGER

This task covers:

- a. Removal (page 2-622)
- b. Inspection/Replacement (page 2-622)
- c. Installation (page 2-622)

INITIAL SETUP:

Tools

- Handle, ratchet, 1/2-inch drive
- Socket, 9/16-inch, 1/2-inch drive
- Socket, 3/4-inch, 1/2-inch drive
- Wrench, box-end, 9/16-inch
- Wrench, box-end, 3/4-inch

Personnel Required

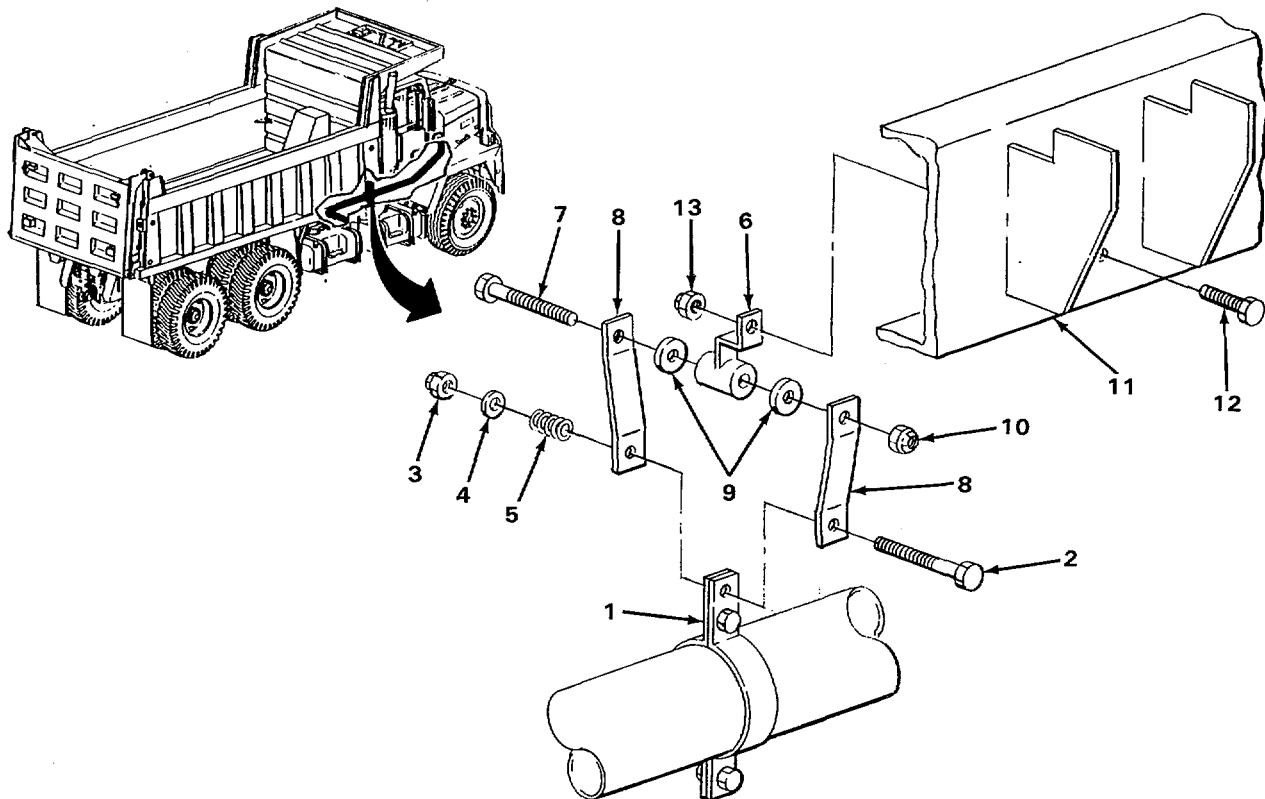
One

EXHAUST PIPE REAR HANGER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
<u>WARNING</u>			
Exhaust system parts become very hot when engine is running. Allow time for parts to cool before working on exhaust system. Hot exhaust system parts will cause serious burns.			
1. Exhaust pipe clamp (1)	Screw (2), nut (3), flat washer (4), and spring (5)		Using 9/16-inch, 1/2-inch drive socket and ratchet handle and 9/16-inch box-end wrench, unscrew and take off.
2. Support (6)	Screw (7), two hangers (8), two bushings (9), and nut (10)		Using 9/16-inch, 1/2-inch drive socket and ratchet handle and 9/16-inch box-end wrench, unscrew and take off.
3. Frame rail (11)	Screw (12), nut (13), and support (6)	a. Using 3/4-inch, 1/2-inch drive socket and ratchet handle and 3/4-inch box-end wrench, unscrew and take off. b. Takeout support.	
INSPECTION/REPLACEMENT			
NOTE			
Replace all damaged or defective parts.			
For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).			
4.	Two hangers (8) and support (6)		Look for cracks, breaks, bends, worn holes, or excessive corrosion.
5.	Two bushings (9)		Look for cracked, broken, worn, or brittle rubber.
6.	All threaded parts		Look for damaged threads or rounded heads.
INSTALLATION			
7. Frame rail (11)	Support (6), screw (12), and nut (13)	a. Put support in position. b. Screw in and tighten using 3/4-inch, 1/2-inch drive socket and ratchet handle and 3/4-inch box-end wrench. Support must face downward.	

EXHAUST PIPE REAR HANGER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
8. Support (6)	Screw (7), two hangers (8), two bushings (9), and nut (10)	Put in position.	Hand tighten only.
9. Exhaust pipe clamp (1)	Two hangers (8), screw (2), spring (5), flat washer (4), and	a. Aline holes in hangers with holes in exhaust pipe clamp. b. Put in screw, spring, flat washer and nut (3) nut. c. Tighten using 9/16-inch, 1/2-inc., drive socket and ratchet handle and 9/16-inch box-end wrench.	
10. Support (6)	Screw (7) and nut (10)	Tighten using 9/16-inch, 1/2-inch drive socket and ratchet handle and 9/16-inch box-end wrench.	



TASK ENDS HERE

TA244102

MUFFLER UPPER SUPPORT

This task covers:

- a. Removal (page 2-624)
- b. Inspection/Replacement (page 2-625)
- c. Installation (page 2-626)

INITIAL SETUP:

Tools	Personnel Required
Wrench, box-end, 7/16-inch (two required)	One
Wrench, box-end, 1/2-inch	
Wrench, box-end, 9/16-inch	

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
<u>WARNING</u>			
Exhaust system parts become very hot when engine is running. Allow time for parts to cool before working on exhaust system. Hot exhaust system parts will cause serious burns.			
1.	Muffler pipe (1)	Two nuts (2) and two flat washers (3)	Using 9/16-inch box-end wrench, unscrew and take off.
2.		Loop clamp (4) and saddle (5)	Take off.
3.	Spacer (6)	Three screws (7) and three nuts (8)	Using two 7/16-inch box-end wrenches, unscrew and take out.
4.	Insulator (9)	Spacer (6) and mounting plate (10)	Take off.
5.	Upper bracket (11)	Three screws (12) and three nuts (13)	Using two 7/16-inch box-end wrenches, unscrew and take out.
6.		Insulator (9)	Take out.
7.	Side of cab (14)	Four screws (15), upper bracket (11), and lower bracket (16)	<ul style="list-style-type: none"> a. Using 1/2-inch box-end wrench, unscrew and take out screws. b. Take off upper and lower brackets.

MUFFLER UPPER SUPPORT - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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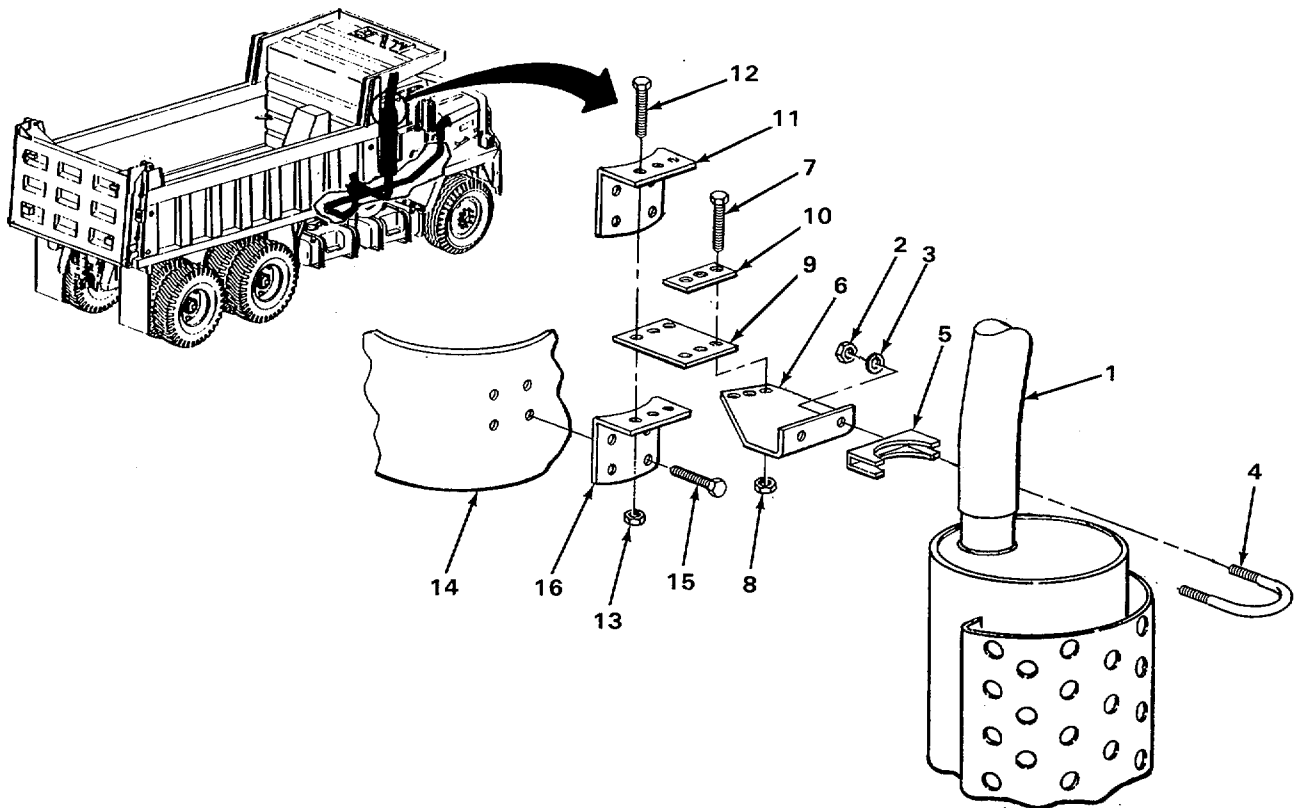
INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

- | | | |
|-----|---|--|
| 8. | Spacer (6), mounting plate (10), upper bracket (11), and lower bracket (16) | Look for cracks, breaks, worn holes, or corrosion. |
| 9. | Insulator (9) | Look for cracked, broken, worn, or brittle rubber. |
| 10. | All threaded parts | Look for damaged threads or rounded heads. |

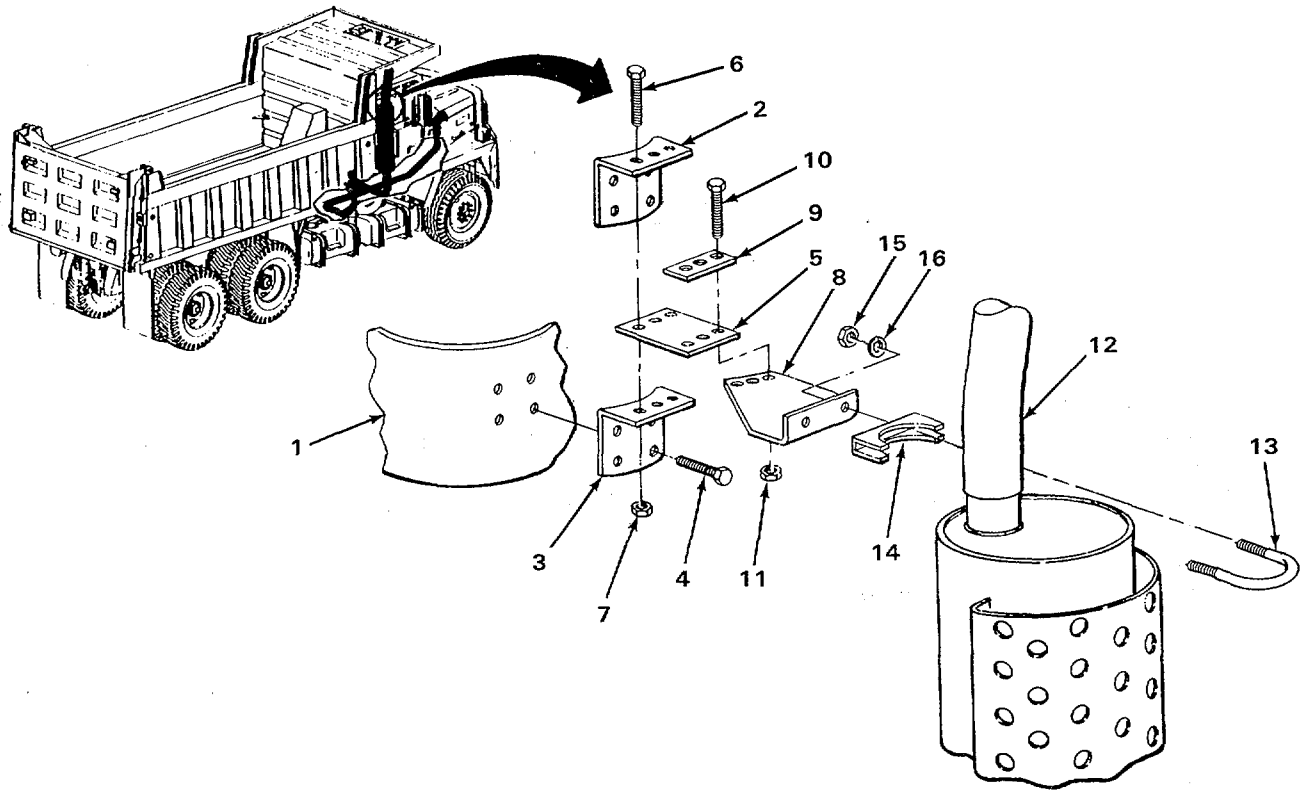


TA244103

MUFFLER UPPER SUPPORT - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSTALLATION		
11. Side of cab (1)	Upper bracket (2), lower bracket (3), and four screws (4)	a. Put upper and lower bracket in position. b. Screw in and tighten four screws. Hand tighten only.
12. Upper bracket (2) and lower bracket (3)	Insulator (5)	Put in place.
13.	Three screws (6) and three nuts (7)	Screw in and tighten using two 7/16-inch box-end wrenches.
14.	Four screws (4)	Tighten using 1/2-inch box-end wrench.
15. Insulator (5)	Spacer (8) and mounting plate (9)	Put in position.
16. Mounting plate (9)	Three screws (10) and three nuts (11)	Screw in and tighten using two 7/16-inch box-end wrenches.
17. Muffler pipe (12) and spacer (8)	Loop clamp (13) and saddle (14)	Put in position.'
18. Loop clamp (13)	Two nuts (15) and two flat washers (16)	Screw on and tighten using 9/16-inch box- end wrench.

MUFFLER UPPER SUPPORT - CONTINUED



TASK ENDS HERE

TA244104

Section IX. COOLING SYSTEM MAINTENANCE

	Page		Page
Air Compressor Coolant Hoses.....	2-655	Radiator Outlet Hose.....	2-639
Fan Drivebelt.....	2-661	Radiator Vent Hose.....	2-642.1
Front Water Manifold Hose.....	2-651.8	Thermostat.....	2-633
Radiator.....	2-628	Water Filter.....	2-637
Radiator Bypass Coolant Line.....	2-647	Water Filter Hoses.....	2-658
Radiator Deaeration Hose.....	2-651.6	Water Pump Belt Adjustment.....	2-636
Radiator Hose.....	2-651.0		
Radiator Inlet Hose.....	2-643		

RADIATOR

This task covers:

- | | |
|---|--|
| <ul style="list-style-type: none"> a. Checking Coolant Protection (page 2-628) b. Draining (page 2-629) | <ul style="list-style-type: none"> c. Flushing (page 2-630) d. Refilling (page 2-630) e. Adding (page 2-632) |
|---|--|

INITIAL SETUP:

<p>Tools</p> <p>Can, filling, radiator, 3-gallon Container, 6-gallon Hose, water Pliers, slip-joint, 8-inch Screwdriver, flat-tip, 1/4-inch Tester, antifreeze, cooling system</p> <p>Materials/Parts</p> <p>Coolant, antifreeze (item 6, appendix C) Rags, wiping (item 15, appendix C)</p>	<p>Personnel Required</p> <p>One</p> <p>Equipment Condition</p> <p>Right and left side hood panels opened (page 2-424).</p> <p>References</p> <p>TB 750-651 (Use of Antifreeze Solutions in Engine Cooling Systems) TM 5-3805-254-10 (Operator's Manual)</p>
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LOCATION	ITEM	ACTION	REMARKS
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CHECKING COOLANT PROTECTION

WARNING

Be careful when removing radiator cap. If engine is hot, escaping steam could burn you. Use a rag to cover radiator cap. Unscrew cap just enough to allow any built-up pressure to escape. When all pressure has been relieved, unscrew cap and take off.

- | | | |
|-----------------|---------|-------------------------------------|
| 1. Radiator (1) | Cap (2) | Turn counterclockwise and take off. |
|-----------------|---------|-------------------------------------|

RADIATOR - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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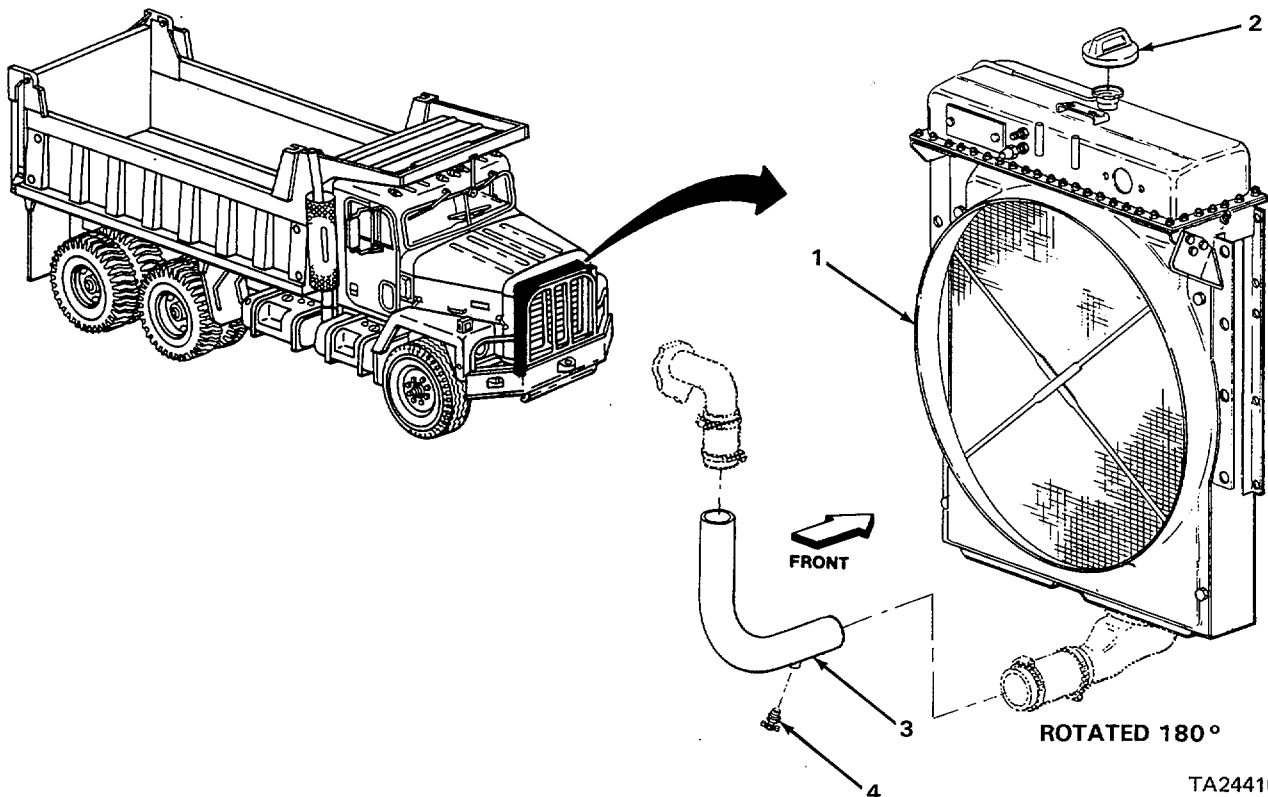
DRAINING

2.	Coolant	Check coolant protection (TB 750-651).	
3.	Cap (2)	Put on and turn clockwise.	

NOTE

If drained coolant is not contaminated, save it for later use. If coolant is contaminated, get rid of it and use new coolant.

4.	Radiator (1)	Cap (2)	Turn counterclockwise and take off.
5.	Radiator outlet pipe (3)	Draincock (4)	<ol style="list-style-type: none"> Place 6-gallon container underneath. Using 8-inch slip-joint pliers, turn counterclockwise to open. Allow coolant to drain. When 6-gallon container is filled, turn clockwise to close. Get rid of coolant. See note above. Repeat steps a thru e until all coolant is drained.



TA244105

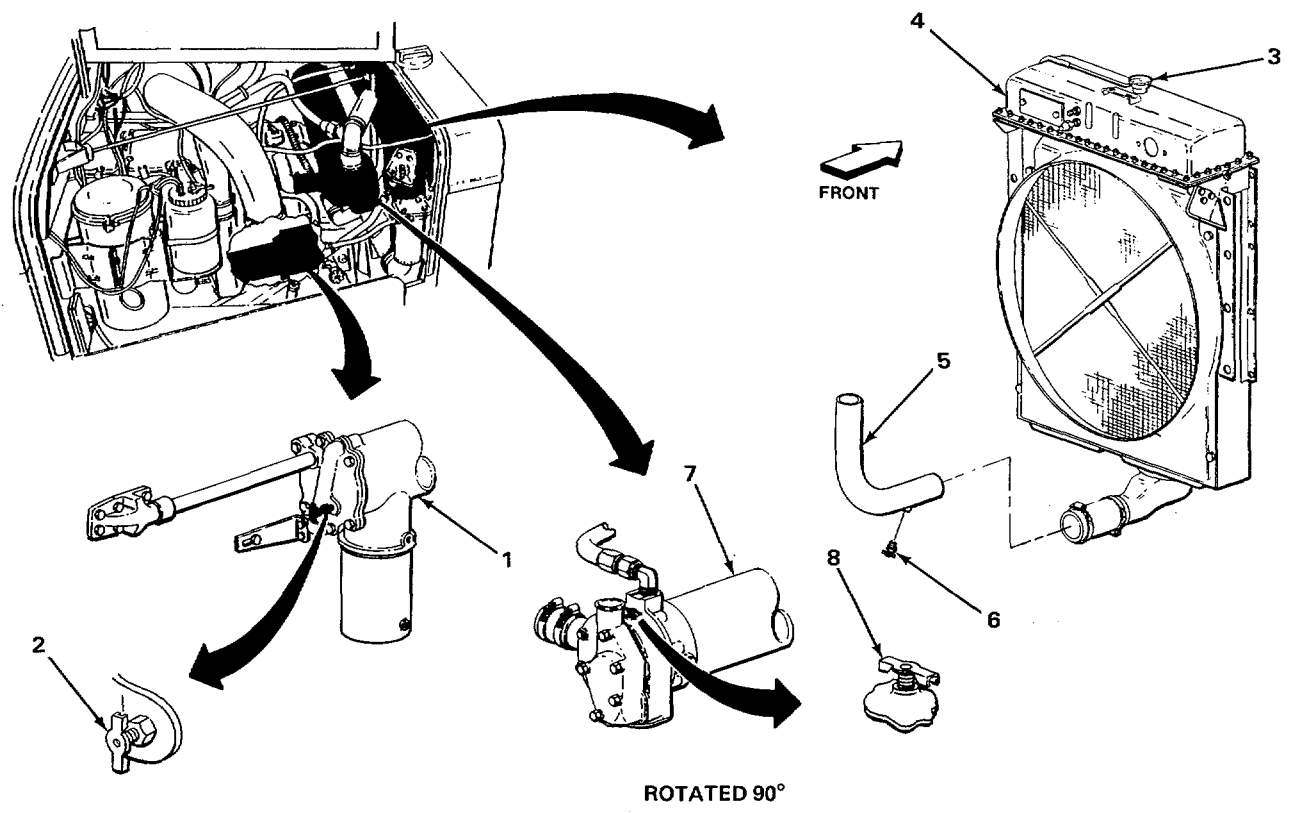
RADIATOR - CONTINUED

LOCATION	ITEM	ACTION REMARKS
DRAINING - CONTINUED		
6. Engine oil cooler (1)	Draincock (2)	<ol style="list-style-type: none"> Place 6-gallon container underneath. Using 8-inch slip-joint pliers, turn counterclockwise to open. Allow coolant to drain. Turn clockwise to close using 8-inch slip-joint pliers. Get rid of coolant. See note above. Go to step 11 to refill.
NOTE		
Perform steps 1 thru 6 before flushing radiator.		
FLUSHING		
7. Filler neck (3)	Radiator (4)	Using water hose, fill with water.
8. Radiator outlet	Draincock (6) pipe (5)	<ol style="list-style-type: none"> Using 8-inch slip-joint pliers, turn counterclockwise to open. Regulate water going into radiator at same speed as water coming out of draincock.
9.	Dump truck	<ol style="list-style-type: none"> Start engine (TM 5-3805-254-10). Run engine until all water coming out of draincock is clear. Shut down engine (TM 5-3805-254-10). Take out water hose.
10. Radiator outlet pipe (5)	Draincock (6)	<ol style="list-style-type: none"> Allow water to drain into suitable container or shop drainage system. Turn clockwise to close using 8-inch slip-joint pliers.
REFILLING		
11. Torque converter cooler (7)	Draincock (8)	Using 8-inch slip-joint pliers, turn counterclockwise to open.
12. Radiator (4)	Filler neck (3)	<ol style="list-style-type: none"> Using 3-gallon radiator filling can, or a hose with regulated output, fill with coolant until a steady stream of coolant flows from draincock (8).

RADIATOR - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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- b. Quickly close draincock (8) and tighten using 8-inch slip-joint pliers. **Do not overtighten.**
- c. Continue filling with coolant to 1-inch (25.4 mm) below top of radiator upper tank.
- d. Let stand 5 minutes and visually recheck coolant level.
- e. Fill to 1-inch (25.4 mm) below top of radiator upper tank.



TA244106

RADIATOR - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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REFILLING - CONTINUED

- | | | | |
|-----|------------|--|--|
| 13. | Dump truck | a. Start engine and allow engine to reach operating temperature (TM 5-3805-254-10).
b. Shut down engine (TM 5-3805-254-10). | |
|-----|------------|--|--|

WARNING

Be careful when bleeding torque converter cooler. Escaping steam and coolant could burn you. Open draincock just enough to allow any built up pressure to escape.

- | | | | |
|-----|-----------------------------|----------------------------|--|
| 14. | Torque converter cooler (1) | Draincock (2) | a. Using 8-inch slip-joint pliers, turn counterclockwise to open.
b. When all air has escaped and a steady stream of coolant flows out, turn clockwise to close using 8-inch slip-joint pliers.
c. Repeat steps a and b until all air has escaped. |
| 15. | Radiator (3) | Coolant | Fill to 1-inch (25.4 mm) below top of radiator upper tank. |
| 16. | Cap (4) | Put on and turn clockwise. | |

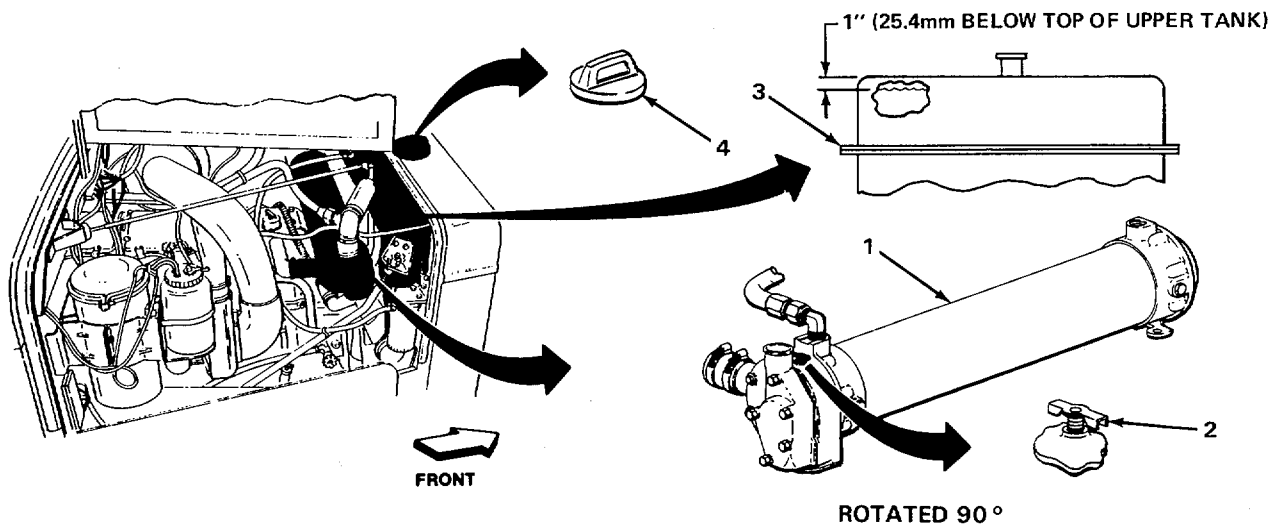
ADDING

WARNING

Be careful when removing radiator cap. If engine is hot, escaping steam could burn you. Use a rag to cover radiator cap. Unscrew cap just enough to allow any built-up pressure to escape. When all pressure has been relieved, unscrew cap and take off.

- | | | | |
|-----|---------|--|--|
| 17. | Cap (4) | Turn counterclockwise and take off. | |
| 18. | Coolant | a. Visually check coolant level.
b. If coolant level is lower than 1-inch (25.4 mm) below top of radiator upper tank, fill to proper level. | |
| 19. | Cap (4) | Put on and turn clockwise. | |

RADIATOR - CONTINUED



NOTE

FOLLOW-ON MAINTENANCE: Close right and left side hood panels (page 2-424).

TASK ENDS HERE

THERMOSTAT

This task covers:

- a. Removal (page 2-634)
- c. Installation (page 2-634)
- c. Testing (page 2-634)

INITIAL SETUP:

Tools

- Container, metal, 1/2-gallon
- Extension, 6-inch, 1/2-inch drive
- Handle, ratchet, 1/2-inch drive
- Scraper,
- Screwdriver, flat-tip, 1/4-inch
- Socket, 9/16-inch, 1/2-inch drive
- Thermometer, 0° to 220°F

Materials/Parts

- Gasket, thermostat housing (one required)

Materials/Parts - Continued

- Sealer, silicone (item 16, appendix C)
- Lockwasher, thermostat housing (five required)

Personnel Required

One

Equipment Condition

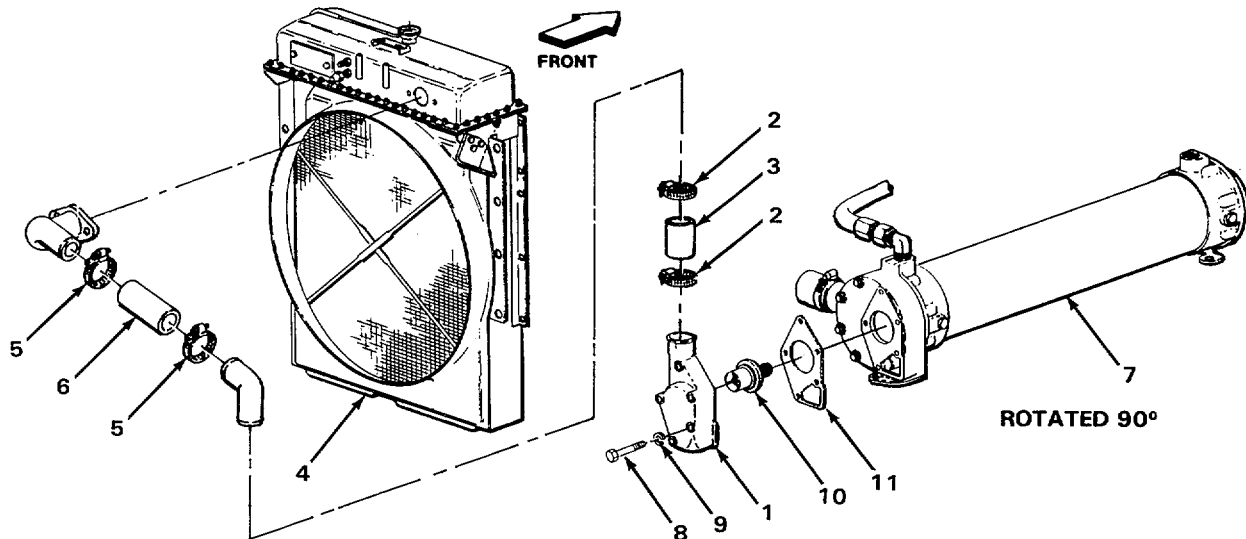
- Cooling system drained (page 2-628).
- Left and right side hood panels opened (page 2-424).

THERMOSTAT - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1.	Thermostat housing (1)	Hose clamps (2) and radiator hose (3)	<ol style="list-style-type: none"> Using 1/4-inch flat-tip screwdriver, loosen hose clamps. Take off radiator hose.
2.	Radiator (4)	Hose clamps (5) and radiator hose (6)	<ol style="list-style-type: none"> Using 1/4-inch flat-tip screwdriver, loosen hose clamps. Take off radiator hose.
3.	Torque converter cooler (7)	Thermostat housing (1), five screws (8), and lockwashers (9)	<ol style="list-style-type: none"> Using 9/16-inch, 1/2-inch drive socket 6-inch extension, and ratchet handle, unscrew and take out screws. Get rid of lockwashers. Take off thermostat housing.
4.	Thermostat housing (1)	Temperature valve (10) and gasket (11)	<ol style="list-style-type: none"> Take out temperature valve. Using gasket scraper, take off gasket. Do not scratch or gouge machined surface. Get rid of gasket.
TESTING			
5.	Temperature valve (10)		<ol style="list-style-type: none"> Suspend in 1/2-gallon metal container filled with cold water with thermometer. Be sure not to allow temperature valve or thermometer to touch sides or bottom of 112-gallon metal container. Heat water, using suitable source, while noting temperature when thermostat begins to open. A good thermostat will begin to open between 165° and 168°F (73.9° and 75.6°C). Note temperature when thermostat is fully open. A good thermostat will be fully open between 180° and 183°F (82.2° and 83.9°C). Replace thermostat if defective.
INSTALLATION			
6.	Thermostat housing (1)	Temperature valve (10) and new gasket (11)	<ol style="list-style-type: none"> Put in temperature valve. Put silicone sealer on thermostat housing. Put new gasket in place.

THERMOSTAT - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
7. Torque converter cooler (7)	Thermostat housing (1), five screws (8), and new lock-washers (9)	a. Put on thermostat housing. b. Screw in and tighten using 9/16-inch, 1/2-inch drive socket, 6-inch extension and ratchet handle.	
8. Radiator (4)	Hose clamps (5) and radiator hose (6)	a. Put on hose clamps. b. Put on radiator hose. c. Tighten hose clamps using 1/4-inch flat-tip screwdriver.	
9. Thermostat housing (1)	Hose clamps (2) and radiator hose (3)	a. Put on hose clamps. b. Put on radiator hose. c. Tighten hose clamps using 1/4-inch flat-tip screwdriver.	



NOTE

FOLLOW-ON MAINTENANCE:

1. Refill cooling system (page 2-628).
2. Close left and right side hood panels (page 2-424).

TASK ENDS HERE

WATER PUMP BELT ADJUSTMENT

INITIAL SETUP:

Tools

- Extension, 6-inch, 1/2-inch drive
- Gage, belt tension, 30 to 180 lb (130 to 800 N.m)
- Handle, ratchet, 1/2-inch drive
- Socket, 7/8-inch, 1/2-inch drive
- Wrench, open-end, 1 1/16-inch

Personnel Required

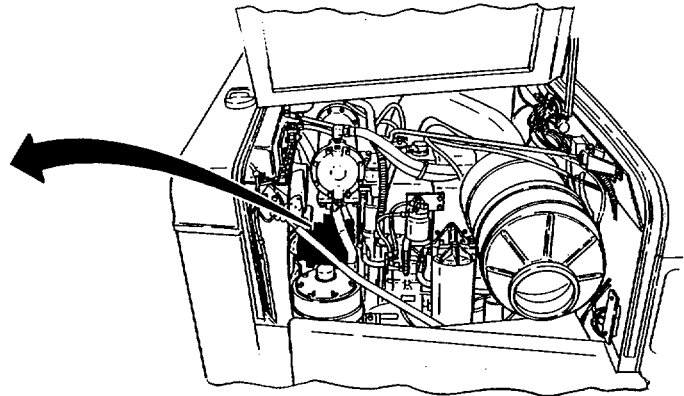
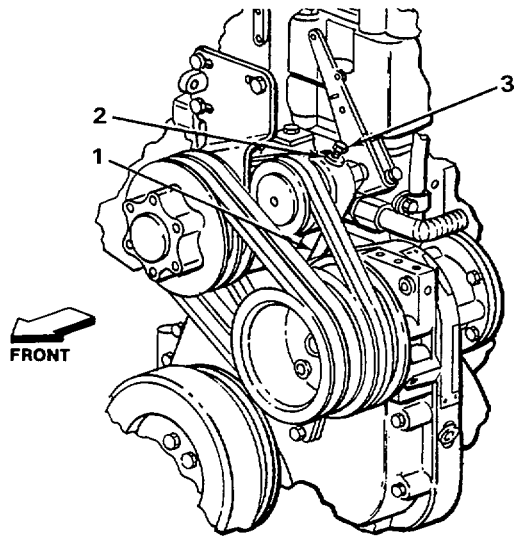
One

Equipment Condition

Left side hood panel opened (page 2-424).

LOCATION	ITEM	ACTION	REMARKS
1. Water pump (1)	Nut (2)	Using 1 1/16-inch open-end wrench, loosen.	
CAUTION			
Do not overtighten adjusting screw. Damage to water pump and idler pulley could occur.			
2.	Adjusting screw (3)	Using 7/8-inch, 1/2-inch drive socket, 6-inch extension, ratchet handle, and belt tension gage, turn clockwise, tightening idler pulley adjusting screw, to adjust idler pulley to obtain 120 to 140 pounds (162.7 to 189.8 N.m) belt tension.	
3.	Nut (2)	Tighten using 1 1/16-inch open-end wrench.	

WATER PUMP BELT ADJUSTMENT - CONTINUED



NOTE

FOLLOW-ON MAINTENANCE: Close left side hood panel (page 2-424).

TASK ENDS HERE

WATER FILTER

This task covers:

a. Removal (page 2-638)

b. Installation (page 2-638)

INITIAL SETUP:

Tools

Pliers, slip-joint, 8-inch
Wrench, filter

Materials/Parts

Filter, water

Personnel Required

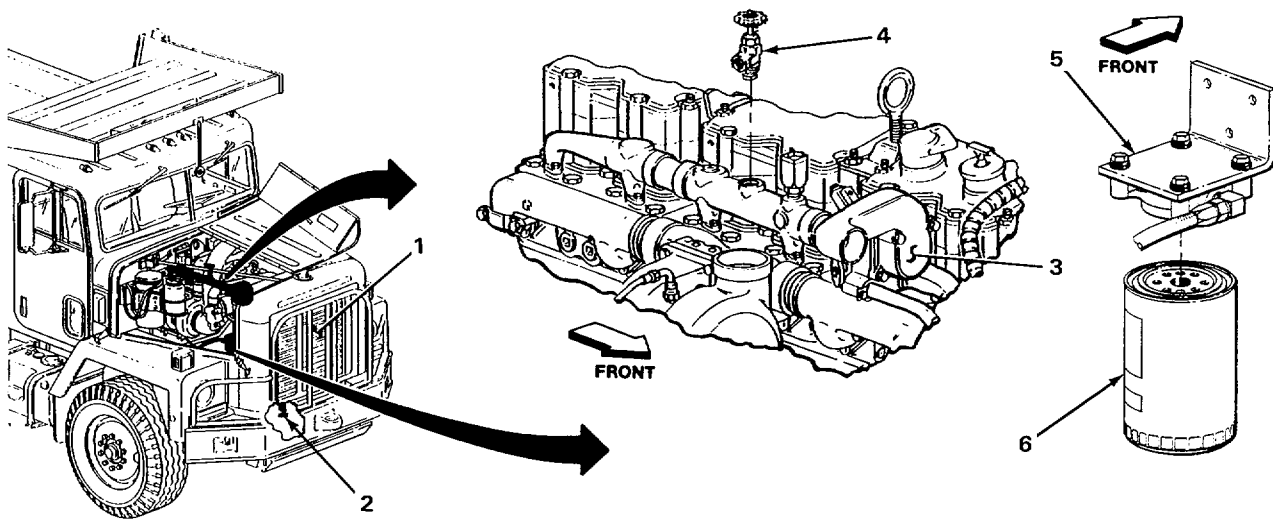
One

Equipment Condition

Cooling system drained (page 2-628).
Right side hood panel opened (page 2-424).

WATER FILTER - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1. Radiator (1)	Shutoff valve (2)		Using 8-inch slip-joint pliers, turn clockwise to close.
2. Water manifold (3)	Shutoff valve (4)		Using 8-inch slip-joint pliers, turn clockwise to close.
3. Filter base (5)	Water filter (6)	a. Using filter wrench, unscrew and take off. b. Get rid of.	
INSTALLATION			
4.	New water filter (6)		Hand tighten one-half to three-quarters turn until gasket touches filter base.
5. Water manifold (3)	Shutoff valve (4)		Turn counterclockwise to open using 8-inch slip-joint pliers.
6. Radiator (1)	Shutoff valve (2)		Turn counterclockwise to open using 8-inch slip-joint pliers.



NOTE

FOLLOW-ON MAINTENANCE:

1. Refill cooling system (page 2-628).
2. Close right side hood panel (page 2-424).

TASK ENDS HERE

RADIATOR OUTLET HOSE

This task covers:

a. Draining (page 2-4)

b. Filling (page 2-5)

INITIAL SETUP:

Tools

- Gloves, safety
- Goggles, safety
- Scraper, gasket
- Screwdriver, flat-tip, 1/4-inch
- Wrench, box-end, 9/16-inch

Materials/Parts

- Detergent, liquid, GP (item 7, appendix C)
- Gasket, radiator outlet
- Lockwasher, radiator outlet screw (four required)

Materials/Parts - Continued

- Rags, wiping (item 15, appendix C)
- Sealer, silicone rubber (item 16, appendix C)
- Solvent, dry-cleaning (item 19, appendix C)

Personnel Required

One

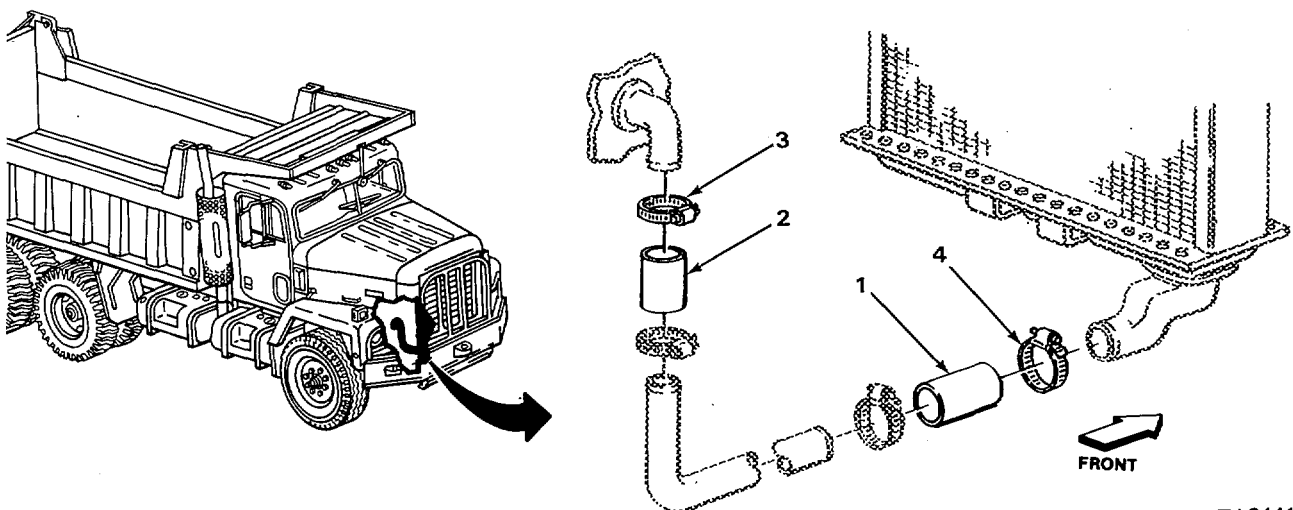
Equipment Condition

- Right side hood panel opened (page 2-424).
- Cooling system drained (page 2-628).

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

REMOVAL

- | | | | |
|--------------------|----------------------|--|--|
| 1. Hoses (1 and 2) | Two clamps (3 and 4) | Using 1/4-inch flat-tip screwdriver, loosen. | |
|--------------------|----------------------|--|--|



TA244111

RADIATOR OUTLET HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL - CONTINUED			
2.	Connection (1)	Hose (2) and clamp (3)	Take off.
3.	Outlet (4)	Hose (5) and clamp (6)	Take off.
4.	Pipe (7)	Hoses (2 and 5) and clamps (8 and 9)	a. Using 1/4-inch flat-tip screwdriver, loosen clamps. b. Take off hoses and clamps.
5.	Radiator (10)	Four screws (11), four flat washers (12), four lockwashers (13), gasket (14), and outlet (4)	a. Using 9/16-inch box-end wrench, unscrew and take out. b. Take off outlet. c. Get rid of lockwashers. d. Using gasket scraper, scrape off all old gasket material. e. Get rid of gasket.

CLEANING

NOTE

For more information on how to clean parts, go to **General Maintenance Instructions (page 2-424)**.

6.	All rubber parts	a. Clean with solution of liquid detergent and water. b. Rinse in clean water. c. Using clean, dry rags, wipe dry.
----	------------------	--

WARNING

Dry-cleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 dry-cleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

7.	Outlet (4), pipe (7), and clamps (3,6, 9, and 8)	a. Clean with dry-cleaning solvent. b. Using clean, dry rags, wipe dry.
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RADIATOR OUTLET HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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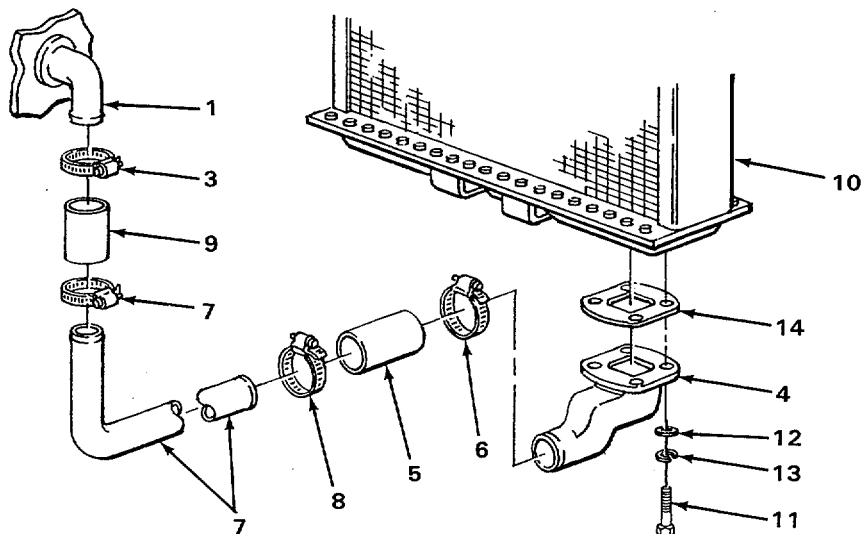
INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to **General Maintenance Instructions (page 2-424)**.

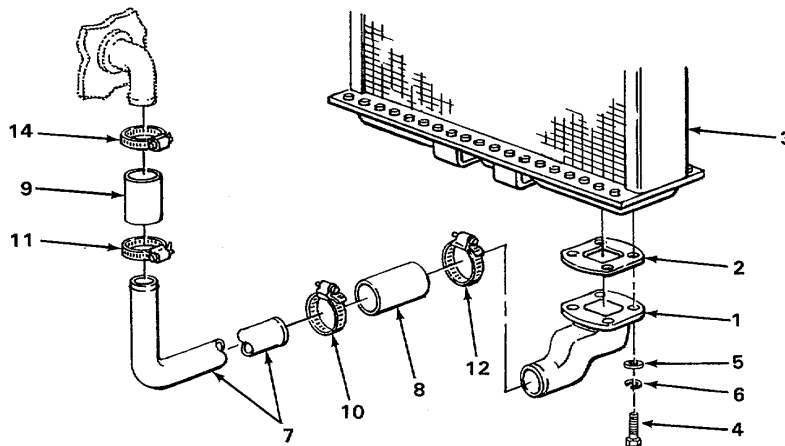
- | | | |
|-----|-------------------------|--|
| 8. | Outlet (4) and pipe (7) | <ul style="list-style-type: none"> a. Look for cracks, breaks, holes, and rust. b. Look for damage to gasket surfaces. |
| 9. | Hoses (2 and 5) | Look for cracks, breaks, chafing, and hardness. |
| 10. | Clamps | Look for cracks and breaks. |
| 11. | All threaded parts | Look for damaged threads and rounded heads. |



TA244112

RADIATOR OUTLET HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
12. Outlet (1)	New gasket (2)	Put in place using silicone sealer.	
13. Radiator (3)	Outlet (1)	Put in place.	
14. Outlet (1)	Four screws (4), four flat washers (5), and four new lockwashers (6)	Screw in and tighten using 9/16-inch box-end wrench.	
15. Pipe (7)	Hoses (8 and 9) and clamps (10 and 11)	a. Put in place. b. Tighten using 1/4-inch flat-tip screwdriver.	
16. Outlet (1)	Hose (8) and clamp (12)	Put on.	
17. Connection (13)	Hose (9) and clamp (14)	Put on.	
18. Hoses (8 and 9)	Clamps (12 and 14)	Tighten using 1/4-inch flat-tip screwdriver.	



TA244113

NOTE

FOLLOW-ON MAINTENANCE:

1. Fill cooling system (page 2-628).
2. Close right side hood panel (page 2-424).

TASK ENDS HERE

RADIATOR VENT HOSE

This task covers:

- | | |
|---|--|
| <ul style="list-style-type: none"> a. Removal (page 2-642.2) b. Cleaning (page 2-642.2) | <ul style="list-style-type: none"> b. Inspection/Replacement (page 2-642.2) d. Installation (page 2-642.4) |
|---|--|
-

INITIAL SETUP:

Equipment Conditions

Left and right side hood panels opened (page 2-424).

Tools/Test Equipment

- Gloves, safety
- Goggles, safety
- Wrench, open-end, 7/16-inch
- Wrench, box-end, 7/16-inch

Materials/Parts

Detergent, liquid, GP (Item 7, Appendix C)
 Rags, wiping (Item 15, Appendix C)
 Lockwasher, lamp (two required)

Personnel Required

One

Change 1 2-642.1

RADIATOR VENT HOSE - CONTINUED

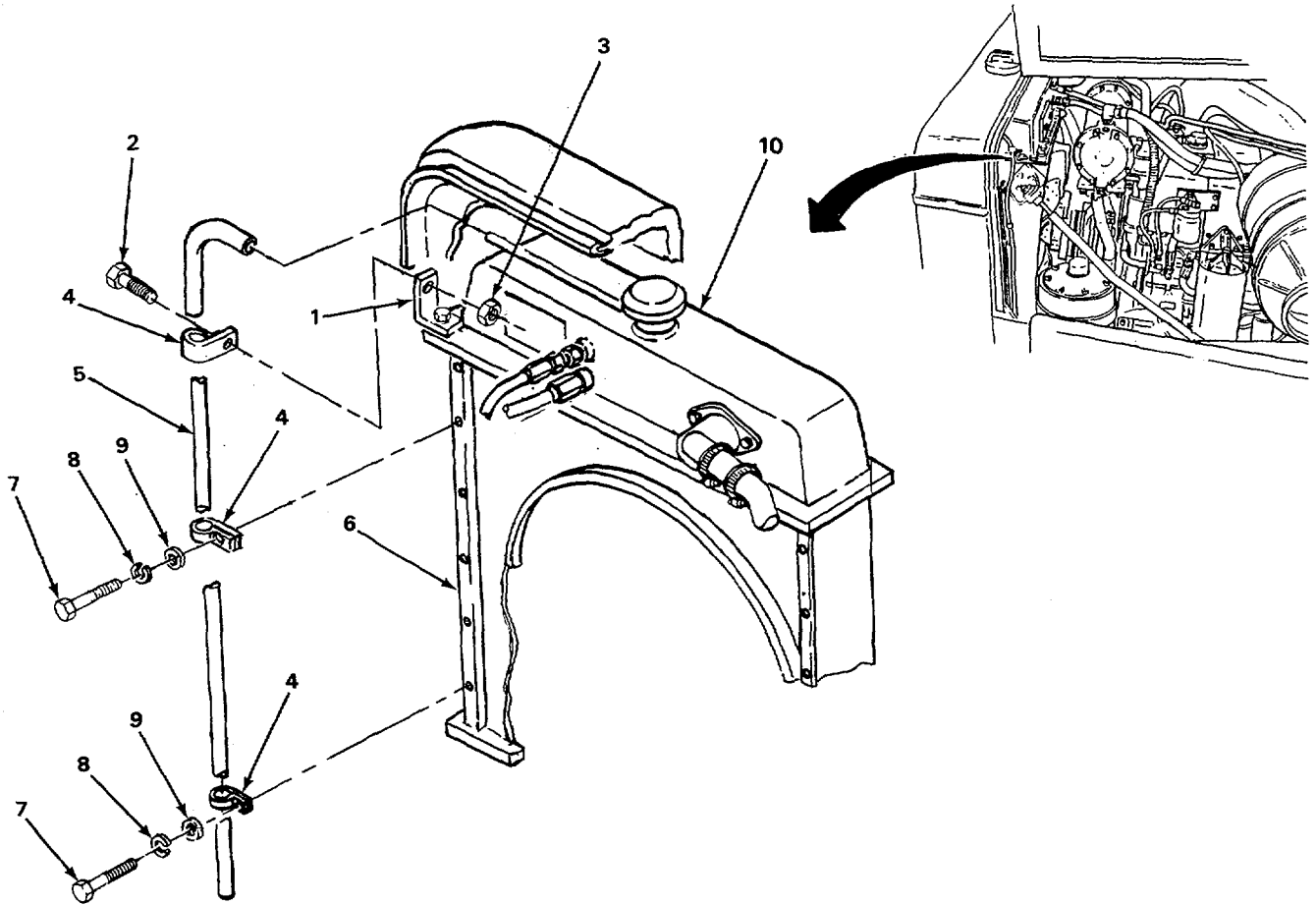
LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1.	Extension (1)	Screw (2), locknut (3), and clamp (4)	a. Using 7/16-inch open-end wrench and 7/16-inch box-end wrench, unscrew, and take out. b. Get rid of locknut. c. Take clamp off hose (5).
NOTE			
Step 2 is typical for two remaining clamp assemblies.			
2.	Radiator shroud (6)	Screw (7), lockwasher (8), and washer (9)	a. Using 7/16-inch box-end wrench, unscrew, and take out. b. Get rid of lockwasher. c. Take clamp off hose.
3.	Radiator (10)	Hose (5)	Take off.
CLEANING			
NOTE			
For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).			
4.	Hose (5)		a. Clean with solution of liquid detergent and water. b. Rinse in clean water. c. Using clean, dry rags, wipe dry.
INSPECTION/REPLACEMENT			
NOTE			
Replace all damaged or defective parts.			
For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).			
5.	Hose (5)		Check for cracks, breaks, chafing, or hardness.

RADIATOR VENT HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

INSPECTION/REPLACEMENT - CONTINUED

- | | | | |
|----|--------------------|---|--|
| 6. | Clamps (4) | Look for cracks and breaks. | |
| 7. | All threaded parts | Look for damaged threads and rounded heads. | |



TA70187

Change 1 2-642.3

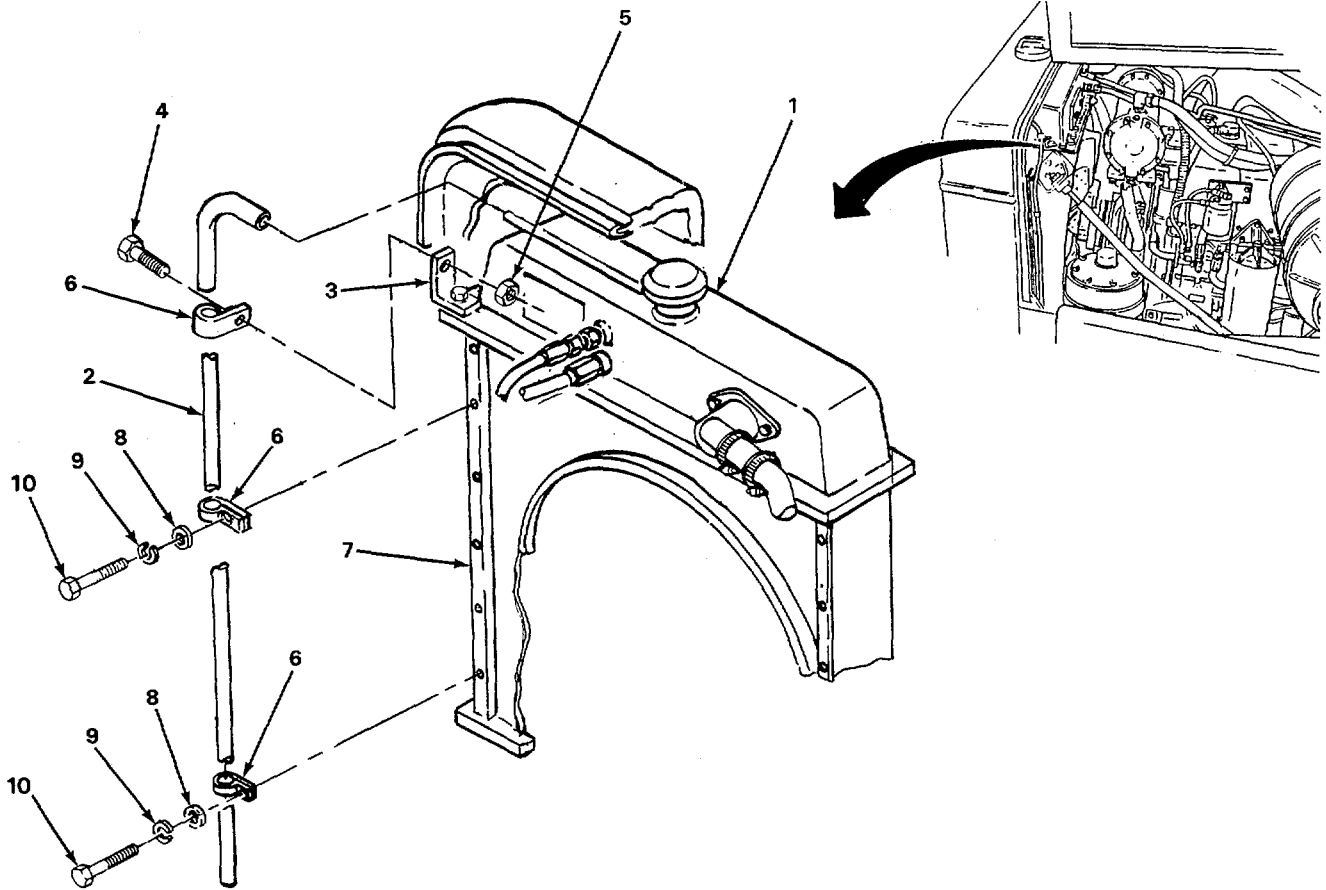
RADIATOR VENT HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
8. Radiator (1)	Hose (2)	Put on.	
9. Extension (3)	Screw (4), new locknut (5), and clamp (6)	a. Put clamp on hose. b. Aline holes in clamp and extension. c. Screw in and tighten using 7/16-inch box-end wrench.	
NOTE			
Step 10 is typical for two clamp assemblies.			
10. Radiator shroud (7)	Washer (8), new lockwasher (9), and screw (10)	a. Put clamp on hose. b. Aline hoses in clamp and radiator shroud. c. Screw in and tighten using 7/16-inch box-end wrench.	

Change 1 2-642.4

RADIATOR VENT HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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NOTE

FOLLOW-ON MAINTENANCE: Close left and right side hood panels (page 2-424).

TASK ENDS HERE

TA701880

Change 1 2-642.5/(2-642.6 Blank)

RADIATOR INLET HOSE

This task covers:

a. Draining (page 2-4)

b. Filling (page 2-5)

INITIAL SETUP:

Tools

- Gloves, safety
- Goggles, safety
- Scraper, gasket
- Screwdriver, flat-tip, 1/4-inch
- Wrench, box-end, 9/16-inch

Materials/Parts

- Detergent, liquid, GP (item 7, appendix C)
- Gasket, radiator inlet
- Lockwasher, radiator inlet screw (two required)

Materials/Parts - Continued

- Rags, wiping (item 15, appendix C)
- Sealer, silicone rubber (item 16, appendix C)
- Solvent, dry-cleaning (item 19, appendix C)

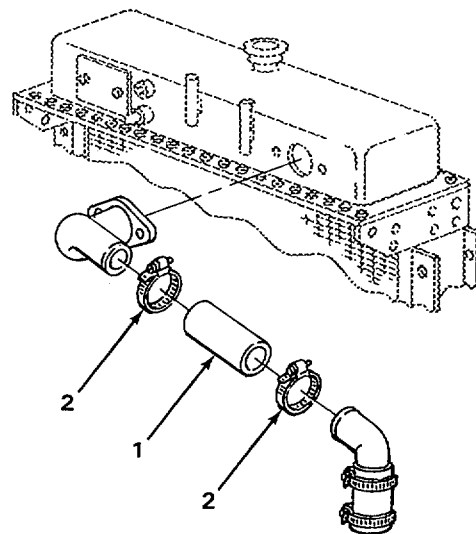
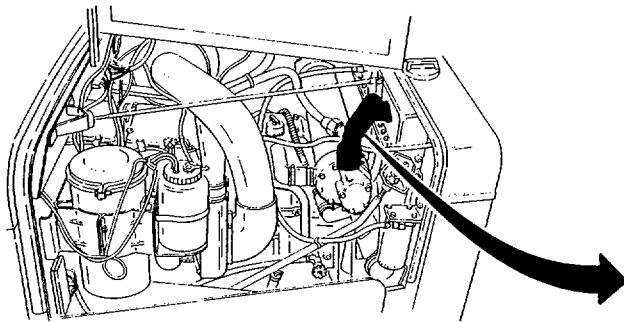
Personnel Required

One

Equipment Condition

- Right side hood panel opened (page 2-424).
- Cooling system drained (page 2-628).

LOCATION	ITEM	ACTION	REMARKS
1. Hose (1)	Two clamps (2)	Using 1/4-inch flat-tip screwdriver, loosen.	



TA244114

RADIATOR INLET HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL - CONTINUED			
2.	Hose (1)	Two clamps (2)	Using 1/4-inch flat-tip screwdriver, loosen.
3.	Thermostat housng (3) and elbow (4)	Hose (1) and two clamps (2)	Take off.
4.	Inlet (5) and elbow (4)	Hose (6) and two clamps (7)	Take off.
5.	Radiator (8)	Two screws (9), two flat washers (10), two lockwashers (11), inlet (5), and gasket (12)	a. Using 9/16-inch box-end wrench, unscrew and take out. b. Take off inlet. c. Get rid of lockwashers. d. Using gasket scraper, scrape off all old gasket material. e. Get rid of gasket.

CLEANING

NOTE

For more information on how to clean parts, go to **General Maintenance Instructions (page 2-424)**.

6.	All rubber parts	a. Clean with solution of liquid detergent and water. b. Rinse in clean water. c. Using clean, dry rags, wipe dry.
----	------------------	--

WARNING

Dry-cleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 dry-cleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

7.	All metal parts	a. Clean with dry-cleaning solvent. b. Using clean, dry rags, wipe dry.
----	-----------------	--

RADIATOR INLET HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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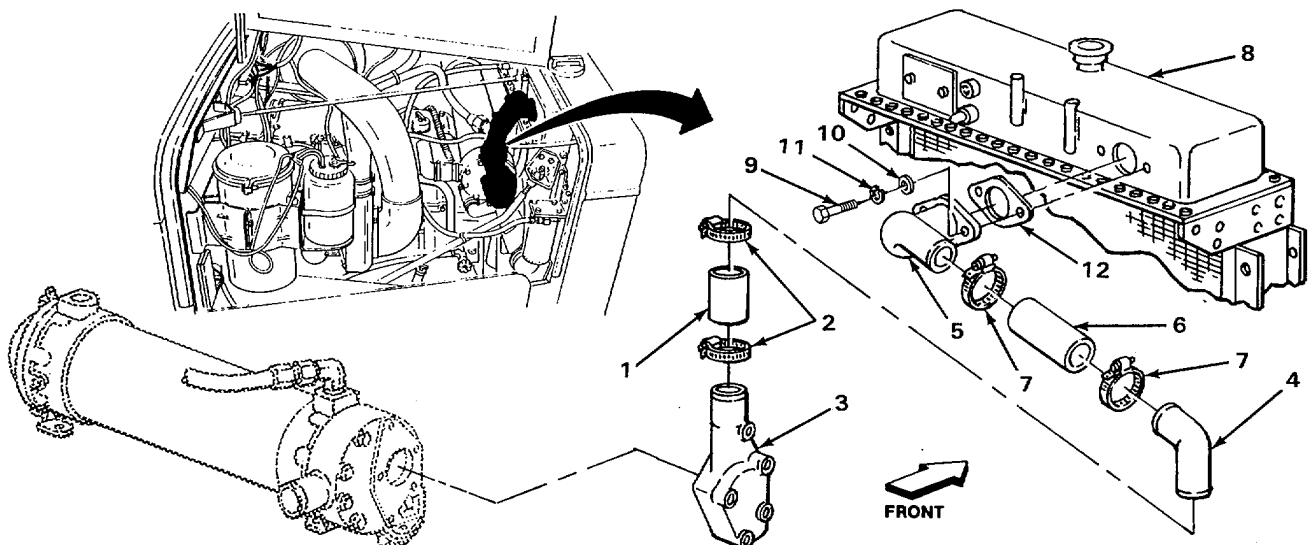
INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

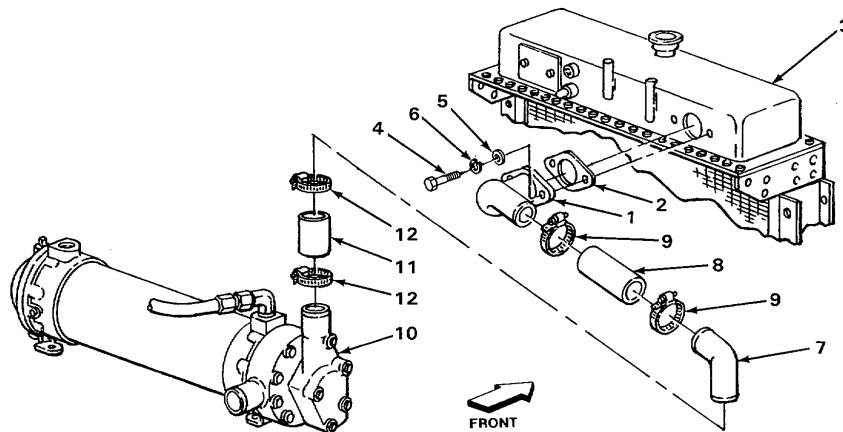
- | | | |
|-----|-------------------------|--|
| 8. | Inlet (5) and elbow (4) | a. Look for cracks, breaks, holes, and rust.
b. Look for damage to gasket surfaces. |
| 9. | Hoses (1 and 6) | Look for cracks, breaks, chafing, and hardness. |
| 10. | Clamps (2 and 7) | Look for cracks and breaks. |
| 11. | All threaded parts | Look for damaged threads and rounded heads. |



TA244115

RADIATOR INLET HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
12. Inlet (1)	New gasket (2)	Put in place using silicone sealer.	
13. Radiator (3)	Inlet (1)	Put in place.	
14. Inlet (1)	Two screws (4), two flat washers (5), and two new lockwashers (6)	Screw in and tighten using 9/16-inch, box-end wrench.	
15. Inlet (1) and elbow (7)	Hose (8) and two clamps (9)	Put in place.	
16. Thermostat housing (10) and elbow (7)	Hose (11) and two clamps (12)	Put in place.	
17. Hoses (8 and 11)	Clamps (9 and 12)	Tighten using 1/4-inch flat-tip screwdriver.	



TA244116

NOTE

FOLLOW-ON MAINTENANCE:

1. Fill cooling system (page 2-628).
2. Close right side hood panel (page 2-424).

TASK ENDS HERE

RADIATOR BYPASS COOLANT LINE**This task covers:**

- | | |
|---|--|
| <ul style="list-style-type: none"> a. Removal (page 2-648) b. Cleaning (page 2-648) | <ul style="list-style-type: none"> c. Inspection/Replacement (page 2-649) d. Installation (page 2-650) |
|---|--|

INITIAL SETUP:

Tools

Gloves, safety
 Goggles, safety
 Scraper, gasket
 Screwdriver, flat-tip, 1/4-inch
 Wrench, box-end, 1/2-inch
 Wrench, box-end, 9/16-inch

Materials/Parts

Detergent, liquid, GP (item 7, appendix C)
 Gasket, elbow to transmission oil cooler
 Lockwasher, bypass pipe clamp
 Lockwasher, transmission oil cooler elbow (two required)

Materials/Parts - Continued

Packing, bypass pipe
 Rags, wiping (item 15, appendix C)
 Sealer, silicone rubber (item 16, appendix C)
 Solvent, dry-cleaning (item 19, appendix C)

Personnel Required

One

Equipment Condition

Right side hood panel opened (page 2-424).
 Cooling system drained (page 2-628).

RADIATOR BYPASS COOLANT LINE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1.	Hose (1)	Two clamps (2)	Using 1/4-inch flat-tip screwdriver, loosen.
2.	Elbow (3)	Two screws (4) and two lockwashers (5)	a. Using 9/16-inch box-end wrench, unscrew and take out. b. Get rid of lockwashers.
3.	Transmission oil cooler (6)	Elbow (3)	Take off.
4.	Elbow (3)	Gasket (7)	a. Using gasket scraper, scrape off. b. Get rid of gasket.
5.	Bypass pipe (8)	Screw (9) and lockwasher (10)	a. Using 1/2-inch box-end wrench, unscrew and take out. b. Get rid of lockwasher.
6.		Clamp (11)	Take off.
7.	Elbow (3) and bypass pipe (8)	Hose (1) and two clamps (2)	Take off.
8.	Water pump (12)	Bypass pipe (8)	Take out.
9.	Bypass pipe (8)	Packing (13)	a. Take off. b. Get rid of packing.

CLEANING

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

10.	Hose (1)		a. Clean with solution of liquid detergent and water. b. Rinse in clean water. c. Using clean, dry rags, wipe dry.
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RADIATOR BYPASS COOLANT LINE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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WARNING

Dry-cleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 dry-cleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

11.	All metal parts	a. Clean with dry-cleaning solvent. b. Using clean, dry rags, wipe dry.	
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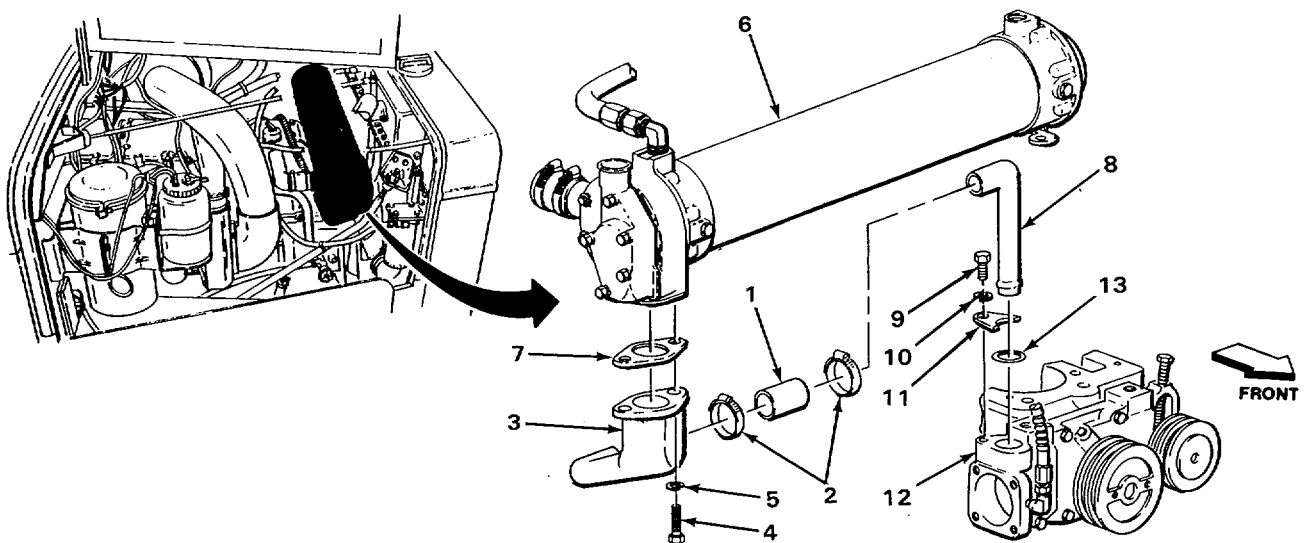
INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424).

12.	Bypass pipe (8) and elbow (3)	a. Look for cracks, breaks, and holes. b. Look for damage to gasket surface.	
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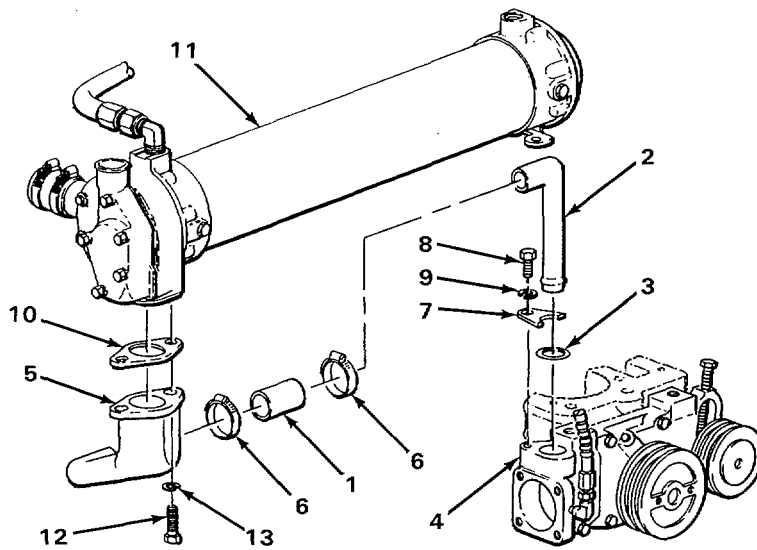


TA244117

RADIATOR BYPASS COOLANT LINE - CONTINUED

LOCATION	ITEM	ACTION REMARKS
INSPECTION/REPLACEMENT - CONTINUED		
13.	Hose (1)	Look for cracks, breaks, chafing, and hardness.
14.	All metal parts	Look for cracks and breaks.
15.	All threaded parts	Look for damaged threads and rounded heads.
INSTALLATION		
16. Bypass pipe (2)	New packing (3)	Put on.
17. Water pump (4)	Bypass pipe (2)	Put in.
18. Elbow (5) and bypass pipe (2)	Hose (1) and two clamps (6)	Put on.
19. Bypass pipe (2)	Clamp (7)	Put in place.
20.	Screw (8) and new lockwasher (9)	Screw in and tighten using 1/2-inch box-end wrench.
21. Elbow (5)	New gasket (10)	Put in place using silicone sealer.
22. Transmission oil cooler (11)	Elbow (5)	Put on.
23. Elbow (5)	Two screws (12) and two new lockwashers (13)	Screw in and tighten using 9/16-inch box-end wrench.
24. Hose (1)	Two clamps (6)	Tighten using 1/4-inch flat-tip screwdriver.

RADIATOR BYPASS COOLANT LINE - CONTINUED



TA24411E

NOTE

FOLLOW-ON MAINTENANCE:

1. Fill cooling system (page 2-628).
2. Close right side hood panel (page 2-424).

TASK ENDS HERE

Chance 1 2-651

RADIATOR HOSE

This task covers:

- | | |
|---|--|
| <ul style="list-style-type: none"> a. Removal (page 2-651.0) b. Cleaning (page 2-651.2) | <ul style="list-style-type: none"> c. Inspection/Replacement (page 2-651.2) d. Installation (page 2-651.4) |
|---|--|

INITIAL SETUP:

Equipment Conditions

Left and right side hood panels opened (page 2-424).
Cooling system drained (page 2-628).

Tools/Test Equipment

- Gloves, safety
- Goggles, safety
- Handle, ratchet, 3/8-inch drive
- Scraper, gasket
- Screwdriver, flat-tip, 1/4-inch
- Socket, 1/2-inch, 3/8-inch drive
- Wrench, box-end, 7/16-inch
- Wrench, open-end, 7/16-inch
- Wrench, open-end, 1 1/8-inch

Tools/Test Equipment - Continued

Wrench, open-end, 1 3/8-inch

Materials/Parts

- Detergent, liquid, GP (Item 7, Appendix C)
- Rags, wiping (Item 15, Appendix C)
- Sealer, silicone rubber (Item 16, Appendix C)
- Solvent, dry-cleaning (Item 19, Appendix C)
- Tape, antiseizing (Item 22, Appendix C)
- Gasket, elbow
- Locknut, extension
- Lockwasher, elbow (two required)

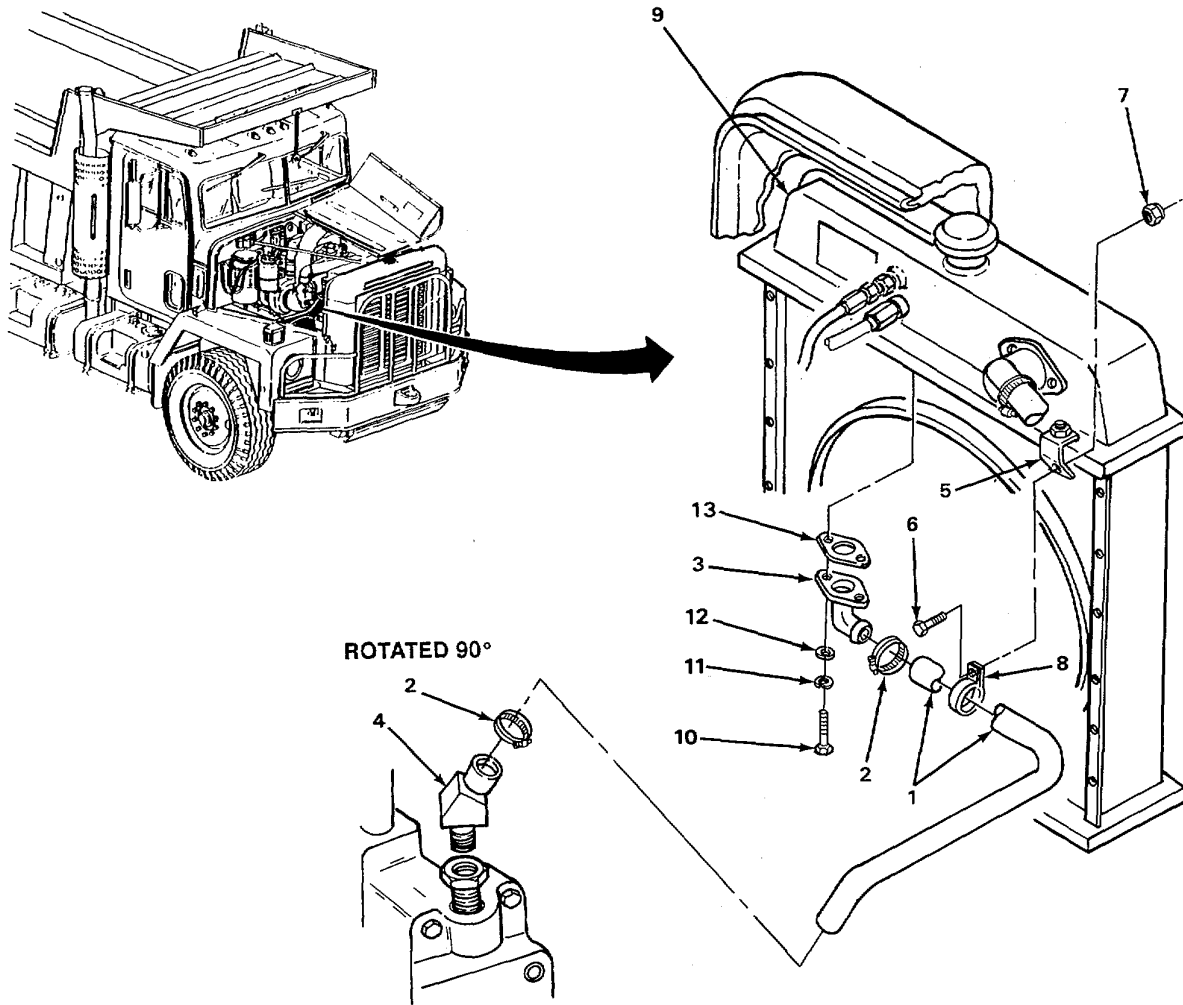
Personnel Required

One

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1.	Radiator hose (1)	Two clamps (2)	Using 1/4-inch flat-tip screwdriver, loosen.
2.	Elbow (3)	Hose (1) and clamp (2)	Take off.
3.	Elbow (4)	Hose (1) and clamp (2)	Take off.
4.	Extension (5)	Screw (6), locknut (7), and clamp (8)	<ul style="list-style-type: none"> a. Using 7/16-inch open-end wrench and 7/16-inch box-end wrench, unscrew, and take out. b. Get rid of locknut. c. Take out hose. d. Take clamp off hose.
5.	Radiator (9)	Two screws (10), lockwashers (11), washers (12), elbow (3), and gasket (13)	<ul style="list-style-type: none"> a. Using 1/2-inch, 3/8-inch drive socket and ratchet handle, unscrew, and take out. b. Take off elbow. c. Get rid of lockwashers. d. Using gasket scraper, scrape off all old gasket material. e. Get rid of gasket.

RADIATOR HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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TA701881 ■

Change 1 2-651.1

RADIATOR HOSE -CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL - CONTINUED			
6.	Reducer (1)	Elbow (2)	Using 1 1/8-inch open-end wrench, unscrew, and take off
7.	Water transfer	Reducer (1)	Using 1 3/8-inch open-end wrench, unscrew, and take off

CLEANING

NOTE

For more information on how to clean parts, go to **General Maintenance instruction (page 2-424)**.

- | | | |
|----|------------------|--|
| 8. | All rubber hoses | a. Clean with solution of liquid detergent and water.
b. Rinse in clean water.
c. Using clean, dry rags, wipe dry. |
|----|------------------|--|

WARNING

Dry cleaning solvent p-d-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type # 1 dry-cleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

- | | | |
|----|-----------------|--|
| 9. | All metal parts | a. Clean with dry-cleaning solvent and wiping rag. |
|----|-----------------|--|

INSPECTION/REPLACEMENT

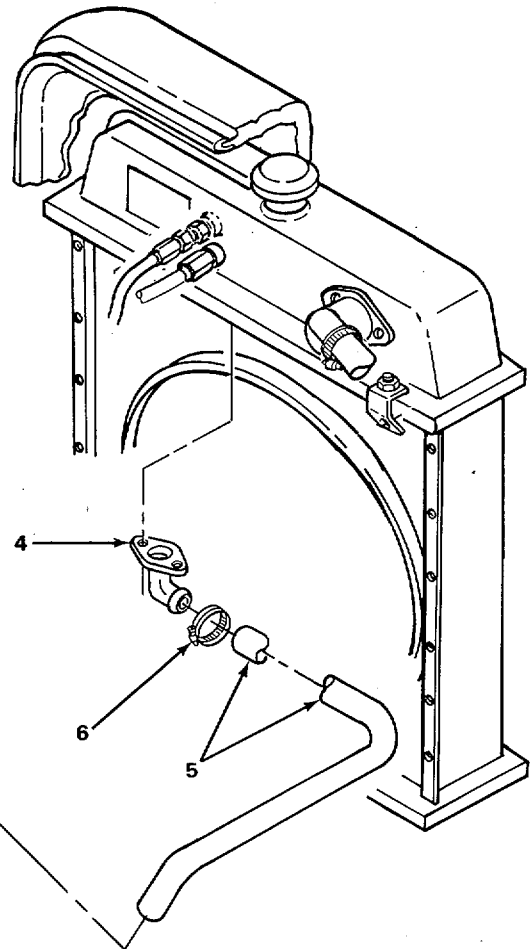
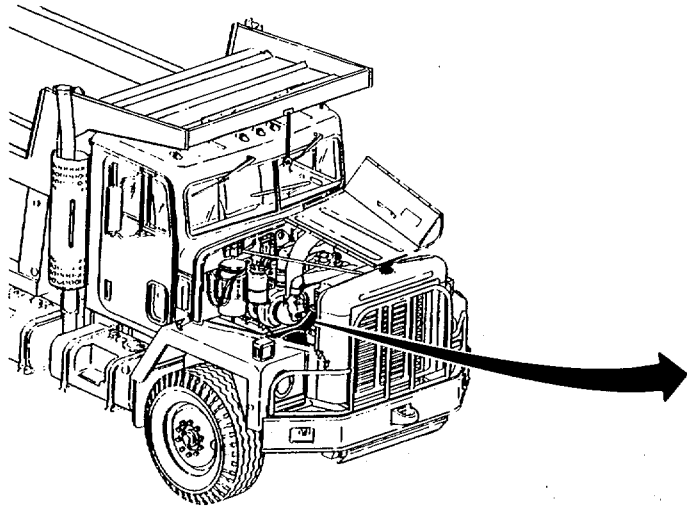
NOTE

Replace all damaged or defective parts.

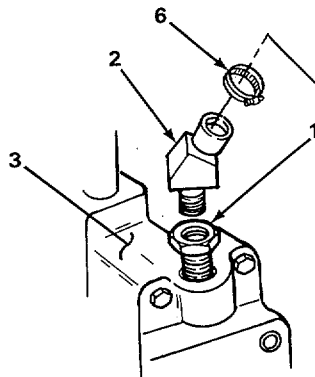
For more information on how to inspect parts, go to **General Maintenance Instruction (page 2-424)**.

- | | | |
|-----|---|---|
| 10. | Elbow (4), elbow (2)
and reducer (1) | Look for cracks, breaks, or corrosion. |
| 11. | Hose (5) | Check for cracks, breaks, chafing, or hardness. |
| 12. | Clamps (6) | Look for cracks and breaks. |
| 13. | All threaded parts | Look for damaged threads or rounded heads. |

LOCATION	ITEM	ACTION	REMARKS
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ROTATED 90°



TA701882

Change 1 2-651.3

RADIATOR HOSE - CONTINUED

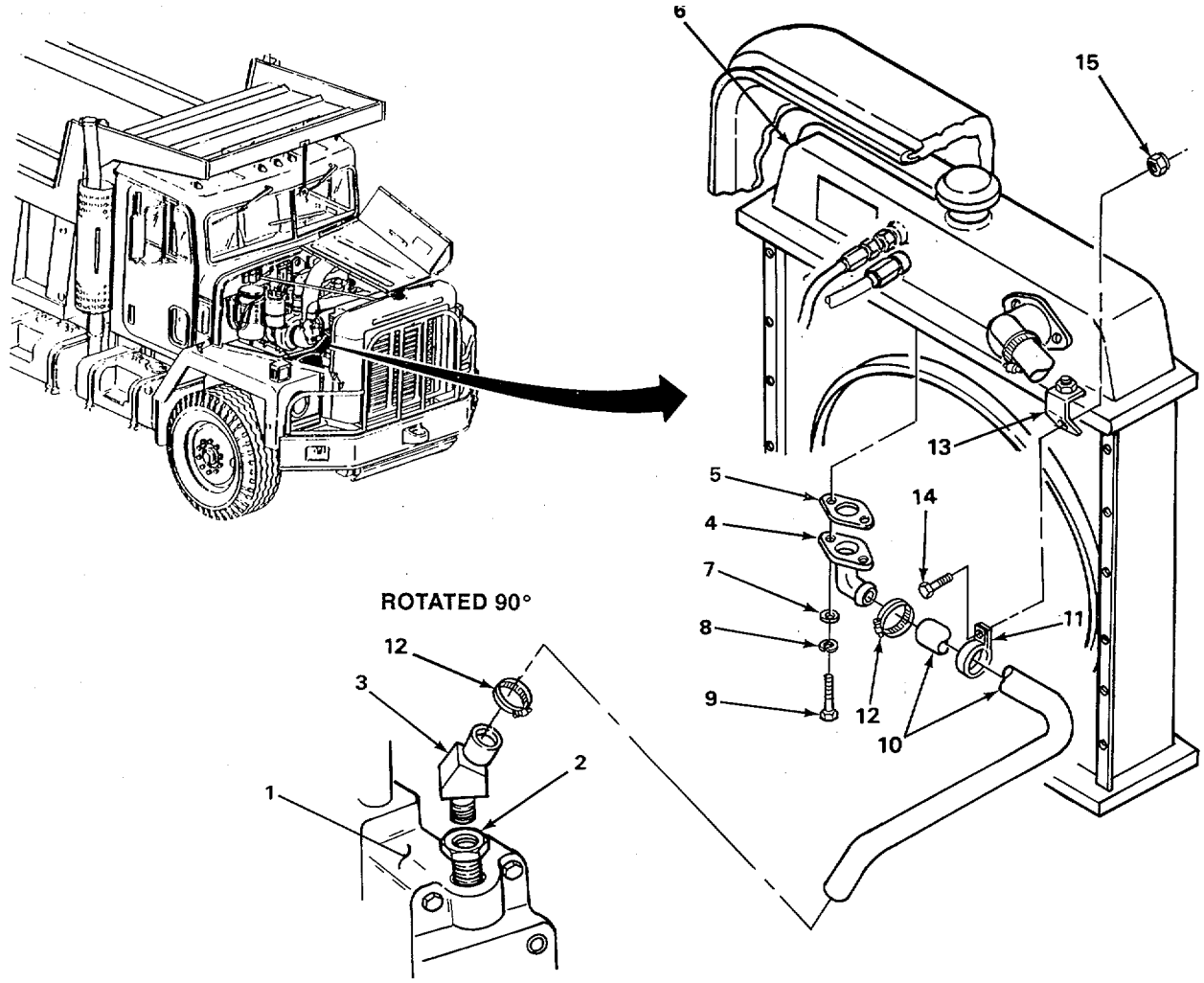
LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
14. Water transfer connection (1)	Reducer (2)	a. Wrap pipe threads with antiseizing tape (page 2-424). b. Screw in and tighten using 1 3/8-inch open-end wrench.	
15. Reducer (2)	Elbow (3)	a. Wrap pipe threads with antiseizing tape (page 2-424). b. Screw in and tighten using 1 1/8-inch open-end wrench.	
16. Elbow (4)	New gasket (5)	Put in place using silicone sealer.	
17. Radiator (6)	Elbow (4)	Put in place.	
18. Elbow (4)	Two washers (7), new lockwashers (8), and screws (9)	Screw in and tighten using 1/2-inch, 3/8-inch drive socket and ratchet handle.	
19. Hose (10)	Clamp (11)	Put on.	
20. Elbow (3)	Clamp (12) and hose (10)	a. Put on clamp. b. Put on hose. c. Tighten clamp using 1/4-inch flat-tip screwdriver.	
21. Elbow (4)	Clamp (12) and hose (10)	a. Put on clamp. b. Put on hose. c. Tighten clamp using 1/4-inch flat-tip screwdriver.	
22. Extension (13)	Clamp (11), screw (14), and new locknut (15)	a. Aline holes in clamp and extension. b. Screw in and tighten using 7/16-inch open-end wrench and 7/16-inch box-end wrench.	

NOTE**FOLLOW-ON MAINTENANCE:**

1. Refill cooling system (page 2-628).
2. Close left and right side hood panels (page 2-424).

Change 1 2-651.4

LOCATION	ITEM	ACTION	REMARKS
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TASK ENDS HERE

TA701883

Change 1 2-651.5

RADIATOR DEAERATION HOSE

This task covers:

- | | |
|----------------------------|--|
| a. Removal (page 2-651.6) | c. Inspection/Replacement (page 2-651.7) |
| b. Cleaning (page 2-651.6) | d. Installation (page 2-651.7) |

INITIAL SETUP

Equipment Conditions

Left and right side hood panels opened (page 2-424).
Cooling system drained (page 2-628).

Materials/Parts

Detergent, liquid, GP (Item 7, Appendix C)
Rags, wiping (Item 15, Appendix C)
Solvent, drycleaning (Item 19, Appendix C)
Tape, antiseizing (Item 22, Appendix C)

Tools/Test Equipment

Gloves, safety
Goggles, safety
Wrench, open-end, 11/16-inch

Personnel Required

One

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1. Adapter (1)	Line nut (2)		Using 11/16-inch open-end wrench, unscrew, and take off.
2. Adapter (3)	Line nut (4)		a. Using 11/16-inch open-end wrench, unscrew, and take off. b. Take out hose (5).
3. Radiator (6)	Adapter (1)		Using 11/16-inch open-end wrench, unscrew, and take off.
4. Water manifold (7)	Adapter (3)		Using 11/16-inch open-end wrench, unscrew, and take off.

CLEANING

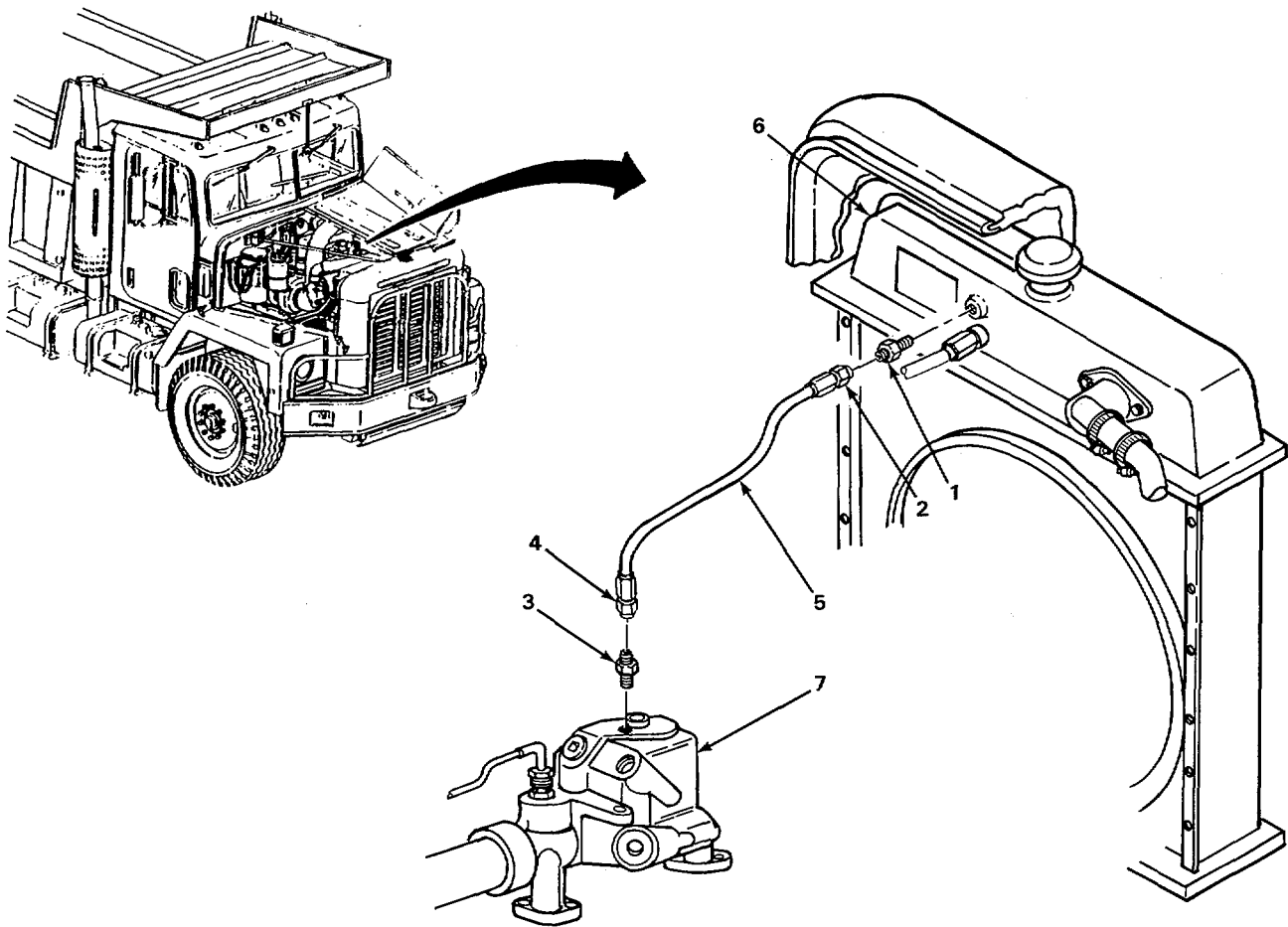
NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

- | | | |
|----|------------------|--|
| 5. | All rubber parts | a. Clean with solution of liquid detergent and water.
b. Rinse in clean water.
c. Using clean, dry rags, wipe dry. |
|----|------------------|--|

RADIATOR DEAERATION HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

- | | | |
|----|-----------------|---|
| 6. | All metal parts | a. Clean with drycleaning solvent.
b. Using clean, dry rags, wipe dry. |
|----|-----------------|---|

RADIATOR DEAERATION HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSPECTION/REPLACEMENT			
NOTE			
Replace all damaged or defective parts.			
For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424) .			
7.	Hose (1)	a. Check for cracks, breaks, chafing, or hardness. b. Look for excessive rust or corrosion.	
8.	All threaded parts	Look for damaged threads.	

INSTALLATION**CAUTION**

Antiseizing tape must be used on all pipe threads to provide a good seal and to prevent threaded parts from seizing.

NOTE

For more information on how to use antiseizing tape, go to **General Maintenance Instructions (page 2-424).**

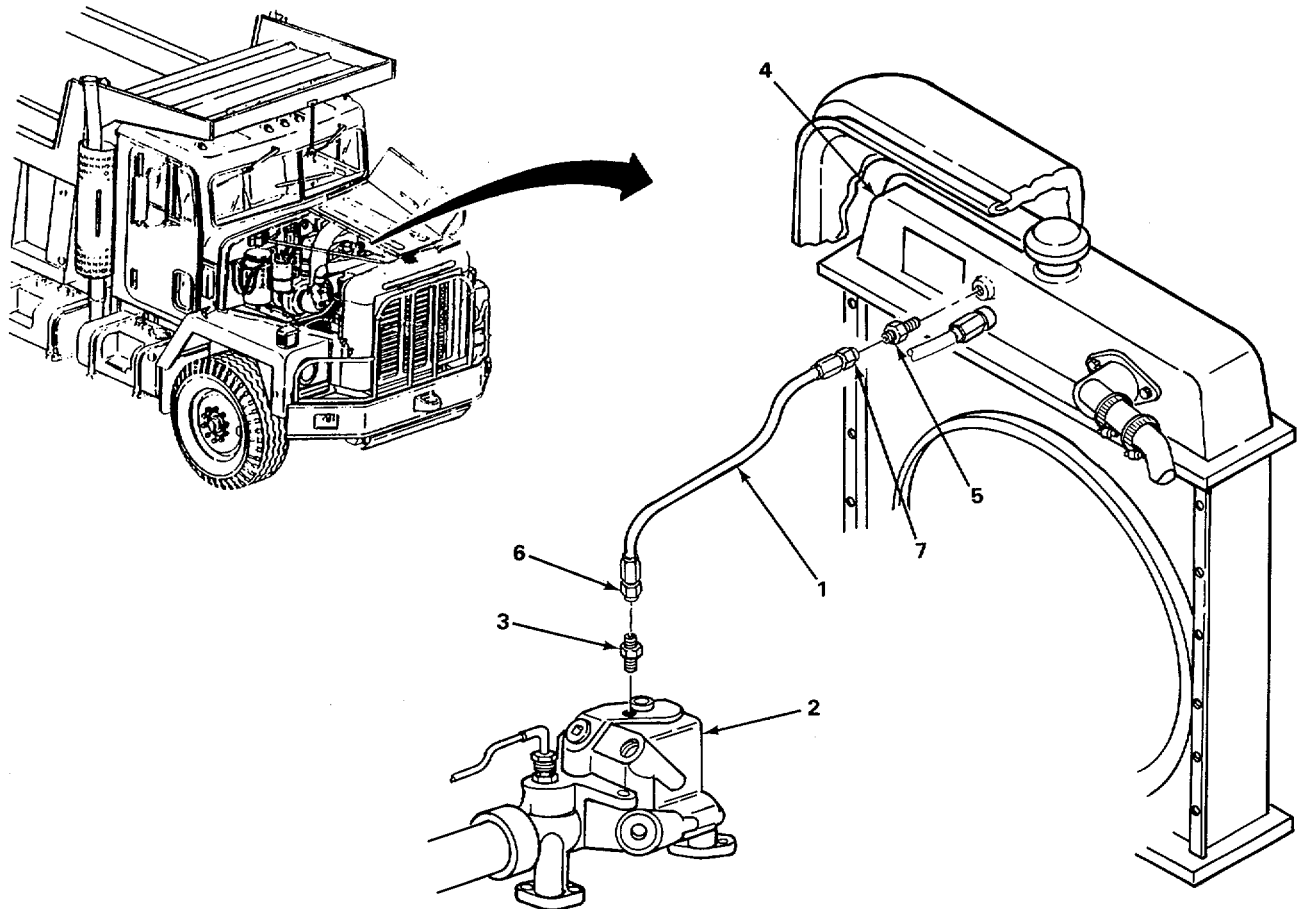
9. Water manifold (2)	Adapter (3)	a. Wrap pipe threads with antiseizing tape (page 2-424). b. Screw in and tighten using 11/16-inch open-end wrench.	
10. Radiator (4)	Adapter (5)	a. Wrap pipe threads with antiseizing tape (page 2-424). b. Screw in and tighten using 11/16-inch open-end wrench.	
11. Adapter (3)	Line nut (6) of hose (1)	Screw on and tighten using 11/16-inch open-end wrench.	
12. Adapter (5)	Line nut (7) of hose (1)	Screw on and tighten using 11/16-inch open-end wrench.	

NOTE**FOLLOW-ON MAINTENANCE:**

1. Refill cooling system (page 2-628).
2. Close left and right side hood panels (page 2-424).

RADIATOR DEAERATION HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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TASK ENDS HERE

TA701885

Change 1 2-651.9

FRONT WATER MANIFOLD HOSE

This task covers:

- | | |
|--------------------------|--|
| a. Removal (page 2-652) | c. Inspection/Replacement (page 2-653) |
| b. Cleaning (page 2-652) | d. Installation (page 2-654) |
-

INITIAL SETUP**Tools**

Gloves, safety
Goggles, safety
Scraper, gasket
Screwdriver, flat-tip, 1/4-inch
Wrench, box-end, 9/16-inch
Solvent, drycleaning (item 19, appendix C)

Materials/Parts

Gasket, front water manifold
Lockwasher, front water manifold screw (four required)
Rags, wiping (item 15, appendix C)
Sealer, silicone rubber (item 16, appendix C)

Change 1 2-651.1 0/(2-651.11 Blank)

FRONT WATER MANIFOLD HOSE - CONTINUED

INITIAL SETUP - CONTINUED

Personnel Required

One

Equipment Condition

Right side hood panel opened (page 2-424).
Cooling system drained (page 2-628).

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1. Hose (1)	Clamp (2)	Using 1/4-inch flat-tip screwdriver, loosen.	
2. Front water manifold (3)	Four bolts (4) and four lockwashers (5)	a. Using 9/16-inch box-end wrench, unscrew and take out. b. Get rid of lockwashers.	
3.	Inlet (6)	a. Turn counterclockwise to clear front water manifold. b. Take off.	
4. Inlet (6)	Gasket (7)	a. Using gasket scraper, scrape off all old gasket material. b. Get rid of gasket.	
5. Hose (1)	Clamp (8)	Using 1/4-inch flat-tip screwdriver, loosen.	
6. Transmission oil cooler (9)	Hose (1) and two clamps (2 and 8)	Take off.	

CLEANING

NOTE

For more information on how to clean parts, go to **General Maintenance Instructions (page 2-424)**.

WARNING

Drycleaning solvent P-D-680 is toxic and flammable. Wear protective safety goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and do not breathe vapors. Do not use near open flame or excessive heat. The flashpoint for type #1 drycleaning solvent is 100°F (38°C) and for type #2 is 138°F (59°C). If you become dizzy while using cleaning solvent, get fresh air immediately, and get medical aid. If contact with eyes is made, flush your eyes with water and get medical aid immediately.

FRONT WATER MANIFOLD HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
7.	All metal parts	a. Clean with drycleaning solvent. b. Use clean, dry rags, wipe dry.	

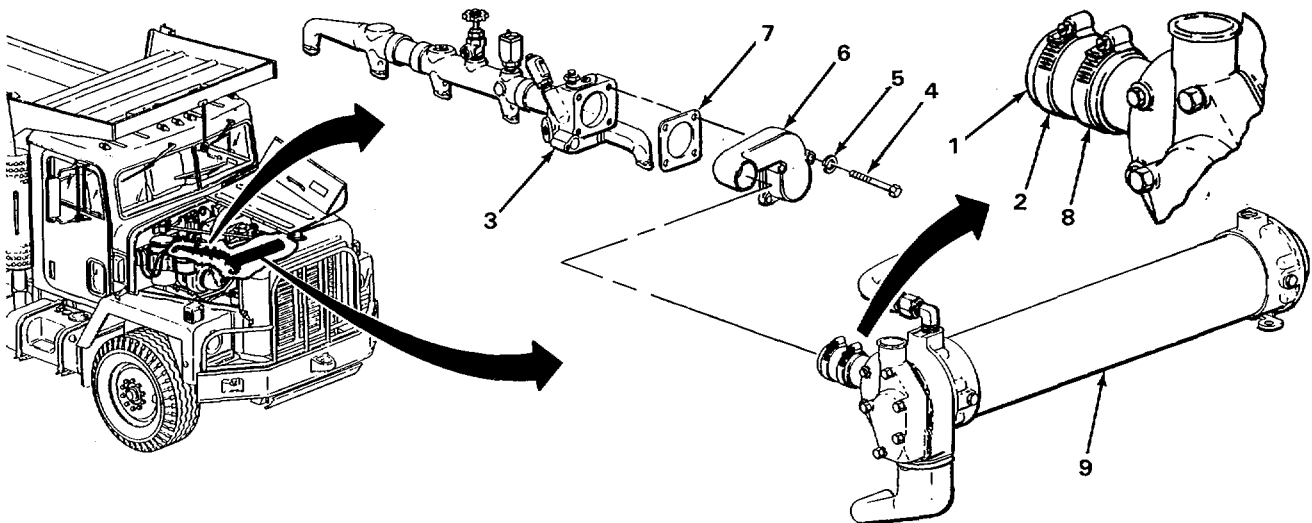
INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

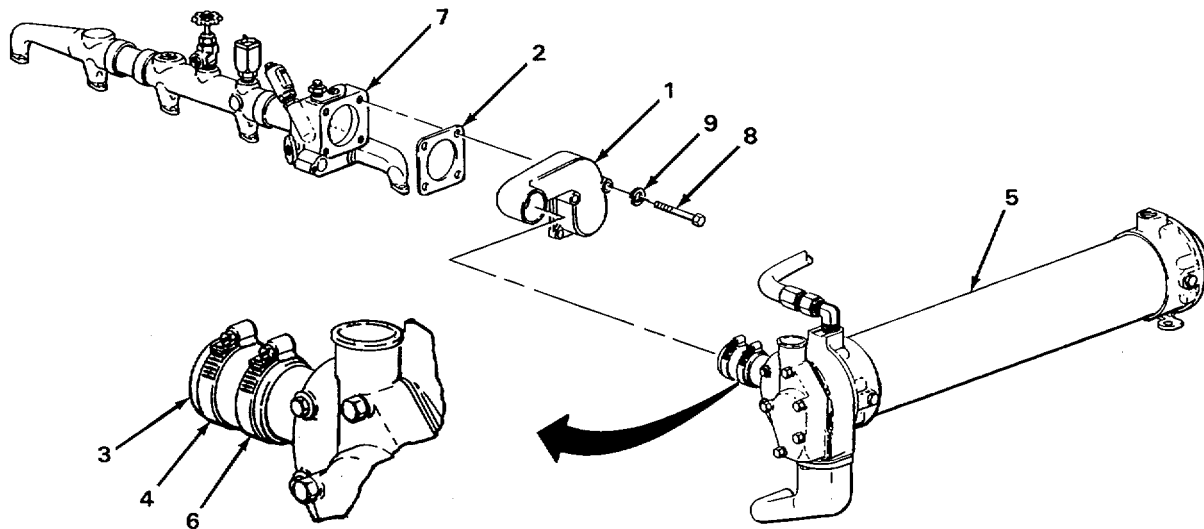
For more information on how to inspect parts, go to **General Maintenance Instructions (page 2-424)**.

8.	Inlet (6)	a. Look for cracks, breaks, holes, and rust. b. Look for damage to gasket surfaces.
9.	Hose (1)	Look for cracks, breaks, chafing, and hardness.
10.	Clamps (2 and 8)	Look for cracks and breaks.
11.	All threaded parts	Look for damaged threads and rounded heads.



FRONT WATER MANIFOLD HOSE - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
12. Inlet (1)	New gasket (2)	Put in place using silicone sealer.	
13.	Hose (3) and clamp (4)	Put on.	
14. Transmission oil cooler (5)	Hose (3) and clamp (6)	Put on.	
15. Front water manifold (7)	Inlet (1) manifold.	Turn clockwise to align with front water	
16.	Four bolts (8) and four new lockwashers (9)	Screw in and tighten using 9/16-inch box-end wrench.	
17. Hose (3)	Clamps (4 and 6)	Tighten using 1/4-inch flat-tip screwdriver.	



NOTE

FOLLOW-ON MAINTENANCE:

1. Fill cooling system (page 2-628).
2. Close right side hood panel (page 2-424).

TASK ENDS HERE

TA244120

AIR COMPRESSOR COOLANT HOSES

This task covers:

- a. Removal (page 2-655)
- b. Cleaning (page 2-656)
- c. Inspection/Replacement (page 2-656)
- d. Installation (page 2-656)

INITIAL SETUP

Tools

- Extension, 10-inch, 3/8-inch drive
- Handle, hinged, 3/8-inch drive
- Wrench, flare-nut, crowfoot, 1-inch, 3/8-inch drive
- Wrench, open-end, 1-inch

Personnel Required

One

Equipment Condition

- Right and left side hood panels opened (page 2-424).
- Cooling system drained (page 2-628).

Materials/Parts

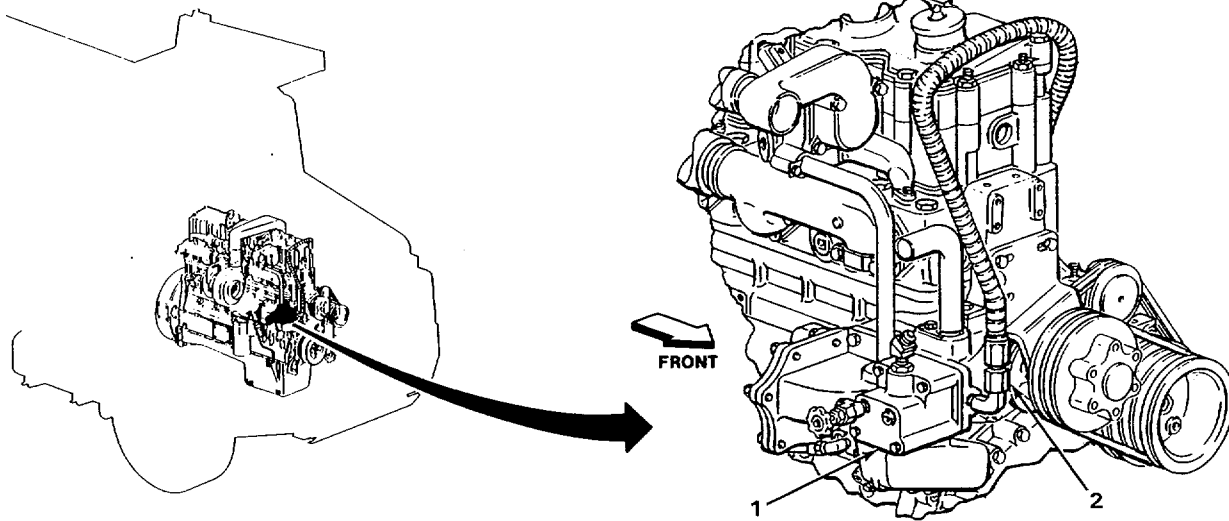
- Detergent, liquid, GP (item 7, appendix C)
- Rags, wiping (item 15, appendix C)

LOCATION	ITEM	ACTION	REMARKS
----------	------	--------	---------

REMOVAL

- 1. Water pump (1)
- Supply hose (2)

Using 1-inch open-end wrench, unscrew and take off.

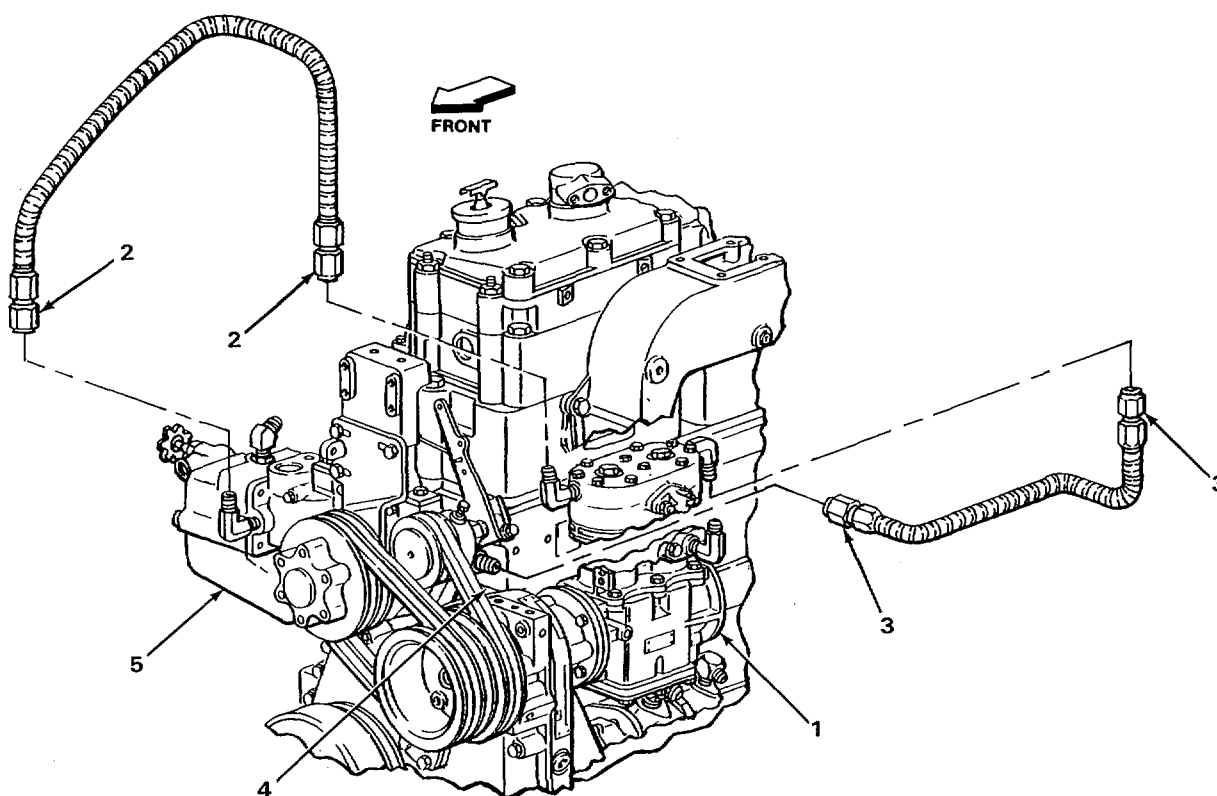


AIR COMPRESSOR COOLANT HOSES - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
REMOVAL - CONTINUED			
2.	Air compressor (1)	Supply hose (2)	Using 1-inch open-end wrench, unscrew and take off.
3.		Return hose (3)	Using 1-inch open-end wrench, unscrew and take off.
4.	Cylinder block (4)	Return hose (3)	Using 1-inch, 3/8-inch drive flare-nut crowfoot wrench, 10-inch extension, and hinged handle, unscrew and take off.
CLEANING			
NOTE			
For more information on how to clean parts, go to General Maintenance Instructions (page 2-424) .			
5.		Supply hose (2) and return hose (3)	<ul style="list-style-type: none"> a. Clean with solution of liquid detergent and water. b. Rinse in clean water. c. Using clean, dry rags, wipe dry.
INSPECTION/REPLACEMENT			
NOTE			
Replace all damaged or defective parts.			
For more information on how to inspect parts, go to General Maintenance Instructions (page 2-424) .			
6.		Supply hose (2) and return hose (3)	Look for cracks, breaks, chafing, and hardness.
7.		All threaded parts	Look for damaged threads and rounded heads.
INSTALLATION			
8.	Cylinder block (4)	Return hose (3)	Screw in and tighten using 1-inch, 3/8-inch drive flare-nut crowfoot wrench, 10-inch extension, and hinged handle.

AIR COMPRESSOR COOLANT HOSES - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
9. Air compressor (1)	Return hose (3)	Screw in and tighten using 1-inch, open-end wrench.	
10.	Supply hose (2)	Screw in and tighten using 1-inch, open-end wrench.	
11. Water pump (5)	Supply hose (2)	Screw in and tighten using 1-inch, open-end wrench.	



NOTE

FOLLOW-ON MAINTENANCE:

1. Fill cooling system (page 2-628).
2. Close right and left side hood panels (page 2-424).

TASK ENDS HERE

TA244122

WATER FILTER HOSES

This task covers:

- | | |
|--------------------------|--|
| a. Removal (page 2-658) | c. Inspection/Replacement (page 2-659) |
| b. Cleaning (page 2-658) | d. Installation (page 2-660) |

INITIAL SETUP

Tools

Pliers, slip-joint, 8-inch
Wrench, open-end, 3/4-inch

Personnel Required

One

Equipment Condition

Materials/Parts

Detergent, liquid, GP (item 7, appendix C)
Rags, wiping (item 15, appendix C)

Right and left side hood panels opened
(page 2-424).
Cooling system drained (page 2-628).

LOCATION	ITEM	ACTION REMARKS
----------	------	-------------------

REMOVAL

- | | | |
|-----------------------|-------------------|--|
| 1. Radiator (1) | Shutoff valve (2) | Using 8-inch slip-joint pliers, turn clockwise to close. |
| 2. Water manifold (3) | Shutoff valve (4) | Using 8-inch slip-joint pliers, turn clockwise to close. |
| 3. Filter base (5) | Hose (6) | Using 3/4-inch, open-end wrench, unscrew and take off. |
| 4. Shutoff valve (2) | Hose (6) | Using 3/4-inch, open-end wrench, unscrew and take off. |
| 5. Filter base (5) | Hose (7) | Using 3/4-inch, open-end wrench, unscrew and take off. |
| 6. Shutoff valve (4) | Hose (7) | Using 3/4-inch, open-end wrench, unscrew and take off. |

CLEANING

NOTE

For more information on how to clean parts, go to General Maintenance Instructions (page 2-424).

WATER FILTER HOSES - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
7.	All rubber parts	a. Clean with solution of liquid detergent and water. b. Rinse in clean water. c. Using clean, dry rags, wipe dry.	

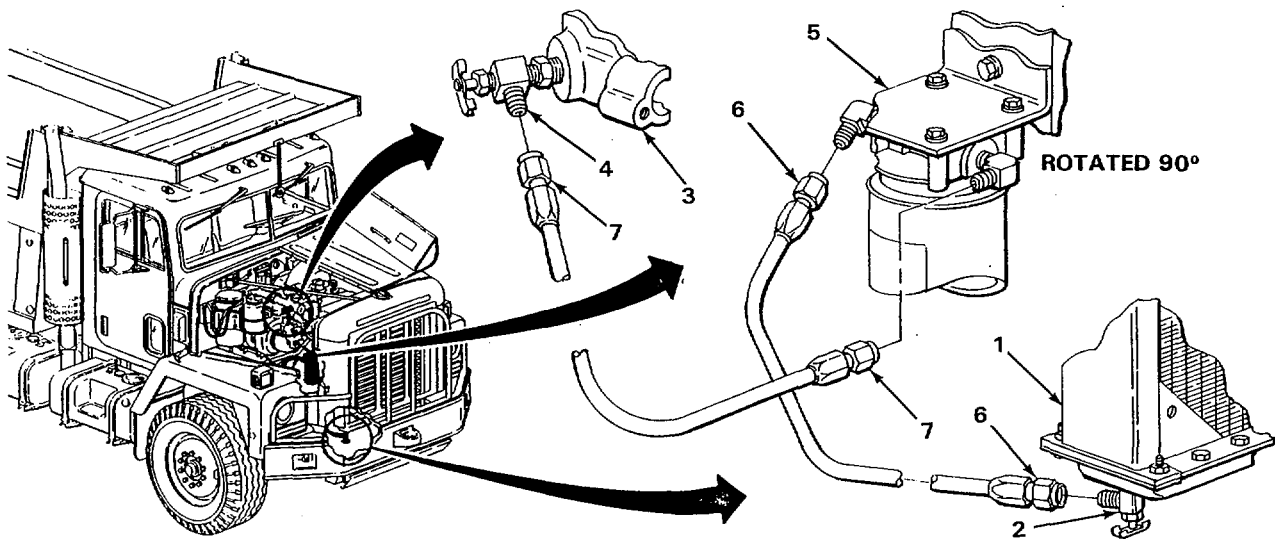
INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

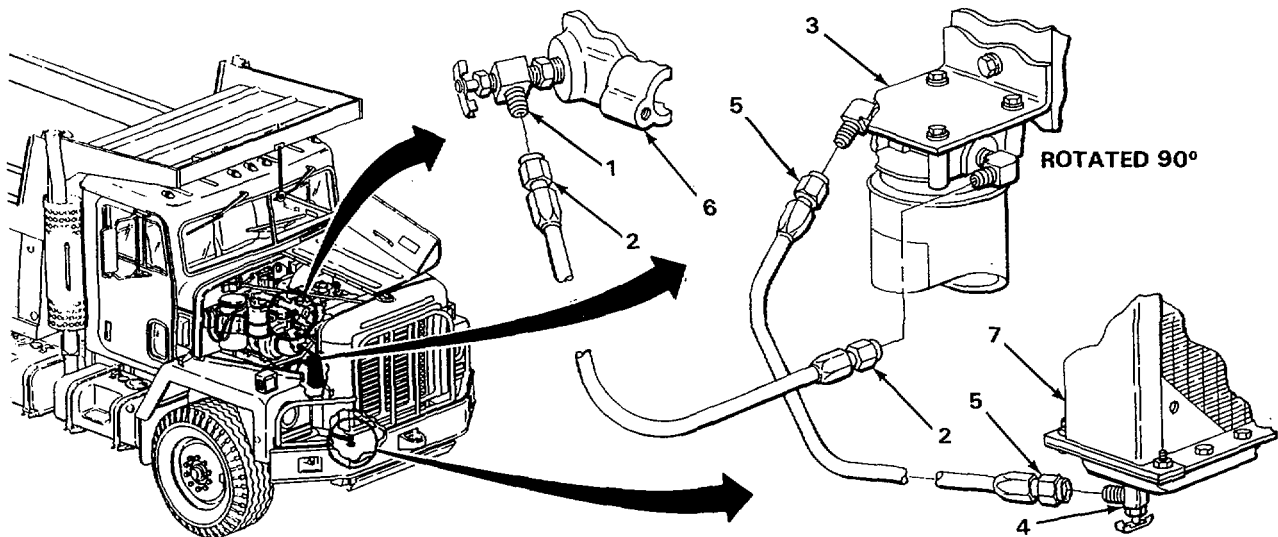
For more information on how to inspect parts, go to **General Maintenance Instructions (page 2-424)**.

8.	Hoses (6 and 7)	Look for cracks, breaks, chafing, and hardness.
9.	All threaded parts	Look for damaged threads and rounded heads.



WATER FILTER HOSES - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
INSTALLATION			
10. Shutoff valve (1)	Hose (2)	Screw in and tighten using 3/4-inch open-end wrench.	
11. Filter base (3)	Hose (2)	Screw in and tighten using 3/4-inch open-end wrench.	
12. Shutoff valve (4)	Hose (5)	Screw in and tighten using 3/4-inch open-end wrench.	
13. Filter base (3)	Hose (5)	Screw in and tighten using 3/4-inch open-end wrench.	
14. Water manifold (6)	Shutoff valve (1)	Turn counterclockwise to open using 8-inch slip-joint pliers.	
15. Radiator (7)	Shutoff valve (4)	Turn counterclockwise to open using 8-inch slip-joint pliers.	



NOTE

FOLLOW-ON MAINTENANCE:

1. Fill cooling system (page 2-628).
2. Close right and left side hood panels (page 2-424).

TASK ENDS HERE

FAN DRIVEBELT

This task covers:

- a. Removal (page 2-661)
- b. Inspection/Replacement (page 2-662)
- c. Installation (page 2-662)
- d. Adjustment (page 2-662)

INITIAL SETUP

Tools

- Extension, 6-inch, 1/2-inch drive
- Gage, belt-tension, 30 to 180 lb (130 to 800 N.m)
- Handle, ratchet, 1/2-inch drive
- Socket, 9/16-inch, 1/2-inch drive
- Wrench, box-end, 3/4-inch

Personnel Required

One

Equipment Condition

Right and left side hood panels opened (page 2-424).

LOCATION	ITEM	ACTION	REMARKS
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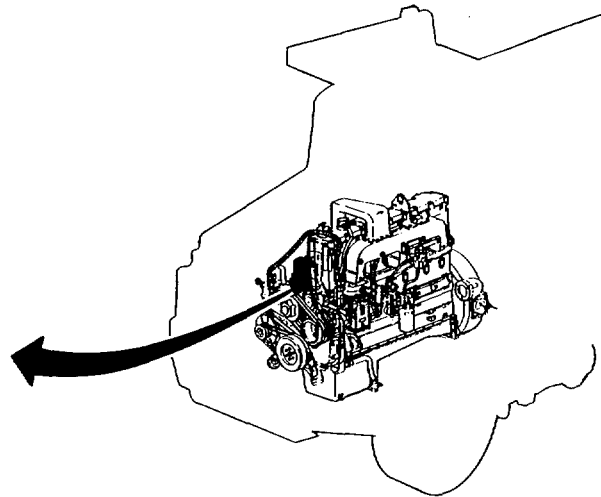
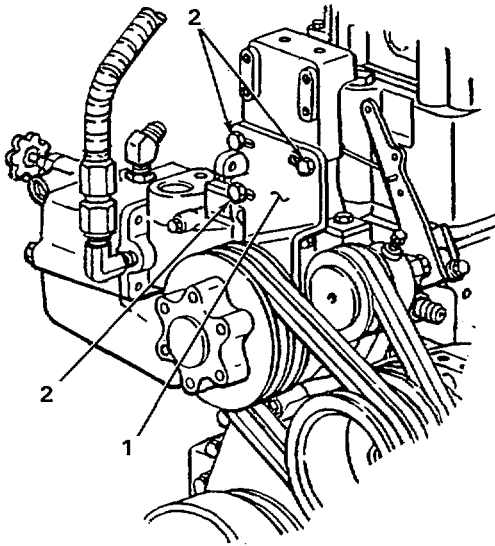
REMOVAL

- 1. Adjusting bracket (1)

Three screws (2) and loosen.

Using 3/4-inch box-end wrench, unscrew

Do not take out.



FAN REMOVED FOR CLARITY

TA244125

FAN DRIVEBELT - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
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REMOVAL - CONTINUED

- | | | | |
|----|-----------------------|---------------------|---|
| 2. | Adjusting bracket (1) | Adjusting screw (2) | Using 9/16-inch, 1/2-inch drive socket, 6-inch extension, and ratchet handle, turn clockwise to loosen pulley.
Do not take out. |
| 3. | Two pulleys (3 and 4) | Two belts (5 and 6) | Take off. |

INSPECTION/REPLACEMENT

NOTE

Replace all damaged or defective parts.

For more information on how to inspect parts, go to **General Maintenance Instructions (page 2-424)**.

- | | | | |
|----|--|-----------------|---|
| 4. | | Belts (5 and 6) | Look for cracks, breaks, chafing, and hardness. |
|----|--|-----------------|---|

INSTALLATION

- | | | | |
|----|-----------------------|---------------------|---------|
| 5. | Two pulleys (3 and 4) | Two belts (5 and 6) | Put on. |
|----|-----------------------|---------------------|---------|

ADJUSTMENT

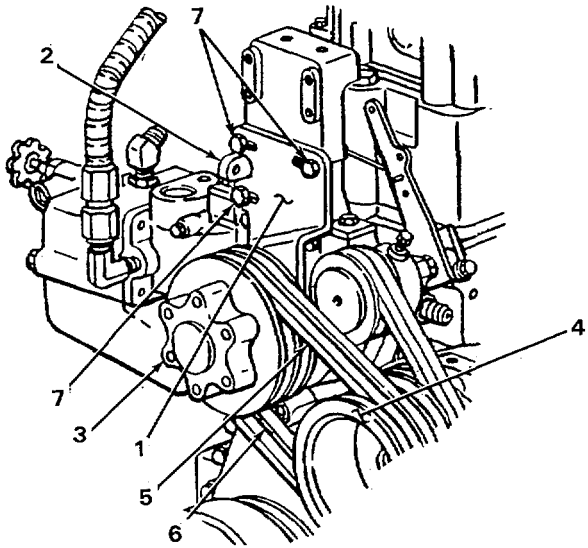
NOTE

If three adjusting bracket screws are not loose, do step one.

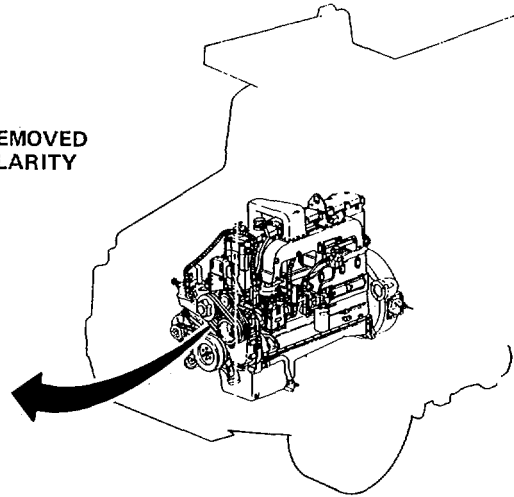
- | | | | |
|----|-----------------------|---------------------|--|
| 6. | Adjusting bracket (1) | Adjusting screw (2) | Turn counterclockwise using 9/16-inch, 1/2-inch drive socket, 6-inch extension, ratchet handle, and belt-tension gage, to obtain 90 to 110 lb (122.0 to 149.1 N.m) belt-tension. |
|----|-----------------------|---------------------|--|

FAN DRIVEBELT - CONTINUED

LOCATION	ITEM	ACTION	REMARKS
7.	Three screws (7)	Screw in and tighten using 3/4-inch box-end wrench.	



FAN REMOVED FOR CLARITY



NOTE

FOLLOW-ON MAINTENANCE: Close left and right side hood panels (page 2-424).

TASK ENDS HERE

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By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

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Brigadier General, United States Army
The Adjutant General

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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 = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
 1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
 1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 Lb
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

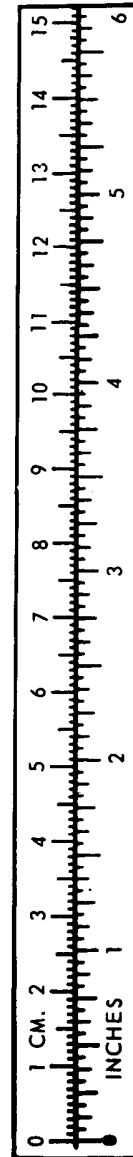
TEMPERATURE

$5/9 (^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
 212^o Fahrenheit is equivalent to 100^o Celsius
 90^o Fahrenheit is equivalent to 32.2^o Celsius
 32^o Fahrenheit is equivalent to 0^o Celsius
 $9/5 \text{ C}^{\circ} + 32 = \text{F}^{\circ}$

APPROXIMATE CONVERSION FACTORS

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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