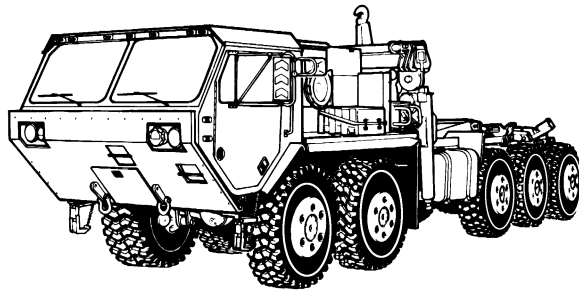


TECHNICAL MANUAL

UNIT MAINTENANCE

VOLUME IV

PALLETIZED LOAD SYSTEM



MODEL M1074/M1075

NSN 2320-01-304-2277

NSN 2320-01-304-2278

DISTRIBUTION RESTRICTION
Approved for public release;
distribution is unlimited.

AXLES TROUBLESHOOTING	2-2975
SUSPENSION TROUBLESHOOTING	2-3019
WHEELS AND TIRES TROUBLESHOOTING	2-3025
ARCTIC KIT WATER PUMP TROUBLESHOOTING	2-3038
INTERFACE TROUBLESHOOTING	2-3055
CONTAINER HANDLING UNIT (CHU) TROUBLESHOOTING	2-3136
ENGINE MAINTENANCE	3-1
FUEL SYSTEM MAINTENANCE	4-1
EXHAUST SYSTEM MAINTENANCE	5-1
COOLING SYSTEM MAINTENANCE	6-1
ELECTRICAL MAINTENANCE	7-1
TRANSMISSION MAINTENANCE	8-1
TRANSFER CASE MAINTENANCE	9-1
DRIVESHAFT MAINTENANCE	10-1
AXLES MAINTENANCE	11-1
BRAKE MAINTENANCE	12-1
MAINTENANCE ALLOCATION CHART	B-1
MANDATORY REPLACEMENT PARTS	F-1

WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

WARNING

Radiator, radiator cap, coolant, and hoses are very hot and pressurized during truck operation. Let radiator cool before checking hoses. Failure to do so may result in serious burns to personnel.

WARNING

Use extreme care when removing the radiator pressure cap. Sudden release of pressure can cause a steam flash which could seriously injure personnel. Slowly loosen cap to the first stop to relieve pressure before removing cap completely. After opening, securely tighten cap.

WARNING

Use a clean, thick waste cloth or like material to remove radiator pressure cap. Avoid using gloves. If hot water soaks through gloves, personnel could be burned.

WARNING

Apply truck brakes and chock wheels before any maintenance tasks are performed. Otherwise serious injury to personnel could result.

WARNING

Never use fuel to clean parts. Fuel is highly flammable. Serious personal injury could result if fuel ignites during cleaning.

WARNING

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc). Failure to comply may result in injury to personnel.

WARNING

Steam cleaning creates hazardous noise levels and severe burn potential. Eye, skin, and ear protection is required. Failure to comply may result in injury to personnel.

WARNING

Solvents used with a spray gun must be used in a spray booth with filter. Face shield must be used by personnel operating spray gun. Failure to comply may result in injury to personnel.

WARNING

On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.

WARNING

Do not drain engine oil while engine is hot. Severe injury to personnel may result.

WARNING

Ensure engine is cool before performing this task or injury to personnel may result.

WARNING

Use care when removing springs. Springs are under tension and can act as projectiles when released and could cause injury to personnel.

WARNING

Use care when installing springs. Springs are under tension and can act as projectiles when released and could cause injury to personnel.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.

WARNING

Do not remove the radiator cap when the engine is hot; steam and hot coolant can escape and burn personnel.

WARNING

After Nuclear, Biological, or Chemical (NBC) exposure of truck, all air filters shall be handled with extreme caution. Unprotected personnel may experience injury or death if residual toxic agents or radioactive material are present. If truck is exposed to chemical or biological agents, servicing personnel shall wear protective mask, hood, protective overgarments, and chemical protective gloves and boots in accordance with FM 3-4. All contaminated air filters shall be placed in double-lined plastic bags and moved swiftly to a segregation area away from the worksite. The same procedure applies for radioactive dust contamination. The Company NBC team should measure radiation prior to filter removal to determine extent of safety procedures required per the NBC Annex to the unit Standard Operating Procedures (SOP). The segregation area in which the contaminated air filters are temporarily stored shall be marked with appropriate NBC placards. Final disposal of contaminated air filters shall be in accordance with local SOP. Decontamination operation shall be in accordance with FM 3-5 and local SOP.

WARNING

Brake drum can get very hot during vehicle operation. Place hand near drum to check for excessive heat, but do not touch. Failure to comply may result in injury to personnel.

WARNING

Use extreme care when removing coolant system pressure tester. Sudden release of pressure can cause injury to personnel.

WARNING

Fuel is slippery and can cause falls. To avoid injury, wipe up spilled fuel with rags.

WARNING

Starting fluid is toxic and highly flammable. Container is pressurized. NEVER heat container and NEVER discharge starting fluid in confined areas or near open flame. Severe injury to personnel may result.

WARNING

Allow engine to cool before performing maintenance on the muffler, exhaust pipe, exhaust manifold or turbocharger. If necessary, use insulated pads and gloves.

WARNING

Muffler weighs 152 lbs (69 kg). Attach suitable lifting device prior to removal to prevent possible injury to personnel.

WARNING

Ensure this task is done only when muffler is cool. Performing this task on a warm or hot muffler may result in severe burning to personnel.

WARNING

Use extreme care when removing coolant system pressure tester. Sudden release of pressure can cause injury to personnel.

WARNING

Excess coolant may splash out upon removal of tube from hump hose. Ensure proper eye protection is worn to prevent possible injury to personnel.

WARNING

Cooling assembly weighs 925 lbs (420 kg). Attach suitable lifting device for removal and properly support cooling assembly to prevent possible injury to personnel.

WARNING

Ensure all personnel stay clear of radiator while engine is running. Air in radiator will be released which may cause hot coolant to spray out and cause injury or death to personnel.

WARNING

Engine cover assembly weighs 55 lbs (25 kg). Use an assistant to help remove engine cover assembly or injury to personnel may result.

WARNING

Radiator assembly weighs 575 lbs (261 kg). Do not stand directly under radiator assembly or injury to personnel may result.

WARNING

Ensure grille assembly is fully supported by lifting device prior to removal of screws. Failure to comply may result in severe injury to personnel.

WARNING

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

WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

WARNING

Starter weighs 73 lbs. (33 kg). Attach suitable lifting device prior to removal to prevent possible injury to personnel.

WARNING

Starter weighs 73 lbs. (33 kg). Attach suitable lifting device prior to installation to prevent possible injury to personnel.

WARNING

Use care when removing snap and retaining rings. Snap and retaining rings are under spring tension and can act as projectiles when released and could cause severe eye injury.

WARNING

Use care when installing snap and retaining rings. Snap and retaining rings are under spring tension and can act as projectiles when released and could cause severe eye injury.

WARNING

Diesel fuel is flammable. Do not perform this procedure near fire, flame, or sparks. Injury or death to personnel could result.

WARNING

Do not remove screws securing fan brace. Removing screws will cause fan brace to drop and may result in severe injury or death to personnel.

WARNING

Do not start engine or move truck when anyone is working on or under vehicle. Severe injury or death to personnel could result.

WARNING

Upon removal of all wires and cables, ensure no contact is made with battery terminals or other wires and cables. Strap wires and cables away from battery terminals and other wires and cables as required to prevent damage to parts, personal injury, or death.

WARNING

Ensure that exhaust pipe and turbo charger pipe connections are free from soot or debris. Failure to comply may result in exhaust leak and injury or death to personnel.

WARNING

Battery acid (electrolyte) is extremely harmful. Always wear safety goggles and rubber gloves, and do not smoke when performing maintenance on batteries. Injury will result if acid contacts skin or eyes. Wear rubber apron to prevent clothing being damaged.

WARNING

Be careful not to short out battery terminals. Do not smoke or use open flame near batteries. Batteries may explode from a spark. Battery acid is harmful to skin and eyes.

WARNING

Wear safety goggles and acid-proof gloves when battery cover must be removed or when adding electrolyte.

WARNING

Avoid electrolyte contact with skin, eyes, or clothing. If battery electrolyte spills, take immediate action to stop burning effects:

- External: Immediately flush with cold running water to remove all acid.
- Eyes: Flush with cold water for at least 15 minutes. Seek immediate medical attention.
- Internal: Drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Seek immediate medical attention.
- Clothing or Vehicle: Wash at once with cold water. Neutralize with baking soda or household ammonia solution.

WARNING

Injury will result if acid contacts skin or eyes. Wear rubber apron to prevent clothing being damaged.

WARNING

Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

WARNING

Do not allow personnel to perform maintenance directly under boom or mast. Failure to follow proper procedures could cause serious injury or death.

WARNING

22 to 28 vdc are always present on wire 1431 at the ENGINE switch. Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

WARNING

22 to 28 vdc are always present on wire 1281 and DUVAC connectors. Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

WARNING

22 to 28 vdc are always present on wire 1139 at starter solenoid. Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

WARNING

Transmission oil will be extremely hot when drained. Do not come in contact with hot oil to avoid severe burns. If burned with hot oil, seek medical attention immediately.

WARNING

Ensure there are no personnel in front of truck when placing it into drive. Failure to do so may result in injury or death to personnel.

WARNING

Ensure transmission oil and filter are cool prior to removal. Failure to comply may result in injury to personnel.

WARNING

Wear safety goggles when performing tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.

WARNING

Do not remove the radiator cap when the engine is hot; steam and hot coolant can escape and burn personnel.

WARNING

Driveshafts can weigh up to 100 lbs (45 kg), obtain aid from an assistant to prevent possible injury to personnel.

WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death keep flame away from fuel and keep fire extinguisher within easy reach.

WARNING

Use jackstands to support axle weight. Failure to comply may result in injury to personnel.

WARNING

Brake shoes may be covered with dust. Breathing this dust may be harmful to your health. Do not use compressed air to clean brake shoes. Wear a filter mask approved for use against brake dust. Failure to comply may result in injury or death to personnel.

WARNING

Use care when removing brake spring. Spring is under tension and can act as a projectile when released and could cause injury to personnel.

WARNING

Use care when installing brake spring. Spring is under tension and can act as a projectile when released and could cause injury to personnel.

WARNING

22 to 28 vdc are always present at DUVAC connectors. Care must be exercised when removing the DUVAC cover. Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuit, a direct short may result. Damage to equipment, injury or death to personnel may occur.

WARNING

Spring in air chamber is very powerful and is under tension. Failure to cage air chamber before removal will release tension of spring abruptly and could result in injury or death to personnel.

WARNING

Air reservoir will fall when screws are removed. Support air reservoir prior to removing screws to prevent injury to personnel.

WARNING

Do not touch hot exhaust system with bare hands; injury to personnel will result.

WARNING

Allow engine to cool before performing troubleshooting maintenance. If necessary use insulated pads and gloves. Hot engine components will burn and cause injury to personnel.

WARNING

Terminal 1 and terminal 2 at DUVAC controller are electrically hot all of the time. Ensure bracket does not contact either terminal. Damage to equipment, injury or death to personnel may occur.

WARNING

Terminal 1 and terminal 2 at DUVAC controller are electrically hot all of the time. Ensure DUVAC cover or bracket does not contact either terminal. Damage to equipment, injury or death to personnel may occur.

WARNING

Inner wheel weighs 105 lbs (48 kg). Attach suitable lifting device prior to moving rim to prevent possible injury to personnel.

WARNING

Ensure all personnel keep hands and fingers out from between tire and bead lock. Failure to comply may result in injury to personnel.

WARNING

Alternator is capable of producing over 40 vdc. Be careful when taking a voltage reading not to get shocked.

WARNING

High pressure hydraulics [oil under 3,700 psi (25,512 kPa) pressure] operate this equipment. Refer to vehicle operator and maintenance manuals for hydraulic oil pressure. Never disconnect any hydraulic line or fittings without first dropping pressure to zero. High pressure oil stream can pierce body and cause severe injury to personnel.

WARNING

Ensure all personnel wear proper eye protection. Do not stand directly in front of valve stem when draining air from tire. Tire is under extreme air pressure. Failure to comply may result in injury to personnel.

WARNING

Prolonged contact with lubricating oil (MIL-L-2104) may cause a skin rash. Skin and clothing that come in contact with lubricating oil should be thoroughly washed immediately. Saturated clothing should be removed immediately. Areas in which lubricating oil is used should be well-ventilated to keep fumes to a minimum.

WARNING

Tie-rod end may unexpectedly pop-up when pressure is applied with hydraulic jack. Keep hands and face clear of tie-rod end. Failure to comply may result in severe injury to personnel.

WARNING

Skid plate weighs 130 lbs (59 kg). Attach suitable lifting device prior to removal to prevent injury to personnel.

WARNING

Skid plate structure weighs 95 lbs (43 kg). Attach suitable lifting device prior to removal to prevent injury to personnel.

WARNING

Skid plate crossmember weighs 55 lbs (25 kg). Attach suitable lifting device prior to removal to prevent possible injury to personnel.

WARNING

Right hand and left hand extension assemblies weigh 110 lb (50 kg) each. Use the aid of an assistant when lifting to prevent injury to personnel.

WARNING

Crossover tube weighs 100 lbs (45 kg). Attach a suitable lifting device prior to removal to prevent possible injury to personnel.

WARNING

Each hard lift bracket weighs 67 lbs (30 kg). Attach a suitable lifting device prior to removal to prevent possible injury to personnel.

WARNING

Self-guided coupler weighs 100 lbs (45 kg). Attach suitable lifting device prior to removal to prevent possible injury to personnel.

WARNING

The exhaust pipe and muffler can become very hot during vehicle operation. Be careful not to touch these parts with bare hands, or allow body to come in contact with pipe or muffler. Exhaust system parts can become hot enough to cause serious burns.

WARNING

Support hoist extension before removing retaining pin or injury to personnel may occur.

WARNING

Tire carrier weighs 145 lbs (66 kg). Attach suitable lifting device prior to removal to prevent possible injury to personnel.

WARNING

Wire rope can become frayed or contain broken wires. Wear heavy leather-palmed work gloves when handling wire rope. Frayed or broken wires can cause injury to personnel.

WARNING

Never let moving wire rope slide through hands, even when wearing gloves. A broken wire could cut through glove and can cause injury to personnel.

WARNING

Cab door weighs 100 lbs (45 kg). Support with suitable lifting device to avoid injury to personnel.

WARNING

Do not let window fall. Broken glass may cause serious injury to personnel.

WARNING

Platform assembly weighs 62 lbs (28 kg). Attach suitable lifting device prior to removal to prevent possible injury to personnel.

WARNING

Always wear proper eye protection and protective clothing when handling glass. Failure to comply may result in injury to personnel.

WARNING

Seat assembly weighs 55 lbs (25 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Box assembly weighs 92 lbs (42 kg). Ensure box assembly is properly supported to prevent possible injury to personnel.

WARNING

Wear heavy gloves when handling crane cable. Never let cable run through hands; frayed cables can cut.

WARNING

The crane hydraulic system operates at oil pressures up to 3,100 psi (21,375 kPa). Never disconnect any hydraulic line or fitting without first dropping the pressure to zero. Failure to comply may result in serious injury or death to personnel.

WARNING

Self-recovery winch weighs 645 lbs (292 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Front tension guide weighs 60 lbs (27 kg). Use an assistant to prevent possible injury to personnel.

WARNING

Leave top front screw installed in frame to prevent spacer from falling. Failure to comply may result in injury to personnel.

WARNING

Front guide assembly weighs 75 lbs (34 kg). Use an assistant to prevent injury to personnel.

WARNING

Position top front screw in frame to hold spacer in place. Failure to comply may result in injury to personnel.

WARNING

Rear tension guide weighs 50 lbs (23 kg). Use an assistant to prevent injury to personnel.

WARNING

Rear guide assembly weighs 65 lbs (29 kg). Use an assistant to prevent possible injury to personnel.

WARNING

Rear roller assembly weighs 375 lbs (170 kg). Attach suitable lifting device prior to removal to prevent possible injury to personnel.

WARNING

Do not remove heater hoses when engine is hot; steam and hot coolant can escape and burn personnel.

WARNING

Use clean wiping rags or like material to remove heater hoses. Avoid using gloves. If hot water soaks through gloves, personnel could be burned.

WARNING

Coolant is slippery and can cause falls and injury. Clean up spilled coolant immediately.

WARNING

Allow engine to cool prior to removal of heater core to prevent burns and injury to personnel.

WARNING

Use caution when removing hoses to prevent getting antifreeze in eyes or mouth, if antifreeze does get in eyes or mouth, seek medical attention immediately.

WARNING

Extreme care should be taken when removing heater hoses if water temperature gage reads above 180 degrees F (82 degrees C). Contact by steam or hot coolant may result in injury or death to personnel.

WARNING

Allow engine to cool prior to removal of valve to prevent burns and possible injury to personnel.

WARNING

Ensure engine is cool before performing this task or severe burns from hot hydraulic fluid may result.

WARNING

The main hydraulic system operates at oil pressures up to 3,675 psi (25,339 kPa). Never disconnect any hydraulic line, fitting or component without first dropping pressure to zero. Failure to comply may result in serious injury or death to personnel.

WARNING

Use extreme care when loosening filler cap. Sudden release of pressure could seriously injure personnel. Slowly loosen cap to relieve pressure and ensure proper eye protection is worn.

WARNING

Hydraulic reservoir weighs 120 lbs (54 kg). The aid of an assistant is required to prevent possible injury to personnel.

WARNING

Battery weighs 75 lbs (34 kg). Remove battery only with the aid of an assistant to prevent possible injury to personnel.

WARNING

Battery weighs 75 lbs (34 kg). Install battery only with the aid of an assistant to prevent possible injury to personnel.

WARNING

Battery box weighs 75 lbs (34 kg). Use the aid of an assistant to prevent possible injury to personnel.

WARNING

Sharp edges of exhaust pipe could cause injury to personnel.

WARNING

Coolant may run out of water jacket when turned. Wear eye protection or injury to personnel may result.

WARNING

High pressure hydraulics [oil under 3,100 psi (21,374 kPa) pressure] operate this equipment. Refer to vehicle operator and maintenance manuals for hydraulic oil pressure. Never disconnect any hydraulic line or fittings without first dropping pressure to zero. A high pressure oil stream can pierce body and cause severe injury to personnel.

WARNING

Machine gun ring weighs 295 lbs (134 kg). Attach suitable lifting device to prevent injury to personnel.

WARNING

Machine gun ring front support weighs 55 lbs (25 kg). Attach suitable lifting device to prevent injury to personnel.

WARNING

Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32, R33 are always electrically hot and can cause severe injury to personnel. Care must be exercised when working under the electrical circuit board cover.

WARNING

Ensure equipment will not move while repairing or inspecting it. For trailers, “red tag” the hitch, and block or chock wheels or tracks. For powered equipment, block or chock wheels or tracks, and “red tag” the starter. Prevent a “quick fix” from becoming a quick injury.

WARNING

When adjustment or service requires a running engine, two personnel will be used; one at controls and one at service point. This helps prevent accidental movement of controls.

WARNING

Wires 1866 and 1867 have 12 vdc at all times direct from batteries. Care must be exercised when working with these wires to avoid injury to personnel.

WARNING

Ensure all personnel are clear of rear of truck before shifting into R (reverse). Failure to do so might result in injury or death to personnel.

WARNING

Circuit breakers and relays are always electrically hot and can cause severe injury to personnel. Care must be exercised when working under the electrical circuit board cover.

WARNING

Ether is toxic and highly flammable. Container is pressurized. Never heat container and never discharge ether into confined areas or near open flame. Severe injury to personnel may result.

WARNING

Do not place any part of body in area of fan operation. Failure to do so will result in injury or death to personnel.

WARNING

10 to 14 vdc are always present at terminals E and F of connector MC7.

WARNING

Before inflating or deflating, stand out of the trajectory area or personal injury or death may result.

WARNING

Hot transmission oil can cause severe burns and injury to personnel. Transmission should be allowed to cool before oil is drained.

WARNING

Wear safety goggles when performing leakage tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

WARNING

If air lines are under high pressure when they are disconnected, they can whip around and cause injury to personnel. Caution should be exercised when loosening or disconnecting air line fittings.

WARNING

Exercise extreme caution when working around wheels or under truck while engine is operating. Movement of truck may cause injury or death to personnel.

WARNING

Keep clear of equipment when equipment is being raised or lowered. Equipment may fall and cause serious injury or death to personnel.

WARNING

Never crawl under equipment when performing maintenance unless equipment is securely blocked. Equipment may fall and cause serious injury or death to personnel.

WARNING

Do not work on any item supported only by lift jacks or hoist. Always use blocks or proper stands to support the item prior to any work. Equipment may fall and cause injury or death to personnel.

WARNING

Ensure transmission is cool before proceeding. Failure to comply may result in injury to personnel.

WARNING

Keep hands and arms away from fan blade and drive while engine is running, or serious injury to personnel will result.

WARNING

Maintain adequate distance from moving steering parts or serious injury to personnel may result.

WARNING

Do not stand between wheels when engine is operating. Movement of vehicle can cause injury or death to personnel.

WARNING

Truck must be on level ground and wheels must be chocked before parking brake is released. Otherwise, truck may roll and cause injury to personnel.

WARNING

Do not use retread tires on vehicles equipped with a Central Tire Inflation System (CTIS). Use only the tires that are specified in the Repair Parts and Special Tools List (RPSTL). Failure to comply may result in tire failure and loss of vehicle control.

WARNING

Ensure transfer case is cool before proceeding. Failure to comply may result in injury to personnel.

WARNING

Failure to place wheel/tire assembly in safety cage prior to initial inflation could result in serious injury or death to personnel.

WARNING

When a wheel/tire is in a restraining device, do not lean any part of body or equipment on or against the restraining device, or injury or death could result.

WARNING

Stand clear of trajectory area during deflation or personal injury or death may result.

WARNING

Always completely deflate tire by removing valve core from valve stem before attempting demounting operation. After air has finished exhausting from valve stem, carefully run a piece of wire through valve stem to ensure it is not plugged and tire is completely deflated. Failure to comply may result in injury to personnel.

WARNING

Wheel/tire assembly must be deflated in a safety cage or personal injury or death may result.

WARNING

Keep hands clear of studs and outer face of wheel to prevent injury to personnel.

WARNING

Wheel/tire assembly weighs 523 lbs (237 kg). Attach suitable lifting device prior to moving to prevent possible injury to personnel.

WARNING

Stay out of the trajectory as indicated by the area shown. Under some circumstances, the trajectory may deviate from its expected path. Injury or death to personnel may result.

WARNING

Container lock could drop suddenly if not supported. Failure to comply may result in injury to personnel.

WARNING

Slider weighs 142 lbs (64 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Right front support bracket weighs 98 lbs (44 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Left front support bracket weighs 98 lbs (44 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Front support assembly weighs 660 lbs (299 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Front crossmember assembly weighs approximately 500 lbs (227 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Stow cone weldment weighs approximately 225 lbs (102 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Rear guide assembly weighs 70 lbs (32 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Slide arm weighs 65 lbs (29 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Lifting frame weighs 1600 lbs (726 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Stow weldment weighs 410 lbs (186 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Rear roller bracket weighs 150 lbs (68 kg). When removing one rear roller bracket, ensure remaining rear roller bracket is supported. Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Arm assembly weighs 240 lbs (109 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Right strut bracket assembly weighs 80 lbs (36 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Alternator weighs 75 lbs (34 kg). Use the aid of an assistant to prevent possible injury to personnel.

WARNING

Starter weighs 73 lbs (33 kg). Attach suitable lifting device prior to installation to prevent possible injury to personnel.

WARNING

Ensure brake drum is not pulled back more than approximately two inches (5 cm). Failure to comply may result in injury or death to personnel.

WARNING

Most circuit breakers are always electrically hot and can cause severe injury to personnel. Care must be exercised when working under the ECB cover.

WARNING

Tip of removal tool is very sharp. Use caution when using tool. Failure to comply may result in injury to personnel.

WARNING

Stand clear of tires while turning them. Failure to do so may result in injury or death to personnel

WARNING

Never inflate the wheel/tire assembly unless all ten outer wheel nuts have been properly torqued or personal injury could result.

WARNING

Brake drum weighs 132 lbs (60 kg). Attach suitable lifting device to prevent possible injury to personnel.

WARNING

Axle's No. 1 and No. 2 brake drums may swing out during removal. Use the aid of an assistant to support lifting device. Failure to comply may result in injury to personnel.

WARNING

Keep hands clear of studs and outer face of axles to prevent injury to personnel.

WARNING

Stand clear of tires while turning. Failure to do so may result in injury or death to personnel.

WARNING

Sharp edges of exhaust pipe could cause injury to personnel.

WARNING

Do not remove hoses when cooling system is hot; steam and hot coolant can escape and burn personnel.

WARNING

The hydraulic system operates at high pressures. Never disconnect any hydraulic line or fitting without first dropping pressure to zero. Failure to comply may result in serious injury or death to personnel.

WARNING

CARC paint contains isocyanate (HDI) which is highly irritating to skin and respiratory system. High concentrations of HDI can produce symptoms of itching and reddening of skin, a burning sensation in throat and nose and watering of the eyes. In extreme concentrations, HDI can cause cough, shortness of breath, pain during respiration, increased sputum production, and chest tightness. The following precautions must be taken whenever using CARC paint:

- ALWAYS use air line respirators when using CARC paint unless air sampling shows exposure to be below standards. Use chemical cartridge respirator if air sampling is below standards.
- DO NOT let skin or eyes come in contact with CARC paint. Always wear protective equipment (gloves, ventilation mask, safety goggles, etc.).
- DO NOT use CARC paint without adequate ventilation.
- NEVER weld or cut CARC-coated materials.
- DO NOT grind or sand painted equipment without high-efficiency air purifying respirators in use.
- BE AWARE of CARC paint exposure symptoms; symptoms can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.

WARNING

Horizontal roller weighs 75 lbs (34 kg). Attach suitable lifting device prior to removal to prevent possible injury to personnel.

WARNING

Do not put fingers in between boom sections when removing wear pads. Use a screwdriver or similar tool to remove wear pads. Failure to comply may result in injury to personnel.

WARNING

Do not put fingers in between boom sections when installing wear pads. Use a screwdriver or similar tool. Failure to comply may result in injury to personnel.

WARNING

Do not inhale fumes; could cause severe injury or death.

WARNING

Do not over-tighten clamp during installation. Accumulator is filled with compressed gas, and a change in pressure could cause crane to malfunction. Failure to comply may result in injury or death to personnel.

WARNING

Wire cable assembly can become frayed or contain broken wires. Wear heavy leather-palmed work gloves when handling wire cable assembly. Frayed or broken wires can cause injury to personnel.

WARNING

Never let moving wire cable assembly slide through hands, even when wearing gloves. A broken wire could cut through glove and cause injury to personnel.

WARNING

Air cleaner assembly can weigh up to 100 lbs (45 kg). Ensure air cleaner assembly is properly supported during removal. Failure to comply may result in injury to personnel.

WARNING

Ensure air cleaner assembly is properly supported. Failure to comply may result in injury to personnel.

WARNING

Use care when removing retaining rings. Retaining rings are under spring tension and can act as projectiles when released and could cause severe eye injury.

WARNING

Use care when installing retaining rings. Retaining rings are under spring tension and can act as projectiles when released and could cause severe eye injury.

LIST OF EFFECTIVE PAGES

Insert latest changed pages. Destroy superseded pages.

NOTE

The portion of the text effected by the changes is indicated by a vertical line in the outer margins of the page. Changes to illustrations are indicated by a shadowed or screened areas, or by miniature pointing hands.

Dates of issue for original and changed pages are:

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TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 1396 CONSISTING OF THE FOLLOWING:

Page No.	*Change No.	Page No.	*Change No.	Page No.	*Change No.
Title	0	11-1 - 11-26	0		
Blank	0	12-1 - 12-214	0		
a - z	0	A-1 - A-2	0		
A	0	B-1 - B-39	0		
B Blank	0	B-40 Blank	0		
i - iii	0	C-1 - C-10	0		
iv Blank	0	D-1 - D-16	0		
2-2975 - 2-3017	0	E-1 - E-7	0		
2-3018 Blank	0	E-8 Blank	0		
2-3019 - 2-3023	0	F-1 - F-13	0		
2-3024 Blank	0	F-14 Blank	0		
2-3025 - 2-3053	0	G-1 - G-3	0		
2-3054 Blank	0	G-4 Blank	0		
2-3055 - 2-3228	0	INDEX-1 - INDEX-15	0		
3-1 - 3-32	0	INDEX-16 Blank	0		
4-1 - 4-93	0				
4-94 Blank	0				
5-1 - 5-13	0				
5-14 Blank	0				
6-1 - 6-56	0				
7-1 - 7-380	0				
8-1 - 8-9	0				
8-10 Blank	0				
9-1 - 9-22	0				
10-1 - 10-10	0				

* Zero In This Column Indicates An Original Page.

Unit Maintenance Manual PALLETIZED LOAD SYSTEM

MODEL M1074/M1075
NSN 2320-01-304-2277
NSN 2320-01-304-2278

Current as of 01 August 1999

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

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

TABLE OF CONTENTS

	Page
CHAPTER 2 VEHICLE MAINTENANCE (CONT).	
Section IV Troubleshooting	2-97
Section VI Maintenance Procedures	2-3210
CHAPTER 3 ENGINE MAINTENANCE	3-1
CHAPTER 4 FUEL SYSTEM MAINTENANCE	4-1
CHAPTER 5 EXHAUST SYSTEM MAINTENANCE	5-1
CHAPTER 6 COOLING SYSTEM MAINTENANCE	6-1
CHAPTER 7 ELECTRICAL SYSTEM MAINTENANCE	7-1
CHAPTER 8 TRANSMISSION MAINTENANCE	8-1
CHAPTER 9 TRANSFER CASE MAINTENANCE	9-1

* This manual supersedes TM 9-2320-364-20-4, 1 April 1998.

	Page
CHAPTER 10	10-1
DRIVESHAFT AND UNIVERSAL JOINT MAINTENANCE	..... 10-1
CHAPTER 11	11-1
AXLES MAINTENANCE	..... 11-1
CHAPTER 12	12-1
BRAKE MAINTENANCE	..... 12-1
 APPENDIXES	
A	A-1
REFERENCES	..... A-1
B	B-1
MAINTENANCE ALLOCATION CHART	..... B-1
C	C-1
EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST	..... C-1
D	D-1
ILLUSTRATED LIST OF MANUFACTURED ITEMS	..... D-1
E	E-1
TORQUE LIMITS	..... E-1
F	F-1
MANDATORY REPLACEMENT PARTS	..... F-1
G	G-1
TOOL IDENTIFICATION LIST	..... G-1
INDEX	INDEX-1
SCHEMATICS	SCHMTC-1
Section I	145 Amp Alternator and DDEC II Engine
Section II	200 Amp Alternator and DDEC III Engine

HOW TO USE THIS MANUAL

This manual is designed to help maintain the Model M1074/M1075 Palletized Load System (PLS) truck. Listed below are some special features included in this manual to help locate and use the needed information:

- A front cover table of contents is provided for quick reference to chapters and sections that will be used often.
- **WARNING**, **CAUTION**, and **NOTE** headings, subject headings, and other essential information are printed in bold type making them easier to see.
- The maintenance tasks describe what must be done to the truck before starting the task (Equipment Condition), and what must be done to return the vehicle to operating condition after the task is finished (Follow-On Maintenance).
- The Appendixes are located at the end of the manual. They contain a reference guide to other manuals, the Maintenance Allocation Chart (MAC), a list of expendable supplies and materials, and other material for maintaining the PLS truck.
- In addition to text, there are exploded-view illustrations showing how to take a component off and put it back on. Cleaning and inspection procedures are also included as required.
- Chapter 2 of this manual covers Unit level Preventive Maintenance Checks and Services (PMCS) and basic troubleshooting, as well as general maintenance.
- Chapters 3 through 12 of this manual cover Unit Maintenance for each PLS truck system.

Follow these guidelines when using this manual:

- Read all **WARNINGS** and **CAUTIONS** before performing any procedure.
- The equipment conditions found in the maintenance procedures are of a general nature and the mechanic may be able to perform only certain steps within a procedure to accomplish the equipment condition.

2-33. AXLES TROUBLESHOOTING.

This paragraph covers Axles System Troubleshooting. The Axles System Fault Index, Table 2-61, lists faults for the axles system of the PLS truck. Refer to wiring and air schematics, Figures 2-72 and 2-73, when performing tests and corrective actions.

Table 2-61. Axles System Fault Index

Fault No.	Description	Page
1.	Axle Differential(s) Unusually Noisy When Operating	2-2978
2.	Differential Side To Side Lockup Will Not Engage With CTIS In Emergency With Transfer Case In Low	2-2982
3.	Interaxle Front To Rear Lockup Will Not Engage With CTIS In Mud, Sand And Snow	2-3004

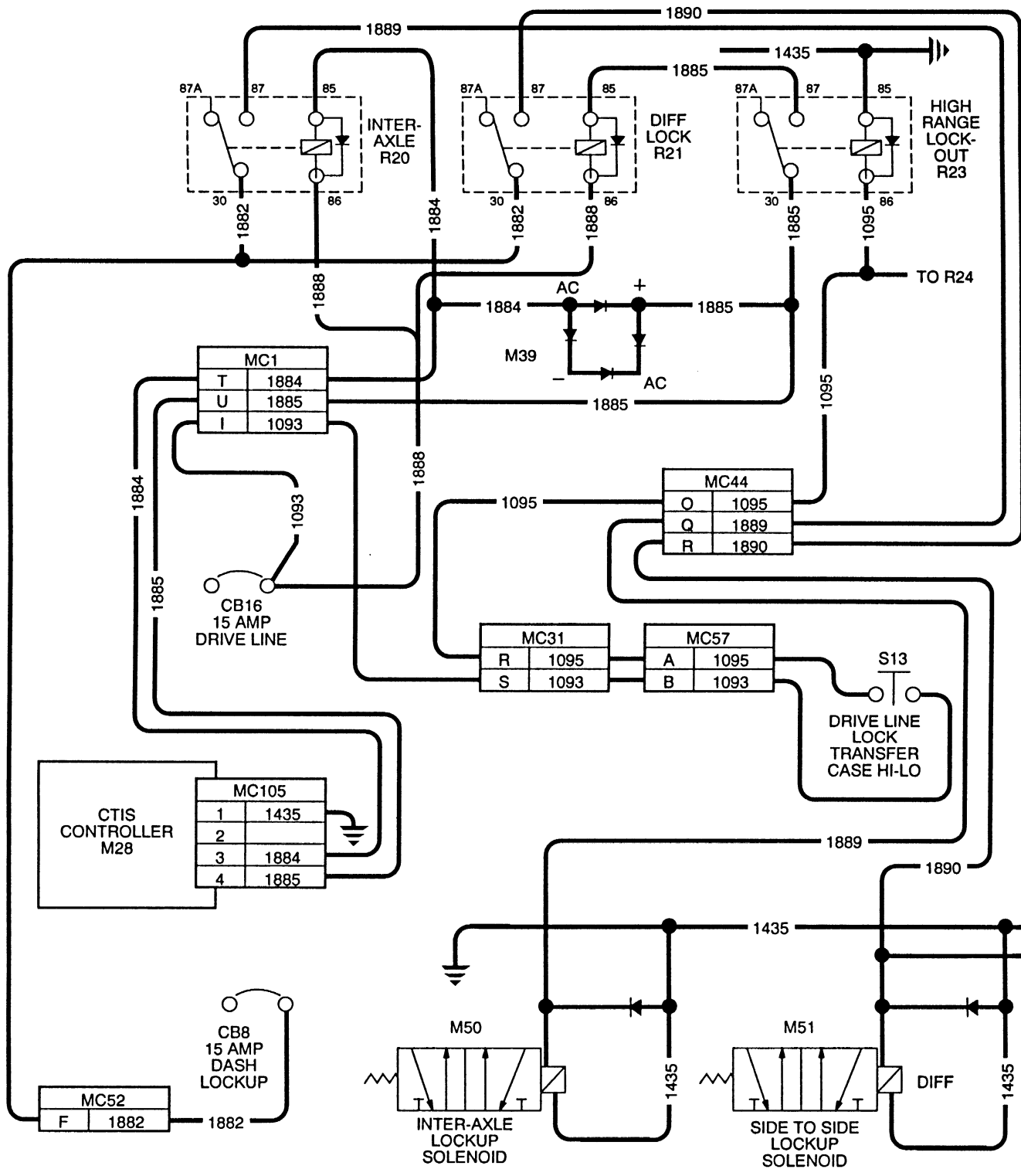


Figure 2-72. Interaxle/Differential Lockup Wiring Schematic

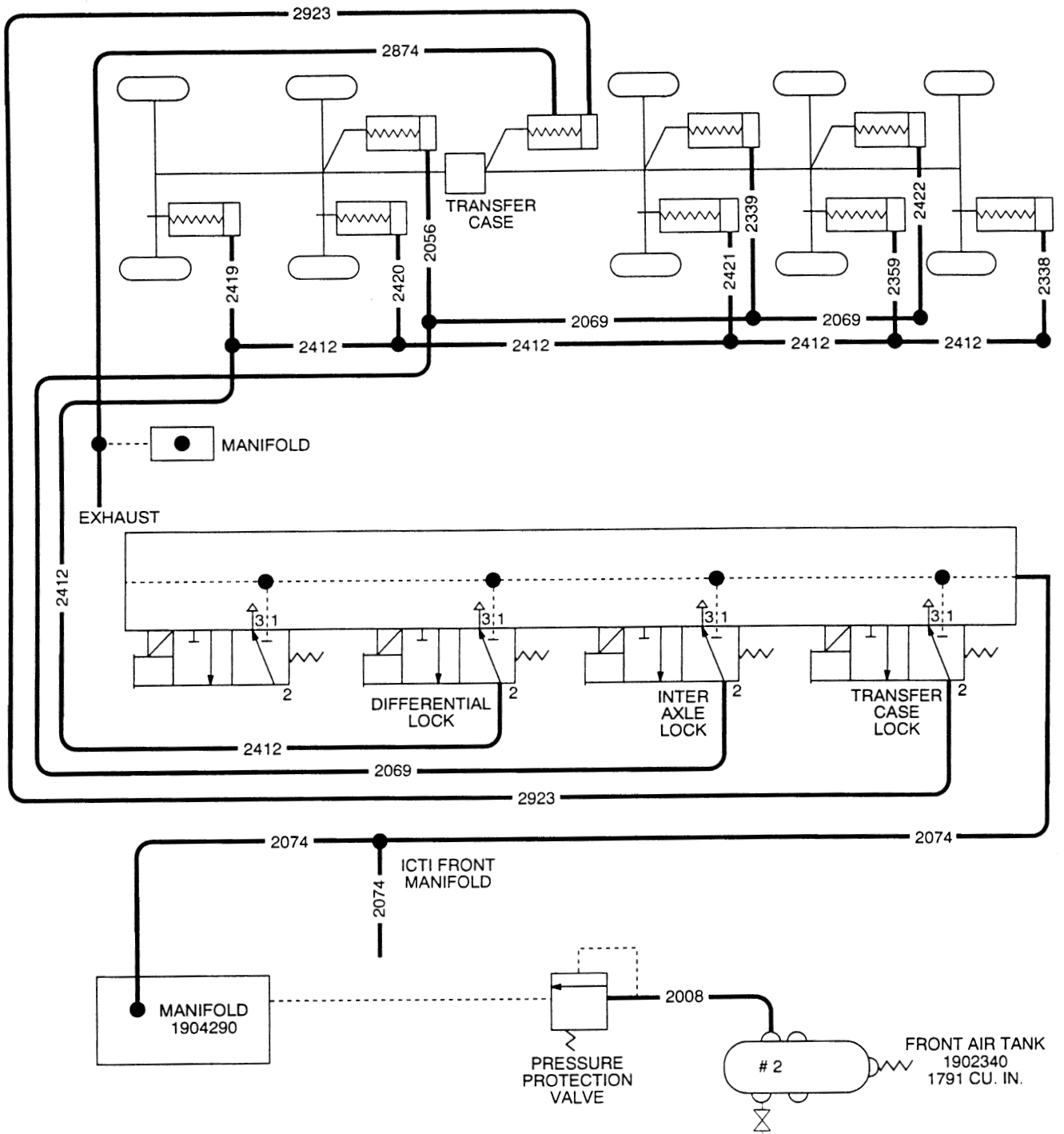


Figure 2-73. Interaxle/Differential Lockup Air Schematic

2-33. AXLES TROUBLESHOOTING (CONT).

1. AXLE DIFFERENTIAL(S) UNUSUALLY NOISY WHEN OPERATING.

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74 Appendix G)

References

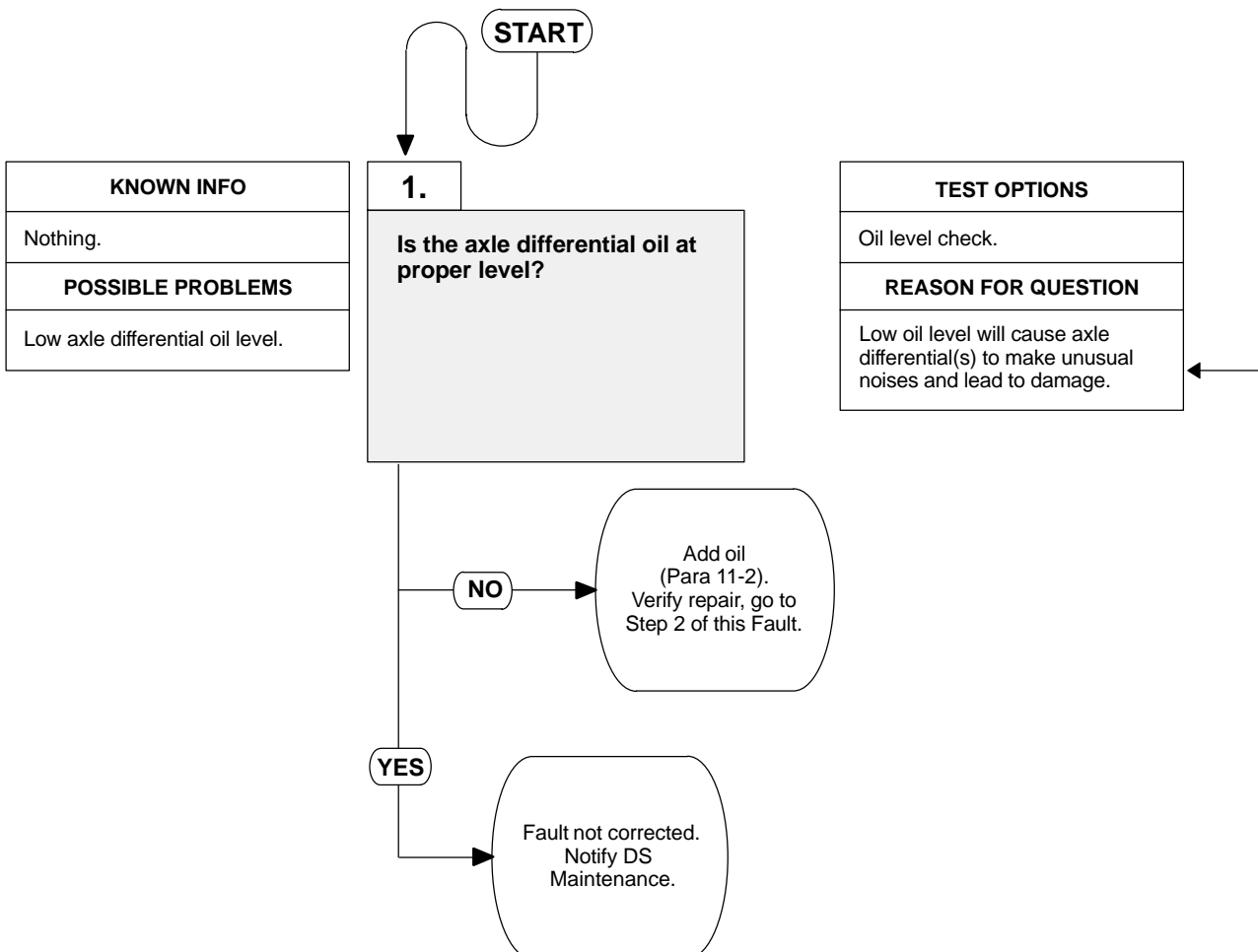
TM 9-2320-364-10

Materials/Parts

Packing, Preformed (Item 261, Appendix F)

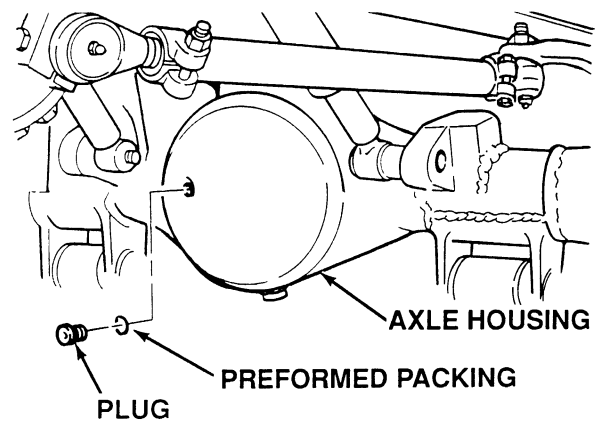
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)



OIL LEVEL CHECK

- (1) Remove axle housing oil plug and preformed packing. Discard preformed packing.
- (2) Does oil appear in hole?
 - (a) If oil is not present, add oil (Para 11-2).
 - (b) If oil is present, go to Step 2 of this Fault.
- (3) Install preformed packing and plug.



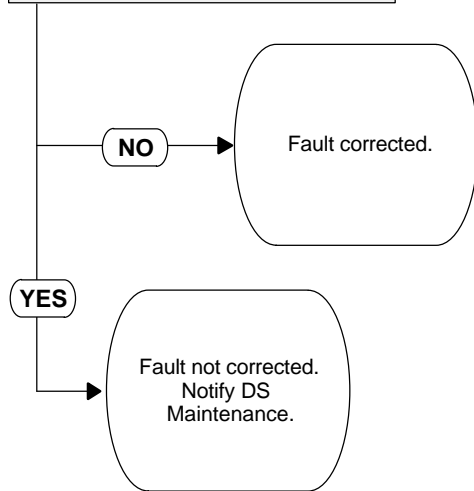
1. AXLE DIFFERENTIAL(S) UNUSUALLY NOISY WHEN OPERATING (CONT).

KNOWN INFO
Axle differential oil level OK.
POSSIBLE PROBLEMS

2.

Are the axle differential(s) unusually noisy when operating?

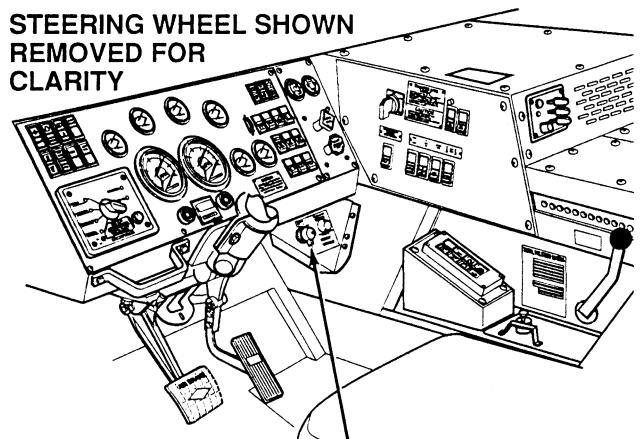
TEST OPTIONS
Verify repair.
REASON FOR QUESTION
If axle differentials are not unusually noisy when operating, fault has been corrected.



VERIFY REPAIR

- (1) Start engine (TM 9-2320-364-10).
- (2) Drive truck and observe operation of axle differentials.
 - (a) If axle differentials are unusually noisy, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.
 - (b) If axle differentials are no longer noisy, fault has been corrected.
- (3) Turn OFF ENGINE switch.

**STEERING WHEEL SHOWN
REMOVED FOR
CLARITY**



ENGINE SWITCH

2-33. AXLES TROUBLESHOOTING (CONT).

2. DIFFERENTIAL SIDE TO SIDE LOCKUP WILL NOT ENGAGE WITH CTIS IN EMERGENCY WITH TRANSFER CASE IN LOW.

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
 STE/ICE-R (Optional) (Item 3, Appendix G)
 Multimeter (Item 44, Appendix G)

Materials/Parts

Solution, Soap (Item 86, Appendix C)
 Adhesive (Item 8, Appendix C)

References

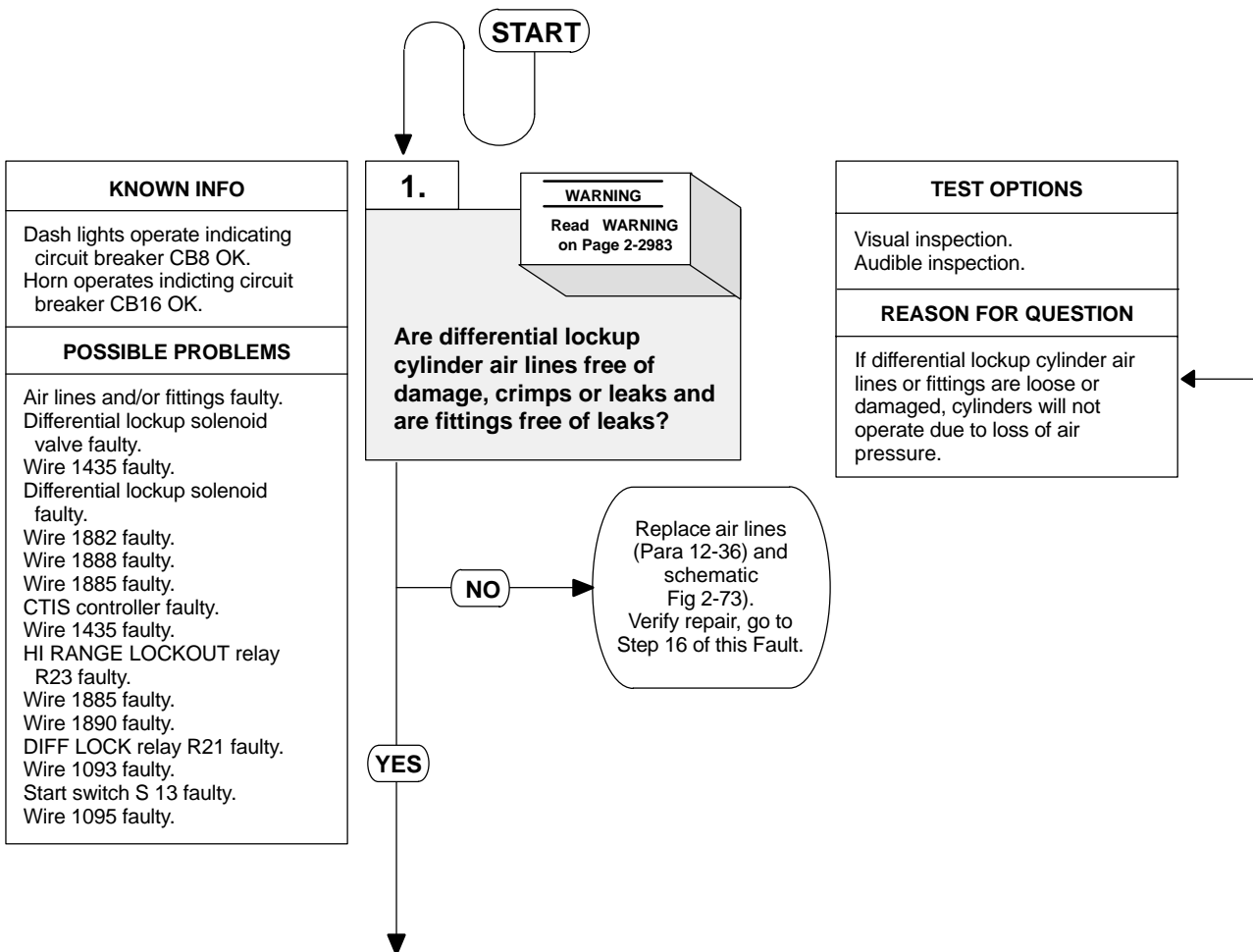
TM 9-2320-364-10
 TM 9-4910-571-12&P

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Parking brake applied, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)

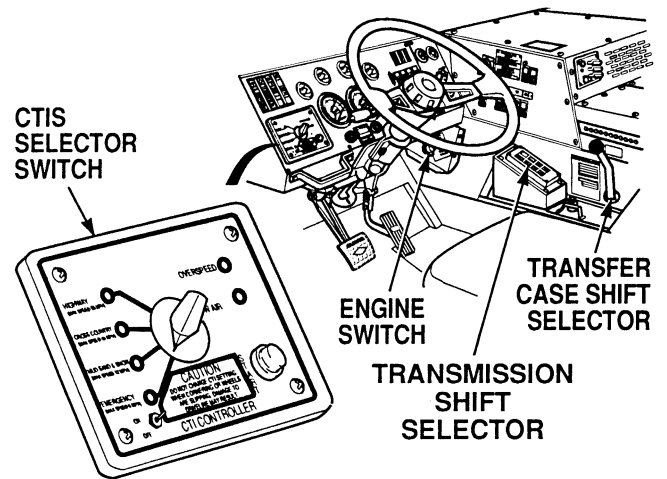
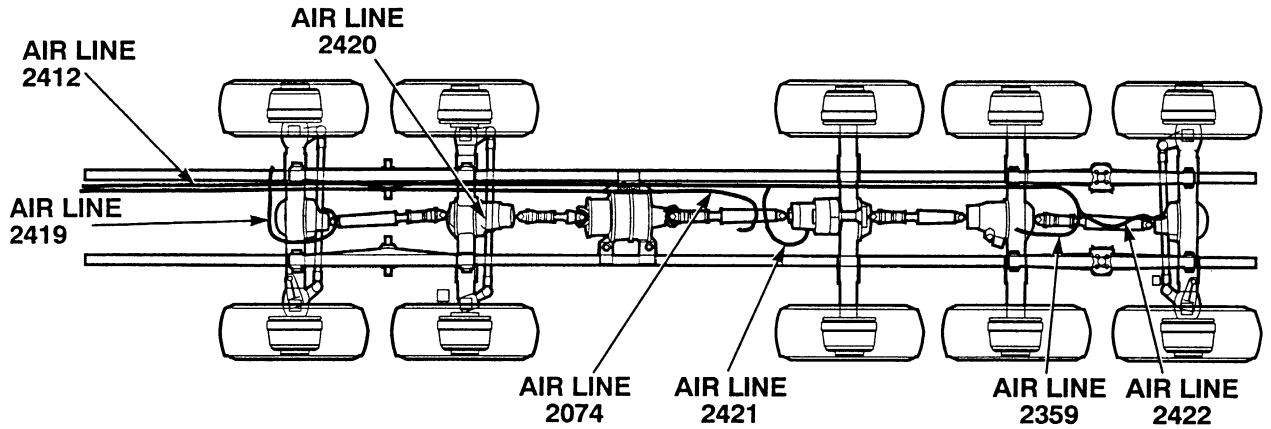
Note

Use soap solution to check for air leaks.

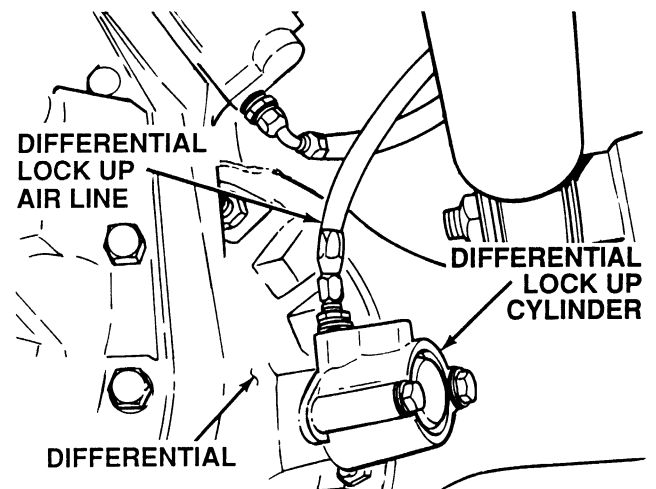


WARNING

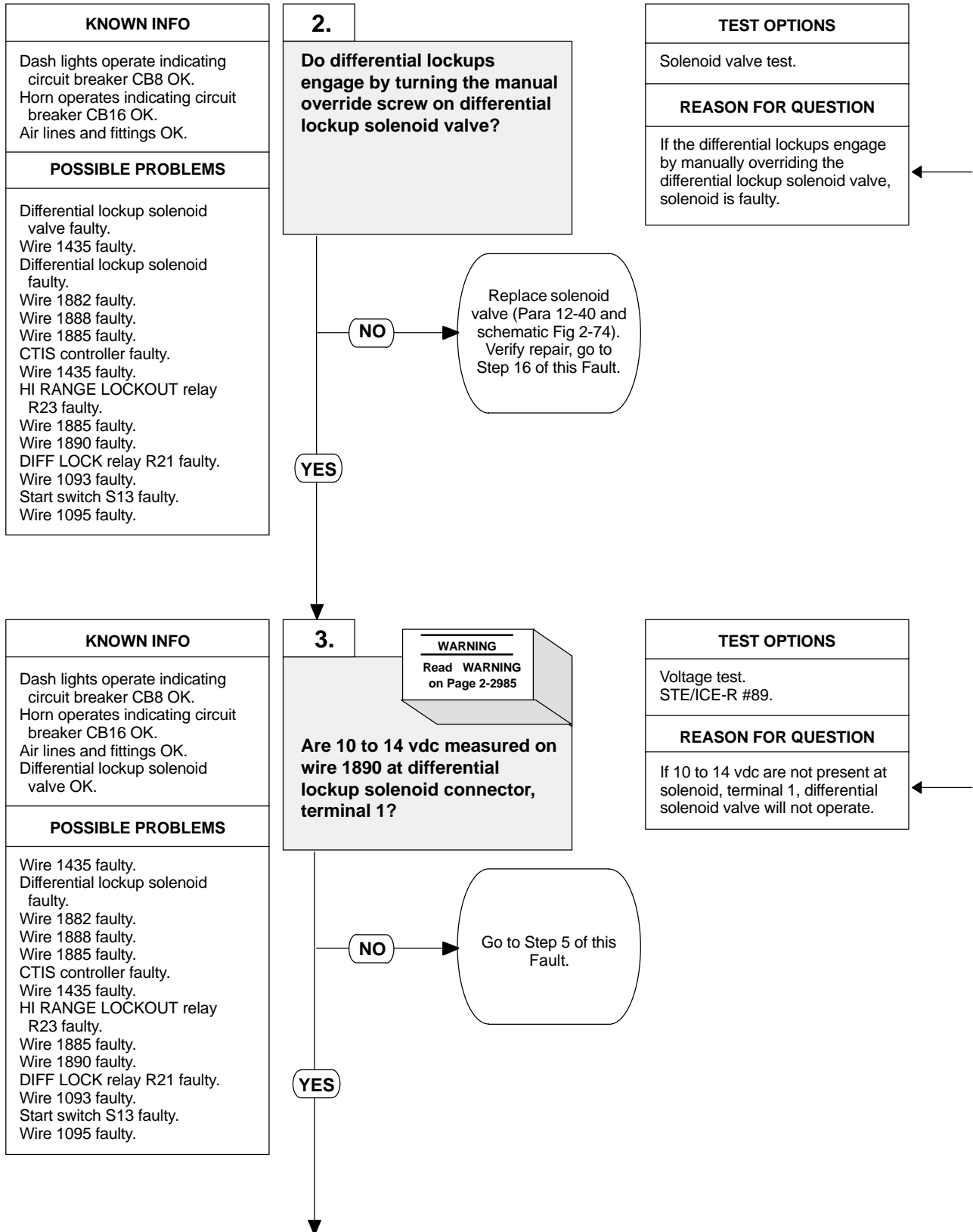
Do not stand between wheels when engine is operating. Movement of vehicle can cause injury or death to personnel.



VISUAL INSPECTION
(1) Set the CTIS rotary selector switch to EMERGENCY (TM 9-2320-364-10).
(2) Set transmission selector to Neutral (N).
(3) Shift transfer case shift lever to Low (L).
(4) Start engine and build air pressure to 125 ± 4 psi (861 ± 28 kPa).
(5) Check differential lockup cylinder air lines and fittings for damage, crimps and leaks (Para 12-36 and schematic Fig 2-73). <ul style="list-style-type: none"> (a) If damage, crimps or leaks are present, tighten loose connections, turn OFF ENGINE switch and replace air lines as necessary (Para 12-36 and schematic Fig 2-73). (b) If no damage, crimps or leaks are present, turn OFF ENGINE switch and go to Step 2 of this Fault.



2. DIFFERENTIAL SIDE TO SIDE LOCKUP WILL NOT ENGAGE WITH CTIS IN EMERGENCY WITH TRANSFER CASE IN LOW (CONT).

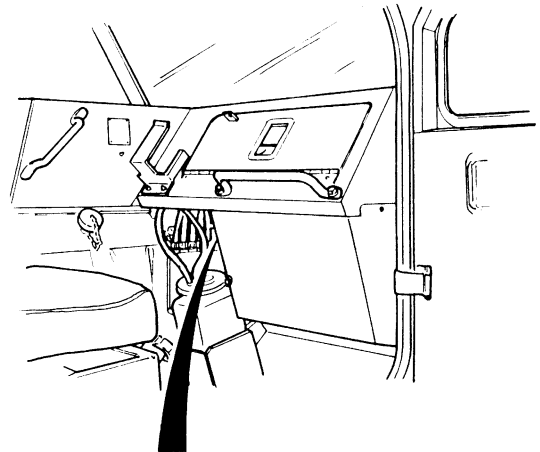


WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

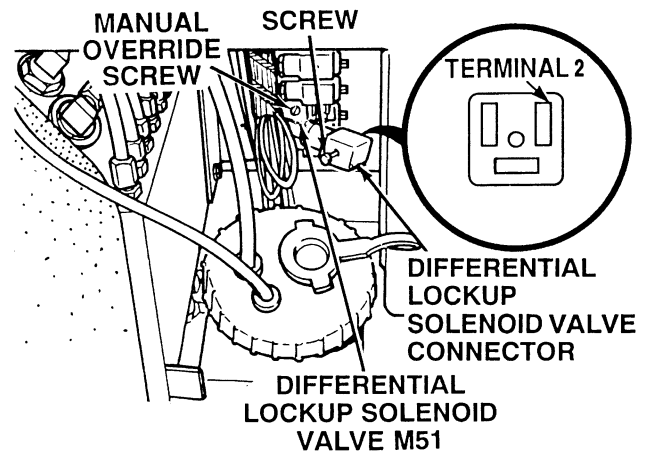
SOLENOID VALVE TEST

- (1) Loosen screw and disconnect solenoid connector, top half.
- (2) Turn differential solenoid valve M51 manual override screw to the left and listen for air passing through valve.
 - (a) If air does not pass through valve, replace valve (Para 12-40).
 - (b) If air does pass through valve, valve is OK.
- (3) Turn solenoid valve M51 manual override screw all the way to the right.

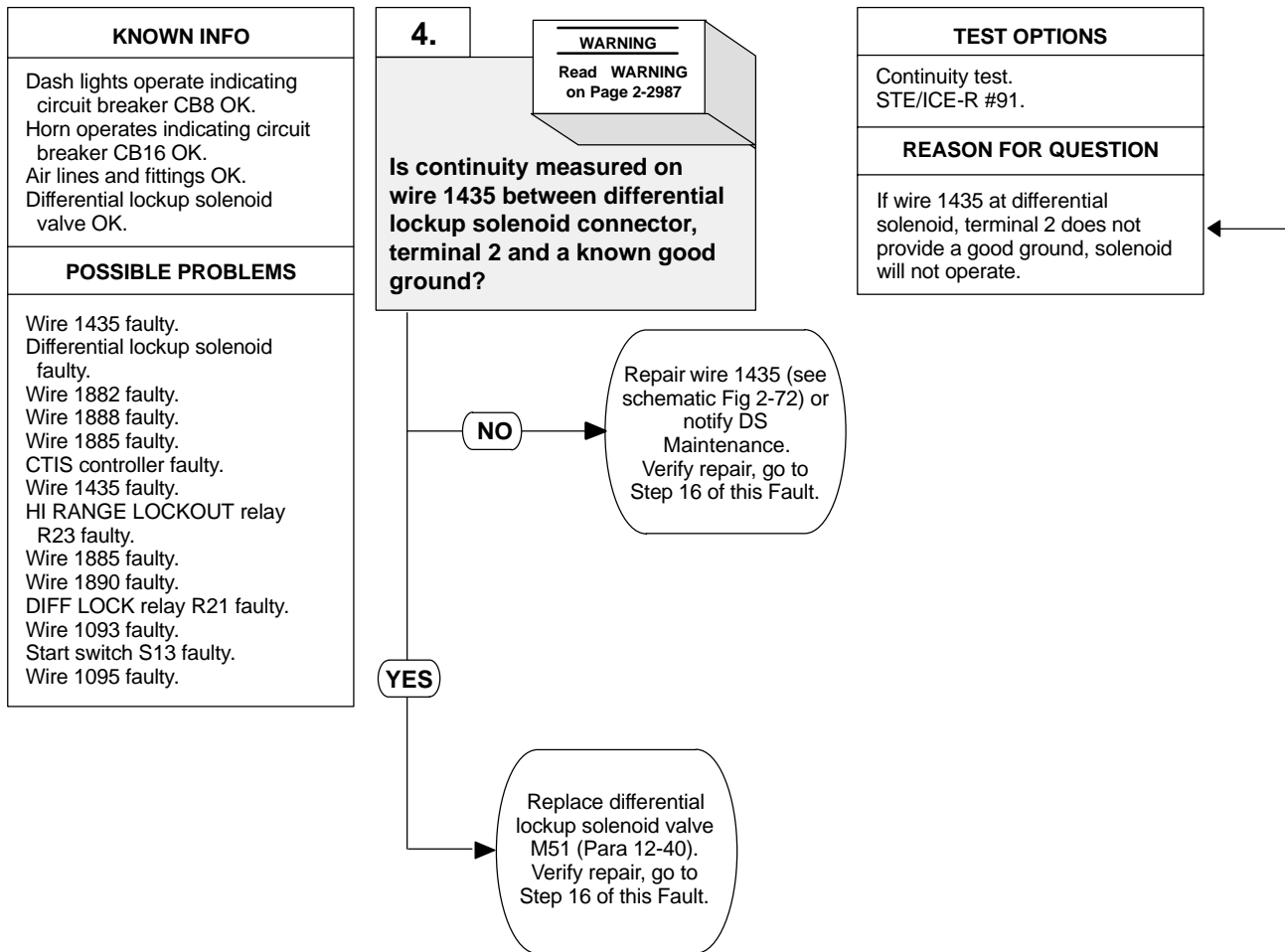


VOLTAGE TEST

- (1) Set multimeter select switch to volts dc.
- (2) Connect positive (+) multimeter lead to differential lockup solenoid connector, terminal 1.
- (3) Connect negative (-) multimeter lead to a known good ground.
- (4) Turn ON ENGINE switch (TM 9-2320-364-10).
 - (a) If 10 to 14 vdc are not present, turn OFF ENGINE switch and go to Step 5 of this Fault.
 - (b) If 10 to 14 vdc are present, wire 1890 is OK.
- (5) Turn OFF ENGINE switch.



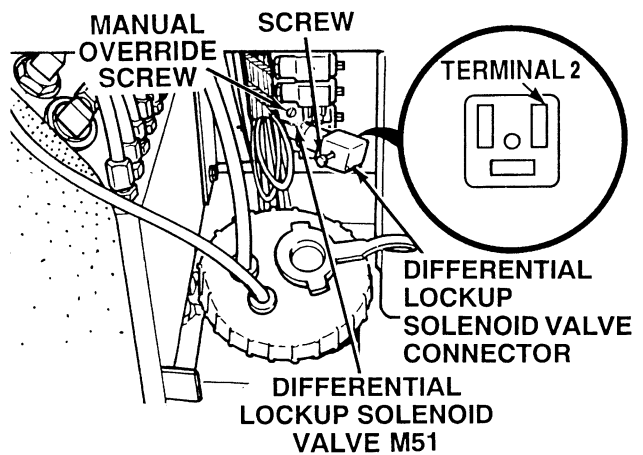
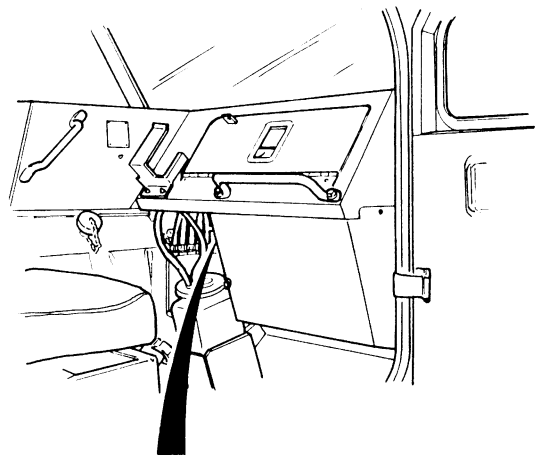
2. DIFFERENTIAL SIDE TO SIDE LOCKUP WILL NOT ENGAGE WITH CTIS IN EMERGENCY WITH TRANSFER CASE IN LOW (CONT).



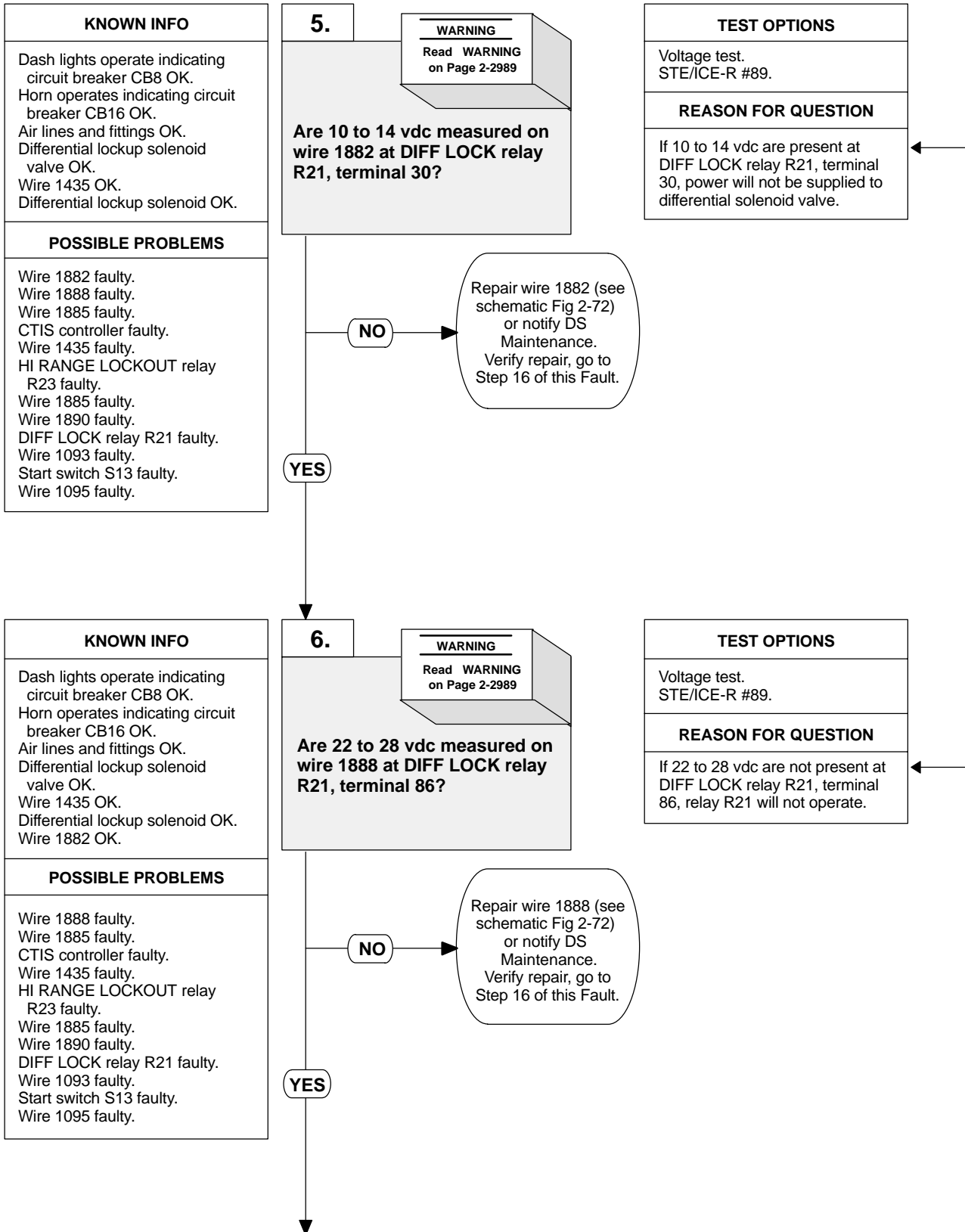
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- CONTINUITY TEST**
- (1) Set multimeter selector switch to ohms.
 - (2) Is there continuity on wire 1435 between differential lockup solenoid connector, terminal 2 and a known good ground?
 - (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-72) or notify DS Maintenance, and perform Steps (3) and (4) below.
 - (b) If there is continuity, replace differential lockup solenoid (Para 12-40).
 - (3) Connect solenoid connector to differential lockup solenoid valve M51.
 - (4) Tighten connector screw and coat head of connector screw with adhesive.



2. DIFFERENTIAL SIDE TO SIDE LOCKUP WILL NOT ENGAGE WITH CTIS IN EMERGENCY WITH TRANSFER CASE IN LOW (CONT).



WARNING

- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32 and R33 are always electrically hot and can cause severe injury to personnel. Care must be exercised when working under the electrical circuit board cover.

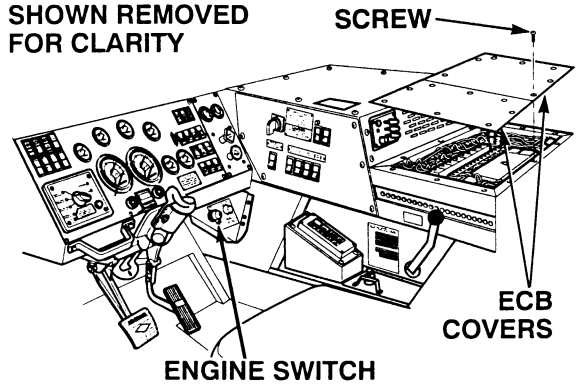
NOTE

Relay test must be performed with relay partially removed.

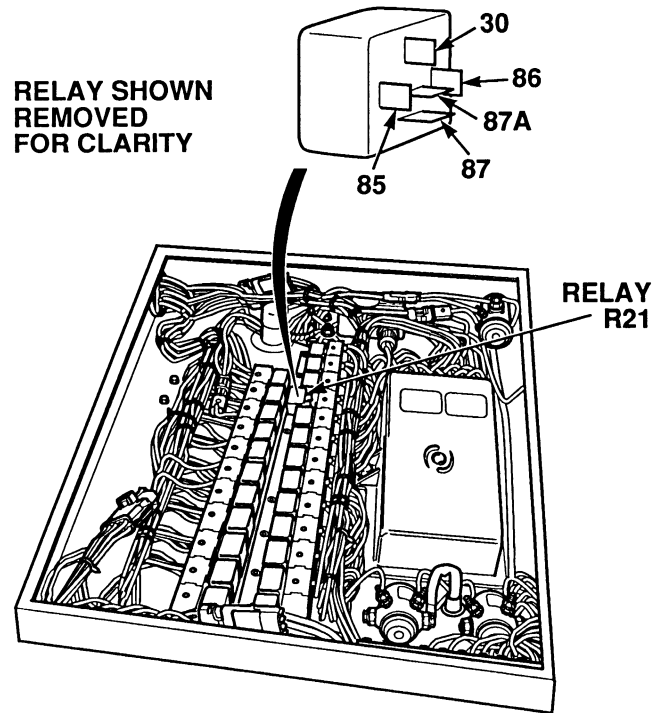
VOLTAGE TEST
<ol style="list-style-type: none"> (1) Remove 15 screws and ECB covers. (2) Connect positive (+) multimeter lead to DIFF LOCK relay R21, terminal 30. (3) Connect negative (-) multimeter lead to a known good ground. (4) Turn ON ENGINE switch. <ol style="list-style-type: none"> (a) If 10 to 14 vdc are not present, turn OFF ENGINE switch and repair wire 1882 (see schematic Fig 2-72), or notify DS Maintenance. (b) If 10 to 14 vdc are present, wire 1882 is OK. (5) Turn OFF ENGINE switch.

VOLTAGE TEST
<ol style="list-style-type: none"> (1) Connect positive (+) multimeter lead to DIFF LOCK relay R21, terminal 86. (2) Connect negative (-) multimeter lead to a known good ground. (3) Turn ON ENGINE switch (TM 9-2320-364-10). <ol style="list-style-type: none"> (a) If 22 to 28 vdc are not present, turn OFF ENGINE switch and repair wire 1888 (see schematic Fig 2-72), or notify DS Maintenance. (b) If 22 to 28 vdc are present, wire 1888 is OK. (4) Turn OFF ENGINE switch.

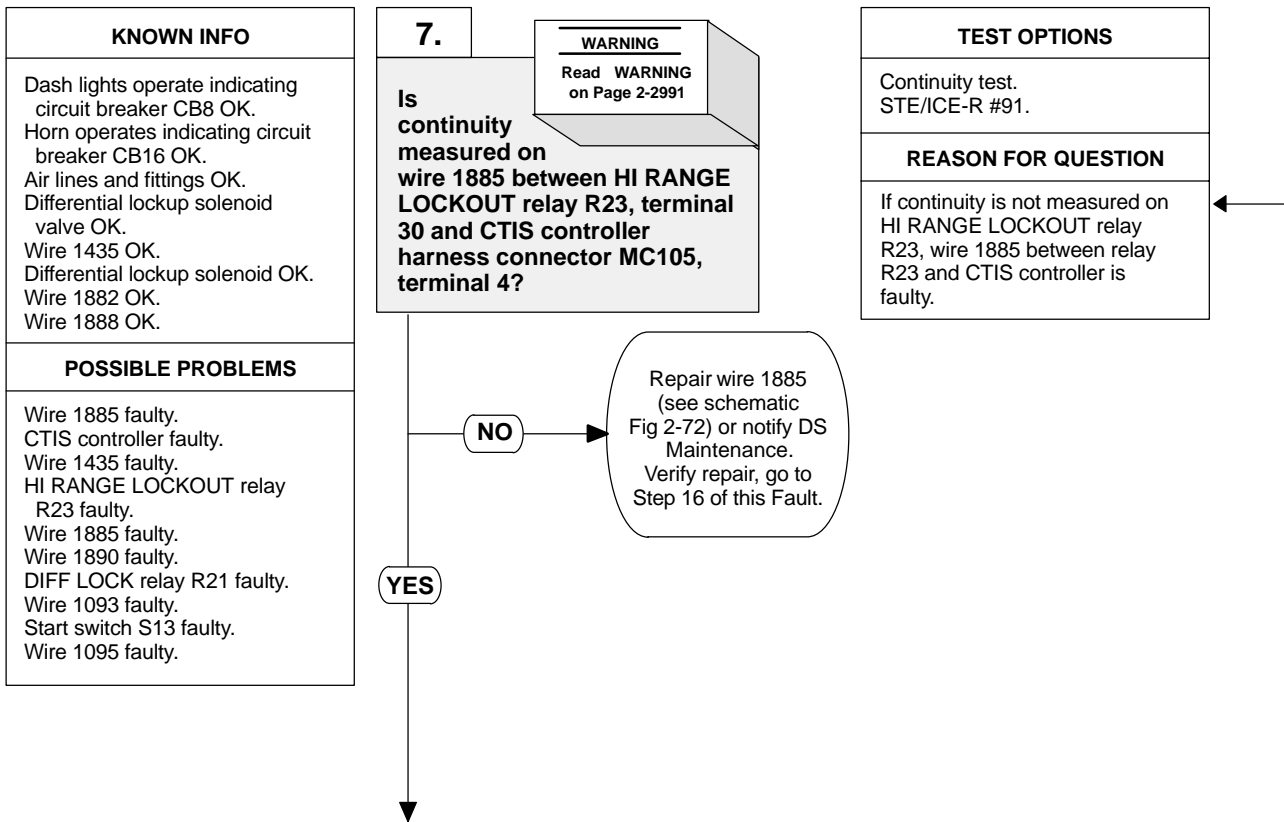
STEERING WHEEL SHOWN REMOVED FOR CLARITY



RELAY SHOWN REMOVED FOR CLARITY



2. DIFFERENTIAL SIDE TO SIDE LOCKUP WILL NOT ENGAGE WITH CTIS IN EMERGENCY WITH TRANSFER CASE IN LOW (CONT).



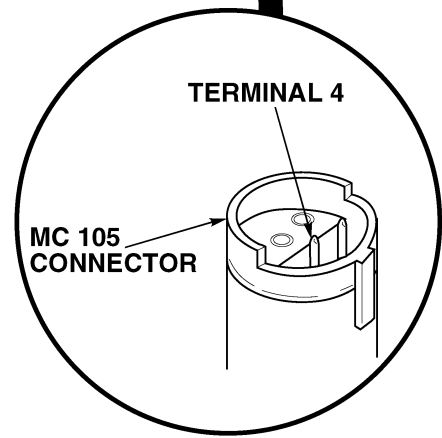
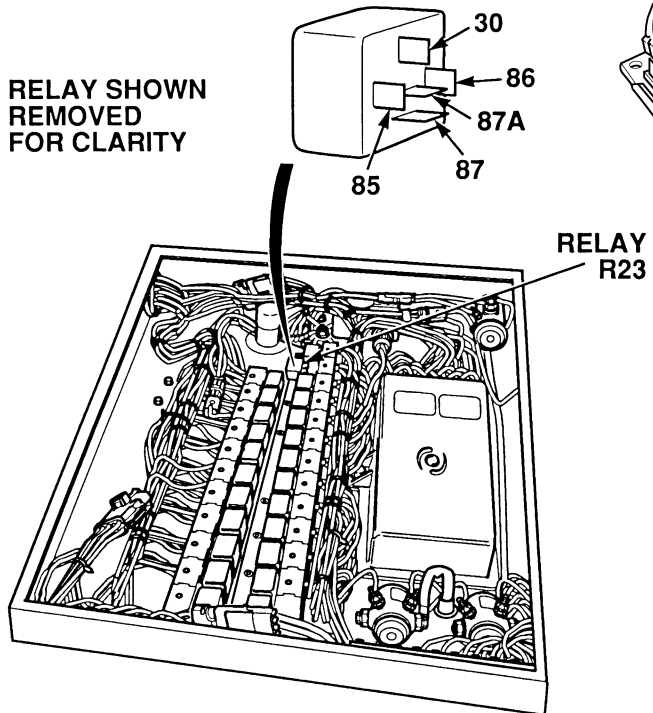
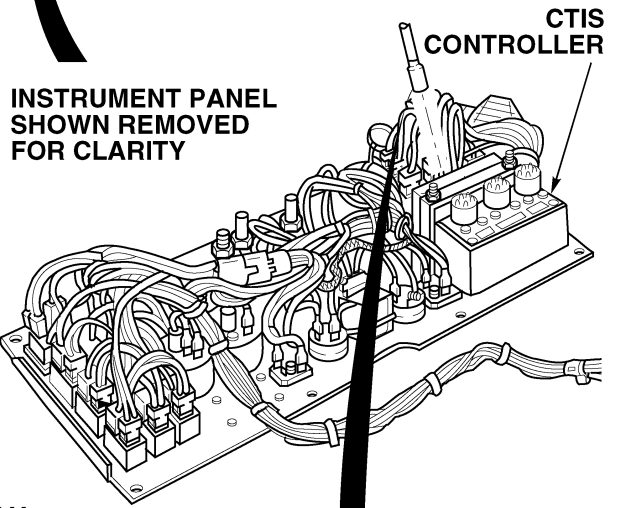
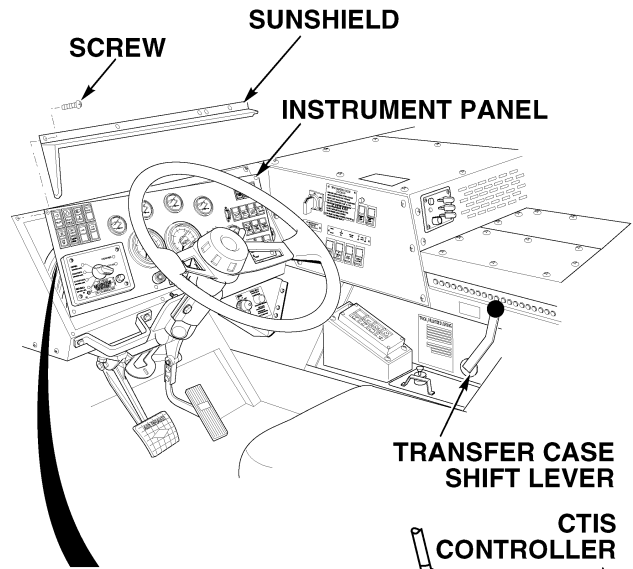
WARNING

- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32 and R33 are always electrically hot and can cause severe injury to personnel. Care must be exercised when working under the electrical circuit board cover.

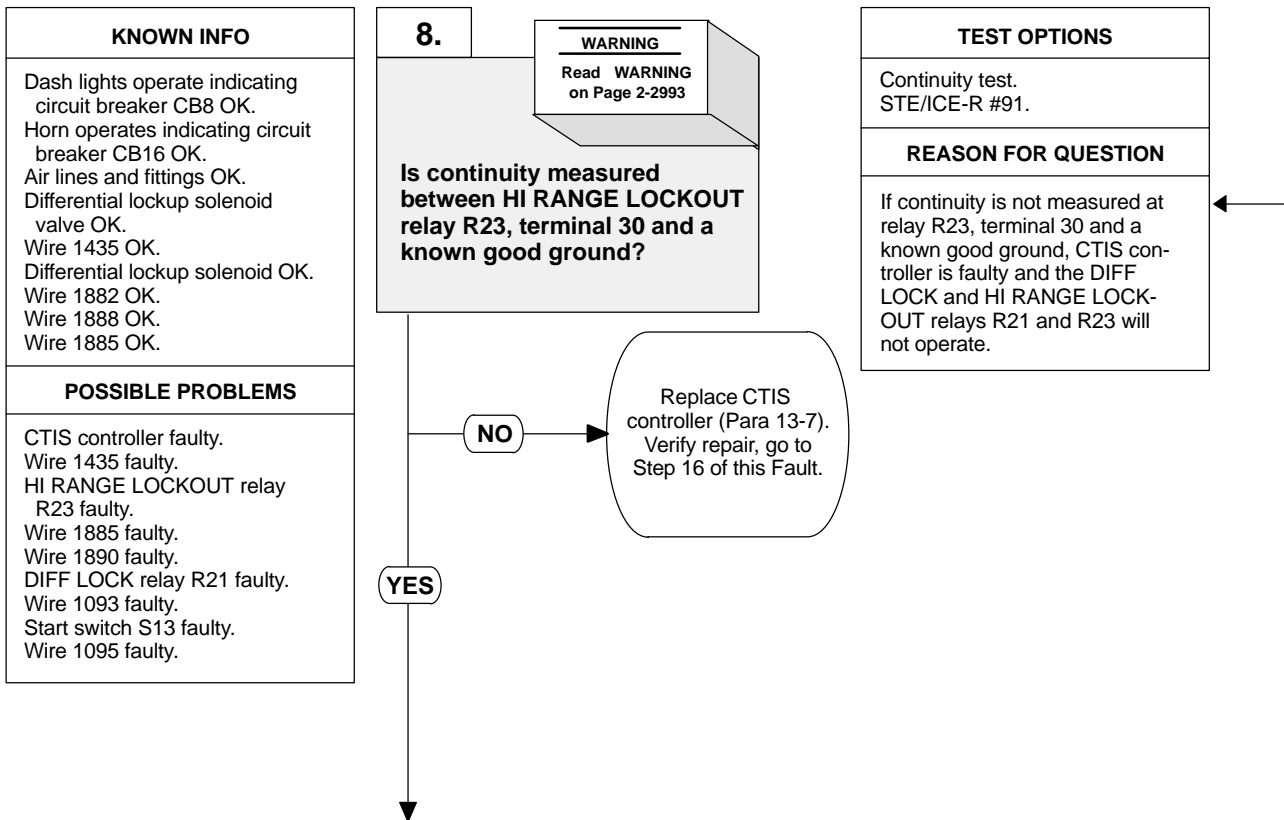
NOTE

Relay test must be performed with relay partially removed.

CONTINUITY TEST	
(1)	Remove ten screws and sunshield from instrument panel.
(2)	Pull top of instrument panel toward steering wheel.
(3)	Disconnect CTIS controller harness connector MC105.
(4)	Set multimeter select switch to ohms.
(5)	Is there continuity on wire 1885 between relay R23, terminal 30 and CTIS controller harness connector MC105, terminal 4?
(a)	If there is no continuity, repair wire 1885 (see schematic Fig 2-72) or notify DS Maintenance.
(b)	If there is continuity, wire 1885 is OK.
(6)	Connect connector MC105 to CTIS controller.
(7)	Install instrument panel and sunshield with ten screws.



2. DIFFERENTIAL SIDE TO SIDE LOCKUP WILL NOT ENGAGE WITH CTIS IN EMERGENCY WITH TRANSFER CASE IN LOW (CONT).



WARNING

- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32 and R33 are always electrically hot and can cause severe injury to personnel. Care must be exercised when working under the electrical circuit board cover.

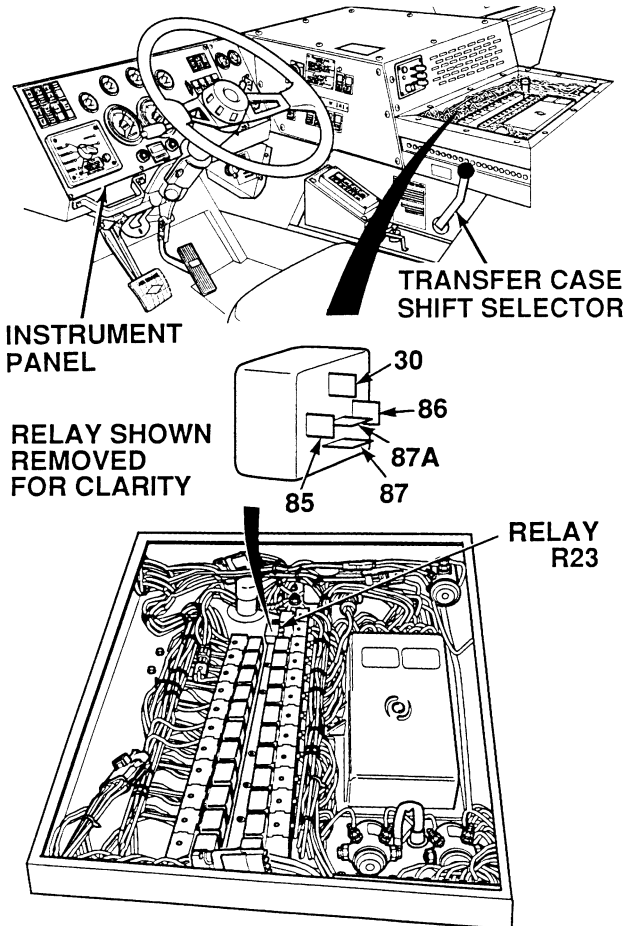
NOTE

Relay test must be performed with relay partially installed.

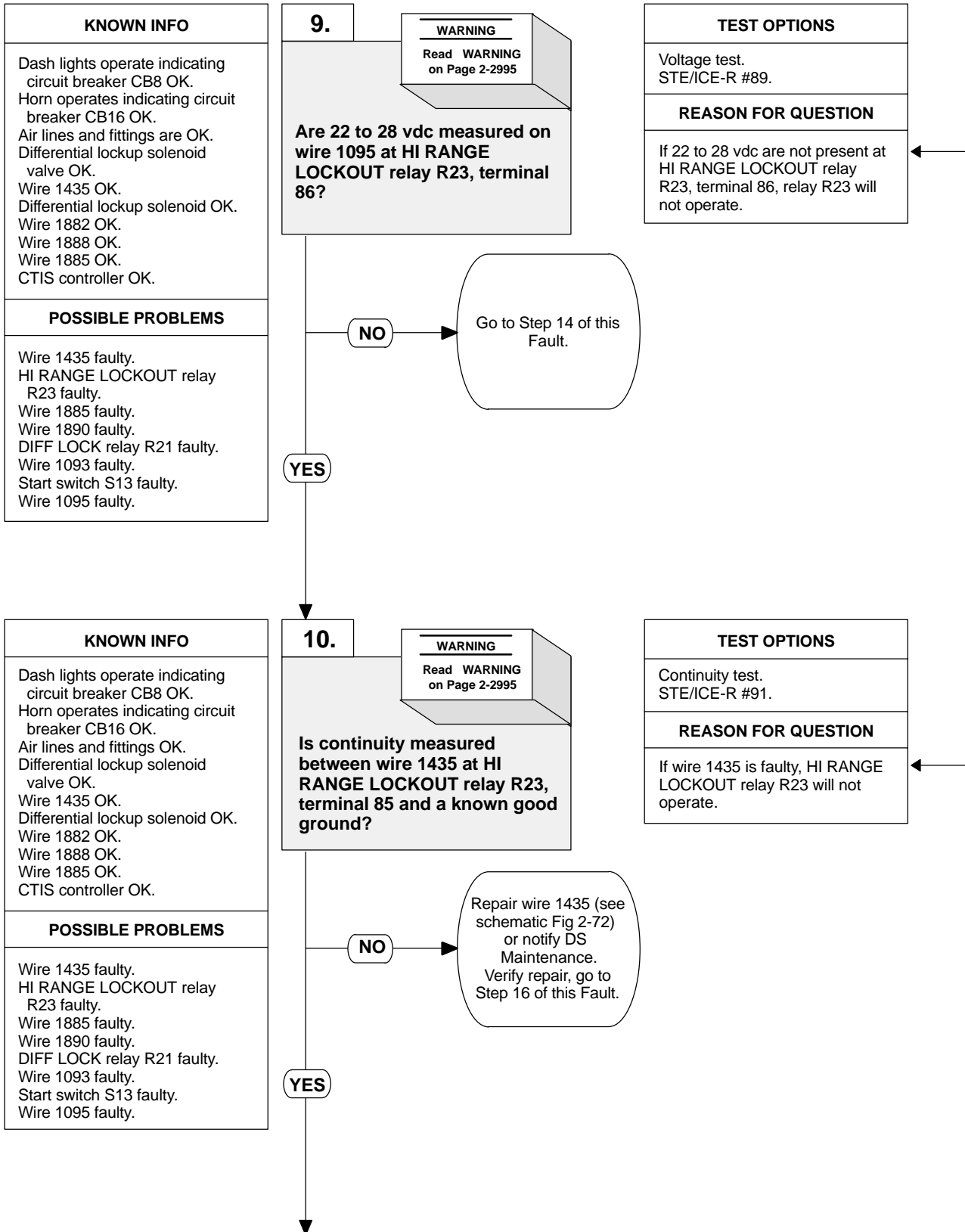
CONTINUITY TEST

Is there continuity between HI RANGE LOCKOUT relay R23, terminal 30 and a known good ground?

- (1) If there is no continuity, replace CTIS controller (Para 13-7).
- (2) If there is continuity, CTIS controller is OK.



2. DIFFERENTIAL SIDE TO SIDE LOCKUP WILL NOT ENGAGE WITH CTIS IN EMERGENCY WITH TRANSFER CASE IN LOW (CONT).



KNOWN INFO
Dash lights operate indicating circuit breaker CB8 OK. Horn operates indicating circuit breaker CB16 OK. Air lines and fittings are OK. Differential lockup solenoid valve OK. Wire 1435 OK. Differential lockup solenoid OK. Wire 1882 OK. Wire 1888 OK. Wire 1885 OK. CTIS controller OK.
POSSIBLE PROBLEMS
Wire 1435 faulty. HI RANGE LOCKOUT relay R23 faulty. Wire 1885 faulty. Wire 1890 faulty. DIFF LOCK relay R21 faulty. Wire 1093 faulty. Start switch S13 faulty. Wire 1095 faulty.

9.

WARNING

Read **WARNING** on Page 2-2995

Are 22 to 28 vdc measured on wire 1095 at HI RANGE LOCKOUT relay R23, terminal 86?

TEST OPTIONS
Voltage test. STE/ICE-R #89.
REASON FOR QUESTION
If 22 to 28 vdc are not present at HI RANGE LOCKOUT relay R23, terminal 86, relay R23 will not operate.

KNOWN INFO
Dash lights operate indicating circuit breaker CB8 OK. Horn operates indicating circuit breaker CB16 OK. Air lines and fittings OK. Differential lockup solenoid valve OK. Wire 1435 OK. Differential lockup solenoid OK. Wire 1882 OK. Wire 1888 OK. Wire 1885 OK. CTIS controller OK.
POSSIBLE PROBLEMS
Wire 1435 faulty. HI RANGE LOCKOUT relay R23 faulty. Wire 1885 faulty. Wire 1890 faulty. DIFF LOCK relay R21 faulty. Wire 1093 faulty. Start switch S13 faulty. Wire 1095 faulty.

10.

WARNING

Read **WARNING** on Page 2-2995

Is continuity measured between wire 1435 at HI RANGE LOCKOUT relay R23, terminal 85 and a known good ground?

TEST OPTIONS
Continuity test. STE/ICE-R #91.
REASON FOR QUESTION
If wire 1435 is faulty, HI RANGE LOCKOUT relay R23 will not operate.

WARNING

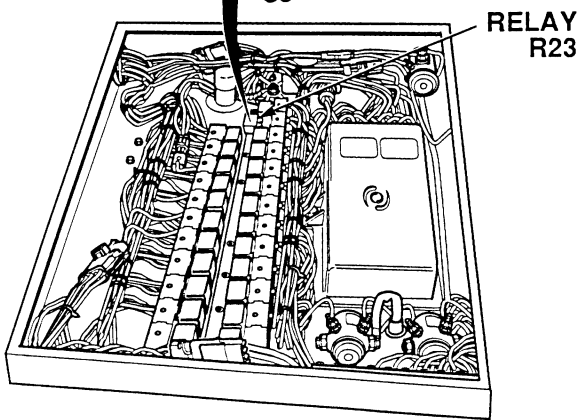
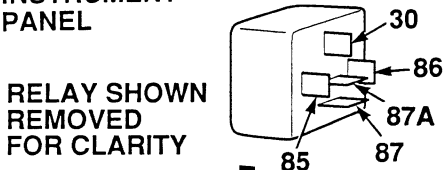
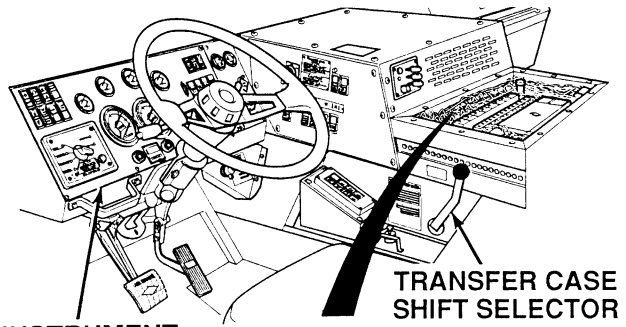
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32 and R33 are always electrically hot and can cause severe injury to personnel. Care must be exercised when working under the electrical circuit board cover.

NOTE

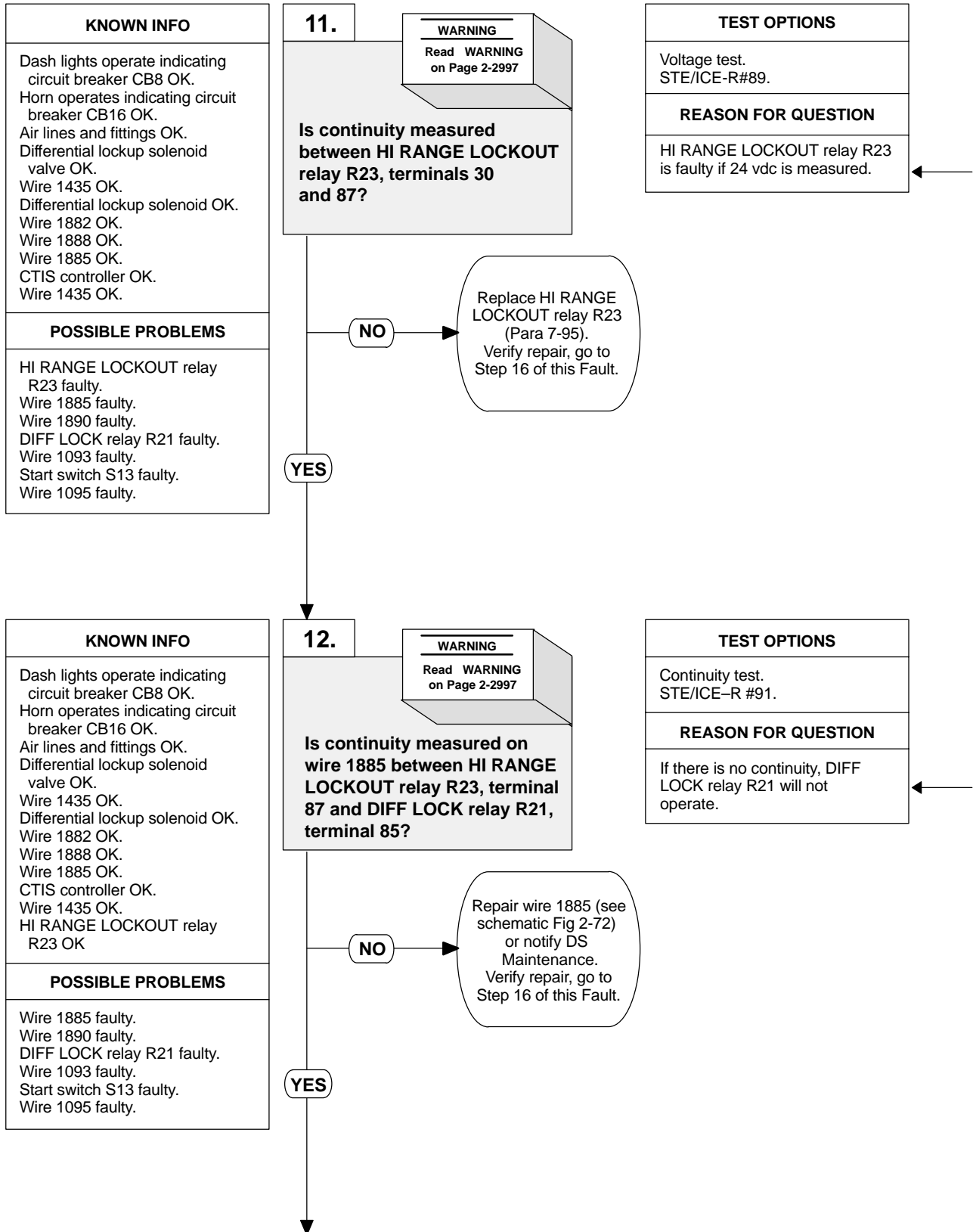
Relay test must be performed with relay partially installed.

VOLTAGE TEST
<ol style="list-style-type: none"> (1) Set multimeter select switch to volts dc. (2) Connect positive (+) multimeter lead to HI RANGE LOCKOUT relay R23, terminal 86. (3) Connect negative (-) multimeter lead to a known good ground. (4) Turn ON ENGINE switch (TM 9-2320-364-10). <ol style="list-style-type: none"> (a) If 22 to 28 vdc are not present, perform Step (5) below and go to Step 14 of this Fault. (b) If 22 to 28 vdc are present, wire 1095 is OK. (5) Turn OFF ENGINE switch.

CONTINUITY TEST
<ol style="list-style-type: none"> (1) Set multimeter selector to ohms. (2) Is there continuity on wire 1435 between HI RANGE LOCKOUT relay R23, terminal 85 and a known good ground? <ol style="list-style-type: none"> (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-72) or notify DS Maintenance. (b) If there is continuity, wire 1435 is OK.



2. DIFFERENTIAL SIDE TO SIDE LOCKUP WILL NOT ENGAGE WITH CTIS IN EMERGENCY WITH TRANSFER CASE IN LOW (CONT).



WARNING

- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32 and R33 are always electrically hot and can cause severe injury to personnel. Care must be exercised when working under the electrical circuit board cover.

VOLTAGE TEST

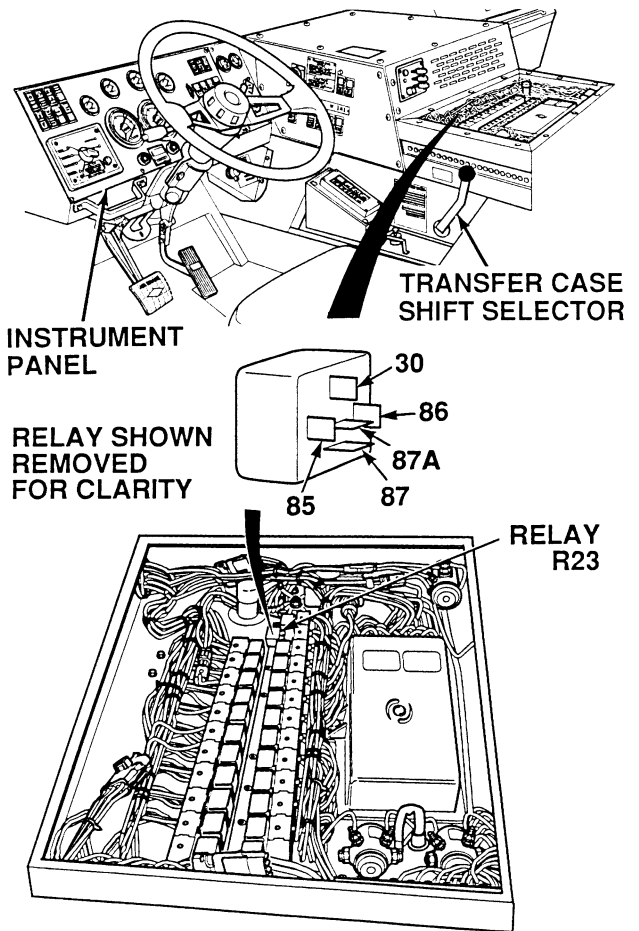
- (1) Remove INTERAXLE relay R21.
- (2) Turn ON ENGINE switch (TM 9-2320-364-10).
- (3) Is there continuity between terminals 30 and 87 on HI RANGE LOCKOUT relay R23?
 - (a) If there is no continuity, perform Steps (4) and (5) below and replace HI RANGE LOCKOUT relay R23 (Para 7-95).
 - (b) If there is continuity, HI RANGE LOCKOUT relay R23 is OK (Para 7-95).
- (4) Turn OFF ENGINE switch.
- (5) Install INTERAXLE relay R21.

NOTE

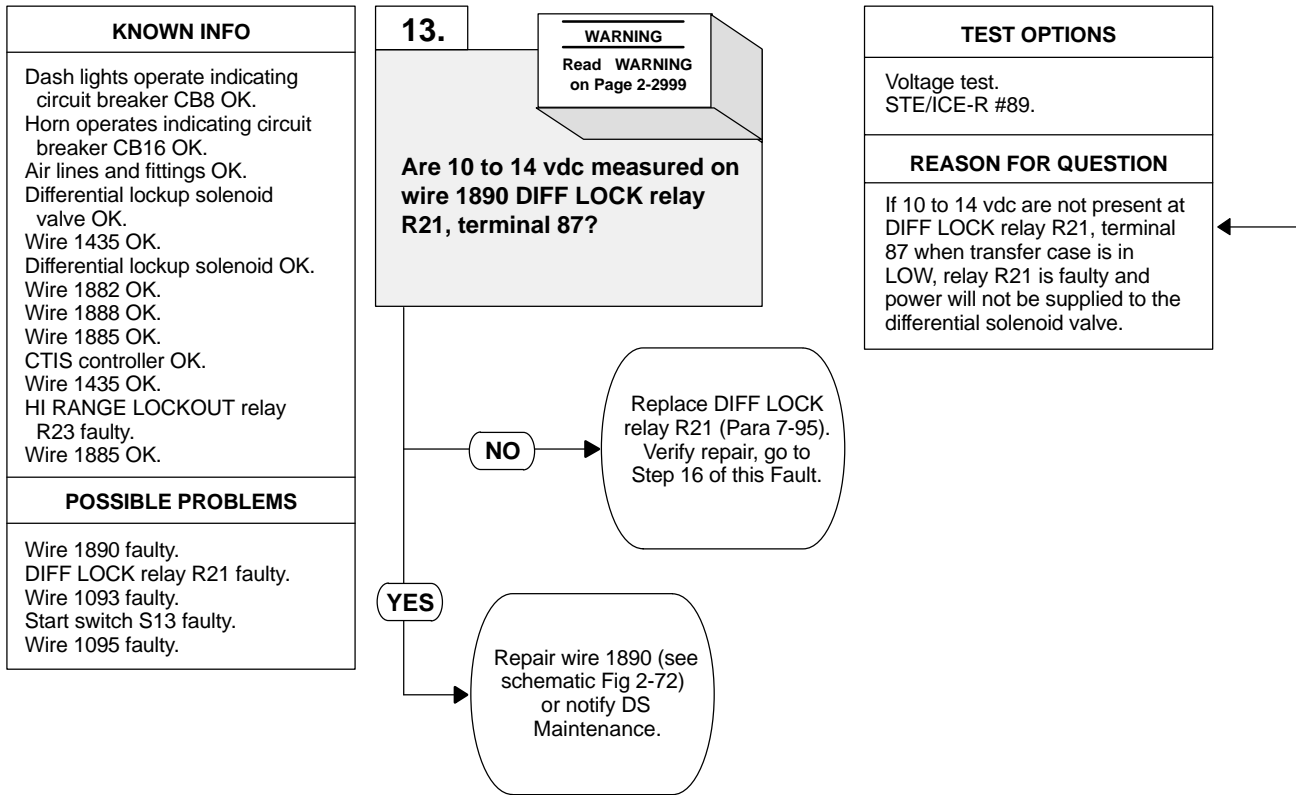
Relay test must be performed with relay partially removed.

CONTINUITY TEST

- (1) Set multimeter select switch to ohms.
- (2) Is there continuity on wire 1885 between HI RANGE LOCKOUT relay R23, terminal 87, and DIFF LOCK relay R21, terminal 85?
 - (a) If there is no continuity, repair wire 1885 (see schematic Fig 2-72) or notify DS Maintenance.
 - (b) If there is continuity, wire 1885 is OK.

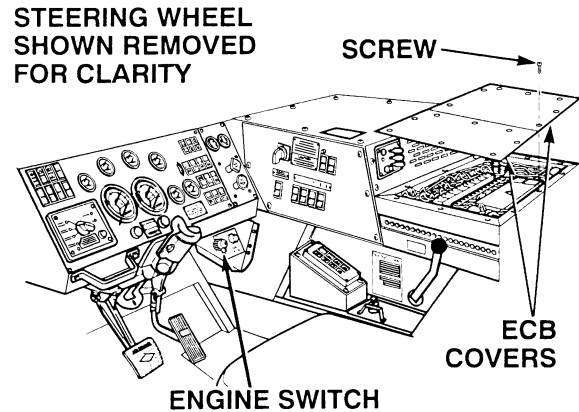


2. DIFFERENTIAL SIDE TO SIDE LOCKUP WILL NOT ENGAGE WITH CTIS IN EMERGENCY WITH TRANSFER CASE IN LOW (CONT).



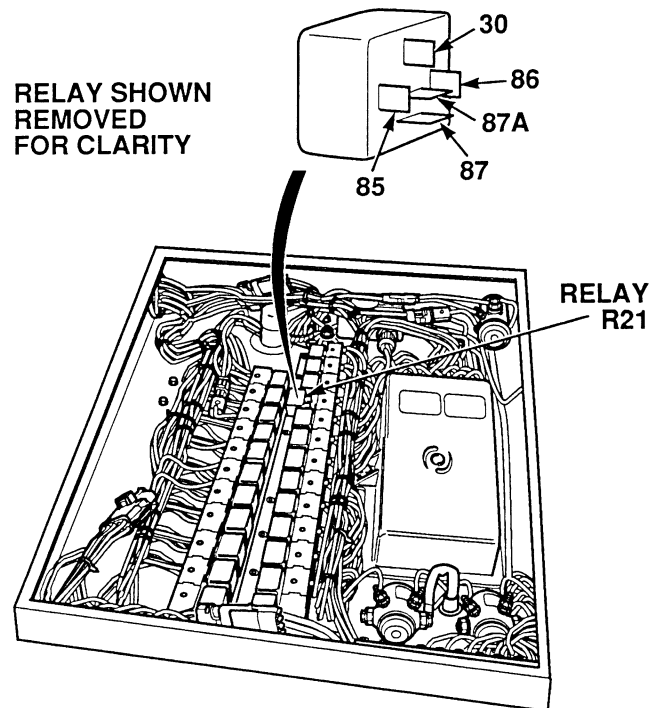
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

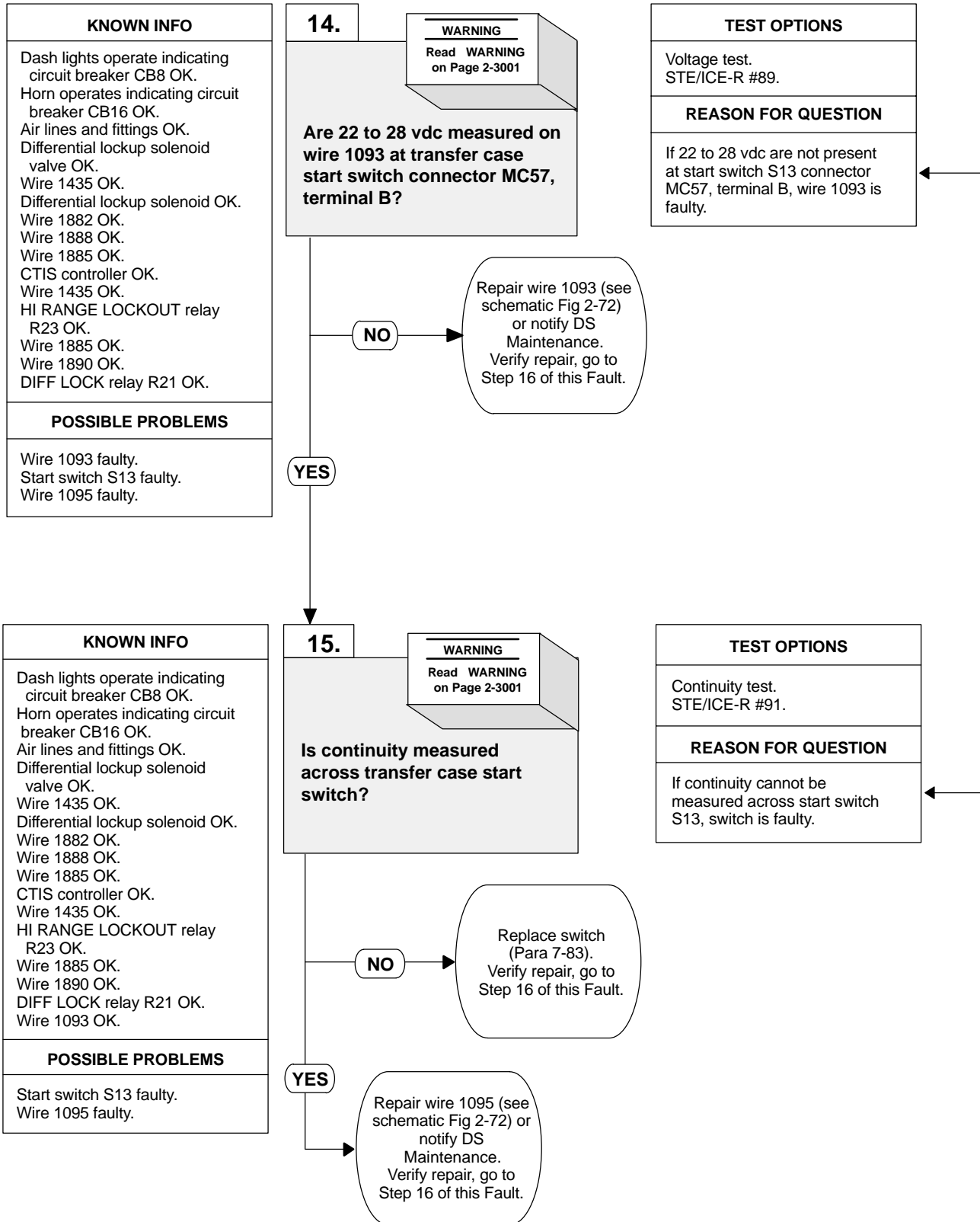


VOLTAGE TEST

- (1) Set multimeter select switch to volts dc.
- (2) Connect positive (+) multimeter lead to DIFF LOCK relay R21, terminal 87.
- (3) Connect negative (-) multimeter lead to a known good ground.
- (4) Turn ON ENGINE switch (TM 9-2320-364-10).
 - (a) If 10 to 14 vdc are not present, turn OFF ENGINE switch and replace DIFF LOCK relay R21 (Para 7-95). Install two ECB covers and 15 screws.
 - (b) If 10 to 14 vdc are present, turn OFF ENGINE switch and repair wire 1890 (see schematic Fig 2-72), or notify DS Maintenance.
- (5) Install two ECB covers and 15 screws.



2. DIFFERENTIAL SIDE TO SIDE LOCKUP WILL NOT ENGAGE WITH CTIS IN EMERGENCY WITH TRANSFER CASE IN LOW (CONT).



WARNING

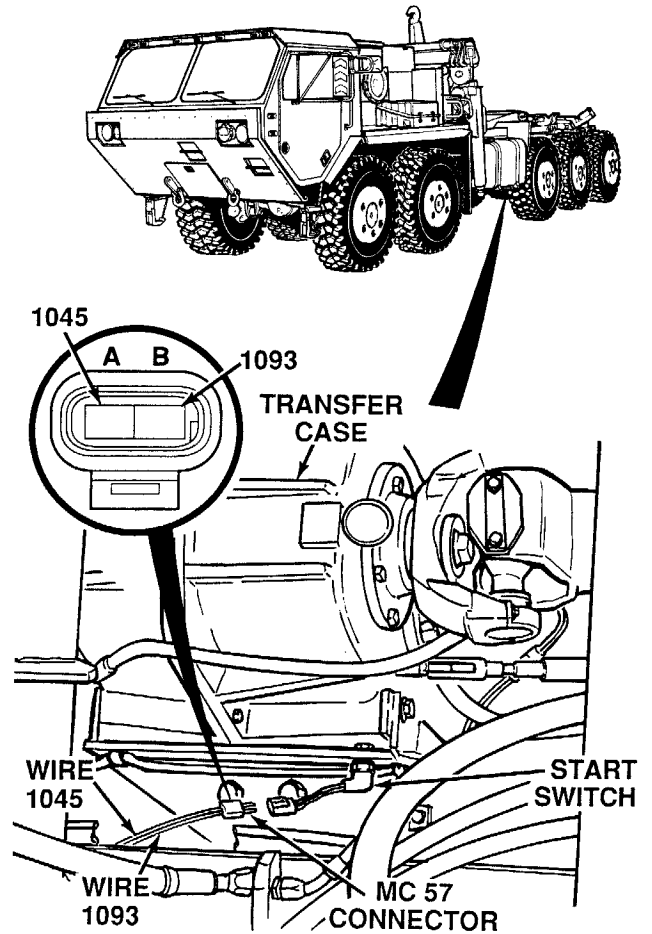
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32 and R33 are always electrically hot and can cause severe injury to personnel. Care must be exercised when working under the electrical circuit board cover.

NOTE

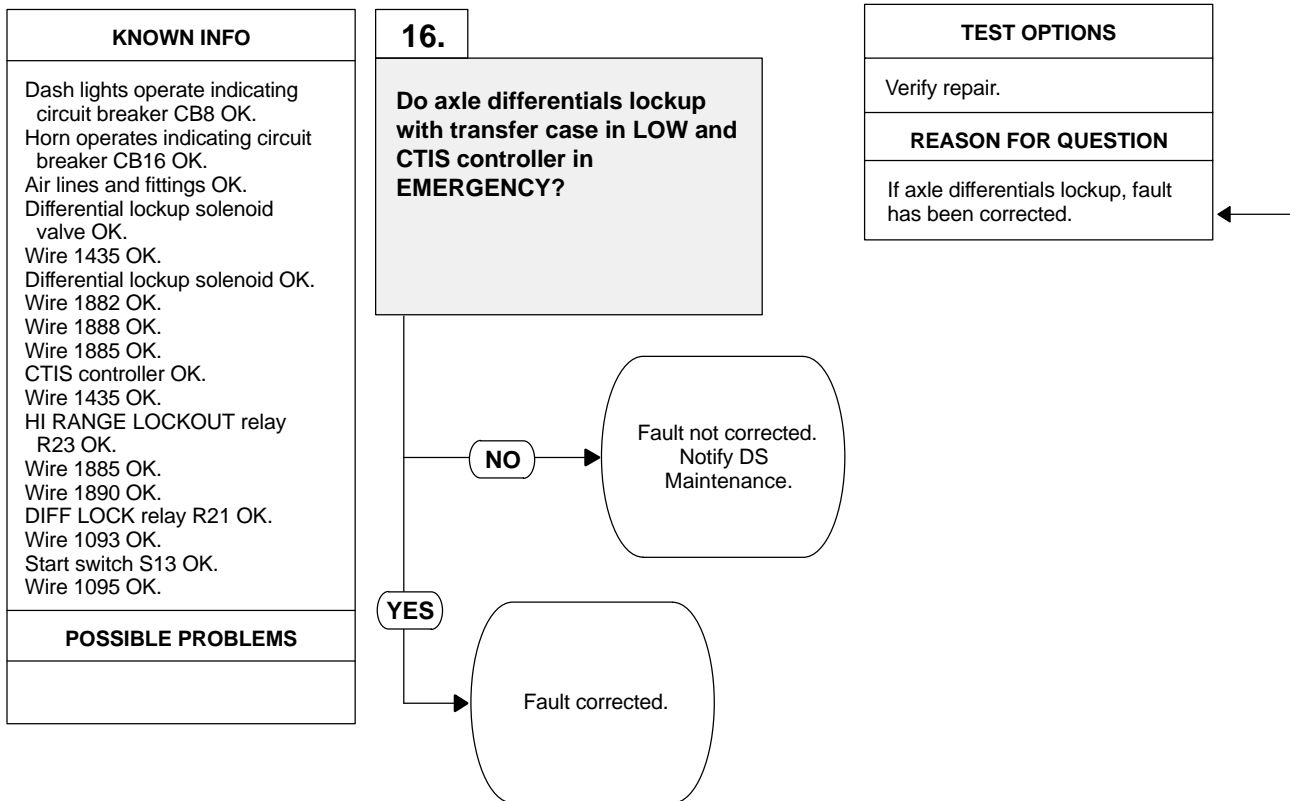
Relay test must be performed with relay partially removed.

VOLTAGE TEST
<ol style="list-style-type: none"> (1) Disconnect transfer case start switch. (2) Connect positive (+) multimeter lead to transfer case start switch harness connector MC57, terminal B. (3) Connect negative (-) multimeter lead to a known good ground. (4) Turn ON ENGINE switch (TM 9-2320-364-10). <ol style="list-style-type: none"> (a) If 22 to 28 vdc are not present, turn OFF ENGINE switch and repair wire 1093 (see schematic Fig 2-72), or notify DS Maintenance. (b) If 22 to 28 vdc are present, wire 1093 is OK. (5) Turn OFF ENGINE switch.

CONTINUITY TEST
<ol style="list-style-type: none"> (1) Set multimeter select switch to ohms. (2) Is there continuity between terminal A and terminal B on transfer case start switch connector. <ol style="list-style-type: none"> (a) If there is no continuity, replace switch (Para 7-83). (b) If there is continuity, repair wire 1095 (see schematic Fig 2-72) or notify DS Maintenance. (3) Connect start switch connector.



2. DIFFERENTIAL SIDE TO SIDE LOCKUP WILL NOT ENGAGE WITH CTIS IN EMERGENCY WITH TRANSFER CASE IN LOW (CONT).



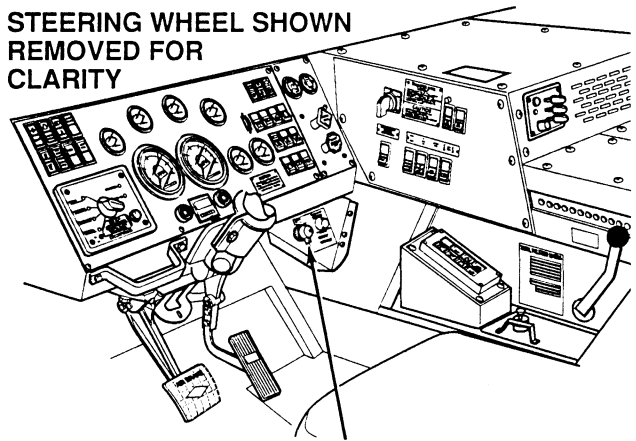
NOTE

Steering will become more difficult with the CTIS in EMERGENCY and the transfer case in LOW if axles are locking up correctly.

VERIFY REPAIR

- (1) Start engine (TM 9-2320-364-10).
- (2) Drive truck with CTIS in EMERGENCY and the transfer case in LOW and observe steering conditions.
 - (a) If differentials do not lockup, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.
 - (b) If differentials lockup, fault has been corrected.
- (3) Turn OFF ENGINE switch.

**STEERING WHEEL SHOWN
REMOVED FOR
CLARITY**



ENGINE SWITCH

2-33. AXLES TROUBLESHOOTING (CONT).

3. INTERAXLE FRONT TO REAR LOCKUP WILL NOT ENGAGE WITH CTIS IN MUD, SAND AND SNOW.

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
 (Item 74, Appendix G)
 STE/ICE-R (Optional) (Item 3, Appendix G)
 Multimeter (Item 44, Appendix G)

Materials/Parts

Adhesive (Item 9, Appendix C)
 Solution, Soap (Item 86, Appendix C)

References

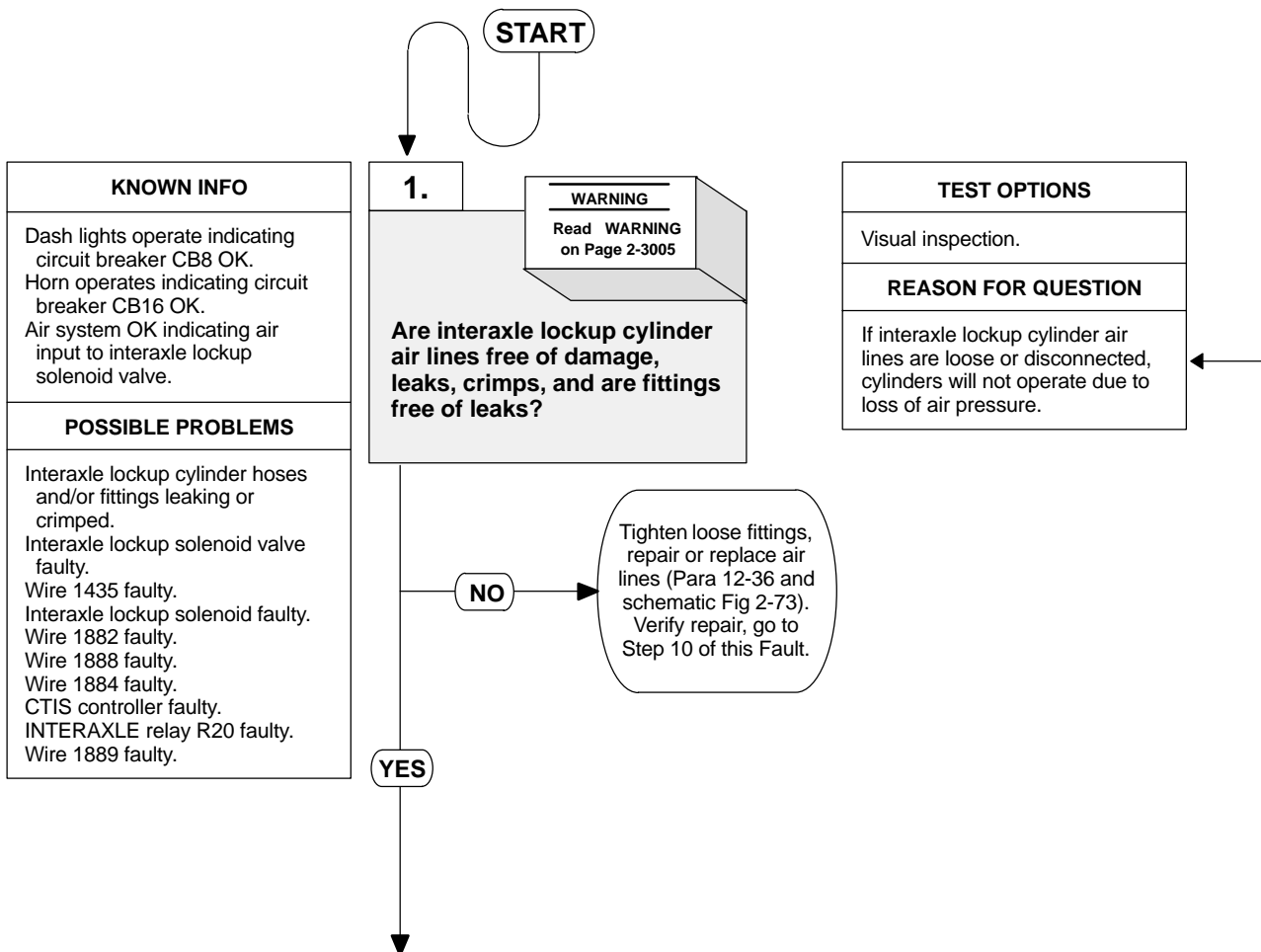
TM 9-2320-364-10
 TM 9-4910-571-12&P

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Parking brake applied, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)

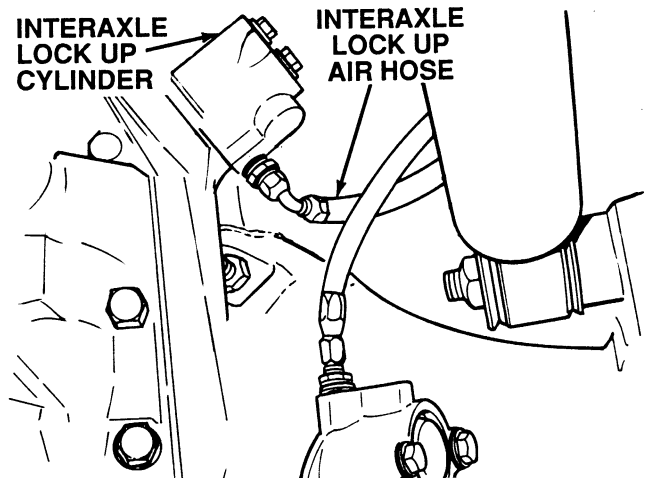
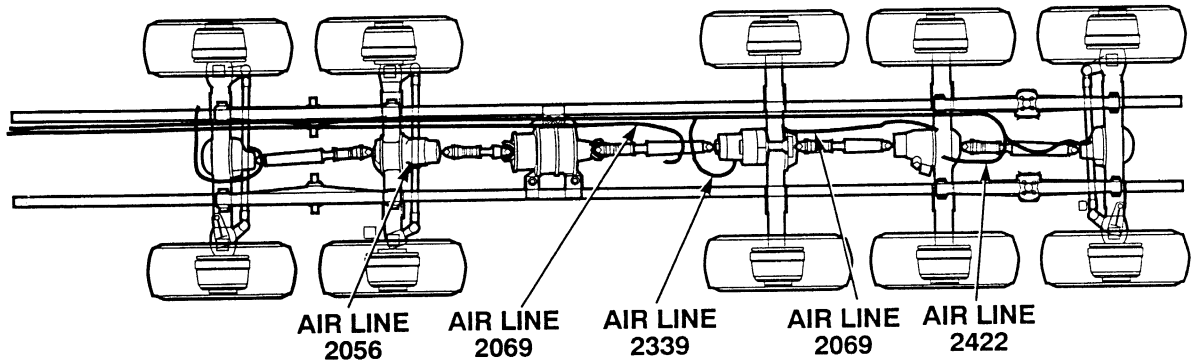
NOTE

Soap and water solution will be used to visually check for leaks.



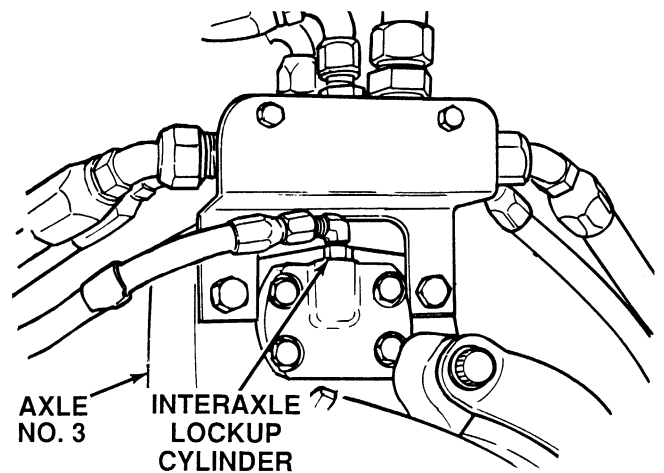
WARNING

Do not stand between wheels when engine is operating. Movement of vehicle can cause injury or death to personnel.

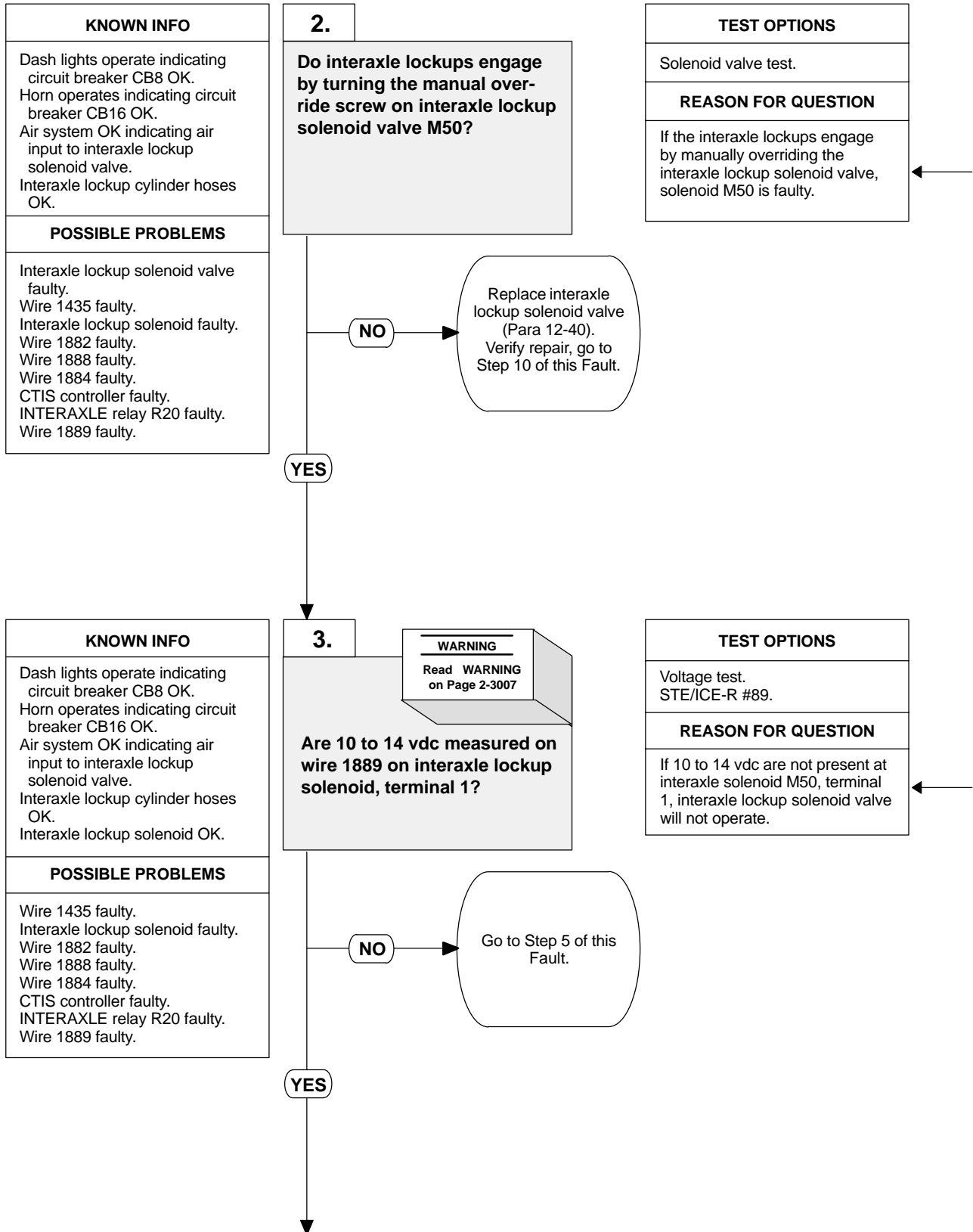


VISUAL INSPECTION

- (1) Set CTIS rotary selector switch to MUD, SAND AND SNOW (TM 9-2320-364-10).
- (2) Start engine and build up air pressure to 125 ± 4 psi (861 ± 28 kPa).
- (3) Check interaxle lockup air lines for damage, crimps or leaks (Para 12-36 and schematic Fig 2-73).
 - (a) If damage, crimps or leaks are present, turn OFF ENGINE switch, and tighten loose connections or replace air line (Para 12-36 and schematic Fig 2-73).
 - (b) If no damage, crimps or leaks are present, turn OFF ENGINE switch and go to Step 2 of this Fault.



3. INTERAXLE FRONT TO REAR LOCKUP WILL NOT ENGAGE WITH CTIS IN MUD, SAND AND SNOW (CONT).



WARNING

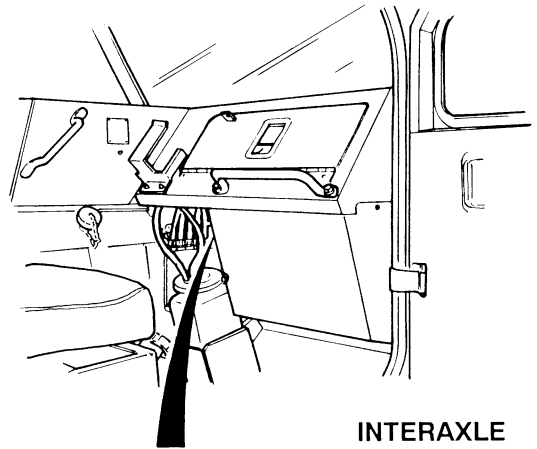
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits a direct short may result. Damage to equipment, injury or death to personnel may occur.

SOLENOID VALVE TEST

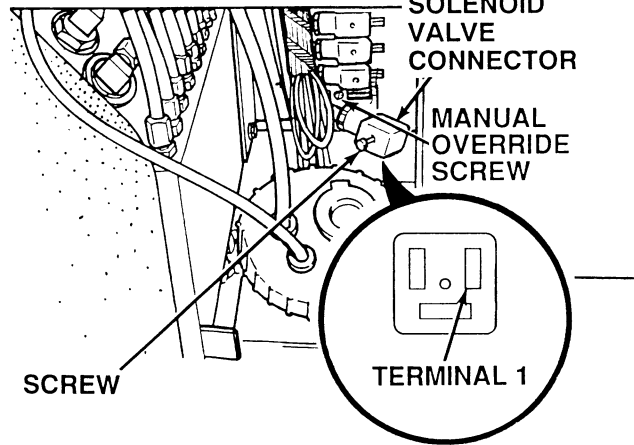
- (1) Loosen screw and disconnect connector.
- (2) Turn solenoid valve M50 manual override screw to the left and listen for air passing through valve.
 - (a) If air does not pass through valve, replace interaxle lockup solenoid valve (Para 12-40).
 - (b) If air passes through valve, valve is OK.
- (3) Turn solenoid valve M50 manual override screw all the way to the right.

VOLTAGE TEST

- (1) Connect positive (+) multimeter lead to interaxle solenoid connector, terminal 1.
- (2) Connect negative (-) multimeter lead to a known good ground.
- (3) Turn ON ENGINE switch (TM 9-2320-364-10).
 - (a) If 10 to 14 vdc are not present, turn OFF ENGINE switch and go to Step 5 of this Fault.
 - (b) If 10 to 14 vdc are present, turn OFF ENGINE switch and go to Step 4 of this Fault.



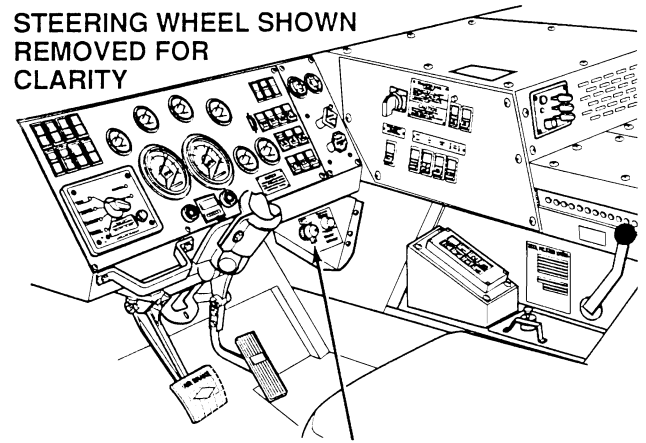
INTERAXLE LOCKUP SOLENOID VALVE CONNECTOR



MANUAL OVERRIDE SCREW

SCREW

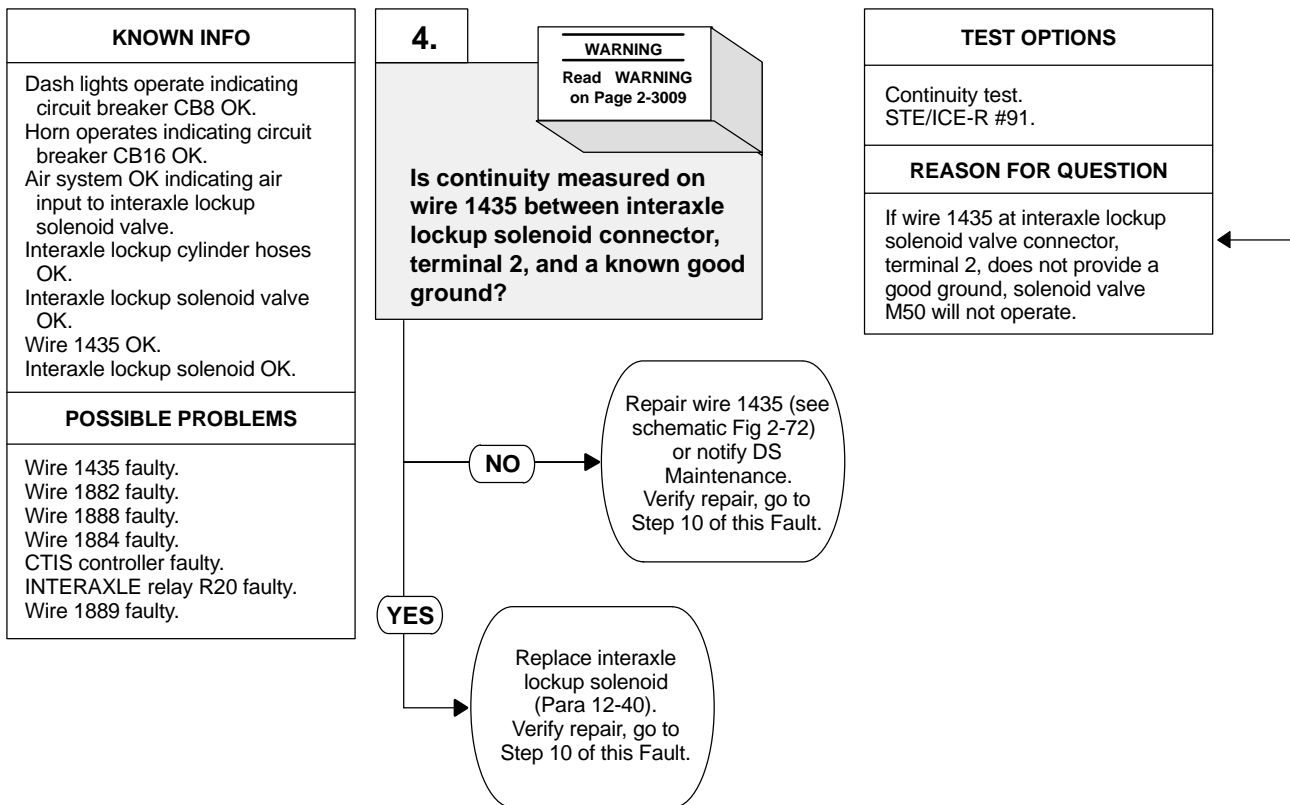
TERMINAL 1



STEERING WHEEL SHOWN REMOVED FOR CLARITY

ENGINE SWITCH

3. INTERAXLE FRONT TO REAR LOCKUP WILL NOT ENGAGE WITH CTIS IN MUD, SAND AND SNOW (CONT).

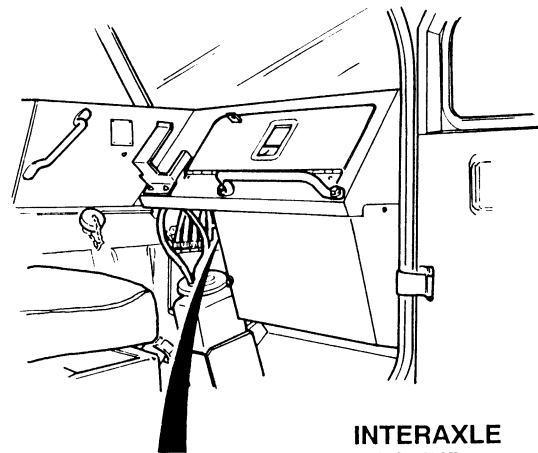


WARNING

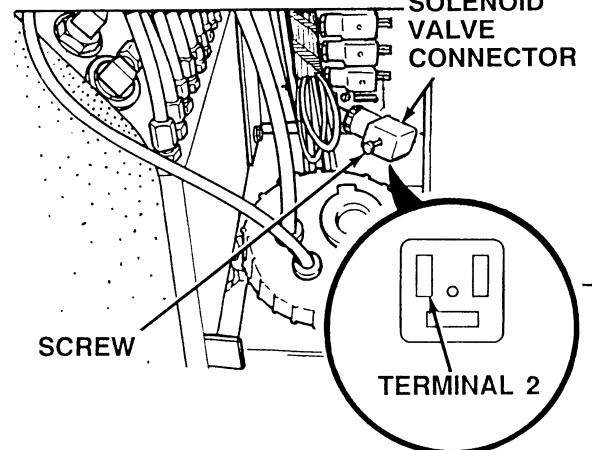
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

CONTINUITY TEST

- (1) Set multimeter selector switch to ohms.
- (2) Is there continuity on wire 1435 between interaxle solenoid connector, terminal 2, and a known good ground?
 - (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-72) or notify DS Maintenance, and perform Step (3) below.
 - (b) If there is continuity, wire 1435 is OK.
- (3) Connect interaxle solenoid connector to interaxle solenoid valve M50.
- (4) Tighten connector screw and coat head of connector screw with adhesive.



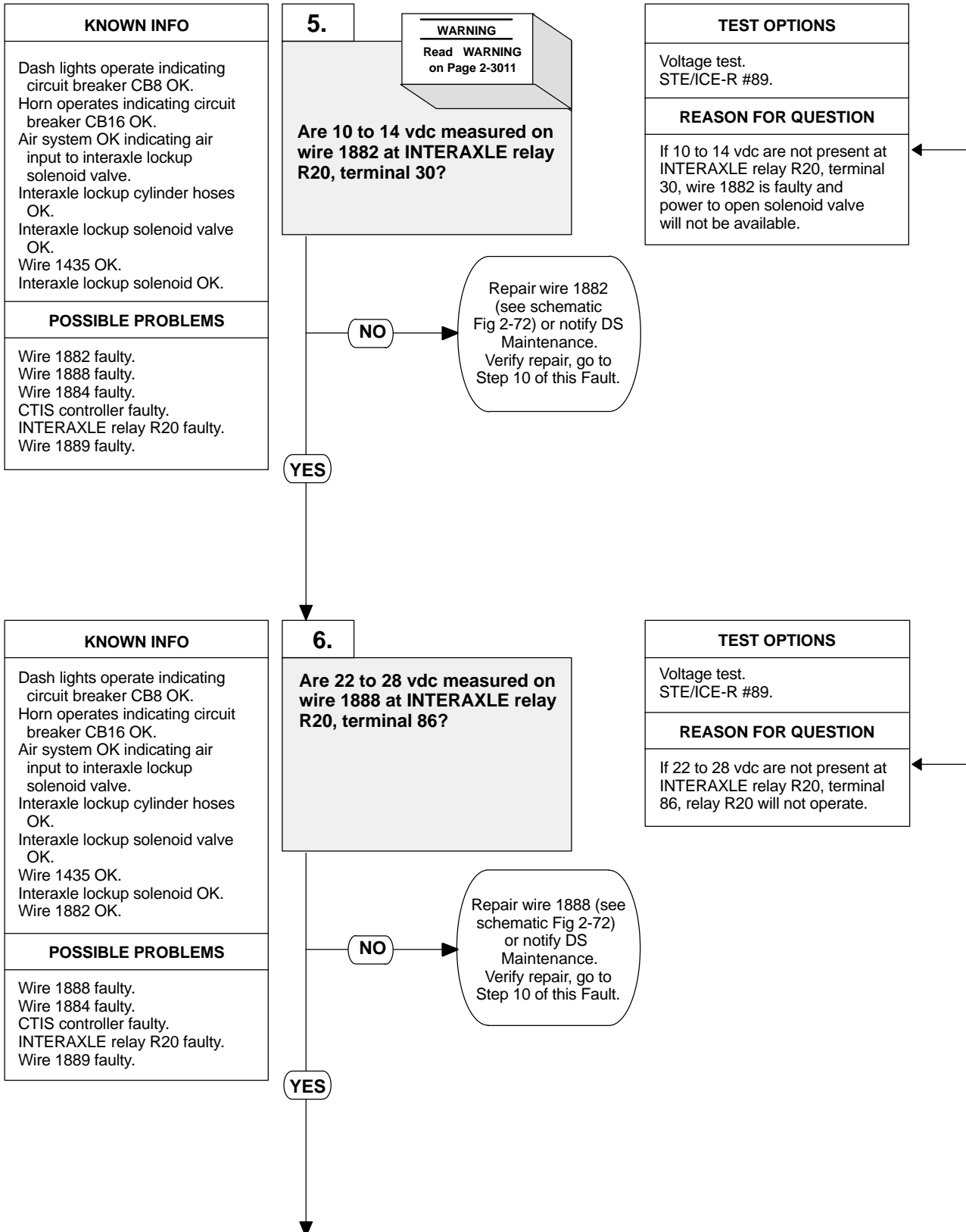
**INTERAXLE
LOCKUP
SOLENOID
VALVE
CONNECTOR**



SCREW

TERMINAL 2

3. INTERAXLE FRONT TO REAR LOCKUP WILL NOT ENGAGE WITH CTIS IN MUD, SAND AND SNOW (CONT).



WARNING

- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32 and R33 are always electrically hot and can cause severe injury to personnel. Care must be exercised when working under the electrical circuit board cover.

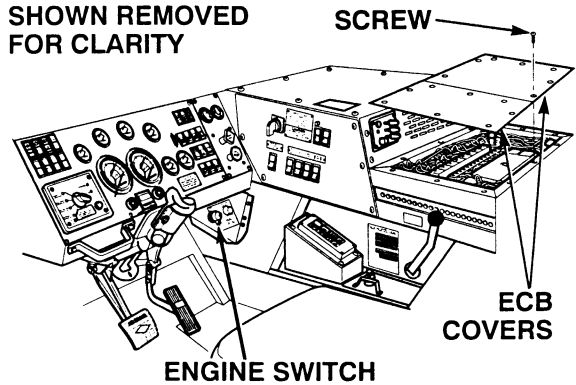
NOTE

Relay test must be performed with relay partially removed.

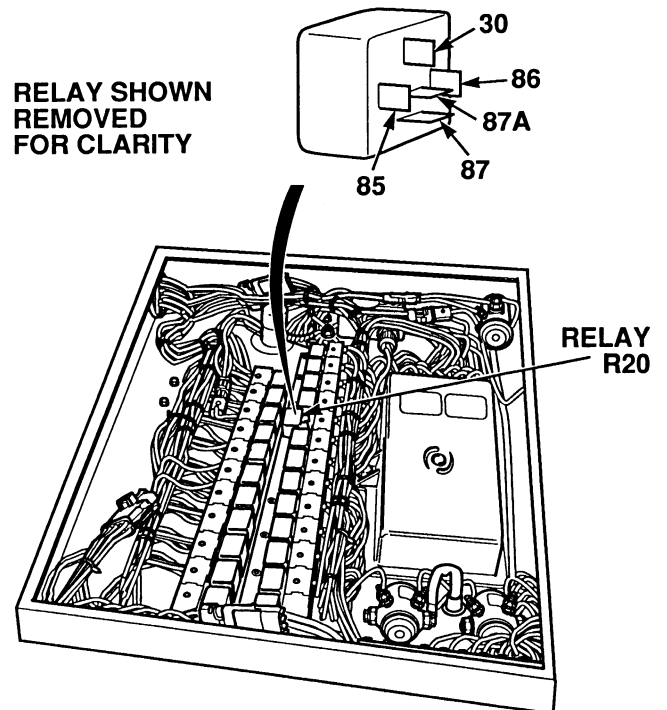
VOLTAGE TEST

- (1) Remove 15 screws and ECB covers.
- (2) Set multimeter select switch to volts, dc.
- (3) Connect positive (+) multimeter lead to INTERAXLE relay R20, terminal 30.
- (4) Connect negative (-) multimeter lead to a known good ground.
- (5) Turn ON ENGINE switch (TM 9-2320-364-10).
 - (a) If 10 to 14 vdc are not present, turn OFF ENGINE switch, and repair wire 1882 (see schematic Fig 2-72) or notify DS Maintenance.
 - (b) If 10 to 14 vdc are present, wire 1882 is OK.
- (6) Turn OFF ENGINE switch.

STEERING WHEEL SHOWN REMOVED FOR CLARITY



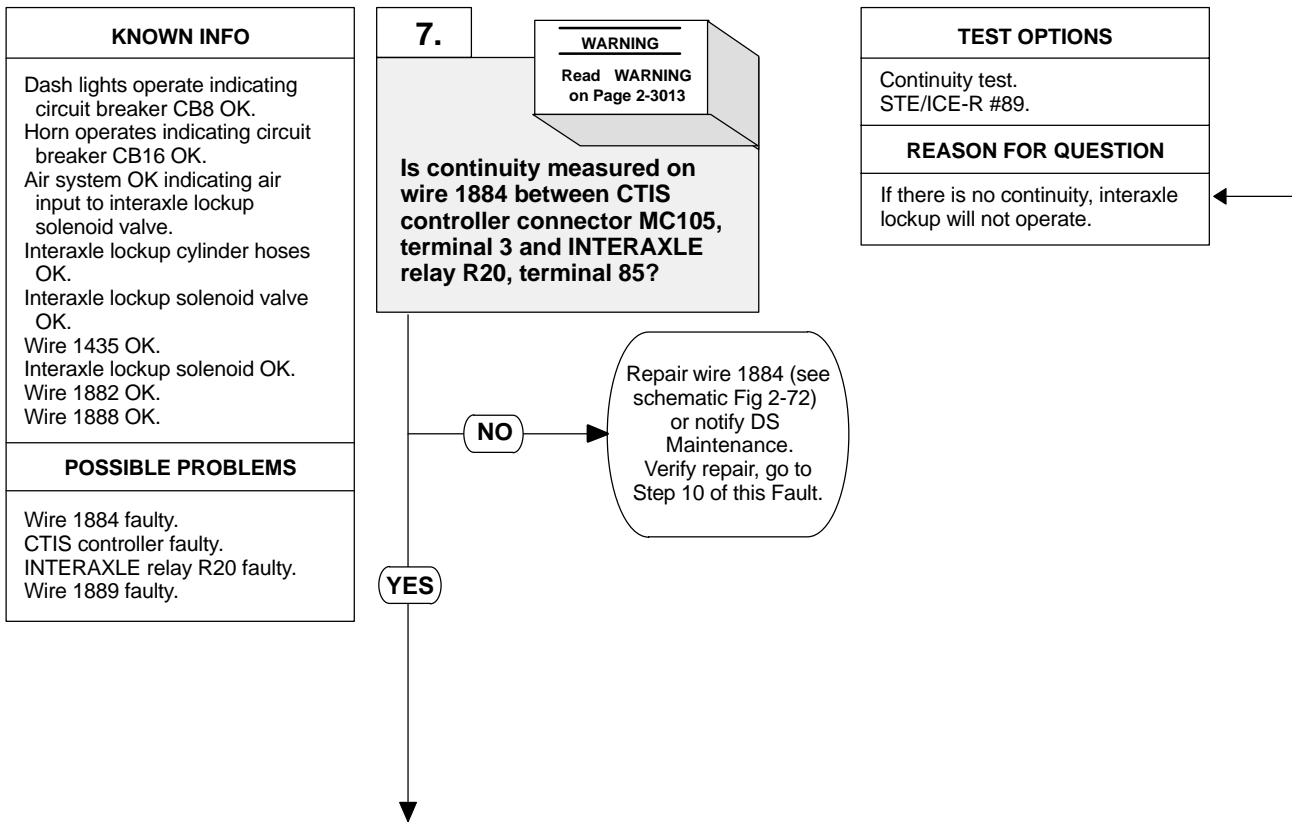
RELAY SHOWN REMOVED FOR CLARITY



VOLTAGE TEST

- (1) Connect positive (+) multimeter lead to INTERAXLE relay R20, terminal 86.
- (2) Connect negative (-) multimeter lead to a known good ground.
- (3) Turn ON ENGINE switch (TM 9-2320-364-10).
 - (a) If 22 to 28 vdc are not present, turn OFF ENGINE switch, and repair wire 1888 (see schematic Fig 2-72) or notify DS Maintenance.
 - (b) If 22 to 28 vdc are present, wire 1888 is OK.
- (4) Turn OFF ENGINE switch.

3. INTERAXLE FRONT TO REAR LOCKUP WILL NOT ENGAGE WITH CTIS IN MUD, SAND AND SNOW (CONT).



WARNING

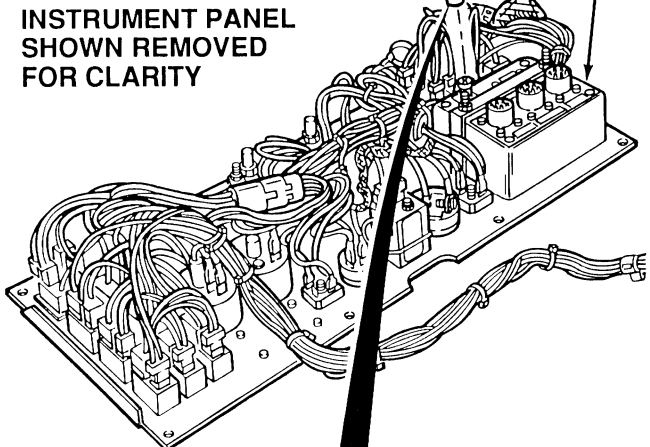
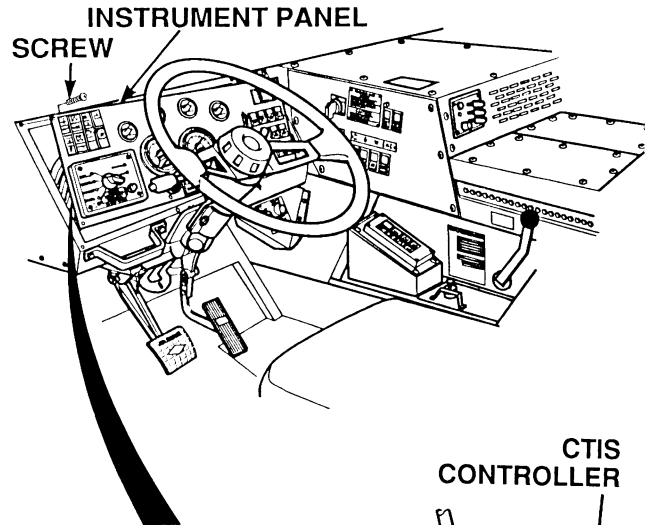
- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32 and R33 are always electrically hot and can cause severe injury to personnel. Care must be exercised when working under the electrical circuit board cover.

NOTE

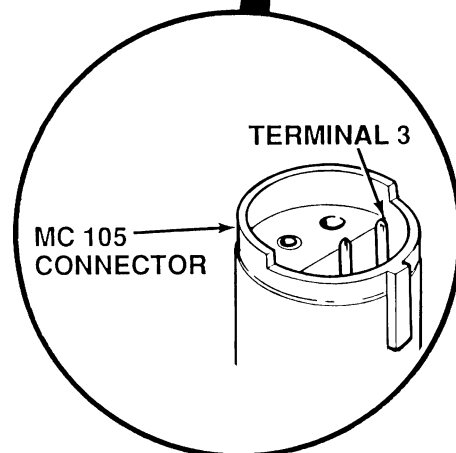
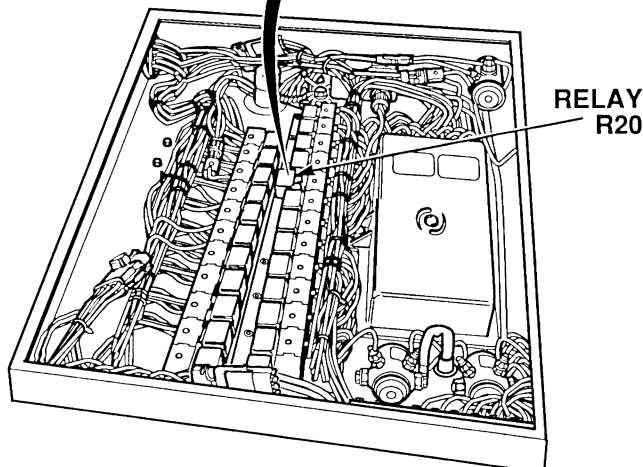
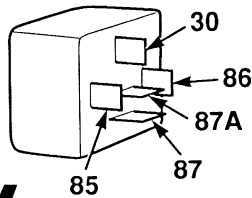
Relay test must be performed with relay partially removed.

CONTINUITY TEST

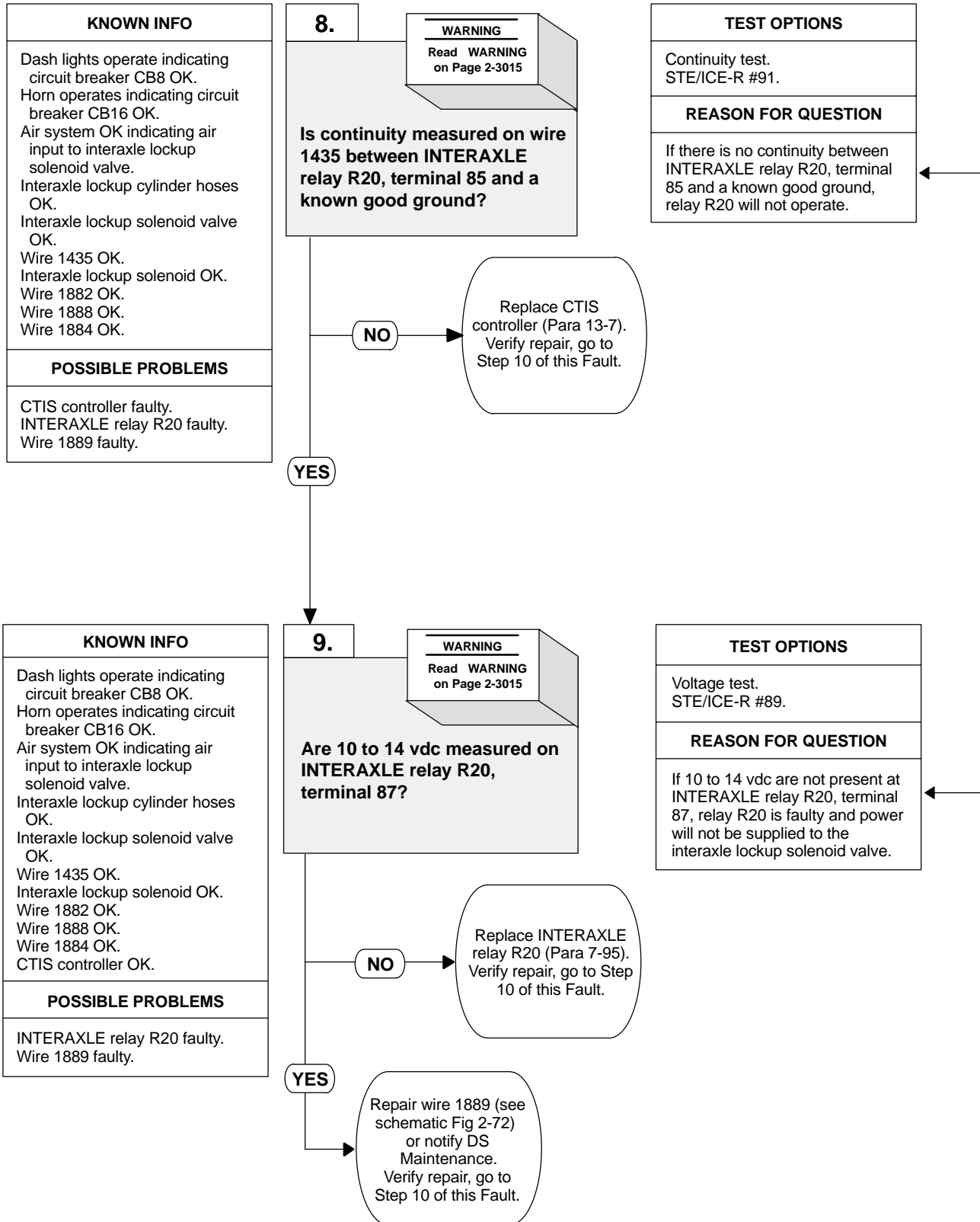
- (1) Remove ten screws and sunshield from instrument panel.
- (2) Pull top of instrument panel toward steering wheel.
- (3) Disconnect CTIS controller connector MC105.
- (4) Set multimeter select switch to ohms.
- (5) Is there continuity between CTIS controller connector MC105, terminal 3 and relay R20, terminal 85?
 - (a) If there is no continuity, repair wire 1884 (see schematic Fig 2-72) or notify DS Maintenance, and perform Steps (6) and (7) below.
 - (b) If there is continuity, wire 1884 is OK.
- (6) Connect CTIS controller connector MC105 to CTIS controller.
- (7) Install instrument panel and sunshield with ten screws.



RELAY SHOWN REMOVED FOR CLARITY



3. INTERAXLE FRONT TO REAR LOCKUP WILL NOT ENGAGE WITH CTIS IN MUD, SAND AND SNOW (CONT).



WARNING

- Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.
- Circuit breakers CB5, CB6, CB12, CB20, CB22, CB23 and relays R3, R13 - R19, R26, R28, R32 and R33 are always electrically hot and can cause severe injury to personnel. Care must be exercised when working under the electrical circuit board cover.

NOTE

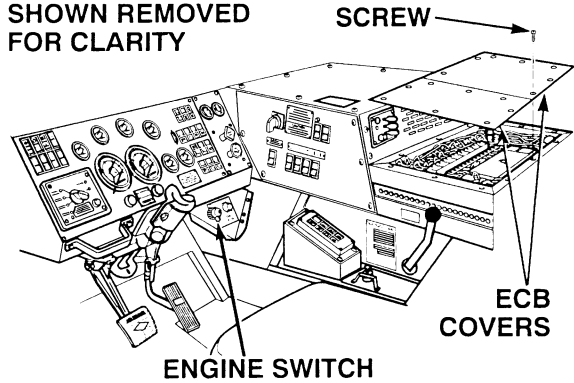
Relay test must be performed with relay partially removed.

CONTINUITY TEST

Is there continuity on wire 1435 between relay R20, terminal 85 and a known good ground?

- (1) If there is no continuity, replace CTIS controller (Para 13-7).
- (2) If there is continuity, CTIS controller is OK.

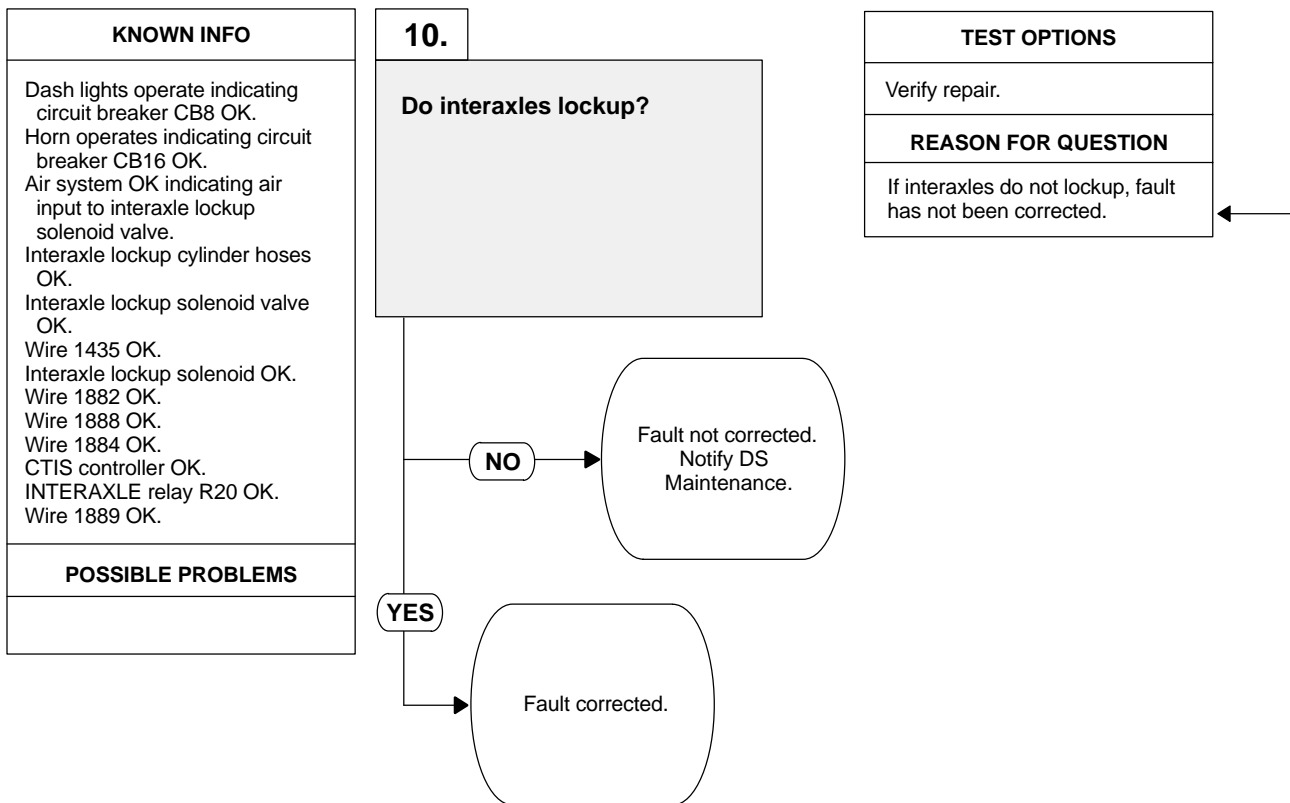
STEERING WHEEL SHOWN REMOVED FOR CLARITY



VOLTAGE TEST

- (1) Set multimeter select switch to volts dc.
- (2) Connect positive (+) multimeter lead to INTERAXLE relay R20, terminal 87.
- (3) Connect negative (-) multimeter lead to a known good ground.
- (4) Turn ON ENGINE switch (TM 9-2320-364-10).
 - (a) If 10 to 14 vdc are not present, turn OFF ENGINE switch and replace relay (Para 7-95).
 - (b) If 10 to 14 vdc are present, turn OFF ENGINE switch and repair wire 1889 (see schematic Fig 2-72), or notify DS Maintenance.
- (5) Install 15 screws and two ECB covers.

3. INTERAXLE FRONT TO REAR LOCKUP WILL NOT ENGAGE WITH CTIS IN MUD, SAND AND SNOW (CONT).

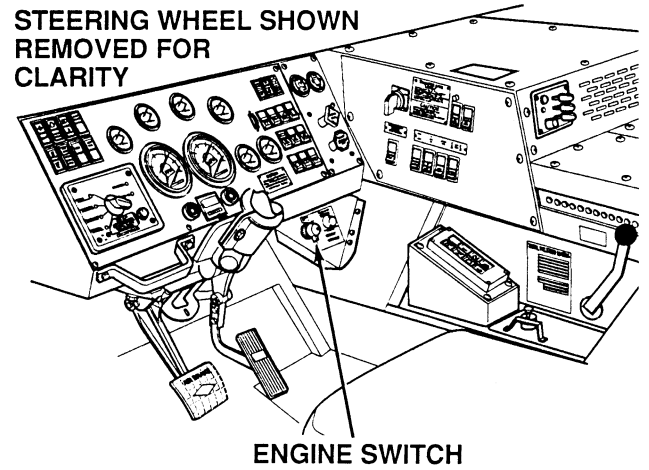


NOTE

Steering will become more difficult with the CTIS in MUD, SAND AND SNOW if the axles are locking up correctly.

VERIFY REPAIR

- (1) Turn ON ENGINE switch (TM 9-2320-364-10).
- (2) Drive truck with CTIS in MUD, SAND AND SNOW and observe steering conditions.
 - (a) If interaxle lockups do not lockup, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.
 - (b) If interaxle lockups do lockup, fault has been corrected.
- (3) Turn OFF ENGINE switch.



2-34. SUSPENSION TROUBLESHOOTING.

This paragraph covers Suspension System Troubleshooting. The Suspension System Fault Index, Table 2-62, lists faults for the suspension system of the PLS truck.

Table 2-62. Suspension System Fault Index

Fault No.	Description	Page
1.	Ride is Rough	2-3020

2-34. SUSPENSION TROUBLESHOOTING (CONT).

1. RIDE IS ROUGH.

INITIAL SETUP

Tools and Special Tools

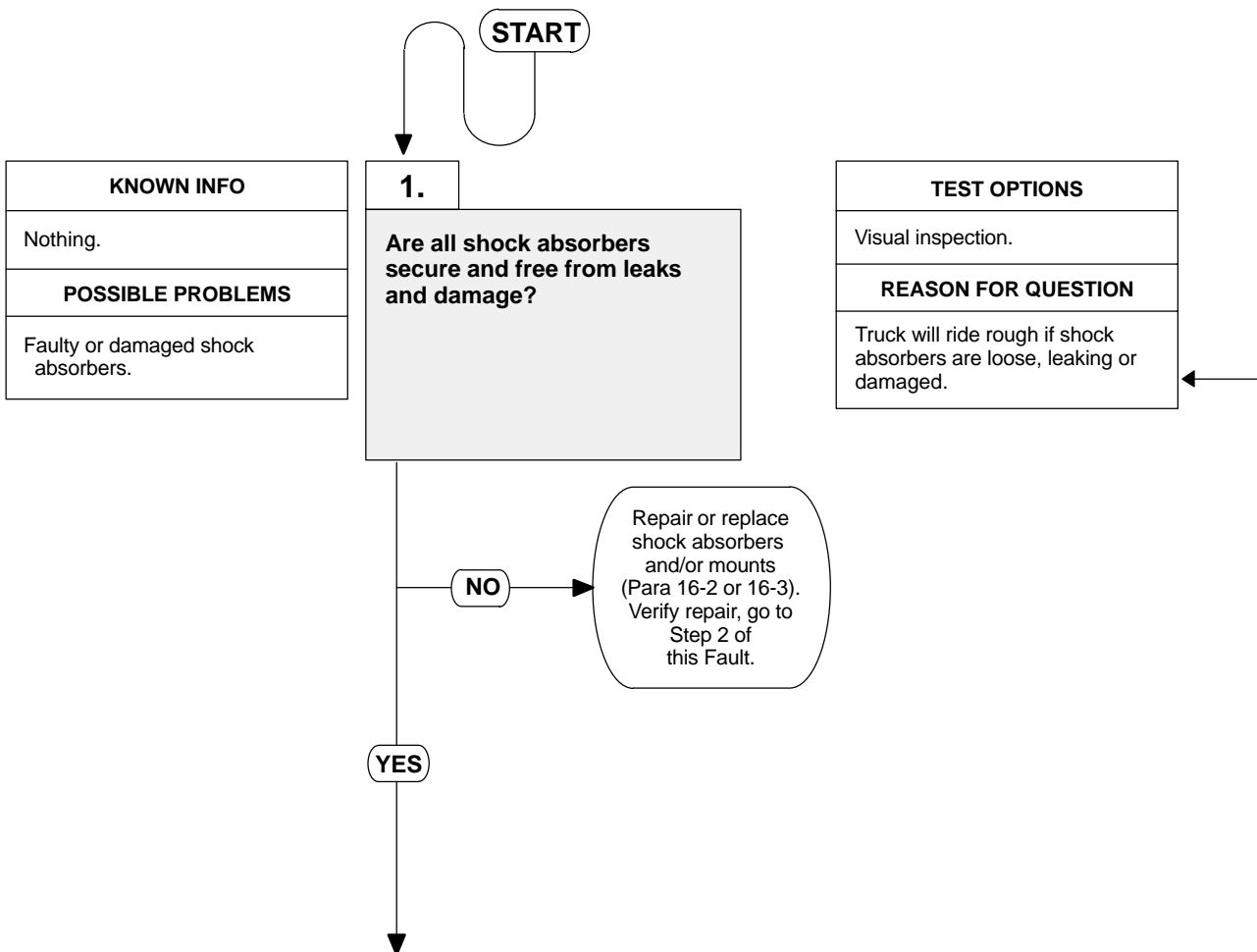
Tool Kit, General Mechanic's: Automotive
 (Item 74, Appendix G)
 Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m])
 (Item 95, Appendix G)

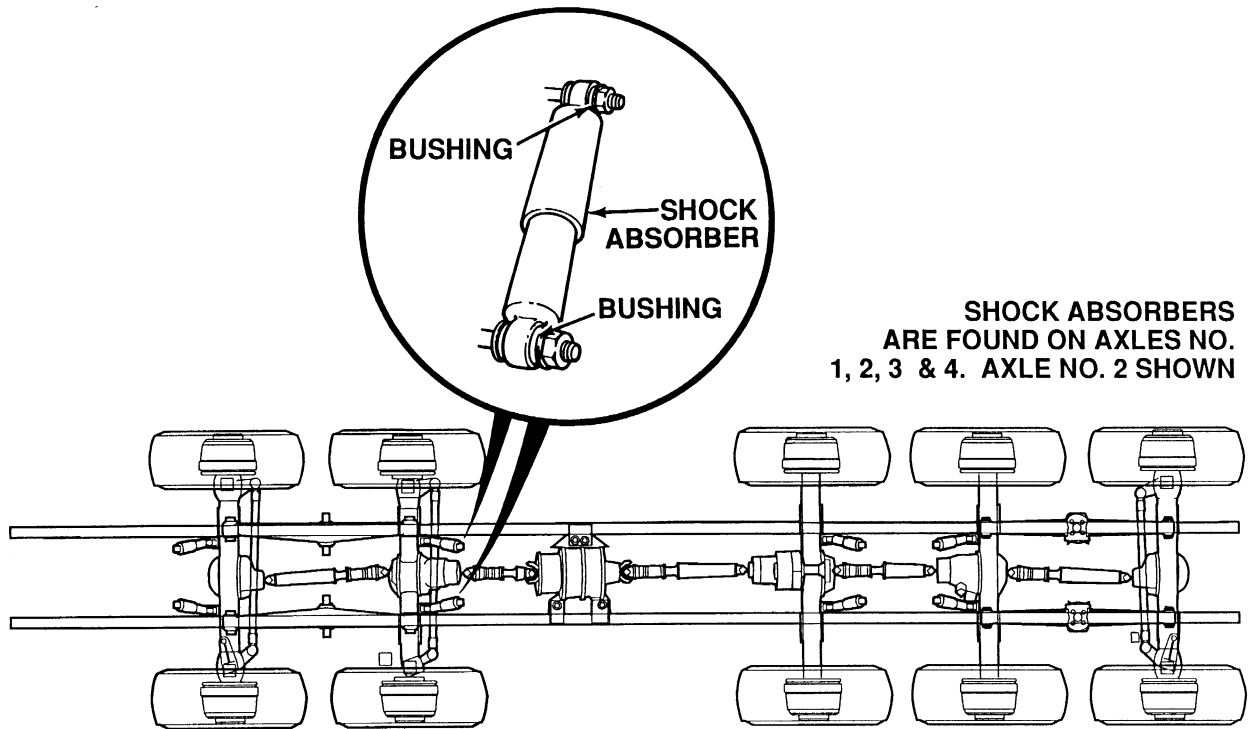
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)

References

TM 9-2320-364-10

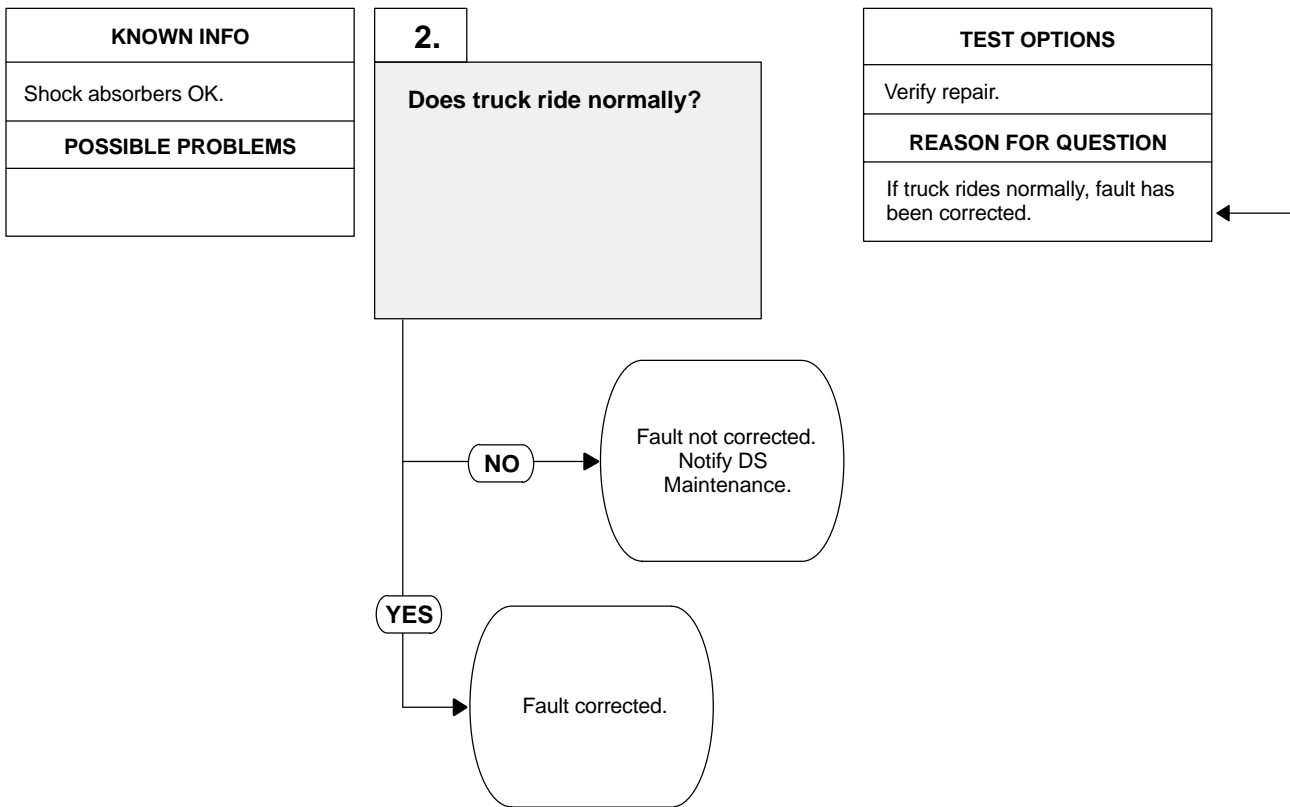




VISUAL INSPECTION

- (1) Check shock absorbers for leaks or damage.
 - (a) If shock absorbers are leaking or damaged, replace shock absorbers (Para 16-2 or 16-3).
 - (b) If there are no leaks or damage, go to Step (2) below.
- (2) Check shock absorbers for proper mounting and excessive bushing wear.
 - (a) If shock absorbers are loose, tighten to 170 lb-ft (230 N-m).
 - (b) If bushings are worn, replace bushings (Para 16-2 or 16-3). Go to Step 2 of this Fault.

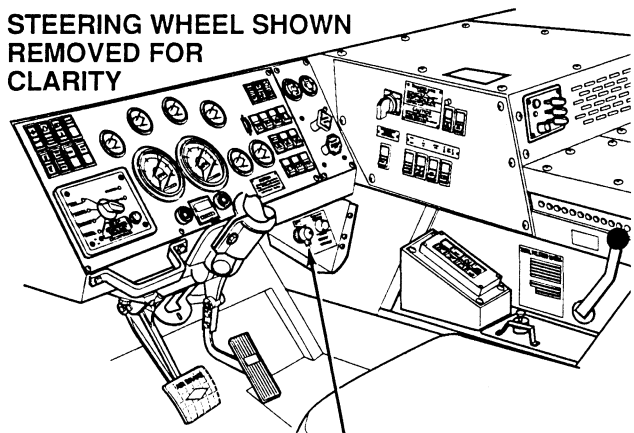
1. RIDE IS ROUGH (CONT).



VERIFY REPAIR

- (1) Start engine (TM 9-2320-364-10).
- (2) Operate truck to verify truck rides normally.
 - (a) If truck rides rough, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.
 - (b) If truck rides normally, fault has been corrected.
- (3) Turn OFF ENGINE switch.

**STEERING WHEEL SHOWN
REMOVED FOR
CLARITY**



ENGINE SWITCH

2-35. WHEELS AND TIRES TROUBLESHOOTING.

This paragraph covers Wheels and Tires Troubleshooting. The Wheels and Tires System Fault Index, Table 2-63, lists faults for the wheels and tires of the PLS truck.

Table 2-63. Wheels and Tires System Fault Index

Fault No.	Description	Page
1.	Tires Wear Unevenly Or Excessively	2-3026
2.	Wheel Wobbles Or Shimmies	2-3032

2-35. WHEELS AND TIRES TROUBLESHOOTING (CONT).

1. TIRES WEAR UNEVENLY OR EXCESSIVELY.

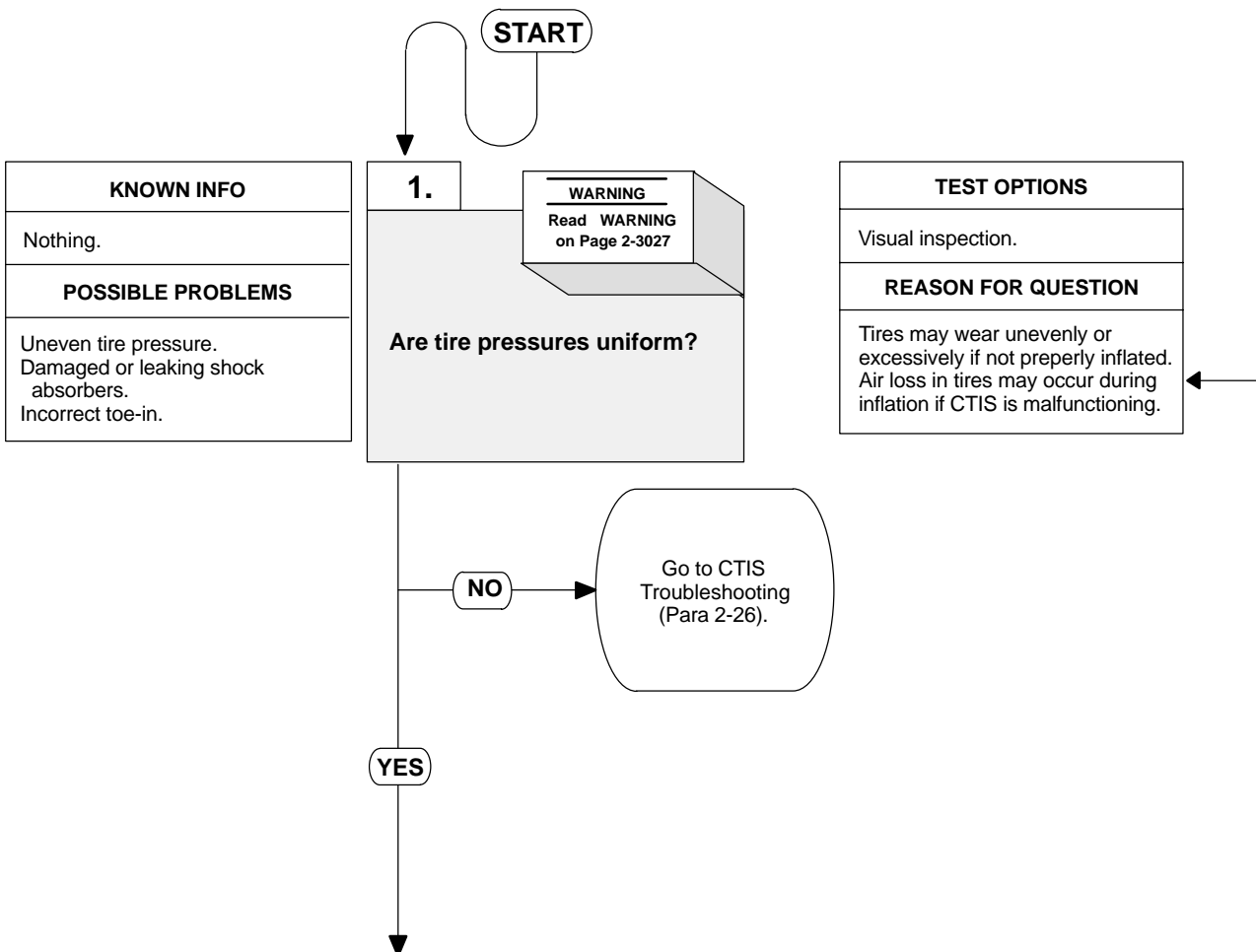
INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
 (Item 74, Appendix G)
 Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m])
 (Item 95, Appendix G)

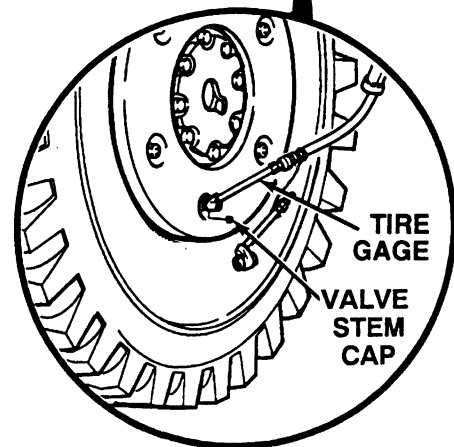
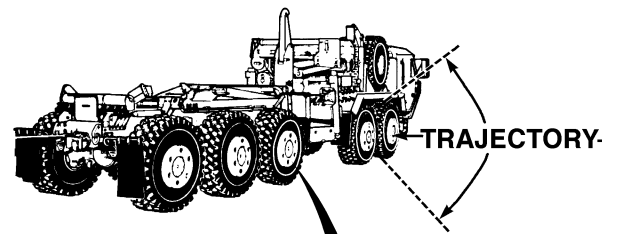
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Parking brake applied, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)



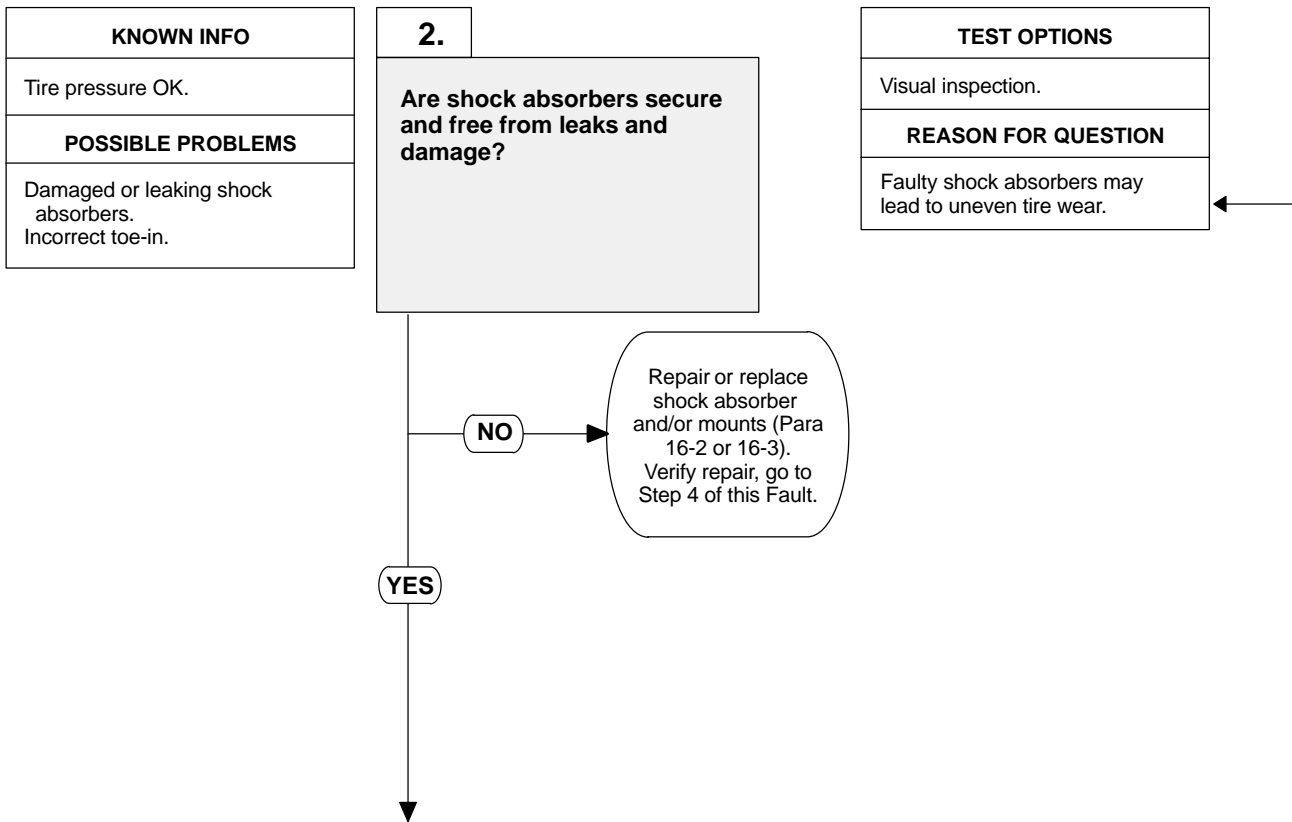
WARNING

Before inflating or deflating, stand out of the trajectory area or personal injury or death may result.

**VISUAL INSPECTION**

- (1) Refer to (TM 9-2320-364-10) for correct tire pressures.
- (2) Remove valve stem cap.
- (3) Attach tire gage to valve stem.
 - (a) If tire pressure in one tire is incorrect, install valve stem cap and go to CTIS Troubleshooting (Para 2-26).
 - (b) If tire pressure is the same in all tires, install valve stem cap and go to Step 2 of this Fault.

1. TIRES WEAR UNEVENLY OR EXCESSIVELY (CONT).

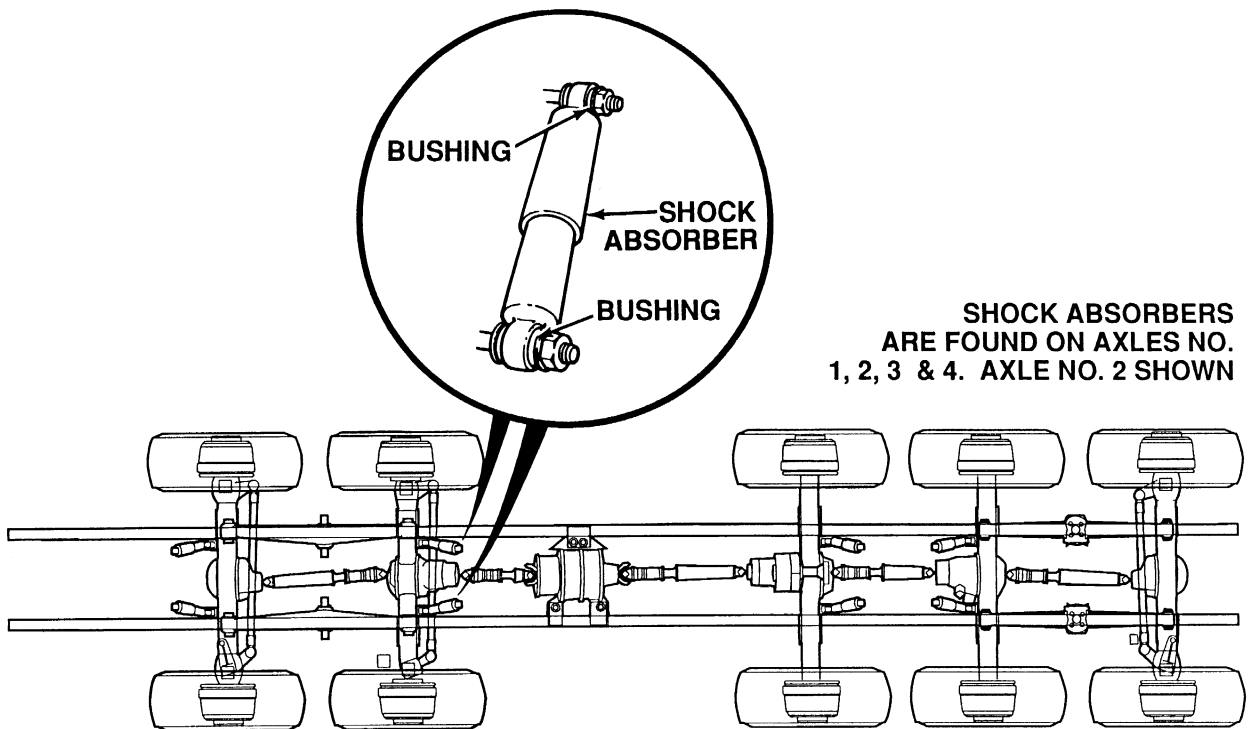


NOTE

Shock absorbers are installed on Axles No. 1 through No. 4. Axle No. 2 shown.

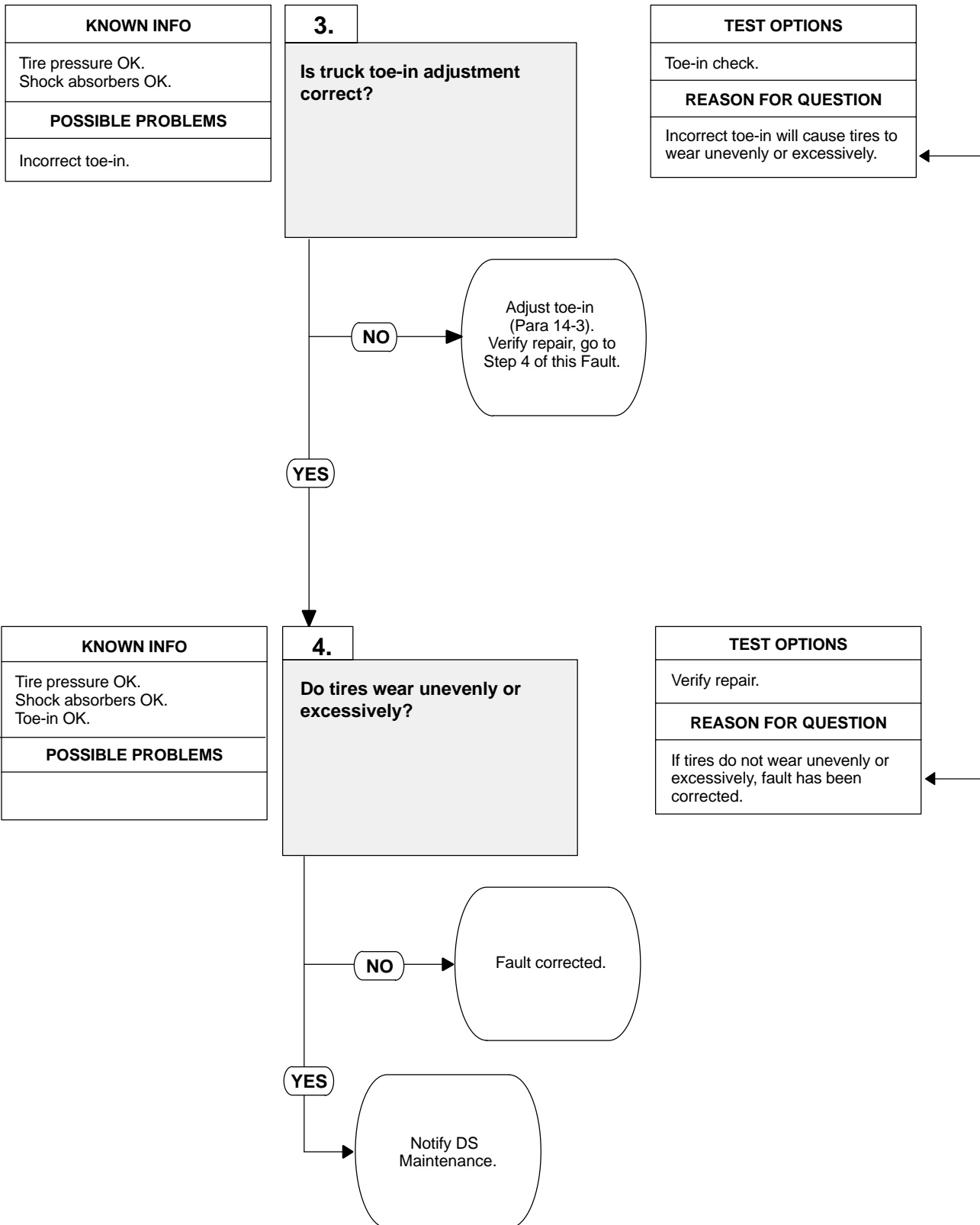
VISUAL INSPECTION

- (1) Check shock absorbers for leaks or damage.
 - (a) If shock absorbers are leaking or damaged, replace shock absorbers (Para 16-2 or 16-3).
 - (b) If there are no leaks or damage, perform Step (2) below.
- (2) Check shock absorbers for proper mounting and excessive bushing wear.
 - (a) If shock absorbers are loose, tighten to 170 lb-ft (230 N-m).
 - (b) If bushings are worn, replace bushing (Para 16-2 or 16-3).
 - (c) If bushings and mounting are OK, go to Step 3 of this Fault.



**SHOCK ABSORBERS
ARE FOUND ON AXLES NO.
1, 2, 3 & 4. AXLE NO. 2 SHOWN**

1. TIRES WEAR UNEVENLY OR EXCESSIVELY (CONT).

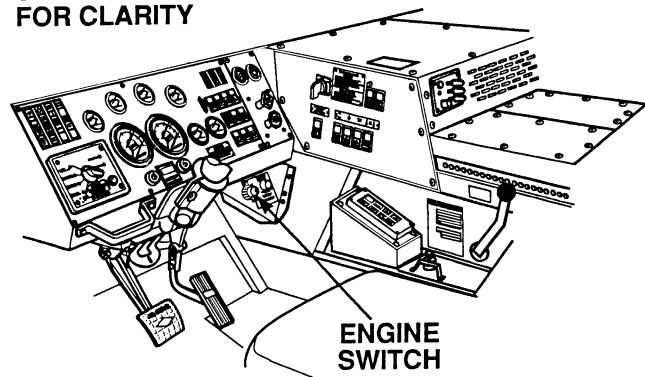


TOE-IN CHECK

Check Axles No. 1, No. 2 and No. 5 wheel toe-in.

- (1) If toe-in is incorrect, perform toe-in adjustment (Para 14-3).
- (2) If toe-in is correct, go to Step 4 of this Fault.

**STEERING WHEEL
SHOWN REMOVED
FOR CLARITY**



VERIFY REPAIR

- (1) Operate vehicle until next scheduled PMCS for tire wear (Para 2-9).
- (2) Perform tire wear check (Para 2-9).
 - (a) If tires are not worn evenly, fault has not been corrected. Notify DS Maintenance.
 - (b) If tires are worn evenly tread, fault has been corrected.

2-35. WHEELS AND TIRES TROUBLESHOOTING (CONT).

2. WHEEL WOBBLES OR SHIMMIES.

INITIAL SETUP

Tools and Special Tools

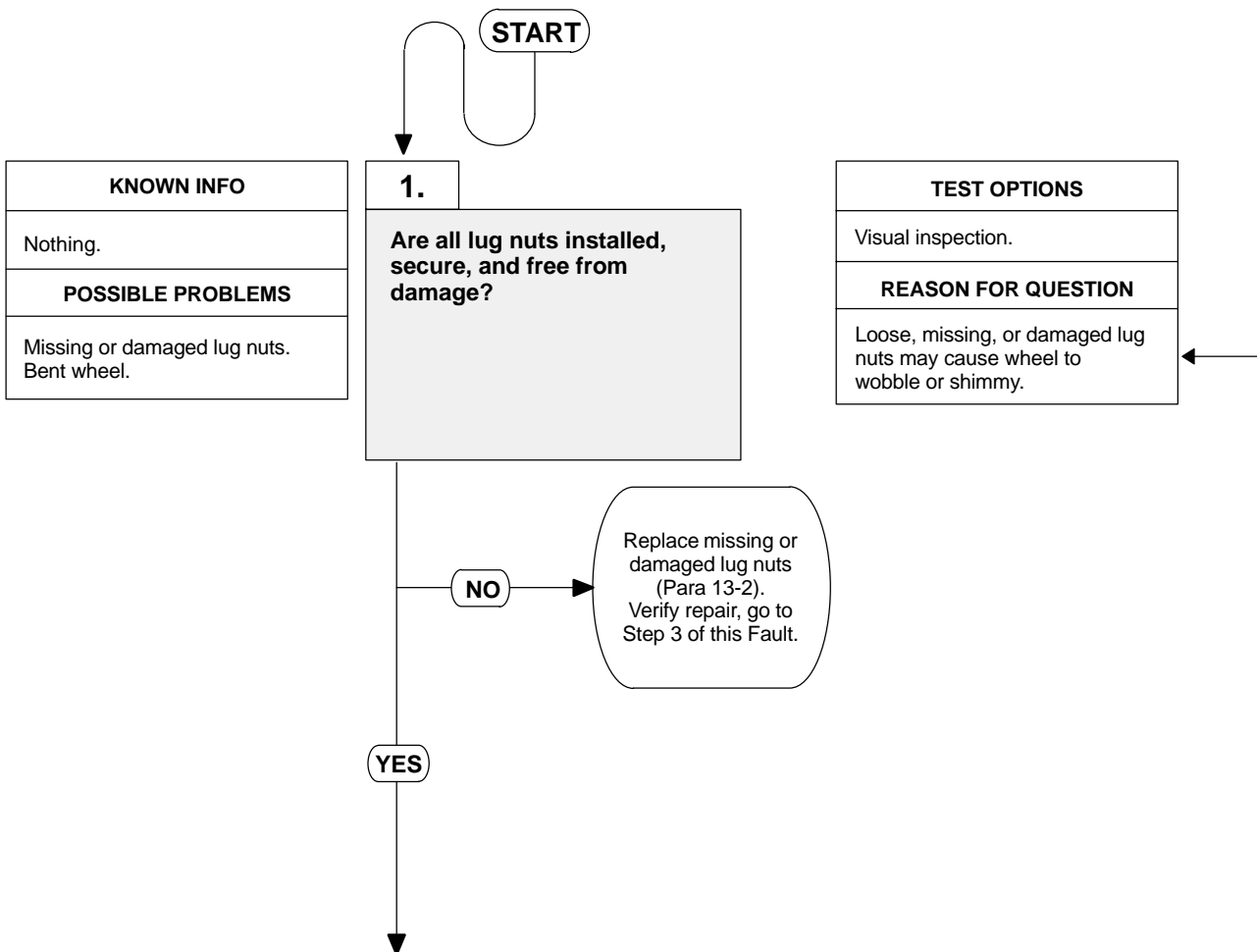
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
 Multiplier, Torque (Item 45, Appendix G)
 Wrench, Torque (0 to 300 lb-ft [0 to 407 N·m]) (Item 96, Appendix G)

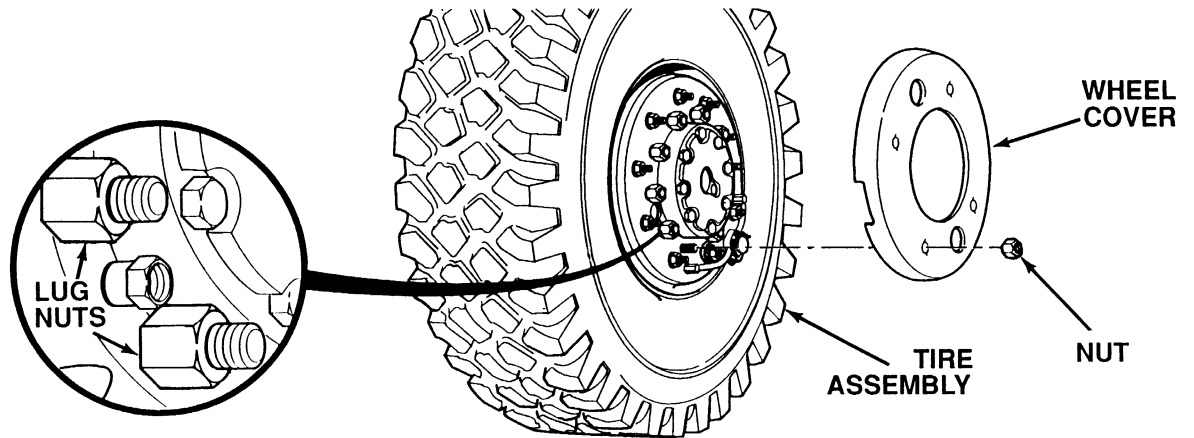
References

TM 9-2320-364-10

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Parking brake applied, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)

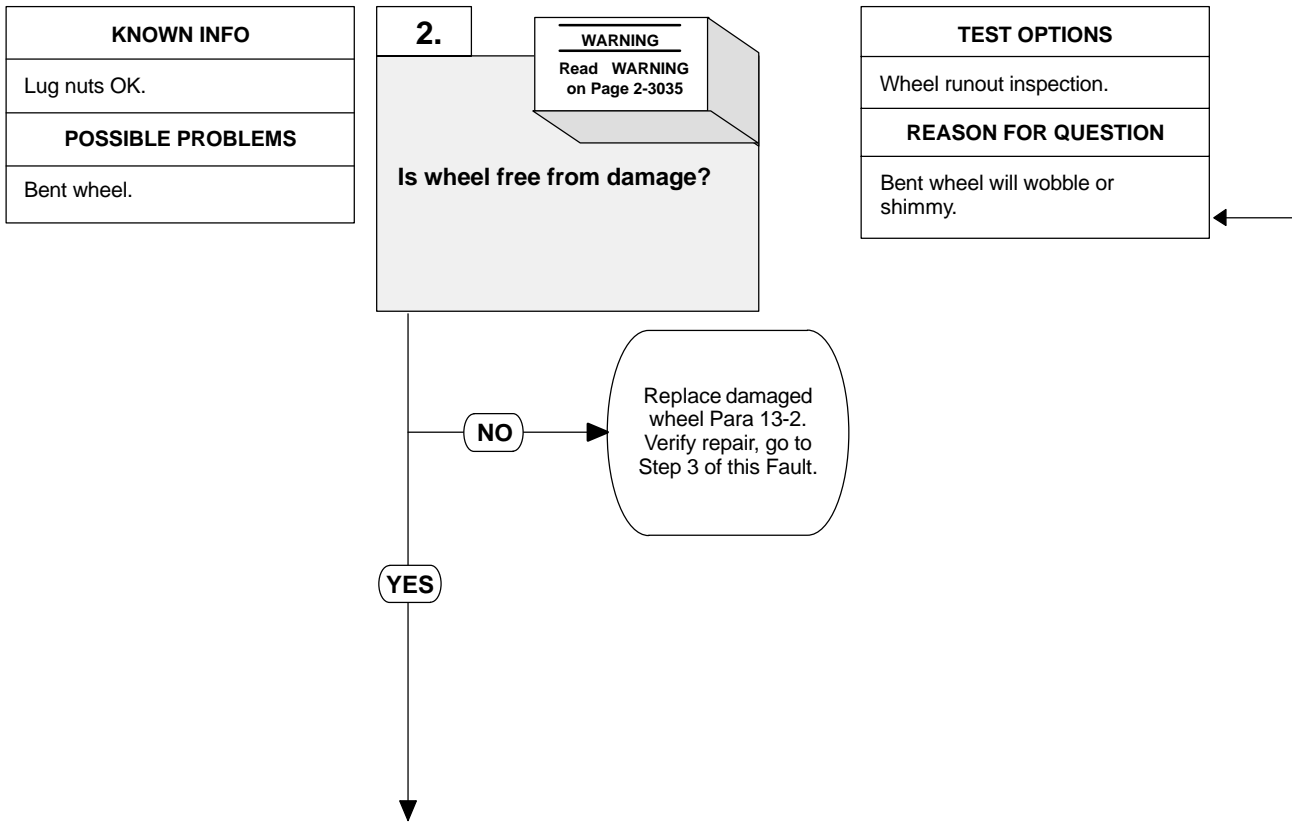




VISUAL INSPECTION

- (1) Remove four locknuts and wheel cover from tire assembly.
- (2) Check if any lugnuts are loose, missing, or damaged.
 - (a) If there are missing or loose lug nuts, replace missing lugnuts or tighten loose lugnuts 450 to 550 lb-ft (610 to 746 N·m).
 - (b) If there are no missing or loose lugnuts, install wheel cover on tire assembly and four locknuts.

2. WHEEL WOBBLES OR SHIMMIES (CONT).



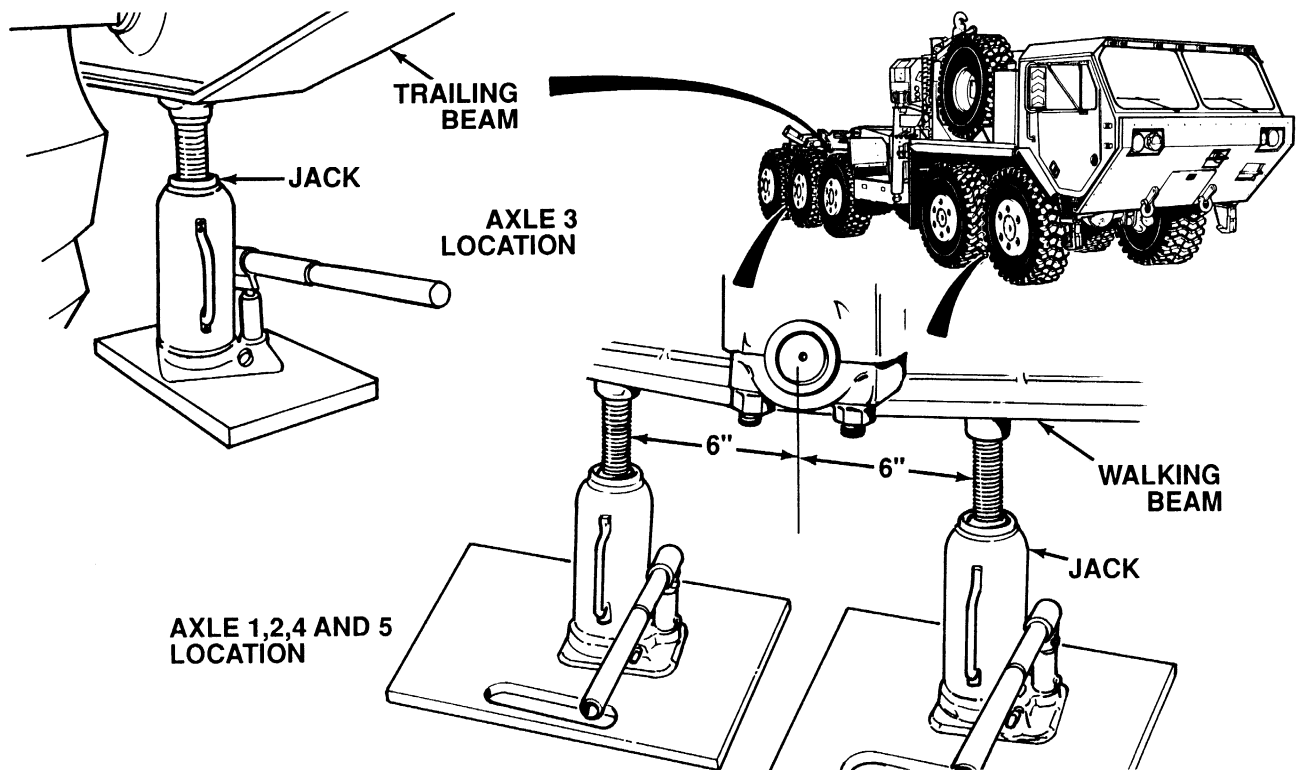
WARNING

Truck must be on level ground and wheels must be chocked before parking brake is released. Otherwise, truck may roll and cause injury to personnel.

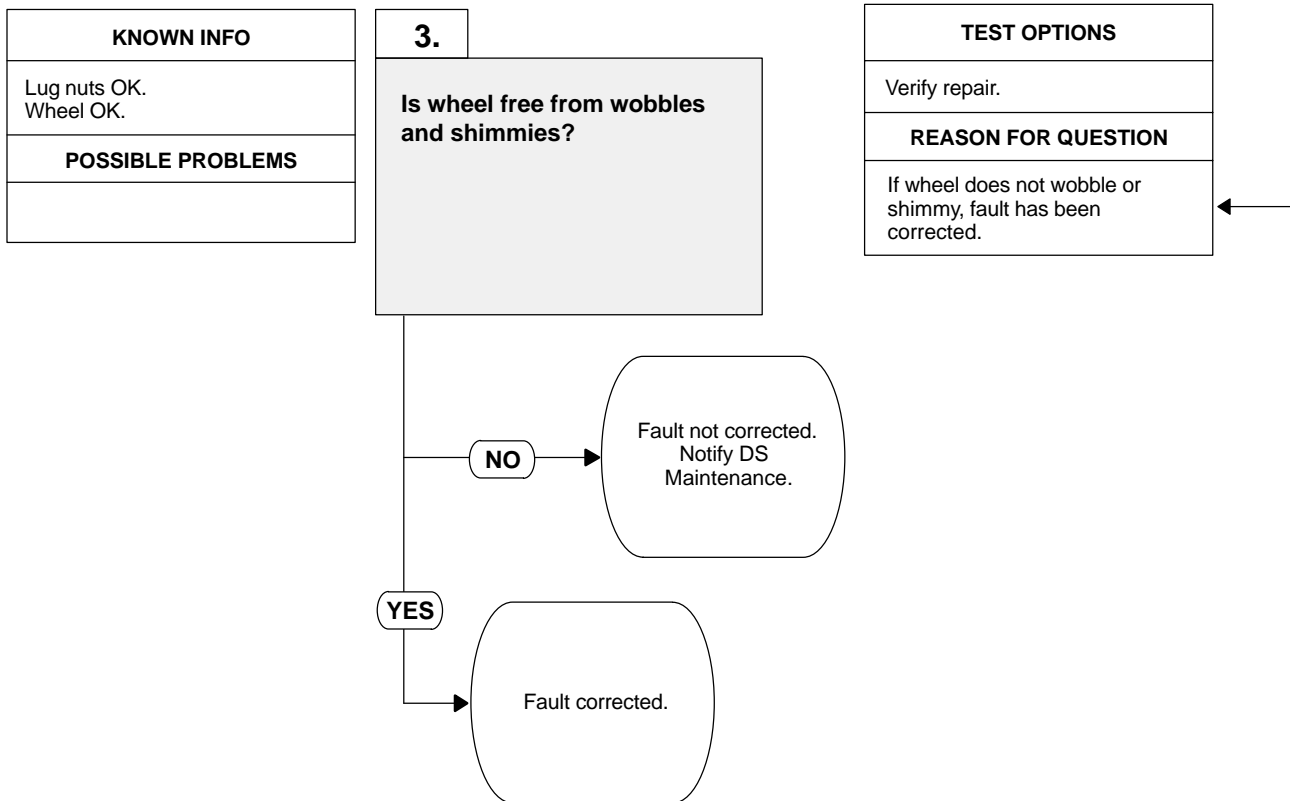
NOTE

Steps (1) and (5) apply only to three rear axles.

WHEEL RUNOUT INSPECTION
(1) Release parking brakes (TM 9-2320-364-10).
(2) Jack up wheel.
(3) Rotate wheel and check for bent rim. <ul style="list-style-type: none"> (a) If wheel rim is bent or damaged, perform Steps (4) and (5) below, and replace rim (Para 13-2). (b) If wheel rim is not bent or damaged, perform Steps (4) and (5) below and go to Step 3 of this Fault.
(4) Lower wheel.
(5) Set parking brakes.



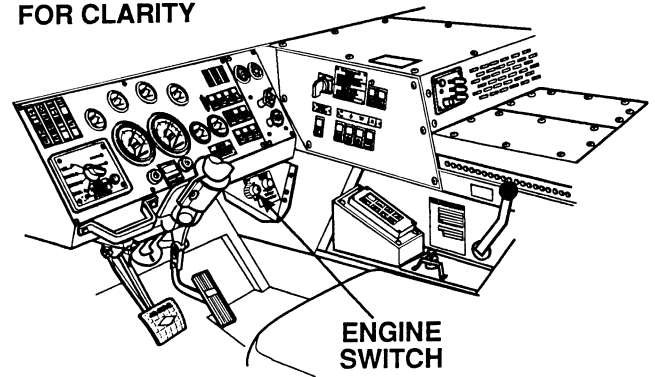
2. WHEEL WOBBLER OR SHIMMIES (CONT).



VERIFY REPAIR

- (1) Start engine (TM 9-2320-364-10).
- (2) Operate truck at varied speeds.
- (3) Check for tire wobbles or shimmys.
 - (a) If there are tire wobbles or shimmys, fault not corrected. Turn OFF ENGINE switch and notify DS Maintenance.
 - (b) If there are no wobbles or shimmys, fault has been corrected.
- (4) Turn OFF ENGINE switch.

**STEERING WHEEL
SHOWN REMOVED
FOR CLARITY**



2-36. ARCTIC KIT WATER PUMP TROUBLESHOOTING.

This paragraph covers Arctic Kit Water Pump Troubleshooting. The Arctic Kit Water Pump System Fault Index, Table 2-64, lists faults for the arctic kit water pump of the PLS truck. Refer to schematic Figure 2-74 when performing tests and corrective actions.

Table 2-64. Arctic Kit Water Pump System Fault Index

Fault No.	Description	Page
1	Arctic Kit Water Pump Does Not Operate	2-3040

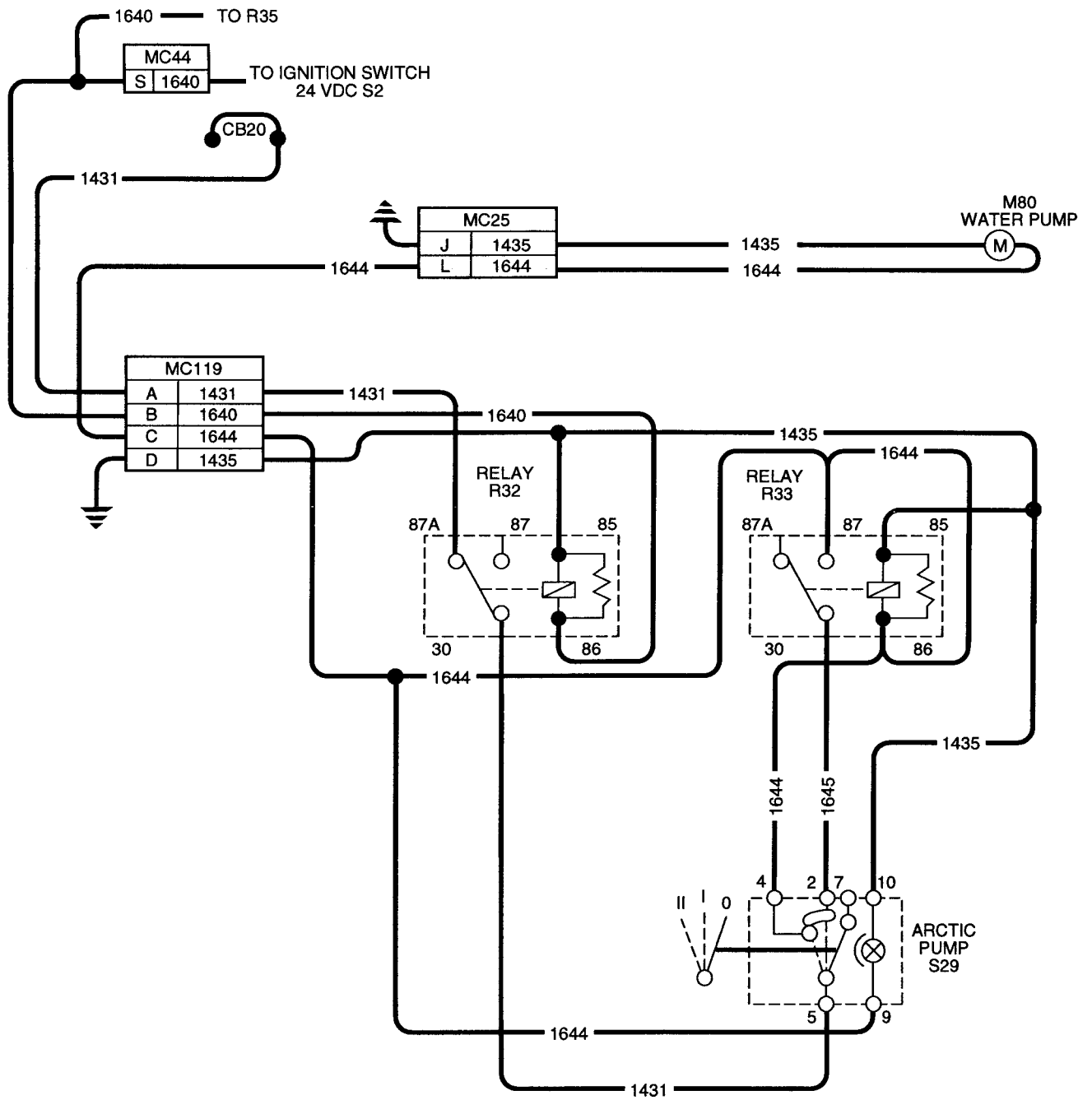


Figure 2-74. Arctic Kit Water Pump Electrical Schematic

2-36. ARCTIC KIT WATER PUMP TROUBLESHOOTING (CONT).

1. ARCTIC KIT WATER PUMP DOES NOT OPERATE.

INITIAL SETUP

Tools and Special Tools

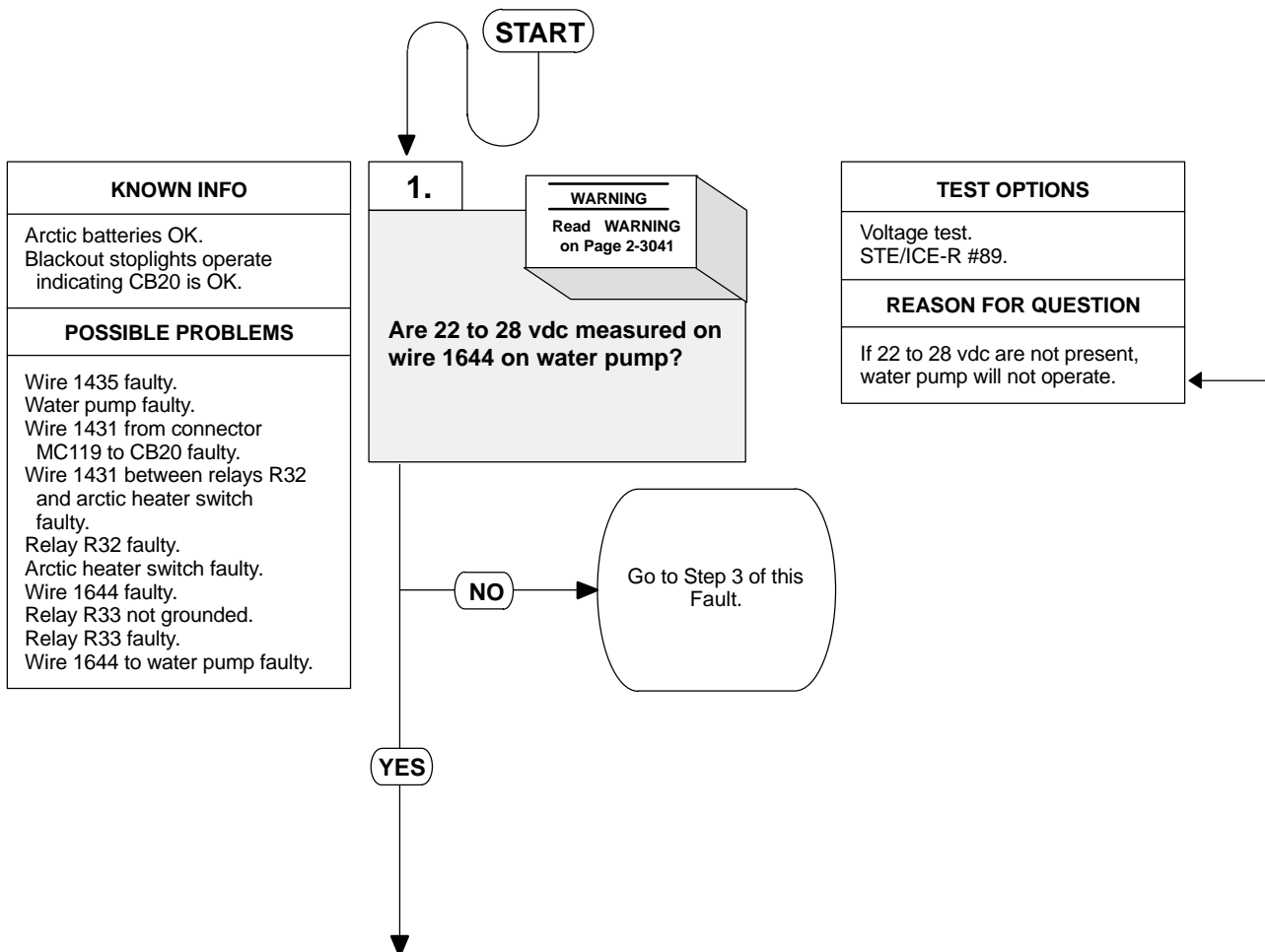
Tool Kit, General Mechanic's: Automotive
 (Item 74, Appendix G)
 STE/ICE-R (optional) (Item 3, Appendix G)
 Multimeter (Item 44, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-34-10)
 Parking brake applied, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)

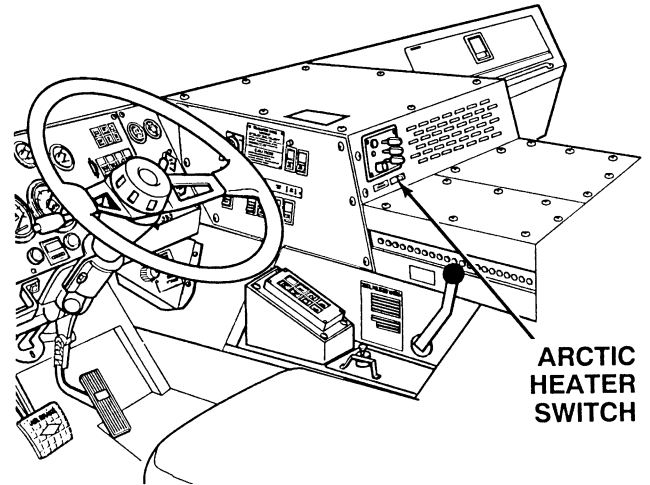
References

TM 9-2320-364-10
 TM 9-4910-571-12&P

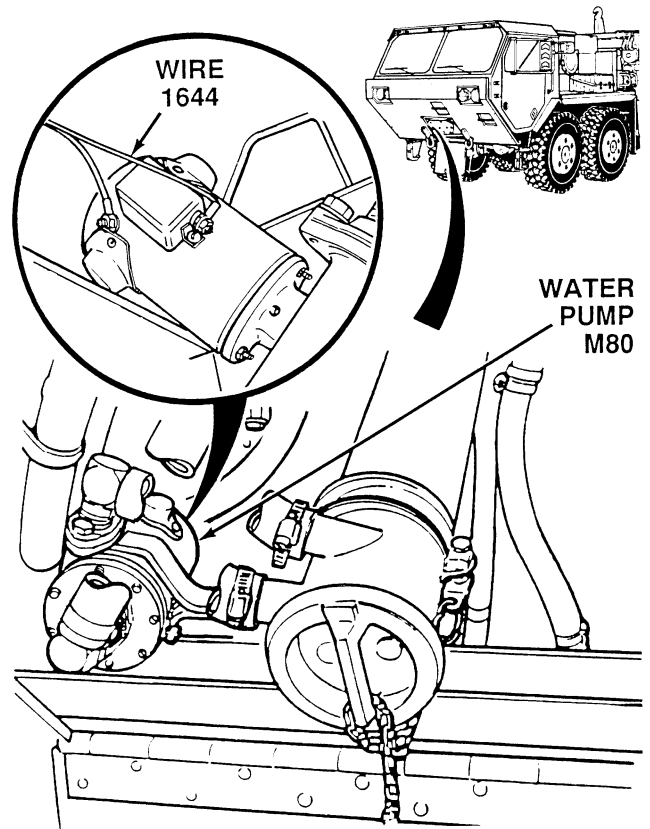


WARNING

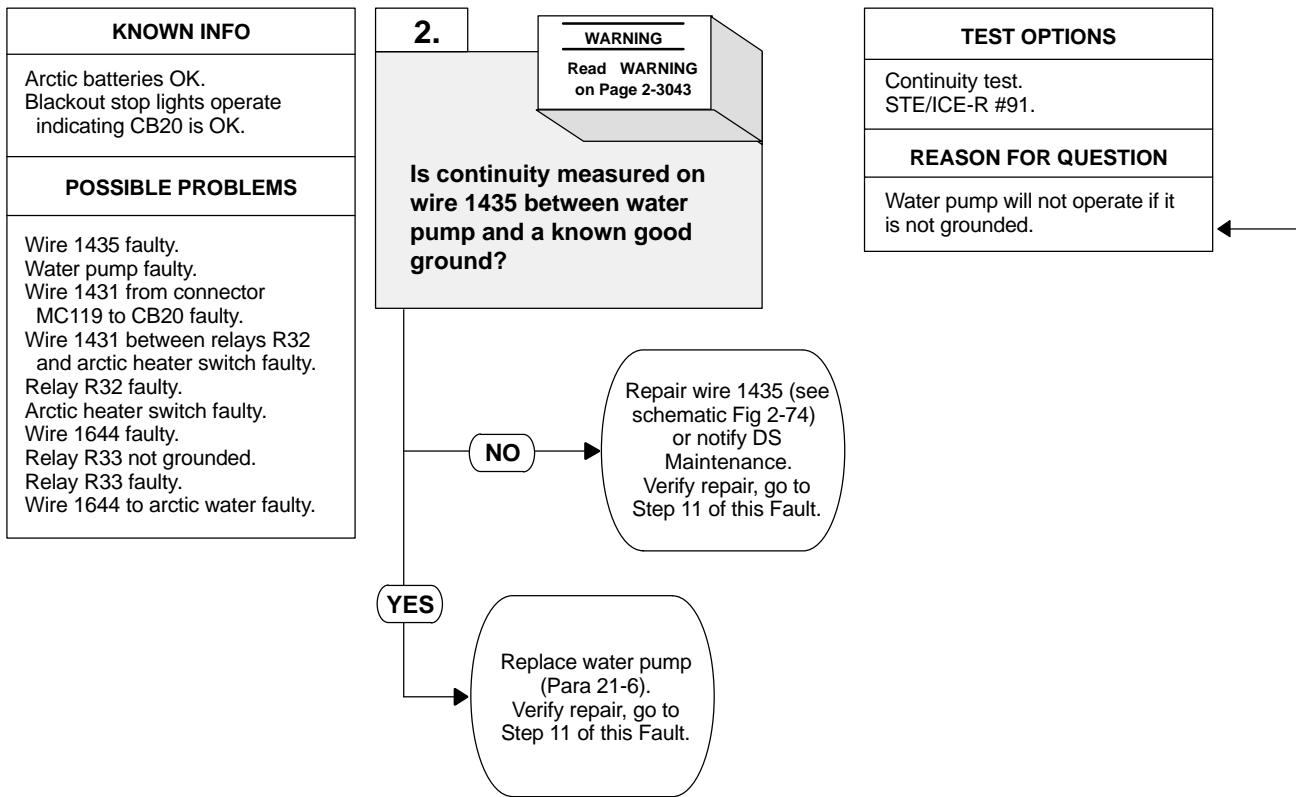
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.



- | VOLTAGE TEST | |
|--------------|---|
| (1) | Open front access cover. |
| (2) | Set multimeter select switch to volts dc. |
| (3) | Connect positive (+) multimeter lead to wire 1644 at water pump. |
| (4) | Connect negative (-) multimeter lead to a known good ground. |
| (5) | Set arctic heater switch to START and then to ON position (TM 9-2320-364-10). |
| (a) | If 22 to 28 vdc are not present, perform Step (6) below and go to Step 3 of this Fault. |
| (b) | If 22 to 28 vdc are present, perform Step (6) below and go to Step 2 of this Fault. |
| (6) | Turn OFF arctic heater switch. |



1. ARCTIC KIT WATER PUMP DOES NOT OPERATE (CONT).

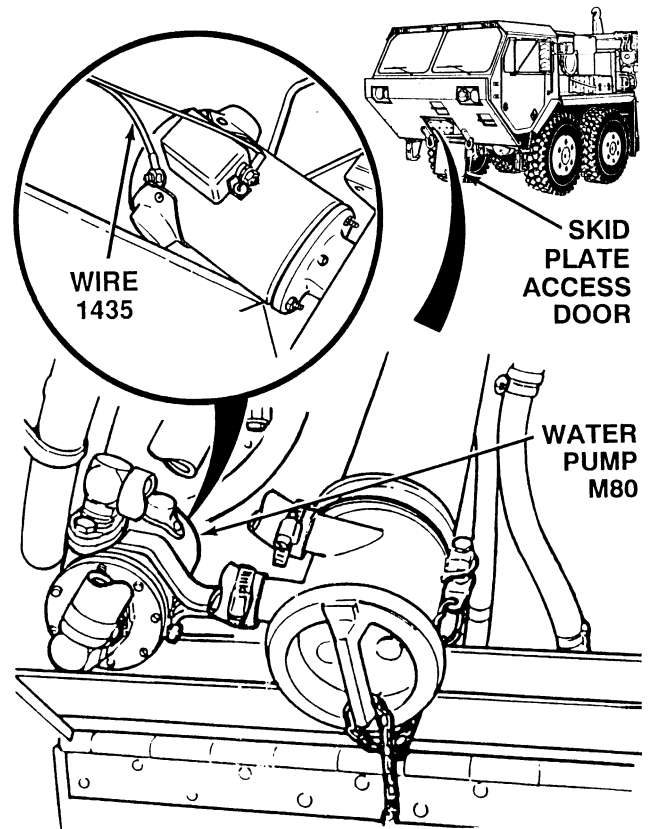


WARNING

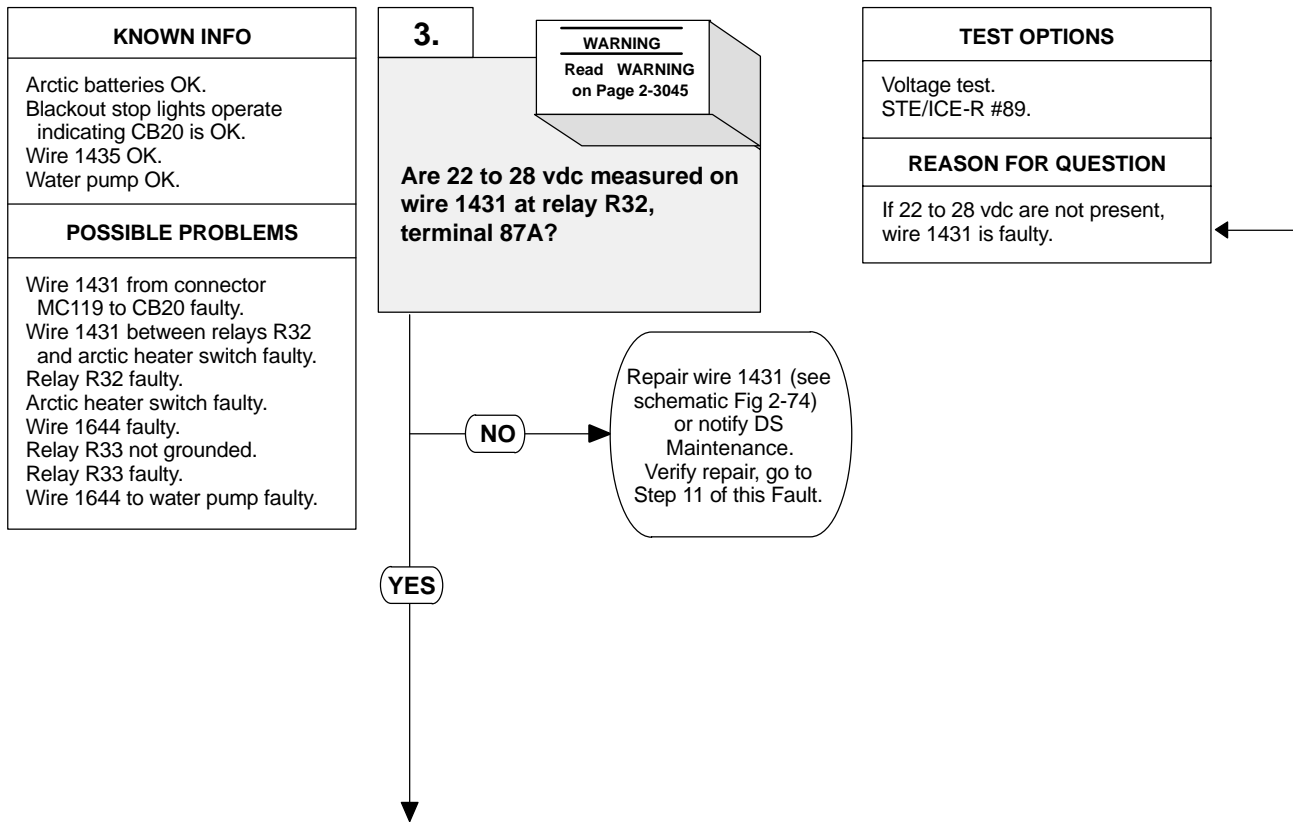
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury, or death to personnel may occur.

CONTINUITY TEST

- (1) Set multimeter select switch to ohms.
- (2) Is there continuity between wire 1435 and a known good ground?
 - (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-74) or notify DS Maintenance.
 - (b) If there is continuity, replace water pump (Para 21-6).



1. ARCTIC KIT WATER PUMP DOES NOT OPERATE (CONT).



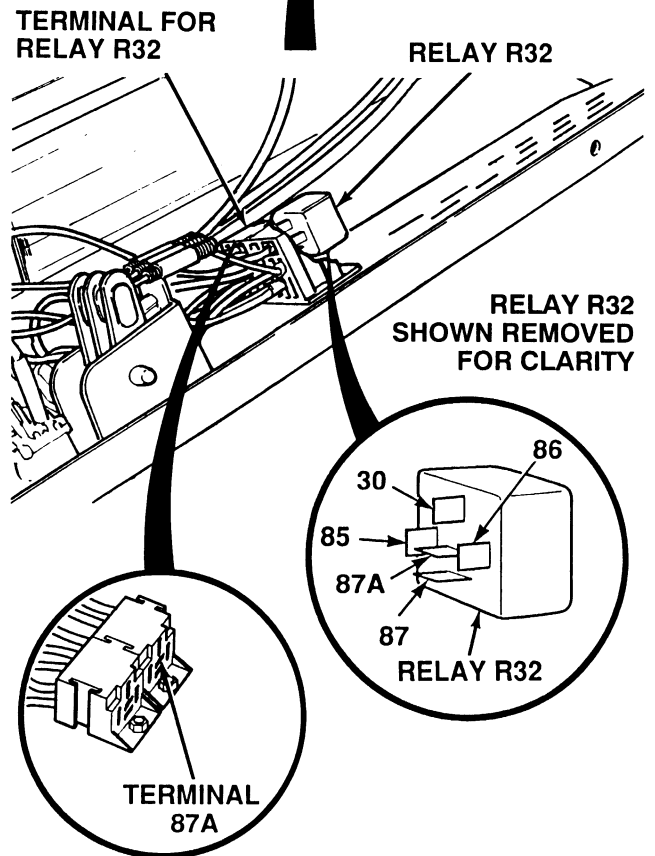
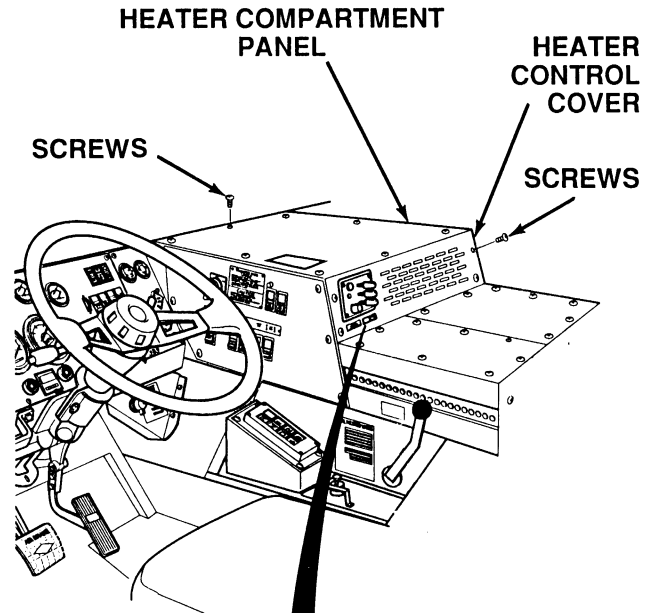
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

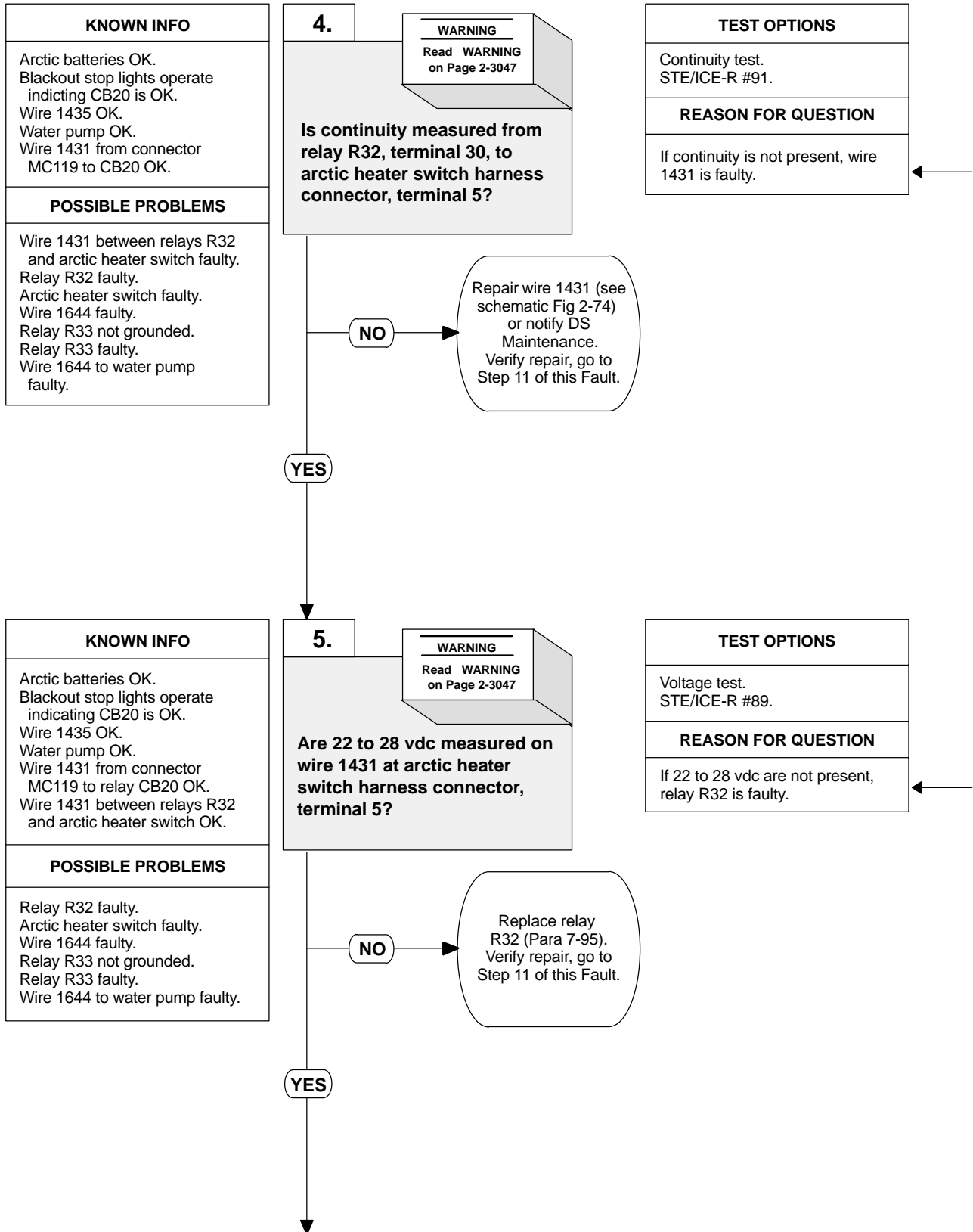
NOTE

Relay test must be performed with relay partially removed.

VOLTAGE TEST	
(1)	Remove eight screws and heater compartment panel.
(2)	Remove four screws and pull heater control cover out enough to access water pump relays.
(3)	Connect positive (+) multimeter lead to relay R32 terminal, terminal 87A.
(4)	Connect negative (-) multimeter lead to a known good ground.
(a)	If 22 to 28 vdc are not present, repair wire 1431 (see schematic Fig 2-74) or notify DS Maintenance.
(b)	If 22 to 28 vdc are present, wire 1431 is OK. Go to Step 4 of this Fault.



1. ARCTIC KIT WATER PUMP DOES NOT OPERATE (CONT).



WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

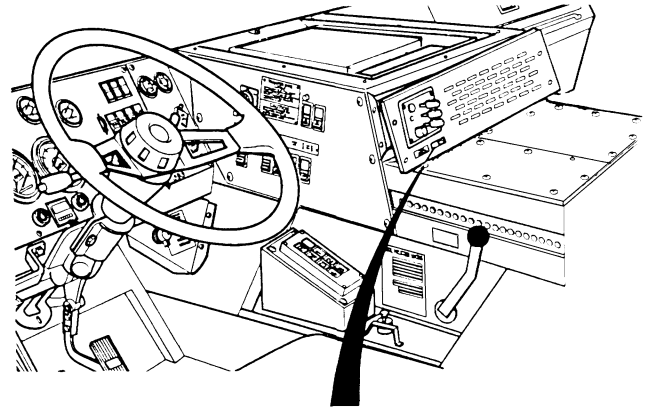
Relay test must be performed with relay partially removed.

CONTINUITY TEST

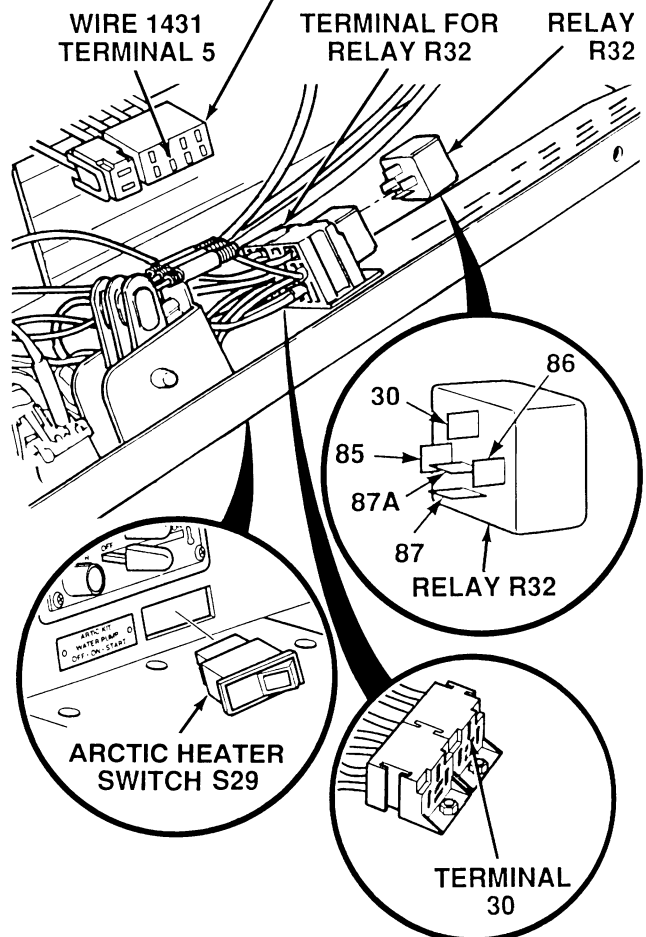
- (1) Set multimeter select switch to ohms.
- (2) Disconnect arctic heater switch.
- (3) Is there continuity between relay R32, terminal 30 to arctic heater switch harness connector, terminal 5?
 - (a) If there is no continuity, repair wire 1431 (see schematic Fig 2-74) or notify DS Maintenance.
 - (b) If there is continuity, wire 1431 is OK.
- (4) Install relay R32 in terminal.

VOLTAGE TEST

- (1) Set multimeter select switch to volts dc.
- (2) Connect positive (+) multimeter lead to arctic heater switch connector, terminal 5.
- (3) Connect negative (-) multimeter lead to a known good ground.
 - (a) If 22 to 28 vdc are not present, replace relay R32 (Para 7-95).
 - (b) If 22 to 28 vdc are present, relay R32 is OK.

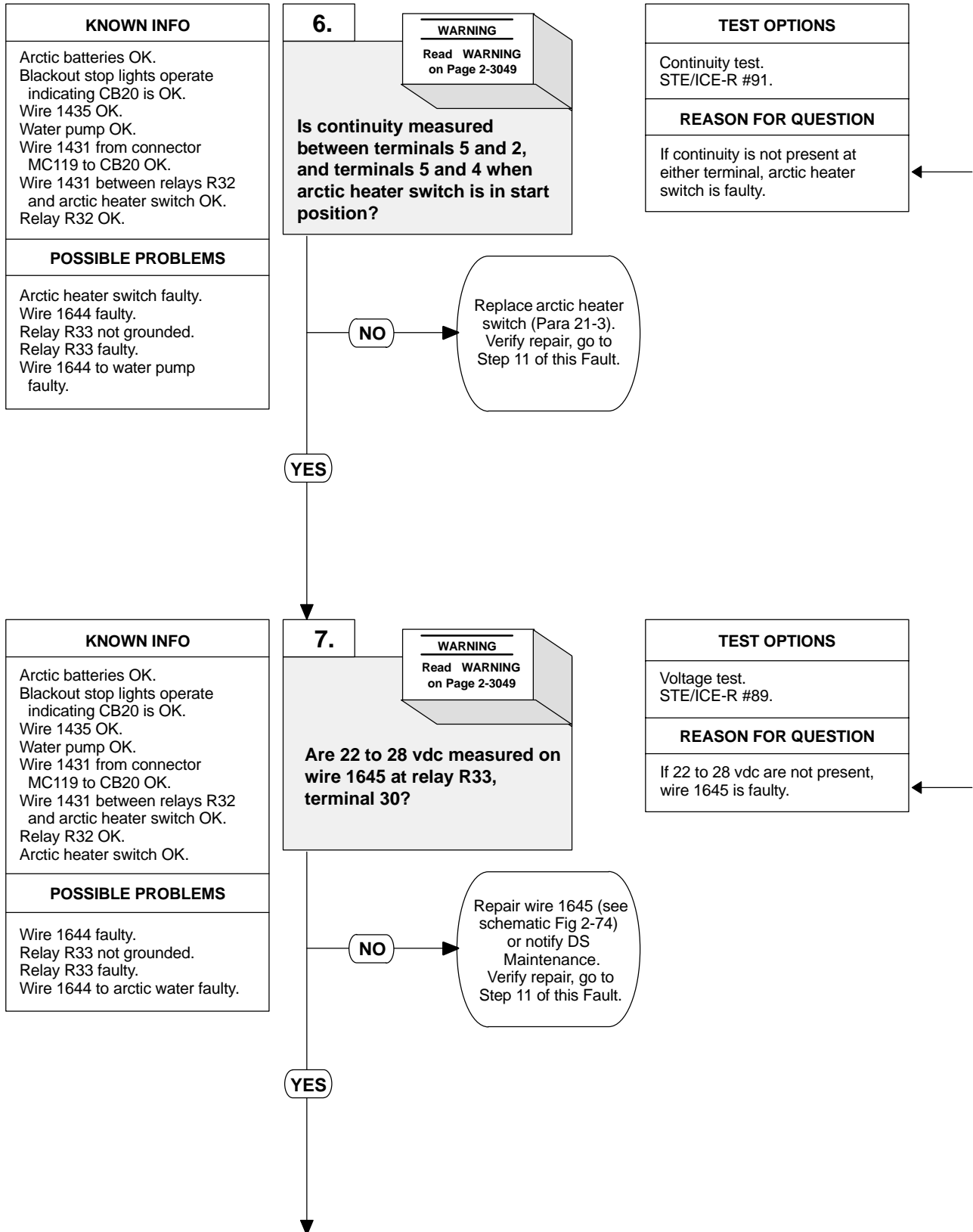


ARCTIC HEATER SWITCH CONNECTOR



RELAY R32 SHOWN REMOVED FOR CLARITY

1. ARCTIC KIT WATER PUMP DOES NOT OPERATE (CONT).

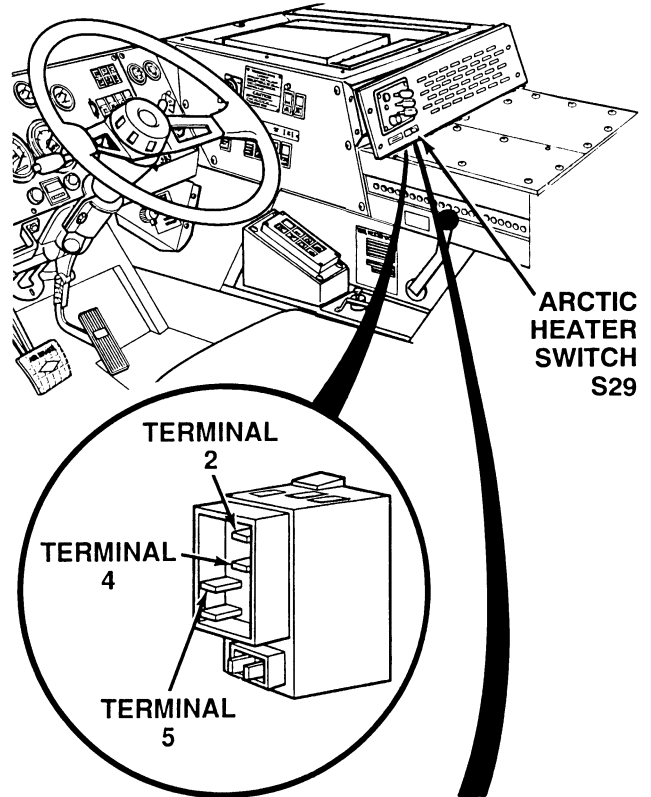


WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

- (1) Set multimeter select switch to ohms.
- (2) Hold arctic heater switch in START position (TM 9-2320-364-10).
- (3) Is there continuity between terminals 5 and 2 and terminals 5 and 4 when arctic heater switch is in START position?
 - (a) If there is no continuity, replace arctic heater switch (Para 21-3).
 - (b) If there is continuity, arctic heater switch is OK.
- (4) Release arctic heater switch.
- (5) Connect arctic heater switch.

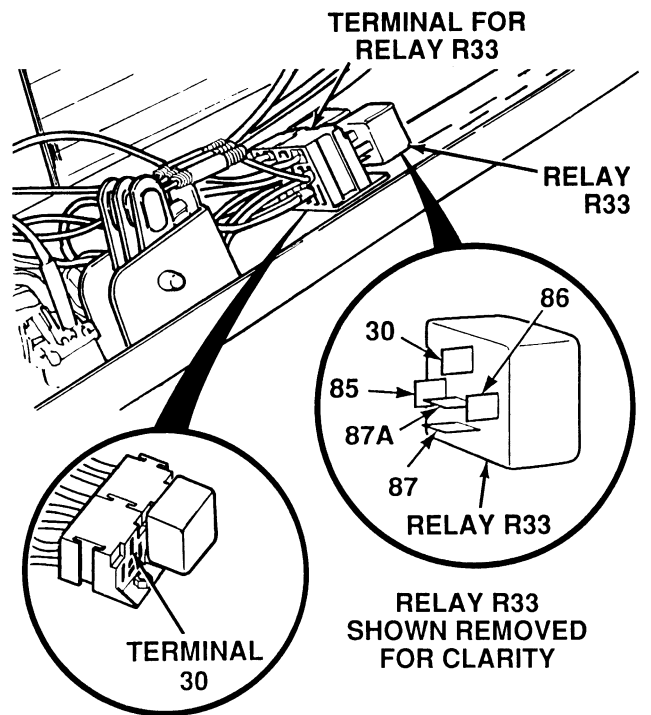


NOTE

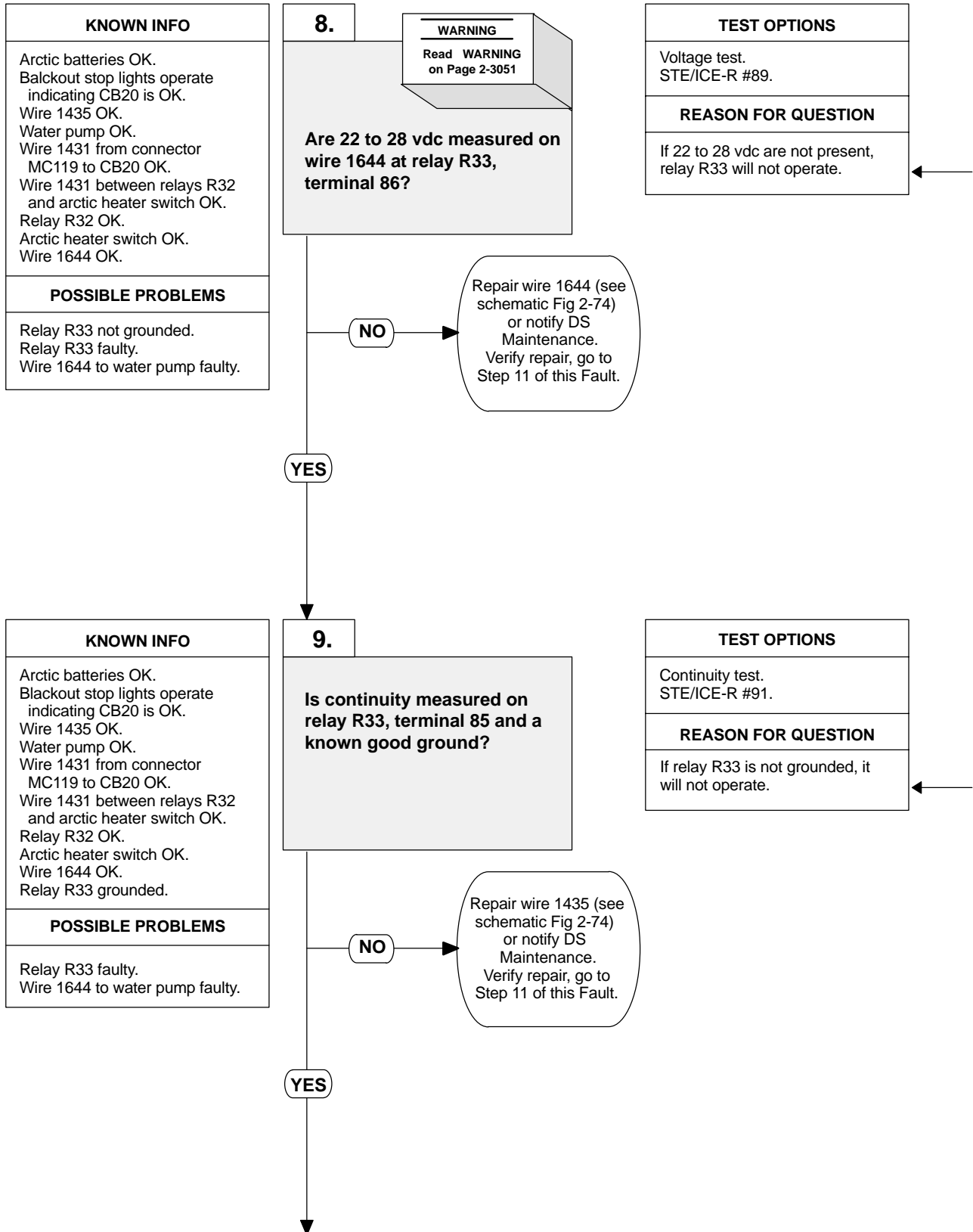
Relay test must be performed with relay partially removed.

VOLTAGE TEST

- (1) Set multimeter select switch to volts dc.
- (2) Connect positive (+) multimeter lead to relay R33 terminal, terminal 30.
- (3) Connect negative (-) multimeter lead to a known good ground.
- (4) Set arctic heater switch to START, then to ON position (TM 9-2320-364-10).
 - (a) If 22 to 28 vdc are not present, turn OFF arctic heater switch and repair wire 1645 (see schematic Fig 2-74) or notify DS Maintenance.
 - (b) If 22 to 28 vdc are present, wire 1645 is OK.
- (5) Turn OFF arctic heater switch.



1. ARCTIC KIT WATER PUMP DOES NOT OPERATE (CONT).



WARNING

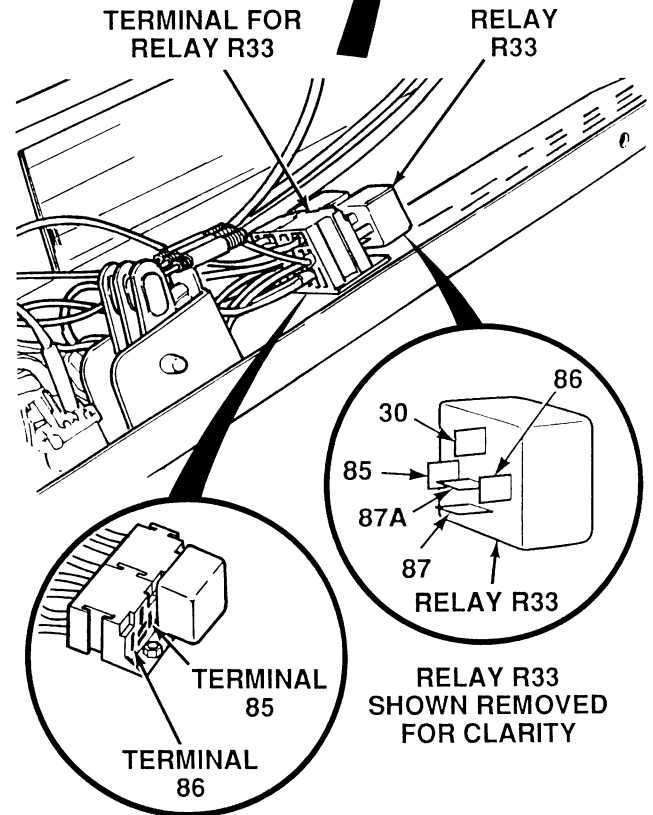
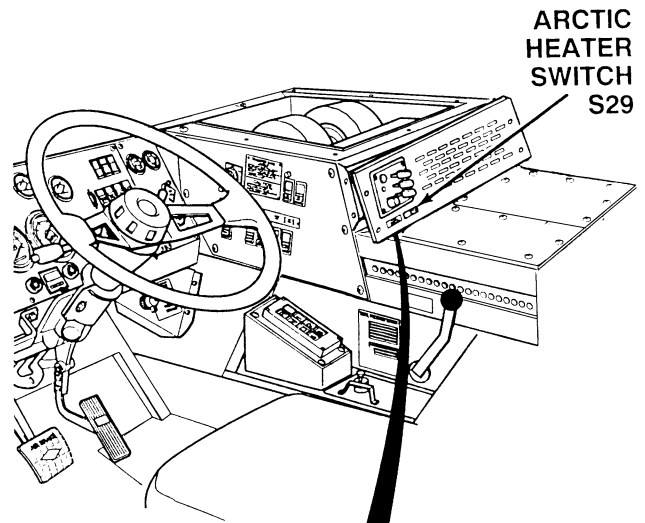
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

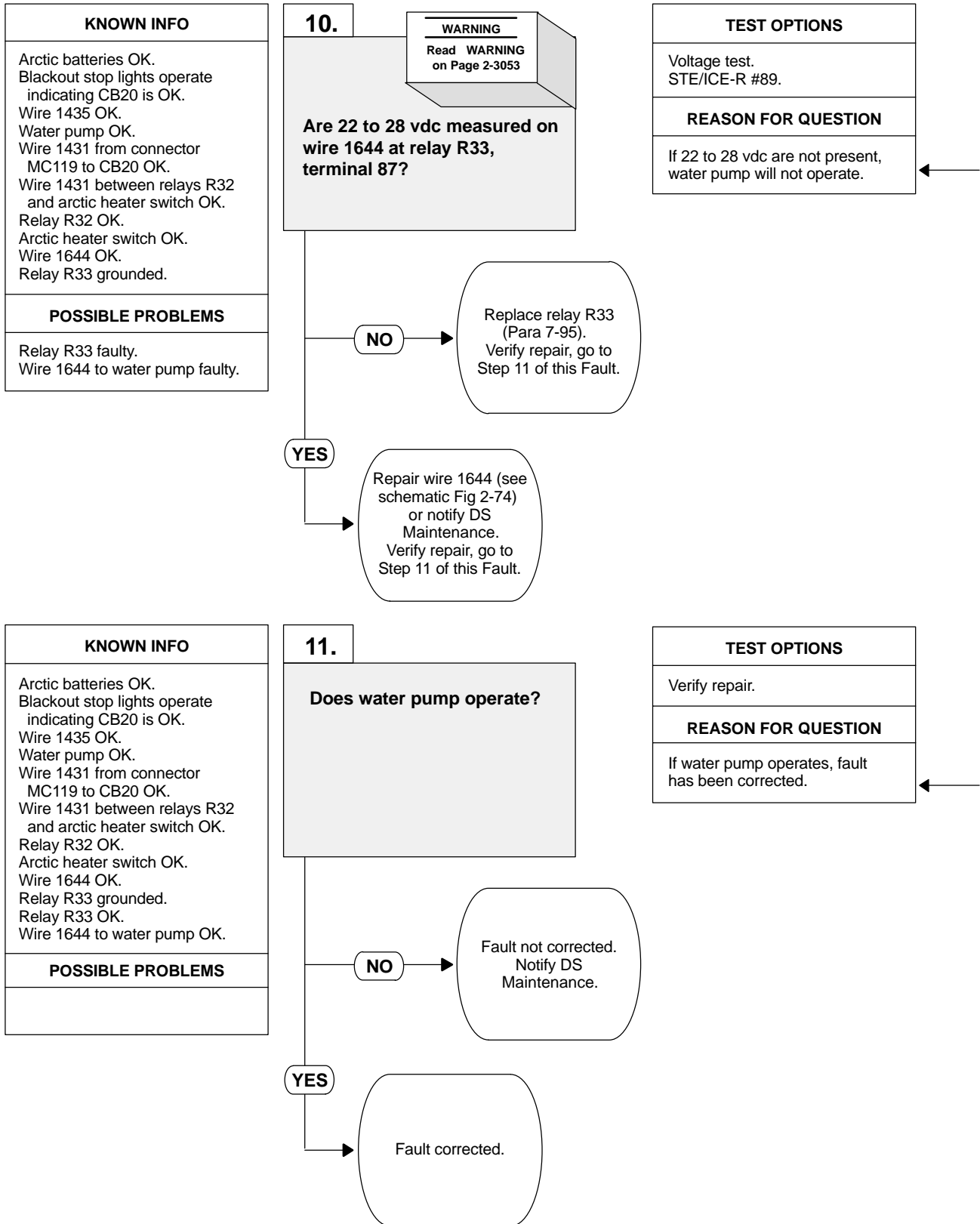
Relay test must be performed with relay partially removed.

VOLTAGE TEST
<ol style="list-style-type: none"> (1) Connect positive (+) multimeter lead to relay R33, terminal 86. (2) Connect negative (-) multimeter lead to a known good ground. (3) Set arctic heater switch to START and then to ON position (TM 9-2320-364-10). <ol style="list-style-type: none"> (a) If 22 to 28 vdc are not present, turn OFF arctic heater switch and replace wire 1644 (see schematic Fig 2-74) or notify DS Maintenance. (b) If 22 to 28 vdc are present, wire 1644 is OK. Go to Step 9 of this Fault. (4) Turn OFF arctic heater switch.

CONTINUITY TEST
<ol style="list-style-type: none"> (1) Set multimeter select switch to ohms. (2) Is there continuity between relay R33, terminal 85 and a known good ground? <ol style="list-style-type: none"> (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-74) or notify DS Maintenance. (b) If there is continuity, wire 1435 is OK.



1. ARCTIC KIT WATER PUMP DOES NOT OPERATE (CONT).



WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

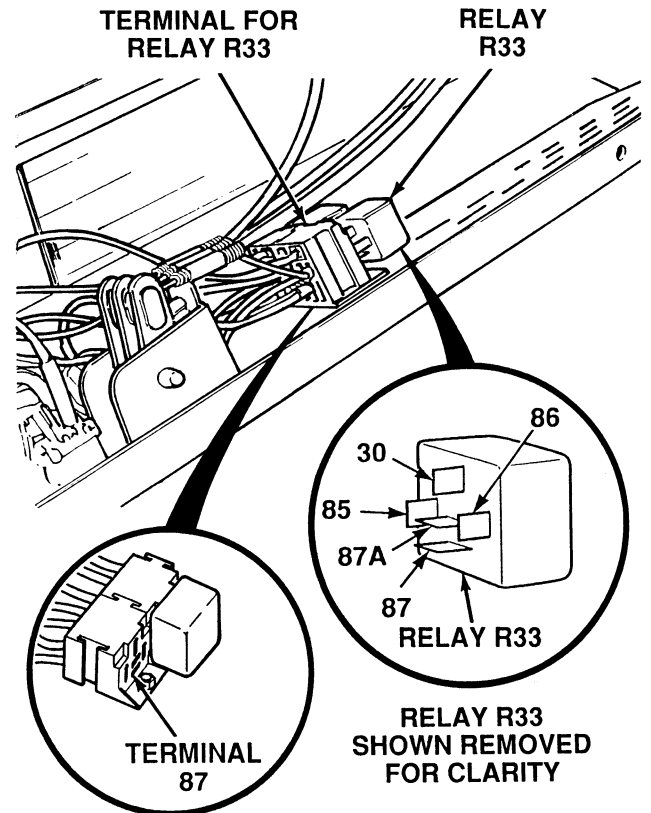
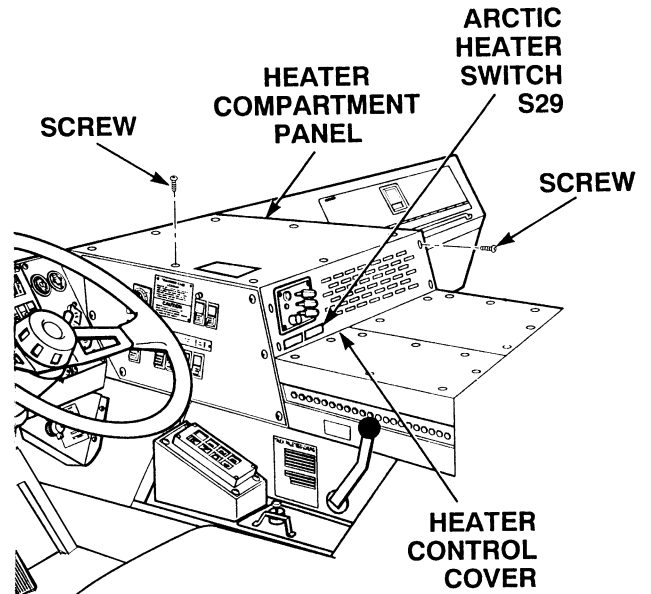
Relay test must be performed with relay partially removed.

VOLTAGE TEST

- (1) Set multimeter select switch to volts dc.
- (2) Connect positive (+) multimeter lead to relay R33 terminal, terminal 87.
- (3) Connect negative (-) multimeter lead to a known good ground.
- (4) Set arctic heater switch to START and then to ON position (TM 9-2320-364-10).
 - (a) If 22 to 28 vdc are not present, replace relay R33 (Para 7-95).
 - (b) If 22 to 28 vdc are present, repair wire 1644 (see schematic Fig 2-74) or notify DS Maintenance.
- (5) Turn OFF arctic heater switch.
- (6) Install relay R33 in terminal.
- (7) Close front access cover.
- (8) Install heater control cover and four screws.
- (9) Install heater compartment panel and eight screws.
- (10) Install two ECB covers and 15 screws.

VERIFY REPAIR

- (1) Set arctic heater switch to START, then to ON position (TM 9-2320-364-10).
 - (a) If water pump does not operate, fault not corrected. Notify DS Maintenance.
 - (b) If water pump operates, fault has been corrected.
- (2) Turn OFF arctic heater switch.



2-37. INTERFACE TROUBLESHOOTING.

This paragraph covers Interface Troubleshooting. The Interface Troubleshooting System Fault Index, Table 2-65, lists faults of the interface air supply for the PLS truck. Refer to schematic Figures 2-75 through 2-78 when performing tests and corrective actions.

Table 2-65. Interface Troubleshooting System Fault Index

Fault No.	Description	Page
1.	Loss Of Interface Air Supply	2-3060
2.	Interface Kit Hydraulics Inoperative	2-3066
3.	Loss Of Interface Power 12 VDC	2-3108
4.	Loss Of Interface Power 24 VDC	2-3122

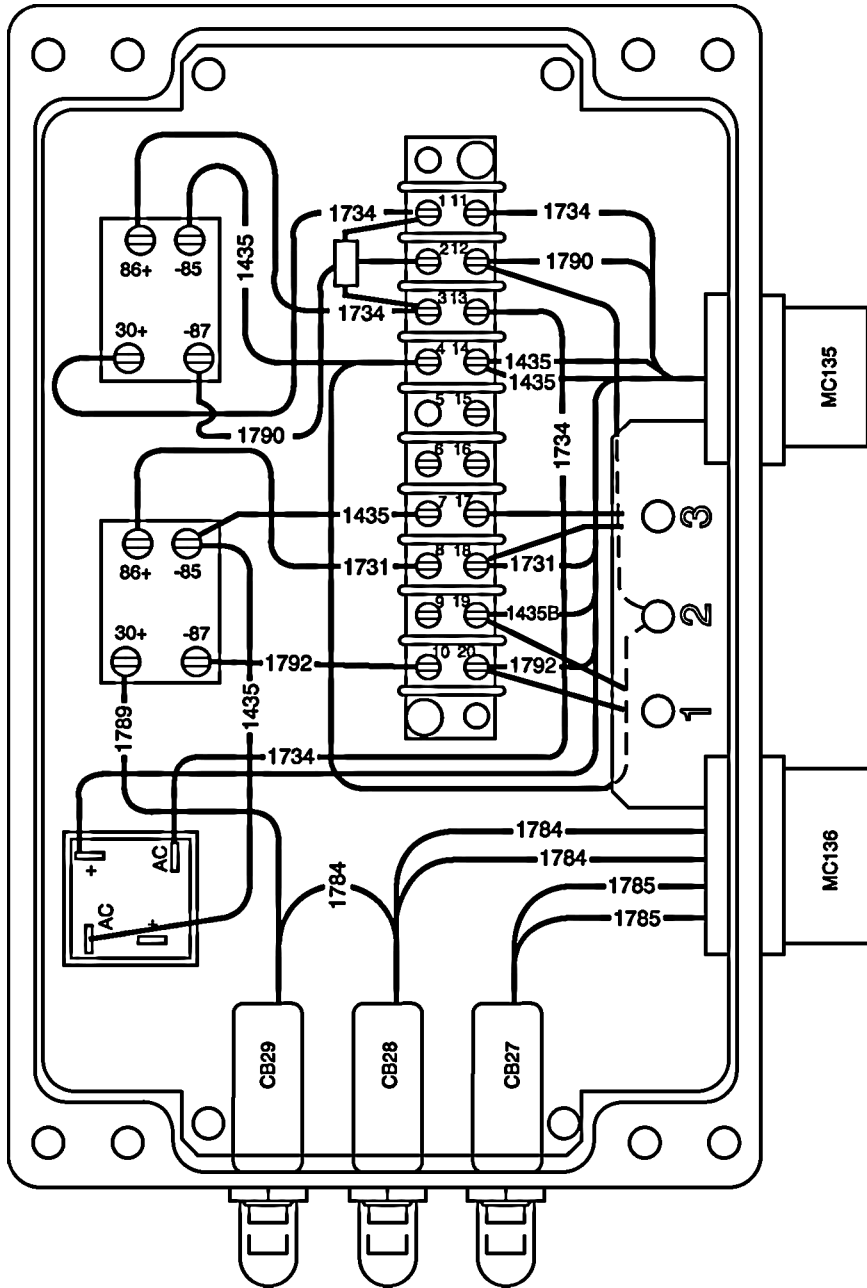


Figure 2-75. Interface Power Box Wiring Diagram

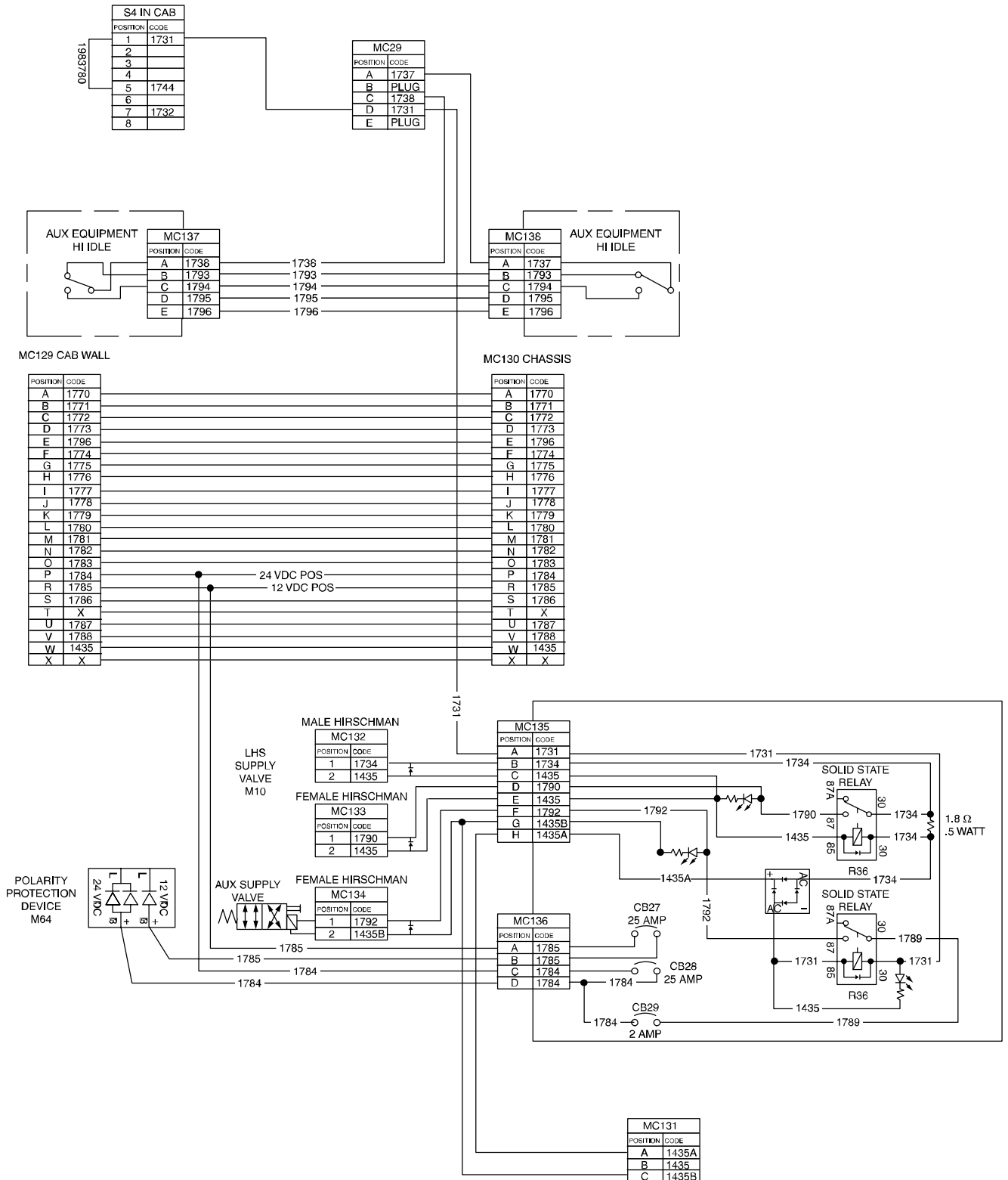


Figure 2-76. Interface Wiring Diagram

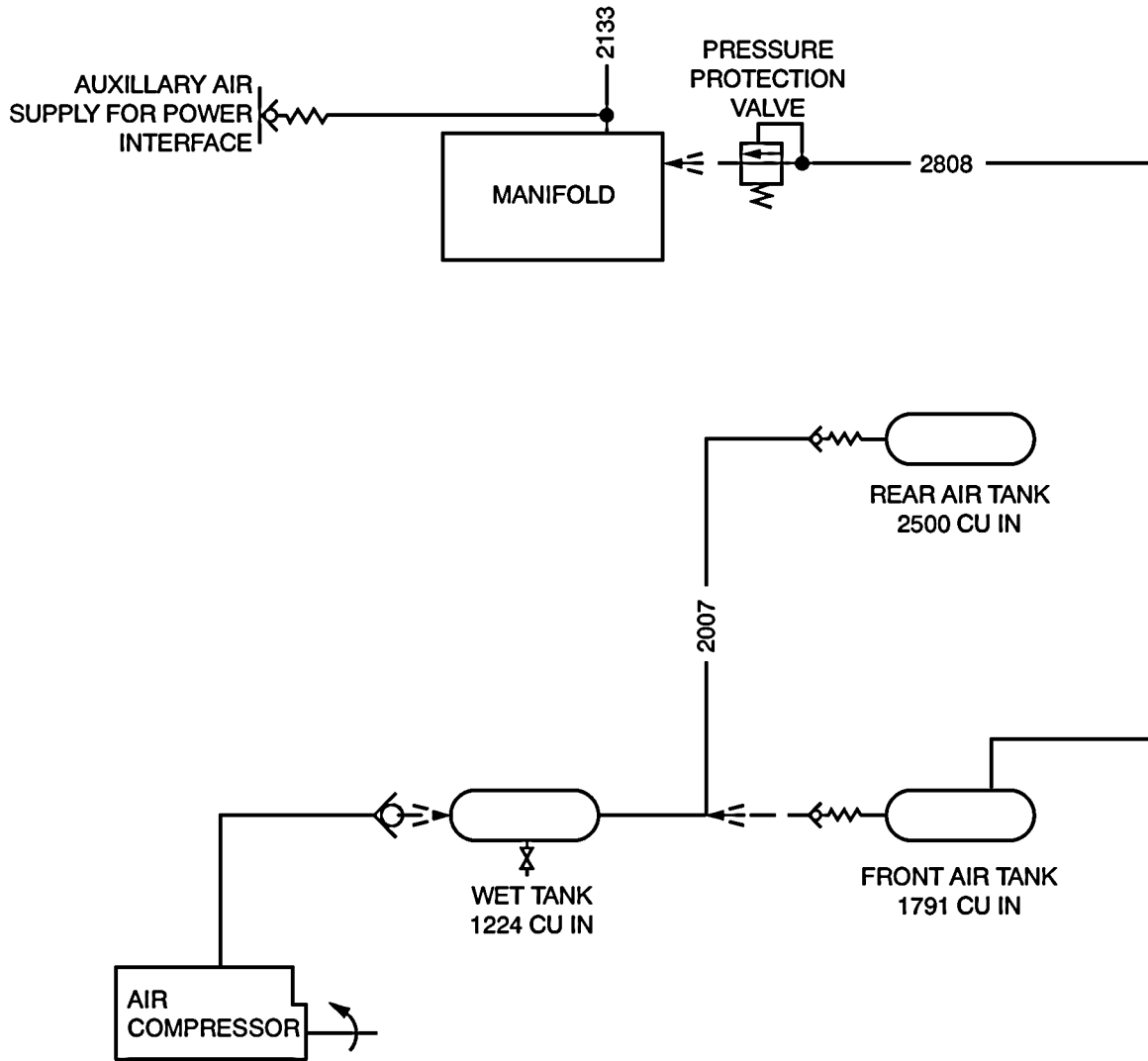


Figure 2-77. Interface Air Hose Lines Diagram

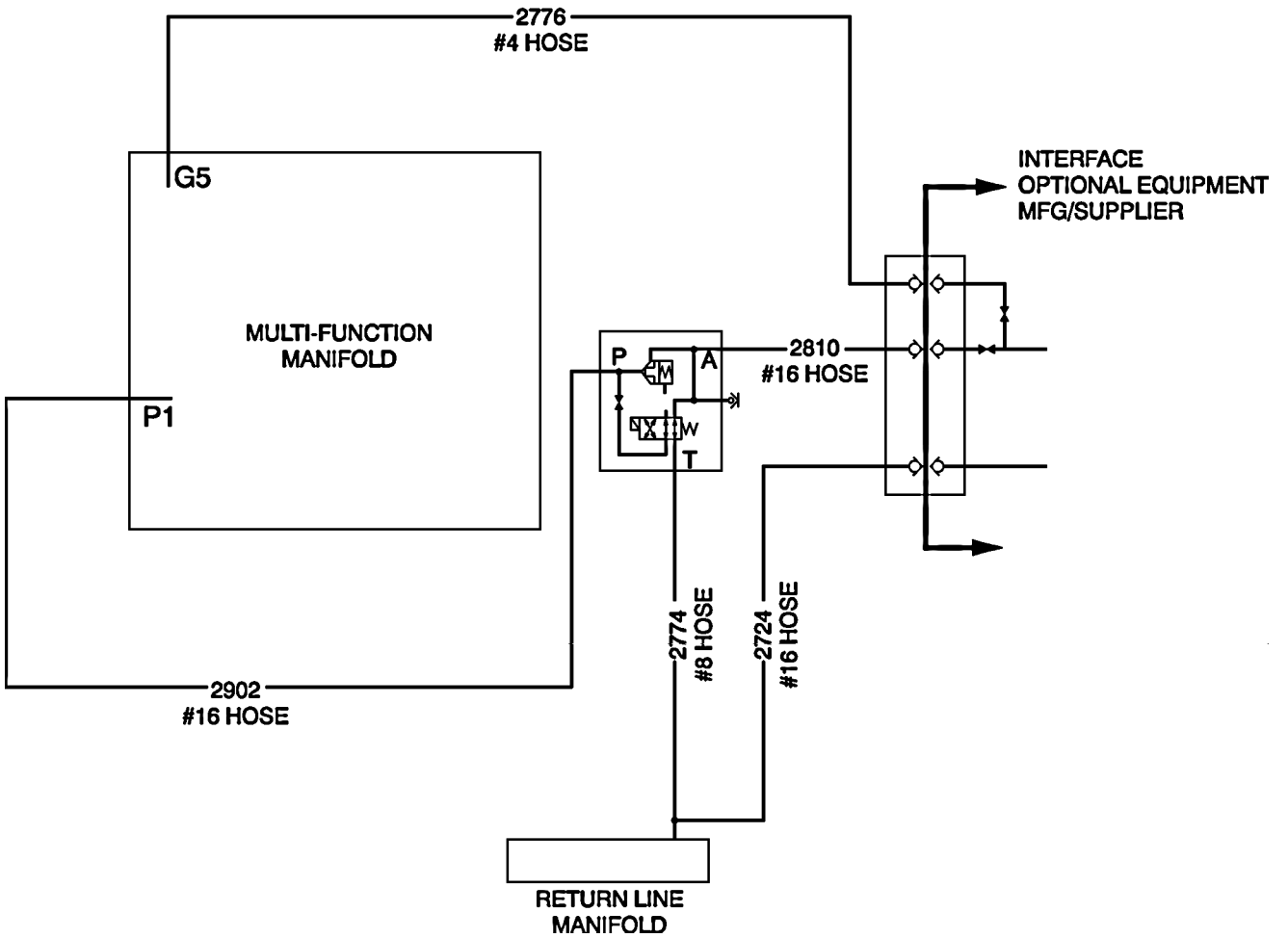


Figure 2-78. Interface Hydraulic Lines Diagram

2-37. INTERFACE TROUBLESHOOTING (CONT)

1. LOSS OF INTERFACE AIR SUPPLY.

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Materials/Parts

Solution, Soap (Item 86, Appendix C)

References

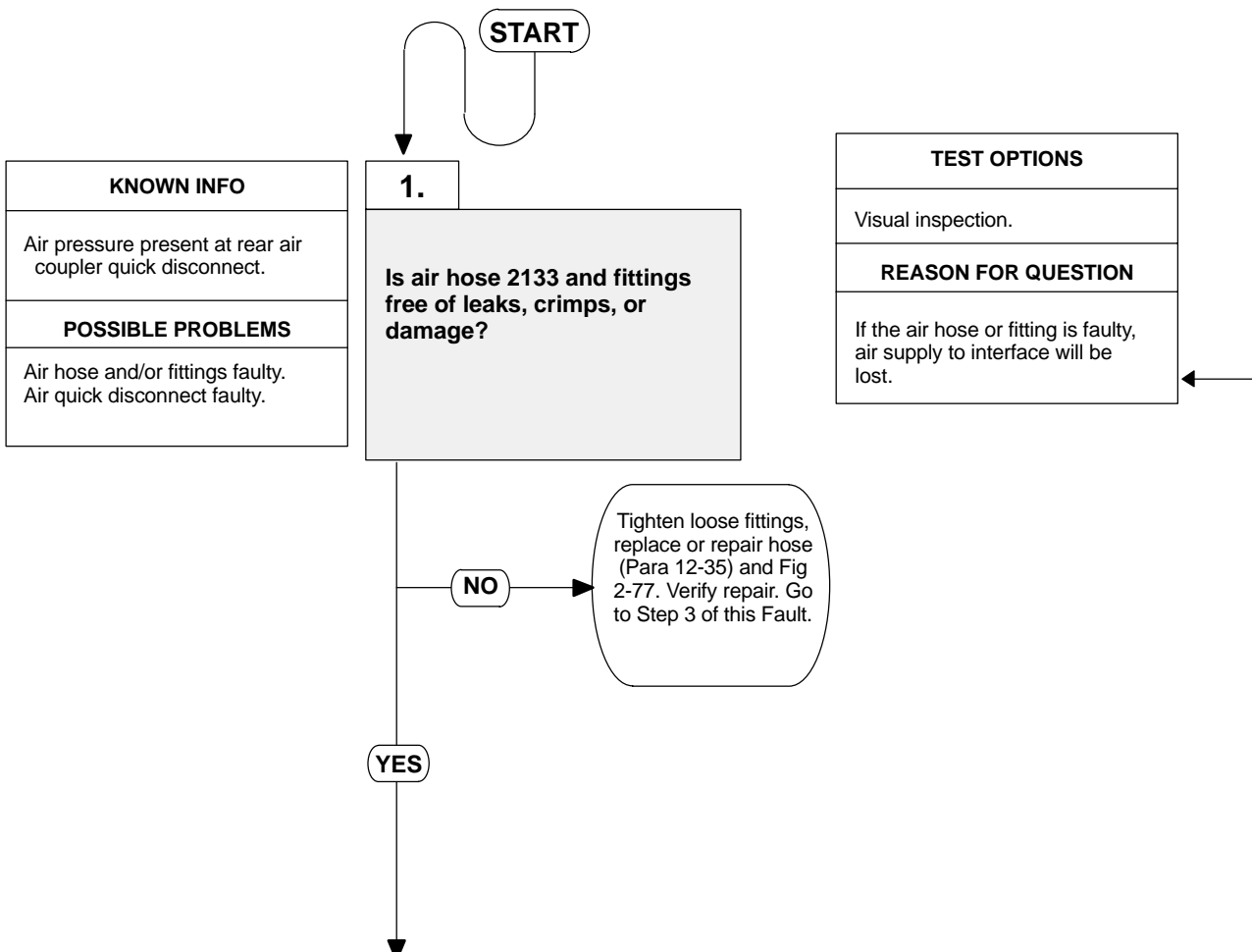
TM 9-2320-364-10

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Parking brake ON, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system charged, (TM 9-2320-364-10)
Load handling system (LHS) fully extended,
(TM 9-2320-364-10)

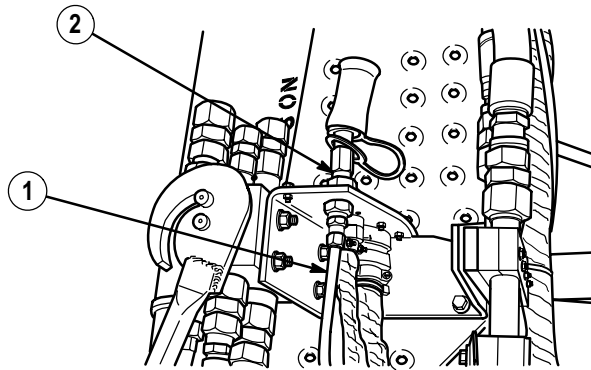
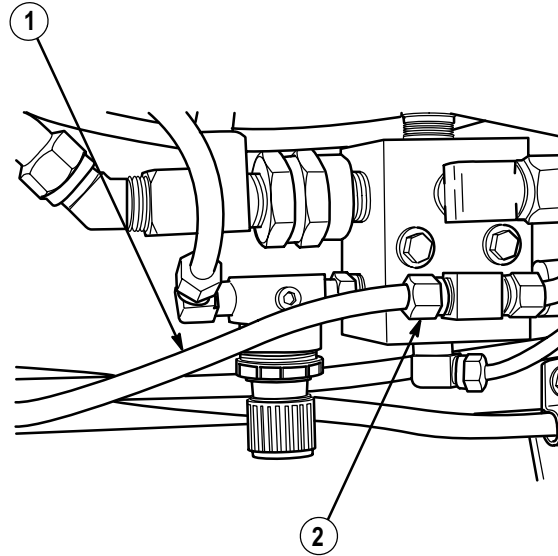
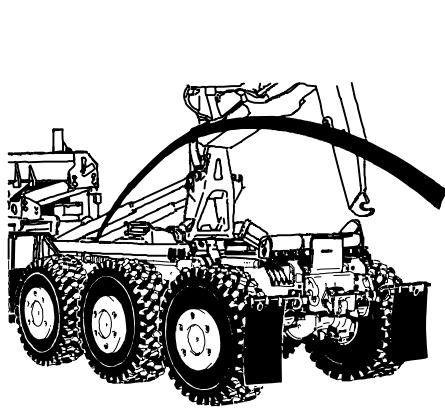
NOTE

Use soap solution to inspect for air leaks.



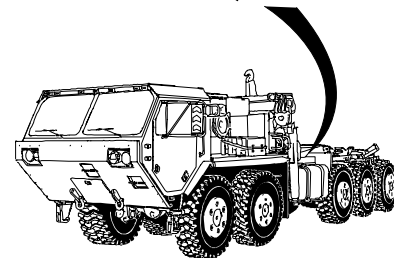
WARNING

Wear safety goggles when performing tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

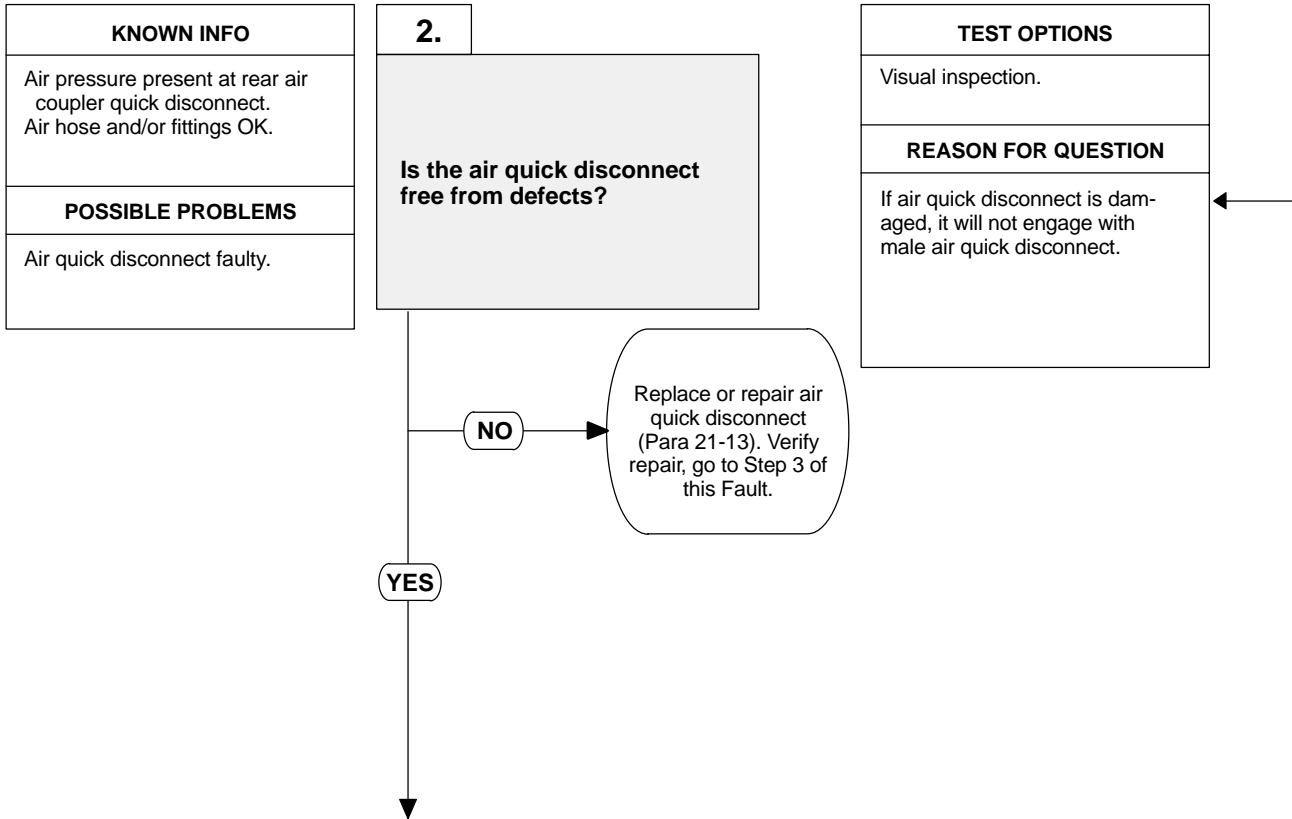


VISUAL INSPECTION

Check air hose 2133 (1) for damage and loose or damaged fittings (2). If hose is leaking or damaged, tighten fittings, repair or replace hose (Para 12-35).



1. LOSS OF INTERFACE AIR SUPPLY (CONT).

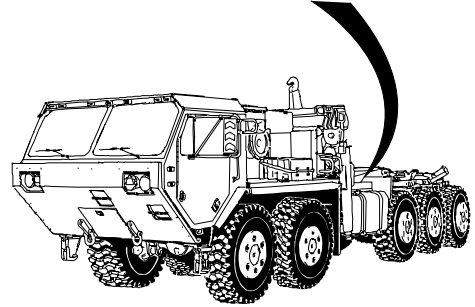
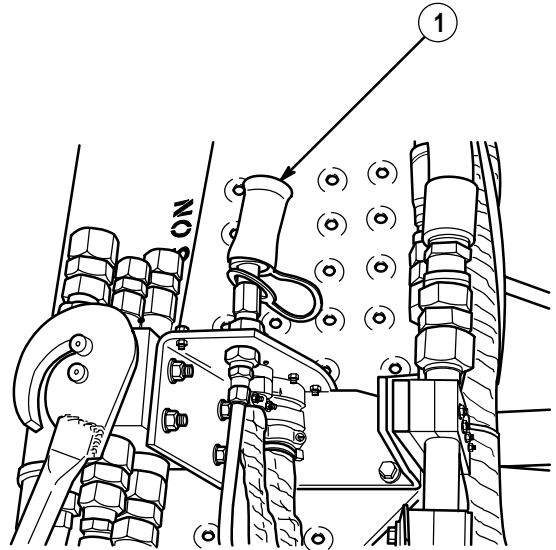


WARNING

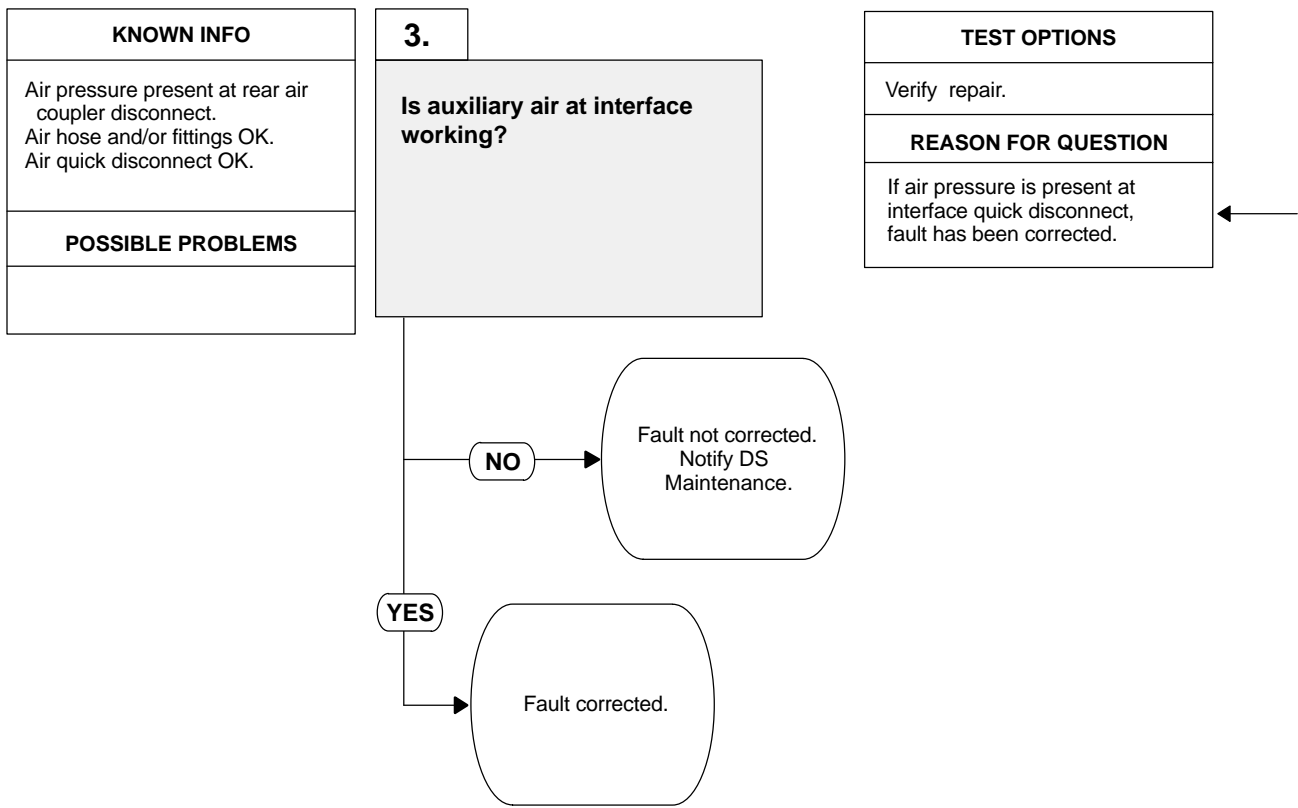
Wear safety goggles when performing tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

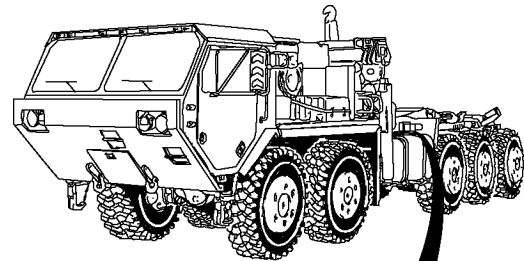
VISUAL INSPECTION

Check air quick disconnect (1) for damage. If air quick disconnect is leaking or damaged, tighten fittings or replace air quick disconnect (Para 21-13).



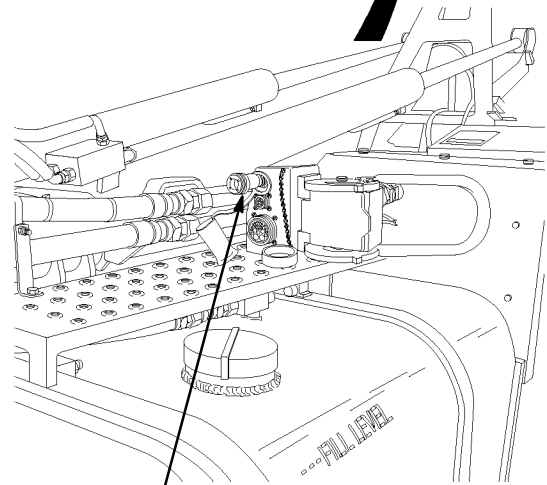
1. LOSS OF INTERFACE AIR SUPPLY (CONT).





VERIFY REPAIR

- (1) Start engine (TM 9-2320-364-10).
- (2) If air pressure is present at interface air quick disconnect, fault has been corrected.
- (3) If air pressure is not present at interface air quick disconnect, fault has not been corrected. Notify DS Maintenance.



**AIR
QUICK
DISCONNECT**

2-37. INTERFACE TROUBLESHOOTING (CONT)

2. INTERFACE KIT HYDRAULICS INOPERATIVE.

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
 STE/ICE-R ((Optional) (Item 3, Appendix G)
 Multimeter (Item 44, Appendix G)

Equipment Condition

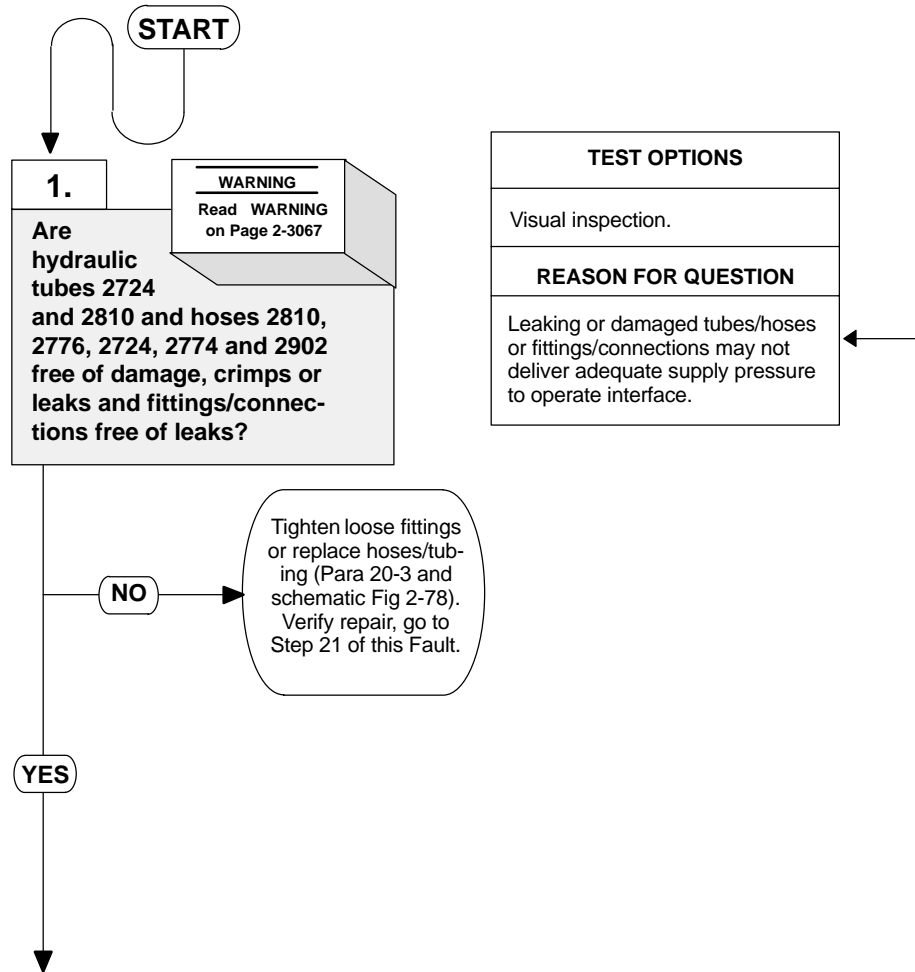
Engine OFF, (TM 9-2320-364-10)
 Parking brake applied, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)

KNOWN INFO

Hydraulic selector switch is in CRANE/SRW mode.
 LHS operates when nothing is connected to interface quick disconnect and hydraulic selector switch is in AUTO or MAN mode.
 Batteries OK.
 EMM module hooked up to truck interface kit.
 Circuit breaker CB29 not tripped.

POSSIBLE PROBLEMS

Hoses or tubes leaking or damaged.
 Quick disconnect faulty.
 LED #3 lamp not illuminated.
 LED #1 lamp not illuminated.
 Auxiliary supply valve faulty.
 Jumperwire in S4 connector terminals 1 and 5 faulty.
 Wire 1731 from connector S4 terminal 1 to connector MC29 terminal D faulty.
 Wire 1731 from connector MC29 terminal D to connector MC135 terminal A faulty.
 Wire 1731 from connector MC135 terminal A to relay R36 terminal 86 faulty.
 LED #3 lamp faulty.
 Wire 1435 from relay R36 terminal 85 to rectifier terminal AC faulty.
 Rectifier faulty.
 Wire 1435A from connector MC135 terminal H to connector MC131 terminal A faulty.
 Circuit breaker CB29 faulty.
 Wire 1789 from circuit breaker CB29 to relay R36 terminal 30 faulty.
 Relay R36 faulty.
 Wire 1792 from relay R36 terminal 87 to LED #1 lamp faulty.
 LED #1 lamp faulty.
 Wire 1792 from LED #1 lamp to connector MC135 terminal F and to connector MC134 terminal 1 faulty.
 Wire 1435B from LED #1 lamp to connector MC134 terminal 2 and to connector MC131 terminal C faulty.



TEST OPTIONS

Visual inspection.

REASON FOR QUESTION

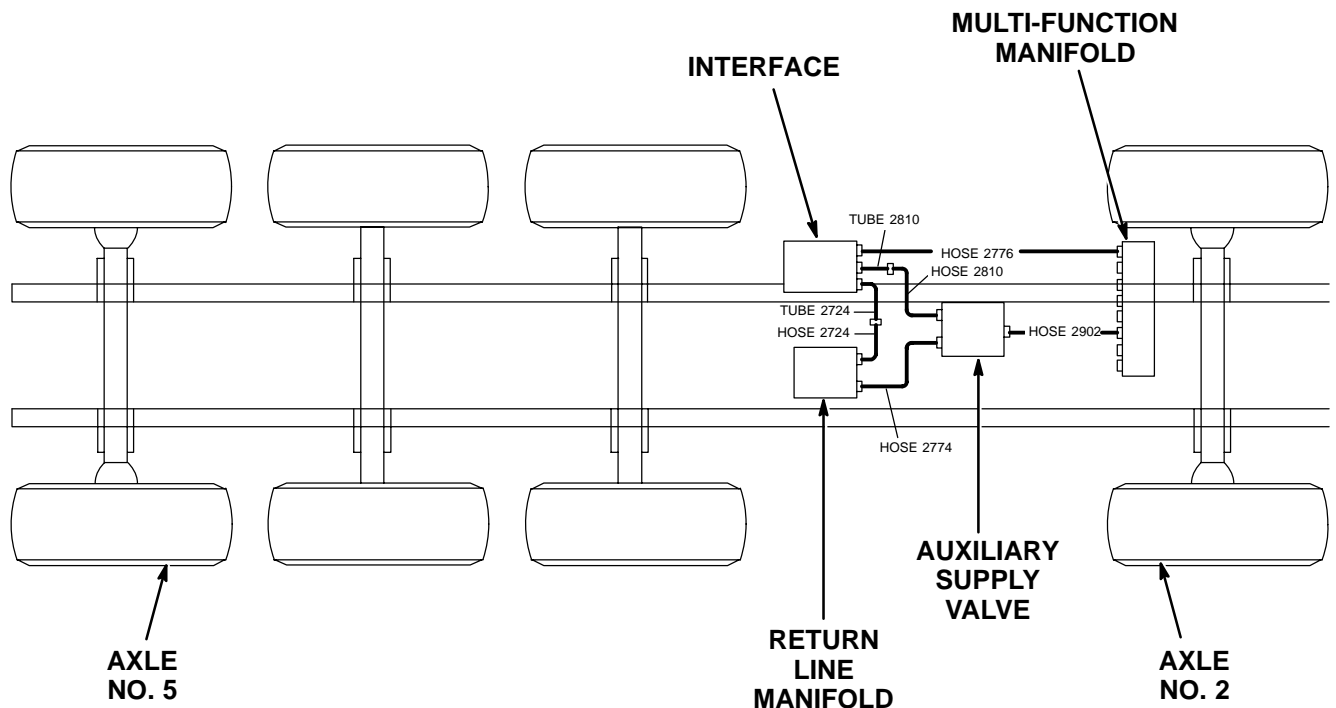
Leaking or damaged tubes/hoses or fittings/connections may not deliver adequate supply pressure to operate interface.

WARNING

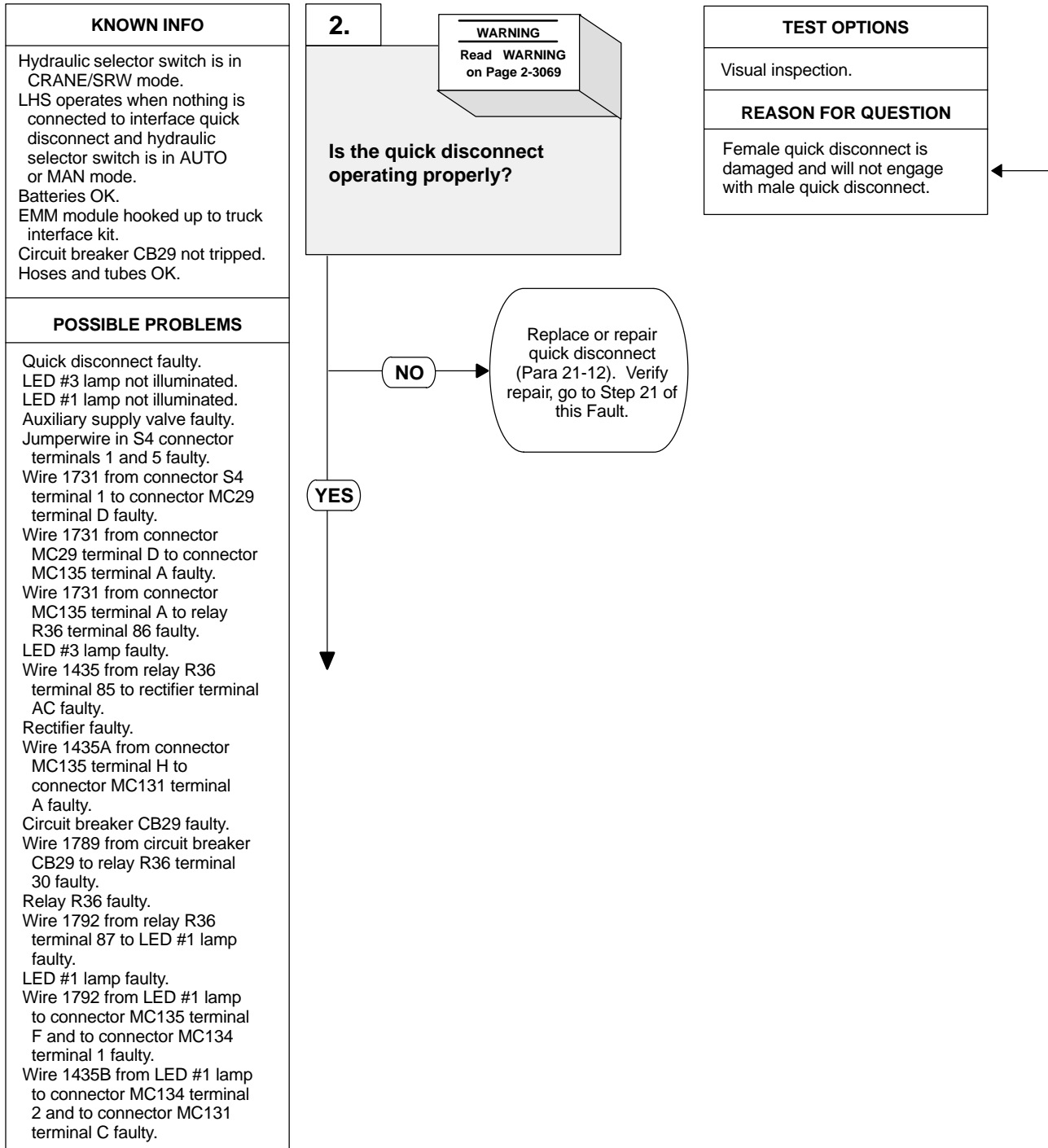
High pressure hydraulics [oil under 3700 psi (25,512 kPa) pressure] operate this equipment. Refer to vehicle operator and maintenance manuals for hydraulic oil pressure. Never disconnect any hydraulic line or fittings without first dropping pressure to zero. A high pressure oil stream can pierce body and cause severe injury to personnel.

VISUAL INSPECTION

- (1) Inspect interface hydraulic tubes 2724 and 2810 and hoses 2774, 2724, 2810, 2776 and 2902 for damage, crimps or leaks.
- (2) If hoses/tubes are damaged, crimped or leaking, tighten fittings or replace hoses/tubing (Para 20-3 and schematic Fig 2-78).



2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).

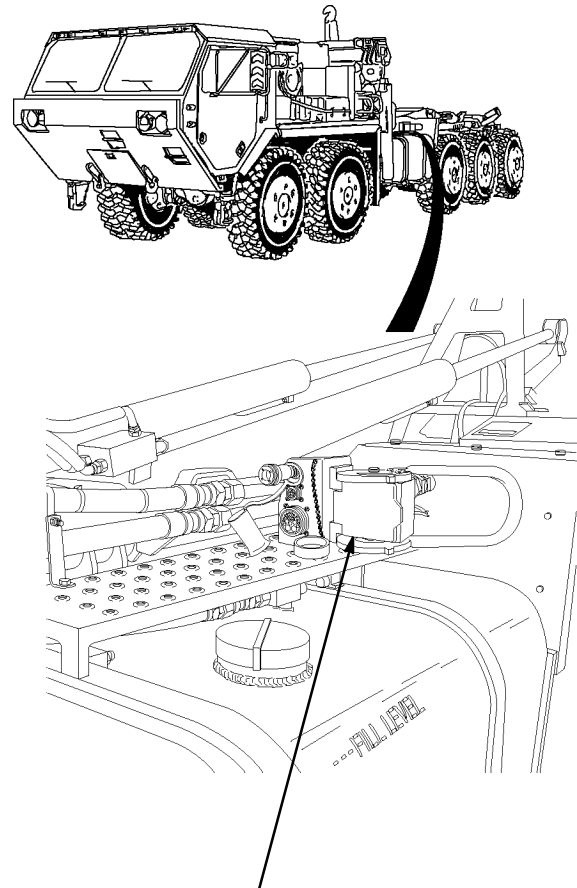


WARNING

High pressure hydraulics [oil under 3700 psi (25,512 kPa) pressure] operate this equipment. Refer to vehicle operator and maintenance manuals for hydraulic oil pressure. Never disconnect any hydraulic line or fittings without first dropping pressure to zero. A high pressure oil stream can pierce body and cause severe injury to personnel.

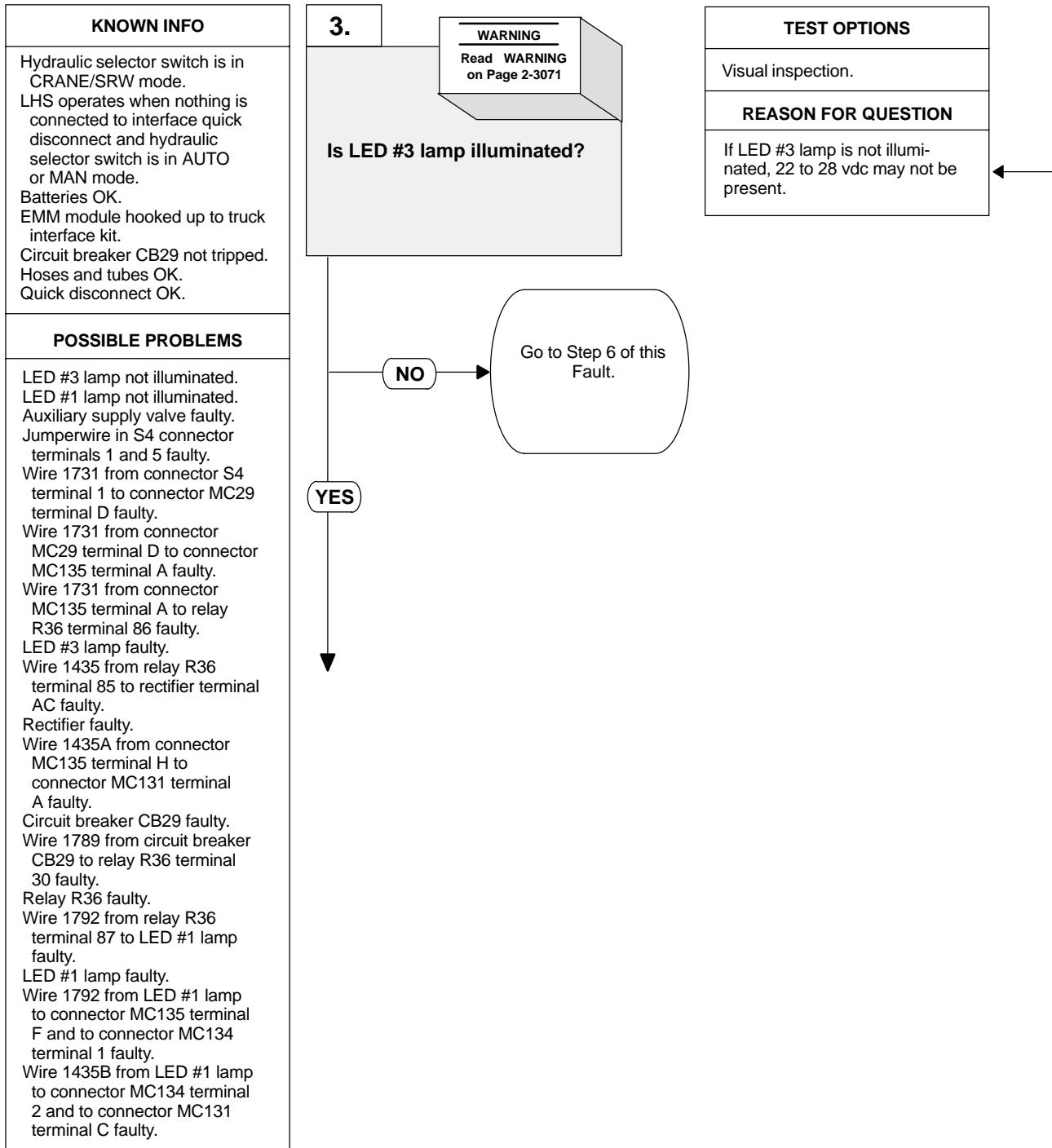
VISUAL INSPECTION

- (1) Remove quick disconnect from mounting bracket (Para 21-12).
- (2) Inspect quick disconnect safety nut release.
- (3) Inspect moveable components for dirt, sticking, or any other physical damage.
 - (a) If quick disconnect is damaged, repair or replace (Para 21-12).
 - (b) If quick disconnect is not damaged, quick disconnect is OK.
- (4) Install quick disconnect (Para 21-12).



**QUICK
DISCONNECT**

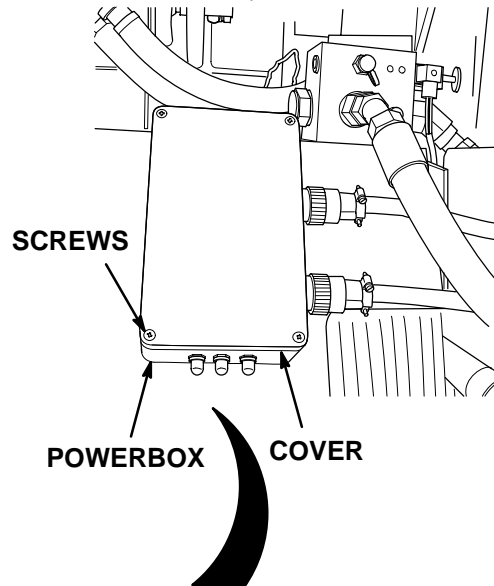
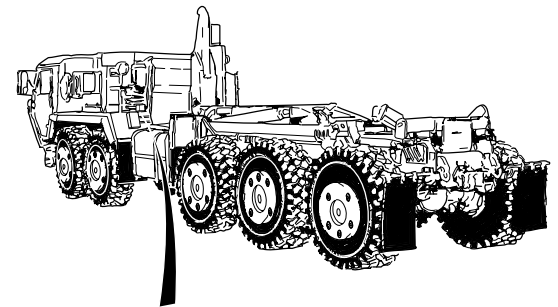
2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



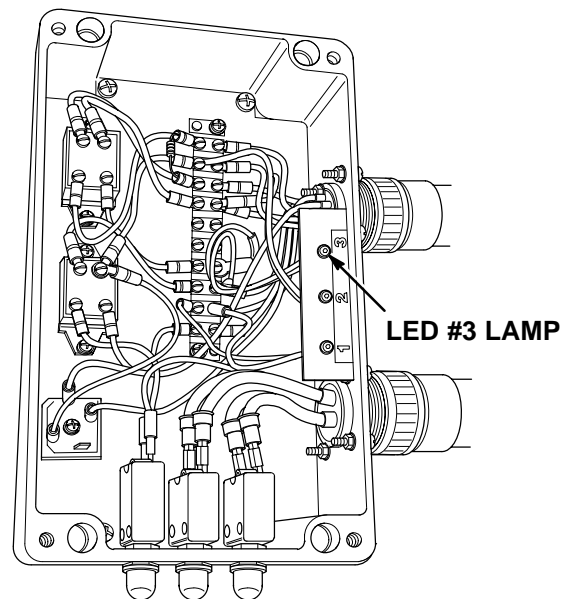
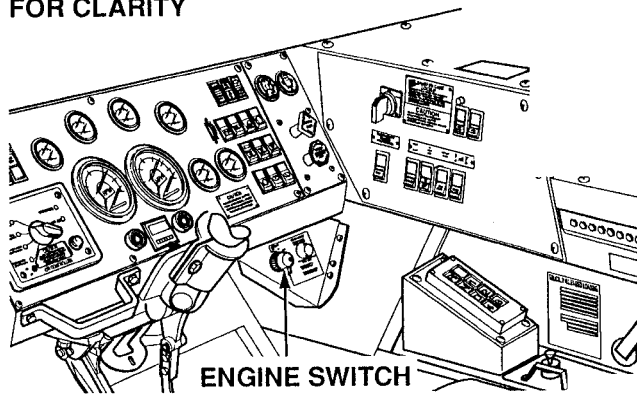
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

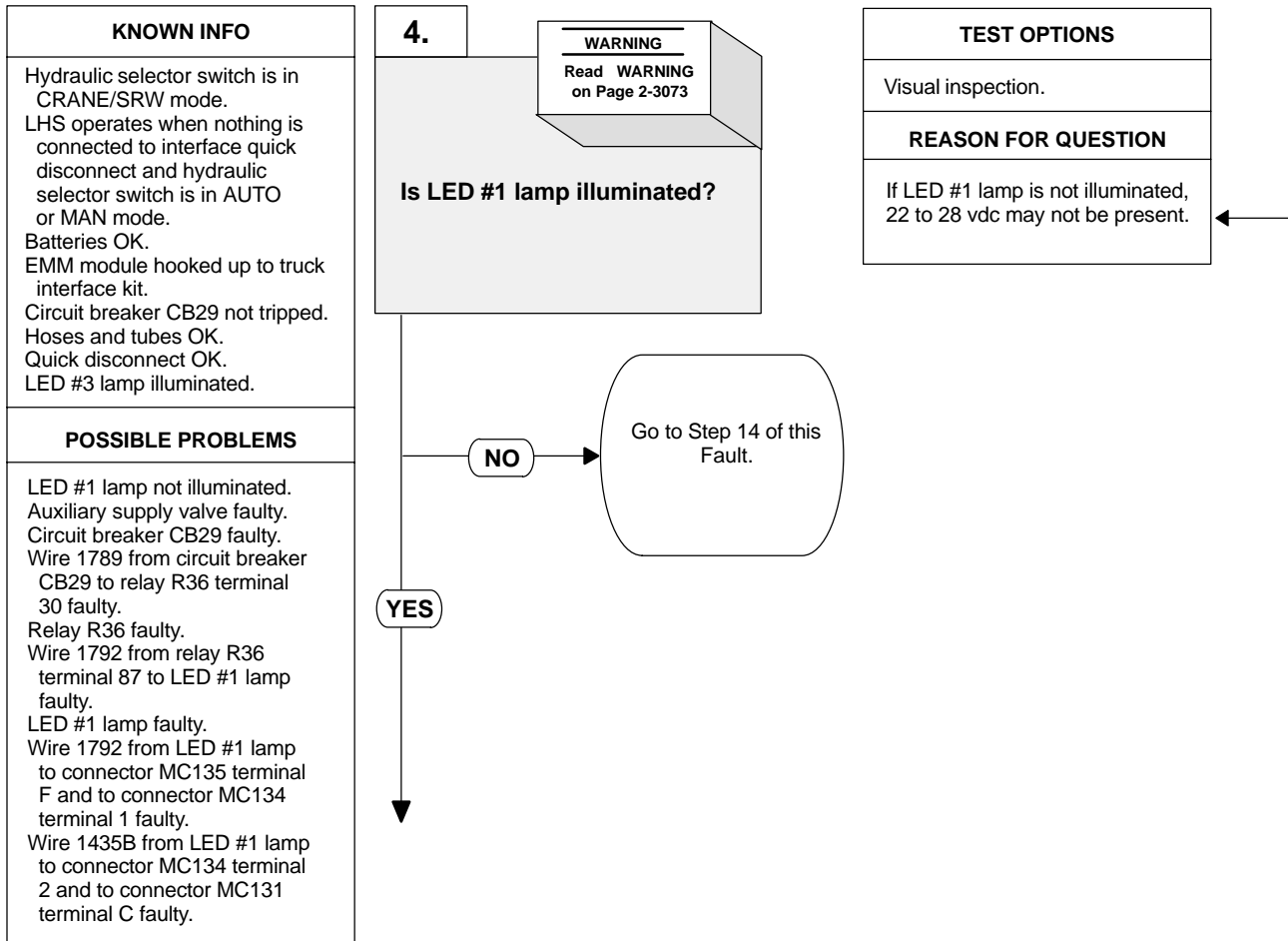
- VISUAL INSPECTION**
- (1) Loosen four screws and remove powerbox cover.
 - (2) Turn ON ENGINE switch (TM 9-2320-364-10).
 - (3) Check LED #3 lamp for illumination.
 - (a) If LED #3 lamp is not illuminated, go to Step 6 of this Fault.
 - (b) If LED #3 lamp is illuminated, perform Step (4) below and go to Step 4 of this Fault. LED #3 lamp is OK.
 - (4) Turn OFF ENGINE switch.



STEERING WHEEL SHOWN REMOVED FOR CLARITY



2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).

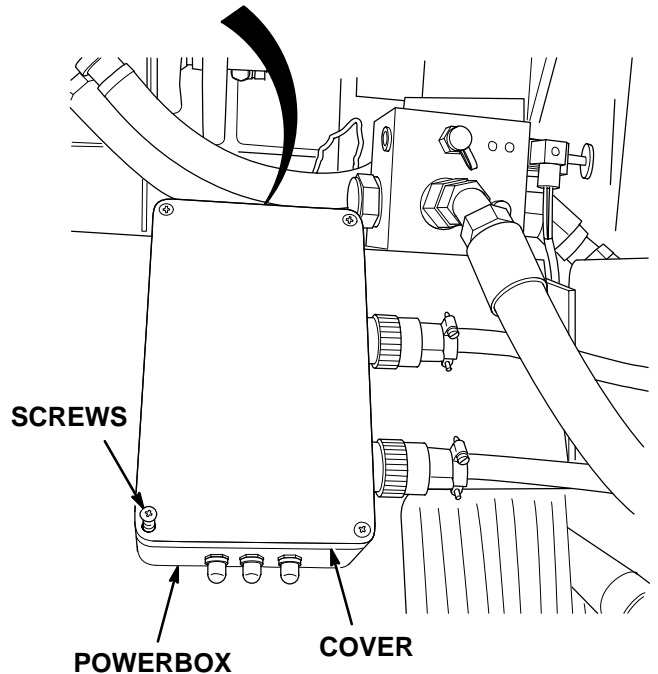
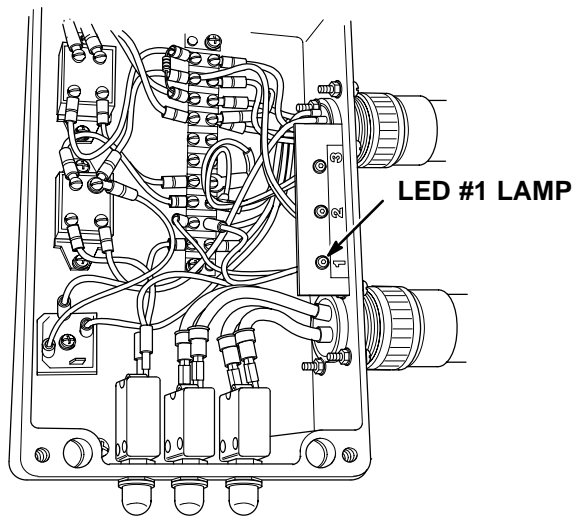
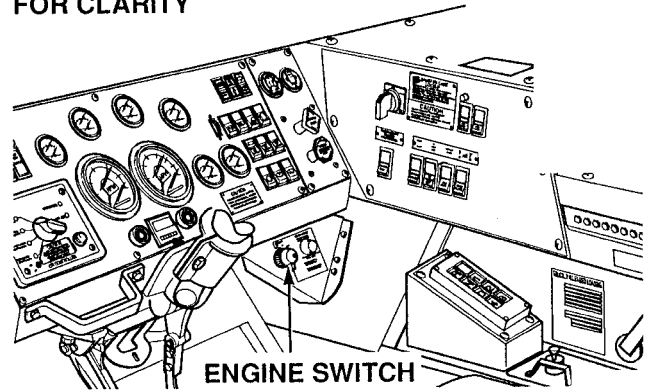


WARNING

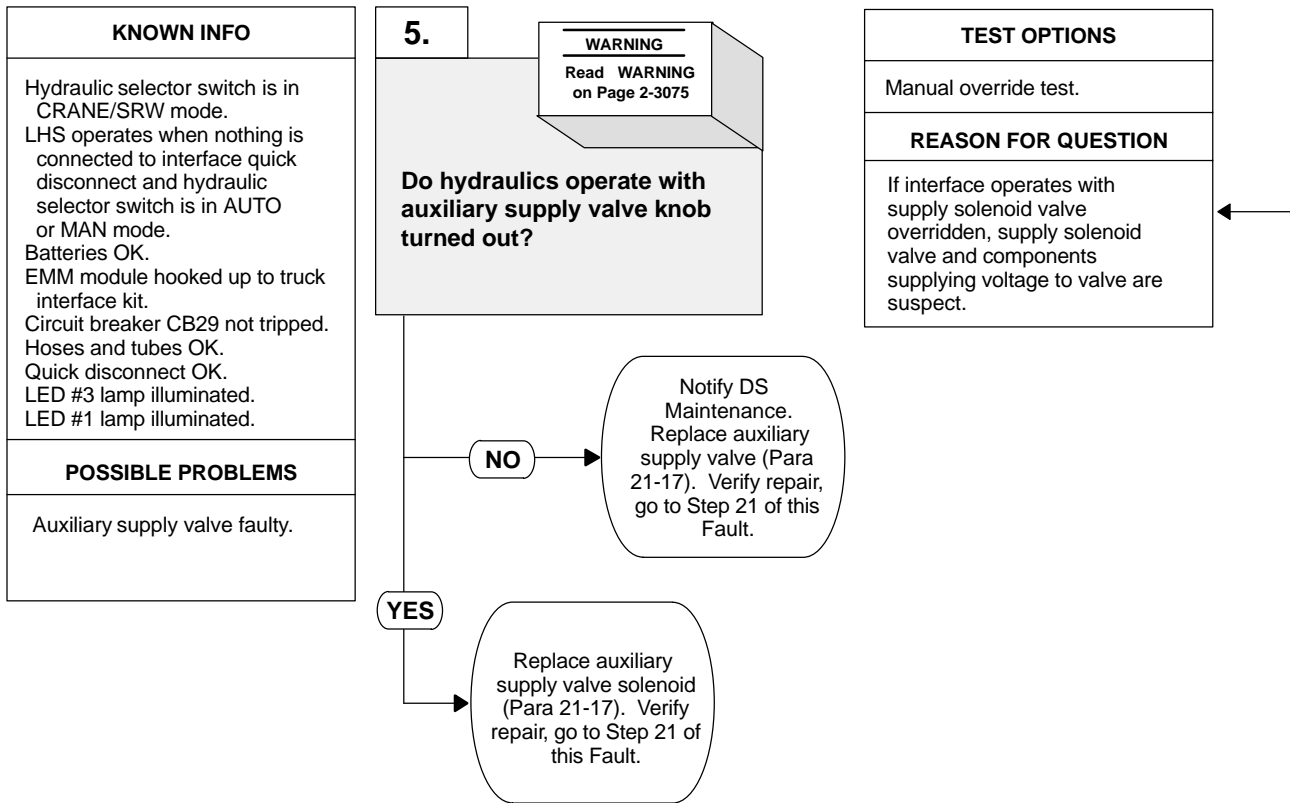
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- VISUAL INSPECTION**
- (1) Turn ON ENGINE switch (TM 9-2320-364-10).
 - (2) Check LED #1 lamp for illumination.
 - (a) If LED #1 lamp is not illuminated, go to Step 14 of this Fault.
 - (b) If LED #1 lamp is illuminated, perform Steps (3) and (4) below and go to Step 5 of this Fault. LED #1 lamp is OK.
 - (3) Turn OFF ENGINE switch.
 - (4) Install powerbox cover and tighten four screws.

STEERING WHEEL SHOWN REMOVED FOR CLARITY



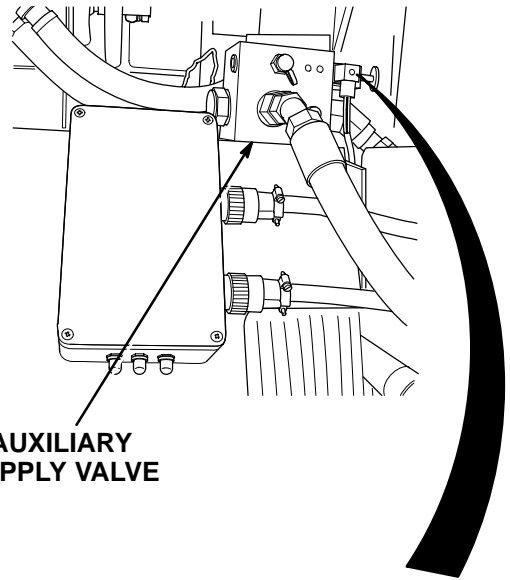
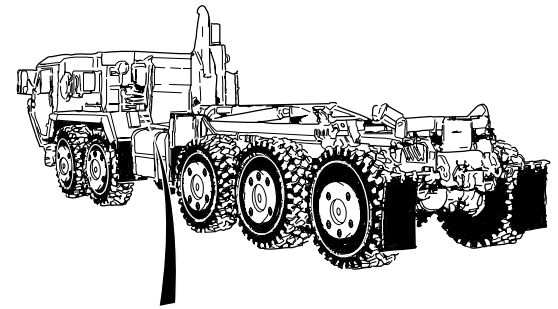
2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



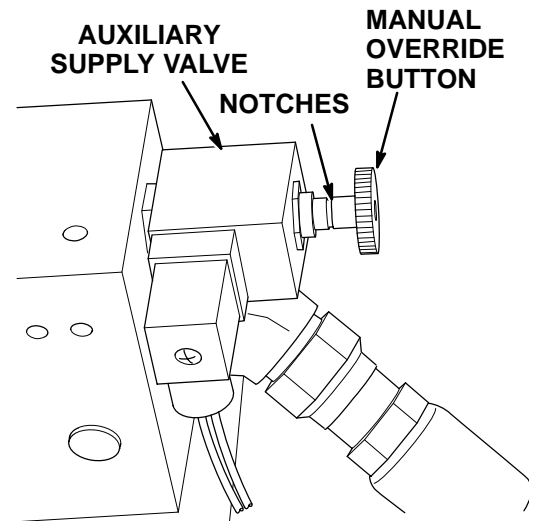
WARNING

High pressure hydraulics [oil under 3700 psi (25,512 kPa) pressure] operate this equipment. Refer to vehicle operator and maintenance manuals for hydraulic oil pressure. Never disconnect any hydraulic line or fittings without first dropping pressure to zero. A high pressure oil stream can pierce body and cause severe injury to personnel.

- MANUAL OVERRIDE TEST**
- (1) Start engine (TM 9-2320-364-10).
 - (2) Open manual override button on auxiliary supply valve solenoid by pulling out past notches and turning clockwise.
 - (3) Set hydraulic selector switch to CRANE/SRW position.
 - (4) Operate Interface:
 - (a) If interface does not operate, perform Steps (5) thru (7) below and replace auxiliary supply valve (Para 21-17) and go to Step 21 of this Fault.
 - (b) If interface operates, perform Steps (5) thru (7) below and replace auxiliary supply valve solenoid (Para 21-17), and go to Step 21 of this Fault.
 - (5) Set hydraulic selector switch to OFF position.
 - (6) Shut off engine.
 - (7) Close auxiliary supply valve solenoid valve manual override button.



AUXILIARY SUPPLY VALVE



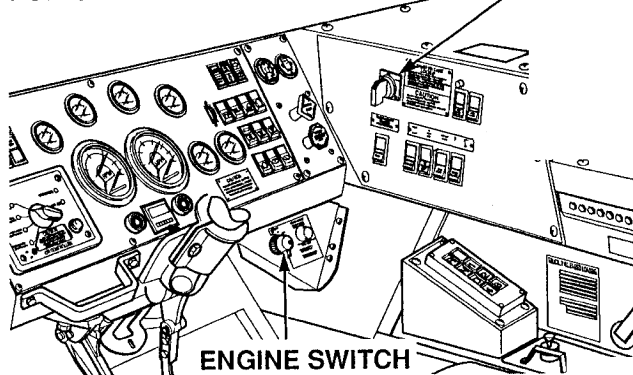
AUXILIARY SUPPLY VALVE

NOTCHES

MANUAL OVERRIDE BUTTON

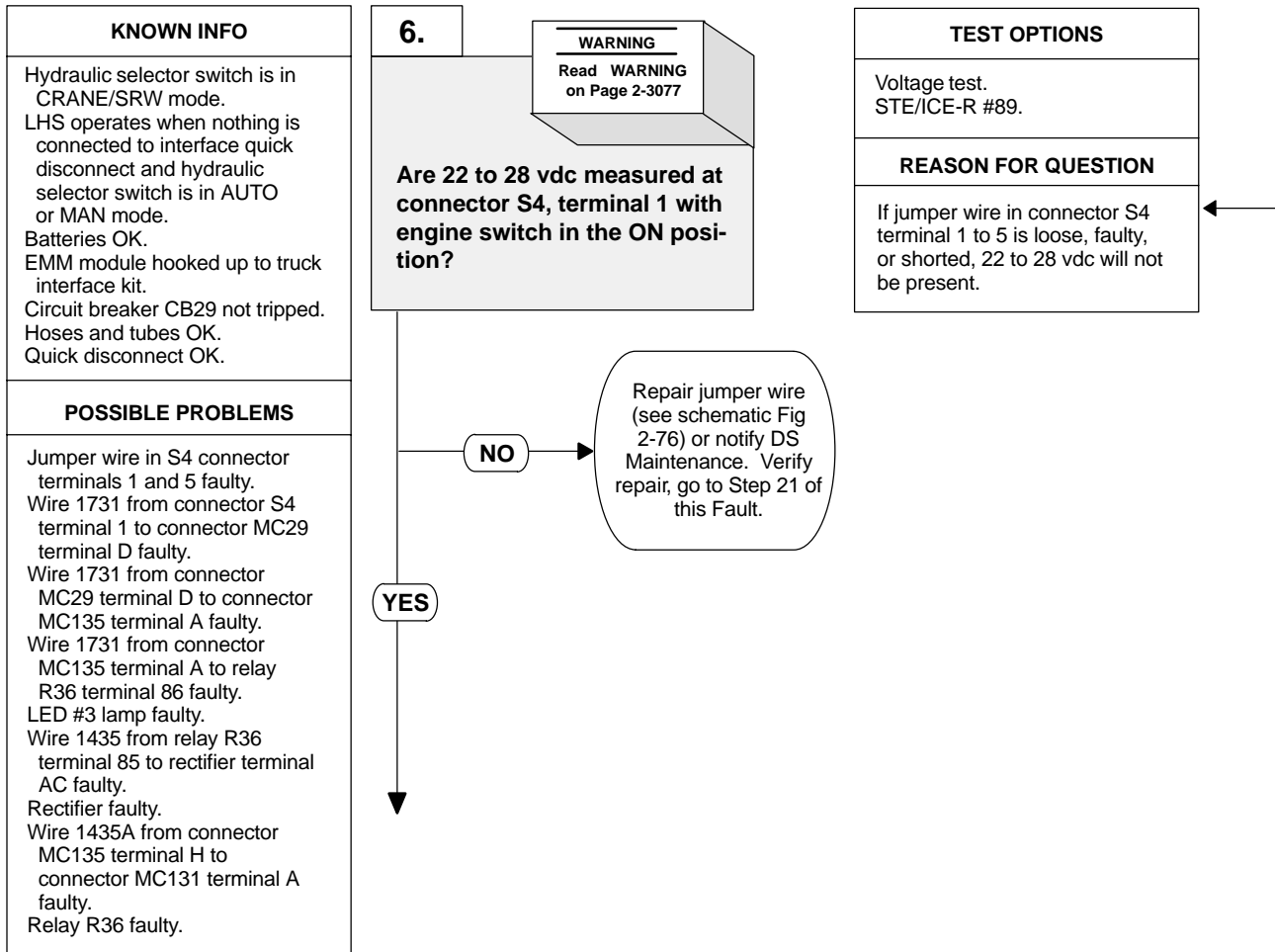
STEERING WHEEL SHOWN REMOVED FOR CLARITY

HYDRAULIC SELECTOR SWITCH



ENGINE SWITCH

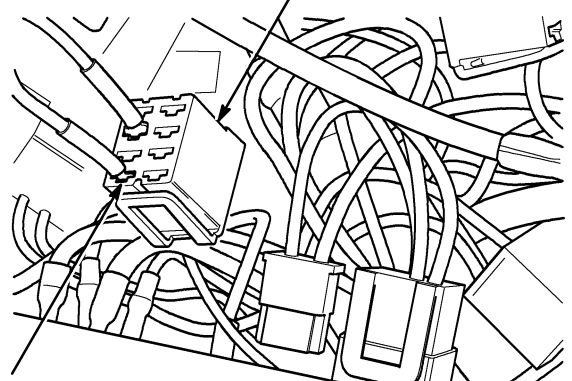
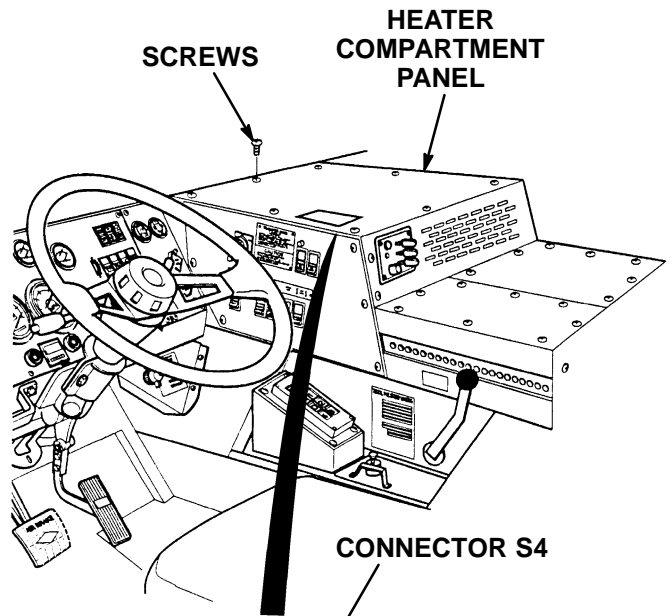
2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



WARNING

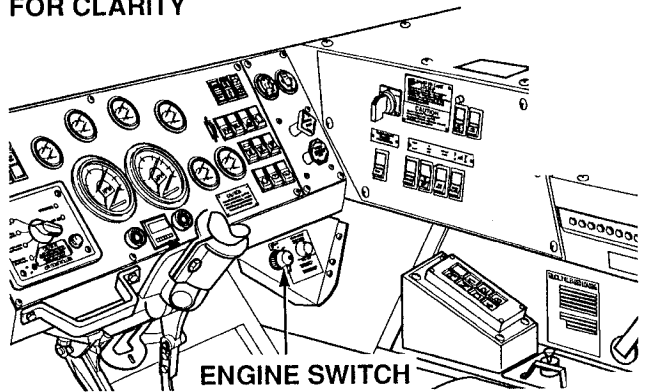
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST
(1) Remove eight screws and heater compartment panel.
(2) Disconnect jumper wire from connector S4 terminal 1.
(3) Connect positive (+) multimeter lead to jumper wire.
(4) Connect negative (-) multimeter lead to a know good ground.
(5) Turn ON ENGINE switch (TM 9-2320-364-10).
(a) If 22 to 28 vdc are present, perform Step (6) below and repair jumper wire (see schematic Fig 2-76) or notify DS Maintenance.
(b) If 22 to 28 vdc are present, perform Steps (6), (7) and (8) below and go to Step 7 of this Fault.
(6) Turn OFF ENGINE switch.
(7) Connect jumper wire to connector S4 terminal 1.
(8) Install heater compartment panel with eight screws.

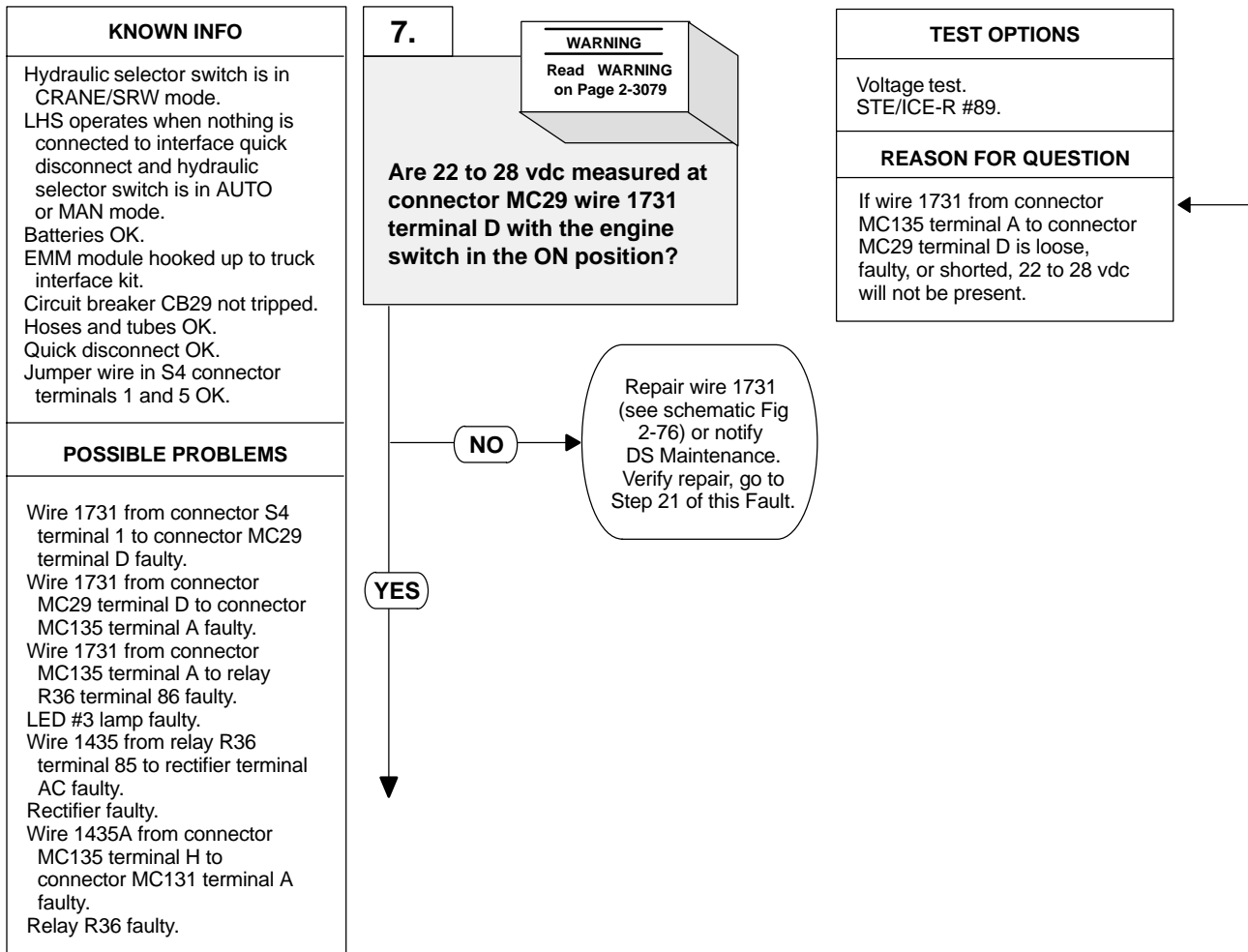


TERMINAL 1

STEERING WHEEL SHOWN REMOVED FOR CLARITY

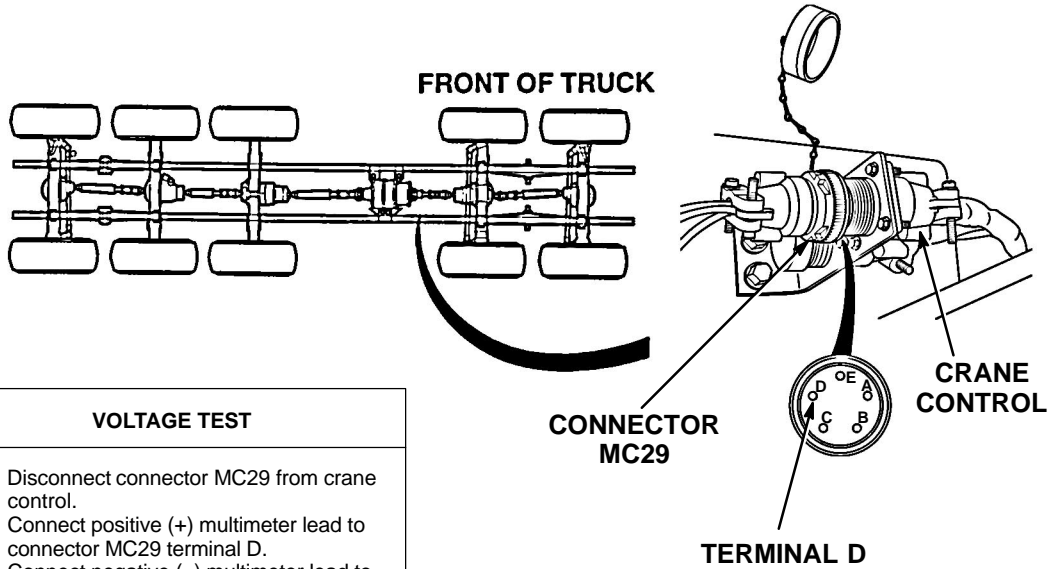


2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



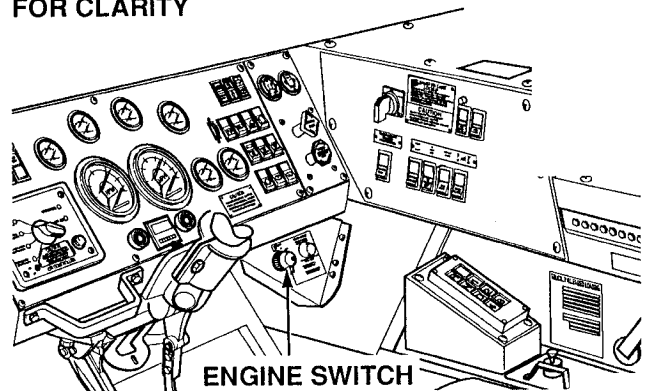
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

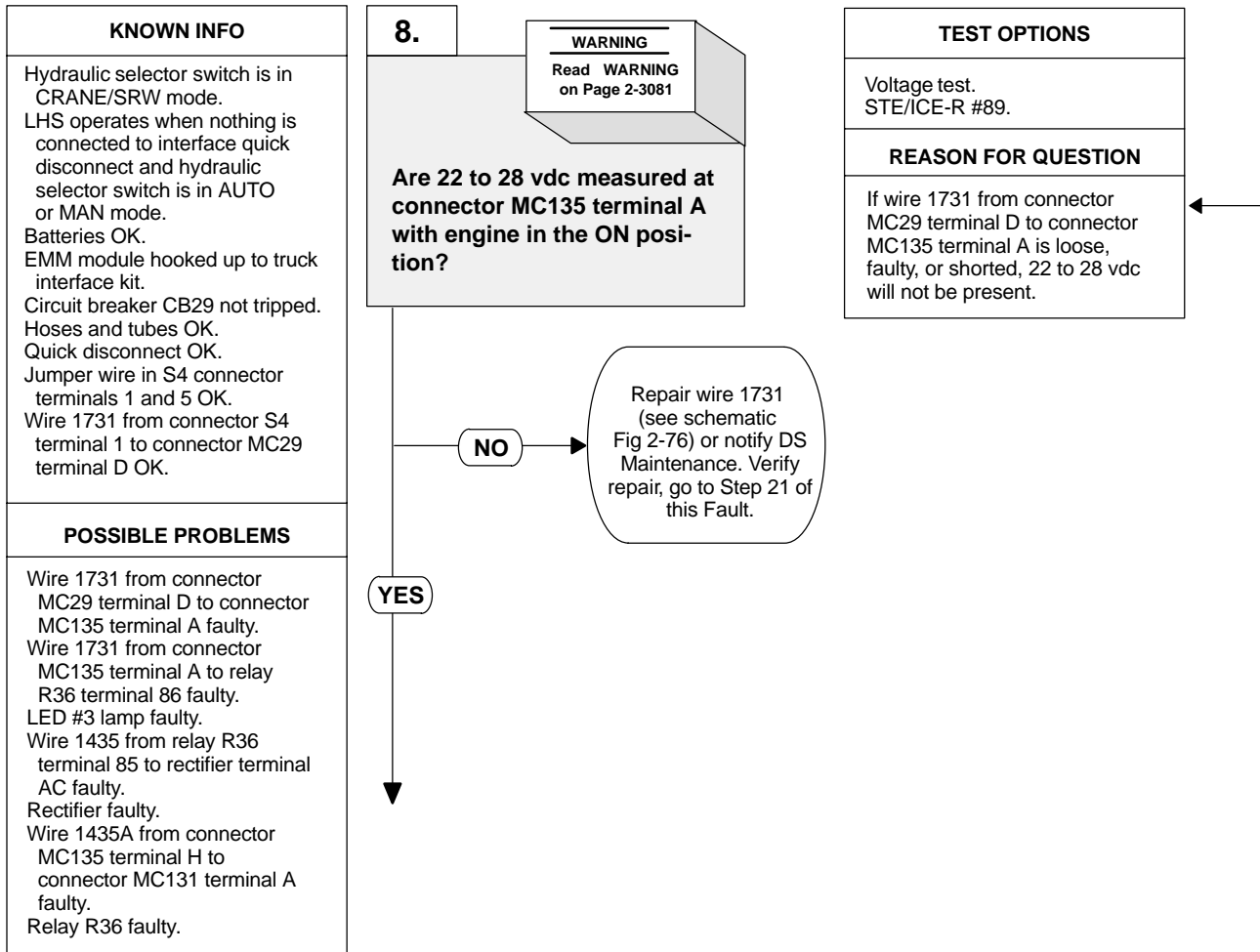


VOLTAGE TEST
(1) Disconnect connector MC29 from crane control.
(2) Connect positive (+) multimeter lead to connector MC29 terminal D.
(3) Connect negative (-) multimeter lead to a known good ground.
(4) Turn ON ENGINE switch (TM 9-2320-364-10).
(a) If 22 to 28 vdc are not present, perform Step (5) below and repair wire 1731 (see schematic Fig 2-76) or notify DS Maintenance.
(b) If 22 to 28 vdc are present, perform Steps (5) and (6) below and go to Step 8 of this Fault.
(5) Turn OFF ENGINE switch.
(6) Connect connector MC29 to crane control.

STEERING WHEEL SHOWN REMOVED FOR CLARITY



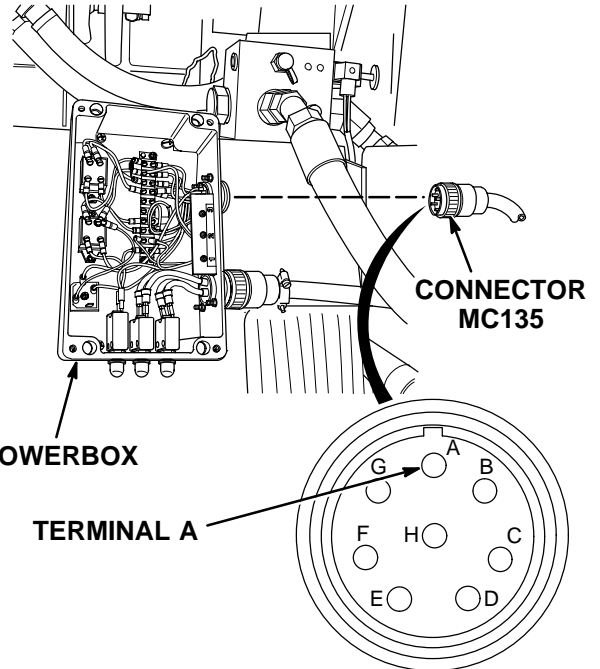
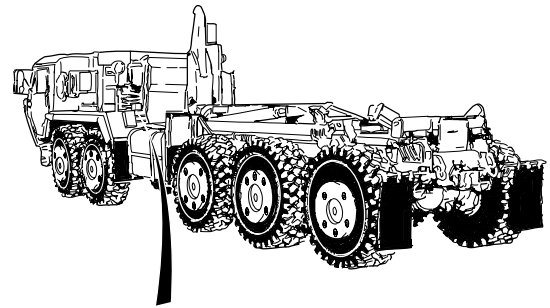
2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



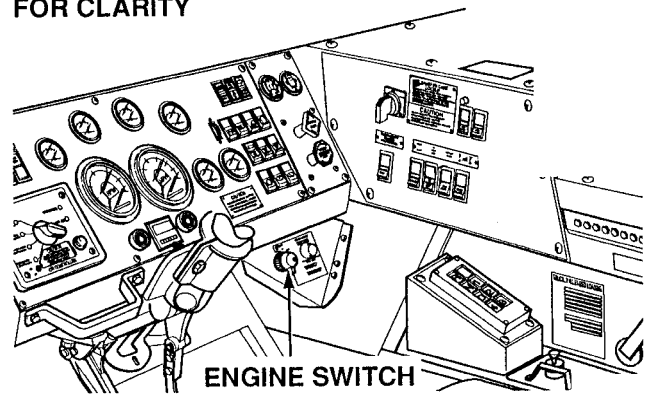
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

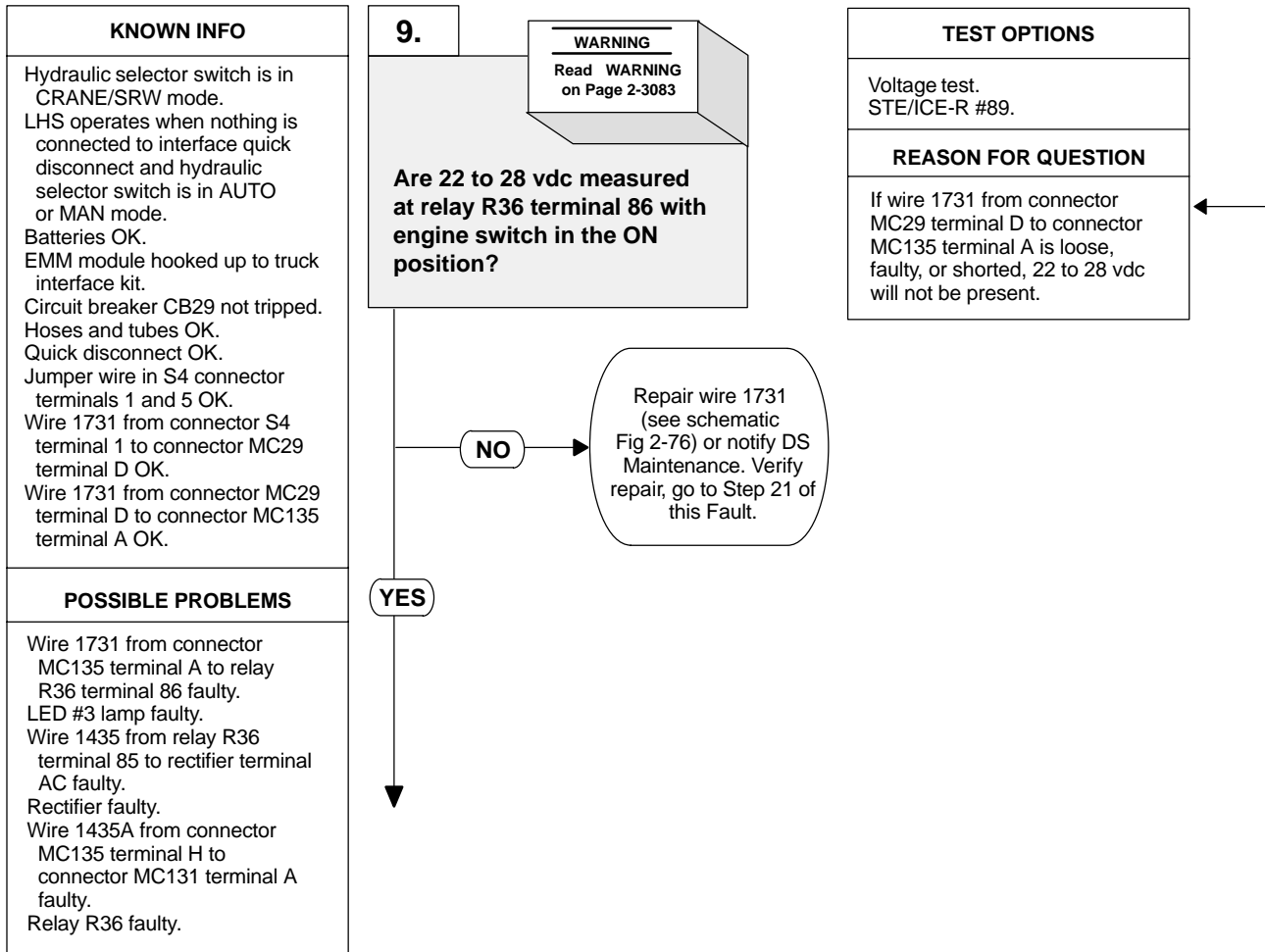
- | VOLTAGE TEST | |
|--------------|---|
| (1) | Disconnect connector MC135 from powerbox. |
| (2) | Connect positive (+) multimeter lead to connector MC135 terminal A. |
| (3) | Connect negative (-) multimeter lead to a known good ground. |
| (4) | Turn ON ENGINE switch (TM 9-2320-364-10). |
| (a) | If 22 to 28 vdc are not present, perform Step (5) below and repair wire 1731 (see schematic Fig 2-76) or notify DS Maintenance. |
| (b) | If 22 to 28 vdc are present, perform Steps (5) and (6) below and go to Step 9 of this Fault. |
| (5) | Turn OFF ENGINE switch. |
| (6) | Connect connector MC135 to powerbox. |



**STEERING WHEEL
SHOWN REMOVED
FOR CLARITY**



2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).

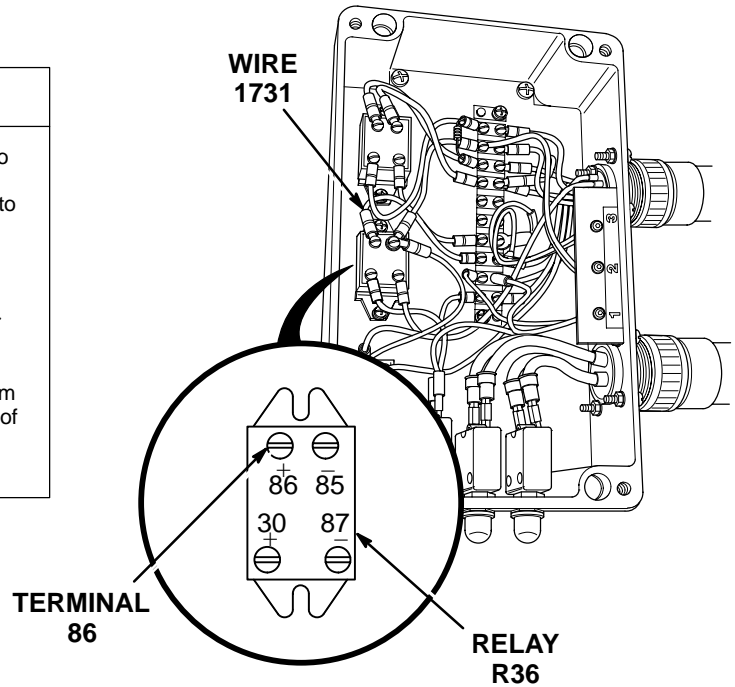


WARNING

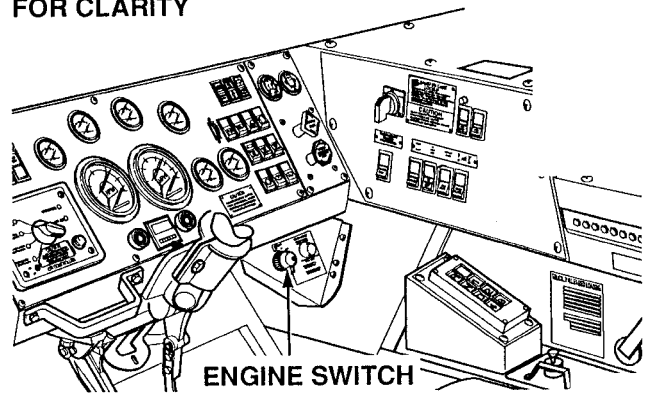
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

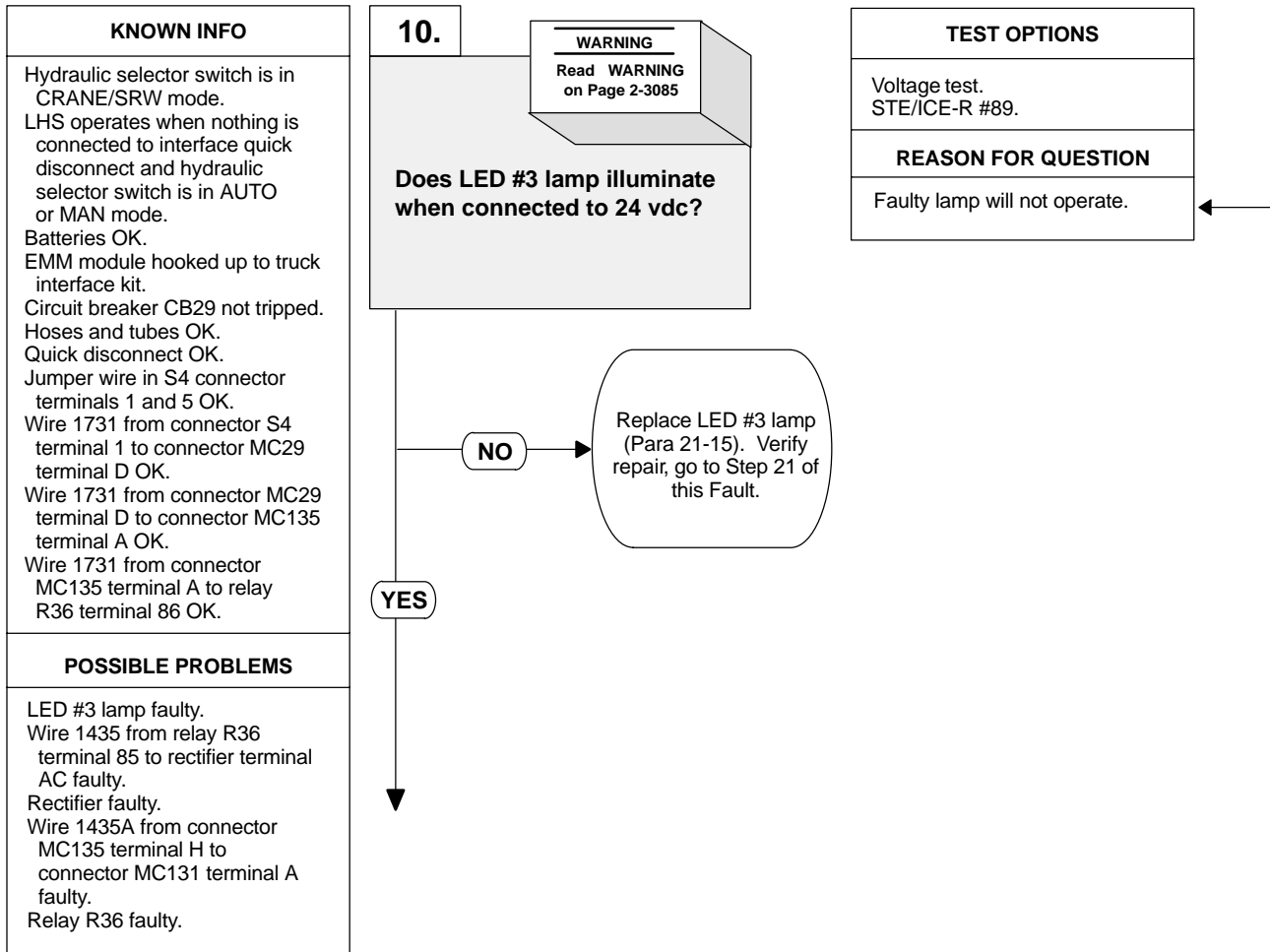
- (1) Connect positive (+) multimeter lead to relay R36 terminal 86.
- (2) Connect negative (-) multimeter lead to a known good ground.
- (3) Turn on engine switch (TM 9-2320-364-10).
 - (a) If 22 to 28 vdc are not present, perform Step (4) below and repair wire 1731 (see schematic Fig 2-76) or notify DS Maintenance.
 - (b) If 22 to 28 vdc are present, perform Step (4) below and go to Step 10 of this Fault.
- (4) Turn OFF ENGINE switch.



STEERING WHEEL SHOWN REMOVED FOR CLARITY



2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



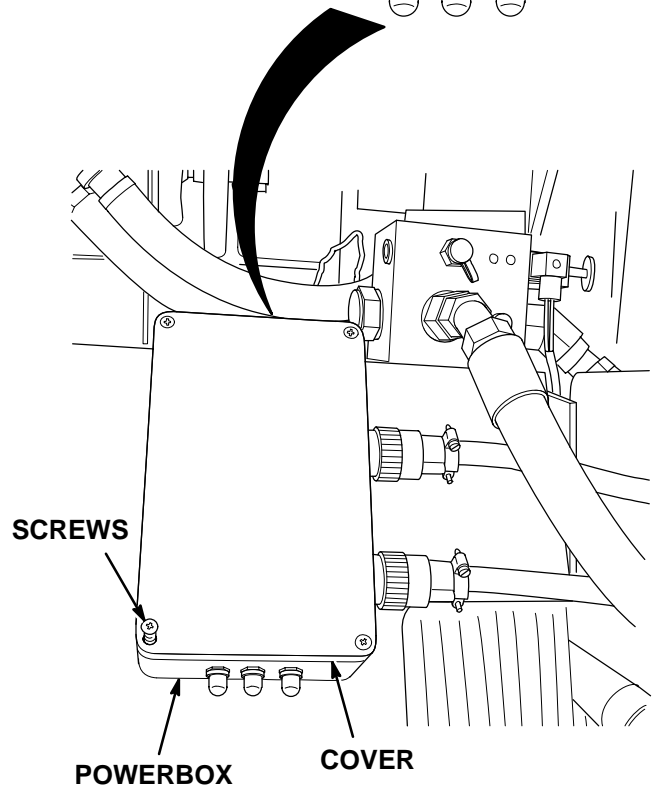
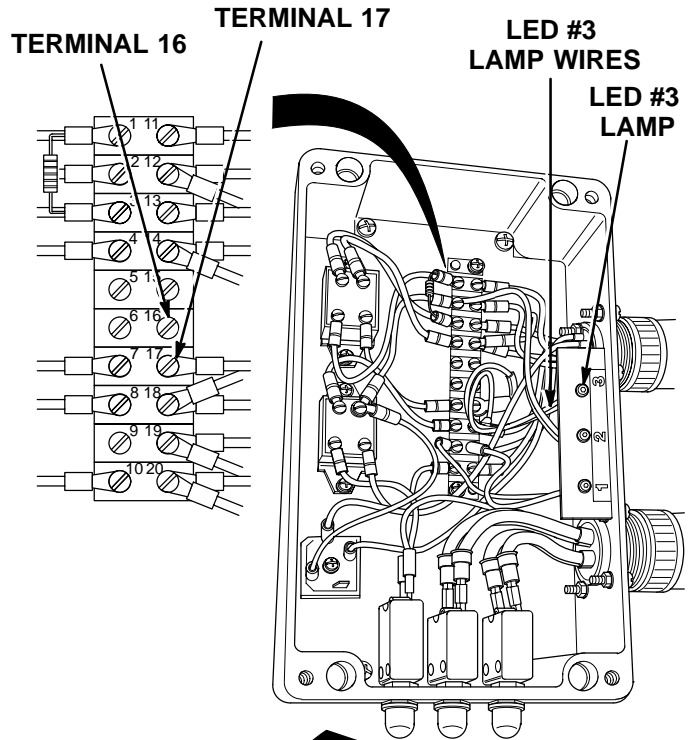
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

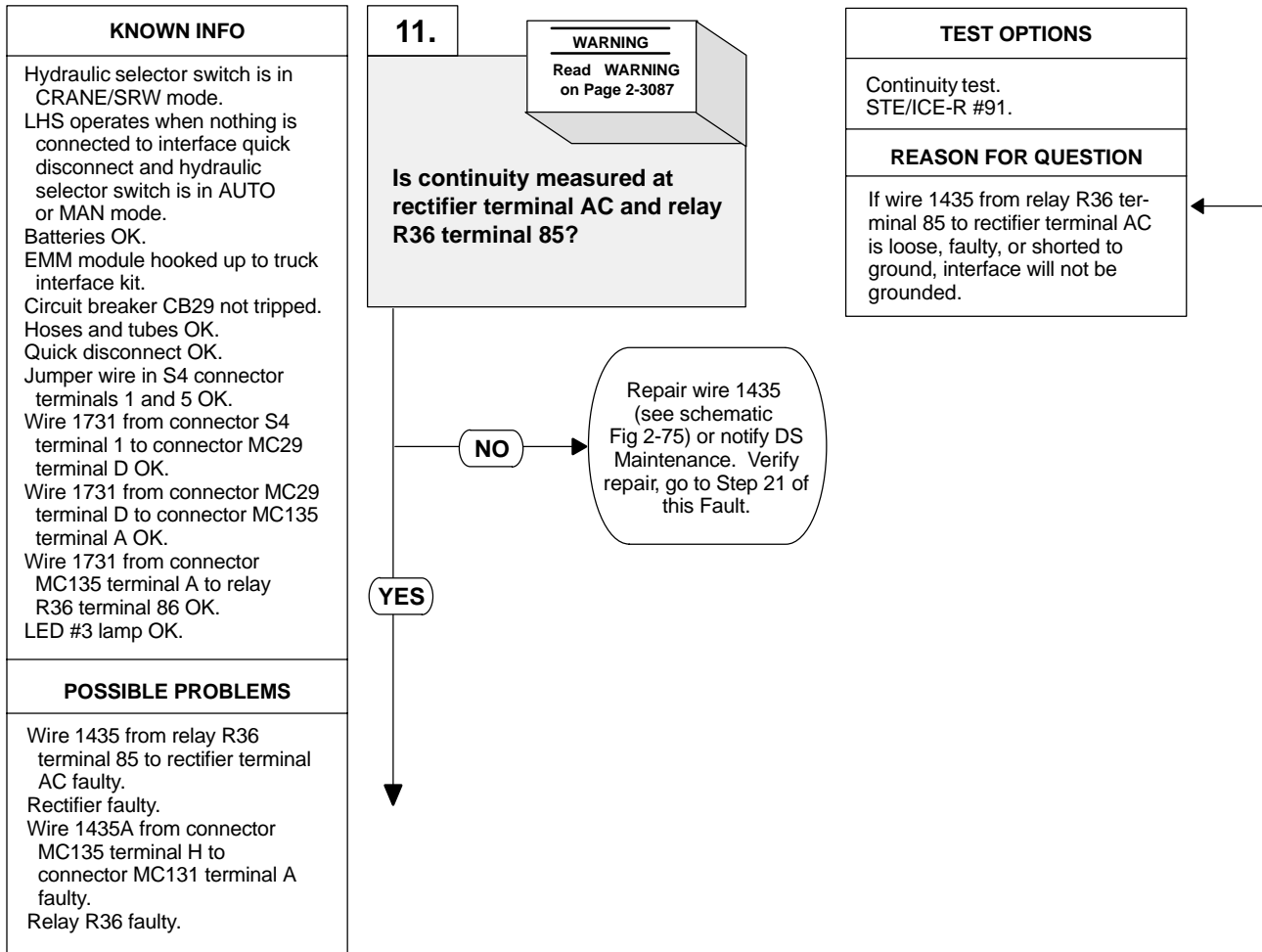
NOTE

Tag and mark wires prior to removal.

VOLTAGE TEST	
(1)	Remove LED #3 lamp wires from power box terminals 16 and 17.
(2)	Connect LED #3 lamp wires to known good 24 vdc.
(a)	If LED #3 lamp does not illuminate, replace LED #3 lamp (Para 21-15) and perform Steps (3) and (4) below.
(b)	If LED #3 lamp does illuminate, LED #3 lamp is OK. Perform Step (3) below and go to Step 11 of this Fault.
(3)	Install LED #3 lamp wires to powerbox terminals 16 and 17.
(4)	Install powerbox cover and tighten four screws.



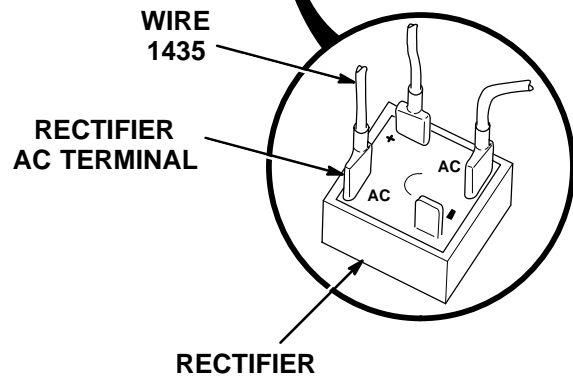
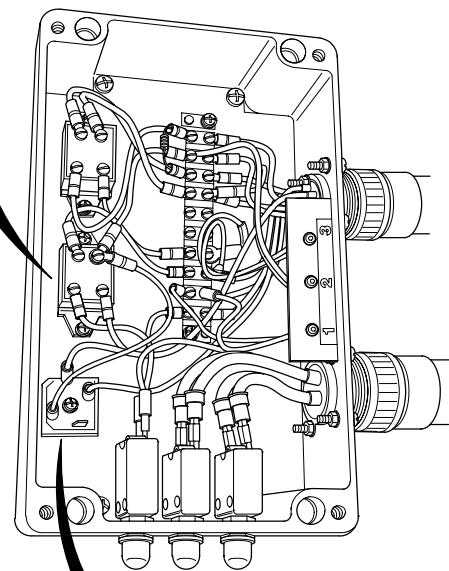
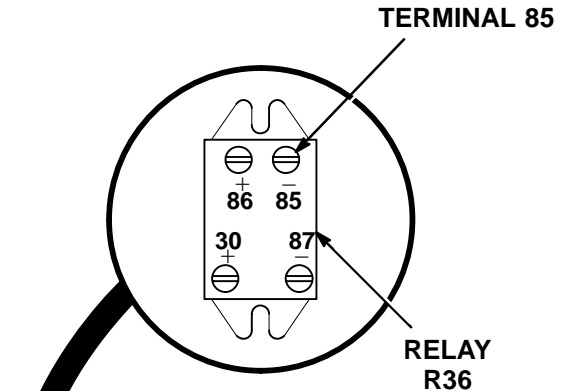
2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



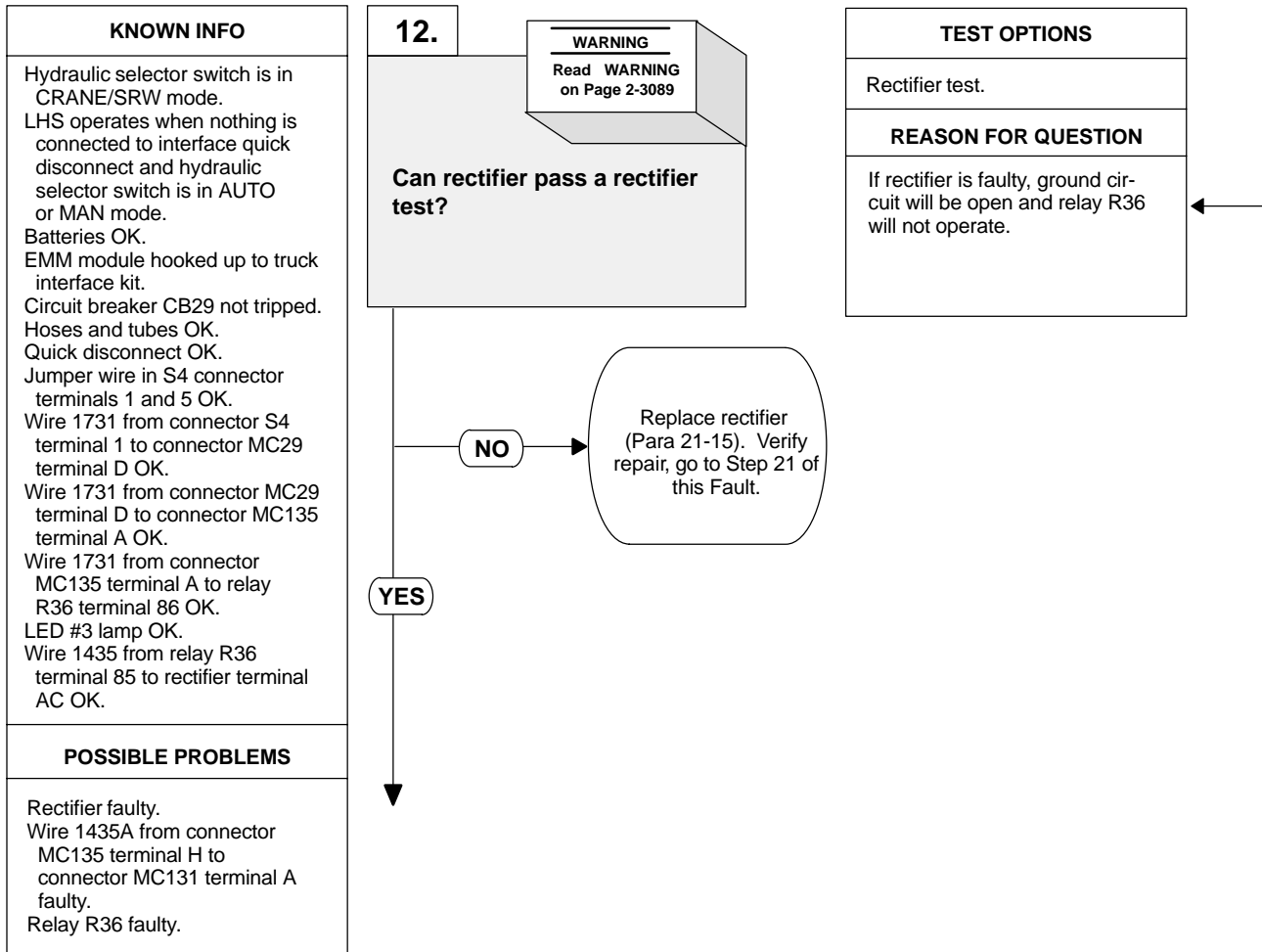
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST
(1) Set multimeter select switch to OHMS.
(2) Is there continuity between wire 1435 from rectifier AC terminal and relay R36 terminal 85?
(a) If there is no continuity, repair wire 1435 (see schematic Fig 2-75) or notify DS Maintenance.
(b) If there is continuity, wire 1435 is OK.



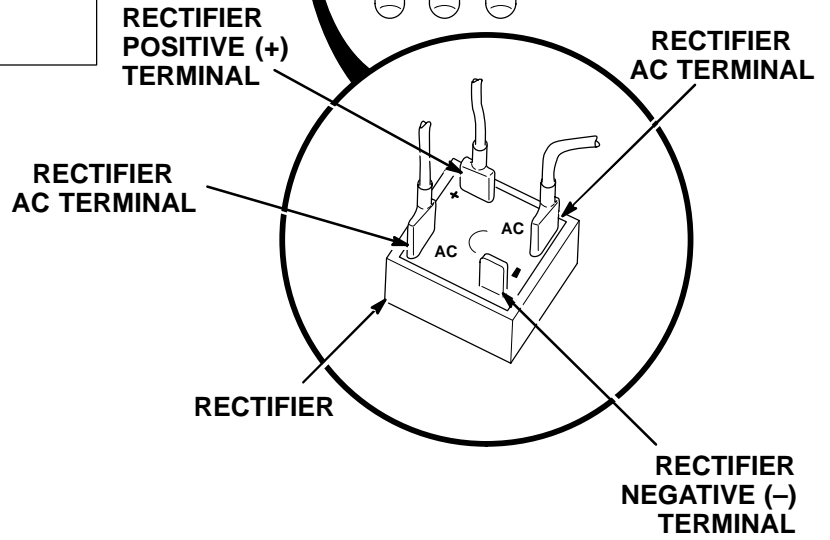
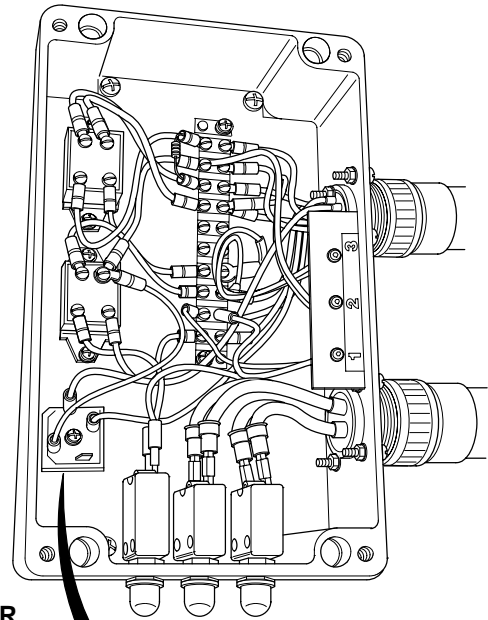
2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



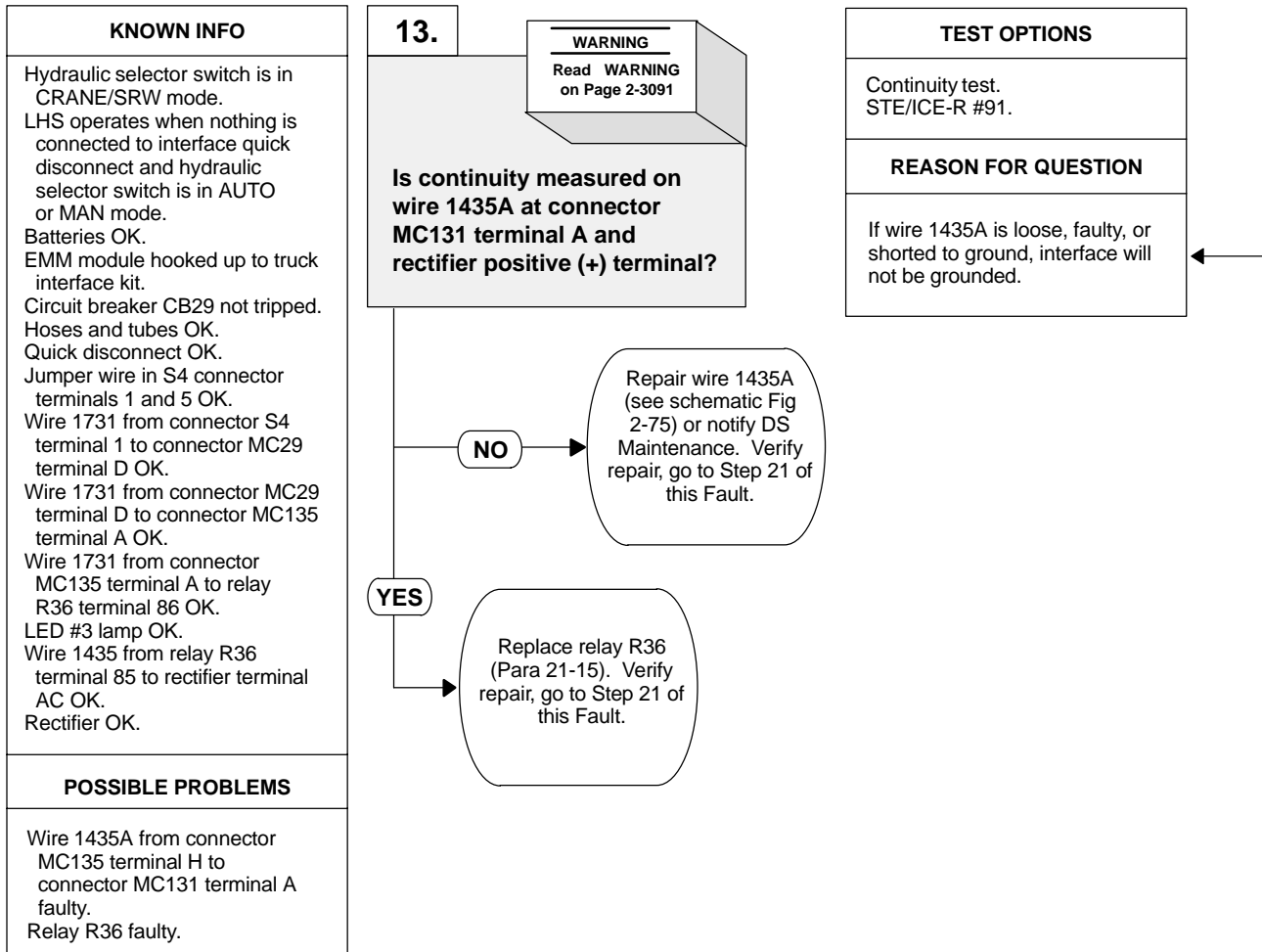
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- | RECTIFIER TEST |
|---|
| (1) Identify, tag and disconnect wires from rectifier. |
| (2) Set multimeter select switch to DIODE CHECK. |
| (3) Connect positive (+) multimeter lead to negative rectifier terminal. |
| (4) Connect negative (-) multimeter lead to each rectifier AC terminal one at a time. |
| (a) If vdc are not present at either AC terminal, replace rectifier (Para 21-15). |
| (b) If vdc are present at both AC terminals, go to Step (5) below. |
| (5) Connect negative (-) multimeter lead to positive (+) rectifier terminal. |
| (6) Connect positive (+) multimeter lead to each rectifier AC terminal one at a time. |
| (a) If vdc are not present at either AC terminal, replace rectifier (Para 21-15). |
| (b) If vdc are present at both AC terminals, rectifier is OK. |
| (7) Connect wires to rectifier. |

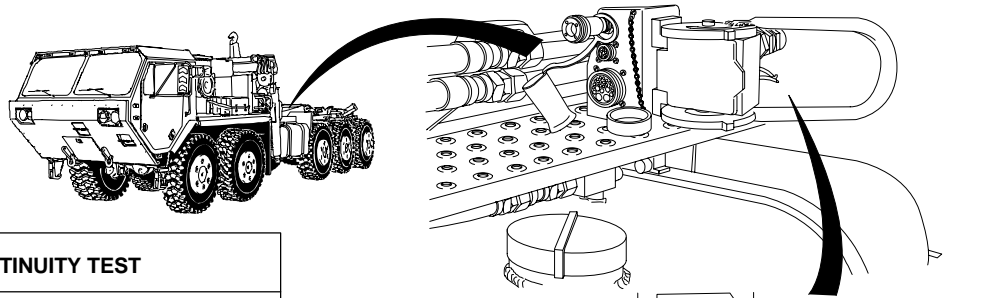


2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



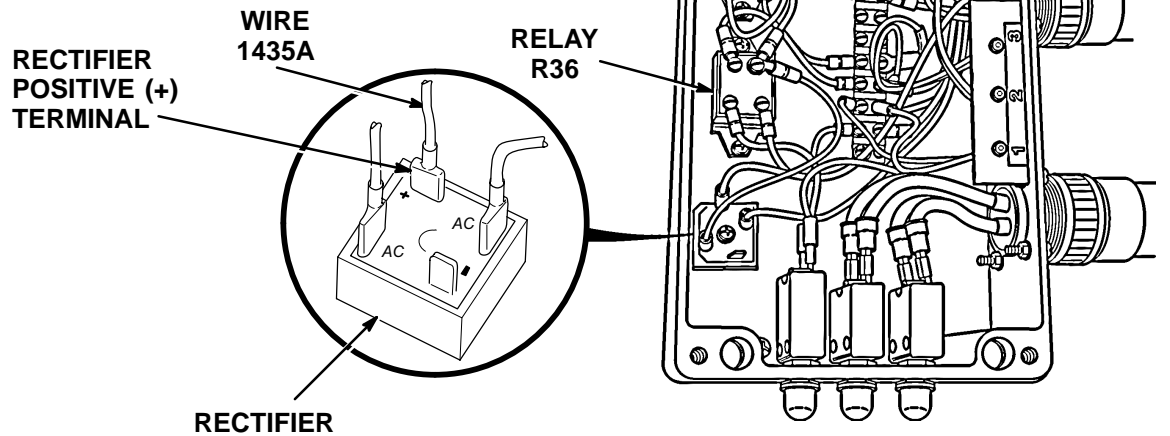
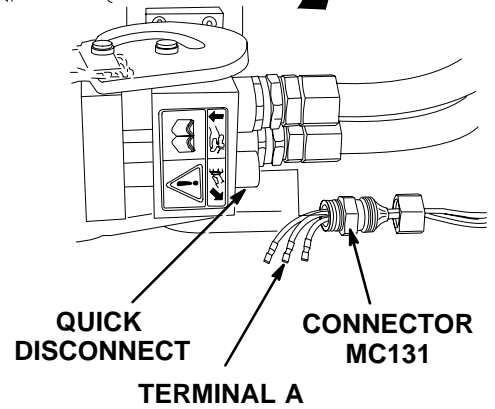
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

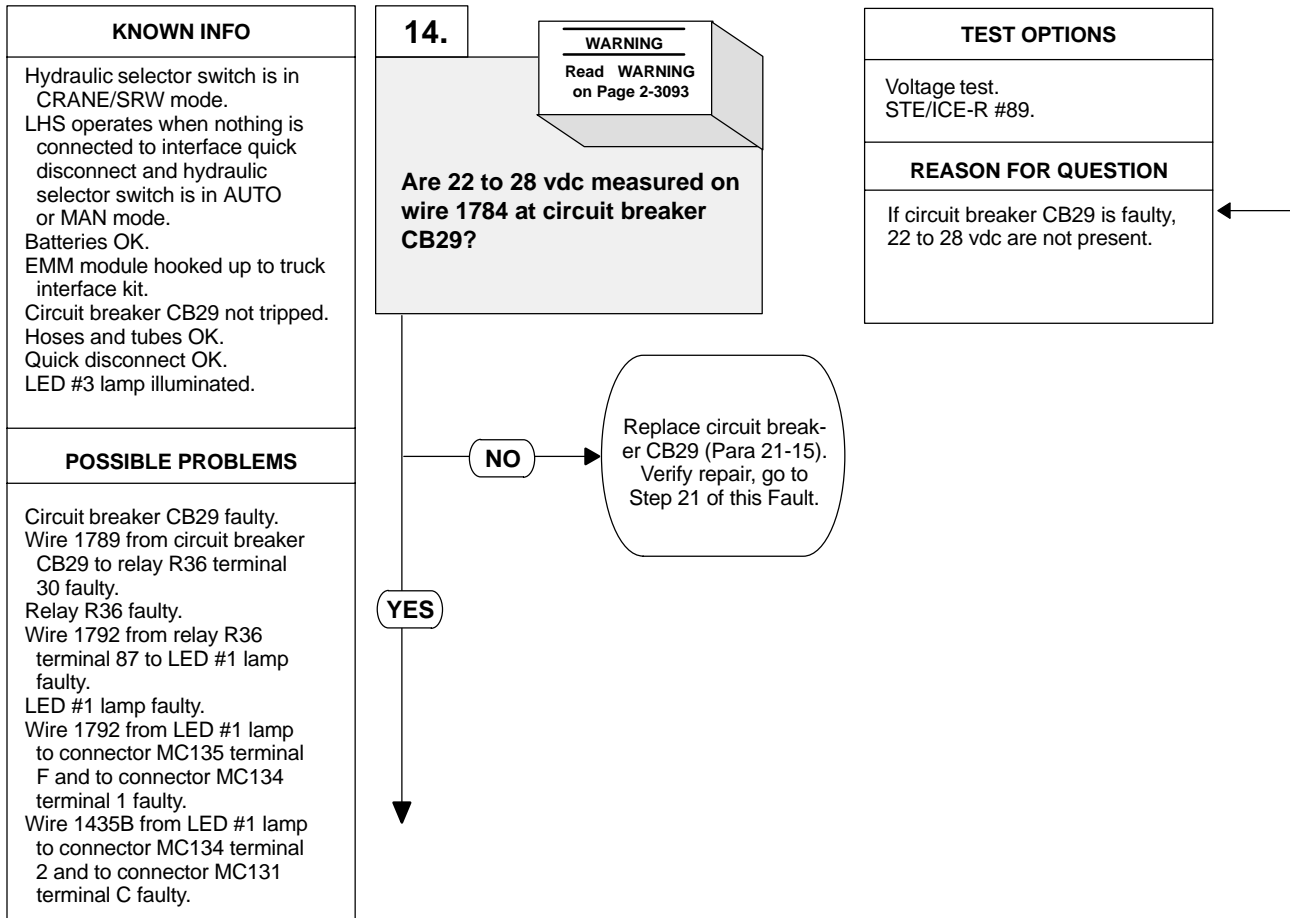


CONTINUITY TEST

- (1) Remove connector MC131 from quick disconnect.
- (2) Set multimeter select switch to OHMS.
- (3) Is there continuity between connector MC131 terminal A and rectifier positive (+) terminal?
 - (a) If there is no continuity, repair wire 1435A (see schematic Fig 2-75) or notify DS Maintenance.
 - (b) If there is continuity, replace relay R36 (Para 21-15). Perform Step (4) below and go to Step 21 of this fault.
- (4) Connect connector MC131 to quick disconnect.
- (5) Install powerbox cover and tighten four screws.



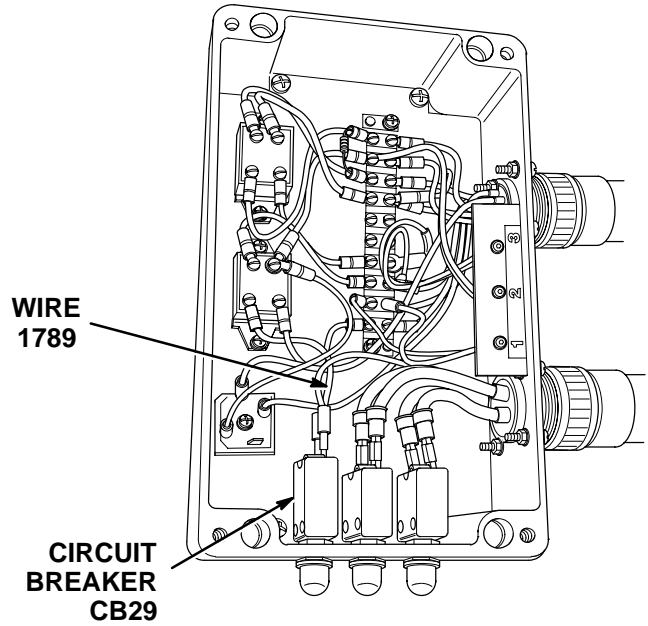
2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



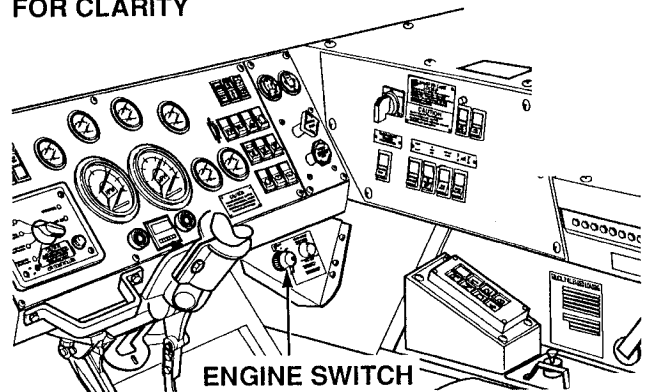
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

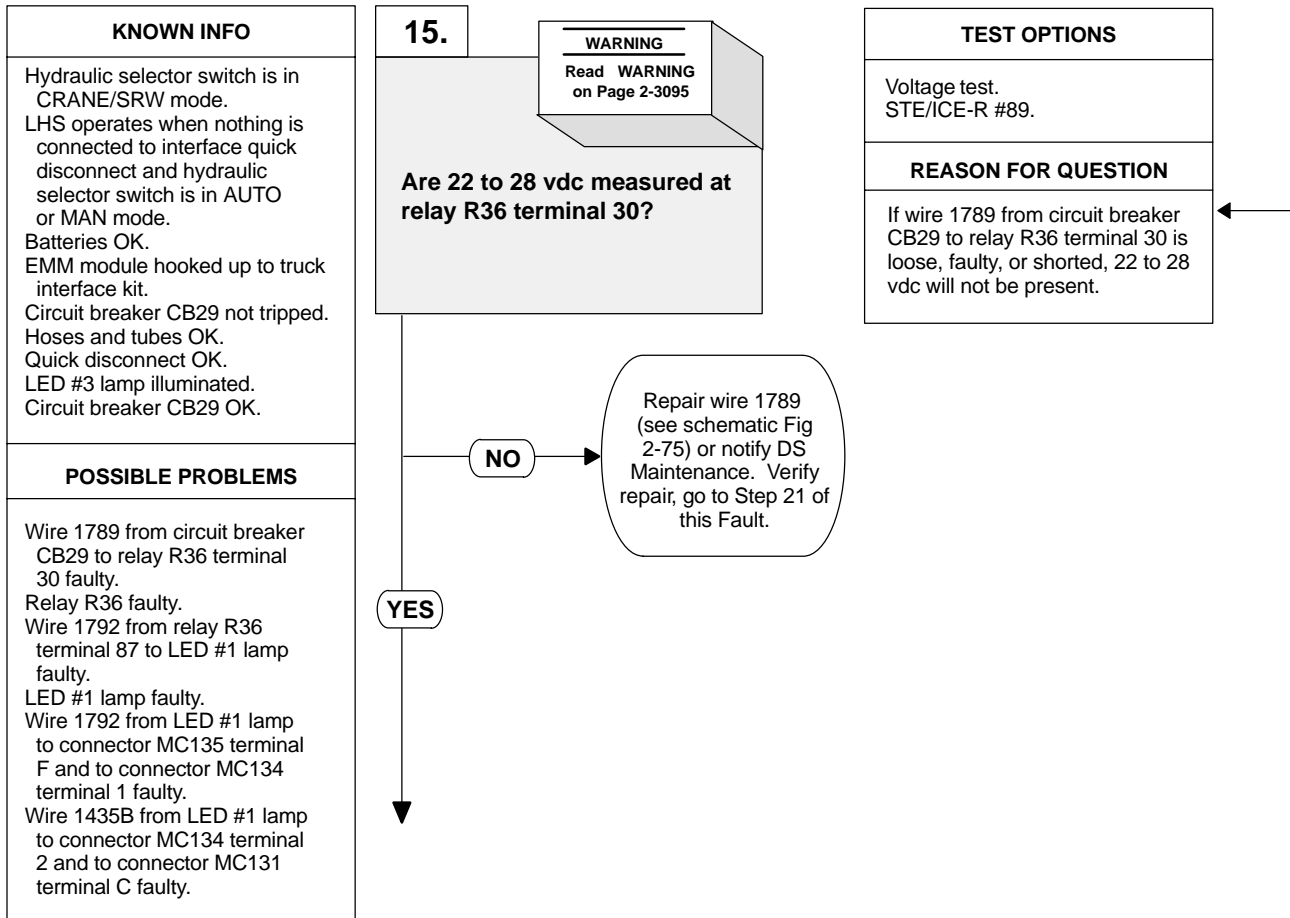
- VOLTAGE TEST**
- (1) Set multimeter select switch to volts DC.
 - (2) Connect positive (+) multimeter lead to wire 1789 at circuit breaker CB29.
 - (3) Connect negative (-) multimeter lead to a known good ground.
 - (a) If 22 to 28 vdc are not present, turn OFF ENGINE switch and replace circuit breaker CB29 (Para 21-15).
 - (b) If 22 to 28 vdc are present, circuit breaker CB29 is OK. Go to Step 15 of this Fault.



**STEERING WHEEL
SHOWN REMOVED
FOR CLARITY**



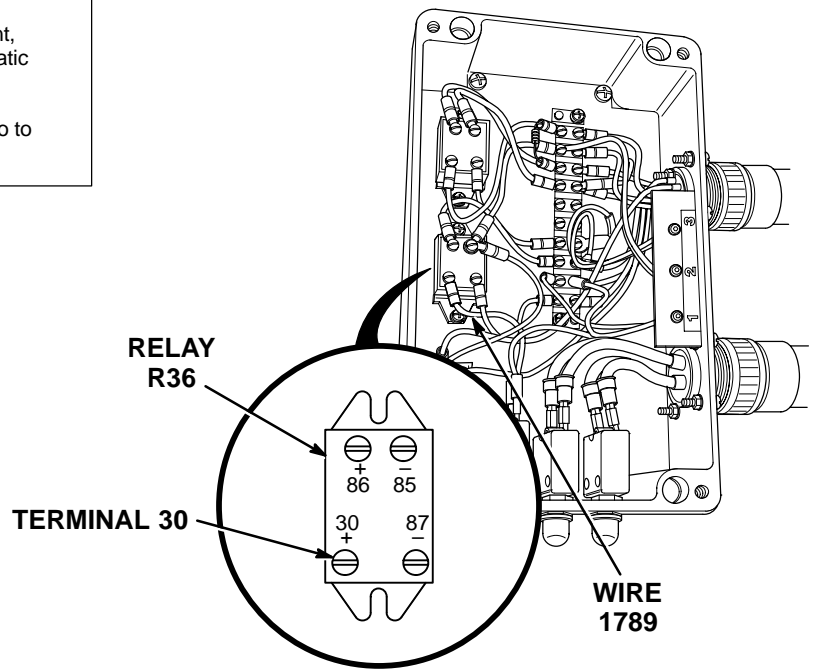
2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



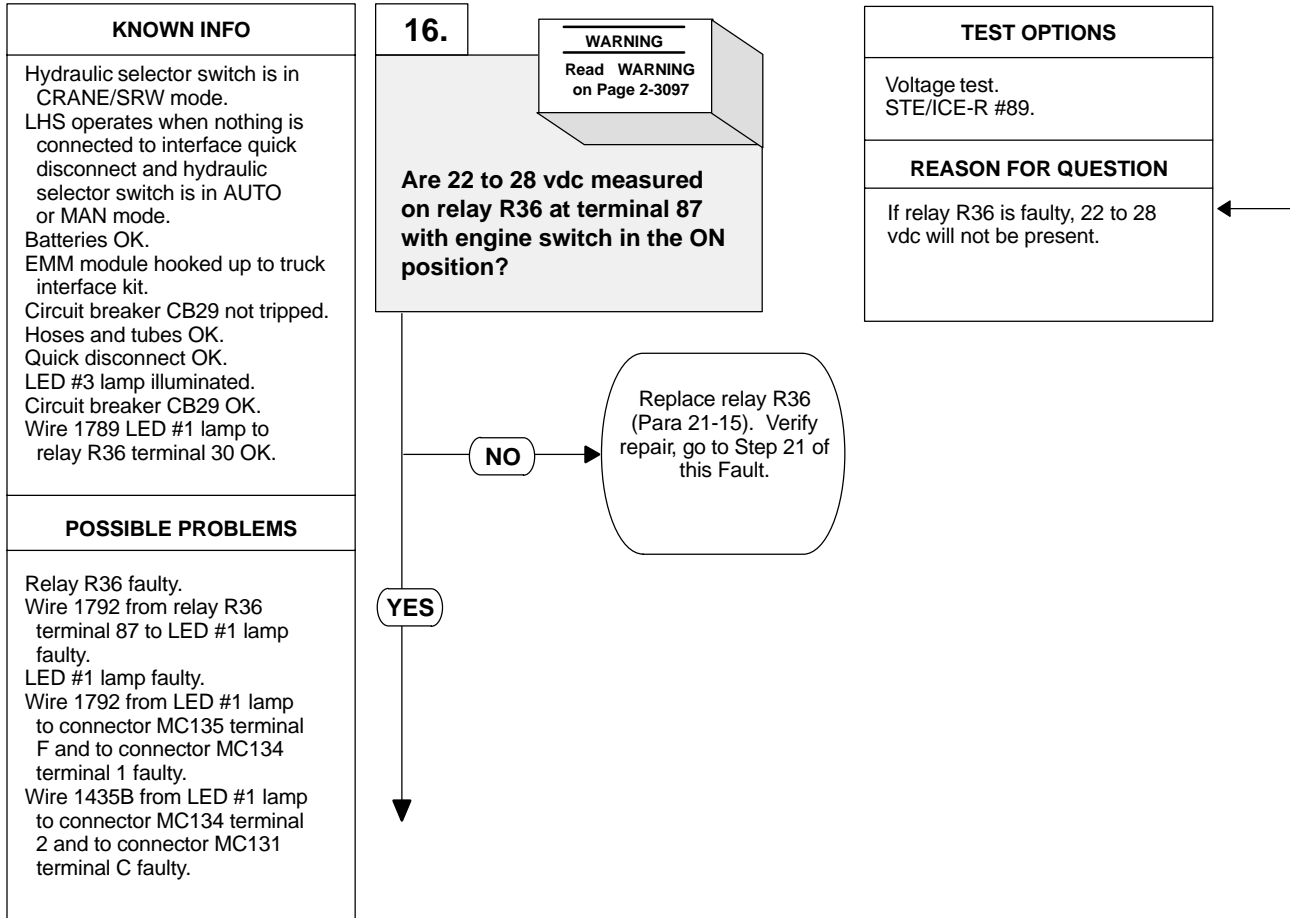
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- VOLTAGE TEST**
- (1) Connect positive (+) multimeter lead to relay R36 terminal 30.
 - (2) Connect negative (-) multimeter lead to a known good ground.
 - (a) If 22 to 28 vdc are not present, repair wire 1789 (see schematic Fig 2-75) or notify DS Maintenance.
 - (b) If 22 to 28 vdc are present, go to Step 16 of this Fault.



2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).

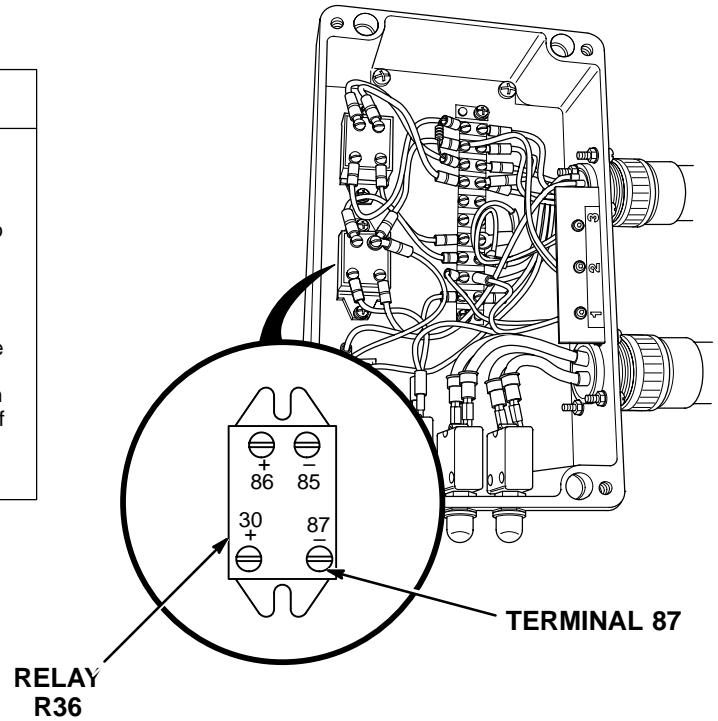


WARNING

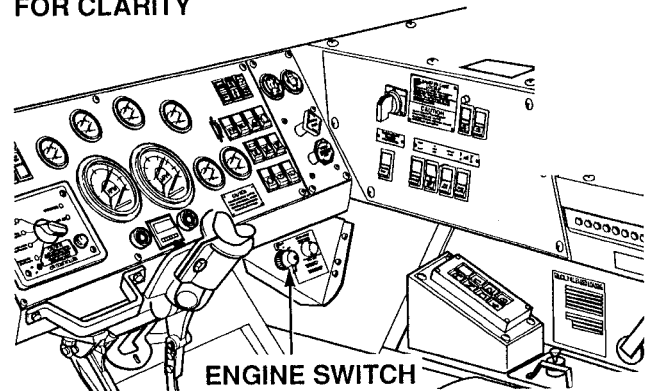
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

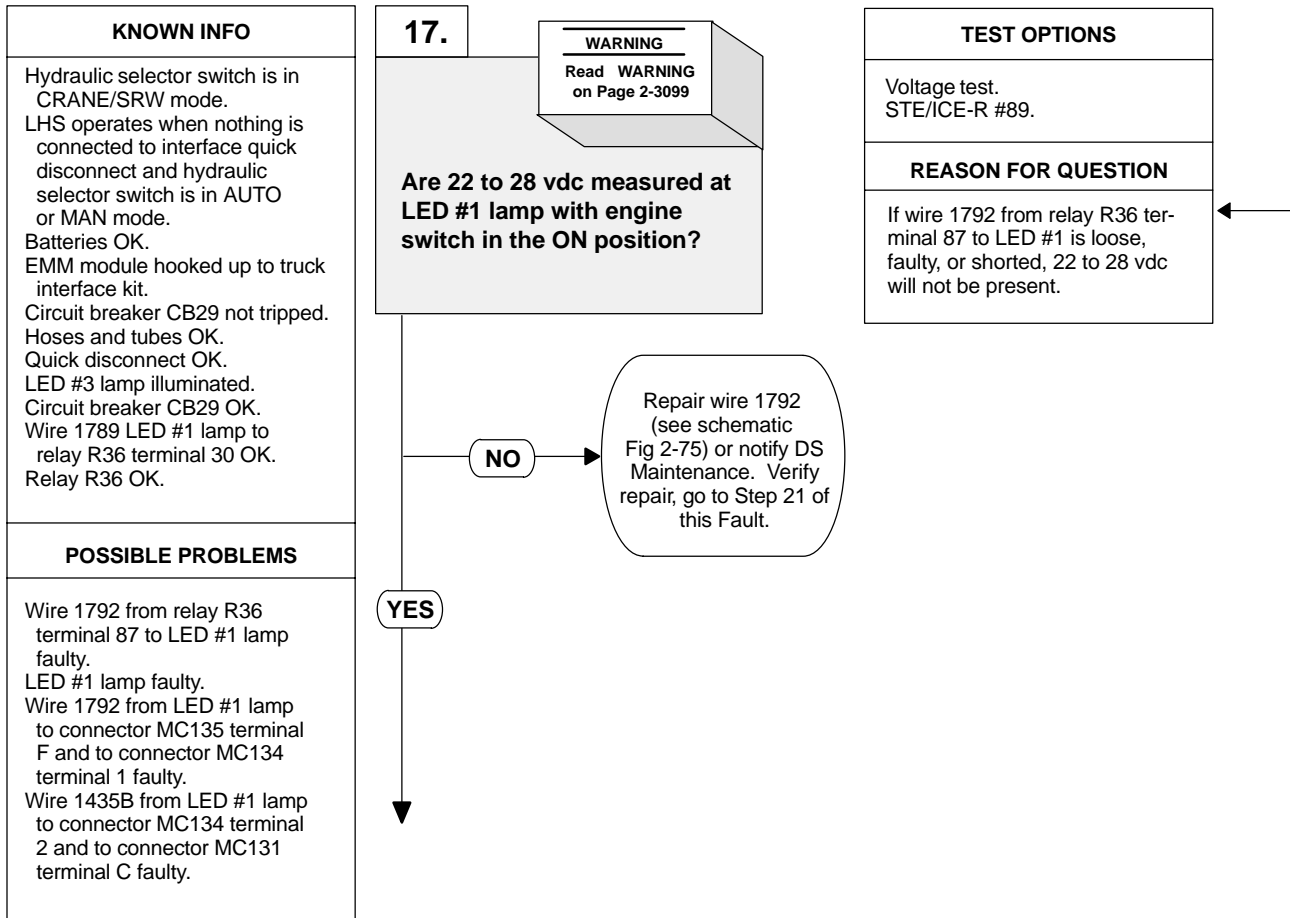
- (1) Set multimeter switch to volts DC.
- (2) Connect positive (+) multimeter lead to relay R36 terminal 87.
- (3) Connect negative (-) multimeter lead to a known good ground.
- (4) Turn ON ENGINE switch (TM 9-2320-364-10).
 - (a) If 22 to 28 vdc are not present, perform Step (5) below and replace relay R36 (Para 21-15).
 - (b) If 22 to 28 vdc are present, perform Step (5) below and go to Step 17 of this Fault.
- (5) Turn OFF ENGINE switch.



**STEERING WHEEL
SHOWN REMOVED
FOR CLARITY**



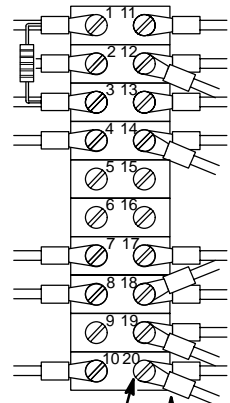
2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



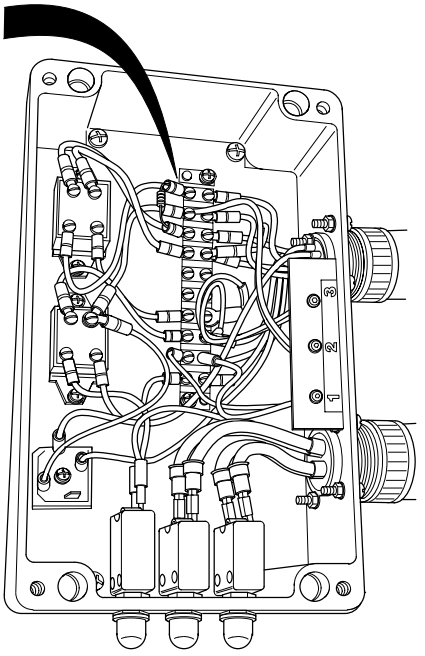
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- | VOLTAGE TEST | |
|--------------|---|
| (1) | Connect positive (+) multimeter lead to LED #1 lamp wire on powerbox terminal 20. |
| (2) | Connect negative (-) multimeter lead to a known good ground. |
| (3) | Turn ON ENGINE switch (TM 9-2320-364-10). |
| (a) | If 22 to 28 vdc are not present, perform Step (4) below and repair wire 1792 (see schematic Fig 2-75) or notify DS Maintenance. |
| (b) | If 22 to 28 vdc are present, perform Step (4) below and go to Step 18 of this Fault. |
| (4) | Turn OFF ENGINE switch. |

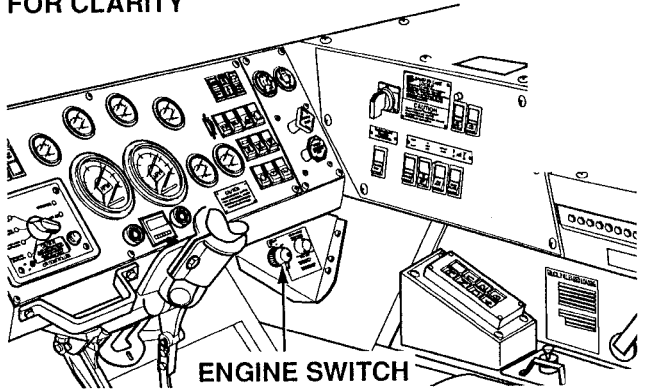


TERMINAL 20



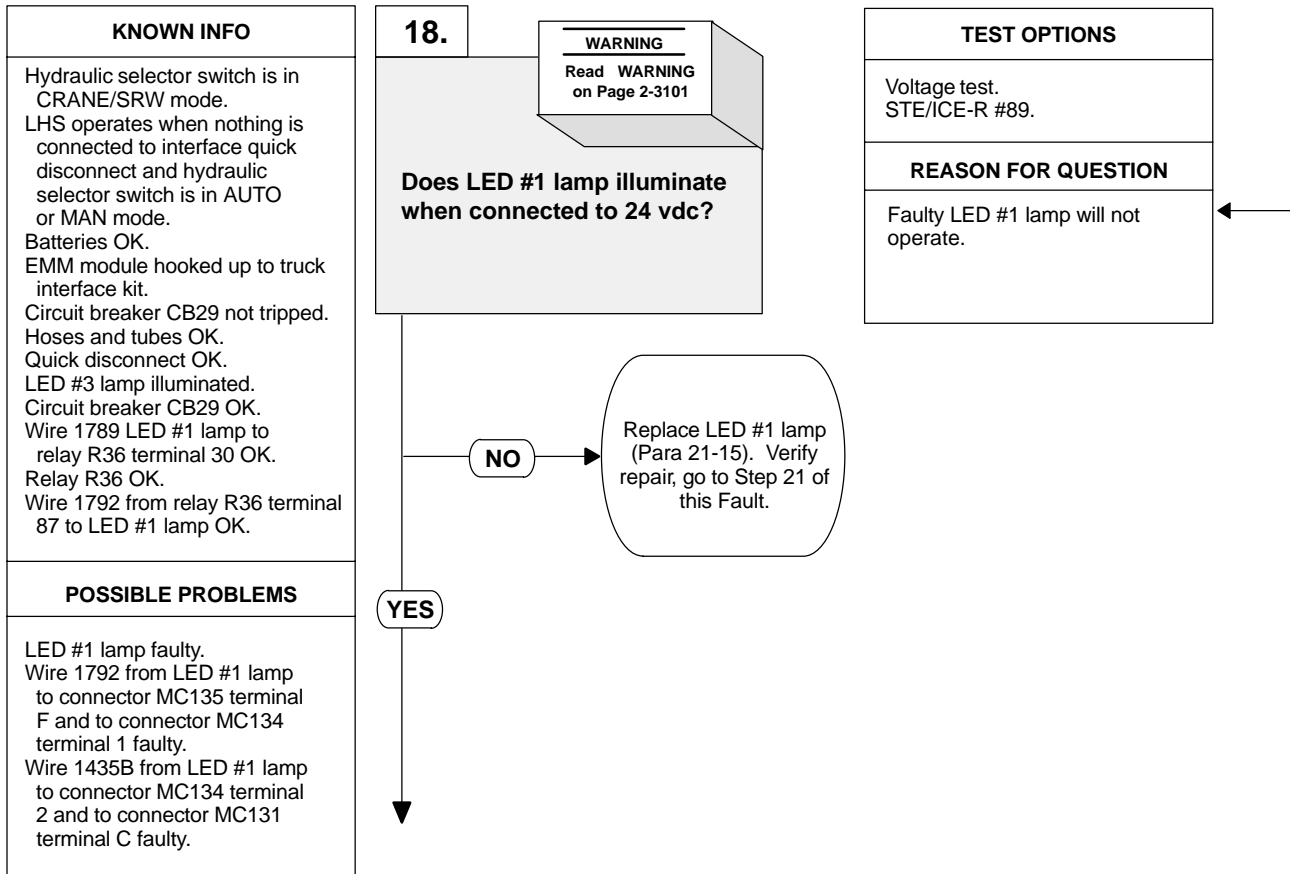
LED #1
LAMP WIRE

STEERING WHEEL
SHOWN REMOVED
FOR CLARITY



ENGINE SWITCH

2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



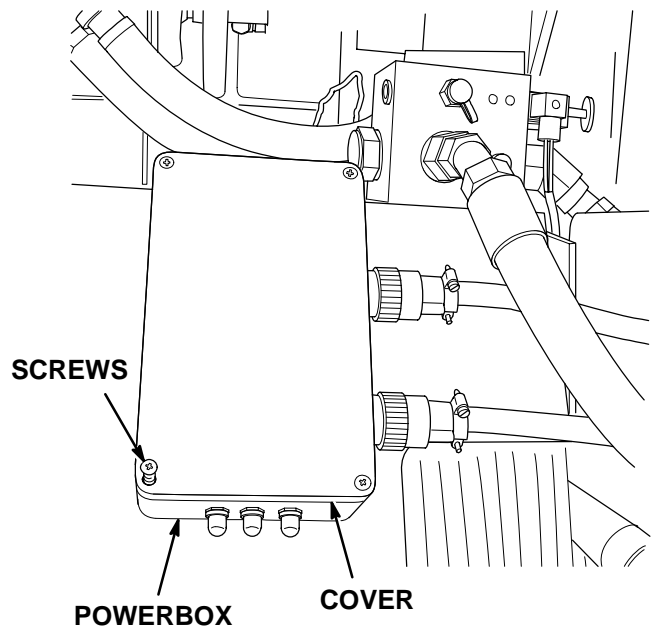
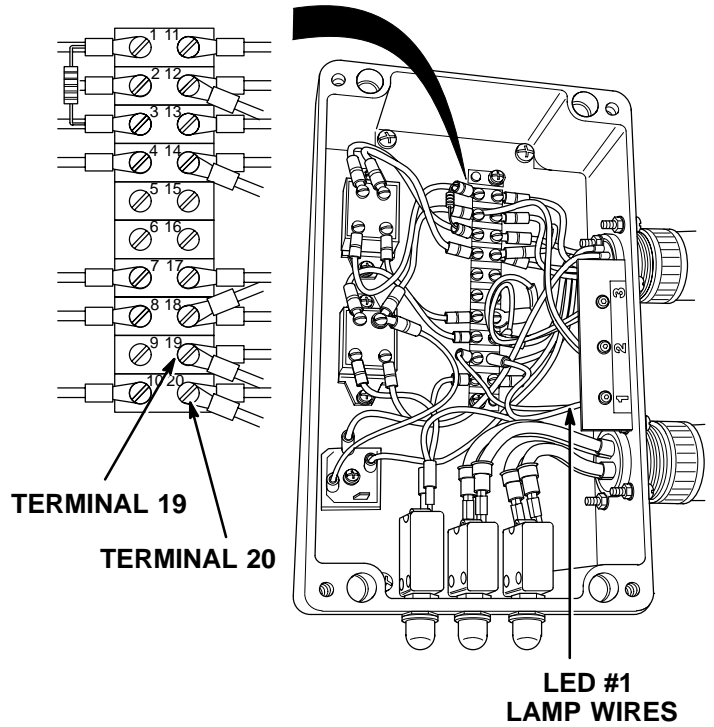
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

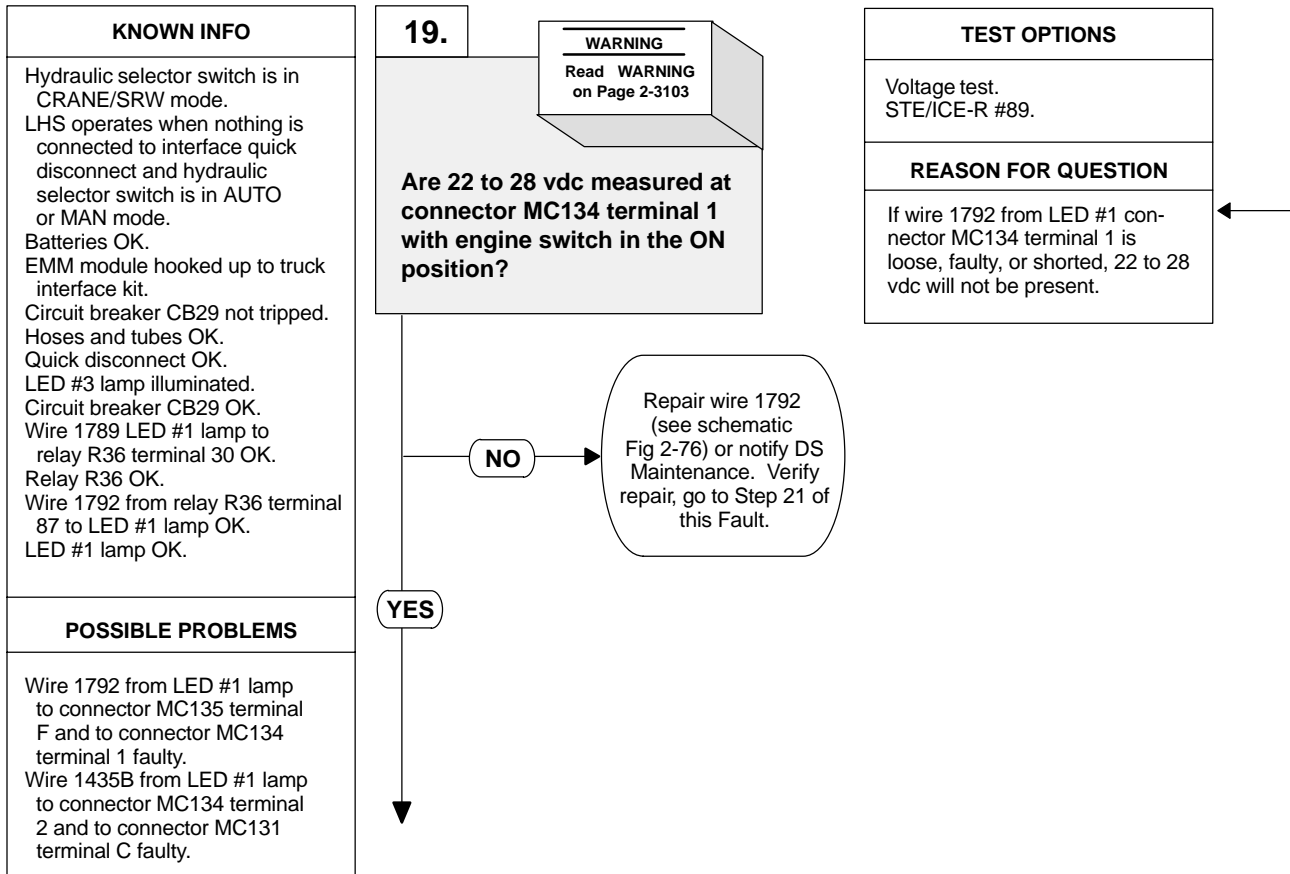
NOTE

Tag and mark wires prior to removal.

VOLTAGE TEST
(1) Remove LED #1 lamp wires from powerbox terminals 19 and 20.
(2) Connect LED #1 lamp wires to a known good 24 vdc.
(a) If LED #1 lamp does not illuminate, replace LED #1 lamp (Para 21-15) and perform Steps (3) and (4) below.
(b) If LED #1 lamp does illuminate, LED #1 lamp is OK. Perform Step (3) below and go to Step 19 of this Fault.
(3) Install LED #1 lamp wires to powerbox terminals 19 and 20.
(4) Install powerbox cover and tighten four screws.



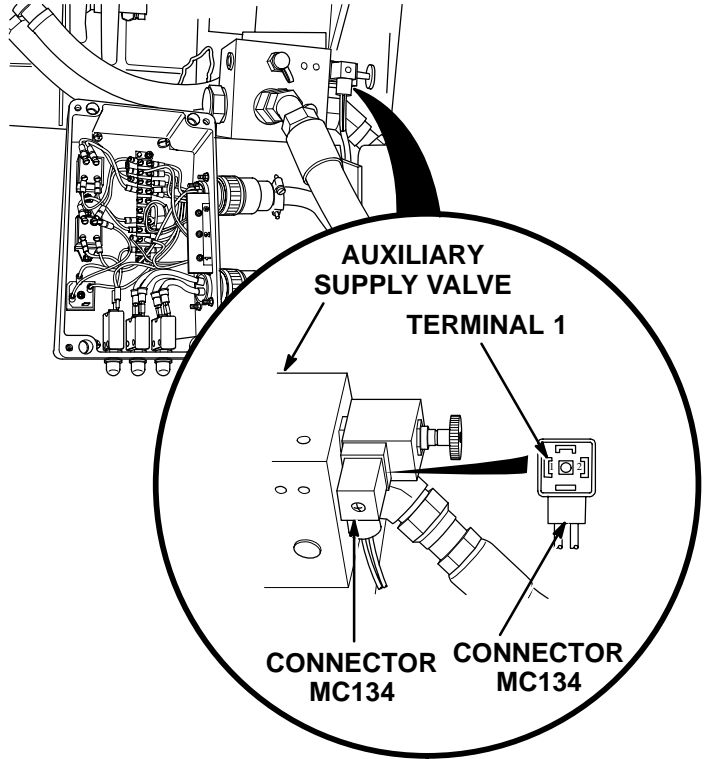
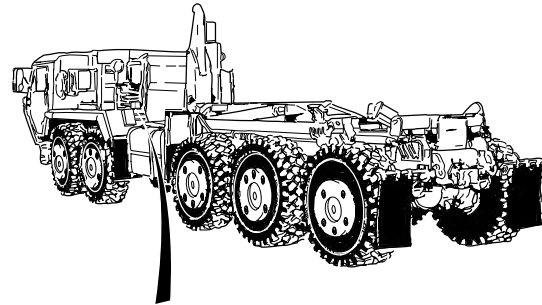
2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



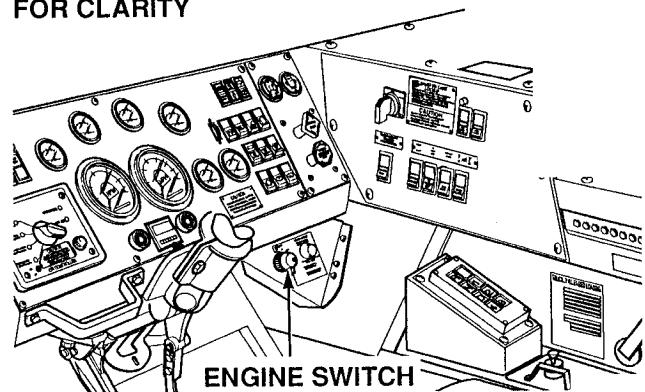
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

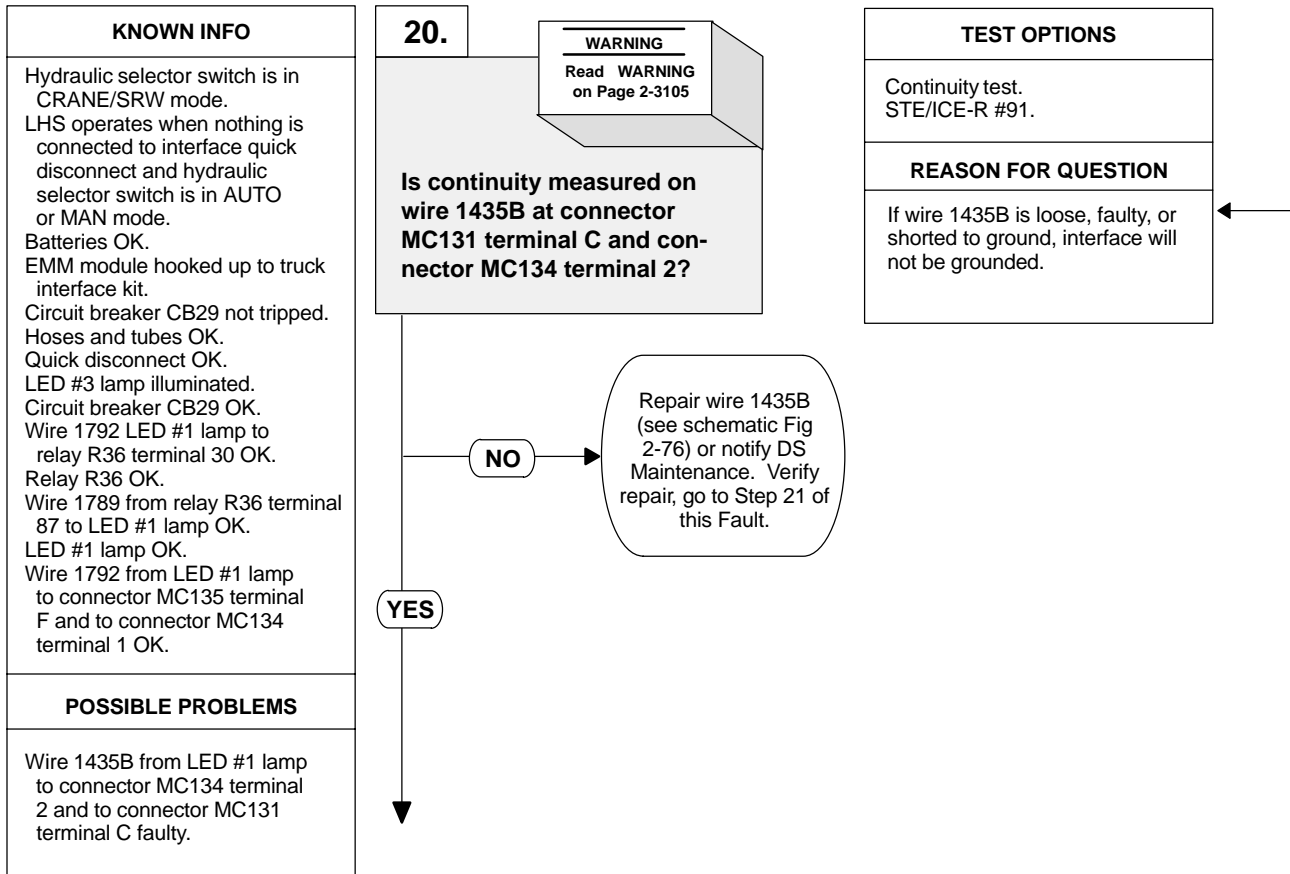
- VOLTAGE TEST**
- (1) Disconnect connector MC134 from auxiliary supply valve.
 - (2) Connect positive (+) multimeter lead to connector MC134 terminal 1.
 - (3) Connect negative (-) multimeter lead to a known good ground.
 - (4) Turn ON ENGINE switch (TM 9-2320-364-10).
 - (a) If 22 to 28 vdc are not present, perform Step (5) below and repair wire 1792 (see schematic Fig 2-76) or notify DS Maintenance.
 - (b) If 22 to 28 vdc are present, perform Step (5) below and go to Step 20 of this Fault.
 - (5) Turn OFF ENGINE switch.



**STEERING WHEEL
SHOWN REMOVED
FOR CLARITY**

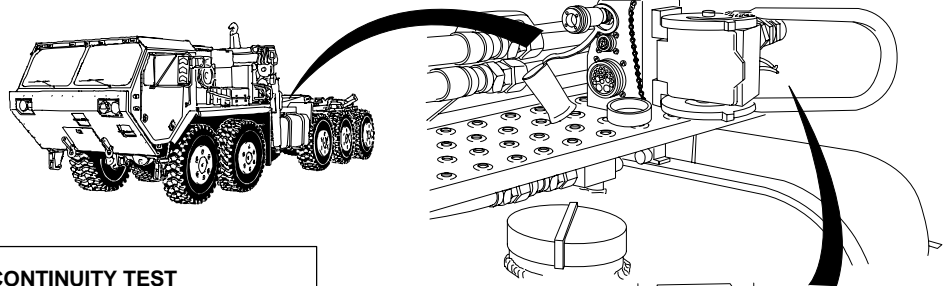


2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).

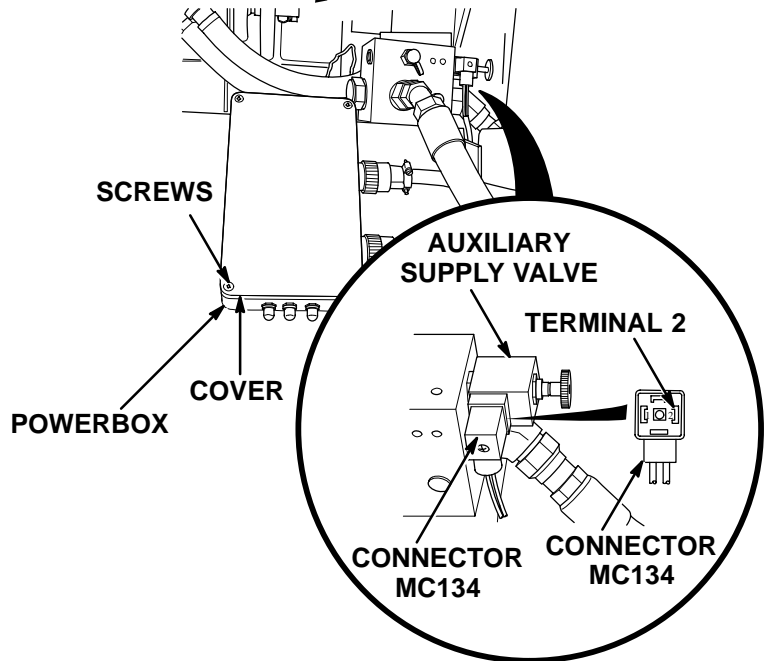
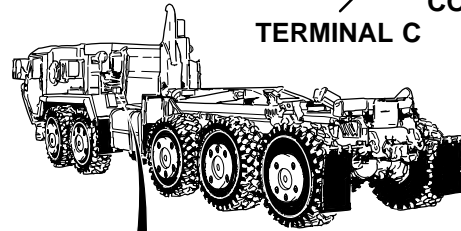
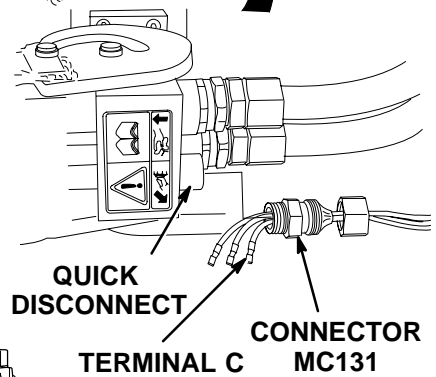


WARNING

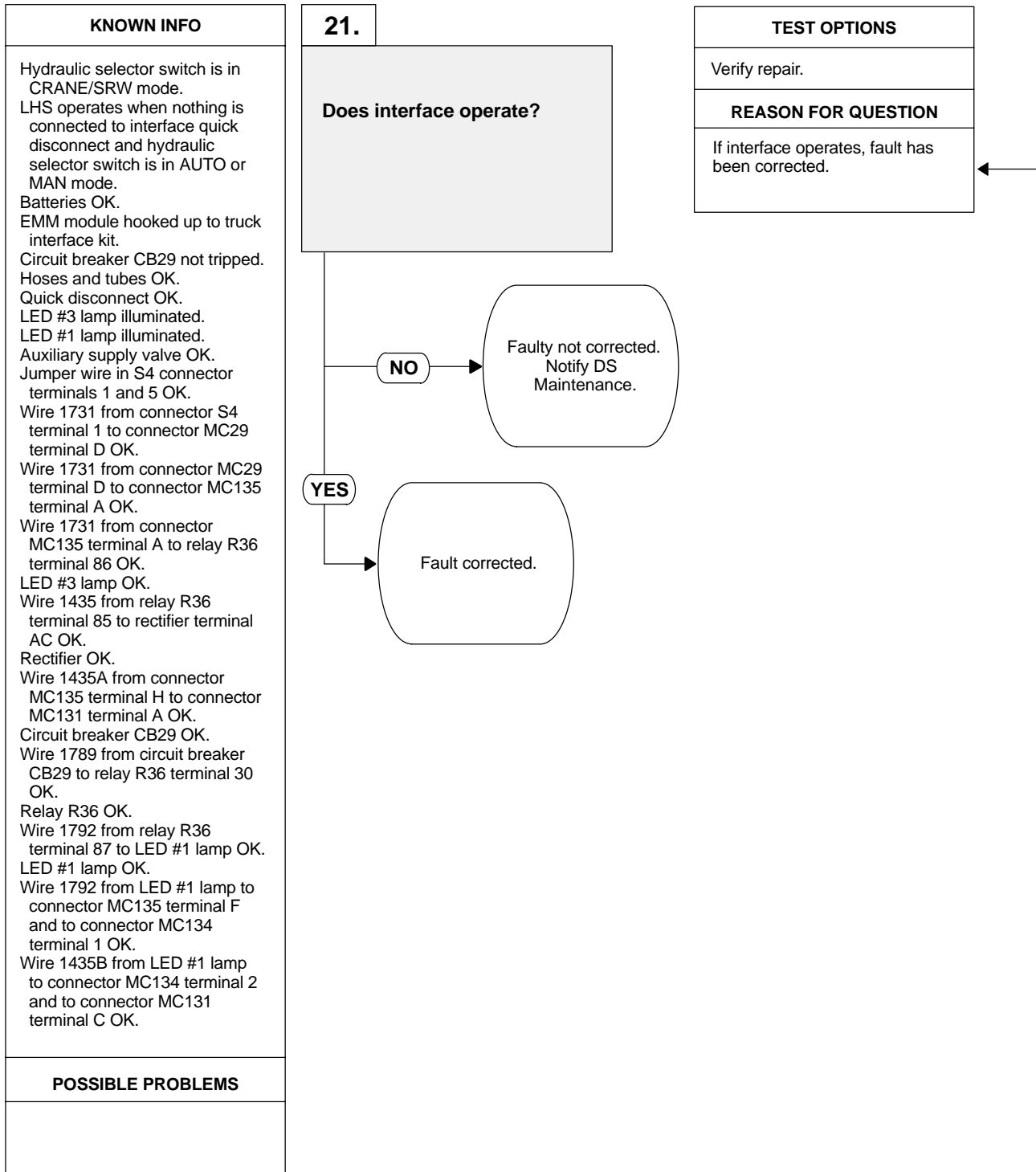
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



- CONTINUITY TEST**
- (1) Disconnect connector MC131 from quick disconnect.
 - (2) Set multimeter select switch to OHMS.
 - (3) Is there continuity between connector MC131 terminal C and connector MC134 terminal 2?
 - (a) If there is no continuity, repair wire 1435B (see schematic Fig 2-76) or notify DS Maintenance.
 - (b) If there is continuity, wire 1435B is OK.
 - (4) Connect connector MC131 to quick disconnect.
 - (5) Connect connector MC134 to auxiliary supply valve.
 - (6) Install cover on powerbox with four screws.

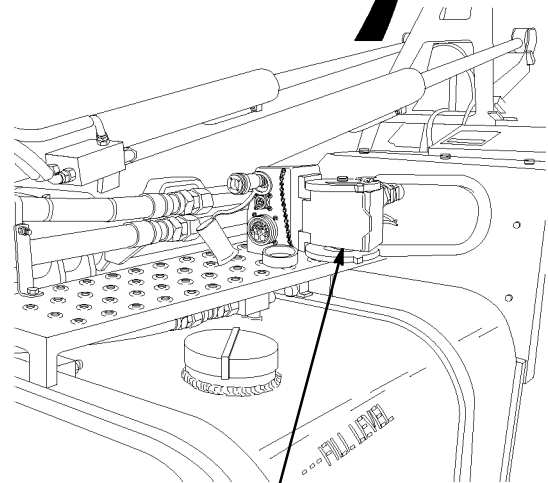
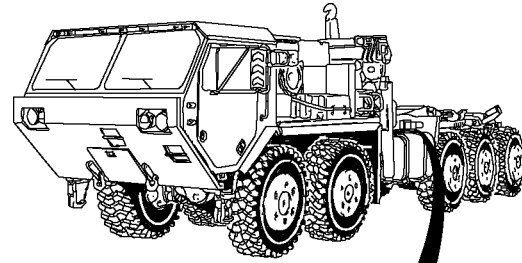


2. INTERFACE KIT HYDRAULICS INOPERATIVE (CONT).



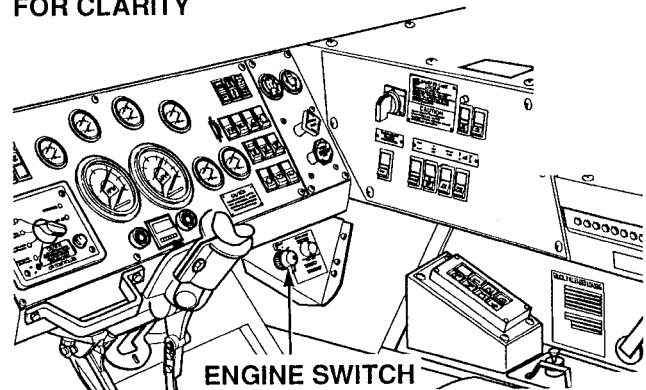
VERIFY REPAIR

- (1) Connect quick disconnect to auxiliary source (TM 9-2320-364-10).
- (2) Start engine (TM 9-2320-364-10).
- (3) Operate interface.
 - (a) If interface does not operate, fault is not corrected. Notify DS Maintenance.
 - (b) If interface operates, fault has been corrected.
- (4) Turn OFF ENGINE switch.
- (5) Disconnect quick disconnect.



**QUICK
DISCONNECT**

**STEERING WHEEL
SHOWN REMOVED
FOR CLARITY**



2-37. INTERFACE TROUBLESHOOTING (CONT)

3. LOSS OF INTERFACE POWER 12 VDC.

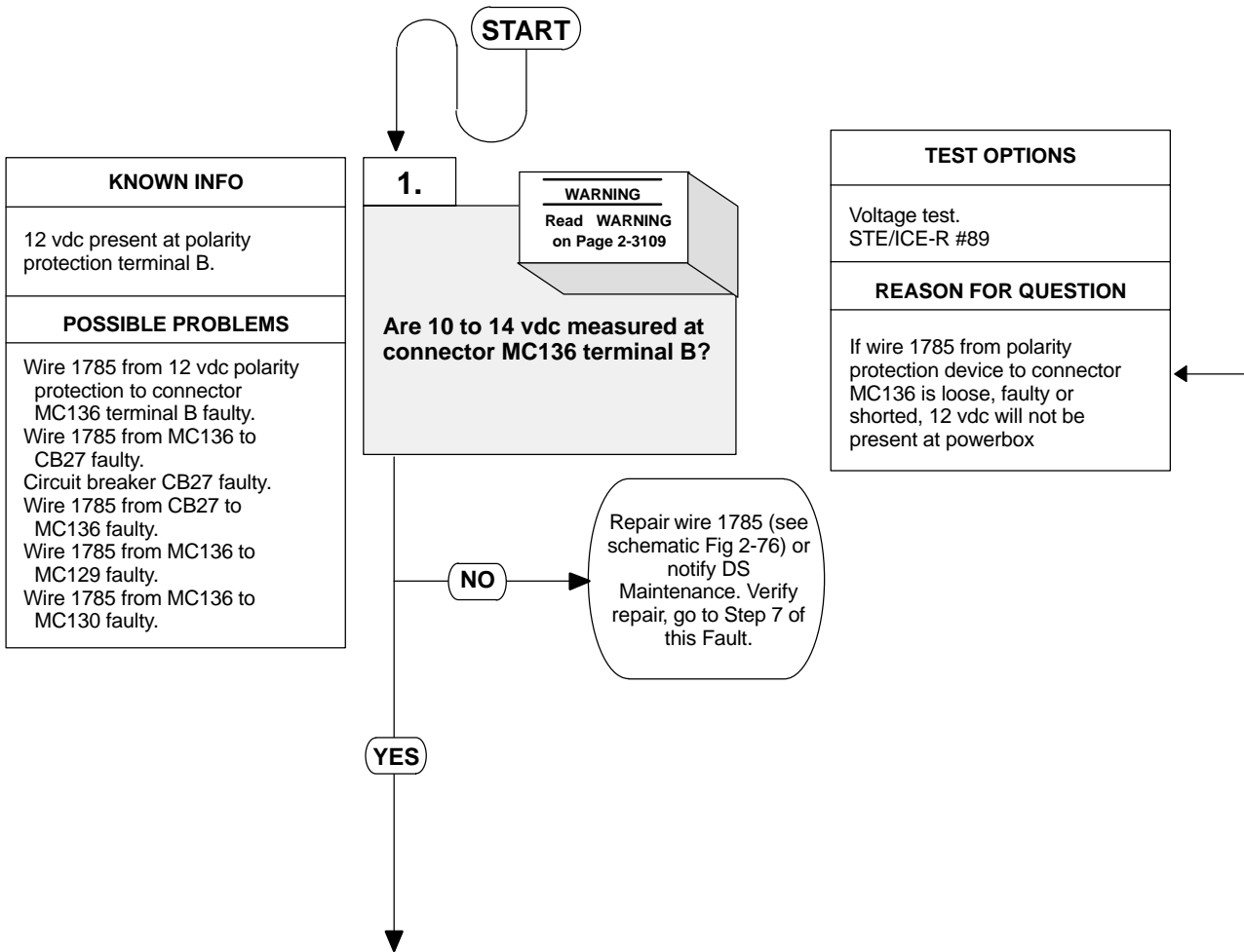
INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
 (Item 74, Appendix G)
 STE/ICE-R ((Optional)
 (Item 3, Appendix G)
 Multimeter (Item 44, Appendix G)
 Jumpwire

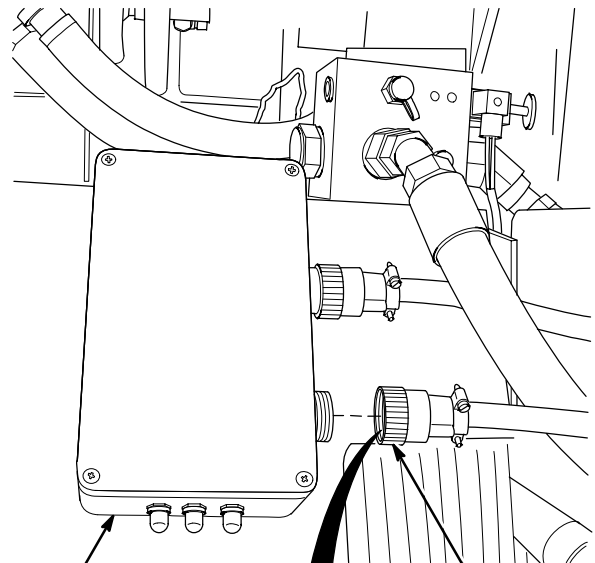
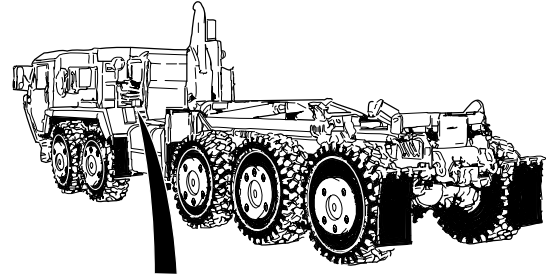
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Parking brake applied, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)



WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



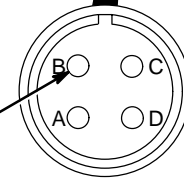
VOLTAGE TEST

- (1) Disconnect connector MC136 from powerbox.
- (2) Set multimeter select switch to volts DC.
- (3) Connect positive (+) multimeter lead to connector MC136 terminal B.
- (4) Connect negative (-) multimeter lead to a known good ground.
 - (a) If 10 to 14 vdc are not present, perform Step (5) below and repair wire 1785 between polarity protection and connector MC136 (see schematic Fig 2-76) or notify DS Maintenance.
 - (b) If 10 to 14 vdc are present, perform Step (5) below and go to Step 2 of this Fault.
- (5) Connect connector MC136 to powerbox.

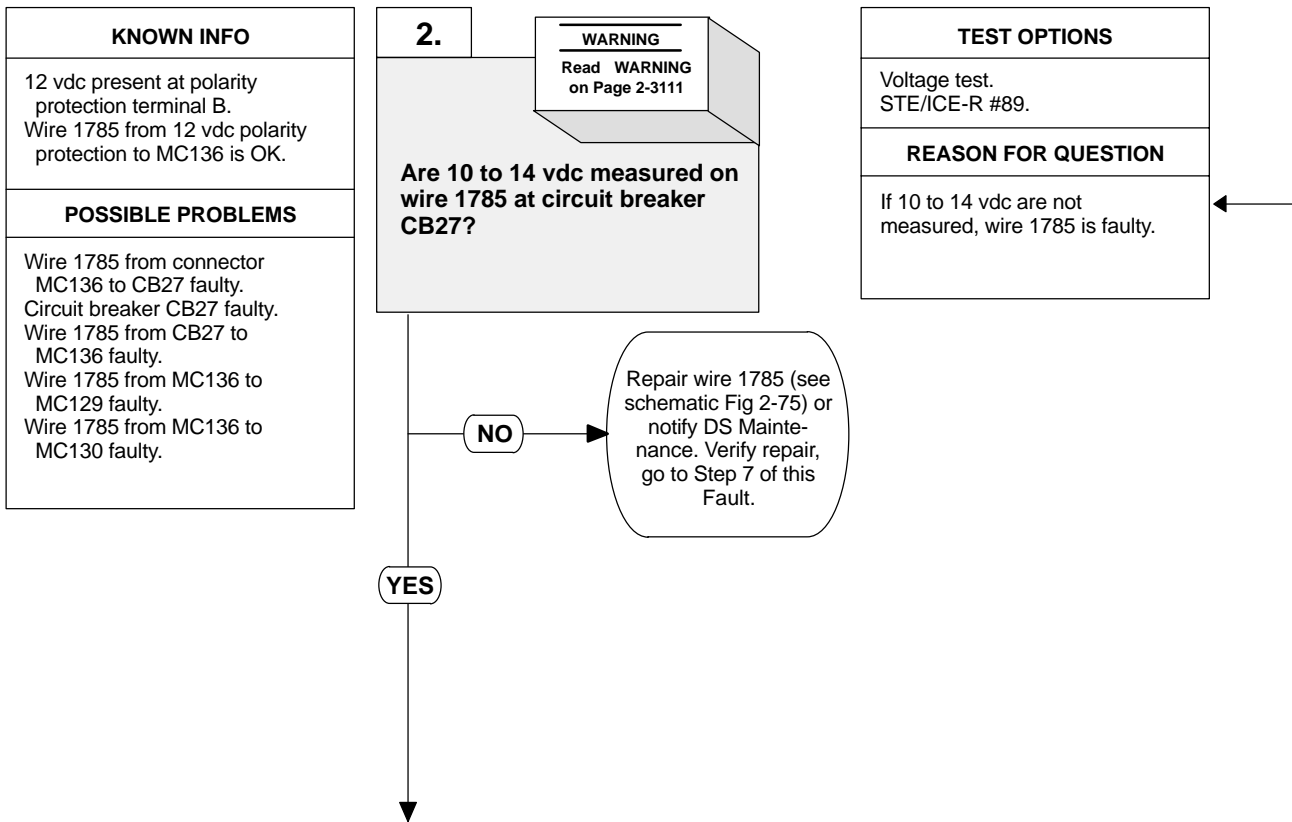
POWERBOX

CONNECTOR MC136

TERMINAL B



3. LOSS OF INTERFACE POWER 12 VDC (CONT).

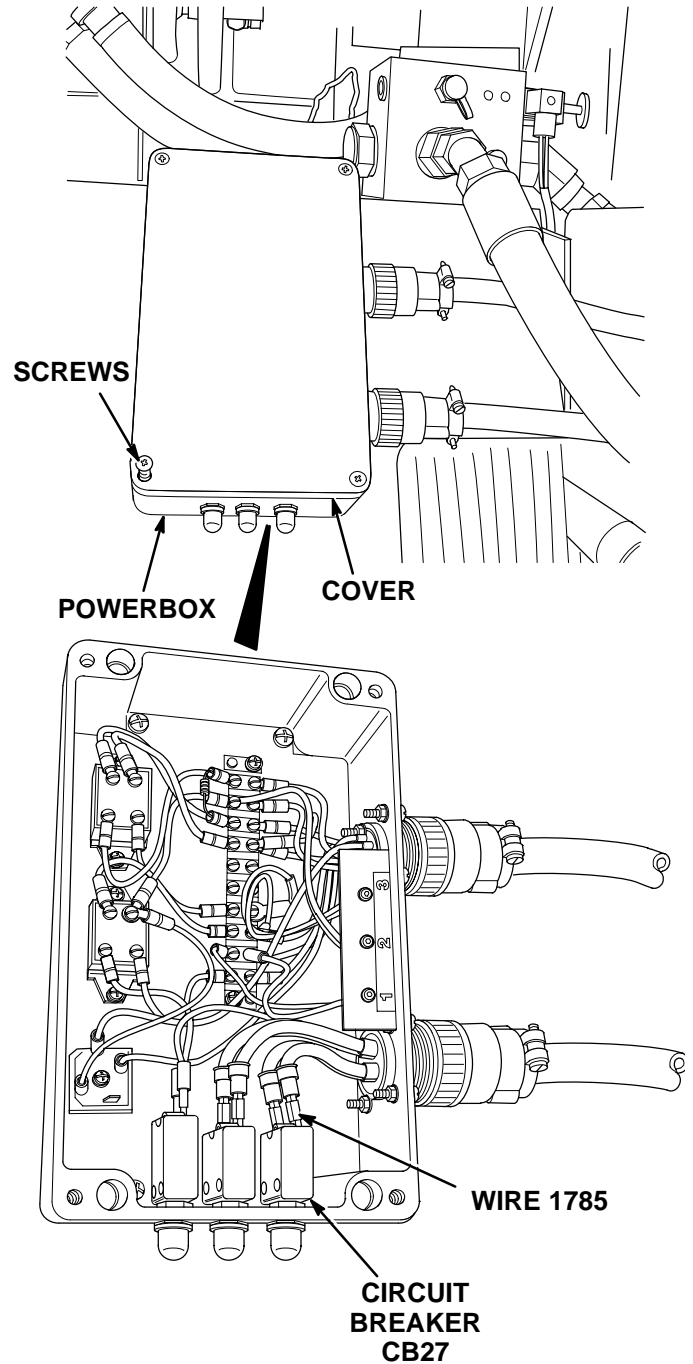


WARNING

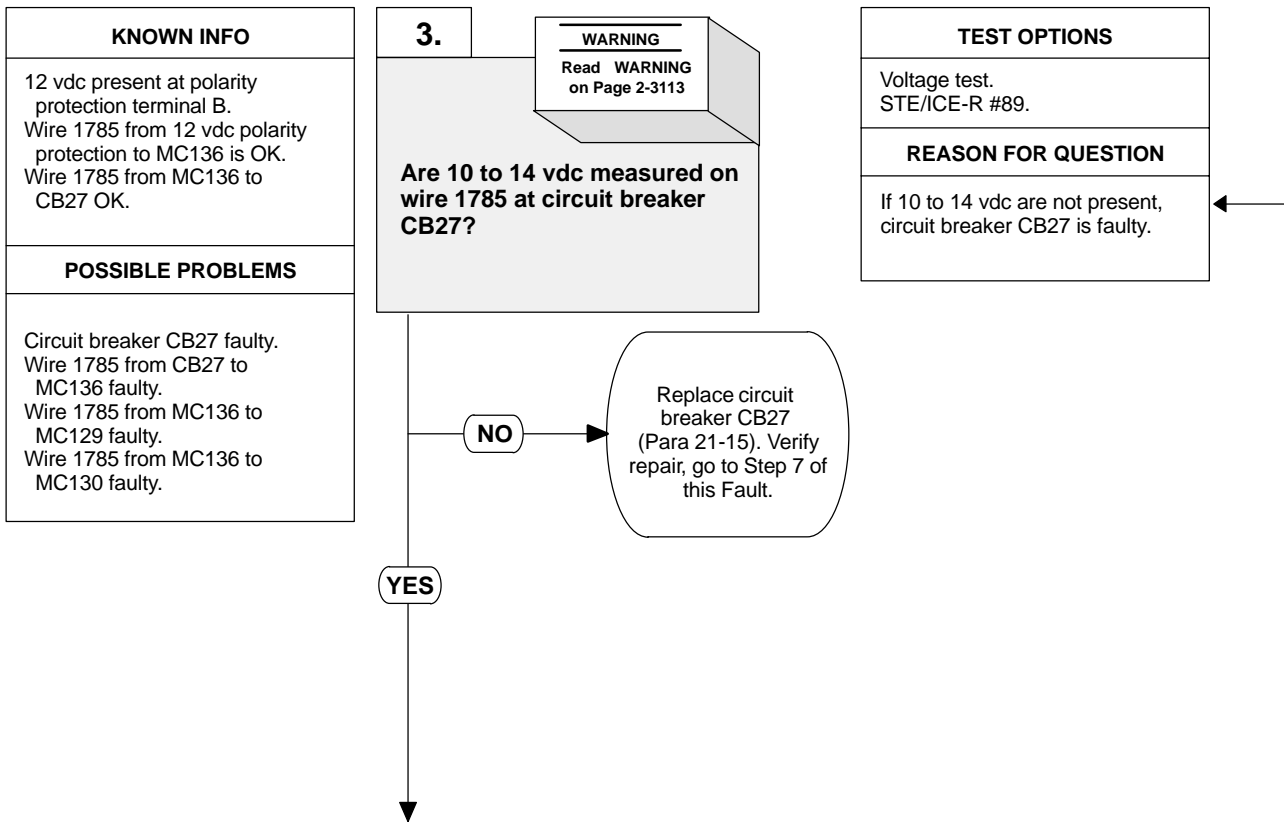
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

- (1) Loosen four screws and remove powerbox cover.
- (2) Set multimeter select switch to volts DC.
- (3) Connect positive (+) multimeter lead to wire 1785 at circuit breaker CB27.
- (4) Connect negative (-) multimeter lead to a known good ground.
 - (a) If 10 to 14 vdc are not present, repair wire 1785 (see schematic Fig 2-75) or notify DS Maintenance.
 - (b) If there are 10 to 14 vdc present, wire 1785 is OK.



3. LOSS OF INTERFACE POWER 12 VDC (CONT).

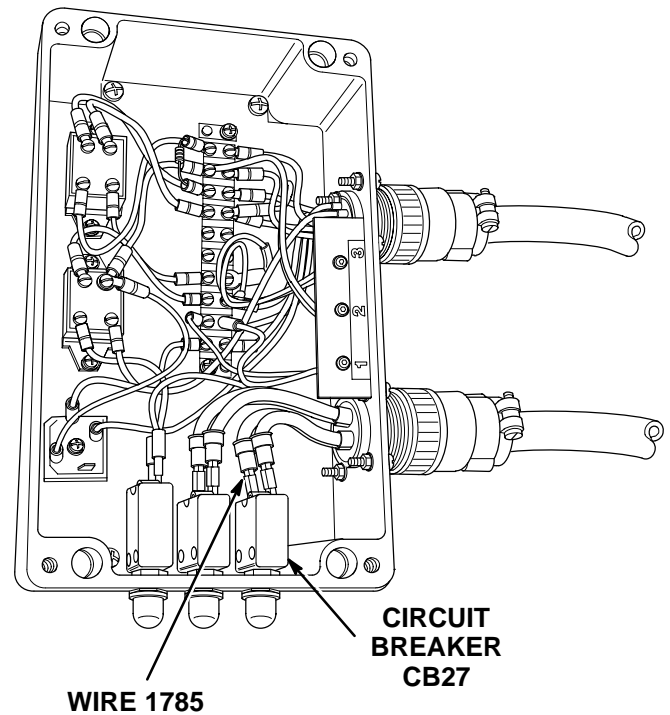


WARNING

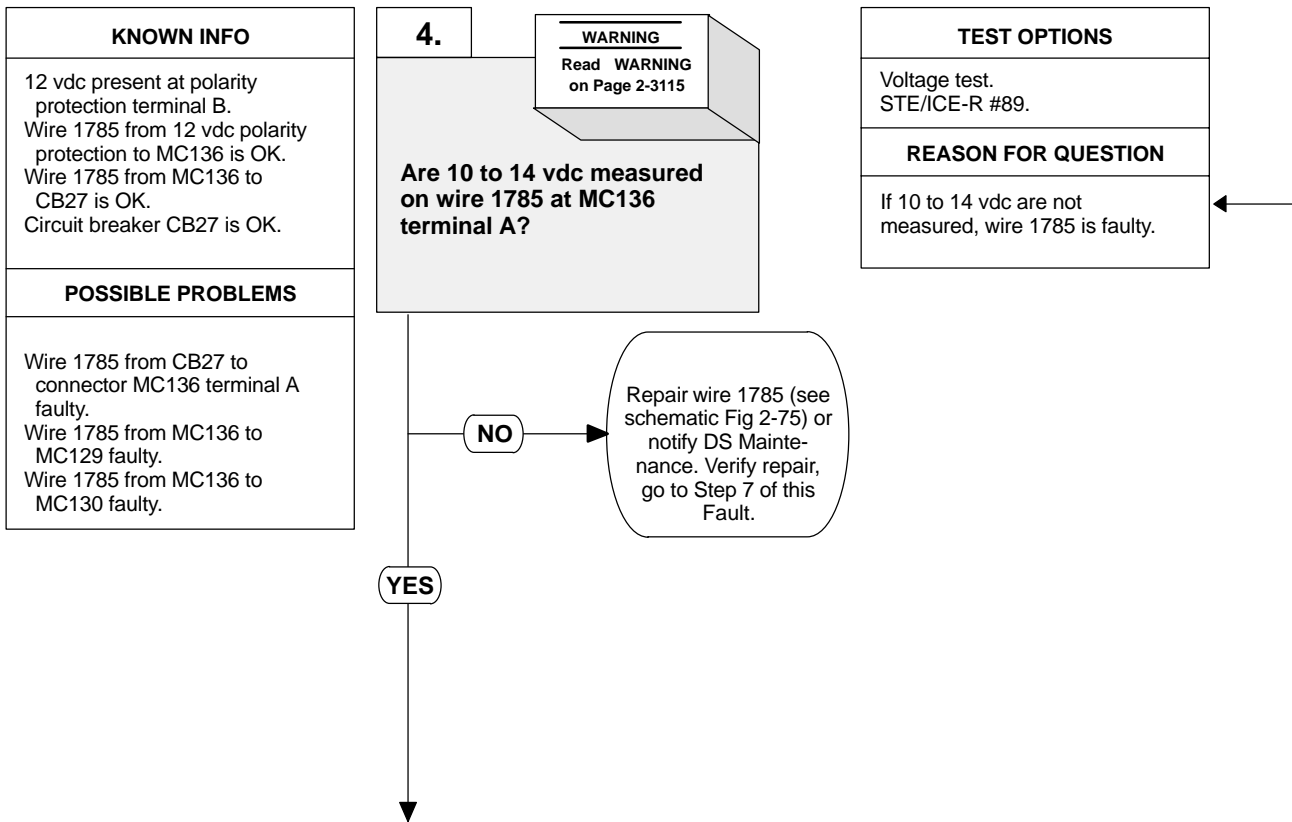
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

- (1) Set multimeter select switch to volts DC.
- (2) Connect positive (+) multimeter lead to wire 1785 at circuit breaker CB27.
- (3) Connect negative (-) multimeter lead to a known good ground.
 - (a) If 10 to 14 vdc are not present, replace circuit breaker CB27 (Para 21-15).
 - (b) If 10 to 14 vdc are present, circuit breaker CB27 is OK.



3. LOSS OF INTERFACE POWER 12 VDC (CONT).

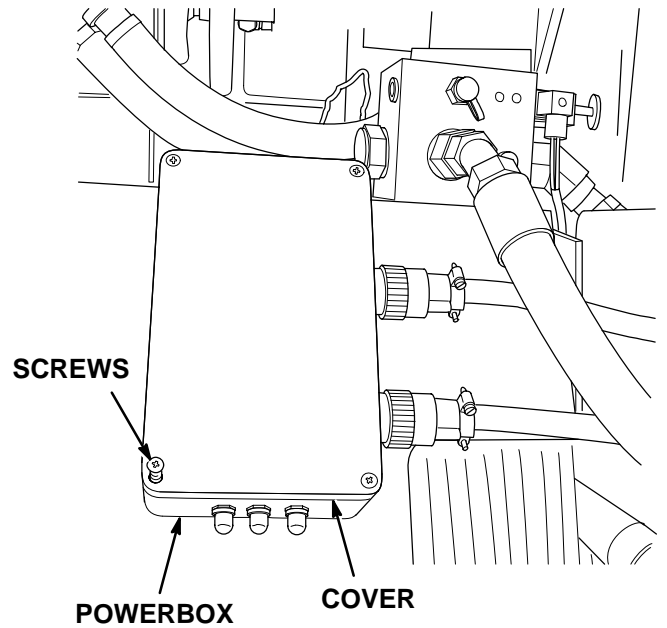
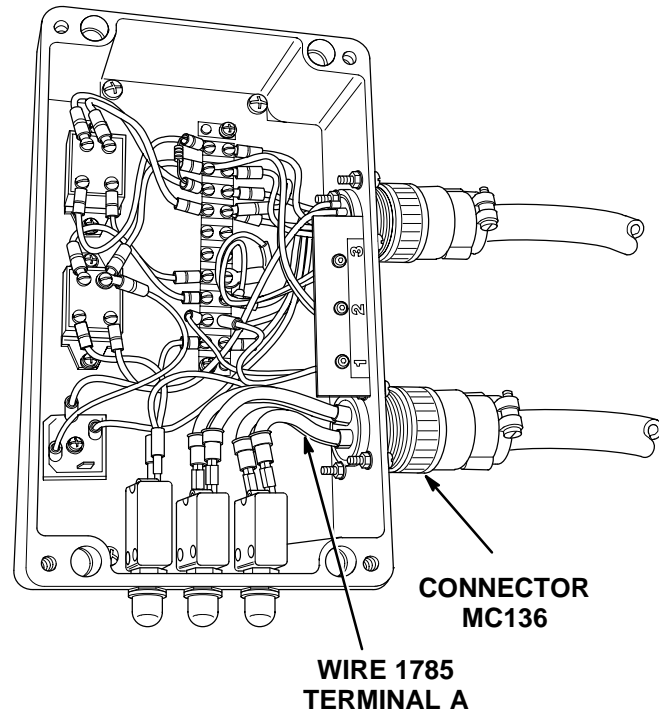


WARNING

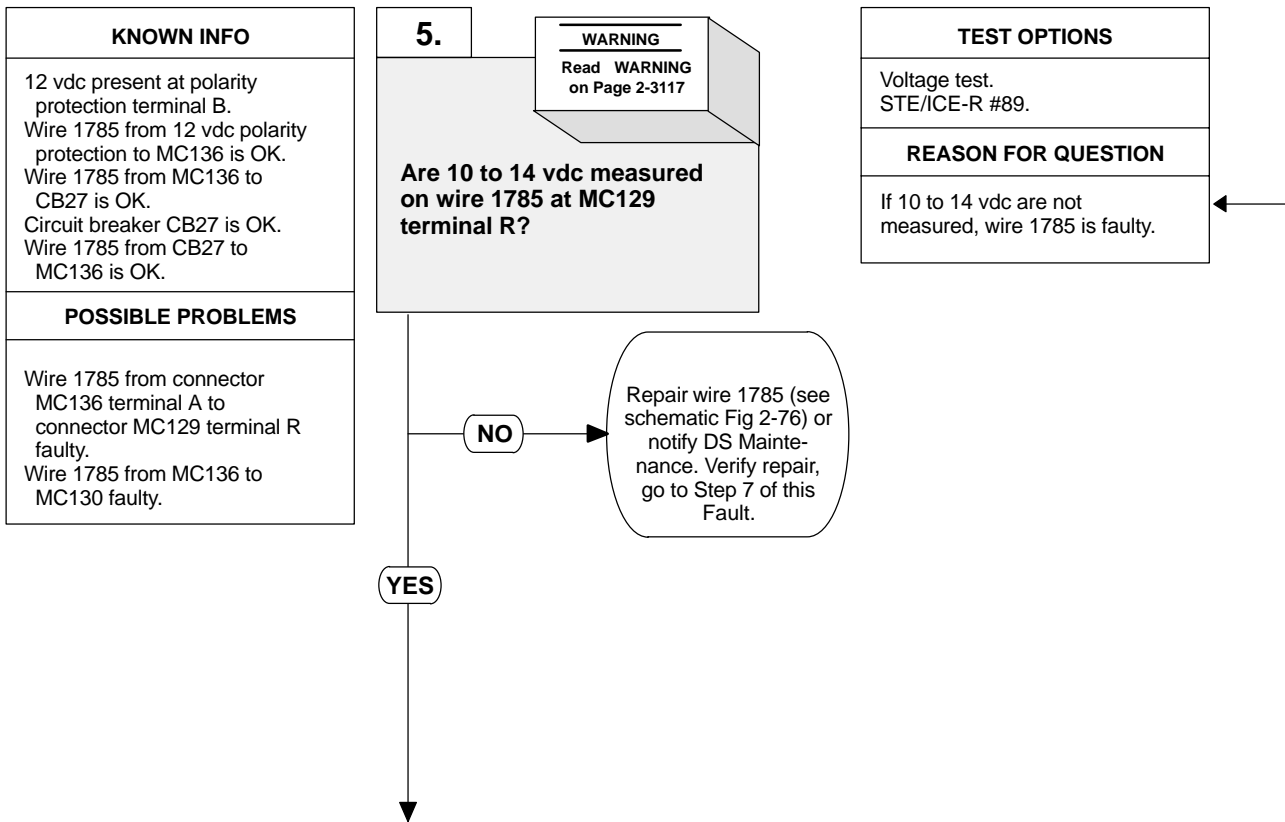
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

- (1) Set multimeter select switch to volts DC.
- (2) Connect positive (+) multimeter lead to wire 1785 at connector MC136 terminal A.
- (3) Connect negative (-) multimeter lead to a known good ground.
 - (a) If 10 to 14 vdc are not present, repair wire 1785 (see schematic Fig 2-75) or notify DS Maintenance.
 - (b) If there are 10 to 14 vdc present, wire 1785 is OK. Perform Step (4) below.
- (4) Install cover on powerbox with four screws.



3. LOSS OF INTERFACE POWER 12 VDC (CONT).

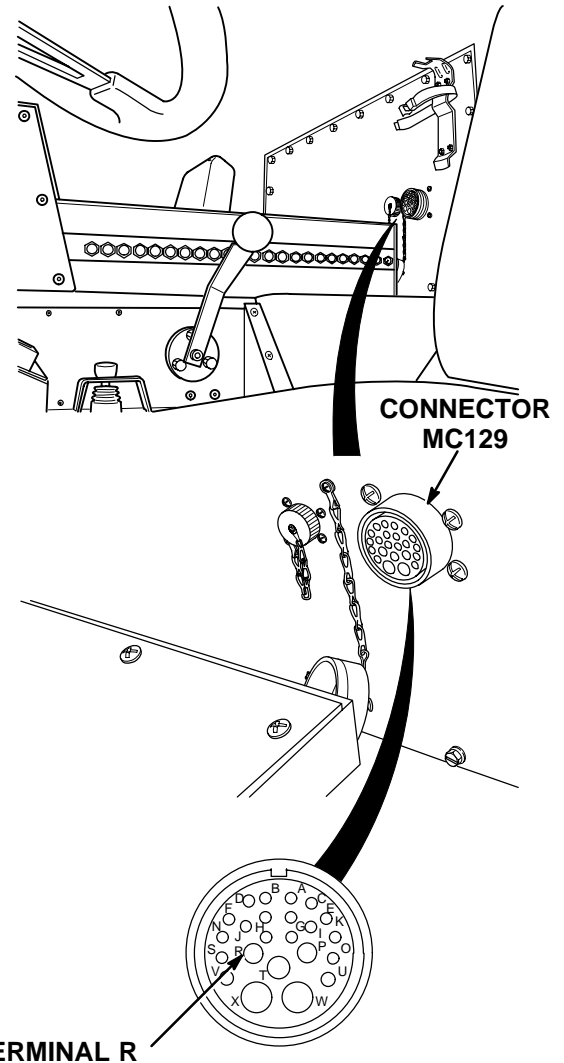


WARNING

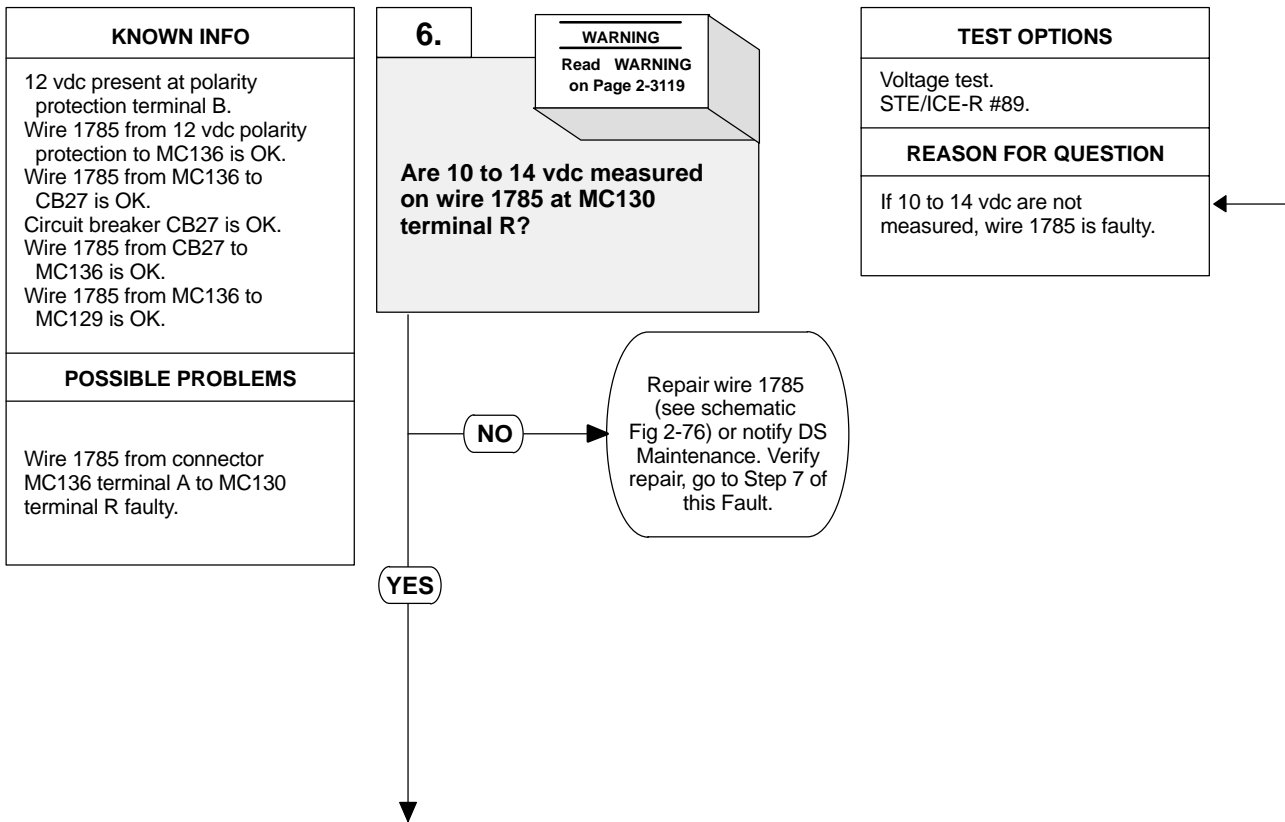
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

- (1) Set multimeter select switch to volts DC.
- (2) Connect positive (+) multimeter lead to wire 1785 at connector MC129 terminal R.
- (3) Connect negative (-) multimeter lead to a known good ground.
 - (a) If 10 to 14 vdc are not present, repair wire 1785 (see schematic Fig 2-76) or notify DS Maintenance.
 - (b) If there are 10 to 14 vdc present, wire 1785 is OK.



3. LOSS OF INTERFACE POWER 12 VDC (CONT).

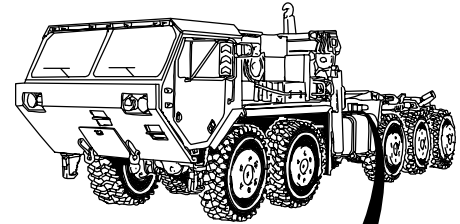


WARNING

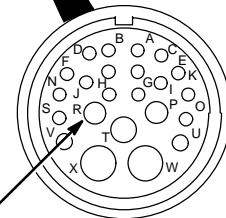
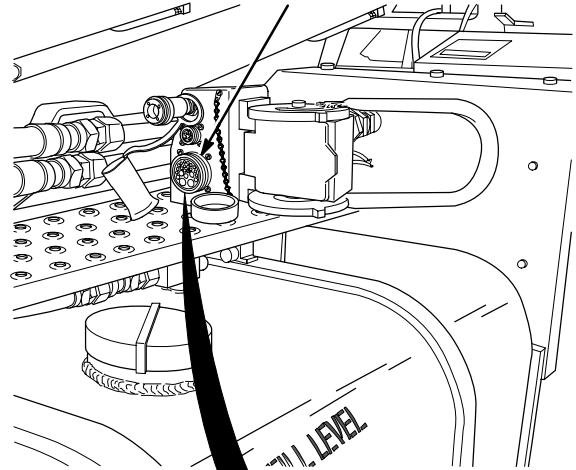
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

- (1) Set multimeter select switch to volts DC.
- (2) Connect positive (+) multimeter lead to wire 1785 at MC130 terminal R.
- (3) Connect negative (-) multimeter lead to a known good ground.
 - (a) If 10 to 14 vdc are not present, repair wire 1785 (see schematic Fig 2-76) or notify DS Maintenance.
 - (b) If there are 10 to 14 vdc present, wire 1785 is OK.

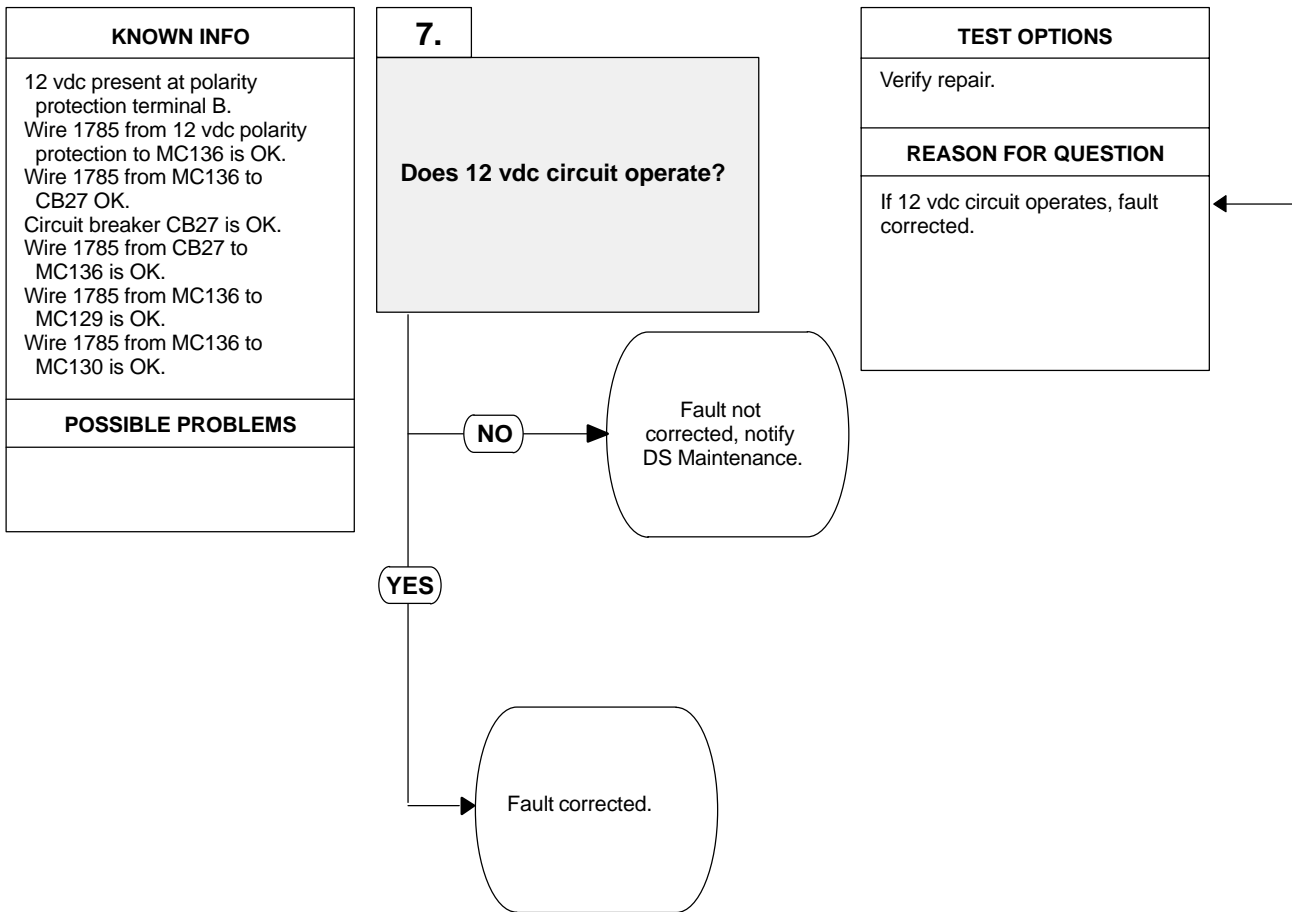


**CONNECTOR
MC130**



TERMINAL R

3. LOSS OF INTERFACE POWER 12 VDC (CONT).



VERIFY REPAIR

- (1) If 12 vdc circuit does not operate, fault not corrected, notify DS Maintenance.
- (2) If 12 vdc circuit operates, fault has been corrected.

2-37. INTERFACE TROUBLESHOOTING (CONT)

4. LOSS OF INTERFACE POWER 24 VDC.

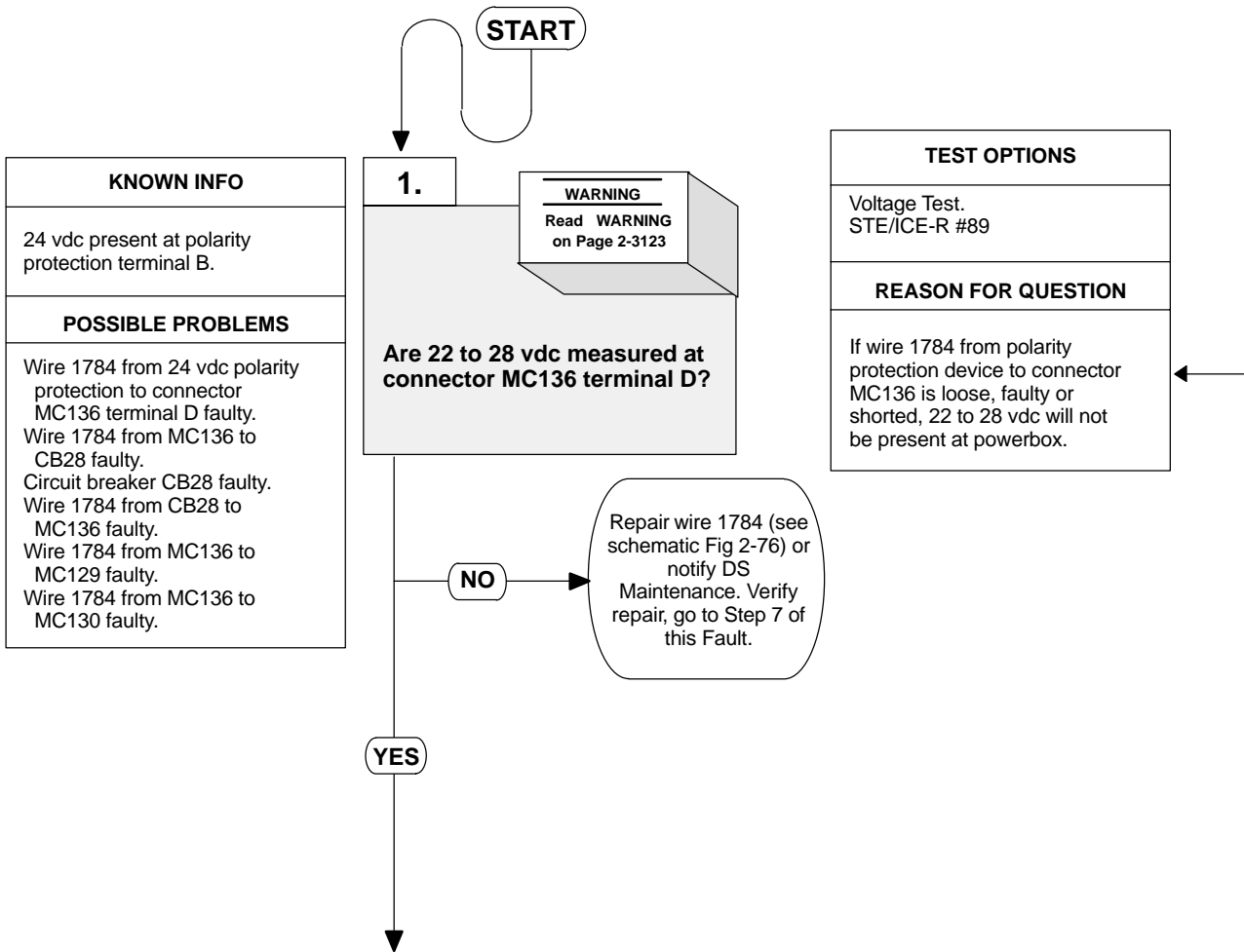
INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
 (Item 74, Appendix G)
 STE/ICE-R (Optional)
 (Item 3, Appendix G)
 Multimeter (Item 44, Appendix G)

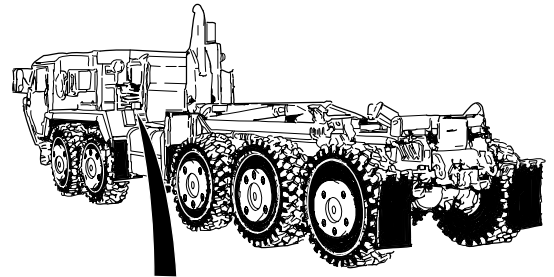
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Parking brake applied, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)

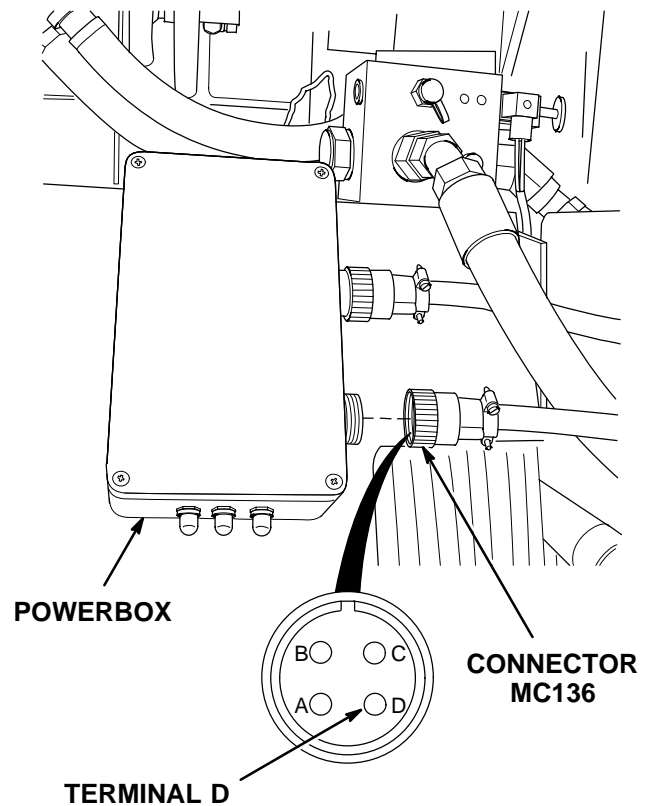


WARNING

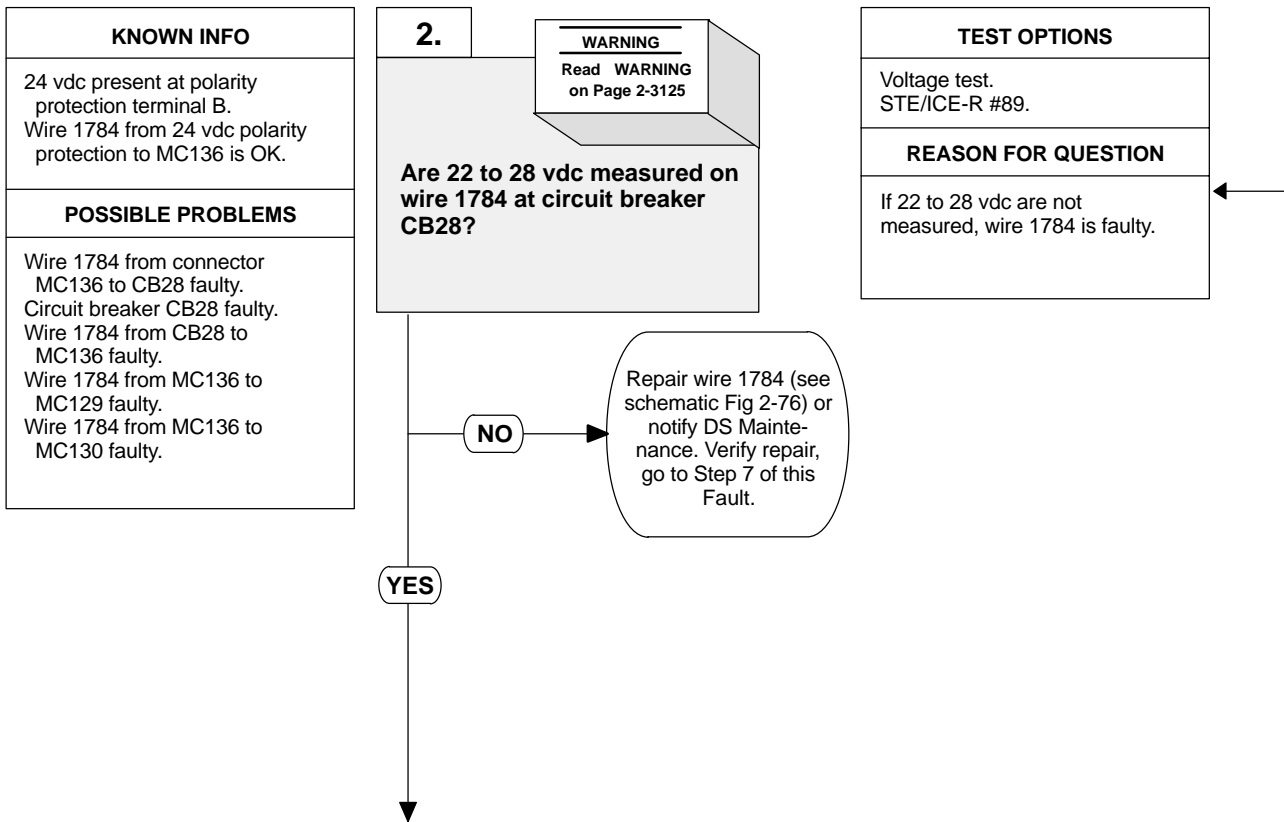
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.



- | VOLTAGE TEST | |
|---------------------|---|
| (1) | Disconnect connector MC136 from powerbox. |
| (2) | Set multimeter select switch to volts DC. |
| (3) | Connect positive (+) multimeter lead to connector MC136 terminal D. |
| (4) | Connect negative (-) multimeter lead to a known good ground. |
| (a) | If 22 to 28 vdc are not present, perform Step (5) below and repair wire 1784 between polarity protection and connector MC136 (see schematic Fig 2-76) or notify DS Maintenance. |
| (b) | If 22 to 28 vdc are present, perform Step (5) below and go to Step 2 of this Fault. |
| (5) | Connect connector MC136 to powerbox. |



4. LOSS OF INTERFACE POWER 24 VDC (CONT).

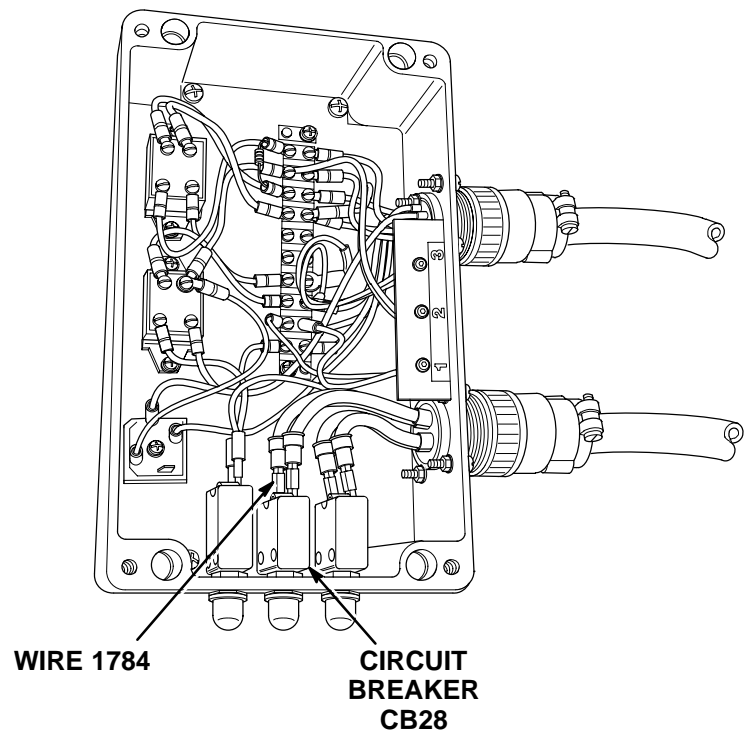
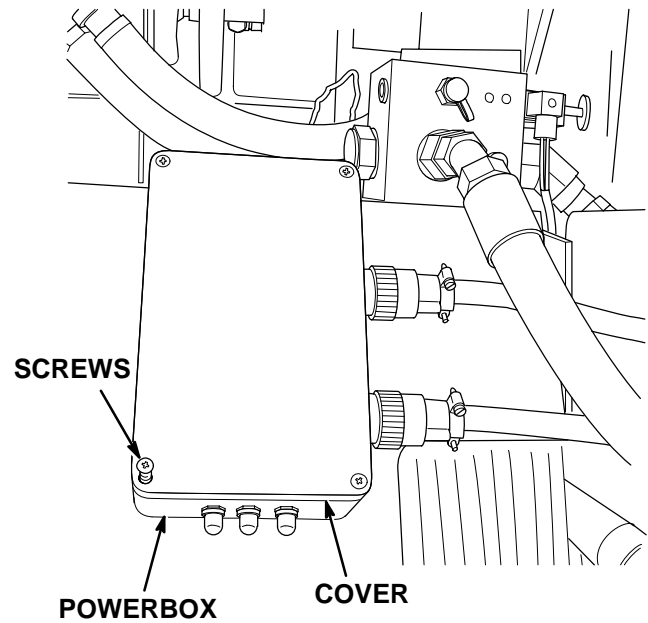


WARNING

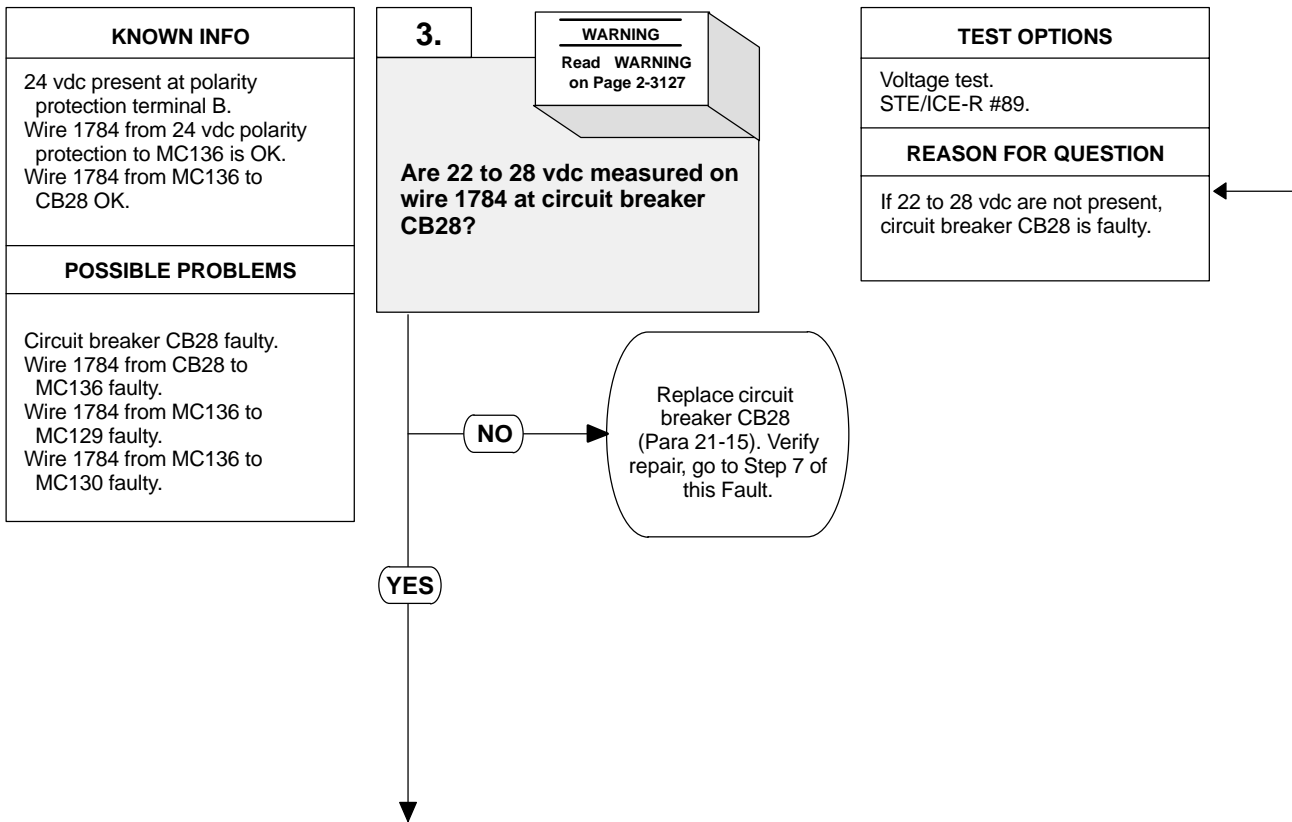
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

- (1) Loosen four screws and remove powerbox cover.
- (2) Set multimeter select switch to volts DC.
- (3) Connect positive (+) multimeter lead to wire 1784 at circuit breaker CB28.
- (4) Connect negative (-) multimeter lead to a known good ground.
 - (a) If 22 to 28 vdc are not present, repair wire 1784 (see schematic Fig 2-75) or notify DS Maintenance.
 - (b) If there are 22 to 28 vdc present, wire 1784 is OK.



4. LOSS OF INTERFACE POWER 24 VDC (CONT).

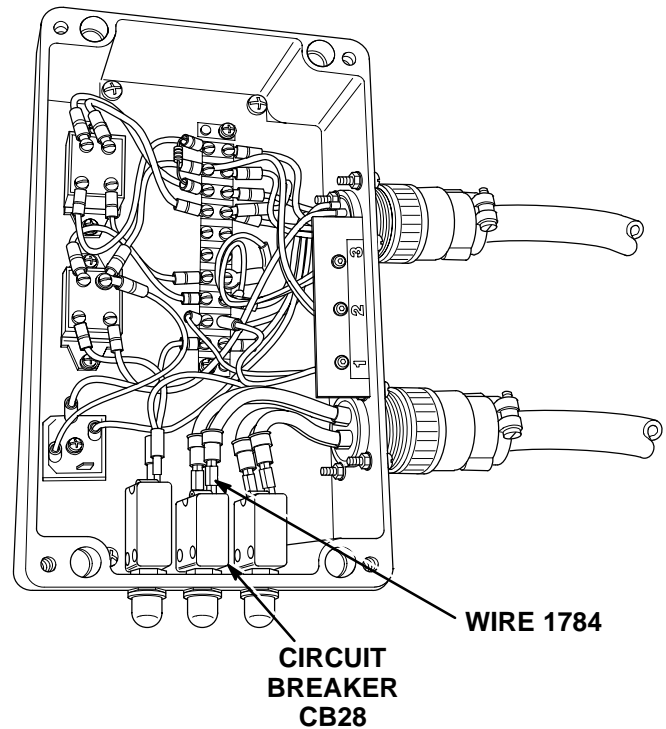


WARNING

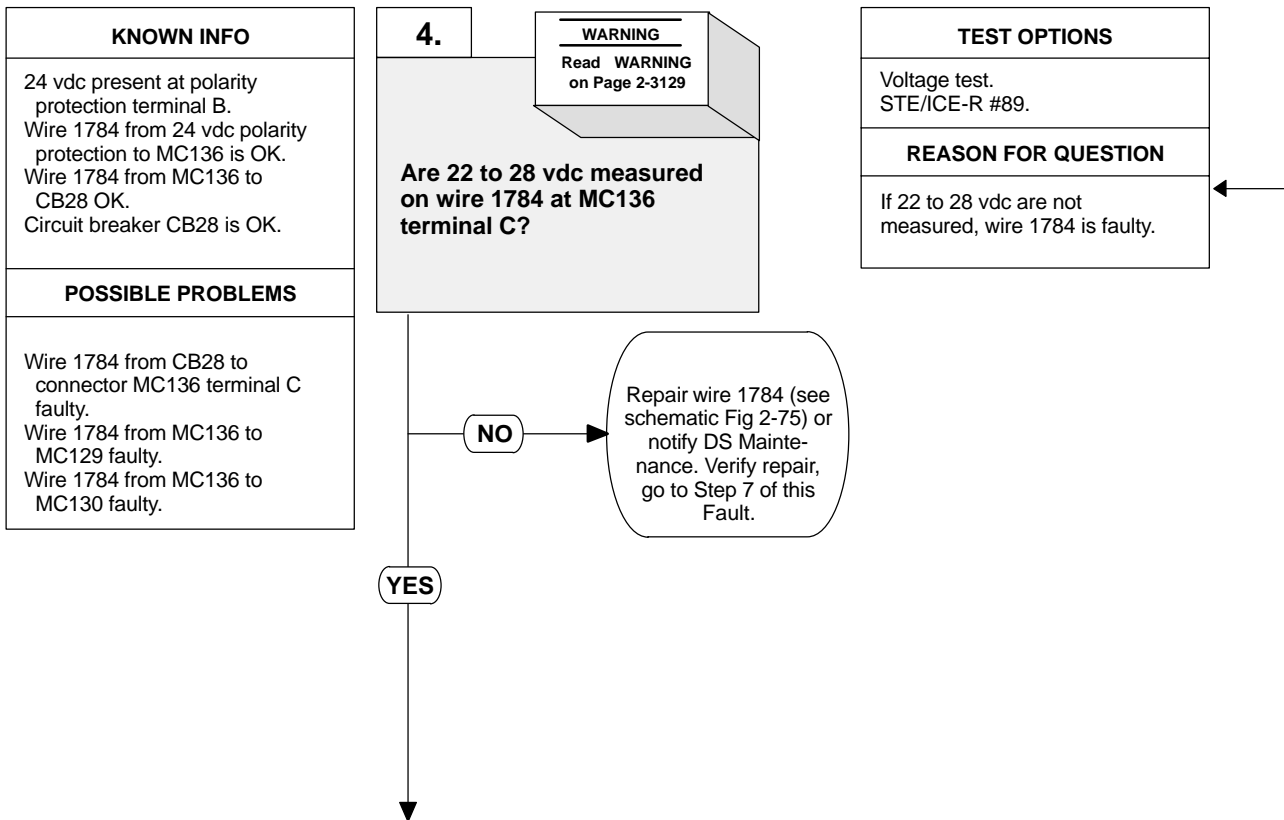
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

- (1) Set multimeter select switch to volts DC.
- (2) Connect positive (+) multimeter lead to wire 1784 at circuit breaker CB28.
- (3) Connect negative (-) multimeter lead to a known good ground.
 - (a) If 22 to 28 vdc are not present, replace circuit breaker CB28 (Para 21-15).
 - (b) If 22 to 28 vdc are present, circuit breaker CB28 is OK.



4. LOSS OF INTERFACE POWER 24 VDC (CONT).

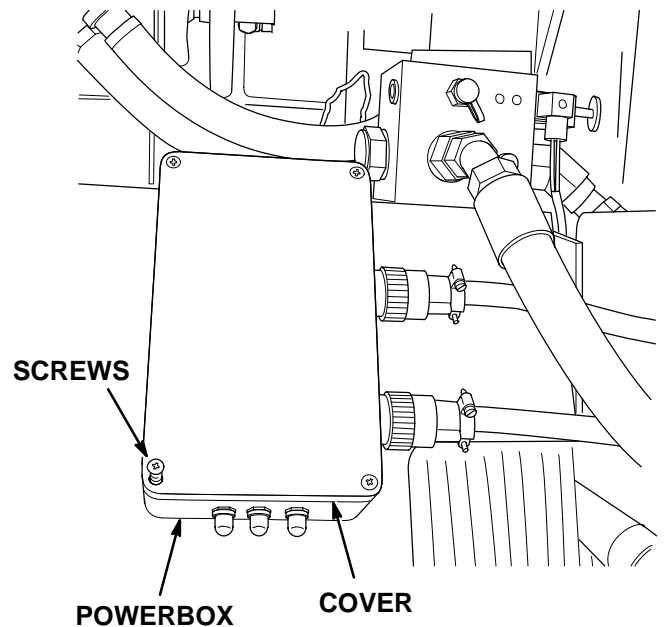
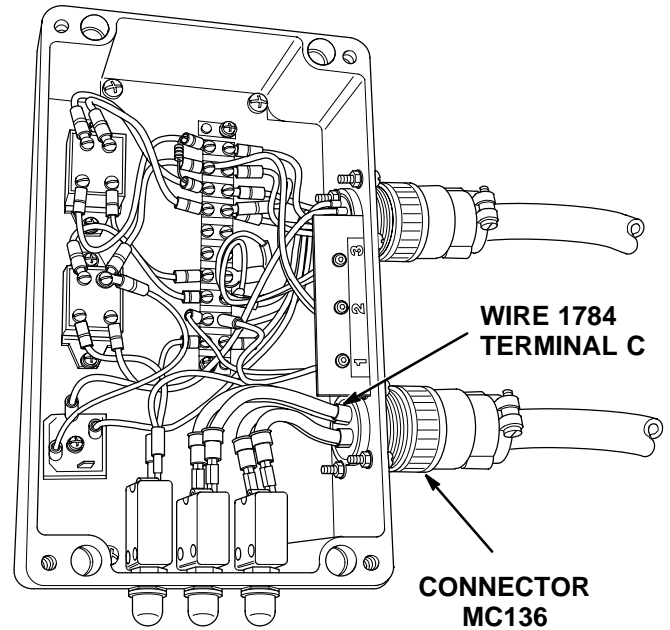


WARNING

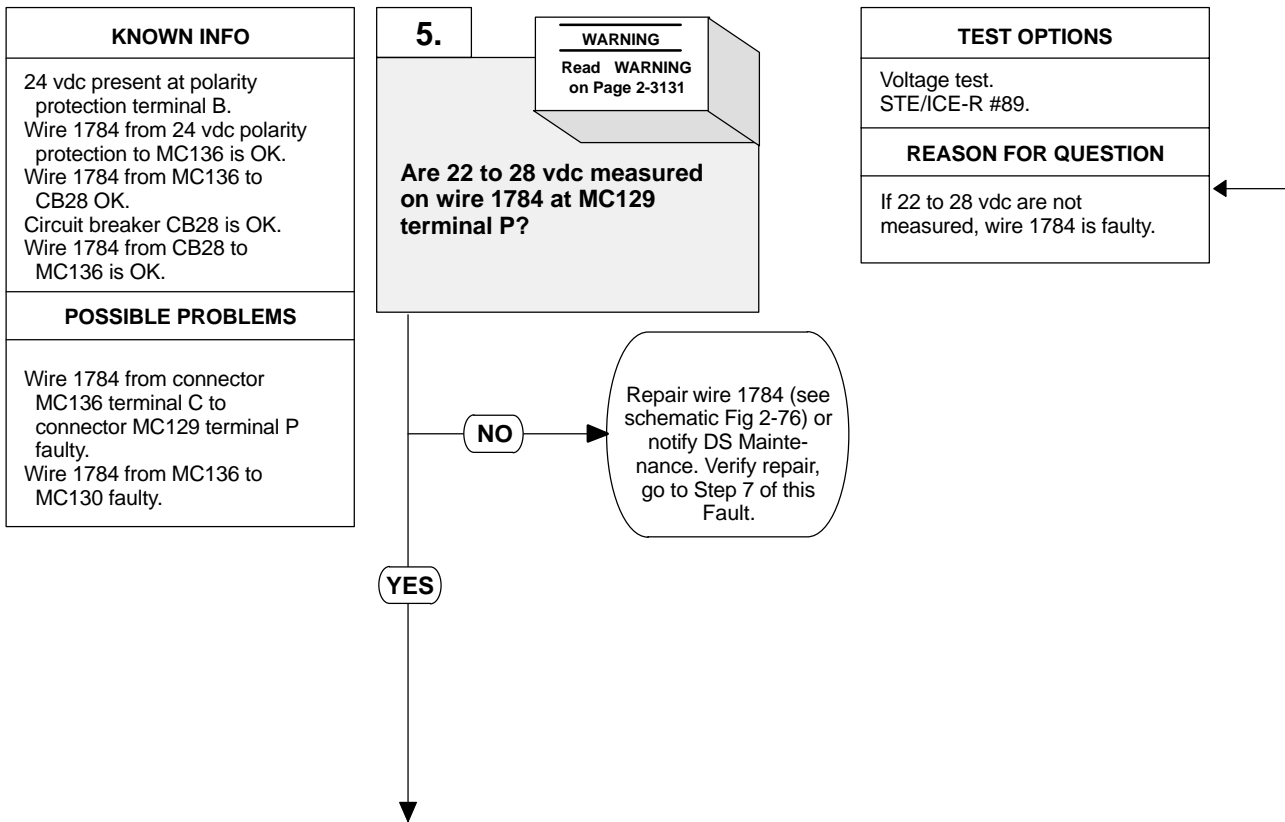
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

- (1) Set multimeter select switch to volts DC.
- (2) Connect positive (+) multimeter lead to wire 1784 at connector MC136 terminal C.
- (3) Connect negative (-) multimeter lead to a known good ground.
 - (a) If 22 to 28 vdc are not present, repair wire 1784 (see schematic Fig 2-75) or notify DS Maintenance.
 - (b) If there are 22 to 28 vdc present, wire 1784 is OK. Perform Step (4) below.
- (4) Install cover on powerbox with four screws.



4. LOSS OF INTERFACE POWER 24 VDC (CONT).

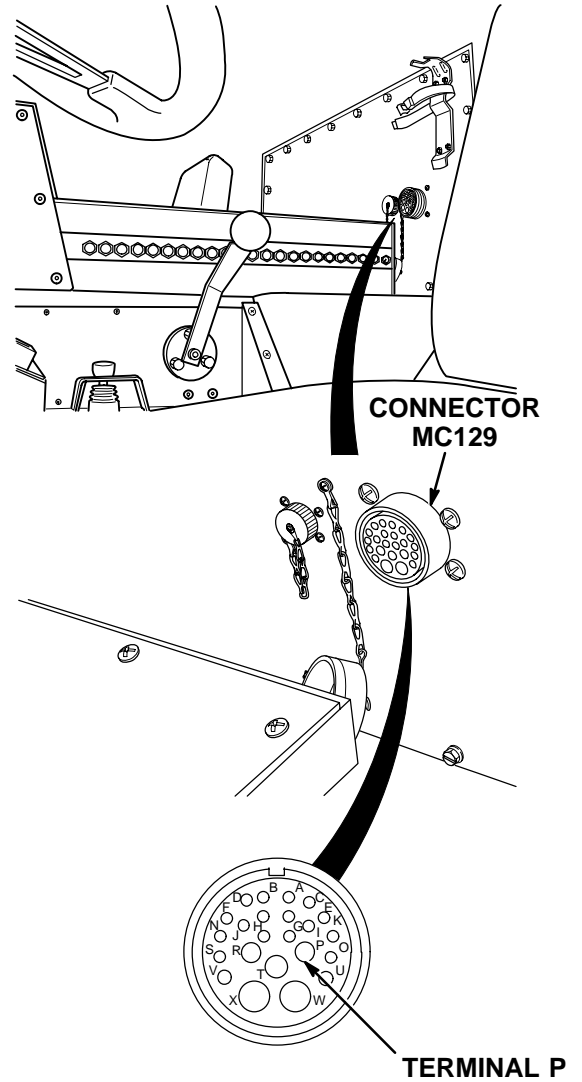


WARNING

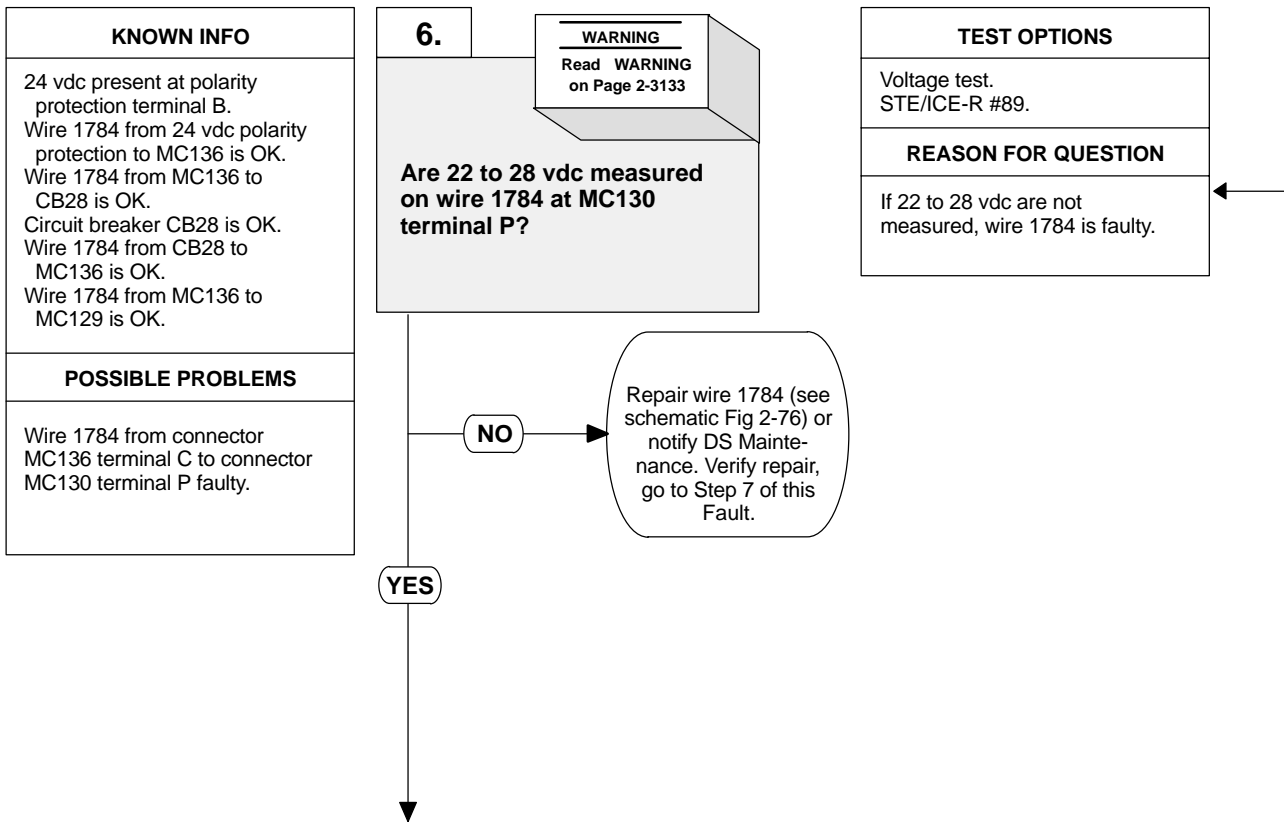
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

- (1) Set multimeter select switch to volts DC.
- (2) Connect positive (+) multimeter lead to wire 1784 at connector MC129 terminal P.
- (3) Connect negative (-) multimeter lead to a known good ground.
 - (a) If 22 to 28 vdc are not present, repair wire 1784 (see schematic Fig 2-76) or notify DS Maintenance.
 - (b) If there are 22 to 28 vdc present, wire 1784 is OK.



4. LOSS OF INTERFACE POWER 24 VDC (CONT).

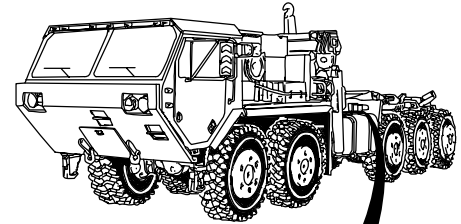


WARNING

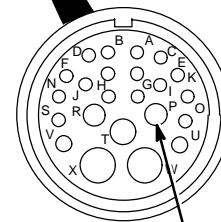
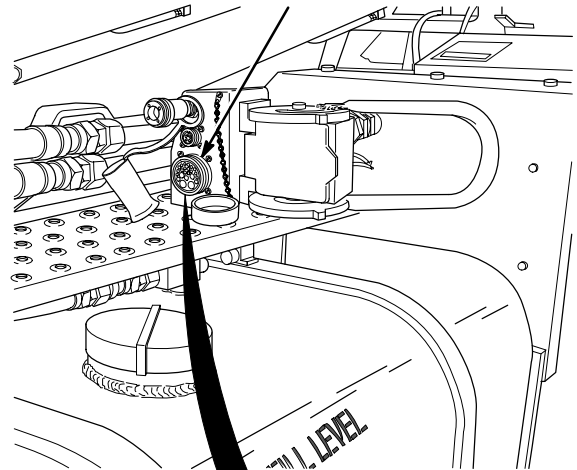
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

- (1) Set multimeter select switch to volts DC.
- (2) Connect positive (+) multimeter lead to wire 1784 at MC130 terminal P.
- (3) Connect negative (-) multimeter lead to a known good ground.
 - (a) If 22 to 28 vdc are not present, repair wire 1784 (see schematic Fig 2-76) or notify DS Maintenance.
 - (b) If there are 22 to 28 vdc present, wire 1784 is OK.

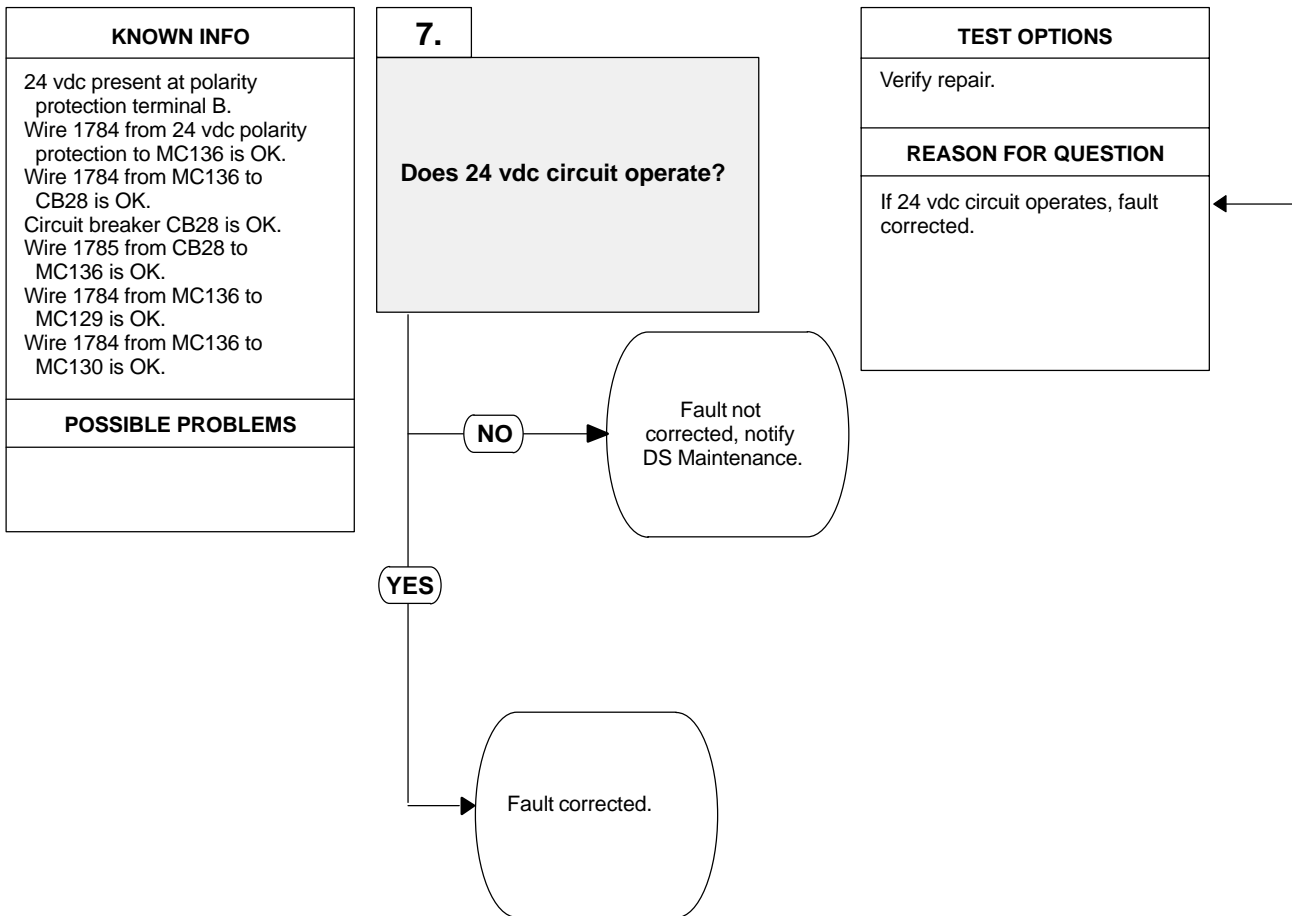


**CONNECTOR
MC130**



TERMINAL P

4. LOSS OF INTERFACE POWER 24 VDC (CONT).



VERIFY REPAIR

- (1) If 24 vdc circuit does not operate, fault not corrected, notify DS Maintenance.
- (2) If 24 vdc circuit operates, fault has been corrected.

2-38. CHU TROUBLESHOOTING.

This paragraph covers CHU Troubleshooting. The CHU Troubleshooting System Fault Index, Table 2-66, lists faults of the CHU system for the PLS truck. Refer to schematic Figures 2-79 through 2-81 when performing tests and corrective actions.

Table 2-66. CHU Troubleshooting System Fault Index

Fault No.	Description	Page
1.	Main Frame Does Not Unload	2-3140
2.	Rotary Paddle Cylinders Do Not Operate	2-3142
3.	LHS Does Not Unload In CHU Mode	2-3150
4.	Chu Mode Switch Inoperative (Lifting Frame Contacts Rear Rollers)	2-3164
5.	Hook Arm Extends Too Far In CHU Mode (Auto)	2-3176

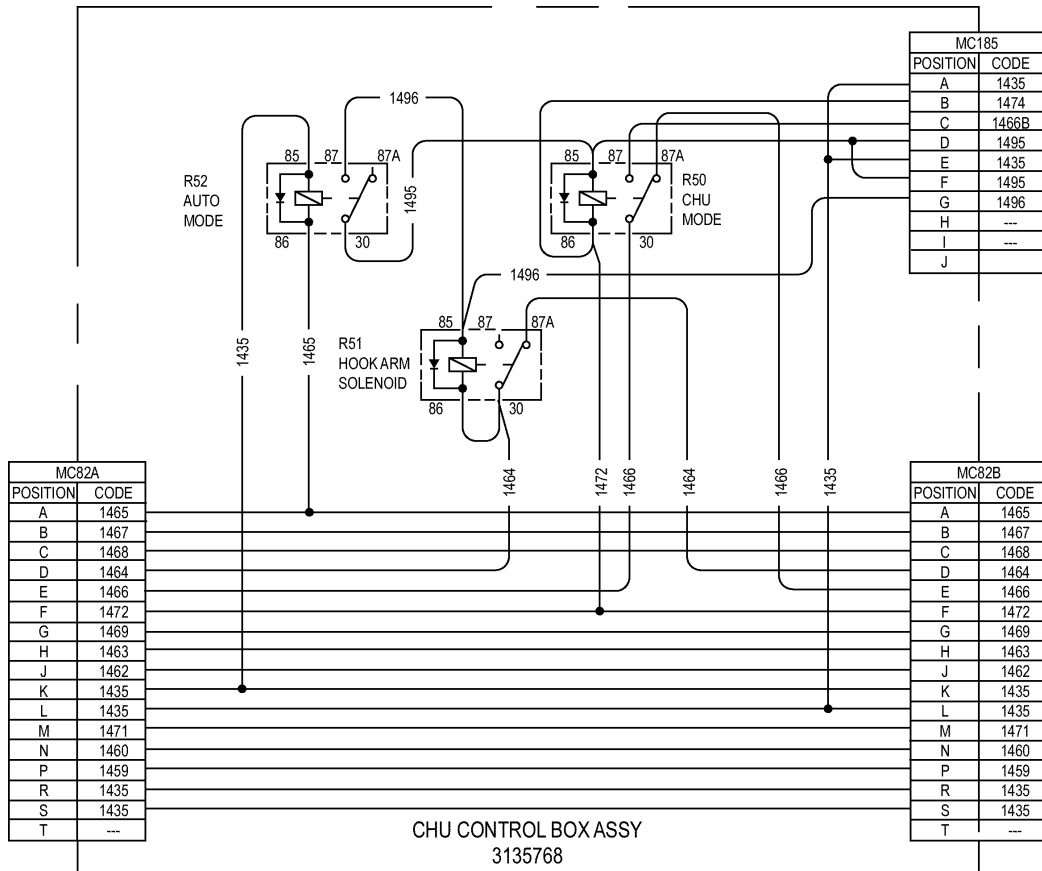


Figure 2-79. CHU Power Box Wiring Diagram

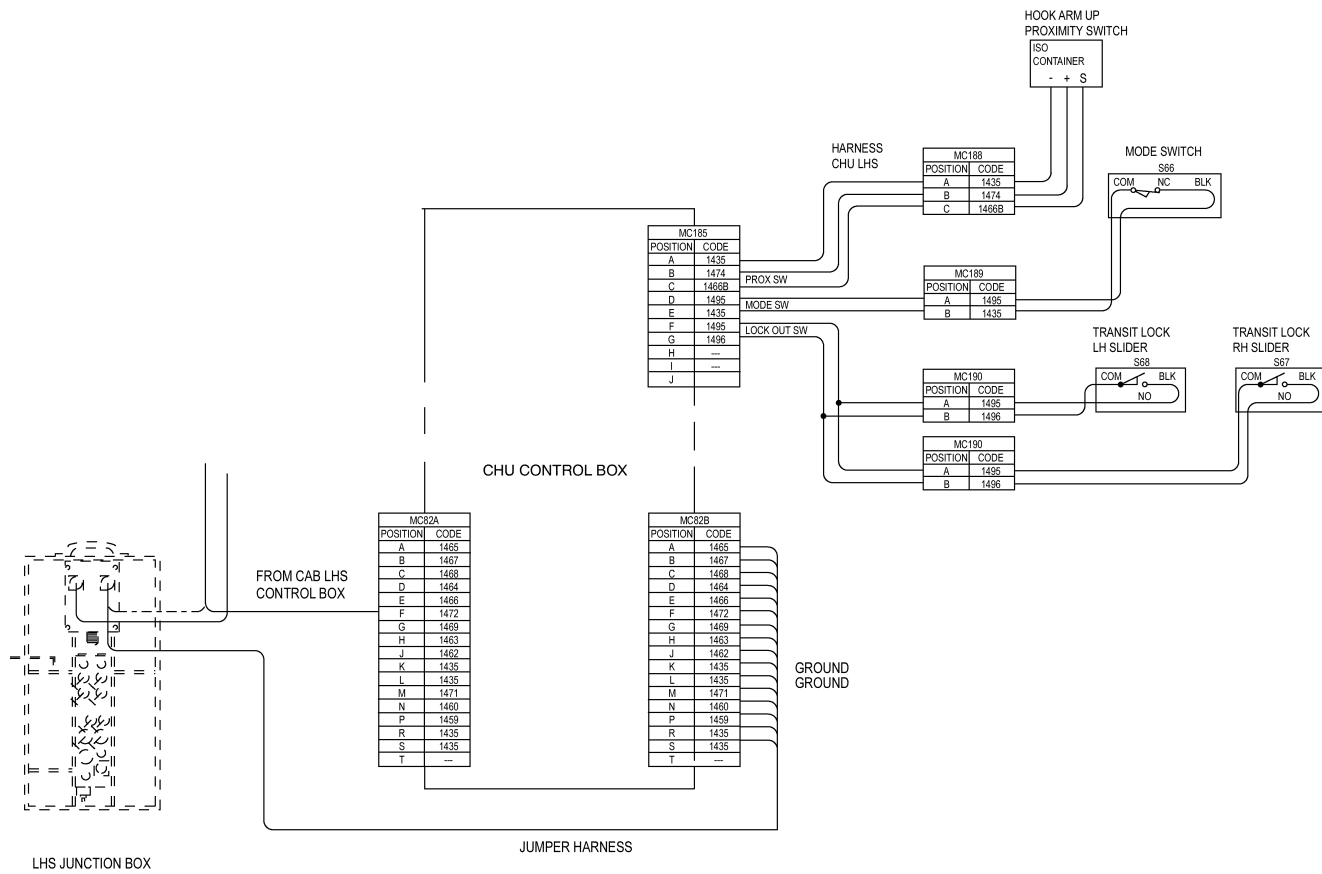


Figure 2-80. CHU Wiring Diagram

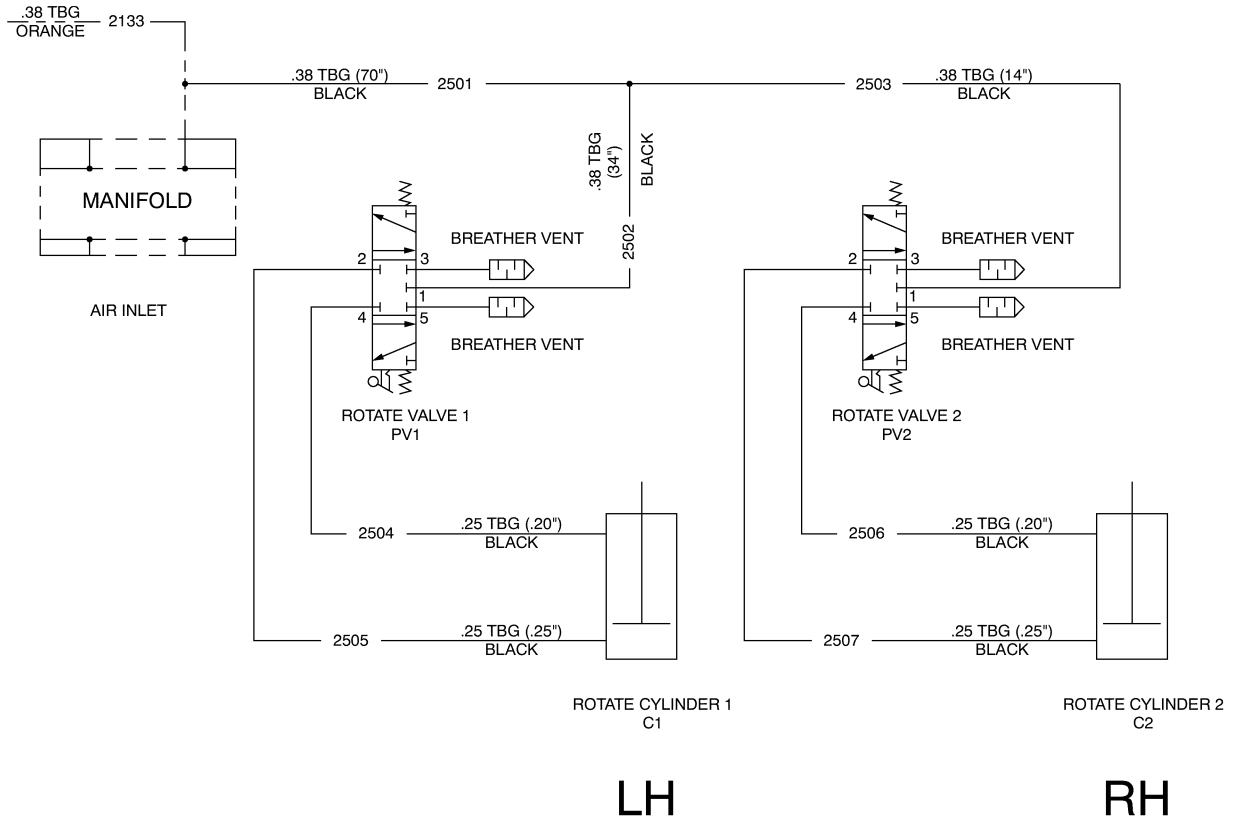


Figure 2-81. CHU Air Hose Lines Diagram

2-38. CHU TROUBLESHOOTING (CONT)

1. MAIN FRAME DOES NOT UNLOAD.

INITIAL SETUP

Tools and Special Tools

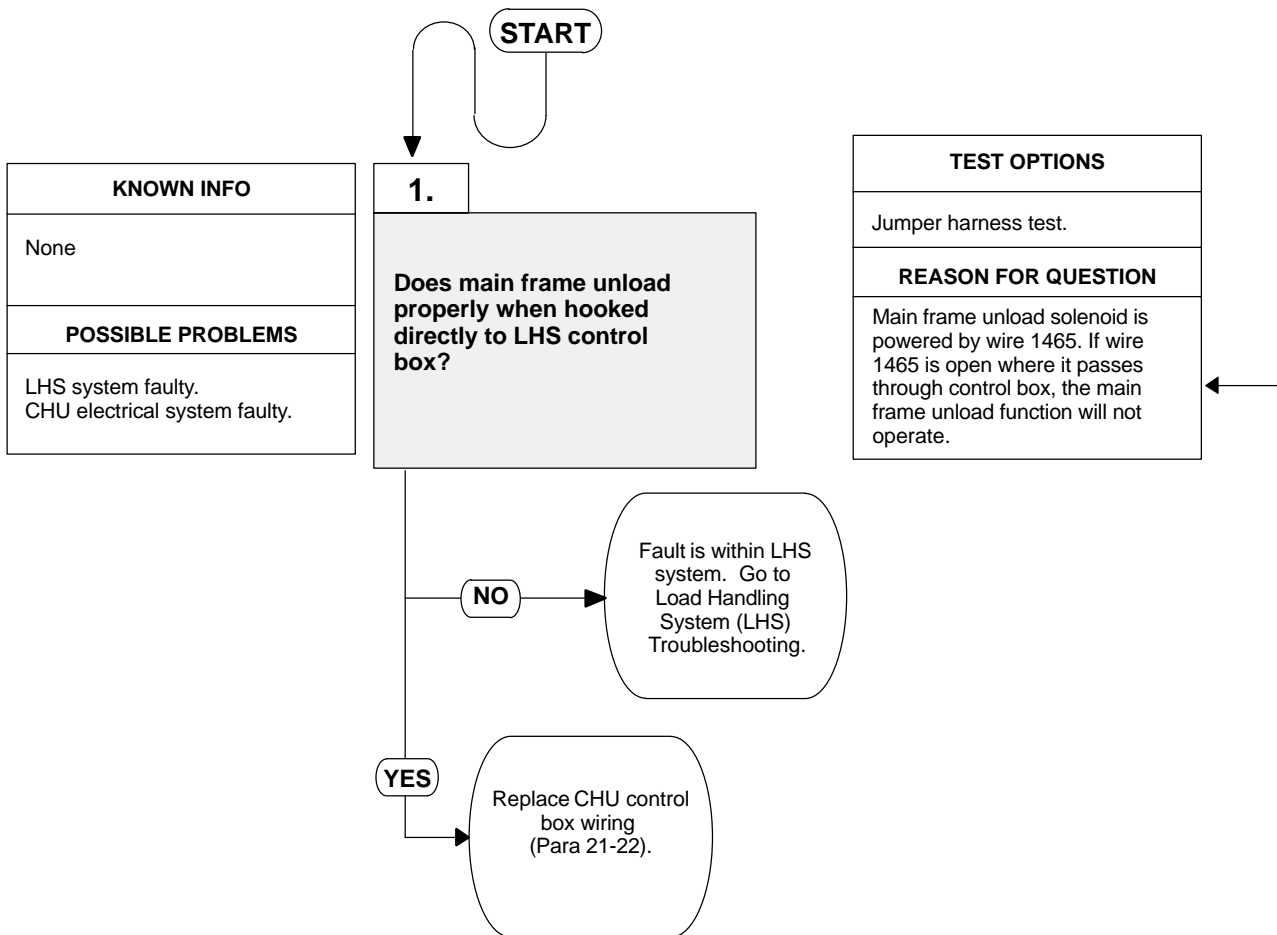
Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

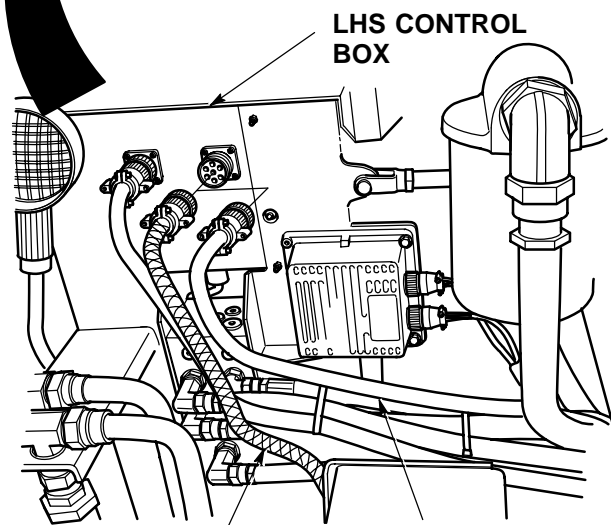
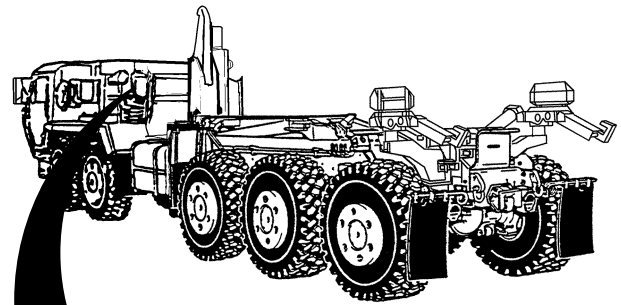
References

TM 9-2320-364-10

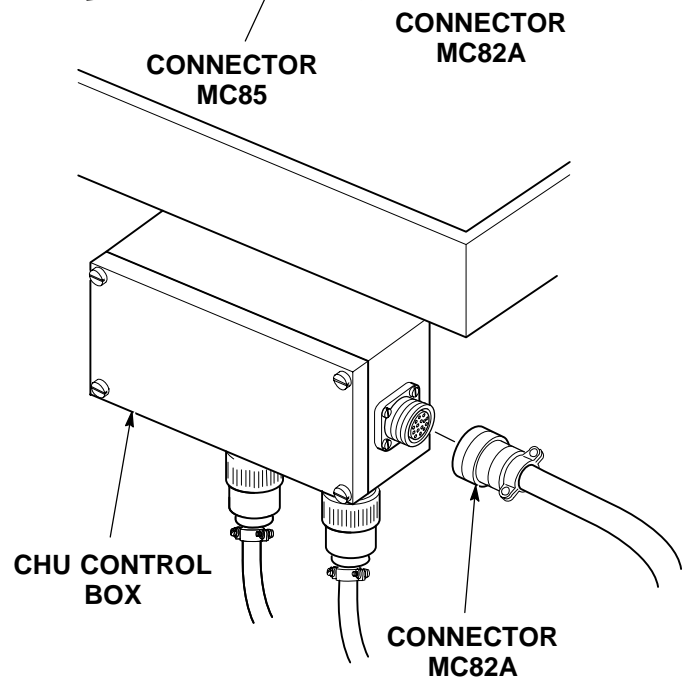
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Parking brake ON, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system charged, (TM 9-2320-364-10)
Load handling system (LHS) fully extended,
(TM 9-2320-364-10)





- | JUMPER HARNESS TEST |
|---|
| (1) Disconnect jumper harness connector MC85 from LHS control box. |
| (2) Disconnect connector MC82A from CHU control box and connect to LHS control box. |
| (3) Cycle LHS (TM 9-2320-364-10). |
| (4) Does main frame unload properly? |
| (a) If operation is correct, perform step (5) and (6) below. |
| (b) If main frame does not unload properly, Fault is within LHS system. Perform step (5) and (6) below then go to Load Handling System (LHS) Troubleshooting. |
| (5) Disconnect MC82A from LHS control box and hook up to CHU control box. |
| (6) Connect jumper harness MC85 to LHS control box. |



2-38. CHU TROUBLESHOOTING (CONT)

2. ROTARY PADDLE CYLINDERS DO NOT OPERATE.

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Materials/Parts

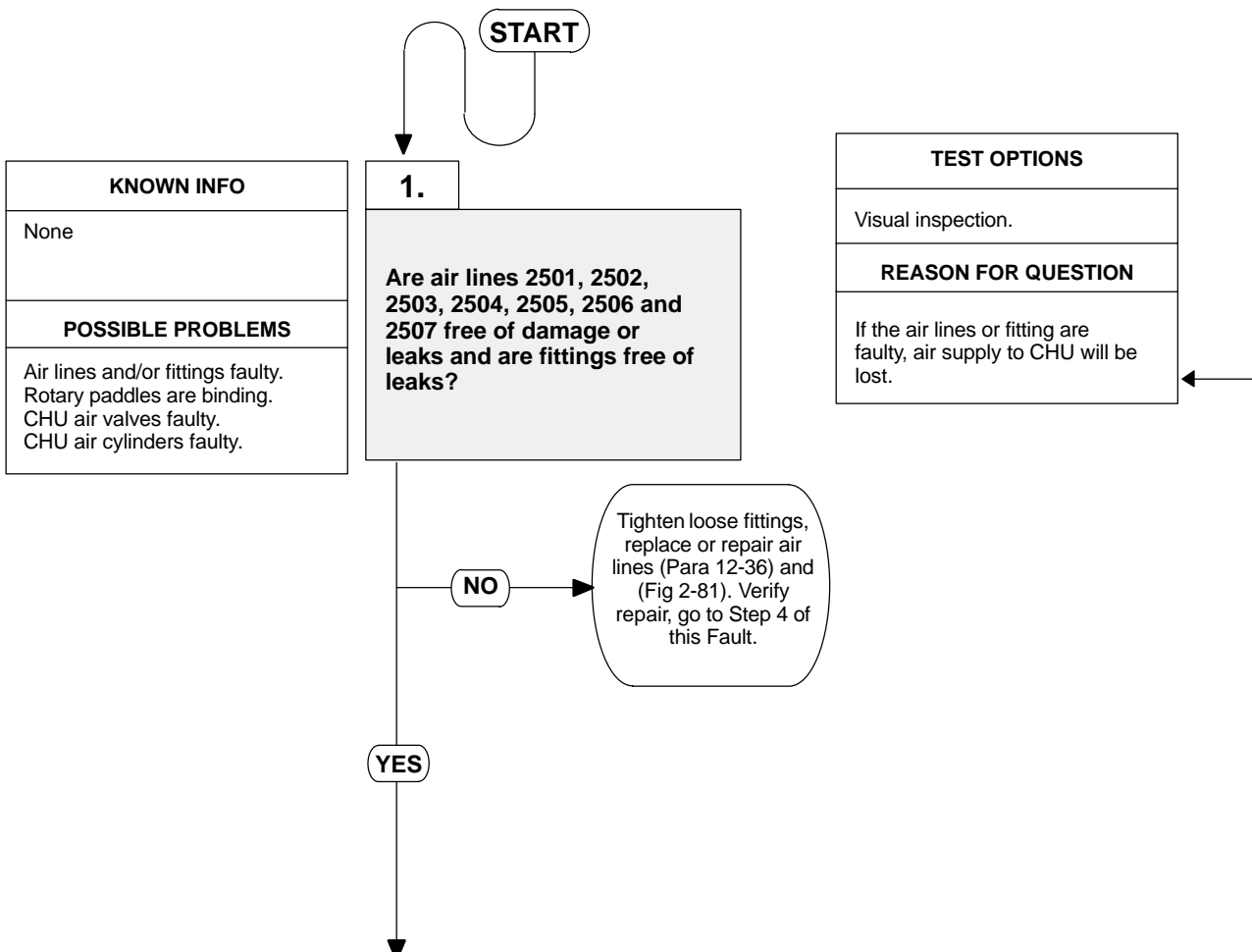
Solution, Soap (Item 86, Appendix C)

References

TM 9-2320-364-10

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Parking brake ON, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system charged, (TM 9-2320-364-10)
Lifting frame in container mode
(TM 9-2320-364-10)
Load handling system (LHS) fully extended,
(TM 9-2320-364-10)

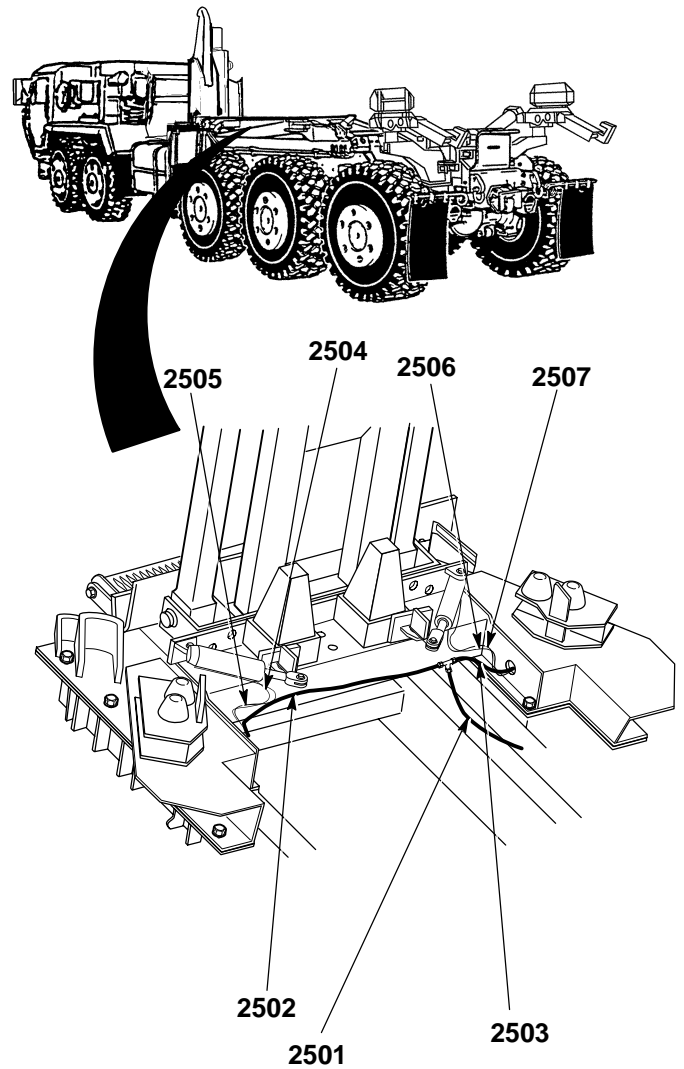


NOTE

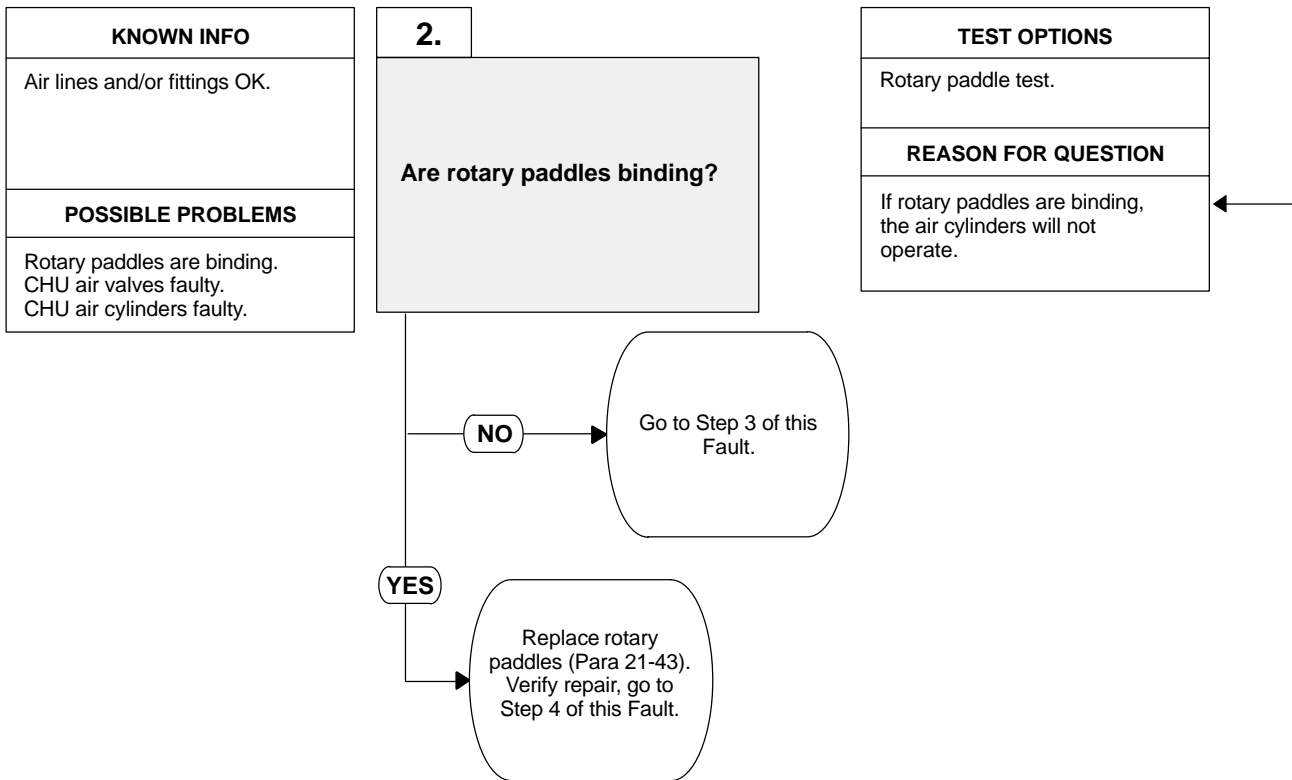
Use soap solution to inspect for air leaks.

VISUAL INSPECTION

Check air lines 2501, 2502, 2503, 2504, 2505, 2506 and 2507 for damage and loose or damaged fittings. If lines are leaking or damaged, tighten fittings, repair or replace air lines (Para 12-36).

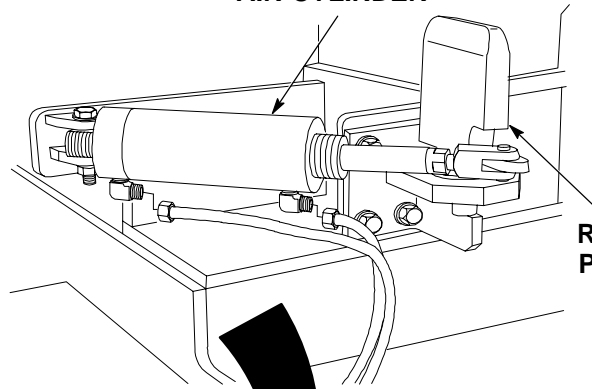


2. ROTARY PADDLE CYLINDERS DO NOT OPERATE (CONT).



AIR CYLINDER

ROTARY PADDLE

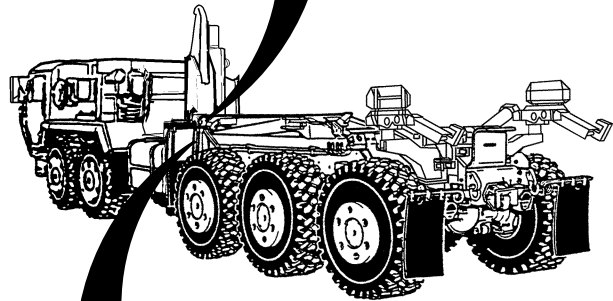


NOTE

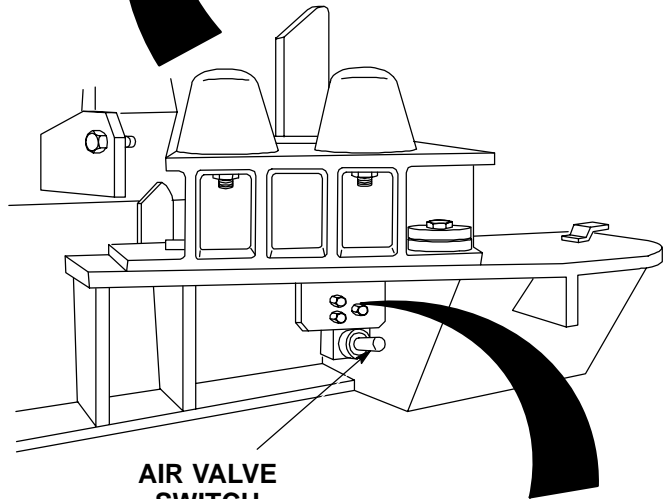
Left and right air cylinders and paddles are identical. Left side is shown.

ROTARY PADDLE TEST

- (1) Disengage rotary paddle from air cylinder (Para 21-43).
- (2) While observing air cylinder shaft, operate air valve switch.
 - (a) If air cylinder shaft moves, replace rotary paddle (Para 21-43).
 - (b) If air cylinder shaft does not move, rotary paddle is OK. Install rotary paddle (Para 21-43).



AIR VALVE SWITCH



LIFTING FRAME AIR CONTROLS
FLIPPER BRACKET

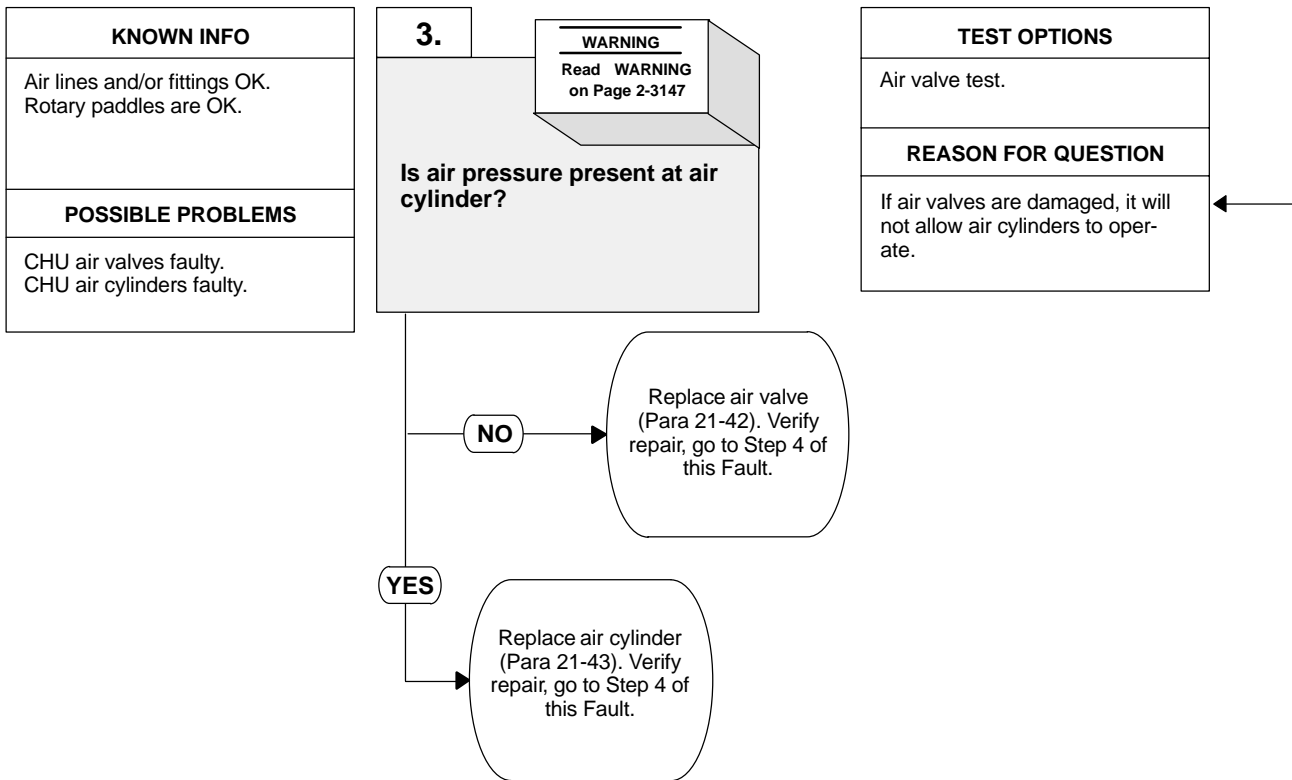
ENGAGE

DISENGAGE



48152-3152165

2. ROTARY PADDLE CYLINDERS DO NOT OPERATE (CONT).



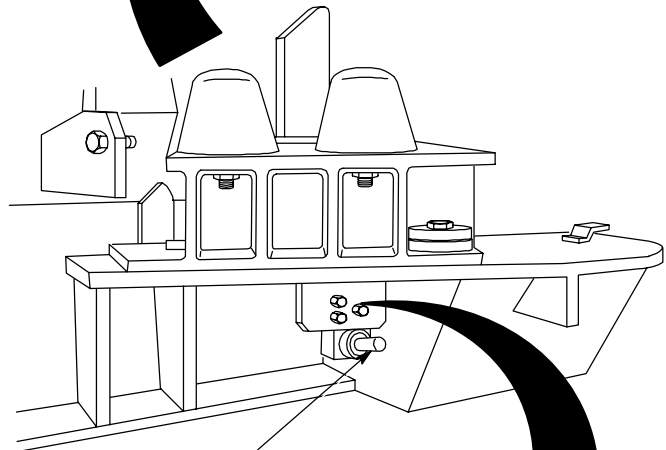
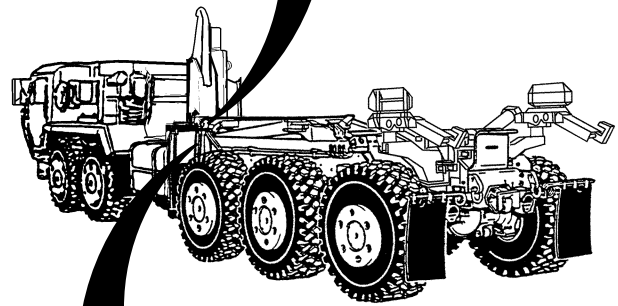
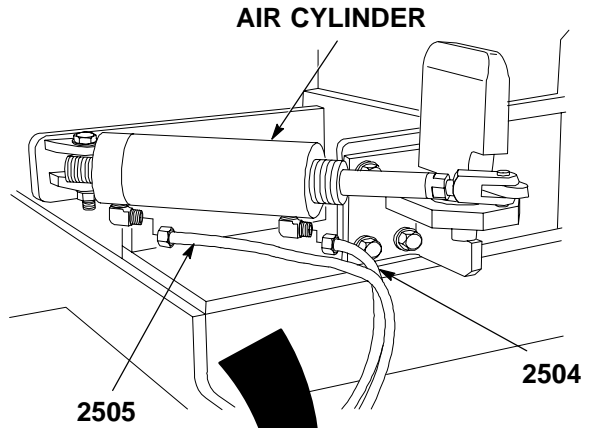
WARNING

Wear safety goggles when performing tests on valves. Failure to do so may result in serious eye injury due to high pressure air.

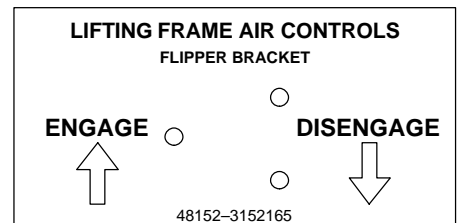
NOTE

Procedure is the same for both air valves. Left side is shown.

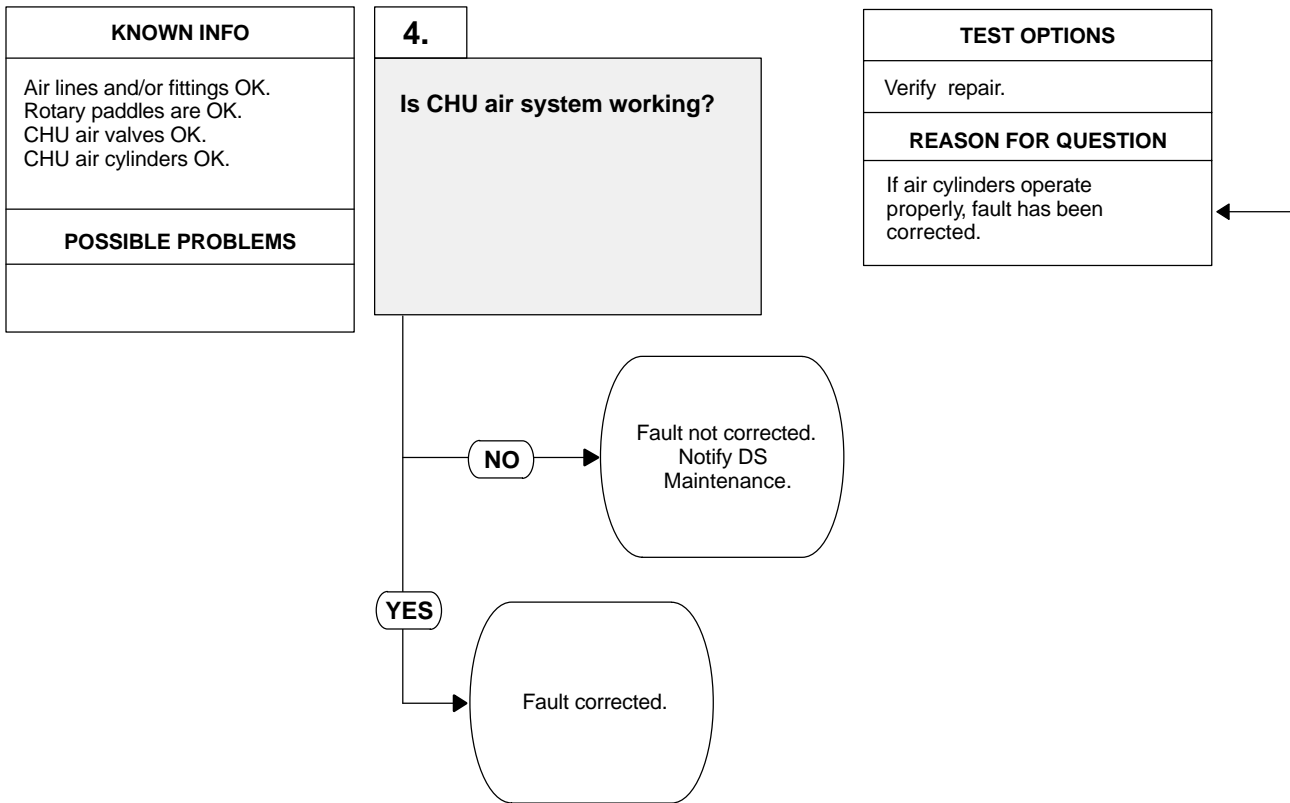
- AIR VALVE TEST**
- (1) Disconnect air lines 2504 and 2505 from air cylinder (Para 12-35).
 - (2) Move flipper bracket switch to engage position and check for air pressure at air line 2504.
 - (3) Move flipper bracket switch to disengage position and check for air pressure at air line 2505.
 - (4) Is there air pressure at both air lines?
 - (a) If there is air pressure at both air lines, perform Step (5) below and replace air cylinder (Para 21-43).
 - (b) If there is no air pressure at air line 2504 and/or 2505, perform Step (5) and replace air valve (Para 21-42).
 - (5) Connect air lines 2504 and 2505 to air cylinder (Para 12-35).

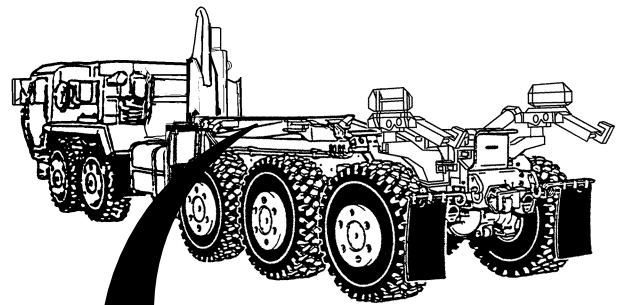


AIR VALVE SWITCH



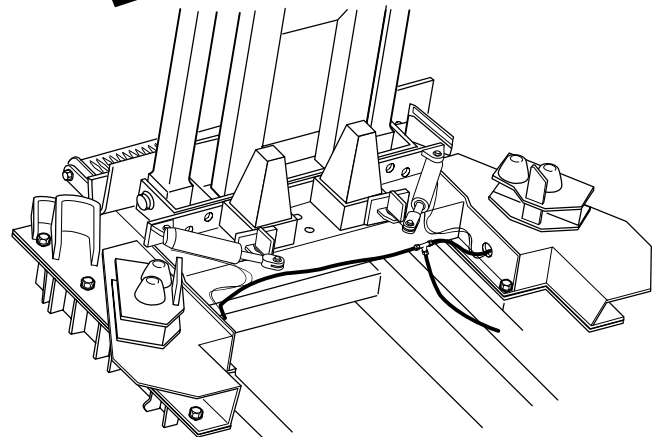
2. ROTARY PADDLE CYLINDERS DO NOT OPERATE (CONT).





VERIFY REPAIR

- (1) Start engine (TM 9-2320-364-10).
- (2) If air cylinders rotate rotary paddles properly, fault has been corrected.
- (3) If air cylinders do not rotate rotary paddles properly, fault has not been corrected. Notify DS Maintenance.



2-38. CHU TROUBLESHOOTING (CONT)

3. LHS DOES NOT UNLOAD IN CHU MODE.

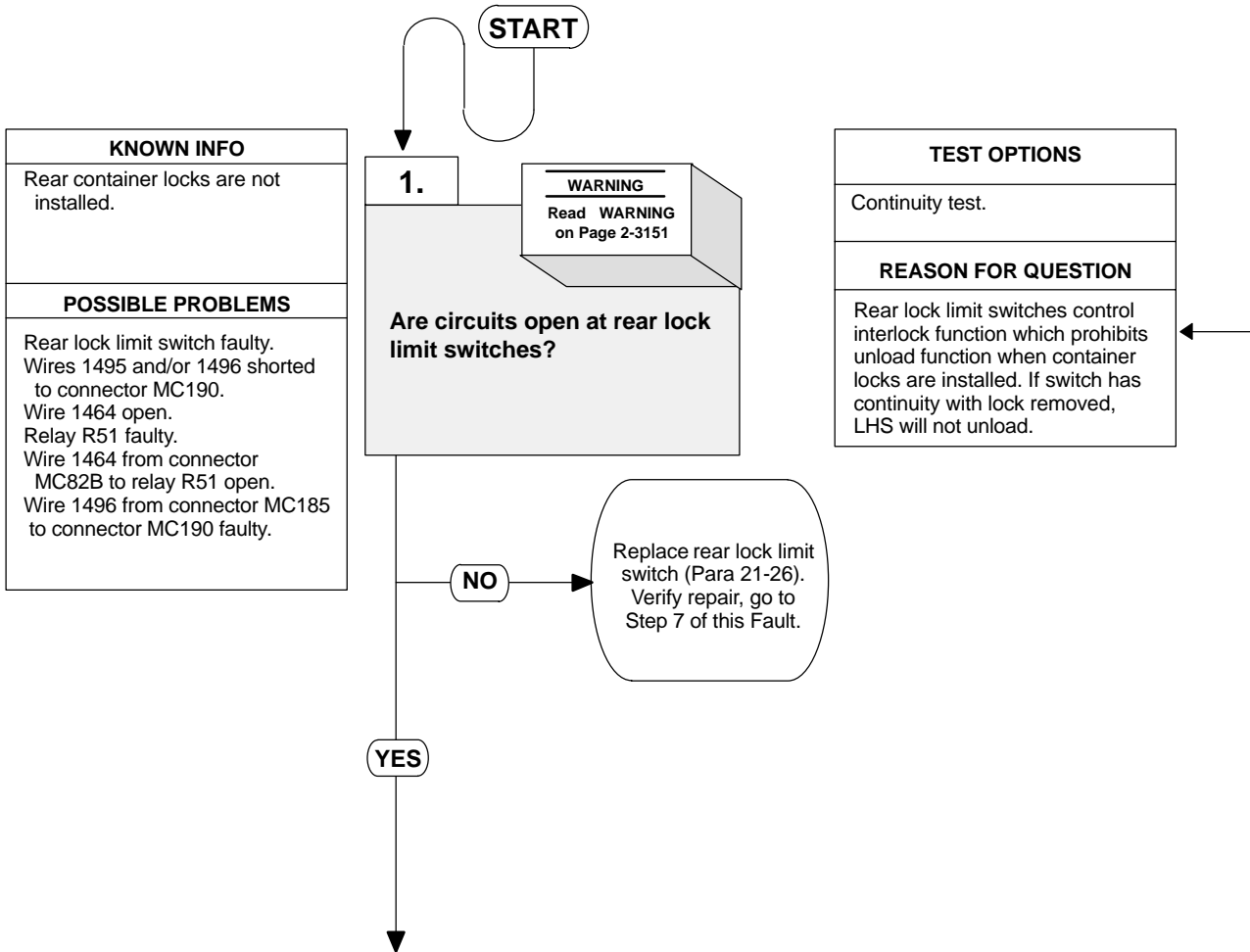
INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
 (Item 74, Appendix G)
 Multimeter (Item 44, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Parking brake applied, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)

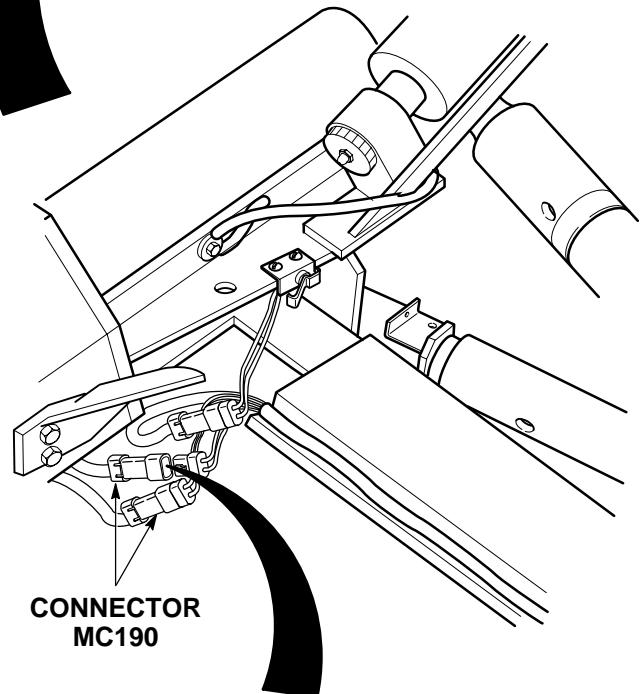
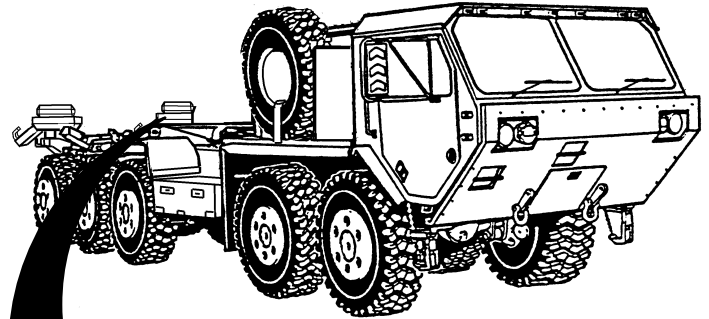


WARNING

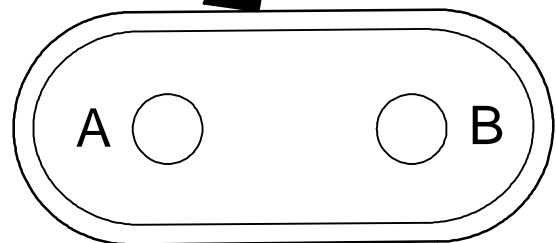
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

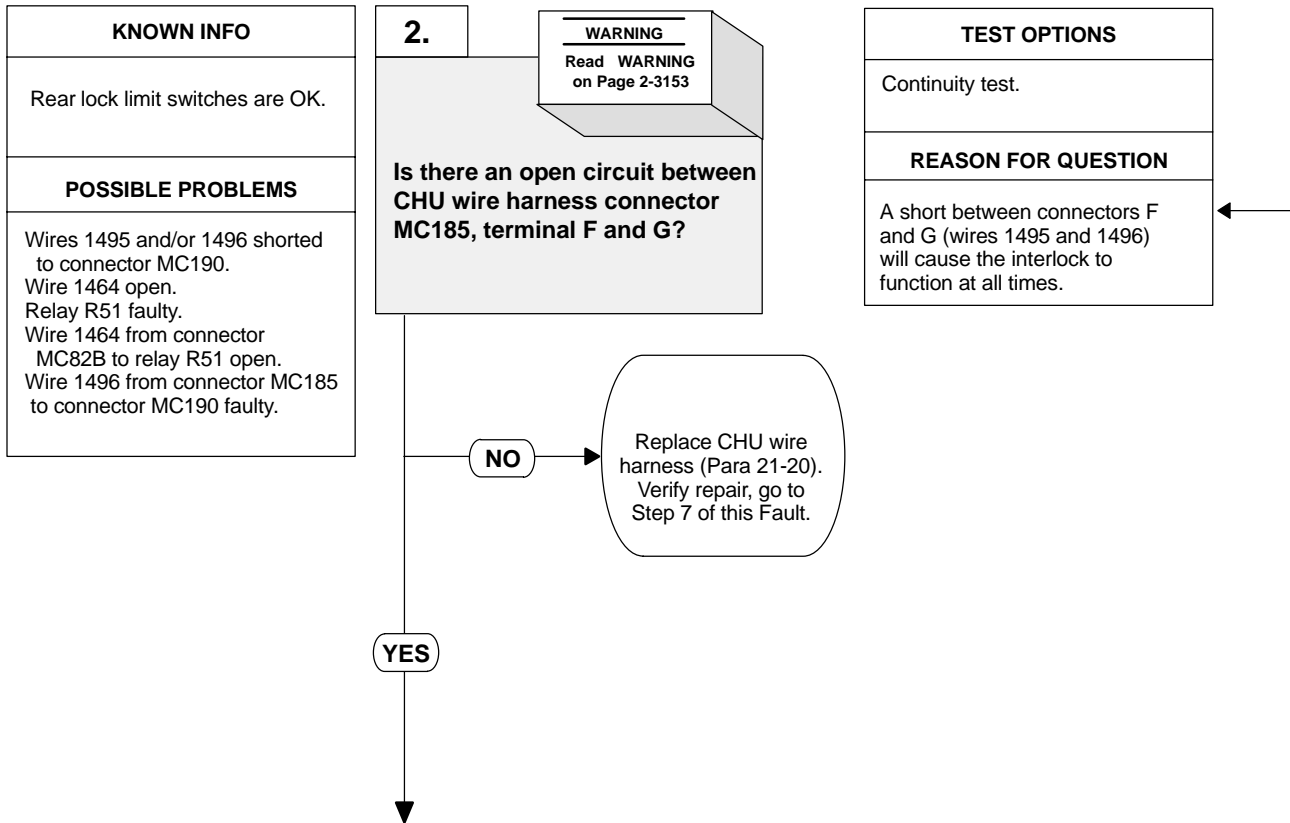
- (1) Disconnect two rear lock limit switch connectors MC190.
- (2) Set multimeter select switch to ohms.
- (3) Is there continuity between connector MC190 terminal A and terminal B?
 - (a) If there is continuity, replace rear lock limit switch (Para 21-26).
 - (b) If there is no continuity, rear lock limit switch is OK.
- (4) Connect rear lock limit switch connector MC190.
- (5) Repeat step (3) and (4) for second rear lock limit switch.



**CONNECTOR
MC190**



3. LHS DOES NOT UNLOAD IN CHU MODE (CONT).

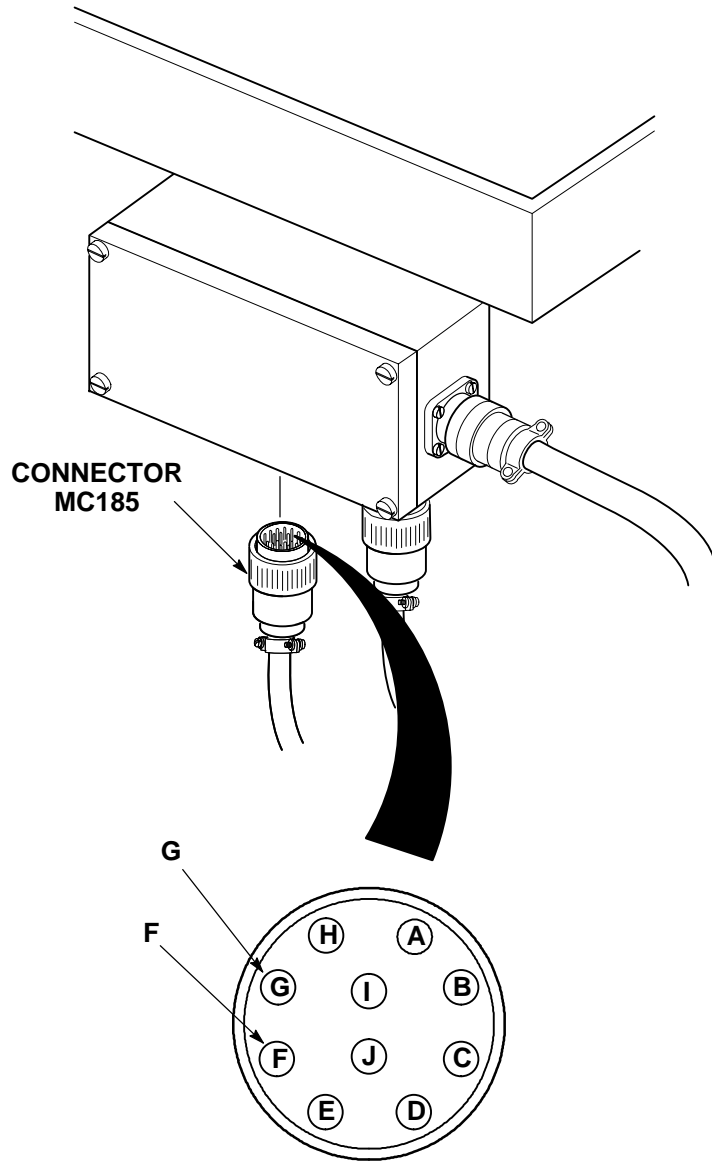


WARNING

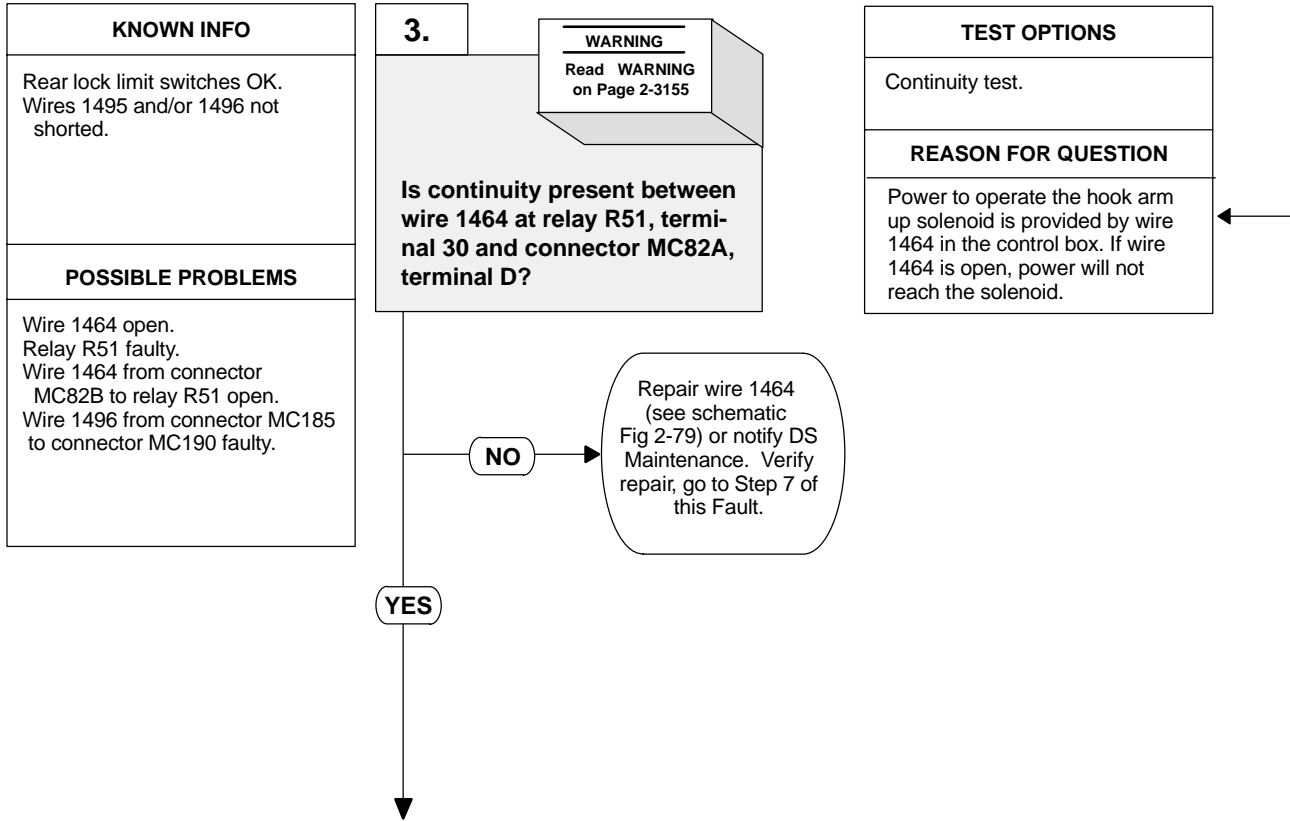
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

- (1) Disconnect CHU wire harness connector MC185 from CHU control box.
- (2) Set multimeter select switch to ohms.
- (3) Is there continuity between connector MC185 terminal F and terminal G of CHU wire harness?
 - (a) If there is continuity, replace CHU wire harness (Para 21-20).
 - (b) If there is no continuity, wires 1495 and 1496 are not shorted.
- (4) Connect CHU wire harness connector MC185



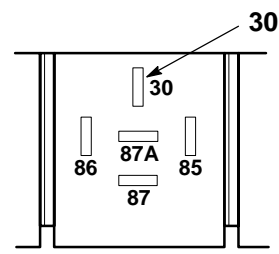
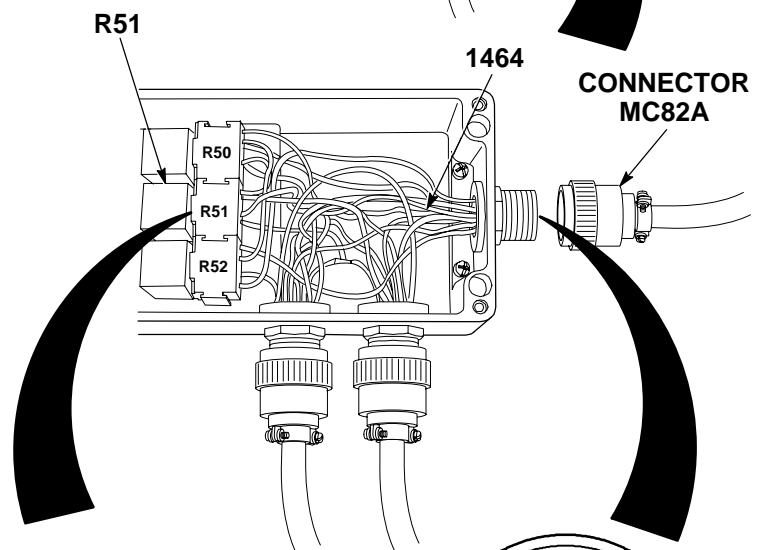
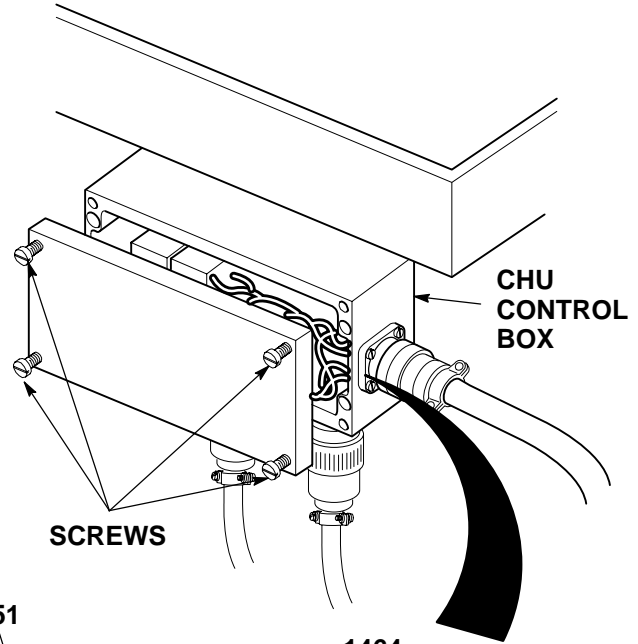
3. LHS DOES NOT UNLOAD IN CHU MODE (CONT).



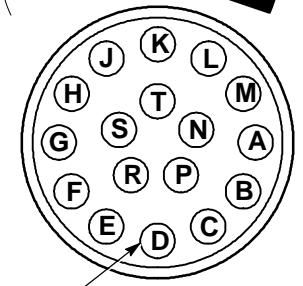
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- CONTINUITY TEST**
- (1) Loosen four screws and remove cover from CHU control box.
 - (2) Disconnect harness at MC82A connector on CHU control box.
 - (3) Remove relay R51 from CHU control box (Para 21-23).
 - (4) Set multimeter select switch to ohms.
 - (5) Is there continuity on wire 1464, terminal 30 and connector MC82A, terminal D?
 - (a) If there is no continuity, repair wire 1464 (see schematic Fig 2-79) or notify DS Maintenance.
 - (b) If there is continuity, wire 1464 is OK.
 - (6) Connect harness connector MC82A on CHU control box.

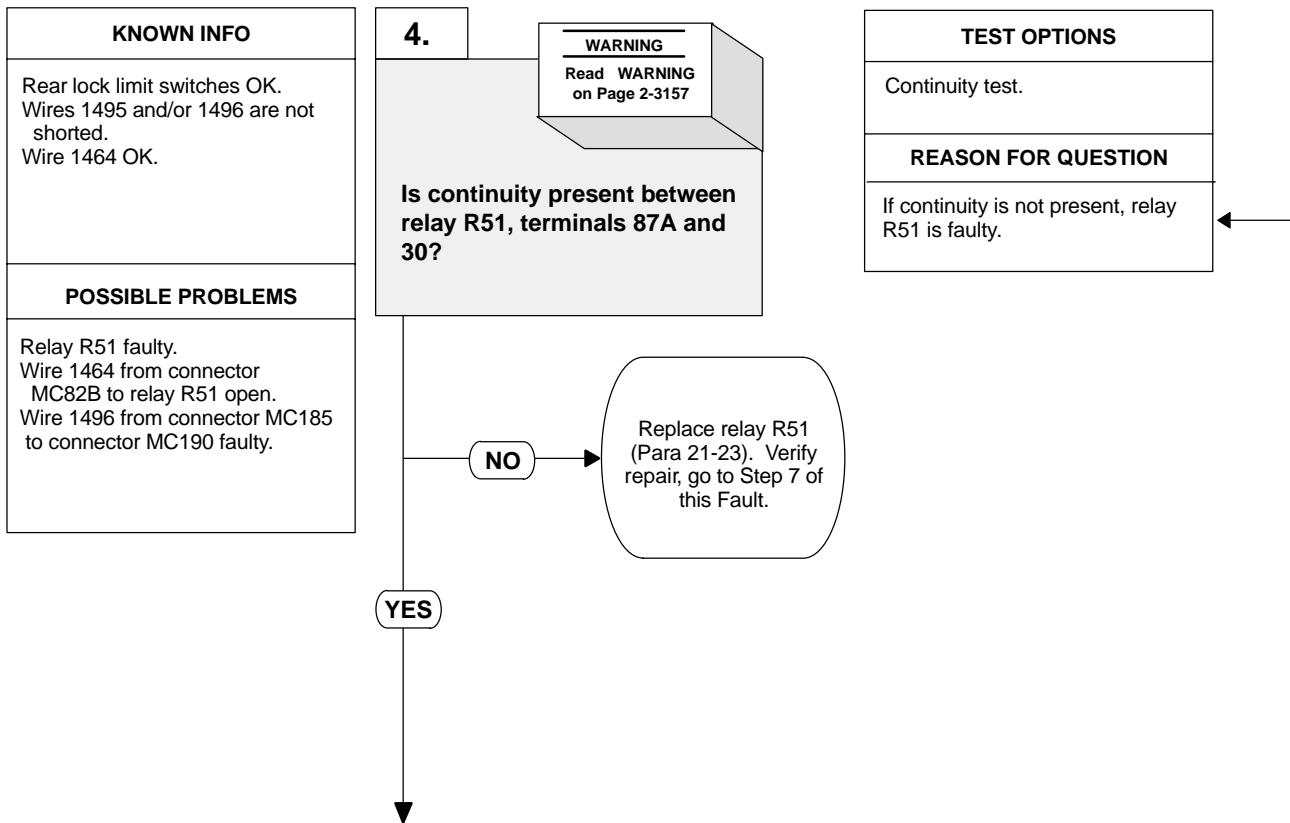


R51



D

3. LHS DOES NOT UNLOAD IN CHU MODE (CONT).

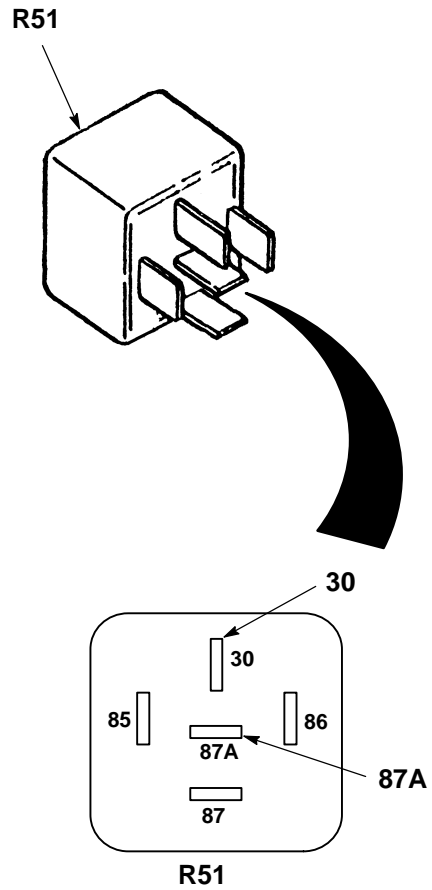


WARNING

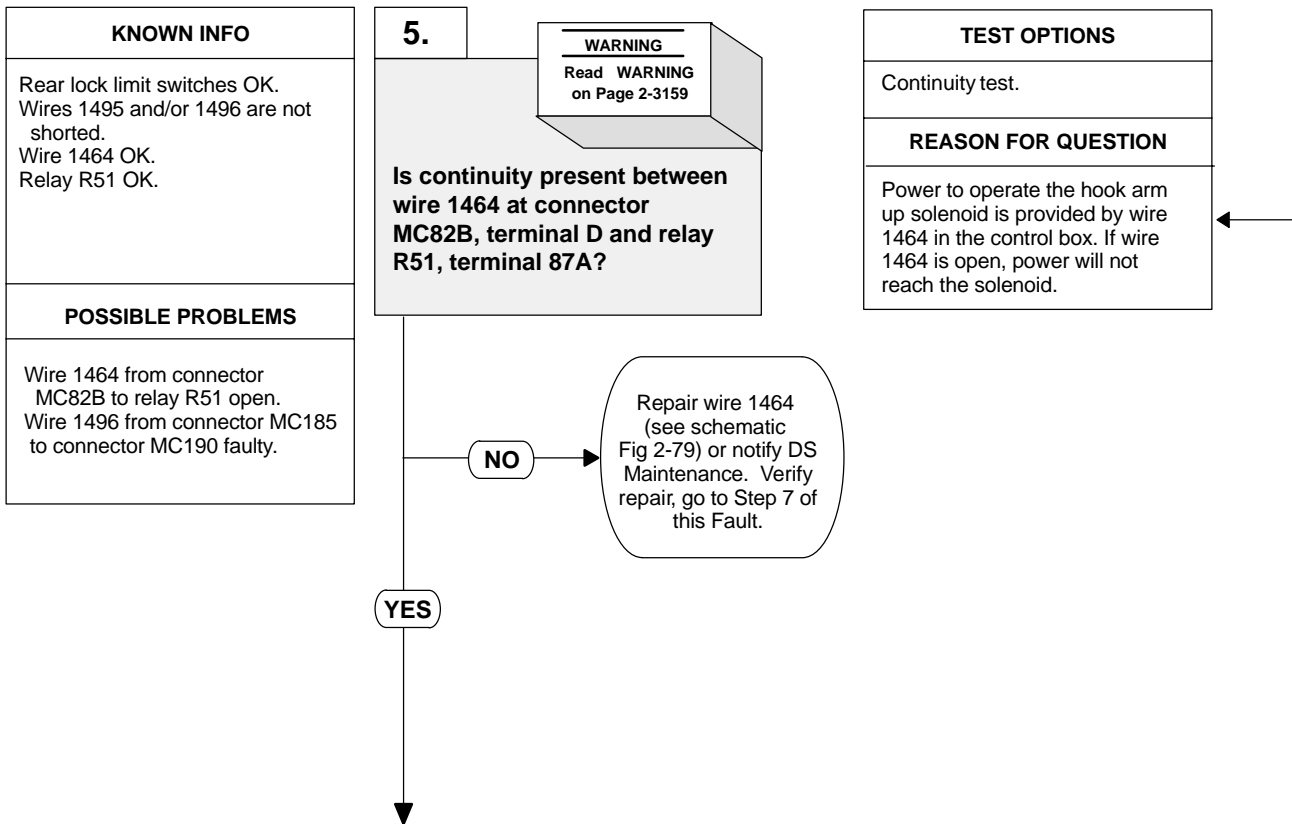
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

- (1) Set multimeter select switch to ohms.
- (2) Is there continuity between relay R51 terminals 87A and 30?
 - (a) If there is no continuity, replace relay R51 (Para 21-23).
 - (b) If there is continuity, relay R51 is OK.



3. LHS DOES NOT UNLOAD IN CHU MODE (CONT).

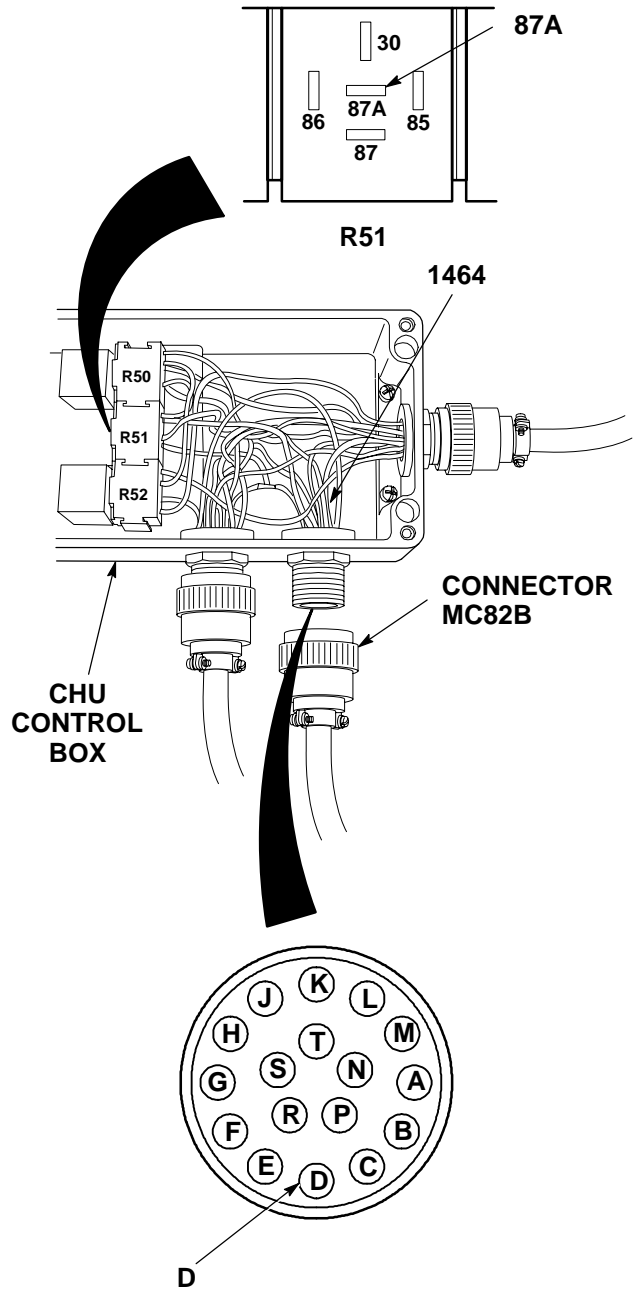


WARNING

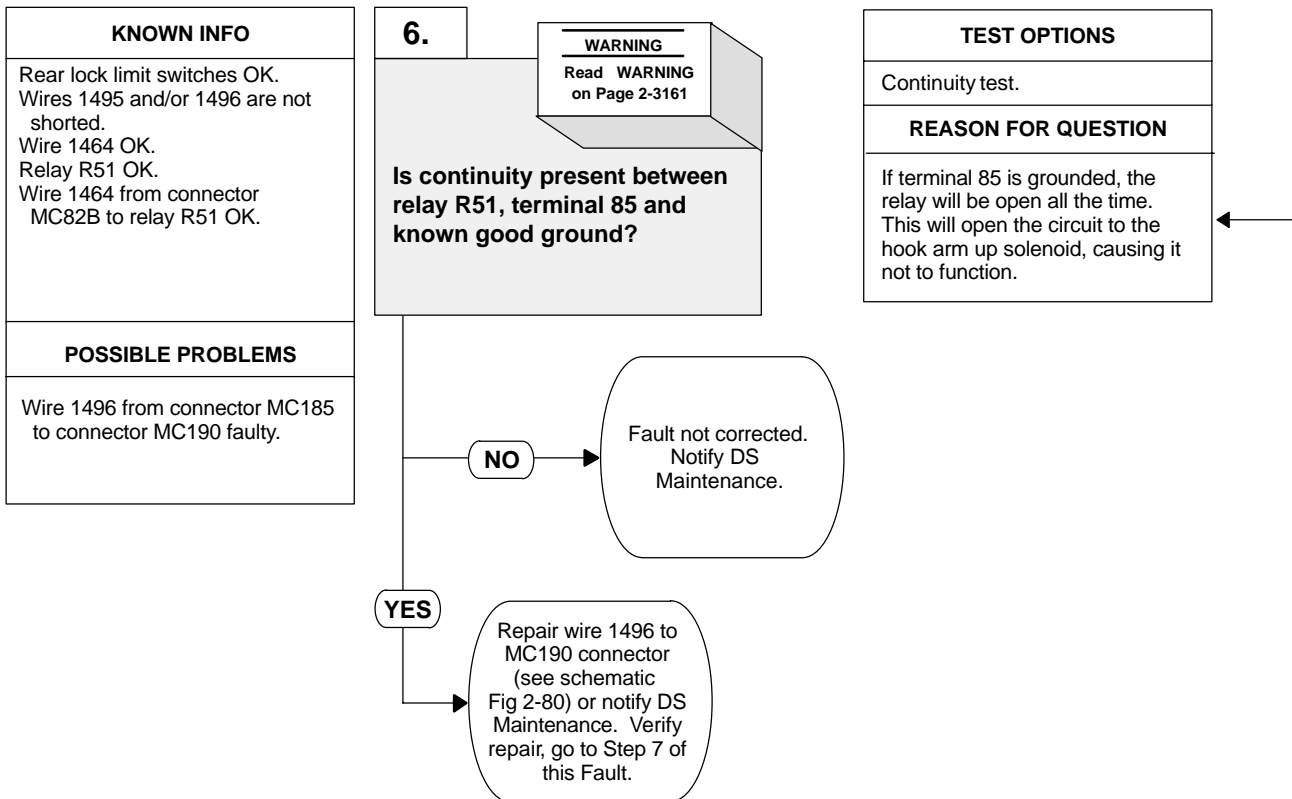
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

- (1) Disconnect harness connector MC82B from CHU control box.
- (2) Set multimeter select switch to ohms.
- (3) Is there continuity between wire 1464, terminal 87A and connector, MC82B, terminal D?
 - (a) If there is no continuity, repair wire 1464 (see schematic Fig 2-79) or notify DS Maintenance.
 - (b) If there is continuity, wire 1464 is OK.
- (4) Connect harness connector MC82B to CHU control box.

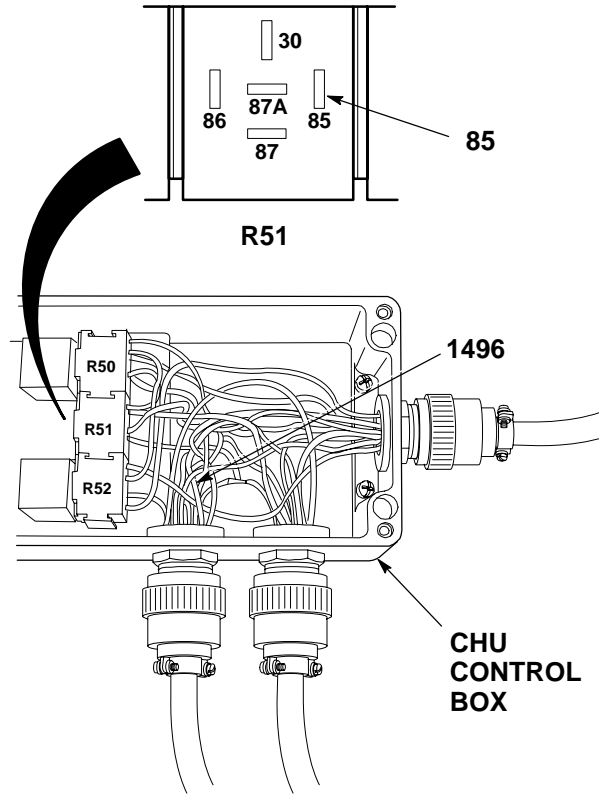


3. LHS DOES NOT UNLOAD IN CHU MODE (CONT).



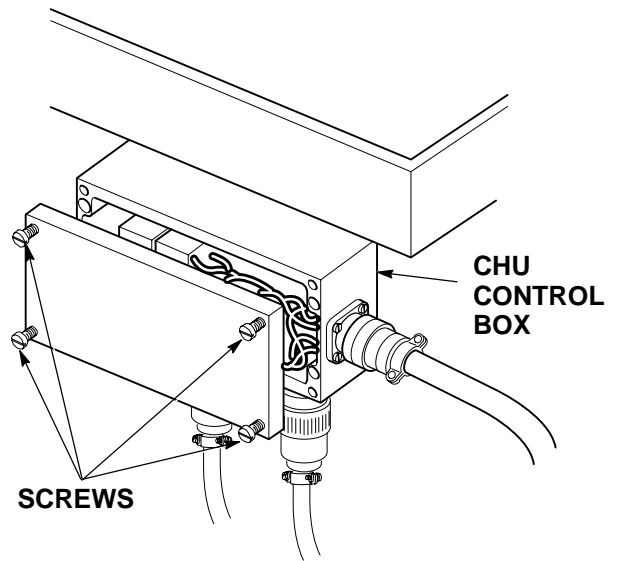
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

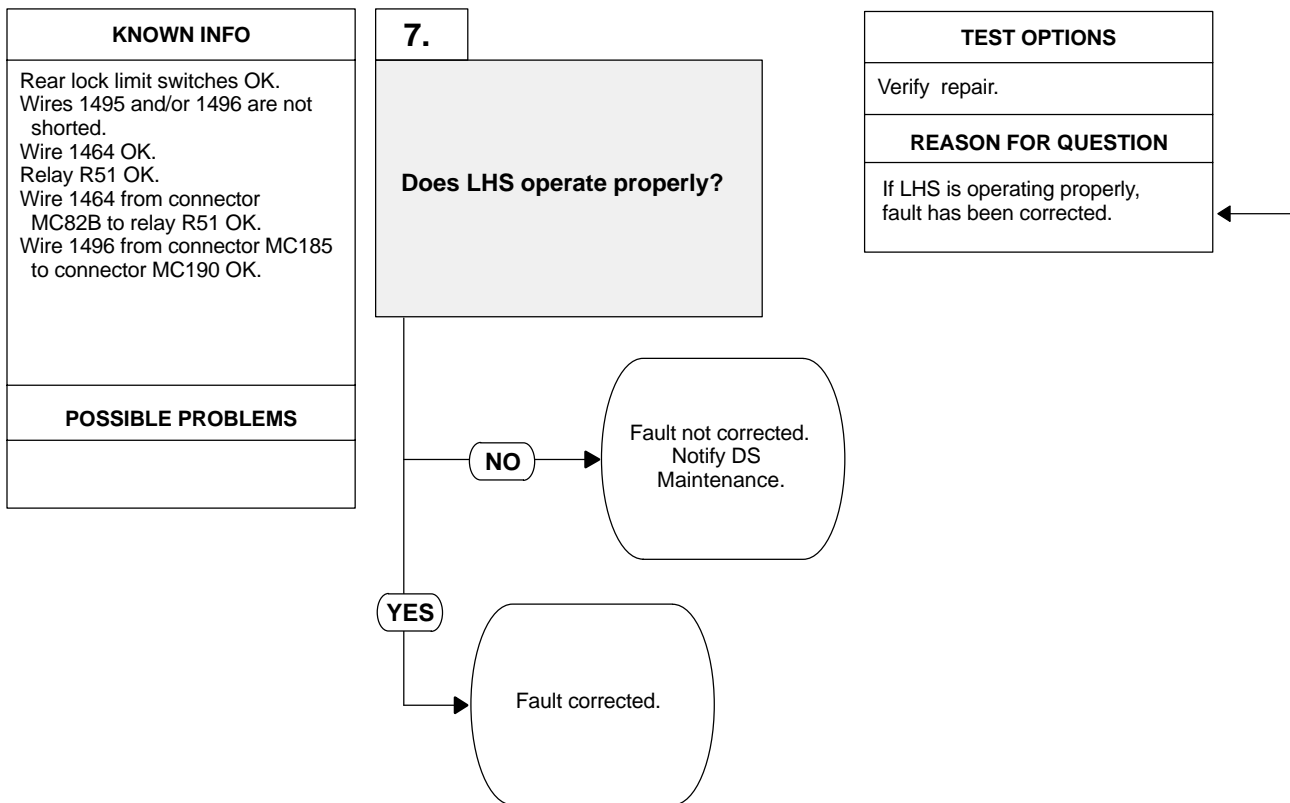


CONTINUITY TEST

- (1) Set multimeter select switch to ohms.
- (2) Is there continuity between relay R51, terminal 85 and known good ground?
 - (a) If there is no continuity, notify DS Maintenance.
 - (b) If there is continuity, repair wire 1496 between connector MC190, terminal A and connector MC185, terminal G (see schematic Fig 2-80) or notify DS Maintenance.
- (3) Install relay R51 (Para 21-23).
- (4) Position CHU control cover on box and tighten four screws.



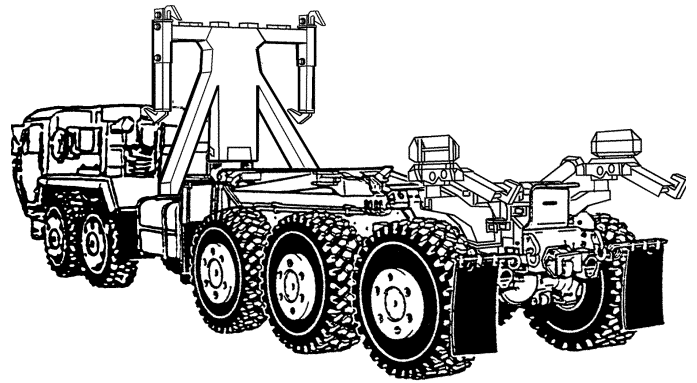
3. LHS DOES NOT UNLOAD IN CHU MODE (CONT).



VERIFY REPAIR

Cycle LHS (TM 9-2320-364-10).

- (1) If LHS cycles properly, fault has been corrected.
- (2) If LHS does not cycle properly, fault has not been corrected. Notify DS Maintenance.



2-38. CHU TROUBLESHOOTING (CONT)

4. CHU MODE SWITCH INOPERATIVE (LIFTING FRAME CONTACTS REAR ROLLERS).

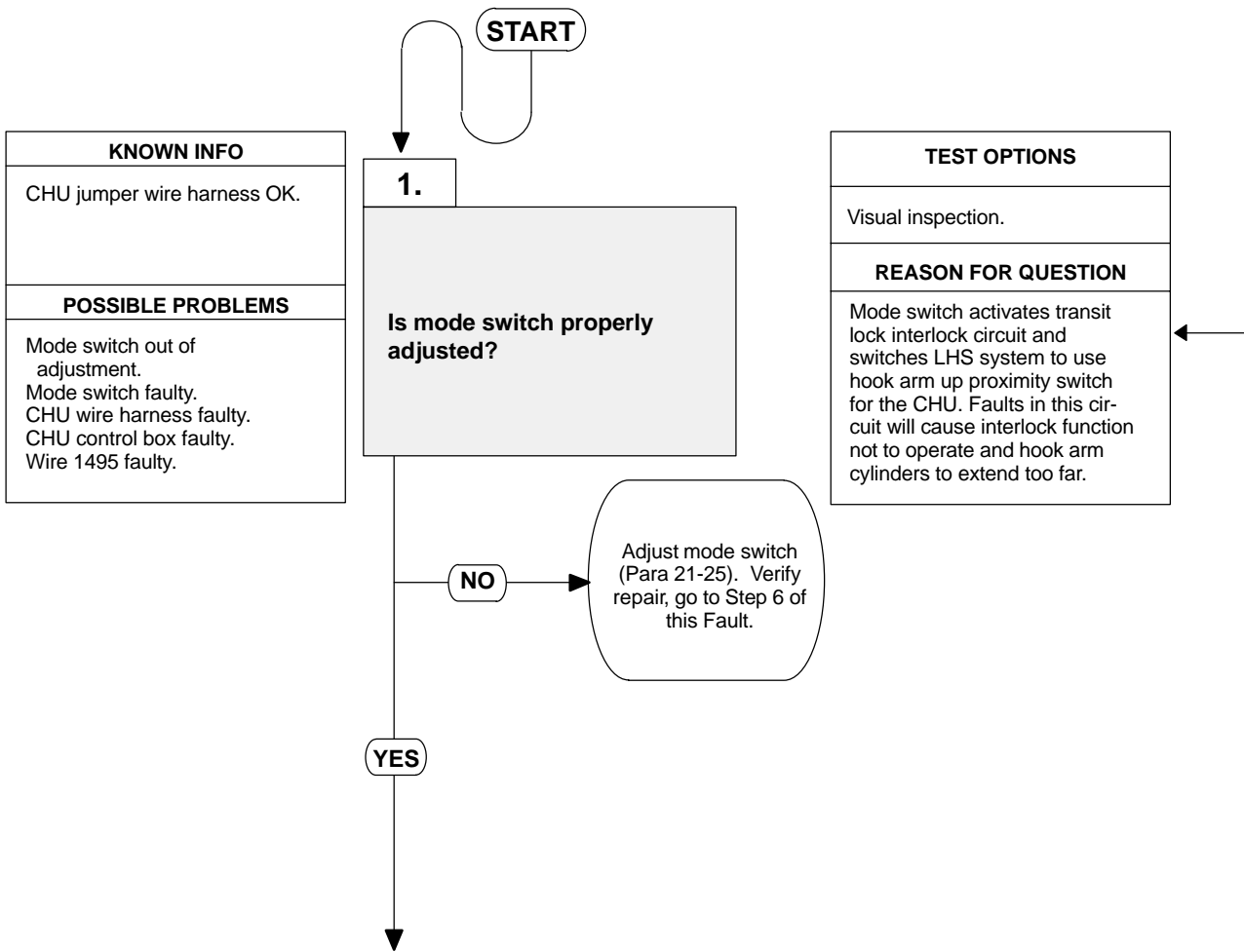
INITIAL SETUP

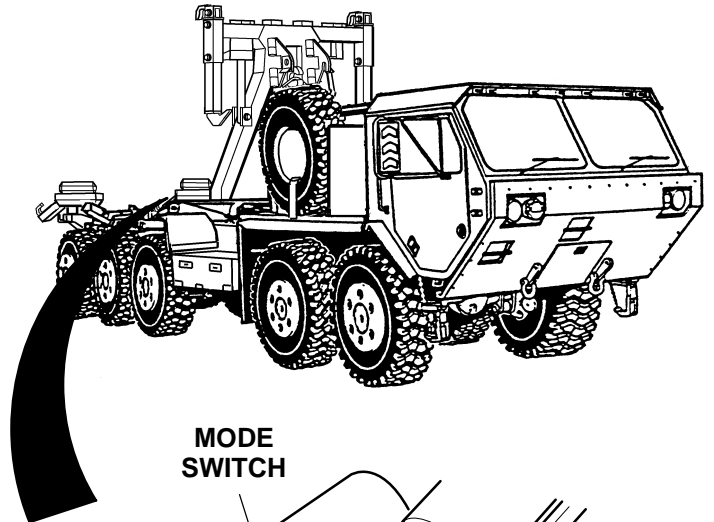
Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Multimeter (Item 44, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Parking brake applied, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

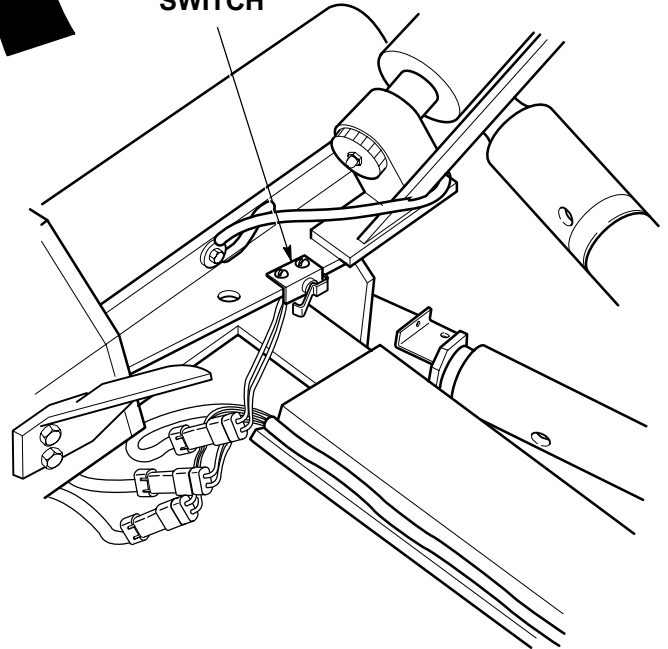




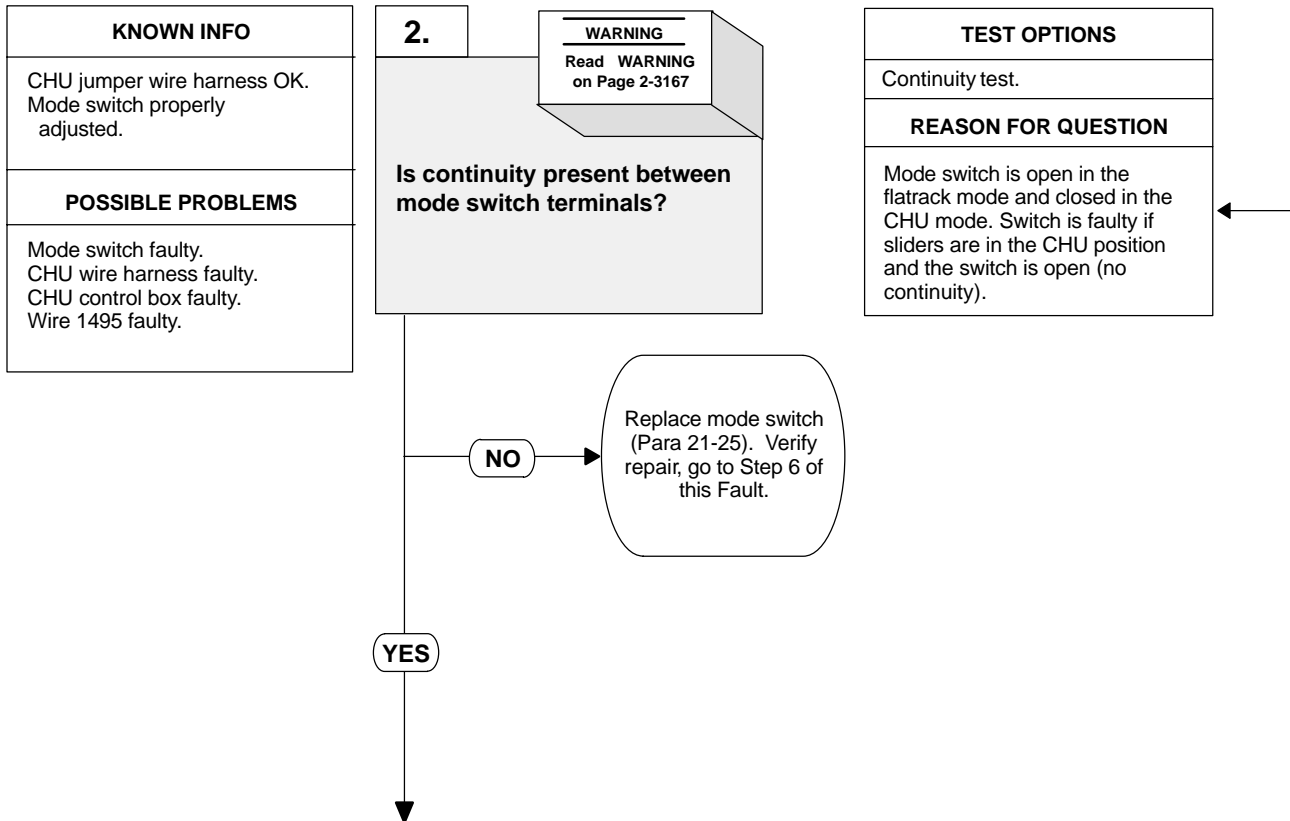
**MODE
SWITCH**

VISUAL INSPECTION

Check adjustment of mode switch and adjust if not correct (Para 21-25).



4. CHU MODE SWITCH INOPERATIVE (LIFTING FRAME CONTACTS REAR ROLLERS) (CONT).



WARNING

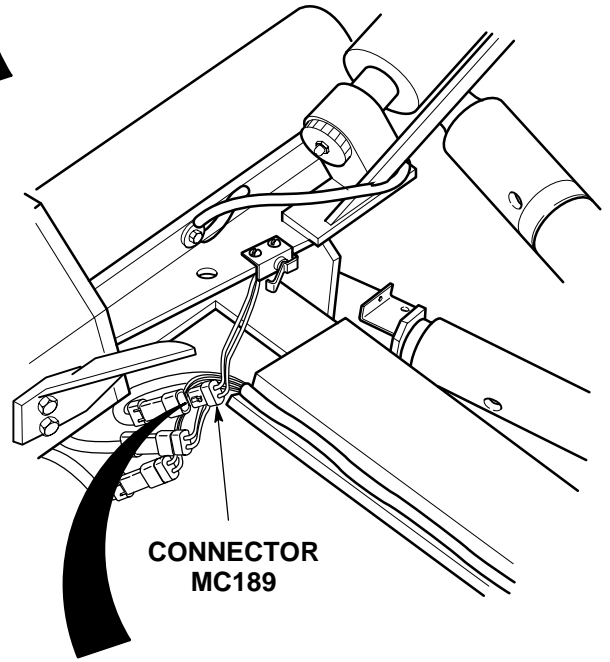
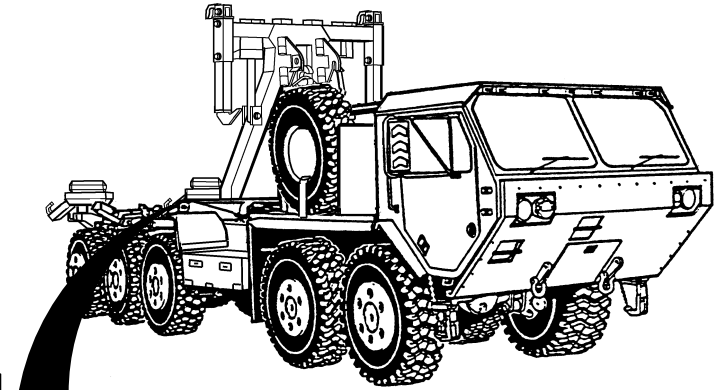
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

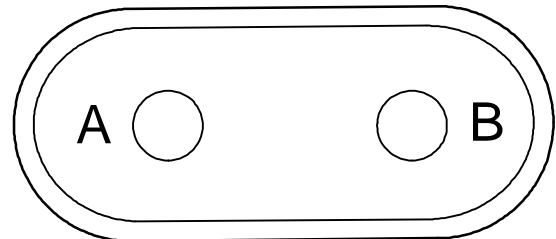
Sliders must be in the CHU position to perform this test.

CONTINUITY TEST

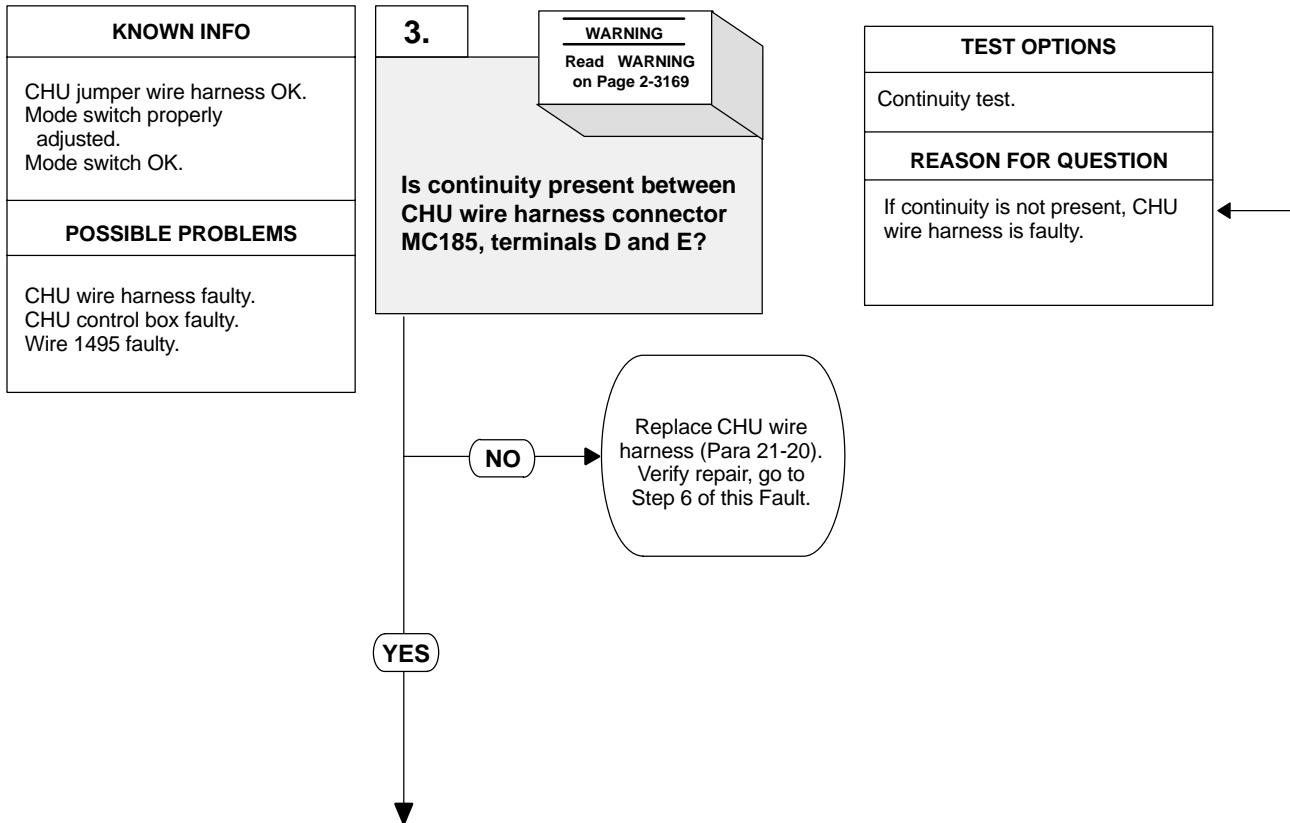
- (1) Disconnect mode switch connector MC189.
- (2) Set multimeter select switch to ohms.
- (3) Is there continuity between connector MC189 terminal A and terminal B?
 - (a) If there is no continuity, replace mode switch (Para 21-25).
 - (b) If there is continuity, mode switch is OK.
- (4) Connect mode switch connector MC189.



**CONNECTOR
MC189**



4. CHU MODE SWITCH INOPERATIVE (LIFTING FRAME CONTACTS REAR ROLLERS) (CONT).

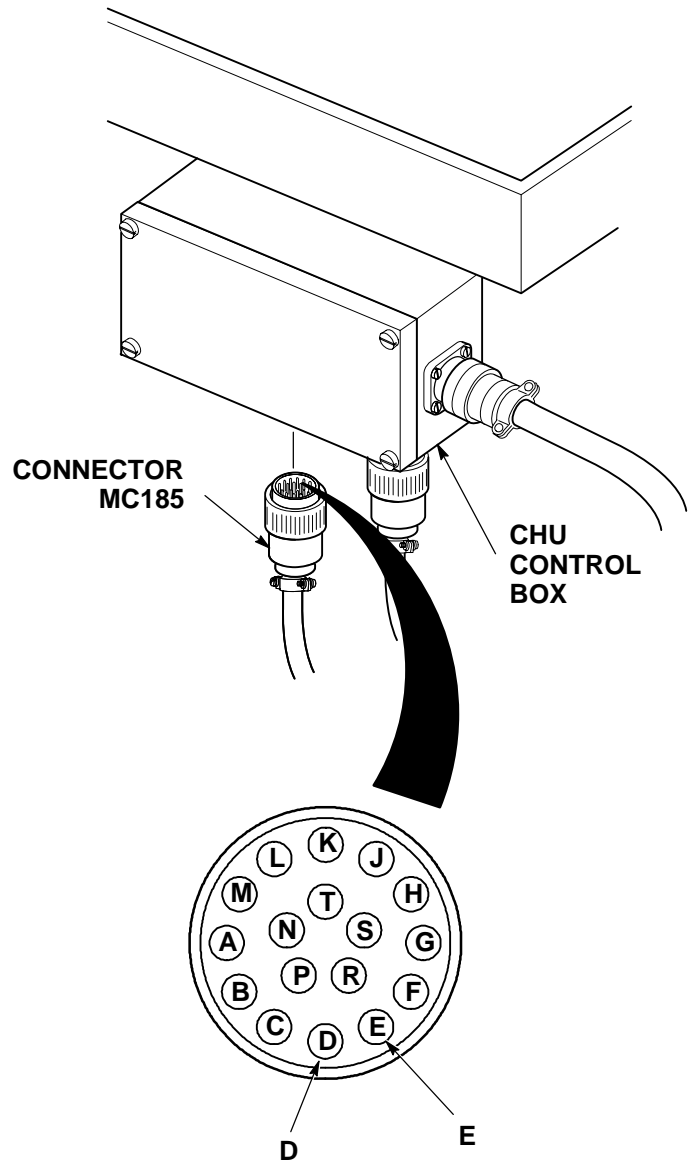


WARNING

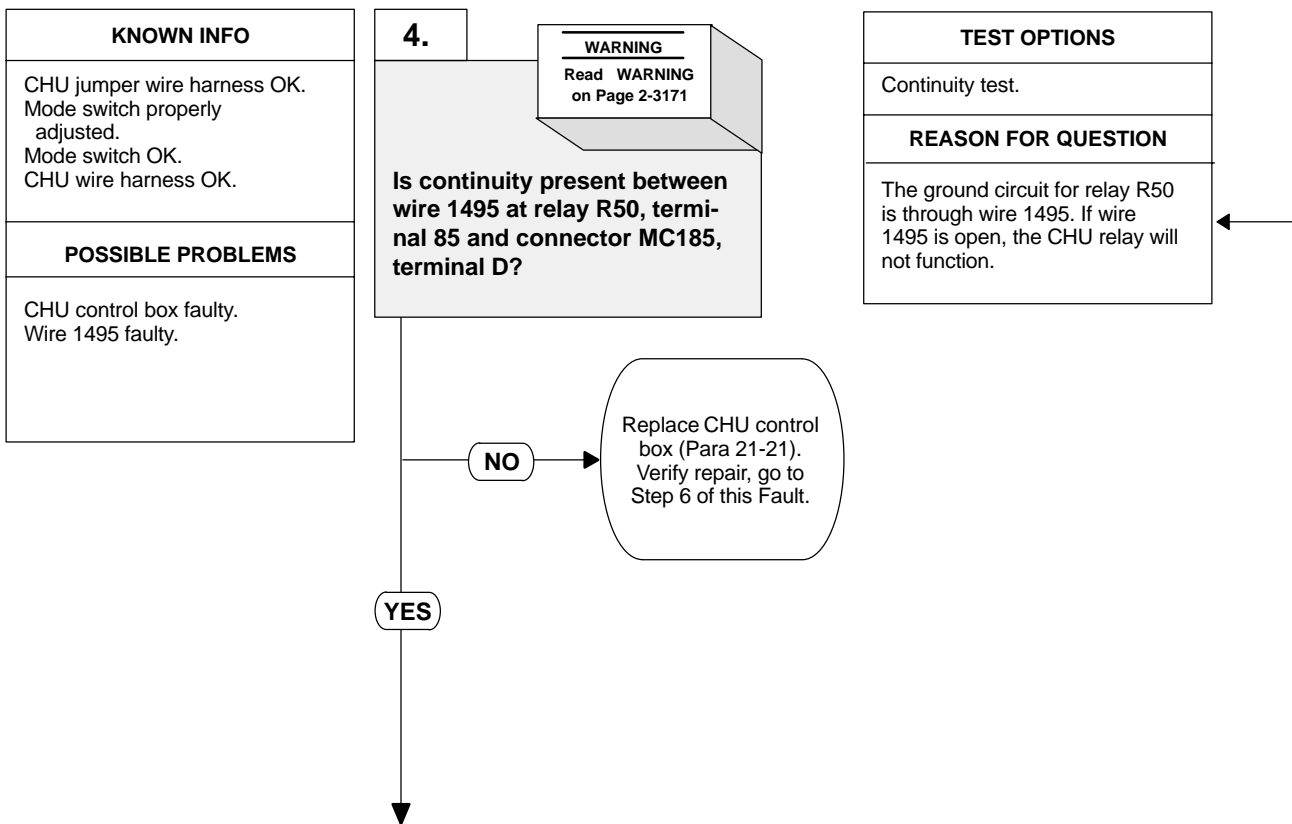
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

- (1) Disconnect CHU wire harness connector MC185 from CHU control box.
- (2) Set multimeter select switch to ohms.
- (3) Is there continuity between connector MC185 terminal D and terminal E of CHU wire harness?
 - (a) If there is continuity, CHU wire harness is OK.
 - (b) If there is no continuity, replace CHU wire harness (Para 21-20).



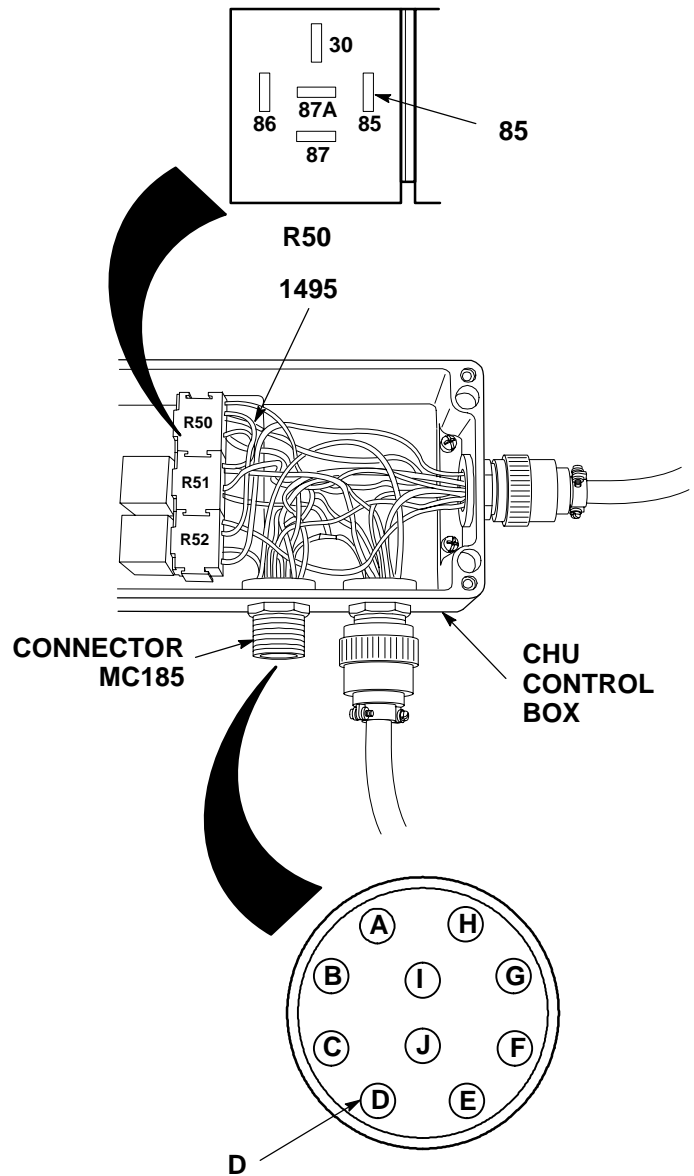
4. CHU MODE SWITCH INOPERATIVE (LIFTING FRAME CONTACTS REAR ROLLERS) (CONT).



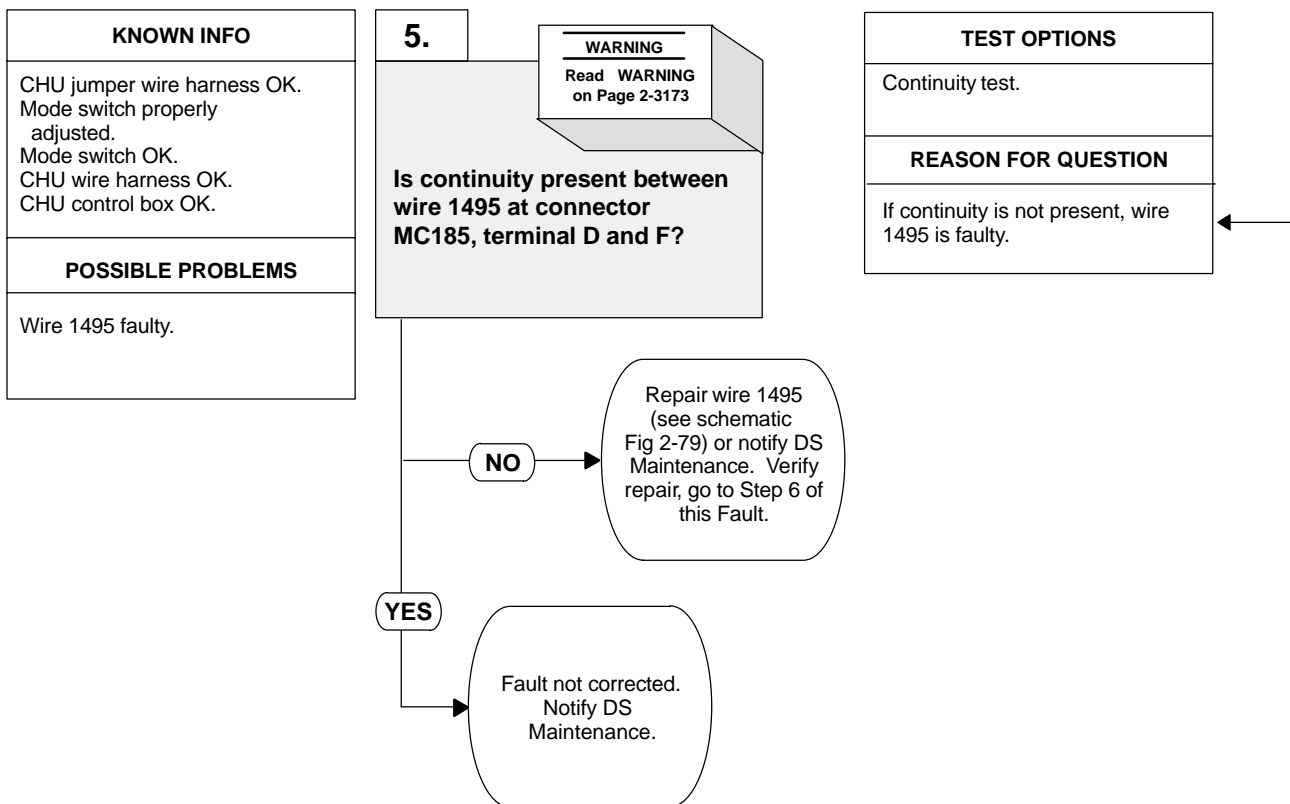
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST
(1) Remove relay R50 from CHU control box (Para 21-23).
(2) Set multimeter select switch to ohms.
(3) Is there continuity between relay R50, terminal 85 and connector MC185, terminal D?
(a) If there is no continuity, replace CHU control box (Para 21-21).
(b) If there is continuity, wire 1495 is OK perform Step (4) below.
(4) Install relay R51 (Para 21-23).



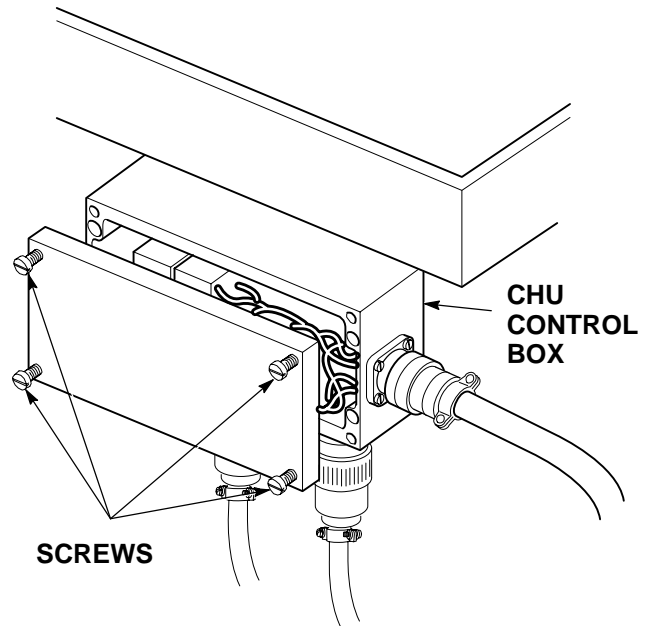
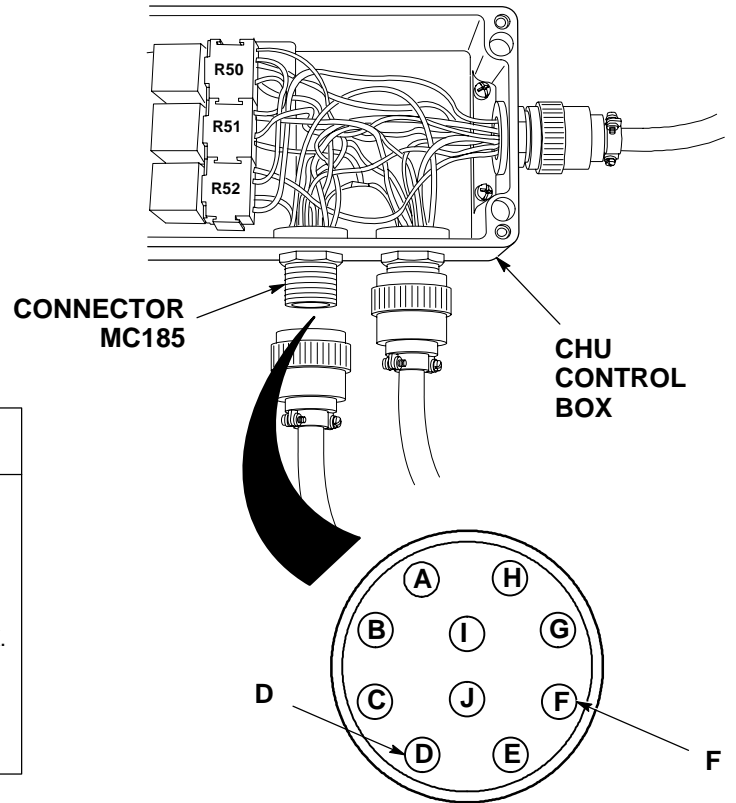
4. CHU MODE SWITCH INOPERATIVE (LIFTING FRAME CONTACTS REAR ROLLERS) (CONT).



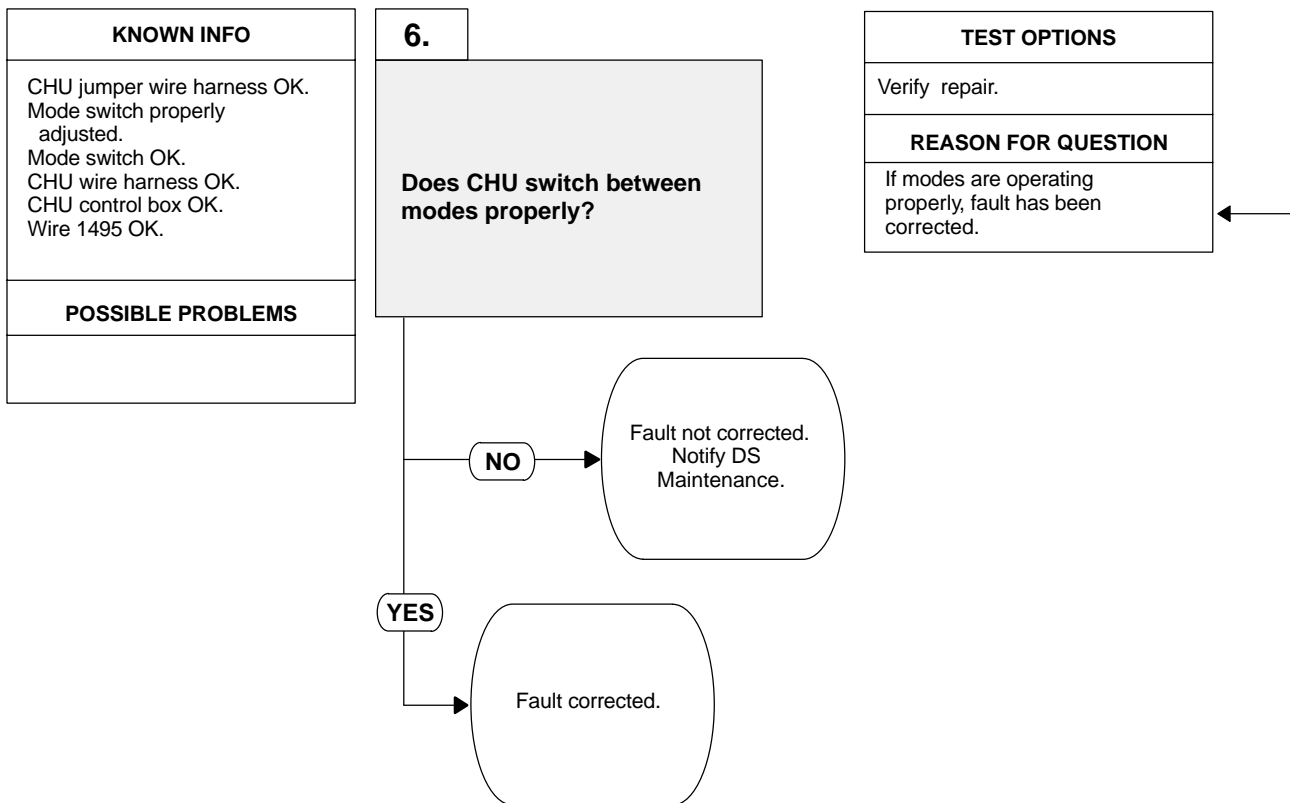
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- | CONTINUITY TEST |
|--|
| (1) Set multimeter select switch to ohms. |
| (2) Is there continuity between wire 1495, connector MC185, terminal D and F? |
| (a) If there is no continuity, repair wire 1495 (see schematic Fig 2-79) or notify DS Maintenance. |
| (b) If there is continuity, wire 1495 is OK. |
| (3) Connect harness connector MC185 to CHU control box. |
| (4) Install cover on CHU control box and tighten four screws. |



4. CHU MODE SWITCH INOPERATIVE (LIFTING FRAME CONTACTS REAR ROLLERS) (CONT).



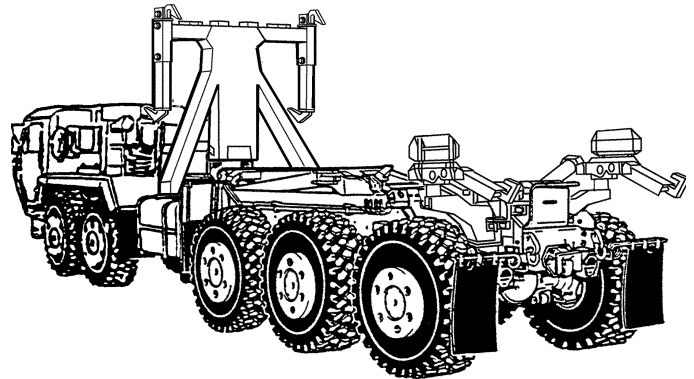
NOTE

Pay special attention to the length of hook arm extension and the operation of the transit lock interlock functions.

VERIFY REPAIR

Place CHU in flatrack mode
(TM 9-2320-364-10).

- (1) If CHU operates properly in flatrack, fault has been corrected.
- (2) If CHU does not operate properly, fault has not been corrected, notify DS Maintenance.



2-38. CHU TROUBLESHOOTING (CONT)

5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO).

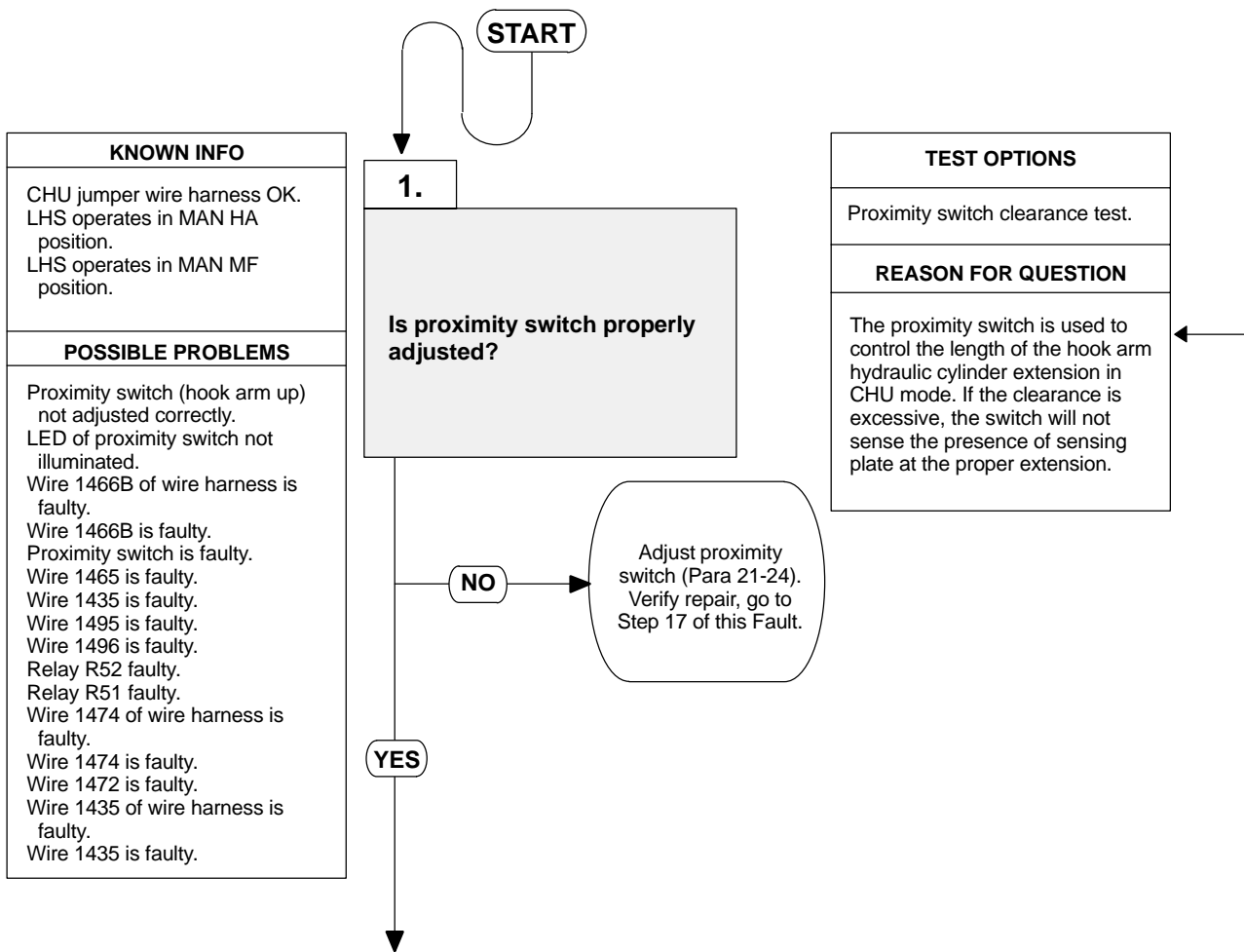
INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
 (Item 74, Appendix G)
 Multimeter (Item 44, Appendix G)

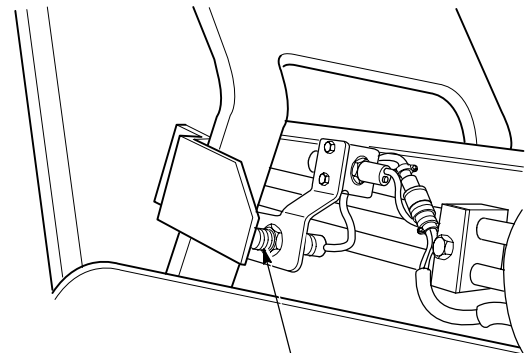
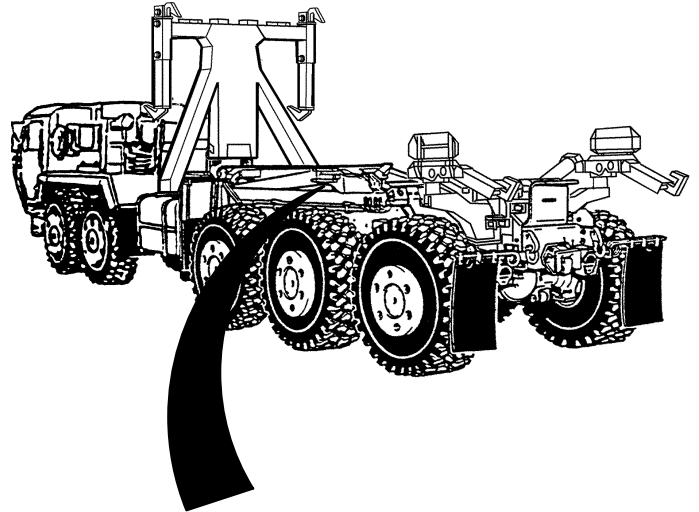
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Parking brake applied, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 PLS is in container mode,
 (TM 9-2320-364-10)



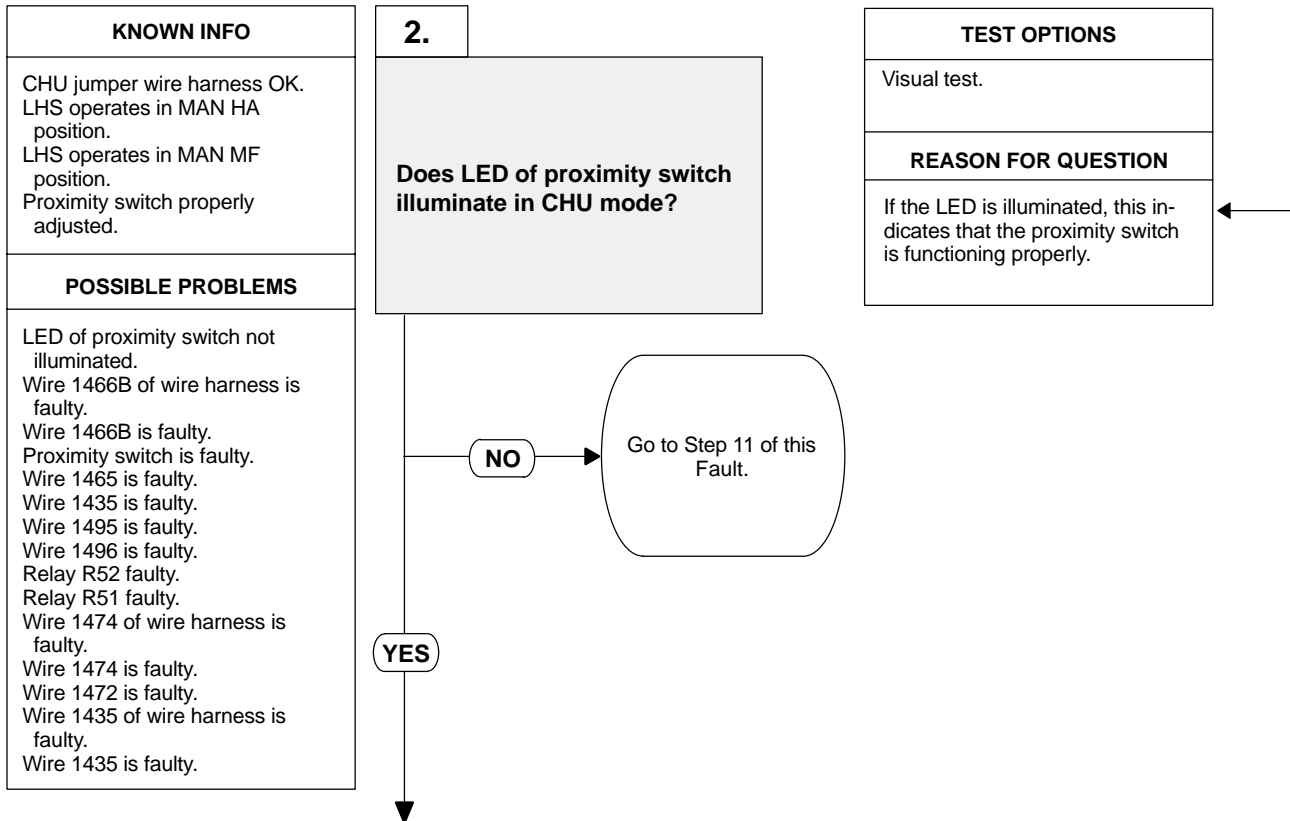
**PROXIMITY SWITCH
CLEARANCE TEST**

Check adjustment of proximity switch and
adjust if not correct (Para 21-24).



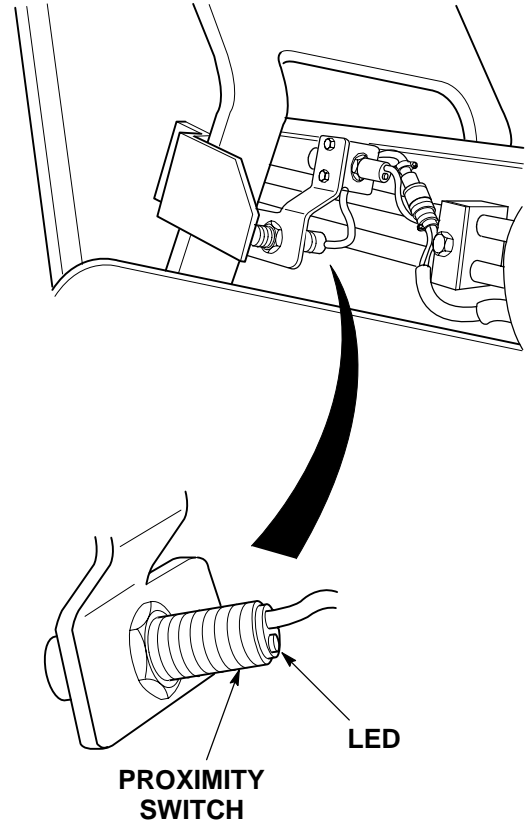
**PROXIMITY
SWITCH**

5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).

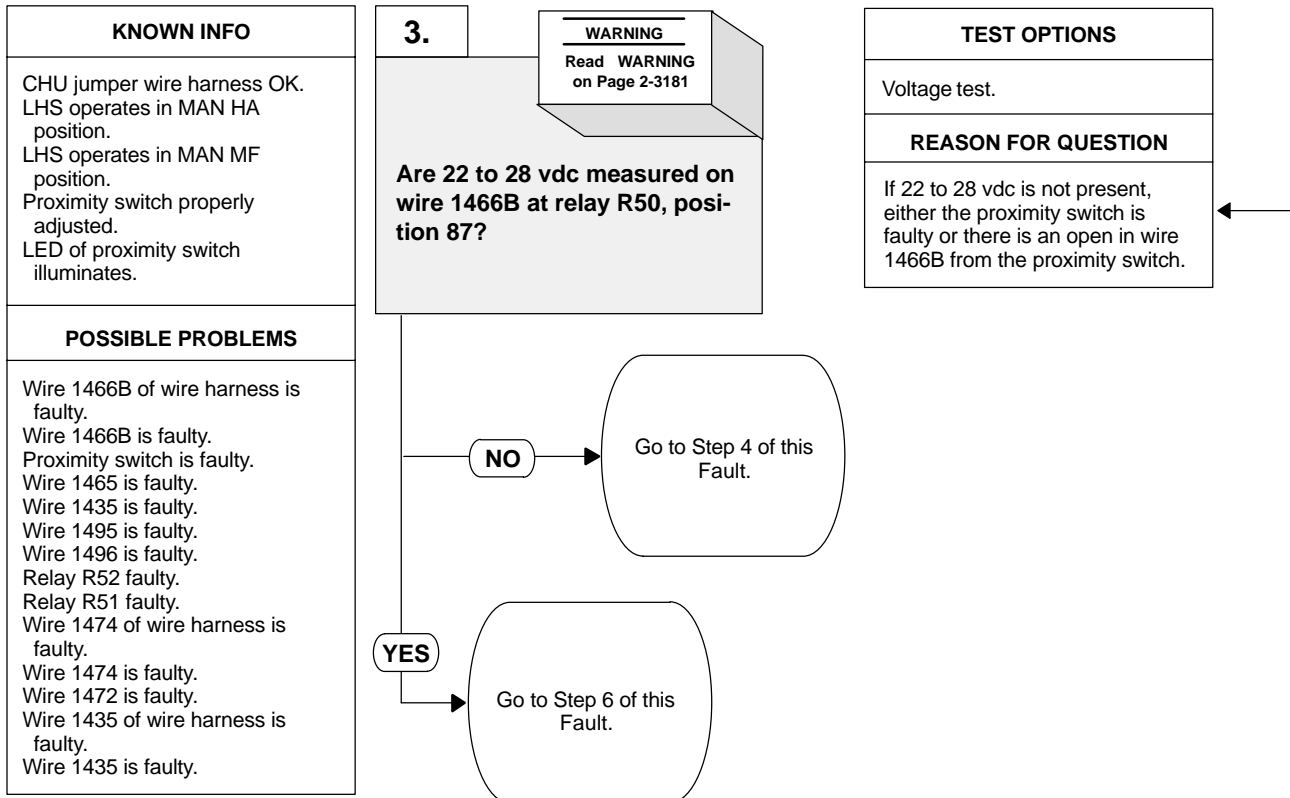


VISUAL TEST

- (1) Cycle LHS so sensor plate on hook arm covers CHU proximity switch (TM 9-2320-364-10).
- (2) Observe LED on proximity switch while in CHU mode.
 - (a) If LED is illuminated, go to Step 3 of this Fault.
 - (b) If LED is not illuminated, go to Step 11 of this Fault.



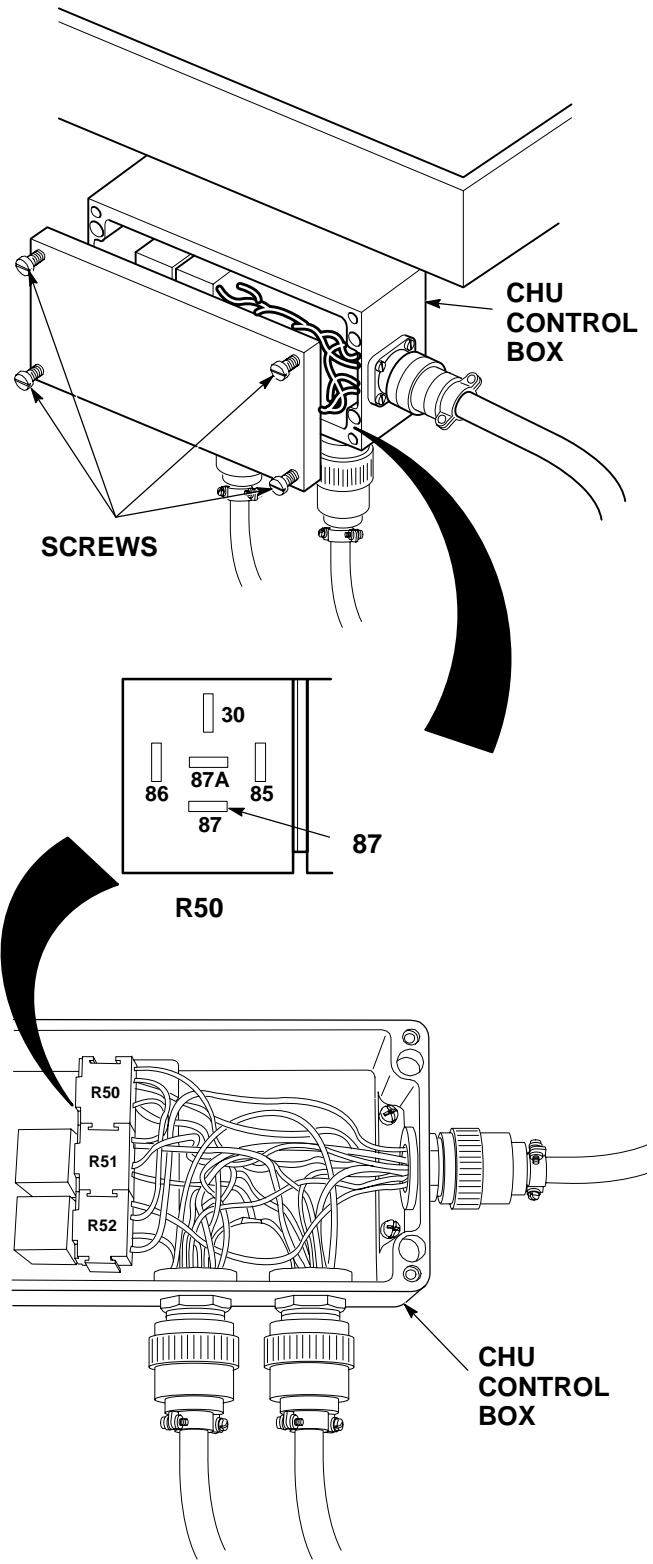
5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).



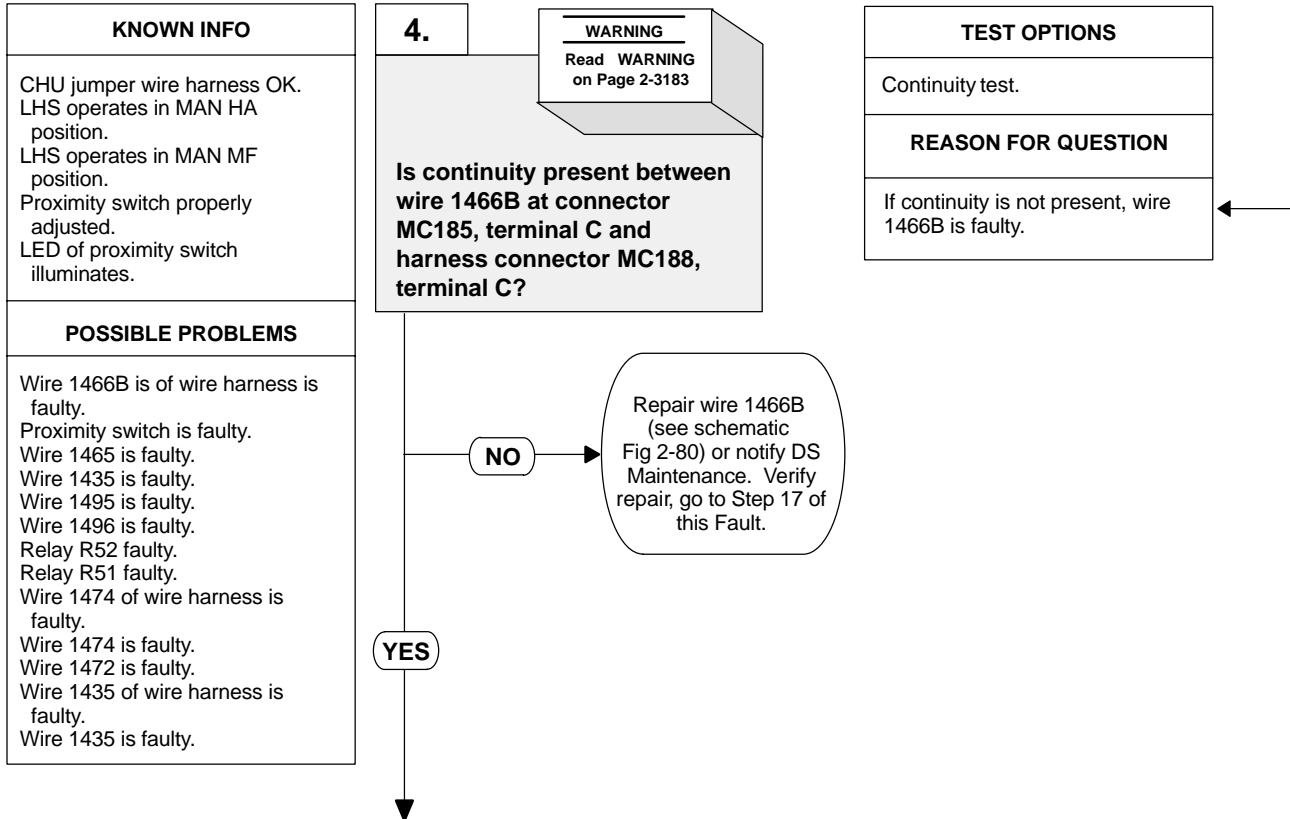
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- VOLTAGE TEST**
- (1) Cycle LHS so sensor plate on hook arm covers CHU proximity switch (TM 9-2320-364-10).
 - (2) Loosen four screws and remove cover from CHU control box.
 - (3) Remove relay R50 from CHU control box (Para 21-23).
 - (4) Turn ON ENGINE switch (TM 9-2320-364-10).
 - (5) Connect negative (-) multimeter lead to a known good ground.
 - (6) Connect positive (+) multimeter lead to relay R50, terminal 87.
 - (a) If 22 to 28 vdc are not present, perform Step (8) below and go to Step 4 of this Fault.
 - (b) If 22 to 28 vdc are present, proximity switch is OK, perform Steps (7) and (8) below and go to Step 6 of this Fault.
 - (7) Install relay R50 on CHU control box (Para 21-23).
 - (8) Turn OFF ENGINE switch.



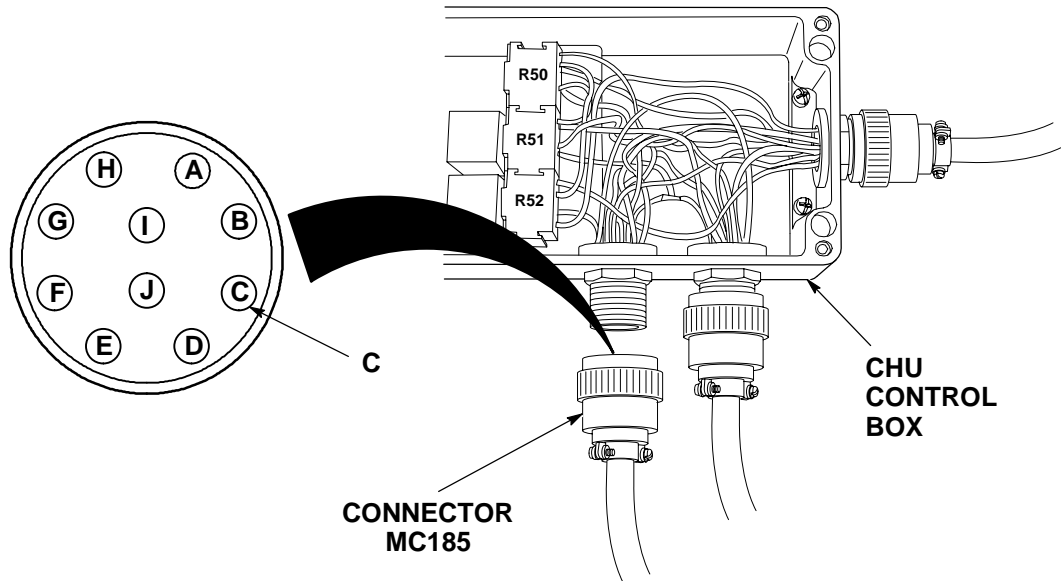
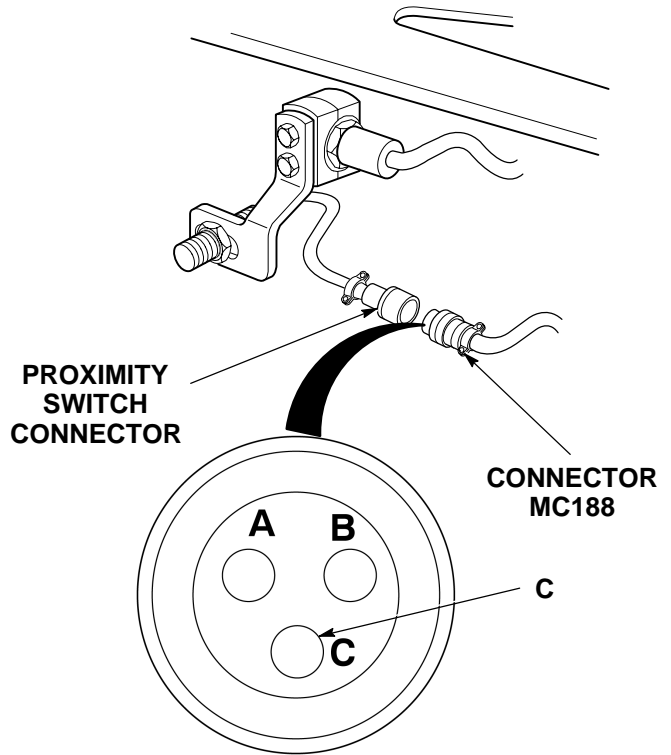
5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).



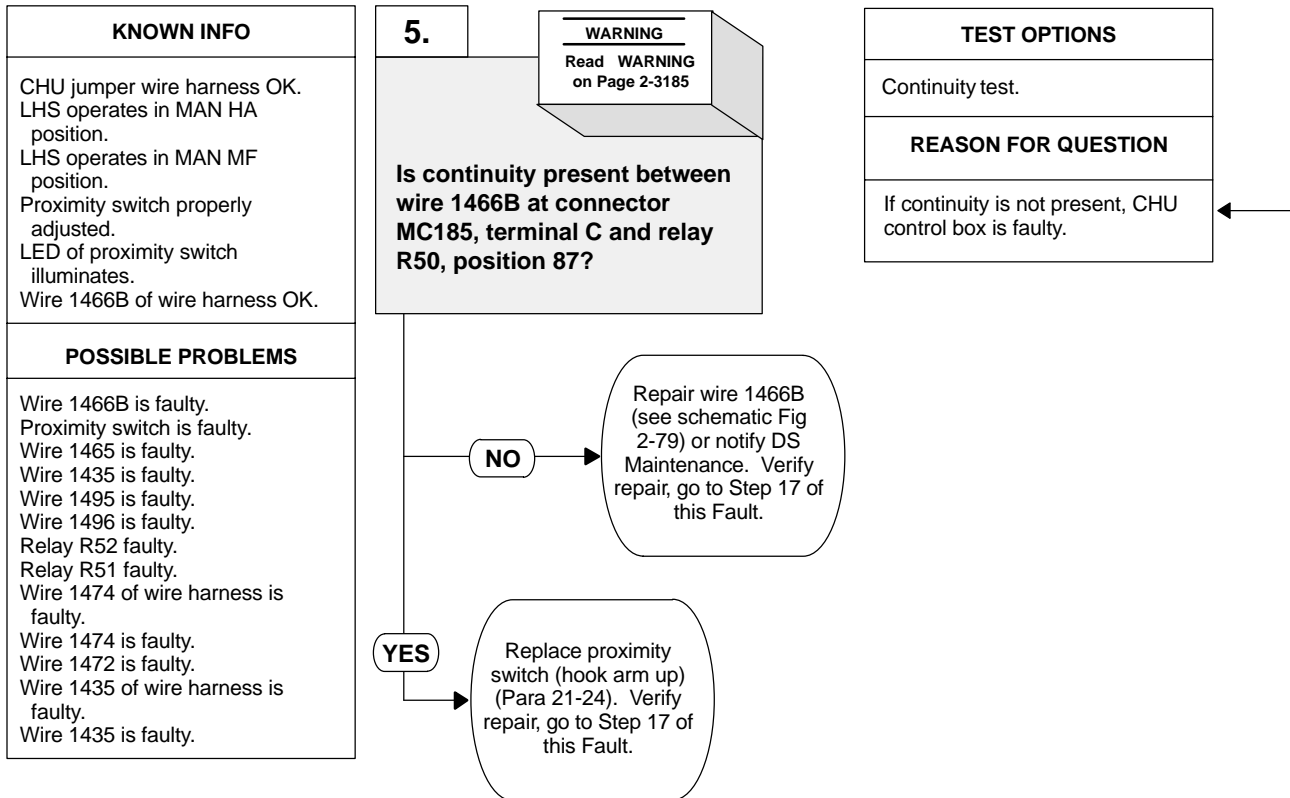
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- | CONTINUITY TEST | |
|-----------------|---|
| (1) | Disconnect harness connector MC188 from proximity switch connector. |
| (2) | Disconnect harness connector MC185 from CHU control box. |
| (3) | Set multimeter select switch to ohms. |
| (4) | Is there continuity between connector MC188 terminal C and connector MC185 terminal C? |
| (a) | If there is no continuity, repair wire 1466B (see schematic Fig 2-80) or notify DS Maintenance. |
| (b) | If there is continuity, wire 1466B is OK. |
| (5) | Connect harness connector MC188 to proximity switch. |



5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).

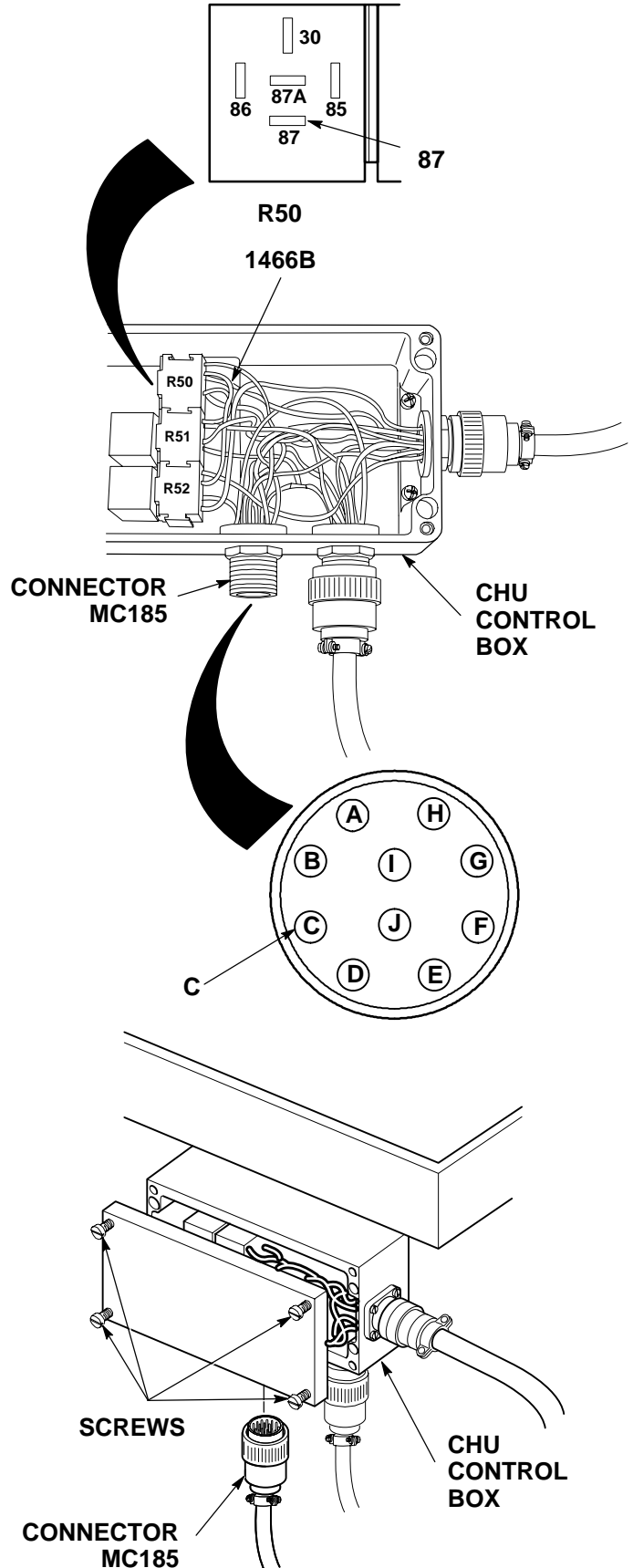


WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

- (1) Set multimeter select switch to ohms.
- (2) Is there continuity between connector MC185 terminal C and relay R50 terminal 87?
 - (a) If there is no continuity, repair wire 1466B (see schematic Fig 2-79) or notify DS Maintenance.
 - (b) If there is continuity, replace proximity switch (hook arm up) (Para 21-24) and perform Steps (3) through (5) below.
- (3) Install relay R50 (Para 21-23).
- (4) Connect harness connector MC185 to CHU control box.
- (5) Install cover on CHU control box and tighten four screws.



5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).

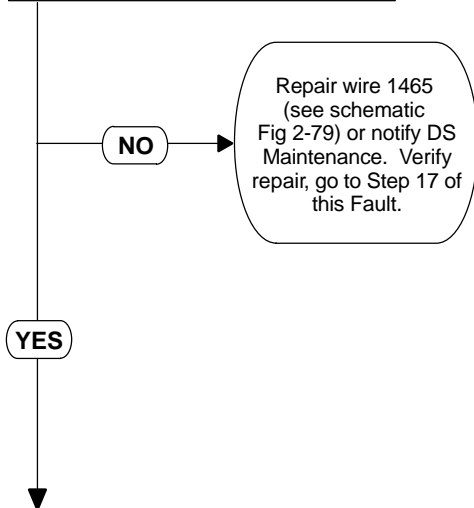
KNOWN INFO
CHU jumper wire harness OK. LHS operates in MAN HA position. LHS operates in MAN MF position. Proximity switch properly adjusted. LED of proximity switch illuminates. Wire 1466B of wire harness OK. Wire 1466B OK. Proximity switch OK.
POSSIBLE PROBLEMS
Wire 1465 is faulty. Wire 1435 is faulty. Wire 1495 is faulty. Wire 1496 is faulty. Relay R52 faulty. Relay R51 faulty. Wire 1474 of wire harness is faulty. Wire 1474 is faulty. Wire 1472 is faulty. Wire 1435 of wire harness is faulty. Wire 1435 is faulty.

6.

WARNING
Read WARNING on Page 2-3187

Is continuity present between wire 1465 at connector MC82A, terminal A and relay R52, terminal 86?

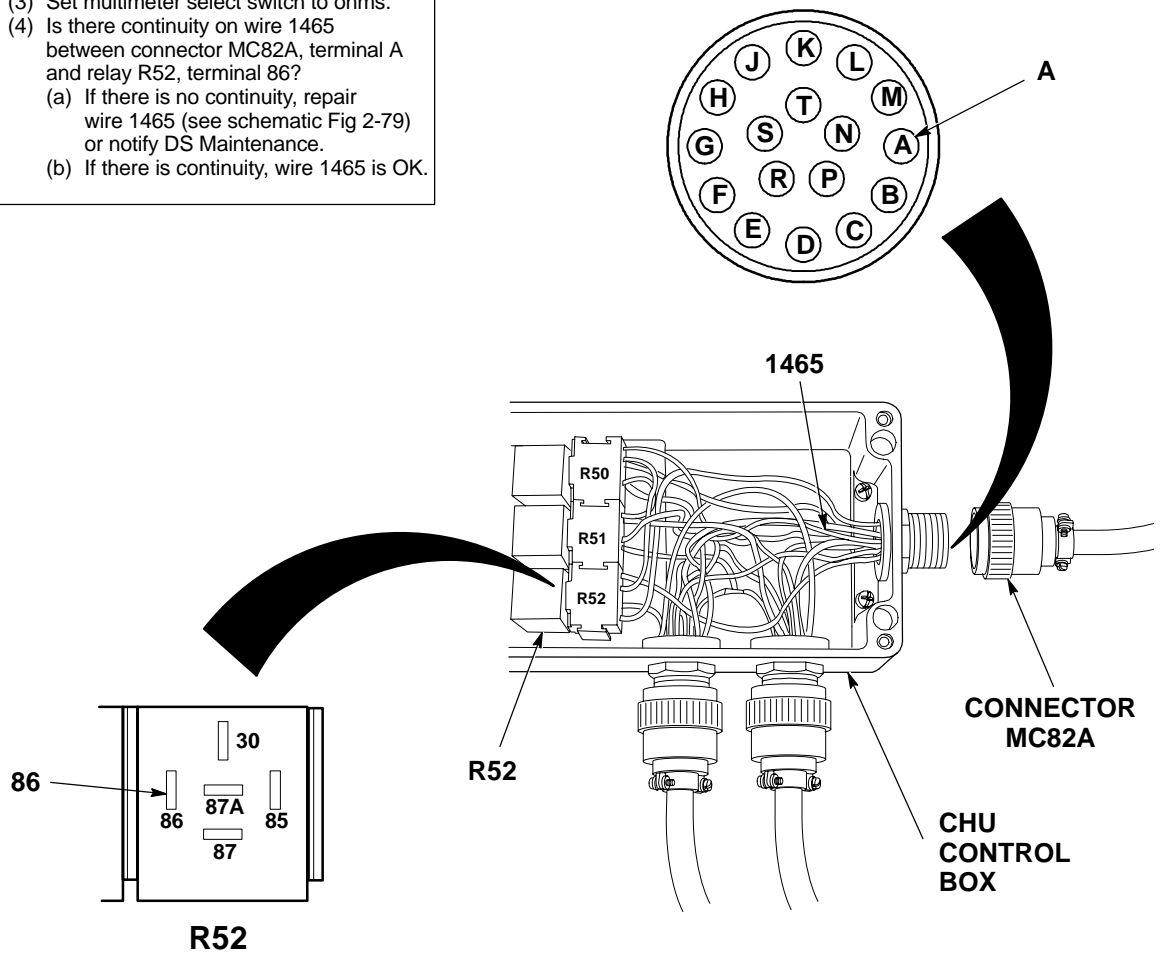
TEST OPTIONS
Continuity test.
REASON FOR QUESTION
Relay R52 controls the hook arm extend function in AUTO mode. The power supply to relay R52 is from wire 1465. Relay will not function if there is an open in wire 1465.



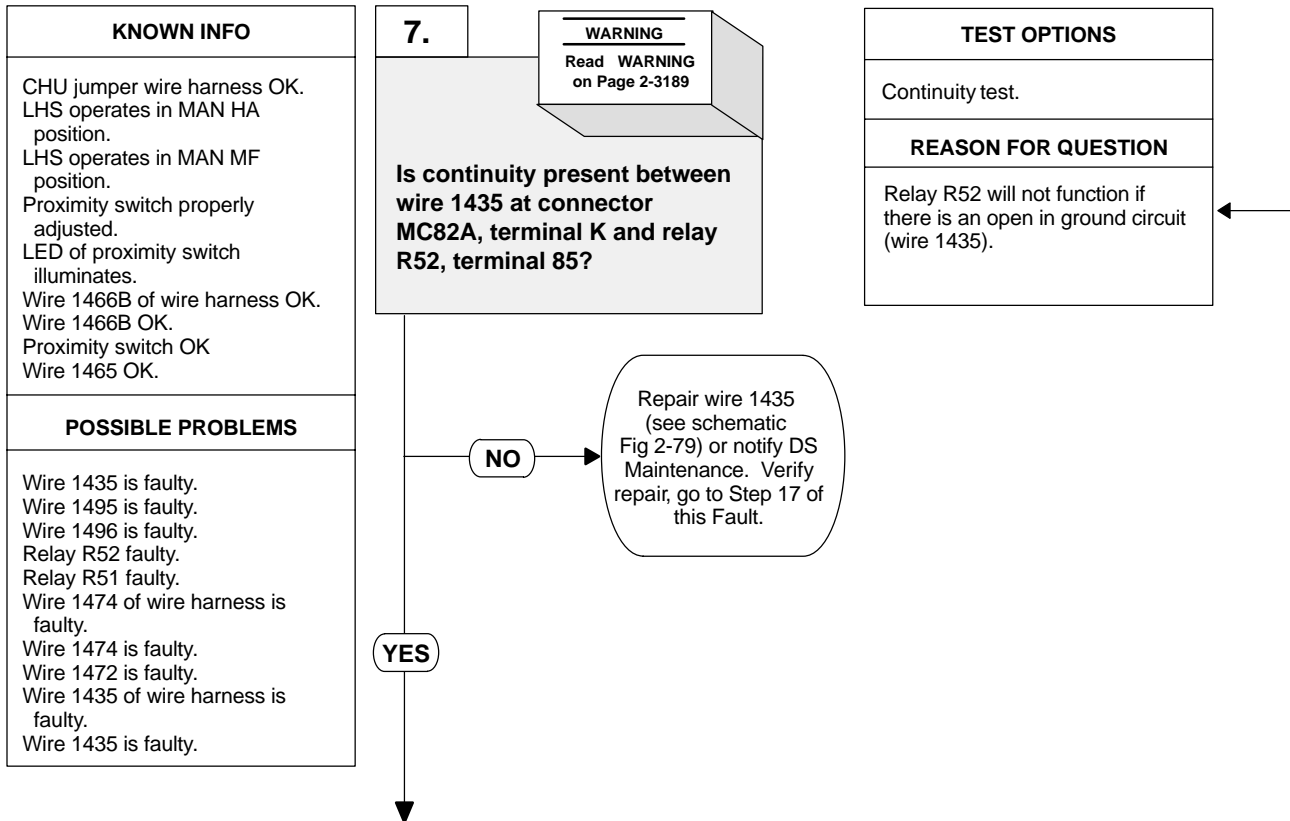
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- CONTINUITY TEST**
- (1) Disconnect harness connector MC82A from CHU control box.
 - (2) Remove relay R52 from CHU control box (Para 21-23).
 - (3) Set multimeter select switch to ohms.
 - (4) Is there continuity on wire 1465 between connector MC82A, terminal A and relay R52, terminal 86?
 - (a) If there is no continuity, repair wire 1465 (see schematic Fig 2-79) or notify DS Maintenance.
 - (b) If there is continuity, wire 1465 is OK.



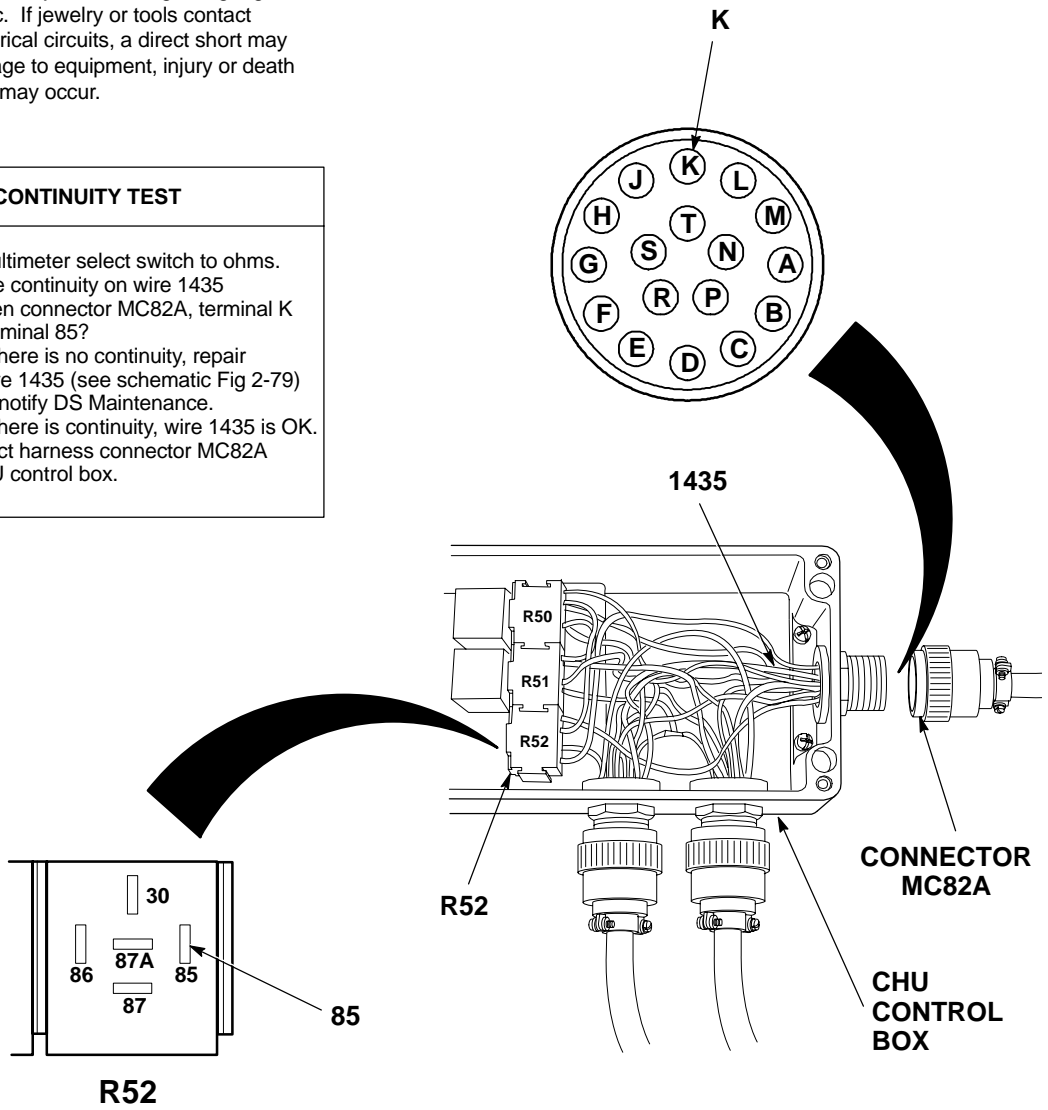
5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).



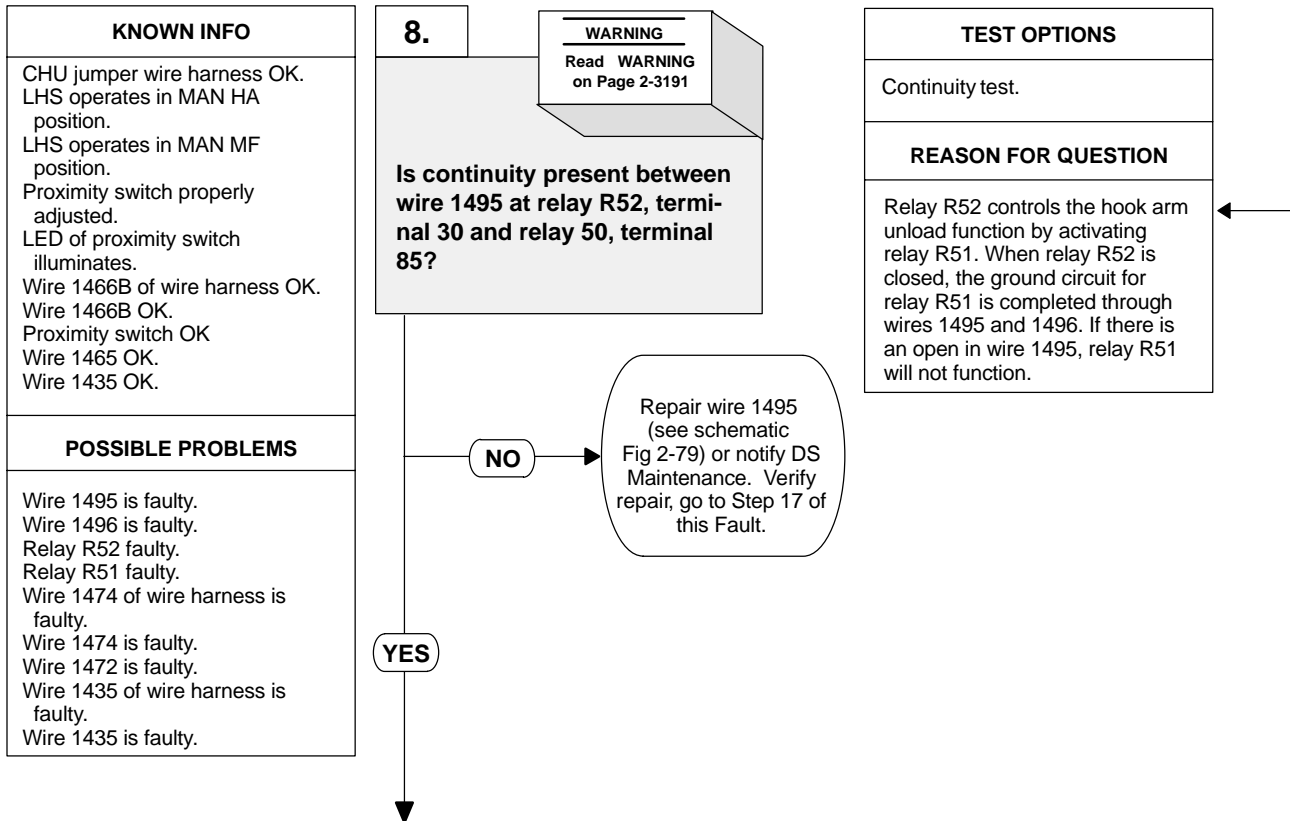
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- CONTINUITY TEST**
- (1) Set multimeter select switch to ohms.
 - (2) Is there continuity on wire 1435 between connector MC82A, terminal K and terminal 85?
 - (a) If there is no continuity, repair wire 1435 (see schematic Fig 2-79) or notify DS Maintenance.
 - (b) If there is continuity, wire 1435 is OK.
 - (3) Connect harness connector MC82A to CHU control box.



5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).

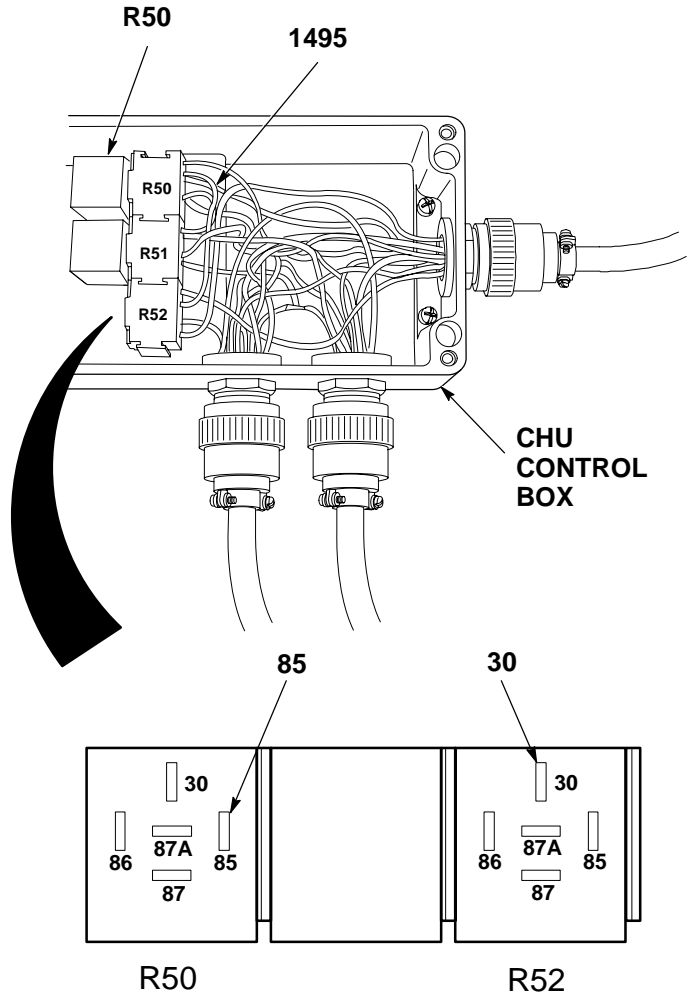


WARNING

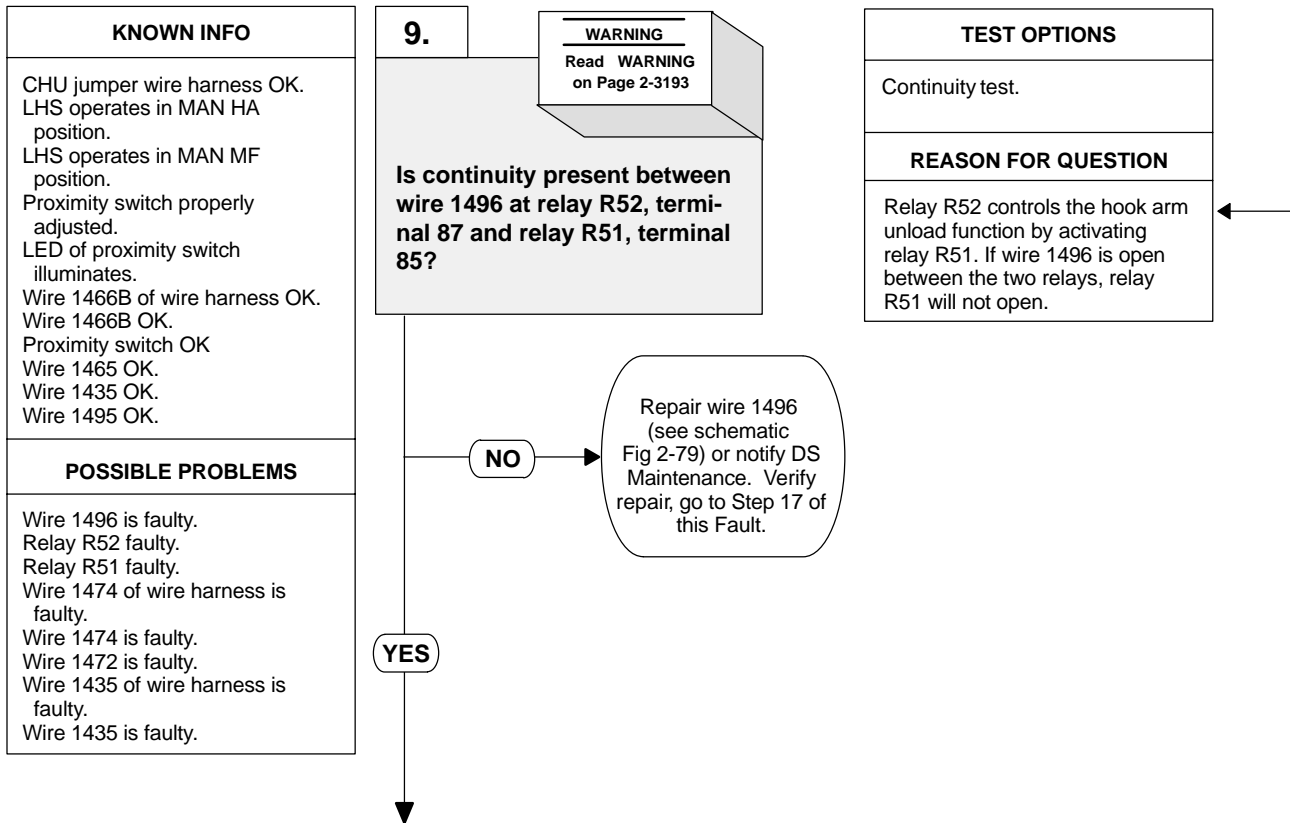
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

CONTINUITY TEST

- (1) Remove relay R50 from CHU control box (Para 21-23).
- (2) Set multimeter select switch to ohms.
- (3) Is there continuity between relay 50, terminal 85 and relay 52, terminal 30?
 - (a) If there is no continuity, replace wire 1495 (see schematic Fig 2-79) or notify DS Maintenance.
 - (b) If there is continuity, wire 1495 is OK.
- (4) Install relay R50 (Para 21-23).



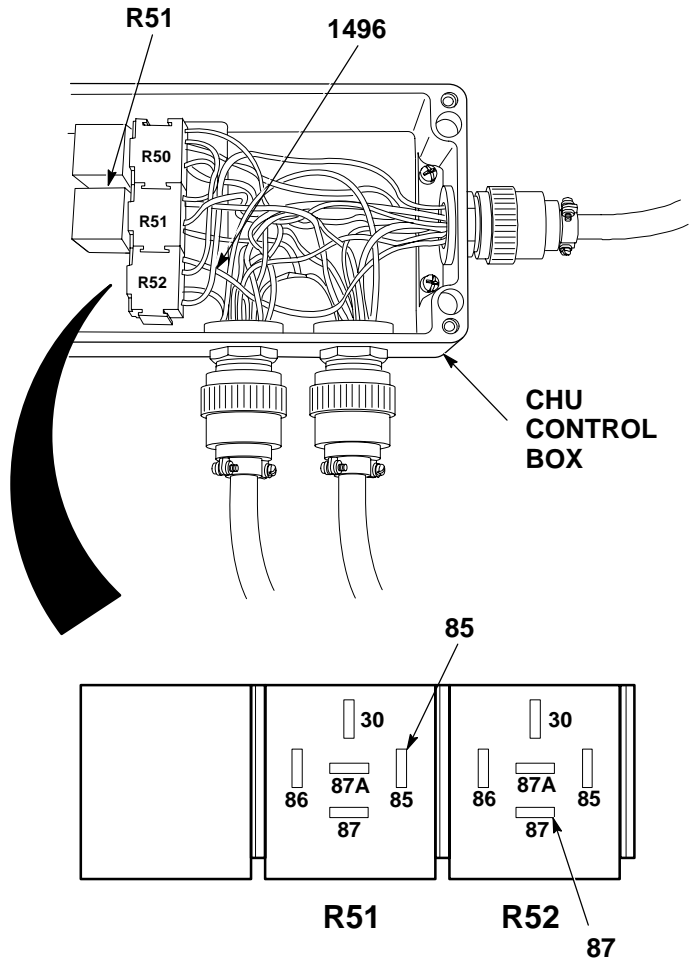
5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).



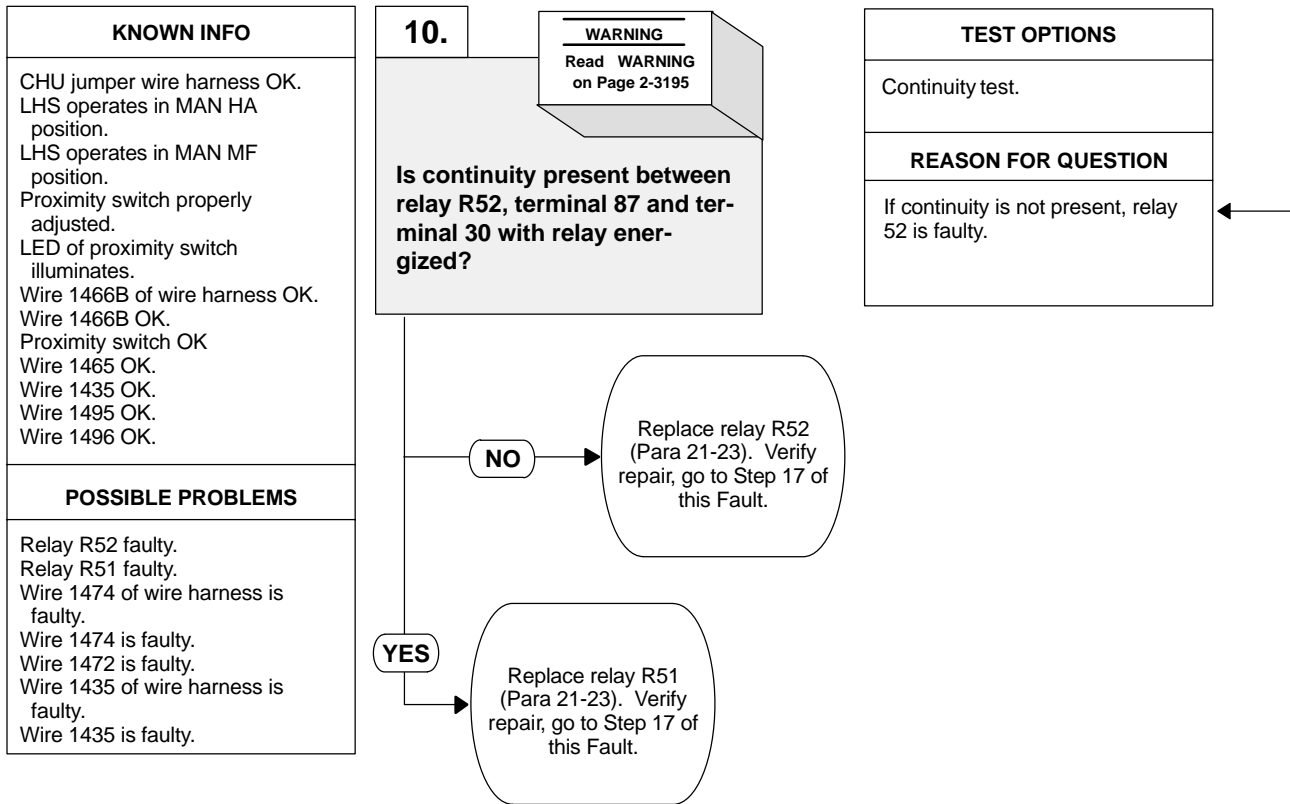
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- CONTINUITY TEST**
- (1) Remove relay R51 from CHU control box (Para 21-23) .
 - (2) Set multimeter select switch to ohms.
 - (3) Is there continuity on wire 1496 between relay 51, terminal 85 and relay R52, terminal 87?
 - (a) If there is no continuity, repair wire 1496 (see schematic Fig 2-79) or notify DS Maintenance.
 - (b) If there is continuity, wire 1496 is OK.
 - (4) Install relays R51 and R52 (Para 21-23).



5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).



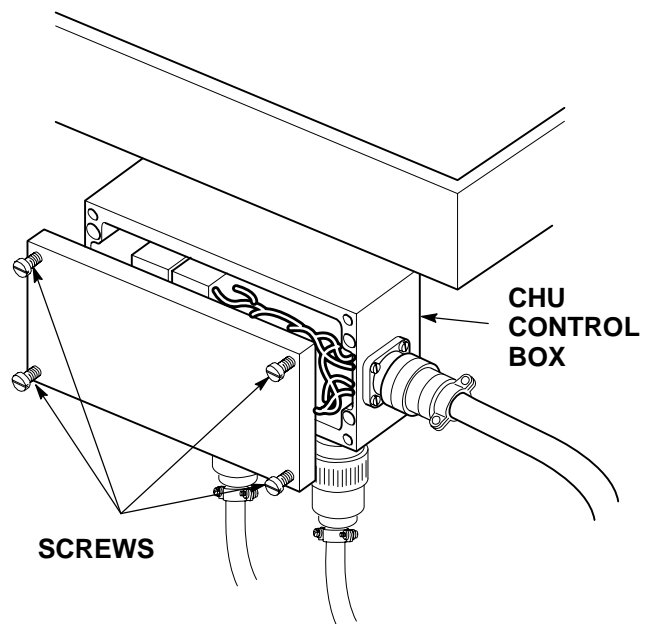
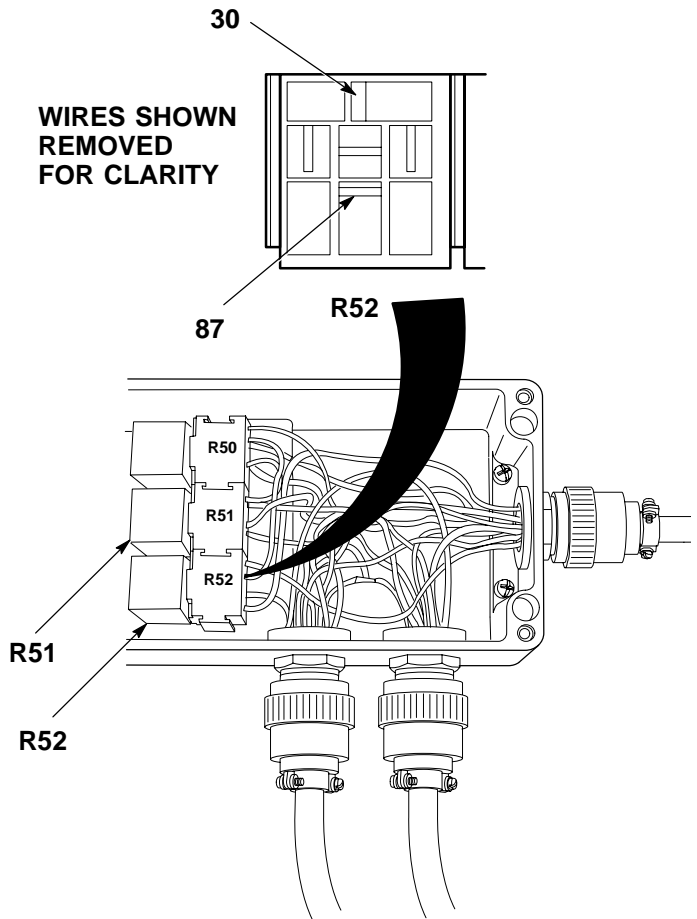
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

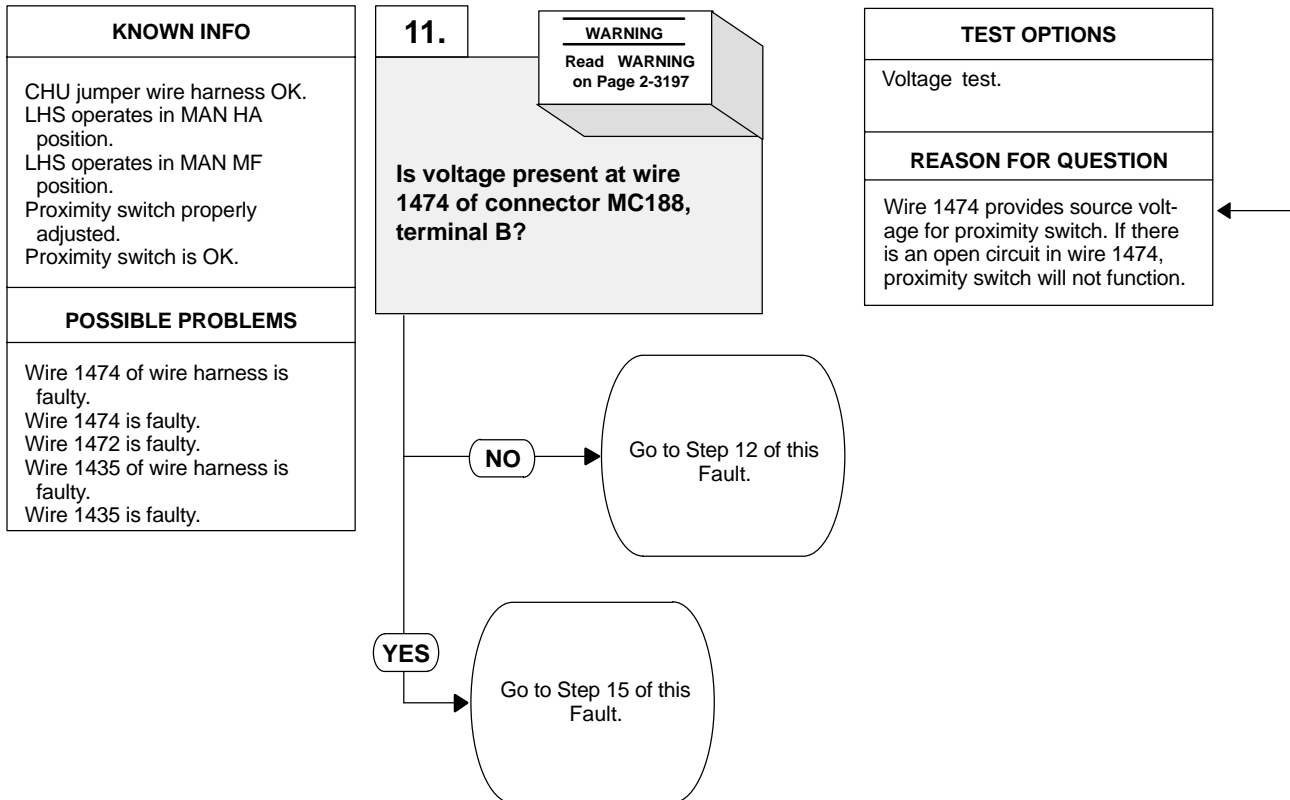
CAUTION

Connect multimeter leads only to terminals indicated. Connecting multimeter to other terminals may cause damage to vehicle or test equipment.

- | CONTINUITY TEST | |
|-----------------|--|
| (1) | Turn engine switch ON (TM 9-2320-364-10). |
| (2) | Cycle LHS in AUTO mode until main frame cylinders begin to extend. |
| (3) | Turn off engine. |
| (4) | Turn engine switch to ON position (TM 9-2320-364-10). |
| (5) | Hold LHS control in UNLOAD position. |
| (6) | Set multimeter select switch to ohms. |
| (7) | Is there continuity at relay R52 between terminals 87 and 30? |
| (a) | If there is no continuity, replace relay R52 (Para 21-23). |
| (b) | If there is continuity, replace relay R51 (Para 21-23). |
| (8) | Turn off engine switch. |
| (9) | Install cover on CHU control box and tighten four screws. |



5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).

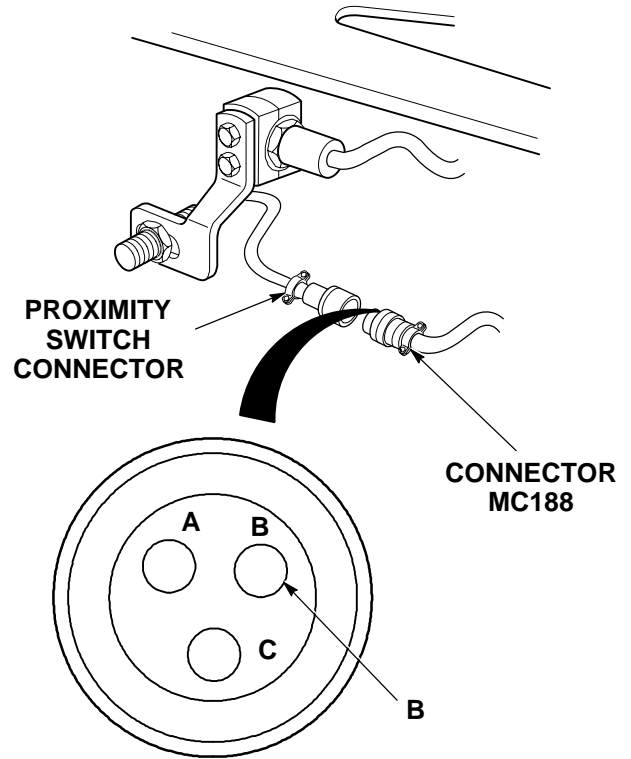


WARNING

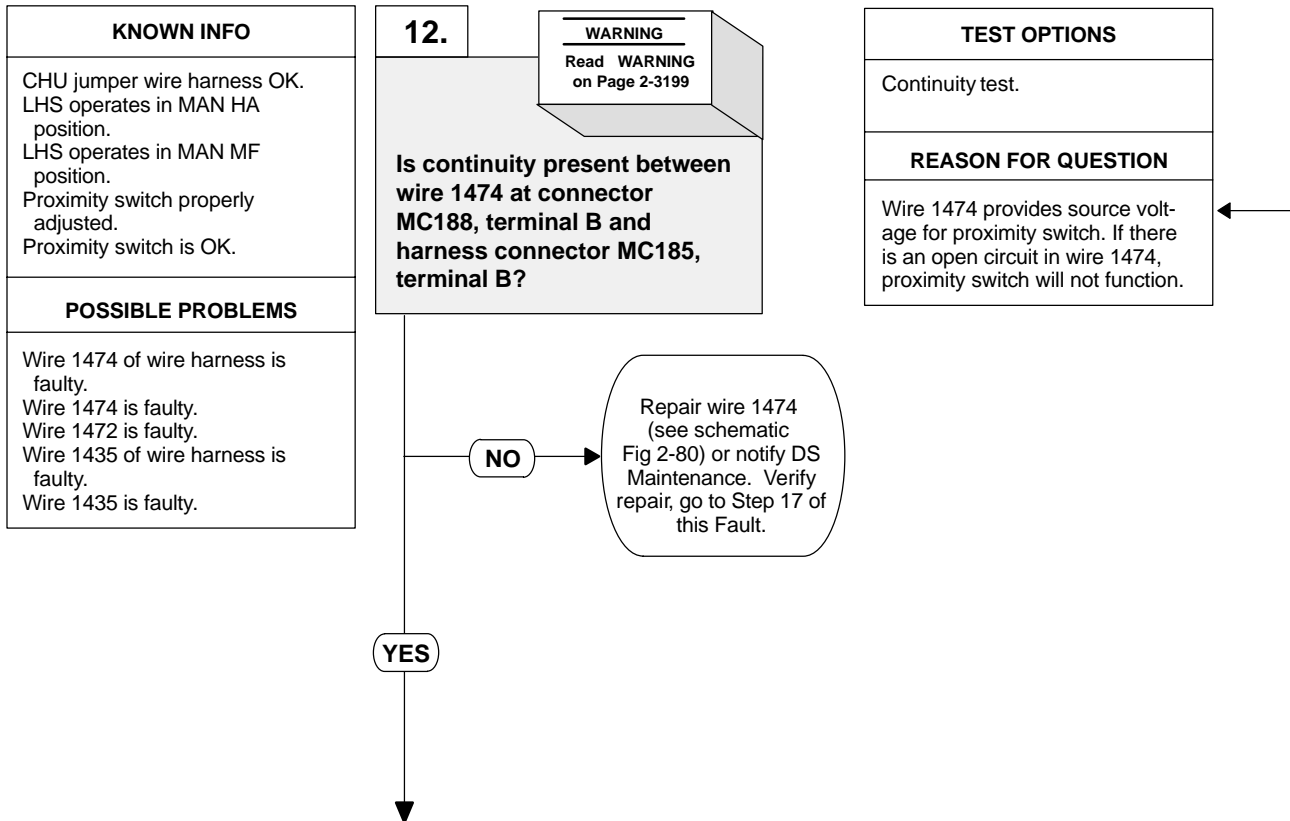
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

VOLTAGE TEST

- (1) Disconnect harness connector MC188 from proximity switch connector.
- (2) Set multimeter select switch to volts.
- (3) Is there voltage measured at connector MC188 terminal B?
 - (a) If there is no voltage, go to Step 12 of this Fault .
 - (b) If there is voltage, go to Step 17 of this Fault.



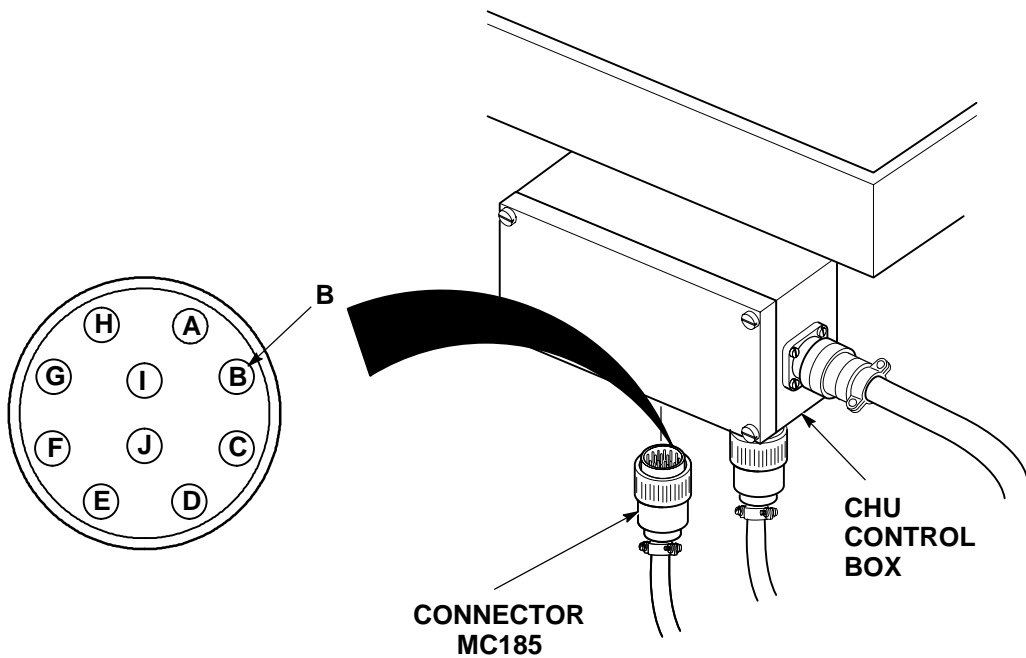
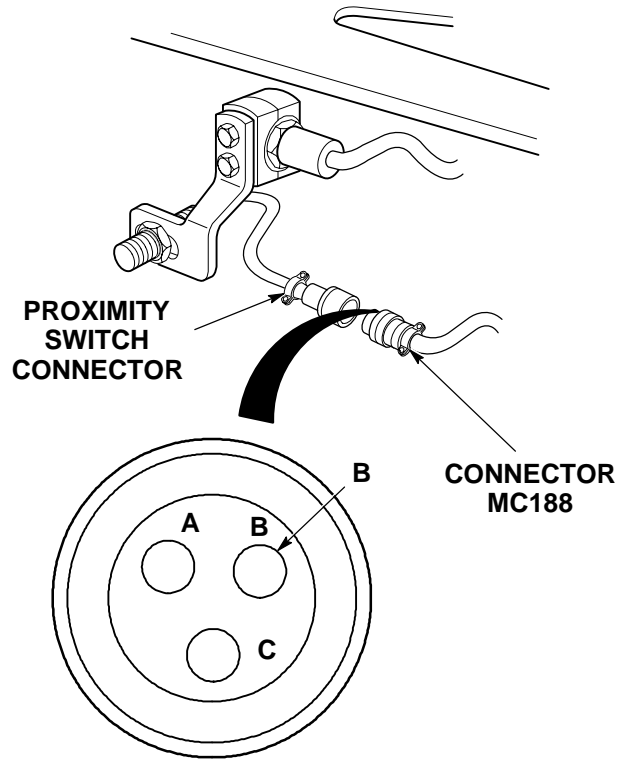
5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).



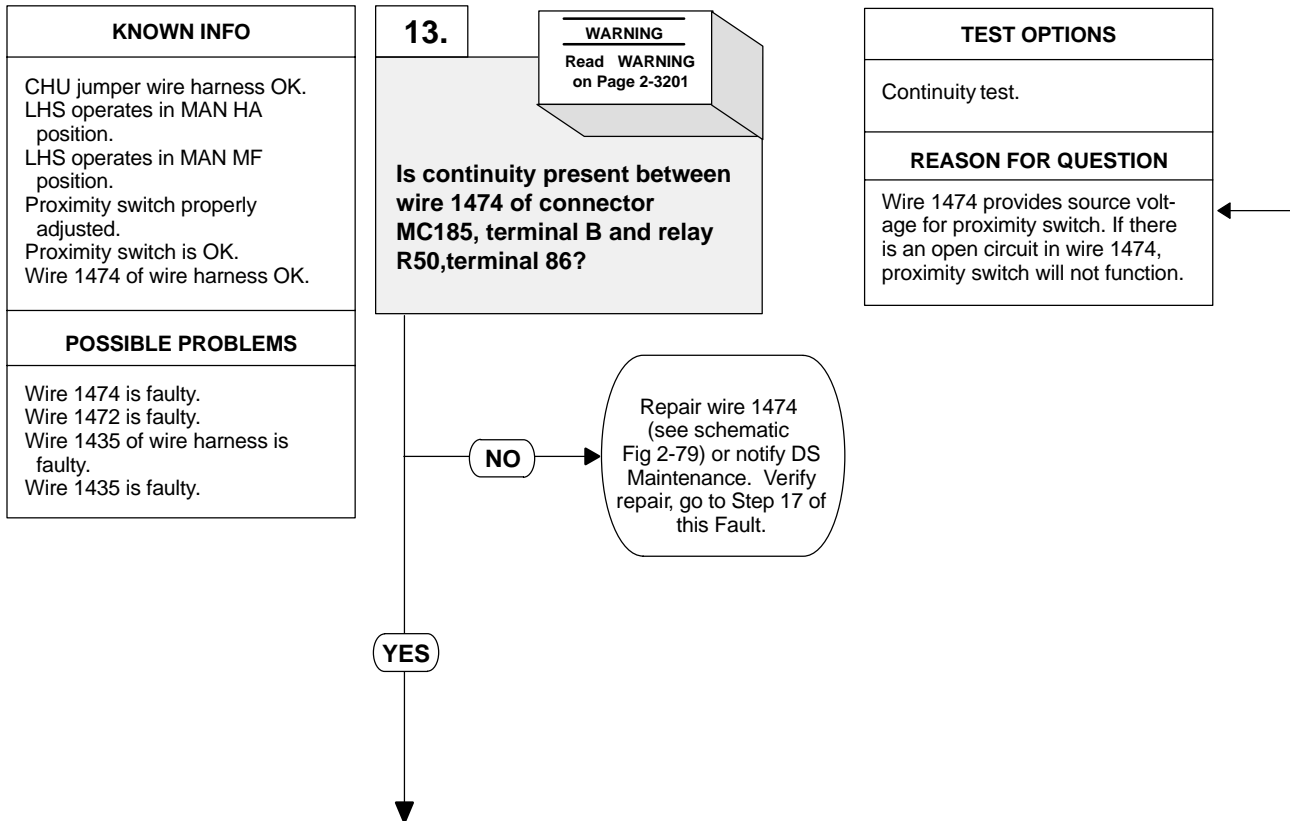
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- CONTINUITY TEST**
- (1) Disconnect wire harness connector MC185 from CHU control box.
 - (2) Set multimeter select switch to ohms.
 - (3) Is there continuity between connector MC188, terminal B and connector MC185, terminal B?
 - (a) If there is no continuity, repair wire 1474 (see schematic Fig 2-80) or notify DS Maintenance.
 - (b) If there is continuity, wire 1474 is OK.
 - (4) Connect proximity switch connector to harness connector MC188.



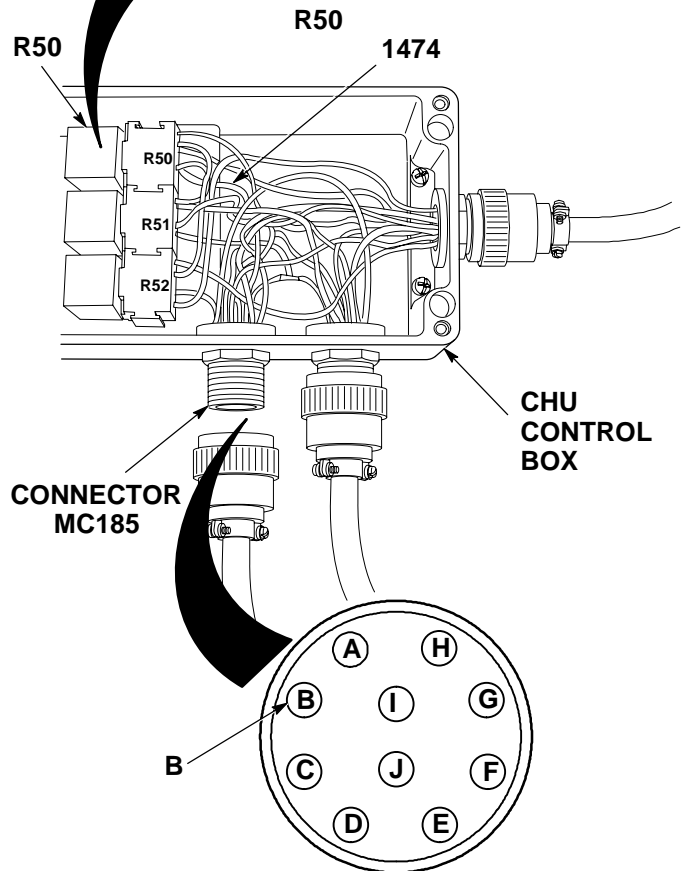
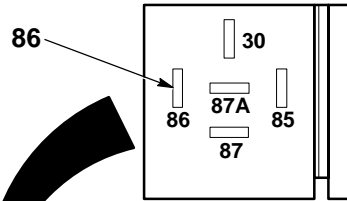
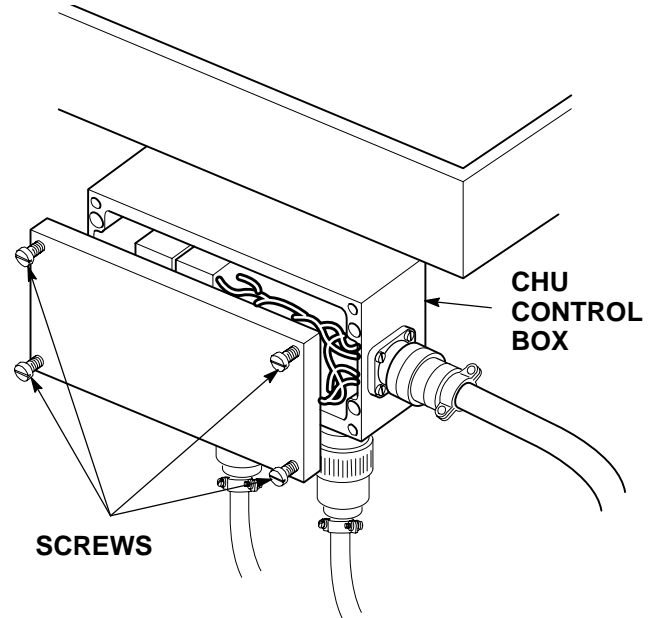
5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).



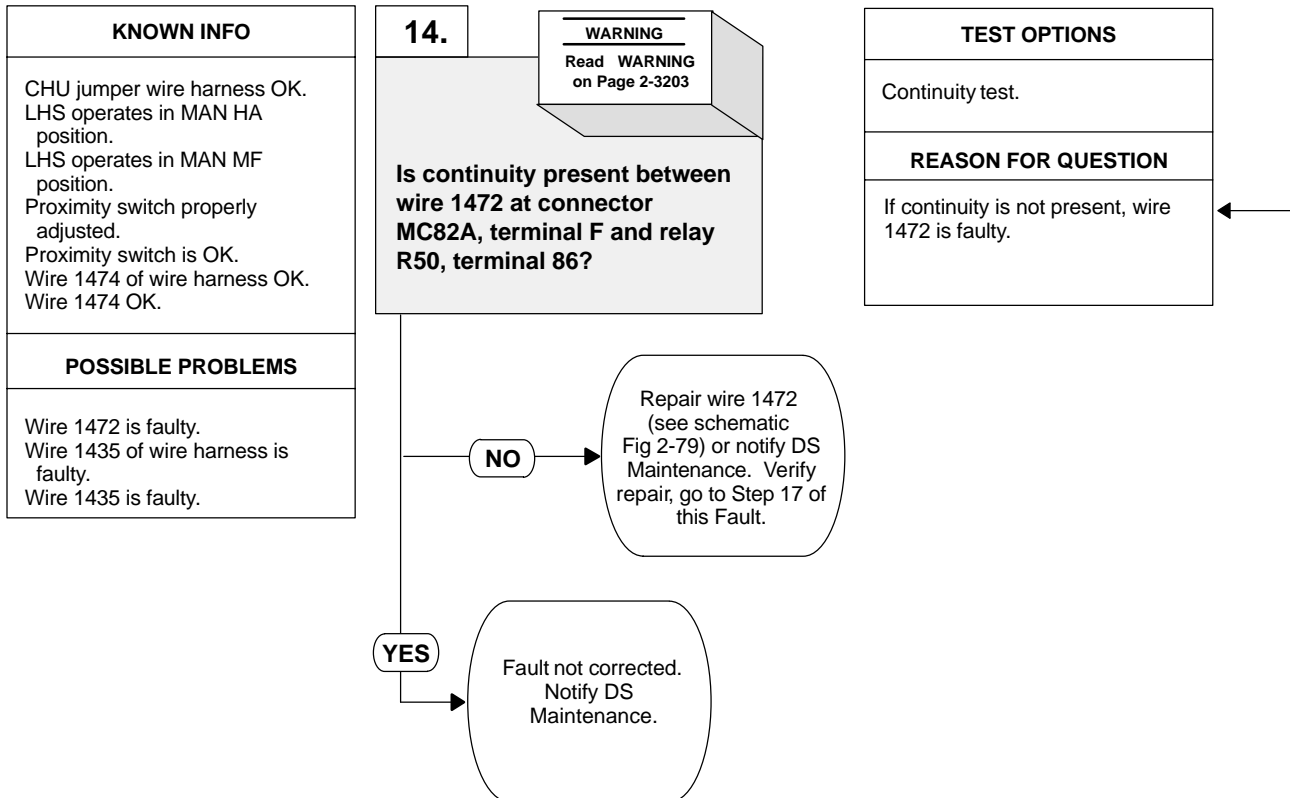
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- CONTINUITY TEST**
- (1) Loosen four screws and remove cover from CHU control box.
 - (2) Remove relay R50 (Para 21-23).
 - (3) Set multimeter select switch to ohms.
 - (4) Is there continuity between wire 1474 of connector MC185, terminal B and relay R50, terminal 86?
 - (a) If there is no continuity, repair wire 1474 (see schematic Fig 2-79) or notify DS Maintenance, then perform Steps (4) thru (7) below.
 - (b) If there is continuity, wire 1474 is ok, go to Step 14 of this Fault.
 - (5) Install relay R50 (Para 21-23).
 - (6) Connect wire harness connector MC185 to CHU control box.
 - (7) Install cover on CHU control box and tighten four screws.



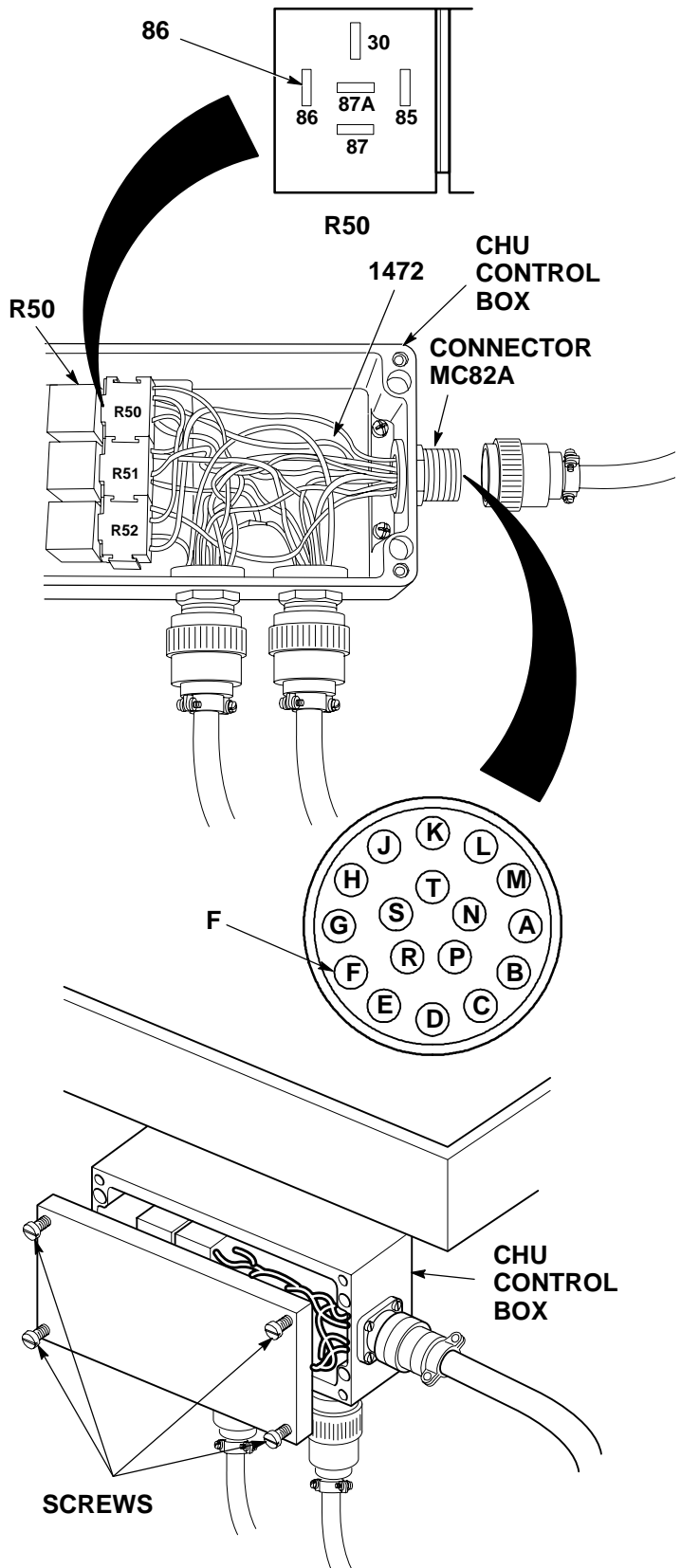
5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).



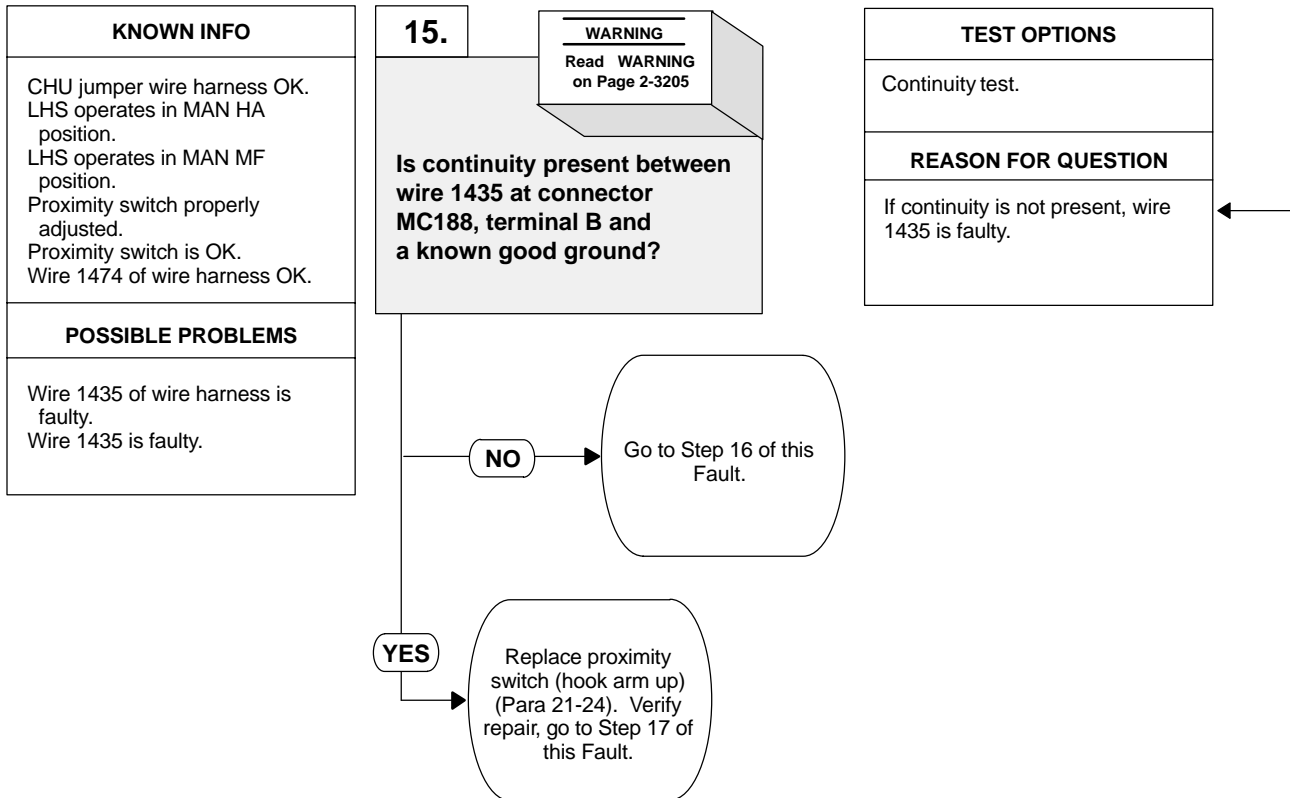
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- CONTINUITY TEST**
- (1) Disconnect wire harness connector MC82A from CHU control box.
 - (2) Set multimeter select switch to ohms.
 - (3) Is there continuity between wire 1472 of connector MC82A, terminal F and relay R50, terminal 86?
 - (a) If there is no continuity, repair wire 1472 (see schematic Fig 2-79) or notify DS Maintenance, then perform Steps (4) thru (6) below.
 - (b) If there is continuity, notify DS maintenance and perform Steps (4) thru (6) below.
 - (4) Install relay R50 (Para 21-23).
 - (5) Connect wire harness connector MC82A to CHU control box.
 - (6) Install cover on CHU control box and tighten four screws.



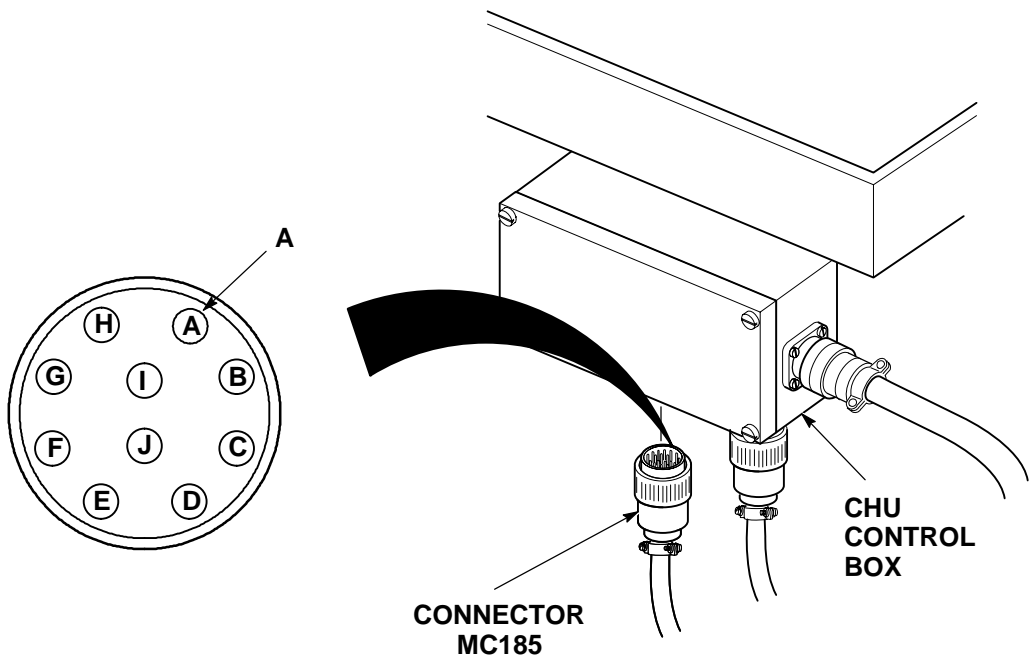
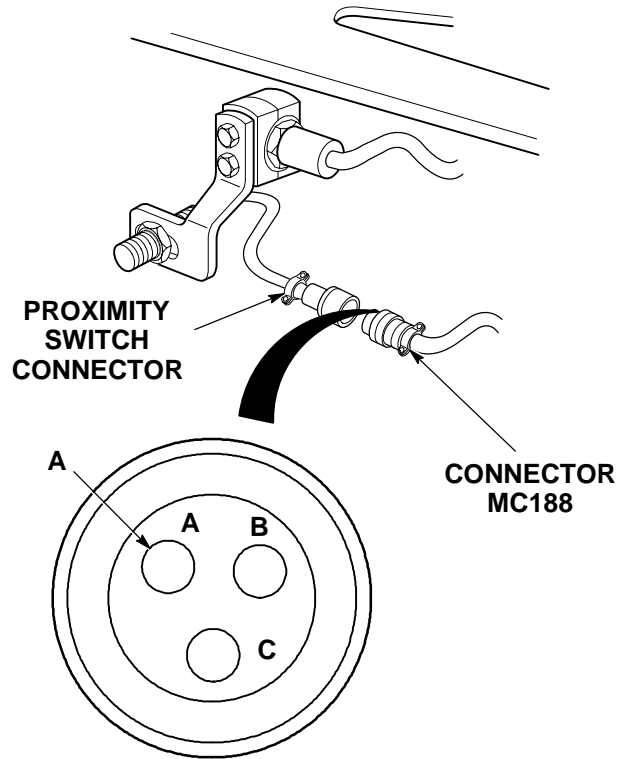
5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).



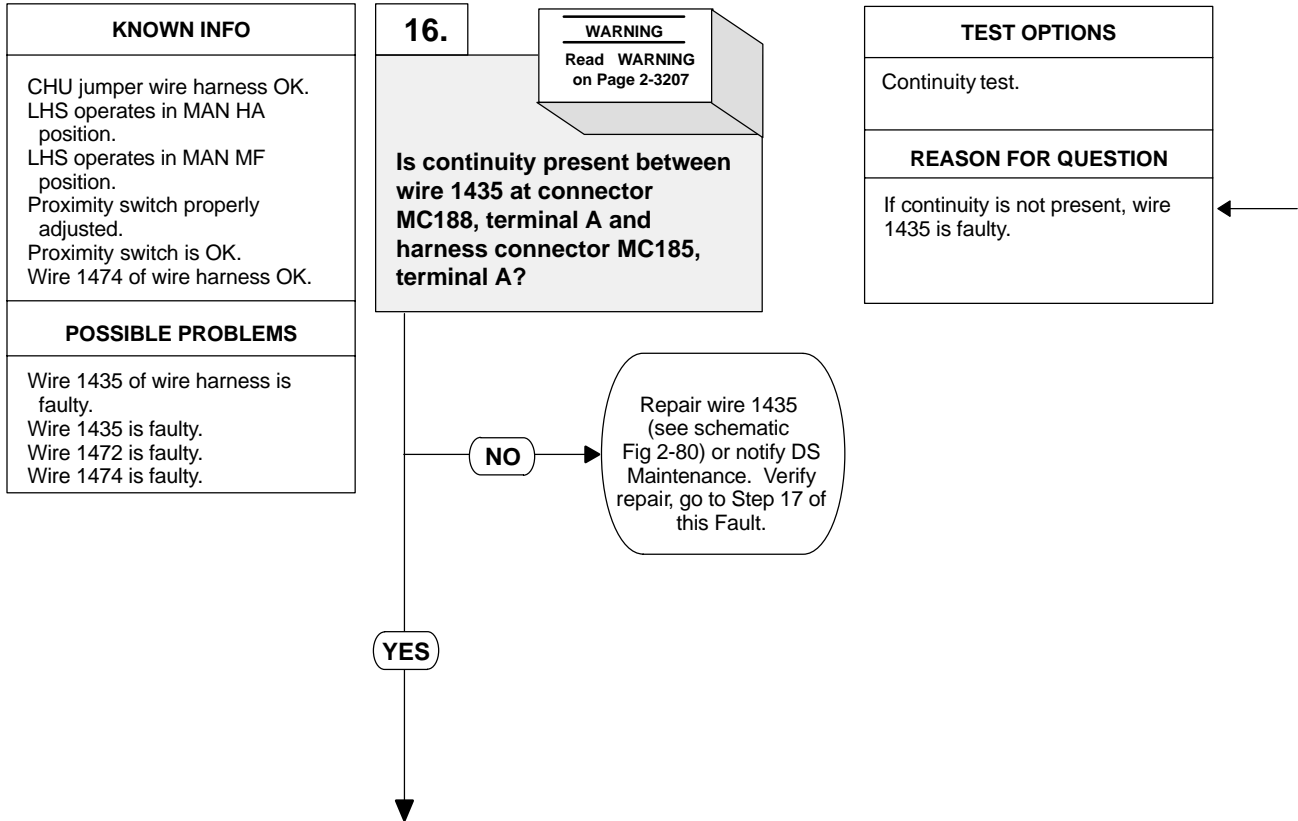
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- CONTINUITY TEST**
- (1) Set multimeter select switch to ohms.
 - (2) Is there continuity between connector MC188, terminal A and a known good ground.
 - (a) If there is no continuity, go to Step 16 of this Fault.
 - (b) If there is continuity, replace proximity switch (hook arm up) (Para 21-24) and perform Step (3) below.
 - (3) Connect wire harness connector MC185 to CHU control box.



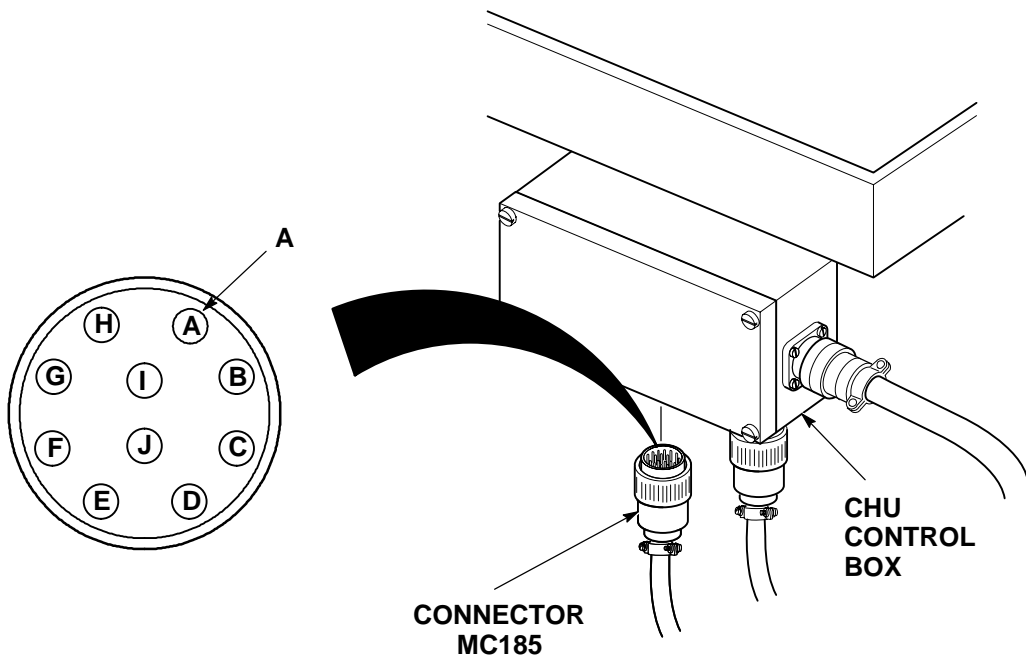
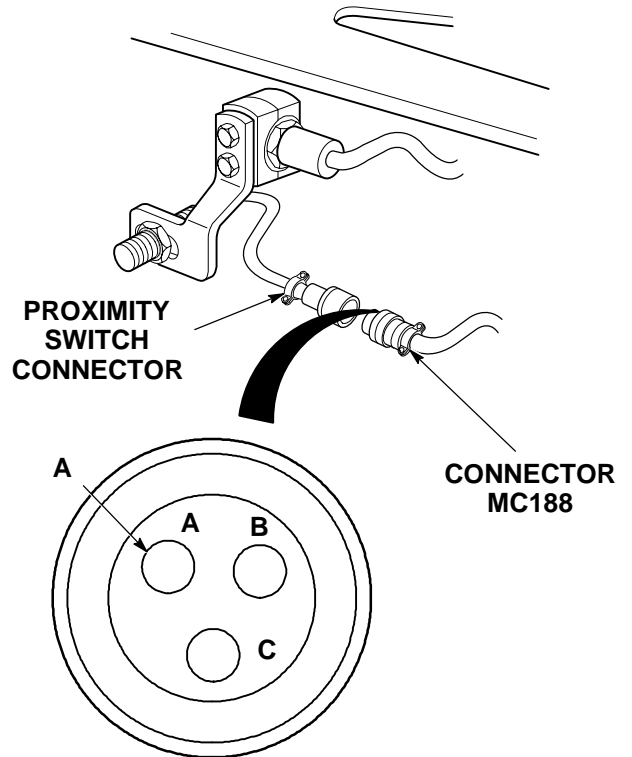
5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).



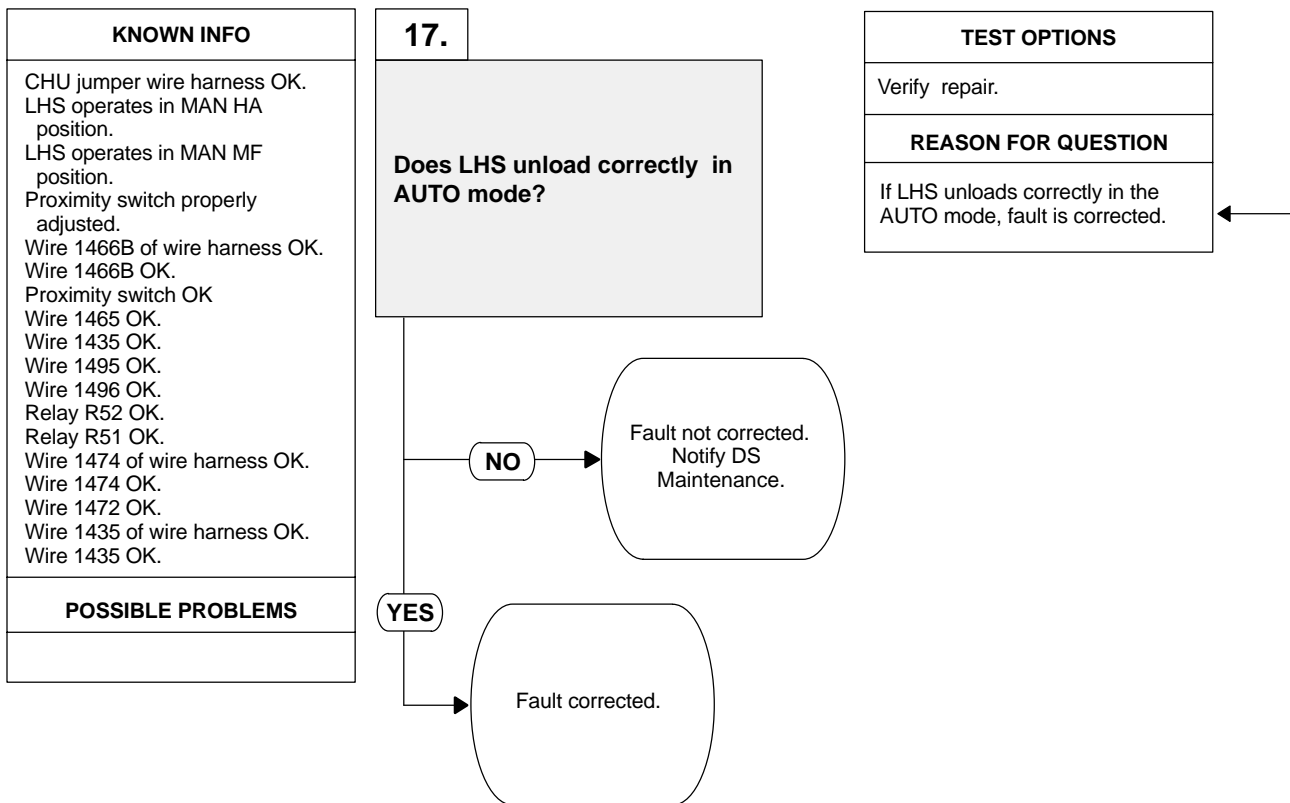
WARNING

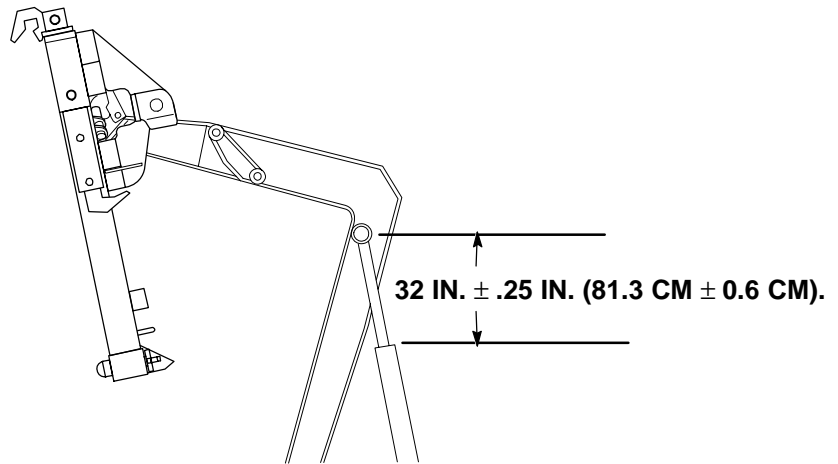
Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- | CONTINUITY TEST |
|--|
| (1) Disconnect wire harness connector MC185 from CHU control box. |
| (2) Set multimeter select switch to ohms. |
| (3) Is there continuity between connector MC188, terminal A and connector MC185, terminal A?
(a) If there is no continuity, repair wire 1435 (see schematic Fig 2-80) or notify DS Maintenance.
(b) If there is continuity, wire 1435 is OK. |
| (4) Connect proximity switch connector to harness connector MC188. |
| (5) Connect wire harness connector MC185 to CHU control box. |



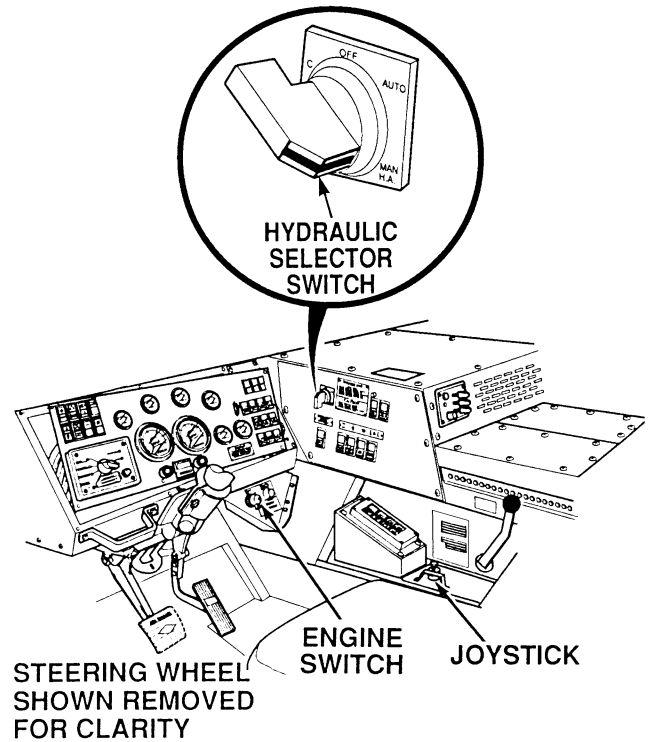
5. HOOK ARM EXTENDS TOO FAR IN CHU MODE (AUTO) (CONT).





VERIFY REPAIR

- (1) Start engine (TM 9-2320-364-10).
- (2) Set hydraulic selector switch in the AUTO position.
- (3) Hold joystick in the UNLOAD position until hook arm hydraulic cylinder stops extending and main frame cylinder starts to extend.
- (4) Turn OFF ENGINE switch.
- (5) Measure the hook arm cylinder rod extension distance from the center of the rod pin to the top of the cylinder bearing end cap. This distance should be 32 in. ± .25 in. (81.3 cm ± 0.6 cm).
 - (a) If dimension is correct, fault has been corrected.
 - (b) If dimension is not correct, perform steps (6) through (9) below and notify DS Maintenance.
- (6) Start engine (TM 9-2320-364-10).
- (7) Return LHS to transit position (TM 9-2320-364-10).
- (8) Set hydraulic selector switch in OFF position.
- (9) Turn OFF ENGINE switch.



Section VI. MAINTENANCE PROCEDURES

2-39. MAINTENANCE INTRODUCTION.

This section provides general procedures to be followed for the Unit Maintenance level as specified in the Maintenance Allocation Chart (MAC). When a special procedure is used, the detailed procedure will be in the section covering that component.

2-40. GROUND HANDLING.

- a. Towing.** Two towing eyes are located at front and two located at rear of truck.
- b. Parking.** Parking brakes are designed to hold vehicle GVW on a minimum of 7-9 percent grade, pointing either uphill or downhill per Federal Motor Carrier Safety Regulation 393.41.
- c. Mooring and Transport.** For forward, aft, lateral and upward movements, truck has four tiedown rings. Refer to TM 9-2320-364-10 for mooring condition and tiedown locations.
- d. Hoisting.** Sling assemblies and towing eyes used for hoisting are found on the truck

2-41. GENERAL REMOVAL INSTRUCTIONS.

- a. Work Required.** Remove parts if repair or replacement is required. Do not disassemble a component any further than needed.
- b. Preparation.** Before removal of any electrical, hydraulic, or air system components, ensure system component is not energized or pressurized. Disconnect battery ground cables, on those trucks equipped with a battery disconnect switch, the switch may be used to disconnect batteries. Relieve air system pressure. Before removal of fasteners (nuts, locknuts). Remove any paint on threads to prevent binding of fastener.
- c. Identification.** To ease assembly and installation, tag and mark shims, connectors, wires and mating ends of lines before disconnecting them. Identify similar parts to ensure correct assembly.
- d. Position of Valves.** Before removing valve handles, mark or diagram their positions when open and closed. This will help during assembly.
- e. Tire Removal.** Before removing any tires, position jackstands under axles, walking beams or frame. See Figure 2-82 through 2-84 for proper jackstand placement. This will secure the truck for safe tire removal.
- f. Location.** Before removing cable ties, cushion clamps, hoses, tubing, wiring etc., note the location, position and routing to ensure correct assembly.

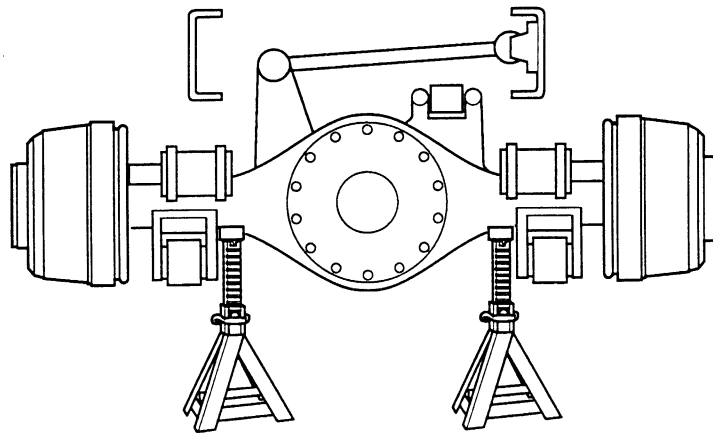


Figure 2-82. Axle No. 1 through 5 Jackstand Placement

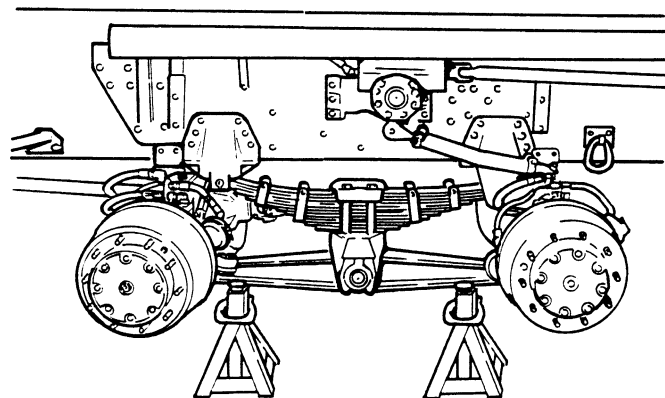


Figure 2-83. Axle No. 1 & 2 or 4 & 5 Walking Beam Jackstand Placement

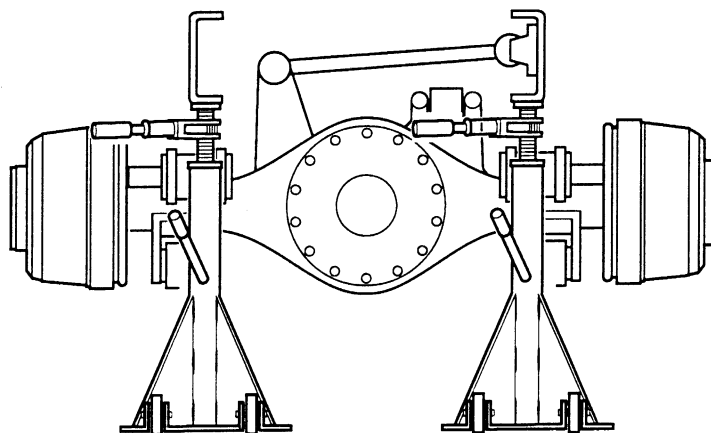


Figure 2-84. Frame Jackstand Placement

2-42. GENERAL DISASSEMBLY INSTRUCTIONS.

- a. **Cleanliness.** Work area must be as clean as possible to prevent contamination to components.

CAUTION

Self-locking fasteners that are loosened must be replaced, not tightened.

- b. **Locking Parts.** Replace all lockwire, lockwashers, cotter pins and locknuts at time of reassembly.
- c. **Expendable Parts.** All gaskets, packings and seals removed during repair must be discarded and replaced with new parts.
- d. **Removing Seals.** Be sure all traces of oil, gaskets and sealants are removed from components. When possible, use wood or plastic probes and scrapers to prevent damage to machined surfaces.

CAUTION

Do not use tape to close off fuel or oil openings. Sticky surface of tape can mix with fuel and oil and cause engine malfunctions.

- e. **Parts Protection.** To keep dust, dirt, moisture and other objects out of internal parts of systems or components, cap or tape over all open tubes, hoses, air lines, fittings and component openings as soon as part is removed. Wrap all removed parts in clean paper or dip parts in preservation oil.

2-43. GENERAL CLEANING INSTRUCTIONS.

WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
 - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
 - Never use fuel to clean parts. Fuel is highly flammable. Serious personal injury could result if fuel ignites during cleaning.
- a. **Cleaning Solvents.** Use only approved cleaning solvents to clean parts. Drycleaning solvent P-D-680 (Item 87, Appendix C) is commonly used. Always work in a well-ventilated area.

WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc). Failure to comply may result in injury to personnel.

b. Removing Deposits. Soak parts in drycleaning solvent (Item 87, Appendix C), and wash away deposits by flushing or spraying. When necessary, brush with a soft bristle brush (not wire) moistened in solvent. Use compressed air to dry parts, except bearings, after cleaning. Bearings must drip and air dry.

c. Tools. Do not use wire brushes, abrasive wheels, or compounds to clean parts unless specifically approved in the detailed procedures. Parts may be scratched or altered and may weaken a highly stressed part.

d. Ball and Roller Bearings. When cleaning ball or roller bearings, place them in a basket and suspend them in a container of drycleaning solvent (Item 87, Appendix C). If needed, use a brush to remove caked grease, chips, etc. Avoid rotating bearing before solid particles are removed to prevent damaging races and balls. When bearings have been cleaned, coat them lightly with lubricating oil (Item 54, Appendix C) to remove solvent.

CAUTION

Do not clean tires, lubricant seals, rubber hoses, or electrical components with solvent mixture.

e. Rubber Parts. Do not clean preformed packings or rubber parts in drycleaning solvent. Wipe parts clean with a dry, cleaning cloth (Item 31, Appendix C).

WARNING

Steam cleaning creates hazardous noise levels and severe burn potential. Eye, skin, and ear protection is required. Failure to comply may result in injury to personnel.

f. Exterior Parts. Steam clean all exterior parts thoroughly before removing. This will make inspection and disassembly easier.

2-43. GENERAL CLEANING INSTRUCTIONS (CONT).

WARNING

Solvents used with a spray gun must be used in a spray booth with filter. Face shield must be used by personnel operating spray gun. Failure to comply may result in injury to personnel.

g. Engine, Cab and Body. Use a spray gun and solvent mixture for cleaning exterior of engine, cab and body. Allow mixture to remain on item surface for 10 minutes before rinsing. Rinse with hot water under 80 to 120 pounds of pressure, if available. An ordinary garden hose with nozzle may be used if other equipment is not available. Rinse thoroughly.

CAUTION

To prevent corrosion, parts should be dipped in rust preventive within two hours of degreasing.

h. Degreasing Machine. A degreasing machine may be used to remove heavy grease and oil from metal parts.

WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- Never use fuel to clean parts. Fuel is highly flammable. Serious personal injury could result if fuel ignites during cleaning.

i. Passages. After degreasing, check all oil passages and cavities for dirt or blockage before coating with lubricating oil (Item 54, Appendix C). Run a thin, flexible wire through oil passages to make sure they are not clogged. Use a pressure spray gun and drycleaning solvent (Item 87, Appendix C) to clean dirty passages.

j. Electrical Parts. Electrical parts, such as coils, junction blocks and switches should not be soaked or sprayed with cleaning solutions. Clean these parts with a cleaning cloth (Item 31, Appendix C) moistened with drycleaning solvent (Item 87, Appendix C).

CAUTION

Do not use soap or alkalis for cleaning tank interiors.

k. Oil and Fuel Tanks. Pay special attention to all warnings and cautions when working on truck's fuel tank. Oil tanks and fuel tanks should be flushed, using a spray gun and drycleaning solvent. (Item 87, Appendix C).

l. Battery. Exterior surfaces of the electrical system and battery should be cleaned with a weak solution of baking soda and water. Apply solution with a bristle brush to remove corrosion. Pay special attention to all warnings and cautions when working on batteries.

m. Hydraulic System. When cleaning hydraulic system parts use drycleaning solvent P-D-680. Clean and dry parts thoroughly to make sure no residue remains. If a coating preservative is required before assembly, apply a light film of lubricating oil (Item 54, Appendix C). If petroleum-free solvents are not available, use the same hydraulic fluid as used in the truck's system.

2-44. GENERAL INSPECTION INSTRUCTIONS.

a. Cleaning. Clean all parts before inspection. Check for defects such as physical distortion, wear, cracks and pitting.

b. Sealing Surfaces. Inspect all surfaces in contact with gaskets, packings, or seals for nicks and burrs. If any defect is found, remove it before assembly.

c. Bearings. Inspect bearings for rusted or pitted balls, races, or separators. Inspect balls and races for brinnelling, abrasion and serious discoloration. The following are conditions for bearing rejection:

- (1) Cuts or grooves parallel to ball or roller rotation.
- (2) Fatigue pits (not minor machine marks or scratches).
- (3) Cracks.

d. Gears and Splined Shafts. Inspect gears and splined shafts for wear, pittings, rolling, peening, scoring, burning, brinnelling and fatigue cracks.

e. Tubing, Hoses and Fittings. Inspect all hose surfaces for broken or frayed fabric. Check for breaks caused by sharp kinks or contact with other parts of the truck. Inspect copper tubing lines for kinks. Inspect fittings and tubing and mating surfaces and threads for nicks, cracks scratches and other damage. Replace any defective part. After assembly and during initial truck operation period, check for leaks.

f. Electrical Parts. Inspect all wiring harnesses for broken, chafed, or burned wiring. Inspect all terminal connectors for loose connections and broken parts.

g. Metal Parts. Visually inspect all castings and weldments for cracks. Parts that carry a great load should receive magnetic particle inspection. Critical non-ferrous parts may be inspected with fluorescent penetrant.

h. Drain Plugs. When removing drain plugs from transmission, engine, hydraulic system components, or axle differential and planetary hubs, check amount of sediment on plugs. Accumulations of grit or fine metal particles may indicate actual or potential component failure. A few fine particles are normal. This inspection helps to determine if there are defective parts prior to internal inspection of the component and to predict degradation of the equipment.

2-45. GENERAL REPAIR INSTRUCTIONS.

- a. Burrs.** Remove burrs from surface teeth with a fine-cut file or crocus cloth.
- b. Exterior Parts.** Chassis and exterior painted parts may be resurfaced when paint is damaged, or where parts have been repaired.

NOTE

Polished or machined steel parts not protected by cadmium, tin, copper, or other plating or surface treatments require protection. Bare metal surfaces must be free of moisture when protective coating is applied.

- c. Protecting Parts.** Protect bare steel surfaces from rust when not actually undergoing repair work. Dip parts in, or spray then with, corrosion preventive compound (Item 35, Appendix C). Aluminum parts may require protection in atmospheres having a high salt content.
- d. Screws, Nuts and Fittings.** Replace any screw, nut, or fitting with damaged threads. Inspect tapped holes for thread damage. If cross-threading is evident retap the hole for the next oversize screw or stud. If the retapping will weaken the part, or if the cost of the part makes retapping impractical, replace the part. Chasing the threads with proper size tap or die may be adequate.
- e. Stud Installation.** When installing studs use a proper driver. A worn stud driver may damage the end thread. Then a chasing die must be used before a nut can be screwed on. This procedure will remove cadmium plating and allow corrosion. Before installing a stud, inspect the hole for chips. Blow out foreign matter and start stud by hand. Before final insertion, coat thread with a film of antiseize compound (Item 20, Appendix C). Install stud to proper "setting height", which is the total projecting length.
- f. Dents.** Straighten minor body dents by bumping with a soft-faced hammer while using a wooden block backing.
- g. Sheet Metal Repair.** Repair minor skin cracks by installing patches.

2-46. GENERAL ASSEMBLY INSTRUCTIONS.

- a. Preparation.** Remove protective grease coatings from new parts before installation.
- b. Preformed Packing Installation.** Lubricate all preformed packings with a thin coat of lubricating oil (Item 54, Appendix C) before installing. To install a preformed packing, first clean the groove, then stretch packing and place into position. Place component on flat surface and uniformly press packing into position. Ensure preformed packings are not nicked or torn during assembly.

CAUTION

Use sealing compound sparingly and only on male threads. Do not apply compound on first two threads to avoid contamination of system from compound. Do not apply compound to hose connections or fittings with preformed packings. Damage to equipment may result.

- c. Pipe Joints and Fittings.** Use sealing compound, sealant, or adhesive as indicated in each maintenance task. Refer to Para 2-47i for tightening procedure.
- d. Oil Seals.** Coat oil seals evenly with oil or grease before installing. Install oil seals with seal lip facing toward lubricant, applying an even force to outer edge of seal. If oil seals are to be installed over keyed or splined shafts, use a guide to prevent sharp edge of keyway or splines from cutting the leather or neoprene seal. Construct guides of very thin gauge sheet metal and shape to the required diameter. Make certain guide edges are not sharp and are bent slightly inward so they do not cut the seal.
- e. Bearings and Shafts.** When mounting bearings on shafts always apply force to the inner races. When mounting bearings into housing always apply the force to the outer race.

f. Bearing Lubrication. Lubricate bearings before assembly with lubricant used in the related housing or container to provide the first run-in until lubricant from the system can reach the bearings.

WARNING

On direct contact, uncured silicone sealant irritates eyes. In case of contact, flush eyes with water and seek medical attention. In case of skin contact, wipe off and flush with water.

g. Silicone Sealant. Silicone sealant is often used instead of a gasket to seal mating parts. The mating parts must be clean, dry and free of oil or grease for proper adhesion. After silicone sealant has been applied, the mating parts must be assembled immediately. Silicone sealant starts to set-up in 15 minutes and takes 24 hours to completely cure. Excess silicone sealant should be wiped off after assembling the mating parts.

h. Gaskets. Remove all traces of previous gasket and sealant before installing new gasket. Coat both sides of gasket with sealant to provide added sealing.

2-47. GENERAL INSTALLATION INSTRUCTIONS.

a. Preparation. When unpacking items, remove all packing material, barrier paper, tape, plastic bags, protective caps and protective grease coatings. Handle and store removed components carefully.

CAUTION

Use sealing compound sparingly and only on male threads. Do not apply compound on first two threads to avoid contamination of system from compound. Do not apply compound to hose connections or fittings with preformed packings. Damage to equipment may result.

b. Sealing Compounds. Use sealing compounds as required in each maintenance task.

c. Torquing. Tighten bolts, screws, washers, hoses and fittings as required in Appendix E or in each maintenance task.

d. Identification Tags. Put hoses, tubes, lines and electrical wiring in place by matching identification tags and markings on equipment.

e. Hoses, Air Lines and Wiring. After installing hoses, air lines and wiring, ensure that they do not contact moving parts or components edges. Secure in place, out of way with cable ties and cushion clips.

2-47. GENERAL INSTALLATION INSTRUCTIONS (CONT).

f. Hose and Fitting Tightening Procedure.

NOTE

Tighten hoses and fittings as required in Appendix E or in each maintenance task. If a torque wrench and crowsfoot are not available or cannot be used, use following procedure.

- (1) Install hose nut (1) on fitting (2).

NOTE

When turning effort increases, hose nut seat is in contact with fitting seat.

- (2) Tighten hose nut (1) until seated on fitting (2).

NOTE

Alignment marks allow the mechanic to count the number of flats the hose nut has rotated during tightening.

- (3) Scribe alignment mark on hose nut (1) and fitting (2).
- (4) Tighten hose nut (1) until mark on hose nut has rotated correct number of flats (Refer to Table 2-67).

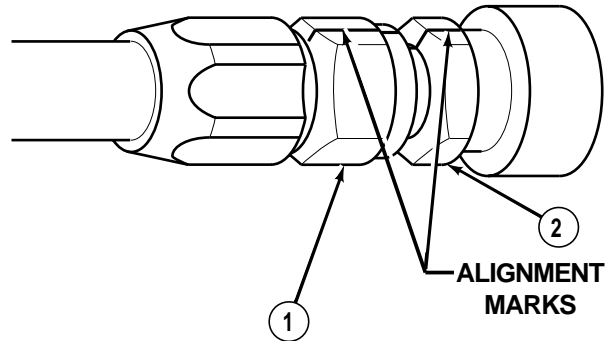


Table 2-67. Recommended Flats Rotation

Dash No.	SAE 37 Degree Flared Hose and Fitting	SAE 45 DEGREE Flared Hose and Fitting	37 DEGREE Flared Tube
-4	1 1/2 - 1 3/4	1 - 1 1/4	2 1/4 - 2 3/4
-5	1 - 1 1/2	1 - 1 1/4	2 1/4 - 2 3/4
-6	1 - 1 1/2	3/4 - 1	2 1/4 - 2 3/4
-8	1 1/4 - 1 3/4	1 - 1 1/4	2 1/4 - 2 3/4
-10	1 1/4 - 1 3/4	1 - 1 1/4	2 - 2 1/2
-12	1 - 1 1/2	1 - 1 1/4	2 - 2 1/2
-16	3/4 - 1	----	2 1/4 - 2 3/4
-20	1/2 - 3/4	----	1 1/4 - 1 3/4
-24	1/2 - 3/4	----	3/4 - 1 1/4
-32	3/4	----	1 - 1 1/4

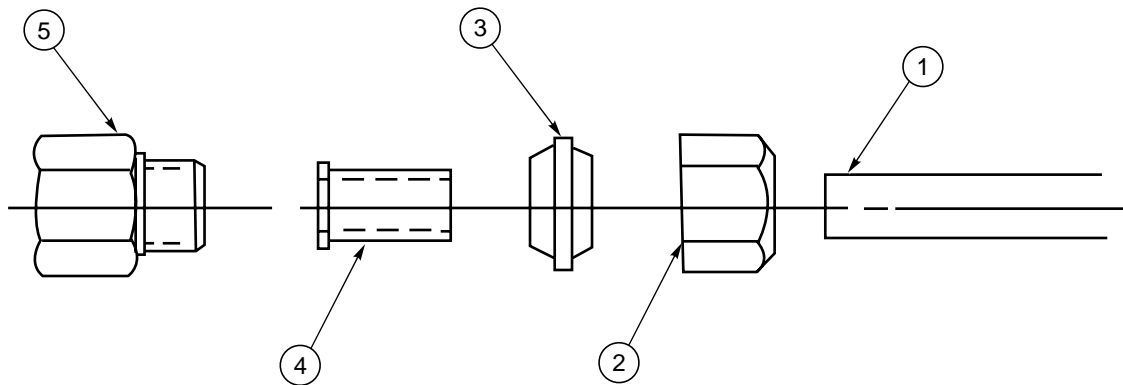
g. Air Line Tightening Procedure

- (1) Ensure end of air line (1) is cut square.
- (2) Remove nut (2), ferrule (3) and tube support (4) from fitting (5).
- (3) Position nut (2), ferrule (3) and tube support (4) on air line (1).

NOTE

Air line is properly seated when tube support bottoms out in fitting.

- (4) Install air line (1) in fitting (5) hand tight.

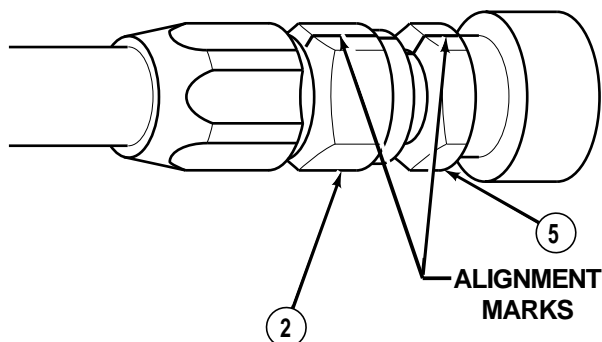


NOTE

Alignment mark allow mechanic to count the number of times the nut has rotated during tightening.

- (5) Scribe mark on nut (2) and fitting (5).
- (6) Tighten nut (2) until mark on nut (2) has rotated correct number of turns. (Ref to Table 2-68).

Table 2-68. Air Line Tightening.



Air line O.D. Size	Additional Number of Turns from Hand-Tight
1/4	3
3/8 and 1/2	4
5/8 and 3/4	3 1/2

2-47. GENERAL INSTALLATION INSTRUCTIONS (CONT).

h. Fastener tightening sequence procedures.

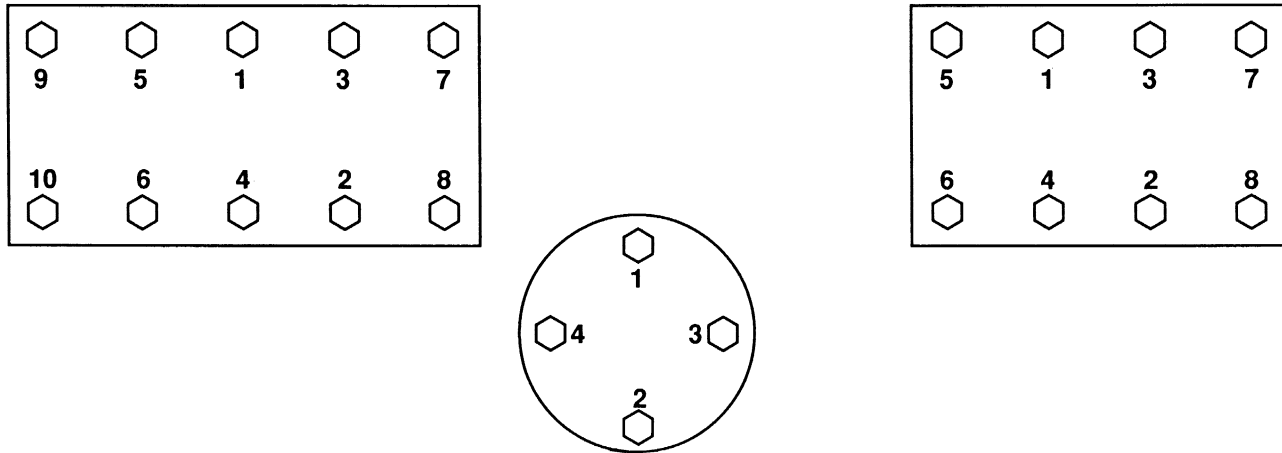


Figure 2-85. General Tightening Sequences.

NOTE

If a component has a critical tightening sequence it will be illustrated in that particular task; otherwise, use the general sequence charts provided (Figure 2-85).

- (1) Installation Torque.
 - (a) Tighten nuts twice in a criss-cross pattern using a torque wrench. The first time nut is torqued apply approximately 75 percent of the final torque value.
 - (b) Repeat the sequence a second time until 100 percent of the final torque value has been obtained for each nut.

NOTE

When one or more screws are loose, check torque for all bolts on the component.

- (2) Checking Torque. Tighten nuts in a criss-cross pattern using a torque wrench. Apply 100 percent of the final torque value.

*i. Pipe Thread Tightening Procedures.***WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Use sealing compound sparingly and only on male threads. Do not apply compound on first two threads to avoid contamination of system from compound. Do not apply compound to hose connections or fittings with preformed packings. Damage to equipment may result.

- (1) Coat threads of male fitting with sealing compound, sealant or adhesive as indicated in each maintenance task.
- (2) Position male fitting on female fitting finger tight.
- (3) Scribe alignment mark on both fittings.

CAUTION

- It may be necessary to tighten fitting slightly more or less than 2 1/2 turns to match position noted prior to removal. Do not loosen fitting to arrive at proper position or a leak may occur.
 - Over tightening may cause pipe fitting to deform and damage to the joining fitting, flange or component.
- (4) Tighten male fitting 2 1/2 (3 maximum) full turns past hand tight position.

2-48. PREPARATION FOR STORAGE OR SHIPMENT INTRODUCTION.

a. Instructions in this section apply to the vehicle to make it available for use upon receipt after shipment. The storage instructions apply to vehicles being taken out of service for a period up to one year with exercise. If vehicles are inactive for more than 1 year they will use extended storage procedures.

b. Refer to (AR 750-1) for administrative storage instructions.

c. Refer to (TB 9-2300-422-20) for security procedures.

d. Refer to (TM 38-450) for storage and maintenance of prepositioned material configures to unit sets instructions.

2-49. PREPARATION FOR STORAGE OR SHIPMENT.

a. Perform all Unit Preventive Maintenance Checks and Services (PMCS).

b. Correct all deficiencies noted during inspection if facilities are available. If repairs required are beyond the scope of Unit Maintenance, refer the deficiencies to Direct or General Support Maintenance.

c. Instructions pertaining to Basic Issue Items (BII) and Components of End Items (COEI) storage locations are covered in Appendix B and F of (TM 9-2320-364-10).

d. Remove rust and corrosion, and scrape any flaked and peeling paint. Dry all surfaces to be painted and coated with preservatives. Refer to (TM 9-247), Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Material and Related Materials including Chemicals.

e. Repaint surface, as required, to prevent against deterioration. Refer to (TM 43-0209) for painting instructions for Field Use, Color, Marking, and Camouflage Painting of Military Vehicles.

2-50. STORAGE MAINTENANCE PROCEDURES.

a. Before placing a vehicle in storage, perform the following tasks:

- (1) Clean the exterior, interior of cab, engine, and undercarriage. Wash any oil, grease, or mud from tires.
- (2) Conduct a visual inspection of the vehicle. Check lubricant levels and tire pressures (CTIS highway setting). Correct any discrepancies.
- (3) Completely lubricate the chassis and all ancillary equipment in accordance with (Para 2-9 and TM 9-2320-364-10).
- (4) Check the coolant level. Test the coolant to ensure that the cooling system is protected against corrosion and temperatures down to -30°F (-34°C). Add antifreeze or corrosion inhibitors compatible with ethylene glycol base antifreeze if cooling system is not adequately protected. (TB 750-651).
- (5) Ensure the fuel tank contains at least 20 gallons (75.7L) of treated fuel. The fuel should be treated with Biobor J.F. (Item 24, Appendix C) (or equivalent). The addition of 3 teaspoons of Biobor to 20 gallons of fuel will provide adequate protection against fungus growth. When storing a vehicle in freezing conditions, the addition of 3 ounces (88.7 ml) of isopropyl alcohol (Item 17, Appendix C) to 20 gallons of diesel fuel will help prevent fuel line freeze up.
- (6) All fuel that is added to the vehicle during storage must be treated. While in storage, there must always be at least 20 gallons (75.7L) of treated fuel in the vehicle's fuel tank.

- (7) Check condition of engine air filter. Replace if necessary (Para 4-5).
- (8) Coat all exposed unpainted surfaces such as crane valve spools, hydraulic cylinders, drive shafts and shift cables with grease.

CAUTION

Do not allow the baking soda solution to enter the batteries or damage to batteries will result.

- (9) Clean batteries and battery cables with a baking soda solution and rinse with fresh water. Add water to battery electrolyte if necessary. Check the specific gravity of the batteries regularly. Keep the batteries fully charged and clean (TM 9-6150-200-14).
- (10) Protect spare tire from direct sunlight.
- (11) If possible, store vehicles close together, out of direct sunlight, and away from electrical or generating equipment.
- (12) Park vehicle to allow access for inspection, maintenance, and exercising.

CAUTION

Ensure tires are not resting on surface containing grease or oil. Failure to comply may result in damage to tires.

- (13) Park vehicle so tires are not resting on surfaces containing grease or oil.

CAUTION

The DDEC system, alternator, and turn signal flasher drain on batteries at all times. Batteries will discharge during storage if not disconnected.

- (14) Disconnect batteries (Para 7-87).

b. While vehicle is in storage, perform the following tasks monthly:

- (1) Connect batteries (Para 7-87).
- (2) If engine is run every 30 days or less, use lubricating oil OE/HDO (Item 56, Appendix C). If engine is not run every 30 days or less, use preservative lubricating oil (Item 60, Appendix C) Grade 2 and change oil filter or warranty will not be maintained.
- (3) Conduct visual inspection of the vehicle. Check for oil leaks, lubricant levels, battery electrolyte, coolant level, and tire pressures (CTIS highway setting). Correct any discrepancies.
- (4) Inspect oil can points. Lubricate if necessary (Para 2-9 and TM 9-2320-364-10).
- (5) Shift transfer case to neutral, start engine, and idle for 10 minutes. After 10 minutes of engine idle, operate engine for 5 minutes at 1500 rpm or until the engine water temperature reaches 180°F (82°C). Shift the transmission slowly through all gear selector positions. Return the transmission to neutral and the transfer case to high range.

2-50. STORAGE MAINTENANCE PROCEDURES (CONT).

- (6) Move vehicle 30 feet (9m) forward and reverse.
- (7) Idle engine 10 minutes before shutdown.
- (8) Check grease coating on all chromium plated and unpainted surfaces. If grease was wiped from chromium plated or unpainted surfaces when vehicle was moved, recoat these surfaces.
- (9) Disconnect batteries (Para 7-87). If batteries are not going to be charged for over 30 days, remove batteries from vehicle (Para 7-88) and keep fully charged (TM 9-6150-200-14).

c. While vehicle is in storage, perform the following tasks quarterly:

- (1) Perform all monthly tasks.
- (2) Exercise all ancillary equipment (TM 9-2320-364-10). While operating winches or crane, lubricate wire rope.
- (3) Drive vehicle at least 1/4 mile (.4 km). While driving, shift transmission through all gear ranges.

d. While vehicle is in storage, perform the following tasks yearly:

- (1) Perform all quarterly tasks.
- (2) Clean the exterior, interior of cab, engine, and undercarriage. Wash any oil and grease from tires.

CAUTION

Do not allow the baking soda solution to enter the batteries or damage to batteries will result.

- (3) Clean batteries and battery cables with a baking soda solution and rinse with fresh water. Do not allow the baking soda solution to enter the batteries. Add water to battery electrolyte if necessary. Check the specific gravity of the batteries regularly. Keep the batteries fully charged and clean (TM 9-6150-200-14).
- (4) Completely lubricate the chassis and all ancillary equipment in accordance with (Para 2-9 and TM 9-2320-364-10).
- (5) Check the coolant level. Test the coolant to ensure that the cooling system is protected against corrosion and temperatures down to -30°F (-34°C). Add antifreeze or corrosion inhibitors compatible with ethylene glycol base antifreeze if cooling system is not adequately protected (TB 750-651).
- (6) Change engine oil and oil filter (Para 3-2, 3-6). Add preservative lubricating oil (Item 60, Appendix C) Grade 2. Change fuel filters (Para 4-3, 4-13, 4-15, 4-17).

e. Extended storage (vehicle inactive).

CAUTION

When vehicle is to remain inactive for more than 12 months, extended storage procedures must be performed to prevent damage due to rust corrosion or organic growth in the fluids.

CAUTION

When vehicle is to remain inactive for more than 12 months, extended storage procedures must be performed to maintain the vehicle warranty.

- (1) Completely lubricate the chassis and all ancillary equipment in accordance with Para 2-9 and TM 9-2320-364-10.
- (2) Engine extended storage.
 - (a) Change oil and filter (Paras 3-2 & 3-6). Add preservative lubricating oil (Item 60, Appendix C), Grade 2.
 - (b) Seal off turbocharger inlet and outlet connection with moisture resistant tape.
- (3) Transmission extended storage.
 - (a) Drain oil (Para 8-3).
 - (b) Add 2 quarts (1.9L) of VCI-329 (Item 96, Appendix C) or equivalent and then fill transmission to operating level with transmission fluid. Add 1 teaspoon of Biobor JF (Item 24, Appendix C), (or equivalent) as a fungus inhibitor to transmission oil.
 - (c) Run the engine for approximately five minutes at 1,500 rpm with the transmission in neutral (N).
 - (d) Drive the vehicle. Make sure the transmission shifts through all ranges.
 - (e) Continue running the engine at 1,500 rpm with the transmission in neutral until normal operating temperature is reached.

CAUTION

Do not allow transmission oil temperature to exceed 225 degrees F (107 degrees C) or damage to transmission may result.

- (f) If normal operating temperature is less than 225 degrees F (107 degrees C), shift the transmission to forward range and stall the converter. Do not exceed 225 degrees F (107 degrees C). Idle engine for approximately five minutes with transmission in neutral (N).

WARNING

Ensure transmission is cool before proceeding. Failure to comply may result in injury to personnel.

- (g) When transmission is cool enough to touch, seal all openings and the breather with moisture-proof tape.
 - (h) Coat all exposed, unpainted surfaces with preservative grease such as petrolatum (Item 63, Appendix C), Class 2.
 - (i) If additional storage time is required, repeat Steps (b) through (h) at yearly intervals; except, it is not necessary to drain the transmission each year. Just add VCI-329 (Item 96, Appendix C), or equivalent vapor corrosion inhibitor and Biobor JF (Item 24, Appendix C), (or equivalent) as a fungus inhibitor.
- (4) Crane extended storage.
 - (a) Coat all unpainted surfaces with Corrosion Preventative Compound (Item 36, Appendix C), or equivalent.
 - (b) Clean and touch up all paint defects to prevent rusting.
 - (c) Ensure manual hand pump is fully retracted.

2-50. STORAGE MAINTENANCE PROCEDURES (CONT).

- (d) Apply liberal amounts of grease to both manual override buttons.
- (e) Unwind hoist cable from drum, clean and lube with recommended lubricant (Brilube or equivalent), rewind on drum.

CAUTION

To avoid over filling, drain oil (equal to amount being added) before installing additive or damage to equipment may result.

- (f) Add 2 fl oz (60 ml) VCI-326 (Item 95, Appendix C), (or equivalent) vapor corrosion inhibitor to crane swing drive and .8 fl oz (24 ml) to hoist gearbox.
 - (g) Operate crane to allow additive to coat all moving parts.
 - (h) If additional storage time is required, repeat Step (f) at yearly intervals.
- (5) Axle extended storage.

CAUTION

To avoid over filling, drain oil before installing additive or damage to equipment may result.

- (a) Drain oil from axle that is equal to quantity of additive being added (Para 11-2).
 - (b) Add 1.7 pts (0.8L) VCI-326 (Item 95, Appendix C), vapor corrosion inhibitor or equivalent to, No. 1, 2, 3, 4 and 5 axles.
 - (c) Add 2.6 fl oz (76 ml) VCI-326 (Item 95, Appendix C), vapor corrosion inhibitor or equivalent to, No. 1, 2, 3, 4 and 5 axle planetary hub gears.
 - (d) Drive vehicle approximately 1 mile (1.6 km) to mix additive with the axle oil.
 - (e) If additional storage time is required, repeat Steps (a) through (c) at yearly intervals.
- (6) Winch extended storage.
None required.
- (7) Transfer Case extended storage.

CAUTION

To avoid over filling, drain oil before installing additive or damage to equipment may result.

- (a) Drain amount of oil from transfer case that is equal to quantity of additive being added (Para 9-2).
- (b) Add 1 pt. (0.5L) VCI-326 (Item 95, Appendix C), vapor corrosion inhibitor or equivalent to transfer case.
- (c) If vehicle can be driven, drive vehicle approximately 1 mile (1.6 km) to mix additive. If vehicle cannot be driven, shift transfer case to neutral, start engine, with parkint brakes applied, shift transmission manually through all gear selections.

WARNING

Ensure transfer case is cool before proceeding. Failure to comply may result in injury to personnel.

- (d) When transfer case is cool enough to touch, seal breather with moisture proof tape.
 - (e) Coat all exposed, unpainted surfaces with preservative grease such as petrolatum (Item 63, Appendix C), Class 2 or equivalent.
 - (f) If additional storage time is required, repeat Step (b) at yearly intervals.
- (8) Main hydraulic system extended storage.

CAUTION

To avoid over filling, drain oil before installing or damage to equipment may result.

- (a) Drain amount of oil from main hydraulic reservoir that is equal to the quantity of additive being added (Para 14-2).
 - (b) Add 8.5 qts (8L) VCI-326 (Item 95, Appendix C), vapor corrosion inhibitor or equivalent to main hydraulic reservoir.
 - (c) Operate all ancillary equipment:
 - LHS - two complete cycles.
 - Crane - (if equipped) cycle each crane function two cycles.
 - Self Recovery Winch - winch out approximately six feet of cable, then winch in. Repeat cycle twice.
 - (d) If additional storage time is required, repeat Steps (a) and (b) at yearly intervals.
- (9) Steering hydraulic system extended storage.

CAUTION

To avoid over filling, drain oil before installing additive or damage to equipment may result.

- (a) Drain amount of oil from steering hydraulic reservoir that is equal to the quantity of additive being added (Para 20-11).
 - (b) Add 1.6 pts (0.75L) VCI-326 (Item 95, Appendix C), vapor corrosion inhibitor or equivalent to steering hydraulic reservoir.
 - (c) Operate steering system to mix additive. Turn steering wheel to full right turn and then full left turn. Repeat this cycle three times.
 - (d) If additional storage time is required, repeat Steps (a) and (b) at yearly intervals.
- (10) Steering reduction gear box (2:21 to 1) extended storage.
- None Required.

2-50. STORAGE MAINTENANCE PROCEDURES (CONT).

- (11) Fuel system extended storage.
 - (a) Drain fuel tank (Para 4-8).
 - (b) Change all fuel filters (Para 4-3, 4-13, 4-15, 4-17).
 - (c) Ensure the fuel tank contains at least 20 gallons (75.7L) of treated fuel. The fuel should be treated with Biobor JF (Item 24, Appendix C), (or equivalent). The addition of 3 teaspoons of Biobor to 20 gallons of fuel will provide adequate protection against fungus growth. When storing a vehicle in freezing conditions, the addition of 3 ounces (88.7 ml) of isopropyl alcohol (Item 17, Appendix C), to 20 gallons of diesel fuel will help prevent fuel line freeze up.
 - (d) Run engine 5 minutes to circulate clean treated fuel throughout the fuel system.
 - (e) All fuel that is added to the vehicle during storage must be treated. While in storage, there must always be at least 20 gallons (75.7L) of treated fuel in the vehicle's fuel tank.
 - (f) Cap off fuel system.

- (12) Battery extended storage.

Remove batteries from vehicle (Para 7-88) and keep fully charged (TM 9-6150-200-14).

- (13) Check the coolant level (TM 9-2320-364-10). Test the coolant to ensure that the cooling system is protected against corrosion and temperatures down to -30 degrees F (-34 degrees C). Add antifreeze or corrosion inhibitors compatible with ethylene glycol base antifreeze if cooling system is not adequately protected (TB 750-651).

f. When removing vehicle from storage, perform the following tasks:

- (1) Install batteries (Para 7-88).
- (2) Conduct a visual inspection to the vehicle and remove moisture proof tape from engine, transmission, transfer case and fuel system. Check lubricant levels and tire pressures. Correct any discrepancies.
- (3) Lubricate the chassis, ancillary equipment, and oil can points (Para 2-9 and TM 9-2320-364-10).

CHAPTER 3

ENGINE MAINTENANCE

Para	Contents	Page
3-1	Introduction	3-1
3-2	Engine Oil Service	3-2
3-3	Power Take-Off (PTO) Adapter Replacement	3-4
3-4	Left Rocker Cover And Gasket Replacement	3-5
3-5	Right Rocker Cover And Gasket Replacement	3-12
3-6	Engine Oil Filter Replacement	3-16
3-7	Remote Engine Oil Filter Replacement	3-18
3-8	Engine Oil Filter Adapter Repair	3-20
3-9	Remote Engine Oil Filter Manifold Replacement	3-23
3-10	Engine And Transmission Hose Replacement	3-30

3-1. INTRODUCTION.

This chapter contains maintenance instructions for removing, replacing, repairing, installing and adjusting engine components authorized by the Maintenance Allocation Chart (MAC) at the Unit Maintenance level.

3-2. ENGINE OIL SERVICE.

This task covers:

- a. Drain
- b. Fill
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Pan, Drain (Item 46, Appendix G)

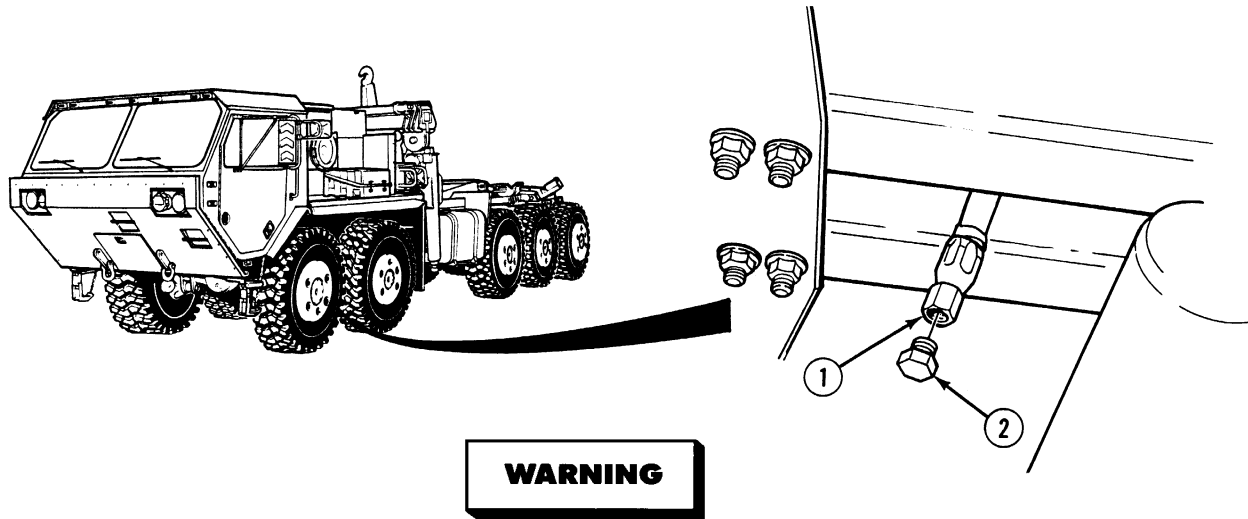
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

Materials/Parts

Lubricating Oil, Engine (Item 56, Appendix C)
Rags, Wiping (Item 67, Appendix C)

a. Drain.



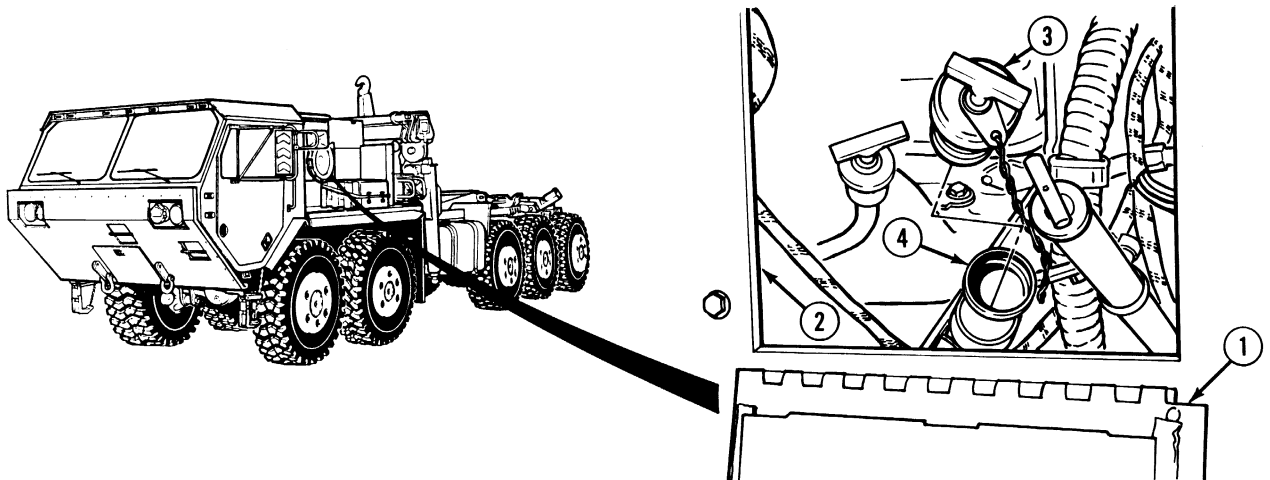
Do not drain engine oil while engine is hot. Severe injury to personnel may result.

- (1) Position drain pan under oil pan drain hose (1).

NOTE

Engine oil capacity is 32 qts (30 l).

- (2) Remove plug (2) from oil pan drain hose (1) and completely drain all engine oil.
- (3) Install plug (2) in oil pan drain hose (1). Tighten plug until snug.

b. Fill.**CAUTION**

Ensure engine oil drain hose plug is properly installed and engine is completely drained of oil. Failure to comply may result in damage to equipment.

- (1) Open access door (1) on left side engine noise panel (2).
- (2) Remove engine fill tube cap (3) from engine fill tube (4).
- (3) Fill engine with oil in accordance with Lubrication Table 2-3, Para 2-9.
- (4) Install engine fill tube cap (3) in engine fill tube (4).

c. Follow-On Maintenance:

- Start and run engine for three minutes, (TM 9-2320-364-10).
- Check for oil leaks, (TM 9-2320-364-10).
- Shut OFF engine and allow oil to drain for 20 minutes, (TM 9-2320-364-10).
- Check engine oil level and add engine oil as needed, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

3-4. LEFT ROCKER COVER AND GASKET REPLACEMENT.

This task covers:

- | | |
|------------------------|--------------------------|
| a. Removal | c. Installation |
| b. Cleaning/Inspection | d. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Compressor Unit, Air (Item 11, Appendix G)
- Gloves, Chemical Oil Protective (Item 28, Appendix G)
- Goggles, Industrial (Item 30, Appendix G)
- Gun, Air Blow (Item 31, Appendix G)
- Socket Set, 3/8 in. (Item 62, Appendix G)
- Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)

Materials/Parts

- Lubricating Oil, Engine (Item 56, Appendix C)
- Rags, Wiping (Item 67, Appendix C)

Materials/Parts - Continued

- Solvent, Drycleaning (Item 87, Appendix C)
- Clamp, Hose (2) (Item 19, Appendix F)
- Clamp, Hose (3) (Item 20, Appendix F)
- Element (Item 34, Appendix F)
- Gasket (Item 54, Appendix F)
- Screw (3) (Item 297, Appendix F)
- Seal (Item 326, Appendix F)
- Seal (Item 330, Appendix F)

Equipment Condition

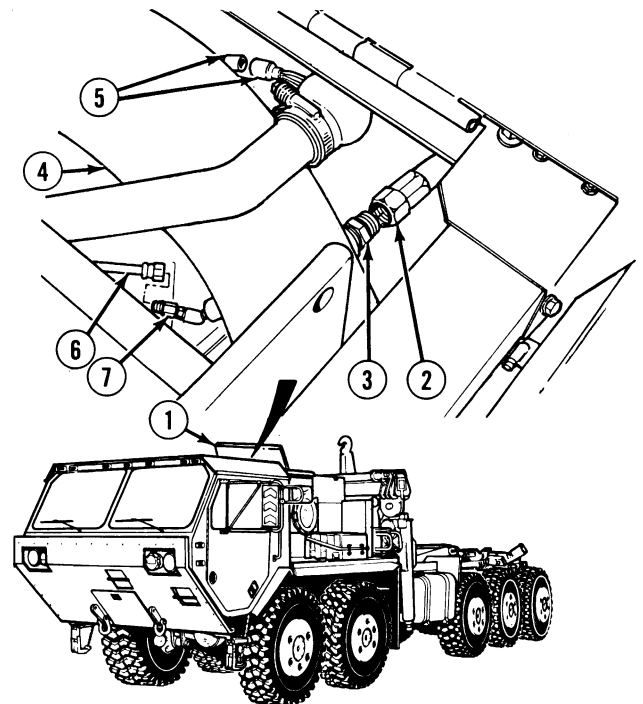
- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)
- Left side noise panel removed, (Para 17-28)

a. Removal.



Clean around rocker cover prior to removal from engine to keep dust or dirt from entering engine. Failure to comply may result in damage to equipment.

- (1) Open engine cover (1).
- (2) Remove hose 2600 (2) from fitting (3) on air intake pipe assembly (4).
- (3) Disconnect MC67 connector (5).
- (4) Remove hose 2381 (6) from fitting (7) on air intake pipe assembly (4).



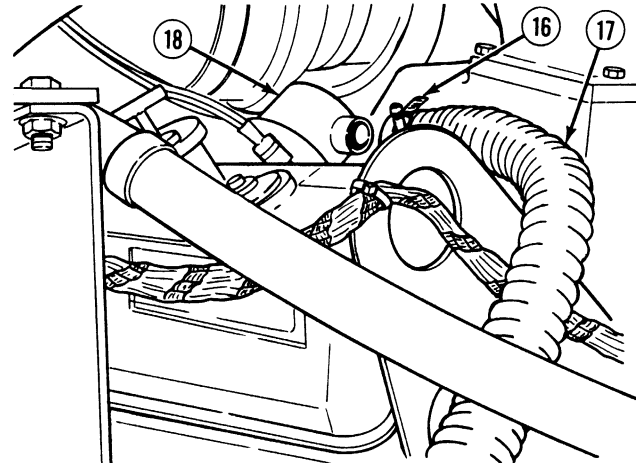
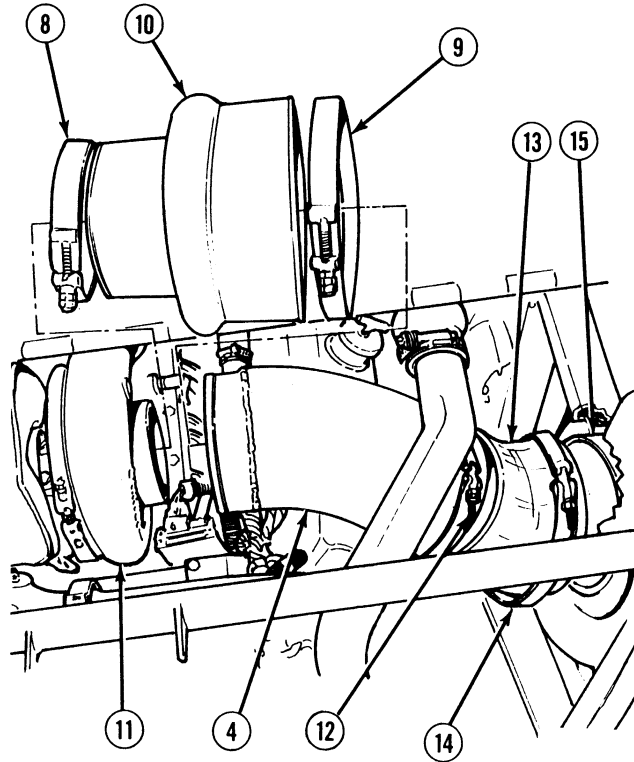
3-4. LEFT ROCKER COVER AND GASKET REPLACEMENT (CONT).

- (5) Loosen hose clamps (8) and (9) on hose (10) and air intake pipe assembly (4).

NOTE

Note position of air intake pipe assembly prior to removal to ensure proper installation.

- (6) Remove air intake pipe assembly (4) from hose (10).
- (7) Remove hose (10) and hose clamps (8) and (9) from turbocharger (11). Discard hose clamps.
- (8) Loosen hose clamp (12) on air intake pipe assembly (4).
- (9) Remove air intake pipe assembly (4) and hose clamp (12) from air cleaner elbow (13). Discard hose clamp.
- (10) Loosen hose clamp (14) on air cleaner elbow (13).
- (11) Remove air cleaner elbow (13) and hose clamp (14) from air cleaner (15). Discard hose clamp.
- (12) Loosen hose clamp (16) from breather hose (17).
- (13) Remove breather hose (17) and hose clamp (16) from breather (18). Discard hose clamp.



CAUTION

Do not allow dirt or other contaminants to enter cylinder head or damage to equipment may result.

NOTE

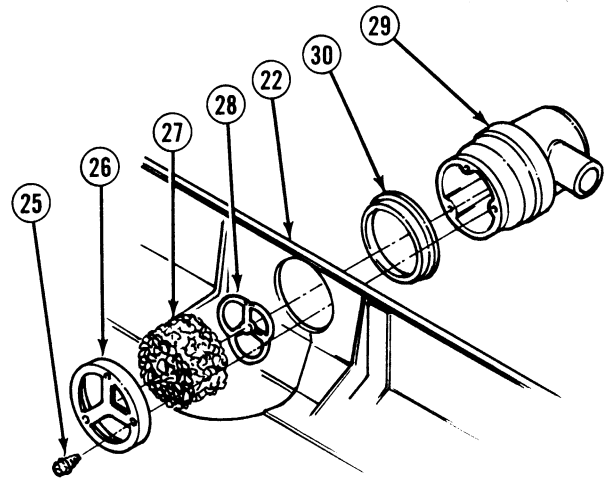
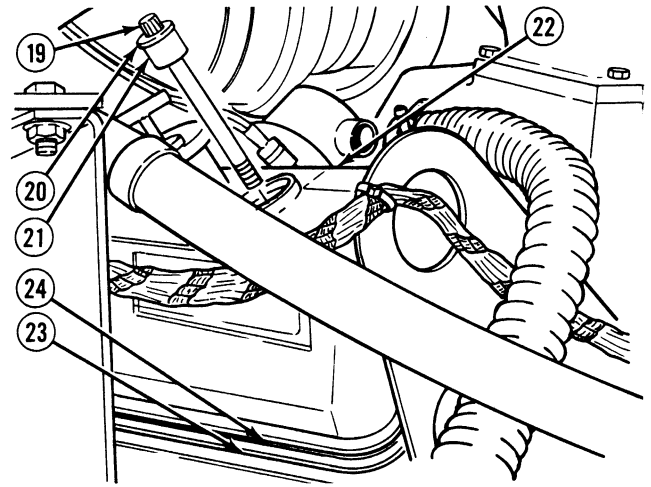
Screws, washers and resilient mounts are removed as one assembly in Step (14).

- (14) Remove two screws (19), washers (20) and resilient mounts (21) from rocker cover (22).

NOTE

Hoses, tubes and connectors may be moved as required to access removal of rocker cover.

- (15) Remove rocker cover (22) from cylinder head (23).
- (16) Remove and discard gasket (24) from rocker cover (22).
- (17) Remove three screws (25) and retaining plate (26) from rocker cover (22). Discard screws.
- (18) Remove element (27) and retainer (28) from shell (29). Discard element.
- (19) Remove shell (29) and seal (30) from rocker cover (22). Discard seal.

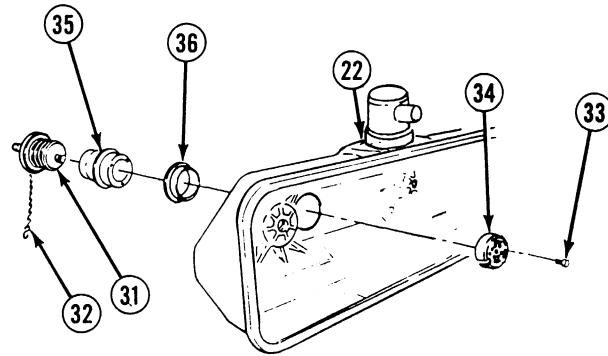


3-4. LEFT ROCKER COVER AND GASKET REPLACEMENT (CONT).

NOTE

Fill plug is located on left rocker cover only.

- (20) Remove filler cap plug (31) from rocker cover (22).
- (21) Remove chain hook (32) from filler cap plug (31).
- (22) Remove and discard three screws (33) from strainer (34).
- (23) Remove strainer (34), filler cap tube (35) and seal (36) from rocker cover (22). Discard seal.



b. Cleaning/Inspection.

WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

- (1) Clean all parts with drycleaning solvent.

WARNING

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.) or injury to personnel may result.

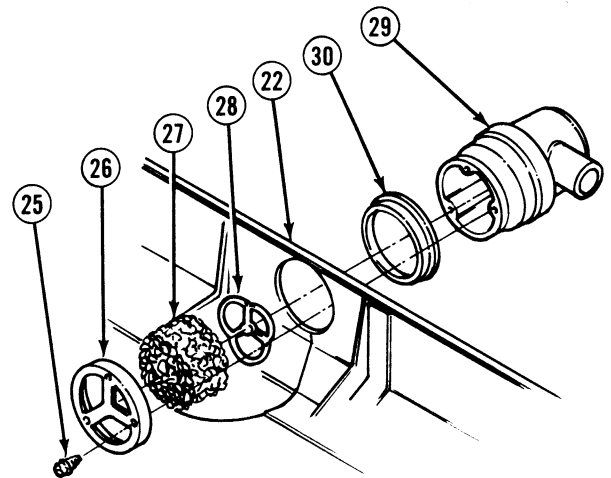
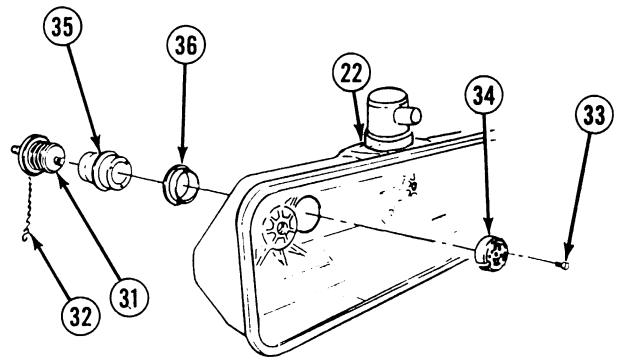
- (2) Dry all parts with compressed air.
- (3) Blow out groove in rocker cover with compressed air.
- (4) Inspect all parts for holes, cracks, chips or stripped threads. Replace damaged parts.

c. Installation.

NOTE

- Fill plug located on left rocker cover only.
- Ensure chain hook slides through rocker cover to outside of cover before installing screws.

- (1) Install seal (36), filler cap tube (35) and strainer (34) in rocker cover (22) with three screws (33).
- (2) Install chain hook (32) on filler cap plug (31).
- (3) Install filler cap plug (31) in rocker cover (22).
- (4) Install seal (30) in rocker cover (22).
- (5) Install shell (29) in seal (30) with breather tube stub toward rear of engine.
- (6) Install retainer (28) and element (27) in shell (29).
- (7) Position retainer plate (26) over element (27) and install three screws (25) in rocker cover (22).



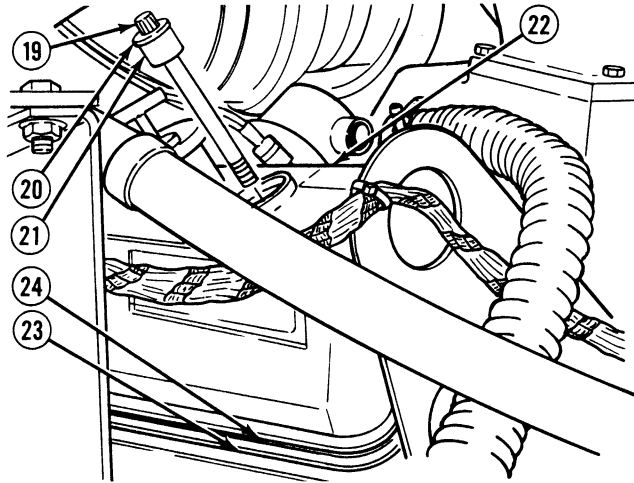
3-4. LEFT ROCKER COVER AND GASKET REPLACEMENT (CONT).

- (8) Press stem side of gasket (24) in groove at four corners of rocker cover (22).

NOTE

When gasket is completely installed in groove, it should not fall out.

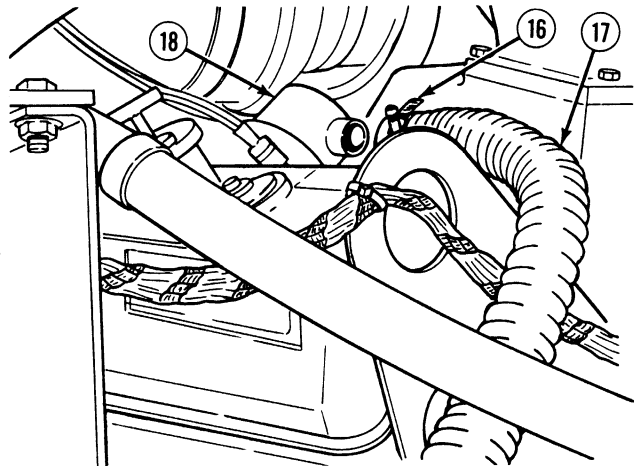
- (9) Press remainder of gasket (24) into place in groove. Ensure gasket is fully seated.
- (10) Lubricate flat surface of gasket (24) and cylinder head (23) with light coating of clean engine oil.
- (11) Install rocker cover (22) on cylinder head (23).



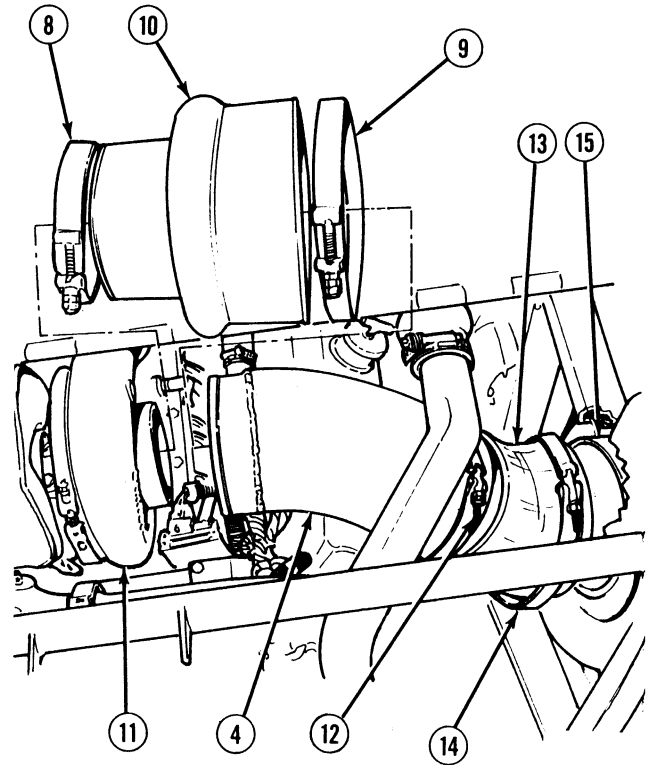
NOTE

Screws, washers and resilient mounts are installed as one assembly in Step (12).

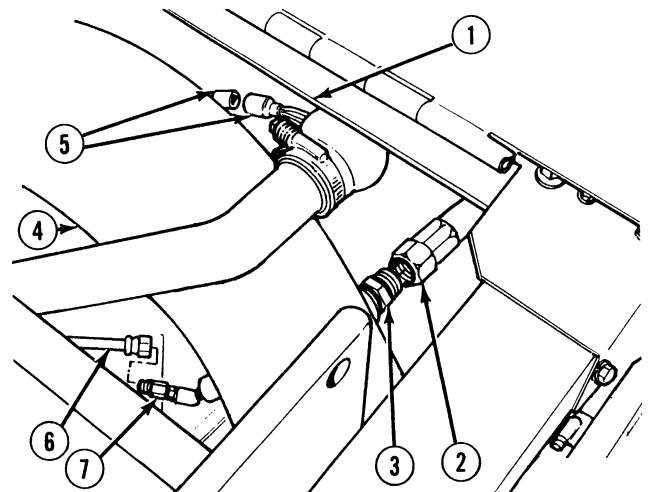
- (12) Install two screws (19), washers (20) and resilient mounts (21) in rocker cover (22). Tighten screws to 15 to 20 lb-ft (20 to 27 N·m).
- (13) Install hose clamp (16) and breather hose (17) on breather (18).



- (14) Install hose clamp (14) and air cleaner elbow (13) on air cleaner (15).
- (15) Install hose clamp (12) and air intake pipe (4) on air cleaner elbow (13).
- (16) Install hose clamps (8) and (9) and hose (10) on turbocharger (11) and pipe assembly (4).



- (17) Install hose 2381 (6) on fitting (7) on air intake pipe assembly (4).
- (18) Connect MC67 connector (5).
- (19) Install hose 2600 (2) on fitting (3) on air intake pipe assembly (4).
- (20) Close engine cover (1).



d. Follow-On Maintenance:

- Install left side noise panel, (Para 17-28).
- Start engine, (TM 9-2320-364-10).
- Idle engine for five minutes.
- Shut OFF engine, (TM 9-2320-364-10).
- Check for oil leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

3-5. RIGHT ROCKER COVER AND GASKET REPLACEMENT.

This task covers:

- | | |
|------------------------|--------------------------|
| a. Removal | c. Installation |
| b. Cleaning/Inspection | d. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Compressor Unit, Air (Item 11, Appendix G)
- Gloves, Chemical Oil Protective (Item 28, Appendix G)
- Goggles, Industrial (Item 30, Appendix G)
- Gun, Air Blow (Item 31, Appendix G)
- Socket Set, 3/8 in. (Item 62, Appendix G)
- Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)

Materials/Parts

- Lubricating Oil, Engine (Item 56, Appendix C)
- Rags, Wiping (Item 67, Appendix C)

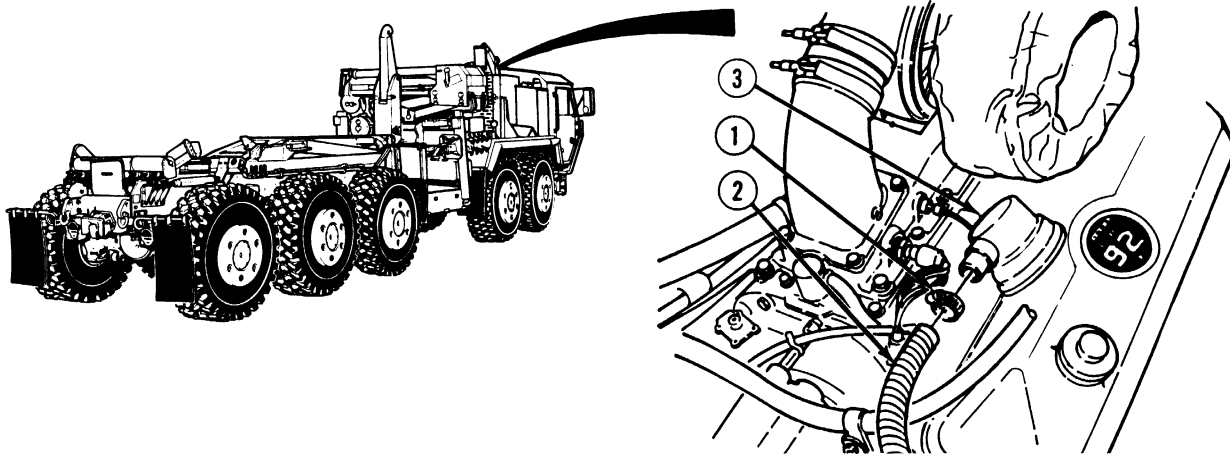
Materials/Parts - Continued

- Solvent, Drycleaning (Item 87, Appendix C)
- Clamp, Hose (Item 19, Appendix F)
- Element (Item 34, Appendix F)
- Gasket (Item 54, Appendix F)
- Screw (3) (Item 297, Appendix F)
- Seal (Item 330, Appendix F)

Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)
- Exhaust pipes removed, (Para 5-3)

a. Removal.



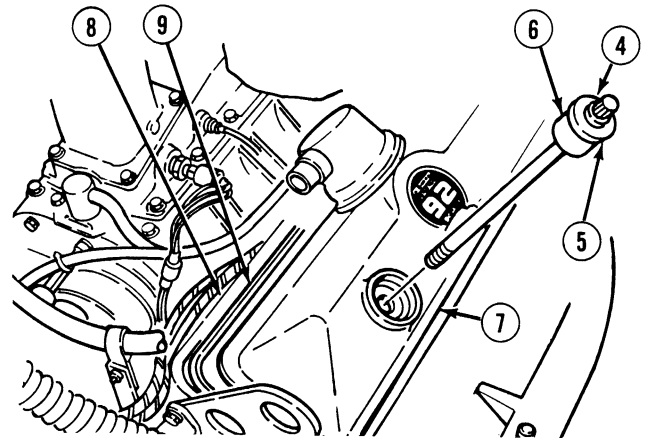
Clean around rocker covers prior to removal from engine to avoid dust or dirt from entering engine. Failure to comply may result in damage to equipment.

- (1) Loosen hose clamp (1) and remove breather hose (2) and hose clamp from breather (3). Discard hose clamp.

NOTE

Screws, washers and resilient mounts are removed as one assembly in Step (2).

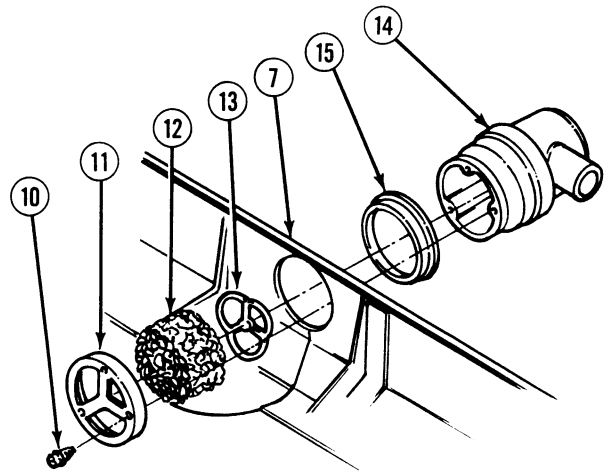
- (2) Remove two screws (4), washers (5) and resilient mounts (6) from rocker cover (7).



NOTE

Hoses, tubes and connectors may be moved as required to access removal of rocker cover.

- (3) Remove rocker cover (7) from cylinder head (8).
- (4) Remove and discard gasket (9) from rocker cover (7).
- (5) Remove three screws (10) and retaining plate (11) from rocker cover (7). Discard screws.
- (6) Remove element (12) and retainer (13) from shell (14). Discard element.
- (7) Remove shell (14) and seal (15) from rocker cover (7). Discard seal.



3-5. RIGHT ROCKER COVER AND GASKET REPLACEMENT (CONT).

b. Cleaning/Inspection.

WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

- (1) Clean all parts with drycleaning solvent.

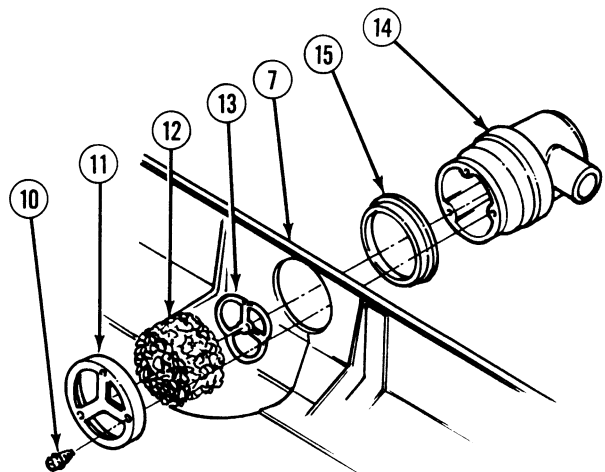
WARNING

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.) or injury to personnel may result.

- (2) Dry all parts with compressed air.
- (3) Blow out groove in rocker cover with compressed air.
- (4) Inspect all parts for holes, cracks, chips or stripped threads. Replace damaged parts.

c. Installation.

- (1) Install seal (15) in rocker cover (7).
- (2) Install shell (14) in seal (15) with breather tube stub toward rear of engine.
- (3) Install retainer (13) and element (12) in shell (14).
- (4) Position retainer plate (11) over element (12) and install three screws (10) in rocker cover (7).

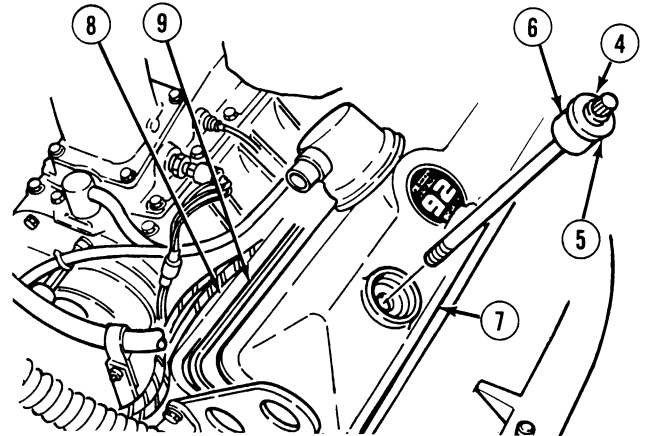


- (5) Press stem side of gasket (9) in groove at four corners of rocker cover (7).

NOTE

When gasket is completely installed in groove, it should not fall out.

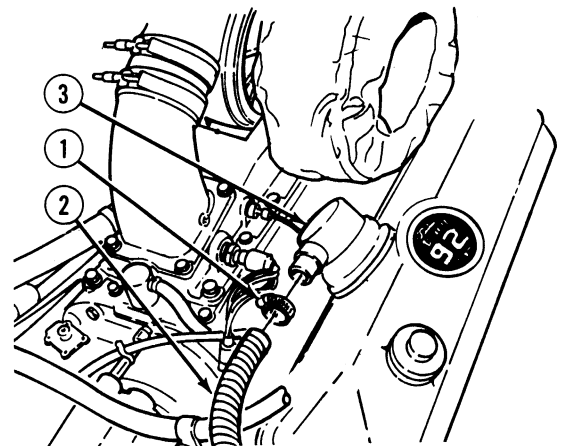
- (6) Press remainder of gasket (9) into place in groove. Ensure gasket is fully seated.
- (7) Lubricate flat surface of gasket (9) and cylinder head (8) with light coating of clean engine oil.
- (8) Install rocker cover (7) on cylinder head (8).



NOTE

Screws, washers and resilient mounts are installed as one assembly in Step (9).

- (9) Install two screws (4), washers (5) and resilient mounts (6) in rocker cover (1). Tighten screws to 15 to 20 lb-ft (20 to 27 N·m).
- (10) Install hose clamp (1) and breather hose (2) on breather (3).



d. Follow-On Maintenance:

- Install exhaust pipes, (Para 5-3).
- Start engine, (TM 9-2320-364-10).
- Idle engine for five minutes.
- Shut OFF engine, (TM 9-2320-364-10).
- Check for oil leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

3-6. ENGINE OIL FILTER REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Pan, Drain (Item 46, Appendix G)
- Removal Tool, Oil Filter (Item 54, Appendix G)

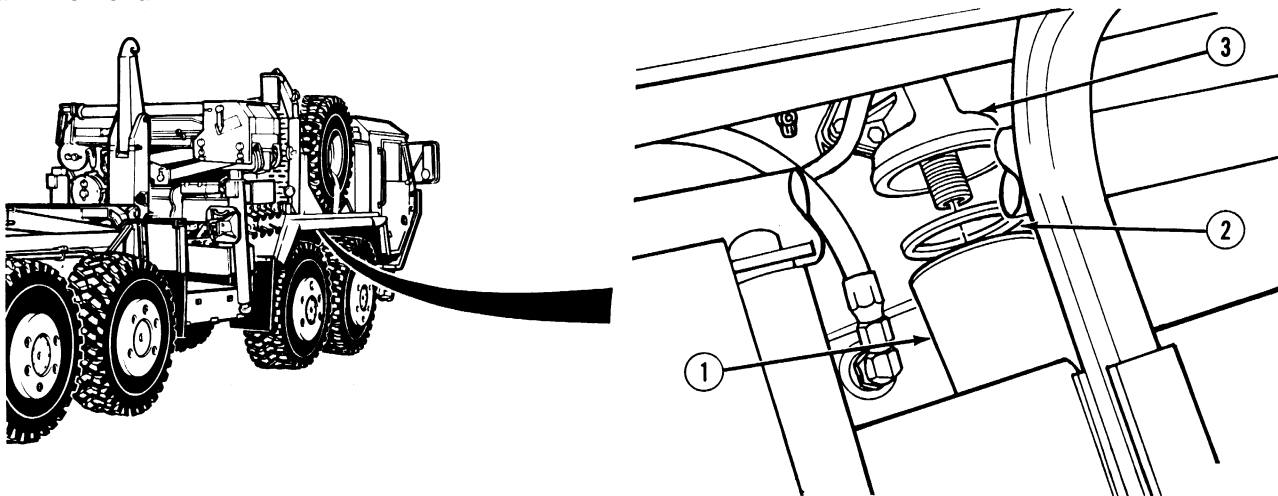
Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)

Materials/Parts

- Lubricating Oil, Engine (Item 56, Appendix C)

a. Removal.



WARNING

Ensure engine is cool before performing this task or severe burns may result.

- (1) Position drain pan under engine oil filter (1).

NOTE

Fender skirt must be lifted out of way to gain access to oil filter.

- (2) Using oil filter removal tool, loosen engine oil filter (1) by turning counterclockwise.

NOTE

Preformed packing may come off with filter.

- (3) Remove and discard engine oil filter (1) and preformed packing (2) from filter head (3).

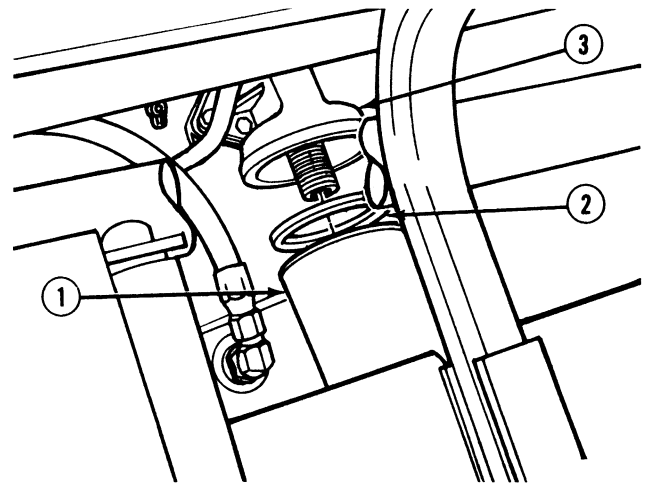
b. Installation.

- (1) Lubricate preformed packing (2) with clean engine oil and install preformed packing on engine oil filter (1).
- (2) Fill engine oil filter (1) 2/3 full with clean engine oil.
- (3) Install engine oil filter (1) on filter head (3).



Do not use oil filter removal tool to tighten engine oil filter or possible damage to filter head may result.

- (4) By hand, tighten engine oil filter (1) until preformed packing (2) makes contact with filter head (3).
- (5) By hand, tighten engine oil filter (1) 2/3 turn on filter head (3).

**c. Follow-On Maintenance:**

- Start and run engine for three minutes, (TM 9-2320-364-10).
- Check for oil leaks, (TM 9-2320-364-10).
- Shut OFF engine and allow oil to drain for 20 minutes, (TM 9-2320-364-10).
- Check oil level and add engine oil as needed, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

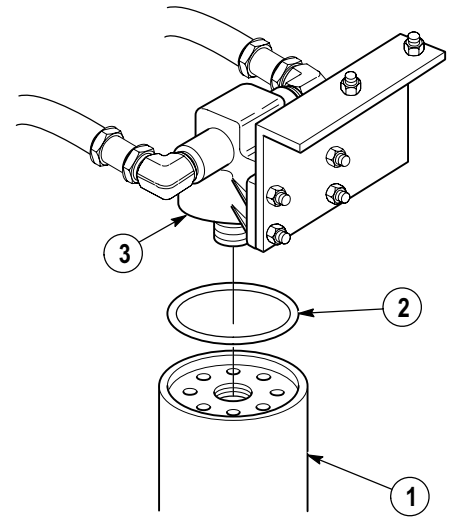
b. Installation.

- (1) Lubricate preformed packing (2) with clean engine oil and install preformed packing on engine oil filter (1).
- (2) Fill engine oil filter (1) 2/3 full with clean engine oil.
- (3) Install engine oil filter (1) on filter head (3).



Do not use oil filter removal tool to tighten engine oil filter or possible damage to filter head may result.

- (4) By hand, tighten engine oil filter (1) until preformed packing (2) makes contact with filter head (3).
- (5) By hand, tighten engine oil filter (1) 2/3 turn on filter head (3).

**c. Follow-On Maintenance:**

- Start and run engine for three minutes, (TM 9-2320-364-10).
- Check for oil leaks, (TM 9-2320-364-10).
- Shut OFF engine and allow oil to drain for 20 minutes, (TM 9-2320-364-10).
- Check oil level and add engine oil as needed, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

3-8. ENGINE OIL FILTER ADAPTER REPAIR.

This task covers:

- | | | |
|----------------|------------------------|--------------------------|
| a. Removal | c. Cleaning/Inspection | e. Installation |
| b. Disassembly | d. Assembly | f. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
 Caps, Vise Jaw (Item 9, Appendix G)
 Compressor Unit, Air (Item 11, Appendix G)
 Gloves, Chemical Oil Protective (Item 28, Appendix G)
 Goggles, Industrial (Item 30, Appendix G)
 Gun, Air Blow (Item 31, Appendix G)
 Vise, Machinist's (Item 75, Appendix G)
 Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m]) (Item 95, Appendix G)

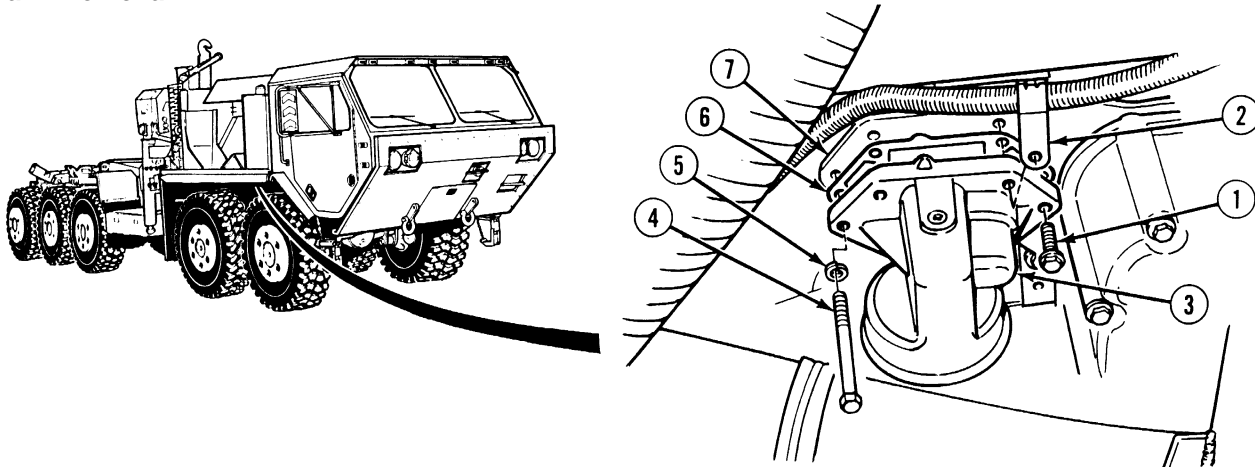
Materials/Parts

Sealing Compound (Item 77, Appendix C)
 Solvent, Drycleaning (Item 87, Appendix C)
 Gasket (Item 61, Appendix F)
 Lockwasher (2) (Item 202, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Right fender front skirt removed, (Para 17-33)
 Engine oil filter removed, (Para 3-6)

a. Removal.



WARNING

Ensure engine is cool before performing this task or injury to personnel may result.

- (1) Remove four screws (1) and cushion clip (2) from engine oil filter adapter (3).
- (2) Remove two screws (4) and lockwashers (5) from engine oil filter adapter (3). Discard lockwashers.
- (3) Remove engine oil filter adapter (3) and gasket (6) from engine (7). Discard gasket.

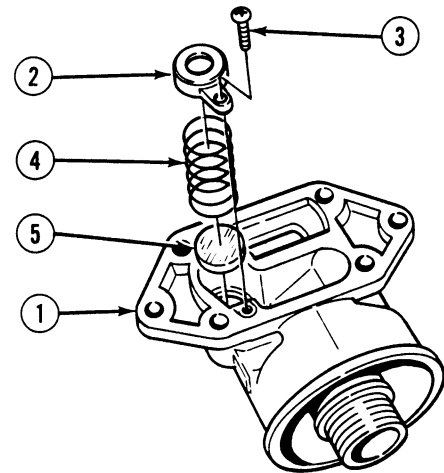
b. Disassembly.

- (1) Position adapter (1) in soft jawed vise with retainer (2) facing up.

WARNING

Use care when removing springs. Springs are under tension and can act as projectiles when released and could cause injury to personnel.

- (2) While holding down retainer (2), remove screw (3), retainer (2), spring (4) and valve disk (5) from adapter (1).
- (3) Remove adapter (1) from vise.

**c. Cleaning/Inspection.****WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
 - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- (1) Clean all metal parts with drycleaning solvent.

WARNING

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc) or injury to personnel may result.

- (2) Dry parts with compressed air.
- (3) Inspect parts for cracks, gouges or pitting.
- (4) Replace all damaged parts.

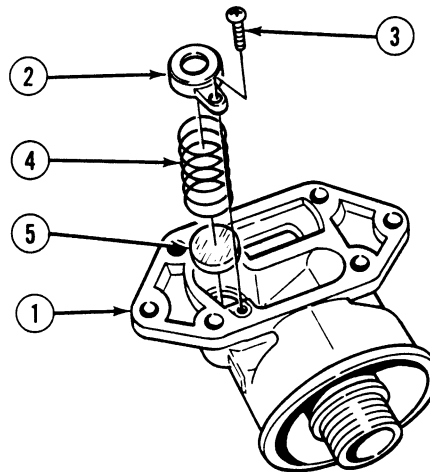
3-8. ENGINE OIL FILTER ADAPTER REPAIR (CONT).

d. Assembly.

WARNING

Use care when removing springs. Springs are under tension and can act as projectiles when released and could cause injury to personnel.

- (1) Position adapter (1) in soft jawed vise.
- (2) Install valve disk (5), spring (4), retainer (2) and screw (3) in adapter (1).
- (3) Remove adapter (1) from vise.

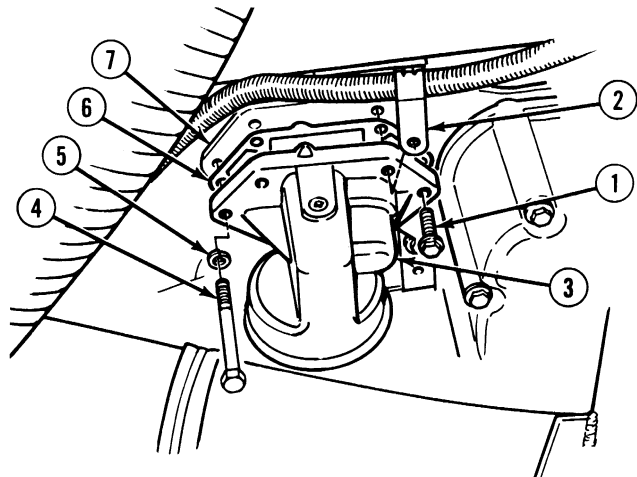


e. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Coat threads of two screws (4) with sealing compound.
- (2) Position gasket (6) and engine oil filter adapter (3) on engine (7).
- (3) Install two lockwashers (5) and screws (4) in engine oil filter adapter (3). Tighten screws to 25 lb-ft (34 N·m).
- (4) Coat threads of four screws (1) with sealing compound.
- (5) Install cushion clip (2) and four screws (1) on engine oil filter adapter (3). Tighten screws to 25 lb-ft (34 N·m).



f. Follow-On Maintenance:

- Install engine oil filter, (Para 3-6).
- Install right fender front, (Para 17-33).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

3-9. REMOTE ENGINE OIL FILTER MANIFOLD REPAIR.

This task covers:

- | | | |
|----------------|------------------------|--------------------------|
| a. Removal | c. Cleaning/Inspection | e. Installation |
| b. Disassembly | d. Assembly | f. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Caps, Vise Jaw (Item 9, Appendix G)
- Compressor Unit, Air (Item 11, Appendix G)
- Gloves, Chemical Oil Protective (Item 28, Appendix G)
- Goggles, Industrial (Item 30, Appendix G)
- Gun, Air Blow (Item 31, Appendix G)
- Vise, Machinist's (Item 75, Appendix G)
- Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m]) (Item 95, Appendix G)

Materials/Parts

- Sealing Compound (Item 77, Appendix C)
- Solvent, Drycleaning (Item 87, Appendix C)
- Gasket (Item 62, Appendix F)
- Locknut (2) (Item 92, Appendix F)
- Locknut (4) (Item 101, Appendix F)
- Locknut (Item 106, Appendix F)
- Lockwasher (4) (Item 202, Appendix F)

Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)
- Right fender front skirt removed, (Para 17-33)
- Remote engine oil filter removed, (Para 3-7)

a. Removal.

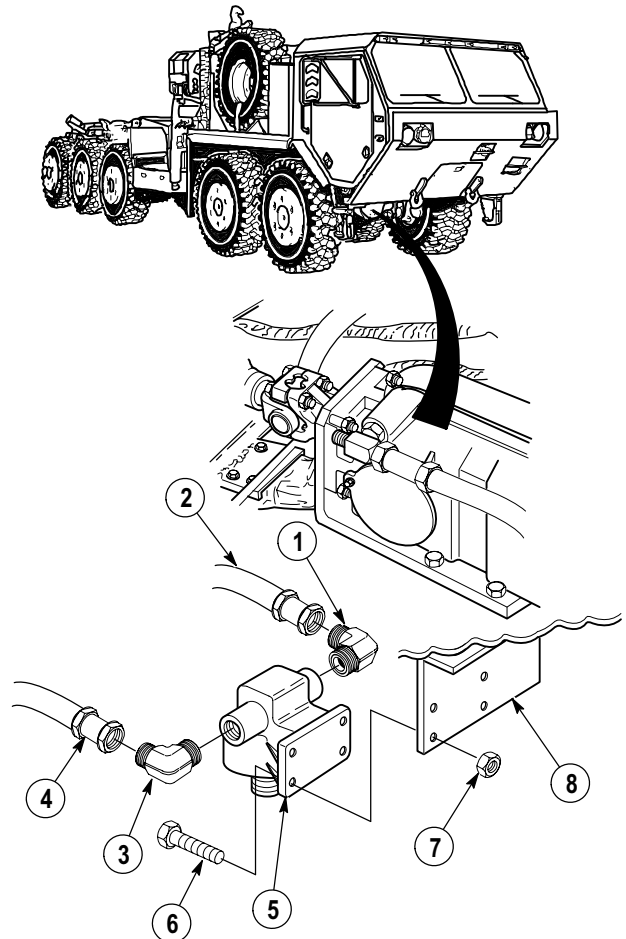
WARNING

Ensure engine is cool before performing this task or injury to personnel may result.

NOTE

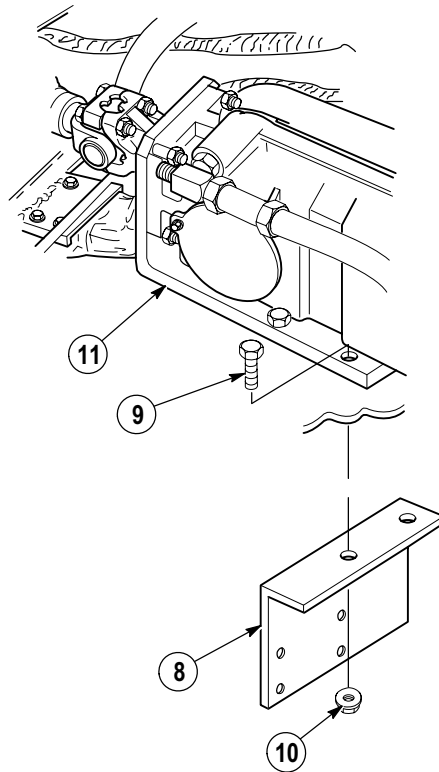
Note positions of adapters and hoses prior to removal.

- (1) Remove adapter (1), hose 2830 (2), adapter (3) and hose 2831 (4) from filter head (5).
- (2) Remove four screws (6), locknuts (7) and filter head (5) from filter head bracket (8). Discard locknuts.



3-9. REMOTE ENGINE OIL FILTER MANIFOLD REPAIR (CONT).

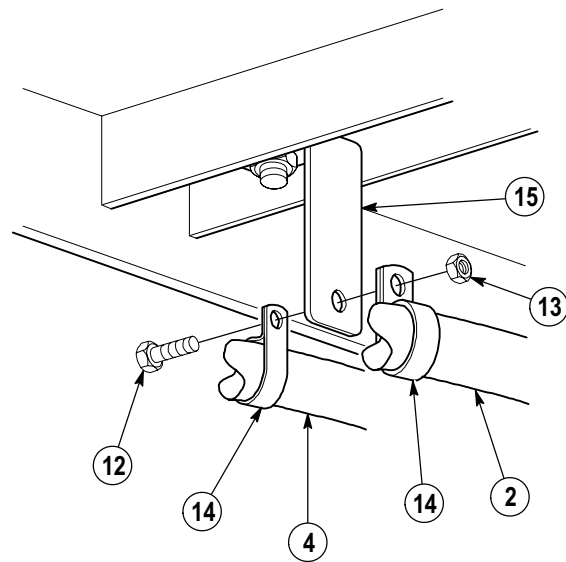
- (3) Remove two screws (9), two locknuts (10) and filter head bracket (8) from hydraulic pump support (11). Discard locknuts.



NOTE

Note location of hoses before removal of cushion clips.

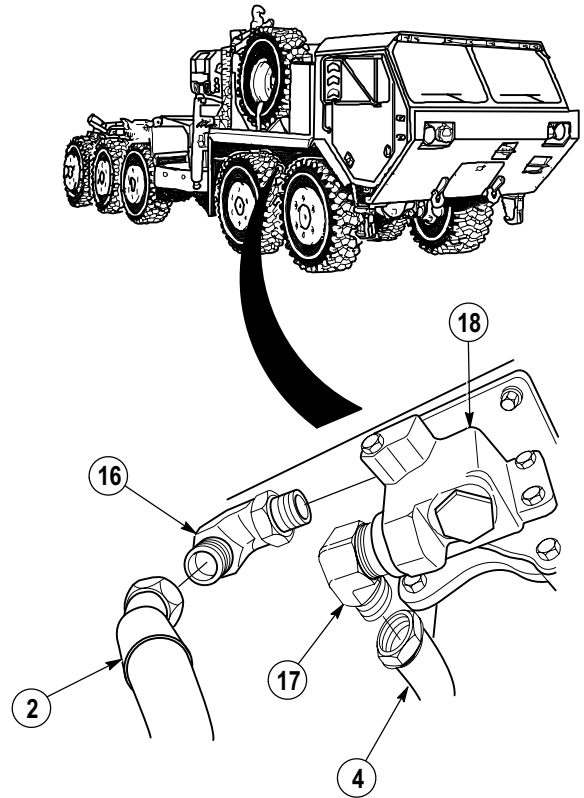
- (4) Remove screw (12), locknut (13) and cushion clips (14) from L-bracket (15). Discard locknut.
- (5) Remove hose 2830 (2) and hose 2831 (4) from cushion clips (14).



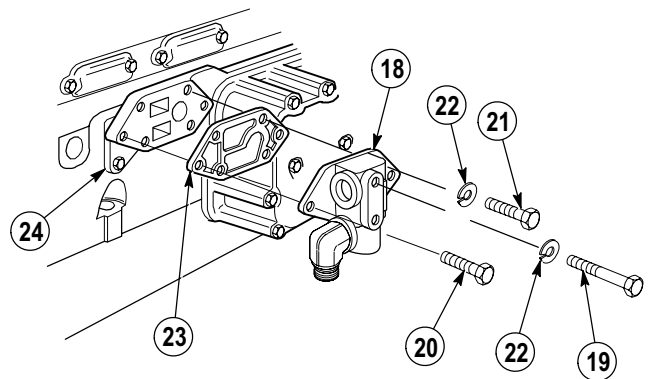
NOTE

Note position of adapters and hoses prior to removal.

- (6) Remove hose 2830 (2) and hose 2831 (4) from adapters (16) and (17) on remote engine oil filter manifold (18).
- (7) Remove adapter (16) from remote engine oil filter manifold (18).



- (8) Remove two screws (19), screws (20), screws (21), four lockwashers (22), remote engine oil filter manifold (18) and gasket (23) from oil cooler adapter cover (24). Discard lockwashers and gasket.



3-9. REMOTE ENGINE OIL FILTER MANIFOLD REPAIR (CONT).

b. Disassembly.

- (1) Position remote engine oil filter manifold (1) in soft jawed vice.

NOTE

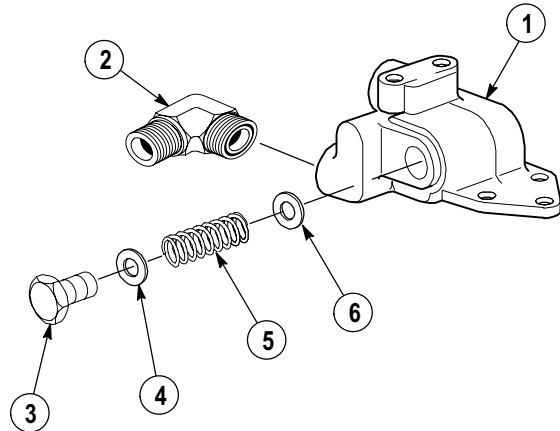
Note location and position of adapter prior to removal.

- (2) Remove adapter (2) from remote engine oil filter manifold (1).

WARNING

Use care when installing springs. Springs are under tension and can act as projectiles when released and could cause injury to personnel.

- (3) Remove plug (3), washer (4), spring (5) and valve disk (6) from remote engine oil filter manifold (1).
- (4) Remove remote engine oil filter manifold (1) from vise.



c. Cleaning/Inspection.

WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
 - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- (1) Clean all metal parts with drycleaning solvent.

WARNING

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc) or injury to personnel may result.

- (2) Dry parts with compressed air.
- (3) Inspect parts for cracks, gouges or pitting.
- (4) Replace all damaged parts.

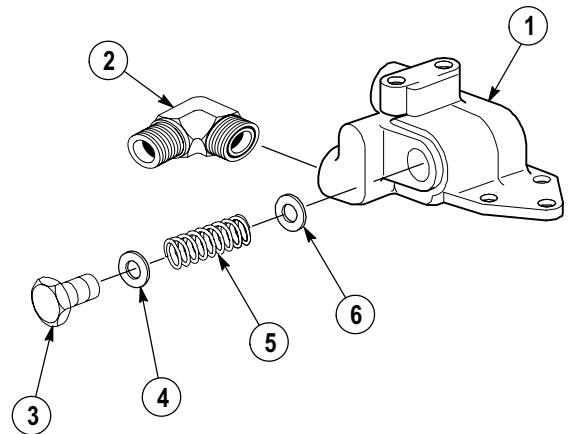
d. Assembly.

- (1) Position remote engine oil filter manifold (1) in soft jawed vise.

WARNING

Use care when removing springs. Springs are under tension and can act as projectiles when released and could cause injury to personnel.

- (2) Install valve disk (6), spring (5), washer (4) and plug (3) in remote engine oil filter manifold (1).

**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (3) Apply sealing compound to threads of adapter (2).

NOTE

Adapter in Step (4) is installed in bottom port marked "IN" and facing down.

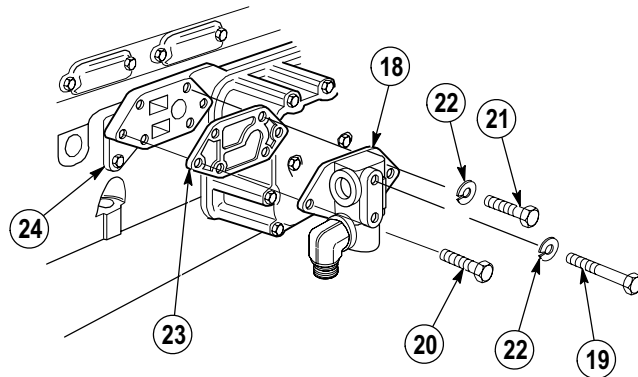
- (4) Install adapter (2) in remote engine oil filter manifold (1).
- (5) Remove remote engine oil filter manifold (1) from vise.

3-9. REMOTE ENGINE OIL FILTER MANIFOLD REPAIR (CONT).

e. Installation.

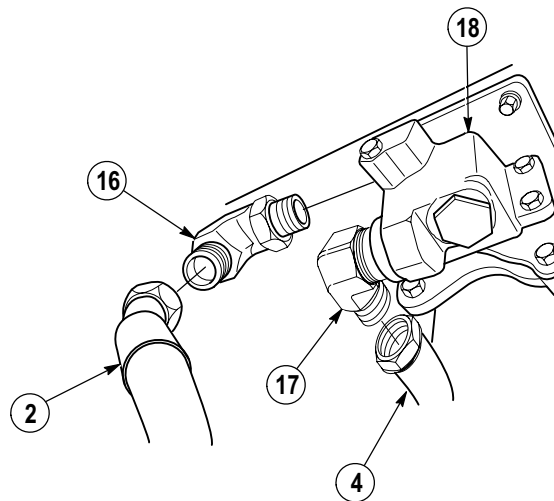
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (1) Apply sealing compound to threads of two screws (21), screws (20) and screws (19).
- (2) Install gasket (23) and remote engine oil filter manifold (18) on oil cooler adapter cover (24) with two screws (21), screws (20), screws (19) and four lockwashers (22). Tighten screws to 30 to 35 lb-ft (41 to 47 N·m).

- (3) Apply sealing compound to threads of adapter (16).
- (4) Install hose 2830 (2) to adapter (16) and hose 2831 (4) to adapter (17).

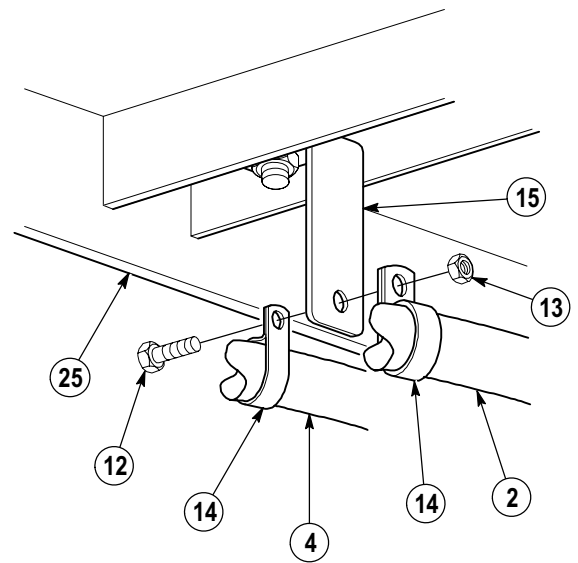


- (5) Position hose 2830 (2) and hose 2831 (4) under front crossmember (25).



Do not cross hoses, engine damage will occur.

- (6) Position cushion clips (14) on hose 2830 (2) and hose 2831 (4).
- (7) Attach cushion clips (14) to L-bracket (15) with screw (12) and locknut (13).

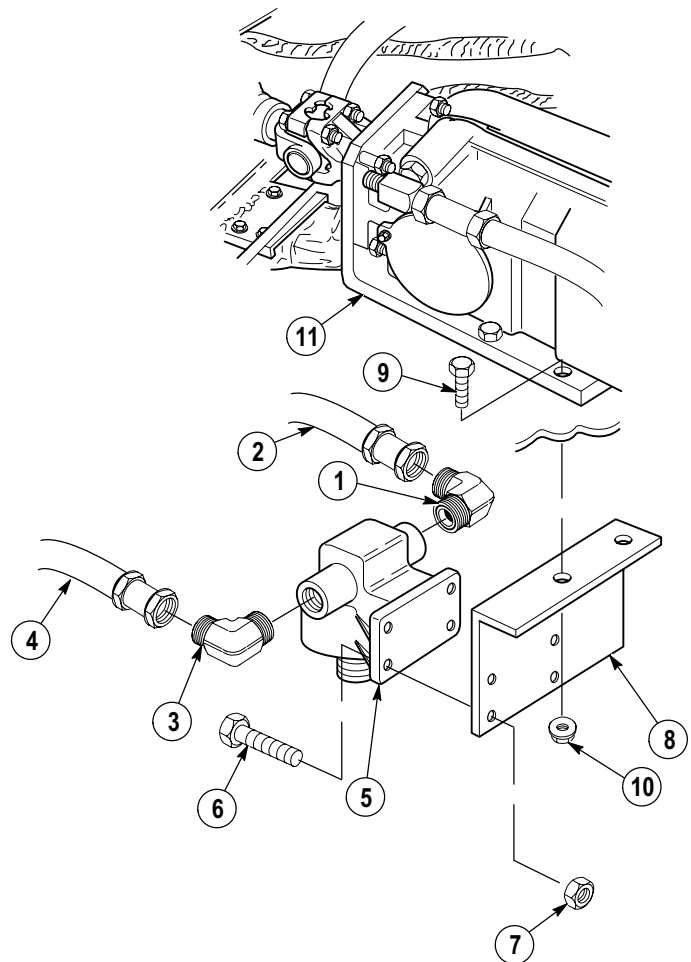


- (8) Attach filter head bracket (8) using two screws (9) and two locknuts (10) to hydraulic pump support (11).
- (9) Attach filter head (5) to filter head bracket (8) with four screws (6) and locknuts (7).



Do not cross hoses, engine damage will occur.

- (10) Attach adapter (1) to hose 2830 (2) and adapter (3) to hose 2831 (4). Attach adapters (1) and (3) to filter head (5).



f. Follow-On Maintenance:

- Install remote engine oil filter, (Para 3-7).
- Install right fender front skirt, (Para 17-33).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

3-10. ENGINE AND TRANSMISSION HOSE REPLACEMENT.

This task covers:

- a. Hose Replacement
- b. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Cap and Plug Set (Item 8, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

Materials/Parts

Cable Ties (Item 26, Appendix C)
Petrolatum, Technical (Item 63, Appendix C)
Tags, Identification (Item 88, Appendix C)

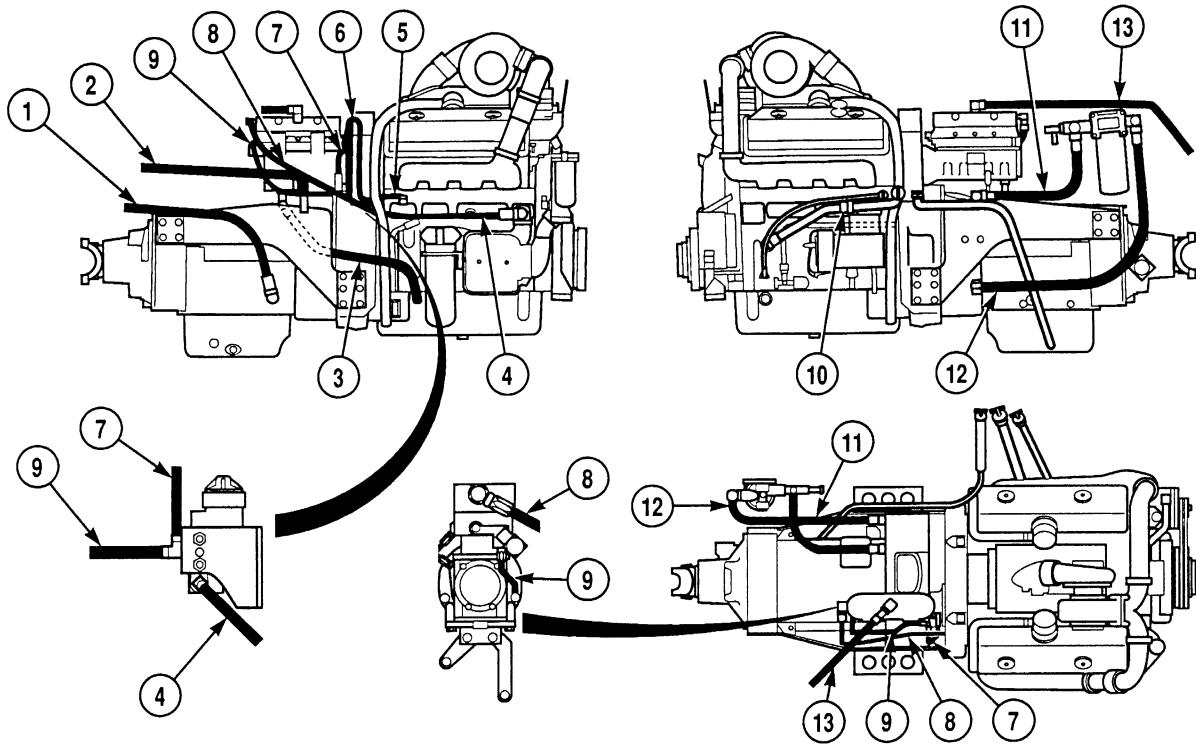
a. Hose Replacement.



Equipment may be damaged by foreign matter if hoses, tubes, and connectors are not plugged and capped when removed.

NOTE

- As items are removed, cap and plug all hoses, tubes and connectors.
- Tag and mark each end of hose before removal.
- Remove clamps and support brackets as required.
- Remove cable ties as required.



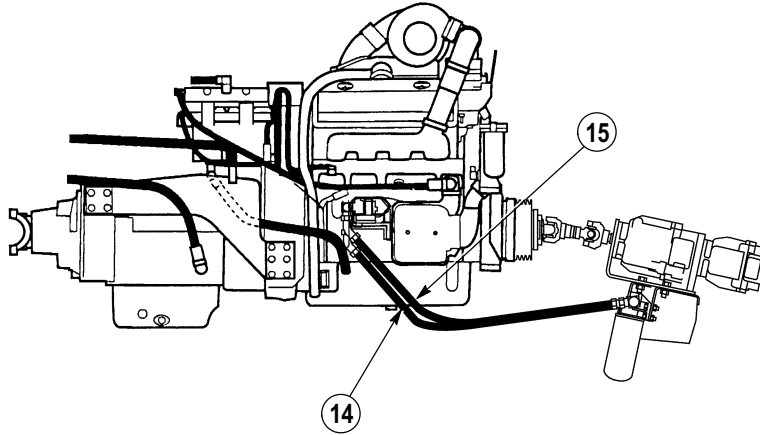
Item No.	Hose No.	From	To
1	2382	Right transmission	Left rear radiator
2	2279	Right rear radiator	Top of transmission
3	2630	Right rear engine oil pan	Bottom rear air compressor
4	2159	Air governor	Air tank No. 1
5	2628	Right rear engine cooling jacket	Front air compressor
6	2629	Right rear engine	Left front air compressor
7	2114	Air governor	Front air compressor
8	2628	Upper rear engine	Upper rear air compressor
9	2040	Air governor	Lower rear air compressor
10	2999	Left engine crankcase	Oil fill tube
11	2310	Top of transmission	Oil filter
12	2311	Oil filter	Left front transmission

CAUTION

To prevent damage to truck air system, do not kink hose 13 between air compressor and air drier.

13	2001	Top of air compressor	Air dryer
----	------	-----------------------	-----------

3-10. ENGINE AND TRANSMISSION HOSE REPLACEMENT (CONT).



Item No.	Hose No.	From	To
14	2830	Remote oil filter	Oil filter manifold
15	2831	Remote oil filter	Oil filter manifold

b. Follow-On Maintenance:

- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

CHAPTER 4

FUEL SYSTEM MAINTENANCE

Para	Contents	Page
4-1	Introduction	4-1
4-2	Fuel Priming Pump Replacement	4-2
4-3	Fuel Priming Pump Filter Replacement	4-6
4-4	Air Cleaner Assembly Repair	4-8
4-5	Air Filter Replacement	4-19
4-6	Air Cleaner Mounting Bracket Grab Handle Replacement	4-21
4-7	Air Intake Ducting Replacement	4-22
4-8	Fuel Tank And Brackets Replacement	4-30
4-9	Auxiliary Fuel Tank And Brackets Replacement	4-41
4-10	Fuel Shutoff Valve Replacement	4-62
4-11	Fuel Level Sending Unit Replacement	4-65
4-12	Fuel Hoses And Tubes Replacement	4-67
4-13	Secondary Fuel Filter Replacement	4-70
4-14	Secondary Fuel Filter Head Replacement	4-72
4-15	Fuel/Water Separator Service	4-76
4-16	Fuel/Water Separator And Bracket Replacement	4-79
4-17	Fuel/Water Separator Filter Replacement	4-84
4-18	Ether Start Aid Assembly Replacement	4-87
4-19	Ether Start Aid Hose And Fittings Replacement	4-89
4-20	Ether Start Aid Thermostat Replacement	4-92

4-1. INTRODUCTION.

This chapter contains maintenance instructions for removing, replacing, installing, repairing and testing fuel system components as authorized by the Maintenance Allocation Chart (MAC) at the Unit Maintenance level.

4-2. FUEL PRIMING PUMP REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Cap and Plug Set (Item 8, Appendix G)
Pan, Drain (Item 47, Appendix G)

Materials/Parts

Cable Ties (Item 25, Appendix C)
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)

Materials/Parts - Continued

Locknut (2) (Item 106, Appendix F)

Equipment Condition

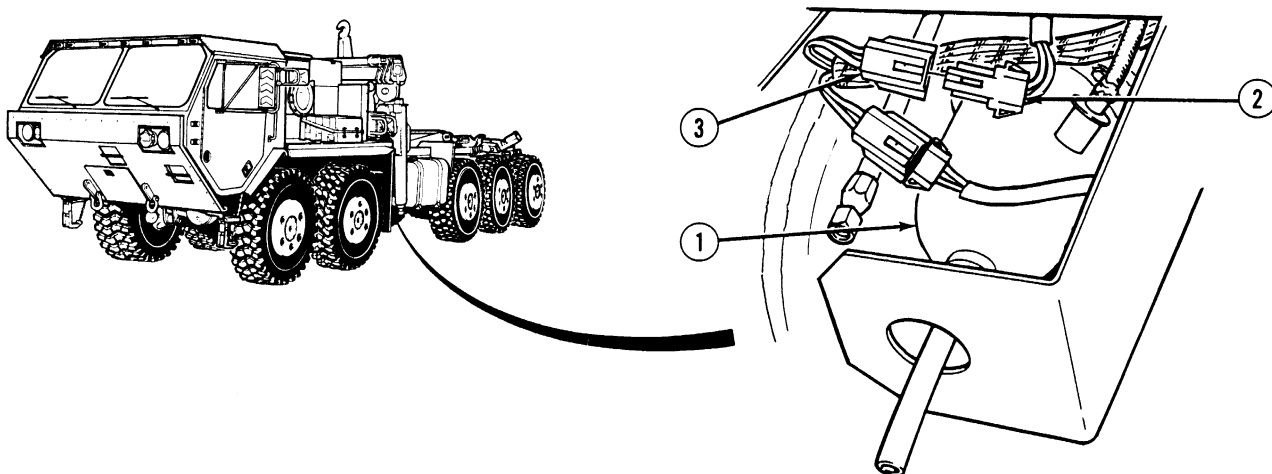
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Fuel/Water separator drained, (Para 4-15)
Differential pressure switch removed,
(Para 7-84)
Air dryer guard removed (if equipped),
(Para 12-19)

a. **Removal.****WARNING**

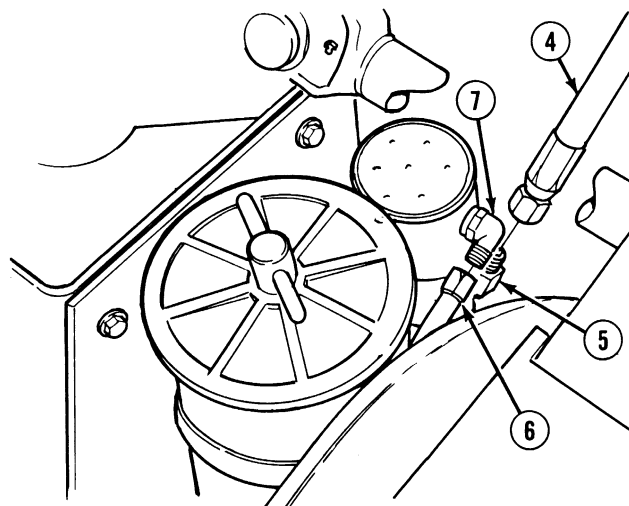
Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.

NOTE

- Remove cable ties as required.
- Tag and mark wires and hoses prior to removal.
- Note location and position of elbows and tees prior to removal.
- Connectors are removed by gently prying on tab and pulling connector apart.



- (1) Position drain pan under fuel/water separator (1) to catch excess fuel.
- (2) Disconnect fuel pump connector 108 (2) from wire harness connector (3).
- (3) Remove hose 2919 (4) from elbow (5).
- (4) Remove hose 2920 (6) from elbow (7).



4-2. FUEL PRIMING PUMP REPLACEMENT (CONT).

NOTE

Note location and position of elbows and tees prior to removal.

- (5) Remove two locknuts (8), screws (9) and priming pump (10) from bracket (11). Discard locknuts.
- (6) Remove elbows (5) and (7) from priming pump (10).

b. Installation.

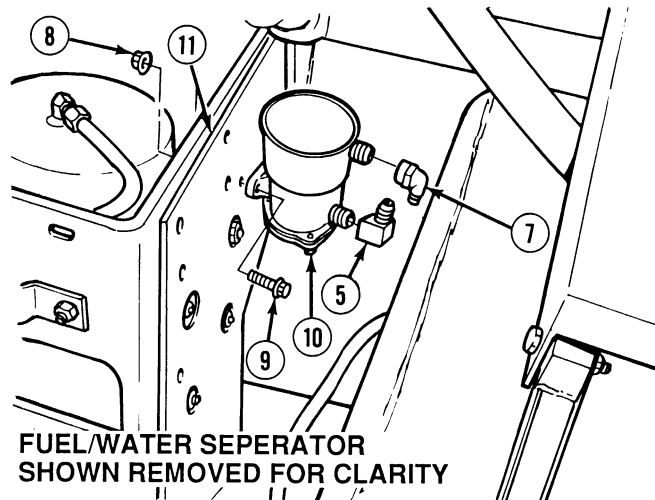
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

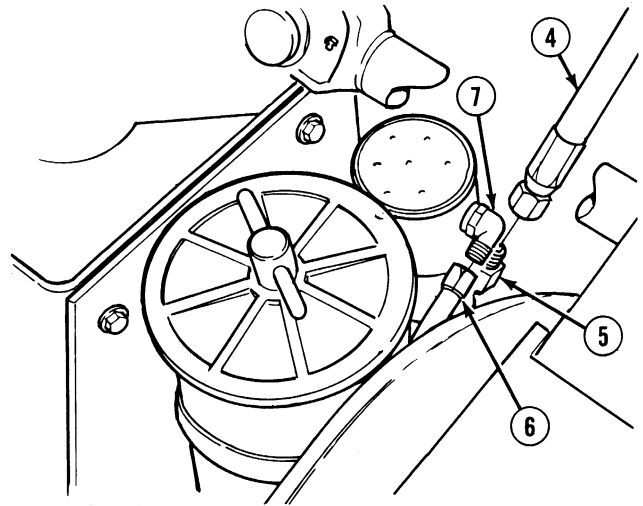
NOTE

Ensure tees and elbow are installed as noted prior to removal.

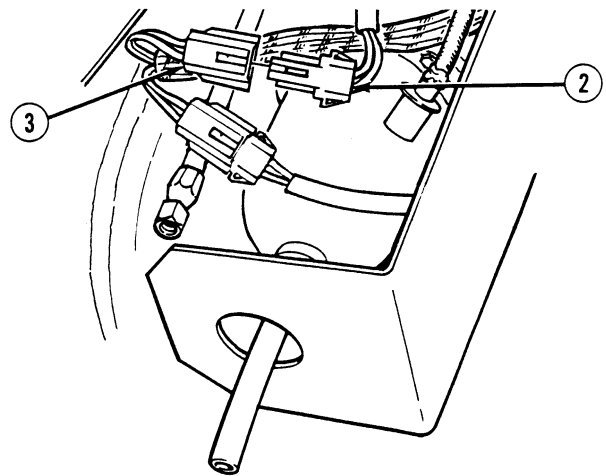
- (1) Apply sealing compound to threads of elbows (5) and (7).
- (2) Install elbows (5) and (7) in priming pump (10).
- (3) Install priming pump (10) on bracket (11) with two screws (9) and locknuts (8).



- (4) Install hose 2920 (6) on elbow (7).
- (5) Install hose 2919 (4) on elbow (5).



- (6) Connect fuel pump connector 108 (2) to wire harness connector (3).



c. Follow-On Maintenance:

- Install differential pressure switch, (Para 7-84).
- Fill fuel/water separator, (Para 4-15).
- Install air dryer guard (if equipped), (Para 12-19).
- Start engine, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-3. FUEL PRIMING PUMP FILTER REPLACEMENT.

This task covers:

- | | |
|------------------------|--------------------------|
| a. Removal | c. Installation |
| b. Cleaning/Inspection | d. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Pan, Drain (Item 47, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Fuel/water separator drained, (Para 4-15)

Materials/Parts

Gasket (Item 63, Appendix F)
Screws (3) (Item 312, Appendix F)

a. Removal.

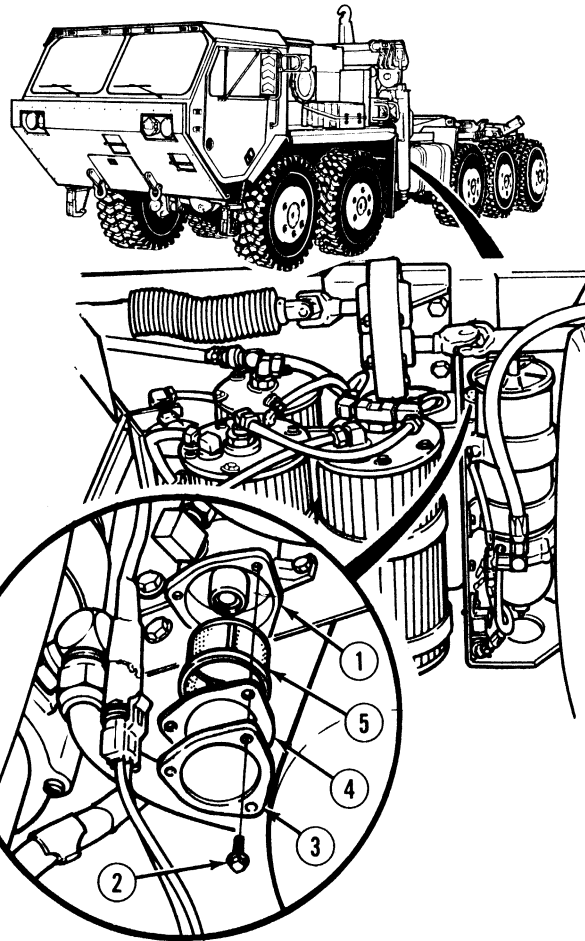
WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.

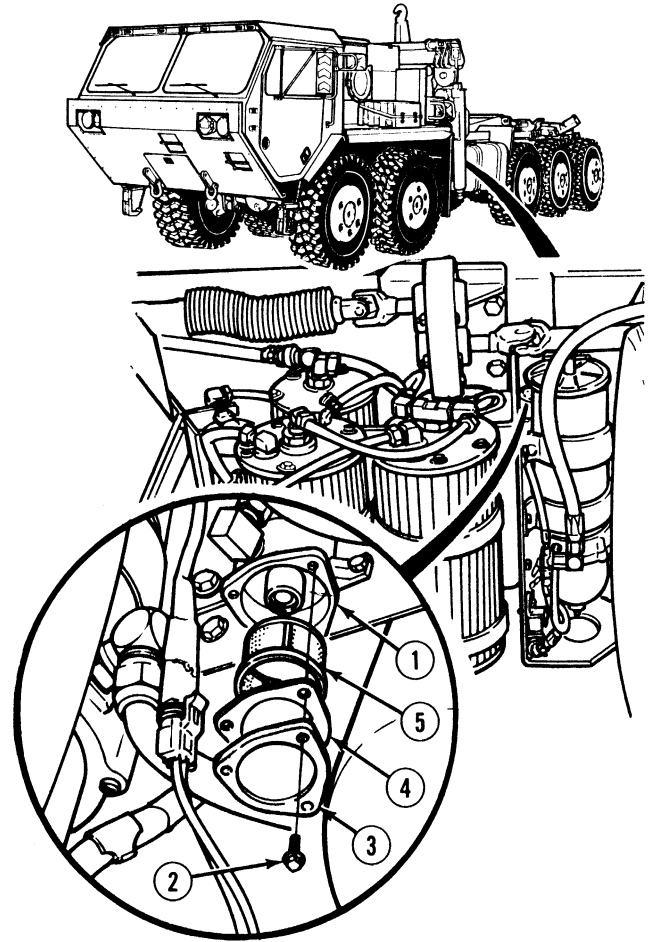
- (1) Place drain pan under fuel priming pump (1).
- (2) Remove three screws (2), cover (3), gasket (4) and filter (5) from fuel priming pump (1). Discard screws and gasket.

b. Cleaning/Inspection.

- (1) Clean particles from magnetic cover.
- (2) Clean filter, nylon mesh screen can be rinsed out or blown out with air pressure.
- (3) Inspect all parts for cracks and other signs of wear.
- (4) Replace all damaged parts.



- c. **Installation.** Install filter (5), gasket (4) and cover (3) on fuel priming pump (1) using three screws (2).



d. **Follow-On Maintenance:**

- Fill fuel/water separator, (Para 4-15).
- Start engine, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-4. AIR CLEANER ASSEMBLY REPAIR.

This task covers:

- | | | |
|----------------|------------------------|--------------------------|
| a. Removal | c. Cleaning/Inspection | e. Installation |
| b. Disassembly | d. Assembly | f. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Compressor Unit, Air (Item 11, Appendix G)
- Gloves, Chemical Oil Protective (Item 28, Appendix G)
- Goggles, Industrial (Item 30, Appendix G)
- Gun, Air Blow (Item 31, Appendix G)
- Socket Set, 3/8 in. (Item 62, Appendix G)
- Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)

Materials/Parts

- Compound, Corrosion Preventative (Item 34, Appendix C)
- Rags, Wiping (Item 67, Appendix C)
- Solvent, Drycleaning (Item 87, Appendix C)
- Gasket (Item 44, Appendix F)
- Locknut (4) (Item 89, Appendix F)

Materials/Parts - Continued

- Locknut (Item 133, Appendix F)
- Locknut (Item 140, Appendix F)
- Lockwasher (6) (Item 197, Appendix F)
- Lockwasher (6) (Item 207, Appendix F)

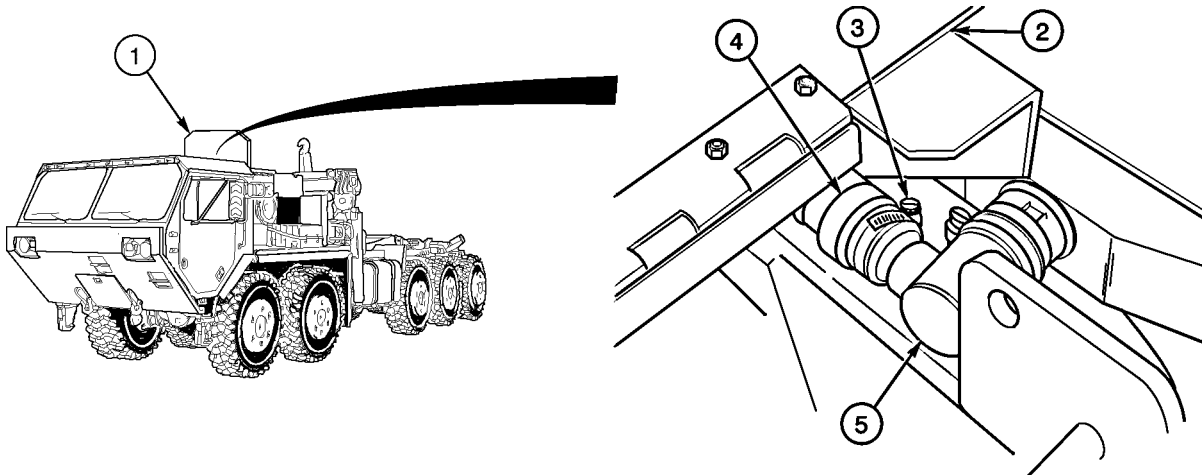
Personnel Required

Two

Equipment Condition

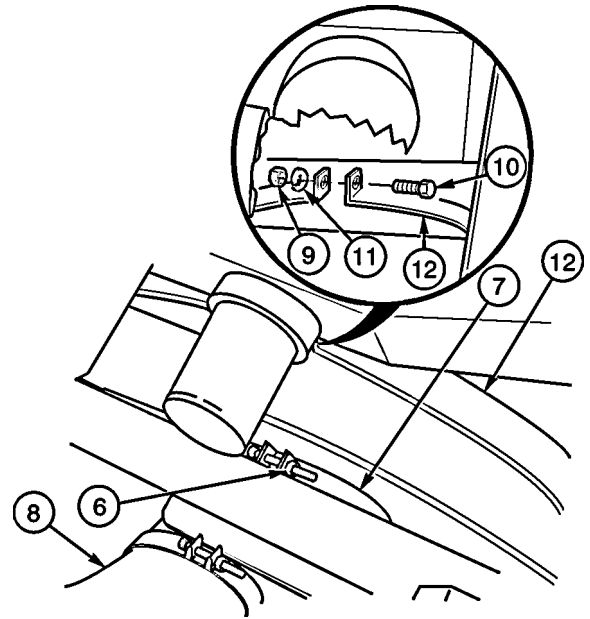
- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)
- Batteries disconnected, (Para 7-87)
- Left side noise panel removed, (Para 17-28)

a. Removal.



- (1) Open engine cover (1) on radiator shroud (2).
- (2) Loosen clamp (3) on aspirator hose (4) and remove aspirator hose (4) from dust cup (5).

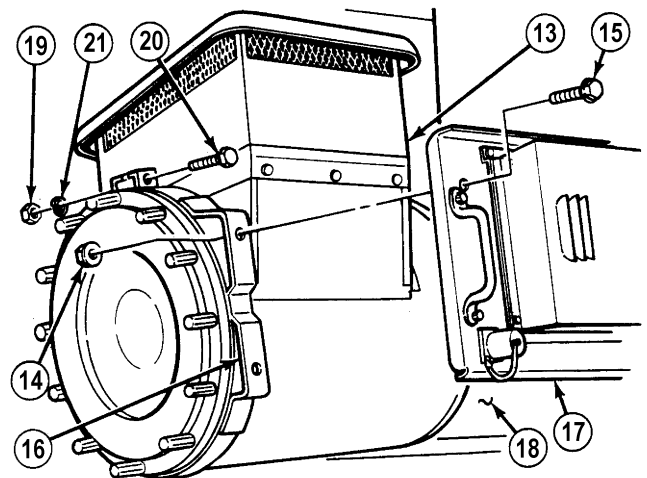
- (3) Loosen nut (6) on clamp (7) and push clamp back on air inlet hose (8).
- (4) Remove nut (9), screw (10) and lockwasher (11) from rear bracket (12). Discard lockwasher.



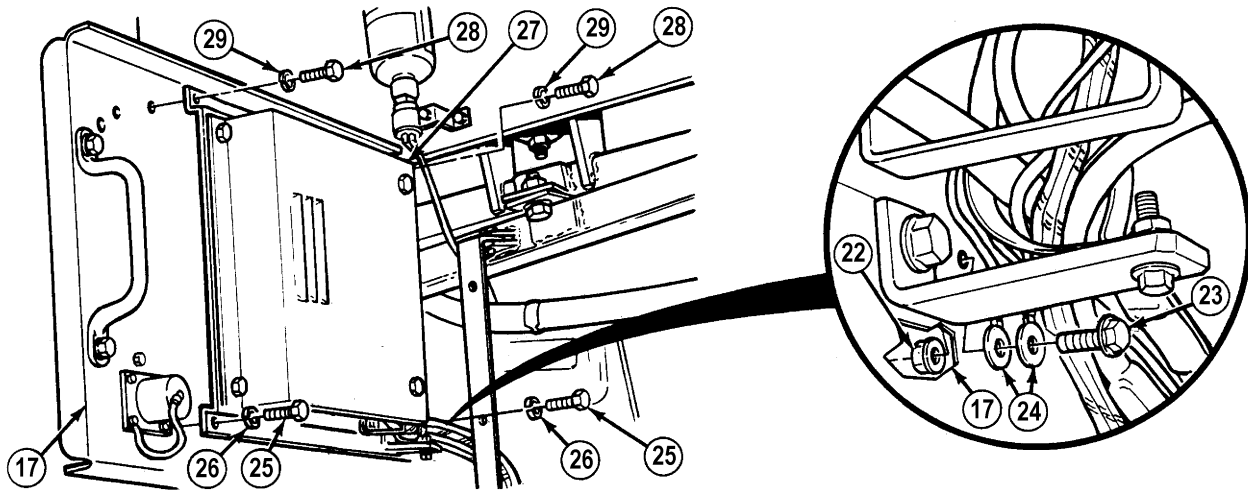
WARNING

Air cleaner assembly can weigh up to 100 lbs (45 kg). Ensure air cleaner assembly is properly supported during removal. Failure to comply may result in injury to personnel.

- (5) With the aid of an assistant, support air cleaner assembly (13) and remove two locknuts (14) and screws (15) from front bracket (16) and air cleaner mounting panel (17). Discard locknuts.
- (6) With the aid of an assistant, remove air cleaner assembly (13) from truck (18).
- (7) Remove nut (19), screw (20) and lockwasher (21) from front bracket (16). Discard lockwasher.
- (8) Remove front bracket (16) from air cleaner assembly (13).



4-4. AIR CLEANER ASSEMBLY REPAIR (CONT).

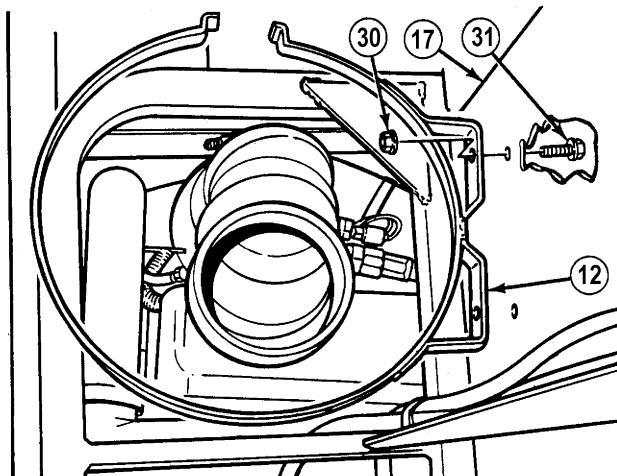


- (9) Remove locknut (22), screw (23) and two ground wires (24) from air cleaner mounting panel (17). Discard locknut.
- (10) Remove two screws (25) and lockwashers (26) from air cleaner mounting panel (17) and electric bracket (27). Discard lockwashers.

NOTE

Electric bracket only needs to be removed far enough to access screws on rear bracket for Step (12).

- (11) With the aid of an assistant, support electric bracket (27) and remove two screws (28), lockwashers (29) and electric bracket from air cleaner mounting panel (17). Discard lockwashers.
- (12) Remove two locknuts (30), screws (31) and rear bracket (12) from air cleaner mounting panel (17). Discard locknuts.



b. Disassembly.**WARNING**

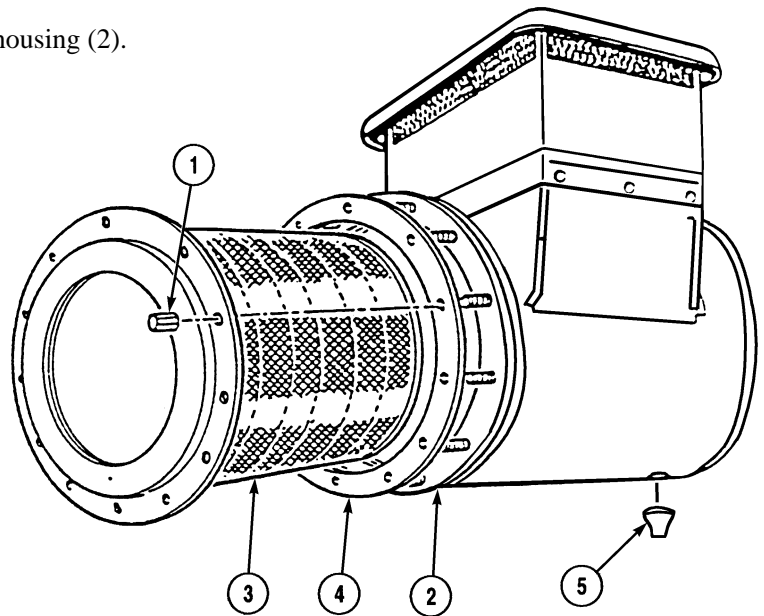
After Nuclear, Biological, or Chemical (NBC) exposure of truck, all air filters shall be handled with extreme caution. Unprotected personnel may experience injury or death if residual toxic agents or radioactive material are present. If truck is exposed to chemical or biological agents, servicing personnel shall wear protective mask, hood, protective overgarments, and chemical protective gloves and boots in accordance with FM 3-4. All contaminated air filters shall be placed in double-lined plastic bags and moved swiftly to a segregation area away from the worksite. The same procedure applies for radioactive dust contamination. The Company NBC team should measure radiation prior to filter removal to determine extent of safety procedures required per the NBC Annex to the unit Standard Operating Procedures (SOP). The segregation area in which the contaminated air filters are temporarily stored shall be marked with appropriate NBC placards. Final disposal of contaminated air filters shall be in accordance with local SOP. Decontamination operation shall be in accordance with FM 3-5 and local SOP.

- (1) Remove 12 nuts (1) from air cleaner housing (2).

CAUTION

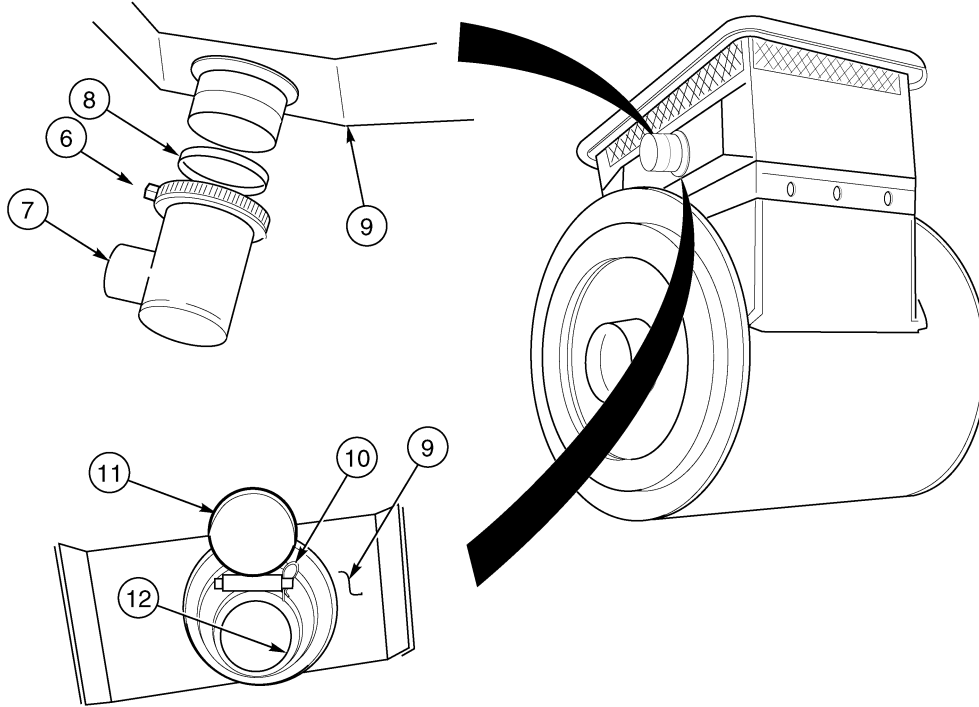
Air filter fits tightly around air cleaner housing. Even pressure must be applied around perimeter of air filter. This can be done by either prying evenly around air filter or by moving around air filter while prying with light pressure. Failure to comply may result in damage to parts.

- (2) Remove air filter (3) from air cleaner housing (2).
- (3) Remove and discard gasket (4) from air cleaner housing (2).
- (4) Remove bleeder valve (5) from air cleaner housing (2).



4-4. AIR CLEANER ASSEMBLY REPAIR (CONT).

- (5) Loosen clamp (6) and remove dust cup (7) and seal ring (8) from weather cap assembly (9).



NOTE

Perform Step (6) if check valve assembly is damaged.

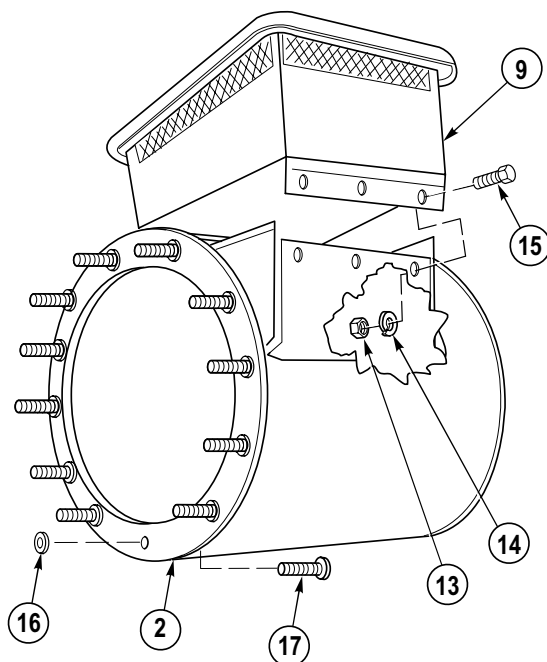
- (6) Remove and discard cotter pin (10), plate (11) and gasket (12) from weather cap assembly (9).

- (7) Remove six nuts (13), lockwashers (14), screws (15) and weather cap assembly (9) from air cleaner housing (2). Discard lockwashers.

NOTE

Perform Step (8) if studs are damaged.

- (8) Remove retaining rings (16) and studs (17) from air cleaner housing (2). Discard damaged studs.



c. Cleaning/Inspection

WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

CAUTION

Do not clean air filter or pre-cleaner filter in weather cap assembly with dry cleaning solvent. Filters may become plugged and damage to equipment may result.

- (1) Clean all metal parts with drycleaning solvent.

WARNING

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc). Failure to comply may result in injury or death to personnel.

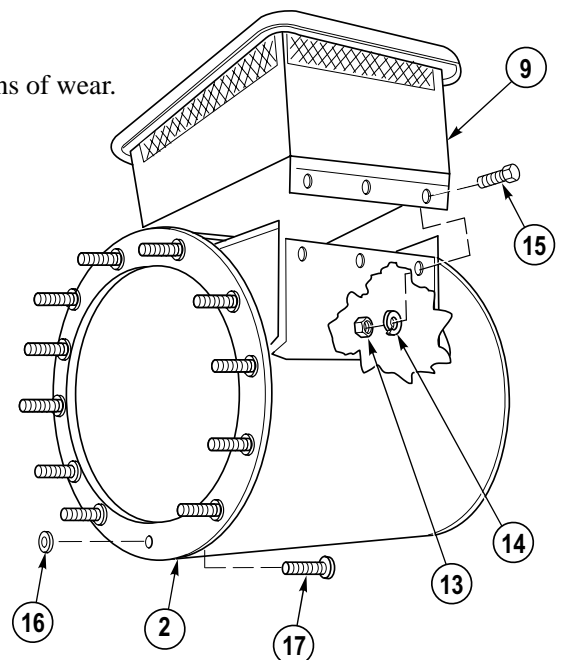
- (2) Dry all metal parts with compressed air.
- (3) Clean rubber parts with clean, dry cloth.
- (4) Inspect all parts for cracks, stripped threads and other signs of wear.
- (5) Replace all damaged parts.

d. Assembly

NOTE

Perform Step (1) if studs were removed.

- (1) Install studs (17) and retaining rings (16) on air cleaner housing (2).
- (2) Install weather cap assembly (9) on air cleaner housing (2) with six screws (15), lockwashers (14) and nuts (13).

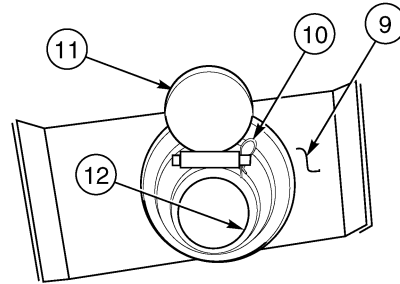


4-4. AIR CLEANER ASSEMBLY REPAIR (CONT).

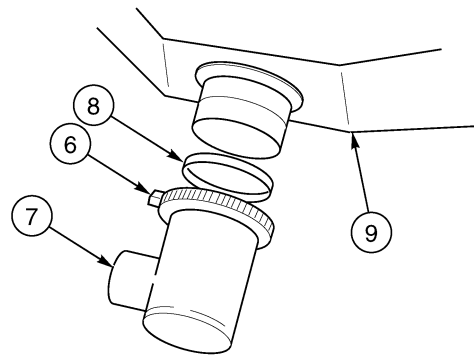
NOTE

Perform Step (3) if check valve assembly was removed.

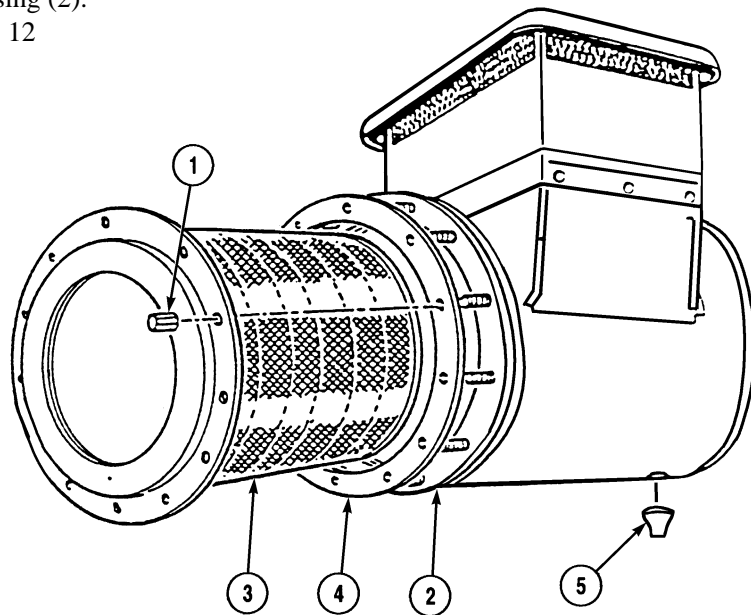
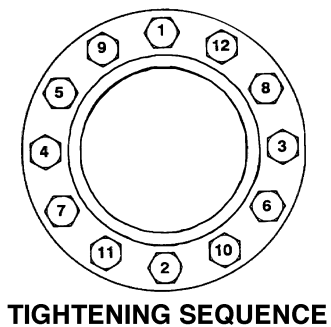
- (3) Install gasket (12), plate (11) and cotter pin (10) on weather cap assembly (9).



- (4) Install seal ring (8) and dust cup (7) on weather cap assembly (9) with clamp (6). Tighten to 30 to 35 lb-in (3 to 4 N·m).

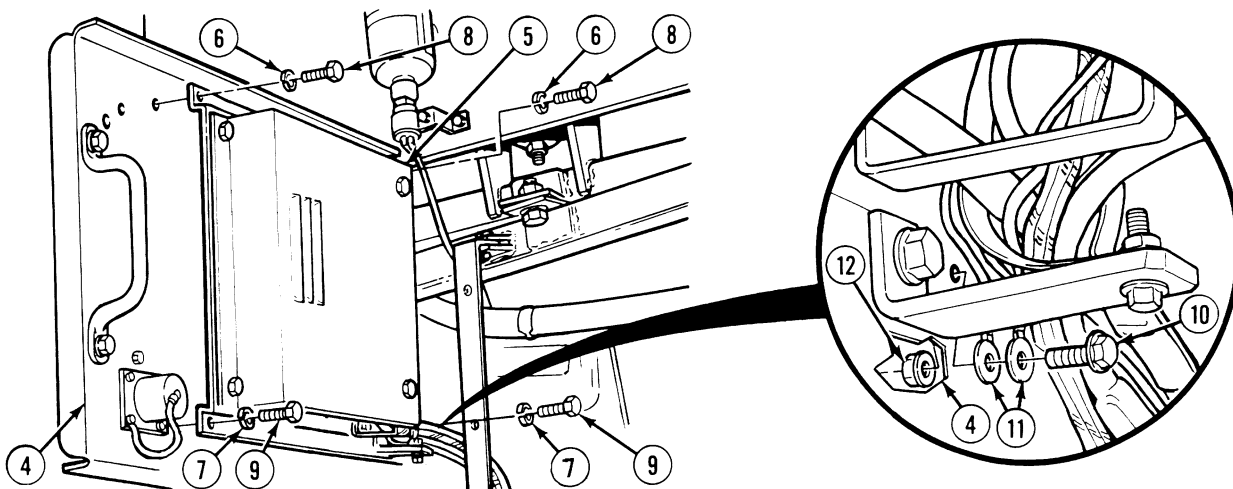
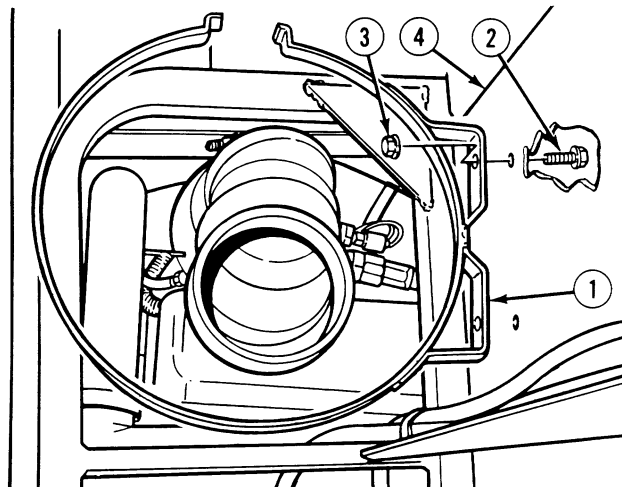


- (5) Install bleeder valve (5) on air cleaner housing (2).
- (6) Install gasket (4) on air cleaner housing (2).
- (7) Install air filter (3) in air cleaner housing (2).
- (8) Install 12 nuts (1) on air cleaner housing (2). Tighten nuts to 90 to 110 lb-in (10 to 12 N·m).



e. Installation.

- (1) With the aid of an assistant, support rear bracket (1) and install two screws (2) and locknuts (3) in air cleaner mounting panel (4) and rear bracket (1). Tighten to 70 lb-in (8 N·m).



- (2) With the aid of an assistant, support electric bracket (5) and install lockwashers (6) and (7) and screws (8) and (9) on air cleaner mounting panel (4).
- (3) Install two ground wires (11) with screw (10) and locknut (12) to air cleaner mounting panel (4).
- (4) Apply corrosion preventive compound to screw (10).

4-4. AIR CLEANER ASSEMBLY REPAIR (CONT).

- (5) Position front bracket (13) on air cleaner assembly (14) with lockwasher (15), screw (16) and nut (17).

WARNING

Ensure air cleaner assembly is properly supported. Failure to comply may result in injury to personnel.

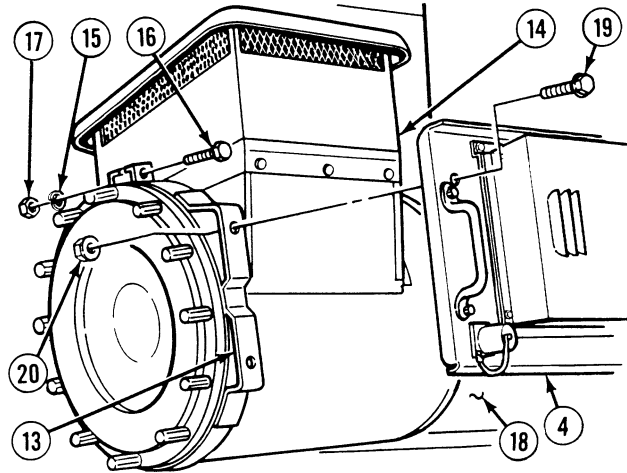
CAUTION

When installing air cleaner assembly, ensure rear bracket does not wedge under air cleaner assembly or damage to parts may occur.

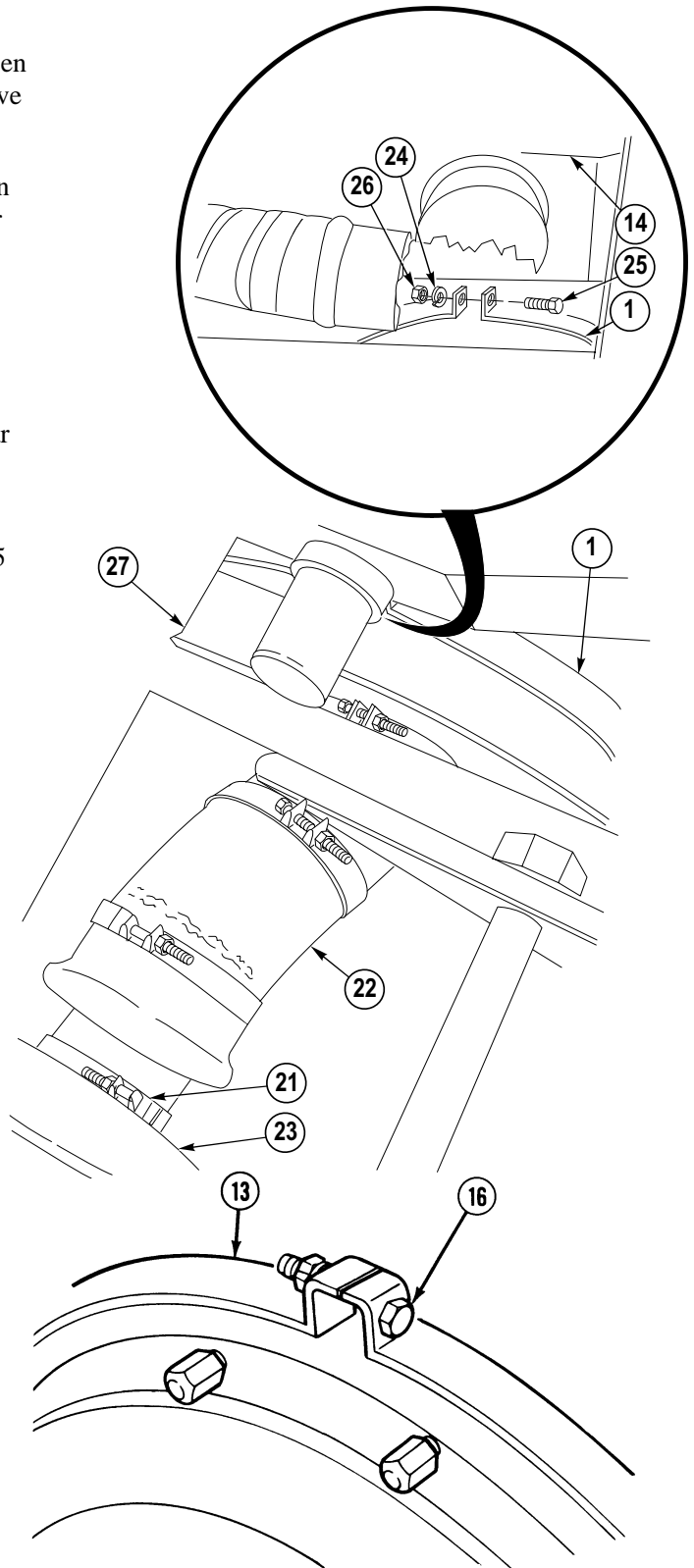
NOTE

An assistant will be required for Steps (6) through (11).

- (6) Position air cleaner assembly (14) on truck (18) and air cleaner mounting panel (4).
- (7) Support air cleaner assembly (14) and install two screws (19) and locknuts (20) in front bracket (13) and air cleaner mounting panel (4).



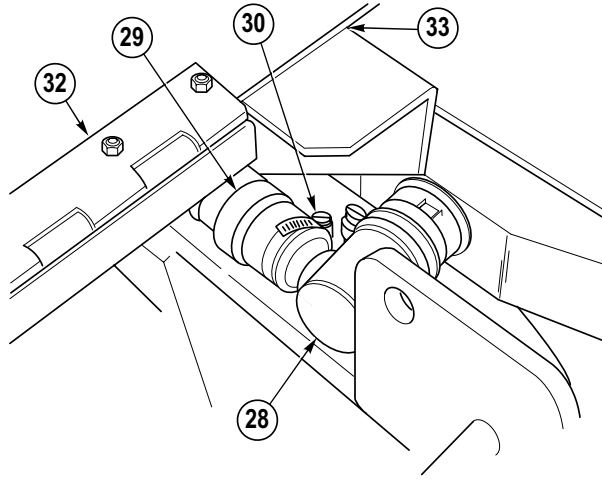
- (8) Support air cleaner assembly (14) and loosen clamp (21) on air inlet hose (22) and remove air inlet hose (22) from turbocharger (23).
- (9) Support air cleaner assembly (14) and align and install air inlet hose (22) on air cleaner assembly (14). Tighten clamp (27).
- (10) Support air cleaner assembly (14) and install air inlet hose (22) on turbocharger (23). Tighten clamp (21).
- (11) Position air cleaner assembly (14) with rear bracket (1) and position lockwasher (24), screw (25) and nut (26) in rear bracket (1).
- (12) Tighten screw (25) in rear bracket (1) to 85 to 100 lb-in (10 to 11 N·m).



- (13) Tighten screw (16) in front bracket (13) to 85 to 100 lb-in (10 to 11 N·m).

4-4. AIR CLEANER ASSEMBLY REPAIR (CONT).

- (14) Install aspirator hose (29) on dust cup (28) with clamp (30).
- (15) Close engine cover (32) on radiator shroud (33).



f. Follow-On Maintenance:

- Install left side noise panel, (Para 17-28).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-5. AIR FILTER REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

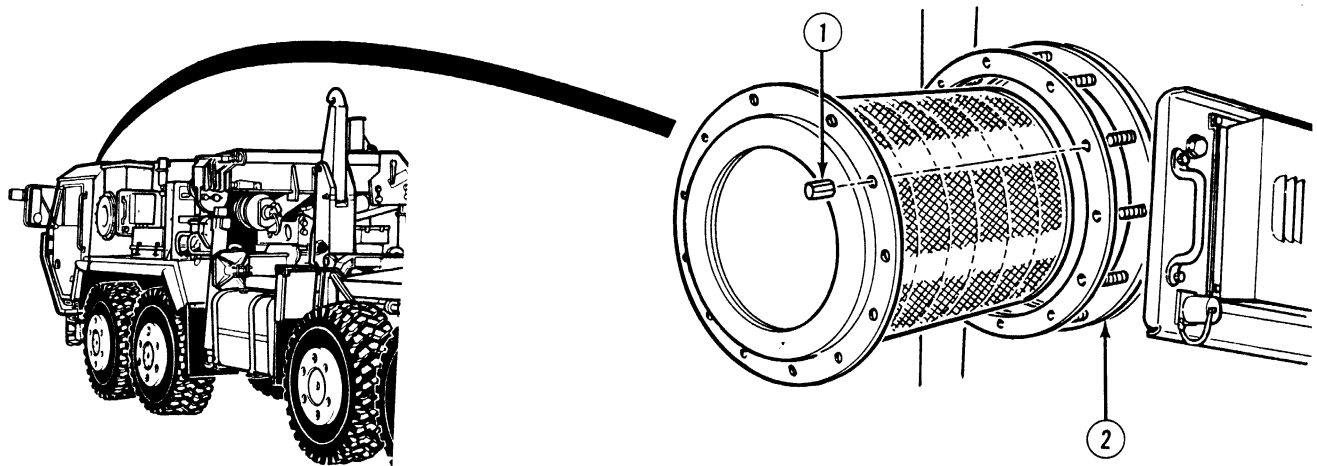
- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Socket Set, 3/8 in. (Item 62, Appendix G)
- Wrench, Torque (0 to 210 lb-in [0 to 24 N·m]) (Item 98, Appendix G)

Materials/Parts

- Rags, Wiping (Item 67, Appendix C)
- Gasket (Item 44, Appendix F)

Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)



a. Removal.

WARNING

After Nuclear, Biological, or Chemical (NBC) exposure of truck, all air filters shall be handled with extreme caution. Unprotected personnel may experience injury or death if residual toxic agents or radioactive material are present. If truck is exposed to chemical or biological agents, servicing personnel shall wear protective mask, hood, protective overgarments, and chemical protective gloves and boots in accordance with FM 3-4. All contaminated air filters shall be placed in double-lined plastic bags and moved swiftly to a segregation area away from the worksite. The same procedure applies for radioactive dust contamination. The Company NBC team should measure radiation prior to filter removal to determine extent of safety procedures required per the NBC Annex to the unit Standard Operating Procedures (SOP). The segregation area in which the contaminated air filters are temporarily stored shall be marked with appropriate NBC placards. Final disposal of contaminated air filters shall be in accordance with local SOP. Decontamination operation shall be in accordance with FM 3-5 and local SOP.

- (1) Remove 12 nuts (1) from air cleaner housing (2).

4-5. AIR FILTER REPLACEMENT (CONT).

CAUTION

Air filter fits tightly around air cleaner housing. Even pressure must be applied around perimeter of air filter. This can be done by either prying evenly around air filter or by moving around air filter while prying with light pressure. Failure to comply may result in damage to parts.

- (2) Remove air filter (3) from air cleaner housing (2).

NOTE

Perform Step (3) only if gasket is damaged.

- (3) Remove and discard gasket (4) from air cleaner housing (2).
- (4) Wipe inside of air cleaner housing (2) with damp cloth to remove contaminants.

b. Installation.

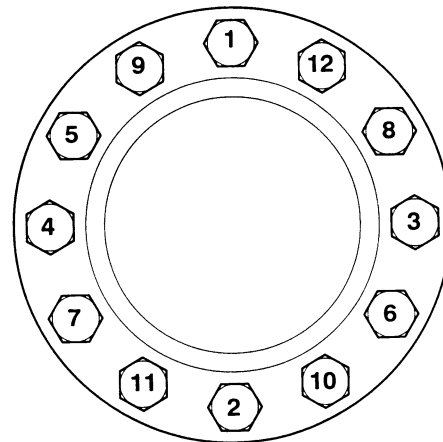
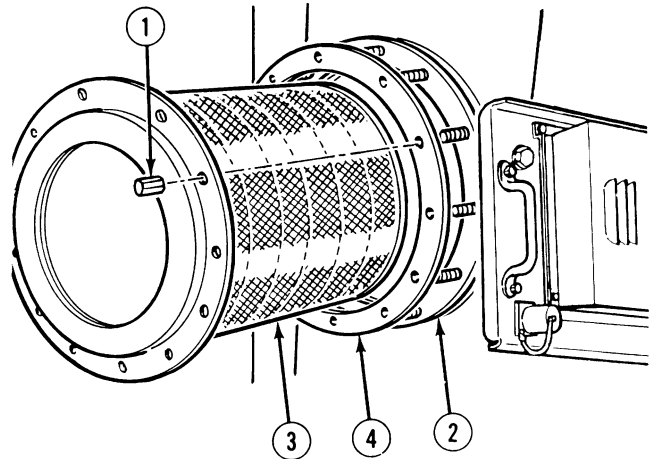
NOTE

Perform Step (1) if gasket was removed.

- (1) Install gasket (4) on air cleaner housing (2).
- (2) Install air filter (3) in air cleaner housing (2).
- (3) Install 12 nuts (1) on air cleaner housing (2). Tighten nuts to 90 to 110 lb-in (10 to 12 N·m).

c. Follow-On Maintenance:

- Reset air cleaner restriction indicator, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).



TIGHTENING SEQUENCE

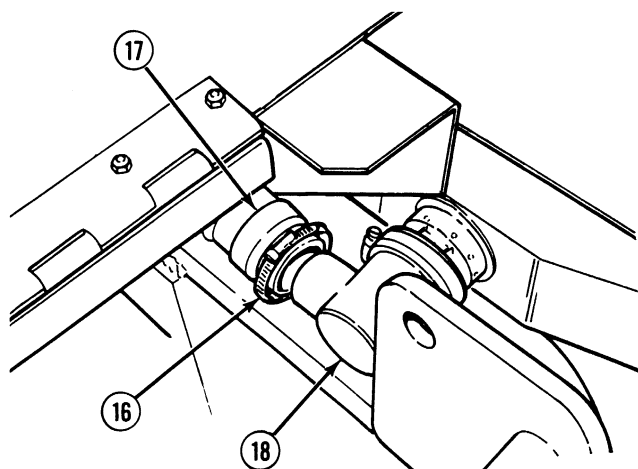
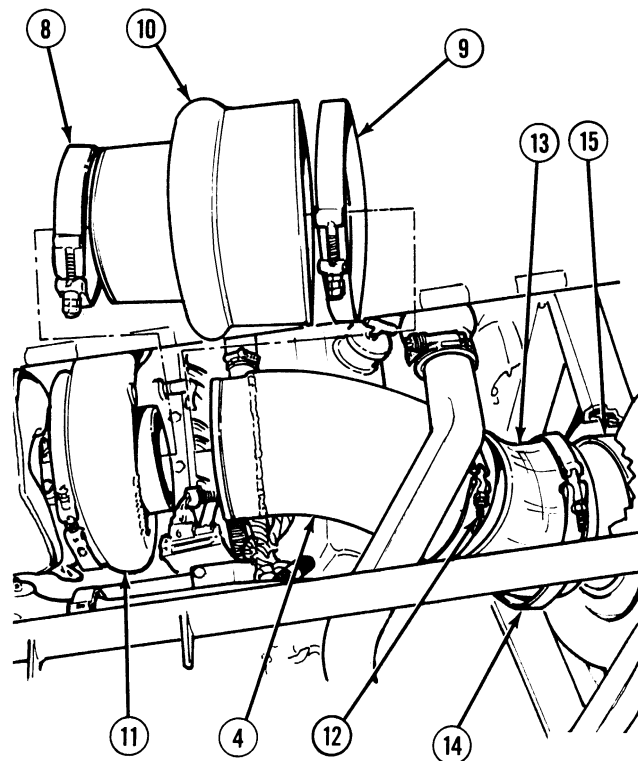
END OF TASK

- (5) Loosen hose clamps (8) and (9) on hose (10) and air intake pipe assembly (4).

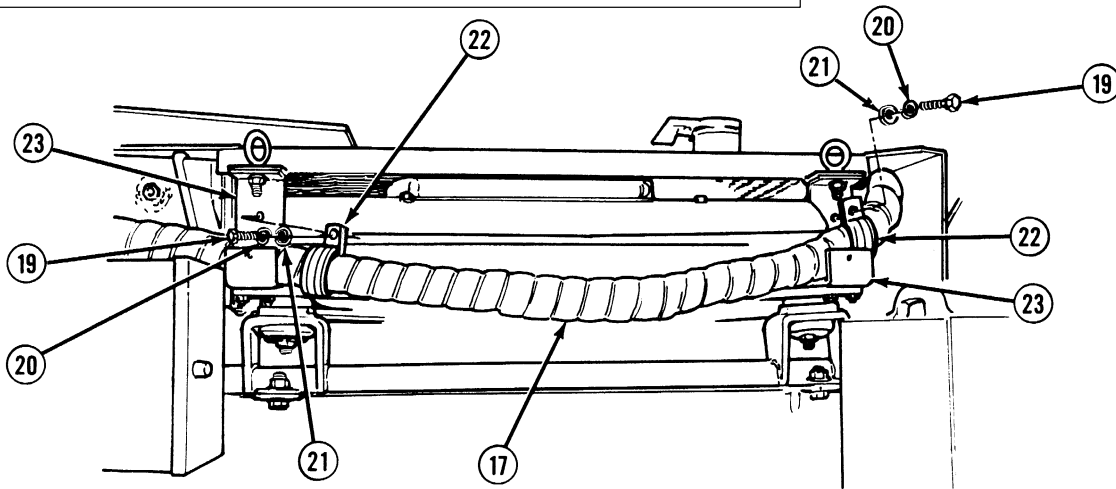
NOTE

Note position of air intake pipe assembly prior to removal to ensure proper installation.

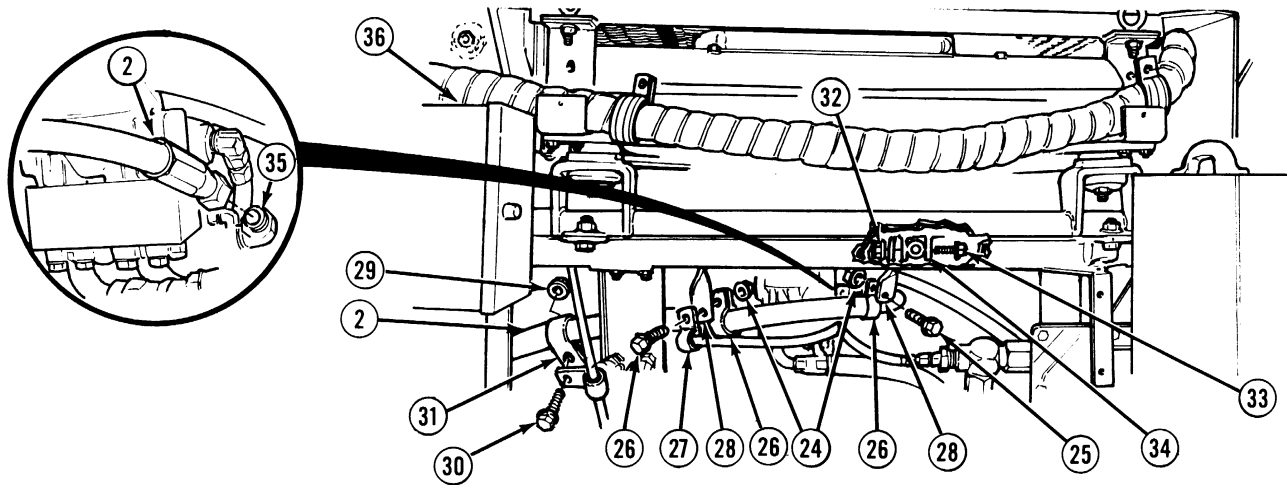
- (6) Remove air intake pipe assembly (4) from hose (10).
- (7) Remove hose (10) and hose clamps (8) and (9) from turbocharger (11). Discard clamps.
- (8) Remove hose clamp (12) from air intake pipe assembly (4). Discard clamp.
- (9) Remove air intake pipe assembly (4) from air cleaner elbow (13).
- (10) Remove hose clamp (14) on air cleaner elbow (13). Discard hose clamp.
- (11) Remove air cleaner elbow (13) from air cleaner (15).
- (12) Remove clamp (16) from aspirator hose (17). Discard clamp.
- (13) Remove aspirator hose (17) from dust cup (18).



4-7. AIR INTAKE DUCTING REPLACEMENT (CONT).

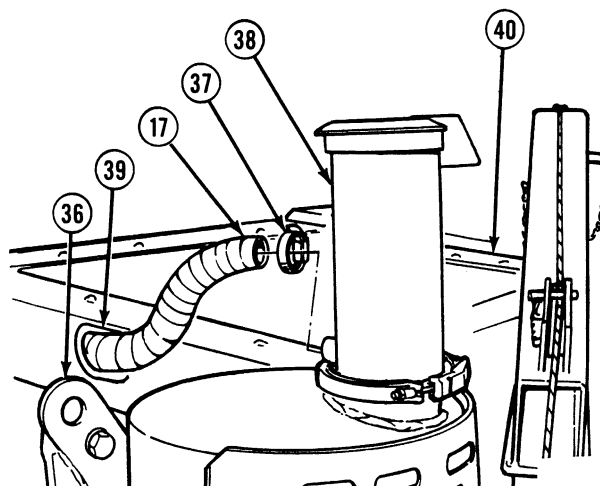


- (14) Remove two screws (19), lockwashers (20), washers (21) and cushion clips (22) from radiator side supports (23). Discard lockwashers.
- (15) Remove two cushion clips (22) from aspirator hose (17).



- (16) Remove two locknuts (24), screws (25) and clamps (26) and (27) from two brackets (28). Discard locknuts.
- (17) Remove locknut (29), screw (30) and clamp (31) from hose assembly (2). Discard locknut.
- (18) Remove two clamps (26) from hose assembly (2).
- (19) Remove locknut (32), screw (33) and bracket (28) from fan support bracket (34). Discard locknut.
- (20) Remove hose assembly (2) from air compressor fitting (35).
- (21) Remove hose assembly (2) from truck (36).

- (22) Loosen clamp (37) on aspirator hose (17).
- (23) Remove aspirator hose (17) and clamp (37) from muffler stack (38).
- (24) Remove aspirator hose (17) from truck (36).
- (25) Remove quick edge molding (39) from rear skin (40).

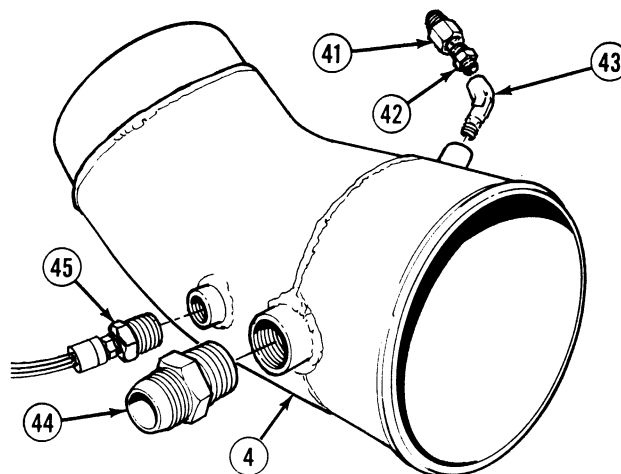


- (26) Remove straight adapter (41) from pipe nipple (42).

NOTE

Note position of elbow and pipe nipple prior to removal.

- (27) Remove pipe nipple (42) from elbow (43).
- (28) Remove elbow (43) from air intake pipe assembly (4).
- (29) Remove straight adapter (44) from air intake pipe assembly (4).
- (30) Remove fitting (45) from air intake pipe assembly (4).



b. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound to fitting (45).

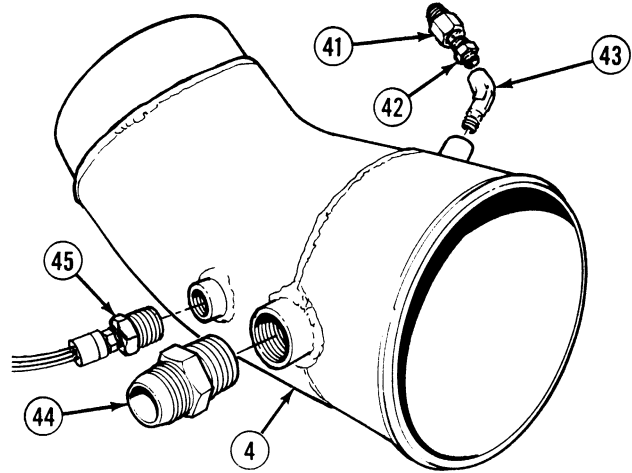
4-7. AIR INTAKE DUCTING REPLACEMENT (CONT).

- (2) Install fitting (45) in air intake pipe assembly (4).
- (3) Apply sealing compound to straight adapter (44).
- (4) Install straight adapter (44) in air intake pipe assembly (4).
- (5) Apply sealing compound to elbow (43).

NOTE

Install elbow in position as noted during removal.

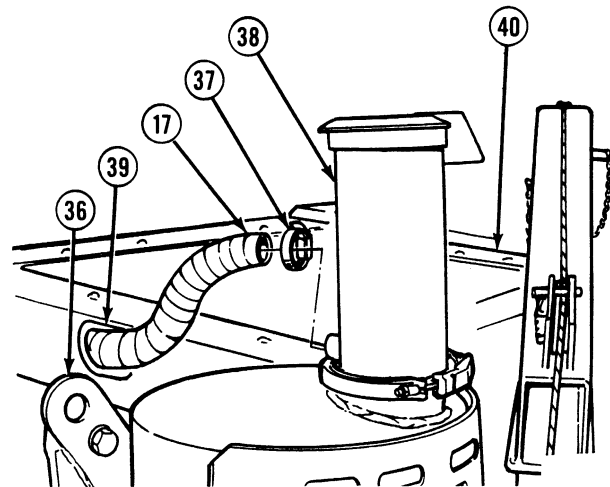
- (6) Install elbow (43) in air intake pipe assembly (4).
- (7) Apply sealing compound to pipe nipple (42).

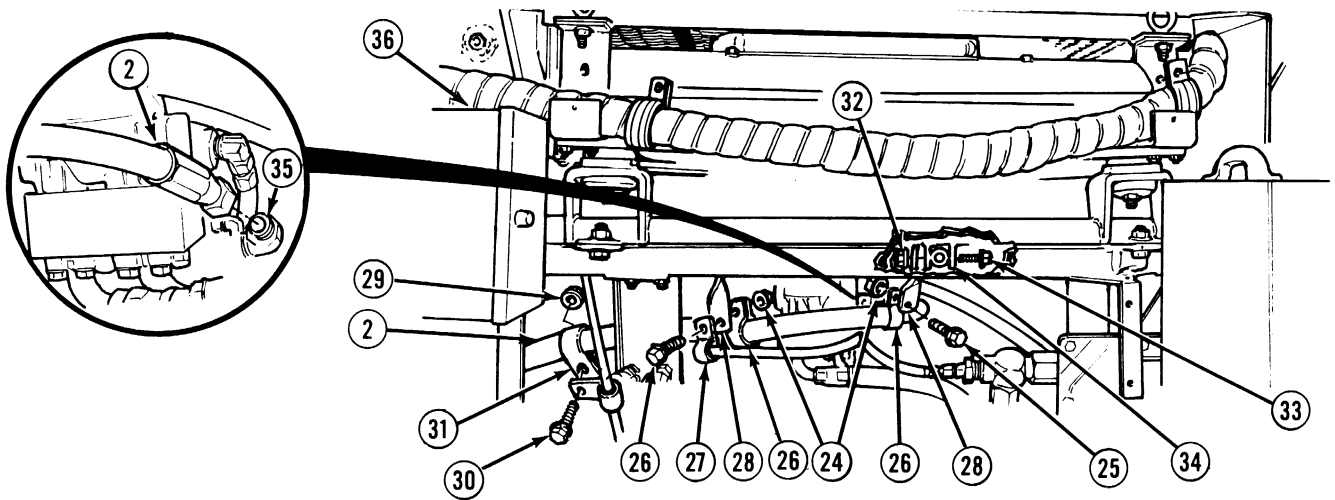


CAUTION

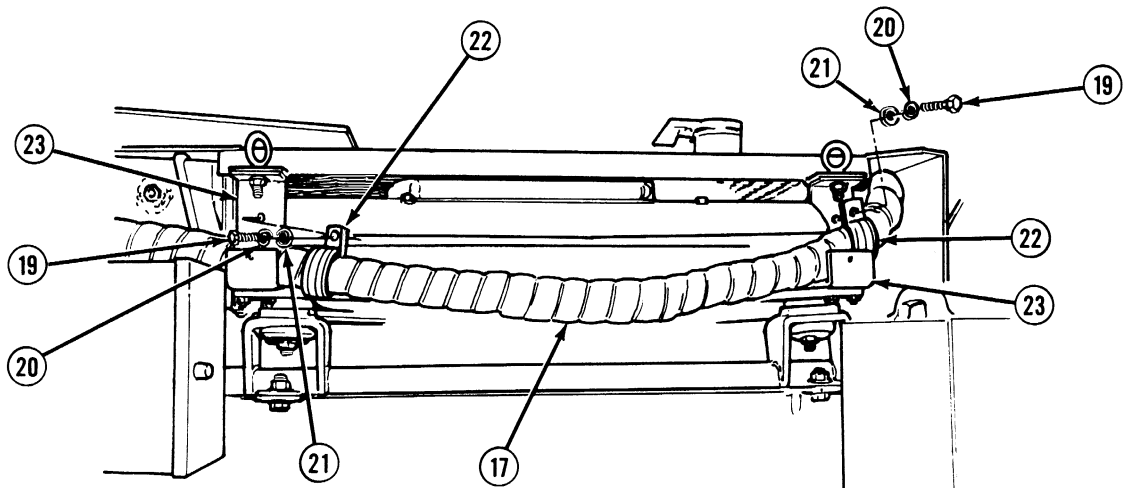
Ensure filter side of pipe nipple is installed away from elbow. Failure to comply may result in damage to equipment.

- (8) Install pipe nipple (42) in elbow (43).
- (9) Apply sealing compound to straight adapter (41).
- (10) Install straight adapter (41) in pipe nipple (42).
- (11) Install quick edge molding (39) on rear skin (40).
- (12) Position aspirator hose (17) in truck (36).
- (13) Install clamp (37) and aspirator hose (17) on muffler stack (38).





- (14) Position hose assembly (2) in truck (36).
- (15) Install hose assembly (2) on air compressor fitting (35).
- (16) Install bracket (28) on fan support bracket (34) with screw (33) and locknut (32).
- (17) Position two clamps (26) on hose assembly (2).
- (18) Install two clamps (26) and clamp (27) on two brackets (28) with two screws (25) and locknuts (24).
- (19) Install clamp (31) on hose assembly (2) with screw (30) and locknut (29).



- (20) Position two cushion clips (22) on aspirator hose (17).

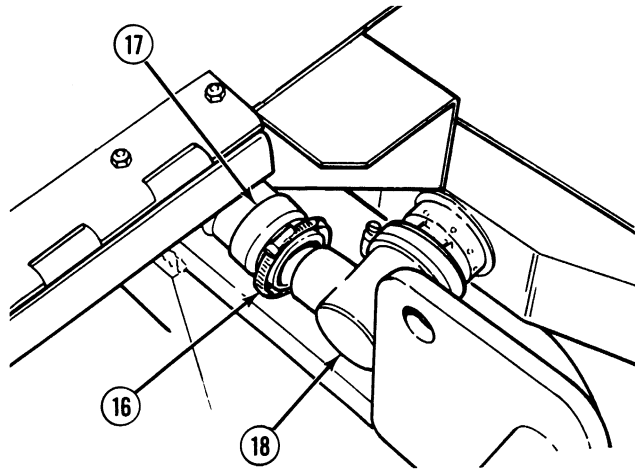
NOTE

Ensure aspirator hose will reach dust cup prior to tightening screws in Step (21).

- (21) Install two cushion clips (22) on radiator side supports (23) with two washers (21), lockwashers (20) and screws (19).

4-7. AIR INTAKE DUCTING REPLACEMENT (CONT).

- (22) Install clamp (16) and aspirator hose (17) on dust cup (18).

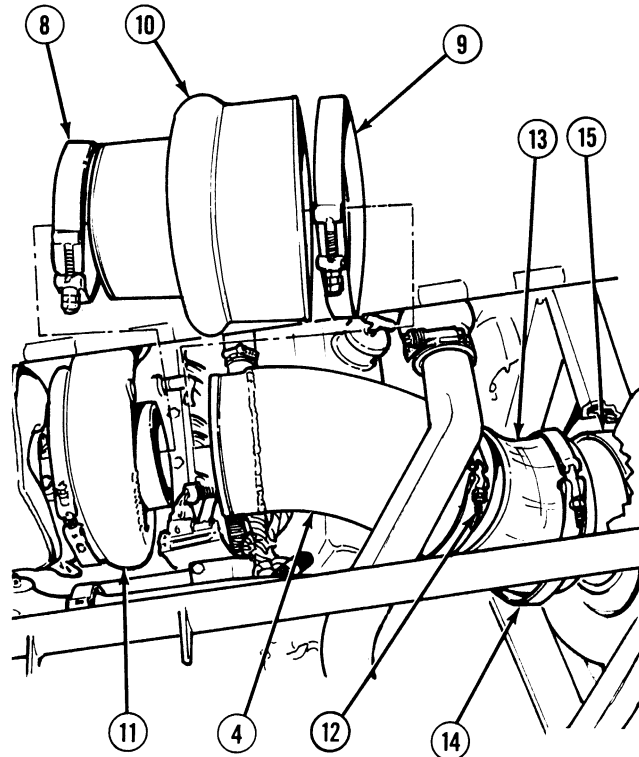


- (23) Position clamp (14) and air cleaner elbow (13) on air cleaner (15).

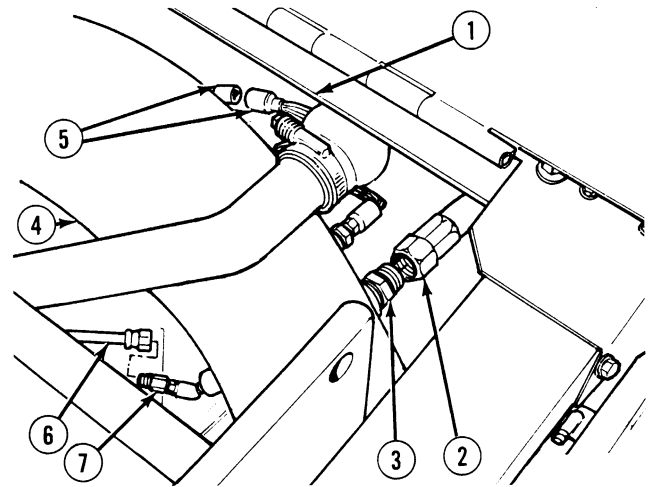
NOTE

Ensure air intake pipe assembly is installed in same position as noted during removal.

- (24) Position clamp (12) and air intake pipe assembly (4) in air cleaner elbow (13). Do not tighten clamp.
- (25) Position clamps (8) and (9) and hose (10) on air intake pipe assembly (4) and turbocharger (11).
- (26) Tighten clamps (8), (9), (12) and (14) on air intake pipe assembly (4) to 40 lb-in (5 N·m).



- (27) Install hose 2381 (6) on fitting (7) on air intake pipe assembly (4).
- (28) Connect MC67 connector (5).
- (29) Install hose assembly 2600 (2) on fitting (3) on air intake pipe assembly (4).
- (30) Close engine cover (1).



c. Follow-On Maintenance:

- Install left skin, (Para 17-15).
- Install left side noise panel, (Para 17-28).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-8. MAIN FUEL TANK AND BRACKETS REPLACEMENT.

This task covers:

- | | |
|------------------------|--------------------------|
| a. Removal | c. Installation |
| b. Cleaning/Inspection | d. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Dispensing Pump (Item 16, Appendix G)
Drum, Storage 57 gal (2) (Item 21, Appendix G)
Gloves, Chemical Oil Protective
(Item 28, Appendix G)
Goggles, Industrial (Item 30, Appendix G)
Hammer, Soft Faced (Item 33, Appendix G)
Pan, drain (6 gal) (Item 46, Appendix G)
Socket Set, Deep Well, 1/2 in.
(Item 60, Appendix G)
Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m])
(Item 95, Appendix G)

Materials/Parts

Adhesive, Spray (Item 16, Appendix C)
Lubricant, Tire (Item 53, Appendix C)
Sealing Compound (Item 72, Appendix C)
Tag, Identification (Item 88, Appendix C)
Locknut (12) (Item 92, Appendix F)
Locknut (8) (Item 106, Appendix F)
Locknut (2) (Item 141, Appendix F)
Lockwasher (4) (Item 172, Appendix F)
Nut, Stop (Item 218, Appendix F)
Tape, Rubber Adhesive (Item 340, Appendix F)

References

TB 43-0212, Purging, Cleaning and Coating
Interior Ferrous and Terne Sheet Vehicle Fuel
Tanks

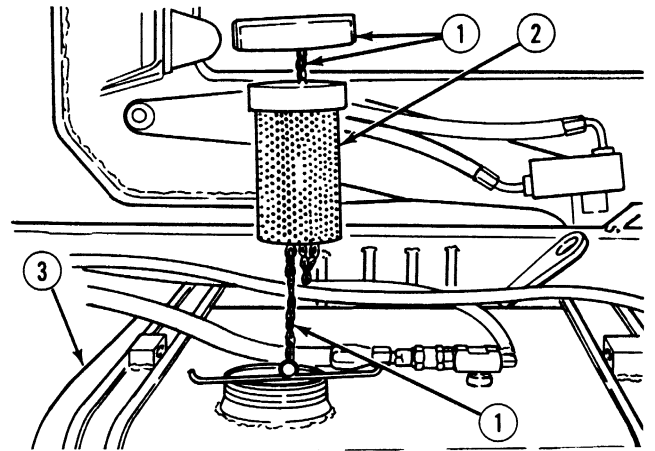
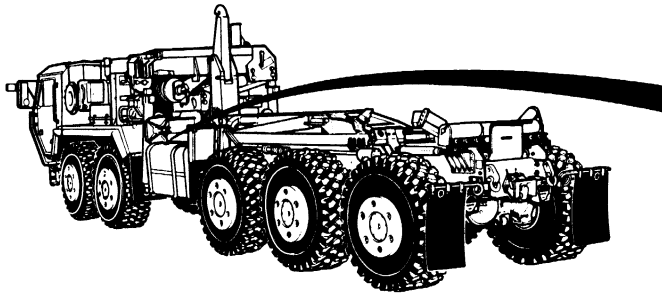
Personnel Required

Two

Equipment Condition

LHS extended, (TM 9-2320-364-10)
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Fuel level sending unit removed, (Para 4-11)
Tread platform assembly removed, (Para 15-9)
Auxiliary fuel tank drained (if equipped),
(Para 4-9)

a. **Removal.**



WARNING

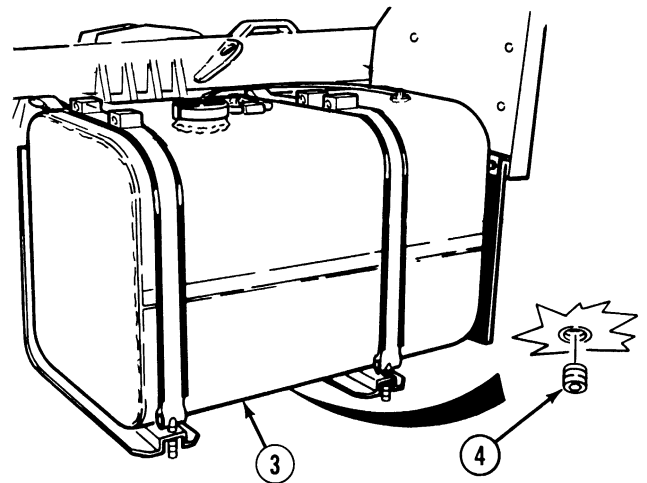
Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.

- (1) Remove cap and chain (1) and strainer (2) from main fuel tank (3).
- (2) Position dispensing pump in main fuel tank (3).
- (3) Pump fuel into storage drum.

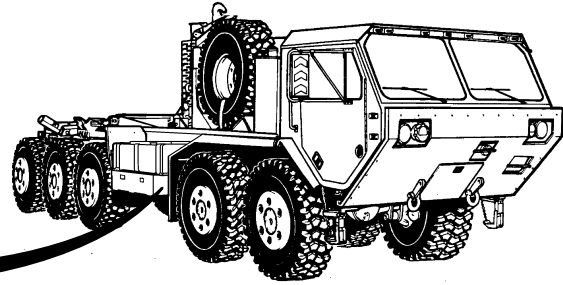
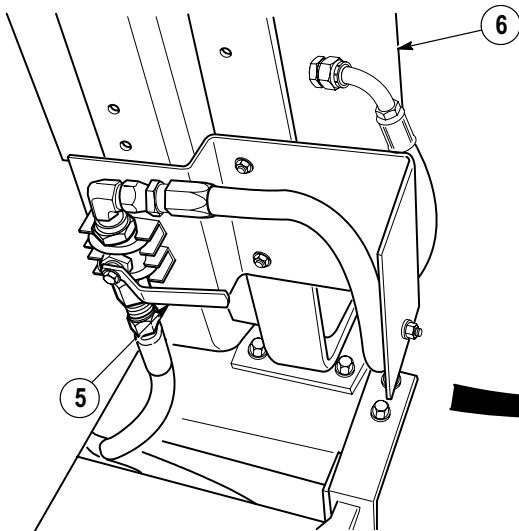
NOTE

- Perform Steps (4) and (5) if truck is not equipped with auxiliary fuel tank.
- Perform Steps (6) through (12) if truck is equipped with auxiliary fuel tank.

- (4) Position drain pan under drain plug (4).
- (5) Remove drain plug (4) from main fuel tank (3) to drain excess fuel.



4-8. MAIN FUEL TANK AND BRACKETS REPLACEMENT (CONT).

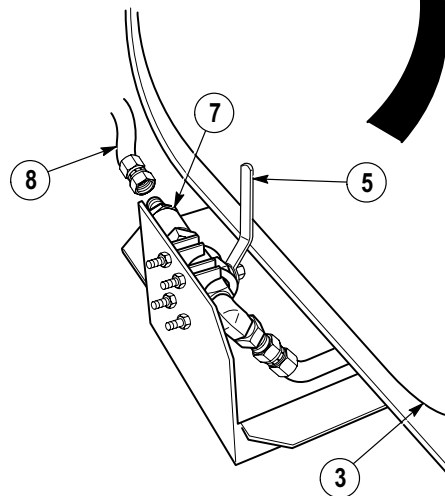
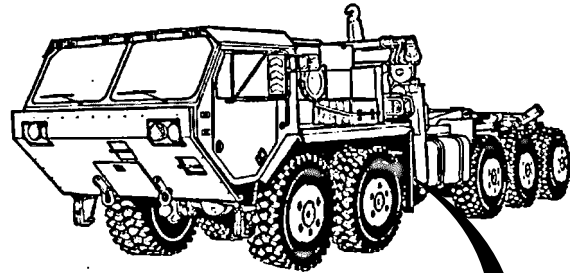


- (6) Close fuel shutoff valve (5) on auxiliary fuel tank (6) and main fuel tank (3).
- (7) Position drain pan under safety valve (7) and end of hose 2320 (8).

NOTE

- Note position of reducer prior to removal.
- Tag and mark all hoses.

- (8) Disconnect hose 2320 (8) from safety valve (7).



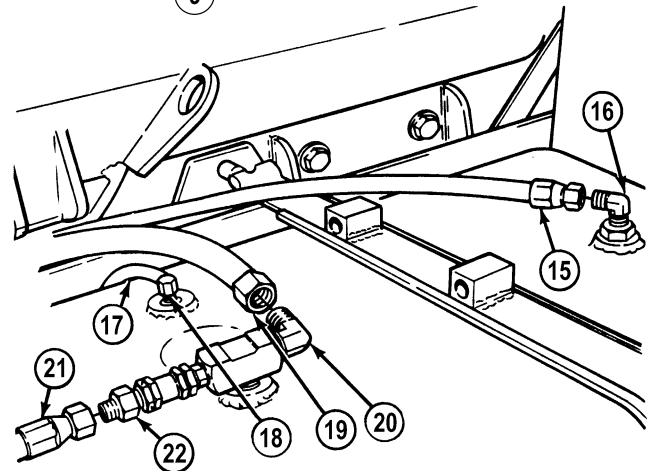
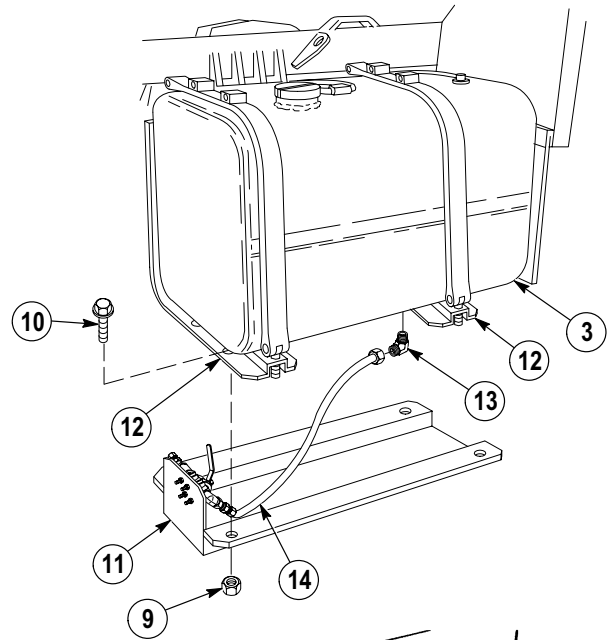
CAUTION

Ensure fuel tank guard is supported until hose 2320 is disconnected from reducer or damage to equipment may result.

NOTE

Tag and mark all hoses prior to removal.

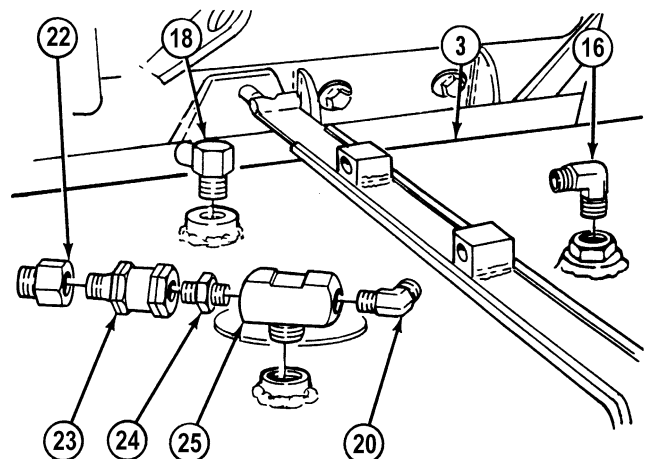
- (9) Remove six locknuts (9), screws (10) and fuel tank guard (11) from main fuel tank brackets (12).
- (10) Position drain pan under reducer (13) and end of hose 2320 (14).
- (11) Disconnect hose 2320 (14) from reducer (13) on main fuel tank (3) to drain excess fuel.
- (12) Remove reducer (13) from main fuel tank (3).
- (13) Disconnect hose 2260 (15) from elbow (16).
- (14) Disconnect overflow hose (17) from tank vent valve (18).
- (15) Disconnect hose 2919 (19) from elbow (20).
- (16) Disconnect hose 2259 (21) from reducer (22).



NOTE

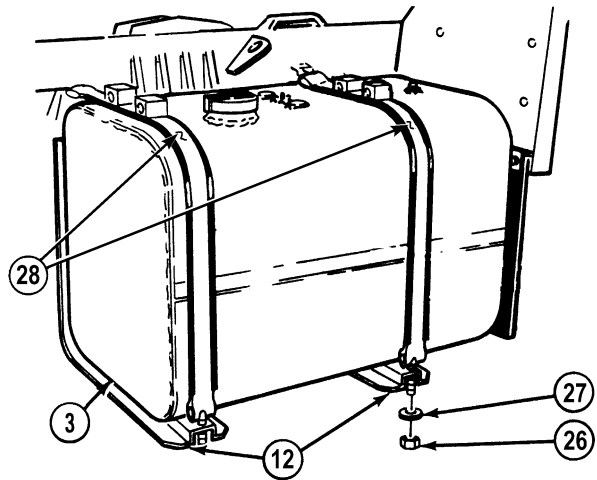
Note position of elbows, reducers, tees and check valve prior to removal.

- (17) Remove elbow (16) from main fuel tank (3).
- (18) Remove tank vent valve (18) from main fuel tank (3).
- (19) Remove elbow (20), reducer (22), check valve (23), reducer (24) and tee (25) from main fuel tank (3).



4-8. MAIN FUEL TANK AND BRACKETS REPLACEMENT (CONT).

- (20) Remove two locknuts (26), washers (27) and position two fuel tank straps (28) up and out of the way. Discard locknuts.
- (21) With the aid of an assistant, remove main fuel tank (3) from fuel tank brackets (12). Lower main fuel tank to ground.

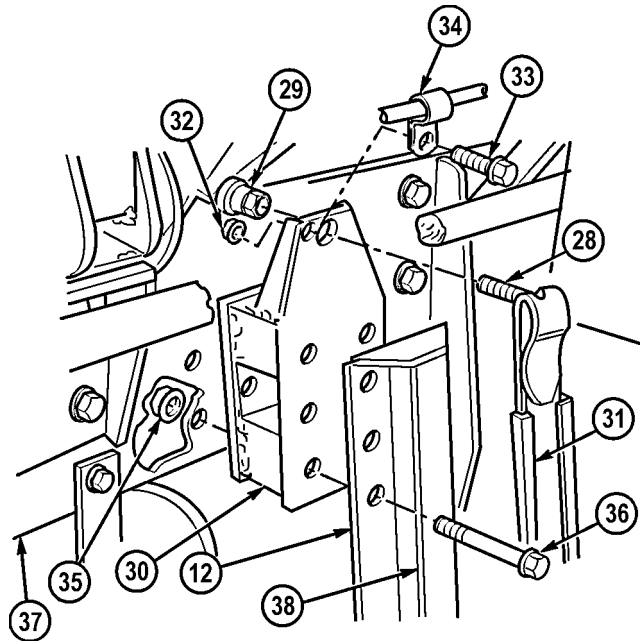


- (22) Remove two nuts (29) and fuel tank straps (28) from brackets (30).

NOTE

Perform Step (23) if strap liners are damaged.

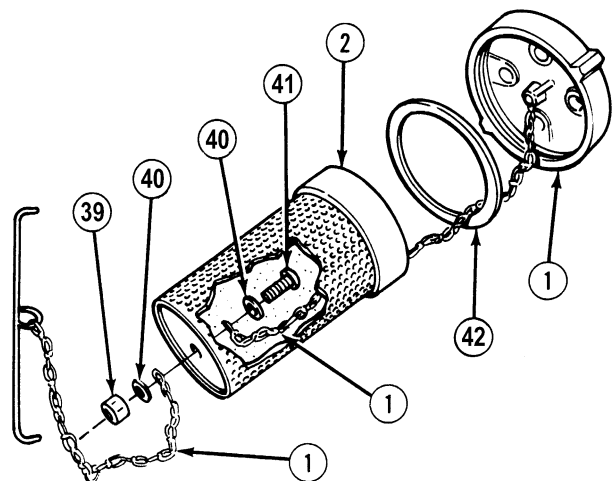
- (23) Remove strap liners (31) from each fuel tank strap (28).
- (24) Remove two locknuts (32), screws (33) and clamps (34) from brackets (30). Discard locknuts.
- (25) Remove 12 locknuts (35), screws (36), two fuel tank brackets (12) and two brackets (30) from frame (37). Discard locknuts.



NOTE

Perform Step (26) if rubber adhesive tape is damaged.

- (26) Remove rubber adhesive tape (38) from each fuel tank bracket (19). Discard rubber adhesive tape.
- (27) Remove stop nut (39), two washers (40), screw (41) and cap and chain (1) from strainer (2). Discard stop nut.
- (28) Remove gasket (42) from cap and chain (1).

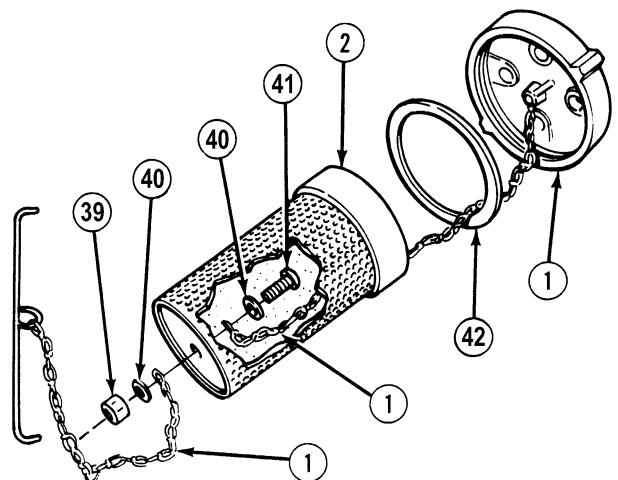


b. Cleaning/Inspection.**WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
 - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- (1) Clean fuel tank straps and fuel tank brackets with drycleaning solvent. Scrape residue from fuel tank brackets.
 - (2) Clean strap liners with soapy water. Rinse liners with clean water.
 - (3) Inspect fuel tank brackets and fuel tank straps for cracks, breaks or corrosion.
 - (4) Inspect strap liners and rubber adhesive tape for brittleness, cracks, or breaks.
 - (5) Purge and clean fuel tank (TB 43-0212) as required.
 - (6) Inspect fuel tank for cracks or broken welds.
 - (7) Replace all damaged parts.

c. Installation.

- (1) Install gasket (42) on cap and chain (1).
- (2) Install cap and chain (1), screw (41), two washers (40) and stop nut (39) on strainer (2).



4-8. MAIN FUEL TANK AND BRACKETS REPLACEMENT (CONT).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

Perform Steps (3) and (4) if adhesive tape was removed.

- (3) Apply spray adhesive to two fuel tank brackets (12) and allow to dry.
- (4) Install rubber adhesive tape (38) by removing protective backing and installing on two fuel tank brackets (12).
- (5) Install two fuel tank brackets (12) and brackets (30) with 12 screws (36) and locknuts (35) on frame (37). Tighten locknuts to 210 lb-ft (285 N·m).
- (6) Install two clamps (34) on brackets (30) with screws (33) and locknut (32).

NOTE

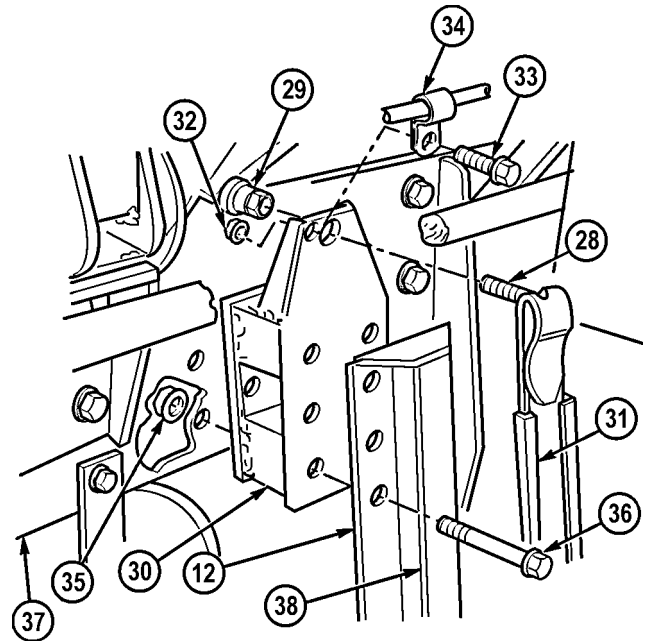
Perform Step (7) if strap liners were removed.

- (7) Install strap liners (31) on each fuel tank strap (28).

NOTE

Fuel tank straps are properly installed when three threads are showing through end of nut.

- (8) Install two fuel tank straps (28) on brackets (30) with two nuts (29).

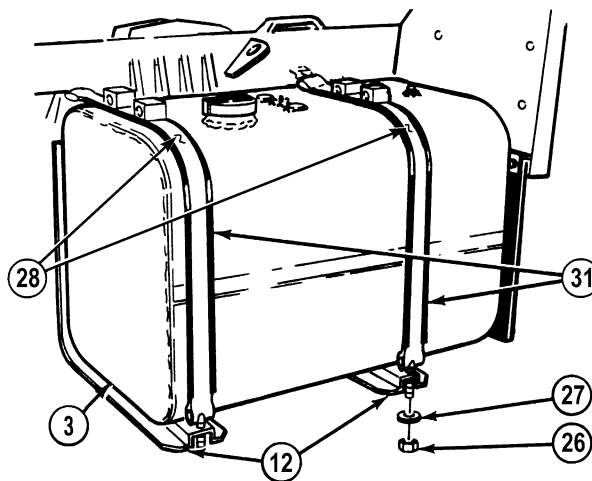


- (9) With the aid of an assistant, position main fuel tank (3) on fuel tank brackets (12).
- (10) Coat both strap liners (31) and main fuel tank (3) contact area with tire lubricant.

CAUTION

Do not overtighten locknuts or fuel tank straps will crush fuel tank.

- (11) Secure main fuel tank (3) with two fuel tank straps (28), washers (27) and locknuts (26). Tighten locknuts to 25 to 30 lb-ft (34 to 41 N·m).
- (12) Using a soft faced hammer, tap on fuel tank straps (28) and retighten as necessary until torque remains at 25 to 30 lb-ft (34 to 41 N·m).



4-8. MAIN FUEL TANK AND BRACKETS REPLACEMENT (CONT).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Do not coat last two threads of fittings with sealing compound. Sealing compound will contaminate fuel system and cause damage to equipment.

NOTE

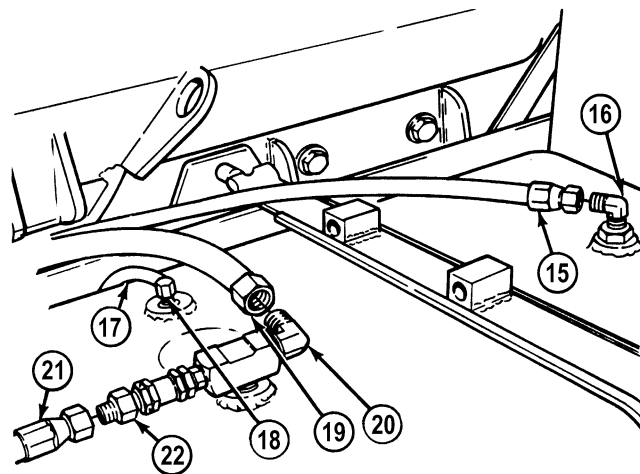
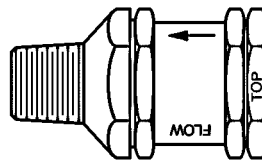
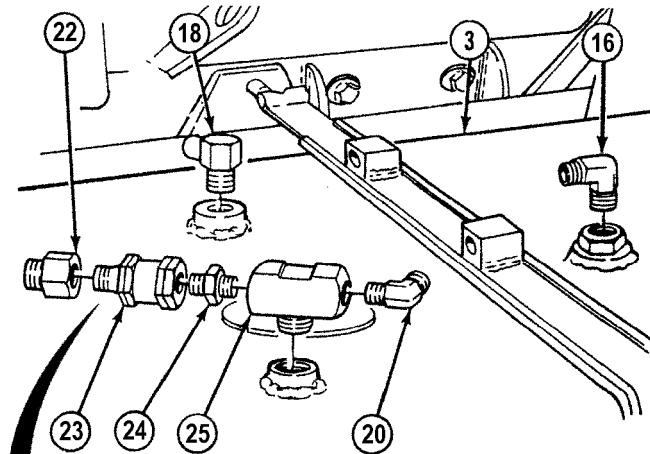
Install elbows, reducers, tees and check valve as noted prior to removal.

- (13) Coat threads of tee (25), reducer (24), reducer (22) and elbow (20) with sealing compound.

NOTE

Install check valve with the word "TOP" positioned on top.

- (14) Install tee (25), reducer (24), check valve (23), reducer (22) and elbow (20) on main fuel tank (3).
- (15) Coat threads of elbow (16) and tank vent valve (18) with sealing compound.
- (16) Install elbow (16) and tank vent valve (18) on main fuel tank (3).
- (17) Connect hose 2259 (21) to reducer (22).
- (18) Connect hose 2919 (19) to elbow (20).
- (19) Connect overflow hose (17) to tank vent valve (18).
- (20) Connect hose 2260 (15) to elbow (16).

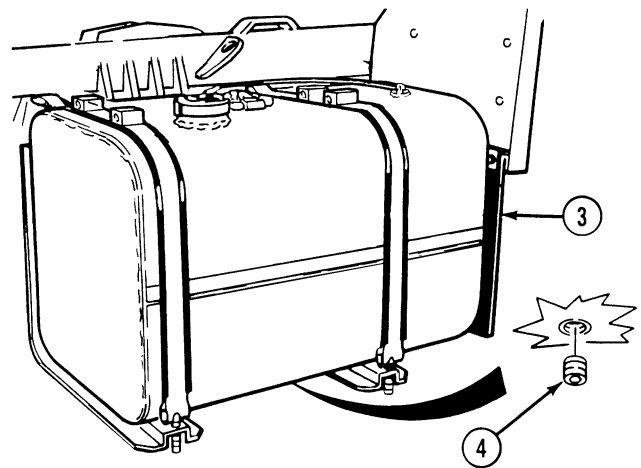


WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

- Perform Steps (21) and (22) if truck is not equipped with auxiliary fuel tank.
- Perform Steps (23) through (27) if truck is equipped with auxiliary fuel tank.

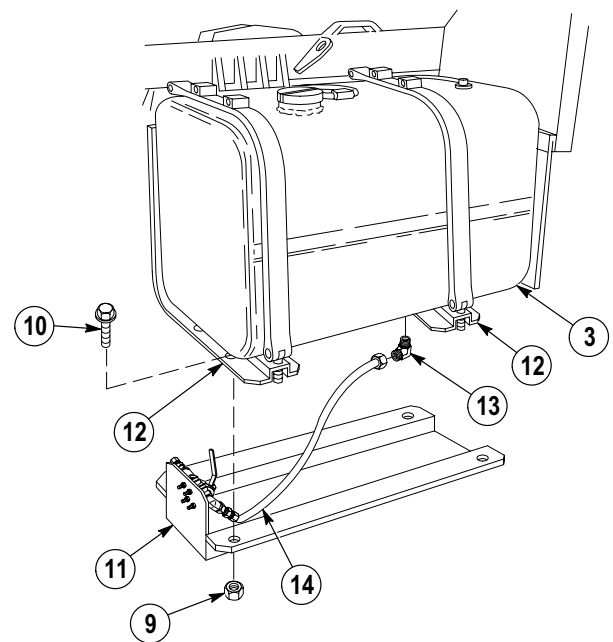


- (21) Apply sealing compound on threads of drain plug (4).
- (22) Install drain plug (4) in main fuel tank (3).
- (23) Apply sealing compound to threads of reducer (13).
- (24) Install reducer (13) in main fuel tank (3).

CAUTION

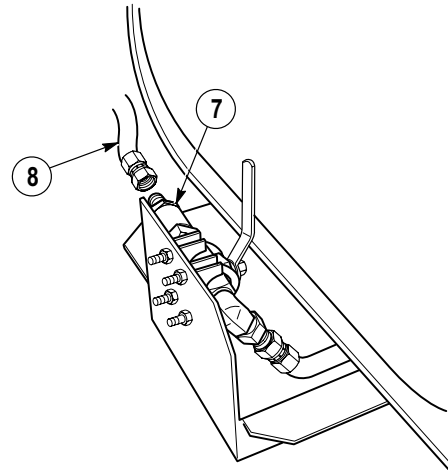
Ensure fuel tank guard is supported during installation or damage to equipment may result.

- (25) Attach hose 2320 (14) to reducer (13).
- (26) Install fuel tank guard (11), six screws (10) and locknuts (9) to fuel tank brackets (12).

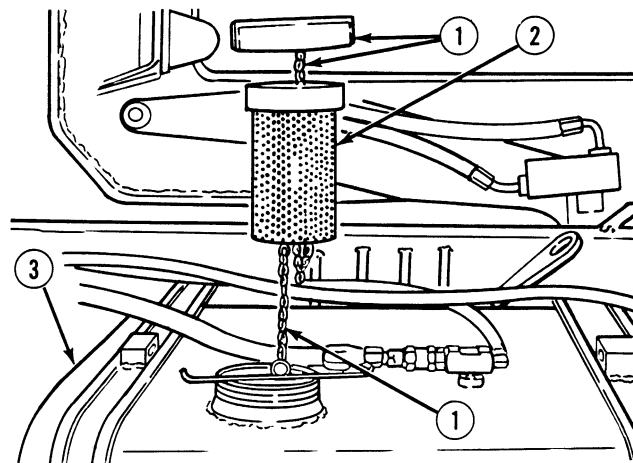


4-8. MAIN FUEL TANK AND BRACKETS REPLACEMENT (CONT).

(27) Connect hose 2320 (8) to safety valve (7).



(28) Install strainer (2) and cap and chain (1) in fuel tank (3).



d. Follow-On Maintenance:

- Install tread platform assembly, (Para 15-9)
- Install fuel level sending unit, (Para 4-11).
- Fill main fuel tank, (TM 9-2320-364-10).
- Check fuel tank and connections for leaks. Tighten any connections that leak.
- Remove wheel chocks, (TM 9-2320-364-10).
- LHS in transit position, (TM 9-2320-364-10).

END OF TASK

4-9. AUXILIARY FUEL TANK AND BRACKETS REPLACEMENT.

This task covers:

- | | |
|------------------------|--------------------------|
| a. Removal | c. Installation |
| b. Cleaning/Inspection | d. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Dispensing Pump (Item 16, Appendix G)
Drum, Storage 57 gal (Item 21, Appendix G)
Gloves, Chemical Oil Protective
(Item 28, Appendix G)
Goggles, Industrial (Item 30, Appendix G)
Hammer, Soft Faced (Item 33, Appendix G)
Pan, drain (6 gal) (Item 46, Appendix G)
Socket Set, Deep Well, 1/2 in.
(Item 60, Appendix G)
Socket Set, 3/4 in. (Item 61, Appendix G)
Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m])
(Item 95, Appendix G)

Materials/Parts

Adhesive, Spray (Item 16, Appendix C)
Lubricant, Tire (Item 53, Appendix C)
Sealing Compound (Item 72, Appendix C)
Tag, Identification (Item 88, Appendix C)
Locknut (21) (Item 92, Appendix F)
Locknut (6) (Item 93, Appendix F)
Locknut (6) (Item 105, Appendix F)
Locknut (9) (Item 106, Appendix F)
Lockwasher (8) (Item 172, Appendix F)
Nut, Stop (Item 218, Appendix F)
Rubber Liner (Item 291, Appendix F)

References

TB 43-0212, Purging, Cleaning and Coating
Interior Ferrous and Terne Sheet Vehicle Fuel
Tanks

Personnel Required

Two

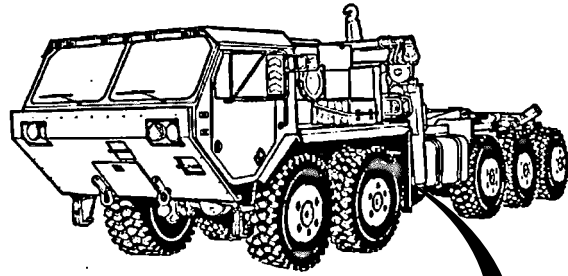
Equipment Condition

LHS extended, (TM 9-2320-3654-10)
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Main fuel tank drained, (Para 4-8)
Auxiliary fuel tank tread platform removed,
(Para 15-24)

4-9. AUXILIARY FUEL TANK AND BRACKETS REPLACEMENT (CONT).

a. Removal

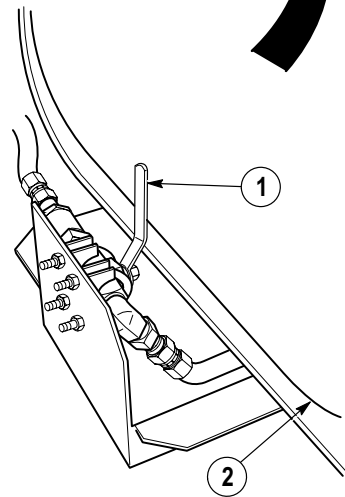
- (1) Close fuel shutoff valve (1) on main fuel tank (2).



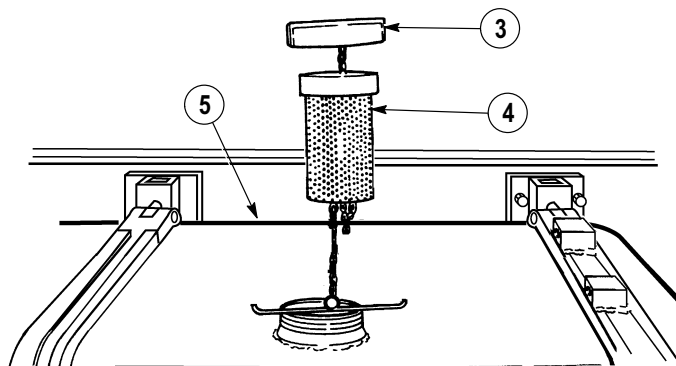
WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death:

- Keep fuel away from open flame or any spark (ignition source).
- Keep extinguisher within easy reach when working with fuel or on a fuel system.



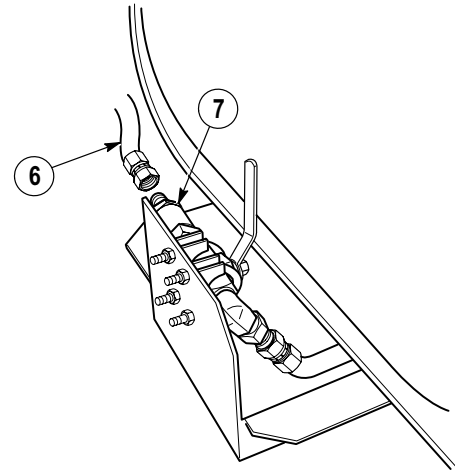
- (2) Remove cap and chain (3) and strainer (4) from auxiliary fuel tank (5).
- (3) Position dispensing pump in auxiliary fuel tank (5).
- (4) Pump fuel into storage drums.



NOTE

- Perform Steps (5) through (8) if auxiliary fuel tank fittings on main fuel tank are damaged.
- Tag and mark all hoses.

- (5) Disconnect hose 2320 (6) from safety valve (7).



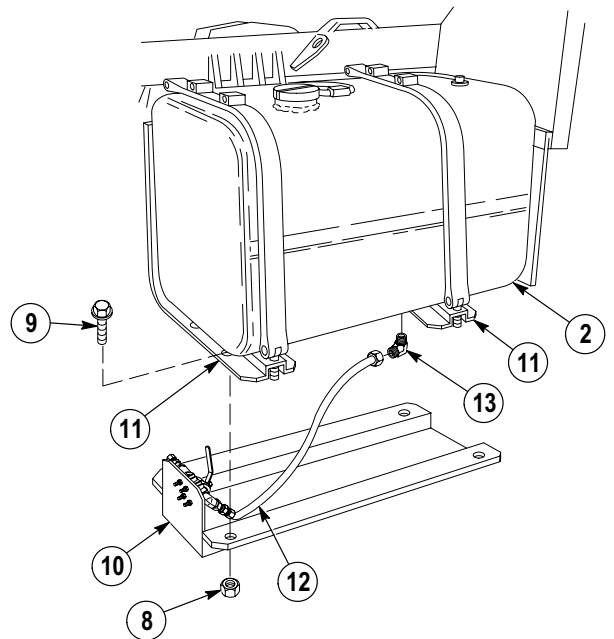
- (6) Remove six locknuts (8), screws (9) and fuel tank guard (10) from fuel tank brackets (11). Discard locknuts.

- (7) Disconnect hose 2320 (12) from reducer (13) on main fuel tank (2).

NOTE

Note position of reducer prior to removal.

- (8) Remove reducer (13) from main fuel tank (2).



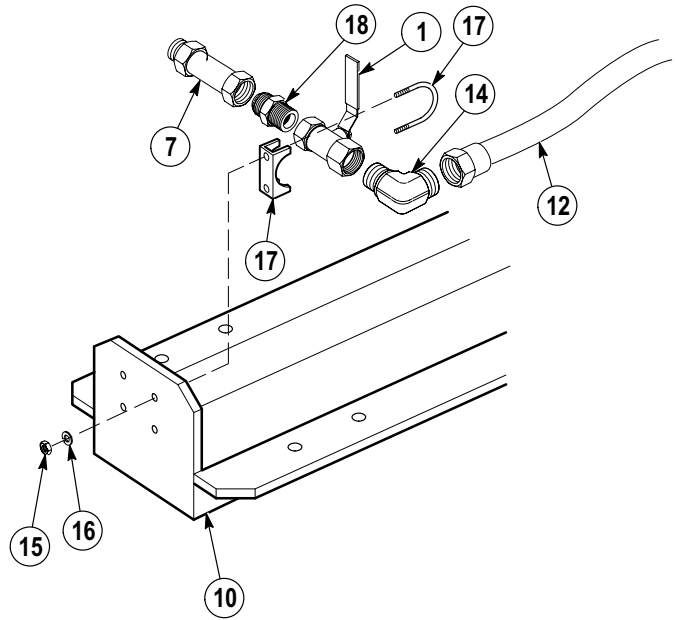
4-9. AUXILIARY FUEL TANK AND BRACKETS REPLACEMENT (CONT).

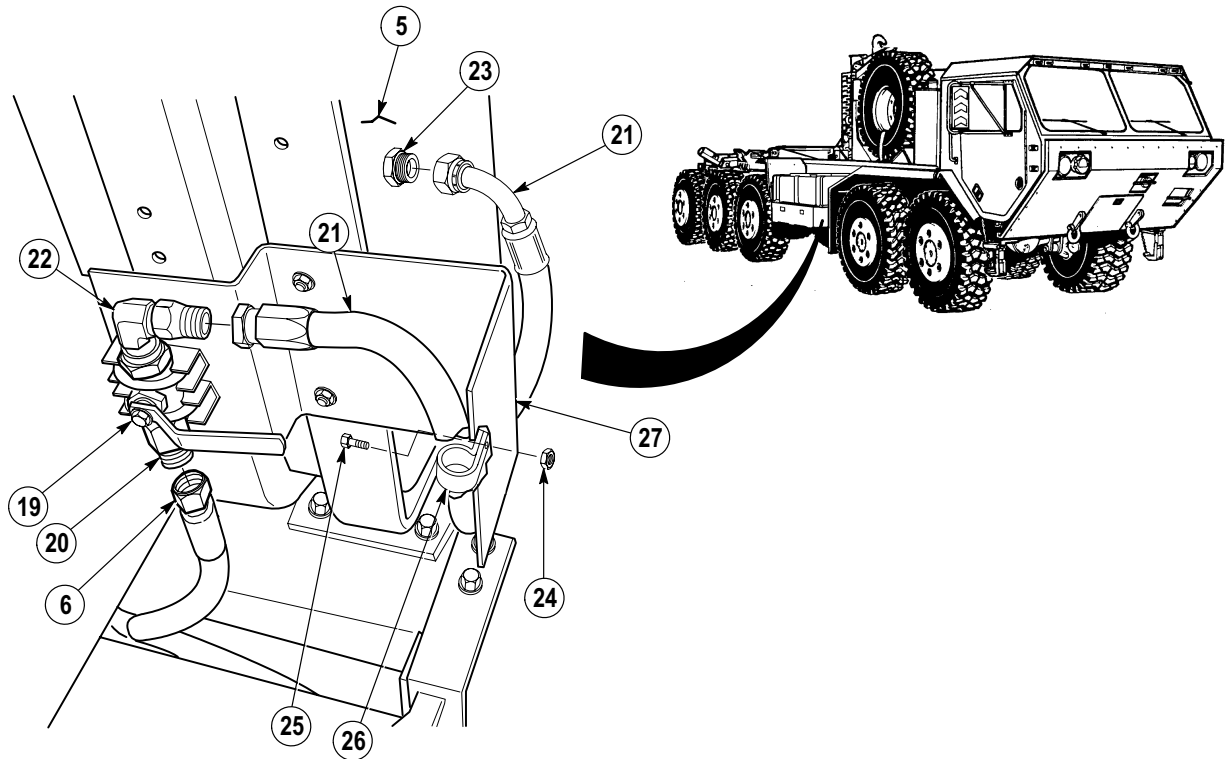
- (9) Disconnect hose 2320 (12) from elbow (14).
- (10) Remove four nuts (15), lockwashers (16), two clamps (17) and fuel shutoff valve (1) from fuel tank guard (10). Discard lockwashers.

NOTE

Note position of elbows, fuel shutoff valves, safety valves and adapters prior to removal.

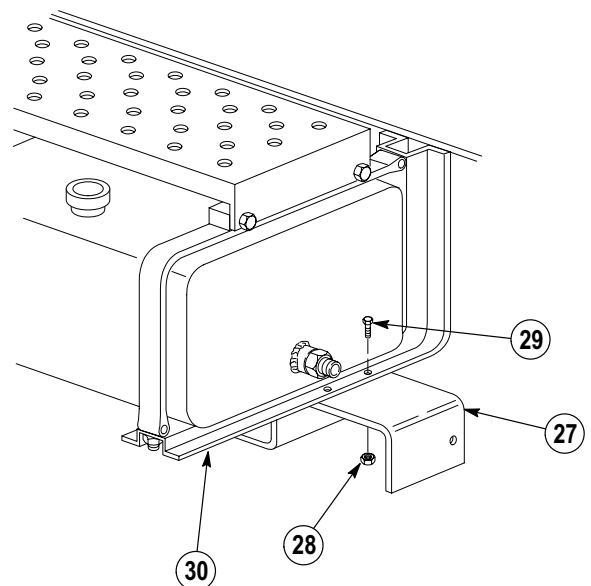
- (11) Disassemble elbow (14), fuel shutoff valve (1), adapter (18) and safety valve (7).





- (12) Position drain pan under fuel shutoff valve (19) on auxiliary fuel tank (5).
- (13) Disconnect hose 2320 (6) from safety valve (20).
- (14) Open fuel shutoff valve (19) on auxiliary fuel tank (5) to drain excess fuel.
- (15) Disconnect hose 2320 (21) from elbow (22).
- (16) Disconnect hose 2320 (21) from reducer (23).
- (17) Remove locknut (24), screw (25) and cushion clip (26) from fuel tank guard (27). Discard locknut.
- (18) Remove hose 2320 (21) from cushion clip (26).

- (19) Remove two locknuts (28), screws (29) and fuel tank guard (27) from front fuel tank bracket (30).



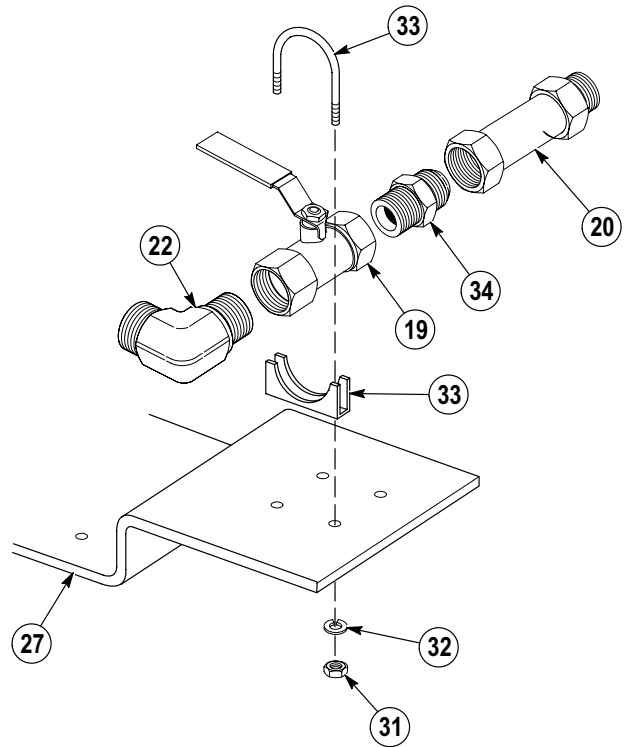
4-9. AUXILIARY FUEL TANK AND BRACKETS REPLACEMENT (CONT).

- (20) Remove four nuts (31), lockwashers (32), two clamps (33) and fuel shutoff valve (19) from fuel tank guard (27). Discard lockwashers.

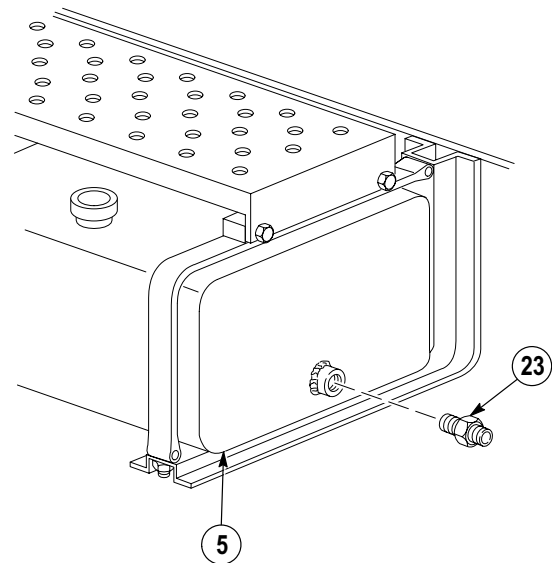
NOTE

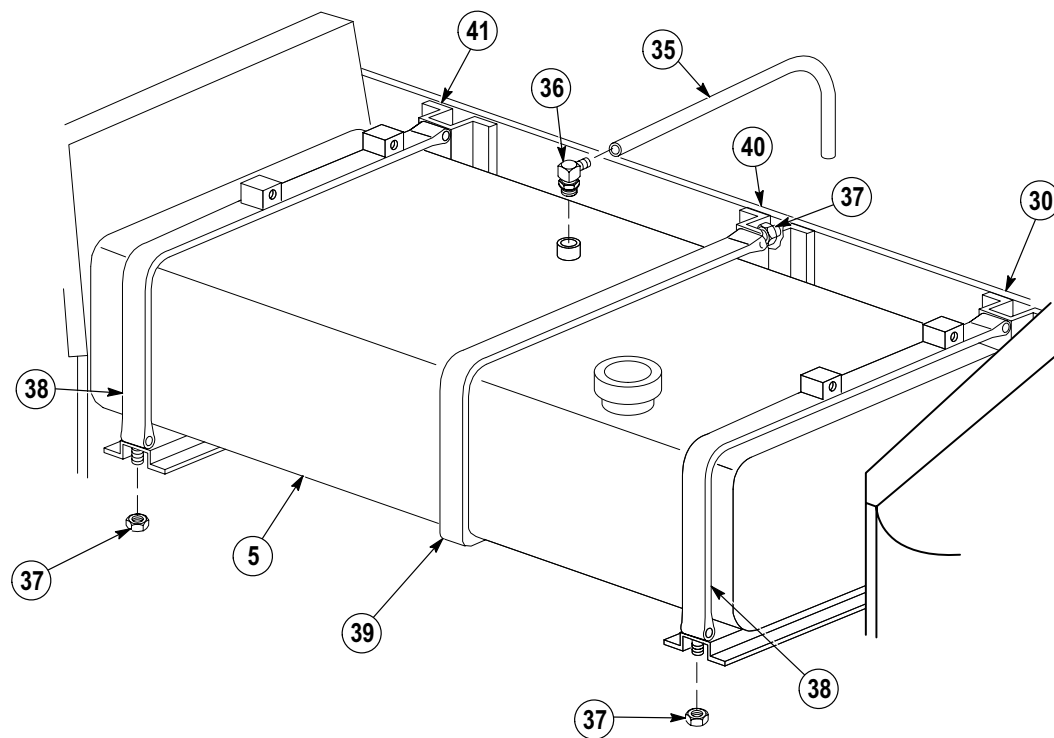
Note position of reducers, elbows, safety valve, fuel shutoff valves and adapters prior to removal.

- (21) Disassemble elbow (22), fuel shutoff valve (19), adapter (34) and check valve (20).



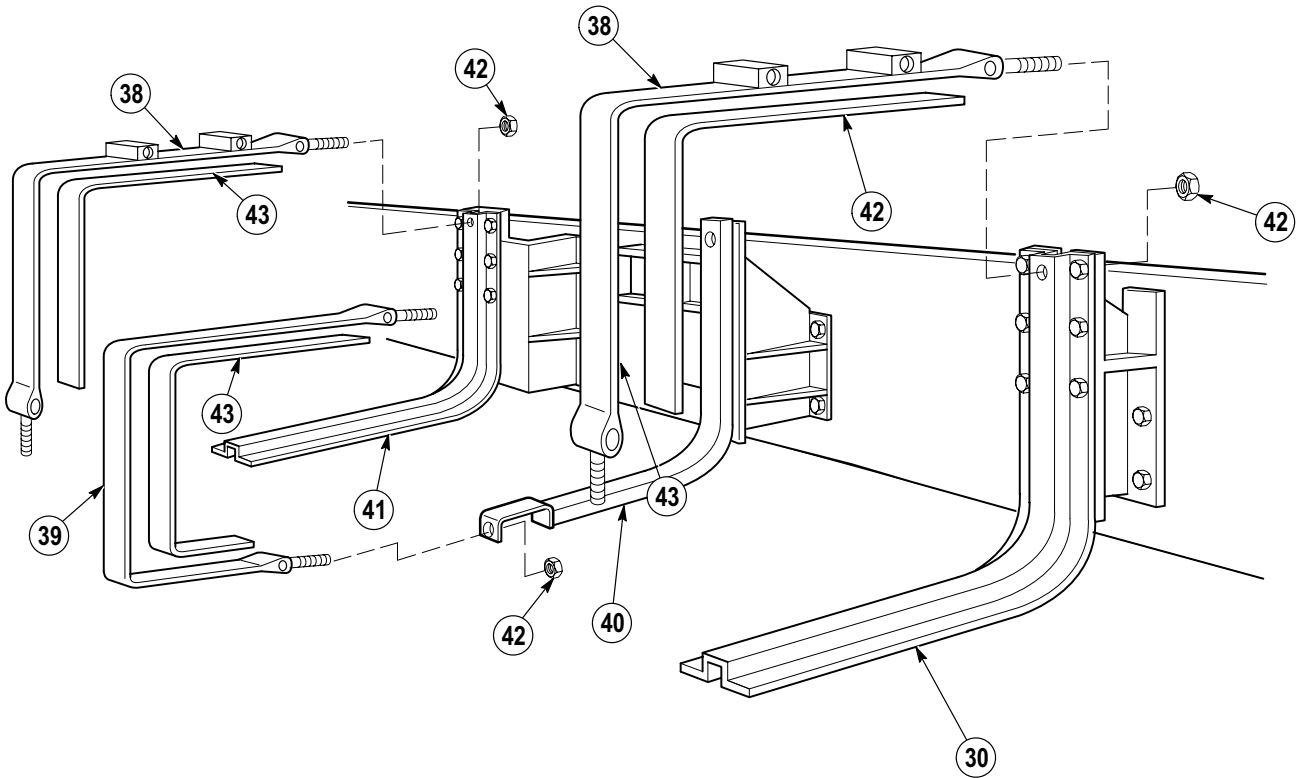
- (22) Remove reducer (23) from auxiliary fuel tank (5).



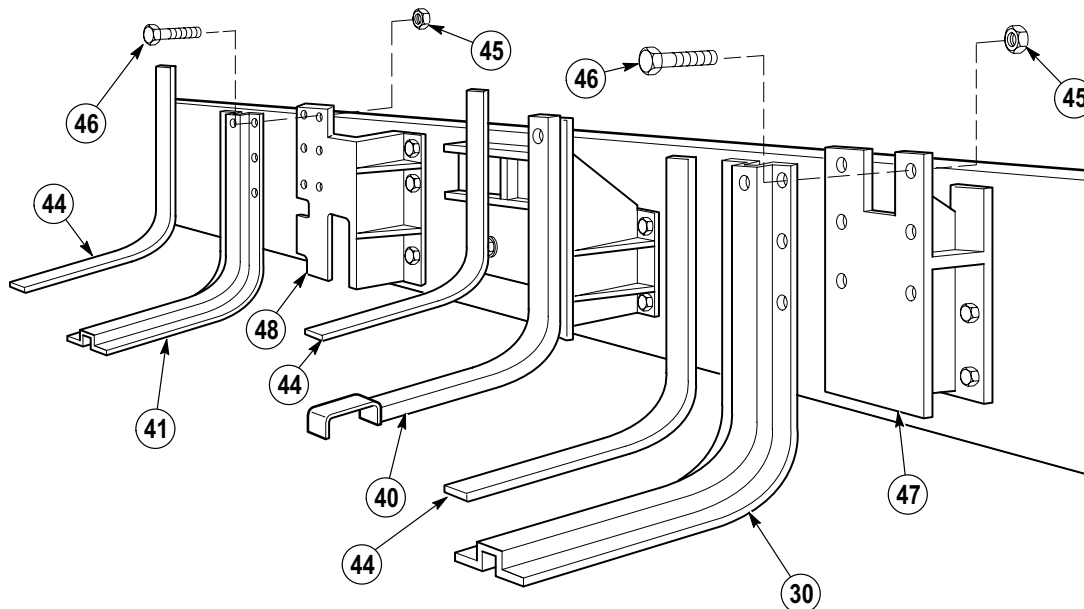


- (23) Disconnect overflow hose (35) from tank vent valve (36).
- (24) Remove tank vent valve (36) from auxiliary fuel tank (5).
- (25) Remove three locknuts (37) from two fuel tank straps (38) and fuel tank strap (39). Discard locknuts.
- (26) Position two fuel tank straps (38) up and out of way.
- (27) Position fuel tank strap (39) down and out of way.
- (28) With the aid of an assistant, remove auxiliary fuel tank (5) from fuel tank brackets (30), (40) and (41). Lower auxiliary fuel tank to ground.

4-9. AUXILIARY FUEL TANK AND BRACKETS REPLACEMENT (CONT).



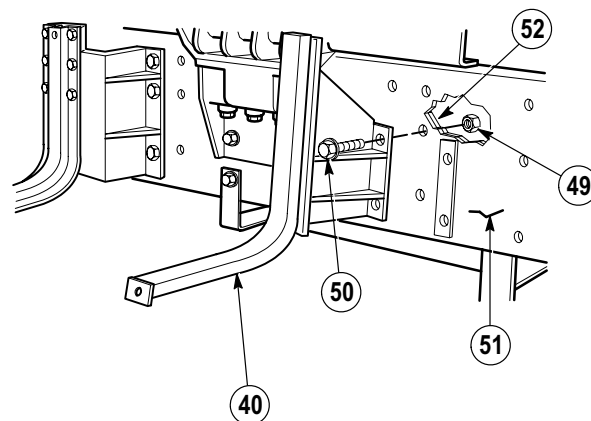
- (29) Remove three locknuts (42), two fuel tank straps (38) and fuel tank strap (39) from fuel tank brackets (30), (40) and (41).
- (30) Remove strap liners (43) from two fuel tank straps (38) and fuel tank strap (39).



NOTE

Perform Step (31) if rubber liner is damaged.

- (31) Remove rubber liners (44) from fuel tank brackets (30), (40) and (41). Discard rubber liner.
- (32) Remove 12 locknuts (45), screws (46) and fuel tank brackets (30) and (41) from mounting brackets (47) and (48). Discard locknuts.
- (33) Remove six locknuts (49), screws (50) and middle fuel tank bracket (40) from frame (51) and transfer case bracket (52). Discard locknuts.

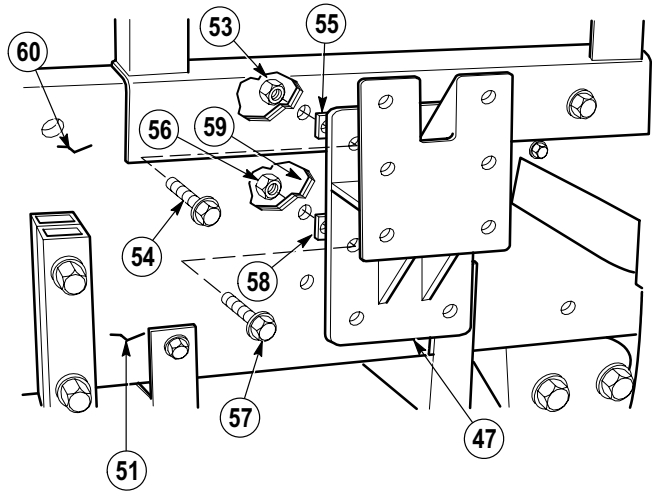


4-9. AUXILIARY FUEL TANK AND BRACKETS REPLACEMENT (CONT).

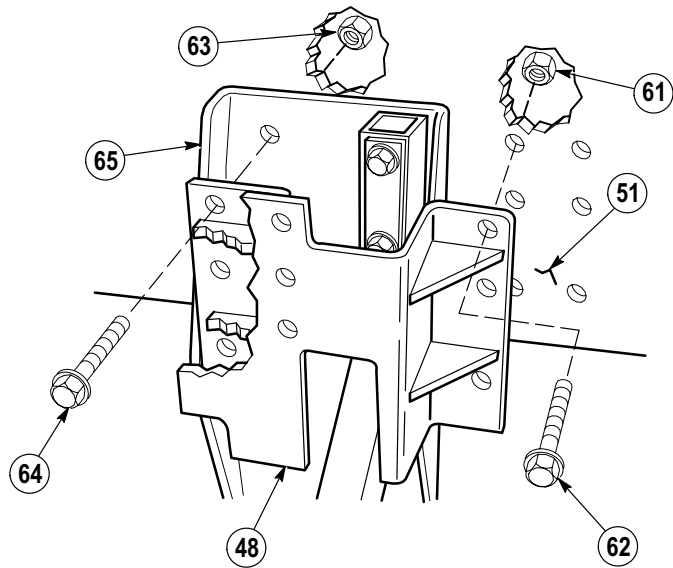
NOTE

If truck is equipped with CHU kit, spacers will not be used in Step (34).

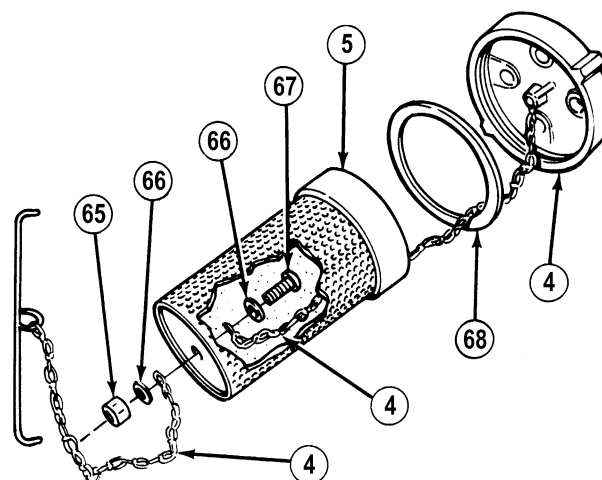
- (34) Remove locknut (53), screw (54), spacer (55), four locknuts (56), screws (57), two spacers (58) and mounting bracket (47) from frame (51), crossmember bracket (59) and deck weldment (60).



- (35) Remove three locknuts (61), screws (62), locknuts (63), screws (64) and rear mounting bracket (48) from frame (51) and crossmember bracket (65). Discard locknuts.



- (36) Remove stop nut (66), two washers (67), screw (68) and cap and chain (3) from strainer (4). Discard stop nut.
- (37) Remove gasket (69) from cap and chain (3).



b. Cleaning/Inspection

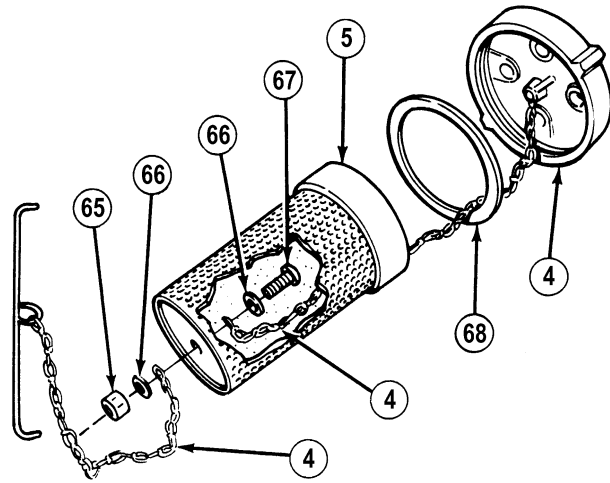
WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
 - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- (1) Clean fuel tank straps and fuel tank brackets with drycleaning solvent. Scrape residue from fuel tank brackets.
 - (2) Clean strap liners with soapy water. Rinse liners with clean water.
 - (3) Inspect fuel tank brackets and fuel tank straps for cracks, breaks or corrosion.
 - (4) Inspect strap liners and rubber liners for brittleness, cracks, or breaks.
 - (5) Purge and clean fuel tank (TB 43-0212) as required.
 - (6) Inspect fuel tank for cracks or broken welds.
 - (7) Replace all damaged parts.

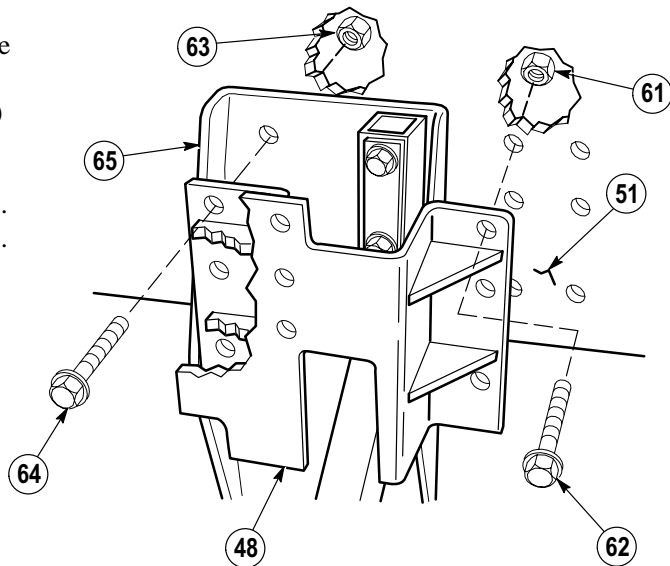
4-9. AUXILIARY FUEL TANK AND BRACKETS REPLACEMENT (CONT).

c. Installation

- (1) Install gasket (69) on cap and chain (3).
- (2) Install cap and chain (3), screw (68), two washers (67) and stop nut (66) on strainer (4).



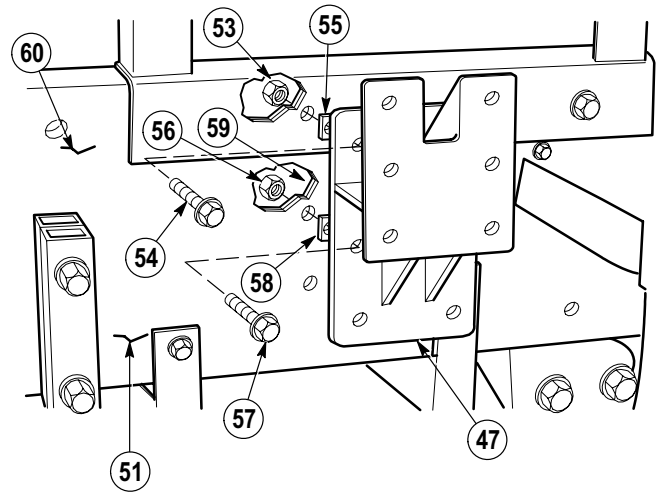
- (3) Position rear mounting bracket (48) on frame (51) and crossmember bracket (65) with three screws (64), locknuts (63), screws (62) and locknuts (61).
- (4) Tighten locknuts (63) to 375 lb-ft (508 N·m). Tighten locknuts (61) to 210 lb-ft (285 N·m).



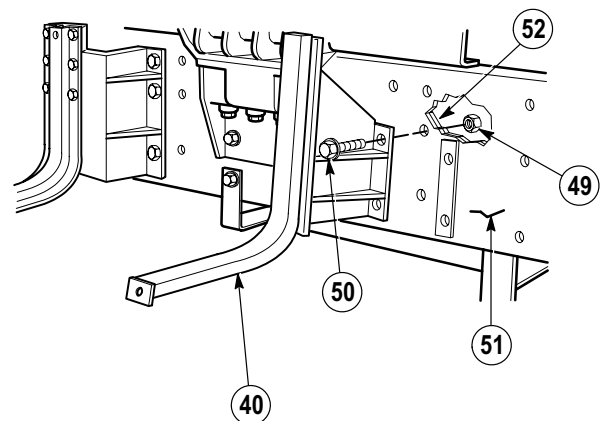
NOTE

If truck is equipped with CHU kit, spacers will not be present in Step (5).

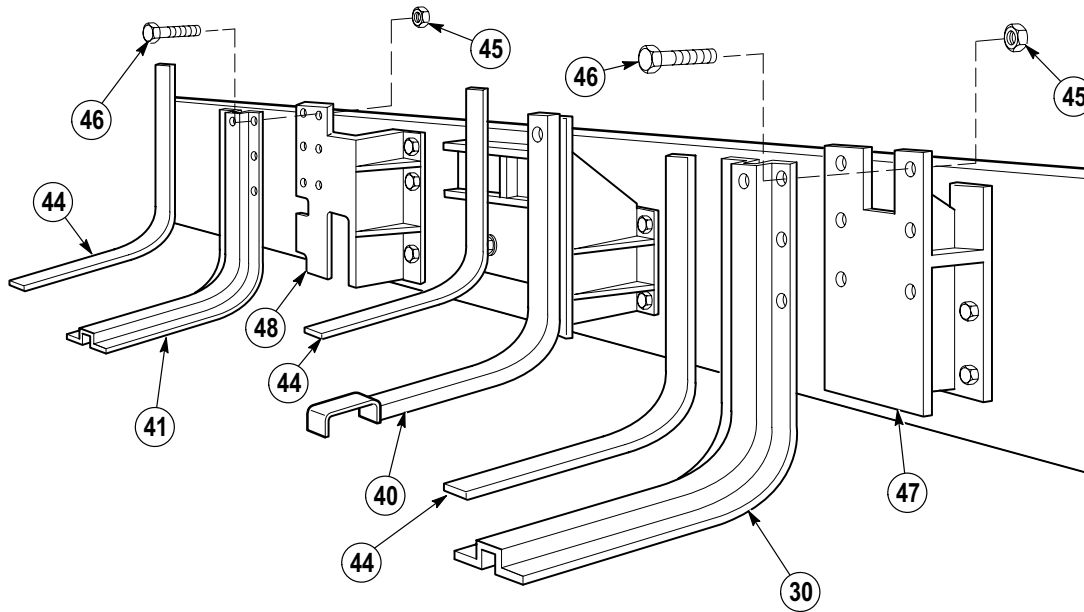
- (5) Position spacer (55), two spacers (58) and mounting bracket (47) on frame (51), crossmember bracket (59) and deck weldment (60) with four screws (57), locknuts (56), screw (54) and locknut (53).
- (6) Tighten four locknuts (56) to 210 lb-ft (285 N·m). Tighten locknut (53) to 375 lb-ft (508 N·m).



- (7) Position middle fuel tank bracket (40) on frame (51) and transfer case bracket (52) and with six screws (50) and locknuts (49).
- (8) Tighten locknuts (49) to 210 lb-ft (285 N·m).



4-9. AUXILIARY FUEL TANK AND BRACKETS REPLACEMENT (CONT).



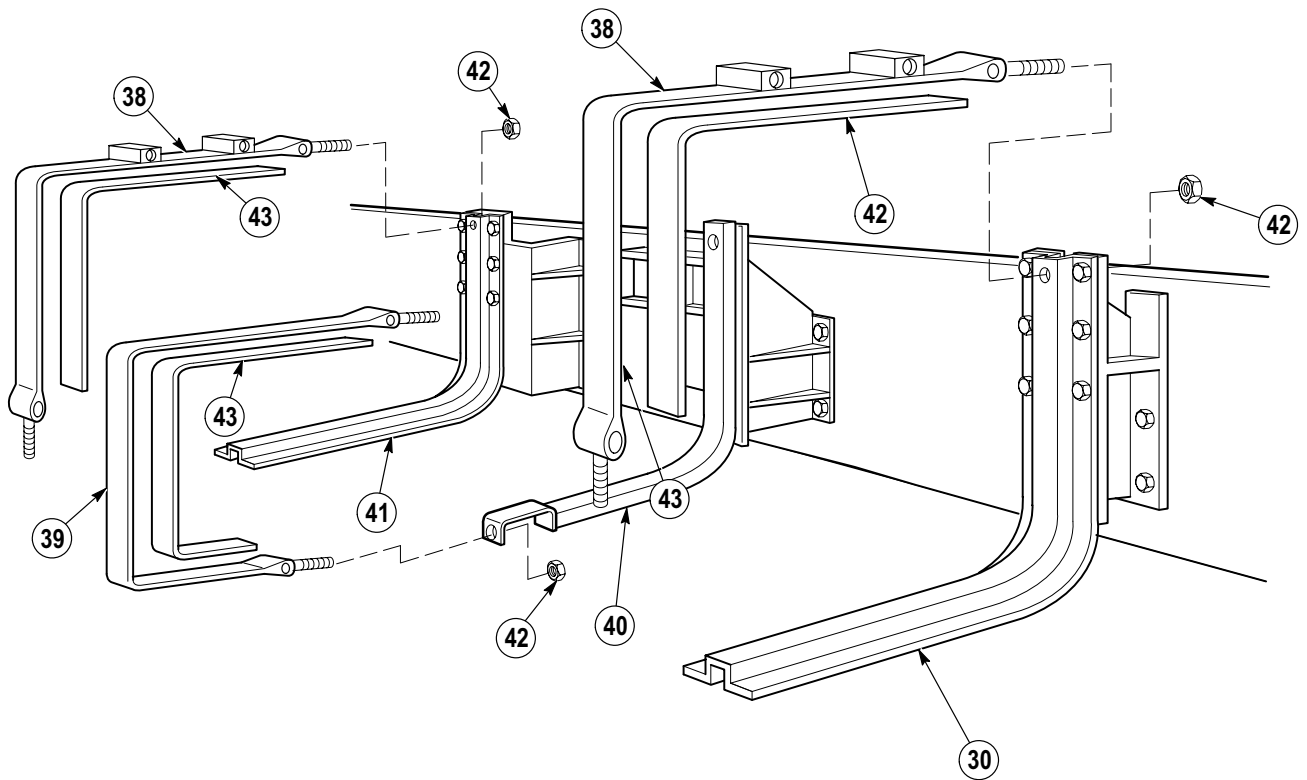
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

Perform Steps (9) and (10) if rubber liners were removed.

- (9) Apply spray adhesive to fuel tank brackets (30) and (41) and middle fuel tank bracket (40).
- (10) Install rubber liners (44) by removing protective backing and installing on middle fuel tank bracket (40) and fuel tank brackets (30) and (41).
- (11) Install fuel tank bracket (41) with six screws (46) and locknuts (45) on rear mounting bracket (48). Tighten locknuts to 210 lb-ft (285 N·m).
- (12) Install fuel tank bracket (30) with six screws (46) and locknuts (45) on front mounting bracket (47). Tighten locknuts to 210 lb-ft (285 N·m).

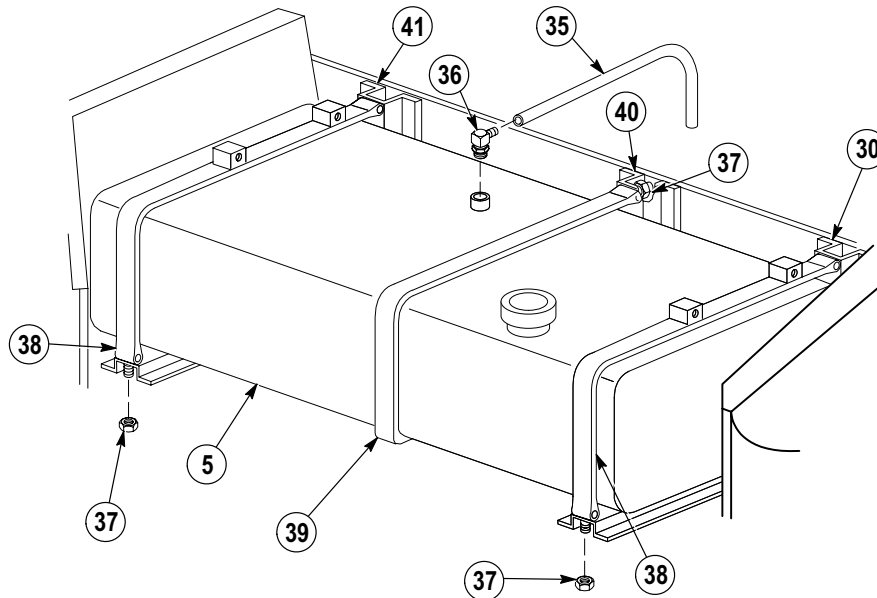


NOTE

Fuel tank straps are properly installed when three threads are showing through end of nut.

- (13) Install strap liners (43) on fuel tank strap (39) and two fuel tank straps (38).
- (14) Attach two fuel tank straps (38) on fuel tank brackets (30) and (41) with two locknuts (42).
- (15) Attach fuel tank strap (39) on middle fuel tank bracket (40) with locknut (42).

4-9. AUXILIARY FUEL TANK AND BRACKETS REPLACEMENT (CONT).



- (16) With the aid of an assistant, position auxiliary fuel tank (5) on fuel tank brackets (30) and (41) and middle fuel tank bracket (40).
- (17) Coat strap liners (43) and fuel tank (5) contact area with tire lubricant.

CAUTION

Do not overtighten locknuts or fuel tank straps will crush fuel tank.

- (18) Secure auxiliary fuel tank (5) with two fuel tank straps (38), fuel tank strap (39) and three locknuts (37). Tighten locknuts to 25 to 30 lb-ft (34 to 41 N·m).
- (19) Using soft faced hammer, tap on fuel tank straps (38) and (39) and retighten as necessary until torque remains at 25 to 30 lb-ft (34 to 41 N·m).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

Do not coat last two threads of fittings with sealing compound. Sealing compound will contaminate fuel system and cause damage to equipment.

- (20) Apply sealing compound to threads of tank vent valve (36).
- (21) Install tank vent valve (36) into auxiliary fuel tank (5).
- (22) Connect overflow hose (35) to tank vent valve (36).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

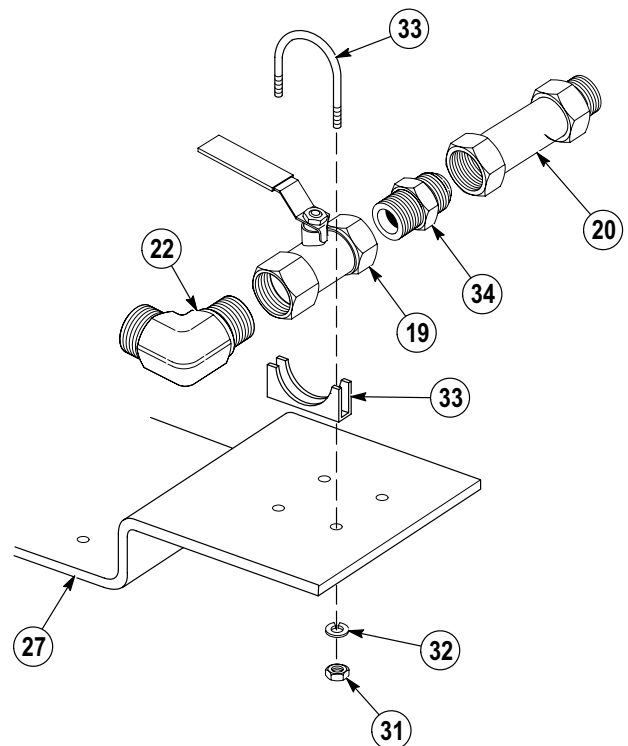
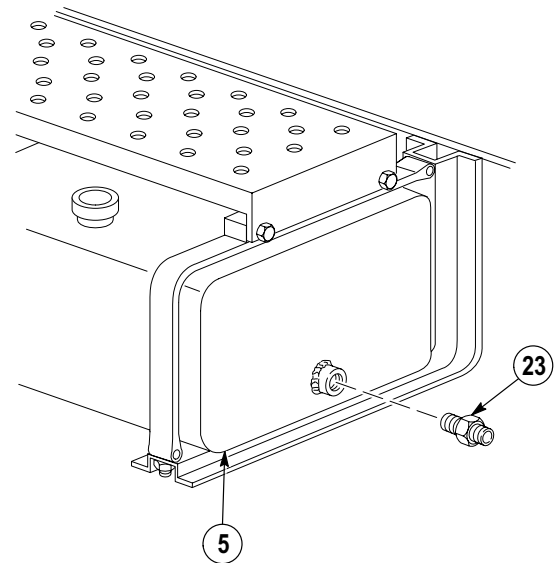
CAUTION

Do not coat last two threads of fittings with sealing compound. Sealing compound will contaminate fuel system and cause damage to equipment.

NOTE

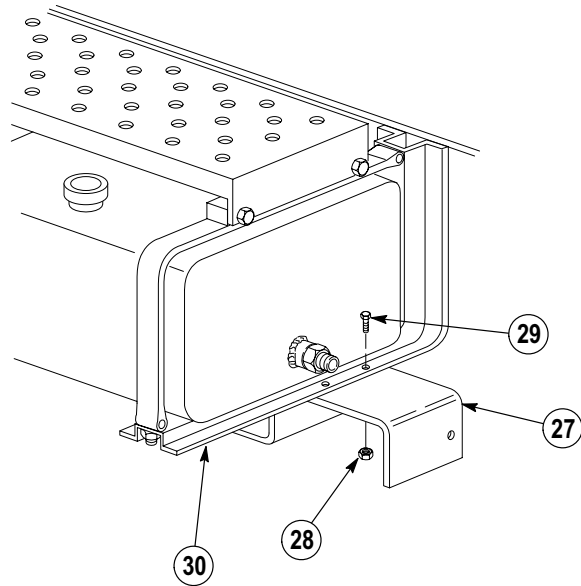
Install elbows, reducers, adapter, fuel shutoff valves and safety valves as noted prior to removal.

- (23) Coat threads of reducer (23) with sealing compound.
- (24) Install reducer (23) on auxiliary fuel tank (5).
- (25) Coat threads of elbow (22), adapter (34), and safety valve (20) with sealing compound.
- (26) Assemble elbow (22), fuel shutoff valve (19), adapter (34) and safety valve (20).
- (27) Position fuel shutoff valve (19) between two clamps (33) and install on fuel tank guard (27) with four lockwashers (32) and nuts (31).

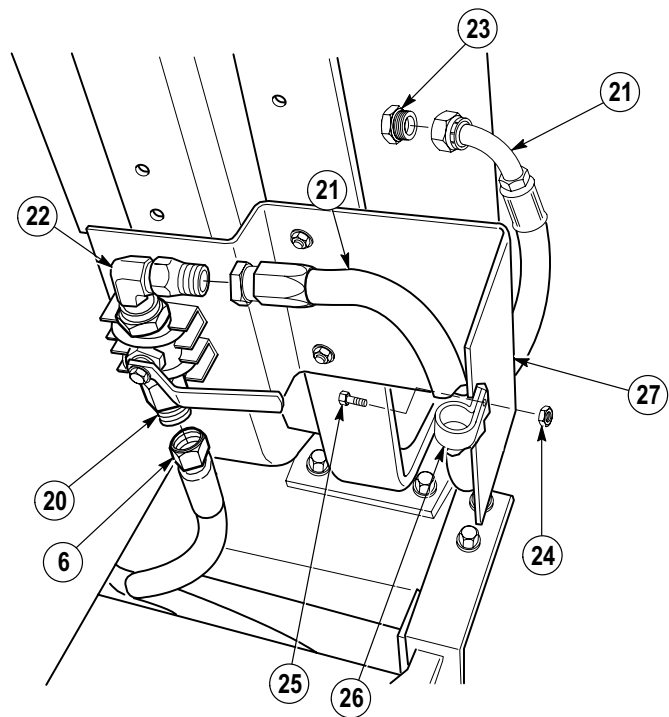


4-9. AUXILIARY FUEL TANK AND BRACKETS REPLACEMENT (CONT).

- (28) Install fuel tank guard (27), two screws (29) and locknuts (28) to fuel tank bracket (30).



- (29) Connect hose 2320 (21) to reducer (23).
- (30) Connect hose 2320 (21) to elbow (22).
- (31) Connect hose 2320 (6) to safety valve (20).
- (32) Position cushion clip (26) on hose 2320 (21).
- (33) Install cushion clip (26), screw (25) and locknut (24) on fuel tank guard (27).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

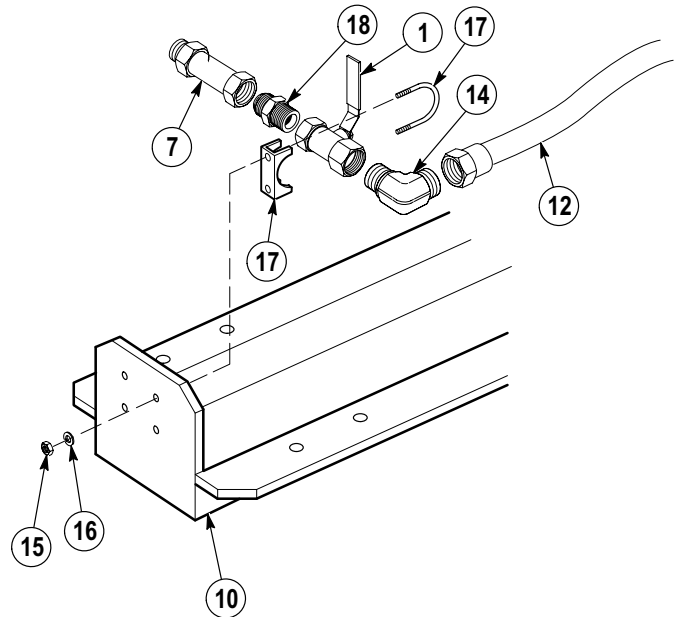
Do not coat last two threads of fittings with sealing compound. Sealing compound will contaminate fuel system and cause damage to equipment.

- (34) Apply sealing compound to threads of elbow (14), adapter (18), and safety valve (7).

NOTE

Ensure elbow, fuel shutoff valve and safety valve are positioned as noted prior to removal.

- (35) Assemble elbow (14), fuel shutoff valve (1), adapter (18) and safety valve (7).
- (36) Position fuel shutoff valve (1) between two clamps (17) and install on fuel tank guard (10) with four lockwashers (16) and nuts (15).
- (37) Attach hose 2320 (12) to elbow (14).



4-9. AUXILIARY FUEL TANK AND BRACKETS REPLACEMENT (CONT).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

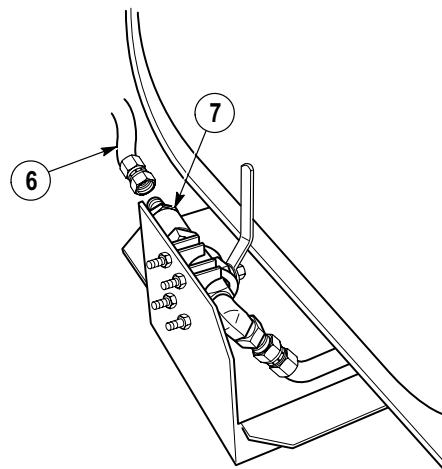
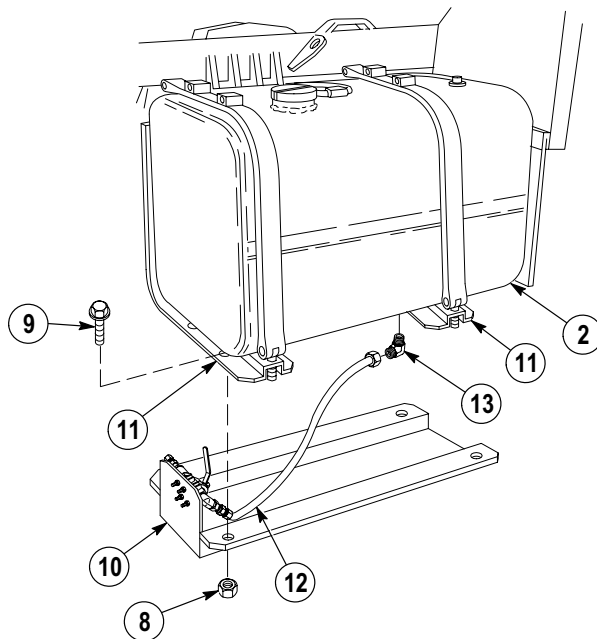
Do not coat last two threads of fittings with sealing compound. Sealing compound will contaminate fuel system and cause damage to equipment.

- (38) Apply sealing compound to threads of reducer (13).

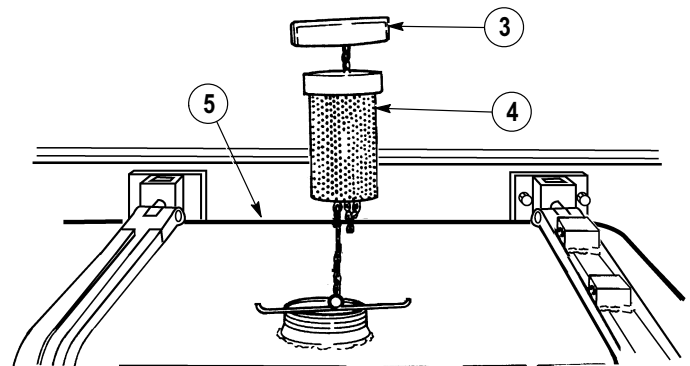
NOTE

Install reducer as noted prior to removal.

- (39) Install reducer (13) in fuel tank (2).
- (40) Attach hose 2320 (12) to reducer (13).
- (41) Install fuel tank guard (10), six screws (9) and locknuts (8) to fuel tank brackets (11).
- (42) Connect hose 2320 (6) to safety valve (7).



- (43) Install strainer (4) and cap and chain (3) in auxiliary fuel tank (5).



d. Follow-On Maintenance:

- Install auxiliary tread platform assembly, (Para 15-24).
- Fill fuel tanks, (TM 9-2320-364-10).
- Check fuel tank and connections for leaks. Tighten any connections that leak.
- Remove wheel chocks, (TM 9-2320-364-10).
- LHS in transit position, (TM 9-2320-364-10).

END OF TASK

4-10. FUEL SHUTOFF VALVE REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
 Cap and Plug Set (Item 8, Appendix G)
 Caps, Vise Jaw (Item 9, Appendix G)
 Pan, Drain (Item 47, Appendix G)
 Vise, Machinist's (Item 75, Appendix G)

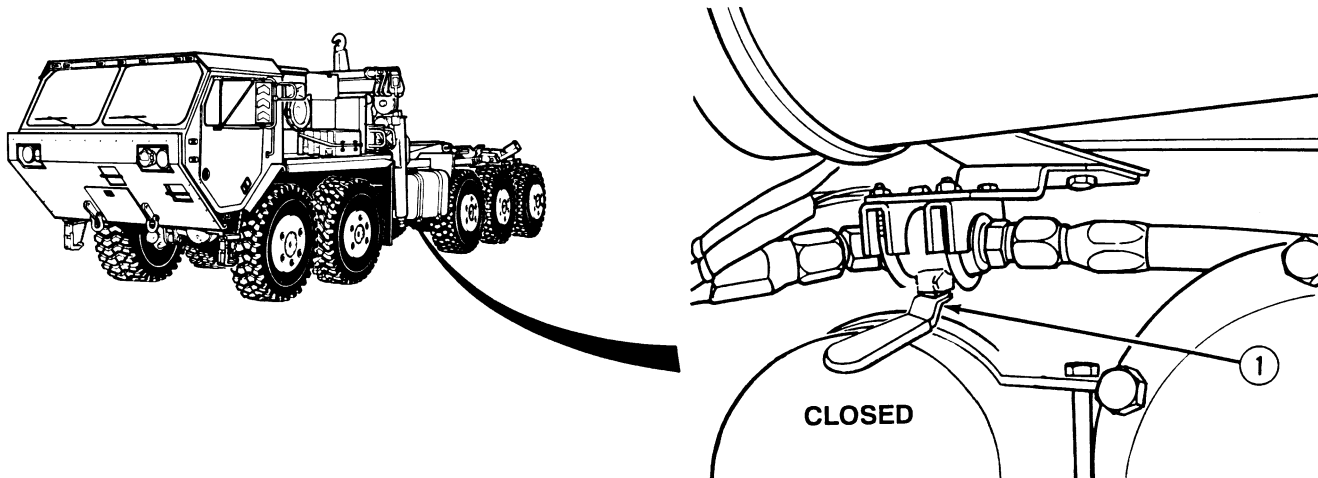
Materials/Parts

Sealing Compound (Item 72, Appendix C)
 Clamp Assembly (2) (Item 21, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)

a. Removal.



WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.

NOTE

Cap and plug hoses and fittings upon removal.

- (1) Position drain pan under fuel shutoff valve (1).
- (2) Close fuel shutoff valve (1).

WARNING

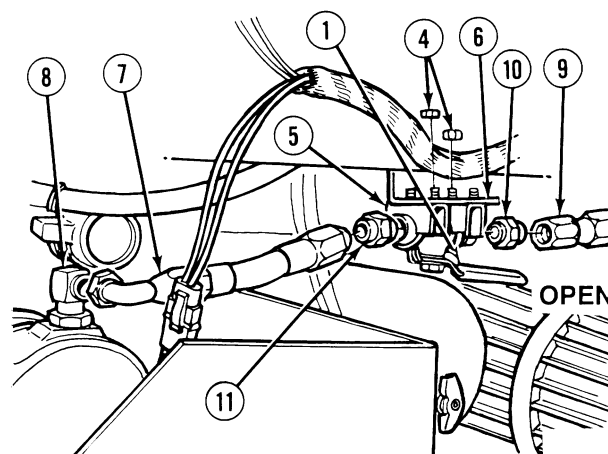
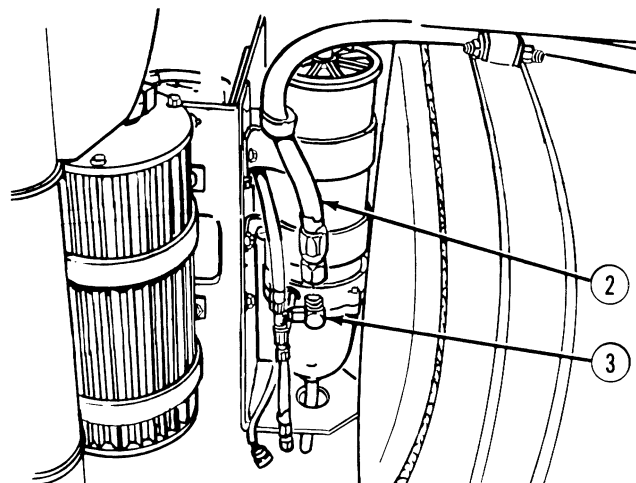
Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.

- (3) Remove hose 2259 (2) from elbow (3).
- (4) Remove four nuts (4), two clamp assemblies (5) and fuel shutoff valve (1) from bracket (6). Discard clamp assemblies.
- (5) Remove hose 2261 (7) from elbow (8).
- (6) Open fuel shutoff valve (1) and drain fuel from shutoff valve.
- (7) Remove hose 2262 (9) from adapter (10).
- (8) Remove hose 2261 (7) from elbow (11).
- (9) Position fuel shutoff valve (1) in soft jawed vise.

NOTE

Note position of elbow prior to removal.

- (10) Remove elbow (11) and adapter (10) from fuel shutoff valve (1).



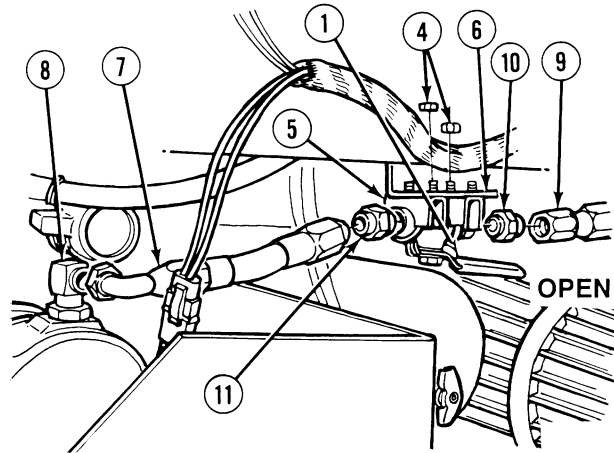
4-10. FUEL SHUTOFF VALVE REPLACEMENT (CONT).

b. Installation.

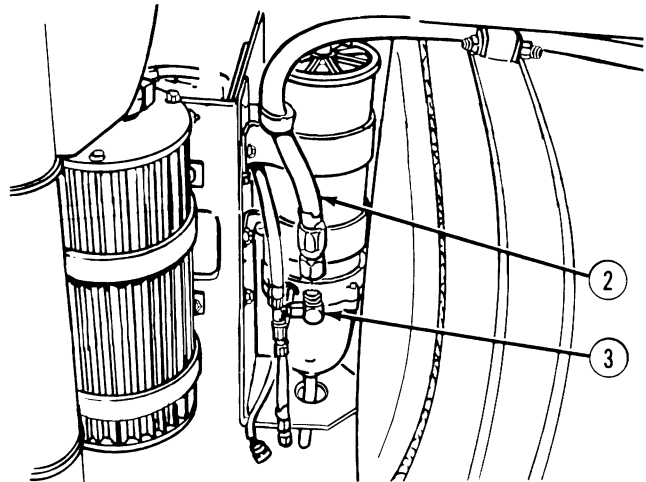
- (1) Position fuel shutoff valve (1) in soft jawed vise.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (2) Apply sealing compound to threads of elbow (11) and adapter (10).
- (3) Install elbow (11) and adapter (10) in fuel shutoff valve (1).
- (4) Install fuel shutoff valve (1) on bracket (6) with two clamp assemblies (5) and four nuts (4).
- (5) Install hose 2262 (9) on adapter (10).
- (6) Install hose 2261 (7) on elbow (11) and elbow (8).
- (7) Install hose 2259 (2) on elbow (3).



c. Follow-On Maintenance:

- Fill fuel tank, (TM 9-2320-364-10).
- Prime fuel system, (Para 4-3).
- Check for fuel leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-11. FUEL LEVEL SENDING UNIT REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Socket Set, 3/8 in. (Item 62, Appendix G)
- Wrench, Torque, 3/8 in Drive (0 to 60 N·m) (Item 98, Appendix G)

Materials/Parts

- Sealing Compound (Item 75, Appendix C)
- Tags, Identification (Item 88, Appendix C)

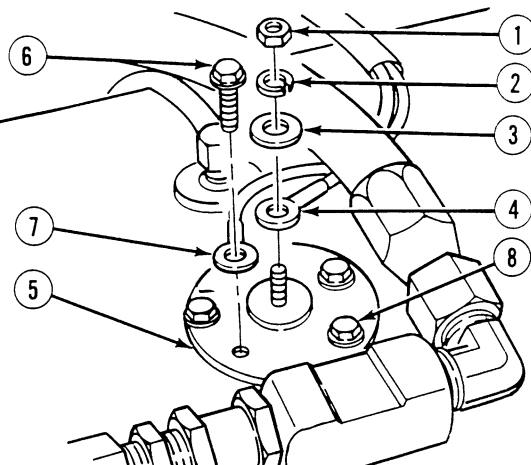
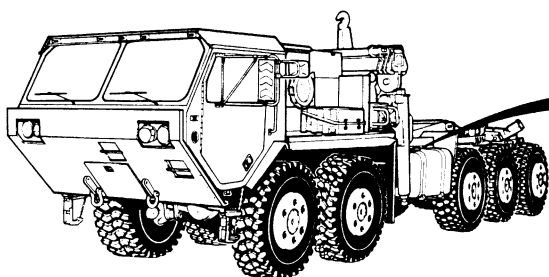
Materials/Parts - Continued

- Gasket (Item 43, Appendix F)
- Locknut (Item 94, Appendix F)
- Lockwasher (Item 163, Appendix F)

Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)
- Batteries disconnected, (Para 7-87)
- Tread platform assembly removed, (Para 15-9)

a. Removal.



WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.

NOTE

Tag and mark all wires prior to removal.

- (1) Remove locknut (1), lockwasher (2), washer (3) and wire 1318 (4) from top of fuel level sending unit (5). Discard lockwasher and locknut.
- (2) Remove screw (6) and wire 1435 (7) from top of fuel level sending unit (5).
- (3) Remove four screws (8) from top of fuel level sending unit (5).

4-10. FUEL SHUTOFF VALVE REPLACEMENT (CONT).

NOTE

Note position of float arm when removing.

- (4) Remove fuel level sending unit (5) from top of fuel tank (9).
- (5) Remove and discard gasket (10) from top of fuel tank (9).

b. Installation.

NOTE

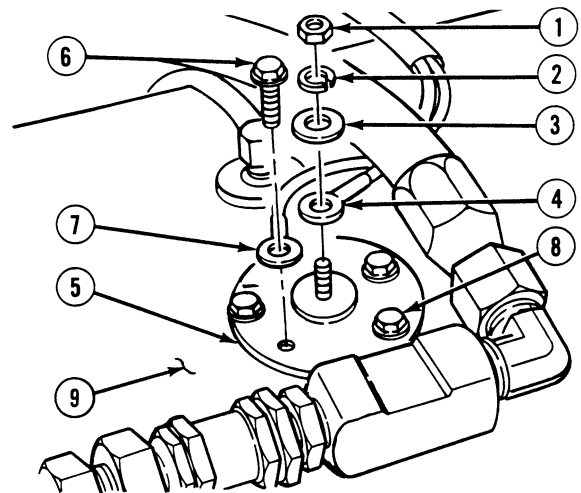
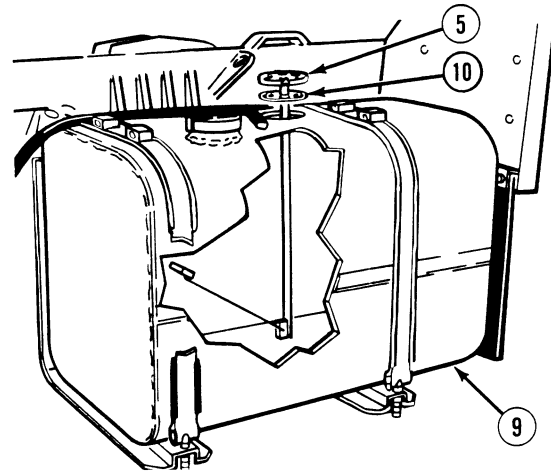
Use non-hardening sealant on outer edge of fuel level sending unit tank access hole only.

- (1) Using non-hardening sealant, install gasket (10) on top of fuel tank (9).

NOTE

Install fuel sending unit as noted in removal.

- (2) Install fuel level sending unit (5) on fuel tank (9).
- (3) Install four screws (8) on fuel level sending unit (5) and tank (9). Tighten screws to 36 lb-in (4 N·m).
- (4) Install wire 1435 (7) and screw (6) on fuel level sending unit (5) and fuel tank (9). Tighten screw to 36 lb-in (4 N·m).
- (5) Install wire 1318 (4), washer (3), lockwasher (2) and locknut (1) on top of fuel level sending unit (5). Tighten nut to 36 lb-in (4 N·m).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check fuel gage operation, (TM 9-2320-364-10).
- Install tread platform assembly, (Para 15-9)
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-12. FUEL HOSES AND TUBES REPLACEMENT.

This task covers:

- a. Hose Locations
- b. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74 Appendix G)
Cap and Plug Set (Item 8, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

Materials/Parts

Cable Ties (Item 25, Appendix C)
Tags, Identification (Item 88, Appendix C)



Equipment may be damaged by foreign matter if hoses, tubes and connectors are not plugged and capped when removed.

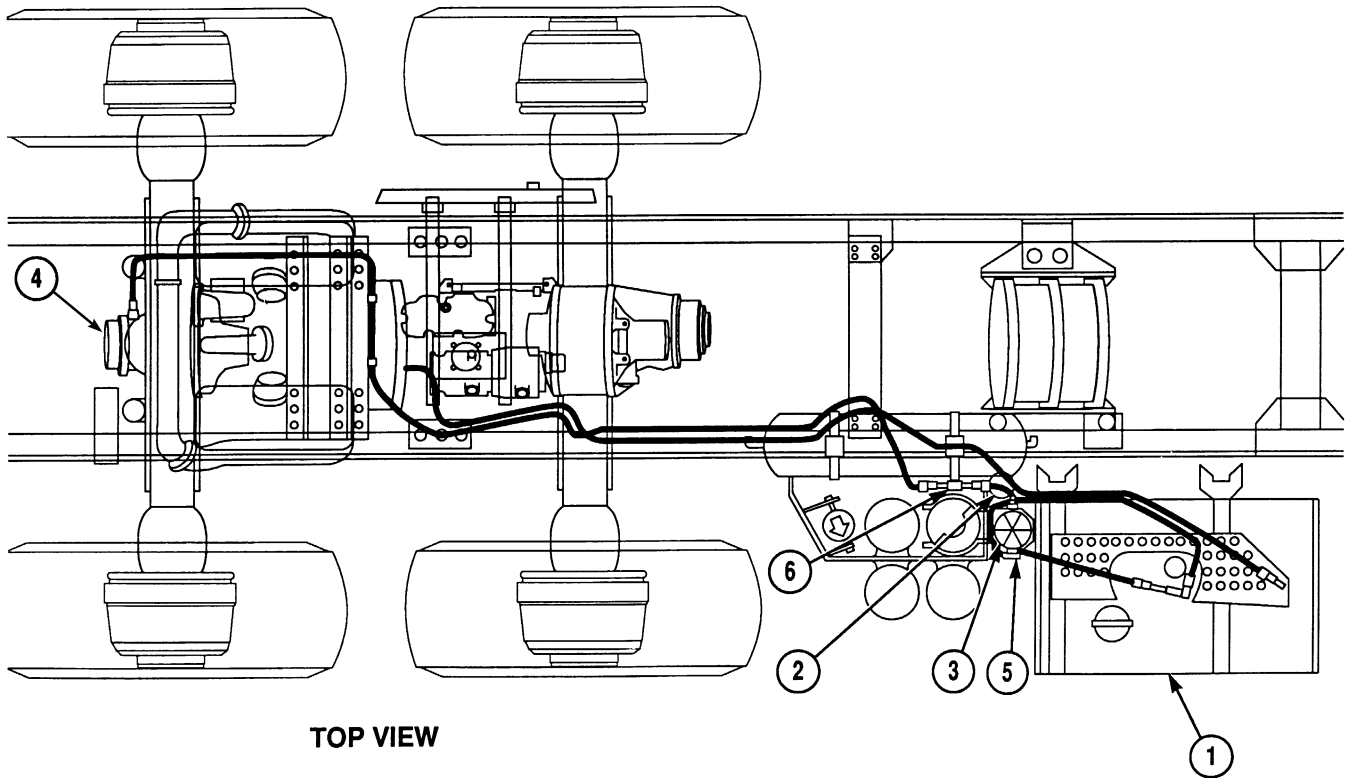
NOTE

- This procedure shows the location of fuel lines on the truck. It will never be necessary to remove all fuel lines at one time.
- Note location and remove and replace cable ties as required.
- As items are removed, cap and plug all hoses, tubes and connectors.
- Tag and mark each hose end before removal.
- Remove clamps and support brackets as required.
- Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripping threads and cuts. Replace all damaged parts.
- Note location and position of cushion clips prior to removal.

4-12. FUEL HOSES AND TUBES REPLACEMENT (CONT).

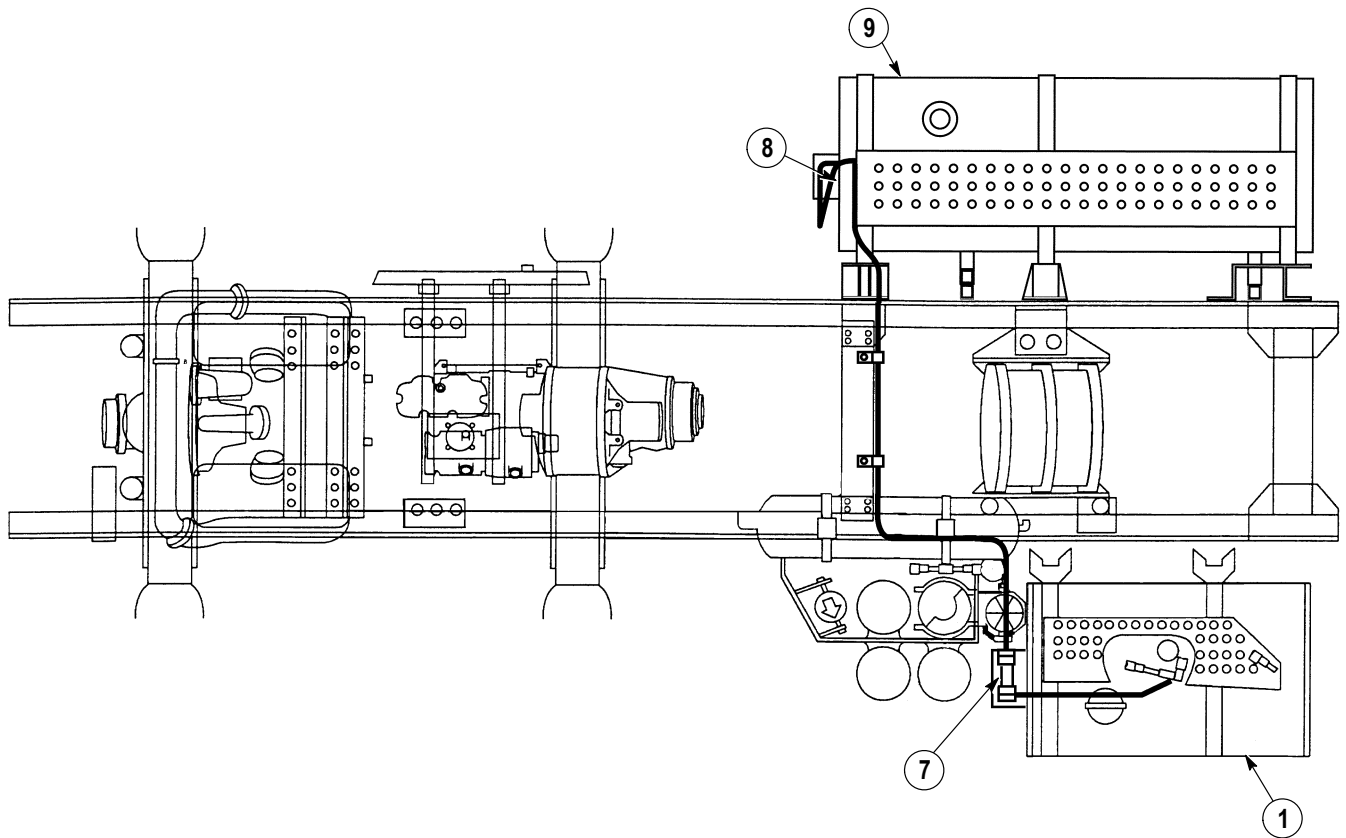
a. Hose Locations.

Table 4-1. Fuel Hoses/Tubes Replacement



Hose No.	From	To
2919	Fuel Tank (1)	Electric Priming Pump (2)
2920	Electric Priming Pump (2)	Fuel/Water Separator (3)
2259	Fuel/Water Separator (3)	Fuel Tank (1)
2260	Engine (4)	Fuel Tank (1)
2261	Fuel/Water Separator (5)	Shutoff Valve (6)
2962	Shutoff valve (6)	Engine (4)

Table 4-1. Fuel Hoses/Tubes Replacement - CONT.



Hose No.	From	To
2320	Fuel Tank (1)	Shutoff valve (7)
2320	Shutoff valve (7)	Shutoff valve (8)
2320	Shutoff valve (8)	Auxiliary Fuel Tank (9)

b. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-13. SECONDARY FUEL FILTER REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

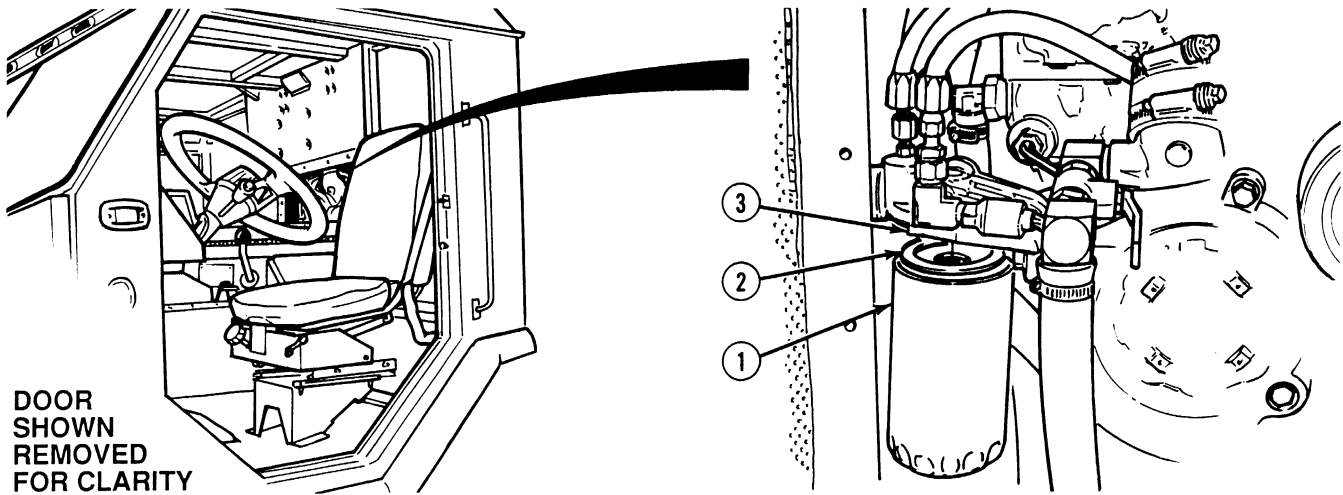
Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Remover Tool, Oil Filter (Item 54, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Cab engine access panel removed, (Para 17-24)

Material/Parts

Oil, Fuel, Diesel Regular (Item 62, Appendix C)



WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.

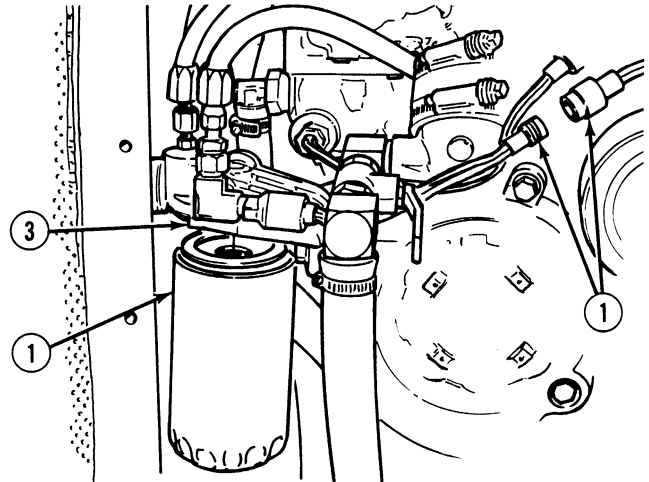
a. Removal.

- (1) Remove and discard fuel filter (1) and preformed packing (2) from fuel filter head (3).

b. Installation.

- (1) Coat preformed packing (2) on fuel filter (1) with diesel fuel.
- (2) Fill fuel filter (1) 2/3 full with clean diesel fuel oil.

- (3) Install fuel filter (1) on fuel filter head (3). Hand-tighten fuel filter 3/4 turn after preformed packing makes contact with filter head.



c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for leaks, (TM 9-2320-364-10).
- Install cab engine access panel, (Para 17-24).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-14. SECONDARY FUEL FILTER HEAD REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
 (Item 74, Appendix G)
 Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m])
 (Item 95, Appendix G)

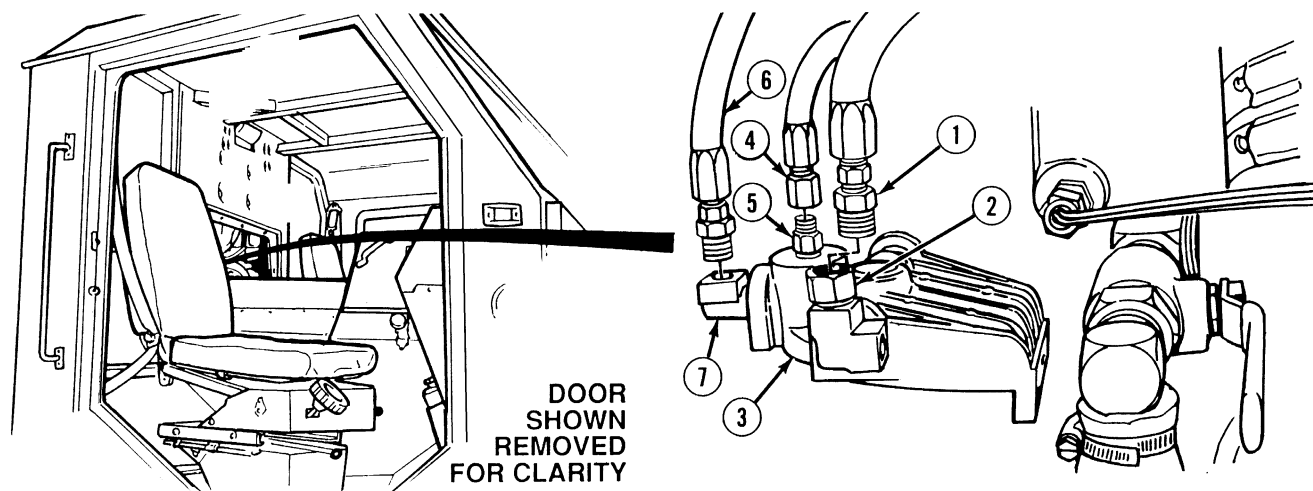
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Secondary fuel filter removed, (Para 4-13)
 Fuel pressure transducer removed, (Para 7-74)

Materials/Parts

Sealing Compound (Item 72, Appendix C)
 Tags, Identification (Item 88, Appendix C)

a. Removal.



NOTE

Tag and mark fuel lines prior to removal.

- (1) Remove fuel line (1) from fitting (2) on fuel filter head (3).
- (2) Remove fuel line (4) from fitting (5) on fuel filter head (3).
- (3) Remove fuel line (6) from fitting (7) on fuel filter head (3).

CAUTION

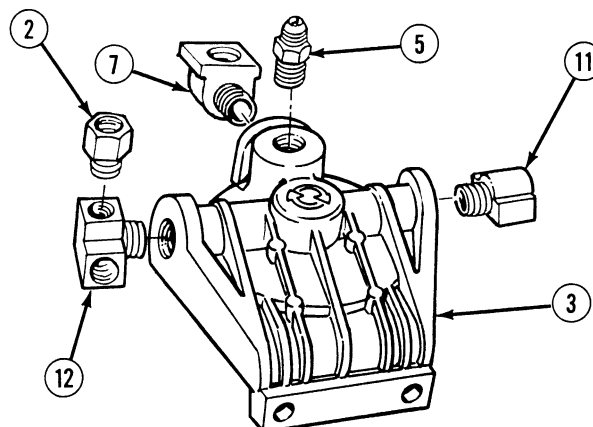
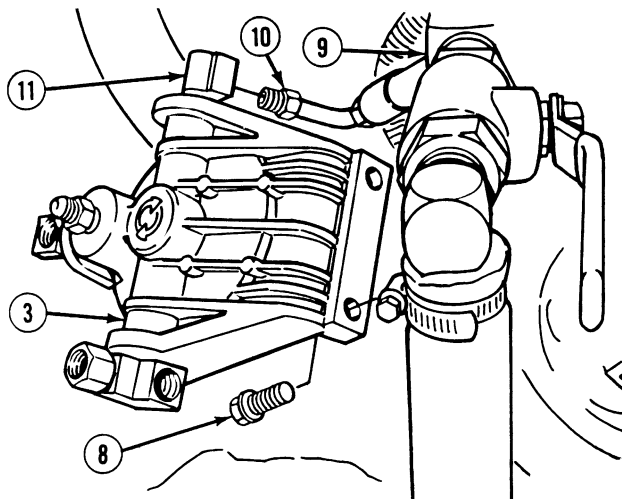
Ensure fuel filter head is supported when removing two screws or fuel filter head may fall and damage may occur.

- (4) Remove two screws (8) from fuel filter head (3) and engine block (9).
- (5) Remove fuel filter line (10) from fitting (11).
- (6) Remove fuel filter head (3) from engine block (9).

NOTE

Note and record location and position of all fittings and elbows prior to removal.

- (7) Remove fittings (2), (5), (7) and (11) from fuel filter head (3).
- (8) Remove elbow (12) from fuel filter head (3).

**b. Installation.****WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

Ensure all fittings and elbow are installed in same location and position as during removal.

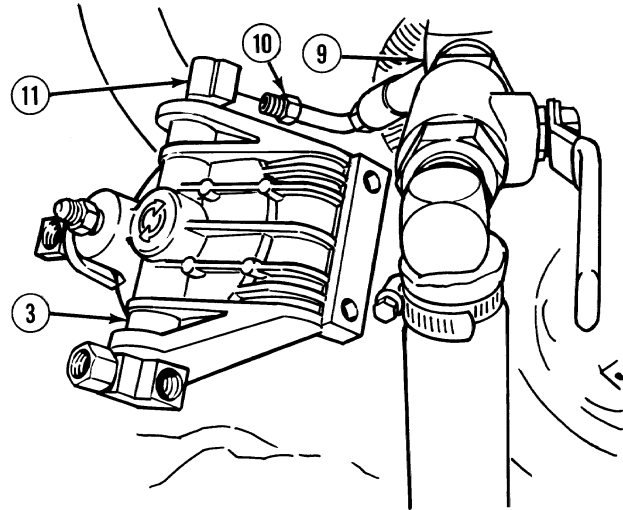
- (1) Apply sealing compound to elbow (12).
- (2) Install elbow (12) in fuel filter head (3).
- (3) Apply sealing compound to fittings (2), (5), (7) and (11).
- (4) Install fittings (2), (5), (7) and (11) in fuel filter head (3).

4-14. SECONDARY FUEL FILTER HEAD REPLACEMENT (CONT).

CAUTION

Ensure fuel filter head is fully supported until after Step (5) or fuel filter head may fall and damage may occur to parts.

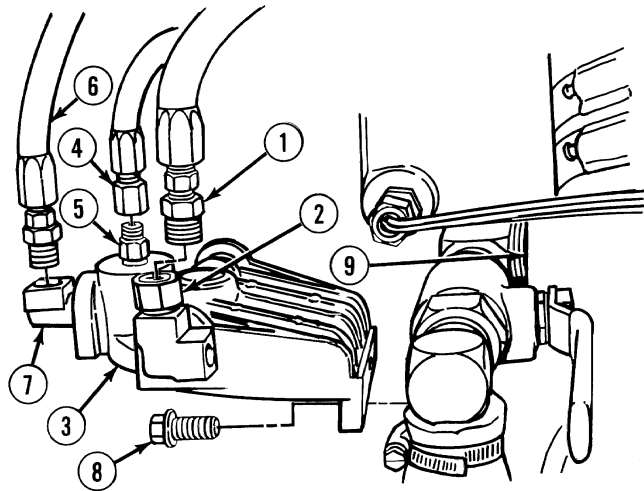
- (5) Position fuel filter head (3) on engine block (9).
- (6) Install fuel filter Line (10) on fitting (11) of fuel filter head (3).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (7) Coat threads of two screws (8) with sealing compounds.
- (8) Position fuel filter head (3) on engine block (9) and secure with two screws (8). Tighten screws to 23 lb-ft (31 N·m).
- (9) Install fuel filter line (6) on fitting (7) of fuel filter head (3).
- (10) Install fuel filter line (4) on fitting (5) of fuel filter head (3).
- (11) Install fuel filter line (1) on fitting (2) of fuel filter head (3).



c. *Follow-On Maintenance:*

- Install fuel pressure transducer, (Para 7-74).
- Install secondary fuel filter, (Para 4-13).
- Start engine, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-15. FUEL/WATER SEPARATOR SERVICE.

This task covers:

- a. Drain
- b. Fill
- c. Follow-On Maintenance

INITIAL SETUP

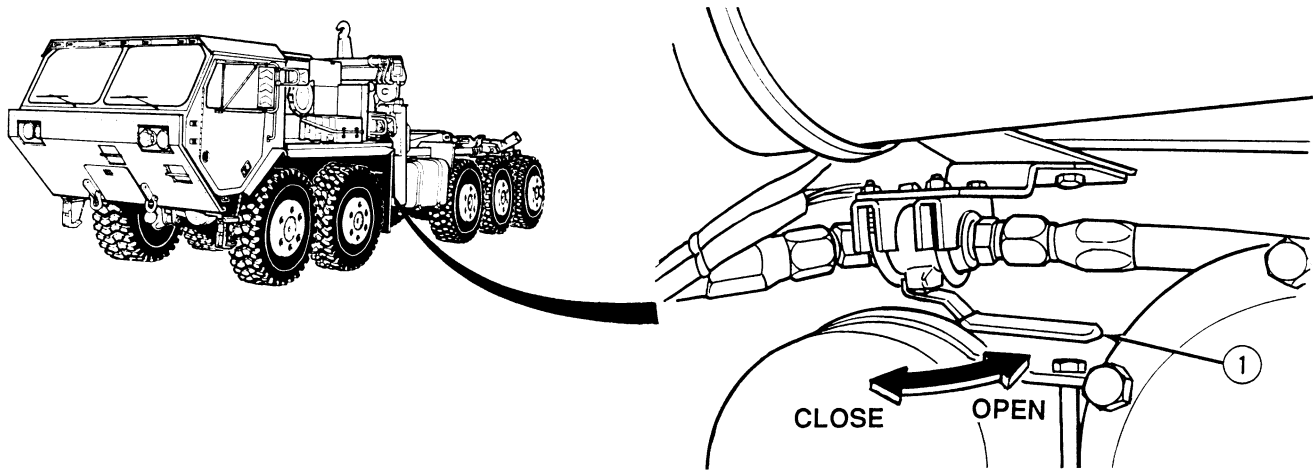
Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Cap and Plug Set (Item 8, Appendix G)
Pan, Drain (Item 47, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

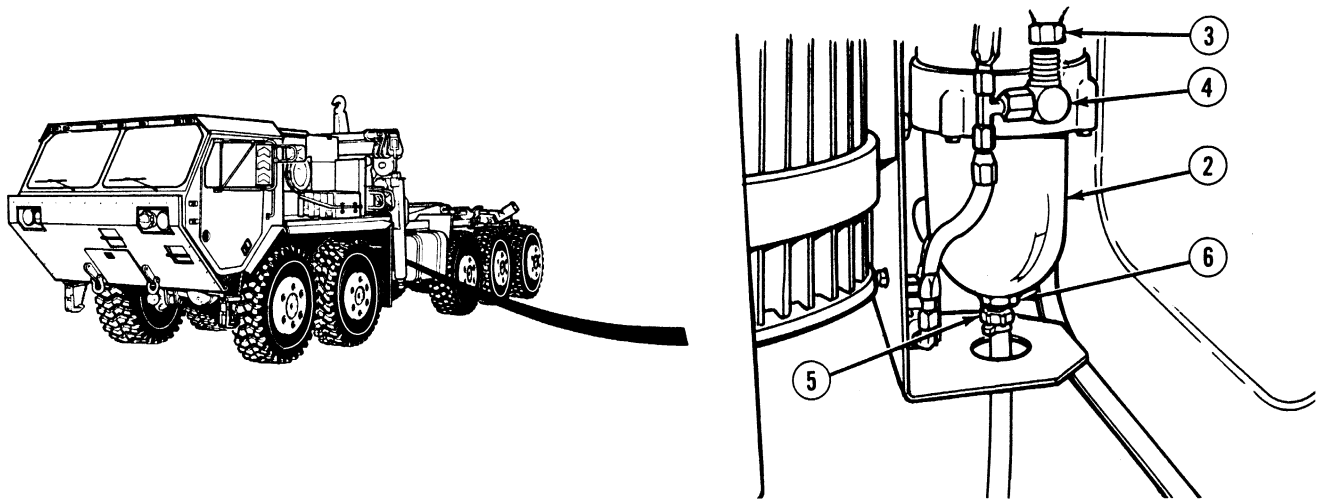
a. Drain.



NOTE

If draining water only from fuel/water separator, perform Steps (2), (4) and (5).

- (1) Close valve (1).



WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.

- (2) Position drain pan under fuel/water separator (2).

NOTE

Cap hose after disconnection.

- (3) Disconnect hose 2259 (3) from elbow (4).

NOTE

To open drain valve, turn drain valve nut to the left. To close drain valve, turn drain valve nut to the right.

- (4) Open drain valve (5) on fuel/water separator (2).

CAUTION

Do not overtighten drain valve. Overtightening may cause sediment bowl to crack.

- (5) Close drain valve (5) and remove drain pan.

NOTE

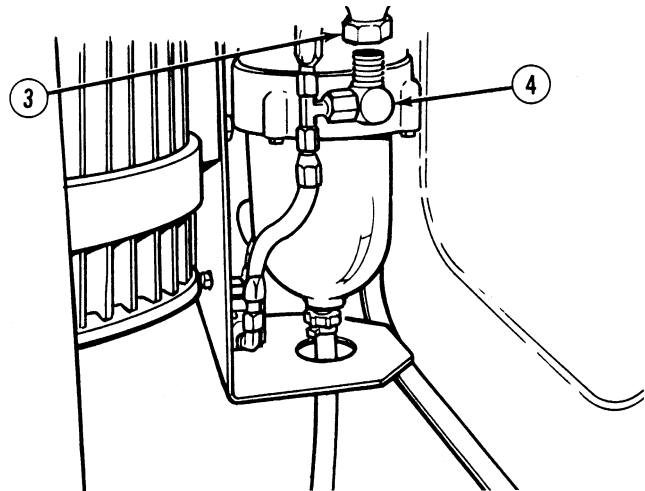
Perform Step (6) if drain valve assembly becomes loose or leaks.

- (6) Tighten nut (6) on drain valve (5) to 26 to 30 lb-in (3 to 4 N·m).

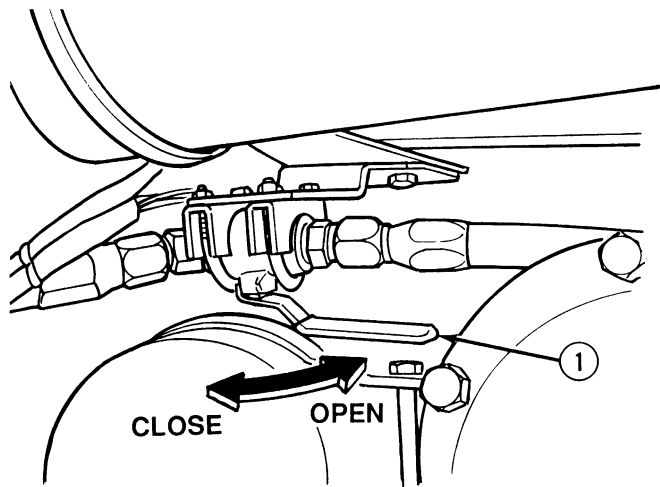
4-15. FUEL/WATER SEPARATOR SERVICE (CONT).

b. Fill.

(1) Connect hose 2259 (3) to elbow (4).



(2) Open valve (1).



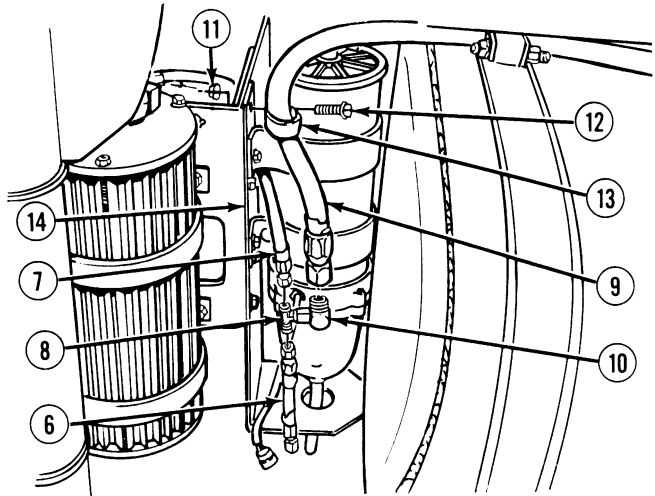
c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10)
- Shut OFF engine, (TM 9-2320-364-10).
- Check for leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

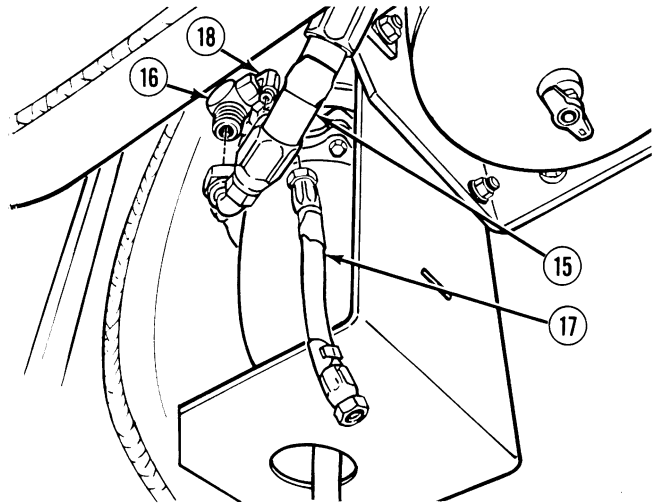
END OF TASK

4-16. FUEL/WATER SEPARATOR AND BRACKET REPLACEMENT (CONT).

- (4) Remove hose 2922 (6) and hose 2920 (7) from tee (8).
- (5) Disconnect hose 2259 (9) from elbow (10).
- (6) Remove locknut (11), screw (12), cushion clip (13) and hose 2259 (9) from bracket (14). Discard locknut.



- (7) Remove hose 2261 (15) from elbow (16).
- (8) Remove hose 2921 (17) from elbow (18).

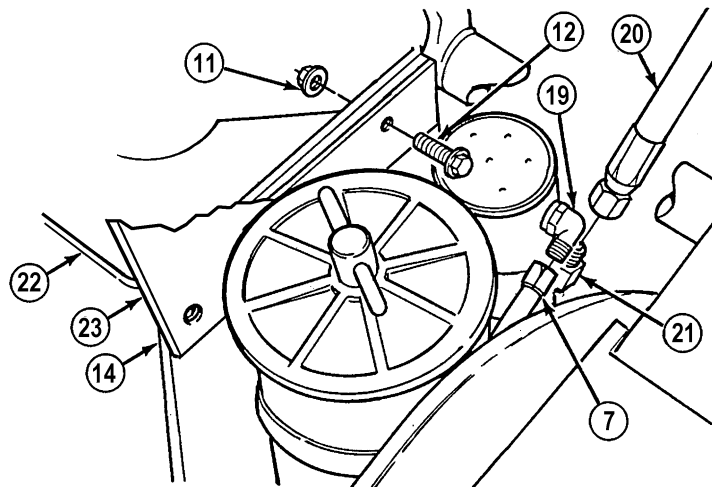


- (9) Remove hose 2920 (7) from elbow (19).
- (10) Remove hose 2919 (20) from elbow (21).

NOTE

Perform Step (11) if truck is equipped with air dryer guard.

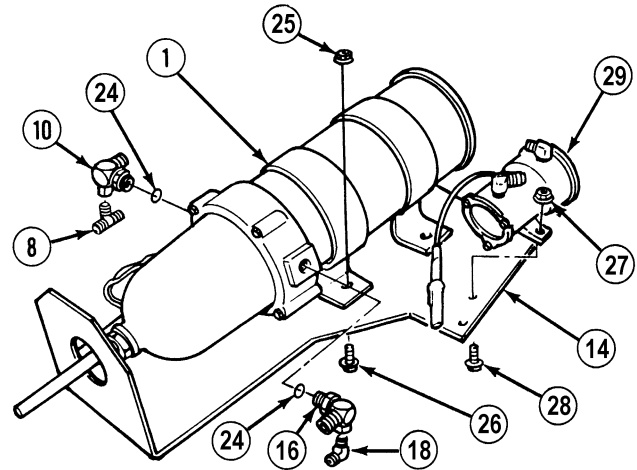
- (11) Support air dryer guard, remove remaining three locknuts (11), screws (12) and slide bracket (14) from between bracket (22) and air dryer guard bracket (23). Discard locknuts.
- (12) Remove remaining three locknuts (11), screws (12) and bracket (14) from bracket (22). Discard locknuts.



NOTE

Note location and position of elbows and tees prior to removal.

- (13) Remove tee (8) and elbow (18) from elbows (10) and (16).
- (14) Remove elbows (10) and (16) and preformed packings (24) from fuel/water separator (1).
- (15) Remove four locknuts (25), screws (26) and fuel/water separator (1) from bracket (14). Discard locknuts.
- (16) Remove two locknuts (27), screws (28) and priming pump (29).

**b. Installation.****WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

Ensure tees and elbow are installed as noted prior to removal.

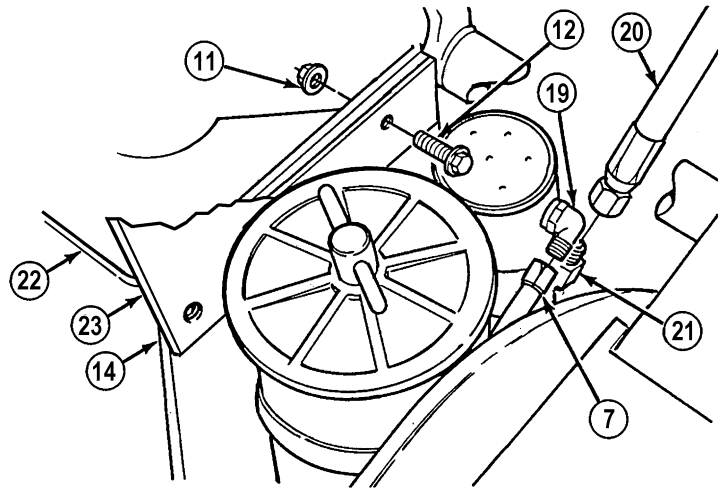
- (1) Install priming pump (29) on bracket (14) with two screws (28) and locknuts (27).
- (2) Install fuel/water separator (1) on bracket (14) with four screws (26) and locknuts (25).
- (3) Install two preformed packings (24) and elbows (10) and (16) in fuel/water separator (1).
- (4) Apply sealing compound on threads of tee (8) and elbow (18).
- (5) Install tee (8) and elbow (18) on elbows (10) and (16).

4-16. FUEL/WATER SEPARATOR AND BRACKET REPLACEMENT (CONT.)

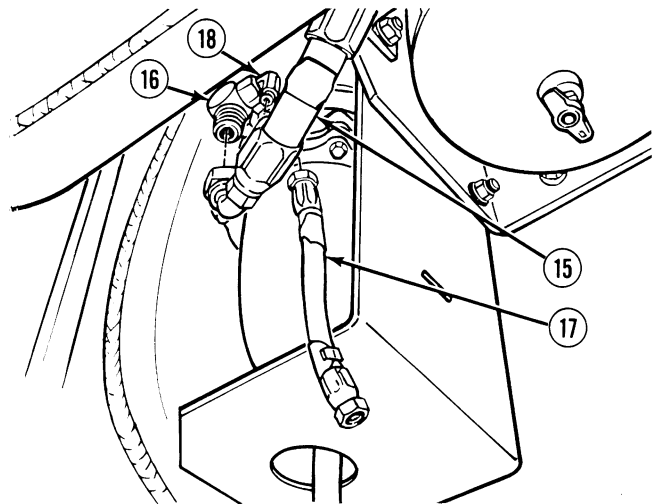
NOTE

- Do not install upper outside locknut and screw. It will be installed in Step (13).
- Perform Step (6) if air dryer guard is on truck.

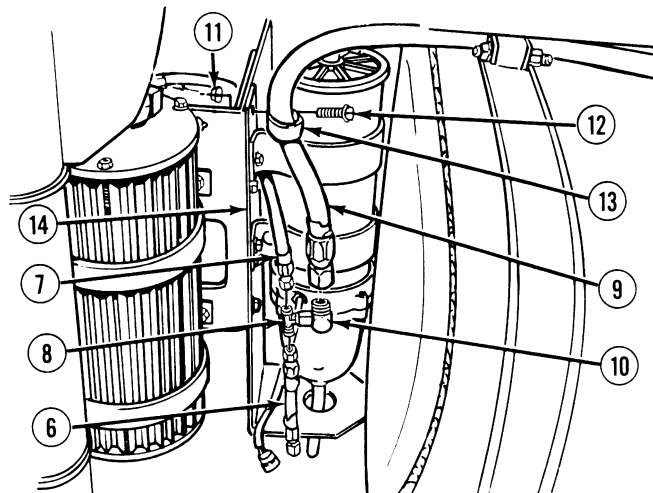
- (6) Install bracket (14) between bracket (22) and air dryer guard bracket (23) with three screws (12) and locknuts (11).
- (7) Install bracket (14) on bracket (22) with three screws (12) and locknuts (11).
- (8) Install hose 2919 (20) on elbow (21).
- (9) Install hose 2920 (7) on elbow (19).



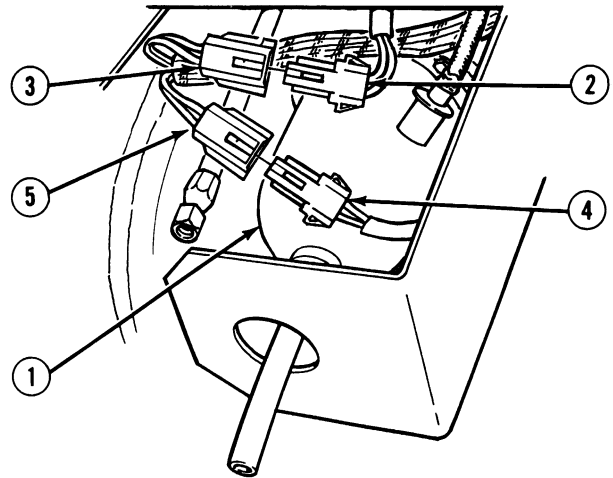
- (10) Install hose 2921 (17) on elbow (18).
- (11) Install hose 2261 (15) on elbow (16).



- (12) Install hose 2559 (9) on elbow (10).
- (13) Install hose 2259 (9) on bracket (14) with cushion clip (13), screw (12) and locknut (11).
- (14) Install hose 2922 (6) and hose 2920 (7) on tee (8).



- (15) Connect fuel pump MC108 connector (2) to wire harness connector (3).
- (16) Connect heater MC107 connector (4) to wire harness connector (5).



c. Follow-On Maintenance:

- Install differential pressure switch, (Para 7-84).
- Fill fuel/water separator, (Para 4-15).
- Start engine, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-17. FUEL/WATER SEPARATOR FILTER REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Pan, Drain (Item 47, Appendix G)

Materials/Parts

Oil, Fuel, Diesel Regular (Item 62, Appendix C)

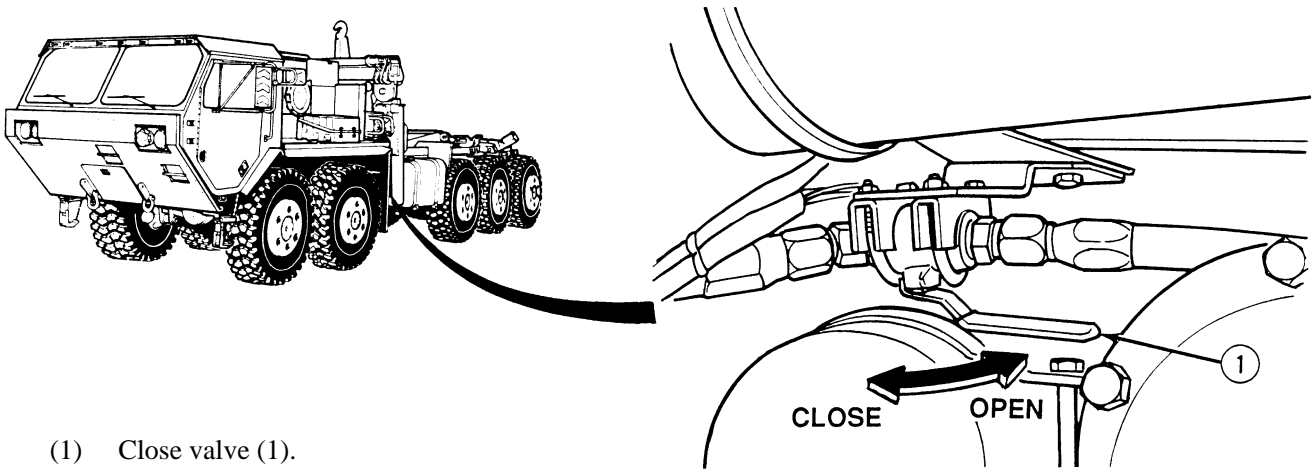
Materials/Parts - Continued

Gasket (Item 45, Appendix F)
Packing, Preformed (Item 222, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Fuel/water separator drained, (Para 4-15)

a. Removal.



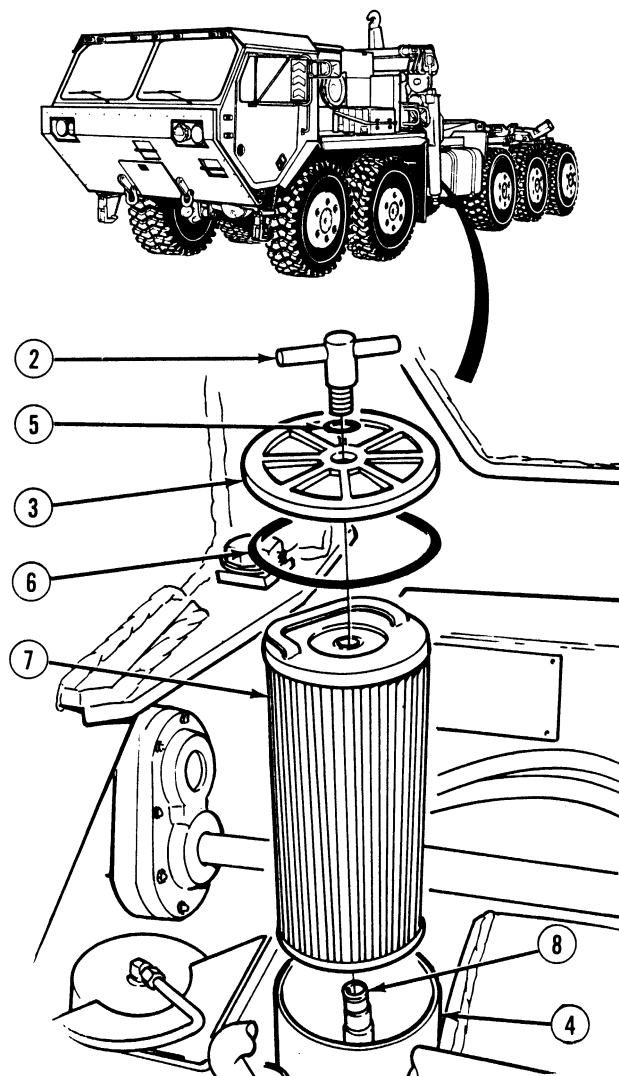
WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.

- (2) Remove T-handle (2) and lid (3) from fuel/water separator (4).
- (3) Remove lid (3) and preformed packing (5) from T-handle (2). Discard preformed packing.
- (4) Remove and discard gasket (6) from lid (3).
- (5) Remove and discard filter element (7) from return tube (8) in fuel/water separator (4).

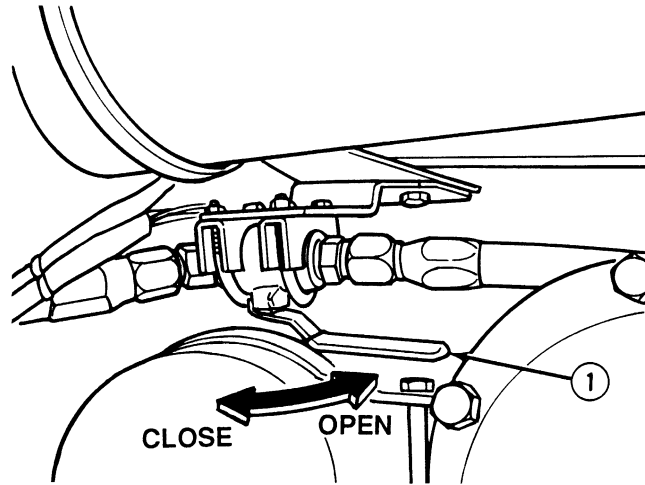
b. Installation.

- (1) Pour clean diesel fuel in fuel/water separator (4) until half full.
- (2) Install filter element (7) on return tube (8) in fuel/water separator (4).
- (3) Pour clean diesel fuel into fuel/water separator (4) until full.
- (4) Lubricate gasket (6) with diesel fuel and install gasket in lid (3).
- (5) Install lid (3) on fuel/water separator (4).
- (6) Lubricate preformed packing (5) with diesel fuel and install preformed packing on T-handle (2).
- (7) Install T-handle (2) in lid (3).



4-17. FUEL/WATER SEPARATOR FILTER REPLACEMENT (CONT).

- (8) Open valve (1).



c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-18. ETHER START AID ASSEMBLY REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Materials/Parts

Locknut (2) (Item 133, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Left side noise panel removed, (Para 17-28)

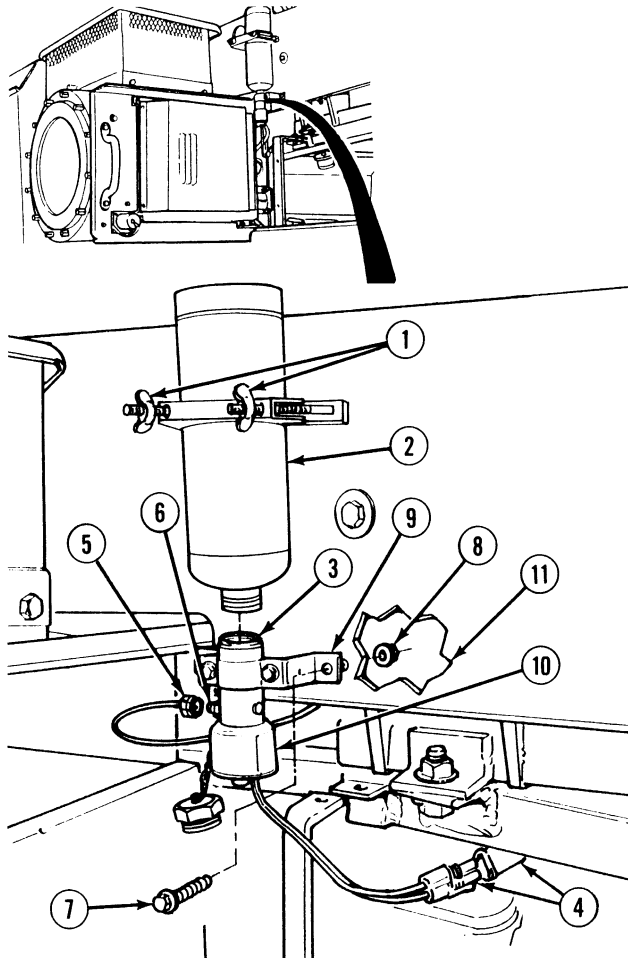
a. Removal.**WARNING**

Starting fluid is toxic and highly flammable. Container is pressurized. NEVER heat container and NEVER discharge starting fluid in confined areas or near open flame. Severe injury to personnel may result.

NOTE

Connectors are removed by gently prying on tab and pulling connector apart.

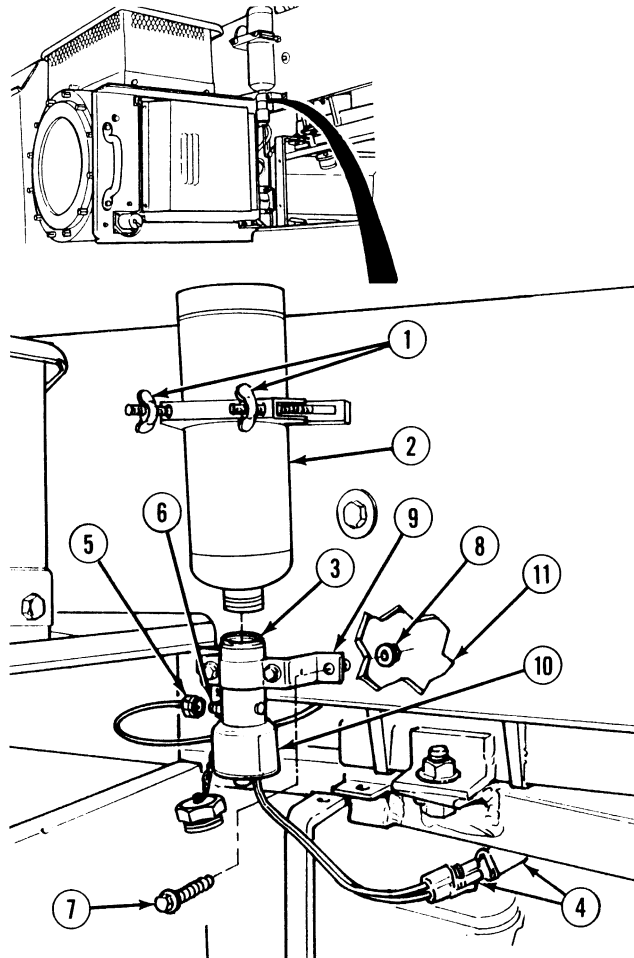
- (1) Loosen two wingnuts (1) and remove ether supply cylinder (2) by turning counterclockwise from solenoid valve (3).
- (2) Disconnect MC23 connector (4).
- (3) Remove ether tube (5) from fitting (6).
- (4) Remove two screws (7) and locknuts (8) from bracket (9). Discard locknuts.
- (5) Remove ether starting aid (10) from truck (11).



4-18. ETHER START AID ASSEMBLY REPLACEMENT (CONT).

b. Installation.

- (1) Install ether starting aid (10) on truck (11) with two screws (7) and locknuts (8) in bracket (9).
- (2) Install ether tube (5) on fitting (6).
- (3) Connect MC23 connector (4).
- (4) Install ether supply cylinder (2) into solenoid valve (3) by turning clockwise and tighten two wingnuts (1).



c. Follow-On Maintenance:

- Install left side noise panel, (Para 17-28).
- Start engine, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-19. ETHER START AID HOSE AND FITTINGS REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

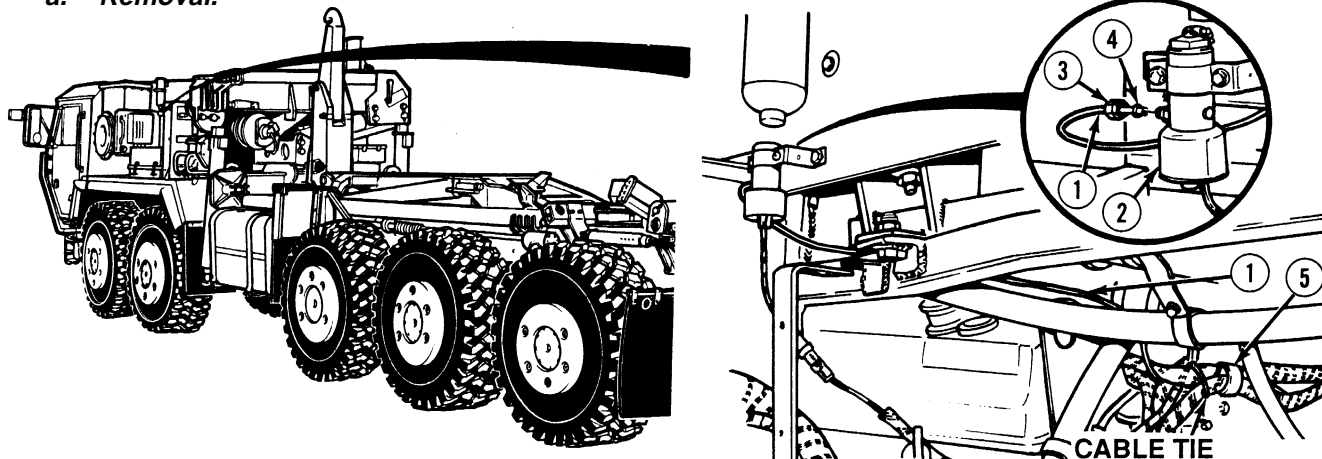
Materials/Parts

Cable Ties (Item 25, Appendix C)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Left side noise panel removed, (Para 17-28)
Right side noise panel removed, (Para 17-26)
Ether start cylinder disconnected, (Para 4-18)

a. Removal.

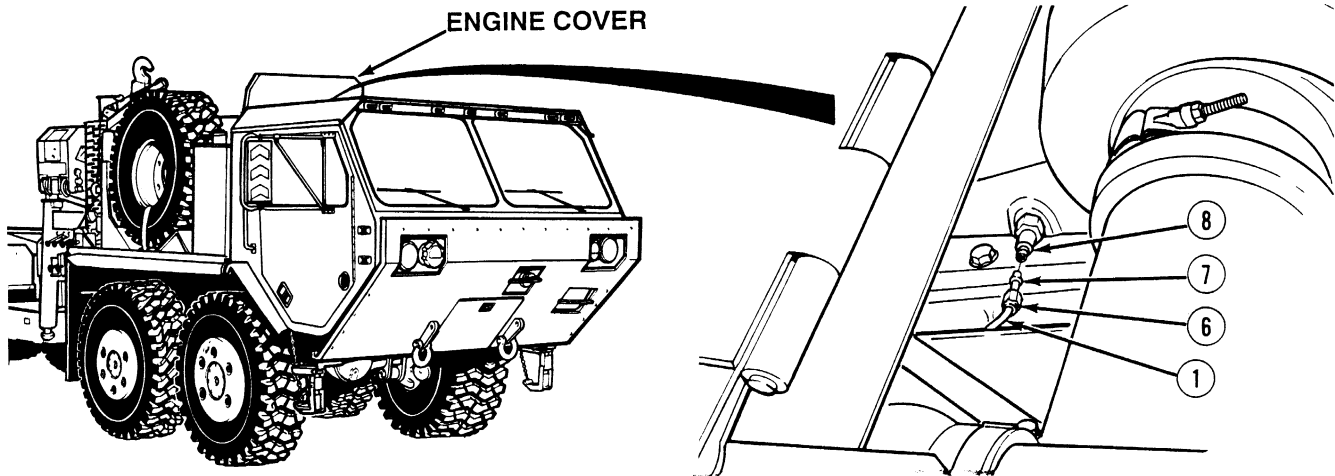


WARNING

Starting fluid is toxic and highly flammable. Container is pressurized. NEVER heat container and NEVER discharge starting fluid in confined areas or near open flame. Severe injury to personnel may result.

- (1) Remove ether tube (1) from valve assembly (2).
- (2) Cut ether tube (1) and discard nut (3) and ferrule (4).
- (3) Remove ether tube (1) from two engine wire harness clips (5).

4-19. ETHER STARTING AID HOSE AND FITTINGS REPLACEMENT (CONT).



- (4) Open engine cover.
- (5) Remove nut (6), ferrule (7) and ether tube (1) from atomizer (8). Discard nut, ferrule and ether tube.

b. Installation.

WARNING

Starting fluid is toxic and highly flammable. Container is pressurized. NEVER heat container and NEVER discharge starting fluid in confined areas or near open flame. Severe injury to personnel may result.

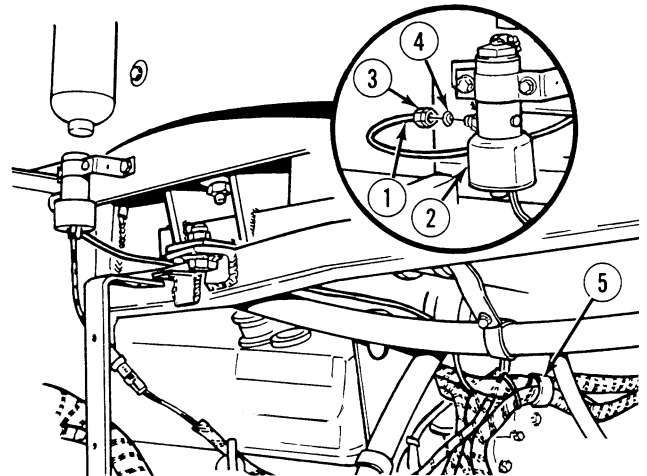
- (1) Install nut (6) and ferrule (7) on ether tube (1).
- (2) Install ether tube (1) on atomizer (8).
- (3) Close engine cover.

- (4) Route ether tube (1) through two engine wire harness clips (5).

NOTE

Install cable ties as required.

- (5) Cut ether tube (1) to correct length.
 (6) Position nut (3) and ferrule (4) on ether tube (1).
 (7) Install ether tube (1) on valve assembly (2).



c. Follow-On Maintenance:

- Connect ether start aid assembly, (Para 4-18).
- Install right side noise panel, (Para 17-26).
- Install left side noise panel, (Para 17-28).
- Start engine, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

4-20. ETHER START AID THERMOSTAT REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Goggles, Industrial (Item 30, Appendix G)

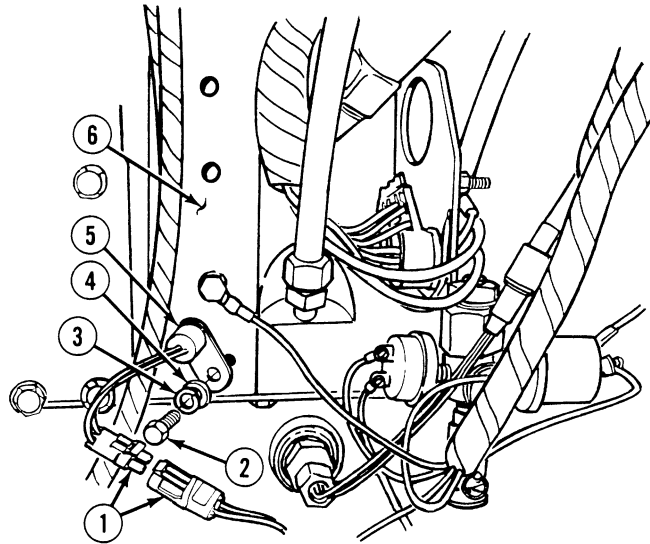
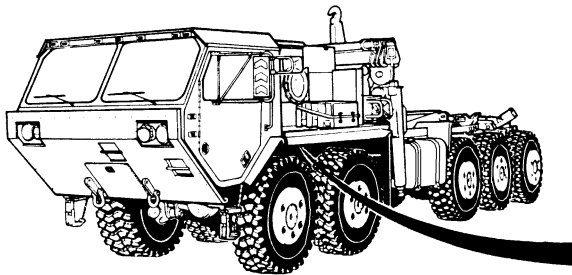
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Left front fender skirt removed, (Para 17-34)

Materials/Parts

Corrosion Preventive Compound (Item 34, Appendix C)
Lockwasher (Item 174, Appendix F)

a. Removal.



WARNING

Allow engine to cool before performing this procedure or injury to personnel may result.

NOTE

Connectors are removed by gently prying on tab and pulling apart connectors.

- (1) Disconnect ether start aid thermostat MC56 connector (1).
- (2) Remove screw (2), lockwasher (3), washer (4) and thermostat (5) from engine block (6). Discard lockwasher.

b. Installation.

- (1) Install thermostat (5), washer (4), lockwasher (3) and screw (2) in engine block (6).
- (2) Connect ether start aid thermostat MC 56 connector (1).

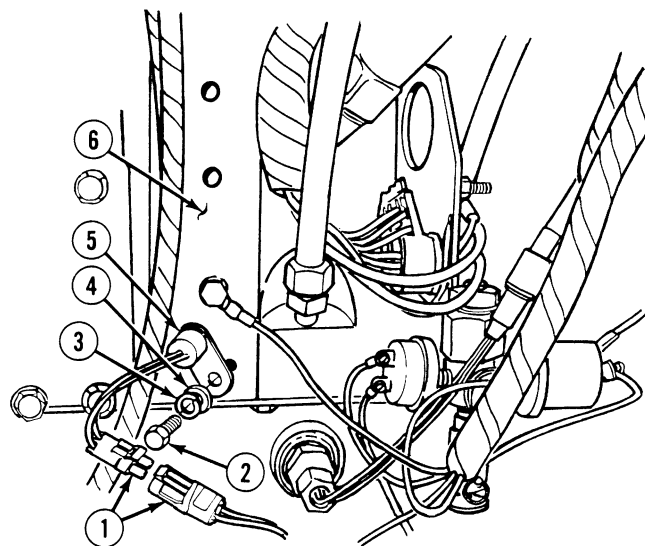
WARNING

Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

- (3) Apply corrosion preventive compound to screw (2).

c. Follow-On Maintenance:

- Install left front fender skirt, (Para 17-34).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

CHAPTER 5

EXHAUST SYSTEM MAINTENANCE

Para	Contents	Page
5-1	Introduction	5-1
5-2	Muffler Replacement	5-2
5-3	Exhaust Pipes Replacement	5-10

5-1. INTRODUCTION.

This chapter contains maintenance instructions for removing and installing exhaust system components as authorized by the Maintenance Allocation Chart (MAC) at the Unit Maintenance level.



5-2. MUFFLER REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
 (Item 74, Appendix G)
 Socket Set, 3/8 in. (Item 62, Appendix G)
 Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m])
 (Item 95, appendix G)
 Wrench, Torque (0 to 60 N·m)
 (Item 98, Appendix G)
 Lifting Device (Minimum capacity 300 lbs
 [136 kg])
 Wooden Blocks (Appendix D)

Materials/Parts

Clamp (Item 18, Appendix F)
 Clamp (Item 12, Appendix F)

Materials/Parts - Continued

Locknut (4) (Item 92, Appendix F)
 Locknut (2) (Item 98, Appendix F)
 Lockwasher (Item 173, Appendix F)
 Screw, Self-Locking (5) (Item 319, Appendix F)

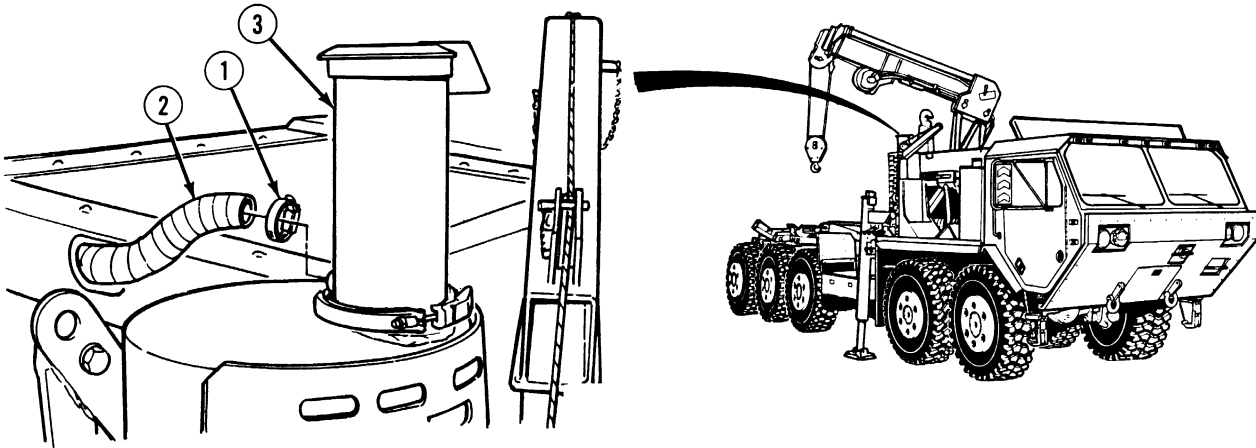
Personnel Required

Two

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Crane extended, (TM 9-2320-364-10)
 Spare tire removed, (TM 9-2320-364-10)
 Right side noise panel removed, (Para 17-26)
 Engine cover opened, (TM 9-2320-364-10)

a. Removal.



WARNING

Allow engine to cool before performing maintenance on the muffler, exhaust pipe, exhaust manifold or turbocharger. If necessary, use insulated pads and gloves.

NOTE

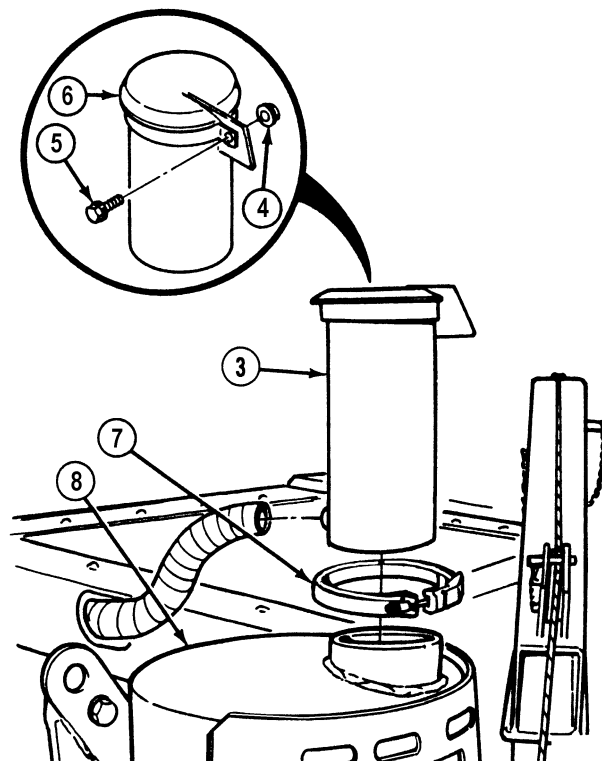
Note position of clamps to aid in installation.

- (1) Loosen clamp (1) and remove aspirator hose (2) from exhaust stack (3).

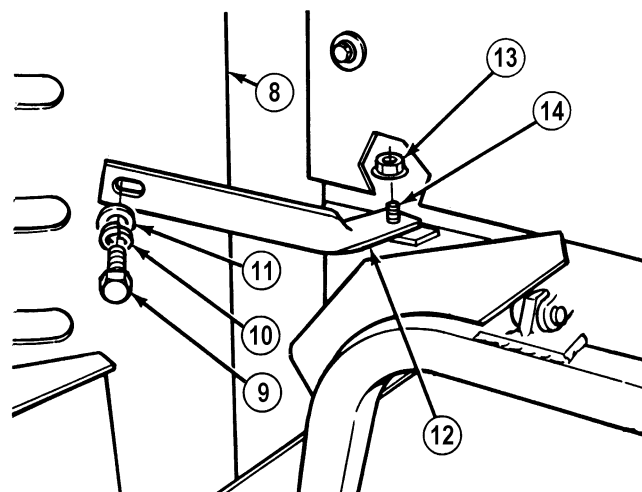
NOTE

Perform Step (2) only if installing a new rain cap.

- (2) Remove nut (4), screw (5) and rain cap (6) from exhaust stack (3).
- (3) Unlatch clamp (7) and remove exhaust stack (3) and clamp from muffler (8).

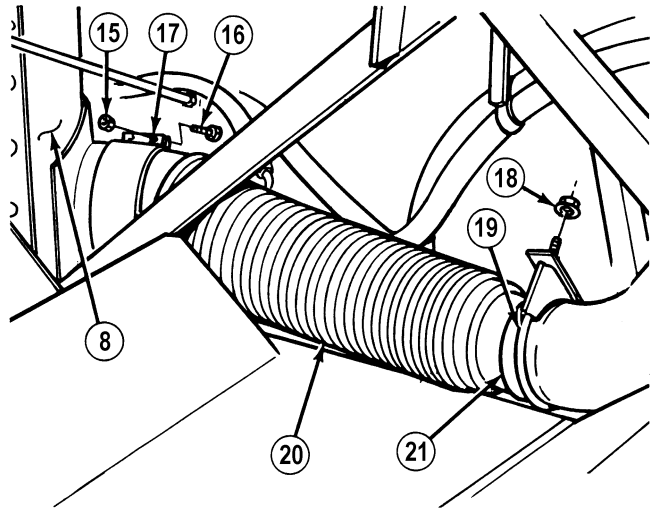


- (4) Remove screw (9), lockwasher (10) and washer (11) from muffler support bracket (12) and muffler (8). Discard lockwasher.
- (5) Remove and discard locknut (13) from radiator mounting screw (14).
- (6) Remove muffler support bracket (12) from radiator mounting screw (14).



5-2. MUFFLER REPLACEMENT (CONT).

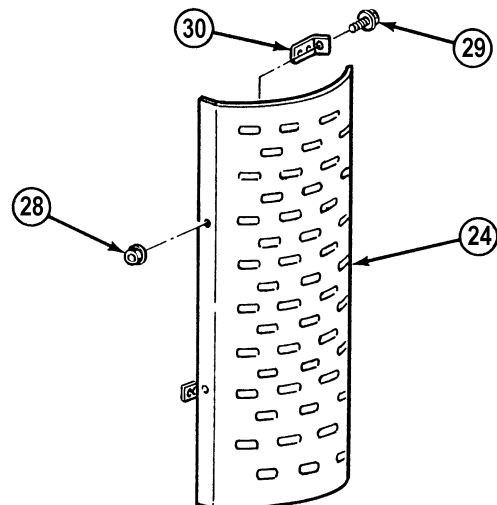
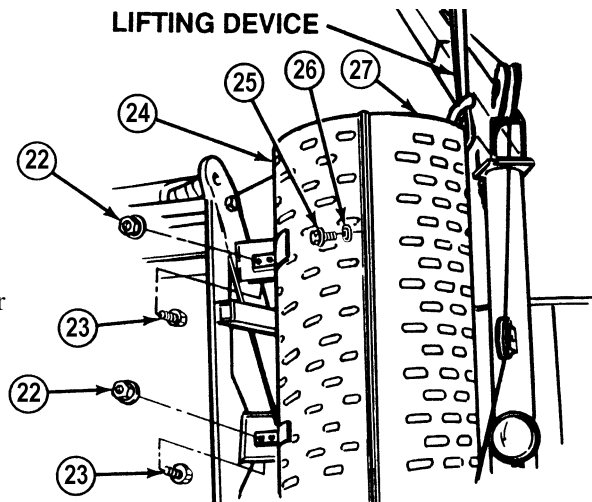
- (7) Remove two locknuts (15) and screws (16) from clamp (17). Discard clamp, locknuts and screws.
- (8) Remove two locknuts (18) and U-bolt clamp (19) from exhaust tube (20). Discard locknuts and U-bolt clamp.
- (9) Remove exhaust tube (20) from exhaust tube (21).
- (10) Remove exhaust tube (20) from muffler (8).



NOTE

If truck is not equipped with a crane, perform Steps (10) through (13).

- (11) Remove two locknuts (22) and screws (23) from muffler guard (24). Discard locknuts.
- (12) Remove two self-locking screws (25), washers (26) and muffler guard (24) from muffler (27). Discard self-locking screws.
- (13) Remove two locknuts (28), screws (29) and angle brackets (30) from muffler guard (24). Discard locknuts.



WARNING

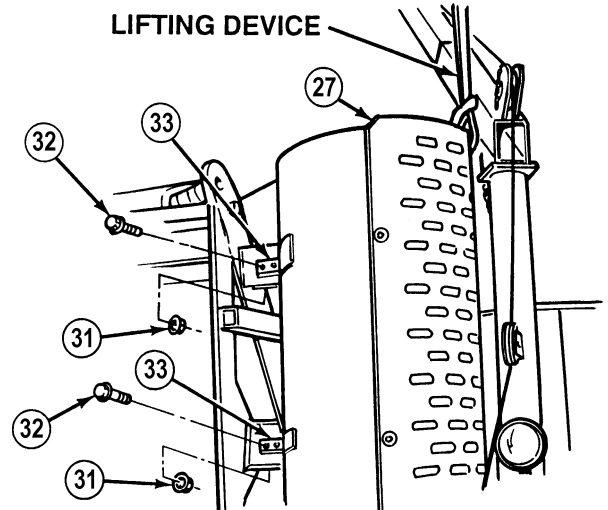
Muffler weighs 152 lbs (69 kg). Attach suitable lifting device prior to removal to prevent possible injury to personnel.

- (14) Attach lifting device to muffler guard (27).

NOTE

- Retain one locknut for temporary use in Step (18) of Removal and Step (3) of Installation.
- Two remaining locknuts and screws are present if truck is not equipped with a crane. If truck is equipped with a crane, four locknuts and screws are present.

- (15) Remove locknuts (31) and screws (32) from two brackets (33). Discard locknuts.



CAUTION

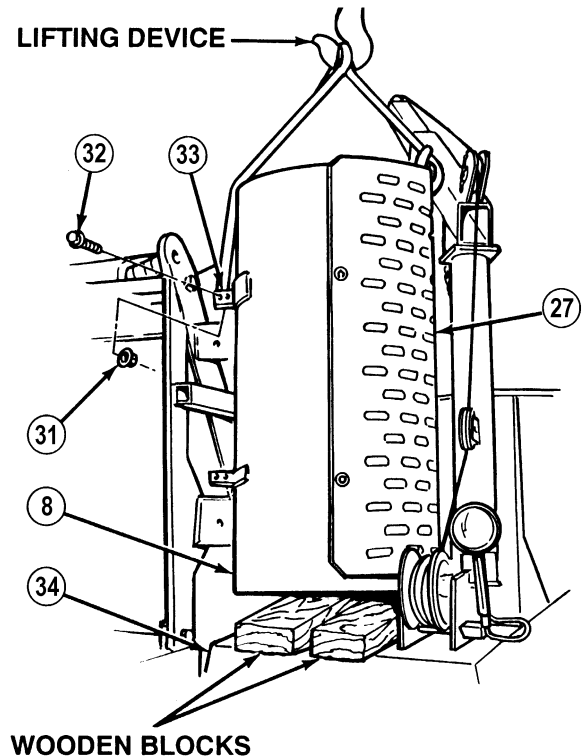
Ensure muffler does not contact spare tire winch assembly. Failure to comply may result in damage to equipment.

- (16) With the aid of an assistant, raise muffler (8) approximately two in. (5 cm) and position two wooden blocks under muffler.
- (17) Lower muffler (8) onto wooden blocks.
- (18) Attach lifting device to bracket (33) and secure with screw (32) and locknut (31).

CAUTION

Use extreme caution when removing muffler from truck. Muffler may swing into truck and damage may occur to parts.

- (19) With the aid of an assistant, remove muffler (8) from truck (34).
- (20) Remove locknut (31), screw (32) and lifting device from bracket (33).
- (21) Remove lifting device from muffler guard (27).



5-2. MUFFLER REPLACEMENT (CONT).

NOTE

Only three self-locking screws and washers will be present if truck is not equipped with a crane.

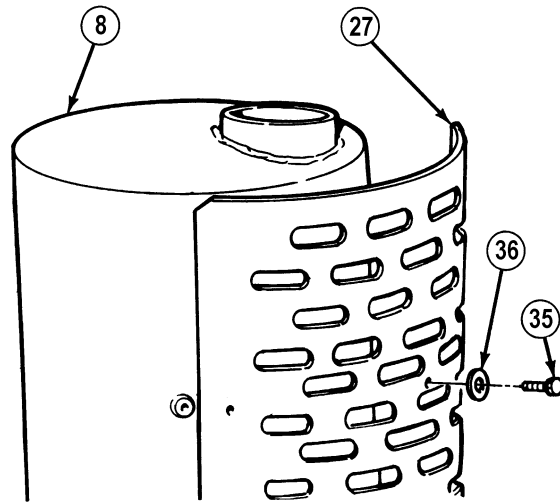
- (22) Remove five self-locking screws (35), washers (36) and muffler guard (27) from muffler (8). Discard self-locking screws.

b. Installation.

NOTE

Do not install two self-locking screws and washers on rear edge of muffler guard if truck is not equipped with a crane.

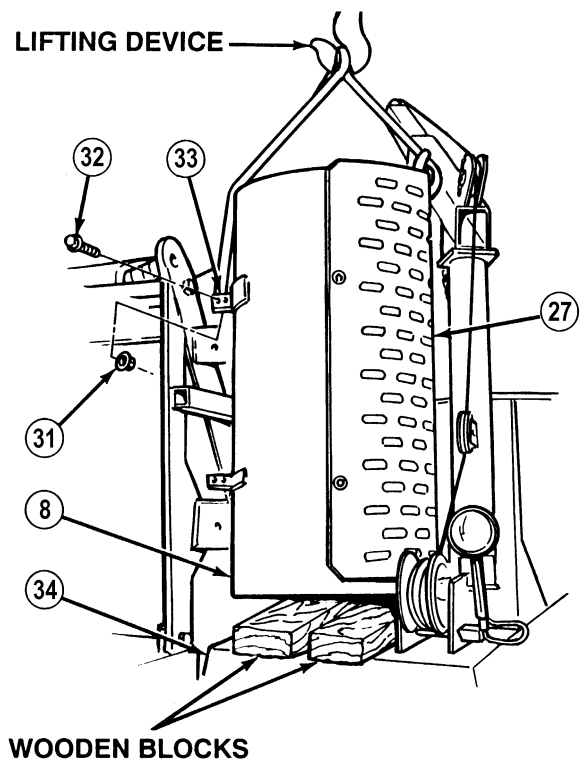
- (1) Install muffler guard (27) on muffler (8) with five washers (36) and self-locking screws (35). Tighten screws 22 to 28 lb-ft (29 to 38 N·m).



WARNING

Muffler weighs 152 lbs (69 kg). Attach suitable lifting device prior to removal to prevent possible injury to personnel.

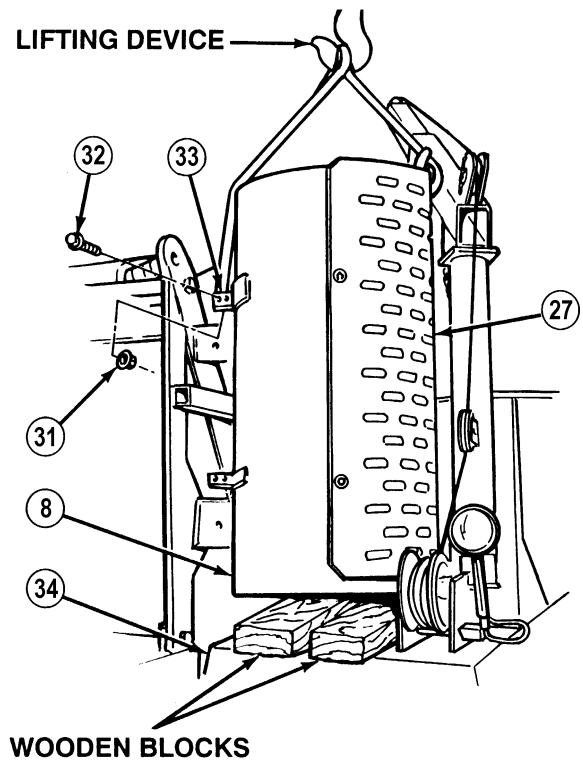
- (2) Attach lifting device to muffler guard (27).
- (3) Attach lifting device on bracket (33) and secure with screw (32) and locknut (31).
- (4) With the aid of an assistant, position muffler (8) over truck (34).
- (5) Position two wooden blocks on truck (34) under muffler (8).



CAUTION

Use extreme caution when installing muffler on truck. Muffler may swing into truck and damage may occur to parts.

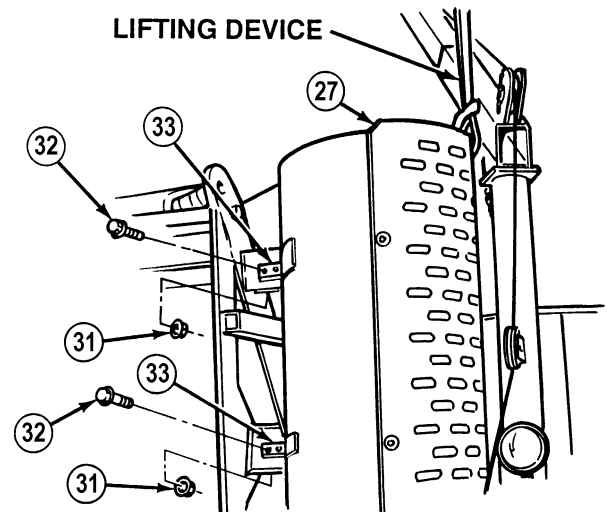
- (6) With the aid of an assistant, lower muffler (8) on wooden blocks.
- (7) Remove locknut (31), screw (32) and lifting device from bracket (33). Discard locknut.
- (8) With the aid of an assistant, raise muffler (8) up slightly and remove two wooden blocks.
- (9) With the aid of an assistant, lower muffler (8) and align bracket (33) on muffler.



NOTE

Do not install the two outboard screws and locknuts if truck is not equipped with a crane.

- (10) Install four screws (32) and locknuts (31) in two brackets (33).
- (11) Remove lifting device from muffler guard (27).

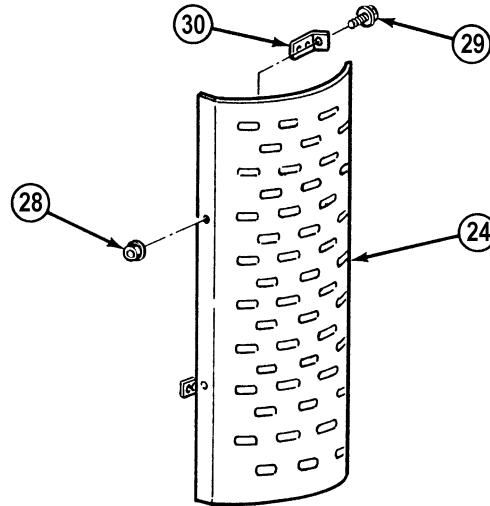


5-2. MUFFLER REPLACEMENT (CONT).

NOTE

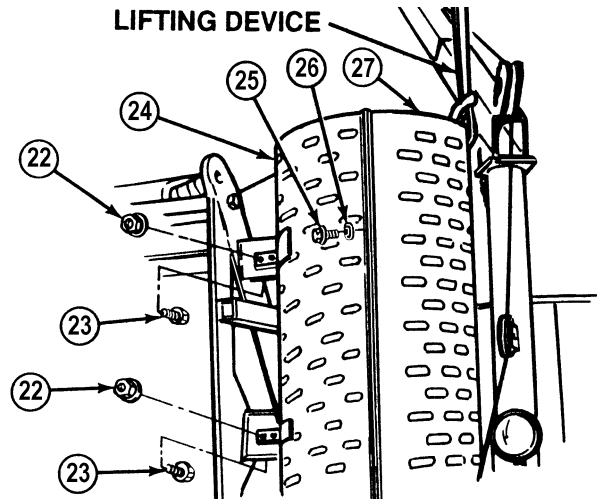
If truck is not equipped with a crane perform Steps (12) through (14).

- (12) Install two angle brackets (30) on muffler guard (24) with two screws (29) and locknuts (28).



- (13) Install muffler guard (24) on muffler guard (27) with two washers (26) and self-locking screws (25). Tighten screws to 22 to 28 lb-ft (30 to 38 N·m).
- (14) Install two screws (23) and locknuts (22) on muffler guard (27).

LIFTING DEVICE

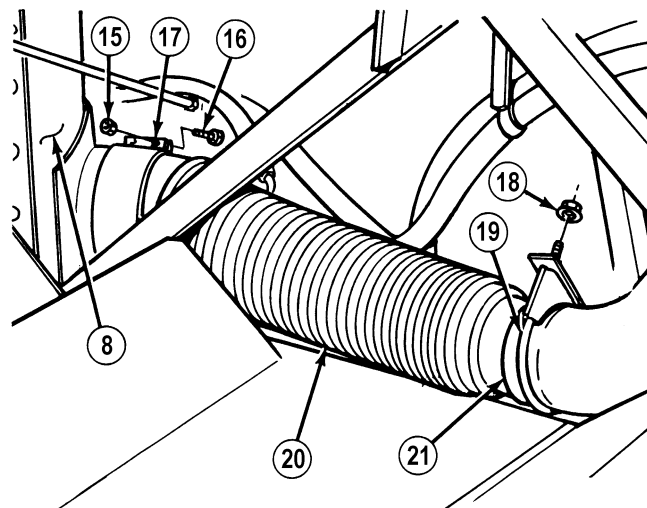


- (15) Position exhaust tube (20) on exhaust tube (21).
- (16) Position exhaust tube (20) on muffler (8).
- (17) Install U-bolt clamp (19) and two locknuts (18) on exhaust tube (20). Tighten U-bolt clamp to 35 lb-ft (47 N·m).

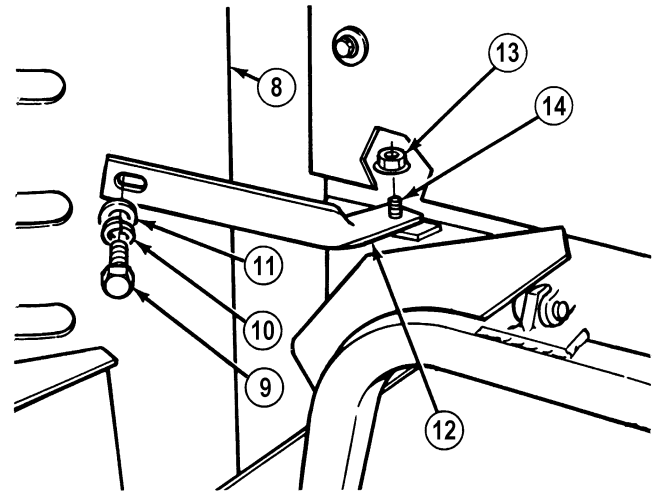
NOTE

Partially tighten larger diameter first (approximately half closed).
Partially tighten smaller diameter second (approximately half closed).

- (18) Position clamp (17) over exhaust tube (20) and install two screws (16) and locknuts (15). Tighten to 40 to 60 lb-ft (54 to 81 N·m).



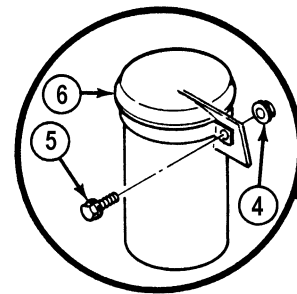
- (19) Install muffler support bracket (12) on radiator mounting screw (14).
- (20) Position locknut (13) on radiator mounting screw (14).
- (21) Install washer (11), lockwasher (10), screw (9) and muffler support bracket (12) on muffler (8).
- (22) Tighten locknut (13) on radiator mounting screw (14).
- (23) Install exhaust stack (3) and clamp (7) on muffler (8) and re-latch clamp.



NOTE

Perform Steps (24) through (26) only if installing a new clamp.

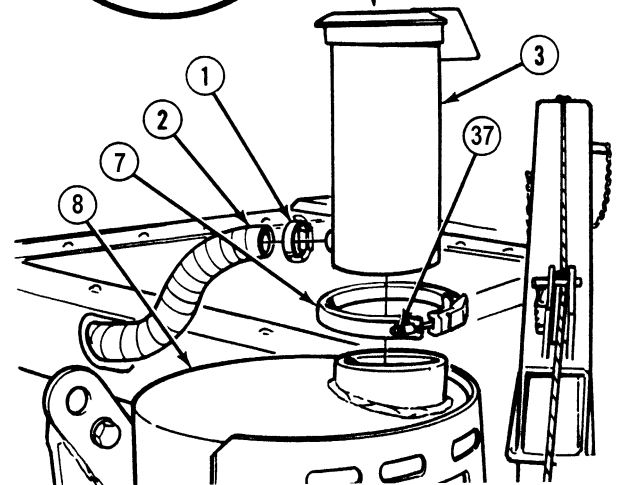
- (24) Tighten locknut (37) on clamp (7) to 20 to 30 lb-in (2 to 3 N·m).
- (25) Unlatch clamp (7) on muffler (8), then re-latch clamp (7).
- (26) Tighten locknut (37) on clamp (7) to 50 lb-in (6 N·m).



NOTE

Perform Step (27) only if rain cap was removed.

- (27) Install rain cap (6) on exhaust stack (3) with screw (5) and nut (4).
- (28) Install aspirator hose (2) and clamp (1) on exhaust stack (3) and tighten clamp (1).



c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Check for exhaust leaks, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Install right side noise panel, (Para 17-26).
- Install spare tire, (TM 9-2320-364-10).
- Stow crane, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

5-3. EXHAUST PIPES REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Wrench, Torque (0 to 60 N·m)
(Item 98, Appendix G)

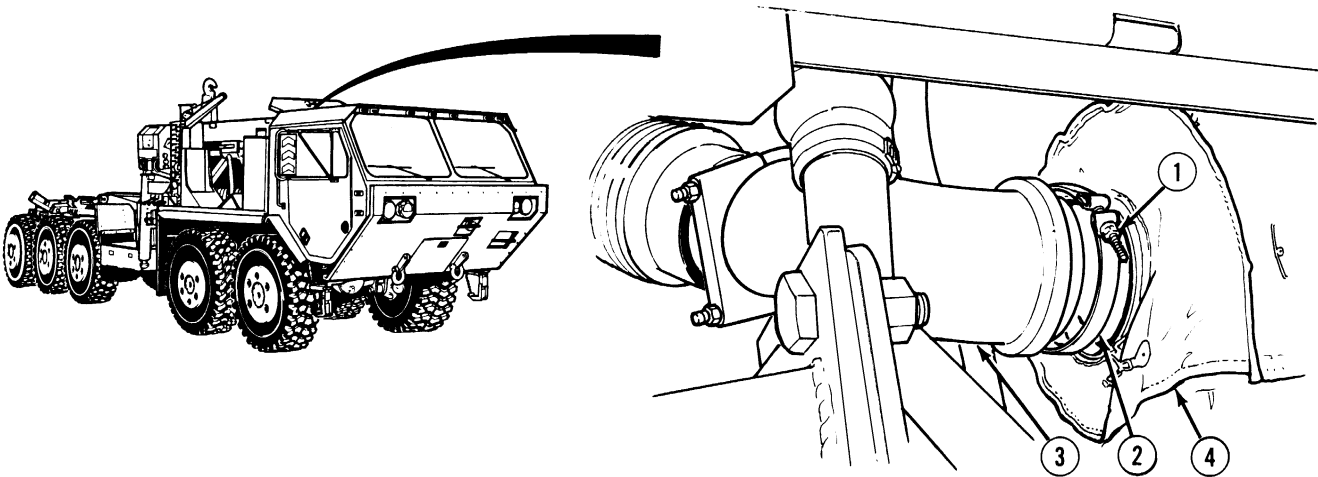
Material/Parts

Clamp (Item 12, Appendix F)
Clamp (2) (Item 18, Appendix F)
Locknut (Item 92, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Spare tire removed, (TM 9-2320-364-10)
Right side noise panel removed, (Para 17-26)
Engine cover opened, (TM 9-2320-364-10)

a. Removal.

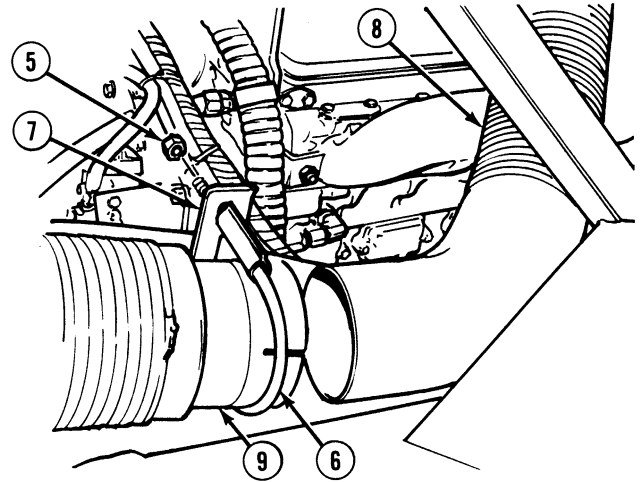


WARNING

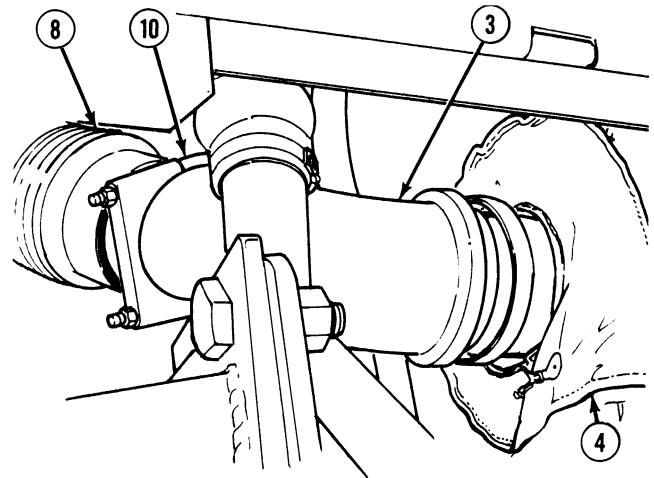
Ensure this task is done only when muffler is cool. Performing this task on a warm or hot muffler may result in severe burning to personnel.

- (1) Remove and discard locknut (1) and clamp (2) from exhaust pipe (3) and turbocharger (4).

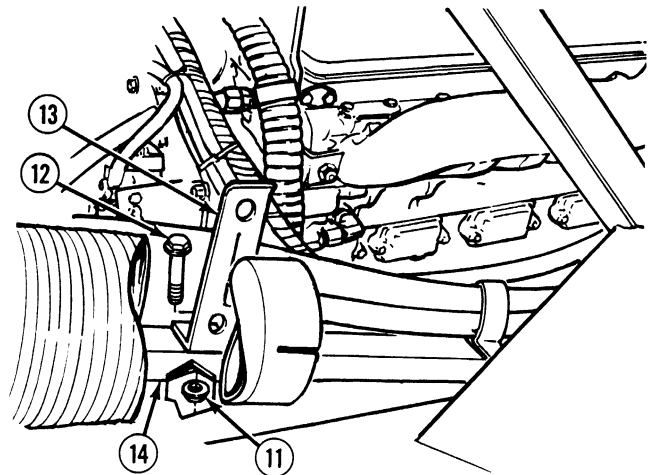
- (2) Remove and discard two locknuts (5) and clamp (6) from support bracket (7).



- (3) Rotate exhaust pipe (3) and remove from turbocharger (4).
- (4) Remove exhaust pipe (8) from exhaust pipe (9).
- (5) Loosen clamp (10) and slide up on exhaust pipe (3).
- (6) Remove exhaust pipe (3) from exhaust pipe (8).

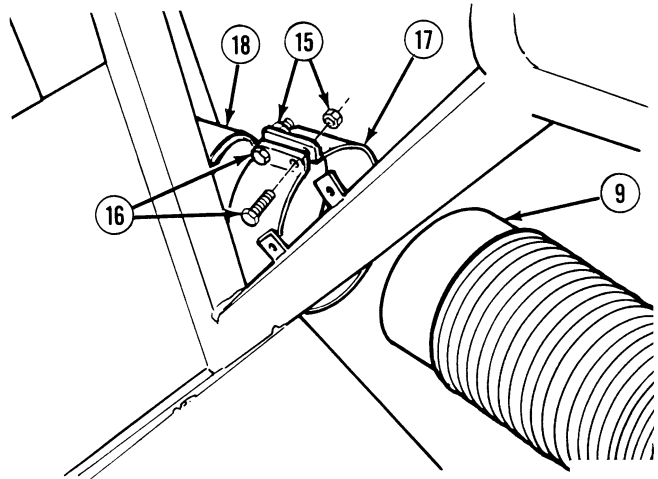


- (7) Remove locknut (11), screw (12) and support bracket (13) from power frame module (14). Discard locknut.



5-3. EXHAUST PIPES REPLACEMENT (CONT).

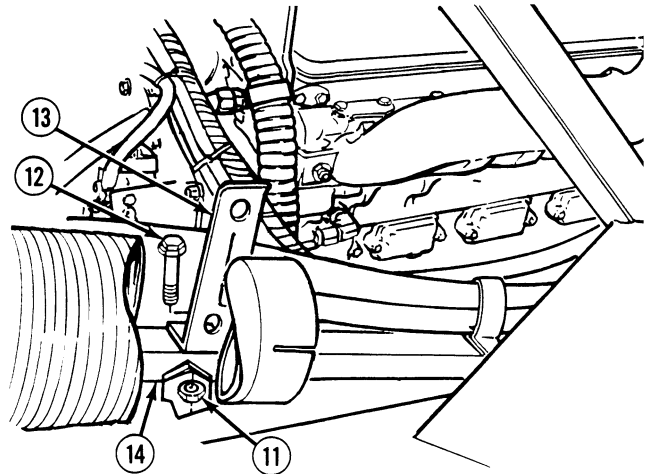
- (8) Remove and discard two locknuts (15), screws (16) and clamp (17) from exhaust pipe (9).
- (9) Remove exhaust pipe (9) from muffler (18).



b. Installation.

- (1) Position exhaust pipe (9) in muffler (18).
- (2) Install clamp (17), two screws (16) and locknuts (15) on exhaust pipe (9).
- (3) Install support bracket (13), screw (12) and locknut (11) on power frame module (14).

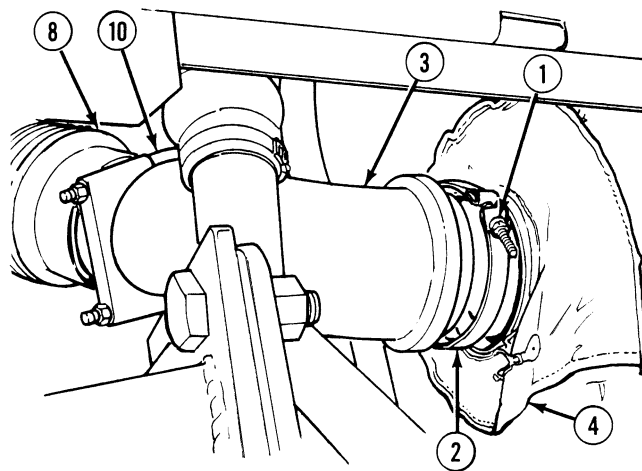
- (4) Install exhaust pipe (3) in exhaust pipe (8).
- (5) Position clamp (10) on exhaust pipe (3).
- (6) Position exhaust pipe (3) on turbocharger (4).



WARNING

Ensure that exhaust pipe and turbo charger pipe connections are free from soot or debris. Failure to comply may result in exhaust leak and injury or death to personnel.

- (7) Position exhaust clamp (2) and locknut (1) on exhaust pipe (3).



CAUTION

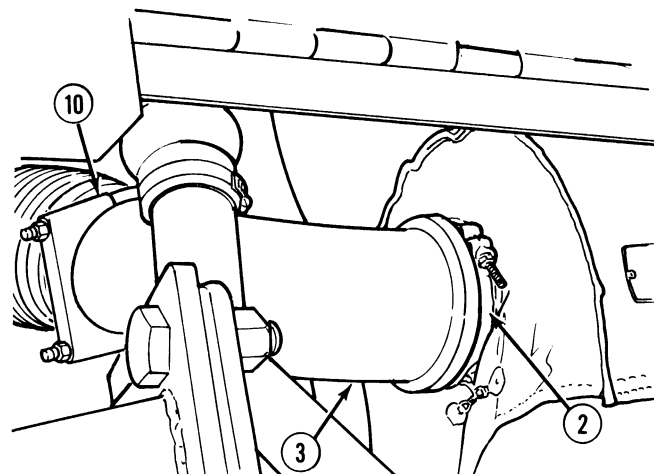
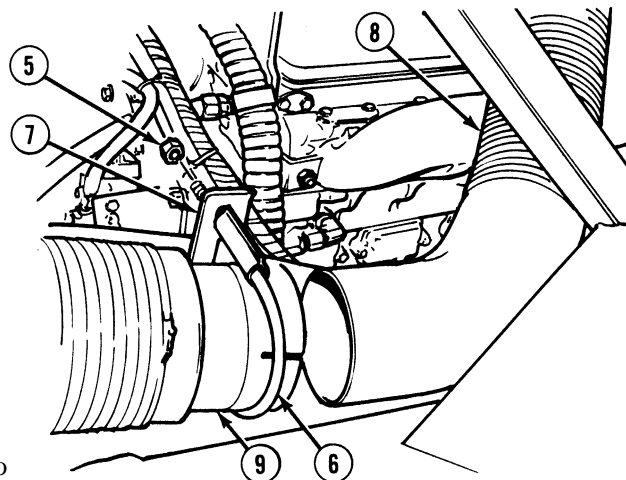
Ensure that exhaust pipes do not contact parts of engine or truck after assembly. Failure to comply may result in damage to equipment.

- (8) Position exhaust pipe (8) in exhaust pipe (9).
- (9) Position clamp (6) on exhaust pipe (9).
- (10) Install clamp (6) on support bracket (7) with two locknuts (5). Tighten clamp to 35 lb-ft (47 N·m).
- (11) Tighten clamp (10) on exhaust pipe (3) to 35 lb-ft (47 N·m).

NOTE

It may be necessary to tap clamp into place to ensure proper seating of exhaust pipe and turbocharger.

- (12) Tighten exhaust clamp (2) on exhaust pipe (3) to 100 to 125 lb-in (11 to 14 N·m).

**c. Follow-On Maintenance:**

- Start engine, (TM 9-2320-364-10).
- Check for exhaust leaks, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Close engine cover, (TM 9-2320-364-10).
- Install right side noise panel, (Para 17-26).
- Install spare tire, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

CHAPTER 6

COOLING SYSTEM MAINTENANCE

Para	Contents	Page
6-1	Introduction	6-1
6-2	Cooling System Pressure Test	6-2
6-3	Cooling System Assembly Replacement	6-4
6-4	Cooling System Service	6-20
6-5	Radiator Replacement	6-24
6-6	Coolant Level Sight Glass Replacement	6-37
6-7	Thermostat Replacement	6-40
6-8	Cooling System Hoses And Tubes Replacement	6-52

6-1. INTRODUCTION.

This chapter contains maintenance instructions for removing, replacing, adjusting, servicing, replacing and installing cooling system components authorized by the Maintenance Allocation Chart (MAC) at the Unit Maintenance level.

6-2. COOLING SYSTEM PRESSURE TEST.

This task covers:

- a. Pressure Test
- b. Follow-On Maintenance

INITIAL SETUP

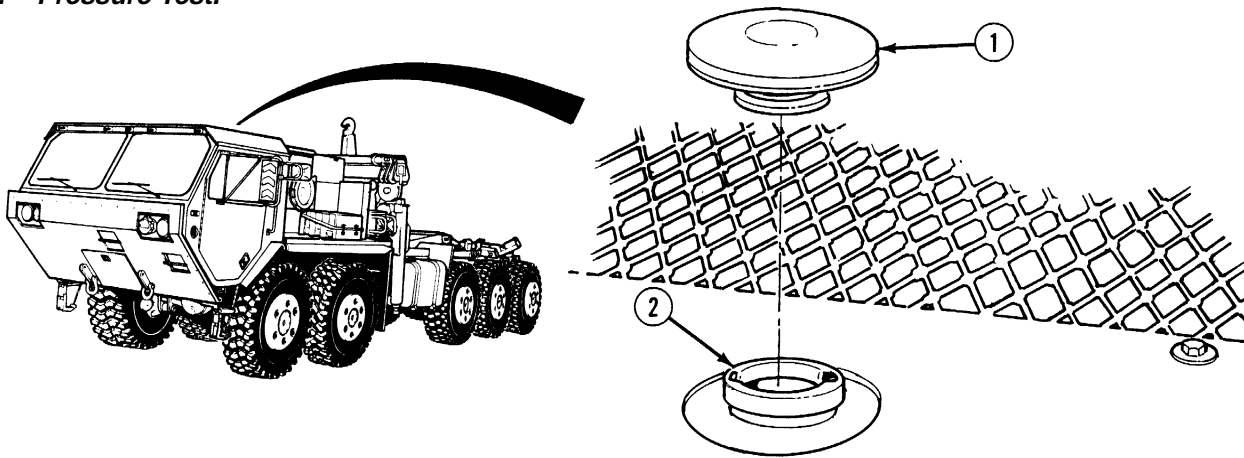
Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
 (Item 74, Appendix G)
 Adapter, Radiator (Item 2, Appendix G)
 Tester, Pressure, Radiator (Item 71, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Cooling system filled, (Para 6-4)

a. Pressure Test.



WARNING

- Radiator, radiator cap, coolant, and hoses are very hot and pressurized during truck operation. Let radiator cool before checking hoses. Failure to do so may result in serious burns to personnel.
- Use extreme care when removing radiator pressure cap. Sudden release of pressure can cause steam flash which could seriously injure personnel. Slowly loosen cap to first stop to relieve pressure before removing cap completely. After opening, securely tighten cap.
- Use clean, thick waste cloth or like material to remove radiator pressure cap. Avoid using gloves. If hot water soaks thru gloves, personnel could be burned.

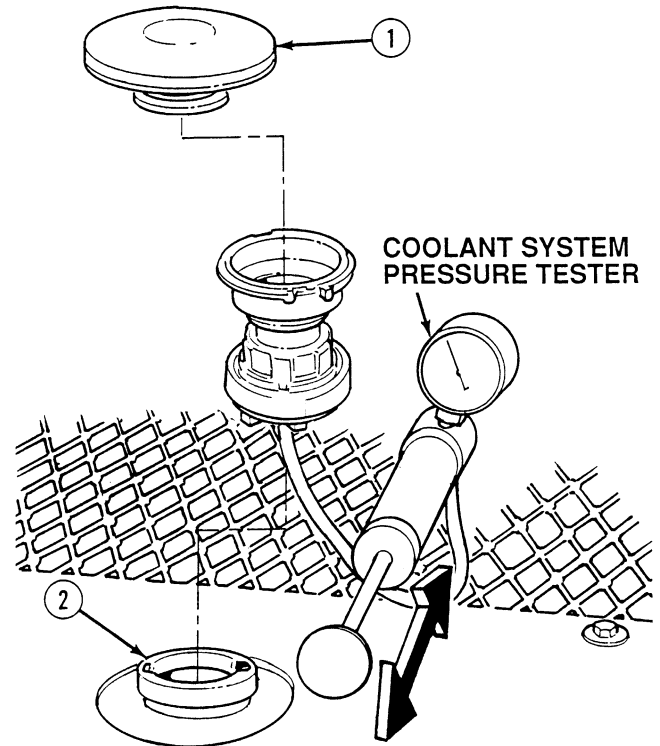
- (1) Push down on radiator cap (1) and slowly turn 1/2 turn counterclockwise to relieve pressure from radiator (2).

- (2) Turn radiator cap (1) additional 1/2 turn counterclockwise and remove radiator cap from radiator (2).
- (3) Install radiator cap (1) on coolant system pressure tester and pressurize radiator cap.

NOTE

Pressure valve on radiator cap must start to open between 6.5 and 8 psi (44.81 and 55.16 kPa) and cap must hold pressure for 30 seconds or more. If pressure valve does not open, replace cap.

- (4) Remove radiator cap (1) from coolant system pressure tester.

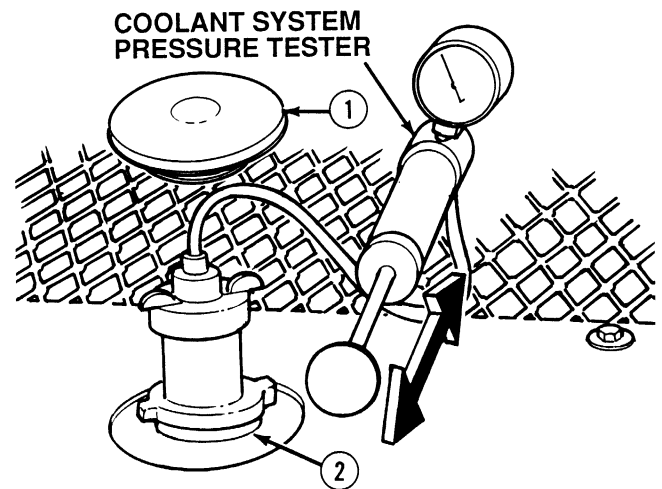


- (5) Install coolant system pressure tester on radiator (2) and pressurize coolant system to 10 to 15 psi (68.95 to 103.4 kPa). If pressure does not hold for two minutes, check for coolant leaks (TM 9-2320-364-10) and repair as necessary.

WARNING

Use extreme care when removing coolant system pressure tester. Sudden release of pressure can cause injury to personnel.

- (6) Slowly remove coolant system pressure tester from radiator (2).
- (7) Install radiator cap (1) on radiator (2).



b. Follow-On Maintenance:

- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

6-3. COOLING SYSTEM ASSEMBLY REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Cap and Plug Set (Item 8, Appendix G)
- Goggles, Industrial (Item 30, Appendix G)
- Jackstands (4) (Item 42, Appendix G)
- Pan, Drain (Item 46, Appendix G)
- Socket Set, 3/8 in. (Item 62, Appendix G)
- Wrench, Combination 1 5/16 in. (Item 81, Appendix G)
- Wrench, Combination 1 1/2 in. (Item 83, Appendix G)
- Wrench, Crowsfoot, 15/16 in. (Item 90, Appendix G)
- Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)
- Lifting Device (Minimum Capacity 1000 lbs)

Materials/Parts

- Cable Ties (Item 25, Appendix C)
- Oil, Lubricating (Item 54, Appendix C)
- Tags, Identification (Item 88, Appendix C)
- Locknut (4) (Item 91, Appendix F)
- Locknut (2) (Item 106, Appendix F)
- Locknut (4) (Item 133, Appendix F)

Materials/Parts - Continued

- Lockwasher (Item 160, Appendix F)
- Lockwasher (8) (Item 165, Appendix F)
- Preformed Packing (2) (Item 253, Appendix F)
- Preformed Packing (Item 221, Appendix F)
- Preformed Packing (Item 252, Appendix F)
- Preformed Packing (Item 254, Appendix F)

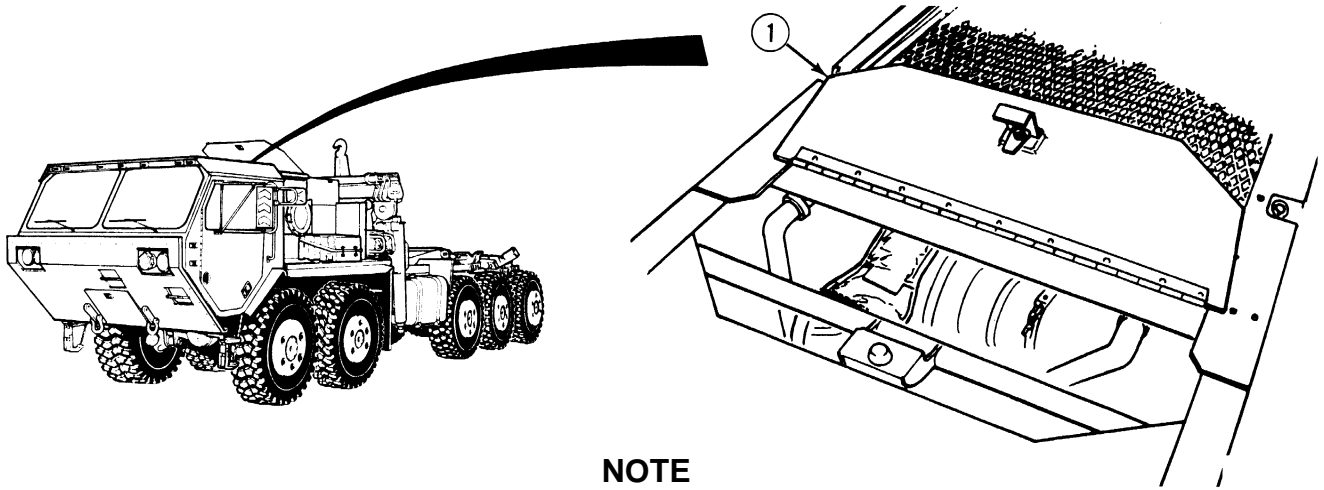
Personnel Required

Two

Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)
- Batteries disconnected, (Para 7-87)
- Spare tire removed, (TM 9-2320-364-10)
- Cooling system drained, (Para 6-4)
- Right side noise panel removed, (Para 17-26)
- Left front side noise panel removed, (Para 17-27)
- Left side noise panel removed, (Para 17-28)
- Rear noise panel removed, (Para 17-29)

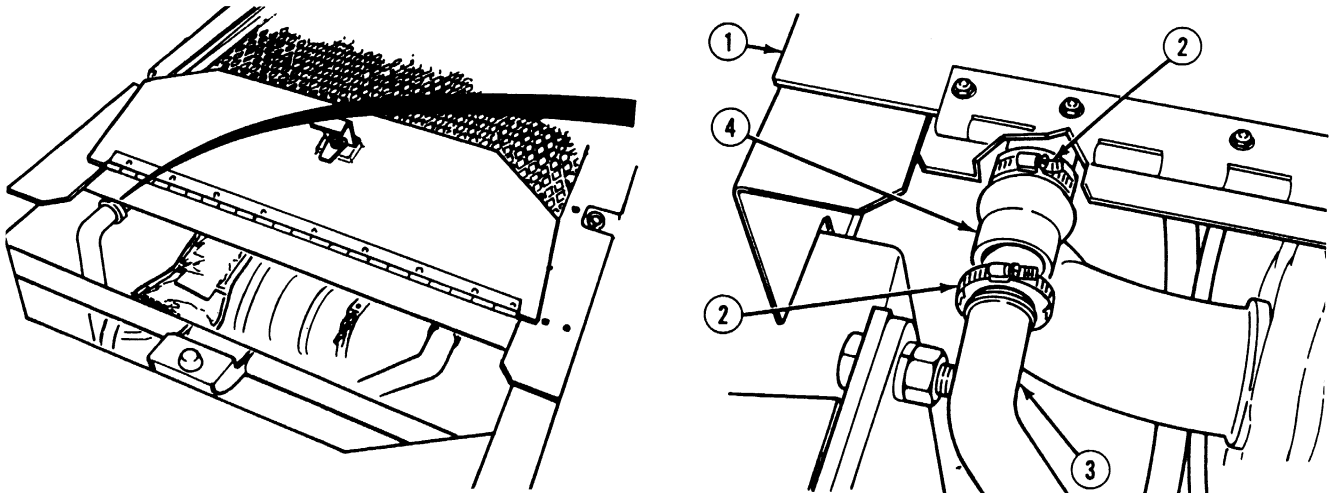
a. **Removal.**



NOTE

- Tag and mark all hoses and tubes prior to removal.
- Cap or plug all hoses and tubes after removal to prevent contamination.

(1) Open engine cover (1).

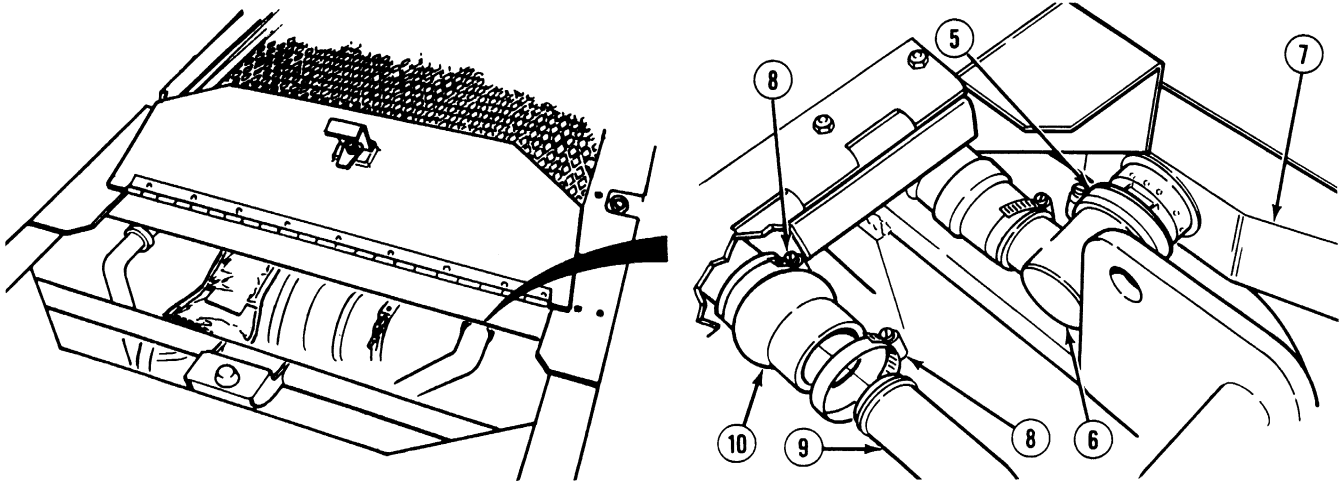


WARNING

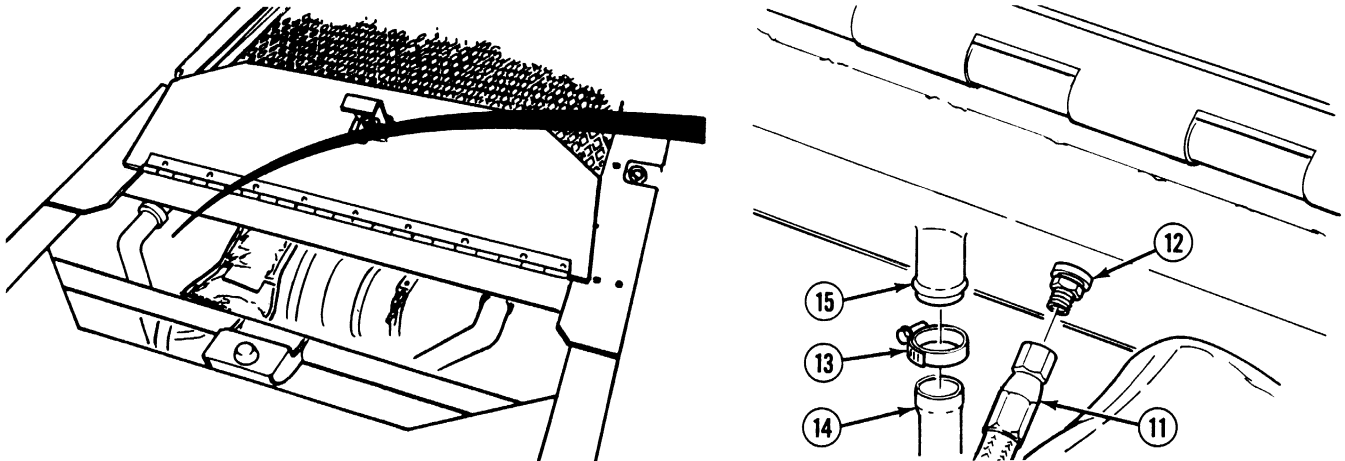
Excess coolant may splash out upon removal of tube from hump hose. Ensure proper eye protection is worn to prevent possible injury to personnel.

(2) Loosen two clamps (2) and remove tube (3) and one clamp (2) from hump hose (4).

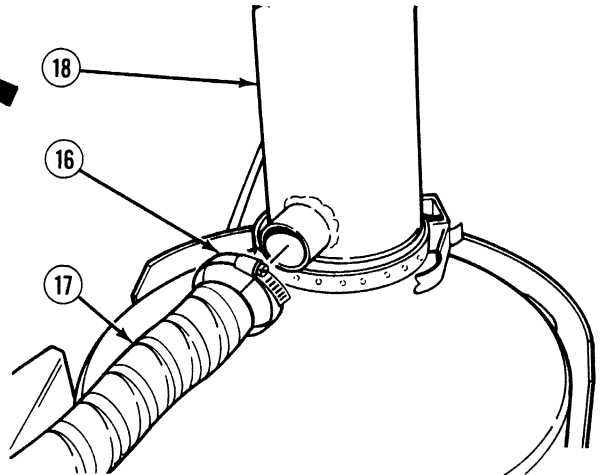
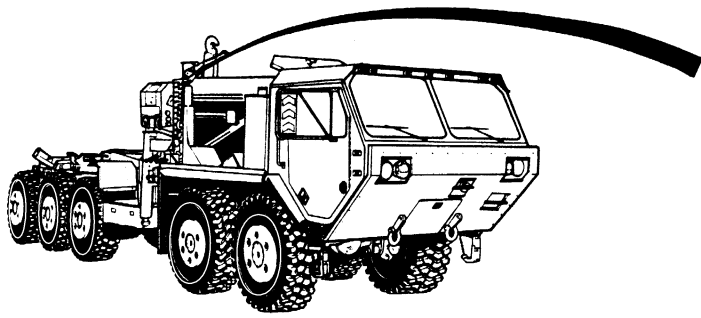
6-3. COOLING SYSTEM ASSEMBLY REPLACEMENT (CONT).



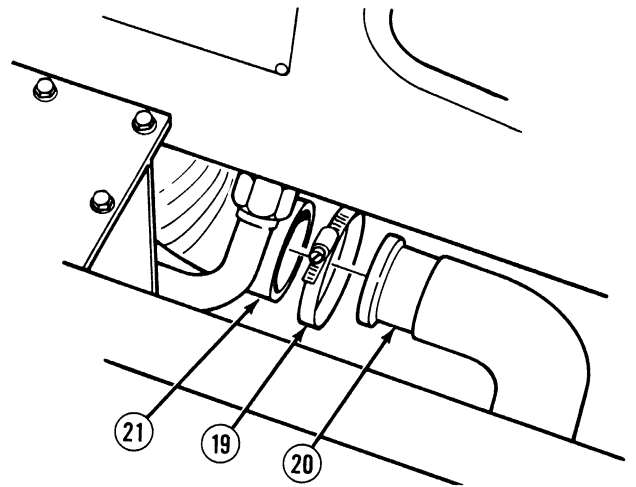
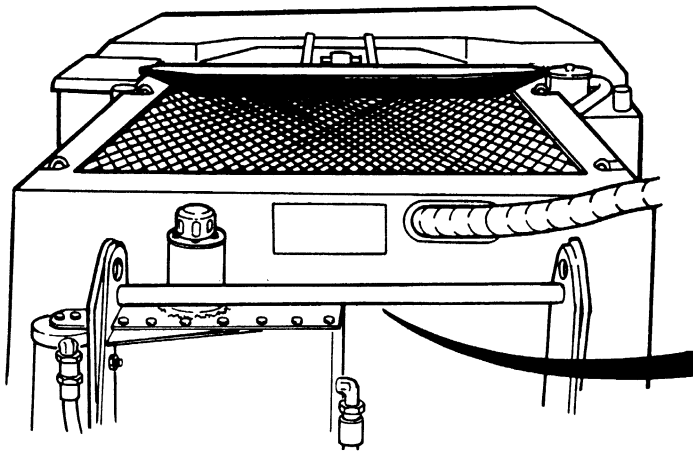
- (3) Loosen clamp (5) on dust cup (6) and remove dust cup (6) and clamp (5) from air cleaner assembly (7).
- (4) Loosen two clamps (8) and remove tube (9) and one clamp (8) from hump hose (10).



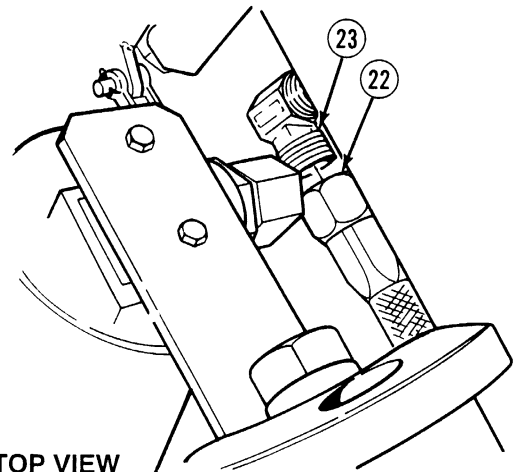
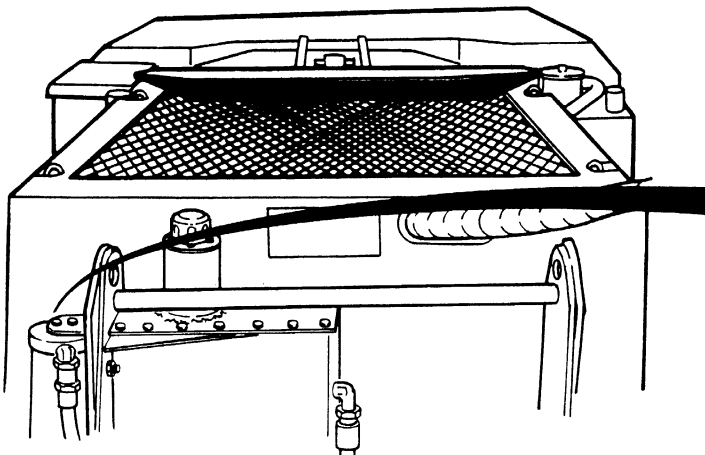
- (5) Remove deairation hose 2300 (11) from adapter (12).
- (6) Loosen clamp (13) and remove hose 2561 (14) and clamp (13) from radiator tube (15).



(7) Loosen clamp (16) and remove aspirator hose (17) and clamp (16) from muffler (18).

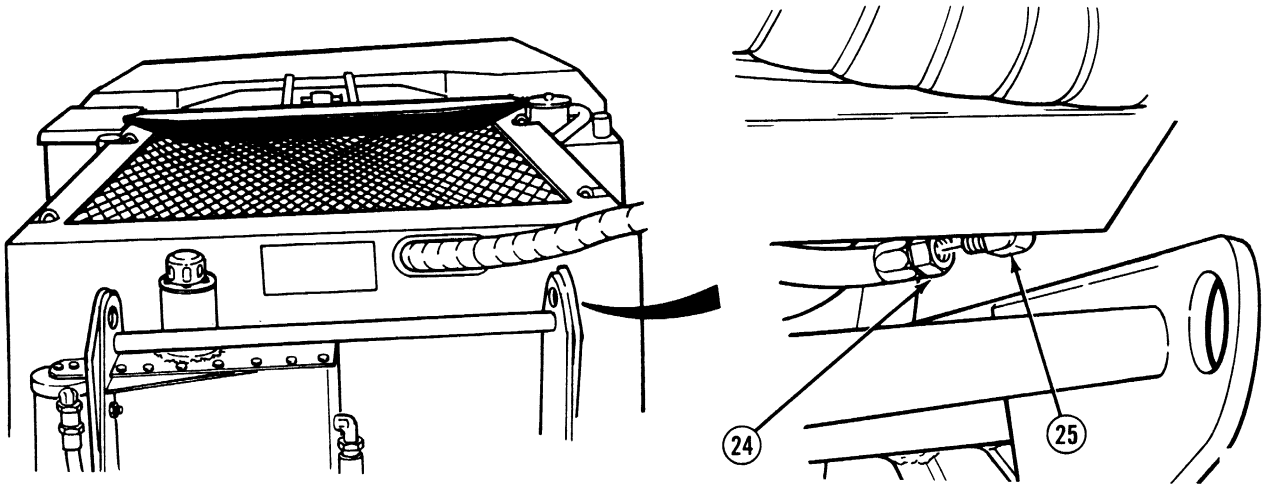


(8) Loosen clamp (19) and remove tube (20) and clamp (19) from elbow (21).

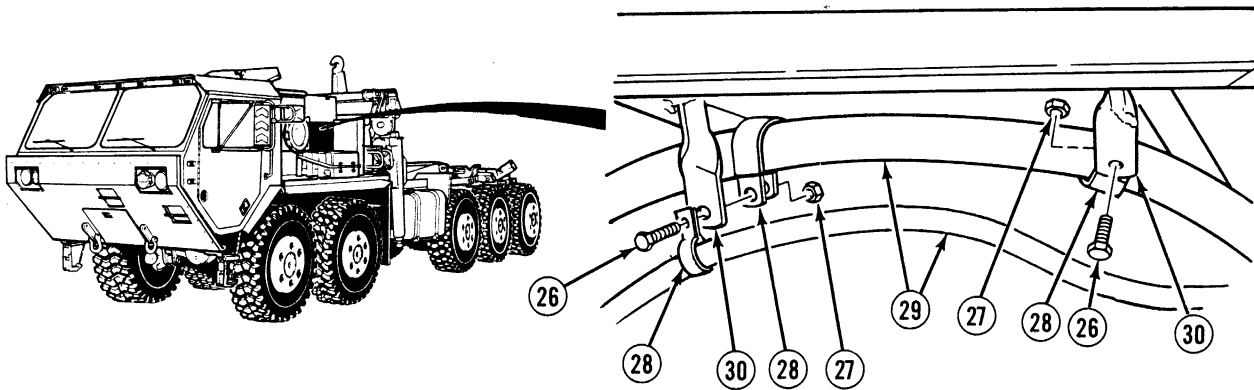


(9) Remove hose 2382 (22) from fitting (23).

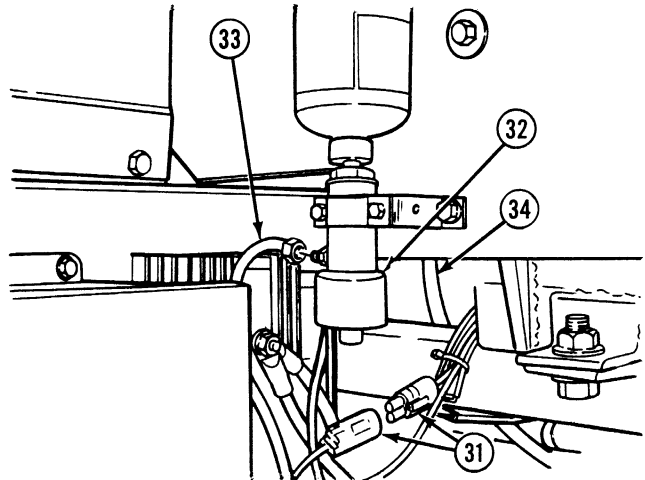
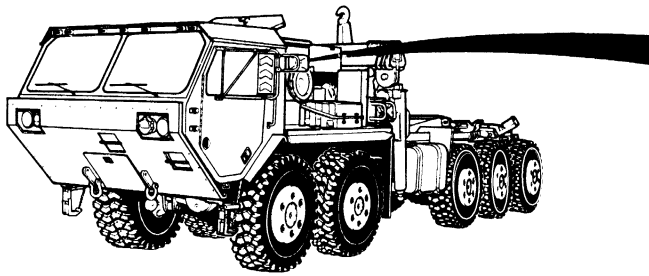
6-3. COOLING SYSTEM ASSEMBLY REPLACEMENT (CONT).



(10) Remove hose 2279 (24) from fitting (25).



(11) Remove two screws (26), locknuts (27), three clips (28), and two hoses (29) from two clip brackets (30). Discard locknuts.



NOTE

- Note location and remove cable ties as required.
- Connectors are disconnected by gently prying up on tab and pulling connectors apart.

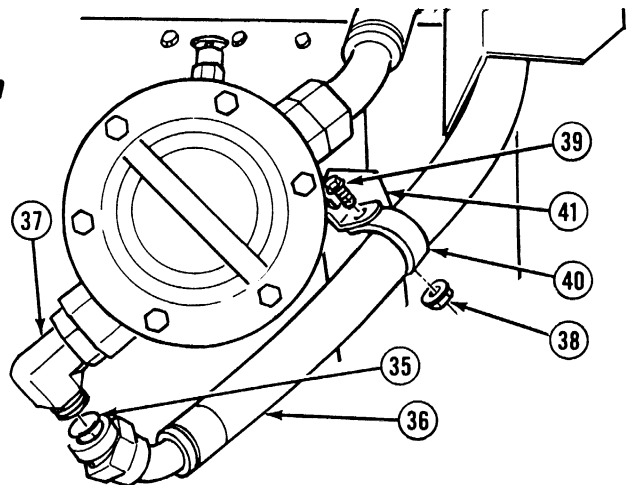
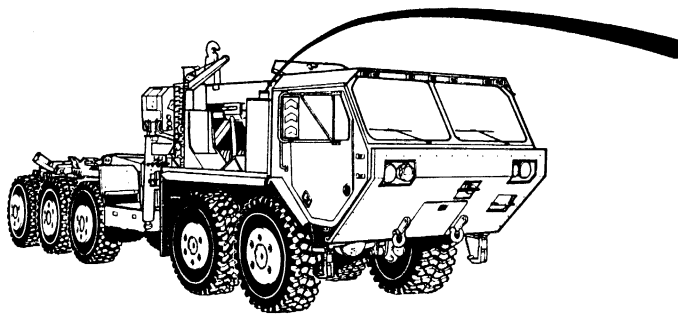
(12) Disconnect MC23 connector (31) from ether start valve (32).

(13) Remove ether injection tube (33) from ether start valve (32).

NOTE

Note routing of overflow tube prior to removal.

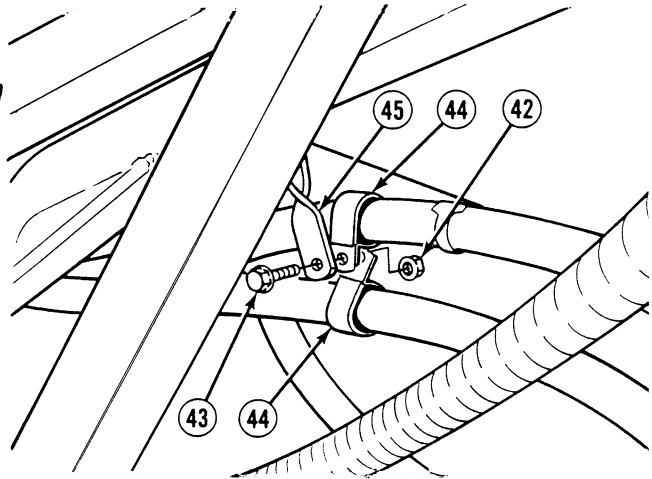
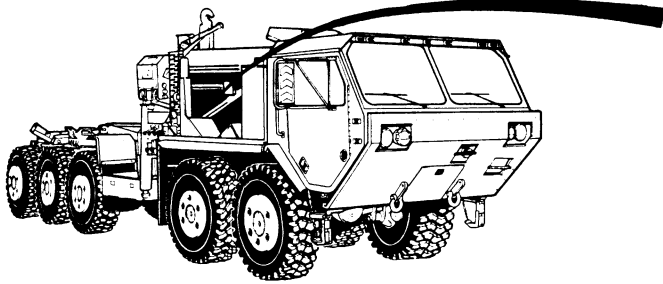
(14) Pull radiator overflow tube (34) up and out of way.



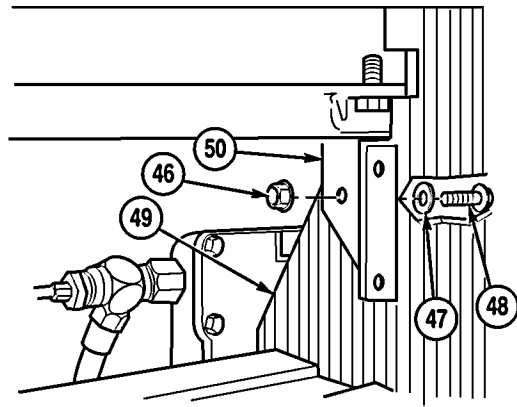
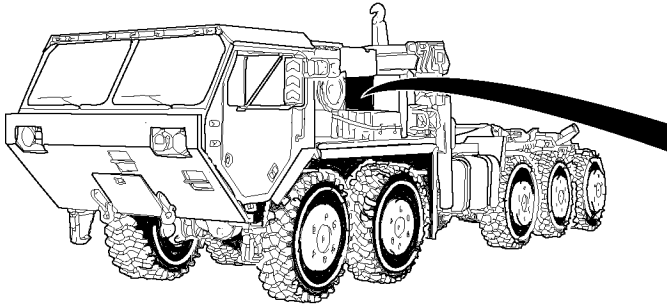
(15) Remove preformed packing (35) and hose 2773 (36) from elbow (37). Discard preformed packing.

(16) Remove locknut (38), screw (39) and clip (40) from bracket (41). Discard locknut.

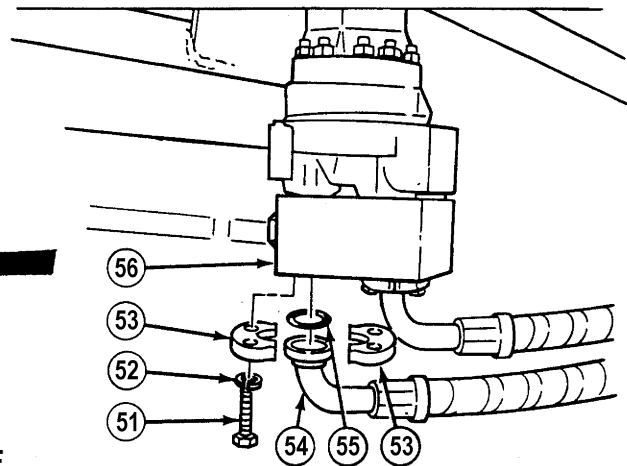
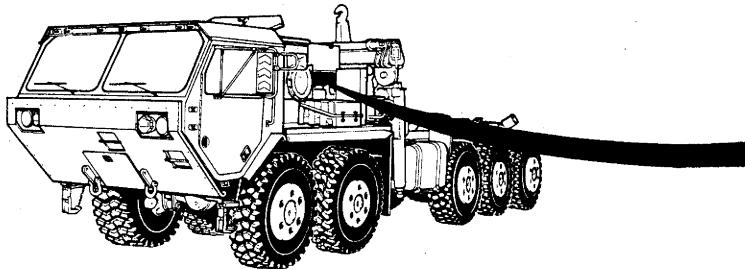
6-3. COOLING SYSTEM ASSEMBLY REPLACEMENT (CONT).



(17) Remove locknut (42), screw (43) and two clips (44) from bracket (45). Discard locknut.



(18) Remove two locknuts (46), washers (47), and screws (48) from cooling skirt (49) and bracket (50). Discard locknuts.



NOTE

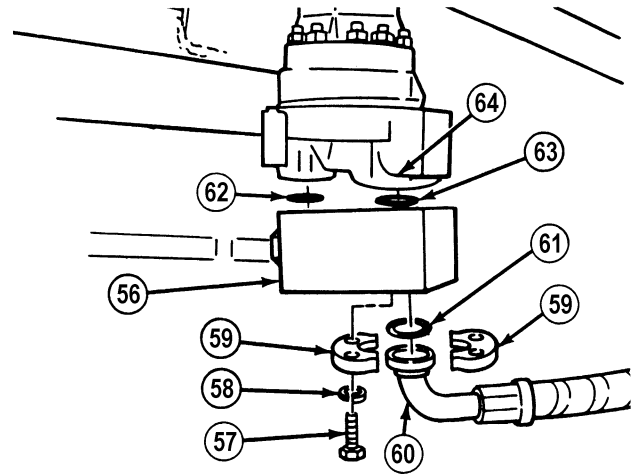
Position drain pan under fan motor to catch excess oil.

(19) Remove four screws (51), lockwashers (52), two adapters (53), hose 2772 (54) and preformed packing (55) from inlet side of check manifold (56). Discard lockwashers and preformed packing.

CAUTION

Ensure check manifold is supported upon removal of four screws. Check manifold will fall when four screws are removed and damage to equipment may result.

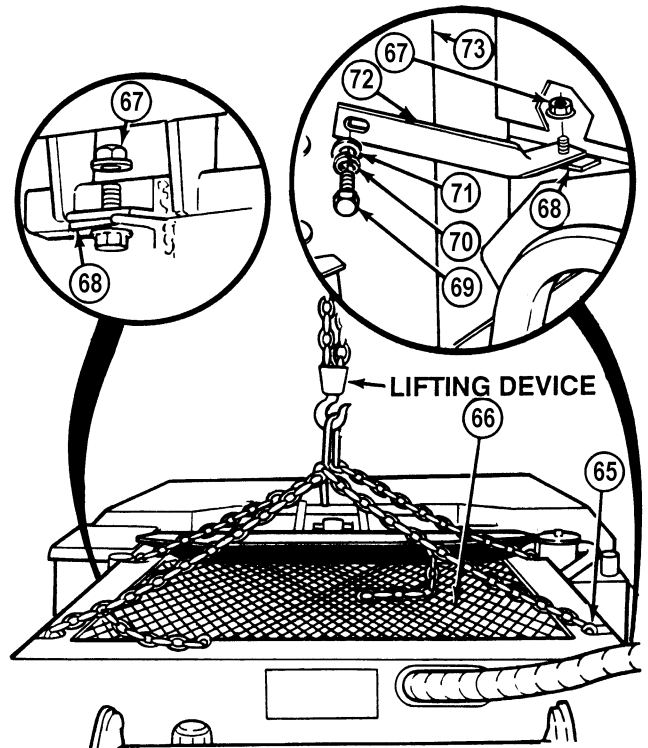
- (20) Remove four screws (57) and lockwashers (58), two adapters (59), hose 2771 (60) and preformed packing (61) from outlet side of check manifold (56). Discard lockwashers and preformed packing.
- (21) Remove check manifold (56) and two preformed packings (62) and (63) from fan motor (64). Discard preformed packings.



WARNING

Cooling assembly weighs 925 lbs (420 kg). Attach suitable lifting device for removal and properly support cooling assembly to prevent possible injury to personnel.

- (22) Attach lifting device to four lifting eyes (65) on cooling assembly (66).
- (23) Remove and discard four locknuts (67) from radiator support brackets (68).
- (24) Remove screw (69), lockwasher (70), washer (71) and muffler support bracket (72) from muffler (73) and radiator support bracket (68). Discard lockwasher.



6-3. COOLING SYSTEM ASSEMBLY REPLACEMENT (CONT).

- (25) With the aid of an assistant, remove cooling assembly (66) from radiator support brackets (68) and position four jackstands.
- (26) Remove lifting device from lifting eyes (65) on cooling assembly (66).

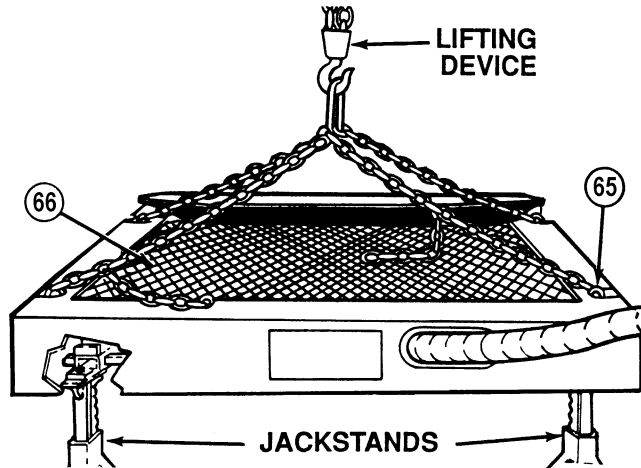
b. Installation.

WARNING

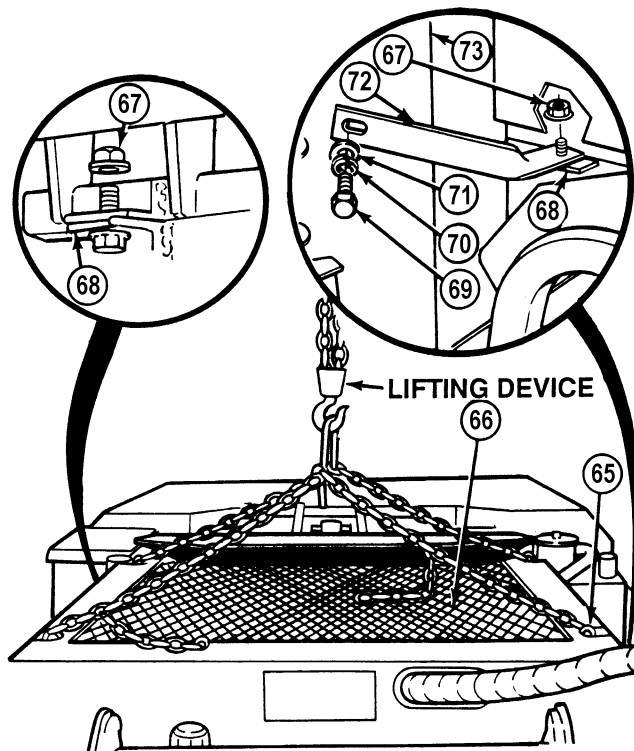
Cooling assembly weighs 925 lbs (420 kg). Attach lifting device for installation and properly support cooling assembly to prevent possible injury to personnel.

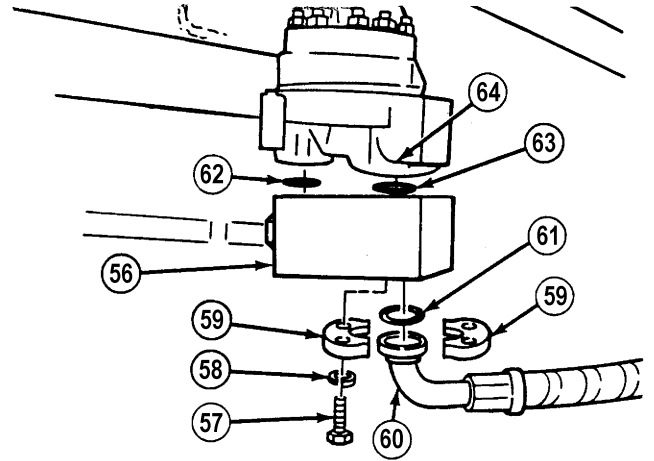
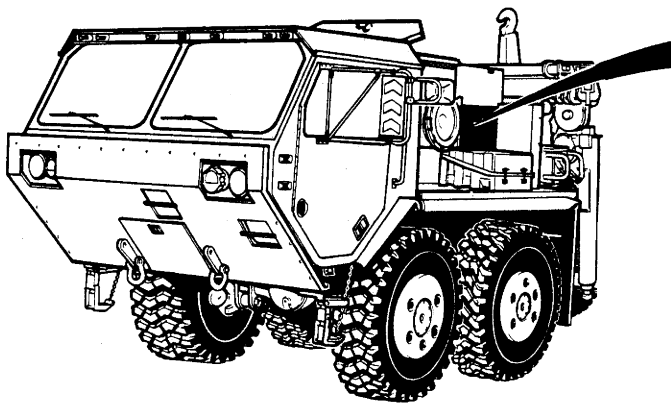
NOTE

- Install cable ties in locations noted prior to removal.
- Remove all caps and plugs prior to installation of hoses and tubes.

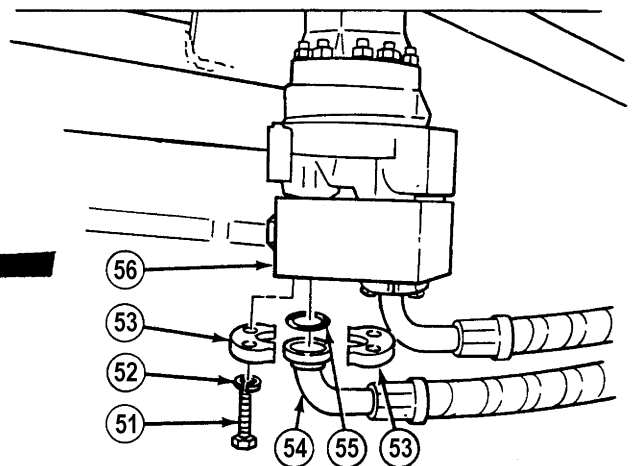
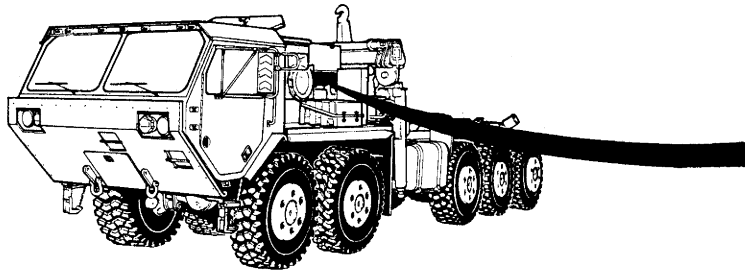


- (1) Attach lifting device to four lifting eyes (65) on cooling assembly (66).
- (2) With the aid of an assistant, position cooling assembly (66) on radiator support brackets (68).
- (3) Install muffler support bracket (72) on muffler (73) and radiator support bracket (68) with washer (71), lockwasher (70) and screw (69).
- (4) Install four locknuts (67) on radiator support brackets (68).
- (5) Remove lifting device from four lifting eyes (65) on cooling assembly (66).



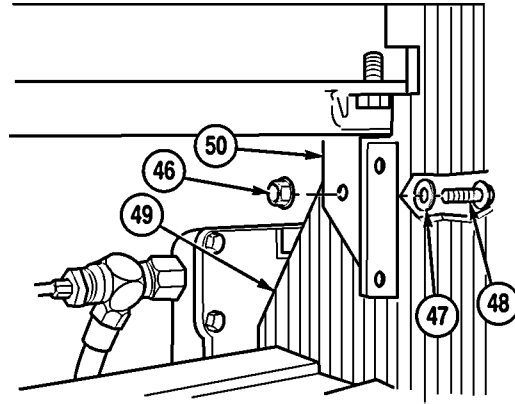
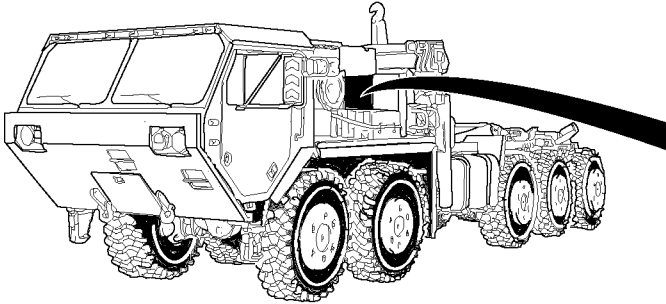


- (6) Coat two preformed packings (62) and (63) with lubricating oil.
- (7) Position two preformed packings (62) and (63) in check manifold (56).
- (8) Position check manifold (56) on fan motor (64).
- (9) Apply lubricating oil to preformed packing (61).
- (10) Install preformed packing (61), hose 2771 (60), two adapters (59), four lockwashers (58) and screws (57) in outlet side of check manifold (56).

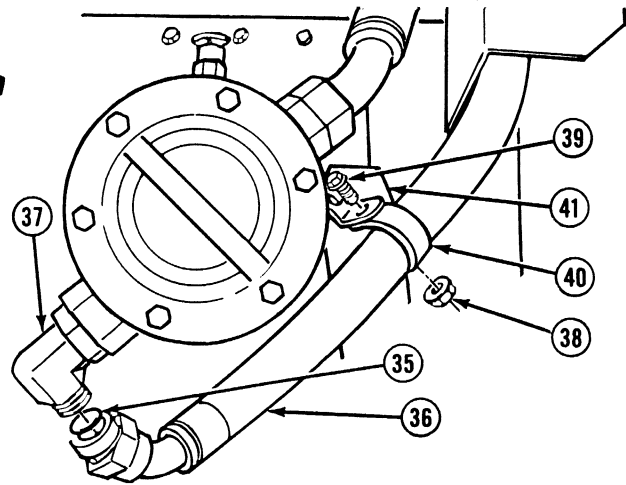
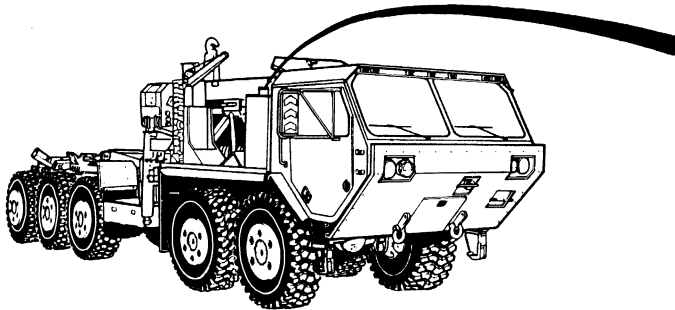


- (11) Apply lubricating oil to preformed packing (55).
- (12) Install preformed packing (55), hose 2772 (54), two adapters (53), four lockwashers (52) and screws (51) in inlet side of check manifold (56).

6-3. COOLING SYSTEM ASSEMBLY REPLACEMENT (CONT).

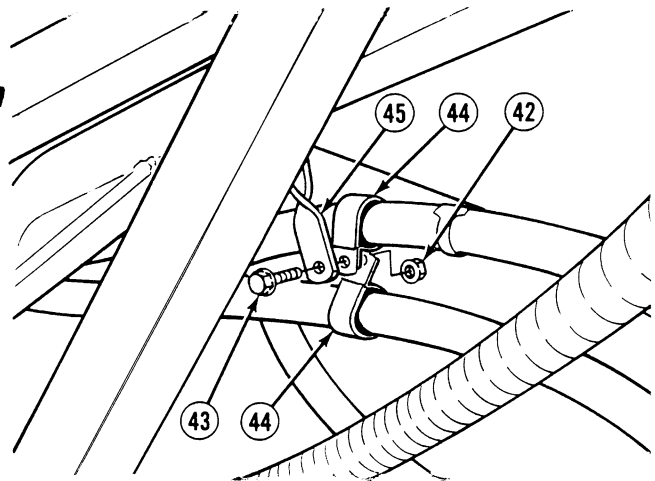
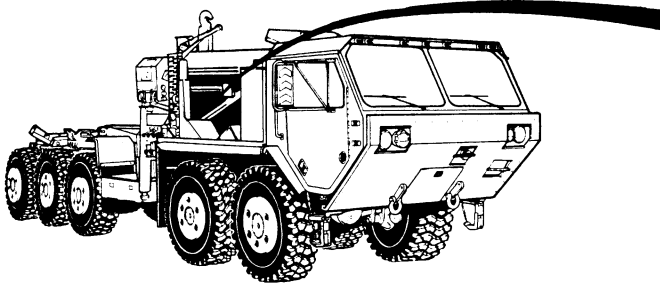


(13) Install cooling skirt (49), with two screws (48), washers (47), and locknuts (46) on bracket (50).

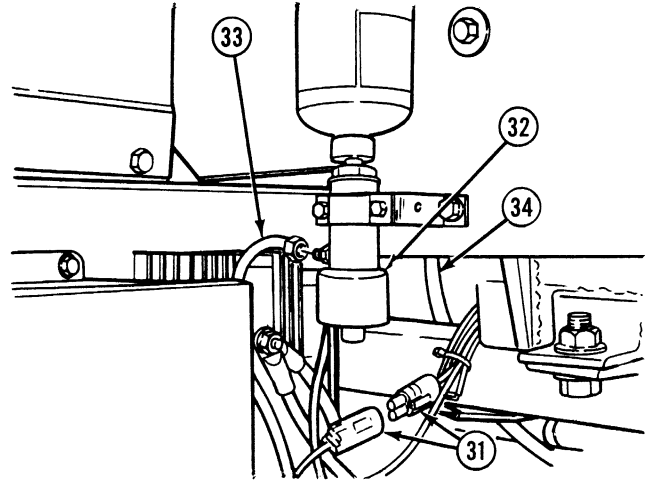
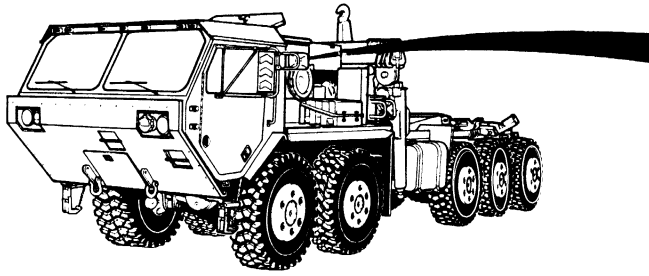


(14) Install preformed packing (35) and hose 2773 (36) on elbow (37).

(15) Install clip (40) in bracket (41) with screw (39) and locknut (38).



(16) Install two clips (44) on bracket (45) with screw (43) and locknut (42).

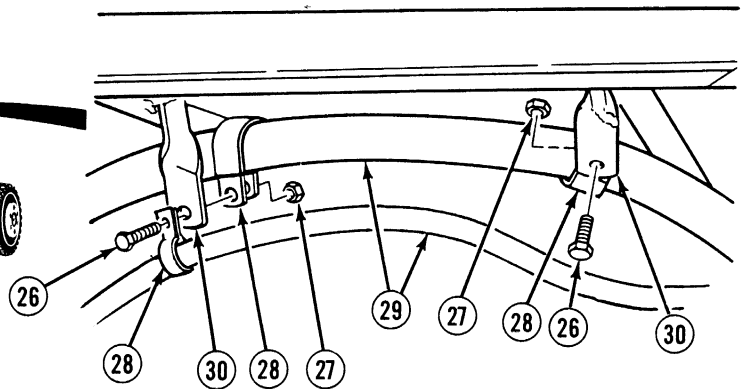
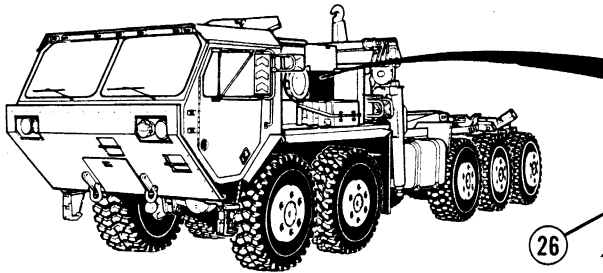


- (17) Install ether injection tube (33) on ether start valve (32).

NOTE

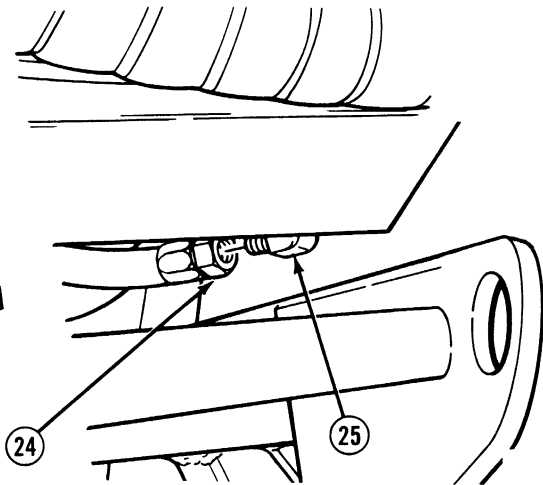
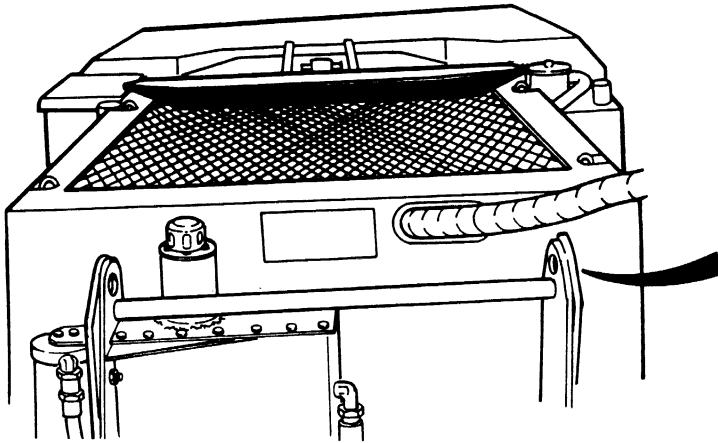
Ensure overflow tube is routed as noted prior to removal.

- (18) Route radiator overflow tube (34) back into position.
- (19) Connect connector MC23 (31) to ether start valve (32).

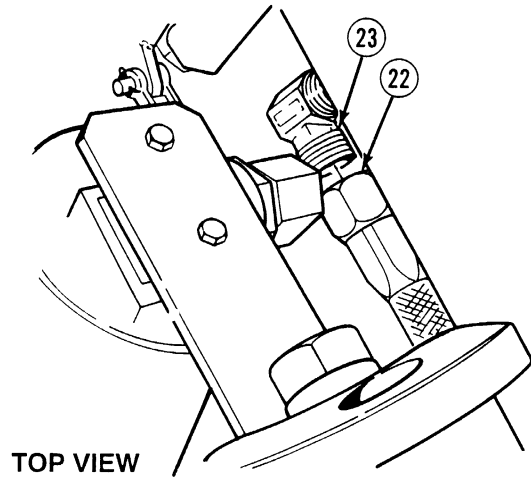
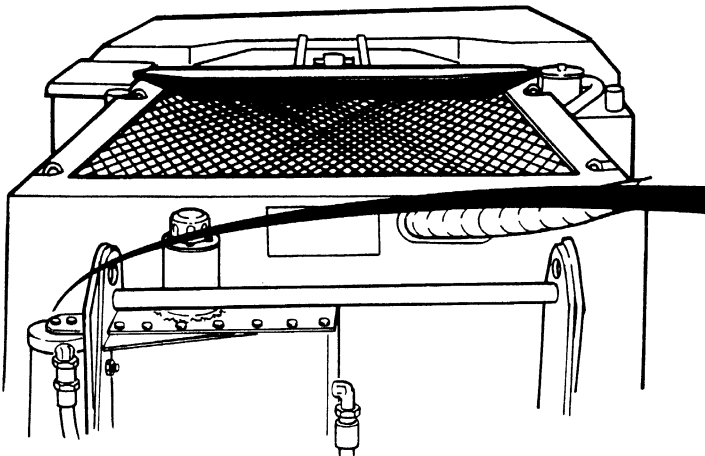


- (20) Install two hoses (29), three clips (28), two screws (26), and locknuts (27) on two clip brackets (30).

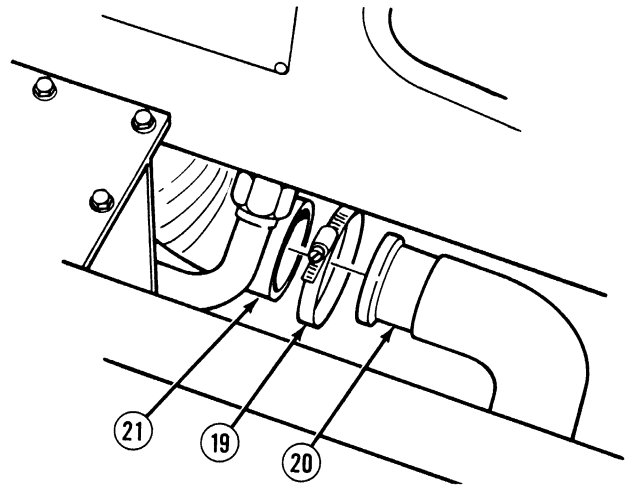
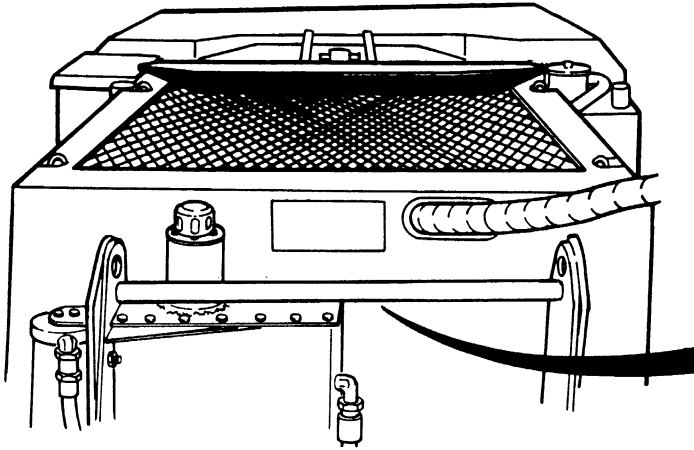
6-3. COOLING SYSTEM ASSEMBLY REPLACEMENT (CONT).



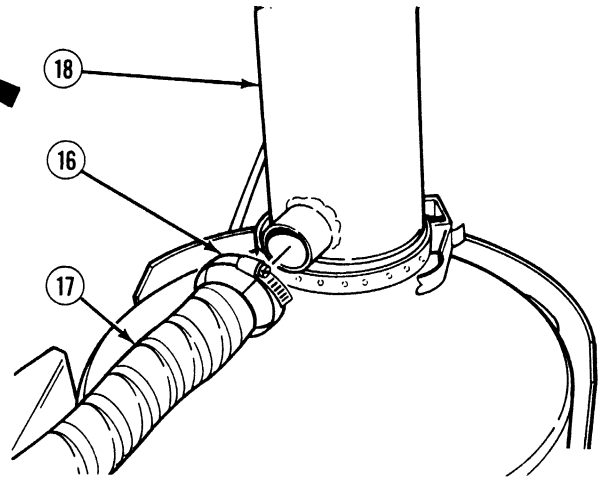
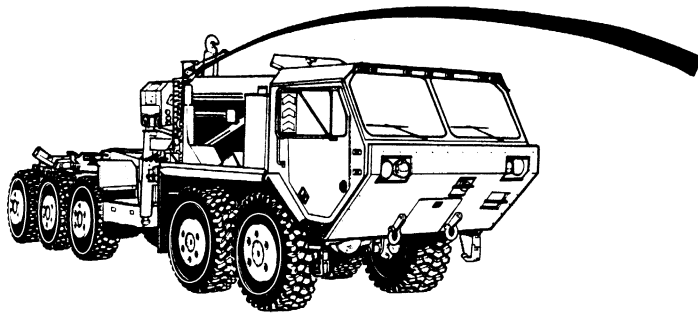
(21) Install hose 2279 (24) on fitting (25).



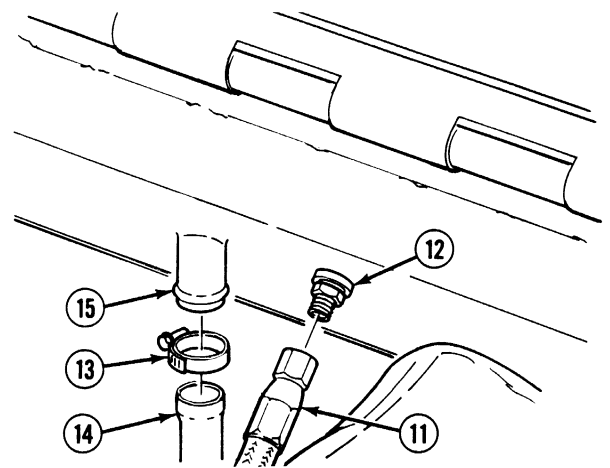
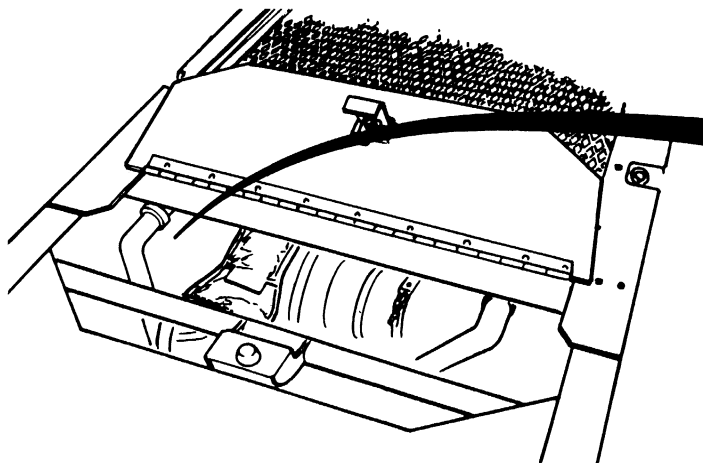
(22) Install hose 2382 (22) on fitting (23).



(23) Install clamp (19) and tube (20) on elbow (21).



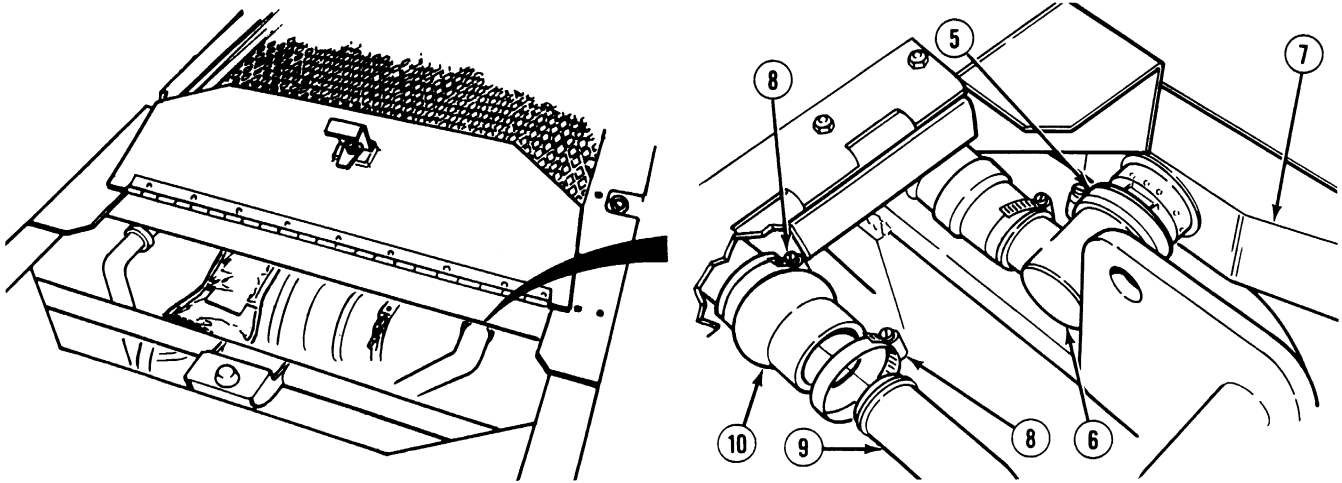
(24) Install clamp (16) and aspirator hose (17) on muffler (18).



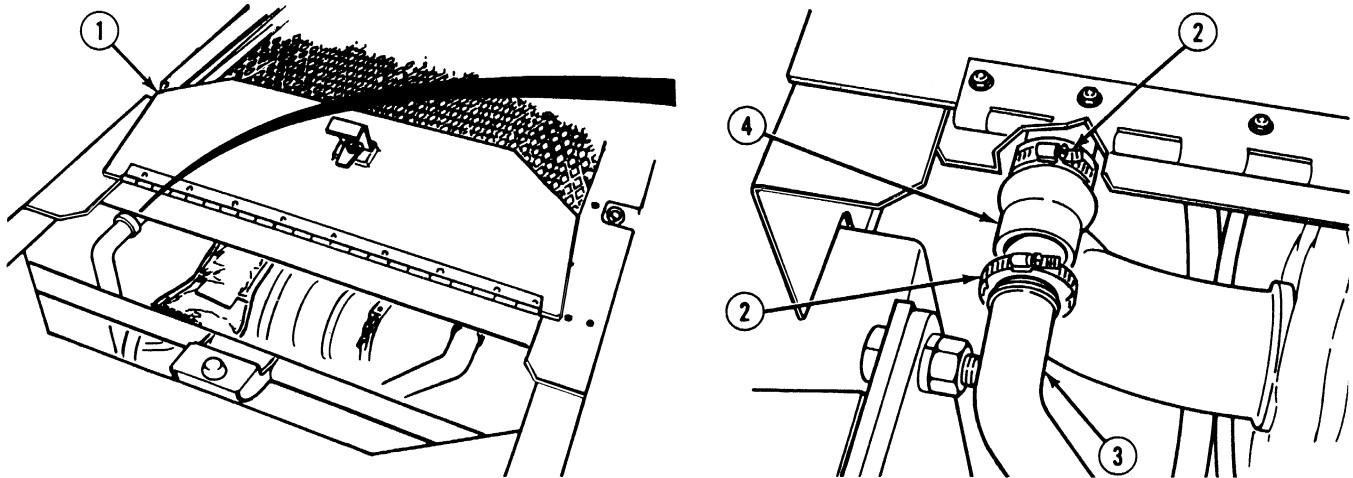
(25) Install clamp (13) and hose 2561 (14) on radiator tube (15). Tighten clamp to 40 lb-in (5 N·m).

(26) Install deairation hose 2300 (11) on adapter (12).

6-3. COOLING SYSTEM ASSEMBLY REPLACEMENT (CONT).



- (27) Install tube (9) in hump hose (10) and tighten two clamps (8) to 100 lb-in (11 N·m).
- (28) Install dust cup (6) on air cleaner assembly (7) and tighten clamp (5).



- (29) Install tube (3) in hump hose (4) and tighten two clamps (2) to 100 lb-in (11 N·m).
- (30) Close engine cover (1).

c. Follow-On Maintenance:

- Fill cooling system, (Para 6-4).
- Connect batteries, (Para 7-87).
- Check hydraulic reservoir level and fill if required, (Para 2-9).
- Start engine, (TM 9-2320-364-10).
- Allow engine to run for three minutes.
- Shut OFF engine, (TM 9-2320-364-10).
- Check for leaks, (TM 9-2320-364-10).
- Install rear noise panel, (Para 17-29).
- Install left side noise panel, (Para 17-28).
- Install left front side noise panel, (Para 17-27).
- Install right side noise panel, (Para 17-26).
- Install spare tire, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

6-4. COOLING SYSTEM SERVICE.

This task covers:

- a. Drain b. Fill c. Follow-on Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Drum, Storage 57 gal (Item 21, Appendix G)
Hose, Drain (Minimum length 3 ft.) (Item 37, Appendix G)
Pan, Drain (Item 47, Appendix G)

Material/Parts

Antifreeze (Item 19, Appendix C)
Rags, Wiping (Item 67, Appendix C)

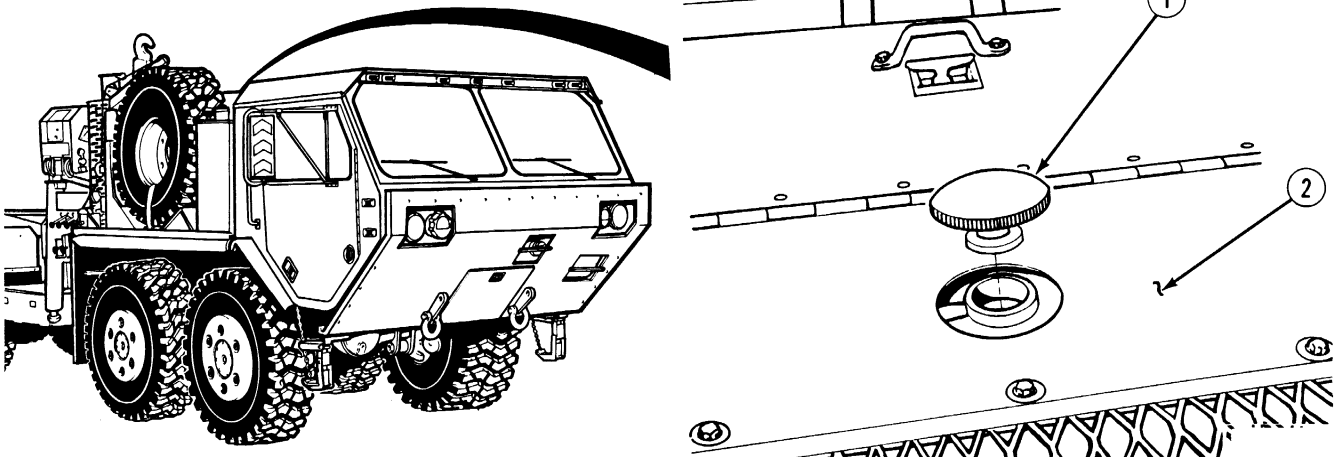
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Right fender rear skirt removed, (Para 17-33)
Left fender rear skirt removed, (Para 17-34)
Cab engine access panel removed, (Para 17-24)

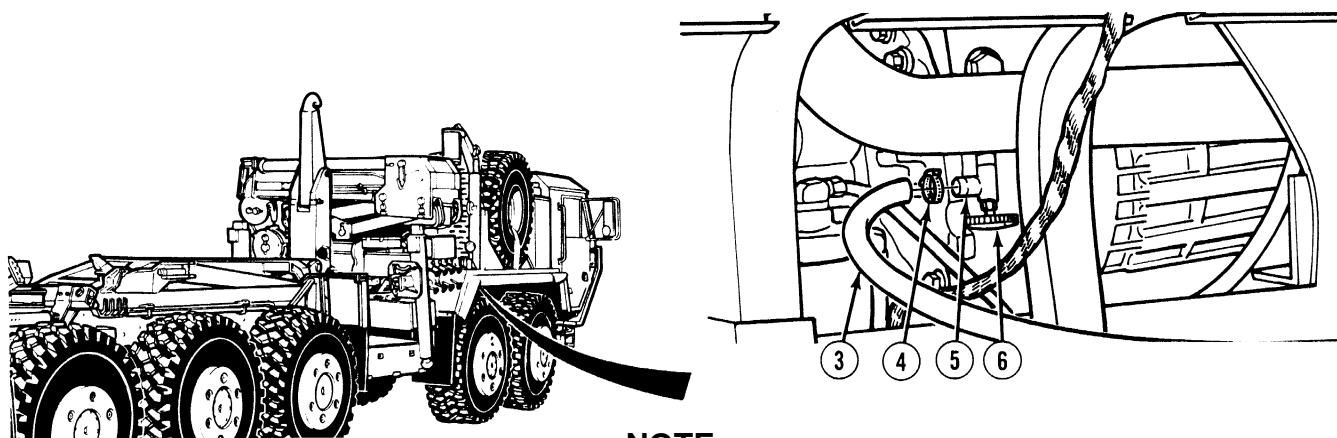
WARNING

- Radiator, radiator cap, coolant, and hoses are very hot and pressurized during truck operation. Let radiator cool before checking hoses. Failure to do so may result in serious burns to personnel.
- Use extreme care when removing radiator pressure cap. Sudden release of pressure can cause steam flash which could seriously injure personnel. Slowly loosen cap to first stop to relieve pressure before removing cap completely. After opening, securely tighten cap.
- Use clean, thick waste cloth or like material to remove radiator pressure cap. Avoid using gloves. If hot water soaks thru gloves, personnel could be burned.

a. Drain.



- (1) Push down on radiator cap (1) and slowly turn 1/2 turn counterclockwise to relieve pressure.
- (2) Turn radiator cap (1) additional 1/2 turn counterclockwise and remove radiator cap from radiator (2).



NOTE

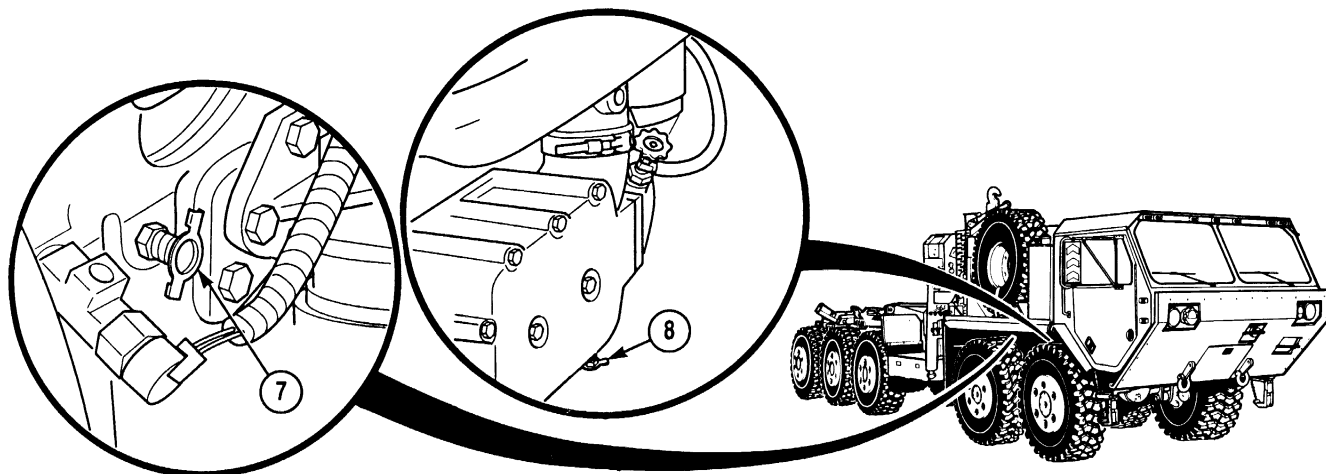
A clamp may be used to hold drain hose on drain cock as shown in Step (3).

- (3) Install drain hose (3) and clamp (4) to drain cock (5).
- (4) Position end of drain hose (3) in drain pan.

NOTE

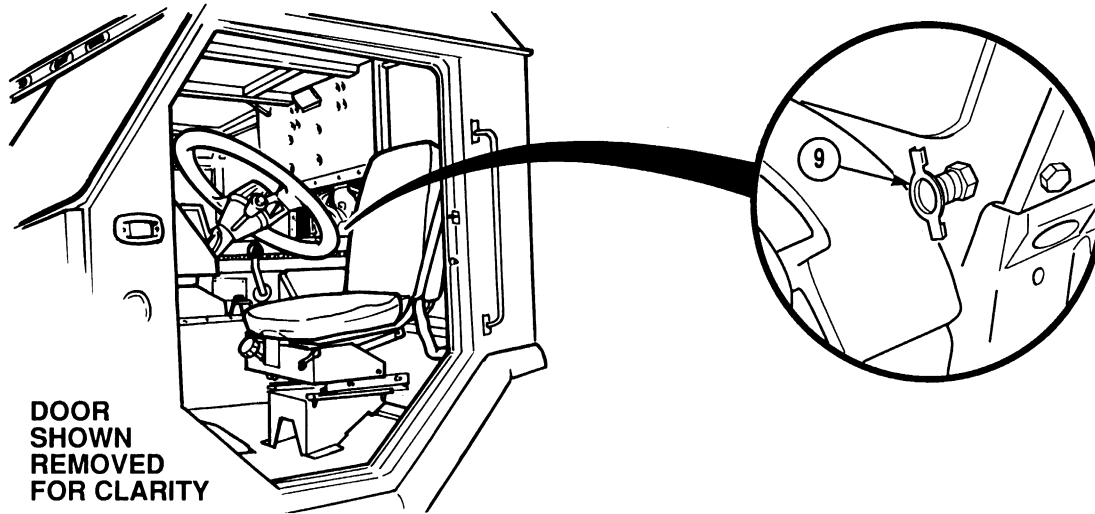
- Cooling system capacity is 100 qts (95 liters).
- Cooling system capacity with arctic kit is 103 qts (97 liters).

- (5) Open valve (6) on drain cock (5) and drain coolant.
- (6) After coolant stops draining, close valve (6) on drain cock (5).
- (7) Remove clamp (4) and drain hose (3) from drain cock (5).

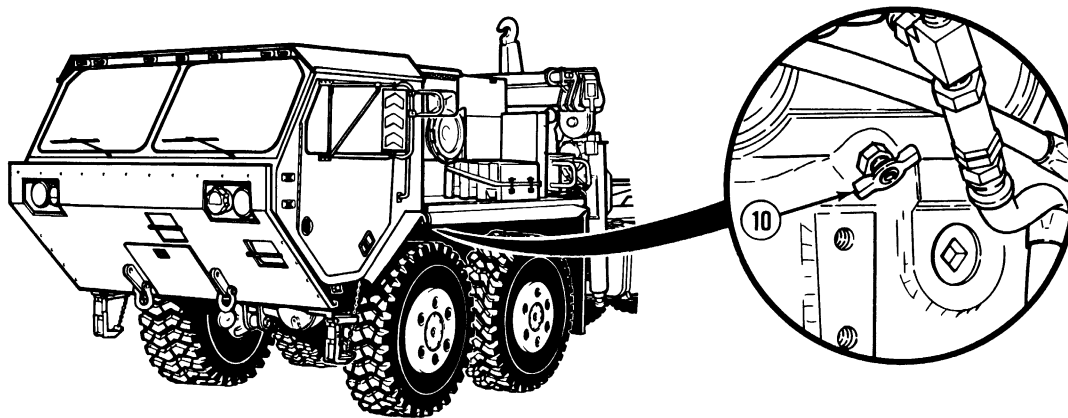


- (8) Position drain pan under drain cock (7).
- (9) Open drain cock (7) and allow coolant to drain.
- (10) Close drain cock (7).
- (11) Position drain pan under drain cock (8).
- (12) Open drain cock (8) and allow coolant to drain.
- (13) Close drain cock (8).

6-4. COOLING SYSTEM SERVICE (CONT).



- (14) Position drain pan under drain cock (9).
- (15) Open drain cock (9) and allow coolant to drain.
- (16) Close drain cock (9).



NOTE

Location of drain cock is behind starter.

- (17) Position drain pan under drain cock (10).
- (18) Open drain cock (10) and allow coolant to drain.
- (19) Close drain cock (10).

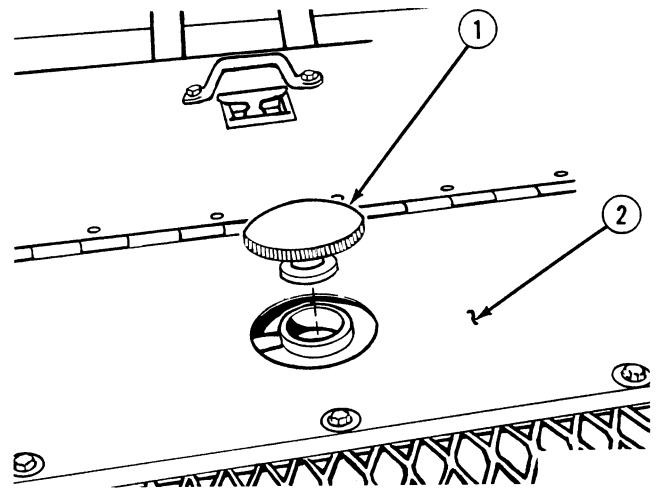
b. Fill.

- (1) Fill radiator (2) with coolant until full.
Refer to Table 2-4 and Para 2-9.

WARNING

Ensure all personnel stay clear of radiator while engine is running. Air in radiator will be released which may cause hot coolant to spray out and cause injury or death to personnel.

- (2) Start engine and run engine until normal operation temperature of 180 degrees is reached, (TM 9-2320-364-10).
- (3) Shut off engine, (TM 9-2320-364-10).
- (4) Check radiator coolant level in sight glass and add coolant as required, (TM 9-2320-364-10).
- (5) Install radiator cap (1) on radiator (2).

**c. Follow-On Maintenance.**

- Start engine, (TM 9-2320-364-10).
- Allow engine to run for three minutes.
- Shut OFF engine, (TM 9-2320-364-10).
- Check for leaks, (TM 9-2320-364-10).
- Install left fender rear skirt, (Para 17-34).
- Install right fender rear skirt, (Para 17-33).
- Install engine access panel, (Para 17-24).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

6-5. RADIATOR REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Cap and Plug Set (Item 8, Appendix G)
- Jackstands (4) (Item 42, Appendix G)
- Pan, Drain (Item 46, Appendix G)
- Socket Set, 3/8 in. (Item 62, Appendix G)
- Wrench, Combination 1 5/16 in. (Item 81, Appendix G)
- Wrench, Combination 1 1/2 in. (Item 83, Appendix G)
- Crowsfoot, 15/16 in. (Item 90, Appendix G)
- Wrench, Torque (0 to 300 lb-ft [0 to 407 N·m]) (Item 96, Appendix G)
- Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)
- Lifting Device (minimum capacity 600 lbs [272 kg])
- Chain 4 point

Material/Parts

- Sealing Compound (Item 72, Appendix C)
- Tags, Identification (Item 88, Appendix C)
- Locknut (2) (Item 106, Appendix F)
- Locknut (4) (Item 118, Appendix F)
- Locknut (8) (Item 133, Appendix F)
- Lockwasher (26) (Item 180, Appendix F)
- Screw (7) (Item 305, Appendix F)
- Screw (25) (Item 319, Appendix F)

Personnel Required

Two

Equipment Condition

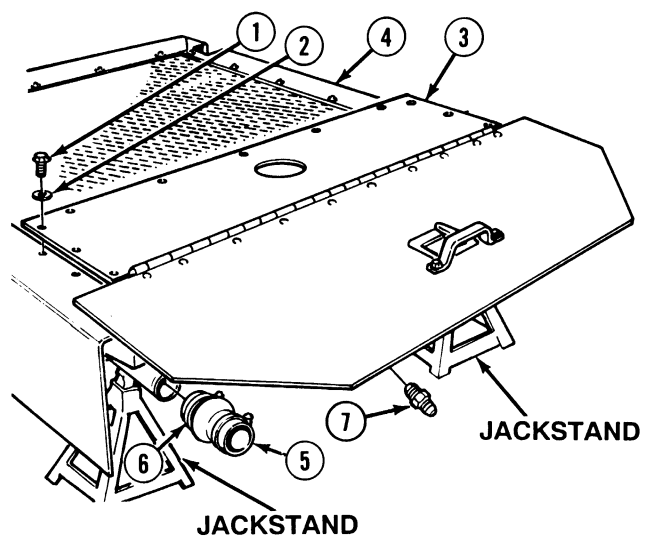
Cooling system assembly removed, (Para 6-3)

a. Removal.

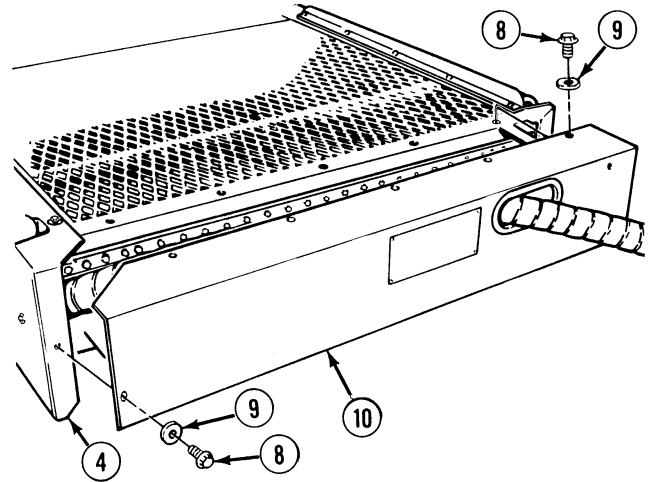
WARNING

Engine cover assembly weighs 55 lbs (25 kg). Use an assistant to help remove engine cover assembly or injury to personnel may result.

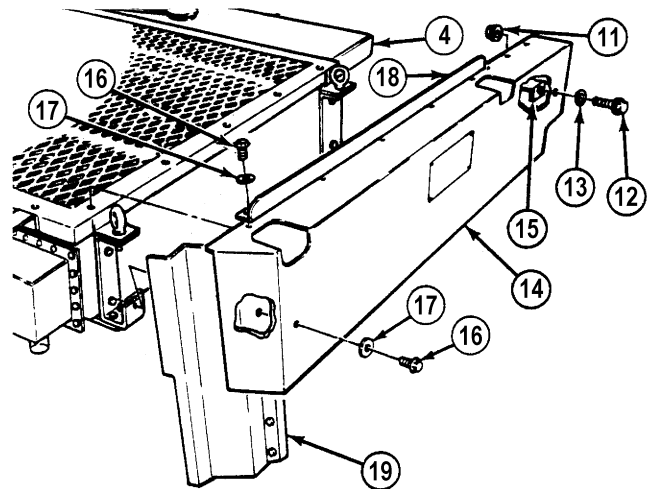
- (1) With the aid of an assistant, remove 11 screws (1) and washers (2) from engine cover assembly (3). Discard screws.
- (2) Remove engine cover assembly (3) from cooling assembly (4).
- (3) Remove two hump hoses (5) and clamps (6) from cooling assembly (4).
- (4) Remove fitting (7) from cooling assembly (4).



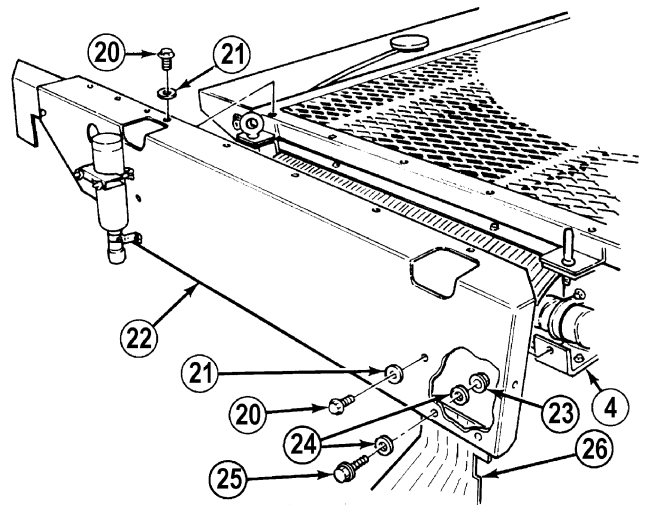
- (5) Remove seven screws (8) and washers (9) from back panel (10). Discard screws.
- (6) Remove back panel (10) from cooling assembly (4).



- (7) Remove nut (11), screw (12) and washer (13) from right side skin (14) and bracket (15).
- (8) Remove seven screws (16) and washers (17) from angle (18), right side skin (14) and muffler shield (19). Discard screws.
- (9) Remove angle (18) and right side skin (14) from cooling assembly (4).



- (10) Remove seven screws (20) and washers (21) from left side skin (22). Discard screws.
- (11) Remove two locknuts (23), four washers (24) and two screws (25) from cooling skirt (26) and left side skin (22). Discard locknuts.
- (12) Remove left side skin (22) from cooling assembly (4).



6-5. RADIATOR REPLACEMENT (CONT).

NOTE

Note and record position of hose in Step (13) prior to removal.

- (13) Loosen clamp (27) and remove hose (28) and clamp from cooling assembly (4).

NOTE

Position drain pan under tube assembly to catch excess oil.

- (14) Remove tube assembly (29) from fittings (30).

NOTE

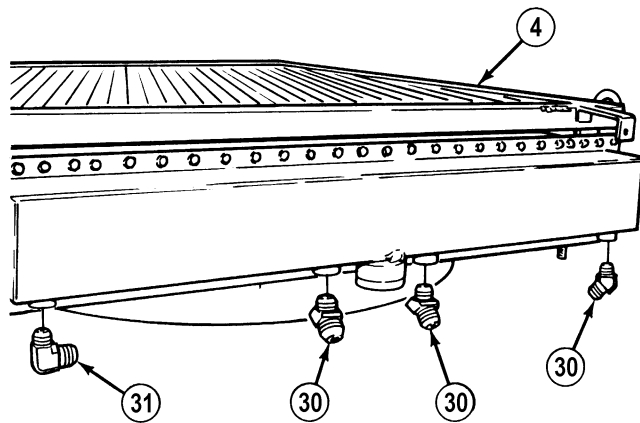
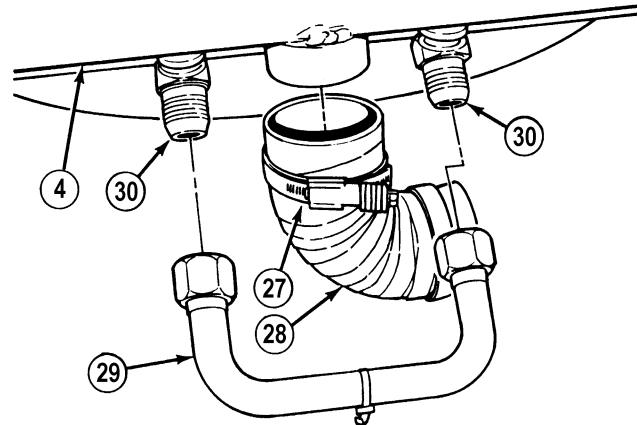
- Note and record position of four fittings in Step (15) prior to removal.
- Cap and plug cooling assembly after removal of four fittings.

- (15) Remove three fittings (30) and fitting (31) from cooling assembly (4).

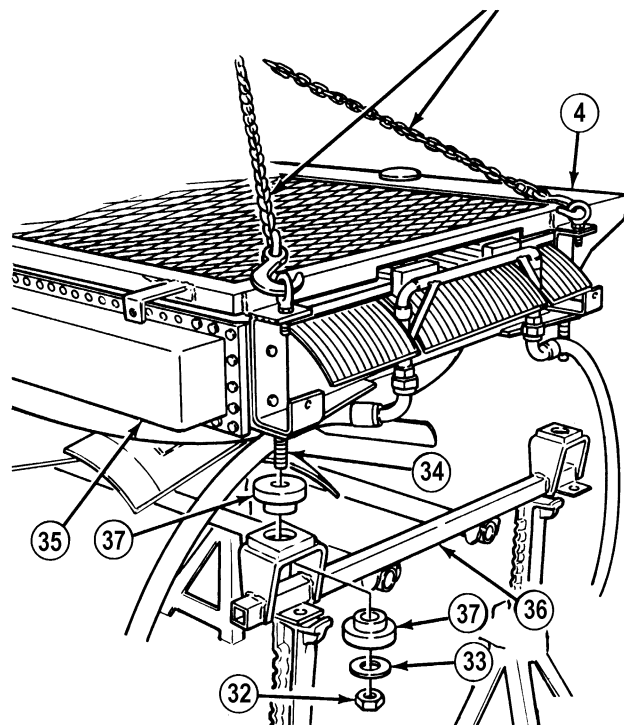
WARNING

Radiator assembly weighs 575 lbs (261 kg). Do not stand directly under radiator assembly or injury to personnel may result.

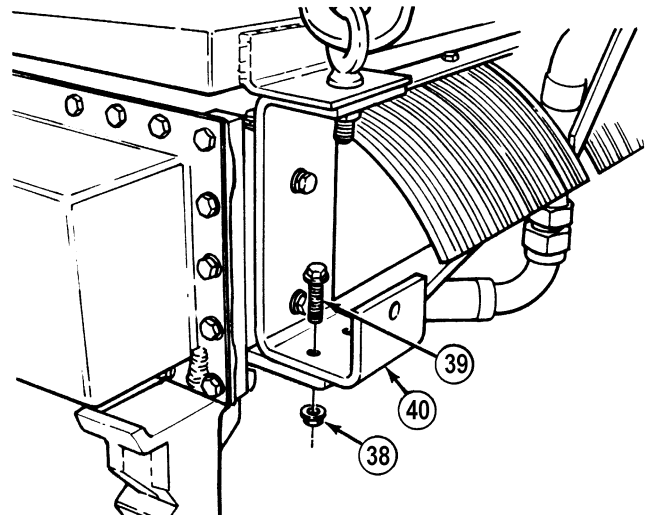
- (16) Attach lifting device to cooling assembly (4).
- (17) Remove four locknuts (32) and washers (33) from mounting studs (34). Discard locknuts.
- (18) With the aid of an assistant, remove radiator assembly (35) from radiator support (36) and position on four jackstands.
- (19) Remove eight mounts (37) from radiator support (36).



LIFTING DEVICE



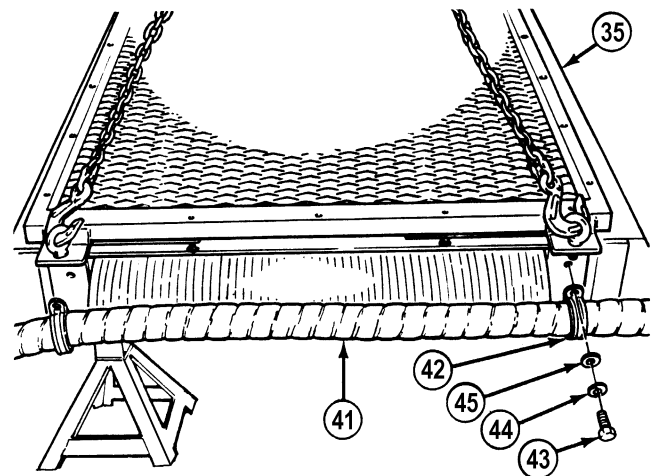
- (20) Remove eight locknuts (38) and screws (39) from four side brackets (40). Discard locknuts.



NOTE

Aspirator hose is matchmarked to clips to ensure length of hose will be correct during installation.

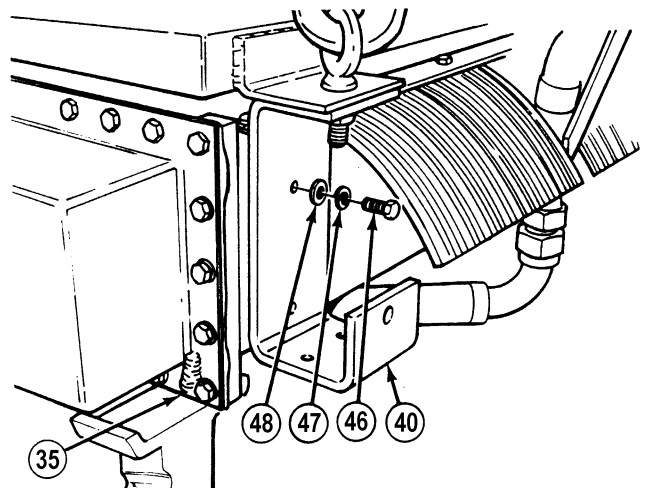
- (21) Matchmark position of aspirator hose (41) to clips (42).
- (22) Remove two screws (43), lockwashers (44), washers (45), clips (42) and aspirator hose (41) from left side of radiator assembly (35). Discard lockwashers.



WARNING

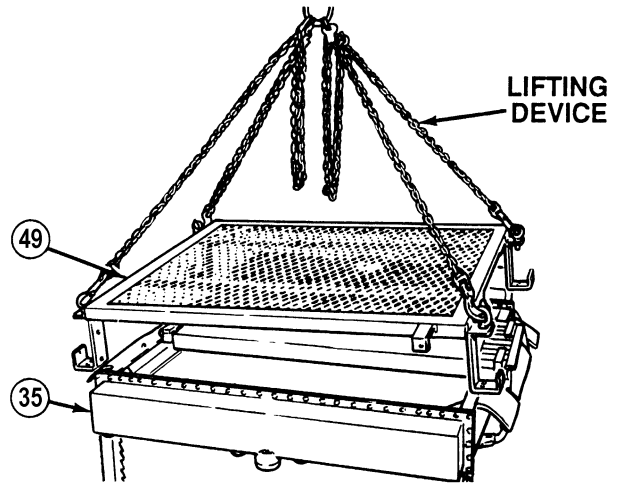
Ensure grille assembly is fully supported by lifting device prior to removal of screws in Step (23). Failure to comply may result in severe injury to personnel.

- (23) Remove two screws (46), lockwashers (47) and washers (48) from side brackets (40) on left side of radiator assembly (35). Discard lockwashers.
- (24) Remove four screws (46), lockwashers (47) and washers (48) from two side brackets (40) on right side of radiator assembly (35). Discard lockwashers.



6-5. RADIATOR REPLACEMENT (CONT).

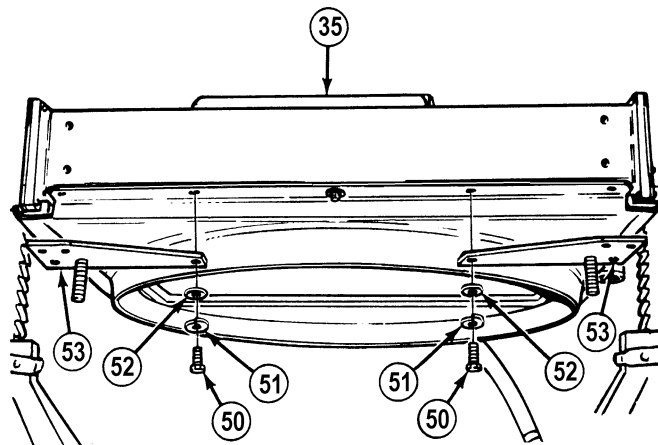
- (25) With the aid of an assistant and using a lifting device, remove grille assembly (49) from radiator assembly (35).
- (26) Remove lifting device from grille assembly (49).



NOTE

Tag and mark location of radiator bracket assemblies prior to removal.

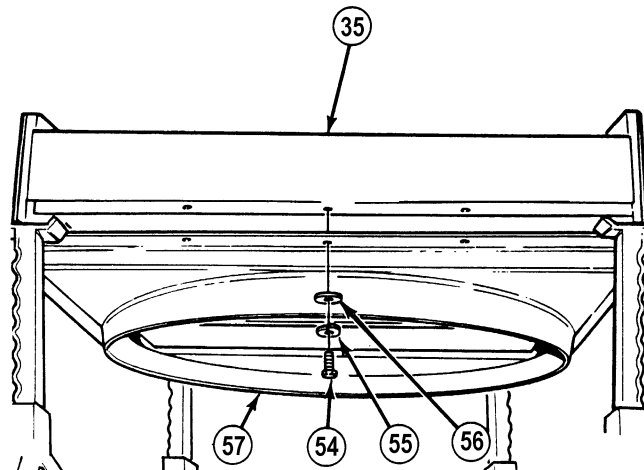
- (27) Remove eight screws (50), lockwashers (51), washers (52) and four radiator bracket assemblies (53) from radiator assembly (35). Discard lockwashers.



NOTE

Two screws removed in Step (28) are located on each side of radiator assembly.

- (28) With the aid of an assistant, remove two screws (54), lockwashers (55), washers (56) and fan shroud (57) from radiator assembly (35). Discard lockwashers.

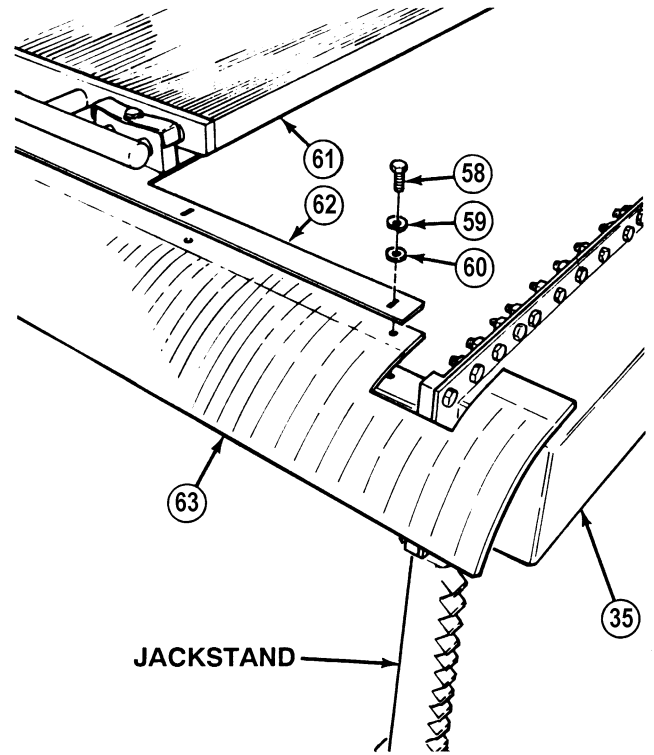


- (29) Remove four screws (58), lockwashers (59) and washers (60) from left side of radiator assembly (35). Discard lockwashers.
- (30) Remove four screws (58), lockwashers (59) and washers (60) from right side of radiator assembly (35). Discard lockwashers.
- (31) With the aid of an assistant, remove air to oil cooler assembly (61) and angle (62) from radiator assembly (35).

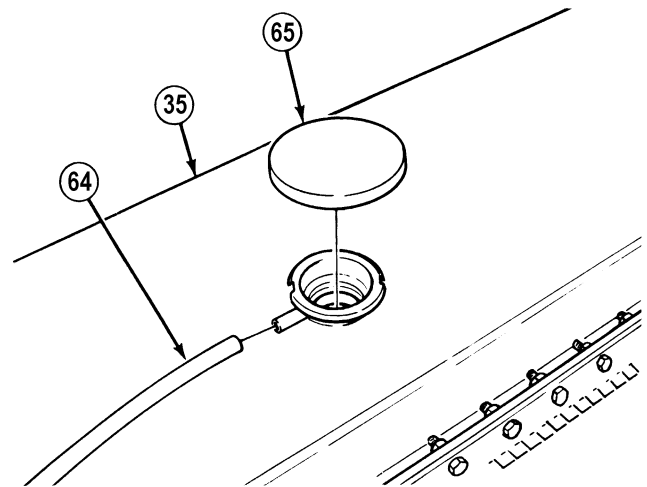
NOTE

Baffles may stay with air to oil cooler assembly or radiator assembly.

- (32) Remove two baffles (63) from air to oil cooler assembly (61) or radiator assembly (35).



- (33) Remove overflow tube (64) from radiator assembly (35).
- (34) Remove radiator cap (65) from radiator assembly (35).
- (35) Remove radiator assembly (35) from jackstands.

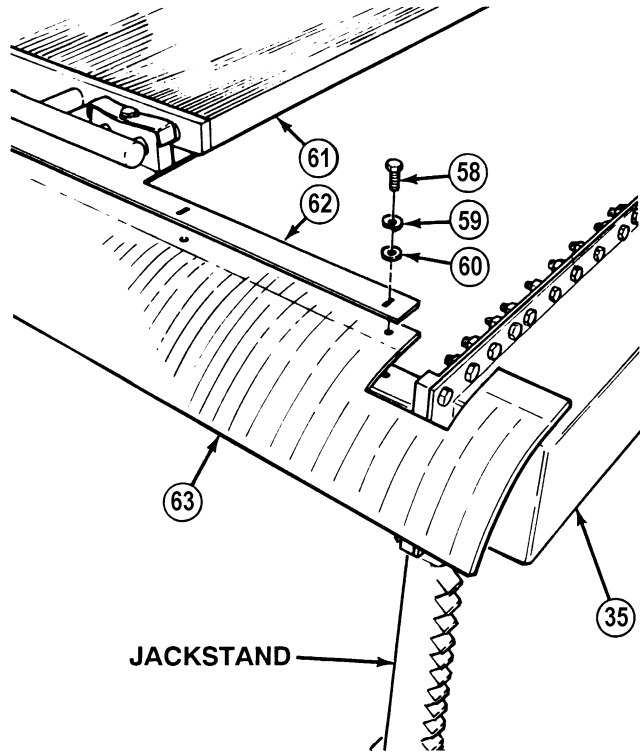


b. Installation.

- (1) Position radiator assembly (35) on jackstands.
- (2) Install radiator cap (65) on radiator assembly (35).
- (3) Install overflow tube (64) on radiator assembly (35).

6-5. RADIATOR REPLACEMENT (CONT).

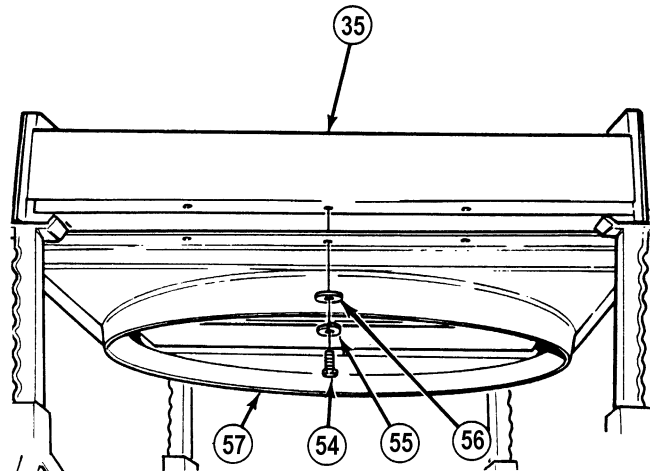
- (4) Position two baffles (63) on radiator assembly (35).
- (5) With the aid of an assistant, position angle (62) and air to oil cooler assembly (61) on radiator assembly (35) aligning baffles (63) with radiator assembly and air to oil cooler assembly.
- (6) Position four washers (60), lockwashers (59) and screws (58) in right side of radiator assembly (35).
- (7) Position four washers (60), lockwashers (59) and screws (58) in left side of radiator assembly (35).
- (8) Tighten eight screws (58) on radiator assembly (35).



NOTE

Screws in Step (9) are installed on each side of radiator assembly.

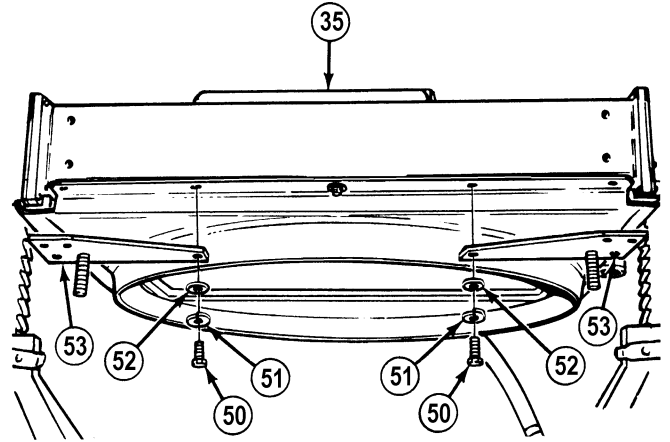
- (9) With the aid of an assistant, position fan shroud (57) on radiator assembly (35) with two washers (56), lockwashers (55) and screws (54).



NOTE

Ensure all radiator bracket assemblies are installed as noted prior to removal.

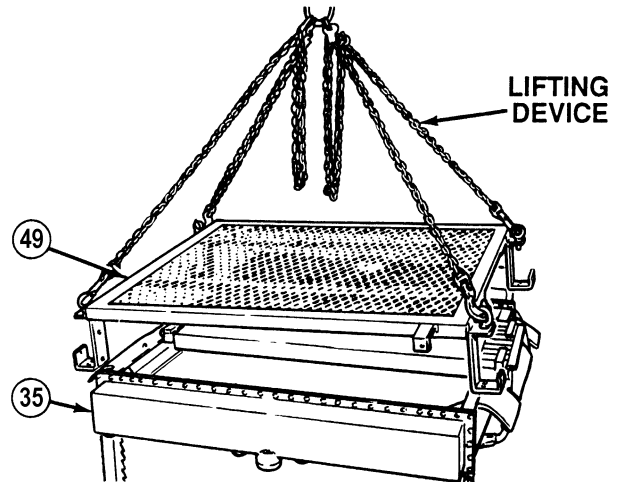
- (10) Position four radiator bracket assemblies (53) on radiator assembly (35) with eight washers (52), lockwashers (51) and screws (50).



WARNING

Ensure grille assembly is fully supported by lifting device prior to Step (11). Failure to comply may result in severe injury to personnel.

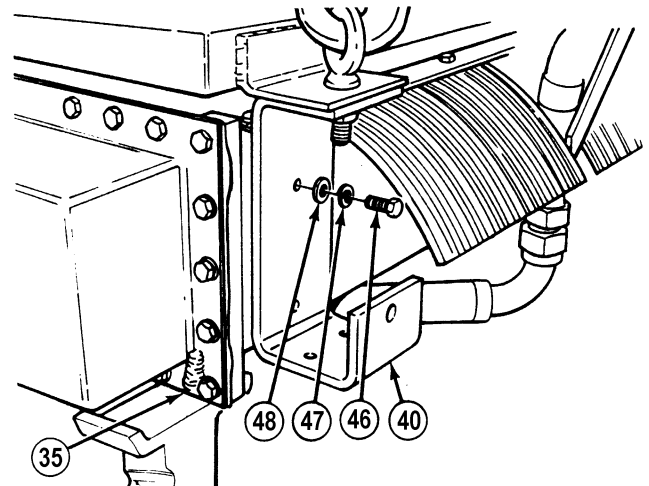
- (11) Attach lifting device to grille assembly (49).
- (12) Position grille assembly (49) on radiator assembly (35).



WARNING

Ensure grille assembly is fully supported by lifting device prior to Step (13). Failure to comply may result in severe injury to personnel.

- (13) Position four washers (48), lockwashers (47) and screws (46) in two side brackets (40) on right side of radiator assembly (35).
- (14) Position two washers (48), lockwashers (47) and screws (46) in two side brackets (40) on left side of radiator assembly (35).

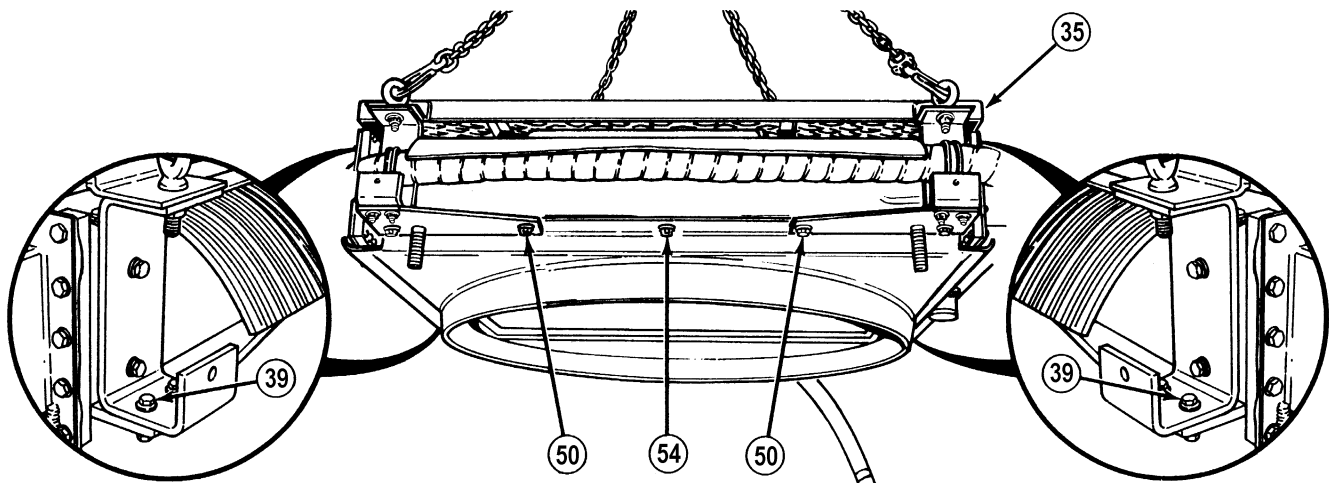
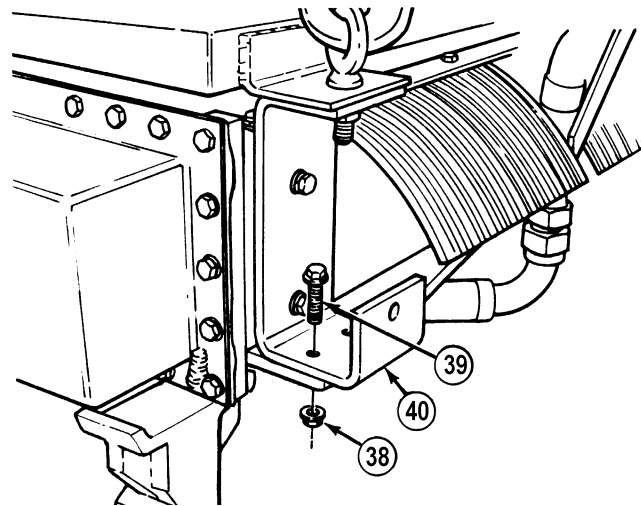
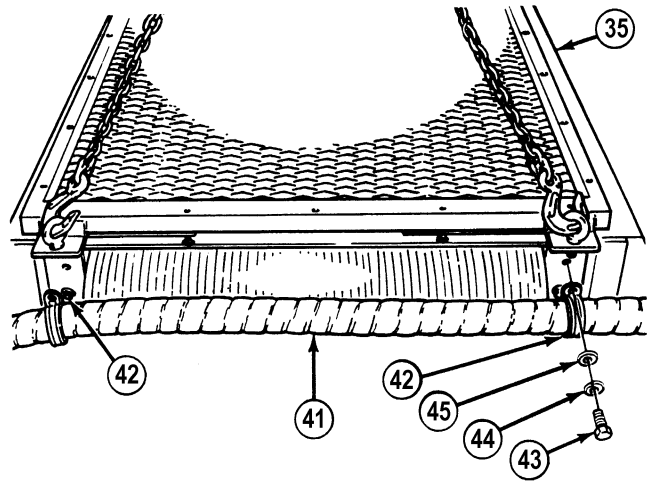


6-5. RADIATOR REPLACEMENT (CONT).

NOTE

Ensure matchmarks are aligned on aspirator hose and clips as noted prior to removal.

- (15) Position aspirator hose (41) on left side of radiator assembly (35) with two clips (42), washers (45), lockwashers (44) and screws (43).
- (16) Tighten screws (46) and (43) on radiator assembly (35).
- (17) Position eight screws (39) and locknuts (38) in four side brackets (40).



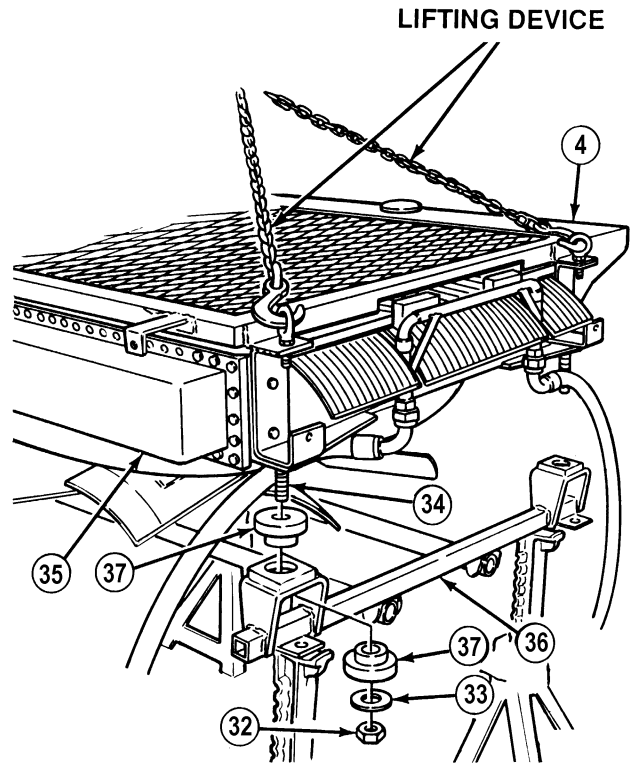
- (18) Tighten screws (39), (50) and (54) on radiator assembly (35).

- (19) Position eight mounts (37) on radiator support (36).

WARNING

Radiator assembly weighs 575 lbs (261 kg). Do not stand directly under radiator assembly or injury to personnel may result.

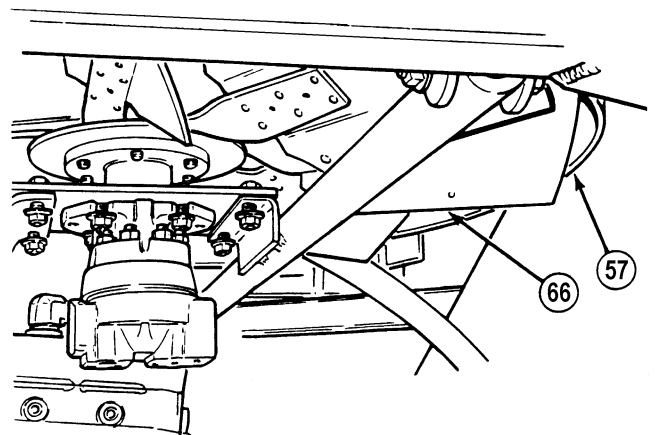
- (20) With the aid of an assistant, and using lifting device, position radiator assembly (35) on radiator support (36).
- (21) Install four washers (33) and locknuts (32) on mounting studs (34). Tighten locknuts to 110 lb-ft (149 N·m).
- (22) Remove lifting device from cooling assembly (4).



NOTE

Fan should be centered under fan shroud with same amount of distance between fan shroud and blades of fan.

- (23) Check clearance of fan (66) to fan shroud (57).

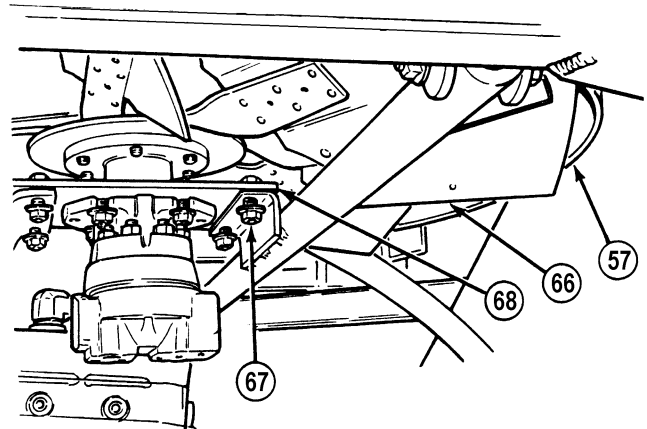


6-5. RADIATOR REPLACEMENT (CONT).

NOTE

- If fan clearance is correct, go to Step (29). If fan clearance is not correct, perform Step (24).
- If fan motor was replaced, four locknuts in Step (24) will be loose and do not need to be discarded. If fan motor was not replaced, four locknuts need to be discarded.

- (24) Remove and discard four locknuts (67) from fan mounting plate (68).
- (25) With the aid of an assistant, adjust fan (66) until fan is centered under fan shroud (57).
- (26) Position four locknuts (67) on fan mounting plate (68).
- (27) Check for even distance of blades of fan (66) to fan shroud (57).
- (28) Tighten four locknuts (67) on fan mounting plate (68).



WARNING

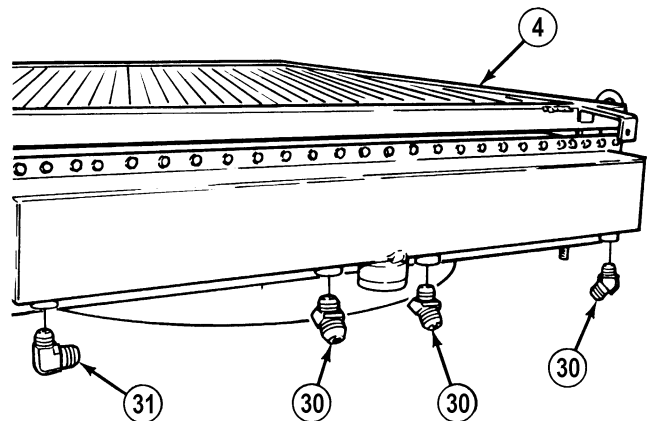
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (29) Apply sealing compound on threads of three fittings (30) and fitting (31).

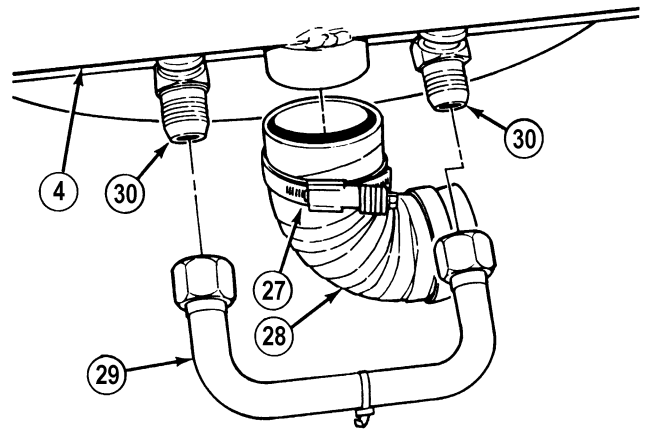
NOTE

Four fittings in Step (30) are installed to position noted prior to removal.

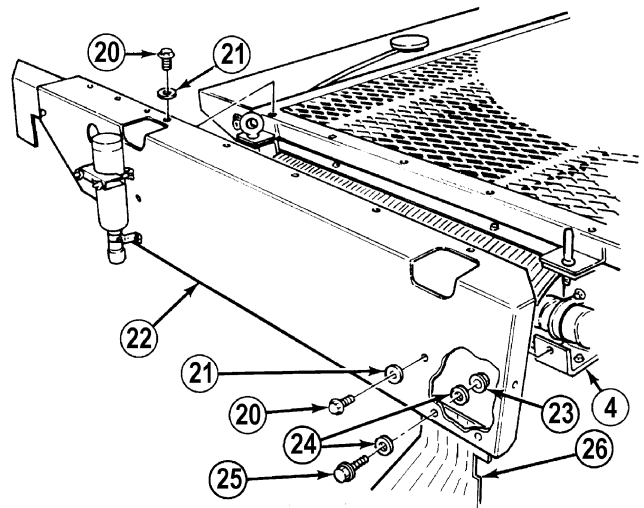
- (30) Install three fittings (30) and fitting (31) in cooling assembly (4).



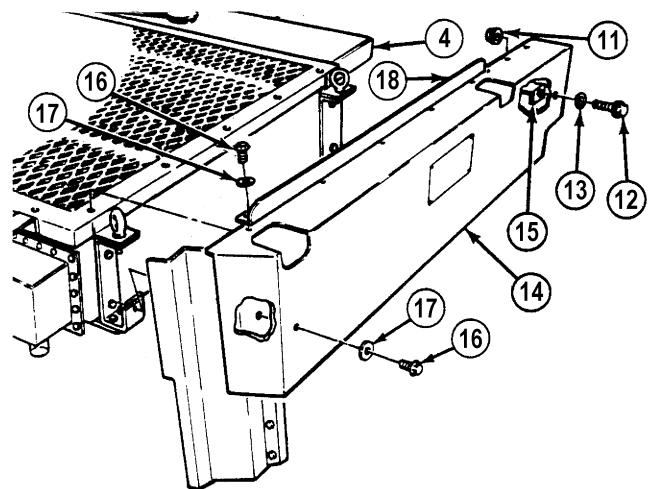
- (31) Install tube assembly (29) on two fittings (30).
- (32) Install hose (28) and clamp (27) on cooling assembly (4). Tighten clamp to 100 lb-in (11 N·m).



- (33) Position left side skin (22) on cooling assembly (4) with seven washers (21) and screws (20).
- (34) Install two screws (25), four washers (24) and two locknuts (23) on left side skin (22) and cooling skirt (26).

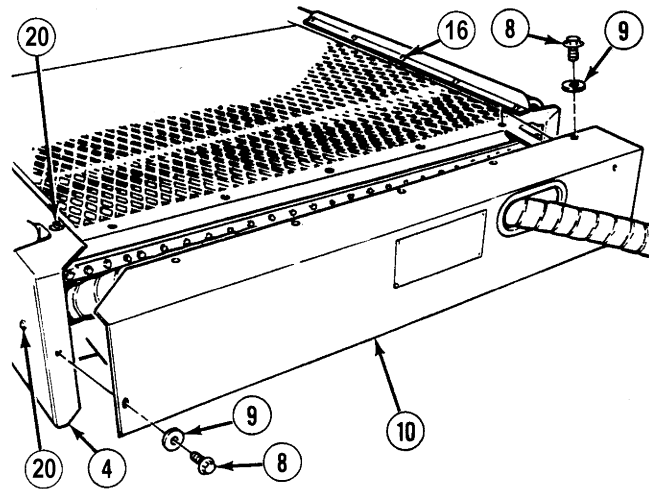


- (35) Position right side skin (14) on cooling assembly (4) with two washers (17) and screws (16).
- (36) Position screw (12), washer (13) and nut (11) on right side skin (14) and bracket (15).
- (37) Position angle (18) on right side skin (14) with five washers (17) and screws (16).



6-5. RADIATOR REPLACEMENT (CONT).

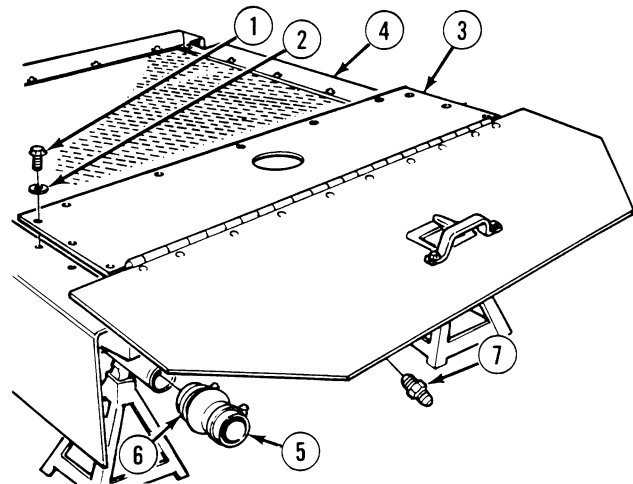
- (38) Position back panel (10) on cooling assembly (4) with seven washers (9) and screws (8).
- (39) Tighten screws (8), (16) and (20) on cooling assembly (4).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (40) Apply sealing compound on threads of fitting (7).
- (41) Install fitting (7) in cooling assembly (4).
- (42) Position two clamps (6) and two hump hoses (5) on cooling assembly (4).



WARNING

Engine cover assembly weighs 55 lbs (25 kg). Use an assistant to help install engine cover assembly or injury to personnel may result.

- (43) With the aid of an assistant, install engine cover assembly (3) on cooling assembly (4) with 11 washers (2) and screws (1).

c. Follow-On Maintenance:

- Install cooling system assembly, (Para 6-3).

END OF TASK

6-6. COOLANT LEVEL SIGHT GLASS REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Hose, Drain (Minimum Length 3 Ft [0.9m])
(Item 37, Appendix G)
Pan, Drain (Item 46, Appendix G)

Equipment Condition

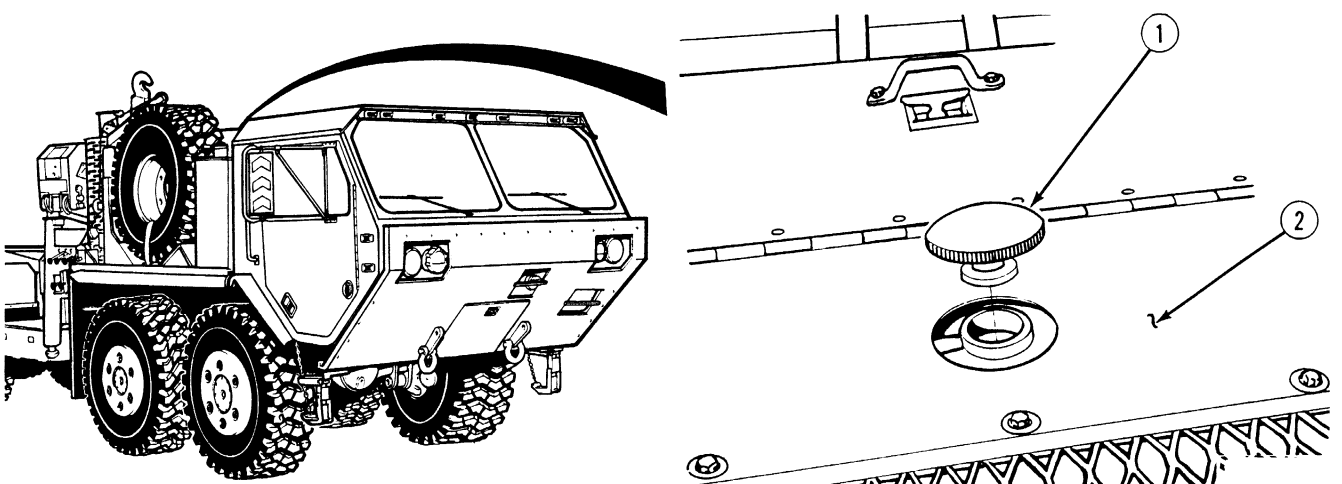
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Right fender rear skirt removed, (Para 17-33)

Materials/Parts

Antifreeze (Item 19, Appendix C)
Rag, Wiping (Item 67, Appendix C)
Sealing Compound (Item 72, Appendix C)

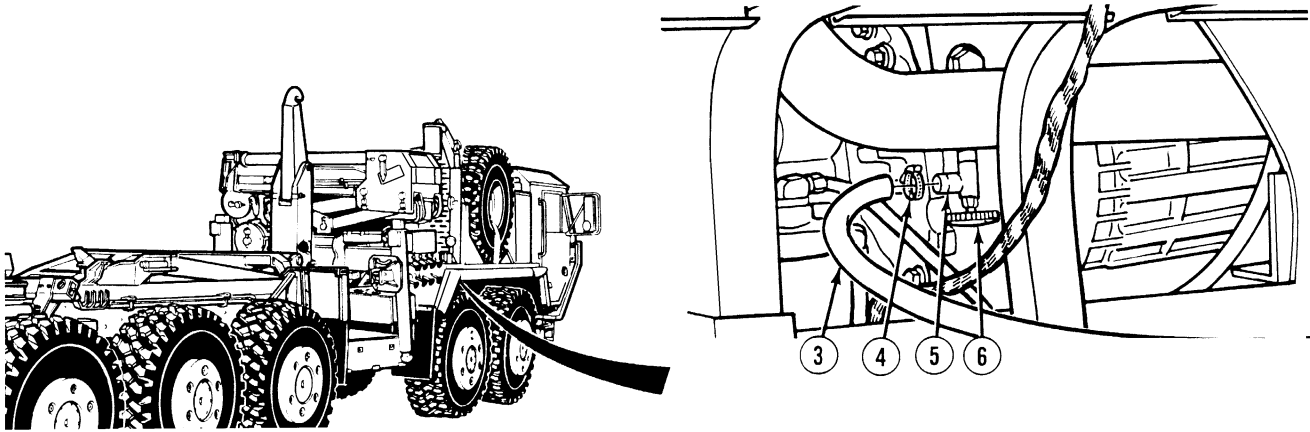
a. Removal.**WARNING**

- Use extreme care when removing radiator pressure cap. Sudden release of pressure can cause steam flash which could seriously injure personnel. Slowly loosen cap to the first stop to relieve pressure before removing cap complete. After opening, securely tighten cap.
- Use clean, thick waste cloth or like material to remove radiator pressure cap. Avoid using gloves. If hot water soaks through gloves, personnel could be burned.



- (1) Push down on radiator cap (1) and slowly turn 1/2 turn counterclockwise to relieve pressure.
- (2) Turn radiator cap (1) additional 1/2 turn counterclockwise and remove radiator cap from radiator (2).

6-6. COOLANT LEVEL SIGHT GLASS REPLACEMENT (CONT).



NOTE

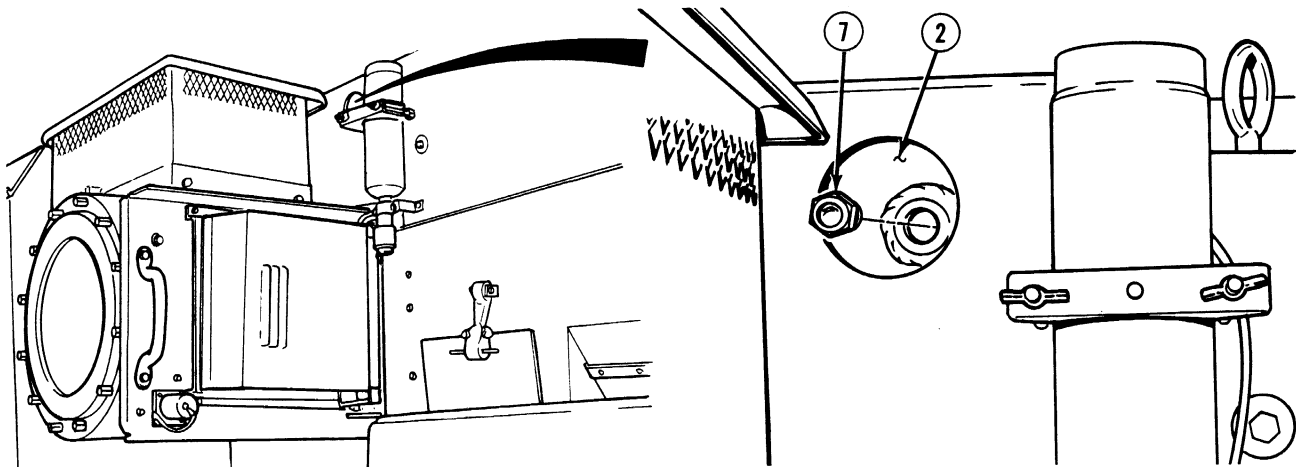
A clamp may be used to hold drain hose on drain cock as shown in Step (3).

- (3) Install drain hose (3) and clamp (4) to drain cock (5) and tighten clamp on drain hose.
- (4) Position end of drain hose (3) in drain pan.

NOTE

Radiator capacity is 108 qts (114 liters).

- (5) Open valve (6) on drain cock (5) and drain coolant below level of sight glass. Close valve (6) on drain cock (5).
- (6) Remove clamp (4) and drain hose (3) from drain cock (5).

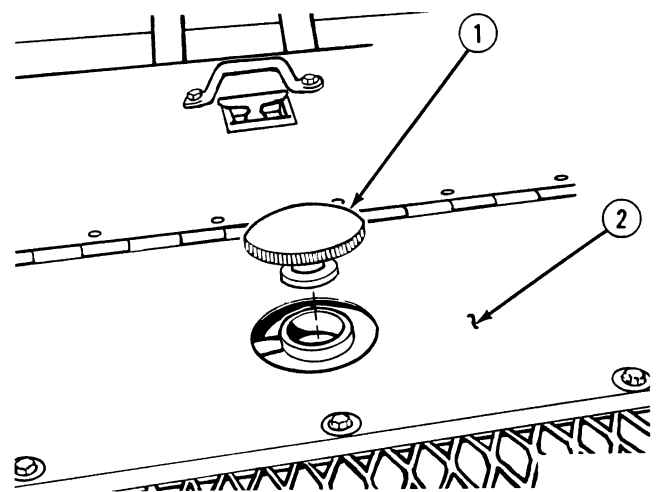
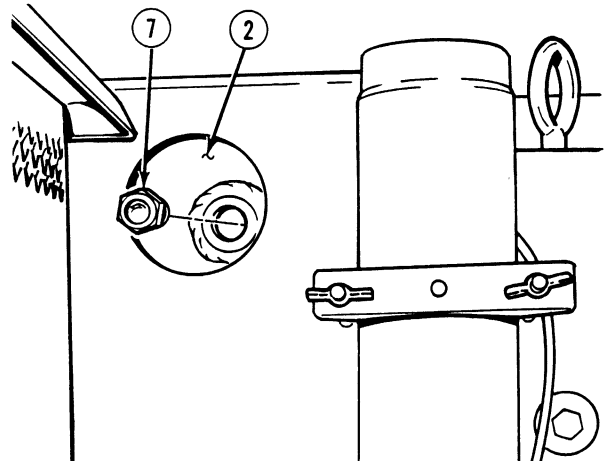


- (7) Remove coolant level sight glass (7) from radiator (2).

b. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Coat threads of coolant level sight glass (7) with sealing compound.
- (2) Install coolant level glass (7) in radiator (2).
- (3) Install radiator cap (1) on radiator (2).

**c. Follow-On Maintenance:**

- Fill radiator, (Para 6-4).
- Start engine, (TM 9-2320-364-10).
- Allow engine to run for three minutes, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for coolant leaks, (TM 9-2320-364-10).
- Check coolant level, (TM 9-2320-364-10).
- Install right fender rear skirt, (Para 17-33).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

6-7. THERMOSTAT REPLACEMENT.

This task covers:

- | | |
|------------------------|--------------------------|
| a. Removal | c. Installation |
| b. Cleaning/Inspection | d. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
 Compressor unit, Air (Item 11, Appendix G)
 Gloves, Chemical Oil Protective (Item 28, Appendix G)
 Goggles, Industrial (Item 30, Appendix G)
 Gun, Air Blow (Item 31, Appendix G)
 Installer, Seal (Item 39, Appendix G)
 Pan, Drain (Item 46, Appendix G)
 Socket Set, 3/8-in (Item 62, Appendix G)
 Wrench, Torque (0 to 175 lb-ft [9 to 237 N·m]) (Item 95, Appendix G)
 Wrench, Torque, 3/8 in. Drive (0 to 60 N·m) (Item 98, Appendix G)
 Handle (Item 34, Appendix G)

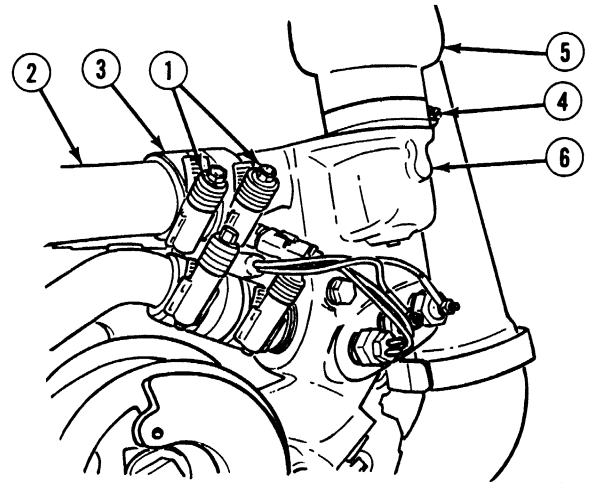
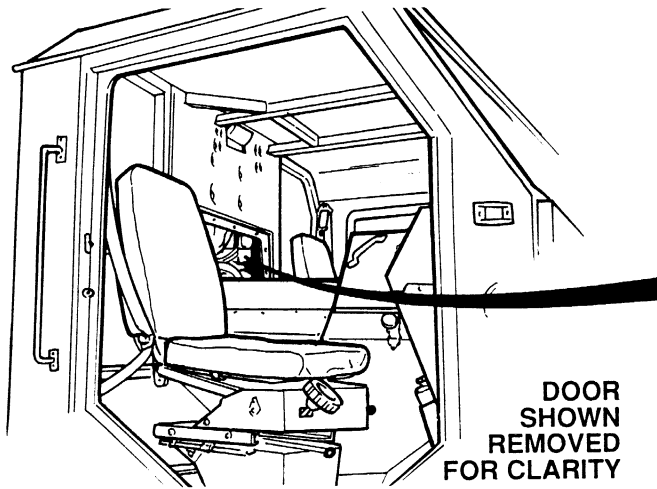
Materials/Parts

Adhesive, Sealant (Item 9, Appendix C)
 Cable Ties (Item 26, Appendix C)
 Sealing Compound (Item 72, Appendix C)
 Gasket (Item 53, Appendix F)
 Gasket (Item 55, Appendix F)
 Lockwasher (7) (Item 202, Appendix F)
 Seal (2) (Item 325, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Cab engine access panel removed, (Para 17-24)
 Cooling system drained, (Para 6-4)
 Electronic Control Module (ECM) removed, (DDEC II, Para 7-56 or DDEC III, Para 7-57)

a. Removal.



NOTE

- Both thermostats are replaced at the same time.
- Note location and remove cable ties as required.

(1) Loosen two clamps (1) on top crossover tube (2) and slide hose (3) on crossover tube.

NOTE

Position drain pan under engine.

(2) Loosen clamp (4) and remove hump hose (5) and clamp (4) from left thermostat housing (6).

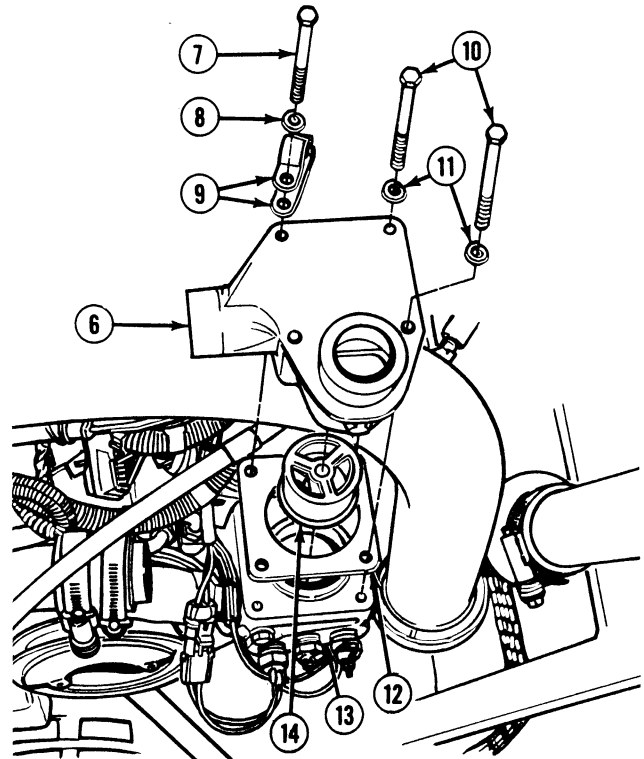
6-7. THERMOSTAT REPLACEMENT (CONT).

- (3) Remove screw (7), lockwasher (8) and clip (9) from left thermostat housing (6). Discard lockwasher.
- (4) Remove two screws (10) and lockwashers (11) from left thermostat housing (6). Discard lockwashers.

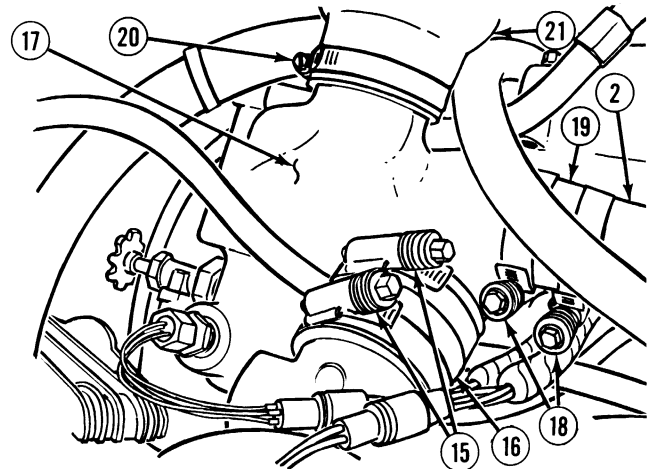
NOTE

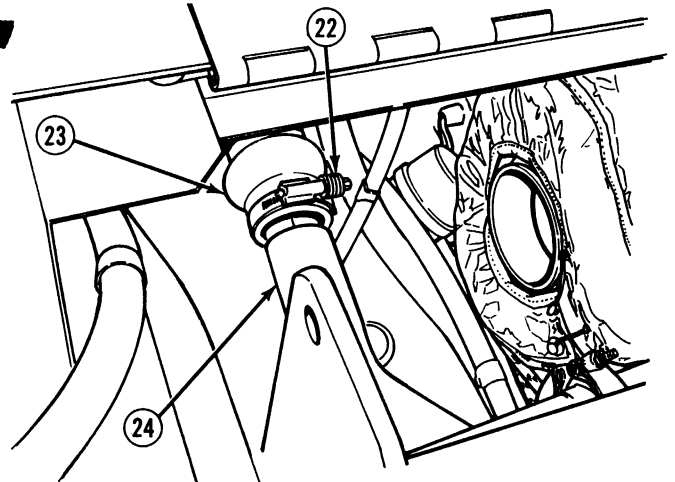
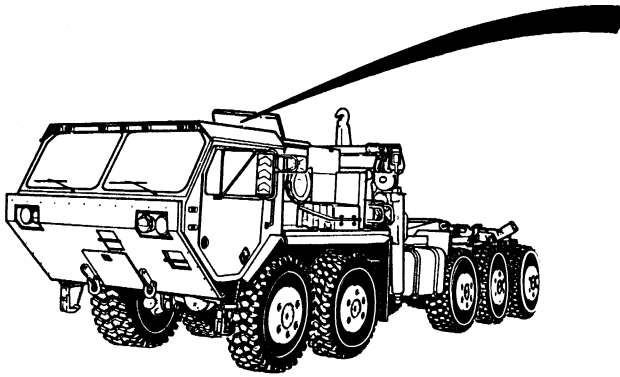
It may be necessary to tap thermostat housing with a soft faced hammer to loosen from engine block.

- (5) Remove left thermostat housing (6) and gasket (12) from engine block (13). Discard gasket.
- (6) Remove and discard thermostat (14) from left thermostat housing (6).

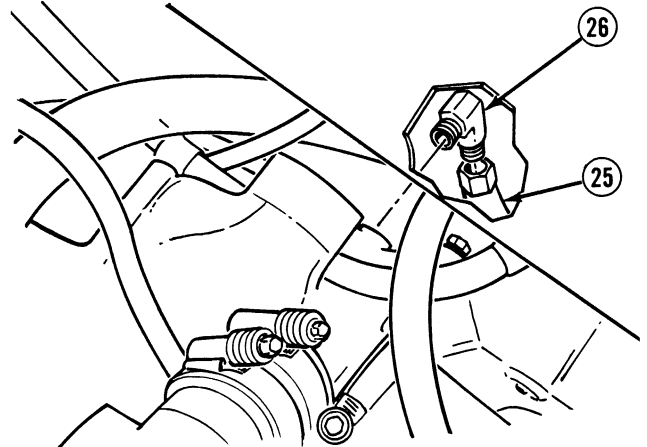


- (7) Loosen two clamps (15) and move hose (16) toward right thermostat housing (17) until free.
- (8) Loosen two clamps (18) on hose (19) and slide hose on top crossover tube (2).
- (9) Loosen clamp (20) on hump hose (21) and remove hump hose and clamp from right thermostat housing (17).

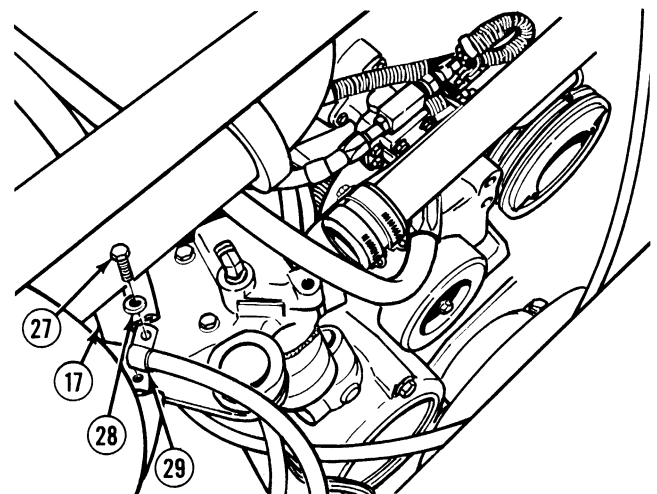




- (10) Loosen clamp (22) on hump hose (23) and remove radiator tube (24) from hump hose.
- (11) Remove hose 2300 (25) from elbow (26).

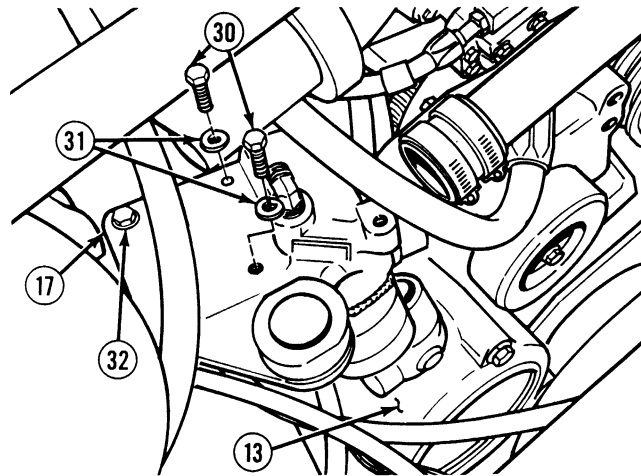


- (12) Remove screw (27), lockwasher (28) and clip (29) from right thermostat housing (17). Discard lockwasher.



6-7. THERMOSTAT REPLACEMENT (CONT).

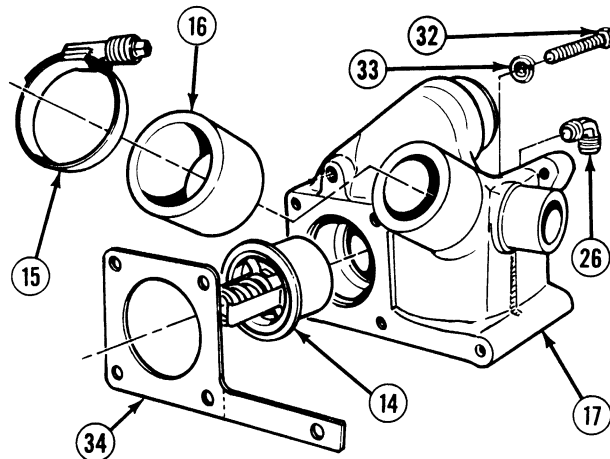
- (13) Remove two screws (30) and lockwashers (31) from right thermostat housing (17). Discard lockwashers.
- (14) Loosen screw (32) on right thermostat housing (17).



NOTE

- It may be necessary to tap thermostat housing with a soft faced hammer to loosen.
- Screw and lockwasher are removed with right thermostat housing.

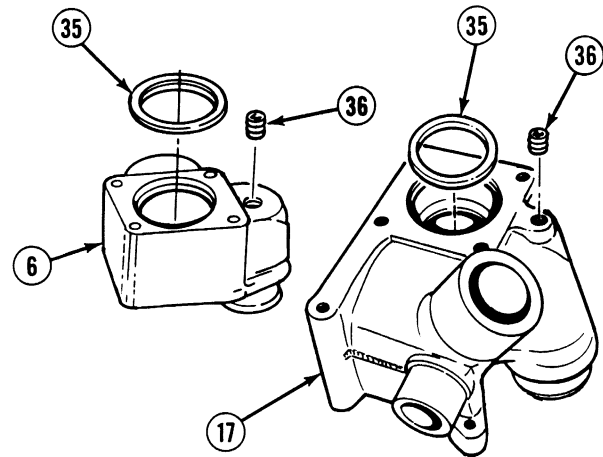
- (15) Remove screw (32), lockwasher (33), right thermostat housing (17) and gasket (34) from engine block (13). Discard gasket.
- (16) Remove screw (32) and lockwasher (33) from right thermostat housing (17). Discard lockwasher.
- (17) Remove elbow (26) from right thermostat housing (17).
- (18) Remove and discard thermostat (14) from right thermostat housing (17).
- (19) Remove hose (16) and two clamps (15) from right thermostat housing (17).



NOTE

Both left and right seal rings are replaced the same way.

- (20) Position left and right thermostat housings (6) and (17) bottom side up.
- (21) Remove and discard seal ring (35) from left and right thermostat housings (6) and (17).
- (22) Remove plugs (36) from left and right thermostat housings (6) and (17).

**b. Cleaning/Inspection.****CAUTION**

Use care when scraping gasket material not to damage machined surfaces of housing.

- (1) Scrape gasket material from thermostat housing.

WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
 - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- (2) Clean metal parts with drycleaning solvent and wire brush.

WARNING

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (Goggles/shield, gloves, etc.).

- (3) Dry parts with compressed air.
- (4) Inspect housing for cracks.
- (5) Replace all damaged parts.

6-7. THERMOSTAT REPLACEMENT (CONT).

c. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

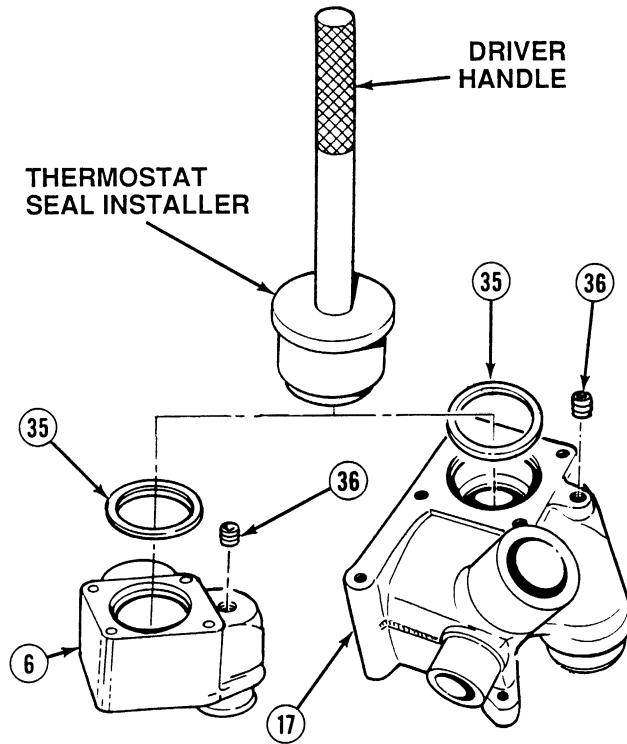
Install cable ties as required.

- (1) Coat threads of two plugs (36) with sealing compound.
- (2) Install two plugs (36) in left and right thermostat housings (6) and (17).

NOTE

Lip on seal ring faces installer.

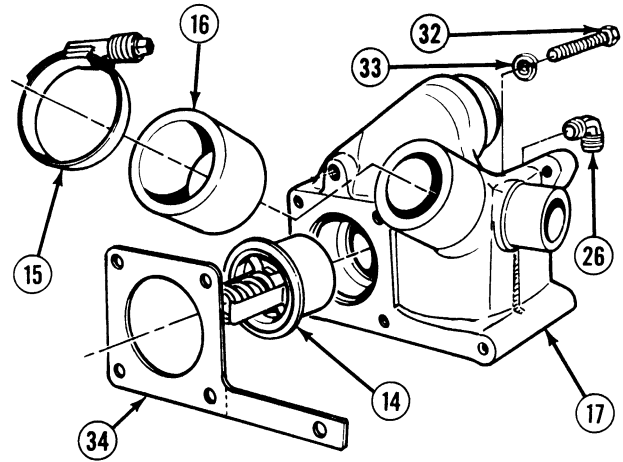
- (3) Position seal ring on installer and handle and install seal ring (35) in left and right thermostat housings (6) and (17) until fully seated.



- (4) Install hose (16) and two clamps (15) on right thermostat housing (17).
- (5) Install thermostat (14) in right thermostat housing (17).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (6) Apply sealing compound on threads of elbow (26).
- (7) Install elbow (26) in right thermostat housing (17).

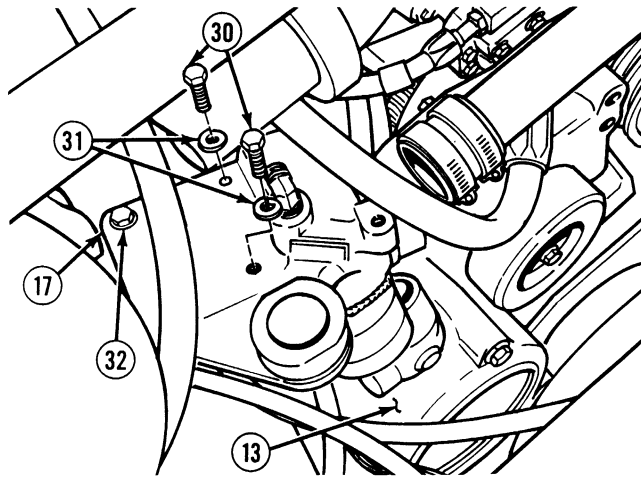
WARNING

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

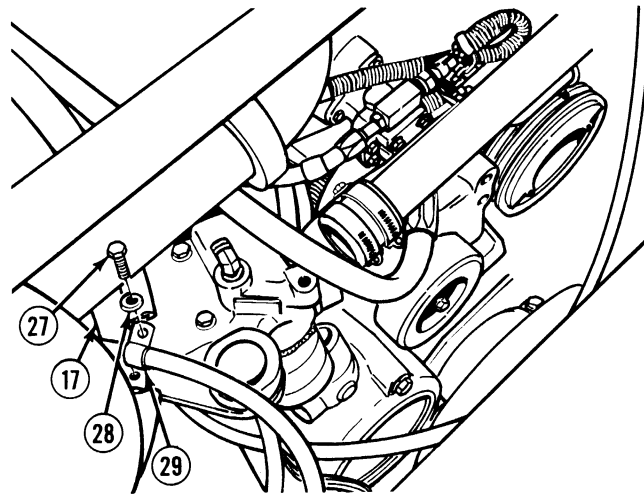
- (8) Apply adhesive sealant sparingly to gasket (34).
- (9) Position gasket (34) on right thermostat housing (17).
- (10) Position lockwasher (33) and screw (32) in right thermostat housing (17).

6-7. THERMOSTAT REPLACEMENT (CONT).

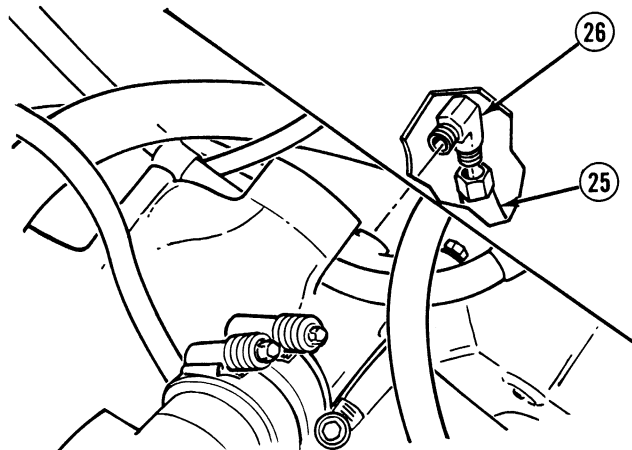
- (11) Install right thermostat housing (17) on engine block (13) with two lockwashers (31) and screws (30). Tighten two screws (30) and screw (32) 23 to 26 lb-ft (31 to 35 N·m).



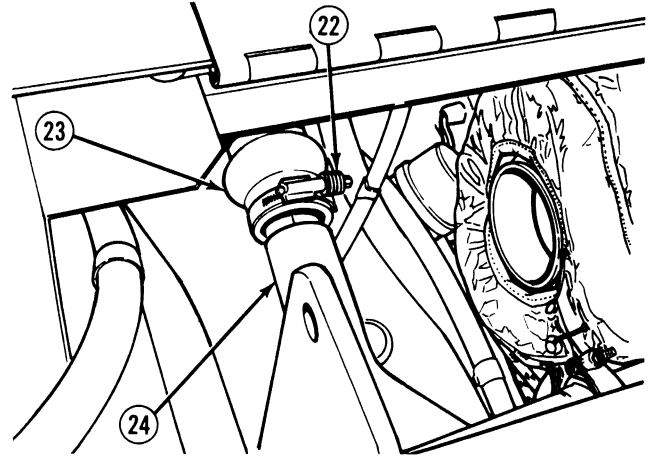
- (12) Install clip (29), lockwasher (28) and screw (27) on right thermostat housing (17). Tighten screw 23 to 26 lb-ft (31 to 35 N·m).



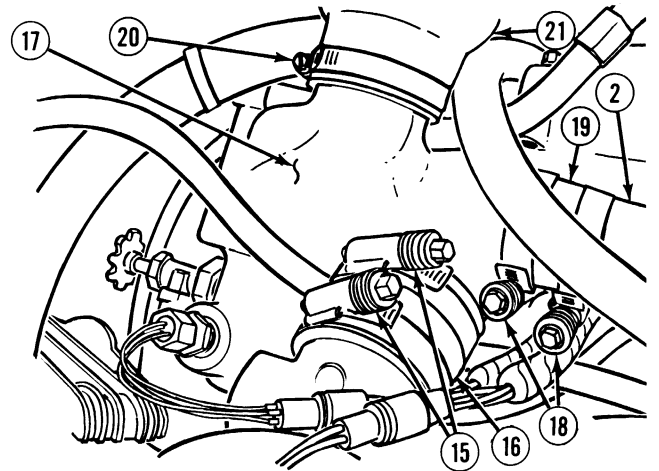
- (13) Install hose 2300 (25) on elbow (26).



- (14) Install radiator tube (24) in hump hose (23) and tighten clamp (22) to 100 lb-in (11 N·m).



- (15) Install clamp (20) and hump hose (21) on right thermostat housing (17). Tighten clamp to 100 lb-in (11 N·m).
- (16) Position hose (16) and two clamps (15) on right thermostat housing (17) and tighten clamps to 100 lb-in (11 N·m).
- (17) Pull hose (19) and two clamps (18) from top crossover tube (2) and position on right thermostat housing (17). Tighten two clamps to 40 lb-in (4 N·m).



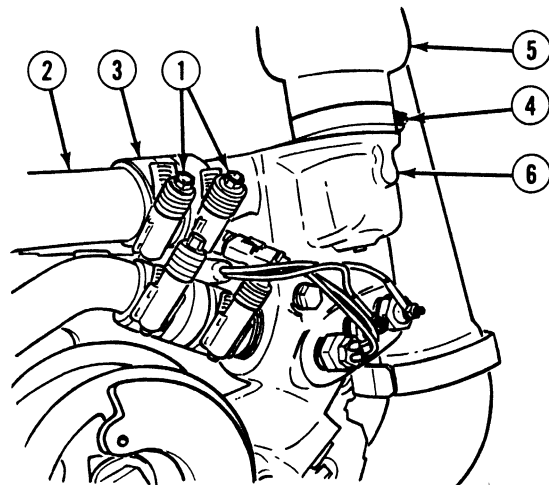
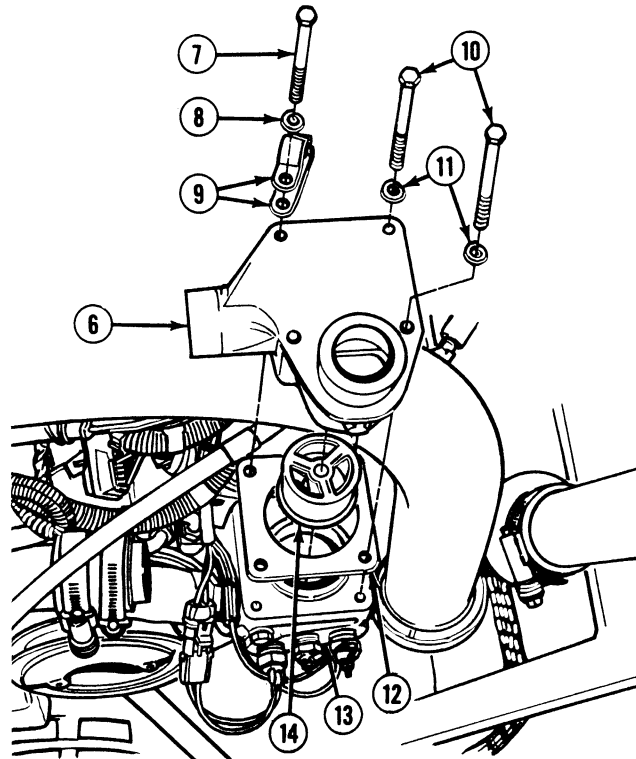
6-7. THERMOSTAT REPLACEMENT (CONT).

- (18) Install thermostat (14) in left thermostat housing (6).

WARNING

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

- (19) Apply adhesive sealant sparingly to gasket (12).
- (20) Position gasket (12) on left thermostat housing (6).
- (21) Install left thermostat housing (6) on engine block (13) with two lockwashers (11) and screws (10). Tighten screws finger tight.
- (22) Install clip (9), lockwasher (8) and screw (7) in left thermostat housing (6). Tighten screw finger tight.
- (23) Tighten three screws (7) and (10) on left thermostat housing (6) 23 to 26 lb-ft (31 to 35 N·m).
- (24) Install hump hose (5) and clamp (4) on left thermostat housing (6). Tighten clamp to 100 lb-in (11 N·m).
- (25) Position hose (3) from top crossover tube (2) on left thermostat housing (6) and tighten two clamps (1) to 40 lb-in (4 N·m).



d. Follow-On Maintenance:

- Install Electronic Control Module (ECM), (DDEC II, Para 7-56 or DDEC III, Para 7-57).
- Fill cooling system, (Para 6-4).
- Start engine, (TM 9-2320-364-10).
- Allow engine to run for three minutes.
- Shut OFF engine, (TM 9-2320-364-10).
- Check for coolant leaks, (TM 9-2320-364-10).
- Install cab engine access panel, (Para 17-24).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

6-8. COOLING SYSTEM HOSES AND TUBES REPLACEMENT.

This task covers:

- a. Coolant Hose Locations
- b. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Cap and Plug Set (Item 8, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)
Wrench, Torque (0 to 60 N·m)
(Item 98, Appendix G)

Material/Parts

Cable Ties (Item 25, Appendix C)
Tags, Identification (Item 88, Appendix C)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Spare tire removed, (TM 9-2320-364-10)
Front access cover open, (TM 9-2320-364-10)
Cab engine access panel removed, (Para 17-24)
Right fender front and rear skirt removed,
(Para 17-33)
Left fender front and rear skirt removed,
(Para 17-34)
Cooling system drained, (Para 6-4)

a. *Coolant Hose Locations.*

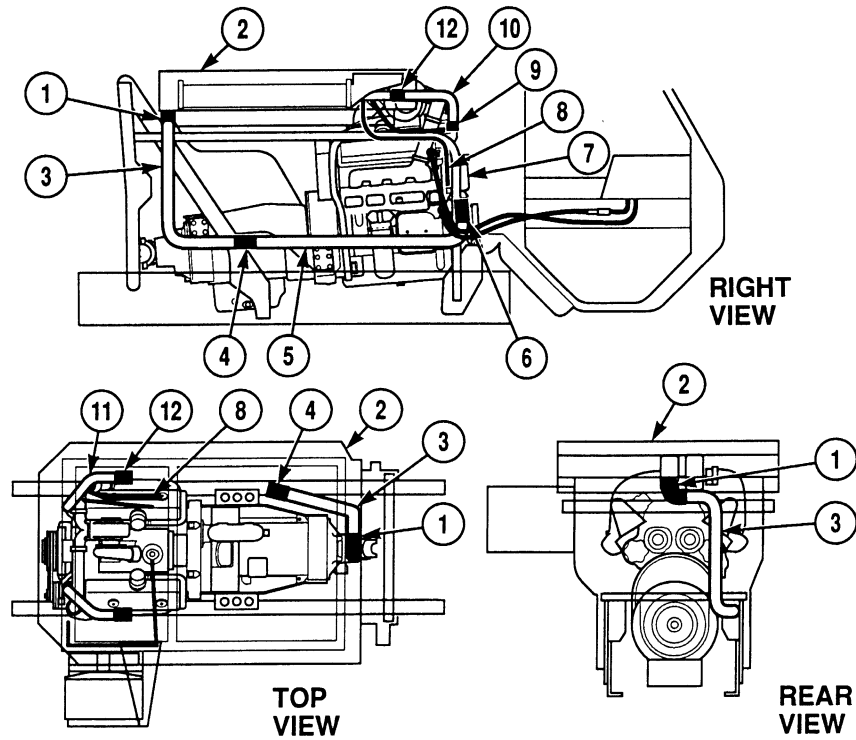


Equipment may be damaged by foreign matter if hoses, tubes and connectors are not plugged and capped when removed.

NOTE

- This procedure is for reference only to show location of hoses on the truck. It will never be necessary to remove all coolant hoses at one time. Individual tasks will indicate the area where hoses are removed and installed.
- As items are removed, cap and plug all hoses, tubes and connectors.
- Tag and mark all hoses, pipes and tubes before removal.
- Remove and replace cable ties as required.
- Remove clamps and support brackets as required.

Table 6-1. Cooling System Hose Locations

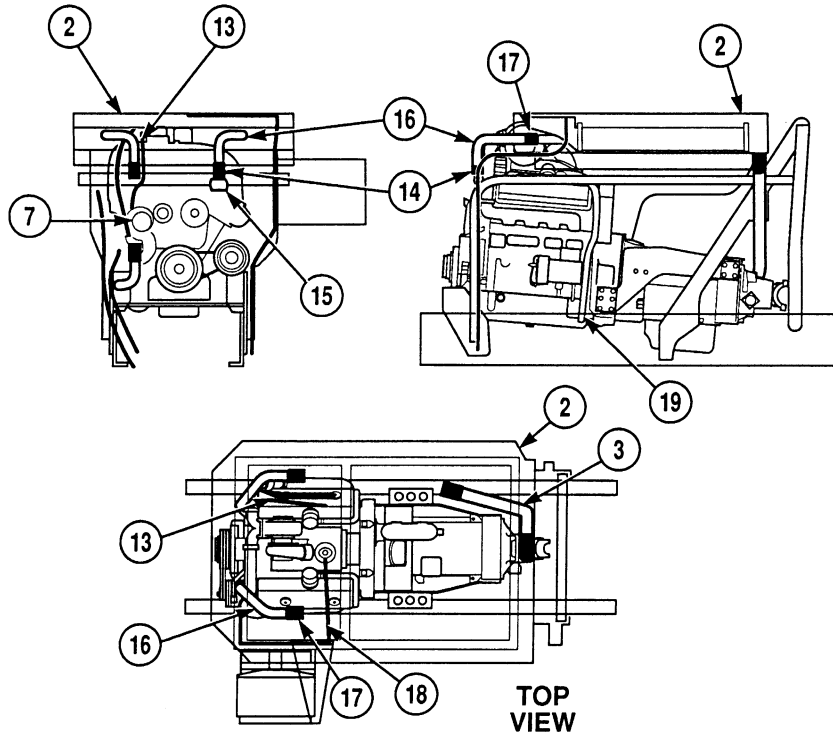


Hose	Type	From	To
(1)*	Rubber elbow	Rear radiator (2)	Tube (3)
(3)	Water pipe	Rubber elbow (1) at rear radiator	Hump hose (4) by transmission
(4)	Hump hose	Water pipe (3) right of transmission	Water pipe (5) right of transmission
(5)	Water pipe	Hump hose (4) right of transmission	Hump hose (6) under water pump
(6)*	Hump hose	Water pipe (5)	Water pump (7)
(8)	Hose	Right front radiator (2)	Rear of water pump (7)
(9)	Hump hose	Right thermostat (10)	Water pipe (11)
(11)	Water pipe	Hump hose (9) at right thermostat	Hump hose (12) at right front of radiator (2)
(12)	Hump hose	Water pipe (11)	Right front radiator (2)

*These hoses are installed with a hose clamp on each end. Tighten hose clamps to 40 lb-in (4 N·m) for small clamps, 100 lb-in (11 N·m) for large clamps.

6-8. COOLING SYSTEM HOSES AND TUBES REPLACEMENT (CONT).

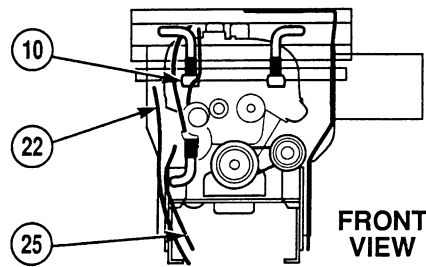
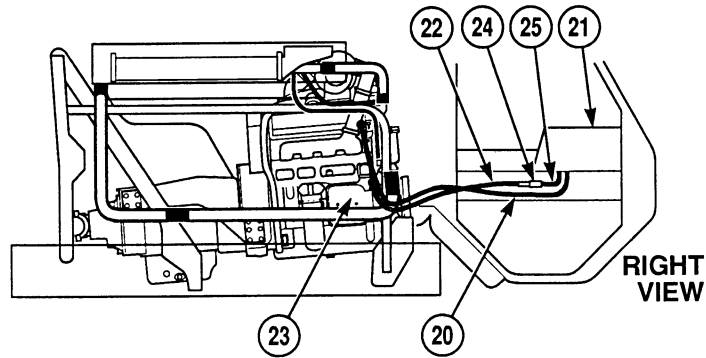
Table 6-1. Cooling System Hose Locations - CONT.



Hose	Type	From	To
(13)	JIC hose	Right front radiator (2)	Top rear water pump (7)
(14)*	Hump hose	Left thermostat (5)	Water pipe (16)
(16)	Water pipe	Hump hose (14) at left thermostat	Hump hose (17) at left front radiator
(17)	Hump hose	Water pipe (18)	Left front radiator (2)
(19)	Hose	Overflow tube at radiator cap (2)	Left side below engine

*These hoses are installed with a hose clamp on each end. Tighten hose clamps to 40 lb-in (4 N·m) for small clamps, 100 lb-in (11 N·m) for large clamps.

Table 6-1. Cooling System Hose Locations - CONT.



Hose	Type	From	To
(20)*	Hose	Right thermostat (10)	Heater in cab (21)
(20)	Hose	Right oil cooler (23)	Heater control valve (24)
(25)	Hose	Heater control valve (24)	Heater in cab (21)

*These hoses are installed with a hose clamp on each end. Tighten hose clamps to 40 lb-in (4 N·m) for small clamps, 100 lb-in (11 N·m) for large clamps.

6-8. COOLING SYSTEM HOSES AND TUBES REPLACEMENT (CONT).

b. Follow-On Maintenance:

- Fill cooling system with coolant, (Para 6-4).
- Start engine, (TM 9-2320-364-10).
- Allow engine to run for three minutes.
- Shut OFF engine, (TM 9-2320-364-10).
- Check for leaks (TM 9-2320-364-10).
- Install left front and rear skirt, (Para 17-34).
- Install right front and rear skirt, (Para 17-33).
- Install cab engine access panel, (Para 17-24).
- Close front access cover, (TM 9-2320-364-10).
- Install spare tire, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

CHAPTER 7

ELECTRICAL SYSTEM MAINTENANCE

Para	Contents	Page
7-1	Introduction	7-3
7-2	Alternator Replacement (145 Amp)	7-4
7-3	Alternator Replacement (200 Amp)	7-10
7-4	Alternator Belts Replacement/Adjustment (145 Amp)	7-16
7-5	Alternator Belts Replacement/Adjustment (200 Amp)	7-20
7-6	Voltage Regulator Replacement (145 Amp)	7-24
7-7	Voltage Regulator Adjustment (145 Amp)	7-26
7-8	Voltage Regulator Replacement (200 Amp)	7-28
7-9	Dual Voltage Alternator Control (DUVAC) Replacement (145 Amp)	7-30
7-10	Dual Voltage Alternator Control (DUVAC) Adjustment (145 Amp)	7-40
7-11	Polarity Protection Control Replacement (200 Amp)	7-42
7-12	Starter Motor Replacement	7-52
7-13	Instrument Panel Replacement	7-57
7-14	Instrument Panel Gage Wiring Harness Replacement	7-60
7-15	Instrument Panel Switch Wiring Harness Replacement	7-71
7-16	Circuit Breaker Replacement	7-74
7-17	Speedometer Replacement	7-77
7-18	Odometer (KM) Replacement	7-79
7-19	Rectifier Replacement	7-80
7-20	Tachometer Replacement	7-84
7-21	Electric Gage Replacement	7-86
7-22	Battery Gage Replacement	7-89
7-23	Panel Light Replacement	7-91
7-24	Warning Lamp Replacement	7-92
7-25	Warning Buzzer Replacement	7-94
7-26	Thumbwheel Rheostat Switch Replacement	7-96
7-27	Rocker Switch Replacement	7-98
7-28	DDEC III Diagnostic Request Switch And Bracket Replacement	7-99
7-29	STE/ICE-R Toggle Switch Replacement	7-100
7-30	Transfer Case Lockup Switch Replacement	7-102
7-31	Hydraulic Selector Switch Replacement	7-104
7-32	Engine Switch Replacement	7-107
7-33	Ether Start Aid Switch Replacement	7-109
7-34	Isolator Replacement (145 Amp)	7-111
7-35	Turn Signal Switch/Hazard Switch Replacement	7-112
7-36	Crane On/Off And High Idle Switch Replacement	7-116
7-37	Proximity Switch Replacement/Adjustment (Hook Arm Down)	7-118
7-38	Proximity Switch Replacement/Adjustment (Hook Arm Up)	7-121
7-39	Proximity Switch Replacement/Adjustment (Main Frame Down)	7-126
7-40	Load Handling System (LHS) Control Assembly (Cab) Replacement	7-131
7-41	Safe Lowering Button Replacement	7-132
7-42	LHS Junction Box Replacement	7-138
7-43	Outtrigger Proximity Switch Replacement	7-145

Para	Contents	Page
7-44	Head Light Adjustment	7-152
7-45	Head Light Assembly Replacement	7-155
7-46	Front Composite Light Repair	7-160
7-47	Rear Composite Light And Bracket Repair	7-165
7-48	Rear Fender Side Marker Light Replacement	7-171
7-49	Cab Dome Light Assembly Replacement	7-174
7-50	Reverse Light Repair	7-176
7-51	Blackout Light Repair	7-178
7-52	Front Marker Light Assembly Repair	7-181
7-53	Rear Marker Light Assembly Repair	7-187
7-54	Amber Marker Light Replacement	7-195
7-55	Hand Held Work Lamp Assembly Repair	7-198
7-56	DDEC II Engine Cold Plate/Electronic Control Module (ECM) Replacement	7-203
7-57	DDEC III Engine Cold Plate/Electronic Control Module (ECM) Replacement	7-210
7-58	Throttle Sensor Replacement	7-218
7-59	Turbo Throttle Switch Replacement/Adjustment	7-220
7-60	Engine Oil Pressure Switches Replacement	7-222
7-61	Turbo Boost Pressure Switch Replacement	7-224
7-62	Fuel Temperature Sensor Replacement	7-226
7-63	DDEC Turbo Boost Sensor Replacement	7-228
7-64	STE/ICE Water Temperature Sensor Replacement	7-230
7-65	Water Temperature Gage/Fan Control Sensors Replacement	7-234
7-66	STE/ICE Engine Oil Temperature Sensor Replacement	7-238
7-67	DDEC II Engine Oil Pressure Sensor Replacement	7-240
7-68	DDEC III Engine Oil Pressure Sensor Replacement	7-242
7-69	DDEC III Coolant Temperature Sensor Replacement	7-244
7-70	DDEC Oil Temperature Sensor Replacement	7-246
7-71	Transmission Electronic Control Unit (ECU) Replacement	7-249
7-72	Magnetic Speed Sensor Replacement	7-251
7-73	Tachometer Drive Assembly Replacement	7-253
7-74	Fuel Pressure Transducer Replacement	7-257
7-75	Air Cleaner Pressure Transducer Replacement	7-259
7-76	Turbocharger Outlet Pressure Transducer Replacement	7-260
7-77	Air Box Pressure Transducer Replacement	7-262
7-78	Fuel Filter Pressure Transducer Replacement	7-264
7-79	Engine Oil Pressure Sending Unit Replacement	7-266
7-80	Water Temperature Sending Unit/Temperature Switch Replacement	7-268
7-81	Transmission Oil Temperature Sending Unit Replacement	7-270
7-82	Transfer Case Sending Unit Replacement	7-272
7-83	Transfer Case Neutral Start Switch Replacement	7-274
7-84	Differential Pressure Switch Replacement	7-277
7-85	Electric Horn Replacement	7-280
7-86	Reverse Alarm Replacement	7-281
7-87	Battery Disconnection/Connection	7-284
7-88	Battery Replacement	7-287
7-89	Battery Box and Shunt Repair	7-290

Para	Contents	Page
7-90	Battery Box Wiring Replacement (145 AMP)	7-296
7-91	Battery Box Wiring Replacement (200 AMP)	7-310
7-92	12V Magnetic Switch Replacement	7-326
7-93	24V Side Panel Magnetic Switch Replacement	7-329
7-94	24V Magnetic Switch Replacement	7-332
7-95	Relay Replacement	7-335
7-96	Electric Resistor Replacement	7-336
7-97	Flasher Unit Replacement	7-338
7-98	Throttle Position Control Replacement	7-339
7-99	Slave Connector And Cable Replacement	7-341
7-100	Vernier Control Replacement	7-346
7-101	General Wire Harness Repair	7-348
7-102	Engine Brake Wire Harness Replacement	7-363
7-103	7-Pin Electrical Connector Replacement	7-365
7-104	12-Pin Electrical Connector Replacement	7-370
7-105	Emergency Steering Switch Replacement	7-372
7-106	Battery Disconnect Switch Box Repair	7-375

7-1. INTRODUCTION.

This chapter contains maintenance instructions for removing, installing, adjusting, replacing, and testing electrical system components as authorized by the Maintenance Allocation Chart (MAC) at the Unit Maintenance level.

7-2. ALTERNATOR REPLACEMENT (145 AMP).

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Caps, Vise Jaw (Item 9, Appendix G)
- Gage, Belt Tensioning (Item 26, Appendix G)
- Puller Kit, Universal (Item 51, Appendix G)
- Vise (Item 75, Appendix G)
- Wrench, Combination, 1-1/16 Wrench (Item 78, Appendix G)
- Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m]) (Item 95, Appendix G)

Materials/Parts

- Alcohol, Isopropyl (Item 17, Appendix C)
- Cloth, Cleaning (Item 31, Appendix C)
- Sealant, Electrical (Item 68, Appendix C)
- Tags, Identification (Item 88, Appendix C)
- Tape, Pressure Sensitive (Item 94, Appendix C)

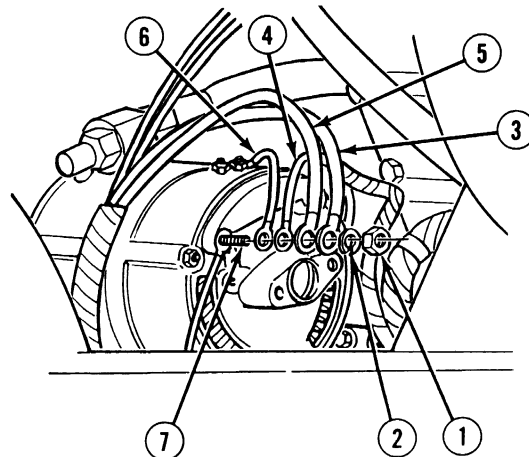
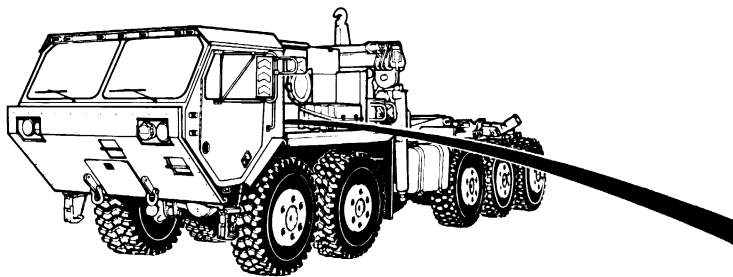
Materials/Parts - Continued

- Capacitor (if required) (Item 8, Appendix F)
- Locknut (Item 91, Appendix F)
- Lockwasher (2) (Item 149, Appendix F)
- Lockwasher (Item 167, Appendix F)
- Lockwasher (Item 173, Appendix F)
- Lockwasher (Item 177, Appendix F)
- Lockwasher (2) (if required) (Item 193, Appendix F)
- Lockwasher (Item 199, Appendix F)

Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)
- Batteries disconnected, (Para 7-87)
- Left side noise panel removed, (Para 17-28)
- Cab engine access panel removed, (Para 17-24)
- Left front noise panel removed, (Para 17-27)

a. Removal.

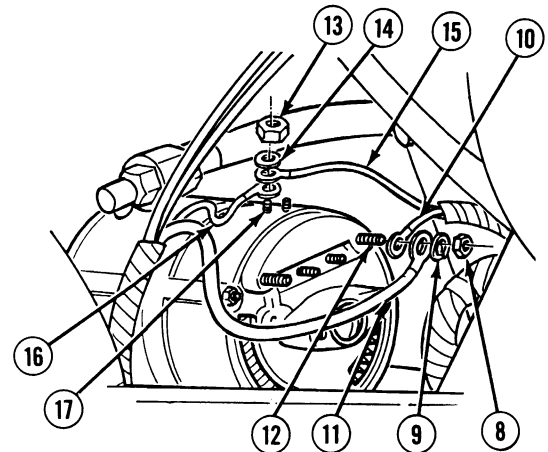


NOTE

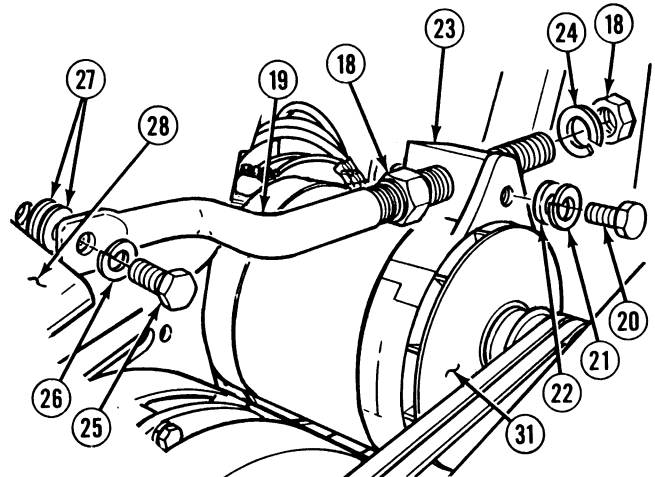
Tag and mark all wires prior to removal.

- (1) Remove nut (1), lockwasher (2), and wires 1275 (3), 1815 (4), 1435 (5) and 1057 (6) from negative terminal (7). Discard lockwasher.

- (2) Remove nut (8), lockwasher (9) and wires 1820 (10) and 1278 (11) from positive terminal (12). Discard lockwasher.
- (3) Remove nut (13), lockwasher (14) and wires 1953 (15) and 1344 (16) from F-positive terminal (17). Discard lockwasher.



- (4) Loosen nut (18) on alternator support arm (19).
- (5) Remove screw (20), lockwasher (21) and washer (22) from eye rod end (23) on alternator support arm (19). Discard lockwasher.
- (6) Remove nut (18), lockwasher (24), eye rod end (23) and nut (18) from alternator support arm (19). Discard lockwasher.



NOTE

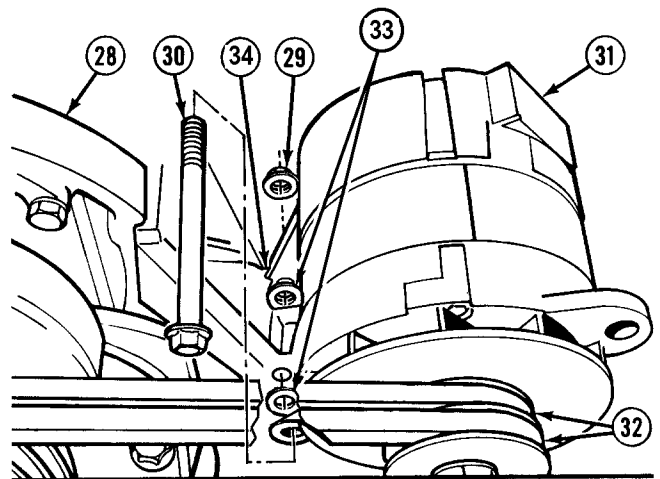
Note number of washers prior to removal.

- (7) Remove screw (25), lockwasher (26), alternator support arm (19) and washers (27) from engine (28). Discard lockwasher.
- (8) Remove and discard locknut (29) from screw (30).
- (9) Rotate alternator (31) towards center of engine (28) and remove two belts (32) from alternator (31).

NOTE

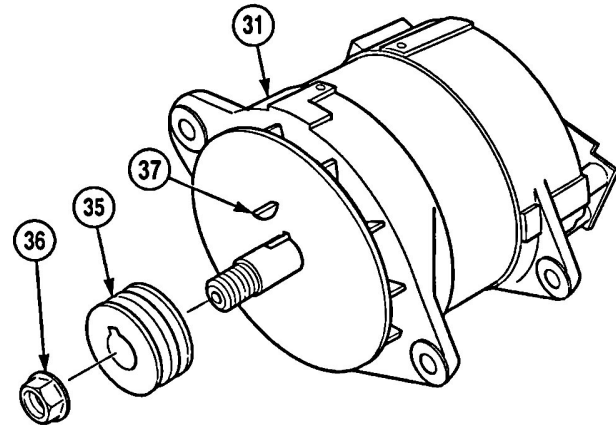
- There may or may not be washer(s) used in Step (10).
- Note position of washer(s) prior to removal.

- (10) Remove screw (30), washer(s) (33) and alternator (31) from alternator mounting bracket (34).



7-2. ALTERNATOR REPLACEMENT (145 AMP) (CONT).

- (11) Position pulley (35) in soft-jawed vise.
- (12) Remove and discard locknut (36) from alternator (31).
- (13) Remove pulley (35) from vise.
- (14) Remove pulley (35) from alternator (31).
- (15) Remove key (37) from alternator (31).



b. Installation.

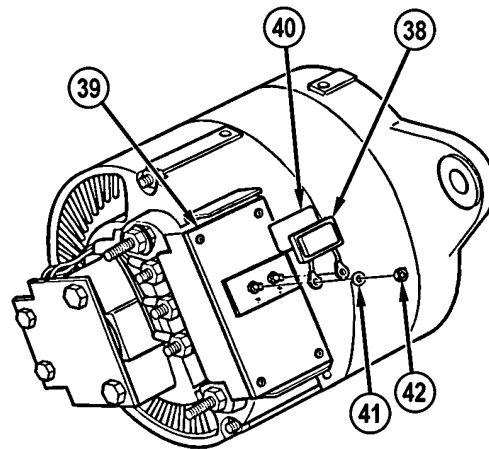
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

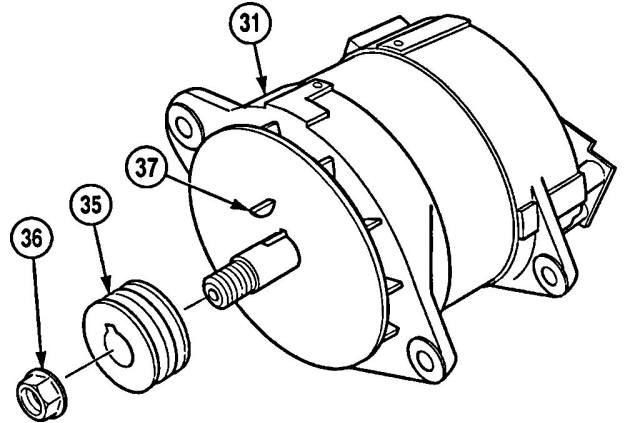
NOTE

Perform Steps (1) through (4) if alternator does not have a capacitor installed.

- (1) Clean the bottom surface of capacitor (38) and cover (39) with an equal mixture of isopropyl alcohol and water, and let air dry.
- (2) Install two sided tape (40) to the bottom of capacitor (38).
- (3) Position capacitor (38) on cover (39) and install two lockwashers (41) and nuts (42).
- (4) Press capacitor (38) firmly to cover (39).
- (5) Apply electrical sealant to two terminals on cover (39).



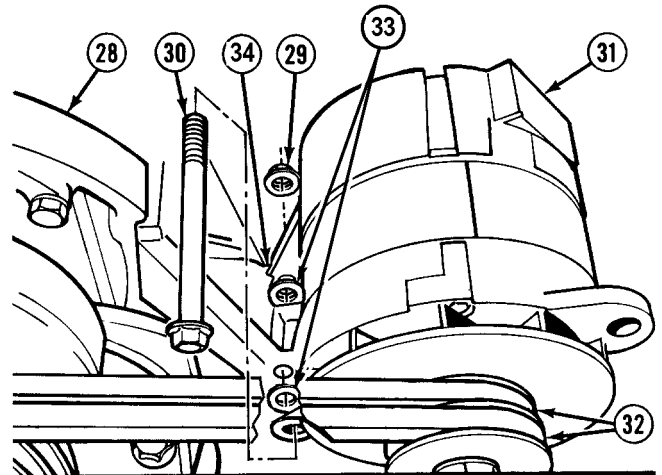
- (6) Position key (37), pulley (35) and locknut (36) on alternator (31). Do not tighten.
- (7) Position pulley (35) in soft-jawed vise.
- (8) Tighten locknut (36) on alternator (31) 70 to 80 lb-ft (95 to 108 N·m).
- (9) Remove pulley (35) from vise.



NOTE

- There may or may not be washer(s) used in Step (10).
- Install washer(s) as noted prior to removal.

- (10) Position alternator (31) on alternator mounting bracket (34) and install washer(s) (33) and screw (30) in bottom of alternator (31).
- (11) Rotate alternator (31) towards center of engine (28) and install two belts (32). Slide alternator (31) back into original position.
- (12) Position locknut (29) on screw (30). Do not tighten.

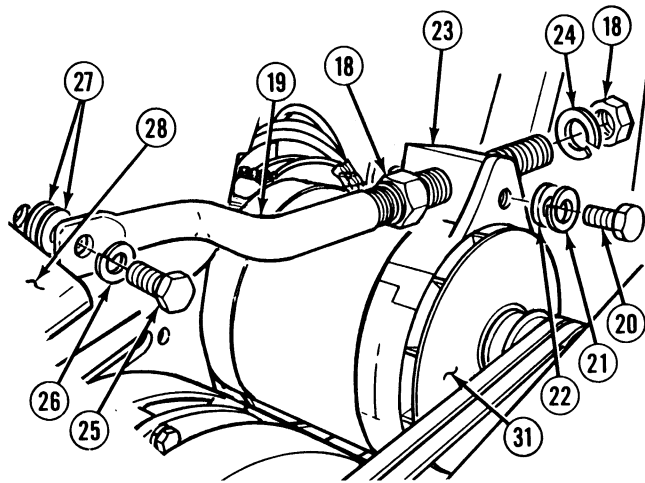


7-2. ALTERNATOR REPLACEMENT (145 AMP) (CONT).

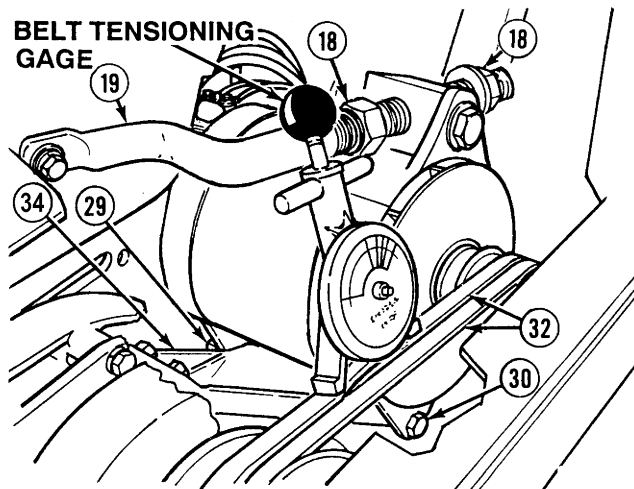
NOTE

Install same number of washers as removed.

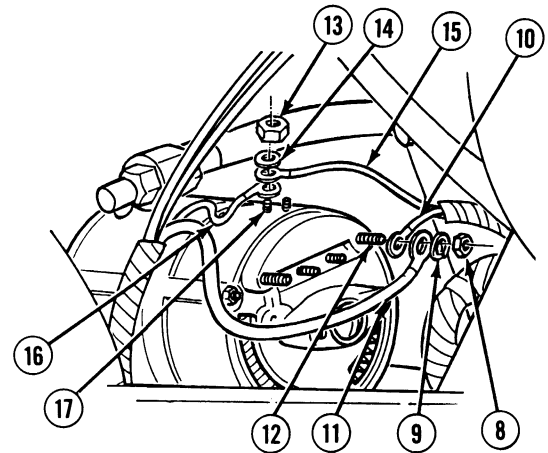
- (13) Position washers (27) and alternator support arm (19) on engine (28) with lockwasher (26) and screw (25).
- (14) Position nut (18), eye rod end (23), lockwasher (24) and nut (18) on alternator support arm (19).
- (15) Position washer (22), lockwasher (21) and screw (20) in eye rod end (23) and alternator support arm (19).
- (16) Tighten screw (25) on alternator support arm (19) 137 to 147 lb-ft (186 to 199 N·m).
- (17) Tighten screw (20) on alternator (31) 50 to 55 lb-ft (68 to 75 N·m).



- (18) Position belt tensioning gage on belts (32).
- (19) Tighten nut (18) on alternator support arm (19) until alternator belts tension reaches 55 to 65 lbs (245 to 289 N).
- (20) Tighten nut (18) on alternator support arm (19) to 75 lb-ft (102 N·m).
- (21) Remove belt tensioning gage from belts (32).
- (22) Tighten locknut (29) on screw (30) and alternator mounting bracket (34) 95 to 105 lb-ft (129 to 142 N·m).



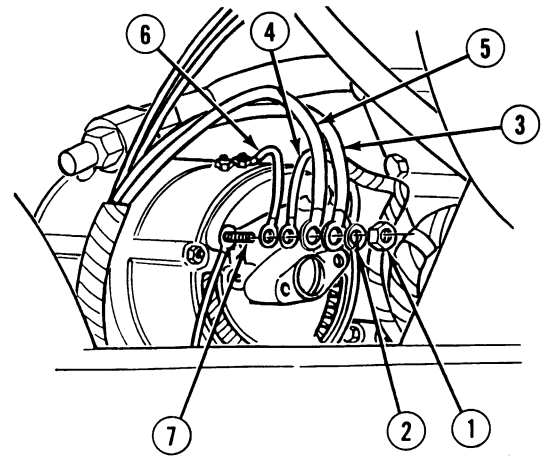
- (23) Install wires 1953 (15) and 1344 (16), lockwasher (14) and nut (13) on F positive terminal (17).
- (24) Install wires 1820 (10) and 1278 (11), lockwasher (9) and nut (8) on positive terminal (12).
- (25) Install wires 1275 (3), 1815 (4), 1435 (5) and 1057 (6), lockwasher (2) and nut (1) on negative terminal (7).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (26) Apply electrical sealant to negative terminal (7), positive terminal (12) and F positive terminal (17).



c. Follow-On Maintenance:

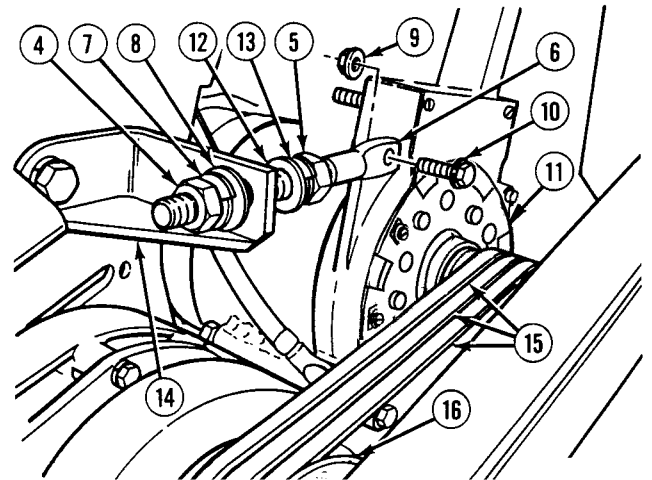
- Install left front noise panel, (Para 17-27).
- Install left side noise panel, (Para 17-28).
- Install cab engine access panel, (Para 17-24).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

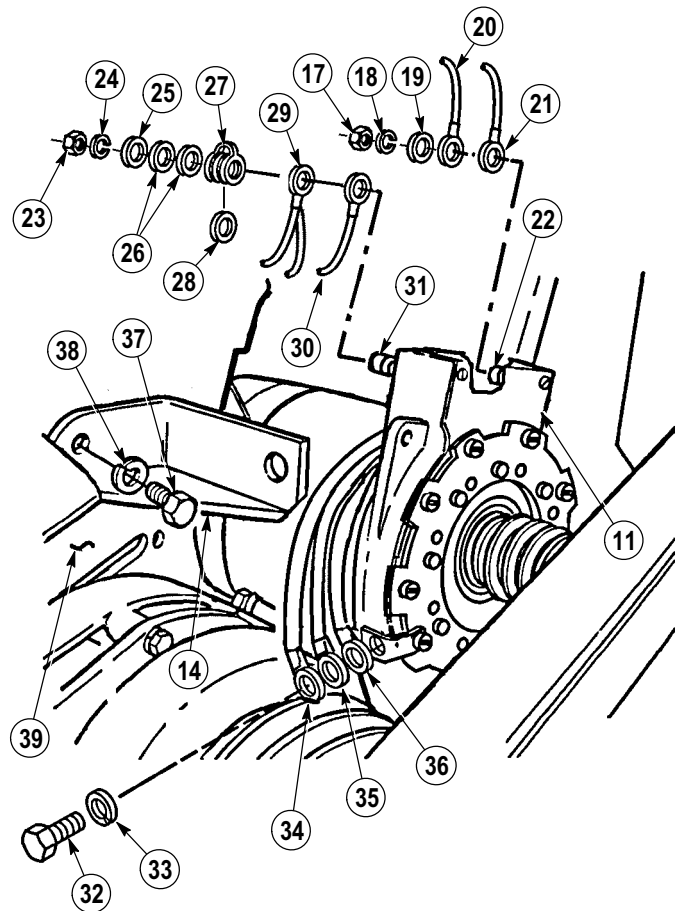
- (3) Remove nut (4), lockwasher (7) and washer (8) from alternator support arm (6). Discard lockwasher.
- (4) Remove locknut (9), screw (10) and alternator support arm (6) from alternator (11). Discard locknut.
- (5) Remove washer (12), lockwasher (13), nut (5) and alternator support arm (6) from bracket (14). Discard lockwasher.
- (6) Remove three alternator belts (15) from alternator (11) and engine pulley (16).

NOTE

Tag and mark all wire connectors prior to removal.



- (7) Remove nut (17), lockwasher (18), washer (19), wire 1860 (20) and wire 1274 (21) from 12 volt terminal (22). Discard lockwasher.
- (8) Position washer (19) and nut (17) on 12 volt terminal (22).
- (9) Remove nut (23), lockwasher (24), washer (25), washer(s) (if present) (26), fuse link (27), insulator washer (28), wire 1820/1953 (29) and wire 1281A (30) from 24 volt terminal (31). Discard lockwasher.
- (10) Position fuse link (27), insulator washer (28), washer(s) (if removed) (26), washer (25) and nut (24) on 24 volt terminal (31).
- (11) Remove screw (32), lockwasher (33), wire 1815 (34), wire 1435 (35) and wire 1275 (36) from alternator (11). Discard lockwasher.
- (12) Remove screw (37), lockwasher (38) and bracket (14) from engine (39). Discard lockwasher.



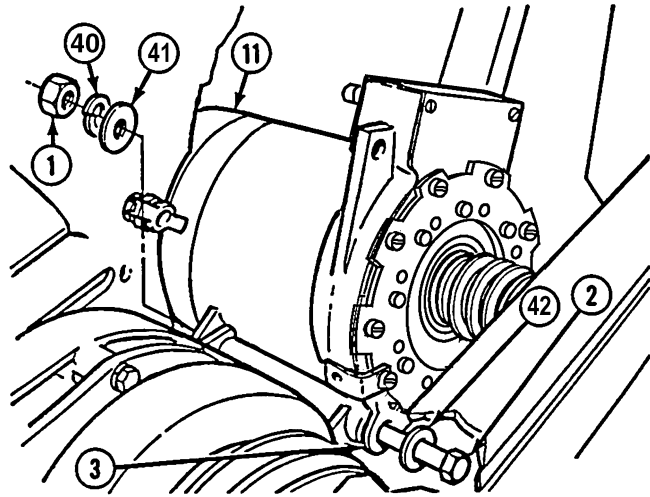
7-3. ALTERNATOR REPLACEMENT (200 AMP) (CONT).

- (13) Remove nut (1), lockwasher (40), washer (41), screw (2) and washer (42) from alternator (11) and alternator mounting bracket (3). Discard lockwasher.

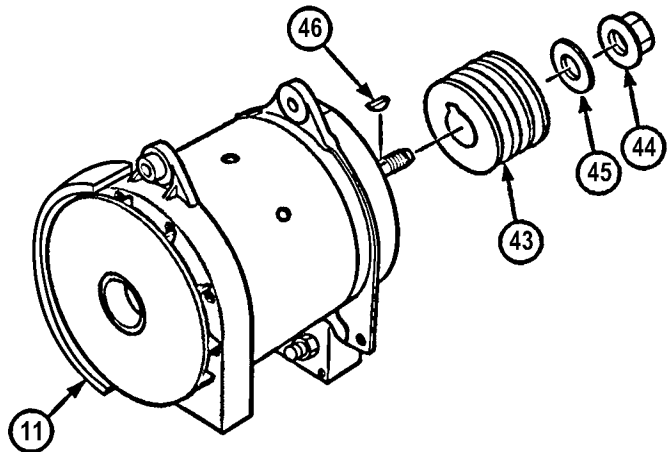
WARNING

Alternator weighs 75 lbs (34 kg).
Use the aid of an assistant to prevent possible injury to personnel.

- (14) With the aid of an assistant, remove alternator (11) from alternator mounting bracket (3).



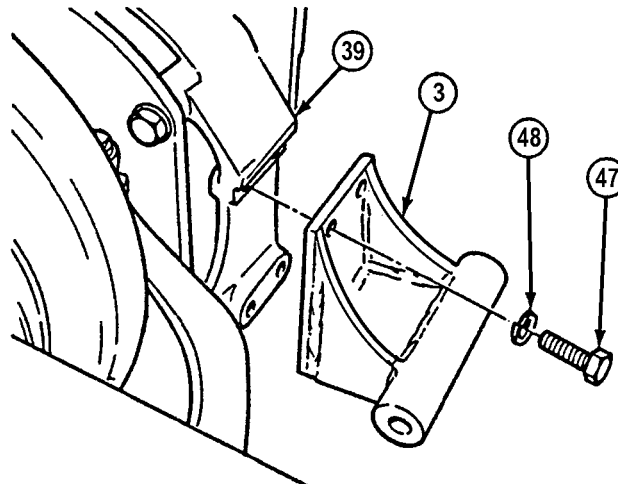
- (15) Position pulley (43) in soft-jawed vise.
- (16) Remove locknut (44) and washer (45) from alternator (11). Discard locknut.
- (17) Remove pulley (43) from vise.
- (18) Remove pulley (43) from alternator (11).
- (19) Remove key (46) from alternator (11).



NOTE

Perform Step (20) if alternator mounting bracket is damaged.

- (20) Remove four screws (47), lockwashers (48) and alternator mounting bracket (3) from engine (39). Discard lockwashers.

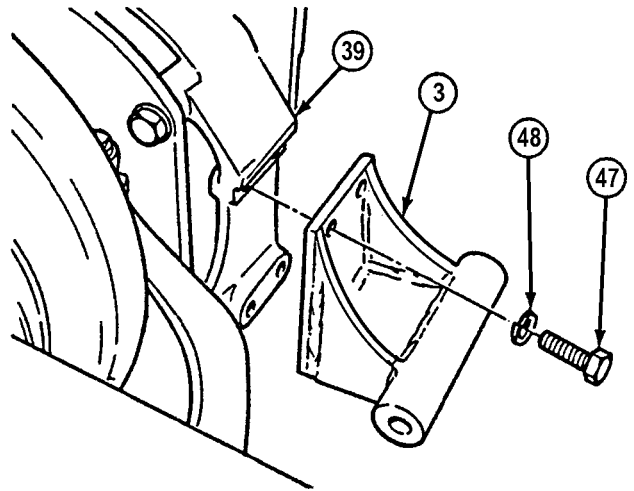


b. Installation

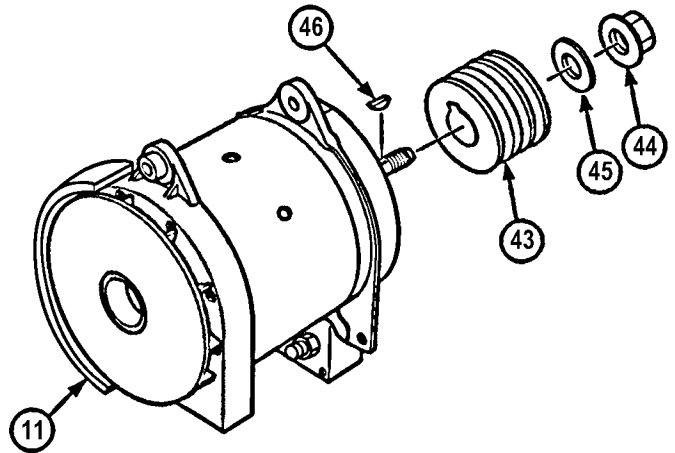
NOTE

Perform Step (1) if alternator mounting bracket was removed.

- (1) Install alternator mounting bracket (3) on engine (39) with four lockwashers (48) and screws (47). Tighten screws.



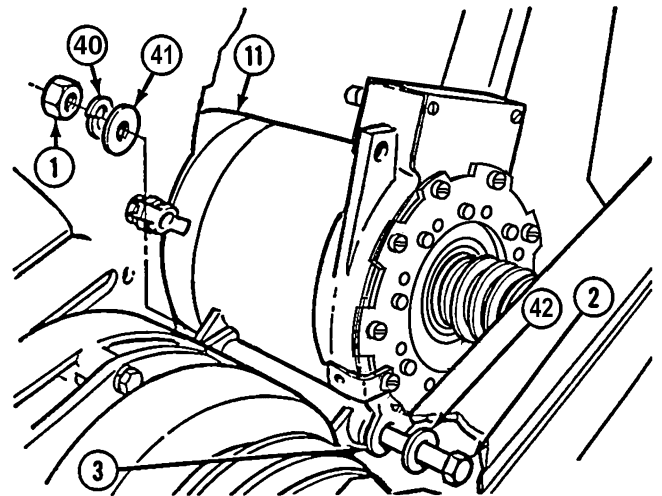
- (2) Position key (46), pulley (43), washer (45) and locknut (44) on alternator (11).
- (3) Position pulley (43) in soft-jawed vise.
- (4) Tighten locknut (44) on alternator (11) to 120 lb-ft (163 N·m).
- (5) Remove pulley (43) from vise.



WARNING

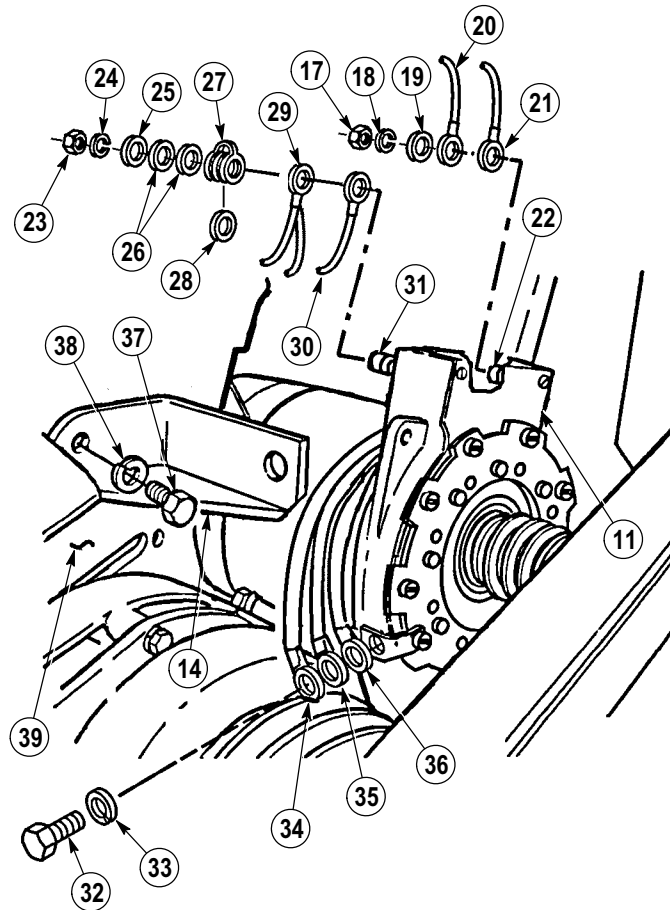
Alternator weighs 75 lbs (34 kg). Use the aid of an assistant to prevent possible injury to personnel.

- (6) With the aid of an assistant, position alternator (11) in alternator mounting bracket (3).
- (7) Position screw (2), washer (42), washer (41), lockwasher (40) and nut (1) in alternator mounting bracket (3) and alternator (11).



7-3. ALTERNATOR REPLACEMENT (200 AMP) (CONT).

- (8) Position alternator bracket (14), lockwasher (38) and screw (37) on engine (39).
- (9) Install wire 1275 (36), wire 1435 (35), wire 1815 (34), lockwasher (33) and screw (32) on alternator (11).
- (10) Tighten screw (32) to 17 lb-ft (23 N·m).
- (11) Remove nut (23), washer (25), washer(s) (if present) (26), and fuse link (27) with insulator washer (28) from 24 volt terminal (31).
- (12) Install wire 1281A (30), wire 1820/1953 (29), fuse link (27) with insulator washer (28), washer(s) (if removed) (26), washer (25), lockwasher (24) and nut (23) on 24 volt terminal (31).
- (13) Tighten nut (23) to 15 lb-ft (20 N·m).
- (14) Remove nut (17) and washer (19) from 12 volt terminal (22).
- (15) Install wire 1274 (21), wire 1860 (20), lockwasher (18), washer (19) and nut (17) on 12 volt terminal (22).
- (16) Tighten nut (17) to 15 lb-ft (20 N·m).

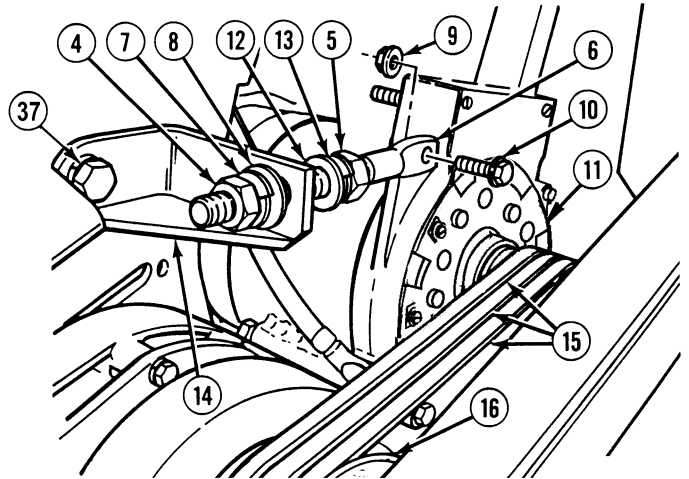


WARNING

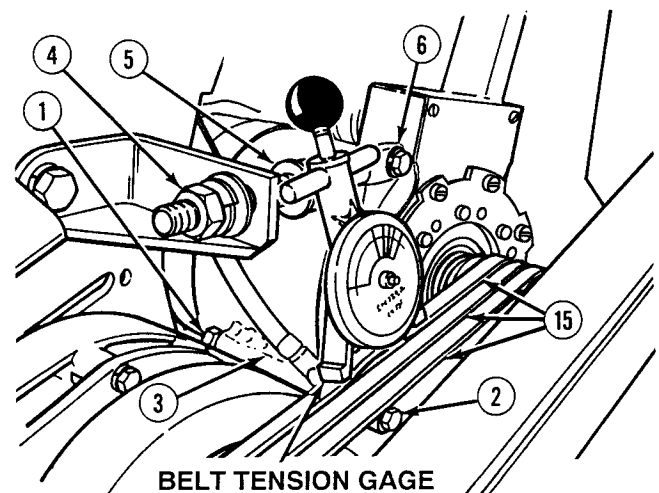
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (17) Apply electrical sealant to 12 volt terminal (22), 24 volt terminal (31) and screw (32).

- (18) Position three alternator belts (15) on alternator (11) and engine pulley (16).
- (19) Install nut (5), lockwasher (13) and washer (12) on alternator arm (6).
- (20) Position alternator support arm (6) in bracket (14).
- (21) Tighten screw (37) to 170 lb-ft (23 N·m).
- (22) Position alternator support arm (6) on alternator (11) with screw (10) and locknut (9).
- (23) Position washer (8), lockwasher (7) and nut (4) on alternator support arm (6).



- (24) Install belt tensioning gage on belts (15).
- (25) Tighten nut (5) on alternator support arm (6) until alternator belts tension reaches 60 to 65 lbs (260 to 289 N).
- (26) Tighten nut (4) on alternator support arm (6).
- (27) Remove belt tensioning gage from belts (15).
- (28) Tighten locknut (9) on screw (10) to 26 to 30 lb-ft (30 to 41 N·m).
- (29) Tighten nut (1) on screw (2) and alternator mounting bracket (3) to 90 lb-ft (122 N·m).



c. Follow-On Maintenance:

- Adjust alternator belts, (Para 7-5).
- Install hydraulic drive shaft, (Para 20-2).
- Install cab engine access panel, (Para 17-24).
- Install left front noise panel, (Para 17-27).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-4. ALTERNATOR BELTS REPLACEMENT/ADJUSTMENT (145 AMP).

This task covers:

- | | |
|-----------------|--------------------------|
| a. Removal | c. Adjustment |
| b. Installation | d. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
 Gage, Belt Tensioning (Item 26, Appendix G)
 Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m]) (Item 95, Appendix G)

Materials/Parts

Sealing Compound (Item 73, Appendix C)
 Locknut (Item 91, Appendix F)

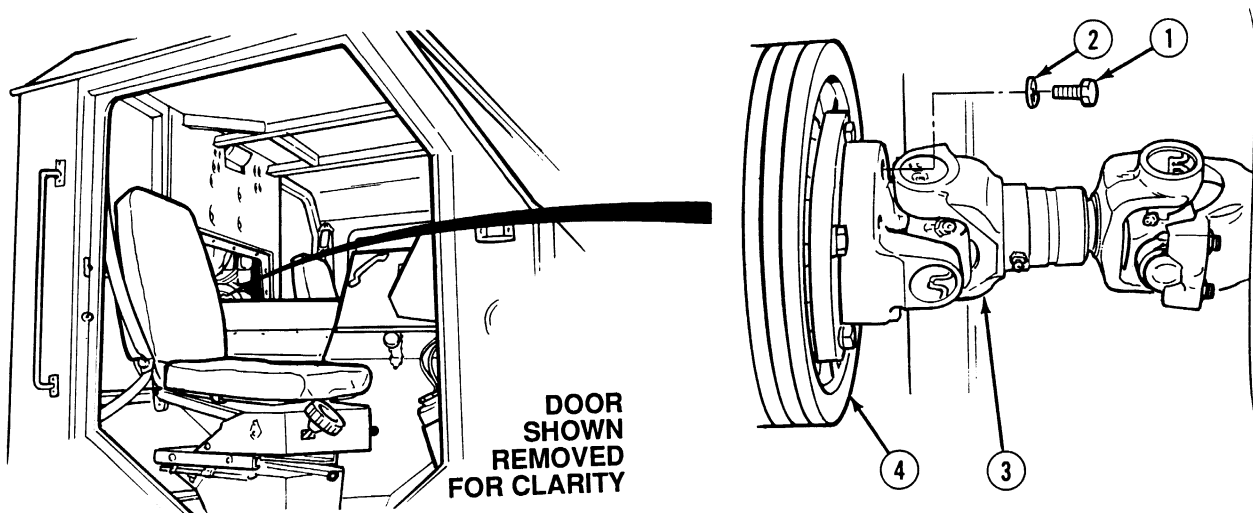
Materials/Parts - Continued

Lockwasher (5) (Item 169, Appendix F)
 Lockwasher (Item 177, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Batteries disconnected, (Para 7-87)
 Cab engine access panel removed, (Para 17-24)

a. Removal.

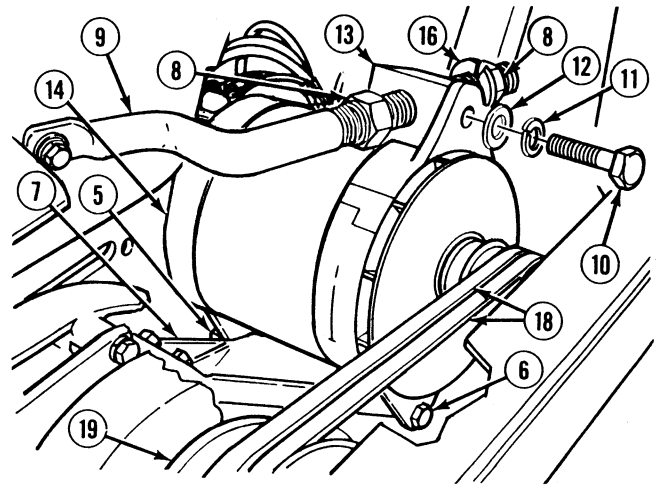


NOTE

If adjusting only, perform Steps (1) through (5) of **Removal** and Steps (2) and (3) of **Installation**.

- (1) Remove four screws (1), lockwashers (2) from pump drive shaft (3) and engine (4). Discard lockwashers.

- (2) Remove locknut (5) from screw (6) on bottom alternator mounting bracket (7). Discard locknut.
- (3) Position locknut (5) on screw (6).
- (4) Loosen nuts (8) on alternator support arm (9).
- (5) Remove screw (10), lockwasher (11) and washer (12) from eye rod end (13) and alternator (14). Discard lockwasher.
- (6) Remove outer nut (8), lockwasher (16) and eye rod end (13), from alternator support arm (9). Discard locknuts.
- (7) Remove two alternator belts (18) from alternator (14) and engine pulley (19).



b. Installation.

NOTE

When installing arctic alternator belts, kit includes three belts; only two are required.

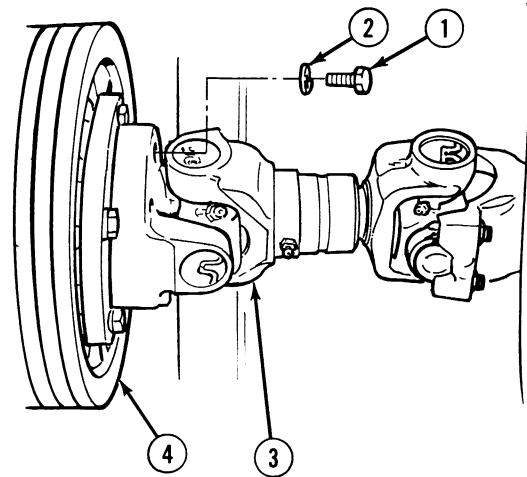
- (1) Install two alternator belts (18) on alternator (14) and engine pulley (19).
- (2) Position lockwasher (16) and outer nut (8) on alternator support arm (9).
- (3) Install washer (12), lockwasher (11) and screw (10) on alternator (14) and eye rod end (13). Tighten screw (10) to 50 to 55 lb-ft (68 to 75 N·m).
- (4) Tighten nut (8) on inside of eye rod end (13) until light tension is on belts (18).

7-4. ALTERNATOR BELTS REPLACEMENT/ADJUSTMENT (145 AMP) (CONT).

WARNING

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

- (5) Coat threads of four screws (1) with sealing compound.
- (6) Install pump drive shaft (3) on engine (4) with four lockwashers (2) and screws (1). Tighten screws 60 lb-ft (81 N·m).

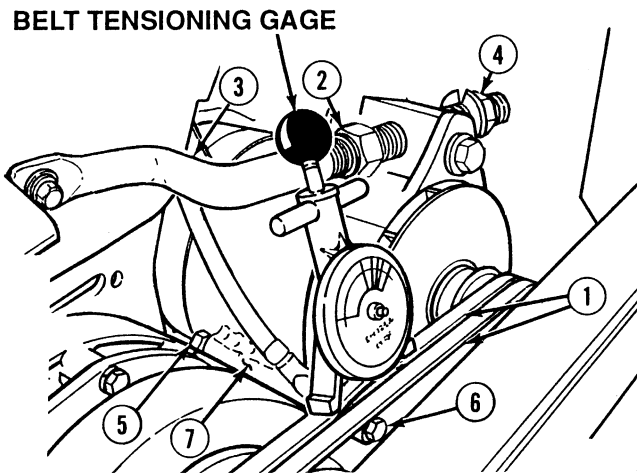


c. Adjustment.

NOTE

If belts have been replaced, begin with Step (3).

- (1) Loosen locknut (5) on screw (6).
- (2) Loosen nut (4).
- (3) Install belt tensioning gage on belts (1).
- (4) Tighten nut (2) on alternator support arm (3) until alternator belts tension reaches 55 to 65 lbs (245 to 289 N).
- (5) Tighten nut (4) on alternator support arm (3) to 75 lb-ft (102 N·m).
- (6) Remove belt tensioning gage from belts (1).
- (7) Tighten locknut (5) on screw (6) and alternator mounting bracket (7) 95 to 105 lb-ft (128 to 142 N·m).



- (8) Connect batteries, (Para 7-87).
- (9) Start engine (TM 9-2320-364-10) and run for three minutes.
- (10) Turn OFF engine switch.
- (11) Repeat Steps (3) through (7) until belt tension remains at 55-65 lbs (245 to 289 N).

d. Follow-On Maintenance:

- Install cab engine access panel, (Para 17-24).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-5. ALTERNATOR BELTS REPLACEMENT/ADJUSTMENT (200 AMP).

This task covers:

- | | |
|-----------------|--------------------------|
| a. Removal | c. Adjustment |
| b. Installation | d. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
 (Item 74, Appendix G)
 Gage, Belt Tensioning (Item 26, Appendix G)
 Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m])
 (Item 95, Appendix G)

Materials/Parts

Sealing Compound (Item 73, Appendix C)
 Locknut (Item 96, Appendix F)

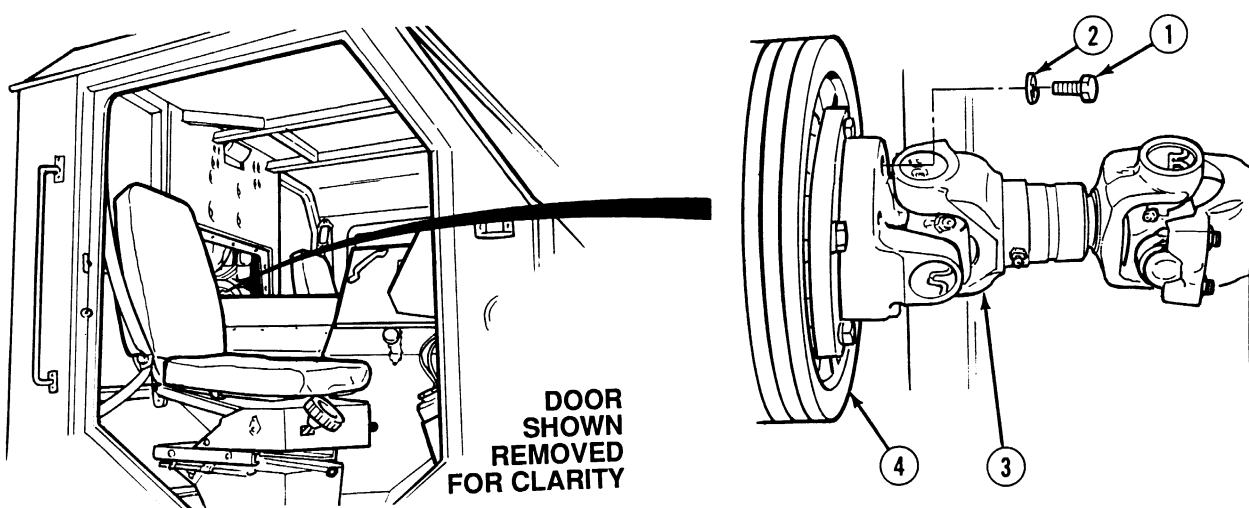
Materials/Parts - Continued

Lockwasher (4) (Item 169, Appendix F)
 Lockwasher (Item 173, Appendix F)
 Lockwasher (2) (Item 177, Appendix F)

Equipment Condition

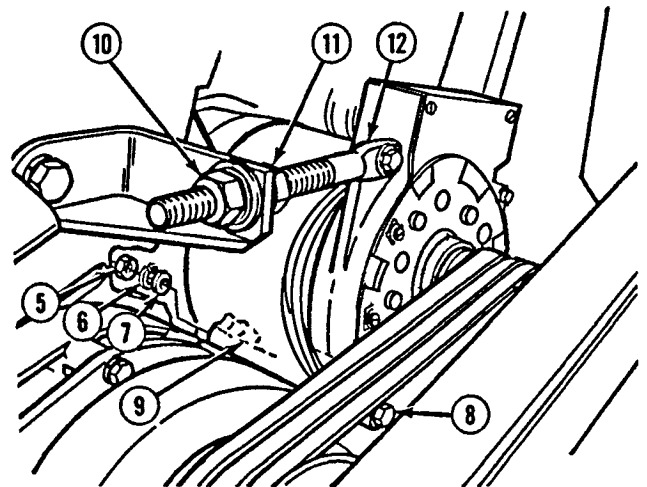
Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Batteries disconnected, (Para 7-87)
 Cab engine access panel removed,
 (Para 17-24)

a. Removal.

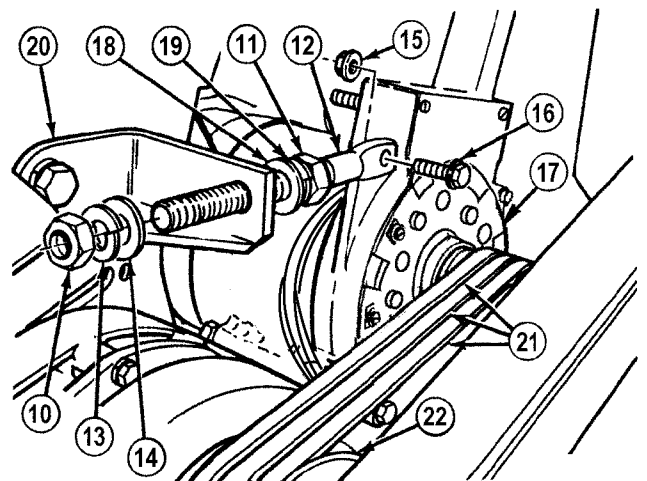


- (1) Remove four screws (1) and lockwashers (2) from pump drive shaft (3) and engine (4). Discard lockwashers.

- (2) Remove nut (5), lockwasher (6) and washer (7) from screw (8) on bottom alternator mounting bracket (9). Discard lockwasher.
- (3) Loosen two nuts (10) and (11) on alternator support arm (12).

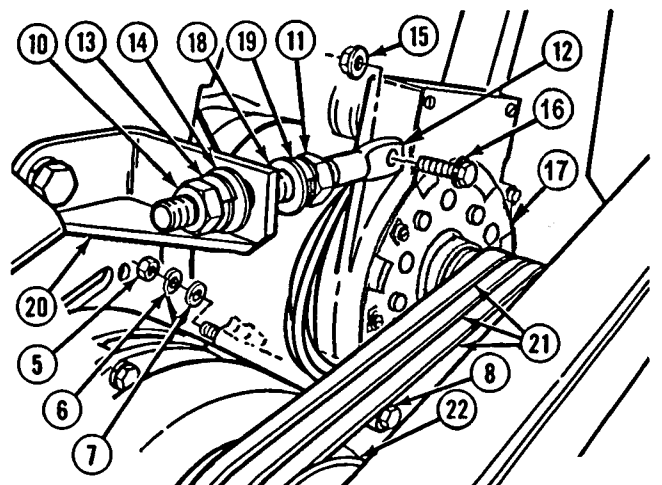


- (4) Remove nut (10), lockwasher (13) and washer (14) from alternator support arm (12). Discard lockwasher.
- (5) Remove locknut (15), screw (16) and alternator support arm (12) from alternator (17). Discard locknut.
- (6) Remove washer (18), lockwasher (19), nut (11) and alternator support arm (12) from bracket (20). Discard lockwasher.
- (7) Remove three alternator belts (21) from alternator (17) and engine pulley (22).



b. Installation.

- (1) Install three alternator belts (21) on alternator (17) and engine pulley (22).
- (2) Install nut (11), lockwasher (19) and washer (18) on alternator support arm (12).
- (3) Position alternator support arm (12) in bracket (20).
- (4) Position alternator support arm (12) on alternator (17) with screw (16) and locknut (15).
- (5) Position washer (14), lockwasher (13) and nut (10) on alternator support arm (12).
- (6) Position washer (7), lockwasher (6) and nut (5) on screw (8).

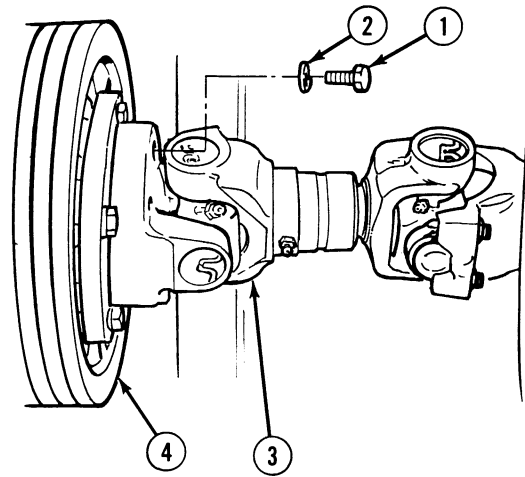


7-5. ALTERNATOR BELTS REPLACEMENT/ADJUSTMENT (200 AMP) (CONT).

WARNING

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

- (7) Coat threads of four screws (1) with sealing compound.
- (8) Install pump drive shaft assembly (3) on engine (4) with four lockwashers (2) and screws (1). Tighten screws to 60 lb-ft (81 N·m).

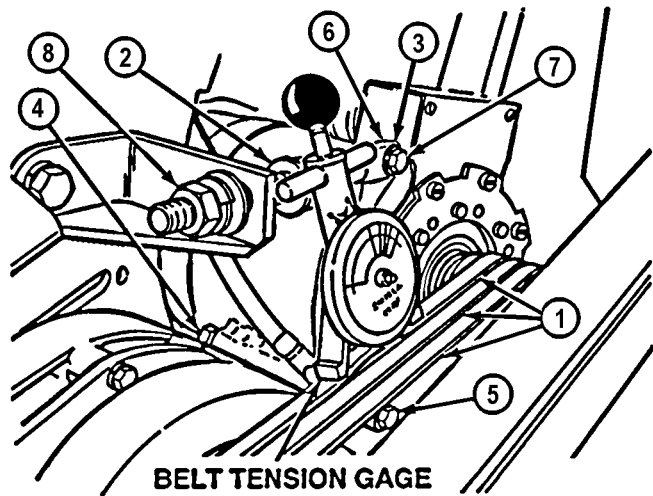


c. Adjustment.

NOTE

If adjusting only, perform Steps (2) through (6) of **a. Removal** and Steps (2) through (6) of **b. Installation**.

- (1) Install belt tension gage on one belt (1).
- (2) Tighten nut (2) on alternator support arm (3) until alternator belt tension reaches 60 to 65 lbs (260-289 N). Check tension on other two belts.
- (3) Tighten nut (4) on screw (5) to 90 lb-ft (122 N·m).
- (4) Tighten locknut (6) on screw (7) to 26 to 30 lb-ft (30 to 41 N·m).
- (5) Tighten nut (8) on alternator support arm (3).
- (6) Remove belt tension gage from alternator belt (1).



BELT TENSION GAGE

- (7) Connect batteries, (Para 7-87).
- (8) Operate engine for three minutes.
- (9) Turn OFF engine switch.
- (10) Ensure alternator belt tension is 60 to 65 lbs (260 to 289 N) on all three belts. If tension is not correct repeat adjustment procedures.

d. Follow-On Maintenance:

- Install cab engine access panel, (Para 17-24).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-6. VOLTAGE REGULATOR REPLACEMENT (145 AMP).

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

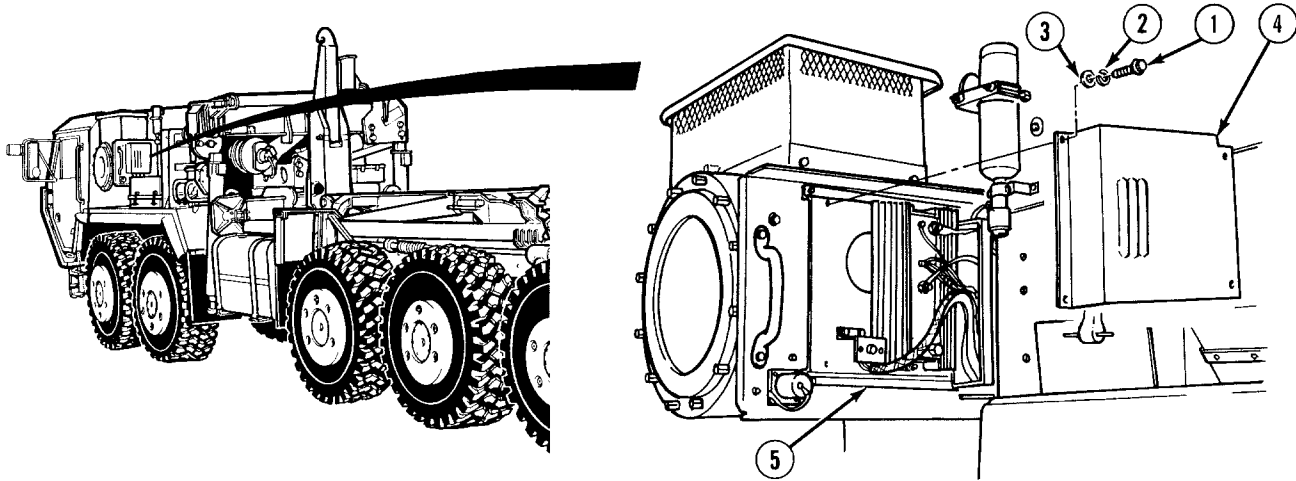
Materials/Parts

Cable Ties (Item 26, Appendix C)
Lockwasher (2) (Item 164, Appendix F)
Lockwasher (4) (Item 195, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)
Left side noise panel removed, (Para 17-28)

a. Removal.

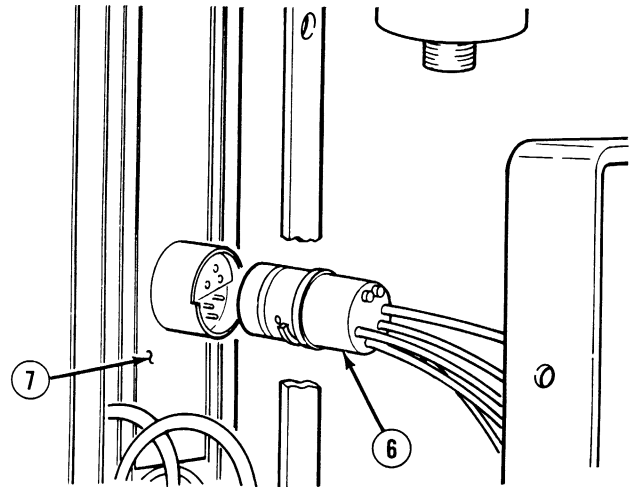


NOTE

Remove cable ties as needed.

- (1) Remove four screws (1), lockwashers (2), washers (3) and splash guard (4) from electric bracket (5). Discard lockwashers.

- (2) Disconnect voltage regulator harness (6) from voltage regulator (7).



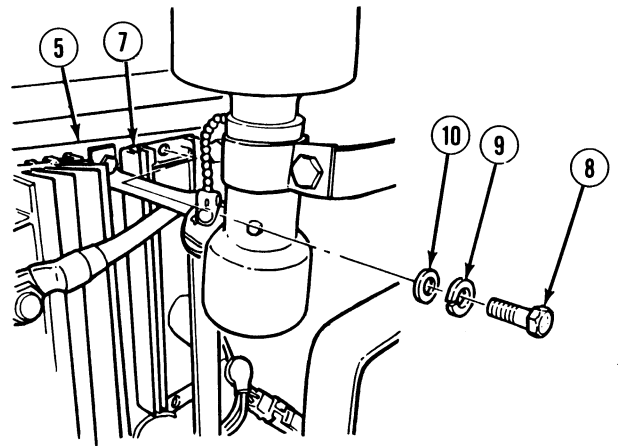
- (3) Remove two screws (8), lockwashers (9), washers (10) and voltage regulator (7) from electric bracket (5). Discard lockwashers.

b. Installation.

NOTE

Install cable ties as required.

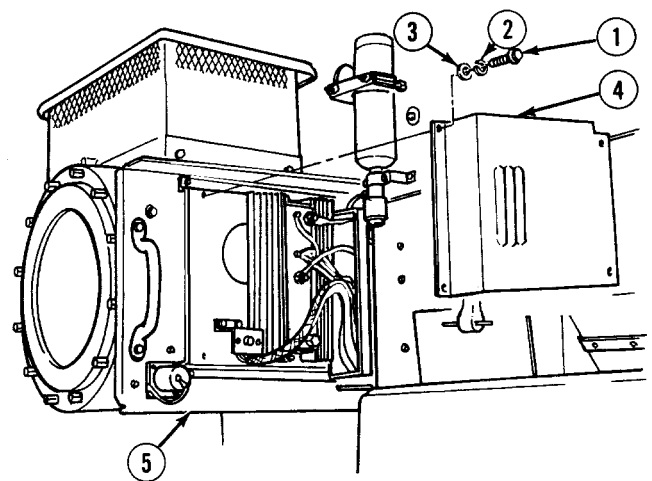
- (1) Install voltage regulator (7), two washers (10), lockwashers (9) and screws (8) on electric bracket (5).



- (2) Connect voltage regulator harness (6) on voltage regulator (7).
- (3) Install splash guard (4), four washers (3), lockwashers (2) and screws (1) on electric bracket (5).

c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Install left side noise panel, (Para 17-28).
- Remove wheel chocks, (TM 9-2320-364-10).



END OF TASK

7-7. VOLTAGE REGULATOR ADJUSTMENT (145 AMP).

This task covers:

- a. Adjustment
- b. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Multimeter (2) (Item 44, Appendix G)

Materials/Parts

Lockwasher (6) (Item 195, Appendix F)

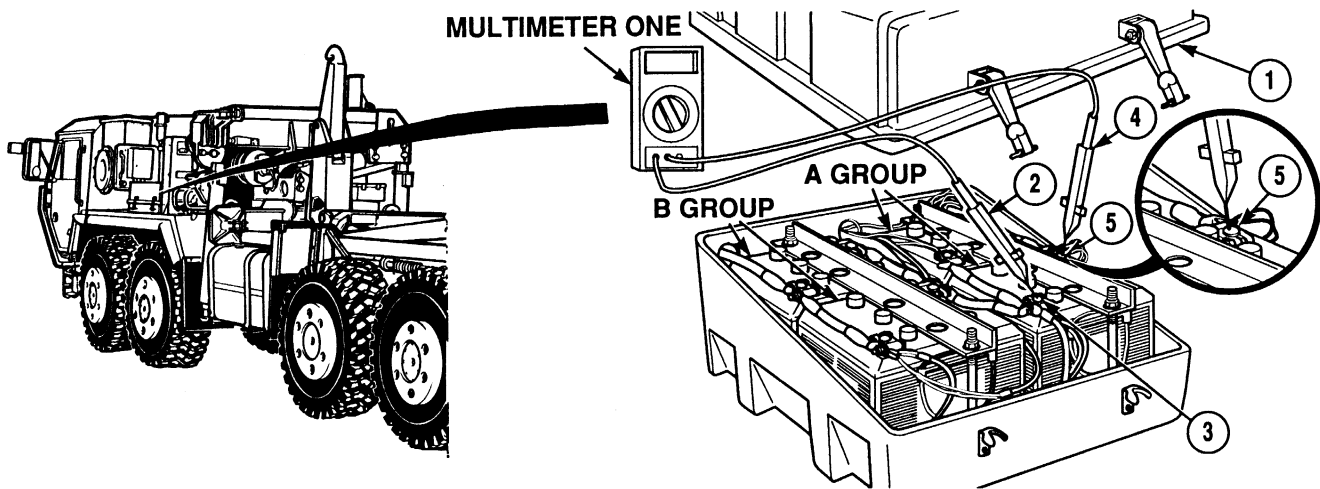
Personnel Required

Two

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Left side noise panel removed, (Para 17-28)

a. Adjustment.



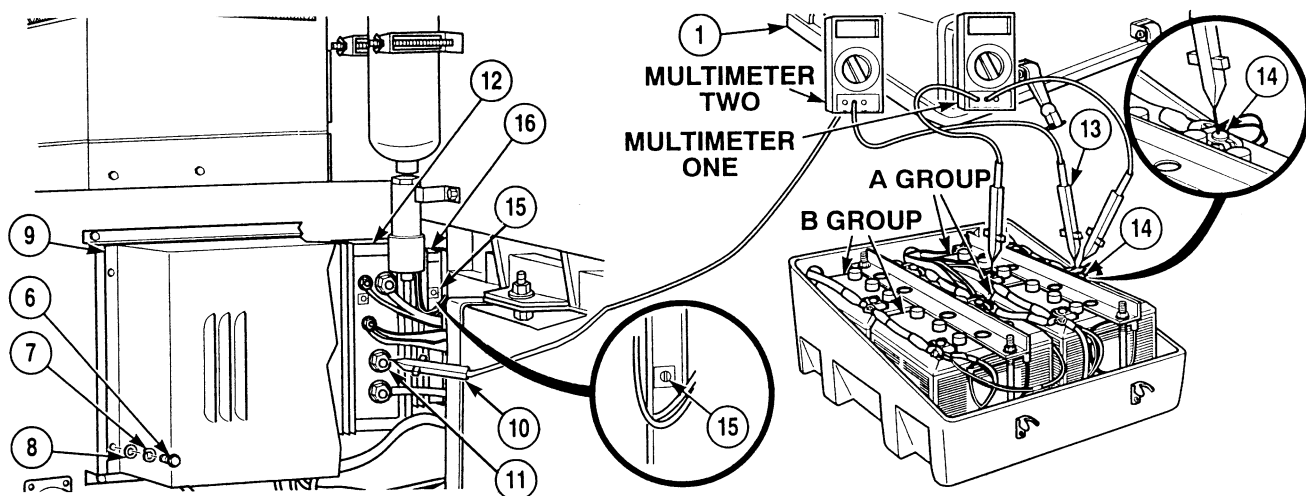
WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

Multimeter is positioned in 12 VDC mode.

- (1) Remove battery box cover (1) and connect multimeter one positive lead (2) to positive terminal (3) and multimeter one negative lead (4) to negative terminal (5) on group "A" batteries.



- (2) Remove four screws (6), lockwashers (7), washers (8) and DUVAC cover (9). Discard lockwashers.
- (3) Connect multimeter two positive lead (10) to "A" terminal (11) of DUVAC controller (12) and multimeter two negative lead (13) to negative terminal (14) of group "A" batteries.
- (4) With the aid of an assistant, start engine and run engine at 800 to 1,000 RPM, (TM 9-2320-364-10).
- (5) With the aid of an assistant, turn truck head lights and heater on, (TM 9-2320-364-10).

CAUTION

Use caution when turning adjusting screw of potentiometer. Turning adjusting screw with too much force may damage potentiometer.

NOTE

- Multimeter two should read 13 volts to 15 volts.
 - Potentiometer on regulator is adjusted by turning adjusting screw on potentiometer. Turning to the right increases voltage. Turning to the left decreases voltage.
 - Voltage regulator should be adjusted so 13.8 volts to 14.2 volts is read on multimeter one while multimeter two reads 13 volts to 15 volts.
- (6) Adjust potentiometer (15) on regulator (16) as required.
 - (7) Install DUVAC cover (9), four washers (8), lockwashers (7) and screws (6).
 - (8) Install battery box cover (1).

b. Follow-On Maintenance:

- Install left side noise panel, (Para 17-28).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-8. VOLTAGE REGULATOR REPLACEMENT (200 AMP).

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

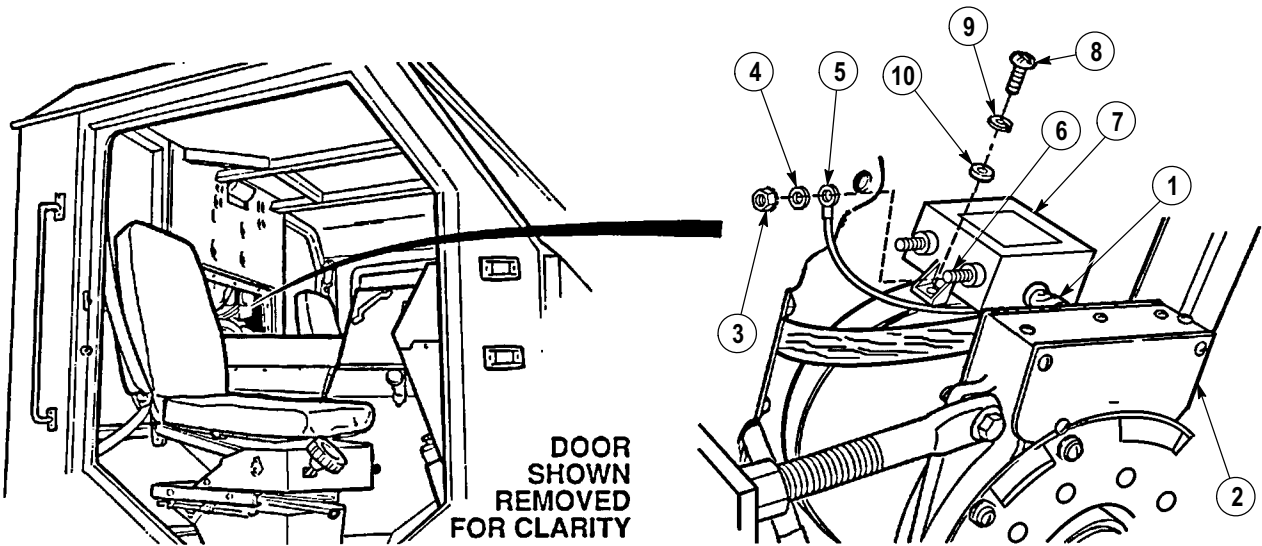
Materials/Parts

Sealant, Electrical (Item 68, Appendix C)
Sealing Compound (Item 78, Appendix C)
Locknut (Item 138, Appendix F)
Lockwasher (2) (Item 209, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)
Cab engine access panel removed, (Para 17-24)

a. Removal.

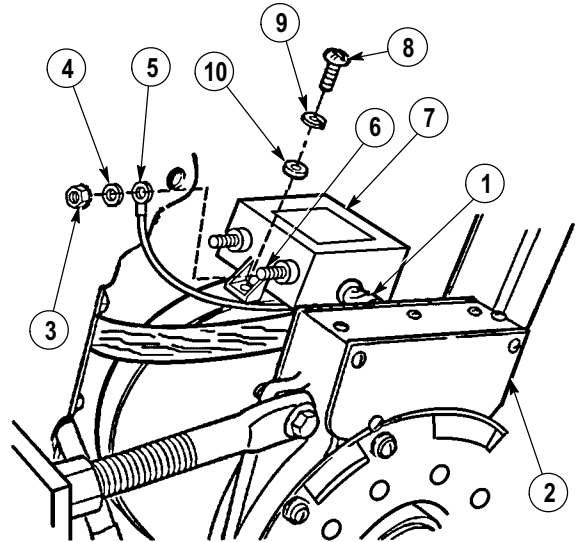


- (1) Disconnect regulator receptacle connector (1) from alternator (2).
- (2) Remove locknut (3), washer (4) and wire 1020B (5) from terminal (6) of regulator (7). Discard locknut.
- (3) Remove two screws (8), lockwashers (9), washers (10) and regulator (7) from alternator (2). Discard lockwashers.

b. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound to threads of two screws (8).
- (2) Install regulator (7) on alternator (2) with two washers (10), lockwashers (9), and screws (8).
- (3) Install wire 1020B (5), washer (4) and locknut (3) on terminal (6) of regulator (7). Tighten locknut to 25 lb-in (3 N·m).
- (4) Apply electrical sealant to terminal (6).
- (5) Connect regulator receptacle connector (1) to alternator (2).

**c. Follow-On Maintenance:**

- Install cab engine access panel, (Para 17-24).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-9. DUAL VOLTAGE ALTERNATOR CONTROL (DUVAC) REPLACEMENT (145 AMP).

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Materials/Parts

Cable Tie (Item 26, Appendix C)
 Sealant, Electrical (Item 68, Appendix C)
 Tags, Identification (Item 88, Appendix C)
 Locknut (2) (Item 103, Appendix F)
 Locknut (2) (Item 106, Appendix F)

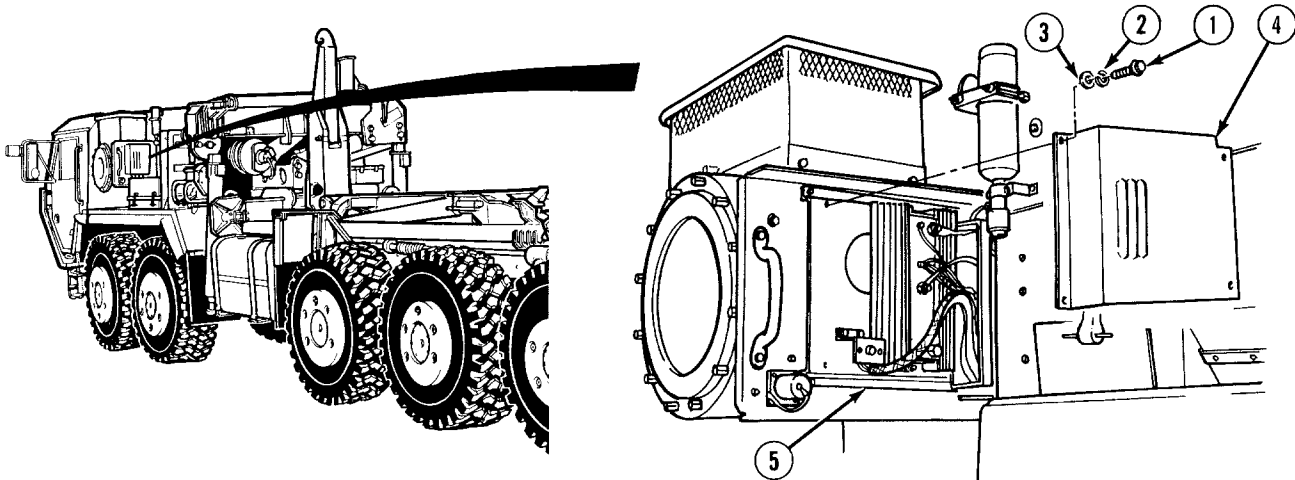
Materials/Parts - Continued

Lockwasher (2) (Item 164, Appendix F)
 Lockwasher (12) (Item 195, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Batteries disconnected, (Para 7-87)
 Left side noise panel removed, (Para 17-28)

a. Removal.

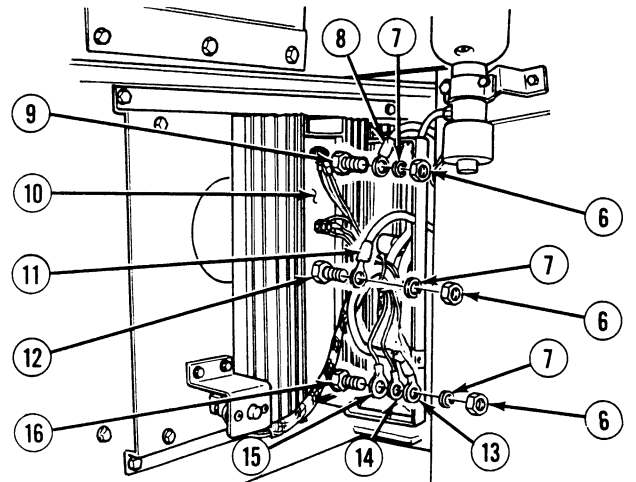


NOTE

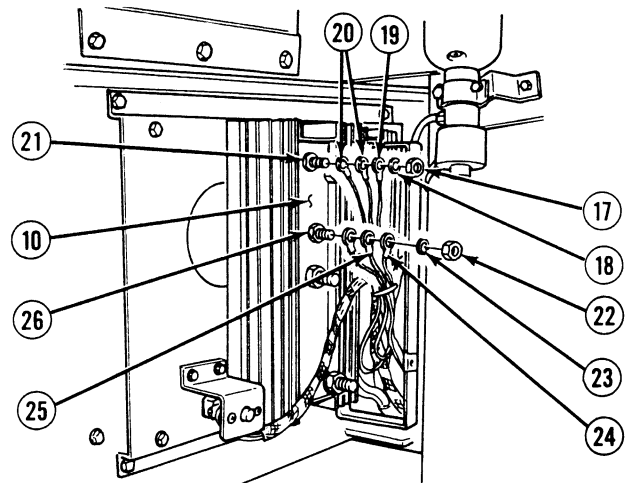
- Tag and mark all wires as needed
- Remove cable ties as needed.

- (1) Remove four screws (1), lockwashers (2), washers (3) and splash guard (4) from electric bracket (5). Discard lockwashers.

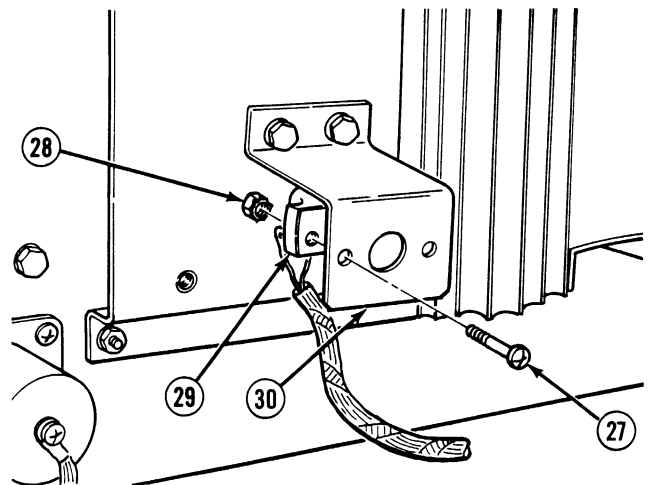
- (2) Remove nut (6), lockwasher (7), wire 1277 (8) from 24 volt battery stud (9) of DUVAC controller (10). Discard lockwasher.
- (3) Remove nut (6), lockwasher (7), wire 1278 (11) from 24 volt alternator stud (12) of DUVAC controller (10). Discard lockwasher.
- (4) Remove nut (6), lockwasher (7), wire 1274 (13), orange wire (14), and red wire (15) from 12 volt battery stud (16) of DUVAC controller (10). Discard lockwasher.



- (5) Remove nut (17), lockwasher (18), brown wire (19), two wires 1020 (20) from IGN stud (21) of DUVAC controller (10). Discard lockwasher.
- (6) Remove nut (22), lockwasher (23), black wire (24), two wires 1435 (25) from ground stud (26) of DUVAC controller (10). Discard lockwasher.

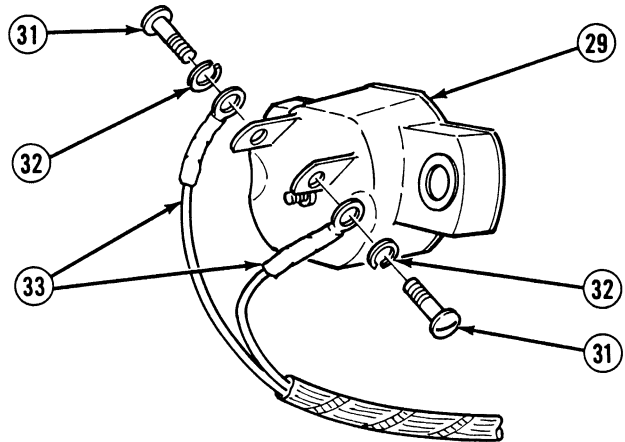


- (7) Remove two screws (27), locknuts (28) and circuit breaker (29) from stand off bracket (30). Discard locknuts.

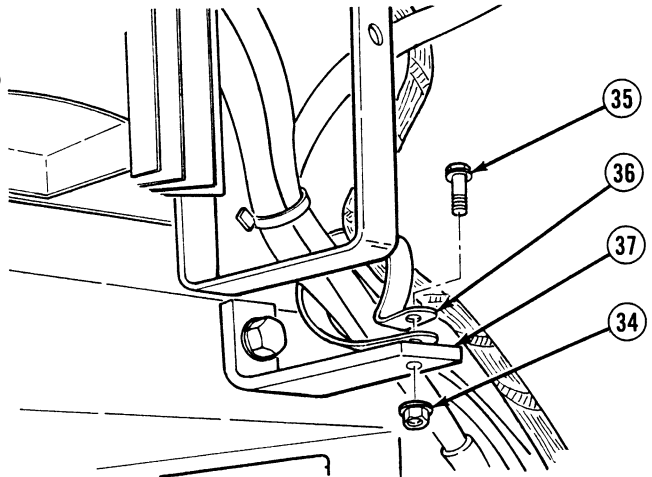


**7-9. DUAL VOLTAGE ALTERNATOR CONTROL (DUVAC) REPLACEMENT
(145 AMP) (CONT).**

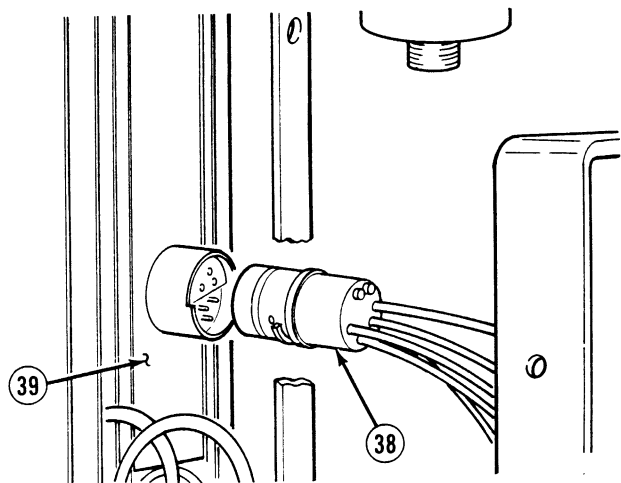
- (8) Remove two screws (31), lockwashers (32), two wires 1020 (33) from circuit breaker (29). Discard lockwashers.



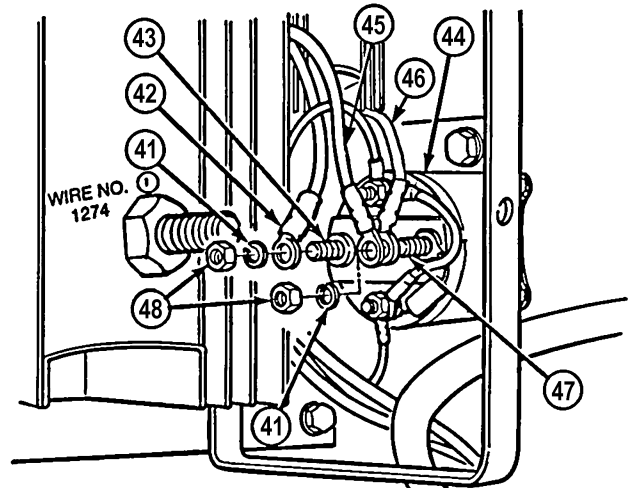
- (9) Remove locknut (34), screw (35), cushion clip (36) from bracket (37). Discard locknut.



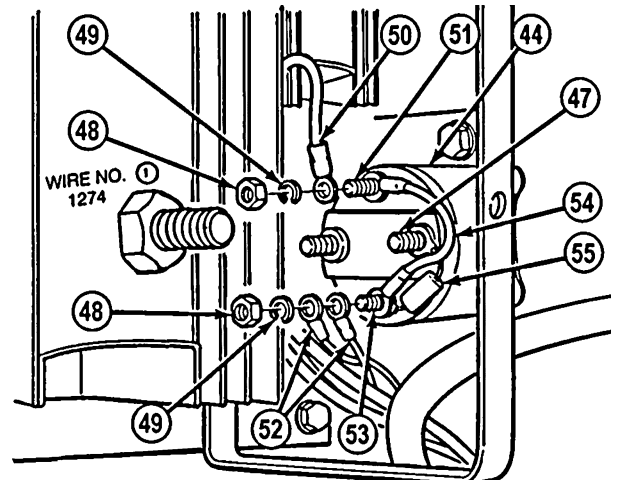
- (10) Disconnect voltage regulator harness (38) from voltage regulator (39).



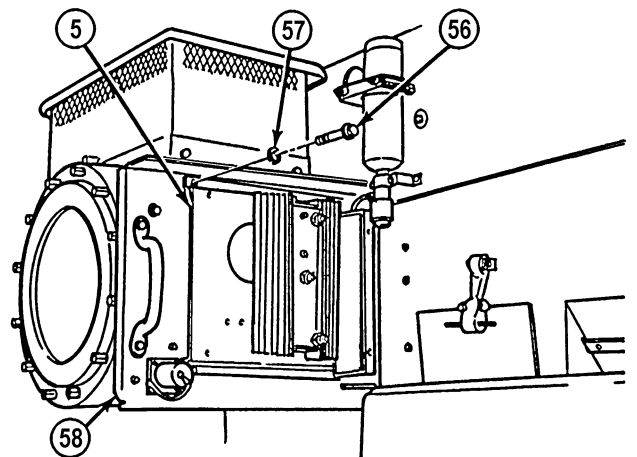
- (11) Remove nut (40), lockwasher (41), and wire 1281 (42) from stud (43) of 24 volt solenoid switch (44). Discard lockwasher.
- (12) Remove nut (40), lockwasher (41), wire 1045 (45) and capacitor wire (46) from stud (47) of 24 volt solenoid switch (44). Discard lockwasher.



- (13) Remove nut (48), lockwasher (49) and wire 1021A (50) from stud (51) of 24 volt solenoid switch (44). Discard lockwasher.
- (14) Remove nut (48), lockwasher (49) and two wires 1435 (52) from stud (53) of 24 volt solenoid switch (44). Discard lockwasher.
- (15) Remove jumper diode wire (54) from stud (51) and stud (53).
- (16) Remove capacitor (55) from stud (47) and stud (53).



- (17) Remove four screws (56), lockwashers (57) and electric bracket (5) from air cleaner bracket (58). Discard lockwashers.



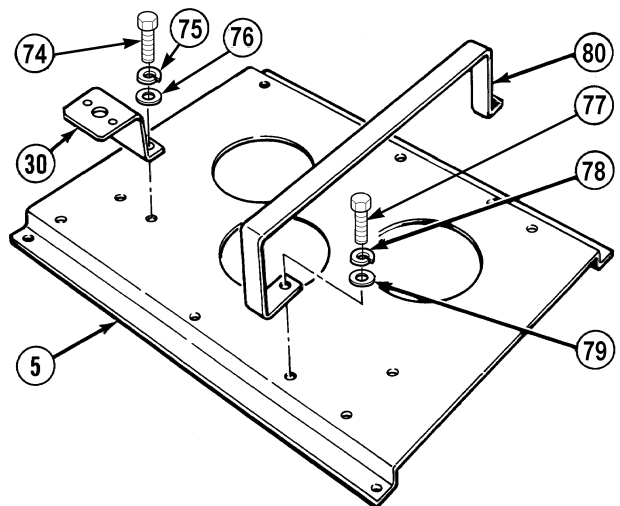
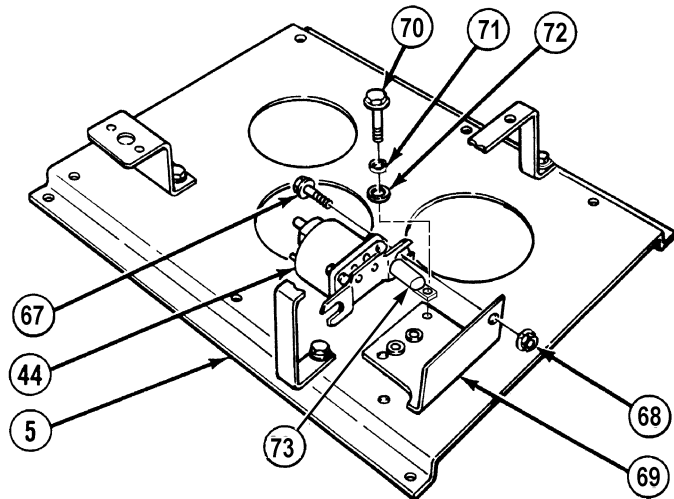
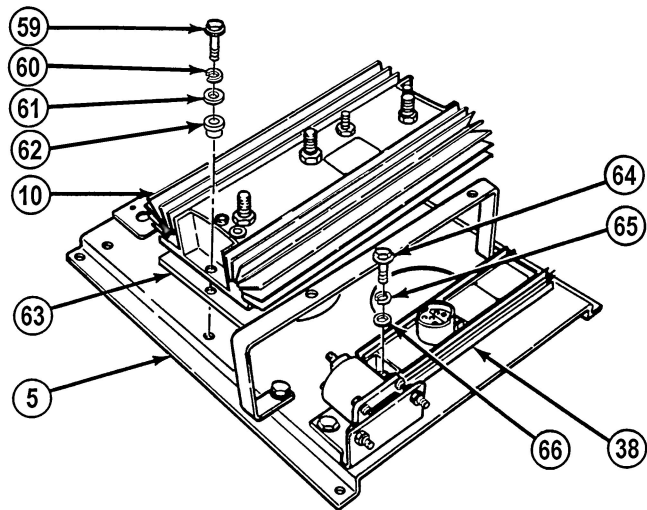
**7-9. DUAL VOLTAGE ALTERNATOR CONTROL (DUVAC) REPLACEMENT
(145 AMP) (CONT).**

- (18) Position electric bracket (5) on clean work bench.

NOTE

Nylon shoulder washers and insulator plate may not be present in Step (19).

- (19) Remove two screws (59), lockwashers (60), washers (61), nylon shoulder washer (62), DUVAC controller (10) and insulator plate (63) from electric bracket (5). Discard lockwashers.
- (20) Remove two screws (64), lockwashers (65), washers (66) and voltage regulator (38) from electric bracket (5). Discard lockwashers.
- (21) Remove two screws (67), locknuts (68) and solenoid switch (44) from solenoid switch bracket (69). Discard locknuts.
- (22) Remove two screws (70), lockwashers (71), washers (72), capacitor (73) and solenoid switch bracket (69), from electric bracket (5). Discard lockwashers.
- (23) Remove two screws (74), lockwashers (75), washers (76) and standoff bracket (30) from electric bracket (5). Discard lockwashers.
- (24) Remove two screws (77), lockwashers (78), washers (79) and mounting bracket (80) from electric bracket (5). Discard lockwashers.

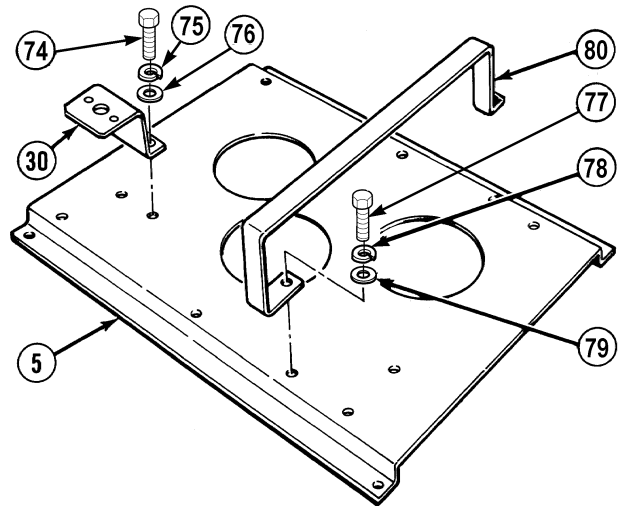


b. Installation.

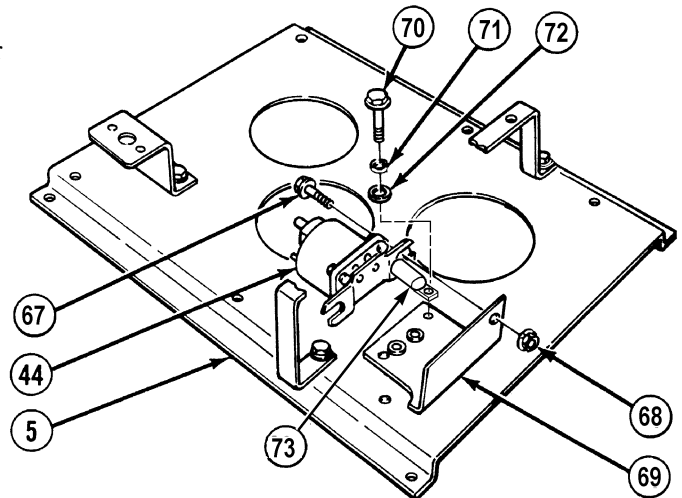
NOTE

Install cable ties as needed.

- (1) Install mounting bracket (80), two washers (79), lockwashers (78) and screws (77) on electric bracket (5).
- (2) Install standoff bracket (30), two washers (76), lockwashers (75) and screws (74) on electric bracket (5).



- (3) Install solenoid switch bracket (69), capacitor (73), two washers (72), lockwashers (71) and screws (70) on electric bracket (5).
- (4) Install solenoid switch (44), two screws (67), and locknuts (68) on solenoid switch bracket (69).

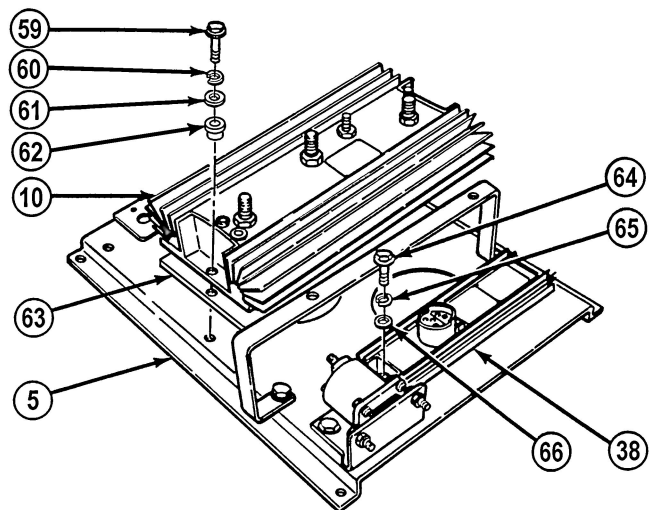


- (5) Install voltage regulator (38), two washers (66), lockwashers (65) and screws (64) on electric bracket (5).

CAUTION

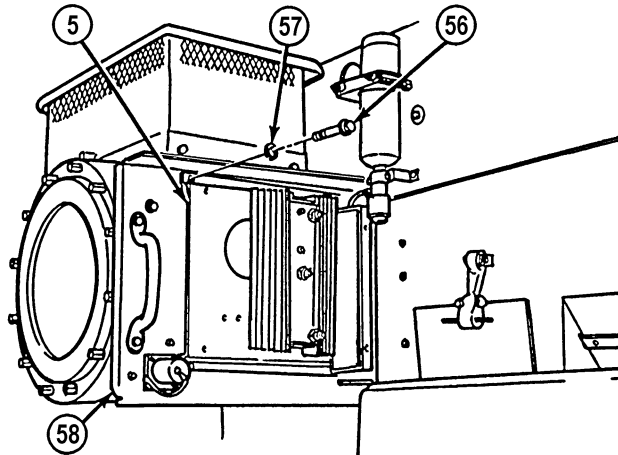
Ensure an insulator plate and two nylon shoulder washers are installed in Step (6). If these items were not present during removal, they must be ordered and installed. Failure to comply may result in damage to equipment.

- (6) Install insulator plate (63), DUVAC controller (10), two nylon shoulder washers (62), washers (61), lockwashers (60) and screws (59) on electric bracket (5).

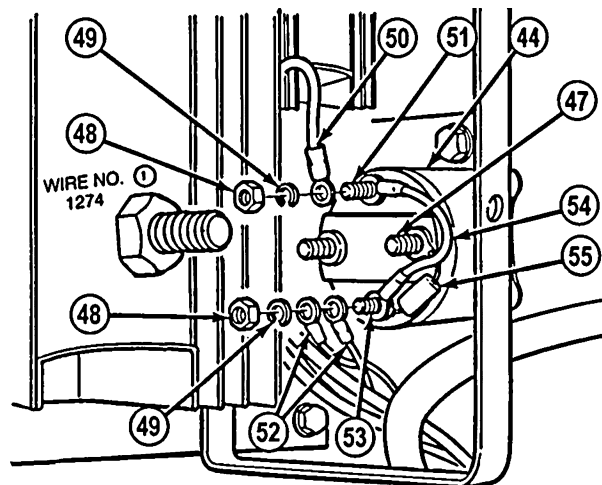


7-9. DUAL VOLTAGE ALTERNATOR CONTROL (DUVAC) REPLACEMENT (145 AMP) (CONT).

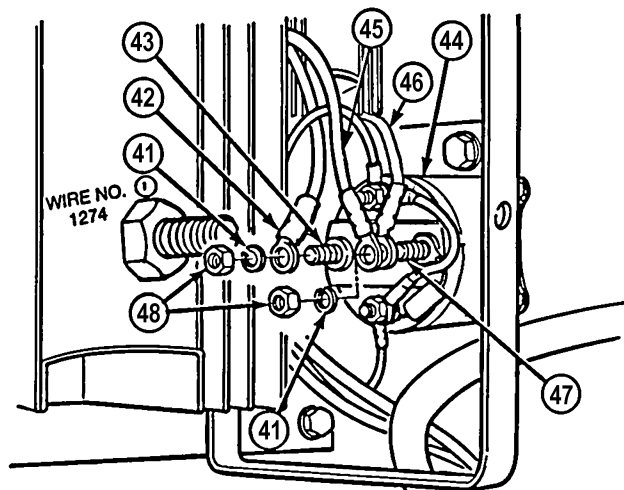
- (7) Install electric bracket (5), four lockwashers (57) and screws (56) on air cleaner bracket (58).



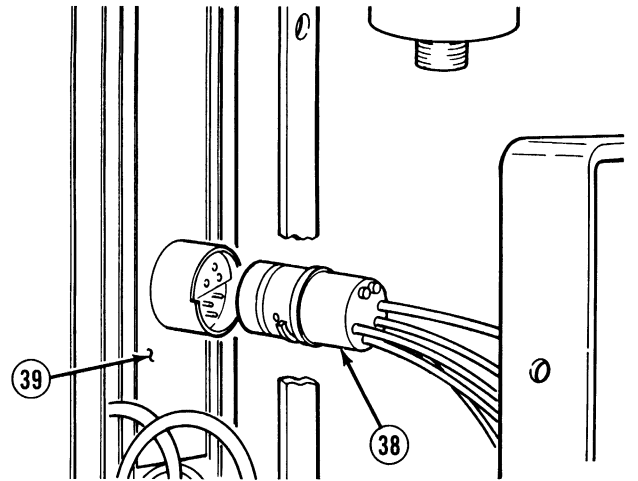
- (8) Install capacitor (55) on studs (53) and (47).
- (9) Install jumper diode wire (54) with negative terminal on stud (51) and positive terminal on stud (53).
- (10) Install two wires 1435 (52), lockwasher (49) and nut (48) on stud (53) of 24 volt solenoid switch (44).
- (11) Install wire 1021A (50), lockwasher (49) and nut (48) on stud (51) of 24 volt solenoid switch (44).



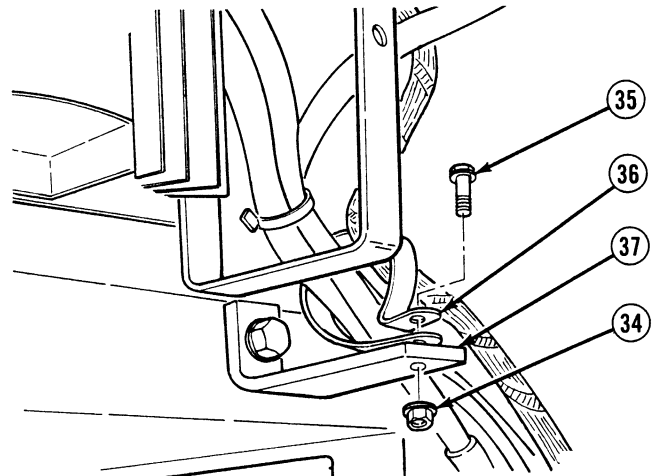
- (12) Install wire 1045 (45), capacitor wire (46), lockwasher (41) and nut (40) on stud (47) of 24 volt solenoid switch (44).
- (13) Install wire 1281 (42), lockwasher (41) and nut (40) on stud (43) of 24 volt solenoid switch (44).



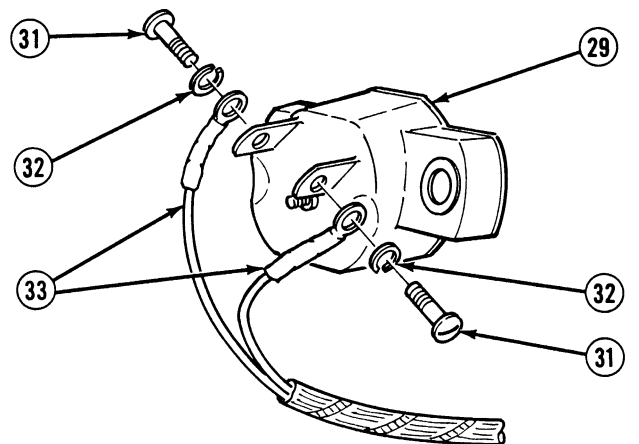
- (14) Connect voltage regulator harness (38) on voltage regulator (39).



- (15) Install cushion clip (36), screw (35) and locknut (34) on bracket (37).

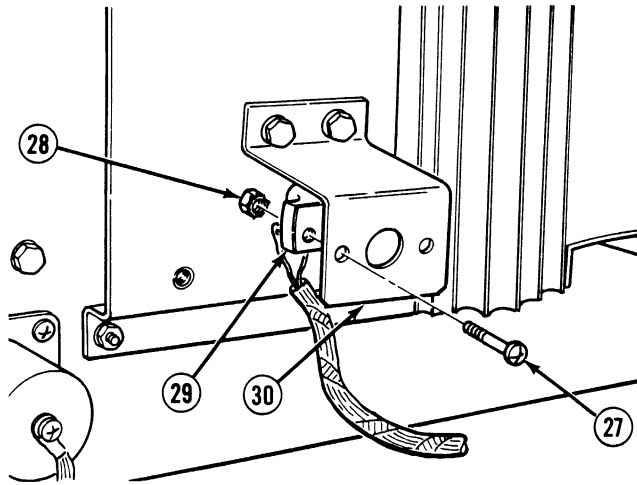


- (16) Install two wires 1020 (33), lockwashers (32) and screws (31) on circuit breaker (29).

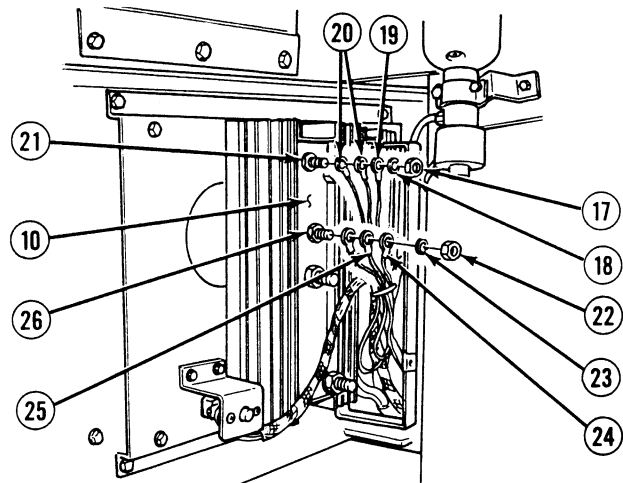


**7-9. DUAL VOLTAGE ALTERNATOR CONTROL (DUVAC) REPLACEMENT
(145 AMP) (CONT).**

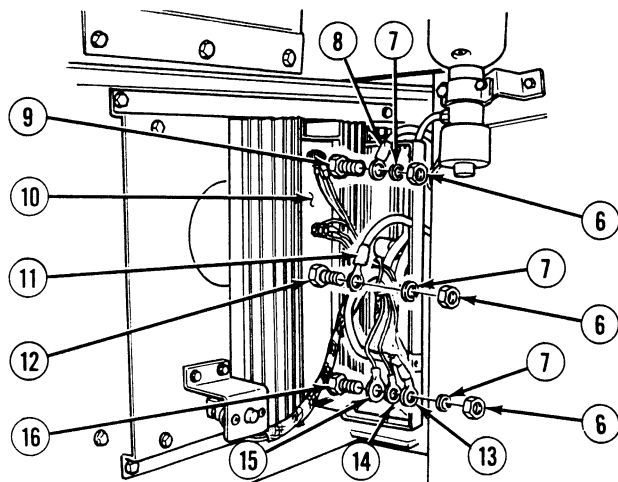
- (17) Install circuit breaker (29), two screws (27) and locknuts (28) on stand off bracket (30).



- (18) Install two wires 1435 (25), black wire (24), lockwasher (23) and nut (22) on ground stud (26) of DUVAC controller (10).
- (19) Install two wires 1020 (20), brown wire (19), lockwasher (18) and nut (17) on IGN stud (21) of DUVAC controller (10).



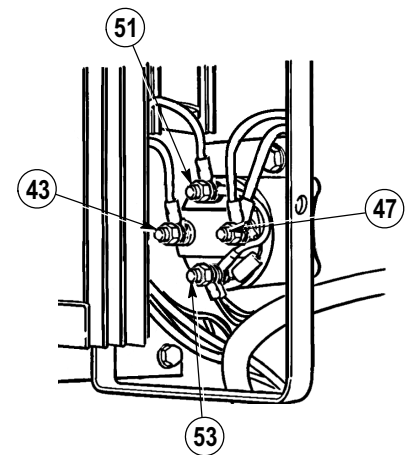
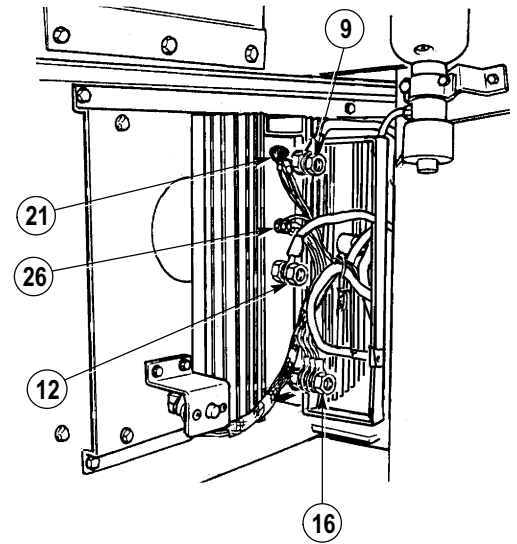
- (20) Install red wire (15), orange wire (14), wire 1274 (13), lockwasher (7) and nut (6) on 12 volt battery stud (16) of DUVAC controller (10).
- (21) Install wire 1278 (11), lockwasher (7) and nut (6) on 24 volt alternator stud (12) of DUVAC controller (10).
- (22) Install wire 1277 (8), lockwasher (7) and nut (6) on 24 volt battery stud (9) of DUVAC controller (10).



WARNING

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

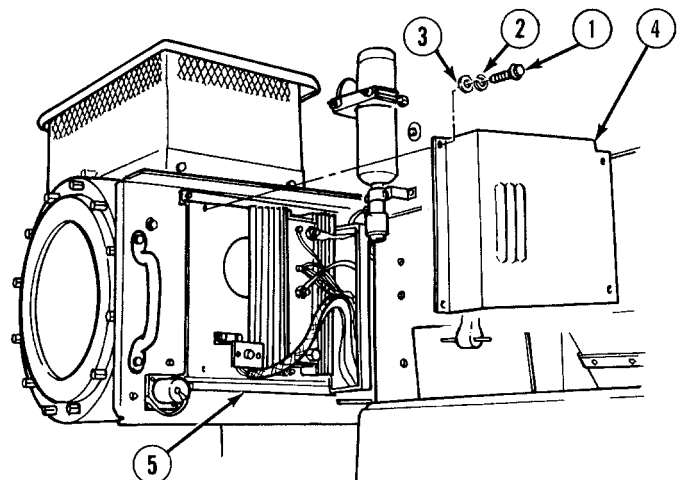
- (23) Apply electrical sealant to 12 volt battery stud (16), 24 volt alternator stud (12), ground stud (26), IGN stud (21), 24 volt battery stud (9), stud (53), stud (51), stud (47) and stud (43).



- (24) Install splash guard (4), four washers (3), lockwashers (2) and screws (1) on electric bracket (5).

c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Adjust DUVAC control, (Para 7-10).
- Install left side noise panel, (Para 17-28).
- Remove wheel chocks, (TM 9-2320-364-10).



END OF TASK

7-10. DUAL VOLTAGE ALTERNATOR CONTROL (DUVAC) ADJUSTMENT (145 AMP).

This task covers:

- a. Adjustment
- b. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Multimeter (2) (Item 44, Appendix G)

Materials/Parts

Lockwasher (6) (Item 195, Appendix F)

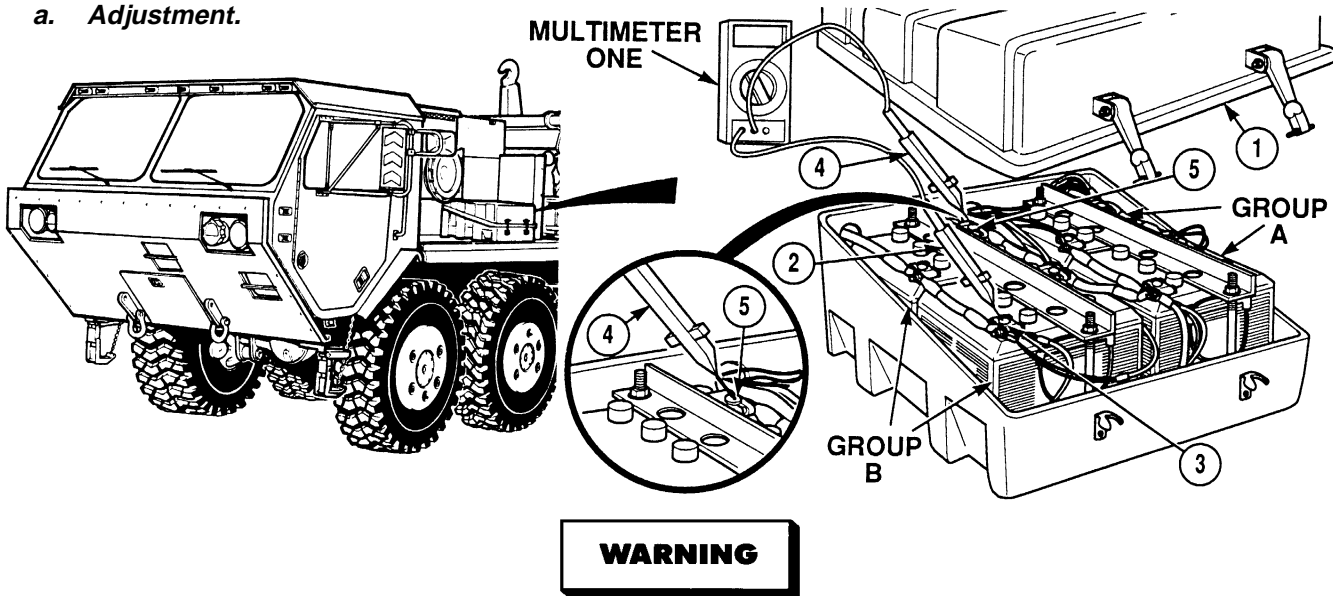
Personnel Required

Two

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Left side noise panel removed, (Para 17-28)

a. Adjustment.



Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

NOTE

- Multimeter is positioned in 24 VDC mode.
 - DUVAC controller should reset to the 24 vdc charge mode approximately every 55 seconds. Take the voltage reading for at least two minutes to allow the regulator timer to cycle.
 - Every 55-60 seconds you will see momentary drop in voltage as regulator resets from 12 to 24 vdc charging mode.
 - Charging voltage could drop as low as 0 vdc.
- (1) Remove battery box cover (1) and connect multimeter one positive lead (2) to positive terminal (3) and multimeter one negative lead (4) to negative terminal (5) on group "B" batteries.

- (2) Remove four screws (6), lockwashers (7), washers (8) and DUVAC cover (9). Discard lockwashers.

WARNING

Remove all jewelry such as rings, dog tags, bracelets, etc. If jewelry or tools contact positive electrical circuits, a direct short may result. Damage to equipment, injury or death to personnel may occur.

- (3) Connect multimeter two positive lead (10) to "A" terminal (11) of DUVAC controller (12) and multimeter two negative lead (13) to negative terminal (14) of group "A" batteries.
- (4) With the aid of an assistant, start engine and run engine at 800 to 1,000 RPM, (TM 9-2320-364-10).
- (5) With the aid of an assistant, turn truck head lights and heater on, (TM 9-2320-364-10).

CAUTION

Use caution when turning adjusting screw of potentiometer. Turning adjusting screw with too much force may damage potentiometer.

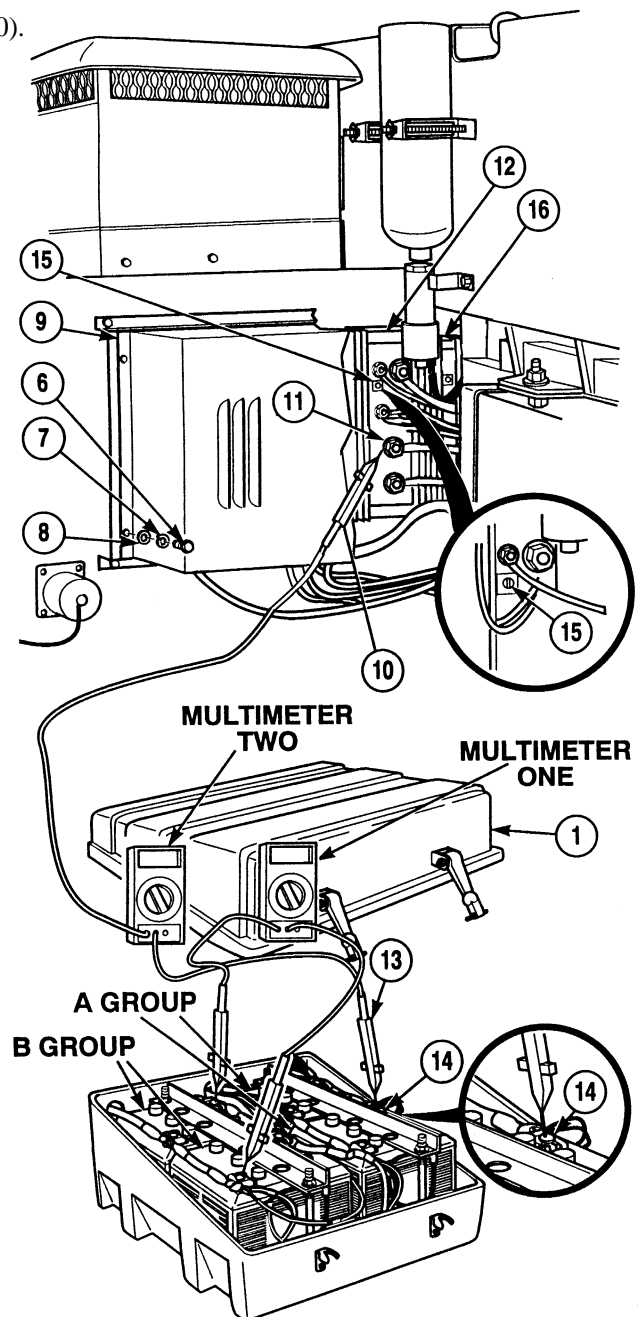
NOTE

- Potentiometer on DUVAC controller is adjusted by turning adjusting screw on potentiometer. Turning to the right increases voltage. Turning to the left decreases voltage.
- Multimeter one should read 14.3 to 14.6 volts.
- Multimeter two should read 26 to 30 volts.

- (6) Adjust potentiometer (15) on DUVAC controller (12) as required.
- (7) Install DUVAC cover (9), four washers (8), lockwashers (7) and screws (6).
- (8) Install battery box cover (1).

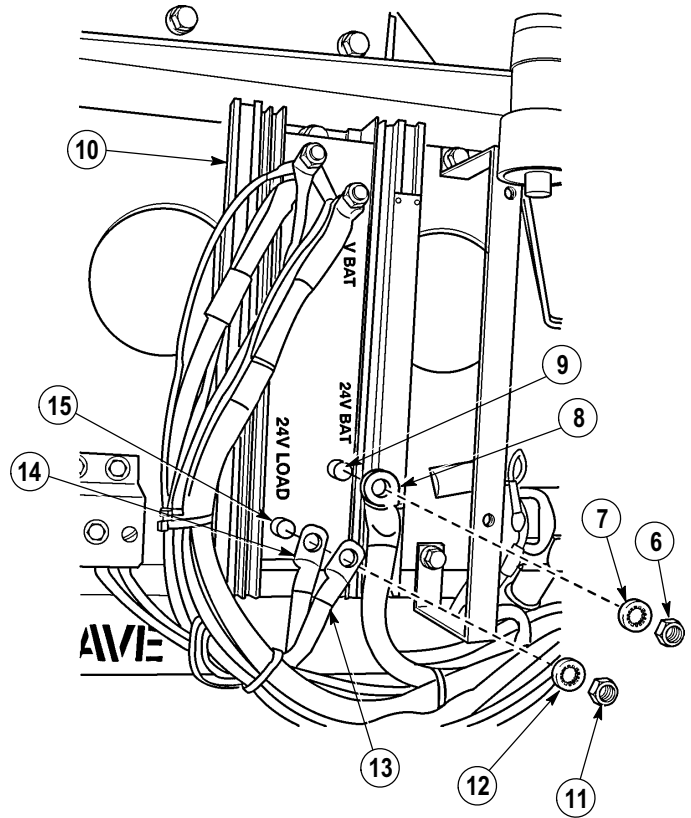
b. Follow-On Maintenance:

- Install left side noise panel, (Para 17-28).
- Remove wheel chocks, (TM 9-2320-364-10).

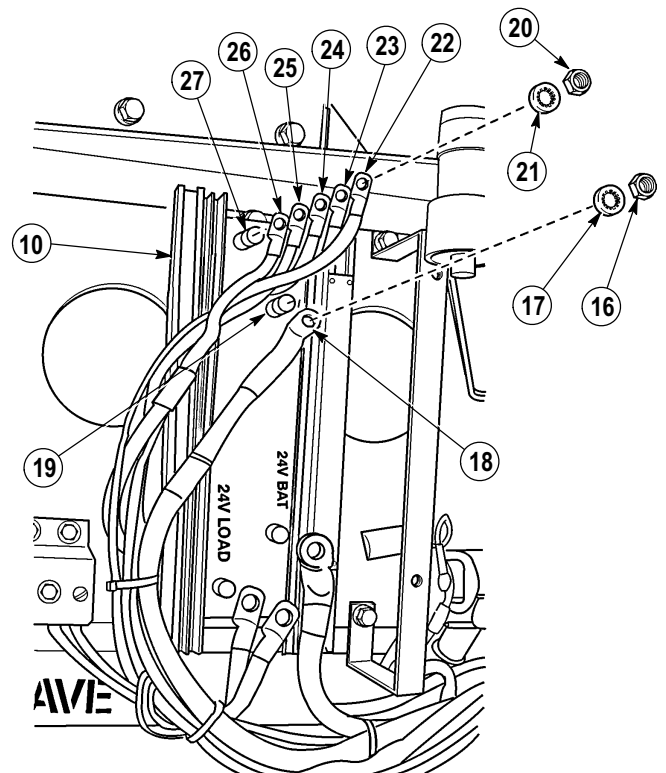


END OF TASK

- (2) Remove nut (6), lockwasher (7) and wire 1281A (8) from 24 volt battery terminal (9) of polarity protection controller (10). Discard lockwasher.
- (3) Remove nut (11), lockwasher (12), wire 1431 (13) and wire 1281 (14) from 24 volt load terminal (15) of polarity protection controller (10). Discard lockwasher.

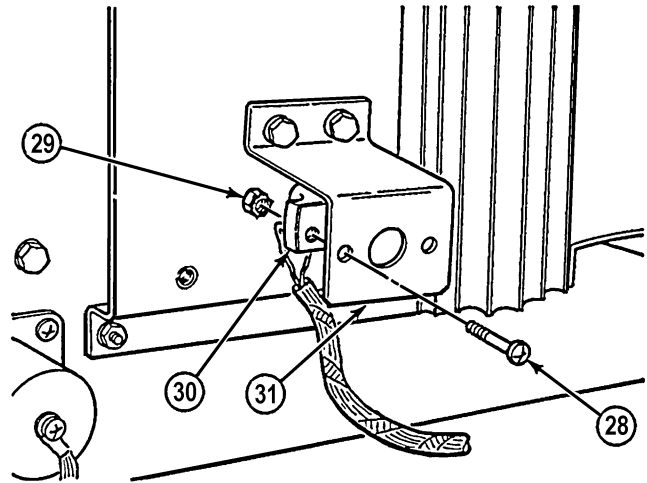


- (4) Remove nut (16), lockwasher (17), and wire 1566 (18) from 12 volt battery terminal (19) of polarity protection controller (10). Discard lockwasher.
- (5) Remove nut (20), lockwasher (21), wire 240/241 (22), wire 1866 (23), wire 1075 (24), wire 1079 (25) and wire 1430 (26) from 12 volt load terminal (27) of polarity protection controller (10). Discard lockwasher.

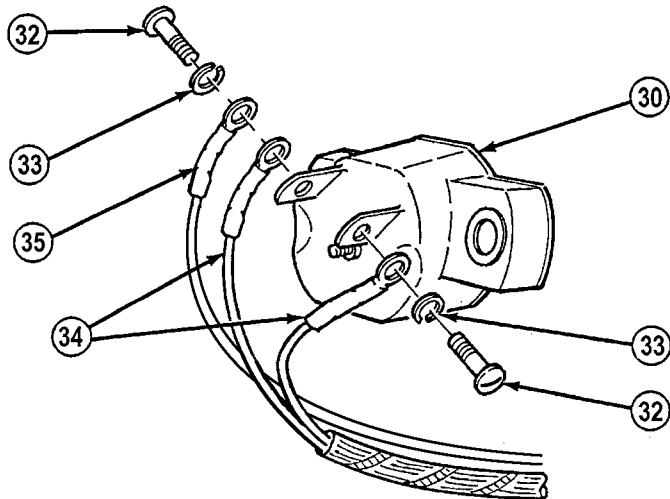


7-11. POLARITY PROTECTION CONTROL REPLACEMENT (200 AMP) (CONT).

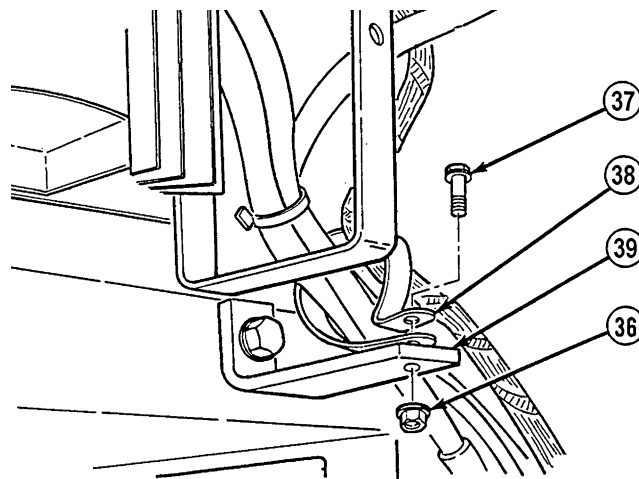
- (6) Remove two screws (28), locknuts (29) and circuit breaker (30) from stand off bracket (31). Discard locknuts.



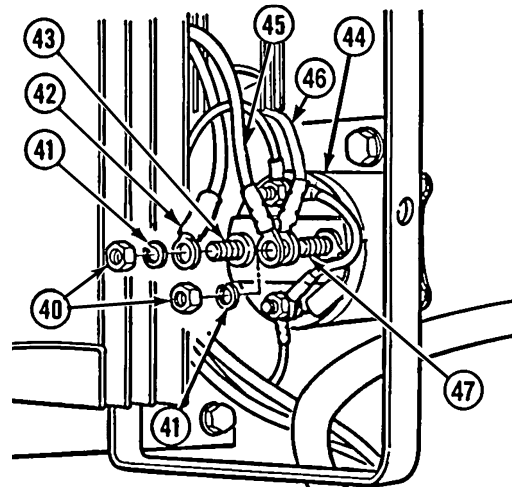
- (7) Remove two screws (32), lockwashers (33), two wires 1020 (34), and wire 1020A (35) from circuit breaker (30). Discard lockwashers.



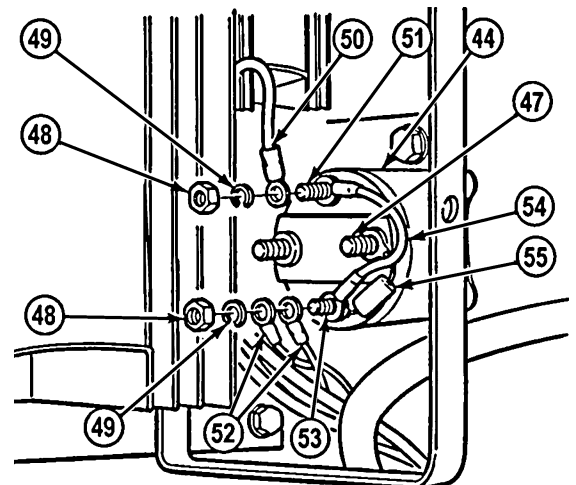
- (8) Remove locknut (36), screw (37), cushion clip (38) from bracket (39). Discard locknut.



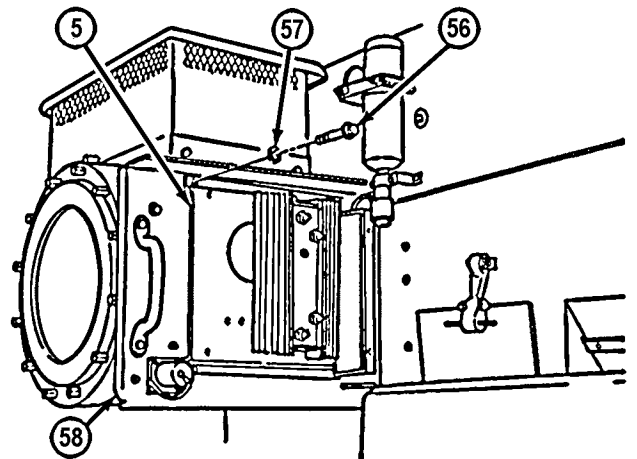
- (9) Remove nut (40), lockwasher (41) and wire 1055 (42) from stud (43) of 24 volt solenoid switch (44). Discard lockwasher.
- (10) Remove nut (40), lockwasher (41), wire 1045 (45) and capacitor wire (46) from stud (47) of 24 volt solenoid switch (44). Discard lockwashers.



- (11) Remove nut (48), lockwasher (49) and wire 1021A (50) from stud (51) of 24 volt solenoid switch (44). Discard lockwasher.
- (12) Remove nut (48), lockwasher (49) and two wires 1435 (52) from stud (53) of 24 volt solenoid switch (44). Discard lockwasher.
- (13) Remove jumper diode wire (54) from stud (51) and stud (53).
- (14) Remove capacitor (55) from stud (47) and stud (53).

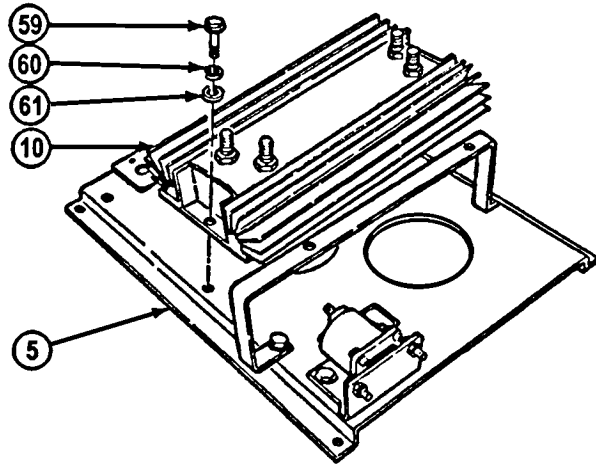


- (15) Remove four screws (56), lockwashers (57) and electric bracket (5) from air cleaner bracket (58). Discard lockwashers.

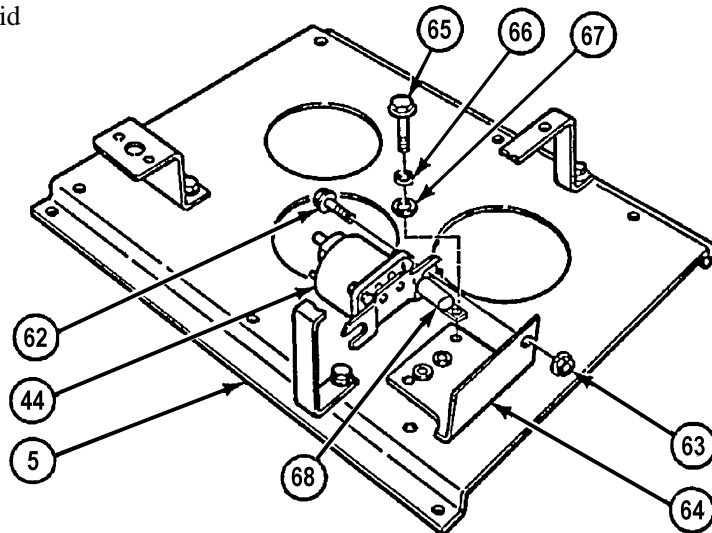


7-11. POLARITY PROTECTION CONTROL REPLACEMENT (200 AMP) (CONT).

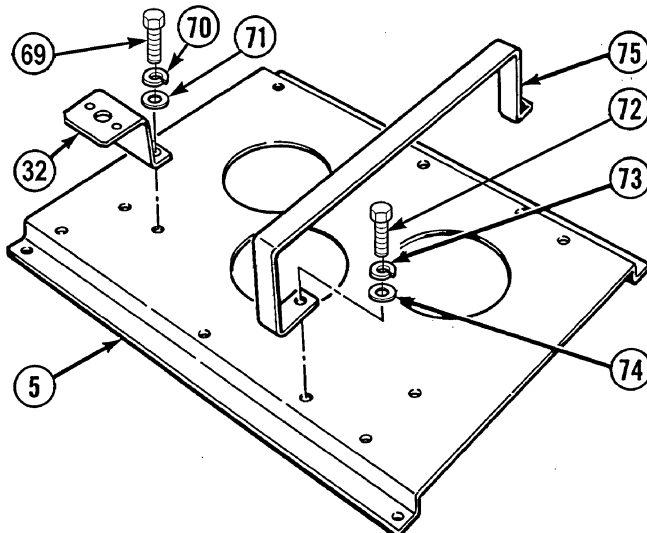
- (16) Position electric bracket (5) on clean work bench.
- (17) Remove two screws (59), lockwashers (60), washers (61), and polarity protection controller (10) from electric bracket (5). Discard lockwashers.



- (18) Remove two screws (62), locknuts (63) and 24 volt solenoid switch (44) from solenoid switch bracket (64). Discard locknuts.
- (19) Remove two screws (65), lockwashers (66), washers (67), capacitor (68) and solenoid switch bracket (6) from electric bracket (5). Discard lockwashers.



- (20) Remove two screws (69), lockwashers (70), washers (71) and standoff bracket (31) from electric bracket (5). Discard lockwashers.
- (21) Remove two screws (72), lockwashers (73), washers (74) and mounting bracket (75) from electric bracket (5). Discard lockwashers.



b. Installation.

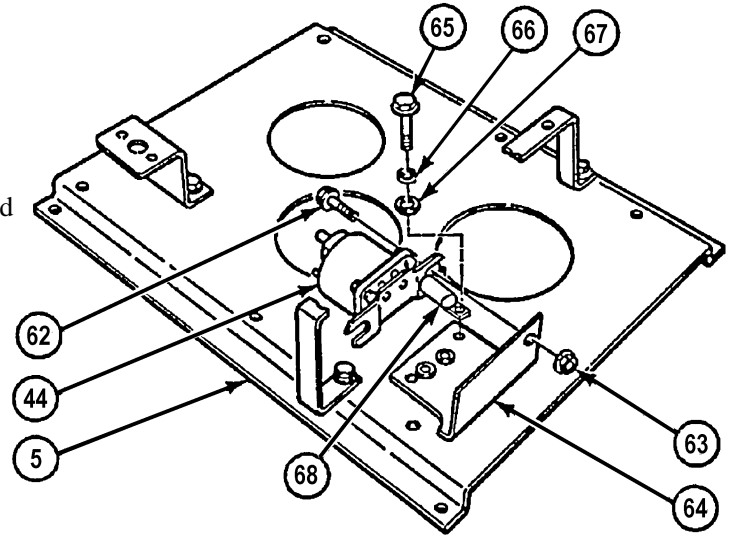
NOTE

Install cable ties as required.

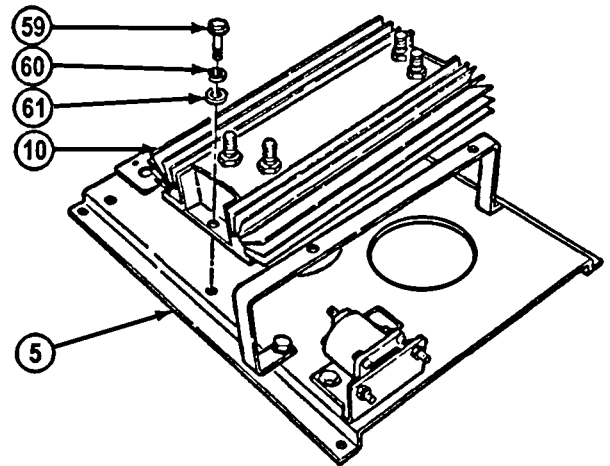
- (1) Install mounting bracket (75), two washers (74), lockwashers (73) and screws (72) on electric bracket (5).
- (2) Install standoff bracket (31), two washers (71), lockwashers (70) and screws (69) on electric bracket (5).

- (3) Install solenoid switch bracket (64), capacitor (68), two washers (67), lockwashers (66) and screws (65) on electric bracket (5).

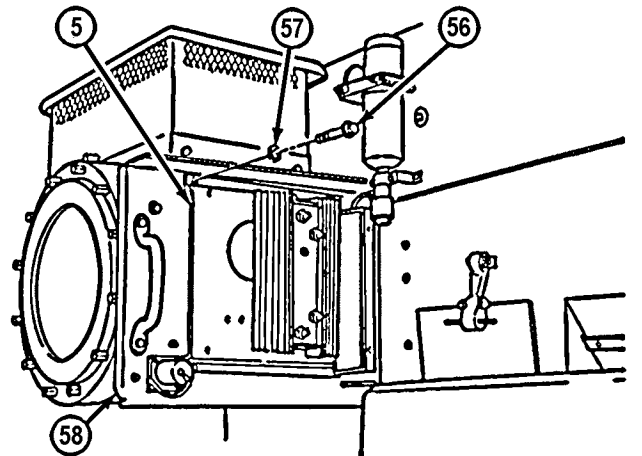
- (4) Install 24 volt solenoid switch (44), two screws (62) and locknuts (63) on solenoid switch bracket (64).



- (5) Install polarity protection controller (10), two washers (61), lockwashers (60) and screws (59) on electric bracket (5).

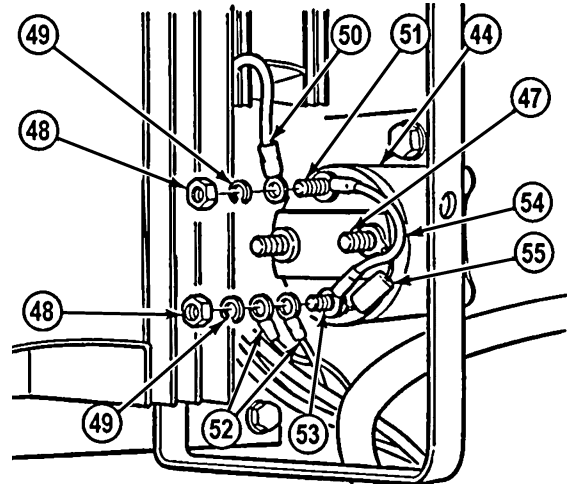


- (6) Install electric bracket (5), four lockwashers (57) and screws (56) on air cleaner bracket (58).

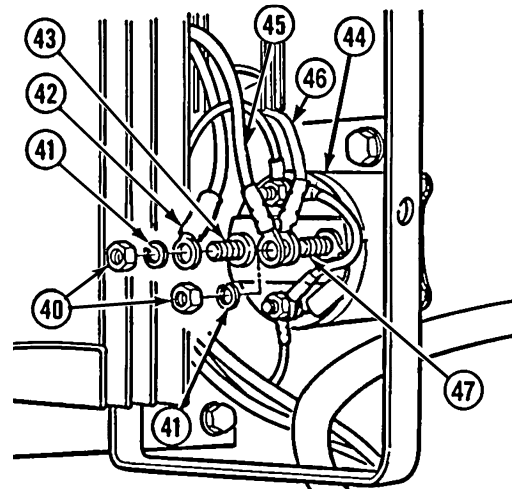


7-11. POLARITY PROTECTION CONTROL REPLACEMENT (200 AMP) (CONT).

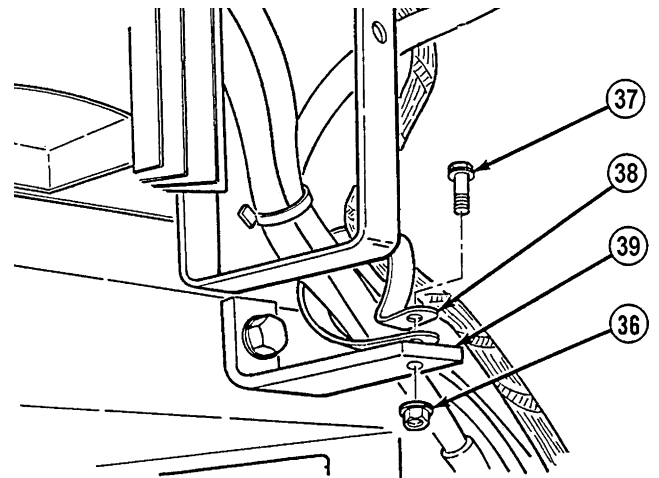
- (7) Install capacitor (55) on studs (53) and (47).
- (8) Install jumper diode wire (54) with negative terminal on stud (51) and positive terminal on stud (53).
- (9) Install two wires 1435 (52), lockwasher (49) and nut (48) on stud (53) of 24 volt solenoid switch (44).
- (10) Install wire 1021A (50), lockwasher (49) and nut (48) on stud (51) of 24 volt solenoid switch (44).



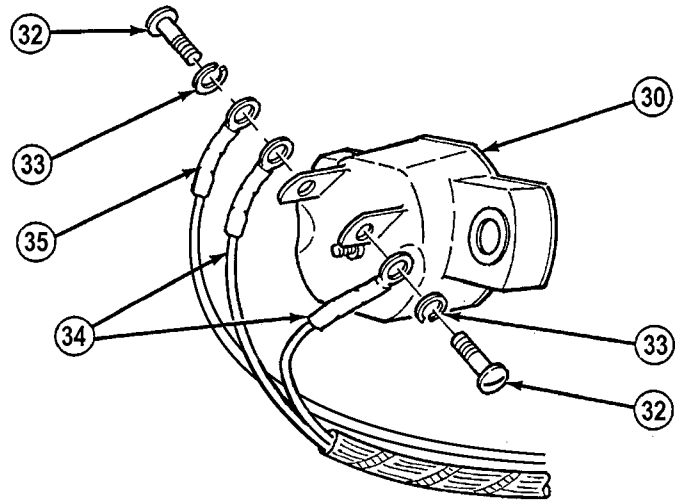
- (11) Install wire 1045 (45), capacitor wire (46), lockwasher (41) and nut (40) on stud (47) of 24 volt solenoid switch (44).
- (12) Install wire 1055 (42), lockwasher (41) and nut (40) on stud (43) of 24 volt solenoid switch (44).



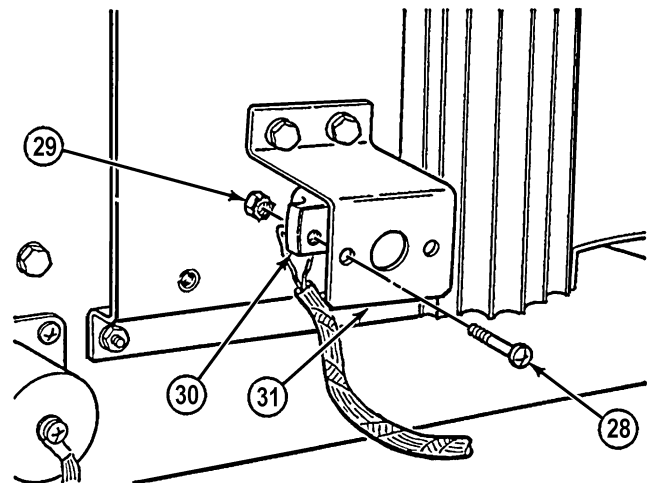
- (13) Install cushion clip (38), screw (37) and locknut (36) on bracket (39).



- (14) Install wire 1020A (35), two wires 1020 (34), lockwashers (33) and screws (32) on circuit breaker (30).

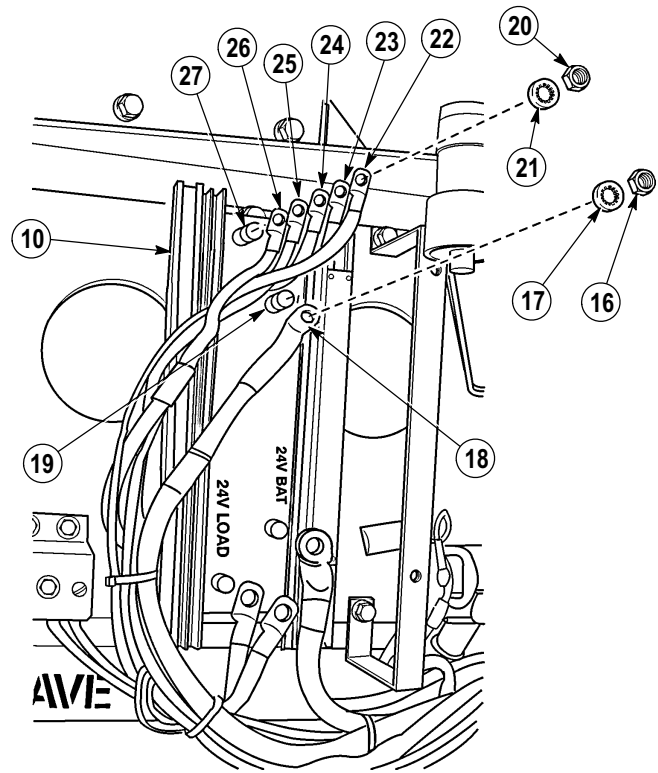


- (15) Install circuit breaker (30), two screws (28) and locknuts (29) on stand off bracket (31).

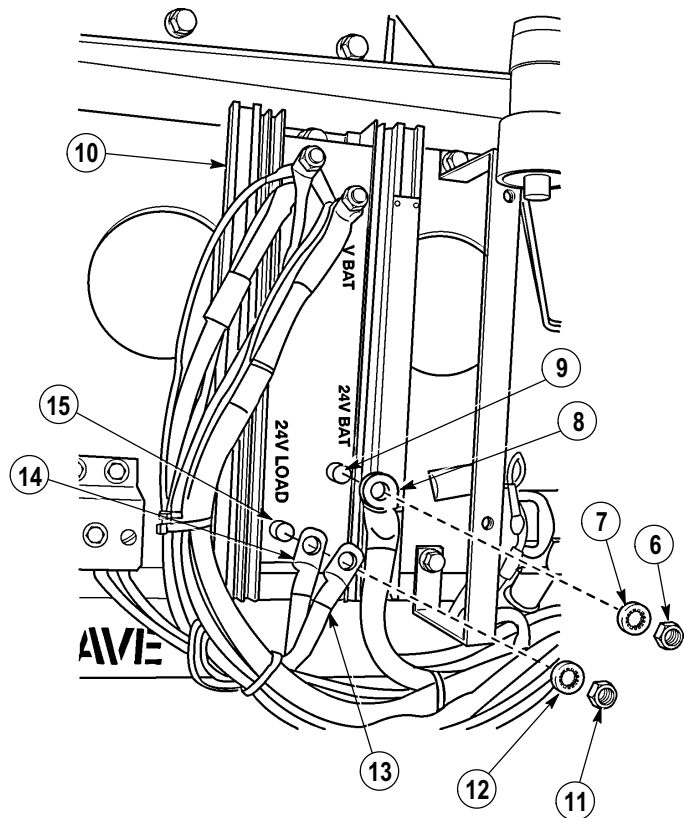


7-11. POLARITY PROTECTION CONTROL REPLACEMENT (200 AMP) (CONT).

- (16) Install wire 1430 (26), wire 1079 (25), wire 1075 (24), wire 1866 (23), wire 240 and 241 (22), lockwasher (21) and nut (20) on 12 volt load terminal (27) of polarity protection controller (10).
- (17) Install wire 1566 (18), lockwasher (17) and nut (16) on 12 volt battery terminal (19) of polarity protection controller (10).



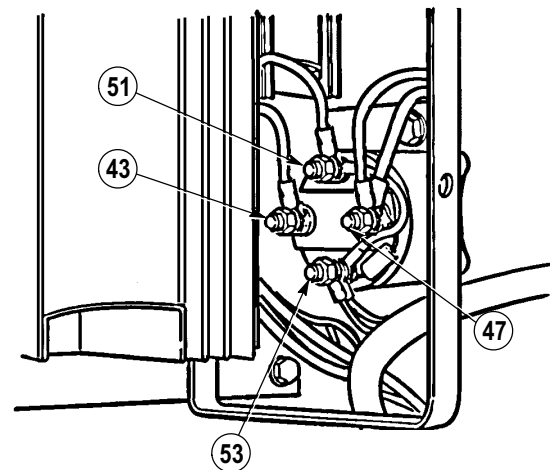
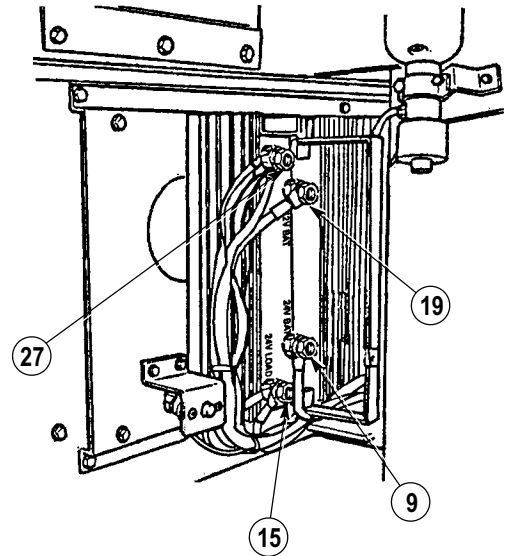
- (18) Install wire 1281 (14), wire 1431 (13), lockwasher (12) and nut (11) on 24 volt load terminal (15) of polarity protection controller (10).
- (19) Install wire 1281A (8), lockwasher (7) and nut (6) on 24 volt battery terminal (9) of polarity protection controller (10).



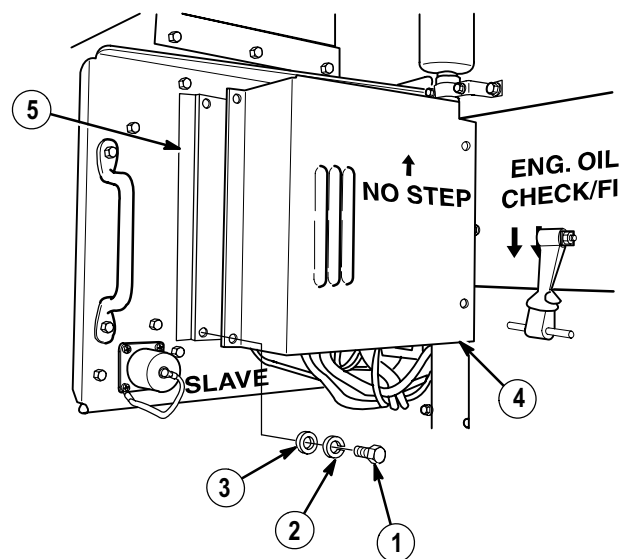
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (20) Apply electrical sealant to 24 volt battery terminal (9), 12 volt alternator terminal (27), 12 volt battery terminal (19), 24 volt load terminal (15), two screws (32), studs (53), (51), (47), and (43).



- (21) Install splash guard (4), four washers (3), lockwashers (2) and screws (1) on electric bracket (5).

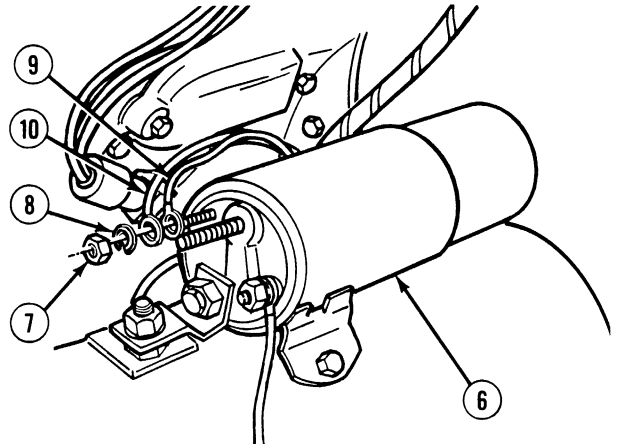


c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Install left side noise panel, (Para 17-28).
- Remove wheel chocks, (TM 9-2320-364-10).

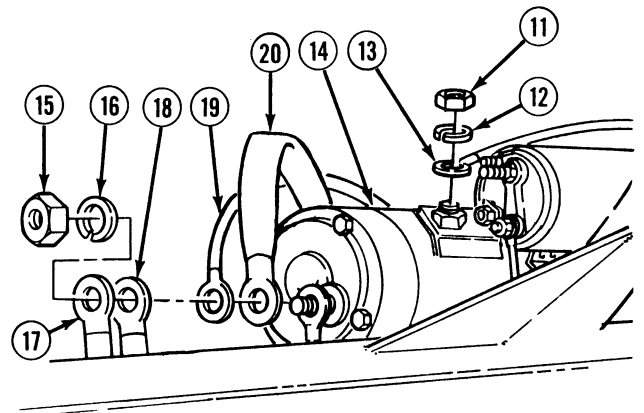
END OF TASK

- (2) Remove nut (7), lockwasher (8) wire 1045 (9) and wire 1816 (10) from starter solenoid (6). Discard lockwashers.

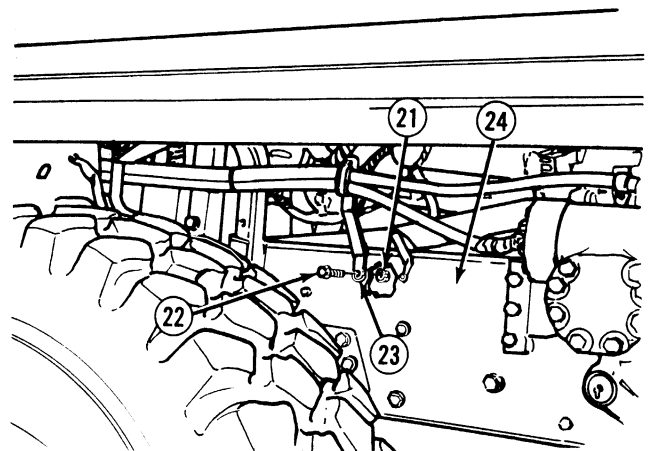


- (3) Remove nut (11), lockwasher (12) and wire 1818 (13) from starter (14). Discard lockwasher.

- (4) Remove nut (15), lockwasher (16), wires 1138 (17), 1138 (18), 1819 (19) and ground strap (20) from starter (14). Position nut (15) and lockwasher (16) on starter (14).



- (5) Remove locknut (21), screw (22) and bracket (23) from frame (24). Discard locknut.



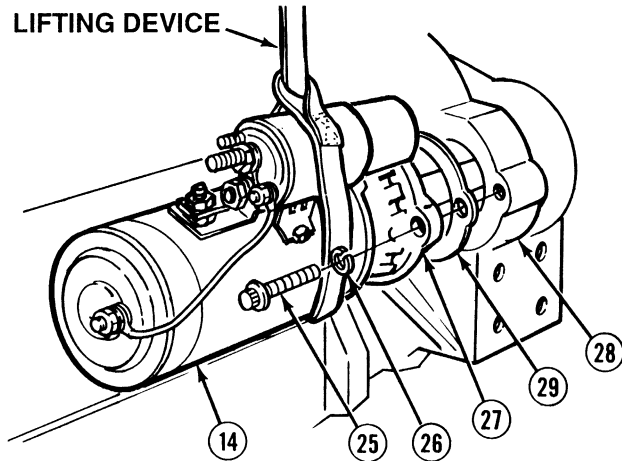
7-12. STARTER MOTOR REPLACEMENT (CONT).

- (6) Remove two of three screws (25) and lockwashers (26) from starter mounting bracket (27). Discard lockwashers.

WARNING

Starter weighs 73 lbs (33 kg). Attach suitable lifting device prior to removal to prevent possible injury to personnel.

- (7) Install lifting device and raise lifting device to support weight of starter (14).
- (8) With the aid of an assistant, remove remaining screw (25) and lockwasher (26) from starter mounting bracket (27). Discard lockwasher.



NOTE

Starter is lowered between frame and tires.

- (9) Remove starter (14) from flywheel housing (28).
- (10) Remove and discard gasket (29) from starter (14) and flywheel housing (28).
- (11) Remove lifting device from starter (14).

b. Installation.

- (1) Install gasket (29) on starter (14).

WARNING

Starter weighs 73 lbs (33 kg). Attach suitable lifting device prior to installation to prevent possible injury to personnel.

NOTE

Install cable ties as required.

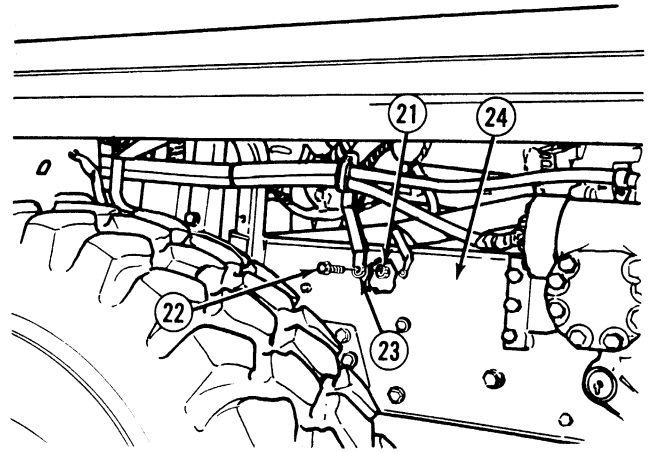
- (2) Install lifting device and raise lifting device to support weight of starter (14).

NOTE

Starter is lifted between frame and tires.

- (3) With the aid of an assistant, position starter (14) in flywheel housing (28).
- (4) With the aid of an assistant, support starter (14) and position one of three lockwashers (26) and screws (25) in starter mounting bracket (27).
- (5) Remove lifting device from starter (14).
- (6) Install remaining two lockwashers (26) and screws (25) in starter mounting bracket (27). Tighten all three screws 137 to 147 lb-ft (186 to 199 N·m).

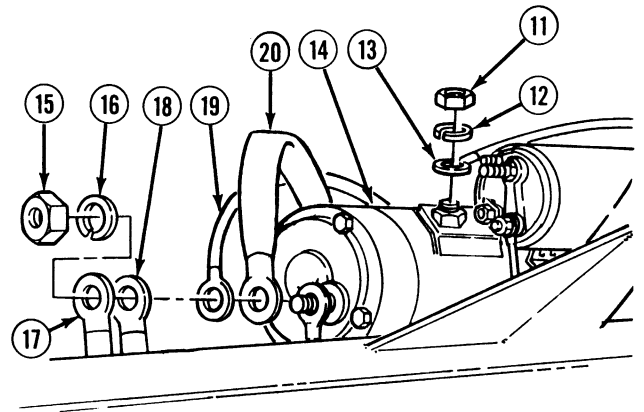
- (7) Install bracket (23) on frame (24) with screw (22) and locknut (21).



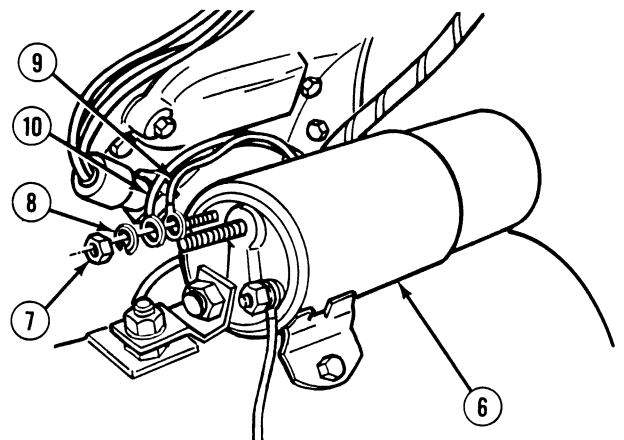
- (8) Remove nut (15) and lockwasher (16) from starter (14). Discard lockwasher.

- (9) Install ground strap (20), wires 1819 (19), 1138 (18), 1138 (17), lockwasher (16) and nut (15) on starter (14). Tighten nut to 30 lb-ft (41 N·m).

- (10) Install wire 1818 (13), lockwasher (12) and nut (11) on starter (14). Tighten nut to 30 lb-ft (41 N·m).

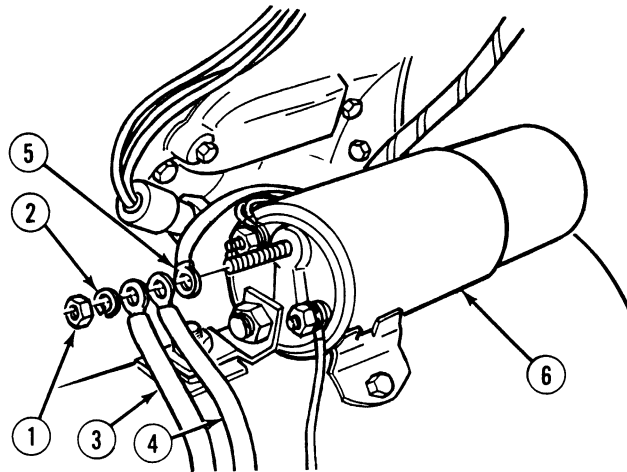


- (11) Install wires 1045 (9), 1816 (10), lockwasher (8) and nut (7) on starter solenoid (6). Tighten nuts to 31 lb-in (4 N·m).



7-12. STARTER MOTOR REPLACEMENT (CONT).

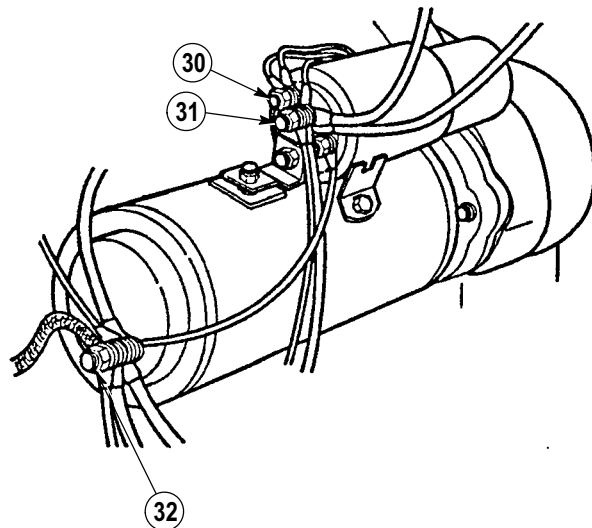
- (12) Install wires 1139 (5), 1055 (4) and 1139 (3), lockwasher (2) and nut (1) on starter solenoid (6). Tighten nut to 30 lb-ft (41 N·m).



WARNING

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

- (13) Apply electrical sealant to terminals (30), (31) and (32).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check starter operation, (TM 9-2320-364-10).
- Install left front noise panel, (Para 17-27).
- Install left side noise panel, (Para 17-28).
- Install left front and rear skirt, (Para 17-34).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-13. INSTRUMENT PANEL REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Materials/Parts

Cable Ties (Item 26, Appendix C)
Compound, Corrosion Preventive
(Item 34, Appendix C)

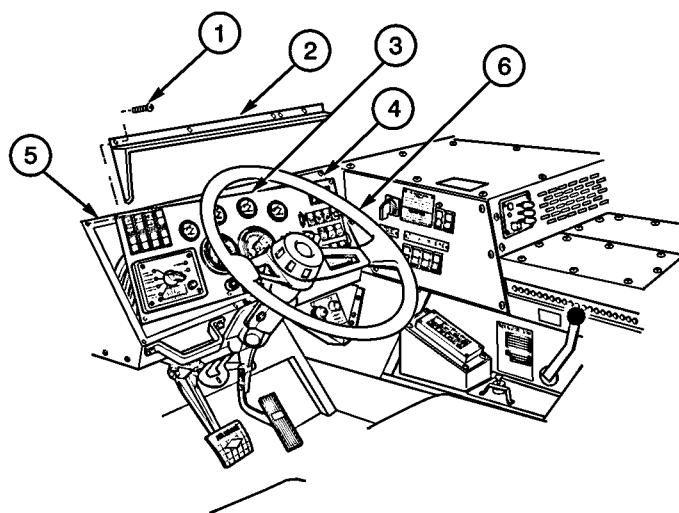
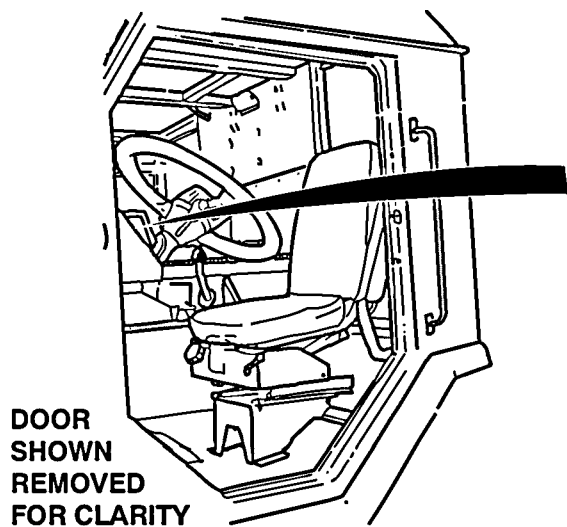
Materials/Parts - Continued

Tags, Identification (Item 88, Appendix C)
Locknut (Item 106, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.

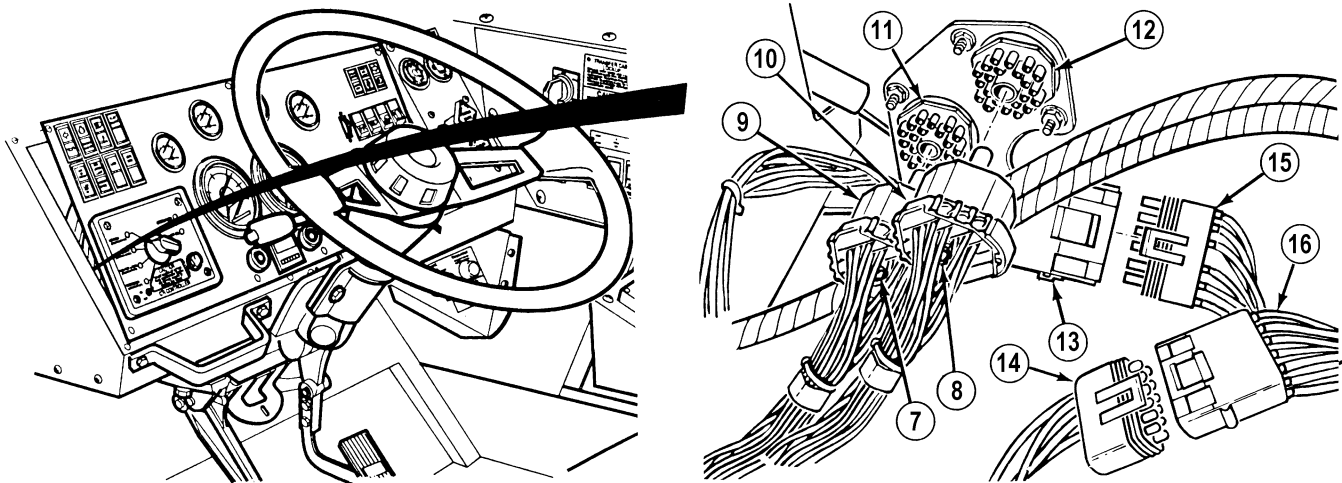


NOTE

Remove cable ties as required.

- (1) Remove ten screws (1), and sunshield (2) from instrument panel (3), dash air panel (4) and dash (5).
- (2) Pull top of instrument panel (3) towards steering wheel (6).

7-13. INSTRUMENT PANEL REPLACEMENT (CONT).



NOTE

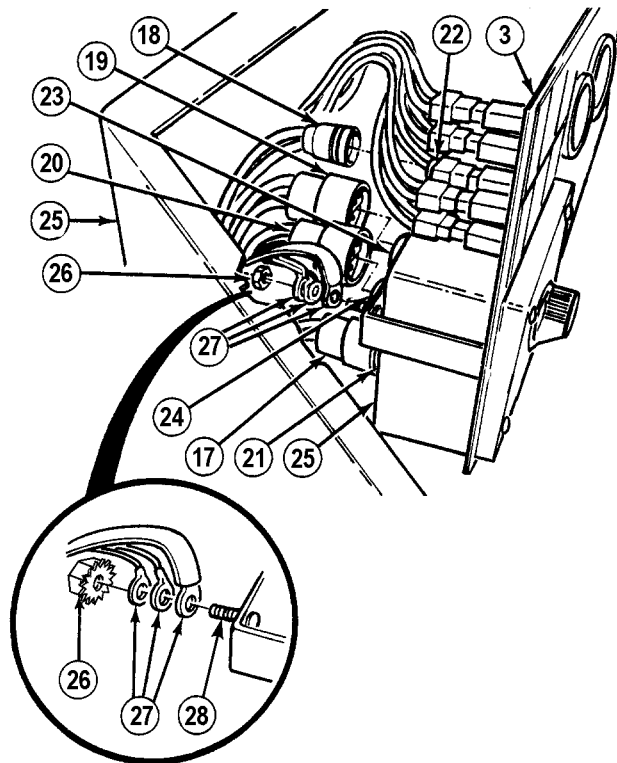
Tag and mark electrical connectors before removal.

- (3) Loosen screws (7) and (8) and remove MC4 (9) and MC8 (10) connectors from wiring harness connectors (11) and (12).

NOTE

Connectors are disconnected by gently prying up on lock tabs and pulling connector apart.

- (4) Remove MC34 (13) and MC112 (14) connectors from wiring harness connectors (15) and (16).
- (5) Remove MC35 (17), MC105 (18), MC110 (19) and MC111 (20) connectors from connectors (21), (22), (23) and (24) on rear of CTIS controller (25).
- (6) Remove locknut (26) and three ground straps (27) from stud (28). Discard locknut.
- (7) Remove instrument panel (3) from dash (5).

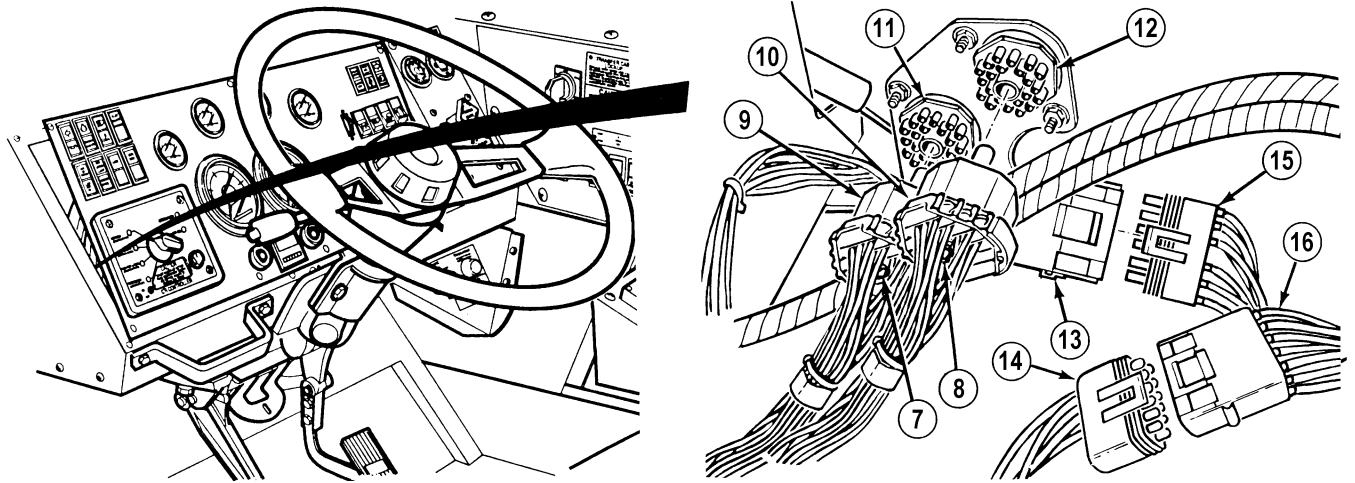


b. Installation.

NOTE

Install cable ties as required.

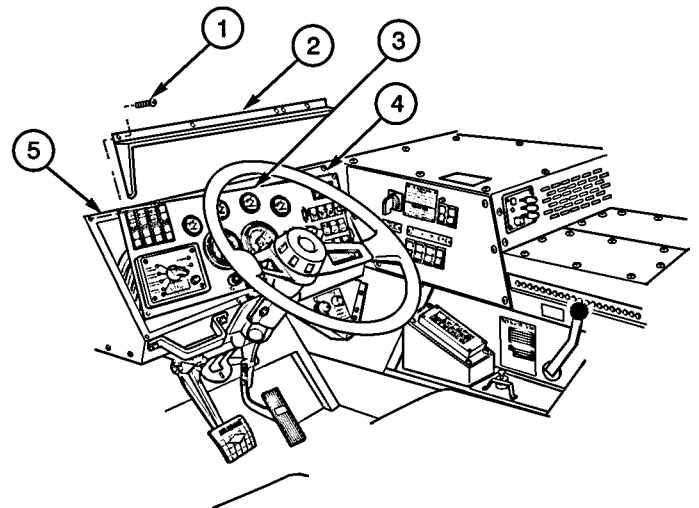
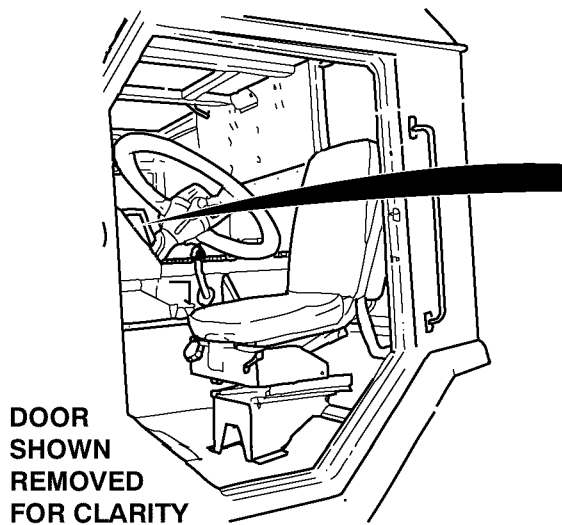
- (1) Position instrument panel (3) on dash (5).
- (2) Install three ground straps (27) and locknut (26) on stud (28).
- (3) Apply corrosion preventive compound to stud (28).
- (4) Install MC35 (17), MC105 (18), MC110 (19) and MC111 (20) connectors on connectors (21), (22), (23) and (24) on rear of CTIS controller (25).



NOTE

Ensure wiring harness connector locking tab locks in place.

- (5) Install MC34 (13) and MC112 (14) connectors on wiring harness connectors (15) and (16).
- (6) Install MC4 (9) and MC8 (10) connectors on wiring harness connectors (11) and (12) with screws (7) and (8).



- (7) Install instrument panel (3) and sunshield (2) on dash (5) and dash air panel (4) with ten screws (1).

c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check instrument panel operation, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-14. INSTRUMENT PANEL GAGE WIRING HARNESS REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

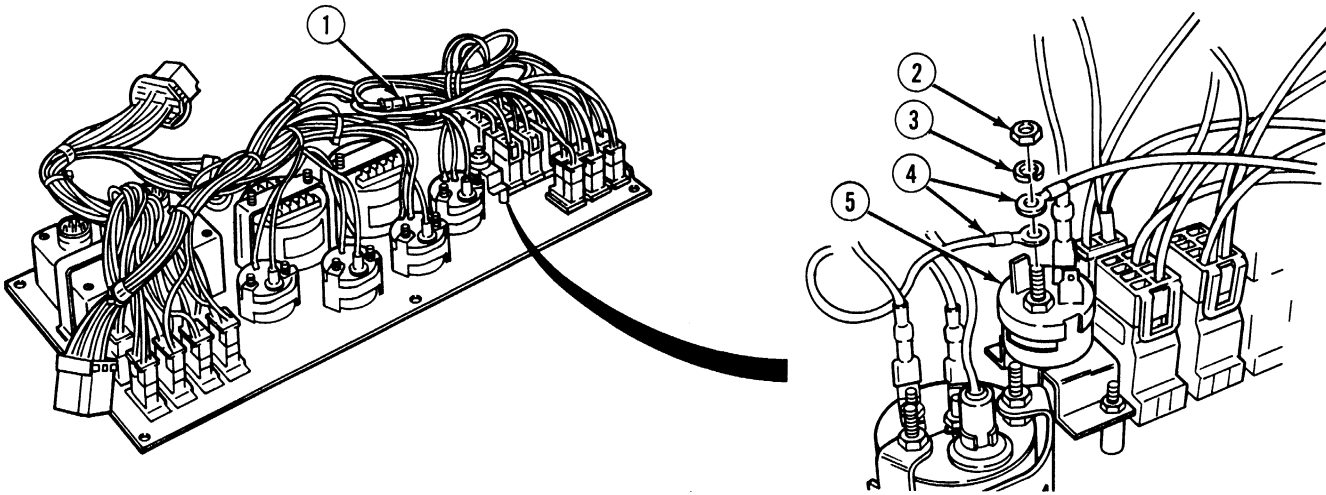
Materials/Parts

Cable Tie (Item 26, Appendix C)
Tags, Identification (Item 88, Appendix C)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Instrument panel removed, (Para 7-13)
Odometer (KM) removed, (Para 7-18)

a. Removal.

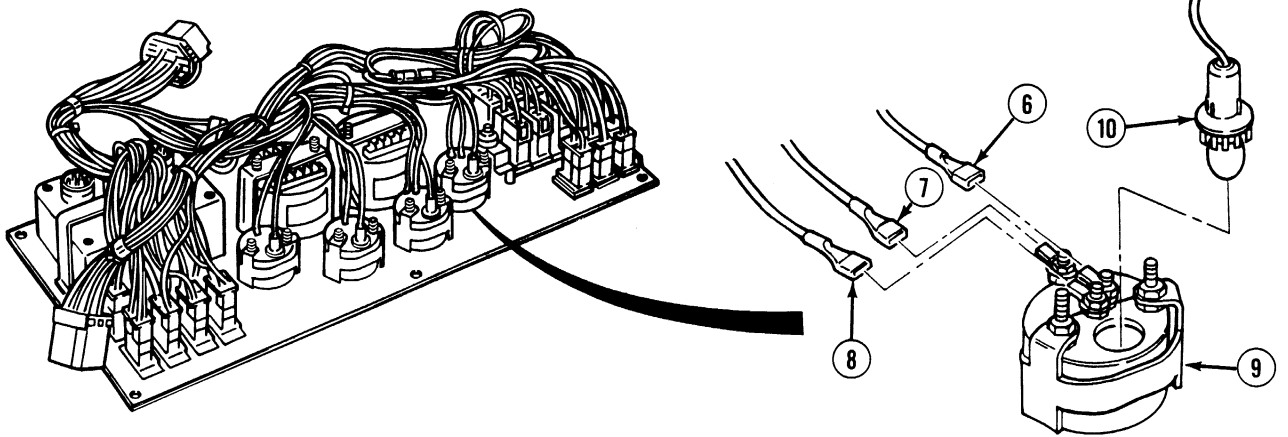


NOTE

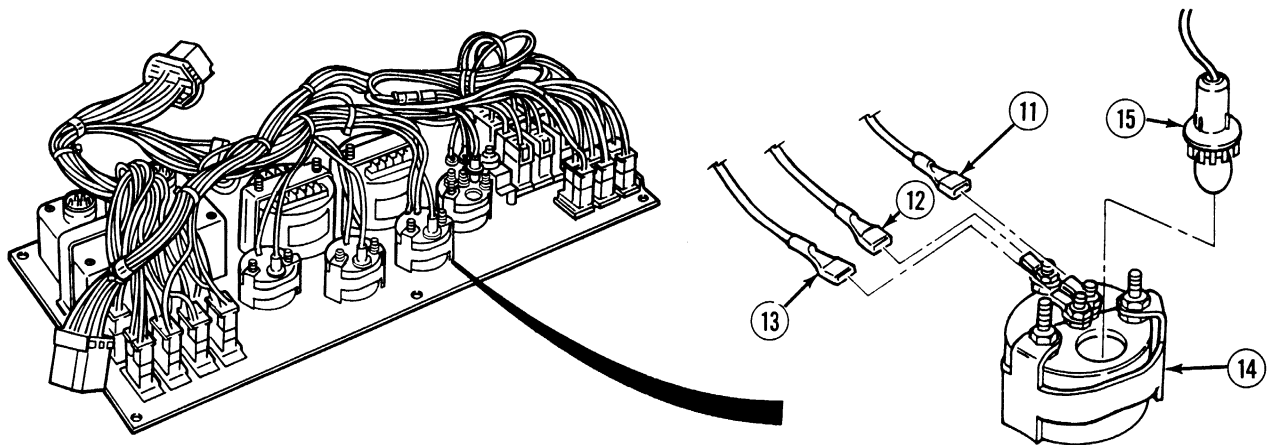
- Tag and mark all terminals and wires prior to removal.
- Remove cable ties as required.

(1) Disconnect MC53 connector (1).

(2) Remove nut (2), lockwasher (3) and two wires 1052 (4) from rear of thumbwheel rheostat switch (5).

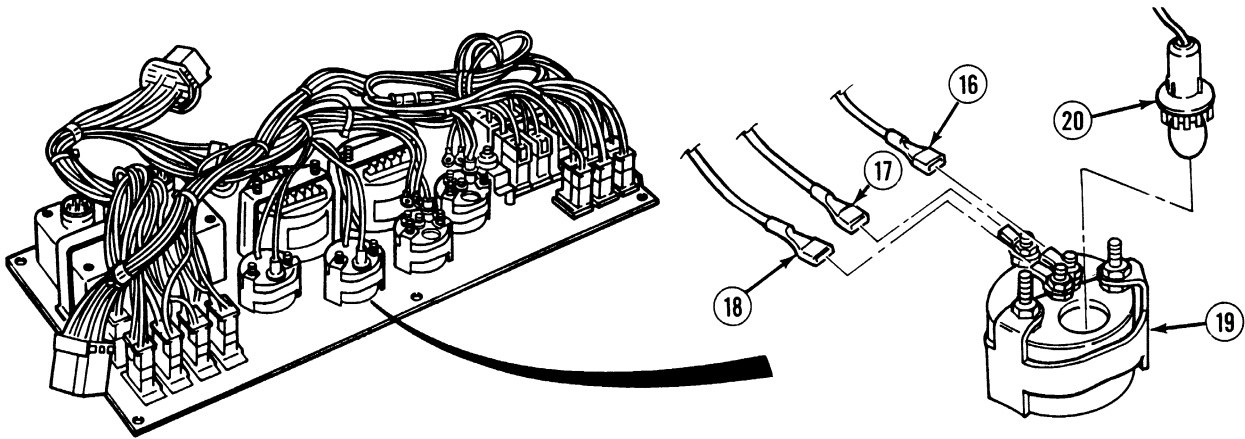


- (3) Remove wires 1318 (6), 1435 (7) and 1276 (8) from rear of fuel gage (9).
- (4) Disconnect gage light connector 1052 (10) from rear of fuel gage (9).

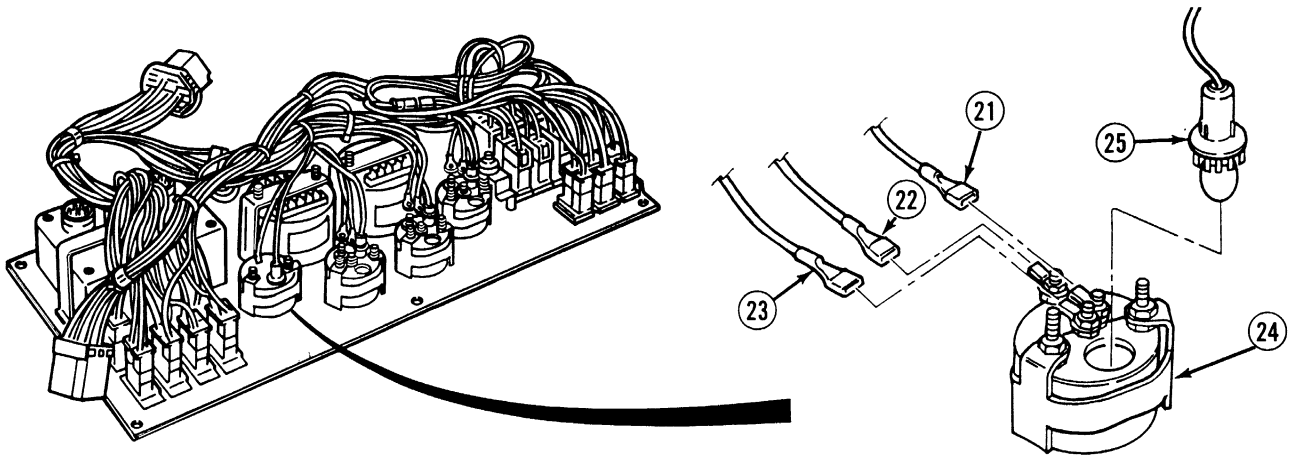


- (5) Remove wires 1449 (11), 1435 (12) and 1276 (13) from rear of transmission temperature gage (14).
- (6) Disconnect gage light connector 1052 (15) from rear of transmission temperature gage (14).

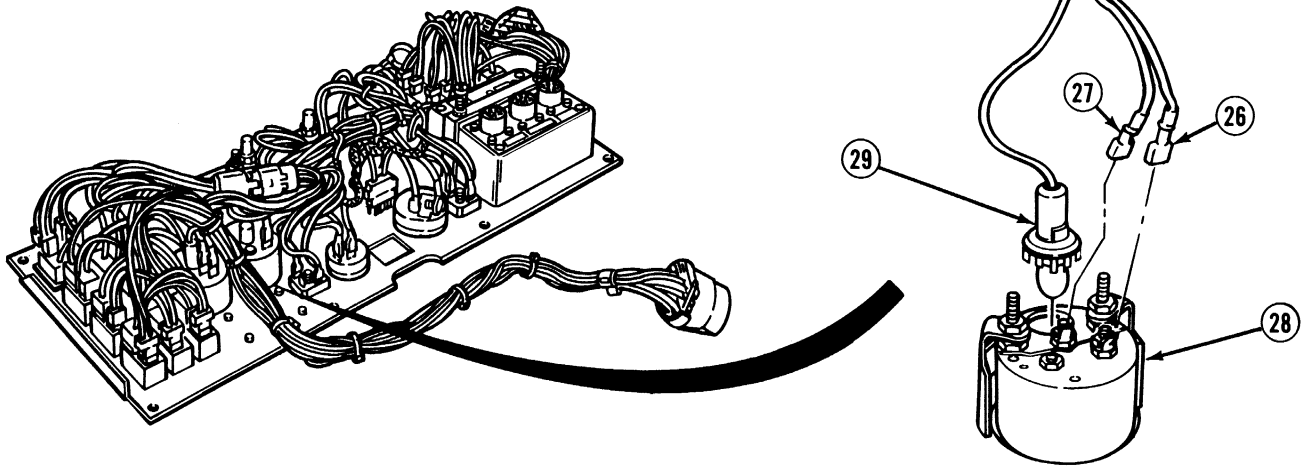
7-14. INSTRUMENT PANEL GAGE WIRING HARNESS REPLACEMENT (CONT).



- (7) Remove wires 1320 (16), 1435 (17) and 1276 (18) from rear of water temperature gage (19).
- (8) Disconnect gage light connector 1052 (20) from rear of water temperature gage (19).



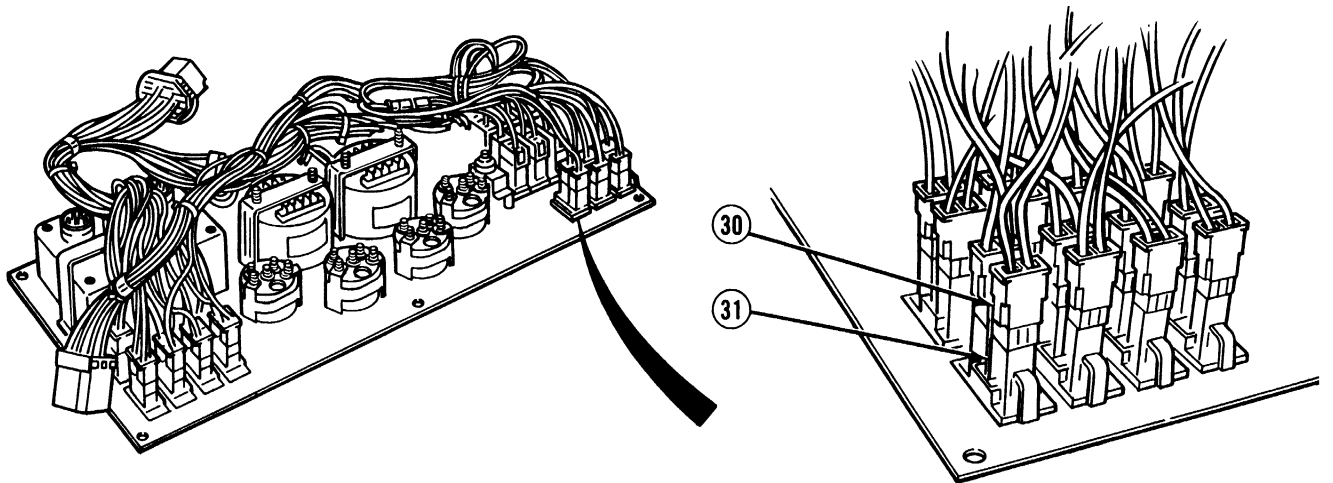
- (9) Remove wires 1113 (21), 1435 (22) and 1276 (23) from rear of oil pressure gage (24).
- (10) Disconnect gage light connector 1052 (25) from rear of oil pressure gage (24).



NOTE

Both battery gages are removed in the same way.

- (11) Remove wires 1276 or 1702 (26) and 1435 (27) from rear of battery gage (28).
- (12) Disconnect gage light connector 1052 (29) from rear of battery gage (28).

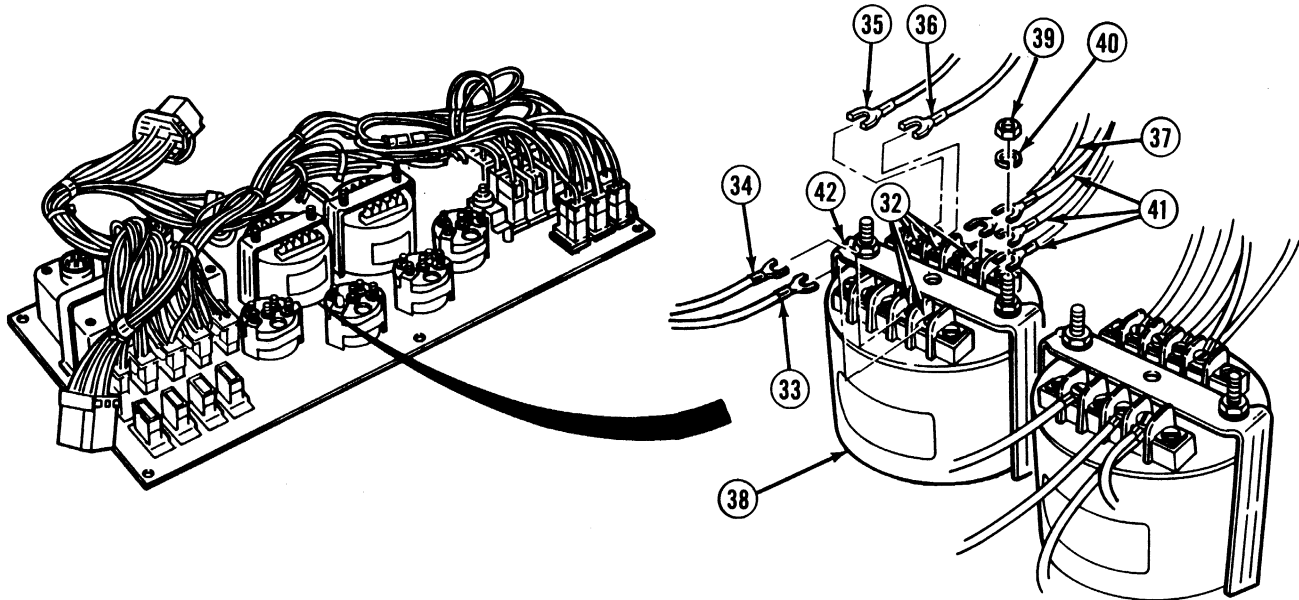


NOTE

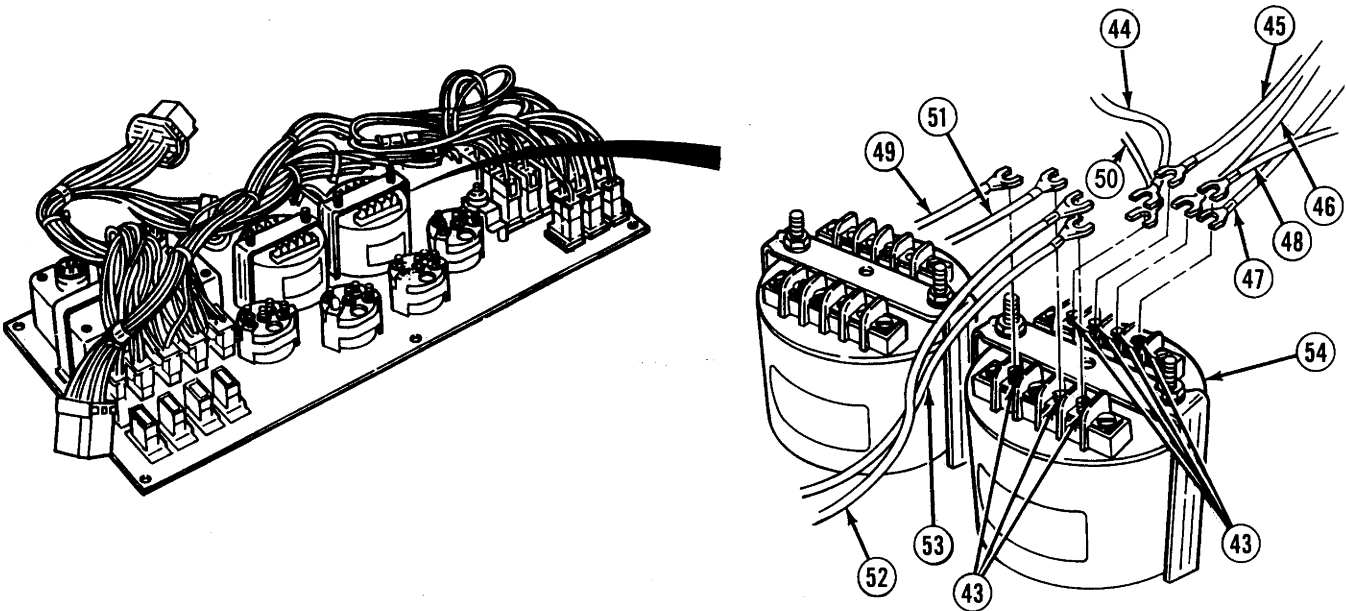
- All light connectors are removed the same way.
- Make sure light bulbs and light bulb sockets stay with warning light housings.

- (13) Disconnect 19 light connectors (30) from rear of 19 warning light housings (31).

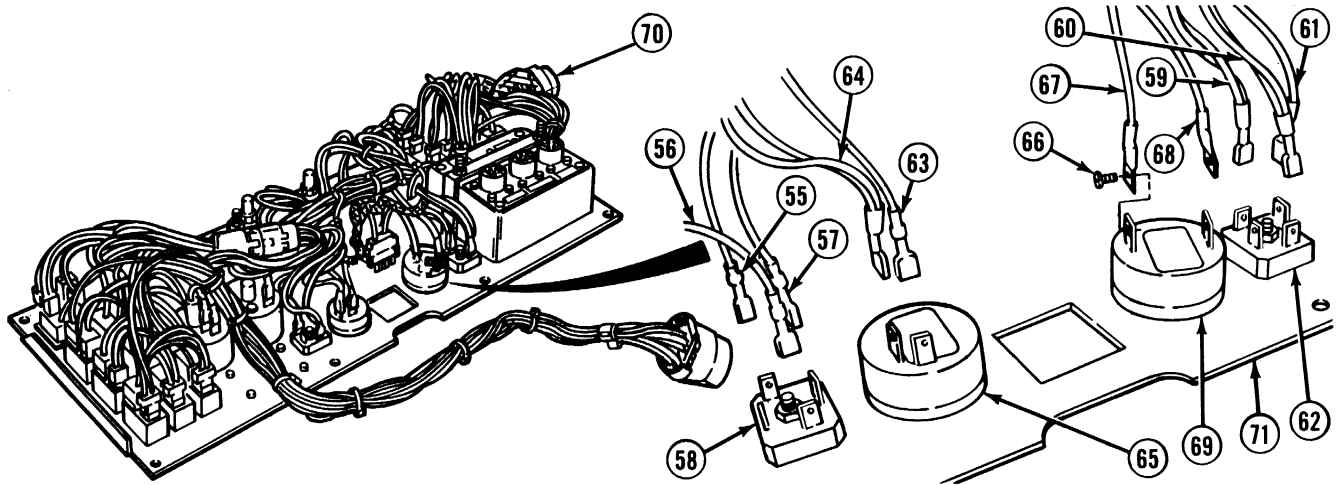
7-14. INSTRUMENT PANEL GAGE WIRING HARNESS REPLACEMENT (CONT).



- (14) Loosen five screws (32) and remove wires 1052 (33), 1435 (34), 1435 (35), 1108 (36) and 1276 (37) from rear of tachometer (38).
- (15) Remove nut (39), lockwasher (40) and three ground straps (41) from rear of tachometer mounting bracket (42).



- (16) Loosen seven screws (43) and remove wires 1435 (44), 1519 (45), 1519 (46), red (47), 1276 (48), blue (49), black (50), 1435 (51), 1052 (52) and white (53) from rear of speedometer (54).

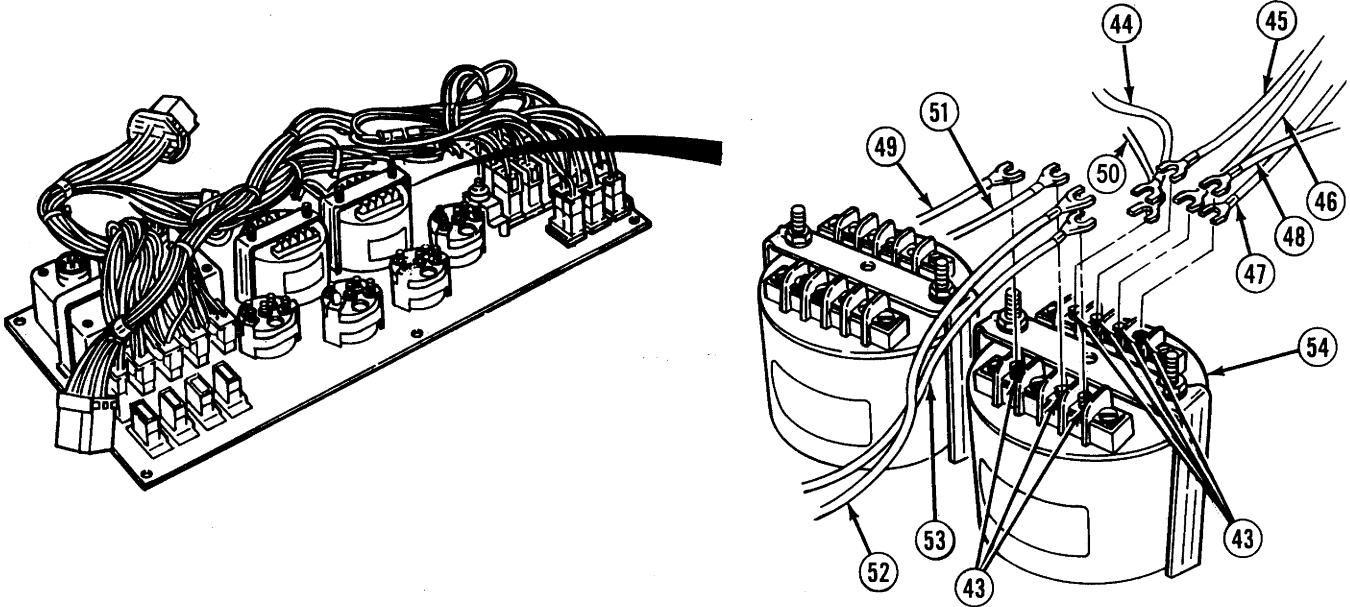


- (17) Disconnect wires 1114 (55), 1120 (56), and 1120 (57) from rear of rectifier (58) and wires 1147 (59), 1032 (60) and 1033 (61) from rear of rectifier (62).
- (18) Disconnect wires 1276 (63) and 1120 (64) from rear of warning buzzer (65).
- (19) Remove screws (66) and wires 1276 (67) and 1033 (68) from rear of warning buzzer (69).
- (20) Remove gage wiring harness (70) from rear of instrument panel (71).

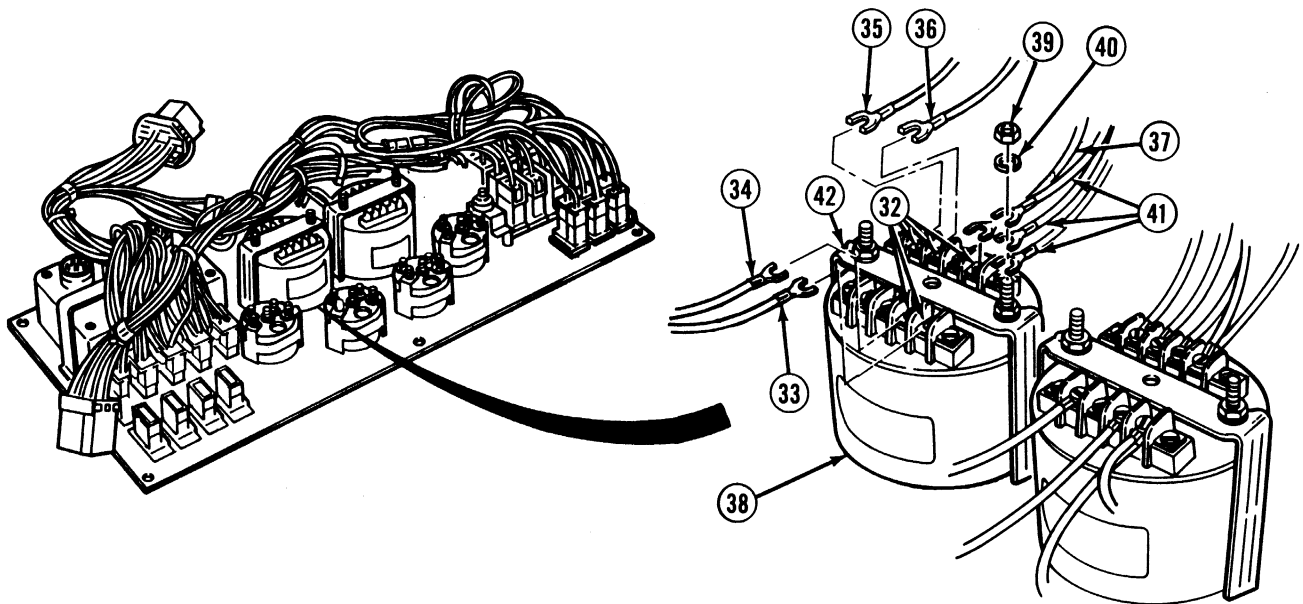
b. Installation.

- (1) Position gage wiring harness (70) on rear of instrument panel (71).
- (2) Install wires 1276 (67), 1033 (68) and screws (66) at rear of warning buzzer (69).
- (3) Connect wires 1276 (63) and 1120 (64) at rear of warning buzzer (65).
- (4) Connect wires 1114 (55), 1120 (56) and 1120 (57) at rear of rectifier (58) and wires 1147 (59), 1032 (60) and 1033 (61) at rear of rectifier (62).

7-14. INSTRUMENT PANEL GAGE WIRING HARNESS REPLACEMENT (CONT).



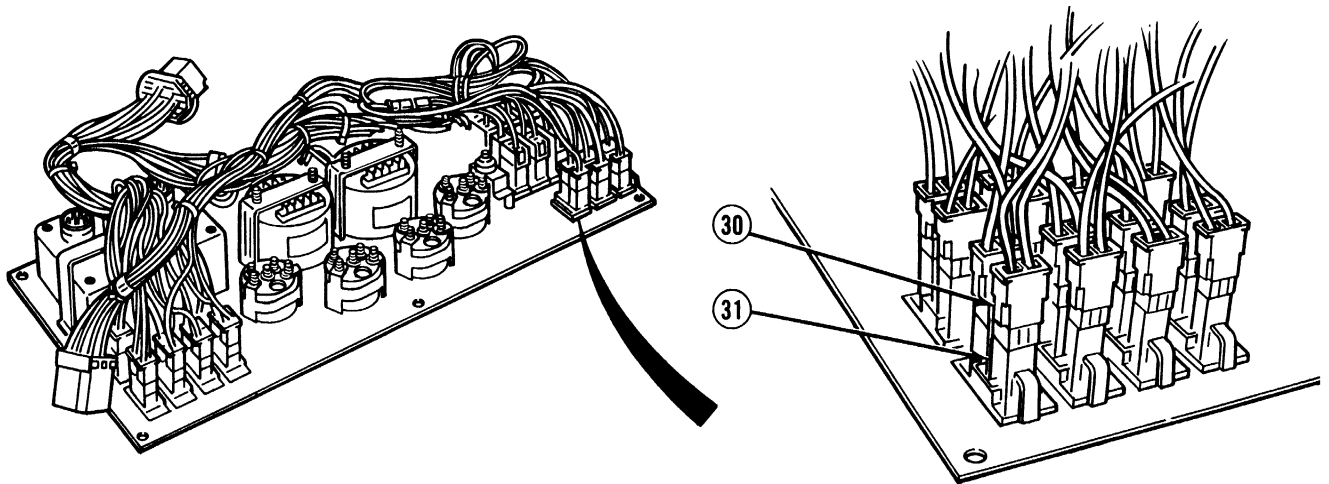
- (5) Install wires 1435 (44), 1519 (45), 1519 (46), red (47), 1276 (48), blue (49), black (50), 1435 (51), 1052 (52) and white (53) and tighten seven screws (43) on rear of speedometer (54).



NOTE

Ground straps do not have numbers.

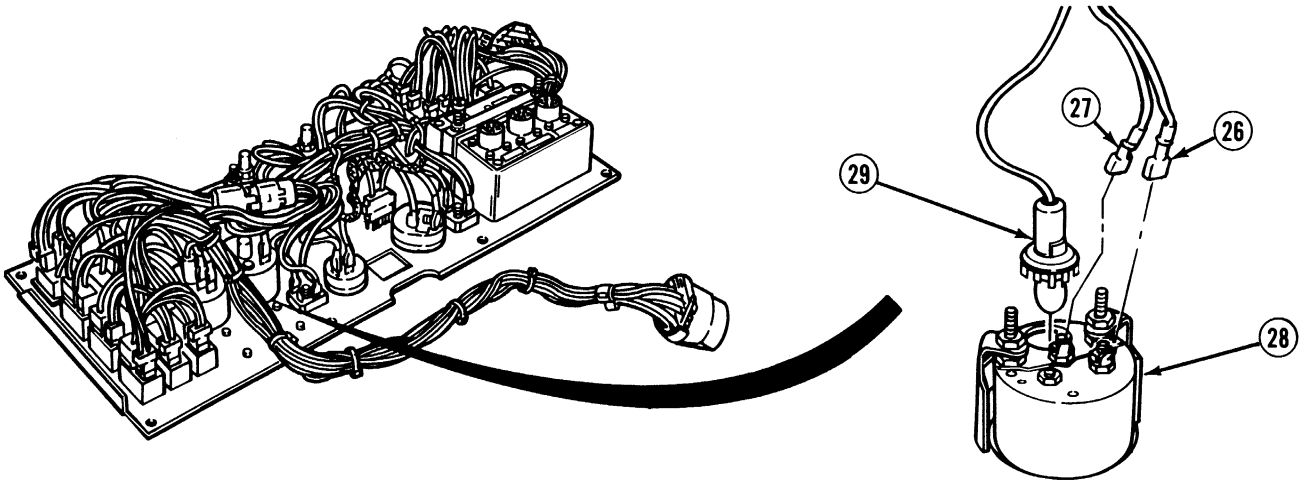
- (6) Install three ground straps (41), lockwasher (40) and nut (39) on rear of tachometer mounting bracket (42).
- (7) Install wires 1052 (33), 1435 (34), 1435 (35), 1108 (36), 1276 (37) and tighten five screws (32) on rear of tachometer (38).



NOTE

All light connectors are installed the same way.

- (8) Connect 19 light connectors (30) on rear of 19 warning light housings (31).

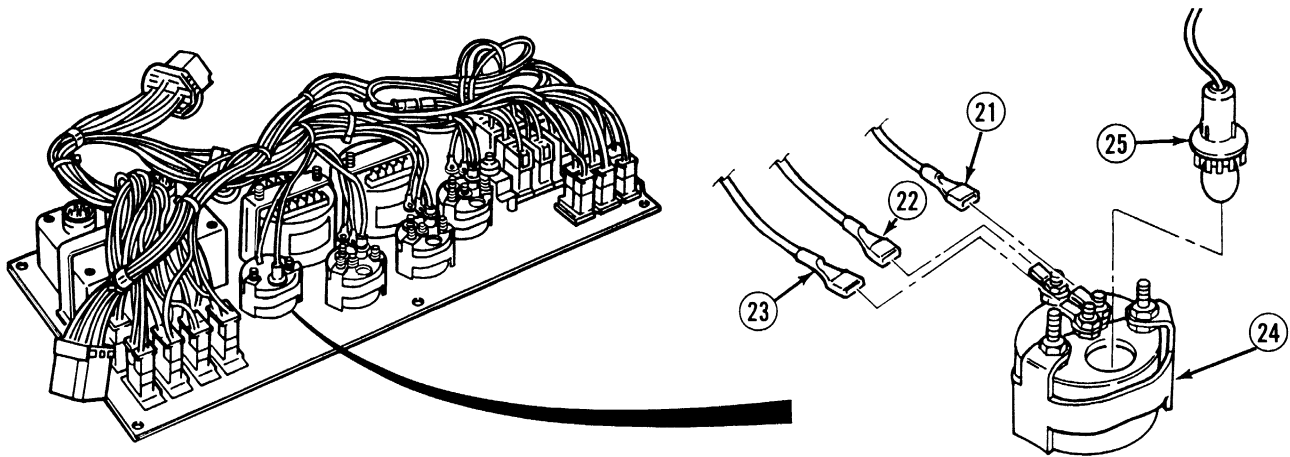


NOTE

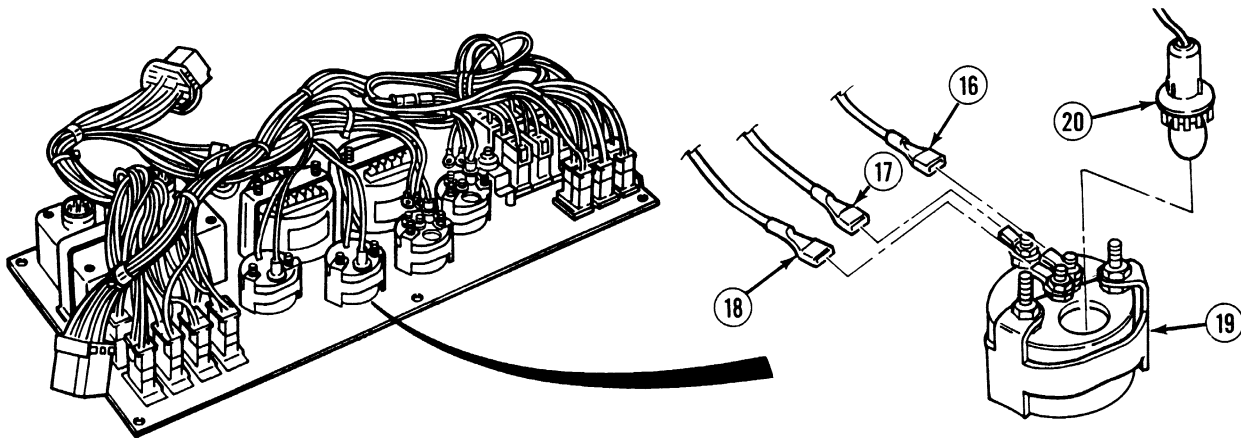
Both battery gages are installed the same way.

- (9) Connect gage light connector 1052 (29) on rear of battery gage (28).
- (10) Install wires 1276 (26) and 1435 (27) on rear of battery gage (28).

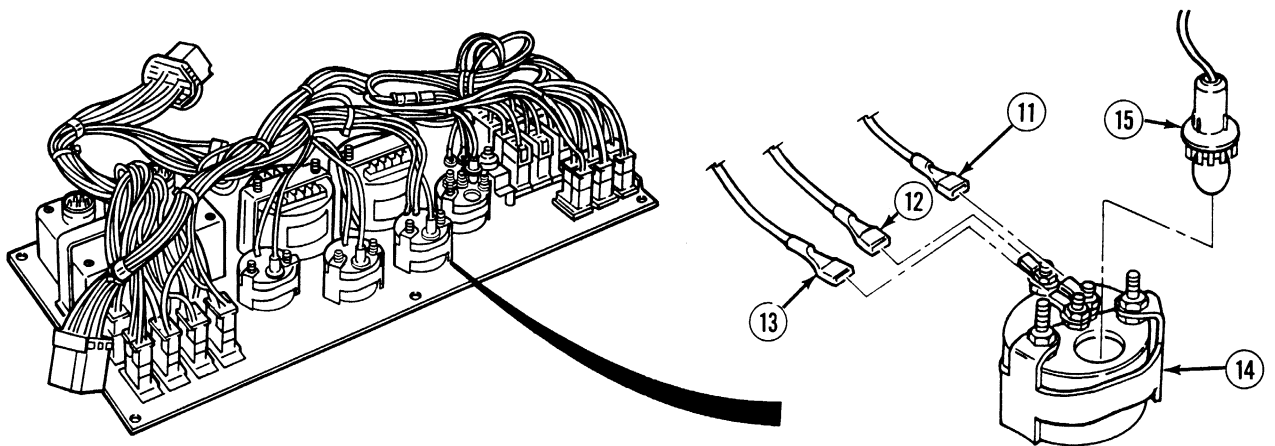
7-14. INSTRUMENT PANEL GAGE WIRING HARNESS REPLACEMENT (CONT.)



- (11) Connect gage light connector 1052 (25) on rear of oil pressure gage (24).
- (12) Install wires 1113 (21), 1435 (22) and 1276 (23) on rear of oil pressure gage (24).

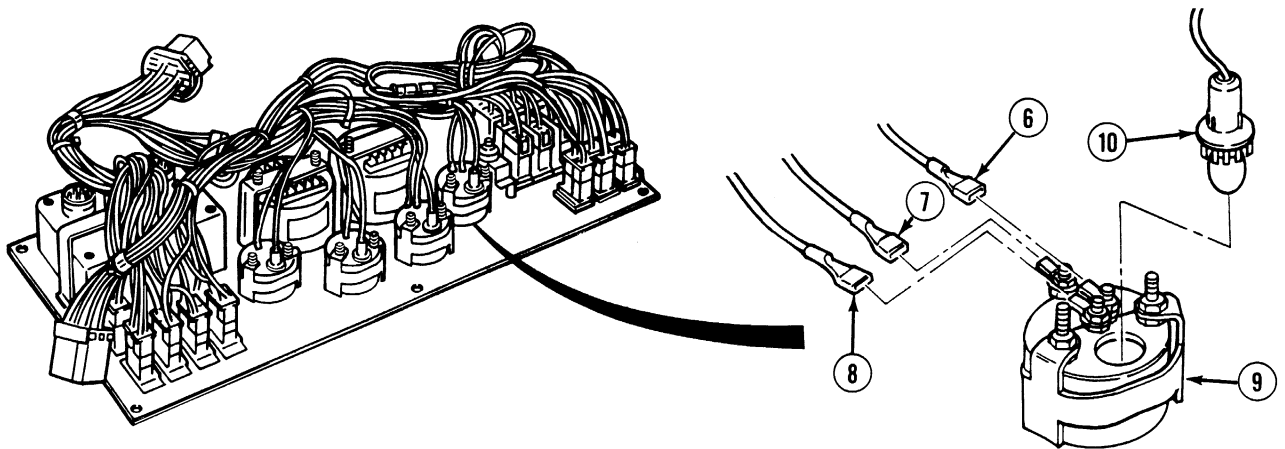


- (13) Connect gage light connector 1052 (20) on rear of water temperature gage (19).
- (14) Install wires 1320 (16), 1435 (17) and 1276 (18) on rear of water temperature gage (19).



(15) Connect gage light connector 1052 (15) on rear of transmission temperature gage (14).

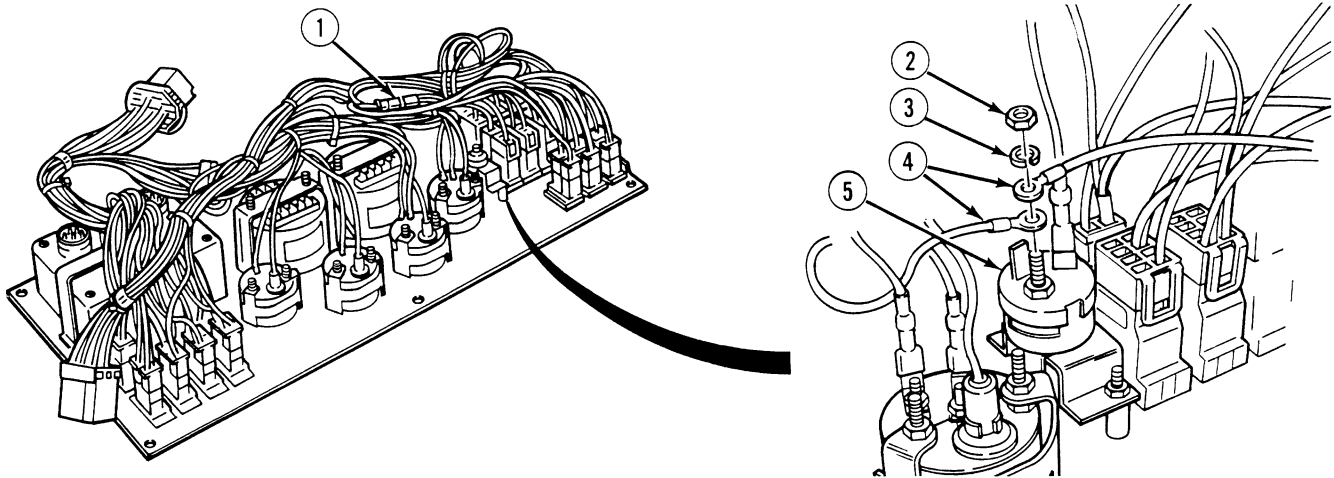
(16) Install wires 1449 (11), 1435 (12) and 1276 (13) on rear of transmission temperature gage (14).



(17) Connect gage light connector 1052 (10) on rear of fuel gage (9).

(18) Install wires 1318 (6), 1435 (7) and 1276 (8) on rear of fuel gage (9).

7-14. INSTRUMENT PANEL GAGE WIRING HARNESS REPLACEMENT (CONT).



- (19) Install two wires 1052 (4), lockwasher (3) and nut (2) on rear of thumbwheel rheostat switch (5).
- (20) Connect MC53 connector (1).

c. Follow-On Maintenance:

- Install odometer (KM), (Para 7-18).
- Install instrument panel, (Para 7-13).
- Check gage operation, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-15. INSTRUMENT PANEL SWITCH WIRING HARNESS REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

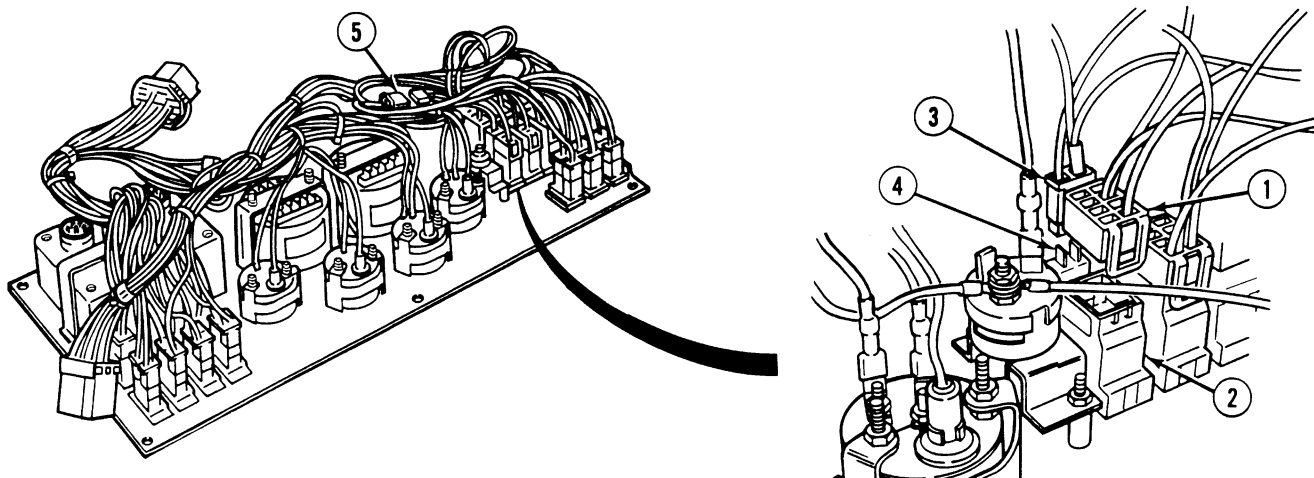
Materials/Parts

Cable Tie (Item 26, Appendix C)
Tag, Identification (Item 88, Appendix C)
Lockwasher (Item 212, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Instrument panel removed, (Para 7-13)

a. Removal.

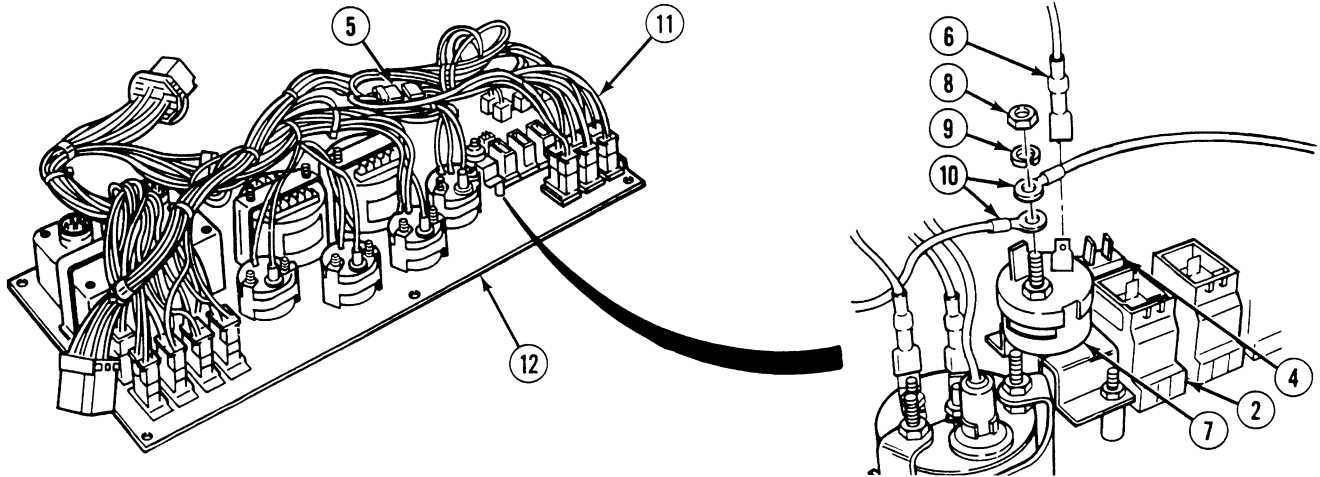


NOTE

- Tag and mark all terminals and connectors prior to removal.
- Remove cable ties as required.
- Connectors are removed by gently prying on lock tab.
- All 10 rocker switch electrical connectors are removed in the same way.
- All 10 light bulb socket electrical connectors are removed in the same way.
- Ensure light bulbs and light bulb sockets stay with each rocker switch.

- (1) Disconnect connector (1) from rear of rocker switch (2).
- (2) Disconnect connector (3) from light bulb socket (4).
- (3) Disconnect MC53 connector (5).

7-15. INSTRUMENT PANEL SWITCH WIRING HARNESS REPLACEMENT (CONT).



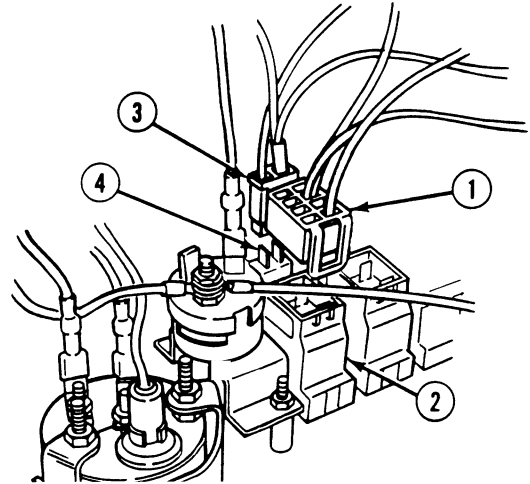
- (4) Disconnect wire 1276 (6) from thumbwheel rheostat (7).
- (5) Remove nut (8), lockwasher (9) and two wires 1052 (10) from thumbwheel rheostat (7). Discard lockwasher.
- (6) Remove switch wiring harness (11) from instrument panel (12).

b. Installation.

NOTE

- Install cable ties as required.
 - All 10 rocker switch connectors are installed in the same way.
 - All 10 light bulb socket connectors are installed in the same way.
- (1) Position switch wiring harness (11) in instrument panel (12).
 - (2) Install two wires 1052 (10) on thumbwheel rheostat (7) with lockwasher (9) and nut (8).
 - (3) Connect wire 1276 (6) on thumbwheel rheostat (7).
 - (4) Connect MC53 connector (5).

- (5) Connect connector (3) to rear of light bulb socket (4).
- (6) Connect connector (1) to rear of rocker switch (2).



c. Follow-On Maintenance:

- Install instrument panel, (Para 7-13).
- Check operation of instrument panel, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-16. CIRCUIT BREAKER REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

- Tool Kit, Electrical (Item 73, Appendix G)
- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Torque Wrench (0 to 60 N·m) (Item 98, Appendix G)

Materials/Parts

- Tags, Identification (Item 88, Appendix C)

Materials/Parts - Continued

- Lockwasher (Item 188, Appendix F)

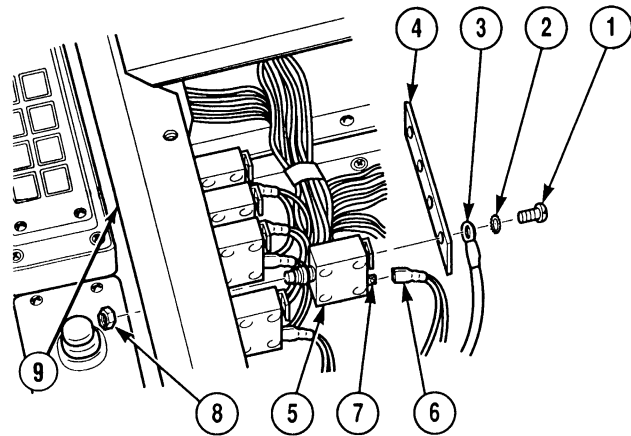
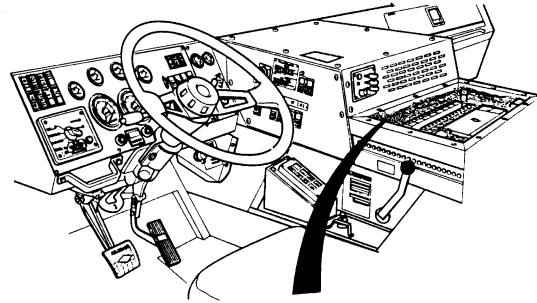
Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)
- Batteries disconnected, (Para 7-87)
- Electronic Control Box (ECB) covers removed, (Para 17-22)

a. Removal.

NOTE

- All circuit breakers are removed the same way. Work light circuit breaker shown.
- Where bus bar is used, bus bar must be removed from rear of all circuit breakers that are attached to bus bar.
- Refer to Figure 7-1 Circuit Breaker Wire Chart for location of circuit breakers.
- Tag and mark wires prior to removal.



- (1) Remove screw (1), lockwasher (2), wire 1176 (3), and bus bar (4) from rear of circuit breaker CB4 (5). Discard lockwasher.
- (2) Disconnect wire 1292/1040 (6) from terminal (7).
- (3) Remove nut (8) from face of circuit breaker CB4 (5).
- (4) Remove circuit breaker CB4 (5) from ECB (9).

Table 7-1. Circuit Breaker Wiring Positions

Circuit Breaker	Connected to Top Connection	Connected to Bottom Connection
CB1	Bus Bar	1927, 1052
CB2	Bus Bar	1835
CB3	Bus Bar	1413
CB4	1175, Bus Bar	1040, 1292
CB5	1079, Bus Bar	1084
CB6	Bus Bar	1009
CB7	Bus Bar	1712
CB8	Bus Bar	1534
CB9	1074, Bus Bar	1919
CB10	1872	1872
CB11	1711, 1871	225
CB12	1867,1866	203
CB13	Bus Bar	439
CB14	1875, Bus Bar	223A
CB15	Bus Bar	1082, 1534, 1340, 1487
CB16	Bus Bar	1026, 1093, 1888
CB17	Bus Bar	1880
CB18	Bus Bar	1723, 1755
CB19	Bus Bar, 1280	1717
CB20	1431	1676, 1665C, 1026, 1431
CB21	1280, 1280	1739
CB22	241	241
CB23	240	240
CB25	1958	OPEN
CB26	1959	OPEN

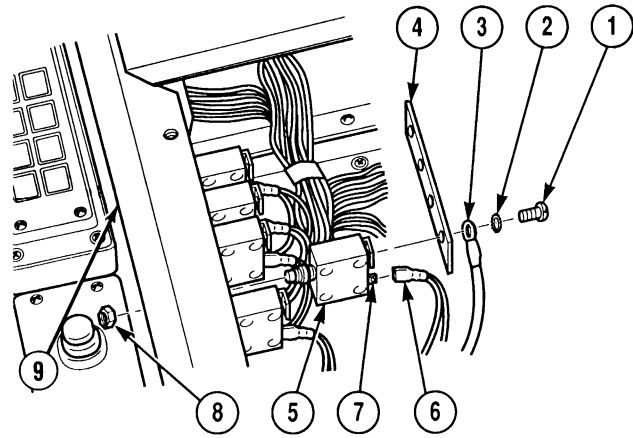
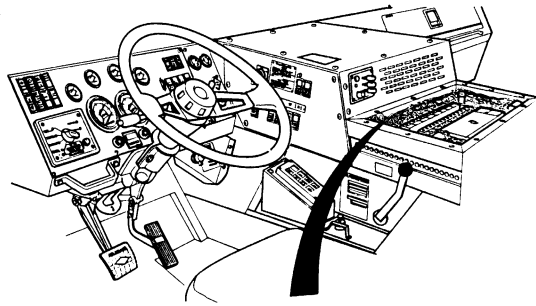
7-16. CIRCUIT BREAKER REPLACEMENT (CONT).

b. Installation.

NOTE

Where bus bar is used, bus bar must be installed on rear of all circuit breakers that are to be attached to bus bar.

- (1) Position circuit breaker CB4 (5) in ECB (9).
- (2) Position nut (8) on face of circuit breaker CB4 (5). Tighten nut to 16 to 24 lb-in (1.3 to 2 N·m).
- (3) Connect wire 1292/1040 (6) to terminal (7) on rear of circuit breaker CB4 (5).
- (4) Install bus bar (4) and wire 1176 (3) lockwasher (2) and screw (1) on rear of circuit breaker CB4 (5).



c. Follow-On Maintenance:

- Install Electronic Control Box (ECB) cover, (Para 17-22).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-17. SPEEDOMETER REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Materials/Parts

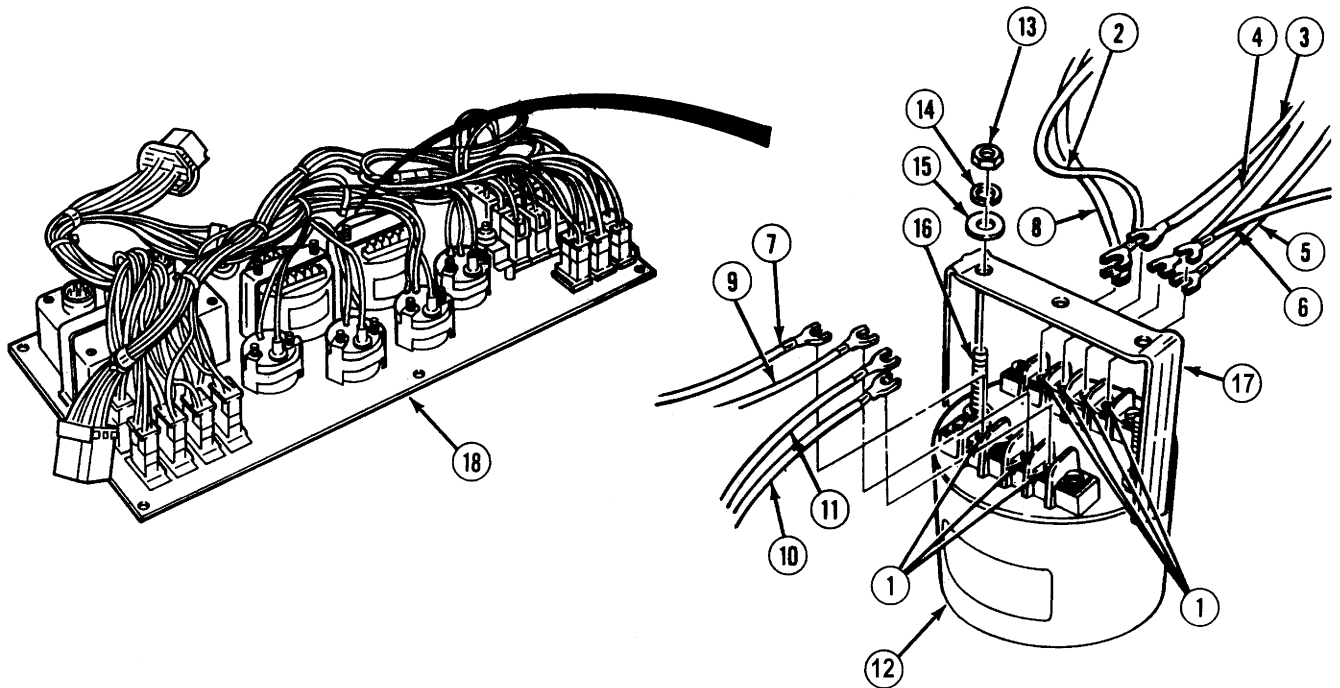
Tag, Identification (Item 88, Appendix C)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)

Wheels chocked, (TM 9-2320-364-10)

Instrument panel removed, (Para 7-13)

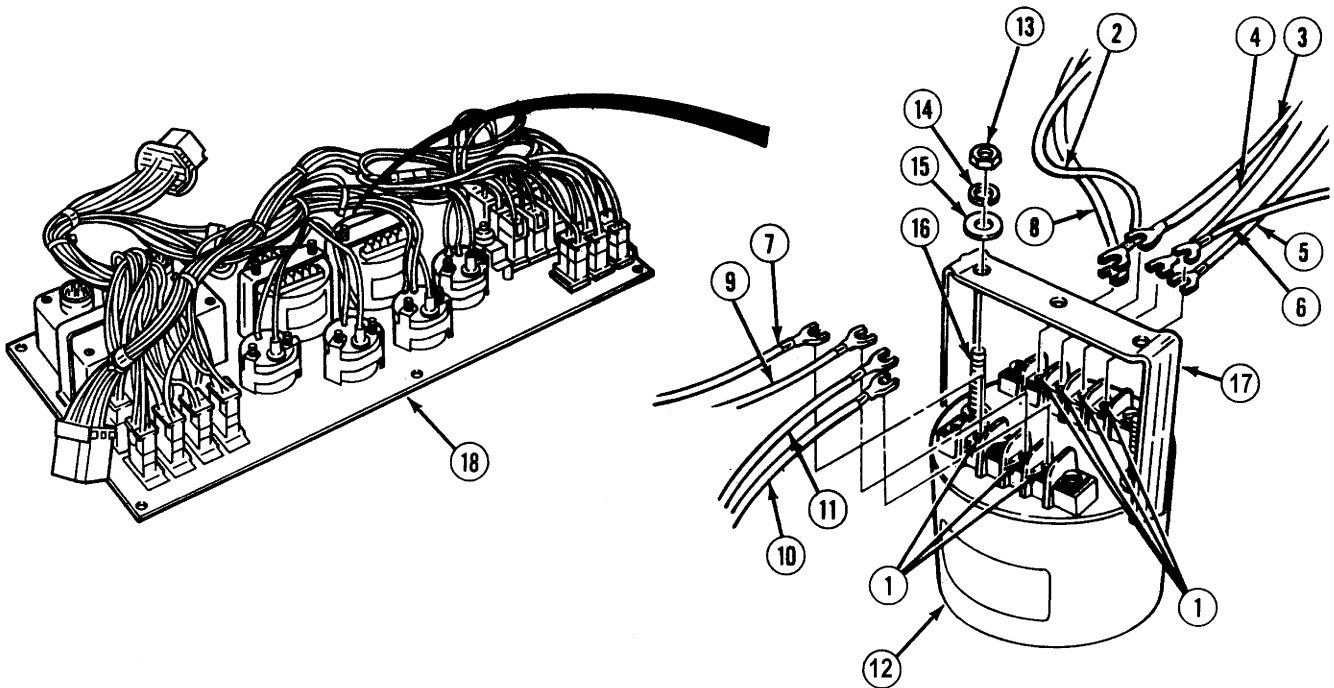
a. Removal.**NOTE**

Tag and mark wires prior to removal.

- (1) Loosen seven screws (1) and remove wires 1435 (2), 1519 (3), 1519 (4), red (5), 1276 (6), blue (7), black (8), 1435 (9), 1052 (10) and white (11) from rear of speedometer (12).
- (2) Remove two nuts (13), lockwashers (14) and washers (15) from two speedometer mounting bracket screws (16).
- (3) Remove speedometer mounting bracket (17) from rear of speedometer (12).
- (4) Remove speedometer (12) from instrument panel (18).

7-17. SPEEDOMETER REPLACEMENT (CONT).

b. Installation.



NOTE

- If new instrument panel is being installed, make sure paint is cleaned off between tachometer and speedometer on back of new instrument panel to allow for grounding.
- Ensure speedometer face is aligned properly with dash during installation.

- (1) Install speedometer (12) in instrument panel (18).
- (2) Install speedometer mounting bracket (17) on rear of speedometer (12).
- (3) Install two washers (15), lockwashers (14) and nuts (13) on two speedometer mounting bracket screws (16).
- (4) Install wires 1435 (2), 1519 (3), 1519 (4), red (5), 1276 (6), blue (7), black (8), 1435 (9), 1052 (10) and white (11) with seven screws (1) on rear of speedometer (12).

c. Follow-On Maintenance:

- Install instrument panel, (Para 7-13).
- Start engine, (TM 9-2320-364-10).
- Check operation of speedometer, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-18. ODOMETER (KM) REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Instrument panel removed, (Para 7-13)

a. Removal.

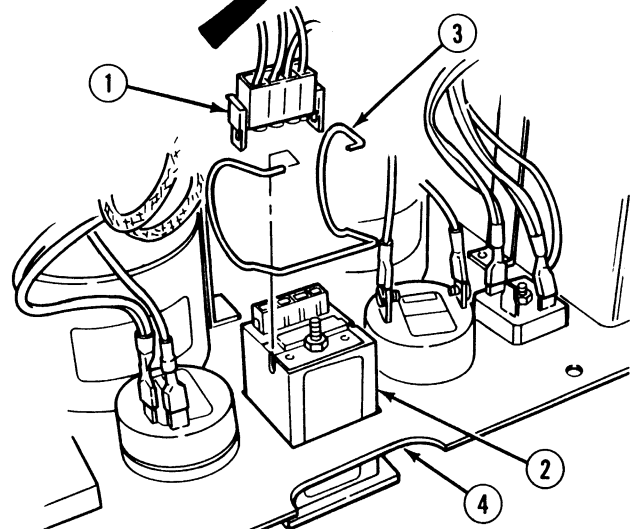
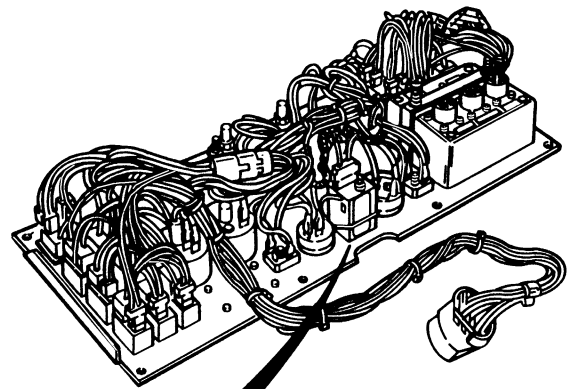
- (1) Disconnect connector (1) from rear of odometer (KM) (2).
- (2) Remove mounting spring clip (3) from rear of odometer (KM) (2).
- (3) Remove odometer (KM) (2) from instrument panel (4).

b. Installation.

- (1) Install odometer (KM) (2) into instrument panel (4).
- (2) Install mounting spring clip (3) on rear of odometer (KM) (2) and snap spring clip in place.
- (3) Connect connector (1) on rear of odometer (KM) (2).

c. Follow-On Maintenance:

- Install instrument panel, (Para 7-13).
- Remove wheel chocks, (TM 9-2320-364-10).



END OF TASK

7-19. RECTIFIER REPLACEMENT.

This task covers:

- a. Dash Panel Rectifier
- b. Heater Panel Rectifier
- c. Electronic Control Box (ECB) Rectifier
- d. Electronic Control Box (ECB) Side Panel Rectifier
- e. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Materials/Parts

Tags, Identification (Item 88, Appendix C)
 Locknut (3) (Item 97, Appendix F)
 Lockwasher (3) (Item 163, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Batteries disconnected, (Para 7-87)
 Instrument panel removed, (Para 7-13)
 Heater panel removed, (Para 17-4) (heater rectifier and side panel rectifier only)
 Electronic Control Box (ECB) cover removed, (Para 17-22) (ECB rectifiers only)

a. Dash Panel Rectifier Replacement.

NOTE

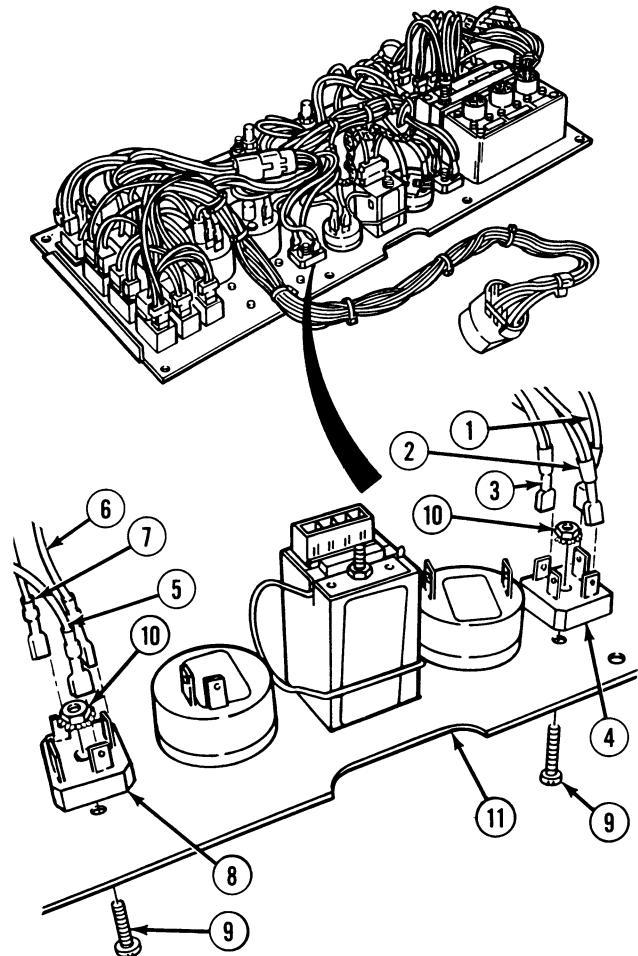
Tag and mark wires prior to removal.

(1) Removal.

- (a) Remove wires 1033 (1), 1032 (2) and 1147 (3) from rectifier (4).
- (b) Remove wires 1120 (5) and (6), and wire 1114 (7) from rectifier (8).
- (c) Remove two screws (9), locknuts (10) and rectifiers (4) and (8) from instrument panel (11). Discard locknuts.

(2) Installation.

- (a) Install rectifiers (4) and (8) on instrument panel (11) with two screws (9) and locknuts (10).
- (b) Install wires 1120 (5) and (6), and wire 1114 (7) on rectifier (8).
- (c) Install wires 1033 (1), 1032 (2) and 1147 (3) on rectifier (4).



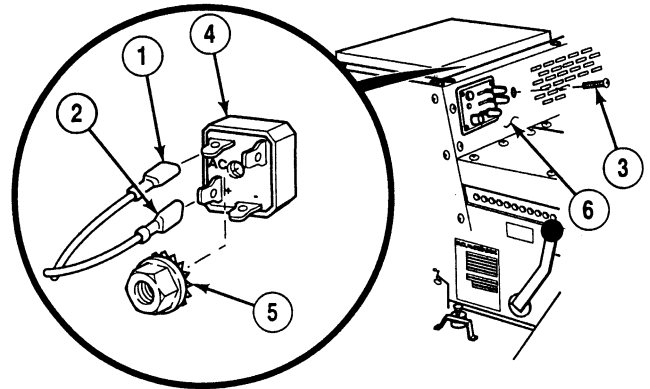
b. Heater Panel Rectifier Replacement.

(1) *Removal.*

- (a) Remove wire 1082 (1) and wire 1082 (2) from rectifier (4).
- (b) Remove wire 1082 (1) and wire 1082 rectifier (4) from heater panel (6). Discard locknut.

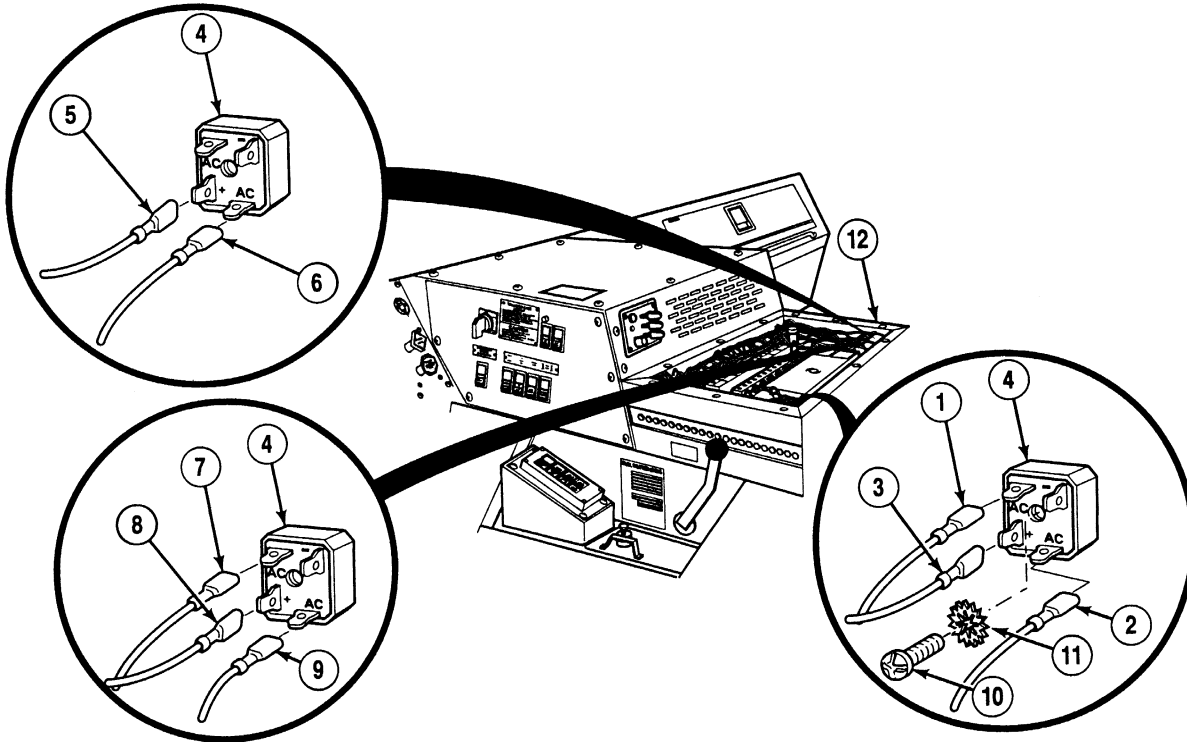
(2) *Installation.*

- (a) Install rectifier (4) on heater control panel (6) with screw (3) and locknut (5).
- (b) Install wire 1082 (1) and wire 1082 (2) on rectifier (4).



7-19. RECTIFIER REPLACEMENT (CONT).

c. Electronic Control Box (ECB) Rectifiers.



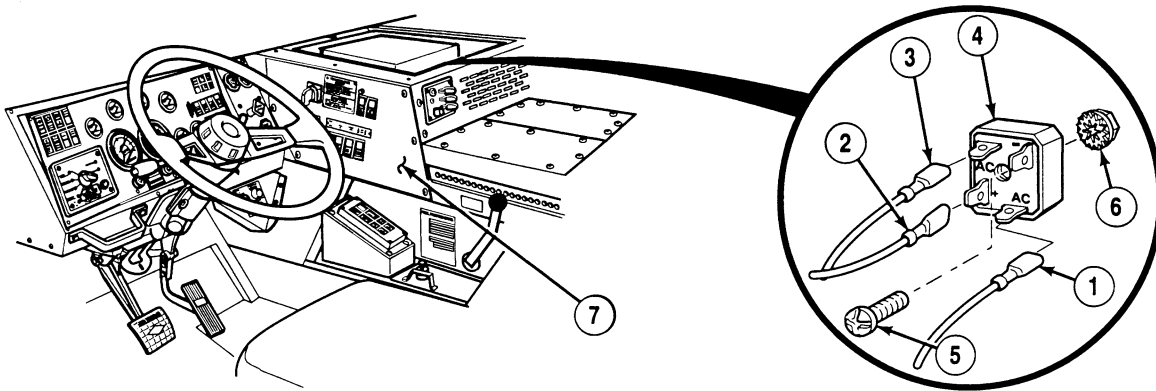
(1) *Removal.*

- (a) Remove wire 1435 (1), wire 1435 (2) and wire 1435 (3) from rectifier (4).
- (b) Remove wire 1885 (5) and wire 1884 (6) from rectifier (4).
- (c) Remove wire 1534 (7), wire 1538 (8) and wire 1029 (9) from rectifier (4).
- (d) Remove three screws (10), lockwashers (11) and rectifiers (4) from ECB box (12). Discard lockwashers.

(2) *Installation.*

- (a) Install three rectifiers (4) on ECB box (12) with screws (10) and lockwashers (11).
- (b) Install wire 1534 (7), wire 1538 (8) and wire 1029 (9) on rectifier (4).
- (c) Install wire 1885 (5) and wire 1884 (6) on rectifier (4).
- (d) Install wire 1435 (1), wire 1435 (2) and wire 1435 (3) on rectifier (4).

d. Electronic Control Box (ECB) Side Panel Rectifier Replacement.



(1) Removal.

- (a) Remove wire 1744-1724 (1), wire 1733-1733 (2) and wire 1734 (3) from rectifier (4).
- (b) Remove screw (5), locknut (6) and rectifier (4) from ECB panel (7). Discard locknut.

(2) Installation.

- (a) Install rectifier (4) on ECB panel (7) with screw (5) and locknut (6).
- (b) Install wire 1734 (3), wire 1733-1733 (2) and wire 1744-1724 (1) on rectifier (4).

e. Follow-On Maintenance:

- Install heater panel, (Para 17-4).
- Install Electronic Control Box (ECB) cover, (Para 17-22).
- Install instrument panel, (Para 7-13).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-20. TACHOMETER REPLACEMENT.

This task covers:

- | | | |
|------------|-----------------|--------------------------|
| a. Removal | b. Installation | c. Follow-On Maintenance |
|------------|-----------------|--------------------------|

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

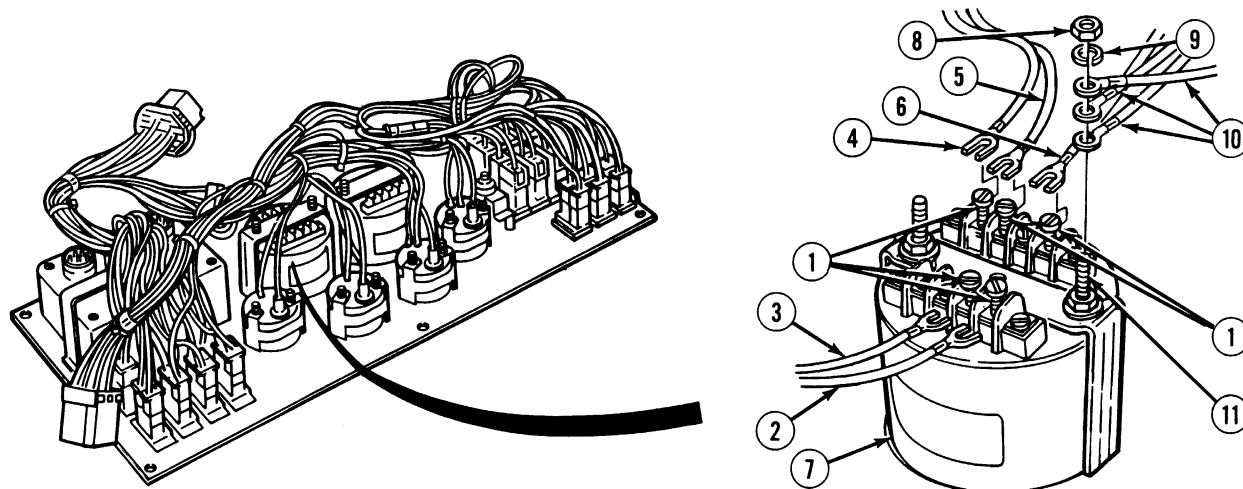
Materials/Parts

Tag, Identification (Item 88, Appendix C)
Lockwasher (Item 194, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Instrument panel removed, (Para 7-13)

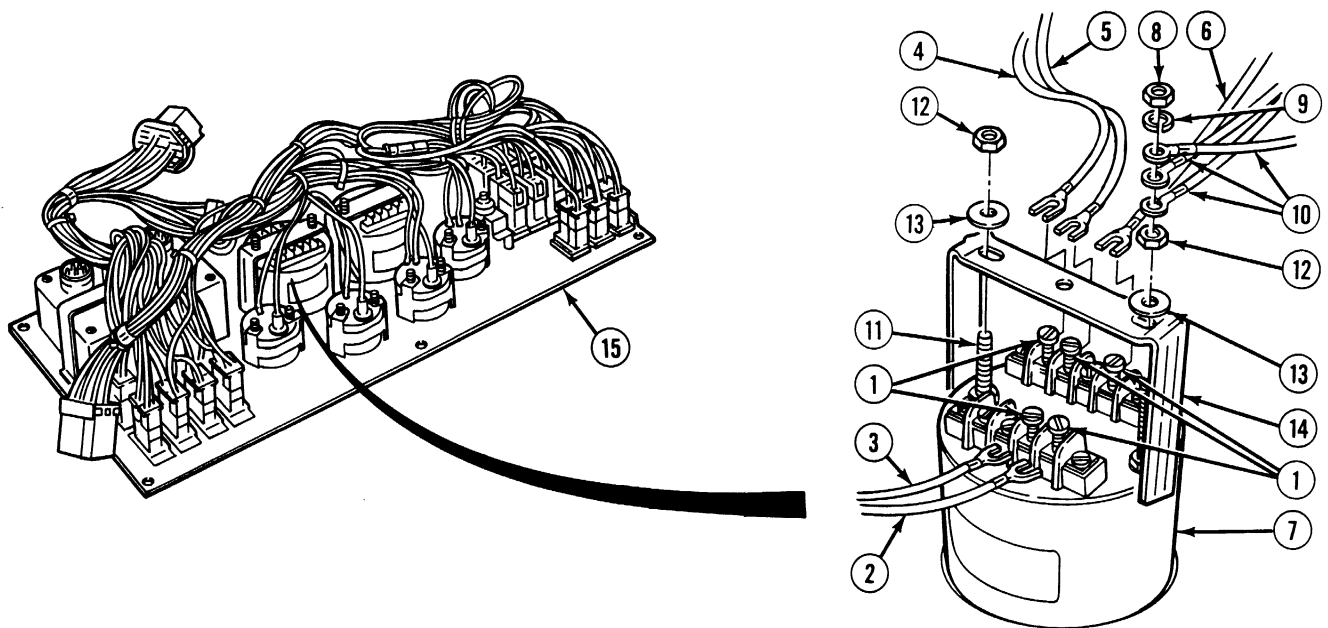
a. Removal.



NOTE

- Tag and mark wires prior to removal.
- Ground wires do not have numbers.

- (1) Loosen five screws (1) and remove wires 1052 (2), 1435 (3), 1435 (4), 1108 (5) and 1276 (6) from screws on rear of tachometer (7).
- (2) Remove nut (8), lockwasher (9) and three ground wires (10) from mounting bracket screw (11).



- (3) Remove two nuts (12) and washers (13) from two mounting bracket screws (11).
- (4) Remove mounting bracket (14) from rear of tachometer (7).
- (5) Remove tachometer (7) from instrument panel (15).

b. Installation.

NOTE

- Ensure face of gage is aligned properly with dash during installation.
- If new instrument panel is being installed, ensure paint is cleaned off between tachometer and speedometer on back of new instrument panel where mounting brackets contact panel to allow for grounding.

- (1) Position tachometer (7) in instrument panel (15).
- (2) Install mounting bracket (14) on rear of tachometer (7).
- (3) Install two washers (13) and nuts (12) on two mounting bracket screws (11).
- (4) Install three ground wires (10), lockwasher (9) and nut (8) on mounting bracket screw (11).
- (5) Install wires 1052 (2), 1435 (3), 1435 (4), 1108 (5) and 1276 (6) on five screws (1).

c. Follow-On Maintenance:

- Install instrument panel, (Para 7-13).
- Start engine, (TM 9-2320-364-10).
- Check operation, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-21. ELECTRIC GAGE REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

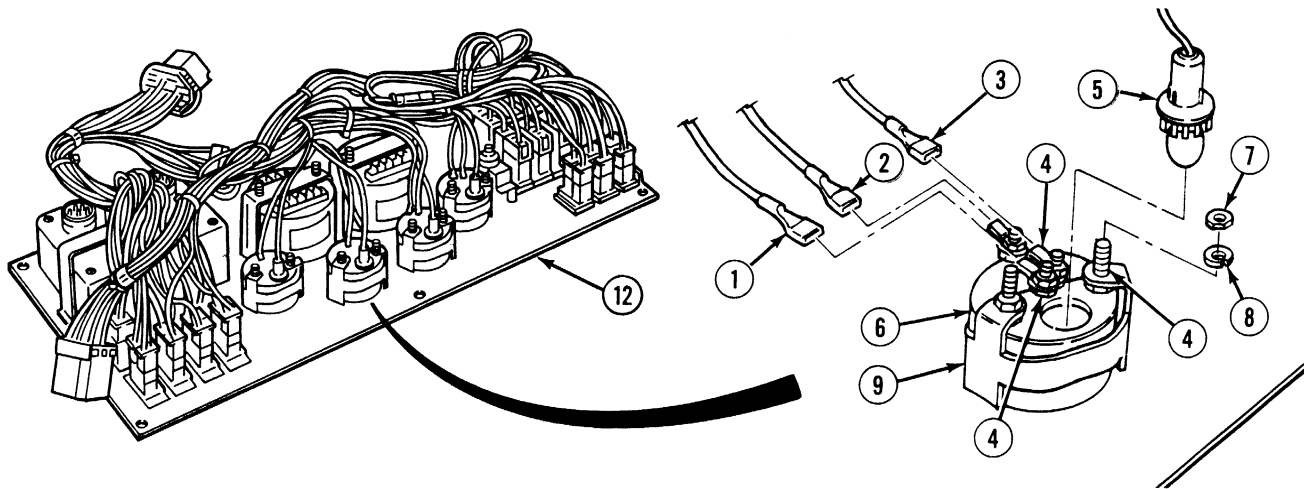
Materials/Parts

Tags, Identification (Item 88, Appendix C)

Equipment Condition

Engine Off, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Instrument panel removed, (Para 7-13)

a. Removal.



NOTE

- Oil pressure gage, water temperature gage, transmission temperature gage and fuel gage are all removed the same way. Water temperature gage shown.
 - Refer to Figure 7-1 for wire locations.
 - Tag and mark wires before removal.
- (1) Remove wires 1320 (1), 1435 (2) and 1276 (3) from terminals (4).
 - (2) Remove light socket 1052 (5) from rear of gage (6).
 - (3) Remove light socket 1052 (5) from rear of gage mounting bracket (9).
 - (4) Remove gage mounting bracket (9) from rear of gage (6).
 - (5) Remove gage (6) from instrument panel (10).

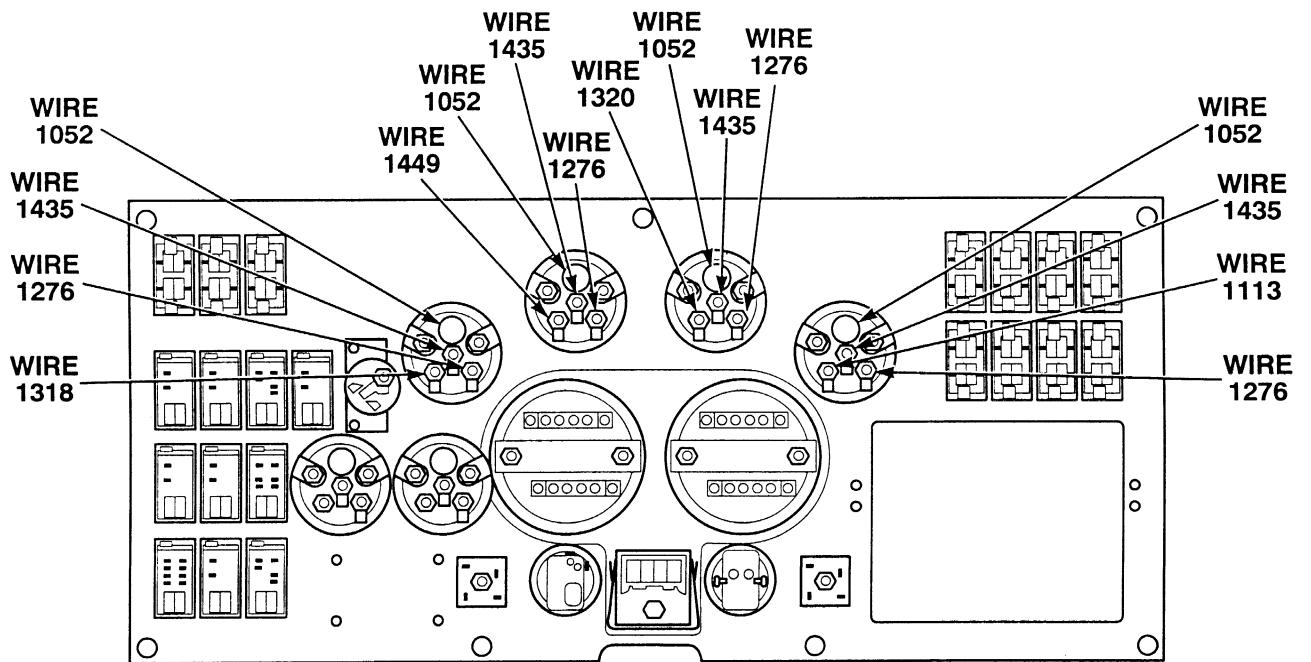
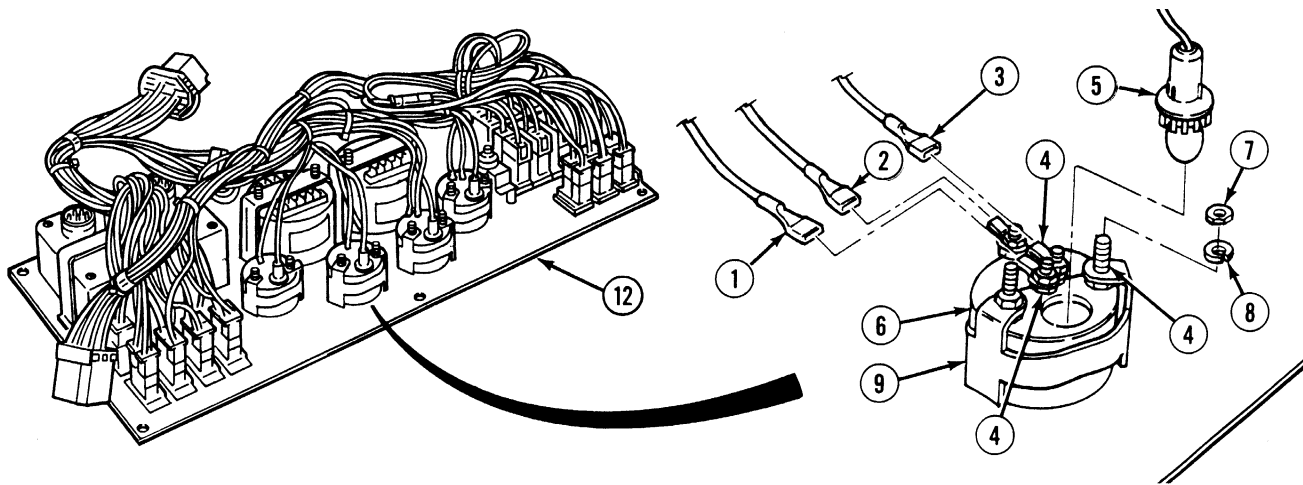


Figure 7-1. Electric Gage Wire Chart

7-21. ELECTRIC GAGE REPLACEMENT (CONT).

b. Installation.



NOTE

- Oil pressure gage, water temperature gage, transmission temperature gage and fuel gage are all installed the same way. Water temperature gage shown.
- Refer to Figure 7-1 for wire locations.
- During installation make sure face of gage is aligned properly.

- (1) Position gage (6) in instrument panel (10).
- (2) Install gage mounting bracket (9) on rear of gage (6).
- (3) Install two lockwashers (8) and nuts (7) on rear of gage mounting bracket (9).
- (4) Install light socket 1052 (5) in rear of gage (6).
- (5) Install wires 1320 (1), 1435 (2) and 1276 (3) on terminals (4).

c. Follow-On Maintenance:

- Install instrument panel, (Para 7-13).
- Start engine, (TM 9-2320-364-10).
- Check operation, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-22. BATTERY GAGE REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

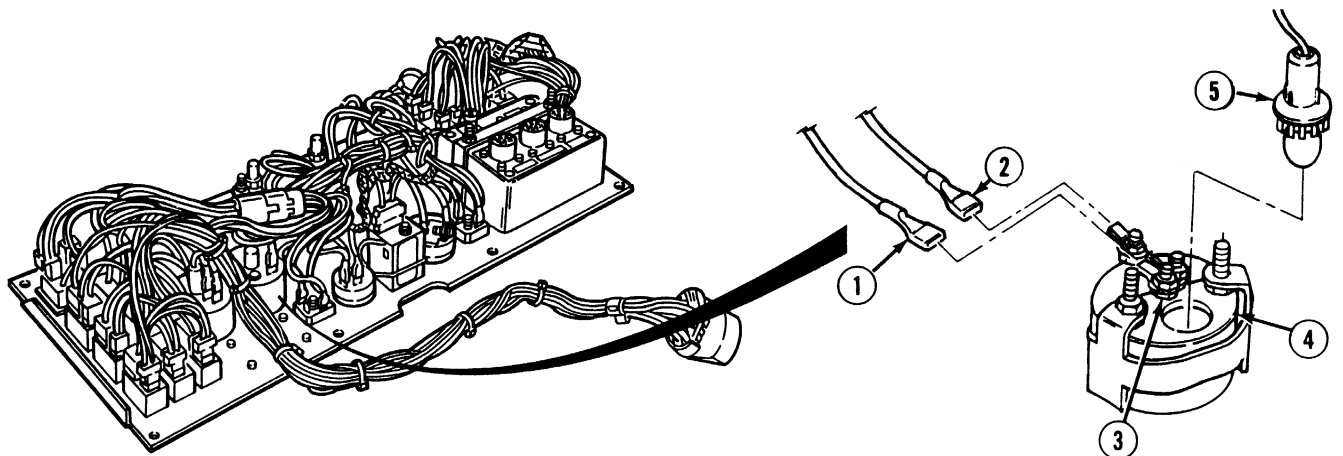
Materials/Parts

Tags, Identification (Item 88, Appendix C)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Instrument panel removed, (Para 7-13)

a. Removal.



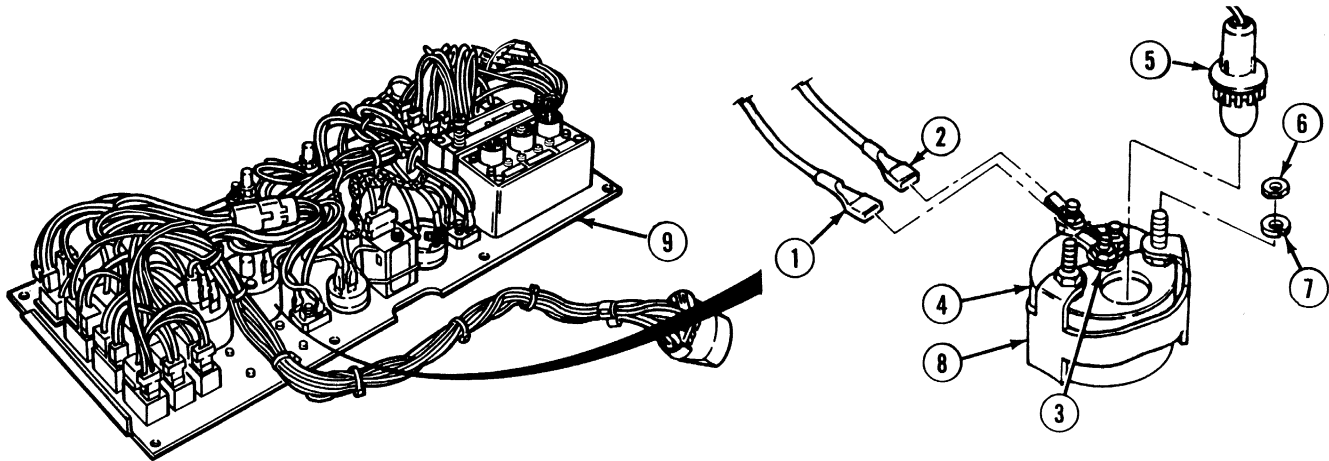
NOTE

- 12 volt gage shown.
- Positive wire is numbered 1276 for 12 volt gage.
- Positive wire is numbered 1702 for 24 volt gage.
- Both battery gages are removed the same way.
- Tag and mark wires prior to removal.

(1) Remove wire 1276 or 1702 (1) and wire 1435 (2) from terminals (3) on rear of battery gage (4).

(2) Remove lamp socket 1052 (5) from rear of battery gage (4).

7-22. BATTERY GAGE REPLACEMENT (CONT).



- (3) Remove two nuts (6) and lockwashers (7) from rear of battery gage mounting bracket (8).
- (4) Remove battery gage mounting bracket (8) from rear of battery gage (4).
- (5) Remove battery gage (4) from instrument panel (9).

b. Installation.

NOTE

- Both battery gages are installed the same way.
- Positive wire is numbered 1276 for 12 volt gage.
- Positive wire is numbered 1702 for 24 volt gage.
- Ensure face of gage is aligned properly with dash during installation.

- (1) Install battery gage (4) in instrument panel (9).
- (2) Install battery gage mounting bracket (8) on rear of battery gage (4).
- (3) Install two lockwashers (7) and nuts (6) on rear of battery gage mounting bracket (8).
- (4) Install lamp socket 1052 (5) on rear of battery gage (4).
- (5) Install wire 1276 or 1702 (1) and wire 1435 (2) on terminals (3) on rear of battery gage (4).

c. Follow-On Maintenance:

- Install instrument panel, (Para 7-13).
- Check operation, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-23. PANEL LIGHT REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

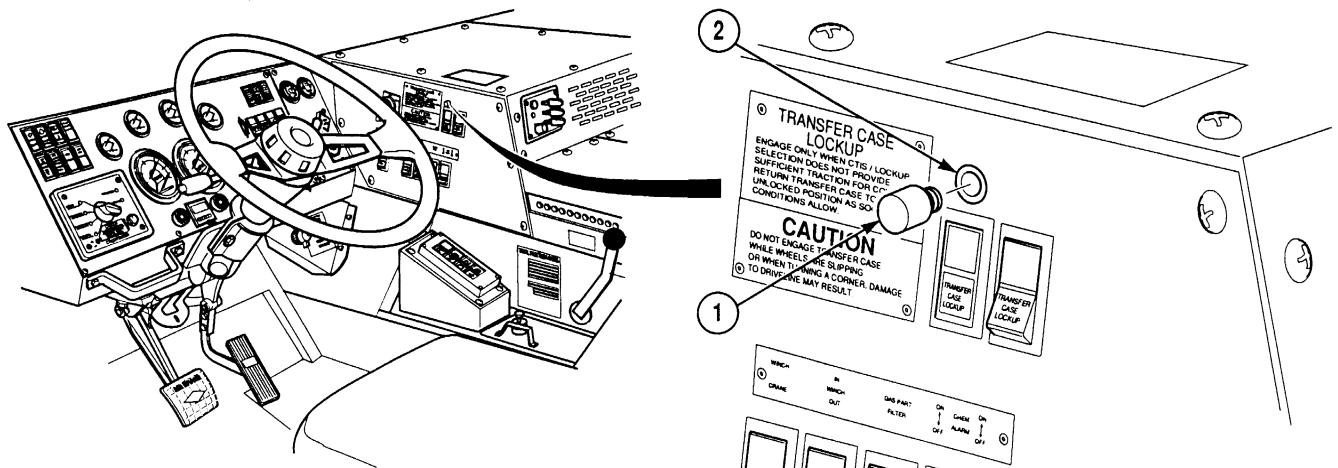
INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-3640-10)
Wheels chocked, (TM 9-2320-364-10)



a. **Removal.** Remove and discard lamp (1) from lamp panel socket (2).

b. **Installation.** Install lamp (1) in lamp panel socket (2).

c. **Follow-On Maintenance:**

- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-24. WARNING LAMP REPLACEMENT.

This task covers:

- | | | |
|------------|-----------------|--------------------------|
| a. Removal | b. Installation | c. Follow-On Maintenance |
|------------|-----------------|--------------------------|

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Materials/Parts

Tags, Identification (Item 88, Appendix C)

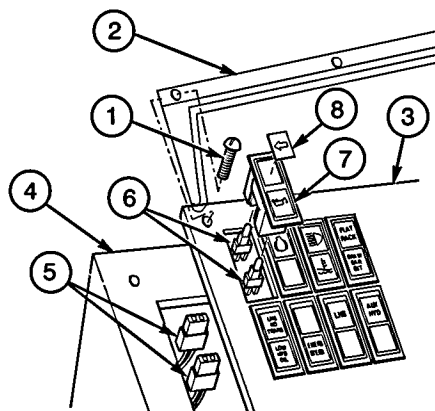
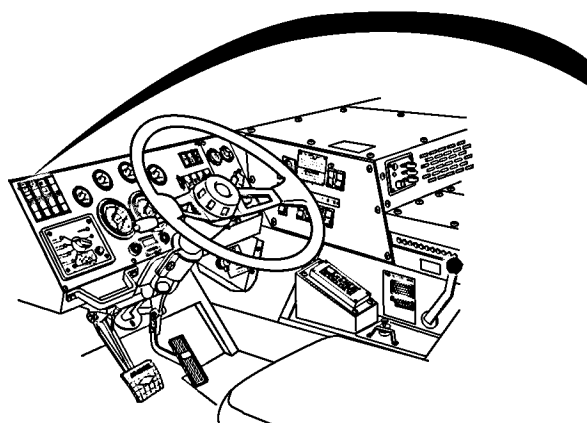
Equipment Condition

Engine OFF, (TM 9-2320-364-10)

Wheels chocked, (TM 9-2320-364-10)

Batteries disconnected, (Para 7-87)

a. Removal.



- (1) Remove ten screws and (1) and sunshield (2) from instrument panel (3).
- (2) Pull top of instrument panel (3) away from dash (4).

CAUTION

Ensure caution is used when removing warning lamp. Failure to comply may cause damage to retaining tabs.

NOTE

- All warning lamps are removed in the same way.
- Tag and mark leads prior to removal.

- (3) Remove two connectors (5) from two lamp sockets (6).
- (4) Remove two lamp sockets (6) from warning lamp (7).

NOTE

Warning lamp is removed by compressing two lock tabs and pushing out through instrument panel.

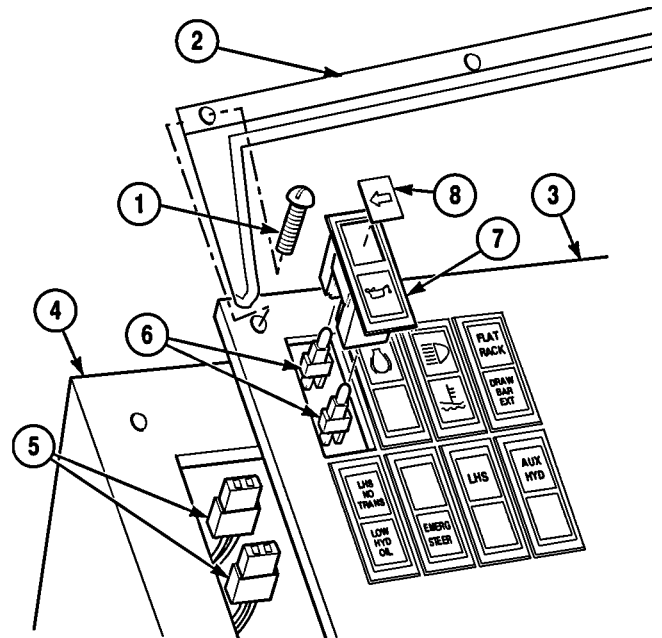
- (5) Remove warning lamp (7) from instrument panel (3).
- (6) Remove applique (8) from warning lamp (7).

b. Installation.



Ensure caution is used when installing warning lamp. Failure to comply may cause damage to retaining tabs.

- (1) Install applique (8) on warning lamp (7).
- (2) Install warning lamp (7) in instrument panel (3).
- (3) Install lamp socket (6) in warning lamp (7).
- (4) Install two connectors (5) on lamp sockets (6).
- (5) Install instrument panel (3) and sunshield (2) on dash (4) with ten screws (1).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check operation of warning lamp, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-25. WARNING BUZZER REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

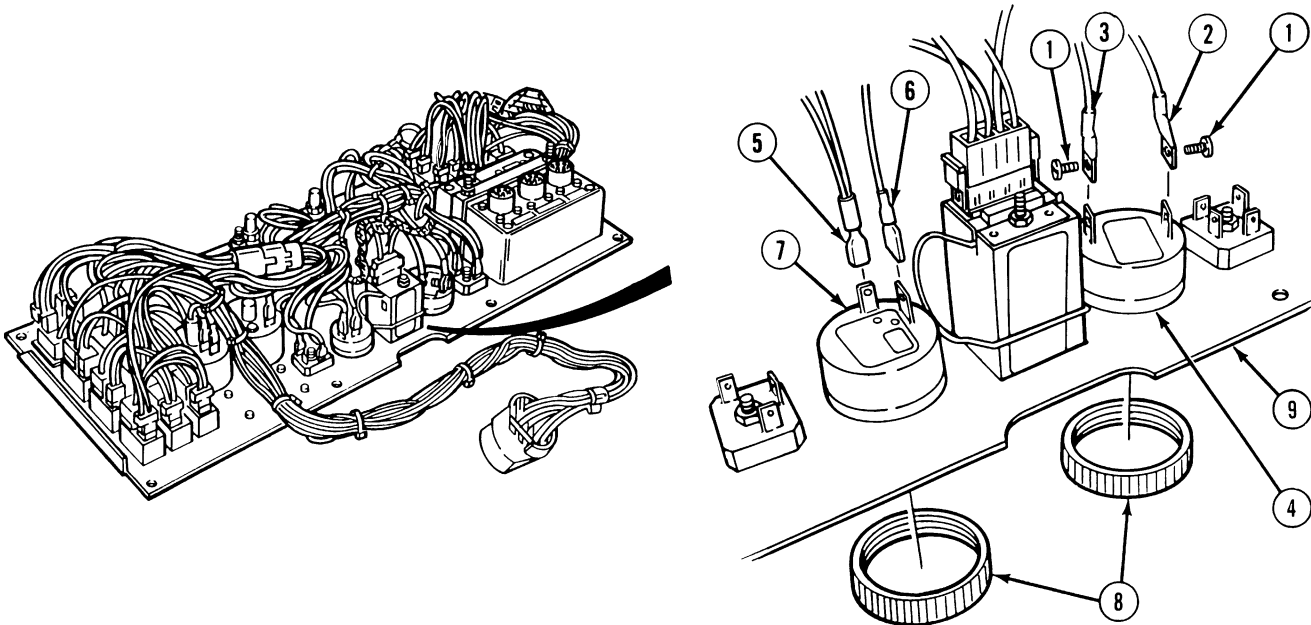
Materials/Parts

Tags, Identification (Item 88, Appendix C)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Instrument panel removed, (Para 7-13)

a. Removal.



NOTE

- Tag and mark all wires and connectors prior to removal.
- For removal of low air warning buzzer only, perform Steps (1) and (3).
- For removal of low oil warning buzzer only, perform Steps (2) and (3).

(1) Remove two screws (1), wire 1033 (2) and wire 1276 (3) from rear of low oil warning buzzer (4).

(2) Disconnect wire 1276 (5) and wire 1120 (6) from rear of low oil warning buzzer (7).

(3) Remove retaining rings (8) and warning buzzers (4) and (7) from instrument panel (9).

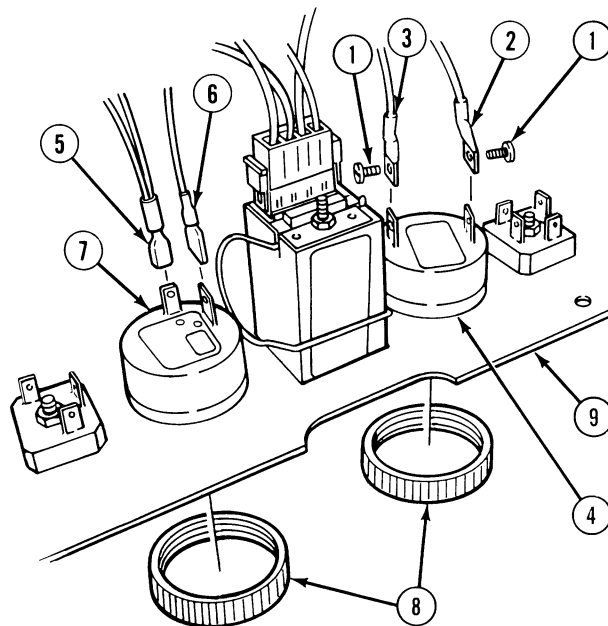
b. Installation.**NOTE**

- For installation of low oil warning buzzer only, perform Steps (1) and (2).
- For installation of low air warning buzzer only, perform Steps (1) and (3).

- (1) Install warning buzzers (4) and (7) in instrument panel (9) with retaining rings (8).
- (2) Connect wire 1033 (5) and wire 1120 (6) on rear of low oil warning buzzer (7).
- (3) Install wire 1033 (2) and wire 1276 (3), and screws (1) on rear of low air warning buzzer (4).

c. Follow-On Maintenance:

- Install instrument panel, (Para 7-13).
- Start engine, (TM 9-2320-364-10).
- Check operation of warning buzzers, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Remove wheel chocks, (TM9-2320-364-10).

**END OF TASK**

7-26. THUMBWHEEL RHEOSTAT SWITCH REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

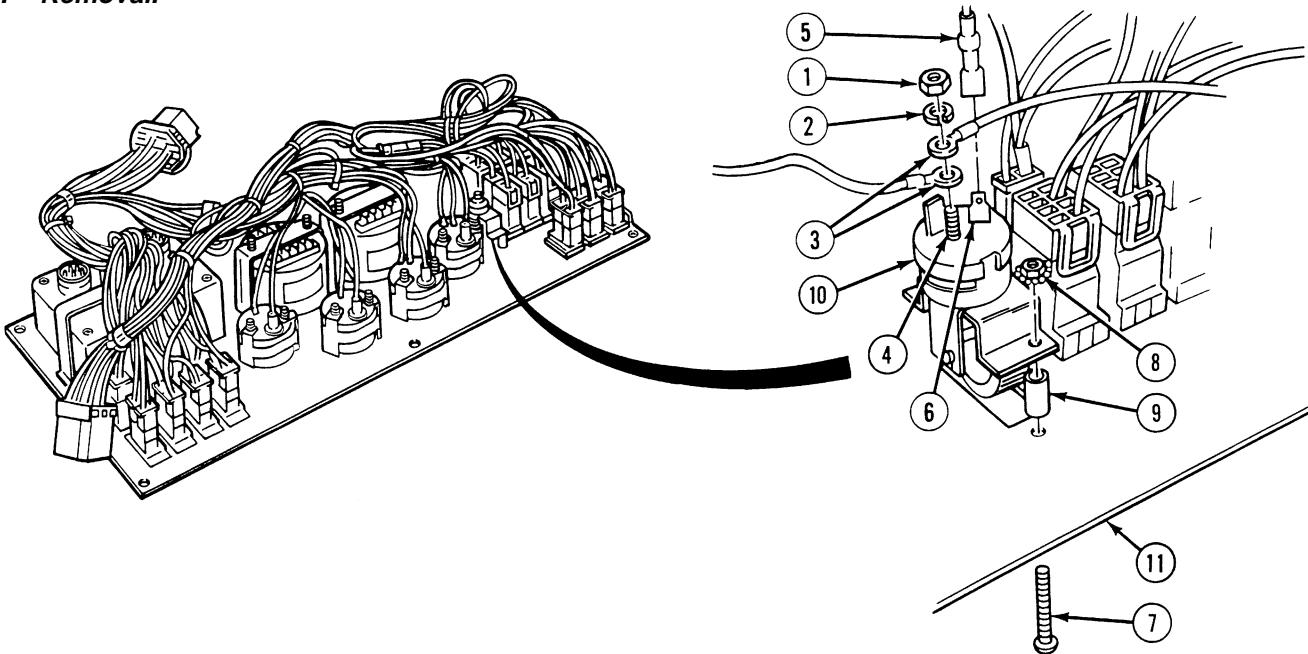
Materials/Parts

Tags, Identification (Item 88, Appendix C)
Locknut (2) (Item 103, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Instrument panel removed, (Para 7-13)

a. Removal.



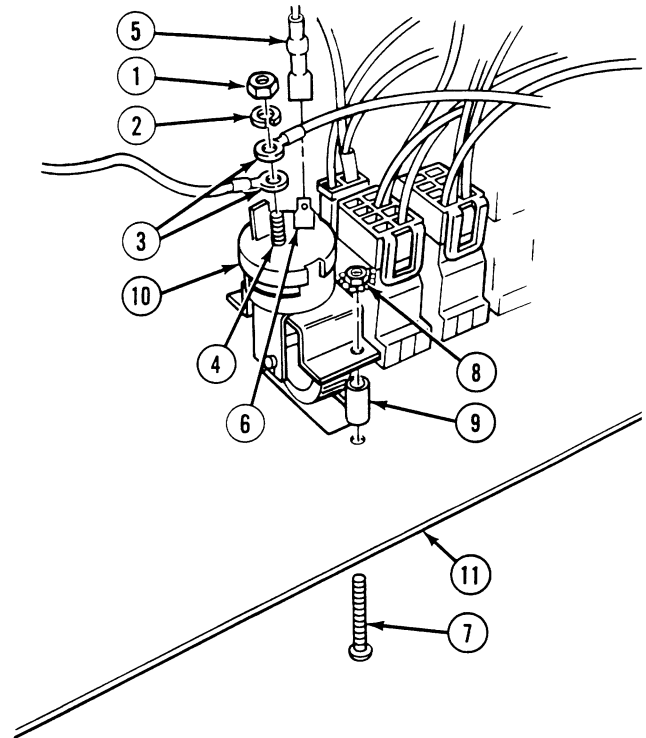
NOTE

Tag and mark wires prior to removal.

- (1) Remove nut (1), lockwasher (2) and two wires 1052 (3) from terminal (4).
- (2) Disconnect wire 1276 (5) from terminal (6).
- (3) Remove two screws (7), locknuts (8), spacers (9) and thumbwheel rheostat switch (10) from instrument panel (11). Discard locknuts.

b. Installation.

- (1) Install thumbwheel rheostat switch (10) in instrument panel (11) with two spacers (9), locknuts (8) and screws (7).
- (2) Connect wire 1276 (5) to terminal (6).
- (3) Install two wires 1052 (3), lockwasher (2) and nut (1) to terminal (4).

**c. Follow-On Maintenance:**

- Install instrument panel, (Para 7-13).
- Start engine, (TM 9-2320-364-10).
- Check operation of switch, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-27. ROCKER SWITCH REPLACEMENT.

This task covers:

- | | | |
|------------|-----------------|--------------------------|
| a. Removal | b. Installation | c. Follow-On Maintenance |
|------------|-----------------|--------------------------|

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

Materials/Parts

Tags, Identification (Item 88, Appendix C)

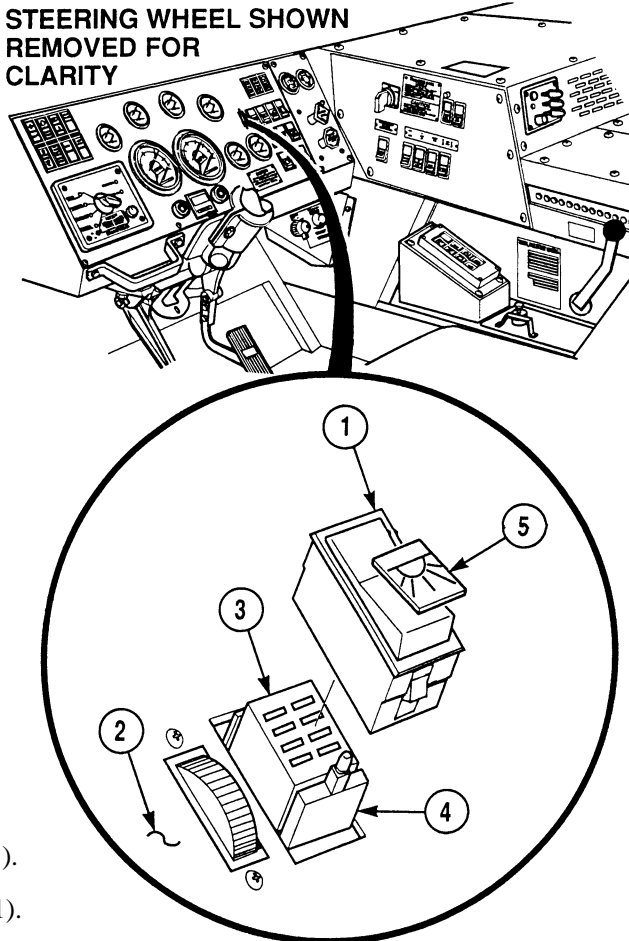
a. Removal.

NOTE

- All 12 rocker switches are removed the same way.
- Tag and mark wires prior to removal.
- Rocker switch is removed by compressing retaining tabs.

- (1) Remove rocker switch (1) from instrument panel (2).
- (2) Disconnect connector (3) from rear of rocker switch (1).
- (3) Disconnect light plug (4) from rear of rocker switch (1).
- (4) Remove applique (5) from rocker switch (1).

STEERING WHEEL SHOWN
REMOVED FOR
CLARITY



b. Installation.

NOTE

All 12 rocker switches are installed the same way.

- (1) Install applique (5) in rocker switch (1).
- (2) Connect light plug (4) in rear of rocker switch (1).
- (3) Connect connector (3) in rear of rocker switch (1).
- (4) Install rocker switch (1) in instrument panel (2).

c. Follow-On Maintenance:

- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-28. DDEC III DIAGNOSTIC REQUEST SWITCH AND BRACKET REPLACEMENT.		
This task covers:		
a. Removal	b. Installation	c. Follow-On Maintenance
INITIAL SETUP		
Tools and Special Tools Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)	Equipment Condition Engine OFF, (TM 9-2320-364-10) Wheels chocked, (TM 9-2320-364-10) Batteries disconnected, (Para 7-87)	
Materials/Parts Locknut (2) (Item 97, Appendix F)		

a. Removal.

- (1) Remove two locknuts (1), screws (2), MC 13 diagnostic connector (3) and bracket (4). Discard locknuts.
- (2) Disconnect connector (5) from rear of diagnostic request switch (6).
- (3) Remove switch (6) from bracket (4).
- (4) Remove applique (7) from switch (6).

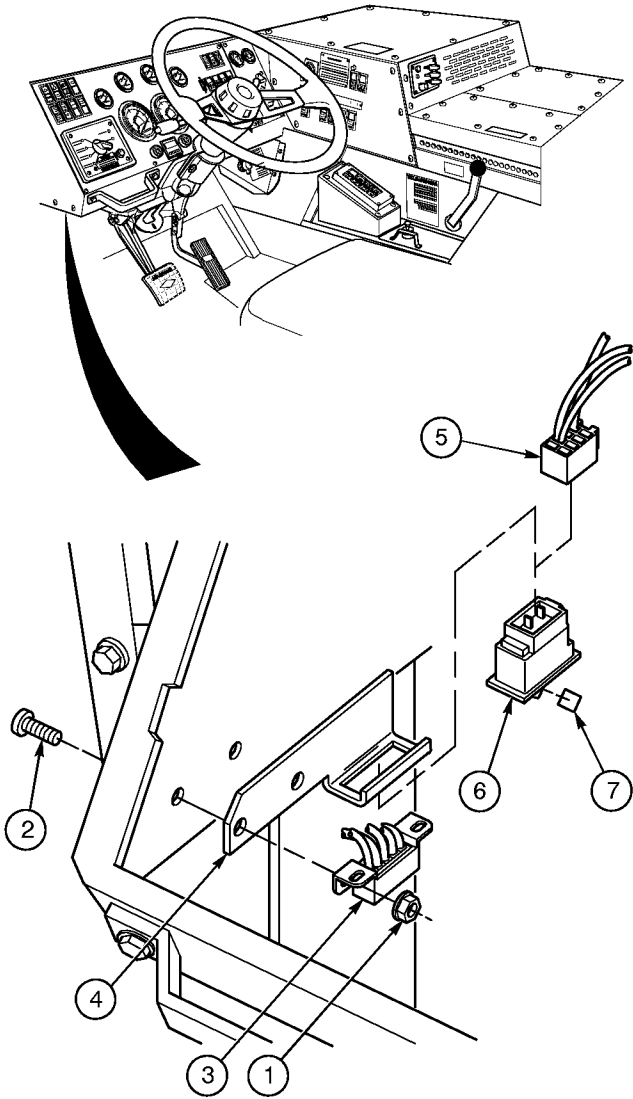
b. Installation.

- (1) Install applique (7) on diagnostic request switch (6).
- (2) Install switch (6) on bracket (4).
- (3) Install connector (5) on rear of switch (6).
- (4) Install bracket (4), MC 13 diagnostic connector (3), two screws (2) and two locknuts (1).

c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK



7-29. STE/ICE-R TOGGLE SWITCH REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 56, Appendix G)

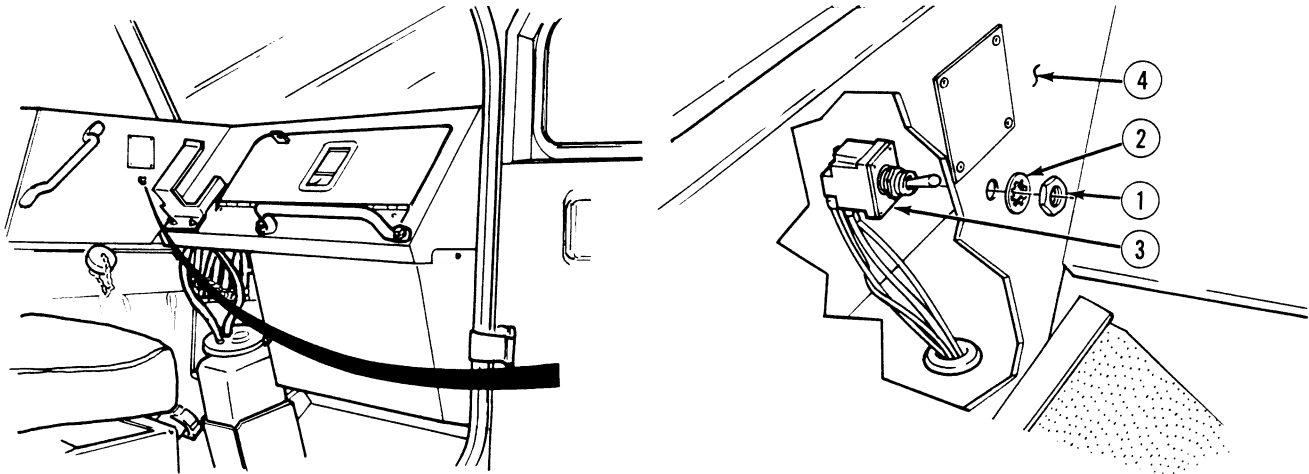
Materials/Parts

Tags, Identification, (Item 88, Appendix C)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)
Heater compartment cover removed,
(Para 17-4)

a. Removal.

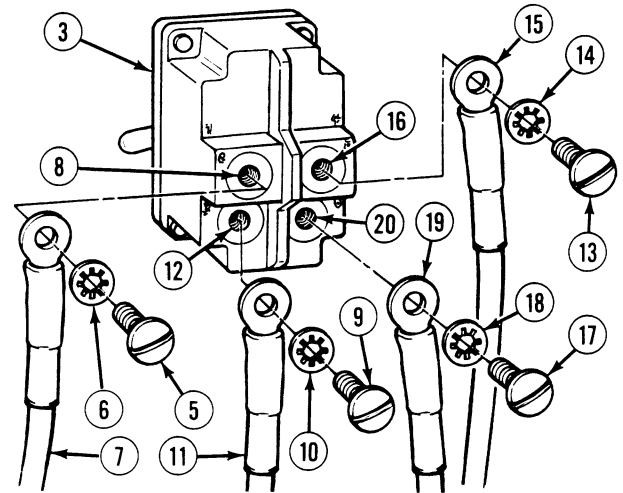


NOTE

Tag and mark all wires and connectors prior to removal.

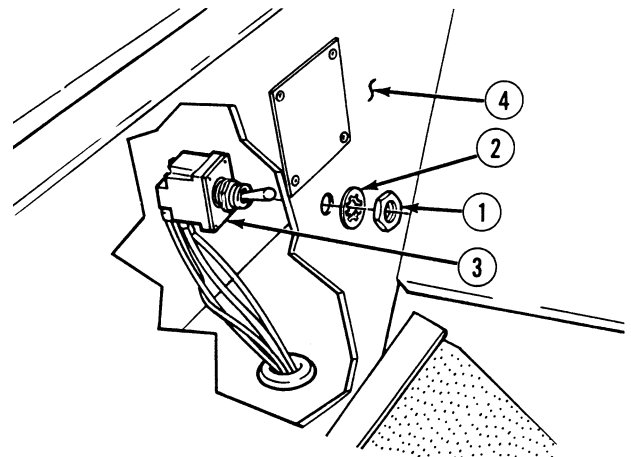
- (1) Remove nut (1), lockwasher (2) and toggle switch (3) from heater control panel (4).

- (2) Remove screw (5), lockwasher (6) and wire 1939B (7) from terminal 2 (8) on toggle switch (3).
- (3) Remove screw (9), lockwasher (10) and wire 1940B (11) from terminal 3 (12) on toggle switch (3).
- (4) Remove screw (13), lockwasher (14) and wire 1938B (15) from terminal 5 (16) on toggle switch (3).
- (5) Remove screw (17), lockwasher (18) and wire 1952B (19) from terminal 6 (20) on toggle switch (3).



b. Installation.

- (1) Install wire 1952B (19), lockwasher (18) and screw (17) on terminal 6 (20) of toggle switch (3).
- (2) Install wire 1938B (15), lockwasher (14) and screw (13) on terminal 5 (16) of toggle switch (3).
- (3) Install wire 1940B (11), lockwasher (10) and screw (9) on terminal 3 (12) of toggle switch (3).
- (4) Install wire 1939B (7), lockwasher (6) and screw (5) on terminal 2 (8) of toggle switch (3).
- (5) Install toggle switch (3), lockwasher (2) and nut (1) on heater control panel (4).



c. Follow-On Maintenance:

- Install heater compartment cover, (Para 17-4).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-30. TRANSFER CASE LOCKUP SWITCH REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP

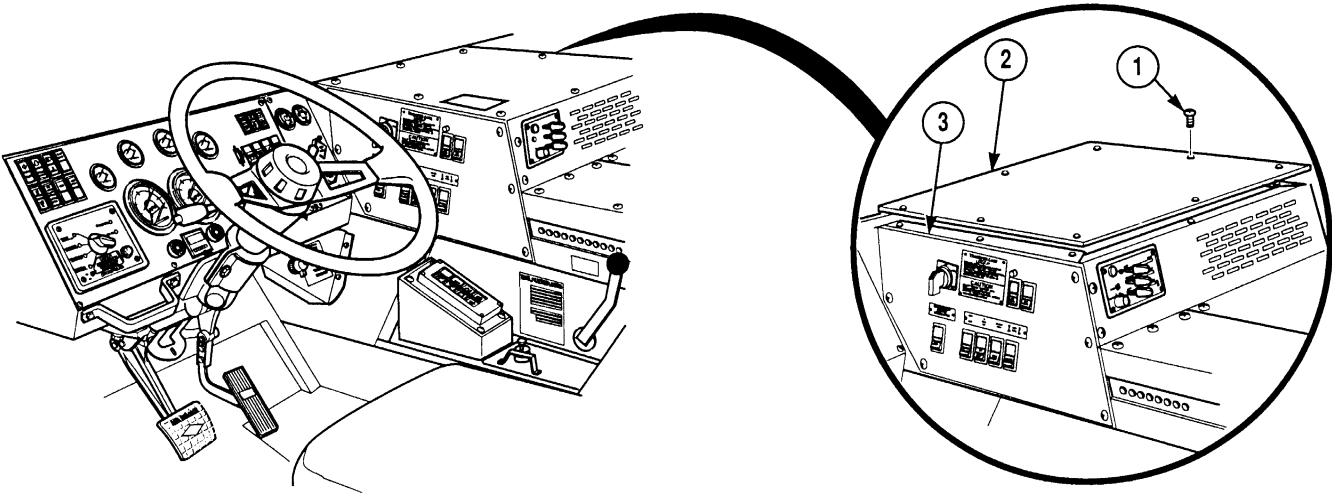
Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.



- (1) Remove eight screws (1) from heater compartment cover (2).
- (2) Remove heater compartment cover (2) from heater control panel (3).

CAUTION

Use extreme caution when depressing tabs on transfer case lockup switch to avoid breaking tabs off of switch.

NOTE

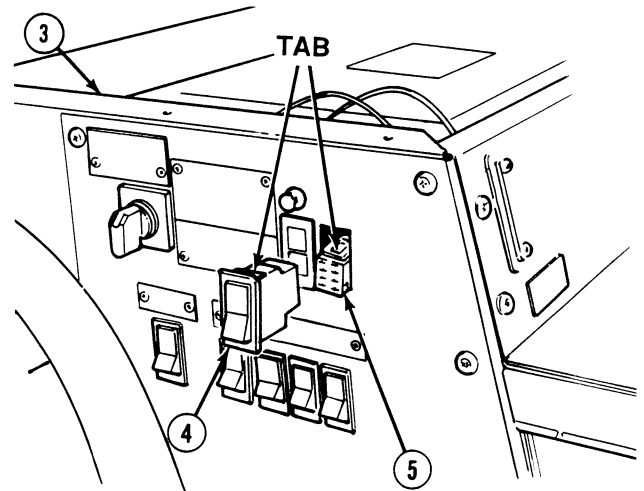
Transfer case lockup switch is removed from heater control side panel by depressing tabs on back of switch.

- (3) Remove transfer case lockup switch (4) from heater control panel (3).

NOTE

Transfer case lockup switch is removed from connector by depressing tabs on connector.

- (4) Remove transfer case lockup switch (4) from switch connector S22 (5).

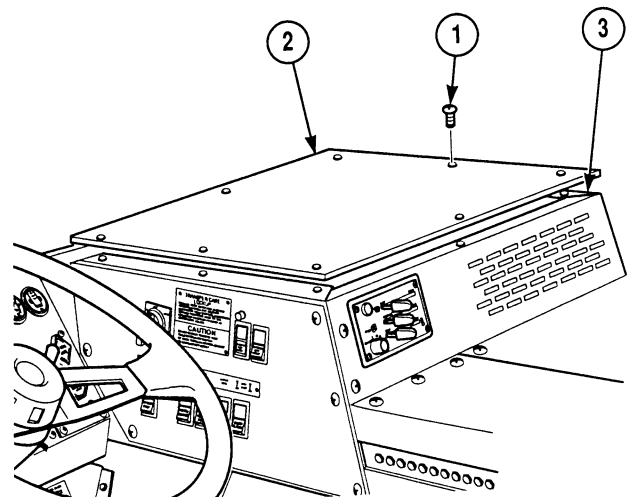


b. Installation.

NOTE

Transfer case lockup switch is installed when tabs are secure.

- (1) Install transfer case lockup switch (4) on switch connector S22 (5).
- (2) Install transfer case lockup switch (4) in heater control panel (3).
- (3) Install heater compartment cover (2) on heater control panel (3) with eight screws (1).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check operation of transfer case lock, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-31. HYDRAULIC SELECTOR SWITCH REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

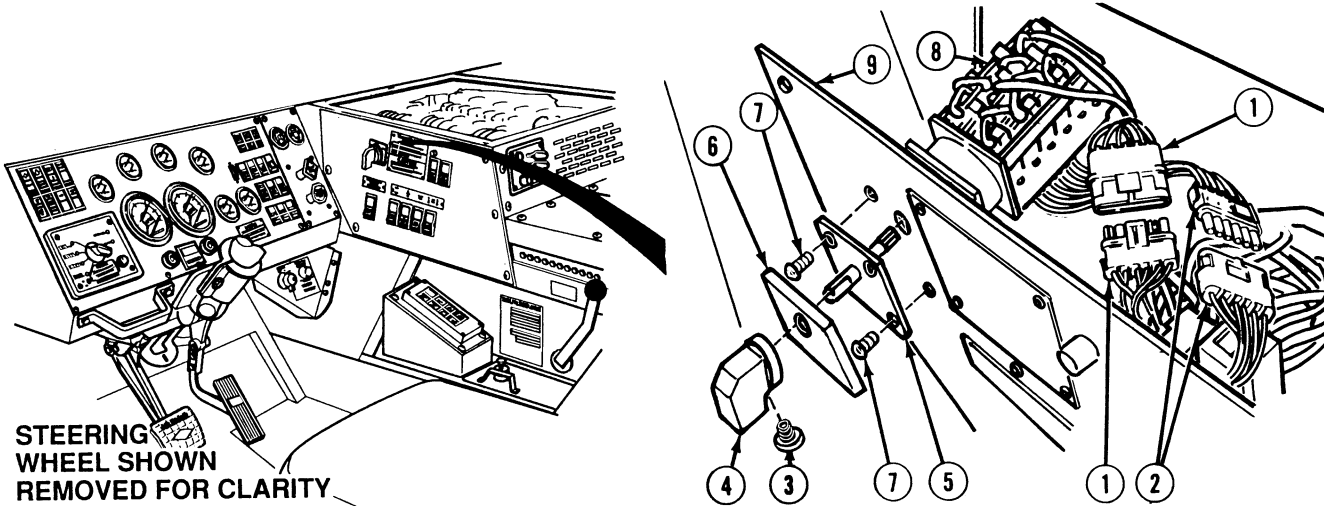
Materials/Parts

Tags, Identification (Item 88, Appendix C)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)
Heater compartment cover removed,
(Para 17-4)

a. Removal.



NOTE

Connectors are disconnected by gently prying up on tab and pulling connectors apart.

- (1) Disconnect MC93 connector (1).
- (2) Disconnect MC94 connector (2).
- (3) Loosen screw (3) and remove knob (4) from hydraulic selector switch front mounting plate (5).

NOTE

Hydraulic selector switch face plate snaps in place.

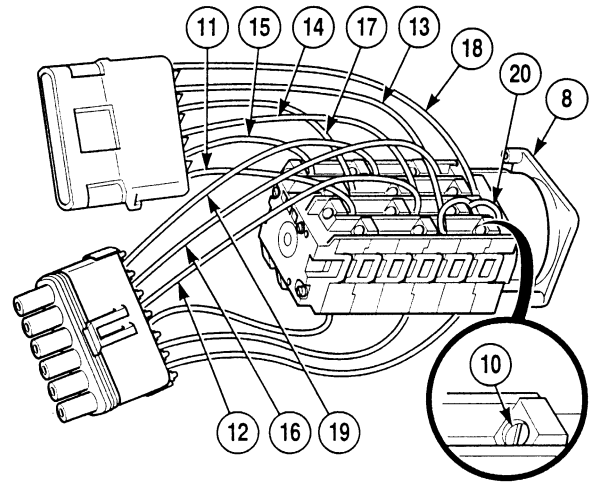
- (4) Remove hydraulic selector switch face plate (6) from hydraulic selector switch front mounting plate (5).
- (5) Remove four screws (7), hydraulic selector switch front mounting plate (5) and hydraulic selector switch (8) from heater control left side panel (9).

NOTE

Tag and mark wires prior to removal.

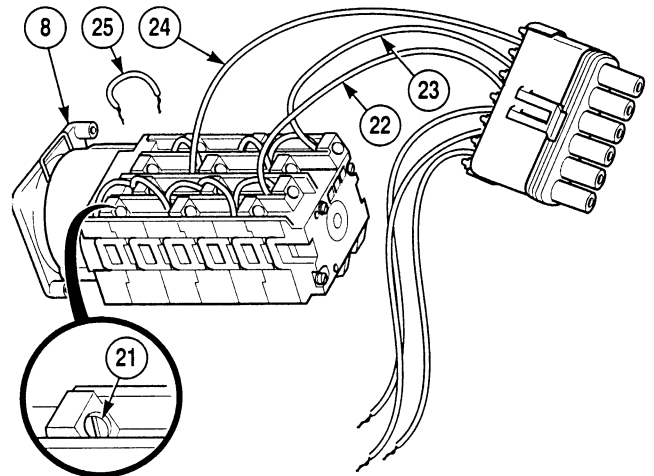
- (6) Loosen eleven captive screws (10) and remove wires 1724 (11), 1487 (12), 1483 (13), 1481 (14), 1480 (15), 1486 (16), 1482 (17), 1484 (18) and 1485 (19) from hydraulic selector switch (8).

- (7) Remove two jumperwires (20) from hydraulic selector switch (8).



- (8) Loosen twelve captive screws (21) and remove wires 1488 (22), 1489 (23) and 1490 (24).

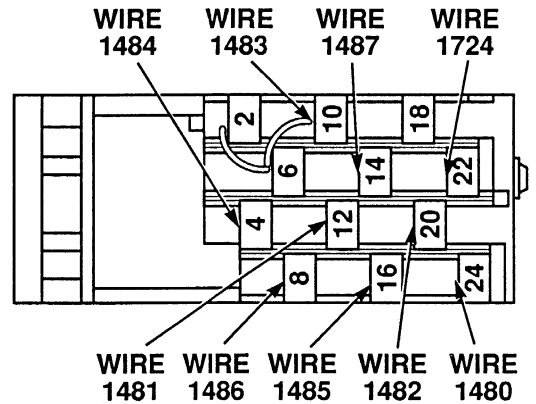
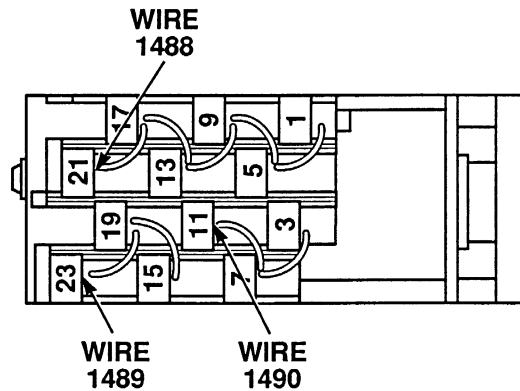
- (9) Remove nine jumperwires (25) from hydraulic selector switch (8).



b. Installation.

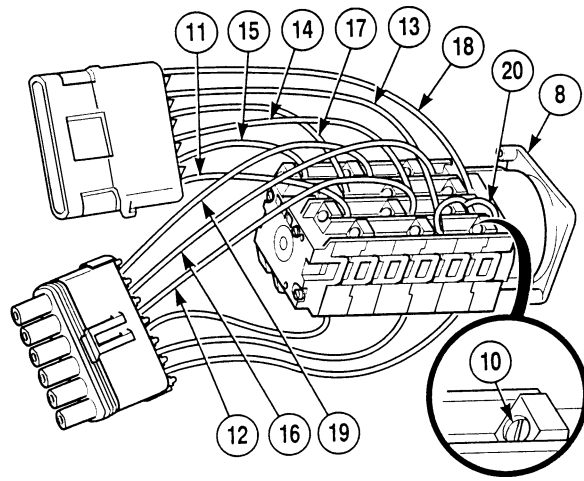
- (1) Install three wires 1488 (22), 1489 (23) and 1490 (24) in hydraulic selector switch (8) with three screws (21).

- (2) Install nine jumperwires (25) in hydraulic selector switch (8) with nine screws (21).



7-31. HYDRAULIC SELECTOR SWITCH REPLACEMENT (CONT).

- (3) Install wires 1724 (11), 1487 (12), 1483 (13), 1481 (14), 1480 (15), 1486 (16), 1482 (17), 1484 (18) and 1485 (19) in hydraulic selector switch (8) with nine screws (10).
- (4) Install two jumperwires (20) in hydraulic selector switch (8) with two screws (10).

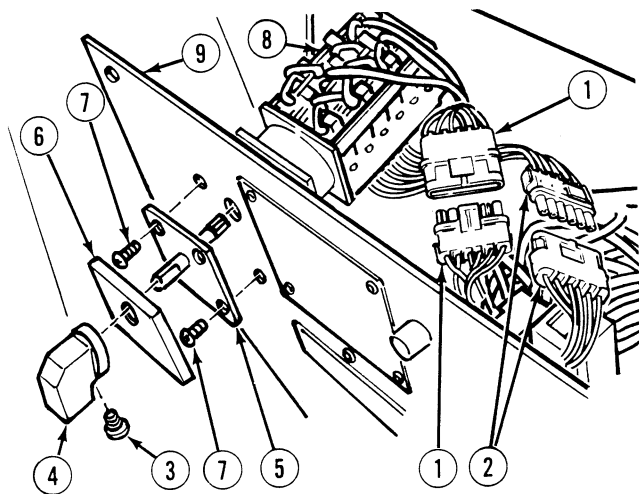


- (5) Install hydraulic selector switch (8), hydraulic selector switch front mounting plate (5) and four screws (7) on heater control left side panel (9).

NOTE

Hydraulic selector switch face plate snaps in place.

- (6) Install hydraulic selector switch face plate (6) on hydraulic selector switch front mounting plate (5).
- (7) Install knob (4) on hydraulic selector switch front mounting plate (5) with screw (3).
- (8) Connect MC94 connector (2).
- (9) Connect MC93 connector (1).



c. Follow-On Maintenance:

- Install heater compartment cover, (Para 17-4).
- Connect batteries, (Para 7-87).
- Start engine, (TM 9-2320-364-10).
- Check hydraulic selector switch operation, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-32. ENGINE SWITCH REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

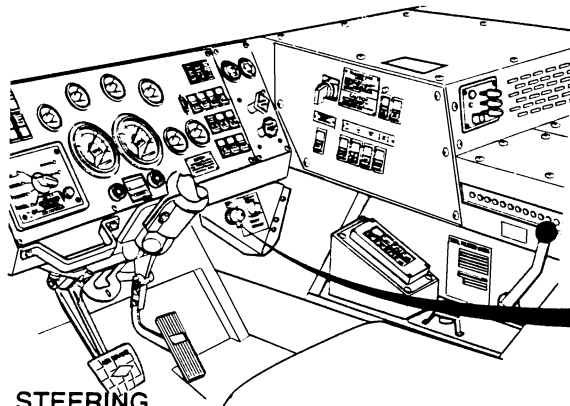
Materials/Parts

Tags, Identification (Item 88, Appendix C)

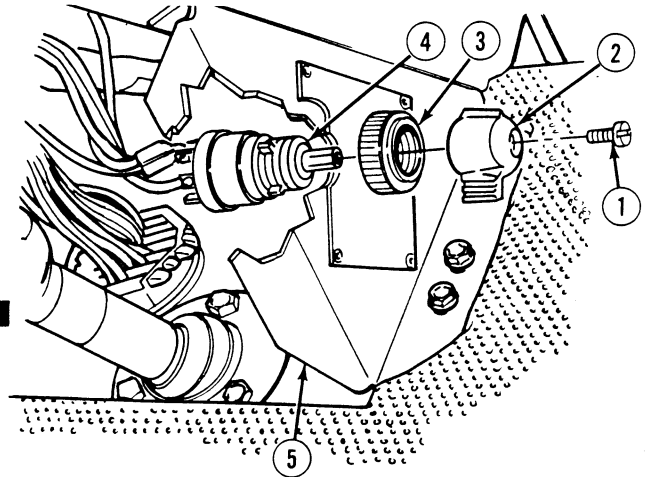
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.



**STEERING
WHEEL SHOWN
REMOVED FOR CLARITY**

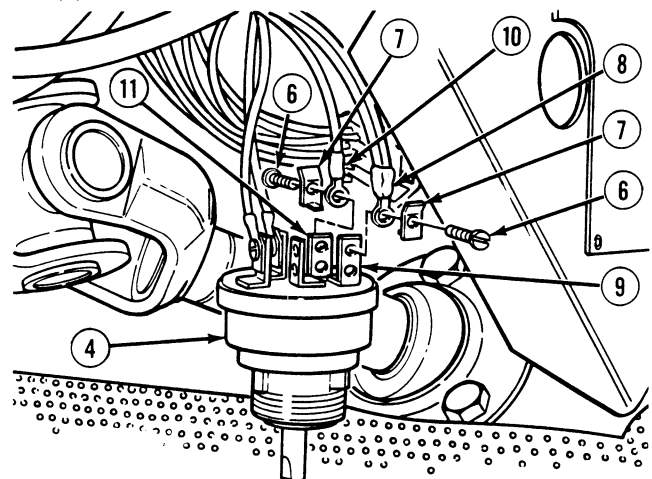


- (1) Remove screw (1), lever (2) and nut (3) from engine switch (4).
- (2) Remove engine switch (4) from instrument panel (5).

NOTE

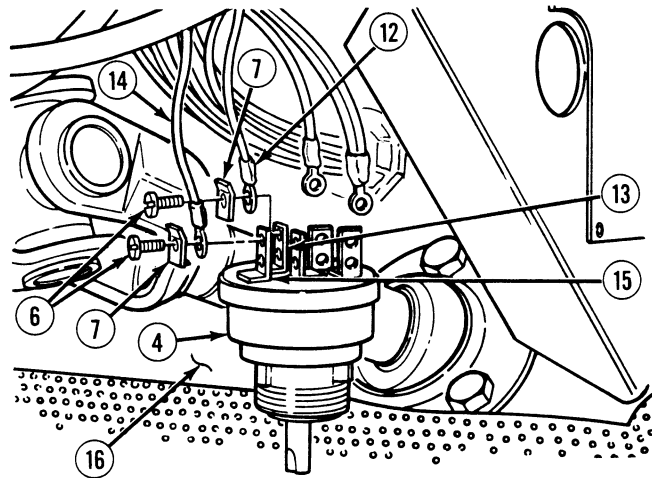
Tag and mark wires prior to removal.

- (3) Remove screw (6), washer (7) and wire 1431 (8) from BAT post (9) on engine switch (4).
- (4) Remove screw (6), washer (7) and wire 1640 (10) from ACC post (11) on engine switch (4).



7-32. ENGINE SWITCH REPLACEMENT (CONT).

- (5) Remove screw (6), washer (7) and wire 1021 (12) from starter post (13) on engine switch (4).
- (6) Remove screw (6), washer (7) and wire 1020 (14) from ignition post (15) on engine switch (4).
- (7) Remove engine switch (4) from truck (16).

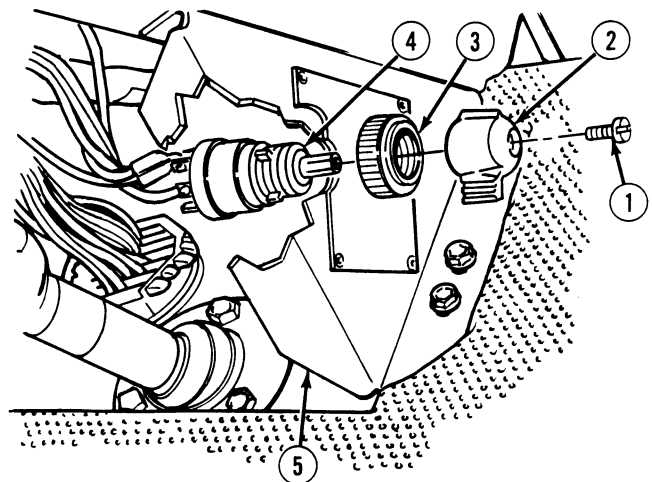
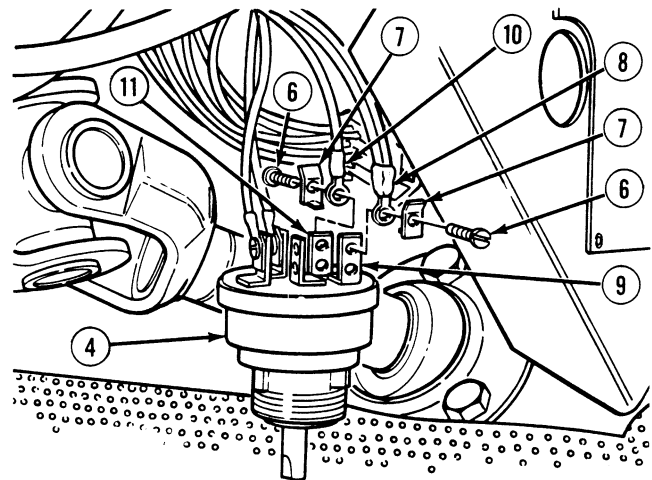


b. Installation.

CAUTION

If replacing engine switch, remove and discard screw and washer from ground terminal. Failure to comply may result in damage to equipment.

- (1) Position engine switch (4) in truck (16).
- (2) Install wire 1020 (14), washer (7) and screw (6) on ignition post (15) on engine switch (4).
- (3) Install wire 1021 (12), washer (7) and screw (6) on starter post (13) on engine switch (4).
- (4) Install wire 1640 (10), washer (7) and screw (6) on ACC post (11) on engine switch (4).
- (5) Install wire 1431 (8), washer (7) and screw (6) on BAT post (9) on engine switch (4).
- (6) Install engine switch (4) in instrument panel (5).
- (7) Install nut (3), lever (2) and screw (1) on engine switch (4).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Start engine, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-33. ETHER START AID SWITCH REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

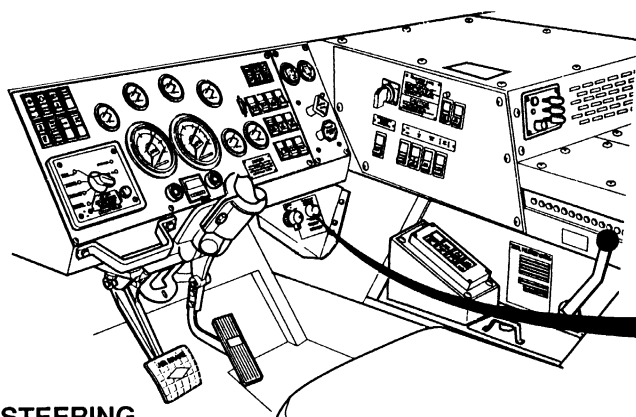
Materials/Parts

Tags, Identification (Item 88, Appendix C)

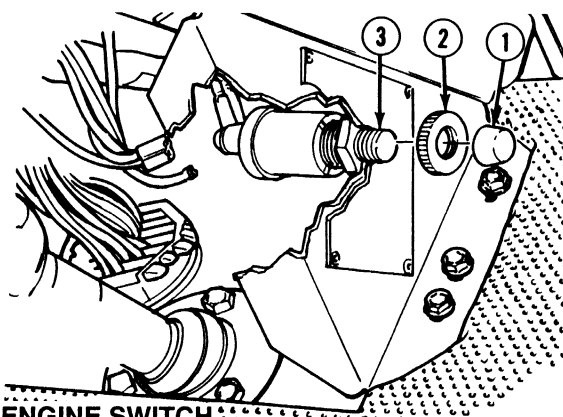
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.



STEERING WHEEL SHOWN REMOVED FOR CLARITY

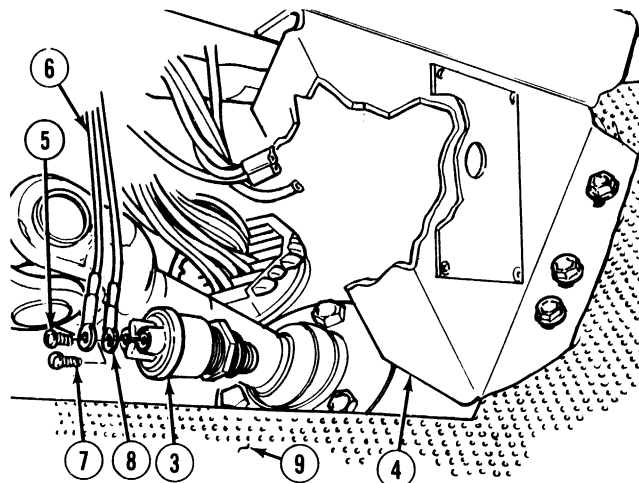


ENGINE SWITCH SHOWN REMOVED FOR CLARITY

NOTE

Tag and mark all wires and connectors prior to removal.

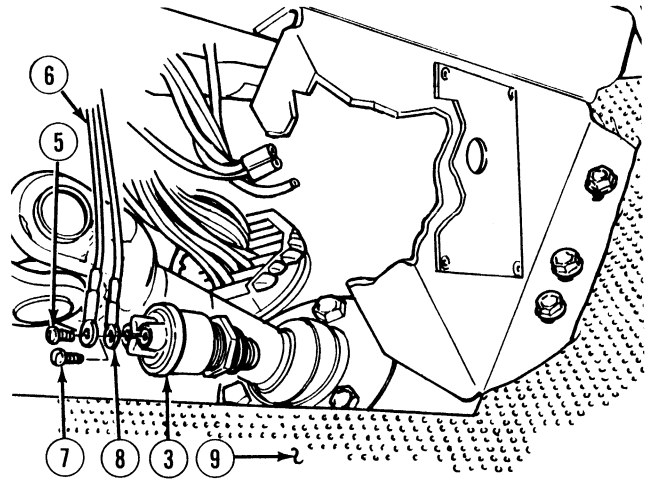
- (1) Remove rubber cap (1) and nut (2) from ether start aid switch (3).
- (2) Remove ether start aid switch (3) from instrument panel (4).
- (3) Remove screw (5) and wire 1036 (6) from ether start aid switch (3).
- (4) Remove screw (7) and wire 1487 (8) from ether start aid switch (3).
- (5) Remove ether start aid switch (3) from truck (9).



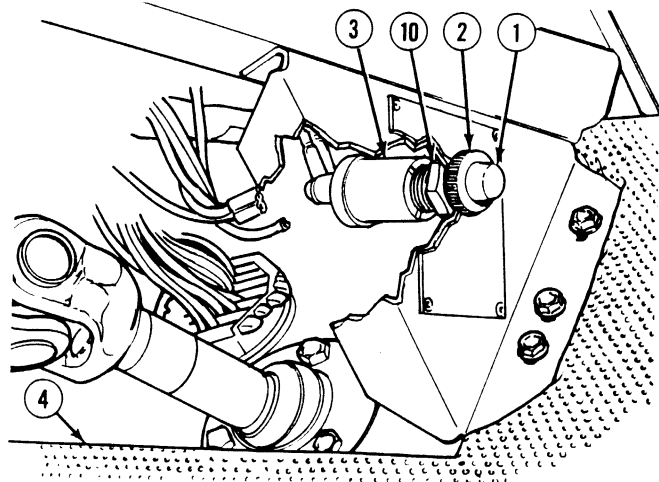
7-33. ETHER START AID SWITCH REPLACEMENT (CONT).

b. Installation.

- (1) Position ether start aid switch (3) in truck (9).
- (2) Install wire 1487 (8) and screw (7) on ether start aid switch (3).
- (3) Install wire 1036 (6) and screw (5) on ether start aid switch (3).



- (4) Bottom out nut (10) against ether start aid switch (3).
- (5) Install ether start aid switch (3) in instrument panel (4).
- (6) Install nut (2) and rubber cap (1) on ether start aid switch (3).
- (7) Tighten nut (10) until nut is tight against instrument panel (4).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-34. ISOLATOR REPLACEMENT (145 AMP).

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)

Materials/Parts

Cable Ties (Item 26, Appendix C)

Tags, Identification (Item 88, Appendix C)

Lockwasher (2) (Item 184, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)

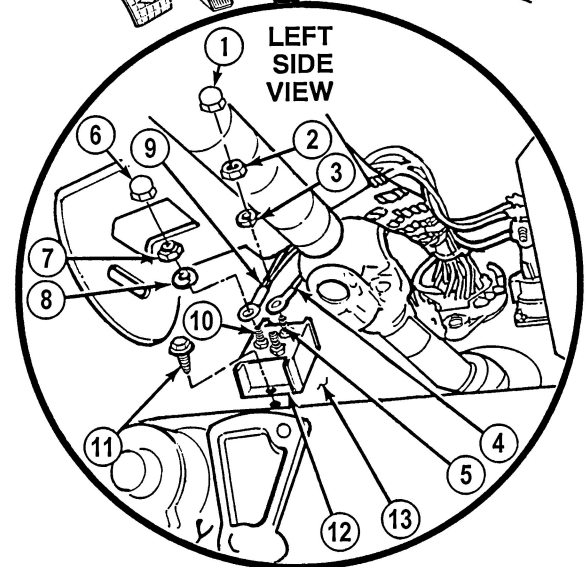
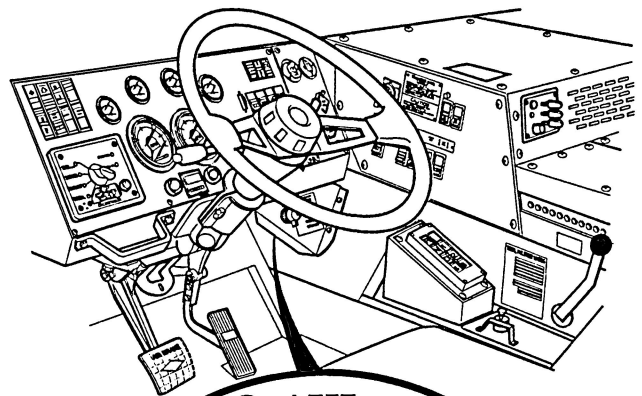
Wheels chocked, (TM 9-2320-364-10)

Batteries disconnected, (Para 7-87)

a. Removal.**NOTE**

- Tag and mark wires prior to removal.
- Remove cable ties as required.

- (1) Remove capnut (1), nut (2), lockwasher (3) and wire 1431 (4) from isolator stud (5). Discard lockwasher.
- (2) Remove capnut (6), nut (7), lockwasher (8) and wire 1431 (9) from isolator stud (10). Discard lockwasher.
- (3) Remove two screws (11) and isolator (12) from cab wall (13).

**b. Installation.****NOTE**

Install cable ties as required.

- (1) Install isolator (12) and two screws (11) on cab wall (13).
- (2) Install wire 1431 (9), lockwasher (8), nut (7) and capnut (6) on isolator stud (10).
- (3) Install wire 1431 (4), lockwasher (3), nut (2) and capnut (1) on isolator stud (5).

c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-35. TURN SIGNAL SWITCH/HAZARD SWITCH REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, Electrical (Item 73, Appendix G)
 Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
 Puller Kit (Item 51, Appendix G)

Materials/Parts

Cable Ties (Item 26, Appendix C)
 Tape, Insulating (Item 88, Appendix C)
 Electrical Contacts (5) (Item 25, Appendix F)
 Electrical Contacts (Item 26, Appendix F)

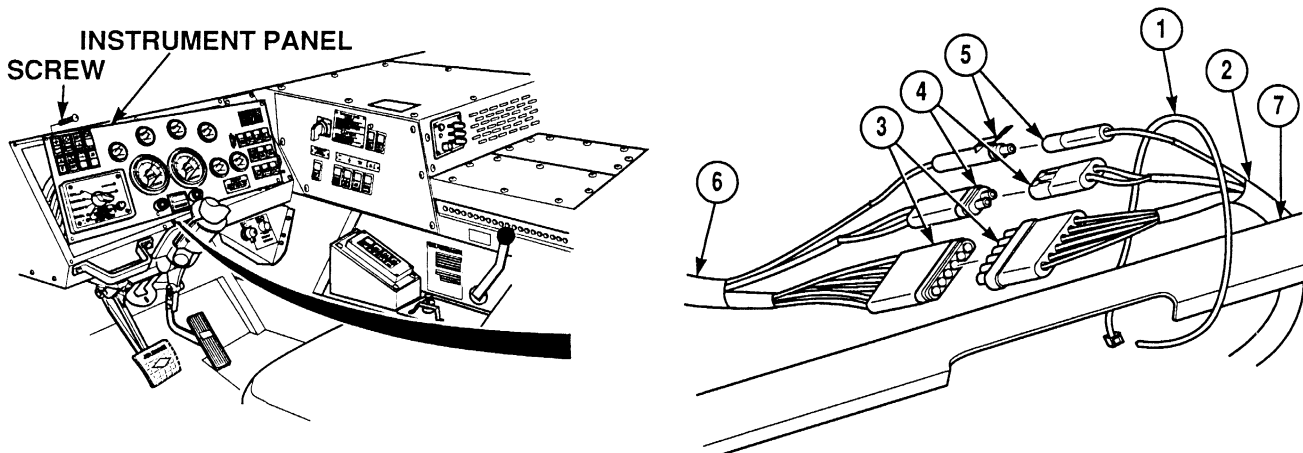
Materials/Parts - Continued

Electrical Contacts (Item 27, Appendix F)
 Dust Boot (6) (Item 29, Appendix F)
 Dust Boot (Item 30, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Instrument panel removed, (Para 7-13)
 Steering wheel removed, (Para 14-5)

a. Removal.



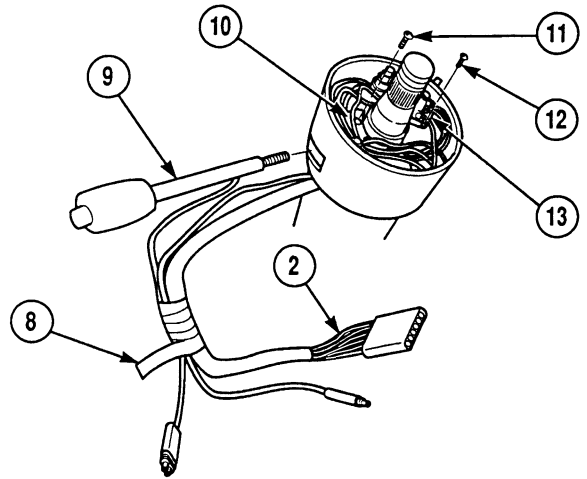
- (1) Remove cable tie (1) from turn signal wiring harness (2).

NOTE

Note location of wiring harness before disconnecting wire connectors.

- (2) Disconnect connectors MC7 (3), MC91 (4) and MC92 (5) from dash wiring harness (6).
 (3) Remove turn signal wiring harness (2) from under instrument panel (7).

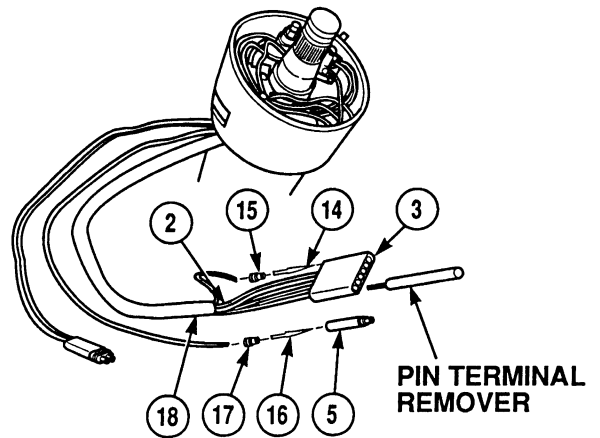
- (4) Remove and discard tape (8) from turn signal wiring harness (2).
- (5) Remove turn signal switch arm (9) from turn signal switch (10).
- (6) Remove mounting screws (11) and (12) from turn signal switch (10) and emergency hazard switch.



NOTE

Tag and mark electrical pins before removing from electrical connector.

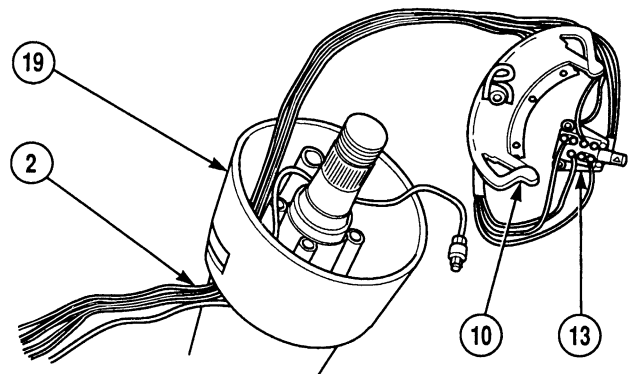
- (7) Using terminal pin remover, remove six contacts (14) and dust boots (15) from turn signal connector MC7 (3).
- (8) Using terminal pin remover, remove contacts (16) and dust boots (17) from turn signal connector MC92 (5).
- (9) Remove and discard seven contacts (14) and (16) and dust boots (15) and (16) from turn signal wiring harness (2).
- (10) Remove turn signal wiring harness sleeve (18) from turn signal wiring harness (2).



- (11) Route turn signal wiring harness (2) through steering column (19) while removing turn signal switch (10) and emergency hazard switch (13).

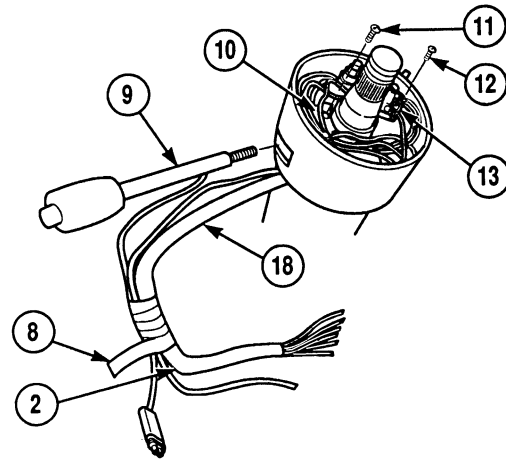
b. Installation.

- (1) Route turn signal wiring harness (2) through steering column (19) while installing turn signal switch (10) and emergency hazard switch (13).



7-35. TURN SIGNAL SWITCH/HAZARD SWITCH REPLACEMENT (CONT).

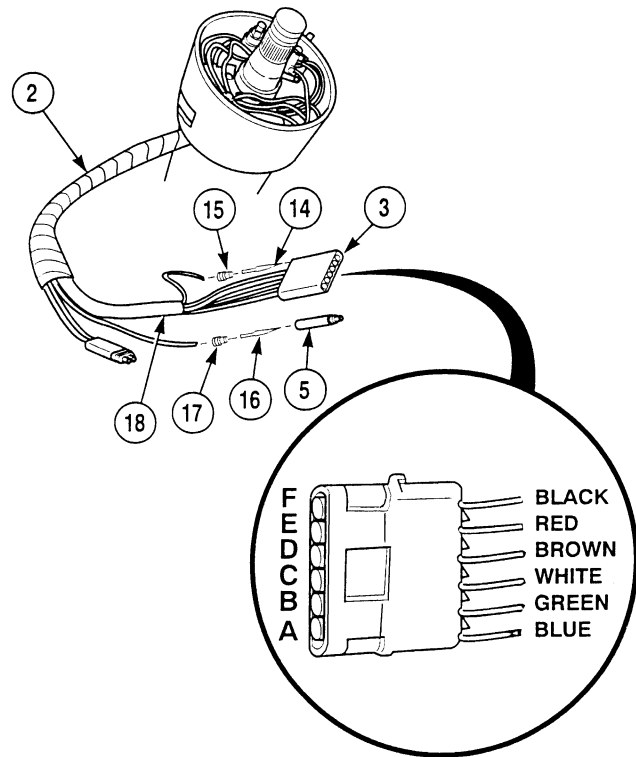
- (2) Install mounting screws (11) and (12) in turn signal switch (10) and emergency hazard switch (13).
- (3) Install turn signal switch arm (9) in turn signal switch (10).
- (4) Install turn signal wiring harness sleeve (18) on turn signal wiring harness (2).
- (5) Install tape (8) on turn signal wiring harness (2).



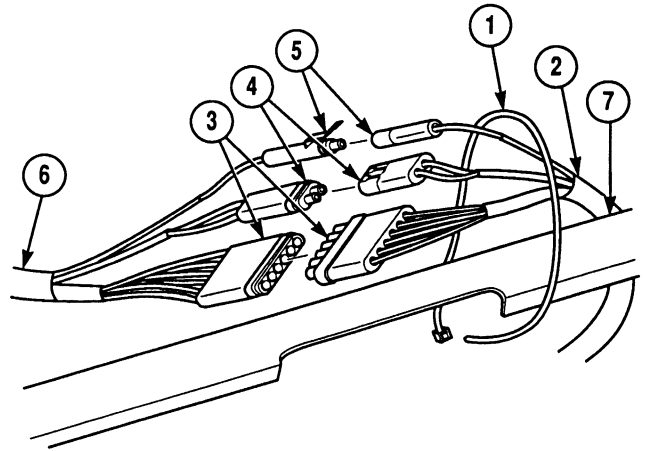
NOTE

Strip wire insulation to allow 1/4 in. of wire to be exposed.

- (6) Install dust boot (17) and contact (16) on turn signal wiring harness (2).
- (7) Install six dust boots (15) and contact (14) on turn signal wiring harness (2).
- (8) Install dust boot (17) and contact (16) in turn signal connector MC92 (5).
- (9) Install six dust boots (15) and contact (14) in turn signal connector MC7 (3).



- (10) Install turn signal wiring harness (2) under dash panel (7).
- (11) Connect wire connectors MC92 (5), MC91 (4) and MC7 (3) to dash wiring harness (6).
- (12) Install cable tie (1) on turn signal wiring harness (2).



c. Follow-On Maintenance:

- Install instrument panel, (Para 7-13).
- Install steering wheel, (Para 14-5).
- Check operation, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-36. CRANE ON/OFF AND HIGH IDLE SWITCH REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Gage, Feeler (Item 27, Appendix G)
Wrench, Combination, 1 1/2 in.
(Item 83, Appendix G)

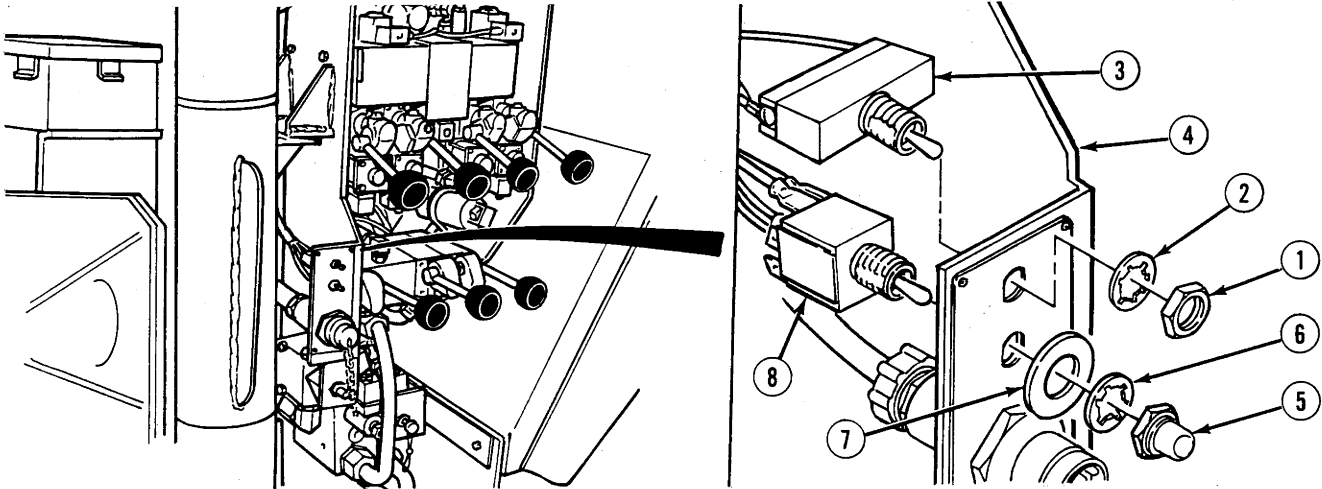
Equipment Condition

LHS in transit position, (TM 9-2320-364-10)
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

Materials/Parts

Tags, Identification (Item 88, Appendix C)

a. Removal.



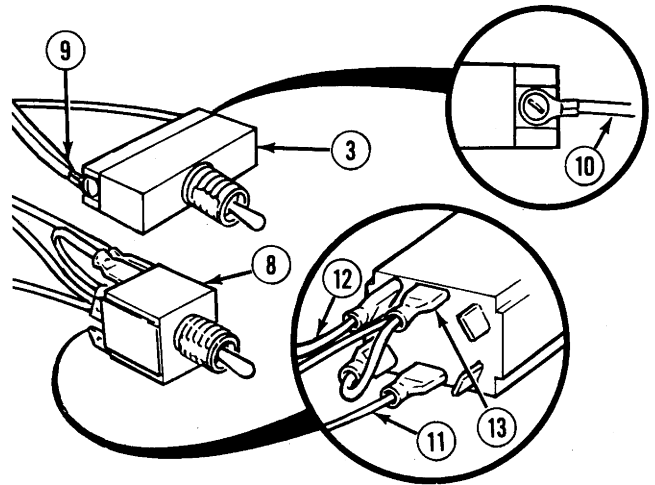
(1) Remove nut (1), lockwasher (2) and ON/OFF switch (3) from bracket (4).

(2) Remove nut boot (5), lockwasher (6), washer (7) and HIGH IDLE switch (8) from bracket (4).

NOTE

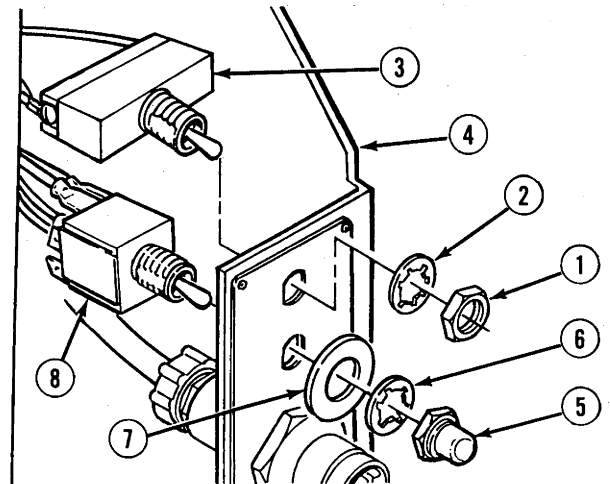
Tag and mark position of wires before removal.

- (3) Remove black wire (9) and white wire (10) from ON/OFF switch (3).
- (4) Remove black wire (11), pink wire (12) and green wire (13) from HIGH IDLE switch (8).



b. Installation.

- (1) Install green wire (13), pink wire (12) and black wire (11) on HIGH IDLE switch (8).
- (2) Install white wire (10) and black wire (9) on ON/OFF switch (3).
- (3) Install HIGH IDLE switch (8) on bracket (4) with washer (7), lockwasher (6) and nut boot (5).
- (4) Install ON/OFF switch (3) on bracket (4) with lockwasher (2) and nut (1).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-37. PROXIMITY SWITCH REPLACEMENT/ADJUSTMENT (HOOK ARM DOWN).

This task covers:

- | | |
|-----------------|--------------------------|
| a. Removal | c. Adjustment |
| b. Installation | d. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Gage, Feeler (Item 27, Appendix G)
Wrench, Combination, 1 1/2 in.
(Item 83, Appendix G)

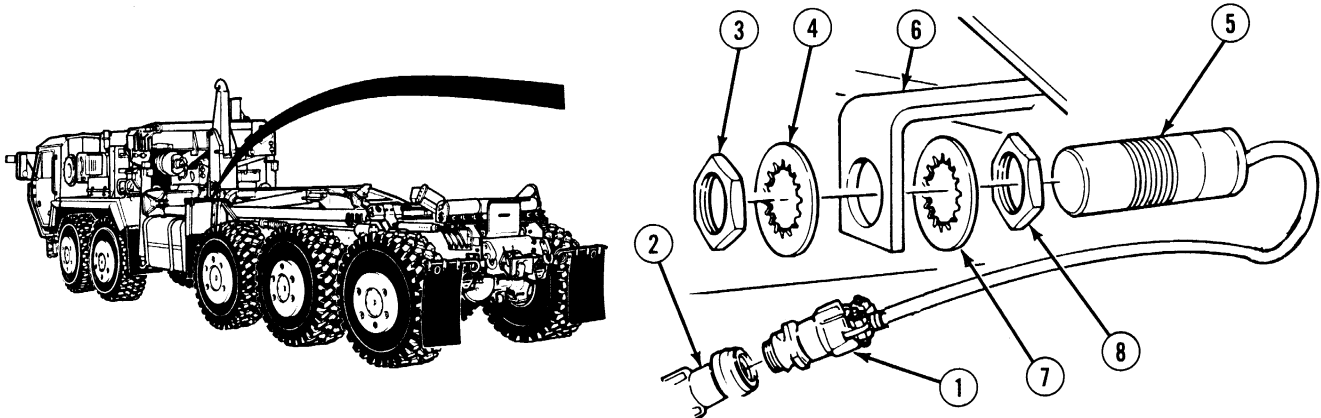
Materials/Parts

Tags, Identification (Item 88, Appendix C)

Equipment Condition

LHS in transit position, (TM 9-2320-364-10)
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.



- (1) Disconnect proximity switch MC88 connector (1) from main harness connector (2).

NOTE

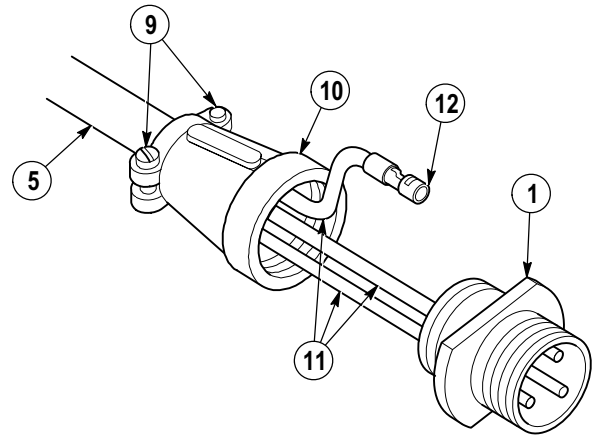
Lockwashers may or may not have been used in Steps (2) and (3).

- (2) Remove nut (3), lockwasher (4) and proximity switch (5) from compression frame (6).
(3) Remove lockwasher (7) and nut (8) from proximity switch (5).

NOTE

Tag all wires prior to removal.

- (4) Loosen two screws (9) and remove nut (10) from MC88 connector (1).
- (5) Remove three wires (11) with terminals (12) from MC88 connector (1).
- (6) Remove nut (10) and MC88 connector (1) from proximity switch (5).

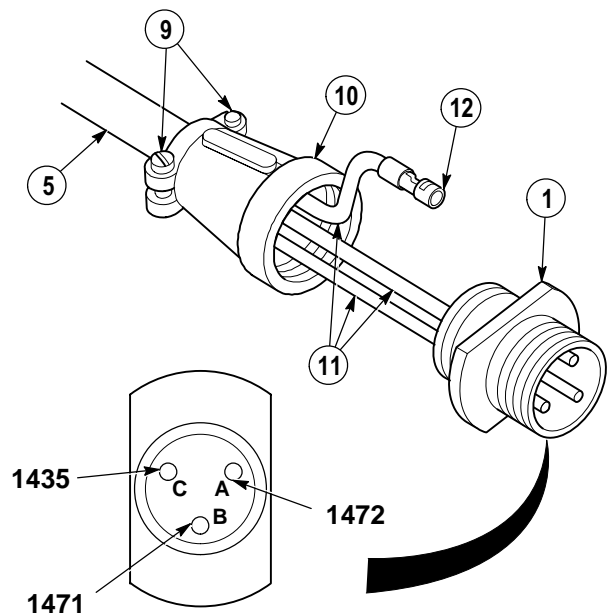


b. Installation.

- (1) Position nut (10) and MC88 connector (1) on proximity switch (5).
- (2) Install three terminals (12) with wires (11) in MC88 connector (1) in following positions.

Table 7-2. Proximity Switch Wire Positions.

Wire	Position	Color
1472	A	Brown
1471	B	Black
1435	C	Blue

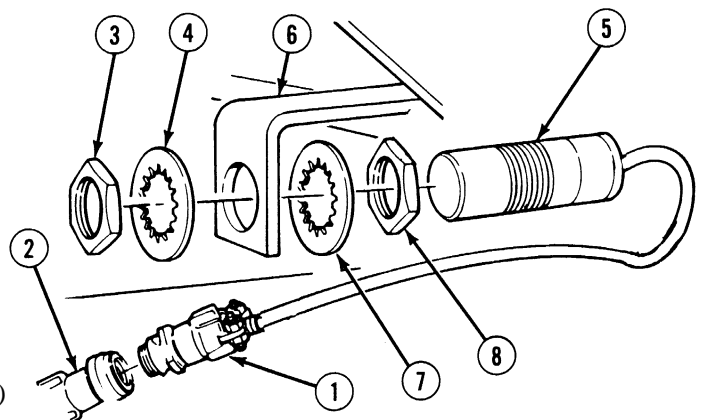


- (3) Install nut (10) on MC88 connector (1) and tighten two screws (9).

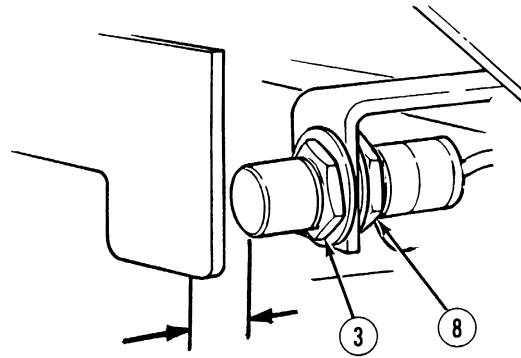
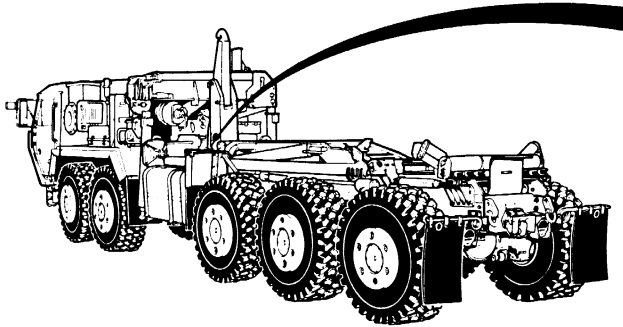
NOTE

If lockwashers are not used in Steps (4) and (5), serrated side of nuts face bracket.

- (4) Install nut (8) and lockwasher (7) on proximity switch (5).
- (5) Install proximity switch (5), lockwasher (4) and nut (3) on compression frame (6).
- (6) Install proximity switch MC88 connector (1) on main harness connector (2).



**7-37. PROXIMITY SWITCH REPLACEMENT/ADJUSTMENT (HOOK ARM DOWN)
(CONT).**



**.12 ± .01 IN.
(3 ± .25 MM)**

c. Adjustment. Using feeler gage, adjust clearance between proximity switch and hook arm to 0.12 ± 0.01 in. (3 ± 0.25 mm) and tighten nuts (3) and (8).

d. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check operation of hook arm, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-38. PROXIMITY SWITCH REPLACEMENT/ADJUSTMENT (HOOK ARM UP).

This task covers:

- | | |
|-----------------|--------------------------|
| a. Removal | c. Adjustment |
| b. Installation | d. Follow-On Maintenance |

INITIAL SETUP*Tools and Special Tools*

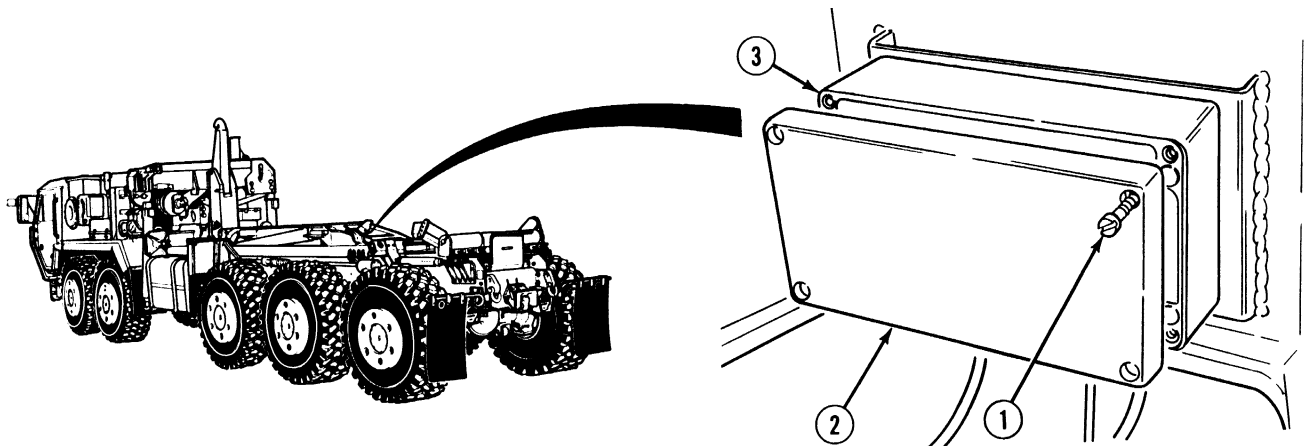
Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Materials/Parts

Cable Ties (Item 25, Appendix C)
Tags, Identification (3) (Item 88, Appendix C)
Lockwasher (2) (Item 195, Appendix F)

Equipment Condition

LHS in transit position, (TM 9-2320-364-10)
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

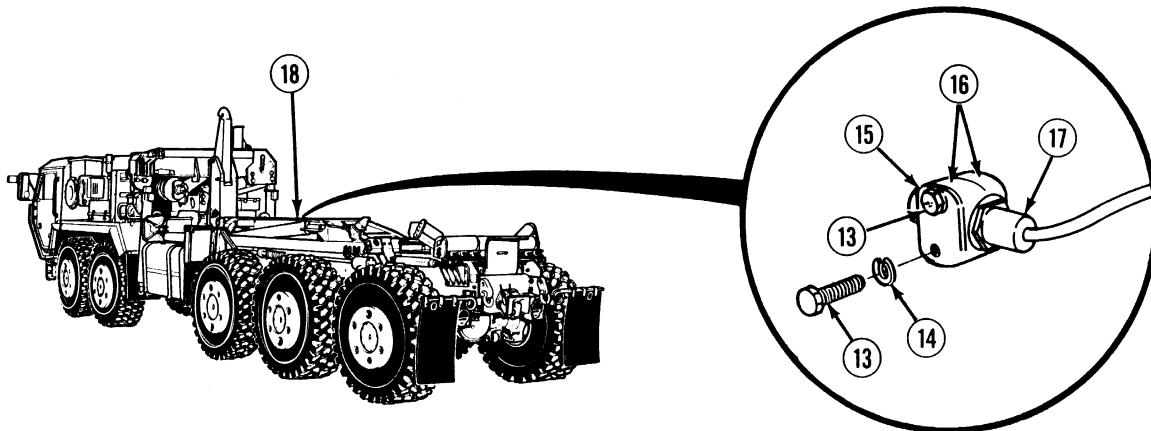
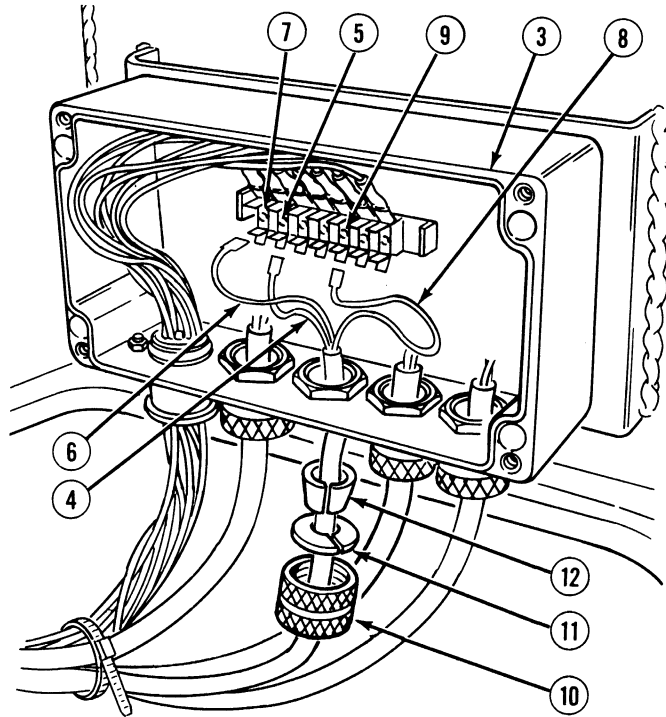
a. Removal.

- (1) Loosen four captive screws (1) and junction box cover (2) from junction box (3).

7-38. PROXIMITY SWITCH REPLACEMENT/ADJUSTMENT (HOOK ARM UP) (CONT).

NOTE

- Tag and mark wires prior to removal.
 - Remove cable ties as required.
- (2) Remove wire 1435 (4) from terminal (5), wire 1474 (6) from terminal (7) and wire 1466 (8) from terminal (9).
 - (3) Remove collar (10), washer (11), sealing ring (12) and wires 1435 (4), 1474 (6) and 1466 (8) from junction box (3).



- (4) Remove two screws (13), lockwashers (14) and plate (15) from two clamp halves (16). Discard lockwashers.
- (5) Remove two clamp halves (16) with proximity switch (17) as an assembly from middle frame (18).

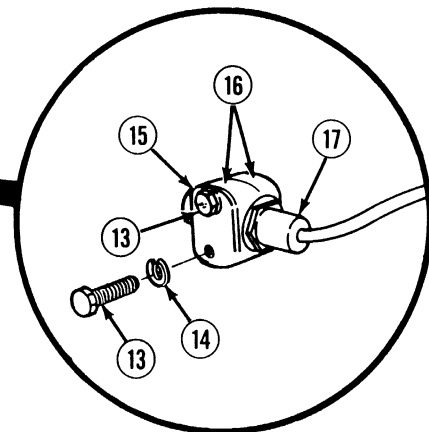
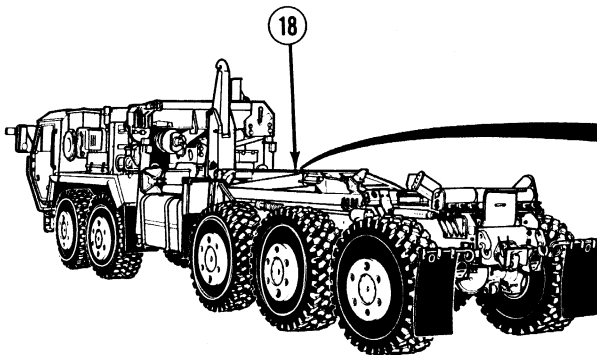
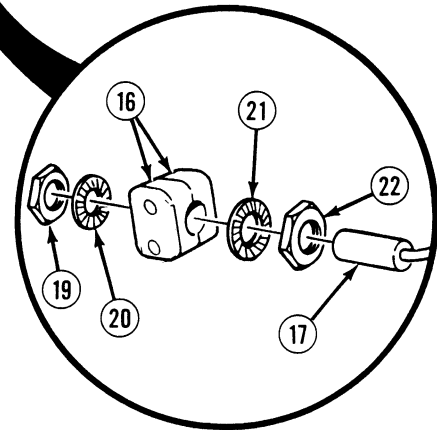
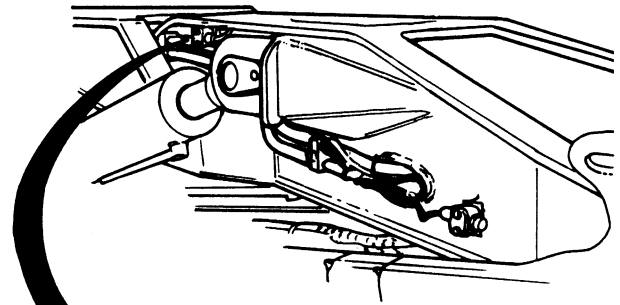
NOTE

- Lockwashers may or may not have been used in Step (6).
 - There may only be one nut used in Step (6).
- (6) Remove nut (19), lockwasher (20), two clamp halves (16), lockwasher (21) and nut (22) from proximity switch (17).

b. Installation.

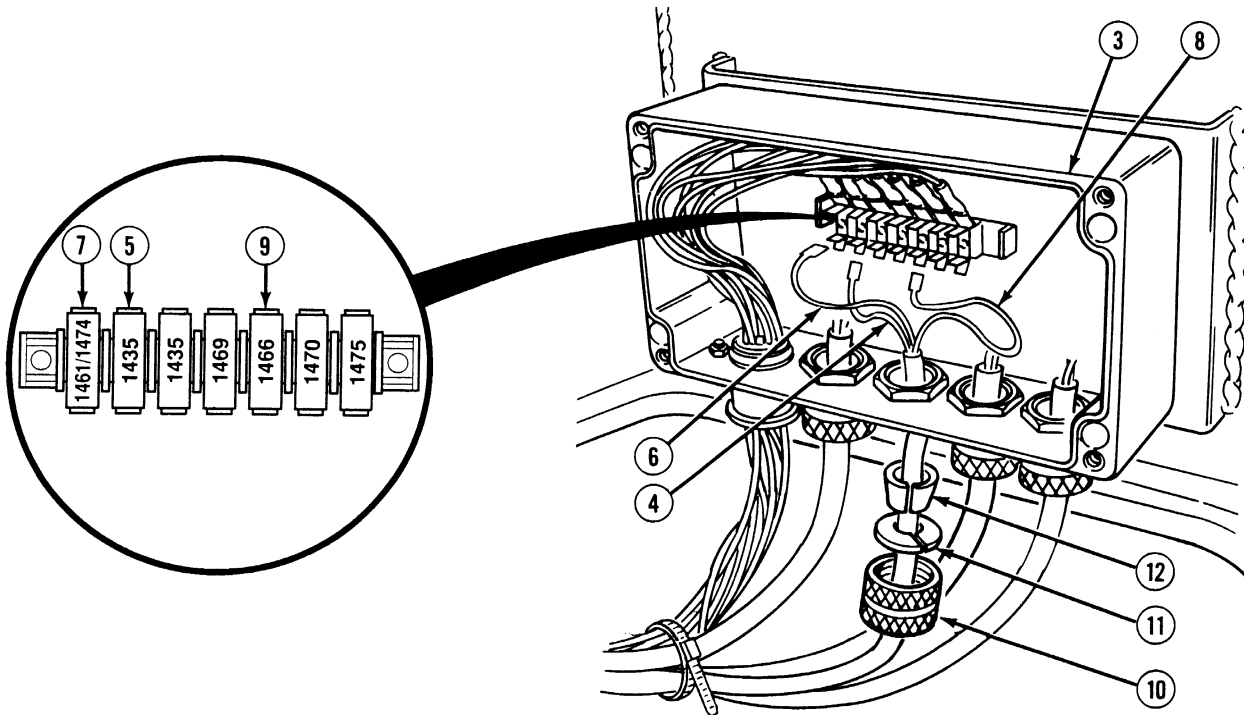
NOTE

- If lockwashers are not used in Step (1), serrated side of nuts face clamp.
 - There may be only one nut used in Step (1).
- (1) Install nut (22), lockwasher (21), two clamp halves (16), lockwasher (20) and nut (19) on proximity switch (17).



- (2) Position proximity switch (17), with two clamp halves (16) as an assembly, on middle frame (18) with plate (15), two lockwashers (14) and screws (13).

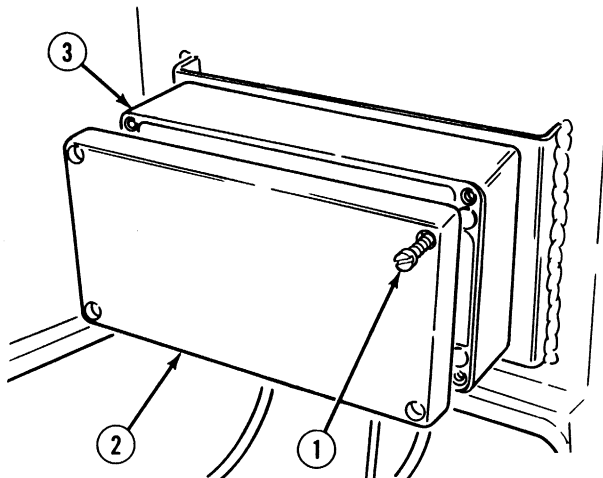
7-38. PROXIMITY SWITCH REPLACEMENT/ADJUSTMENT (HOOK ARM UP) (CONT).

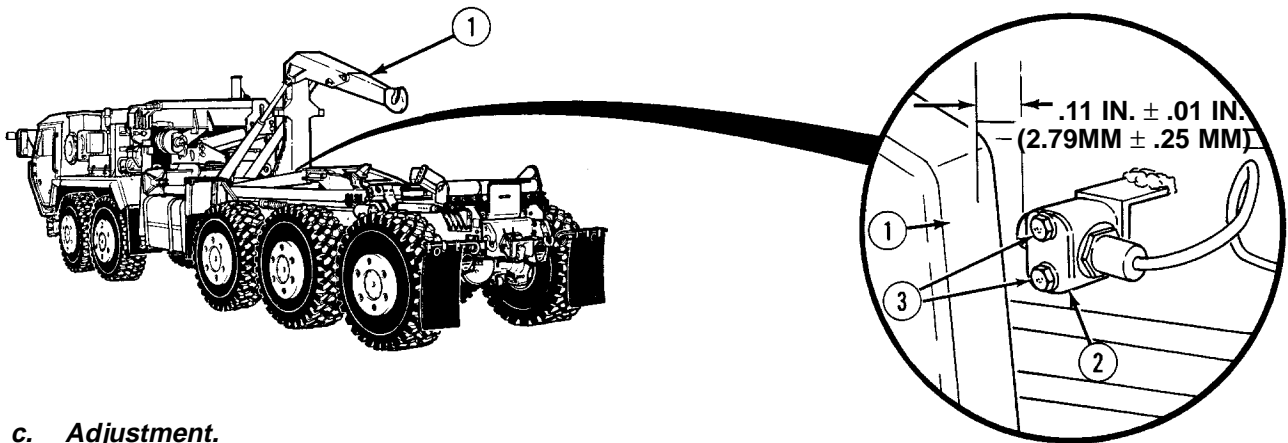


NOTE

Wire numbers on harnesses are positioned on terminal strip as indicated in chart.

- (3) Install wires 1466 (8), 1474 (6) and 1435 (4) in junction box (3) with sealing ring (12), washer (11) and collar (10).
- (4) Install wire 1466 (8) on terminal (9), wire 1474 (6) on terminal (7) and wire 1435(4) on terminal (5).
- (5) Install junction box cover (2) on junction box (3) and tighten four screws (1).





c. Adjustment.

- (1) Connect batteries, (Para 7-87).
- (2) Fully extend hook arm (1) using manual mode only.
- (3) Adjust clearance between proximity switch (2) and hook arm (1) using two screws (3). Clearance should be $0.11 \text{ in.} \pm 0.01 \text{ in.}$ ($2.79 \text{ mm} \pm 0.25 \text{ mm}$).
- (4) Tighten two screws (3) on proximity switch (2).

d. Follow-On Maintenance:

- LHS in transit position, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-39. PROXIMITY SWITCH REPLACEMENT/ADJUSTMENT (MAIN FRAME DOWN).

This task covers:

- a. Removal
- b. Installation
- c. Adjustment
- d. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

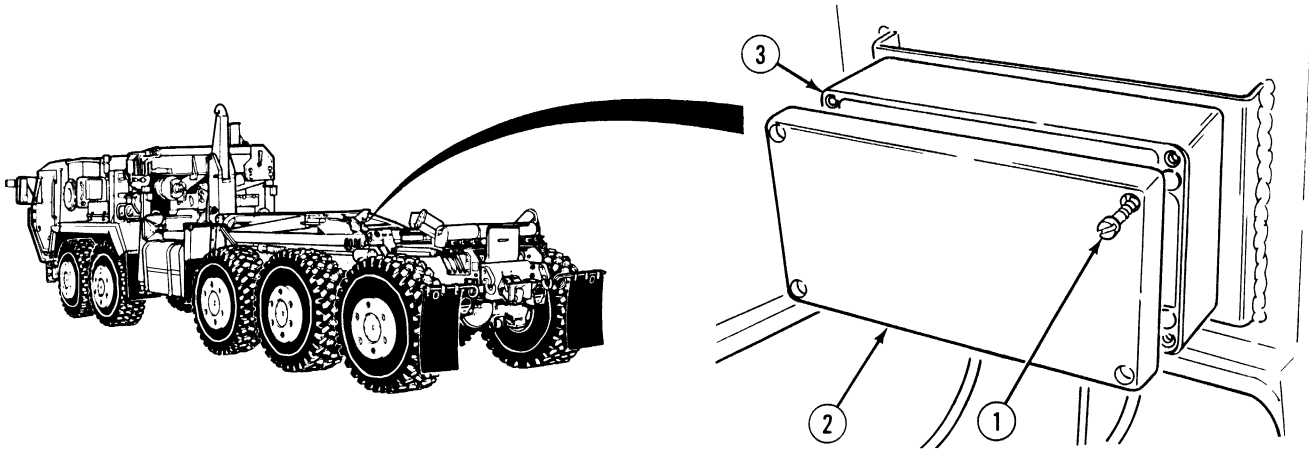
Materials/Parts

Cable Ties (Item 25, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (2) (Item 109, Appendix F)
Lockwasher (2) (Item 172, Appendix F)
Lockwasher (2) (Item 195, Appendix F)

Equipment Condition

LHS in transit position, (TM 9-2320-364-10)
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

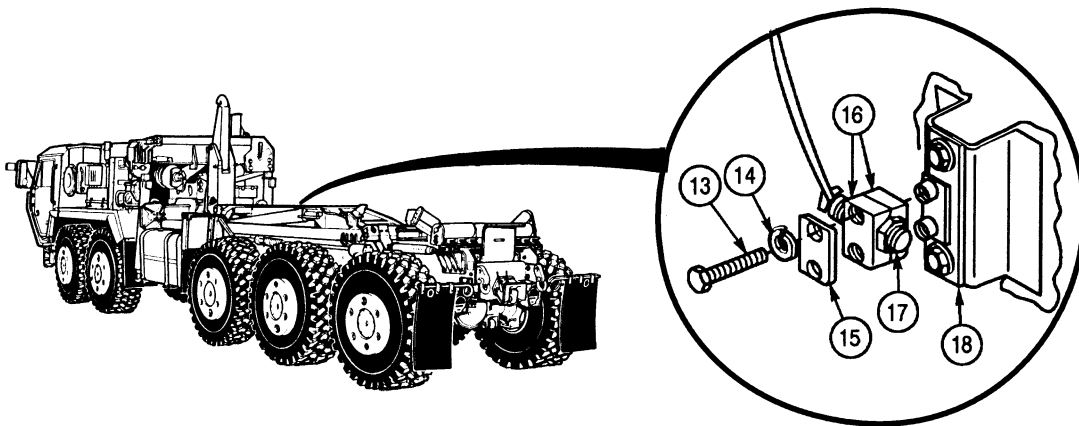
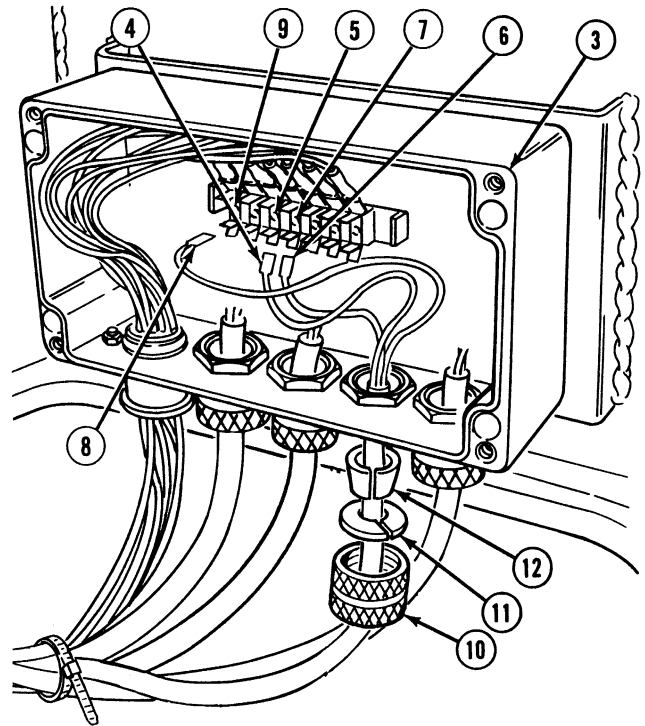
a. Removal.



- (1) Loosen four captive screws (1) and junction box cover (2) from junction box (3).

NOTE

- Tag and mark wires prior to removal.
 - Remove cable ties as required.
- (2) Remove wire 1435 (4) from terminal (5), wire 1469 (6) from terminal (7) and wire 1461 (8) from terminal (9).
 - (3) Remove collar (10), washer (11), sealing ring (12) and wires 1435 (4), 1469 (6) and 1461 (8) from junction box (3).

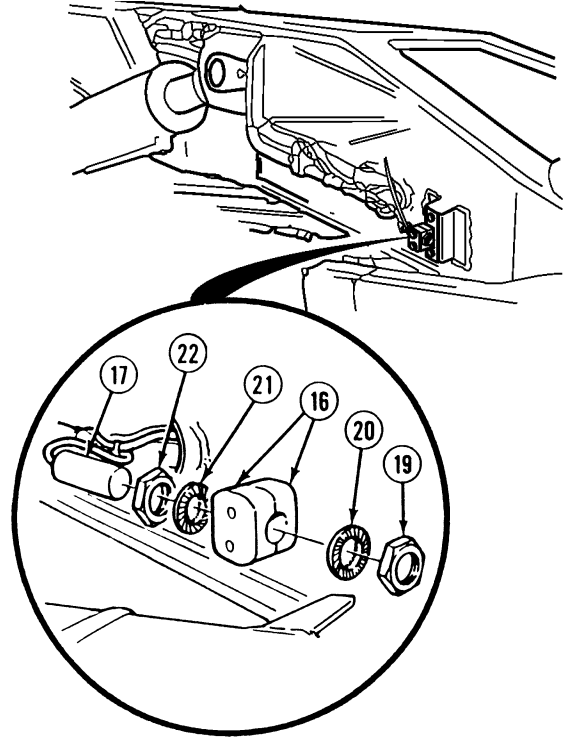


- (4) Remove two screws (13), lockwashers (14) and plate (15) from two clamp halves (16). Discard lockwashers.
- (5) Remove two clamp halves (16) with proximity switch (17) as an assembly from proximity switch mounting plate (18).

7-39. PROXIMITY SWITCH REPLACEMENT/ADJUSTMENT (MAIN FRAME DOWN) (CONT).

NOTE

- Lockwashers may or may not be used in Step (6).
 - There may only be one nut used in Step (6).
- (6) Remove nut (19), lockwasher (20), two clamp halves (16), lockwasher (21) and nut (22) from proximity switch (17). Discard lockwashers.



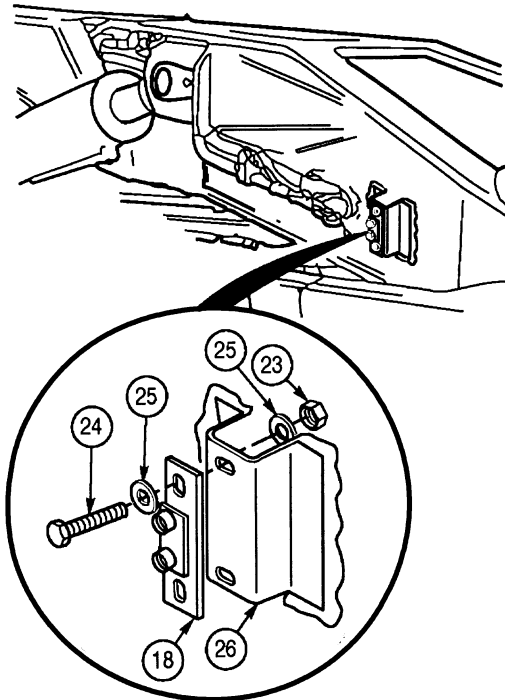
- (7) Remove two locknuts (23), screws (24), four washers (25) and proximity switch mounting plate (18) from middle frame (26).

b. Installation.

NOTE

Install cable ties as required.

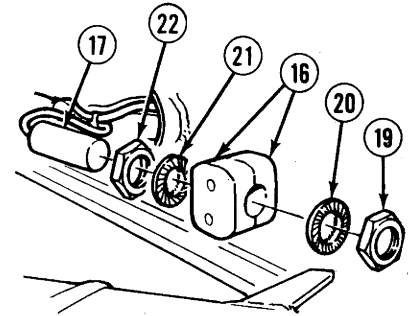
- (1) Position proximity switch mounting plate (18), four washers (25), two screws (24) and locknuts (23) on middle frame (26).



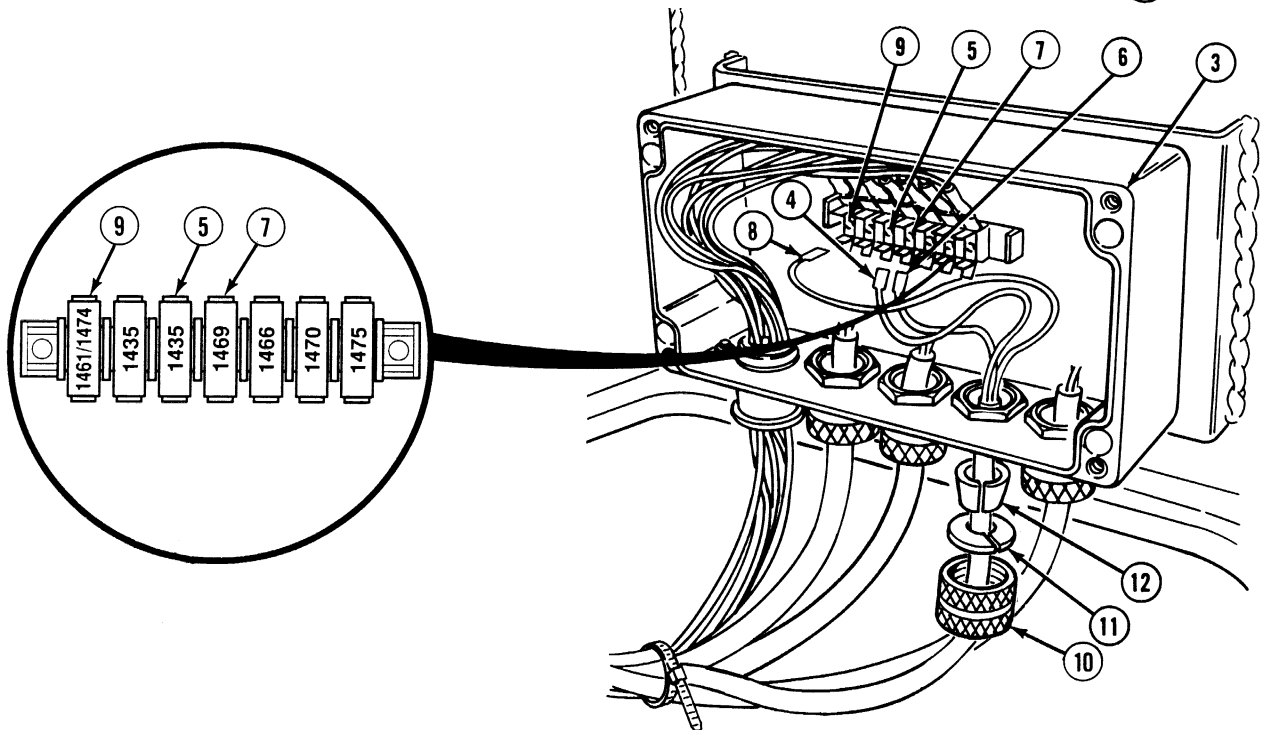
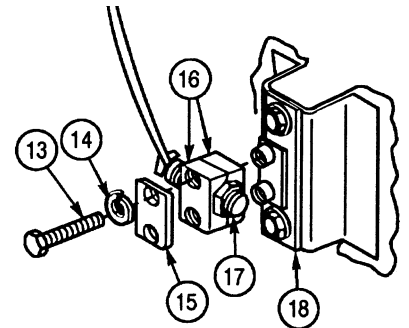
NOTE

- If lockwashers are not used in Step (2), serrated side of nuts face clamp.
- There may only be one nut used in Step (2).

(2) Position nut (22), lockwasher (21), two clamp halves (16), lockwasher (20) and nut (19) on proximity switch (17).



(3) Position proximity switch (17), with two clamp halves (16) as an assembly, on proximity switch mounting plate (18) with plate (15), two lockwashers (14) and screws (13).



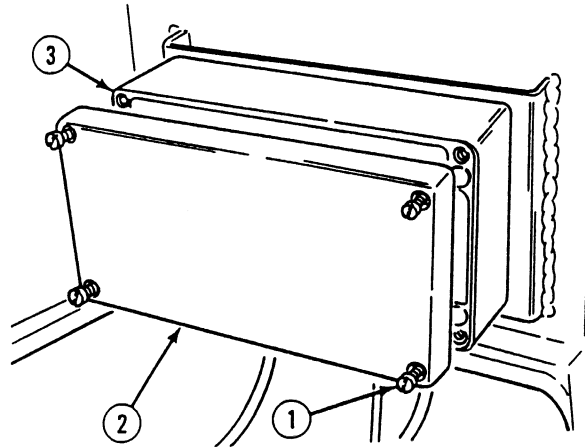
NOTE

Wire numbers on harnesses are positioned on terminal strip as indicated in chart.

- (4) Install wires 1461 (8), 1469 (6) and 1435 (4) in junction box (3) with sealing ring (12), washer (11) and collar (10).
- (5) Install wire 1461 (8) on terminal (9), wire 1469 (6) on terminal (7) and wire 1435 (4) on terminal (5).

7-39. PROXIMITY SWITCH REPLACEMENT/ADJUSTMENT (MAIN FRAME DOWN) (CONT).

- (6) Position junction box cover (2) on junction box (3) and tighten four screws (1).

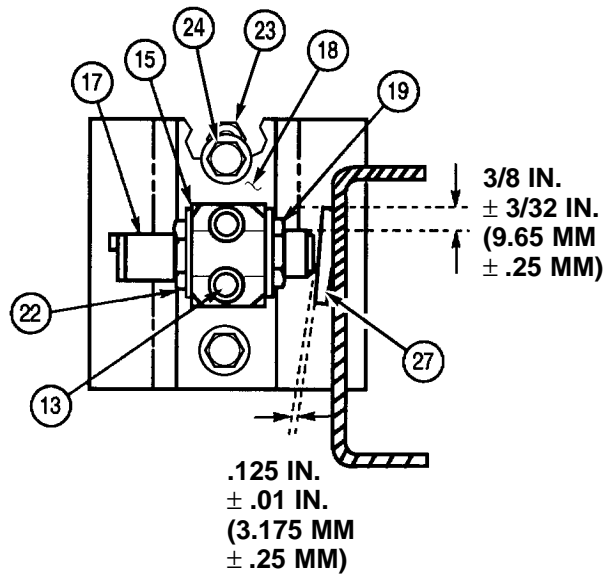


c. Adjustment.

NOTE

Proximity switch mounting plate and middle frame have slotted holes to aid in adjustment.

- (1) Adjust height between top of proximity switch (17) and top of target plate (27). Height should be 3/8 in. \pm 3/32 in. (9.65 mm \pm .25 mm).
- (2) Tighten proximity switch mounting plate (18) with two screws (24) and locknuts (23).
- (3) Adjust clearance between proximity switch (17) and target plate (27). Clearance should be .125 in. \pm .01 in. (3.175 mm \pm .25 mm).
- (4) Tighten two screws (13) on clamp halves (15).



d. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check LHS operation, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-40. LOAD HANDLING SYSTEM (LHS) CONTROL ASSEMBLY (CAB) REPLACEMENT.

This task covers:

a. Removal

b. Installation

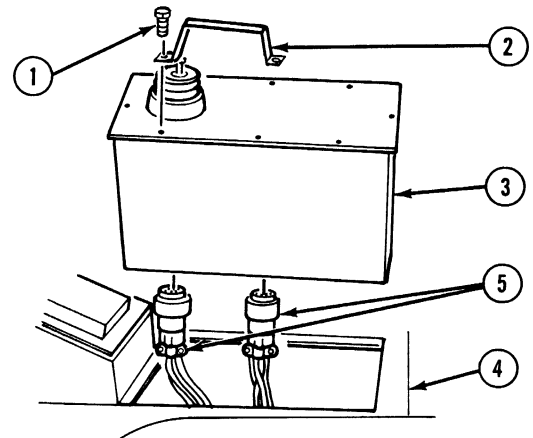
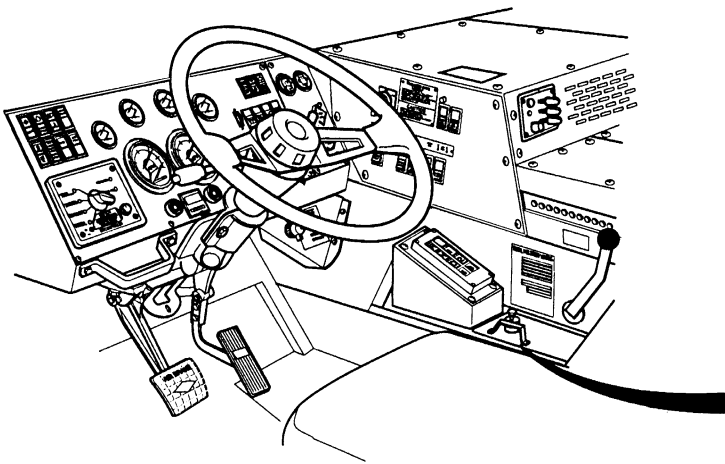
c. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.**NOTE**

Do not remove eight acorn nuts on control cover. Control is not repairable and should not be disassembled.

- (1) Remove eight screws (1) and handle (2) from control assembly (3).
- (2) Remove control assembly (3) from console (4).
- (3) Remove two connectors (5) from control assembly (3).

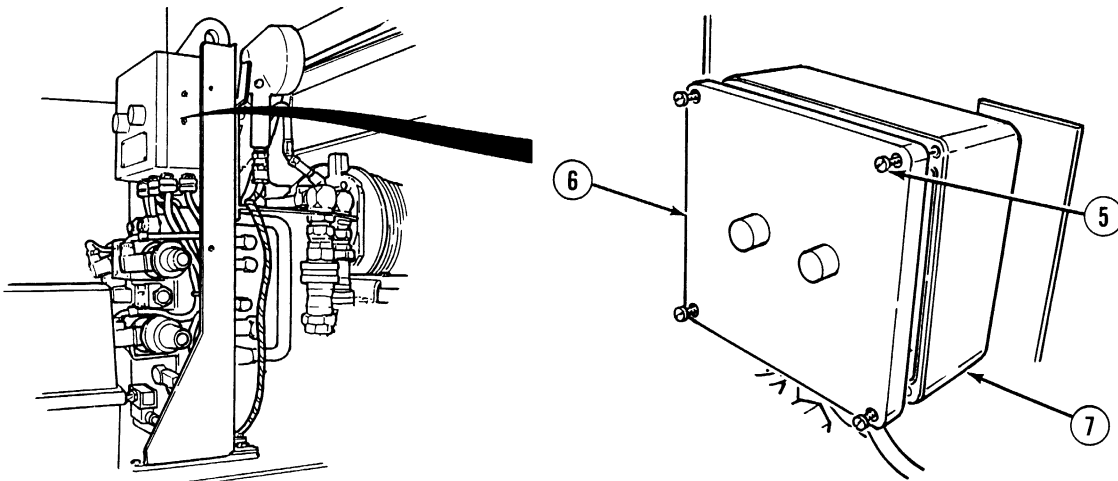
b. Installation.

- (1) Install two connectors (5) on control assembly (3).
- (2) Install control (3) and handle (2) in console (4) with eight screws (1).

c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Start engine and check operation of LHS, (TM 9-2320-364-10).
- Shut OFF ENGINE, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK



CAUTION

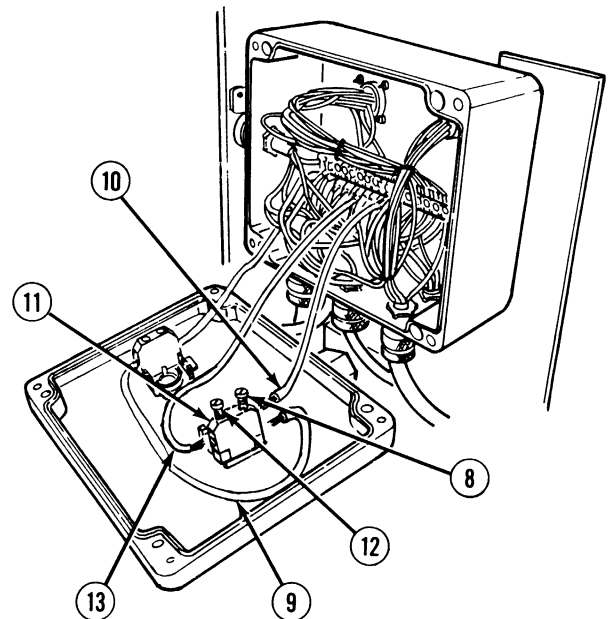
Carefully remove box cover to avoid pulling out wires or damage to wires may result.

- (2) Loosen four captive screws (5) and box cover (6) from box (7).

NOTE

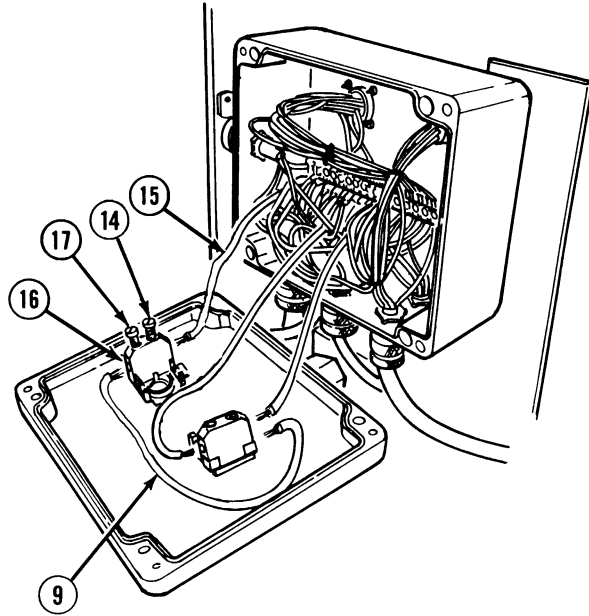
- Steps (3) and (4) are for left safe lowering button only.
- Steps (5) and (6) are for right safe lowering button only.
- Tag and mark wires prior to removal.

- (3) Loosen screw (8) and remove wire 1479 (9) and wire 1479 (10) from switch (11).
- (4) Loosen screw (12) and remove wire 1478 (13) from switch (11).



7-41. SAFE LOWERING BUTTON REPLACEMENT (CONT).

- (5) Loosen screw (14) and remove wire 1477 (15) from switch (16).
- (6) Loosen screw (17) and remove wire 1479 (9) from switch (16).



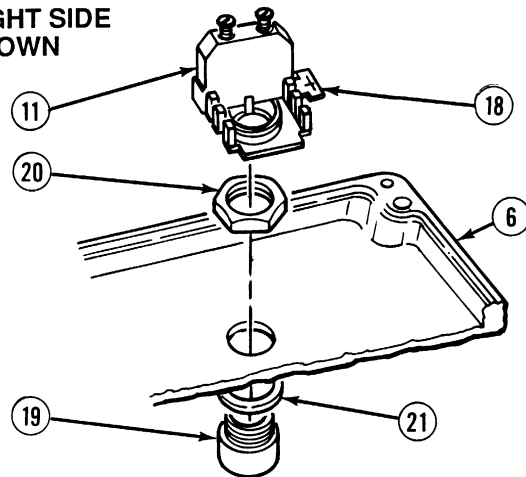
CAUTION

Pressing down on/or rotating tab too far could break tab and/or switch.

NOTE

- Mark position of switch prior to removal.
 - Both switches removed the same way.
 - Tab will only move a short distance.
- (7) Press down and rotate lock tab (18) clockwise on switch (11).
 - (8) Lift off switch (11) from button (19).
 - (9) Remove nut (20), seal (21) and button (19) from cover (6).

RIGHT SIDE SHOWN



b. Installation.**NOTE**

Both switches are installed onto cover the same way.

- (1) Install seal (21) and button (19) in cover (6) with nut (20).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (2) Apply adhesive to back of switch (11).
- (3) Line up tabs in switch (11) and position switch (11) on button (19).

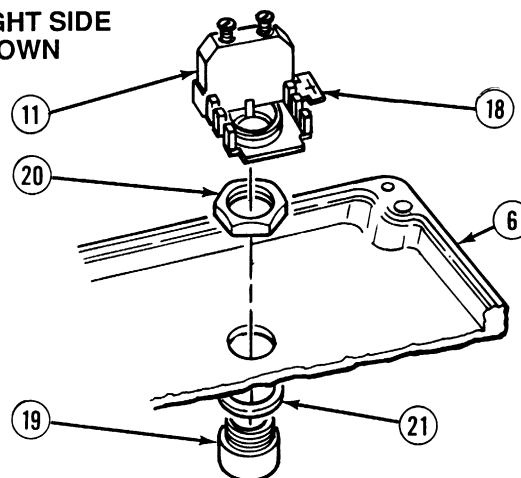
CAUTION

Pressing down on, or rotating tab more than required to lock tab could break tab and/or switch.

NOTE

Tab will only move a short distance.

- (4) Press down and rotate lock tab (18) counterclockwise on switch (11).

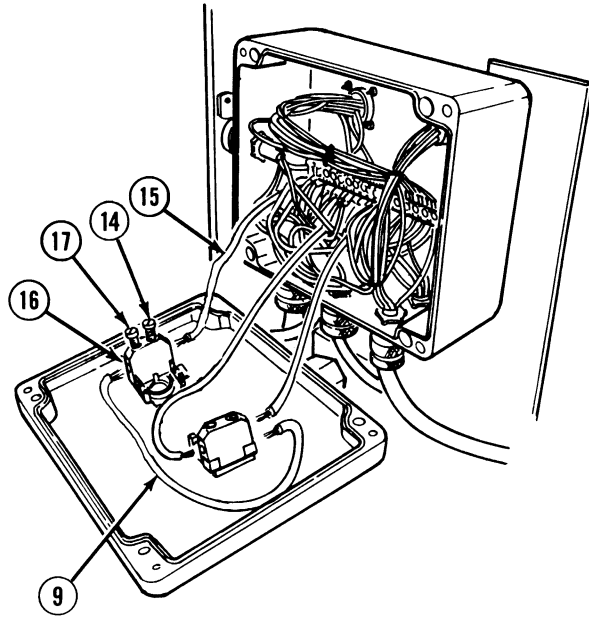
RIGHT SIDE SHOWN

7-41. SAFE LOWERING BUTTON REPLACEMENT (CONT).

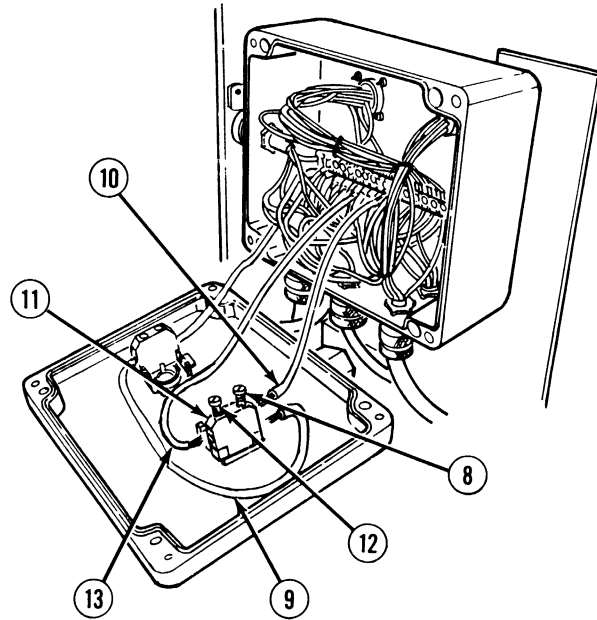
NOTE

- Steps (5) and (6) are for right safe lowering button only.
- Steps (7) and (8) are for left safe lowering button.

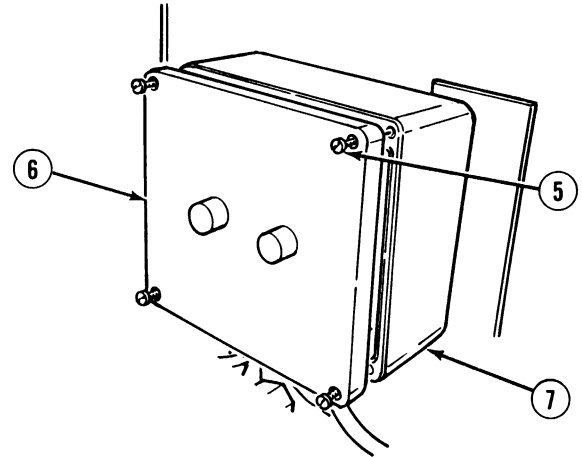
- (5) Install wire 1479 (9) on switch (16) and tighten screw (17).
- (6) Install wire 1477 (15) on switch (16) and tighten screw (14).



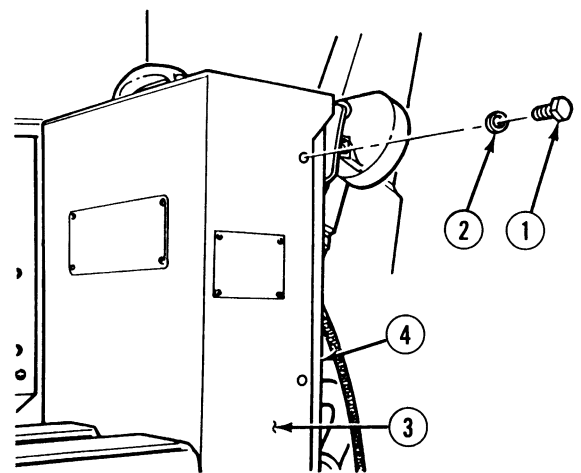
- (7) Install wire 1478 (13) on switch (11) and tighten screw (12).
- (8) Install wire 1479 (9) and wire 1479 (10) on switch (11) and tighten screw (8).



- (9) Install cover (6) on box (7) with four captive screws (5).



- (10) Install cover (3) on bracket (4) with six screws (1) and lockwashers (2).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-42. LHS JUNCTION BOX REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

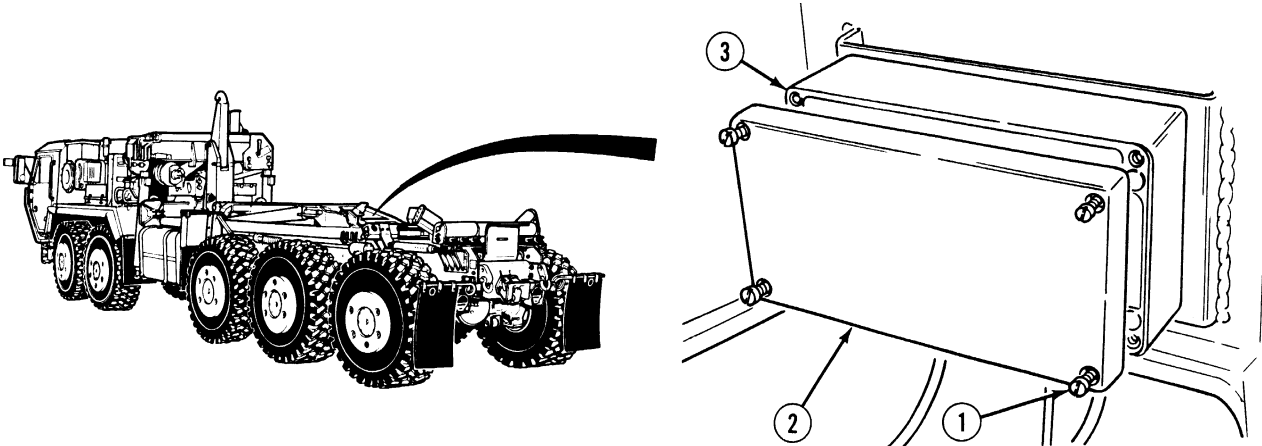
Materials/Parts

Adhesive (Item 8, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (6) (Item 103, Appendix F)
Lockwasher (4) (Item 224, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
LHS in transit position, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

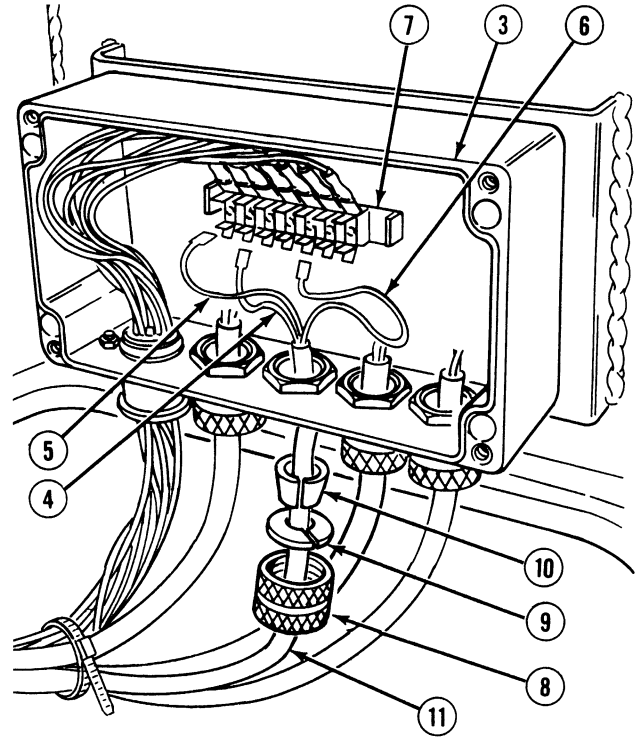
a. Removal.



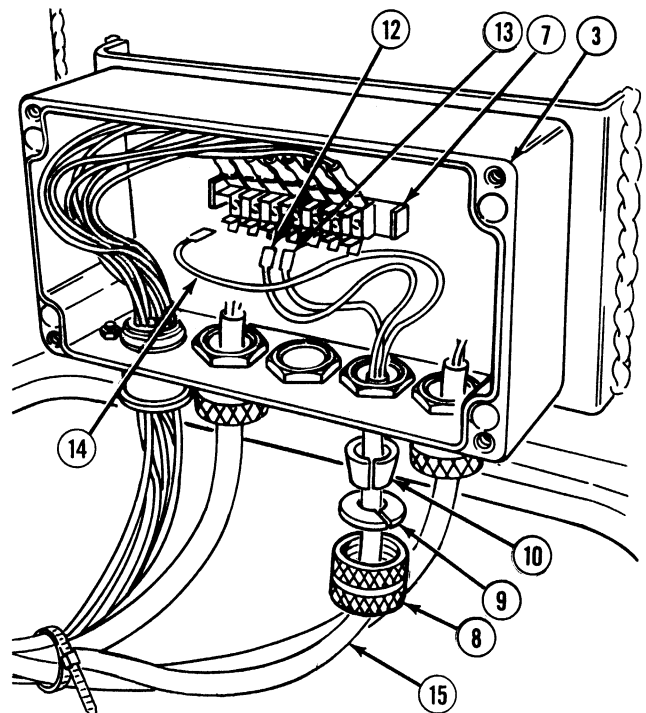
- (1) Loosen four captive screws (1) and remove junction box cover (2) from junction box (3).

NOTE

- Tag and mark wires prior to removal.
 - Remove cable ties as required.
- (2) Remove wire 1435 (4), wire 1474 (5) and wire 1466 (6) from terminal strip (7).
 - (3) Remove collar (8), washer (9), sealing ring (10) and cable (11) as an assembly from junction box (3).

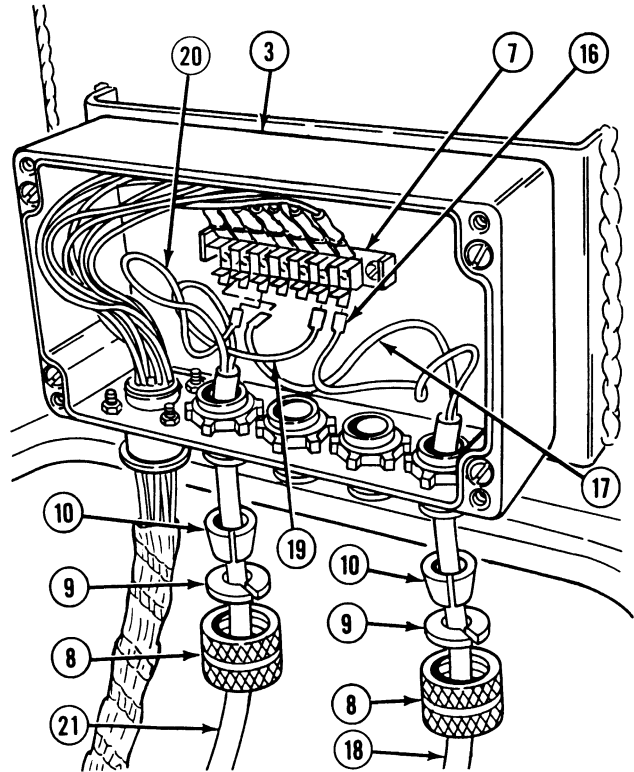


- (4) Remove wire 1435 (12), wire 1469 (13) and wire 1461 (14) from terminal strip (7).
- (5) Remove collar (8), washer (9), sealing ring (10) and cable (15) as an assembly from junction box (3).

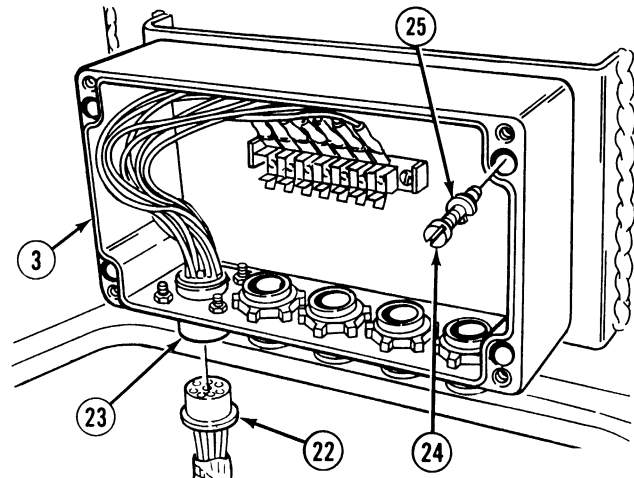


7-42. LHS JUNCTION BOX REPLACEMENT (CONT).

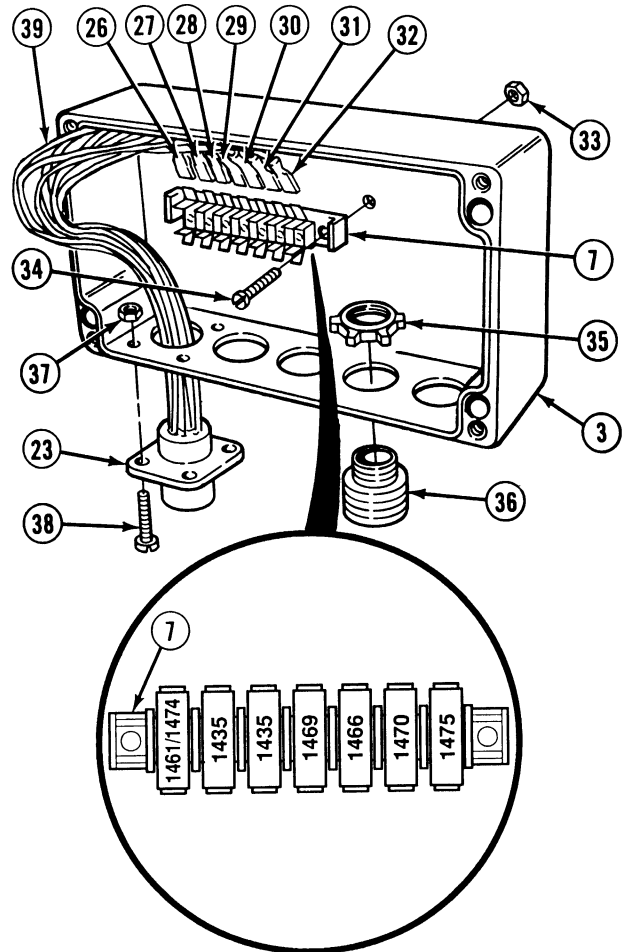
- (6) Remove wire 1475 (16) and wire 1435 (17) from terminal strip (7).
- (7) Remove collar (8), washer (9), sealing ring (10) and cable (18) as an assembly from junction box (3).
- (8) Remove wire 1470 (19) and wire 1435 (20) from terminal strip (7).
- (9) Remove collar (8), washer (9), sealing ring (10) and cable (21) as an assembly from junction box (3).



- (10) Remove MC87 connector (22) from connector (23).
- (11) Remove four screws (24), lockwashers (25) and junction box (3) from truck. Discard lockwashers.



- (12) Remove harness wires 1461 (26), 1435 (27), 1469 (28), 1469 (29), 1466 (30), 1470 (31) and 1475 (32) from terminal strip (7).
- (13) Remove two locknuts (33), screws (34) and terminal strip (7) from junction box (3). Discard locknuts.
- (14) Remove four locknuts (35) and bulkheads (36) from junction box (3). Discard locknuts.
- (15) Remove four locknuts (37), screws (38), connector (23) and harness (39) from junction box (3). Discard locknuts.



b. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

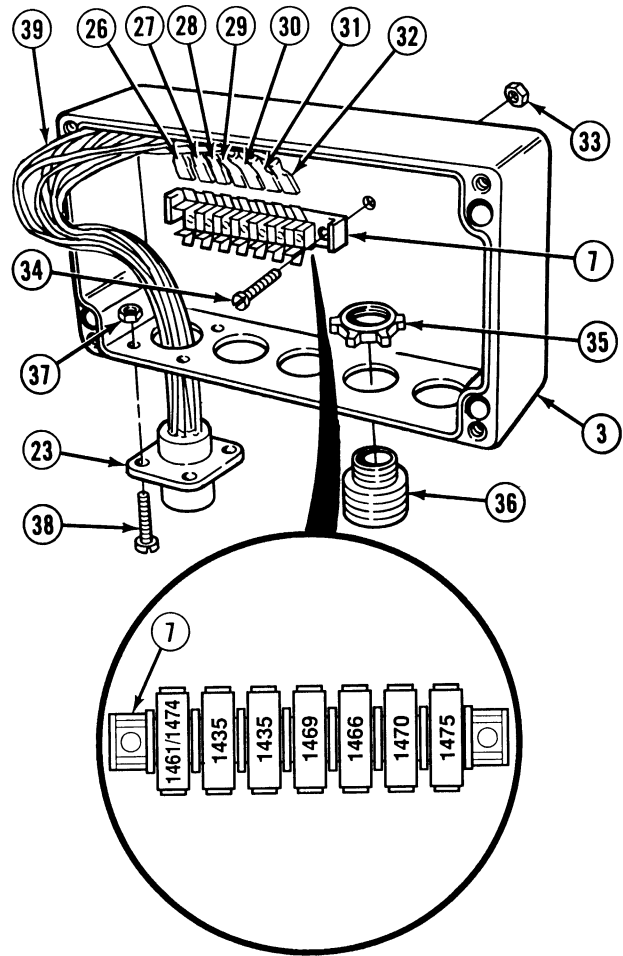
NOTE

Wire numbers on harnesses match numbers on terminal strip.

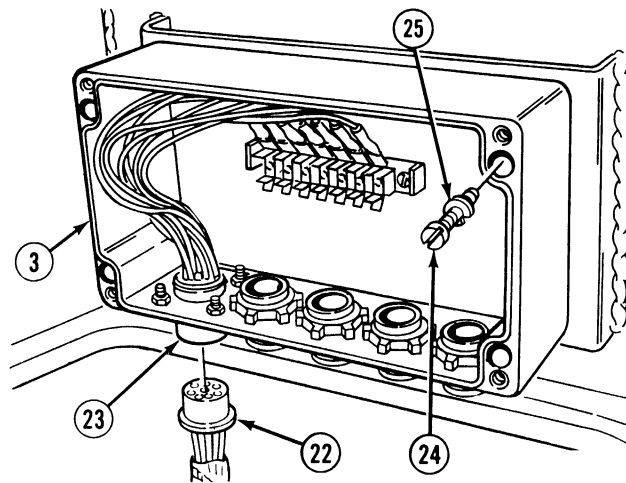
- (1) Apply adhesive to back plate of connector (23).

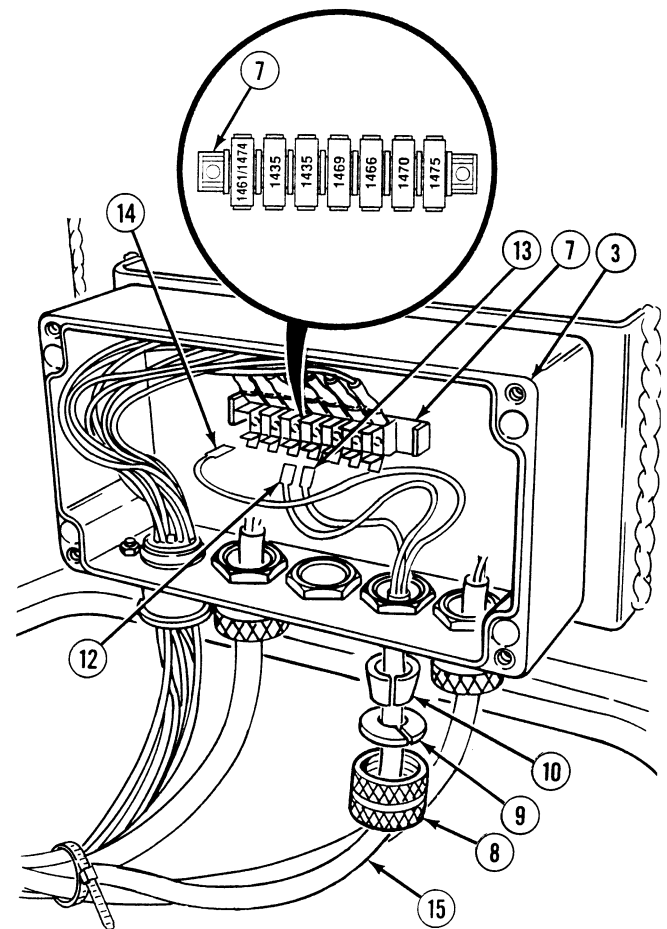
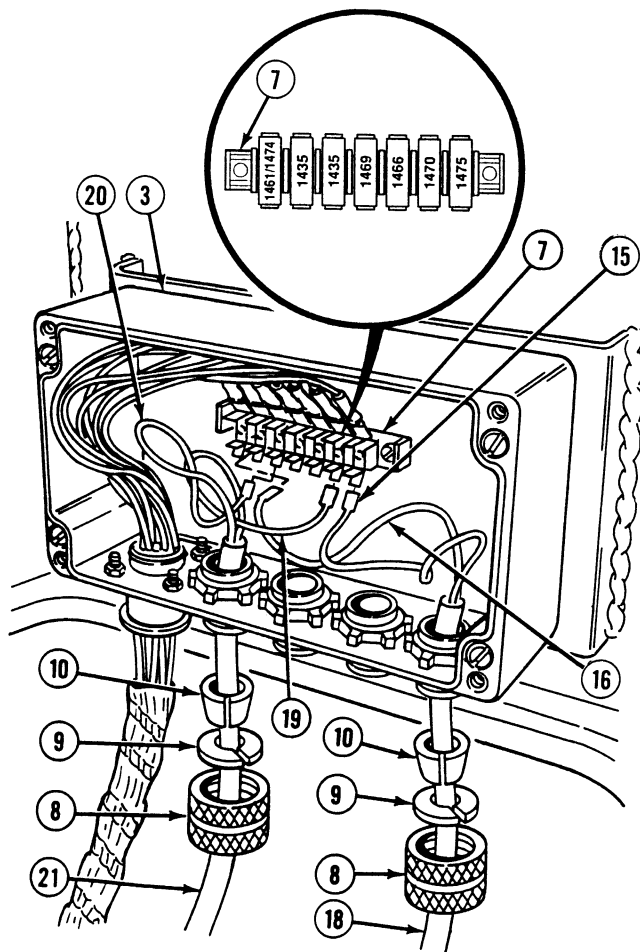
7-42. LHS JUNCTION BOX REPLACEMENT (CONT).

- (2) Install harness (39) and connector (23) in junction box (3) with four screws (38) and locknuts (37).
- (3) Install four bulkheads (36) on junction box (3) with locknuts (35).
- (4) Apply adhesive to back plate of terminal strip (7).
- (5) Install terminal strip (7) with two screws (34) and locknuts (33).
- (6) Install wires 1461 (26), 1435 (27), 1435 (28), 1469 (29), 1466 (30), 1470 (31) and 1475 (32) on terminal strip (7).



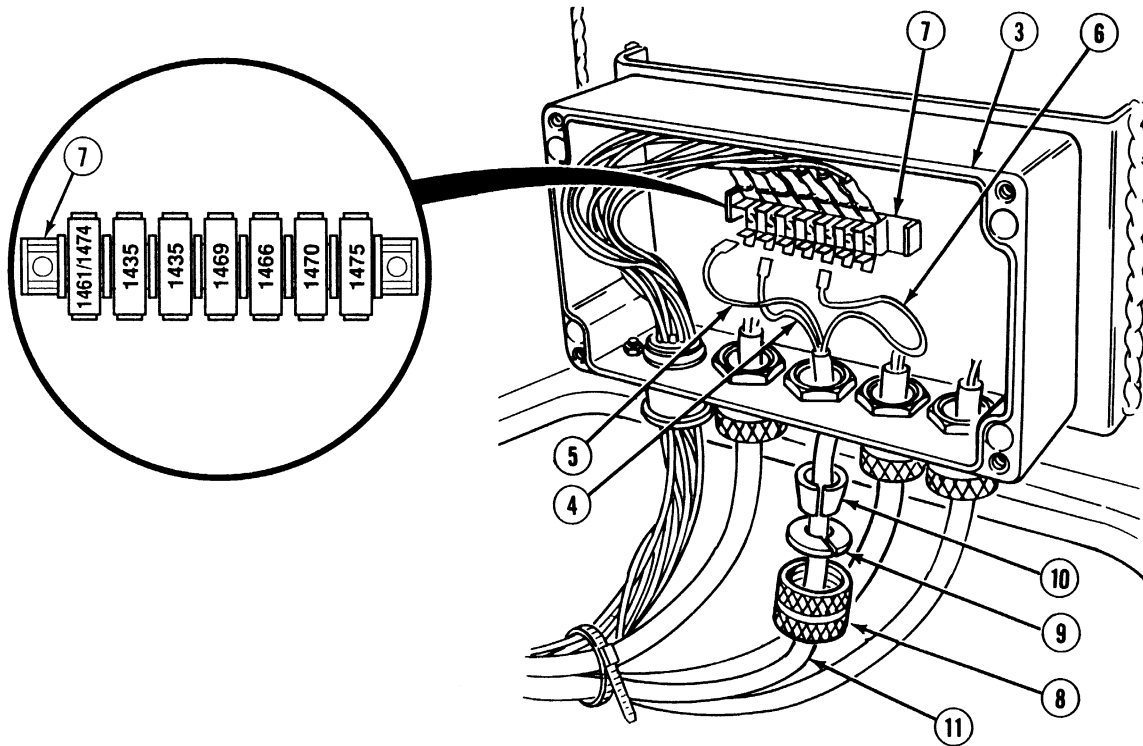
- (7) Install junction box (3) on truck with four screws (24) and lockwashers (25).
- (8) Install MC87 connector (22) on connector (23).





- (9) Install sealing ring (10), washer (9), collar (8) and cable (21) as an assembly on junction box (3).
- (10) Install wire 1470 (19) and wire 1435 (20) on terminal strip (7).
- (11) Install sealing ring (10), washer (9), collar (8) and cable (18) as an assembly on junction box (3).
- (12) Install wire 1435 (16) and wire 1475 (15) on terminal strip (7).
- (13) Install sealing ring (10), washer (9), collar (8) and cable (15) in junction box (3) as an assembly.
- (14) Install wire 1461 (14), wire 1469 (13) and wire 1435 (12) on terminal strip (7).

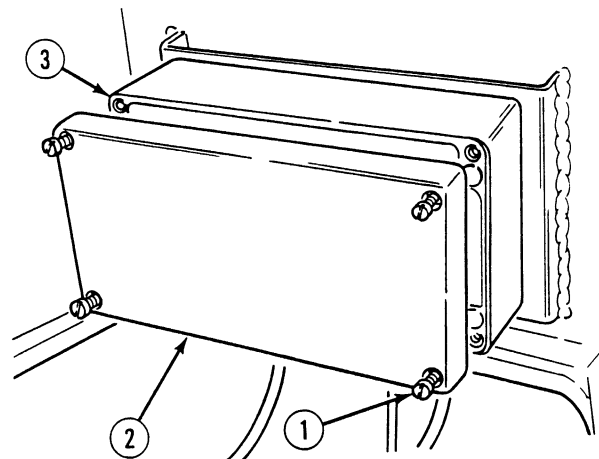
7-42. LHS JUNCTION BOX REPLACEMENT (CONT).



- (15) Install sealing ring (10), washer (9), collar (8) and cable (11) in junction box (3) as an assembly.
- (16) Install wire 1466 (6), wire 1474 (5) and wire 1435 (4) on terminal strip (7).
- (17) Install junction box cover (2) on junction box (3) with four captive screws (1).

c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).



END OF TASK

7-43. OUTRIGGER PROXIMITY SWITCH REPLACEMENT.

This task covers:

- | | |
|-----------------|--------------------------|
| a. Removal | c. Adjustment |
| b. Installation | d. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Wrench, Combination 1-1/2 in.
(Item 83, Appendix G)

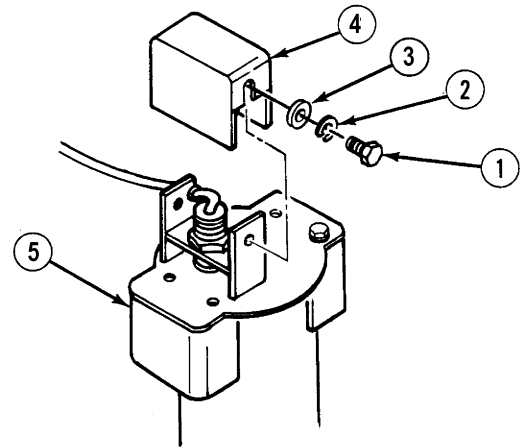
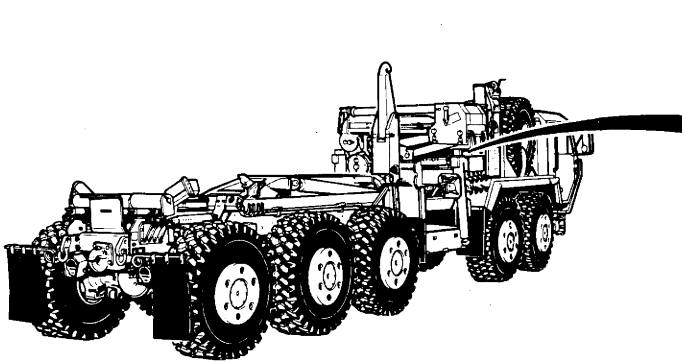
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

Materials/Parts

Cable Ties (Item 25, Appendix C)
Lockwasher (2) (Item 172, Appendix F)

a. Removal.



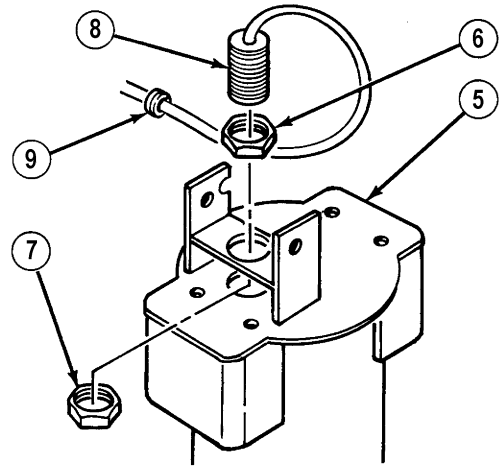
NOTE

Left and right proximity switches are removed the same way. Right side shown.

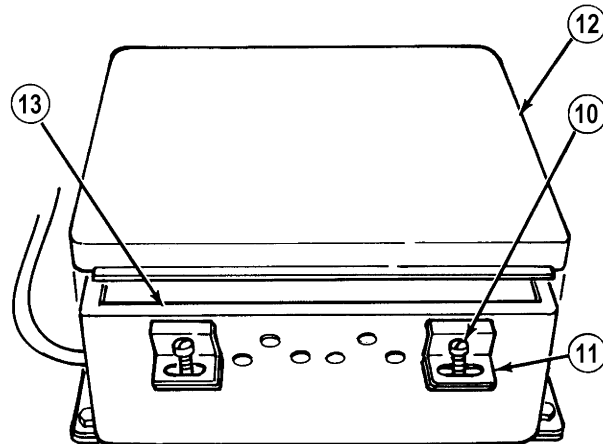
- (1) Remove two screws (1), lockwashers (2), washers (3) and proximity switch cover (4) from outrigger cover (5). Discard lockwashers.

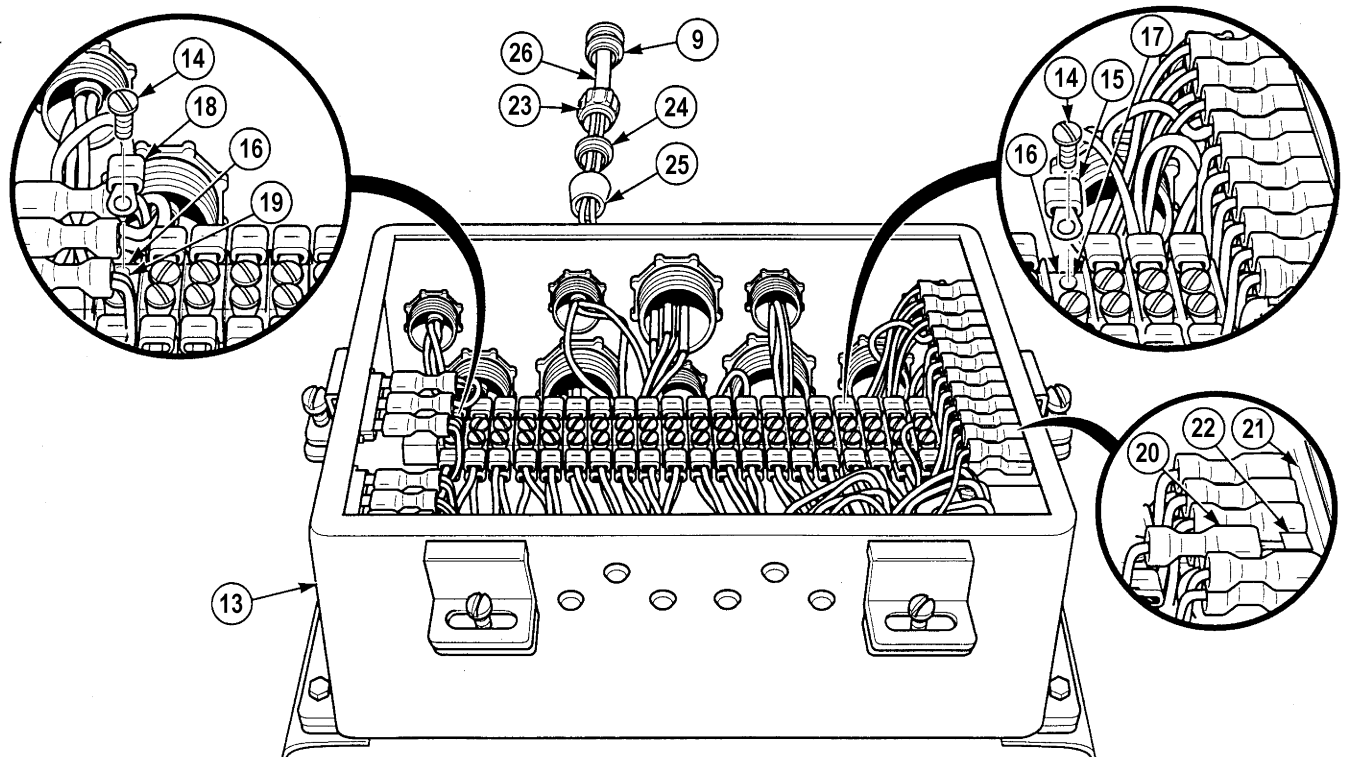
7-43. OUTRIGGER PROXIMITY SWITCH REPLACEMENT (CONT).

- (2) Loosen top jam nut (6) from cover (5).
- (3) Remove bottom jam nut (7) from proximity switch (8).
- (4) Remove proximity switch (8) and grommet (9) from cover (5).
- (5) Remove top jamnut (6) from switch (8).
- (6) Repeat Steps (1) through (5) for left side outrigger proximity switch.



- (7) Loosen six screws (10), clips (11) and remove cover (12) from junction box (13).

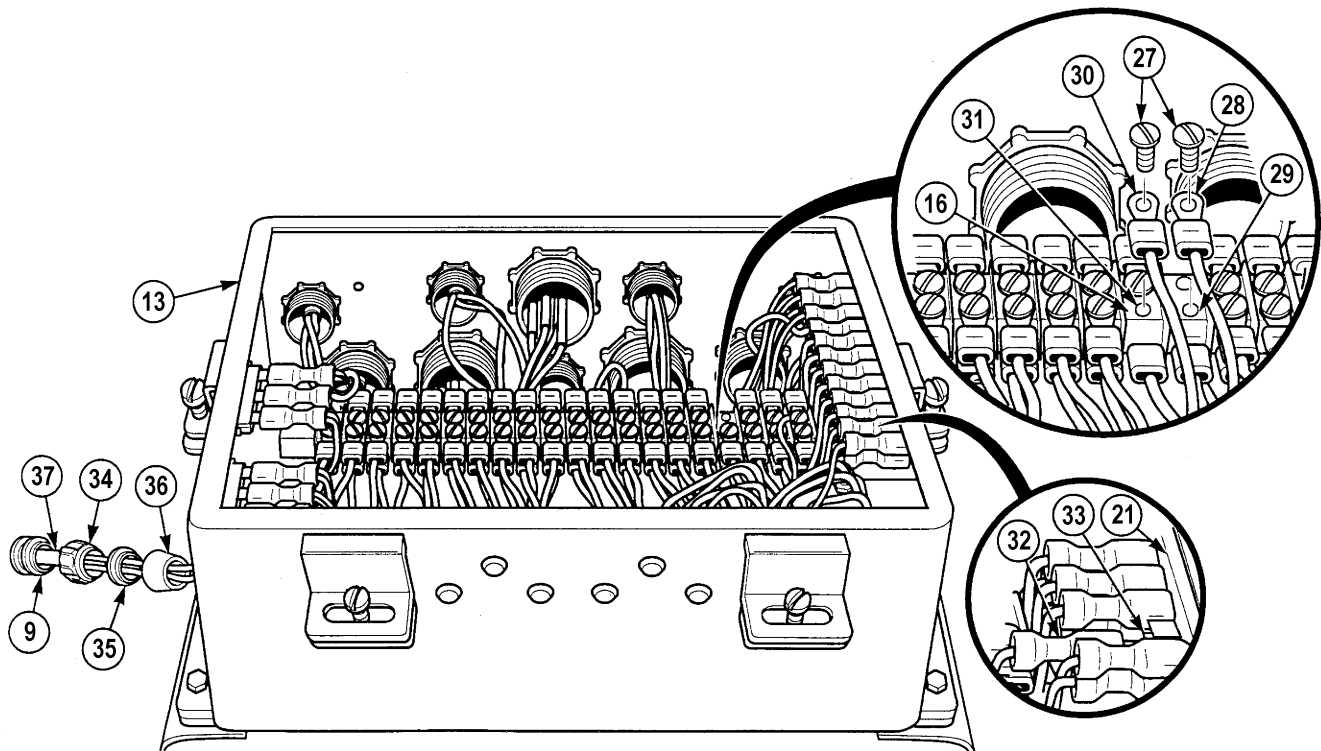




NOTE

- Tag and mark electrical wires and cables before disassembly.
 - Remove cable ties as necessary.
 - Perform Steps (8) through (12) for right hand proximity switch.
 - Perform Steps (13) through (17) for left hand proximity switch.
- (8) Remove screw (14) and black wire (15) from bus bar (16) at terminal 4 (17).
- (9) Remove screw (14) and brown wire (18) from bus bar (16) at terminal 20 (19).
- (10) Disconnect blue wire (20) from top of ground strip (21) at terminal 2 (22).
- (11) Remove cover (23), washer (24), grommet (25) and cable (26) from junction box (13).
- (12) Remove grommet (9) from cable (26).

7-43. OUTRIGGER PROXIMITY SWITCH REPLACEMENT (CONT).



- (13) Remove screw (27) and brown wire (28) from bus bar (16) at terminal 4 (29).
- (14) Remove screw (27) and black wire (30) from bus bar (16) at terminal 5 (31).
- (15) Disconnect blue wire (32) from bottom of ground strip (21) at terminal 2 (33).
- (16) Remove cover (34), washer (35), grommet (36) and cable (37) from junction box (13).
- (17) Remove grommet (9) from cable (37).

b. Installation.

NOTE

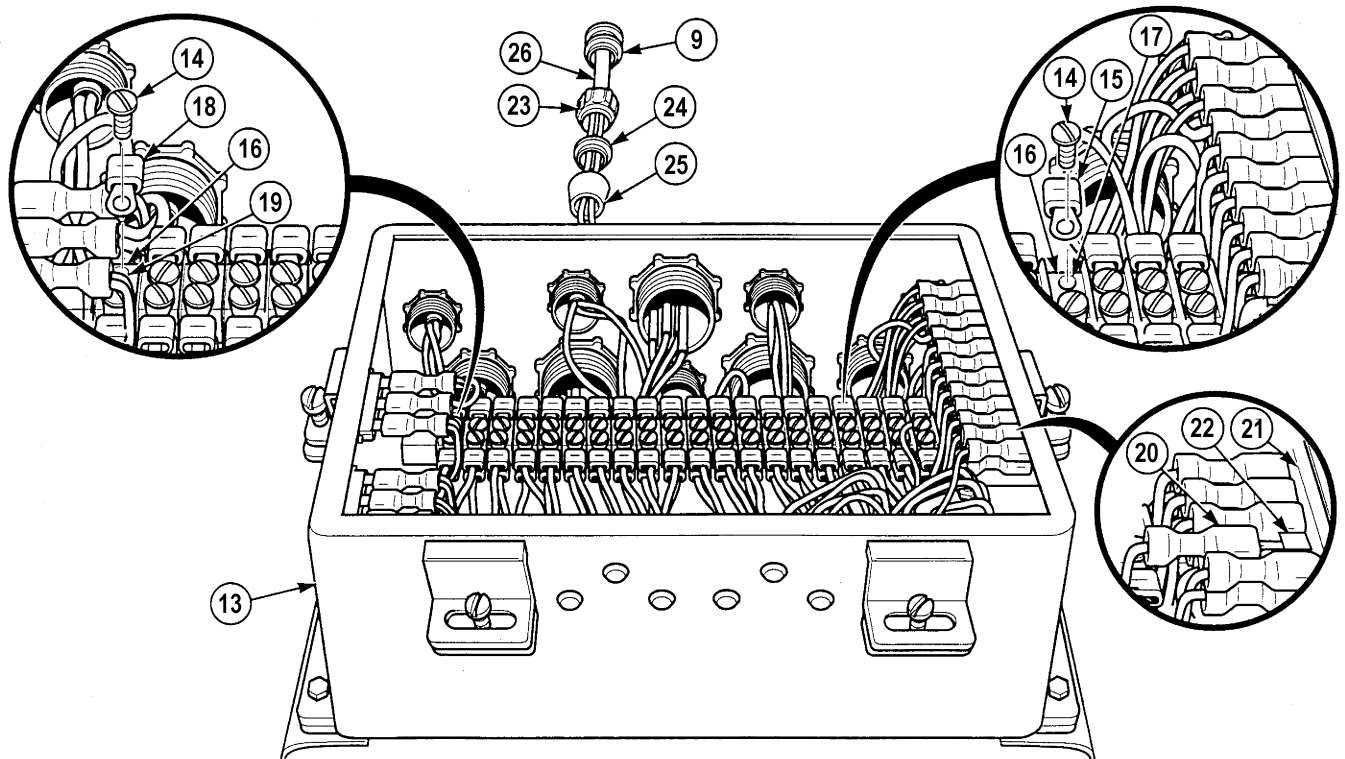
- Perform Steps (1) through (5) for left hand proximity switch.
- Perform Steps (6) through (10) for right hand proximity switch.

- (1) Position grommet (9), cover (34), washer (35) and grommet (36), on cable (37) and install cable in junction box (13).
- (2) Connect blue wire (32) on bottom of ground strip (21) at terminal 2 (33).

NOTE

Use cable ties as necessary to bundle wires.

- (3) Install brown wire (28) on bus bar (16) at terminal 4 (29) with screw (27).
- (4) Install black wire (30) on bus bar (16) at terminal 5 (31) with screw (27).
- (5) Tighten cover (34) on cable (37).



- (6) Position grommet (9), cover (23), washer (24) and grommet (25), on cable (26) and install cable in junction box (13).
- (7) Connect blue wire (20) on top of ground strip (21) at terminal 2 (22).

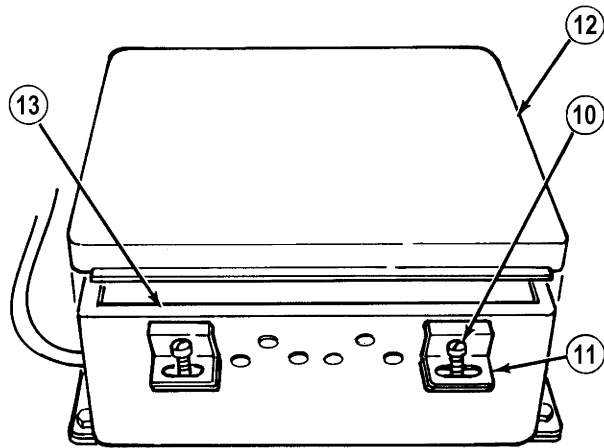
NOTE

Use cable ties as necessary to bundle wires.

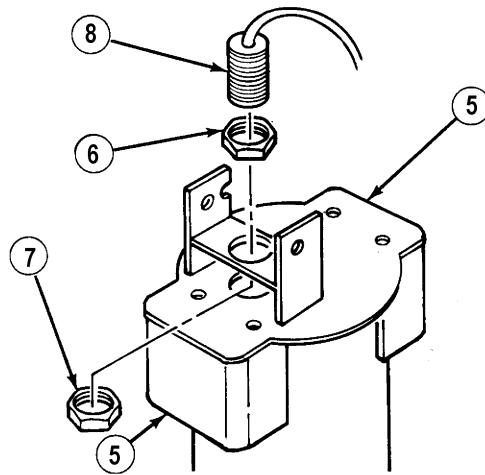
- (8) Install black wire (15) on bus bar (16) at terminal 4 (17) with screw (14).
- (9) Install brown wire (18) to bus bar (16) at terminal 20 (19) with screw (14).
- (10) Tighten cover (23) on cable (26).

7-43. OUTRIGGER PROXIMITY SWITCH REPLACEMENT (CONT).

- (11) Install cover (12) on junction box (13) with six clips (11). Tighten screws (10).



- (12) Position top jam nut (6) on proximity switch (8).
- (13) Position proximity switch (8) in outrigger cover (5) to marked position.
- (14) Position bottom jam nut (7) on proximity switch (8).
- (15) Repeat Steps (12) through (14) for left side proximity switch.

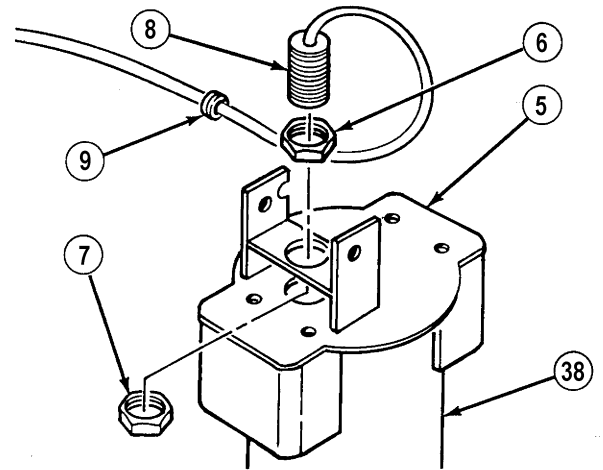


c. Adjustment.

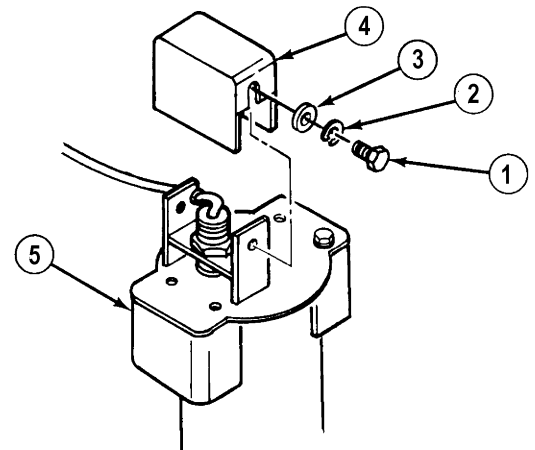
- (1) Connect batteries, (Para 7-87).
- (2) Start engine and lower outriggers until weight is off suspension, (TM 9-2320-364-10).
- (3) Shut OFF engine, (TM 9-2320-364-10).
- (4) Adjust top jam nut (6) and bottom jam nut (7) until proximity switch (8) contacts outriggers cylinder (38).

NOTE

- Proper adjustment for proximity switch is with switch backed out two complete turns from cylinder contact point.
- Adjusting jam nuts will result in movement of switch.



- (5) Tighten top jam nut (6) two complete turns to back proximity switch out two threads.
- (6) Tighten bottom jam nut (7).
- (7) Install grommet (9) on outrigger cover (5).
- (8) Install proximity switch cover (4) on outrigger cover (5) with two washers (3), lockwashers (2) and screws (1).
- (9) Repeat Steps (4) through (8) for left side proximity switch.



d. Follow-On Maintenance:

- Check crane operation, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-44. HEAD LIGHT ADJUSTMENT.

This task covers:

- a. Head Light Aim Check b. Head Light Adjustment c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

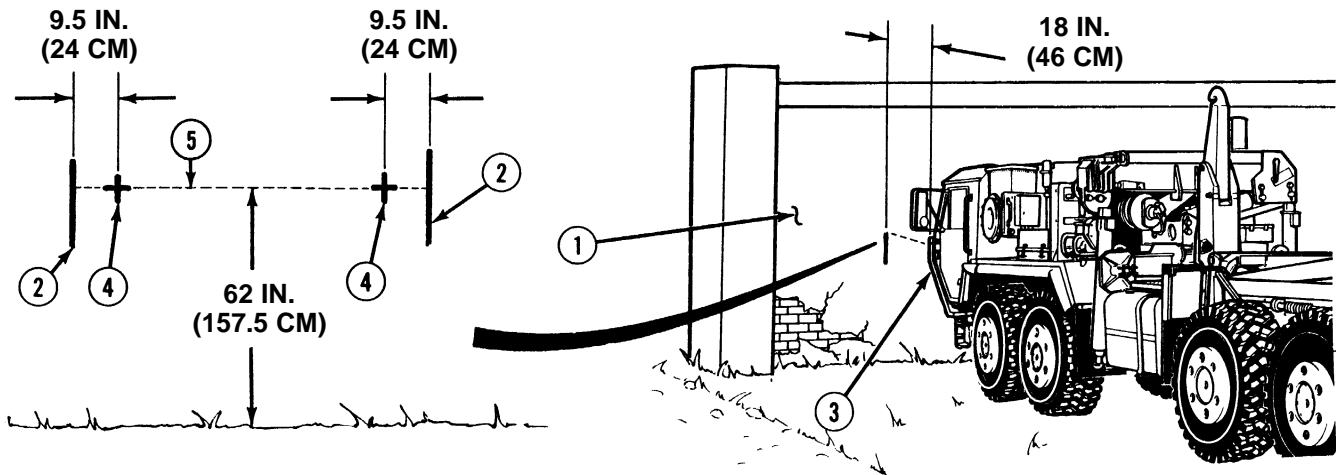
Materials/Parts

Chalk (Item 28, Appendix C)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Set tire pressures to highway,
(TM 9-2320-364-10)

a. Head Light Aim Check.



NOTE

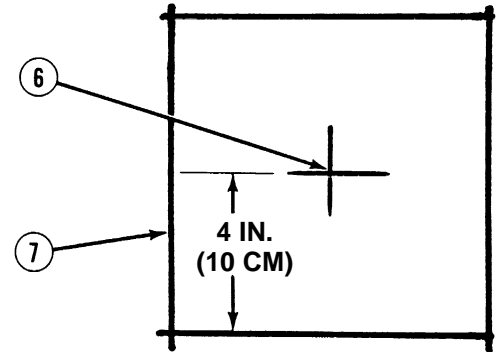
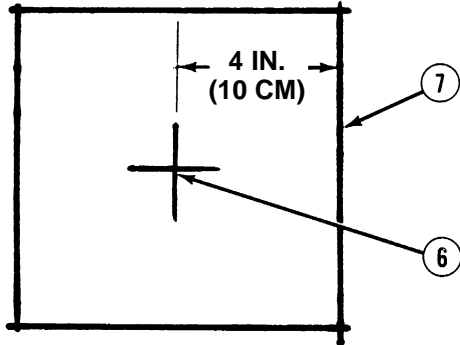
Ensure truck is parked on level ground.

- (1) Ensure skid plate is 18 in. (46 cm) from flat surface (1). Apply parking brake.

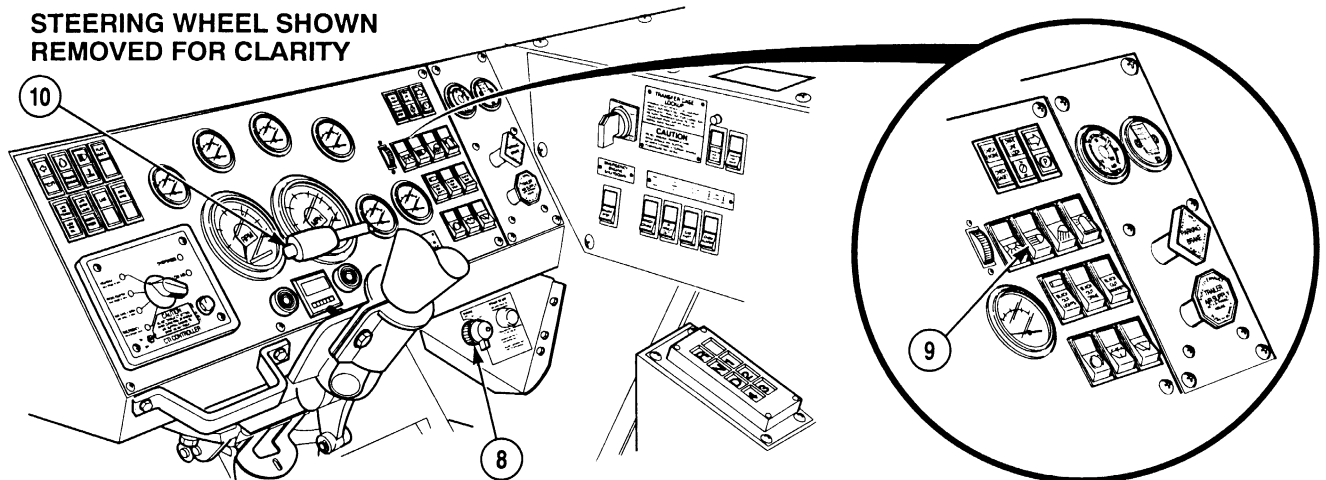
NOTE

Ensure truck is empty before checking aim of head lamps.

- (2) Using chalk, draw vertical line (2) on flat surface from each end of skid plate (3).
(3) Measure in 9 1/2 in. (24 cm) from each vertical chalk line (2) and draw small vertical chalk line (4).
(4) Measure up 62 in. (157.5 cm) from ground and draw horizontal chalk line (5) crossing vertical chalk line (4) making a cross.



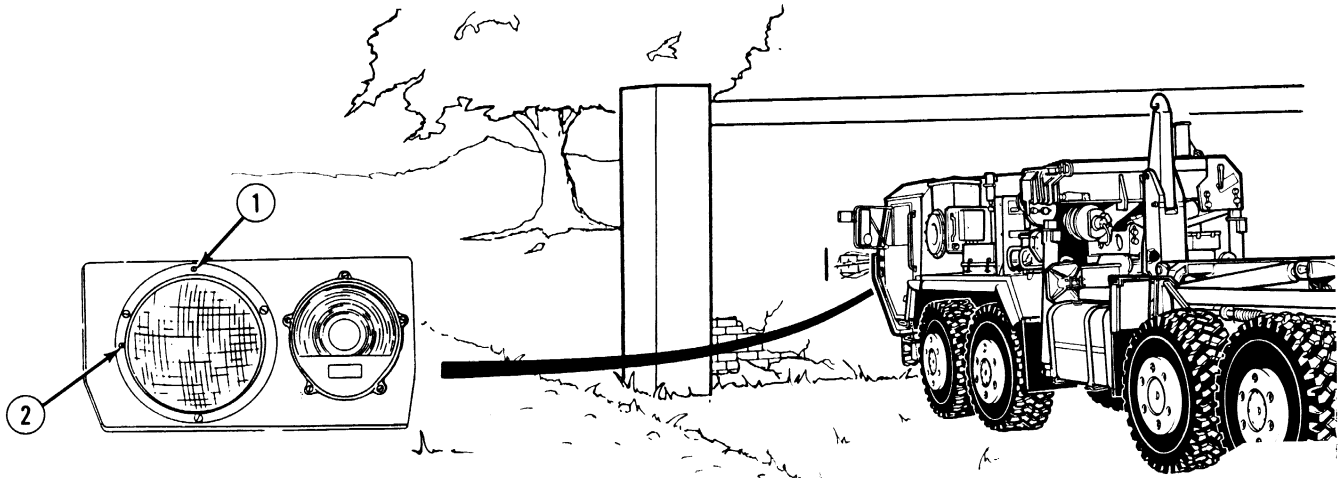
- (5) Measure out 4 in. (10 cm) from center of each cross (6) in four directions to make an 8 in. (20 cm) square (7).



- (6) Turn engine switch (8) to ON position.
- (7) Turn head light switch (9) on and set dimmer button (10) on low beam.
- (8) Note location where head light beams strike vertical surface. If head light beams strike within squares, head light aim is correct. Go to end of task. If head light beams strike outside squares, perform adjustment.

7-44. HEAD LIGHT ADJUSTMENT (CONT).

b. Head Light Adjustment.

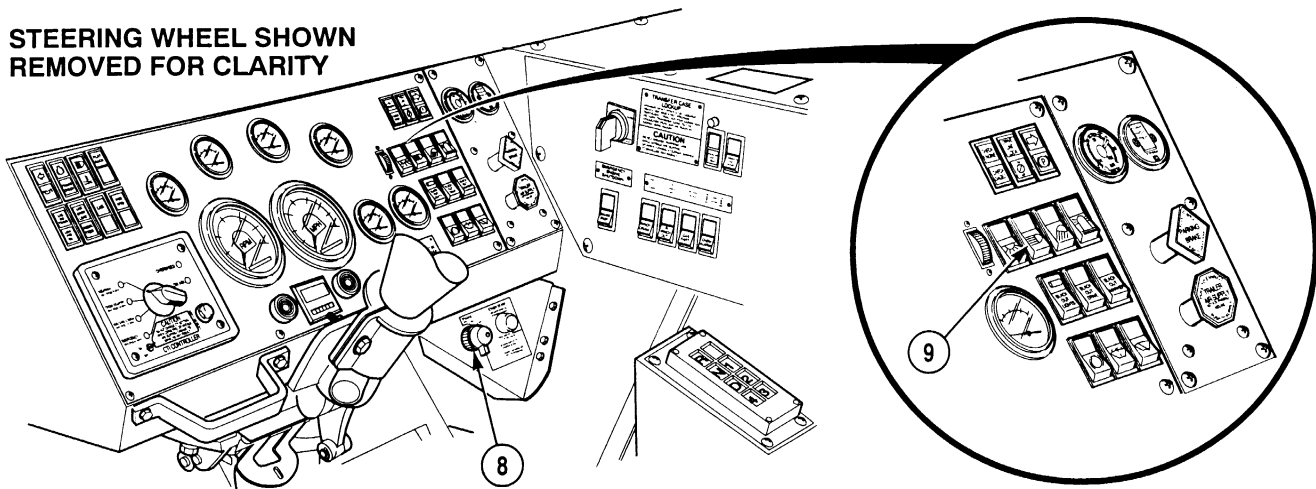


NOTE

- Turning screw clockwise moves head light up or left.
- Turning screw counterclockwise moves head light down or right.

- (1) Turn adjusting screw (1) to move head light up or down.
- (2) Turn adjusting screw (2) to move head light right or left.

STEERING WHEEL SHOWN REMOVED FOR CLARITY



- (3) Check adjustment.
- (4) Turn head light switch (9) off.
- (5) Turn engine switch (8) to OFF position

c. Follow-On Maintenance:

- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-45. HEAD LIGHT ASSEMBLY REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)

Materials/Parts

Compound, Corrosion Preventive
(Item 34, Appendix C)
Tag, Identification (Item 88, Appendix C)
Gasket, Headlight (Item 71, Appendix F)

Materials/Parts - Continued

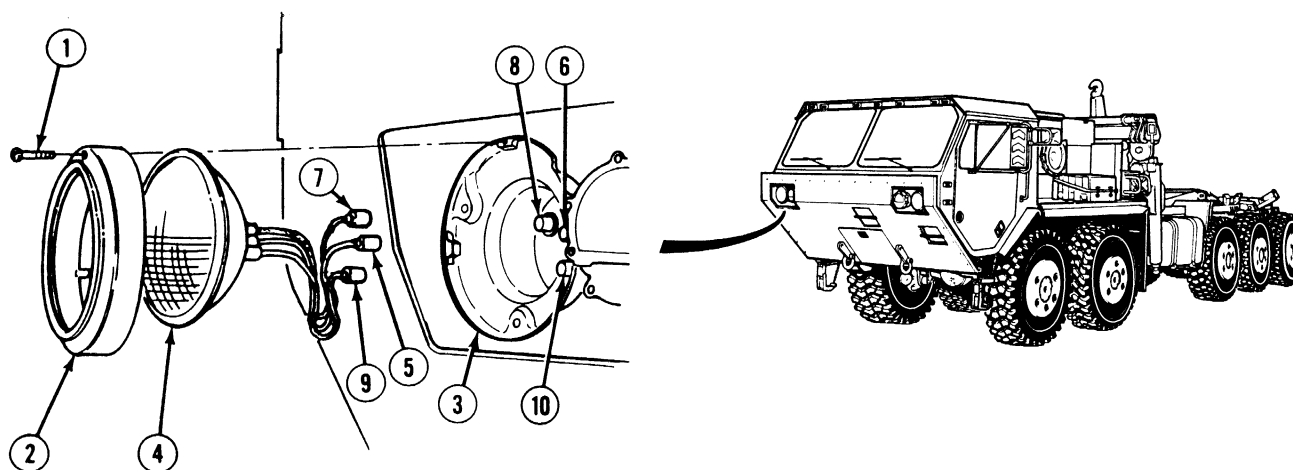
Locknut (6) (Item 106, Appendix F)
Lockwasher (3) (Item 195, Appendix F)

Personnel Required

Two

Equipment Condition

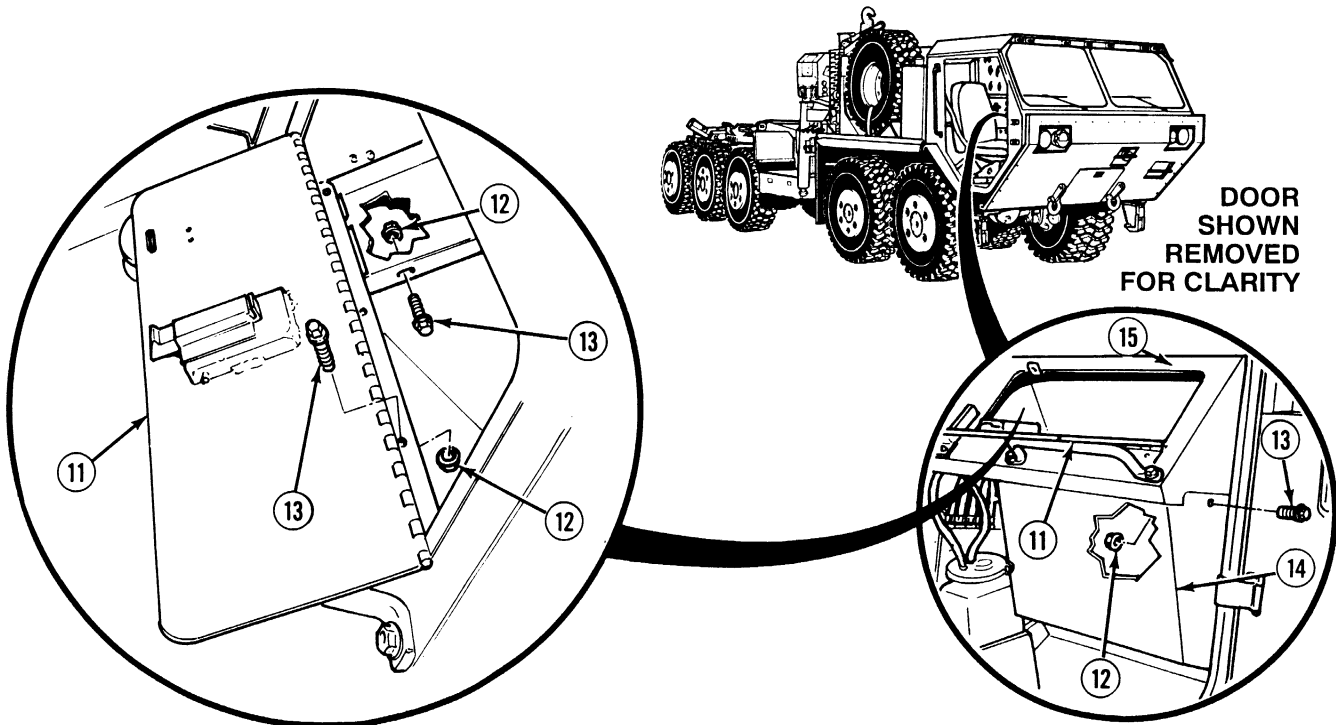
Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.**NOTE**

Tag and mark all wires before removal.

- (1) Remove three screws (1) and head lamp retaining ring (2) from head light assembly (3).
- (2) Remove head lamp (4) from head light assembly (3).
- (3) Disconnect wire 1018 (5) from connector (6) on head light assembly (3).
- (4) Disconnect wire 1017 (7) from connector (8) on head light assembly (3).
- (5) Disconnect wire 1091 (9) from connector (10) on head light assembly (3).

7-45. HEAD LIGHT ASSEMBLY REPLACEMENT (CONT).



NOTE

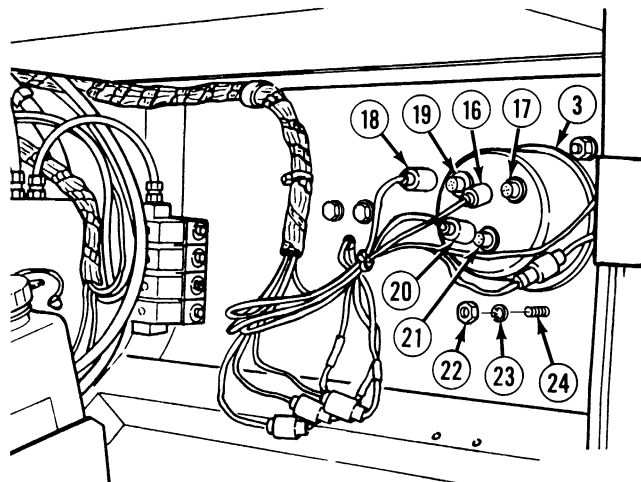
Perform Step (6) for right side only.

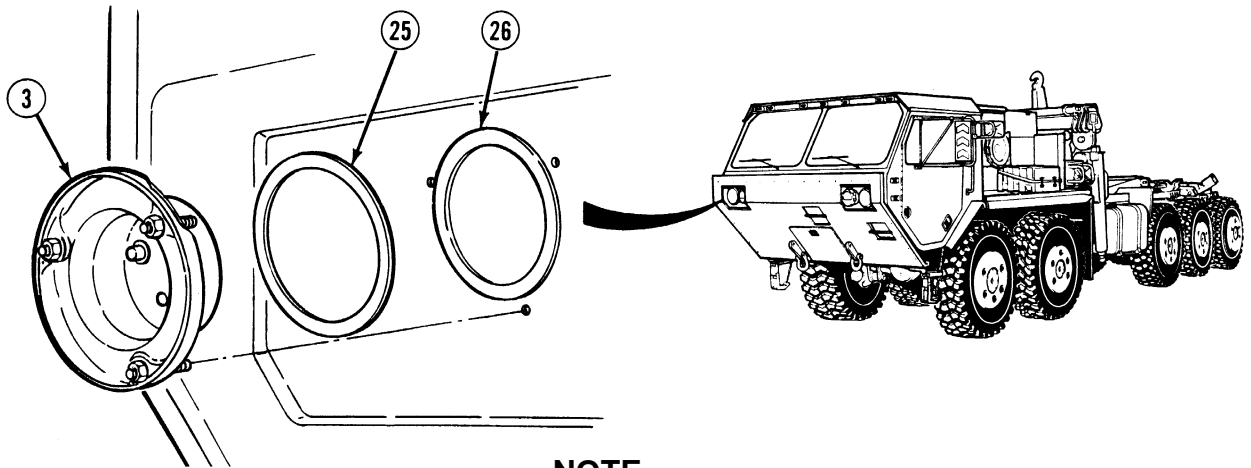
- (6) Open glove box door (11) and remove six locknuts (12), screws (13) and glove box (14) from right side of dash (15). Discard locknuts.

NOTE

Right side and left side headlight assemblies are removed the same way. Right side is shown.

- (7) Disconnect wire 1007 (16) from connector (17) on head light assembly (3).
- (8) Disconnect wire 1006 (18) from connector (19) on head light assembly (3).
- (9) Disconnect wire 1435 (20) from connector (21) on head light assembly (3).
- (10) With the aid of an assistant, remove three nuts (22) and lockwashers (23) from studs (24) at rear of head light assembly (3). Discard lockwashers.





NOTE

Note position of head light assembly prior to removal.

- (11) Remove head light assembly (3) and gasket (25) from truck (26). Discard gasket.

b. Installation.

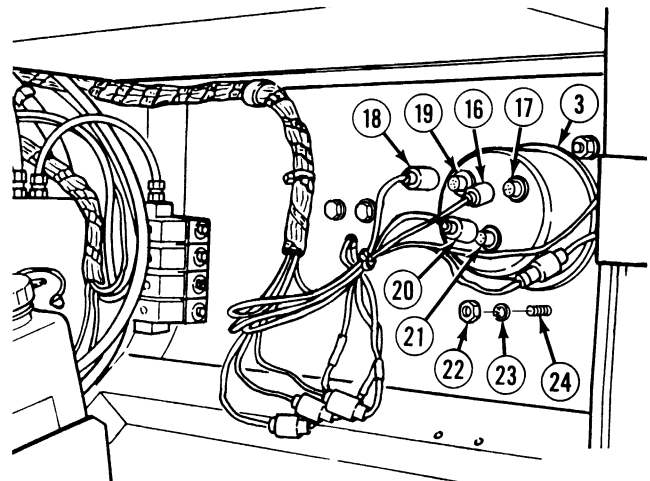
NOTE

Right side and left side headlight assemblies are installed the same way. Right side is shown.

- (1) Position head light assembly (3) and gasket (25) on truck (26).
- (2) With the aid of an assistant, install three lockwashers (23) and nuts (22) on studs (24) at rear of head light assembly (3).

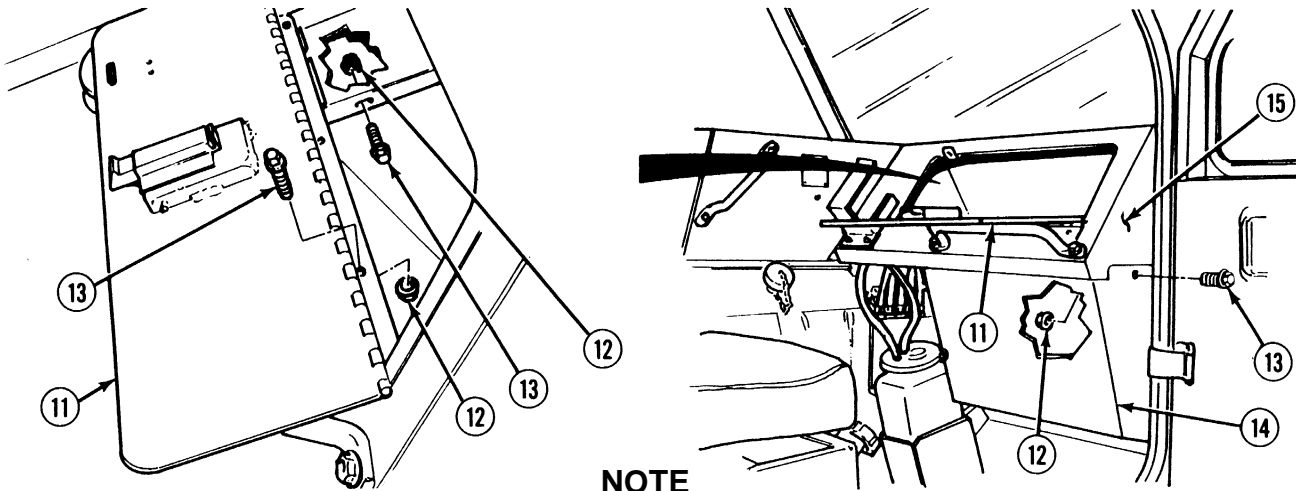
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (3) Apply corrosion preventive compound to connectors on wires 1007 (16), 1006 (18) and 1435 (20).
- (4) Connect wire 1007 (16) to connector (17) on head light assembly (3).
- (5) Connect wire 1006 (18) to connector (19) on head light assembly (3).
- (6) Connect wire 1435 (20) to connector (21) on head light assembly (3).

7-45. HEAD LIGHT ASSEMBLY REPLACEMENT (CONT).



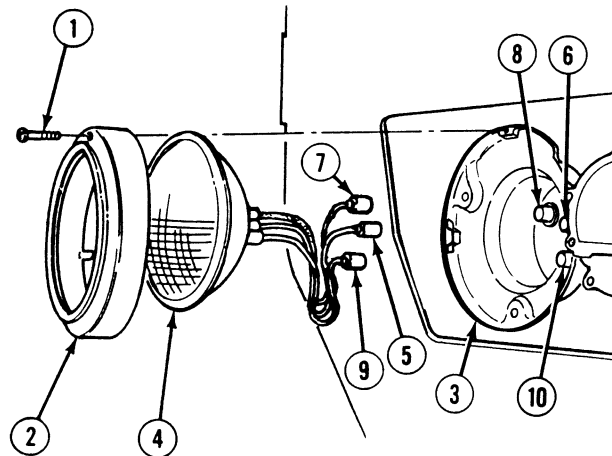
NOTE
Perform Step (7) for right side only.

- (7) Install glove box (14) under right side of dash (15) with six screws (13) and locknuts (12). Close glove box door (11).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (8) Apply corrosion preventive compound to connectors on wires 1018 (5), 1017 (7) and 1091 (9).
- (9) Connect wire 1018 (5) to connector (6) on head light assembly (3).
- (10) Connect wire 1017 (7) to connector (8) on head light assembly (3).
- (11) Connect wire 1091 (9) to connector (10) on head light assembly (3).
- (12) Install head lamp (4) in head light assembly (3).
- (13) Install head lamp retaining ring (2) in head light assembly (3) with three screws (1).



c. *Follow-On Maintenance:*

- Connect batteries, (Para 7-87).
- Check head light operation, (TM 9-2320-364-10).
- Adjust head light, (Para 7-44).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-46. FRONT COMPOSITE LIGHT REPAIR.

This task covers:

- | | | |
|----------------|------------------------|--------------------------|
| a. Removal | c. Cleaning/Inspection | e. Installation |
| b. Disassembly | d. Assembly | f. Follow-on Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Goggles, Industrial (Item 30, Appendix G)

Materials/Parts

Adhesive, Sealant (Item 14, Appendix C)
Silicone Compound, Anti-Corrosion (Item 85, Appendix C)
Tag, Identification (Item 88, Appendix C)
Gasket (Item 60, Appendix F)

Materials/Parts - Continued

Locknut (6) (Item 106, Appendix F)
Lockwasher (2) (Item 168, Appendix F)
Packing, Preformed (Item 223, Appendix F)

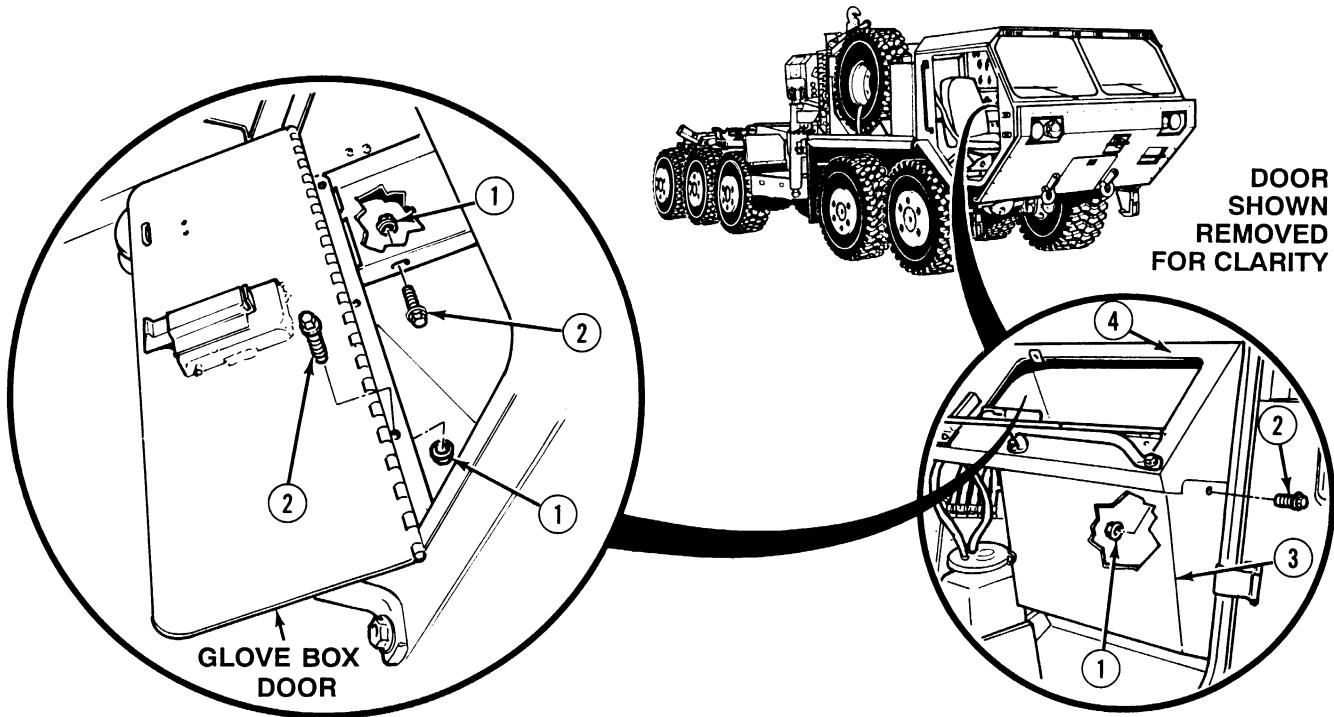
Personnel Required

Two

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.



NOTE

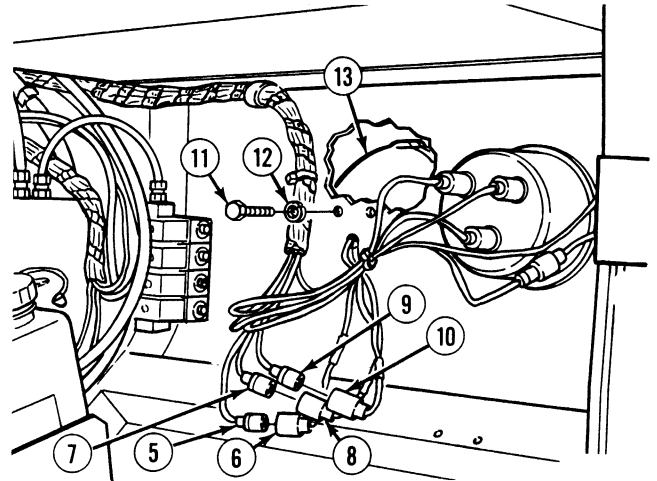
Perform Step (1) for right side only.

- (1) Open glove box door and remove six locknuts (1), screws (2) and glove box (3) from right side of dash (4).

NOTE

- Right side and left side are removed the same way. Right side is shown.
- Tag and mark wires prior to removal.
- Refer to Table 7-3 for wire numbers of right and left lights.

- (2) Disconnect wire 1680 (5) from wire 483 (6).
- (3) Disconnect wire 1008 (7) from wire 491 (8).
- (4) Disconnect wire 1001 (9) from wire 460 (10).
- (5) Remove two screws (11) and lockwashers (12) from rear of composite light (13). Discard lockwashers.



NOTE

It may be necessary to pry composite light from cab.

- (6) With the aid of an assistant, remove wire 483 (6), 491 wire (8) and wire 460 (10) through composite light wiring harness access hole (14) and remove composite light (13) from cab wall (15).

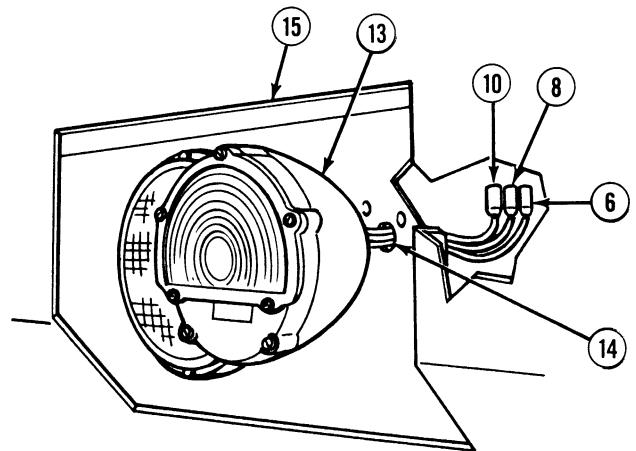


Table 7-3. Front Composite Light/Bracket Wires.

Left Light	Right Light
1002/460	1001/460
1008/491	1008/491
1680/483	1680/483

7-46. FRONT COMPOSITE LIGHT REPAIR (CONT).

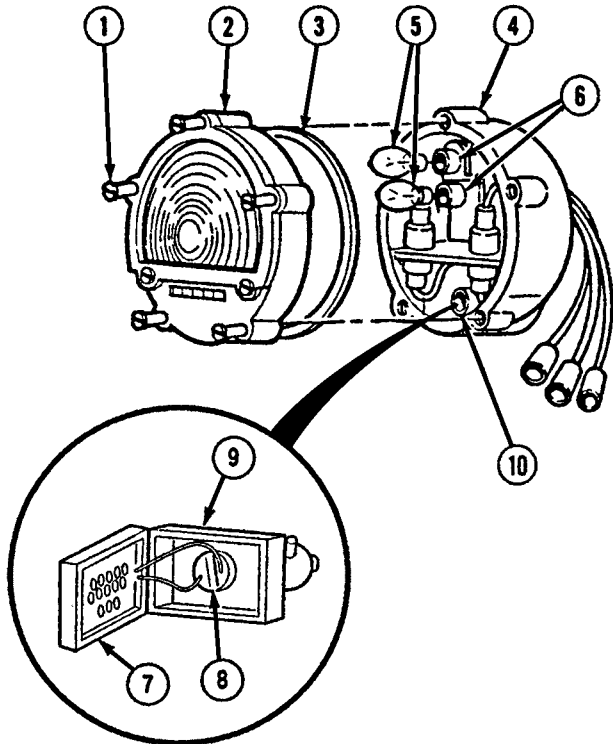
b. Disassembly.

- (1) Loosen five captive screws (1), and remove cover (2) and gasket (3) from composite light (4). Discard gasket.
- (2) Push in and remove two lamps (5) and (6) from lamp sockets (7) and (8).
- (3) Open blackout marker lamp door (9).

CAUTION

- Keep all moisture and oils off lamp. Do not touch lamp with bare hands. Use a clean dry, oil free cloth to hold lamp while installing lamp in blackout light.
- Turning base screw too far could damage blackout marker lamp.

- (4) Push in and rotate blackout marker lamp base screw (10) counterclockwise and remove blackout marker lamp (11) from blackout marker lamp socket (12).



c. Cleaning/Inspection.

- (1) Inspect lamp sockets for corrosion.
- (2) Inspect lenses for cracks.
- (3) Inspect light housing for cracks.

d. Assembly.

WARNING

Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

- (1) Apply anti-corrosion silicone compound to inside of blackout marker lamp socket (12) and two lamp sockets (7) and (8).
- (2) Open blackout marker lamp door (9).
- (3) Install blackout marker lamp (11) in blackout marker lamp socket (12) and push in and rotate blackout marker lamp base screw (10) clockwise.
- (4) Close blackout marker lamp door (9).
- (5) Push in and install two lamps (5) and (6) in lamp sockets (7) and (8).
- (6) Install preformed packing (3), composite light cover (2) with five captive screws (1) in composite light housing (4).

e. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

- Right side and left side are installed the same way. Right side is shown.
- Refer to Table 7-4 for wire numbers of right and left lights.

- (1) Apply adhesive sealant on rear of composite light (13).
- (2) With the aid of an assistant, install wire 483 (6), wire 491 (8) and wire 460 (10) through composite light wiring harness access hole (14).
- (3) Install two lockwashers (12) and screws (11) in rear of composite light (13) through cab wall (15).
- (4) Connect wire 1001 (9) to wire 460 (10).
- (5) Connect wire 1008 (7) to wire 491 (8).
- (6) Connect wire 1680 (5) to wire 483 (6).

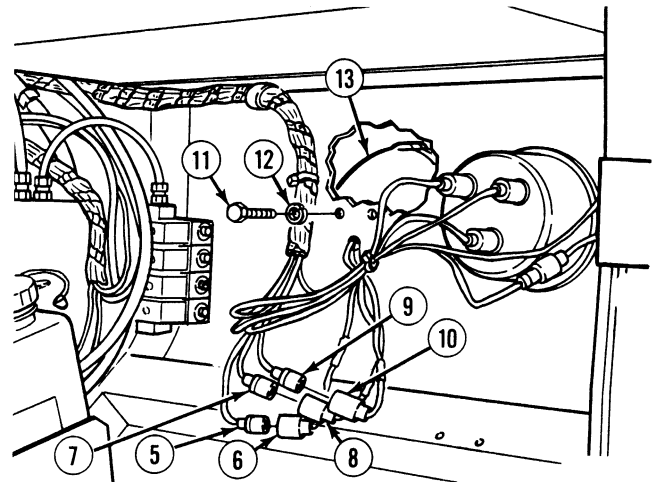
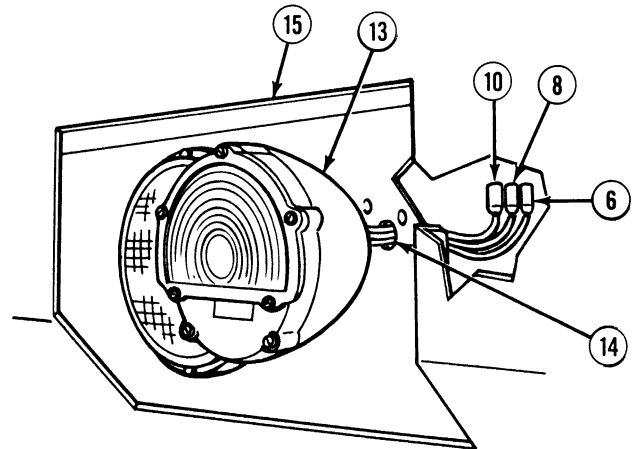
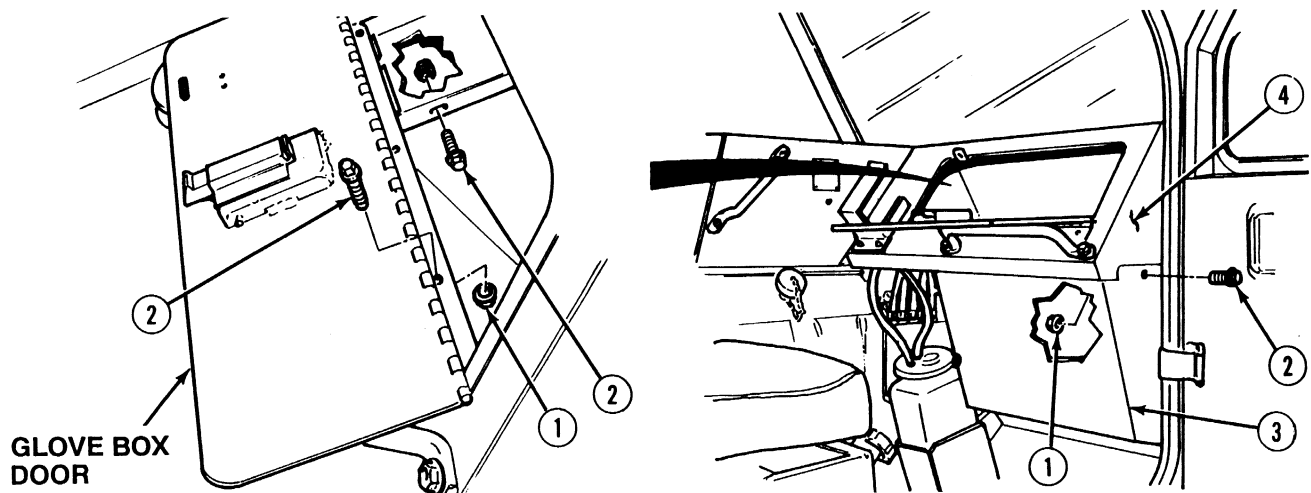


Table 7-4. Front Composite Light/Bracket Wires.

Left Light	Right Light
1002/460	1001/460
1008/491	1008/491
1680/483	1680/483

7-46. FRONT COMPOSITE LIGHT REPAIR (CONT).



NOTE

Perform Step (7) for right side only.

- (7) Install glove box (3) under right side of dash (4) with six screws (2), locknuts (1) and close glove box door.

f. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check composite light operation, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-47. REAR COMPOSITE LIGHT AND BRACKET REPAIR.

This task covers:

- | | | |
|----------------|----------------------------|--------------------------|
| a. Removal | c. Cleaning and Inspection | e. Installation |
| b. Disassembly | d. Assembly | f. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Goggles, Industrial (Item 30, Appendix G)

Materials/Parts

Compound, Corrosion Preventative (Item 23, Appendix C)
Silicone Compound, Anti-Corrosion (Item 85, Appendix C)
Tags, Identification (Item 88, Appendix C)

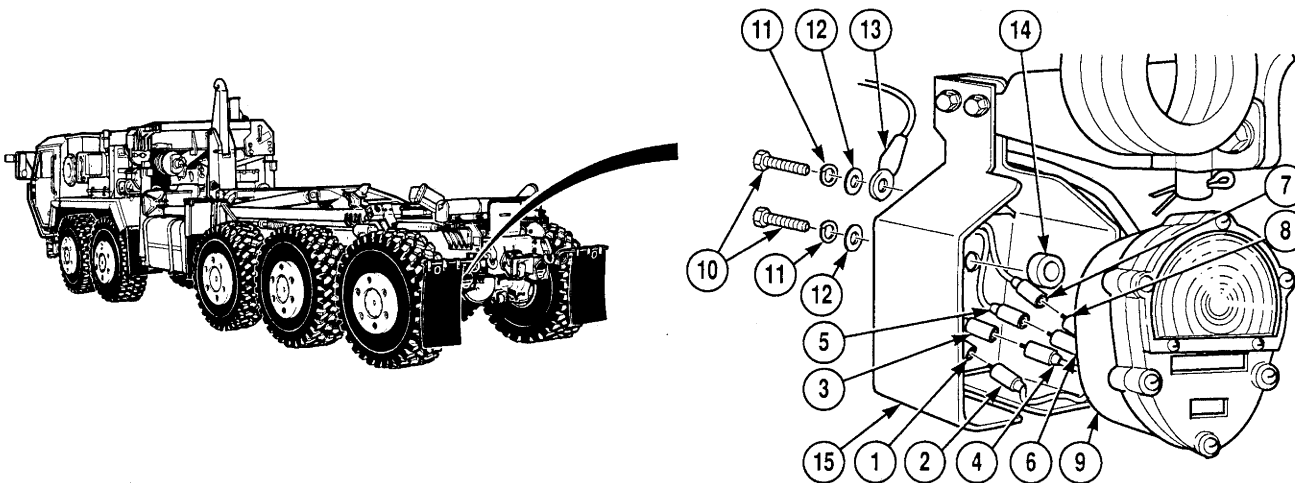
Materials/Parts - Continued

Gasket (Item 48, Appendix F)
Locknut (Item 91, Appendix F)
Locknut (2) (Item 106, Appendix F)
Lockwasher (2) (Item 168, Appendix F)
Preformed Packing (Item 224, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.



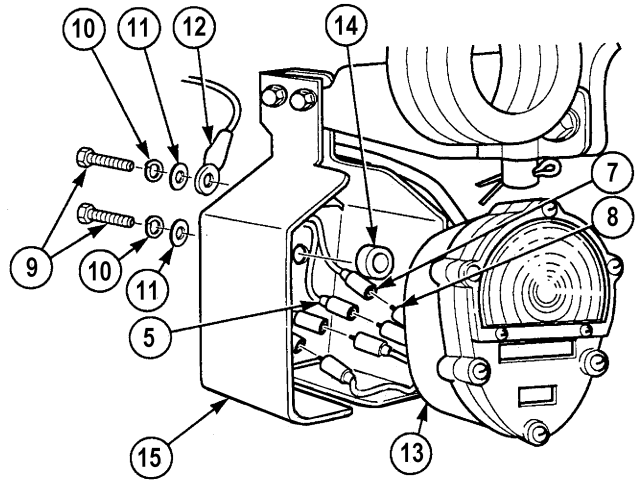
NOTE

- Left and right side are removed the same way.
- Left side shown.
- Tag and mark wires before removal.
- Feed wires through rear of bracket during removal.
- Refer to Table 7-5 for wire numbers of right and left lights.

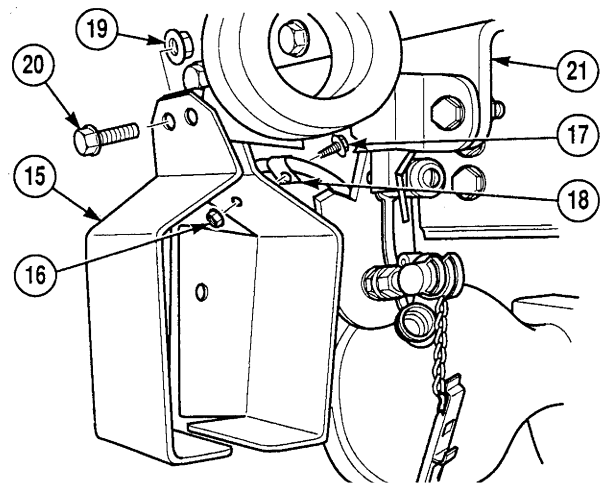
- (1) Disconnect wire 1678 (1) from wire 23 (2).
- (2) Disconnect wire 1680 (3) from wire 24 (4).

7-47. REAR COMPOSITE LIGHT AND BRACKET REPAIR (CONT).

- (3) Disconnect wire 1003 (5) from wire 22 (6).
- (4) Disconnect wire 1008 (7) from wire 21 (8).
- (5) Remove two screws (9), lockwashers (10), washers (11), ground wire (12), composite light (13) and spacer (14) from rear of composite light mounting bracket (15). Discard lockwashers.

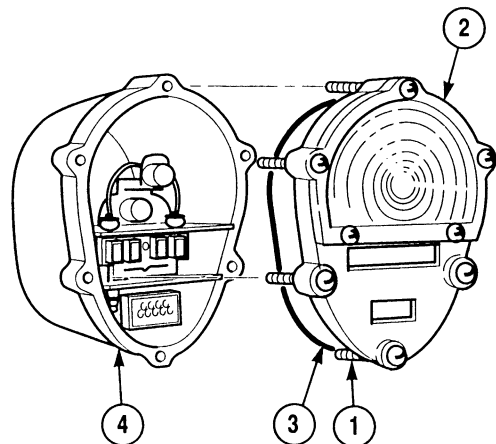


- (6) Remove locknut (16), screw (17) and cushion clip (18) from composite light mounting brackets (15). Discard locknut.
- (7) Remove two locknuts (19), screws (20) and composite light mounting brackets (15) from frame (21). Discard locknuts.



b. Disassembly.

- (1) Loosen six screws (1), composite light cover (2) and preformed packing (3) from composite light housing (4). Discard preformed packing.



- (2) Push in and remove two lamps (5) and (6) from lamp sockets (7) and (8).



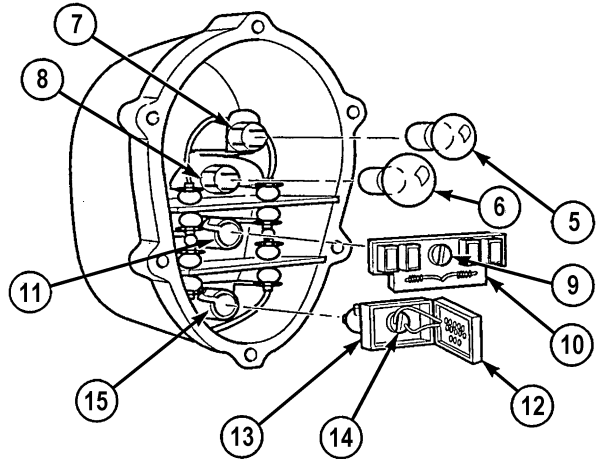
Turning base screw more than necessary to remove lamp assembly could damage wires and/or blackout light assembly.

- (3) Push in and rotate blackout tail light base screw (9) counterclockwise and remove blackout tail lamp (10) from blackout tail lamp socket (11).
- (4) Open blackout brake lamp door (12) on blackout brake lamp (13).



- Keep all moisture and oils off lamp. Do not touch lamp with bare hands. Use a clean dry, oil free cloth to hold lamp while installing lamp in blackout light.
- Turning base screw more than necessary to remove lamp assembly could damage wires and/or blackout light assembly.

- (5) Push in and rotate blackout brake lamp base screw (14) counterclockwise and remove blackout brake lamp (13) from blackout brake lamp socket (15).



c. Cleaning and Inspection.

- (1) Inspect lamp sockets for corrosion.
- (2) Inspect lenses for cracks.
- (3) Inspect light housing for cracks.

7-47. REAR COMPOSITE LIGHT AND BRACKET REPAIR (CONT).

d. Assembly.

WARNING

Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

- (1) Apply anti-corrosion silicone compound to inside of blackout brake lamp socket (15), blackout tail lamp socket (11), and two sockets (7) and (8).
- (2) Position blackout brake lamp (13) in blackout brake lamp socket (15).

CAUTION

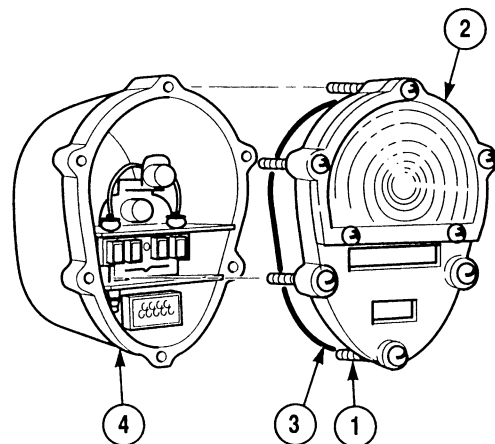
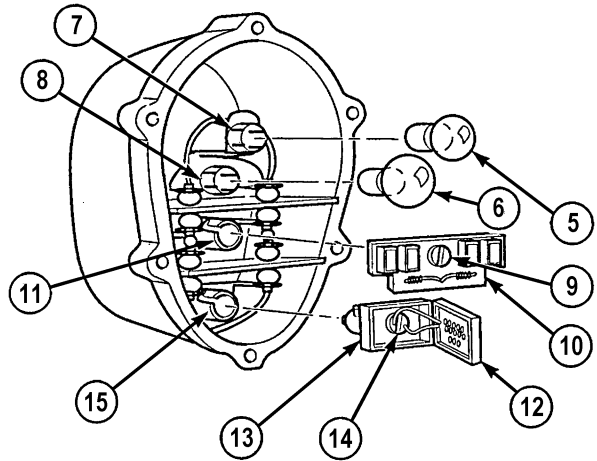
Turning base screw more than necessary to install lamp assembly could damage wires and/or blackout light assembly.

- (3) Push in and rotate blackout brake lamp base screw (14) clockwise to secure lamp in blackout brake lamp socket (15).
- (4) Close blackout brake lamp door (12) on blackout lamp (13).
- (5) Position blackout tail lamp (10) in blackout tail lamp socket (11).

CAUTION

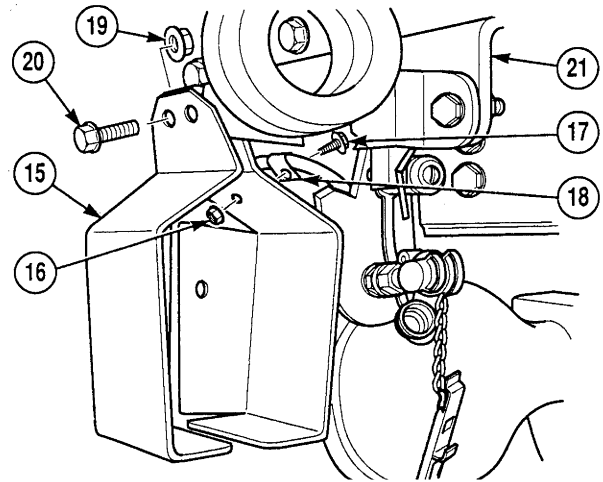
Turning base screw more than necessary to install lamp assembly could damage wires and/or blackout light assembly.

- (6) Push in and rotate blackout tail lamp base screw (9) clockwise to secure lamp in blackout tail lamp socket (11).
- (7) Push in and install two lamps (5) and (6) in lamp sockets (7) and (8).
- (8) Install preformed packing (3), composite light cover (2) and six screws (1) in composite light housing (4).



e. Installation.

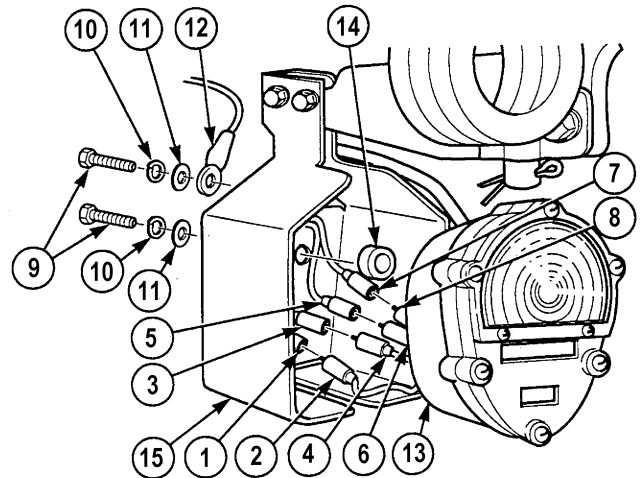
- (1) Install two composite light mounting brackets (15), two screws (20) and locknuts (19) on frame (21).
- (2) Install cushion clip (18), screw (17) and locknut (16) on composite light mounting brackets (15).
- (3) Position ground wire (12), two washers (11), lockwasher (10), screws (9) and spacers (14) on composite light mounting bracket (15).
- (4) Position composite light (13) in composite light mounting bracket (15) and tighten two screws (10).



NOTE

- Refer to Table 7-5 for wire numbers of right and left lights.
- Feed wires through rear of bracket during installation.

- (5) Connect wire 1008 (7) to wire 21 (8).
- (6) Connect wire 1003 (5) to wire 22 (6).
- (7) Connect wire 1680 (3) to wire 24 (4).
- (8) Connect wire 1678 (1) to wire 23 (2).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (9) Apply corrosion preventive compound to ground wire (4).

Table 7-5. Front Composite Light/Bracket Wires.

Left Light	Right Light
1678/23	1678/23
1680/22	1680/24
1003/22	1004/22
1008/21	1008/21

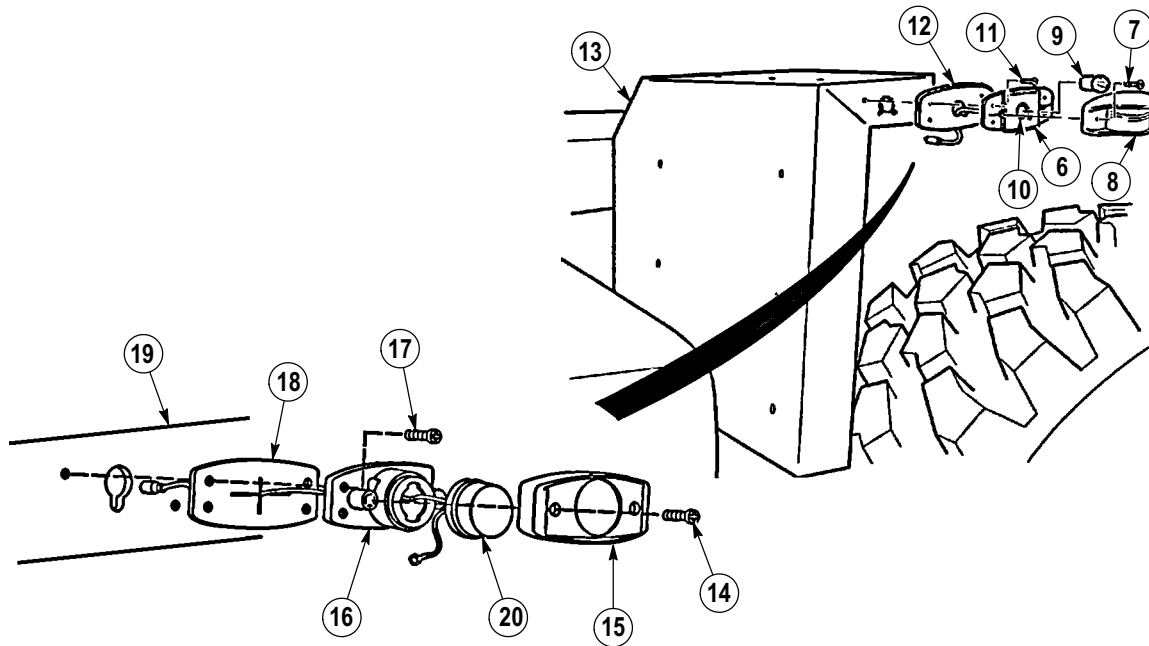
7-47. REAR COMPOSITE LIGHT AND BRACKET REPAIR (CONT).

f. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check rear composite light operation, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-48. REAR FENDER SIDE MARKER LIGHT REPLACEMENT (CONT).



NOTE

- Perform Steps (4) through (6) for side marker light with lamp.
 - Perform Steps (7) through (9) for side marker light with LED.
- (4) Remove two screws (7) and cover (8) from side marker light (6).
 - (5) Remove lamp (9) from side marker light socket (10).
 - (6) Remove two self-tapping screws (11), side marker light (6) and gasket (12) from rear fender (13). Discard self-tapping screws.
 - (7) Remove two screws (14) and cover (15) from side marker light (16).
 - (8) Remove two self-tapping screws (17), side marker light (16) and gasket (18) from fender (19). Discard self-tapping screws.
 - (9) Turn LED (20) counterclockwise 1/4 turn and remove from side marker light (16).

b. Installation.

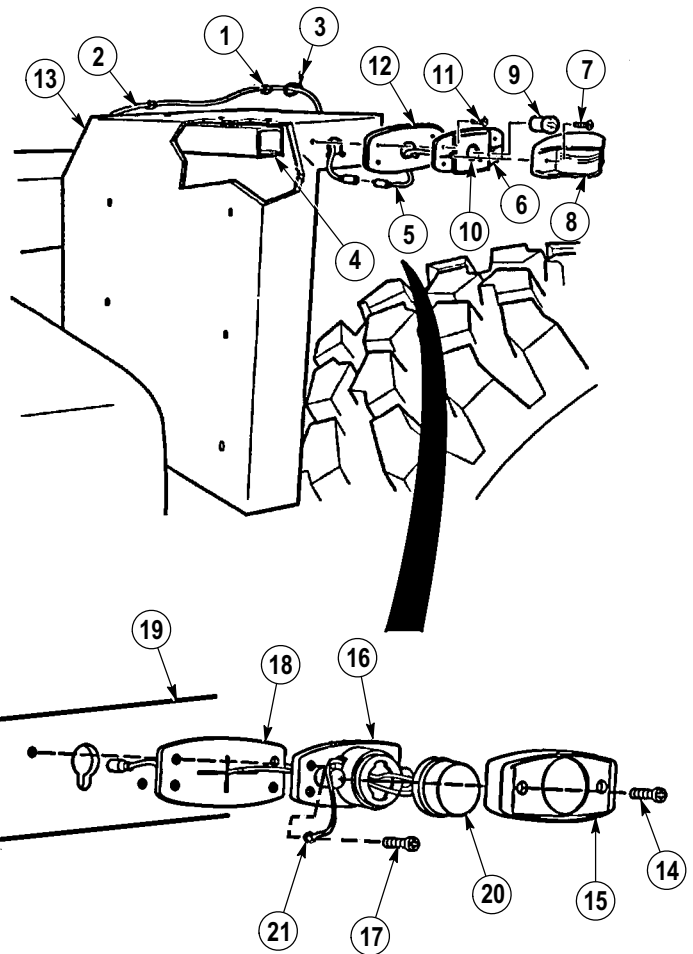
NOTE

- If an entire marker light assembly is being replaced, new marker light assembly will be an LED.
 - Perform Steps (1) through (5) for side marker light with lamp.
 - Perform Steps (6) through (10) for side marker light with LED.
- (1) Position gasket (12) and side marker light (6) on rear fender (13).
 - (2) Install two self-tapping screws (11) and side marker light (6) on rear fender (13).

WARNING

Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

- (3) Apply anti-corrosion silicone compound to inside of side marker light socket (10).
- (4) Install lamp (9) in side marker light socket (10).
- (5) Install cover (8) and two screws (7) in side marker light (6).
- (6) Position ground wire (21) through hole in side marker light (16).
- (7) Install LED (20) in side marker light (16) and turn 1/4 turn clockwise.
- (8) Position gasket (18) and side marker light (16) on fender (19).
- (9) Install two self-tapping screws (17), ground wire (21) and side marker light (16) on fender (19).
- (10) Install cover (15) and two screws (14) in side marker light (16).
- (11) Connect connector (5) to side marker light wiring harness (2).
- (12) Install loop clamp (3) and side marker light wiring harness (2) on rear fender support arm (4).
- (13) Install cable tie (1) on side marker light wiring harness (2).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

b. Installation.**WARNING**

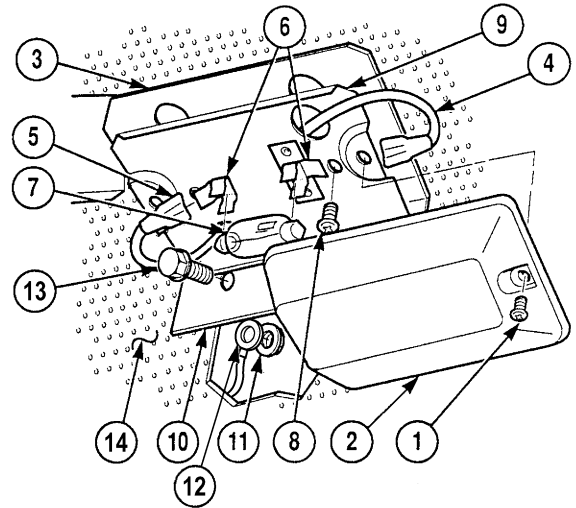
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound on threads of two screws (13).

NOTE

Ground wire may or may not be present in Step (2).

- (2) With the aid of an assistant, install bracket (10) inside cab (14) with two screws (13), ground wire (12) and two locknuts (11).
- (3) Apply corrosion preventive compound to terminal end of ground wire (12).
- (4) Install cab light (9) on bracket (10) with two screws (8).
- (5) Install lamp (7) in cab dome light assembly (3).
- (6) Connect wire 1153 (4) and wire 1435 (5) to terminals (6) on cab dome light assembly (3).
- (7) Install lens cover (2) on cab dome light assembly (3) with two screws (1).

**c. Follow-On Maintenance**

- Connect batteries, (Para 7-87).
- Check operation, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-50. REVERSE LIGHT REPAIR.

This task covers:

- | | | |
|----------------|-----------------|--------------------------|
| a. Removal | c. Assembly | e. Follow-On Maintenance |
| b. Disassembly | d. Installation | |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Socket Set, 3/8 in. Drive
(Item 62, Appendix G)
Wrench, Torque, 3/8 in. Drive (0-60 N·m)
(Item 98, Appendix G)

Materials/Parts - Continued

Lockwasher (Item 198, Appendix F)

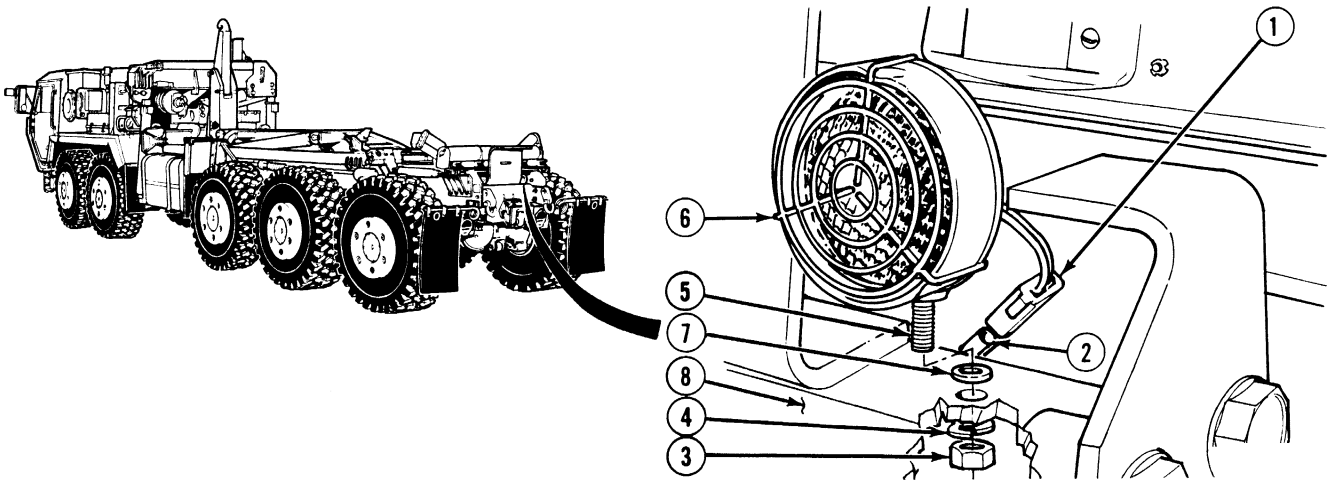
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

Materials/Parts

Compound, Corrosion Preventive
(Item 34, Appendix C)
Solution, Soap (Item 86, Appendix C)

a. Removal.



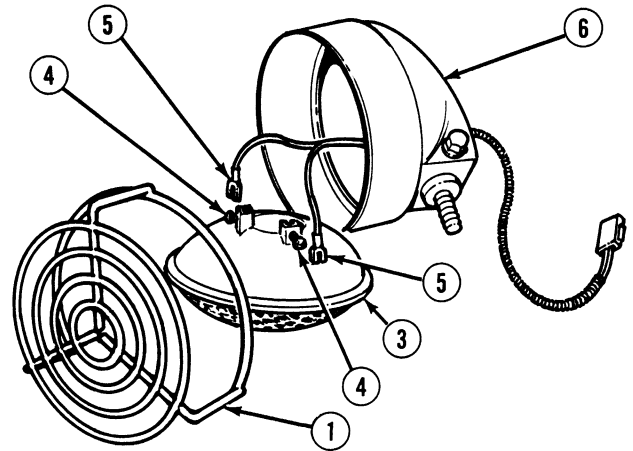
NOTE

Connectors are removed by gently prying on tab and pulling connector apart.

- (1) Disconnect MC77 connector (1) from wire harness (2).
- (2) Remove nut (3) and lockwasher (4) from reverse light mounting screw (5). Discard lockwasher.
- (3) Remove reverse light (6) and washer (7) from rear crossmember (8).

b. Disassembly.

- (1) Remove wire guard (1) from reverse light (6).
- (2) Lubricate edge of lamp (3) with soap solution and remove lamp from reverse light (6).
- (3) Loosen two screws (4) and remove connectors (5) from rear of lamp (3) and remove lamp.



c. Assembly.

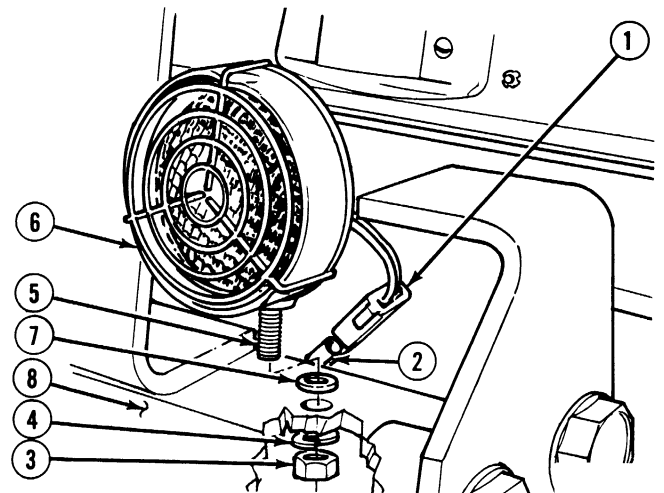
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply corrosion preventive compound on two connectors (5).
- (2) Install two connectors (5) and screws (4) on rear of lamp (3).
- (3) Install lamp (3) in reverse light (6).
- (4) Install wire guard (1) on reverse light (6).

d. Installation.

- (1) Position washer (7) and reverse light (6) on rear crossmember (8).
- (2) Install lockwasher (4) and nut (3) on reverse light mounting screw (5). Tighten nut to 35 lb-ft (47 N·m).
- (3) Apply corrosion preventive compound on MC77 connector (1).
- (4) Connect MC77 connector (1) to wire harness (2).



e. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check operation of reverse light, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-51. BLACKOUT LIGHT REPAIR.

This task covers:

- | | | |
|----------------|-----------------|--------------------------|
| a. Removal | c. Assembly | e. Follow-On Maintenance |
| b. Disassembly | d. Installation | |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Goggles, Industrial (Item 30, Appendix G)

Materials/Parts

Cloth, Cleaning (Item 31, Appendix C)
Silicone Compound, Anti-Corrosion
(Item 85, Appendix C)

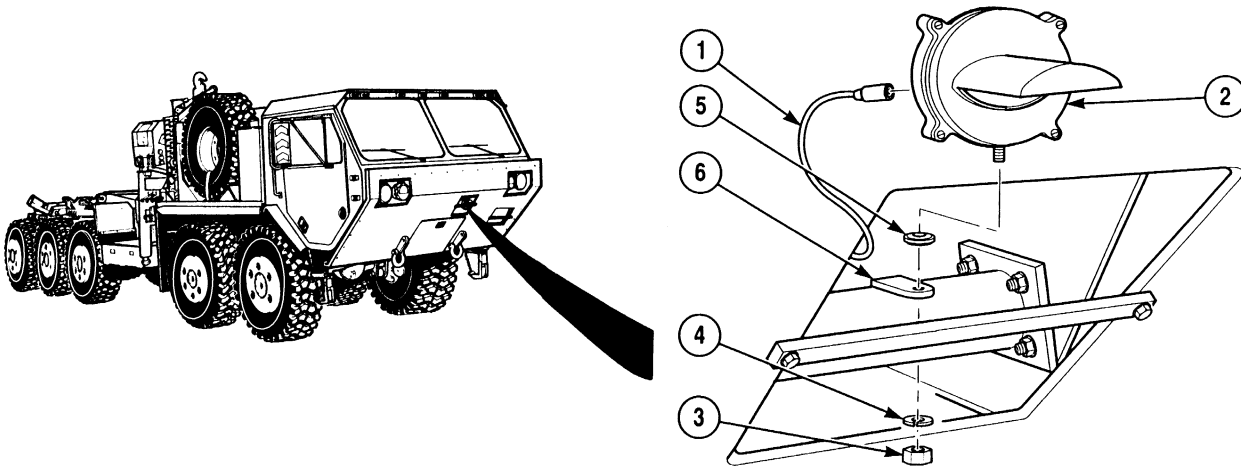
Materials/Parts - Continued

Gasket (Item 67, Appendix F)
Lockwasher (Item 197, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.

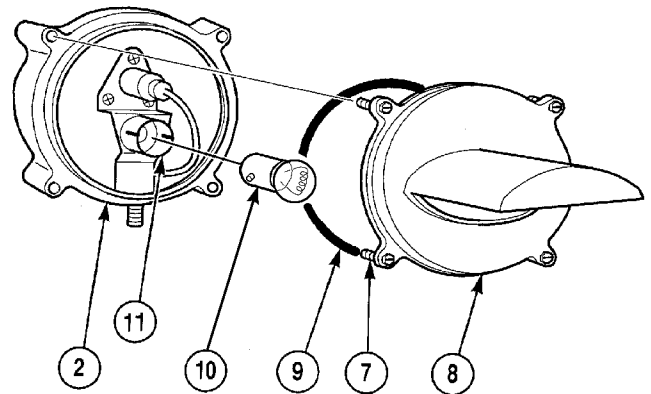


- (1) Disconnect wire 1679 (1) from rear of blackout light (2).
- (2) Remove nut (3), lockwasher (4) and spacer (5) from blackout light (2). Discard lockwasher.
- (3) Remove blackout light (2) from mounting bracket (6).

b. Disassembly.**CAUTION**

Keep all moisture and oils off lamp. Do not touch lamp with bare hands. Use a clean dry cloth to hold lamp while installing lamp in blackout light.

- (1) Loosen four captive screws (7) and cover (8) from blackout light (2).
- (2) Remove and discard gasket (9) from blackout light (2).
- (3) Remove lamp (10) from lamp socket (11).

**c. Cleaning and Inspection.**

- (1) Inspect lamp socket for corrosion.
- (2) Inspect lens for cracks.
- (3) Inspect light housing for cracks.

d. Assembly.**WARNING**

Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

- (1) Apply anti-corrosion silicone compound to inside of lamp socket (11).
- (2) Install lamp (10) in lamp socket (11).
- (3) Position gasket (9) in blackout light (2).
- (4) Install cover (8) on blackout light (2) with four captive screws (7).

7-51. BLACKOUT LIGHT REPAIR (CONT).

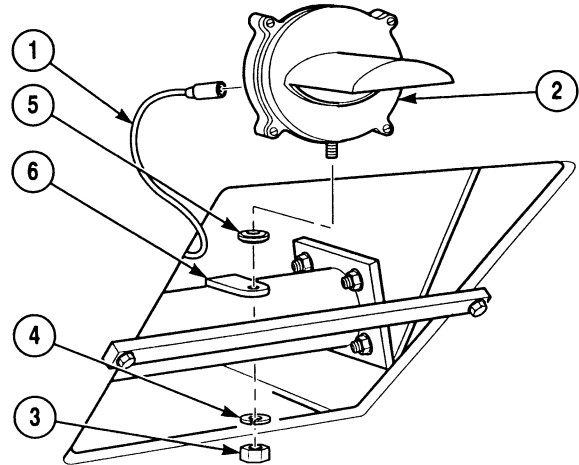
e. Installation.

- (1) Connect wire 1679 (1) on blackout light (2).

NOTE

Grooved side of spacer faces up.

- (2) Position blackout light (2) and spacer (5) on mounting bracket (6).
- (3) Install lockwasher (4) and nut (3) on blackout light (2).



f. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check operation of blackout light, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-52. FRONT MARKER LIGHT ASSEMBLY REPAIR.

This task covers:

- | | | |
|----------------|------------------------|--------------------------|
| a. Removal | c. Cleaning/Inspection | e. Installation |
| b. Disassembly | d. Assembly | f. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Goggles, Industrial (Item 30, Appendix G)

Materials/Parts

Cable Ties (Item 25, Appendix C)
Compound, Corrosive Preventive (Item 34, Appendix C)
Silicone Compound, Anti-Corrosion (Item 85, Appendix C)
Tags, Identification (Item 88, Appendix C)

Materials/Parts - Continued

Lockwasher (6) (Item 164, Appendix F)
Screws, Self-Tapping (2) (Item 299, Appendix F)

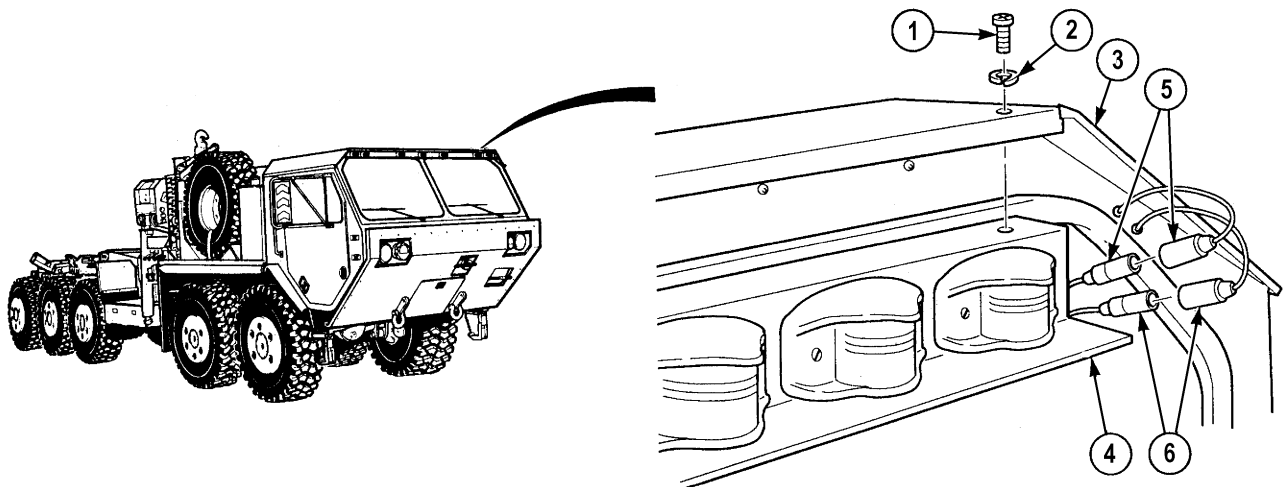
Personnel Required

Two

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.



NOTE

Tag and mark all wires prior to removal.

- (1) With the aid of an assistant, remove six screws (1) and lockwashers (2) from cab roof (3) while supporting marker light bracket (4). Discard lockwashers.
- (2) Disconnect wire 1680 (5) and wire 1012 (6).

7-52. FRONT MARKER LIGHT ASSEMBLY REPAIR (CONT).

b. Disassembly.

NOTE

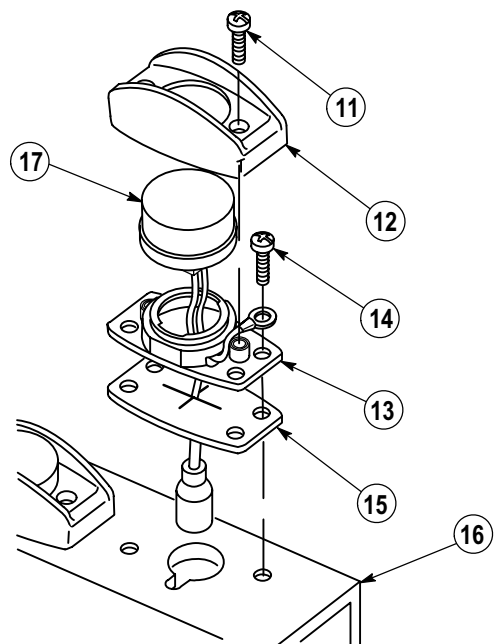
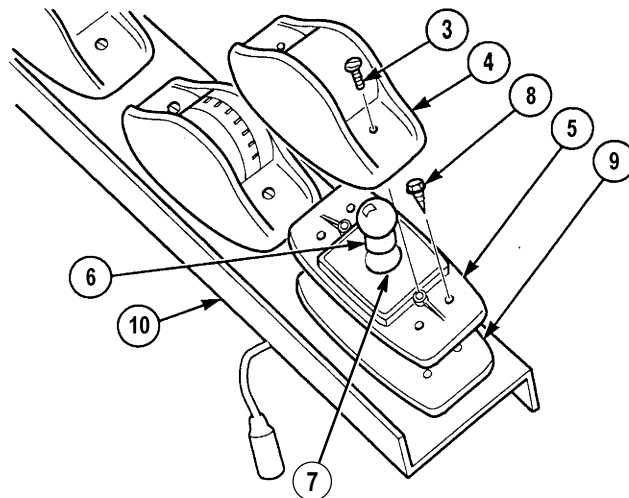
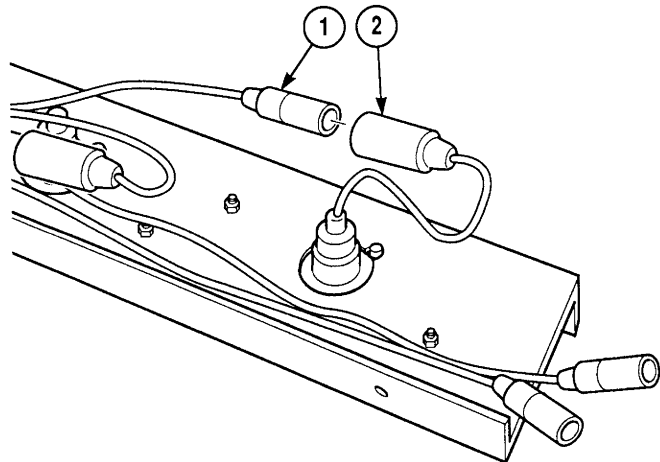
- There are five marker lights. All marker lights are disassembled the same way.
- Remove cable ties as required.

- (1) Disconnect wire 1012 (1) from wire 489 (2).

NOTE

- Perform Steps (2) through (4) for front marker light with lamp.
- Perform Steps (5) through (7) for front marker light with LED.

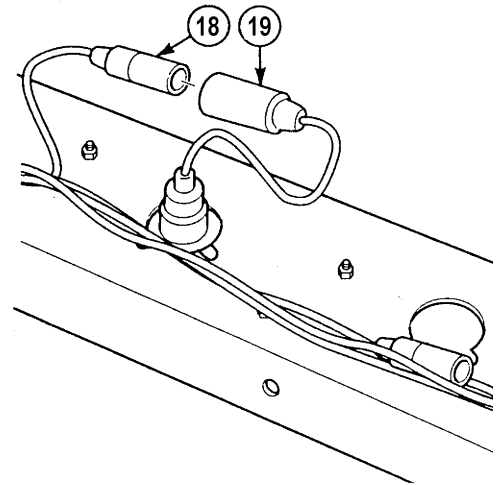
- (2) Remove two screws (3) and lens cover (4) from marker light assembly (5).
- (3) Remove lamp (6) from lamp socket (7).
- (4) Remove two self-tapping screws (8), marker light assembly (5) and gasket (9) from marker light bracket (10). Discard self-tapping screws.
- (5) Remove two screws (11) and lens cover (12) from marker light assembly (13).
- (6) Remove two self-tapping screws (14), marker light assembly (13) and gasket (15) from marker light bracket (16). Discard self-tapping screws.
- (7) Remove LED (17) from marker light assembly (13) by turning LED 1/4 turn.



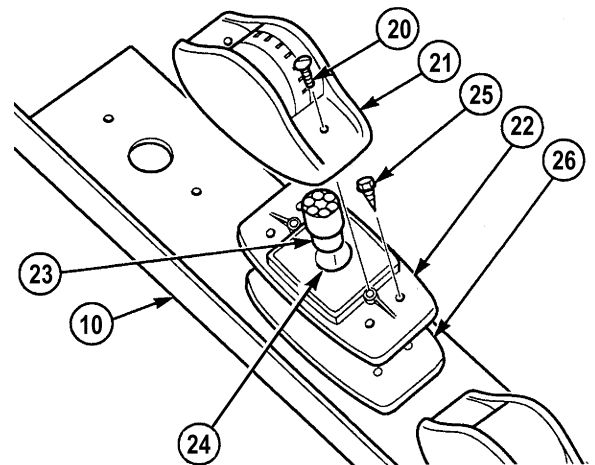
NOTE

There are two blackout lights.
Both blackout lights are
disassembled the same way.

- (8) Disconnect wire 1680 (18) from wire 490 (19).



- (9) Remove two screws (20) and blackout lens cover (21) from blackout marker light assembly (22).
- (10) Remove blackout lamp (23) from blackout lamp socket (24).
- (11) Remove two self tapping screws (25), blackout marker light assembly (22) and gasket (26) from bracket (10). Discard self-tapping screws.



c. Cleaning/Inspection.

- (1) Inspect bulbs, LEDs and lenses for cracks or breaks.
- (2) Inspect wires for frays and broken wires.
- (3) Replace all damaged parts. If entire marker light assembly is being replaced, new marker light assembly will be a LED.

7-52. FRONT MARKER LIGHT ASSEMBLY REPAIR (CONT).

d. Assembly.

NOTE

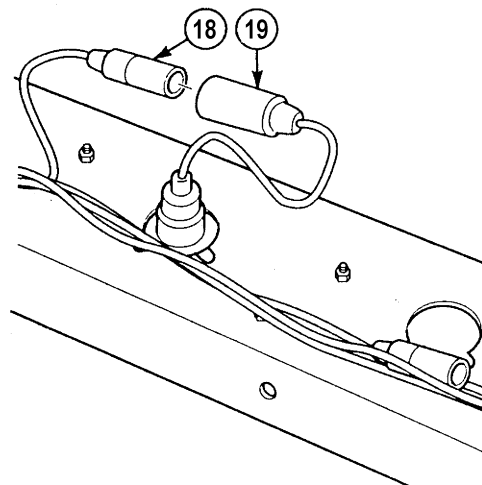
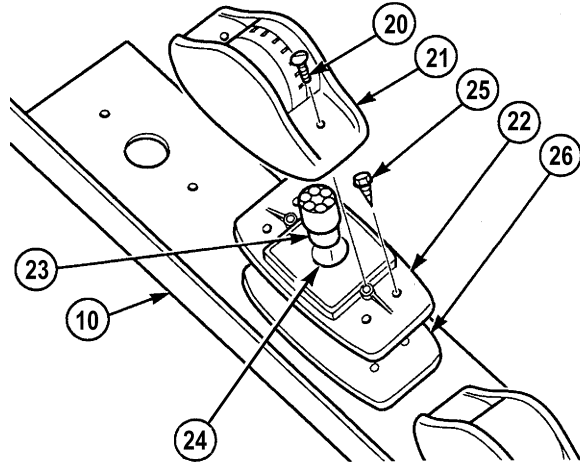
- There are two blackout lights. Both blackout lights are assembled the same way.
- Install cable ties as required.

- (1) Install gasket (26), blackout marker light assembly (22) and two screws (25) in bracket (10).

WARNING

Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

- (2) Apply anti-corrosion silicone compound to inside of lamp socket (24).
- (3) Install blackout lamp (23) in blackout lamp socket (24).
- (4) Install two screws (20) in lens cover (21).
- (5) Connect wire 1680 (18) to wire 490 (19).



NOTE

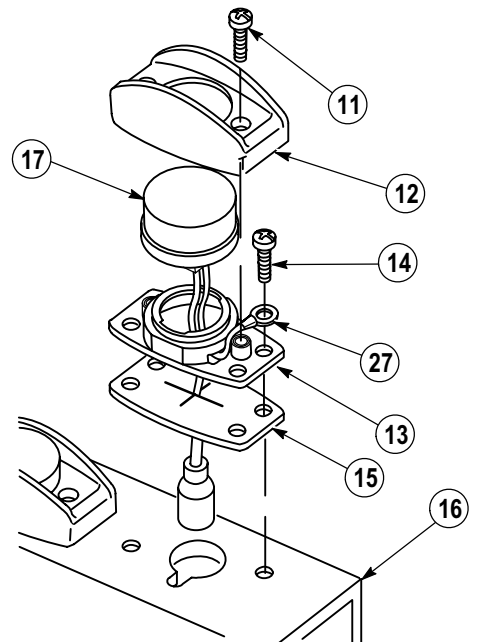
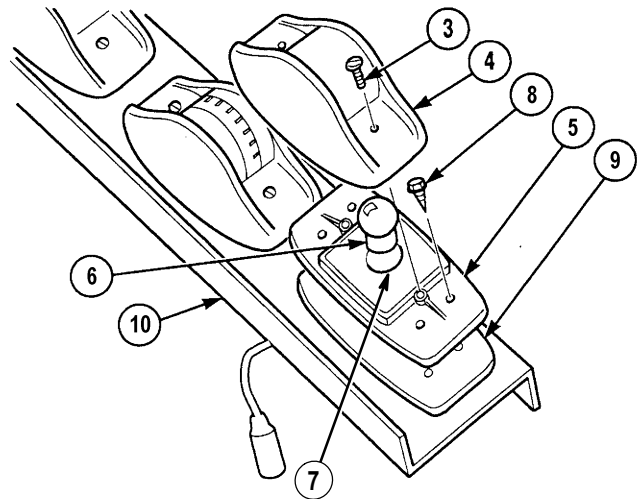
- There are five marker lights. All marker lights are assembled the same way.
- Install cable ties as required.
- Perform Steps (6) through (9) for front marker light with lamp.
- Perform Steps (10) through (13) for front marker light with LED.

- (6) Install gasket (9), marker light assembly (5) and two self-tapping screws (8) on marker light bracket (10).

WARNING

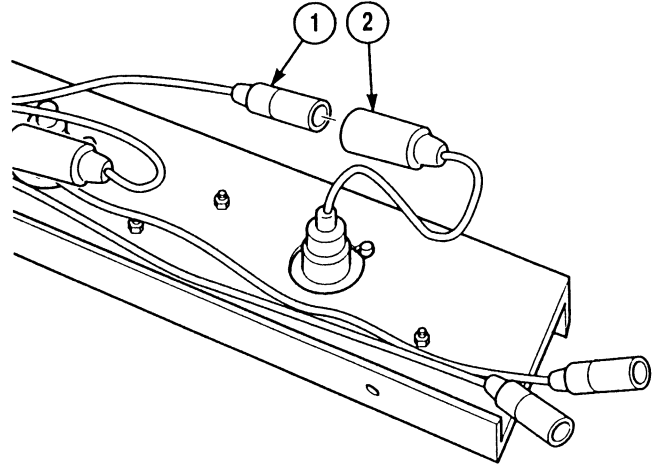
Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

- (7) Apply anti-corrosion silicone compound to inside of lamp socket (7).
- (8) Install lamp (6) in lamp socket (7).
- (9) Install two screws (3) in lens cover (4).
- (10) Position ground wire (27) through hole in marker light assembly (13).
- (11) Install LED (17) in marker light assembly (13) and turn 1/4 turn clockwise.
- (12) Install gasket (15), marker light assembly (13), ground wire (27) and two self-tapping screws (14) on marker light bracket (16).
- (13) Install two screws (11) in lens cover (12).



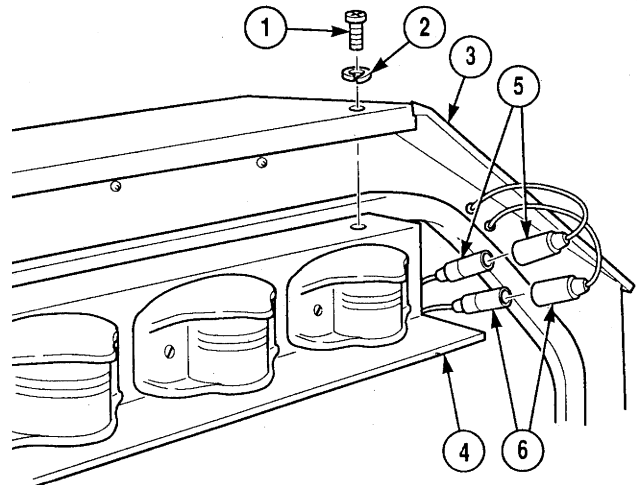
7-52. FRONT MARKER LIGHT ASSEMBLY REPAIR (CONT).

- (14) Connect wire 1012 (1) to wire 489 (2).



e. Installation.

- (1) With the aid of an assistant, support marker light bracket (3) and connect wire 1012 (6) and wire 1680 (5).
- (2) With the aid of an assistant, install marker light bracket (4) with six lockwashers (2) and screws (1) on cab roof (3).



f. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check operation of front marker light assembly, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-53. REAR MARKER LIGHT ASSEMBLY REPAIR.

This task covers:

- | | | |
|----------------|------------------------|--------------------------|
| a. Removal | c. Cleaning/Inspection | e. Installation |
| b. Disassembly | d. Assembly | f. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Goggles, Industrial (Item 30, Appendix G)
- Socket Set, 3/8 in. (Item 62, Appendix G)

Materials/Parts

- Cable Ties (Item 25, Appendix C)
- Compound, Corrosive Preventive (Item 34, Appendix C)
- Silicone Compound, Anti-Corrosion (Item 85, Appendix C)

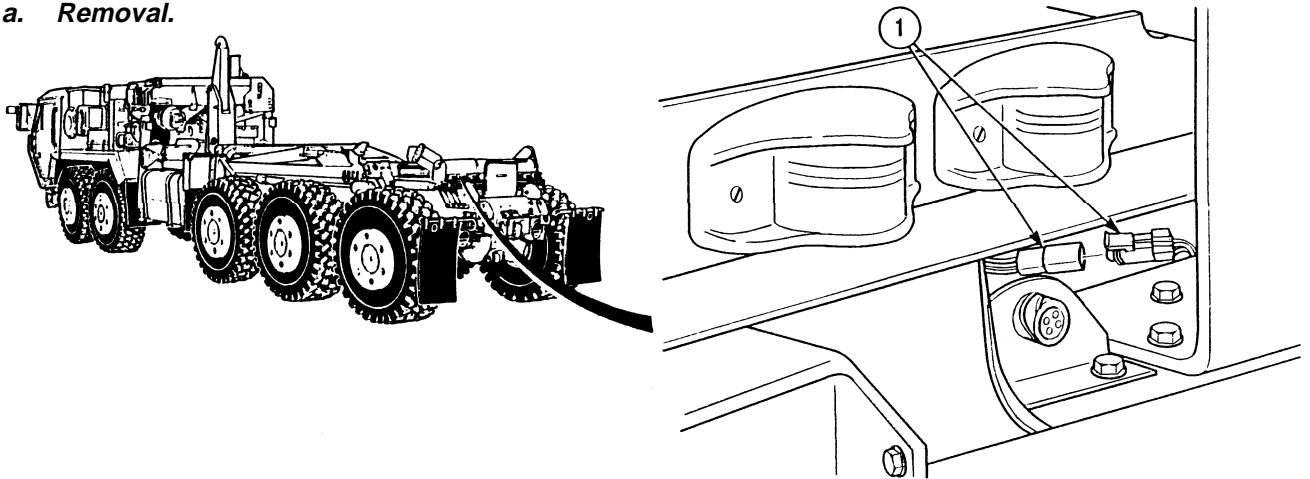
Materials/Parts - Continued

- Locknut (18) (Item 103, Appendix F)
- Locknut (4) (Item 106, Appendix F)
- Lockwasher (4) (Item 168, Appendix F)
- Screw, Self-Tapping (14) (Item 299, Appendix F)

Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-23220-364-10)
- Batteries disconnected, (Para 7-87)

a. Removal.



NOTE

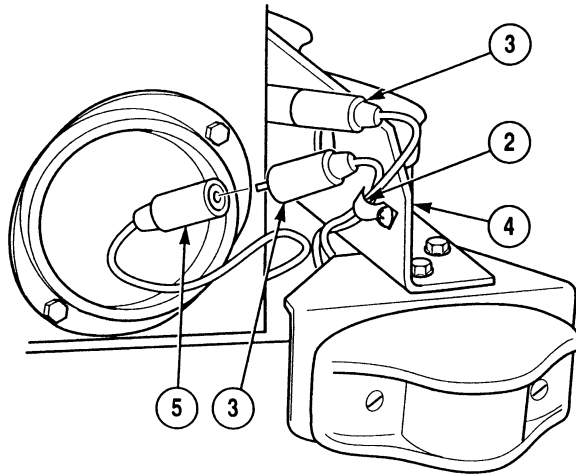
Connectors are removed by gently prying on tab and pulling connector apart.

- (1) Disconnect MC90 connector (1).

7-53. REAR MARKER LIGHT ASSEMBLY REPAIR (CONT).

NOTE

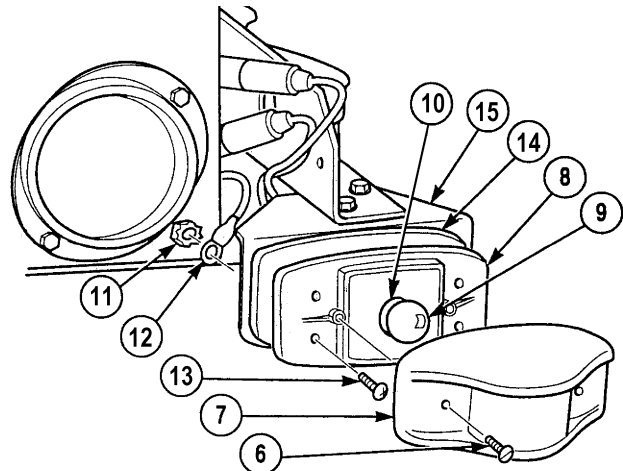
- There are seven red marker lights. All red marker lights are removed the same way.
- Remove cable ties as required.
- Left and right side removed the same way.
- Loop clamp is removed by first pulling out lock button and then removing loop clamp.



- (2) Remove loop clamp (2) and two wires 489 (3) from rear light bar assembly (4).
- (3) Disconnect wire 1012 (5) from wire 489 (3).

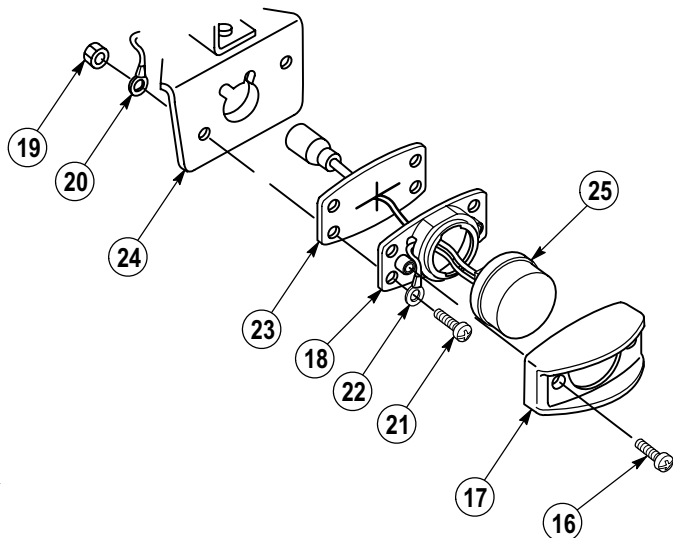
NOTE

- Perform Steps (4) through (6) for rear marker light with lamp.
- Perform Steps (7) through (9) for rear light with LED.



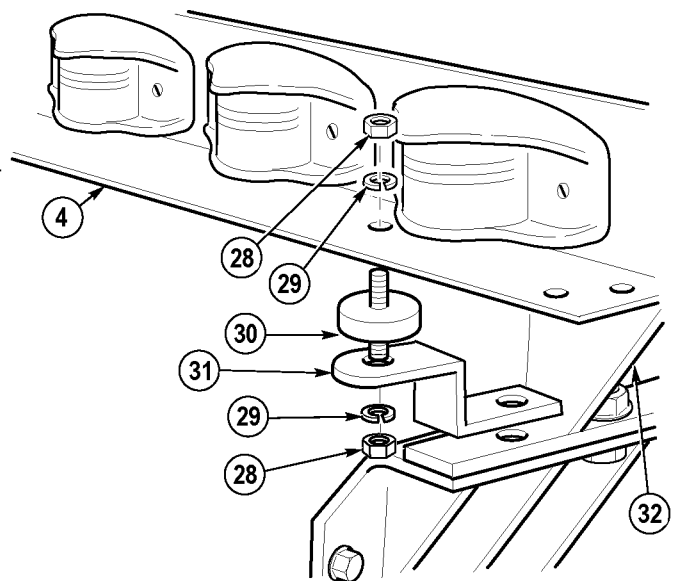
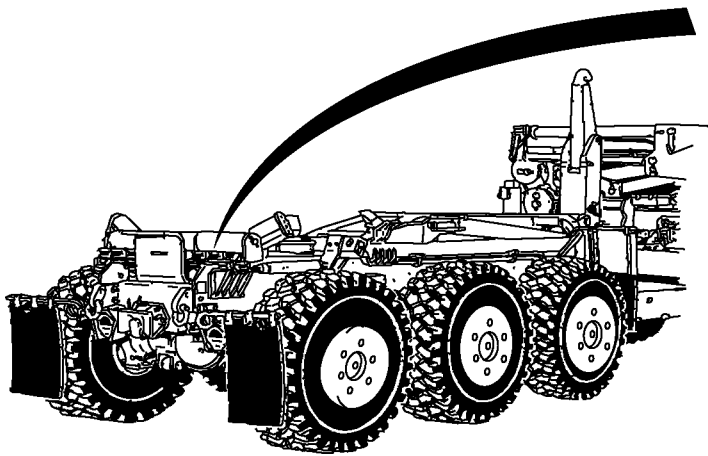
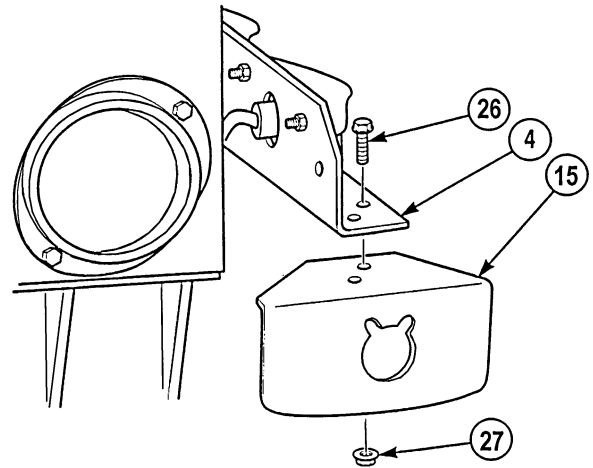
- (4) Remove two screws (6) and lens cover (7) from rear marker light assembly (8).
- (5) Remove rear marker lamp (9) from rear marker lamp socket (10).
- (6) Remove two locknuts (11), wire 1435 (12), two screws (13), rear marker light assembly (8) and gasket (14) from rear marker light bracket (15). Discard locknuts.

- (7) Remove two screws (16) and lens cover (17) from rear marker light assembly (18).
- (8) Remove two locknuts (19), wire 1435 (20), two screws (21), ground wire (22) rear marker light assembly (18) and gasket (23) from rear bracket (24). Discard locknuts.



- (9) Turn LED (25) counterclockwise 1/4 turn and remove from rear marker light assembly (18).

- (10) While supporting rear marker bracket, remove two screws (26), locknuts (27) and rear bracket (15) from rear light bar (4). Discard locknuts.



NOTE

Perform Step (11) for both sides of rear light bar assembly.

- (11) Remove two nuts (28), lockwashers (29) and shear mount (30) from bracket (31). Lift and tilt bracket to remove shear mounts. Discard lockwashers.

CAUTION

Use care when removing bracket to prevent wires from being damaged.

- (12) Remove rear light bar assembly (4) from truck (32).

7-53. REAR MARKER LIGHT ASSEMBLY REPAIR (CONT).

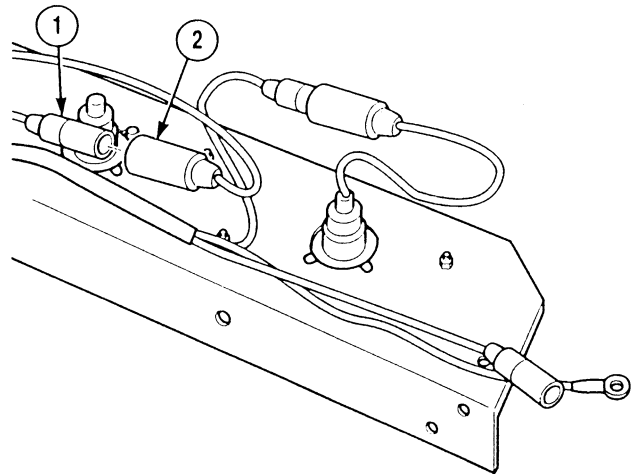
b. Disassembly.



Keep all moisture and oils off lamp. Do not touch lamp with bare hands. Use a clean dry, oil free cloth to hold lamp while installing lamp in blackout light.

NOTE

There are two blackout lights. Both blackout lights are removed the same way.

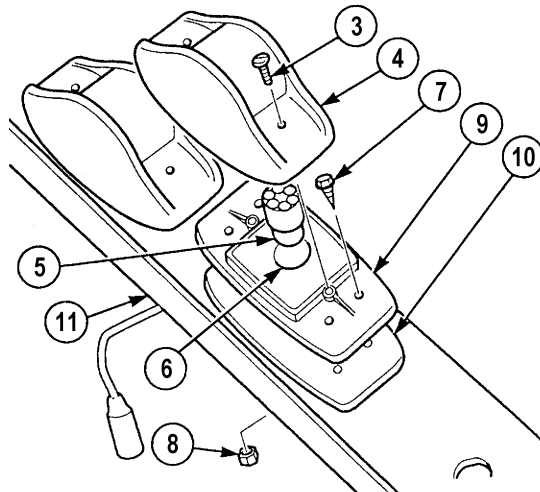


- (1) Disconnect wire 1680 (1) from wire 490 (2).

- (2) Remove two screws (3) from blackout lens cover (4).

- (3) Remove blackout lamp (5) from blackout lamp socket (6).

- (4) Remove two self-tapping screws (7), nut (8), blackout light assembly (9) and gasket (10) from rear light bar assembly (11). Discard self-tapping screws.



c. Cleaning/Inspection.

- (1) Inspect all wires and connectors for damage.
- (2) Inspect bulbs, LEDs and lens for cracks.
- (3) Inspect all other parts for cracks or other damage.
- (4) Replace all damaged parts. If entire marker light assembly is being replaced, new marker light assembly will be a LED.

d. **Assembly.**

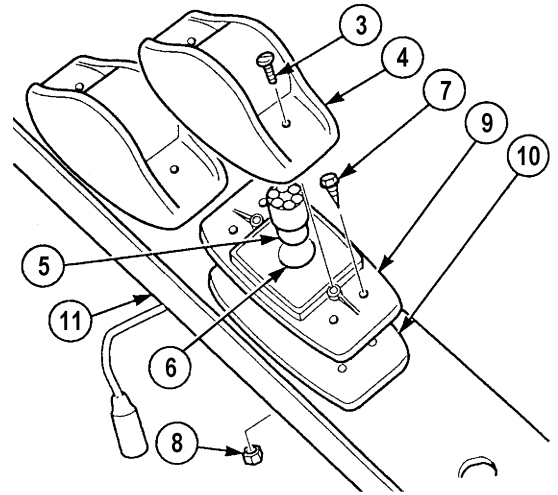
CAUTION

Keep all moisture and oils off lamp. Do not touch lamp with bare hands. Use a clean dry, oil free cloth to hold lamp while installing lamp in blackout light.

NOTE

- There are two blackout lights. Both blackout lights are installed the same way.
- Replace cable ties as required.

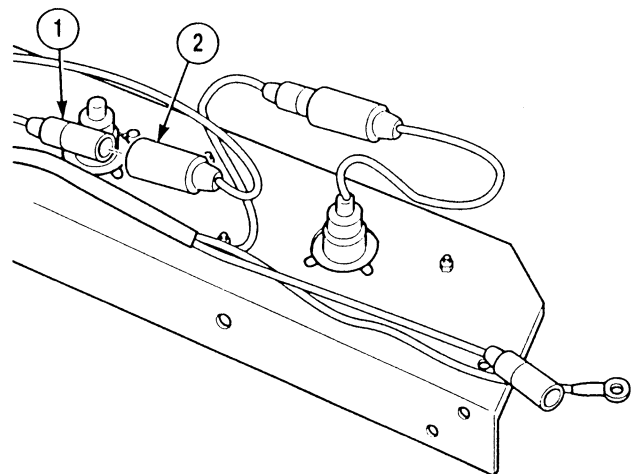
- (1) Install gasket (10), blackout light assembly (9), two self-tapping screws (7) and nut (8) on rear light bar assembly (11).



WARNING

Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

- (2) Apply anti-corrosion silicone compound to inside of lamp socket (6).
- (3) Install blackout lamp (5) in blackout lamp socket (6).
- (4) Install lens cover (4) with two screws (3) in blackout light assembly (9).
- (5) Connect wire 1680 (1) to wire 490 (2).



7-53. REAR MARKER LIGHT ASSEMBLY REPAIR (CONT).

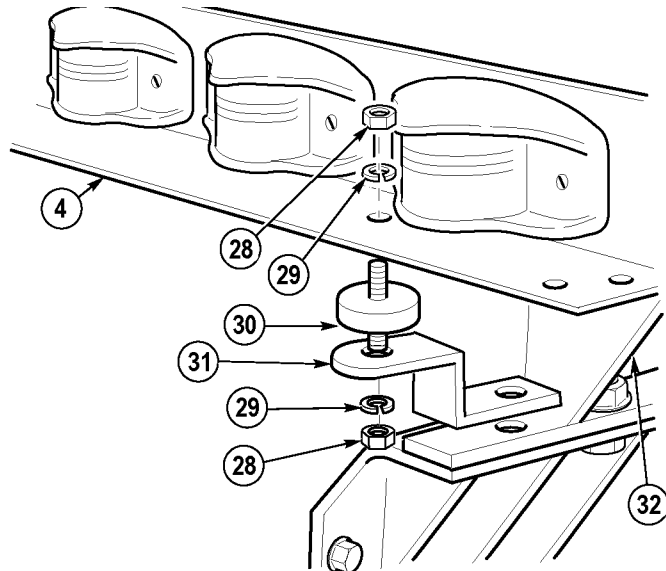
e. Installation.

- (1) Position rear marker light assembly (4) on truck (32).

NOTE

Perform Step (2) for both sides of rear light bar assembly.

- (2) Lift and tilt bracket (31) and install shear mount (30), two lockwashers (29) and nuts (28) in bracket (31) and rear marker light assembly (4).

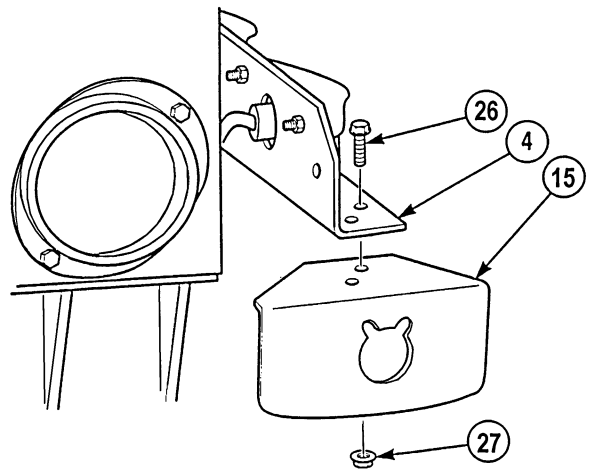


- (3) Install rear bracket (15) with two screws (26) and nuts (27) on rear marker light assembly (4).

NOTE

- All seven red marker lights are installed the same way.
- Perform Steps (4) through (8) for rear marker light with lamp.
- Perform Steps (9) through (13) for rear marker light with LED.

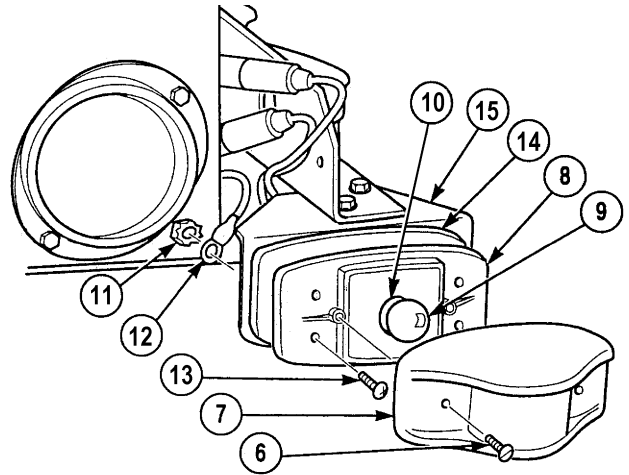
- (4) Install gasket (14), rear marker light assembly (8), two self-tapping screws (13), wire 1435 (12) and two nuts (10) on rear bracket (15).



WARNING

Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

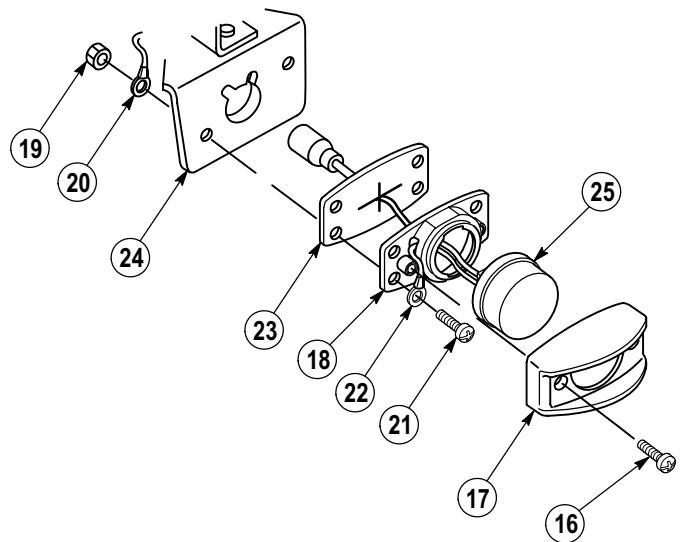
- (5) Apply anti-corrosion silicone compound to inside of rear lamp socket (10).
- (6) Install rear lamp (9) in rear lamp socket (10).
- (7) Install lens cover (7) with two screws (6) in light assembly (8).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

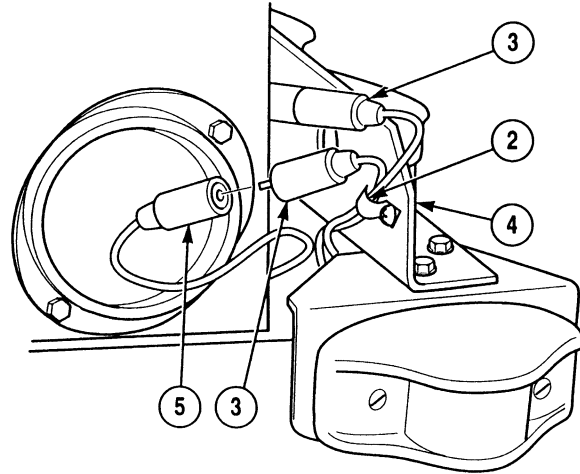
- (8) Apply corrosive preventive compound to wire 1435 (12).
- (9) Position ground wire (22) through hole in rear marker light assembly (18).
- (10) Install LED (25) in rear marker light assembly (18) and turn 1/4 turn clockwise.
- (11) Install gasket (23), rear marker light assembly (18), two self-tapping screws (21), ground wire (22), wire 1435 (20) and two nuts (19) on rear bracket (24).
- (12) Install lens cover (17) with two screws (16) in rear marker light assembly (18).



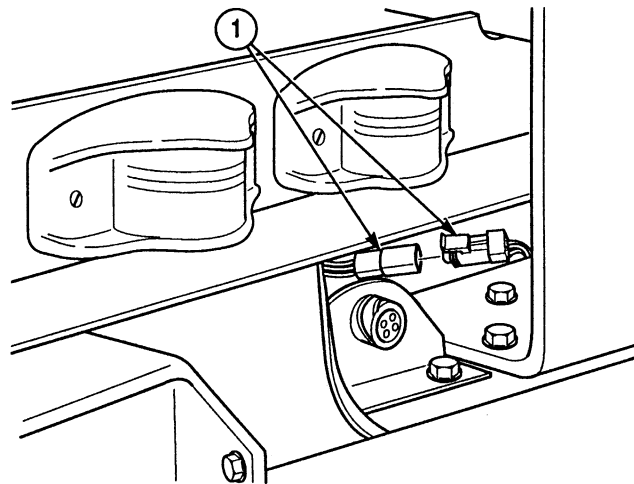
7-53. REAR MARKER LIGHT ASSEMBLY REPAIR (CONT).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (13) Apply corrosive preventive compound to wire 1435 (20).
- (14) Connect wire 1012 (5) to wire 489 (3).
- (15) Install push clip (2) and two wires 489 (3) on rear marker light assembly (4).
- (16) Connect MC90 connector (1).



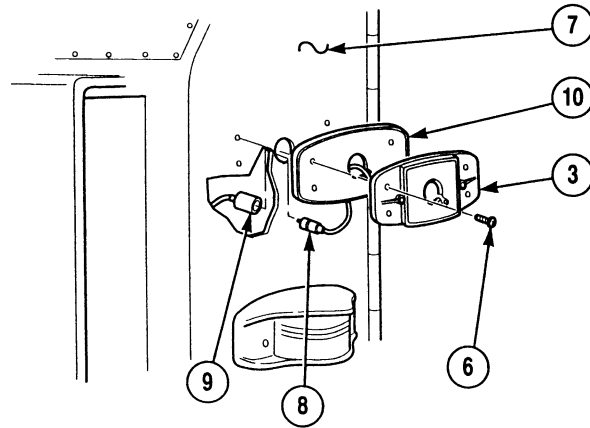
f. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check operation of rear marker light assembly, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

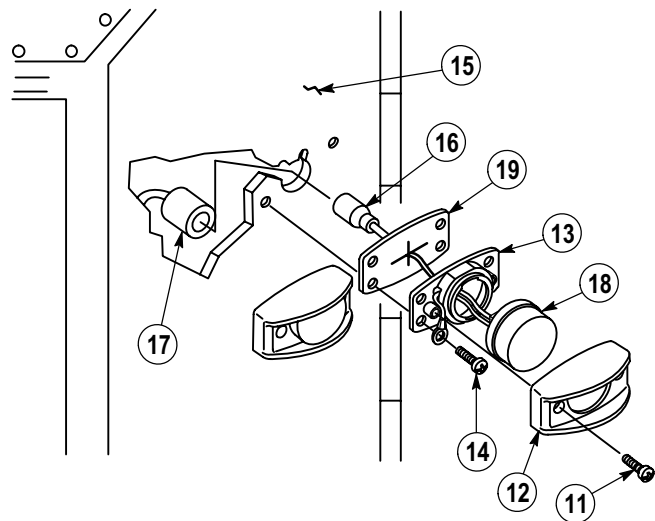
END OF TASK

7-54. AMBER MARKER LIGHT REPLACEMENT (CONT).

- (3) Remove four self-tapping screws (6) and amber marker light assembly (3) from truck (7). Discard self-tapping screws.
- (4) Disconnect wire 489 (8) from wire 1012 (9).
- (5) Remove gasket (10) from amber marker light assembly (3).



- (6) Remove two screws (11) and lens cover (12) from amber marker light assembly (13).
- (7) Remove four self-tapping screws (14) and amber marker light assembly (13) from truck (15). Discard self-tapping screws.
- (8) Disconnect wire 489 (16) from wire 1012 (17).
- (9) Turn LED (18) counterclockwise 1/4 turn and remove LED (18) and gasket (19) from amber marker light assembly (13).

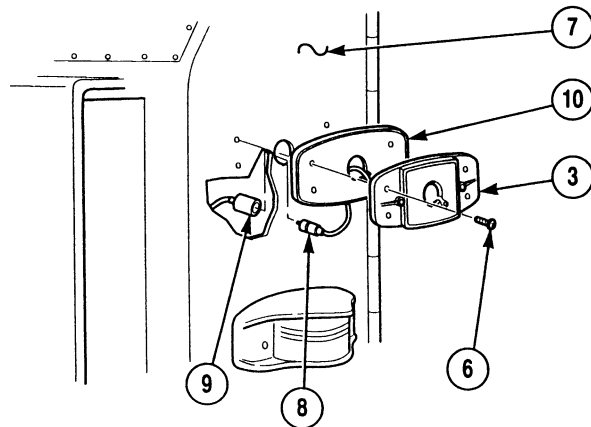


b. Installation.

NOTE

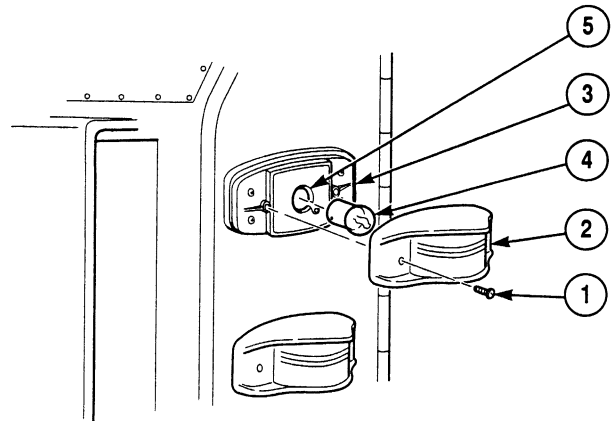
- Perform Steps (1) through (6) for amber marker light with lamp.
- Perform Steps (7) through (11) for amber marker light with LED.

- (1) Install gasket (10) on rear of amber marker light assembly (3).
- (2) Connect wire 489 (8) to wire 1012 (9).
- (3) Install amber marker light assembly (3) and four self-tapping screws (6) on truck (7).

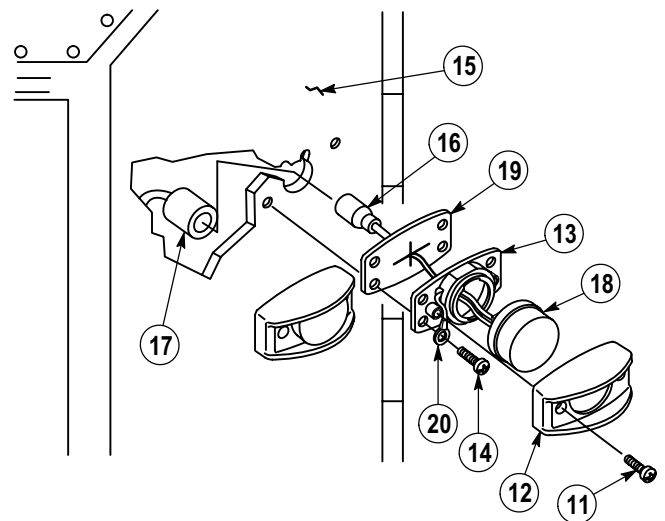


WARNING

Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.



- (4) Apply anti-corrosion silicone compound to inside of socket (5).
- (5) Install lamp (4) in socket (5).
- (6) Install lens cover (2) and two screws (1) on amber marker light assembly (3).
- (7) Position ground wire (20) through hole in amber marker light assembly (13).
- (8) Install LED (18) in amber marker light assembly (13) and turn 1/4 turn clockwise.
- (9) Position gasket (19) on wire 489 (16) and connect wire 489 (16) to wire 1012 (17).
- (10) Install amber marker light assembly (13), ground wire (20) and four self-tapping screws (14) on truck (15).
- (11) Install lens cover (12) and two screws (11) on amber marker light assembly (13).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check operation of amber marker lights, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-55. HAND HELD WORK LAMP ASSEMBLY REPAIR.

This task covers:

- | | | |
|----------------|-----------------|--------------------------|
| a. Removal | c. Assembly | e. Follow-On Maintenance |
| b. Disassembly | d. Installation | |

INITIAL SETUP

Tools and Special Tools

Tool Kit , General Mechanic's: Automotive
(Item 74, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)
Wrench, Torque, (0-60 N·m)
(Item 98, Appendix G)

Materials/Parts

Primer, T (Item 65, Appendix C)
Sealing Compound (Item 77, Appendix C)

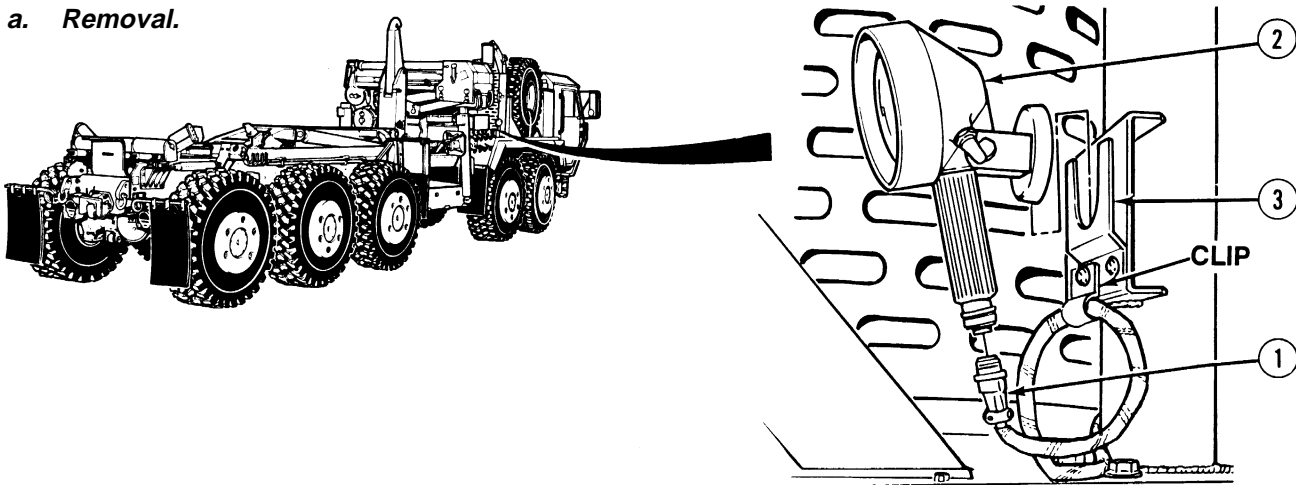
Materials/Parts - Continued

Solution, Soap (Item 86, Appendix C)
Cap, End Splice (Item 7, Appendix F)
Locknut (2) (Item 92, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.



CAUTION

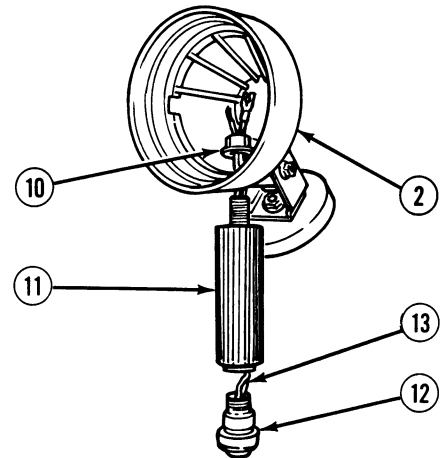
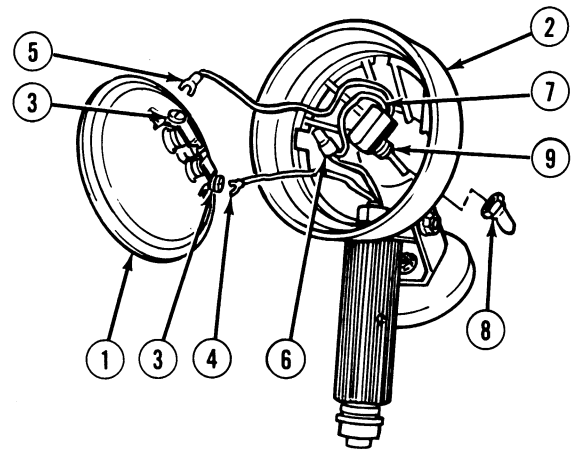
MC54 and MC79 are installed with sealing compound; use care when disconnecting or damage to equipment may result.

NOTE

- Right side shown. Left side removed the same way.
 - Disconnect MC54 connector on left side.
- (1) Remove MC79 connector (1) from bottom of hand held work lamp assembly (2).
 - (2) Remove hand held work lamp assembly (2) from hand held work lamp assembly mounting bracket (3).

b. Disassembly.

- (1) Apply soap solution to edge of sealed beam (1) and pry off from hand held work lamp assembly (2).
- (2) Loosen two screws (3) and remove wire 1435 (4) and wire 1040B (5) from rear of sealed beam (1).
- (3) Remove and discard end splice cap (6) from switch wire (7).
- (4) Remove switch retainer nut (8) from front of switch (9).
- (5) Remove switch (9) from hand held work lamp assembly (2).
- (6) Remove nut (10) from hand held work lamp assembly handle (11).
- (7) Remove hand held work lamp assembly handle (11) from hand held work lamp assembly housing (2).
- (8) Remove connector (12) and wire harness (13) from hand held work lamp assembly handle (11).



NOTE

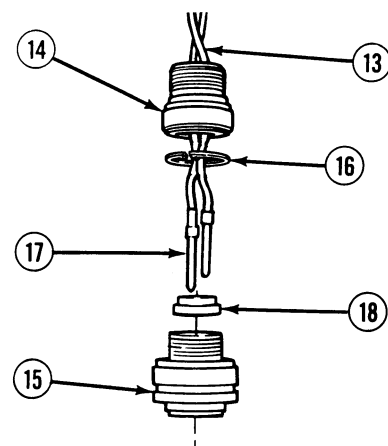
Note position of wire pins before disassembly of connector.

- (9) Remove connector adapter (14) from connector housing (15).



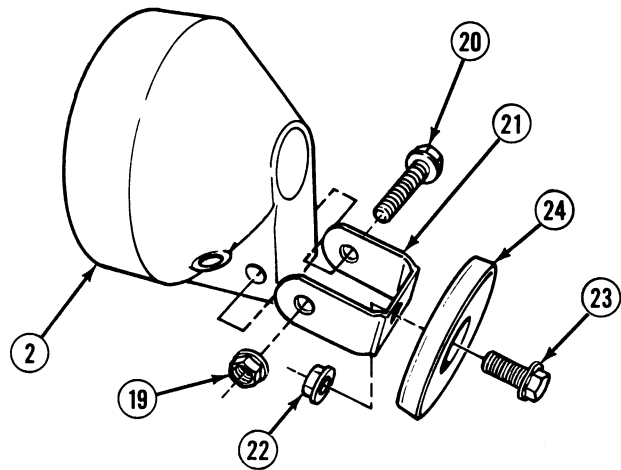
Use care when removing retaining rings. Retaining rings are under spring tension and can act as projectiles when released and could cause severe eye injury.

- (10) Remove retaining ring (16) from electrical connector housing (15).
- (11) Remove two wire pins (17) and wire pin guide (18) from connector housing (15).
- (12) Remove connector adapter (14) from wire harness (13).



7-55. HAND HELD WORK LAMP ASSEMBLY REPAIR (CONT).

- (13) Remove locknut (19), screw (20) and hand held work lamp assembly bracket (21) from hand held work lamp assembly (2). Discard locknut.
- (14) Remove locknut (22), screw (23) and magnet mount (24) from hand held work lamp assembly bracket (21). Discard locknut.



c. Assembly.

- (1) Install magnet mount (24), screw (23) and locknut (22) on hand held work lamp assembly bracket (21).

NOTE

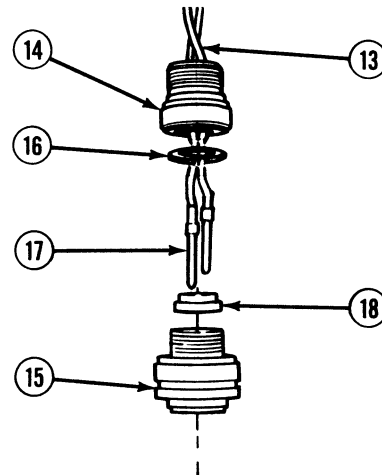
When properly installed, hand held work lamp assembly should rotate after bracket is tightened.

- (2) Install hand held work lamp assembly bracket (21), screw (20) and locknut (19) on hand held work lamp assembly (2).
- (3) Install connector adapter (14) and wire pin guide (18) on wire harness (13).

NOTE

Ensure slots in wire pin guides align with tab in electrical connector adapter.

- (4) Install two wire pins (17) and wire pin guide (18) in connector housing (15).

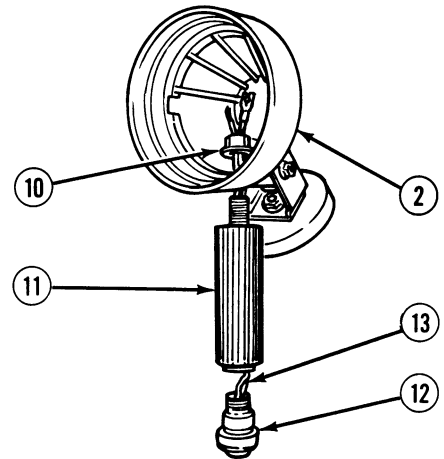


WARNING

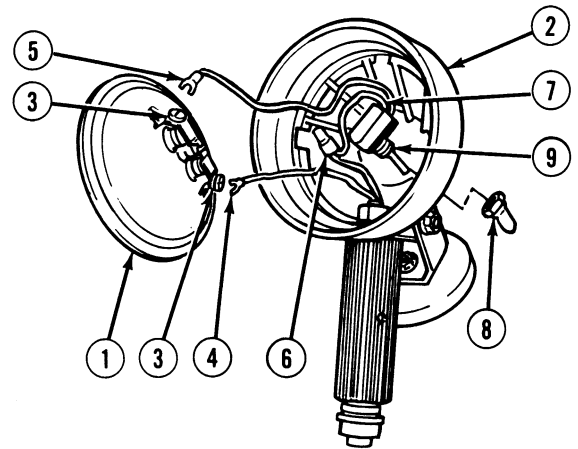
Use care when installing retaining rings. Retaining rings are under spring tension and can act as projectiles when released and could cause severe eye injury.

- (5) Install retaining ring (16) in connector housing (15).
- (6) Install connector adapter (14) on connector housing (15).

- (7) Install wire harness (13) and electrical connector (12) in hand held work lamp assembly handle (11).
- (8) Install hand held work lamp assembly handle (11) on hand held work lamp assembly housing (2).
- (9) Install nut (10) on hand held work lamp assembly handle (11).



- (10) Install switch (9) on hand held work lamp assembly housing (2).
- (11) Install switch retainer nut (8) on front of switch (9).
- (12) Install splice cap (6) on switch wire (7).
- (13) Install wires 1435 (4) and 1040B (5) with screws (3) on rear of sealed beam (1).
- (14) Install sealed beam (1) in hand held work lamp assembly (2).



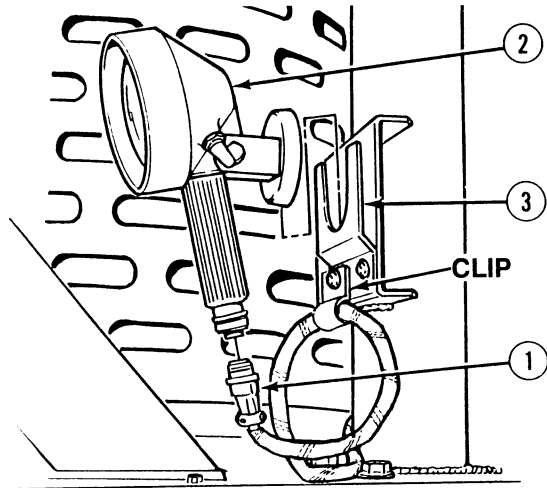
7-55. HAND HELD WORK LAMP ASSEMBLY REPAIR (CONT).

d. Installation.

- (1) Install hand held work lamp assembly (2) in work light mounting bracket (3).

WARNING

Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (2) Apply primer and sealing compound on three threads of connector (1).

NOTE

Electrical harness must be routed through clip until harness clears fender.

- (3) Install connector (1) on hand held work lamp assembly (2).

e. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Check operation of work lamp assembly, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-56. DDEC II ENGINE COLD PLATE/ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT).

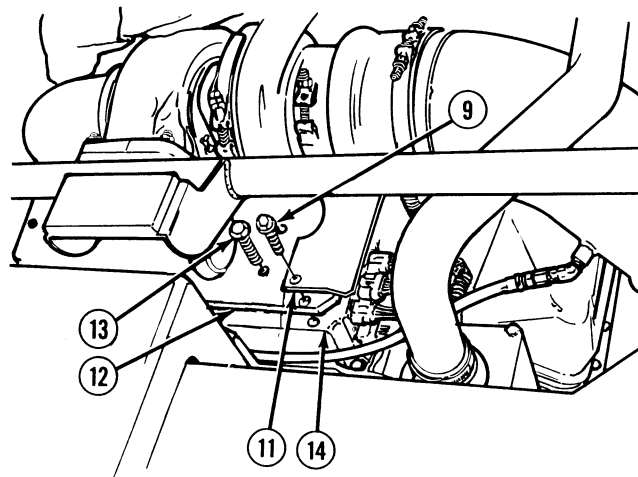
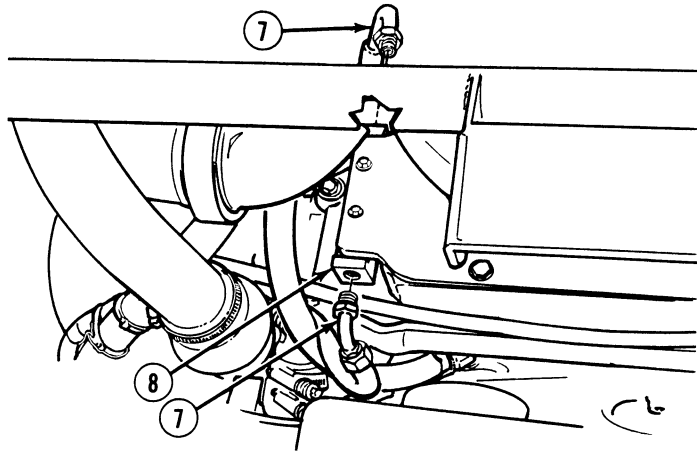
WARNING

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.

NOTE

Tag and mark all hoses prior to removal.

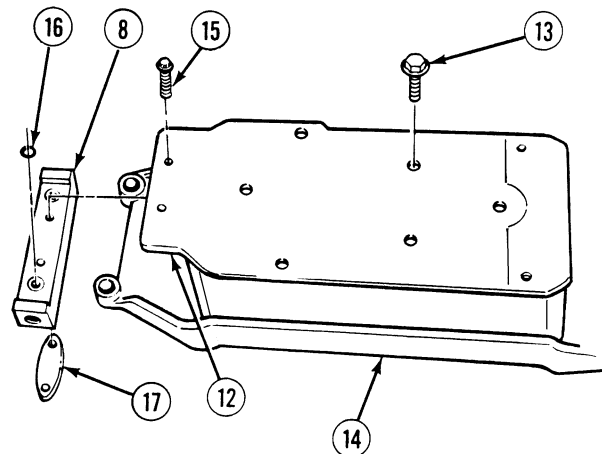
- (3) Remove two fuel lines (7) from plastic fitting block (8).
- (4) Remove two lock screws (9) and shield (11) from engine cold plate (12). Discard screws.
- (5) Remove six lock screws (13) and engine cold plate (12) from electronic control module (14). Discard screws.



NOTE

Perform Step (6) if replacing cold plate.

- (6) Remove two screws (15), plastic fitting block (8), two preformed packings (16) and plate (17) from engine cold plate (12). Discard preformed packings.

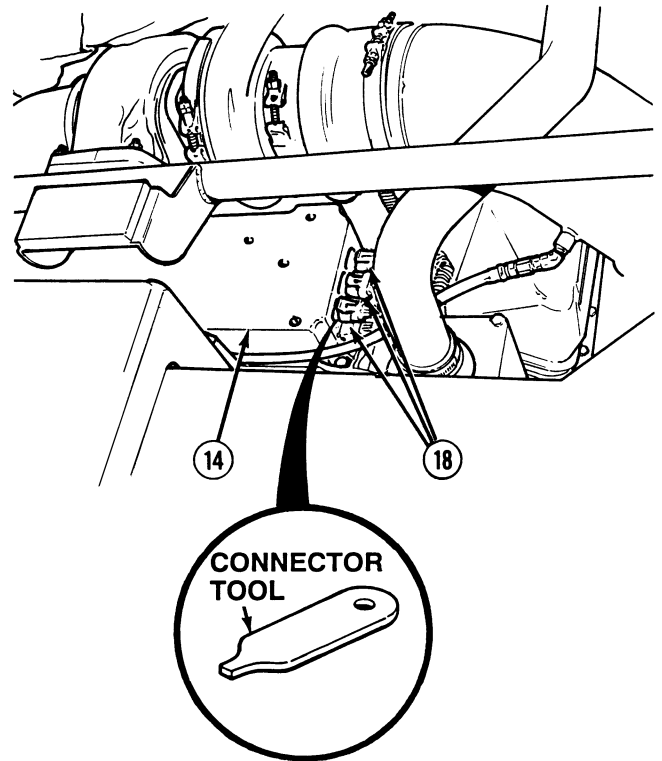


CAUTION

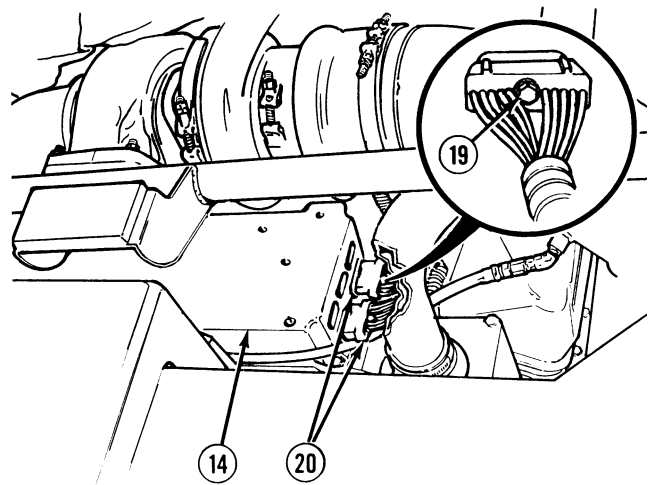
Use caution while removing connectors from ECM. The ECM has plastic retainers that may break if connectors are not properly removed.

NOTE

- Perform Steps (7) through (15) only if removing the electronic control module.
- Tag and mark wiring harness connectors before removal.
- Connectors are removed by gently prying up on locking tab with connector tool and pulling connector out.



- (7) Using connector tool, remove three wiring harness connectors (18) from ECM (14).
- (8) Loosen two screws (19) and remove wiring harness connectors (20) from ECM (14).

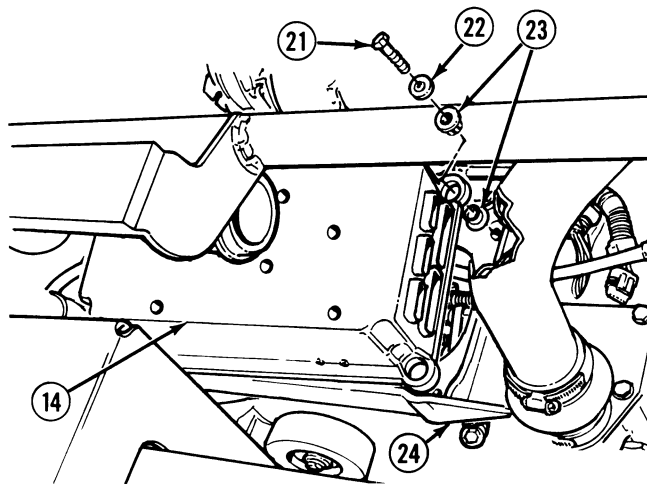


7-56. DDEC II ENGINE COLD PLATE/ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT).

NOTE

- Washers may or may not be present in Step (9).
- If mounts are damaged, mounts and screws must be replaced.

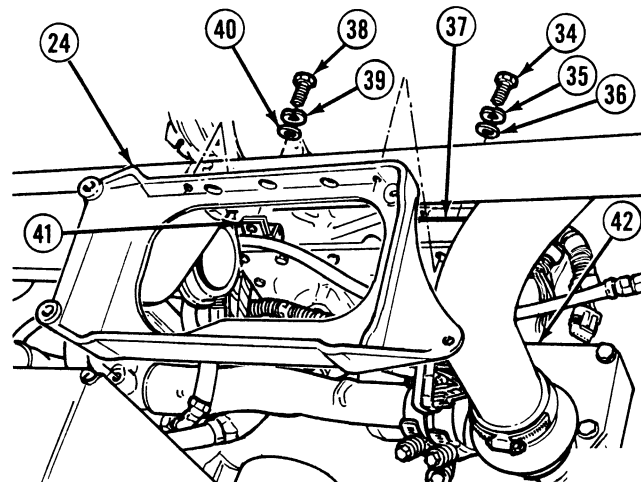
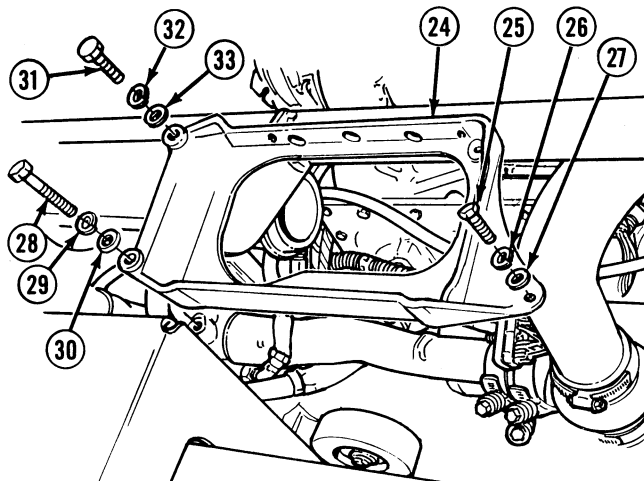
- (9) Remove four screws (21), washers (22), eight mounts (23) and ECM (14) from ECM mounting bracket (24).



NOTE

Perform Steps (10) through (15) if removing ECM bracket.

- (10) Remove screw (25), lockwasher (26) and washer (27) from ECM mounting bracket (24). Discard lockwasher.
- (11) Remove screw (28), lockwasher (29) and washer (30) from ECM mounting bracket (24). Discard lockwasher.
- (12) Remove screw (31), lockwasher (32) and washer (33) from ECM mounting bracket (24). Discard lockwasher.
- (13) Remove screw (34), lockwasher (35), washer (36) and turbo boost sensor bracket (37) from ECM mounting bracket (24). Discard lockwasher.
- (14) Remove screw (38), lockwasher (39), washer (40) and turbo oil line clamp (41) from ECM mounting bracket (24). Discard lockwasher.
- (15) Remove ECM mounting bracket (24) from engine (42).

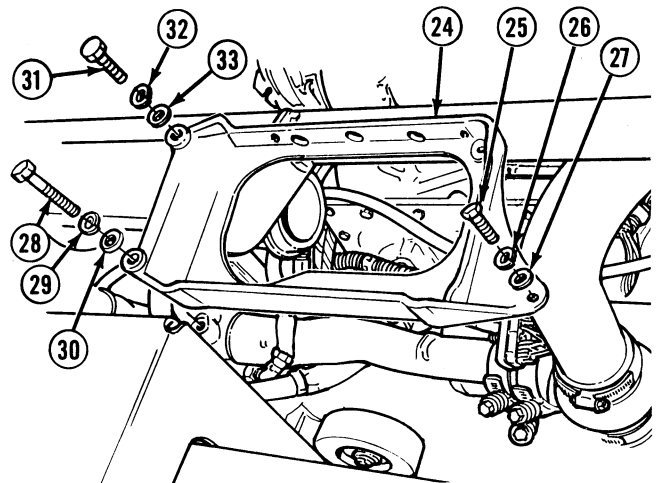
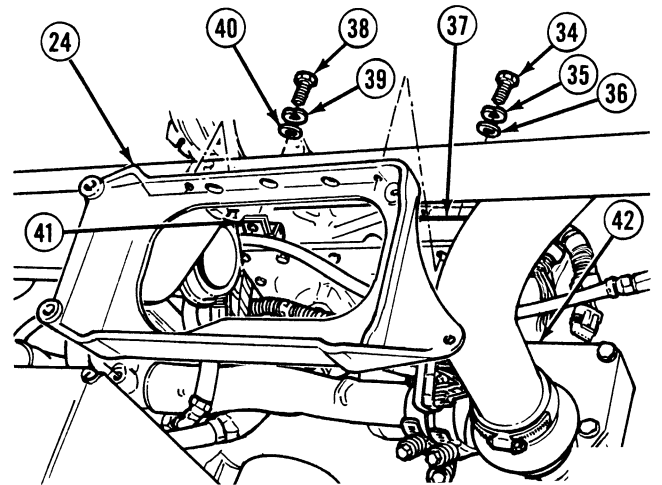


b. Installation.

NOTE

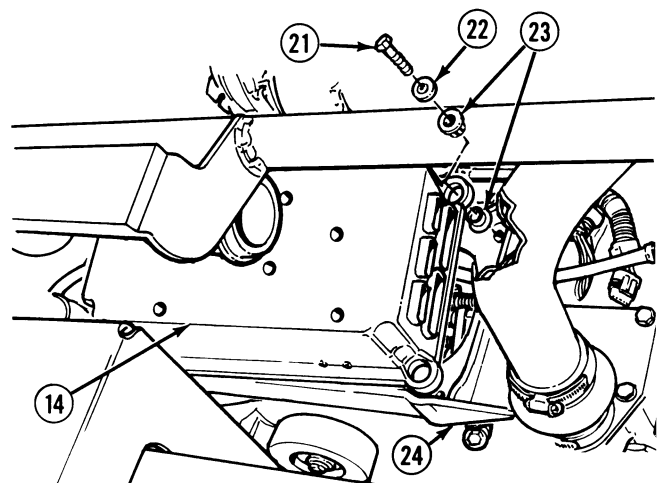
Perform Steps (1) through (7) if ECM mounting bracket was removed.

- (1) Position ECM mounting bracket (24) on engine (42).
- (2) Install turbo oil line clamp (41), washer (40), lockwasher (39) and screw (38) on ECM mounting bracket (24). Tighten screw 120 to 156 lb-in (13 to 17 N·m).
- (3) Install turbo boost sensor bracket (37), washer (36), lockwasher (35) and screw (34) on ECM mounting bracket (24). Tighten screw 120 to 156 lb-in (13 to 17 N·m).
- (4) Position washer (33), lockwasher (32) and screw (31) in ECM mounting bracket (24).
- (5) Position washer (30), lockwasher (29) and screw (28) in ECM mounting bracket (8).
- (6) Position washer (27), lockwasher (26) and screw (25) in ECM mounting bracket (24).
- (7) Tighten screws (25), (28) and (31) to 23 to 26 lb-ft (31 to 35 N·m).



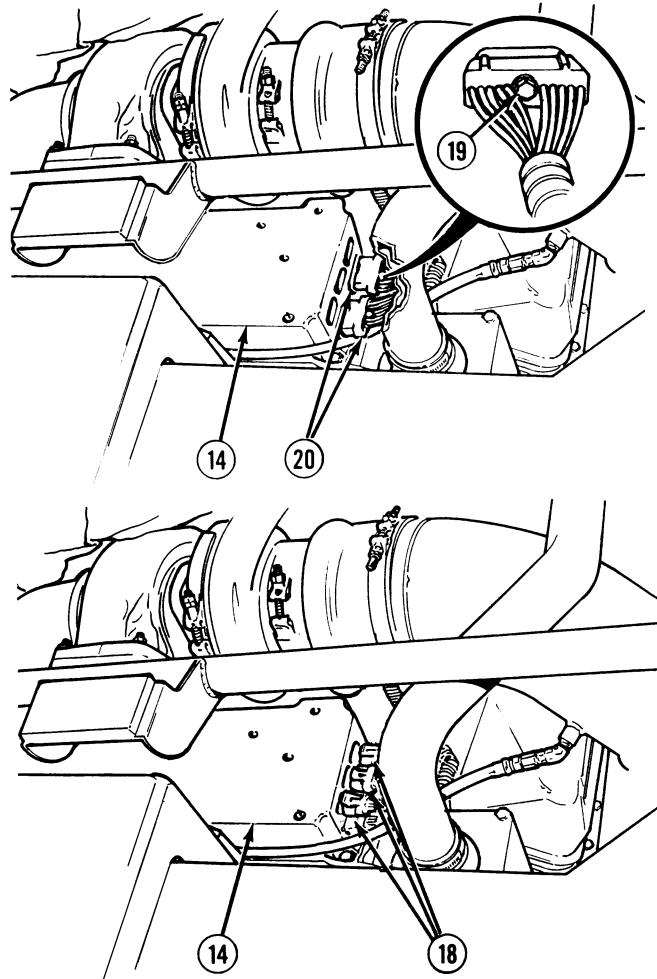
NOTE

- Perform Steps (8) through (10) if ECM was removed.
 - Washers may or may not be present in Step (8).
- (8) Install ECM (14), eight mount cushions (23), four washers (22) and screws (21) in ECM mounting bracket (24). Tighten screws 60 to 84 lb-in (7 to 9 N·m).



7-56. DDEC II ENGINE COLD PLATE/ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT).

- (9) Install two wiring harness connectors (20) on ECM (14) and tighten two screws (19).



CAUTION

Use caution while installing connectors from ECM. The ECM has plastic retainers that may break if connectors are not properly installed.

NOTE

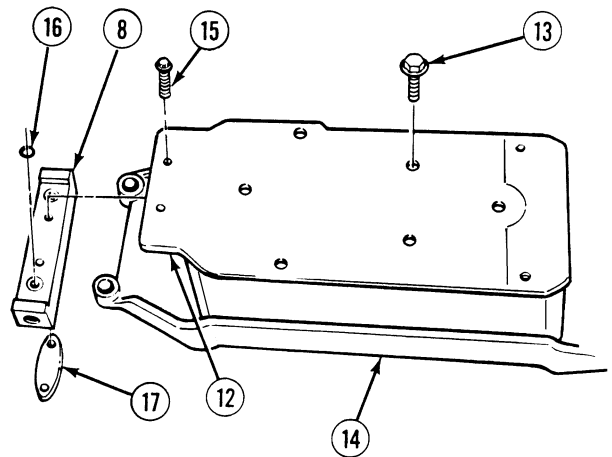
Ensure locking tangs are locked in place when installing wiring harness connectors.

- (10) Install three wiring harness connectors (18) on ECM (14).

NOTE

If only installing cold plate, perform Steps (11) and (12).

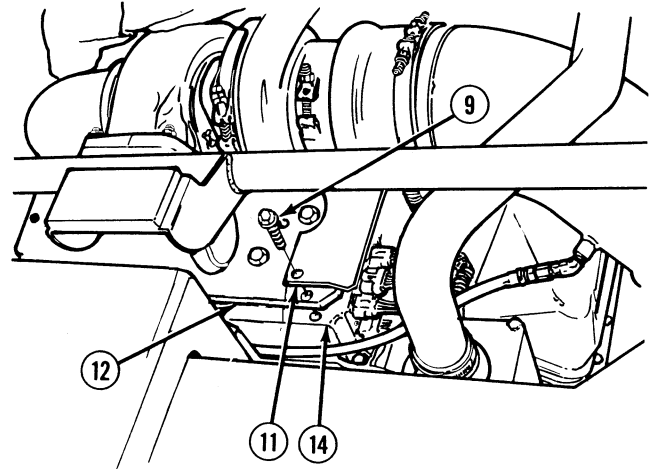
- (11) Install two preformed packings (16), plate (17), plastic fitting block (8) and two screws (15) on engine cold plate (12). Tighten screws 84 to 108 lb-in (9 to 12 N·m).
- (12) Install engine cold plate (12) and six screws (13) on electronic control module (14). Tighten screws 156 to 204 lb-in (17 to 23 N·m).



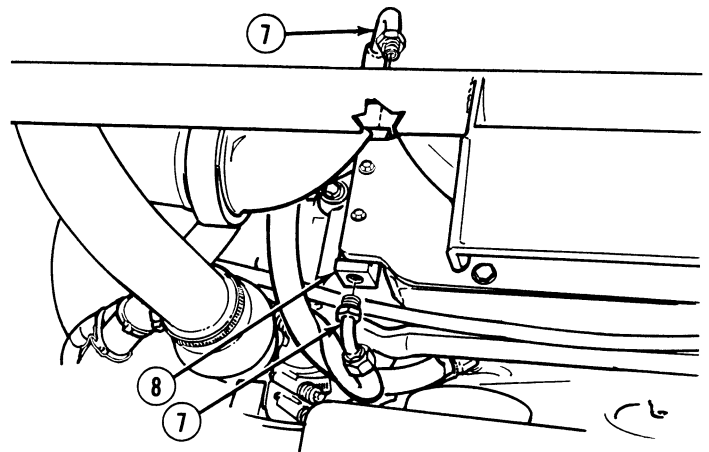
NOTE

Perform Steps (13) through (16) if cold plate was removed.

- (13) Install shield (11) and two screws (9) on engine cold plate (12). Tighten screws 156 to 204 lb-in (17-23 N·m).

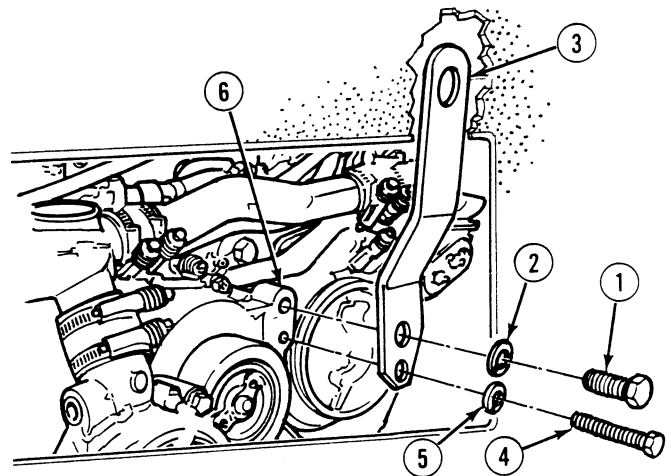


- (14) Install two fuel lines (7) on plastic fitting block (8).
- (15) Position engine lifting bracket (3) on front balance cover (6) with lockwasher (5) and (2) and screws (4) and (1).
- (16) Tighten screw (1) on engine lifting bracket (3) to 71 to 75 lb-ft (96-102 N·m).
- (17) Tighten screw (4) on engine lifting bracket (3) to 53 to 56 lb-ft (72-76 N·m).
- (18) Tighten screw (1) on engine lifting bracket (3) to 103 to 110 lb-ft (140-149 N·m).
- (19) Tighten screw (4) on engine lifting bracket (3) to 71 to 75 lb-ft (96-102 N·m).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Start engine, (TM 9-2320-364-10).
- Check for leaks, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Install cab engine access panel, (Para 17-24).
- Close engine cover, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).



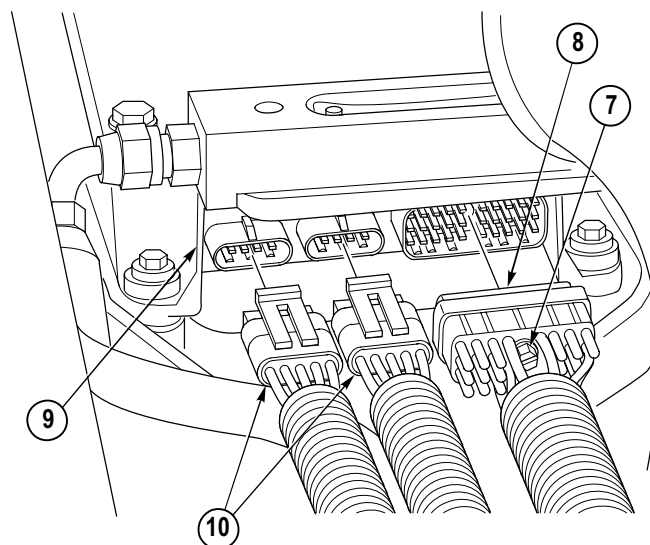
END OF TASK

CAUTION

Use caution while removing connectors from ECM. The ECM has plastic retainers that may break if connectors are not properly removed.

NOTE

- Connector is removed by gently prying on clip and pulling on connector.
- Tag and mark wiring harness connectors before removal.

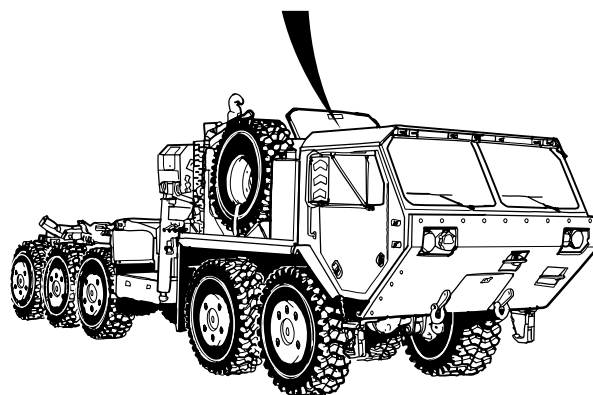


- (3) Loosen screw (7) and remove engine wiring harness connector (8) from right side of ECM (9).

NOTE

Connector screws are designed to remain with connector.

- (4) Disconnect two injector wiring harness connectors (10) from right side of ECM (9).



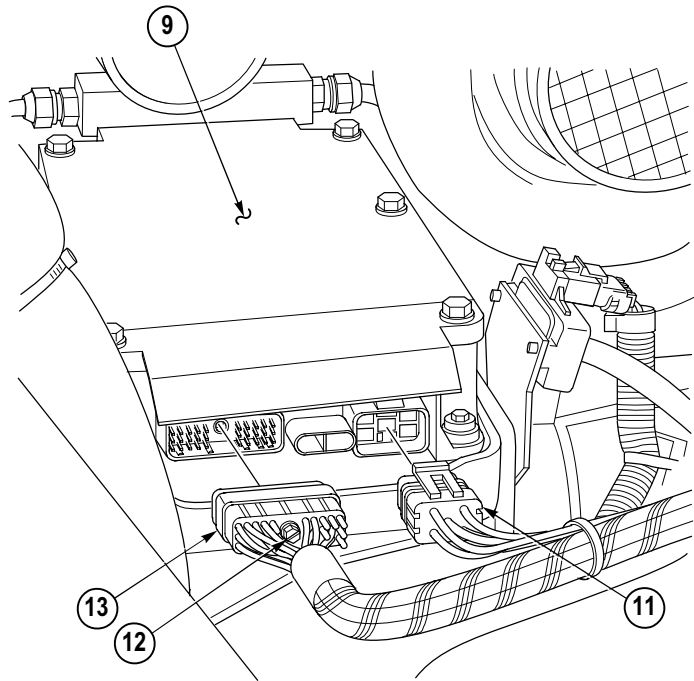
7-57. DDEC III ENGINE COLD PLATE/ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT).

CAUTION

Use caution while removing connectors from ECM. The ECM has plastic retainers that may break if connectors are not properly removed.

NOTE

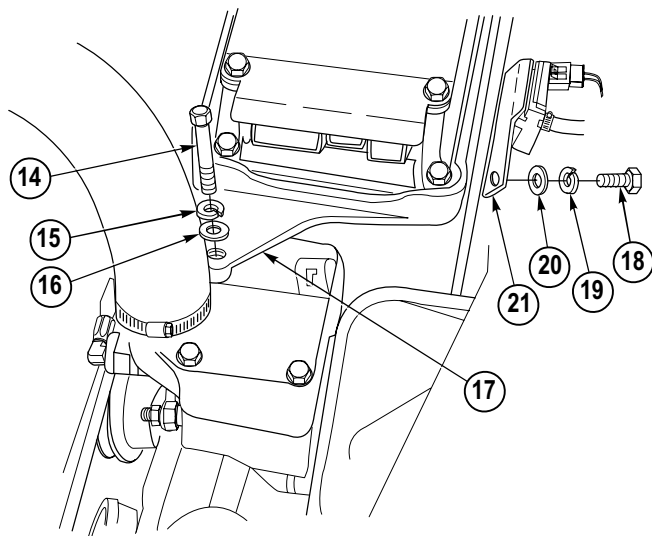
- Tag and mark wiring harness connectors before removal.
- Connectors are removed by gently prying up on locking tab with connector tool and pulling connector out.



- (5) Remove 5-way power wiring harness connector MC17 (11) from left side of ECM (9).
- (6) Loosen screw (12) and remove vehicle wiring harness connector MC18 (13) from left side of ECM (9).

- (7) Remove screw (14), lockwasher (15) and washer (16) from ECM bracket (17). Discard lockwasher.

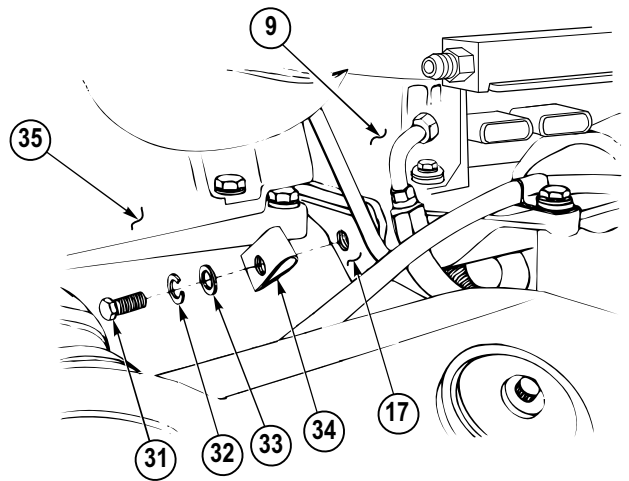
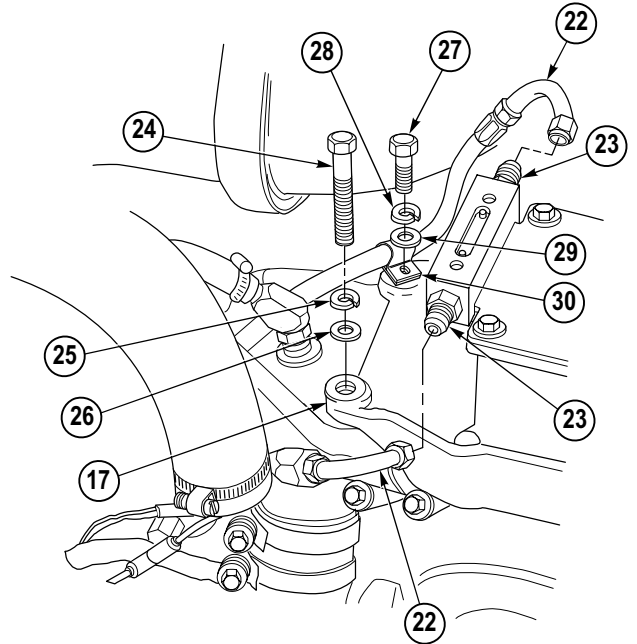
- (8) Remove screw (18), lockwasher (19), washer (20) and turbo boost sensor bracket (21) from ECM bracket (17). Discard lockwasher.



CAUTION

Fuel is very flammable and can explode easily. To avoid serious injury or death, keep fuel away from open fire and keep fire extinguisher within easy reach when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine.

- (9) Remove two fuel lines (22) from fittings (23).
- (10) Remove screw (24), lockwasher (25) and washer (26) from ECM bracket (17). Discard lockwasher.
- (11) Remove screw (27), lockwasher (28), washer (29) and clip (30) from ECM bracket (17). Discard lockwasher.
- (12) Remove screw (31), lockwasher (32), washer (33) and clip (34) from ECM bracket (17). Discard lockwasher.
- (13) Remove ECM bracket (17) and ECM (9) from engine (35) and place on clean work surface.

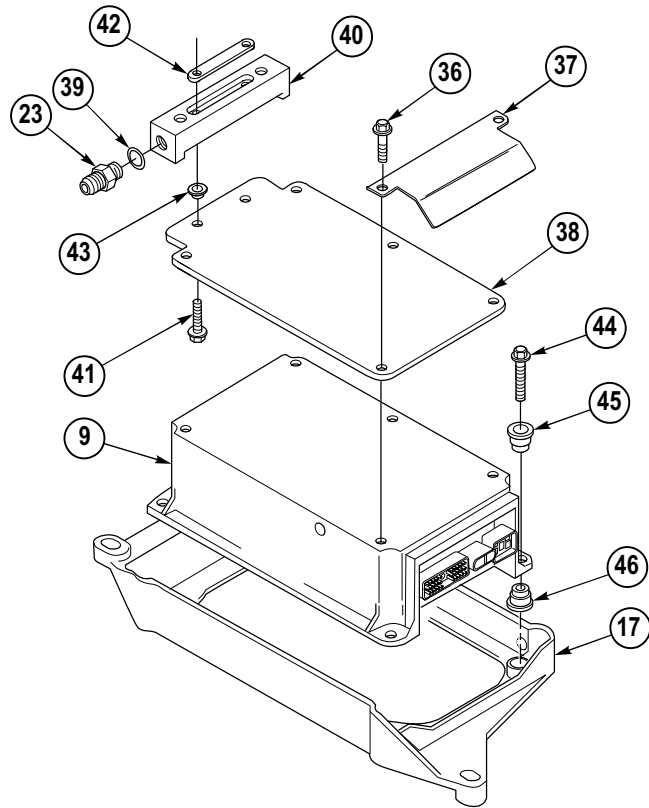


7-57. DDEC III ENGINE COLD PLATE/ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT).

- (14) Remove five screws (36), heat shield (37) and engine cold plate (38) from ECM (9).
- (15) Remove two fittings (23) and preformed packing (39) from fitting (40). Discard preformed packings.
- (16) Remove two screws (41), retainer plate (42), fitting (40) and two seals (43) from engine cold plate (38). Discard seals.
- (17) Remove four screws (44) and isolators (45) from ECM (9). Discard screws and isolators.
- (18) Remove ECM (9) and four isolators (46) from ECM bracket (17). Discard isolators.

b. Installation.

- (1) Install four isolators (46) on ECM bracket (17).
- (2) Install ECM (9) on ECM bracket (17) with four isolators (45) and screws (44).
- (3) Install two seals (43), fitting (40) and retainer plate (42) on engine cold plate (38) with two screws (41). Tighten two screws to 84-108 lb-in (9-12 N·m).
- (4) Install two fittings (23) and preformed packings (39) on fitting (40).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (5) Coat threads of five screws (36) with antiseize compound.
- (6) Install engine cold plate (38) and heat shield (37) on ECM (9) with five screws (36). Tighten five screws to 180 lb-in (20 N·m).

NOTE

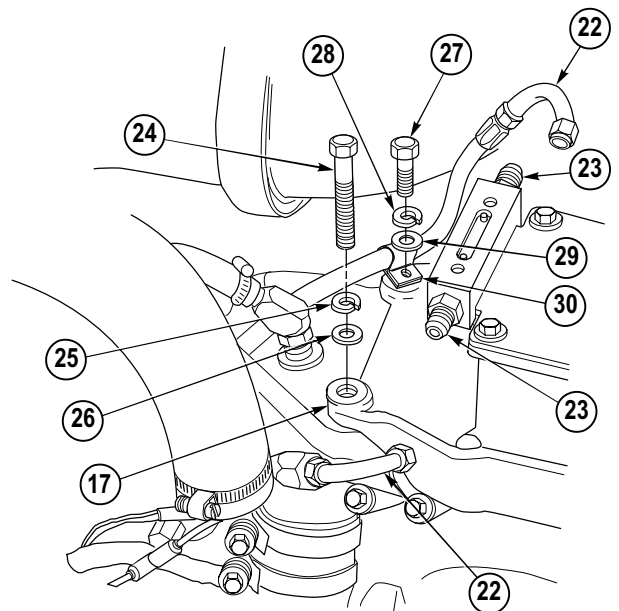
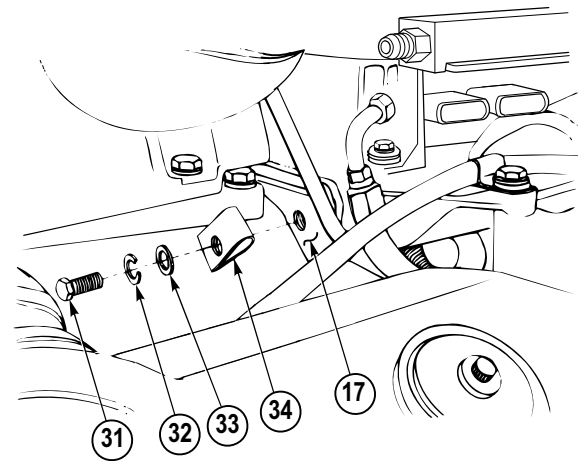
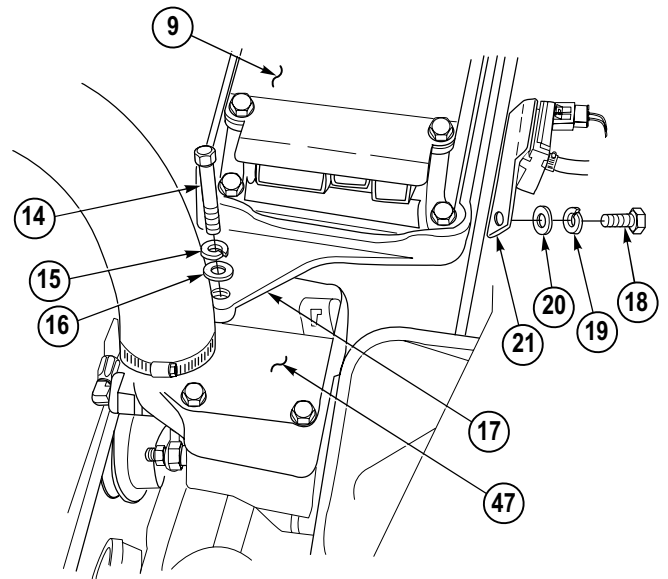
Left injector wire harness should be located under ECM bracket.

- (7) Position ECM (9) and ECM bracket (17) on thermostat housing (47).
- (8) Position turbo boost sensor bracket (21) on ECM bracket (17) with washer (20), lockwasher (19) and screw (18). Do not tighten screw.
- (9) Position washer (16), lockwasher (15) and screw (14) on ECM bracket (17). Do not tighten screw.
- (10) Position clip (34), washer (33), lockwasher (32) and screw (31) on ECM bracket (17). Do not tighten screw.
- (11) Position clip (30), washer (29), lockwasher (28) and screw (27) on ECM bracket (17). Do not tighten screw.
- (12) Position washer (26), lockwasher (25), and screw (24) on ECM bracket (17). Do not tighten screw.

CAUTION

Screws connecting bracket to blower must be tightened first to prevent damage to housing.

- (13) Tighten two screws (18) and (31) to 120-156 lb-in (14-18 N·m).
- (14) Tighten three screws (14), (27) and (24) to 17-20 lb-ft (23-27 N·m).
- (15) Install two fuel lines (22) on fittings (23).



7-57. DDEC III ENGINE COLD PLATE/ELECTRONIC CONTROL MODULE (ECM) REPLACEMENT (CONT).

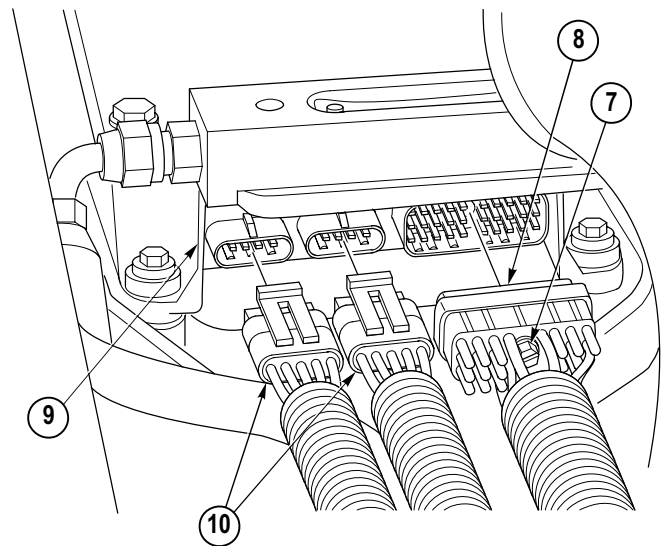
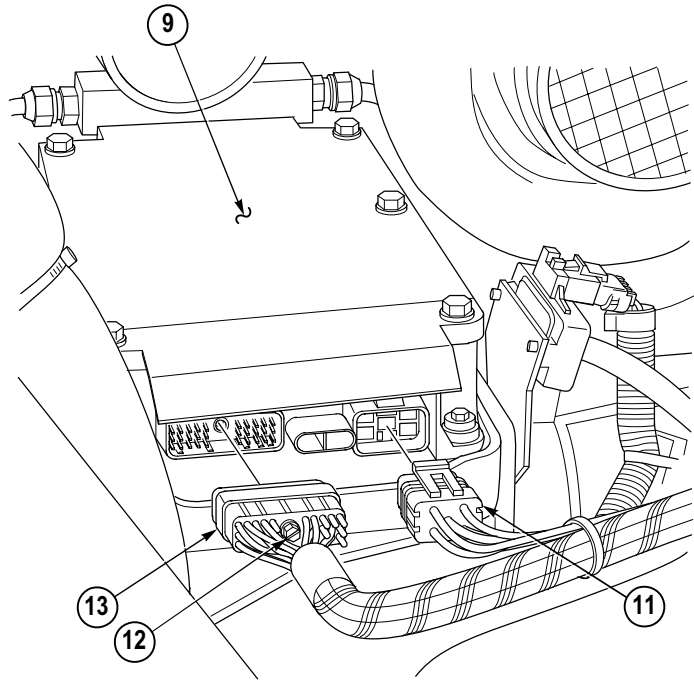
CAUTION

Use caution while installing connectors from ECM. The ECM has plastic retainers that may break if connectors are not properly installed.

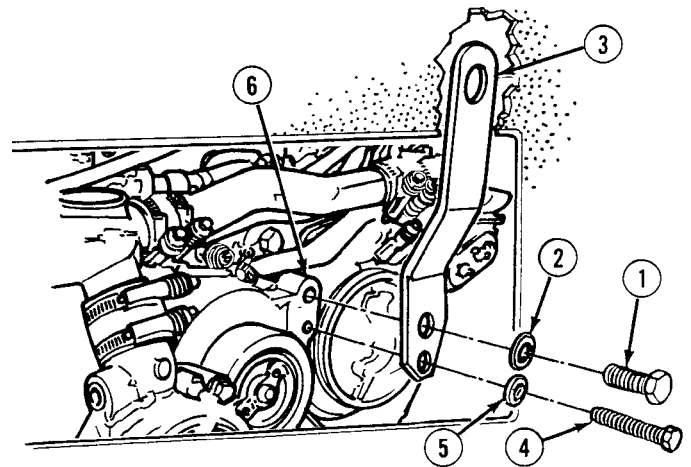
NOTE

- Ensure locking tangs are locked in place when installing wiring harness connectors.
- ECM wiring harnesses are designed to be installed in only one location.

- (16) Connect chassis wire harness connector (13) to left side of ECM (9) and tighten screw (12).
- (17) Connect power wire harness connector (11) to left side of ECM (9).
- (18) Connect two injector wiring harnesses (10) to right side of ECM (9).
- (19) Connect engine wiring harness connector (8) to right side of ECM (9) and tighten screw (7).



- (20) Position engine lifting bracket (3) on front balance cover (6) with lockwasher (5) and (2) and screws (4) and (1).
- (21) Tighten screw (1) on engine lifting bracket (3) to 71 to 75 lb-ft (96-102 N·m).
- (22) Tighten screw (4) on engine lifting bracket (3) to 53 to 56 lb-ft (72-76 N·m).
- (23) Tighten screw (1) on engine lifting bracket (3) to 103 to 110 lb-ft (140-149 N·m).
- (24) Tighten screw (4) on engine lifting bracket (3) to 71 to 75 lb-ft (96-102 N·m).



c. Follow-on Maintenance:

- Connect batteries, (Para 7-87).
- Start engine, (TM 9-2320-364-10).
- Check for leaks, (TM 9-2320-364-10).
- Shut off engine, (TM 9-2320-364-10).
- Install cab engine access panel, (Para 17-24).
- Close engine cover, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

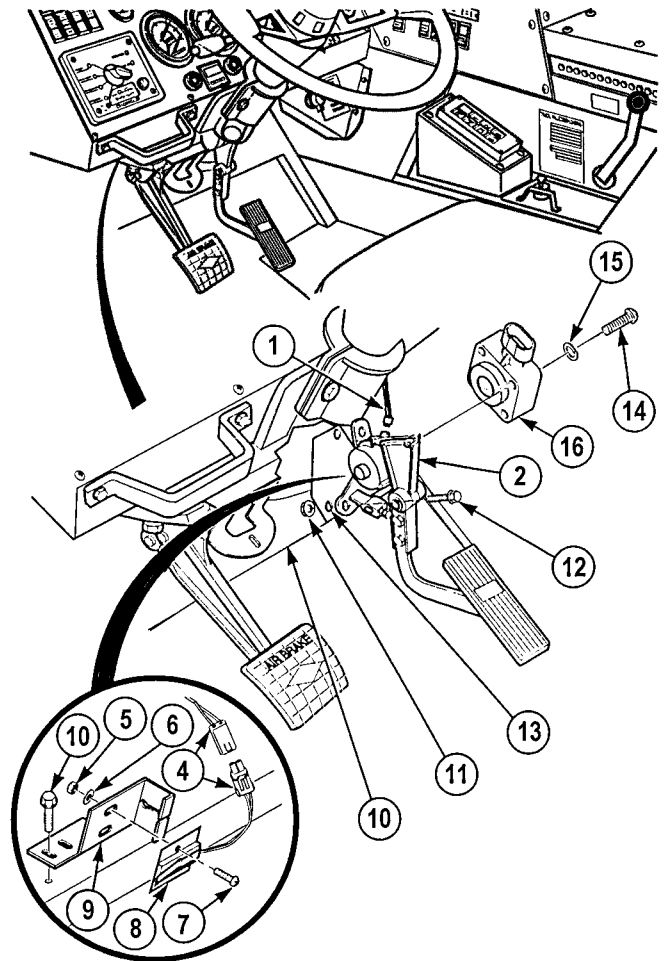
b. Installation.

- (1) Install potentiometer (16) on throttle sensor (2) with two washers (15) and screws (14).
- (2) Install throttle sensor (2) on throttle sensor mounting bracket (13) with two screws (12) and locknuts (11).
- (3) Position bracket (8) on cab (10) with two screws (9).



Throttle position switch must be installed so it is activated 0.12 in. to 0.19 in. (3 mm to 5 mm) before full throttle position. Failure to comply may result in engine overheating.

- (4) Install throttle position switch (7) on bracket (8) with screws (6), two washers (5) and locknuts (4).
- (5) Tighten two screws (9) on bracket (8).
- (6) Connect MC127 connector (3).
- (7) Connect MC6 connector (1) to throttle sensor (2).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Start engine, (TM 9-2320-364-10).
- Check operation of throttle sensor, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-59. TURBO THROTTLE SWITCH REPLACEMENT/ADJUSTMENT.

This task covers:

- | | |
|-----------------|--------------------------|
| a. Removal | c. Adjustment |
| b. Installation | d. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

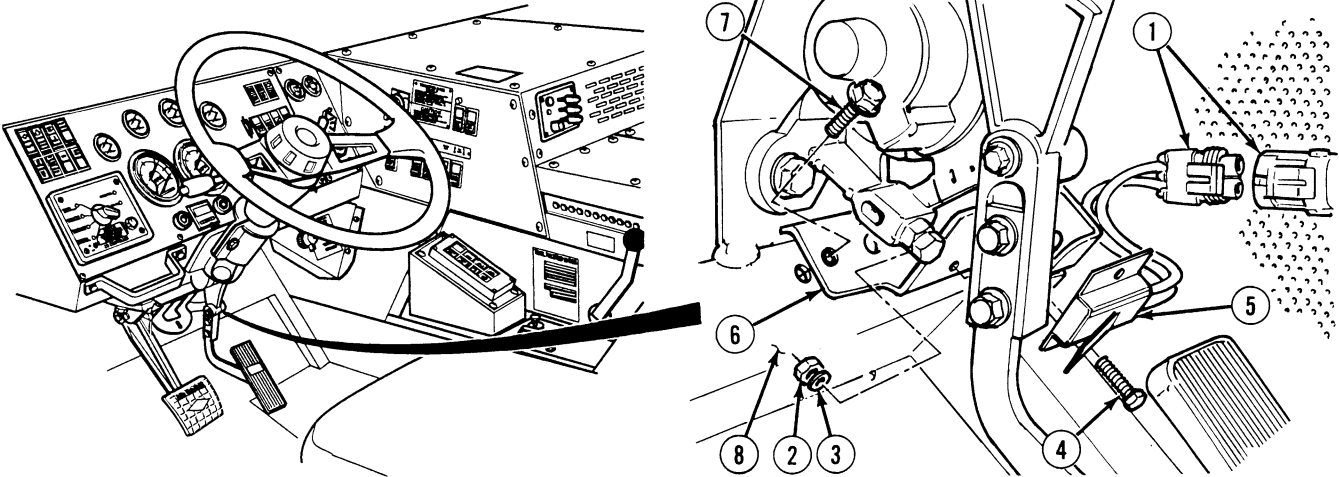
Materials/Parts

Locknut (2) (Item 124, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

a. Removal.



- (1) Disconnect MC127 connector (1).
- (2) Remove two locknuts (2), washers (3), screws (4) and switch assembly (5) from throttle switch bracket (6). Discard locknuts.

NOTE

Perform Step (3) if throttle switch bracket is damaged.

- (3) Remove two screws (7) and throttle switch bracket (6) from cab frame (8).

b. Installation.

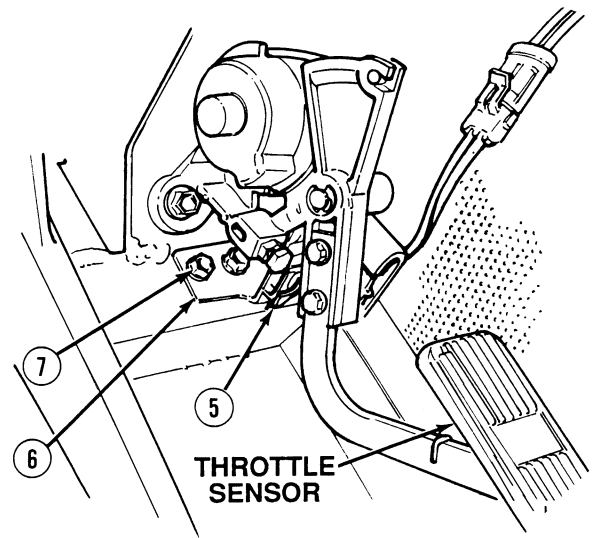
NOTE

Perform Step (1) if bracket was removed.

- (1) Position throttle switch bracket (6) on cab frame (8) with two screws (7).
- (2) Install switch assembly (5) on throttle switch bracket (6) with two screws (4), washers (3) and locknuts (2).
- (3) Connect MC127 connector (1).

c. Adjustment.

- (1) Adjust switch assembly (5) until contact is made only when throttle sensor is in full downward position. Allow 1/4 in. to 3/8 in. (6.35 mm to 9.53 mm) travel after throttle sensor contacts switch.
- (2) Tighten two screws (7) on throttle switch bracket (6).

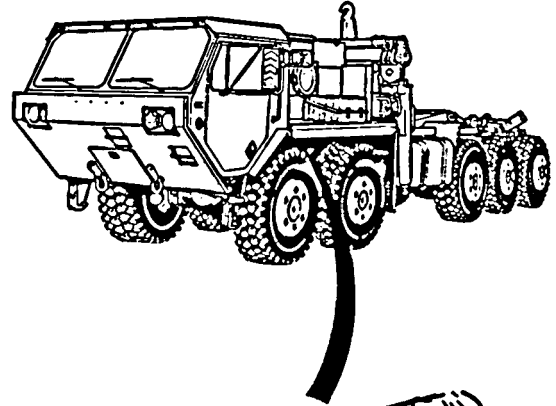
**d. Follow-On Maintenance:**

- Remove wheel chocks, (TM 9-2320-364-10).

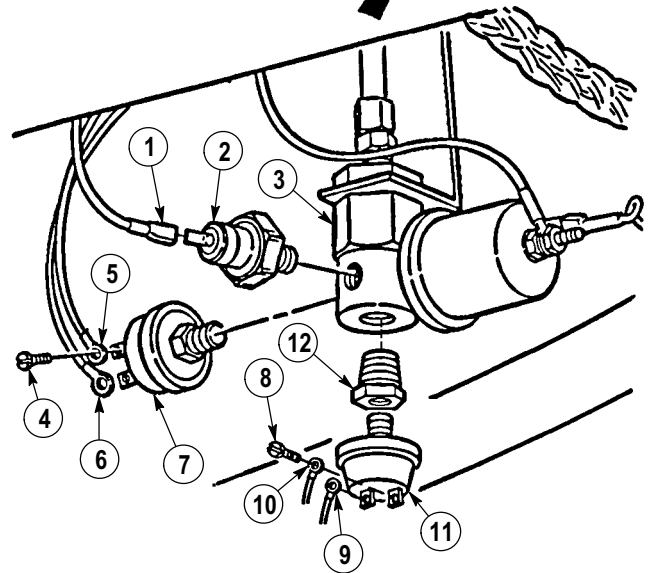
END OF TASK

b. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (1) Coat threads of oil pressure switch (7) with sealing compound and install in manifold (3).
- (2) Install wire 1517 (5) and wire 1871 (6) on oil pressure switch (7) with two screws (4). Apply electrical sealant to terminals.
- (3) Install oil pressure switch (2) in manifold (3).
- (4) Install wire 1032 (1) on oil pressure switch (2).

**NOTE**

Perform Steps (5) through (7) if truck is equipped with 200 AMP alternator.

- (5) Install reducer (12) and oil pressure switch (11) in manifold (3).
- (6) Install wire 1020B (10) and wire 1020A (9) on oil pressure switch (11) with two screws (8).
- (7) Apply electrical sealant to two screws (8).

c. Follow-On Maintenance:

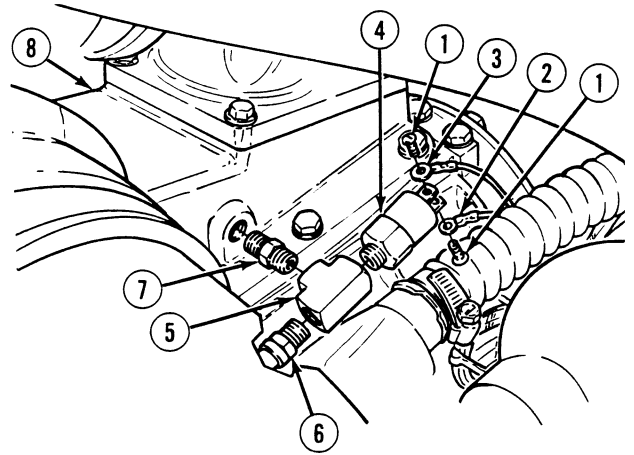
- Install left front fender skirt, (Para 17-34).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

b. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound on threads of fitting (7).
- (2) Install fitting (7) on air inlet housing (8).
- (3) Install tee (5) on fitting (7).
- (4) Apply sealing compound on threads of tee (5).
- (5) Install hose (6) on tee (5).
- (6) Apply sealing compound on threads of turbo boost switch (4).
- (7) Install turbo boost switch (4) on tee (5).
- (8) Install wire 1955 (2) and wire 1957 (3) on turbo boost pressure switch (4) with screws (1).

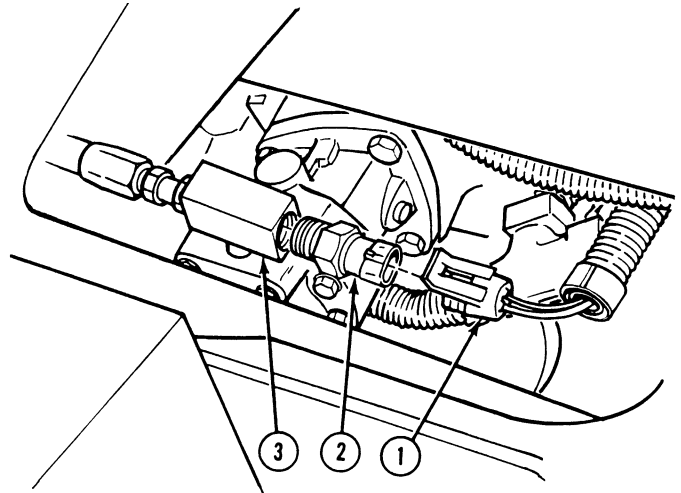
**c. Follow-On Maintenance:**

- Close engine cover, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

b. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (1) Apply sealing compound to threads of fuel temperature sensor (2).
- (2) Install fuel temperature sensor (2) in tee (3).
- (3) Connect connector (1) in fuel temperature sensor (2).

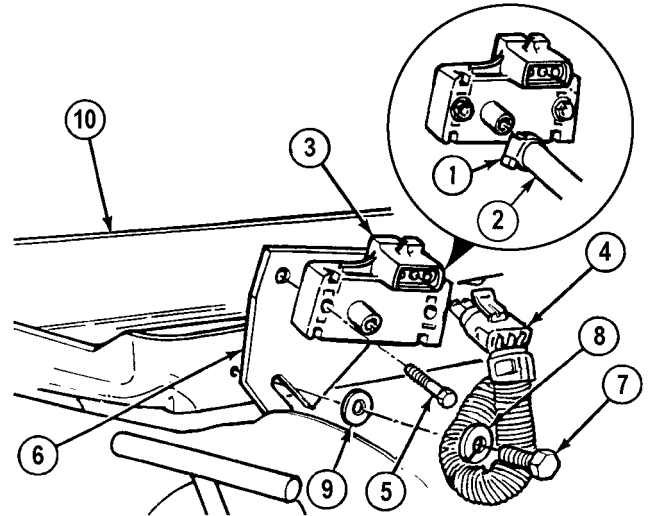
c. Follow-On Maintenance:

- Install Electronic Control Module (ECM), (DDEC II, Para 7-56 or DDEC III, Para 7-57).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

b. Installation.

- (1) Install turbo boost sensor bracket (6) on ECM bracket (10) with washer (9), lockwasher (8) and screw (7). Tighten screw (7) to 120 to 156 lb-in (13 to 17 N·m).
- (2) Install turbo boost sensor (3) on turbo boost sensor bracket (6) with two screws (5).
- (3) Connect connector (4) and hose (2) to turbo boost sensor (3).
- (4) Tighten clamp (1) on hose (2).

**c. Follow-On Maintenance:**

- Install Electronic Control Module (ECM), (DDEC II, Para 7-56 or DDEC III, Para 7-57).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-64. STE/ICE WATER TEMPERATURE SENSOR REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

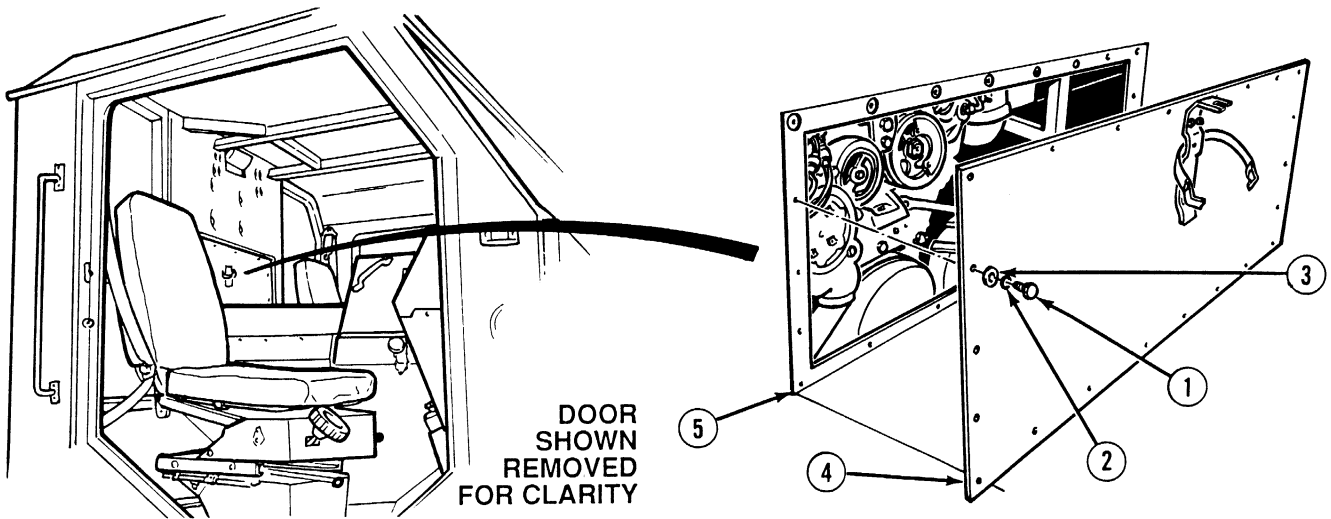
Materials/Parts

Sealing Compound (Item 72, Appendix C)
Lockwasher (22) (Item 195, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Cooling system drained, (Para 6-4)
Fire extinguisher removed, (TM 9-2320-364-10)
Secondary fuel filter removed,
(DDEC III engines only) (Para 4-13).

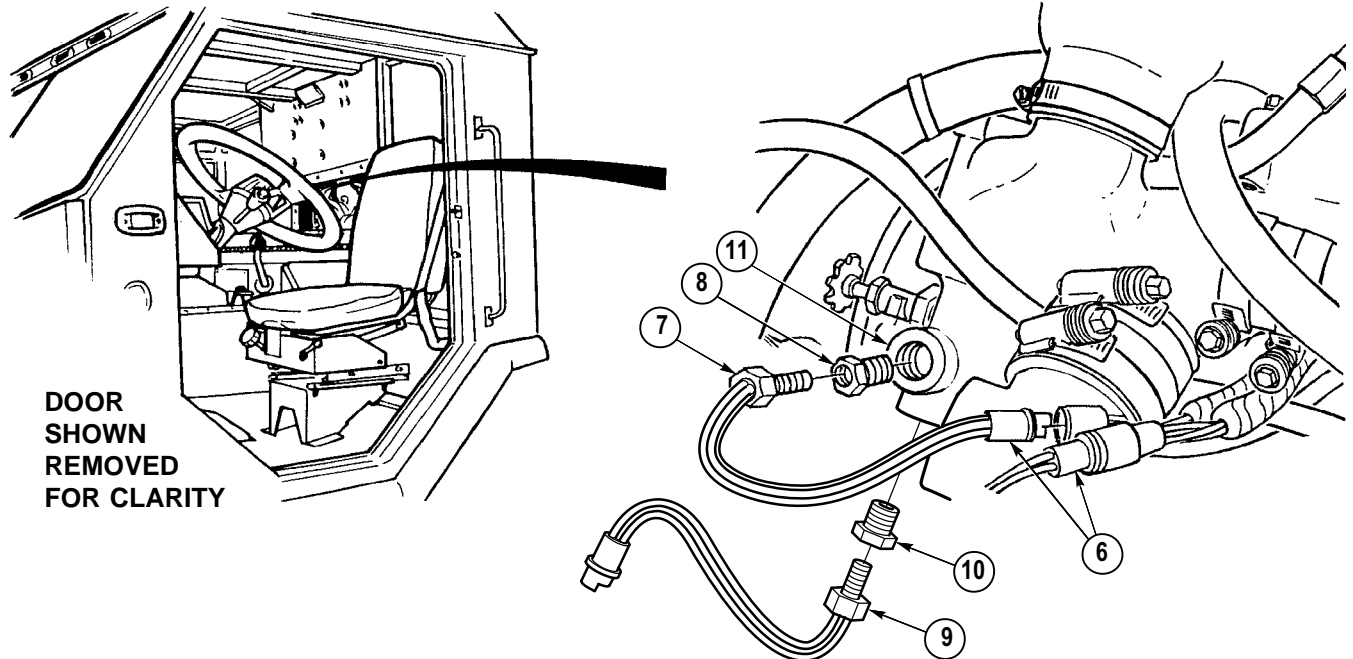
a. Removal.



NOTE

Perform Step (1) for DDEC II engines only.

- (1) Remove 22 screws (1), lockwashers (2), washers (3) and cab access panel (4) from cab (5). Discard lockwashers.



NOTE

Connectors are removed by gently prying on tab and pulling apart connectors.

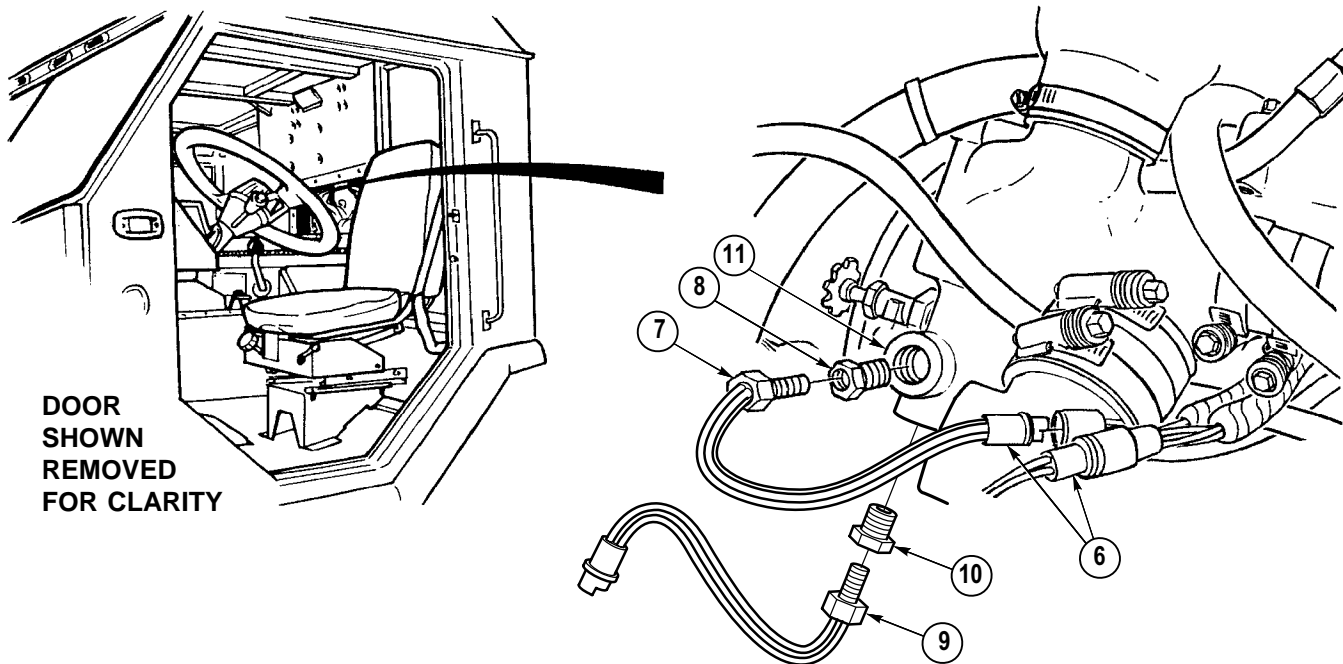
- (2) Disconnect MC71 connector (6).

NOTE

- Perform Step (3) for DDEC II engines.
 - Perform Step (4) for DDEC III engines.
- (3) Remove STE/ICE sensor (7) from bushing reducer (8).
 - (4) Remove STE/ICE sensor (9) from bushing reducer (10).
 - (5) Remove bushing reducer (8) or (10) from thermostat housing (11).

7-64. STE/ICE WATER TEMPERATURE SENSOR REPLACEMENT (CONT).

b. Installation.



**DOOR
SHOWN
REMOVED
FOR CLARITY**

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound to threads of bushing reducer (8) or (10).
- (2) Install bushing reducer (8) or (10) in thermostat housing (11).
- (3) Apply sealing compound to threads of STE/ICE sensor (7) or (9).

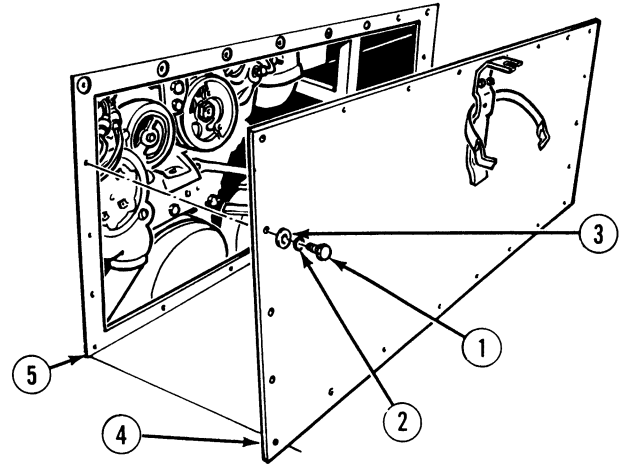
NOTE

- Perform Step (4) for DDEC II engines.
 - Perform Step (5) for DDEC III engines.
- (4) Install STE/ICE sensor (7) in bushing reducer (8).
 - (5) Install STE/ICE sensor (9) in bushing reducer (10).
 - (6) Connect MC71 connector (6).

NOTE

Perform Step (7) for DDEC II engines only.

- (7) Install cab engine access panel (4) in cab (5) with 22 washers (3), lockwashers (2) and screws (1).

**c. Follow-On Maintenance:**

- Install secondary fuel filter, (DDEC III engines only) (Para 4-13).
- Install fire extinguisher, (TM 9-2320-364-10).
- Fill cooling system, (Para 6-4).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-65. WATER TEMPERATURE GAGE/FAN CONTROL SENSORS REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
 Socket Set, 3/8 in. (Item 62, Appendix G)
 Wrench, Torque (0-60 N·m)
 (Item 98, Appendix G)

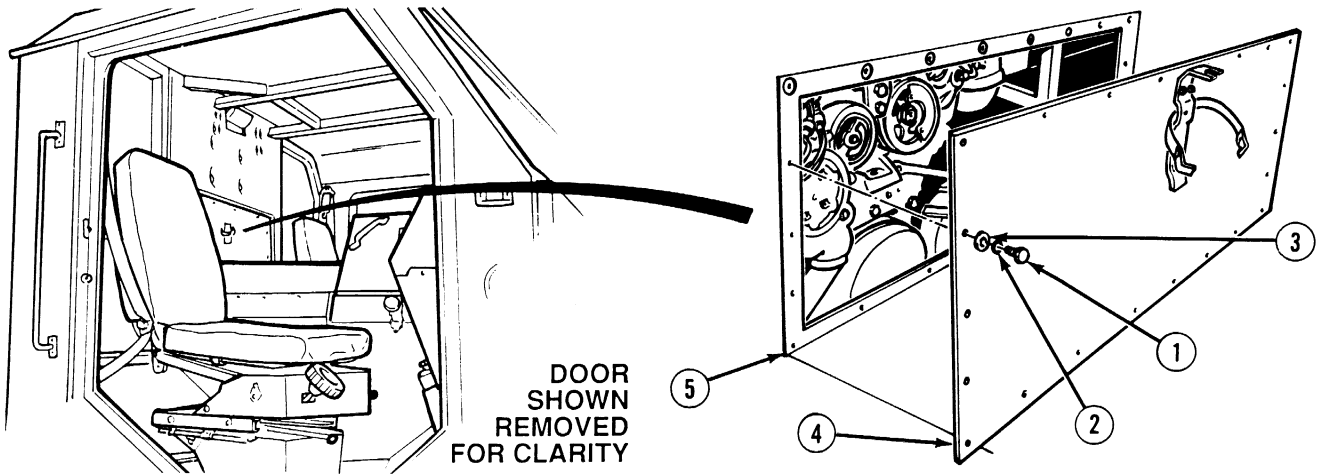
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Cooling system drained, (Para 6-4)
 Fire extinguisher removed,
 (TM 9-2320-364-10)

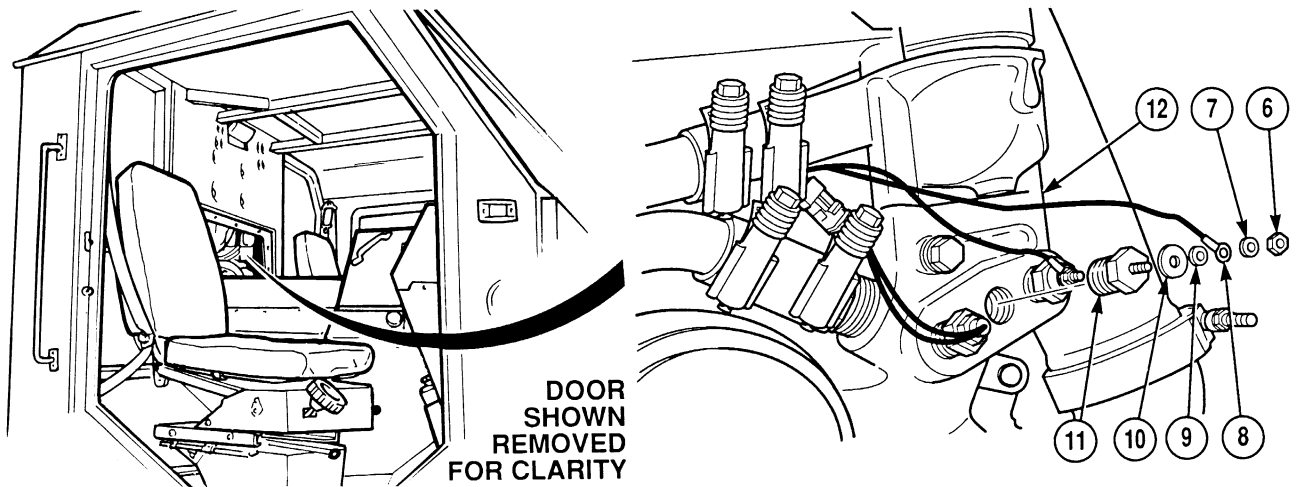
Materials/Parts

Sealant, Electrical (Item 68, Appendix C)
 Sealing Compound (Item 72, Appendix C)
 Lockwasher (22) (Item 195, Appendix F)

a. Removal.



- (1) Remove 22 screws (1), lockwashers (2), washers (3) and cab access panel (4) from cab (5). Discard lockwashers.



DOOR
SHOWN
REMOVED
FOR CLARITY

NOTE

- Perform Steps (2) and (3) to remove water temperature gage sensor.
 - Perform Steps (4) and (5) to remove fan control sensor.
- (2) Remove nut (6), lockwasher (7), wire 1320 (8), washer (9) and washer (10) from water temperature gage sensor (11). Discard lockwasher.
 - (3) Remove water temperature gage sensor (11) from left thermostat housing (12).
 - (4) Disconnect MC61 connector (13).
 - (5) Remove fan control sensor (14) from left thermostat housing (12).

7-65. WATER TEMPERATURE GAGE/FAN CONTROL SENSORS REPLACEMENT (CONT).

b. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap water.

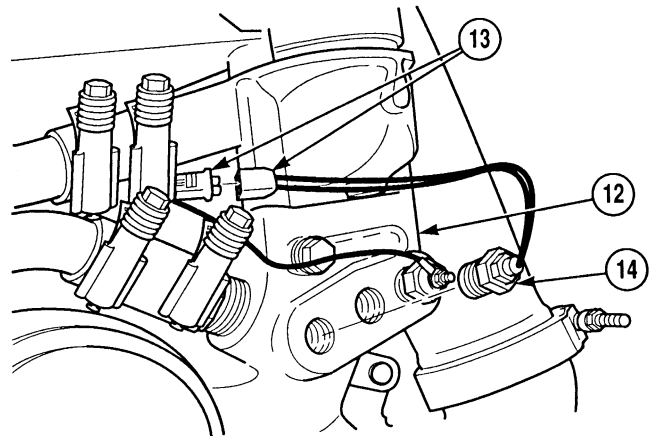
CAUTION

Do not overtighten fan control sensor.

NOTE

- Perform Steps (1) through (3) to install fan control sensor.
- Perform Steps (4) and (5) to install water temperature gage sensor.

- (1) Apply sealing compound to threads of fan control sensor (14).
- (2) Install fan control sensor (14) in left thermostat housing (12).
- (3) Connect MC61 connector (13).



CAUTION

Do not overtighten water temperature gage sensor.

- (4) Install water temperature gage sensor (11) in left thermostat housing (12). Tighten to 20 lb-in (2.25 N·m).
- (5) Install washer (10), washer (9), wire 1320 (8), lockwasher (7) and nut (6) on water temperature gage sensor (11).

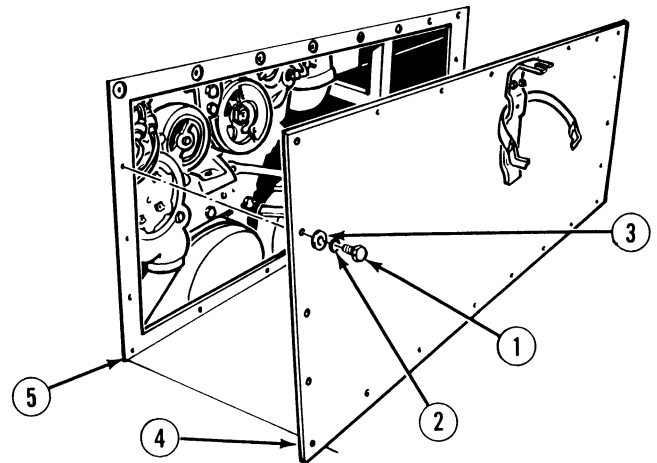
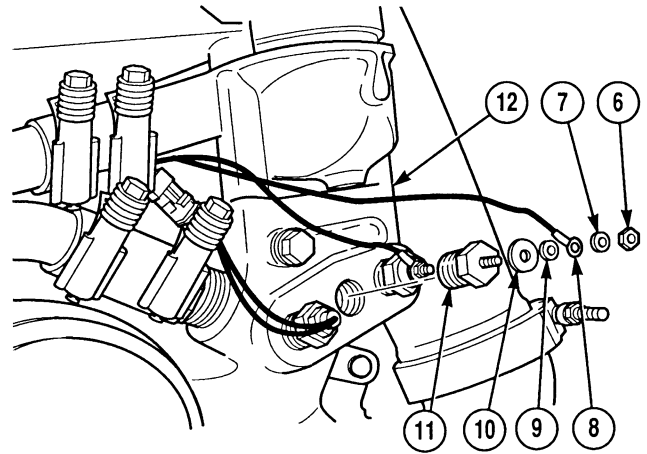
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap water.

- (6) Apply electrical sealant to terminal on water temperature gage sensor (11).
- (7) Install 22 washers (3), lockwashers (2), screws (1) and cab engine access panel (4) in cab (5).

c. Follow-On Maintenance:

- Install fire extinguisher, (TM 9-2320-364-10).
- Fill cooling system, (Para 6-4).
- Start engine, (TM 9-2320-364-10).
- Allow engine to run for three minutes.
- Shut OFF engine, (TM 9-2320-364-10).
- Check for coolant leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).



END OF TASK

7-66. STE/ICE ENGINE OIL TEMPERATURE SENSOR REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Wrench, Combination, 1 1/8 in.
(Item 79, Appendix G)

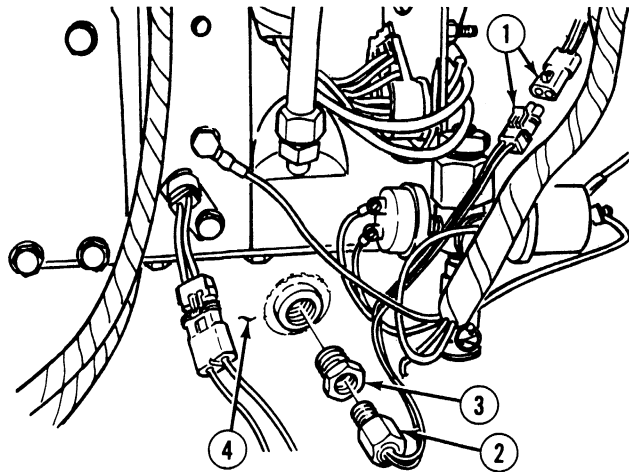
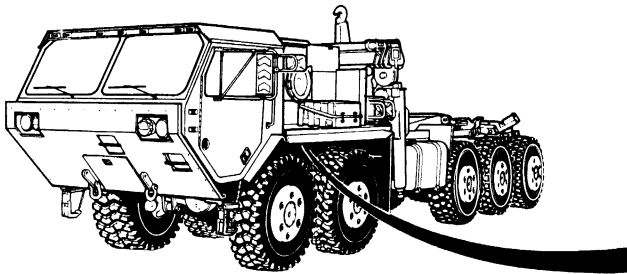
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Engine oil drained, (Para 3-2)
Left front fender skirt removed, (Para 17-34)

Material/Parts

Sealing Compound (Item 72, Appendix C)

a. Removal.



NOTE

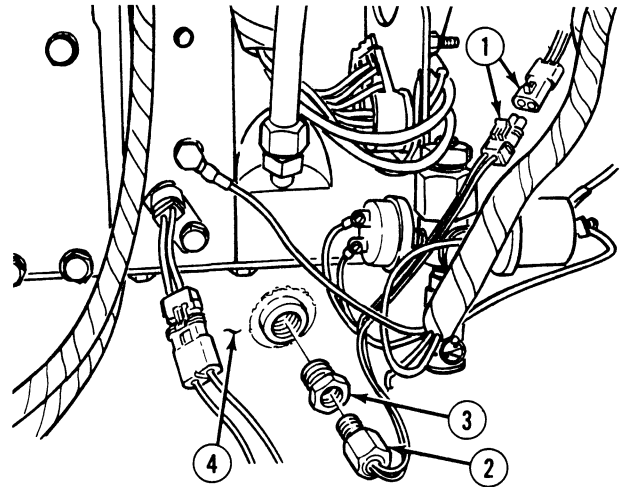
Connectors are removed by gently prying on tab and pulling apart connectors.

- (1) Disconnect MC70 connector (1).
- (2) Remove engine oil temperature sensor (2) from reducer bushing (3).
- (3) Remove reducer bushing (3) from oil pan (4).

b. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound to the threads of reducer bushing (3).
- (2) Install reducer bushing (3) in oil pan (4).
- (3) Apply sealing compound to the threads of oil temperature sensor (2).
- (4) Install engine oil temperature sensor (2) in reducer bushing (3).
- (5) Connect MC70 connector (1).

**c. Follow-On Maintenance:**

- Fill engine oil, (Para 3-2).
- Check for coolant leaks, (TM 9-2320-364-10).
- Install left front fender skirt, (Para 17-34).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-67. DDEC II ENGINE OIL PRESSURE SENSOR REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Wrench, Combination, 1 1/4 in.
(Item 80, Appendix G)

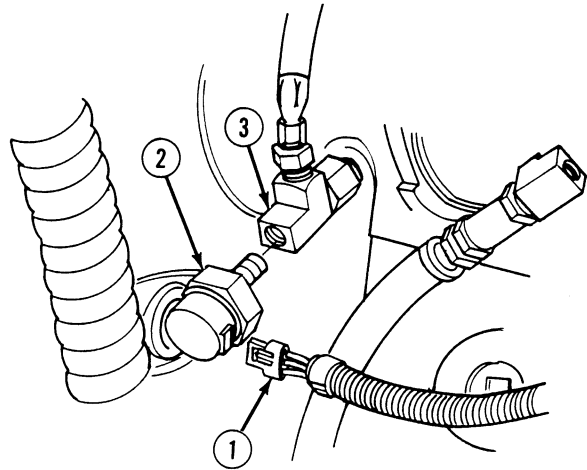
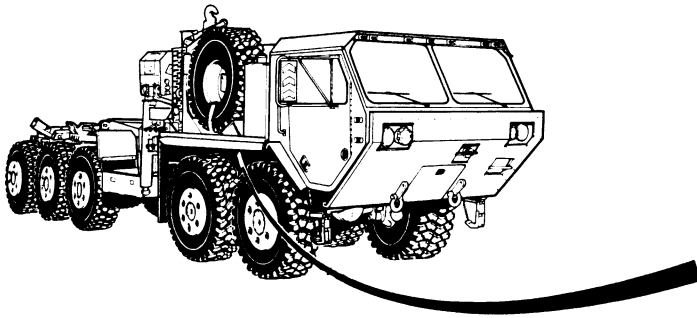
Materials/Parts

Sealing Compound (Item 72, Appendix C)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Right front fender skirt removed, (Para 17-33)
Batteries disconnected, (Para 7-87)

a. Removal.



WARNING

Ensure engine is cool before performing this task or injury to personnel may result.

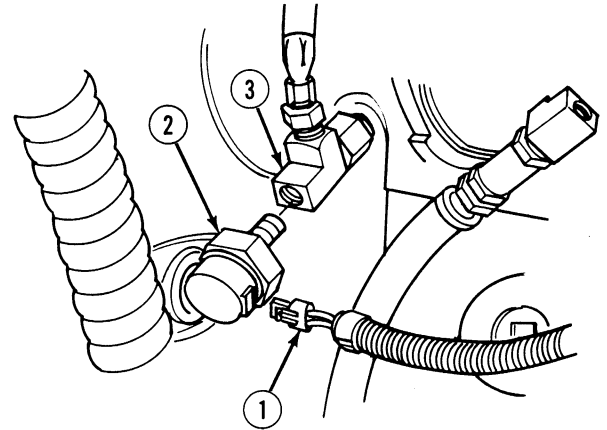
NOTE

Connectors are removed by gently prying on tab and pulling apart connectors.

- (1) Disconnect connector (1).
- (2) Remove DDEC engine oil pressure sensor (2) from tee (3).

b. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (1) Apply sealing compound to threads of DDEC engine oil pressure sensor (2).
- (2) Install DDEC engine oil pressure sensor (2) on tee (3).
- (3) Connect connector (1).

c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Install right front fender skirt, (Para 17-33).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

WARNING

Ensure engine is cool before performing this task or injury to personnel may result.

NOTE

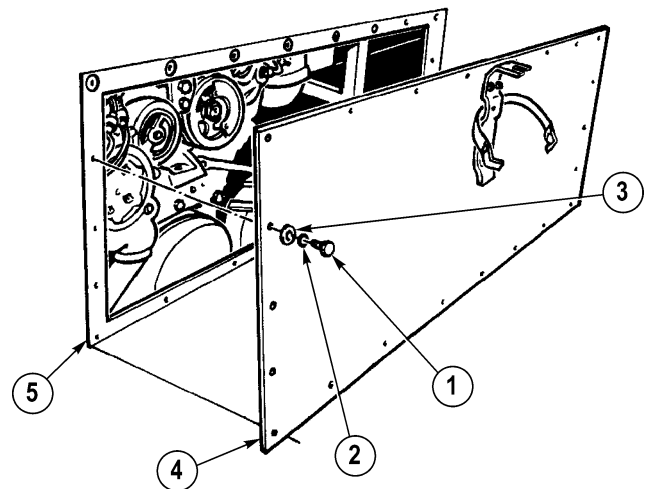
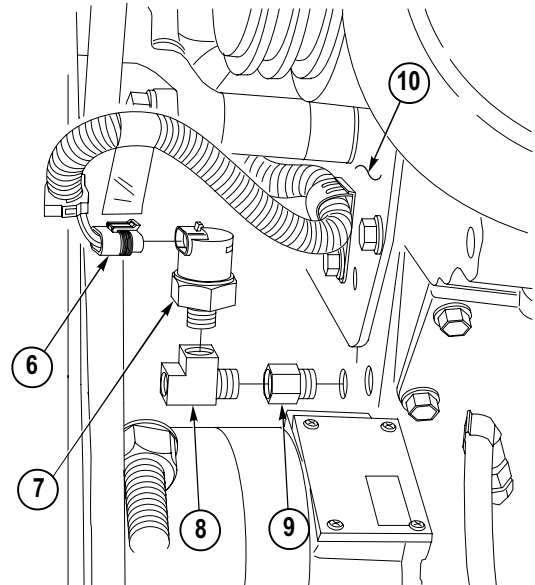
Connectors are removed by gently prying on tab and pulling apart connectors.

- (2) Disconnect connector (6).
- (3) Remove DDEC engine oil pressure sensor (7) from tee (8).
- (4) Remove tee (8) from reducer (9).
- (5) Remove reducer (9) from engine (10).

b. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound to threads of DDEC engine oil pressure sensor (7), tee (8) and reducer (9).
- (2) Install reducer (9) in engine (10).
- (3) Install tee (8) in reducer (9).
- (4) Install DDEC engine oil pressure sensor (7) on tee (8).
- (5) Connect connector (6).
- (6) Install cab engine access panel (4) in cab (5) with 22 washers (3), lockwashers (2) and screws (1).

**c. Follow-On Maintenance:**

- Install fire extinguisher, (TM 9-2320-364-10).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

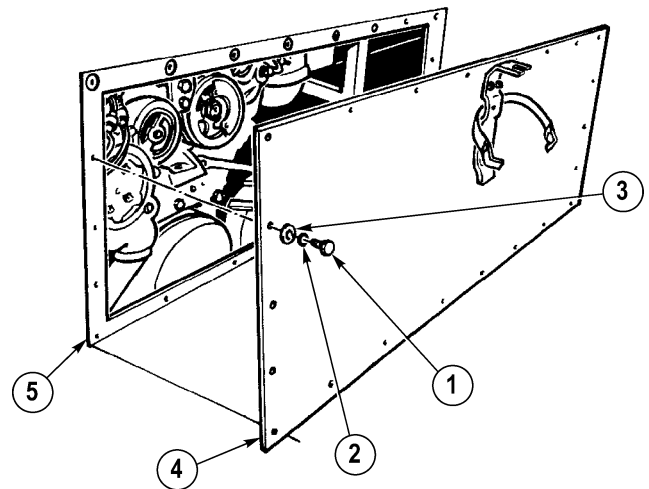
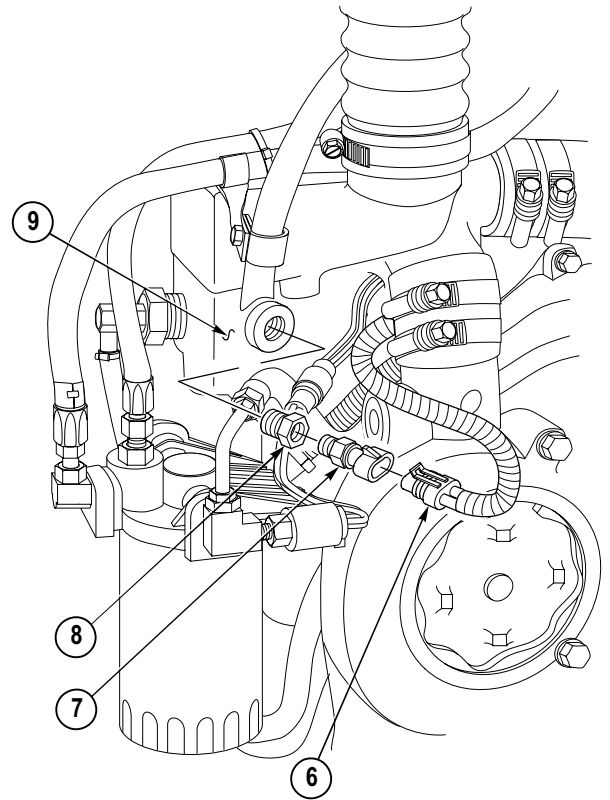
- (2) Disconnect connector (6) from coolant temperature sensor (7).
- (3) Remove coolant temperature sensor (7) from fitting (8).
- (4) Remove fitting (8) from right thermostat housing (9).

b. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

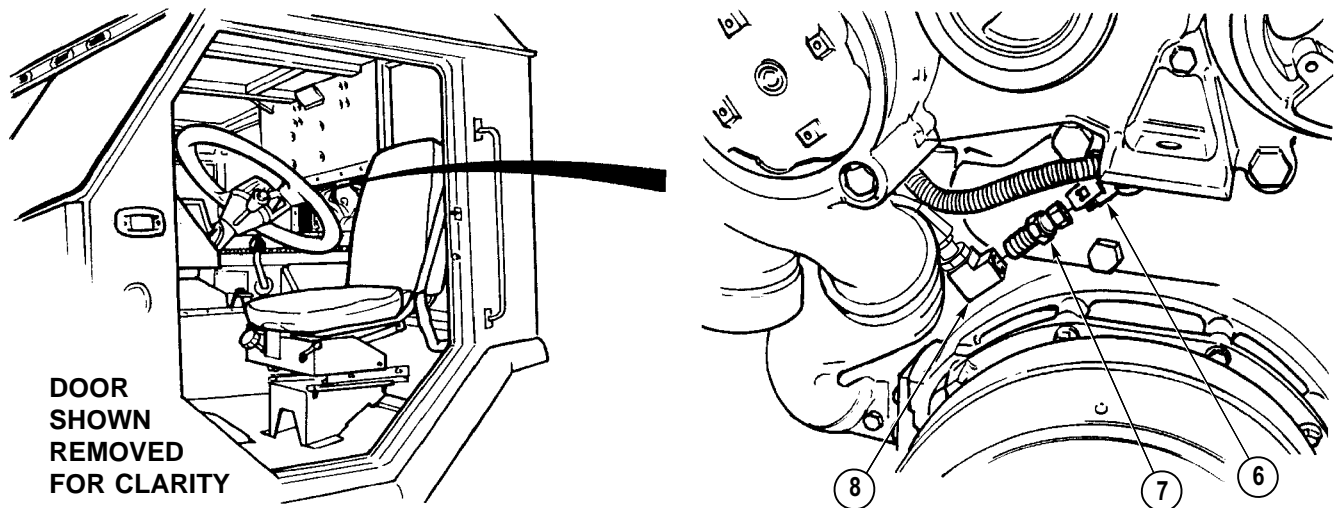
- (1) Apply sealing compound to threads of fitting (8) and coolant temperature sensor (7).
- (2) Install fitting (8) in right thermostat housing (9).
- (3) Install coolant temperature sensor (7) in fitting (8).
- (4) Connect connector (6) in coolant temperature sensor (7).
- (5) Install cab engine access panel (4) in cab (5) with 22 washers (3), lockwashers (2) and screws (1).



c. Follow-On Maintenance:

- Install fire extinguisher, (TM 9-2320-364-10).
- Fill cooling system, (Para 6-4).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK



NOTE

Connectors are removed by gently prying on tab and pulling apart connectors.

- (2) Disconnect connector (6) from DDEC oil temperature sensor (7).
- (3) Remove DDEC oil temperature sensor (7) from tee (8).

b. Installation.

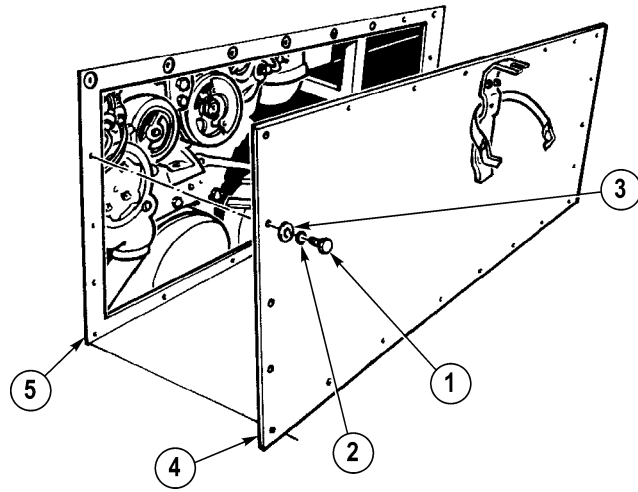
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound to threads of DDEC oil pressure sensor (7).
- (2) Install DDEC oil temperature sensor (7) in tee (8).
- (3) Connect connector (6) in DDEC oil temperature sensor (7).

7-70. DDEC OIL TEMPERATURE SENSOR REPLACEMENT (CONT).

- (4) Install cab engine access panel (4) in cab (5) with 22 washers (3), lockwashers (2) and screws (1).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Install fire extinguisher, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-71. TRANSMISSION ELECTRONIC CONTROL UNIT (ECU) REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Material/Parts

Locknut (Item 133, Appendix F)

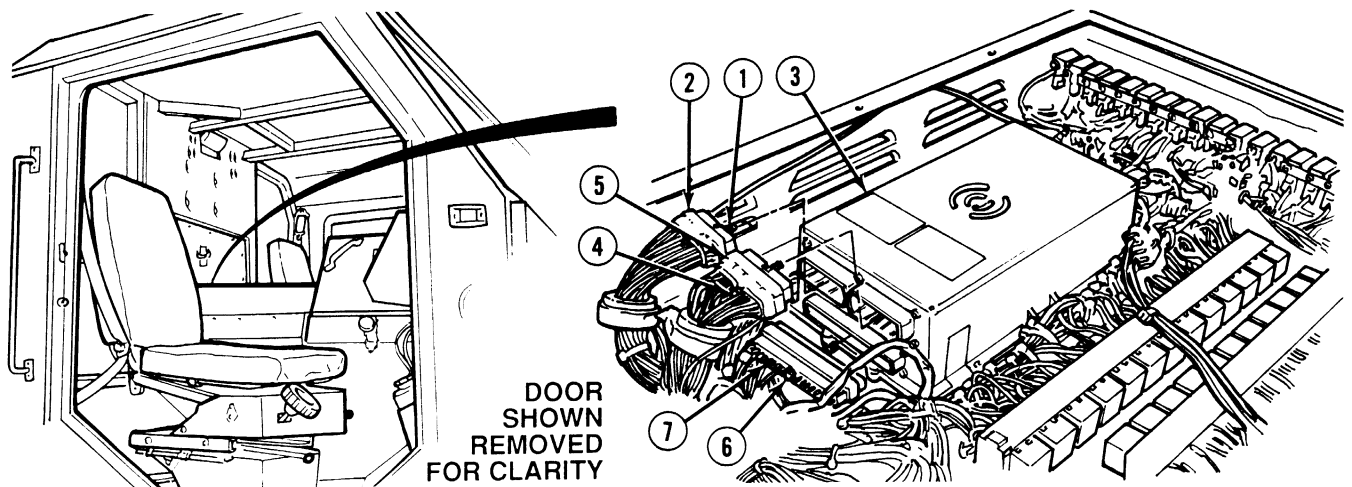
Equipment Condition

Engine OFF, (TM 9-2320-364-10)

Wheels chocked, (TM 9-2320-364-10)

Electronic Control Box (ECB) cover removed,
(Para 17-22)

Batteries disconnected, (Para 7-87)

a. Removal.

- (1) Loosen screw (1) and disconnect MC9 connector (2) from transmission ECU (3).
- (2) Loosen screw (4) and disconnect MC10 connector (5) from transmission ECU (3).
- (3) Loosen screw (6) and disconnect MC45 connector (7) from transmission ECU (3).

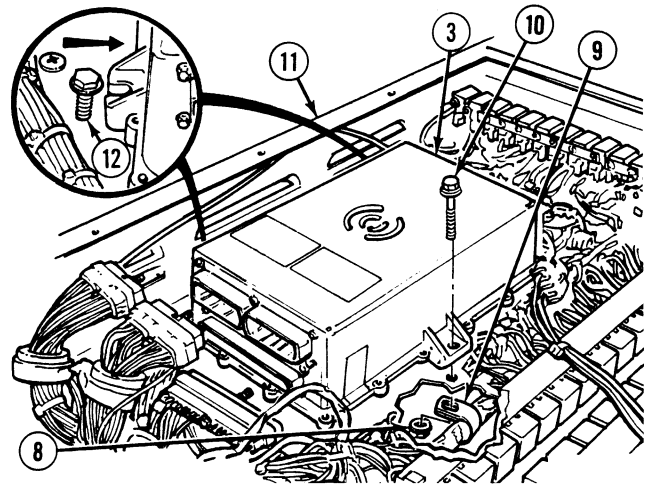
7-71. TRANSMISSION ELECTRONIC CONTROL UNIT (ECU) REPLACEMENT (CONT).

- (4) Remove locknut (8) and cushion clip (9) from screw (10) under electronic control box (11). Discard locknut.
- (5) Remove screw (10) from transmission ECU (3).

NOTE

Transmission ECU is removed by sliding transmission ECU out towards front of truck.

- (6) Loosen two screws (12) and remove transmission ECU (3) from electrical box (11).

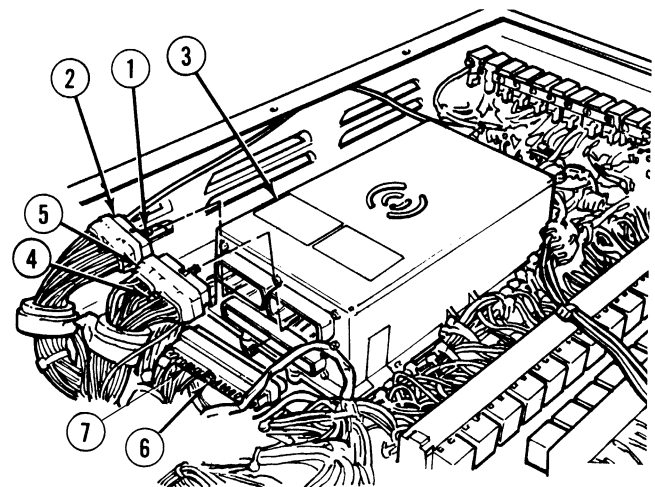


b. Installation.

NOTE

Transmission ECU is installed by sliding transmission ECU in towards rear of truck.

- (1) Position transmission ECU (3) on electronic control box (11).
- (2) Tighten two screws (12) on transmission ECU (3).
- (3) Install screw (10) on transmission ECU (3).
- (4) Install cushion clip (9) and locknut (8) on screw (10) under electrical box (11).
- (5) Connect MC45 connector (7) to transmission ECU (3) and tighten screw (6).
- (6) Connect MC10 connector (5) to transmission ECU (3) and tighten screw (4).
- (7) Connect MC9 connector (2) to transmission ECU (3) and tighten screw (1).



c. Follow-On Maintenance:

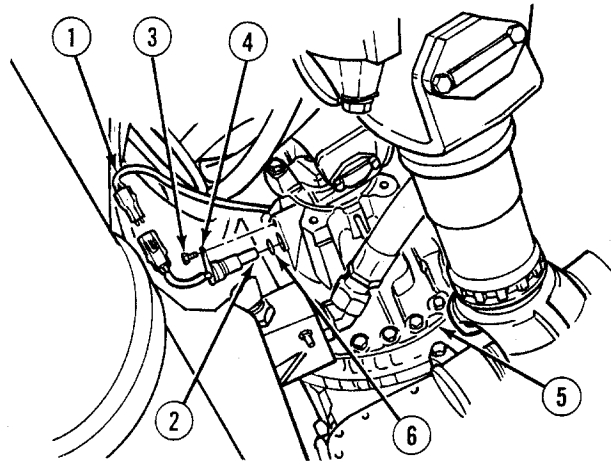
- Connect batteries, (Para 7-87).
- Install Electronic Control Box (ECB) cover, (Para 17-22).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-72. MAGNETIC SPEED SENSOR REPLACEMENT (CONT).

b. Installation.

- (1) Apply lubricating oil to preformed packing (6).
- (2) Install preformed packing (6) and magnetic speed sensor (2) in transmission (5).
- (3) Install bracket (4) and screw (3) in transmission (5). Tighten screw to 144 to 156 lb-in (16.2 to 17.6 N·m).
- (4) Connect connector (1) on magnetic speed sensor (2).

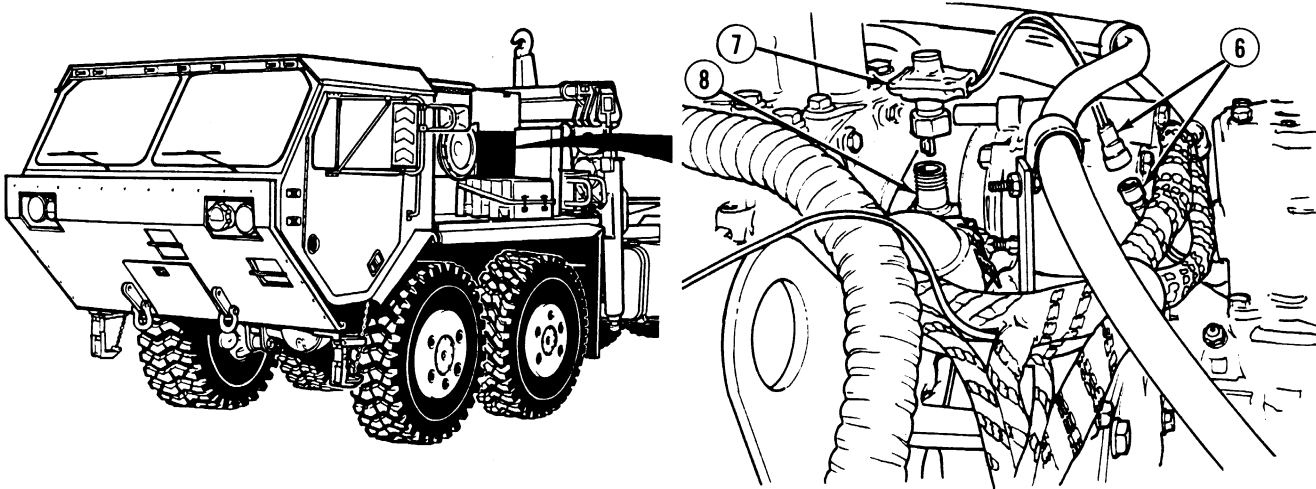


c. Follow-On Maintenance:

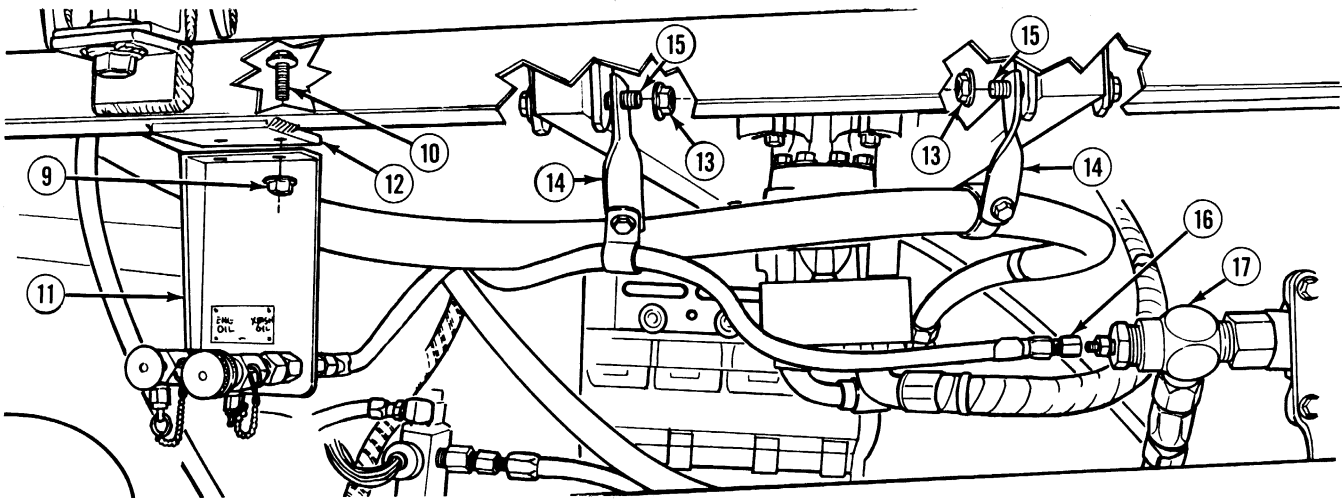
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-73. TACHOMETER DRIVE ASSEMBLY REPLACEMENT (CONT).



- (2) Disconnect MC41 connector (6).
- (3) Remove tachometer drive sending unit (7) from tachometer drive housing (8).



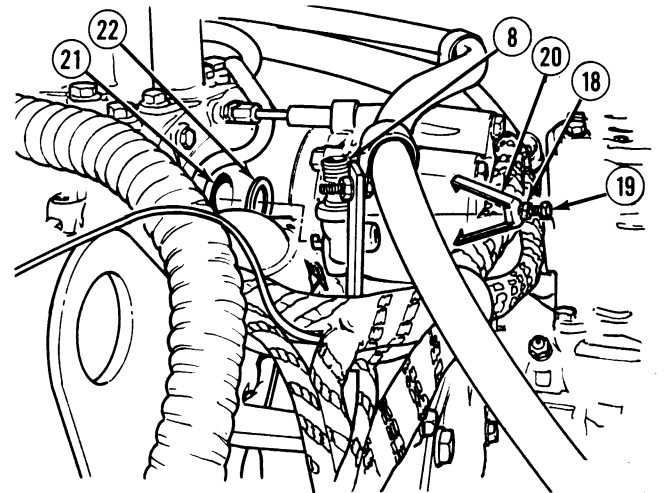
- (4) Remove two locknuts (9), screws (10) and plate (11) from power pack frame (12). Discard locknuts.

WARNING

Do not remove screws securing fan brace. Removing screws will cause fan brace to drop and may result in severe injury or death to personnel.

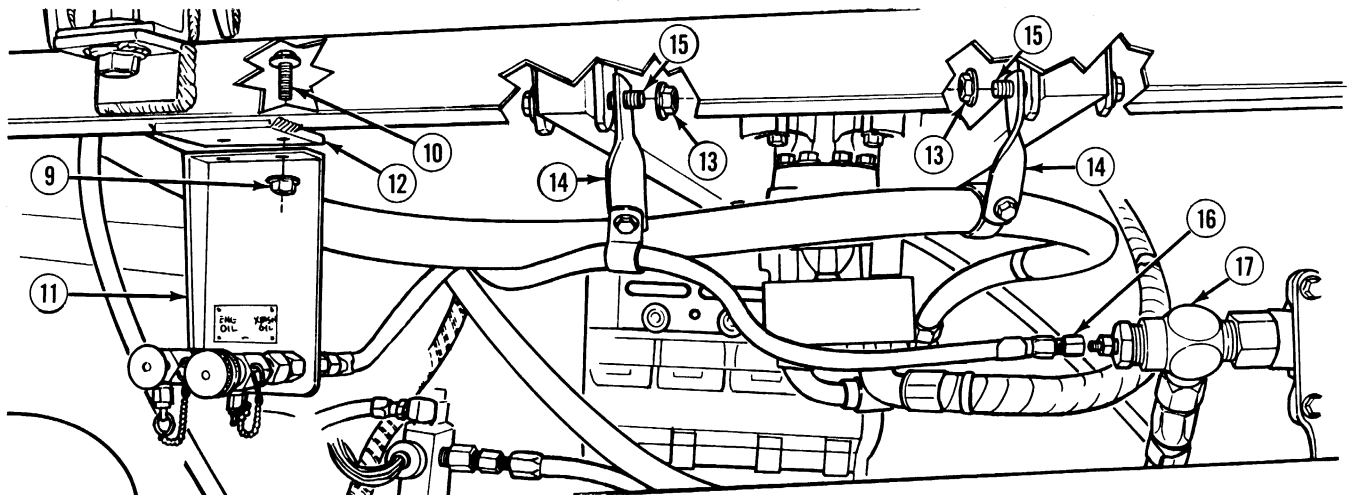
- (5) Remove two locknuts (13) and brackets (14) from screws (15).
- (6) Position two locknuts (13) on screws (15).
- (7) Remove hose 2312 (16) from adapter (17).

- (8) Loosen jam nut (18) on screw (19).
- (9) Loosen screw (19) and remove clamp (20) from blower (21).
- (10) Remove and discard tachometer drive housing (8) and gasket (22) from blower (21).



b. Installation.

- (1) Install gasket (22) and tachometer drive housing (8) on blower (21).
- (2) Install clamp (20) on blower (21).
- (3) Tighten screw (19) on clamp (20).
- (4) Tighten jam nut (18) on screw (19).



- (5) Install hose (16) in adapter (17).

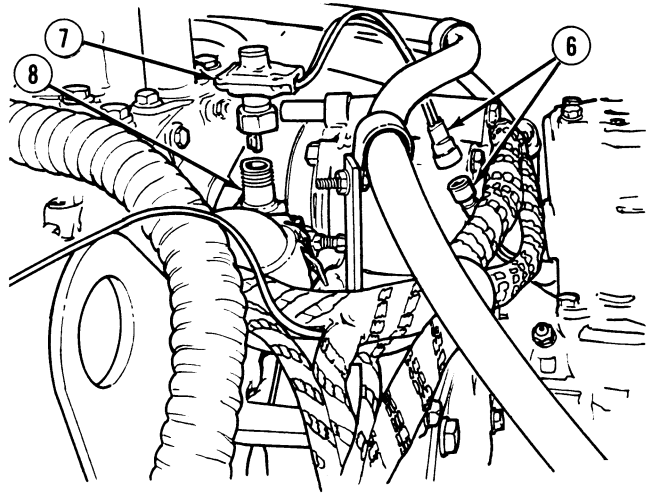
WARNING

Do not remove screws securing fan brace. Removing screws will cause fan brace to drop and may result in severe injury or death to personnel.

- (6) Remove two locknuts (13) from screws (15). Discard locknuts.
- (7) Install two brackets (14) and locknuts (13) on screws (15).
- (8) Install plate (11), two screws (10) and locknuts (9) in power pack frame (12). Tighten locknuts securely.

7-73. TACHOMETER DRIVE ASSEMBLY REPLACEMENT (CONT).

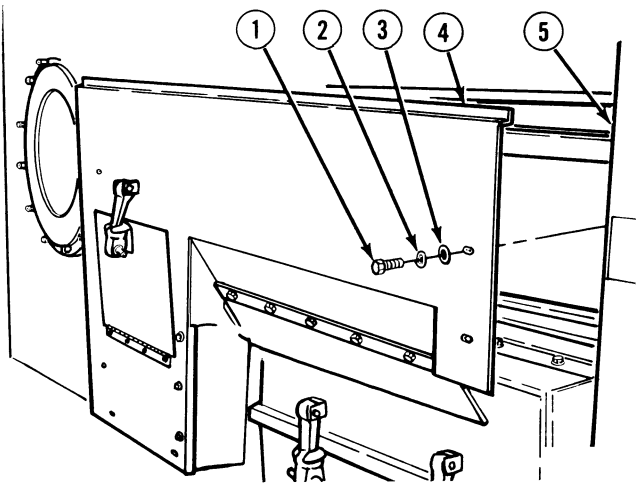
- (9) Install tachometer drive sending unit (7) on tachometer drive housing (8).
- (10) Connect MC41 connector (6).



CAUTION

Ensure left side noise panel remains free from contacting either start aid assembly or electrical cables upon removal or damage to equipment may result.

- (11) Install left side noise panel (4), eight washers (3), lockwashers (2) and screws (1) on truck (5).



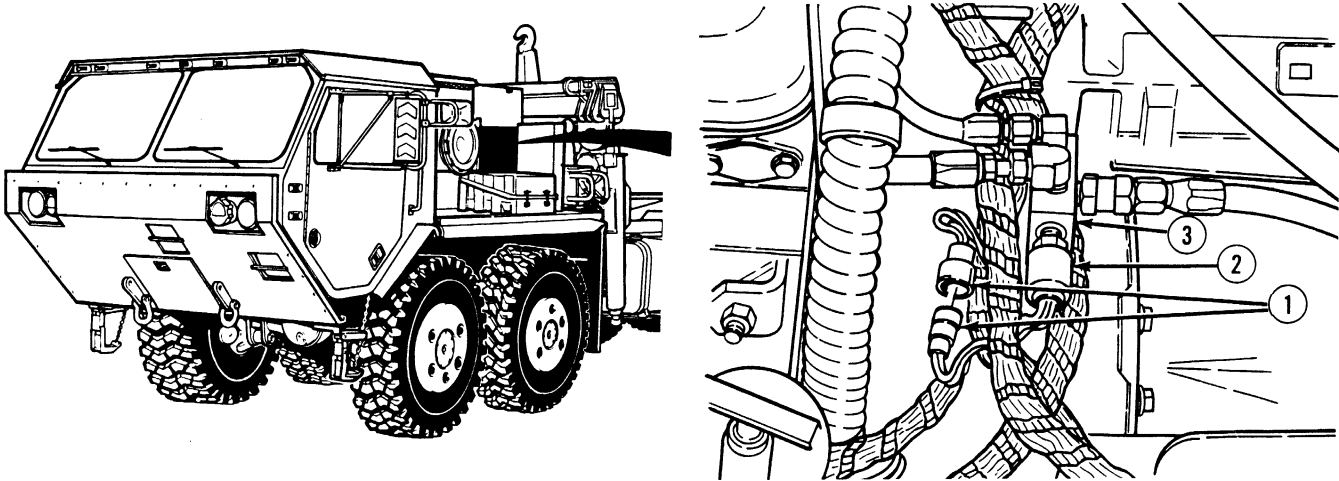
c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Check operation of tachometer, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-74. FUEL PRESSURE TRANSDUCER REPLACEMENT (CONT).

b. Installation.



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound to threads of transducer (2).
- (2) Install transducer (2) on manifold (3).
- (3) Connect MC69 connector (1).

c. Follow-On Maintenance:

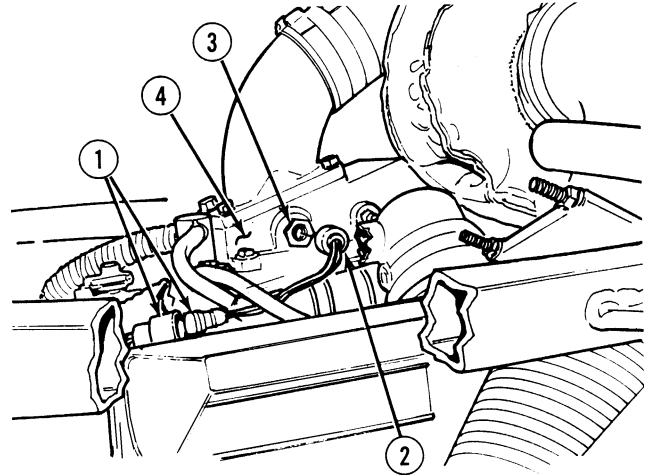
- Install left side noise panel, (Para 17-28).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

b. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound to threads of reducer bushing (3).
- (2) Install reducer bushing (3) in turbocharger housing (4).
- (3) Apply sealing compound to turbocharger outlet pressure transducer (2).
- (4) Install turbocharger outlet pressure transducer (2) in reducer bushing (3).
- (5) Connect MC66 connector (1).

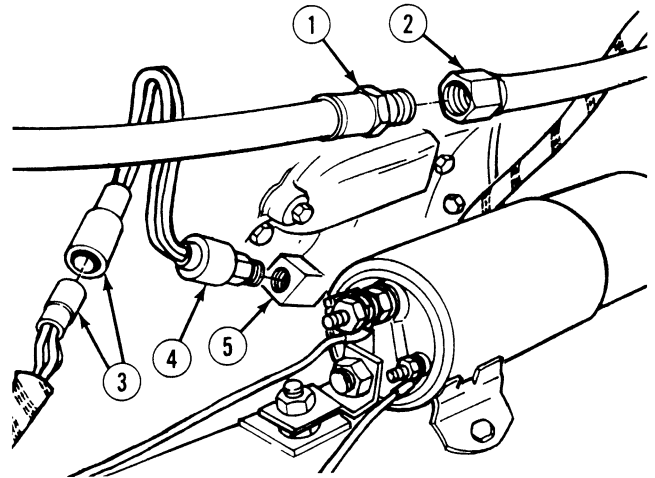
**c. Follow-On Maintenance:**

- Close engine cover, (TM 9-2320-364-10).
- Install right side noise panel, (Para 17-26).
- Install spare tire, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

b. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (1) Apply sealing compound to threads of air box pressure transducer (4).
- (2) Install air box pressure transducer (4) into tee (5).
- (3) Connect MC68 connector (3).
- (4) Install hose 2988 (1) on engine oil fill tube (2).

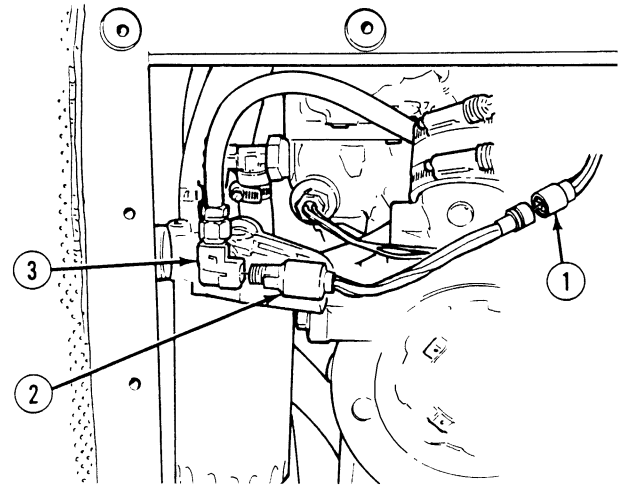
c. Follow-On Maintenance:

- Install left side noise panel, (Para 17-28).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

b. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (1) Apply sealing compound to threads of fuel filter pressure transducer (2).
- (2) Install fuel filter pressure transducer (2) on elbow (3).
- (3) Connect MC43 connector (1).

c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Check for coolant leaks, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Install cab engine access panel, (Para 17-24).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

c. *Follow-On Maintenance:*

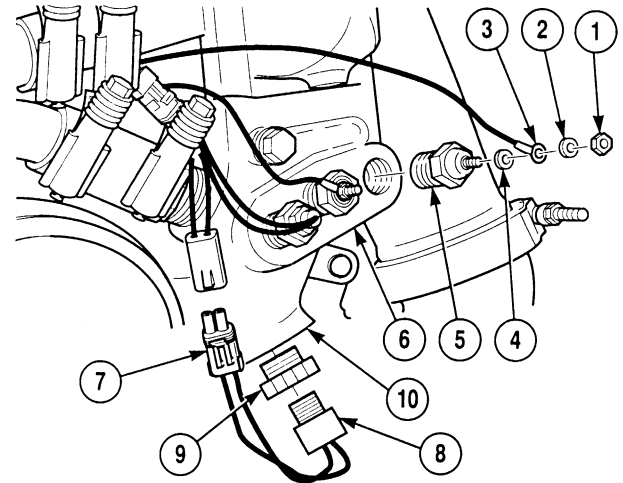
- Install left front fender skirt, (Para 17-34).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

b. Installation.**WARNING**

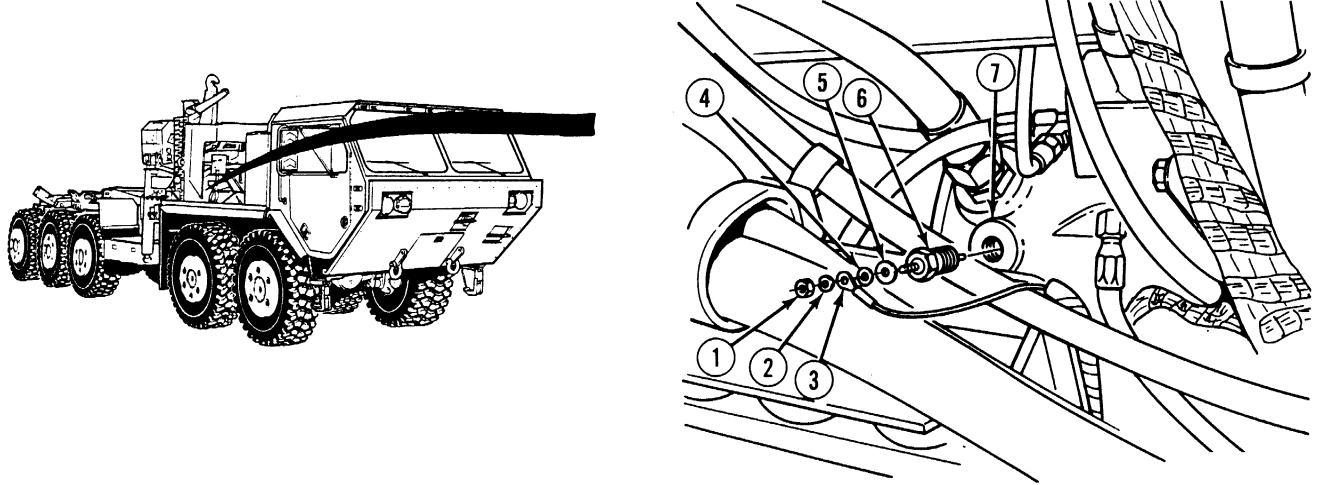
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound to threads of reducer (9).
- (2) Install reducer (9) in thermostat housing (10).
- (3) Apply sealing compound to threads of water temperature switch (8).
- (4) Install temperature switch (8) in reducer bushing (9).
- (5) Connect MC128 connector (7).
- (6) Install water temperature sending unit (5) in engine block (6).
- (7) Install washer (4), wire 1147 (3), lockwasher (2) and nut (1) on water temperature sending unit (5). Tighten nut to 9 lb-in (1 N·m).
- (8) Apply electrical sealant to terminal on water temperature sending unit (5).

**c. Follow-On Maintenance:**

- Connect batteries, (Para 7-87).
- Fill cooling system, (Para 6-4).
- Start engine, (TM 9-2320-364-10).
- Check for coolant leaks, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Install cab engine access panel, (Para 17-24).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

b. Installation.

- (1) Install transmission oil temperature sending unit (6) in transmission (7).
- (2) Install washer (5), washer (4), wire 1449 (3), lockwasher (2) and nut (1) on transmission oil temperature sending unit (6). Tighten nut to 20 lb-in (2 N·m).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (3) Apply electrical sealant to terminal on transmission oil temperature sending unit (6).

c. Follow-On Maintenance:

- Install right side noise panel, (Para 17-26).
- Connect batteries, (Para 7-87).
- Install spare tire, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

b. Installation.**NOTE**

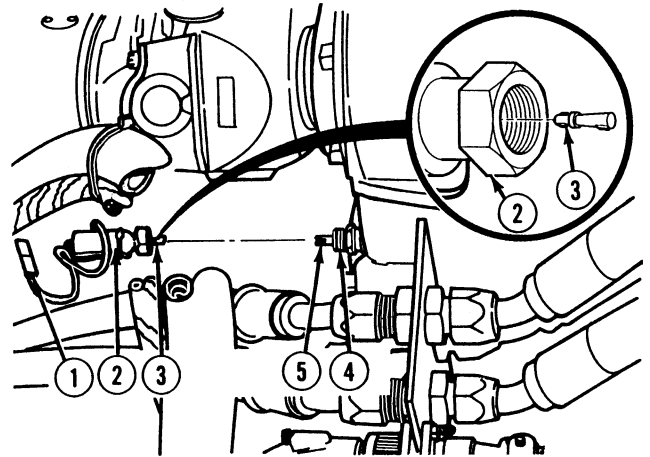
Install cable ties as required.

- (1) Install tang (3) in sending unit (2).

CAUTION

Do not remove speedometer drive shaft from transfer case or parts may fall inside transfer case and cause damage to equipment.

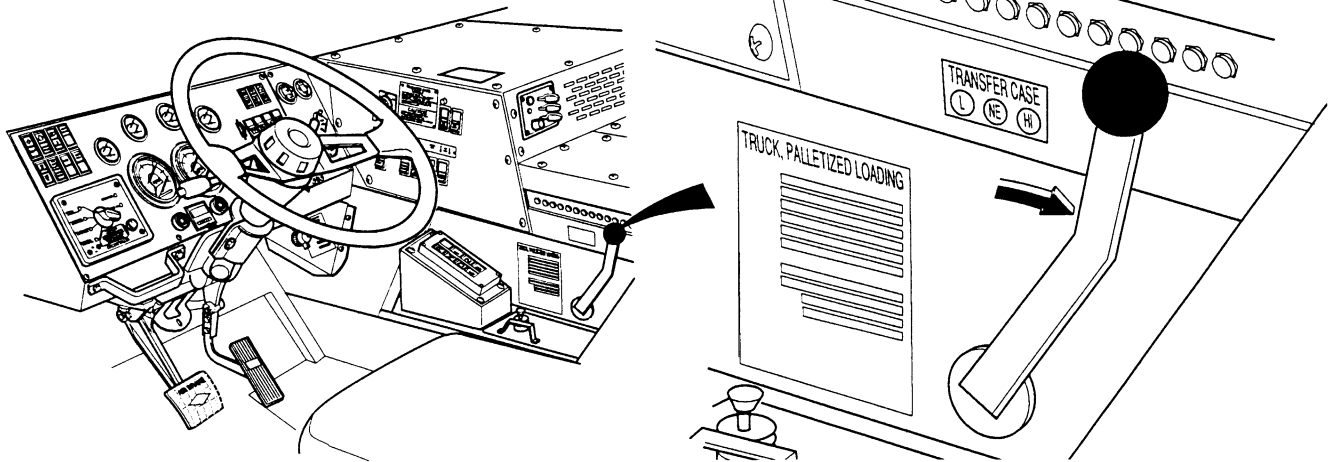
- (2) Install tang (3) and sending unit (2) in speedometer drive shaft (5) and sleeve (4).
- (3) Connect connector (1).

**c. Follow-On Maintenance:**

- LHS in transit position, (TM 9-2320-364-10).
- Remove wheels chocks, (TM 9-2320-364-10).

END OF TASK

b. Installation.



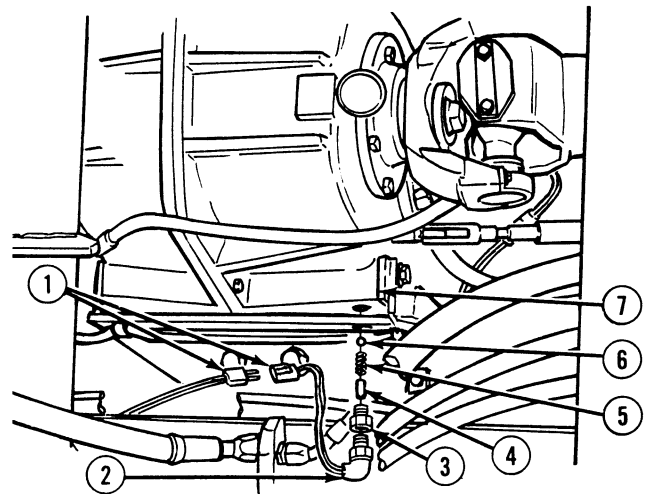
NOTE

Install cable ties as required.

- (1) Shift transfer case into High range (HI).
- (2) Install ball (6), detent spring (5) and rod (4) in transfer case housing (7).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



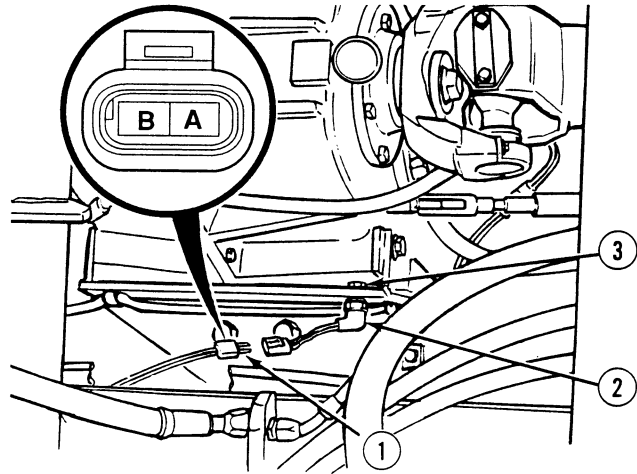
NOTE

Remove and discard aluminum gasket from new neutral start switch. Gasket is not needed for installation.

- (3) Apply sealing compound to threads of fitting (3).
- (4) Install fitting (3) in transfer case housing (7). Tighten two to three turns past hand tight.
- (5) Apply sealing compound to threads of neutral start switch (2).
- (6) Install neutral start switch (2) in fitting (3).

7-83. TRANSFER CASE NEUTRAL START SWITCH REPLACEMENT (CONT).

- (7) Connect a multimeter on MC57 connector (1). Multimeter should indicate no continuity:
 - (a) If no continuity is measured, proceed with Step (8).
 - (b) If continuity is measured, turn out neutral start switch (2) 3/4 of a turn beyond the point where the multimeter measures continuity.
- (8) With the aid of an assistant, shift transfer case out of High range (HI). Multimeter should measure continuity:
 - (a) If continuity is measured, proceed with Step (9).
 - (b) If no continuity is measured, tighten switch (2) and adapter (3) 3/4 of a turn past the point where multimeter measures continuity.
- (9) Shift transfer case into High range (HI). Multimeter should measure no continuity.
- (10) Remove multimeter from MC57 connector (1).
- (11) Connect MC57 connector (1).



c. Follow-On Maintenance:

- Position LHS in transit position, (TM 9-2320-364-10).
- Check operation, (TM 9-2320-364-10).
- Remove wheels chocks, (TM 9-2320-364-10).

END OF TASK

7-84. DIFFERENTIAL PRESSURE SWITCH REPLACEMENT (CONT).

- (4) Remove hose 2922 (4) from elbow (3).
- (5) Remove screw (5), locknut (6), differential pressure switch bracket (7) and differential pressure switch (8) from bracket (9). Discard locknut.

NOTE

Note position of elbows prior to removal.

- (6) Remove two elbows (3) from differential pressure switch (8).

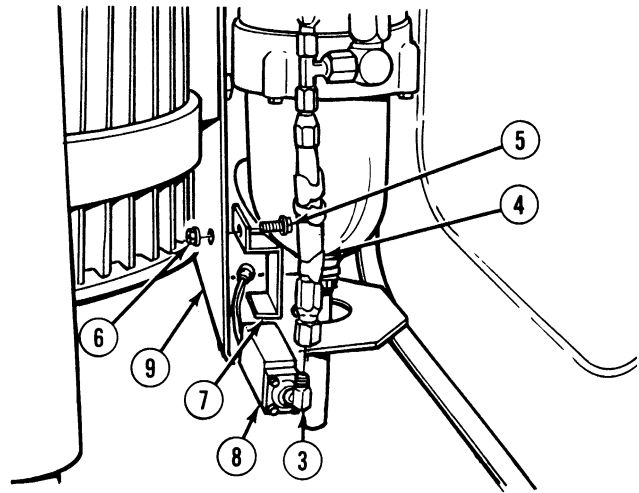
b. Installation.

WARNING

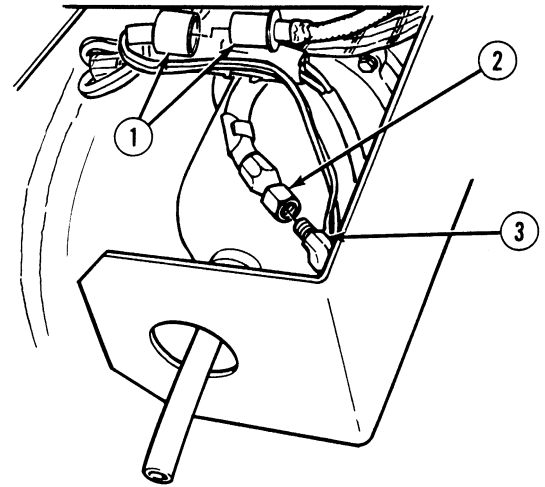
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

- Install cable ties as required.
 - Install elbows in position as noted prior to removal.
- (1) Apply sealing compound to elbows (3).
 - (2) Install two elbows (3) on differential pressure switch (8).
 - (3) Install differential pressure switch (8), bracket (7), screw (5) and nut (6) on bracket (9).
 - (4) Install hose 2922 (4) on elbow (3).



- (5) Install hose 2921 (2) on elbow (3).
- (6) Connect MC42 connector (1).



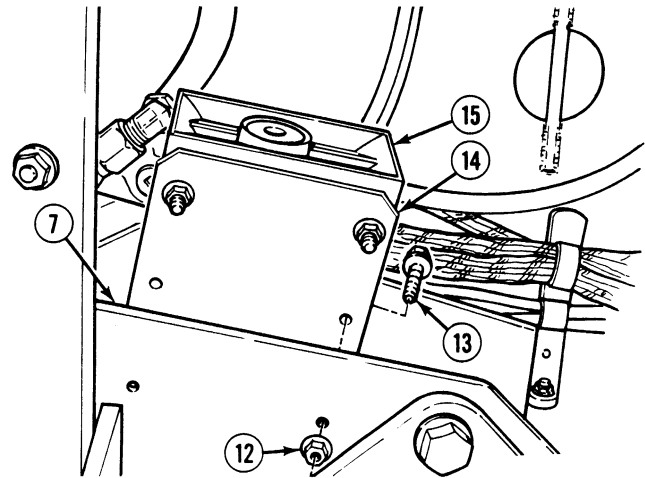
c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Start engine, (TM 9-2320-364-10).
- Check operation, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

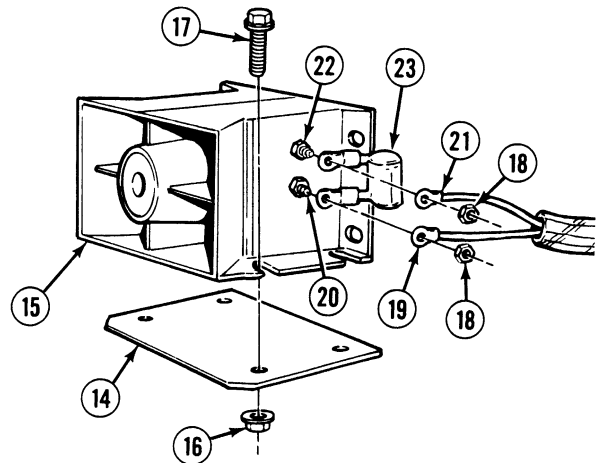
END OF TASK

7-86. REVERSE ALARM REPLACEMENT (CONT).

- (4) With the aid of an assistant, remove two locknuts (12), screws (13), mounting plate (14) and reverse alarm (15) from truck frame (7). Discard locknuts.



- (5) Remove two locknuts (16), screws (17) and mounting plate (14) from reverse alarm (15). Discard locknuts.
- (6) Remove nut (18) and wire 1718 (19) from positive stud (20) of reverse alarm (15).
- (7) Remove nut (18) and wire 1435 (21) from negative stud (22) of reverse alarm (15).
- (8) Remove reverse alarm capacitor (23) from positive stud (20) and negative stud (22) of reverse alarm (15).



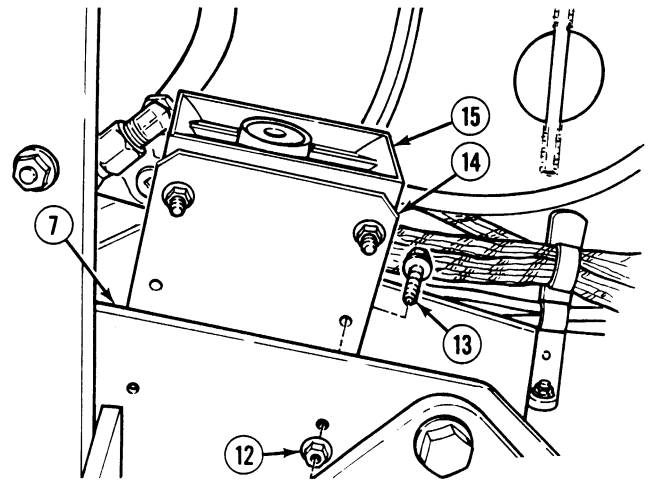
b. Installation.

NOTE

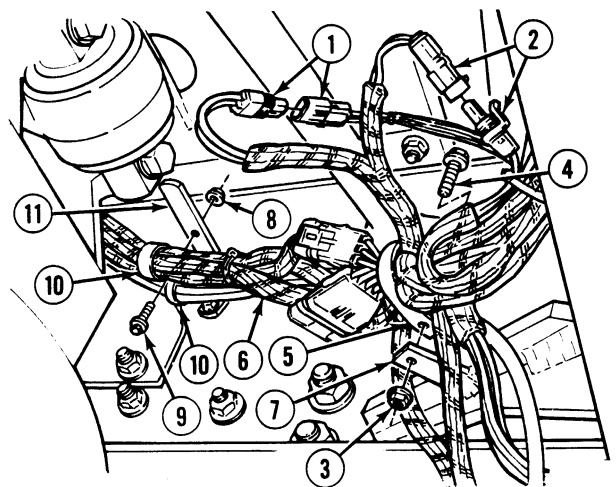
Install cable ties as required.

- (1) Install reverse alarm capacitor (23) on positive stud (20) and negative stud (22) of reverse alarm (15).
- (2) Install wire 1435 (21) and nut (18) on negative stud (22) of reverse alarm (15).
- (3) Install wire 1718 (19) and nut (18) on positive stud (20) of reverse alarm (15).
- (4) Install mounting plate (14), two screws (17) and locknuts (16) on reverse alarm (15).

- (5) With the aid of an assistant, install mounting plate (14) and reverse alarm (15) on truck frame (7) using two screws (13) and locknuts (12).



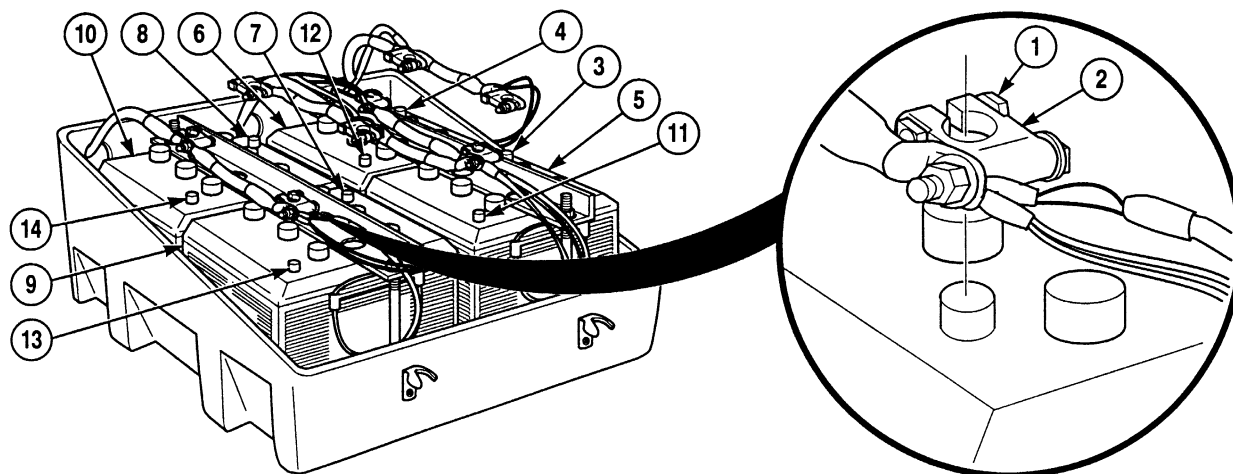
- (6) With the aid of an assistant, install reverse wire harness (6), two cushion clips (10), screw (9) and locknut (8) on bracket (11).
- (7) Install reverse wire harness (6), cushion clip (5), screw (4) and locknut (3) on truck frame (7).
- (8) Connect MC77 connector (1) and MC124 connector (2).



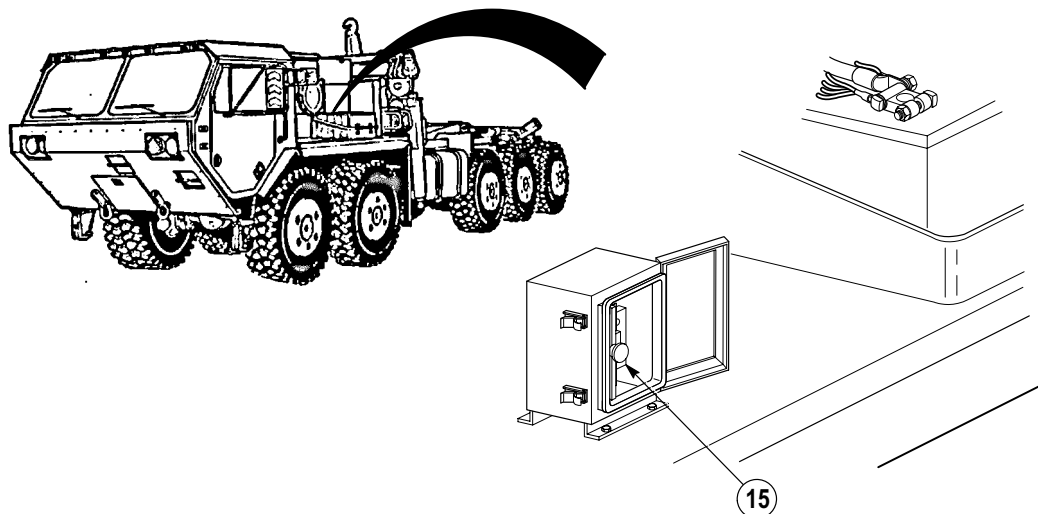
c. Follow-On Maintenance:

- Install rear hard lift assembly, (Para 15-8).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK



- (2) Loosen two nuts (1) and remove two terminals (2) from negative posts (7) and (8) on battery one (9) and battery two (10).
- (3) Loosen two nuts (1) and remove two terminals (2) from positive posts (11) and (12) on battery three (5) and battery four (6).
- (4) Loosen two nuts (1) and remove two terminals (2) from positive posts (13) and (14) on battery one (9) and battery two (10).



NOTE

Step (5) should only be done if placing a truck in storage and truck is equipped with battery disconnect switch.

- (5) Pull out battery disconnect switch (15).

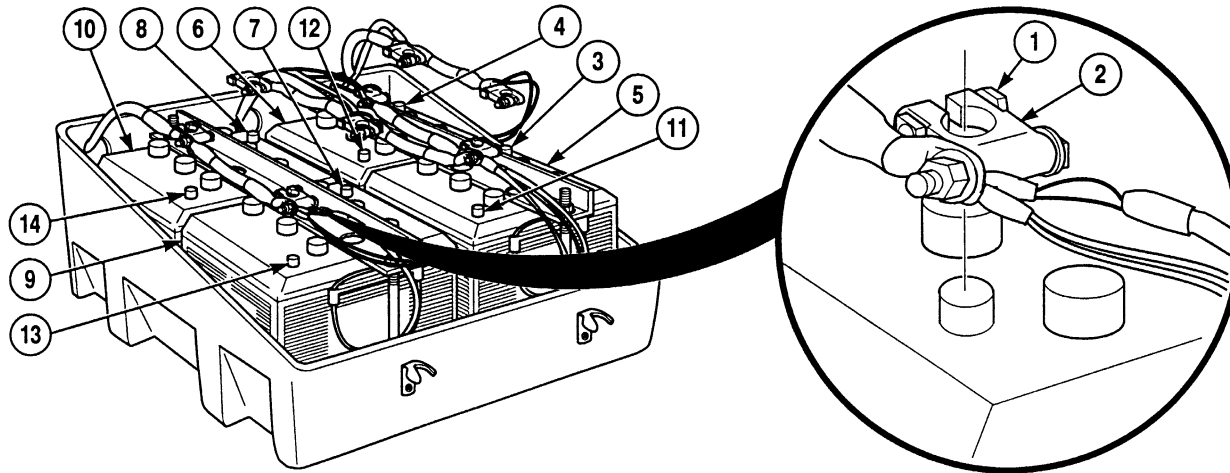
b. Connection.

NOTE

Perform Step (1) if truck has been in storage and is equipped with battery disconnect switch.

- (1) Push in battery disconnect switch (15).

7-87. BATTERY DISCONNECTION/CONNECTION (CONT).



NOTE

Install cable ties as required.

- (2) Install two terminals (2) on positive posts (13) and (14) on batteries one (9) and two (10) and tighten two nuts (1) 84 to 96 lb-in (9 to 11 N·m).
- (3) Install two terminals (2) on positive posts (11) and (12) on batteries three (5) and four (6) and tighten two nuts (1) 84 to 96 lb-in (9 to 11 N·m).
- (4) Install two terminals (2) on negative posts (7) and (8) on batteries one (9) and two (10) and tighten two nuts (1) 84 to 96 lb-in (9 to 11 N·m).
- (5) Install two terminals (2) on negative posts (3) and (4) on batteries three (5) and four (6) and tighten two nuts (1) 84 to 96 lb-in (9 to 11 N·m).

WARNING

Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

- (6) Apply anticorrosion compound to positive posts (11), (12), (13) and (14) and negative posts (3), (4), (7) and (8) and eight terminals (2).

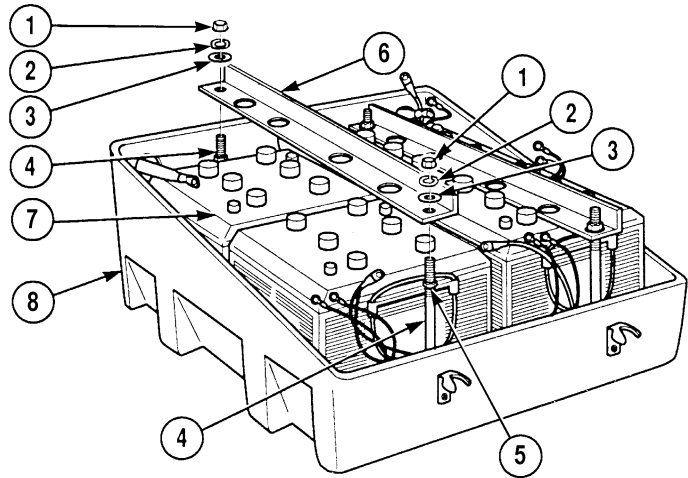
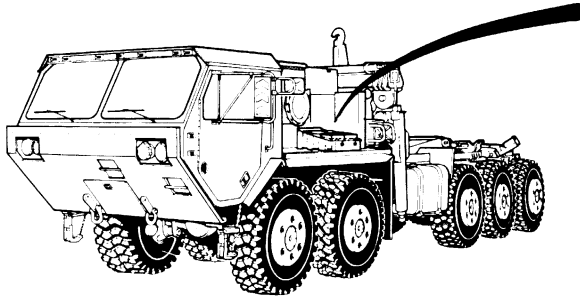
c. Follow-On Maintenance:

- Install battery box cover, (TM 9-2320-364-10).
- Connect arctic kit batteries (if equipped), (Para 21-11).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-88. BATTERY REPLACEMENT (CONT).

a. Removal.



- (1) Remove four nuts (1), lockwashers (2) and washers (3) while holding up on screws (4) and nut (5).
- (2) Remove two battery hold downs (6) from screws (5).

WARNING

Battery weighs 75 lbs (34 kg). Remove battery only with the aid of an assistant to prevent possible injury to personnel.

- (3) With aid of an assistant, remove battery or batteries (7) from battery box (8).

b. Installation.

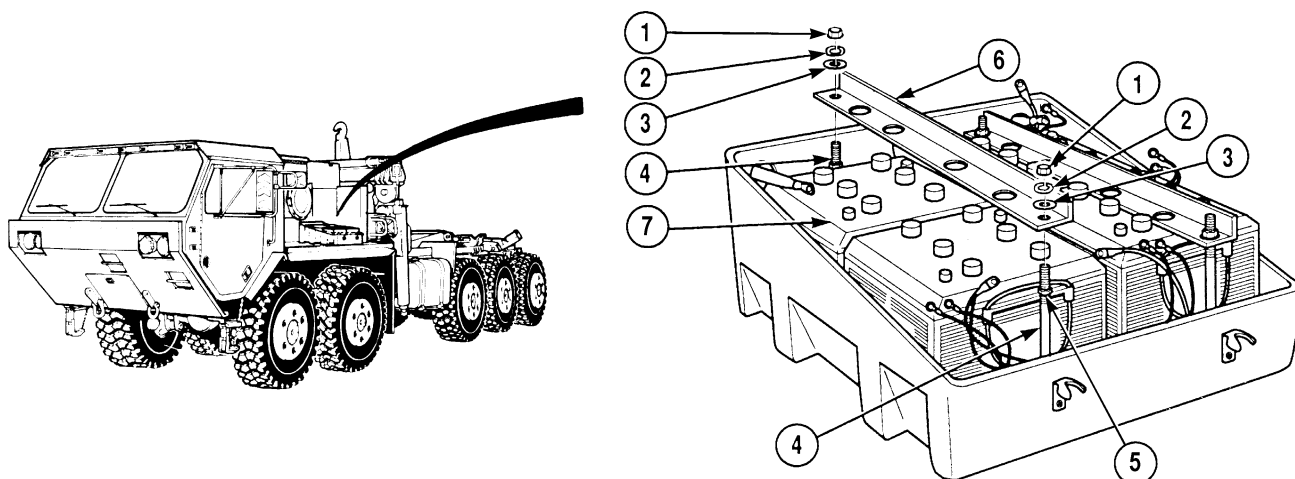
WARNING

Battery weighs 75 lbs (34 kg). Install battery only with the aid of an assistant to prevent possible injury to personnel.

NOTE

- Use data plate located on left hand noise panel for assistance in battery positioning in Step (1).
- Refer to TM 9-6140-200-14 for more specific details on battery maintenance.

- (1) With the aid of an assistant, install battery (7) in battery box (8).
- (2) Position two battery hold downs (6) on four screws (4).



- (3) Hold battery hold downs (6) in position while holding up on screws (4).
- (4) Turn nut (5) so top of nut is even with top of battery (7). Then turn nut down two turns.

CAUTION

Counter torque must be used or damage to batteries may result.

- (5) While holding nut (5), install washers (3), lock washers (2) and nuts (1) on four screws (4).

WARNING

Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

- (6) Coat threads of four screws (4), nuts (5), washers (3), lockwashers (2) and nuts (1) with bituminous coating compound.

c. Follow-On Maintenance:

- Connect battery box wiring, (Para 7-90).
- Remove wheel chocks, (TM 9-2320-363-10).

END OF TASK

7-89. BATTERY BOX AND SHUNT REPAIR.

This task covers:

- | | | |
|----------------|------------------------|--------------------------|
| a. Removal | c. Cleaning/Inspection | e. Installation |
| b. Disassembly | d. Assembly | f. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
 Gloves, Chemical Oil Protective (Item 28, Appendix G)
 Goggles, Industrial (Item 30, Appendix G)

Materials/Parts

Cloth, Cleaning (Item 31, Appendix C)
 Coating Compound, Bituminous, Solvent Type (Item 32, Appendix C)
 Solution, Soap (Item 86, Appendix C)
 Solvent, Drycleaning (Item 87, Appendix C)
 Tags, Identification (Item 88, Appendix C)

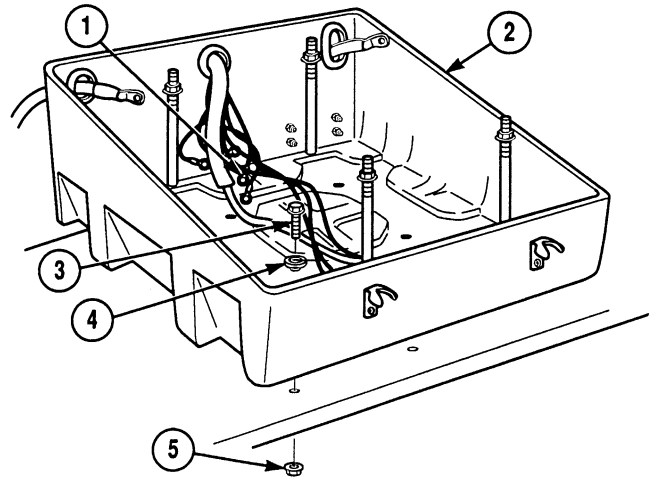
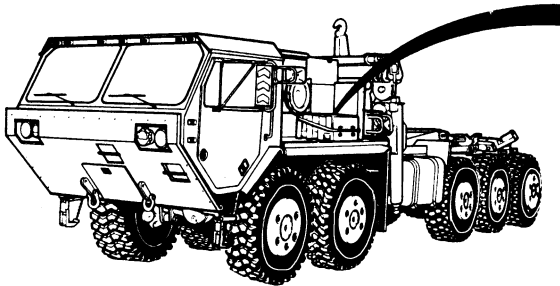
Materials/Parts - Continued

Tape, Adhesive (Item 90, Appendix C)
 Locknut (4) (Item 105, Appendix F)
 Locknut (4) (Item 106, Appendix F)
 Locknut (4) (Item 110, Appendix F)
 Locknut (2) (Item 133, Appendix F)
 Lockwasher (4) (Item 190, Appendix F)
 Lockwasher (2) (Item 191, Appendix F)

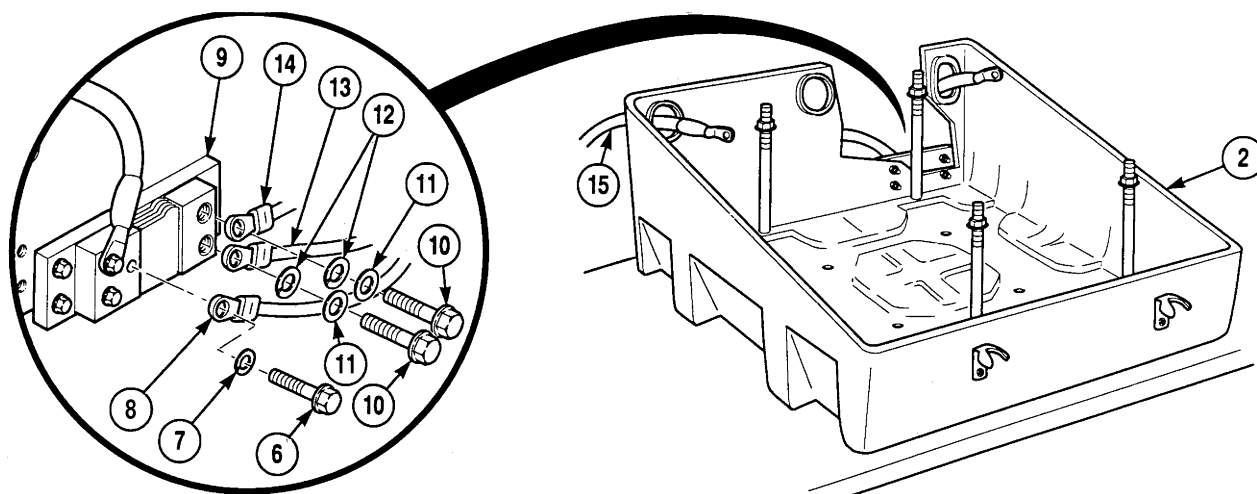
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Batteries removed, (Para 7-88)

a. Removal.



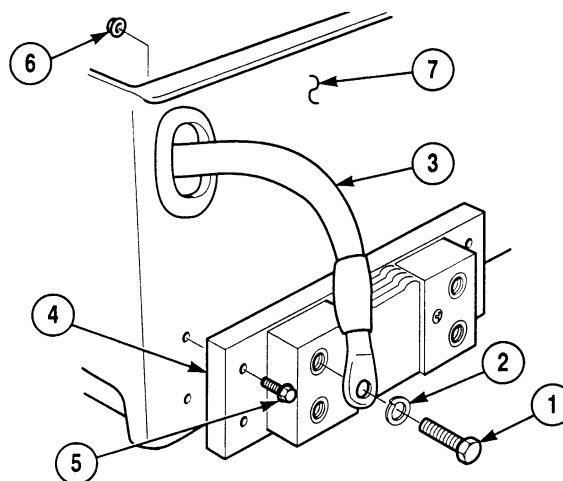
- (1) Tape together and remove wiring (1) coming through center hole in battery box (2).
- (2) Remove four screws (3), washers (4) and locknuts (5) and pull battery box (2) out to access rear. Discard locknuts.



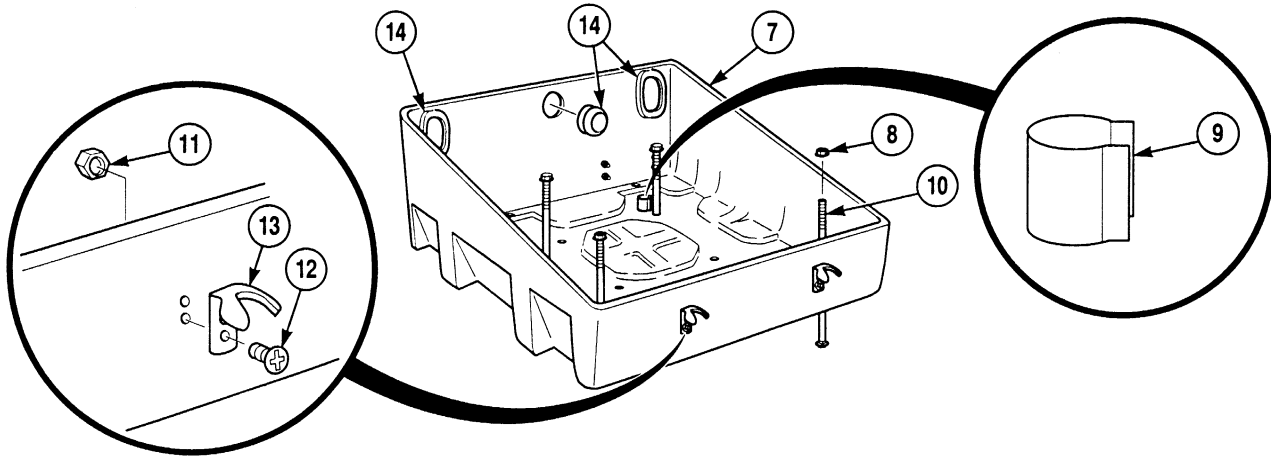
- (3) Remove screw (6), lockwasher (7) and wire 1829 (8) from shunt (9). Discard lockwasher.
- (4) Remove two screws (10), washers (11), lockwashers (12) and wire 1138 (13) and wire 1828 (14) from shunt (9).
- (5) Remove wire 1139 (15) from battery box (2).
- (6) Remove battery box (2) from truck.

b. Disassembly.

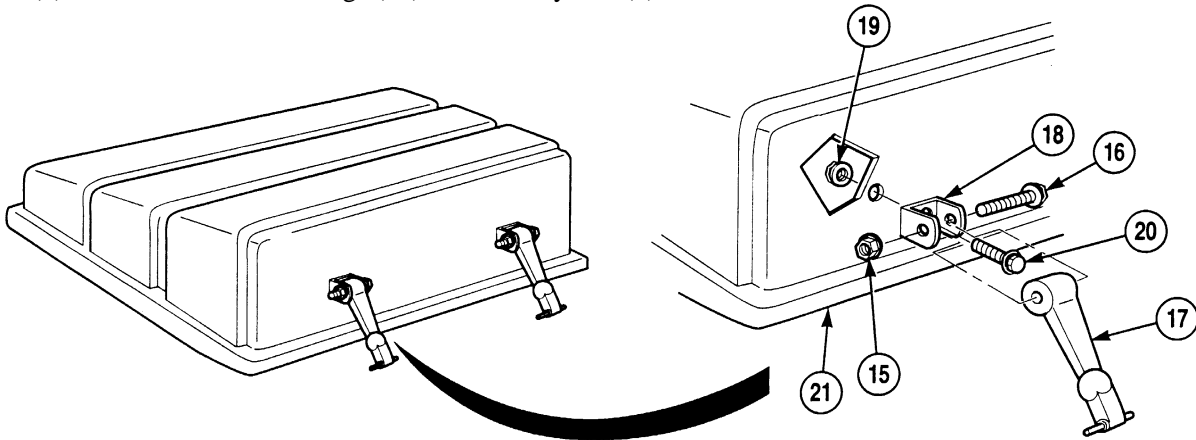
- (1) Remove screw (1), lockwasher (2) and cable (3) from shunt (4). Discard lockwasher.
- (2) Remove four screws (5), locknuts (6) and shunt (4) from battery box (7). Discard locknuts.



7-89. BATTERY BOX AND SHUNT REPAIR (CONT).



- (3) Remove four nuts (two on front screws, two on rear) (8), two rear clips (9) and four battery holddown screws (10) from battery box (7).
- (4) Remove four locknuts (11), screws (12) and brackets (13) from battery box (7). Discard locknuts.
- (5) Remove three moldings (14) from battery box (7).



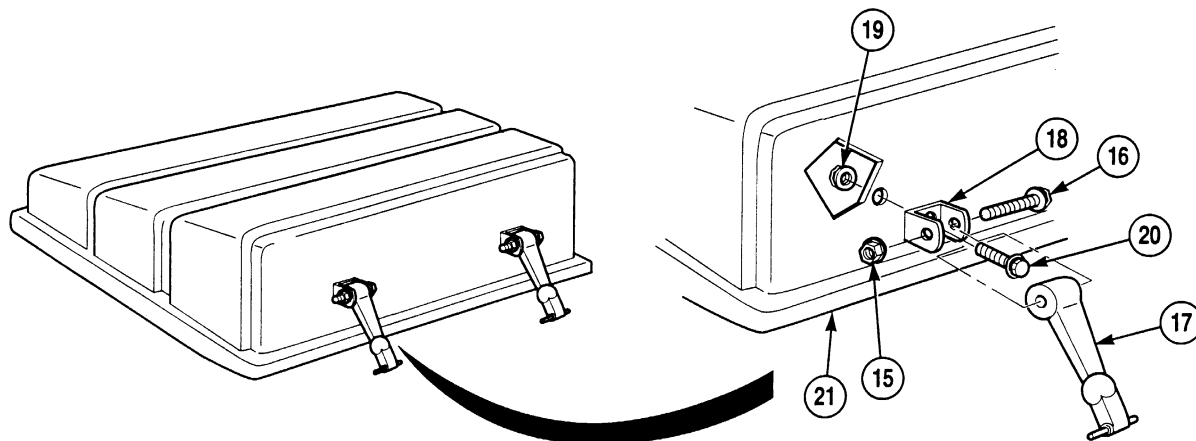
- (6) Remove two locknuts (15), screws (16) and rubber hooks (17) from hook anchor brackets (18). Discard locknuts.
- (7) Remove two locknuts (19), screws (20) and hook anchor brackets (18) from battery box cover (21). Discard locknuts.

c. Cleaning/Inspection.

WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
 - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- (1) Clean all metal hook components with drycleaning solvent.
 - (2) Inspect hook for cracks or deterioration.
 - (3) Clean battery box with clean cloths and detergent.
 - (4) Inspect for cracks or breaks.
 - (5) Replace all damaged parts.

d. Assembly.



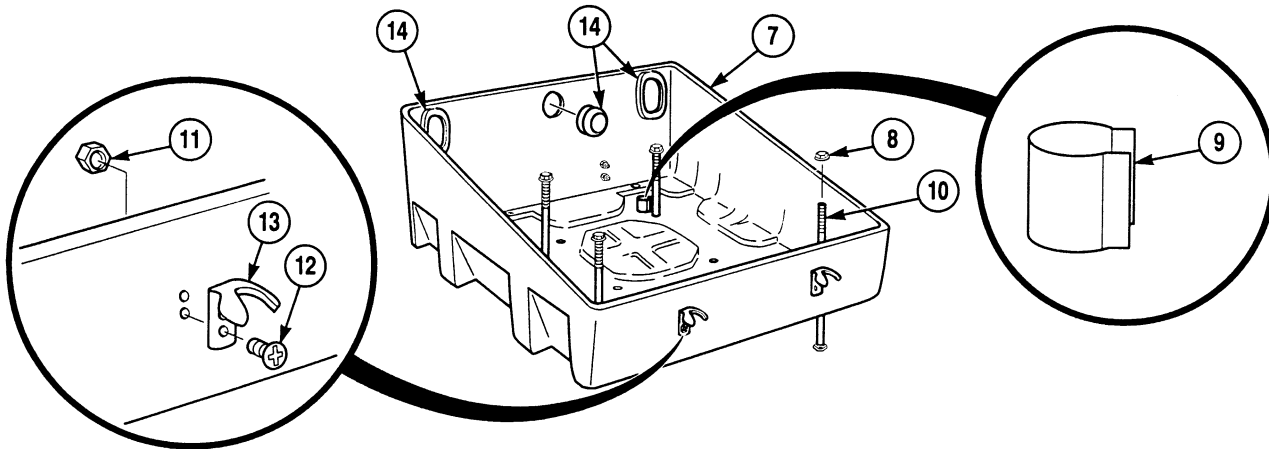
- (1) Install hook anchor brackets (18), screws (20) and two locknuts (19) on battery box cover (21).

NOTE

Do not overtighten locknuts. Latch should move freely when properly assembled.

- (2) Install two rubber hooks (17), screws (16) and locknuts (15) on hook anchor brackets (18).

7-89. BATTERY BOX AND SHUNT REPAIR (CONT).



- (3) Install three moldings (14) in battery box (7).
- (4) Install two brackets (13), screws (12) and locknuts (11) on battery box (7).

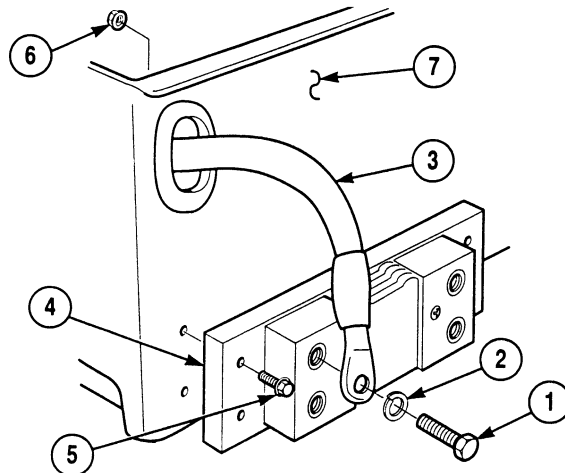
WARNING

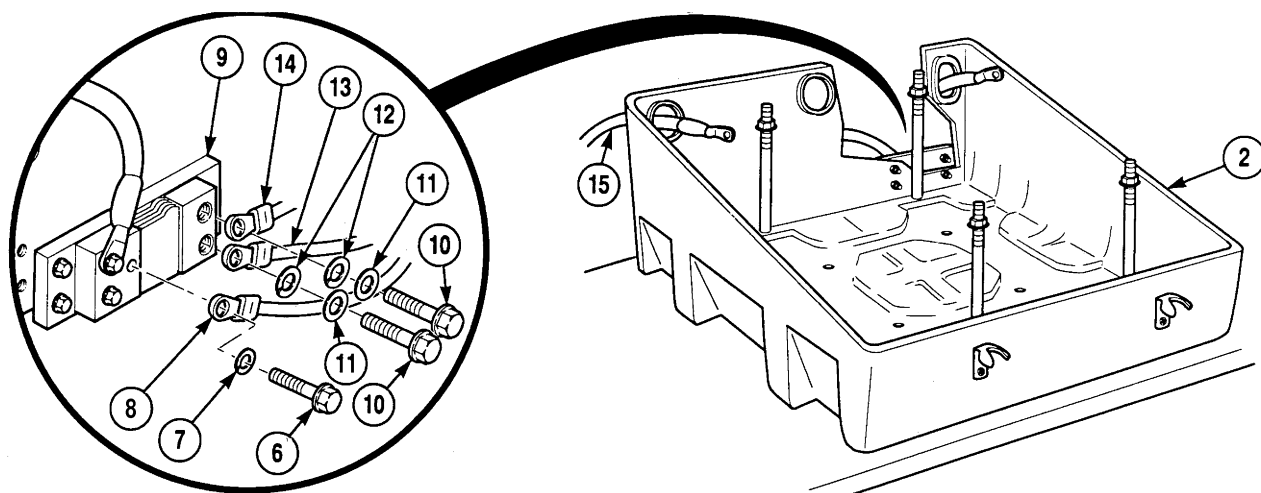
Corrosion inhibitor contains alkali. Do not get in eyes; wear goggles/safety glasses when using. Avoid contact with skin. In case of contact, immediately wash area with soap and water. If eyes are contacted, flush eyes with large amounts of water for at least 15 minutes and get immediate medical attention.

NOTE

Threads of screws, nuts, and washers will be coated with bituminous coating compound, during battery installation.

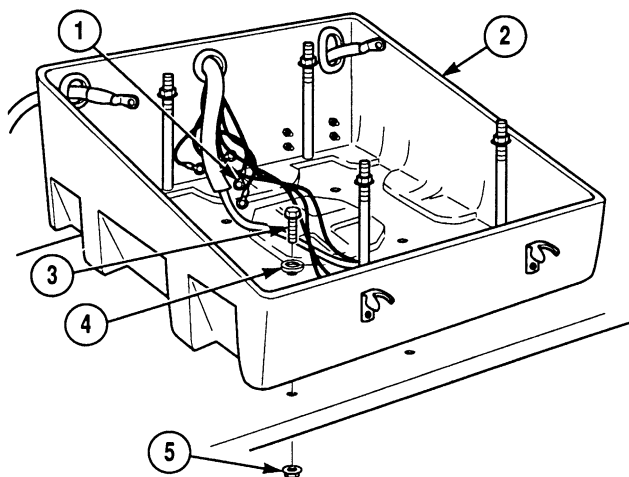
- (5) Coat four battery holddown screws (10) excluding the threads with bituminous coating compound.
- (6) Install four battery holddown screws (10) up through bottom of battery box (7) and four nuts (two on front, two on rear) (8) on screws.
- (7) Install two rear clips (9) on rear holddown screws (10).
- (8) Install shunt (4), four locknuts (6) and screws (5) on battery box (7).
- (9) Install cable (3), lockwasher (2) and screw (1) on shunt (4).





e. Installation.

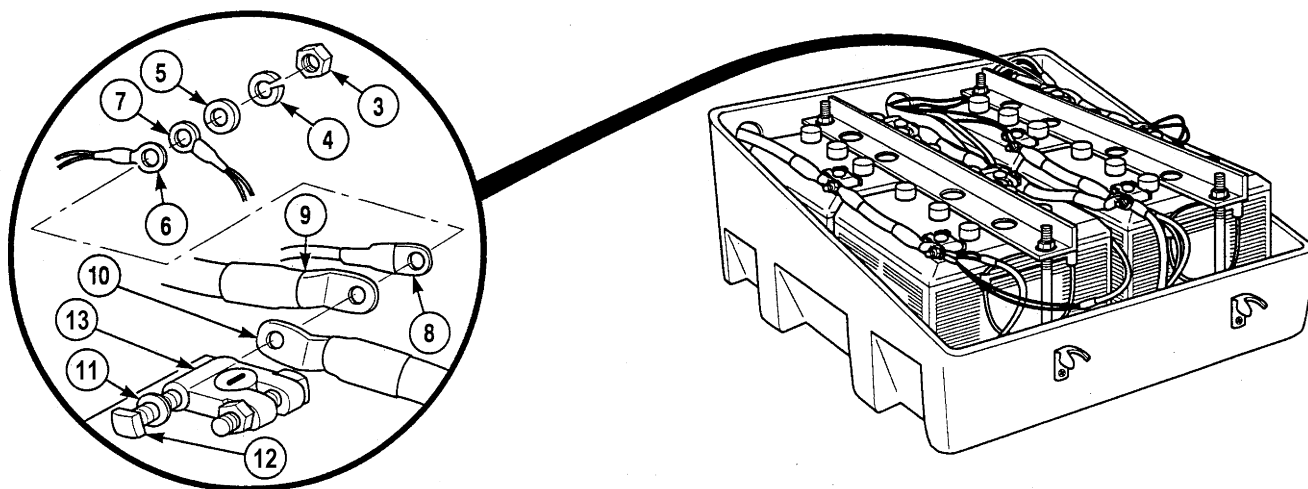
- (1) Position battery box (2) on truck.
- (2) Position wire 1139 (15) in battery box (2).
- (3) Install two wires 1138 (13) and 1828 (14), lockwashers (12), washers (11) and screws (10) on shunt (9).
- (4) Install wire 1829 (8), lockwasher (7) and screw (6) on shunt (9).
- (5) Install battery box (2) four screws (3), washers (4) and locknuts (5) on truck.
- (6) Install wiring (1) through center hole in battery box (2).



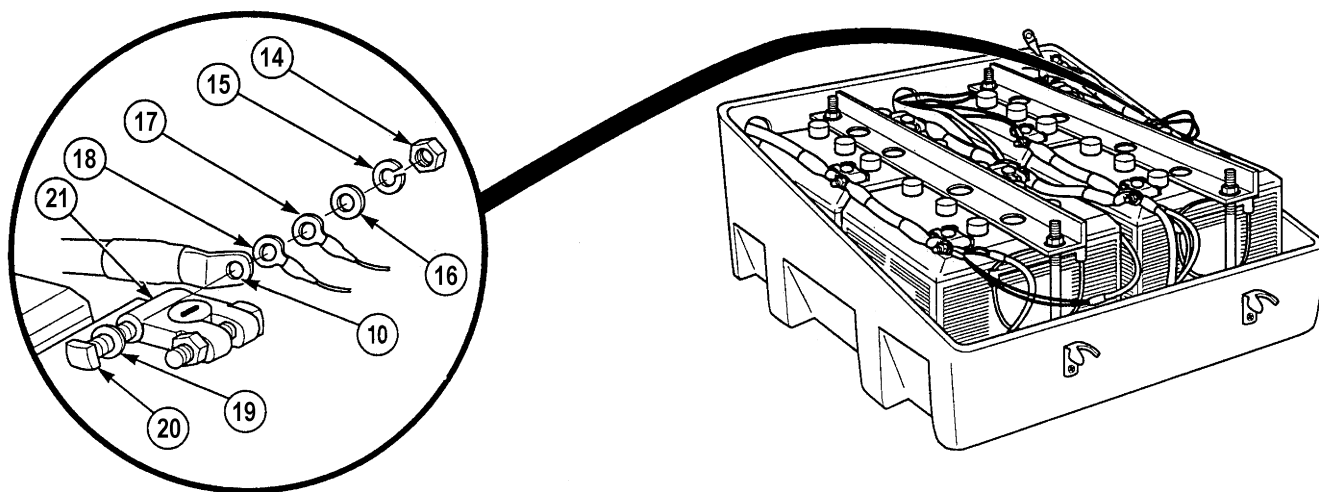
f. Follow-On Maintenance:

- Install batteries, (Para 7-88).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

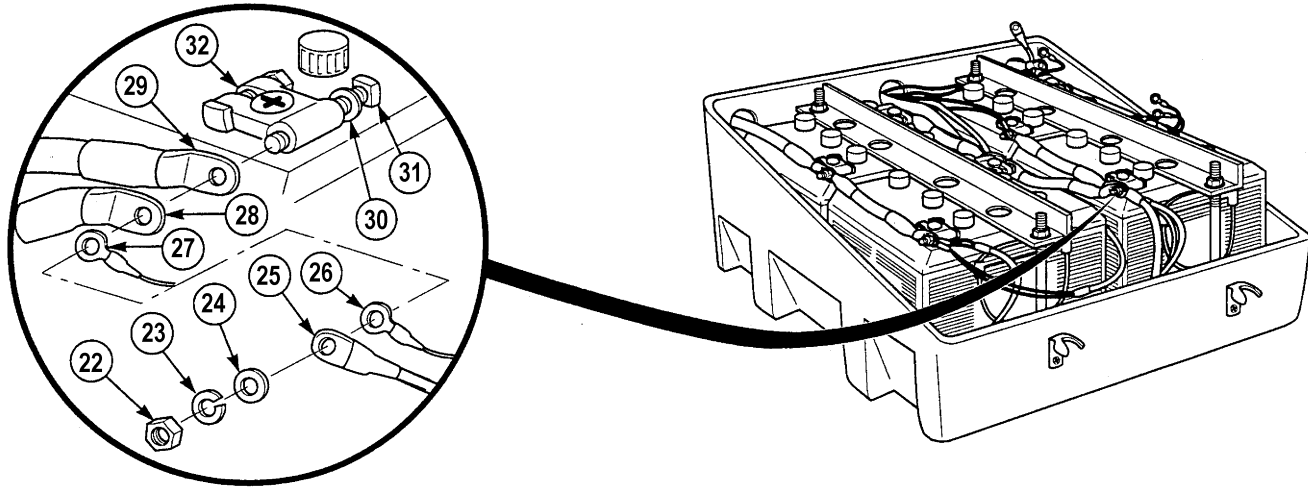


- (2) Remove nut (3), lockwasher (4), washer (5), wires 150/150 (6), wires 208/209 (7), wire 1275 (8), cable 1138 (9), cable 1137 (10), washer (11) and screw (12) from negative terminal (13). Discard lockwasher.

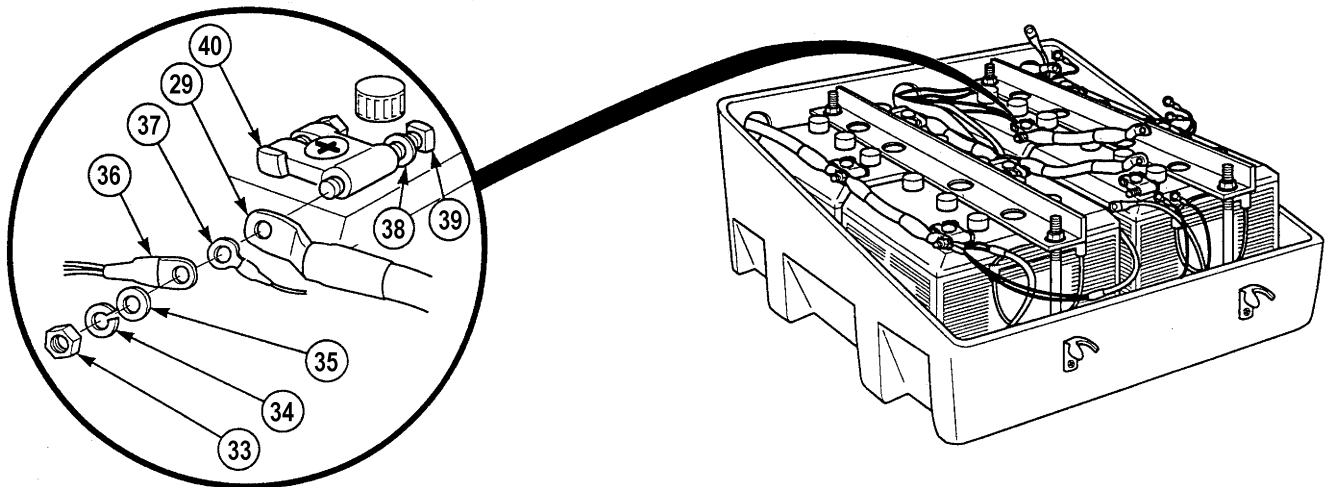


- (3) Remove nut (14), lockwasher (15), washer (16), wire 1813 (17), wire 1821 (18), cable 1137 (10), washer (19) and screw (20) from negative terminal (21). Discard lockwasher.

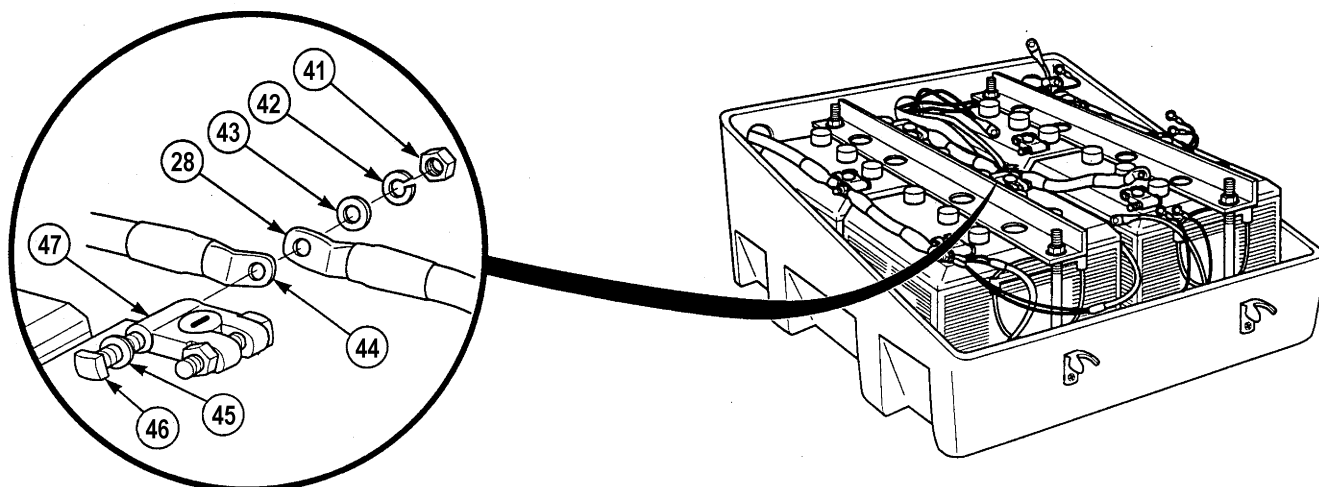
7-90. BATTERY BOX WIRING REPLACEMENT (145 AMP) (CONT).



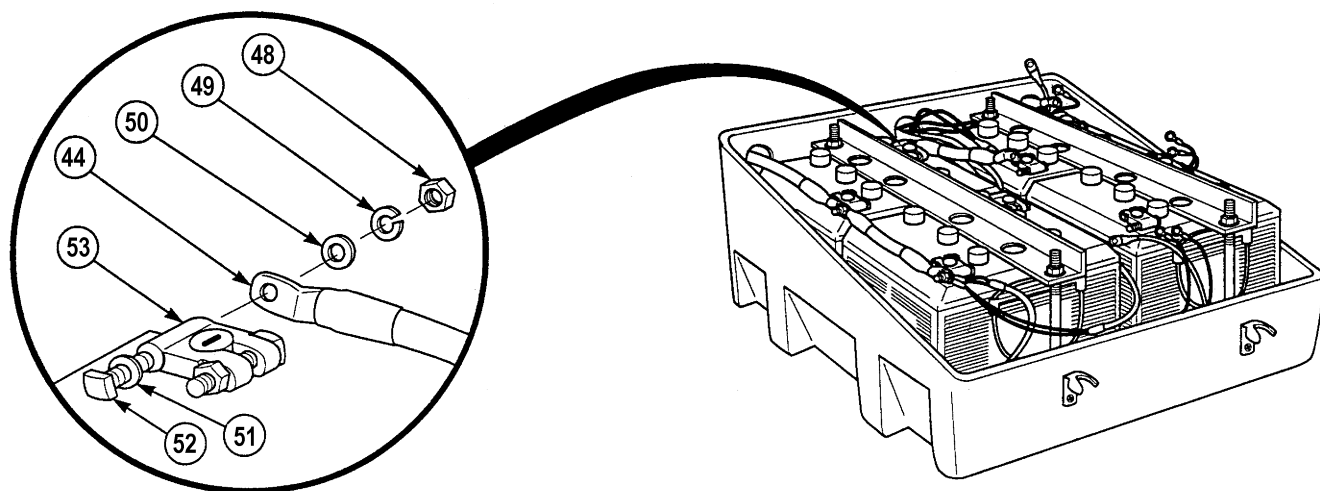
- (4) Remove nut (22), lockwasher (23), washer (24), wire 1566 (25), wire 1866 (26), wire 1075 (27), cable 1137 (28), cable 1137 (29), washer (30) and screw (31) from positive terminal (32). Discard lockwasher.



- (5) Remove nut (33), lockwasher (34), washer (35), wires 240/241 (36), wire 1079 (37), cable 1137 (29), washer (38) and screw (39) from positive terminal (40). Discard lockwasher.

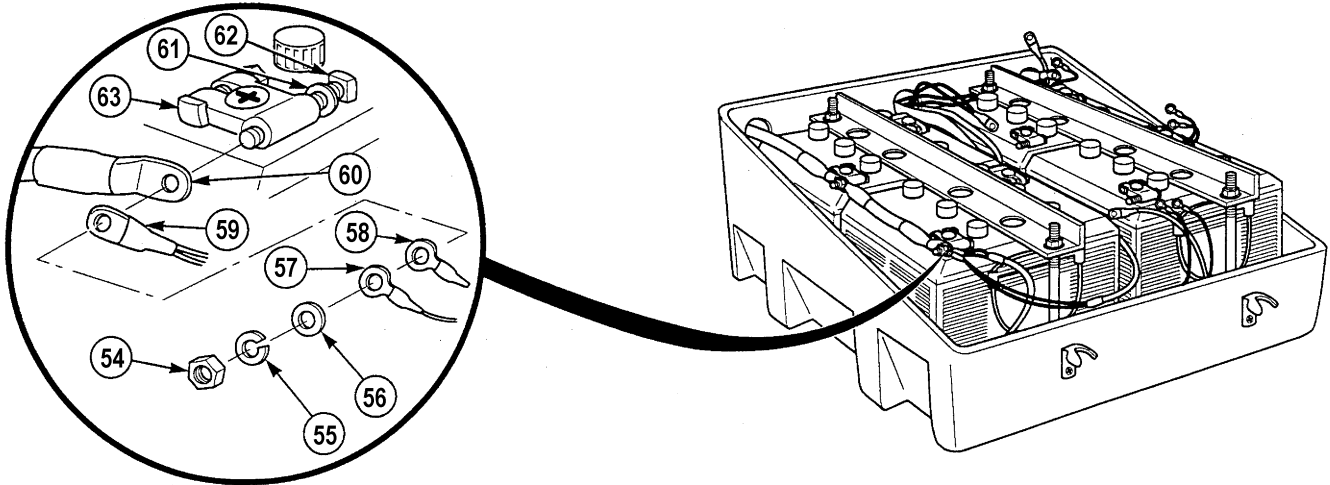


- (6) Remove nut (41), lockwasher (42), washer (43), cable 1137 (28), cable 1137 (44), washer (45) and screw (46) from negative terminal (47). Discard lockwasher.

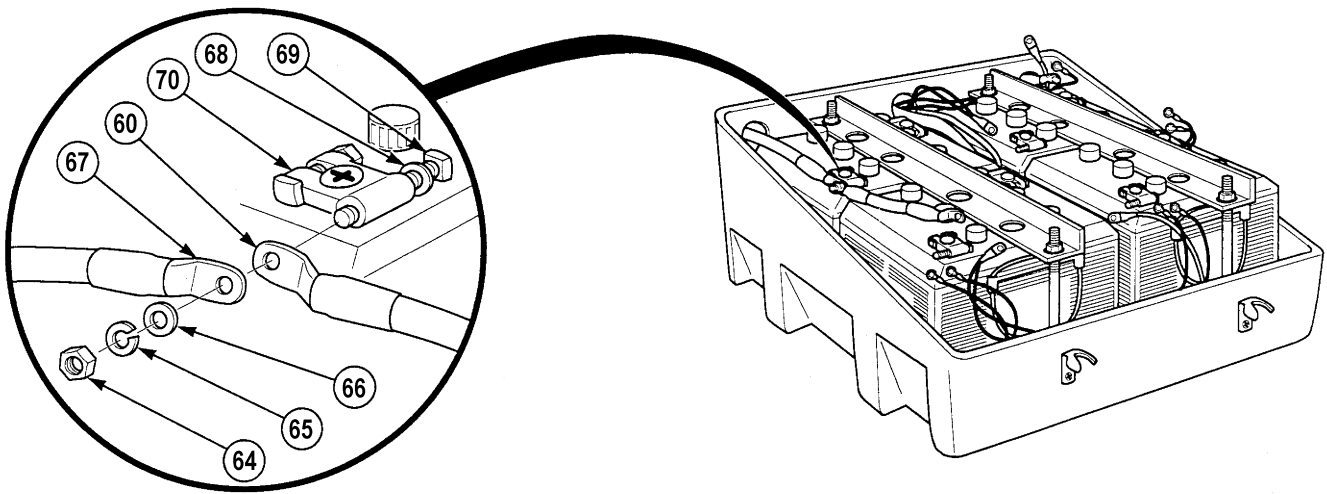


- (7) Remove nut (48), lockwasher (49), washer (50), cable 1137 (44), washer (51) and screw (52) from negative terminal (53). Discard lockwasher.

7-90. BATTERY BOX WIRING REPLACEMENT (145 AMP) (CONT).

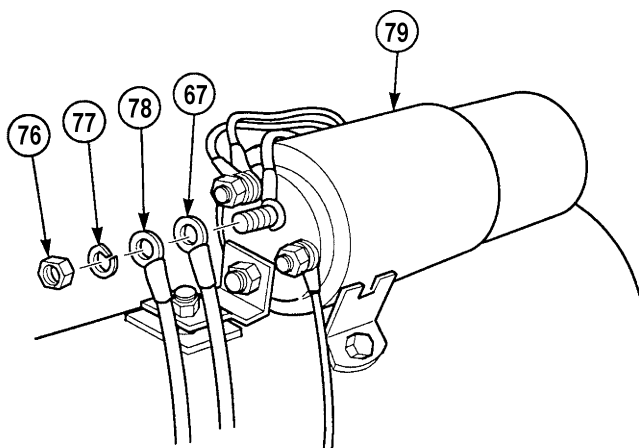
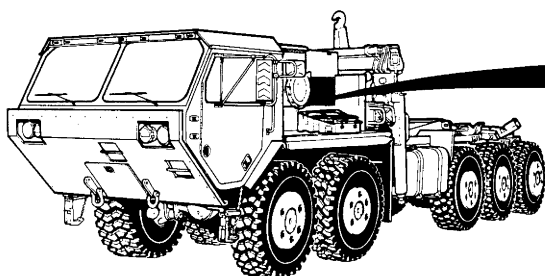
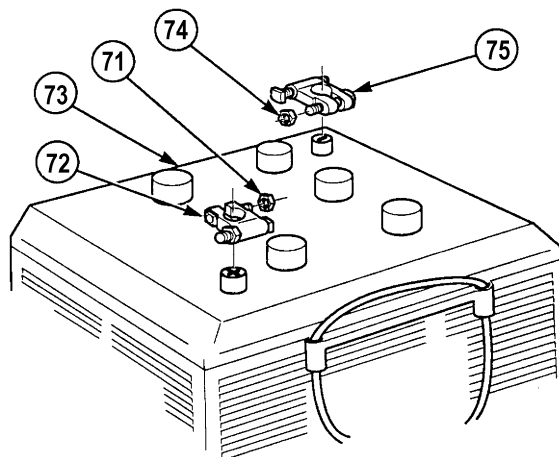


- (8) Remove nut (54), lockwasher (55), washer (56), wire 1814 (57), wire 1822 (58), wires 1431/1431 (59), cable 1137 (60), washer (61) and screw (62) from positive terminal (63). Discard lockwasher.

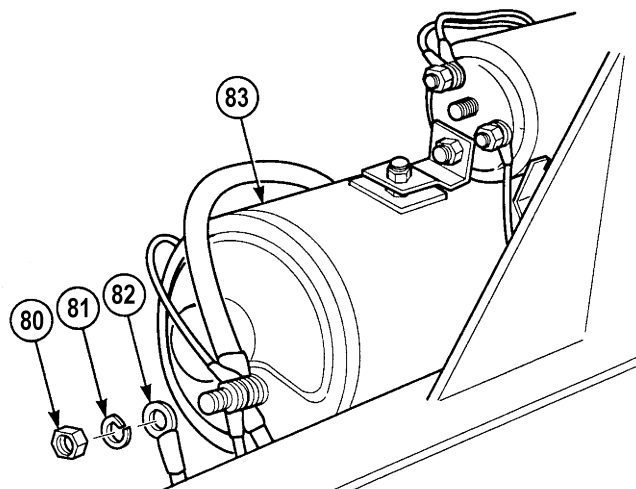


- (9) Remove nut (64), lockwasher (65), washer (66), cable 1139 (67), cable 1137 (60), washer (68) and screw (69) from positive terminal (70). Discard lockwasher.

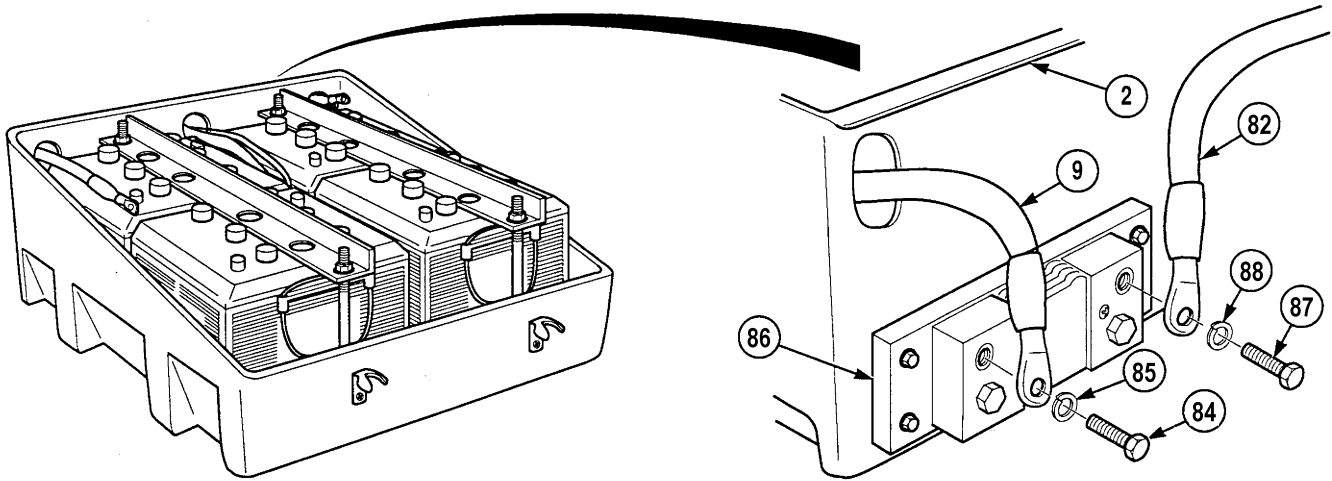
- (10) Loosen nut (71) and remove positive terminal (72) from battery/batteries (73).
- (11) Loosen nut (74) and remove negative terminal (75) from battery/batteries (73).



- (12) Remove nut (76), lockwasher (77), cable 1155 (78) and cable 1139 (67) from starter solenoid (79).
- (13) Remove nut (80), lockwasher (81) and cable 1138 (82) from starter (83).

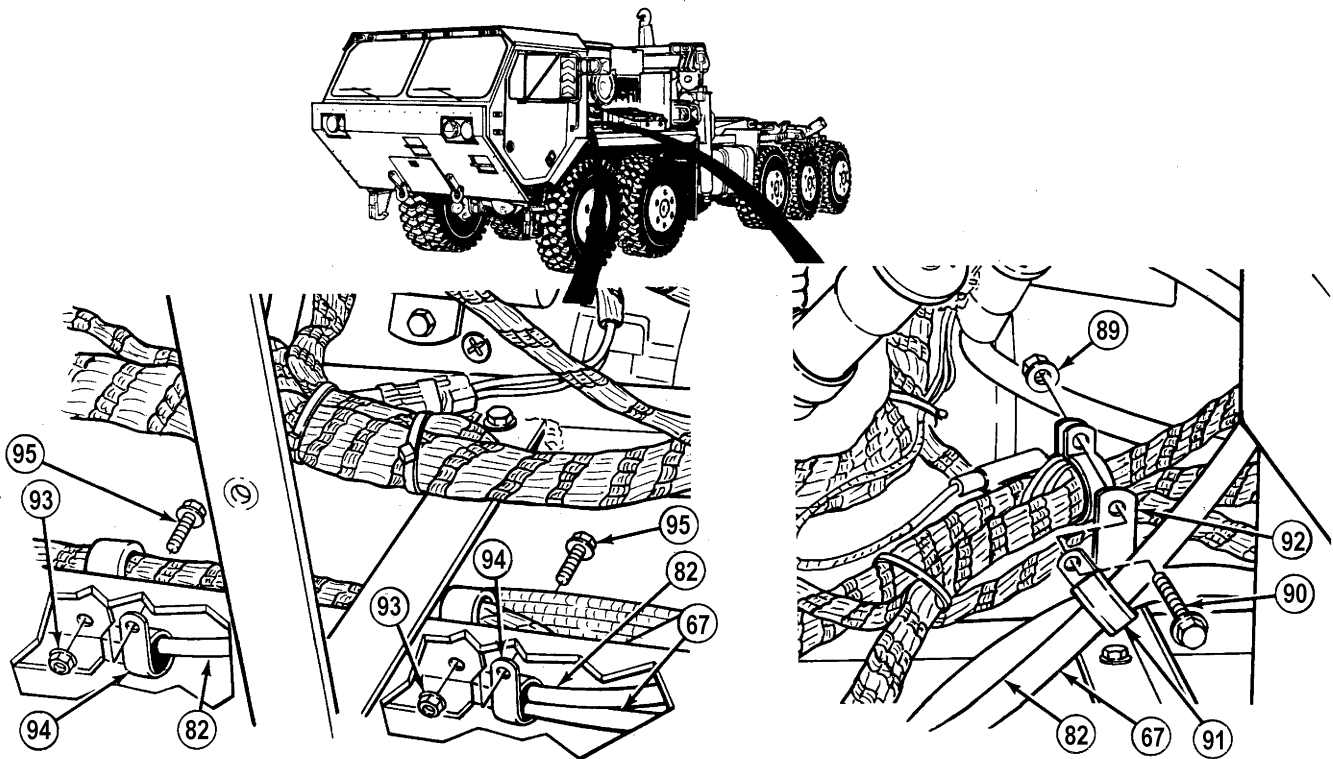


7-90. BATTERY BOX WIRING REPLACEMENT (145 AMP) (CONT).



(14) Remove screw (84), lockwasher (85) and cable 1138 (9) from shunt (86) on rear of battery box (2).

(15) Remove screw (87), lockwasher (88) and cable 1138 (82) from shunt (86) on rear of battery box (2).

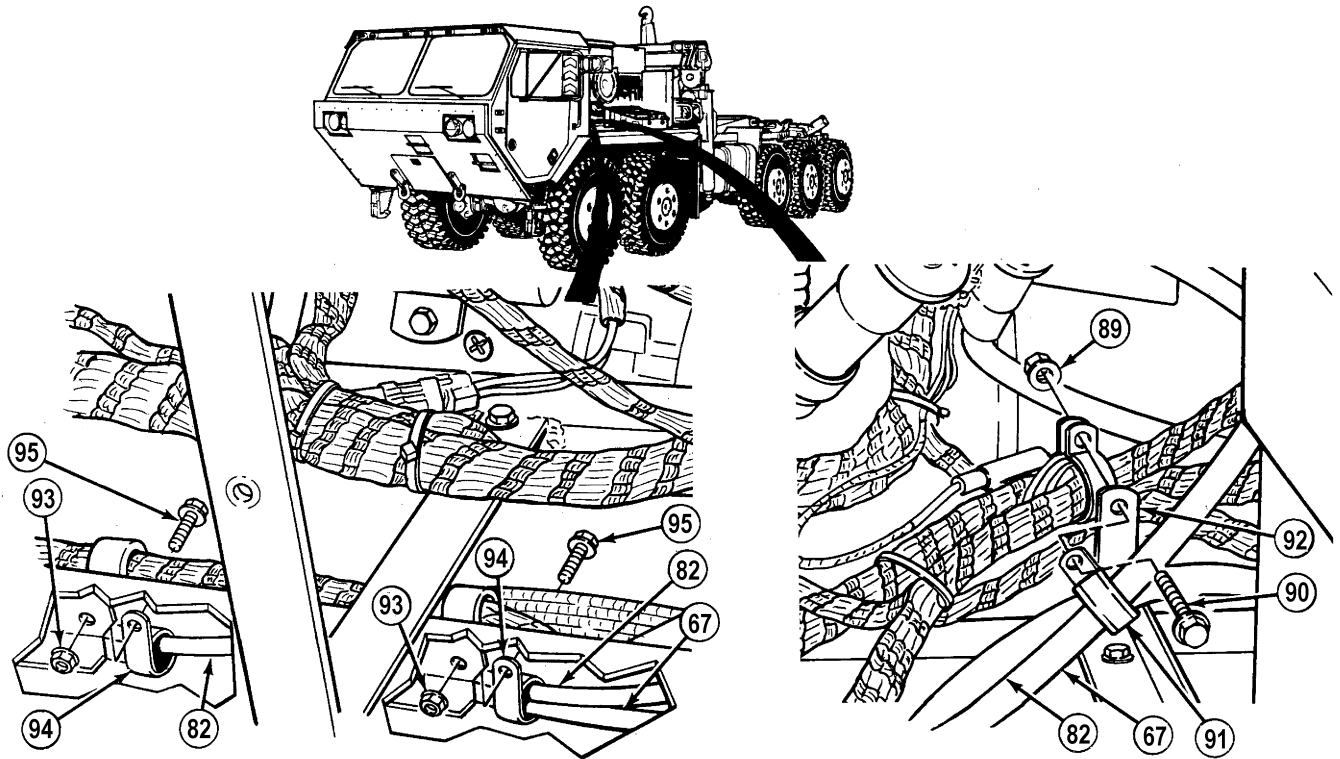


(16) Remove locknut (89), screw (90) and cushion clip (91) from bracket (92).

(17) Remove cables 1139 (67) and 1138 (82) from cushion clip (91).

(18) Remove two locknuts (93), cushion clips (94) and two screws (95) from cable 1139 (67) and cable 1138 (82).

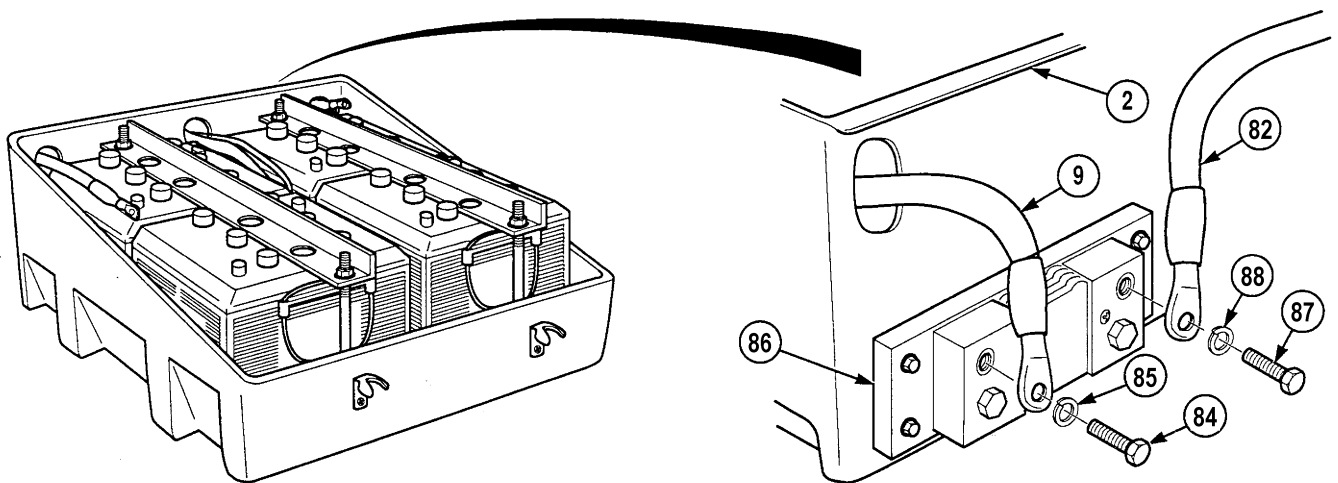
b. Installation.



NOTE

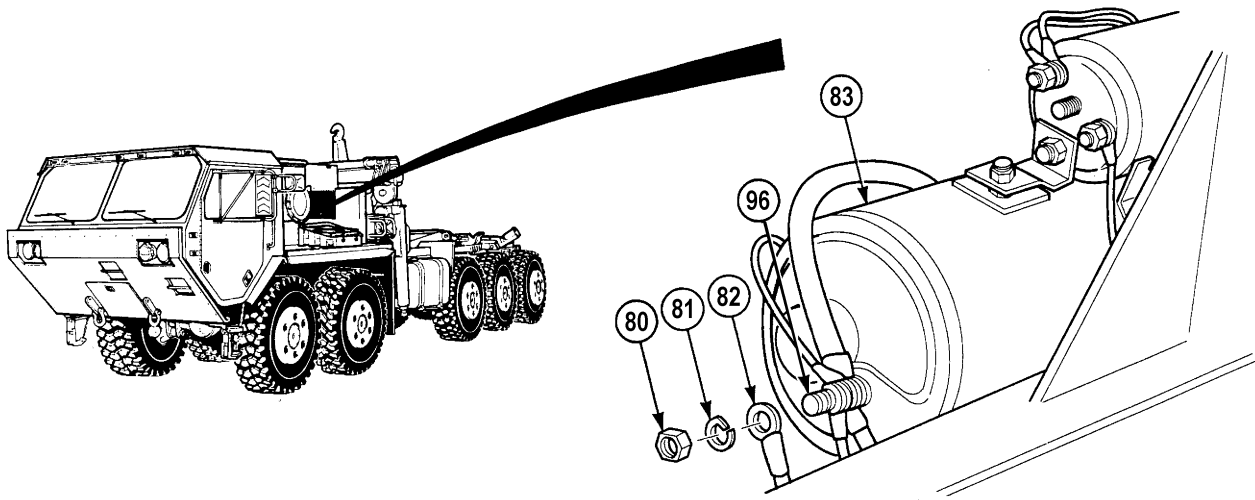
Ensure that cables will reach to connecting points prior to tightening cushion clips.

- (1) Install cables 1139 (74) and 1138 (82) with two cushion clips (94), two screws (95) and locknuts (93).
- (2) Install two cables 1139 (67) and 1138 (82) to bracket (92) with cushion clip (91), screw (90) and locknut (89).



- (3) Install cable 1138 (82) to shunt (86) on rear of battery box (2) with screw (87) and lockwasher (88).
- (4) Install cable 1138 (9) to shunt (86) on rear of battery box (2) with screw (84) and lockwasher (85).

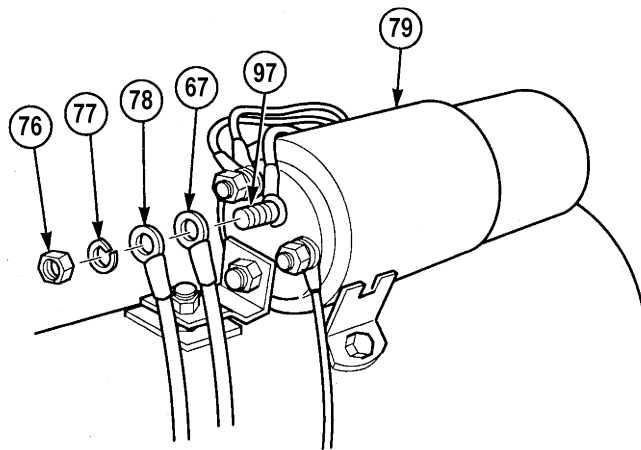
7-90. BATTERY BOX WIRING REPLACEMENT (145 AMP) (CONT).



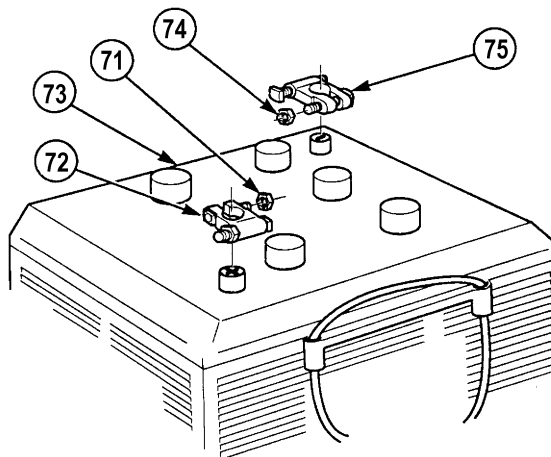
- (5) Install cable 1138 (82) to starter (83) with lockwasher (81) and nut (80).
- (6) Install cable 1139 (67) and cable 1055 (78) to starter solenoid (79) with lockwasher (77) and nut (76).

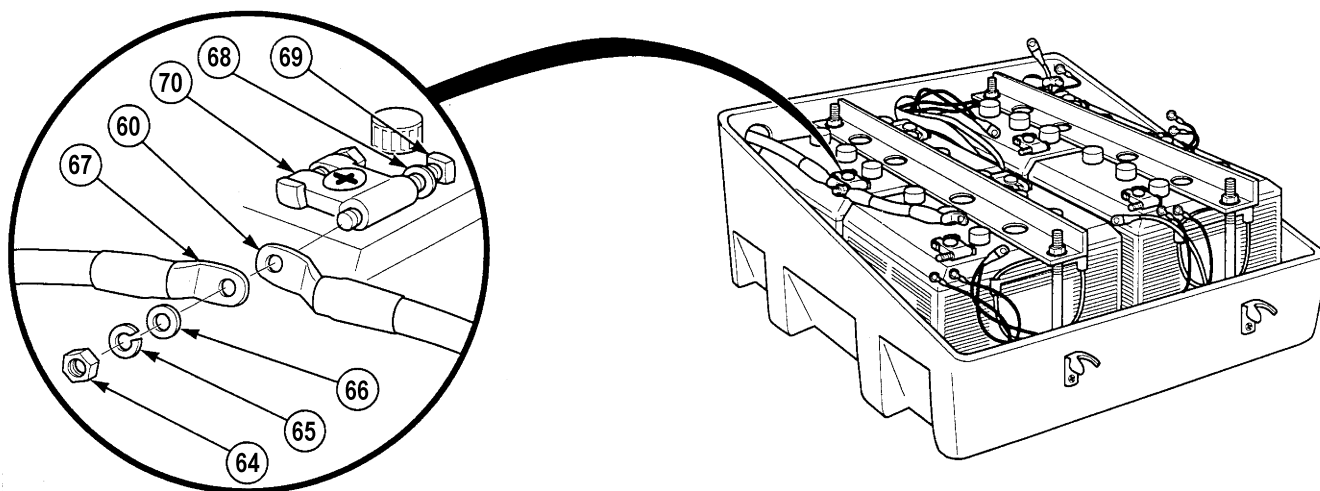
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (7) Apply electrical sealant to terminals (96) and (97) of starter (83) and starter solenoid (79).
- (8) Install negative terminals (75) on small post at right rear of batteries (73) and tighten nut (74) to 84 to 96 lb-in (9 to 11 N·m).
- (9) Install positive terminals (72) on large post at left front of batteries (73) and tighten nut (71) to 84 to 96 lb-in (9 to 11 N·m).



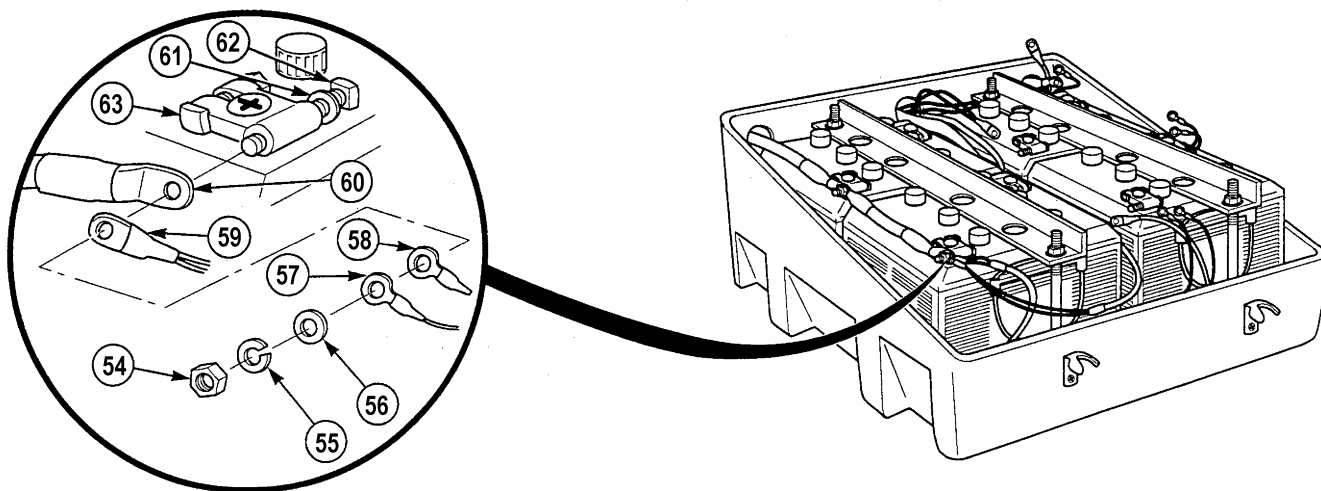


- (10) Position screw (69), washer (68), cable 1137 (60), cable 1139 (67), washer (66), lockwasher (65) and nut (64) on positive terminal (70).

CAUTION

While applying torque to locknut, hold screw with wrench or damage to battery may occur.

- (11) Tighten nut (64) to 12 to 16 lb-ft (16 to 22 N·m).



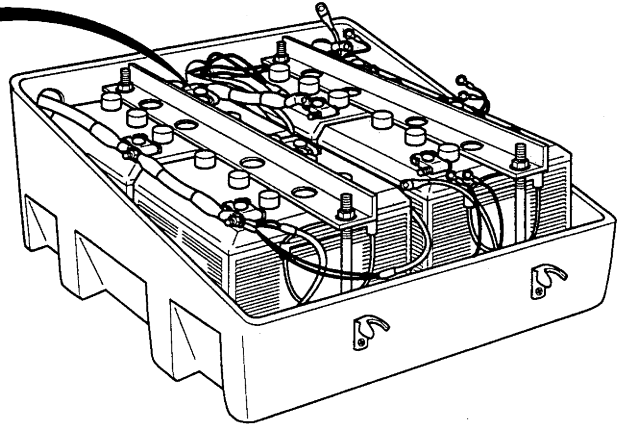
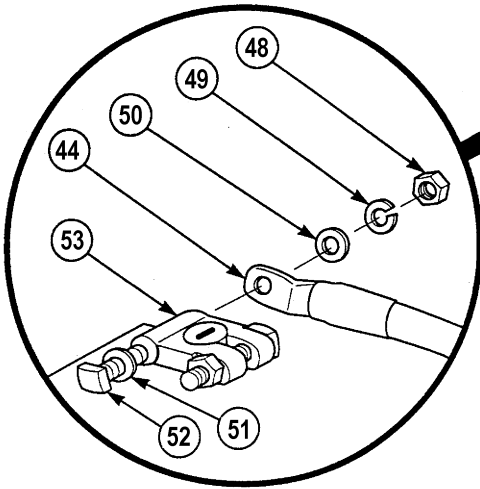
- (12) Position screw (62), washer (61), cable 1137 (60), wires 1431/1431 (59), wire 1822 (58), wire 1814 (57), washer (56), lockwasher (55) and nut (54) on positive terminal (63).

CAUTION

While applying torque to locknut, hold screw with wrench or damage to battery may occur.

- (13) Tighten nut (54) to 12 to 16 lb-ft (16 to 22 N·m).

7-90. BATTERY BOX WIRING REPLACEMENT (145 AMP) (CONT).

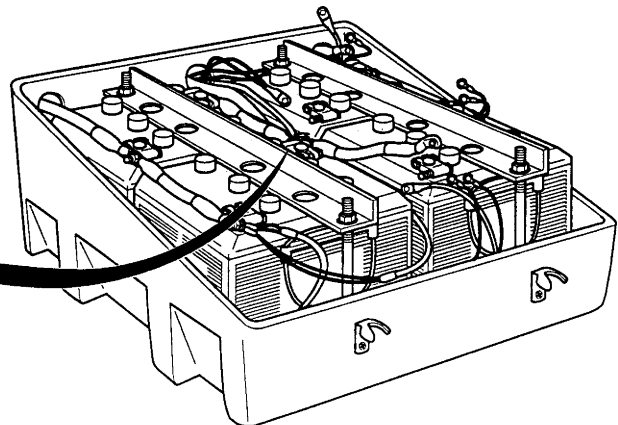
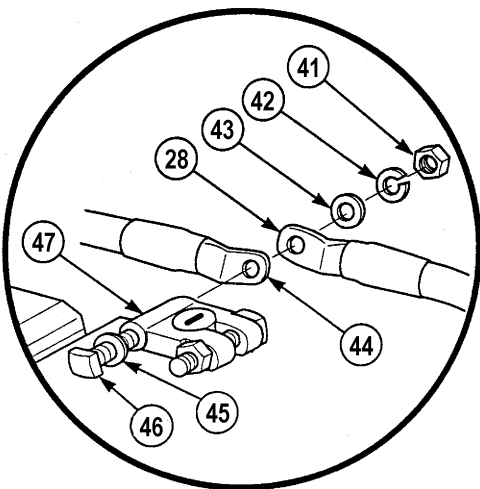


- (14) Position screw (52), washer (51), cable 1137 (44), washer (50), lockwasher (49) and nut (48) on negative terminal (53).

CAUTION

While applying torque to locknut, hold screw with wrench or damage to battery may occur.

- (15) Tighten nut (48) to 12 to 16 lb-ft (16 to 22 N·m).

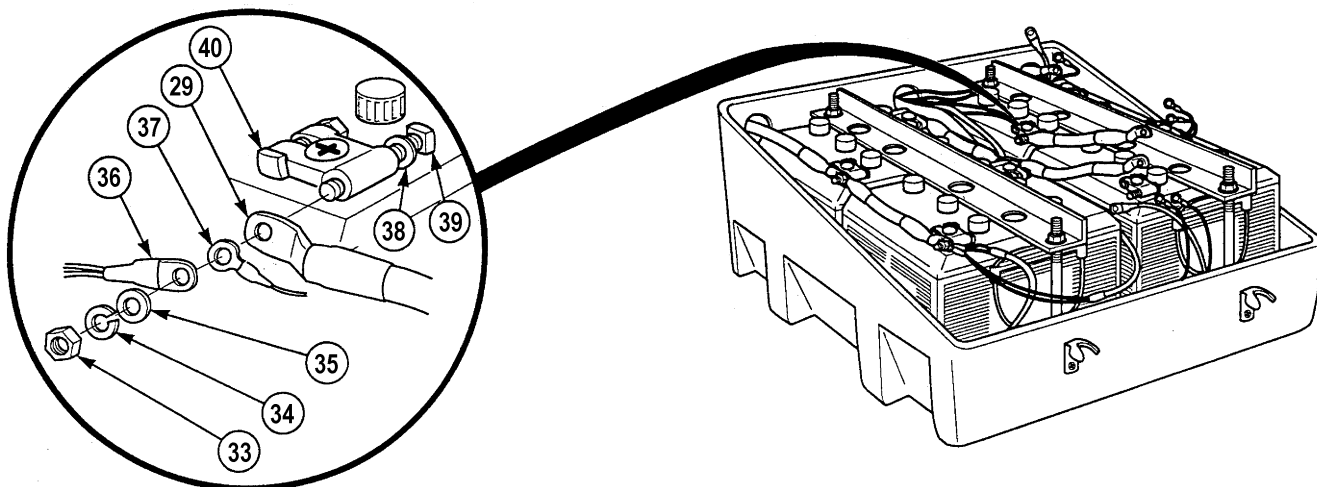


- (16) Position screw (46), washer (45), cable 1137 (44), cable 1137 (28), washer (43), lockwasher (42) and nut (41) on negative terminal (47).

CAUTION

While applying torque to locknut, hold screw with wrench or damage to battery may occur.

- (17) Tighten nut (41) to 12 to 16 lb-ft (16 to 22 N·m).

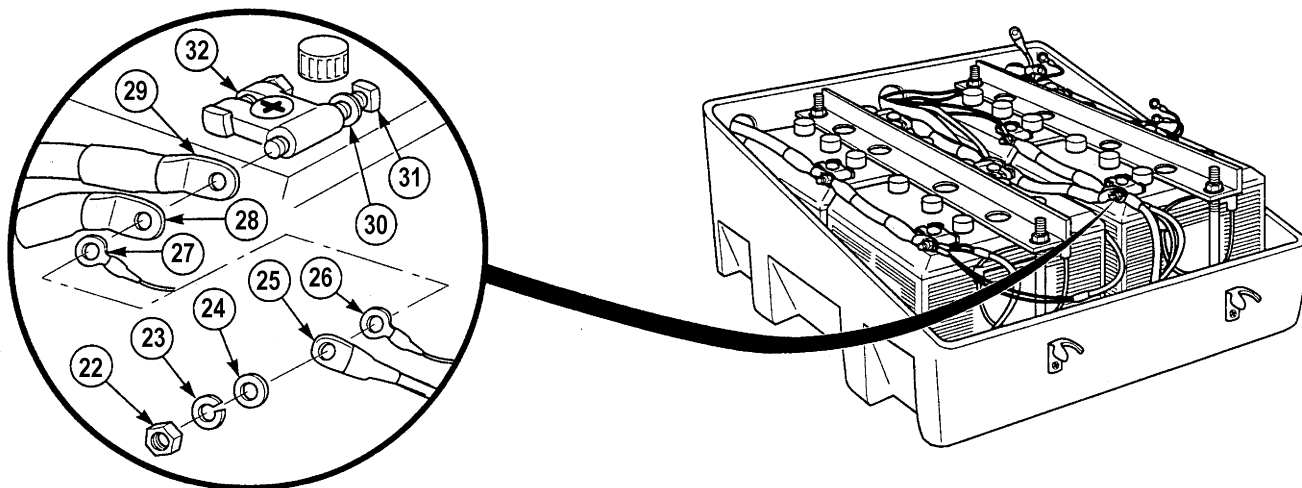


- (18) Position screw (39), washer (38), cable 1137 (29), wire 1079 (37), wires 240/241 (36), washer (35), lockwasher (34) and nut (33) on positive terminal (40).

CAUTION

While applying torque to locknut, hold screw with wrench or damage to battery may occur.

- (19) Tighten nut (33) to 12 to 16 lb-ft (16 to 22 N·m).



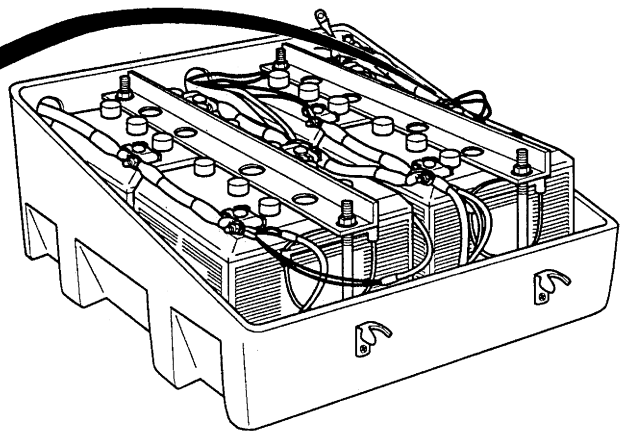
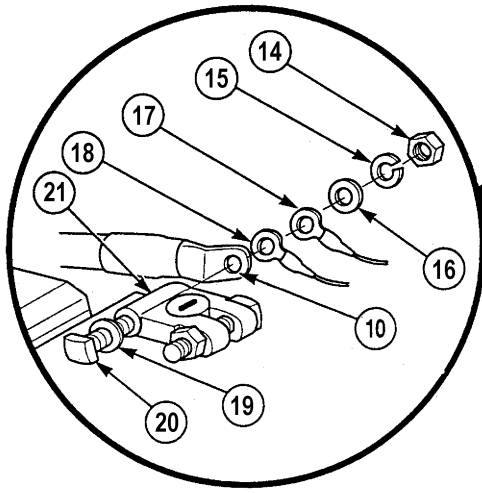
- (20) Position screw (31), washer (30), cable 1137 (29), cable 1137 (28), wire 1075 (27), wire 1866 (2622), wire 1566 (25), washer (24), lockwasher (23) and nut (22) on positive terminal (32).

CAUTION

While applying torque to locknut, hold screw with wrench or damage to battery may occur.

- (21) Tighten nut (22) to 12 to 16 lb-ft (16 to 22 N·m).

7-90. BATTERY BOX WIRING REPLACEMENT (145 AMP) (CONT).

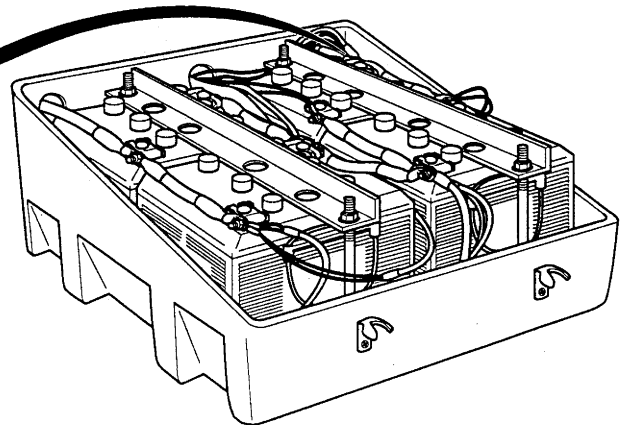
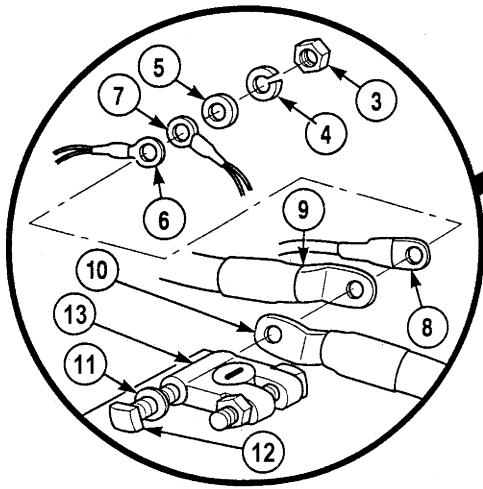


- (22) Position screw (20), washer (19), cable 1137 (10), wire 1821 (18), wire 1813 (17), washer (16), lockwasher (15) and nut (14) on negative terminal (21).

CAUTION

While applying torque to locknut, hold screw with wrench or damage to battery may occur.

- (23) Tighten nut (14) to 12 to 16 lb-ft (16 to 22 N·m).

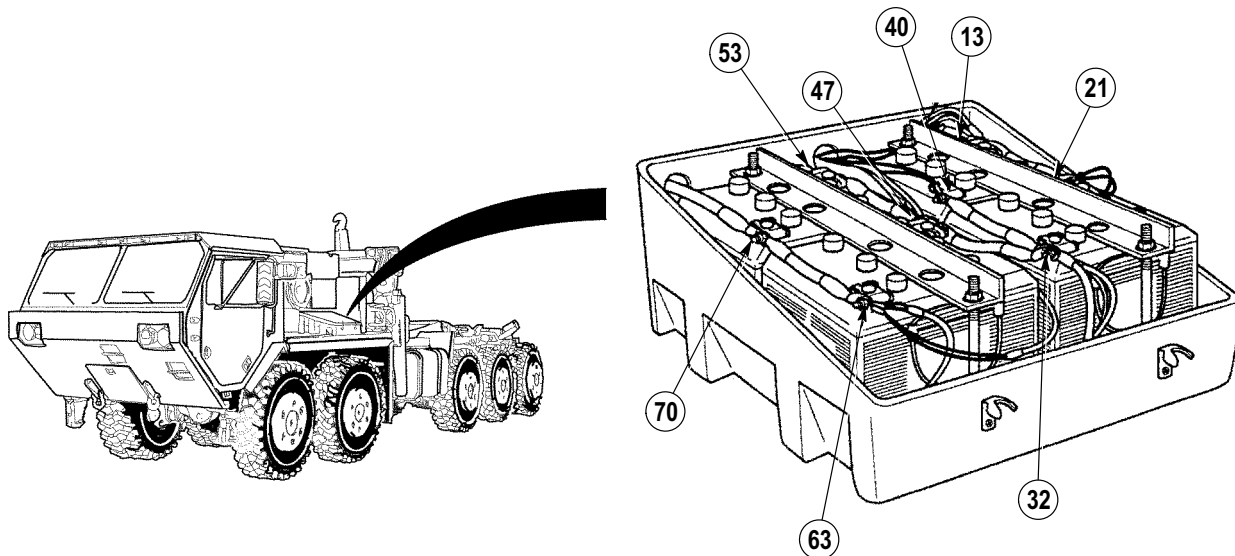


- (24) Position screw (12), washer (11), cable 1138 (10), cable 1137 (9), wire 1275 (8), wires 150/150 (6), wires 208/209 (6), washer (5), lockwasher (4) and nut (3) on negative terminal (13).

CAUTION

While applying torque to locknut, hold screw with wrench or damage to battery may occur.

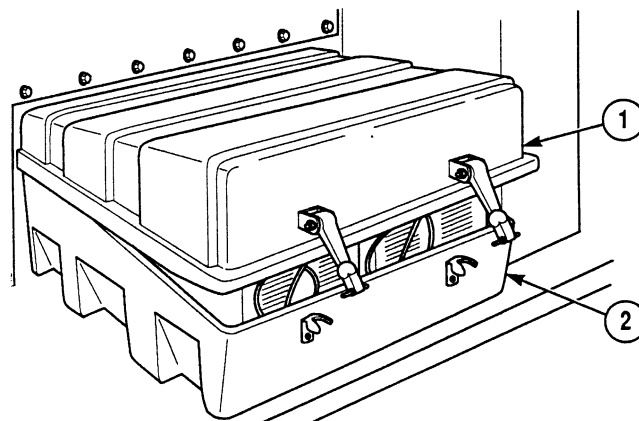
- (25) Tighten nut (3) to 12 to 16 lb-ft (16 to 22 N·m).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

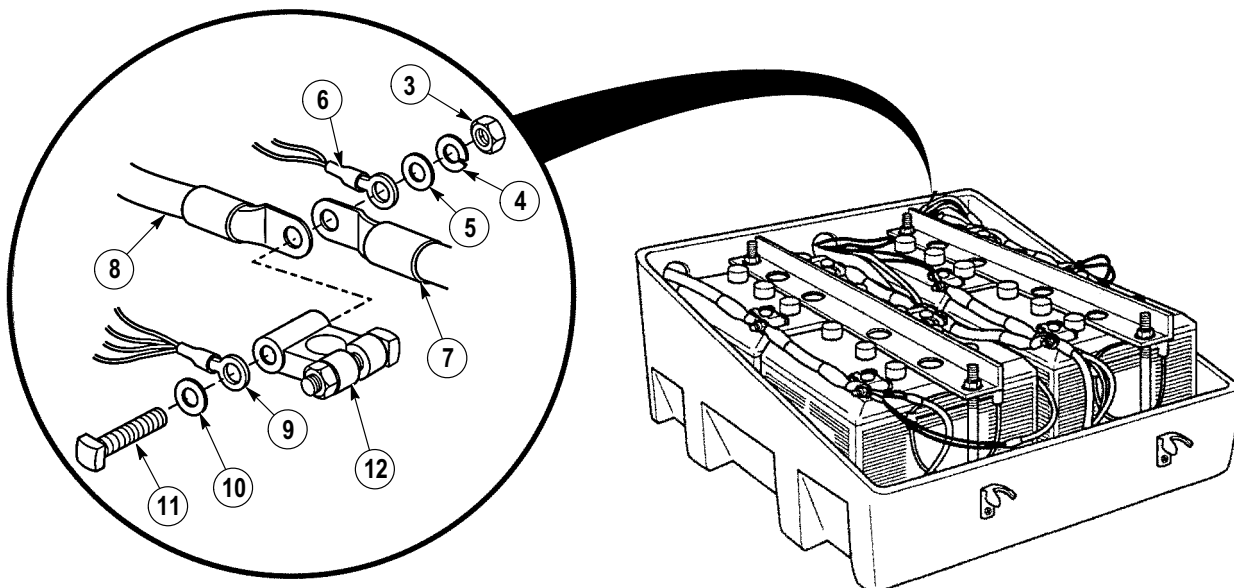
- (26) Apply corrosion preventive compound to positive terminals (32), (40), (63) and (70) and negative terminals (13), (21), (47) and (53).
- (27) Install battery box cover (1) on battery box (2).



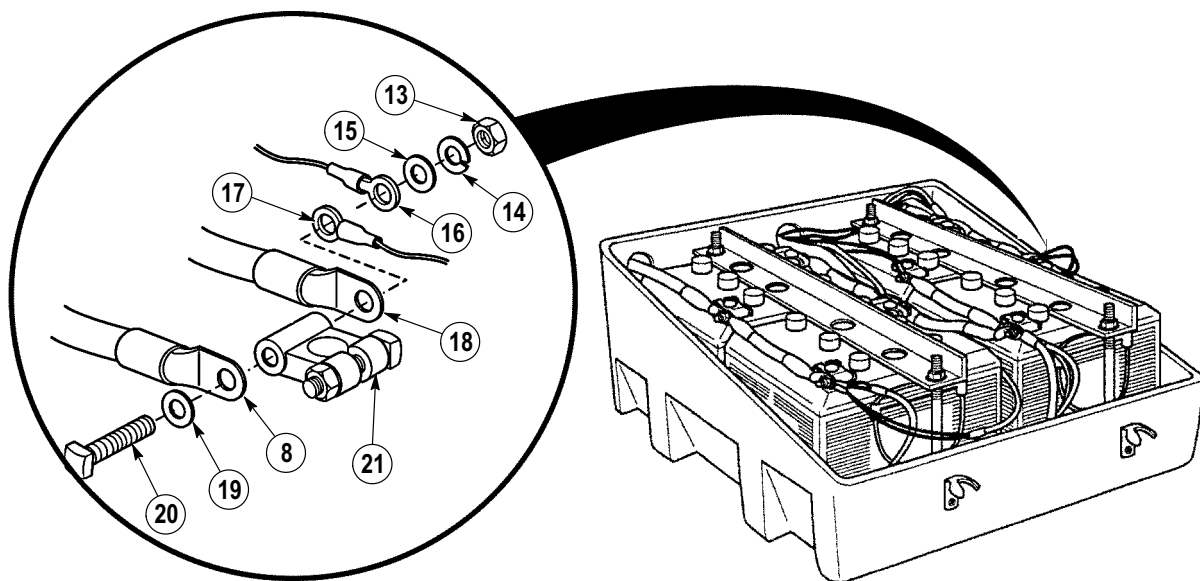
c. Follow-On Maintenance:

- Install left side noise panel, (Para 17-28).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK



- (2) Remove nut (3), lockwasher (4), washer (5), wires 208/209 (6), cable 1138 (7), cable 1137 (8), wires 150/150/151/953 (9), washer (10) and screw (11) from negative terminal (12). Discard lockwasher.

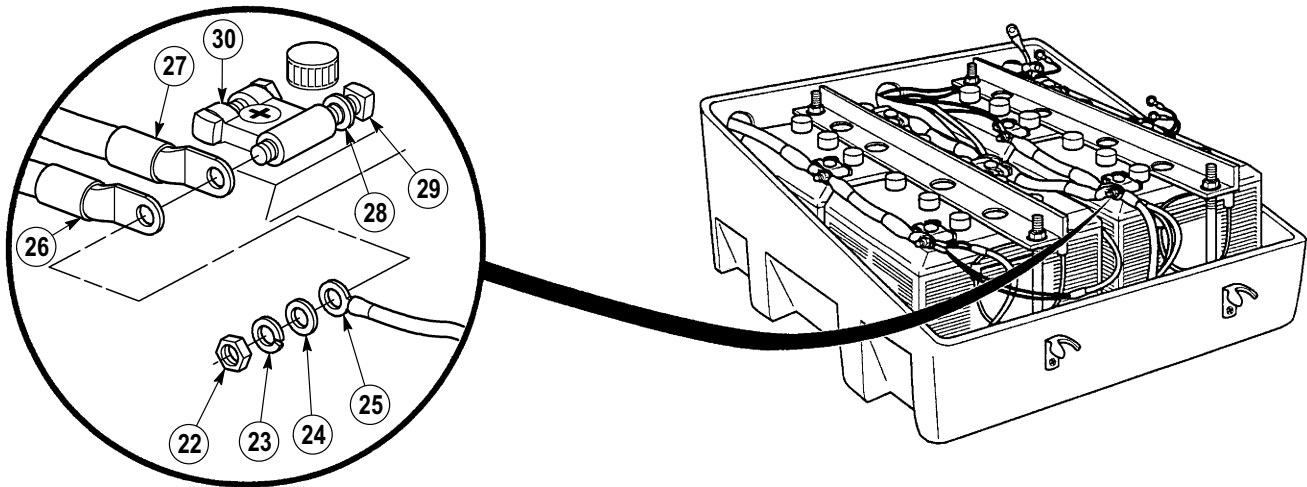


NOTE

If truck is not equipped with battery disconnect switch, wire 1275 will have been removed in Step (2).

- (3) Remove nut (13), lockwasher (14), washer (15), wire 1813 (16), wire 1821 (17), cable 1275 (18), cable 1137 (8), washer (19) and screw (20) from negative terminal (21). Discard lockwasher.

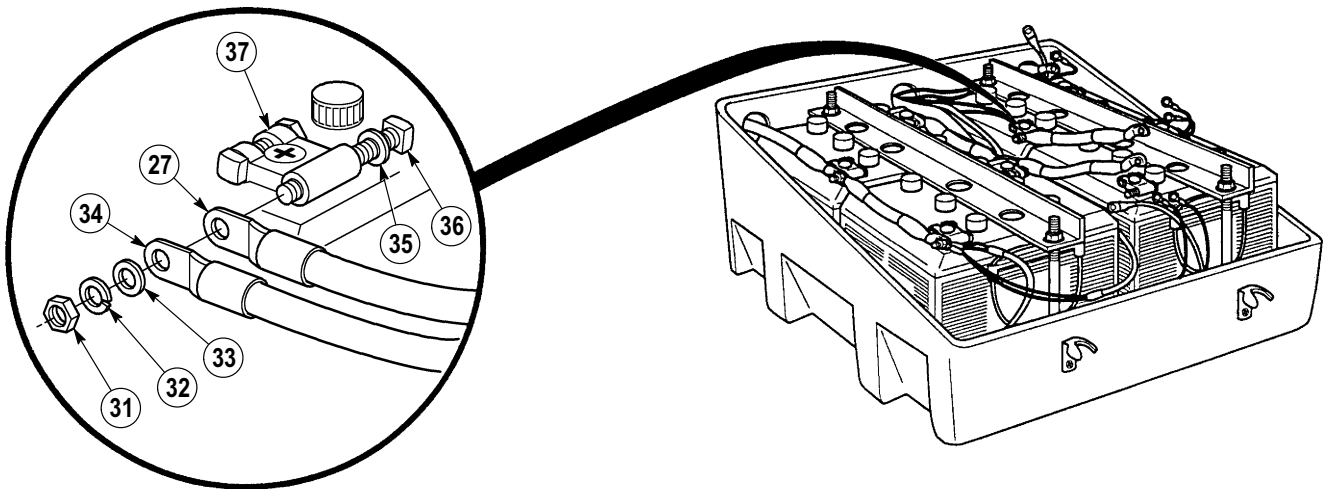
7-91. BATTERY BOX WIRING REPLACEMENT (200 AMP) (CONT).



NOTE

On trucks equipped with battery disconnect switch, cable 1566 is removed in Step (5).

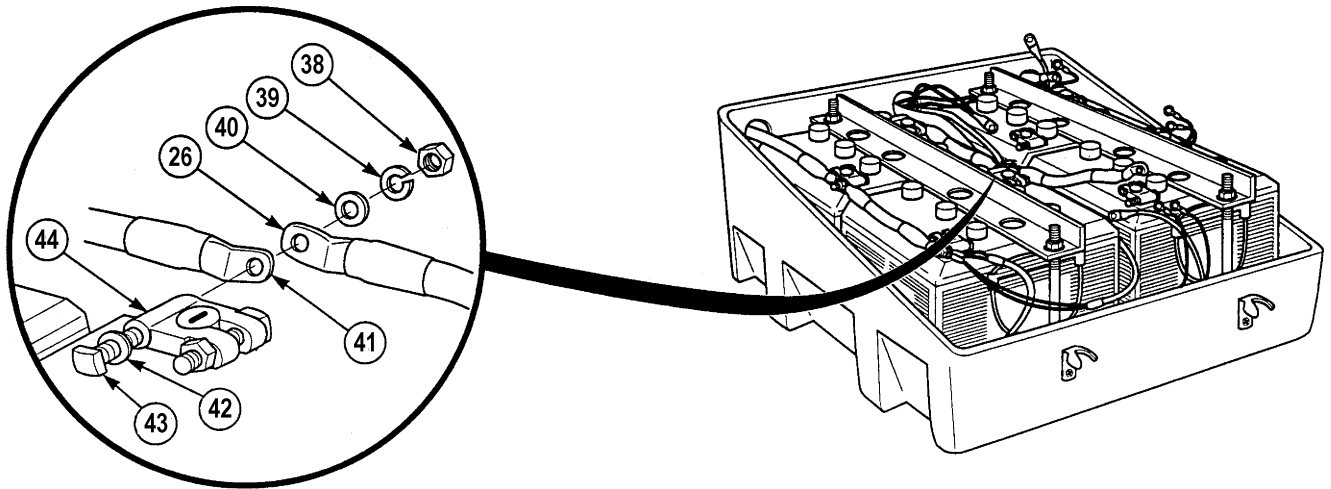
- (4) Remove nut (22), lockwasher (23), washer (24), cable 1566 (25), cable 1138 (26), cable 1137 (27), washer (28) and screw (29) from positive terminal (30). Discard lockwasher.



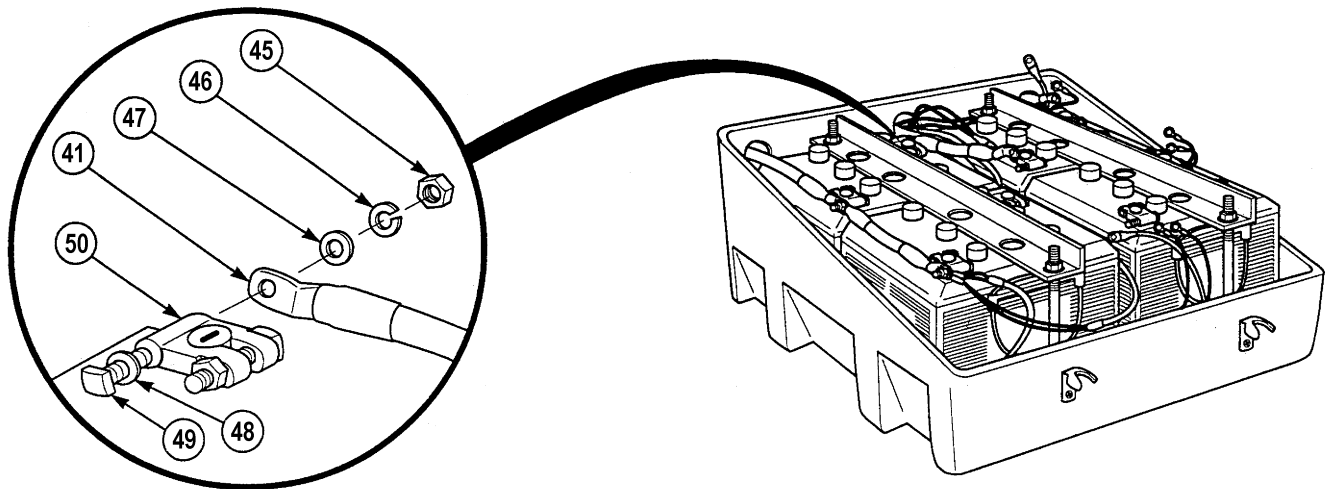
NOTE

Cable 1274 is found on trucks not equipped with battery disconnect switch. Cable 1566 is found on trucks equipped with battery disconnect switch.

- (5) Remove nut (31), lockwasher (32), washer (33), cable 1274 or 1566 (34), cable 1137 (27), washer (35) and screw (36) from positive terminal (37). Discard lockwasher.

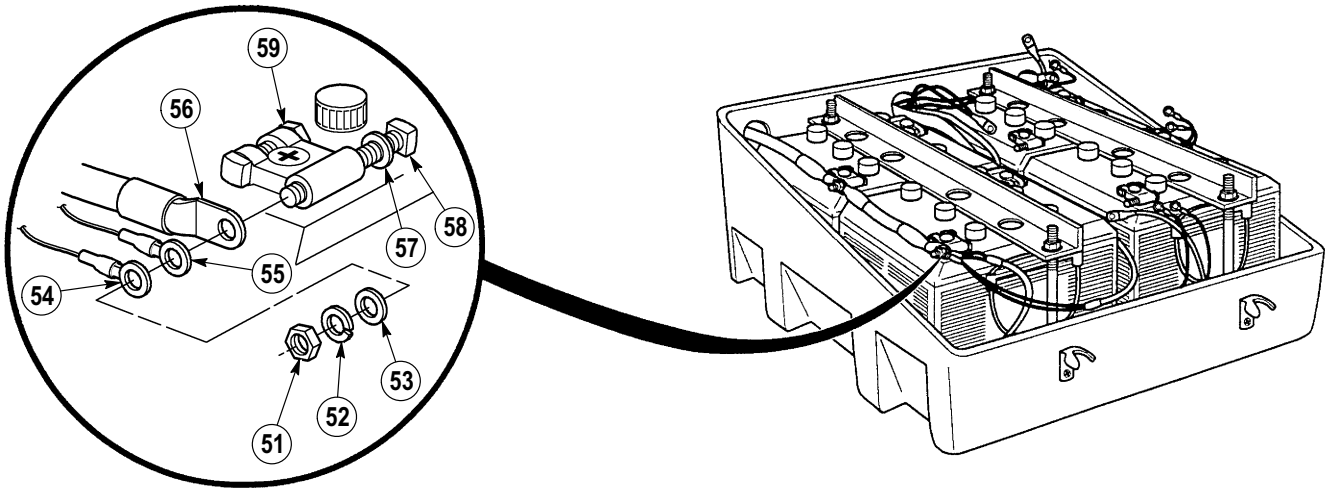


- (6) Remove nut (38), lockwasher (39), washer (40), cable 1138 (26), cable 1137 (41), washer (42) and screw (43) from negative terminal (44). Discard lockwasher.

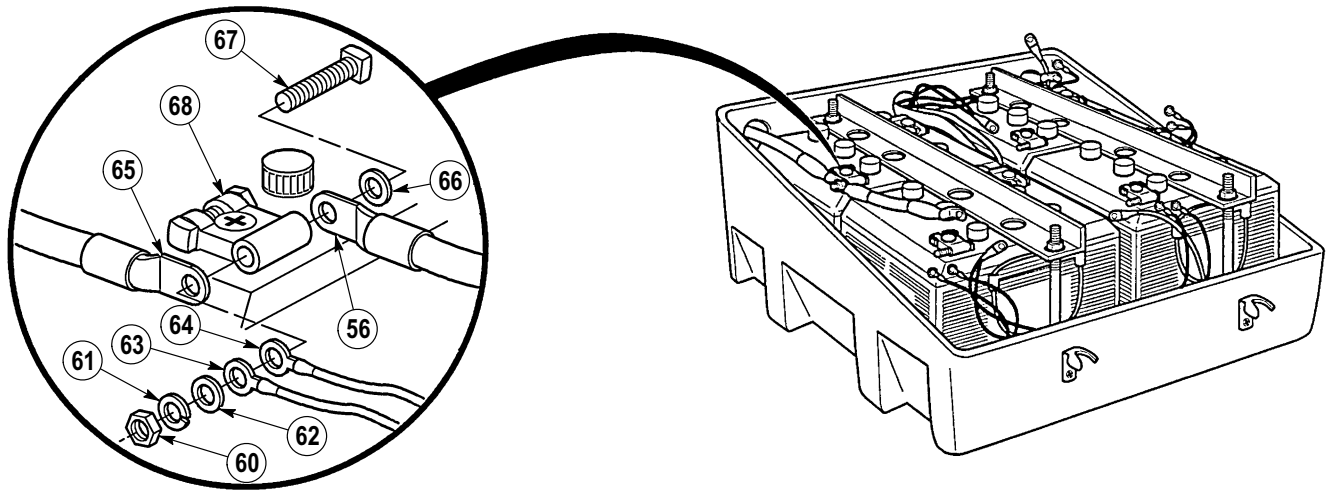


- (7) Remove nut (45), lockwasher (46), washer (47), cable 1137 (41), washer (48) and screw (49) from negative terminal (50). Discard lockwasher.

7-91. BATTERY BOX WIRING REPLACEMENT (200 AMP) (CONT).



- (8) Remove nut (51), lockwasher (52), washer (53), wire 1814 (54), wire 1822 (55), cable 1137 (56), washer (57) and screw (58) from positive terminal (59). Discard lockwasher.

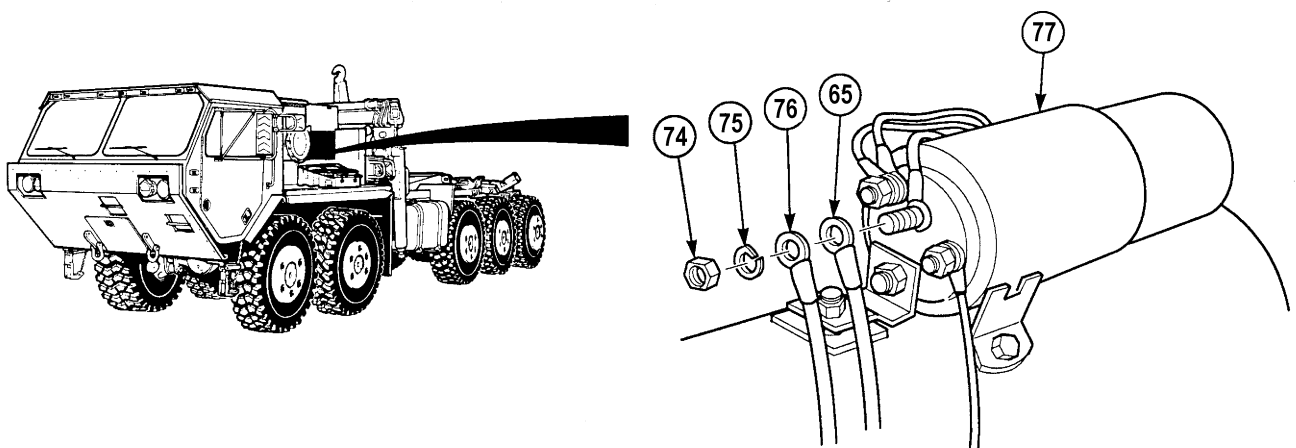
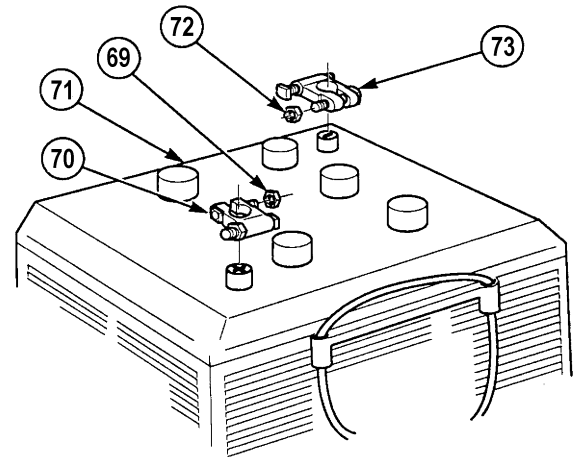


NOTE

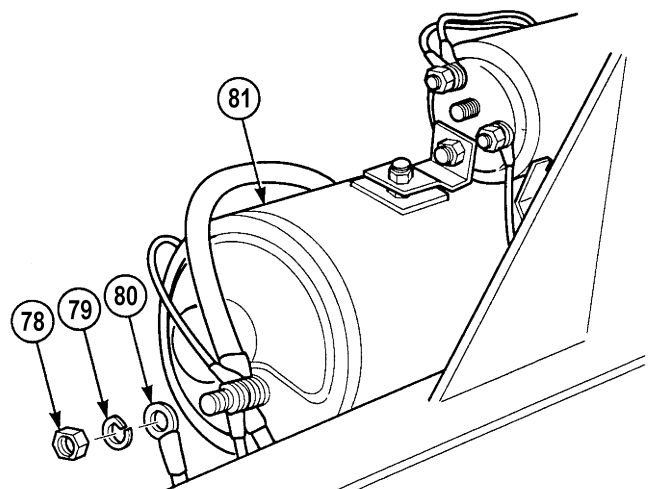
If truck is equipped with battery disconnect switch, there will only be one cable 1281A to remove.

- (9) Remove nut (60), lockwasher (61), washer (62), cable 1281A (63), cable 1281A (64), cable 1139 (65), cable 1137 (56), washer (66) and screw (67) from positive terminal (68). Discard lockwasher.

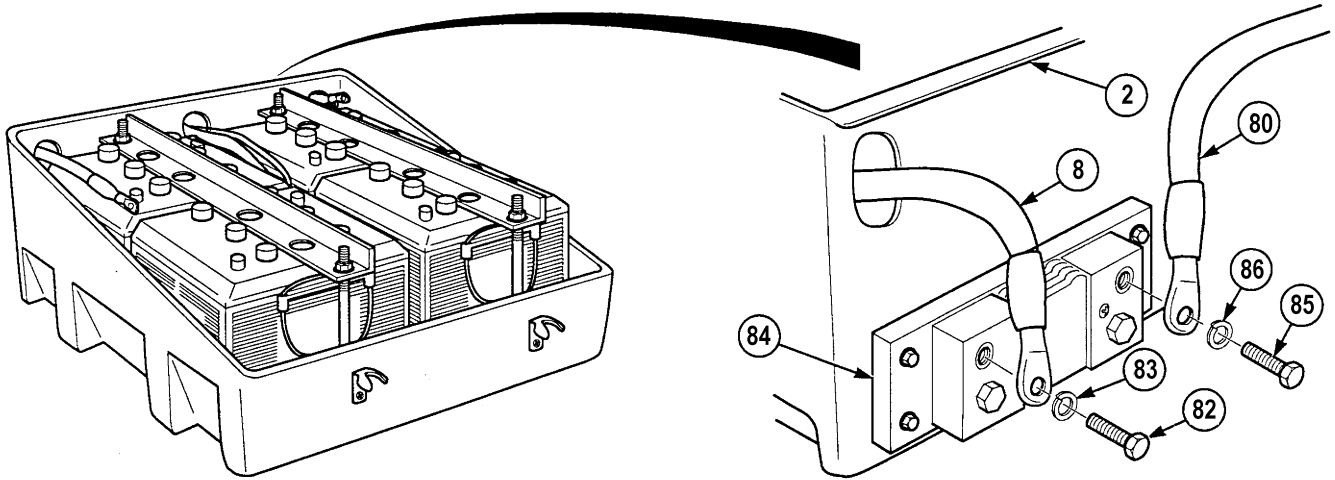
- (10) Loosen nut (69) and remove positive terminal (70) from battery/batteries (71).
- (11) Loosen nut (72) and remove negative terminal (73) from battery/batteries (71).



- (12) Remove nut (74), lockwasher (75), cable 1155 (76) and cable 1139 (65) from starter solenoid (77). Discard lockwasher.
- (13) Remove nut (78), lockwasher (79) and cable 1138 (80) from starter (81). Discard lockwasher.

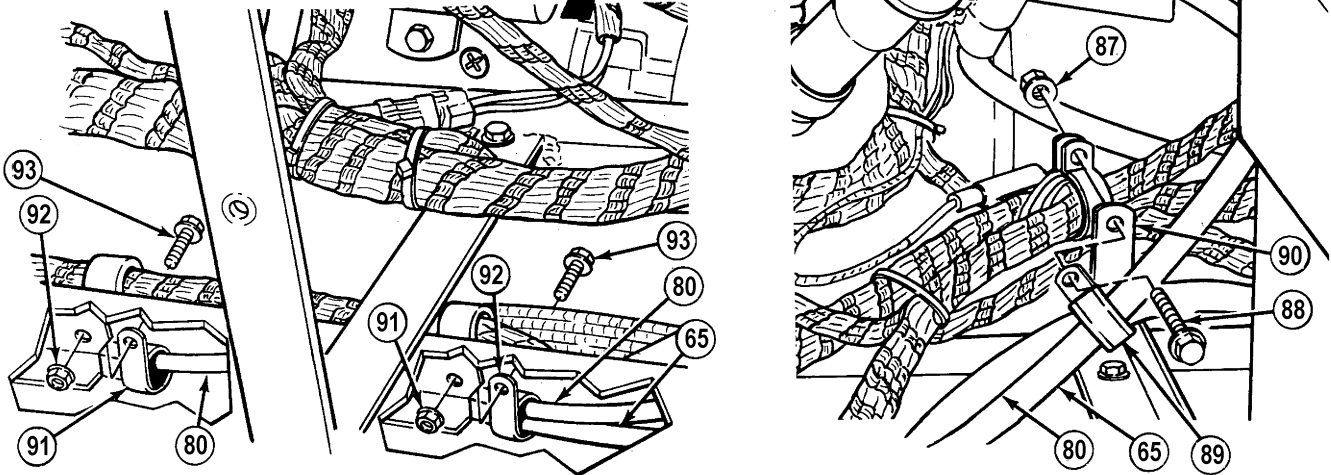
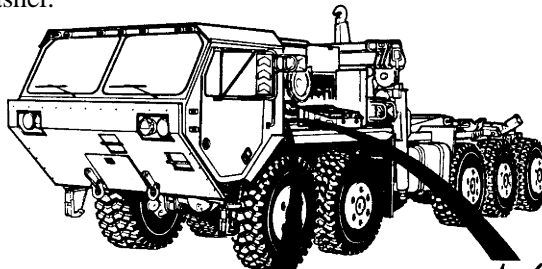


7-91. BATTERY BOX WIRING REPLACEMENT (200 AMP) (CONT).



(14) Remove screw (82), lockwasher (83) and cable 1138 (7) from shunt (84) on rear of battery box (2). Discard lockwasher.

(15) Remove screw (85), lockwasher (86) and cable 1138 (80) from shunt (84) on rear of battery box (2). Discard lockwasher.

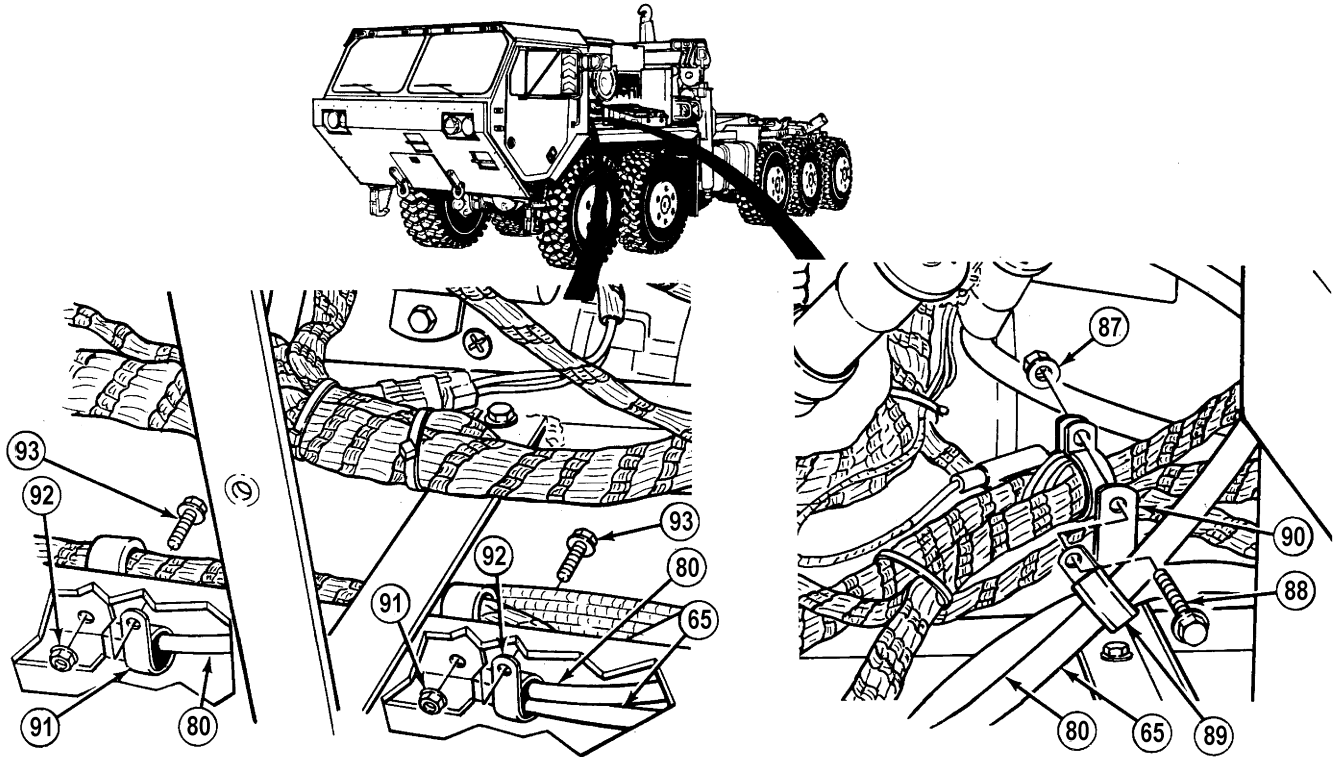


(16) Remove locknut (87), screw (88) and cushion clip (89) from bracket (90). Discard locknut.

(17) Remove cables 1139 (65) and 1138 (80) from cushion clip (89).

(18) Remove two locknuts (91), cushion clips (92) and two screws (93) from cable 1139 (65) and cable 1138 (80). Discard locknuts.

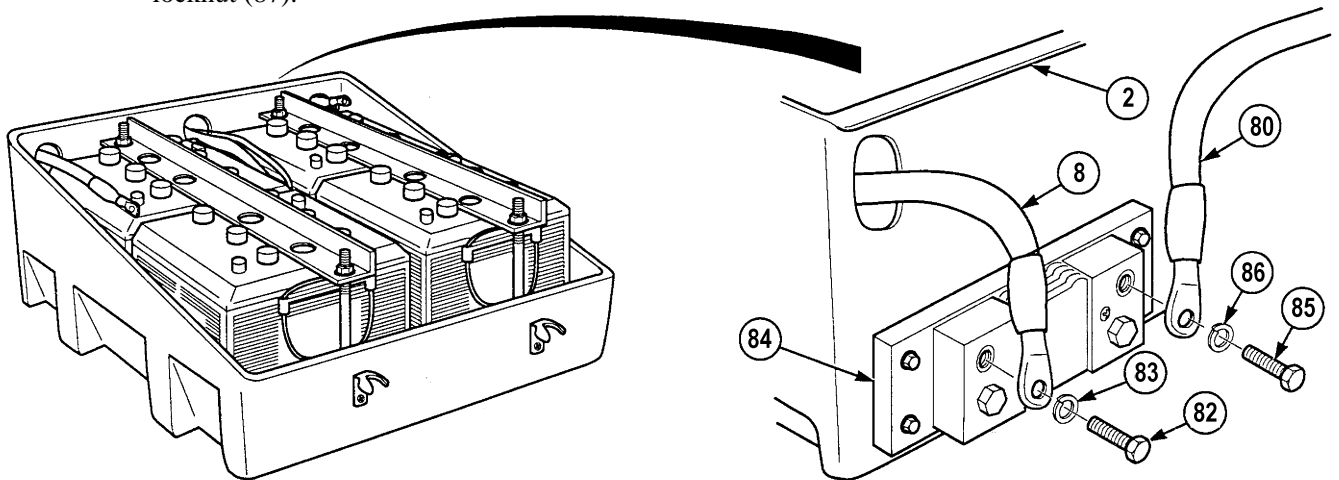
b. Installation.



NOTE

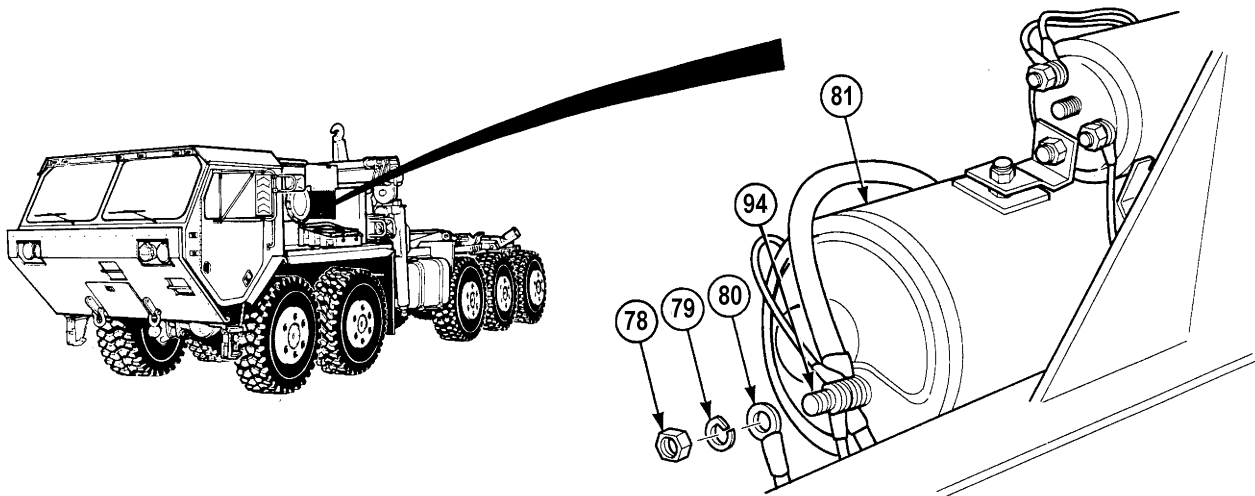
Ensure that cables will reach to connecting points prior to tightening cushion clips.

- (1) Install cables 1139 (72) and 1138 (80) with two cushion clips (92), two screws (93) and locknuts (91).
- (2) Install two cables 1139 (65) and 1138 (80) to bracket (90) with cushion clip (89), screw (88) and locknut (87).



- (3) Install cable 1138 (80) to shunt (84) on rear of battery box (2) with screw (85) and lockwasher (86).
- (4) Install cable 1138 (7) to shunt (84) on rear of battery box (2) with screw (82) and lockwasher (83).

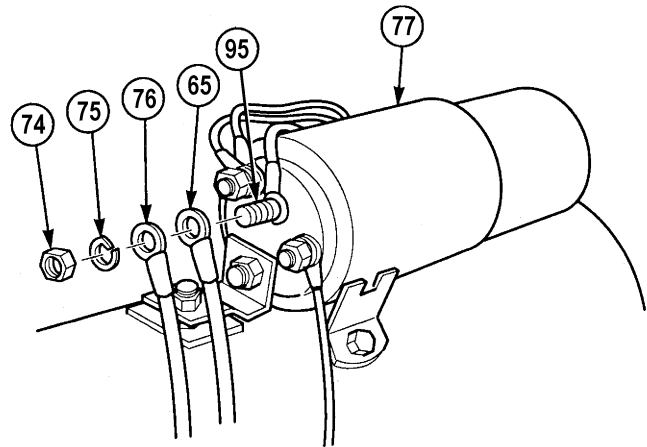
7-91. BATTERY BOX WIRING REPLACEMENT (200 AMP) (CONT).



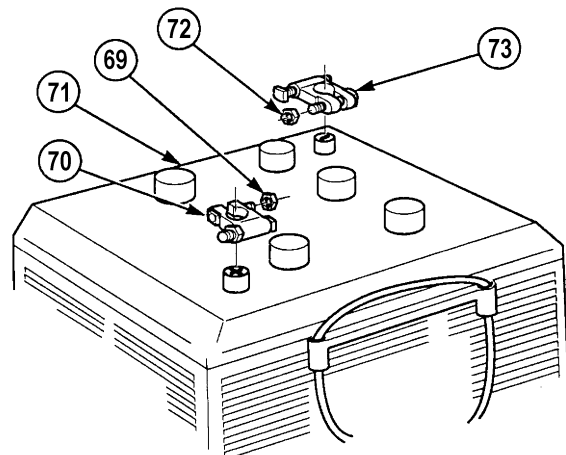
- (5) Install cable 1138 (80) to starter (81) with lockwasher (79) and nut (78).
- (6) Install cable 1139 (65) and cable 1055 (76) to starter solenoid (77) with lockwasher (75) and nut (74).

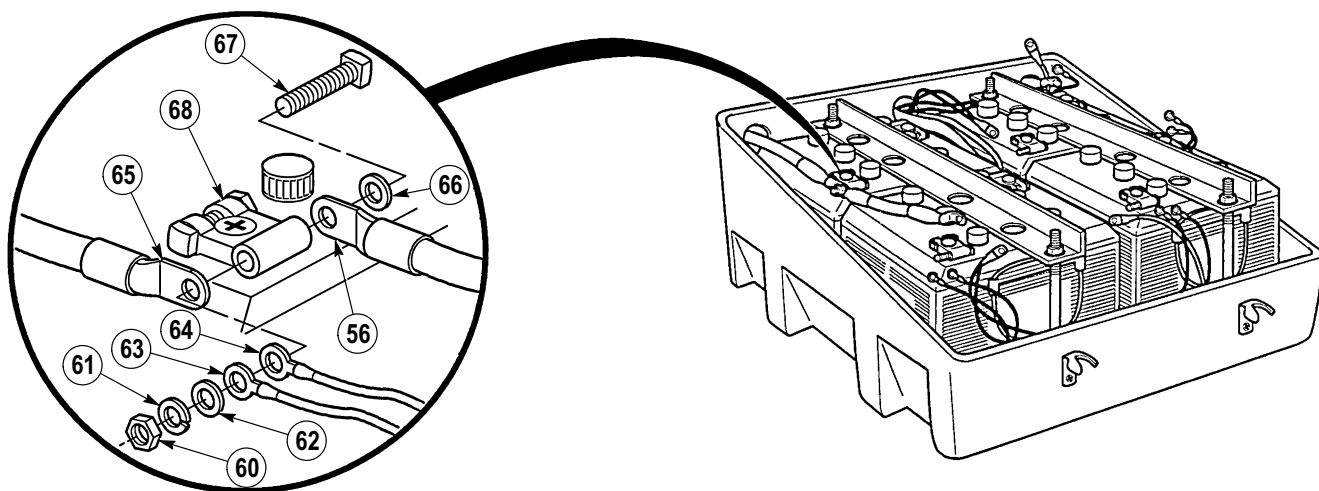
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (7) Apply electrical sealant to terminals (94) and (95) on starter (81) and starter solenoid (77).
- (8) Install negative terminals (73) on small post at right rear of batteries (71) and tighten nut (72) to 84 to 96 lb-in (9 to 11 N·m).
- (9) Install positive terminals (70) on large post at left front of batteries (71) and tighten nut (69) to 84 to 96 lb-in (9 to 11 N·m).





NOTE

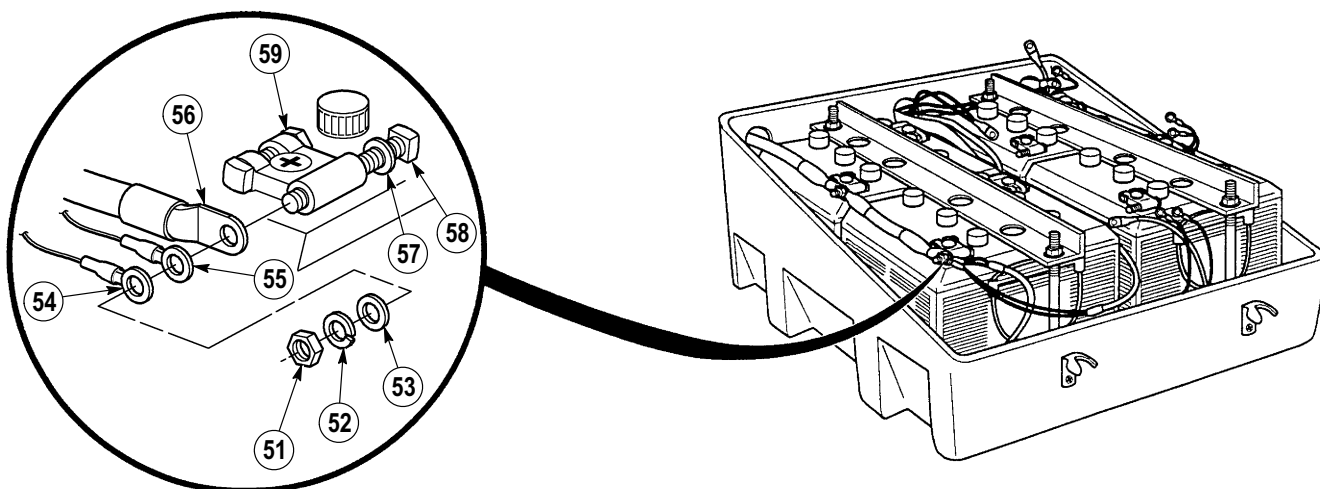
If truck is equipped with a battery disconnect switch, there will only be one cable 1281A to install.

- (10) Position screw (67), washer (66), cable 1137 (56), cable 1139 (65), cable 1281A (64), cable 1281A (63), washer (62), lockwasher (61) and nut (60) on positive terminal (68).

CAUTION

While applying torque to nut, hold screw with wrench or damage to battery may occur.

- (11) Tighten nut (60) to 12 to 16 lb-ft (16 to 22 N·m).



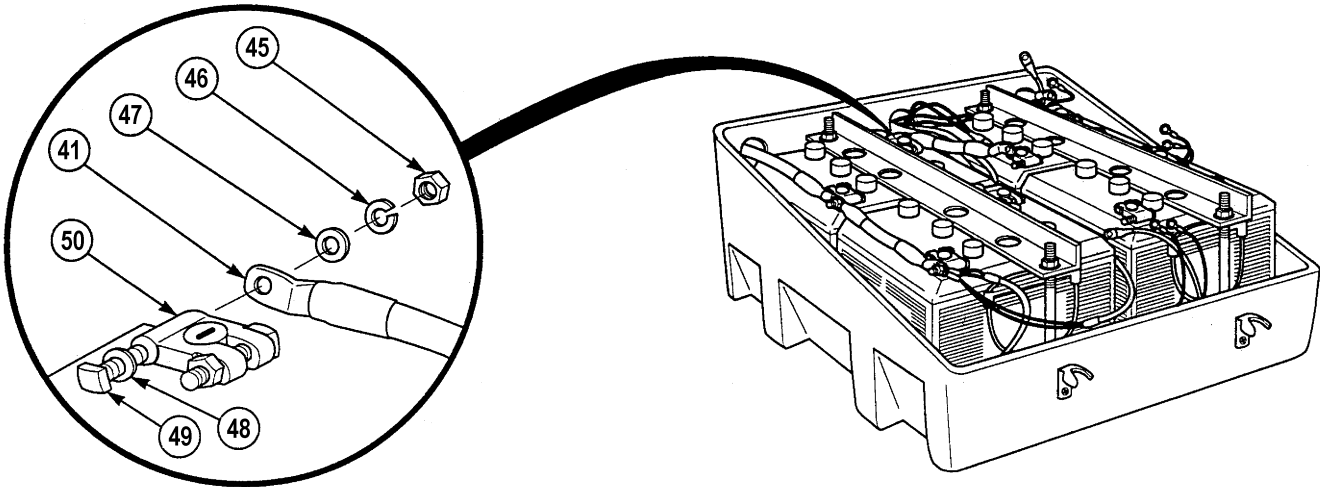
- (12) Position screw (58), washer (57), cable 1137 (56), wire 1822 (55), wire 1814 (54), washer (53), lockwasher (52) and nut (51) on positive terminal (59).

CAUTION

While applying torque to nut, hold screw with wrench or damage to battery may occur.

- (13) Tighten nut (51) to 12 to 16 lb-ft (16 to 22 N·m).

7-91. BATTERY BOX WIRING REPLACEMENT (200 AMP) (CONT).

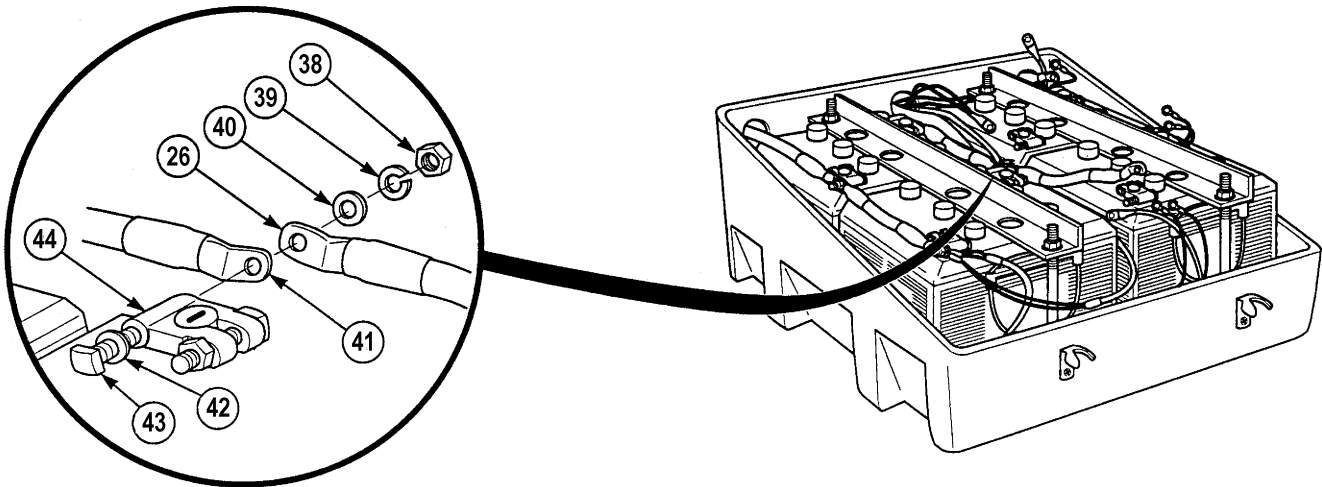


- (14) Position screw (49), washer (48), cable 1137 (41), washer (47), lockwasher (46) and nut (45) on negative terminal (50).

CAUTION

While applying torque to locknut, hold screw with wrench or damage to battery may occur.

- (15) Tighten nut (45) to 12 to 16 lb-ft (16 to 22 N·m).

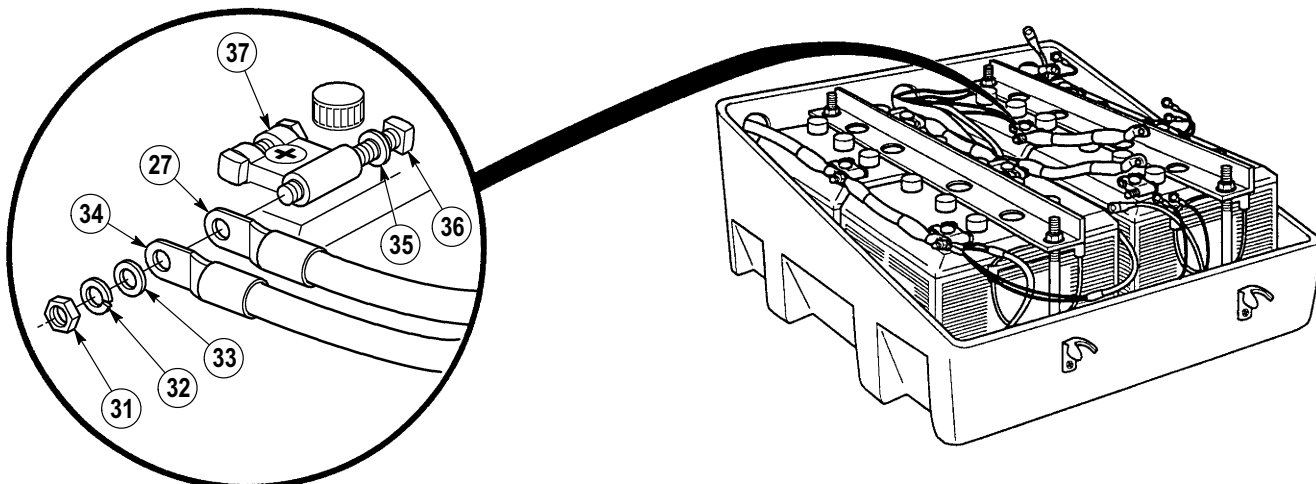


- (16) Position screw (43), washer (42), cable 1137 (41), cable 1138 (26), washer (40), lockwasher (39) and nut (38) on negative terminal (44).

CAUTION

While applying torque to nut, hold screw with wrench or damage to battery may occur.

- (17) Tighten nut (38) to 12 to 16 lb-ft (16 to 22 N·m).



NOTE

Cable 1274 is found on trucks not equipped with battery disconnect switch. Cable 1566 is found on trucks equipped with battery disconnect switch.

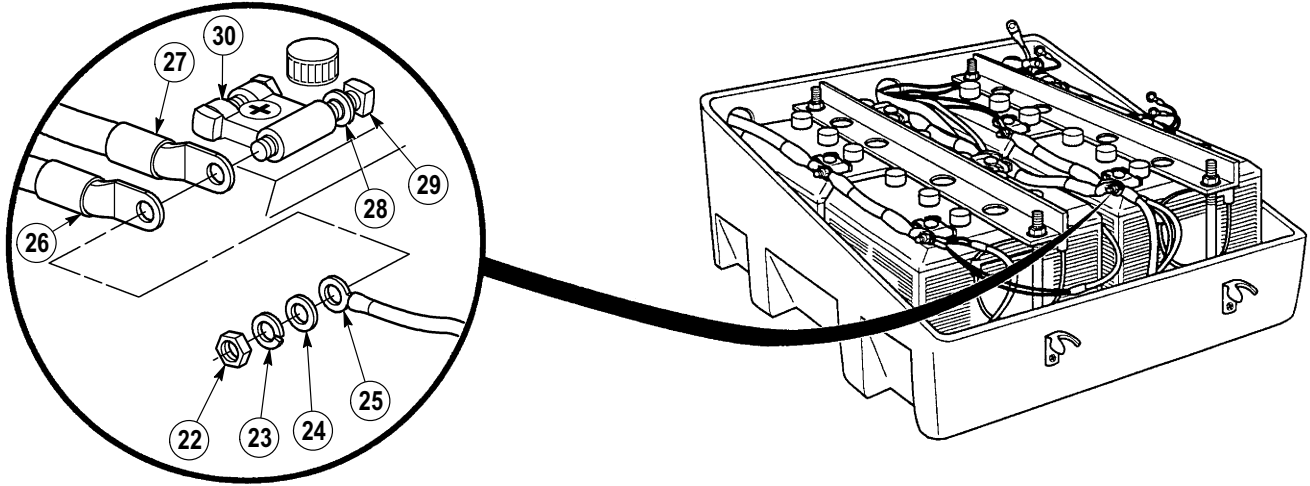
- (18) Position screw (36), washer (35), cable 1137 (27), cable 1274 or 1566 (34), washer (33), lockwasher (32) and nut (31) on positive terminal (37).

CAUTION

While applying torque to nut, hold screw with wrench or damage to battery may occur.

- (19) Tighten nut (31) to 12 to 16 lb-ft (16 to 22 N·m).

7-91. BATTERY BOX WIRING REPLACEMENT (200 AMP) (CONT).



NOTE

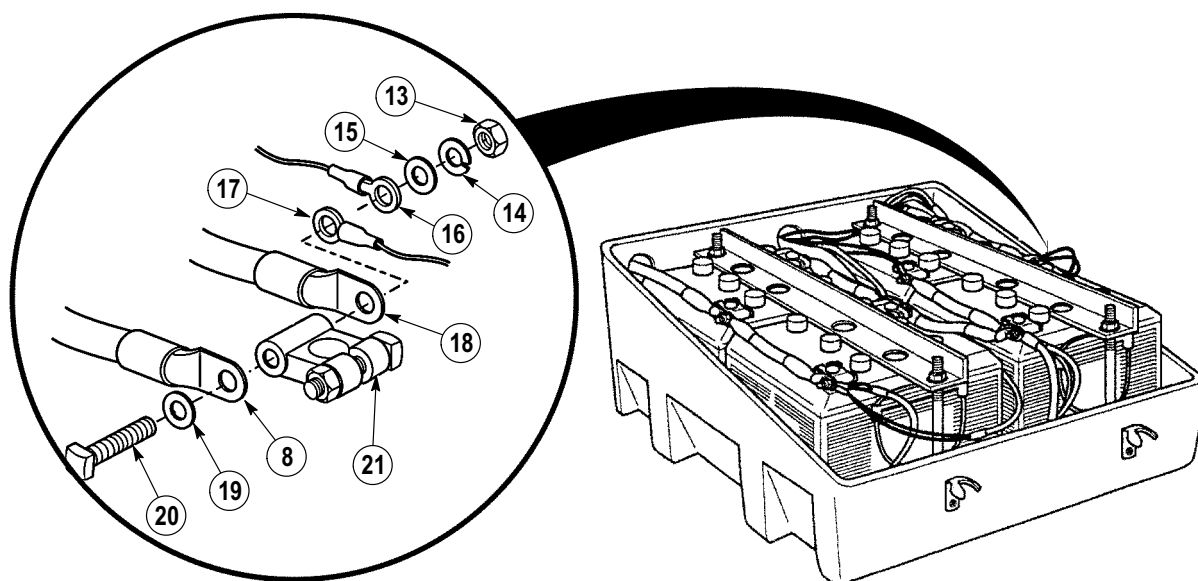
On trucks equipped with battery disconnect switch, cable 1566 has already been installed in Step (18).

- (20) Position screw (29), washer (28), cable 1137 (27), cable 1138 (26), cable 1566 (25), washer (24), lockwasher (23) and nut (22) on positive terminal (30).

CAUTION

While applying torque to nut, hold screw with wrench or damage to battery may occur.

- (21) Tighten nut (22) to 12 to 16 lb-ft (16 to 22 N·m).



NOTE

If truck is not equipped with a battery disconnect switch, install wire 1275 in Step (24).

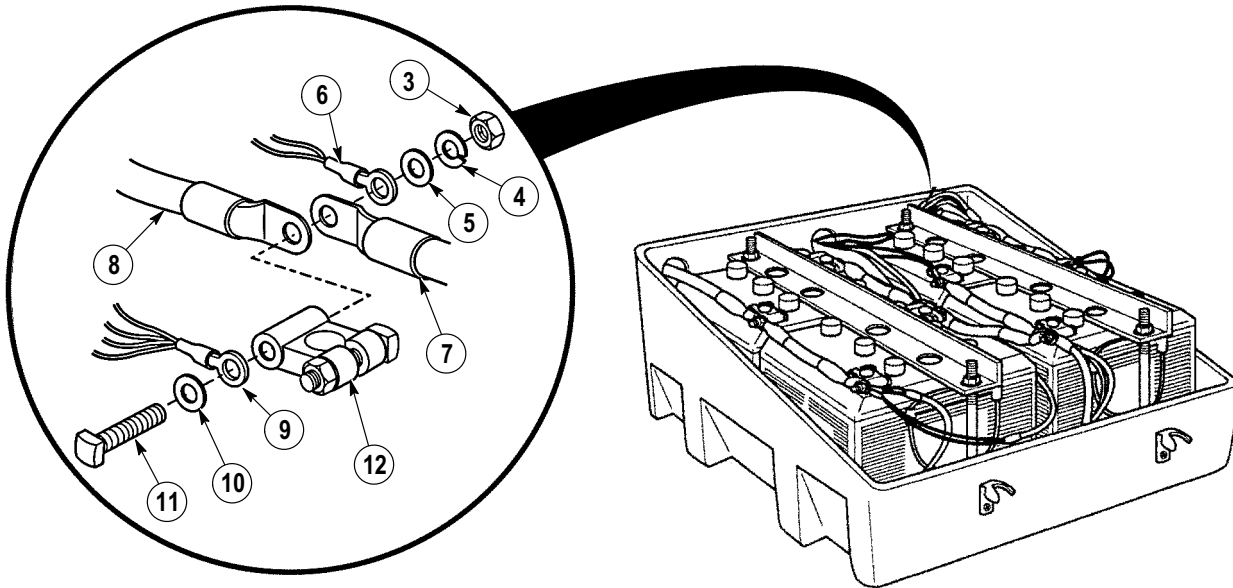
- (22) Position screw (20), washer (19), cable 1137 (8), cable 1275 (18), wire 1821 (17), wire 1813 (16), washer (15), lockwasher (14) and nut (13) on negative terminal (21).

CAUTION

While applying torque to nut, hold screw with wrench or damage to battery may occur.

- (23) Tighten nut (13) to 12 to 16 lb-ft (16 to 22 N·m).

7-91. BATTERY BOX WIRING REPLACEMENT (200 AMP) (CONT).

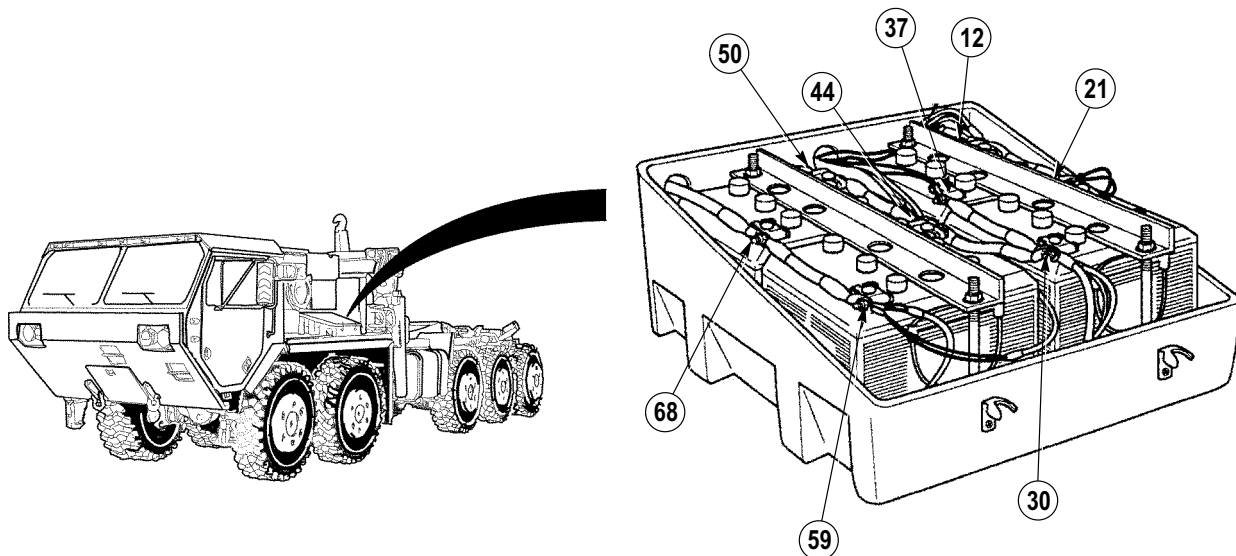


- (24) Position screw (11), washer (10), wires 150/150/151/953 (9), cable 1137 (8), cable 1138 (7), wires 208/209 (6), washer (5), lockwasher (4) and nut (3) on negative terminal (12).

CAUTION

While applying torque to nut, hold screw with wrench or damage to battery may occur.

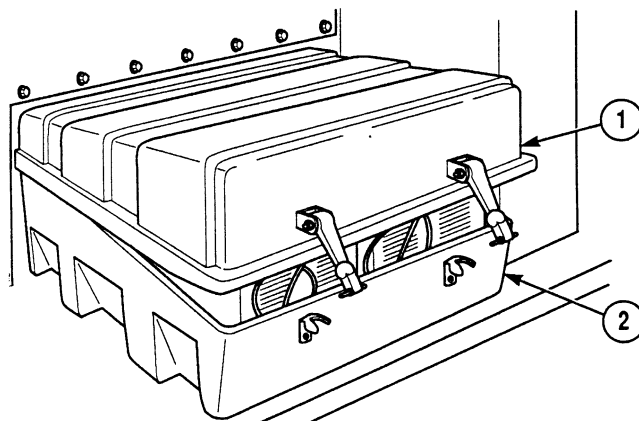
- (25) Tighten nut (3) to 12 to 16 lb-ft (16 to 22 N·m).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (26) Apply corrosion preventive compound to positive terminals (30), (37), (59) and (68) and negative terminals (12), (21), (44) and (50).
- (27) Install battery box cover (1) on battery box (2).

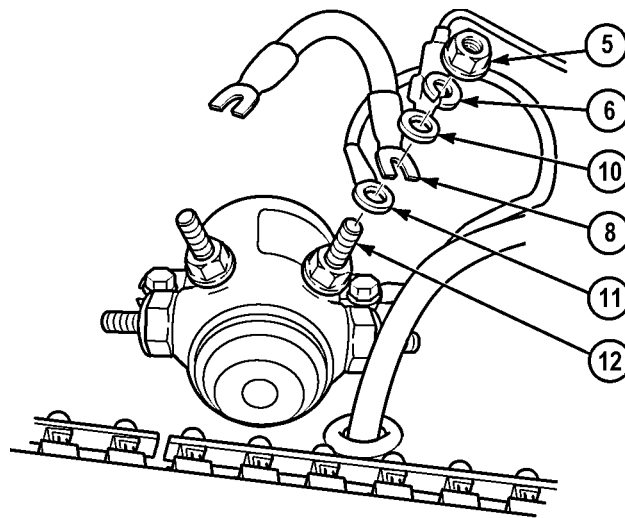


c. Follow-On Maintenance:

- Install left side noise panel, (Para 17-28).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

- (3) Remove nut (5), lockwasher (6), diode (8), capacitor (10) and wire 1435 (11) from magnetic switch terminal (12). Discard lockwasher.



- (4) Remove nut (1), lockwasher (2), wire 1430 (13) and capacitor (10) from magnetic switch terminal (14). Discard lockwasher.

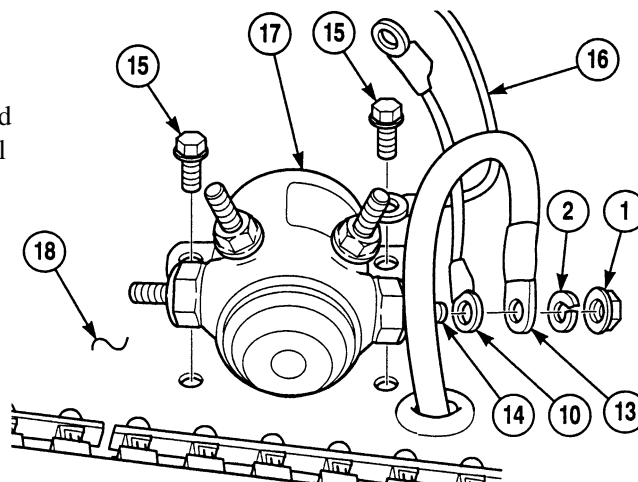
- (5) Remove two screws (15), wire 1435 (16) and magnetic switch (17) from electronic control box (18). Discard screws.

b. Installation.

- (1) Install magnetic switch (17), wire 1435 (16) with two screws (15) on electronic control box (18).

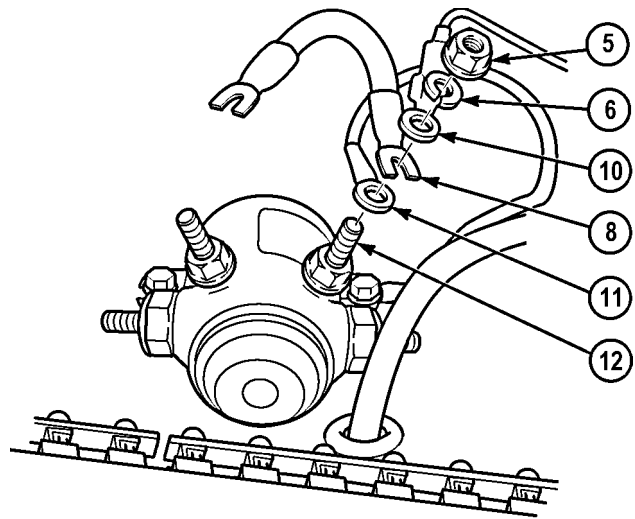
- (2) Position capacitor (10), wire 1430 (13), lockwasher (2) and nut (1) on magnetic switch terminal (14).

- (3) Tighten nut (1) to 30 to 35 lb-in (3 to 4 N·m).

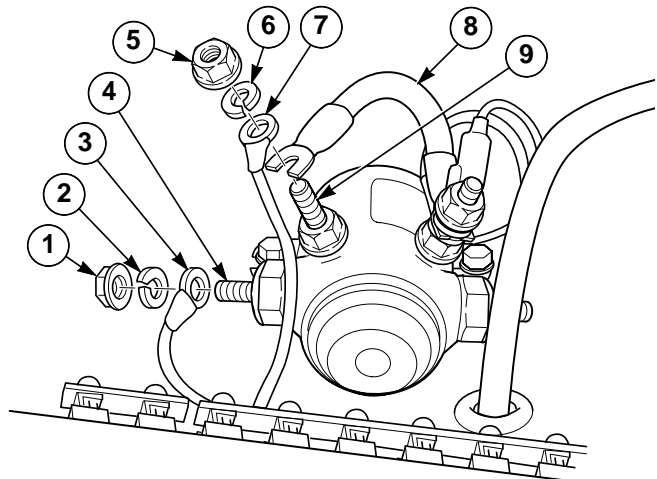


7-92. 12V MAGNETIC SWITCH REPLACEMENT (CONT).

- (4) Position wire 1435 (11), capacitor (10), diode (8), lockwasher (6) and nut (5) on magnetic switch terminal (12).
- (5) Tighten nut (5) to 10 to 15 lb-in (1 to 2 N·m).



- (6) Position diode (8), wire 1189 (7), lockwasher (6) and nut (5) on magnetic switch terminal (9).
- (7) Tighten nut (5) to 10 to 15 lb-in (1 to 2 N·m).
- (8) Position wire 1175 (3), lockwasher (2) and nut (1) on magnetic switch terminal (4).
- (9) Tighten nut (1) to 30 to 35 lb-in (3 to 4 N·m).



c. Follow-On Maintenance:

- Install Electronic Control Box (ECB) cover, (Para 17-22).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-93. 24V SIDE PANEL MAGNETIC SWITCH REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

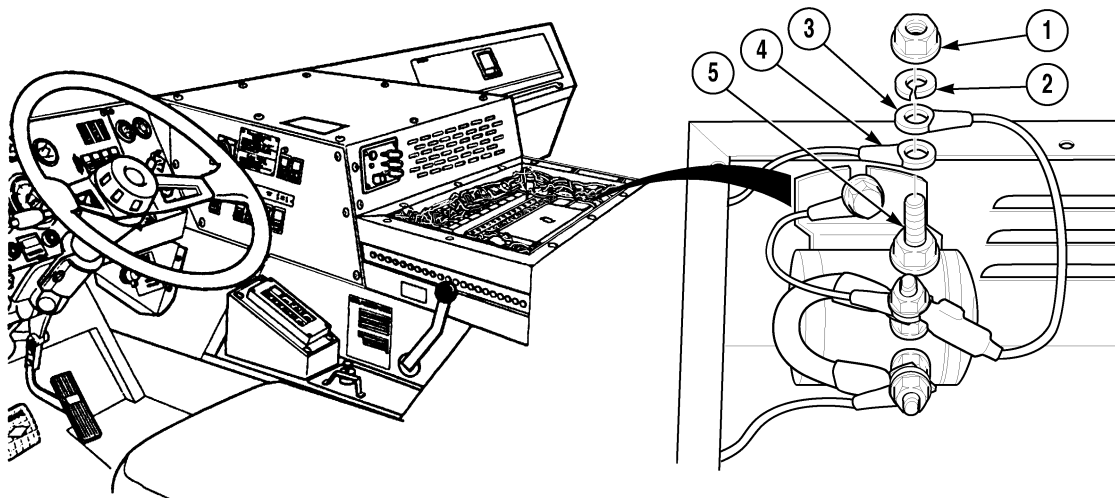
Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)
Wrench, Torque, 3/8 in. Drive (0 to 60 N·m)
(Item 98, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)
Electronic Control Box (ECB) cover removed,
(Para 17-22)

Materials/Parts

Tags, Identification (Item 88, Appendix C)
Lockwasher (2) (Item 194, Appendix F)
Lockwasher (2) (Item 196, Appendix F)
Screw, Self-Locking (2) (Item 309, Appendix F)

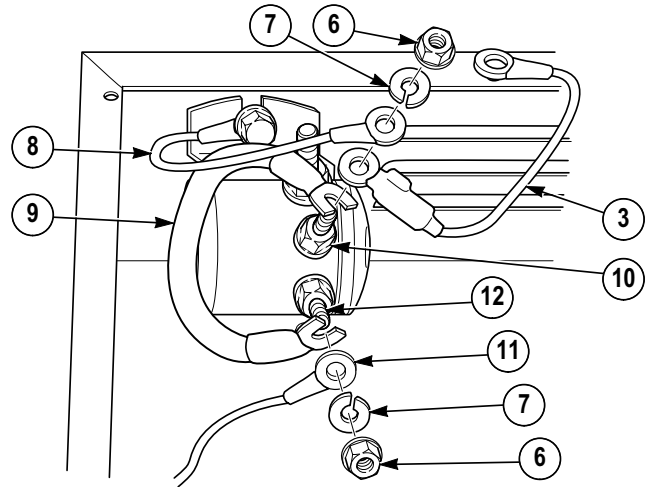
a. Removal.**NOTE**

Tag and mark wires prior to removal.

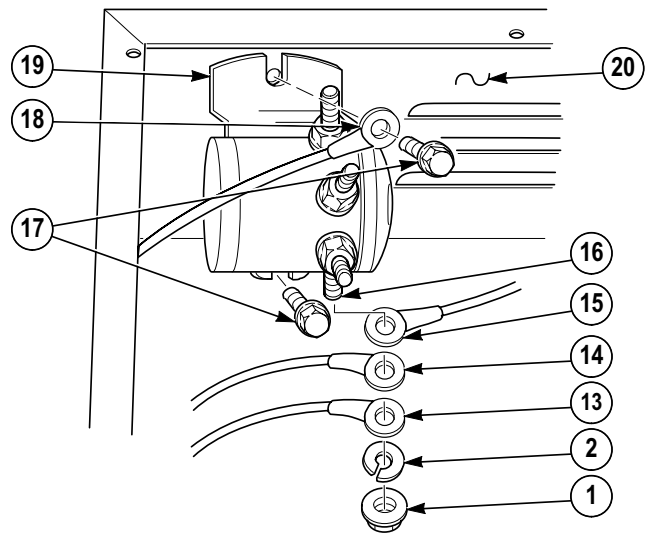
- (1) Remove nut (1), lockwasher (2), capacitor (3) and wire 1074 (4), from magnetic switch terminal (5). Discard lockwasher.

7-93. 24V SIDE PANEL MAGNETIC SWITCH REPLACEMENT (CONT).

- (2) Remove nut (6), lockwasher (7), capacitor (3), wire 1435 (8) and diode (9) from magnetic switch terminal (10). Discard lockwasher.
- (3) Remove nut (6), lockwasher (7), wire 1072 (11) and diode (9) from magnetic switch terminal (12). Discard lockwasher.



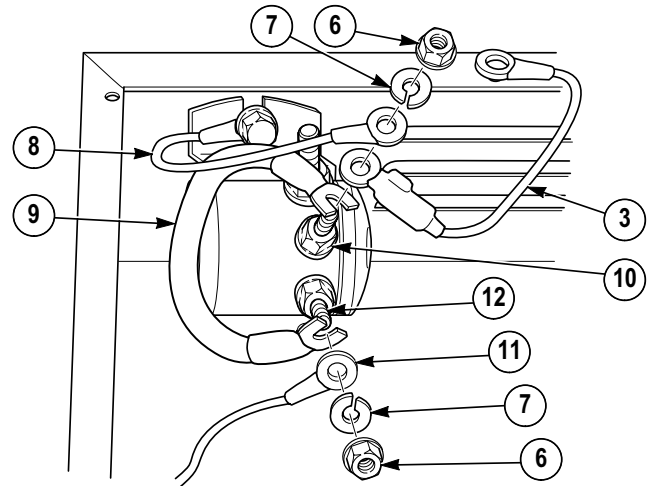
- (4) Remove nut (1), lockwasher (2), wire 1958 (13), wire 1075 (14) and wire 1075B (15) from magnetic switch terminal (16). Discard lockwasher.
- (5) Remove screw (17) and wire 1435 (18) from magnetic switch (19) and side panel of electrical box (20). Discard screw.
- (6) Remove screw (17) and magnetic switch (19) from side panel of electrical box (20). Discard screw.



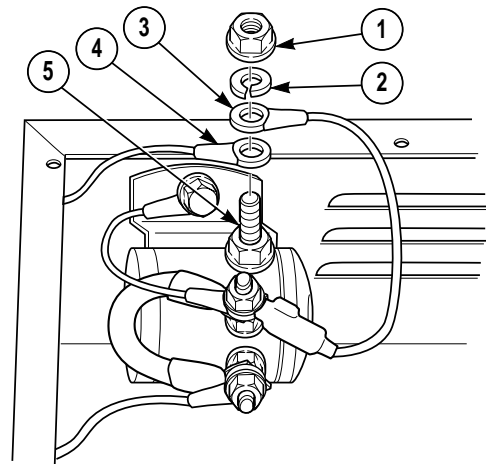
b. Installation.

- (1) Install magnetic switch (19) and wire 1435 (18) with two screws (17) on magnetic switch (19) and side panel of electrical box (20).
- (2) Position wire 1075B (15), wire 1075 (14), wire 1958 (13), lockwasher (2) and nut (1) on magnetic switch terminal (16).
- (3) Tighten nut (1) to 30 to 35 lb-in (3 to 4 N·m).

- (4) Position wire 1072 (11), diode (9), lockwasher (7) and nut (6) on magnetic switch terminal (12).
- (5) Position wire 1435 (8), capacitor (3), diode (9), lockwasher (7) and nut (6) on magnetic switch terminal (10).
- (6) Tighten two nuts (6) to 10 to 15 lb-in (1 to 2 N·m).



- (7) Position wire 1074 (4), capacitor (3), lockwasher (2) and nut (1) on magnetic switch terminal (5).
- (8) Tighten nut (1) to 30 to 35 lb-in (3 to 4 N·m).

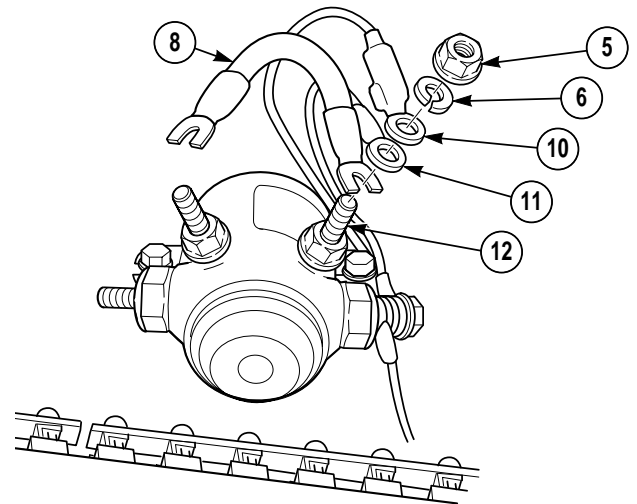


c. Follow-On Maintenance:

- Install Electronic Control Box (ECB) cover, (Para 17-22).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

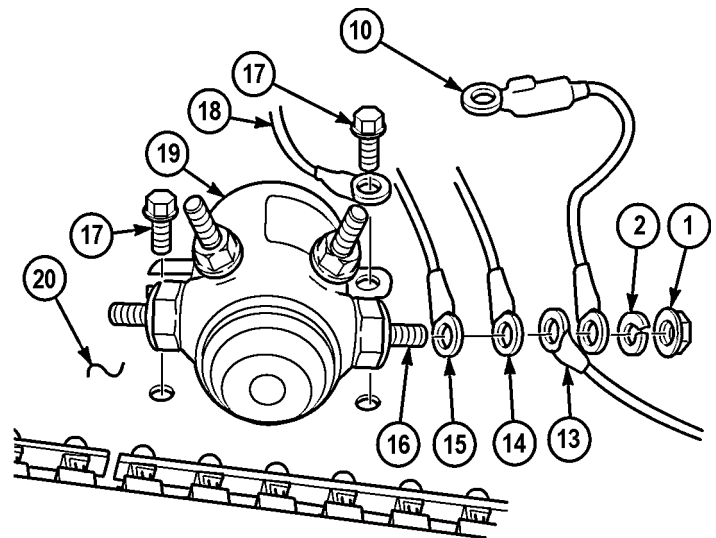
- (3) Remove nut (5), lockwasher (6), diode (8), capacitor (10) and wire 1435 (11) from magnetic switch (12). Discard lockwasher.



NOTE

Wire 1959 may or may not be present in Step (4).

- (4) Remove nut (1), lockwasher (2), capacitor (10), wire 1702 (13), wire 1280 (14) and wire 1959 (15), from magnetic switch terminal (16). Discard lockwasher.
- (5) Remove screw (17) and wire 1435 (18) from magnetic switch (19) and electronic control box (20). Discard screw.
- (6) Remove screw (17) and magnetic switch (19) from electronic control box (20). Discard screw.



b. Installation.

- (1) Install magnetic switch (19) and wire 1435 (18) with two screws (17) in magnetic switch (19) and electronic control box (20).

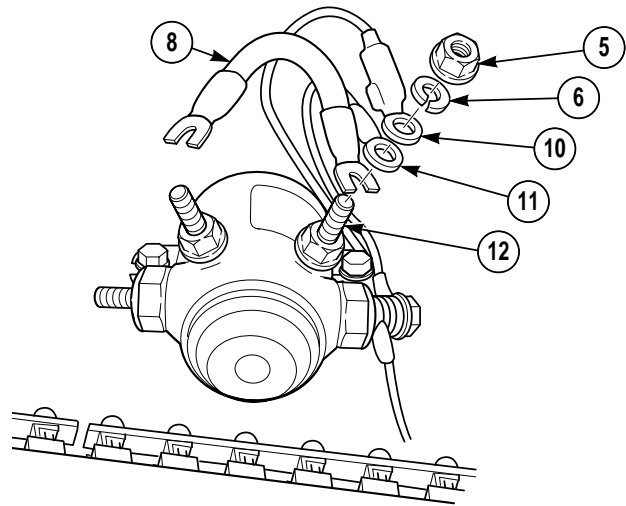
NOTE

Wire 1959 may or may not be present in Step (2).

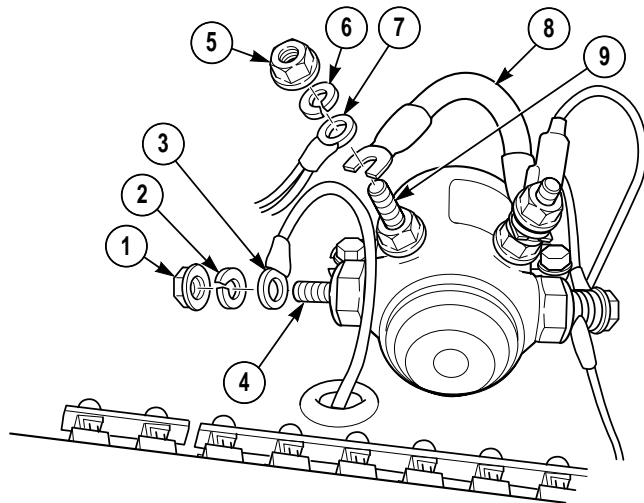
- (2) Position wire 1959 (15), wire 1072 (13), wire 1280 (14), capacitor (10), lockwasher (2) and nut (1) in magnetic switch terminal (16).
- (3) Tighten nut (1) to 30 to 35 lb-in (3 to 4 N·m).

7-94. 24V MAGNETIC SWITCH REPLACEMENT (CONT).

- (4) Position capacitor (10), wire 1435 (11), diode (8), lockwasher (6) and nut (5) on magnetic switch terminal (12).
- (5) Tighten nut (5) to 10 to 15 lb-in (1 to 2 N·m).



- (6) Position wire 1640 (7), diode (8), lockwasher (6) and nut (5) on magnetic switch terminal (9).
- (7) Tighten nut (5) to 10 to 15 lb-in (1 to 2 N·m).
- (8) Position wire 1280 (3), lockwasher (2) and nut (1) on magnetic switch terminal (4).
- (9) Tighten nut (1) to 30 to 35 lb-in (3 to 4 N·m).



c. Follow-On Maintenance:

- Install Electronic Control Box (ECB) cover, (Para 17-22).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-96. ELECTRIC RESISTOR REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

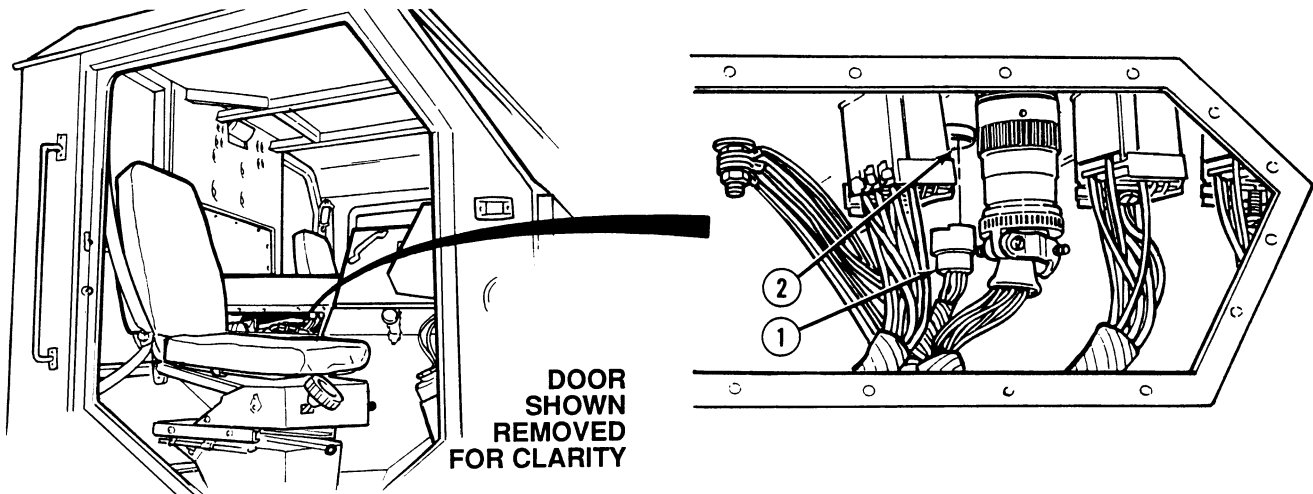
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

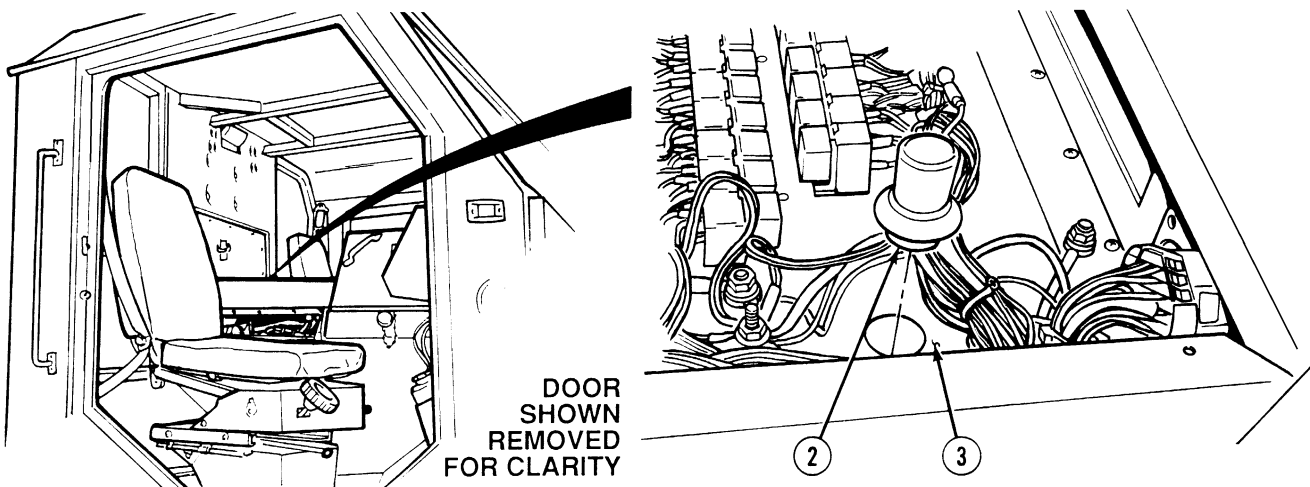
Equipment Condition - Continued

Batteries disconnected, (Para 7-87)
Electronic Control Box (ECB) side panel removed, (Para 17-20)
Electronic Control Box (ECB) cover removed, (Para 17-22)

a. Removal.



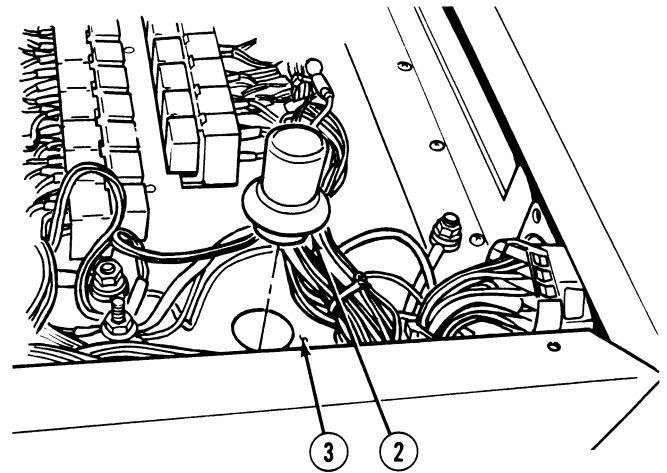
- (1) Disconnect MC40 connector (1) from resistor assembly (2).



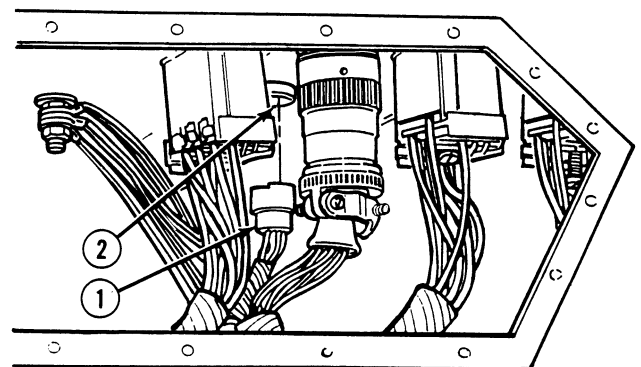
- (2) Remove resistor assembly (2) from ECB (3).

b. Installation.

- (1) Install resistor assembly (2) on ECB (3) until fully seated.



- (2) Connect MC40 connector (1) to resistor assembly (2).

**c. Follow-On Maintenance:**

- Install Electronic Control Box (ECB) side panel, (Para 17-20).
- Install Electronic Control Box (ECB) cover, (Para 17-22).
- Connect batteries, (Para 7-87).
- Check operation, (TM 9-2320-364-10).
- Remove wheel chocks, (TM-2320-364-10).

END OF TASK

7-98. THROTTLE POSITION CONTROL REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Materials/Parts

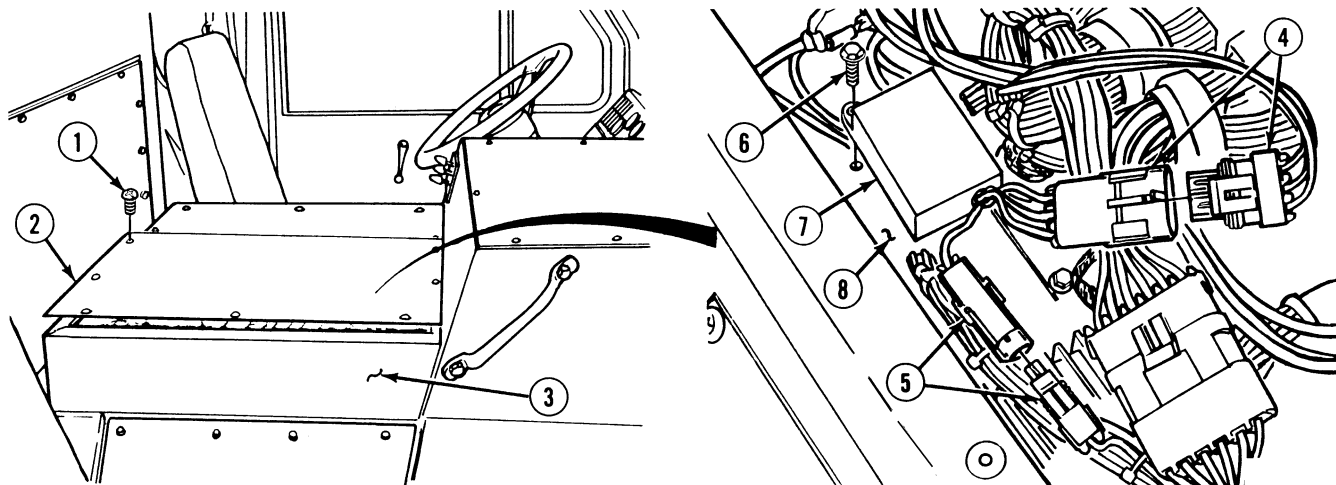
Cable Ties (Item 25, Appendix C)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)

Wheels chocked, (TM 9-2320-364-10)

Batteries disconnected, (Para 7-87)

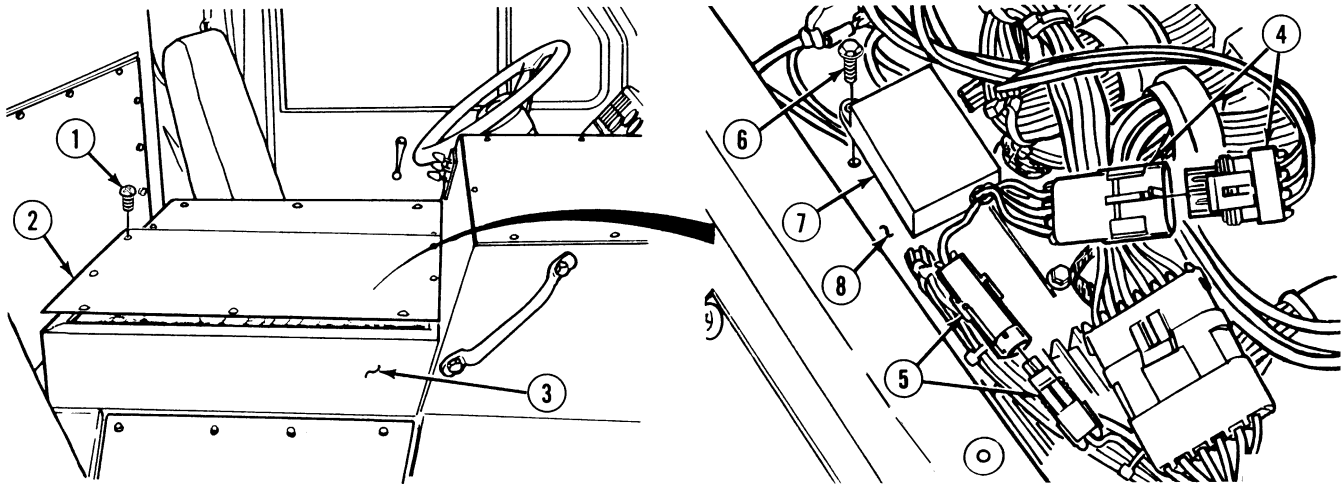
a. Removal.**NOTE**

- Remove cable ties as required.
- Connectors are removed by gently prying on tab and pulling apart connectors.

- (1) Remove eight screws (1) and right cover (2) from electronic control box (3).
- (2) Disconnect MC36 connector (4).
- (3) Disconnect wire 908 (5).
- (4) Remove screw (6) from position control throttle (7).
- (5) Remove position control throttle (7) from electronic control box (8).

7-98. THROTTLE POSITION CONTROL REPLACEMENT (CONT).

b. Installation.



- (1) Install position control throttle (7) in electronic control box (8) with screw (6).
- (2) Connect wire 908 (5).
- (3) Connect MC36 connector (4).
- (4) Install right cover (2) on electronic control box (3) with eight screws (1).

c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-99. SLAVE CONNECTOR AND CABLE REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Socket Set, 3/8 in. (Item 62, Appendix G)
- Wrench, Torque (0 to 175 lb-ft [0-237 N·m]) (Item 95, Appendix G)
- Wrench, Torque, (0-60 N·m) (Item 98, Appendix G)

Materials/Parts

- Adhesive (Item 6, Appendix C)
- Sealant, Electrical (Item 68, Appendix C)
- Tags, Identification (Item 88, Appendix C)

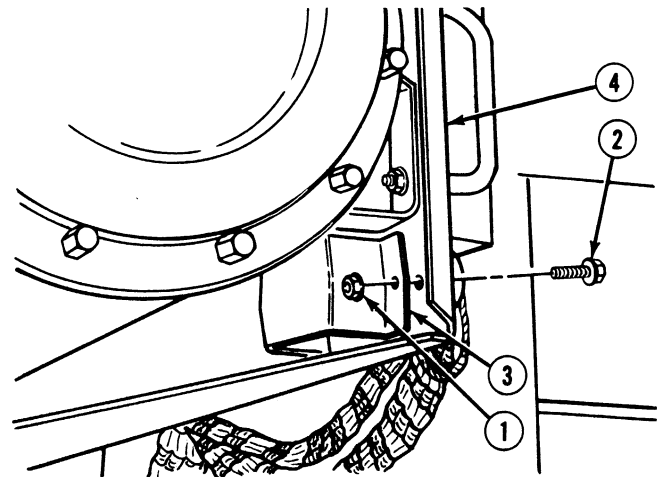
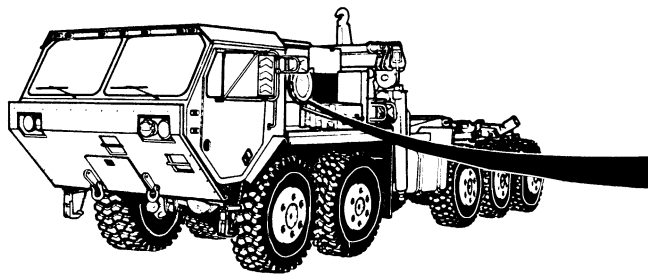
Materials/Parts - Continued

- Locknut (3) (Item 103, Appendix F)
- Locknut (4) (Item 106, Appendix F)
- Lockwasher (2) (Item 168, Appendix F)
- Lockwasher (2) (Item 169, Appendix F)

Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)
- Batteries disconnected, (Para 7-87)
- Left side noise panel removed, (Para 17-28)

a. Removal.



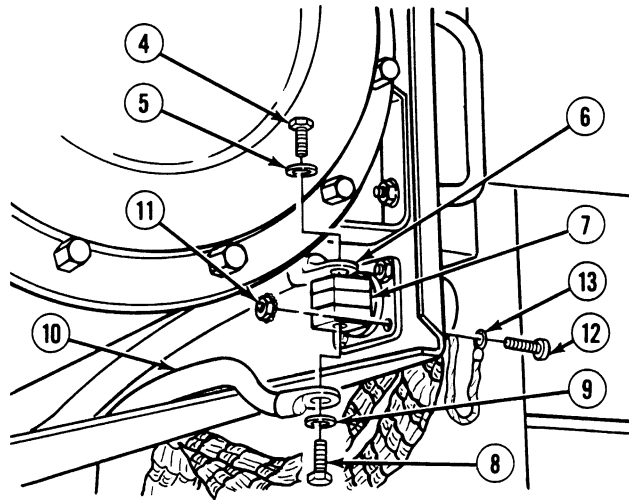
NOTE

Tag and mark wires upon removal.

- (1) Remove two locknuts (1), screws (2) and slave cover (3) from air cleaner bracket (4). Discard locknuts.

7-99. SLAVE CONNECTOR AND CABLE REPLACEMENT (CONT).

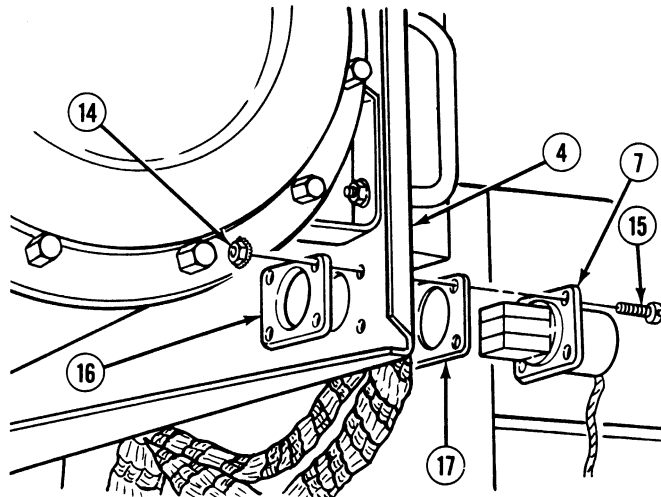
- (2) Remove screw (4), lockwasher (5) and positive cable (Pos) 1138 (6) from receptacle (7). Discard lockwasher.
- (3) Remove screw (8), lockwasher (9) and negative cable (Neg) 1139 (10) from receptacle (7). Discard lockwasher.
- (4) Remove locknut (11), screw (12) and eyelet (13) from receptacle (7). Discard locknut.



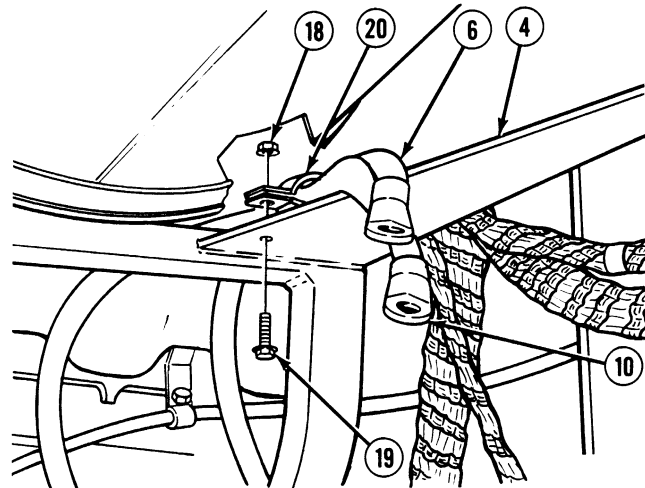
CAUTION

Note position of receptacle prior to removal. Receptacle has positive and negative side. Failure to comply may result in receptacle installed in incorrect position and damage to equipment may occur.

- (5) Remove three locknuts (14), screws (15), insulator (16), gasket (17) and receptacle (7) from air cleaner bracket (4). Discard locknuts and gasket.



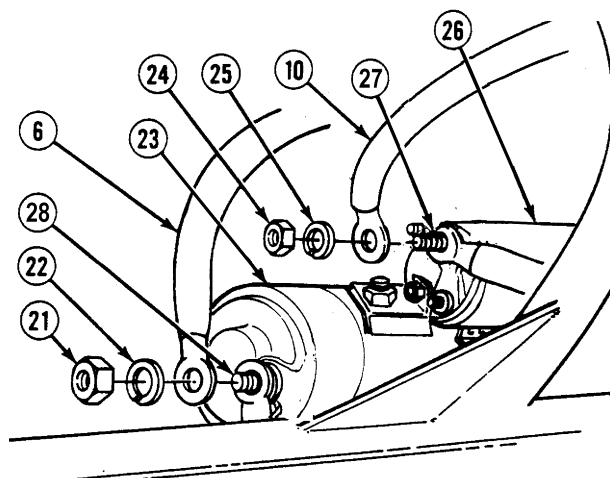
- (6) Remove locknut (18), screw (19) and cushion clip (20) from air cleaner bracket (4). Discard locknut.
- (7) Remove cushion clip (20) from positive cable (Pos) 1138 (6) and negative cable (Neg) (10).



- (8) Remove nut (21), lockwasher (22) and wire 1138 (6) from starter (23). Discard lockwasher.
- (9) Remove nut (24), lockwasher (25) and wire 1139 (10) from starter solenoid (26). Discard lockwasher.

b. Installation.

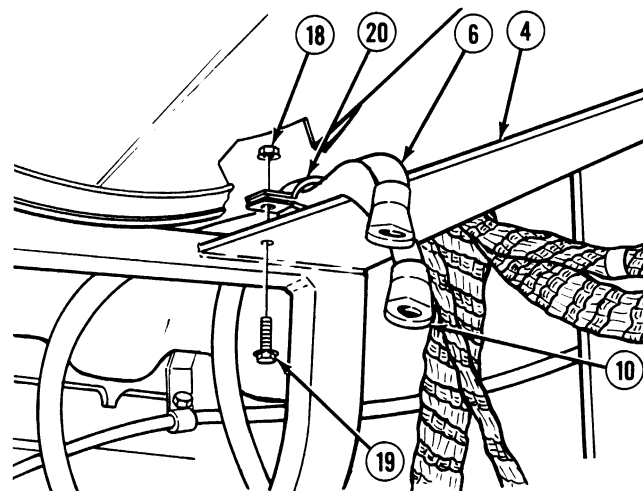
- (1) Install wire 1139 (10), lockwasher (25) and nut (24) on starter solenoid (26). Tighten nut to 30 lb-ft (41 N·m).
- (2) Install wire 1138 (6), lockwasher (22) and nut (21) on starter (23). Tighten nut to 30 lb-ft (41 N·m).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (3) Apply electrical sealant to terminals (27) and (28) on starter solenoid (26) and starter (23).
- (4) Position cushion clip (20) over wires 1139 (10) and 1138 (6) and secure cushion clip to air cleaner bracket (4) with screw (19) and nut (18).



7-99. SLAVE CONNECTOR AND CABLE REPLACEMENT (CONT).

WARNING

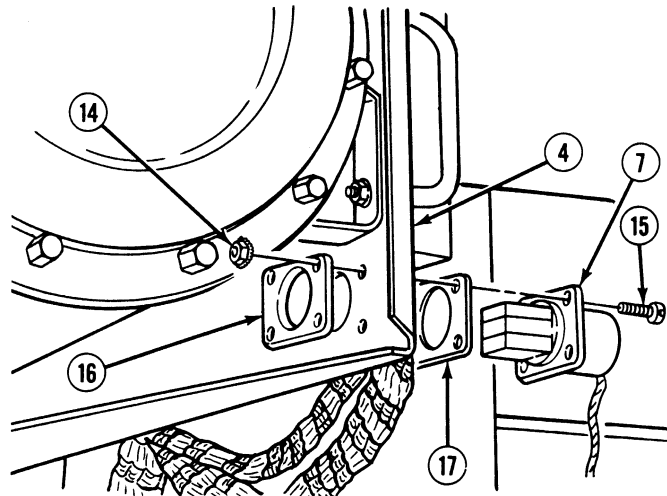
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (5) Apply adhesive to gasket (17).

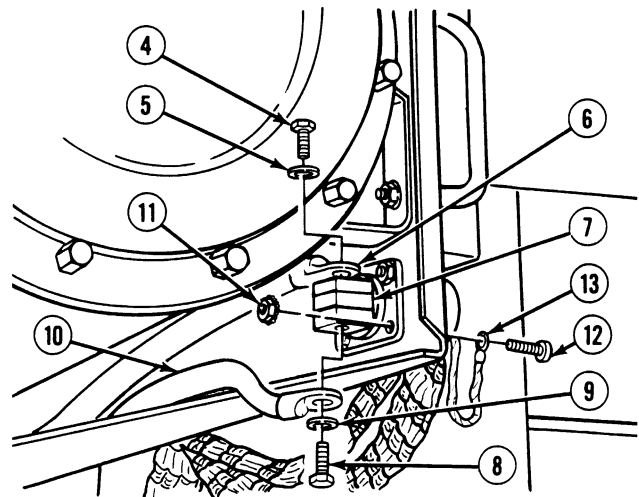
CAUTION

Ensure receptacle is installed with positive and negative sides in same position as noted during removal. Failure to comply may result in damage to equipment.

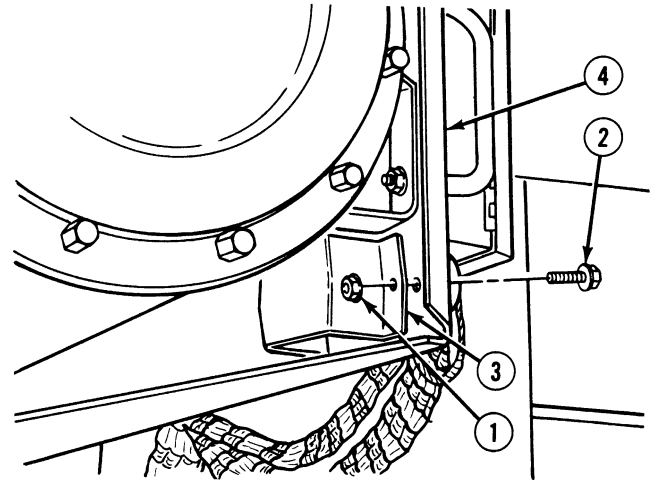
- (6) Install gasket (17), insulator (16) and receptacle (7) on air cleaner bracket (4) with three screws (15) and nuts (14). Tighten screws to 32 lb-in (4 N·m).



- (7) Install eyelet (13) on receptacle (7) with screw (12) and nut (11). Tighten screw to 32 lb-in (4 N·m).
- (8) Install negative wire 1139 (10) on receptacle (7) with lockwasher (9) and screw (8).
- (9) Install positive wire 1138 (6) on receptacle (7) with lockwasher (5) and screw (4).
- (10) Apply electrical sealant to positive (6) and negative (10) connectors.



- (11) Install slave cover (3) on air cleaner bracket (4) with two screws (2) and nuts (1). Tighten nuts to 96 lb-in (11 N·m).



c. Follow-On Maintenance:

- Install left side noise panel, (Para 17-28).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-100. VERNIER CONTROL REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP

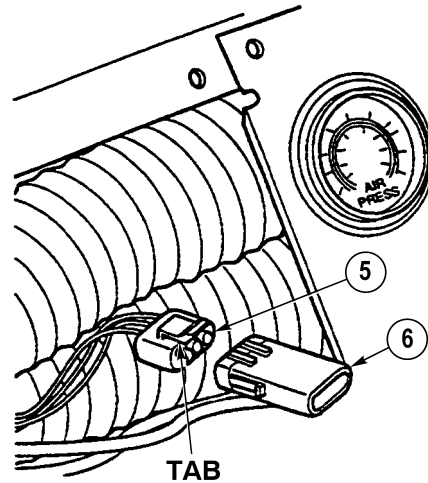
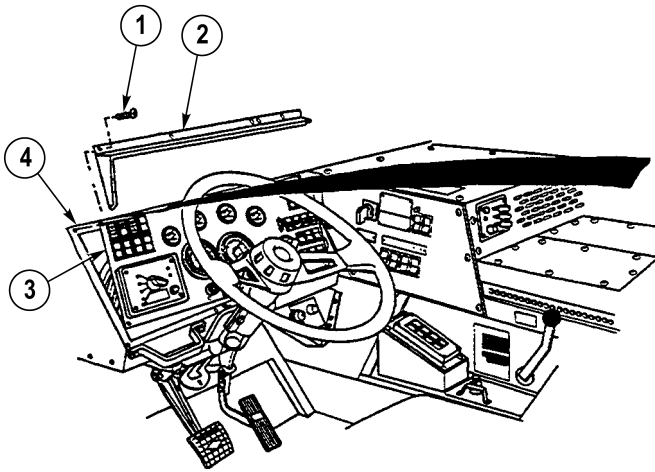
Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.

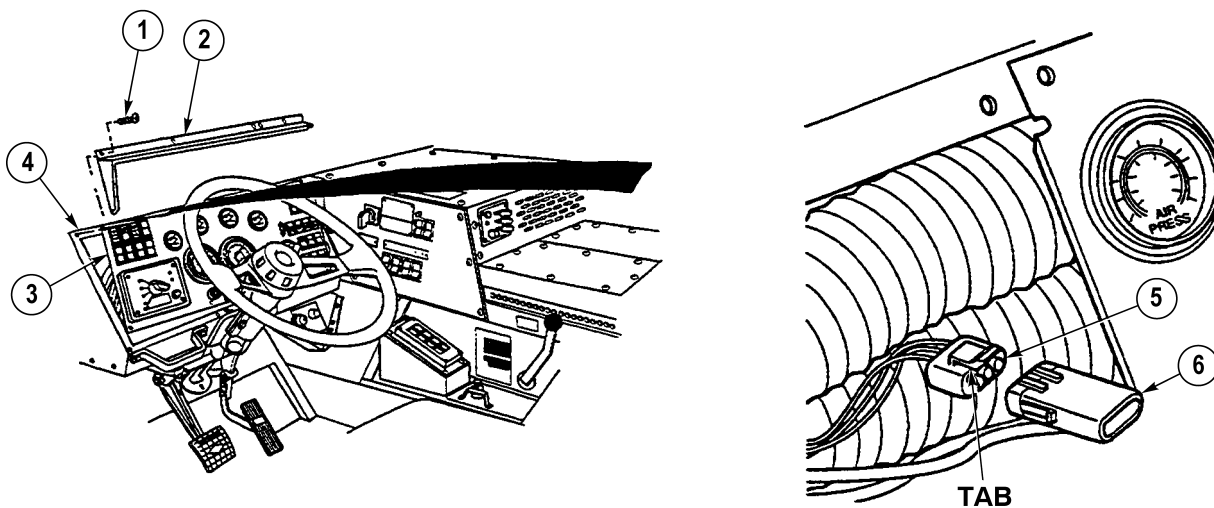


- (1) Remove ten screws (1) and sunshield (2) from instrument panel (3).
- (2) Pull instrument panel (3) away from dash (4).

NOTE

Connector is disconnected by gently pulling up on tab on connector.

- (3) Disconnect MC38 connector (5) from vernier control (6).

b. Installation.**CAUTION**

Vernier controls for DDEC II and DDEC III are not interchangeable. Installation of wrong part will cause either too high or too low, high idle speed which may result in serious engine damage.

- (1) Connect MC38 connector (5) to vernier control (6).
- (2) Position instrument panel (3) and sunshield (2) on dash (4).
- (3) Install ten screws (1) in instrument panel (3) and sunshield (2).

c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-101. GENERAL WIRE HARNESS REPAIR.

This task covers:

- | | | |
|----------------------------|-----------------------------|------------------------------|
| a. Type 1 Connector Repair | d. Type 4 Connector Repair | g. Group III Terminal Repair |
| b. Type 2 Connector Repair | e. Group I Terminal Repair | h. 22 - Pin Connector Repair |
| c. Type 3 Connector Repair | f. Group II Terminal Repair | i. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, Electric (Item 73, Appendix G)
Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Connector Remover (DUETCH) (Item 12, Appendix G)
Crimping Tool (Item 13, Appendix G)
Extractor Tool Electrical (Item 22, Appendix G)
Extractor Tool Electrical (Item 23, Appendix G)
Insertion Tool (Cannon) (Item 38, Appendix G)
Terminal Crimper (Item 67, Appendix G)
Terminal Remover (Item 68, Appendix G)
Terminal Remover (Item 69, Appendix G)
Terminal Remover, Weatherpack (Item 70, Appendix G)
Weatherpack Crimper (Item 76, Appendix G)

Materials/Parts

Heatshrink (Item 48, Appendix C)
Tape (Item 90, Appendix C)

References

TM 43-0158

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

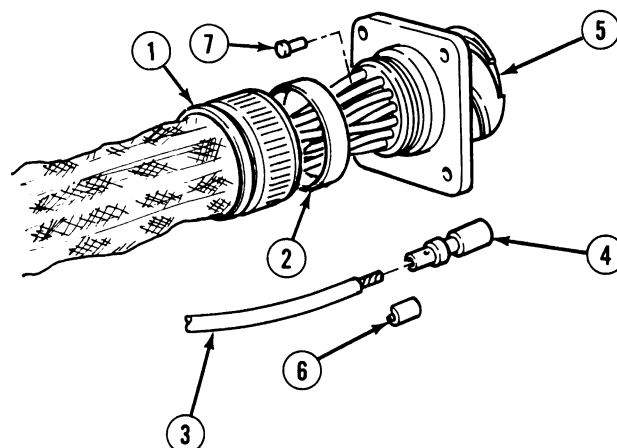
a. *Type 1 Connector Repair.*



Terminals come in different styles and sizes. To prevent damage, be sure to use only the exact replacements. Do not attempt to modify terminal to fit.

NOTE

Repeat procedure as necessary.



(1) *Disassembly.*

- (a) Unscrew cover (1).
- (b) Slide plastic sleeve (2) back.
- (c) Remove wire (3) and terminal (4) from connector (5).

NOTE

Cut as close to damaged terminal as possible.

- (d) Cut off terminal (4) at end of wire (3). Remove insulation (6) $\frac{1}{4}$ inch (.635 cm) from end of wire (3). Discard terminal.

(2) *Assembly.*

- (a) Install terminal (4) on wire (3) and crimp in place.
- (b) Install terminal (4) on connector (5).
- (c) Install sealing plugs (7) in unused holes.
- (d) Slide plastic sleeve (2) against connector (5).
- (e) Install cover (1) on connector (5).

7-101. GENERAL WIRE HARNESS REPAIR (CONT).

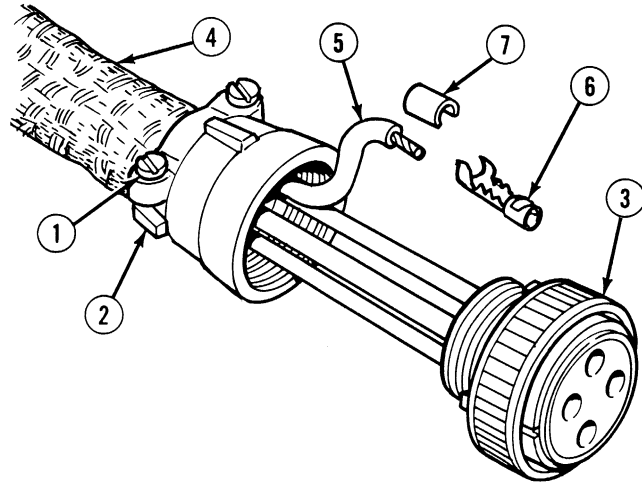
b. Type 2 Connector Repair.

CAUTION

Terminals come in different styles and sizes. To prevent damage, be sure to use only the exact replacements. Do not attempt to modify terminal to fit.

NOTE

Repeat procedure as necessary.



(1) *Disassembly.*

- (a) Remove two screws (1) and cable clamp (2) from connector (3).
- (b) Remove heat shrink (4).
- (c) Remove wire (5) and terminal (6) from connector (3).

NOTE

Cut as close to damaged terminal as possible.

- (d) Cut off terminal (6) at end of wire (5). Remove insulation (7) 1/4 inch (.635 cm) from end of wire (3). Discard terminal.

(2) *Assembly.*

- (a) Install terminal (6) on connector (3).
- (b) Install cable clamp (2) on connector (3) with two screws (1).
- (c) Install heat shrink (4) around wires (5).

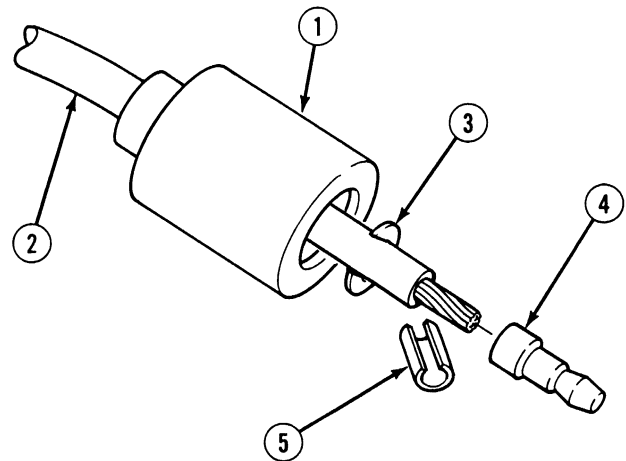
c. Type 3 Connector Repair.

- (1) *Disassembly.*
 - (a) Slide outer shell (1) back on wire (2).
 - (b) Remove C-washer (3) from wire (2).
 - (c) Cut terminal (4) from wire (2).
 - (d) Trim end of wire (2) as needed to make an undamaged end.

NOTE

If trimming causes wire to become too short, refer to TM 43-0158.

- (e) Remove 0.375 in. (1.0 cm) of insulation (5) from end of wire (2).
- (2) *Assembly.*
 - (a) Install terminal (4) on wire (2).
 - (b) Install C-washer (3) on wire (2) just below terminal (4).
 - (c) Slide outer shell (1) over C-washer (3) and terminal (4).
 - (d) Be sure no bare wire (2) is visible outside of outer shell (1).



7-101. GENERAL WIRE HARNESS REPAIR (CONT).

d. Type 4 Connector Repair.

(1) *Disassembly.*

- (a) Slide outer shell (1) and sleeve (2) back on wire (3).
- (b) Remove contact (4) from wire (3).
- (c) Trim end of wire (3) as needed to make an undamaged end.

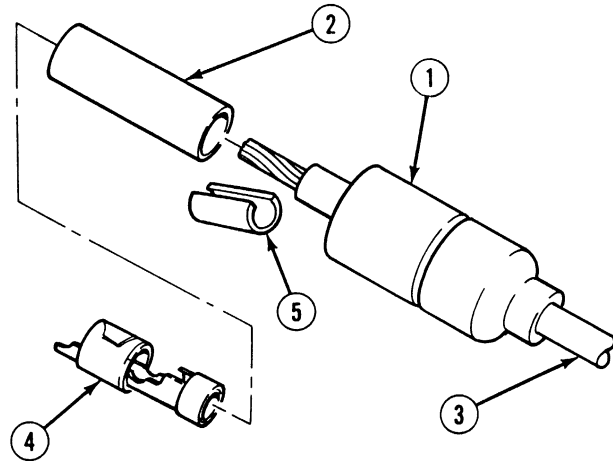
NOTE

If trimming causes wire to become too short refer to TM 43-0158.

- (d) Remove 0.25 in. (.6 cm) of insulation (5) from end of wire (3).

(2) *Assembly.*

- (a) Install sleeve (2) over end of wire (3).
- (b) Install contact (4) over end of wire (3).
- (c) Crimp contact (4) securely in place.
- (d) Slide outer shell (1) over sleeve (2) and contact (4).
- (e) Be sure no bare wire (3) shows outside of outer shell (1).



e. Group I Terminal Repair.

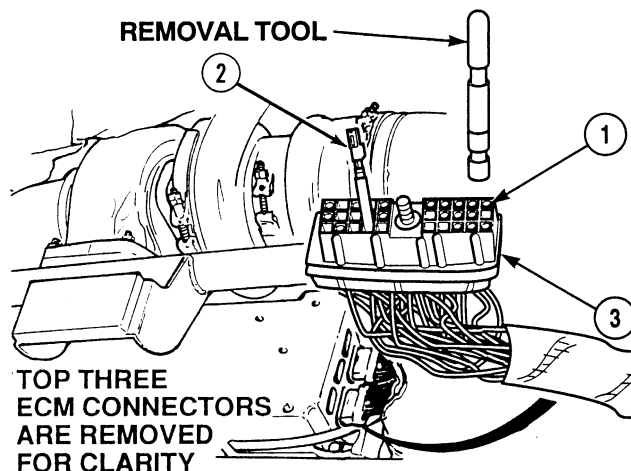
- (1) *Disassembly.*

WARNING

Tip of removal tool is very sharp.
Use caution when using tool.
Failure to comply may result in injury to personnel.

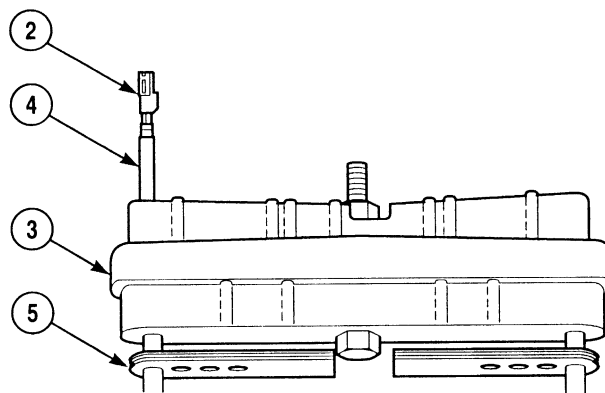
NOTE

- Locking tab on the terminal mates with molded tab in plastic connector to retain cable assembly.
 - All Group I connectors are repaired the same way. Number of wires in connection may vary.
- (a) Insert tip of removal tool between locking tab (1) of terminal (2) and wall of connector (3).
 - (b) Release locking tab (1) from connector (3).
 - (c) Push terminal (2) through front of connector (3).



NOTE

- Perform Step (d) only if old terminal is still attached to wire.
 - Make cut directly behind damaged terminal.
- (d) Cut and remove terminal (2) from wire (4). Discard terminal.
 - (e) Remove wire (4) and seal (5) from connector (3).



7-101. GENERAL WIRE HARNESS REPAIR (CONT).

(2) *Assembly.*

- (a) Push wire (4) through seal (5) and connector (3) cavity.

CAUTION

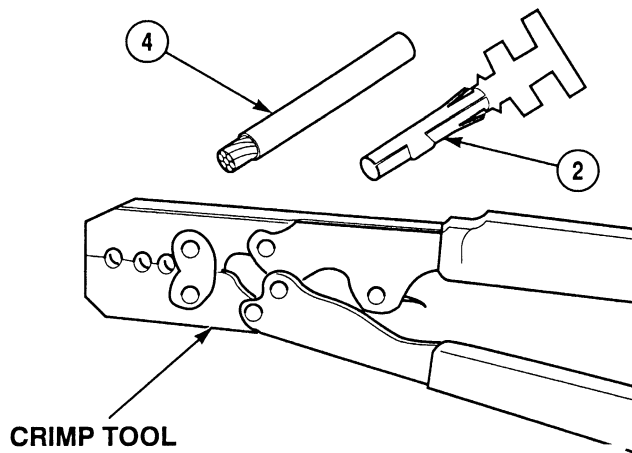
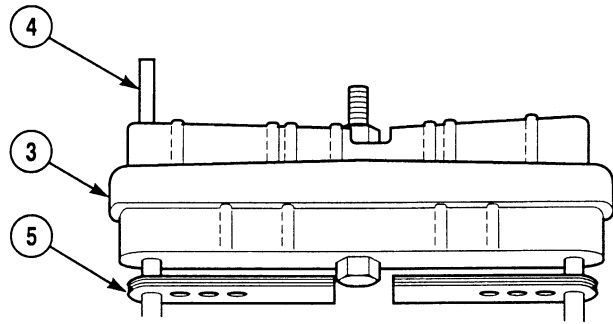
Strip wire after placing it through seal and connector body to prevent damage to individual strands.

- (b) Strip end of wire (4) using crimp tool leaving 1/4 in. (0.64 cm) of bare wire.

NOTE

When installing terminal be sure terminal wings point to the upper jaw of crimping tool.

- (c) Push terminal holder open and insert terminal (2) until attaching portion of terminal rests on anvil.



NOTE

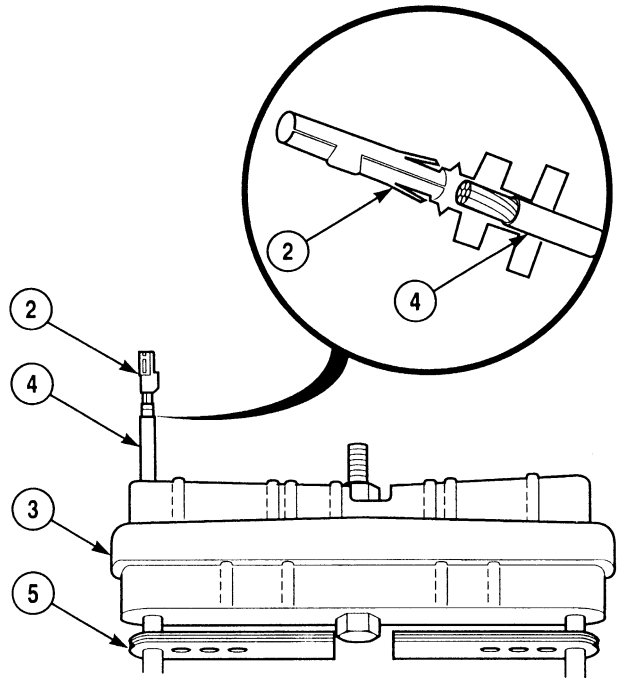
Wire should be positioned so larger wings of terminal will crimp around insulation and smaller wings will crimp around exposed bare wire.

- (d) Position wire (4) on terminal (2).
- (e) Press handle(s) of crimp tool together until ratchet releases and crimp is complete.

NOTE

Locking tab should be positioned toward notch in connector cavity when properly installed.

- (f) Pull wire (4) and terminal (2) back through connector (3) until seated.
- (g) Seat seal (5) into connector (3).



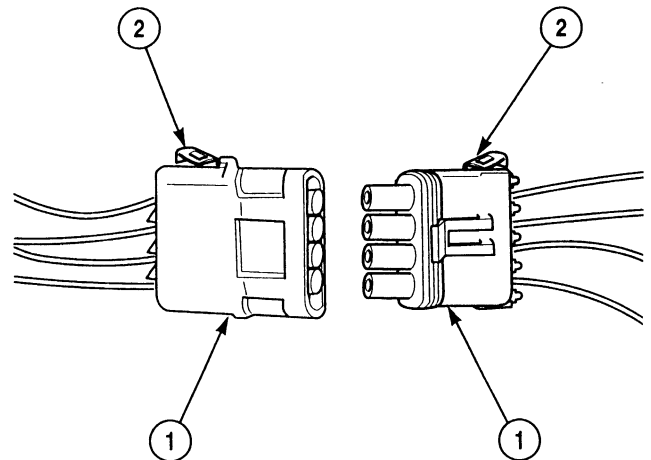
f. Group II Terminal Repair.

- (1) *Disassembly.*

NOTE

- Connector is removed by gently prying up on clip and pulling on connector.
- All Group II connectors are repaired the same way. Number of wires in connector may vary.
- Both halves of connector are repaired the same way.

- (a) Disconnect connector (1).
- (b) Unlatch and open two secondary locks (2) on connector (1).



7-101. GENERAL WIRE HARNESS REPAIR (CONT).

WARNING

Tip of removal tool is very sharp.
Use caution when using tool.
Failure to comply may result in
injury to personnel.

- (c) Insert removal tool into cavity (3) on connector (1) until seated.
- (d) Pull wire (4) back through connector (1) and remove tool.

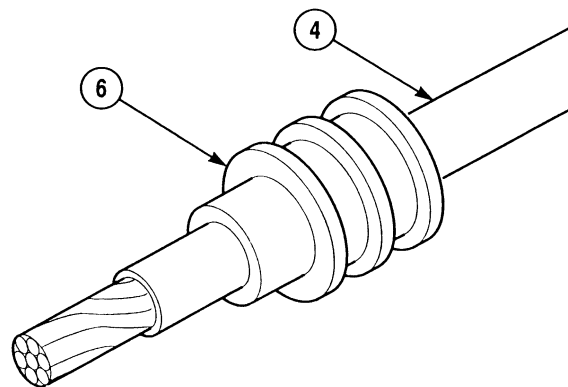
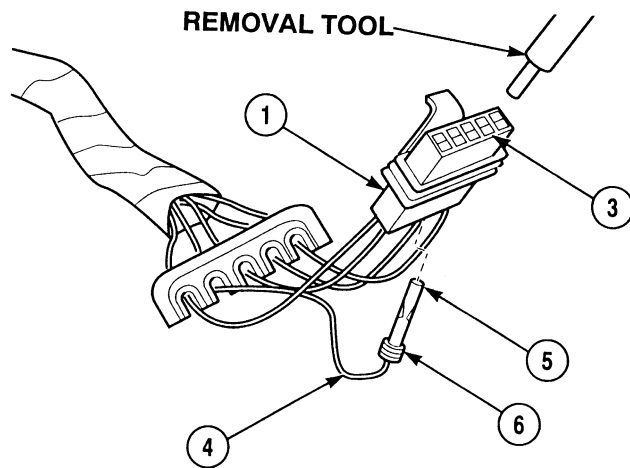
NOTE

- Perform Step (e) only if old terminal is still attached to wire.
 - Make cut directly behind damaged terminal.
- (e) Cut terminal (5) and wire seal (6) from wire (4). Discard terminal and seal.
- (2) *Assembly.*
- (a) Insert 1 in. (2.5 cm) of wire (4) through new wire seal (6).

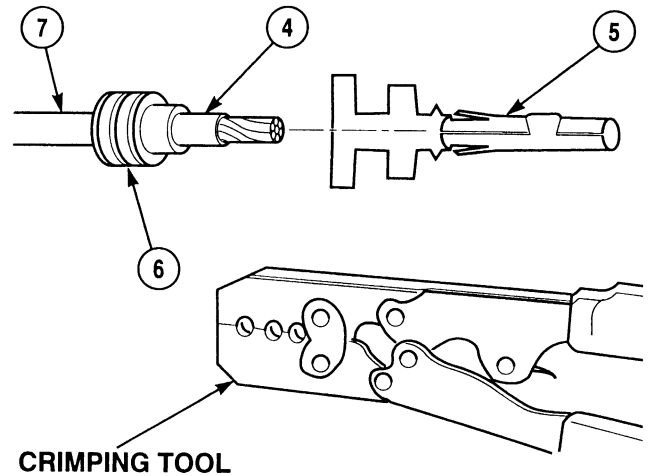
CAUTION

Strip wire after placing it through seal to prevent damage to individual wire strands.

- (b) Strip end of wire (4) leaving 1/4 in. (0.64 cm) of bare wire.



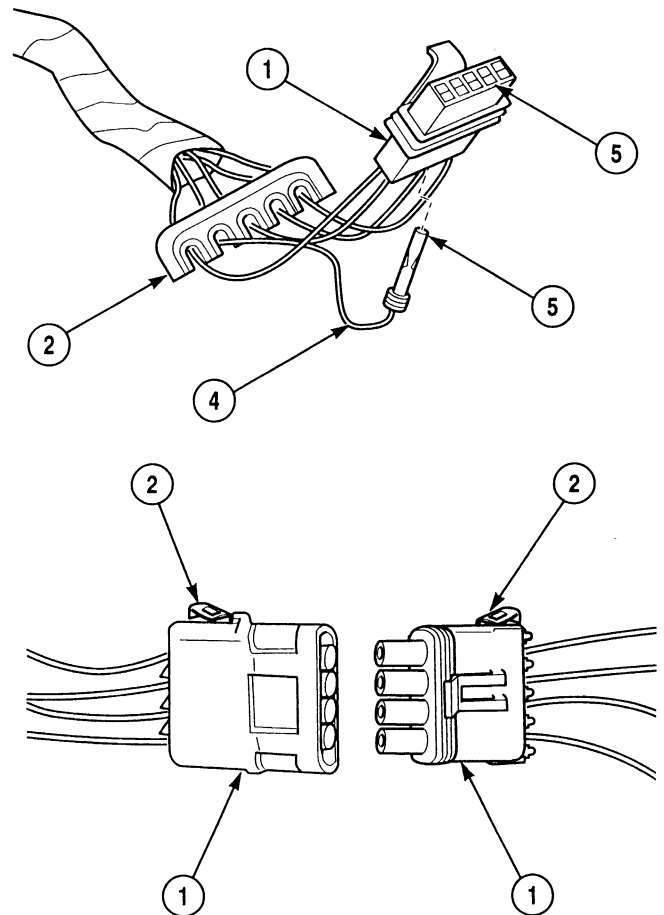
- (c) Insert new terminal (5) in locating hole of crimp tool using proper hole according to the gage of wire (4).
- (d) Slide seal (6) down to end of insulation (7) on wire (4).



NOTE

Wire and seal should be positioned so larger wings of terminal will crimp around seal and smaller wings will crimp around exposed bare wire.

- (e) Position wire (4) on terminal (5).
- (f) Press handles of crimp tool together until ratchet releases and crimp is complete.
- (g) Push new terminal (5) and wire (4) through connector (1) until seated.
- (h) Close two secondary locks (2) on connector (1).
- (i) Connect connector (1).



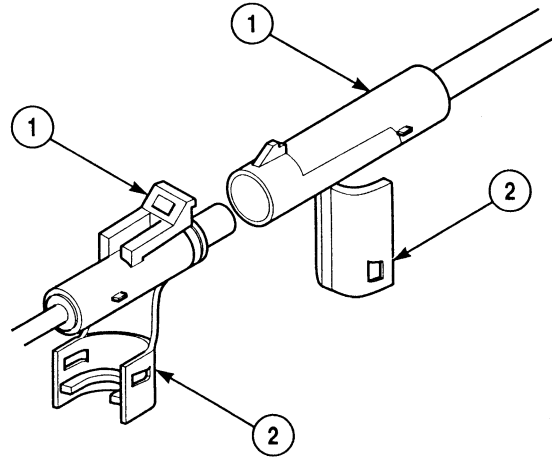
7-101. GENERAL WIRE HARNESS REPAIR (CONT).

g. Group III Terminal Repair.

(1) *Disassembly.*

NOTE

- Connector is removed by gently prying up on clip and pulling on connector.
- All Group III connectors are repaired the same way. Number of wires in connector may vary.
- Both halves of connector are repaired the same way.

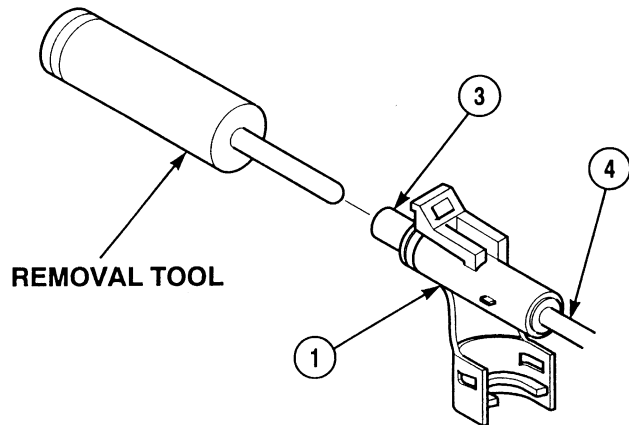


- (a) Disconnect connector (1).
- (b) Unlatch and remove two secondary locks (2) on connector (1).

WARNING

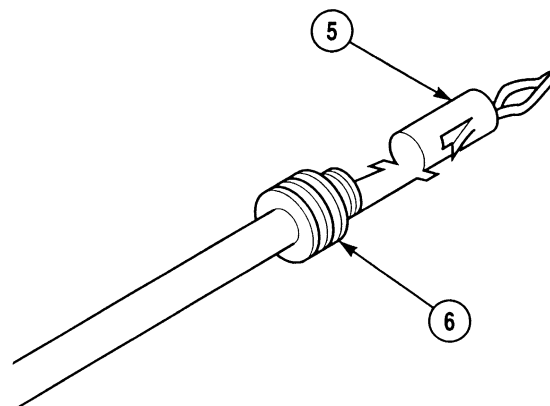
Tip of removal tool is very sharp. Use caution when using tool. Failure to comply may result in injury to personnel.

- (c) Insert removal tool into terminal connector cavity (3) until seated.
- (d) Pull wire (4) back through connector (1) and removal tool.



NOTE

- Perform Step (e) only if old terminal is still attached to wire.
 - Make cut directly behind damaged terminal.
- (e) Cut off terminal (5) and wire seal (6).
Discard terminal and seal.



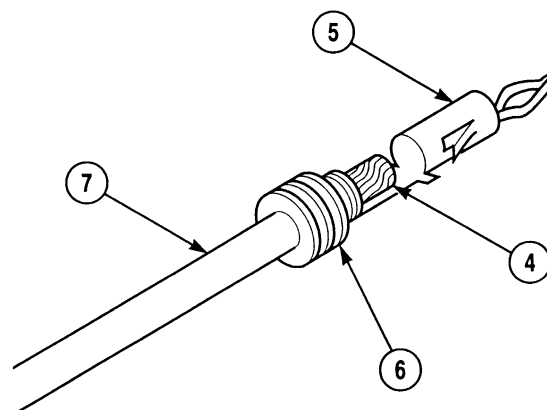
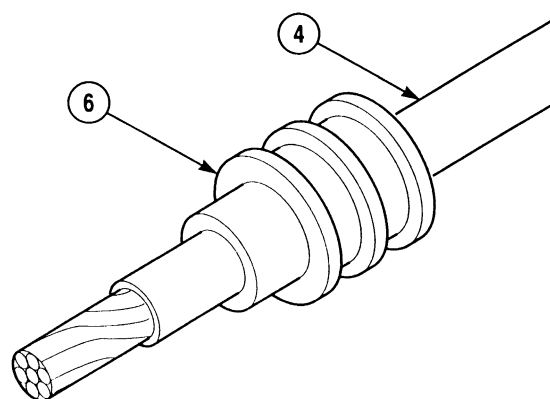
(2) *Assembly.*

- (a) Insert 1 in. (2.5 cm) of wire (4) through new wire seal (6).



Strip wire after placing it through seal to prevent damage to individual wire strands.

- (b) Strip end of wire (4) leaving 0.25 in. (0.64 cm) of bare wire.
- (c) Insert new terminal (5) in locating hole of crimp tool using the proper hole according to gage of wire (4).
- (d) Slide wire seal (6) down to end of insulation (7) on wire (4).

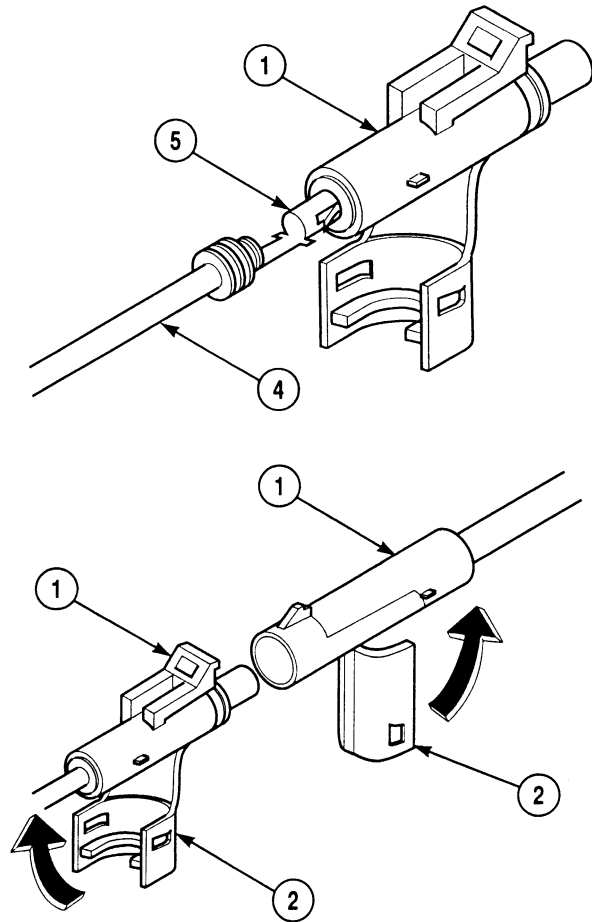


7-101. GENERAL WIRE HARNESS REPAIR (CONT).

NOTE

Wire and seal should be positioned so larger wings of terminal will crimp around insulation and smaller wings will crimp around exposed bare wire.

- (e) Position wire (4) on terminal (5).
- (f) Press handles of crimp tool together until ratchet releases and crimp is complete.
- (g) Push new terminal (5) and wire (4) through connector (1) until seated.
- (h) Install two secondary locks (2) on connector (1).
- (i) Connect connector (1).



h. 22-Pin Connector Repair.

(1) *Disassembly.*

- (a) Loosen center screw (1) and remove harness connector (2) from cab connector (3).

NOTE

For access to wires on cab connector it may be necessary to perform Step (b) to remove connector from dash.

- (b) Remove two locknuts (4), screws (5) and cab connector (3) from connector bracket (6).

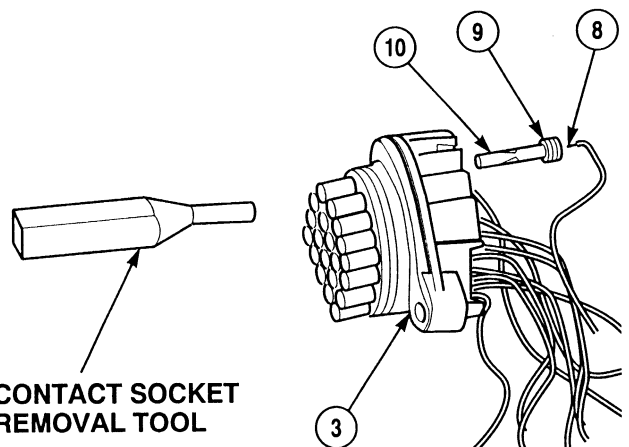
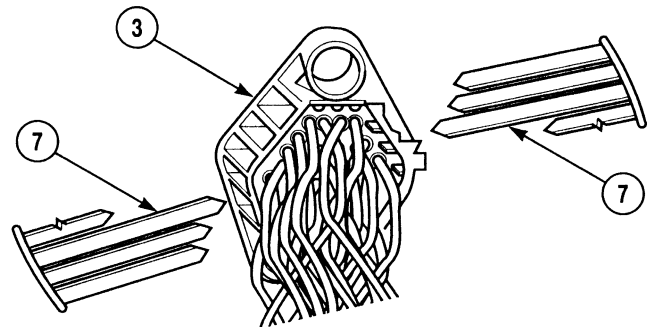
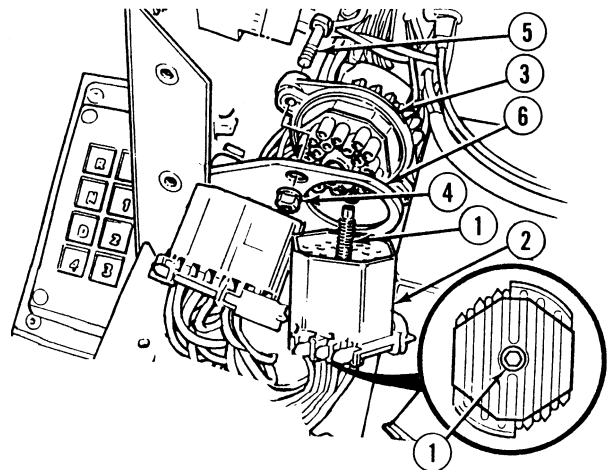
NOTE

Cab connectors and harness connectors are repaired the same way. Harness connector is shown.

- (c) Remove secondary lock(s) (7) from connector (3).

- (d) Remove wire (8), cable seal (9) and electrical contact (10) from connector (3) with contact socket removal tool.

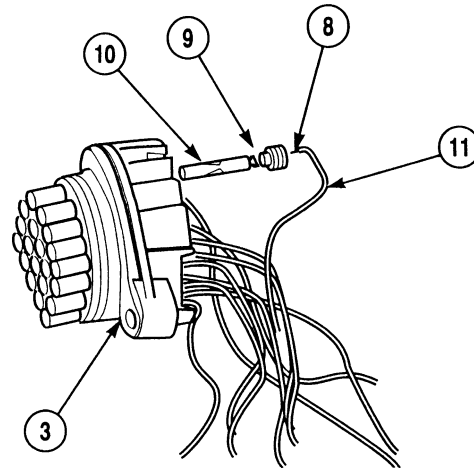
- (e) Cut and remove cable seal (9) and electrical contact (10) from wire (8).



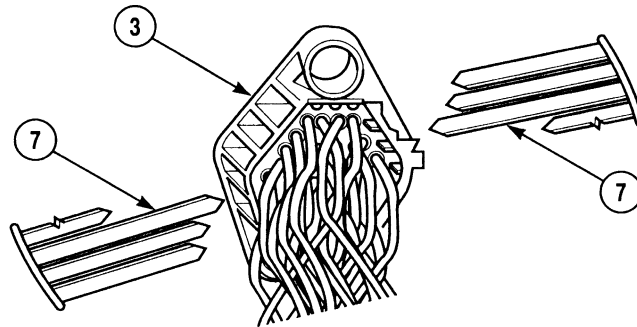
7-101. GENERAL WIRE HARNESS REPAIR (CONT).

(2) *Assembly.*

- (a) Strip approximately 5/16 in (7.87 mm) of insulation (11) from end of wire (8).
- (b) Install new cable seal (9) on wire (8).
- (c) Crimp new electrical contact (10) on wire (8).
- (d) Install wire (8) in connector (3) until it locks.



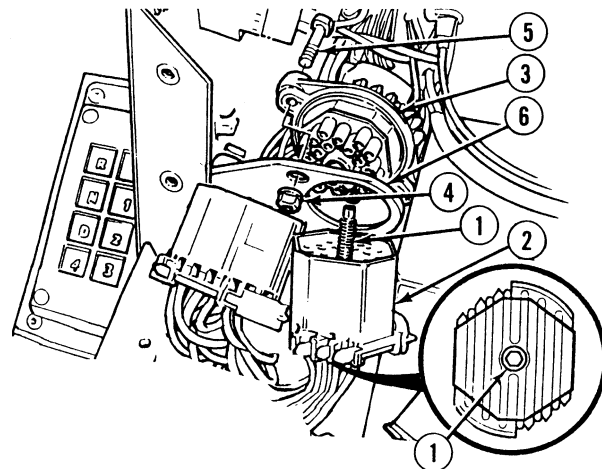
- (e) Install secondary lock(s) (7) in connector (3).



NOTE

Perform Step (f) only if cab connector was removed.

- (f) Install cab connector (3) on cab (6) with two screws (5) and new locknuts (4).
- (g) Install harness connector (2) on cab connector (3) with screw (1).



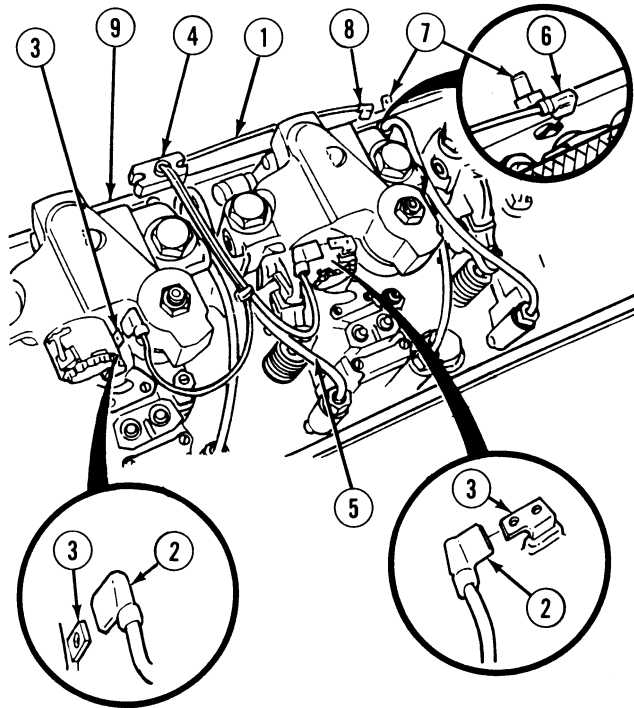
i. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-102. ENGINE BRAKE WIRE HARNESS REPLACEMENT (CONT.)

- (2) Remove rubber harness support (4) from injector lines (5).
- (3) Disconnect spade connector (6) from terminal assembly (7).
- (4) Disconnect spade connector (8) from terminal assembly (7).
- (5) Remove terminal assembly (7) from cylinder head (9).
- (6) Remove engine brake harness (1) from cylinder head (9).



b. Installation.

NOTE

- There is one brake wiring harness in each cylinder head. Both brake wiring harnesses are installed the same way. Right side shown.
- Install cable ties as noted during removal.

- (1) Position engine brake harness (1) in cylinder head (9).
- (2) Install terminal assembly (7) in cylinder head (9).
- (3) Connect spade connector (8) on terminal assembly (7).
- (4) Connect spade connector (6) on terminal assembly (7).
- (5) Install rubber harness support (4) on injector lines (5).
- (6) Connect positive lock connectors (2) on engine brake solenoids (3).

c. Follow-On Maintenance:

- Install left or right rocker cover, (Para 3-4 or Para 3-5).
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

7-103. 7-PIN ELECTRICAL CONNECTOR REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

Tool Kit, Electric (Item 73, Appendix G)

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Weatherpak Crimper (Item 76, Appendix G)

Materials/Parts

Adhesive (Item 8, Appendix C)

(Model A connector only)

Cable Ties (Item 25, Appendix C)

Compound, Corrosion Preventive

(Item 35, Appendix C)

Materials/Parts- Continued

Tags, Identification (Item 88, Appendix C)

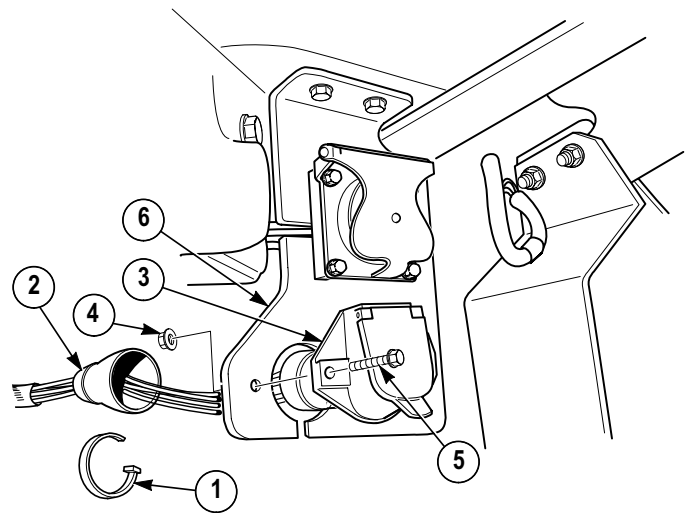
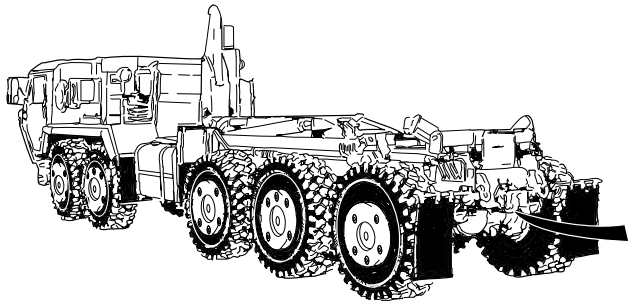
Locknut (4) (Item 133, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)

Wheels chocked, (TM 9-2320-364-10)

Batteries disconnected, (Para 7-87)

a. Removal.**NOTE**

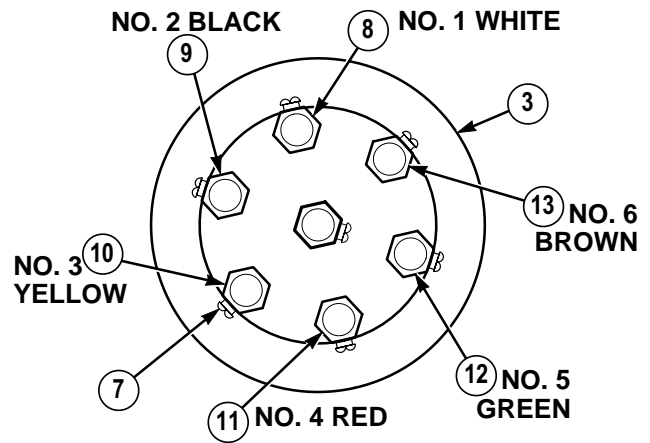
- Front connector MC27 and rear connector MC16 are removed the same way. Rear connector MC16 is shown.
- There are two types of 7-pin electrical connectors. Model B replaced Model A.
- Model A has a rubber boot covering the back.
- Model B uses rubber push on connectors on the back.
- Perform steps (1) through (4) for Model A connectors.
- Tag and mark wires prior to removal.
- Loosen cushion clips as required.

(1) Remove cable tie (1) and rubber boot (2) from connector MC16 (3).

(2) Remove two locknuts (4), screws (5) and connector MC16 (3) from mounting bracket (6). Discard locknuts.

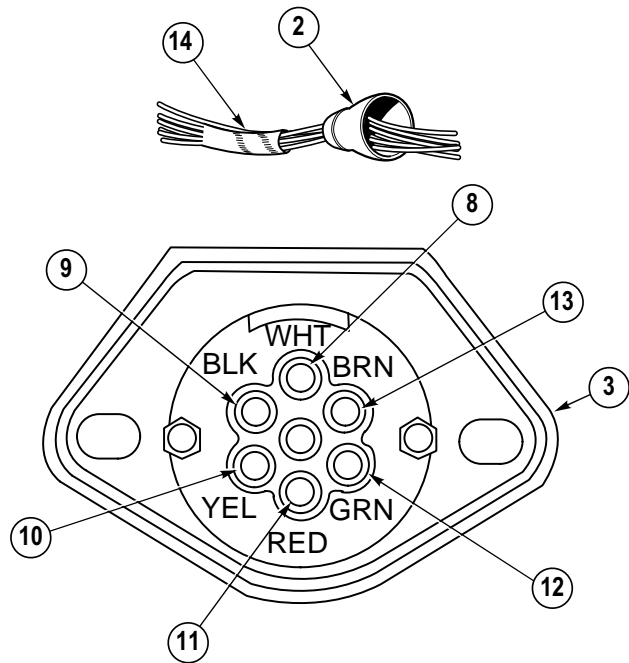
7-103. 7-PIN ELECTRICAL CONNECTOR REPLACEMENT (CONT.)

- (3) Loosen six screws (7) and remove wires: 1435 (8), 1012 (9), 1003 (110), 1005 (11), 1004 (12) and 1008 (13) from connector MC16 (3).
- (4) Remove rubber boot (2) from wire harness (14).

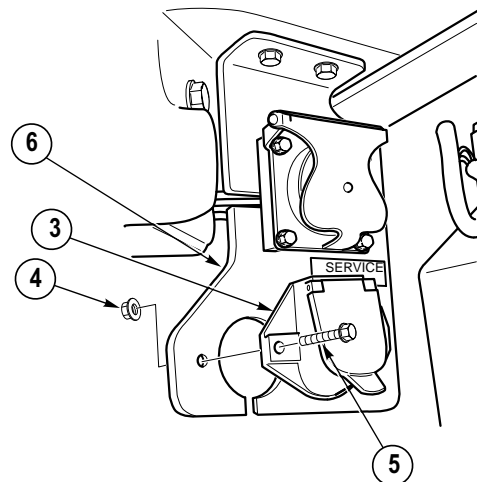


NOTE

- Perform steps (5) and (6) for model B connector.
 - Wire is removed by pulling seal boot out of MC16 connector.
- (5) Remove wires 1435 (8), 1012 (9), 1003 (10), 1005 (11), 1004 (12) and 1008 (13) from connector MC16 (3).



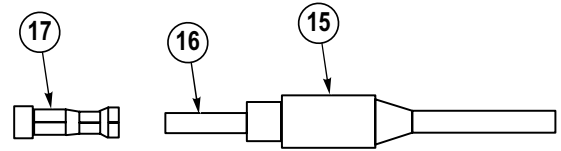
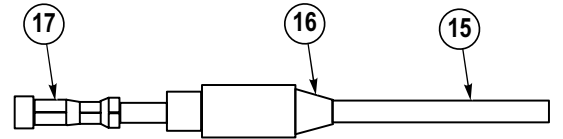
- (6) Remove two locknuts (4), screws (5) and connector MC16 (3) from mounting bracket (6). Discard locknuts.



b. Installation.

NOTE

- Perform Steps (1) through (11) for model B connector.
- Perform Steps (4) through (11) if replacing model A connector with model B connector.
- Perform Steps (1) through (8) if terminal or seal boot is damaged on model B connector.
- Tapered end of seal boot is installed on wire first.

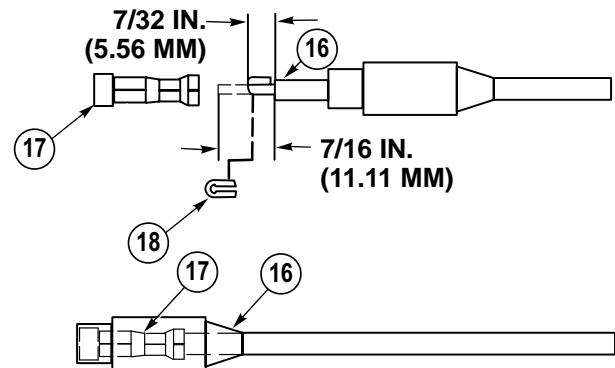


- (1) Slide seal boot (15) over wire (16) to expose terminal (17).
- (2) Cut off terminal (17) at end of wire (16). Discard terminal.

NOTE

Perform steps (3) and (4) if seal boot is damaged.

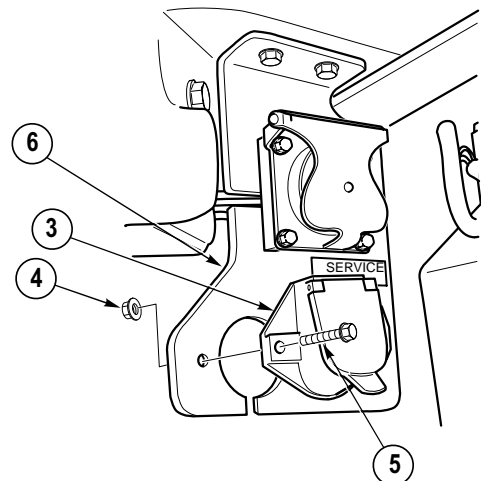
- (3) Remove and discard seal boot (15).
- (4) Install seal boot (15) on wire (16).
- (5) Remove 7/16 in. (11.11 mm) of insulation (18) from end of wire (16).
- (6) Fold over exposed end of wire (16) to 7/32 in. (5.56 mm).



NOTE

Replacement kit comes with large and small terminals. Small terminals must be used.

- (7) Install terminal (17) on wire (16).
- (8) Slide seal boot (15) over terminal (17).
- (9) Install MC16 connector (5) on mounting bracket (6) with two screws (7) and locknuts (8).



7-103. 7-PIN ELECTRICAL CONNECTOR REPLACEMENT (CONT.)

WARNING

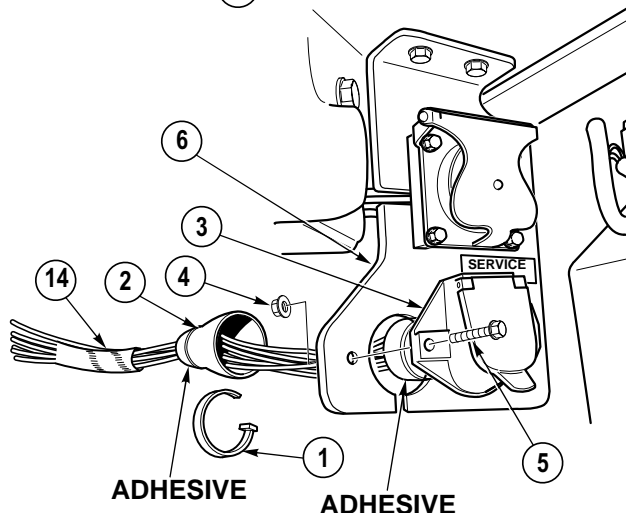
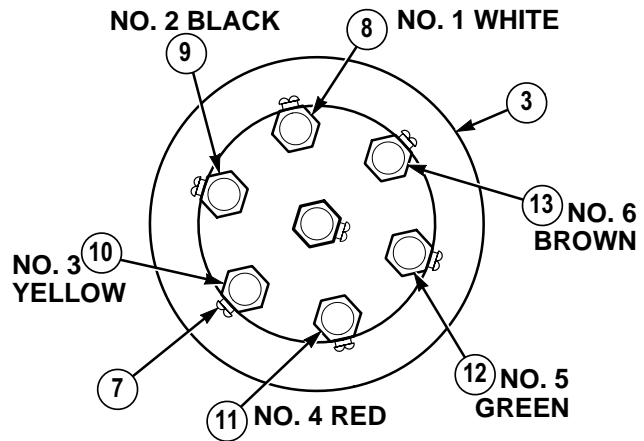
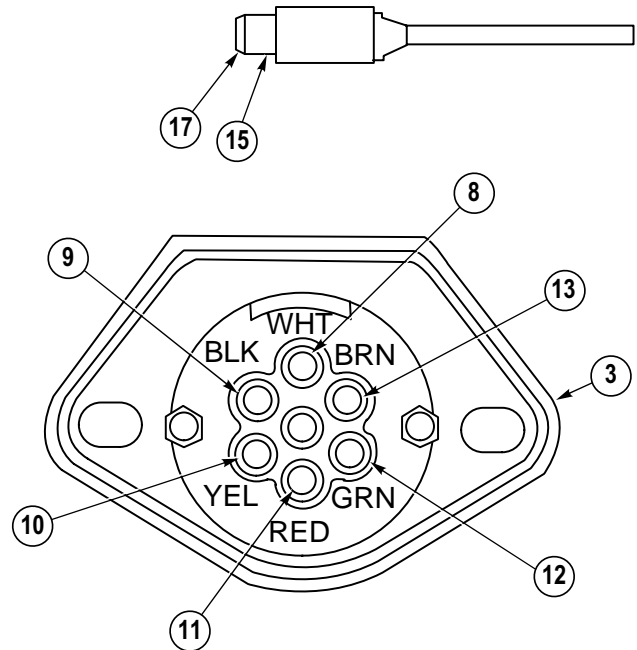
Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin. To avoid injury or death, keep away from open fire and use in well ventilated area. If adhesives, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (10) Apply corrosion preventative to front of terminals (17).
- (11) Install wires 1435 (8), 1012 (9), 1003 (10), 1005 (11), 1004 (12) and 1008 (13) on connector MC16 (3).

NOTE

Perform steps (12) through (18) for model A connector.

- (12) Position rubber boot (2) on wire harness (14).
- (13) Install wires 1435 (8), 1012 (9), 1003 (10), 1005 (11), 1004 (12) and 1008 (13) on connector MC16 (3) with screws (7).
- (14) Install connector MC16 (3) on mounting bracket (6) with two screws (5) and locknuts (4).
- (15) Apply corrosion preventative compound to front and rear terminals in connector MC16 (3).
- (16) Apply corrosion preventative compound to front and rear terminals in connector MC16 (3).
- (17) Install rubber boot (2) on connector MC16 (3) with cable tie (1).
- (18) Apply a thin strip of adhesive to rear of rubber boot (2) where wires enter boot.



c. *Follow-On Maintenance:*

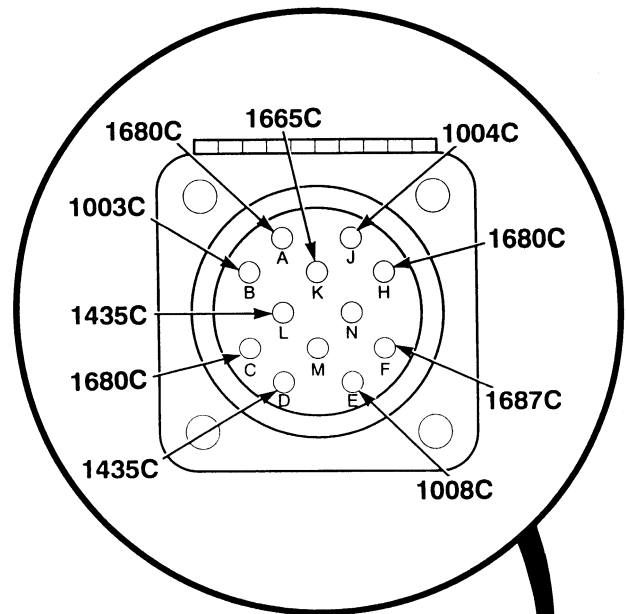
- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

- (4) Using removal tool, remove wires (10) with pins (11) from electrical connector MC15 (9).

Table 7-6. 12-Pin Connector Wire Positions.

Wire	Position
1680C	A
1003C	B
1680C	C
1435C	D
1008C	E
1687C	F
1680C	H
1004C	J
1665C	K
1435C	L



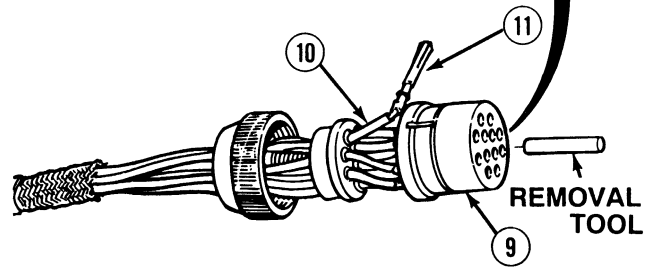
b. Installation.

- (1) Install pins (11) and wires (10) in electrical connector MC15 (9).

NOTE

Align tab with keyway.

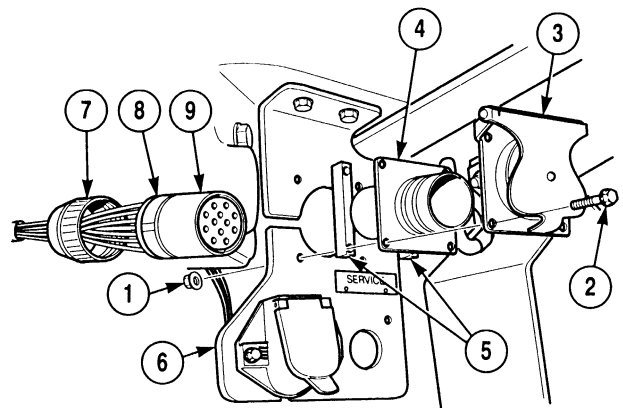
- (2) Install electrical connector MC15 (9) in electrical connector housing (4).
- (3) Install collar boot (8) and collar (7) through bracket (6) on electrical connector housing (4).



NOTE

Electrical connector housing must be positioned on mounting bracket with keyway facing up.

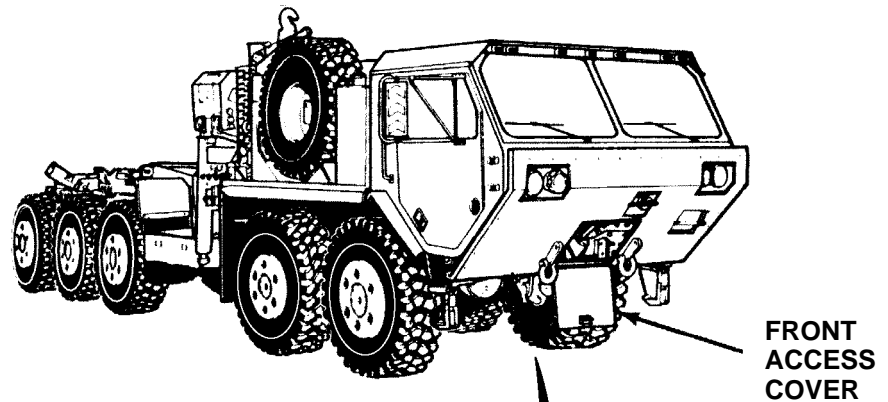
- (4) Align four holes in electrical connector housing (4) with holes in mounting bracket (6).
- (5) Install two spacers (5), electrical connector housing (4) and spring cover (3) on mounting bracket (6) with four screws (2) and locknuts (1).



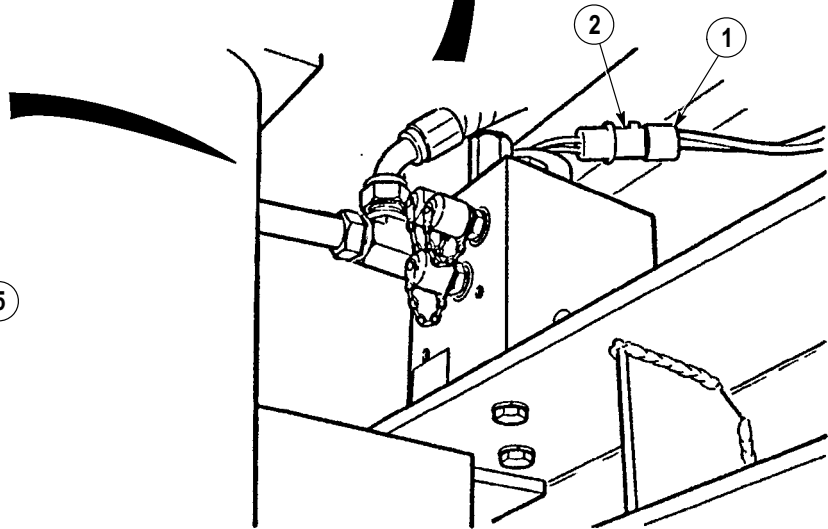
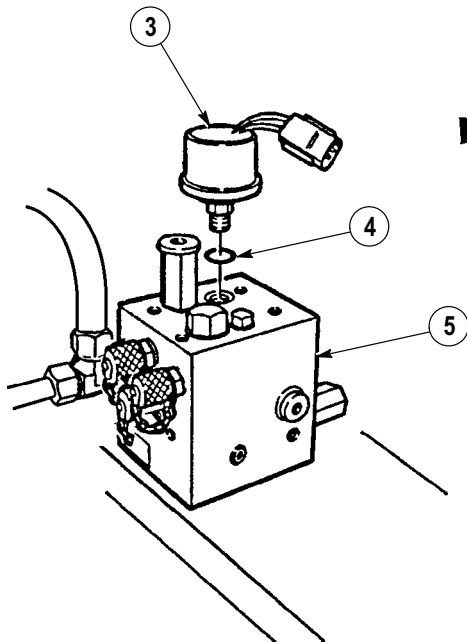
c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK



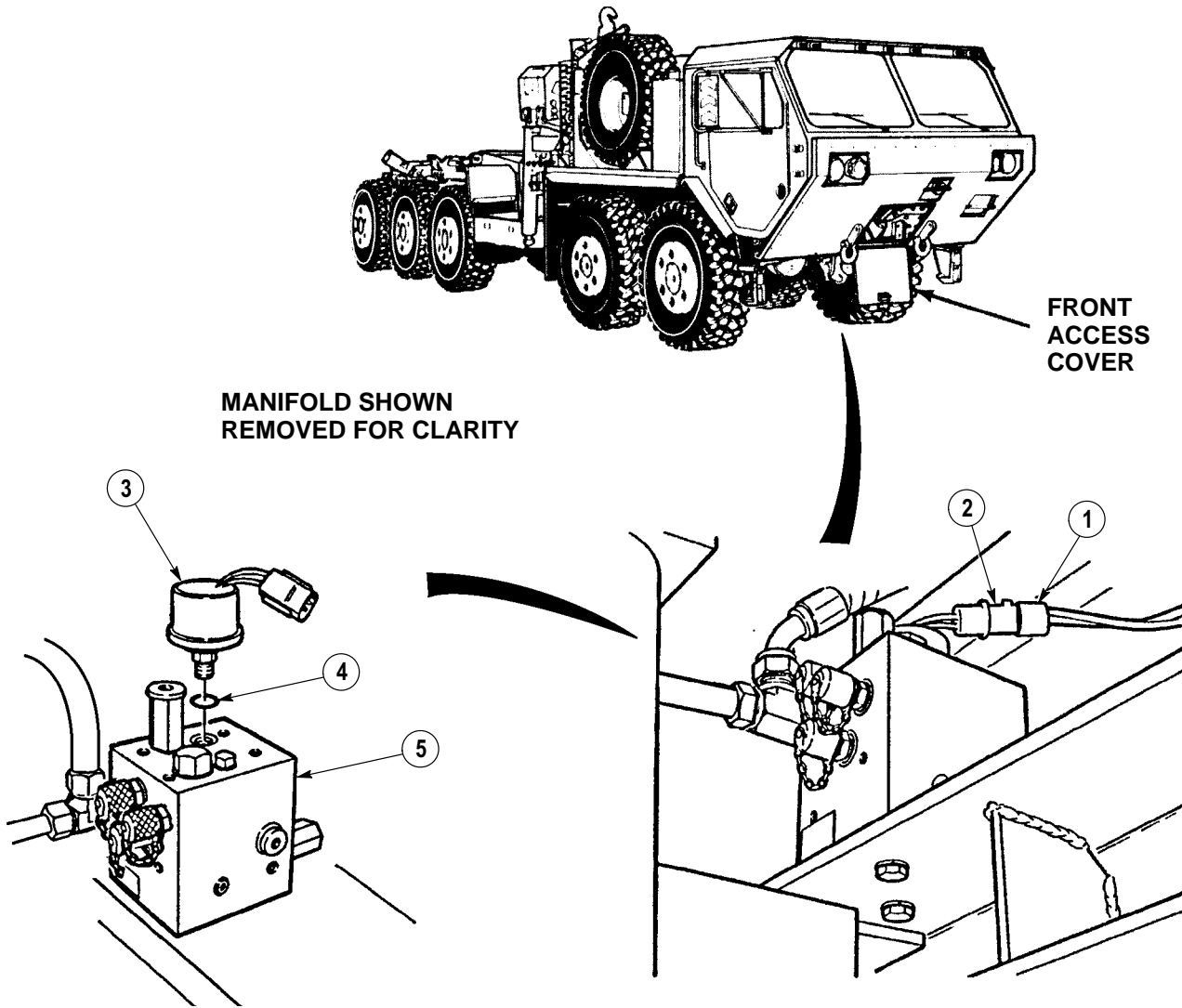
MANIFOLD SHOWN
REMOVED FOR CLARITY



- (2) Disconnect MC113 connector (1) from pressure switch connector (2).
- (3) Remove pressure switch (3) and preformed packing (4) from manifold (5). Discard preformed packing.

7-105. EMERGENCY STEERING SWITCH REPLACEMENT (CONT).

b. Installation.



- (1) Apply hydraulic oil to preformed packing (4).
- (2) Install preformed packing (4) and pressure switch (3) on manifold (5).
- (3) Connect MC113 connector (1) on pressure switch connector (2).
- (4) Close front access cover.

c. Follow-On Maintenance:

- Connect batteries, (Para 7-87)
- Remove wheel chocks, (TM 9-2320-364-10)

END OF TASK

7-106. BATTERY DISCONNECT SWITCH BOX REPAIR.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Wrench, Torque, 3/8 in. Drive (0 to 60 N·m)
(Item 98, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)

Wheels chocked, (TM 9-2320-364-10)

Batteries disconnected, (Para 7-87)

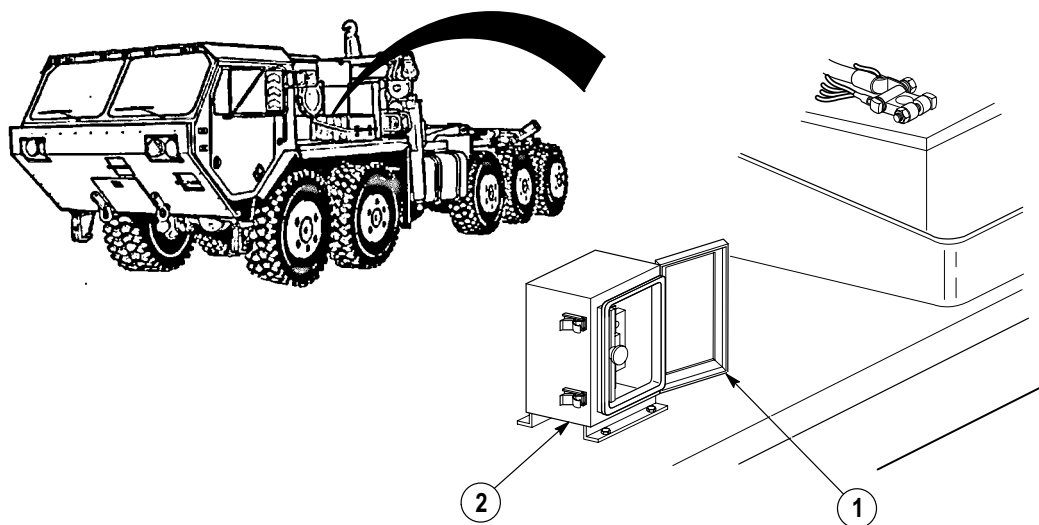
Material/Parts

Sealant, Electrical (Item 68, Appendix C)

Locknut (4) (Item 98, Appendix F)

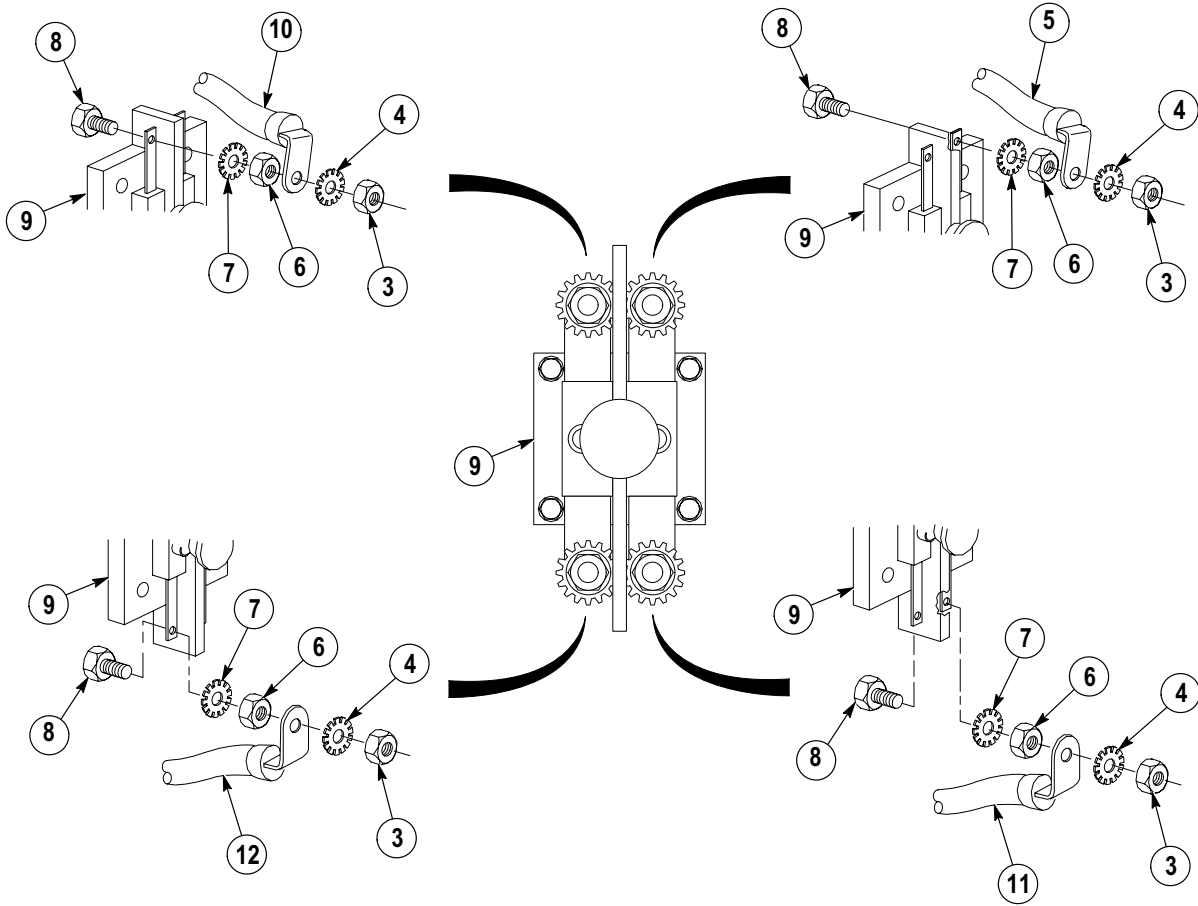
Lockwasher (8) (Item 162.1, Appendix F)

Lockwasher (4) (Item 171, Appendix F)

a. Removal.

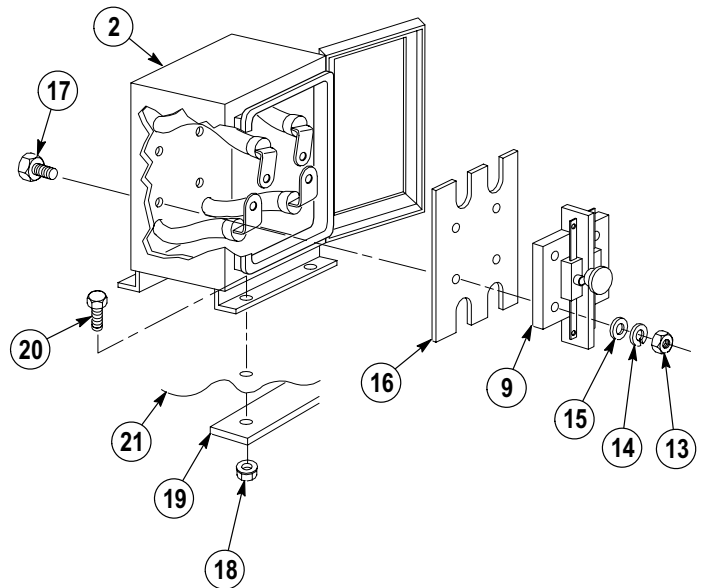
(1) Open door (1) on battery disconnect switch box (2).

7-106. BATTERY DISCONNECT SWITCH BOX REPAIR (CONT).

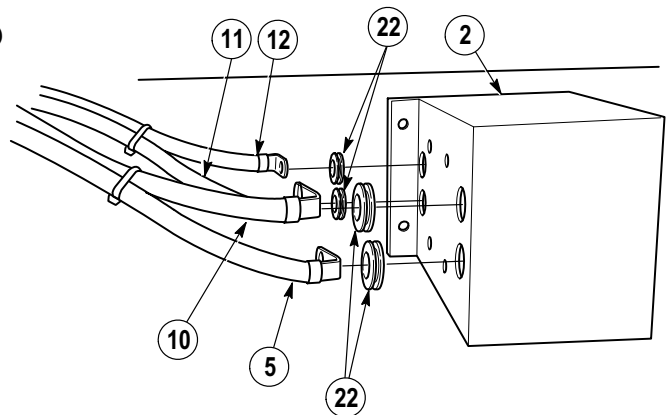


- (2) Remove nut (3), lockwasher (4), wire 1281A (5), nut (6), lockwasher (7) and screw (8) from upper right section of battery disconnect switch (9). Discard lockwashers.
- (3) Remove nut (3), lockwasher (4), wire 1566 (10), nut (6), lockwasher (7) and screw (8) from upper left section of battery disconnect switch (9). Discard lockwashers.
- (4) Remove nut (3), lockwasher (4), wire 1281A (11), nut (6), lockwasher (7) and screw (8) from lower right section of battery disconnect switch (9). Discard lockwashers.
- (5) Remove nut (3), lockwasher (4), wire 1274 (12), nut (6), lockwasher (7) and screw (8) from lower left section of battery disconnect switch (9). Discard lockwashers.

- (6) Remove four nuts (13), lockwashers (14), washers (15), battery disconnect switch (9), isolator plate (16) and four screws (17). Discard lockwashers.
- (7) Remove four locknuts (18), two mounting brackets (19), four screws (20) and battery disconnect switch box (2) from left fender (21). Discard locknuts.



- (8) Pull wires 1281A (5), 1566 (10), 1281A (11) and 1274 (12) through battery disconnect switch box (2).
- (9) Remove four grommets (22) from battery disconnect switch box (2).

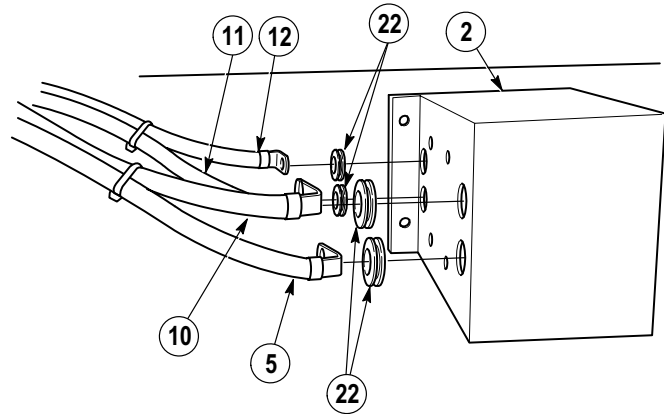


7-106. BATTERY DISCONNECT SWITCH BOX REPAIR (CONT).

b. Installation.

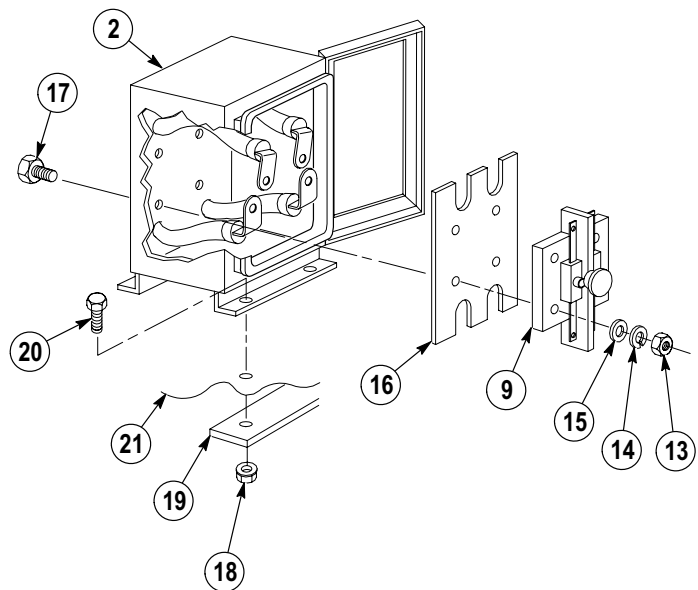
WARNING

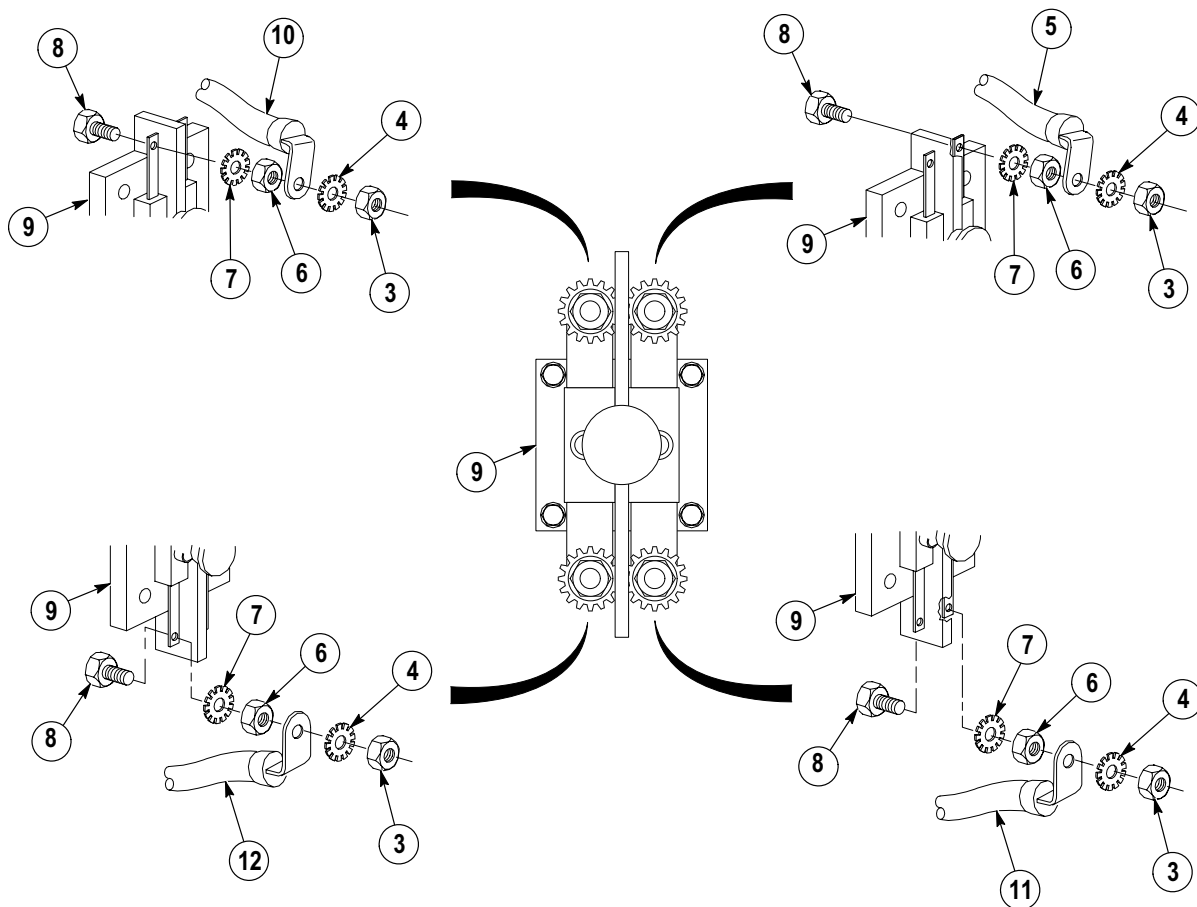
Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin. To avoid injury or death, keep away from open fire and use in well ventilated area. If adhesives, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (1) Apply electrical sealant to four grommets (22).
- (2) Install four grommets (22) in battery disconnect switch box (2).
- (3) Pull wires 1281A (5), 1566 (10), 1281A (11) and 1274 (12) through battery disconnect switch box (2).

- (4) Install battery disconnect switch box (2) on left fender (21) with four screws (20), two mounting brackets (19) and four locknuts (18).
- (5) Install four screws (17), isolator plate (16), battery disconnect switch (9), washers (15), lockwashers (14) and nuts (13).
- (6) Tighten nuts (13) to 15 lb-ft (20 N·m).





- (7) Install screw (8), lockwasher (7), nut (6), wire 1274 (12), lockwasher (4) and nut (3) on lower left section of battery disconnect switch (9).
- (8) Install screw (8), lockwasher (7), nut (6), wire 1271A (11), lockwasher (4) and nut (3) on lower right section of battery disconnect switch (9).
- (9) Install screw (8), lockwasher (7), nut (6), wire 1566 (10), lockwasher (4) and nut (3) on upper left section of battery disconnect switch (9).
- (10) Install screw (8), lockwasher (7), nut (6), wire 1271A (5), lockwasher (4) and nut (3) on upper right section of battery disconnect switch (9).
- (11) Tighten nuts (3) to 15 lb-ft (20 N·m).

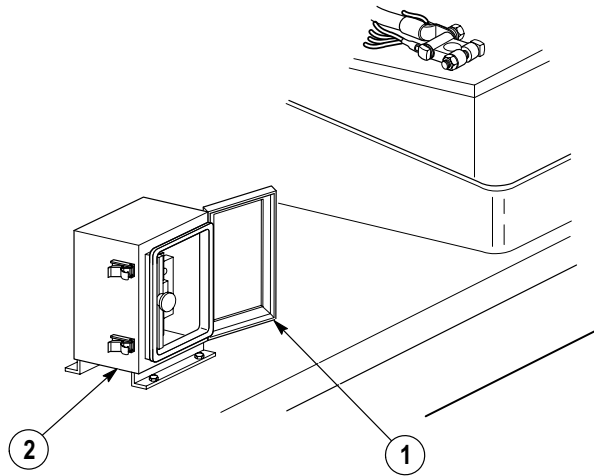
WARNING

Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin. To avoid injury or death, keep away from open fire and use in well ventilated area. If adhesives, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (12) Apply electrical sealant to ends of four screws (8).

7-106. BATTERY DISCONNECT SWITCH BOX REPAIR (CONT).

- (13) Close door (1) on battery disconnect switch box (2).



c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

CHAPTER 8

TRANSMISSION MAINTENANCE

Para	Contents	Page
8-1	Introduction	8-1
8-2	Transmission Shift Selector Repair	8-2
8-3	Transmission Oil Service	8-5
8-4	Transmission Oil Filter (External) Replacement	8-7
8-5	Transmission Breather Replacement/Service	8-8

8-1. INTRODUCTION.

This chapter contains maintenance instructions for removing, replacing, installing and adjusting components of the transmission authorized by the Maintenance Allocation Chart (MAC) at the Unit Maintenance level.



8-2. TRANSMISSION SHIFT SELECTOR REPAIR.

This task covers:

- | | | |
|----------------|-----------------|--------------------------|
| a. Removal | c. Assembly | e. Follow-On Maintenance |
| b. Disassembly | d. Installation | |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

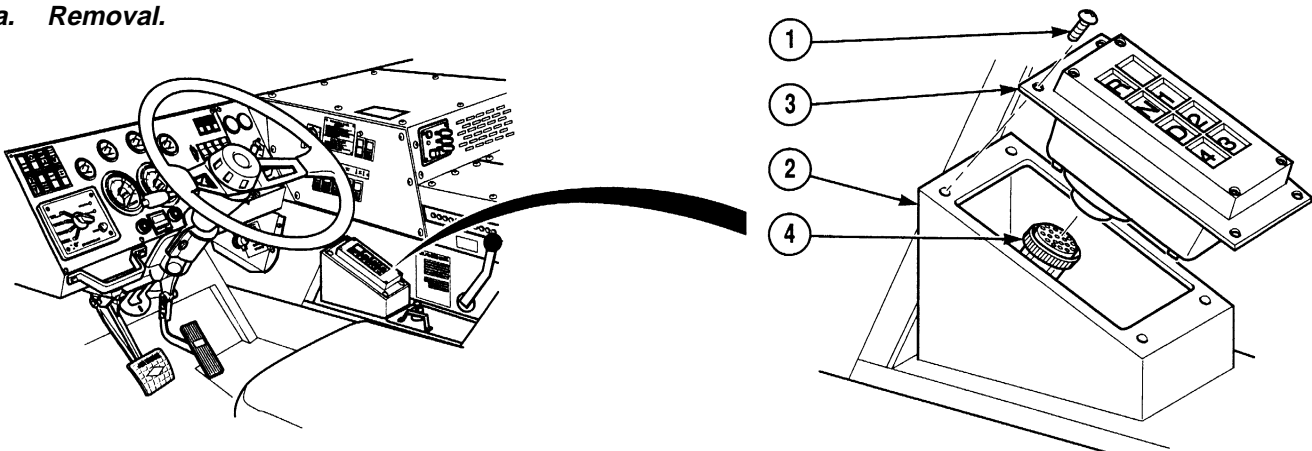
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

Materials/Parts

Tape, Foam (Item 91, Appendix C)
Gasket (Item 52, Appendix F)
Locknut (4) (Item 103, Appendix F)
Lockwasher (4) (Item 153, Appendix F)

a. Removal.



- (1) Remove four screws (1) from shift selector mounting bracket (2) and shift selector assembly (3).
- (2) Disconnect MC12 connector (4) from rear of shift selector assembly (3) and remove shift selector assembly (3) from shift selector mounting bracket (2).

b. Disassembly.

- (1) Remove four screws (5) and locknuts (6) from shift selector cover assembly (7). Discard locknuts.
- (2) Remove mounting bracket (8) from shift selector housing (9).

NOTE

Perform Step (3) if foam tape is damaged.

- (3) Remove foam tape (10) from bottom of mounting bracket (8).
- (4) Remove four screws (11) and lockwashers (12) from rear of shift selector housing (9). Discard lockwashers.

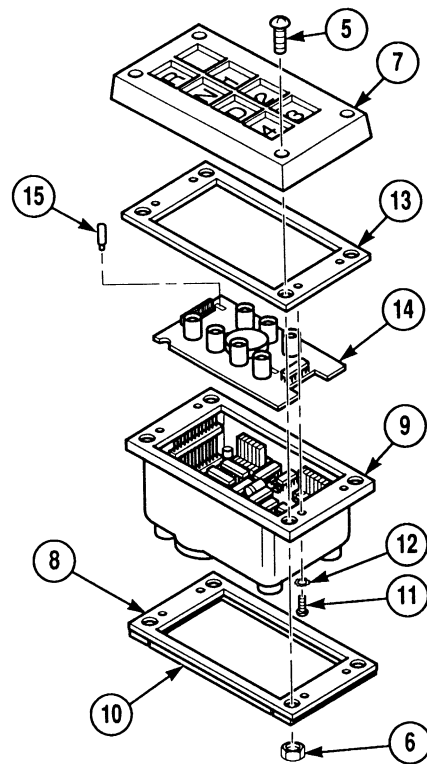


Use caution when removing shift selector cover assembly. Cover assembly is plugged into circuit board assembly. Failure to use caution may cause damage to cover assembly or circuit board assembly.

- (5) Remove shift selector cover assembly (7) and gasket (13) from shift selector housing (9). Discard gasket.
- (6) Disconnect and remove circuit board assembly (14) from shift selector housing (9).
- (7) Remove three lamps (15) from circuit board assembly (14).

c. Assembly.

- (1) Install three lamps (15) in shift selector circuit board assembly (14).
- (2) Connect circuit board assembly (14) in shift selector housing (9).



8-2. TRANSMISSION SHIFT SELECTOR REPAIR (CONT).

CAUTION

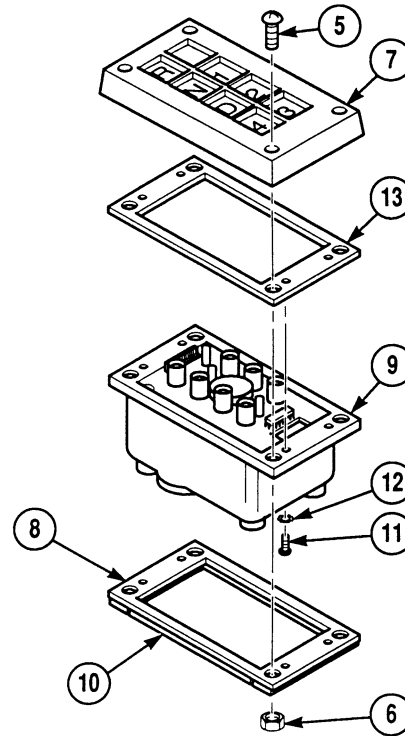
Use caution when installing shift selector cover assembly. Cover assembly has to be plugged into circuit board assembly. Failure to use caution may cause damage to cover assembly or circuit board assembly.

- (3) Position shift selector cover assembly (7) and gasket (13) on shift selector housing (9).
- (4) Install four lockwashers (12) and screws (11) in rear of shift selector housing (9).

NOTE

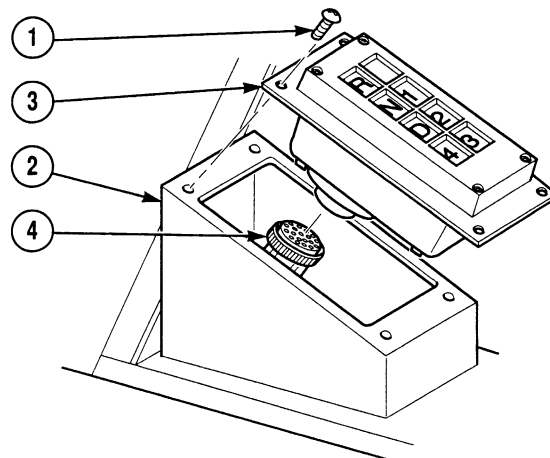
Perform Step (5) if foam tape was removed.

- (5) Install foam tape (10) on mounting bracket (8).
- (6) Install mounting bracket (8) on shift selector housing (9).
- (7) Install four screws (5) and locknuts (6) in shift selector cover assembly (7).



d. Installation.

- (1) Connect MC12 connector (4) on rear of shift selector assembly (3).
- (2) Install four screws (1) in shift selector assembly (3) and install shift selector assembly (3) onto shift selector mounting bracket (2).



e. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

8-3. TRANSMISSION OIL SERVICE (CONT).

NOTE

Transmission dipstick is removed by rotating handle counterclockwise and pulling out.

- (2) Remove transmission dipstick (6) from dipstick tube (7).

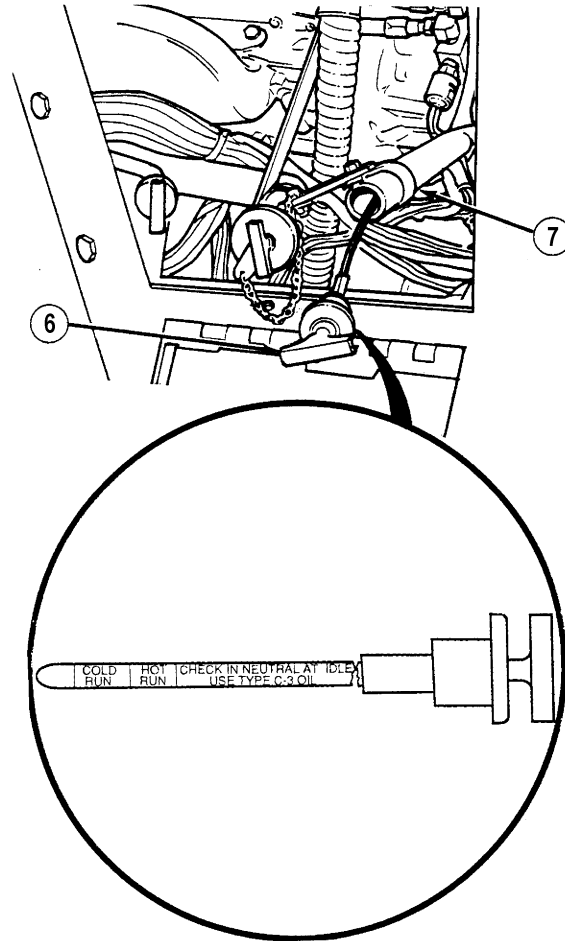
CAUTION

Check both sides of dipstick. Reading may be inaccurate on one side of dipstick, as a result of oil lying in dipstick tube.

NOTE

Frequently check transmission and stop filling when oil is in COLD RUN range.

- (3) Fill transmission at dipstick tube (7). Stop filling when oil is in COLD RUN range on dipstick (6).
- (4) Install dipstick (6) in dipstick tube (7).
- (5) Start engine, run at 1,000 RPM for one minute and return engine to idle.



WARNING

Ensure there are no personnel in front of truck when placing it into drive. Failure to do so may result in injury or death to personnel.

- (6) Apply brake pedal, set transmission range selector to Drive (D) and run engine at 1,000 rpm until transmission temperature reaches 160 to 180 degrees F (71 to 82 degrees C).
- (7) Return engine to idle, set transmission range selector to Neutral (N) and release brake pedal.

c. Follow-On Maintenance:

- Check transmission oil level, (TM 9-2320-364-10).
- Shut off engine, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

8-5. TRANSMISSION BREATHER REPLACEMENT/SERVICE.

This task covers:

- | | |
|------------------------|--------------------------|
| a. Removal | c. Installation |
| b. Cleaning/Inspection | d. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
 Compressor Unit, Air (Item 11, Appendix G)
 Gloves, Chemical Oil Protective (Item 28, Appendix G)
 Goggles, Industrial (Item 30, Appendix G)
 Gun, Air Blow (Item 31, Appendix G)

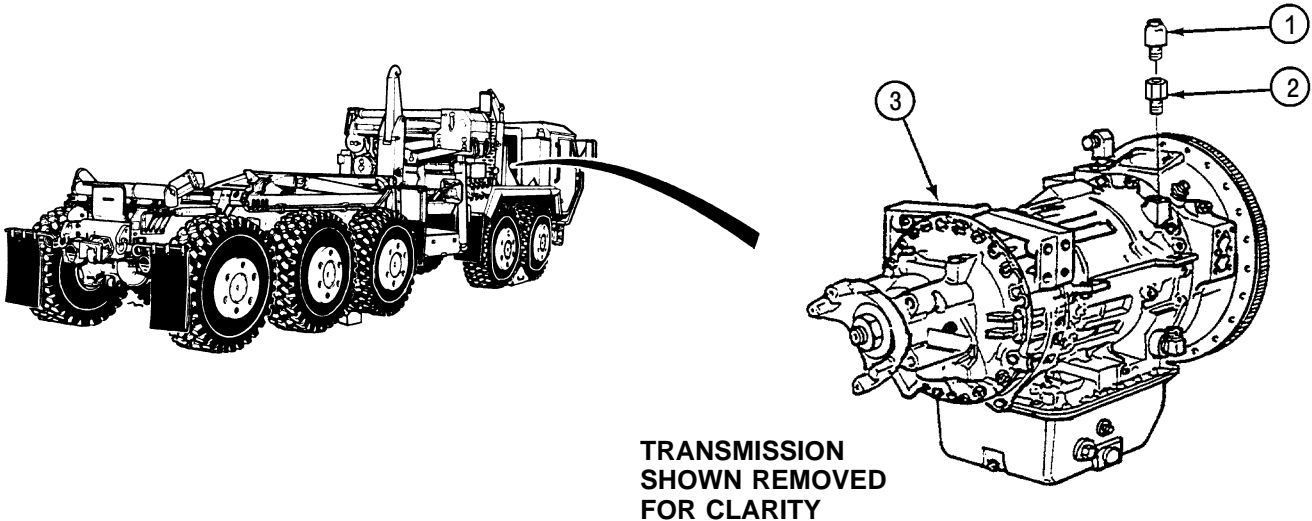
Materials/Parts

Sealing Compound (Item 72, Appendix C)
 Solvent, Dry Cleaning (Item 87, Appendix C)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Right side noise panel removed, (Para 17-26)

a. Removal.



- (1) Remove transmission breather (1) from reducer (2).
- (2) Remove reducer (2) from transmission (3).

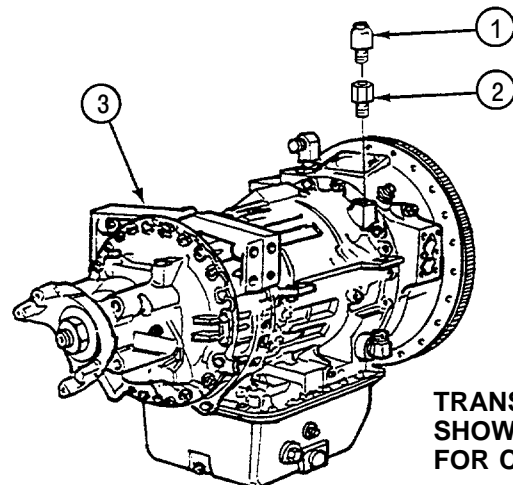
b. Cleaning/Inspection**WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
 - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- (1) Clean transmission breather and reducer with drycleaning solvent and air dry.
 - (2) Check for cracks, dents and/or stripped threads.
 - (3) Replace damaged parts.

c. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound to threads of reducer (2).
- (2) Install reducer (2) in transmission (3).
- (3) Apply sealing compound to threads of transmission breather (1).
- (4) Install transmission breather (1) in transmission (3).

**d. Follow-On Maintenance:**

- Install right side noise panel, (Para 17-26).
- Remove where chocks, (TM 9-2320-364-10).

END OF TASK

CHAPTER 9

TRANSFER CASE MAINTENANCE

Para	Contents	Page
9-1	Introduction	9-1
9-2	Transfer Case Service	9-2
9-3	Transfer Case Differential Air Chamber Replacement	9-5
9-4	Transfer Case Shift Assembly Replacement	9-8
9-5	Transfer Case Shift Cable Adjustment	9-12
9-6	Transfer Case Shift Cable Replacement	9-14
9-7	Transfer Case Hose Replacement	9-19
9-8	Transfer Case Breather Replacement	9-22

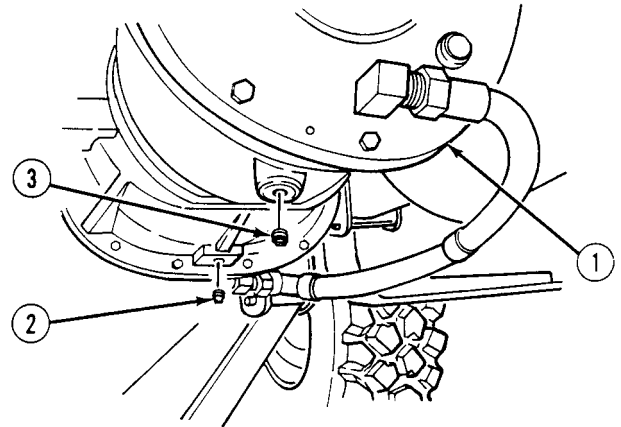
9-1. INTRODUCTION.

This chapter contains maintenance instructions for removing, replacing, installing and adjusting components of the transfer case on truck as authorized by the Maintenance Allocation Chart (MAC) at the Unit Maintenance level.

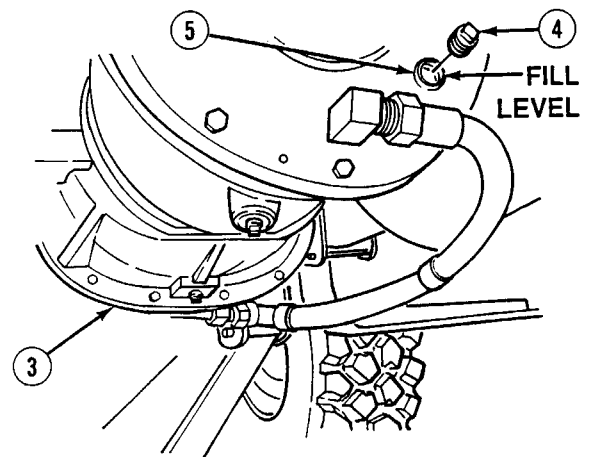
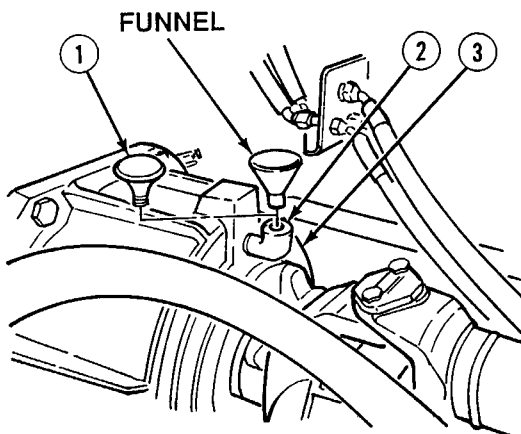
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (3) Coat threads of drain plug (2) with sealing compound.
- (4) Install drain plug (2) on transfer case (1).
- (5) Position drain pan under drain plug (3).
- (6) Remove drain plug (3) from transfer case (1).
- (7) Coat threads of drain plug (3) with sealing compound.
- (8) Install drain plug (3) on transfer case (1).



b. Fill.



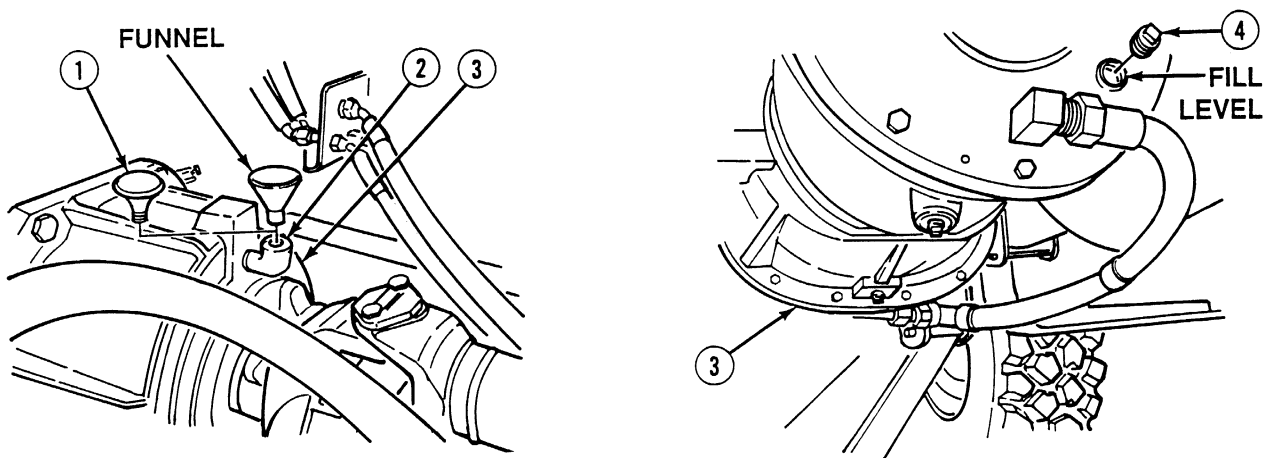
- (1) Remove breather (1) from elbow (2) on top, front of transfer case (3).
- (2) Remove pipe plug (4) from front of transfer case (3).
- (3) Position drain pan under hole (5).

NOTE

To prevent spills, pour oil slowly.

- (4) Using funnel, pour lubricating oil into elbow (2) until oil seeps from hole (5).

9-2. TRANSFER CASE SERVICE (CONT).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (5) Coat threads of pipe plug (4) with sealing compound.
- (6) Install pipe plug (4) in transfer case (3).
- (7) Coat threads of breather (1) with sealing compound.
- (8) Install breather (1) in street elbow (2).

c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Return LHS to transit position, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for oil leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

9-3. TRANSFER CASE DIFFERENTIAL AIR CHAMBER REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Socket Set, 3/8 in. (Item 62, Appendix G)
- Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m]) (Item 95, Appendix G)
- Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)

Materials/Parts

- Adhesive Sealant (Item 14, Appendix C)
- Lubricating Oil (Item 55, Appendix C)

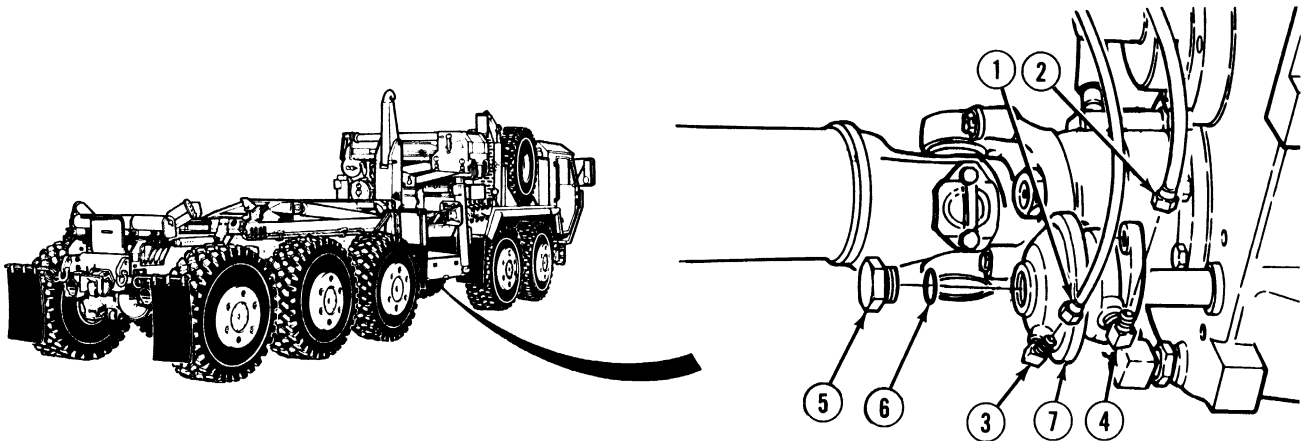
Materials/Parts

- Tags, Identification (Item 88, Appendix C)
- Adhesive (Item 101, Appendix C)
- Locknut (Item 108, Appendix F)
- Lockwasher (2) (Item 168, Appendix F)
- Packing, Preformed (Item 242, Appendix F)
- Washer, Copper (2) (Item 349, Appendix F)

Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)
- Air system drained, (TM 9-2320-364-10)

a. Removal.



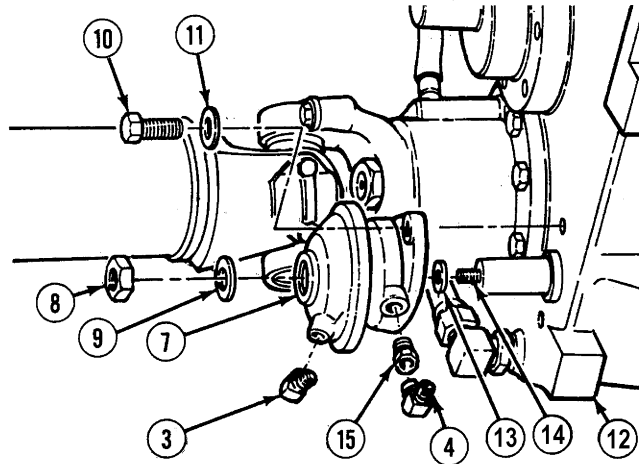
NOTE

Tag and mark all lines prior to removal.

- (1) Disconnect air line 2923 (1) and air line 2874 (2) from elbow (3) and elbow (4).
- (2) Remove cap nut (5) and preformed packing (6) from top of air chamber (7). Discard preformed packing.

9-3. TRANSFER CASE DIFFERENTIAL AIR CHAMBER REPLACEMENT (CONT).

- (3) Remove locknut (8) and copper washer (9) from inside top of air chamber (7). Discard locknut and copper washer.
- (4) Remove two screws (10) and lockwashers (11) from base of air chamber (7). Discard lockwashers.
- (5) Remove air chamber (7) from rear housing (12).
- (6) Remove copper washer (13) from end of shift rod (14). Discard copper washer.



NOTE

Tag and mark position of elbows and reducers prior to removal.

- (7) Remove elbow (3), reducer (15) and elbow (4) from air chamber (7).

b. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Coat threads of elbow (3), reducer (15) and elbow (4) with adhesive sealant.

NOTE

Install elbows and reducer in position noted prior to removal.

- (2) Install elbow (3), reducer (15) and elbow (4) in air chamber (7).
- (3) Install copper washer (13) on shift rod (14).
- (4) Coat threads of two screws (10) and bottom lip of air chamber (7) with adhesive.

NOTE

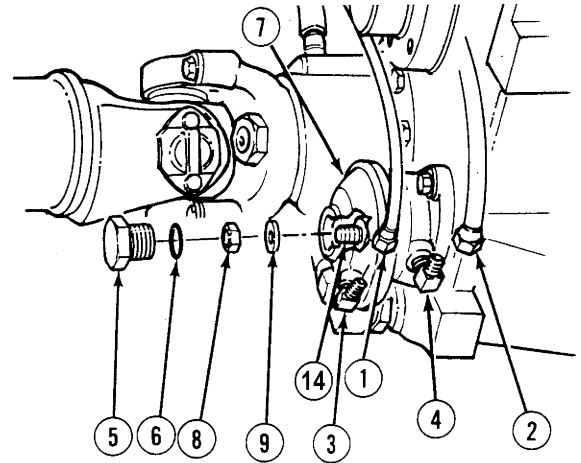
If shift rod is not fully extended, locknut cannot be installed.

- (5) Pull shift rod (14) out of rear housing (12) as far as possible.
- (6) Install air chamber (7) on rear housing (12) with two screws (10) and lockwashers (11). Tighten screws to 25 lb-ft (34 N·m).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

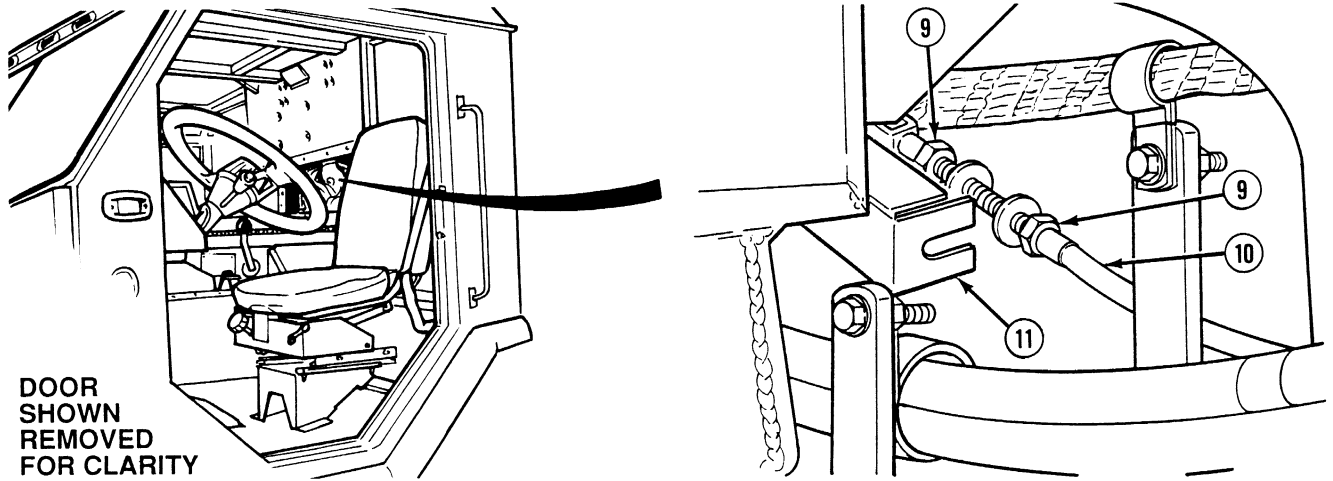
- (7) Apply adhesive sealant to threads of shift rod (14).
- (8) Install copper washer (9) and locknut (8) on shift rod (14). Tighten to 180 lb-in (20 N·m).
- (9) Coat preformed packing (6) with a light coating of oil.
- (10) Install preformed packing (6) on cap nut (5).
- (11) Install cap nut (5) on air chamber (7).
- (12) Install air line 2923 (1) and air line 2874 (2) on elbow (3) and elbow (4).



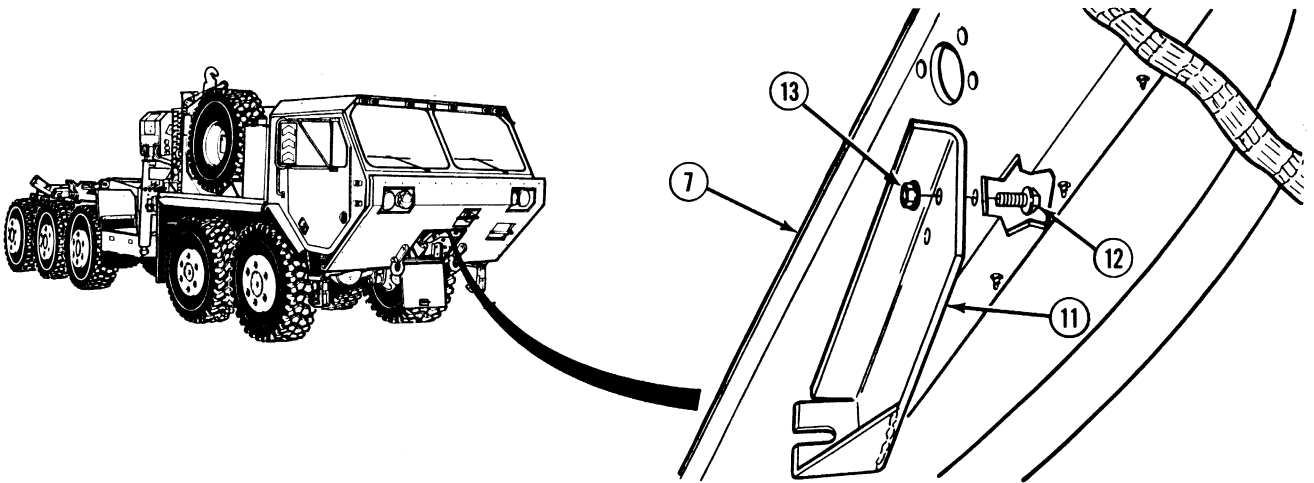
c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Check transfer case operation, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK



- (5) Loosen jam nuts (9) and remove transfer case shift cable (10) from front transfer case shift cable bracket (11).



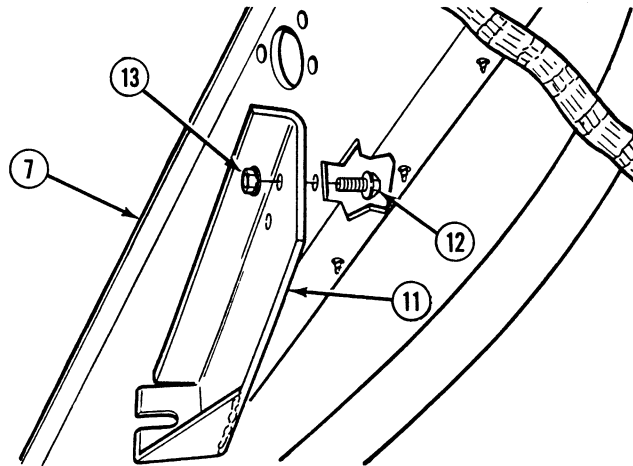
- (6) With the aid of an assistant, remove two screws (12), locknuts (13), and front transfer case shift cable bracket (11) from cab structure (7). Discard locknuts.

9-4. TRANSFER CASE SHIFT ASSEMBLY REPLACEMENT (CONT).

b. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

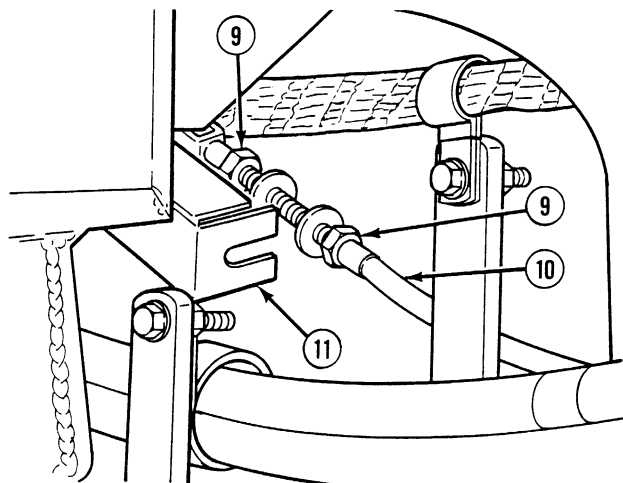


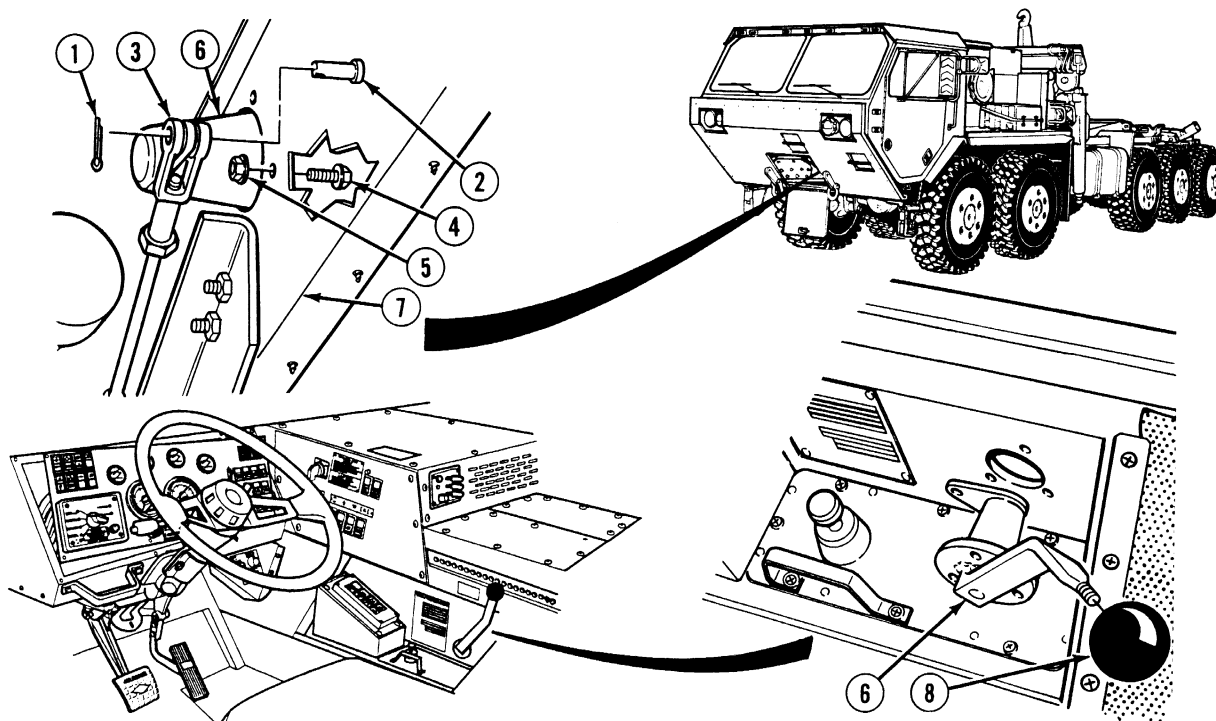
- (1) Apply adhesive to rear of transfer case shift cable bracket (11).
- (2) With the aid of an assistant, install front transfer case shift cable bracket (11) on cab structure with two screws (12) and locknuts (13).

NOTE

Make sure transfer case shifter is in Neutral (N).

- (3) Install and align transfer case shift cable (10) on front transfer case shift cable bracket (11) and tighten jam nut (9).





- (4) Install knob (8) on transfer case shift assembly (6).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (5) Apply adhesive on rear side of transfer case shift assembly (6).
- (6) Position transfer case shift assembly (6) in cab structure (7) with three screws (4).
- (7) With the aid of an assistant, install three locknuts (5) on screws (4).
- (8) Position adjustable clevis (3) on transfer case shift assembly (6).
- (9) Install yoke pin (2) and cotter pin (1) on adjustable clevis (3).

c. Follow-On Maintenance:

- Adjust transfer case shift cable, (Para 9-5).
- Engine access panel installed, (Para 17-24).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

9-5. TRANSFER CASE SHIFT CABLE ADJUSTMENT.

This task covers:

- a. Adjustment
- b. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Personnel Required

Two

Materials/Parts

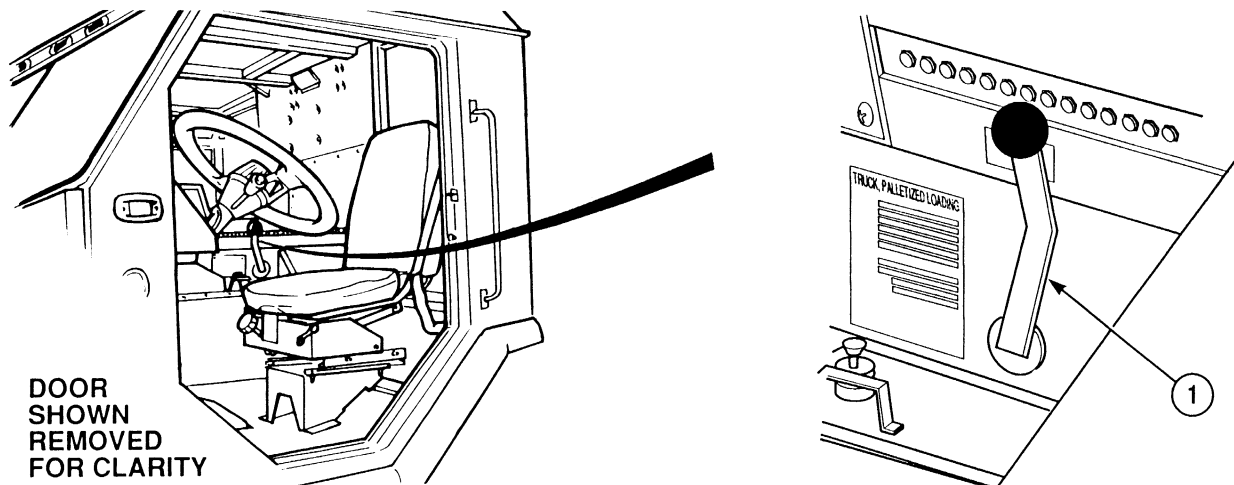
Pin, Cotter (Item 270, Appendix F)

Equipment Condition

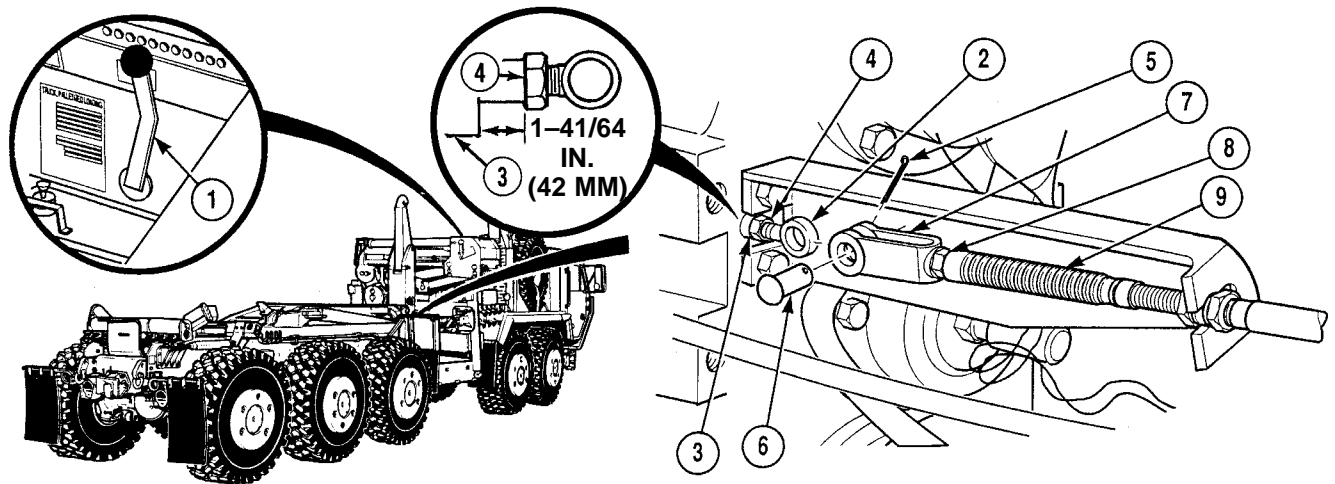
Engine OFF, (TM 9-2320-364-10)

Wheels chocked, (TM 9-2320-364-10)

a. Adjustment.



- (1) Position transfer case shift lever (1) in Neutral (N) position.



NOTE

Measurement should be approximately 1-41/64 in. (42 mm) when transfer case is in neutral.

- (2) Measure shift rod (2) extension from transfer case housing (3) to rear of shift rod jam nut (4).
- (3) Remove cotter pin (5) from clevis pin (6). Discard cotter pin.
- (4) Remove clevis pin (6) from yoke (7).
- (5) Loosen jam nut (8) on transfer case shift cable (9).
- (6) With the aid of an assistant, hold transfer case shift lever (1) in Neutral (straight up) position and screw yoke (7) in or out to align holes in yoke and shift rod (2).
- (7) Install clevis pin (6) in yoke (7) and shift rod (2).
- (8) Install cotter pin (5) in clevis pin (6).

NOTE

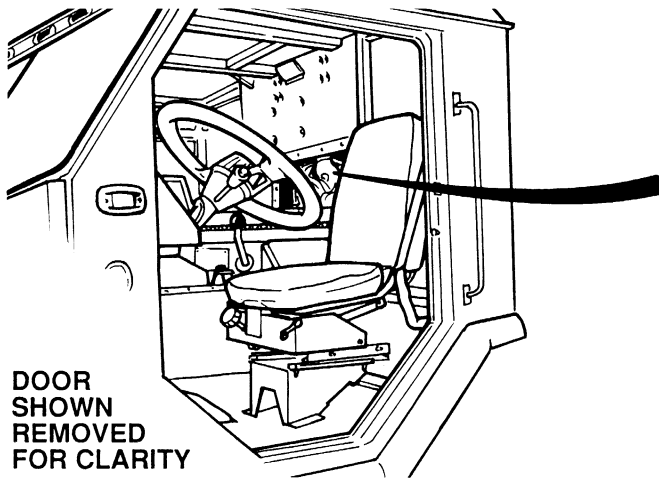
Transfer case shift lever should not hit electronic control box when shifting into high or low range.

- (9) Move transfer case shift lever (1) through low, neutral and high to make sure that shift rod (2) is free to fully engage the lock positions.
- (10) Set transfer case shift lever (1) to high range.
- (11) Tighten jam nut (8) securely against yoke (7).

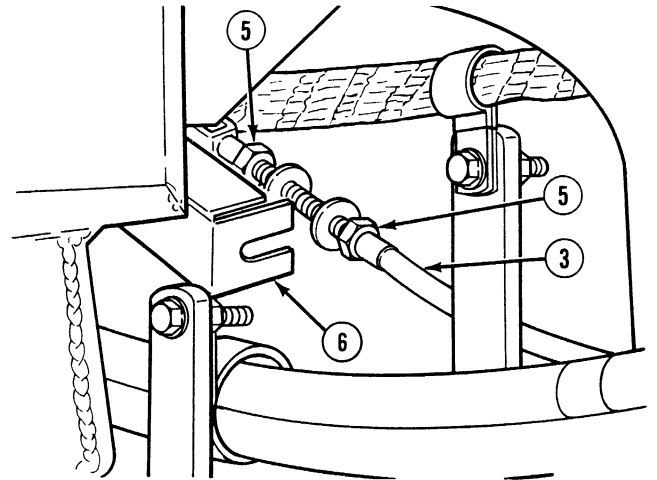
b. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Check transfer case operation, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

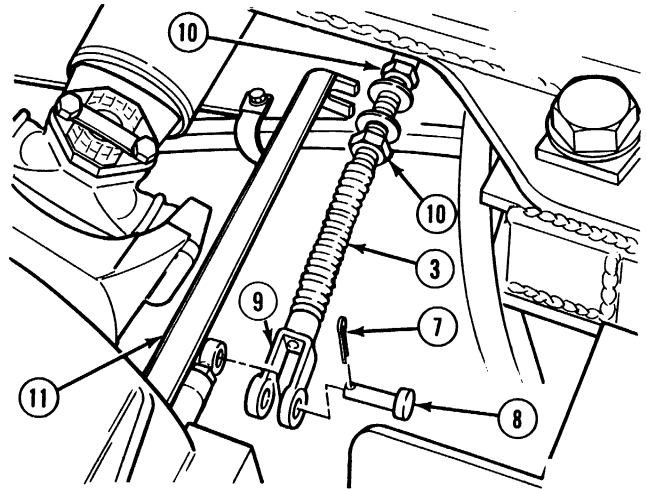
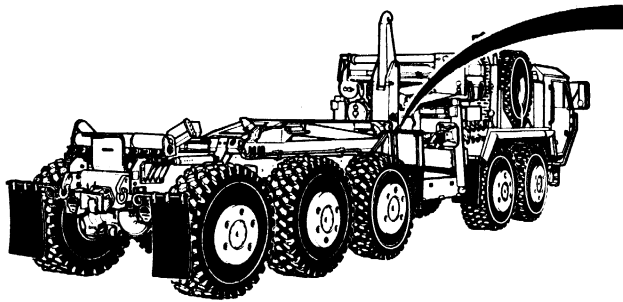
END OF TASK



DOOR
SHOWN
REMOVED
FOR CLARITY

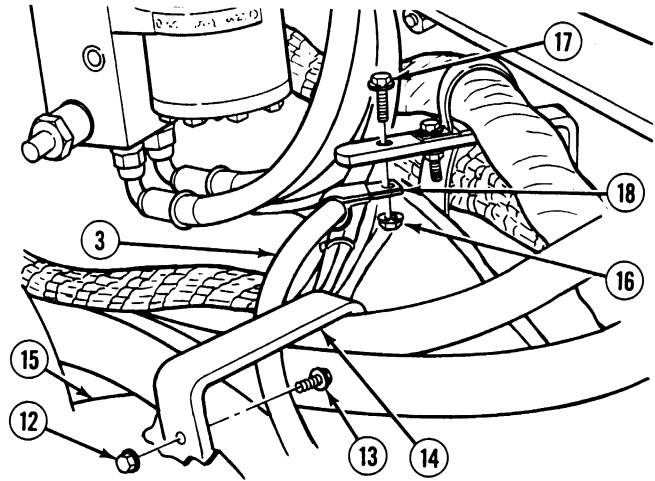
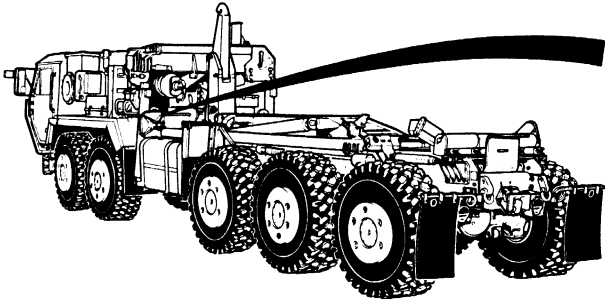


- (2) Loosen jam nuts (5) and remove transfer case shift cable (3) from bracket assembly (6).



- (3) Remove cotter pin (7) and yoke pin (8) from transfer case shift cable (3) and adjusting clevis (9). Discard cotter pin.
- (4) Loosen jam nuts (10) and remove transfer case shift cable (3) from bracket (11).

9-6. TRANSFER CASE SHIFT CABLE REPLACEMENT (CONT).



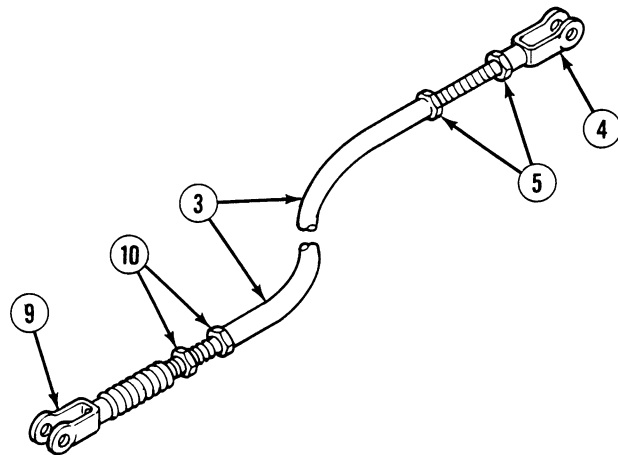
- (5) Remove locknut (12), screw (13) and bracket (14) from crossmember (15).
- (6) Remove locknut (16), screw (17) and cushion clip (18) from transfer case shift cable (3). Discard locknut.
- (7) With the aid of an assistant, remove transfer case shift cable (3) from truck.
- (8) Loosen four jam nuts (5) and (10) and remove two clevises (4) and (9) from ends of transfer case shift cable (3).

b. Installation.

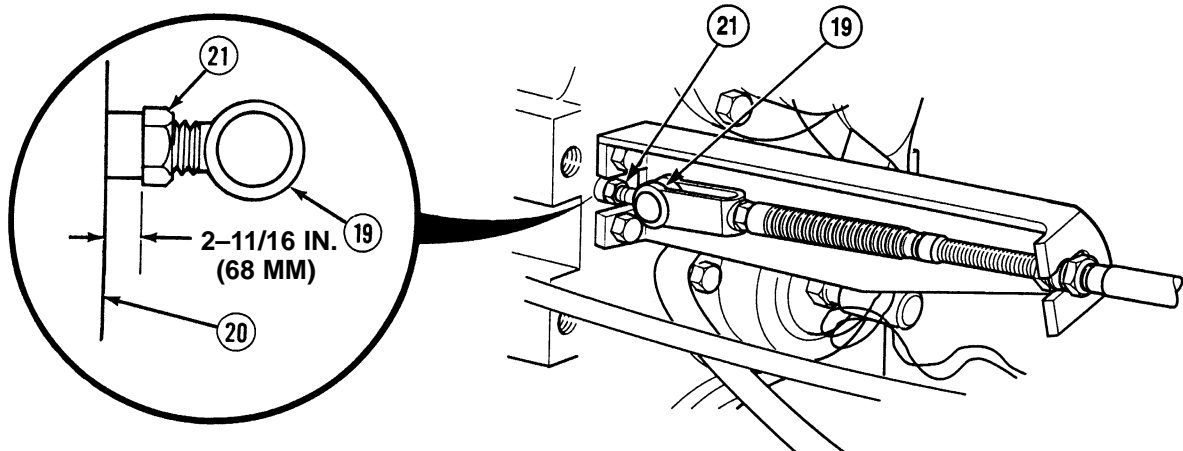
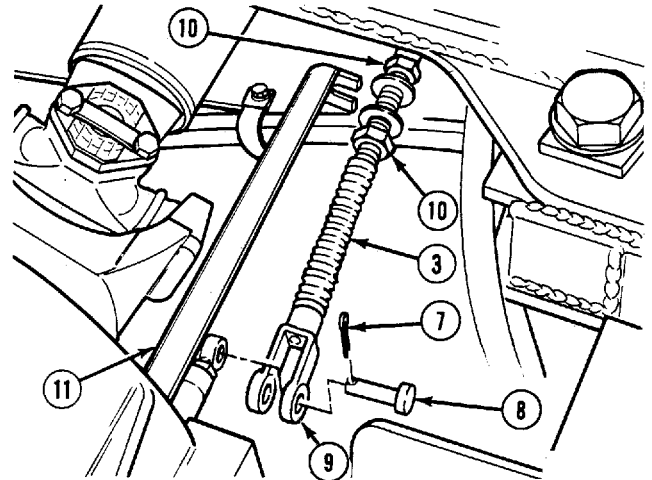
NOTE

Install cable ties as needed.

- (1) Install four jam nuts (5) and (10) and two clevises (4) and (9) on transfer case shift cable (3).
- (2) With the aid of an assistant, position transfer case shift cable (3) in truck and install cushion clip (18) with screw (17) and locknut (16). Tighten locknut to 23 lb-ft (31 N·m).
- (3) Install bracket (14) on crossmember (15) with screw (13) and locknut (12).



- (4) Install transfer case shift cable (3) on bracket (11) with jam nuts (10).
- (5) Adjust transfer case shift cable (3) until cable and adjusting clevis (9) are aligned and tighten jam nuts (10).
- (6) Install yoke pin (8) and cotter pin (7) in adjusting clevis (9) and transfer case shift cable (3).



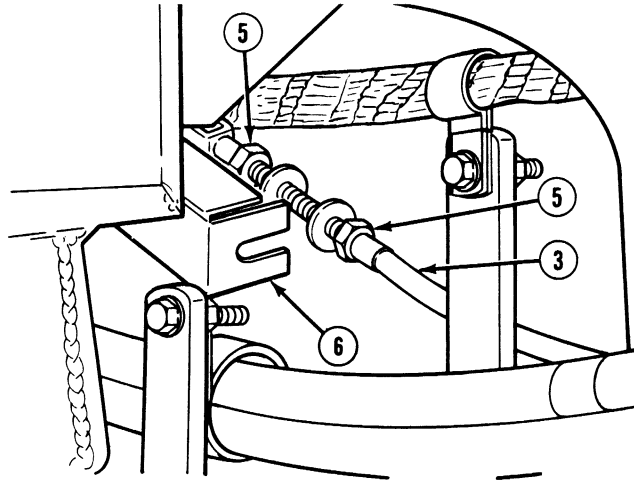
NOTE

Measurement in Step (7) should be 2-11/16 in. (68 mm) when transfer case is in neutral.

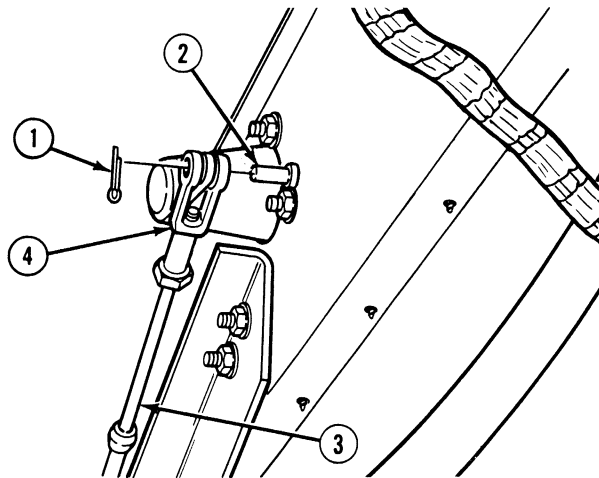
- (7) Measure shift rod (19) extension from transfer case housing (20) to rear of shift rod jam nut (21).

9-6. TRANSFER CASE SHIFT CABLE REPLACEMENT (CONT).

- (8) Install and align transfer case shift cable (3) on bracket (6) with two jam nuts (5).



- (9) Install yoke pin (2) and cotter pin (1) in adjusting clevis (4) and transfer case shift cable (3).

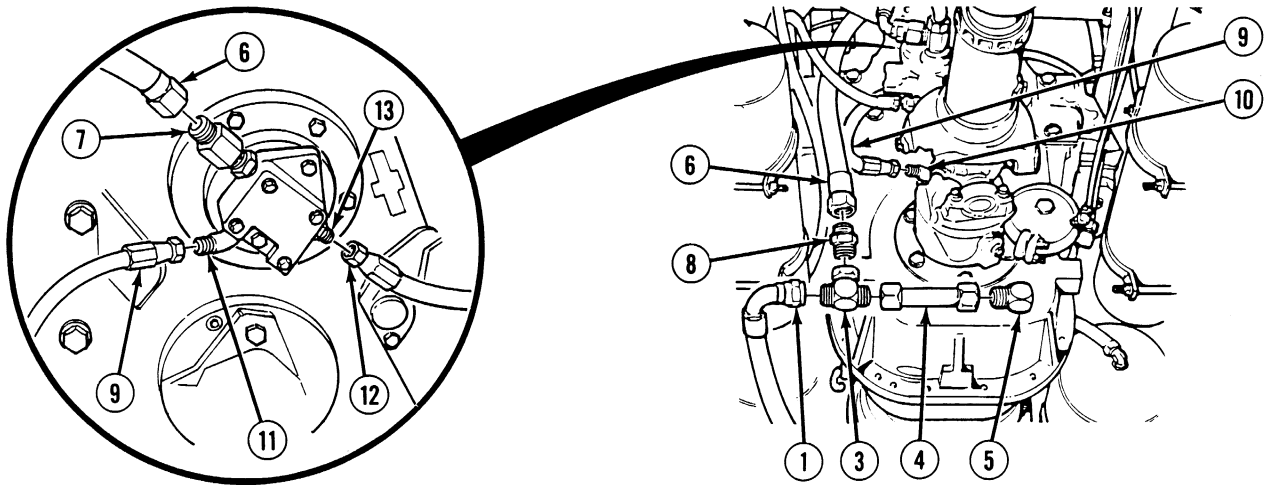


c. Follow-On Maintenance:

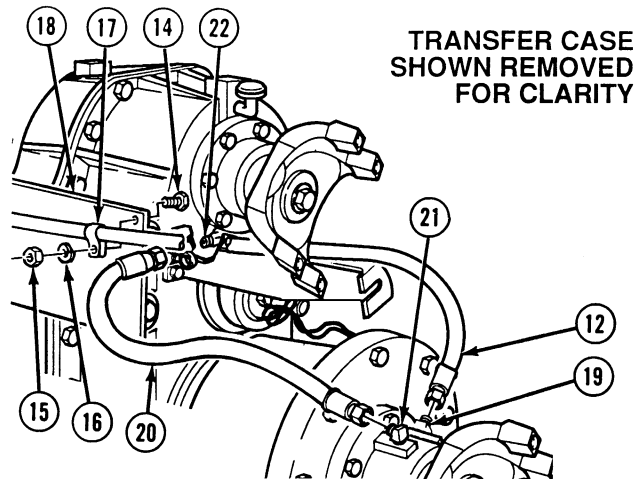
- Install cab engine access panel, (Para 17-24).
- Adjust transfer case shift cable, (Para 9-5).
- Install right fender front skirt, (Para 17-33).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

9-7. TRANSFER CASE HOSE REPLACEMENT (CONT).



- (2) Remove hose 2815 (1) from tee (3).
- (3) Remove tube (4) from tee (3) and elbow (5).
- (4) Remove hose 2815 (6) from adapter (7).
- (5) Remove hose 2815 (6) from adapter (8).
- (6) Remove adapter (8) from tee (3).
- (7) Remove hose 2762 (9) from elbows (10) and (11).
- (8) Remove hose 2831 (12) from adapter (13).
- (9) Remove two screws (14), nuts (15), lockwashers (16) and cushion clips (17) from right support assembly (18). Discard lockwashers.
- (10) Remove cushion clip (17) from hose 2831 (12).
- (11) Remove hose 2831 (12) from elbow (19).
- (12) Remove hose 2762 (20) from elbow (21) and (22).

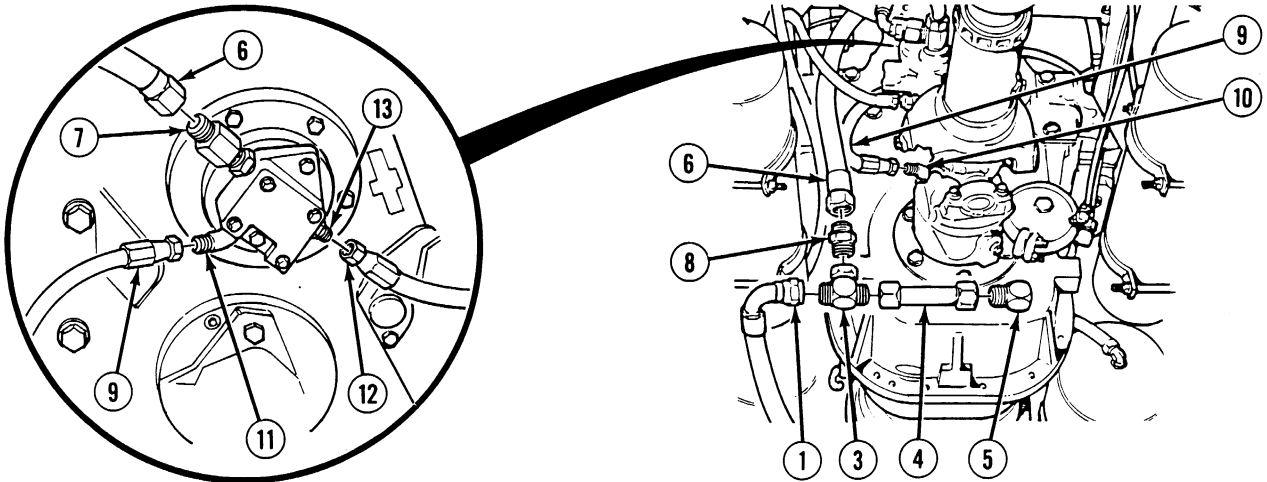


b. Installation.

NOTE

Install cable ties as required.

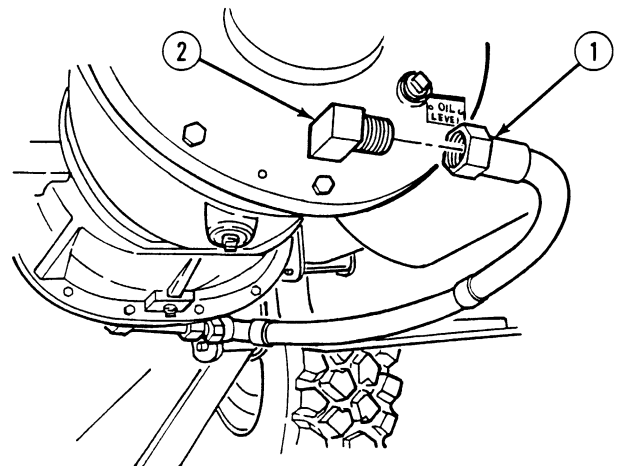
- (1) Install hose 2762 (20) on elbows (21) and (22).
- (2) Install hose 2831 (12) on elbow (19).
- (3) Install two cushion clips (17) on hose 2831 (12) and right support assembly (18) with two screws (14), lockwashers (16) and nuts (15). Tighten screws to 96 lb-in (11 N·m).



- (4) Install hose 2831 (12) on adapter (13).
- (5) Install hose 2762 (9) on elbows (11) and (10).
- (6) Install adapter (8) on tee (3).
- (7) Install hose 2815 (6) on adapters (8) and (7).
- (8) Install hose 2815 (1) and tube (4) on tee (3).
- (9) Install elbow (5) on tube (4).
- (10) Install hose 2815 (1) on elbow (2).

c. Follow-On Maintenance:

- Fill transfer case, (Para 9-2).
- Start engine, (TM 9-2320-364-10).
- Return LHS to transit position, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for oil leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).



END OF TASK

CHAPTER 10

DRIVESHAFT AND UNIVERSAL JOINT MAINTENANCE

Para	Contents	Page
10-1	Introduction	10-1
10-2	Driveshaft and Universal Joint Repair	10-2

10-1. INTRODUCTION.

This chapter contains maintenance instructions for removing, replacing, installing and adjusting driveshafts and universal joints as authorized by the Maintenance Allocation Chart (MAC) at the Unit Maintenance level.

10-2. DRIVESHAFT AND UNIVERSAL JOINT REPAIR.

This task covers:

- | | | |
|----------------|------------------------|--------------------------|
| a. Removal | c. Cleaning/Inspection | e. Installation |
| b. Disassembly | d. Assembly | f. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Bar, Crow (Item 4, Appendix G)
- Compressor Unit, Air (Item 11, Appendix G)
- Gloves, Chemical Oil Protective (Item 28, Appendix G)
- Goggles, Industrial (Item 30, Appendix G)
- Gun, Airblow (Item 31, Appendix G)
- Wrench, Torque (0 to 175 lb-ft [0 to 24 N·m]) (Item 95, Appendix G)

Materials/Parts

- Grease (Item 42, Appendix C)
- Sealing Compound (Item 77, Appendix C)
- Solvent, Drycleaning (Item 87, Appendix C)

Materials/Parts - Continued

- Journal and Bearing Kit (Axles No. 1 and No. 5 Driveshaft) (Item 82, Appendix F)
- Journal and Bearing Kit (Axles No. 2 and No. 4 Driveshaft) (Item 84, Appendix F)
- Journal and Bearing Kit (Axle No. 3 Driveshaft) (Item 83, Appendix F)

Personnel Required

Two

Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)
- LHS fully extended, (for transmission to transfer case driveshaft), (TM 9-2320-364-10)

a. Removal.



Driveshafts can weigh up to 100 lbs (45 kg), obtain aid from an assistant to prevent possible injury to personnel.

NOTE

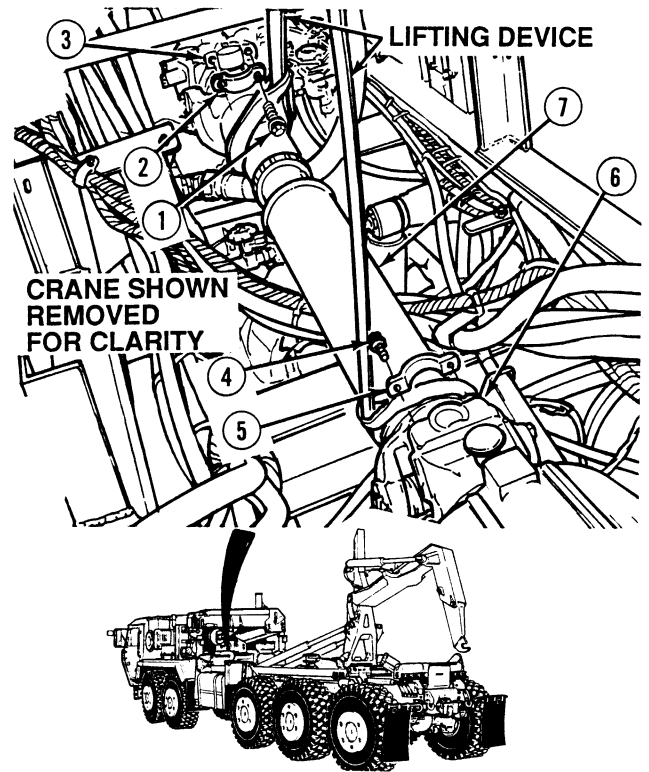
- All driveshafts are removed, disassembled, cleaned, assembled and installed the same way.
- Driveshaft between transmission and transfer is shown.
- A crow bar may be necessary to hold yokes from turning.

- (1) With the aid of an assistant, remove four screws (1) and two bearing straps (2) from yoke (3).
- (2) With the aid of an assistant, remove four screws (4) and two bearing straps (5) from yoke (6).

CAUTION

Use care when removing driveshaft from yokes. Bearing caps or needle bearings may fall out and be damaged or lost.

- (3) With the aid of an assistant, compress driveshaft (7) and remove from yokes (3) and (6).



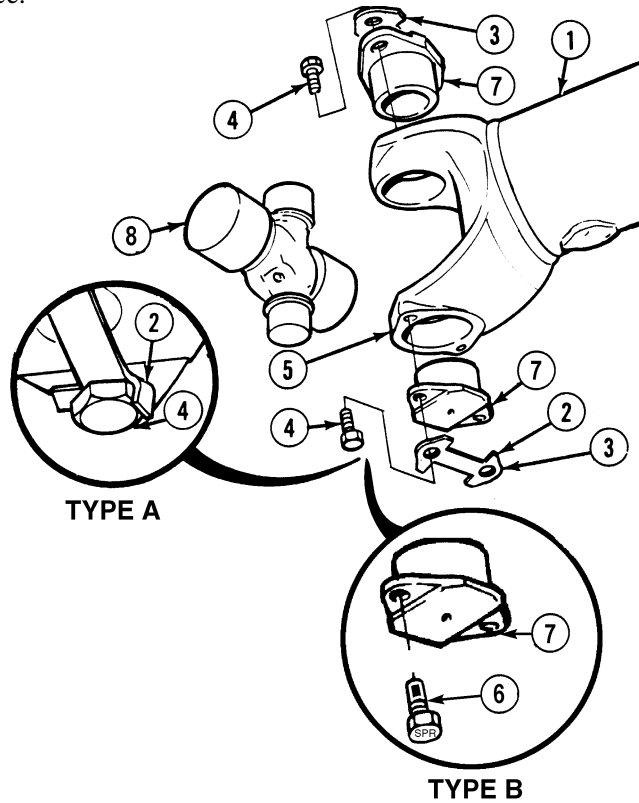
10-2. DRIVESHAFT AND UNIVERSAL JOINT REPAIR (CONT).

b. Disassembly.

- (1) Position driveshaft (1) on clean work surface.

NOTE

- There are two types of bearing assembly fasteners. Type B replaced Type A.
- Type A uses lock straps with hex head screws.
- Type B uses serrated hex head screws with lock patches.
- Perform Steps (2) and (3) for Type A.



- (2) Bend four locking tabs (2) on two lock straps (3) away from screws (4).
- (3) Remove and discard four screws (4) and two lock straps (3) from slip yoke (5).

NOTE

Perform Step (4) for Type B.

- (4) Remove four screws (6) from slip yoke (5). Discard screws.

CAUTION

Use caution when removing bearing assemblies from yoke. Needles in bearing assemblies may be lost or damaged.

- (5) Remove two bearing assemblies (7) from slip yoke (5).
- (6) Remove universal joint (8) from slip yoke (5).

- (7) Remove retaining wire (9) and two bearing caps (10) from universal joint (8).

NOTE

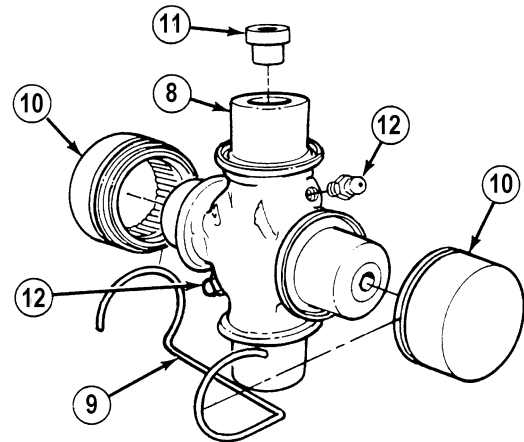
Perform Step (8) only if check valves stayed in bearing caps.

- (8) Remove four check valves (11) from universal joint (8).

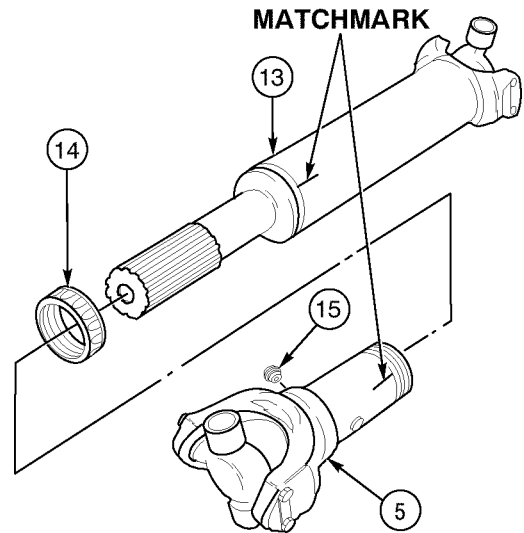
NOTE

Some universal joints may come with more than one grease fitting.

- (9) Remove two grease fittings (12) from universal joint (8).
- (10) Repeat Steps (1) through (9) for remaining universal joint (8).



- (11) Matchmark slip yoke (5) and splined shaft (13).
- (12) Remove slip yoke (5) and dust cap (14) from splined shaft (13).
- (13) Remove dust cap (14) from slip yoke (5).
- (14) Remove grease fitting (15) from slip yoke (5).



10-2. DRIVESHAFT AND UNIVERSAL JOINT REPAIR (CONT).

c. *Cleaning/Inspection.*

WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
 - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- (1) Clean all metal parts with drycleaning solvent.

WARNING

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc). Failure to comply may result in injury or death to personnel.

- (2) Dry all parts with compressed air.
- (3) Inspect driveshaft for cracks, dents or missing balance weights on slip yoke.
- (4) Inspect universal joint for pitting and gouges.
- (5) Inspect bearing caps for cracks or missing needle bearings.
- (6) Inspect splines and dust cap for cracks.
- (7) Replace all damaged parts.

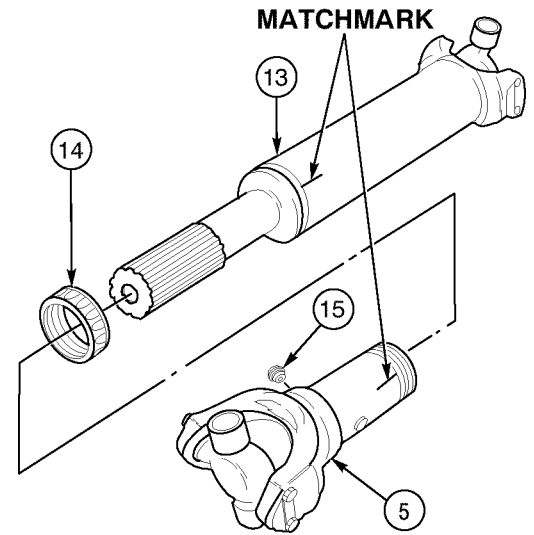
d. Assembly.

- (1) Install grease fitting (15) in slip yoke (5).
- (2) Coat spline shaft (13) with grease.
- (3) Position dust cap (14) on spline shaft (13).

CAUTION

Matchmarks must be aligned as marked during removal. Failure to comply may result in damage.

- (4) Align matchmarks and install slip yoke (5) on spline shaft (13).
- (5) Install dust cap (14) on slip yoke (5). Tighten hand tight.

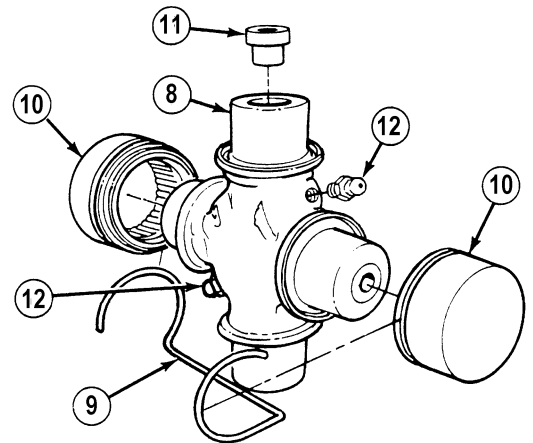


- (6) Install two grease fittings (12) in universal joint (8).

CAUTION

Check valves must be installed correctly or lubricant will not flow correctly and cause damage to equipment.

- (7) If removed, install four check valves (11) in universal joint (8).
- (8) Coat inside of two bearing caps (10) with grease.
- (9) Install two bearing caps (10) and retaining wire (8) on universal joint (8).

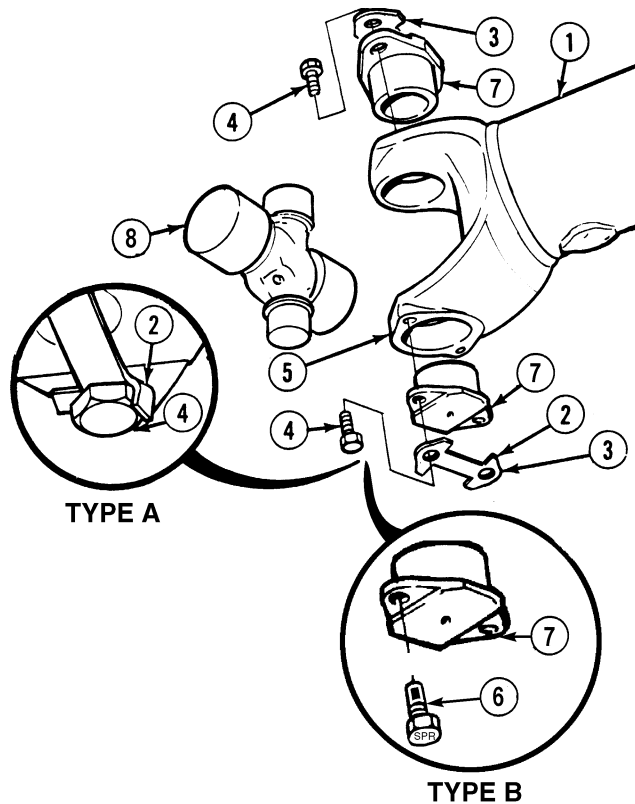


10-2. DRIVESHAFT AND UNIVERSAL JOINT REPAIR (CONT).

- (10) Position universal joint (8) in slip yoke (5).
- (11) Coat inside of two bearing caps (7) with grease.
- (12) Install two bearing assemblies (7) on slip yoke (5) and universal joint (8).

NOTE

- There are two types of bearing assembly fasteners. Type B replaced Type A.
- Type A uses lock straps with hex head screws.
- Type B uses serrated hex head screws with lock patches.
- Perform Steps (13) and (14) for Type A.



- (13) Install two lock straps (3) and four screws (4) on two bearing caps (10) and slip yoke (5). Refer to Table 10-1 for proper torque value and tighten screws.
- (14) Bend four locking tabs (2) on two lock straps (3) against screws (4).

NOTE

Perform Step (15) for Type B.

- (15) Install four screws (6) on two bearing assemblies (7) and slip yoke (5). Refer to Table 10-2 for proper torque value and tighten screws.
- (16) Repeat Steps (1) through (15) for remaining universal joint (8).

Table 10-1. Lock Strap Screw Torque Requirements (Type A)

Driveshaft	Torque Requirement
Axle No. 1 to Axle No. 2	17 to 24 lb-ft (23 to 32 N·m)
Axle No. 2 to Transfer Case	32 to 42 lb-ft (43 to 57 N·m)
Transfer Case to Axle No. 3	32 to 42 lb-ft (43 to 57 N·m)
Axle No. 3 to Axle No. 4	32 to 42 lb-ft (43 to 57 N·m)
Axle No. 4 to Axle No. 5	17 to 24 lb-ft (23 to 32 N·m)
Transmission to Transfer Case	32 to 42 lb-ft (43 to 57 N·m)

Table 10-2. Lock Screw Torque Requirements (Type B)

Driveshaft	Torque Requirement
Axle No. 1 to Axle No. 2	26 to 35 lb-ft (35 to 48 N·m)
Axle No. 2 to Transfer Case	38 to 48 lb-ft (52 to 65 N·m)
Transfer Case to Axle No. 3	38 to 48 lb-ft (52 to 65 N·m)
Axle No. 3 to Axle No. 4	38 to 48 lb-ft (52 to 65 N·m)
Axle No. 4 to Axle No. 5	26 to 35 lb-ft (35 to 48 N·m)
Transmission to Transfer Case	38 to 48 lb-ft (52 to 65 N·m)

10-2. DRIVESHAFT AND UNIVERSAL JOINT REPAIR (CONT).

e. Installation.

WARNING

- Driveshafts can weigh up to 100 lbs (45 kg), obtain aid from an assistant to prevent possible injury to personnel.
- Adhesive causes immediate bonding on contact with eyes, skin, or clothing and also gives off harmful vapors. Wear protective goggles and use in a well-ventilated area. If adhesive gets in eyes, flush with water for 15 minutes and get immediate medical attention.

NOTE

Driveshafts are properly installed when yoke is facing towards power source.

- (1) With the aid of an assistant, position and extend driveshaft (7) into yokes (4) and (6).
- (2) Coat threads of four screws (4) with sealing compound.
- (3) Install four screws (4) and two bearing straps (5) to yoke (6). Refer to Table 10-3 for proper torque and tighten screws.
- (4) Coat threads of four screws (1) with sealing compound.
- (5) Install four screws (1) and two bearing straps (2) to yoke (3). Refer to Table 10-3 for proper torque and tighten screws.

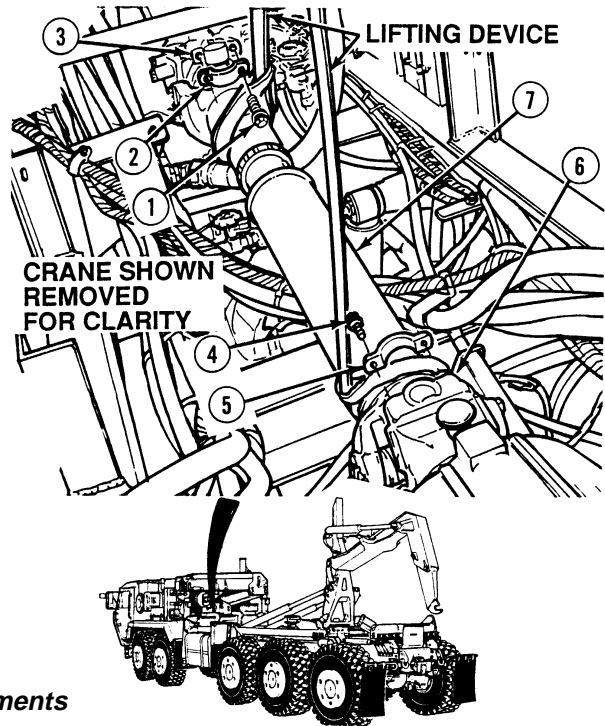


Table 10-3. Bearing Strap Screw Torque Requirements

Driveshaft	Torque Requirement
Axle No. 1 to Axle No. 2	55 to 60 lb-ft (75 to 81 N·m)
Axle No. 2 to Transfer Case	130 to 135 lb-ft (176 to 183 N·m)
Transfer Case to Axle No. 3	130 to 135 lb-ft (176 to 183 N·m)
Axle No. 3 to Axle No. 4	130 to 135 lb-ft (176 to 183 N·m)
Axle No. 4 to Axle No. 5	55 to 60 lb-ft (75 to 81 N·m)
Transmission to Transfer Case	130 to 135 lb-ft (176 to 183 N·m)

f. Follow-On Maintenance:

- Lubricate driveshaft and universal joint, (Para 2-22).
- LHS in transit position, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

CHAPTER 11

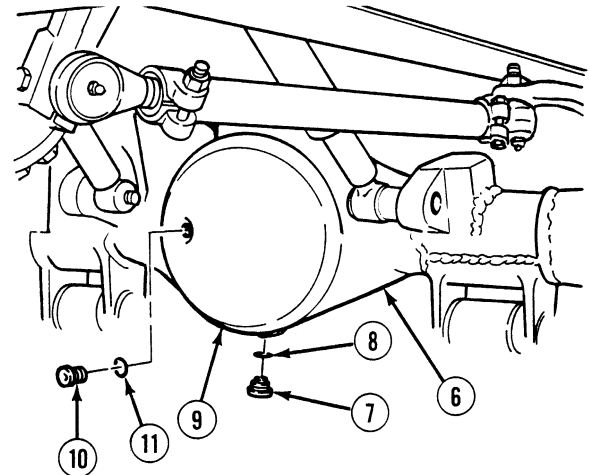
AXLES MAINTENANCE

Para	Contents	Page
11-1	Introduction	11-1
11-2	Axle Oil Service	11-2
11-3	Axle Breather Elbow Replacement	11-5
11-4	Axles No.1, 2 And 5 Pivot and Spindle Inspection	11-7
11-5	Axle No. 1 Locking Cylinder Lines And Fittings Replacement	11-8
11-6	Axle No. 2 Locking Cylinder Lines And Fittings Replacement	11-10
11-7	Axle No. 3 Locking Cylinder Lines And Fittings Replacement	11-13
11-8	Axle No. 4 Locking Cylinder Lines And Fittings Replacement	11-17
11-9	Axle No. 5 Locking Cylinder Lines And Fittings Replacement	11-20
11-10	Steering Stop Bolt Replacement/Adjustment	11-23

11-1. INTRODUCTION.

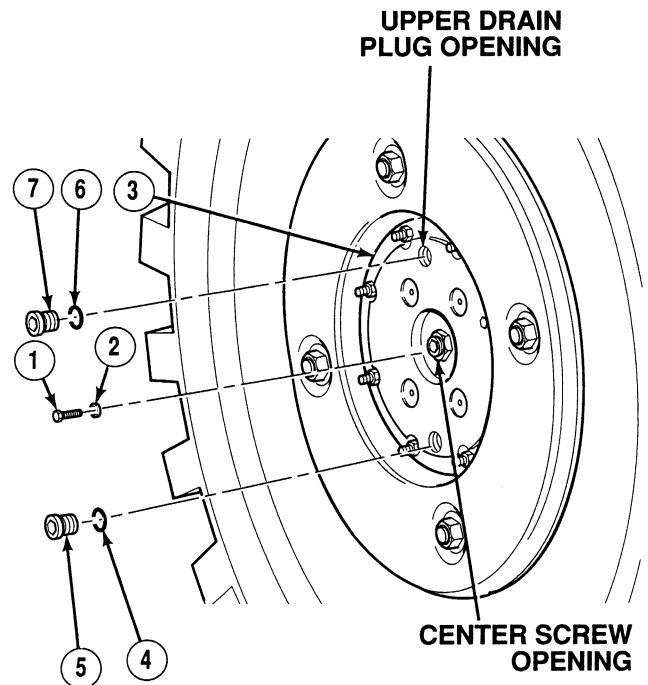
This chapter contains maintenance instructions for removing, replacing, installing and adjusting the axles authorized by the Maintenance Allocation Chart (MAC) at the Unit Maintenance level.

- (5) Position a drain pan under differential carrier (6).
- (6) Remove magnetic drain plug (7) and preformed packing (8) from axle housing (9). Discard preformed packing.
- (7) Remove drain plug (10) and preformed packing (11) from axle housing (9). Discard preformed packing.



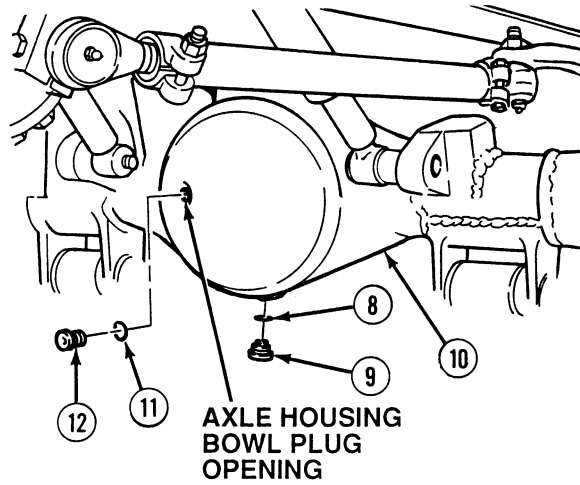
b. Fill.

- (1) Remove screw (1) and washer (2) from planetary gear (3). Discard washer.
- (2) Install preformed packing (4) and lower drain plug (5) in planetary gear (3).
- (3) Add lubricant to upper drain plug opening until oil appears at center screw opening.
- (4) Install washer (2) and screw (1) in planetary gear (3).
- (5) Install preformed packing (6) and upper drain plug (7) in planetary gear (3).



11-2. AXLE OIL SERVICE (CONT).

- (6) Install preformed packing (8) and magnetic drain plug (9) in axle housing (10).
- (7) Add lubricant at axle housing bowl plug opening until oil appears at opening.
- (8) Install preformed packing (11) and drain plug (12) in axle housing (10).



c. Follow-On Maintenance:

- Check for oil leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

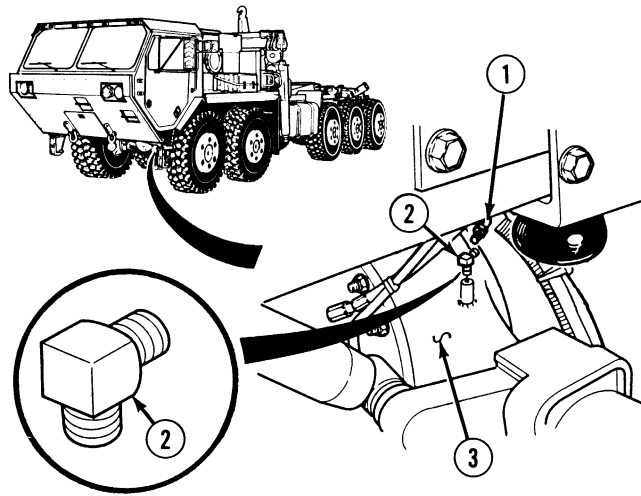
END OF TASK

11-3. AXLE BREATHER ELBOW REPLACEMENT (CONT).

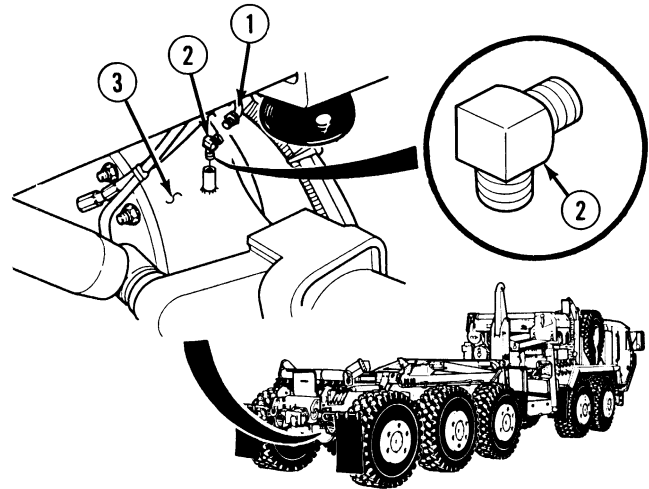
b. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (1) Coat threads of axle breather elbow (2) with sealing compound.
- (2) Install axle breather elbow (2) in axle housing (3).
- (3) Connect air line 2893 (1) to axle breather elbow (2).



c. Follow-On Maintenance:

- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

11-4. AXLES NO. 1, 2 AND 5 PIVOT AND SPINDLE INSPECTION.

This task covers:

- a. Inspection
- b. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

- Bar, Wrecking (Item 5, Appendix G)
- Jack, Hydraulic, Hand (Item 40, Appendix G)
- Jackstand (Item 42, Appendix G)
- Wooden Block (Appendix D)

Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)

Personnel Required

Two

a. Inspection.

WARNING

Use jackstands to support axle weight. Failure to comply may result in injury to personnel.

- (1) Position jack under axle (1) and raise axle until tire (2) is just off ground.
- (2) Position jackstand under axle (1) and lower axle onto jackstand.
- (3) Position wrecking bar between tire (2) and ground.

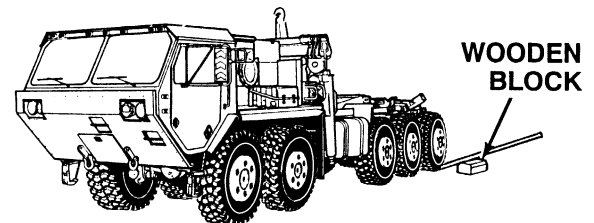
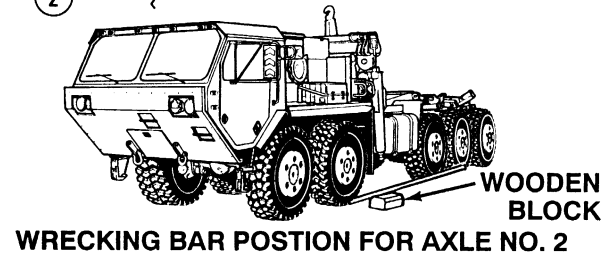
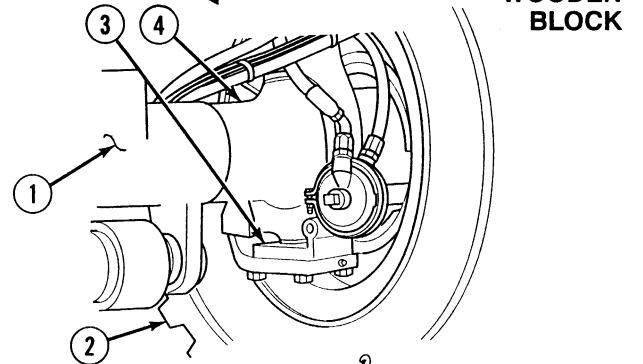
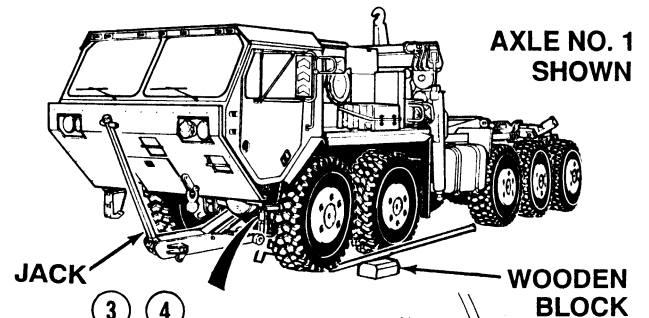
NOTE

If wheel play is noticed, notify DS Maintenance.

- (4) With the aid of an assistant, watch for play at hub gear socket (3) and ball (4) while prying up on tire (2).
- (5) Remove wrecking bar.
- (6) Raise axle (1) and remove jackstand.
- (7) Lower axle (1) and remove jack.

b. Follow-On Maintenance:

- Remove wheel chocks, (TM 9-2320-364-10).



END OF TASK

- (4) Disconnect air line 2419 (1) from fitting (6).
- (5) Remove fitting (6) from tee (7).

b. Installation.

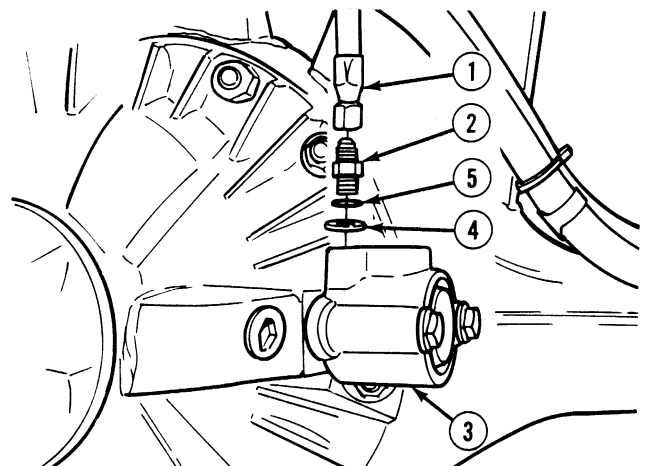
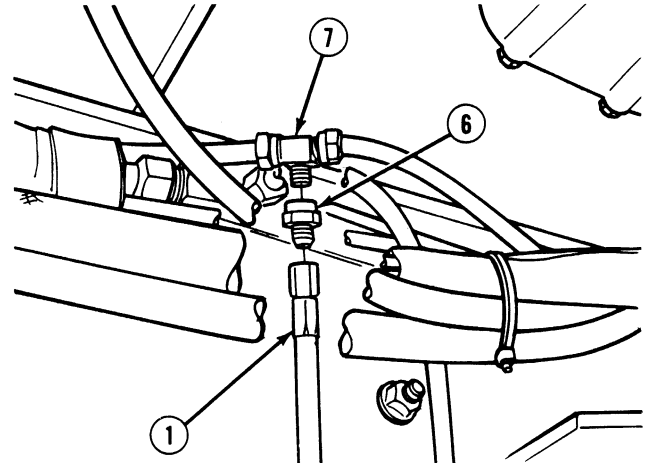
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

Install cable ties as required.

- (1) Apply sealing compound to threads of tee (7).
- (2) Install fitting (6) on tee (7).
- (3) Install air line 2419 (1) on fitting (6).
- (4) Install preformed packing (5) and washer (4) on fitting (2).
- (5) Install fitting (2) in locking cylinder (3).
- (6) Install air line 2419 (1) on fitting (2).



c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi, (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

- (7) Disconnect air line 2420 (1) from fitting (11).
- (8) Remove fitting (11) from tee (12).
- (9) Disconnect air line 2056 (6) from fitting (13).
- (10) Remove fitting (13) from tee (14).

b. Installation.

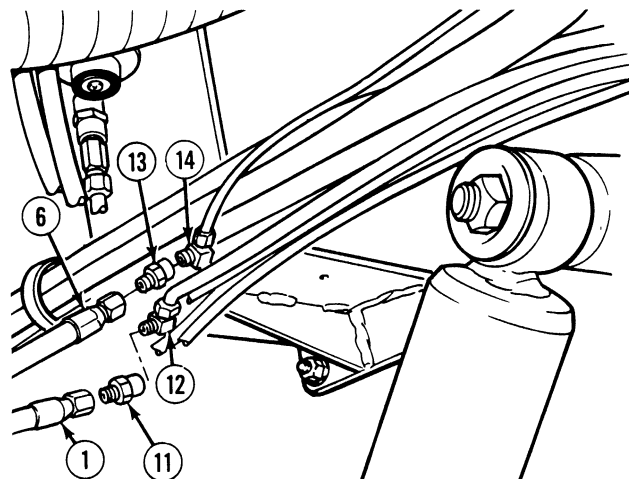
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

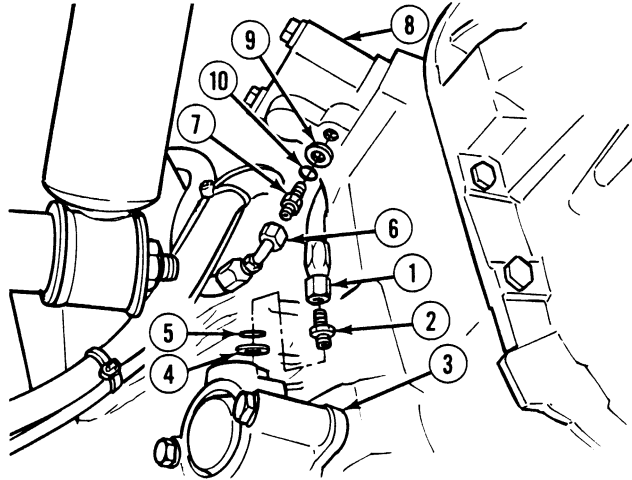
Install cable ties as required.

- (1) Apply sealing compound to threads of tees (14) and (12).
- (2) Install fitting (13) on tee (14).
- (3) Install fitting (11) on tee (12).
- (4) Install air line 2056 (6) on fitting (13).
- (5) Install air line 2420 (1) on fitting (11).



11-6. AXLE NO. 2 LOCKING CYLINDER LINES AND FITTINGS REPLACEMENT (CONT).

- (6) Install preformed packing (10) and washer (9) on fitting (7).
- (7) Install preformed packing (5) and washer (4) on fitting (2).
- (8) Install fitting (7) in locking cylinder (8).
- (9) Install air line 2056 (6) on fitting (7).
- (10) Install fitting (2) in locking cylinder (3).
- (11) Install air line 2420 (1) on fitting (2).



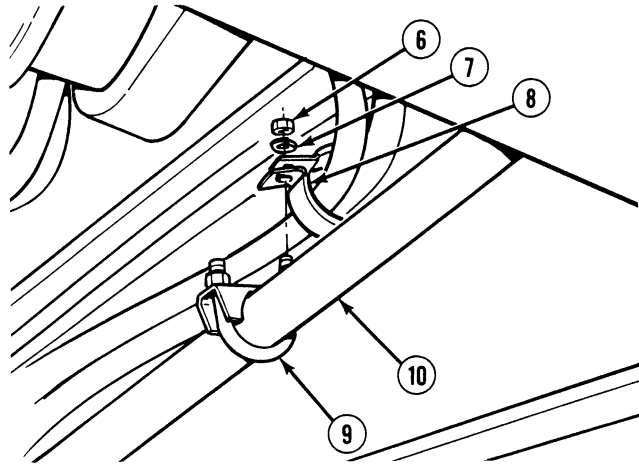
c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

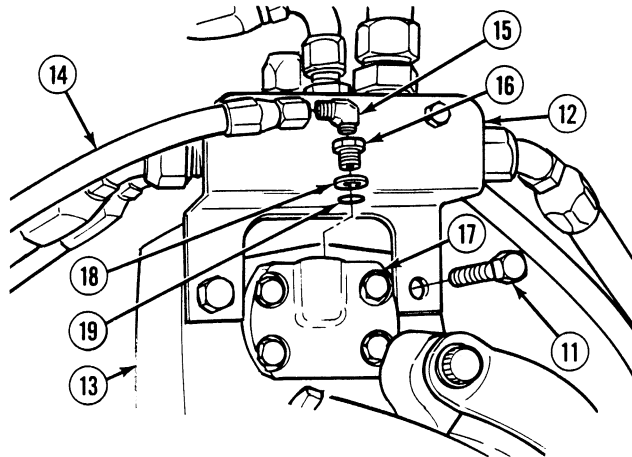
END OF TASK

11-7. AXLE NO. 3 LOCKING CYLINDER LINES AND FITTINGS REPLACEMENT (CONT).

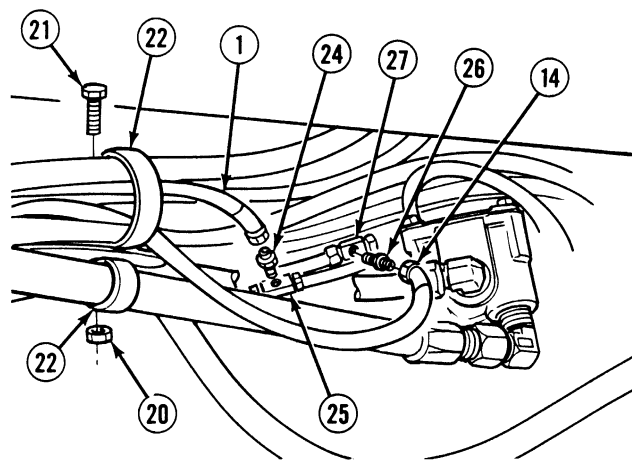
- (4) Remove nut (6), lockwasher (7) and cushion clip (8) from clamp (9) on torque rod (10). Discard lockwasher.



- (5) Remove two screws (11) and bracket (12) from axle (13).
- (6) Disconnect air line 2339 (14) from elbow (15).
- (7) Remove elbow (15) and fitting (16) from locking cylinder (17).
- (8) Remove washer (18) and preformed packing (19) from fitting (16). Discard preformed packing.



- (9) Remove locknut (20), screw (21) and two cushion clips (22) from crossmember (23). Discard locknut.
- (10) Disconnect air line 2421 (1) from fitting (24).
- (11) Remove fitting (24) from tee (25).
- (12) Disconnect air line 2339 (14) from fitting (26).
- (13) Remove fitting (26) from tee (27).



b. Installation.

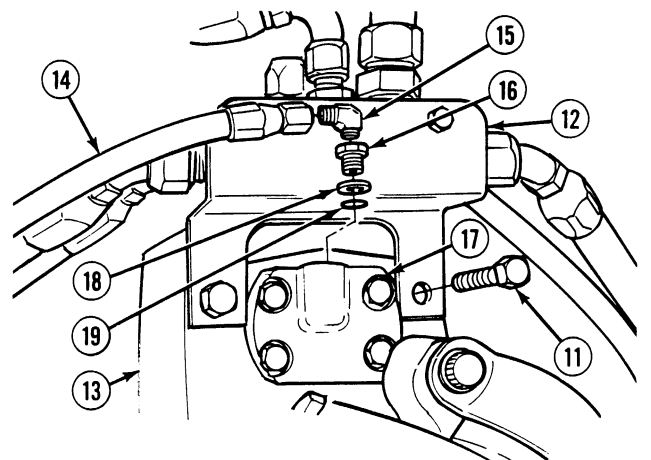
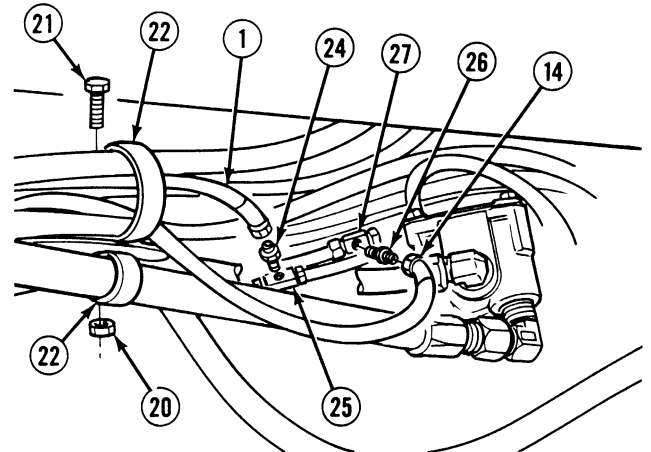
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

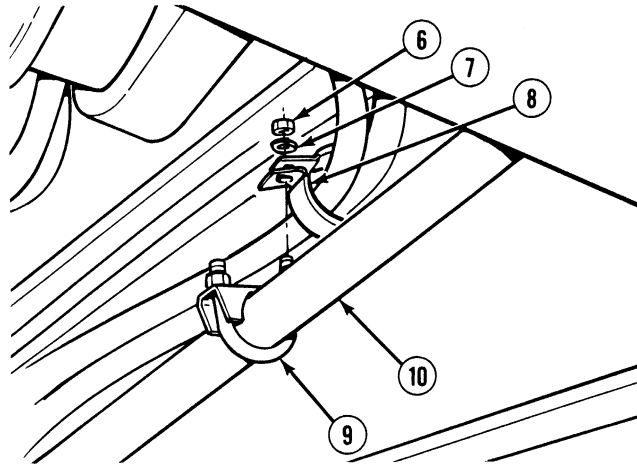
Install cable ties as required.

- (1) Apply sealing compound to threads of tee (27) and tee (25).
- (2) Install two fittings (26) and (24) on tees (27) and (25).
- (3) Install air line 2339 (14) on fitting (26).
- (4) Install air line 2421 (1) on fitting (24).
- (5) Install two cushion clips (22) on crossmember (23) with screw (21) and locknut (20).
- (6) Install preformed packing (19) and washer (18) on fitting (16).
- (7) Install fitting (16) in locking cylinder (17).
- (8) Install elbow (15) in fitting (16).
- (9) Install air line 2339 (14) on elbow (15).
- (10) Install bracket (12) on axle (13) with two screws (11).

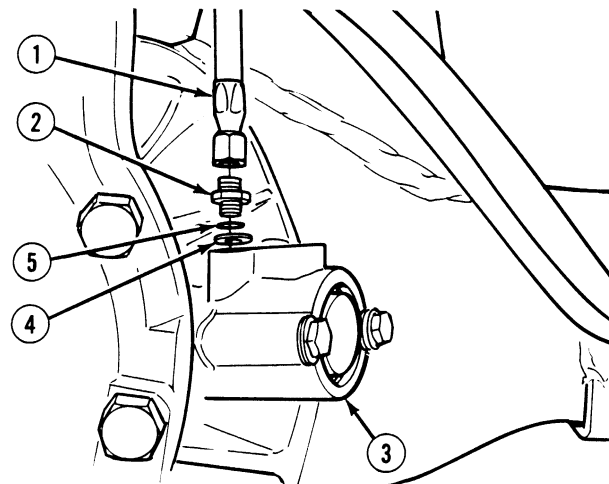


11-7. AXLE NO. 3 LOCKING CYLINDER LINES AND FITTINGS REPLACEMENT (CONT).

- (11) Install cushion clip (8) on clamp (9) with lockwasher (7) and nut (6).
- (12) Tighten nut (6) until lockwasher (7) is compressed.



- (13) Install preformed packing (5) and washer (4) on fitting (2).
- (14) Install fitting (2) in locking cylinder (3).
- (15) Install air line 2421 (1) on fitting (2).



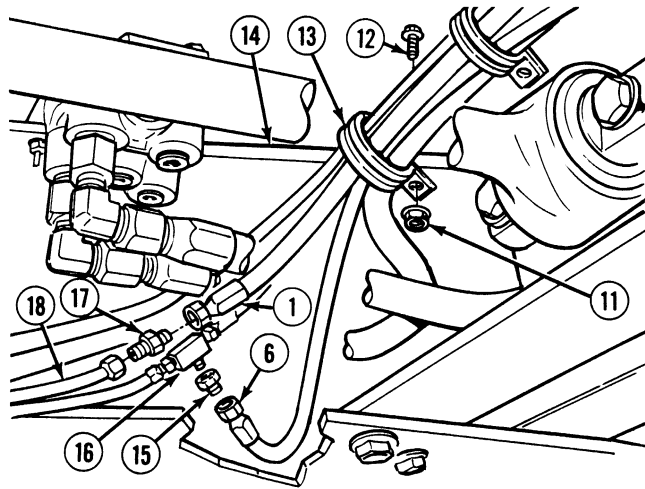
c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

11-8. AXLE NO. 4 LOCKING CYLINDER LINES AND FITTINGS REPLACEMENT (CONT).

- (7) Remove two locknuts (11), screws (12) and cushion clips (13) from crossmember (14). Discard locknuts.
- (8) Disconnect air line 2359 (6) from fitting (15).
- (9) Remove fitting (15) from tee (16).
- (10) Disconnect air line 2422 (1) from fitting (17).
- (11) Remove fitting (17) from air line 2069 (18).



b. Installation.

NOTE

Install cable ties as required.

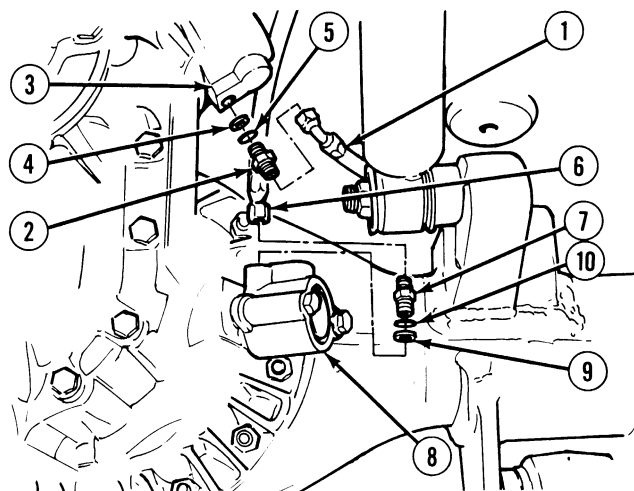
- (1) Install fitting (17) in air line 2069 (18).
- (2) Install air line 2422 (1) on fitting (17).
- (3) Install air line 2359 (6) on connector (15).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (4) Apply sealing compound on threads of tee (16).
- (5) Install fitting (15) on tee (16).
- (6) Install two cushion clips (13) on crossmember (14) with two screws (12) and locknuts (11).

- (7) Install preformed packing (10) and washer (9) on fitting (7).
- (8) Install preformed packing (5) and washer (4) on fitting (2).
- (9) Install fitting (7) in locking cylinder (8).
- (10) Install air line 2359 (6) on fitting (7).
- (11) Install fitting (2) in locking cylinder (3).
- (12) Install air line 2422 (1) on fitting (2).

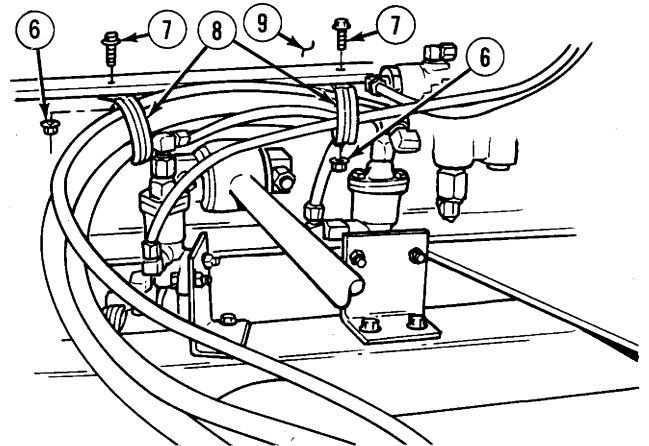


c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

- (4) With the aid of an assistant, remove two locknuts (6), screws (7) and cushion clips (8) from crossmember (9). Discard locknuts.



- (5) Disconnect air line 2338 (1) from fitting (10).
- (6) Remove fitting (10) from tee (11).

b. Installation.

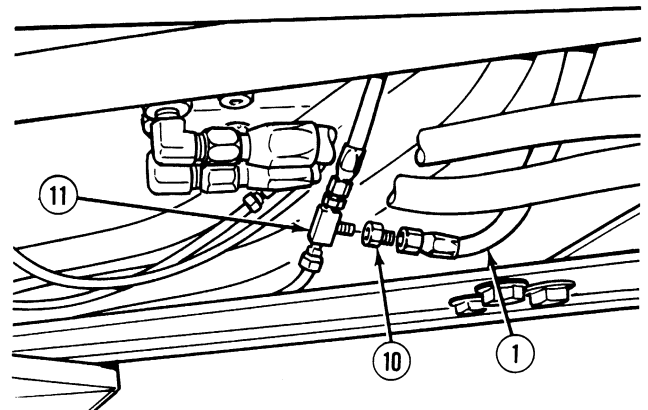
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

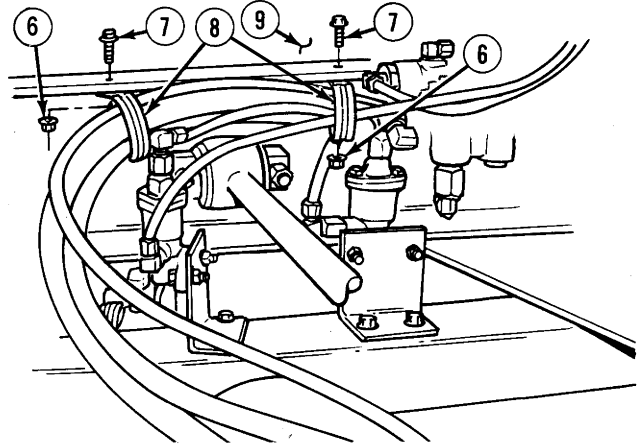
Install cable ties as required.

- (1) Apply sealing compound on threads of tee (11).
- (2) Install fitting (10) on tee (11).
- (3) Install air line 2338 (1) on fitting (10).

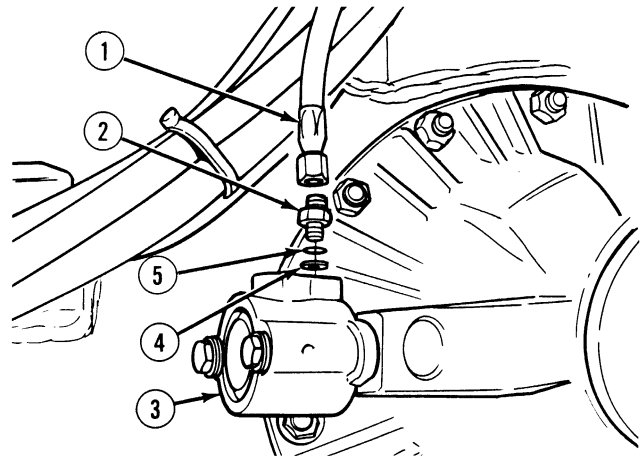


11-9. AXLE NO. 5 LOCKING CYLINDER LINES AND FITTINGS REPLACEMENT (CONT).

- (4) With the aid of an assistant, install two cushion clips (8) on crossmember (9) with two screws (7) and locknuts (6).



- (5) Install preformed packing (5) and washer (4) on fitting (2).
- (6) Install fitting (2) in locking cylinder (3).
- (7) Install air line 2338 (1) on fitting (2).



c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

11-10. STEERING STOP BOLT REPLACEMENT/ADJUSTMENT.

This task covers:

- | | |
|-----------------|--------------------------|
| a. Removal | c. Adjustment |
| b. Installation | d. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

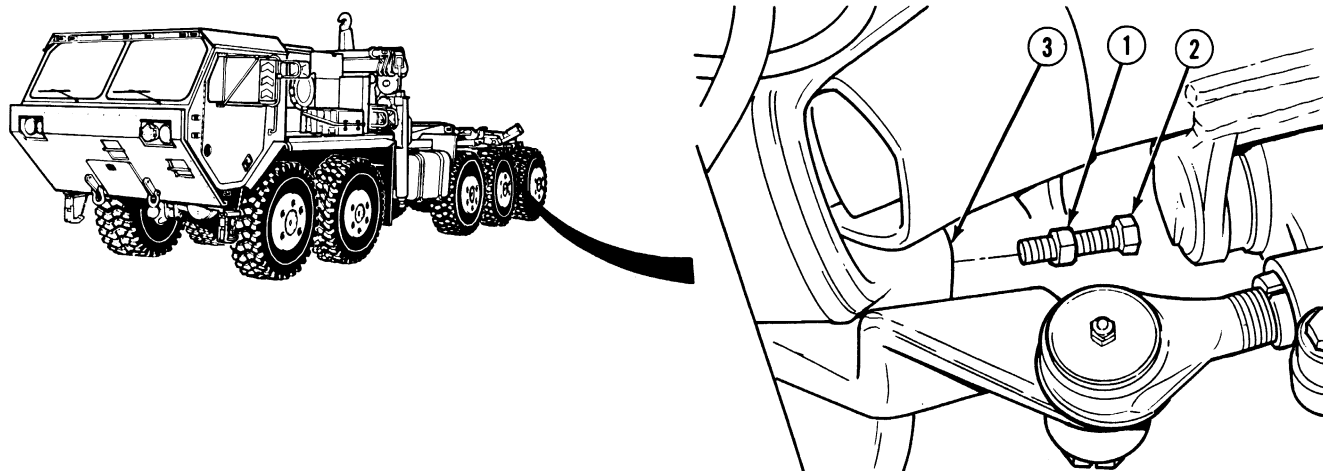
Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Socket Set, Deep Well (Item 60, Appendix G)
Tape, Measurer (Item 66, Appendix G)
Wrench, Torque (0 to 175 lb-ft [0 to 237 N·m])
(Item 95, Appendix G)
Plate, Steel 1/8 in. by 1 in. by 8 in.
(Appendix D)

Personnel Required

Two

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)



NOTE

All six steering stop bolts are removed and installed the same way. Axle No. 5 is shown.

a. Removal.

- (1) Loosen jamnut (1) on steering stop bolt (2).
- (2) Remove steering stop bolt (2) from axle (3).

b. Installation.

- (1) Position steering stop bolt (2) and jamnut (1) on axle (3).
- (2) Hold jamnut (1) while tightening steering stop bolt (2) until steering stop bolt (2) is fully seated against axle (3).

11-10. STEERING STOP BOLT REPLACEMENT/ADJUSTMENT (CONT).

c. Adjustment.

WARNING

Stand clear of tires while turning them. Failure to do so may result in injury or death to personnel.

NOTE

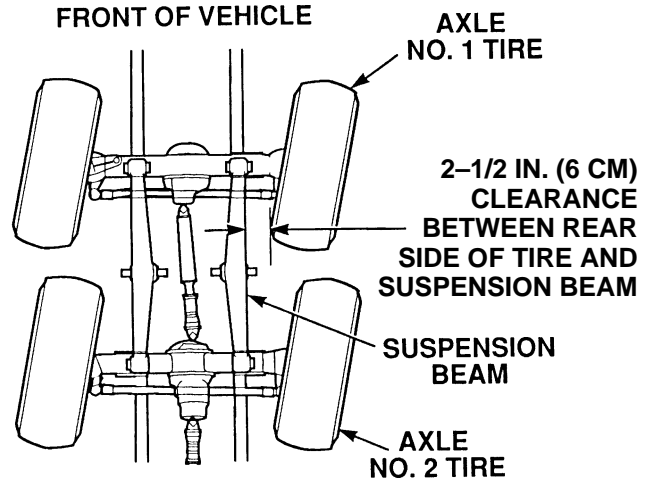
Left side and right side axle stops are adjusted the same way. Right side shown for Axles 1 and 2. Left side shown for Axle 5.

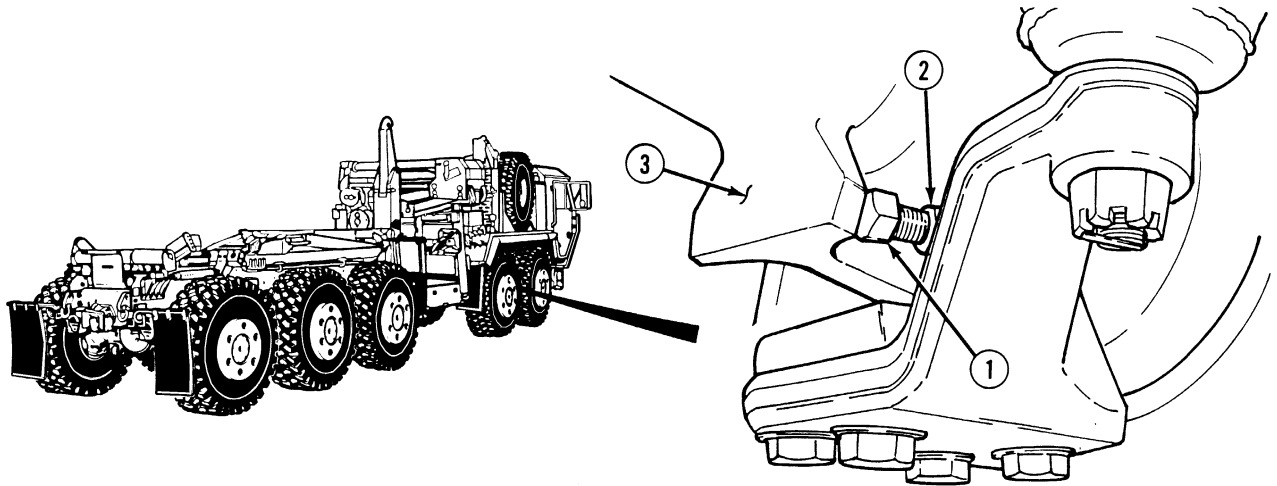
- (1) With the aid of an assistant, start truck and turn steering wheel to the right until the rear side of the right front tire is 2-1/2 in. (6 cm) away from the suspension beam.

NOTE

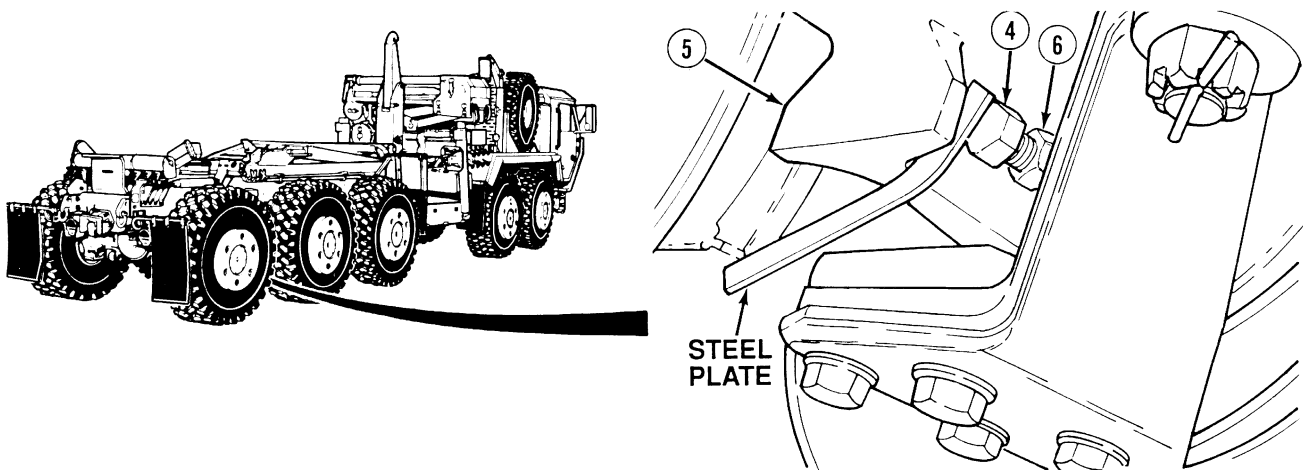
Axle steering stop arrangement for Axles No. 1, 2 and 5 are similar.

- (a) If 2-1/2 in. (6 cm) cannot be attained notify Direct Support Maintenance.
- (b) If 2-1/2 in. (6 cm) can be attained, go to Step (2).





- (2) Adjust steering stop bolt (1) and jamnut (2) on Axles No. 1 and 2 until stop bolts touch the hub assembly (3).



- (3) Place a 1/8 by 1 by 8 in. steel plate between Axle No. 5 steering stop bolt (4) and hub assembly (5).
 (4) Adjust steering stop bolt (4) and jam nut (6) on Axle No. 5 so that stop bolt touches the steel plate.

NOTE

It may be necessary to rotate jam nut right or left 1/2 flat to permit installation of deep well socket on jam nut.

- (5) With the aid of an assistant, turn steering wheel full left.
 (6) Tighten jam nuts (2) and (6) to 147 lb-ft (199 N·m).

11-10. STEERING STOP BOLT REPLACEMENT/ADJUSTMENT (CONT).

- (7) Repeat Steps (1) through (6) for left side axle stops.
- (8) Shut OFF engine.
- (9) Notify Direct Support Maintenance to have steering gear internal reliefs adjusted.

d. Follow-On Maintenance:

- Remove wheels chocks, (TM 9-2320-364-10).

END OF TASK

CHAPTER 12

BRAKE MAINTENANCE

Para	Contents	Page
12-1	Introduction	12-2
12-2	Brake Shoe/Self Adjuster Repair	12-3
12-3	Brake Shoe Adjustment	12-11
12-4	Brake Treadle Valve Replacement	12-13
12-5	Brake Pressure Switch Replacement	12-21
12-6	Low Air Switch Replacement	12-24
12-7	Parking Brake Switch Replacement	12-26
12-8	Hand Brake Switch Replacement	12-28
12-9	Axles No. 1 And 2 Air Chamber Replacement	12-30
12-10	Axles No. 3, 4 And 5 Air Chamber Replacement	12-38
12-11	Front Double Check Valve Replacement	12-45
12-12	Ball Valve Replacement	12-51
12-13	Service Relay Valve No. 1 Replacement	12-54
12-14	Service Relay Valve No. 2 Replacement	12-57
12-15	Service Relay Valve No. 3 Replacement	12-60
12-16	Relay Spring Valve No. 1 Replacement	12-64
12-17	Relay Spring Valve No. 2 Replacement	12-67
12-18	Spring Brake Valve Replacement	12-72
12-19	Air Dryer Guard Replacement	12-76
12-20	Air Dryer/After Cooler Replacement	12-78
12-21	Air Dryer Repair	12-85
12-22	After Cooler Repair	12-92
12-23	Coalescing Filter Assembly Replacement	12-99
12-24	Air Dryer Coalescing Filter Replacement	12-103
12-25	Air Manifold (Cab) Replacement	12-105
12-26	Windshield Washer Cab Air Regulator Replacement	12-117
12-27	Air Reservoir No. 1 Replacement	12-121
12-28	Air Reservoir No. 2 Replacement	12-128
12-29	Air Reservoir No. 3 Replacement	12-134
12-30	Air Reservoir No. 4 Replacement	12-140
12-31	Air Reservoir No. 5 Replacement	12-145
12-32	Front Gladhand Bracket Replacement	12-150
12-33	Load Sensing Valve Replacement	12-152
12-34	Load Sensing Valve Adjustments	12-157
12-35	Air Dryer Reservoir Replacement	12-164
12-36	Air Line Replacement	12-167
12-37	Dash Manifold Valve Replacement	12-182
12-38	Air Manifold/Air Regulator/Pressure Protection Valve Assembly Repair	12-186
12-39	Quick Release Valve Replacement	12-192
12-40	Solenoid Four Position Valve Replacement	12-195
12-41	Air Governor And Bracket Replacement/Adjustment	12-199
12-42	Emergency Air Quick Disconnect Replacement	12-203

12-43	Gladhand Replacement	12-205
12-44	Emergency Gladhand Bracket Replacement	12-208
12-45	Tractor Protection Valve Replcement	12-210
12-46	Hand Brake Valve Replacement	12-213

12-1. INTRODUCTION.

This chapter contains maintenance instructions for removing, replacing and installing brake components as authorized by the Maintenance Allocation Chart (MAC) at the Unit Maintenance level.

12-2. BRAKE SHOE/SELF ADJUSTER REPAIR.		
This task covers:		
a. Removal	c. Cleaning/Inspection	e. Installation
b. Disassembly	d. Assembly	f. Follow-On Maintenance
INITIAL SETUP		
<i>Tools and Special Tools</i> Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G) Gloves, Chemical Oil Protective (Item 28, Appendix G) Goggles, Industrial (Item 30, Appendix G) Respirator, Air Filter (Item 57, Appendix G) Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G) Tool, Removal, Brake Return Spring (Appendix D)		<i>Materials/Parts - Continued</i> Guide Assy, Pawl (Item 73, Appendix F) Guide Assy, Pawl (Item 74, Appendix F) Seal, Ring (2) (Item 332, Appendix F) Seal, Ring (2) (Item 333, Appendix F)
<i>Materials/Parts</i> Cloth, Cleaning (Item 31, Appendix C) Grease, High Temperature (Item 44, Appendix C) Solvent, Drycleaning (Item 87, Appendix C) Tags, Identification (Item 88, Appendix C) Wire, Safety (Item 100, Appendix C)		<i>Personnel Required</i> Two
		<i>Equipment Condition</i> Engine OFF, (TM 9-2320-364-10) Wheels chocked, (TM 9-2320-364-10) Brake drum removed, (Para 13-3) Air chamber removed, (Axles No. 1 and 2), (Para 12-9) Air chamber removed, (Axles No. 3, 4 and 5), (Para 12-10)

a. Removal.

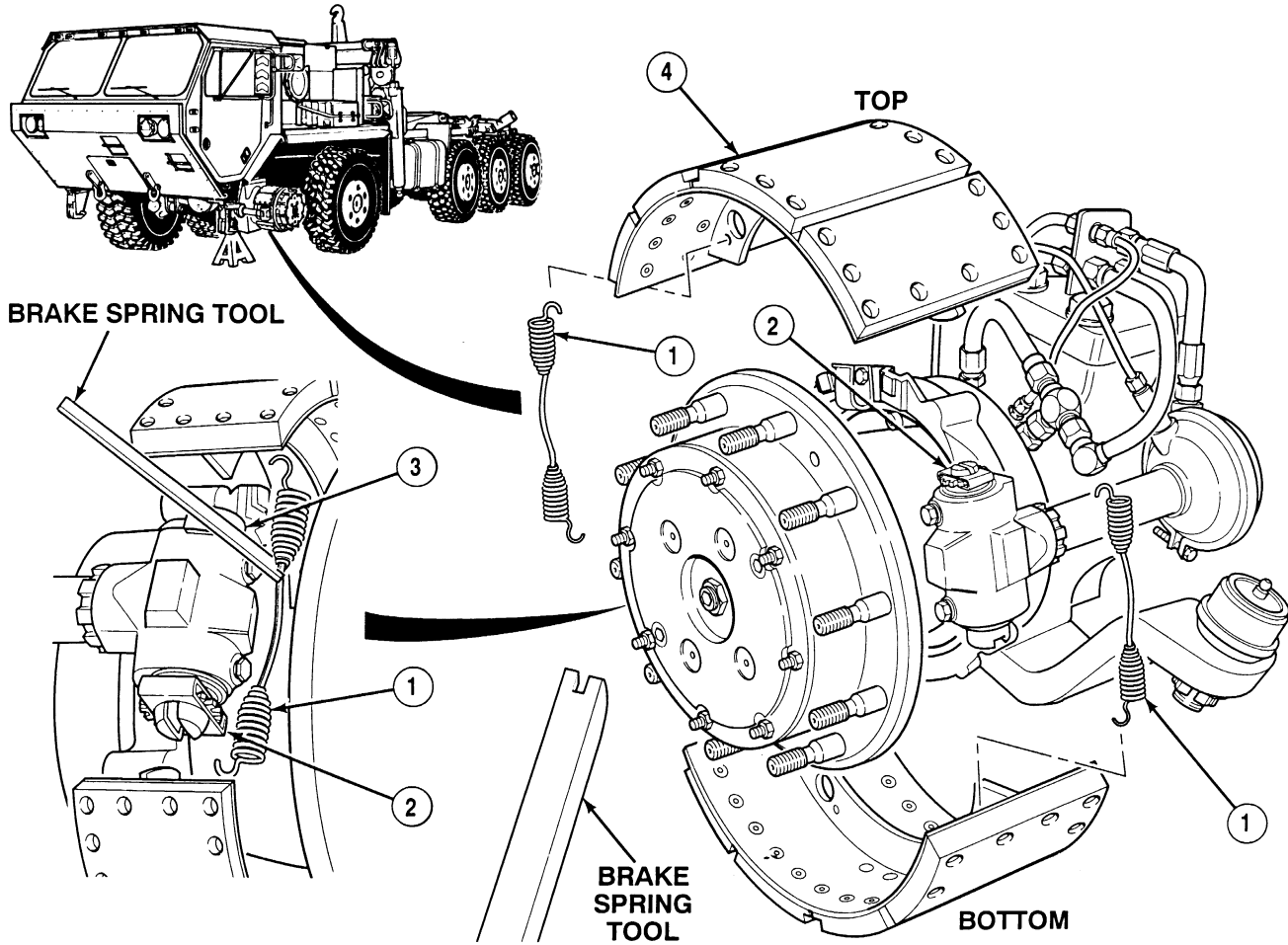


- Brake shoes may be covered with dust. Breathing this dust may be harmful to your health. Do not use compressed air to clean brake shoes. Wear a filter mask approved for use against brake dust. Failure to comply may result in injury or death to personnel.
- Use care when removing brake spring. Spring is under tension and can act as a projectile when released and could cause injury to personnel.



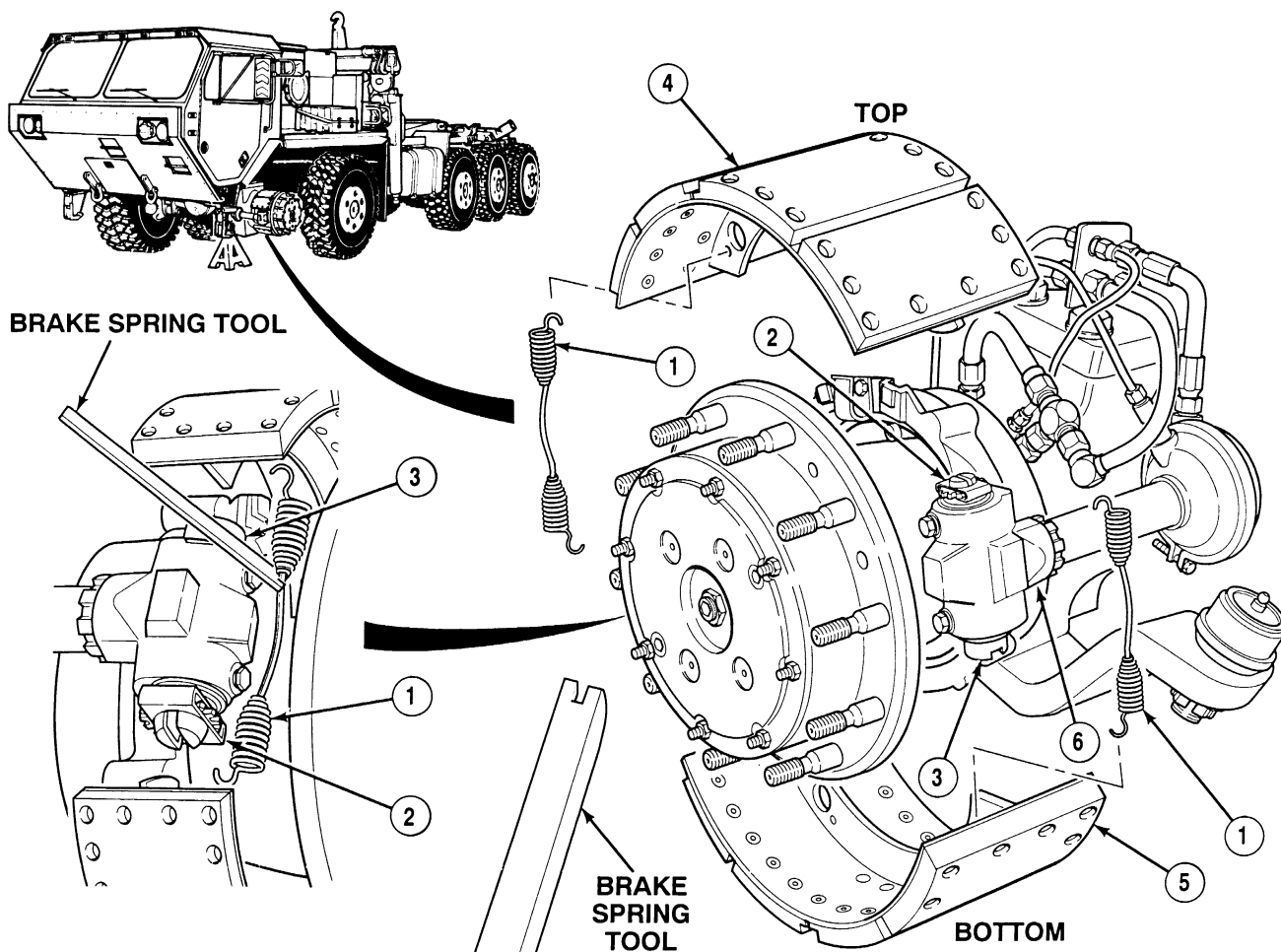
When one brake shoe needs to be replaced, all brake shoes for that axle must be replaced. Damage to equipment could result.

12-2. BRAKE SHOE/SELF ADJUSTER REPAIR (CONT).



NOTE

- Note position and location of brake shoes prior to removal.
 - All brake shoes are removed the same way. Axle No. 1 left side shown.
 - Axles No. 1 and 2 adjusting bolts are located on top rear and bottom front brake chambers.
 - Axles No. 3 and 4 adjusting bolts are located on a single front brake chamber.
 - Axle No. 5 adjusting bolts are located on a single rear brake chamber.
- (1) At rear return spring (1), position edge of brake spring tool against adjusting bolt (2) or brake spider assembly (3) and pry up to release upper end of rear return spring (1) from upper brake shoe (4).



WARNING

Use care when removing brake spring. Spring is under tension and can act as a projectile when released and could cause injury to personnel.

- (2) Remove lower end of rear return spring (1) from lower brake shoe (5).
- (3) With the aid of an assistant, support lower brake shoe (5). Repeat Steps (1) and (2) for forward return spring (1).
- (4) Remove lower brake shoe (5) from hub (6).
- (5) Remove upper brake shoe (4) from hub (6).

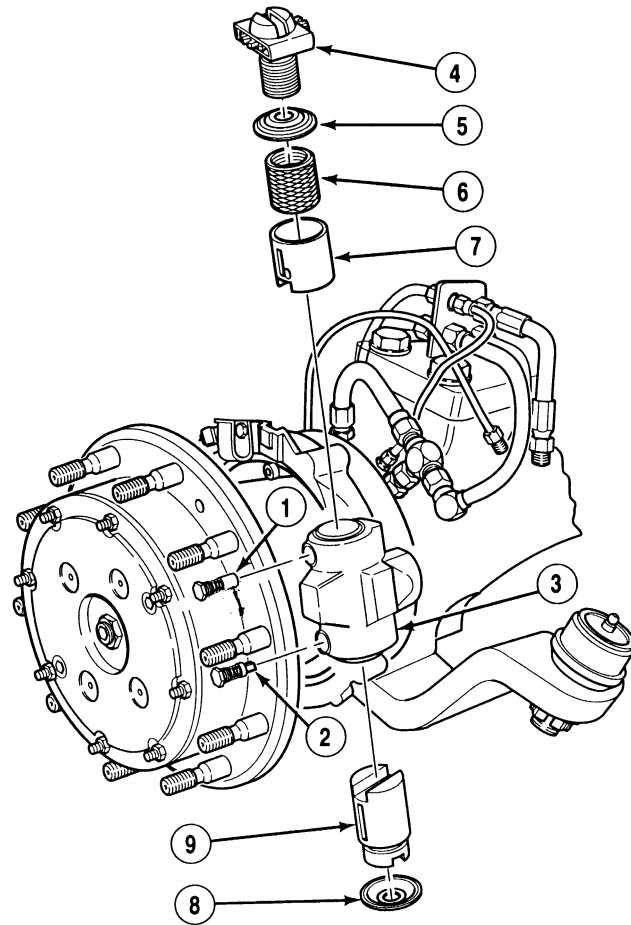
12-2. BRAKE SHOE/SELF ADJUSTER REPAIR (CONT).

b. Disassembly.

NOTE

Tag and mark adjusting plungers and plunger assemblies prior to removal.

- (1) Remove guide assembly pawls (1) and (2) from right side of brake spider (3). Discard pawls.
- (2) Remove adjusting bolt (4), ring seal (5), actuator (6) and adjusting plunger (7) from right side of brake spider (3).
- (3) Remove actuator (6) and ring seal (5) from adjusting bolt (7).
- (4) Remove ring seal (5) from adjusting bolt (7). Discard ring seal.
- (5) Remove ring seal (8) and plunger assembly (9) from right side of brake spider (3).
- (6) Remove ring seal (8) from plunger assembly (9). Discard ring seal.
- (7) Repeat Steps (1) through (6) for left side of brake spider (3).



c. **Cleaning/Inspection.**

WARNING

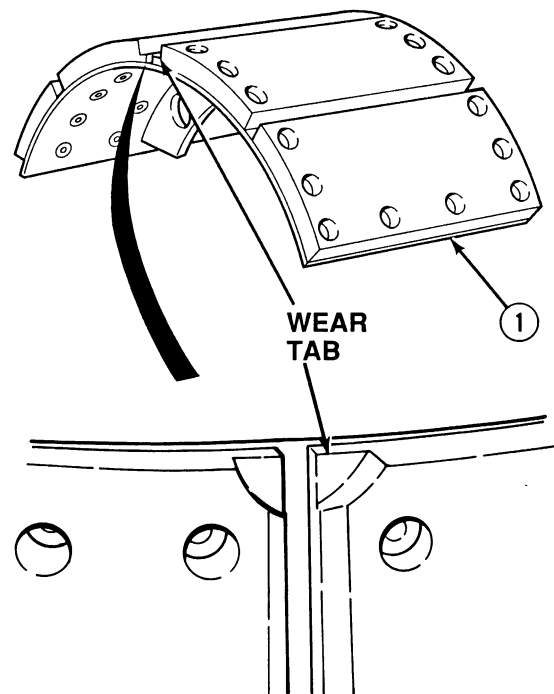
- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

- (1) Clean all metal parts with drycleaning solvent.
- (2) Inspect metal parts for breaks, cracks, burrs, and sharp edges. Look for unusual signs of wear on the actuator and adjusting pawl.

CAUTION

When one brake shoe needs to be replaced, all brake shoes for that axle must be replaced. Damage to equipment could occur.

- (3) Check brake shoe linings (1) for grooves, uneven wear, signs of overheating and thickness. If there are signs of overheating, if step on center edge of wear tab on brake shoe lining is not visible or if 1/4 in. (6 mm) thickness or less on any part of brake shoe, is present, replace brake shoes.
- (4) Replace all damaged parts.
- (5) Coat adjusting bolts, seals, adjusting plungers, actuators, plunger assemblies and plug with grease.



12-2. BRAKE SHOE/SELF ADJUSTER REPAIR (CONT).

d. Assembly.

- (1) Install ring seal (8) on plunger assembly (9).

NOTE

Ensure slot on plunger assembly lines up with guide assembly pawl hole.

- (2) Install plunger assembly (9) into top right side of brake spider (3).

NOTE

Ensure slot in adjusting plunger lines up with guide assembly pawl hole.

- (3) Install adjusting plunger (7) into lower right side of brake spider (3).

- (4) Install ring seal (5) and actuator (6) on adjusting bolt (7).

CAUTION

Adjusters may not function properly if installed tightly against the plunger.

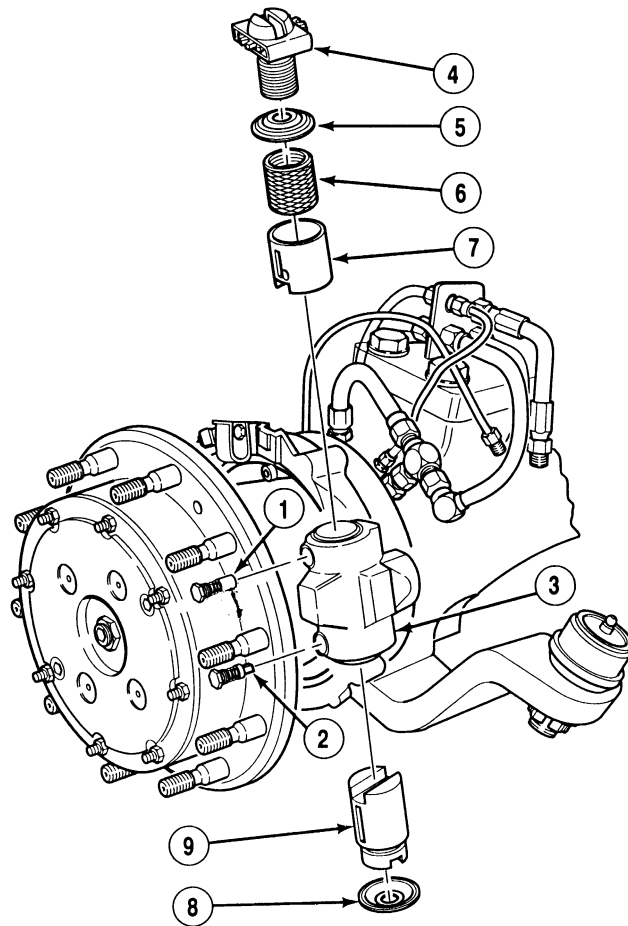
- (5) Position adjusting bolt (4) in lower right side of brake spider (3).

NOTE

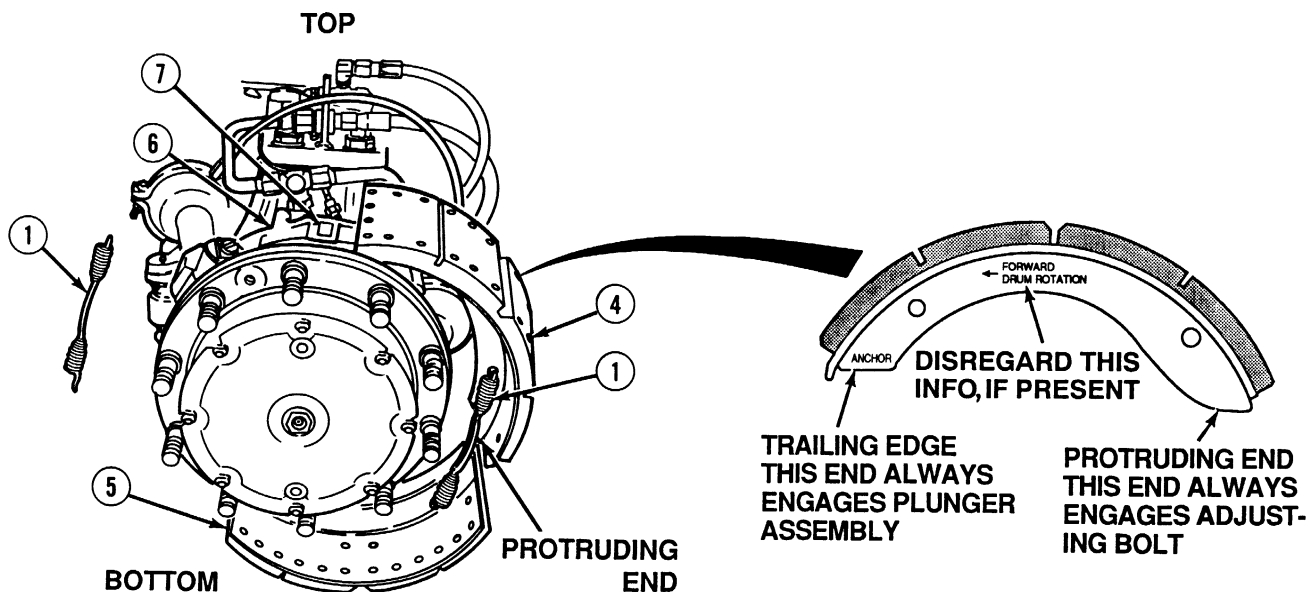
Install guide assembly pawls in location noted prior to removal.

- (6) Install two guide assembly pawls (1) and (2) in right side of spider (3). Tighten guide assembly pawls (1) and (2) to 22 lb-ft (30 N·m).

- (7) Repeat Steps (1) through (6) for left side of brake spider (3).



e. *Installation.*

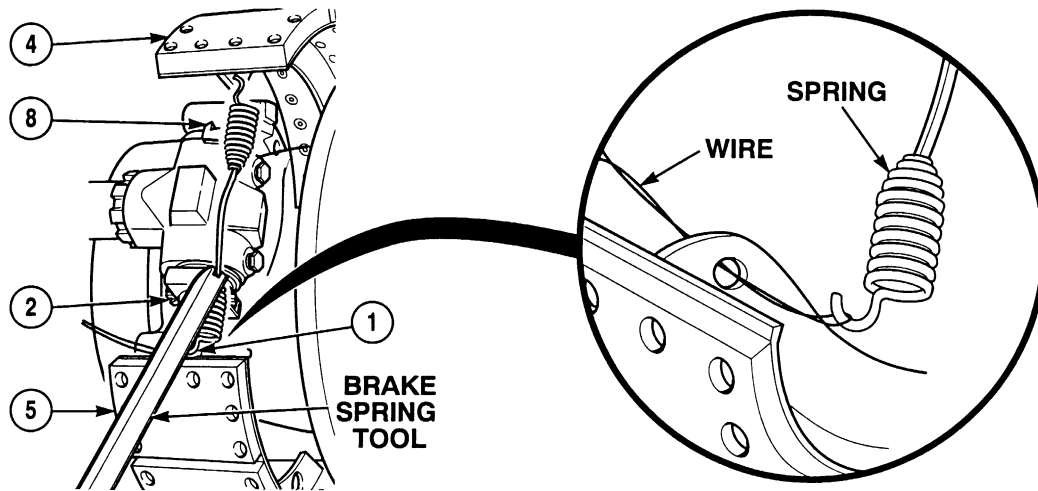


NOTE

- The protruding ends of brake shoe assemblies fit in slots of adjusting bolts.
- Only newer brake shoe assemblies are marked with “ANCHOR” at trailing edge.
- Axle No. 1 and 2 adjusting bolts are located on front and rear brake chambers. Axle No. 3, 4 and 5 adjusting bolts are on a single brake chamber.
- Ensure upper and lower brake shoes are positioned in clips.

- (1) With the aid of an assistant, install front brake return spring (1) on upper and lower brake shoes (4) and (5).
- (2) With the aid of an assistant, position upper and lower brake shoes (4) and (5) and front brake return spring (1) on hub (6). Shoes must fit on hub clips (7).

12-2. BRAKE SHOE/SELF ADJUSTER REPAIR (CONT).



WARNING

Use care when installing springs. Springs are under tension and can act as projectiles when released, causing severe eye injury.

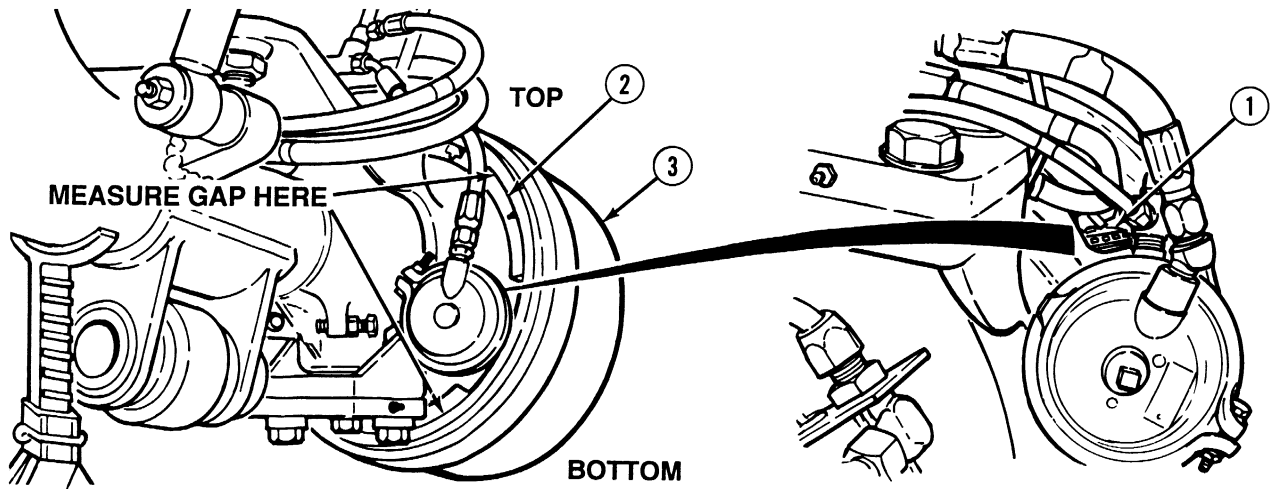
- (3) Install rear brake return spring (1) on upper brake shoe (4).
- (4) Insert loop of wire through back side of spring hole of lower brake shoe and loop over rear brake return spring hook (1).
- (5) With the aid of an assistant, use brake spring tool to pry brake return spring (1) downward and use loop of wire to pull rear brake return spring hook through spring hole of lower brake shoe (5) ensuring that brake shoe (5) is positioned in adjusting bolt (2) and brake shoe (4) is positioned in plunger (8).
- (6) Remove brake spring tool from rear brake return spring (1).
- (7) Remove wire from rear brake return spring (1).

f. Follow-On Maintenance:

- Install air brake chamber, (Axle No. 1 and 2), (Para 12-9).
- Install air brake chamber, (Axle No. 3, 4 and 5), (Para 12-10).
- Adjust brake assembly, (Para 12-3).
- Install brake drum, (Para 13-3).
- Install wheels and tires, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-3. BRAKE SHOE ADJUSTMENT (CONT).



NOTE

Gap between brake drum and brake shoe should be measured in two spots as shown in illustration.

- (2) Using feeler gage, check clearances at brake shoe (2) centers. Back off adjusting bolts (1) alternately one click at a time until the gap between brake drum (3) and brake shoe (2) is 0.0315 in. (0.8 mm) minimum and 0.0472 in. (1.2 mm) maximum.
- (3) Turn brake drum (3) by hand. If brake drum does not turn freely, repeat Steps (1) through (3).

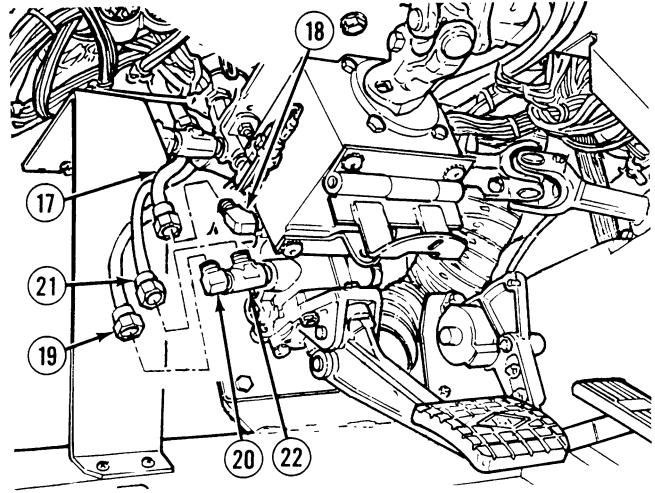
b. Follow-On Maintenance:

- Uncage brakes (No. 3, 4 and 5 axles only), (TM 9-2320-364-10).
- Install wheels and tires, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

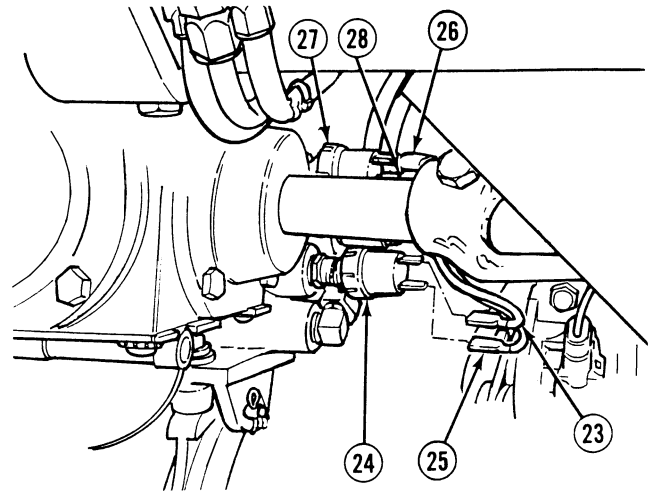
END OF TASK

12-4. BRAKE TREADLE VALVE REPLACEMENT (CONT).

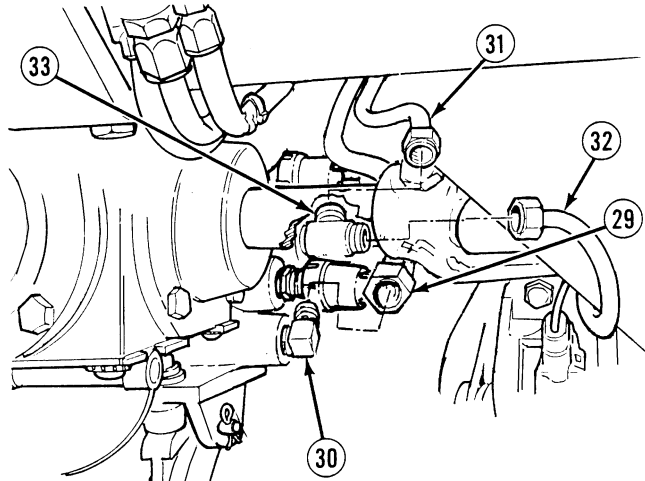
- (5) Remove air line 2006 (17) from elbow (18).
- (6) Remove air line 2027 (19) from elbow (20).
- (7) Remove air line 2073 (21) from tee (22).



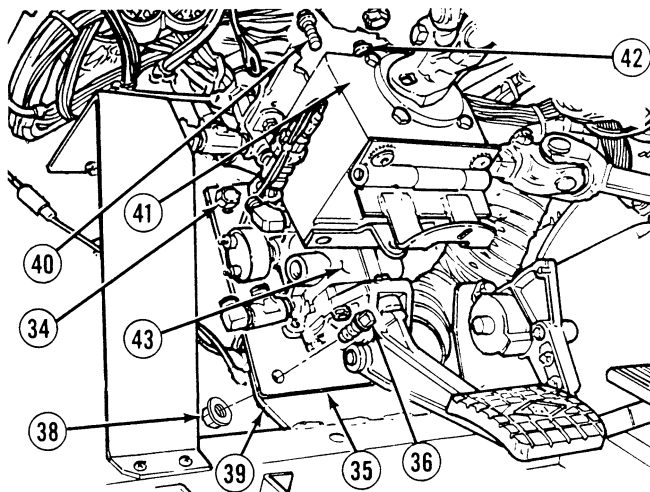
- (8) Remove wire 1435 (23) from lower low air switch (24).
- (9) Remove wire 1120 (25) from upper low air switch (24).
- (10) Remove wire 1120 (26) from lower low air switch (27).
- (11) Remove wire 1435 (28) from upper low air switch (27).



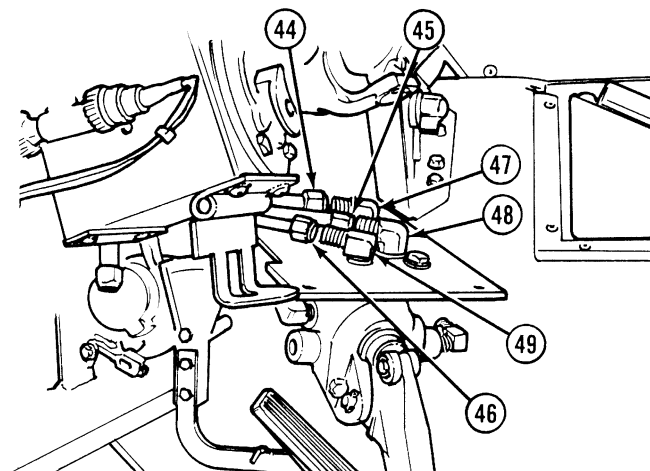
- (12) Remove air line 2623 (29) from elbow (30).
- (13) Remove air lines 2665 (31) and 2489 (32) from tee (33).



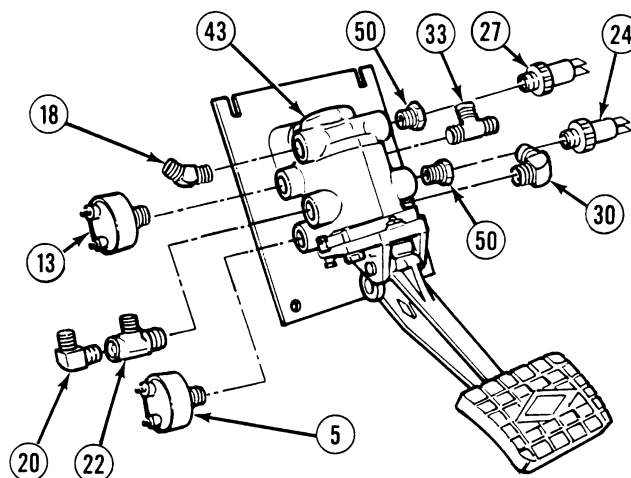
- (14) Loosen two screws (34) on valve plate (35).
- (15) Remove two lower screws (36), locknuts (38) and valve plate (35) from bracket (39). Discard locknuts.
- (16) Remove three gear box mounting screws (40) from gear box (41) and loosen fourth mounting screw (42) enough to allow treadle valve (43) to be removed.
- (17) Remove treadle valve (43) with valve plate (35) as an assembly.



- (18) Remove air line 2005 (44), 2619 (45) and 2488 (46) from elbows (47), (48) and (49).



- (19) Remove elbow (30) and tee (33) from right side of treadle valve (43).
- (20) Remove lower low air switch (24) and reducer (50) from treadle valve (43).
- (21) Remove upper low air switch (27) and reducer (50) from treadle valve (43).
- (22) Remove two reducers (50) from low air switches (24) and (27).
- (23) Remove upper brake switch (13), lower brake switch (5), tee (22) with elbow (20) and elbow (18) from treadle valve (43).
- (24) Remove elbow (20) from tee (22).



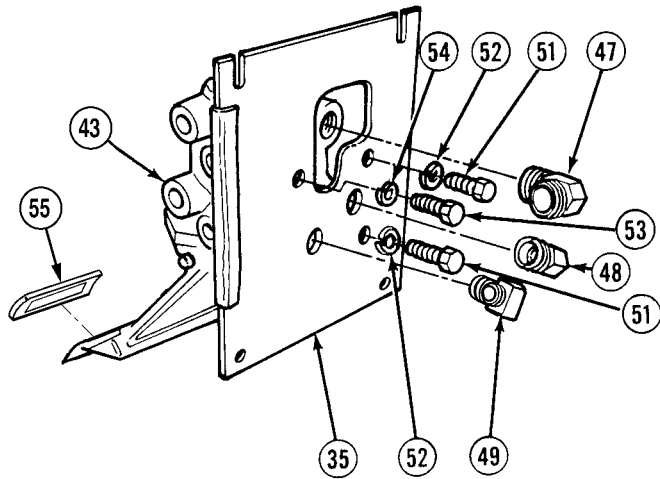
12-4. BRAKE TREADLE VALVE REPLACEMENT (CONT).

- (25) Remove two screws (51), lockwashers (52), elbow (47) and elbow (49) from back of treadle valve (43). Discard lockwashers.
- (26) Remove elbow (48), screw (53), lockwasher (54) and valve plate (35) from treadle valve (43). Discard lockwasher.

NOTE

Perform Step (27) if pedal pad is damaged.

- (27) Remove pedal pad (55) from treadle valve (43).



b. Installation.

NOTE

Perform Step (1) if pedal pad was removed.

- (1) Install pedal pad (55) on treadle valve (43).

NOTE

Install wires, elbows, tees and air lines as noted prior to removal.

- (2) Install valve plate (35), lockwasher (54) and screw (53) on treadle valve (43).

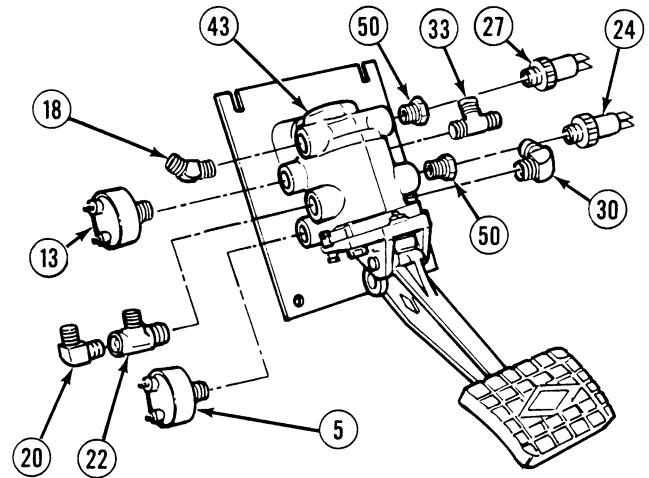
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (3) Coat threads of elbow (48) with sealing compound.
- (4) Install elbow (48) on treadle valve (43).
- (5) Coat threads of elbows (47) and (49) with sealing compound.
- (6) Install elbow (47), elbow (49), two lockwashers (52) and screws (51) on treadle valve (43).

WARNING

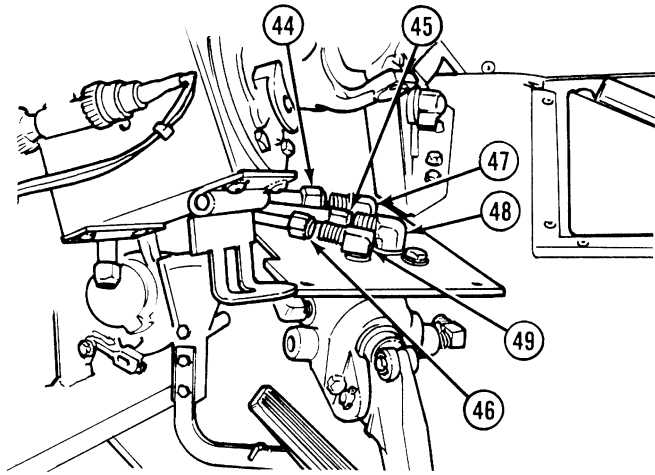
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



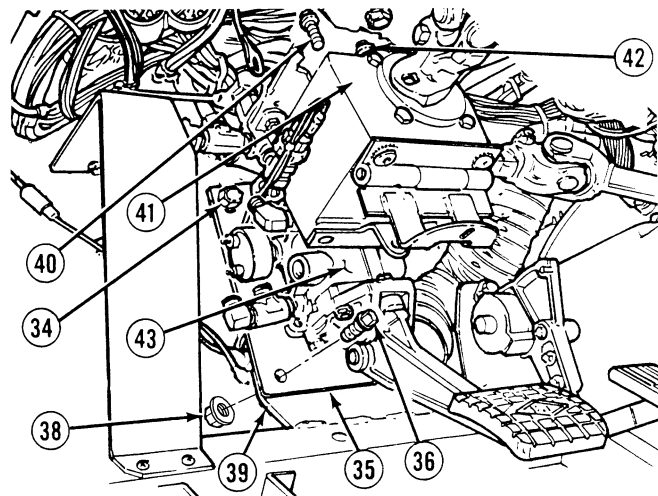
- (7) Coat threads of elbow (30) and tee (33) with sealing compound.
- (8) Install elbow (30) and tee (33) on treadle valve (43).
- (9) Coat threads of two reducers (50) with sealing compound.
- (10) Install two reducers (50) on treadle valve (43).
- (11) Coat threads of upper low air switch (27) and lower air switch (24) with sealing compound.
- (12) Install upper low air switch (27) and lower low air switch (24) in two reducers (50).
- (13) Coat threads of tee (22) and elbow (20) with sealing compound.
- (14) Install elbow (20) on tee (22).
- (15) Install tee (22) on treadle valve (43).
- (16) Coat threads of upper brake switch (13) with sealing compound.
- (17) Install upper brake switch (13) on treadle valve (43).
- (18) Coat threads of elbow (18) with sealing compound.
- (19) Install elbow (18) on treadle valve (43).

12-4. BRAKE TREADLE VALVE REPLACEMENT (CONT).

- (20) Install air lines 2488 (46), 2619 (45) and 2005 (44) on elbows (49), (48) and (47).

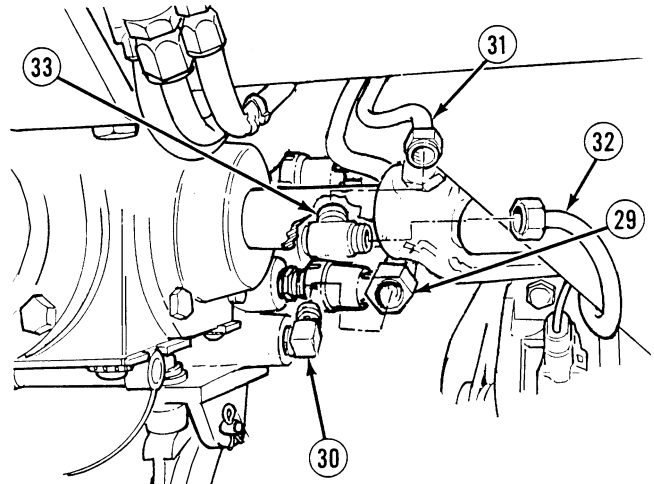


- (21) Install treadle valve (43) and valve plate (35) as an assembly with two lower screws (36) and locknuts (38) on bracket (39).
- (22) Tighten two upper screws (34) on valve plate (35).
- (23) Install three steering box mounting screws (40) and tighten fourth mounting screw (42) in gear box (41).



(24) Install air lines 2665 (31) and 2489 (32) on tee (33).

(25) Install air line 2623 (29) on elbow (30).

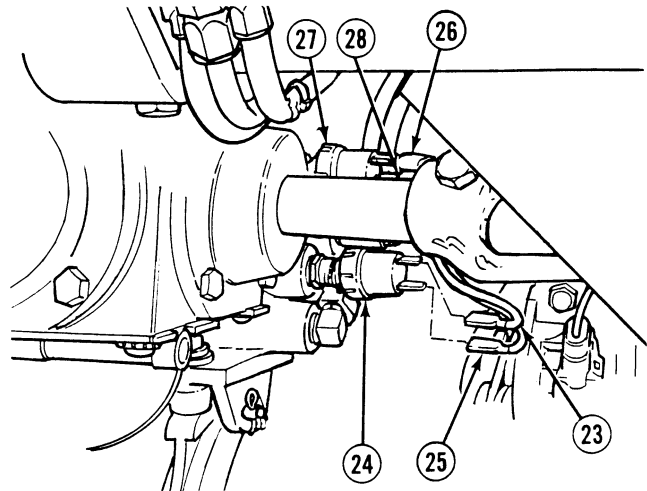


(26) Install wire 1435 (28) on upper low air switch (27).

(27) Install wire 1120 (26) on lower low air switch (27).

(28) Install wire 1120 (25) on upper low air switch (24).

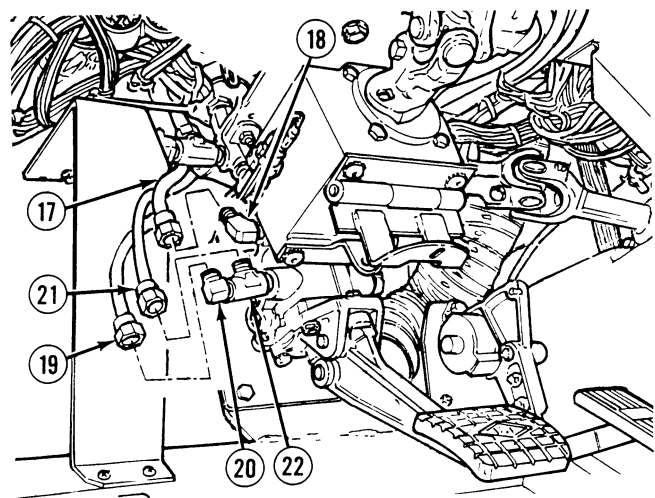
(29) Install wire 1435 (23) on lower low air switch (24).



(30) Install air line 2073 (21) on tee (22).

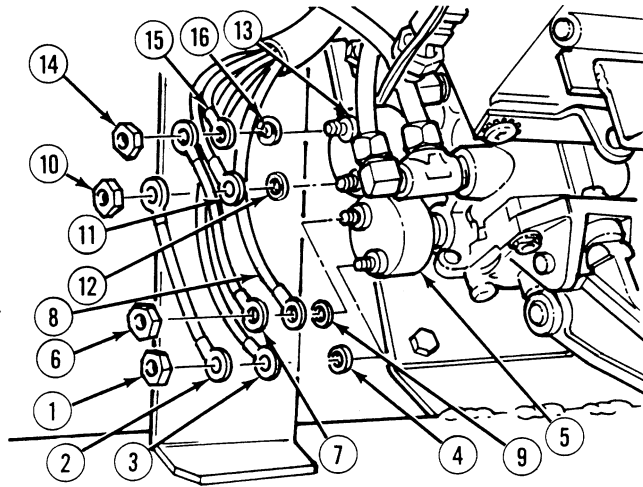
(31) Install air line 2027 (19) on elbow (20).

(32) Install air line 2006 (17) on elbow (18).



12-4. BRAKE TREADLE VALVE REPLACEMENT (CONT).

- (33) Install washer (16), wire 1009 (15), jumperwire 1009 (7) and nut (14) on top terminal of upper brake switch (13).
- (34) Install washer (12), wire 1005 (11) jumperwire 1005 (2) and nut (10) on bottom terminal of upper brake switch (13).
- (35) Install washer (9), wire 1009 (8), jumper wire 1009 (7) and nut (6) on top terminal of lower brake switch.
- (36) Install washer (4), wire 1005 (3) jumper wire 1005 (2) and nut (1) on bottom terminal of lower brake switch.



c. Follow-On Maintenance:

- Install instrument panel, (Para 7-13).
- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-5. BRAKE PRESSURE SWITCH REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

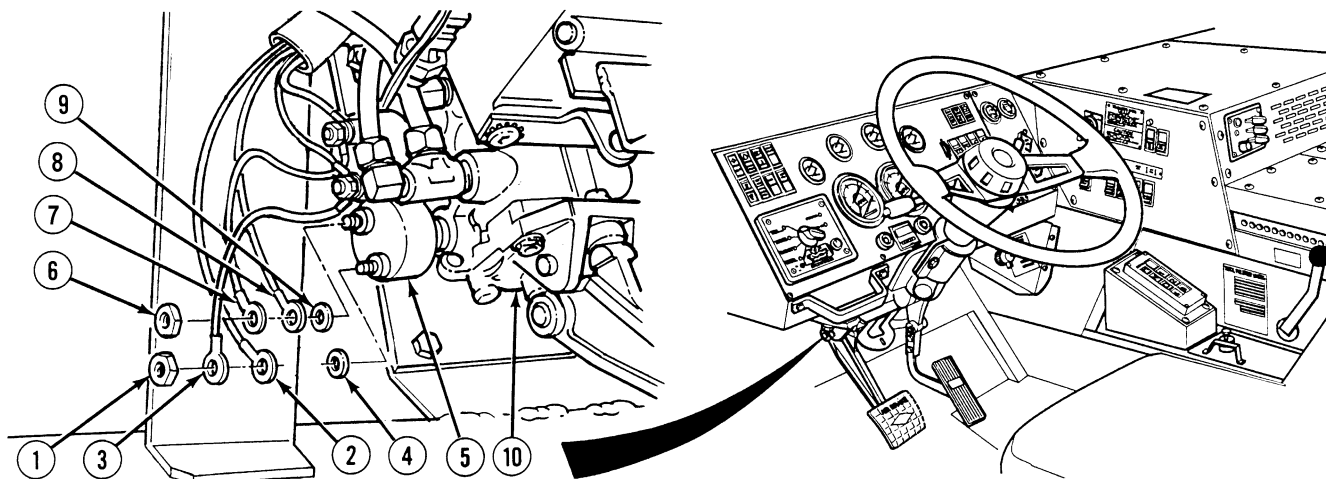
Materials/Parts

Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)
Batteries disconnected, (Para 7-87)

a. Removal.



NOTE

Tag and mark all wires prior to removal.

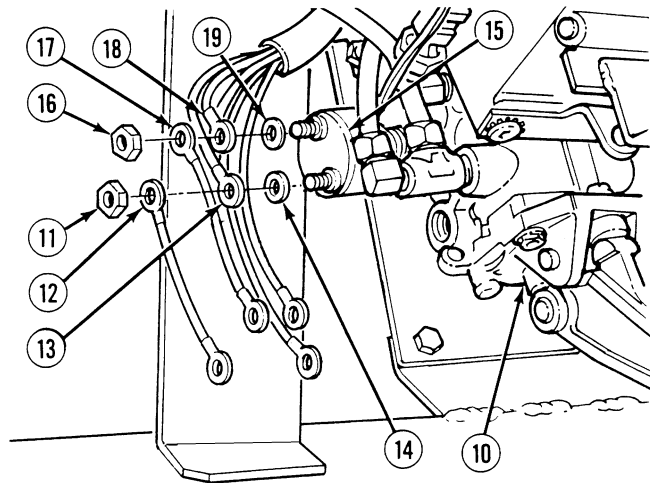
- (1) Remove nut (1), wire 1005 (2), wire 1005 (3) and washer (4) from terminal of lower brake switch (5).
- (2) Remove nut (6), wire 1009 (7), wire 1009 (8) and washer (9) from terminal of lower brake switch (5).
- (3) Remove lower brake switch (5) from brake pedal valve (10).

12-5. BRAKE PRESSURE SWITCH REPLACEMENT (CONT).

NOTE

If only removing lower brake switch, proceed to Step (4) of **b. Installation.**

- (4) Remove nut (11), wire 1005 (12), wire 1005 (13) and washer (14) from terminal of upper brake switch (15).
- (5) Remove nut (16), wire 1009 (17), wire 1009 (18) and washer (19) from terminal of upper brake switch (15).
- (6) Remove upper brake switch (15) from pedal valve (10).

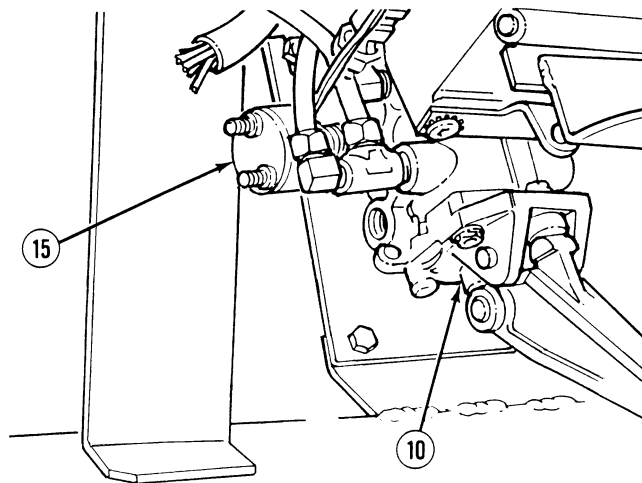


b. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Coat threads of upper brake switch (15) with sealing compound.

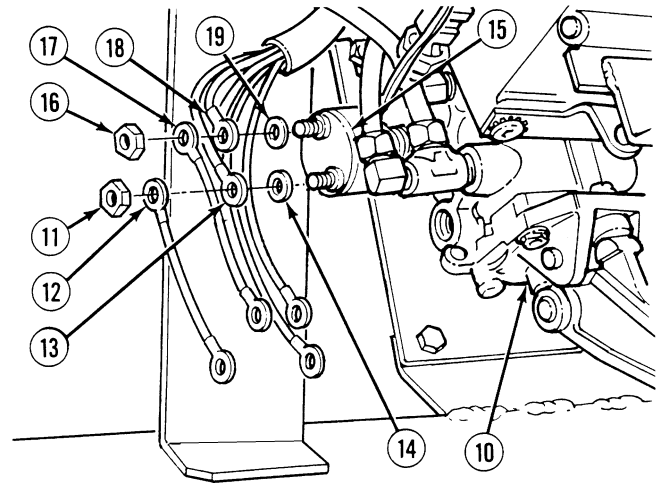


NOTE

Switch terminals should line up vertically (one above the other) when switch is installed.

- (2) Install switch (15) on brake valve (10).

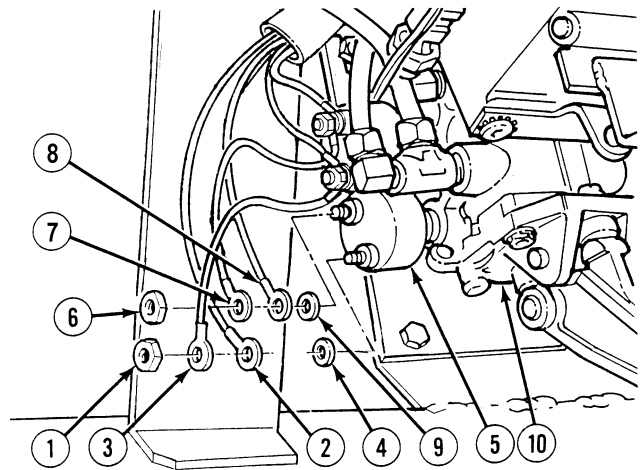
- (3) Install washer (19), wire 1009 (18), wire 1009 (17) and nut (16) on terminal of upper brake switch (15).
- (4) Install washer (14), wire 1005 (13), wire 1005 (12) and nut (11) on terminal of upper brake switch (15).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (5) Coat threads of lower brake switch (5) with sealing compound.



NOTE

Switch terminals should line up vertically.

- (6) Install lower brake switch (5) on pedal valve (10).
- (7) Install washer (9), wire 1009 (8), wire 1009 (7) and nut (6) on terminal of lower brake switch (5).
- (8) Install washer (4), wire 1005 (3), wire 1005 (2) and nut (1) on terminal of lower brake switch (5).

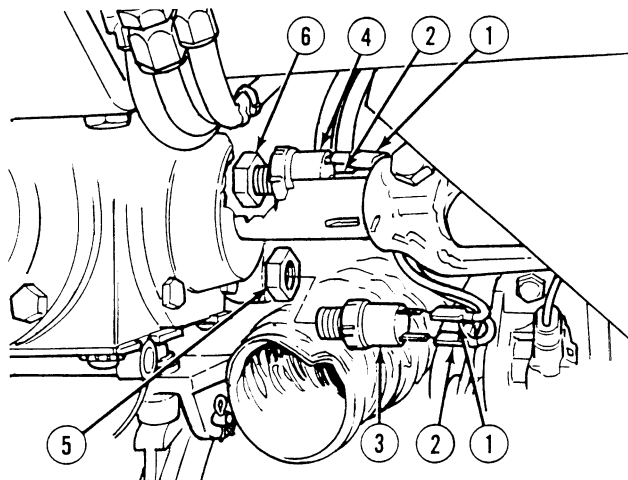
c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

b. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (1) Coat threads of upper low air switch (4) and lower low air switch (3) with sealing compound.
- (2) Install upper low air switch (4) in reducer (6).
- (3) Install lower low air switch (3) in reducer (5).
- (4) Install wire 1435 (2) and wire 1120 (1) on upper low air switch (4).
- (5) Install wire 1435 (2) and wire 1120 (1) on lower low air switch (3).

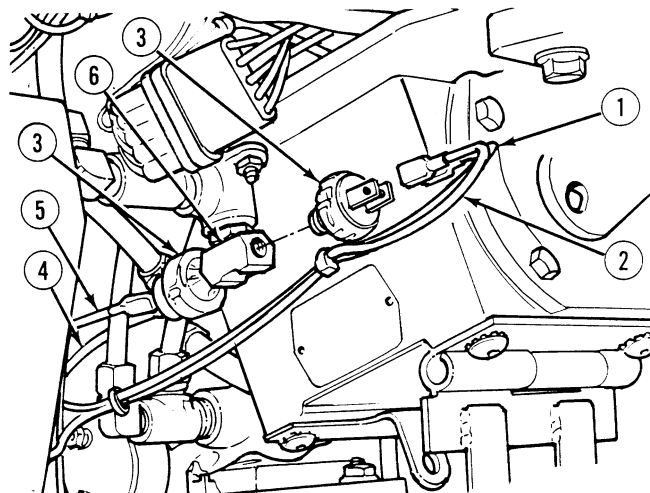
c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

b. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (1) Coat threads of two switches (3) with sealing compound.
- (2) Install two switches (3) in tee (6).
- (3) Install wires 1510 (1) and 1525 (2) on switch (3).
- (4) Install wires 1435 (4) and 1371 (5) on switch (3).

c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Check operation of parking brake switch, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

c. Follow-On Maintenance:

- Install instrument panel, (Para 7-13).
- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Check operation of switch, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-9. AXLES NO. 1 AND 2 AIR CHAMBER REPLACEMENT.

This task covers:

- a. Front Air Chamber Replacement b. Rear Air Chamber Replacement c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
 (Item 74, Appendix G)
 Socket Set, 3/4 in. (Item 61, Appendix G)
 Wrench, Spanner (Item 94, Appendix G)
 Wrench, Torque (0 to 300 lb-ft [0 to 407 N·m])
 (Item 96, Appendix G)

Materials/Parts

Grease (Item 44, Appendix C)
 Sealing Compound (Item 72, Appendix C)

Materials/Parts - Continued

Sealing Compound (Item 81, Appendix C)
 Tags, Identification (Item 87, Appendix C)

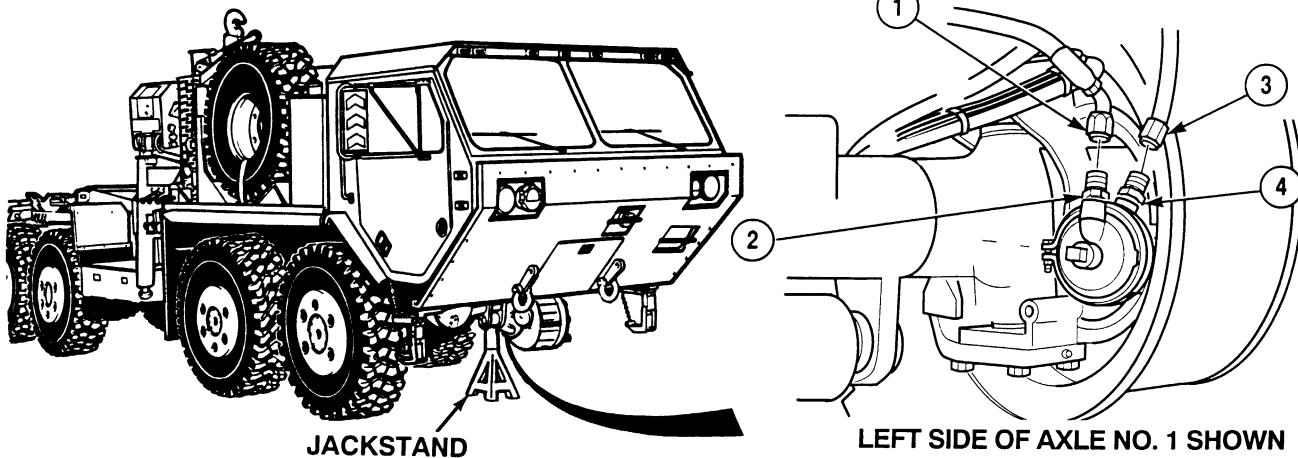
Personnel Required

Two

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Air system drained, (TM 9-2320-364-10)
 Wheel and tire removed, (TM 9-2320-364-10)

a. Front Air Chamber Replacement.



NOTE

- Tag and mark air lines prior to removal.
- Refer to Table 12-1 for air line numbers.
- Axle No. 1 and 2 air chambers, left and right side are removed the same way. Axle No. 1 left side shown.

(1) Removal.

- Remove air line (1) from fitting (2).
- Remove air line (3) from fitting (4).

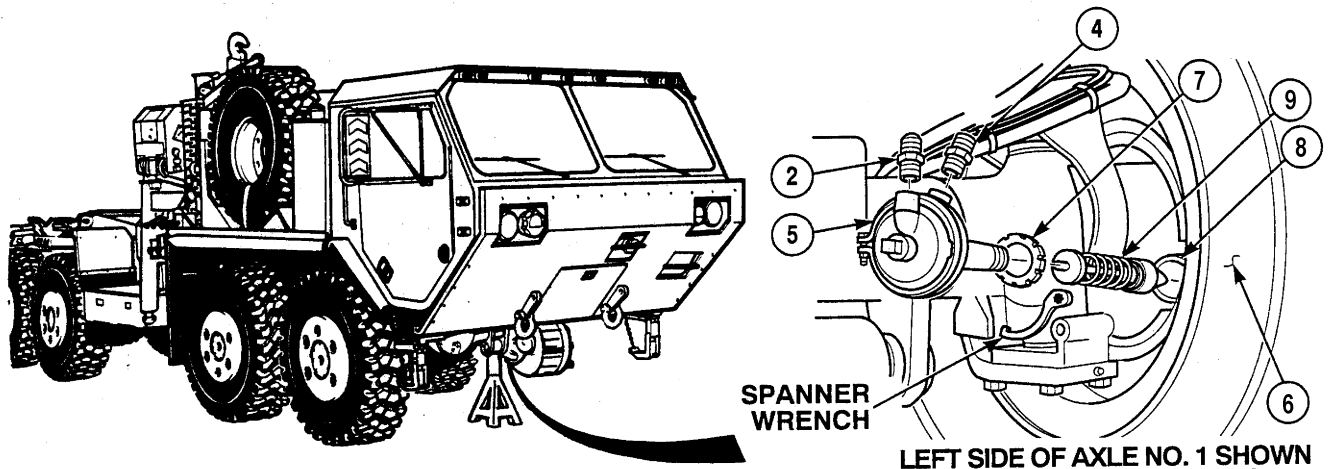


Table 12-1. Air Line Numbers

Item No.	Axle No. 1		Axle No. 2	
	Right Side	Left Side	Right Side	Left Side
1	2874	2874	2874	2874
3	2013	2012	2387	2388

NOTE

Perform Step (c) only if fittings are damaged or new air chamber is being installed.

- (c) Remove two fittings (2) and (4) from front air chamber (5).

WARNING

Ensure brake drum is not pulled back more than approximately two inches (5 cm). Failure to comply may result in injury or death to personnel.

- (d) Pull brake drum (6) back approximately two inches (5 cm).
- (e) Using spanner wrench, loosen collet nut (7) by turning from bottom.
- (f) Remove air chamber (5) from brake assembly (8).
- (g) Remove wedge assembly (9) from brake assembly (8).

NOTE

Perform Step (h) only if collet nut is damaged.

- (h) Remove collet nut (7) from air chamber (5).

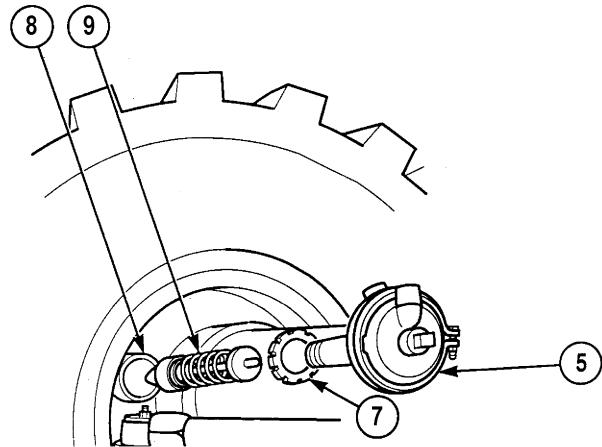
12-9. AXLES NO. 1 AND 2 AIR CHAMBER REPLACEMENT (CONT).

(2) *Installation.*

- (a) Coat wedge assembly (9) with grease.
- (b) Install wedge assembly (9) in brake assembly (8).

NOTE

- Perform Step (c) if collet nut was removed.
 - Install collet nut flat end first on air chamber.
- (c) Install collet nut (7) completely onto air chamber (5).



LEFT SIDE OF AXLE NO. 1 SHOWN

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (d) Apply sealing compound to first four threads of air chamber (5).
- (e) Install air chamber (5) into brake assembly (8) until air chamber bottoms out in brake assembly.

CAUTION

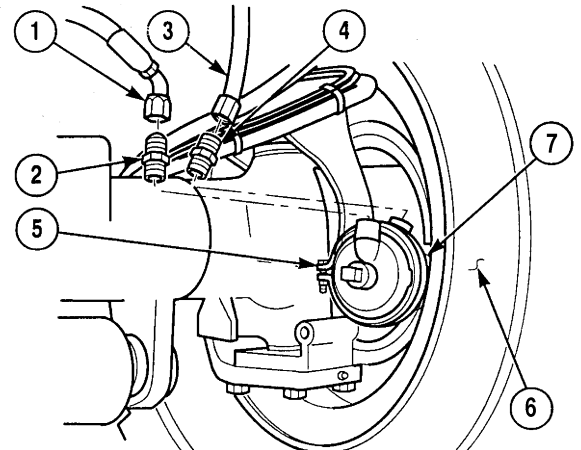
Air chamber can only be turned out a maximum of one turn. Failure to comply may result in damage to equipment.

- (f) Rotate air chamber (5) to align air ports.

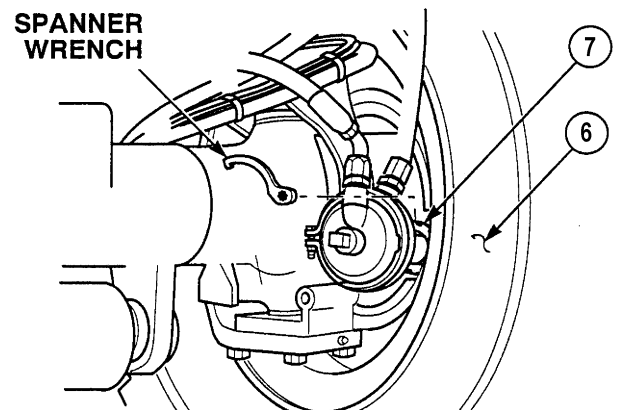
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (g) Coat threads of two fittings (2) and (4) with sealing compound.
 (h) Install fittings (2) and (4) in air chamber (5).



LEFT SIDE OF AXLE NO. 1 SHOWN



LEFT SIDE OF AXLE NO. 1 SHOWN

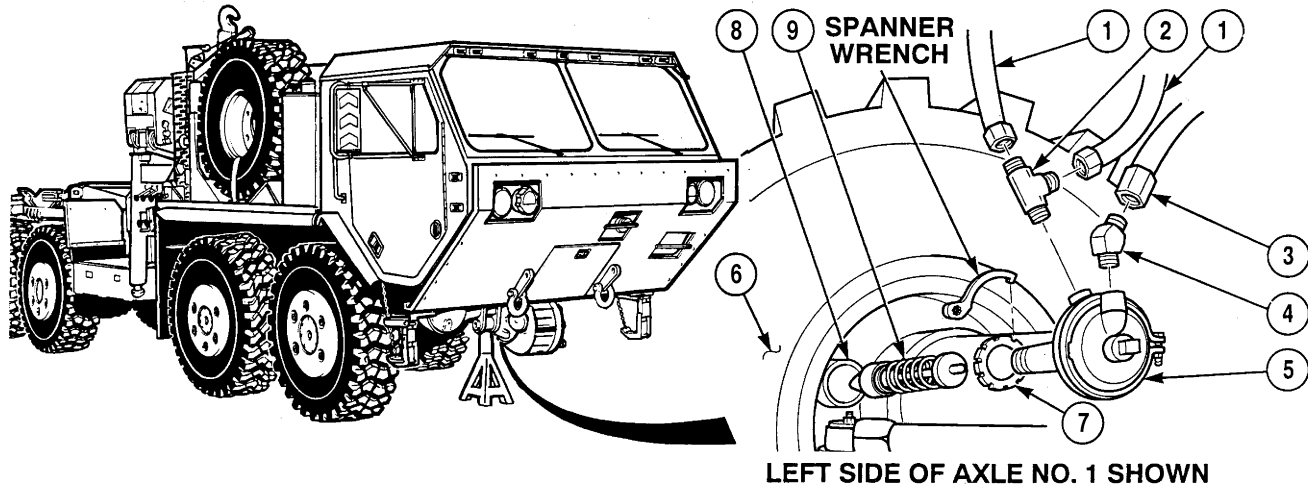
NOTE

Refer to Table 12-1 for air line numbers.

- (i) Install air line (3) on fitting (4).
 (j) Install air line (1) on fitting (2).
 (k) Start truck and build air pressure to 125 psi (861 kPa).
 (l) Turn OFF engine switch.
 (m) Release parking brake.
 (n) With the aid of an assistant, apply service brake pedal and using spanner wrench tighten collet nut (7) to 250 to 280 lb-ft (339 to 380 N·m).
 (o) Release brake pedal.
 (p) Push in on brake drum (6) approximately two inches to reinstall brake drum (6).

12-9. AXLES NO. 1 AND 2 AIR CHAMBER REPLACEMENT (CONT).

b. Rear Air Chamber Replacement.



NOTE

- Tag and mark air lines prior to removal.
- Refer to Table 12-1 for air line numbers.
- Axle No. 1 and 2 air chambers are removed the same way. Axle No. 1 shown.

(1) *Removal.*

- Remove two air lines (1) from tee fitting (2).
- Remove air line (3) from elbow (4).

NOTE

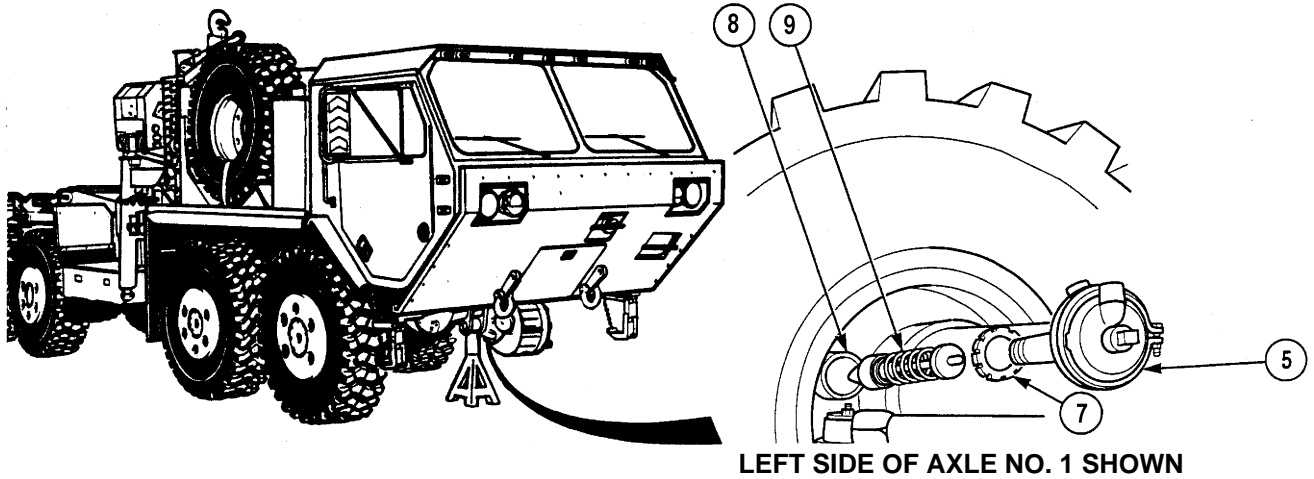
Perform Step (c) only if elbow and tee are damaged or new air chamber is being installed.

- Remove tee (2) and elbow (4) from air chamber (5).

WARNING

Ensure brake drum is not pulled back more than approximately two inches (5 cm). Failure to comply may result in injury or death to personnel.

- Pull brake drum (6) back approximately two inches (5 cm).
- Using spanner wrench, loosen collet nut (7).
- Remove air chamber (5) from brake assembly (8).
- Remove wedge assembly (9) from brake assembly (8).

**NOTE**

Perform Step (h) only if collet nut is damaged.

(h) Remove collet nut (7) from air chamber (5).

(2) Installation.

- (a) Coat wedge assembly (9) with grease.
- (b) Install wedge assembly (9) in brake assembly (8).

NOTE

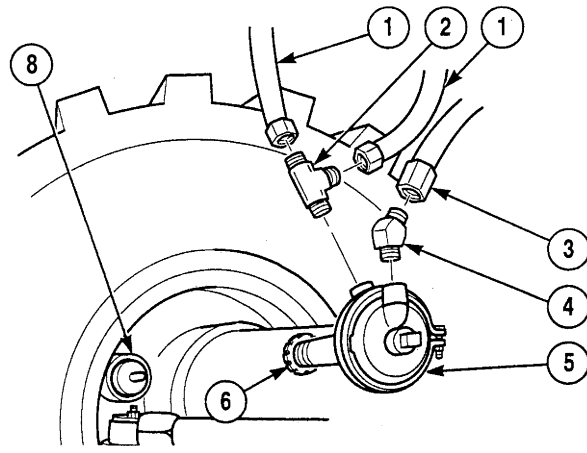
- Perform Step (c) if collet nut was removed.
 - Install collet nut flat end first on air chamber.
- (c) Install collet nut (7) completely onto air chamber (5).

12-9. AXLES NO. 1 AND 2 AIR CHAMBER REPLACEMENT (CONT).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (d) Apply sealing compound to first four threads of the air chamber (5).
- (e) Install air chamber (5) into brake assembly (8) until air chamber bottoms out in brake assembly.



LEFT SIDE OF AXLE NO. 1 SHOWN

CAUTION

Air chamber can only be turned out a maximum of one turn. Failure to comply may result in damage to equipment.

- (f) Rotate air chamber (5) to align air ports.

NOTE

Perform Steps (g) and (h) if removed.

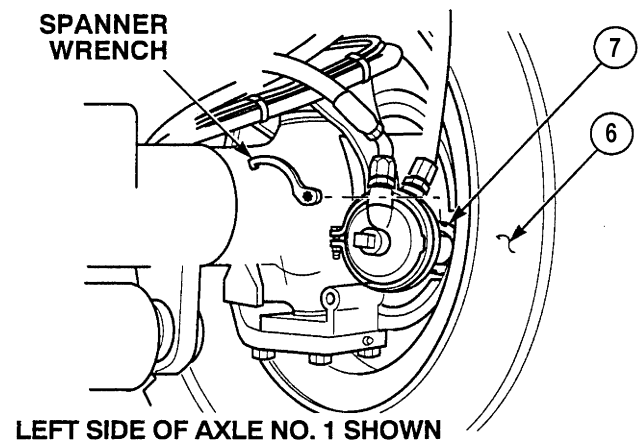
- (g) Coat threads of elbow (4) and tee (2) with sealing compound.
- (h) Install tee (2) and elbow (4) in air chamber (5).

NOTE

Refer to Table 12-1 for air line numbers.

- (i) Install air line (3) on elbow (4).
- (j) Install two air lines (1) on tee fitting (2).

- (k) Start engine and build air pressure to 125 psi (862 kPa).
- (l) Shut off engine.
- (m) Release parking brake.
- (n) With the aid of an assistant, apply service brake pedal and using spanner wrench, tighten collet nut (7) to 250 to 280 lb-ft (339 to 380 N·m).
- (o) Release brake pedal.
- (p) Apply parking brake.
- (q) Push in on brake drum (6) approximately two inches (5.08 cm) to reinstall brake drum.

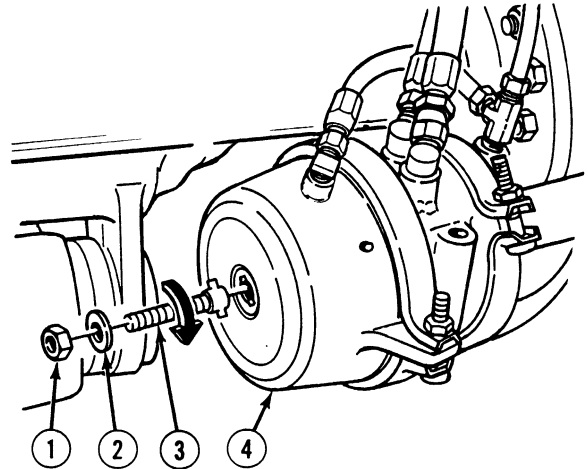


c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Install wheel and tire, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

- (4) Insert caging bolt (3) into keyway of air chamber (4). Turn caging bolt 1/4 turn clockwise. Caging bolt will contact a lock plate.
- (5) Install washer (2) and nut (1) onto caging bolt (3). Cage air chamber (4) by tightening nut.

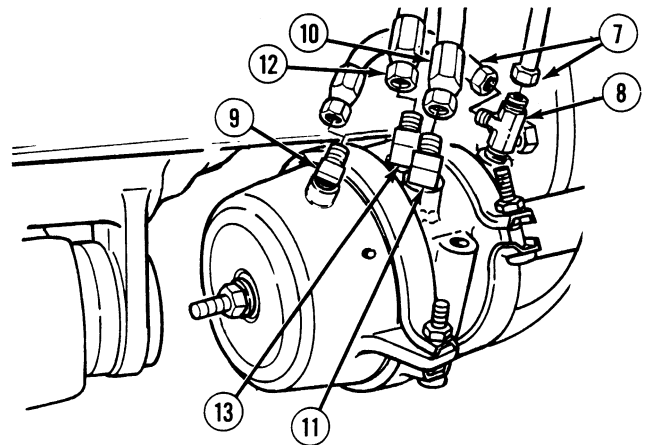


WARNING

Spring in air chamber is very powerful and is under tension. Failure to cage air chamber before removal will release tension of spring abruptly and could result in injury or death to personnel.

NOTE

- Tag and mark air lines before removal.
- Refer to Table 12-2 for air line numbers.



- (6) Remove two air lines (7) from tee (8) and elbow (9).
- (7) Remove air line (10) from elbow (11).
- (8) Remove air line (12) from elbow (13).

Table 12-2. Air Line Numbers

Item No.	Axle No. 3		Axle No. 4		Axle No. 5	
	Right Side	Left Side	Right Side	Left Side	Right Side	Left Side
7	2874	2874	2874	2874	2874	2874
10	2022	2023	2138	2139	2140	2141
12	2546	2547	2017	2015	2018	2016

12-10. AXLES NO. 3, 4 AND 5 AIR CHAMBER REPLACEMENT (CONT).

NOTE

- Perform Step (9) only if fittings are damaged or new air chamber is being installed.
- Note location and position of elbows and tee prior to removal.

- (9) Remove tee (8), elbow (9), elbow (11) and elbow (13) from air chamber (4).

WARNING

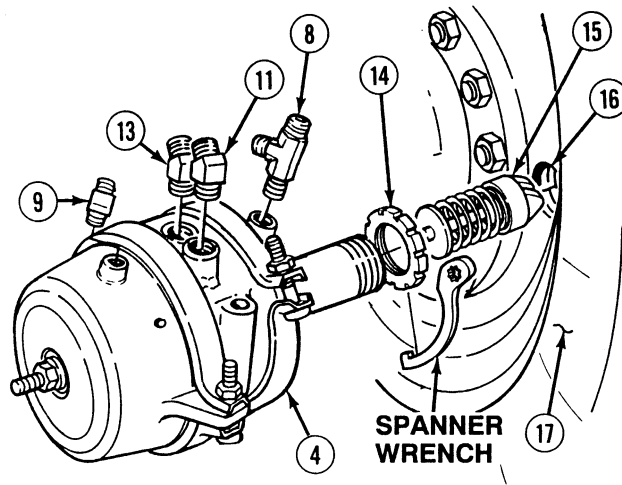
Ensure brake drum is not pulled back more than approximately two inches (5 cm). Failure to comply may result in injury or death to personnel.

- (10) Pull brake drum (17) back approximately two inches (5 cm).
- (11) Using spanner wrench, loosen collet nut (14).
- (12) Remove air chamber (4) and wedge assembly (15) from brake assembly (16).

NOTE

Perform Step (13) only if collet nut is damaged.

- (13) Remove collet nut (14) from air chamber (4).

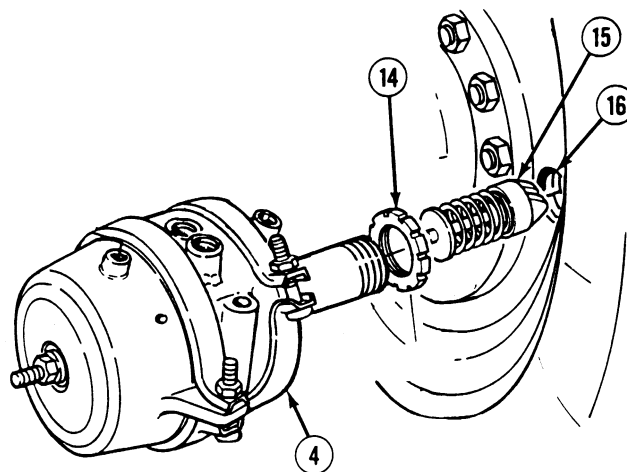


b. Installation.

- (1) Coat wedge assembly (15) with grease.
- (2) Install wedge assembly (15) in brake assembly (16).

NOTE

- Perform Step (3) if collet nut was removed.
 - Install collet nut flat end first on air chamber.
- (3) Install collet nut (14) completely on air chamber (4).

**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (4) Apply sealing compound to first four threads on air chamber (4).
- (5) Install air chamber (4) into brake assembly (16) until air chamber bottoms out in brake assembly.

CAUTION

Air chamber can only be turned out a maximum of one turn. Failure to comply may result in damage to equipment.

- (6) Rotate air chamber (4) to align ports.
- (7) Position collet nut (14) on air chamber (4) against brake assembly (16).

12-10. AXLES NO. 3, 4 AND 5 AIR CHAMBER REPLACEMENT (CONT).

WARNING

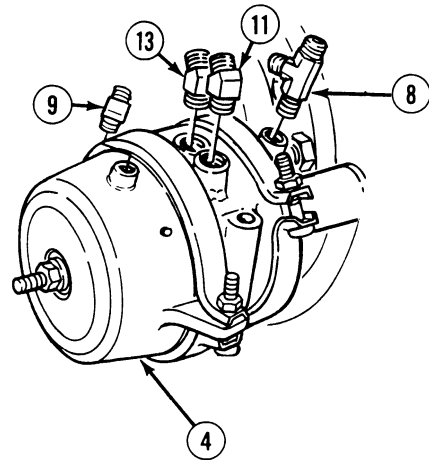
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (8) Apply sealing compound to threads of elbows (13), (11), (9) and tee (8).

NOTE

Install elbows and tee as noted prior to removal.

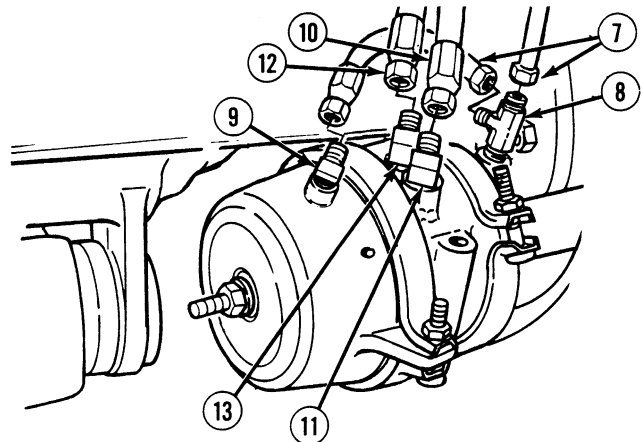
- (9) Install elbows (13), (11), (9) and tee (8) in air chamber (4).



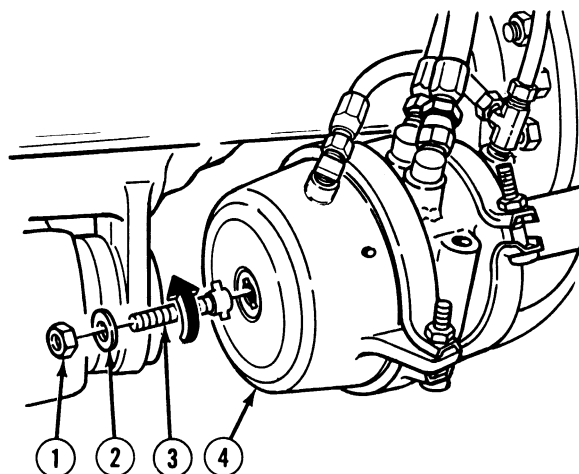
NOTE

Refer to Table 12-2 for air line numbers.

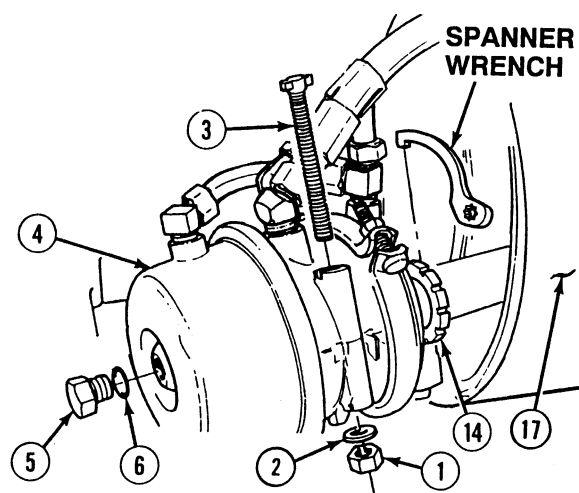
- (10) Install air line (12) on elbow (13).
- (11) Install air line (10) on elbow (11).
- (12) Install two air lines (7) on elbow (9) and tee (8).



- (13) Remove nut (1), washer (2) from caging bolt (3).
- (14) Turn caging bolt (3) 1/4 turn counterclockwise and remove from air chamber (4).



- (15) Install caging bolt (3), in storage slot using washer (2) and nut (1).
- (16) Install preformed packing (6) and plug (5).
- (17) Position plug (5) in air chamber (4).
- (18) Tighten plug (5) to 120 lb-in (14 N·m).
- (19) Start engine and build air pressure to 125 psi (861 kPa).
- (20) Shut OFF engine.
- (21) Release parking brake.
- (22) With the aid of an assistant, apply service brake pedal and using spanner wrench, tighten collet nut (14) to 250 to 280 lb-ft (339 to 380 N·m).
- (23) Release brake pedal.
- (24) Apply parking brake.
- (25) Push in on brake drum (17) approximately two inches (5 cm) to reinstall brake drum.



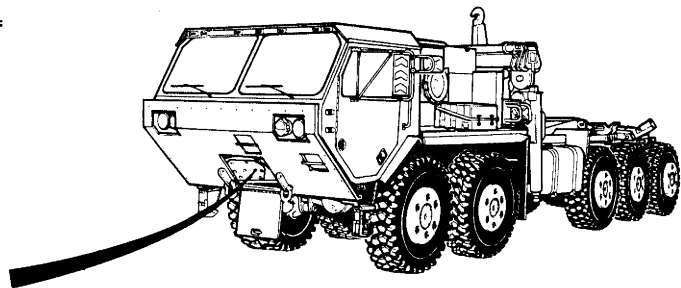
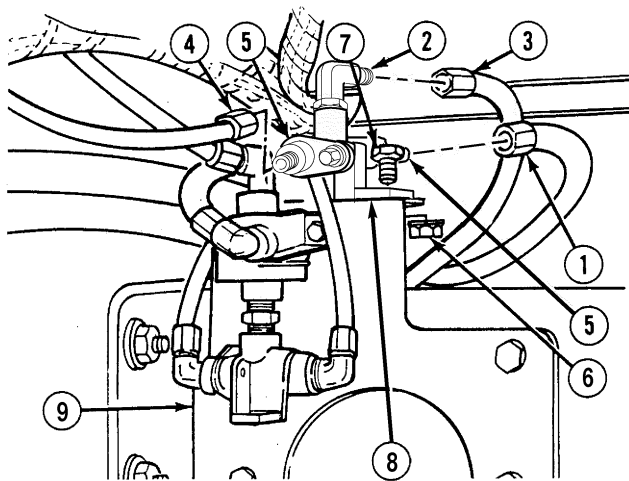
12-10. AXLES NO. 3, 4 AND 5 AIR CHAMBER REPLACEMENT (CONT).

c. *Follow-On Maintenance:*

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Install wheel and tire, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-11. FRONT DOUBLE CHECK VALVE REPLACEMENT (CONT).

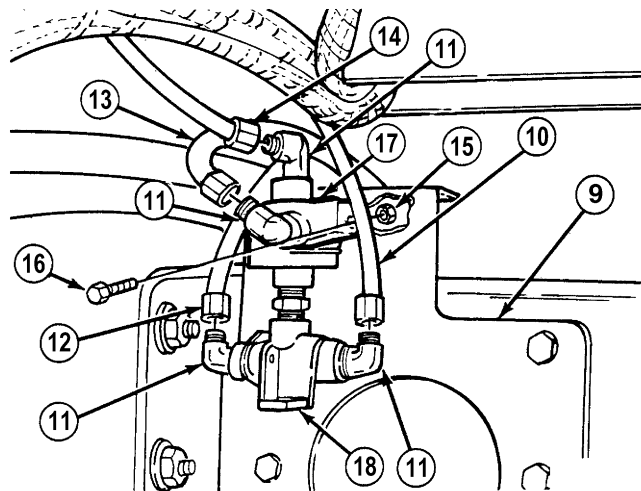


- (4) Remove air line 2686 (1) from adapter (5).
- (5) Remove air line 2684 (3) from elbow (2).
- (6) Remove air line 2689 (4) from adapter (5).

NOTE

If truck is equipped with an arctic kit, a hose bracket must also be removed in Step (7).

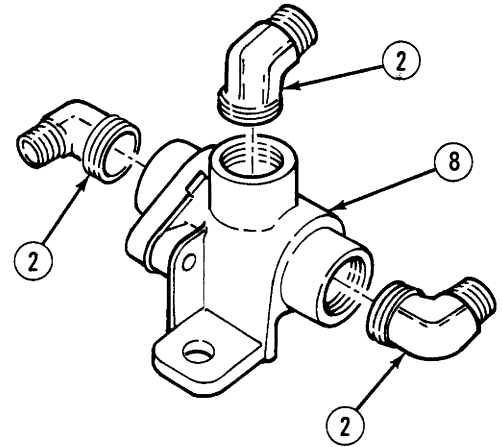
- (7) Remove locknut (6), screw (7), and top double check valve (8) from front gladhand bracket (9). Discard locknut.
- (8) Remove air line 2663 (10) from elbow (11).
- (9) Remove air line 2664 (12) from elbow (11).
- (10) Remove air line 2661 (13) from elbow (11).
- (11) Remove air line 2665 (14) from elbow (11).
- (12) Remove locknut (15), screw (16), and front double check valves (17) and (18) from front gladhand bracket (9). Discard locknut.
- (13) Secure top double check valve (8) in a soft-jaw vise.



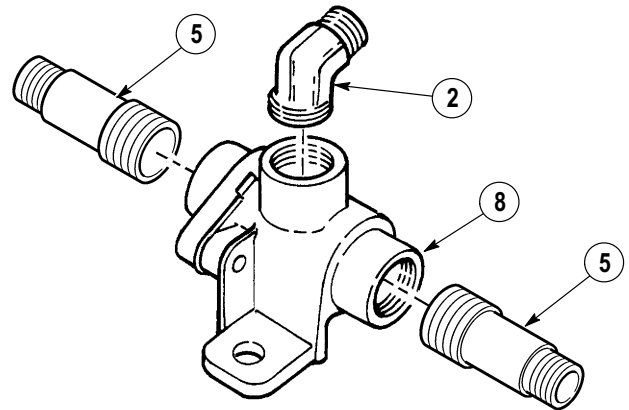
NOTE

- Mark positions of adapters, elbows and valves before removal.
- If truck is not equipped with remote oil filter, perform Step (14).
- If truck is equipped with remote oil filter, perform Step (15).

(14) Remove three elbows (2) from top double check valve (8).



(15) Remove elbow (2) and two adapters (5) from top double check valve (8).

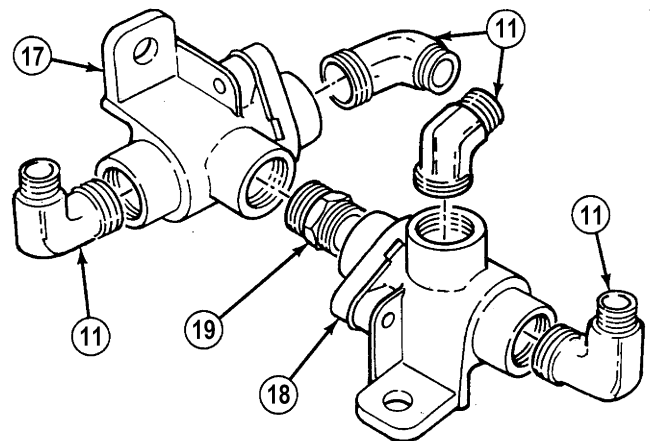


(16) Secure front double check valves (17) and (18) in a soft-jaw vise.

(17) Remove four elbows (11) from front double check valves (17) and (18).

(18) Remove front double check valve (18) from nipple (19).

(19) Remove nipple (19) from front double check valve (17).



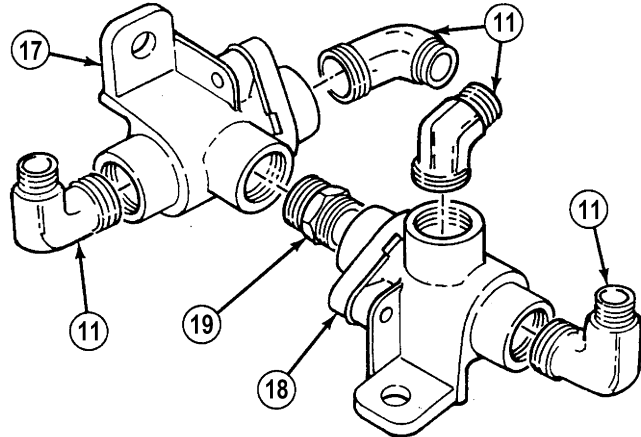
12-11. FRONT DOUBLE CHECK VALVE REPLACEMENT (CONT).

b. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

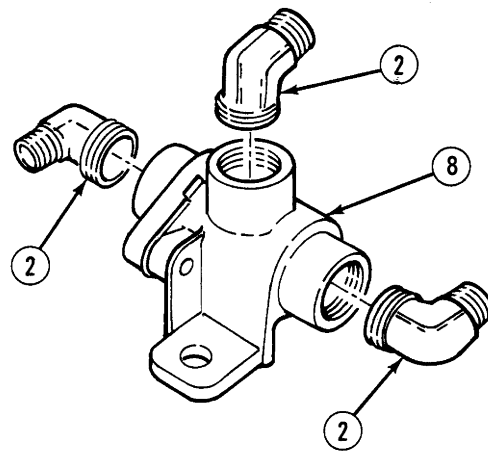
- (1) Apply sealing compound on threads of both ends of nipple (19).
- (2) Install nipple (19) in front double check valve (17).
- (3) Install front double check valve (18) on nipple (19).
- (4) Apply sealing compound on threads of four elbows (11).
- (5) Install four elbows (11) in front double check valves (17) and (18).



NOTE

- If truck is not equipped with remote oil filter, perform Steps (6) and (7).
- If truck is equipped with remote oil filter, perform Steps (8) and (9).

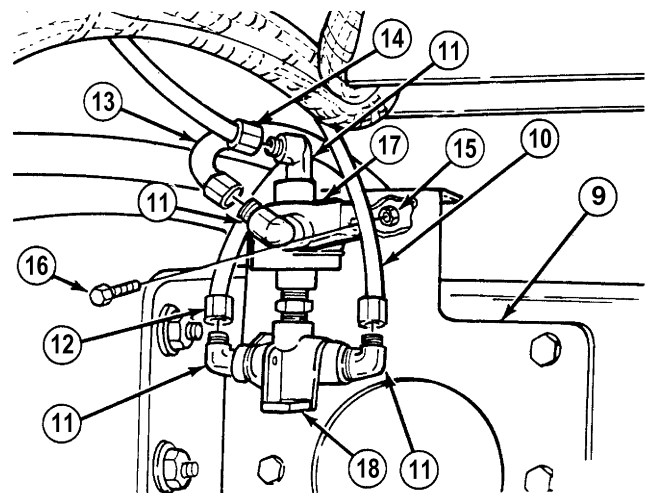
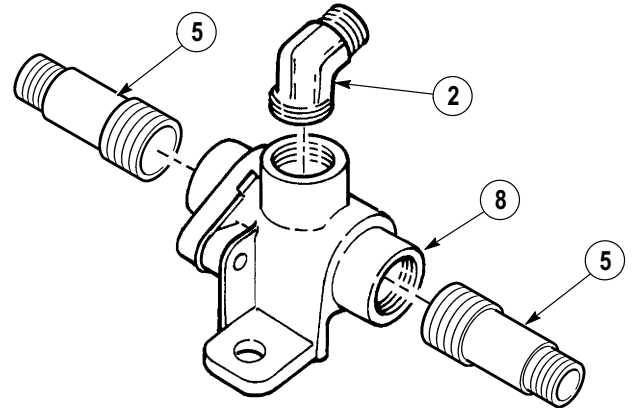
- (6) Apply sealing compound on threads of three elbows (2).
- (7) Install three elbows (2) in top double check valve (8).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (8) Apply sealing compound on threads of elbow (2) and two adapters (5).
- (9) Install two adapters (5) and elbow (2) in top double check valve (8).
- (10) Install front double check valves (17) and (18) on front gladhand bracket (9) with screw (16) and locknut (15). Tighten locknut to 156 lb-in (18 N·m).
- (11) Install air line 2665 (13) on elbow (10).
- (12) Install air line 2661 (12) on elbow (10).
- (13) Install air line 2664 (11) on elbow (10).
- (14) Install air line 2663 (9) on elbow (10).

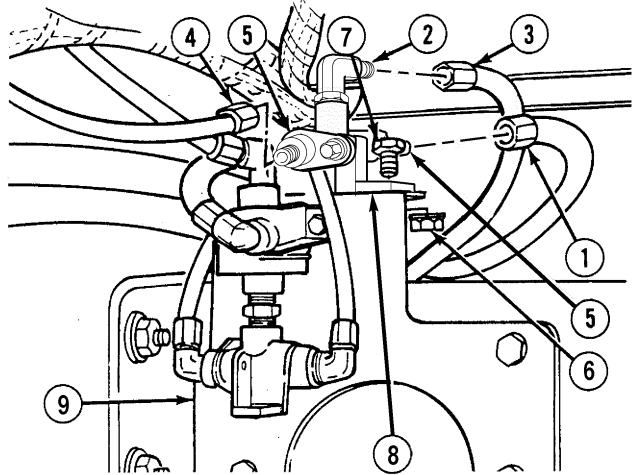


12-11. FRONT DOUBLE CHECK VALVE REPLACEMENT (CONT).

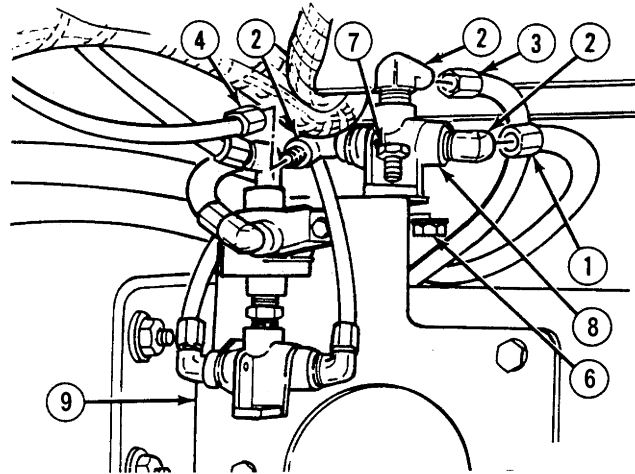
- (15) Install top double check valve (8) on front gladhand bracket (9) with screw (7) and locknut (6).

NOTE

- If truck is not equipped with remote oil filter, perform Steps (16) through (18).
- If truck is not equipped with remote oil filter, perform Steps (19) and (21).



- (16) Install air line 2689 (4) on adapter (5).
 (17) Install air line 2684 (3) on elbow (2).
 (18) Install air line 2686 (1) on adapter (5).
 (19) Install air line 2689 (4) on elbow (2).
 (20) Install air line 2684 (3) on elbow (2).
 (21) Install air line 2686 (1) on elbow (2).



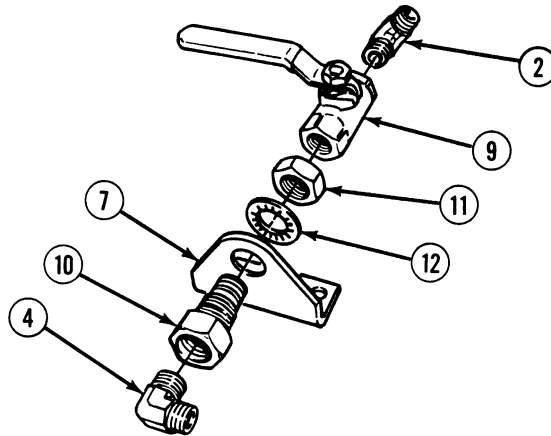
c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-12. BALL VALVE REPLACEMENT (CONT).

- (4) Position bracket (7) in soft-jaw vise.
- (5) Remove elbow (2) from ball valve (9).
- (6) Remove ball valve (9) from reducer (10).
- (7) Remove elbow (4) from reducer (10).
- (8) Loosen jam nut (11) on reducer (10) and remove reducer (10), lockwasher (12) and jam nut (11) from bracket (7). Discard lockwasher.
- (9) Remove bracket (7) from soft-jaw vise.



b. Installation.

- (1) Position bracket (7) in soft-jaw vise.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

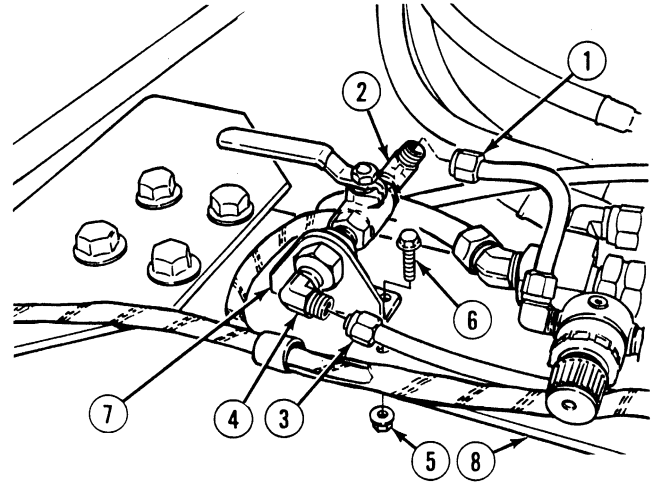
- (2) Apply sealing compound on threads of reducer (10).
- (3) Install reducer (10), lockwasher (12) and jam nut (11) on bracket (7).
- (4) Install ball valve (9) on reducer (10).
- (5) Apply sealing compound on threads of elbows (4) and (2).

NOTE

Install elbows as noted prior to removal.

- (6) Install elbow (2) on ball valve (9).
- (7) Install elbow (4) on reducer (10).
- (8) Remove bracket (7) from soft-jaw vise.

- (9) Install two screws (6) and bracket (7) on crossmember (8) with two locknuts (5).
- (10) Install air line 2044 (3) on elbow (4).
- (11) Install air line 2044 (1) on elbow (2).



c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- LHS in transit position, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

NOTE

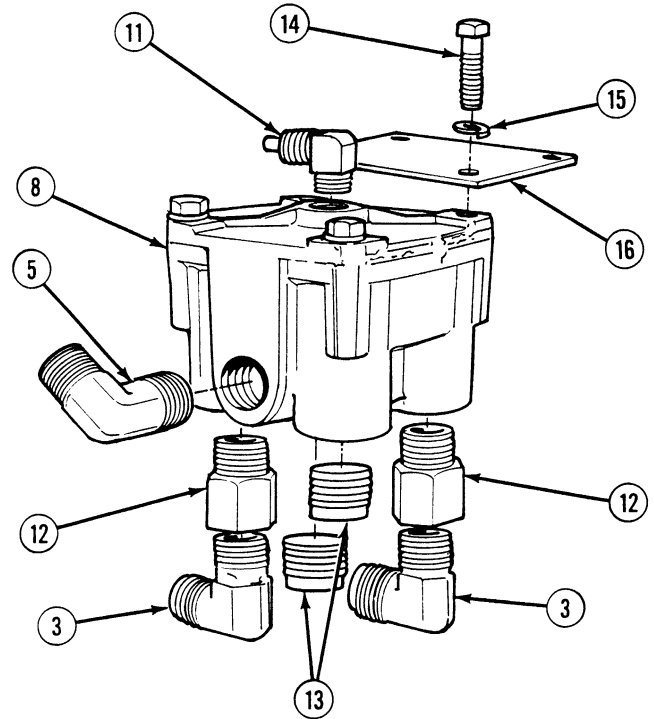
Mark position of fittings before removal.

- (5) Remove two elbows (3) from adapters (12).
- (6) Remove two adapters (12) from service relay valve (8).
- (7) Remove two plugs (13) from service relay valve (8).
- (8) Remove elbow (5) from service relay valve (8).
- (9) Remove elbow (11) from service relay valve (8).

NOTE

Perform Step (10) if installing new service relay valve.

- (10) Remove two screws (14), lockwashers (15) and service relay valve mounting bracket (16) from service relay valve (8). Discard lockwashers.

**b. Installation.****NOTE**

- Use existing screws to mount service relay mounting bracket.
- Perform Step (1) only if installing new service relay valve.

- (1) Remove two screws (14) and lockwashers (15) from service relay valve (8). Discard lockwasher.
- (2) Install service relay valve mounting bracket (16), two lockwashers (15) and screws (14) on service relay valve (8).

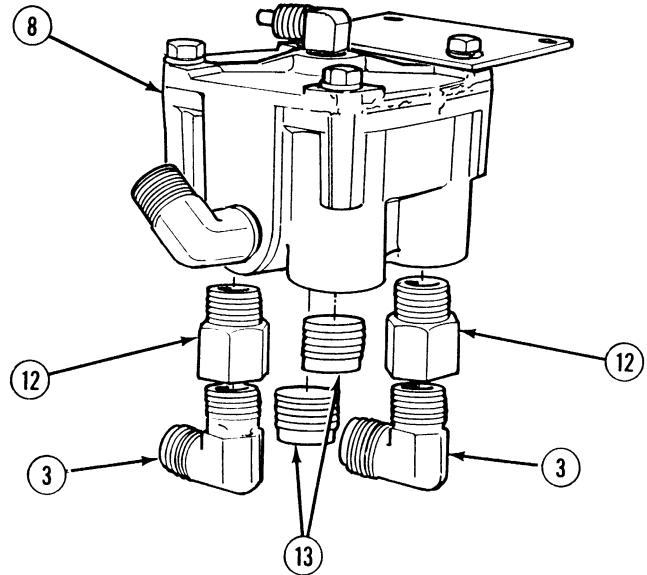
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

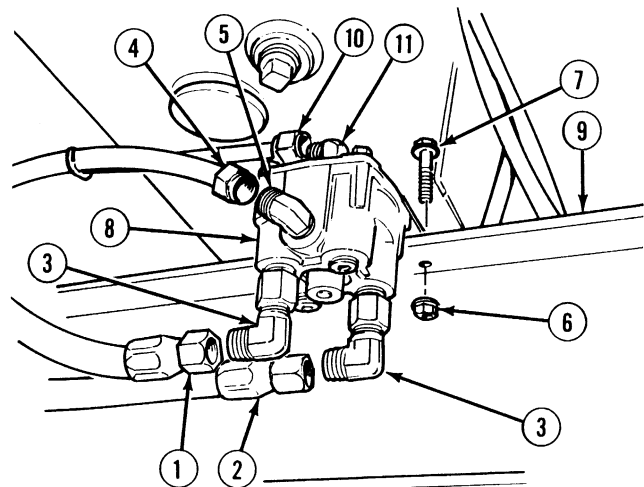
- (3) Apply sealing compound on threads of elbow (11).
- (4) Install elbow (11) in service relay valve (8).
- (5) Apply sealing compound on threads of elbow (5).
- (6) Install elbow (5) in service relay valve (8).
- (7) Apply sealing compound on threads of two plugs (13).

12-13. SERVICE RELAY VALVE NO. 1 REPLACEMENT (CONT).

- (8) Install two plugs (13) in service relay valve (8).
- (9) Apply sealing compound on threads of two adapters (12).
- (10) Install two adapters (12) in service relay valve (8).
- (11) Apply sealing compound on threads of two elbows (3).
- (12) Install two elbows (3) in adapters (12) in service relay valve (8).



- (13) Install air line 2488 (10) on elbow (11).
- (14) Install service relay valve (8), two screws (7) and locknuts (6) on frame (9).
- (15) Install air line 2536 (4) on elbow (5).
- (16) Install air line 2544 (1) and air line 2543 (2) on two elbows (3).



c. Follow-On Maintenance:

- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10)

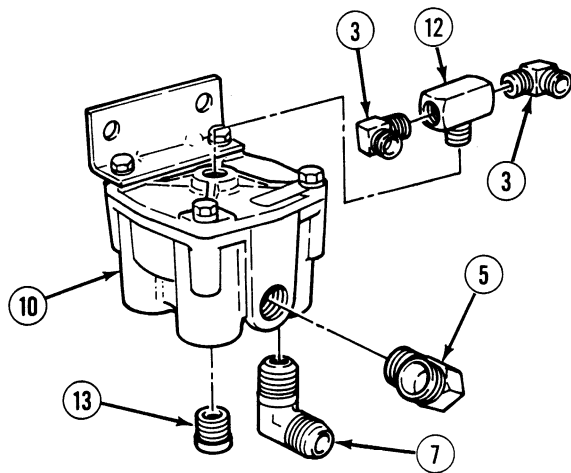
END OF TASK

12-14. SERVICE RELAY VALVE NO. 2 REPLACEMENT (CONT).

NOTE

Tag and mark position of fittings and plugs before removal.

- (5) Remove tee (12) from service relay valve (10).
- (6) Remove two elbows (3) from tee (12).
- (7) Remove elbow (5) from service relay valve (10).
- (8) Remove elbow (7) from service relay valve (10).
- (9) Remove three pipe plugs (13) from service relay valve (10).



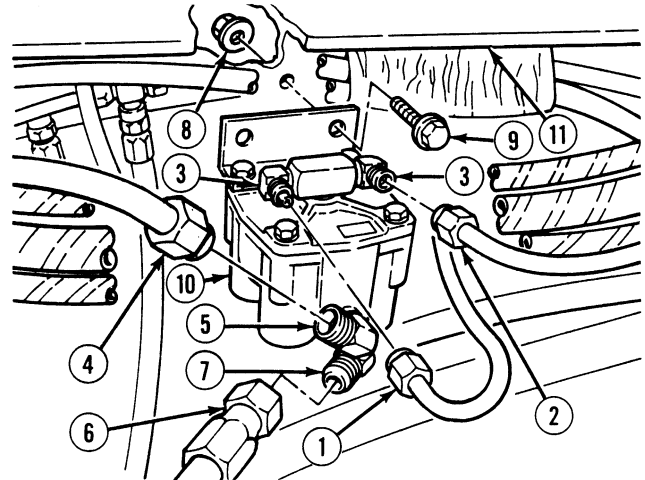
b. Installation.

WARNING

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- (1) Apply sealing compound to threads of three pipe plugs (13).
- (2) Install three pipe plugs (13) in service relay valve (10).
- (3) Apply sealing compound to threads of elbow (7).
- (4) Install elbow (7) in service relay valve (10).
- (5) Apply sealing compound to threads of elbow (5).
- (6) Install elbow (5) in service relay valve (10).
- (7) Apply sealing compound to threads of two elbows (3).
- (8) Install two elbows (3) in tee (12).
- (9) Apply sealing compound to threads of tee (12).
- (10) Install tee (12) in service relay valve (10).

- (11) Install service relay valve (10), two screws (9) and locknuts (8) on frame (11).
- (12) Install air line 2545 (6) on elbow (7).
- (13) Install air line 2011 (4) on elbow (5).
- (14) Install air line 2668 (1) and air line 2639 (2) on elbows (3).

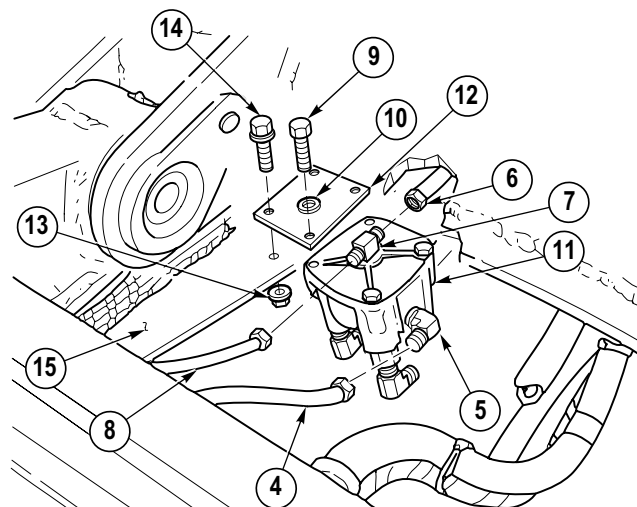


c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- LHS in transit position, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

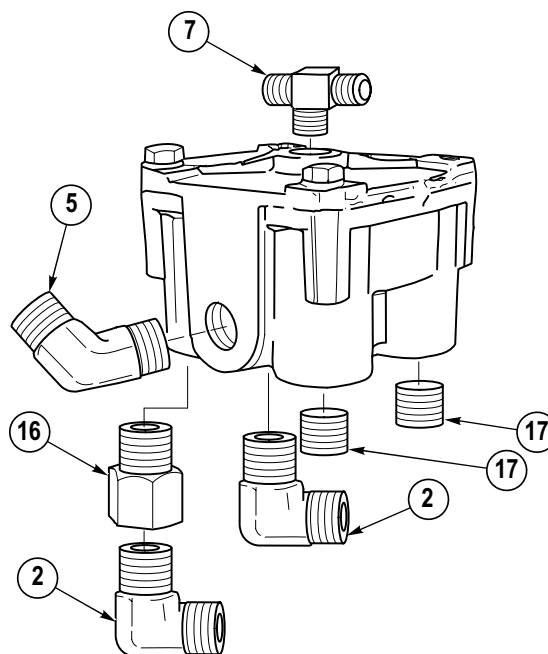
- (2) Remove air line 2014 (4) from elbow (5).
- (3) Remove air line 2660 (6) from tee (7).
- (4) Remove air line 2669 (8) from tee (7).
- (5) Remove two screws (9), lockwashers (10) and service relay valve (11) from service relay valve mounting bracket (12).
- (6) Remove two locknuts (13), screws (14) and service relay valve mounting bracket (12) from frame (15). Discard locknuts.



NOTE

Note location and position of elbows and fittings prior to removal.

- (7) Remove two elbows (2) from adapter (16) and service relay valve (11).
- (8) Remove adapter (16) from service relay valve (11).
- (9) Remove elbow (5) from service relay valve (11).
- (10) Remove tee (7) from service relay valve (11).
- (11) Remove two plugs (17) from service relay valve (11).



12-15. SERVICE RELAY VALVE NO. 3 REPLACEMENT (CONT).

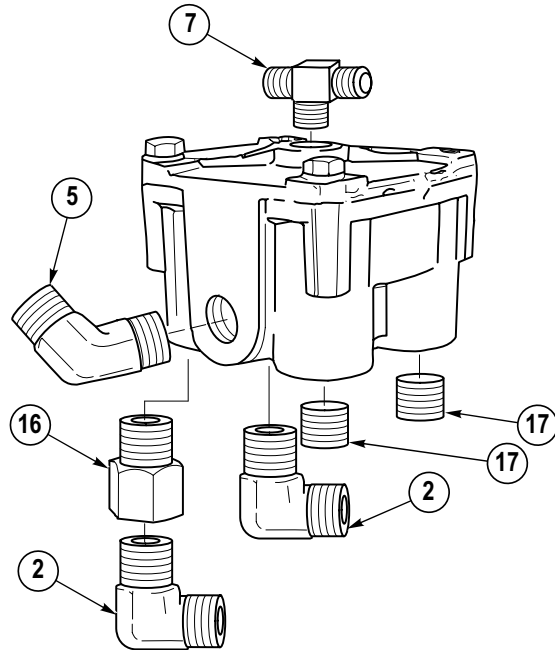
b. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

Ensure tees and elbows are installed as noted prior to removal.



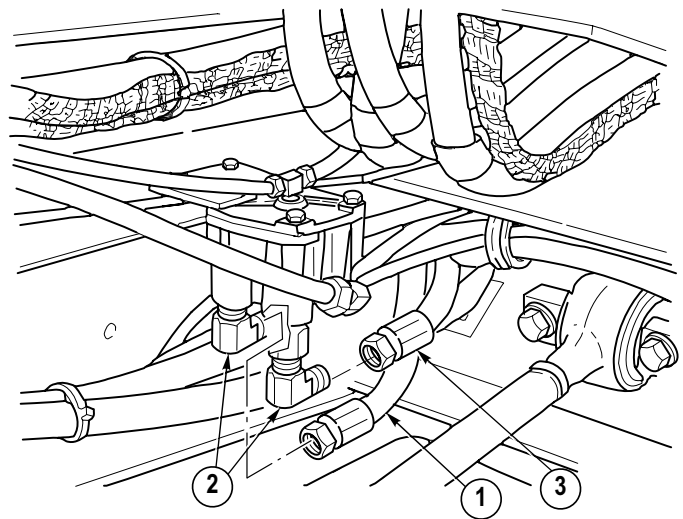
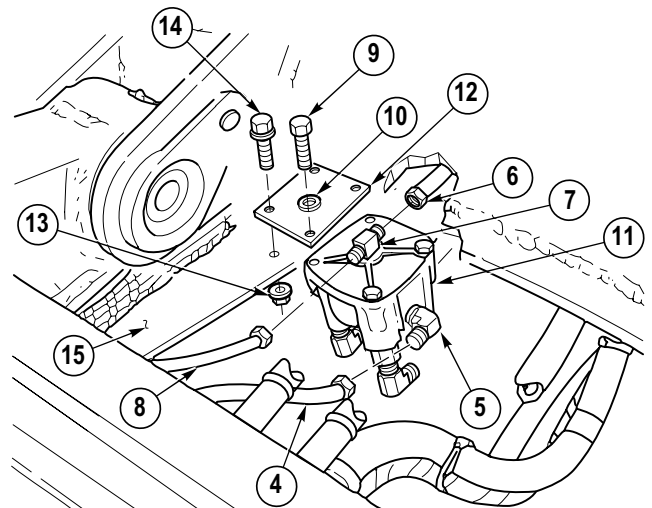
- (1) Apply sealing compound on threads of tee (7).
- (2) Install tee (7) in service relay valve (11).
- (3) Apply sealing compound on threads of elbow (5).
- (4) Install elbow (5) in service relay valve (11).
- (5) Apply sealing compound on threads of two plugs (17).
- (6) Install two plugs (17) on service relay valve (11).
- (7) Apply sealing compound on threads of adapter (16).
- (8) Install adapter (16) in service relay valve (11).
- (9) Apply sealing compound on threads of two elbows (2).
- (10) Install two elbows (2) on adapter (16) and service relay valve (11).

- (11) Install service relay valve mounting bracket (12) and two screws (14) on frame (15) with two locknuts (13).

NOTE

Perform Step (12) only if installing new service relay valve.

- (12) Remove two screws (9) and lockwashers (10) from service relay valve (11). Discard lockwashers.
- (13) Install service relay valve (11) on bracket (12) with two screws (9) and lockwashers (10).
- (14) Install air line 2669 (8) and air line 2660 (6) on tee (7).
- (15) Install air line 2014 (4) on elbow (5).
- (16) Install air line 2144 (3) on elbow (2).
- (17) Install air line 2143 (1) on elbow (2).

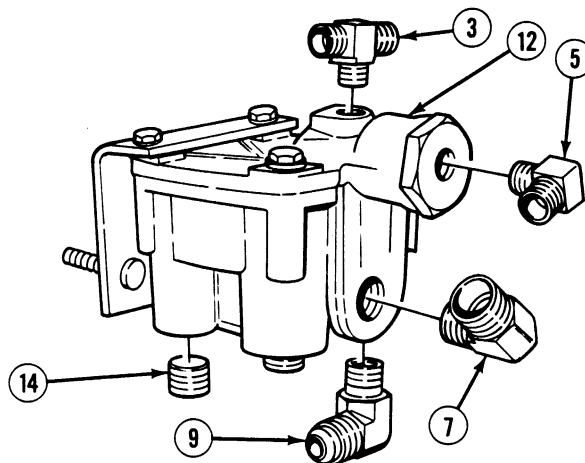


c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- LHS in transit position, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

- (6) Remove tee (3) from relay spring valve (12).
- (7) Remove elbow (5) from relay spring valve (12).
- (8) Remove elbow (7) from relay spring valve (12).
- (9) Remove elbow (9) from relay spring valve (12).
- (10) Remove three pipe plugs (14) from relay spring valve (12).



b. Installation.

WARNING

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- (1) Apply sealing compound on threads of three pipe plugs (14).
- (2) Install three pipe plugs (14) in relay spring valve (12).
- (3) Apply sealing compound on threads of elbow (9).
- (4) Install elbow (9) in relay spring valve (12).
- (5) Apply sealing compound on threads of elbow (7).
- (6) Install elbow (7) in relay spring valve (12).
- (7) Apply sealing compound on threads of elbow (5).
- (8) Install elbow (5) in relay spring valve (12).
- (9) Apply sealing compound on threads of tee (3).
- (10) Install tee (3) in relay spring valve (12).

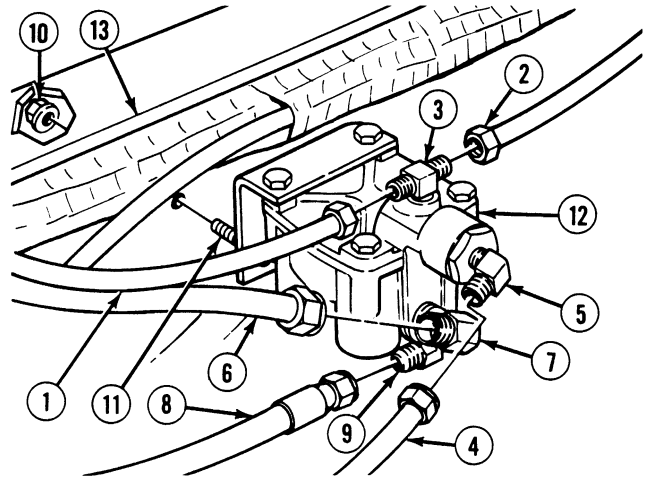
12-16. RELAY SPRING VALVE NO. 1 REPLACEMENT (CONT).

- (11) Install relay spring valve (12), two screws (11) and locknuts (10) on frame (13).

NOTE

Install cable ties as required.

- (12) Install air line 2075 (8) on elbow (9).
- (13) Install air line 2620 (6) on elbow (7).
- (14) Install air line 2639 (4) on elbow (5).
- (15) Install air line 2622 (1) and air line 2638 (2) on tee (3).



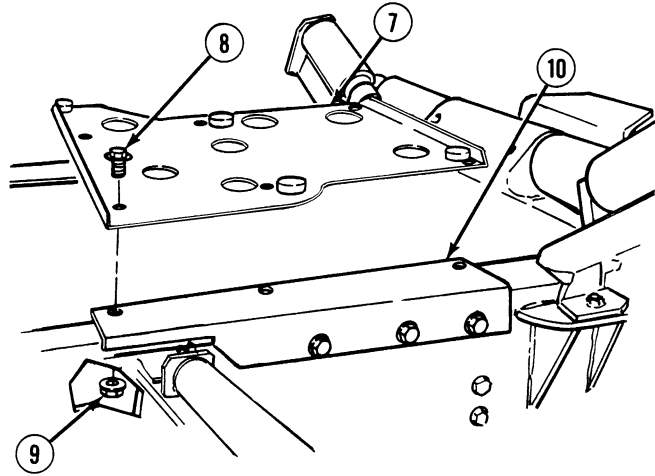
c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- LHS in transit position, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

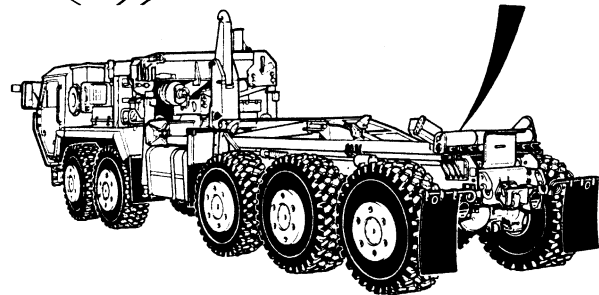
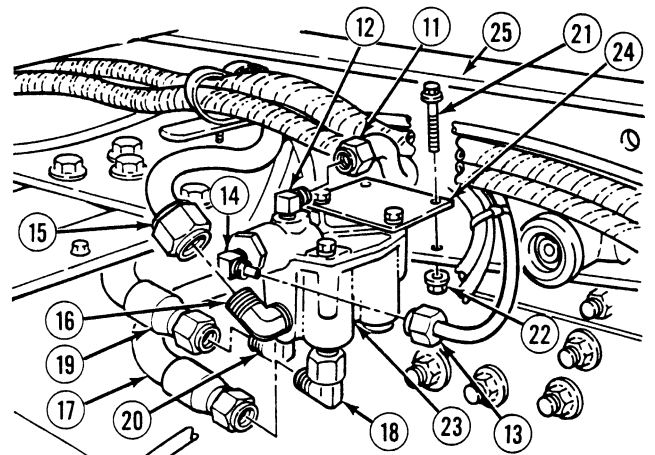
END OF TASK

12-17. RELAY SPRING VALVE NO. 2 REPLACEMENT (CONT).

- (4) With the aid of an assistant, remove six screws (8), locknuts (9) and deck assembly (7) from brackets (10). Discard locknuts.



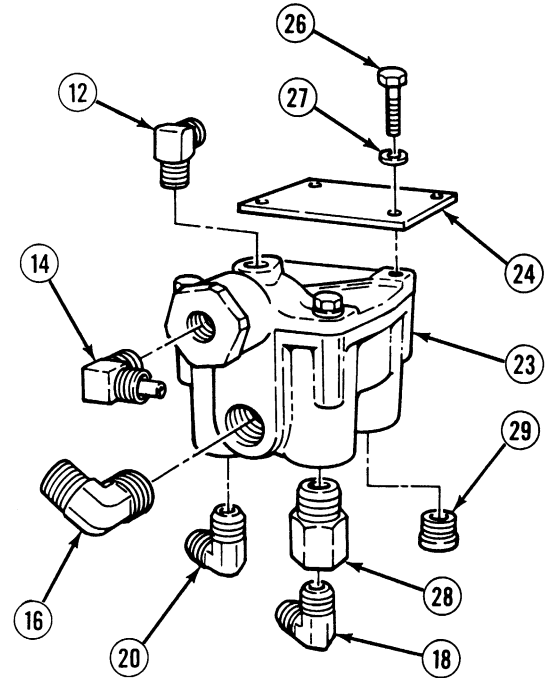
- (5) Remove air line 2638 (11) from elbow (12).
- (6) Remove air line 2660 (13) from elbow (14).
- (7) Remove air line 2614 (15) from elbow (16).
- (8) Remove air line 2369 (17) from elbow (18).
- (9) Remove air line 2368 (19) from elbow (20).
- (10) Remove two screws (21), locknuts (22) relay spring valve (23) and bracket (24) from frame (25). Discard locknuts.



NOTE

- Use existing screws to mount service relay mounting bracket.
- Perform Step (11) only if installing new service relay valve.

- (11) Remove two screws (26), lockwashers (27) and relay spring valve mounting bracket (24) from relay spring valve (23). Discard lock washers.



NOTE

Note location and position of fittings, elbows and plugs prior to removal.

- (12) Remove elbows (12) and (14) from relay spring valve (23).
- (13) Remove elbow (16) from relay spring valve (23).
- (14) Remove elbows (18) and (20) and adapter fitting (28) from relay spring valve (23).
- (15) Remove two pipe plugs (29) from relay spring valve (23).

b. Installation.

WARNING

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NOTE

Install elbow, fittings and plugs as noted prior to removal.

- (1) Install two pipe plugs (29) in relay spring valve (23).
- (2) Apply sealing compound to threads of adapter (28).
- (3) Install adapter fitting (28) in spring valve (23).
- (4) Apply sealing compound to threads of elbow (20).
- (5) Install elbow (20) in spring valve (23).
- (6) Apply sealing compound to threads of elbow (18).
- (7) Install elbow (18) on adapter (28).
- (8) Apply sealing compound to threads of two pipe plugs (29).

12-17. RELAY SPRING VALVE NO. 2 REPLACEMENT (CONT).

WARNING

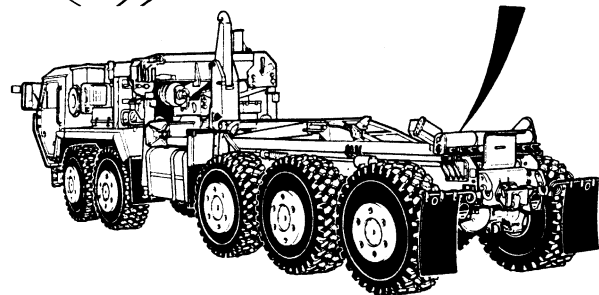
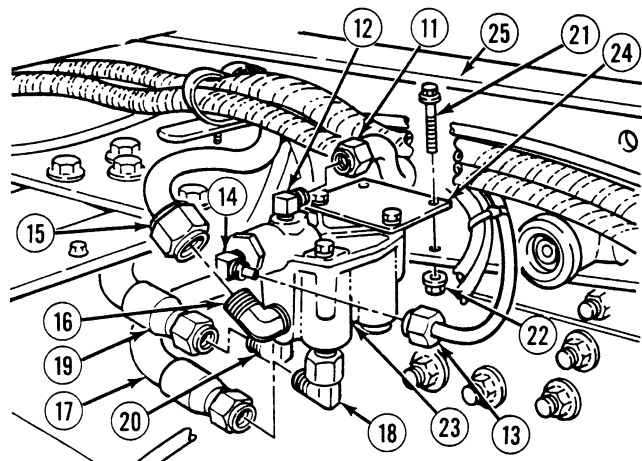
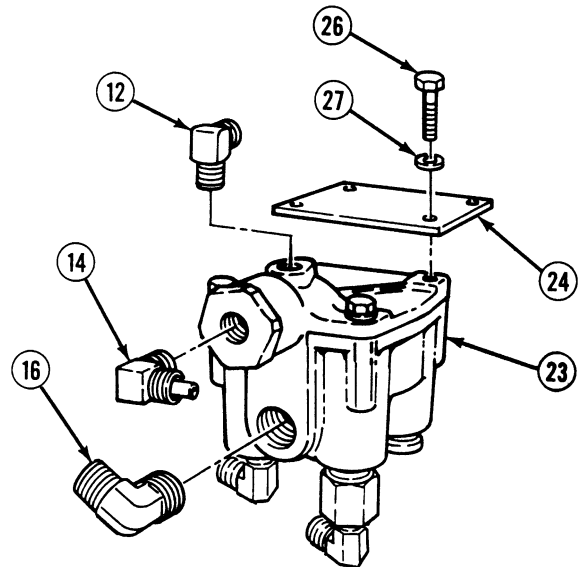
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (9) Apply sealing compound to threads of elbow (16).
- (10) Install elbow (16) in relay spring valve (23).
- (11) Apply sealing compound to threads of elbow (12).
- (12) Install elbow (12) in relay spring valve (23).
- (13) Apply sealing compound to threads of elbow (14).
- (14) Install elbow (14) in relay spring valve (23).

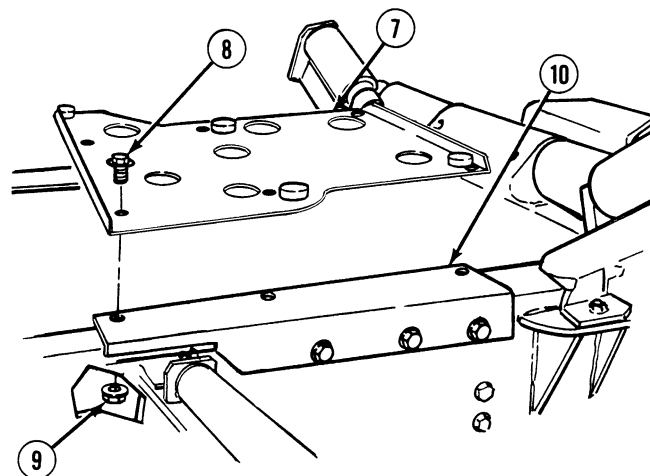
NOTE

- Use existing screws to mount service relay mounting bracket.
- Perform Steps (15) and (16) only if installing new service relay valve.

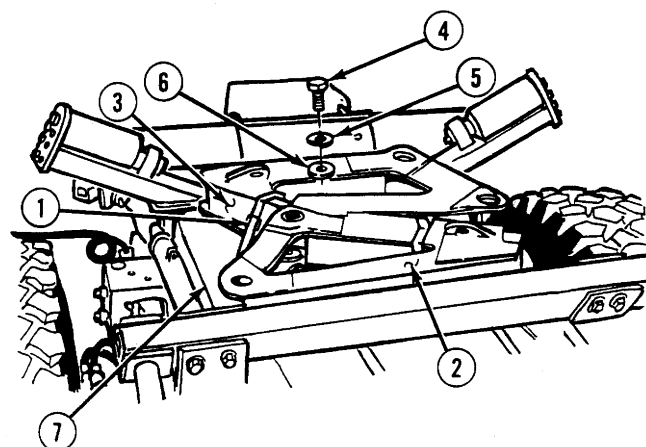
- (15) Remove two screws (26) and lockwashers (27) from relay spring valve (23). Discard lockwashers.
- (16) Install relay spring valve (23) on bracket (24) with two screws (26) and lockwashers (27).
- (17) Install spring relay valve (23) and bracket (24) on frame (25) with two screws (21) and locknuts (22).
- (18) Install air line 2368 (19) on elbow (20).
- (19) Install air line 2369 (17) on elbow (18).
- (20) Install air line 2614 (15) on elbow (16).
- (21) Install air line 2660 (13) on elbow (14).
- (22) Install air line 2638 (11) on elbow (12).



- (23) With the aid of an assistant, install deck (7) on mounting brackets (10) with six screws (8) and locknuts (9).



- (24) Position two extension assemblies (2) and (3) on deck (7).
- (25) Install two extension assemblies (2) and (3) with four washers (6) lockwashers (5) and screws (4).
- (26) Install and tighten two tie down straps (1) to left hand extension assembly (2) and right hand extension assembly (3).



c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-18. SPRING BRAKE VALVE REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Materials/Parts

Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)

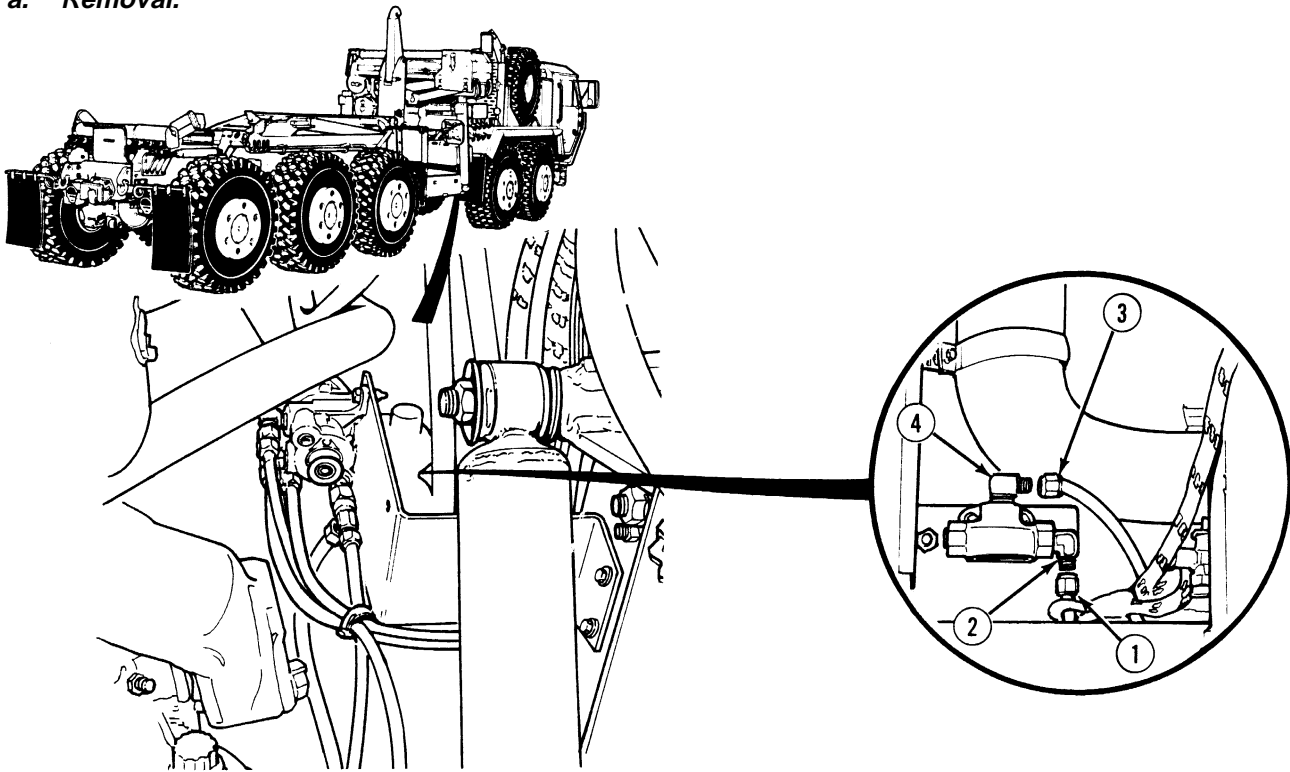
Materials/Parts - Continued

Locknut (2) (Item 133, Appendix F)
Locknut (2) (Item 140, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)

a. Removal.

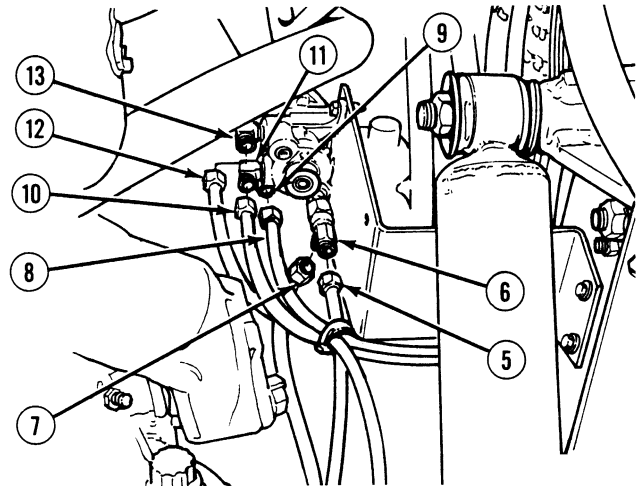


NOTE

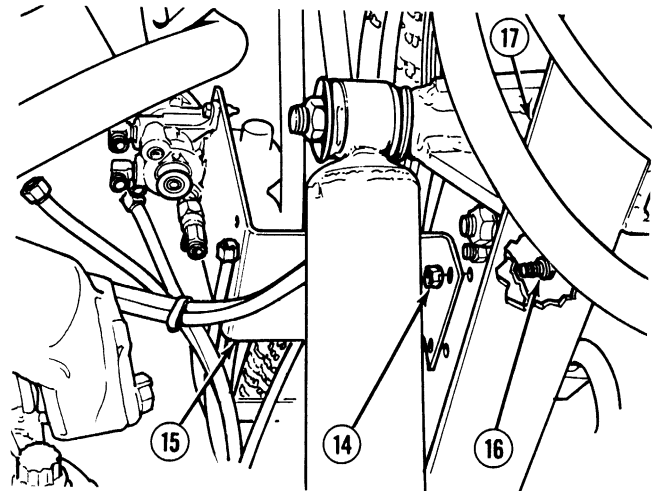
Tag and mark air lines and fittings prior to removal.

- (1) Remove air line 2686 (1) from elbow (2).
- (2) Remove air line 2894 (3) from elbow (4).

- (3) Remove air line 2664 (5) from tee (6).
- (4) Remove air line 2623 (7) from tee (6).
- (5) Remove air line 2621 (8) from elbow (9).
- (6) Remove air line 2612 (10) from elbow (11).
- (7) Remove air line 2622 (12) from elbow (13).



- (8) Remove two locknuts (14), bracket (15) and screw (16) from frame (17). Discard locknuts.



12-18. SPRING BRAKE VALVE REPLACEMENT (CONT).

- (9) Remove elbows (18), (19) and (20) from spring brake valve (21).
- (10) Remove two locknuts (22), spring brake valve (21) and screws (23), from bracket (15). Discard locknuts.
- (11) Remove tee (24), coupling (25) and nipple (26) from spring brake valve (21).

b. Installation.

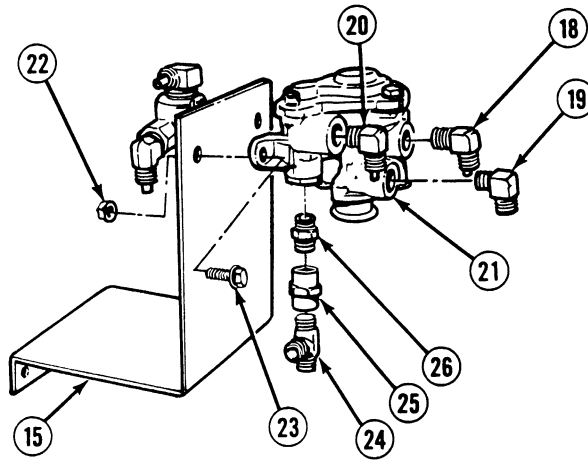
WARNING

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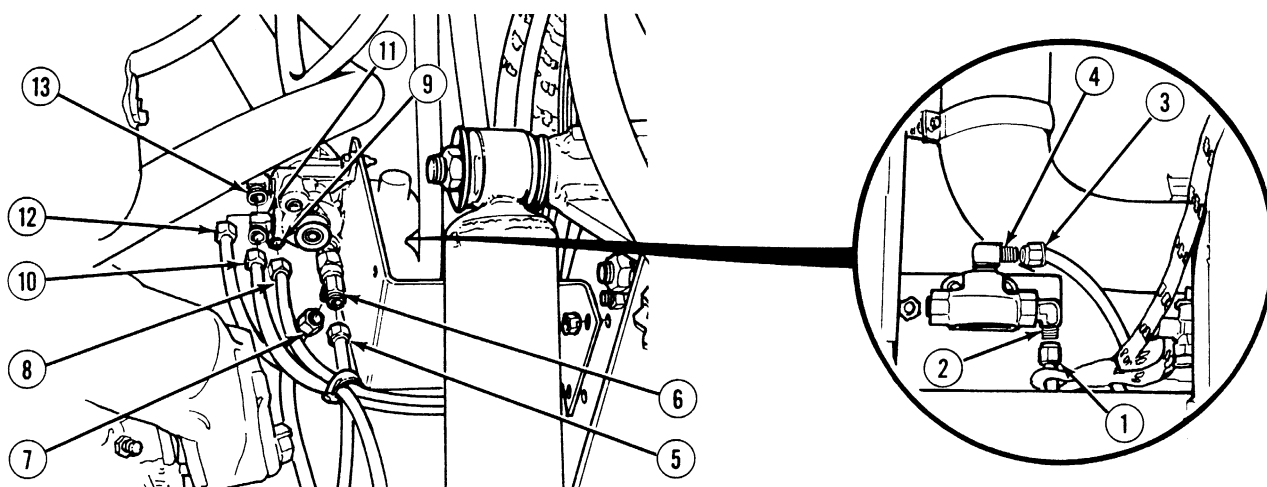
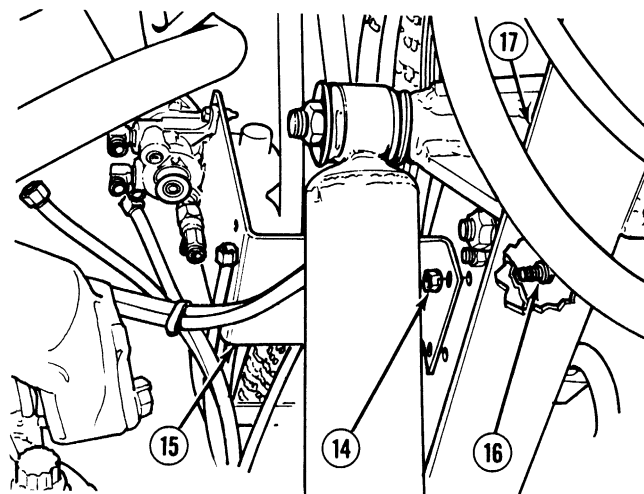
NOTE

Install air lines and fittings as noted during removal.

- (1) Apply sealing compound on threads of nipple (26), coupling (25) and tee (24).
- (2) Install nipple (26), coupling (25) and tee (24) on spring brake valve (21).
- (3) Install two screws (23), spring brake valve (21) and locknuts (22) on bracket (15).
- (4) Apply sealing compound on threads of elbows (20), (19) and (18).
- (5) Install elbows (20), (19) and (18) in spring brake valve (21).



- (6) Install two screws (16), bracket (15) and locknuts (14) on frame (17).



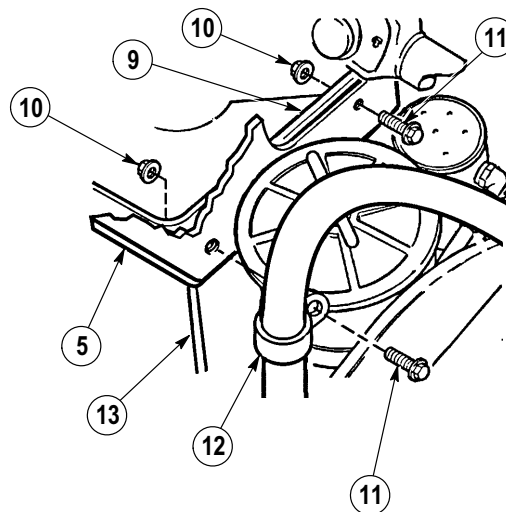
- (7) Install air line 2622 (12) on elbow (13).
 (8) Install air line 2612 (10) on elbow (11).
 (9) Install air line 2621 (8) on elbow (9).
 (10) Install air line 2623 (7) and air line 2664 (5) on tee (6).
 (11) Install air line 2894 (3) on elbow (4).
 (12) Install air line 2686 (1) on elbow (2).

c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

- (3) Remove two locknuts (10), two screws (11), rear air dryer guard bracket (5) and hose 2259 cushion clip (12) from fuel/water separator bracket (13) and air dryer bracket (9). Discard locknuts.



b. Installation.

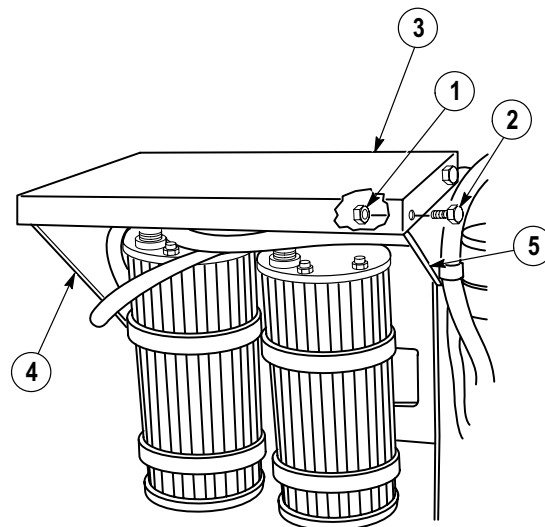
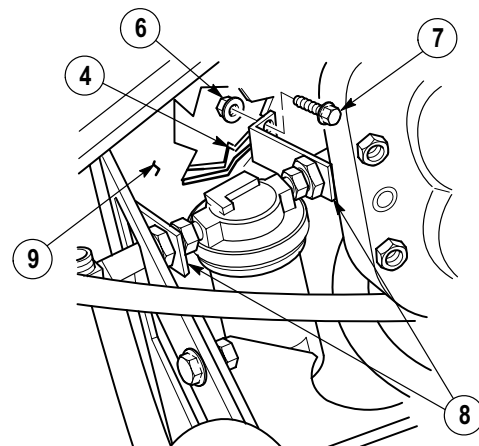
- (1) Position hose 2259 cushion clip (12), rear air dryer guard bracket (5) and fuel/water separator bracket (13) on air dryer bracket (9) with two screws (11) and locknuts (10).

- (2) Position front air dryer guard bracket (4) and two coalescing filter mounting bracket (8) on air dryer bracket (9) with four screws (7) and locknuts (6).

NOTE

Position air dryer guard screw holes to align with front and back air dryer guard brackets.

- (3) Position air dryer guard (3) on front air dryer guard bracket (4) and rear air dryer guard bracket (5) with four screws (2) and locknuts (1).
- (4) Tighten four locknuts (1), four locknuts (6) and two locknuts (10).



c. Follow-On Maintenance:

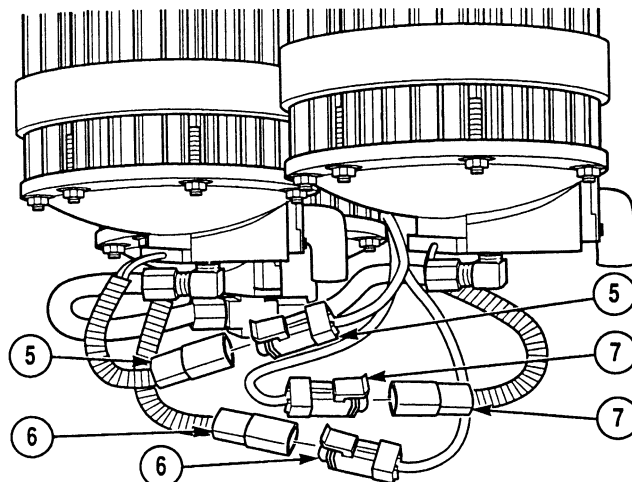
- Install left front mud flap, (Para 17-36).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

NOTE

Connectors are removed by gently prying up on lock tab and pulling connectors apart.

- (3) Disconnect connectors MC97 (5), MC99 (6) and MC98 (7).



- (4) Remove air line 2040 (8) from elbow (9).

- (5) Remove air line 2032 (10) from adapter (11).

- (6) Remove air line 2033 (12) from adapter (13).

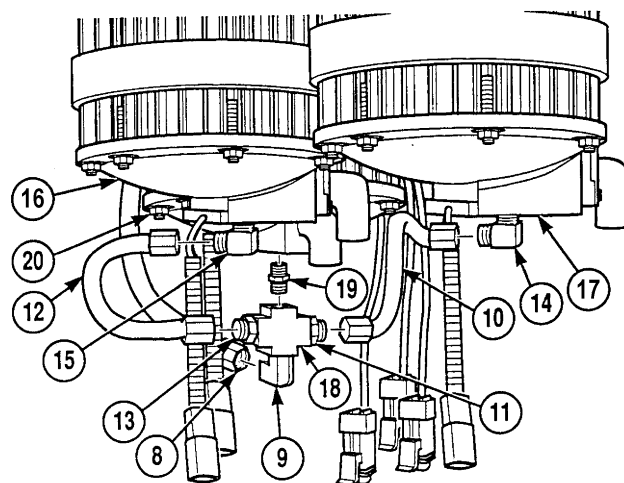
- (7) Remove air line 2032 (10) from elbow (14).

- (8) Remove air line 2033 (12) from elbow (15).

- (9) Remove elbow (15) from air dryer (16).

- (10) Remove elbow (14) from air dryer (17).

- (11) Remove adapter (11), adapter (13) and elbow (9) from cross (18).



- (12) Remove cross (18) and adapter (19) from after cooler (20).

- (13) Remove air line 2037 (21) from elbow (22) and elbow (23).

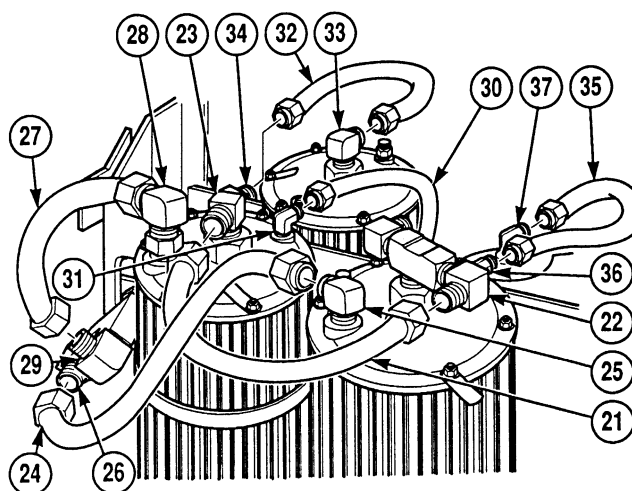
- (14) Remove air line 2036 (24) from elbow (25) and elbow (26).

- (15) Remove air line 2035 (27) from elbow (28) and elbow (29).

- (16) Remove air line 2030 (30) from elbow (31).

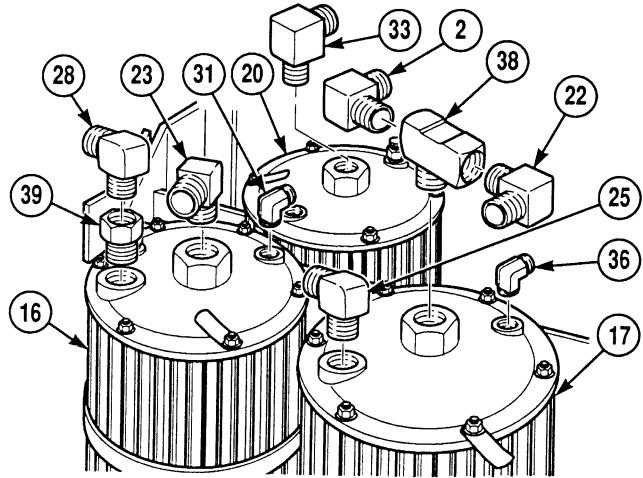
- (17) Remove air line 2034 (32) from elbow (33) and elbow (34).

- (18) Remove air line 2031 (35) from elbow (36) and elbow (37).



12-20. AIR DRYER/AFTER COOLER REPLACEMENT (CONT).

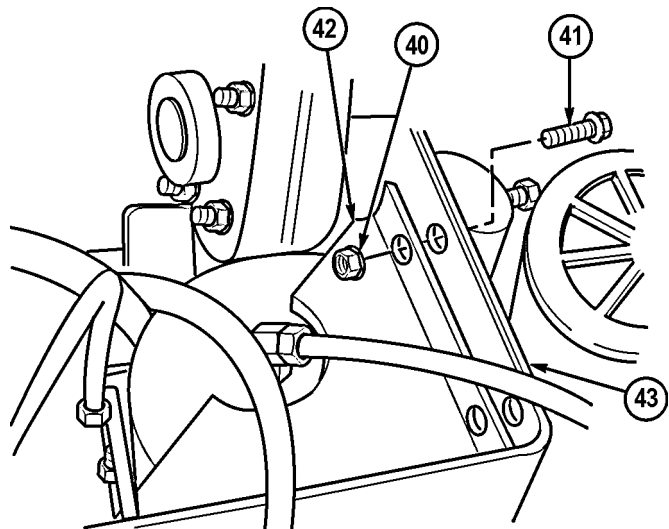
- (19) Remove elbow (25) and elbow (36) from air dryer (17).
- (20) Remove branch tee (38) from air dryer (17).
- (21) Place tee (38) in vise and remove elbow (2) and elbow (22).
- (22) Remove elbow (28) from adapter (39).
- (23) Remove adapter (39) from air dryer (16).
- (24) Remove elbow (23) and elbow (31) and from air dryer (16).
- (25) Remove elbow (33) from after cooler (20).



NOTE

If air dryer guard was removed, there will only be two locknuts and screws removed in Step (26).

- (26) Remove four locknuts (40), screws (41) and bracket (42) from bracket (43). Discard locknuts.



- (27) With the aid of an assistant, remove four locknuts (44), screws (45) and air dryer (17) from bracket (43).
- (28) With the aid of an assistant, remove four locknuts (44), screws (45), air dryer (16) and after cooler (20) from bracket (43).

b. Installation.

NOTE

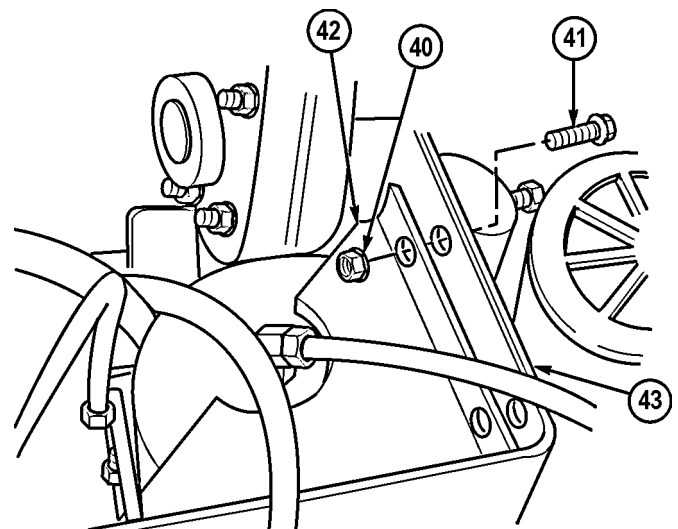
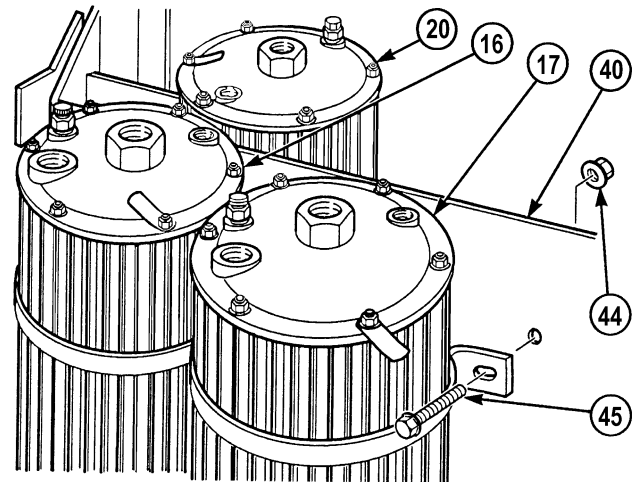
Install air lines, tubes and fittings as noted prior to removal.

- (1) With the aid of an assistant, position air dryers (17) and (16) and after cooler (20) against mounting bracket (43) and install eight screws (45) and locknuts (44) on mounting bracket (43). Tighten screws to 30 lb-ft (40 N·m).

NOTE

If air dryer guard is to be installed, install only two screws and locknuts in Step (2).

- (2) Install bracket (42) on bracket (43) with four screws (41) and locknuts (40).

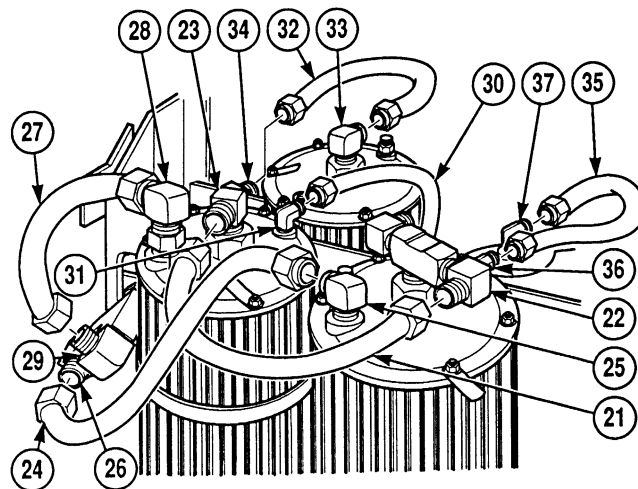
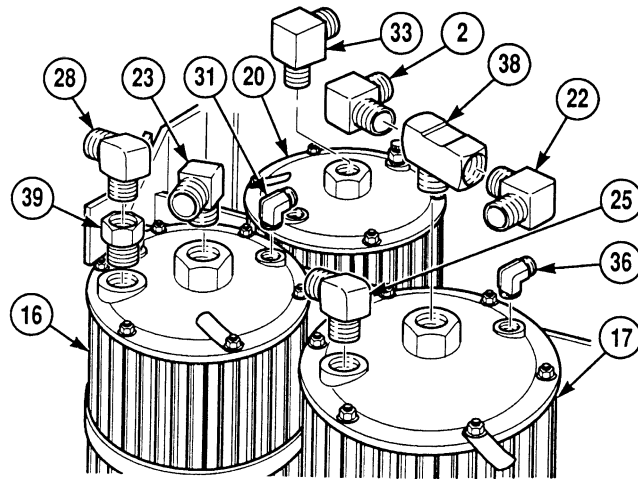


12-20. AIR DRYER/AFTER COOLER REPLACEMENT (CONT).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

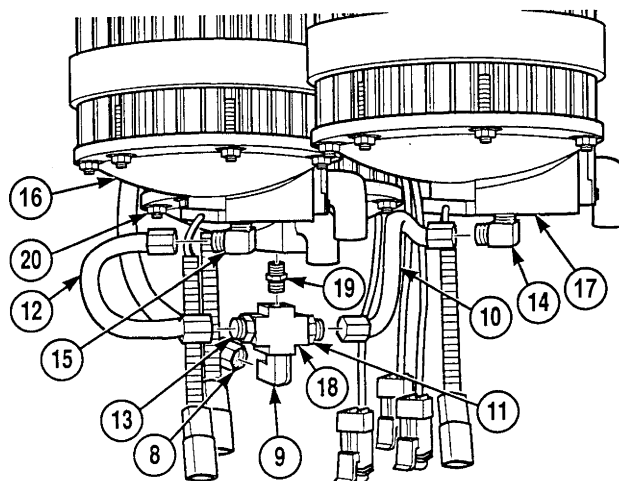
- (3) Apply sealing compound to threads of adapter (39).
- (4) Install adapter (39) in air dryer (16).
- (5) Apply sealing compound to threads of elbow (28).
- (6) Install elbow (28) on adapter (39).
- (7) Apply sealing compound to threads of elbow (23) and elbow (31).
- (8) Install elbow (23) and elbow (31) on air dryer (16).
- (9) Apply sealing compound to threads of elbows (36) and (25) and tee (38).
- (10) Install elbow (36) and elbow (25) and tee (38) on air dryer (17).
- (11) Apply sealing compound to threads of elbow (2) and elbow (22).
- (12) Install elbow (2) and elbow (22) on tee (38).
- (13) Apply sealing compound to threads of elbow (33).
- (14) Install elbow (33) on after cooler (20).
- (15) Install air line 2031 (35) on elbow (36) and elbow (37).
- (16) Install air line 2034 (32) on elbow (33) and elbow (34).
- (17) Install air line 2030 (30) on elbow (31).
- (18) Install air line 2035 (27) on elbow (29) and elbow (28).
- (19) Install air line 2036 (24) on elbow (26) and elbow (25).
- (20) Install air line 2037 (21) on elbow (22) and elbow (23).



WARNING

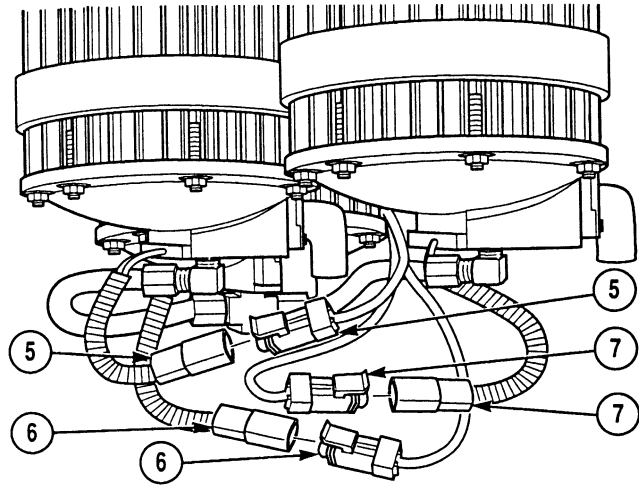
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (21) Apply sealing compound to threads of adapter (19).
- (22) Install adapter (19) on after cooler (20).
- (23) Apply sealing compound to threads of adapter (11) and adapter (13).
- (24) Install adapter (11) and adapter (13) on cross (18).
- (25) Install cross (18) on adapter (19).
- (26) Apply sealing compound to threads of elbow (9).
- (27) Install elbow (9) on cross (18).
- (28) Apply sealing compound to threads of elbow (15).
- (29) Install elbow (15) on air dryer (16).
- (30) Apply sealing compound to threads of elbow (14).
- (31) Install elbow (14) on air dryer (17).
- (32) Install air line 2040 (8) on elbow (9).
- (33) Install air line 2032 (10) on elbow (14) and adapter (11).
- (34) Install air line 2033 (12) on elbow (15) and adapter (13).

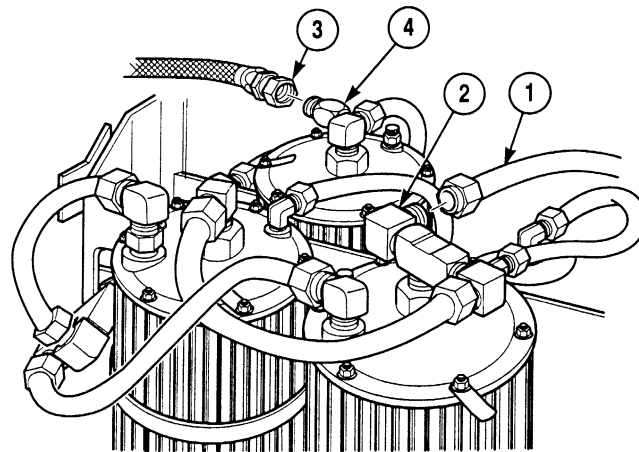


12-20. AIR DRYER/AFTER COOLER REPLACEMENT (CONT).

- (35) Connect connectors MC97 (5), MC99 (6) and MC98 (7).



- (36) Install air line 2001 (3) on elbow (4).
- (37) Install air line 2002 (1) on elbow (2).



c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Install air dryer guard (if equipped), (Para 12-19).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-21. AIR DRYER REPAIR.

This task covers:

- a. Disassembly
- b. Cleaning/Inspection
- c. Assembly
- d. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
 Socket Set, 3/8 in. (Item 62, Appendix G)
 Wrench, Combination 1-1/2 in. (Item 83, Appendix G)
 Wrench, Torque, 3/8 in. Drive (0 to 60 N·m) (Item 98, Appendix G)

Materials/Parts

Cloth, Cleaning (Item 31, Appendix C)
 Tags, Identification (Item 88, Appendix C)
 Locknut (12) (Item 111, Appendix F)
 Preformed Packing Kit (Item 287, Appendix F)

Equipment Condition

Air dryers removed, (Para 12-20)

a. Disassembly.

NOTE

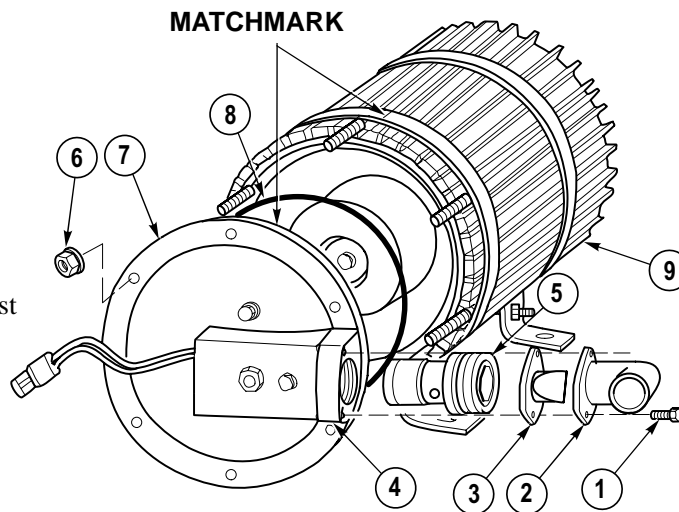
- Matchmark lower cover and housing.
- Air dryers and after cooler look alike.
- Both air dryers are identical.

- (1) Remove three screws (1) elbow (2) and dust boot (3) from heater housing (4).

NOTE

A 15/16 inch OD nut in purge valve may be used to turn purge valve counterclockwise to remove.

- (2) Remove purge valve assembly (5) from heater housing (4).
- (3) Remove six locknuts (6), lower cover (7) and preformed packing (8) from housing (9). Discard locknuts and preformed packing.

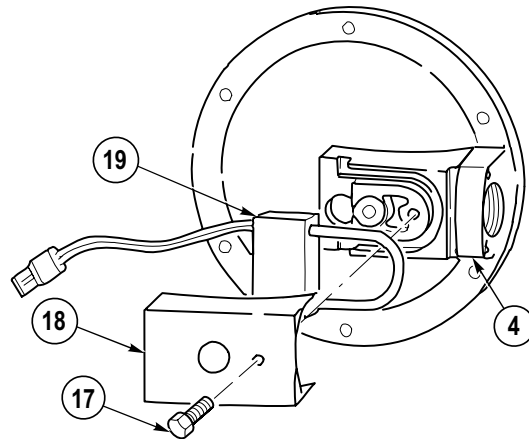
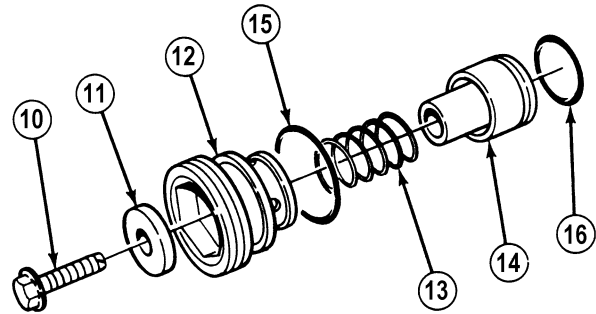


12-21. AIR DRYER REPAIR (CONT).

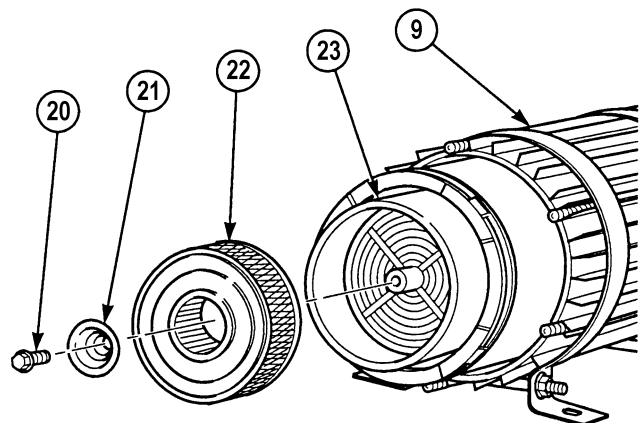
WARNING

Use care when removing springs. Springs are under tension and can act as projectiles when released and could cause injury to personnel.

- (4) Remove screw (10), seal (11), seat (12) and spring (13) from poppet (14).
- (5) Remove preformed packing (15) from seat (12). Discard preformed packing.
- (6) Remove preformed packing (16) from poppet (14). Discard preformed packing.
- (7) Remove screw (17), heater housing cover (18) and heater element (19) from heater housing (4).



- (8) Remove screw (20), retainer (21) and filter (22) from cannister assembly (23) in housing (9). Discard filter.



WARNING

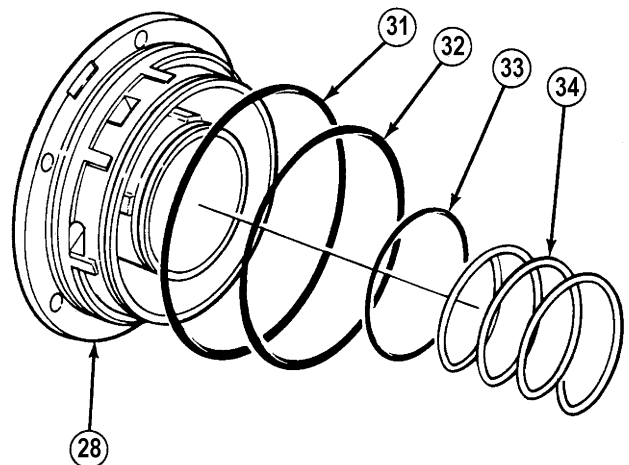
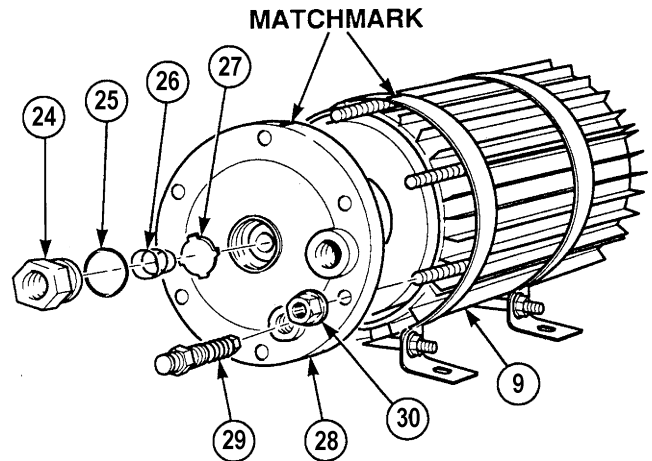
Use care when removing springs. Springs are under tension and can act as projectiles when released and could cause injury to personnel.

- (9) Remove valve (24), preformed packing (25), spring (26) and plate (27) from upper cover (28). Discard preformed packing.
- (10) Remove purge valve (29) from upper cover (28).

NOTE

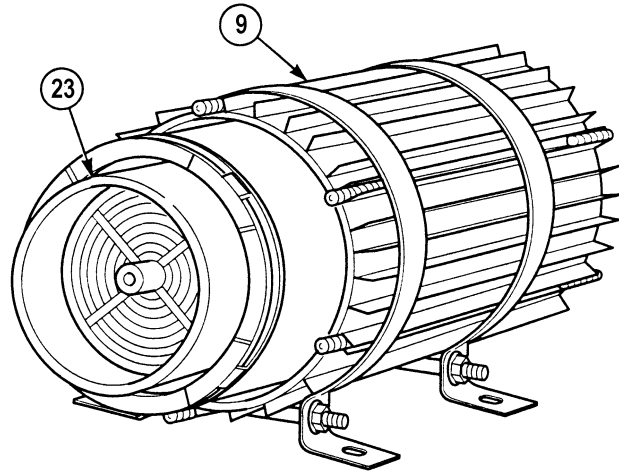
Matchmark upper cover and housing.

- (11) Remove six locknuts (30) and upper cover (28) from housing (9). Discard locknuts.
- (12) Remove preformed packings (31), (32), (33) and spring (34) from upper cover (28). Discard preformed packings.

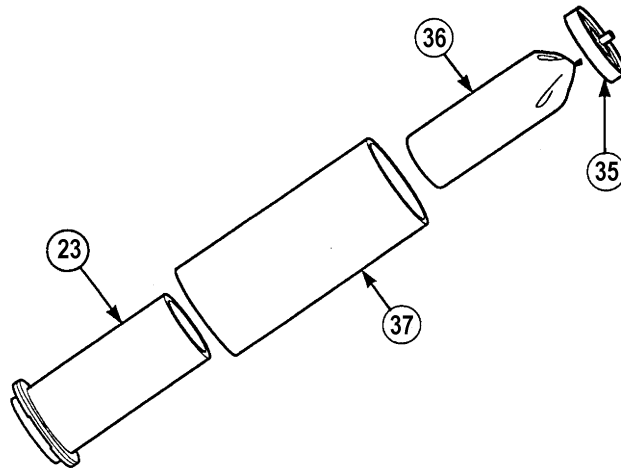


12-21. AIR DRYER REPAIR (CONT).

- (13) Remove cannister assembly (23) from housing (9).



- (14) Remove follower (35), desiccant cartridge (36) and cannister assembly (23) from cylinder (37). Discard desiccant cartridge.



b. Cleaning/Inspection.

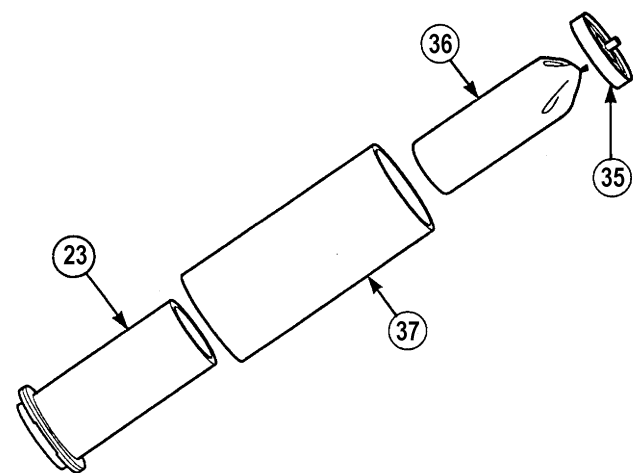
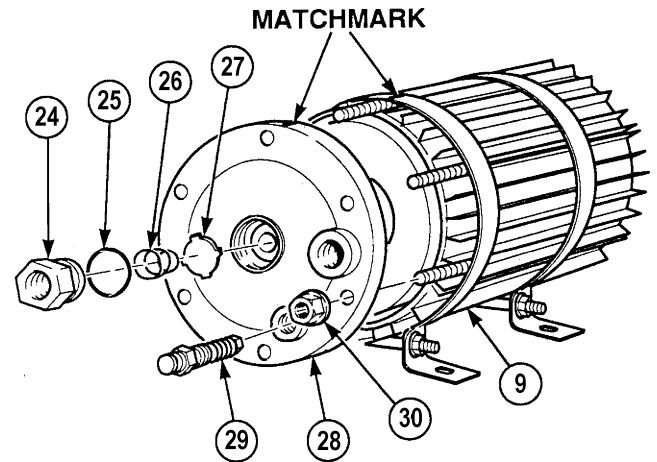
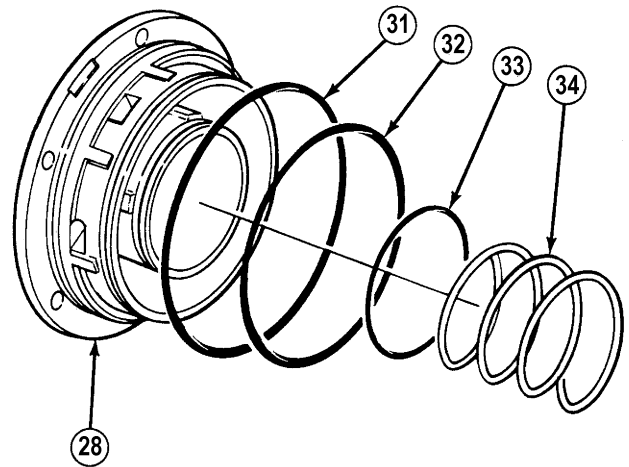
- (1) Using lint free cloth, clean inside of housing, lower cover, inner cylinder and cannister.
- (2) Inspect for cracks.
- (3) Replace all damaged parts.

c. Assembly.

WARNING

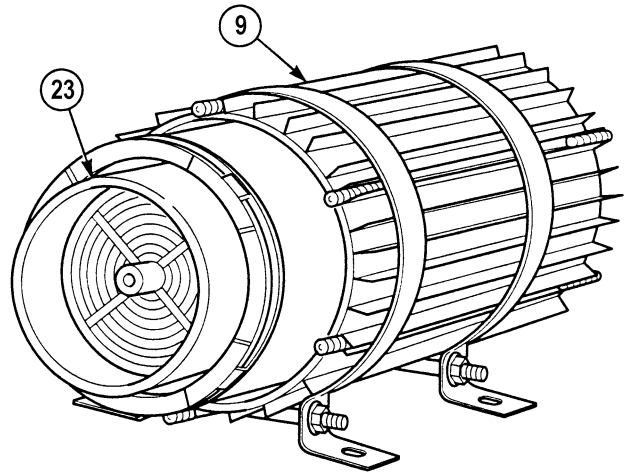
Use care when installing springs. Springs are under tension and can act as projectiles when released and could cause injury to personnel.

- (1) Install spring (34), preformed packings (31), (32) and (33) on upper cover (28).
- (2) Install upper cover (28) on housing (9) with six locknuts (30). Tighten locknuts to 150 to 200 lb-in (16 to 23 N·m).
- (3) Install plate (27), spring (26), preformed packing (25) and valve (24) on upper cover (28).
- (4) Install purge valve (29) to upper cover (28).
- (5) Install cannister assembly (23) in cylinder (37).
- (6) Install desiccant cartridge (36) and follower (35) in cannister assembly (23).

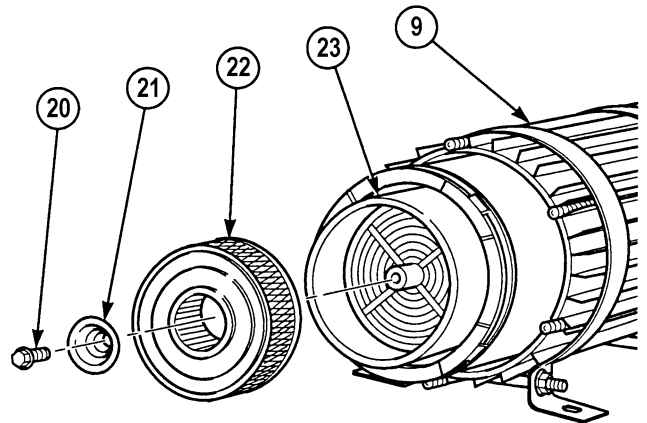


12-21. AIR DRYER REPAIR (CONT).

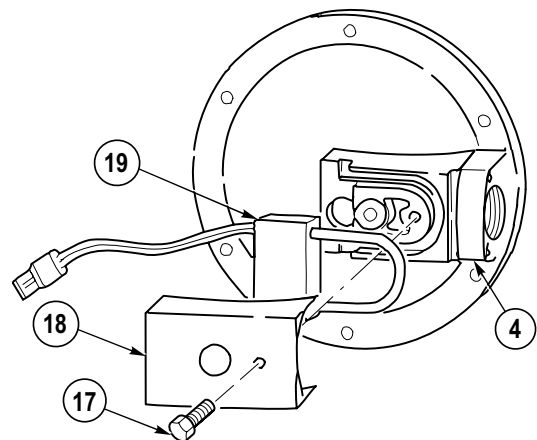
- (7) Install cannister assembly (23) in housing (9).



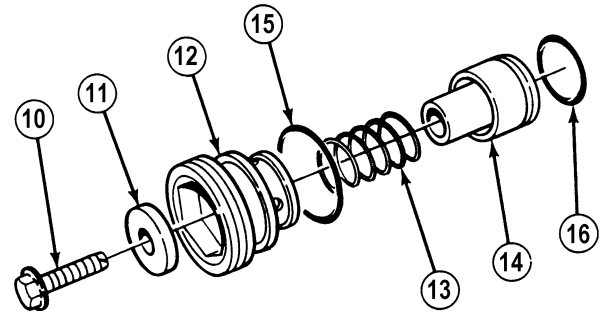
- (8) Install filter (22) in cannister assembly (23).
- (9) Install retainer (21) in filter (22) with screw (20).



- (10) Install heater element (19) and heater housing cover (18) with screw (17) on heater housing (4).



- (11) Install preformed packing (16) on poppet (14).
- (12) Install preformed packing (15) on seat (12).
- (13) Install spring (13) and seat (12) on poppet (14) with seal (11) and screw (10).

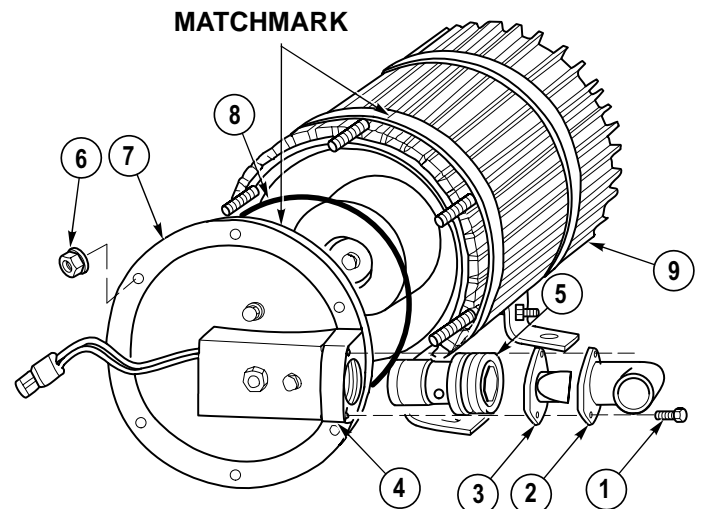


- (14) Install preformed packing (8) in housing (9).
- (15) Install lower cover (7) on housing (9) with six locknuts (6). Tighten locknuts 150 to 200 lb-in (16 to 23 N·m).

NOTE

A 15/16 inch OD nut in purge valve may be used to turn purge valve clockwise to install.

- (16) Install purge valve assembly (5) in heater housing (4).
- (17) Install dust boot (3) and elbow (2) on heater housing (4) with three screws (1). Tighten screws to 60 lb-in (7 N·m).



d. Follow-On Maintenance:

- Install air dryers, (Para 12-20).

END OF TASK

12-22. AFTER COOLER REPAIR.

This task covers:

- | | |
|------------------------|--------------------------|
| a. Disassembly | c. Assembly |
| b. Cleaning/Inspection | d. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanics: Automotive (Item 74, Appendix G)
- Socket Set, 3/8 in. (Item 62, Appendix G)
- Wrench, Combination 1-1/2 in. (Item 83, Appendix G)
- Wrench, Torque (0 to 60 N·m) (Item 98, Appendix G)

Materials/Parts

- Cloth, Cleaning (Item 31, Appendix C)
- Tags, Identification (Item 88, Appendix C)

Materials/Parts - Continued

- Locknut (12) (Item 111, Appendix F)
- Preformed Packing Kit (Item 288, Appendix F)

Equipment Condition

After cooler removed, (Para 12-20)

a. Disassembly.

NOTE

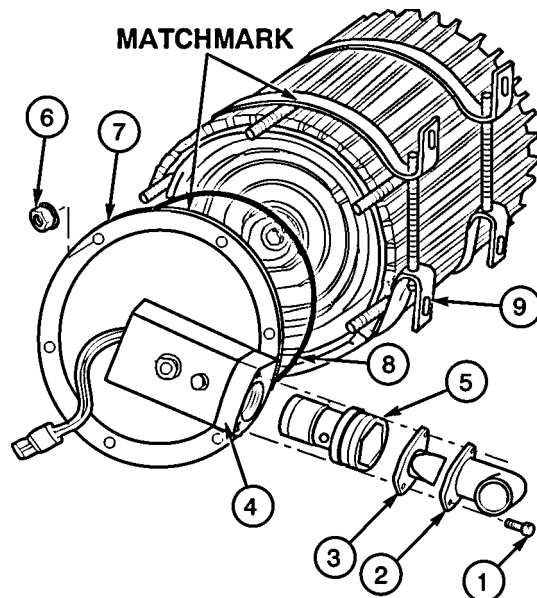
- After cooler and air dryers look alike.
- Matchmark lower cover and housing.

- (1) Remove three screws (1), elbow (2) and dust boot (3) from heater housing (4).

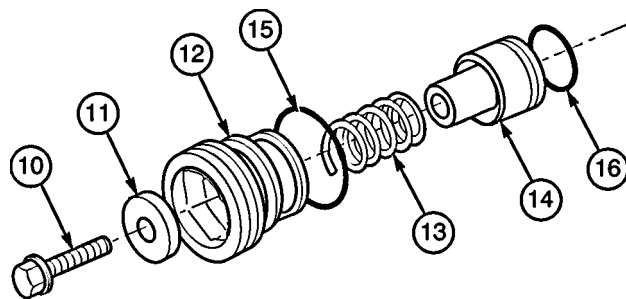
NOTE

A 15/16 inch OD nut in purge valve may be used to turn purge valve counterclockwise to remove.

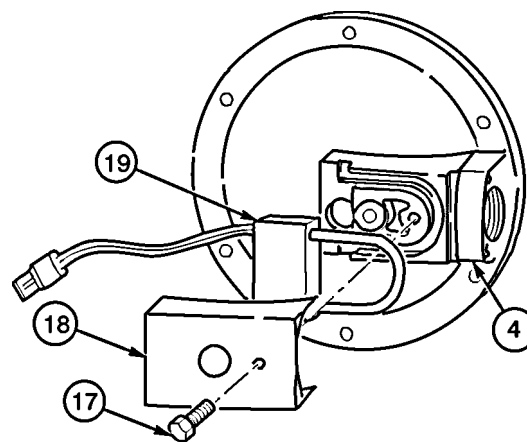
- (2) Remove purge valve assembly (5) from heater housing (4).
- (3) Remove six locknuts (6) from lower cover (7). Discard locknuts.
- (4) Remove lower cover (7) and preformed packing (8) from housing (9). Discard preformed packing.



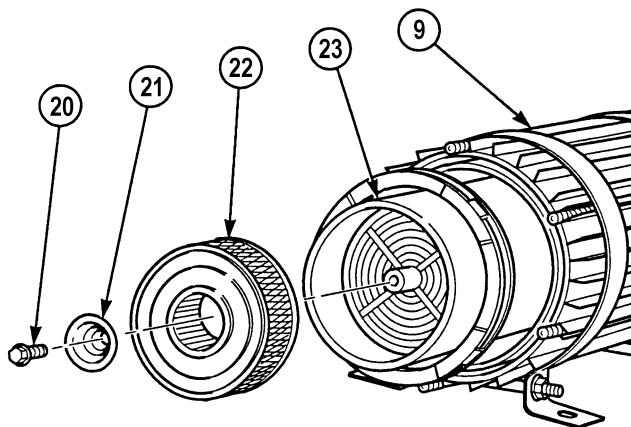
- (5) Remove screw (10), seal (11), seat (12) and spring (13) from poppet (14). Discard seal.
- (6) Remove preformed packing (15) from seat (12). Discard preformed packing.
- (7) Remove preformed packing (16) from poppet (14). Discard preformed packing.



- (8) Remove screw (17), heater housing cover (18) and heater element (19) from heater housing (9).



- (9) Remove screw (20) from retainer (21) and filter (22) from cannister assembly (23) in housing (4). Discard filter element.



12-22. AFTER COOLER REPAIR (CONT).

WARNING

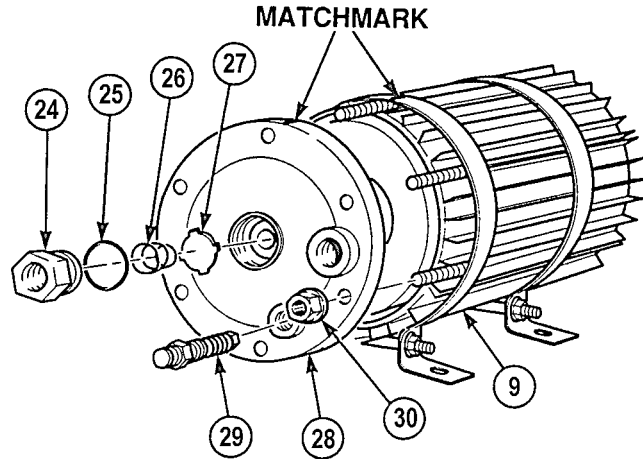
Use care when removing springs. Springs are under tension and can act as projectiles when released and could cause injury to personnel.

- (10) Remove valve (24), preformed packing (25), spring (26) and plate (27) from upper cover (28). Discard preformed packing.
- (11) Remove purge valve (29) from upper cover (28).

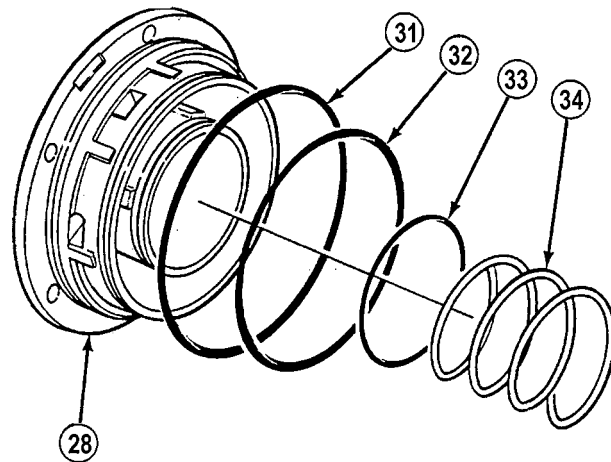
NOTE

Match mark upper cover and housing.

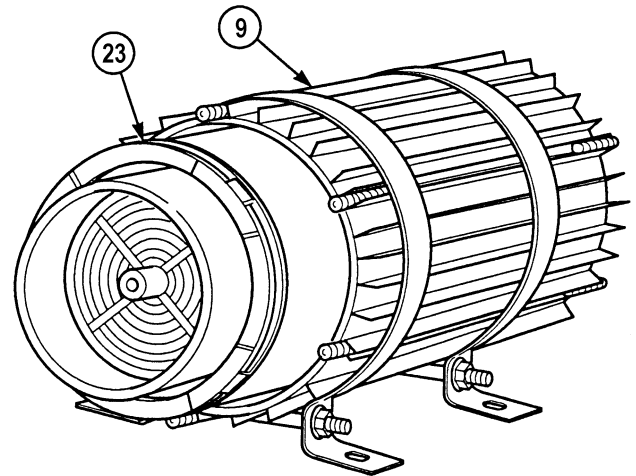
- (12) Remove six locknuts (30) and upper cover (16) from housing (9). Discard locknuts.



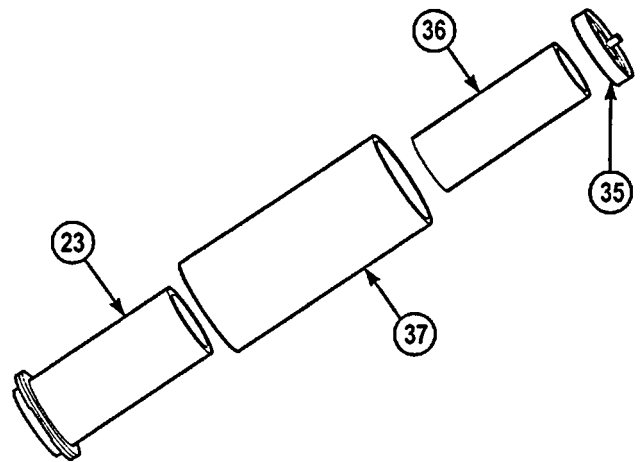
- (13) Remove preformed packings (31), (32), (33) and spring (34) from upper cover (28). Discard preformed packings.



- (14) Remove cannister assembly (23) from housing (9).



- (15) Remove follower (35), foil filter (36) and cannister assembly (23) from cylinder (37). Discard foil filter.



b. Cleaning/Inspection.

- (1) Clean inside of housing, lower cover, inner cylinder and cannister assembly with lint free cloth.
- (2) Inspect for cracks.
- (3) Replace all damaged parts.

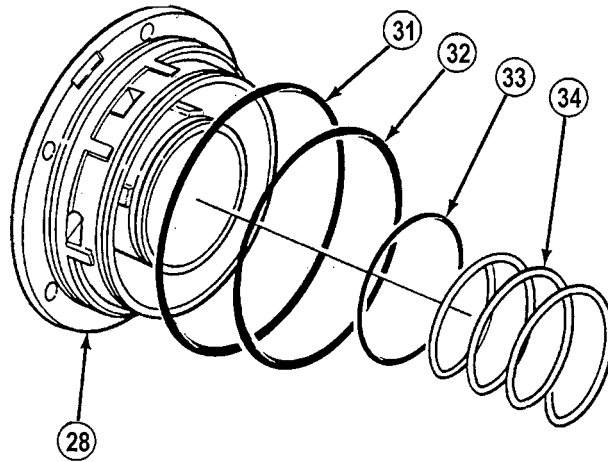
12-22. AFTER COOLER REPAIR (CONT).

c. Assembly.

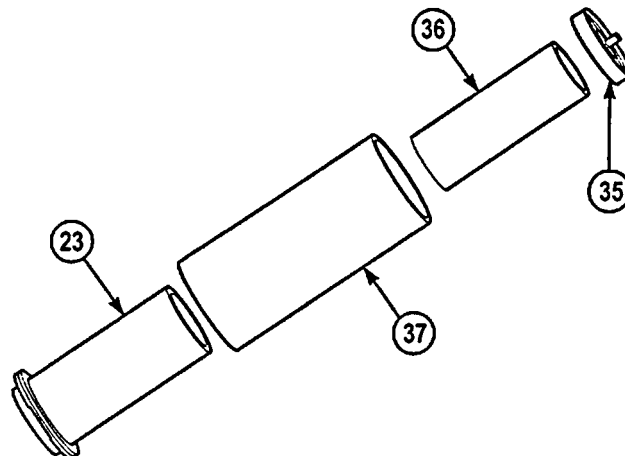
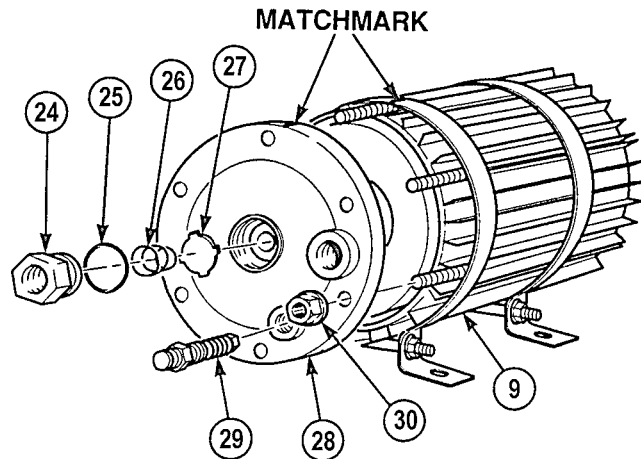
WARNING

Use care when installing springs. Springs are under tension and can act as projectiles when released and could cause injury to personnel.

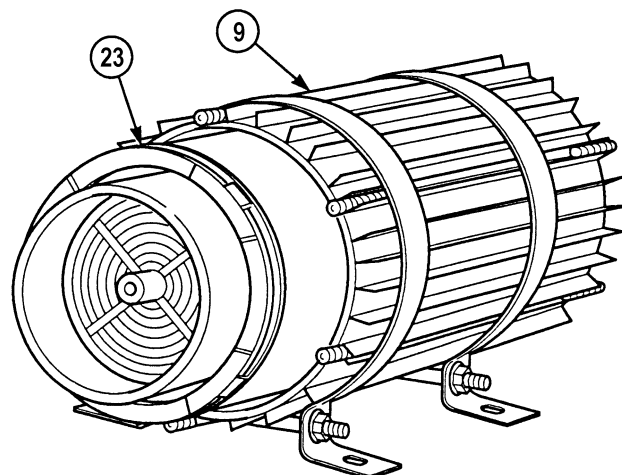
- (1) Install spring (34), preformed packings (31), (32) and (33) on upper cover (28).
- (2) Install upper cover (28) on housing (9) with six locknuts (30). Tighten nuts to 150 to 200 lb-in (16 to 23 N·m).
- (3) Install plate (27), spring (26), preformed packing (25) and valve (24) on upper cover (28).
- (4) Install purge valve (29) to upper cover (28).



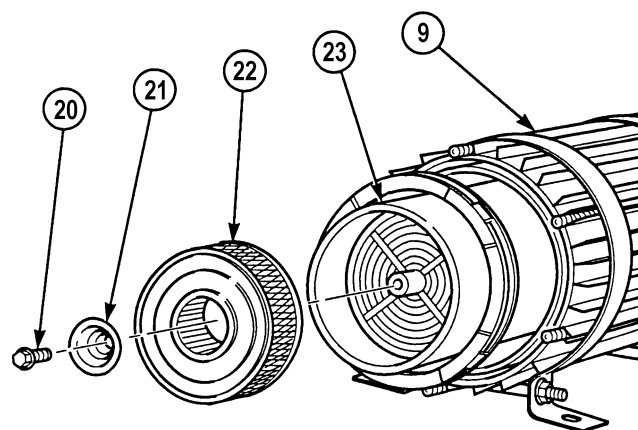
- (5) Install cannister assembly (23) in cylinder (37).
- (6) Install foil filter (36) and follower (35) in cannister assembly (23).



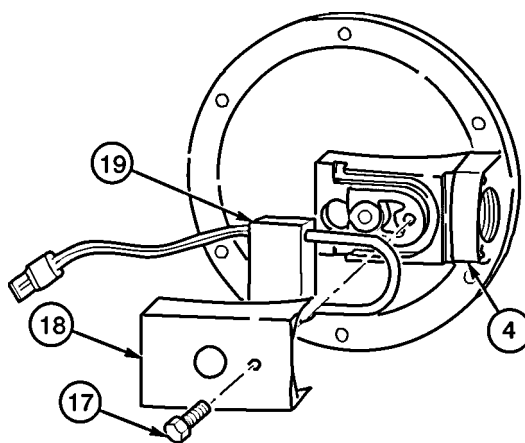
- (7) Install cannister assembly (23) in housing (9).



- (8) Install filter (22) in cannister assembly (23).
 (9) Install retainer (21) in filter (22) with screw (20). Tighten screw to 9 lb-in (1 N·m).

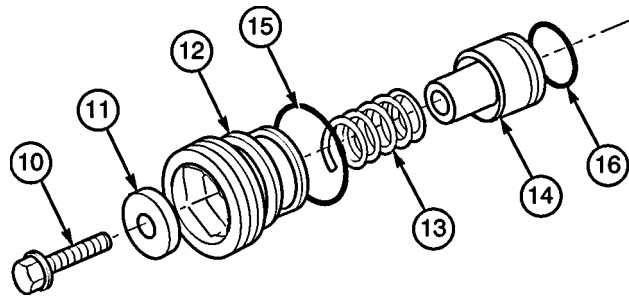


- (10) Install heater element (19) and heater housing cover (18) with screw (17) on heater housing (4).



12-22. AFTER COOLER REPAIR (CONT).

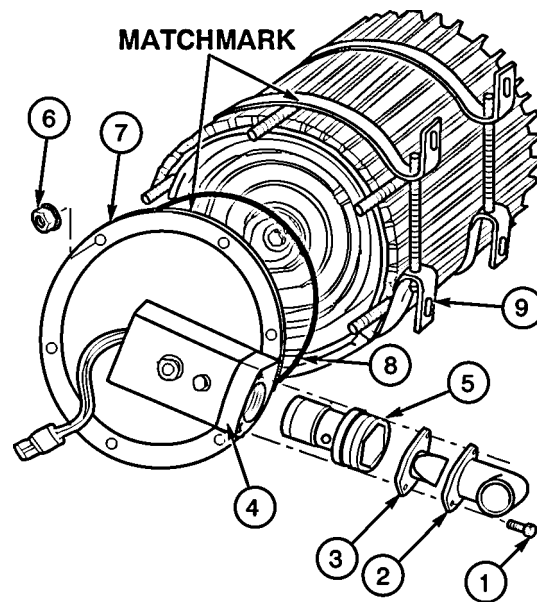
- (11) Install preformed packing (16) on poppet (14).
- (12) Install preformed packing (15) on seat (12).
- (13) Install spring (13) and seat (12) on poppet (14) with seal (11) and screw (10).
- (14) Install preformed packing (8) in housing (9).
- (15) Install lower cover (7) to housing (9) with six locknuts (6).



NOTE

A 15/16 inch OD nut in purge valve may be used to turn purge valve clockwise to install.

- (16) Install purge valve assembly (5) in heater housing (4).
- (17) Install dust boot (3) and elbow (2) on heater housing (4) with three screws (1). Tighten screws to 60 lb-in (7 N·m).



d. Follow-On Maintenance:

- Install after cooler, (Para 12-20).

END OF TASK

12-23. COALESCING FILTER ASSEMBLY REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

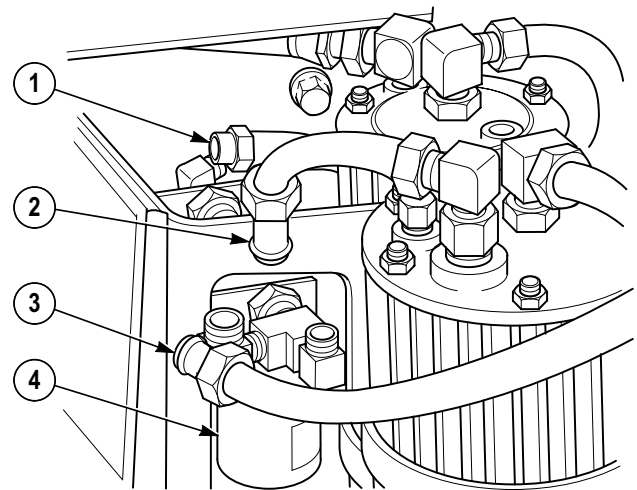
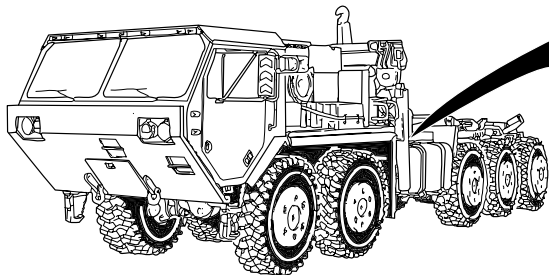
Materials/Parts

Cloth, Cleaning (Item 31, Appendix C)
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)
Lockwasher (2) (Item 186, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Left mud flap removed, (Para 17-36)
Air dryer guard removed (if equipped),
(Para 12-19)
Air System drained, (TM 9-2320-364-10)

a. Removal.



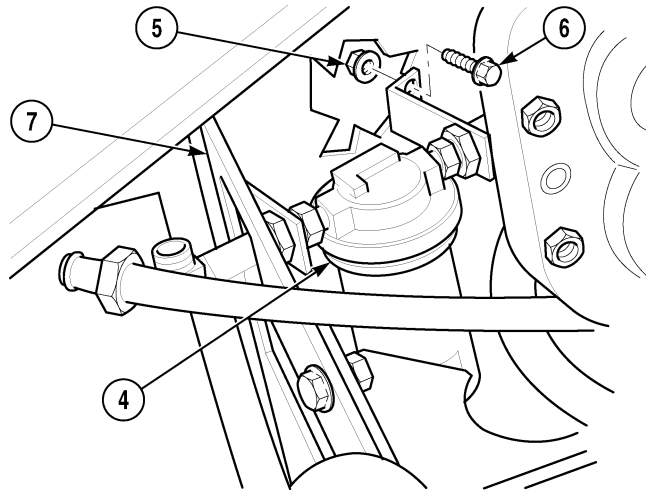
NOTE

Tag and mark air lines prior to removal.

- (1) Disconnect air lines 2034 (1), 2035 (2), and 2036 (3) from coalescing filter assembly (4).

12-23. COALESCING FILTER ASSEMBLY REPLACEMENT (CONT).

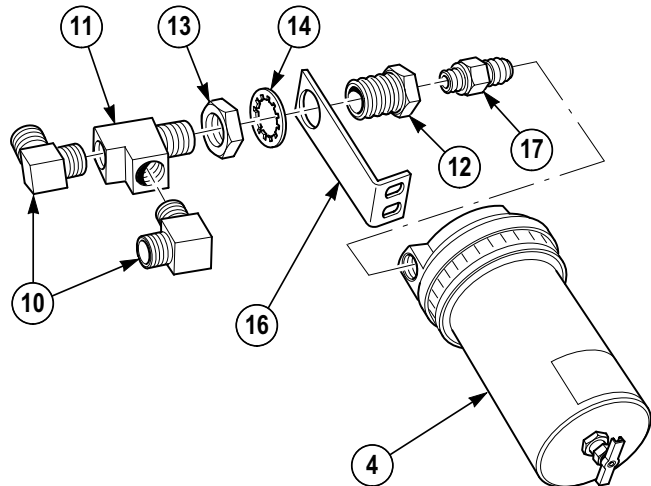
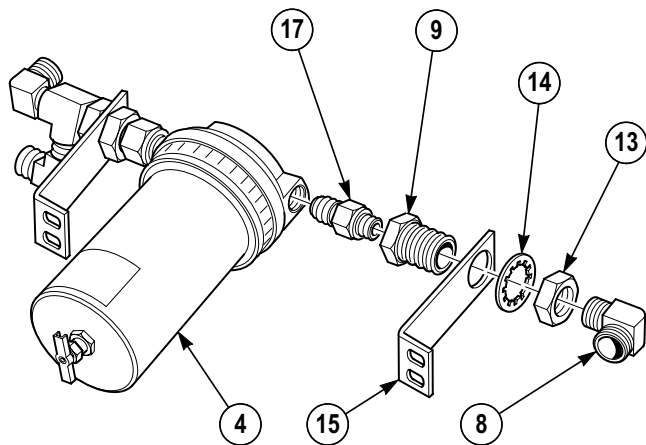
- (2) Remove four locknuts (5), screws (6), and coalescing filter assembly (4) from air dryer mounting bracket (7). Discard locknuts.



NOTE

Note location and position of fittings, elbows, tees, and mounting brackets prior to removal.

- (3) Remove elbow (8) from adapter (9).
- (4) Remove two elbows (10) from tee fitting (11).
- (5) Remove tee fitting (11) from adapter (12).
- (6) Remove two nuts (13), lockwashers (14), and mounting brackets (15) and (16) from adapters (9) and (12). Discard lockwashers.
- (7) Remove adapters (9) and (12) from fittings (17).
- (8) Remove two fittings (17) from coalescing filter assembly (4) head.

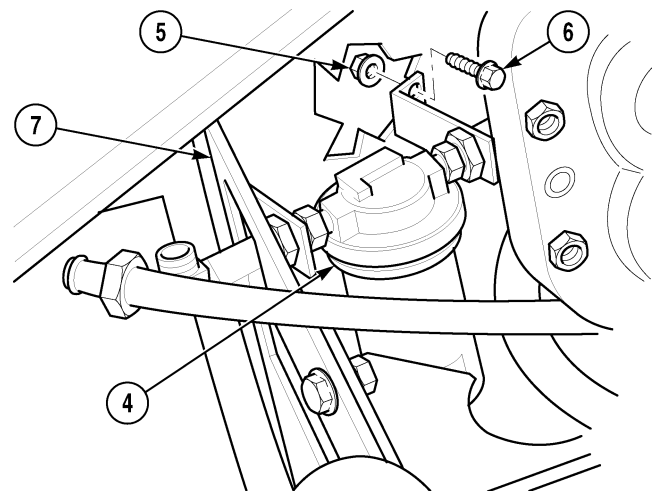
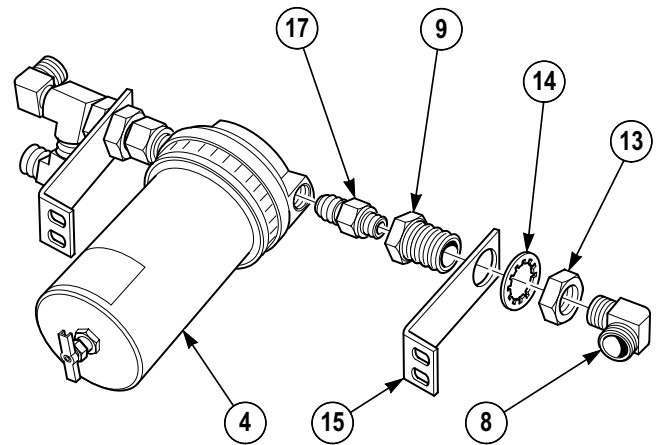
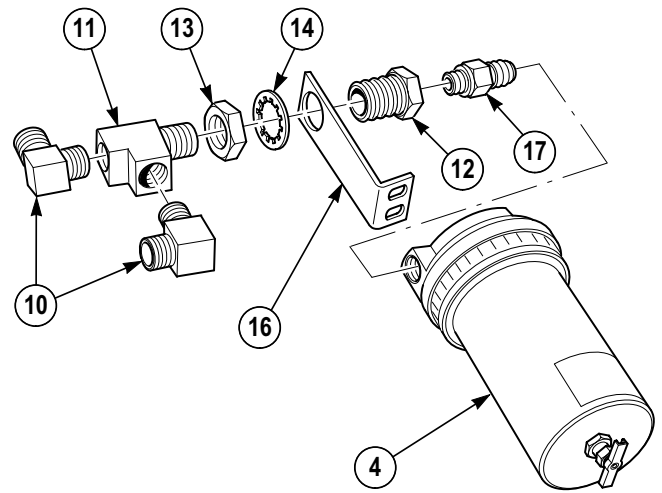


b. Installation.

WARNING

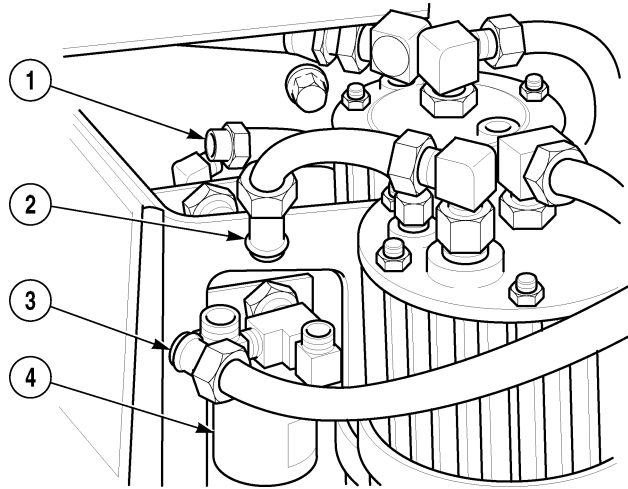
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Coat threads of two fittings (17) with sealing compound.
- (2) Install two fittings (17) in coalescing filter assembly (4) head.
- (3) Coat threads of two fittings (17) with sealing compound.
- (4) Install adapters (9) and (12) on fittings (17).
- (5) Position mounting brackets (15) and (16) on adapters (9) and (12) using two lockwashers (14) and nuts (13).
- (6) Coat threads of tee fitting (11) with sealing compound.
- (7) Install tee fitting (11) on adapter (12).
- (8) Coat threads of two elbows (10) with sealing compound.
- (9) Install two elbows (10) on tee fitting (11).
- (10) Coat threads of elbow (8) with sealing compound.
- (11) Install elbow (8) on adapter (9).
- (12) Install coalescing filter assembly (4) on air dryer mounting bracket (7), with four screws (6) and locknuts (5).
- (13) Tighten two nuts (13).



12-23. COALESCING FILTER ASSEMBLY REPLACEMENT (CONT).

- (14) Connect air lines 2034 (1), 2035 (2), and 2036 (3) to coalescing filter assembly (4).



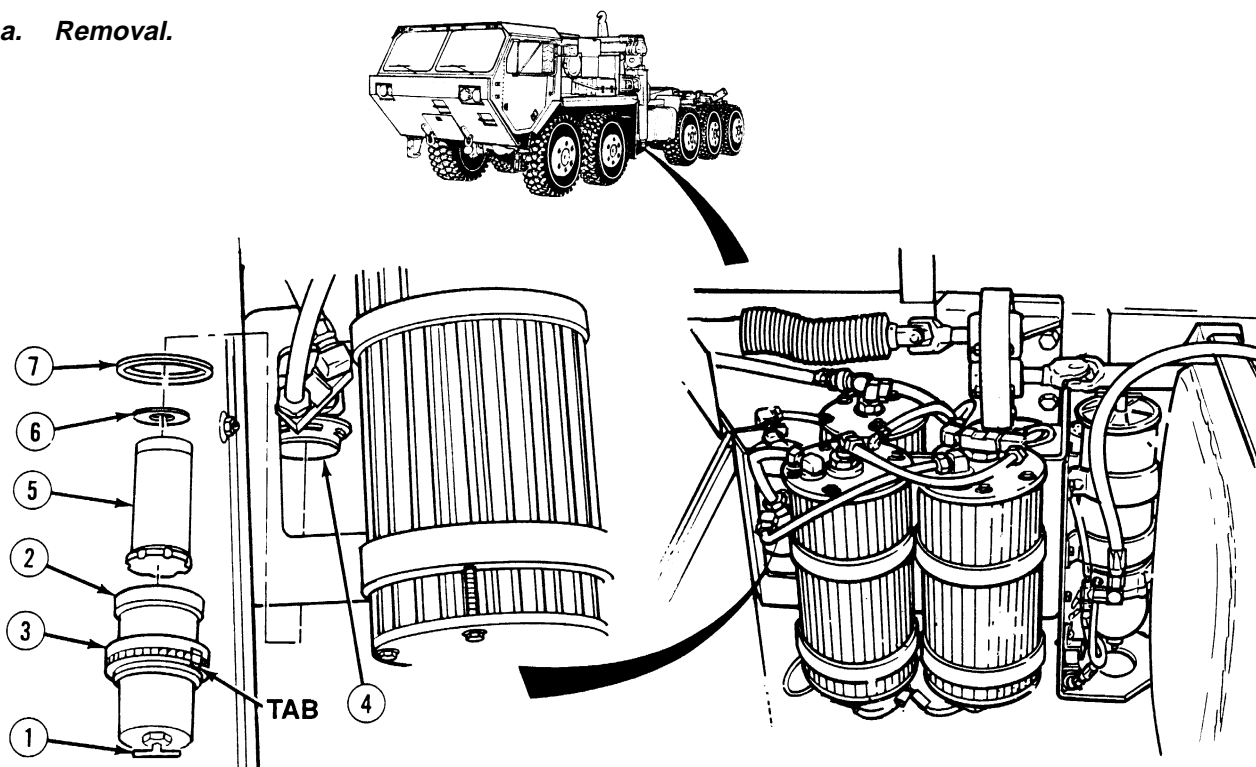
c. Follow-On Maintenance:

- Install left center mud flap, (Para 17-36).
- Start engine, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Install air dryer guard (if equipped), (Para 12-19).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-24. AIR DRYER COALESCING FILTER REPLACEMENT.		
This task covers:		
a. Removal	b. Installation	c. Follow-On Maintenance
INITIAL SETUP		
<i>Materials/Parts</i> Filter Element Kit (Item 39, Appendix F)		<i>Equipment Condition</i> Engine OFF, (TM 9-2320-364-10) Wheels chocked, (TM 9-2320-364-10)

a. Removal.



- (1) Open drain cock (1) on filter cover (2).

NOTE

Collar is loosened by pushing down on tab on collar.

- (2) Loosen collar (3) on filter cover (2) and remove filter cover (2) and collar (3) from filter head (4).

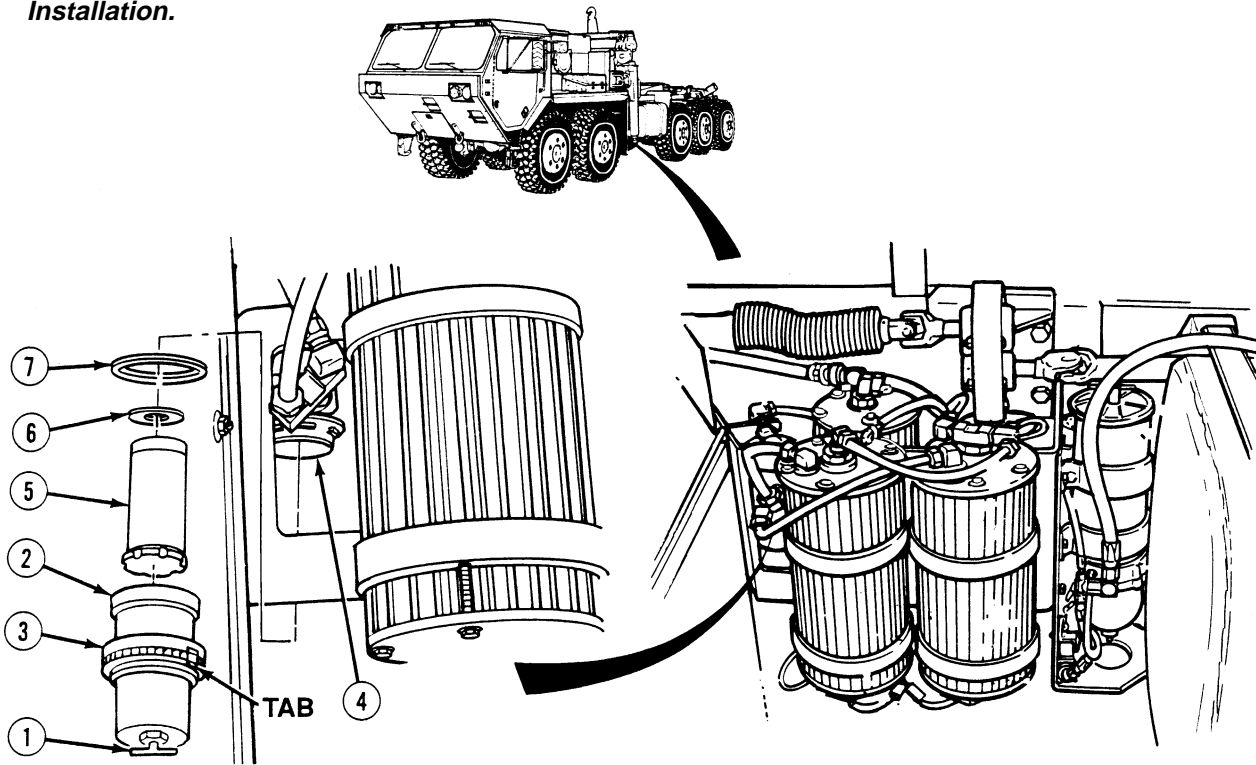
NOTE

Filter is threaded into place.

- (3) Remove and discard filter (5) and gasket (6) from filter head (4).
- (4) Remove and discard preformed packing (7) from filter head (4).

12-24. AIR DRYER COALESCING FILTER REPLACEMENT (CONT).

b. Installation.



- (1) Install gasket (6) and filter (5) in filter head (4). Hand tighten filter.
- (2) Install preformed packing (7) on filter head (4).
- (3) Install filter cover (2) and collar (3) on filter head (4) and rotate collar (3) until tab snaps into place.
- (4) Close drain cock (1) on filter cover (2).

c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-25. AIR MANIFOLD (CAB) REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Materials/Parts

Adhesive (Item 9, Appendix C)
Sealing Compound (Item 77, Appendix C)
Tags, Identification (Item 88, Appendix C)

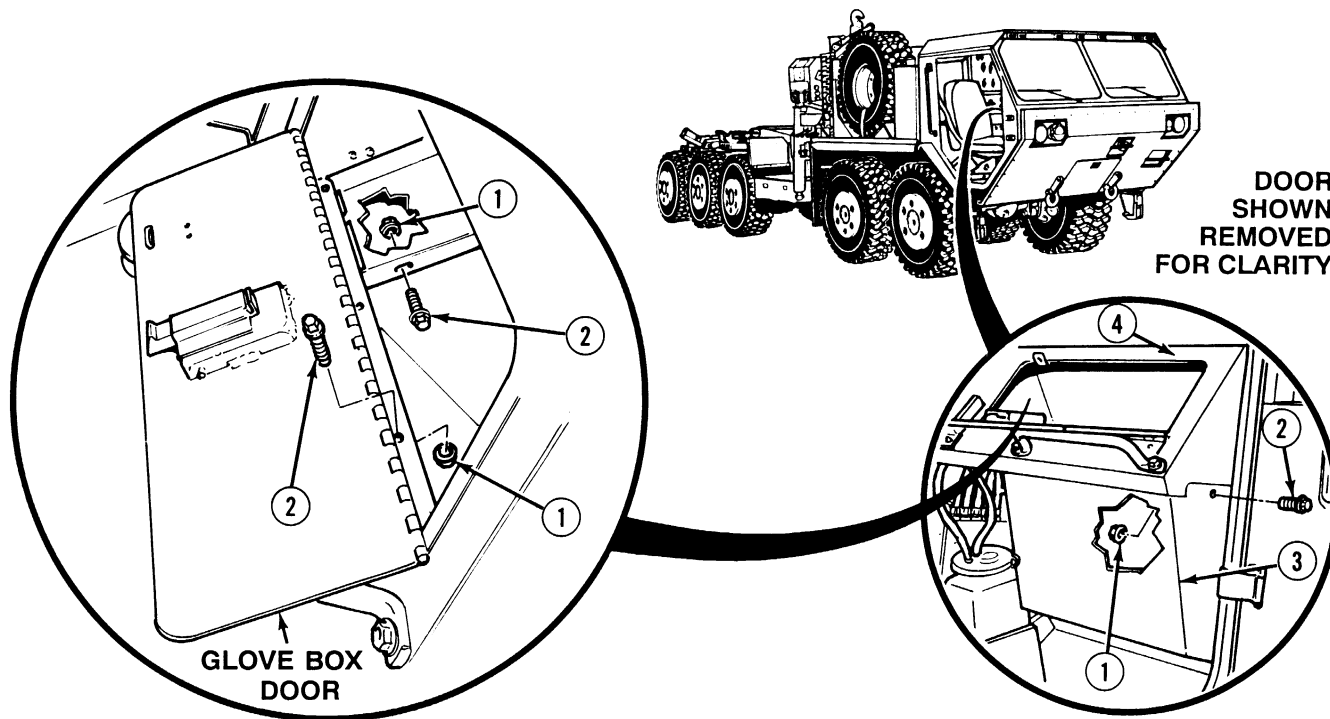
Materials/Parts - Continued

Locknut (6) (Item 133, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)

a. Removal.



- (1) Open glove box door and remove six locknuts (1), screws (2) and glove box (3) from right side of dash (4).

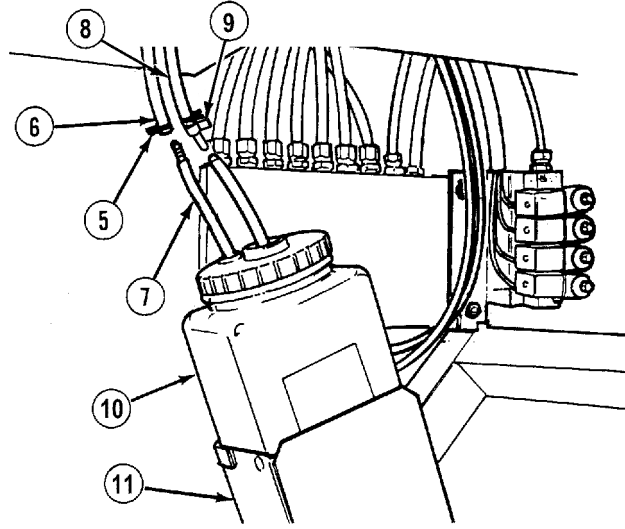
12-25. AIR MANIFOLD (CAB) REPLACEMENT (CONT).

- (2) Compress clamp (5) and remove line (6) from solvent tank line (7).

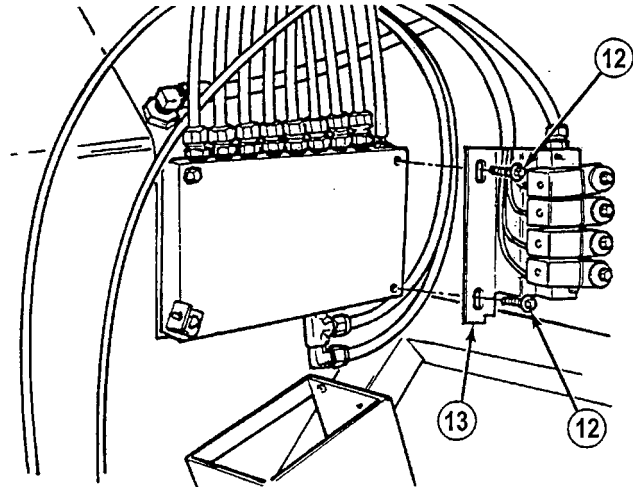
NOTE

Perform Step (3) if relief valve is present.

- (3) Remove line (8) from relief valve (9).
- (4) Remove reservoir (10) from mounting bracket (11).



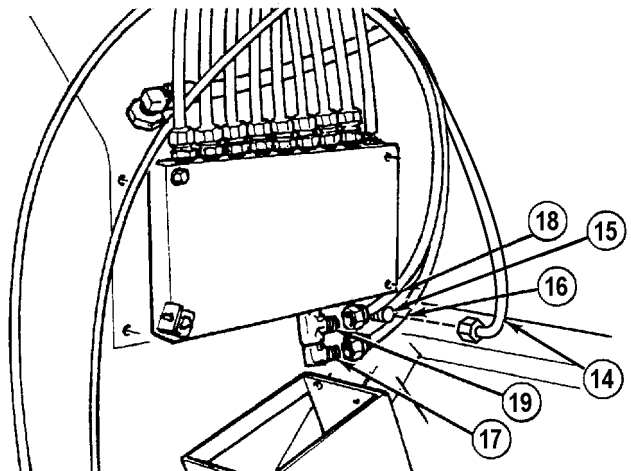
- (5) Remove two screws (12) and solenoid mounting plate (13).



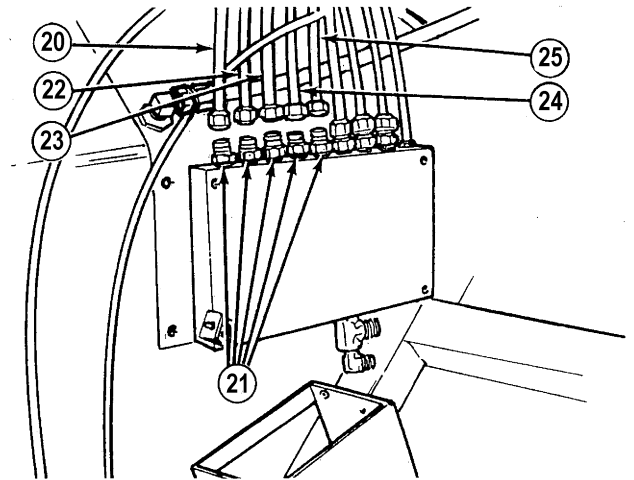
NOTE

- Tag and mark all air lines prior to removal.
- Perform Step (6) if truck is equipped with air horn.

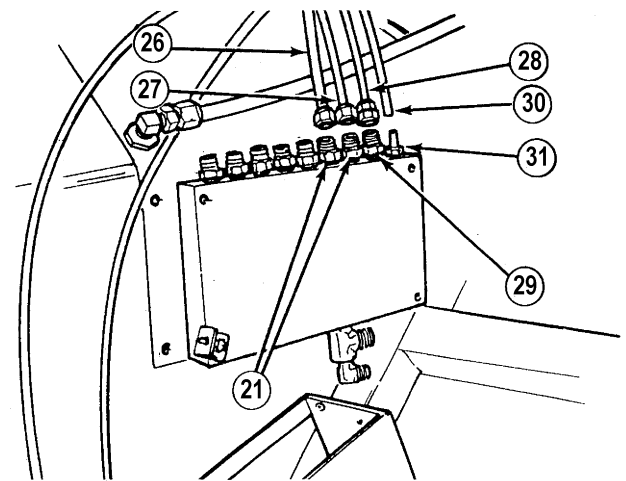
- (6) Remove air line 2037 (14) from elbow (15).
- (7) Remove air line 2029 (16) from tee (17).
- (8) Remove air line 2028 (18) from elbow (19).



- (9) Remove air line 2663 (20) from fitting (21).
- (10) Remove air line 2662 (22) from fitting (21).
- (11) Remove air line 2489 (23) from fitting (21).
- (12) Remove air line 2488 (24) from fitting (21).
- (13) Remove air line 2665 (25) from fitting (21).



- (14) Remove air line 2612 (26) from fitting (21).
- (15) Remove air line 2623 (27) from fitting (21).
- (16) Remove air line 2074 (28) from fitting (29).
- (17) Pull off air line (30) from fitting (31).

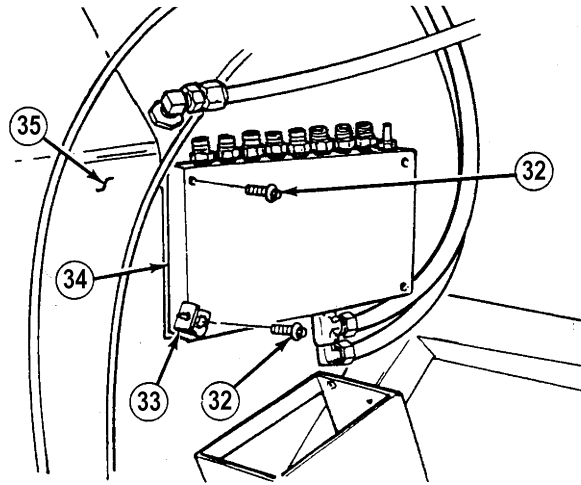


12-25. AIR MANIFOLD (CAB) REPLACEMENT (CONT).

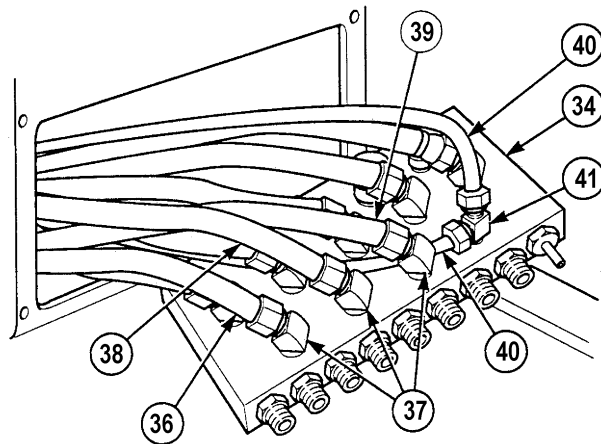
NOTE

It may be necessary to pry manifold from cab.

- (18) Remove two screws (32), bracket (33) and position air manifold (34) away from cab (35).



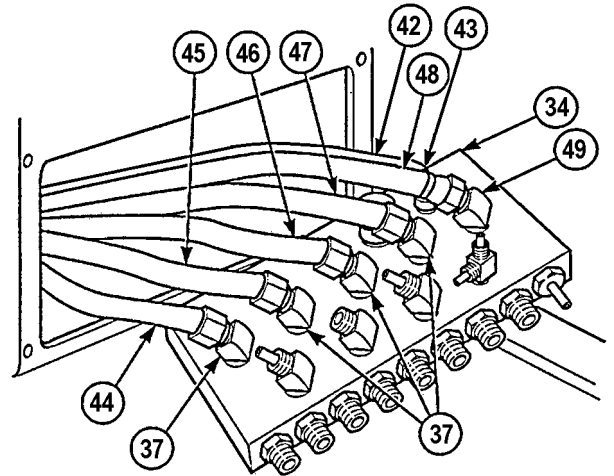
- (19) Position air manifold (34) to access rear line connections.
- (20) Remove air line 2662 (36) from elbow (37).
- (21) Remove air line 2488 (38) from elbow (37).
- (22) Remove air line 2612 (39) from elbow (37).
- (23) Remove two air lines 2074 (40) from tee (41).



NOTE

Perform step (24) if truck is equipped with air horn.

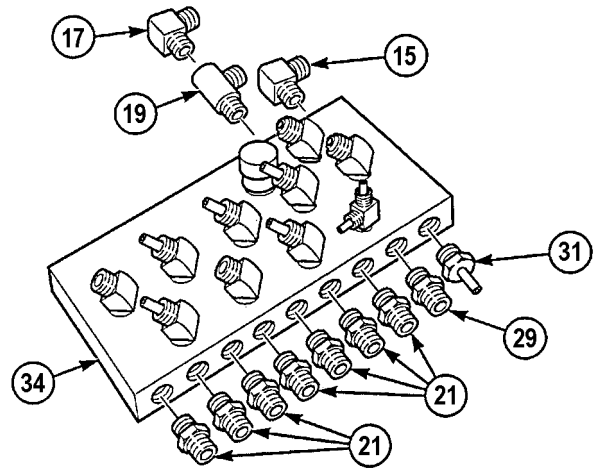
- (24) Remove air line 2039 (42) from elbow (43).
- (25) Remove air line 2663 (44) from elbow (37).
- (26) Remove air line 2489 (45) from elbow (37).
- (27) Remove air line 2665 (46) from elbow (37).
- (28) Remove air line 2623 (47) from elbow (37).
- (29) Remove air line 2381 (48) from elbow (49) and manifold (34) from truck.



NOTE

- Note location and position of tees, elbows and fittings prior to removal.
- Perform Step (30) if truck is equipped with air horn.

- (30) Remove elbow (15) from manifold (34).
- (31) Remove elbow (17) from tee (19).
- (32) Remove tee (19) from manifold (34).
- (33) Remove fitting (31) from air manifold (34).
- (34) Remove fitting (29) from air manifold (34).
- (35) Remove seven fittings (21) from air manifold (34).



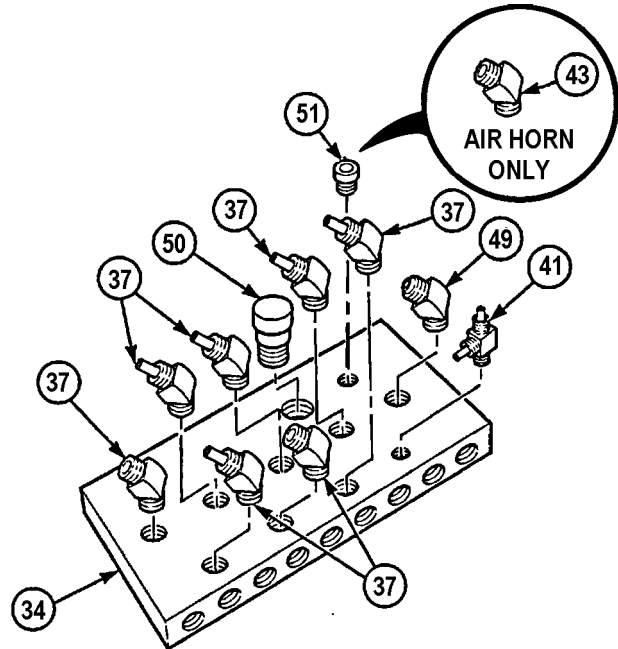
12-25. AIR MANIFOLD (CAB) REPLACEMENT (CONT).

- (36) Remove seven elbows (37) from air manifold (34).
- (37) Remove tee (41) from air manifold (34).
- (38) Remove elbow (49) from air manifold (34).

NOTE

- Perform Step (39) if truck is not equipped with an air horn.
- Perform Step (40) if truck is equipped with an air horn.

- (39) Remove vent (50) and plug (51) from air manifold (34).
- (40) Remove vent (50) and elbow (43) from air manifold (34).



b. Installation.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

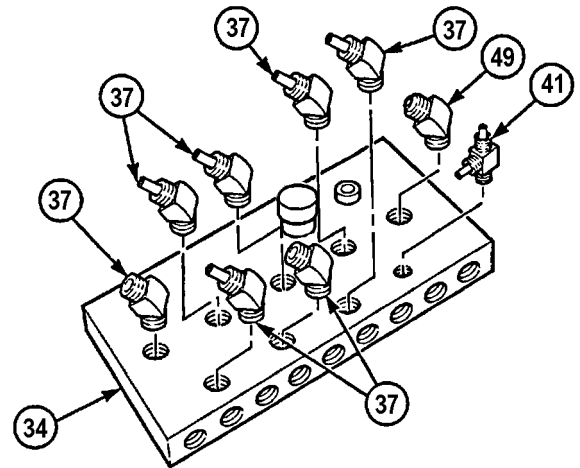
- Perform Steps (1) and (2) if truck is equipped with an air horn.
 - Perform Steps (3) and (4) if truck is not equipped with an air horn.
- (1) Coat threads of vent (50) and elbow (43) with sealing compound.
 - (2) Install vent (50) and elbow (43) in air manifold (34).
 - (3) Coat threads of vent (50) and plug (51) with sealing compound.
 - (4) Install vent (50) and plug (51) in air manifold (34).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

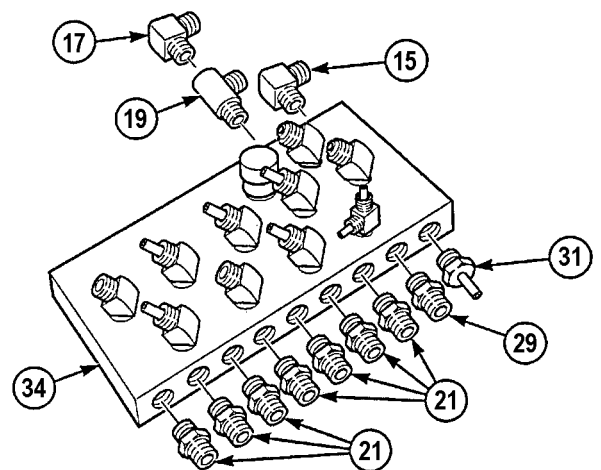
NOTE

Install tees and elbows as noted prior to removal.



- (5) Coat threads of elbow (49) with sealing compound.
- (6) Install elbow (49) in air manifold (34).
- (7) Coat threads of tee (41) with sealing compound.
- (8) Install tee (41) in air manifold (34).
- (9) Coat threads of seven elbows (37) with sealing compound.
- (10) Install seven elbows (37) in air manifold (34).

- (11) Coat threads of seven fittings (21) with sealing compound.
- (12) Install seven fittings (21) in air manifold (34).
- (13) Coat threads of fitting (31) and (29) with sealing compound.
- (14) Install fitting (31) and (29) in air manifold (34).
- (15) Coat threads of tee (19) and elbow (17) with sealing compound.
- (16) Install tee (19) in air manifold (34).
- (17) Install elbow (17) in tee (19).



12-25. AIR MANIFOLD (CAB) REPLACEMENT (CONT).

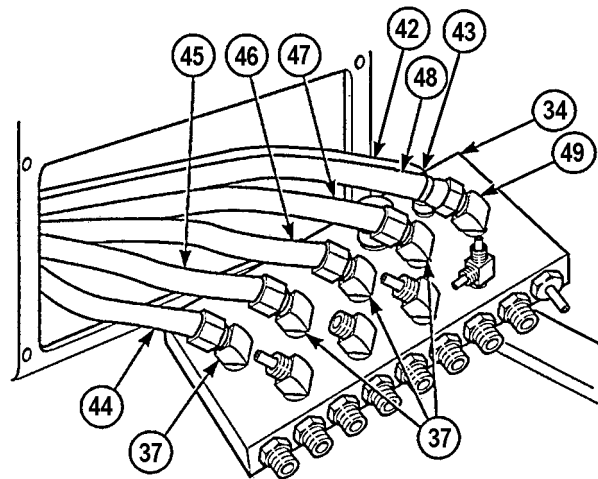
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

Perform Steps (18) and (17) if truck is equipped with air horn.

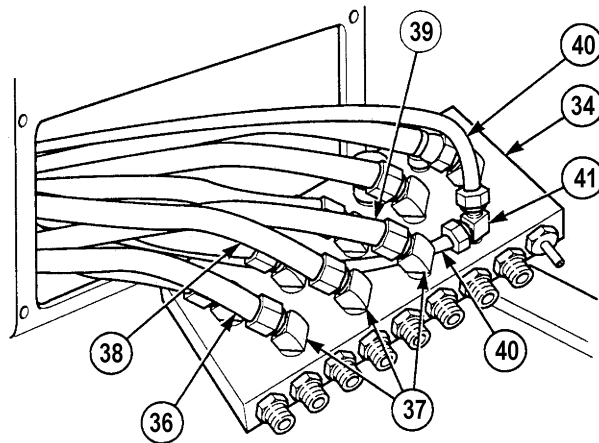
- (18) Coat threads of elbow (15) with sealing compound.
- (19) Install elbow (15) in air manifold (34).
- (20) Install air line 2381 (48) on elbow (49).
- (21) Install air line 2623 (47) on elbow (37).
- (22) Install air line 2665 (46) on elbow (37).
- (23) Install air line 2489 (45) on elbow (37).
- (24) Install air line 2663 (44) on elbow (37).



NOTE

Perform Step (25) if truck is equipped with air horn.

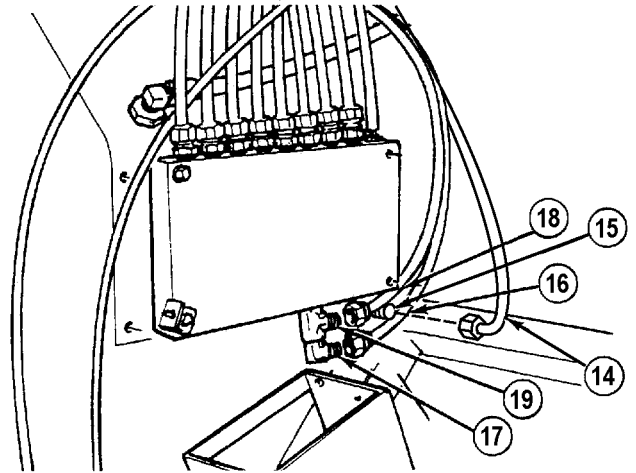
- (25) Install air line 2039 (42) on elbow (43).
- (26) Install two air lines 2074 (40) on tee (41).
- (27) Install air line 2612 (39) on elbow (37).
- (28) Install air line 2488 (38) on elbow (37).
- (29) Install air line 2662 (36) on elbow (37).



NOTE

Perform step (30) if truck is equipped with air horn.

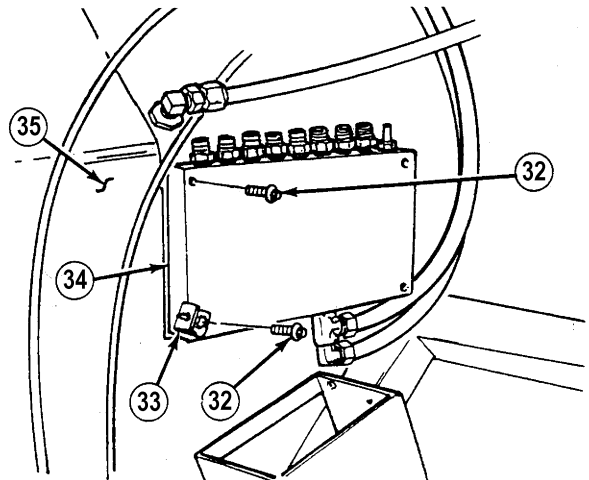
- (30) Install air line 2037 (14) on elbow (15).
- (31) Install air line 2029 (16) on tee (17).
- (32) Install air line 2088 (18) on elbow (19).



WARNING

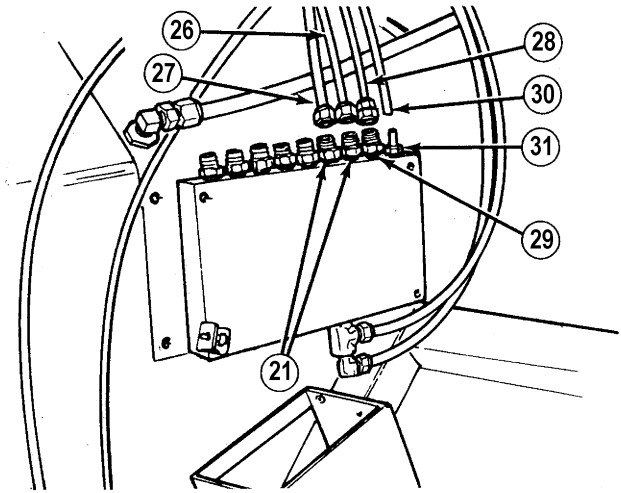
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (33) Apply smooth, even application of adhesive to rear edges of air manifold (34).
- (34) Position air manifold (34), bracket (33) and two screws (32) on cab (35).

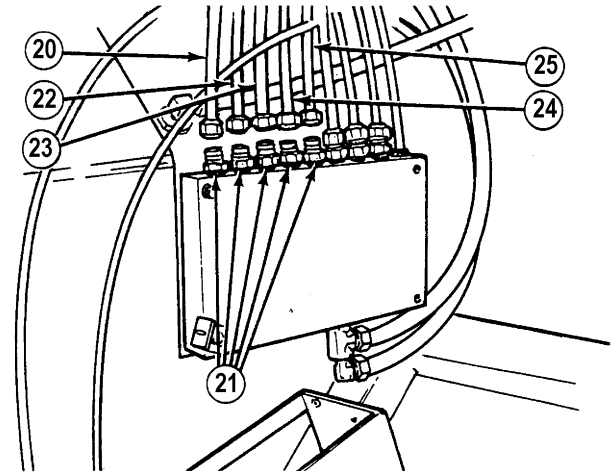


12-25. AIR MANIFOLD (CAB) REPLACEMENT (CONT).

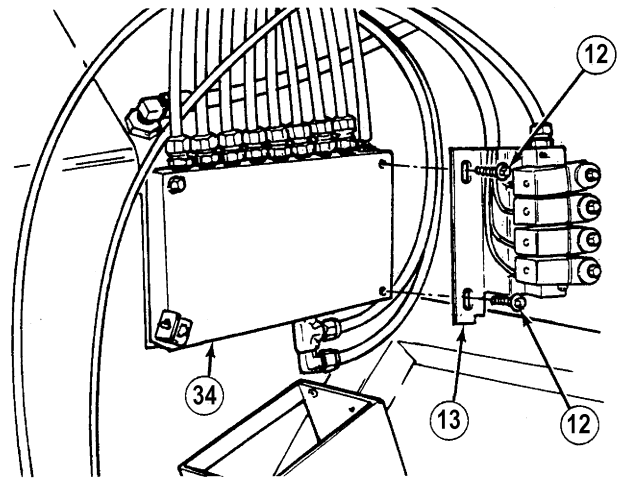
- (35) Install air line (30) on fitting (31).
- (36) Install air line 2074 (28) on fitting (29).
- (37) Install air line 2623 (27) on fitting (21).
- (38) Install air line 2612 (26) on fitting (21).



- (39) Install air line 2665 (25) on fitting (21).
- (40) Install air line 2488 (24) on fitting (21).
- (41) Install air line 2489 (23) on fitting (21).
- (42) Install air line 2662 (22) on fitting (21).
- (43) Install air line 2663 (20) on fitting (21).



- (44) Install solenoid mounting plate (13) two screws (12) on air manifold (34) and tighten screws (32).

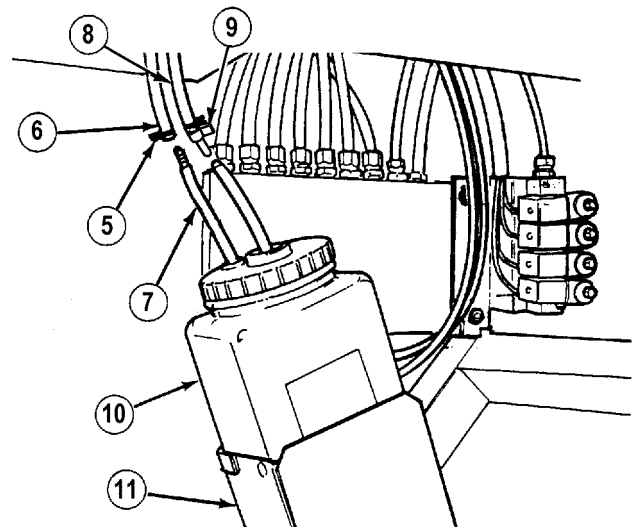


- (45) Install reservoir (10) in mounting bracket (11).

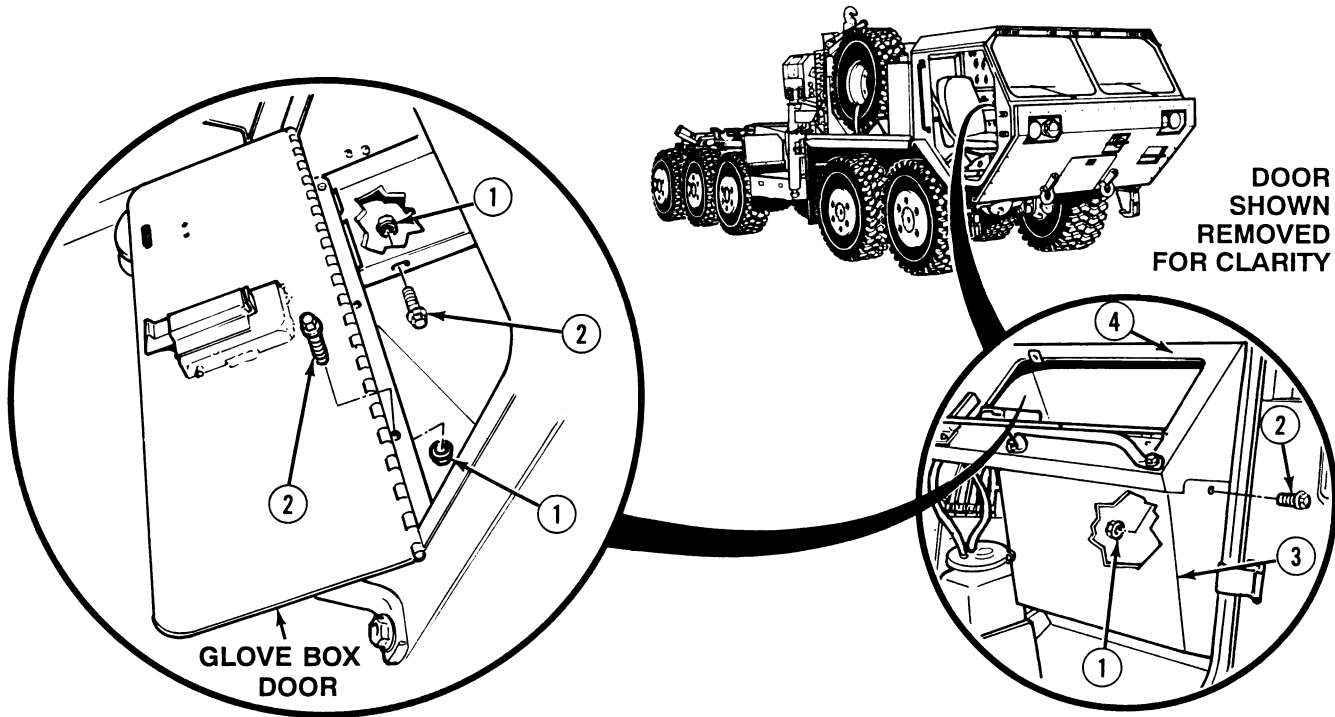
NOTE

Perform Step (46) if relief valve is present.

- (46) Install line (8) on relief valve (9).
 (47) Compress clamp (5) and install line (6) on reservoir line (7).



12-25. AIR MANIFOLD (CAB) REPLACEMENT (CONT).



(48) Position glove box (3) under right side of dash (4) and install six screws (2) with locknuts (1).

(49) Close glove box door.

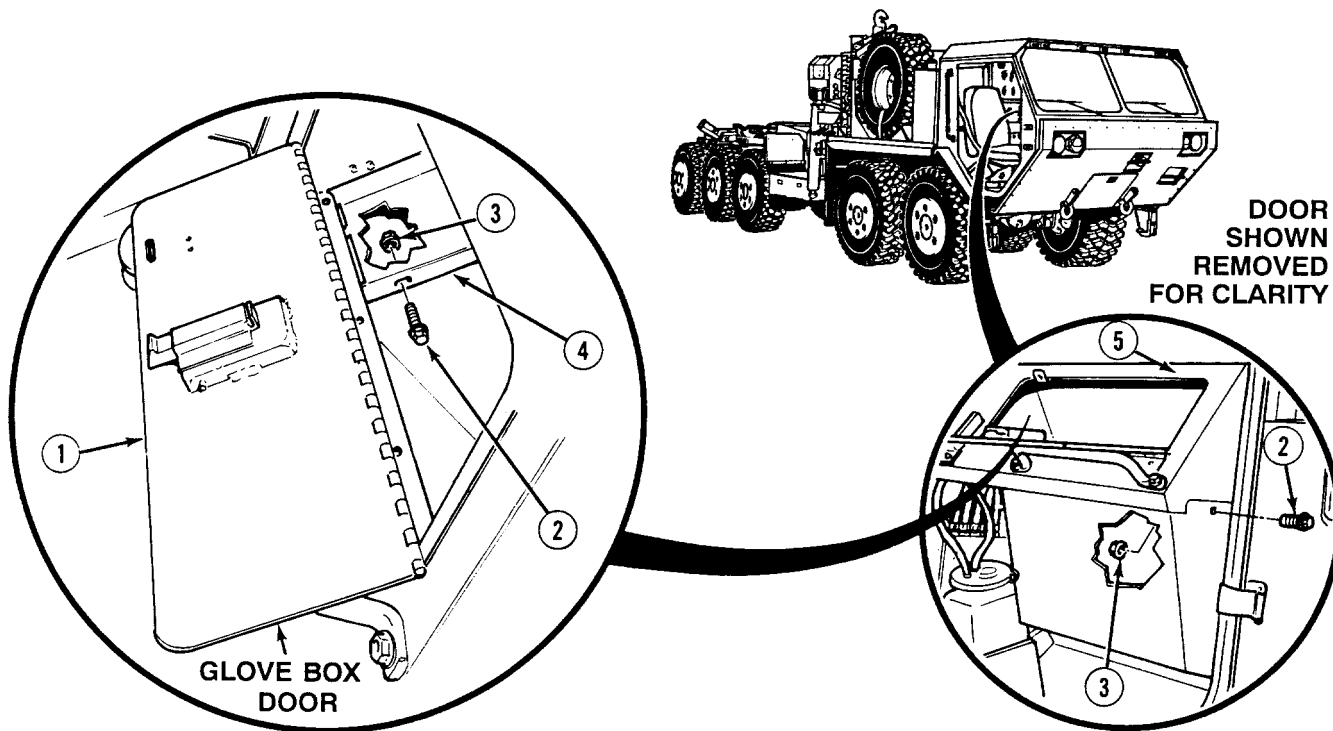
c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-26. WINDSHIELD WASHER CAB AIR REGULATOR REPLACEMENT.		
This task covers:		
a. Removal	b. Installation	c. Follow-On Maintenance
INITIAL SETUP		
<i>Tools and Special Tools</i> Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)		<i>Materials/Parts - Continued</i> Locknut (Item 140, Appendix F) Lockwasher (Item 168, Appendix F)
<i>Materials/Parts</i> Sealing Compound (Item 72, Appendix C) Tags, Identification (Item 88, Appendix C) Locknut (3) (Item 110, Appendix F)		<i>Equipment Condition</i> Engine OFF, (TM 9-2320-364-10) Wheels chocked, (TM 9-2320-364-10) Air system drained, (TM9-2320-364-10)

a. Removal.



NOTE

Truck may or may not have a windshield washer cab air regulator.

- (1) Open glove box door (1).
- (2) Remove three screws (2), locknuts (3) and plate (4) from dash (5). Discard locknuts.

12-26. WINDSHIELD WASHER CAB AIR REGULATOR REPLACEMENT (CONT).

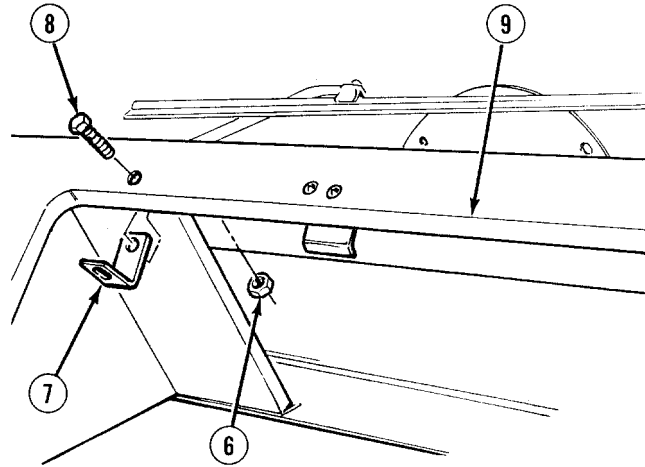
CAUTION

Air regulator is preset. Do not adjust regulator or damage to equipment may result.

NOTE

- Tag and mark lines and fittings before removal.
- Air regulator is mounted on back side of plate.

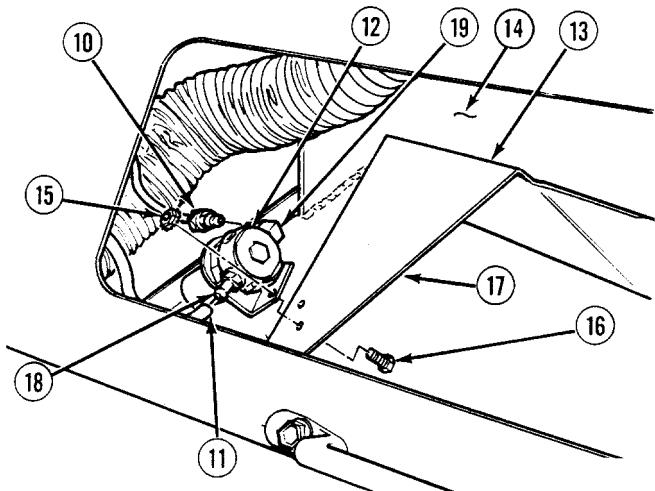
- (3) Remove locknut (6), bracket (7) and screw (8) from dash panel (9).



CAUTION

Use caution while removing air regulator mounting plate, or damage to equipment may result.

- (4) Remove air line 2071 (10) and hose (11) from air regulator (12) and mounting plate (13) from glove box (14).
- (5) Remove two locknuts (15), screws (16) and air regulator (12) from air regulator mounting plate (17). Discard locknuts.
- (6) Remove fitting (18) and elbow (19) from air regulator (12).



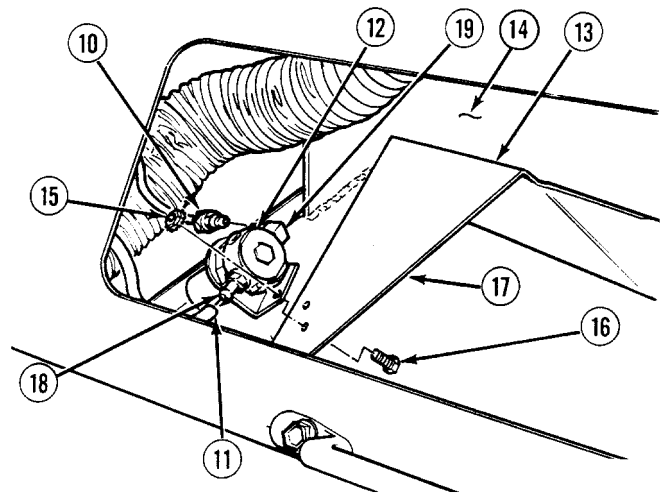
b. Installation.

WARNING

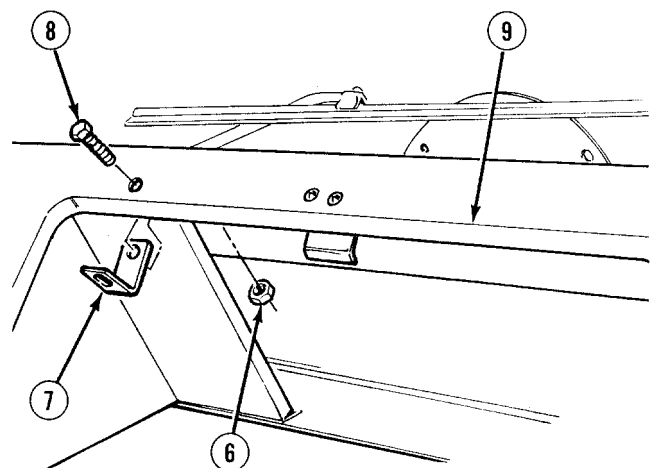
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

CAUTION

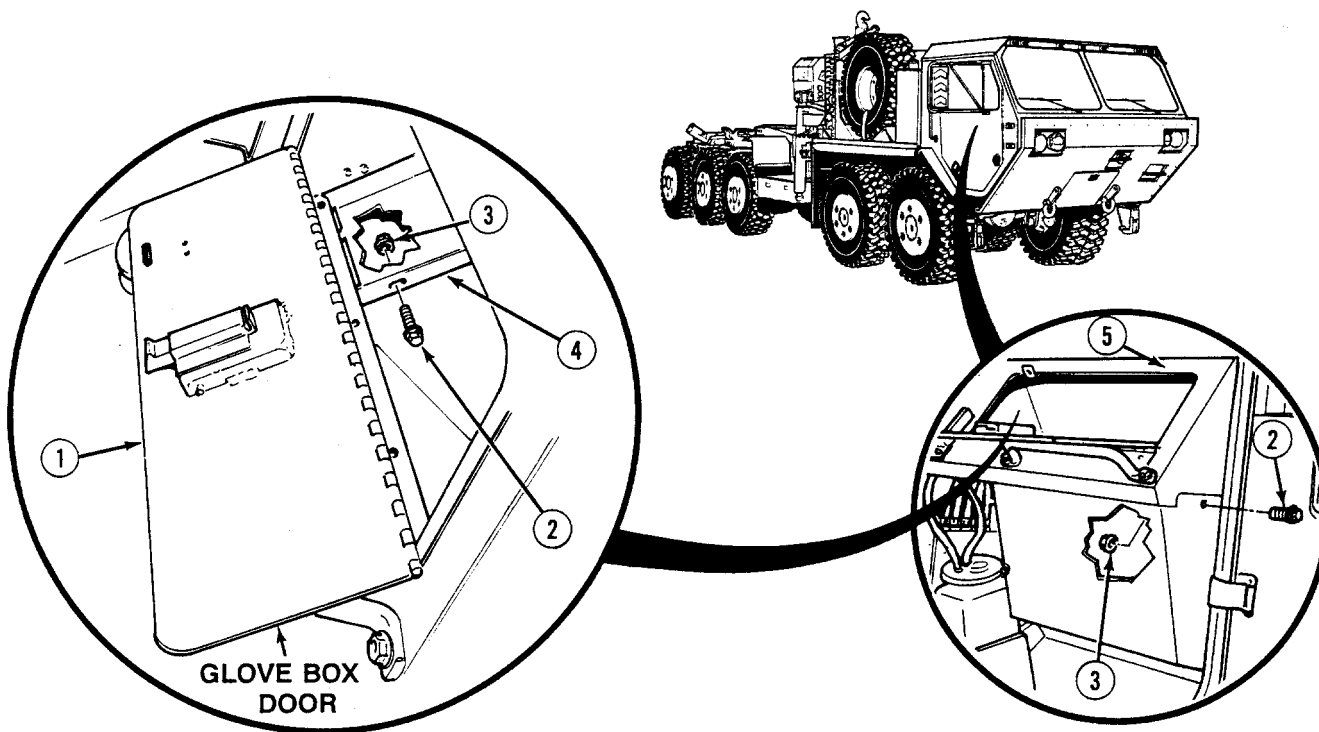
Air regulator is preset. Do not adjust regulator or damage to equipment may result.



- (1) Coat threads of fitting (18) and elbow (19) with sealing compound.
- (2) Install elbow (19) and fitting (18) on air regulator (12).
- (3) Install hose (11) and air line 2071 (10) on air regulator (12).
- (4) Install air regulator (12) on mounting plate (17) with two screws (16) and locknuts (15).
- (5) Position air regulator (12) and mounting plate (17) in glove box (14).
- (6) Install bracket (7) on dash panel (9) with screw (8) and locknut (6).



12-26. WINDSHIELD WASHER CAB AIR REGULATOR REPLACEMENT (CONT).



(7) Install plate (4) in dash (5) with three screws (2) and locknuts (3).

(8) Close glove box door (1).

c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-27. AIR RESERVOIR NO. 1 REPLACEMENT.

This task covers:

- a. Removal
- b. Cleaning/Inspection
- c. Installation
- d. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Caps, Vise Jaw (Item 9, Appendix G)
- Socket Set, 1/2 in. Deep Well (Item 60, Appendix G)
- Vise, Machinist's (Item 75, Appendix G)
- Wrench, Combination 1-1/16 in. (Item 78, Appendix G)
- Wrench, Combination 1-1/8 in. (Item 79, Appendix G)
- Wrench, Combination 1-3/8 in. (Item 82, Appendix G)

Materials/Parts

- Cable Ties (Item 26, Appendix C)
- Sealing Compound (Item 77, Appendix C)
- Tags, Identification (Item 88, Appendix C)
- Locknut (10) (Item 140, Appendix F)
- Lockwasher (2) (Item 206, Appendix F)

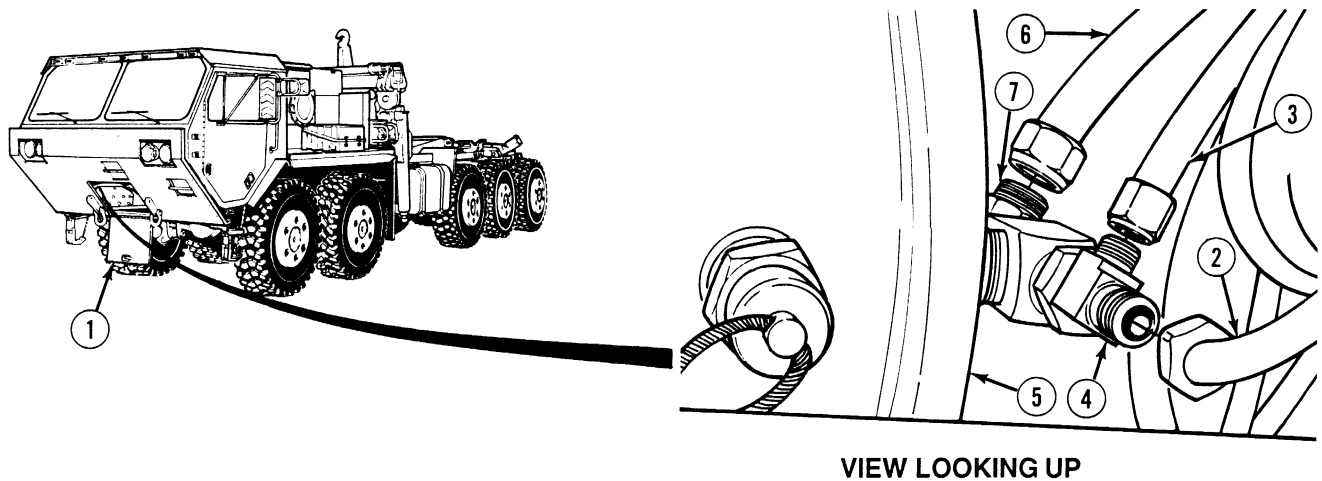
Personnel Required

Two

Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)
- Air system drained, (TM 9-2320-364-10)

a. Removal.



- (1) Open front access cover (1).

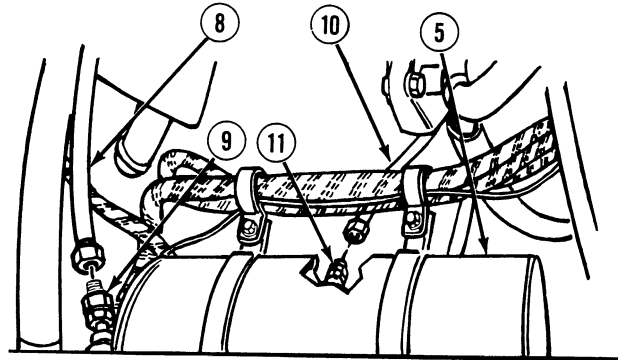
NOTE

Tag and mark air lines before removing.

- (2) Remove air lines 2994 (2) and 2993 (3) from tee (4) on right side of air reservoir (5).
- (3) Remove air line 2184 (6) from elbow (7) on right side of air reservoir (5).

12-27. AIR RESERVOIR NO. 1 REPLACEMENT (CONT).

- (4) Remove air line 2002 (8) from fitting (9) on left side of air reservoir (5).
- (5) Remove air line 2159 (10) from fitting (11) on top of air reservoir (5).

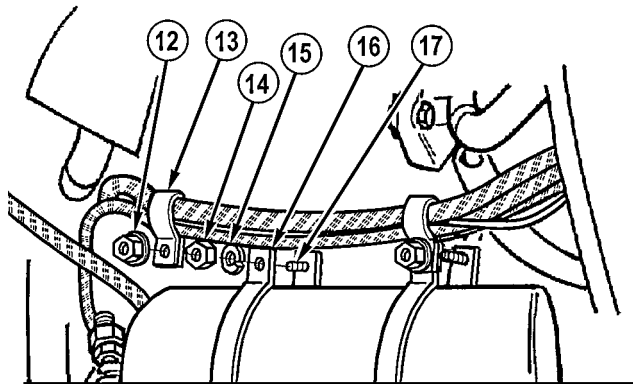


VIEW LOOKING UP

NOTE

- There may or may not be locknuts present in Step (6).
- Cushion clips may be installed under locknuts or lockwashers in Step (6).

- (6) Remove two locknuts (12), cushion clips (13), nuts (14), lockwashers (15), and bracket (16), from bracket screws (17). Discard lockwashers and locknuts.



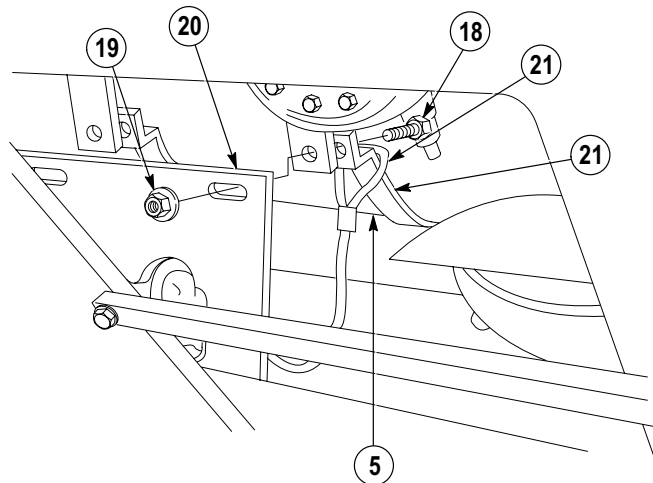
WARNING

Air reservoir will fall when screws are removed. Support air reservoir prior to removing screws to prevent injury to personnel.

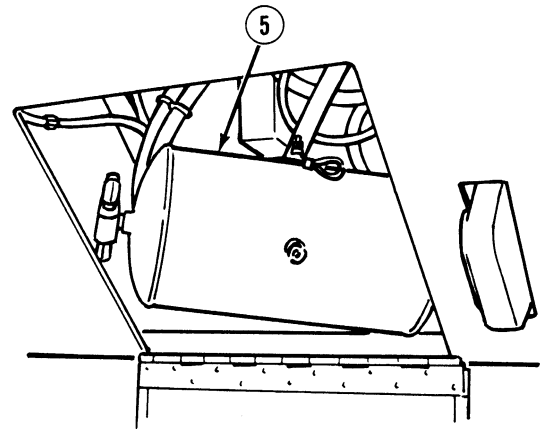
NOTE

Air horn bracket may or may not be present in Step (7).

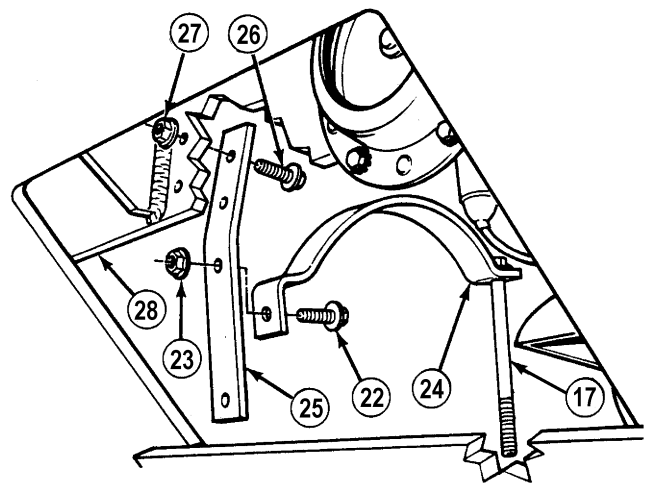
- (7) Remove two screws (18), locknuts (19), air horn bracket (20), and drain valve cable (21) from brackets (16) on air reservoir (5). Discard locknuts.



- (8) With the aid of an assistant, remove air reservoir (5).



- (9) Remove two screws (22), locknuts (23) and top brackets (24) from bracket mounting supports (25). Discard locknuts.
- (10) Remove two bracket screws (17) from top brackets (24).
- (11) Remove four screws (26), locknuts (27) and two bracket mounting supports (25) from frame (28). Discard locknuts.

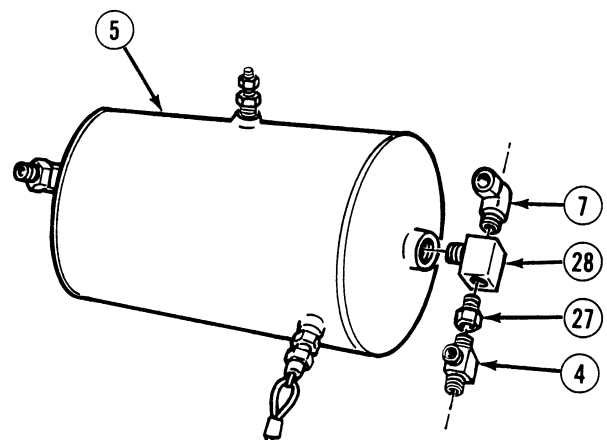


- (12) Position air reservoir (5) in soft jawed vise.

NOTE

Note location of elbows, tees and reducers to reservoir prior to removal.

- (13) Remove elbow (7), tee (4), reducer (29) and tee (30) from air reservoir (5).



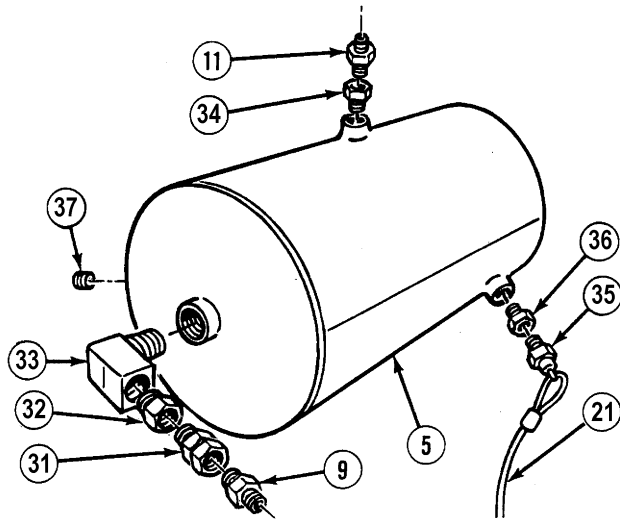
12-27. AIR RESERVOIR NO. 1 REPLACEMENT (CONT).

- (14) Remove fitting (9), check valve (31), reducer (32) and elbow (33) from air reservoir (5).
- (15) Remove fitting (11) and reducer (34) from air reservoir (5).
- (16) Remove drain valve (35) and reducer (36) from air reservoir (5).

NOTE

Perform Step (17) if drain valve cable is damaged.

- (17) Cut and remove drain valve cable (21) from drain valve (35). Discard drain valve cable.
- (18) Remove plug (37) from air reservoir (5).
- (19) Remove air reservoir (5) from vise.



b. Cleaning/Inspection.

- (1) Clean sealant from pipe threads.
- (2) Inspect drain cable for frayed or broken wires.
- (3) Inspect threads, fittings and tank for cracks, broken welds and stripped threads.
- (4) Replace all damaged parts.

c. Installation.

- (1) Position air reservoir (5) in soft jawed vise.

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

Install elbows, tees and fittings as noted prior to removal.

- (2) Coat threads of reducer (36) and drain valve (35) with sealing compound.

NOTE

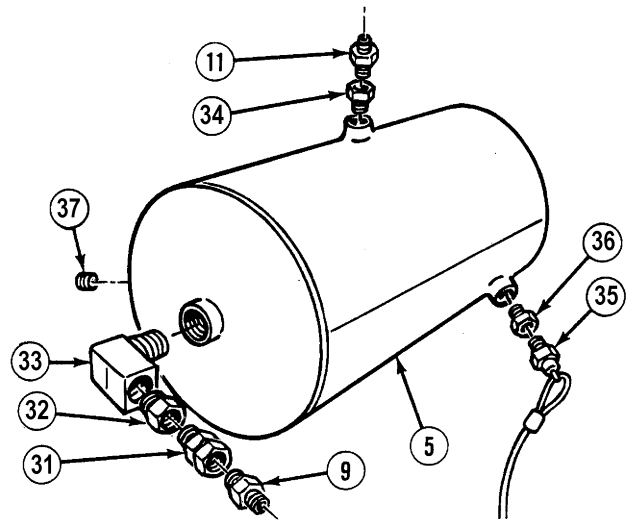
Perform Step (3) if drain valve cable was removed.

- (3) Cut new drain valve cable (21) to 24 in. (60.9 cm) and crimp on drain valve (35).

- (4) Install reducer (36) and drain valve (35) on air reservoir (5).

WARNING

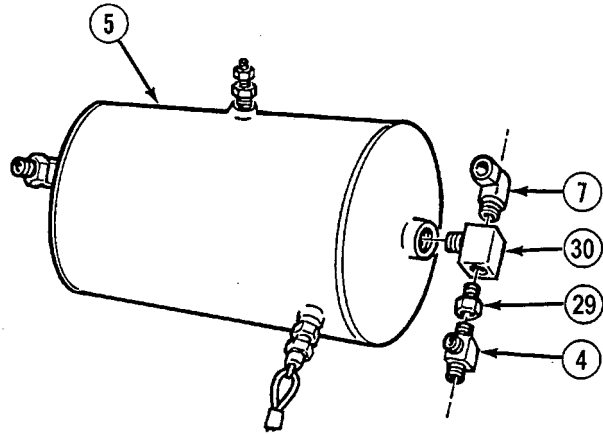
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



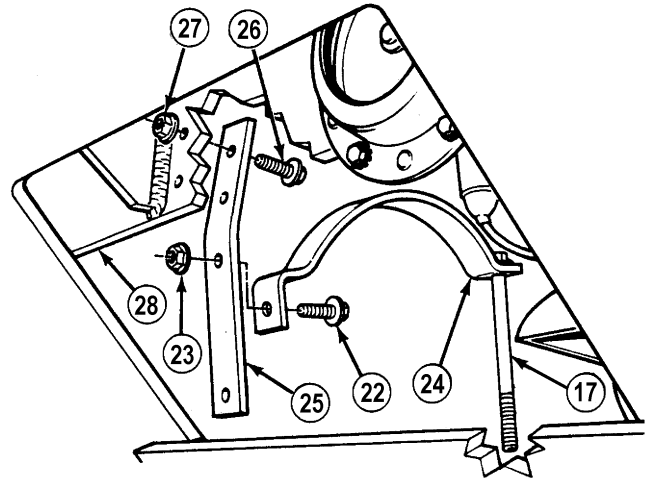
- (5) Coat threads of reducer (34) and fitting (11) with sealing compound.
- (6) Install reducer (34) and fitting (11) on air reservoir (5).
- (7) Coat threads of elbow (33) and reducer (32) with sealing compound.
- (8) Install elbow (33) and reducer (32) on air reservoir (5).
- (9) Coat threads of check valve (31) and fitting (9) with sealing compound.
- (10) Install check valve (31) and fitting (9) on reducer (32).
- (11) Coat threads of plug (37) with sealing compound.
- (12) Install plug (37) on air reservoir (5).
- (13) Remove air reservoir (5) from vise.

12-27. AIR RESERVOIR NO. 1 REPLACEMENT (CONT).

- (14) Coat threads of tee (30) and reducer (29) with sealing compound.
- (15) Install tee (30) and reducer (29) on air reservoir (5).
- (16) Coat threads of tee (4) and elbow (7) with sealing compound.
- (17) Install tee (4) on reducer (29).
- (18) Install elbow (7) on tee (30).
- (19) Remove air reservoir (5) from vise.



- (20) Install two bracket mounting supports (25) on frame (28) with four screws (26) and locknuts (27).
- (21) Install two bracket screws (17) in top brackets (24).
- (22) Install two top brackets (24) on bracket mounting supports (25) with two screws (22) and locknuts (23).

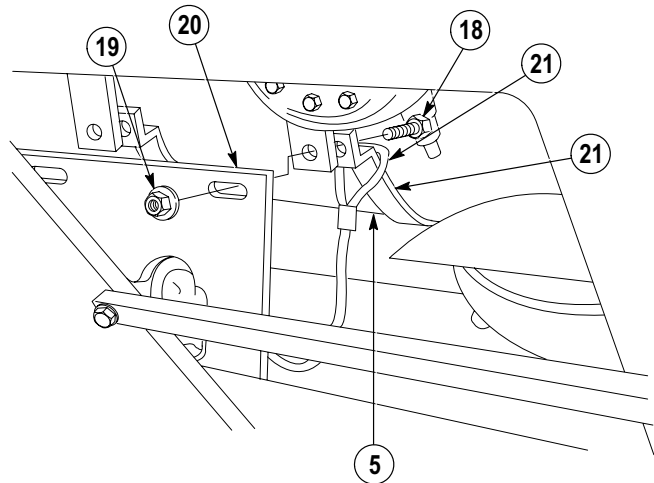


- (23) With the aid of an assistant, position air reservoir (5) in truck.
- (24) Install drain valve cable (21) on left bracket (16).

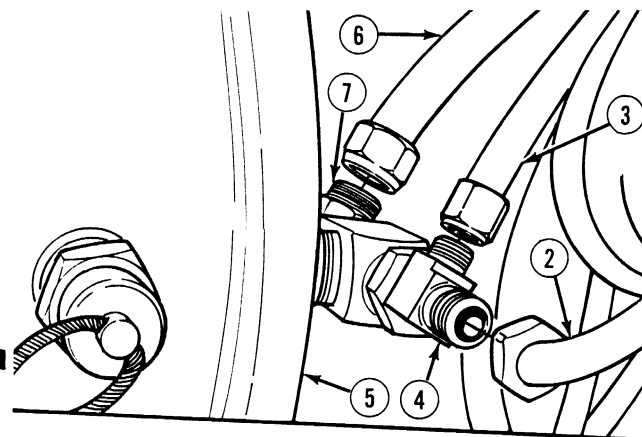
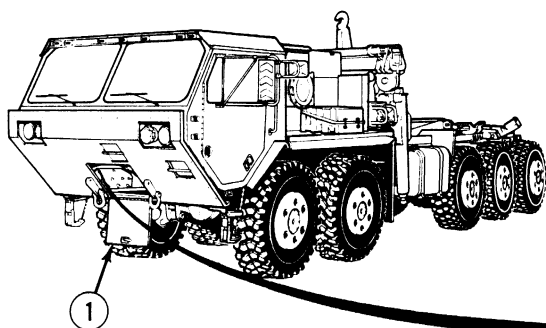
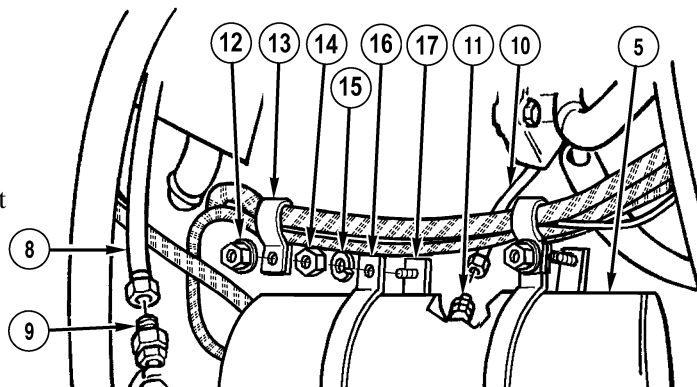
NOTE

Air horn bracket may or may not be present in Step (25).

- (25) With the aid of an assistant, install two brackets (16), screws (18), air horn bracket (20) and locknuts (19).



- (26) Install two brackets (16) lockwashers (15), nuts (14), cushion clips (13) and locknuts (12) on bracket screws (17).
- (27) Install air line 2159 (10) on fitting (11) on top of air reservoir (5).
- (28) Install air line 2002 (8) on fitting (9) on left side of air reservoir (5).



VIEW LOOKING UP

- (29) Install air line 2184 (6) on elbow (7) on right side of air reservoir (5).
- (30) Install air lines 2994 (2) and 2993 (3) on tee (4) on right side of air reservoir (5).
- (31) Close front access cover (1).

d. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check air reservoir and fittings for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-28. AIR RESERVOIR NO. 2 REPLACEMENT.

This task covers:

- | | | |
|------------------------|-----------------|--------------------------|
| a. Removal | c. Installation | d. Follow-On Maintenance |
| b. Cleaning/Inspection | | |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
 Caps, Vise Jaw (Item 9, Appendix G)
 Vise, Machinist's (Item 75, Appendix G)
 Wrench, Combination 1-1/16 in. (Item 78, Appendix G)
 Wrench, Combination 1-1/8 in. (Item 79, Appendix G)
 Wrench, Combination 1-3/8 in. (Item 82, Appendix G)

Materials/Parts

Sealing Compound (Item 77, Appendix C)

Materials/Parts - Continued

Tags, Identification (Item 88, Appendix C)
 Locknut (4) (Item 91, Appendix F)
 Locknut (2) (Item 140, Appendix F)
 Lockwasher (4) (Item 168, Appendix F)

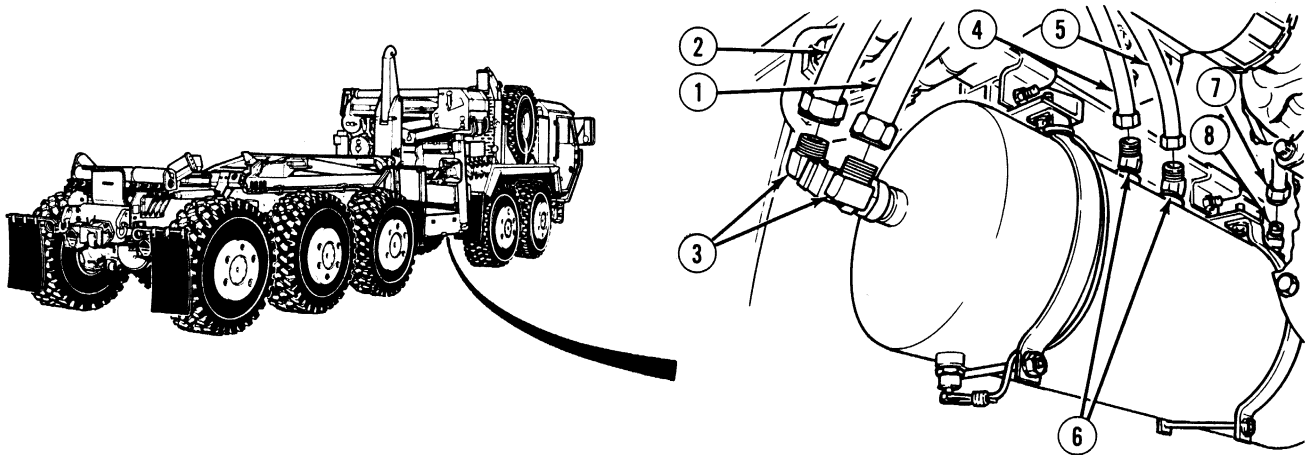
Personnel Required

Two

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Air system drained, (TM 9-2320-364-10)

a. Removal.

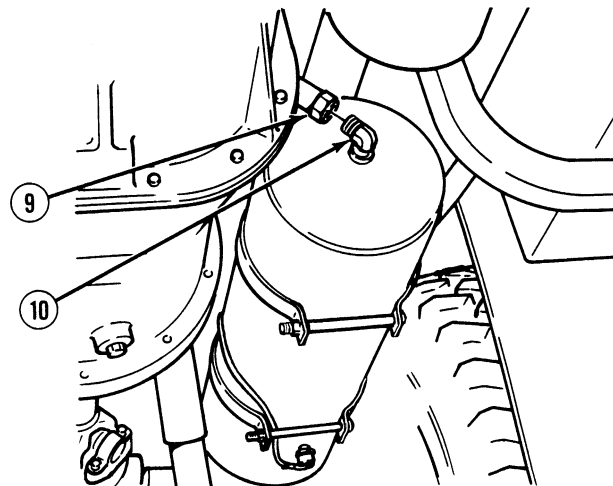


NOTE

Tag and mark air lines prior to removal.

- (1) Remove air lines 2007 (1) and 2184 (2) from two elbows (3).
- (2) Remove air lines 2536 (4) and 2619 (5) from two elbows (6).
- (3) Remove air line 2008 (7) from elbow (8).

- (4) Remove air line 2613 (9) from elbow (10).



- (5) Remove two screws (11), lockwashers (12), washers (13) and mounting clips (14) from air reservoir brackets (15). Discard lockwashers.

- (6) Loosen four locknuts (16) and screws (17) from four reservoir mounting brackets (18).

WARNING

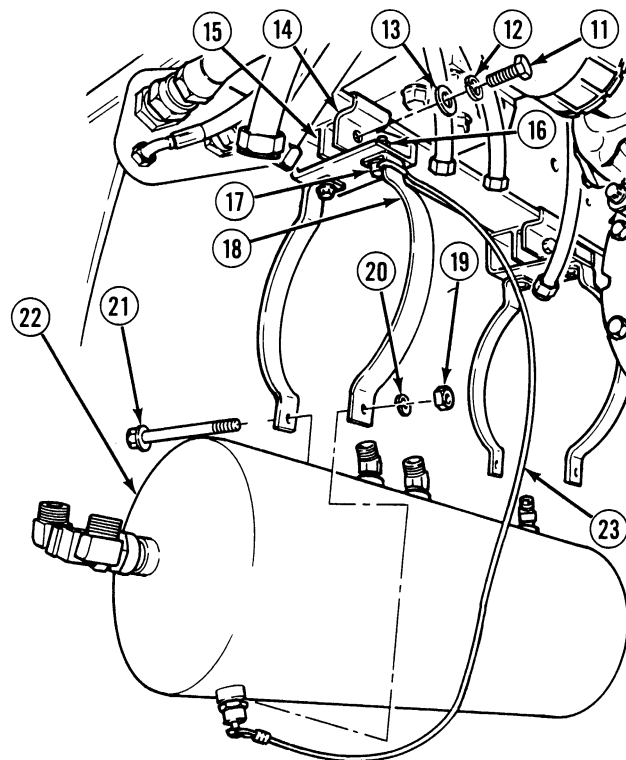
Air reservoir will fall when screws are removed. Support air reservoir prior to removing screws to prevent injury to personnel.

- (7) With the aid of an assistant, remove two nuts (19), lockwashers (20) and screws (21) from reservoir mounting brackets (18). Discard lockwashers.

NOTE

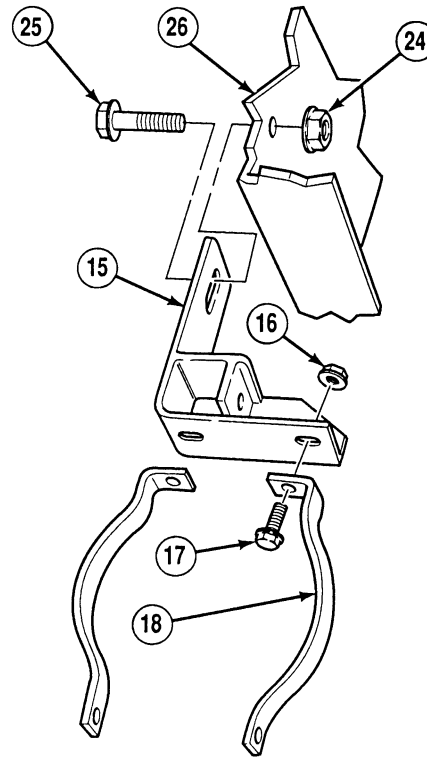
Note position of air reservoir prior to removal.

- (8) Remove air reservoir (22) and drain valve cable (23) from two reservoir mounting brackets (18).



12-28. AIR RESERVOIR NO. 2 REPLACEMENT (CONT).

- (9) Remove four locknuts (16), screws (17) and air reservoir mounting brackets (18) from two air reservoir brackets (15). Discard locknuts.
- (10) Remove two locknuts (24), screws (25) and air reservoir brackets (15) from frame (26). Discard locknuts.

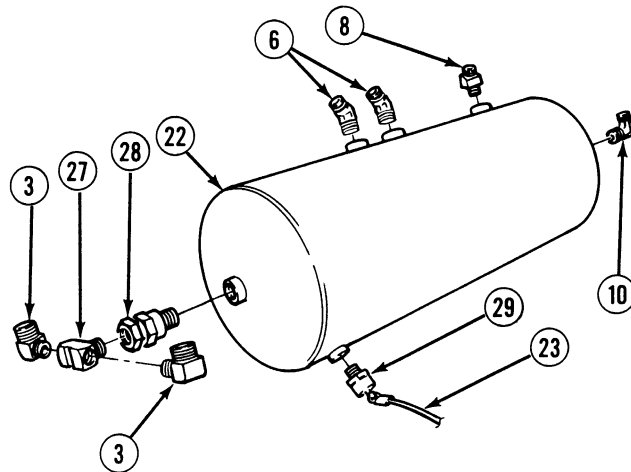


- (11) Position air reservoir (22) in soft jawed vise.

NOTE

Mark position of elbows, tees and fittings prior to removal.

- (12) Remove two elbows (3) from tee (27).
- (13) Remove tee (27) from check valve (28).
- (14) Remove check valve (28) from air reservoir (22).
- (15) Remove two elbows (6) from air reservoir (22).
- (16) Remove elbow (8) from air reservoir (22).
- (17) Remove elbow (10) from air reservoir (22).
- (18) Remove drain valve (29) from air reservoir (22).



NOTE

Perform Step (19) if drain valve cable is damaged.

- (19) Cut and remove drain valve cable (23) from drain valve (29).
- (20) Remove air reservoir (22) from vise.

b. Cleaning/Inspection.

- (1) Clean sealant from pipe threads.
- (2) Inspect drain cable for frayed or broken wires.
- (3) Inspect threads, fittings and tank for cracks, broken welds and stripped threads.
- (4) Replace all damaged parts.

c. Installation.

- (1) Install air reservoir (22) in soft jawed vise.



Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

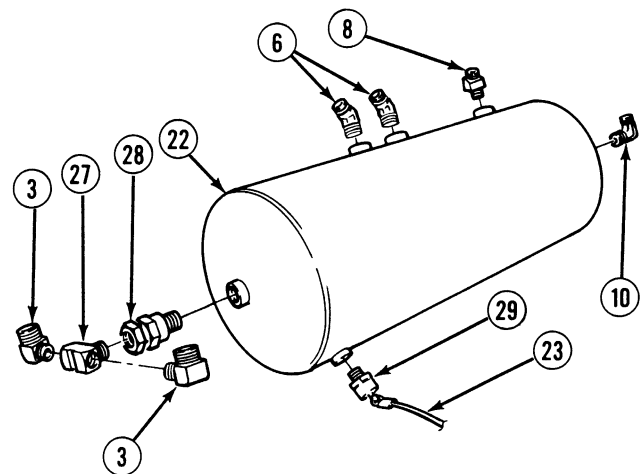
Install elbows, tees and fittings as noted prior to removal.

- (2) Apply sealing compound to threads of drain valve (29).

NOTE

Perform Step (3) if drain valve cable was removed.

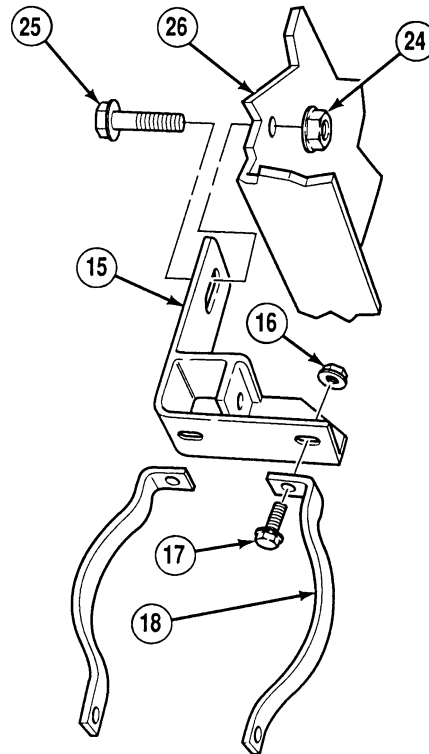
- (3) Cut new drain cable (23) to 30 in. (76 cm) and crimp on drain valve (24).
- (4) Install drain valve (29) on air reservoir (22).
- (5) Apply sealing compound to threads of elbow (10).
- (6) Install elbow (10) in air reservoir (22).



- (7) Apply sealing compound to threads of elbow (8).
- (8) Install elbow (8) in air reservoir (22).
- (9) Apply sealing compound to threads of two elbows (6).
- (10) Install two elbows (6) in air reservoir (22).
- (11) Apply sealing compound to threads of check valve (28).
- (12) Install check valve (28) in air reservoir (22).
- (13) Apply sealing compound to threads of tee (27).
- (14) Install tee (27) on check valve (28).
- (15) Apply sealing compound to threads of two elbows (3).
- (16) Install two elbows (3) in tee (27).
- (17) Remove air reservoir (22) from vise.

12-28. AIR RESERVOIR NO. 2 REPLACEMENT (CONT).

- (18) Install two air reservoir brackets (15), screws (25) and locknuts (24) on frame (26).
- (19) With the aid of an assistant, position four air reservoir mounting brackets (18), screws (17) and locknuts (16) on two air reservoir brackets (15).

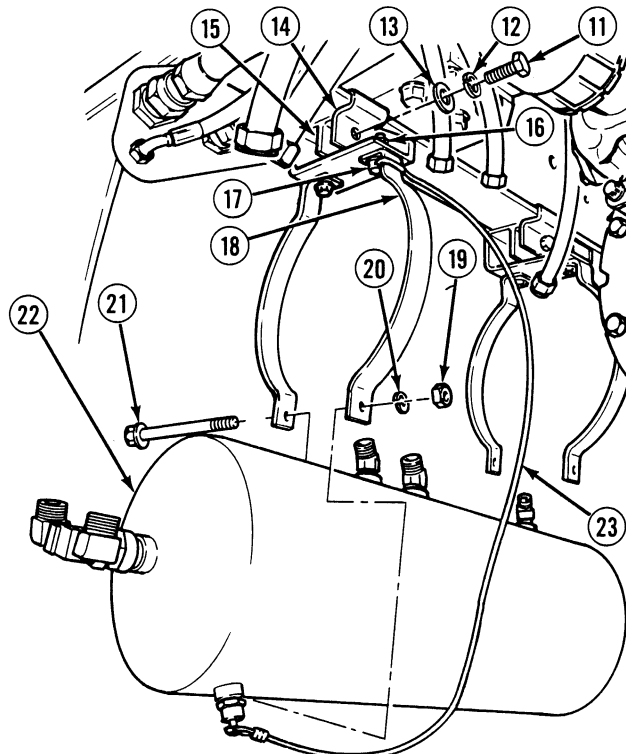


- (20) With the aid of an assistant, position drain valve cable (23) and air reservoir (22) in four reservoir mounting brackets (18).

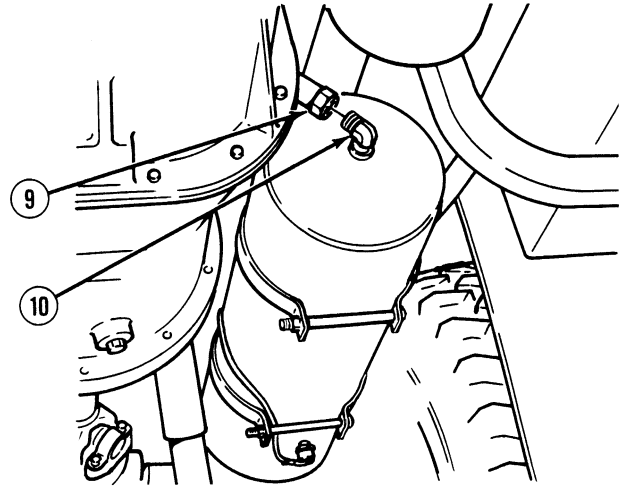
NOTE

When assembling air reservoirs and mounting brackets, do not over tighten nut and lockwasher. Tighten nut until lockwasher is fully compressed.

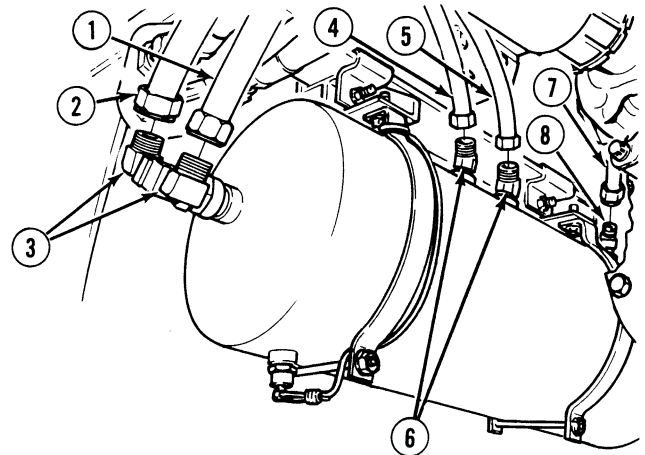
- (21) With the aid of an assistant, install two screws (21), lockwashers (20) and nuts (19) in reservoir mounting brackets (18).
- (22) Tighten two locknuts (16) and screws (17) on brackets (15).
- (23) Install two mounting clips (14), washers (13), lockwashers (12) and screws (11) on air reservoir brackets (15).



- (24) Install air line 2613 (9) on elbow (10).



- (25) Install air line 2008 (7) on elbow (8).
- (26) Install air lines 2536 (4) and 2619 (5) on two elbows (6).
- (27) Install air lines 2007 (1) and 2184 (2) on two elbows (3).



d. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-29. AIR RESERVOIR NO. 3 REPLACEMENT.

This task covers:

- | | | |
|------------------------|-----------------|--------------------------|
| a. Removal | c. Installation | d. Follow-On Maintenance |
| b. Cleaning/Inspection | | |

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Cap, Vise Jaw (Item 9, Appendix G)
- Vise, Machinist's (Item 75, Appendix G)
- Wrench, Combination 1-1/16 in. (Item 78, Appendix G)
- Wrench, Combination 1-1/8 in. (Item 79, Appendix G)
- Wrench, Combination 1-3/8 in. (Item 82, Appendix G)

Materials/Parts

- Sealing Compound (Item 77, Appendix C)

Materials/Parts - Continued

- Tags, Identification (Item 88, Appendix C)
- Locknut (4) (Item 91, Appendix F)
- Locknut (2) (Item 140, Appendix F)
- Lockwasher (4) (Item 168, Appendix F)

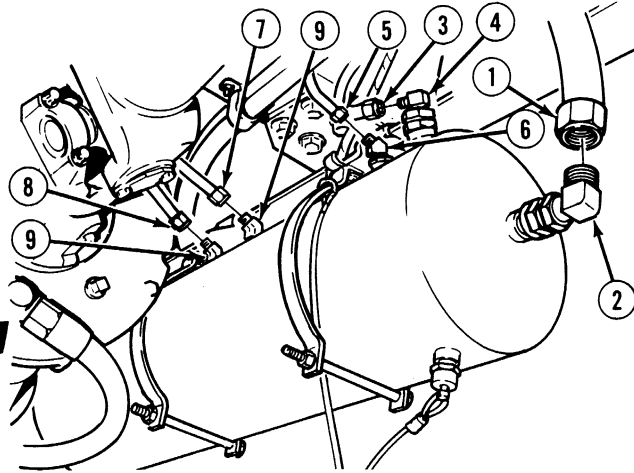
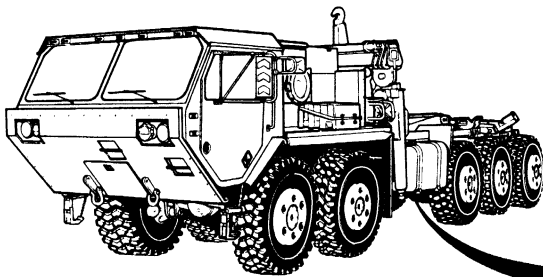
Personnel Required

Two

Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)
- Air system drained, (TM 9-2320-364-10)

a. Removal.

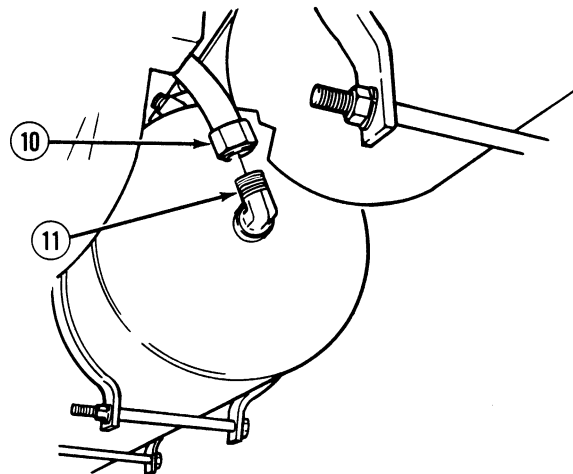


NOTE

Tag and mark air lines prior to removal.

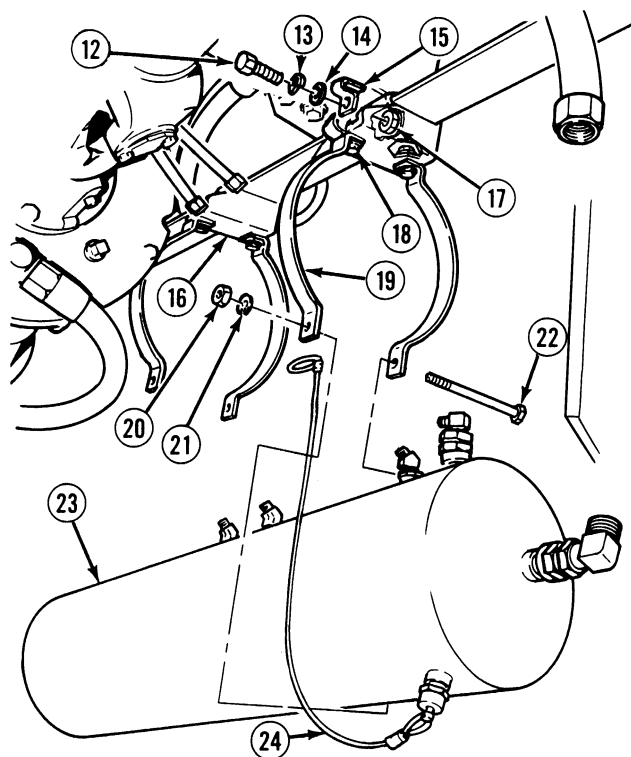
- (1) Remove air line 2007 (1) from elbow (2).
- (2) Remove air line 2895 (3) from elbow (4).
- (3) Remove air line 2621 (5) from elbow (6).
- (4) Remove air lines 2011 (7) and 2014 (8) from two elbows (9).

- (5) Remove air line 2003 (10) from elbow (11).



- (6) Remove two screws (12), lockwashers (13), washers (14) and mounting clips (15) from two air reservoir brackets (16). Discard lockwasher.

- (7) Loosen four locknuts (17) and screws (18) from reservoir mounting brackets (19).



WARNING

Air reservoir will fall when screws are removed. Support air reservoir prior to removing screws to prevent injury to personnel.

- (8) With the aid of an assistant, remove two nuts (20), lockwashers (21) and screws (22) from reservoir mounting brackets (19). Discard lockwashers.

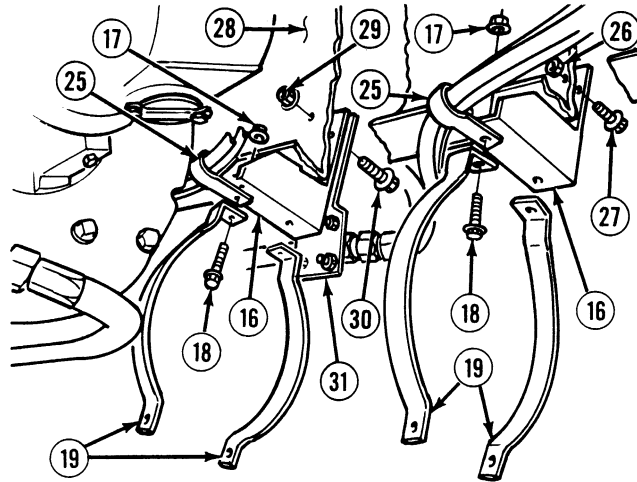
NOTE

Note position of air reservoir prior to removal.

- (9) Rotate air reservoir (23) 180 degrees.
- (10) Remove air reservoir (23) and drain valve cable (24) by sliding air reservoir forward out of two reservoir mounting brackets (19).

12-29. AIR RESERVOIR NO. 3 REPLACEMENT (CONT).

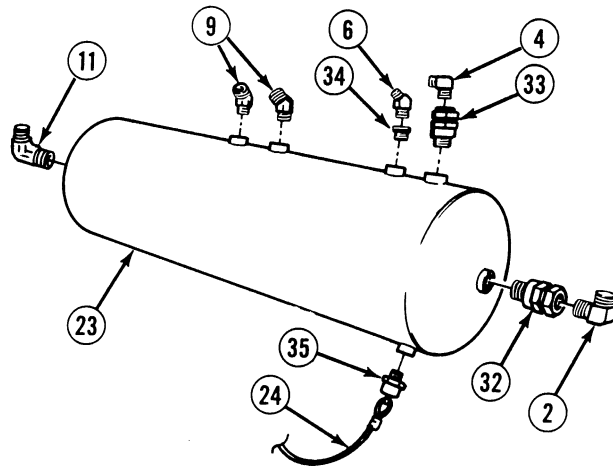
- (11) Remove four locknuts (17), two cushion clips (25), four screws (18) and four air reservoir mounting brackets (19) from air reservoir brackets (16). Discard locknuts.
- (12) Remove locknut (26), screw (27) and air reservoir bracket (16) from frame (28). Discard locknut.
- (13) Remove locknut (29), screw (30), fuel shut off valve mounting bracket (31) and air reservoir bracket (16) from frame (28). Discard locknut.



NOTE

Mark position of elbows, tees and fittings prior to removal.

- (14) Position air reservoir (23) in soft jawed vise.
- (15) Remove elbow (2) and check valve (32) from air reservoir (23).
- (16) Remove elbow (4) and check valve (33) from air reservoir (23).
- (17) Remove elbow (6) and reducer fitting (34) from air reservoir (23).
- (18) Remove two elbows (9) from air reservoir (23).
- (19) Remove elbow (11) from air reservoir (23).
- (20) Remove drain valve (35) from air reservoir (23).



NOTE

Perform Step (21) if drain valve cable is damaged.

- (21) Cut and remove drain valve cable (24) from drain valve (35).
- (22) Remove air reservoir (23) from vise.

b. Cleaning/Inspection.

- (1) Clean sealant from pipe threads.
- (2) Inspect drain cable for frayed or broken wires.
- (3) Inspect threads, fittings and tank for cracks, broken welds and stripped threads.
- (4) Replace all damaged parts.

c. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

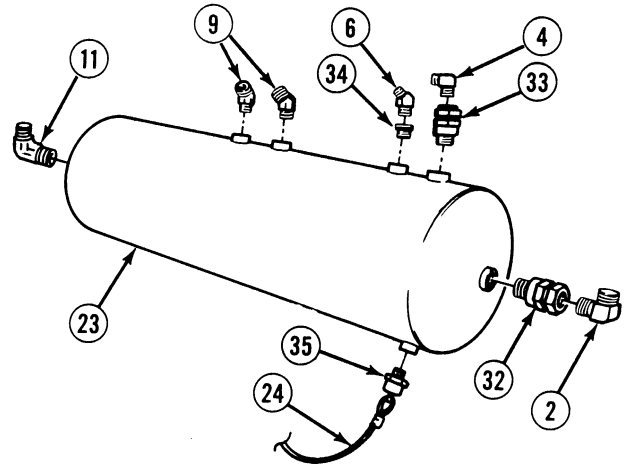
Install elbows, tees and fittings as noted prior to removal.

- (1) Position air reservoir (23) in soft jawed vise.
- (2) Apply sealing compound to threads of drain valve (35).
- (3) Install drain valve (35) on air reservoir (23).

NOTE

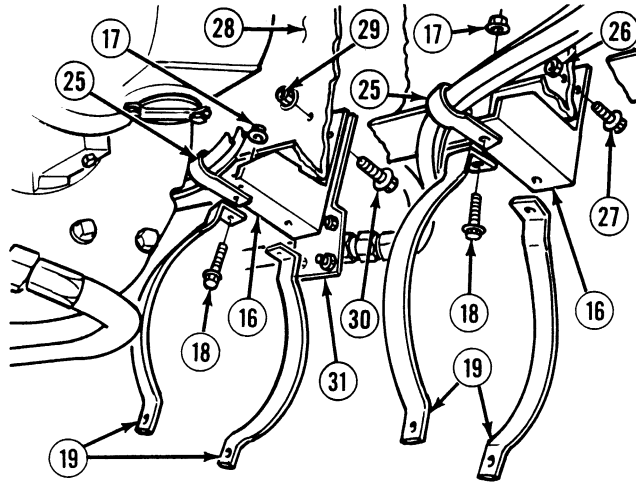
Perform Step (4) if drain valve cable was removed.

- (4) Cut new drain valve cable (24) to 36 in. (91 cm) and crimp on drain valve (35).
- (5) Apply sealing compound to threads of elbow (11).
- (6) Install elbow (11) in air reservoir (23).
- (7) Apply sealing compound to threads of two elbows (9).
- (8) Install two elbows (9) in air reservoir (23).
- (9) Apply sealing compound to threads of elbow (6) and reducer fitting (34).
- (10) Install elbow (6) and reducer fitting (34) in air reservoir (23).
- (11) Apply sealing compound to threads of check valve (33) and elbow (4).
- (12) Install check valve (33) and elbow (4) in air reservoir (23).
- (13) Apply sealing compound to threads of check valve (32) and elbow (2).
- (14) Install check valve (32) and elbow (2) in air reservoir (23).
- (15) Remove air reservoir (23) from vise.



12-29. AIR RESERVOIR NO. 3 REPLACEMENT (CONT).

- (16) Install air reservoir bracket (16), fuel shut off valve mounting bracket (31), screw (30) and locknut (29) on frame (28).
- (17) Install air reservoir bracket (16), screw (27) and locknut (26) on frame (28).
- (18) Position four air reservoir mounting brackets (19), four screws (18), two cushion clips (25) and four locknuts (17) on two air reservoir brackets (16).

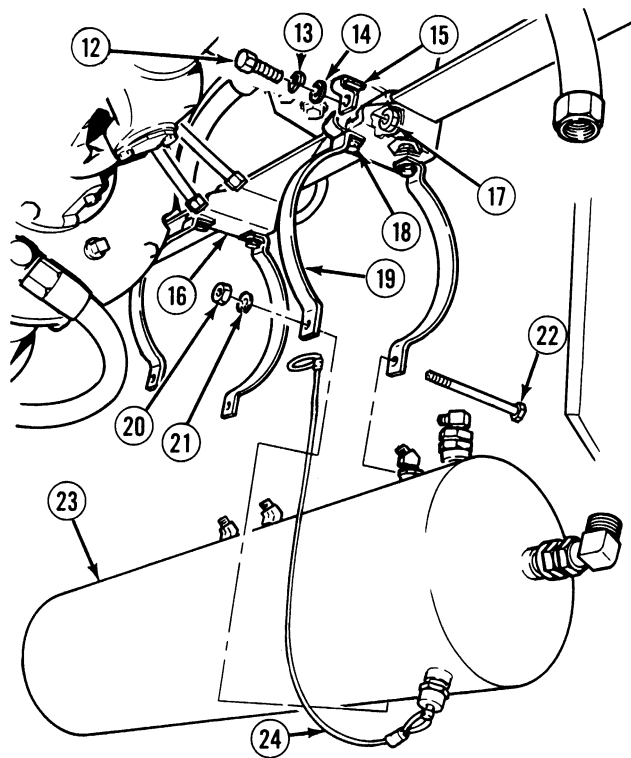


- (19) With the aid of an assistant, position drain valve cable (24) and air reservoir (23) in four air reservoir mounting brackets (19).

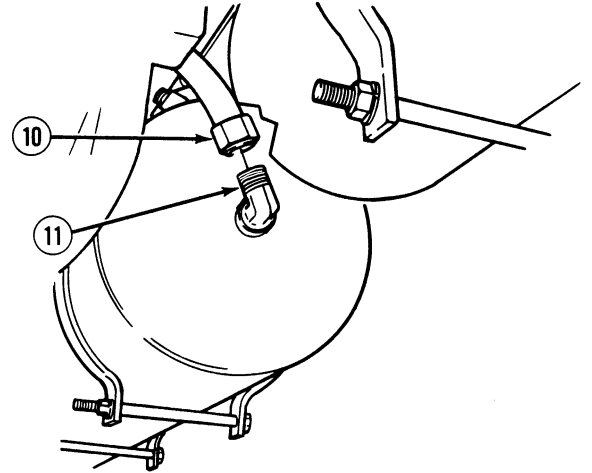
NOTE

When assembling air reservoirs and mounting brackets, do not over tighten nut and lockwasher. Tighten nut until lockwasher is fully compressed.

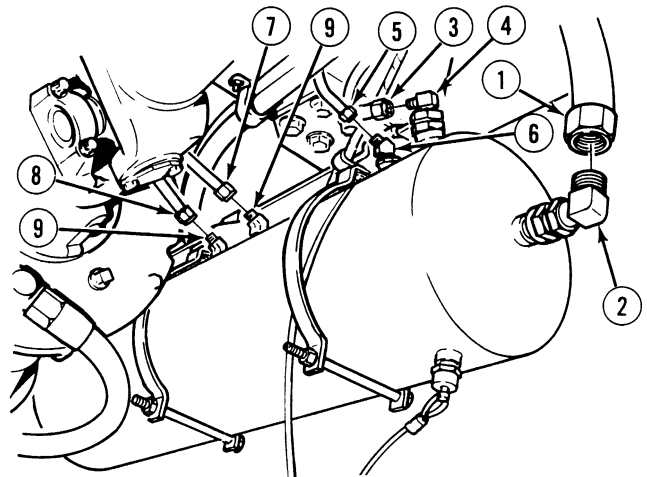
- (20) With the aid of an assistant, install two screws (22), lockwashers (21) and nuts (20) in reservoir mounting bracket (19). Tighten nuts until lockwasher is fully compressed.
- (21) Tighten four locknuts (17) on brackets (19).
- (22) Install two mounting clips (15), washers (14), lockwashers (13) and screws (12) on two air reservoir brackets (16).



- (23) Install air line 2003 (10) on elbow (11).



- (24) Install air lines 2011 (7) and 2014 (8) on two elbows (9).
- (25) Install air line 2621 (5) on elbow (6).
- (26) Install air line 2895 (3) on elbow (4).
- (27) Install air line 2007 (1) on elbow (2).



d. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-30. AIR RESERVOIR NO. 4 REPLACEMENT.

This task covers:

- a. Removal
- b. Cleaning/Inspection
- c. Installation
- d. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
Cap, Vise Jaw (Item 9, Appendix G)
Vise, Machinist's (Item 75, Appendix G)
Wrench, Combination 1-1/8 in. (Item 79, Appendix G)

Personnel Required

Two

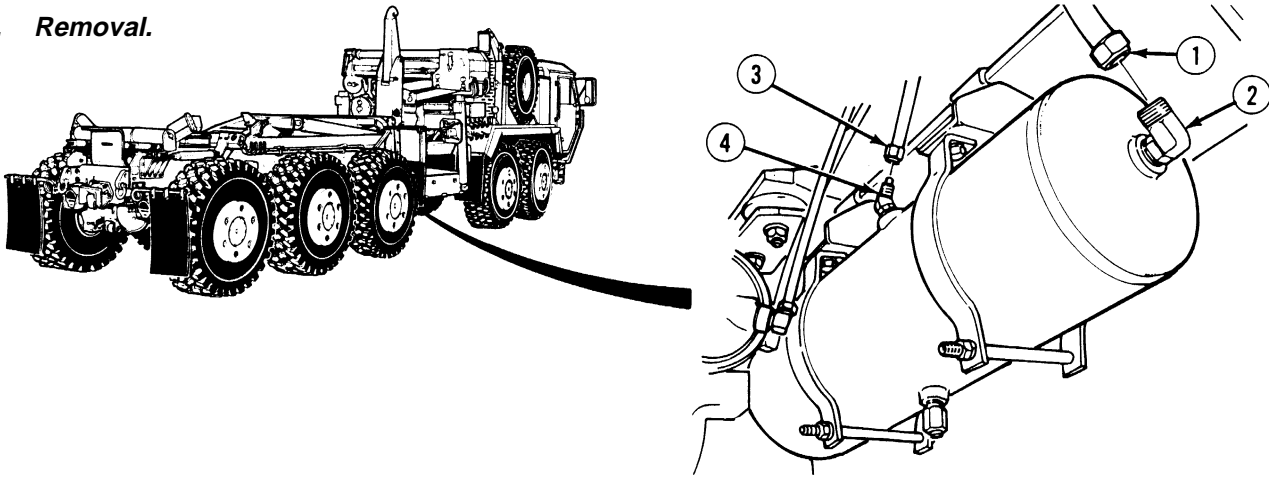
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 2320-364-10)
Air system drained, (TM 9-2320-364-10)

Materials/Parts

Sealing Compound (Item 77, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (4) (Item 91, Appendix F)
Locknut (2) (Item 140, Appendix F)
Lockwasher (4) (Item 168, Appendix F)

a. Removal.



NOTE

Tag and mark air lines prior to removal.

- (1) Remove air line 2793 (1) from elbow (2).
- (2) Remove air line 2376 (3) from elbow (4).

- (3) Remove two screws (5), lockwashers (6), washers (7) and mounting clips (8) from air reservoir brackets (9). Discard lockwasher.
- (4) Loosen four locknuts (10) and screws (11) from air reservoir mounting brackets (12).

WARNING

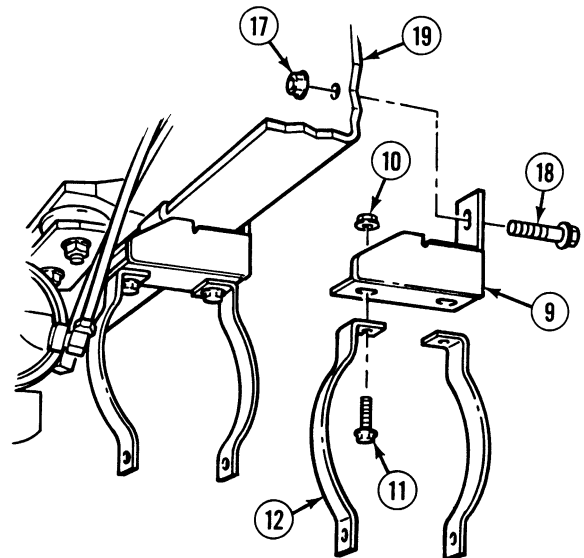
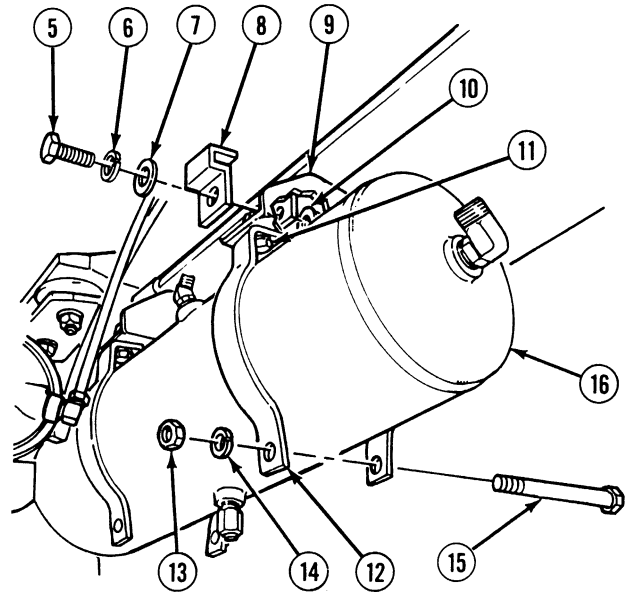
Air reservoir will fall when screws are removed. Support air reservoir prior to removing screws to prevent injury to personnel.

- (5) With the aid of an assistant, remove two nuts (13), lockwashers (14) and screws (15) from four air reservoir mounting brackets (12). Discard lockwashers.

NOTE

Note position of air reservoir prior to removal.

- (6) Remove air reservoir (16) from two air reservoir mounting brackets (12).
- (7) Remove four locknuts (10), screws (11) and air reservoir mounting brackets (12) from two air reservoir brackets (9). Discard locknuts.
- (8) Remove two locknuts (17), screws (18) and air reservoir brackets (9) from frame (19). Discard locknut.

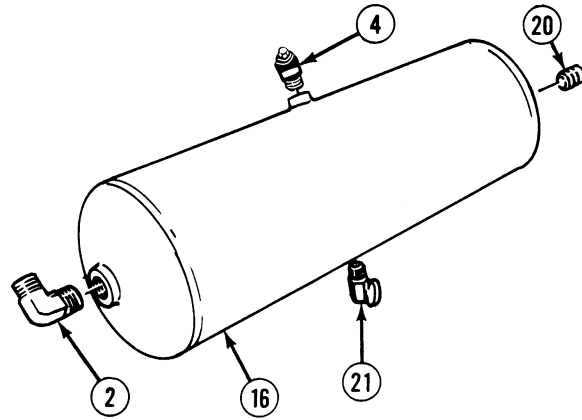


12-30. AIR RESERVOIR NO. 4 REPLACEMENT (CONT).

NOTE

Note location and position of elbows prior to removal.

- (9) Position air reservoir (16) in soft jawed vise.
- (10) Remove plug (20) from air reservoir (16).
- (11) Remove elbow (2) from air reservoir (16).
- (12) Remove elbow (4) from air reservoir (16).
- (13) Remove drain valve (21) from air reservoir (16).
- (14) Remove air reservoir (16) from soft jawed vise.



b. Cleaning/Inspection.

- (1) Clean sealant from pipe threads.
- (2) Inspect threads, fittings and tank for cracks, broken welds and stripped threads.
- (3) Replace all damaged parts.

c. Installation.

WARNING

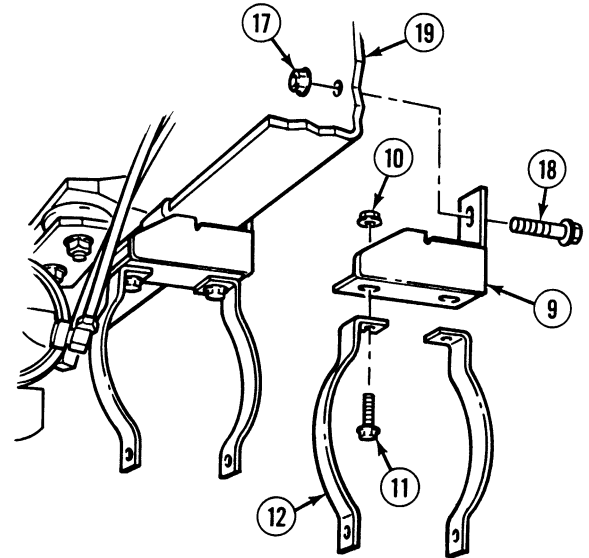
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

Install elbows as noted prior to removal.

- (1) Position air reservoir (16) in soft jawed vise.
- (2) Apply sealing compound to threads of drain valve (21).
- (3) Install drain valve (21) in air reservoir (16).
- (4) Apply sealing compound to threads of elbow (4).
- (5) Install elbow (4) in air reservoir (16).
- (6) Apply sealing compound to threads of elbow (2).
- (7) Install elbow (2) in air reservoir (16).
- (8) Apply sealing compound to threads of pipe plug (20).
- (9) Install pipe plug (20) in air reservoir (16).
- (10) Remove air reservoir (16) from soft jawed vise.

- (11) Install two air reservoir brackets (9), screws (18) and locknuts (17) on frame (19).
- (12) Position four air reservoir mounting brackets (12), screws (11) and locknuts (10) on air reservoir bracket (9).

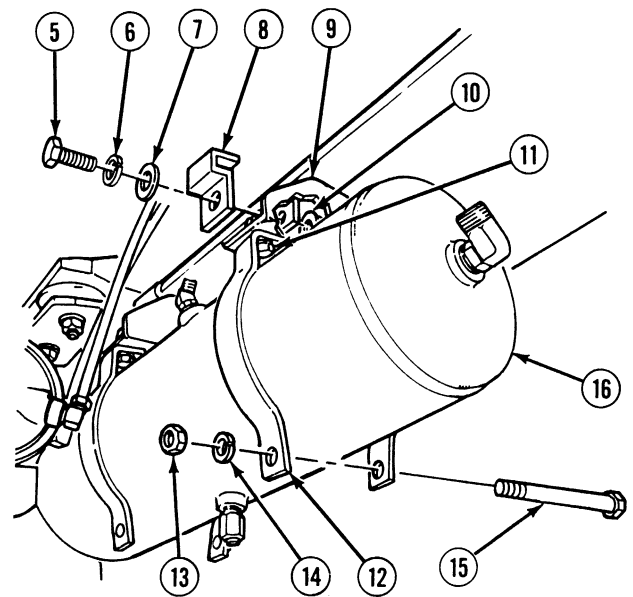


- (13) Position air reservoir (16) in four air reservoir mounting brackets (12).

NOTE

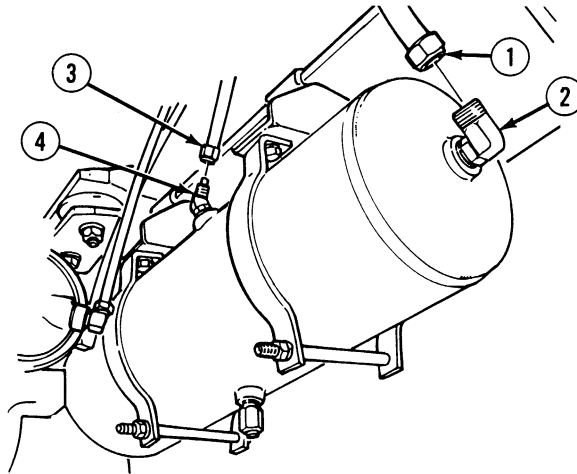
When assembling air reservoirs and mounting brackets, do not over tighten nut and lockwasher. Tighten nut until lockwasher is fully compressed.

- (14) Install two screws (15), lockwashers (14) and nuts (13) in four air reservoir mounting brackets (12).
- (15) Tighten four locknuts (10) and screws (11) on brackets (12).
- (16) Install two mounting clips (8), washers (7), lockwashers (6) and screws (5) on air reservoir brackets (9).



12-30. AIR RESERVOIR NO. 4 REPLACEMENT (CONT).

- (17) Install air line 2376 (3) on elbow (4).
- (18) Install air line 2793 (1) on elbow (2).



d. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-31. AIR RESERVOIR NO. 5 REPLACEMENT.

This task covers:

- a. Removal
- b. Installation
- c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

- Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
- Cap, Vise Jaw (Item 9, Appendix G)
- Vise, Machinist's (Item 75, Appendix G)
- Wrench, Combination 1-1/8 in. (Item 79, Appendix G)

Materials/Parts

- Sealing Compound (Item 77, Appendix C)
- Tags, Identification (Item 88, Appendix C)
- Locknut (4) (Item 91, Appendix F)

Materials/Parts - Continued

- Locknut (2) (Item 133, Appendix F)
- Locknut (Item 140, Appendix F)
- Lockwasher (4) (Item 168, Appendix F)

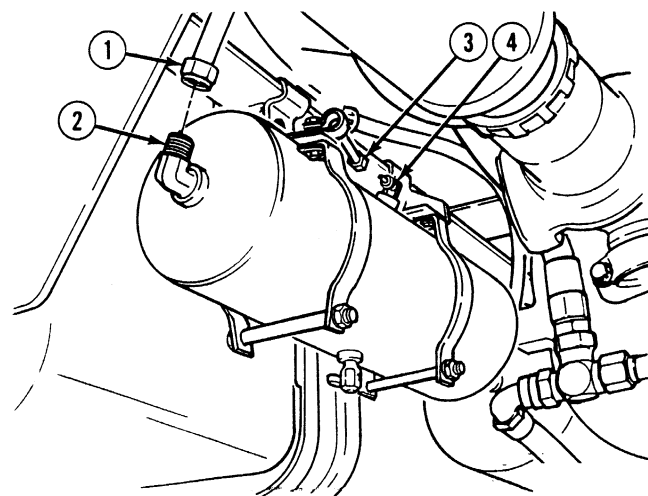
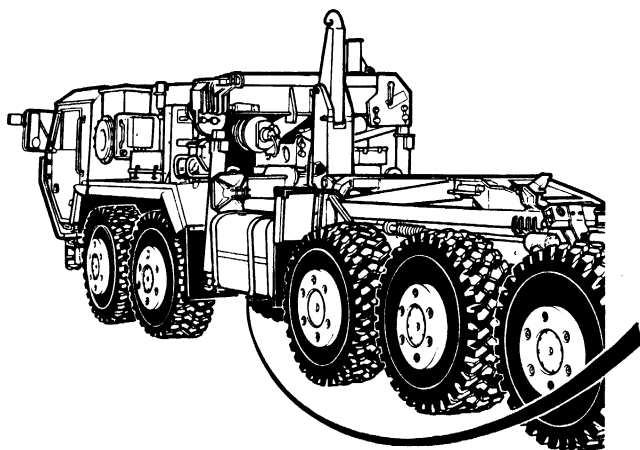
Personnel Required

Two

Equipment Condition

- Engine OFF, (TM 9-2320-364-10)
- Wheels chocked, (TM 9-2320-364-10)
- Air system drained, (TM 9-2320-364-10)

a. Removal.



NOTE

Tag and mark air lines prior to removal.

- (1) Remove air line 2794 (1) from elbow (2).
- (2) Remove air line 2375 (3) from elbow (4).

12-31. AIR RESERVOIR NO. 5 REPLACEMENT (CONT).

- (3) Loosen four locknuts (5) and screws (6), from two air reservoir mounting brackets (7).
- (4) Remove two screws (8), lockwashers (9), washers (10) and mounting clips (11) from two air reservoir brackets (7). Discard lockwashers.

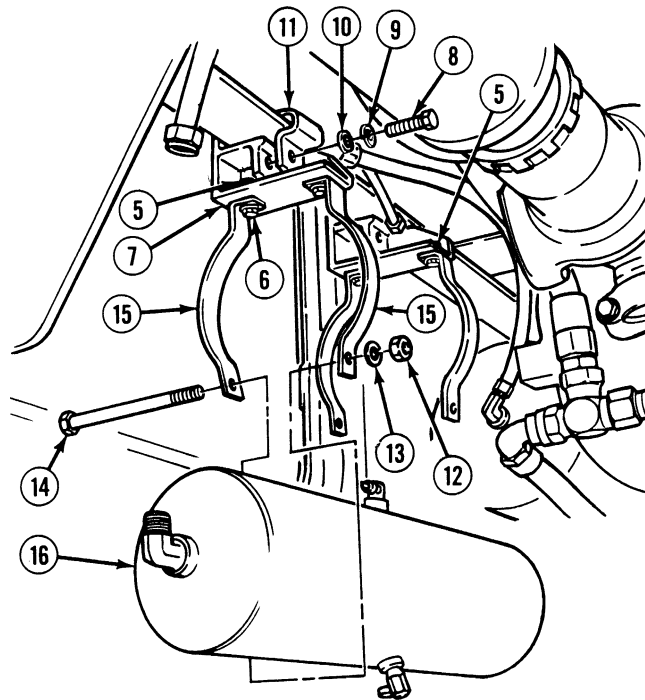
WARNING

Air reservoir will fall when screws are removed. Support air reservoir prior to removing screws to prevent injury to personnel.

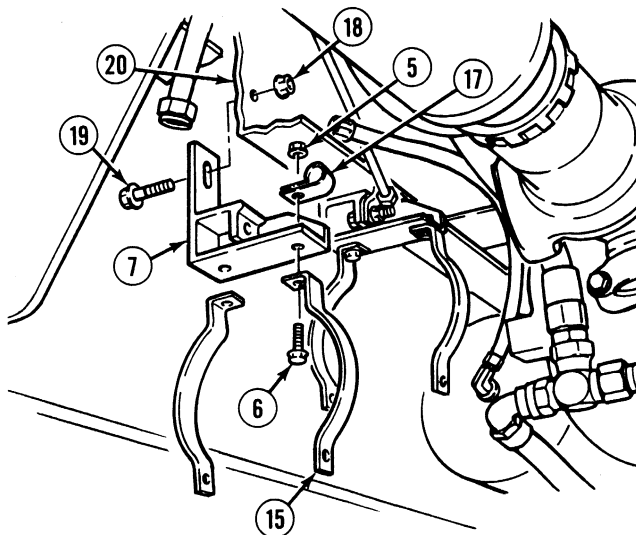
NOTE

Note position of air reservoir prior to removal.

- (5) With the aid of an assistant, remove two nuts (12), lockwashers (13), screws (14) from four air reservoir mounting brackets (15). Discard lockwashers.
- (6) Remove air reservoir (16) from four air reservoir mounting brackets (15).



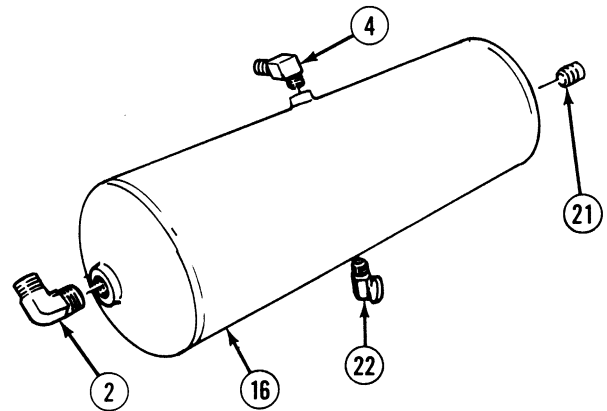
- (7) Remove four locknuts (5), screws (6), cushion clamp (17) and four air reservoir mounting brackets (15) from two air reservoir brackets (7). Discard locknuts.
- (8) Remove two locknuts (18), screws (19) and air reservoir brackets (7) from frame (20). Discard locknuts.



NOTE

Note position of elbows prior to removal.

- (9) Position air reservoir (16) in soft jawed vise.
- (10) Remove plug (21) from air reservoir (16).
- (11) Remove elbow (2) from air reservoir (16).
- (12) Remove elbow (4) from air reservoir (16).
- (13) Remove drain valve (22) from air reservoir (16).
- (14) Remove air reservoir (16) from vise.

**b. Cleaning/Inspection.**

- (1) Clean sealant from pipe threads.
- (2) Inspect threads, fittings and tank for cracks, broken welds and stripped threads.
- (3) Replace all damaged parts.

c. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire, and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

Install elbows as noted prior to removal.

- (1) Position air reservoir (16) in soft jawed vise.
- (2) Apply sealing compound to threads of drain valve (22).
- (3) Install drain valve (22) in air reservoir (16).
- (4) Apply sealing compound to threads of elbow (4).
- (5) Install elbow (4) in air reservoir (16).
- (6) Apply sealing compound to threads of elbow (2).
- (7) Install elbow (2) in air reservoir (16).
- (8) Apply sealing compound to threads of plug (21).
- (9) Install plug (21) in air reservoir (16).
- (10) Remove air reservoir (16) from soft jawed vise.

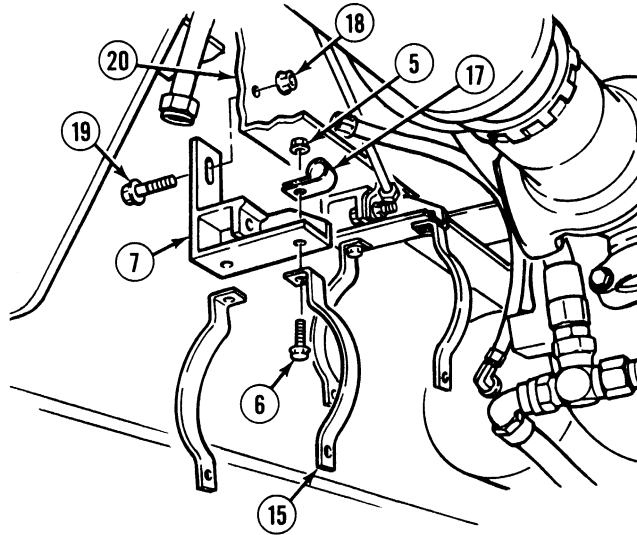
12-31. AIR RESERVOIR NO. 5 REPLACEMENT (CONT).

- (11) Install two air reservoir brackets (7), screws (19) and locknut (18) on frame (20).

NOTE

Cushion clamp is installed with same mounting hardware that mounts inside rear air reservoir mounting bracket.

- (12) Install four air reservoir mounting brackets (15), screws (6), cushion clamp (17) and four locknuts (5) on two air reservoir brackets (7).

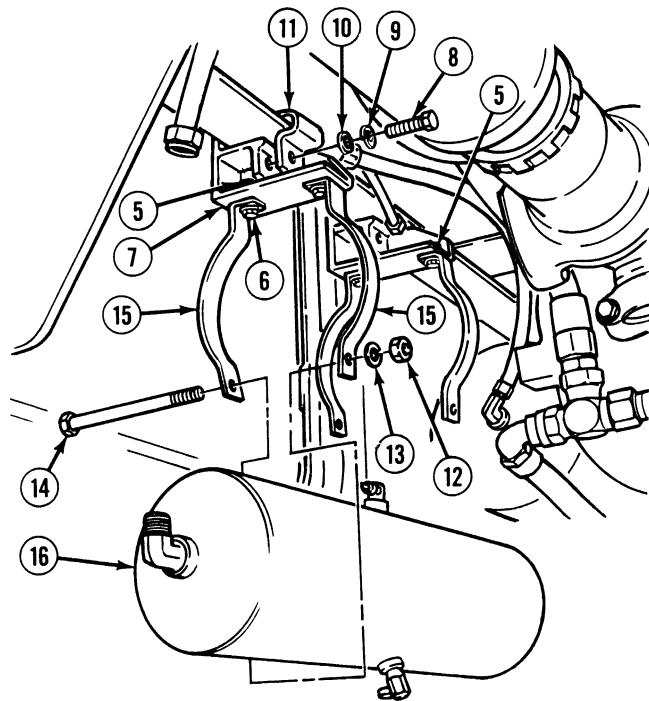


- (13) With the aid of an assistant, position air reservoir (16) in four air reservoir mounting brackets (15).

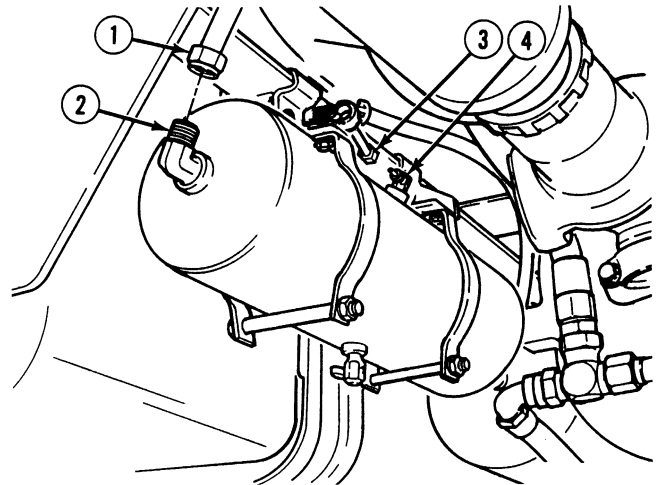
NOTE

When assembling air reservoirs and mounting brackets, do not over tighten nut and lockwasher. Tighten nut until lockwasher is fully compressed.

- (14) With the aid of an assistant, install two screws (14), lockwashers (13) and nuts (12) in four air reservoir mounting brackets (15). Tighten nut until lockwasher is compressed.
- (15) Tighten two nuts (12) and screws (14) on brackets (15).
- (16) Install two mounting clips (11), washers (10), lockwashers (9) and screws (8) on air reservoir bracket (7).



- (17) Install air line 2375 (3) on elbow (4).
- (18) Install air line 2794 (1) on elbow (2).



d. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

b. Installation.**NOTE**

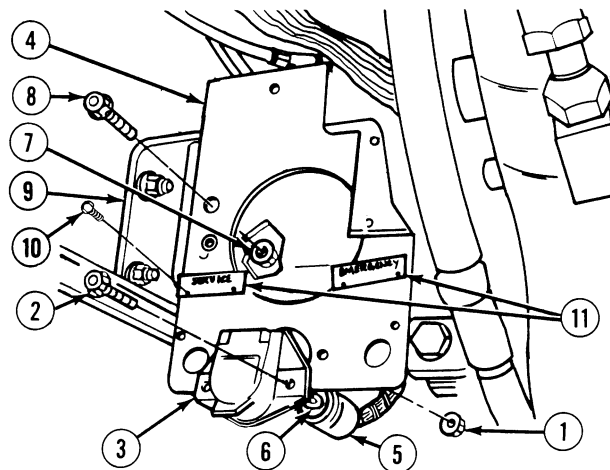
If truck is equipped with an arctic kit, position front gladhand bracket between front crossmember and arctic pump bracket during installation.

- (1) Install front gladhand bracket (4) on front crossmember (9) with four screws (8) and locknuts (7).

NOTE

Perform Step (2) if name plates were removed.

- (2) Install two nameplates (11) on front gladhand bracket (4) with four drive screws (10).
- (3) Insert connector wires (6) in slot of front gladhand bracket (4). Slide rubber boot (5) forward.
- (4) Install connector (3) on front gladhand bracket (4) with two screws (2) and locknuts (1).

**c. Follow-On Maintenance:**

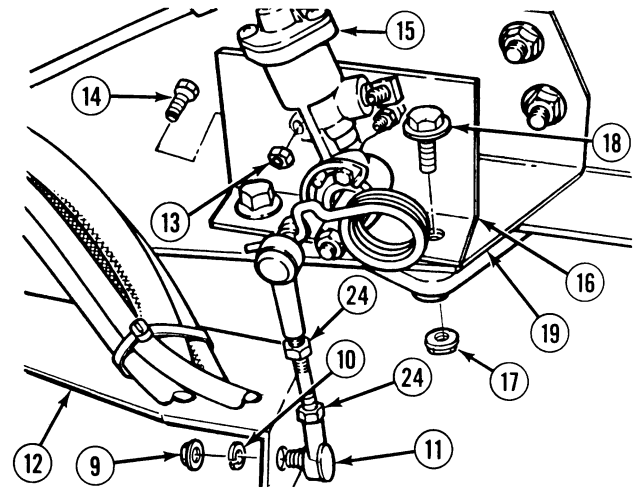
- Install front double check valves, (Para 12-11).
- Install front gladhands, (Para 12-43).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

NOTE

Left hand load sensing valve shown.

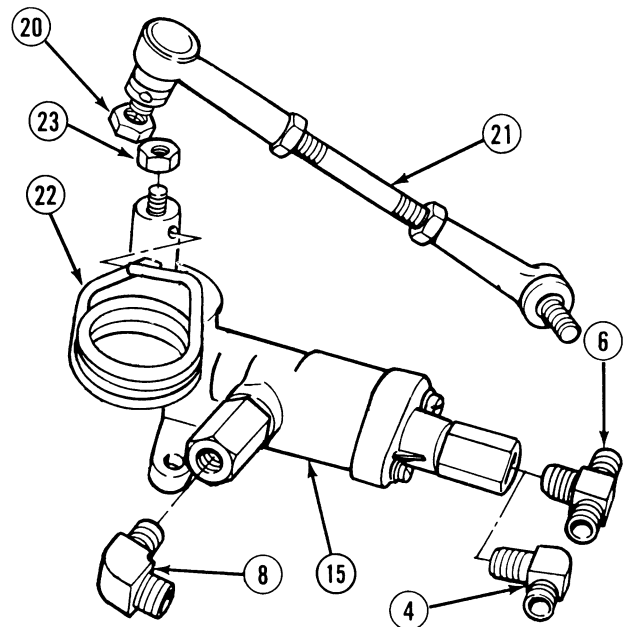
- (5) Remove nut (9), lockwasher (10) and lower head link (11) from axle bracket (12). Discard lockwasher.
- (6) Remove two locknuts (13), screws (14) and load sensing valve (15) from load sensing valve bracket (16). Discard locknuts.
- (7) Remove two locknuts (17), screws (18) and load sensing valve bracket (16) from frame (19). Discard locknut.
- (8) Loosen jam nut (20) and remove link assembly (21) from control spring (22).
- (9) Loosen jam nut (23) and remove control spring (22) from load sensing valve (15).



NOTE

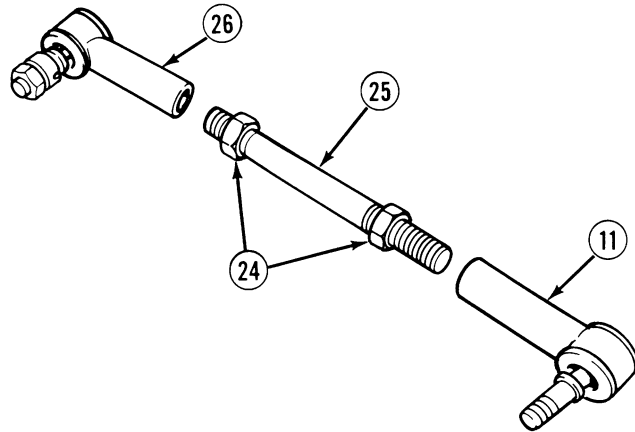
- If removing left side load sensing valve shown, perform Step (10).
- If removing right side load sensing valve, perform Step (11).
- Note location of elbows and tees prior to removal.

- (10) Remove two elbows (8) and (4) from load sensing valve (15).
- (11) Remove elbow (8) and tee (6) from load sensing valve (15).



12-33. LOAD SENSING VALVE REPLACEMENT (CONT).

- (12) Loosen two locknuts (24) on metric rod (25).
- (13) Remove lower head link (11), upper head link (26) and two locknuts (24) from metric rod (25).



b. Installation.

- (1) Position two locknuts (24), upper head link (26) and lower head link (11) on metric rod (25).

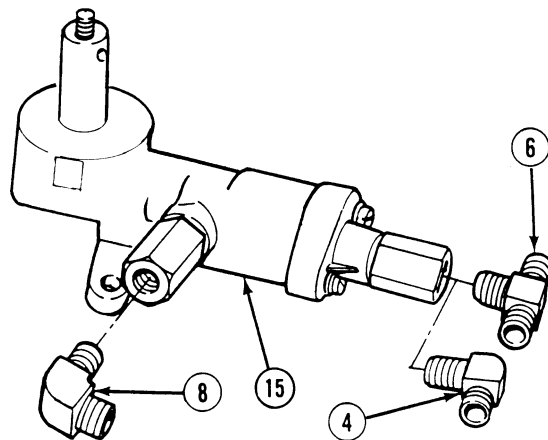
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

- Perform Steps (2) and (3) if left side load sensing valve was removed.
- Perform Steps (4) and (5) if right side load sensing valve was removed.
- Install elbows and tees in positions noted prior to removal.

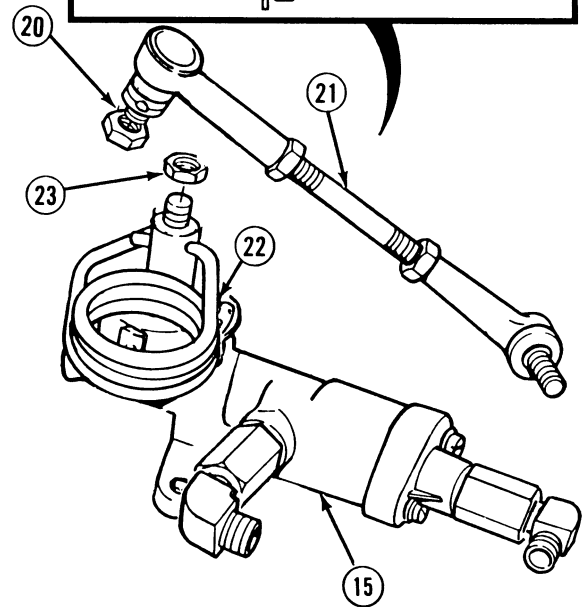
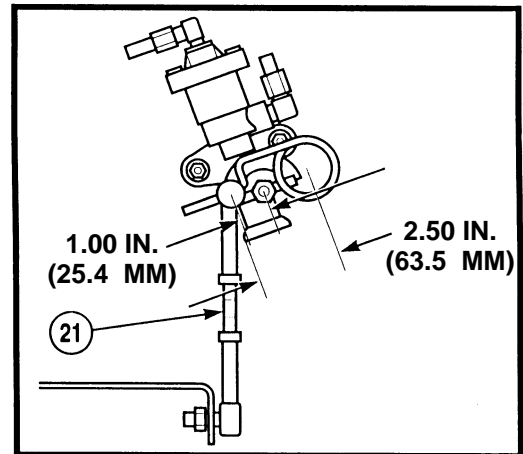
- (2) Apply sealing compound to threads of elbows (4) and (8).
- (3) Install elbows (4) and (8) on load sensing valve (19).
- (4) Apply sealing compound to threads of elbow (8) and tee (6).
- (5) Install elbow (8) and tee (6) on load sensing valve (15).



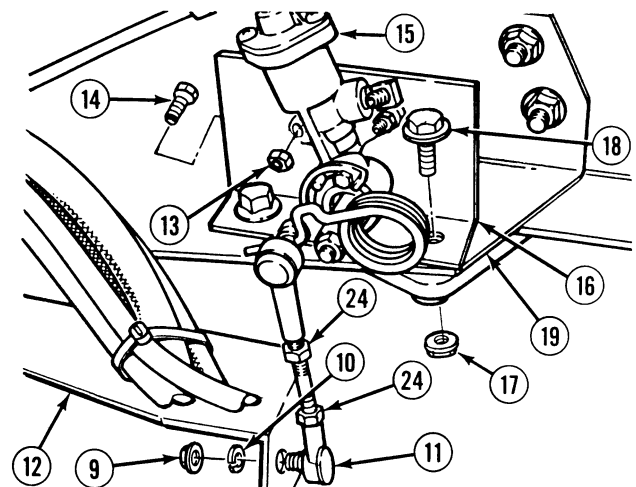
NOTE

- Threads of link assembly must be threaded 1.57 ± 0.06 in. (39.88 ± 1.52 mm) in both the upper and lower head link.
- When installing upper head link, ensure distance is 1 in. (25.4 mm) between center of upper head link and center of control spring jam nut.

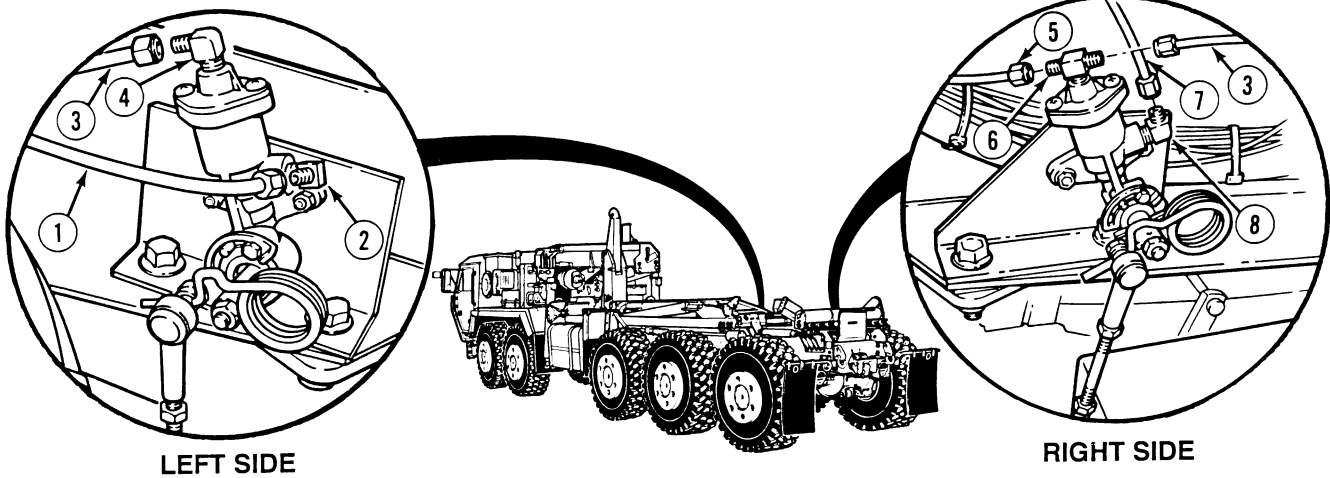
- (6) Install link assembly (21) and control spring (22) on load sensing valve (15) with jam nuts (20) and (23). Tighten jam nuts (20) and (23).
- (7) Install load sensing valve bracket (16) on frame (19) with two screws (18) and locknuts (17).



- (8) Install load sensing valve (15) on load sensing valve bracket (16) with two screws (14) and locknuts (13).
- (9) Install lower head link (11), lockwasher (10) and nut (9) on axle bracket (12).
- (10) Tighten two jam nuts (24) on link assembly (21).



12-33. LOAD SENSING VALVE REPLACEMENT (CONT).



NOTE

- Perform Steps (11) and (12) if left side load sensing valve was removed.
- Perform Steps (13) and (14) if right side load sensing valve was removed.

- (11) Connect air line 2374 (3) to elbow (4).
- (12) Connect air line 2375 (1) to elbow (2).
- (13) Connect air line 2374 (3) and air line 2044 (5) to tee (6).
- (14) Connect air line 2376 (7) to elbow (8).

c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Adjust load sensing valves, (Para 12-34).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-34. LOAD SENSING VALVE ADJUSTMENTS.

This task covers:

- | | |
|---|--|
| a. Regulator Adjustment | c. Height Control Adjustment (Left Side) |
| b. Height Control Adjustment (Right Side) | d. Follow-On Maintenance |

INITIAL SETUP*Tools and Special Tools*

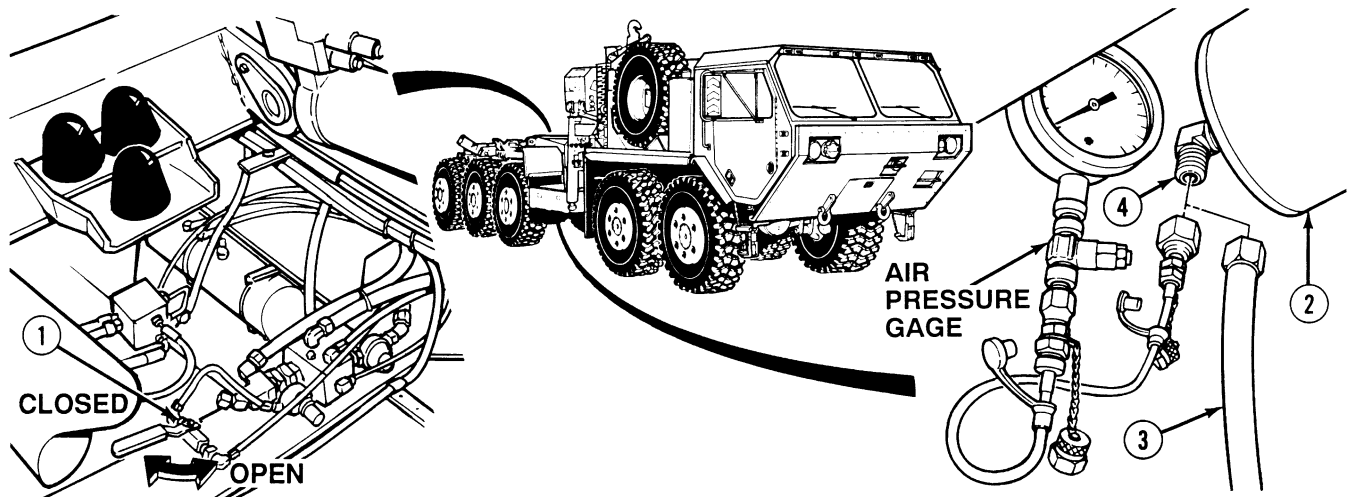
Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Pressure Test Kit (Item 50, Appendix G)
Socket Set, 3/8 in. (Item 62, Appendix G)
Wrench, Torque (0 to 60 N·m)
(Item 98, Appendix G)

Materials/Parts

Lockwasher (Item 179, Appendix F)

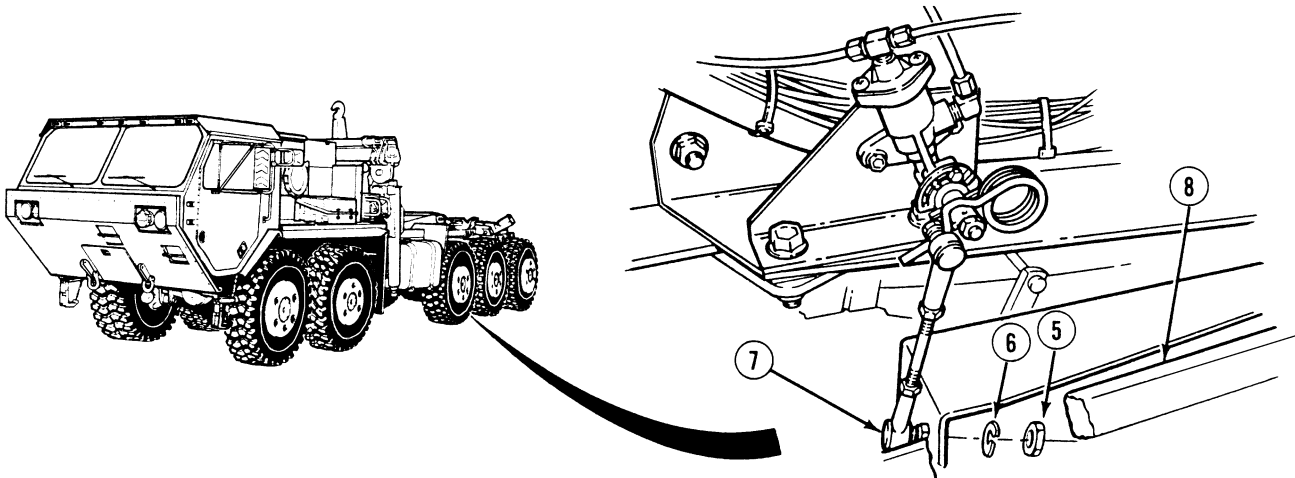
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)

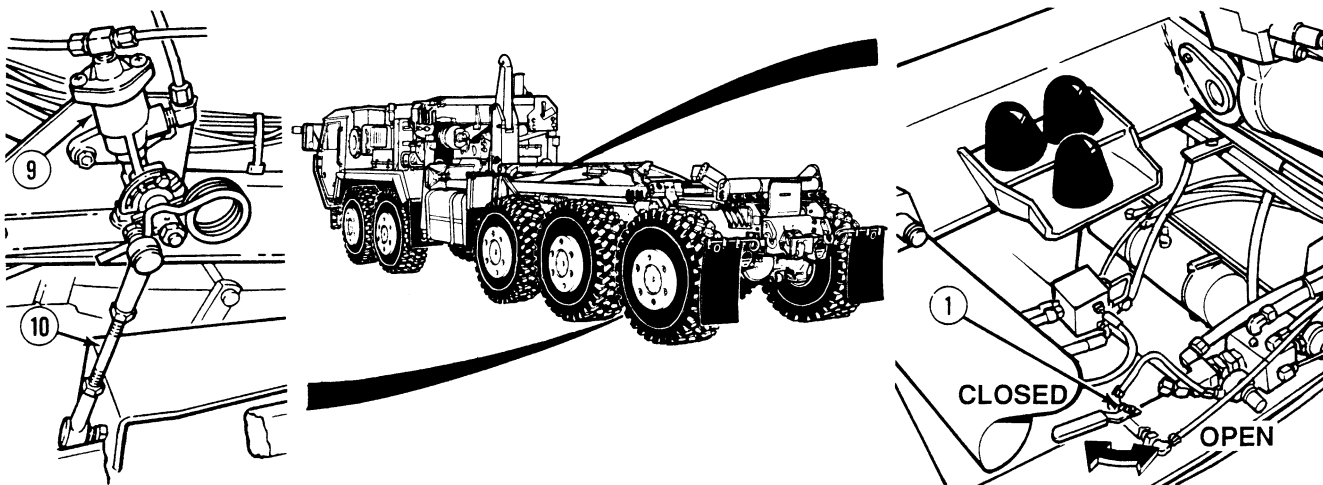
a. Regulator Adjustment.

- (1) Close ball valve (1).
- (2) Drain air from air tank No. 4 (2).
- (3) Disconnect air line 2793 (3) from elbow (4).
- (4) Install air pressure gage on elbow (4).

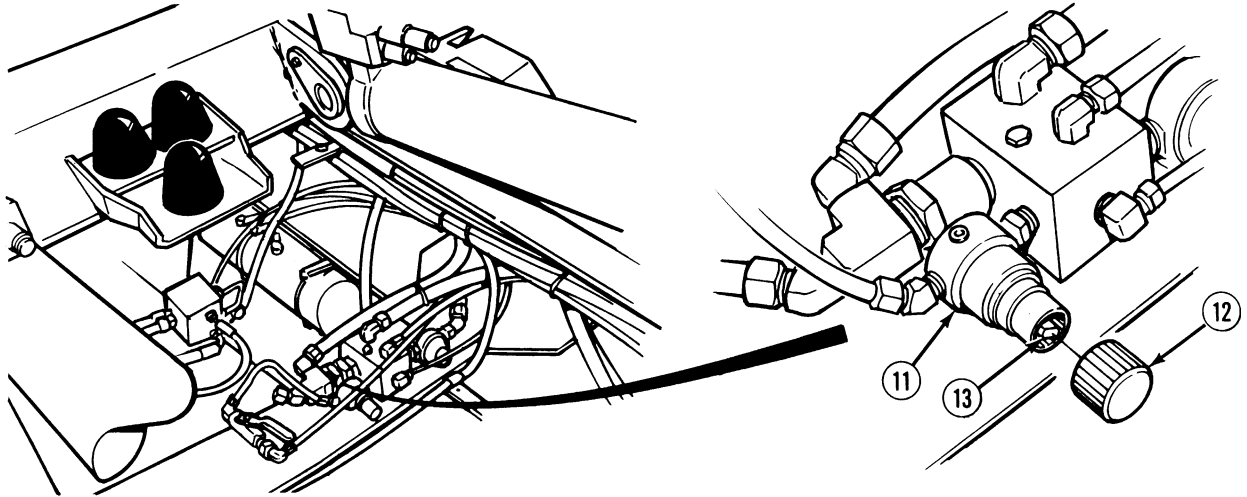
12-34. LOAD SENSING VALVE ADJUSTMENTS (CONT).



- (5) Remove nut (5), lockwasher (6) and right side load sensing valve lower head link (7) from axle bracket (8). Discard lockwasher.
- (6) Start engine, build air pressure to 110 psi (758 kPa).



- (7) Move ball valve (1) to the open position.
- (8) Shut OFF engine.
- (9) Open right side load sensing valve (9) by lifting link assembly (10) upward to its maximum height.

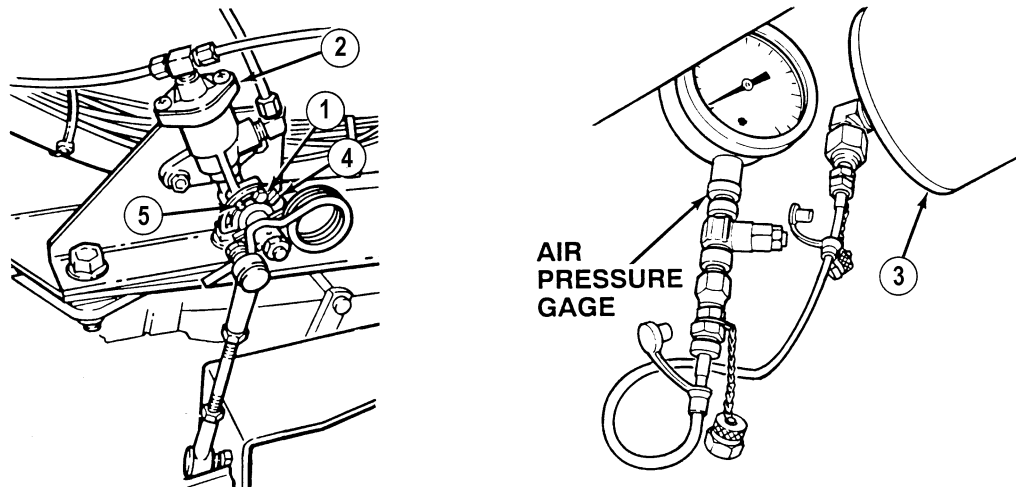


NOTE

Pressure gage should read 75 to 77 psi (517 to 531 kPa). If pressure is within this range proceed to Sub Para **b.** or **c.** of Height Control Adjustment. If not, continue with Step (10).

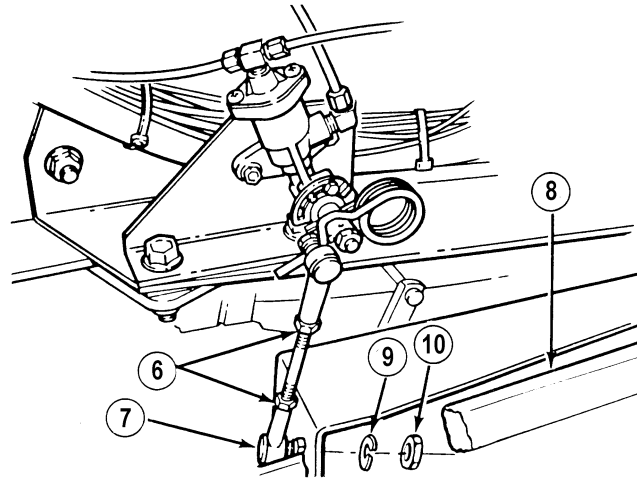
- (10) To adjust pressure regulator (11) remove cap (12) on regulator and turn adjustment screw (13) left to increase pressure, right to decrease pressure. Pressure should be 75 to 77 psi (517 to 531 kPa).

b. Height Control Adjustment (Right Side).

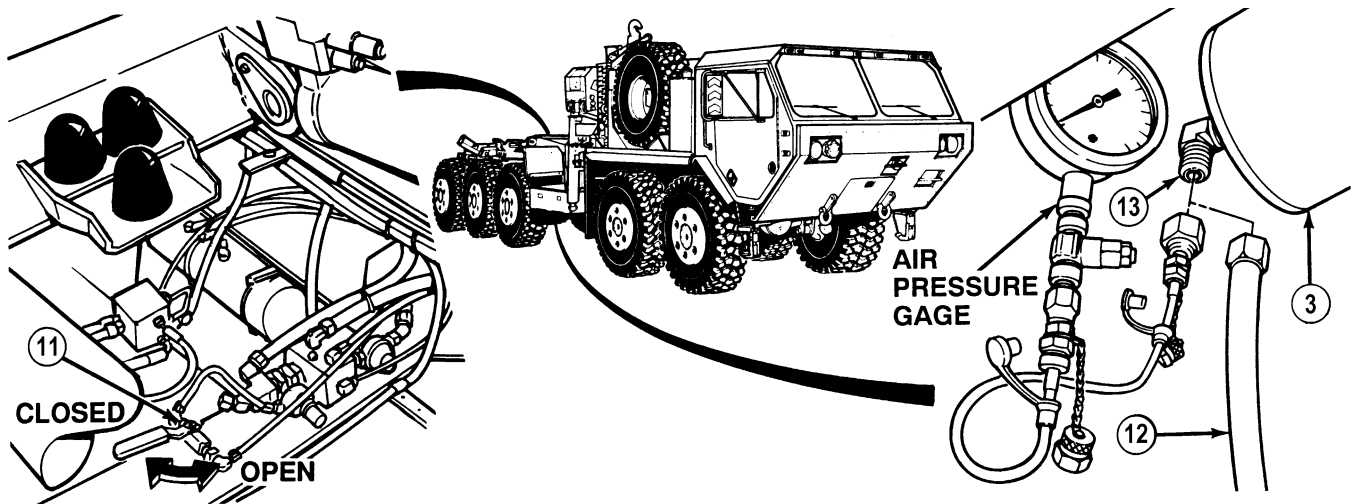


- (1) Start engine and build air pressure to 110 psi (758 kPa).
- (2) Loosen low pressure limit capscrew (1) and adjust load sensing valve (2) until the air pressure gage connected to air tank No. 4 (3) reads 31 psi (214 kPa) \pm 2 psi (\pm 14 kPa).
- (3) Rotate low pressure stop (4) until tab on the stop touches the control shaft cross pin (5). Tighten capscrew (1) to 72 to 84 lb-in (8 to 9 N·m).

12-34. LOAD SENSING VALVE ADJUSTMENTS (CONT).



- (4) Loosen two jam nuts (6) and adjust link assembly (7) to align with hole in axle bracket (8).
- (5) Tighten two jam nuts (6).
- (6) Install link assembly (7) on axle bracket (8) with lockwasher (9) and nut (10).



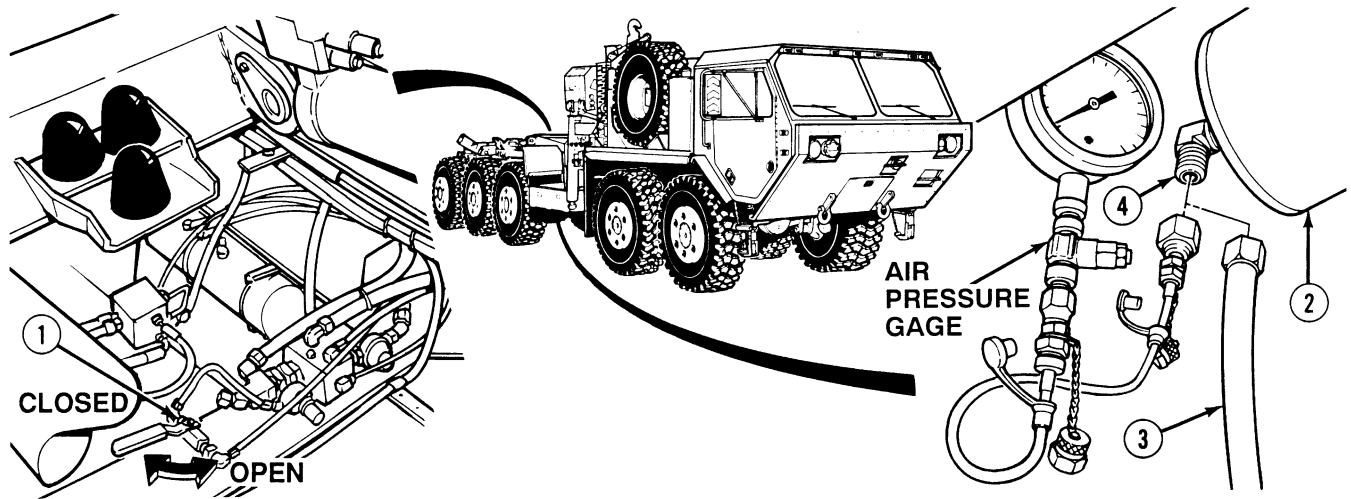
- (7) Close ball valve (11).
- (8) Shut OFF engine.
- (9) Drain the air from air tank No. 4 (3).
- (10) Remove the air pressure gage from air tank No. 4 (3).
- (11) Connect air line 2793 (12) to elbow (13).

NOTE

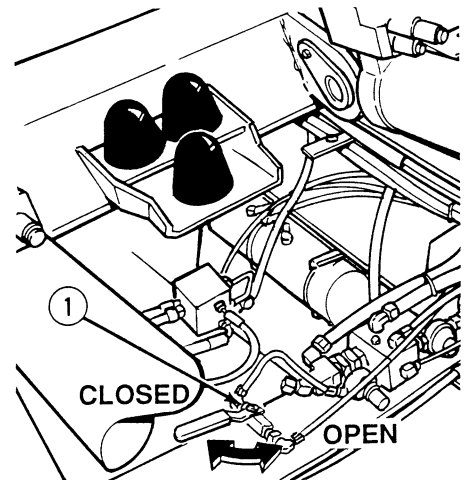
Ball valve must remain open for normal truck operation.

- (12) Open ball valve (11).

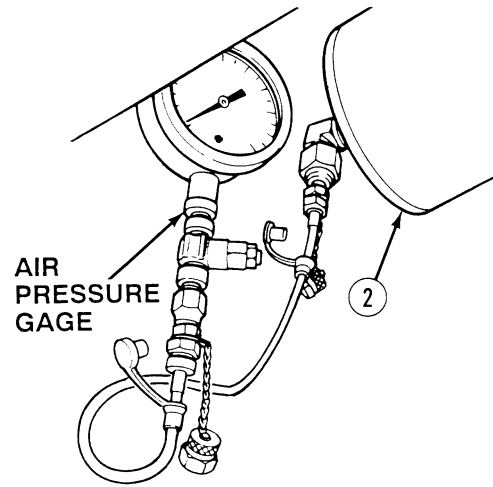
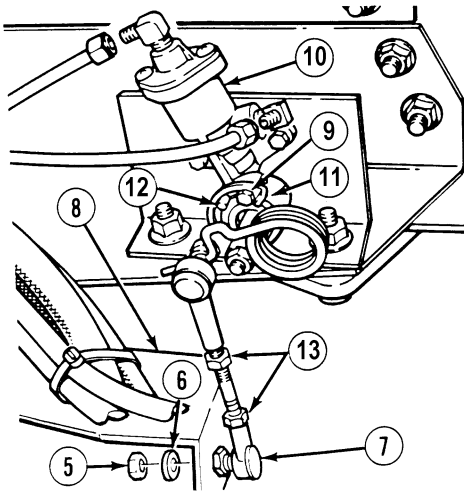
c. Height Control Adjustment (Left Side)



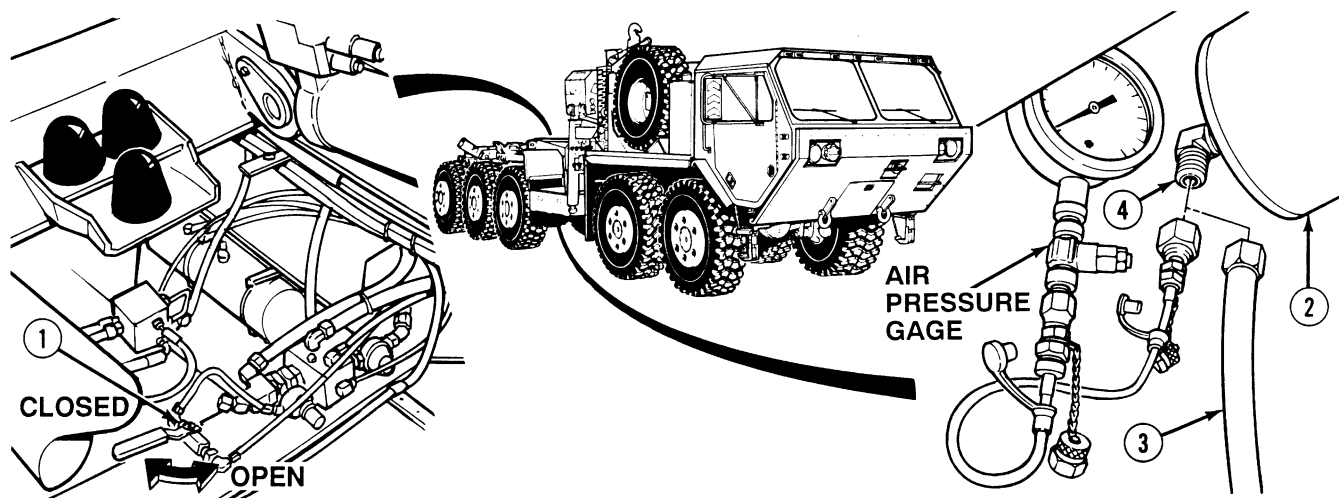
- (1) Close ball valve (1).
- (2) Drain air from air tank No. 5 (2).
- (3) Disconnect air line 2794 (3) from elbow (4).
- (4) Install air pressure gage on elbow (4).
- (5) Start engine and build air pressure to 110 psi (758 kPa).
- (6) Move ball valve (1) to open position.
- (7) Shut OFF engine.



12-34. LOAD SENSING VALVE ADJUSTMENT (CONT).



- (8) Remove nut (5), lockwasher (6) and link assembly (7) from axle bracket (8). Discard lockwasher.
- (9) Loosen low pressure limit capscrew (9) and adjust the load sensing valve (10) until the pressure gage assembly connected to air tank No. 5 (2) reads 31 psi (214 kPa) \pm 2 psi (14 \pm kPa).
- (10) Rotate low pressure stop (11) until tab on the stop touches the control shaft cross pin (12). Tighten capscrew (10) to 72 to 84 lb-in (8 to 9 N·m).
- (11) Loosen two jam nuts (13) and adjust link assembly (7) to align with hole in axle bracket (8).
- (12) Tighten two jam nuts (13).
- (13) Install link assembly (7) on axle bracket (8) with lockwasher (6) and nut (5).



- (14) Close ball valve (1).
- (15) Drain air from air tank No. 5 (2).
- (16) Remove pressure gage assembly from air tank No. 5 (2).
- (17) Connect air line 2794 (3) to elbow (4).

NOTE

Ball valve handle must remain open for normal truck operation.

- (18) Open ball valve (1).

d. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-35. AIR DRYER RESERVOIR REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Materials/Parts

Sealing Compound (Item 77, Appendix C)
Lockwasher (2) (Item 168, Appendix F)

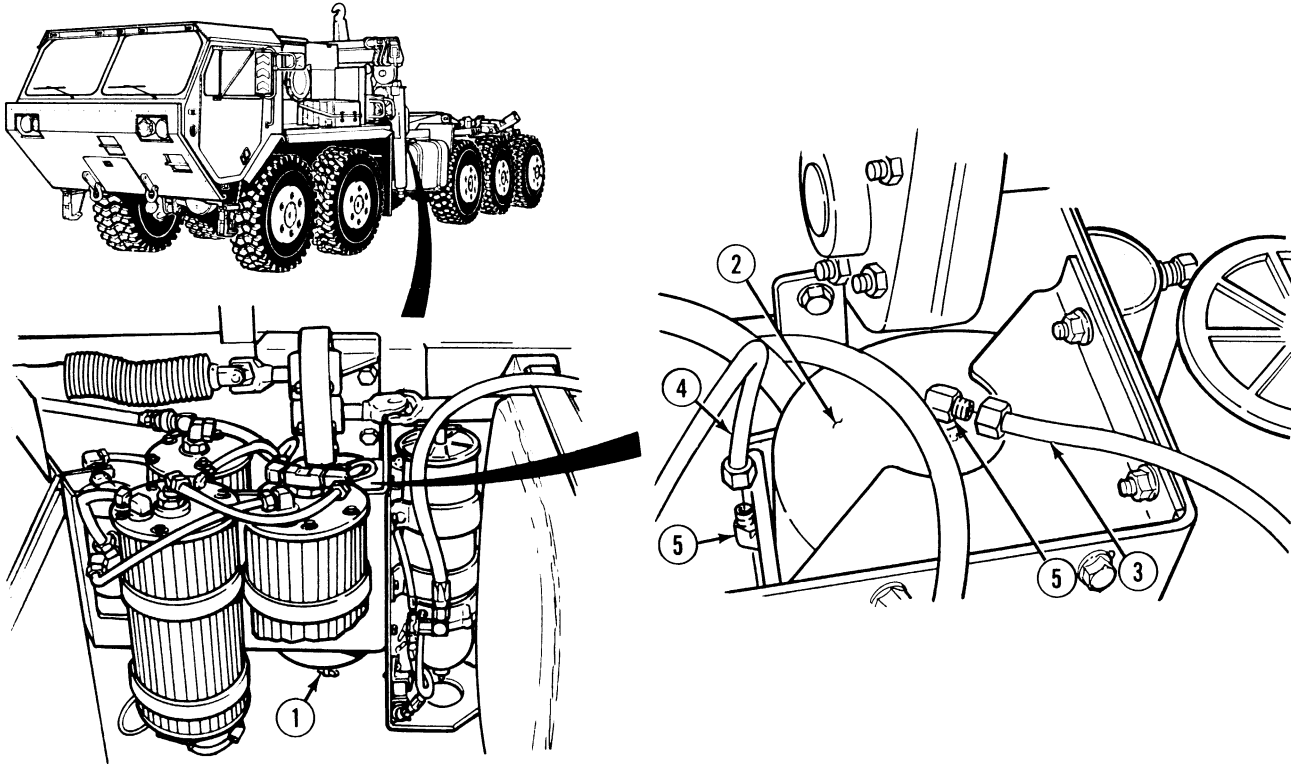
Personnel Required

Two

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air dryer guard removed (if equipped),
(Para 12-19)

a. Removal.

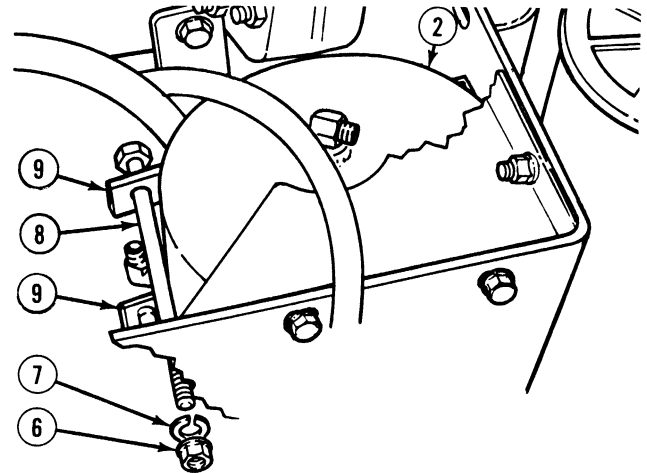


- (1) Open drain valve (1) and drain air from air reservoir (2).
- (2) Remove air lines 2031 (3) and 2030 (4) from two elbows (5).

WARNING

Air reservoir will fall when screws are removed. Support air reservoir prior to removing screws to prevent injury to personnel.

- (3) With the aid of an assistant, remove two nuts (6), lockwashers (7), screws (8) and air reservoir (2) from two brackets (9). Discard lockwashers.



NOTE

Note position of elbows, plug and drain valve prior to removal.

- (4) Remove two elbows (5), drain valve (1) and plug (10) from air reservoir (2).

b. Installation.

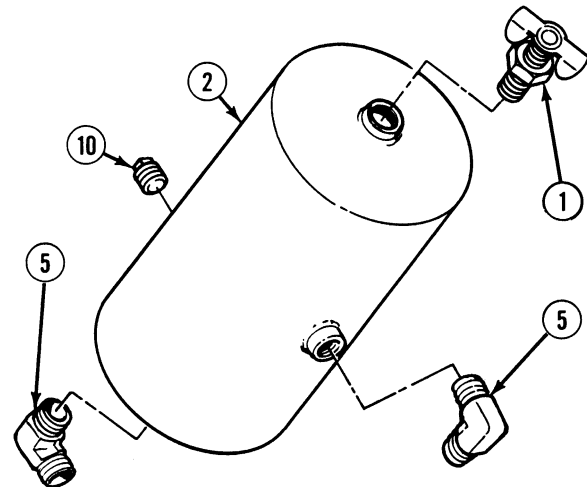
WARNING

Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

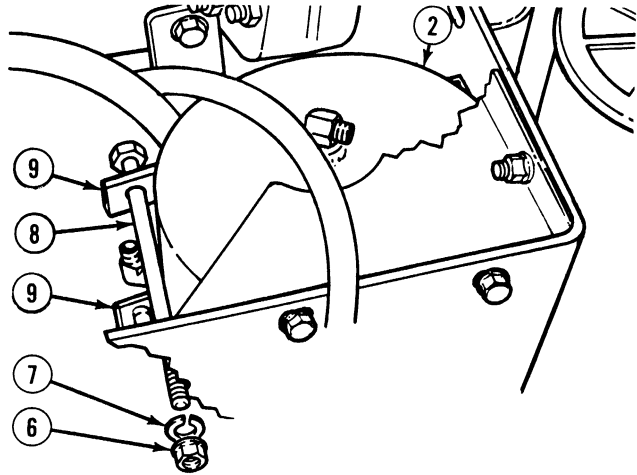
Install elbows, plug and drain valve as noted prior to removal.

- (1) Apply sealing compound on threads of two elbows (5), drain valve (1) and plug (10).
- (2) Install two elbows (5), drain valve (1) and plug (10) on air reservoir (2).

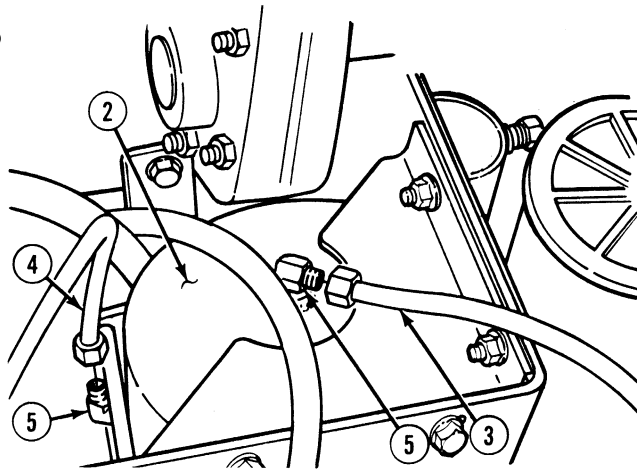


12-35. AIR DRYER RESERVOIR REPLACEMENT (CONT).

- (3) With the aid of an assistant, position reservoir (2) on two brackets (9) and install two screws (8), lockwashers (7) and nuts (6).



- (4) Install air lines 2031 (3) and 2030 (4) on two elbows (5).



c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Install air dryer guard (if equipped), (Para 12-19).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-36. AIR LINE REPLACEMENT.

This task covers:

- a. Air Line Locations b. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Cap and Plug Set (Item 8, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)

Materials/Parts

Cable Ties (Item 86, Appendix C)
Tags, Identification (Item 88, Appendix C)

a. Air Line Locations.


CAUTION

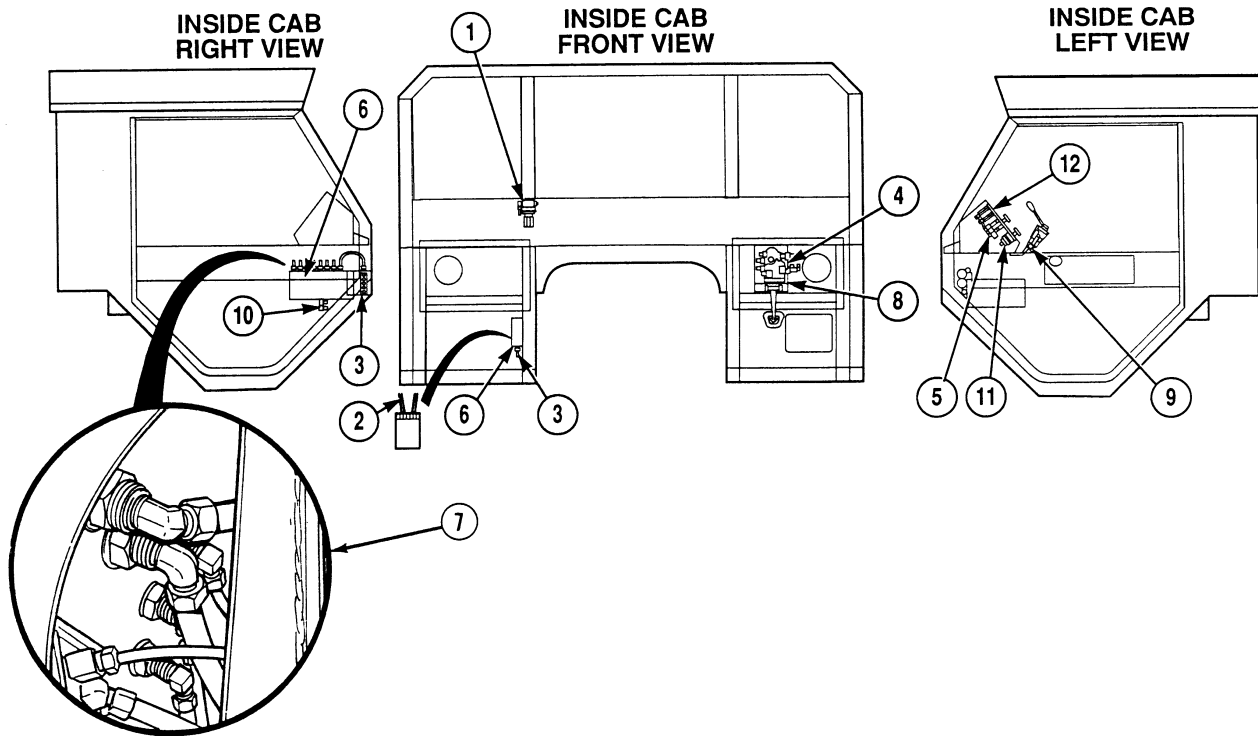
Equipment may be damaged by foreign matter if hoses, air lines, tubes, and connectors are not plugged and capped when removed.

NOTE

- This procedure shows the location of air lines and tubes on the truck. It will never be necessary to remove all air lines and tubes at one time.
- As items are removed, cap and plug all hoses, air lines, tubes and connectors.
- Tag and mark hoses and air lines prior to removal.
- Note location and position of cable ties prior to removal.
- Remove cable ties as required.
- Remove clamps and support brackets as required.
- Inspect all hoses, lines and fittings for cracks, bends, nicks, dents, stripping threads and cuts. Replace all damaged parts.

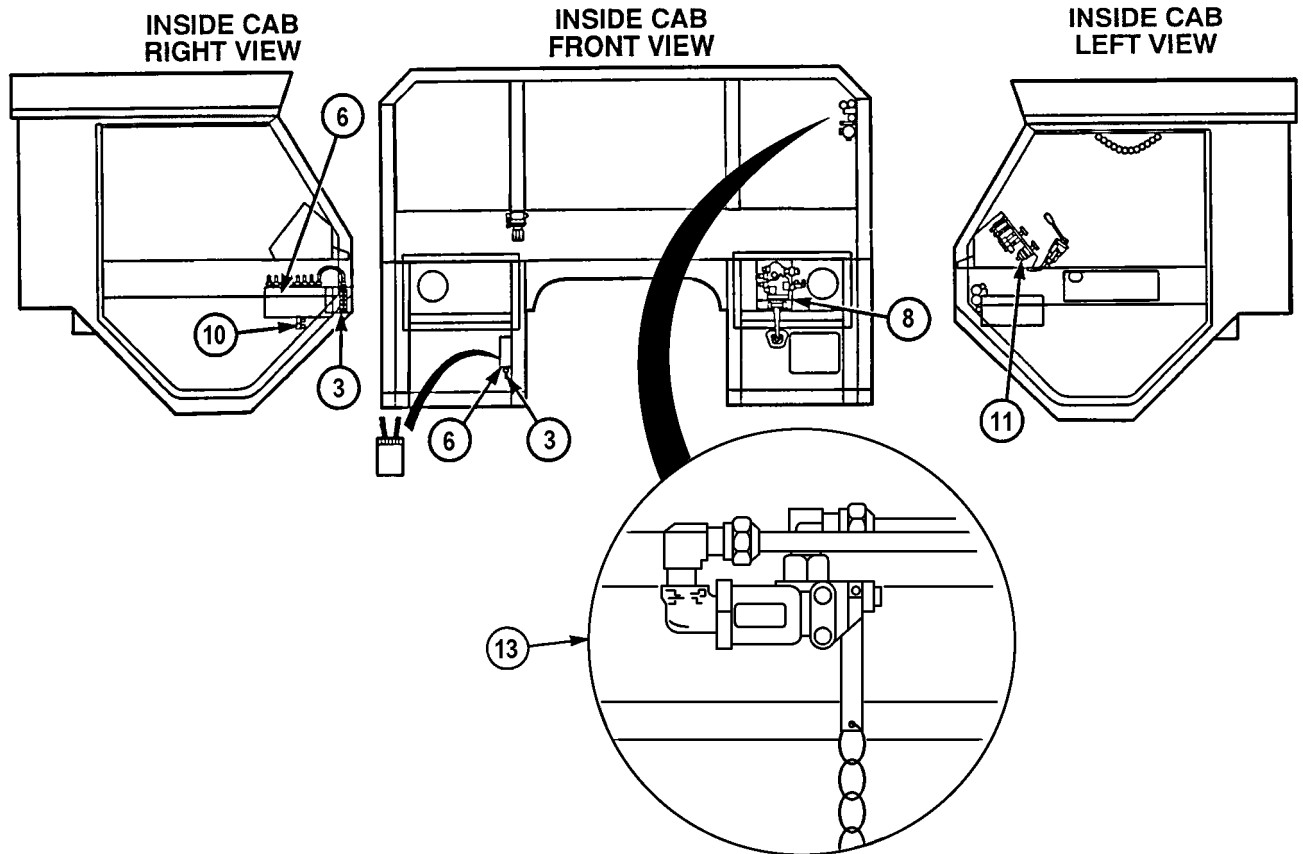
12-36. AIR LINE REPLACEMENT (CONT).

Table 12-3. Cab Air Lines Replacement



Hose No.	From	To
2071	Air Valve Assembly - Rear (1)	Windshield Washer Reservoir Valve Port (2)
2071	Solenoid Valve - Top Rear (3)	Air Valve Assembly - Front (1)
2611	Pressure Switch - Outside Left (4)	Dash Manifold Valve - Center (5)
2381	Air Manifold - Front (6)	Air Restriction Indicator (6)
2069	Solenoid Valve - Bottom Rear (3)	Bulkhead Fitting - Rear (7)
2411	Solenoid Valve - 2nd From Bottom (3)	Bulkhead Fitting - Middle (7)
2073	Brake Treadle Valve - Inside Left (8)	Dash Manifold Valve - Bottom Left (5)
2027	Hand Brake Valve - Bottom Center (9)	Brake Treadle Valve - Outside Left (8)
2923	Solenoid Valve - 3rd From Bottom (3)	Bulkhead Fitting - Front (7)
2006	Dash Manifold Valve Tee - Top Left (5)	Brake Treadle Valve - Top Left (8)
2641	Dash Manifold Valve Tee - Top Right (5)	Air Gage - Top Right (12)
2610	Dash Manifold Valve Tee - Bottom Right (5)	Brake Treadle Valve - Inside Left (8)
2663	Air Manifold - Back (6)	Pressure Switch - Outside Right (4)
2663	Pressure Switch Inside Right (4)	Hand Brake Valve - Right Rear (9)
2074	Air Manifold - 8th From Rear (6)	Solenoid Valve - Top Front (3)
2028	Air Manifold Tee - Top Bottom (10)	Hand Brake Valve - Left Top (9)
2612	Pressure Switch - Inside Left (4)	Air Manifold - 6th From Rear (6)
2662	Air Manifold - 2nd From Rear (6)	Trailer Air Supply Valve - Left (11)

Table 12-3. Cab Air Lines Replacement - CONT.

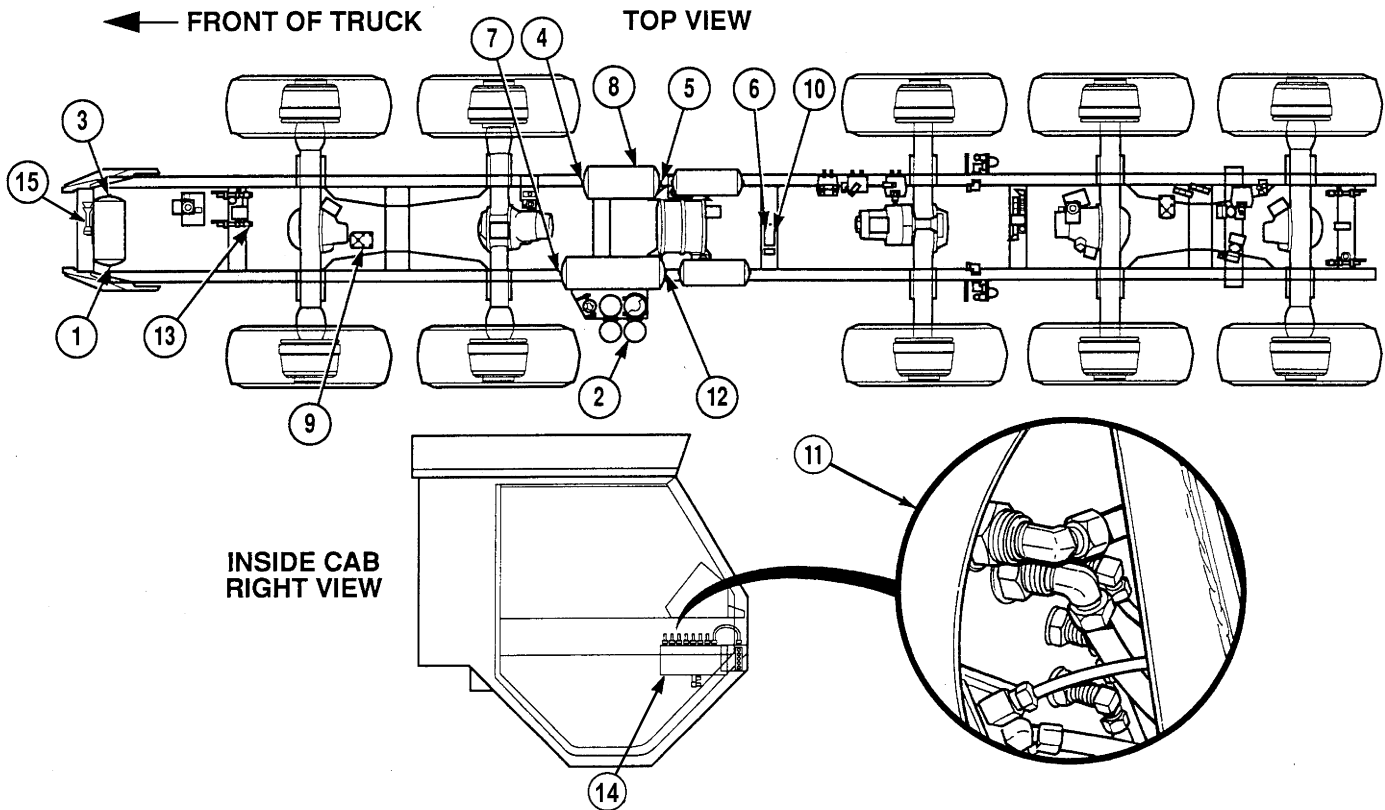


Hose No.	From	To
2619	Brake Treadle Valve - Back Center (8)	Bulkhead Fitting - 4th From Rear (7)
2005	Brake Treadle Valve - Back Top (8)	Bulkhead Fitting - Front (7)
2665	Air Manifold - 5th From Rear (6)	Brake Treadle Valve - Right Top (8)
2623	Air Manifold - 7th From Rear (6)	Brake Treadle Valve - Right Bottom (8)
2488	Brake Treadle Valve - Back Bottom (8)	Air Manifold - 4th From Rear (6)
2489	Brake Treadle Valve - Right Center (8)	Air Manifold - 3rd From Rear (6)
2029	Trailer Air Supply Valve - Right (11)	Air Manifold Tee - Lower Bottom (10)
*2037	Solenoid Valve - Bottom (3)	Air Horn Valve - Rear (13)
*2039	Air Horn Valve - Top (13)	Air Manifold - Bottom front (6)

*If Equipped With Air Horn

12-36. AIR LINE REPLACEMENT (CONT).

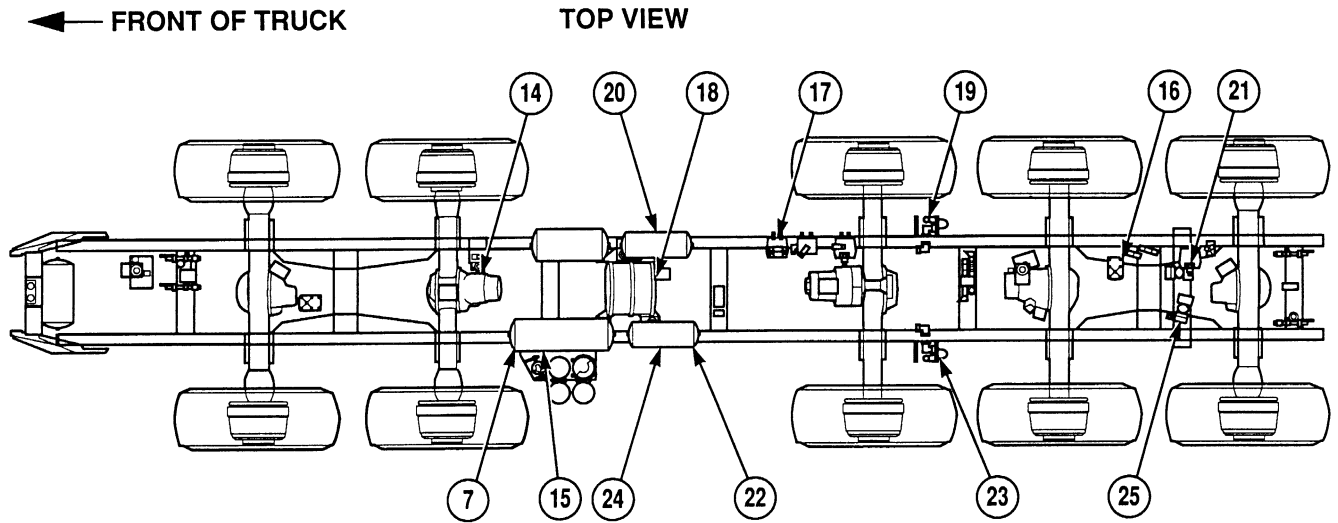
Table 12-4. Chassis Air Lines Replacement



Hose No.	From	To
2002	Air Reservoir No. 1 - Left (1)	Air Dryer - Top Front on Rear Dryer (2)
2184	Air Reservoir No. 1 - Top Right (3)	Air Reservoir No. 2 Tee - Front Bottom (4)
2613	Air Reservoir No. 2 - Rear (5)	Chassis Air Manifold - Right Front (6)
2007	Air Reservoir No. 2 Tee - Front Top (4)	Air Reservoir No. 3 - Front (7)
2536	Air Reservoir No. 2 - Top Center (8)	Service Relay Valve No. 1 - Front (9)
2008	Air Reservoir No. 2 - Top Rear (5)	Pressure Protection Valve - Right Back (10)
2619	Bulkhead Fitting Above Air Manifold - 2nd From Front (11)	Air Reservoir No. 2 - Top Front (8)
2003	Air Reservoir No. 3 - Rear (12)	Chassis Air Manifold Tee - Left Center (6)
2895	Air Reservoir No. 3 - Top Front (7)	Emergency Gladhand - Rear (13)
*2039	Air Manifold - Bottom front (14)	Air Horn - Rear (15)

*If Equipped With Air Horn

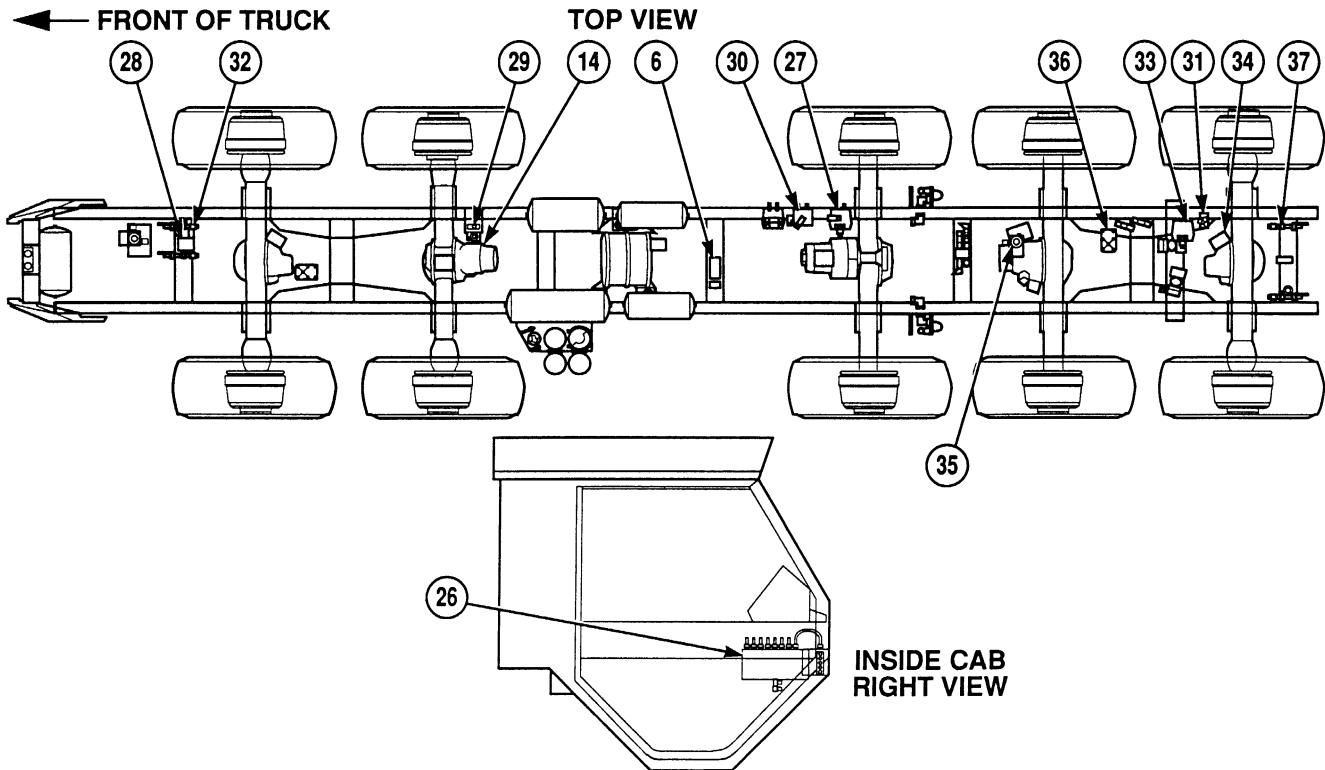
Table 12-4. Chassis Air Lines Replacement - CONT.



Hose No.	From	To
2621	Air Reservoir No. 3 - 2nd From Front (7)	Spring Brake Valve - Left Front (14)
2014	Air Reservoir No. 3 - Top Back (15)	Service Relay Valve No. 3 - Left (16)
2011	Air Reservoir No. 3 - 3rd From Front (15)	Service Relay Valve No. 2 - Left (17)
2793	Air Reservoir No. 4 - Rear (18)	Right Bulkhead Fitting (19)
2376	Air Reservoir No. 4 - Top (20)	Right Load Sensing Valve - Left (21)
2794	Air Reservoir No. 5 - Rear (22)	Left Bulkhead Fitting (23)
2375	Air Reservoir No. 5 - Top (24)	Left Load Sensing Valve - Back (25)

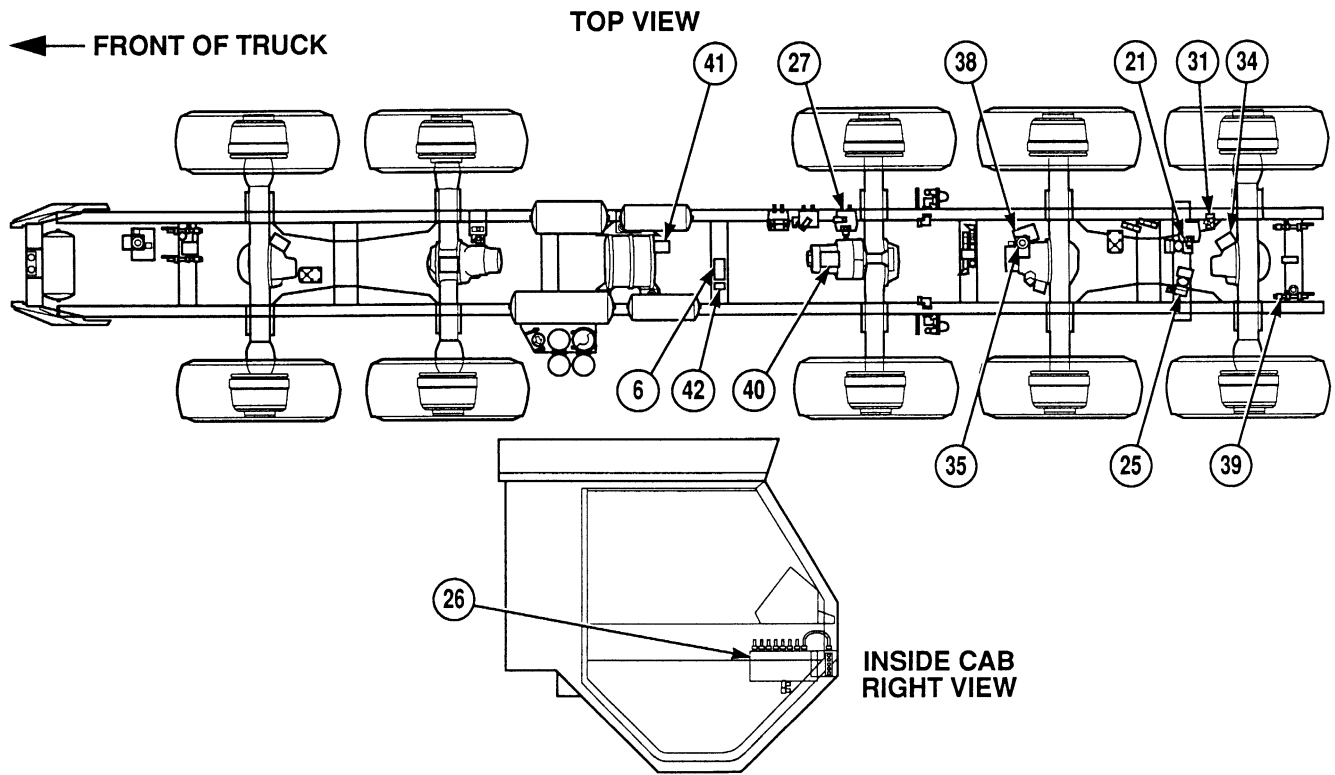
12-36. AIR LINE REPLACEMENT (CONT).

Table 12-4. Chassis Air Lines Replacement - CONT.



Hose No.	From	To
2612	Spring Brake Valve - Left Center (14)	Cab Air Manifold - Top 2nd From Front (26)
2622	Spring Brake Valve - Left Rear (14)	Spring Relay Valve No. 1 - Top Front (27)
2623	Spring Brake Valve Tee - Upper Bottom Right (14)	Cab Air Manifold - 2nd From Front, Middle (26)
2664	Spring Brake Valve Tee - Lower Bottom Right (14)	Double Check Valve - Right Front (28)
2663	Bottom Front Double Check Valve - Left (28)	Cab Air Manifold - Back Center (26)
2686	Top Front Double Check Valve - Left Top (28)	Front Quick Release Valve - Front (29)
2684	Top Front Double Check Valve - Top (28)	Rear Quick Release Valve - Top (30)
2489	Top Front Double Check Valve - Right (28)	Cab Air Manifold - 4th From Front, Center (26)
2665	Middle Front Double Check Valve - Top (28)	Cab Air Manifold - Middle of Center (26)
2661	Middle Front Double Check Valve (28)	Tractor Protection Valve - Left Front (31)
2894	Front Quick Release Valve - Top (29)	Service Gladhand - Rear (32)
2369	Relay Spring Valve No. 2 - Bottom Left (33)	Axle No. 5 Manifold - Front 2nd Down (34)
2368	Relay Spring Valve No. 2 - Bottom Right (33)	Axle No. 4 Manifold - 2nd From Top (35)
2638	Relay Spring Valve No. 2 - Top (33)	Spring Relay Valve No. 1 Tee - Top Rear (27)
2614	Relay Spring Valve No. 2 - Left Bottom (33)	Chassis Air Manifold - Top Front (6)
2660	Relay Spring Valve No. 2 - Left Top (33)	Service Relay Valve No. 3 - Top Rear (36)
2669	Relay Service Valve No. 3 Tee - Top Front (36)	Quick Release Valve - Rear (30)
2143	Relay Service Valve No. 3 - Bottom Right (36)	Axle No. 4 Manifold - 3rd Down, Rear (35)
2653	Tractor Protection Valve - Rear Left (31)	Rear Service Gladhand (37)

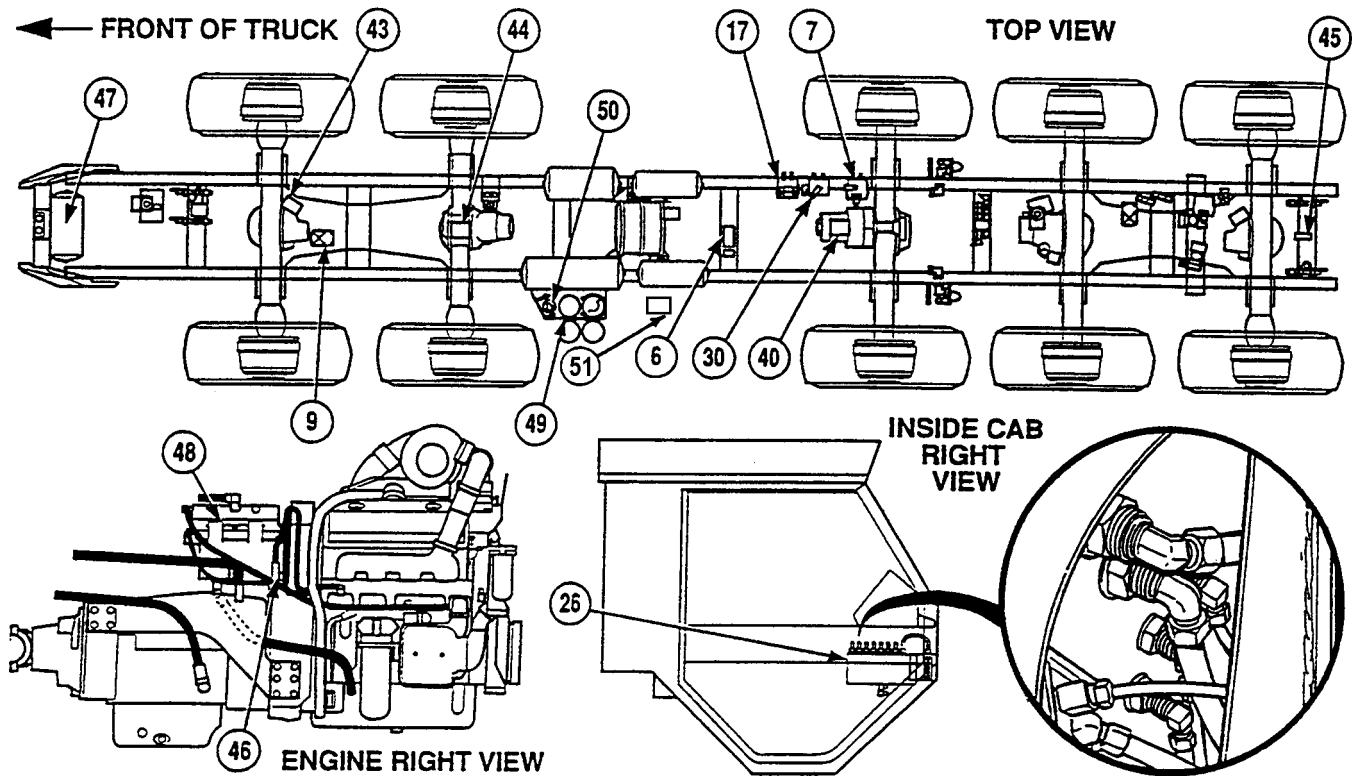
Table 12-4. Chassis Air Lines Replacement - CONT.



Hose No.	From	To
2654	Tractor Protection Valve - Rear Right (31)	Rear Emergency Gladhand (39)
2662	Tractor Protection Valve - Front Right (31)	Cab Air Manifold - Top Rear (26)
2874	Chassis Air Manifold - Side (38)	Axle No. 3 Manifold - Top Rear (40)
2874	Chassis Air Manifold - Rear (38)	Axle No. 4 Manifold - Top Rear (35)
2874	Chassis Air Manifold - Top (38)	Axle No. 5 Manifold - Front Top (34)
2874	Chassis Air Manifold - Front Left (38)	Exhaust (35)
2874	Chassis Air Manifold - Front Right (38)	Transfer Case Locking Cylinder - Front (41)
2374	Left Load Sensing Valve - Top (25)	Right Load Sensing Valve - Top Left (21)
2044	Air Regulator Valve - Left Rear (6)	Ball Valve - Front (42)
2075	Spring Relay Valve No. 1 - Bottom (27)	Axle No. 3 Manifold - 3rd From Front (40)

12-36. AIR LINE REPLACEMENT (CONT).

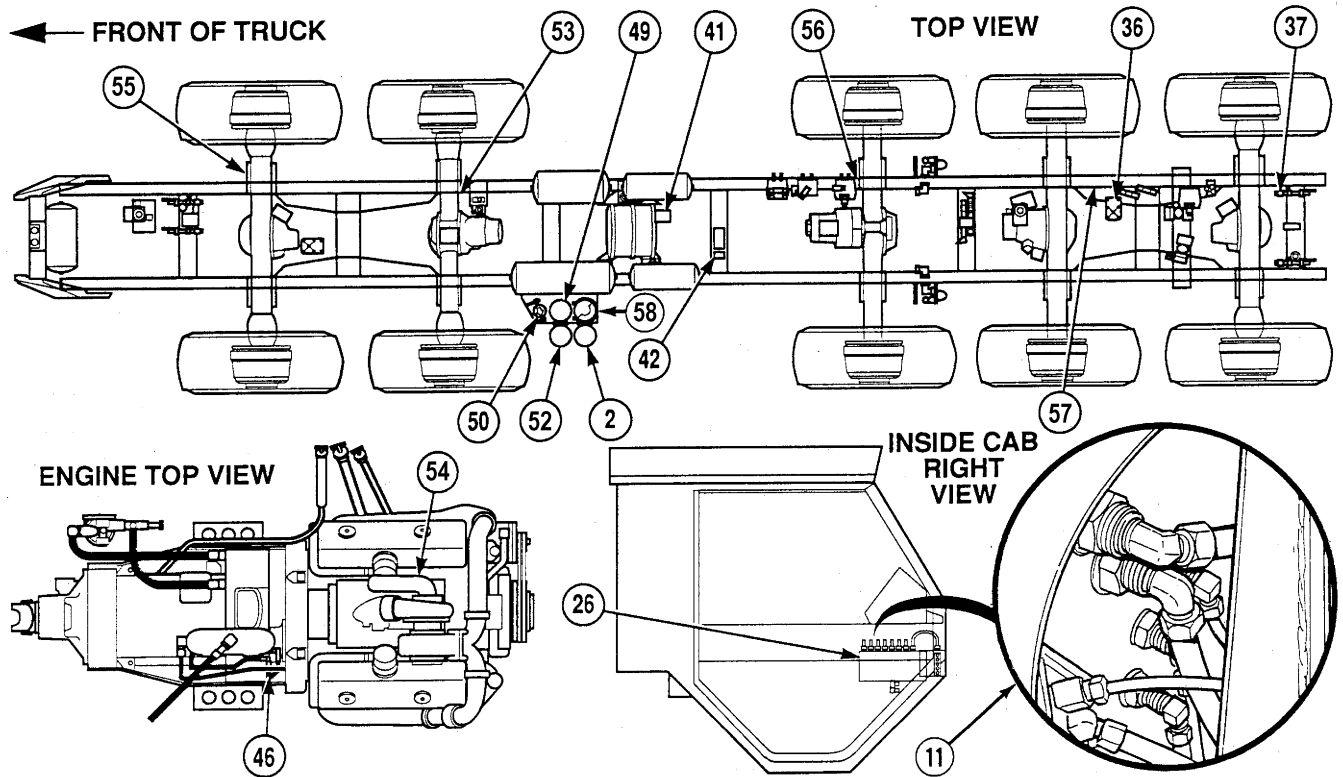
Table 12-4. Chassis Air Lines Replacement - CONT.



Hose No.	From	To
2639	Relay Spring Valve No. 1 - Left (27)	Service Relay Valve No. 2 - Top Rear (17)
2620	Relay Spring Valve No. 1 - Bottom Left (27)	Chassis Air Manifold - Front (6)
2668	Service Relay Valve No. 2 - Top Front (17)	Rear Quick Release Valve - Front (30)
2545	Service Relay Valve No. 2 - Bottom (17)	Axle No. 3 Manifold - Top, 2nd From Front (40)
2488	Service Relay Valve No. 1 - Top (9)	Cab Air Manifold - Top, 3rd From Back (26)
2543	Service Relay Valve No. 1 - Bottom Rear (9)	Axle No. 1 Manifold - Rear Middle (43)
2544	Service Relay Valve No. 1 - Bottom Front (9)	Axle No. 2 Manifold - Top (44)
2133	Chassis Air Manifold - Top Rear (6)	Rear Auxiliary Gladhand - Above Emergency Gladhand (45)
2074	Chassis Air Manifold - Rear (6)	Cab Air Manifold - Top Front (26)
2005	Chassis Air Manifold Tee - Left Front (6)	Bulkhead Fitting - Front Right (11)
2159	Air Governor - Bottom (46)	Air Reservoir No. 1 - Top (47)
2114	Air Governor - Bottom Right Side (46)	Compressor - Top Right Front (48)
2114	Air Governor - Left (46)	Compressor - Rear (48)
2040	Air Governor - Bottom Right Side (46)	After Cooler Tee - Bottom (49)
2001	Compressor - Top (48)	After Cooler - Top Side (49)
2034	After Cooler - Top Center (49)	Coalescing Filter - Top Right (50)
**2133	Chassis Air Manifold - Top Rear (6)	Auxiliary Air Supply for Power Interface (51)

**Power Interface Kit Only

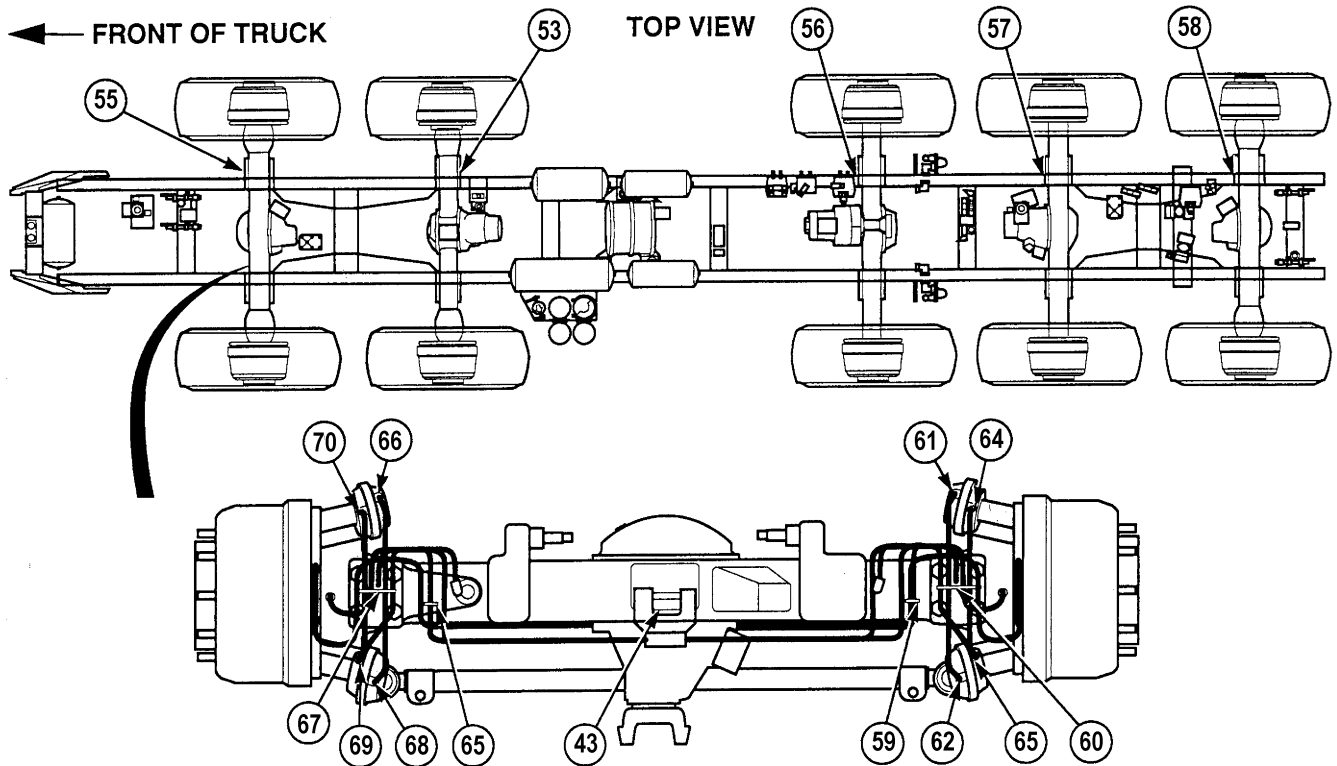
Table 12-4. Chassis Air Lines Replacement - CONT.



Hose No.	From	To
2035	Coalescing Filter - Top Right (50)	Air Dryer - Top Side (52)
2036	Coalescing Filter - Top Left (50)	Air Dryer - Top Side (2)
2044	Ball Valve Tee - Rear (42)	Right Load Sensing Valve - Top Front (37)
2144	Service Relay Valve No. 3 - Bottom Left (36)	Axle No. 5 Manifold - Front, 3rd From Top (34)
2069	Rear Bulkhead Fitting (11)	Tee - Front, Right Frame Above Axle No. 2 (53)
2923	Bulkhead Fitting - 3rd From Front (11)	Transfer Case Air Chamber (41)
2381	Cab Air Manifold - Front Middle (26)	Air Intake Tube - Front (54)
2411	Bulkhead Fitting - 4th From Front (11)	Tee - Front, Right Frame Above Axle No. 1 (55)
2069	Tee - Front, Left Frame Above Axle No. 2 (53)	Tee - Rear, Left Frame Above Axle No. 3 (56)
2069	Tee - Front, Left Frame Above Axle No. 3 (56)	Elbow - Rear, Left Frame Above Axle No. 4 (57)
2030	Air Dryer - Top Side (52)	Air Dryer Air Reservoir - Middle Left Side (58)
2031	Air Dryer - Top Side (2)	Air Dryer Air Reservoir - Top, Center (58)

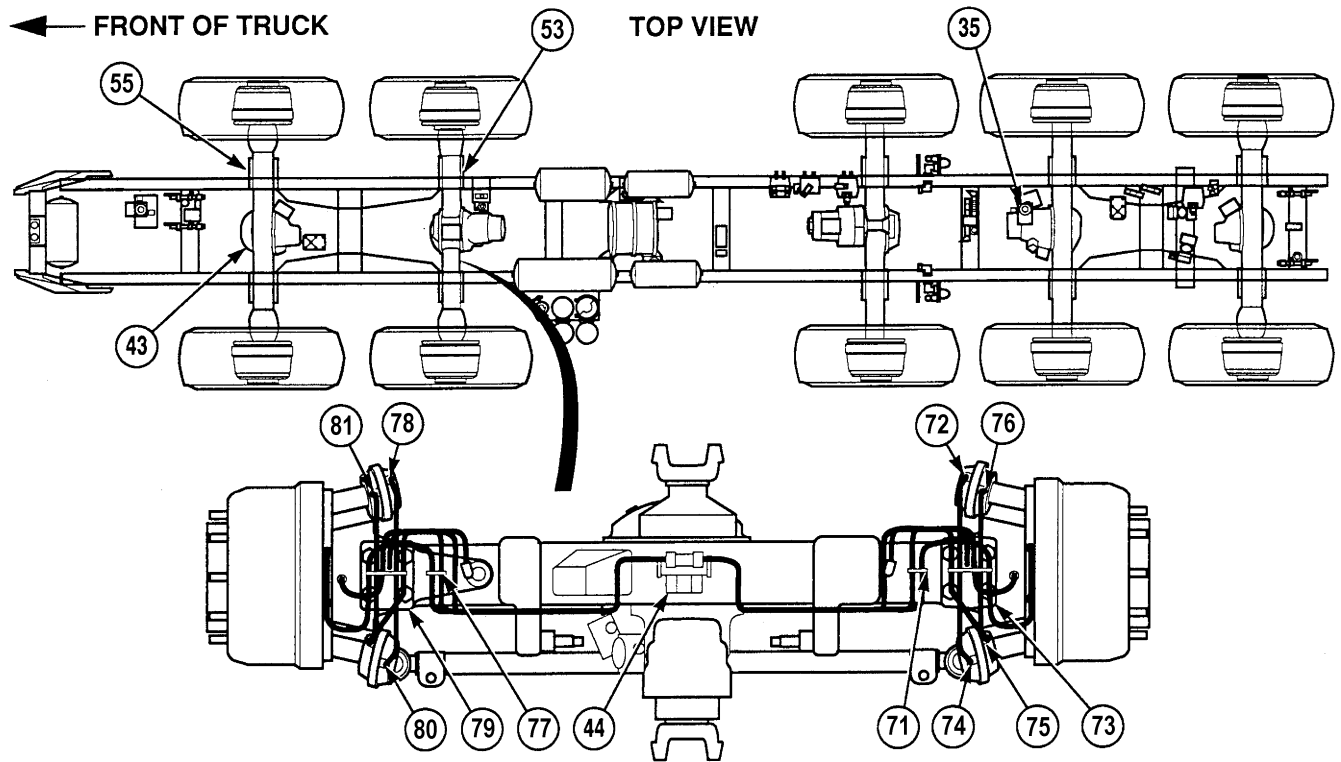
12-36. AIR LINE REPLACEMENT (CONT).

Table 12-4. Chassis Air Lines Replacement - CONT.



Hose No.	From	To
2411	Tee - Front, Right Frame Above Axle No. 1 (55)	Tee - Front, Left Frame Above Axle No. 2 (53)
2411	Tee - Rear, Left Frame Above Axle No. 2 (53)	Tee - Rear, Left Frame Above Axle No. 3 (56)
2411	Tee - Rear, Left Frame Above Axle No. 3 (56)	Tee - Rear, Left Frame Above Axle No. 4 (57)
2411	Tee - Rear, Left Frame Above Axle No. 4 (57)	Tee - Rear, Left Frame Above Axle No. 5 (58)
2013	Air Manifold Above Axle No. 1, Right Center (43)	Axle Housing Bracket, Right Rear (59)
2013	Axle Housing Bracket, Right Front (59)	Right Front Air Chamber, Left Top (60)
2013	Steering Arm Bracket, Right Front (61)	Right Front Air Chamber, Left Top (60)
2013	Steering Arm Bracket, Right Rear (62)	Right Rear Air Chamber, Left Top (60)
2874	Axle No. 1 Right Front Air Chamber, Right Top (60)	Right Rear Air Chamber, Right Top (60)
2874	Axle No. 1 Right Rear Air Chamber, Right Top (60)	Steering Arm Bracket, Rear (63)
2874	Steering Arm Bracket, Front (64)	Air Manifold Above Axle No. 1, Right Top (43)
2012	Air Manifold Above Axle No. 1, Left Center (43)	Axle Housing Bracket, Left Rear (65)
2012	Axle Housing Bracket, Left Front (65)	Steering Arm Bracket, Left Top (66)
2012	Steering Arm Bracket, Left Front (66)	Left Front Air Chamber, Right Top (67)
2012	Steering Arm Bracket, Left Rear (68)	Left Rear Air Chamber, Right Top (67)
2874	Left Front Air Chamber, Left Top (67)	Left Rear Air Chamber, Left Top (67)
2874	Left Rear Air Chamber, Left Top (67)	Steering Arm Bracket, Rear (69)
2874	Steering Arm Bracket, Front (70)	Air Manifold Above Axle No. 1, Left Top (43)

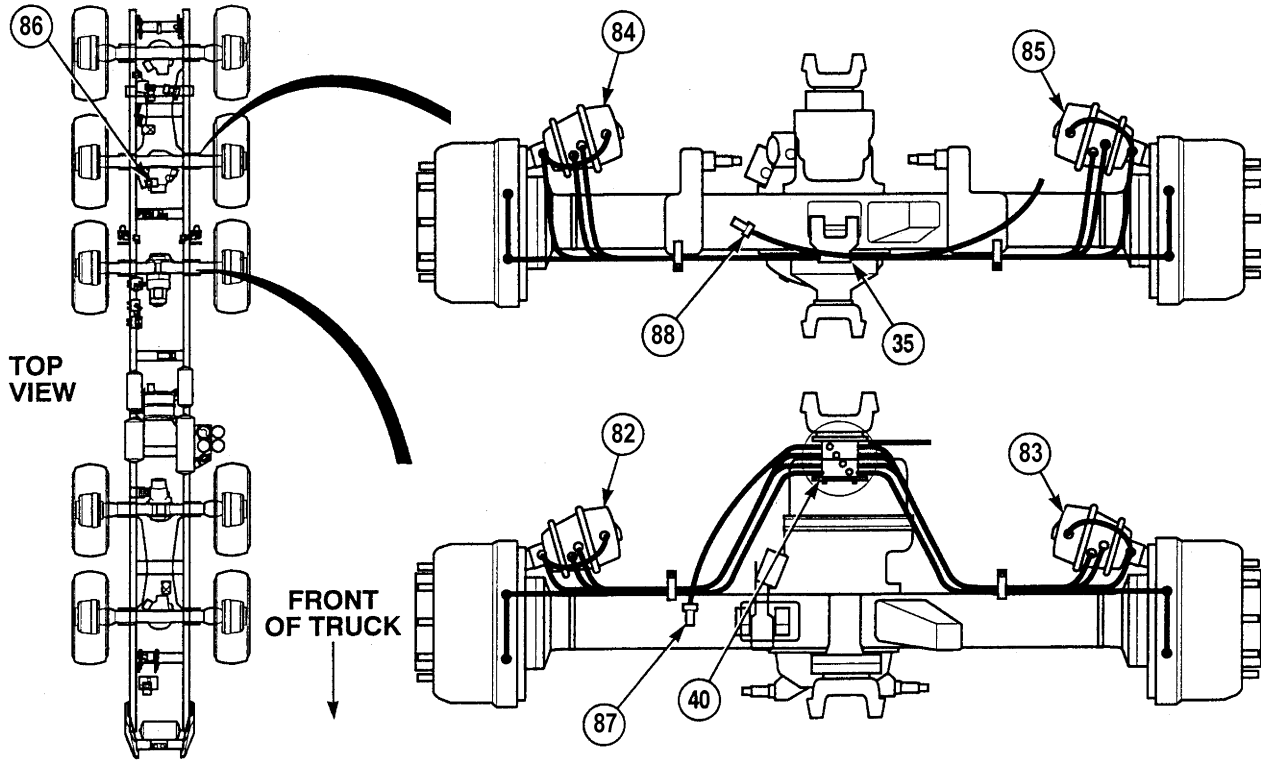
Table 12-4. Chassis Air Lines Replacement - CONT.



Hose No.	From	To
2874	Air Manifold Above Axle No. 1, Rear Top (43)	T-Fitting on Right Front Frame (55)
2874	Tee on Right Front Frame (55)	Exhaust (35)
2387	Lower Manifold Above Axle No. 2, Right (44)	Right Housing Bracket, Left (71)
2387	Right Housing Bracket, Left Front (71)	Steering Arm Bracket, Top (72)
2387	Steering Arm Bracket, Front (72)	Right Front Air Chamber, Left Top (73)
2387	Steering Arm Bracket, Rear (74)	Right Rear Air Chamber, Left Top (73)
2874	Right Front Air Chamber, Right Top (73)	Right Rear Air Chamber, Right Front (73)
2874	Right Rear Air Chamber, Right Top (73)	Steering Arm Bracket, Left Bottom Rear (75)
2874	Steering Arm Bracket, Left Bottom Front (76)	Upper Manifold Above Axle No. 2, Right (44)
2388	Lower Manifold Above Axle No. 2, Left (44)	Left Axle Housing Bracket, Right (77)
2388	Left Axle Housing Bracket, Right Front (77)	Left Axle Housing Bracket, Right (77)
2388	Steering Arm Bracket, Front (78)	Left Front Air Chamber, Right Top (79)
2388	Steering Arm Bracket, Rear (80)	Left Rear Air Chamber, Right Top (79)
2874	Left Front Air Chamber, Left Top (79)	Left Rear Air Chamber, Left Top (79)
2874	Left Rear Air Chamber, left Top (79)	Steering Arm Bracket, Right Bottom Rear (80)
2874	Steering Arm Bracket, Right Bottom Front (81)	Upper Manifold Above Axle No. 2, Left (44)
2874	Upper Manifold Above Axle No. 2, Top (44)	Tee on Right Front Frame (53)

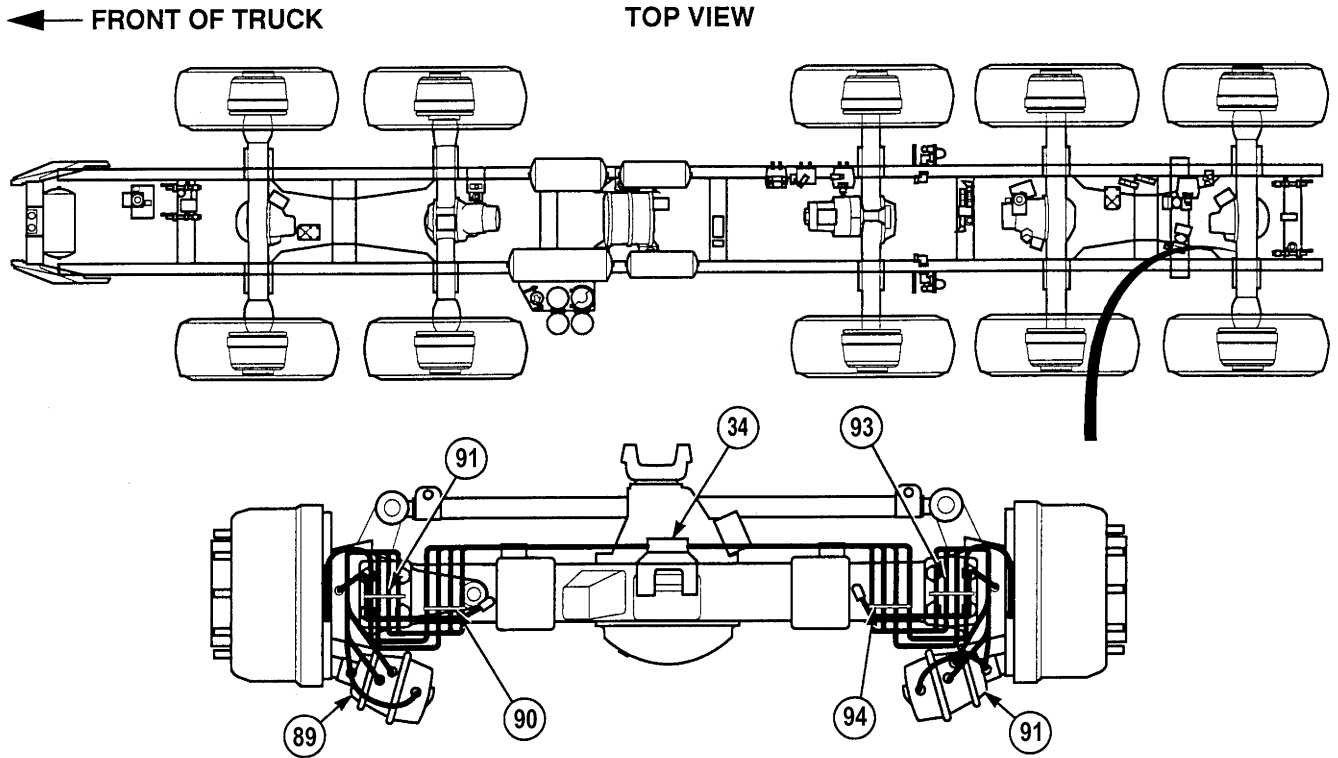
12-36. AIR LINE REPLACEMENT (CONT).

Table 12-4. Chassis Air Lines Replacement - CONT.



Hose No.	From	To
2874	Air Manifold Above Axle No. 3, Rear (40)	Left Rear Air Chamber, Top of Tee (82)
2023	Air Manifold Above Axle No. 3, Left, 3rd From Front (40)	Left Rear Air Chamber, Middle Right (82)
2546	Air Manifold Above Axle No. 3, Left, 2nd From Front (40)	Left Rear Air Chamber, Middle Left (82)
2874	Left Rear Air Chamber, Left Side of Tee (82)	Left Rear Air Chamber, Right Side of Tee (82)
2874	Air Manifold Above Axle No. 3, Rear (40)	Right Front Air Chamber, Top of Tee (83)
2022	Air Manifold Above Axle No. 3, Right 3rd From Front (40)	Right Front Air Chamber, Middle Left (83)
2547	Air Manifold Above Axle No. 3, Right 2nd From Front (40)	Right Front Air Chamber, Middle Left (85)
2874	Right Front Air Chamber, Right Side of Tee (85)	Right Front Air Chamber, Left Side of Tee (83)
2874	Air Manifold Above Axle No. 4, Left Top (35)	Left Rear Air Chamber, Top of Tee (84)
2135	Air Manifold Above Axle No. 4, Left, 2nd From Top (35)	Left Rear Air Chamber, Middle Right (84)
2017	Air Manifold Above Axle No. 4, Left, 3rd From Top (35)	Left Rear Air Chamber, Middle Left (84)
2874	Left Rear Air Chamber, Left Side of Tee (84)	Left Rear Air Chamber, Right Side of Tee (84)
2874	Air Manifold Above Axle No. 4, Right Top (35)	Right Front Air chamber, Top of Tee (85)
2138	Air Manifold Above Axle No. 4, Right, 2nd From Top (35)	Right Front Air Chamber, Middle Left (85)
2017	Air Manifold Above Axle No. 4, Right, 3rd From Top (35)	Right Front Air Chamber, Middle Right (85)
2874	Right Front Air Chamber, Right Side of Tee (85)	Right Front Air Chamber, Left Side of Tee (85)
2893	Rear Central Tire Inflation Manifold (86)	Axle Breather Elbow Axle No. 3 (87)
2893	Rear Central Tire Inflation Manifold (86)	Axle Breather Elbow Axle No. 4 (88)

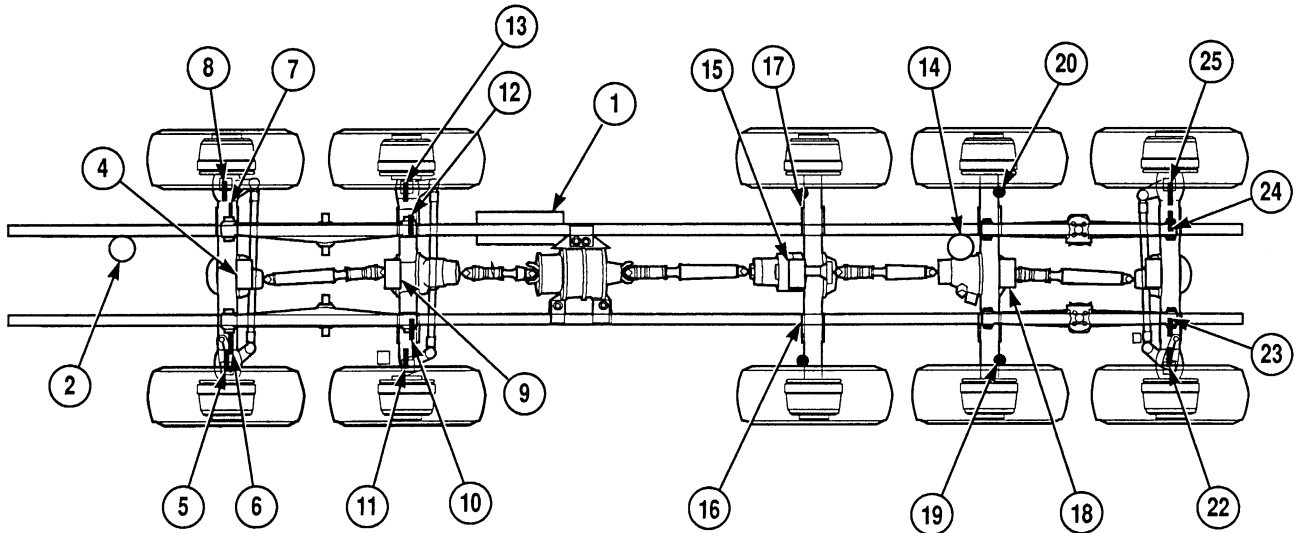
Table 12-4. Chassis Air Lines Replacement - CONT.



Hose No.	From	To
2874	Air Manifold Above Axle No. 5, Left Top (34)	Left Steering Arm Bracket, Bottom Right (89)
2141	Air Manifold Above Axle No. 5, Left, 2nd From Top (34)	Left Axle Housing Bracket, Top Left (90)
2016	Air Manifold Above Axle No. 5, Left, 3rd From Top (34)	Left Axle Housing Bracket, Top Right (90)
2874	Air Manifold Above Axle No. 5, Right, 2nd From Top (34)	Right Steering Arm Bracket, Left (91)
2140	Air Manifold Above Axle No. 5, Right, 2nd From Top (34)	Right Axle Housing Bracket, Top Right (92)
2018	Air Manifold Above Axle No. 5, Right 3rd From Top (34)	Right Axle Housing Bracket, Top Left (92)
2141	Left Axle Housing Bracket, Top Left (90)	Left Steering Arm Bracket, Top Left (89)
2016	Left Axle Housing Bracket, Top Right (90)	Right Steering Arm Bracket, Top Right (91)
2140	Right Axle Housing Bracket, Top Right (92)	Right Steering Arm Bracket, Top Right (91)
2018	Right Axle Housing Bracket, Top Left (92)	Right Steering Arm Bracket, Top Left (91)
2141	Left Steering Arm Bracket, Top Right (89)	Left Rear Air Chamber, Middle Right (93)
2016	Left Steering Arm Bracket, Top Right (89)	Left Rear Air Chamber, Middle Left (93)
2874	Left Steering Arm Bracket, Bottom Right (89)	Left Rear Air Chamber, Left Side of Tee (93)
2874	Left Rear Air Chamber, Left Side of Tee (93)	Left Rear Air Chamber, Right Side of Tee (93)
2140	Right Steering Arm Bracket, Top Right (91)	Right Rear Air Chamber, Middle Left (94)
2018	Right Steering Arm Bracket, Top Left (91)	Right Rear Air Chamber, Middle Right (94)
2874	Right Steering Arm Bracket, Bottom Left (91)	Right Rear Air Chamber, Top of Tee (94)
2874	Right Rear Air Chamber, Right Side of Tee (94)	Right Rear Air Chamber, Left Side of Tee (94)

12-36. AIR LINE REPLACEMENT (CONT).

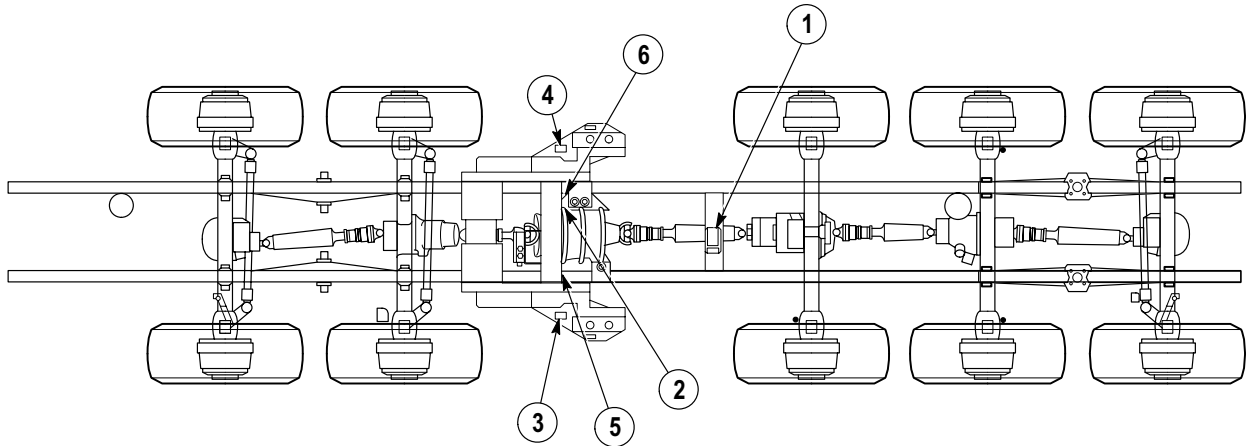
Table 12-5. CTIS Air Lines Replacement



TOP VIEW

Hose No.	From	To
2993	Air Reservoir No. 1, Center Right (1)	Front CTIS Manifold, Left Rear (2)
2994	Air Reservoir No. 1, Bottom Right (1)	Rear CTIS Manifold, Right (3)
2096	Front CTIS Manifold, Front Left (2)	Air Manifold Above Axle No. 1 (4)
2101	Axle No. 1 Steering Arm Bracket, Left (5)	Axle No. 1 Axle Housing Bracket, Left (6)
2101	Axle No. 1 Axle Housing Bracket, Left (6)	Air Manifold Above Axle No. 1, Left (4)
2097	Air Manifold Above Axle No. 1, Right (4)	Axle No. 1 Axle Housing Bracket, Right (7)
2097	Axle No. 1 Steering Arm Bracket, Right (8)	Axle No. 1 Axle Housing Bracket, Right (7)
2098	Front CTIS Manifold, Front Right (2)	Air Manifold Above Axle No. 2 (9)
2103	Axle No. 2 Axle Housing Bracket, Left (10)	Axle No. 2 Steering Arm Bracket, Left (11)
2103	Air Manifold Above Axle No. 2, Left (9)	Axle No. 2 Axle Housing Bracket, Left (10)
2099	Air Manifold Above Axle No. 2, Right (9)	Axle No. 2 Axle Housing Bracket, Right (12)
2099	Axle No. 2 Axle Housing Bracket, Right (12)	Axle No. 2 Steering Arm Bracket, Right (13)
2104	Rear CTIS Manifold, Front (14)	Air Manifold Above Axle No. 3 (15)
2869	Axle No. 3, Left (16)	Air Manifold Above Axle No. 3, Left (15)
2105	Axle No. 3, Right (17)	Air Manifold Above Axle No. 3, Right (15)
2106	Rear CTIS Manifold, Left Rear (14)	Air Manifold Above Axle No. 4 (18)
2871	Axle No. 4, Left (19)	Air Manifold Above Axle No. 4, Left (18)
2107	Axle No. 4, Right (20)	Air Manifold Above Axle No. 4, Right (18)
2872	Rear CTIS Manifold, Center Rear (14)	Air Manifold Above Axle No. 5 (21)
2873	Axle No. 5 Steering Arm Bracket, Left (22)	Axle No. 5 Axle Housing Bracket, Left (23)
2873	Axle No. 5 Axle Housing Bracket, Left (23)	Air Manifold Above Axle No. 5, Left (21)
2109	Axle No. 5 Axle Housing Bracket, Right (24)	Air Manifold Above Axle No. 5, Right (21)
2109	Axle No. 5 Steering Arm Bracket, Right (25)	Axle No. 5 Axle Housing Bracket, Left (22)

Table 12-6. CHU Air Lines Replacement



Hose No.	From	To
2501	Chassis Air Manifold (1)	CHU Air Tee (2)
2502	LH Air Valve (3)	CHU Air Tee (2)
2503	RH Air Valve (4)	CHU Air Tee (2)
2504	LH Air Valve (3)	LH Air Cylinder (5)
2505	LH Air Valve (3)	LH Air Cylinder (5)
2506	RH Air Valve (4)	RH Air Cylinder (6)
2507	RH Air Valve (4)	RH Air Cylinder (6)

b. Follow-On Maintenance:

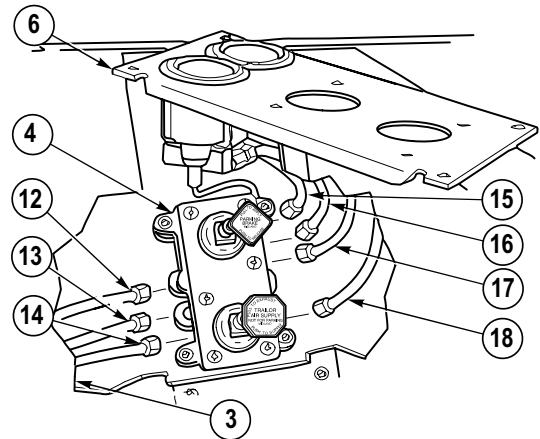
- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Fill air system, (TM 9-2320-364-10).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

NOTE

Tag and mark all hoses before removal.

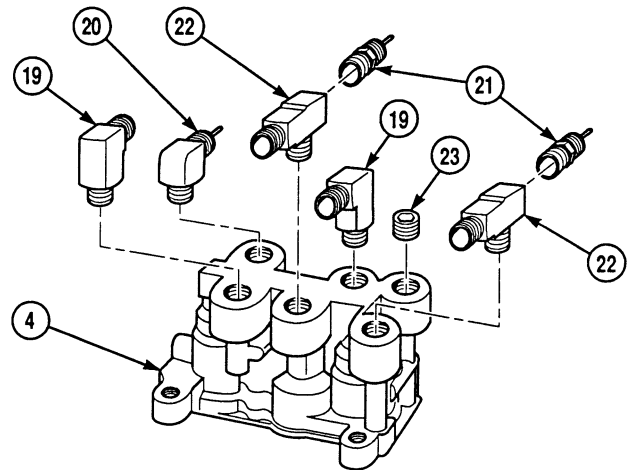
- (6) Disconnect air lines 2006 (12), 2611 (13), 2073 (14), 2641 (15), 2610 (16), 2662 (17) and 2029 (18) from dash manifold valve (4).
- (7) Remove dash manifold valve (4) from dash air panel (6) and dash (3).



NOTE

- Note position and location of all fittings, elbows, and tees prior to removal.
- Middle tee must be loosened 1/8 turn to permit removal of elbow.

- (8) Remove two elbows (19) from dash manifold valve (4).
- (9) Remove elbow (20) from dash manifold valve (4).
- (10) Remove two couplings (21) from tees (22).
- (11) Remove two tees (22) from dash manifold valve (4).
- (12) Remove plug (23) from dash manifold (4).



NOTE

Perform Step (13) if handles are damaged.

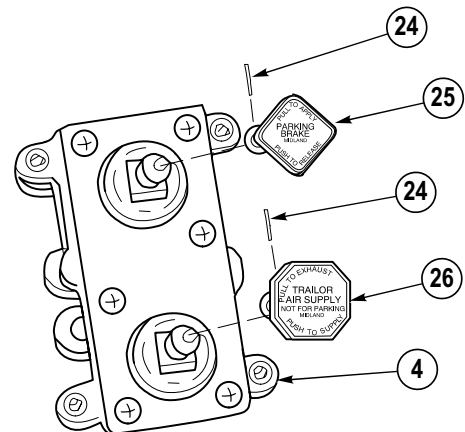
- (13) Remove two roll pins (24) and handles (25) and (26) from dash manifold valve (4).

b. Installation.

NOTE

Perform step (1) if handles were removed.

- (1) Install handles (25) and (26) on dash manifold valve (4) with two roll pins (24).



12-37. DASH MANIFOLD VALVE REPLACEMENT (CONT).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

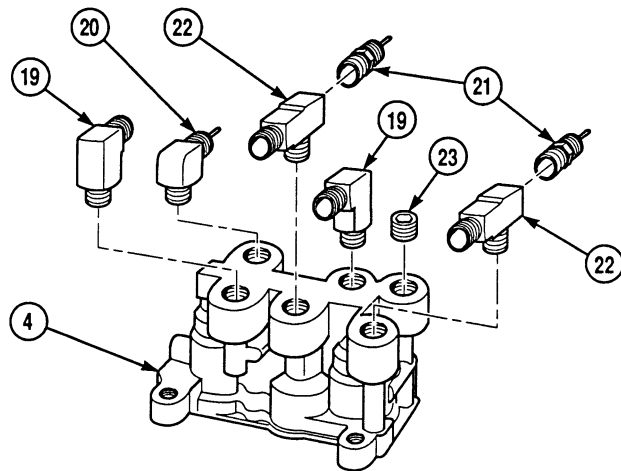
Install fittings, elbows and tees as noted prior to removal.

- (2) Apply sealing compound on threads of two tees (22).
- (3) Install two tees (22) in rear of dash manifold valve (4).
- (4) Apply sealing compound on threads of two couplings (21).
- (5) Install two couplings (21) in tees (22).

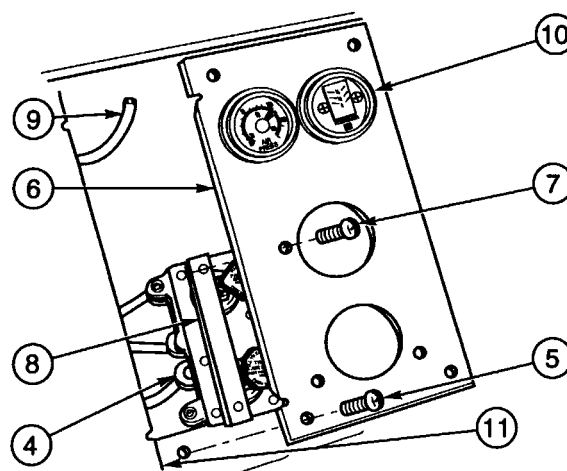
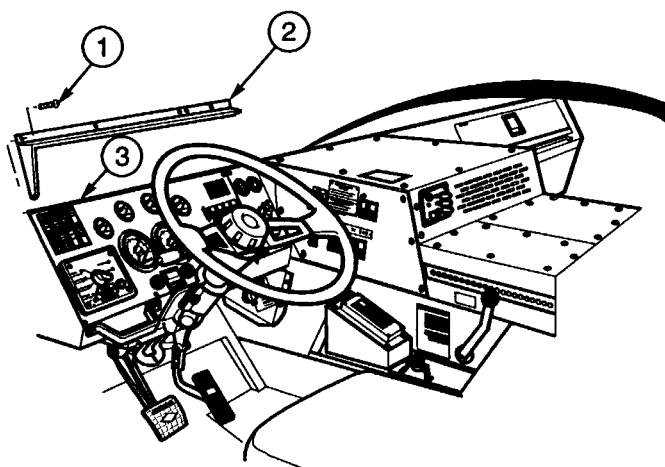
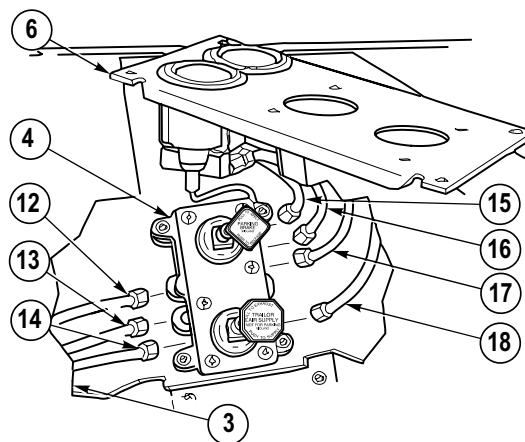
NOTE

Middle tee must be loosened 1/8 turn to permit installation of elbow.

- (6) Apply sealing compound on threads of elbow (20).
- (7) Install elbow (20) on dash manifold valve (4).
- (8) Apply sealing compound on threads of two elbows (19).
- (9) Install two elbows (19) in rear of dash manifold valve (4).
- (10) Apply sealing compound on threads of plug (23).
- (11) Install plug (23) on dash manifold valve (4).



- (12) Position dash manifold valve (4) in dash (11).
- (13) Connect air lines 2006 (12), 2611 (13), 2073 (14), 2641 (15), 2610 (16), 2662 (17) and 2029 (18) on dash manifold valve (4).



- (14) Install vacuum line (9) on gage (10).
- (15) Install two spacers (8) dash panel (6) and four screws (7) on dash manifold valve (4).
- (16) Install dash air panel (6) on dash (3) with two screws (5).
- (17) Install sunshield (2) on dash (3) and dash air panel (6) with six screws (1).

c. Follow-On Maintenance:

- Connect batteries, (Para 7-87).
- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-38. AIR MANIFOLD/AIR REGULATOR/PRESSURE PROTECTION VALVE ASSEMBLY REPAIR.

This task covers:

- | | | |
|----------------|------------------------|--------------------------|
| a. Removal | c. Cleaning/Inspection | e. Installation |
| b. Disassembly | d. Assembly | f. Follow-On Maintenance |

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive (Item 74, Appendix G)
 Gloves, Chemical Oil Protective (Item 28, Appendix G)
 Goggles, Industrial (Item 30, Appendix G)
 Vise, Machinist's (Item 75, Appendix G)

Materials/Parts

Cable Tie (Item 26, Appendix C)
 Sealing Compound (Item 72, Appendix C)

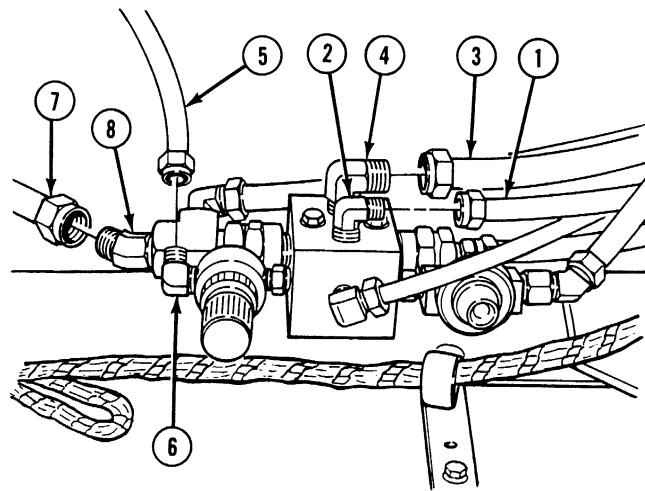
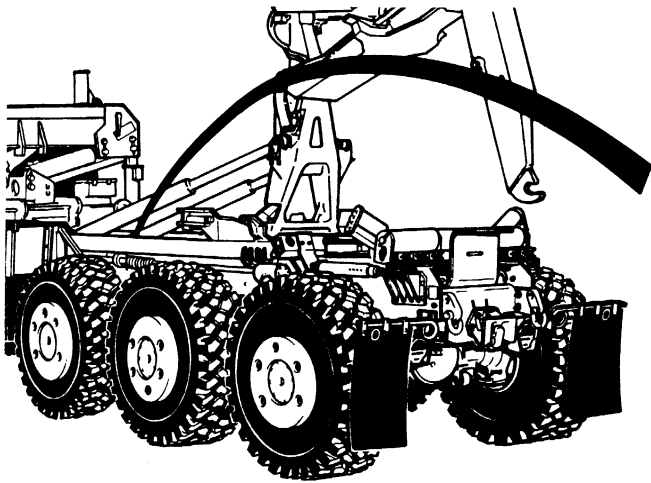
Materials/Parts - Continued

Solvent, Drycleaning (Item 87, Appendix C)
 Tags, Identification (Item 88, Appendix C)
 Locknut (2) (Item 133, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
 Wheels chocked, (TM 9-2320-364-10)
 Air system drained, (TM 9-2320-364-10)
 LHS fully extended, (TM 9-2320-364-10)

a. Removal.

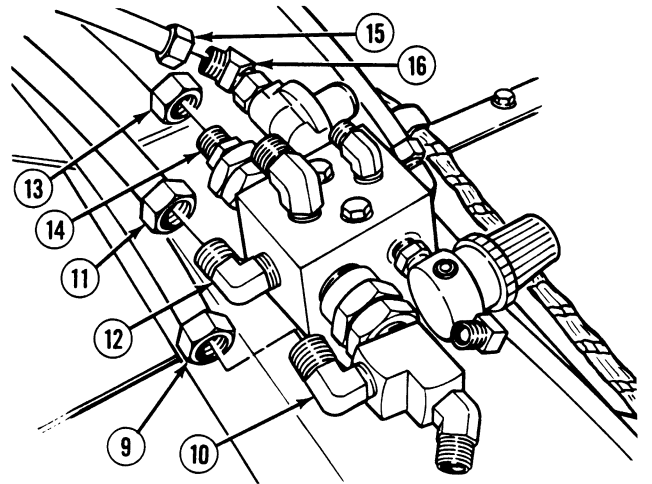


NOTE

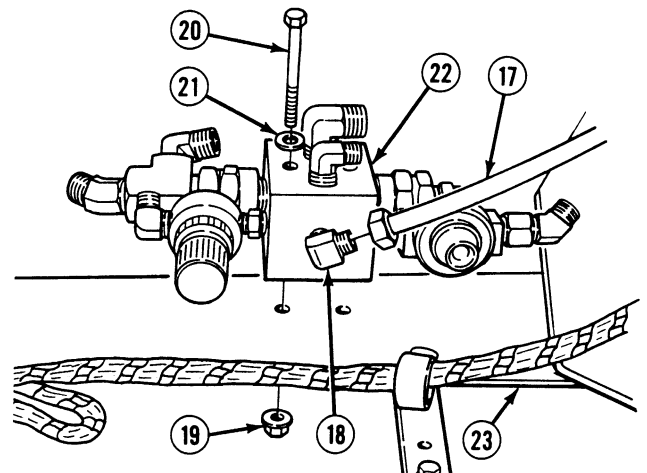
- Tag and mark air lines, elbows, fittings and adapters prior to removal.
- Remove cable ties as required.

- (1) Remove air line 2133 (1) from elbow (2).
- (2) Remove air line 2613 (3) from elbow (4).
- (3) Remove air line 2044 (5) from elbow (6).
- (4) Remove air line 2003 (7) from elbow (8).

- (5) Remove air line 2005 (9) from elbow (10).
- (6) Remove air line 2620 (11) from elbow (12).
- (7) Remove air line 2613 (13) from adapter (14).
- (8) Remove air line 2008 (15) from elbow (16).



- (9) Remove air line 2074 (17) from adapter (18).
- (10) Remove two locknuts (19), screws (20), washers (21) and air manifold (22) from frame (23). Discard locknuts.



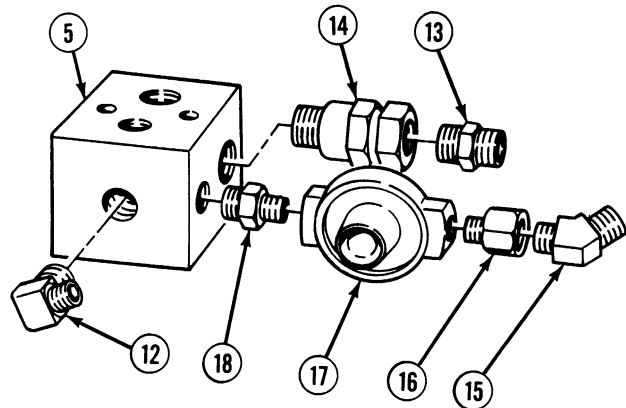
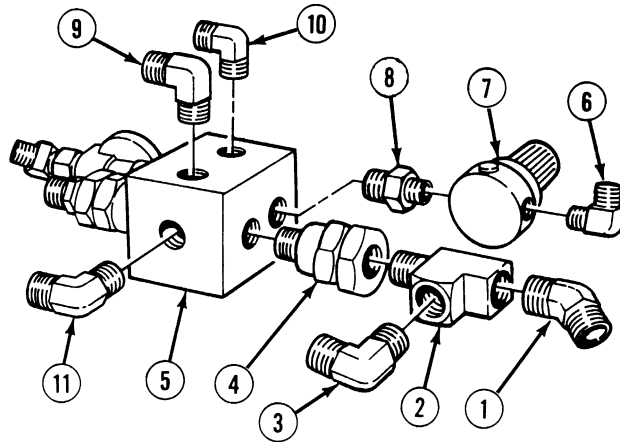
12-38. AIR MANIFOLD/AIR REGULATOR/PRESSURE PROTECTION VALVE ASSEMBLY REPAIR (CONT).

b. Disassembly.

NOTE

Note location of elbows, fittings and adapters prior to removal.

- (1) Remove elbow (1) from tee (2).
- (2) Remove elbow (3) from tee (2).
- (3) Remove tee (2) and check valve (4) from air manifold (5).
- (4) Remove elbow (6), air regulator (7) and adapter (8) from manifold (5).
- (5) Remove elbows (9), (10) and (11) from air manifold (5).
- (6) Remove elbow (12) from air manifold (5).
- (7) Remove adapter (13) and check valve (14) from air manifold (5).
- (8) Remove elbow (15), adapter (16), pressure protection valve (17) and adapter (18) from air manifold (5).



c. Cleaning/Inspection.

WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent. The flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

- (1) Clean part with drycleaning solvent and air dry.
- (2) Check for cracks, dents and/or stripped threads.
- (3) Replace damaged parts.

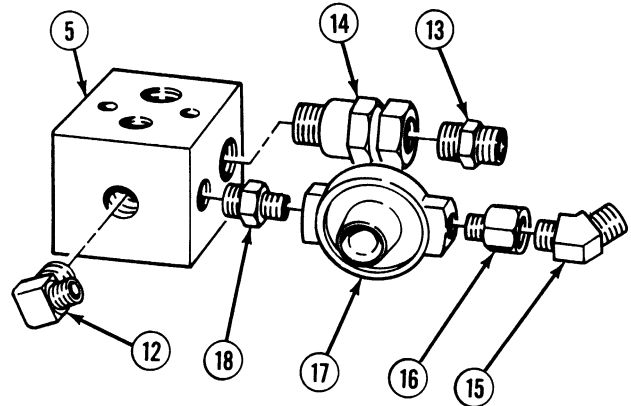
d. Assembly.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

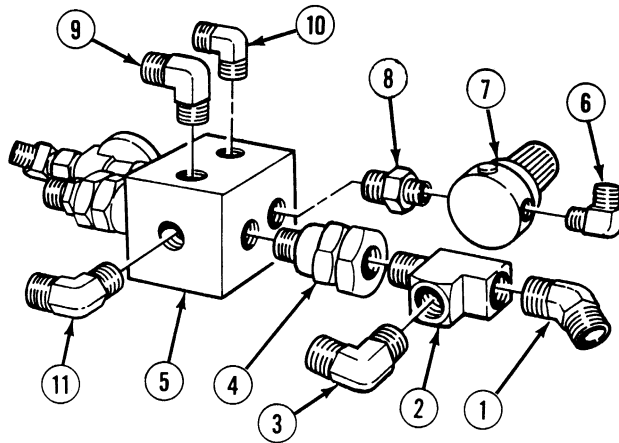
Install elbows, fittings and adapters as noted prior to removal.

- (1) Apply sealing compound to threads of elbow (12), adapter (13), check valve (14), elbow (15), adapter (16) and adapter (18).
- (2) Install adapter (18) in air manifold (5).
- (3) Install pressure protection valve (17) on adapter (18).
- (4) Install adapter (16) in pressure protection valve (17).
- (5) Install elbow (15) in adapter (16).
- (6) Install check valve (14) in air manifold (5).
- (7) Install adapter (13) in check valve (14).
- (8) Install elbow (12) in air manifold (5).
- (9) Apply sealing compound to threads of elbow (1), elbow (3), tee (2), check valve (4), elbow (6), adapter (8), elbow (9), elbow (10) and elbow (11).



12-38. AIR MANIFOLD/AIR REGULATOR/PRESSURE PROTECTION VALVE ASSEMBLY REPAIR (CONT).

- (10) Install elbow (11) in air manifold (5).
- (11) Install elbow (10) in air manifold (5).
- (12) Install elbow (9) in air manifold (5).
- (13) Install adapter (8) in air manifold (5).
- (14) Install air regulator (7) on adapter (8).
- (15) Install elbow (6) in air regulator (7).
- (16) Install check valve (4) in air manifold (5).
- (17) Install tee (2) in check valve (4).
- (18) Install elbow (3) in tee (2).
- (19) Install elbow (1) in tee (2).

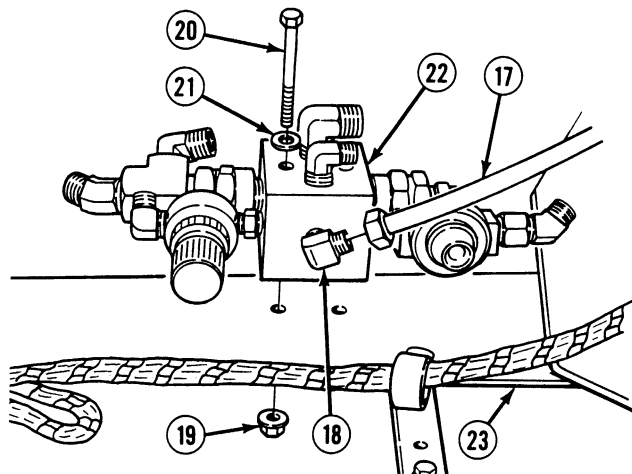


e. Installation.

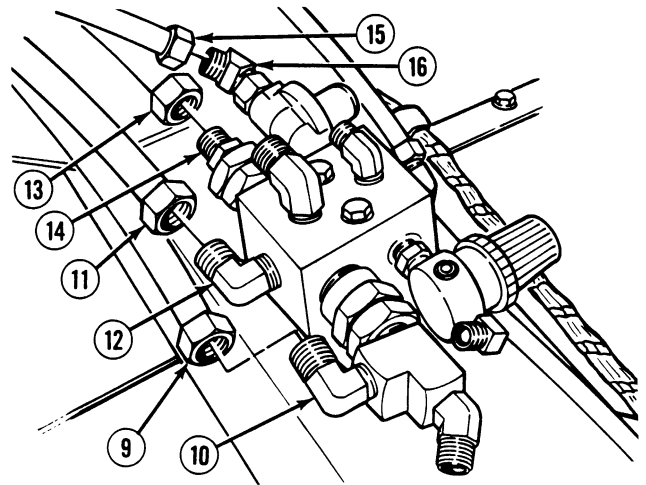
NOTE

Install air lines, elbow, fittings and adapters as noted prior to removal.

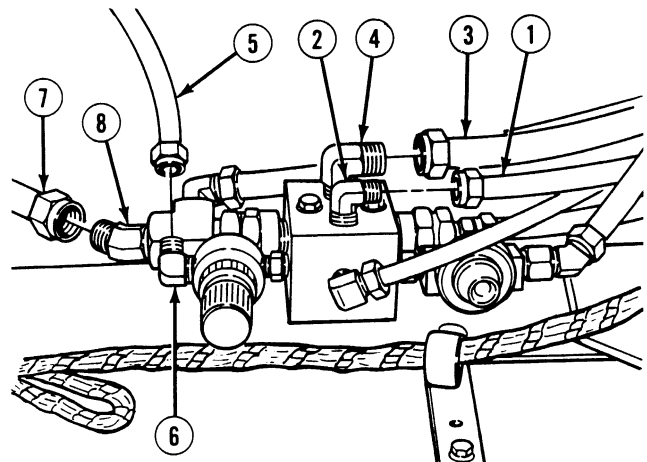
- (1) Install air manifold (22), two washers (21), screws (20) and locknuts (19) on frame (23).
- (2) Install air line 2074 (17) on fitting (18).



- (3) Install air line 2008 (15) on elbow (16).
- (4) Install air line 2613 (13) on adapter (14).
- (5) Install air line 2620 (11) on elbow (12).
- (6) Install air line 2005 (9) on elbow (10).



- (7) Install air line 2003 (7) on elbow (8).
- (8) Install air line 2044 (5) on elbow (6).
- (9) Install air line 2613 (3) on elbow (4).
- (10) Install air line 2133 (1) on elbow (2).



f. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- LHS in transit position, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-39. QUICK RELEASE VALVE REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

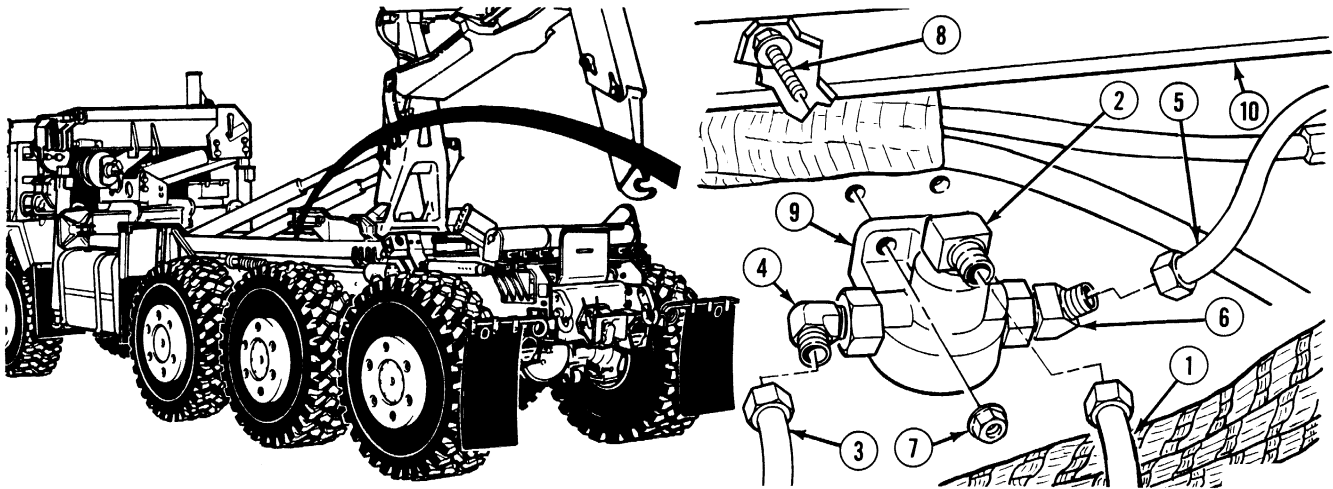
Materials/Parts

Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (2) (Item 133, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)
LHS fully extended, (TM 9-2320-364-10)

a. Removal.



NOTE

Tag and mark air lines prior to removal.

- (1) Remove air line 2684 (1) from elbow (2).
- (2) Remove air line 2668 (3) from elbow (4).
- (3) Remove air line 2669 (5) from elbow (6).
- (4) Remove two locknuts (7), screws (8) and quick release valve (9) from frame (10). Discard locknuts.

NOTE

Note position of elbows prior to removing.

- (5) Remove elbow (2) from quick release valve (9).
- (6) Remove elbow (4) from quick release valve (9).
- (7) Remove elbow (6) from quick release valve (9).

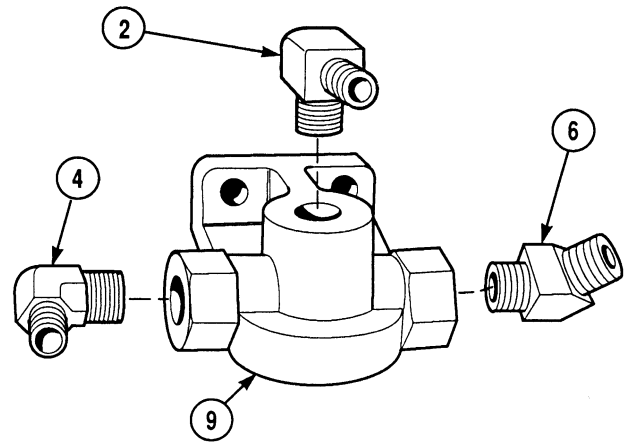
b. Installation.**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

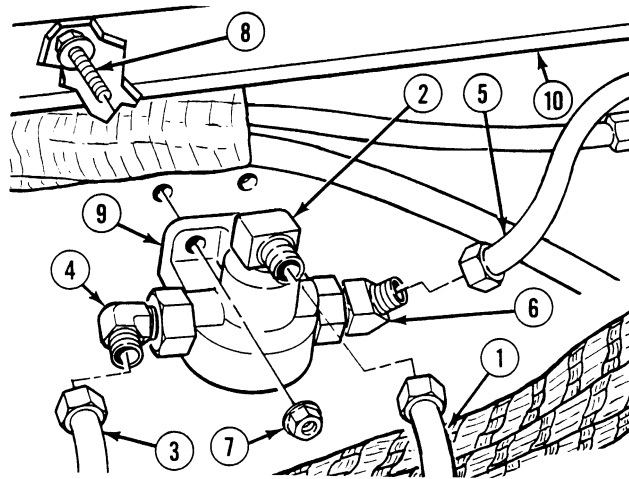
Install elbows to positions noted prior to removal.

- (1) Apply sealing compound on threads of elbow (6).
- (2) Install elbow (6) in quick release valve (9).
- (3) Apply sealing compound on threads of elbow (4).
- (4) Install elbow (4) in quick release valve (9).
- (5) Apply sealing compound on threads of elbow (2).
- (6) Install elbow (2) in quick release valve (9).



12-39. QUICK RELEASE VALVE REPLACEMENT (CONT).

- (7) Install quick release valve (9) on frame (10) with two screws (8) and locknuts (7).
- (8) Install air line 2669 (5) on elbow (6).
- (9) Install air line 2668 (3) on elbow (4).
- (10) Install air line 2684 (1) on elbow (2).



c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- LHS in transit position, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-40. SOLENOID FOUR POSITION VALVE REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

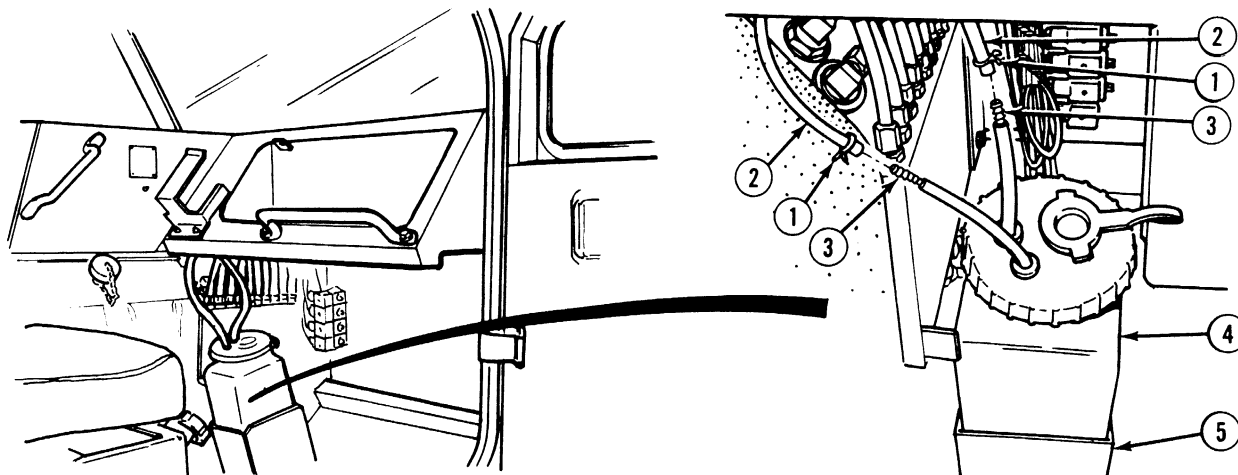
Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Materials/Parts

Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (2) (Item 133, Appendix F)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Glove box removed, (Para 17-53)

a. Removal.**NOTE**

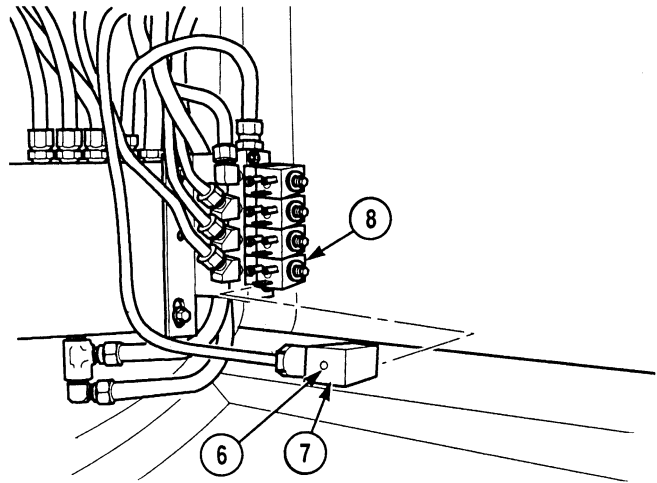
- Tag and mark all hoses, air lines and fittings before removal.
- Remove cable ties as necessary.

(1) Compress two clamps (1) and remove hoses (2) from solvent tank hoses (3).

(2) Remove solvent tank (4) from mounting bracket (5).

12-40. SOLENOID FOUR POSITION VALVE REPLACEMENT (CONT).

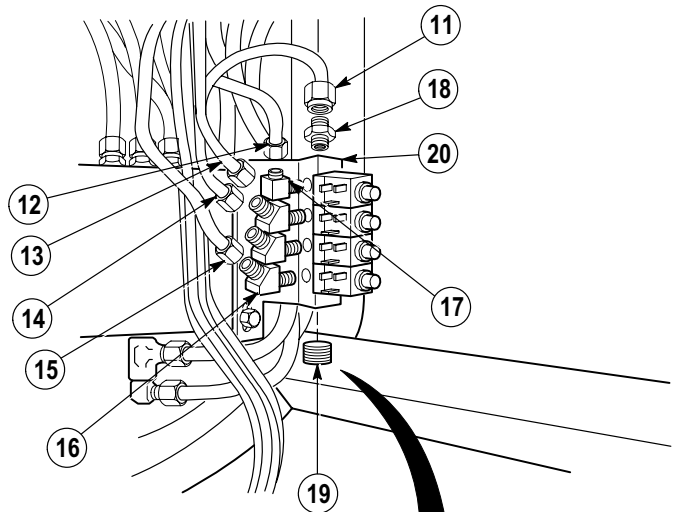
- (3) Loosen four screws (6) and remove connectors (7) from solenoids (8).



NOTE

- Tag and mark all air lines before removal.
- Perform Step (4) if truck is equipped with air horn.

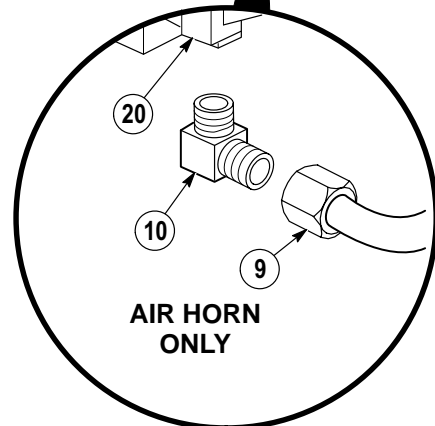
- (4) Remove air line 2037 (9) from 90 degree elbow (10).
- (5) Remove air line 2412 (11), air line 2923 (12), air line 2074 (13), air line 2069 (14) and air line 2071 (15) from three 45 degree elbows (16), 90 degree elbow (17) and fitting (18).



NOTE

Matchmark all fittings and elbows to ensure correct installation and position.

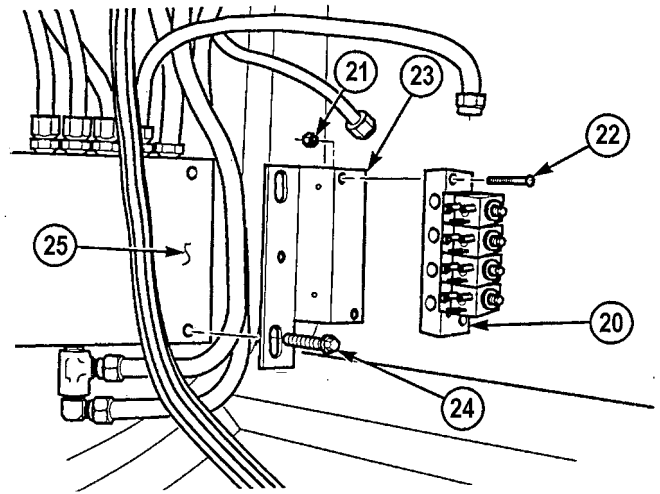
- (6) Remove three 45 degree elbows (16), 90 degree elbow (17), fitting (18) and plug (19) or 90 degree elbow (10) from manifold (20).



- (7) Remove two locknuts (21), screws (22) and manifold (20) from solenoid mounting bracket (23).
- (8) Remove two screws (24) and solenoid mounting bracket (23) from air manifold (25).

b. Installation.

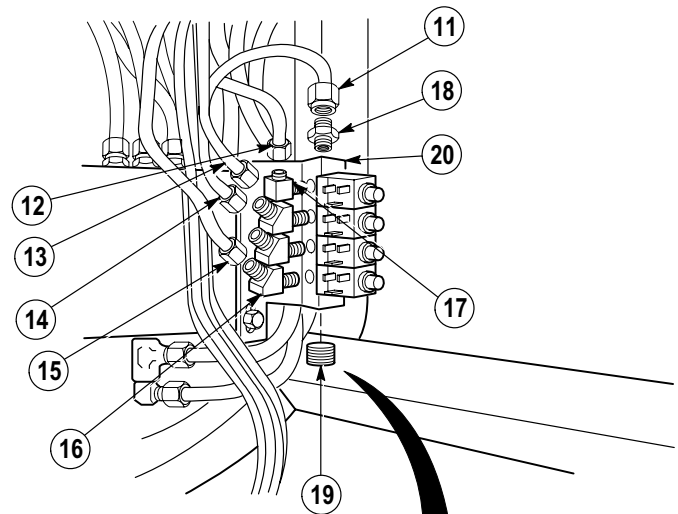
- (1) Install solenoid mounting bracket (23) on air manifold (25) with two screws (24).
- (2) Install manifold (20) on solenoid mounting bracket (23) with two screws (22) and locknuts (21).



WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (3) Apply sealing compound on threads of plug (19), or 90 degree elbow (10), fitting (18), 90 degree elbow (17) and three 45 degree elbows (16).



NOTE

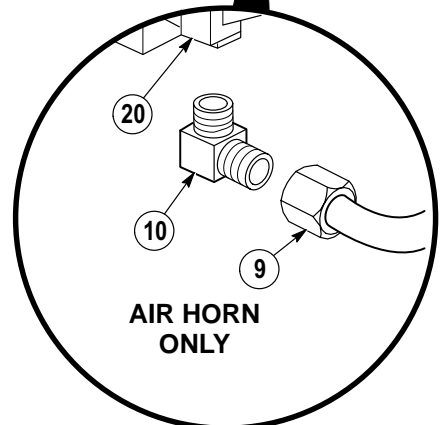
Install fittings as noted prior to removal.

- (4) Working from bottom to top, install plug (19), or 90 degree elbow (10), three 45 degree elbows (16), 90 degree elbow (17) and fitting (18) in manifold (20).
- (5) Install air line 2412 (11), air line 2923 (12), air line 2074 (13), air line 2069 (14) and air line 2071 (15) on fitting (18), 90 degree elbow (17) and three 45 degree elbows (16).

NOTE

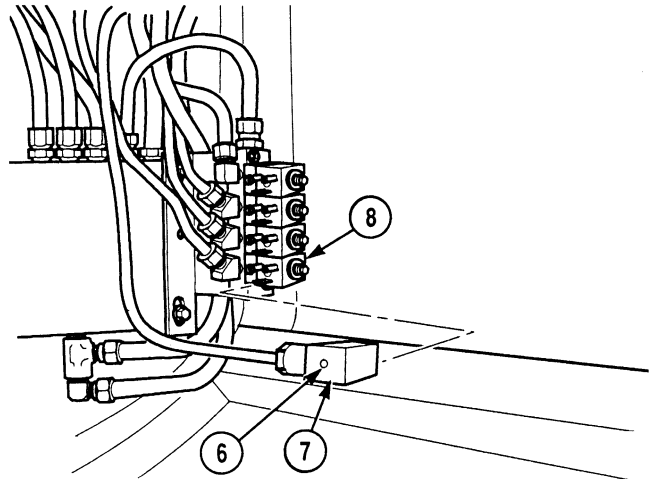
Perform Step (6) if truck is equipped with air horn.

- (6) Install air line 2037 on 90 degree elbow (10).

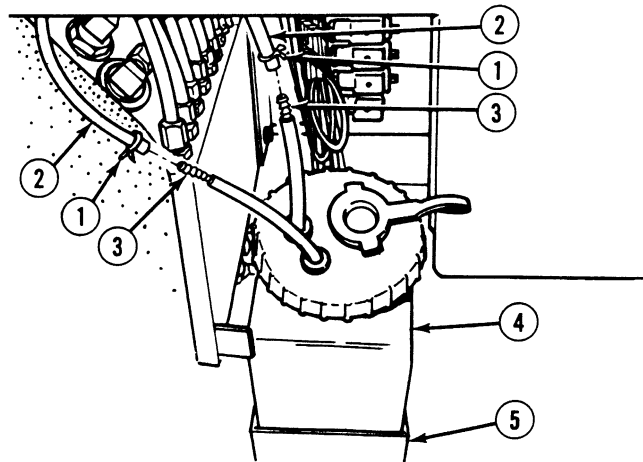


12-40. SOLENOID FOUR POSITION VALVE REPLACEMENT (CONT.)

- (7) Install four connectors (7) on solenoids (8).
- (8) Tighten four screws (6) on connectors (7).



- (9) Install solvent tank (4) in mounting bracket (5).
- (10) Compress two clamps (1) and install hoses (2) on solvent tank hoses (3).



c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Install glove box, (Para 17-53).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-41. AIR GOVERNOR AND BRACKET REPLACEMENT/ADJUSTMENT.

This task covers:

- | | |
|-----------------|--------------------------|
| a. Removal | c. Adjustment |
| b. Installation | d. Follow-On Maintenance |

INITIAL SETUP*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Cap and Plug Set (Item 8, Appendix G)
Pressure Test Kit (Item 50, Appendix G)

Materials/Parts

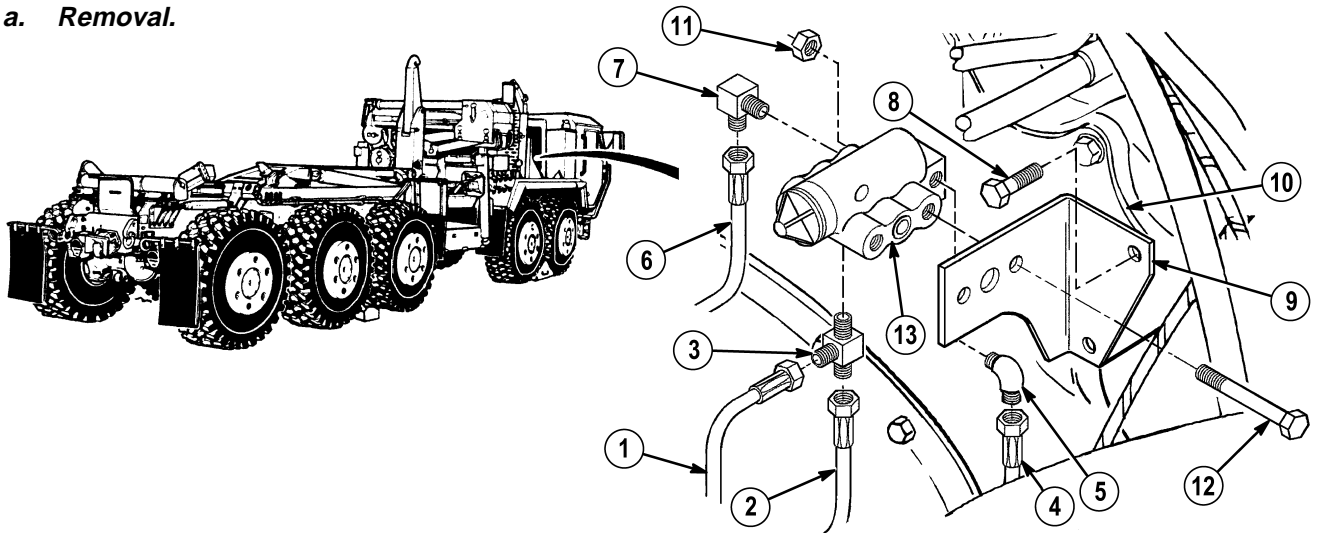
Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)
Locknut (2) (Item 133, Appendix F)

Personnel Required

Two

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Spare tire removed, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)
Right side noise panel removed, (Para 17-26)

a. Removal.**NOTE**

- Tag and mark all hoses prior to removal.
- Tag and note position of fittings prior to removal.
- Cap and plug all hoses and fittings after removal.

- (1) Remove air line 2114 (1) and air line 2040 (2) from tee (3).
- (2) Remove air line 2159 (4) from elbow (5).
- (3) Remove air line 2114 (6) from elbow (7).
- (4) Remove two screws (8) and bracket (9) from engine (10).
- (5) Remove two locknuts (11), screws (12) and governor (13) from bracket (9). Discard locknuts.

12-41. AIR GOVERNOR AND BRACKET REPLACEMENT/ADJUSTMENT (CONT).

- (6) Remove tee (3), elbows (5) and (7) and three plugs (14) from governor (13).

b. Installation.

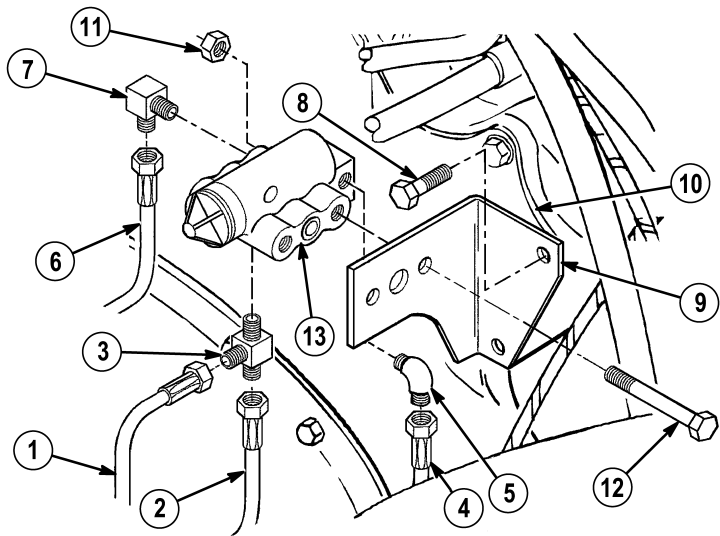
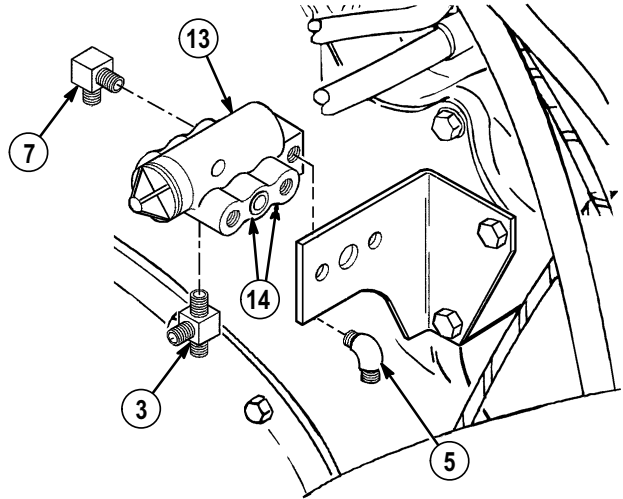
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

Install elbows and tee as noted prior to removal.

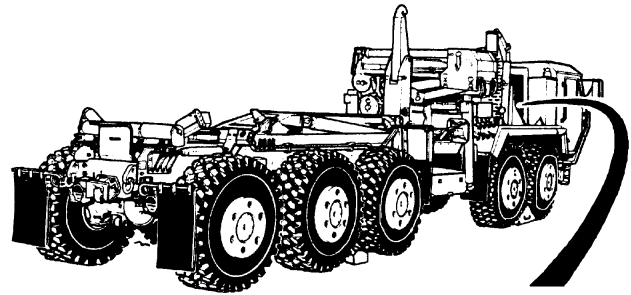
- (1) Coat threads of tee (3), elbows (5) and (7) and three plugs (14) with sealing compound.
- (2) Install tee (3), elbows (5) and (7) and three plugs (14) in governor (13).
- (3) Install governor (13) on bracket (9) with two screws (12) and locknuts (11).
- (4) Install bracket assembly (9) on engine (10) with two screws (8).
- (5) Install air line 2114 (6) on elbow (7).
- (6) Install air line 2159 (4) on elbow (5).
- (7) Install air line 2114 (1) and air line 2040 (2) on tee (3).



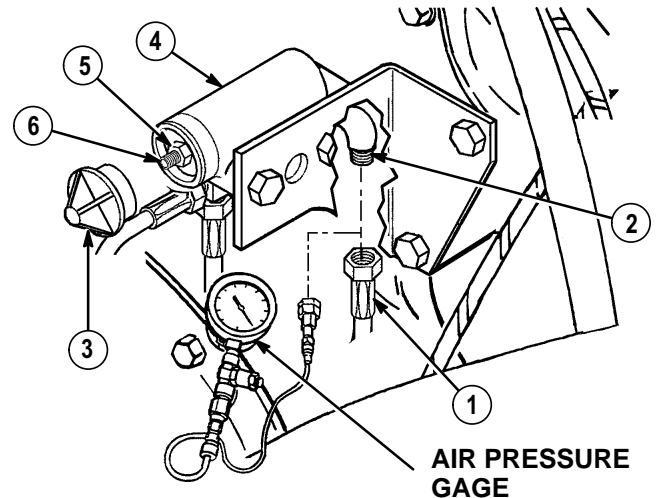
c. Adjustment.

WARNING

Allow engine to cool before performing troubleshooting or maintenance. If necessary use insulated pads and gloves. Hot engine components will burn and cause injury to personnel.



- (1) Drain air from No. 1 air tank.
- (2) Disconnect air line 2159 (1) from elbow (2).
- (3) Install air pressure gage on elbow (2).
- (4) Start engine.
- (5) Build air pressure until air dryer discharge is heard.
- (6) Shut OFF engine.
- (7) Check air pressure gage.



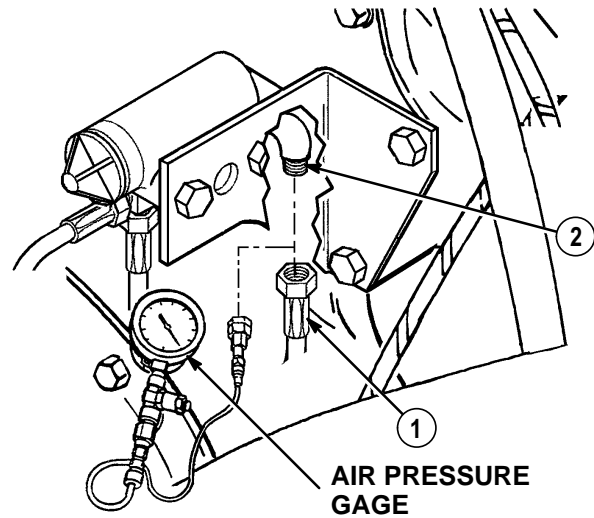
- (a) If air pressure gage indicates 121 to 129 psi (834 to 889 kPa), no adjustment is necessary, go to Step (16).
- (b) If air pressure gage indicates less than 121 psi (834 kPa) or more than 129 psi (889 kPa) go to Step (8).
- (8) Remove cap (3) from governor (4).
- (9) Loosen nut (5) while holding adjusting screw (6).

NOTE

- One complete turn of adjusting screw will change adjustment approximately 15 psi (103 kPa).
 - Turning adjusting screw counterclockwise will increase cut-out pressure.
 - Turning adjusting screw clockwise will decrease cut-out pressure.
- (10) Hold nut (5) and turn adjusting screw (6) to obtain 125 psi (862 kPa) cut-out pressure.
 - (11) Hold adjusting screw (6) and tighten nut (5).
 - (12) Install cap (3) on governor (4).

12-41. AIR GOVERNOR AND BRACKET REPLACEMENT/ADJUSTMENT (CONT).

- (13) Start engine.
- (14) If cut-out air pressure does not cut out at 121 to 129 psi (834 to 889 kPa), shut off engine and repeat Steps (8) through (13). If cut-out pressure is between 121 to 129 psi (834 to 889 kPa), go to Step (15).
- (15) Shut OFF engine.
- (16) Drain air from No. 1 air tank.
- (17) Remove air pressure gage from elbow (2).
- (18) Connect air line 2159 (1) on elbow (2).



d. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Install right side noise panel, (Para 17-25).
- Install spare tire, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-42. EMERGENCY AIR QUICK DISCONNECT REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

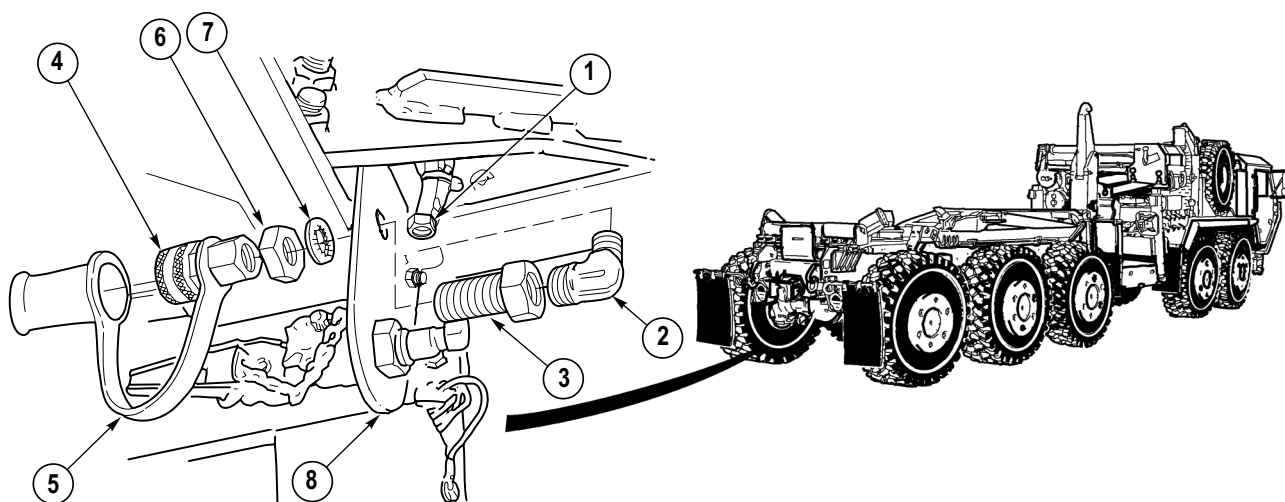
Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Wrench, Combination 1 1/8 in.
(Item 79, Appendix G)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)

Materials/Parts

Cable Ties (Item 26, Appendix C)
Sealing Compound (Item 72, Appendix C)
Lockwasher (Item 158, Appendix F)

a. Removal.

- (1) Remove cover (5) from quick disconnect (4).
- (2) Remove air line 2133 (1) from elbow (2).
- (3) Remove 90 degree elbow (2) from fitting (3).
- (4) Remove quick disconnect (4) from fitting (3).
- (5) Remove jam nut (6), lockwasher (7) and fitting (3) from bracket (8). Discard lockwasher.

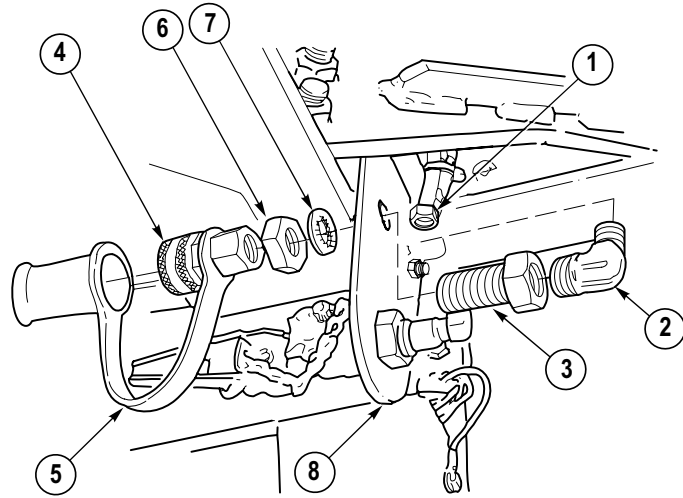
12-42. EMERGENCY AIR QUICK DISCONNECT REPLACEMENT (CONT).

b. Installation.

- (1) Install fitting (3) in bracket (8) with lockwasher (7) and jam nut (6).

WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (2) Apply sealing compound on threads of fitting (3).
- (3) Install quick disconnect (4) on fitting (3).
- (4) Apply sealing compound on threads of 90 degree elbow (2).
- (5) Install 90 degree elbow (2) in fitting (3).
- (6) Install air line 2133 (1) on elbow (2).
- (7) Install cover (5) on quick disconnect (4).

c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-43. GLADHAND REPLACEMENT.

This task covers:

- a. Removal b. Installation c. Follow-On Maintenance

INITIAL SETUP

Tools and Special Tools

Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)
Wrench, Combination 1-1/2 in.
(Item 83, Appendix G)

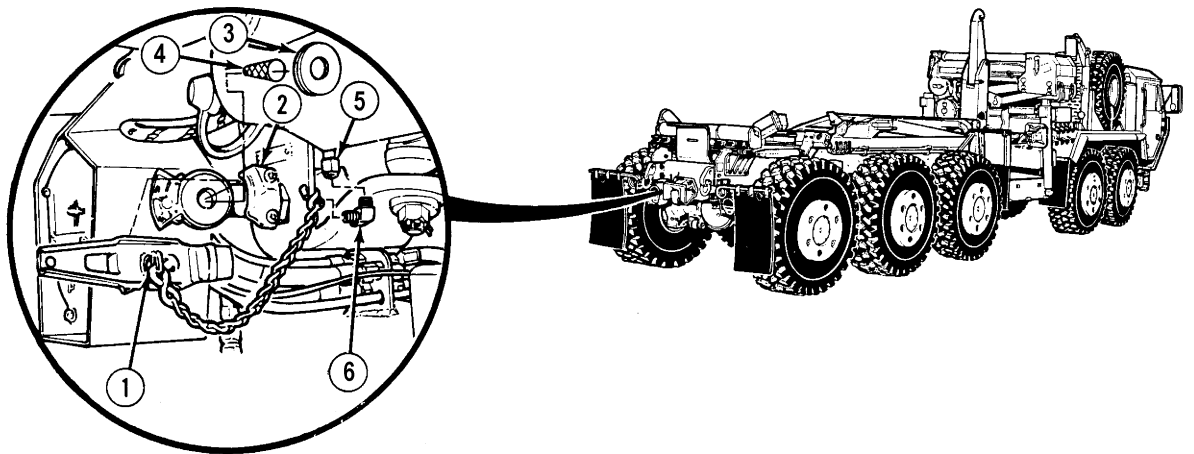
Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)

Materials/Parts

Sealing Compound (Item 72, Appendix C)
Lockwasher (Item 158, Appendix F)

a. Removal.



NOTE

Front and rear gladhands are removed the same way. Left rear shown.

- (1) Remove dummy coupling (1) from gladhand (2).

NOTE

Perform Step (2) if only removing seal (3) or screen (4).

- (2) Remove seal (3) and screen (4) from gladhand (2).
- (3) Remove air line 2653 (5) from connector (6).
- (4) Remove connector (6) from gladhand (2).

12-43. GLADHAND REPLACEMENT (CONT).

- (5) Remove nut (7) and lockwasher (8) from reducer (9). Discard lockwasher.
- (6) Remove gladhand (2) and reducer (9) from bracket (10).
- (7) Remove reducer (9) from gladhand (2).

NOTE

Perform Step (8) if dummy coupling is damaged or if replacing bracket.

- (8) Bend open end of chain S-hook (11) and remove dummy coupling (1) from bracket (10).

b. Installation.

NOTE

Perform Step (1) if dummy coupling was removed.

- (1) Install chain S-hook (11) of dummy coupling (1) in bracket (10). Crimp end of S-hook (11) closed.

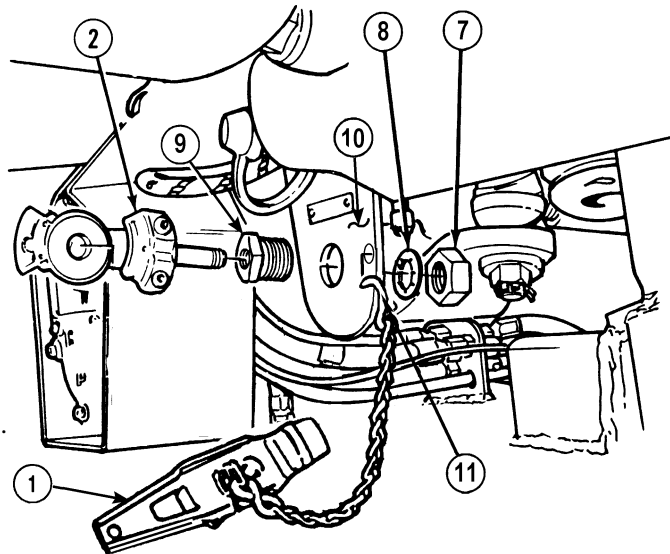
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

NOTE

Front and rear gladhands are installed the same way. Left rear shown.

- (2) Apply sealing compound on threads of reducer (9).
- (3) Install reducer (9) on gladhand (2).
- (4) Install gladhand (2) and reducer (9) on bracket (108) with lockwasher (8) and nut (7).



WARNING

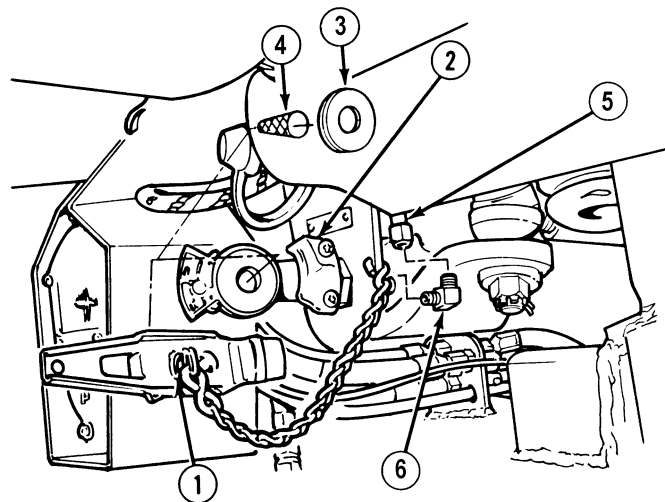
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (5) Apply sealing compound on threads of connector (6).
- (6) Install connector (6) on gladhand (2).
- (7) Install air line 2653 (5) on connector (6).

NOTE

Perform Step (8) only if seal (3) or screen (4) were removed.

- (8) Install screen (4) and seal (3) on gladhand (2).
- (9) Install dummy coupling (1) on gladhand (2).

**c. Follow-On Maintenance:**

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

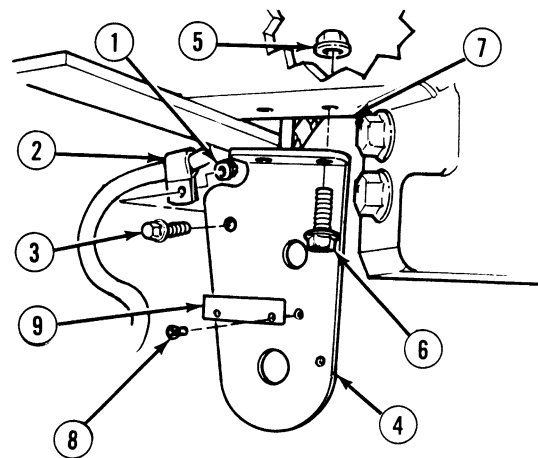
b. Installation.

- (1) With the aid of an assistant, install bracket (4) on rear crossmember (7) with two screws (6) and locknuts (5).
- (2) Install screw (3) and cushion clip (2) on bracket (4) with locknut (1). Tighten locknut to 75 lb-in (8 N·m).

NOTE

Perform Step (3) if nameplate was removed.

- (3) Install nameplate (9) on bracket (4) with two drive screws (8).

**c. Follow-On Maintenance:**

- Install emergency air quick disconnect, (Para 12-42).
- Install gladhand, (Para 12-43).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

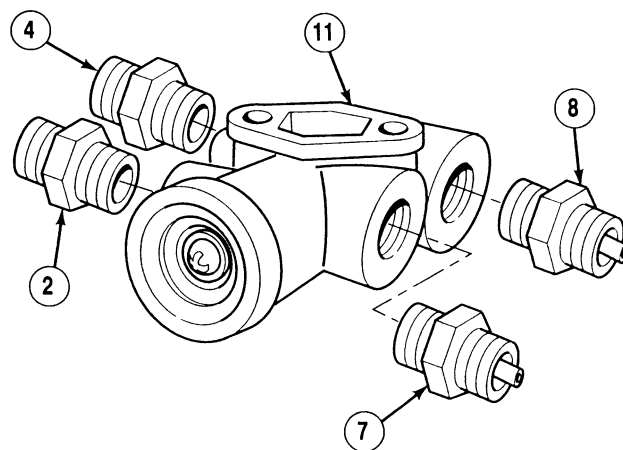
- (5) Position tractor protection valve (11) in soft-jaw vise.
- (6) Remove adapter (2) from tractor protection valve (11).
- (7) Remove adapter (4) from tractor protection valve (11).
- (8) Remove two adapters (7) and (8) from tractor protection valve (11).

b. Installation.

WARNING

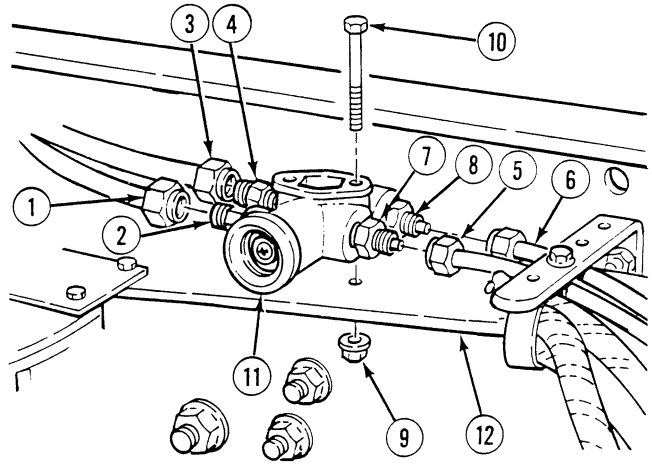
Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound on threads of adapters (7) and (8).
- (2) Install adapters (7) and (8) in tractor protection valve (11).
- (3) Apply sealing compound on threads of adapter (4).
- (4) Install adapter (4) in tractor protection valve (11).
- (5) Apply sealing compound on threads of adapter (2).
- (6) Install adapter (2) in tractor protection valve (11).



12-45. TRACTOR PROTECTION VALVE REPLACEMENT (CONT).

- (7) Install tractor protection valve (11) on frame (12) with two screws (10) and locknuts (9).
- (8) Install air line 2654 (6) on adapter (7).
- (9) Install air line 2653 (5) on adapter (8).
- (10) Install air line 2662 (3) on adapter (4).
- (11) Install air line 2661 (1) on adapter (2).



c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Install tread platform assembly, (Para 15-9).
- Install rear hard lift assembly, (Para 15-8).
- Remove wheel chocks, (TM 9-2320-364-10).

END OF TASK

12-46. HAND BRAKE VALVE REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

INITIAL SETUP*Tools and Special Tools*

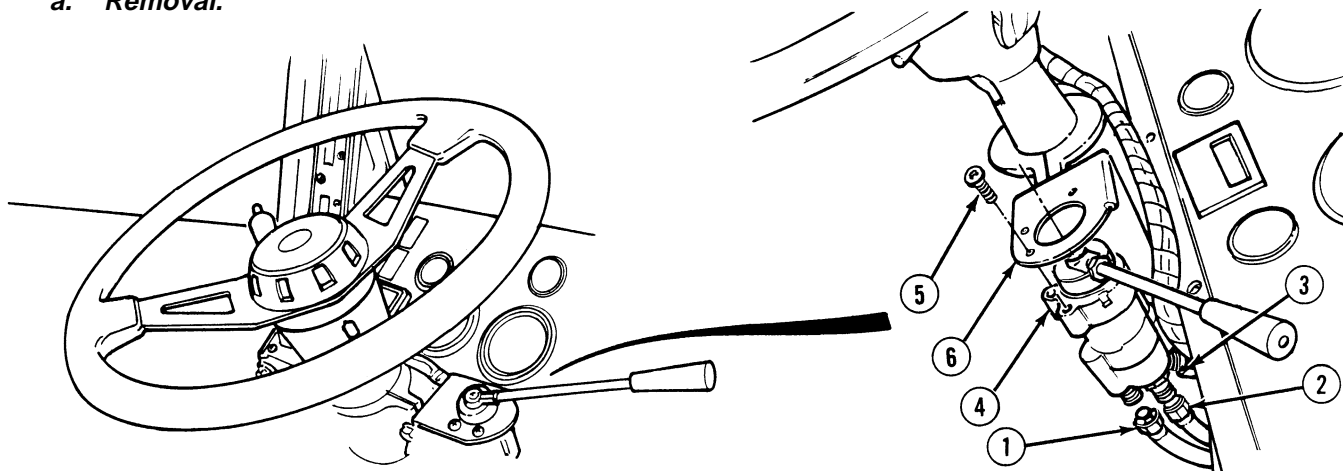
Tool Kit, General Mechanic's: Automotive
(Item 74, Appendix G)

Materials/Parts

Sealing Compound (Item 72, Appendix C)
Tags, Identification (Item 88, Appendix C)

Equipment Condition

Engine OFF, (TM 9-2320-364-10)
Air system drained, (TM 9-2320-364-10)
Wheels chocked, (TM 9-2320-364-10)

a. Removal.**NOTE**

- Tag and mark all hoses before removal.
- Cap and plug all lines after removal.

(1) Remove air line 2028 (1), air line 2027 (2) and air line 2663 (3) from hand brake valve (4).

NOTE

When removing hand brake valve, pull hand brake down and over to right side in order to pull handle through hole in mounting bracket.

(2) Remove three screws (5) and hand brake valve (4) from mounting bracket (6).

12-46. HAND BRAKE VALVE REPLACEMENT (CONT).

NOTE

Matchmark all fittings and elbows to ensure correct installation and position.

- (3) Remove two fittings (7) and elbow (8) from hand brake valve (4).

b. Installation.

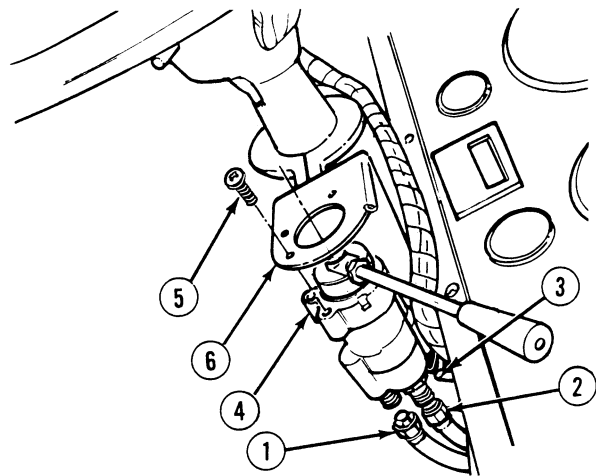
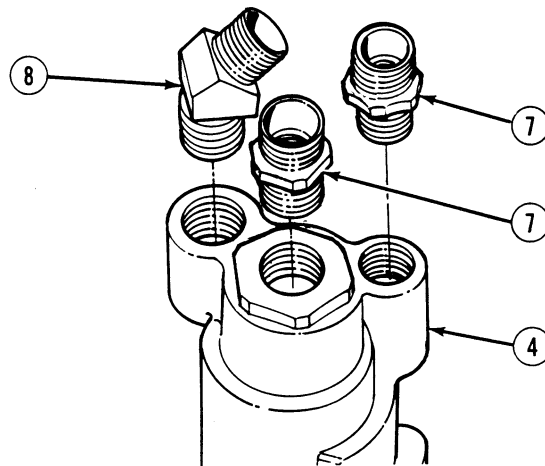
WARNING

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound on threads of elbow (8) and two fittings (7).
- (2) Install elbow (8) and two fittings (7) in hand brake valve (4).
- (3) Install hand brake valve (4) on mounting bracket (6) with three screws (5).
- (4) Install air line 2028 (1), air line 2027 (2) and air line 2663 (3) on hand brake valve (4).

c. Follow-On Maintenance:

- Start engine, (TM 9-2320-364-10).
- Build up air pressure to 125 psi (861 kPa).
- Shut OFF engine, (TM 9-2320-364-10).
- Check for air leaks, (TM 9-2320-364-10).
- Check operation of hand brake valve, (TM 9-2320-364-10).
- Remove wheel chocks, (TM 9-2320-364-10).



END OF TASK

By Order of the Secretary of the Army:

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

Official:



JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
9911813

DISTRIBUTION: To be distributed in accordance with the initial distribution number (IDN) 380898, requirements for TM 9-2320-364-20-4

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

$5/9 (°F - 32) = °C$
 212° Fahrenheit is equivalent to 100° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 32° Fahrenheit is equivalent to 0° Celsius
 $9/5 C° + 32 = F°$

APPROXIMATE CONVERSION FACTORS

<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/Sq 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
Sq Centimeters.....	Square Inches.....	0.155
Square Meters.....	Square Feet.....	10.764
Square Meters.....	Square Yards.....	1.196
Square Kilometers.....	Square Miles.....	0.386
Sq 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 Sq Inch.....	0.145
Km per Liter.....	Miles per Gallon.....	2.354
Km per Hour.....	Miles per Hour.....	0.621

